

SAMPLE COMPREHENSIVE SPECIFICATION

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Specifications, Quality Assurance, Inspections & Investigations for Your Construction Projects

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SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Metal stud wall framing.
2. Metal channel ceiling framing.
3. Direct suspension ceiling framing.
4. Shaftwall wall system.
5. Gypsum board and joint treatment.
6. Tile backer board and joint treatment.
7. Acoustic insulation.

B. Related Sections:

1. Section 05 40 00 - Cold-Formed Metal Framing.
2. Section 06 10 00 - Rough Carpentry: Building wood framing system.
3. Section 06 10 00 - Rough Carpentry: Wood blocking for support of wall mounted fixtures.
4. Section 08 31 13 - Access Doors and Frames: Metal access panels.
5. Section 10 44 00 - Fire Protection Specialties: Product requirements for frames for recessed extinguisher cabinets.

1.2 REFERENCES

A. American National Standards Institute:

1. ANSI A108.11 - Specifications for Interior Installations of Cementitious Backer Units.
2. ANSI A118.9 - Test Methods and Specifications for Cementitious Backer Units.

B. ASTM International:

1. ASTM A641 - Zinc-Coated (Galvanized) Carbon Steel Wire.
2. ASTM C475/C475M - Joint Compound and Joint Tape for Finishing Gypsum Board.
3. ASTM C514 - Nails for the Application of Gypsum Wallboard.
4. ASTM C557 - Adhesives for Fastening Gypsum Wallboard to Wood Framing.
5. ASTM C635 - Metal Suspension systems for Acoustical Tile and Lay In Panel Ceilings.
6. ASTM C645 - Non-Load Bearing (Axial) Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
7. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
9. ASTM C754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
10. ASTM C834 - Standard Specification for Latex Sealants.

11. ASTM C840 - Application and Finishing of Gypsum Board.
 12. ASTM C919 - Use of Sealants in Acoustical Applications.
 13. ASTM C1002 - Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
 14. ASTM C1047 - Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 15. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
 16. ASTM C1186 - Standard Specification for Flat Non-Asbestos Fiber-Cement Sheets.
 17. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
 18. ASTM C1396 - Standard Specification for Gypsum Board.
 19. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 20. ASTM E90 - Test Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions.
 21. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
 22. ASTM E1425 - Standard practice for Determining the Acoustical Performance of Exterior Windows and Doors.
- C. Gypsum Association
1. GA-214 - Recommended Specification: Levels of Gypsum Board Finish.
 2. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
 3. GA-600 - Fire Resistance Design Manual.
- D. Steel Stud Manufacturers Association
1. SSMA - Product Technical Information.
- E. Underwriters Laboratories, Inc.
1. UL - Fire Resistance Directory.
- F. Intertek Testing Services (Warnock Hersey Listed)
1. WH - Certification Listings.

1.3 PERFORMANCE REQUIREMENTS

- A. Non-Load Bearing Interior Partitions and Ceilings:
1. Design and size components to withstand dead and live loads caused by stress and pressures acting normal to plane of wall, and those partitions requiring UL fire ratings. Design partitions and ceilings under direct supervision of professional engineer experienced in design of this Work and licensed by the State where the project is located.
 - a. Shaftwall partitions: Minimum 10 psf (480 Pa) static load.
 - b. Other partitions: Minimum 5 psf (240 Pa) static load.
 - c. Ceilings and Soffits: Deadload of materials.
- B. Conform to applicable codes for fire rated assemblies as indicated on Drawings.
- C. Acoustic Attenuation for Identified Interior Partitions: ASTM E90; STC ratings as shown on drawings.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Signed and sealed by professional engineer.
1. Indicate component details, framed openings, bearing, anchorage, loading and accessories or items required of related Work.
 2. Indicate stud layout.

3. Describe method for securing studs to tracks.
4. Indicate special details required for fire rated assemblies.
5. Provide calculations for loading and stresses.

C. Product Data:

1. Submit data on metal framing, gypsum board, joint tape; and acoustic accessories.
2. Indicate maximum unbraced height permitted for each stud gage and yield strength.

1.5 SUSTAINABLE DESIGN SUBMITTALS

- A. Section 01 81 13 - Sustainable Design Requirements: Requirements for sustainable design submittals.
- B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.
1. Materials Resources Certificates:
 - a. Certify recycled material content for recycled content products.
 - b. Certify source for local and regional materials and distance from Project site.
 2. Indoor Air Quality Certificates:
 - a. Certify volatile organic compound content for each interior adhesive and sealant and related primer.
- C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
1. Provide cost data for the following products:
 - a. Products with recycled material content.
 - b. Local and regional products.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with GA-214, GA-216 and GA-600.
- B. Fire Rated Wall Construction: Rating as indicated on Drawings.
1. Tested Rating: Determined in accordance with ASTM E119.
 2. Prescriptive Rating: Determined in accordance with applicable code.
- C. Sustainable Design Requirements:
1. Recycled Content Materials: Furnish materials with recycled content.
 2. Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles (800 km) of Project site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Metal Framing Manufacturers:
1. Current member of SSMA.

- B. Direct Suspension System Manufacturers:
 1. United States Gypsum Company.
 2. Chicago Metallic Corp.
 3. Substitutions: Section 01 60 00 - Product Requirements.

- C. Gypsum Board and Joint Treatment Manufacturers:
 1. United States Gypsum Company.
 2. National Gypsum.
 3. Georgia Pacific.
 4. Lafarge North America.
 5. Substitutions: Section 01 60 00 - Product Requirements.

- D. Acoustic Insulation Manufacturers:
 1. Thermafiber; Thermafiber Sound Attenuation Fire Blankets (SAFB).
 2. Owens Corning; Sound Attenuation Batts (Mineral Wool) or Sound Attenuation Batts.
 3. CertainTeed; Thermafiber Sound Attenuation Fire Blankets (SAFB) or CertaPro AcoustaTherm Batts.
 4. Johns Manville; MinWool-1200 Sound Attention Fire Batts or Sound Control Batts.
 5. Substitutions: Section 01 60 00 - Product Requirements.

2.2 COMPONENTS

- A. Framing Materials:
 1. Studs and Tracks: ASTM C645; galvanized sheet steel, size as indicated on Drawings, 'C' shape with the following minimum base metal thicknesses:
 - a. Studs with Tile Wall Finish: Minimum 30 mils (20 gage) (0.75 mm).
 - b. Other Studs: Minimum 18 mils (25 gage) (0.45 mm).
 - c. Studs and tracks with thicknesses equivalent to those specified are permitted, provided structural properties meet or exceed properties of studs with specified thickness.
 2. Shaft Wall Studs and Accessories: Manufacturers standard shape for rating indicated.
 3. Deep Leg Deflection Track: ASTM C645 top runner with 2 inch (50 mm) deep flanges.
 4. Furring, Framing and Accessories: ASTM C645.
 5. Fasteners: ASTM C1002.
 6. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

- B. Ceiling Suspension System Framing:
 1. Channels: Hot or cold rolled; G30 hot dipped galvanized steel channel; minimum 1-1/2 inches (38 mm) size and minimum 0.475 lb/ft (700 g/m) in accordance with ASTM C754.
 2. Fasteners: ASTM C1002.
 3. Hanger Wire: ASTM A641 soft temper, Class 1 galvanized steel, minimum 8 gage (4.3 mm).
 4. Hanger Rods: Mild steel rod, with zinc coating, minimum 7/32 inches (5.5 mm) diameter.
 5. Angle Hangers: Minimum 7/8 x 7/8 inches (22 x 22 mm), 16 gage (8 mm thick) ASTM A653/A653M G90 galvanized steel formed angles with 5/16 inches (8 mm) diameter bolted connections.
 6. Anchorage Devices: Screws, clips, bolts, concrete inserts, and other devices of type and size to suit application; to rigidly secure materials in place. Size devices for 5x calculated load for concrete inserts and 3x calculated load for other devices.
 7. Adhesive: ASTM C557.
 - a. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

- C. Direct Suspension System Framing:
 1. Grid Suspension System: ASTM C635; manufacturer's standard zinc coated system of interlocking furring runners, furring tees, and accessories designed for concealed modular supporting network for gypsum board ceilings.

2. Channels: Hot or cold rolled; G90 hot dipped galvanized steel channel; minimum 1-1/2 inches (38 mm) size and minimum 0.475 lb/ft (700 g/m) in accordance with ASTM C754.
 3. Hanger Wire: ASTM A641 soft temper, Class 1 galvanized steel, minimum 12 gage (2.0 mm).
 4. Anchorage Devices: Screws, clips, bolts, concrete inserts, and other devices of type and size to suit application; to rigidly secure materials in place. Size devices for 5x calculated load for concrete inserts and 3x calculated load for other devices.
- D. Gypsum Board Materials: ASTM C1396/C1396M of the following types; thickness as indicated on Drawings; Type X fire resistant where indicated on Drawings; maximum available length in place; ends square cut, tapered edges, unless specified otherwise.
1. Standard Gypsum Board.
 2. Moisture Resistant Gypsum Board.
 3. Exterior Gypsum Soffit Board.
 4. Foil Backed Gypsum Board: Back surface laminated with aluminum foil.
 5. Gypsum Base: Square edges, ends square cut.
 6. Gypsum Shaftliner: 1 inch (25 mm) thick; square edges, ends square cut.
- E. Tile Backer Boards: Thickness and fire resistance as indicated on Drawings.
1. Gypsum Tile Backer Board: ASTM C1178/C1178M; maximum available length in place; ends square cut, tapered edges.
 - a. Georgia Pacific; Dens Shield.
 2. Cementitious Tile Backer Board: ANSI A118.9; high density, glass fiber reinforced.
 - a. United States Gypsum Company; Durock.
 - b. National Gypsum Company; Permabase.
- F. Impact Resistant Boards:
1. Impact Resistant Board: Fiberock AR, fire rated where indicated, manufactured by United States Gypsum Co.

2.3 ACCESSORIES

- A. Acoustic Insulation: ASTM C665, Type I, unfaced semi rigid mineral fiber or fiberglass batt type, thickness indicated on Drawings, friction fit, with maximum flame/smoke properties of 25/450 in accordance with ASTM E84:
1. Fire Rated Partitions: Insulation type as required by fire resistant design indicated on Drawings.
 2. Other Partitions: Insulation type as required by sound transmission test indicated on Drawings.
- B. Acoustic Sealant: Nonsag, paintable, nonstaining, butyl-free, latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90. Furnish fire rated sealant for use in fire rated assemblies.
1. Non-Fire Rated Sealants:
 - a. Ohio Sealants, Inc.; SC 175 Acoustical Sound Sealant Non-Flammable - Latex.
 - b. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
 - c. Tremco, Inc.; Tremflex 834.
 - d. Substitutions: Section 01 60 00 - Product Requirements.
 2. Fire Rated Sealants:
 - a. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
 - b. Tremco, Inc.; TremStop Acrylic.
 - c. Substitutions: Section 01 60 00 - Product Requirements.
 3. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
- C. Junction Box Pads: 6 x 8 inches in size, 1/8 inch thick, resilient sealer pads used to seal side and backs of junction boxes in acoustically rated partitions. Provide one of the following:
1. Lowry Electrical Box Pads.

2. Dottie Sealant Insul Pads.
 3. Substitutions: Section 01 60 00 - Product Requirements.
- D. Metal Trim: ASTM C1047; hot-dipped galvanized steel; with or without paper facing.
1. Corner beads.
 2. Edge Beads: Profile to suit application.
 3. Expansion joints.
- E. Plastic Edge Trim:
1. Premasked L Bead: Vinyl type with removable masking or tear away masking leg.
 - a. Trim-Tex; Pullaway Premask L Bead or Tearaway L Bead.
- F. Joint Materials:
1. For Cementitious Tile Backer Board: **2 inch (50 mm)** wide, coated alkali-resistant fiberglass mesh tape intended for use with tile backer board; approved by tile backer board manufacturer for use with their backer board product; setting type joint compound; and tile setting material as specified in Section 09 30 00.
 2. For Gypsum Tile Backer Board: **2 inch (50 mm)** wide, coated alkali-resistant fiberglass mesh tape intended for use with tile backer board; approved by tile backer board manufacturer for use with their backer board product; tile setting material as specified in Section 09 30 00.
 3. For Other Gypsum Board: ASTM C475; reinforcing tape, joint compound, and water.
 - a. Use setting type joint compound for exterior locations.
- G. Fasteners: ASTM C1002, Type S12 and GA-216.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

3.2 INSTALLATION

- A. Metal Stud Installation:
 1. Install studs in accordance with ASTM C754.
 2. Metal Stud Spacing: **16 inches (400 mm)** on center, unless indicated otherwise on Drawings.
 3. Extend studs minimum 6 inches above ceilings, unless otherwise specified or otherwise indicated on Drawings.
 4. Extend stud framing through the ceiling to the structure above for fire rated partitions, acoustically rated partitions, and other partitions indicated on Drawings.
 - a. Provide deep leg deflection track as top runner.
 - b. Maintain clearance under structural building members to avoid deflection transfer to studs.
 - c. Brace studs within 12 inches of top track.
 - d. Do not fasten studs to top track.
 5. Door Opening Framing: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.
 6. Blocking: Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, handrails, grab bars, and other fittings and fixtures supported by gypsum board partitions.

- a. Provide continuous blocking, minimum 12 inches wide, along length of bumper rails.
- B. Wall Furring Installation:
1. Erect wall furring for direct attachment to concrete masonry and concrete walls.
 2. Fireblock furred spaces at fire rated walls maximum 10 feet on center horizontally and vertically in accordance with applicable code.
- C. Shaft Wall Framing: Install in accordance with GA-600.
- D. Ceiling Framing Installation:
1. Install in accordance with ASTM C754.
 2. Coordinate location of hangers with other work.
 3. Install ceiling framing independent of walls, columns, and above ceiling work.
 4. Install framing members at following maximum spacings:
 - a. Wire Hangers: 4 feet (1200 mm) on center.
 - b. Carrying Channels: 4 feet (1200 mm) on center.
 - c. Rigid Furring Channels: 16 inches (400 mm) on center.
 - d. Metal Framing: 16 inches (400 mm) on center.
 - e. Diagonal Bracing: Maximum 4 feet (1200 mm) bays.
 - f. Cross Framing: 4 feet (1200 mm) on center.
 5. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches (600 mm) past each end of openings.
 6. Laterally brace entire suspension system.
- E. Direct Suspension Ceiling Installation:
1. Install system in accordance with ASTM C636.
 2. Install grid suspension system with perimeter wall track or angle where grid meets vertical surface. Mechanically join main beams and cross furring members to each other and but cut to fit into wall track.
 3. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing.
- F. Acoustic Accessories Installation:
1. Comply with ASTM C919 and manufacturer's instructions to achieve STC ratings indicated on Drawings.
 2. Install resilient channels at maximum 24 inches (600 mm) on center. Locate joints over framing members.
 3. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
 4. Install acoustic sealant at gypsum board perimeter at following locations:
 - a. Metal Framing: Two beads.
 - b. Base Layer: One bead.
 - c. Face Layer: One bead.
 - d. Seal partition face layer at openings for items penetrating partition.
 5. Close off sound flanking paths around or through gypsum board assemblies including sealing partitions above acoustic ceilings.
- G. Gypsum Board Installation:
1. Install gypsum board in accordance with GA-216 and GA-600.
 2. Erect single layer gypsum board vertically, with edges occurring over firm bearing.
 3. Double Layer Applications:
 - a. Secure second layer to first with fasteners.
 - b. Place second layer parallel to first layer. Offset joints of second layer from joints of first layer.

4. At stairwell and other walls extending for heights greater than one floor, install gypsum board horizontally with ends staggered and occurring over framing. Install horizontal control joint at floor lines.
 5. Erect exterior gypsum soffit board perpendicular to supports, with staggered end joints over supports.
 6. Use screws when fastening gypsum board to metal furring or framing.
 7. Treat cut edges and holes in water resistant gypsum board and exterior gypsum soffit board with sealant.
 8. Place control joints consistent with lines of building spaces as indicated on Drawings.
 9. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials and locations as indicated.
 10. Install cementitious backing board over metal studs in accordance with ANSI A108.11.
 11. Apply gypsum board to curved walls in accordance with GA-216.
- H. Joint Treatment:
1. Finish in accordance with the following GA-214 Levels:
 - a. Level 1: Wall surfaces above finished ceilings, concealed from view.
 - b. Level 2: Wall and ceiling surfaces indicated to receive tile finish.
 - c. Level 4: Other wall surfaces exposed to view.
 - d. Level 4: Ceiling surfaces exposed to view.
 2. Tile Backer Board:
 - a. Bed joint tape in tile setting material for joints concealed by tile in finished installation.
 - b. Bed joint tape in joint compound for perimeter joints exposed to view in finished installation.
 3. Joints Exposed to View: Feather coats on to adjoining surfaces so that camber is maximum **1/32 inch (0.8 mm)**.

3.3 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation of Finished Gypsum Board Surface from True Flatness: **1/8 inch in 10 feet (3 mm in 3 m)** in any direction.

END OF SECTION