Tips for Professional Ceiling Installers

Over the years, Armstrong installation instructors and professional installers have solved many ceiling installation problems. Here is a compilation of their solutions ...

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Armstrong

Ceiling Solutions From The Name You Can Trust™
Before You Start

Tip 1:
Allowing panels and tiles to adjust to the jobsite
Remove tiles, panels or planks from their package. Allow them to adjust to room conditions overnight. Install at normal room temperature and humidity.

Ceiling Grid—Wall Molding

Tip 2:
Leveling wall molding
It's quicker, easier and more accurate to use a water level or laser than a carpenter's level. Follow the instructions provided with the tool.

Tip 3:
Installing wall molding on drywall with metal studs
Drive fence staples in at an angle. The front leg should ride along the face of the wall molding; the back leg should go in behind the drywall.

Tip 4:
Installing wall molding on solid or concrete walls
Suspend main beams, as a substitute for wall moldings, next to any wall surfaces that are difficult to penetrate.

Tip 5:
Installing wall molding along an uneven wall surface
As an alternative to scribing to an uneven wall, create a wood fascia along the uneven wall. The top of the fascia should be attached to the joist, the bottom even with the height of the bottom of the wall molding. When installing the wall molding, make sure the bottom of the molding is even with the bottom of the fascia and secure with screws. (See photo at top of next column.)

Ceiling Grid—Main Beams and Cross Tees

Tip 6:
Choosing your hanger wire
We recommend 16-gauge hanger wire for residential work, 12-gauge wire for commercial jobs.

Tip 7:
Bending hanger wires
Bend hanger wires so the bottom of the main beams are level with the bottom of the molding.

Tip 8:
Using “Shenk clips”
These handy “Shenk clips” hold the leveling line to the molding on each side of the room. It's an easy way to clip main beams or cross tees to the wall molding. You can order Shenk clips through your Armstrong ceiling distributor.

Tip 9:
Supporting the main beam
Twist excess wire tightly around the support stand three times.

Tip 10:
Squaring the grid
It is important that the grid is squared accurately. There's more than one way to do this:
Method One
1. Stretch a string from one end of the room to the other where the first main beam will hang.
Squaring the grid (cont.)
2. Stretch a second string from one side of the room to the other, where the first row of cross tees will be placed. The cross tee notches must line up across each row of mains.
3. Square these strings by stretching the first string. Then use a plumb bob and a 3-4-5 triangle to stretch the second string. Or, you can use a laser to determine the location of these strings.

Method Two
1. Stretch the first string from one end of the room to the other where the first main beam will hang.
2. Install the first main beam of the first row of mains, cutting the end so a cross tee notch falls at the calculated border panel distance from the end wall.
3. Cut border cross tees to the side wall and clip to the wall molding. Align the main to the string.
4. Install the first section of the second row of mains, cutting the end so a cross tee notch falls at the same calculated border panel distance from the end wall.
5. Place two 4’ cross tees between the main beam sections in line with the cut border tees. This will create a 2’ x 4’ opening in the grid.
6. Measure across the diagonals of this opening. They should be the same. If the measurements differ, trim one of the main beam ends until the measurements are equal.
7. Now this section of grid is square. Stretch the second string through the center of the cross tees where they meet the two mains.
8. Use this string to measure and cut main beams so the cross tee locations in each succeeding row of mains are aligned.

Tip 12:
Installing ceiling tile track
1. Determine border tile sizes (refer to in-carton ceiling tile or plank instructions)
2. Install the track
   The metal tracks should be positioned perpendicular to the joists. The first track should be screwed to the joists 1” from one side wall. Use 2” drywall screws or screws that will penetrate at least 1” into the joists when the track is in its final position. The tracks do not have to end on a joist.
   Fasten the tracks end to end in a line until they reach the other end of the room. The tracks do not have to be butted tightly together. You may leave up to 1/4” gap between track ends.
   There are two methods for finishing each row of tracks. One method is to cut the track to fit using aviation snips. A second method is to offset the last track section 1/8” to 1/2” from the established line of tracks. Use whichever method is most economical.
   The second row of tracks should be installed parallel to the first row at a distance of 2” less than the border tile from the side wall.
   The third row of tracks should be installed 12” on center from the second row. The remaining rows are installed on 12” centers. The last row of tracks is installed 1” from the other side wall.
   Level the tracks as you go along, using a carpenter’s level, water level, or laser to establish a level substrate.
   When installing plank ceilings, the first and last rows of tracks are installed 1” from the side walls. The rows of tracks in the center of the room are installed on 12” centers.
3. Install the tile (refer to normal instructions)
   If you are scribing the tile to all walls, you must cut the last row of tile tight to the wall. Hold the tile in place so you can mark where the track falls on the back of the tile. Then insert a clip in the cut edge using the marks to align it. Put the tile in place and push the tile up so the clip snaps onto the track.
4. Rooms with offsets and angles
   If the room has offsets such as closets, cabinets, or chimney flues, where all angles are close to 90 deg., remember to run the ceiling tile tracks 1” from the sides of these offsets. Treat them like side walls.
   If there are areas where the walls are at an angle other than 90 deg. to the tracks, fasten a furring strip along the wall at these points. The thickness of the furring is the same as the track with a clip on it. Then the tile can be stapled to the furring at these points. An alternative is to run short pieces of track 90 deg. to the angle of the wall and use the clips normally.

Easy Up Track

Tip 11:
Installing Easy Up track on concrete or masonry ceilings
For tile installations involving unfinished ceilings of concrete or cement block, use Black & Decker Tapcon® Anchors #20617, 3/16” x 1-3/4” Phillips flathead to secure the ceiling tile/plank tracks. Follow the Tapcon installation instructions.
Installing a suspended tile ceiling using Easy Up tracks

1. Determine the amount the ceiling will be dropped. Using a water level, carpenter's level, laser or other suitable leveling device, make a level line around the room at this height. Install wall molding on this line. You may use angle molding or channel molding.

2. Main runners will be installed every 3'6" with the mains going the opposite direction of the joists. Snap chalklines across the joists every 3'6". Install screweyes every four feet along the chalklines.

3. Attack hanger wires to the screweyes.

4. Stretch strings from one side of the room to the other using the level molding as a reference.

5. Bend the hanger wires so the bottom of the main runners will be 1-1/4" higher than the bottom of the molding.

6. Install main runners from one end of the room to the other. You do not have to line up the cross tee slots from one main to the other. You will not install any cross tees.

7. Calculate the size of the border tile. You will need this measurement to locate the ceiling tile tracks.

8. The first row of ceiling tile tracks is located 1" from one end wall and runs the opposite direction of the main runners. Use 1-1/4" or longer drywall screws to fasten the track to the bottom of the mains. Use two screws for every track.

9. The second row of tracks is located 2" less than the border tile from the wall.

10. The remaining rows of tracks are 12" on center from second row.

11. There is no need to shim the tracks to level them because you have already leveled the main runners.

12. Follow the directions for installing the tile as outlined in the in-carton instructions. There are some points of these instructions which are different and those differences are noted below.

13. When you install the first tile, you will not put clips at the end of the track where the cut edge of the tile butts against the wall. The molding you installed will hold up the end of the tile that butts the wall.

14. Install the second tile as outlined in the instructions, but omit the clip at the end of the track.

15. With two tiles in the first row, start the second row. This is outlined in the instructions.

16. When you have installed the first four tiles and are satisfied that they are square, finish the first row. Cut the last tile in the first row about 3/8" short of the wall at the side. Insert a wall spring between the side of the tile and the wall to keep it snug.

17. Finish the second row.

18. Start the third row the same way you started the second row.

19. Continue working until you reach the other end or side of the room. You will cut the last row of tile about 3/8" short of the finishing wall. The cut edge of the tile will rest on the molding. Install a wall spring between the cut edge of the tile and the wall. You will not install clips to hold up the last row of tile.

### Tile Installation Using the Ashlar Method

**Tip 14:** Using Easy Up Kit

Calculate the border tile sizes for the room and install the tracks according to the normal instructions. The calculated border size on the wall parallel to the tracks will tell you where to install the second track. Install the remaining rows of track on 12 inch centers from the second row.

Using the Easy Up Kit, you have the option to stagger the tile in **either** direction, but not both directions.

Using the calculated size of the border tile in the first row perpendicular to the tracks, stretch a string from one side of the room to the other border measurement from the end wall. (See border note on next page.) Make sure the string is **below** the finished height of the ceiling tile.

Cut the first tile in the corner of the room to the calculated border width. Now measure from the wall to the string very accurately at two places and cut the first tile to the measured length. Install the tile according to the normal instructions. Measure and cut the second tile in the first row as described in the normal instructions and install it.

To start the next row and stagger the tile, place the third tile temporarily so it is **offset 6 inches** from the second tile in the first row. (See figure 1.) Measure out from the side wall 12 inches two places and mark the tile. Cut the tile on the two marks and position it against the side wall and against the first tile in the first row. (See figure 2.) Measure and cut the third tile in the first row and install it. Place a full tile in the second row as shown and secure with a clip. If the joints between the tiles are closed when the full tile is lined up, the initial tiles are square. If not, refit the first three tiles and try again. When these tiles are lined up with the joints closed, finish the first row of tile. Then complete the second row.

When you finish the row of tile, start the next row by offsetting as described above. Continue tile installation as described in the normal instructions including the installation of the last row, offsetting as you go along.
Using Easy Up kit (cont.)

NOTE:

If you wish to offset the tile in the other direction, lay out the tracks as described above. When you stretch the border guide string perpendicular to the tracks, **stretch an additional guide string 6 inches closer to the end wall.** (See figure 3 and the border note below.) Install the first tile as described in the normal instructions. When you measure for the second tile in the first row, measure from the second string to the wall and cut the tile to that measurement. This will start the offset in the other direction. Install the tile in the first row alternately using the first string, then the second string to cut the tile. Continue installing the tile in this manner and finish the room.

BORDER NOTE:

If the border tile is less than 9 inches against the wall where the tile will be offset, add three inches to the calculated border. This will eliminate very small borders when offsetting the tile.

**Tip 15:**

Using furring strips

Calculate the border tile sizes for the room and install the furring strips according to the normal instructions. Snap a chalkline at the border measurement down the center of the second furring strip as directed.

If the calculated border on the end wall is less than 9 inches, add 3 inches to it. Using the measurement you get after this calculation, snap a second chalkline at a right angle to the first chalkline using the 3, 4, 5 triangle method outlined in the normal instructions. Once you have the second chalkline marked, snap a third chalkline parallel to the second, 6 inches closer to the end wall. Using this method, you will insure that your border tiles, even though they are offset, are as large as they can be in your room.

**EXAMPLE**

If the room measures 14 feet 8 inches by 10 feet 7 inches, the border on the wall **parallel** to the furring strips will be 9-1/2 inches plus 1/2 inch for the stapling flange (take the 7 inches, add 12 inches, divide by 2 and add 1/2 inch). **Snap the first chalkline down the center of the second furring strip 10 inches from the side wall as shown in figure 1.**

The border **perpendicular** to the furring strips will be 7 inches (take the 8 inches, add 12 inches, divide by 2 and add 1/2 inch). But that is less than 9 inches, so you add 3 inches to the 7 inches to make 10 inches. Add 1/2 inch for the stapling flange. **Snap a second chalkline at a right angle to the first one 10-1/2 inches in from the end wall as shown on figure 1.**

Now measure 6 inches closer to the wall from the second chalkline and snap a third chalkline parallel to the second as shown in figure 1.

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**Overhead Support Beams and Ducts**

**Tip 16:**

Boxing around overhead ducts and beams

1. Nail 1” x 2” furring strips (cleats) along both sides of the beam. Construct lattices from 1” x 1-1/2” wood furring strips and 1” x 3” center supports spaced 16” on center. Nail the lattices to the cleats.
Boxing around overhead ducts and beams (cont.)

2. Enclose the support beam by nailing or screwing wood paneling or drywall to each lattice along both sides and to the bottom of the lattice frames. To finish the box, attach corner molding.

3. If access is needed to the bottom of the boxed-in ductwork, enclose the bottom of the box using grid and panels.

Tip 17:
Using grid to box around obstructions

1. Using aviation snips, make a straight vertical cut on the web of the main beam 1/2” from a cross tee slot. Do not cut through the bottom flange of the main beam; this flange will act as a hinge.

2. From the straight cut on the main beam, measure a distance equal to the required drop in the ceiling level. Here make two 45˚ angle cuts on the main beam. Once again, do not cut through the bottom flange of the main beam.

3. Insert cross tees into top slots.

4. Attach grid wall molding to the outside of the bottom bends, using sheet metal screws or pop rivets.

5. Install vertical ceiling panels. Hold the vertical panels in place by drilling or punching a 1/8” hole in the main beam 1/2” above the flange.

After working the panel into position, use hold-down clips or slide an 8- or 10-penny nail halfway through the hole to hold it in place.

NOTE: As an alternative, the dropped section of grid can be fastened to the main ceiling by using wall molding instead of bending the grid.

1. Snap a chalkline across the face of the grid to locate where the molding will be mounted.

2. Attach the molding to the face of the grid using pop rivets or sheet metal screws.

3. Rivet or screw the drop portion of the soffit grid to the molding. The drop grid is bent as indicated previously to form the bottom.

4. Rivet or screw the wall molding to the face of the bottom corner. If the dropped portion comes back up on the other side, repeat the process.

Support Columns

Tip 18:
Boxing in columns with a suspended ceiling

1. Cut “filler blocks” to fit the outside of the column and the inside of the box at the top and bottom.

2. Cut the filler blocks in half.

3. Place one filler block around the column at the bottom and build the box around it. Let the box extend above the height of the new ceiling.

4. Place the other filler block around the top of the column and inside the box. Nail it in place.

5. Install wall molding around the box at the height of the new ceiling.

6. Miter the corners on the wall molding around the box.
Tip 19:
Installing panels around columns, pipes, vents and posts
1. Measure the exact location of the column in relation to the grid opening.
2. Measure the column size and cut a corresponding hole in the panel. Cut the panel face up through the midpoint of the hole. Make all cuts with a very sharp utility knife.

NOTE: When cutting #942 and #915, make the cut on the back side of the panel, being careful to cut in the same direction as the facial fissures. Make the cut approximately 1/2″ deep. Carefully break the panel along the cut line.
3. Glue scrap pieces of panel material to the back of the board to hold it together.

When fitting fiberglass,
1. Measure the exact location of the column in relation to the grid opening.
2. Measure the column size, cut a corresponding hole in the panel and slit once to the nearest edge.
3. Flex the panel into position around the vertical support.

For fitting panels around ventilation ducts,
1. Extend ducts to the new ceiling height.
2. Measure accurately and cut the panel to accommodate the duct size.
3. Install the panel. Then attach the grille to the extension.

Tip 20:
Boxing in basement windows: two methods
Method One
1. Build a three-sided valance around each window. Use 1/4″ plywood for the top. For the three sides, use 1″ white pine wide enough to accommodate the ceiling drop and the molding being used. Make certain that the valance is wide enough to allow the window to open and long enough to provide for an open drapery. In most cases, a length of 18″ more than the window width is sufficient for the drapery (about 9″ on each side of window).

2. Attach the top of the completed valance to the bottom of the ceiling joists.
3. Install the appropriate wall molding at the level desired.

Method Two
To box in a basement window, use Armstrong fascia molding. Packed five pieces in a box, this molding is available in 10′ lengths and three widths.

#7814 . . . . . . . . . . . . . . . 4″ fascia molding
#7816 . . . . . . . . . . . . . . . 6″ fascia molding
#7818 . . . . . . . . . . . . . . . 8″ fascia molding

The molding is finished on the inside and bottom.

1. Notch the front or sides (depending on the joist direction) to fit under the joists.
2. Bend the molding to the indicated shape. Be sure to make the box deep enough for the window to open and make the box wide enough to allow drapes to be installed. In most cases, a length of 18″ more than the window width is sufficient for the drapery (about 9″ on each side of window).
Boxing in basement windows—Method Two (cont.)
3. Use screws to fasten the flanged ends to the wall. Use angle clips to fasten the front (or sides) to the joists.
4. The bottom lip is already formed to a 15/16” dimension, the same as the field grid. When finishing the corners, use 15/16” outside corner molding covers (Armstrong #7863WH) to close the void.
5. Finish the inside of the box by fastening drywall to the bottom of the joists inside the box. Angle molding can also be fastened to the sides and inside front of the box to allow an acoustical panel to be laid on a slope inside the box to close off the top of the box.

Tip 21:
Installing decorative molding on boxed-in area

If you want to continue using the same decorative molding on the boxed-in areas that you are using on the rest of the room, you should make your box deep enough. For wood molding, allow for the tile and ceiling tile track and clip (1-1/4”) or the panel and the depth of the suspended ceiling drop, the height of the molding and the desired reveal at the bottom of the molding.

If you want to use metal wall molding around the box, again you should allow for the tile track and clip or the panel and the depth of the suspended ceiling drop.

Fasten the molding to the box using finish nails or adhesive.

■ Stairwells

Tip 22:
Boxing in a basement stairwell
1. Nail 1” x 3” cleats onto the ceiling joists. The distance from the old ceiling height to the new ceiling height will determine the width of the valance material.
2. Nail valance into cleats.
3. Cover the seam with standard flat molding.
4. Install the appropriate wall molding at the height desired.

■ Ceiling Borders—Panels

Tip 23:
Figuring borders on scored panels or panels with 12” x 12” patterns

To make the job look as good as it can, it is important to make even and equal borders. The key to making the borders look their best is to remember the “look” of the panels. They look like 12” x 12” tile. Therefore, calculate borders like 12” x 12” tile. Here’s an example.

If the room measures 16’6” x 24’4”, the correct borders for 2’ x 2’ panels would be 15” on two sides and 14” on the other two sides. But with the scoring or pattern on the panels, it would look like a three-inch 12” x 12” border on two sides and a two-inch 12” x 12” border on the other two sides.
Figuring borders on scored panels or panels with 12” x 12” patterns (cont.)

Take the 16’6” dimension. Calculate the border for 12” x 12” tile. It would be 9”. The size of the 2’ x 2’ border panel would then be the 9” plus 12”, or 21”. The grid should be laid out using the 21” dimension in one direction.

Take the 24’4” dimension. Calculate the border for 12” x 12” tile. It would be 8”. The size of the 2’ x 2’ border panel would then be the 8” plus 12” or 20”. The grid should be laid out using the 20” dimension in the other direction.

Bear in mind that when you lay out the grid this way, the grid may not be centered in the room. The look of 12” x 12” tile, however, will be centered with maximized borders. If the scored or patterned panels are removed later and plain or textured panels are used for replacement, the grid may not be centered, and the borders of the new panels may not be seen.

Tip 24:
Cutting “recessed grid” ceiling border panels
1. Trim reveal edge border panels to the same dimensions as for flat panels. The reveal edge detail must now be cut into the panel.
2. Set the panel into the grid. Draw a light pencil line on the panel using the wall molding as a guide.
3. Remove the panel. Use a sharp utility knife and straightedge to cut halfway through the panel from the face side along the pencil line.
4. Lay the utility knife on its side next to the panel and, with the panel face up, cut in at blade height for a reveal cut.
5. Remove the cut strip.
6. Fit the panel into the grid.

Tip 25:
Cutting reveal edge border panels for crown molding
When using a crown molding at the perimeter of a suspended ceiling with reveal edge panels, you can get “mouse hole” gaps. These holes are created when the tegular panel lays on the molding. To eliminate these holes, cut a normal reveal edge at the panel/molding interface—the same cut made when using angle molding. The reveal edge drops in front of the crown molding, and the grid lays directly on the crown molding, eliminating any gaps.

In most cases, the cut reveal edge will not readily be seen and does not need to be painted. If the cut edge is visible, the tegular edge should be painted to match the face of the panel.

■ Field Cuts—Step Edge Panels

Tip 26:
Field cutting
Occasionally you will have a need for a field panel to be reduced in size to fit around air diffusers, certain light fixtures, along soffits, etc. To produce a panel of reduced size with the stopped edge on all four sides is a tedious procedure, and it does take patience. In reality, what you are doing is removing the center section and reattaching the edge.

1. Cut off the decorative edge. Make sure your cut is not angled but straight up and down.
2. Cut the excess out of the center.
3. Apply white glue to the cut edge. Be careful not to apply glue to any area that will be exposed to view.
4. Carefully align the ends and reattach the decorative edge to the field surface. Apply pressure to ensure a positive adhesive connection.
5. Pin the decorative edge in place using four 6-penny box nails.

NOTE: We do not recommend this procedure for border treatments. Instead, see Tip 25 and handle border panels the same way as reveal tile.
Tip 27: Replacing ceiling panels at sprinkler head locations

Replacing ceiling panels around sprinkler head, the ideal approach would be to remove the sprinkler head, recut a new panel and replace the sprinkler head. Since this is both economically or logistically impossible, we usually end up cutting the replacement panel in half and using an exposed cross tee to conceal the cut and fit the two pieces around the sprinkler. There's another, more attractive option if you are using 942 or 915 fissured ceiling panels.

1. Cut on the back side of the panel, being careful to cut in the same direction as the facial fissures. Make the cut approximately 1/2" deep.
2. Carefully break the panel in half by aligning the cut along the side of a table edge so the break will be straight and sharp. (For fissured panels, the break will usually follow the line of fissuring. When joined, the original cut will literally disappear.)
3. Join the two pieces around the sprinkler head.
4. To assure the joint will not part, apply glue to the raw edges of the break before the panel is installed or you can glue scrap pieces across the back of the cut. You can also place a wall spring between one end of the panel and the web of the grid system. The spring will apply constant pressure, keeping the joint nice and tight.

Tip 28: Replacing damaged tiles using the Easy Up kit

Replacing damaged tiles using the Easy Up kit

Removing the damaged tile

1. Make four cut lines in the tile being removed. Always cut from the edge of the tile into the center.
2. After the cuts are made, remove the center section.
3. One at a time, slide the remaining tile sections toward the open center section, and let them drop out.
4. Carefully slide the remaining sections of the tile about 1" toward the center opening. This will allow all remaining sections of the damaged tile to drop out.
5. When the damaged tile is removed, you will see the ceiling tile clip which held up the damaged tile.
6. Slide the clip into the opening and remove it from the track.
7. Reverse it and snap it back on the track.
8. Slide the clip so that the teeth are just above the tongue of the adjacent tile.
9. Use a screwdriver and a hammer to push the clip into the tile above the tongue.

Installing the new tile

10. Take a new tile and remove both flanges.
11. Trim flange edges back 1". Insert the knife blade only deep enough to remove the 1/8" thick flange. It must not penetrate the face of the tile.
12. Remove about 1-1/2" of tongue in one of the corners adjacent to one of the removed flanges.
13. Hold the new tile up in the opening and—on the back of the tile—mark where the sides of the ceiling tile track are.
Replacing damaged tiles using the Easy Up kit (cont.)

14. Use these marks as a guide to force a clip into the edge of the tile where the flange was removed.

15. With the tongue sides of the new tile slightly offset to the adjacent tile, insert the partial tongue into the adjacent tile. You will have to push up on the side where the 1-1/2\" of tongue was removed to allow the tile to flex slightly.

16. Push the partial tongue of the tile into the groove of the adjacent tile.

17. Push up on the other tongue side and push the tile toward the other tile to insert the full tongue into the adjacent tile.

18. When this replacement tile is lined up with the other tile, push up so the clip snaps onto the track.

Tip 30:
Installing recessed lighting in a tile ceiling

When installing a recessed light in a tile ceiling, make sure the light is supplied with support bars. These support bars will fit between the joists and hold up the light fixture so it does not rest on the back of the tile. Mount the support bars so the face of the fixture is flush with the face of the tile.

Tip 31:
Installing recessed lighting in a suspended ceiling

**NOTE:** Incandescent lights, even in reflective high hat or can fixtures, are too hot for plastic surfaced panels, such as fiberglass.

1. Because recessed lights are usually smaller than grid openings, these fixtures should be installed on a subframe. Use extra hanger wires to support the components at the subframe attachment points.

2. Use fixtures with support bars that will rest on the grid. (The alternative is to install an independently hung fixture.)

3. Cut an appropriate fixture opening in the panel.

4. Finish with a trim ring or grille.

**NOTE:** No matter what type of lighting fixture is used, all manufacturers’ requirements must be met. Both lighting and ceiling components are designed with certain circumstances in mind; these conditions must be compatible. Never use incandescent lights in fire-rated applications.

Lighting

Tip 29:
Hanging 2' x 4' lights

When installing 2' x 4' drop-in lights in a suspended ceiling, don’t forget to install additional hanger wires in the corners of the light.

Additional wires may be needed for reinforcement of other fixtures mounted in or on the ceiling. For example, some recessed lights may need additional hanger wires when the fixture is heavy. Place the additional wires near the support for the fixture or independently support the fixture.
Tip 32:
Installing surface-mounted lighting in a suspended ceiling
Support surface-mounted light fixtures and lightweight items with a wood attachment beam mounted above.
1. Measure the distance between the webs of main beams or cross tees and cut a 2” x 4” piece of lumber to this exact length.
2. Lay the wood section on top of the panel, and secure by running two 2” screws through the web of the grid member and into the wood ends. This provides a solid material that is able to receive attachment fasteners for surface-mounted lights or track supports.
3. To help carry any extra load in the grid system, add extra hanger wires to the grid where it attaches to the wood section.

Tip 33:
Installing surface-mounted lighting in a tile ceiling
When you install a surface-mounted light under a tile ceiling, you must secure the light to the joists or furring strips using screws that will allow at least 1” of the threaded portion of the screw to penetrate the wood. With incandescent lighting, use the correct wattage lamps as indicated by the manufacturer.
If the light is fluorescent, you may have to leave a space between the back of the light and the face of the tile ceiling to allow air to circulate. When fixtures are installed against the face of the tile without the air space, the ballast may overheat and “burn out” more frequently.

Tip 34:
Mounting a ceiling fan in a tile ceiling
When installing a fan brace where an electric fixture is not already located, the bracket and electrical box should be mounted so that the face of the box is flush with the finished ceiling.
1. If a furring strip or ceiling tile track line up with the electrical box, cut the furring strip or ceiling tile track so it does not interfere with the box opening. Continue the furring or track on the other side of the box.
2. Cut a hole in the tile to fit around the box at least 1/4” larger than the box. Leave some clearance around the box.
3. After the tiles are in place, mount the fan to the box and install the ceiling fan trim ring against the face of the tile.
4. Use only mounting brackets and electrical boxes recommended for ceiling fan installation. Follow the manufacturers’ directions for their installation.
5. When installing a ceiling fan brace in either a panel or tile ceiling where an electric fixture is already located:
   1. Remove the existing ceiling outlet box and bar.
   2. Clear the joist space above the ceiling opening of insulation, wiring, etc.
   3. Check the location of existing wiring. Remove wiring away from the sides of the joist so it will not be caught behind feet of fan brace.
   4. Follow the fan brace manufacturer’s instructions for mounting the brace.
   5. Reverse the position of the fan brace feet so the feet are up. This will allow the electrical box to extend downward so the face of the box is flush with the finished ceiling. The drop of the ceiling using furring is 1-1/4”.

Vents and Recessed Fans

Tip 35:
Mounting ceiling vents
When you install a power vent in a ceiling to exhaust the air in a bathroom or other area, you must mount the fixture in much the same way as a light fixture or speaker. The fixture must be self-supported. No weight of the fixture may rest on the ceiling tile or panels. Follow fan manufacturer’s instructions.
**Audio Speakers**

**Tip 36:**
Installing audio speakers
1. Determine the speaker location. Remove the panel in that location.
2. Cut a hole the size and shape of the speaker.
3. Paint the grille to match the panel where an integrated look is required.
4. Follow the manufacturer's mounting recommendations for the speaker, but make sure the weight of the speaker and grille is supported either by the grid or independent supports not the ceiling tile or panels. Additional hanger wires may be needed to support the grid.
See Tip 33 for additional support instructions.

**Cathedral Ceilings**

**Tip 37:**
Installing plank on a cathedral ceiling
Always begin the installation at the bottom and work up to the peak. Run the plank horizontally across the plane of the ceiling, the direction “real” planks would run.
1. The joists will run from the bottom of the ceiling to the top. Fasten a furring strip to the bottom of the joists (rafters) where the ceiling plane meets the bottom wall.
2. Fasten furring strips horizontally every 4’ until you get to the top of the peak.
3. Fasten the last furring strip about 2” from the peak.
4. If the joists are not even on the bottom, the furring must be shimmed to flatten it. If the furring strips are not long enough to reach the other end of the room, they must be butt. The butt joints must occur under a joist, and both ends must be double-nailed or screwed to the joist.
5. When all the furring is installed, start installing the ceiling tile tracks. The tracks will run perpendicular to the furring and fasten to the furring. Use drywall screws that allow the thread to fully penetrate the furring.
6. At both ends of the room, install ceiling tile tracks 1” from each end wall, running from the bottom of the ceiling plane to within 1” of the peak. The rest of the tracks should be installed parallel to the end tracks on 12” centers.
7. Cut a piece of wood to make a “starter strip” and fasten it to the wall. Cut it at an angle to fit against the wall and have the bottom of the starter strip parallel to the plane of the ceiling. The bottom edge of the starter strip should be flush with the finished face of the ceiling.
8. Measure the straight line distance from the bottom of the ceiling to the top. Figure the width of the border planks so the bottom plank and the top plank are equal. Stretch a string from one end wall to the other to use as a guide string for cutting the width of the first row of plank.
9. Always start the installation from the bottom and go to the top. Let gravity work for you, not against you. When you get to the last row of plank, cut the last row so it ends 1” from the peak.
10. With both sides of the ceiling done, determine the size of the divider at the top. You will not know what size to cut this piece until the plank reaches the top. Its size depends on the angle of the ceiling and the width of the trim molding you use to cover the peak. Do not attempt to have the planks meet each other at the peak without using a divider. The movement of the house will open and close the joist that you so meticulously fitted.
11. In this illustration, the divider is fitted to a peak without a ridge pole. Cut the piece to fit the detail in your ceiling. Cover the gap with a trim molding.

**Tip 38:**
Installing molding or trim between a suspended panel cathedral ceiling and wall: two options
There are two ways to bridge between a suspended cathedral ceiling and the wall.

**Method One**
Bend the wall molding on a sheet-metal bending brake to the correct angle.

**Method Two**
Cut a piece of wood trim at the correct angle and fasten molding to wood.
**Insulation**

**Tip 39:**
Installing insulation

When an installation calls for insulation on the back of a ceiling, you must be careful how the insulation is applied. With Armstrong #420 and 421 high-performance fiberglass panels, you can lay 2’ x 4’ batts of R-19 insulation that fit on the backs of panels quite nicely.

Do not lay insulation directly on the back of tile or other types of panels. An air space must remain between the back of the panels and the insulation. Create this air space by laying furring strips, wall molding, 12-gauge hanger wire or any number of other rigid supports across the top of the main beams. These rigid members will carry the weight of the insulation and transfer the weight to the mains, leaving an air space between the back of the panels and the insulation.

With tile ceilings, the application of insulation is done less frequently. In most cases, there is no room to apply insulation. If there is room for insulation, make sure that there is an air space between the insulation and the back of the tile. Chicken wire or other wire mesh can be laid over the back of the ceiling, and insulation can be blown in on the wire mesh. The ceiling tracks or furring will then carry the weight of the insulation.

[Diagram of insulation setup]

**Miscellaneous**

**Tip 40:**
Installing tile where kitchen cabinet doors are close to the ceiling

When kitchen cabinet doors are less than 1-1/2” from the ceiling, there is not enough clearance to install ceiling tile tracks or wood furring since they would create a drop of 1-1/4”. The only installation method which will allow the doors to open is the cement method, using ceiling tile adhesive.

Making sure the existing ceiling is level, follow the directions from the cement manufacturer to prepare the surface and apply and place the cement.

**Tip 41:**
Removing dirt from tile and panel surfaces

Pencil marks, metal marks, smudges or dirt may be removed from a tile and panel surface with an art gum eraser.