

Part 1 General

1.01 RELATED REQUIREMENTS

- .1 Section 07 84 00 - Firestopping
- .2 Section 09 22 16 - Non-structural Metal Framing: Metal stud framing for interior walls and partitions
- .3 Section 09 91 00 - Painting

1.02 REFERENCE STANDARDS

- .1 Aluminum Association
 - .1 Designation for Aluminum Finishes
- .2 ASTM
 - .1 ASTM C475 / C475M - 17, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
 - .2 ASTM C514 - 04(2014), Specification for Nails for the Application of Gypsum Board
 - .3 ASTM C557 - 03(2017), Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing
 - .4 ASTM C665 - 17, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
 - .5 ASTM C834 - 17, Standard Specification for Latex Sealants
 - .6 ASTM C840 - 17a, Standard Specification for Application and Finishing of Gypsum Board
 - .7 ASTM C954 - 18, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
 - .8 ASTM C1002 - 18, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
 - .9 ASTM C1047 – 14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
 - .10 ASTM C1177 / C1177M - 17, Specification for Glass Mat Gypsum Substrate for Use as Sheathing
 - .11 ASTM C1178 / C1178M -13, Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel
 - .12 ASTM C1278 / C1278M - 17, Standard Specification for Fiber-Reinforced Gypsum Panel
 - .13 ASTM C1280 - 13, Specification for Application of Gypsum Sheathing
 - .14 ASTM C1396 / C1396M - 17, Standard Specification for Gypsum Board
 - .15 ASTM C1629 / C1629M—06 Standard Classification for Abuse-resistant Nondecorated Interior Gypsum Panel Products and Fiber-reinforced Cement Panels
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-Z317.13, Infection Control during Construction, Renovation, and Maintenance of Health Care Facilities
- .4 Gypsum Association (GA)
 - .1 GA-214 - 17, Recommended Levels of Gypsum Board Finish
 - .2 GA-600 - 2009, Fire Resistance Design Manual

- .3 .
- .5 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S702 - 14, Standard for Mineral Fibre Thermal Insulation for Buildings

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
 - .1 Shop Drawings: Provide shop drawings for shaft wall systems indicating materials and components, stud gauges, fire ratings, installation details. Indicate maximum limiting heights for wall applications; and maximum spans for ceiling applications, including maximum stud spacing.
- .3 Informational Submittals:
 - .1 Product Data: Provide manufacturer's technical data and brochures for specified materials, including detail drawings and installation instructions.
 - .2 Certificates: Provide a letter of certification from the gypsum board manufacturer indicating that the products supplied for this project do not contain hydrogen sulphide, sulphur dioxide, sulphur or any sulphur by-products.

1.04 QUALITY ASSURANCE

- .1 Gypsum board materials supplied for use on this project shall not contain hydrogen sulphide, sulphur dioxide, sulphur or any sulphur by-products.
- .2 Upon request, provide certification letters from gypsum board manufacturer certifying that products meet or exceed specified requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.
- .4 Gypsum board that becomes damp, wet or contaminated with dust or dirt shall be considered damaged materials. Replace damaged materials at no additional cost to the Contract.
- .5 Comply with CAN/CSA Z317.13.
- .6 When shipping, handling and storing gypsum board protect from weather; take all precautions to prevent moisture or dust contamination.
 - .1 Wrap gypsum board in waterproof covers at plant or distribution centre prior to shipping.
 - .2 Load gypsum board in indoor facilities, and ship to project site in enclosed vehicles only. Do not use flat-bed trucks exposed to the elements.
 - .3 Unload at project site only during dry weather.
 - .4 Store gypsum board indoors in dry location, off concrete floors.

1.06 SITE CONDITIONS

- .1 Maintain temperature minimum 10° C, maximum 21° C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.07 WASTE MANAGEMENT AND DISPOSAL

- .1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

Part 2 Products

2.01 ACCEPTABLE MANUFACTURERS

- .1 The following manufacturers of gypsum board are acceptable for the supply of gypsum board for this project:
 - .1 Canadian Gypsum Company (US Gypsum)
 - .2 CertainTeed Gypsum Canada Inc.
 - .3 Georgia-Pacific

2.02 GYPSUM BOARD

- .1 Standard Board: To ASTM C1396/C1396M, regular and Type X, thickness indicated, 1 220 mm (4'-0") wide x maximum practical length, ends square cut, edges.
- .2 Water Resistant Board: To ASTM C1396/C1396M, regular and fire-rated, thickness indicated, 1 220 mm (4'-0") wide x maximum practical length. Moisture and mould resistant.

2.03 METAL FURRING AND SUSPENSION SYSTEMS

- .1 Metal furring, runners, hangers, tie wires, inserts, anchors: to ASTM C1280, galvanized.
- .2 Drywall Furring Channels: 25-gauge galvanized steel channels for screw attachment of gypsum board.
- .3 Wire Hangers: Minimum 12 gauge galvanized mild steel.

2.04 ACCESSORIES

- .1 Nails: To ASTM C514.
- .2 Steel Drill Screws: To ASTM C1002 and ASTM C954 for attachment of gypsum board to heavier backing material. Provide corrosion resistant screw for attachment of water resistant board.
- .3 Stud Adhesive: To ASTM C557.
- .4 Laminating Compound: As recommended by manufacturer, asbestos free.
- .5 Casing Beads, Corner Beads Fill Type: To ASTM C1047, 25 gauge commercial grade sheet steel, zinc coated, perforated flanges; one piece length per location. Plastic casing bead and corner beads not acceptable.

- .6 Joint Compound and Joint Tape: To ASTM C475/C475M, asbestos free.
- .7 Acoustical Sealant: To ASTM C834.
 - .1 Acceptable Products: Tremco Tremflex 834, Chem-Calk 600; Sheetrock Acoustical Sealant; CertainTeed QuietSeal Pro.
- .8 Sound Dampening Putty:
 - .1 Purpose made, acoustical underlayment in 178 x 178 mm x 3.17 mm thick pads.
 - .2 For sound damping around outlet/switch boxes, conduit, pipes, ducts and other items penetrating sound rated or sound insulation wall and ceiling assemblies.
 - .3 Acceptable Products: Serious Energy QuietPutty 380.
- .9 Insulating Strip: Rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

2.05 ACOUSTIC INSULATION

- .1 Sound Attenuation Batt Insulation: To ASTM C665 Type 1, CAN/ULC-S702 Type 1, unfaced mineral fibre, thickness indicated, width to suit stud spacing.
 - .1 Acceptable Products: Owens Corning Sound Attenuation Fire Batts/Mineral Wool; Johns Mansville Sound-Shield; CGC Thermafiber Sound Attenuation Fire Blankets; Rockwool AFB.

Part 3 Execution

3.01 ERECTION

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .3 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .4 Install gypsum board with face side out.
- .5 Do not install damaged or damp boards.
- .6 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.02 SUSPENDED AND FURRED CEILINGS

- .1 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840, except where indicated or specified otherwise.
- .2 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .3 Install work level to tolerance of 1:1200
- .4 Provide additional ceiling suspension hangers to support all items suspended from ceilings such as grilles, diffusers, etc. Refer to drawings and specifications and co-ordinate with other trades for specific items.

- .5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .6 Install 20 mm x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .7 Provide casing beads around perimeter of suspended gypsum board ceilings and adjacent walls. Make joint tight fitting to wall.
- .8 Furr for gypsum board faced vertical bulkheads within or at termination of ceilings.
- .9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

3.03 WALL FURRING

- .1 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where indicated otherwise.
- .2 Frame openings and around built-in equipment on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .3 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.04 GYPSUM BOARD APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .2 Apply single layer gypsum board to furring or framing using screw fasteners. Apply double layer gypsum board to furring or framing using screw fasteners for first layer, laminating adhesive for second layer. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
 - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
 - .3 Apply base layers at right angles to supports unless otherwise indicated.
 - .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .3 Install gypsum board full height of stud framing where studs extend to underside of overhead structures, floors or roof decks, except where otherwise indicated.
- .4 Where gypsum board is installed above finished ceilings, fit work tight to all items penetrating through gypsum board. Seal around full perimeter of items with sealant. For fire rated assemblies and smoke barriers use fire stopping in accordance with Section 07 84 00 – Fire Stopping, and acoustical sealant elsewhere.

3.05 FIRE RATED ASSEMBLIES

- .1 Construct fire rated assemblies where indicated.
- .2 Fire rated assemblies to be constructed in accordance with a ULC listed or cUL certified assembly, or in accordance with Appendix D of the NBC.
- .3 Apply Type X (fire rated) gypsum board where indicated, to obtain fire ratings as indicated or required.
- .4 For fire rated partitions and ceilings apply first and second layers with screw fasteners. No adhesives permitted. Screw spacing as follows:
 - .1 Ceilings: 150 mm on centre around perimeter and 300 mm on centre in field of sheet.
 - .2 Walls: 200 mm on centre around perimeter and 300 mm on centre in field of sheet.
- .5 At door and window openings in fire rated walls and partitions install gypsum board filler full width and length of opening to cover stud header as specified in National Building Code.
- .6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .7 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .8 Install gypsum board with face side out.
- .9 Do not install damaged or damp boards.
- .10 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.
- .11 Provide perimeter relief control joints in fire rated partitions in accordance with GA - 600.

3.06 SOUND RATED/ACOUSTICALLY INSULATED PARTITIONS

- .1 Install acoustic insulation in sound rated and sound insulated partitions and ceiling assemblies, of thickness indicated or required to provide sound rating indicated.
- .2 Install insulation tight between studs, full height of partition.
- .3 Cut and trim insulation to fit tight around protrusions, electrical boxes, and other obstructions. Leave no voids or gaps. Do not compress batts.
- .4 Apply 6 mm – 9 mm round bead of acoustical sealant to seal perimeter of sound rated partitions to prevent noise transmission and to provide required sound rating
- .5 Seal Sound-rated Partitions:
 - .1 On both sides where facings abut dissimilar materials;
 - .2 Around perimeter, in the angle formed by panels and abutting dissimilar materials;
 - .3 At intersections;
 - .4 At panel terminations in door and window frames; and
 - .5 At control joint locations before attaching the control joint to the panels.
- .6 Seal full perimeter of openings for electrical boxes, ducts, conduit and other cut-outs and penetrations in partitions where perimeter sealed with acoustical sealant.
- .7 Seal joints around penetrations in sound rated partitions using glass fibre insulation to fill joints completely.

- .8 Apply continuous beads of acoustical sealant around all openings formed for outlets, lights, etc.
- .9 Cut gypsum panels with 3 mm maximum relief at perimeter to receive sealant. Install before sealant skins.
- .10 Extrude a full bead of acoustical sealant into each joint between first layer of wallboard and floor or other adjoining surface.
- .11 Sound Dampening Putty:
 - .1 Seal around back of outlet and switch boxes with sound dampening putty.
 - .2 Clean surfaces of dust, dirt and other foreign matter that may inhibit adhesion.
 - .3 Cover back and all sides of boxes with putty and overlap and seal putty to studs or back of gypsum board.
 - .4 Cut putty pads to fit and seal around conduits and wiring entering box ensuring full sound seal.
 - .5 Pleat extra material at corners.
 - .6 Press putty pads firmly against substrate ensure full adhesion and coverage.

3.7 ACCESSORIES

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces wherever possible. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges.
- .2 Secure casing beads, corner beads and trim with screws. Staples and crimping not permitted. Secure at 300 mm on centre.
- .3 Install casing beads around perimeter of suspended ceilings and bulkheads, around openings and where gypsum board abuts a dissimilar material.
- .4 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and elsewhere indicated.
- .5 Seal joints with acoustic sealant.
- .6 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

3.8 CONTROL JOINTS

- .1 Construct control joints set in gypsum board facing and supported independently on both sides of joint.
 - .1 For joints moving in only one plane use preformed units.
 - .2 For joints moving in multiple planes use back-to-back casing beads.
- .2 Install continuous 6 mil polyethylene dust barrier behind and across control joints.
- .3 Install control joints, plumb, straight and true with not more than 1 mm gap.
- .4 Use gypsum board with tapered edges on both sides of control joint. Tape, fill and sand casing beads flush with adjacent surface.
- .5 Locate control joints where indicated, and at the following locations:
 - .1 where partitions or furring abuts a structural element or dissimilar wall or ceiling,
 - .2 where a ceiling or bulkhead abuts a structural element or dissimilar wall or other vertical penetration,
 - .3 construction changes within plane of the partition or ceiling,

- .4 partition or furring runs exceed 9 m,
 - .5 ceiling dimensions exceed 15 m for gypsum board in either direction,
 - .6 wings of "L", "U" and "T" shaped ceiling areas are joined, and
 - .7 expansion or control joints occur in structural elements of the building.
- .6 On walls locate control joints over door and window openings wherever possible. Align control joint with corner of frames.

3.9 REMEDIAL WORK

- .1 Patch and make repair existing gypsum board work where indicated and as required for alteration and renovation work of this project.
- .2 Use new materials for patchwork.
- .3 Do patchwork to same standards and workmanship as new construction.
- .4 Patch around openings cut in existing walls for installation of new frames, access doors, equipment, piping, ductwork, conduit.
- .5 Patch existing partitions where part of the partition has been demolished.
- .6 Patch openings in existing partitions where existing work has been removed.
- .7 For fire rated assemblies use materials and methods to maintain fire rating.
- .8 Make patchwork inconspicuous in final assembly.

3.10 GYPSUM BOARD FINISHING

- .1 Do taping and filling to ASTM C840, except where indicated otherwise.
- .2 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .3 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .4 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.
- .5 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .6 Sanding not required behind solid finishes and above finished ceilings.
- .7 Sand behind wall protection and lockers
- .8 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting or other thin finish coating including fabric wall coverings.

3.11 GYPSUM BOARD FINISH LEVELS

- .1 Finish gypsum board in accordance with the following finish levels for specific areas indicated.
- .2 Finish levels as defined in GA-214.
- .3 Where a fire resistance rating is required for the gypsum board assembly, details of construction and finishing shall be in accordance with reports of fire tests of assemblies that have met the fire-rating requirement, regardless of the finish level specified below.

- .4 Level 0:
 - .1 Unfinished, no taping, finishing, or accessories required.
 - .2 Locations: Not used.
- .5 Level 1:
 - .1 All joints and interior angles shall have tape embedded in joint compound. Tape and fastener heads need not be covered with joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
 - .2 Locations: above finished ceilings; plenum areas; concealed areas, and other areas not normally open to public view.
- .6 Level 2:
 - .1 All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
 - .2 Location:
 - .1 Not used.
- .7 Level 3:
 - .1 All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. One additional coat of joint compound shall be applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compounds shall be smooth and free of tool marks and ridges.
 - .2 Locations:
 - .1 Not used.
- .8 Level 4:
 - .1 All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. In addition, two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compounds shall be smooth and free of tool marks and ridges.
 - .2 Locations:
 - .1 Where gypsum board is to be painted with flat, eggshell, or satin paint.
- .9 Level 5:
 - .1 All joints and interior angles shall have tape embedded in joint compound and immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. Two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound shall or a material manufactured especially for this purpose shall be applied over entire surface completely covering the paper. The surface must be smooth and free of tool marks and ridges.
 - .2 Locations:

.1 Not used.

3.12 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.
- .2 Waste Management: separate waste materials in accordance with Section 01 74 21- Construction/Demolition Waste Management

3.13 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION