OLD HOUSE RESTORATION

NO. 2 DRYWALL
Where plastered walls are so badly damaged they cannot be repaired, drywall can provide an acceptable new surface for walls and ceilings. However, installing drywall in an old house is not as simple as it seems. Plastered walls have a hand-applied finish that drywall cannot duplicate. Drywall surfaces must be plumb, level, and true; or, joints between the drywall panels, irregularly-sized studs and ceiling joists, and ceilings that are outof-level will be visible. While plaster is made to cover imperfections in the "bare bones" of the building, drywall magnifies these imperfections. Because drywall is a material developed for new construction, its installation in vintage houses requires special effort to assure that the end result is satisfactory. This publication shows how a high-quality drywall installation can be achieved in an old house restoration.

WHY DRYWALL?

Four things make drywall an attractive alternative to plaster. First, drywall is less expensive than plaster. Second, plasterers are hard to find. Third, if the original plaster must be removed, insulation can be installed and drywall used as the new wall system. And, fourth, homeowners can learn to hang drywall relatively easily.

The cost factor can be especially important in an old house restoration because there may be a number of other urgent repairs needed, and only a limited amount of money available. Drywall costs about 70 percent as much as an equivalent plaster job — if the drywall is hung and taped by a professional crew. Because of additional work that is often needed in an old house, the costs could even be slightly higher. Increases in cost result from ceilings that are badly out-of-level, uneven stud spacing, additional blocking to be installed in corners, studs of varying thicknesses, masonry walls, and extremely hard wood.

This is a typical section of a contemporary wood-frame house. The vapor retarder is installed just behind the drywall to keep moisture from migrating into the wall cavity.

However, making accurate price comparisons between the two systems is difficult. The price depends on how the material is installed. Either drywall or plaster can be attached to furring strips (called strapping in some parts of the country). Both can have insulation added. And there are a number of bases that can be used. For example, plaster systems can use the existing wood lath, new wire lath, rock lath, or veneer lath. Drywall systems can be installed double-nailed, in varying thicknesses, in two layers, or with adhesive attachment.

Great savings are possible when homeowners are willing to do the work themselves. The materials used in drywall are less expensive than materials used in plastering. The labor is the greatest expense in a drywall job — about 66 percent of the total cost. When labor costs are subtracted from the overall job price, the cost of a drywall system drops dramatically. Because of the work involved in hanging drywall, and the expense, owners should consider the decision carefully. The cost of replacing plaster, even with drywall, should be an incentive to save the plaster if at all possible.

In addition to cost, another reason for thinking of drywall is the difficulty in finding a plasterer. However, finding a drywall contractor who will do a conscientious job, given the difficulties of hanging drywall in an old house, can also present a problem. Be sure to ask for references, and discuss the kind of drywall job you expect before signing a contract.
When installing insulation in conjunction with drywall, be sure to install a proper vapor retarder if your house is in a climate where temperatures drop below freezing. This is especially important because the house will become tighter as it is insulated. If you do not install a vapor retarder, you could create moisture problems where none existed. Drywall panels with foil backing can function as effective vapor retarders if the joints are properly taped. Alternately, a polyethylene vapor retarder, stapled to the studs and ceiling joists, can also be used.

The last consideration — enthusiasm for doing the job yourself — is often the most important. For do-it-yourself people, there are two separate skills to learn: the first is hanging the drywall. The second is taping it. The labor cost for each of these is about equal. For instance, taping is approximately 30 percent of the total cost (of labor and materials), and hanging drywall is about 35 percent. It may be easier to learn to hang drywall than to learn how to tape it. Some homeowners choose to subcontract either the taping or the hanging and do the other task themselves.

To achieve the best-looking drywall job possible, a double layer of drywall should be installed. Planning must be done carefully or problems with the new wall thickness may occur. The finished wall must be no thicker than the original wall. Careful attention to sanding and finishing all joints and nail holes should be a priority.

**Drywall Materials**

The most common form of drywall is a paper-covered, gypsum-core panel. The paper covering gives drywall its strength. The gypsum core has very little strength, but it does make the panel fire resistant. Other types of drywall are available but they will not be discussed in this pamphlet.

Drywall is a “dry, wall system” as opposed to the “wet, wall system” of plaster. The panel concept was developed for new construction, so that the most common panel lengths are multiples of 16 inches, the standard new-construction stud spacing. Drywall is commonly available in 8- and 12-foot lengths. There is only one width, however — 4 feet. This is because new construction typically has ceilings that are close to 8 feet high. Two drywall sheets, hung horizontally, are used in new construction. (Light switches are usually located 48 inches from the ceiling so the drywall sheet can be cut from the edge.) Horizontal installations are also at a convenient height for the taping crew — no stooping or climbing on step-ladders.

Longer panels of drywall can be special-ordered; however, 9-, 10-, and 16-foot lengths are not normally stocked in lumber yards.

The long dimension of a drywall panel has a “recessed”, or tapered, edge. The tapered edge allows space for tape and joint compound to be applied so that the completed job will be flat and smooth. The short ends of drywall panels are not tapered. These “butt” ends require special treatment if they are to be taped.

Drywall with special edges is also available, but it must be special-ordered by the lumberyard. Depending on the manufacturer, this specialty drywall is made with a rounded edge, or a tapered/beveled edge. The special-order drywall is used where extra rigidity is required. When the joints are taped with a “setting-type” joint compound and fiberglass tape, the specialty drywall is more resistant to cracking caused by slight building movements than ordinary drywall.

Three types of drywall edges are shown. At the top is the standard, tapered drywall edge. The middle drawing shows a round-edge drywall panel. The bottom drawing shows the tapered/beveled edge panel.
In addition to different edge treatments and lengths, drywall also comes in a number of thicknesses. The most common thicknesses are \( \frac{1}{8} \)" and \( \frac{3}{8} \)". Tapered, round-edge panels only come in these thicknesses. However, \( \frac{1}{8} \)" and \( \frac{3}{8} \)" panels are also available and are often needed in old houses. These have the standard tapered edge. Some manufacturers of drywall only make the \( \frac{1}{4} \)" panel with a square (non-tapered) edge. (This is because the panel is often used as the hidden, bottom layer in a two-layer system.)

To determine the thickness needed, the homeowner must know the spacing of the wood to which the drywall will be attached and whether the drywall will be used on ceilings or walls. It is also important to know whether the drywall will be installed vertically or horizontally, and in one or two layers. Generally, the thicker the drywall, the more it tends to behave like plaster — it won't sag. The thinner the drywall, the more likely it is to sag. The chart can be used to determine the proper choice for different stud and joist spacing. Whether the drywall is oriented perpendicular to or parallel to the joists will also make a difference in whether a particular thickness of drywall can be used. The application method is discussed on page 7.

<table>
<thead>
<tr>
<th>Drywall Thickness</th>
<th>Location</th>
<th>Application Method (1)</th>
<th>Framing Spacing</th>
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<td></td>
<td>sidewalls</td>
<td>perpendicular</td>
<td>24(6)</td>
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(1) Long edge position relative to framing. (2) Not recommended below unheated spaces. (3) Not recommended if water-based texturing material is to be applied. (4) Max. spacing 16" if water-based texturing material is to be applied. (5) Adhesive must be used to laminate \( \frac{1}{4} \)" or \( \frac{3}{8} \)" board for double-layer ceiling construction. (6) Max. spacing 16" o.c. if fire rating required.

Plaster that is badly damaged can remain in place. Furring strips can be used to provide a stable nailing base. It is generally easier to level the ceiling if the strips are oriented perpendicular to the joists.

Furring strips are often nailed perpendicular to ceiling joists, especially where ceilings must be made level. Lumber of a nominal 2-inch thickness should be used for these furring strips if drywall will be nailed to them. If 1x4 furring strips are used perpendicular to the joists, drywall should be hung using drywall screws. This is because the 1x4 strips are flexible. When a hammer drives a nail into a 1x4 furring strip, the impact of the hammer loosens nails that have already been driven. Furring strips of any thickness can be used if they are nailed on the bottom face of the joist itself.

When attaching drywall to furring strips, it is best to use screws. A screw gun with a depth setting is the best tool for this job.
Special-Use Drywall

Three kinds of drywall have special uses. Green-papered drywall is used in high-moisture situations. Foil-backed drywall is used when a vapor retarder is needed. And, Type X, or fire-rated drywall, is used when code requires a wall to resist fire for a specified length of time. Each is slightly more expensive than standard drywall.

Moisture-Resistant Drywall. Moisture-resistant drywall is used in high-moisture areas surrounding bathtub or shower enclosures. The gypsum core is impregnated with asphalt to help it resist moisture. Gypsum alone is very vulnerable to moisture damage. The drywall is only moisture-resistant, however, not waterproof. If moisture-resistant drywall is installed, insulation and a polyethylene vapor retarder (or other vapor retarder) should also be installed. If no insulation is installed in the walls of high-moisture rooms, the gypsum could be damaged if temperatures drop below freezing. This is because the temperature of the drywall could become so cold that water vapor (from showering and bathing) would condense in the gypsum. A ventilating fan should be used to reduce moisture levels. The moisture from a bathroom or kitchen fan should be vented outside. Even moisture-resistant drywall will deteriorate when constantly exposed to moisture.

In parts of the country where temperatures drop below freezing, condensation in wall cavities occurs if humidity in adjacent rooms is high and if there is no vapor retarder.

To obtain some additional insulation, rigid insulation can be installed before drywall is added. This makes the wall thicker and can cause problems with trim.

If a vapor retarder and drywall are installed over damaged plaster without insulating the wall cavity, the vapor retarder can cause condensation problems in the drywall. Do not use a vapor retarder if the wall cavity behind it is to remain uninsulated.
Ideally, the wall cavity should be insulated and a vapor retarder installed behind the drywall. This prevents moisture from moving through the drywall and condensing in the wall cavity.

Either unfaced batts or kraft-faced batts can be used with foil-backed drywall. The kraft-faced batts can be stapled in place, but unfaced batts are less expensive.

Foil-backed Drywall. As we insulate and tighten houses, providing a vapor retarder is essential. A specialty drywall product provides a foil vapor retarder on the back side of the drywall panel. When foil-backed drywall is used as the vapor retarder, unfaced batts of insulation can be used. Kraft-faced batts can also be used if the installer prefers to staple the batts in place.

Foil-backed drywall is nailed in place using the same nailing procedure as normal drywall. At baseboards, at the intersection of ceilings and exterior walls, around electrical outlets, and around windows and doors, sealant should be used to prevent moisture from entering the wall cavity.

An additional benefit in using foil-backed drywall is that it can reduce summer cooling costs. In summer, it is especially effective in blocking the downward flow of heat. The foil must be next to a ¾" (minimum) dead air space for reflectance to occur. This is because the metallic foil, like all metals, is an effective conductor of heat. If metal is in direct contact with a very cold or hot object, it will transfer that heat readily. The air space is used to assure that the metal will be reflecting radiant heat, not acting as a conductor of heat. Properly installed, foil-backed drywall can provide the equivalent of an additional R-3 to R-4 in the walls and R-8 to R-9 in the ceilings during summer months.

Fire-Rated Drywall. Glass filaments are added to the gypsum core in fire-rated drywall. These filaments hold the drywall together in case of fire. Fire-rated drywall must be used where the local building code requires a "rated" wall. A rated wall is one that will stop the advancing fire for a specified period of time.

If foil-backed drywall is used as a vapor retarder on an exterior wall, sealant should be used around the edges of panels and around outlet boxes.
Installation Choices

After selecting the type of drywall needed, the owner must decide how to install it. Choices for installing drywall include whether to use a single-layer application or a double-layer application. Another choice is whether to glue it, nail it, or screw it. A third choice is whether to install the drywall parallel to or perpendicular to the studs, joists, or furring strips. A final choice is whether to nail the ends of panels to joists or whether to use backblocking.

Single or Double Layers. The simplest method for installing drywall is to install a single layer. The ceiling is installed first, then the walls. The drywall must be cut accurately and the panels butted, but not forced, together. In single-layer applications, ceilings should be installed with the drywall oriented perpendicular to the framing. The ceiling is stronger with perpendicular application.

Ceiling strength is important because frequently insulation is installed above the drywall. The weight of the insulation can cause thin drywall (½") to sag. Therefore, some thicknesses of drywall are not recommended for single-layer ceiling applications.

In a single-layer drywall system, the ceiling is installed first, then the walls are installed. Because nailing near corners is difficult, especially on ceilings, the ceiling panels are often partially supported by the wall panels. An adhesive attachment system, recommended if the ceiling panels are allowed to “float”, is explained later in the text.

Drywall can also be installed in two layers. This not only increases the strength of the wall or ceiling; it reduces sound transmission and reduces the number of nails needed in the top layer. The second layer helps conceal any unevenness in the wall framing. Because it uses fewer nails, the chance of nail-popping is reduced.

In double-layer applications, the first layer is nailed or screwed to the wall with the normal nail spacing. The second layer is then glued to the first using drywall adhesive, all-purpose joint compound, or a setting-type joint compound. A few nails can be placed at the top and bottom to hold the sheet in place. Then a brace can be used to hold the middle tight. The second layer can either be applied in the same direction as the first layer, with the joints offset by at least 10 inches; or, the panels can be turned perpendicular to the first layer.

On exterior walls, the use of a rigid insulation combined with one layer of drywall may be desirable. (There is no energy-saving advantage in using foil-backed drywall in this case because it would not be next to the required dead air space.) On inside walls, however, insulation is not needed. The double-layer technique may help match the drywall thickness to the old plaster thickness, and it may avoid the need to use furring strips. In addition, it results in a better looking job.
In a double-layer installation the second layer is glued to the first. A few nails hold the drywall until the adhesive dries. Bend the drywall to facilitate placement.

A double-layer installation can be braced while the adhesive sets. The second layer should be applied perpendicular to the first. Joints should be staggered.

The ceiling is installed first, even in a double-layer system. This allows the wall panels to support the edges of the ceiling panels.

Nail or Screw Attachment. Drywall nails come in assorted lengths and configurations. All have a concave head. When driven in with a drywall hammer, a slight dimple is created in the drywall. (It is important to never break the paper around the driven nail.) Nails can be either blued, ring-shank, or galvanized. Both ring-shank and galvanized nails are designed to prevent nails from working out of the lumber when the lumber dries or humidity levels change. Blued nails may “pop” more easily.

In single-layer applications, panels can be single-nailed or double-nailed. With single-nailing, the nails are evenly spaced around the edges and in the field. The field is the large, inside area of the drywall panel. The nail spacing is always specified by the manufacturer. With double-nailing, two nails are placed close together (about 1-inch apart) along the edges and in the field. Because a double-nailed system is stronger, the spacing between points of attachment is greater. Double-nailing reduces the likelihood that the nails will pop.

In the same way, a ceiling or wall panel that is applied with adhesive is stronger than one that is simply nailed. Thus, nailing is often accompanied by adhesive application. Adhesive is applied to the ceiling joists, furring strips, or studs with a caulking gun; then, the panel is put in place and nailed.
Nailing or Screw Spacing for Single-Ply Gypsum Board

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<tr>
<th>Thickness</th>
<th>Single Nailing</th>
<th>Double Nailing</th>
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<tr>
<td>½” sidewalls</td>
<td>8” o.c. max.</td>
<td>12” o.c. max.</td>
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<tr>
<td>¾” sidewalls</td>
<td>8” o.c. max.</td>
<td>12” o.c. max.</td>
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<tr>
<td>½” ceilings</td>
<td>8” o.c. max.</td>
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<td>⅛” ceilings</td>
<td>10” o.c. max.</td>
<td>12” o.c. max.</td>
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Sometimes, a floating interior angle system is used around the edges of a room. With this system, it is wise to use adhesive attachment as well. With the floating angle, the ceiling is put in place first. Then the walls are installed, with the wall panels pushing up against the ceiling. In old houses that have been plastered, there is often no blocking around the edges of the room to support the drywall. (Pieces of blocking are extra pieces of 2x4 needed to support drywall.) With the floating angle installation, there is no need to use blocking in these corners.

The drywall nail must be set so that a slight dimple is created around it. The dimple will be filled with joint compound. A drywall hammer is the best tool to use to create the dimple. A drywall hammer has a convex head and is less likely to break the facing paper of the drywall.

Drywall screws can also be used for attachment. Where furring strips have been installed to level uneven ceilings, screws are the best choice. A lightweight, electric screw gun with a depth setting is needed for this system. Without a depth setting on the screw gun, the screw could be driven all the way through the drywall. Screw heads should be set just slightly below the drywall surface.

Whether using screws or nails, the length of the fastener will depend on the thicknesses of drywall used. The fastener should penetrate the wood by at least ¾”.

Drywall is sometimes used to cover other surfaces besides walls and ceilings. In this illustration, drywall is used to cover the walls below a kitchen counter. A transition between the countertop and the drywall is needed. This transition is provided by a "reveal." The detail of this reveal is shown on the next page.

To level uneven ceilings, furring strips should be used. The furring strips can be shimmed with shim shingles. Drywall screws should be used to attach drywall to shimmed furring strips.
This illustration shows how the reveal beneath the countertop on the preceding page is created. The top edge of the drywall is covered by a metal edge bead. The recessed area above the edge bead can be painted black to create a shadow effect.

**Metal Edges.** To protect exposed edges and corners from impact, metal edge bead or corner bead is used. Metal edge bead is used where an edge of drywall is butted against another material such as wood, or where the drywall edge is used to create a slight “reveal”. This detail is illustrated above.

Metal corner bead is used to protect corners that project into the room from damage. The metal corner bead must be installed absolutely plumb. When the corner bead has been nailed in place, joint compound is used to cover the metal and feather the corner into the adjacent panels.

**Taping Options**

Because large drywall panels must be joined inconspicuously, a good taping job is as important as a quality installation of the drywall itself. There are two types of tape and two types of compound in which to bed the tape.

**Paper Tape.** Paper tape comes in a large roll. Some paper tapes are perforated, while others are solid. Paper tapes are pre-creased so they can be easily installed in corners. The paper is made to resist pulling apart, but it will not resist movement that causes the paper to bunch or that puts diagonal stress on it. Some kinds of movement in old houses are caused by foundation problems that create diagonal cracks. These cracks should not be taped with paper drywall tape. When paper tape is used to tape drywall joints, however, it performs quite well.

**Fiberglass Tape.** Fiberglass tape is used in drywall, as well as in veneer plaster systems. (See OHR #1, Plaster.) Two types are available. One must be bedded in wet joint compound as the compound is applied. This tape does not have an adhesive backing. Pressure-sensitive fiberglass tape does have a sticky backing. When pressed in place, the tape will stick to drywall until the joint compound is applied. For best performance in holding cracks together, the tape should be pre-stressed by stretching it as it is installed.

Pull diagonally on the fiberglass tape as it is installed. Pre-stressing the tape makes a stronger joint.

To prevent damage to the drywall, corners that project into a room must use corner bead. Joint compound will cover the metal corner. Inside corners are taped with paper or fiberglass tape.
Setting or Drying Compounds

Two types of joint compound can be used to embed the drywall tape. The most commonly-used compounds dry by the evaporation of water. Another type of compound dries more quickly, when a chemical reaction takes place and makes the compound set up.

Drying Compound. Several types of drying compounds are available. All-purpose joint compound can be used for bedding tape, for laminating double-layer applications, and for the finish coats. For compounds that are suited to each phase of tape application, all-purpose joint compound and topping compound can be used. Joint compound is used to bed the tape and topping compound for the final coats. Topping compound is much easier to sand, but it is not stiff enough to be used for bedding the tape. Water-resistant (W/R) compound is also available for taping seams and sealing nail holes in high-moisture areas.

Drywall supplies: a) ready-mix joint compound; b) ready-mix topping compound; c) pan for joint compound; d) 6" taping knife; e) 12" taping knife; f) corner knife; g) tape.

These compounds have a vinyl base and contain no asbestos. Most compounds can be obtained in either powder or ready-mixed form. The ready-mixed compounds come in boxes or buckets. They must be protected from freezing.

Smooth finishes are easier to achieve if ready-mix joint compound (available in 1- and 5-gallon buckets) is used. It is important to keep the lid on the bucket when the compound is not being used. If the compound dries out around the edges of the bucket, small pieces can fall into the compound and cause streaks to appear when the compound is applied. Similarly, if a drywall pan (used to hold a small amount of compound) is used, it must be kept clean and free of bits of dirt and dried compound. A clean drywall pan and taping knife make it easier to achieve a smooth finish.

Setting Compounds. Setting compounds harden by a chemical reaction, where normal joint compounds can take a day or more to dry. The rapid chemical hardening and low shrinkage allow the room to be finished more quickly. When a setting compound is used with tapered/beveled edge drywall, a very strong joint results. The setting compounds are also good for laminating double-layer systems.

Setting compounds have two disadvantages. Compared to non-setting joint compounds, setting compounds are more difficult to sand when they are dry. Seams should be troweled smooth before they harden.

Another disadvantage is time-limited workability. One can buy compounds that will set up in 30 to 60 minutes, 120 to 180 minutes, and 240 to 360 minutes. Choose the setting time carefully so that the compound can be smoothed before it sets.

Use of a setting compound is essential when deep cracks must be filled. Regular, all-purpose joint compound, because it dries by evaporation, tends to shrink, crack, and mildew when it is used to fill a deep crack.

INSTALLING DRYWALL IN AN OLD HOUSE

The fine points of drywall installation are critical in old houses. Many of the decisions to be made about how and where to install drywall will have to be made by the homeowner who knows the final plans for the rooms in question. For example, decisions about whether to try to level all ceilings and door frames will have to be made by the person who will ultimately live in the house. Early decisions about making doors, windows, and walls level and plumb may affect the kind of decorative treatment that can be used on walls and ceilings.
The wallpaper in this room has been installed absolutely level, in spite of the ceiling being badly out of alignment. If horizontal wall treatments are anticipated, it is much easier to plan ahead and level the ceiling first. Then problems such as the one pictured above do not occur.

To illustrate the relationship between level ceilings and surface decoration, let us suppose the homeowner decided that part of the charm of an old house was the slightly out-of-plumb look to the rooms. The homeowner decided to drywall over existing plaster on the ceiling and to repair the damaged plaster walls. However, one wall of the room was resting on the center beam of the house, which had settled. The settled wall caused the ceiling to sag. The ceiling of the room was, in fact, six inches higher in one corner than in the opposite corner.

As the owners begin to hang an elaborate 18-inch frieze paper, they notice they have a difficult choice. Should they hang the paper even with the ceiling, or should they hang it perpendicular to a plumb line? Because they have chosen a frieze paper with a large repeat and a dado paper with a vertical pattern, they decide to hang the paper plumb and level. They try to compensate at the frieze for the room being out-of-level. It would have been better if they had carefully measured the degree to which the ceiling line and walls were not level or if they had chosen a wall treatment that did not emphasize the imperfection. If the room were a small bedroom where the walls would not be painted, the human eye would probably not notice a ceiling that was not perfectly level. However, large rooms with horizontal wall divisions will be more difficult to deal with.

**Horizontal or Vertical Application**

In old houses, drywall can be installed either horizontally or vertically on the walls. Vertical panels may reduce material waste, but the seams are harder to tape if taping is done by hand. The drywall installer must climb up and down on a stepladder. Professional taping crews often use a bazooka taping gun that allows the installer to work from the floor. Drywall stilts that strap to the installer's calves are used by some installers, but these are dangerous devices. A worker can trip or fall and badly injure a back or knee.

In many old houses, the ceilings are higher than eight feet. When two sheets of drywall are hung horizontally, a fraction of a third panel will be needed to bring the drywall down to the floor. This means there will be two horizontal seams around the room, but the seams will be easier to tape. Because only the sides of drywall panels have tapered edges, the horizontal installation can create a visible, vertical joint where the panels are butt-joined in the middle of a wall section. To prevent this joint, drywall should run the entire length of the wall, or back-blocking should be used. Ideally, the end joints should be staggered, with or without back-blocking.

Back-blocking is used to improve the look of butt-joints. Back-blocking creates a tapered well, so that there is room to embed the tape and taping compound and still ensure a smooth seam. The sheet of drywall is installed so the end floats half way into the stud or joist space. Scraps of drywall (at least 8 inches wide) are buttered with drywall adhesive. The scraps are placed along the over-hanging joint. As each drywall piece is installed, a temporary brace is nailed in place to bow the ends inward. The next day when the brace is removed, the tapered formation remains. The slight well that is formed provides a bedding joint for tape and joint compound.
If drywall of the proper length is purchased, it is possible to install the panels vertically and avoid butting ends of drywall panels together. Vertical seams may, however, be more difficult for the average person to reach.

In an older house, two horizontal joints will result if the drywall is hung horizontally. These joints are easier to tape. Longer sheets of drywall can be used to extend from the corner to door or window openings. This reduces the number of butt-joints. Butt-joints that do occur should be staggered, as shown above, or back-blocking can be used.

A beveled-edge drywall panel is shown above. Drywall tape, embedded in joint compound, is used to bridge the gap between the panels. Joint compound or topping compound is used to build up the taped area until it is flush with the surrounding drywall.

The ends of drywall panels are not tapered. Therefore, if a joint is simply taped, a slight hump in the drywall will result. To eliminate this hump, back-blocking is the preferred installation method.
Because the ends of drywall panels do not have the recessed edge, it is necessary to use backblocking if panels are to be end-joined. Here, the ends of drywall panels are floated (not nailed) in the center of the stud cavity. Eight-inch scraps of drywall are cemented onto the back of the sheet.

Temporary braces are nailed to the studs to force the drywall to bend slightly. These should be left in place overnight or until the compound dries. Setting compounds can also be used in backblocking.

After braces are removed, a depressed area remains to accommodate tape and joint compound. The depressed area is then taped and finished like an ordinary drywall seam.

Bending Drywall

In old houses, curved stairways or curving walls may mean that drywall must be contoured to the wall curve. Depending on its thickness, drywall can be contoured around almost any curve.

To bend drywall, moisten the backing paper and the face paper. The face paper is a lighter color than the back, and it is smoother. Use a spray bottle and a fine mist. Replace the drywall in the drywall stack for about an hour. The gypsum core will soften slightly, allowing the drywall to bend. After the panel is nailed to the wall, the core will harden again.

Drywall can be bent without moistening if thinner sheets of drywall are used.

Spraying drywall panels with a fine water mist softens the gypsum core. This makes it easier to bend the panels.
Rough Lumber

Lumber in old houses is often of different dimensions. Some may still have bark on it. In addition, this old lumber may be so hard, especially in an attic space or where hardwood was used for house framing, that it is impossible to drive drywall nails into the studs or joists. Drywall screws can be used instead. If nails are used, the holes may need to be predrilled.

In cases where the lumber is rough-cut, it may be better to hang drywall over wood lath, if the lath is machine-sawn. Hand-split lath is generally too bumpy to provide an even surface for the drywall. If there is evidence of rough lumber and hand-split lath in one location, leave the existing plaster in place, even if it is badly cracked. Drywall can be applied over the plaster, but it should be screwed in place to avoid loosening chunks of plaster. Loose chunks can become trapped between the drywall and plaster if the drywall is nailed. They create a bulge in the drywall. If drywall is installed over the plaster, it may be necessary to fur out the trim.

Where uneven, hand-split lath is found, the wood lath, and even the framing lumber behind it, can be quite uneven. The easiest way to maintain a true wall plane is to cover the remaining plaster with drywall.

Covering Plaster

The major difficulty in covering damaged plaster with drywall occurs when there is a decorative molding around the ceiling or when drywall is butted up against door and window trim. A layer of drywall installed on top of existing plaster can change the effect of interior trim. It may make the trim look smaller or have less of a reveal. The reveal is the projection of the trim beyond the surface of the wall. A change in this trim dimension can change the look of the room significantly.

Using thin drywall, either ¼" or ⅜", is best when covering plaster. However, the thinnest drywall (¼") cannot be used in a single-layer application on ceilings. (See the chart for minimum drywall thicknesses on ceilings.) While it can be used on walls, it does not have a tapered edge. Joints will be visible unless they are very carefully taped and sanded.

Drywall installed on top of plaster will have an additional problem. Where it meets the door, window, or baseboard trim, a joint will be created. This joint must be caulked. Even then, it will tend to open year after year.

There are two ways to provide a reasonably good solution to this dilemma. One way is to remove all the trim in the room, install the drywall behind it, and use furring strips against all the door jambs, window frames, and on the plaster grounds at floor level. “Parting stop”, a kind of trim strip sold at most lumber yards, can be used very successfully for this sort of furring. Or, furring strips can be ripped on a table saw.
When drywall is installed over plaster without removing the trim, the “reveal,” or depth, of the trim disappears. In addition, the joint between the trim and the drywall will open up, even if it is caulked. This is because the wood expands and contracts seasonally.

The second solution is to cover the cut edge of the drywall (where it butts against trim) with metal edge bead. A high-elasticity, paintable caulking compound, with a long expected life, should be used to caulk the joint between the metal edge bead and the trim.

Another way to use drywall over existing plaster is to hang drywall over the ceiling and to repair

A better way to install drywall over plaster is to remove the trim and extend the door jambs with furring strips. This retains the original appearance of the wood trim.

If drywall is to be butted up against existing trim, an edge bead will reduce the likelihood of future cracking at the drywall/trim joint. A caulk that will expand and contract with seasonal humidity change should be used at the joint.

If the ceiling does not have a decorative plaster molding, this will be a simple solution. Any decorative wood trim around the ceiling can be taken down, and then a single-layer, drywall ceiling can be installed on top of the plaster.

When installing plaster over an existing ceiling, use 2½" drywall nails or drywall screws. If the ceiling is very uneven, the use of 1x3 furring strips is recommended.

A good fit around the edges of the room is especially important because cracks can open up. The corners of the room must be tapered. The taped joint must be “feathered” into the existing plastered wall. If there is wood picture- or crown-molding, it can be reinstalled. It is actually preferable to have wood trim at ceiling level because the trim disguises the transition from drywall to plaster.

Pay particular attention to sanding a drywall ceiling. Shine a flashlight across the surface to find high spots. A ceiling stick (used to hold a piece of sandpaper at arm’s length) makes the job less tedious. A small, orbital sander can also be used. Avoid sanding the drywall facing paper, however, as it will become nappy when painted.

In houses where a sand-finish plaster was used, smooth drywall can be painted with a sand-finish paint and then painted with three more coats of a latex or alkyd-based paint. This provides an excellent duplicate of the original sand finish, and it helps disguise drywall seams as well.