
Note to the Designer/Architect/Engineer: These Specifications are basic minimum criteria to be met in preparing the final project specifications for this Section, which is the responsibility of the Designer

York University Building Standards

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1.0 GENERAL

1.1 Scope of Work

1.1.1 This York University Building Standard includes: gypsum board, fire rated gypsum board, ceiling gypsum board, abuse resistant gypsum board, water resistant gypsum board, glass scrim gypsum shaft wall liner panel, cement board, (for exterior grade applications only), exterior sheathing board; glass scrim gypsum sheathing board, and gypsum board accessories and miscellaneous related materials

1.1.2 This Section covers all materials, equipment, tools and labour required for the supply and installation of gypsum board (also referred to as drywall) work, complete with all accessories

1.1.3 The following assemblies are included in this Section:

- .1 partitions
- .2 suspended ceilings
- .3 framed ceilings
- .4 bulkheads
- .5 Shaft-wall enclosures
- .6 Chase enclosures
- .7 Stair enclosures
- .8 Horizontal enclosures
- .9 Other project enclosures and wall assemblies as required

1.2 Sustainable Design Requirements

1.2.1 Use gypsum board with high post consumer recycled content gypsum

1.2.2 Use low volatile organic compounds (VOC) emitting joint compounds

1.2.3 To avoid the absorption of VOC's from other material, store gypsum in a well ventilated area

1.2.4 Wherever possible and where not otherwise specified by the gypsum board or cement board manufacturer use paper joint tape instead of fiberglass

1.2.5 Where the project requiring work covered in this Section is pursuing a LEED credit; then follow project requirements for compliance, documentation and certification of the project in accordance with the requirements of the desired LEED credits (relevant LEED credits include EQ 4.1 Part 2 for adhesives, and credit MR 4.1 (low emitting materials sealants and adhesives) and MR 4.2, provide product data sheets indicating the percentage by weight of post-consumer and pre-consumer recycled content for sound attenuation insulation, MR 2 for waste management gypsum board recycling waste diversion.
MR 5 Regional materials. Use building materials that have been extracted, harvested, recovered and processed within 800 km of the final manufacturing site.

1.3 Submittals

1.3.1 Submit manufacture's product data sheets for products proposed to be used in the work covered by this Section.

1.3.2 Submit test results for each required fire resistance rated assembly for work covered by this Section

1.3.3 Shop drawings for shaft walls:

- .1 Submit written confirmation and design for shaft wall construction showing adequacy of system in meeting fire ratings and its ability to withstand pressures and deflections that may occur in high velocity duct shafts/ Shaft wall design shall be prepared as an engineering shop drawing
- .2 Show clearly suspension location and details
- .3 Show location of control and other joints
- .4 Shop drawings shall bear the stamp and signature of a qualified engineer, member of the provincial association of engineers, details of the following and other details of work covered by this Section

1.3.4 Test Results:

- .1 Submit certified test results for each required fire resistance rated assembly for work covered by this Section

1.4 Quality Assurance

1.4.1 Indicate the fire-resistance rating of specific assemblies on Drawings

- 1.4.2 Fire resistance rating: where gypsum board systems with fire resistance ratings are indicated or required, provide materials and installations that are identical with those of applicable assemblies tested by fire testing laboratories acceptable to authorities having jurisdiction, as per ASTM E119-12a
 - 1.4.3 Since assemblies are fire-response tested as proprietary systems; therefore, stud type, which is described by its profile, used in one shaft-wall manufacturer's assemblies cannot be substituted for a different type required for another manufacturer's assemblies
 - 1.4.4 STC-rating (Sound Transmission Class) Assemblies: Where project requires STC-rated assemblies then, provide materials and construction identical to those of assemblies tested in accordance with ASTM E90 and classified according to ASTM E413 by a testing and inspecting agency
 - 1.4.5 Acoustical sealant for exposed Joints shall be manufacturer's standard non-sag, paintable, non-staining sealant to ASTM C 834 Standard Specification for Latex Sealants
- 1.5 Related York University Standards and Guidelines
- 1.5.1 Section 08 11 00 Metal Doors and Steel Frames
Section 08 14 00 Wood Doors and Wood Frames
Section 09 30 00 Ceramic Tile
Section 09 51 00 Acoustical Ceiling Tile
Section 09 68 00 Carpet Tiles and Rolled Carpet
Section 09 91 00 Painting
Section 10 22 00 Washroom Compartment
Section 12 48 16 Entrance Foot Grille
Section 12 56 00 Institutional Furniture
Section 09 29 00 Metal Supports for Gypsum and Cement board
- 1.6 Performance Standards References
- 1.6.1 Comply with latest iteration of the Ontario Building Code
Comply with latest applicable ULC and CSA standards
ASTM C1396/C1396M- 13 Standard Specification for Gypsum Board
ASTM C1178/C1178M-13 Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel
ASTM 1177/C1177M-13 Standard Specification for Glass Gypsum Substrate for Use as Sheathing

ASTM C954-11 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84mm) to 0.112 in. (2.84mm) in Thickness
ASTM C1047-10a Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
ASTM E413-10 Classification of Rating Sound Insulation
ASTM D3498 Standard Specification for Adhesives for Field Gluing Plywood to Lumber Framing for Floor Systems
ASTM C631 Standard Specification for Bonding Compounds for Interior Gypsum Plastering
ASTM D1056 Standard Specification for Flexible Cellular Materials – Sponge or Expanded Rubber 1,2
CAN/ULC S702 Standard for Thermal Insulation Mineral Fibre for Buildings
CAN/ULC S102 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
CAN/ULC S114 Standard Method of Test for Determination of Non-Combustibility in Building Materials
ASTM C754-11 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
ASTM C840-11 Standard Specification for Application and Finishing of Gypsum Board
ASTM E119-12a Standard test Method for Fire Test of Bonding Construction Materials
CAN/ULC S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials
ASTM C1186-08 (2012) Standard Specification for Flat Fiber-Cement Sheets
ASTM C 834 (2014) Standard Specification for Latex Sealants
GA 214/216 (2010) Recommended Levels of Gypsum Board Finish Gypsum Association
GA 600 (2009) Fire resistance design manual sound control gypsum systems Gypsum Association

1.7 Qualifications

1.7.1 The work covered by this Section shall be undertaken by skilled labour, and in accordance with known industry best practices and the instructions of the manufacturer of the products being used

1.8 Warranty (Standard Warranty and Extended Warranty)

- 1.8.1 Guarantee in writing that gypsum board of all types shall not crack for a period of one year after the date of Substantial Performance of the Work, against all defects of workmanship or materials, including fissures, cracking, surface deterioration or other defects of appearance or solidity
- 1.8.2 The gypsum board installer assumes all costs of repairs, including repair of finishes, if such defects occur

1.9 Delivery, Handling and Storage

- 1.9.1 For large renovation projects¹ and all new construction:
 - .1 Deliver materials in their original packages, containers and bundles bearing brand name and identification of manufacturer or supplier
 - .2 Store materials inside under cover, keep materials dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes of possible damage
 - .3 Stack panels flat on level supports off floor or slab to prevent sagging
 - .4 Follow materials manufacturer's written instructions for storage and handling

1.10 Environmental Conditions

- 1.10.1 Comply with ASTM C840 requirements or with gypsum and shaft wall systems manufacturer's written recommendations, whichever are more stringent
- 1.10.2 Maintain a uniform temperature around 10°C during the installation of gypsum board and between 13°C and 21°C for finishing work
- 1.10.3 Provide sufficient ventilation to eliminate excess humidity

2.0 PRODUCTS

2.1 Gypsum Board

- 2.1.1 Gypsum board, regular type gypsum board shall be paper faced gypsum core panel with solid set core enclosed in paper, 12.7mm (1/2") or 16mm (5/8") thickness are

¹ Large renovation project, is a project with a minimum budget of \$1 million

acceptable unless otherwise indicated, 1220mm (48") wide X maximum practical length, ends must be square cut with tapered edges, must meet ASTM C1396/C1396M specifications

- 2.1.2 Fire-rated gypsum board shall be paper faced gypsum core panel with a specially formulated core for use in fire-resistive Type X or Type C designs, 12.7mm (1/2") or 16mm (5/8") thickness are acceptable unless otherwise indicated, 1220mm (48") wide X maximum practical length, ends must be square cut with tapered edges, boards must meet ASTM C1396/C1396M specifications
- 2.1.3 Gypsum board for shaft walls, fire rated gypsum board to ASTM C1396/C1396M specifications shall be 25.4mm (1") thick, 610mm (24") wide X maximum practical length, ends must be square cut with tapered edges
- 2.1.4 Gypsum board for ceiling applications shall be paper faced gypsum core, 12.7mm (1/2") thickness non sag type equivalent to 15.9mm (5/8") interior ceiling grade, ends must be square cut with tapered edges boards must meet ASTM C1396/C1396M specifications
- 2.1.5 Fiberglass mat faced, silicone core gypsum board, regular and fire resistive, shall be composed of a proprietary silicone-treated gypsum core integrally bonded to inorganic fiberglass mat surfacing on both faces, and acrylic vapour barrier coating on the exposed face, as per ASTM C1178/C1178M and ASTM C1396C/C1396M, regular 12.7 mm (1/2") and fire resistant (type X) 16 mm (5/8") thick respectively, 1220 mm (48") wide by maximum practical length, ends must be square cut with tapered edges for use in humid areas
- 2.1.6 Fiberglass mat faced, silicone core gypsum board, for shaft wall, moisture and mold resistant and fire resistant shall be composed of proprietary silicone-treated gypsum core integrally bonded to inorganic fiberglass mat surfacing on both faces, as per ASTM C1177/C1177M and ASTM C1396/C1396M 25.4mm (1"), 610mm (24") wide X maximum practical length, ends must be square cut with tapered edges on both sides
- 2.1.7 High moisture and mold resistant gypsum board, regular and fire resistant shall be composed of a proprietary fiberglass

treated gypsum core integrally bonded to a smooth metallic fiberglass mat surfacing on both sides, as per ASTM C1177/C1177M and C1339/C1396M, regular 12.7 mm (1/2") and fire resistant (type x) 16mm (5/8") thick respectively, 1220mm (48") wide by maximum practical length, ends square cut, edges tapered for use in humid areas

- 2.1.8 Abuse and fire-resistant gypsum board, composed of a core of fiberglass reinforced gypsum, impact and fire resistant, and faces of resistant paper, as per ASTM C1396/C1396M, 12.7mm (1/2") or 16mm (5/8"), as indicated, 1220mm (48") wide by maximum practical length, ends square cut, edges tapered. To be used on a steel framing of minimum 0.91 mm (20ga) thickness
- 2.1.9 Water resistant gypsum board – For adhesive applied ceramic tile in wet areas (showers rooms) use cementitious backer units as a substrate, as per ASTM C1396 or ASTM C1178, for all other tiled areas including areas where only ceramic or quarry tile base is to be installed, and for ceilings in humid areas. When using water-resistant gypsum backing board at tile applications, the metal studs should be spaced no more than 406 mm 16 inch o.c. Specify moisture resistant gypsum board ASTM C1396 for humid areas that are not exposed to direct moisture. When using moisture resistant board on ceilings, spacing of supports should be no more than 305mm 12 inch o.c.
- 2.1.10 Glass scrim gypsum board shaft wall liner, mold resistant for wet area applications onto which ceramic tiles may be bonded
- 2.1.11 Exterior sheathing board - The use of gypsum board is not acceptable for exterior application except under special short term conditions or as part of protected locations. An acceptable alternative to gypsum board for exterior use is reinforced cement board or gypsum sheathing with a silicone treated gypsum core bonded to inorganic fiberglass matt on both sides. (see 2.1.6)
- 2.1.12 Cementitious backer units as per ASTM C1186-08 (2012)
- 2.1.13 Abuse or impact resistant gypsum board, impact resistant gypsum board should be used when abuse or vandalism of walls is anticipated and gypsum board is the only wall material alternative feasible. Consult manufacturer for restrictions of impact resistant gypsum board on exterior

walls. Installation of abuse resistant gypsum board requires a minimum of 20 gauge metal framing as support. Some abuse resistant gypsum board relies on Lexan backing for penetration resistance. The impervious layer will act as a vapor barrier that may not be desirable in certain wall systems and conditions. Paper faced gypsum board does not typically have good impact or abrasion performance and should not be used for applications requiring impact resistance. Impact resistant gypsum board should be minimum of 1200mm 48 inch wide, 15.9mm 5/8 inch thick, tapered edges. Reinforced gypsum panel with imbedded fiberglass mesh or Lexan backing testing in accordance with the following tests. Hard body impact test must attain a Level 2 performance in accordance with ASTM C1629. Provide fasteners that meet manufacturer requirements and specifications stated in this Section. Impact resistant gypsum board, when tested in accordance with ASTM E84, must have a flame spread rating of 25 or less and a smoke development rating of 50 or less and a flame spread rating of 75 or less, and a smoke development rating of 100 or less.

2.2 Fasteners and Staples

- 2.2.1 Fasteners for drywall work, galvanized nails, screws and staples as per ASTM C1047, flat head counter-sunk screws
- 2.2.2 Fasteners for metal furring, interior, masonry anchors, galvanized with counter sunk heads of appropriate length, penetrating at least 38mm (1 ½”) into the concrete
- 2.2.3 Provide cementitious backer unit screws with a polymer coating
- 2.2.4 Where stapes are used provide 1.5mm thick No. 16 USS gage flattened galvanized wire staples with 11.1 mm wide crown outside measurement and divergent point for base ply of the two-ply gypsum board application

Length of staple legs	Thickness of Gypsum Board
28.6mm 1 1/8 inches	12.7mm ½ inch
31.8mm 1¼ inches	15.9mm 5/8 inch

2.3 Accessories (other)

- 2.3.1 Accessories shall meet or exceed requirements of ASTM C1047 unless otherwise required for conformance to fire-rated
- 2.3.2 Corner Bead and Trim: Paper faced metal bead and trim

- 2.3.3 Panel or Access Doors: General purpose metal or plastic flush doors are acceptable for ceiling application. Where it is necessary to retain fire rating for a wall or ceiling use fire rated panel or access doors

- 2.4 Framing members
 - 2.4.1 Studs and tracks shall comply with ASTM C645, metal thickness as specified in Steel Stud Schedule for appropriate height and as specified elsewhere, galvanized to ASTM A653/A653M, Z180 zinc coating (use minimum 0.88 mm studding for fibre reinforced gypsum board)
 - 2.4.2 Furring: 0.48 mm thick galvanized sheet steel to ASTM A653M, Z180 zinc coating sizes as indicated in drawings
 - 2.4.3 Resilient furring: 0.48mm thick galvanized sheet steel to ASTM A653M, Z180 zinc coating sizes as indicated in drawings, pre-punched, 35 mm face width, 16mm high
 - 2.4.4 Shaft wall framing: meet or exceed requirements of application ULC design. Consult shaft wall manufacturer's design data size framing to suit required heights and anticipated lateral loads

- 2.5 Joint and Adhesive materials
 - 2.5.1 Embedding Compound
 - a. Specifically formulated and manufactured for use in embedding tape at gypsum board joints and compatible with tape, substrate and fasteners
 - 2.5.2 Finishing or Topping Compound
 - b. Specifically formulated and manufactured for use as a finishing compound

- 2.6 All-Purpose Compound
 - 2.6.1 Specifically formulated and manufactured to serve as both a taping and a finishing compound and compatible with tape, substrate and fasteners

- 2.7 Setting or Hardening Type Compound
 - 2.7.1 Specifically formulated and manufactured for use with fiber glass mesh tape

- 2.8 Joint Tape
 - 2.8.1 Use cross-laminated, tapered edge, reinforced paper, or fiberglass mesh tape recommended by the manufacturer

- 2.9 Adhesives
 - 2.9.1 Use adhesive recommended by gypsum board manufacturer
 - 2.9.2 Use adhesives with a low VOC (maximum VOC content of 50 grams/litre – do not use adhesives containing: benzene, carbon tetrachloride, or trichloroethylene)
 - 2.9.3 Do not use adhesives to fasten gypsum board to metal framing

- 2.9.4 Use adhesive only where screw type fasteners to metal framing is not possible to avoid difficulties with future gypsum recycling
 - 2.9.5 Do not use adhesives to fasten gypsum board to wood framing
 - 2.9.6 Use adhesive only where screw type fasteners to wood framing is not possible to avoid difficulties with future gypsum recycling
- 2.10 Structural Failure Test
- 2.10.1 Test to ASTM E695 or ASTM D2394 for structural failure (drop penetration)

3.0 EXECUTION

3.1 General Requirements

3.1.1 Framing and Furring

- .1 Verify that framing and furring are securely attached and of sizes and spacing to provide a suitable substrate to receive gypsum board and cementitious backer units. Verify that all blocking, headers and supports are in place to support plumbing fixtures and to receive other accessories as required by the work. Do not proceed with work until framing and furring are acceptable for application of gypsum board and cementitious backer units

3.1.2 Gypsum Board and Framing

- .1 Verify that surfaces of gypsum board and framing to be bonded with an adhesive are free of dust, dirt, grease, and any other foreign matter. Do not proceed with work until surfaces are clean and acceptable for application gypsum board with adhesive

3.1.3 Masonry and Concrete Walls

- .1 Verify that surfaces masonry and concrete surface walls to receive gypsum board applied with adhesive are dry, free of dust, oil, from release agents, protrusions and voids, and any other foreign matter. Do not proceed with work until surfaces are acceptable for application of gypsum board with adhesive

3.2 Application of Gypsum Board

3.2.1 Apply gypsum board to framing and furring members in

- accordance with ASTM C840 and the manufacturers' installation requirements.
- 3.2.2 Apply gypsum board with separate panels in moderate contact, do not force in place. Stagger end joints of adjoining panels. Neatly fit abutting end and edge joints. Use gypsum board of maximum practical length; select panel size to minimize waste. Cut out gypsum board to neat, close, and tight joints around opening.
- 3.2.3 In vertical applications of gypsum board, provide panels in lengths required to reach full height of vertical surfaces in one continuous piece. Lay out panels to minimize waste; reuse cutoffs whenever possible. Surfaces of gypsum board and substrate members may not be bonded together with an adhesive except where prohibited by fire rating(s). Treat edges of cutouts for plumbing pipes, screwheads, and joints with water-resistant compound as recommended by the gypsum board manufacturer. Minimize framing by floating corners with single studs and drywall clips. Install 16mm 5/8 inch gypsum or 13mm 1/2 inch ceiling board over framing at 610mm 24 inch o.c.
- 3.2.4 In dry areas (areas other than tubs, shower enclosures, saunas, steam rooms, gang showers) apply fiberglass mat water-resistant gypsum tile backing board (or water-resistant gypsum backing board) in accordance with ASTM 840
- 3.2.5 Apply exterior gypsum board (such as at soffits) in accordance with ASTM C840. Apply gypsum board for exterior applications in accordance with manufacturer's specifications for design details, for joints and fasteners and proper installation to protect the substrate from moisture intrusion. Do not leave exposed surfaces of the gypsum sheathing beyond the manufacturer's recommendations without a weather barrier cladding. Provide a continuous asphalt impregnated building felt over sheathing surface in shingle fashion with edges and ends lapped a minimum of 150mm 6 inch. Properly flash the opening and seal all joints, seams, and penetrations with a compatible silicone sealant.
- 3.2.6 Floating Interior Angles – minimize framing by floating corners with single studs and drywall clips. Locate the attachment fasteners adjacent to ceiling and wall intersections in accordance with ASTM C840. Use special drywall clips designed to provide support at wall corners and wall ceiling intersections in lieu of backup studs or blocking minimizes framing, and is approved except where not permitted in fire rated assemblies. Include gypsum or ceiling board over framing sentence when appropriate for design and meets industry guideline and requirements for fire rated

assemblies

- 3.2.7 Control Joints – Install expansion and contracting joints in ceilings and walls in accordance with ASTM C840. Fill control joints between studs in fire rated construction with firesafing insulation to match the fire rating of construction
 - 3.2.8 Application of Foil-backed Gypsum Board – apply foil-backed gypsum board in accordance with ASTM C840
 - 3.2.9 Application of impact resistant Gypsum Board – Apply in accordance with manufacturer’s recommendations and in accordance with ASTM C840
- 3.3 Application of Cementitious Backer units
- 3.3.1 In areas where it is reasonable to expect that moisture will be present such as tubs, shower enclosures, saunas, steam rooms, gang shower rooms etc.) apply cementitious backer units in accordance with ANSI A108. Place asphalt impregnated, continuous felt paper membrane behind cementitious backer units, between backer units and studs or base layer of gypsum board. Place membrane with a minimum 150mm 6 inch overlap of sheets laid shingle style.
- 3.4 Finishing of Gypsum Board
- 3.4.1 Tape and finish gypsum board in accordance with ASTM C840 and GA 214/216. Finish plenum areas above ceilings to Level 1 in accordance with GA 214/216. Finish water resistant gypsum backing board to receive ceramic tile to Level 2 in accordance with GA 214/216. Finish walls and ceilings to receive a heavy-grade wall covering or textured finish before painting to Level 3 in accordance with GA 214/216. Finish walls and ceilings without critical lighting to receive flat paints, light textures, or wall coverings to Level 4 in accordance to GA 214/216. Unless otherwise specified, finish all gypsum board walls, partitions and ceilings to Level 5 in accordance with GA 214/216.
 - 3.4.2 Provide joint, fastener depression, and corner treatment. Tool joints as smoothly as possible to minimize sanding and dust. Do not use fiberglass mesh tape with conventional drying type joint compounds; use setting or hardening type compounds only. Provide treatment for water-resistant gypsum board as recommended by gypsum board manufacturer. Protect workers, building occupants and HVAC system from gypsum dust.
- 3.5 Uniform Surface

3.5.1 Wherever gypsum board is to receive eggshell, semi gloss or gloss paint finish, or where severe, up or down lighting conditions occur, finish gypsum wall surface in accordance to GA 214 Level 5.

3.6 Metal Trim for Pre decorated Gypsum Board

3.6.1 Finish edges, and ends of pre decorated gypsum board, except prefinished vee joints and monolithic type joints, with metal or plastic trim selected to match the gypsum board finish.

3.7 Sealing

3.7.1 Seal openings around pipes, fixtures and other items projecting thorough gypsum board. Apply enough of the same sealant to all fasteners penetrating through the fiberglass mat gypsum board surface to completely cover the penetration when troweled flat.

3.8 Fire-Resistant Assemblies

Wherever fire-rated construction is indicated, provide materials and application method, including types and assembly methods in accordance with UL Fire Resistance and in accordance with GA 600

3.9 Shaftwall Framing

Install the shaftwall system in accordance with the system manufacturer's published instructions. Coordinate bucks, anchors, blocking and other items behind the shaftwall framing with electrical and mechanical work. Patch and repair fireproofing materials that are damaged or removed during shaftwall construction

3.10 Waste Management

3.10.1 York University manages a number of construction wastes and diverts these wastes from landfill. A key aspect of the university's waste diversion program is the need to separate different waste components

3.10.2 Separate clean waste gypsum products from contaminants. Do not include wood, plastic, metal, asphalt-impregnated gypsum board, or any gypsum board coated with fiberglass, vinyl, decorative paper, or other finishes. Place gypsum board in dedicated containers and protect from moisture and contamination from other materials.

3.11 Acoustical Treatment

Install acoustical insulation between studs in acoustically rated partitions
Ensure that acoustic insulation fills cavities between studs, full

height of walls, and is continuous over door frames and around openings and corners

Ensure that insulation is packed around cut openings in board and panels, behind outlet boxes, around plumbing, heating or structural items passing through the system and at abutting walls

Unless indicated otherwise on drawings, apply 15mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to acoustically seal gypsum board and panel junction with abutting fixed building components. Seal full perimeter of cutouts around electrical boxes, ducts, piping, etc.

Apply sealant in accordance with manufacturer's directions.

Apply [[two] [four], 10 mm diameter beads of acoustic sealant] [50mm wide x 10mm thick compressible closed cell foam tape] between stud framing and fixed building components, around periphery of acoustically rated partitions.

End of Section