
USACE/NAVFAC/AFCEA UFGS-09250 (November 2001)

PREPARING ACTIVITY: NAVFAC Replaces
UFGS-09250A (April 2001) and
UFGS-09250N (September 2001)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 25 June 2004

SECTION TABLE OF CONTENTS

DIVISION 09 - FINISHES

SECTION 09250

GYPSUM BOARD

11/01

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY, STORAGE, AND HANDLING
 - 1.3.1 Delivery
 - 1.3.2 Storage
 - 1.3.3 Handling
- 1.4 ENVIRONMENTAL CONDITIONS
 - 1.4.1 Temperature
 - 1.4.2 Exposure to Weather
- 1.5 QUALIFICATIONS

PART 2 PRODUCTS

- 2.1 MATERIALS
 - 2.1.1 Gypsum Board
 - 2.1.1.1 Regular
 - 2.1.1.2 Foil-Backed
 - 2.1.1.3 Type X (Special Fire-Resistant)
 - 2.1.2 Gypsum Backing Board
 - 2.1.2.1 Regular
 - 2.1.2.2 Foil-Backed
 - 2.1.2.3 Type X (Special Fire-Resistant)
 - 2.1.3 Regular Water-Resistant Gypsum Backing Board
 - 2.1.3.1 Regular
 - 2.1.3.2 Type X (Special Fire-Resistant)
 - 2.1.4 Glass Mat Water-Resistant Gypsum Tile Backing Board
 - 2.1.4.1 Regular
 - 2.1.4.2 Type X (Special Fire-Resistant)
 - 2.1.5 Glass Mat Covered or Reinforced Gypsum Sheathing
 - 2.1.5.1 Glass Mat Covered or Reinforced Gypsum Sheathing Sealant
 - 2.1.6 Impact Resistant Gypsum Board
 - 2.1.6.1 Structural Failure Test
 - 2.1.6.2 Indentation Test

- 2.1.7 Predecorated Gypsum Board
- 2.1.8 Cementitious Backer Units
- 2.1.9 Joint Treatment Materials
 - 2.1.9.1 Embedding Compound
 - 2.1.9.2 Finishing or Topping Compound
 - 2.1.9.3 All-Purpose Compound
 - 2.1.9.4 Setting or Hardening Type Compound
 - 2.1.9.5 Joint Tape
- 2.1.10 Fasteners
 - 2.1.10.1 Nails
 - 2.1.10.2 Screws
 - 2.1.10.3 Staples
- 2.1.11 Adhesives
 - 2.1.11.1 Adhesive for Fastening Gypsum Board to Metal Framing
 - 2.1.11.2 Adhesive for Fastening Gypsum Board to Wood Framing
 - 2.1.11.3 Adhesive for Laminating
- 2.1.12 Gypsum Studs
- 2.1.13 Shaftwall Liner Panel
- 2.1.14 Accessories
- 2.1.15 Asphalt Impregnated Building Felt
- 2.1.16 Water

PART 3 EXECUTION

- 3.1 EXAMINATION
 - 3.1.1 Framing and Furring
 - 3.1.2 [Gypsum Board] [and] [Framing]
 - 3.1.3 [Masonry] [and] [Concrete] Walls
- 3.2 APPLICATION OF GYPSUM BOARD
 - 3.2.1 Application of Single-Ply Gypsum Board to Wood Framing
 - 3.2.2 Application of Two-Ply Gypsum Board to Wood Framing
 - 3.2.3 Adhesive Nail-On Application to Wood Framing
 - 3.2.4 Semi-Solid Gypsum Board Partitions
 - 3.2.5 Solid Gypsum Board Partitions
 - 3.2.6 Adhesive Application to Interior Masonry or Concrete Walls
 - 3.2.7 Application of Gypsum Board to Steel Framing and Furring
 - 3.2.8 Arches and Bending Radii
 - 3.2.9 Gypsum Board for Wall Tile or Tile Base Applied with Adhesive
 - 3.2.10 Exterior Application
 - 3.2.11 Glass Mat Covered or Fiber Reinforced Gypsum Sheathing
 - 3.2.12 Floating Interior Angles
 - 3.2.13 Control Joints
 - 3.2.14 Application of Foil-Backed Gypsum Board
 - 3.2.15 Application of Predecorated Gypsum Board
 - 3.2.16 Application of Impact Resistant Gypsum Board
- 3.3 APPLICATION OF CEMENTITIOUS BACKER UNITS
 - 3.3.1 Application
 - 3.3.2 Joint Treatment
- 3.4 FINISHING OF GYPSUM BOARD
 - 3.4.1 Uniform Surface
 - 3.4.2 Metal Trim for Predecorated Gypsum Board
- 3.5 SEALING
 - 3.5.1 Sealing for Glass Mat or Reinforced Gypsum Board Sheathing
- 3.6 FIRE-RESISTANT ASSEMBLIES
- 3.7 PATCHING
- 3.8 SHAFT WALL FRAMING

-- End of Section Table of Contents --

USACE/NAVFAC/AFCEA UFGS-09250 (November 2001)

PREPARING ACTIVITY: NAVFAC Replaces
UFGS-09250A (April 2001) and
UFGS-09250N (September 2001)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 25 June 2004

SECTION 09250

GYPSUM BOARD 11/01

NOTE: This guide specification covers the requirements for gypsum board, cementitious backer units, and accessories intended for use in drywall construction.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

This guide specification includes tailoring options for Fire-rated construction. Selection or deselection of a tailoring option will include or exclude that option in the section, but editing the resulting section to fit the project is still required.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

Reference 05400 COLD-FORMED METAL FRAMING for load bearing studwork. Reference 09100 METAL SUPPORT ASSEMBLIES for non-loadbearing studs, furring and ceiling suspension systems.

NOTE: On the drawings, show:

1. Locations of each type of gypsum board, backing

board and cementitious backer units, using same terminology as in the specification.

2. Locations and UL or GA design numbers for fire rated gypsum board and cementitious backer unit assemblies.

3. Locations of asphalt impregnated building felt if gypsum sheathing is used or if cementitious backer units are used in wet areas.

PART 1 GENERAL

1.1 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest guide specification. Use of SpecsIntact automated reference checking is recommended for projects based on older guide specifications.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|--------------|--|
| ANSI A108.1 | (1999) Installation of Ceramic Tile; including A108.1A-C, 108.4-.13, 118.1-.10, A136.1 |
| ANSI A108.11 | (1992) Interior Installation of Cementitious Backer Units |

ASTM INTERNATIONAL (ASTM)

- | | |
|---------------------|--|
| ASTM C 1002 | (2001) Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs |
| ASTM C 1047 | (1999) Accessories for Gypsum Wallboard and Gypsum Veneer Base |
| ASTM C 1177/C 1177M | (2001) Glass Mat Gypsum Substrate for Use as Sheathing |
| ASTM C 1178/C 1178M | (2001) Glass Mat Water-Resistant Gypsum Backing Panel |
| ASTM C 1396/C 1396M | (2003) Gypsum Board |
| ASTM C 36/C 36M | (2001) Gypsum Wallboard |
| ASTM C 442/C 442M | (2001) Gypsum Backing Board, Gypsum |

	Coreboard, and Gypsum Shaftliner Board
ASTM C 475	(2002) Joint Compound and Joint Tape for Finishing Gypsum Board
ASTM C 514	(2001) Nails for the Application of Gypsum Board
ASTM C 557	(2003) Adhesives for Fastening Gypsum Wallboard to Wood Framing
ASTM C 630/C 630M	(2001) Water-Resistant Gypsum Backing Board
ASTM C 79/C 79M	(2003) Treated Core and Nontreated Core Gypsum Sheathing Board
ASTM C 840	(2003) Application and Finishing of Gypsum Board
ASTM C 954	(2000) 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
ASTM C 960/C 960M	(2001) Predecorated Gypsum Board
ASTM D 1037	(1999) Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
ASTM D 1149	(1999) Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM D 226	(1997a) Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
ASTM D 2394	(1983; R 1999) Simulated Service Testing of Wood and Wood-Base Finish Flooring
ASTM D 412	(1998a; R 2002e1) Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D 5420	(1998a) Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)
ASTM D 624	(2000e1) Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
ASTM E 695	(1979; R 1997e1) Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading
ASTM E 84	(2003) Surface Burning Characteristics of Building Materials

GYPSUM ASSOCIATION (GA)

GA 214	(1996) Recommended Levels of Gypsum Board Finish
GA 216	(2000) Application and Finishing of Gypsum Board
GA 224	(1997) Installation of Predecorated Gypsum Board
GA 253	(1999) Application of Gypsum Sheathing
GA 600	(2003) Fire Resistance Design Manual

UNDERWRITERS LABORATORIES (UL)

UL Fire Resist Dir	(2004) Fire Resistance Directory
--------------------	----------------------------------

1.2 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the

"G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Cementitious backer units

Glass Mat Water-Resistant Gypsum Tile Backing Board

Water-Resistant Gypsum Backing Board

Glass Mat Covered or Reinforced Gypsum Sheathing

Glass Mat Covered or Reinforced Gypsum Sheathing Sealant

Impact Resistant Gypsum Board

Accessories

Submit for each type of gypsum board and for cementitious backer units.

SD-04 Samples

Predecorated gypsum board; G, [_____]

Submit for each color and pattern of predecorated gypsum board. Where colors are not indicated, submit color selection samples of not less than eight of the manufacturer's standard colors.

SD-07 Certificates

Asbestos Free Materials; G, [_____]

Certify that gypsum board types, gypsum backing board types, cementitious backer units, and joint treating materials do not contain asbestos.

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery

Deliver materials in the original packages, containers, or bundles with each bearing the brand name, applicable standard designation, and name of manufacturer, or supplier.

1.3.2 Storage

Keep materials dry by storing inside a sheltered building. Where necessary to store gypsum board and cementitious backer units outside, store off the ground, properly supported on a level platform, and protected from direct exposure to rain, snow, sunlight, and other extreme weather conditions. Provide adequate ventilation to prevent condensation.

1.3.3 Handling

Neatly stack gypsum board and cementitious backer units flat to prevent sagging or damage to the edges, ends, and surfaces.

1.4 ENVIRONMENTAL CONDITIONS

1.4.1 Temperature

Maintain a uniform temperature of not less than 10 degrees C 50 degrees F in the structure for at least 48 hours prior to, during, and following the application of gypsum board, cementitious backer units, and joint treatment materials, or the bonding of adhesives.

1.4.2 Exposure to Weather

Protect gypsum board and cementitious backer unit products from direct exposure to rain, snow, sunlight, and other extreme weather conditions.

1.5 QUALIFICATIONS

Manufacturer shall specialize in manufacturing the types of material specified and shall have a minimum of [5] [_____] years of documented successful experience. Installer shall specialize in the type of gypsum board work required and shall have a minimum of [3] [_____] years of documented successful experience.

PART 2 PRODUCTS

2.1 MATERIALS

NOTE: Check ASTM C 840, GA 216 and ANSI A108.11 for details of materials, fasteners, and application.

Conform to specifications, standards and requirements specified herein. Provide gypsum board types, gypsum backing board types, cementitious backing units, and joint treating materials manufactured from asbestos free materials only.

2.1.1 Gypsum Board

ASTM C 36/C 36M and ASTM C 1396/C 1396M.

2.1.1.1 Regular

NOTE: Use tapered and featured edge gypsum board with embedding and finishing compounds when a very flat surface is required, such as long walls with lighting at the end of the wall and down or up lighted walls.

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, [tapered] [, tapered and featured] edges. [Provide tapered and featured edge gypsum board [in Rooms _____] [as indicated].]

2.1.1.2 Foil-Backed

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, [tapered] [tapered and featured] edges.

2.1.1.3 Type X (Special Fire-Resistant)

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, [tapered] [tapered and featured] edges.

2.1.2 Gypsum Backing Board

NOTE: When thicker board is needed, replace the term
"backing board" with "coreboard", and change
dimension to 19.05-25.4 mm 3/4"-1", depending on
system used.

ASTM C 442/C 442M, gypsum backing board shall be used as a base in a
multilayer system.

2.1.2.1 Regular

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, square
edges.

2.1.2.2 Foil-Backed

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, square
edges.

2.1.2.3 Type X (Special Fire-Resistant)

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, square
edges.

2.1.3 Regular Water-Resistant Gypsum Backing Board

NOTE: For adhesive applied ceramic tile in wet
areas (tubs, shower enclosures, saunas, steam rooms,
gang shower rooms, etc.), use cementitious backer
units (ANSI A108.1) as a substrate. Specify ASTM C
630/C 630M or ASTM C 1178/C 1178M for all other
tiled areas including areas where only ceramic or
quarry tile base is to be installed, and for
ceilings in humid areas. When using water-resistant
gypsum backing board at tile applications, the metal
studs should not be spaced more than 406 mm 16
inches o.c. Specify moisture resistant gypsum board
ASTM C 630/C 630M for humid areas that are not
exposed to direct moisture.
When using moisture resistant board on ceilings,
spacing of supports should be no more than 305 mm 12
inch on center.

ASTM C 630/C 630M

2.1.3.1 Regular

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, tapered

edges.

2.1.3.2 Type X (Special Fire-Resistant)

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, tapered edges.

2.1.4 Glass Mat Water-Resistant Gypsum Tile Backing Board

ASTM C 1178/C 1178M

2.1.4.1 Regular

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, square edges.

2.1.4.2 Type X (Special Fire-Resistant)

1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, square edges.

[2.1.5 Glass Mat Covered or Reinforced Gypsum Sheathing

NOTE: This section should be used where exterior gypsum sheathing with water resistance is required (i.e. cavity sheathing over metal studs with brick veneer or as substrate for EIFS systems). Always use asphalt impregnated felt paper for sheathing protection. For additional protection or if recommended by the manufacturer, choose the paragraph for sheathing sealant.

Exceeds physical properties of ASTM C 79/C 79M and ASTM C 1177/C 1177M. Provide [12.7] [15.9,] mm [1/2] [5/8] inch, gypsum sheathing. Gypsum board shall consist of a noncombustible water-resistant core, with a glass mat surfaces embedded to the gypsum core or reinforcing embedded throughout the gypsum core. Gypsum sheathing board shall be warranted for at least 6 months against delamination due to direct weather exposure. Provide continuous, asphalt impregnated, building felt to cover exterior face of sheathing. [All joints, seams and penetrations shall be sealed with compatible sealant.]

[2.1.5.1 Glass Mat Covered or Reinforced Gypsum Sheathing Sealant

Sealant shall be compatible with gypsum sheathing, rubber washers for masonry veneer anchors, and other associated cavity wall components such as anchors and through wall flashing. Sealants for gypsum sheathing board edge seams and veneer anchor penetrations shall be the type recommended by the gypsum sheathing manufacturer and have the following performance requirements:

- a. ASTM D 412: Tensile Strength - 551 kilopascals 80 psi
- b. ASTM D 412: Ultimate Tensile Strength (maximum elongation) - 1172 kilopascals 170 psi
- c. ASTM D 624: Tear Strength, dieB, - 4.7 kN/m 27 ppi
- d. ASTM D 1149: Joint Movement Capability after 14 Days cure - percent \pm 50

]] 2.1.6 Impact Resistant Gypsum Board

NOTE: Impact resistant gypsum board should be used when abuse or vandalism of walls is anticipated and gypsum board is the only wall material alternative feasible. Consult manufacture for use restrictions of impact resistant gypsum board on exterior walls. This product requires a minimum of 20 gauge metal framing as support, coordinate with section 09100, "Metal Support Assemblies".

Some products rely on lexan backing for penetration resistance. The impervious layer will act as a vapor barrier which may not be desirable in certain wall systems and climates.

None of the paper faced gypsum products have high resistance to abrasion. Designer should consider high strength veneer plaster on wall systems using impact resistant gypsum wallboard, coordinate with section 09215, "Veneer Plaster".

1200 mm 48 inch wide, 15.9 mm 5/8 inch thick, tapered edges. Reinforced gypsum panel with imbedded fiber mesh or lexan backing testing in accordance with the following tests. Provide fasteners that meet manufacturer requirements and specifications stated within this section. Impact resistant gypsum board, when tested in accordance with ASTM E 84, shall have [a flame spread rating of 25 or less and a smoke developed rating of 50 or less for [____]] [and] [a flame spread rating of 75 or less and a smoke developed rating of 100 or less for [____]].

2.1.6.1 Structural Failure Test

ASTM E 695 or ASTM D 2394 for structural failure (drop penetration). ASTM E 695 using a 27.2 kg 60 lb sand filled leather bag, resisting no less than 407 N-m 300 ft. lb. cumulative impact energy before failure or ASTM D 2394 using 139.7 mm 5.5 inches hemispherical projectile resisting no less than 357 N-m 264 ft. lb. before failure. Test specimen stud spacing shall be 406 mm 16 inch or greater on center.

2.1.6.2 Indentation Test

ASTM D 5420 or ASTM D 1037 for indentation resistance. ASTM D 5420 using a .907 kg 32 oz weight with a 16 mm 5/8 inch hemispherical impacting head dropped once 915 mm 3 feet creating not more than 3.5 mm 0.137 inch indentation or ASTM D 1037 using no less than 213 kg 470 lb weight applied to the 11.13 mm 0.438 inch diameter ball to create not more than a 0.5 mm 0.0197 inch indentation depth.

] 2.1.7 Predecorated Gypsum Board

NOTE: Predecorated gypsum board is available only in 1200 mm 48 inch wide panels. Interior finish materials for exits, hospitals, individual rooms with capacity for 5 or more persons must have a flame spread rating of 25 or less and smoked developed rating of 50 or less. Interior finish

materials for other locations must have flame spread rating of 75 or less and smoke developed rating of 100 or less. Flame spread rating greater than 75 and smoke developed rating greater than 100 are not permitted. Refer to MIL-HDBK-1008, "Fire Protection for Facilities Engineering, Design and Construction," for further guidance on specifying flame spread and smoke developed ratings.

NOTE: If the optional phrase "as selected" is not used to designate a color (and pattern), insert a manufacturer's name and color (and pattern) designation in the blank and add the following to the end of this paragraph "The manufacturer's name and catalog designation are provided in order to describe the color (and pattern) desired. Other manufacturer's products having a similar color (and pattern) will be acceptable."

NOTE: Insert designations of rooms or areas in which different flame spread and smoke developed ratings are required.

ASTM C 960/C 960M, [regular] [Type X] gypsum board, 1200 mm 48 inches wide, [12.7] [15.9] mm [1/2] [5/8] inch thick, with a decorative wall covering (Class I) [or coating (Class II)] applied in-plant by the gypsum board manufacturer. The color [and pattern] of wall covering shall be [_____] [as selected]. [Edges shall be square with a slight bevel to produce a shallow vee joint. Wrap wall covering around edges.] Predecorated gypsum board, when tested in accordance with ASTM E 84, shall have [a flame spread rating of 25 or less and a smoke developed rating of 50 or less for [_____] [and] [a flame spread rating of 75 or less and a smoke developed rating of 100 or less for [_____]].

2.1.8 Cementitious Backer Units

NOTE: For adhesive applied ceramic tile in wet areas (tubs, shower enclosures, saunas, steam rooms, gang shower rooms), specify only cementitious backer units.

ANSI A108.1.

2.1.9 Joint Treatment Materials

ASTM C 475.

2.1.9.1 Embedding Compound

Specifically formulated and manufactured for use in embedding tape at gypsum board joints and compatible with tape, substrate and fasteners.

2.1.9.2 Finishing or Topping Compound

Specifically formulated and manufactured for use as a finishing compound.

2.1.9.3 All-Purpose Compound

Specifically formulated and manufactured to serve as both a taping and a finishing compound and compatible with tape, substrate and fasteners.

2.1.9.4 Setting or Hardening Type Compound

Specifically formulated and manufactured for use with fiber glass mesh tape.

2.1.9.5 Joint Tape

Cross-laminated, tapered edge, reinforced paper, or fiber glass mesh tape recommended by the manufacturer.

2.1.10 Fasteners

2.1.10.1 Nails

ASTM C 514. [For predecorated gypsum board provide special nails with factory coated heads of color to match wall covering materials as recommended by the predecorated gypsum board manufacturer.]

2.1.10.2 Screws

ASTM C 1002, Type "G", Type "S" or Type "W" steel drill screws for fastening gypsum board to gypsum board, wood framing members and steel framing members less than 0.84 mm 0.033 inch thick. ASTM C 954 steel drill screws for fastening gypsum board to steel framing members 0.84 to 2.84 mm 0.033 to 0.112 inch thick. Provide cementitious backer unit screws with a polymer coating.

2.1.10.3 Staples

1.5 mm thick No. 16 USS gage flattened galvanized wire staples with 11.1 mm 7/16 inch wide crown outside measurement and divergent point for base ply of two-ply gypsum board application. Use as follows:

<u>Length of Legs (mm)</u>	<u>Thickness of Gypsum Board (mm)</u>
28.6	12.7
31.8	15.9

<u>Length of Legs (inch)</u>	<u>Thickness of Gypsum Board (inch)</u>
1 1/8	1/2
1 1/4	5/8

2.1.11 Adhesives

Do not use adhesive containing benzene, carbon tetrachloride, or trichloroethylene.

2.1.11.1 Adhesive for Fastening Gypsum Board to Metal Framing

Type recommended by gypsum board manufacturer.

2.1.11.2 Adhesive for Fastening Gypsum Board to Wood Framing

ASTM C 557.

2.1.11.3 Adhesive for Laminating

For laminating two-ply gypsum board systems [and] [gypsum studs to face panels], provide adhesive recommended by gypsum board manufacturer.

2.1.12 Gypsum Studs

25 mm One inch minimum thickness and 150 mm 6 inch minimum width. Studs may be of 25 mm one inch thick gypsum board or multilayers laminated to required thickness. Conform to ASTM C 36/C 36M or ASTM C 442/C 442M for material.

2.1.13 Shaftwall Liner Panel

NOTE: Shaftwall panels are typically used for elevators, stairwells and mechanical chases that penetrate rated floor systems. When using shaftwall system, edit section 09100, "Metal Support Assemblies" to include shaftwall liner panel metal studs.

ASTM C 442/C 442M. Shaftwall liner panel shall conform to UL Fire Resist Dir for the Design Number(s) indicated. Liner Panel shall be specifically manufactured for cavity shaftwall system, with water-resistant paper faces, bevel edges, single lengths to fit required conditions, [25.4 mm] [19.05 mm] [1"] [3/4"] thick, by 610 mm 24" wide.

2.1.14 Accessories

ASTM C 1047. Fabricate from corrosion protected steel or plastic designed for intended use. Accessories manufactured with paper flanges are not acceptable. Flanges shall be free of dirt, grease, and other materials that may adversely affect bond of joint treatment. Provide prefinished or job decorated materials. [For predecorated gypsum board provide prefinished metal or plastic trim to match predecorated gypsum board.]

2.1.15 Asphalt Impregnated Building Felt

The moisture barrier over gypsum sheathing shall be 6.7 kg 15-lb asphalt impregnated felt conforming to ASTM D 226 Type I (No. 15).

2.1.16 Water

Clean, fresh, and potable.

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Framing and Furring

Verify that framing and furring are securely attached and of sizes and

spacing to provide a suitable substrate to receive gypsum board and cementitious backer units. Verify that all blocking, headers and supports are in place to support plumbing fixtures and to receive soap dishes, grab bars, towel racks, and similar items. Do not proceed with work until framing and furring are acceptable for application of gypsum board and cementitious backer units.

3.1.2 [Gypsum Board] [and] [Framing]

Verify that surfaces of [gypsum board] [and] [framing] to be bonded with an adhesive are free of dust, dirt, grease, and any other foreign matter. Do not proceed with work until surfaces are acceptable for application of gypsum board with adhesive.

3.1.3 [Masonry] [and] [Concrete] Walls

Verify that surfaces of [masonry] [and] [concrete] walls to receive gypsum board applied with adhesive are dry, free of dust, oil, form release agents, protrusions and voids, and any other foreign matter. Do not proceed with work until surfaces are acceptable for application of gypsum board with adhesive.

3.2 APPLICATION OF GYPSUM BOARD

NOTE: Coordinate with the drawings to ensure that all types of gypsum board specified are indicated. Terminology on the drawings should be identical to that in the specifications.

Apply gypsum board to framing and furring members in accordance with ASTM C 840 or GA 216 and the requirements specified herein. Apply gypsum board with separate panels in moderate contact; do not force in place. Stagger end joints of adjoining panels. Neatly fit abutting end and edge joints. Use gypsum board of maximum practical length. Cut out gypsum board as required to make neat close joints around openings. In vertical application of gypsum board, provide panels in lengths required to reach full height of vertical surfaces in one continuous piece. Surfaces of gypsum board and substrate members may be bonded together with an adhesive, except where prohibited by fire rating(s). Treat edges of cutouts for plumbing pipes, screwheads, and joints with water-resistant compound as recommended by the gypsum board manufacturer. Provide type of gypsum board for use in each system specified herein as indicated.

3.2.1 Application of Single-Ply Gypsum Board to Wood Framing

Apply in accordance with ASTM C 840, System I or GA 216.

3.2.2 Application of Two-Ply Gypsum Board to Wood Framing

Apply in accordance with ASTM C 840, System II or GA 216.

3.2.3 Adhesive Nail-On Application to Wood Framing

Apply in accordance with ASTM C 840, System III or GA 216. This method may be used in lieu of ASTM C 840, System I at the option of the Contractor.

3.2.4 Semi-Solid Gypsum Board Partitions

Provide in accordance with ASTM C 840, System IV or GA 216 .

3.2.5 Solid Gypsum Board Partitions

Provide in accordance with ASTM C 840, System V or GA 216.

3.2.6 Adhesive Application to Interior Masonry or Concrete Walls

Apply in accordance with ASTM C 840, System VI or GA 216.

3.2.7 Application of Gypsum Board to Steel Framing and Furring

Apply in accordance with ASTM C 840, System VIII or GA 216.

3.2.8 Arches and Bending Radii

Apply gypsum board in accordance with ASTM C 840, System IX or GA 216.

3.2.9 Gypsum Board for Wall Tile or Tile Base Applied with Adhesive

NOTE: For adhesive applied ceramic tile in wet areas (tubs, shower enclosures, saunas, steam rooms, gang shower rooms), specify cementitious backer board (ANSI A108.1) as the substrate; specify ASTM C 1178/C 1178M glass mat water-resistant backing board or ASTM C 630/C 630M water-resistant gypsum backing board for other tiled areas including areas where only ceramic or quarry tile base is to be installed.

In dry areas (areas other than tubs, shower enclosures, saunas, steam rooms, gang shower rooms), apply glass matt water-resistant gypsum tile backing board [or water-resistant gypsum backing board] in accordance with ASTM C 840, System X or GA 216.

3.2.10 Exterior Application

Apply exterior gypsum board (such as at soffits) in accordance with ASTM C 840, System XI or GA 216.

3.2.11 Glass Mat Covered or Fiber Reinforced Gypsum Sheathing

NOTE: Choose the bracketed option below if sealant will be applied to sheathing joints and penetrations in addition to the asphalt impregnated building felt.

Apply gypsum sheathing in accordance to gypsum association publication GA 253. Design details for joints and fasteners shall follow gypsum sheathing manufacturer's requirements and be properly installed to protect the substrate from moisture intrusion. Exposed surfaces of the gypsum sheathing shall not be left exposed beyond the manufacture's recommendation without a weather barrier cladding. Provide continuous asphalt impregnated building felt over sheathing surface in shingle fashion with edges and ends lapped a

minimum of 150 mm 6 inch. Openings shall be properly flashed. [All joints, seams and penetrations shall be sealed with compatible silicone sealant.]

3.2.12 Floating Interior Angles

Locate the attachment fasteners adjacent to ceiling and wall intersections in accordance with ASTM C 840, System XII or GA 216, for [single-ply] [and] [two-ply] applications of gypsum board to wood framing.

3.2.13 Control Joints

Install expansion and contraction joints in ceilings and walls in accordance with ASTM C 840, System XIII or GA 216, unless indicated otherwise. Control joints between studs in fire-rated construction shall be filled with firesafing insulation to match the fire-rating of construction.

3.2.14 Application of Foil-Backed Gypsum Board

Apply foil-backed gypsum board in accordance with ASTM C 840, System XIV or GA 216.

3.2.15 Application of Predecorated Gypsum Board

Apply predecorated gypsum board in accordance with GA 224. Attach predecorated gypsum board with adhesive and fasteners as recommended by the manufacturer. Conceal fasteners in the finished work.

3.2.16 Application of Impact Resistant Gypsum Board

Apply in accordance with applicable system of ASTM C 840 as specified or GA 216. Follow manufacturers written instructions on how to cut, drill and attach board.

3.3 APPLICATION OF CEMENTITIOUS BACKER UNITS

3.3.1 Application

In wet areas (tubs, shower enclosures, saunas, steam rooms, gang shower rooms), apply cementitious backer units in accordance with ANSI A108.11. A 15 lb7.6 kg asphalt impregnated, continuous felt paper membrane shall be placed behind cementitious backer units, between backer units and studs or base layer of gypsum board. Membrane shall be placed with a minimum 6 inch 150 mm overlap of sheets laid shingle style.

3.3.2 Joint Treatment

ANSI A108.11.

3.4 FINISHING OF GYPSUM BOARD

Tape and finish gypsum board in accordance with ASTM C 840, GA 214 and GA 216. Plenum areas above ceilings shall be finished to Level 1 in accordance with GA 214. Water resistant gypsum backing board, ASTM C 630/C 630M, to receive ceramic tile shall be finished to Level 2 in accordance with GA 214. Walls and ceilings to receive a heavy-grade wall covering or heave textured finish before painting shall be finished to Level 3 in accordance with GA 214. Walls and ceilings without critical lighting to receive flat paints, light textures, or wall coverings shall be finished to

Level 4 in accordance with GA 214. Unless otherwise specified, all gypsum board walls, partitions and ceilings shall be finished to Level 5 in accordance with GA 214. Provide joint, fastener depression, and corner treatment. Do not use fiber glass mesh tape with conventional drying type joint compounds; use setting or hardening type compounds only. Provide treatment for water-resistant gypsum board as recommended by the gypsum board manufacturer.

3.4.1 Uniform Surface

Wherever gypsum board is to receive eggshell, semigloss or gloss paint finish, or where severe, up or down lighting conditions occur, finish gypsum wall surface in accordance to GA 214 Level 5. In accordance with GA 214 Level 5, apply a thin skim coat of joint compound to the entire gypsum board surface, after the two-coat joint and fastener treatment is complete and dry.

[3.4.2 Metal Trim for Predecorated Gypsum Board

Finish edges, ends, and joints of predecorated gypsum board, except prefinished vee joints and monolithic type joints, with metal or plastic trim selected to match the gypsum board finish.

]3.5 SEALING

Seal openings around pipes, fixtures, and other items projecting through gypsum board and cementitious backer units as specified in Section 07920 JOINT SEALANTS. Apply material with exposed surface flush with gypsum board or cementitious backer units.

[3.5.1 Sealing for Glass Mat or Reinforced Gypsum Board Sheathing

Apply silicone sealant in a 9.5 mm3/8 inch bead to all joints and trowel flat. Apply enough of the same sealant to all fasteners penetrating through the glass mat gypsum board surface to completely cover the penetration when troweled flat. [Construction and materials shall not be placed behind sheathing until a visual inspection of sealed joints during daylight hours has been completed by Contracting Officer.]

]3.6 FIRE-RESISTANT ASSEMBLIES

NOTE: Coordinate with the drawings to ensure that UL or GA design numbers are indicated for fire-resistant assemblies. If review of building code requires pressurized enclosures, include the following:

Pressurized fire-rated gypsum board enclosures shall allow the mechanical and electrical life-safety systems to operate in accordance with the design intent. Air pressure within elevator shaft shall be 360 Pa. 7.5 psf. Air pressure within stair shaft shall be 240 Pa. 5.0 psf. Maximum mid-span deflection shall be L/360.

Wherever fire-rated construction is indicated, provide materials and application methods, including types and spacing of fasteners, [wall[and

ceiling] framing] in accordance with the specifications contained in [UL Fire Resist Dir for the Design Number(s) indicated], [or] [GA 600 for the File Number(s) indicated]. Joints of fire-rated gypsum board enclosures shall be closed and sealed in accordance with UL test requirements or GA requirements. Penetrations through rated partitions and ceilings shall be sealed tight in accordance with tested systems. Fire ratings shall be as indicated.

3.7 PATCHING

Patch surface defects in gypsum board to a smooth, uniform appearance, ready to receive finish as specified. [Remove predecorated gypsum board which cannot be restored to like-new condition. Provide new predecorated gypsum board.]

3.8 SHAFT WALL FRAMING

The shaft wall system shall be installed in accordance with the system manufacturer's published instructions. Bucks, anchors, blocking and other items placed in or behind shaft wall framing shall be coordinated with electrical and mechanical work. Fireproofing materials which are damaged or removed during shaft wall construction shall be patched or replaced.

-- End of Section --