SECTION 09 29 10

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. All materials, labor and equipment to properly install the following Work:

B. Gypsum wallboard.

C. Abuse and impact resistant gypsum board.

D. Gypsum board ceilings and soffits.

E. Tile backer board.

F. Non-load-bearing steel framing.

G. Insulation

H. All accessory components.

1.02 SUSTAINABILITY REQUIREMENTS

A. Sustainability requirements included in the Section are as follows:

1. Meet established minimum pre-consumer percent content for specified gypsum board and insulation products and documentation of Recycled materials.
2. Documentation of Regional materials.

B. The Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Specification Section S01352, Sustainability Requirements, and as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

1.03 REFERENCE STANDARDS

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

B. American Society for Testing and Materials (ASTM), latest editions.

C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

E. ASTM C11 - Standard Terminology Related to Gypsum and Related Building Materials and Systems

F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.

G. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.

H. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2007a (Reapproved 2011).

I. ASTM C1325 - Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units; 2014.

J. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.

K. ASTM C473 - Standard Test Methods for Physical Testing of Gypsum Panel Products; 2015.

L. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.

M. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.

N. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.

O. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015.

P. ASTM C834 - Standard Specification for Latex Sealants; 2014.

Q. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.

R. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.

S. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.

T. GA-214 - Recommended Levels of Gypsum Board Finish; 2010.

U. GA-216 - Application and Finishing of Gypsum Board; 2013.

V. GA-505 - Gypsum Board Products - Glossary of Terminology

W. GA-600 - Fire Resistance Design Manual; 2015.

X. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

Y. Fire Resistance Directory

Z. Tile Council of America
   1. Handbook for Ceramic Tile Installation

AA. International Code Council, ICC-ES (Evaluation Service)
   1. AC86 - Acceptance Criteria for Cold-Formed Steel Framing Members - Interior Non load-bearing Wall Assemblies.

AB. American Iron and Steel Institute (AISI)
   1. AISI S905 - Test Methods for Mechanically Fastened Cold-Formed Steel Connections
   2. AISI Standard for Cold-Formed Steel Framing - General Provisions
   3. AISI NASPEC

1.04 SUBMITTALS

A. Product Data
   1. Submit manufacturers' product information, specifications, and installation instructions for the following products: mold and moisture resistant gypsum board, abuse and impact resistant gypsum board, tile backer board, joint compounds, acoustical sealants, insulation, deck flute closures, fasteners, trim, control joints, joint reinforcing, metal furring members, metal studs, tracks, runners, resilient clips, steel grounds, and all related accessories.
   2. Submit limiting height tables for metal stud framing based on testing and engineering analysis in accordance with ICC-ES Acceptance Criteria AC86.

B. Shop Drawings
   1. Submit drawings indicating sizes and locations of steel grounds for attachment and support of signs, other accessories, fixtures, furnishings, finishes, and equipment.

C. Samples
   1. Submit samples of the following materials:
   2. Wallboard, each type: 12" square.
   3. Metal studs and track: 12"
   4. Accessories: 12", outside corner bead.
   5. Deck flute closures: 2
   6. Screw, each type: 2
   7. Materials Certificates and Acceptances

a. Submit certificates from the manufacturers of the specified materials stating compliance with the applicable requirements set forth for all materials specified in this Section.
b. Submit certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.
c. Submit written acceptances from the wallboard manufacturer and metal stud manufacturer accepting the type of metal studs, tracks, and fasteners to be used for each type of wallboard.

8. Low Emitting Materials Compliance Submittals.
   a. Provide documentation for each sealant to be used indicating that the sealants comply with V.O.C. requirements as stated in Specification Section G01600.
9. Sustainability Submittals
   a. Recycled Content
      1) Submit documentation of recycled content consisting of product data or manufacturer's statement as applicable for the following:
      2) Gypsum board
      3) Abuse and impact resistant gypsum board
      4) Fire resistance rated gypsum wallboard
      5) Tile backer board
      6) Mineral fiber blanket and batt
   b. Submit Contractor's Sustainable Materials Form with complete information on recycled content for materials provided under the work of this section in accordance with Section S01352, Sustainability Requirements. Include cost of materials and percentage, by weight, of materials that have post-consumer or pre-consumer recycled content.
   c. Regional Content
      1) Submit documentation of regional materials consisting of product data or manufacturer's statement as applicable for the following:
      2) Gypsum board
      3) Abuse and impact resistant gypsum board
      4) Fire resistance rated gypsum wallboard
      5) Tile backer board
      6) Mineral fiber blanket and batt
   d. Submit Contractor's Sustainable Materials Form with complete information on regional content for the following materials provided under the work of this section in accordance with Section S01352 (Sustainability Requirements). Include cost of all materials and distance in miles to point of materials extraction and manufacture.

1.05 QUALITY ASSURANCE

A. Qualifications
   1. Submit affidavit certifying that installer is a firm with not less than 5 years of experience relevant to the installation of specified materials.

B. Regulatory Requirements
   1. Building Code: Work of this section shall conform to all requirements of NYC Building Code.
   2. New York City Board of Standards and Appeals (BSA), and New York City Materials Equipment Acceptance (MEA) approvals are acceptable for materials and assemblies conforming to current NYC Building Code requirements.
   3. Fire-Resistance Ratings

4. Comply with fire-resistance ratings as indicated and as required by governing authorities and codes. Provide certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use.
5. Provide materials, accessories and application procedures which have been listed by UL or tested in accordance with ASTM E119 for the type of construction shown. Provide materials and construct assemblies which qualify for required fire resistance classifications in accordance with the Gypsum Association "Fire Resistance Design Manual" as referenced in the Building Code of the City of New York, or in accordance with the acceptance requirements of the New York City MEA or BSA.

C. Industry Standards
1. Comply with applicable requirements of ASTM C840, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.
a. Acoustical Ratings: Comply with acoustical ratings as required and based on type of construction indicated on the Drawings. Provide materials, accessories, including fasteners, seals, sealants and application procedures which have been listed by manufacturer or tested in accordance with ASTM E90 for the type of construction shown.
b. Company Field Advisor
1) Secure the services of a Company Field Advisor of the gypsum board manufacturer for a minimum of 2 working hours. The Field Advisor shall be certified in writing by the manufacturer to be technically qualified in design, installation, and servicing of the required products. The Field Advisor shall be present at the beginning of the actual gypsum board installation for the purpose of:
(a) Rendering technical assistance to the Contractor regarding installation procedures of the system.
(b) Familiarizing the Authority's Representative with all aspects of the system including inspection techniques.
(c) Answering all questions which might arise.

D. Single Source Responsibility
1. Obtain all steel studs and other metal framing components and accessories from a single manufacturer.
a. Field Samples
1) The first completed gypsum board installations of each type shall serve as field samples for inspection of installation and finishing work by the Architect. These installations, when approved by the Architect, will become the benchmark for workmanship for the rest of the installation. The Contractor shall notify the Architect when such field samples are ready for review.
2) One field sample shall be a corridor wall at least 30 feet long, or a location of equal or greater size, as selected by the Authority’s representative. Provide lighting at the time of inspection, equivalent to the lighting to be in place upon project completion. The sample will be inspected by the Architect for proper level of finish. Inspections will occur before and after painting the sample, with the final evaluation occurring after painting.

1.06 PROGRESS INSPECTIONS

A. The Authority will retain a Special Inspector to perform progress inspections for all gypsum board assemblies in accordance with Section S01400 of these Specifications, and Section BC 110.3.4 of the 2014 NYC Building Code for fire resistance rated partitions, floors, ceilings, and shafts.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer.

B. Store all materials inside, under cover, in a manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards to prevent sagging. Do not store at temperature exceeding 125°F.

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

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, provide products of a specified manufacturer.
   1. Products which vary slightly from specified criteria will be considered for acceptance upon submission of a written explanation and complete technical data to the Authority. Written authorization from the Authority is required prior to installation of such materials whether or not the manufacturers are listed herein.
      a. Gypsum board and related products
         1) Gypsum board shall be mold and moisture resistant.
         2) SHEETROCK brand Mold Tough Gypsum Panels, USG Corporation
         3) SHEETROCK brand Mold Tough Gypsum Liner Panels, USG Corporation
         4) DensArmor Plus Interior Guard Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA
         5) DensGlass Ultra Shaft Liner Panels, Georgia-Pacific Gypsum Corporation, Atlanta, GA
         6) Gold Bond brand XP Fire-Shield Wallboard, National Gypsum Company, Charlotte, NC
         7) Gold Bond brand 1” Fire-Shield Shaftliner XP Gypsum Panels, National Gypsum Company, Charlotte, NC
         8) Mold Defense Type X panels, Continental Building Products LLC.
         9) Mold Defense Shaftliner Type X panels, Continental Building Products LLC.
         10) Weather Defense Platinum Shaftliner Type X, Continental Building Products LLC.
      b. Abuse and impact resistant gypsum board and related products
         1) Manufacturers of products proposed as equal to specified products must demonstrate equivalent abuse and impact resistance in testing subject to the Authority’s approval, including erection of sample comparison panels, at no cost to the Authority.
            (a) SHEETROCK brand Mold Tough VHI (Very High Impact) FIRECODE Core Gypsum Panels, USG Corporation
            (b) 2. Fire-Shield Hi-Impact brand XP Wallboard Panels - National Gypsum Company
            (c) Protecta HIR 300 Type X With Mold Defense panels, Continental Building Products LLC.
      c. Tile backer board and related products
         1) DUROCK Brand Cement Board Next Gen - USG Corp., Chicago, IL
         2) PermaBase Brand Cement Board - National Gypsum Co., Charlotte, NC
      d. Metal Support Materials
         1) Marino/Ware, South Plainfield, NJ
         2) ClarkDietrich Building Systems, West Chester, OH
         3) Super Stud Building Products Inc., Edison, NJ
         4) United States Gypsum Co., Chicago, IL
      e. Insulation - Sound Attenuating Blankets
         1) Thermafiber Sound Attenuation Fire Blankets - Thermafiber Inc., Wabash, IN
         2) Roxul Acoustical Fire Batts - Roxul Inc., Milton, Ontario

2.02 MATERIALS

A. Metal Framing
   1. Steel Studs
      a. In compliance with ASTM C645, provide galvanized steel, C-shaped members as specified and as shown on the Drawings of sizes indicated below:
         1) Stud depth: 35/8" unless indicated otherwise on the Drawings.
         2) Stud thickness: 0.0296” minimum thickness of base metal or 20 gage min., for all wall framing members unless otherwise indicated.
            (a) Alternative thickness studs:
               (1) Alternative thickness studs may be used in lieu of 0.0296” thick studs, and shall be 20 gage equivalent or heavier gage, evaluated in accordance with ICC-ES AC86 Acceptance Criteria, latest edition, with partition heights limited by the following:
            (b) Deflection: L/240. L/360 for partitions with ceramic tile finish.
            (c) Loads: All loads to which the assembly is subjected including wall mounted equipment and furnishings. Not less than 5 psf uniform transverse load. Framing shall support all loads without exceeding the allowable stress of the steel.
            (d) Brand and type of wallboard used, and number of layers, extending full height of partition.
            (e) Pull-out strength for #6 screws in 20 gage equivalent studs shall be at least 45 lbs. in accordance with AISI S905 test method.
            (f) Use of alternative thickness studs is subject to the written acceptance of the wallboard manufacturer.
            (g) Conform to all requirements indicated on the Drawings and specified herein, including fire resistance ratings of assemblies.
         3) Stud thickness: 0.0428” min. thickness of base metal or 18 gage min., unless otherwise indicated, for use at all framed openings, with double studs at each door jamb and as wall framing members in areas where cementitious tile backer board is indicated.
         4) Stud thickness: 0.0677” min. thickness of base metal or 14 gage min., unless otherwise indicated, for use behind wall hung toilet partitions, and at interior window guards.
   2. Runners
      a. In compliance with ASTM C645, provide galvanized steel runners to match applicable assembly specified, to match wall framing members, unless indicated otherwise.
   3. Furring Members
      a. In compliance with ASTM C645, provide galvanized cold rolled steel, 0.0296" minimum thickness of base metal or 20 gage min., screw type hat shaped channels; 7/8" depth, width approx. 2¾”, hemmed edges.
      b. Where furring channels are used in conjunction with resilient sound isolation clips, width of channel shall be coordinated with clip configuration to ensure proper fit.
   4. Furring Members for Shaft Walls
      a. Provide galvanized steel C-H studs, J-Runners or other stud shapes indicated on Drawings, 0.0346” minimum design steel thickness or 20 gage minimum.
   5. Steel Grounds
      a. Provide galvanized steel grounds 20 gage minimum thickness, minimum 8” wide by minimum 24” long, for installation directly to steel studs to provide support for wall mounted equipment, fixtures, furnishings, accessories, panels, and all other items of work to be attached to walls. Provide grounds for each room name sign and other signs indicated to be located on drywall partitions. Provide grounds of greater size and thickness as required for secure installation of grab bars and other weight bearing items, and heavy items. Comply with manufacturers’ recommendations. Refer to Section 10840 for requirements for grab bar anchor plates (grounds).

1) Where steel grounds are attached to channels that are mounted to resilient clip, the size of the ground shall be extended to span a minimum of 3 furring channels.

6. Horizontal Bracing
   a. Provide 3/4” galvanized cold rolled steel channels, or steel studs, fastened to webs in a horizontal position. Angle or channel shaped galvanized horizontal bracing that is fixed in place without fasteners may be used subject to written acceptance of the steel stud manufacturer and meeting all required partition ratings and performance criteria; 0.0296” minimum base metal thickness, 7/8” x 7/8” minimum size angle or equivalent channel shape. Comply with ASTM C645, ASTM C754.
7. Protective coating of framing shall conform to ASTM A653/A653M - G40 minimum, or shall be a protective coating with equal or better corrosion resistance.
8. Fasteners for Metal Framing
   a. Provide fasteners of type, size, style, grade, holding power, class, and other properties required for secure installation of framing and furring. Galvanize all fasteners and accessories. Powder actuated fasteners shall not be used in occupied areas of a building.
      1) All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

B. Gypsum Board
   1. General: Panels shall be mold and moisture resistant, meeting a minimum average panel score of “10” in accordance with ASTM D3273. Provide in dimensions resulting in the minimum number of joints. Long edges tapered. Panels shall not contain asbestos.
   2. Paper faced gypsum board
      a. Gypsum wallboard: 5/8” thick, Firecode Core (Type X). Comply with ASTM C1396.
      b. Shaft wall liner panel: 1” thick, fire resistance type X. Comply with ASTM C1396.
      c. Gypsum board shall be manufactured with a minimum of 90% pre-consumer content materials.
      d. Fungi Resistance: Paper facing shall be fungi resistant when tested in accordance with ASTM D3273.
   3. Glass mat faced gypsum board (glass mat facings front and back)
      a. Gypsum wallboard: 5/8” thick, Type X Core. Comply with ASTM C1396 and ASTM C1177.
      b. Shaft wall liner panel: 1” thick, fire resistance Type X. Comply with ASTM C1396.
      c. Gypsum board shall be manufactured with a minimum of 90% pre-consumer content materials.
      d. Fungi Resistance: Facing shall be fungi resistant when tested in accordance with ASTM G21-02 or D3273.

C. Abuse and Impact Resistant Gypsum Board
   1. General: Provide reinforced abuse and impact resistant gypsum board, consisting of gypsum, or gypsum and cellulose fiber, with fiberglass mesh reinforcement. Weight of 5/8” thick panel approximately 2.8 psf. Surfaces shall be true, free from imperfections, and suitable for use with or without decoration. Provide in 48" widths and in such lengths as will result in the minimum number of joints. Provide 5/8" thick panels generally, unless indicated otherwise on the Drawings. Panels shall not contain asbestos. Panels shall be mold resistant, meeting a minimum average panel score of “10” in accordance with ASTM D3273.
   2. Reinforcement: Fiberglass mesh embedded in the back of full panel.
   3. Meet or exceed criteria when tested in accordance with ASTM C473, or ASTM C1396:
      a. Thickness of panel: 5/8"
         1) Flexural Strength, both directions (lbf) 195

2)	Humidified Deflection (eighths of inch)	2
3)	Core, End and Edge Hardness (lbf)	40
4)	Nail Pull Resistance (lbf)	210
5)	Fire Resistance, Type X	1-2 Hrs.
6)	Flame Spread (face), max.	15
7)	Smoke Developed, max.	5

b. Abuse and impact resistant gypsum board shall be manufactured with a minimum of 6% of pre-consumer content materials.

D. Tile Backer Board for Wet Locations
1. General: 5/8" thick. Comply with ANSI A118.9. Fire resistance testing in accordance with ASTM E119. Noncombustible ASTM E136. Composed of Portland cement, aggregate and fiberglass mesh reinforcement. Provide in dimensions resulting in the minimum number of joints. Panels shall not contain asbestos. Provide this type of panel where ceramic tile finish is indicated at wet locations such as shower rooms, locker rooms, kitchen and servery areas, multi-occupant toilet rooms. Panels shall be mold resistant, meeting a minimum average panel score of "10" in accordance with ASTM D3273.
2. Meet or exceed the following criteria:
   a. Flexural strength: Min. 750 lb./in2 in accordance with ASTM Test reference C947.
   b. Water absorption: Max. 15% by weight in 24 hrs. in accordance with ASTM C473.
   c. Indentation strength: 1250 psi min. in accordance with ASTM D2394.
   d. Nail Pull Resistance: 90 lb. min. in accordance with ASTM C473 or D1037.
   e. Surface Burning Characteristics: Flame spread-5, Smoke Density-0, in accordance with ASTM E84.
3. Tile backer board shall be manufactured with a minimum of 10% of pre-consumer content materials.

E. Furring Anchorages
1. In compliance with ASTM A641, provide 16 gage galvanized wire ties, manufacturers standard wire-type clips, bolts, or screws as recommended by furring manufacturer.
2. All devices, other than bolts, used to interconnect ceiling members are required to be certified and listed by an Approved Agency in accordance with NYC Department of Buildings rules. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements.

F. Trim Accessories
1. General: Comply with ASTM C1047, standard accessories as recommended by gypsum board manufacturer. Where exposed to view, provide accessories recommended for level-5 finish. Metal trim shall be formed of galvanized or zinc-coated steel. Provide paper faced metal trim where recommended by board manufacturer, designed for concealment of paper or metal flanges in joint compound. Provide corner beads, L-type edge trim beads, V-type edge trim beads, and control joint beads.
   a. Corner Reinforcement, provide for all outside corners:
      1) Sheetrock Brand paper faced metal outside corner, tape-on bead, model B1W; U.S. Gypsum Company.
         (a) Where covered by thinset ceramic tile provide model B1W-NB.
      2) No-Coat UltraCorner Brand Structural Drywall Corner.

G. Joint Treatment Materials
1. Jointing System - typical: Comply with ASTM C475. Type recommended by the manufacturer for the application indicated, to prevent cracking, and to meet fire resistance

requirements where applicable. Reinforcing tape and compound shall be designed as a system to be used together.

2. Provide setting type or ready-mixed drying type joint compound as recommended by the board manufacturer for each type of board, for joints, fastener heads and cut edges of board.
3. Skim coat: For final coat of Level 5 finish, use type recommended by manufacturer.
4. Jointing compound shall be asbestos free.
5. For tile backer board provide tile backer board manufacturer's recommended fillers, tapes and other materials.

H. Insulation: Comply with ASTM C665, Mineral Fiber Blanket.
1. Sound attenuating blankets, Type I, Density: 2.5 lbs/cubic foot minimum. Thermafiber Inc., Wabash, IN, 888-834-2371; Roxul Inc., Milton, Ontario 800-265-6878.
2. Foil backed insulating blankets, Type III, Class A, by Thermafiber, Inc. Density: 3 lbs/cubic foot minimum. R-value: 3.7 min. per inch of thickness. Foil backing shall be omitted from blankets in exterior partitions indicated to have other vapor retarding materials as part of the wall assembly, such as vapor retarding air barrier systems, or tile backer board assemblies with polyethylene membrane.
3. Blanket and batt insulation units shall be manufactured with a minimum of 20% of pre-consumer content materials.
4. Fungi Resistance: Insulation and facing shall be fungi resistant when tested in accordance with ASTM C1338.

I. Miscellaneous Materials
1. General: Provide auxiliary materials for gypsum board work of the type and grade recommended by the gypsum board manufacturer.
2. Gypsum board Screws:
   a. Comply with recommendations of the wallboard and metal framing manufacturers and ASTM C1002.
   b. For fastening the gypsum board in place, specially designed for use with power-driven tools, of length recommended for application in board manufacturers printed instructions, but not less than 1¼" long, with self-tapping threads and self-drilling points. Screws shall be steel with rust inhibitive coating.
3. For tile backer board provide manufacturer's recommended screw fastening system.
4. Concealed Acoustical Sealant: Comply with ASTM C919; nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable sealant for concealed applications.
   a. All sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.
5. Exposed Acoustical Sealant: Comply with ASTM C834; nonoxidizing, skinnable, paintable, gunnable sealant for exposed applications, either latex or acrylic based type or acrylic-latex type.
   a. For sealants used on site and within the weatherproofing/ waterproof membrane (interior) of the building comply with V.O.C. requirements specified in Section G01600.
6. Flexible Closures: For non-fire-rated Work, for filling gaps between steel deck flutes and tops of partitions. Closures shall be fabricated to conform to profile of deck. Closed cell EPDM rubber, with adhesive. Houston Foam Plastics, Houston, TX, 800-231-1752.
7. Waterproof membrane: For cement-based tile backer board Work, 4-mil fire-retardant polyethylene film.
8. Resilient Clips: For STC rated partitions. Resilient clip consists of a galvanized steel clip for mounting onto furring channels and incorporating a solid neoprene washer designed to be screw attached to steel stud framing. Resilient clip shall be approved for use in New York City within fire resistance rated partitions. Clip shall be RSIC-1 Sound Isolation Clip as manufactured by PAC International, or IsoMax Resilient Sound Isolation Wall Clip as manufactured by Kinetics Noise Control Incorporated.

J.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Inspection
   1. Prior to installation of the Work of this Section, carefully inspect the installed Work of all other trades and verify that all such Work is complete to the point where this installation may properly commence.
   2. Do not install gypsum board in any location where it may be directly exposed to water.
   3. Installation shall comply with manufacturer's recommendations as approved by the Authority, with all pertinent codes and regulations as a minimum standard.

B. Coordination of Work
   1. Coordinate Work of this Section with the Work of other Divisions which have items installed in, on or contiguous to gypsum board assemblies.
   2. Refer to Section 05170 for support system for suspended ceilings.

C. Verification of Conditions
   1. Start of Work constitutes acceptance of existing conditions, Contractor shall bring any discrepancies to the attention of the Authority prior to start of Work.

D. Construction Tolerances.
   1. Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface except at joints between boards. Do not exceed 1/16" variation between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished surfaces.
   2. For soffits and ceilings verify that direct suspension system has been installed properly, that main runners are spaced evenly and have been leveled to a tolerance of 1/8" in 12 feet measured both lengthwise on each runner and transversely between parallel runners so that furring member installation may proceed accurately.

3.02 ENVIRONMENTAL REQUIREMENTS

A. General
   1. Comply with requirements of all referenced application standards and manufacturers recommendations for environmental conditions before, during and after gypsum board application.
   2. Environmental Conditions
      a. Maintain continuous uniform building temperatures of not less than 55ºF and not more than 90ºF for a minimum of 48 hours prior to, during and following application of gypsum board and joint treatment materials and until joint and finishing compounds have dried.
         1) Conform to more restrictive environmental conditions where required by the manufacturer.
      b. Do not install gypsum board in any location where it may be exposed to moisture during the Construction Phase of the Project. Sources of moisture may include: rain, snow, groundwater, flooding and contiguous construction materials. Replace any gypsum board that has been exposed to moisture during the Construction Phase.
   3. Ventilation
      a. Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry hot weather to prevent too rapid drying.
   4. Drying Time
      a. Provide adequate drying time between coats of joint compound.

3.03 INSTALLATION - STEEL FRAMING

A. General

1. Comply with ASTM C754 and manufacturers installation instructions for all non-load bearing steel stud installations.
    a. Extend all partitions to underside of roof and floor construction unless indicated otherwise. Brace laterally to building structure as required for stability.
2. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.
3. In kitchen areas, toilet rooms, and other such areas subject to water on the floors, provide a heavy coating of rust preventive paint, suitable for galvanized steel, on all surfaces of bottom runner tracks and the lower 3” of studs.

B. Steel Stud Installation
1. Where partitions abut ceiling or deck construction or vertical structural elements, provide slip or cushion type joint between metal framing and structure as recommended by manufacturer to prevent transfer of structural loads or movements to partitions, except as otherwise indicated. Maintain lateral bracing of partitions to building structure.
2. Accurately align top and bottom tracks. Secure runner tracks as recommended by the framing manufacturer for the upper and lower construction involved, except, do not exceed 24" on center spacing for power driven fasteners. Provide fasteners approximately 2" from corners and ends of tracks.
3. Position studs vertically and engage both floor and top tracks. Install studs at 16" on center maximum spacing unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Fasten studs to track flanges with screws, or as otherwise required to meet fire resistance ratings and code requirements.
    a. Use full length studs between tracks wherever possible. If necessary, splice studs with a minimum 8" nested lap and fasten with 2 screws per stud flange.
    b. Provide additional studs to support inside corners at partition intersections, and to support outside corners and terminations of partitions (and both sides of control joints).
4. Frame openings other than door openings to comply with details shown and manufacturer’s instructions. Provide full length studs adjacent to jambs and horizontal header and sill tracks. Extend studs to underside of roof or floor construction above.
5. Provide two 18 gage studs at each door jamb unless heavier gage studs are required by Drawings. Comply with stud manufacturers recommendations for the types of frames and weights of doors used in the project. Provide 14 gage studs surrounding openings to receive interior window guards. Studs shall extend to underside of roof or floor construction above.
6. Construct fire rated partitions, vertical ductwork enclosures, column enclosures, etc. to meet or exceed the rating shown on the Drawings.
7. Where framing is in contact with an exterior masonry wall, install asphalt felt protection strip between metal and masonry.

C. Steel Ground Installation
1. Install steel grounds at all locations where wall hung or wall mounted items such as room signs and other signs, casework, cabinets, grab bars, storage shelving, fixtures, toilet compartments, shower and dressing compartments, mirrors, toilet room accessories, lockers, panels, etc. are indicated.
2. Apply steel grounds horizontally to steel studs beginning with first stud beyond item being secured (both directions) prior to installation of gypsum board.
3. Install steel grounds behind top and bottom of each item to be installed, adding grounds as necessary at all points of attachment. Use suitable screws and/or bolts to anchor items. Follow manufacturer's recommendations for proper attachment methods.
4. At resilient clips, extend grounds to cover a minimum of 3 furring channels.

D. Furring Channel Installation
1. Attach hat-shaped metal furring channels to masonry or concrete surfaces; either vertically or horizontally, 16" maximum on center and within 2" of interior corners unless

otherwise indicated on Drawings. Attach furring with hammer-set or power driven fasteners through alternate flanges spaced 24" on center. Provide metal furring channel clips.

2. Where furring channel is installed directly to a masonry exterior wall, install asphalt felt protection strip between furring channel and wall.
3. Where splices in channels occur, nest channels 8" at splices and anchor with two fasteners in each wing.
4. Where furring channels are attached to resilient clips, space clips in a pattern not to exceed 24” on center vertically and 48” on center horizontally, and as recommended by clip manufacturer for supported loads. Locate centerline of bottom channel a maximum of 3” above floor. Do not locate channel splices at clips. Anchor clips using manufacturer’s recommended screw fasteners. Installation shall be in accordance with clip manufacturer’s written instructions.

E. Running Channel Installation
1. Floor and top running channels or stud tracks shall be galvanized cold rolled steel with 1½” extended leg on top runner to allow movement (legs longer as recommended by manufacturer or as required to prevent transfer of structural loads or movements to partitions). Match gage of studs indicated for assembly. Securely fasten to floor, roof or vertical structural elements with fasteners approved by manufacturer, spaced not more than 24" on center. Provide slip or cushion type joint between channel and structural elements as indicated in paragraph titled Steel Stud Installation, above. Maintain lateral bracing of partitions to building structure.

F. Horizontal Bracing or Stiffener Installation
1. Install metal stud bracing fastened to each partition stud with webs in a horizontal position or horizontal bracing fixed to each stud, installed in accordance with industry standards. Provide continuous horizontal rows of bracing, spaced vertically 4’-0” on center maximum, unless otherwise indicated on Drawings. The uppermost row shall be located 12” from the top of stud. Provide additional bracing as recommended by stud manufacturer.

G. Furring Members for Shaft Walls
1. Install furring members, including C-H studs and J-Runners, according to stud manufacturers published instructions for required assemblies.

H. Chase Wall Erection
1. Align two parallel rows of floor and top runners spaced apart as detailed. Attach to concrete floor slabs with concrete stub nails or power-driven anchors 24" o.c. maximum, and to structure above in similar fashion.
2. Position steel studs vertically in runners, 16" o.c. maximum unless closer spacing is indicated on the Drawings, or is required for height of partition or transverse loading in order to meet deflection requirements. Position studs with flanges in the same direction, and with studs on opposite sides of chase directly across from each other. Anchor all studs to floor and ceiling runner flanges with fastener tool.

I. Tolerances
1. Do not exceed 1/8" in 8 feet variation from plumb or level in any exposed line or surface, except at joints between planes or abutting edges or ends. Shim as required to comply with specified tolerances. Variations shall not be visible in finished wall surfaces.

3.04 INSTALLATION - CEILING FRAMING

A. Metal Furring for Ceilings and Soffits
1. Install metal furring members to cold rolled running channels at right angles. Secure with metal furring clips in accordance with manufacturer's printed installation instructions.
2. Space furring at 12” o.c. maximum, and within 4" of walls. Provide 1" clearance between furring end and abutting walls and partitions.
3. Install auxiliary framing at openings for light fixtures, ductwork grilles, access doors as specified in Section 05170 of this Specification. Where necessary, install additional cross-reinforcing to restore lateral stability of grillage.

4. Attach perimeter wall track, angle or trim wherever gypsum board meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into perimeter track, angle or trim piece.

3.05 INSTALLATION - PANELS

A. Applying and Finishing Panels, General

Comply with manufacturer's printed installation instructions and recommendations based upon Project conditions, ASTM C840, GA-216, and these Specifications, for all gypsum board application and finishing.

1. Provide wallboard panels of type, thicknesses, and number of layers indicated on the Drawings. Provide multi-layer assemblies using abuse and impact resistant gypsum board panels in conjunction with other types of panels where indicated on the Drawings.
2. Cement-based tile backer board Work shall comply with the same specified requirements as gypsum board Work where applicable. Install panels and treat joints in accordance with ANSI A108.11 and the tile backer board manufacturer's published instructions. Provide 4-mil polyethylene film membrane continuously over studs, between stud space and backer board.
    a. At exterior walls that include vapor retarding materials such as air barrier systems, the polyethylene film shall be installed with unsealed horizontal laps approximately two feet apart. Install film starting at bottom of wall, and lap each 2-foot high row of film over the row beneath it.
3. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
4. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.
5. Work shall be sealed at perimeters, at control and expansion joints, and at all penetrations with continuous beads of acoustical sealant, including a bead at both faces of partitions. Comply with ASTM C919 and all manufacturers recommendations for beads, including sealing of partitions above ceilings. Close off sound-flanking paths around or through the Work. Firestopping required for fire-rated work shall be covered under Section 07270-Firestopping/Smoke Seals.
6. For non-fire-rated work provide flexible EPDM rubber closures, securely held in place, to completely close all voids between metal deck and tops of partitions and other Work.
7. Where fire-rated work is indicated on Drawings construct assemblies in accordance with the Article herein titled Quality Assurance, Paragraph titled Regulatory Requirements.
8. Install the gypsum board with separate boards in moderate contact but not forced into place. At internal and external corners, conceal the cut edges of the board by overlapping covered edges of the abutting boards. Stagger the boards so that corners of any four boards will not meet at a common point except in vertical corners.
9. Extend all partitions to underside of roof and floor construction, unless indicated otherwise.
10. All interior partitions, unless otherwise indicated, shall have mineral fiber sound attenuating blankets, ASTM C665 Type 1, density 2.5 lbs./cubic foot minimum. Sound attenuating blankets shall be installed friction fitted between studs, completely filling solid the partitions for the full height of the partitions.
11. Where exterior walls are indicated on the Drawings to include insulation between studs, the insulation shall be foil backed mineral fiber insulating blankets, ASTM C665 Type III, Class A, density 3 lbs./cubic foot minimum, filling the space between studs. Foil backing shall be omitted from blankets in exterior walls indicated to have other vapor retarding materials as part of the wall assembly, such as vapor retarding air barrier systems, or tile backer board assemblies with polyethylene membrane.
12. Install ceiling board panels at right angles to framing, minimizing the number of abutting end joints and avoiding abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
13. Fit gypsum panels around ducts, pipes, and conduits.

14. Where partitions intersect open concrete coffers, concrete joists, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow space to properly install sealant or firestopping as applicable.
15. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments. Provide space to properly install sealant or firestopping as applicable between edges and abutting structural surfaces. Trim edges with U-bead edge trim where edges of gypsum panels are exposed.
16. Fasten the gypsum board with drywall screws as recommended by the gypsum board manufacturer. Drive the required screws with clutch-controlled power screwdrivers. Provide fasteners in gypsum panels according to referenced gypsum board application and finishing standard, manufacturer's written recommendations, and as required for fire-resistance-rated assembly. Maximum spacing shall be as follows:
17. Maximum fastener spacing for abuse resistant gypsum board: 8” o.c., except where 12” o.c. is recommended by panel manufacturer.
    a. Maximum fastener spacing for other panels: 8” o.c.
18. Shaft Walls
    a. Construct with 1" liner panels inserted in C-H studs 24" o.c. maximum, with double layer 5/8" Firecode Core panels screw attached to C-H studs, or as otherwise indicated on the Drawings.

B. Panel Application
1. Single layer application on walls/partitions: install the gypsum board to studs at right angles to the furring or framing members, unless otherwise required for fire-resistance-rated assembly, minimizing end joints. Stagger abutting end joints not less than one framing member in alternate courses of board.
2. Multilayer application on partitions/walls: Apply 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. Make end and edge joints, where required, over furring or framing members. Position boards so that like edges abut, with tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
4. Cover both faces of steel stud partition framing with wallboard as indicated on the Drawings (including above ceilings). For panels manufactured with different textures on opposite faces, follow manufacturers recommendations, based on finish material, to determine which side shall face towards studs.
5. Multilayer application on ceilings: Apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 12” minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
6. Multilayer fastening methods: fasten base layers and face layers separately to supports with screws unless otherwise indicated or required by fire-resistance-rated assembly.

C. Finishing and Joint Treatment
1. General: 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.
2. Prefill open joints and damaged surface areas.
3. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

4. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C840 and as indicated, for locations as follows:
    a. Concealed locations
        1) ASTM C840 - Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim in ceiling plenum areas, other concealed areas, and where panels are substrate for tile, unless a higher level of finish is required for fire-resistance rated assemblies.
    b. Exposed locations
        1) ASTM C840 - Level 5, with finished surfaces completely flat and uniform, with no visible irregularities or imperfections: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface at panel and trim surfaces that will be exposed to view.
5. Tile backer units: treat joints according to manufacturer's written instructions. Finished surface of tile backer board shall be smooth and free from any imperfections, depressions, or raised areas that would inhibit the proper application of tile finish over the boards.
6. Outside Corners
    a. Install corner bead fitting neatly over the corner and apply compound to both sides of corner.
    b. Treat the corner with joint compound as recommended by accessory manufacturer, allowing compound to dry between coats. Final coat shall completely cover corner.
7. Inside Corners
    a. Treat as specified for joints, except that the reinforcing tape shall be folded lengthwise through the middle and fitted neatly into corner.
8. Properly prepare surfaces to receive painting, coating and tile finishes.

D. Other Trim
1. General: The Drawings do not purport to show all locations and all requirements for trim in connection with the Work of this Section. Carefully study the Drawings and the installation; provide in place all trim normally recommended by the manufacturer of the gypsum board used.
2. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound, except where semi-finished type is shown on the Drawings. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
3. Install L-type trim at bottom edge of wallboard in all Corridors, Lobbies and Vestibules, and as indicated on the Drawings. Bottom edge shall be held 1/2" above concrete slab in these areas.
4. Installation: Install the trim in strict accordance with the manufacturer's recommended methods of installation.

E. Control Joints
1. General
    a. Provide control joints where indicated on the Drawings. If not indicated on the Drawings, provide control joints at spacing not exceeding the recommendations of the gypsum board manufacturer, and not more than 30'-0" apart.
    b. Control joints shall be arranged neatly. If the pattern of control joints is not indicated on the Drawings, submit shop drawings illustrating the proposed location of all control joints for review by the Authority.
    c. In fire-rated assemblies construct control joints in accordance with reports of fire tests of assemblies that have met the fire-rating requirements. Behind control joints provide gypsum board strips fastened to web of stud in accordance with Gypsum

Association Fire Resistance Design Manual, or provide other configuration demonstrated by testing to maintain fire-rating.

2. Location of Control Joints in Vertical Surfaces (eg., Walls):
   a. Unless otherwise unfeasible, control joints shall be aligned with the edges of openings in the partition (such as door frames, window frames, louvers, etc.)
   b. Control joints shall extend from the finished floor through the entire height of the gypsum board.
3. Location of Control joints in Horizontal Surfaces (eg., Ceilings and Soffits):
   a. Unless otherwise unfeasible, control joints shall be aligned with the edges of rectangular openings in the ceiling (such as light fixtures, grilles, louvers etc.) or on the centerline of round openings (such as sprinkler heads, speakers or round light fixtures).

3.06 CLEAN-UP AND PROTECTION

A. In addition to the requirements of these Specifications, use all necessary care during execution of this portion of the Work to prevent scattering of gypsum board scraps and dust and to prevent tracking of joint and finishing compound onto floor surfaces. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scraps, debris and surplus material of this Section.

END OF SECTION