PART 1 - GENERAL

1.1 SUMMARY

1. Section Includes:
    1. Interior Gypsum Board
        1. Gypsum wallboard, Regular, Type X.
        2. Light-weight Gypsum Ceiling Board Panels.
        3. Flexible gypsum board.
        4. Abuse-resistant gypsum board.
        5. Moisture- and mould-resistant gypsum board.
    2. Speciality Panels
        1. Gypsum wallboard, Type C.
        2. Glass-Mat Interior Gypsum Board.
        3. Acoustically Enhanced Gypsum Board.
        4. Skim-Coated Gypsum Board.
    3. Tile Backing Panels.
        1. Glass-mat, water-resistant backing board.
        2. Cementitious backer units.
    4. Trim accessories, including trims at window mullion interface.
    5. Joint treatment materials and spackling.
    6. Access doors in non-rated ceiling with lids made of gypsum board.

2. Related Work:
    1. Division 09 Section *Interior Painting*.

1.2 Types of Items not described in this Section:
1. Blanket insulation.
2. Metal access doors and frames.
3. Non-structural framing and suspension systems that support gypsum board panels.
4. Gypsum panels used in exterior applications.
5. Gypsum sheathing.
6. Metal shaft-wall framing, gypsum shaft liners, and other components of shaft-wall assemblies.
7. Textured finish.
8. Aluminum trims.
9. Wood and plywood blocking.

1.3 ACTION SUBMITTALS

1. Product Data: For each type of product.

2. Samples: Submit samples for the following products:
    1. Trim Accessories: Full-size Sample in 300 mm long length for each trim accessory indicated or required.

1.4 DELIVERY, STORAGE AND HANDLING

1. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

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

2. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

3. Do not install panels that are wet, those that are moisture damaged, and those that are mould damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mould damaged include, but are not limited to, fuzzy or splotchy surface contamination and discolouration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

1. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to CAN/ULC-S101 by an independent testing agency.

2. 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.

3. Low-Emitting Materials: (LEED projects only) For ceiling and wall assemblies, provide materials and construction identical to those tested in assembly and complying with the testing and product requirements of the California Department of Health Services' *Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers*.

2.2 GYPSUM BOARD, GENERAL

1. Recycled Content of Gypsum Panel Products: (For LEED projects only) Postconsumer recycled content plus one-half of preconsumer recycled content not less than 15 percent.

2. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

3. Long Edges: Tapered.

2.3 INTERIOR GYPSUM BOARD

1. Gypsum Board, Regular: ASTM C 1396/C 1396M.

2. Gypsum Board, Type X: ASTM C 1396/C 1396M.

3. Light-weight Gypsum Ceiling Panels: ASTM C 1396/C 1396M

4. Flexible Gypsum Board: ASTM C 1396/C 1396M. Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.
   1. Thickness: 6.4 mm.

5. Abuse-Resistant Gypsum Board: ASTM C 1629/C 1629M.
    1. Mould Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
    2. Levels:
        1. Level 1 – Typical, unless noted otherwise on Drawings.
        2. Level 2 – Gymnasiums and other locations if noted on Drawings.
        3. Level 3 (most durable) – Only if specifically noted on Drawings.

6. Moisture- and Mould-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mould-resistant core and paper surfaces.
    1. Mould Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 SPECIALTY GYPSUM BOARD

1. Gypsum Board, Type C: ASTM C 1396/C 1396M. Manufactured to have increased fire-resistive capability.

2. Glass-Mat Interior Gypsum Board: ASTM C 1658/C 1658M. With fiberglass mat laminated to both sides. Specifically designed for interior use.
    1. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

3. Acoustically Enhanced Gypsum Board: ASTM C 1396/C 1396M. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.

4. Skim-Coated Gypsum Board: ASTM C 1396/C 1396M. Manufactured with a factory-applied skim coat.

2.5 TILE BACKING PANELS

1. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
    1. Mould Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
    1. Mould Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.6 TRIM ACCESSORIES

1. Interior Trim: ASTM C 1047.
    1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
    2. Shapes:
        1. Cornerbead.
        2. Bullnose bead.
        3. LC-Bead: J-shaped; exposed long flange receives joint compound.
        4. L-Bead: L-shaped; exposed long flange receives joint compound.
        5. U-Bead: J-shaped; exposed short flange does not receive joint compound.
        6. Expansion (control) joint.
        7. Curved-Edge Cornerbead: With notched or flexible flanges.

2. Trim for Non-Rated Ceiling Access Hatches with lids made of Gypsum Board:
    1. Model 8020 PVC Access Door Beads marketed by Trim-Tex, www.trim-tex.com; or equivalent.

3. Trim at Wall Interface with Window Mullions

1. PC350 Frame End Cap with snap on PVC battens, clear anodized aluminum, size to suit, as marketed by PC350, www.pc350.com; or equivalent.
    1. Provide continuous black neoprene gasket between end cap and window mullion.

2.7 JOINT TREATMENT MATERIALS

1. General: Comply with ASTM C 475/C 475M.

2. Joint Tape:
    1. Interior Gypsum Board: Paper.
    2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
    3. Tile Backing Panels: As recommended by panel manufacturer.

3. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
    1. Prefilling: At open joints, rounded or bevelled panel edges, and damaged surface areas, use setting-type taping compound.
    2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
        1. Use setting-type compound for installing paper-faced metal trim accessories.
    3. Fill Coat: For second coat, use drying-type, all-purpose compound.
    4. Finish Coat: For third coat, use drying-type, all-purpose compound.
    5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

4. Joint Compound for Tile Backing Panels:
    1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
    2. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.8 AUXILIARY MATERIALS

1. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

2. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
    1. For LEED projects only:
        1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
        2. Laminating adhesive shall comply with the testing and product requirements of the California Department of Health Services' *Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers*.

3. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
    1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.84 to 2.84 mm thick.
    2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

4. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
    1. For LEED projects only:

1. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Acoustical joint sealant shall comply with the testing and product requirements of the California Department of Health Services' *Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers*.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

2. Examine panels before installation. Reject panels that are wet, moisture damaged, and mould damaged.

3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

1. Comply with ASTM C 840.

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

3. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1.5 mm of open space between panels. Do not force into place.

4. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

5. Form control and expansion joints with space between edges of adjoining gypsum panels.

6. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 0.7 sq. m in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 6.4 to 9.5 mm wide joints to install sealant.

7. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 6.4 to 12.7 mm wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

8. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

9. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

10. STC-Rated Assemblies: Seal construction at perimeters, behind control 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 C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

3.3 APPLYING INTERIOR GYPSUM BOARD

1. Single-Layer Application:
    1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
    2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
        1. Stagger abutting end joints not less than one framing member in alternate courses of panels.
        2. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
    3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
    4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

2. Multilayer Application:
    1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 400 mm minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
    2. 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.
    3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
    4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

4. Curved Surfaces:
    1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 300 mm long straight sections at ends of curves and tangent to them.
    2. For double-layer construction, fasten base layer to studs with screws 400 mm o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 300 mm o.c.

3.4 APPLYING TILE BACKING PANELS

1. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile, unless otherwise noted on Drawings. Install with 6.4 mm gap where panels abut other construction or penetrations.
   1. Install Type X panels where required for fire-resistance-rated assembly.

2. Cementitious Backer Units: ANSI A108.11.

3. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING TRIM ACCESSORIES

1. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

2. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Public Works Representative for visual effect.

3. Interior Trim: Install in the following locations:
   1. Cornerbead: Use at outside corners unless otherwise indicated.
   2. Bullnose Bead: Use where indicated.
   3. LC-Bead: Use at exposed panel edges.
   4. L-Bead: Use where indicated.
   5. U-Bead: Use where indicated.
   6. Curved-Edge Cornerbead: Use at curved openings.

4. Install wall end cap where gypsum board partition intersects with window mullion.

3.6 CEILING ACCESS HATCHES

1. Install ceiling access hatches in non-rated gypsum board ceilings as required to access mechanical or electrical devices.

2. Construct access hatches as per manufacturer's instructions for concealed hatches.

3. Construct access hatches parallel and perpendicular to adjacent wall surfaces and in alignment with each other whenever possible.

4. Construct access hatches 450 x 450 mm in size or larger as required for proper access. Limit variation in hatch sizes.

3.7 FINISHING GYPSUM BOARD

1. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

2. Prefill open joints, rounded or bevelled edges, and damaged surface areas.

3. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

4. Gypsum Board Finish Levels: Finish panels to according to ASTM C 840:

5. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.

6. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.8 PROTECTION

1. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

2. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

3. Remove and replace panels that are wet, moisture damaged, and mould damaged.
    1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
    2. Indications that panels are mould damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

3.9 SCHEDULES

1. Gypsum Board: Utilize the following gypsum board panels for the following applications::
    1. Regular Type: Typical, unless noted otherwise.
    2. Type X: Where required for fire-resistance-rated assembly.
    3. Type C: Only where required for specific fire-resistance-rated assembly indicated.
    4. Flexible Type: Installed at curved assemblies in two-layer application.
    5. Abuse-Resistant Type: Only if noted on drawings, Regular and Type X as required.
    6. Moisture- and Mould-Resistant Type, Regular and Type X as required, as follows:
        1. Throughout school building interiors.
        2. Interior face of exterior walls.
        3. Interior of locker rooms.
        4. Interior of washrooms.
        5. Interior of shower rooms.
        6. Interior of janitorial closet and storage rooms not otherwise tiled.
        7. In other locations specifically indicated on drawings.

2. Tile Backing Panels: Utilize the following tile backing panels in the following applications:
    1. Glass-mat, water-resistant backing board: Typical, unless noted otherwise, Regular and Type X as required.
    2. Cementitious backer units: Only when specifically noted on drawings.

3. Gypsum Board Finish Levels: Provide the following finish levels in the following locations.
    1. Level 1: Ceiling plenum areas, concealed areas, and where noted.
    2. Level 2: Panels that are substrate for tile.
    3. Level 3: Panels that are substrate for epoxy wall coatings.
    4. Level 4: At panel surfaces exposed to view when completed, unless noted otherwise.
        1. Primer and its application to surfaces are specified in Division 09 Section *Interior Painting*.

5. Level 5: At panel surfaces scheduled for a semi-gloss or high-gloss paint finish but not within designated M&E rooms; and in other locations noted on Drawings.
    1. Primer and its application to surfaces are specified in other Division 09 Section *Interior Painting*.
    2. If drawings do not note the required paint gloss level then assume, for pricing purposes, that a Level 5 finish will not be required.

END OF SECTION