GYPSUM ASSOCIATION 9 GYPSUM DRYWALL November 1986

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GYPSUM BOARD RECOMMENDATIONS FOR THE USE OF GYPSUM BOARD IN MANUFACTURED HOUSING

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RECOMMENDATIONS FOR THE USE OF GYPSUM BOARD IN MANUFACTURED HOUSING

1. *Scope and General Provisions*

1.1 These recommendations cover the minimum requirements for the handling, storage, cutting and application of gypsum board interior wall and ceiling finish for modular and mobile-home type manufactured housing units.

1.2 Gypsum board is typically classed noncombustible and provides flame spread ratings, when tested in accordance with ASTM E 84, of 15 for the basic board and 15 to 75 for predecorated gypsum boards.

1.3 Where a certain degree of fire resistance and sound control is required for gypsum board assemblies and constructions, follow applicable building code regulations. Construction details are additionally described in the Gypsum Association GA-600, *Fire Resistance Design Manual.*

1.4 Structural load tests in accordance with ASTM E 72 have been conducted to determine shear resistance of typical gypsum board wall and ceiling assemblies. Consult gypsum board manufacturer for details.

2. *Definitions and Terms for Purpose of these Reecommendations*

2.1 Types of Gypsum Board

2.1.1 Regular Gypsum Wallboard — defined in Standard Specification for Gypsum Wallboard, ASTM C 36.

2.1.2 Type X (Special Fire Resistant) Gypsum Wallboard, Predecorated Gypsum Wallboard or Water Resistant Gypsum Backing Board — gypsum board which provides greater fire resistance as defined in Standard Specification for Gypsum Wallboard, ASTM C 36; or Standard Specification for Water Resistant Gypsum Backing Board, ASTM C 630; or Standard Specification for Predecorated Gypsum Board, ASTM C 960.

2.1.3 Foil Backed Gypsum Board — either regular or Type X gypsum wallboard with aluminum foil laminated to the back surface. The foil is a vapor retarder.

2.1.4 Predecorated Gypsum Board — defined in Standard Specification for Predecorated Gypsum Board, ASTM C 960.

2.1.5 Water Resistant Gypsum Backing Board — defined in Standard Specification for Water Resistant Gypsum Backing Board, ASTM C 630.

2.2 **Batten Strip** — a decorative member used to cover joining edges of gypsum boards.

2.3 **Edge** — paper bound edge, as manufactured.

2.4 **End** — mill-cut or field-cut end perpendicular to edge. At such cuts gypsum core is exposed.

2.5 **Fastener** — nails, screws or staples used for mechanical application of gypsum board.

2.6 **Finishing** — the taping of joints, concealment with joint treatment compound of such joints, heads of fasteners, and edges of corner protective devices, and smoothing or leveling of such areas to prepare them to receive field application of priming, painting, coating, decorative coating, texturing and coverings such as wallpaper and vinyl materials.

2.7 **Framing Member** — that portion of framing, furring, blocking, etc., to which gypsum board is attached. Unless otherwise specified herein, the surface to which abutting edges or ends are attached should not be less than 1 1/2 in. wide for wood members and not less than 1 1/4 in. wide for metal members. For internal corners or angles, bearing surfaces should not be less than 3/4 in.

2.8 **Joint Compound** — defined in Standard Specification for Joint Treatment Materials for Gypsum Wallboard Construction, ASTM C 475.

2.9 **Molding** — a decorative member used to cover inside or outside corners, wall and ceiling intersections, and wall and floor intersections.

2.10 **Parallel (Vertical) Application** — gypsum board applied with edges parallel to members to which it is attached.

2.11 **Perpendicular (Horizontal) Application** — gypsum board application with edges applied at right angles to members to which it is attached.

2.12 **Treated Joint** — a joint between gypsum boards which is reinforced and concealed with tape and joint treatment compound, or covered by strip moldings.

2.13 **Untreated Joint** — a joint which is left exposed.

3. Materials

These recommendations are prepared on the basis that materials conform to the following ASTM specifications and other requirements:

3.1 **Gypsum Wallboard.** Standard Specification for Gypsum Wallboard, ASTM C 36.

3.2 **Water Resistant Gypsum Backing Board.** Standard Specification for Water Resistant Gypsum Backing Board, ASTM C 630.

3.3 **Predecorated Gypsum Wallboard.** Standard Specification for Predecorated Gypsum Board, ASTM C 960.

3.4 **Joint Reinforcing Tape and Joint Compound.** Standard Specification for Joint Treatment Materials for Gypsum Wallboard Construction, ASTM C 475.

3.5 **Laminating Adhesive.** Either joint compound, adhesive, or laminating compound, as recommended by manufacturer of gypsum board.

3.6 **Water.** Should be clean, fresh and suitable for domestic consumption.

3.7 **Nails.** Standard Specification for Nails for Application of Gypsum Wallboard, ASTM C 514.

Special nails for predecorated gypsum board should be as recommended by predecorated gypsum board manufacturer.

3.8 **Screws**

3.8.1 Screws used for attachment of gypsum board to steel framing are designated Type S screws and should comply with ASTM C 1002, Standard Specification for Steel Drill Screws for Application of Gypsum Board.

3.8.2 Screws used for attachment of gypsum board to heavier gage, load bearing steel framing, up to 12 gage, are designated Type S-12 screws and should comply with ASTM C 954.

3.8.3 Screws used for attachment of gypsum board to wood framing are designated Type W screws and should comply with ASTM C 1002.

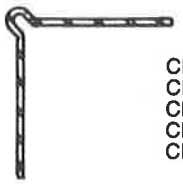
3.8.4 Screws used for attachment of gypsum board to gypsum board are designated Type G screws and should comply with ASTM C 1002.

3.9 **Staples.** Number 16 USS gage flattened galvanized wire staples with 7/16 in. wide crown outside measure and divergent point for first ply only of two-ply gypsum board application or when they will be covered by battens.

(1 in. long legs for 1/4, 5/16 and 3/8 in. thick gypsum board.)

CORNERBEAD, TRIM AND CASINGS

Cornerbead — (Numbers indicate width of flanges, i.e. — 118 is 1-1/8 in. wide flange)



CB—100 x 100
CB—118 x 118
CB—114 x 114
CB—100 x 114
CB—PF (Paper flange, steel corner combination bead)

"U" Bead — (Numbers indicate thickness of board to be used, i.e. — 38 is 3/8 in.)

U-38
U-12
U-58
U-34

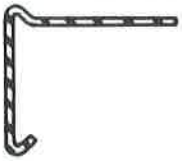
Control Joint

Removable Strip

"L" Bead — (Numbers indicate thickness of board to be used)

L-38
L-12
L-58
L-34

"LK" Bead — (For use with Kerfed jamb)



LK-B
LK-S

(B-Bull or round nose)
(S-Square nose)

"LC" Bead — (Numbers indicate thickness of board to be used)

LC-38
LC-12
LC-58
LC-34

Dimensions indicated are in U.S. Customary units.

Fig. 1

(1 1/8 in. long legs for 1/2 in. thick gypsum board.)
(1 1/4 in. long legs for 5/8 in. thick gypsum board.)

3.9.1 For Mobile/Manufactured Housing, staples with other dimensions may be used in conjunction with adhesive as recommended by the gypsum board manufacturer.

3.10 Adhesives

3.10.1 Standard Specification for Adhesives for Fastening Gypsum Board to Wood Framing, ASTM C 557.

3.10.2 Adhesives for laminating gypsum board to gypsum board should be as recommended by gypsum board manufacturer.

3.11 Framing Members

3.11.1 Wood framing members should conform to American Lumber Standards Specifications.

3.11.2 Light-gage, non-load bearing steel framing should comply with Standard Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board, ATSM C 645.

3.12 Cornerbead and Edge Trim should comply with Standard Specification for Accessories for Gypsum Board and Gypsum Veneer Plaster, ASTM C 1047, and be made from corrosion protected coated steel or plastic designed for its intended use. Flanges should be free from dirt, grease, or other materials that may adversely affect bond of joint treatment or decoration.

3.12.1 Designations used to identify commonly specified types of metal or plastic trim and casings are shown in Figure 1 on facing page.

3.12.2 Other types of corner, edge trim, decorative dividers or control joints between gypsum wallboard panels may be used when they meet the general provisions of Section 3.12.

4. Delivery, Identification, Handling and Storage

4.1 All materials should be delivered in original packages, containers or bundles bearing brand name, applicable standard designation, and name of manufacturer or supplier for whom product is manufactured.

4.2 General — Handling and Storage

4.2.1 Gypsum board is available in 4 ft. widths and in lengths ranging from 6 ft. to 16 ft. An 8 ft. panel of 1/2 in. gypsum board weighs approximately 55 lbs. and an 8' panel of 5/16 in. gypsum board weighs about 40 lbs.

4.2.2 Gypsum board requires careful storage and handling procedures. Gypsum board is flexible, but it will crack or break under excessive pressures or bending. The edges of the board are susceptible to damage if dropped or struck by a sharp object. Improperly stored panels can sag or warp. Damage to gypsum board may be minimized or avoided altogether by following the storage and handling procedures outlined in Section 4.3.

4.3 Storage Location

4.3.1 **Interior Storage** — Gypsum board should be stored in a warehouse or other suitable structure where it will not be exposed to the weather or to temperatures exceeding 125°F. A firm, dry and level floor is recommended to insure that stacks of gypsum board are evenly supported away from dampness. Gypsum board should not be stored in areas of excessive humidity. Gypsum board should not be stored beneath overhead equipment which may have a tendency to drip grease or oil. Incoming board shipments should not be left in heavy traffic areas or where they may be damaged by fork trucks or other warehouse equipment. Avoid storing gypsum board at aisle corners whenever possible. Should it become necessary to store board at corner locations, it is recommended that corner protectors constructed of sheet metal or other suitable material be used.

4.3.2 **Exterior Storage** — The storage of gypsum board is not recommended in exterior locations. Exposure to the elements may result in water stain, light discoloration, mildew, or sagging.

4.4 Construction and Placement of Support Risers.

4.4.1 Units of gypsum board should be properly supported to minimize sagging. Use extra care in the construction and placement of support members (known as risers or spacers) if several tiers of gypsum board are to be stored on top of each other.

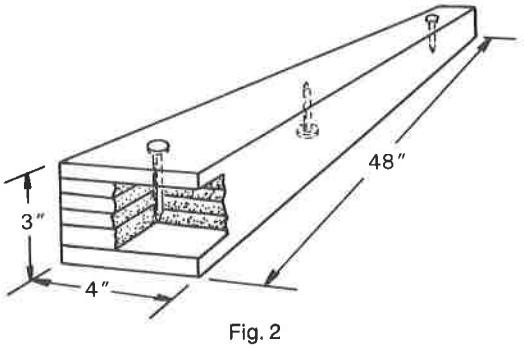


Fig. 2

4.4.2 **Construction** — Figure 2 shows a convenient riser which may be inexpensively constructed

from scraps of gypsum board. Gypsum risers are less expensive than risers made of lumber. If units of gypsum board are to be stored on a damp floor, however, it is recommended that the bottom risers be of wood. All risers must be of uniform height to ensure that the gypsum board is evenly supported. The recommended riser is 4 in. wide x 3 in. high x 48 in. long. Gypsum pieces should be stapled, nailed or glued together.

4.4.3 **Placement** — Careful placement of risers (Figure 3A) will minimize sagging, the most common problem caused by improper storage.

Figure 3B shows how sagging may result when risers are improperly placed. Extended storage under these adverse conditions may cause permanent distortion of the gypsum board.

4.4.3.1 Where permanent storage locations are designated in the warehouse for each length of board handled, post appropriate signs in the area or mark the warehouse floor to indicate where each length of gypsum board should be stored. Riser locations should be painted on the floor to mark proper riser spacing for the length of gypsum board stored in each location.

Note: Minor alterations in the location of risers may be required to adapt to the fork spacing of warehouse lift trucks. Risers may be moved several inches in either direction without adversely affecting the board as long as the number of risers is not reduced and the vertical alignment within stacks is maintained.

4.4.3.2 The recommended placement of risers for warehouse storage of various lengths of gypsum board is detailed in Figure 4. The horizontal distance between risers should not exceed 28 in. Humid conditions or long term storage may require the addition of extra risers.

4.5 **Stock rotation** — Sagging problems may be minimized by rotating stock.

4.6 Straightening Sagged Gypsum Board

4.6.1 When minor sagging occurs, the gypsum board may be straightened following one of the procedures outlined below.

4.6.2 Restack the board, moving the risers about 4 in.-6 in. closer together than the recommended interval, shown in Figure 4. Add one or two evenly spaced risers as necessary to insure that the entire stack is supported. The sagging should be minimized within several days.

4.6.3 Restack the board without risers on a flat, dry concrete floor. Place evenly distributed weight on the top of the board stack. The sagging should be minimized within 24 hours.

4.7 Handling Gypsum Board Manually

4.7.1 Gypsum board should be handled carefully. When board is handled manually, it should be carried on edge.

Gypsum board should never be carried flat, be dragged or slid on its ends, edges, or face when being moved from the stock pile to the assembly line.

CORRECT METHOD OF PLACING RISERS

Note that all risers are placed in proper vertical alignment so each tier is evenly supported. Arrows indicate pressure.

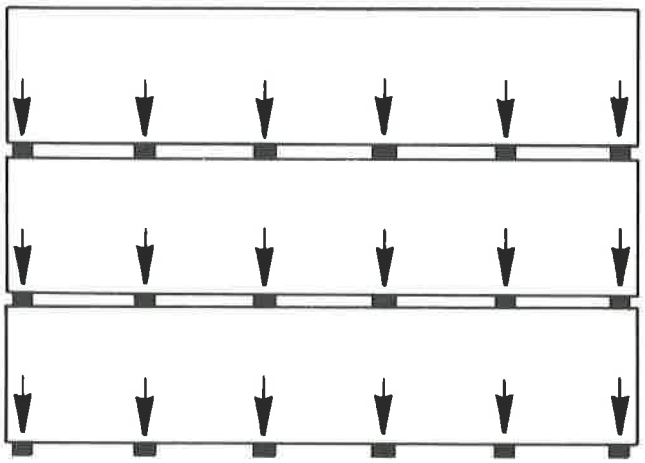


Fig. 3A

INCORRECT METHOD OF PLACING RISERS

Cumulative pressure on unsupported lower units causes gypsum board to sag. Risers are not spaced evenly or in proper vertical alignment.

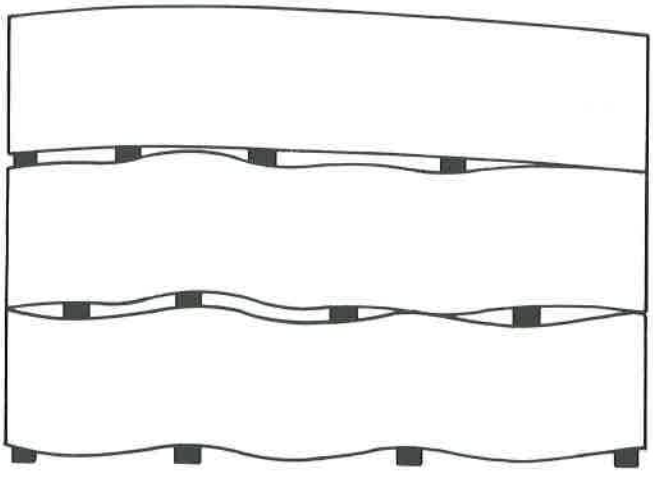


Fig. 3B

4.7.2 **Gypsum board should be piled flat** at the assembly line. Standing it on its edge for an extended period may cause it to warp.

4.7.3 **When turning board from vertical to horizontal** as it is piled, stand board on edge at near side of the pile as close to the edge of the pile as possible (see Figure 5). Tip the board from vertical toward the stack and let it drop on top of the pile.

SUGGESTED PLACEMENT OF RISERS FOR STORAGE OF GYPSUM BOARD (Drawings not to scale)

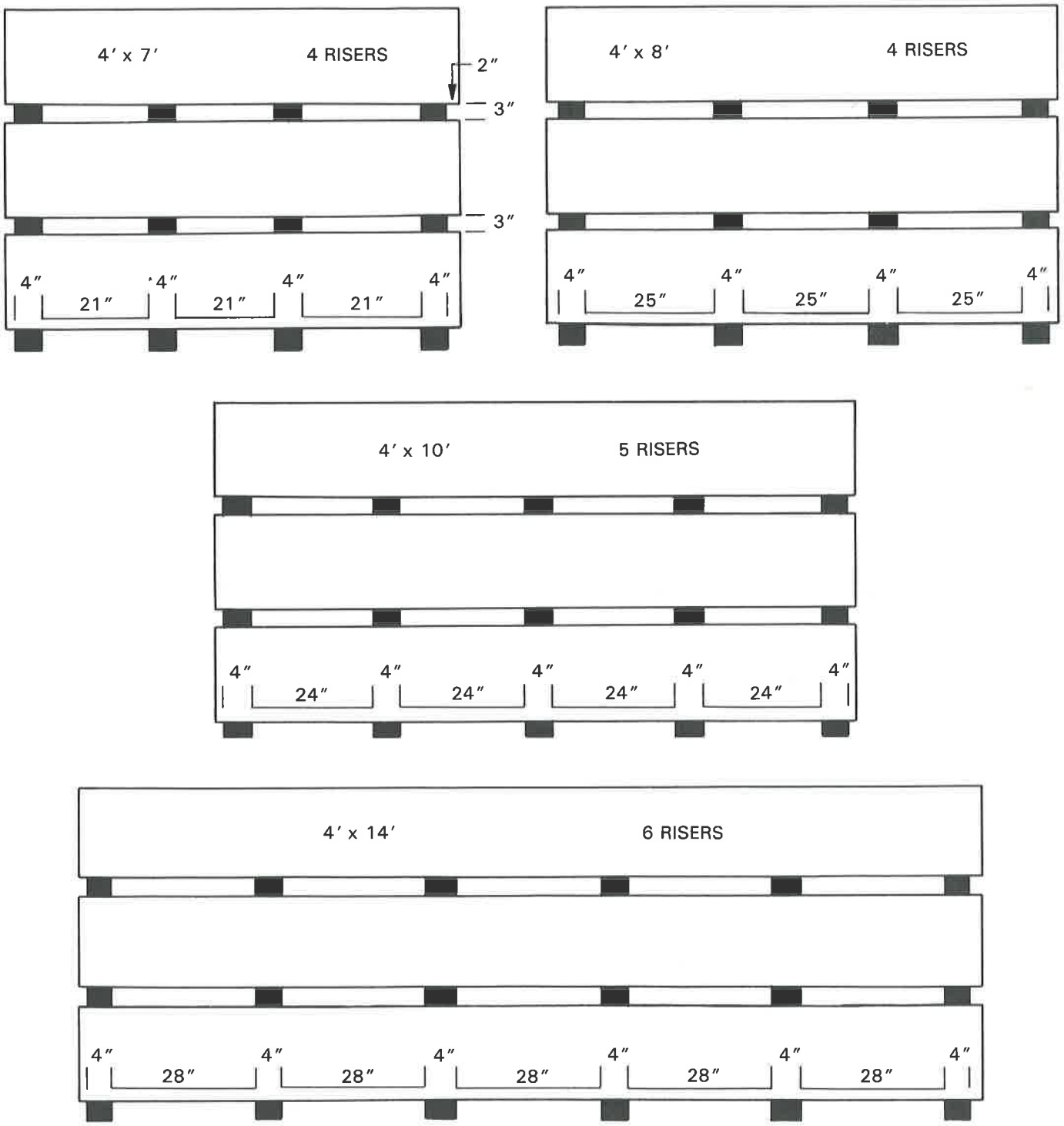


Fig. 4

Note: An air cushion is developed as the board drops, preventing cracking, provided the board does not hang over the far edge

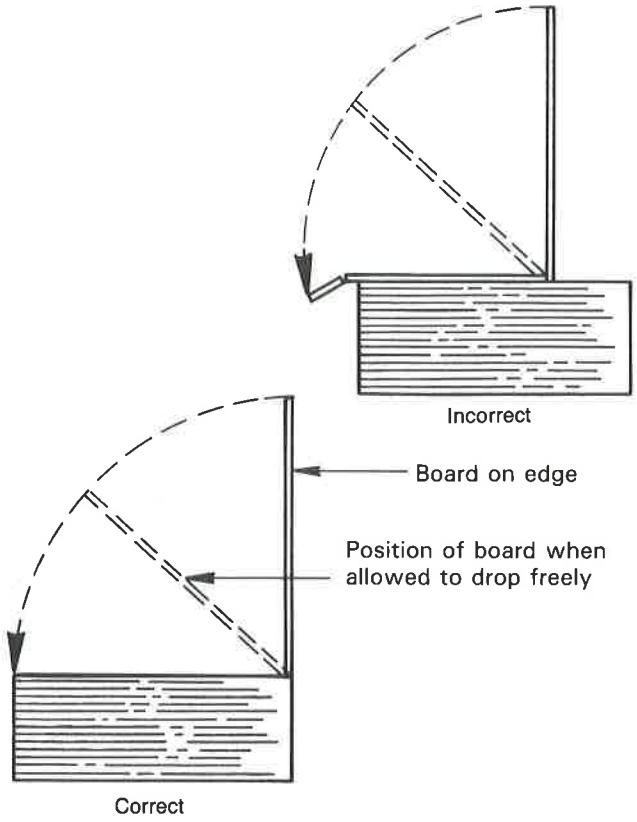


Fig. 5

more than an inch or two as it falls into place.

4.8 Handling Gypsum Board Mechanically (refer to Appendix B for Fork Truck Specifications)

4.8.1 General

4.8.1.1 A 1/2 in. x 4 ft. x 8 ft. gypsum board weighs approximately 55 lbs. A typical unit containing 120 sheets weighs approximately 6600 lbs.

4.8.2 Qualified Operators

4.8.2.1 Lift truck operators should be trained and licensed to operate lift trucks in accordance with OSHA regulations.

Note: The National Safety Council, Gypsum Association, and other organizations have produced lift truck operator training programs which meet OSHA driver certification requirements. These programs may be purchased at nominal cost.

4.8.3 Load Capacity

4.8.3.1 Gypsum board should be ordered in units whose weights are within the rated capacity of the lift trucks.

4.8.4 Preparation

4.8.4.1 End-strapping should not be removed until the board is placed at the work station. End-strapping helps to prevent excessive flexing which can crack long lengths of board.

4.8.4.2 Fork spread must be adequate for the length of board being carried. See Appendix B.5.

4.8.5 Pick-up

4.8.5.1 When approaching a load of gypsum board, ease up to the stack.

Note: Even with padded fork backs, the impact between a moving fork truck and a stack of gypsum board may damage the edges of the boards. Operators should practice easing up to the stack to be lifted to avoid bumping the stack sharply.

4.8.5.2 Do not use forks to split units of gypsum board.

4.8.5.3 To split units, use wedges which have been designed for that purpose.

4.8.5.4 Always pick up gypsum board face up so the forks make contact with the back of the board. Forks scraping across the face of gypsum board could tear the face paper or mar the predecorated surface.

5. *Environmental Conditions*

5.1 Application of gypsum board should be done in a weather resistant building.

5.2 Gypsum board should be protected from excessive weather conditions during unit construction, storage and transit. Adequate ventilation should be provided during unit storage to prevent condensation within the unit.

6. *Framing and Supports*

6.1 **Shear Resistance.** To comply with a shear resistance design requirement, install framing and apply gypsum board in accordance with the design specifications.

6.2 **Framing should be true and straight.** Framing should be attached securely following acceptable engineering practices and in accordance with the plans and specifications for the intended design. All framing should be installed so that after the gypsum board has been applied, the finished surface will be level.

6.3 Typical framing, vapor retarder, intersecting walls and relief joint details are found in Figures 6A through 6F. Door and wall framing details are shown in Figures 6G and 6H.

ROOF—SIDEWALL—FLOOR INTERSECTION

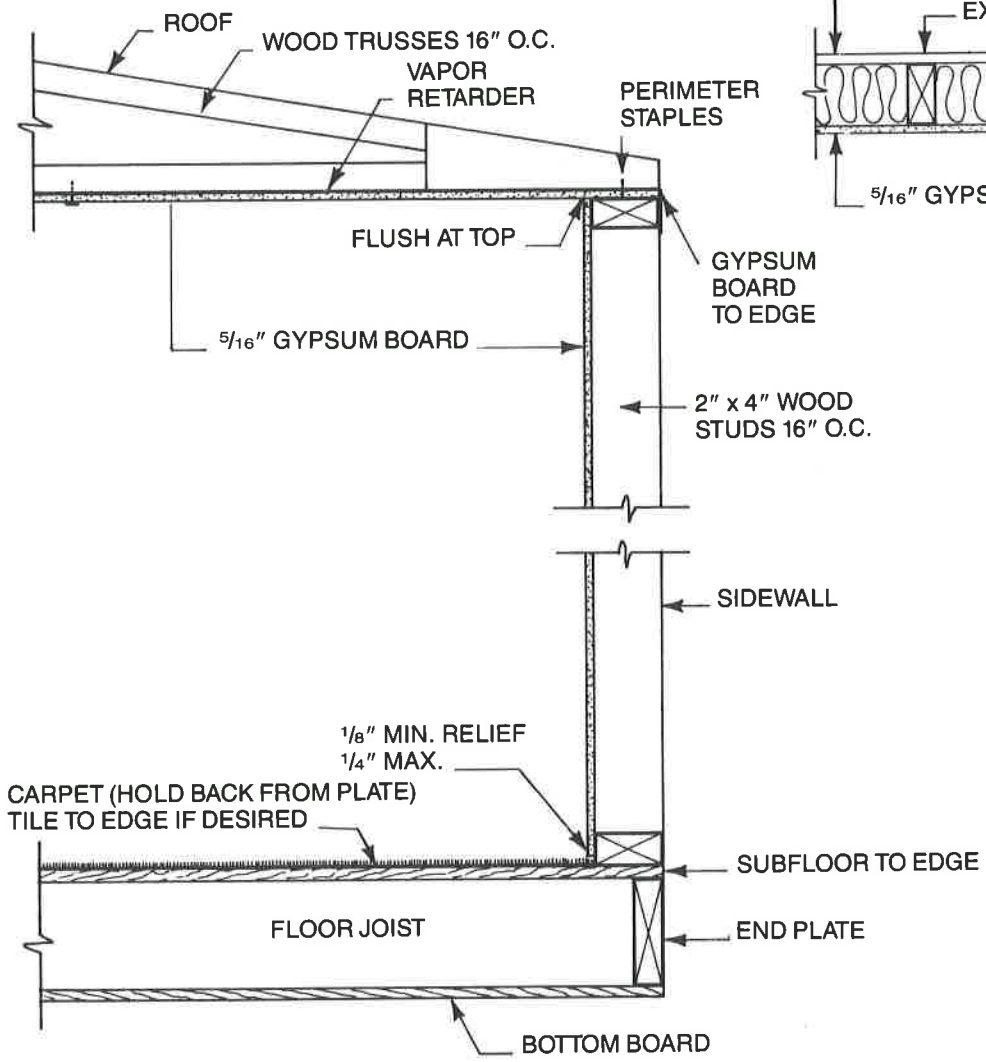


Fig. 6A

EXTERIOR END WALL & SIDEWALL CORNER

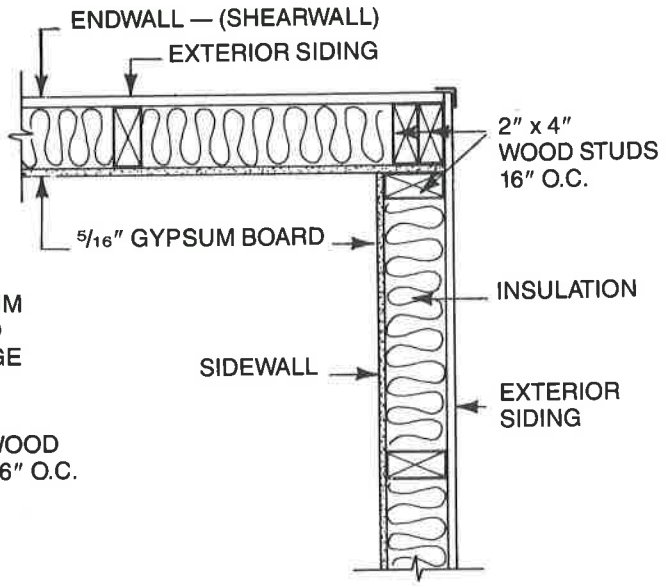


Fig. 6B

INTERIOR—EXTERIOR WALL INTERSECTION

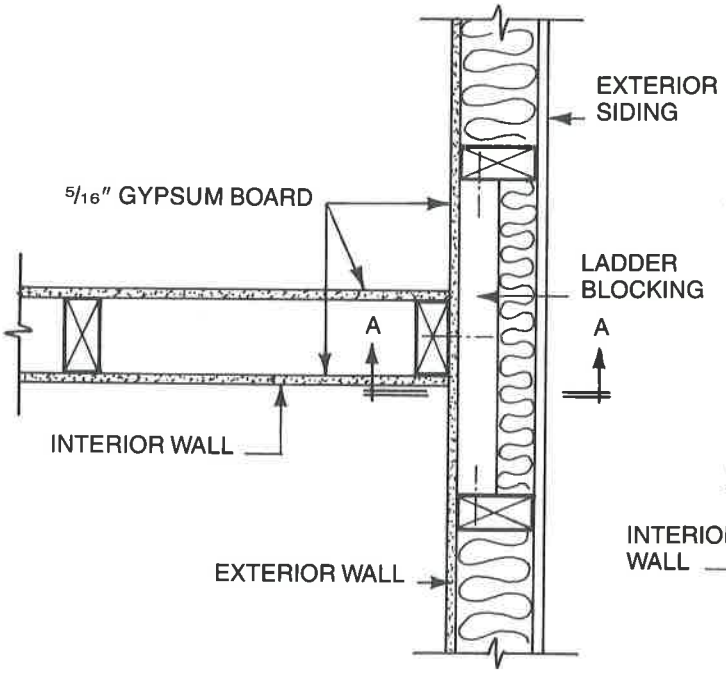
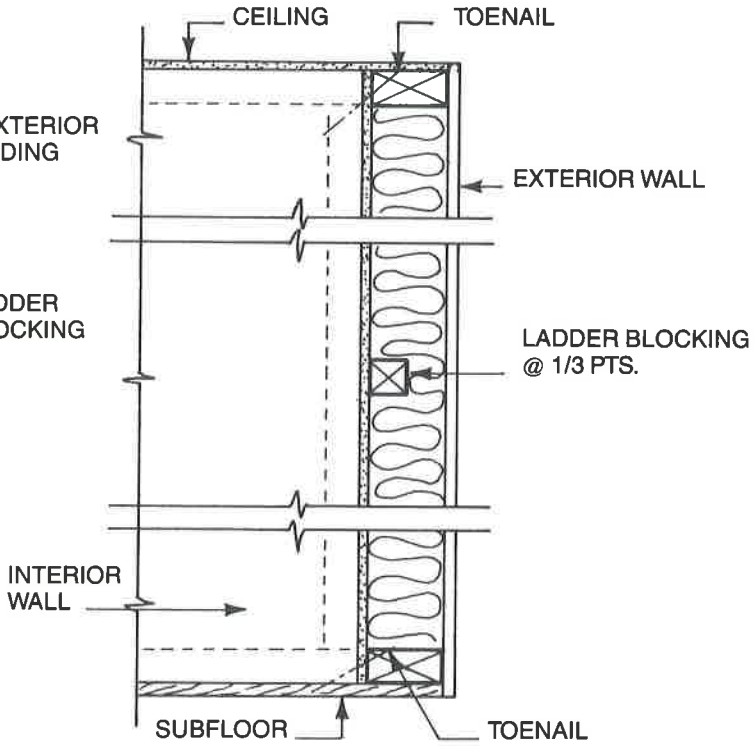


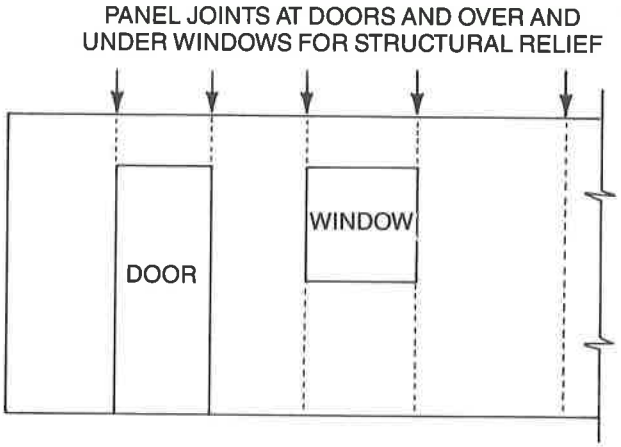
Fig. 6C



SECTION A-A

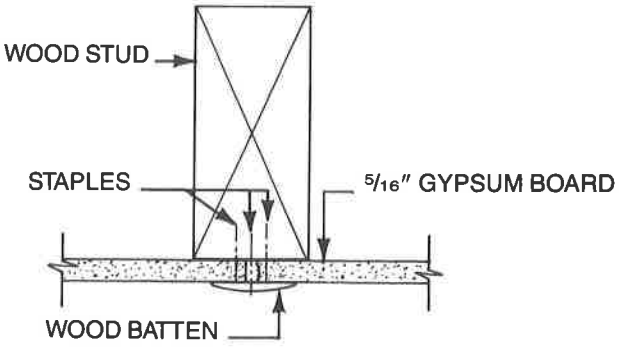
Fig. 6D

PANEL RELIEF JOINTS AT DOORS & WINDOWS



ELEVATION

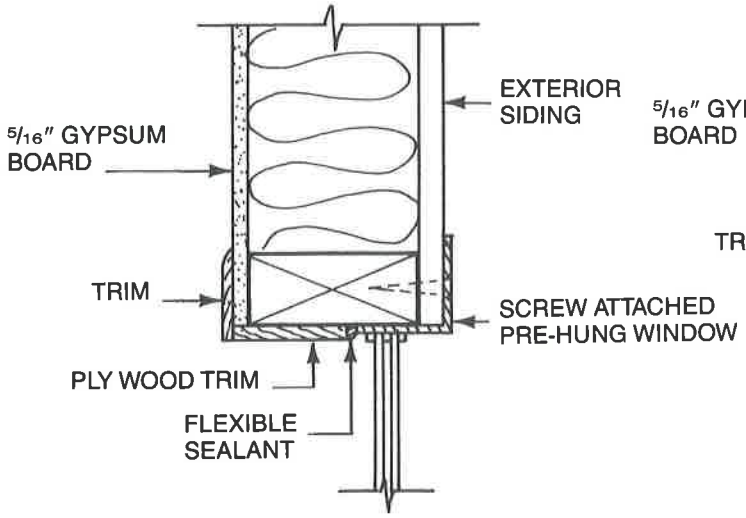
Fig. 6E



JOINT DETAIL WITH BATTEN

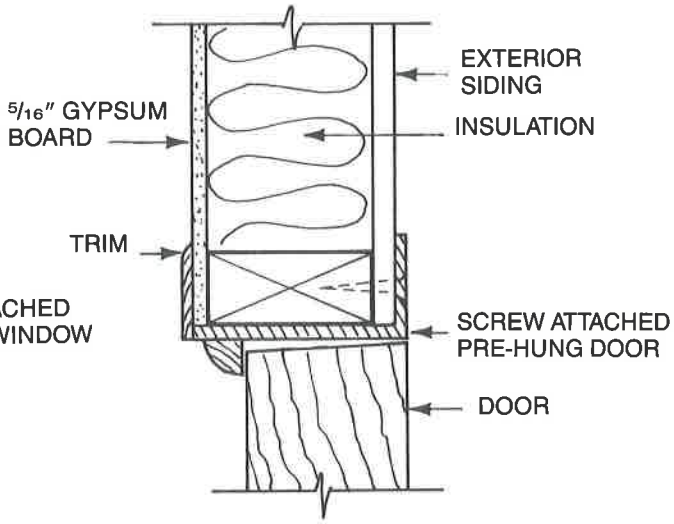
Fig. 6F

DOOR & WINDOW FRAME DETAILS



WINDOW DETAIL

Fig. 6G



DOOR DETAIL

Fig. 6H

UTILITY HOOK-UP WALL DETAIL

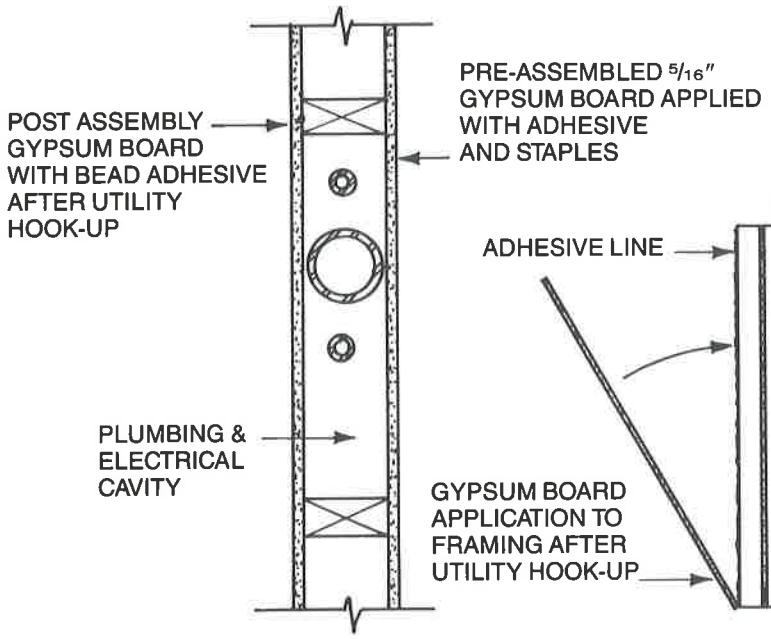
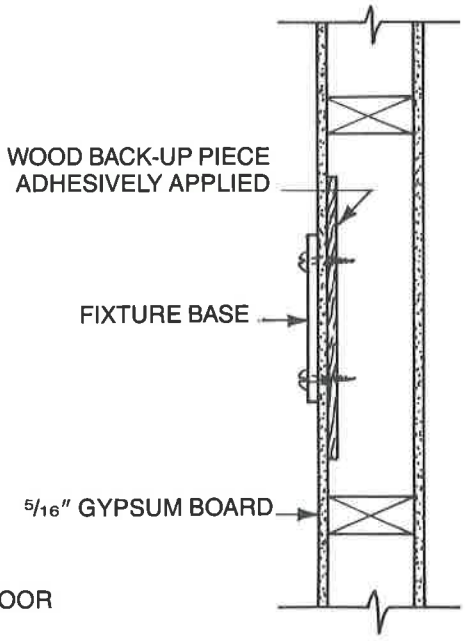


Fig. 6J

DETAIL FOR LIGHT WEIGHT ATTACHMENT



NOTE:
WHERE FASTENERS ARE SUBJECT TO PULLOUT, ATTACHEMENT TO STUDS OR LADDER BRACING IS REQUIRED. (e.g., KITCHEN CABINETS, SHELVING, ETC.)

Fig. 6K

DETAILS FOR HEAVY WEIGHT ATTACHMENT

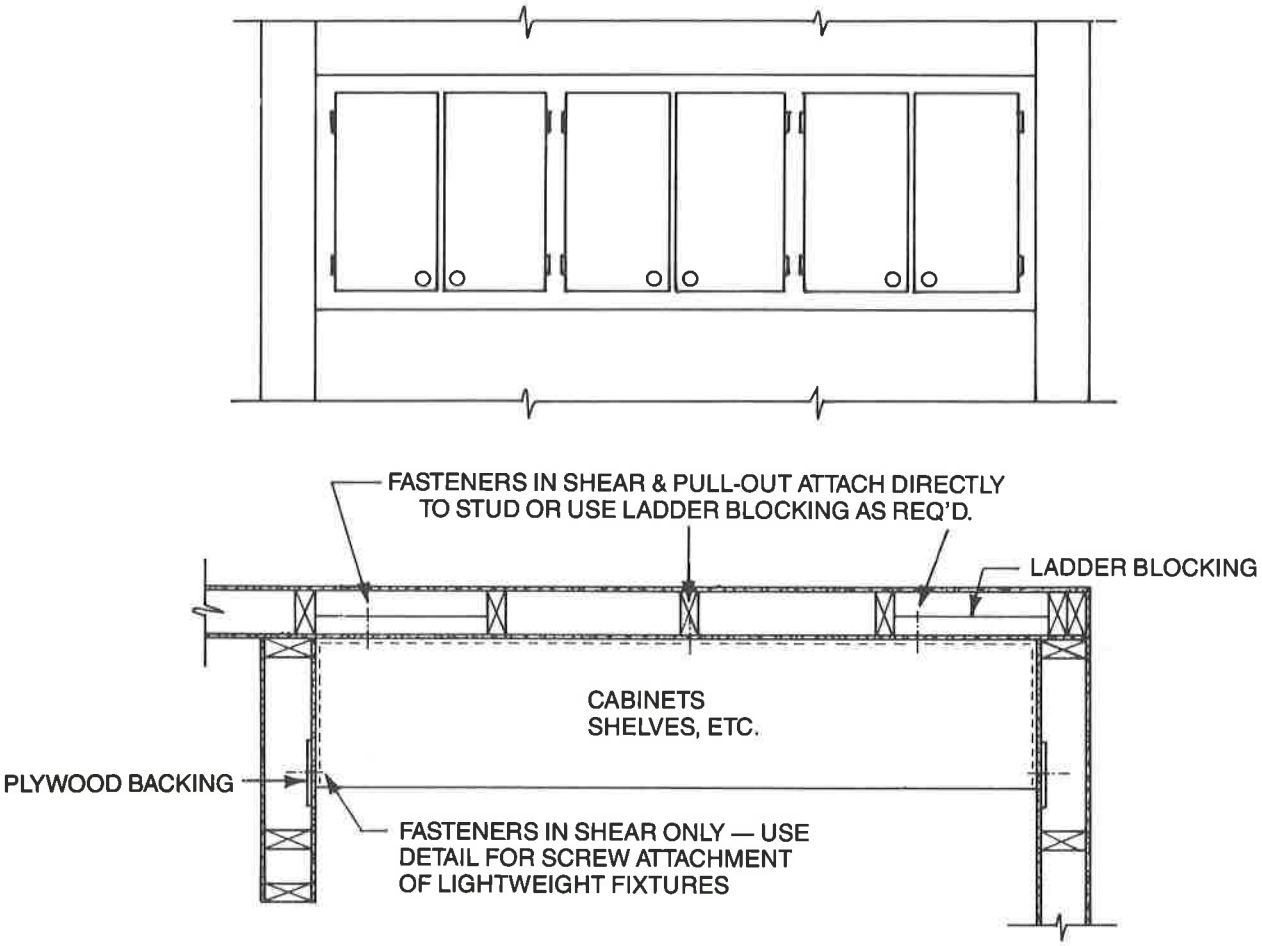


Fig. 6L

6.4 All supports for cabinets, shelving, electrical fixtures, mirrors, drapery hangers and the like, should be installed during manufacture of the unit. (See figures 6J, 6K & 6L)

6.5 Support for Gypsum Board. The entire perimeter of gypsum board should be supported by framing. Framing for doors and windows should be such that when gypsum board is applied, a vertical break or joint occurs at corners of window and door openings. (See Figure 6E)

7. *Application of Gypsum Board*

7.1 **Measuring.** Templates will reduce repetitious measuring and simplify the task of locating standard openings for electrical outlets, pipes, and heating vents. Templates may be constructed of cardboard, light gage sheet metal, or any similar material. Cutouts for electrical boxes should not exceed the box measurement by more than 1/8 in. on any side.

7.2 **Cutting.** Gypsum board may be cut by scoring and breaking, sawing or by use of a router type machine or other suitable device from the face side without damaging the core. Cut edges and ends of the board should be smoothed where necessary to obtain neat, tight fitting joints and corners. Holes for pipes, fixtures or other small openings should be scored on the face in full outline before removal, or holes may be cut out with a saw or special tool designed for this use (see Section 7.3.2).

7.2.1 **Sawing with Power Tools**

Tools required:
- table saw equipped with dust collection system
- downdraft router
- carbide tipped or carborundum blades
- power slitter
- sabre saw

7.2.2 Portable power tools may be used to cut gypsum board, superior results can be obtained when either a table saw or bench mounted router is used. Table mounted equipment permits accurate measurements without requring guidemarks which may mar the surface of the board. The gypsum board is properly supported throughout the entire cutting operation when a table saw is used, reducing the danger that the board may bind or crack. Rip fences or other guides ensure straighter, more even cuts than are possible with portable equipment.

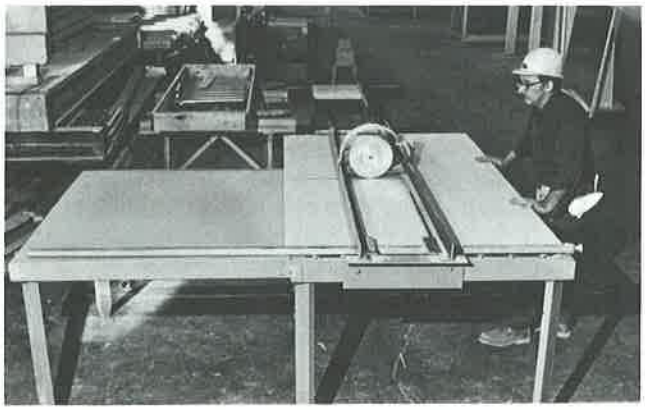


Fig. 7 A table-mounted power slitter such as this one will simplify cutting gypsum board. Slitters can be built which will cut both surfaces of the gypsum board simultaneously.

Note: When using any power tool, all safety precautions should be observed. Work tables should be large enough to support both ends of the gypsum board being cut, and should be arranged so the operator never has to reach over the saw, router, or slitter blades to steady the board or remove scrap. All equipment should be properly guarded, and operators should wear safety glasses. A vacuum exhaust system should be installed on each piece of equipment to remove dust from the work area.

7.3 **Cutting with Hand tools**

Tools required:
- sharp trimming (utility) knife
- keyhole saw
- metal straight edge
- drill
- smoothing rasp or sanding block
- wallboard outlet cutter (optional)

7.3.1. **Methods of Cutting.** Gypsum boards should be cut by scoring and breaking or by sawing, working from face side. When scoring, use a sharp knife to cut through the face paper into gypsum core. Gypsum board is then snapped back away from cut face. Back paper should be broken by snapping gypsum board in reverse direction, or preferably by cutting back paper. All cut edges and ends of gypsum boards should be smoothed where necessary to obtain neat fitting joints when gypsum board is installed.

7.3.2 Holes for pipes, fixtures or other small openings should be scored on face in outline before removal of cut-out with a saw or special tool designed for this use. Where gypsum board meets projecting surfaces, it should be scribed and neatly cut, and the space between the device and the board should not exceed 1/8 in. These holes for pipes, electrical outlet boxes, and heating registers should be carefully prepared so that the appropriate cover plates will completely cover the openings.

Note: Special tools are available which cut standard size openings quickly and easily by means of hand operated die cutters. Refer to the instructions provided by the manufacturer if tools of this type are employed. Holes made with these tools should be cut from the back side of the board to prevent delamination of decorative facing.

7.4 **Shear Resistance.** Note: Refer to Section 6.1.

7.5 **Adhesive Application.** Unless otherwise

recommended by the adhesive manufacturer, the adhesive should be applied by stream or roller in sufficient quantity to provide a continuous bond between the board and all framing members after the gypsum board has been applied.

7.6 **Gypsum Board Application — Mobile/Manufactured Housing.** Apply gypsum board to framing members with long dimension parallel to the member and edges placed on a framing member. Set board in place and square with minimum amount of sliding after contacting adhesive. Ends should be positioned flush or slightly recessed from outer edges of top and bottom plates.

7.7 **Gypsum Board Application — Modular/Manufactured Housing.** Apply gypsum board either parallel or perpendicular to framing members following recommendations contained in *Recommended Specifications for the Application and Finishing of Gypsum Board,* (GA-216) and recommendations of the gypsum board manufacturer.

7.8 **Staple Application.** With gypsum board in place, fasten with staples 6 in. o.c. around perimeter and 1/4 in. from edges. With PVC or PVA adhesive, space staples not to exceed 24 in. o.c. on intermediate studs to insure bonding of the adhesive.

7.8.1 Staples should be applied parallel to framing and driven flush without breaking the finish. Staples not flush with the face may be set using a hammer with a plastic face.

8. *Finishing* (Note: For predecorated gypsum board, see Section 10.)

8.1 **Joints.** Joints between gypsum boards may be finished, left exposed or concealed with battens or other decorative treatment. Exposed corners and wall/ceiling intersections may be covered with a molding. The bottom end of wall panels may be protected with a molding or base trim.

8.2 Gypsum board should be finished with materials which meet ASTM C 475 or those materials recommended by gypsum board manufacturer (see Section 3).

8.3 Compounds for taping and finishing may be drying or setting type. Do not mix one type of compound with another unless recommended by joint compound manufacturer.

8.3.1 When applied, compounds should be of a chemical composition compatible with previous successive coats.

8.4 No finishing operation should be done until interior temperature has been maintained at a minimum of 50°F. (10°C) for a period of at least 48 hours and thereafter until compounds have completely dried.

8.4.1 Adequate and continuous ventilation should be provided to insure proper drying, setting or curing of taping and finishing compounds.

8.5 Gypsum board should be kept free of any dirt, oil or other foreign matter which could cause a lack of bond. All dents or gouges should be brought up to a smooth level plane with the surface of the board. Mechanical fasteners should be set below the plane of the board. All joints should be even and true. Board should be tight against framing members.

8.6 **Taping and finishing** should be done using proper hand tools such as broad knives or trowels with straight and true edges or mechanical tools designed for the work being performed and the materials being used.

8.6.1 **Tape should be properly applied** either by applying compound to joint (buttering), pressing in tape and wiping off excess compound, or by a mechanical tool designed for this process.

8.6.2 **Second coat** should be applied with tools of sufficient width to extend beyond the center of the joint approximately 3 1/2 inches. Compound should be drawn down to a smooth even plane. After drying or setting, treated surfaces should be sanded or otherwise smoothed as needed (Sec 8.13) to eliminate any high spots or excess compound. Drying-type compounds should be allowed to dry thoroughly between coats and before sanding (see Section 8.10).

8.6.3 **A third coat,** when required, should be applied with tools which will permit feathering of joint treatment edges approximately 6 in. from the center of the joint. After drying, final coat should be lightly sanded (see Section 8.13) or wiped with a damp sponge to leave a smooth even surface covering the joint. Caution should be taken not to raise the nap of the paper when sanding.

8.7 **Fastener heads should be covered** with three coats of joint compound, each applied in a different direction. Except as noted in Section 8.10, allow each coat to dry before applying subsequent coats. All cut-outs should be back-filled with compound used for taping or finishing so there is no opening between gypsum board and fixture or receptor.

8.8 All cut edges and openings around pipes and plumbing fixtures should be caulked flush with flexible sealant.

8.9 Care must be taken to insure that all tools and containers are kept clean and free from foreign materials. Only drinking water should be

used for mixing powder compounds or to thin premixed materials. Once setting materials have been mixed, no water should be added. Compounds should not be allowed to freeze.

8.10 Setting-type compounds can receive additional coats as soon as applied material has set and before it dries completely.

8.11 **For Gloss Paints.** After all irregularities have been eliminated and the joint treatment surfaces sanded or sponged where required, a thin skim coat of joint compound should be applied to the entire surface of the board. This will minimize any suction, porosity or other surface variations between the joint compound and the face paper surfaces. Caution should be taken to eliminate laps or tool marks in the skim coating operation. The wall or ceiling surface should be lightly sanded or sponged where required to assure a smooth and even surface. A high quality primer/sealer should be applied prior to decoration.

8.12 **For Severe Lighting Conditions.** Where the wall or ceiling surfaces will be subjected to severe natural or artificial lighting, it is recommended that a thin skim coat of joint compound be applied to the entire board surface to improve fastener and joint concealment. It is also recommended that a high quality primer/sealer be applied prior to decoration.

8.13 APPROVED PROTECTIVE RESPIRATORS SHOULD BE WORN WHEN MIXING POWDER OR SANDING. MIXING SHOULD BE DONE ACCORDING TO MANUFACTURER'S DIRECTIONS. DRILL SPEEDS SHOULD NOT EXCEED THOSE RECOMMENDED BY JOINT COMPOUND MANUFACTURER.

9. *Decoration of Gypsum Board*

9.1 Decoration of gypsum board should not proceed until finishing materials, applied as recommended in Section 8, are dry.

9.2 Gypsum board surfaces to be decorated with wallcovering, paint or texture, should be primed or sealed and allowed to completely dry prior to decoration with specific primer or sealer recommended by wallpaper, paint or texture manufacturer for application over gypsum boards.

9.3 See section 8.11 for surface preparation when gloss paints will be used. See section 8.12 for surface preparation when severe lighting conditions will exist.

10. *Predecorated Gypsum Board*

10.1 **Cleanup and Repair.** Clean wall surfaces with a dry cloth to remove loose dust.

10.1.1 Scratches, minor abrasions and small tears in paper faced woodgrain gypsum board may be repaired by sealing the damaged area with a spray-on high-gloss lacquer, letting dry for several minutes, then fill void with a vinyl paste spackle tinted with water based stain to match background color of finish. Woodgrain can be simulated with a felt marking pen. When dry, wipe entire area with a finish oil or wax and blend to color of original panel.

10.1.1.1 Major fractures of paper faced gypsum board requires replacement.

10.1.2 Damaged areas of pre-painted or textured finishes may be repaired by first leveling the surface with vinyl paste spackling putty. When dry, a basecoat of paint is brushed on to match the base color. Texture is then applied with a squeeze bottle to match surrounding patterns.

Note: Squeeze bottle and matching paints may be available from producing plants or included with gypsum board shipments.

10.1.3 Rips or tears in vinyl surfaces may be repaired by injecting a small amount of white adhesive under the loosened area. Vinyl is replaced and pressure applied in an ironing action. Major damage may be repaired by carefully removing a piece of vinyl large enough to cover the damaged area from a matching piece of vinyl-covered board. (Do NOT tear the vinyl from the board. The gypsum core should be snapped and removed from the vinyl — not the vinyl from the core.) Place the new vinyl over the damaged area and cut through both layers of vinyl with a sharp knife. Remove damaged vinyl, spackle damaged area level with rest of the board. Place the new vinyl in the opening after having spread adhesive on the patch.

APPENDIX A

A. *APPLICATION OF CERAMIC OR PLASTIC WALL TILE OR PLASTIC FINISHED WALL PANELS OVER GYPSUM BOARD.*

A.1 Application of gypsum board under this specification should be in accordance with requirements of Gypsum Association *Recommended Specifications for Application and Finishing of Gypsum Board,* (GA-216). Following are recommendations for application of surfacing materials, when not in conflict with recommendations of surfacing materials manufacturer.

A.1.1 All cut edges and openings around pipes and fixtures should be caulked flush with flexible sealant. (See Figure 8)

A.1.2 Surfacing material should be applied down to top surface or edge of finished shower floor, return, or tub and installed so as to overlap top lip of receptor, sub-pan or tub and should completely cover following areas:

1. Over tubs without showerheads — 6 in. above rim of tub.
2. Over tubs with showerheads — a minimum of 5 ft. above rim or 6 in. above height of showerhead, whichever is higher.
3. Shower stalls — a minimum of 6 ft. above shower dam or 6 in. above showerhead, whichever is higher.
4. All gypsum board window sills and jambs in shower or tub enclosures should be covered to a like height.
5. Surfacing material should be applied to full specified height for a distance of at least 4 in. beyond external face of tub or receptor. Areas beyond an exterior corner are excluded.

A.1.3 Where plastic finished rigid wall panels are used as a surfacing material, the following precautions should be taken:

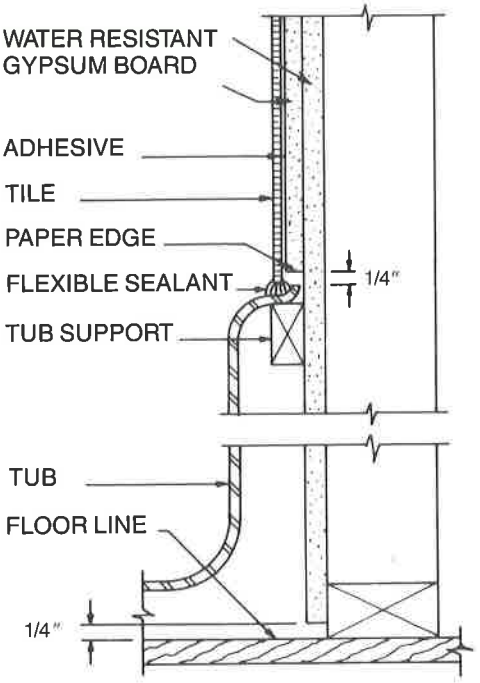


Fig. 8

1. Type and shape of moldings recommended by manufacturer of surfacing material should be used. Recommended tub moldings should be used at base where surfacing materials abut tub, shower floor, or curb. Such moldings should be set in flexible sealant.
2. Joints should be filled in such a manner as to leave no voids for water penetration.
3. A bead of water resistant adhesive should be applied as a dam between the back surface of finishing material and tub or receptor to prevent any leakage of water at joint.

APPENDIX B

B. FORK TRUCK SPECIFICATIONS

B.1 Lift truck manufacturers have worked closely with the gypsum industry to develop recommended specifications for fork trucks which will be used primarily for handling gypsum board. A detailed copy of these specifications may be obtained by writing the Gypsum Association.

B.2 **Load Capacity.** Almost any fork lift truck in good repair can be used to transport gypsum board. An important requirement for safe, damage-free handling of gypsum board is that the weight of the gypsum board to be handled not exceed the capacity of the lift truck.

B.3 **Forks.** Special forks have been designed which minimize the possibility of damage caused when a fork makes contact with the bottom sheet of a stack of gypsum board. These forks feature rounded or beveled edges and a rather exagerated taper to the tip of the fork.

B.4 **Cushioning.** Cushioning material applied to the load face of the forks will inexpensively, yet effectively, minimize damage to the edge of the board. Non-marking rubber or polyurethane backing pads may be installed on the back of the forks to absorb the impact between the fork uprights and the load to be carried. Figure 9 shows how pads may be screwed directly to the back of the forks or inserted in special slots welded to the fork uprights. The fork lift dealer can assist you with such an installation.

Cushioning the load face will reduce the incidence of board edges being crushed or marked by the fork uprights.

B.5 **Variable Fork Spread.**

B.5.1 If only a single length of gypsum board is stocked, lift trucks with sized forks are probably suitable. For maximum flexibility in handling gypsum board of varying lengths, however, forks should be mounted on carriages which permit operators to adjust the distance. A carriage spread in a range from 46 in. to 84 in. is ideally suited for carrying the most common lengths of gypsum board.

B.5.2 Fork spacing should be about one half the length of the board being handled. Fork spacing should be wide enough so that not over 4 ft. of board extends beyond the forks on either end (Figure 10).

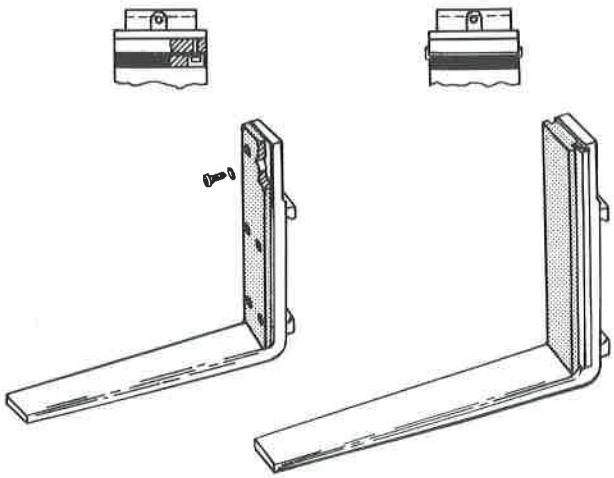


Fig. 9

Fig. 10

OTHER PUBLICATIONS AVAILABLE FROM THE GYPSUM ASSOCIATION

GA-201-85	USING GYPSUM BOARD FOR WALLS AND CEILINGS
GA-216-85	RECOMMENDED SPECIFICATIONS FOR THE APPLICATION AND FINISHING OF GYPSUM BOARD
GA-219-78	RECOMMENDATIONS FOR INSTALLATION OF STEEL DOOR FRAMES IN STEEL STUD GYPSUM BOARD FIRE RATED PARTITIONS
GA-224-84	RECOMMENDED STANDARD SPECIFICATIONS FOR INSTALLATION OF PREDECORATED GYPSUM BOARD
GA-275	RECOMMENDATIONS ON APPLICATION OF GYPSUM BOARD AS A ROOFING SUBSTRATE
GA-505-85	GLOSSARY OF TERMINOLOGY
GA-403-85	GYPSUM DRYWALL IN MANUFACTURED HOMES (A MARKETING PROGRAM)

Single copies of these publications are available free of charge. For information on multiple orders contact the Gypsum Association, 1603 Orrington Avenue, Evanston, Illinois 60201. Phone (312) 491-1744.

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