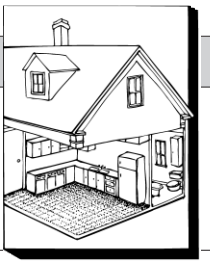
Plumb and Level K&B Remodels



by Stephen Posey

In every kitchen or bath remodel I do, I like to start with the basics. How level is the floor? A difference of 1/4 inch from one side of the room to the other isn't likely to be much of a problem, but steeper inclines can throw everybody off. Plumbers and electricians typically measure up from the subfloor to set their rough-in heights. If the floor is substantially out of whack, and nothing is done to compensate for it, you can end up with some outlets that are above the splash on one side of a cabinet run and some buried within the splash on the other.

Houses tend to settle in predictable ways. If the ceiling dips at one end of the room, it's likely the floor will, too. Any doors and windows along that wall will probably show signs of movement in the same direction as well, visible in the slanted head casings and uneven reveals between the top of the door and the jamb.

One technique I've found helpful is to set up a builders level, mark the corners, and strike a level line all the way around the room. I usually strike this line at some significant point, such as the top of the splash or under one of the cabinets. It can be used as a starting point for your own layout, as well as a reference point for everybody else who comes on the job.

I then make up a story pole with the significant elevations of the design laid out on it. On a kitchen job these might include: finished ceiling height, bottom of crown molding, top of upper cabinets, top of splash, top of counter, and finished floor height. If the design calls for a new door or window opening, include the top, or underside, of the head jamb as well.

To use a story pole, work your way around the room, transferring the marks on the pole to the existing framing at each corner and at any openings. As you proceed, note any variations between the marks, such as a difference between the top of the upper cabinets and the ceiling from one end of the room to the other. You should begin to get a sense of how level (or out-of-level) the space is.

Then pull a string perpendicular to the ceiling joists and between the highest elevations on the story pole along one wall. Any dip or sag in the ceiling will show up in the varying distances from the undersides of the joists to the string. The same procedure can be used at the floorline to check for any bumps or hollows along the plane of the existing subfloor.

Use a straight-edge to check the walls for plumb, and note how far out they are. Then pull a few triangles on the floor to check the walls for square. This is particularly important on remodels that call for a precise, rectilinear pattern in the floor finish. A wall that has drifted out of square will require a tapered piece of material cut to compensate.

By now, you should have a pretty good sense of the way the room has been twisted out of shape over the years. Before deciding on any particular corrective measure, it's a good idea to consider the consequences. Leveling the ceiling, for instance, may not be the best course of action if the floor cannot be leveled to match, or if the existing doors and windows will appear even more out of level by comparison. Also, it doesn't do much good to level the ceiling in a new kitchen by pushing up on the joists and cracking the tile in the shower surround above. To avoid damaging finishes in other parts of the house, I rely a lot on techniques that, for the most part, leave the existing framing alone.

Flat Ceilings

In older houses with high ceilings, it's often possible to put in a dropped framework of 2x4s below the existing finishes. You can build the framework on the floor, then lift the whole thing into place and shim it level as needed. Be sure to build the framework a few inches smaller than the ceiling area so it lifts easily into place. This is much faster than shimming individual pieces of strapping. In an average size kitchen, this can usually be accomplished by two carpenters in about three hours, and the end result is a nice, flat surface for any new cabinets to come up against.

If the ceiling framing is exposed, it's easier to sister new 2x material onto the sides of the existing joists. Using the reference marks laid out from the story pole, I pull a string at each end of the room perpendicular to the joists. Then, after gang-cutting enough 2x stock to do the job, I work with a helper, leveling each piece of new 2x with the strings, and sighting along them to make sure they're straight before gun-nailing them into place.

To correct minor dips or hollows in an existing ceiling, I use tapered shims ripped from 2x material nailed directly to the undersides of the joists. This method works best in small areas.

Leveling Floors

Floors are trickier. In many cases it isn't possible to level a tilted or sagging floor without creating a significant difference between floor heights at the doorways to adjacent rooms. Where an older hardwood or carpeted floor meets a new tile floor it may be possible to soften the transition with a tapered threshold, or bullnose trim piece, allowing for some leveling of the new finish. But if the new and old floors have to be set at the same height, there are fewer options.

If the subfloor is removed, exposing the joists, it's possible to improve an uneven floor by sistering new 2x material to the sides of the joists at any low spots. It isn't critical for the depth of the new material to match that of the existing joists. In fact, it's usually easier if it doesn't. Two-by-fours work fine for this, as will any other framing scrap that happens to be handy.

High spots, or crowns, can be taken out in one of two ways. Hold a chalkline flush with the top corner at either end of the joist and snap a line on the side. Then, with a circular saw set at a depth of 1/8 inch to 1/4 inch, cut a series of kerfs across the top of the joist and remove the waste with the back of a straight-claw hammer. A power plane works well for this, too, but check the joist first for any old bits of metal that might be embedded in it.

Sometimes the solution to a problem floor lies in the design. On a recent kitchen job, for instance, we took out a brick hearth and surround. The weight of the brick, coupled with a lack of support below it, had caused the joists to deflect, creating a noticeable dip in the floor at the center of the room. It happened that a new run of peninsula cabinets sat directly above the worst of the depression, and after shimming them up to match the height of the base cabinets around the perimeter of the room, I had the tile sub level the rest of the floor by increasing the thickness of his mud bed around the peninsula. At the doorways on either side of the room, I preset oak threshold material at the correct finished height, and he worked to them, again varying the thickness of the mud bed to create a substrate that had none of the old floor's dips and rolls.

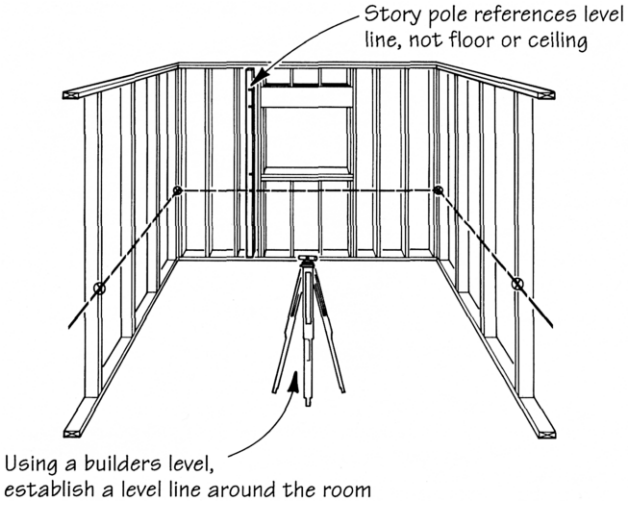
Techniques For Walls

When it comes to squaring up walls, the most widely used technique is furring. Whether the wall leans out or in, the procedure I follow is the same. I start by ripping tapered pieces for the top and bottom plates, and with these in place as a guide to the new wall plane, I fill in between them by sistering new 2x stock to the sides of the existing studs. Of course, thicker walls means you'll need wider jamb stock at doors and windows.

When lining up new walls with old ones, remember that 2x stock has shrunk over the years. The studs that come off the lumber truck probably won't be as wide as the existing ones. For small infill jobs, like closing up a door or a window, I try to cull a few pieces of the old framing from the demo and keep them on hand. That way, I don't have to fur out the new 2x4s or buy oversized stock and rip it down to match the existing. ■

Formerly a remodeler in San Francisco, Stephen Posey is now a builder and writer in Parks, Ariz.

Laying Out a Kitchen



When remodeling a kitchen or bath in an older home, the author first uses a builders level to strike a level line around the room. He makes a story pole that references the level line, as well as other important elevations in the kitchen layout like top of backsplash or bottom of upper cabinets. He then transfers these dimensions to the wall around the room, noting how far out-of-level the floor and ceiling are.