

SECTION 09 21 00 - GYPSUM DRYWALL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included: Provide products in accordance with the Contract Documents. The Contract Documents are as defined in the "Agreement". The "General Conditions Governing All Contracts" shall apply to all work under the Contract. The Work of this Section shall include but not be limited to the following:
1. Gypsum drywall panels, including screw-type metal framing support system.
 2. Drywall finishing with joint tape-and-compound.
 3. Cementitious backerboards.
 4. Metal supports and backer plates for other finishes.
 5. Acoustical insulation and sealant for drywall.
 6. Metal fabrications and accessories.
- B. Related Sections:
1. Section 06 10 00 - Rough Carpentry.
 2. Section 07 84 00 - Penetration Firestopping.
 3. Section 07 92 00 - Joint Sealants.
 4. Section 08 31 13 - Access Doors.
 5. Section 09 30 00 - Tile.
 6. Section 09 91 00 - Painting.

1.02 QUALITY ASSURANCE

- A. Fire-Resistance Rating: Where ratings are indicated, match applicable assemblies tested per ASTM E119 by fire testing laboratories, or to design designations in UL "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction.
- B. Gypsum Board Terminology Standard: GA-505 by Gypsum Association.
- C. Installer: Engage an experienced firm that has recently completed Gypsum Drywall System assemblies with Fire-Resistant Ratings similar in cost, material, design and extent to that indicated by this work which has resulted in construction with a record of successful in-service performance.
- D. Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

1.03 PERFORMANCE REQUIREMENTS

- A. Sound Transmission Characteristics: For gypsum drywall assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.
- B. Installer: Engage an experienced firm that has recently completed Gypsum Drywall System assemblies with STC ratings similar in cost, material, design and extent to that indicated in this work which has resulted in construction with a record of successful in-service performance.
- C. Sound-Attenuation Performance: For gypsum board shaft-wall assemblies, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.
 - 1. STC Rating: 47 Min. unless otherwise indicated for each partition type.
- D. General: All systems shall conform to requirements of the current Code for the seismic hazard group required and all applicable modifications as required by the building code and amendments as required.
- E. Hanger Anchorage Devices: Provide devices appropriate for anchorage to the structure whose suitability has been proven through standard construction practices and certified test data, and as follows:
 - 1. General: Size devices to develop full strength of hanger but not less than 3 times calculated hanger loading, except size direct pull-out concrete inserts for 5 times the calculated hanger loading.
 - 2. Concrete Slabs - 4" Minimum: Provide drilled expansion type anchors of size to suit the load.
- F. Field Evaluation and Testing: Provide pull-out tests by a qualified testing agency subject to the approval of the Resident Engineer, on a selected anchor section. Include all proposed components for anchoring to existing slabs, provide tests in accordance with ASTM E 488. Tests shall evaluate design, and safety factor loading and shall not test beyond design and safety factor loading to failure, unless otherwise indicated approved and required.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and installation instructions for gypsum drywall and gypsum sheathing. Submit other data as required to show compliance with these specifications.
- B. Samples: Submit 12" long samples of each type of trim accessory.
- C. Shop Drawings: Submit Shop Drawings showing locations of control joints.
- D. Research Reports: Submit research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence each assembly's compliance with requirements and with the building code in effect for Project.

1.05 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 keep them dry and protected against damage from weather, sunlight, soiling, dirt or other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Comply with referenced standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum board.
- B. Cold Weather Protection: When air temperature is below 55 deg F maintain temperature of not less than 55 deg F for at least 48 hours before, during and after application of joint treatment materials.
- C. Ventilation: 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.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide products as manufactured by one of the following, or approved equal:
1. Metal Support Materials:
 - a. Dale Industries, Inc.
 - b. Marino Industries.
 - c. United States Gypsum Co.
 - d. Or Approved Equal.
 2. Gypsum Board and Related Products:
 - a. Georgia-Pacific Corp.
 - b. Gold Bond Building Products Div., National Gypsum Co.
 - c. United States Gypsum Co.
 - d. Or Approved Equal.
 3. Cementitious Backer Board:
 - a. United States Gypsum Co.
 - b. Custom Building Products.
 - c. Domtar Gypsum.
 - d. Or Approved Equal.
 4. Grid Suspension Systems:
 - a. Chicago Metallic Corp.
 - b. National Rolling Mills Co.
 - c. United States Gypsum Co.
 - d. Or Approved Equal.
 5. Furring Member: "C" Shaped Studs:
 - a. Gold Bond Building Products.
 - b. Domtar Gypsum Co.
 - c. Georgia Pacific Corp.
 - d. Or Approved Equal.

2.02 CEILING SUPPORTS

- A. General: Provide metal suspension systems of type, structural classification and finish indicated which comply with applicable ASTM C 754 requirements and the requirements of the New York City Building Code.
- B. Hangers: Mild steel rods or flats with zinc-coating or rust-inhibitive primer paint, sizes as indicated.
- C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
- D. Hanger Anchorage Devices: Devices whose suitability for use has been proven by standard construction practices or by certified test data. Size devices for 3x load, as determined by ASTM E 488.
- E. Main Runners: 1-1/2" cold rolled, 475 lbs per 1000 ft. channel, painted.
- F. Furring Members: ASTM C 645; 0.0179" minimum thickness, hat-shaped; "C"-shaped studs for spans of more than 4 feet.
- G. Furring Anchorages: 16-gage galvanized wire ties, clips and anchorages recommended by furring manufacturer.
- H. Grid Suspension System: ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network.
- I. Carry Channel Members: ASTM C 645; 0.0179" minimum thickness, hat-shaped; "C"-shaped studs for spans of more than 4 feet.

2.03 WALL AND PARTITION FRAMING

- A. Studs: ASTM C 645; of profile, size and base metal thickness required to produce assemblies complying with structural performance requirements of ASTM C 754 under required deflection and lateral loading conditions.
 - 1. Depth of Section: Standard sizes as shown.
 - 2. Gauge: Provide Gauge as indicated.
 - a. Provide non standard profiles and gauges for use in installations where required.
 - 3. Runners: Match studs, type as recommended by stud manufacturer.
- B. Furring Members: ASTM C 645; 0.0179" minimum thickness (25 gage) of base metal, hat-shaped, except "Z"-furring members.
- C. Z-Furring Members: Standard screw-type galvanized steel, "Z"-shaped furring members complying with ASTM A 525, G60, 0.0179" min. thickness (25 gage); of depth to suit insulation thickness indicated.

- D. Steel Resilient Furring Channels: Manufacturer's standard product designed to reduce sound transmission, complying with ASTM C 645 for base metal, finish and widths of face and fastening flange, fabricated to form ½ inch deep channel of the following configuration:
 - 1. Single-Leg Configuration: Asymmetric-shaped channel with face connected to one flange by a slotted leg.
- E. Flat Reinforcing Strips: 14 gage by 8" wide minimum (unless otherwise noted) galvanized strip for wall mounted items and accessories such as handrails, grab bars, wall mounted shelving, cabinets, and counters.
- F. Fasteners for Furring Members: Type and size recommended by furring manufacturer for the indicated substrates.

2.04 GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C 36, of types and edge profile indicated; in maximum lengths available, 5/8" thick unless otherwise indicated.
 - 1. Type: Regular, unless otherwise indicated.
 - 2. Type: Type X for fire-resistant rated assemblies.
 - 3. Edges: Tapered.
 - 4. Provide sag resistant type for ceiling surfaces.
- B. Water-Resistant Backing Board: ASTM C 630, of type indicated; in maximum lengths available; 5/8" thick unless otherwise indicated.
 - 1. Type: Regular, unless otherwise indicated.
 - 2. Type: Type X for fire-resistant rated assemblies.

2.05 CEMENTITIOUS BACKER UNITS

- A. Provide cementitious backer units complying with ANSI A118.9, of thickness and width as indicated, and in maximum lengths available to minimize end-to-end butt joints.
- B. Products: Subject to compliance with requirements, provide one of the following products:
 - 1. Sheetrock Brand Glass Mat Mold Tough Firecode X
 - 2. The Original Wonderboard; Custom Building Products.
 - 3. DUROCK Cement Board; United States Gypsum Co.
 - 4. Or Approved Equal.

2.06 TRIM ACCESSORIES

- A. General: ASTM C 1047; standard trim accessories of types required for drywall work, formed of galvanized steel and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, and one-piece control joint beads.
- B. Accessory for Curved Edges: Cornerbead formed of metal, plastic, or metal combined with plastic, with either notched or flexible flanges that are bendable to curvature radius.
 - 1. Product: Rip casing bead, PVC tear away L bead as manufactured by Trim Tex (size as required), Amico, Placar or approved equal.

2.07 JOINT TREATMENT MATERIALS

- A. General: Provide materials comply with ASTM C 475; and recommendations of manufacturer of both gypsum board and joint treatment for the application indicated.
- B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.
- C. Joint Compound: Ready-mixed vinyl-type for interior use. Provide 2 separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.
- D. Water-Resistant Joint Compound: Water-resistant type for joints, fastener heads and cut edges of water-resistant backing board.

2.08 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
 - 1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.
- C. Exposed Acoustical Sealant: Nonoxidizing, skinnable, paintable, gunnable sealant for exposed applications per ASTM C 919.
 - 1. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:
 - 2. Acoustical Sealant for Exposed and Concealed Joints:
 - a. PL Acoustical Sealant; ChemRex, Inc.; Contech Brands.
 - b. AC-20 FTR Acoustical and Insulation Sealant; Pecora Corp.
 - c. Miracle Adhesives/Pratt & Lambart SCS-21/SCS-180.
 - d. Phenoseal "Surpass".
 - e. Or Approved Equal.
 - 3. Acoustical Sealant for Concealed Joints:
 - a. BA-98; Pecora Corp.
 - b. Tremco Acoustical Sealant; Tremco, Inc.
 - c. Or Approved Equal.
- D. Acoustical Insulation: ASTM C 665, Type I; mineral fiber blanket without membrane, Class 25 flame-spread, minimum thickness shall be 2-1/2 inches or as required to meet STC ratings.
 - 1. Mineral Fiber Type: Fibers manufactured from glass.
 - 2. Insulation must meet New York City Building Code requirements.

2.09 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.
- B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum boards.
- C. Spot Grout: ASTM C 475, setting-type joint compound of type recommended for spot grouting hollow metal door frames.
- D. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum boards to steel framing.
- E. Gypsum Board Screws: Comply with ASTM C 1002.
- F. Foam Gaskets and Strips: Closed-cell vinyl foam adhesive-backed strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit metal stud size indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.
 - 1. Furnish concrete inserts and other devices indicated, to other trades for installation well in advance of time needed for coordination with other construction.
 - 2. Coordinate installation of work attached to areas to receive spray-fireproofing install ceiling anchors, offset anchors and plates prior to work.
 - 3. Clean hangers and accessories after installation of fireproofing as required.
- B. Firestopping: Coordinate installation of firestopping with installation of gypsum wall systems so there will not be any conflict in schedule or delay.

3.03 INSTALLATION OF FRAMING, GENERAL

- A. Installation Standard: Comply with ASTM C 754 and ASTM C 840. Provide support for all edges of gypsum board.

- B. Install supplementary backing plates, framing, blocking and bracing at terminations in the work and for support of toilet accessories and other similar construction.
 - 1. Where handrails, grab bars, crash rails, coat hooks, shelving, and the like are attached to drywall, unless other sizes are indicated, provide a 16 gage 8" wide galvanized steel strip behind gypsum board and between studs securely fastened to studs.
 - 2. For shelving install 16 gauge 8" high metal attachment plates at 4", 1'-9", and 5'-9" aff. To centerline of plates.
 - 3. For HDC Grab Bars provide where indicated.
- C. Isolate steel framing from building structure to prevent transfer of structural loading, at locations indicated below.
 - 1. Where edges of suspended ceilings abut building structure.
 - 2. Where partition and wall framing abuts overhead structure.
 - 3. Provide slip- or cushioned-type joints as detailed to attain lateral support and avoid axial loading
- D. Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.

3.04 CEILING SUPPORT SYSTEMS

- A. Secure hangers directly to structure where possible, otherwise connect to inserts, clips or other anchorage devices or fasteners as per N.Y.C. Code requirements.
- B. Space carrying channels 4'-0" o.c. and space hangers 4'-0" o.c. at runners.
- C. Level carrying channels to a tolerance of 1/8" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.
- D. Wire-tie or clip furring members to supports.
- E. Space ceiling furring members 16" o.c.
- F. Provide sufficient supplementary framing and hangers for runner channels on each side of light fixtures, ceiling diffusers and grilles, access panels and other items penetrating the ceiling.

3.05 WALL AND PARTITION FRAMING

- A. Install runner tracks at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other work. At exterior walls, install asphalt felt strips between wall and framing.
- B. Extend partition stud system through ceilings to the structural support above the ceiling, unless otherwise indicated.
- C. Space studs 16" o.c., unless otherwise indicated.

- D. Frame door openings to comply with recommendations of gypsum board manufacturer, or with "Gypsum Construction Handbook" by United States Gypsum Co. Screw studs to jambs of door frames; install runner track at head of frame and secure to jamb studs.
 - 1. Extend vertical jamb studs through suspended ceilings and attach to underside of structure above. Brace studs where required.
- E. Frame openings, other than door openings, in same manner as required for door openings; and install framing below sills of openings to match framing above door heads.
- F. Space wall furring members 16" o.c. unless otherwise shown.
- G. Install insulation between framing or furring members where indicated. Until gypsum board is installed, hold insulation with wire staples.
- H. Install insulation between framing or furring members where indicated. Until gypsum board is installed, hold insulation with wire staples.

3.06 GYPSUM BOARD APPLICATION AND FINISHING, GENERAL

- A. Application and Finishing Standards: ASTM C 840.
- B. Install acoustical insulation prior to gypsum board unless readily installed after board has been installed.
 - 1. Where S.T.C.-rated gypsum board assemblies are indicated or required, seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- C. Locate exposed end-butt joints away from center of walls and ceilings, and stagger not less than 1'-0" in alternate courses. Install boards to form smooth curved surfaces where shown.
- D. Install ceiling boards to minimize the number of end-butt joints, and to avoid end joints in the center of each ceiling. Stagger end joints at least 24".
- E. Install wall and partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- F. In addition to partition types indicated to receive "MR" gypsum board, install moisture resistant gypsum board at all column returns and at heads and jambs for all windows and openings.
- G. Install exposed gypsum board with face side out. Do not install defective or damp boards. Butt boards lightly together with not more than 1/16" space between boards. Do not force into place.
- H. Locate edges and ends over supports or other solid backing. Position boards so that like edges abut, tapered edges against tapered edges and cut ends against cut ends. Stagger joints over different studs on opposite sides of partitions.
- I. Provide framing for support at openings and cutouts.
- J. Form control joints and expansion joints to receive trim accessories. Locate these joints to

comply with manufacturer's instructions and not more than 30 ft. o.c. when not indicated on Drawings.

- K. Cover both faces of partition framing with gypsum board in concealed spaces, except in chase walls which are braced internally.
 - 1. Except for sound or fire rated applications, scraps of not less than 8 sq. ft. area may be used where concealed.
 - 2. Fit gypsum board around ducts, pipes and conduit.
- L. Isolate perimeter of non-load-bearing partitions from the structure. Provide 1/4" to 1/2" space and trim edge with J-type edge trim. Seal joints with acoustical sealant.
- M. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations.
- N. Spot grout hollow metal frames. Except where full grouting is required for fire-resistance rating, grout 6" lengths at each anchorage.
- O. Install Cementitious backerboards as recommended by manufacturer.
 - 1. Finish backing board forming base for ceramic tile to comply manufacturer's directions for treatment of joints behind tile.

3.07 SINGLE-LAYER APPLICATION

- A. On ceilings apply gypsum board prior to wall and partition board application to the greatest extent possible.
- B. On partitions and walls apply gypsum board horizontally, and provide sheet lengths which will minimize end joints.
- C. On Z-furring members apply gypsum board horizontally, (parallel) with no end joints. Locate edge joints over furring members
- D. Single-Layer Fastening: Apply gypsum boards to supports with screws.

3.08 DOUBLE-LAYER APPLICATION

- A. General: Install gypsum backing board for base layer and exposed gypsum board for face layer.
- B. On ceilings apply base layer prior to base layer on walls; apply face layers in same sequence. Offset joints between layers at least 10". Apply base layers at right angles to supports.
- C. On partitions and walls apply base layer and face layers horizontally (parallel) with joints of base layer over supports and face layer joints offset at least 10" with base layer joints.
 - 1. Provide triple layer installations and framing as indicated for Studio areas as indicated. Stagger joints if layers.
- D. On Z-furring members apply base layer and face layer horizontally, with vertical joints offset at least one furring member. Locate edges of base layer over furring members.
- E. Double-Layer Fastening: Screw base layers and face layers separately to supports.

3.09 INSTALLATION OF DRYWALL TRIM

- A. General: Where feasible, use the same fasteners to anchor trim as required to fasten gypsum board. Fasten flanges of trim in accordance with manufacturer's instructions. Closely fit and align ends of trim.
- B. Install metal corner beads at external corners of drywall work.
- C. Install edge trim at exposed or semi-exposed edges of drywall. Install L-type trim where work abuts other work, and install kerf-type where other work is kerfed to receive trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled.
- D. Install semi-finishing trim where trim flanges are not to be covered with joint compound.
- E. Install metal control joints (beaded-type) where indicated.

3.10 FINISHING OF DRYWALL

- A. General: Treat gypsum board joints, trim accessories, penetrations, fastener heads, surface defects and elsewhere as required for applied finishes. Prefill open joints using proper compound.
 - 1. Apply joint tape between gypsum boards, except at trim.
 - 2. Apply joint compound in 3 coats, not including prefill in joints, and sand between last 2 coats and after last coat.
 - 3. Skim coat all wall applications unless otherwise indicated.
- B. Water-Resistant and Tile Backer Board: Treat joints and fasteners to comply with directions of backer board and water-resistant joint compound manufacturer, using water-resistant joint compound. Do not crown the joints. Embed tape in joints and form true angles.
- C. Partial Finishing: Omit third coat and sanding on concealed drywall work which requires finishing to achieve fire-resistance rating, sound rating, or to act as an air or smoke barrier.

3.11 PROTECTION OF WORK

- A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

END OF SECTION