

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

SECTION INCLUDES

Gypsum Board
Non-Structural Metal Framing
Exterior Gypsum Sheathing
Backerboard
Veneer Plaster (Filed Sub-Bid)
Trim Accessories
Acoustical Sealant
Auxiliary Materials

RELATED SECTIONS

06 10 00 Rough Carpentry
07 10 00 Waterproofing and Damproofing
07 20 00 Building Insulation and Moisture Protection
07 90 00 Sealants
09 30 00 Tile
09 90 00 Painting

TECHNICAL STANDARDS AND INFORMATION

Gypsum Association Representing manufacturers of gypsum board in the US and Canada www.gypsum.org
Drywall Information Trust Fund drywallinformation.org
Drywall Recycling www.gypsumrecycling.us/, and www.drywallrecycling.org,
USG Installation and Application Guides www.usg.com

ENVIRONMENTAL ISSUES



PRODUCTS

Consider specifying products locally produced with recycled content. Gypsum board is increasingly available with high amounts of recycled content. Some of it is produced within 500 miles. Synthetic gypsum is a by product of coal fire plants called flue-gas-desulfurization (FGD) gypsum. The use of gypsum board with synthetic gypsum reduces the amount of FGD that enters landfills. Be aware that some overseas products have been shown to have less quality control of the purity of the fly ash and have had a pyrite oxidation of the fly ash to negative affect.

Gypsum board recycling is available locally and should be included in the Construction and Demolition Waste Management Plan. Do not place leftover scraps of gypsum board in the walls as this may inhibit future plumbing or electrical work. Be aware that when using glass fiber containing products that they cannot be recycled.



If a laminating adhesive is to be used, a low-VOC product should be specified to promote better indoor air quality for construction workers and residents.

FIRE SAFETY

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

Polyurethane foam structural adhesives are not allowed.

Gypsum Board installation in modular construction has historically been attached with polyurethane foam structural adhesive. Using foam adhesive rather than mechanical fasteners allows the modular units to be shipped to the site with minimal damage to the drywall due to screw or nail popping.

Polyurethane foam structural adhesives are highly flammable. Their use in the voids often present in modular construction introduces significant flammable material in these voids. Furthermore, at temperatures far below those present in a fire situation, these adhesives lose their strength, allowing the gypsum board to collapse, thus further intensifying the fire hazard.

Currently in Massachusetts ceiling gypsum board must be installed with mechanical fasteners. These standards require fasteners and no adhesive. The same standard is applied to wall construction, although the risk is somewhat less.

Fire safety can also be enhanced by going beyond current code requirements and installing draft barriers within the ceiling plenum space. Code requires draft stopping into areas of 1000 sf or less, (currently proposed to be reduced to 500 sf) but the large volume of space between modular units suggests a need for smaller areas.

MATERIALS

GYPSUM BOARD

Use Interior Gypsum Board complying with ASTM C 36/C36M or ASTM 1396C 1396M. Use water-resistant gypsum board and fire-rated water resistant gypsum board complying with ASTM C 630.

Gypsum wallboard manufacturers include American Gypsum, CertainTeed Gypsum, United States Gypsum (USG), National Gypsum and Georgia-Pacific Gypsum. Gypsum board manufacturers have several different types of gypsum wall board including standard (white board), fire rated (type X), acoustically enhanced, water resistant (green board MR), plaster base gypsum board (blue board) and mold resistant board.

All gypsum drywall panels come in standard sizes but custom sizes are available for large orders. Thickness of gypsum board varies from from ¼ to 1 inch. Most building codes mandate either 1/2 or 5/8 inch drywall for single-thickness applications. Thinner ¼ and 3/8 inch to be used to cover existing walls and ceilings. Select panel sizes and layout panels to minimize waste. Reuse cutoffs to the greatest extent possible in closets or other areas where the cutoff sizes are appropriate to the size of the space being finished. Standard drywall works well in most situations but codes may require Type X, Type MR or other types depending on the application or the UL Fire Rating.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

Moisture resistant type gypsum wall board (green board or other paper faced board) is not recommended in bathroom and laundry areas. Use Densglass or glass fiber covered panels in these areas.

Use flexible caulk to fill the gap between the rough floor and the bottom of the drywall for air sealing, to keep insects out, and to provide a backing for the vinyl base.

Use paper joint tape for interior gypsum wallboard. Self adhering fiberglass joint tape is only permitted where veneer plaster will be used. Used with joint compound, it is not as rigid and cracking may occur.

Joint compound for prefilling shall be interior gypsum board setting-type taping compound. Embedding, first, second & third coats shall be drying-type, all purpose joint compound. Pre-mixed compounds shall be free of antifreeze, vinyl adhesives, preservatives, biocides and other slow releasing compounds.

DESIGN

Drywall assembly types should take into consideration the requirements of fire ratings, wet locations and acoustic details within the design of the overall wall construction..

Use cement board such as Durock behind tile in bathrooms and DensArmor Plus paperless gypsum board smooth finish or Fiberock Brand Tough Panel everywhere else in the bathroom. Blue board with skim coat of plaster may be used on ceilings. Install cement board full height on walls to receive ceramic tile or solid surfacing.

In DDS group homes, install blue board with skim coat on walls and ceilings to provide a more durable surface.

Use fire rated Type X gypsum drywall assemblies or UL rated wall assemblies for rated walls and shaft walls as required by code.

EXECUTION

Application and Finishing of Gypsum Board is to comply with ASTM C840.

Fasten all gypsum drywall with screws, not nails at 16" on center for wall and 12" on center for ceilings. At corners, end walls and top plates use drywall clips or drywall stops to reduce the need for wood or metal blocking and to allow for a fully insulated exterior envelope. Where roof trusses are used, in order to mitigate ceiling cracking, the use of clips is required at ceiling to wall joints. Do not screw the ceiling gypsum board directly to the trusses within 16 inches of an interior wall.

At basement floor slabs, hold gypsum board a minimum of ½" off the floor to prevent moisture wicking into the board. Close the gap with sealant to prevent air infiltration.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

Install drywall according to the requirements of the wall type. Attach corner beads with screws, do not clinch. Install expansion joints as shown on the drawings on walls and ceilings.

There are several levels of gypsum board finish that can be specified. The minimum level of finish required is for all joints and interior angles to have tape embedded in joint compound and two coats of joint compound applied over all joints, angles, fastener heads and accessories.

However, in certain locations the level of finish can be reduced for all joints and interior angles to have tape embedded in joint compound only which is referred to as "fire taping".

NON-STRUCTURAL METAL FRAMING

MATERIALS

REFER TO SECTION 05 10 00 FOR STRUCTURAL FRAMING

Steel framing members for walls and partitions within 10 feet of exterior walls must have a protective hot-dip galvanized coating meeting the requirements of ASTM A653, G 40.

Steel studs and runners shall comply with ASTM C645 with a thickness of 0.0329 inch (20 gauge) and a depth of 3-5/8 inch.

Deflection track shall be manufacturer's top runner complying with the requirements of ASTM C645 and with 2 inch deep flanges.

Shaft wall studs and runners shall have a protective hot-dip galvanized coating meeting the requirements of ASTM A653, G 40. Studs, track (runner) and jamb struts shall have a minimum thickness of 0.0329 inch (20 gauge).

Steel rigid furring channels shall be hat shaped meeting the requirements of ASTM C645 and have a thickness of 0.0179 inch (25 gauge) and a depth of 7/8 inch.

Furring brackets shall be serrated-arm type, adjustable, fabricated from corrosion-resistant steel sheet complying with ASTM C645 and have a minimum thickness of base metal of 0.0329 inch (20 gauge) designed for screw attachment to steel studs and steel rigid furring channels used for furring.

Z-Furring members shall have a slotted or nonslotted web fabricated from steel sheet complying with ASTM A653 with a thickness of 0.0179 inch (25 gauge), face flange of 1-1/4 inch, wall-attachment flange of 7/8 inch and a depth required to fit insulation thickness indicated.

Steel channel bridging shall be cold-rolled steel, 0.0598 inch (16 gauge) minimum thickness, 7/16 inch wide flanges and 1-1/2 inch deep.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

Steel flat strap and backing plate shall be made of sheet steel complying with ASTM A653 or ASTM A568 and a minimum base thickness of 0.0179 inch (25 gauge).

Fasteners for metal framing shall be of the type, material, size, quantity, corrosion resistance, holding power and other properties to fasten steel framing and furring members securely to substrates and complying with the recommendations of the gypsum board manufacturers for applications indicated.

EXECUTION

Install non-structural metal framing to comply with ASTM C754 and with ASTM C840 requirements that apply to framing installation. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings or similar construction. Install runners at floors, ceilings and structural walls and columns where gypsum board stud assemblies abut other construction. Wood blocking and nested studs should be installed at door and window openings and in locations to receive wood trim.

EXTERIOR GYPSUM SHEATHING

MATERIALS

Exterior gypsum sheathing is manufactured to meet the requirements of ASTM C 1396/C 79.

Exterior gypsum sheathing can be a water resistant gypsum board product with a treated core such as Gold Bond Brand Gypsum Sheathing by National Gypsum or a paperless product with a treated core such as Paperless DensGlass Gold Exterior Sheathing by Georgia-Pacific. ProRoc and GlasRoc by CertainTeed is another weather-resistant product which is an appropriate in stucco systems and traditional cladding systems.

DESIGN

Exterior gypsum sheathing can be used with either wood or cold-formed metal framing wall systems to support, stucco, brick veneer and cement. Advantages of gypsum sheathing over plywood sheathing are water resistant and fire rating. Exterior gypsum sheathing is not recommended for wood frame commercial buildings over 3 stories. The use of paper faced products is not acceptable. In the selection exterior sheathing consideration should be given to the structural factors required to be achieved by the sheathing such as shear strength and pull strength of the fastening.

EXECUTION

Install exterior gypsum sheathing according to manufacturers recommendations for the exterior wall cladding system. Gypsum exterior sheathing is designed for use as a substrate that is covered by an exterior

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

wall cladding system. Exterior gypsum sheathing can be left exposed for up to one month but treated core gypsum sheathing should be covered immediately with a weather-resistive barrier such as building felt or equivalent. For other specific weather resistive barrier requirements, consult the building code or cladding manufacturer.

BACKER BOARD

DESIGN

Although backer board may be specified in the Gypsum Board Specification section it is preferred to have it included in the Tile section (which is typically a filed sub trade).

Backer board is recommended in bathrooms behind tile in tub shower surrounds and walk-in showers. Follow manufacturers design details and shower details from the Tile Council of America (TCA) *Handbook for Ceramic Tile Installation*. Fiberglass faced gypsum board is also acceptable and may even be preferred.

Backer board or abuse-resistant gypsum interior panels can also be used in areas where impact resistance is a concern where standard interior gypsum drywall will not hold up. Backer board or abuse-resistant gypsum interior panels are recommended in corridors of fully accessible units or group homes where contact with wheelchairs is a concern.

MATERIALS

Cementitious backer board units must comply with ANSI A108.1 & A118.9 and to ASTM D3273 for mold resistance.

There are three acceptable manufacturers of tile backerboard: DensShield by Georgia-Pacific, Cement Board by James Hardie or Durock by USG. James Hardie Cement Board and Durock are all cementitious board products. DensShield is a paperless tile backer with glass mats on the front and back sides and a proprietary water-resistant treated core and meets ASTM C 1178. Most of these backerboards are available in ¼" and ½" and some in 7/16" or 5/8" thicknesses. Thickness of backer board should match the drywall thickness used in the room for a smooth transition between adjoining materials. Coordinate backerboard section with tile section of the specifications. Use 2" wide, alkali resistant, polymer-coated glass fiber mesh for joints between cementitious backerboard units and between high-density core backerboard.

Joint compound for cementitious backer units shall be a latex-fortified Portland cement mortar.

EXECUTION

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

In wet areas, install tile on cementitious backerboard and follow manufacturer installation recommendations. Extend tile with cement backerboard 6 inches past tub.

Apply glass fiber mesh joint tape and latex-fortified Portland cement mortar on cement backerboard as recommended by manufacturer.

DO NOT use drywall compound on Durock.

VENEER PLASTER



Plaster and Stucco are stipulated filed sub-bid categories under M.G.L. Chapter 149, §44F. If the cumulative estimated value of the work in this section exceeds \$20,000 and the project total cost is \$100,000.00 or greater, it triggers the filed sub-bid requirement.

MATERIALS

When using a veneer plaster finish use plaster based gypsum board (blue board) as the wall or ceiling underlayment such as Imperial Board by USG.

Veneer plaster shall be regular strength or high strength finish plaster, with one-coat meeting ASTM C 587.

Plaster surfaces offer better joint concealment, fewer nail pops, a hard monolithic surface which can be easily decorated, and plaster is more quickly finished than drywall.

DESIGN

Veneer plaster finishes can offer a distinct advantage over drywall - Dust is kept to a minimum with these products. The veneer plaster is applied in a wet state and troweled to a smooth surface. No sanding is required.

Textured plaster finish is not recommended on new work due to product failure and surface peeling after repeated applications of paint over ceiling coating during building rehab.

EXECUTION

Fasten blue board gypsum drywall with screws, not nails at 12" on center.

Apply Plaster in a thin coat directly over the gypsum panel. The plaster thickness usually ranges between 1/16th and 3/32nd of an inch. Follow installation standard of ASTM C 843.

TRIM ACCESSORIES

MATERIALS

09 20 00 • GYPSUM

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

Trim accessories includes corner beads, edge trim, LC-Beads, L-Beads, U-Beads and control joints complying with ASTM C 1047. Acceptable material for trim accessories shall be sheet steel zinc coated hot-dip process or rolled zinc.

DESIGN

In buildings where wheelchairs will be used, protect all corners with corner trim guards.

EXECUTION

Fasten trim accessories with back flanges to framing with the same fasteners used to fasten gypsum board.

Install edge trim where the edge of gypsum board panels would otherwise be exposed.

Corner beads are to be installed on outside corners, unless otherwise indicated. .

LC-bead with both face and back flanges, face flange formed to receive joint compound. Use LC-beads for edge trim.

L-bead with face flange only, face flanged formed to receive joint compound. Use L-bead where indicated.

U-bead with face and back flanges, face flange formed to be left without application of joint compound. Use U-bead where indicated.

Use one piece control joint formed with V-shaped slot and removable strip covering slot opening.

Nails are not allowed for applying trim accessories to gypsum board.

LC-bead used at exposed gypsum board panel edges.

ACOUSTICAL SEALANT

MATERIALS

Acoustical sealant for exposed and concealed joints should be nonsag, paintable and nonstaining latex sealant complying with ASTM C 834. The sealant is to have flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.

EXECUTION

Seal all joints between acoustical partitions work and adjoining gypsum drywall panels. Sealant should be applied around the full perimeter of the wall and at any outlets. Seal perimeters of all projections through acoustical partitions such as pipes and conduits. Seal perimeters of all frames and other items set into acoustical gypsum board installations. Seal the back of all control joints in acoustical gypsum board installations. Also, coordinate acoustical sealant of drywall penetrations with Electrical, Plumbing and HVAC sections.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 9 • FINISHES

09 20 00 • GYPSUM

Acoustic sealant should be specified in demising walls for better sound insulation. Use sealants that meet the required fire rating of the wall.

AUXILIARY MATERIALS

MATERIALS

Steel drill screws must comply with ASTM C 1002 for fastening gypsum board to steel members less than 0.033 inch thick and for fastening gypsum board to gypsum board. Use appropriate size screws for the thickness of the drywall to be installed.

Steel drill screws must comply with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.

Use steel drill screws of type and size recommended by panel manufacturer for fastening cementitious backerboard.

Special laminating adhesive or joint compound recommended for laminating gypsum board panels.

Spot Grout must comply with ASTM C 475 and be setting-type joint compound recommended for spot-grouting hollow metal door frames.

Drywall screws are recommended over drywall nails because they provide better holding power, minimize popping and help prevent damage to the panel.