SECTION 09250 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Includes: Gypsum board work including, but not limited to, the following:

1. Gypsum board.
2. Non-load bearing metal stud framing for gypsum board.
3. Metal ceiling suspension system.

B. Related Work Described Elsewhere:

1. Wood blocking for interior work is provided under Section 06100 – ROUGH CARPENTRY
2. Acoustical insulation is provided under Section 07210 - BUILDING INSULATION.

1.02 QUALITY ASSURANCE

A. Fire Resistive Design: The construction shall comply with the applicable provisions of 2018 IBC, including all local amendments thereto and shall have been tested according to ASTM E 119 by an independent testing and inspecting agency acceptable to the authorities having jurisdiction. Installation and materials shall be in strict accordance with the above-mentioned code.

1. The Fire-Resistant Design shall be as indicated from UL's "Fire Resistance Directory", FM's "Approval Guide, Building Products", GA-600 "Fire Resistance Design Manual", or as listed otherwise.

B. Industry Standard: Comply with applicable requirements of GA 216 "Application and Finishing of Gypsum Board" and GA 214, "Recommended Specification: Levels of Gypsum Board Finish" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendations of the manufacturer.

C. Transverse Loading: The non-load bearing metal framing shall be capable of carrying a transverse load of 5 psf without exceeding the allowable stress or a deflection of L/240. Increase stud gauge, decrease stud spacing, or provide hidden from view lateral bracing to comply with these requirements at no additional cost to the Owner.

D. STC-Rated Assemblies: For STC rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

E. Gypsum Board Terminology: Refer to ASTM C 11, "Terminology Relating to Gypsum and Related Building Materials and Systems", for definition of terms for gypsum board assemblies not defined in this Section or in referenced standards.

1.03 SUBMITTALS

A. Submit under the provisions of Section 01330 - SUBMITTAL PROCEDURES.

B. Manufacturer's Data: Material description and manufacturer's recommended installation procedures for each material.

C. Submit shop drawings indicating fabrications and location of control and expansion joints including plans, elevations, sections, details, and attachment to adjoining work. Submit setting drawings for backing plates and anchors.

1.04 PRODUCT HANDLING

A. Deliver gypsum wallboard materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade; store in a dry well-ventilated space, protected from the weather, under cover and off the ground. Stack gypsum panels flat to prevent sagging. Joint materials shall be stored in accordance with manufacturer's printed instructions. Damaged or deteriorated materials shall be removed from jobsite.

B. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide panels in maximum lengths and widths available that will minimize joints and correspond with the applicable support system.

B. Gypsum Wallboard: ASTM C 1396 "Gypsum Wallboard", 5/8 inch unless specifically noted as 1/2-inch thick, tapered edge type, 48 inches wide, Type "R" regular for all non-rated walls and Type "X" (Special Fire Retardant) for fire rated partitions and elsewhere as indicated.

C. Water Resistant Board: ASTM C 1396, Type "WR" water-resistant backing board, 5/8-inch thick unless indicated otherwise, with tapered edges, 48 inches wide, unless indicated otherwise (for walls only). Provide Type "WR-X" (Special Fire Retardant) for fire rated partitions.

D. Impact Resistant Board: ASTM C 1629 "Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels"; Level 3, Impact resistant gypsum board with fiberglass mat facing, 5/8-inch thick with tapered edges, 48 inches wide, Type X(Special Fire Retardant).

1. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

E. Tile Backer Board: ASTM C 1178 "Glass Mat Faced Water-Resistant, Gypsum Backing Board", glass mat reinforced gypsum backer board, nominal 5/8-inch-thick, for hard tile backing, equal to Dens-Shield Tile Backer by Georgia Pacific. Provide tape and joint compound materials as recommended by manufacturer.

F. Wallboard Fasteners: ASTM C 1002 "Steel Drill Screws for the Application of Gypsum or Metal Plaster Bases", standard bugle head self-drilling, self-tapping

corrosive-resistant drywall screws, Screws used in fire-resistive rated construction shall be of type approved for use by governing building code.

G. Joint Treatment Materials: ASTM C 475 “Joint Compound and Joint Tape for Finishing Gypsum Board”, materials for treating joints and fastener heads shall be as manufactured or recommended by the Manufacturer of the wallboard used. Provide “setting” type joint compound that is unaffected by humidity for water resistant board.

1. Tile Backer Board Joint Treatment:

a. Joint Compound: Same material specified in Section 09310 – CERAMIC TILE used to thinset tile to the backer board or type recommended by manufacturer for the application indicated.

b. Sealant: (JS-XX) One-part mildew-resistant silicone, sealant conforming to ASTM C 920 as specified in Section 07920 – SEALANTS.

H. Non-Load Bearing Studs: Comply with ASTM C 754 for conditions indicated. ASTM C 645 “Non-Load (Axial) Bearing Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board”, studs shall be 1-5/8, 2-1/2, 3-5/8, and 6 inches unless indicated otherwise on the drawings. Studs shall be rolled formed channel of 25, 20 and 16-gauge galvanized steel, ASTM A 653 “Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process”, G60 coating. Provide holes and notches for conduit or electrical wiring. Typical stud gauge shall be 25 gauge unless noted otherwise in the Drawings or this section. Provide minimum 20-gauge at ceramic and stone tile partitions.

1. Provide the appropriate gauge studs and stud spacing for the specified Transverse Loading of this Project based on the ASTM C 754, Maximum Stud Height Tables.

I. Tracks: Metal floor and ceiling tracks shall be rolled formed channel of gauge electro-zinc plated steel of same gauge as stud with width dimensions suitable to corresponding stud sizes indicated on the drawings.

J. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; same gauge as stud and in width to accommodate depth of studs. The U-shape track is 2-1/2-inches deep and has 1-1/2-inches vertical slots spaced 1” along both legs and is fabricated from hot-dipped galvanized steel complying with ASTM A653.

K. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on partition or shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.

1. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing according to ASTM E 1190 conducted by a qualified testing agency.

a. Products: Subject to compliance with the requirements, provide power actuated fasteners with top hat or washer to for larger

bearing surface against track and increased resistance to pullover as manufactured by one of the following:

1) ITW Ramset
2) Hilti
3) Powers
4) or Approved Equal

L. Furring Channels: ASTM C 645, hat-shaped, 7/8-inch-deep, hot-dipped galvanized, 25 gauge.

M. Wire for Ties: ASTM A 641/A 641 M “Zinc-Coated (Galvanized) Carbon Steel Wire”, Class 1 zinc coating, soft temper, 8 gauge for hangers supporting up to 12.5 square feet and 6 gauge where supporting up to 16 square feet and 18 gauge for ties.

N. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053-inch, depth of 1-1/2-inch and minimum 1/2-inch-wide flanges.

O. Wallboard Accessories: ASTM C 1047 “Accessories for Gypsum Wallboard and Gypsum Veneer Base”, Vinyl Corp., Plastic Components Inc., Vinyl Tech or approved equal.

1. Standard Corner Bead: Vinyl Corp. Corner Bead CB 125 at all outside corners of wall, ceiling, and soffit as indicated.
2. Casing Trim: Vinyl Corp. “L” Bead SB 58, “J” Bead MJB5B, or approved equal as indicated.
3. Control Joint: Vinyl Corp. CJV 16 or approved equal.
4. Other Accessories: As indicated or necessary for complete installation.
5. All accessories shall be vinyl, PVC, or approved equal.

P. Ceiling Support Materials and Systems:

1. General: Size ceiling support components to comply with ASTM C 754 “Installation of Steel Framing Members to Receive Screw-Attached Gypsum” unless indicated otherwise.
2. Direct Suspension Systems: Manufacturer’s standard zinc-coated or painted steel system of furring runners, furring tees, and accessories designed for concealed support of gypsum drywall ceilings; of proper type for use intended. System Manufacturer: Equal to one of the following:
   a. Armstrong World Industries, Inc.
   b. Chicago Metallic Corp.
   c. USG Interiors, Inc.
3. Wire for Hangers and Ties: ASTM A 641/A 641 M “Zinc-Coated (Galvanized) Carbon Steel Wire”, Class 1 zinc coating, soft temper, 8-gauge for hangers supporting up to 12.5 square feet and 6 gauge where supporting up to 16 square feet and 18 gauge for ties.

Q. Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

R. Backing Plates: 22-gauge galvanized steel sheet for blocking and bracing in length and width required.

PART 3 - EXECUTION

3.01 EXAMINATION

Examine substrates to which drywall construction attaches or abuts, including preset hollow metal frames, structural framing, and other construction 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 INSTALLATION

A. General: Comply with ASTM C 840 “Application and Finishing of Gypsum Board”, Gypsum Association GA 216 and ASTM C 754 as applicable to the type of substrate and drywall support system indicated.

B. Tolerances:

1. Maximum variation of finish surface from true flatness shall be 1/8-inch in 10-feet in any direction unless specified otherwise.
2. Maximum variation of plumbness of wall shall be 1/8 inch in 10 feet of height.
3. Maximum variation from true position shall be 1/8 inch.

C. Ceiling Support Suspension Systems:

1. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or other anchorage devices or fasteners as indicated. Ensure that 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.
2. Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers at spacing required to support ceilings and that hangers will develop their full strength.
3. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

5. Secure hangers to structure, including intermediate framing members, by attaching to inserts, eye-screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
6. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.
7. Sway brace ceiling to conform to the applicable seismic zone and uplift, applicable requirements of ASTM E 580, “Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint”, and the manufacturer’s recommendations.
8. Space main runners 4 feet on center and space hangers 4 feet on center along runners, except as otherwise shown.
9. Level main runners to a tolerance of 1/8 inch in 12 feet, measured both lengthwise on each runner and transversely between parallel runners.
10. Wire-tie or clip furring members to main runners and to other structural supports as indicated or as recommended by the manufacturer.
11. Direct-hung Metal Support System: Attach perimeter wall track or angle wherever support system meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into wall track.
12. Space furring member 16 inches on center, except as otherwise indicated.
13. Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.
14. Do not connect or suspend steel framing from ducts, pipes, or conduit.
15. Keep hangers and braces 2 inches clear of ducts, pipes, and conduits.

D. Non-Load Bearing Metal Wall Framing:

1. Install supplementary framing, blocking, and bracing to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar work which cannot be adequately supported on gypsum board alone to comply with details indicated and with recommendations of gypsum board manufacturer, or if none are available, with “Gypsum Construction Handbook” published by United States Gypsum Co.
2. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.
3. Install runner tracks at floors, ceilings, and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.
4. Space studs and furring 16 inches on center, except as otherwise indicated.

5. Install steel studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edges of stud flanges first.

6. Install 20-gauge studs spaced at 16-inches on center in walls scheduled to receive ceramic or stone tile and in walls that support wall cabinets and shelving.

7. Install 16-guage studs spaced at 16-inches on center in walls where wall-mounted items are to be installed.

8. Frame door openings with vertical studs securely attached by screws at each jamb either directly to frames or to jamb anchor clips on door frame in accordance with door manufacturer's recommendations; install runner track sections (for jack studs) at head and secure to jamb studs. Provide runner tracks of same gauge as jamb studs. Space jack studs same as partition studs.

9. Install 20-gauge studs at each jamb for all doors 2'-8" wide to 4 feet wide weighing not more than 200 pounds; and for all doors less than 2'-8" wide weighing more than 100 pounds but not more than 200 pounds.

10. Install double 20-gauge studs for single doors up to 4 feet wide, weighing more than 200 pounds but not more than 300 pounds; screw attach web of back-to-back studs direct to jamb anchor clips nested between flange of stud.

11. Frame openings other than door openings in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

12. Install each steel framing and furring member so that fastening surface does not vary more than 1/8-inch from plane of faces of adjacent framing.

E. Gypsum Wallboard, General:

1. Locate exposed end-butt joints as far from center of walls and ceilings as possible.

2. Install exposed gypsum board with face side out. Do not install imperfect, damaged, or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16-inch open space between boards. Do not force into place.

3. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that both tapered edge joints abut, and mill-cut or field-cut end joints abut. 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. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.

5. Cover both faces of stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are properly braced internally. Where concealed application is required for sound, fire,

air or smoke ratings, coverage may be accomplished with scraps of not less than 8 square foot area and may be limited to not less than 75 percent of full coverage.

6. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 3/8-inch space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant. Do not fasten drywall directly to stud system runner tracks.

7. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

8. Install insulation at framing as indicated. Size insulation to width of members spacing. Press friction fit insulation between members as recommended by the insulation manufacturer. Insulation is provided under Section 07210 - BUILDING INSULATION.

9. Tile Backer Unit: Install tile backer units in accordance with manufacturer's instructions and TCNA methods specified in Section 09310 – CERAMIC TILE.

10. For ceilings over showers and shower areas provide tile backer units and finish to a Level 5 finish and make ready to receive scheduled paint finish.

F. Methods of Gypsum Wallboard Application:

1. On ceilings, apply gypsum board prior to wall/partition board application, to greatest extent possible and at right angle to framing, unless otherwise indicated.

2. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

3. Single-Layer Application:

   a. On partitions/walls higher than 8'-1", apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

   b. On partitions/walls 8'-1" or less in height apply gypsum board horizontally (perpendicular); use maximum length sheets possible to minimize end joints.

4. Single-Layer Fastening Method: Apply gypsum boards to supports by fastening with screws, spaced not to exceed 16-inch centers for walls and 12-inch centers for ceilings.

5. Gypsum wallboard construction for fire rated and acoustical rated assemblies shall be in accordance with the design number indicated or if not indicated in accordance with 2018 IBC.

6. Multi-Layer Application on Partitions/Walls: Apply gypsum 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.

G. Installation of Trim Accessories:

1. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, attach trim in accordance with manufacturer's instructions and recommendations.

2. Install corner beads at external corners.

3. Install 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-finishing type is indicated. 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).

4. Install J or LC-type semi-finishing trim where indicated.

5. Install control joints where indicated or necessary in large ceiling and wall expanses. Use door header to ceiling or floor to ceiling in long partitions and wall furring runs and from wall to wall in large ceiling areas. Where joint will be conspicuous, obtain approval prior to installation.

H. Acoustical Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM E 497, "Installing Sound-Isolating Gypsum Board Partitions", ASTM C 919, "Use of Sealants in Acoustical Applications", and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.

3.03 DRYWALL FINISHING

A. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fasteners heads, surface defects and elsewhere in accordance with ASTM C 840 and Gypsum Association GA 216 and GA 214 as required to prepare work for decoration. Prefill open joints, rounded or beveled edges, and damaged surfaces using type of compound recommended by manufacturer.

1. Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated that does not require tape.

2. Apply joint compound in 3 coats (not including prefill of openings in base), and sand between last 2 coats and after last coat. Fastener heads, dents, gouges, and cut-outs shall be filled with joint compound and sanded.

3. Accessories at exposed joints, edges, corners, openings, and similar locations shall be taped, floated with joint compound, and sanded to produce surfaces ready for gypsum board finishes.

4. Treatment for water-resistant gypsum wallboard shall be as recommended by the gypsum wallboard manufacturer.

B. Finish interior gypsum wallboard by applying the following levels of gypsum board finish in accordance with GA-214.

1. Level 1: For ceiling plenum areas and other concealed areas.

2. Level 2: Where wall panels form substrates for tile. For tile backer board finish in accordance with backer board manufacturer and TCNA methods specified in Section 09310 – CERAMIC TILE.

3. Level 4: For ceiling surfaces to receive flat paint and wall surfaces to receive an eggshell finish and wall surfaces to receive all grades of wall covering.

4. Level 5: For wall and ceiling surfaces in critical lighting area as defined by GA-214 as well as gypsum wallboard surfaces scheduled to receive semi-gloss paint.

5. Where Level 5 gypsum board finish is indicated, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories; and apply a thin, uniform skim coat of joint compound over entire surface. For skim coat, use joint compound specified for third coat, or a product specially formulated for this purpose and acceptable to gypsum board manufacturer. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects, tool marks, and ridges and ready for decoration.

6. For Level 4 gypsum board finish, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration.

7. Where Level 3 gypsum board finish is indicated, embed tape in joint compound and apply first and fill (second) coats of joint compound.

8. Where Level 2 gypsum board finish is indicated, embed tape in joint compound and apply first coat of joint compound.

9. Where Level 1 gypsum board finish is indicated, embed tape in joint compound.

C. Prevent finishes from coming into contact with surfaces not indicated to receive finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to the finish manufacturer's written recommendations.

3.04 BACKING PLATES AND ANCHORS

Backing plates and anchors or blocking which are to be attached to studs or furring for anchoring items and work indicated on the drawings or specified in other Sections shall be installed and secured. Plates and anchors shall be welded or fastened in place in accordance with approved setting drawings.

3.05 CLEANING AND REPAIRING

After installation and before painting, correct surface damage and defects. Leave surface clean and smooth, satisfactory to the painter. painting shall be done over gypsum board work until the joints are thoroughly dry. Joints and fastenings are to be invisible after painting.

END OF SECTION