FINISH CARPENTRY CHAPTER 9

After the rough framing is complete and a building is weather-tight, carpenters begin the inside finish carpentry. However, finish carpentry may be optional for TO construction. This chapter covers the following interior wall, partition, and ceiling coverings: gypsum board (or sheetrock/wallboard), plywood, and fiberboard (or chipboard). It also covers interior wall and ceiling moldings. (Doors and windows are covered in Chapter 8 and general information, such as floor and wall tile, suspended ceilings, and painting, is covered in Appendix D.)

Over time, "sheetrock" has become the most common term for gypsum board. Also, the term "drywall " is often loosely used to mean gypsum board /sheetrock / wallboard. In this manual we will use ,'sheetrock."

INTERIOR WALL AND PARTITION COVERINGS

In current construction, sheetrock, plywood, and fiberboard are used instead of laths and plaster to cover walls. Sheetrock is normally applied in single (sometimes double) thickness as shown in Figure 9-1, page 9-2.

NOTE: When covering walls and ceilings, always start with the ceiling. After the ceiling is started, begin covering the wall in one corner and work around the room. Make sure that joints break at the center line of a stud or ceiling joist.

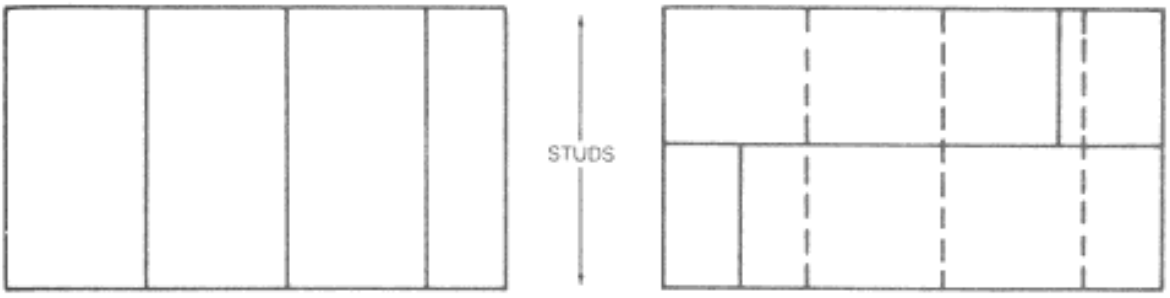
PLYWOOD AND FIBERBOARD

Plywood and fiberboard can be used for interior wall coverings; however, plywood is most commonly used. It comes in 4-feet-wide and 5-to 8-feet-long sheets, 1/4 to 3/4 inch thick. It is usually applied vertically from the floor to the ceiling. When plywood is correctly applied (with flush joints), the joints do not need to be concealed. However, to improve wall appearance, joints may be covered with moldings. These may be battens fastened over the joints or applied as *splines* between the panels. Less expensive plywood can be covered with paint or covered in the same way as plastered surfaces. To hang plywood (or fiberboard), see Figure 9-1. Figure 9-2, page 9-3, shows how to fit sheetrock on rough or uneven walls.

SHEETROCK

Sheetrock saves time in construction and has a short drying time as compared to plaster. It is also fire-resistant. It requires moderately low moisture content of framing members. The dry. ing of members will result in *"nail pops,"* which cause the nailhead to form small humps on the surface. Misaligning sheetrock on the studs may cause a wavy, uneven appearance. Wood sheathing will correct misaligned studs on exterior walls.

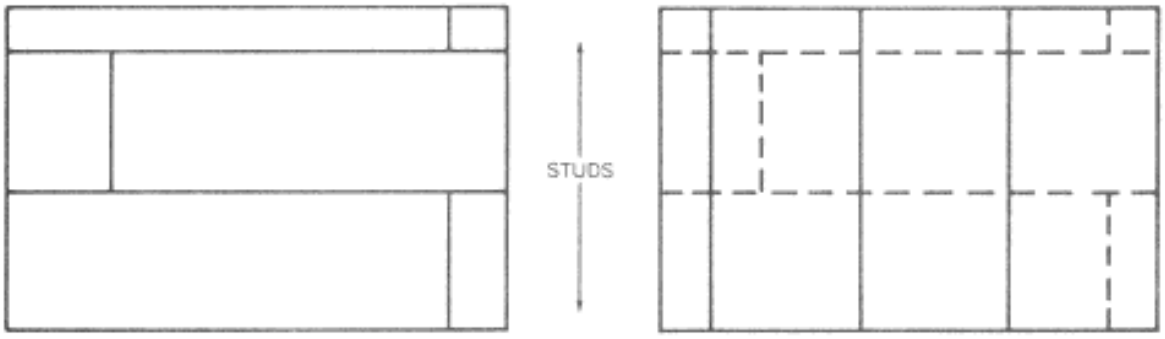
WHERE WALLS ARE NOT MORE THAN 8 FEET HIGH



First layer parallel to studs.

Second layer or face at right angles to studs.

WHERE WALLS ARE MORE THAN 8 FEET HIGH



First layer horizontal joints staggered; use 12-foot boards.

Face layer parallel to studs; use full-length boards from floor to the ceiling.

The sketch at the right shows the proper cutting and fitting of the face layer where doors and windows are in the wall. Wherever practical, vertical end joints on side walls should be placed above door and window openings to reduce the joint treatment to a minimum.

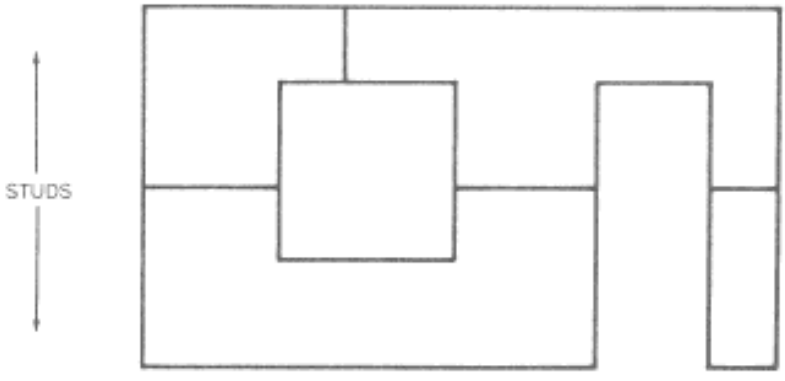


Figure 9-1 Hanging sheetrock and wood panels

Types of Sheetrock

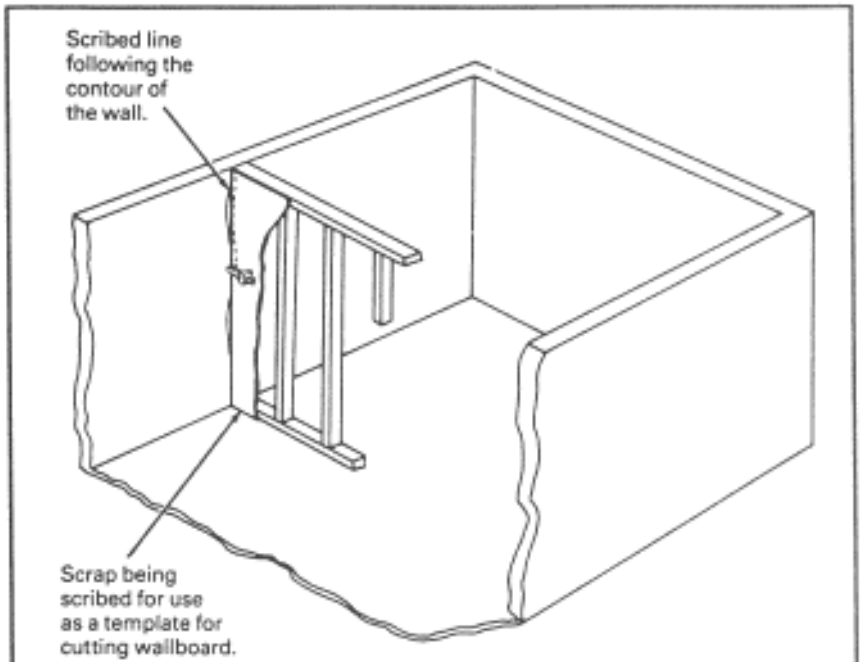
The following are some of the different types of sheetrock used in construction:

- *Gypsum board is* the most commonly used wall and ceiling covering in construction today.
- *Greenboard* or *blueboard is* moisture resistant and is used in bathrooms, laundries, and similar areas.
- *Sound-deadening board is* a sublayer used with other layers of sheetrock (usually type X).
- *Backing board* has gray paper lining both sides. It is used as a base sheet on multilayer applications and is not suitable for finishing and decorating.
- *Foil-backed board* serves as a vapor barrier on exterior walls.
- *Vinyl-surfaced board is* available in a variety of colors. It is attached with special sheetrock finishing nails, screws, or channels and is left exposed with no joint treatment
- *Plasterboard or gypsum lath is* used for a plaster base. It is not compatible with Portland cement plaster.

Sheetrock Dimensions

Sheetrock usually comes in sheets that are 4 x 8, 4 x 9, 4 x l0, 4 x 14, and 4 x 16 feet. Its thickness is 1/4, 3/8, 1/2, or 5/8 inch.

- 1/4 or 3/8 inch is used effectively in renovations to cover existing finish walls with minor irregularities. This thickness is not adequate for single-layer application.
- 1/2 inch is most commonly used. It is adequate for studs or ceiling joists spaced 16 or 24 inches on center.
- 5/8 inch is widely used in multiple, fire-resistant combinations. It is recommended for single-layer walls.



1. Place a piece of scrap material in the angle and scribe (mark) it to indicate the surface peculiarities.
2. Saw the scrap material along the scribed line.
3. Place the scribed strip on the wall panel material to be used. Keep the straight edge of the scrap material parallel with the edge of the panel. Scribe the good sheet of paneling.
4. Saw the sheet along the scribed line.

NOTE: This method can also be used for sheetrock; however, it would be easier to just fill the gaps caused by uneven walls with joint compound.

Figure 9-2. Fitting wall panels to uneven walls

Sheetrock Edges

Sheetrock edges are tapered 1/16 inch thinner than the body of the sheet about 1 1/4 inch on each sheet edge. The shallow channel formed will

be brought level with tape and joint compound.

Sheetrock Application

Sheets may be applied either horizontally or vertically; specifications may indicate which method should be used.

Sheetrock Fasteners

Nails used are specially designed with oversized heads for greater holding power and treated to prevent rust and stains. The most common is the annular-ring nail. Other types of nails include the smooth-shank, the diamond-head (used to attach two layers of sheetrock or to attach sheetrock over existing materials), and the predecorated. The predecorated nails have smaller heads, are left exposed, and are colored to match the sheetrock.

Nails. If the sheetrock is single nailed, the nails should be spaced 6 to 7 inches apart on the ceilings and 6 to 8 inches apart on the walls (Figure 9-3). If the sheetrock is double nailed, the centers of the nail pairs are approxi mately 12 inches apart, with each pair 2 to 2 1/2 inches apart and the outer edges 7 inches on center (Figure 9-4). The distance from the edge should be 3/8 to 1/2 inch. Do not double nail around the perimeter of a sheet.

Drive each nail slightly below the surface, forming a "dimple." Be sure not to break the paper when driving nails. The dimple creates a pocket which is filled with joint compound. Screws are made of high-quality steel; use a power screw gun or an electric drill to drive them in just below the surface without breaking the paper.

Adhesives. Adhesives are used to bond single-ply sheetrock directly to the framing members, furring strips, masonry surfaces, insulation board, or other sheetrock. It must be used with nails or screws.

Joint Compound. Joint compound is used to apply tape over joints, to cover nailheads, and to smooth and level the surface. The powdered form is mixed with water to a desired consistency. It is also available ready mixed. This is the most common form and the easiest to work with.

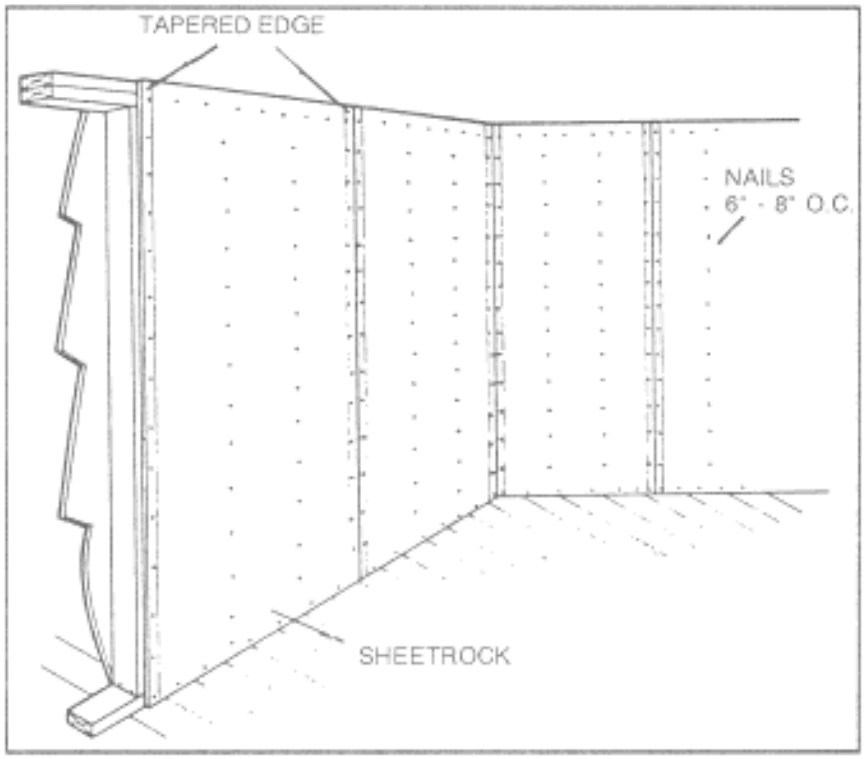


Figure 9-3. Sheetrock applied vertically

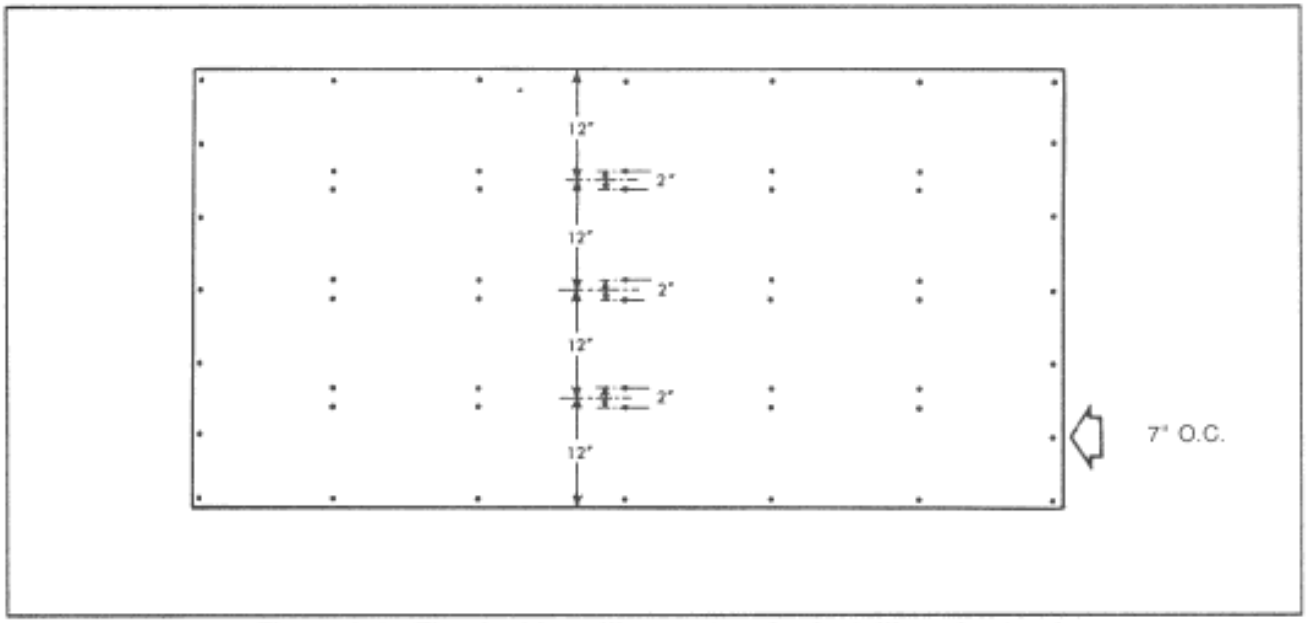


Figure 9-4. The double-nailing system for installing sheetrock

Joint Tape. Joint tape is applied with the first coat of joint compound. It reinforces joints and reduces cracking. The paper type may or may not be perforated. Perforated tape is easier to bed and cover than nonperforated tape. Fiber-mesh tape is self-sticking, which eliminates the need for the first coat of bedding joint compound.

Metal Accessories. Metal accessories include the corner bead and the casing bead. The corner bead is used on all exposed (outside) corners to ensure a clean finish and to protect the outside corners of sheetrock from edge damage It is nailed or screwed 6 inches on center to en sure that it is plumb.

The casing (stop) bead is used where sheetrock sheets butt at wall intersections or wall and exposed ceiling intersections or where otherwise specified. It is matched to the thickness of the sheetrock.

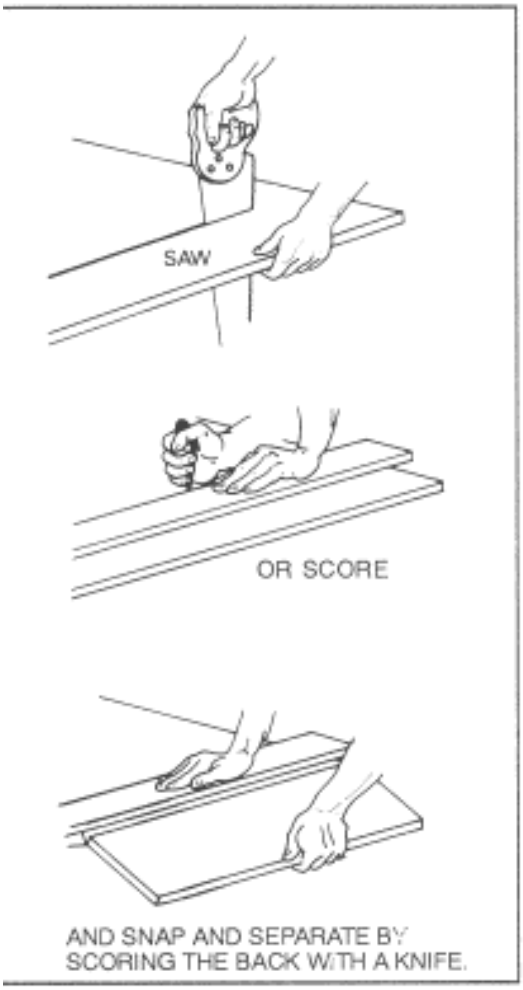


Figure 9-5. Cutting sheetrock

Sheetrock Tools

The following are tools used in the application of sheetrock:

- The sheetrock hammer is used for hammering nails.
- The sheetrock carrier (lifter) is used for carrying or lifting sheetrock.
- Sheetrock knives are used to apply and finish joint

compound. The 4-inch knife is used to bed the tape in the first layer of joint compound and for filling the dimples, the 6-inch knife is used for feathering out the second coat, and the 12-inch knife is used for the third/finish coat.

- The corner trowel flexes from 90° to 103°. It is used to apply joint compound in interior corners.
- The mud pan is used to hold and carry joint compound.
- The corner-bead crimper is used to fasten the corner bead by crimping.
- The T-square is used to lay out and guide a 90° cut on sheetrock.
- The utility knife is used to score or cut the sheetrock (Figure 9-5).
- The keyhole saw is used for cutting out irregular shapes and openings (such as outlet-box openings).
- Surform is used to smooth sheetrock edges after cutting.
- The tape banjo is used to apply tape (dry) or joint compound and tape (wet).
- Sandpaper and sponges are used for feathering or smoothing dried joint compound.
- A chalk line is used to facilitate layout.
- A 16-foot measuring tape is used for measuring the sheetrock.
- A 4-foot hand level is used to plumb.
- Saw horses are used for placing sheetrock on to make cuts.

Sheetrock Installation

There are three steps to installing sheetrock— hanging, finishing, and patching.

Hanging Sheetrock. Apply sheetrock as follows:

Step 1. Install sheetrock on the ceiling first. Measure the distance from the inside edge of the top plate to the outside edge of the second ceiling joist. Measure and cut a piece 48 inches long and to the width measured above. Install and secure the sheet to the ceiling with sheetrock nails. Nail spacing on ceilings is 5 to 7 inches on center.

Step 2. Determine the starting point of the wall. Using a measuring tape, locate a section where the studs are ~ foot on center and where a full sheet could be laid horizontally. Check the layout to ensure that there will be no joints above or below the door or window openings. Sheets will be installed from the ceiling down to the floor, starting at the ceiling.

Step 3. Install the first sheet. With the help of another person, place a sheet of sheetrock in position so that the edges fall on the center of the studs. Place the sheet snug against the ceiling, using a hand level to ensure that it is level. Secure the sheet with sheetrock nails 6 to 8 inches on center, 3/8 inch from the edge. Install succeeding sheets on the top half of the wall against installed sheets, ensuring that joints fall on the center of the studs and proper nail spacing is maintained. Using a utility knife or sheetrock saw, cut out openings for doors and windows.

Step 4. Lay out the receptacles. Measure the distances from an inside corner to both sides of the receptacle box and record them. Measure the distance from the installed sheetrock to the top and bottom of the receptacle box, and record them. Measure and mark these dimensions for the receptacle cutout, allowing 1/16-inch clearance all around.

Step 5. Cut out the opening for the receptacle. With a utility knife, drive a hole within the opening. Using a keyhole saw, cut out the opening. Use a slight undercut bevel so that the back opening is larger than the front opening.

Step 6. Install the prepared sheet. Place the prepared sheet in position, ensuring that the receptacle fits in the opening without breaking the paper. Make adjustments to the opening if necessary. Secure the sheet to the studs with sheetrock nails. Using a Surform, smooth the rough edges of the openings as necessary.

Step 7. Lay out and cut sheets for corner posts. Measure and cut the required number and sizes of sheets to cover corner posts. Scrap pieces of material may be used.

Step 8. Install the corner bead. Using a corner-bead crimper, install the corner bead on the exterior corners of corner posts. Nails may be used if necessary.

Finishing Sheetrock The finishing process consists of covering nailheads and covering seams (covering seams is also referred to as *finishing joints).* Finish sheetrock as follows:

Step 1. Check for improperly recessed nails by running the edge of a sheetrock knife over the nailheads. A clicking sound indicates a nail needing to be recessed.

Step 2. Use a 4-inch knife and mud pan with joint compound to apply a smooth coat of joint compound over the nails. Remove any excess compound.

Step 3. Use the knife and mud pan to apply a heavy coat of joint compound over a sheetrock joint, horizontal or vertical. A heavy coat is enough to ensure a good bond between the tape and sheetrock and to fill in tapered edges. Measure and cut the tape to the length required for a joint. Keeping the tape centered over the joint, start at one end of the joint and work toward the opposite end. Using the knife, press the tape into the compound, removing all excess compound. Work off all excess joint compound, being careful not to wrinkle the tape or leave air bubbles. Continue to tape all the joints in the same manner.

Step 4. Use a 4-inch knife to apply a heavy coat of joint compound over the sheetrock at the inside corner. Measure and cut the tape to the length required for the joint. Fold the tape in half lengthwise, keeping both edges even. Use a corner tape creaser if necessary. Apply the tape at the top and work downward, running the edge of your hand at the center of the tape to ensure that it is in the corner. Using the inside corner tool, press the tape into the compound, working off all excess compound and being careful not to wrinkle the tape or leave air bubbles.

Step 5. Apply the first coat of joint compound over the tape then apply a medium coat of joint compound. Feather the compound with the 6-inch knife to about 2 to 3 inches on each side of the joint. A good job of feathering and smoothing will minimize sanding later.

Step 6. Apply the second coat of joint compound over the tape and nail coverings. The joint compound previously applied must be completely dry. Use the 4-inch knife to apply a thin coat of compound over the nails, removing any excess compound. Using the steps above, apply the second coating to the joints using the 6-inch knife and feathering out 6 to 8 inches on each side of the joint.

Step 7. Apply the third coat of joint compound. The joint compound previously applied must be completely dry. Using the step above, apply the third coat using the 10-inch knife and feathering out 10 to 12 on each side of the joint. Nails should not require a third coat, but it may be applied if necessary.

Step 8. Using a damp sponge or fine sandpaper, sand the surface to a smooth finish, ensuring that there are no voids and that the surface is ready to receive paint.

Patching Sheetrock. There are several different methods of patching sheetrock, depending on the size of the hole.

For small holes, apply fiber-mesh tape directly over the hole. Cut the tape with joint compound and feather the edges. Sand or sponge the area smooth after it has dried.

For fist-size holes, cut out a rectangle around the hole with a keyhole saw. Cut a piece of backing (1 x 2 or 1 x 3) slightly larger than the opening itself. Glue or screw the backing into place. Cut a patch and glue it to the backing using either wallboard adhesive or mastic. Apply tape and coat it with compound. Feather the edges. Sand or sponge the area smooth after it has dried.

For large holes, mark and cut a rectangular section around the damaged area, reaching from the centers of the nearest studs. Cut a patch and screw or nail it to the studs. Apply tape and coat it with compound. Feather the edges. Sand or sponge the area smooth after it has dried.

BASE MOLDING

The interior trim of a building should match or complement the design of the doors, the windows, and the building. Base molding is the trim between the finished wall and the floor. It is available in several widths and forms. Figure 9-6, page 9-8, shows the types of base molding.

Square-edge (or two-piece) baseboard consists of a square-edged baseboard topped with a small base cap. When the wall covering is not straight and true, small base molding will conform more closely to the variations than will a one-piece base alone. This type of baseboard is usually 5/8 x 3 1/4 inches or wider. Installation of square-edged baseboard is shown in Figure 9-7.

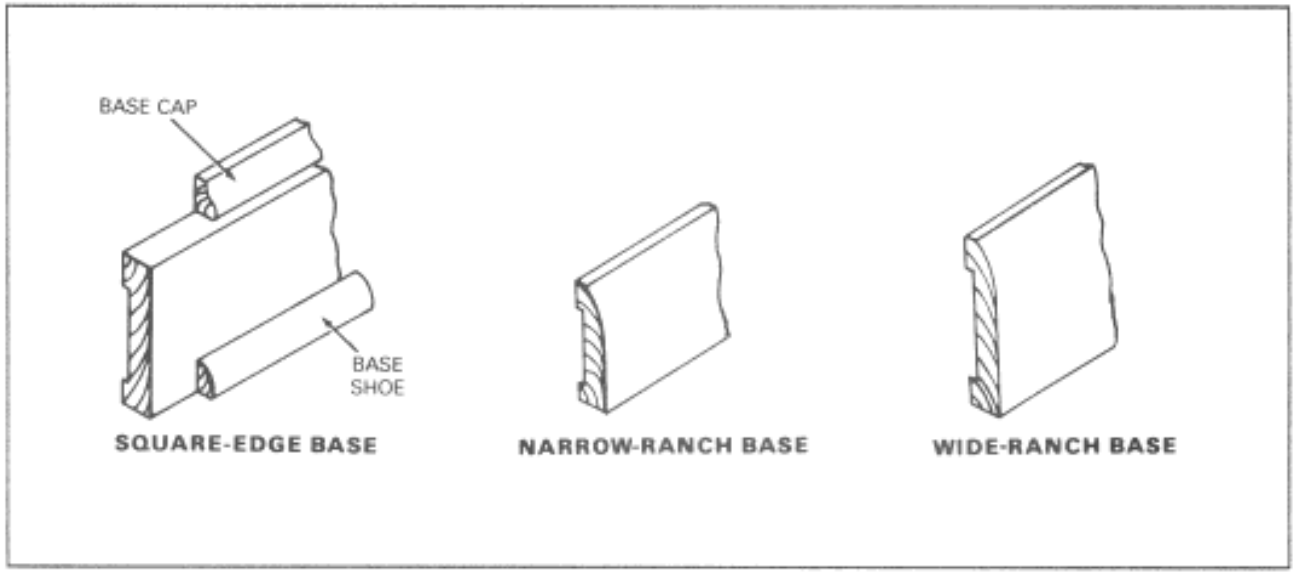


Figure 9-6. Types of base molding

Narrow- and *wide-ranch base* (one-piece baseboard) are 3/4 x 3 1/4 inches or wider and vary from 1/2 x 2 1/4 inches to 1/2 x 3 1/4 inches or wider.

A wood member at the junction of the wall and carpeting serves as a protective bumper; however, wood trim is sometimes eliminated. Most baseboards are finished with a 1/2- x 3/4-inch base shoe. A single-base molding without the shoe is sometimes placed at the wall-floor junction, especially where carpeting might be used.

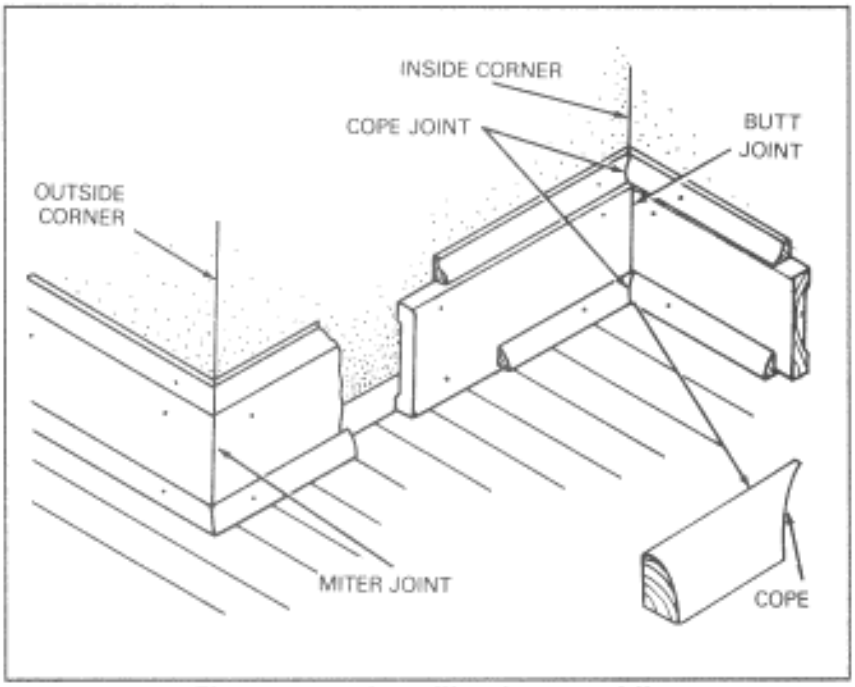


Figure 9-7. Installing base molding

Baseboard should be installed with a butt joint at the inside corners and a mitered joint at the outside corners. (The baseboard installation in Figure 9-7 is done with square-edge baseboard.) It should be nailed to each stud with two 8d finishing nails. Base molding should have a *coped joint* at inside corners and a mitered joint at outside corners. A coped joint is one in which the first piece is square cut against the plaster or base and the second molding is coped. This is done by sawing a 46° miter along the inner line of the miter. The base shoe should be nailed into the subfloor with long, slender nails, but not into the baseboard itself. Then, if there is a small amount of movement in the floor, no opening will occur under the shoe. When several pieces of molding are needed, they should be joined with a lap miter (Figure 9-8). When the face of the base shoe projects beyond the face of the molding, it abuts (Figure 9-9).

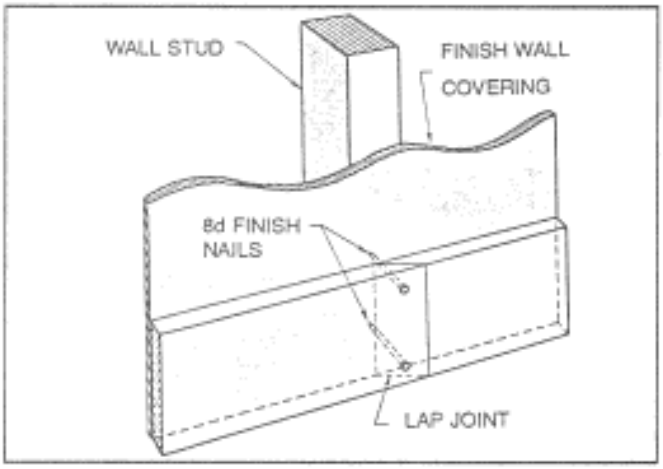


Figure 9-8. Trim lap-miter joint

CEILING COVERINGS

In current construction, sheetrock, plywood, and fiberboard are used instead of laths and plaster to cover ceilings.

SHEETROCK

Cut the panels and treat the joints the same as for walls and partitions, making sure that joints break

on the centers of ceiling joists.

A brace may be constructed and used to raise and hold a sheet in place when fitting and nailing the sheet to the ceiling joists. Nail sheets with the lengths going across ceiling joists to prevent sagging (Figure 9-10, page 9-10).

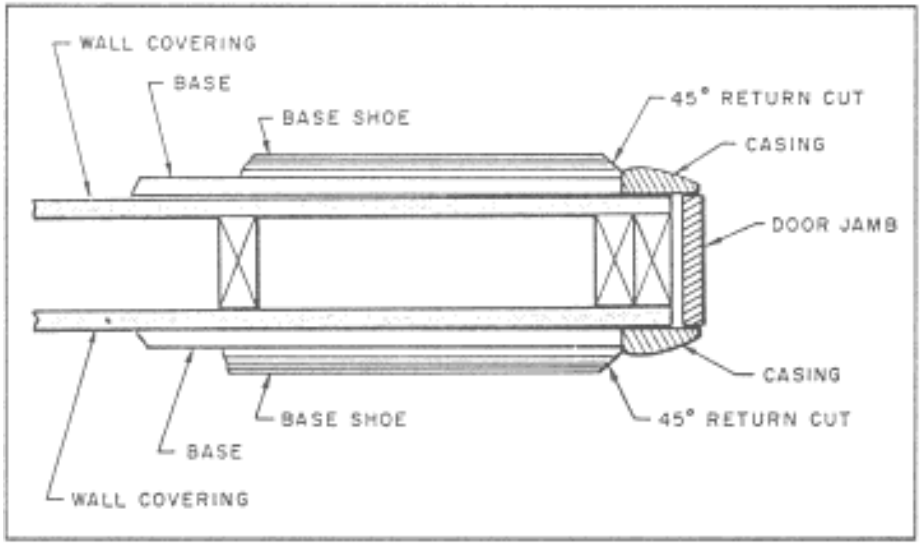


Figure 9-9. Base-shoe trimming

PLYWOOD

Plywood is hung the same on ceilings as on walls and partitions.

FIBERBOARD

Fiberboard sheets are 1/2 to 2 inches thick. For a smooth cut on these sheets, use a utility knife. Fiberboard sheets are attached directly to the joists. To improve ceiling appearance, cover the joints between the sheets with batten strips of wood or fiberboard. Smaller pieces of fiberboard (tiles) require furring strips (wooden strips nailed across joints) (Figure 9-11, page 9-10).

Fiberboard sheets also come in small (rectangular or square) pieces called *tiles*, which are often used for covering ceilings They may be made with a lap joint, which permits blind-nailing or stapling through the edge. They may also be tongue-and-grooved, fastened with 2d box nails driven through special metal clips.

For fiberboard tiles that need solid backing, place furring strips at right angles across the bottom of the joists. Place short furring pieces along the joists between the furring strips. Nail metal channels to furring strips and slide the tiles horizontally into them. In lowering ceilings (usually in older buildings), metal channels are suspended on wire. Some large (2 x 4 foot) tile panels are installed in individual frames.

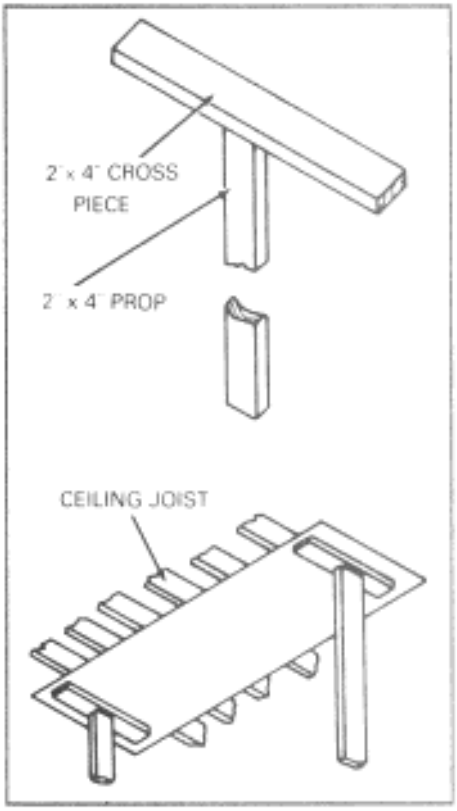


Figure 9-10. Brace for holding ceiling panels

CEILING MOLDINGS

Ceiling moldings are sometimes used at the junction of the wall and the ceiling to finish the sheetrock paneling (sheetrock or wood). Inside corners should be coped joints. This ensures a tight joint even if minor moisture changes occur. Figure 9-12 shows ceiling molding.

For sheetrock walls, a small, simple molding might be best. For large moldings, finish nails should be driven into the

upper wallplates and also into the ceiling joist, when possible. (For plastered ceilings, a cutback edge at the outside of the molding will partially conceal any unevenness of the plaster and make painting easier where there are color changes.)

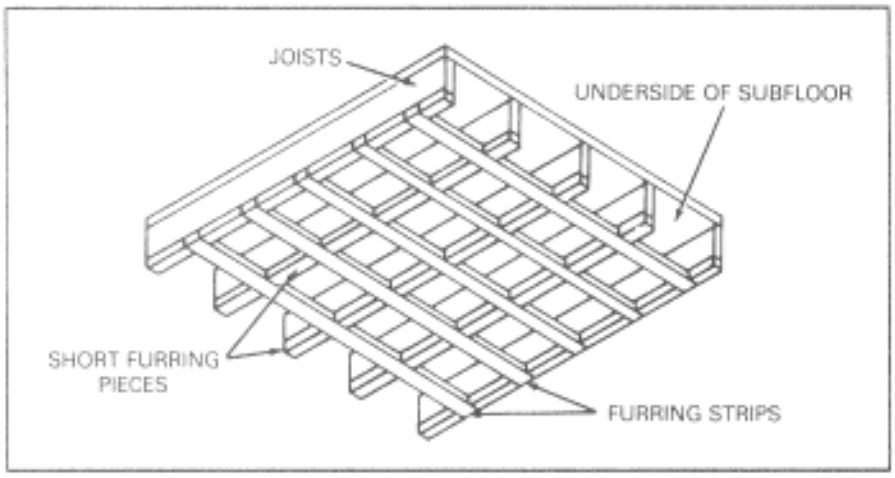


Figure 9-11. Furring strips on ceiling joists

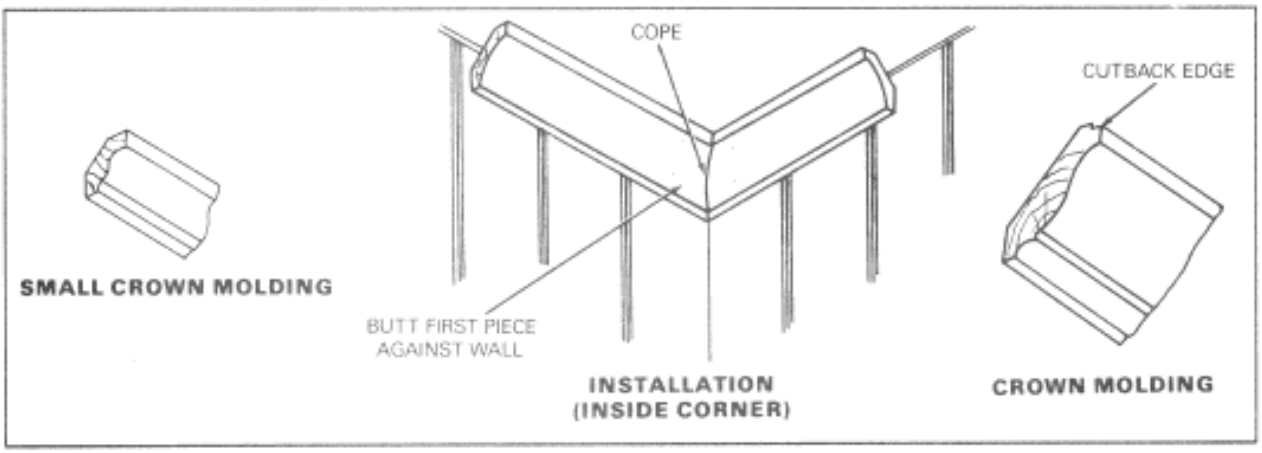


Figure 9-12. Ceiling molding