Designing Additions That Fit

For successful add-ons, respect roof lines and building proportions, and "match existing" where possible

by Doug Walter

This second-story addition adds mass to an exceptionally long and lean house without undermining its identity as a ranch. By matching existing roof lines, windows, siding, and detailing, the addition blends in with the original house.

I think it takes as much skill to design a good second-story addition as it does a skyscraper. (The fees aren't as good, though, which is why most of my colleagues are interested in skyscrapers). But whether you're an architect or a contractor, there's no short cut to learning these skills—no book, CAD program, or seminar. You have to learn remodeling design on the job.

The good news is that most people have a sense of what works visually *if* they take the time to study the existing building in detail and develop all the variations before they present choices to their clients.

There's no magic here—a fully-formed concept seldom pops into my head when I first see a house. It usually comes from drawing and redrawing, because the discipline of trying to capture a three-dimensional building—its lines, light and shadow, and detail—on a sheet of paper makes you deal with every element and how it relates to the whole structure. The closest thing to a shortcut we've found are a few rules of thumb and a systematic way of approaching additions.

Sticking To The Style

In remodeling, what you start with has a lot more to do with what you end up with than any other factor. Or it should. Before you begin drawing, immerse yourself in the period of the house you'll be working on. Respecting the character of the existing house in designing an addition makes just as much sense with a generic 1950s ranch as it does with a 19th-century Victorian. Remember, it was the character of the original house that inspired your clients to commit to a 30-year mortgage in the first place.

We keep slides in the office of the best examples we've found of each of the major styles in Denver: Tudor, Colonial, Victorian, Spanish, French, Bungalow, Ranch, and Tract. We use these for clients, and study them ourselves before sitting down to the drafting board.

Here's an example. We designed a family-room addition for the back of a 1930's brick Colonial Revival here in Denver. The essential features of this style, all in evidence on the front of the house, include quoined corners (ornamentation that imitates blocks of cut stone), oval windows, and arched and elliptical transoms. But like so many homes, architectural detail was sparse on the rear elevation. (The American obsession with *street appearance* ignores the fact that we spend most of our time in the *backyard*.) So we borrowed these ele-

Drawings by Doug Walter and Photos by Philip Kantor

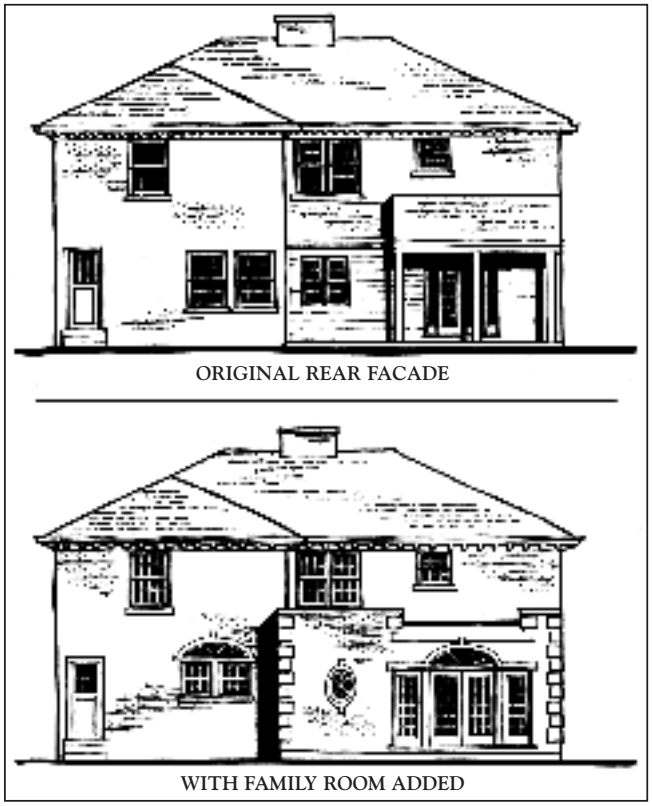

Figure 1. *We borrowed traditional features from the front facade of this 1930s Colonial Revival when we replaced the featureless family room, added by a previous owner on the rear (top). The finished product (bottom) with its quoined corners, oval window, and elliptical transom light is framed with 2x10 ceiling joists so that a second-story bedroom addition can be added in the future.*

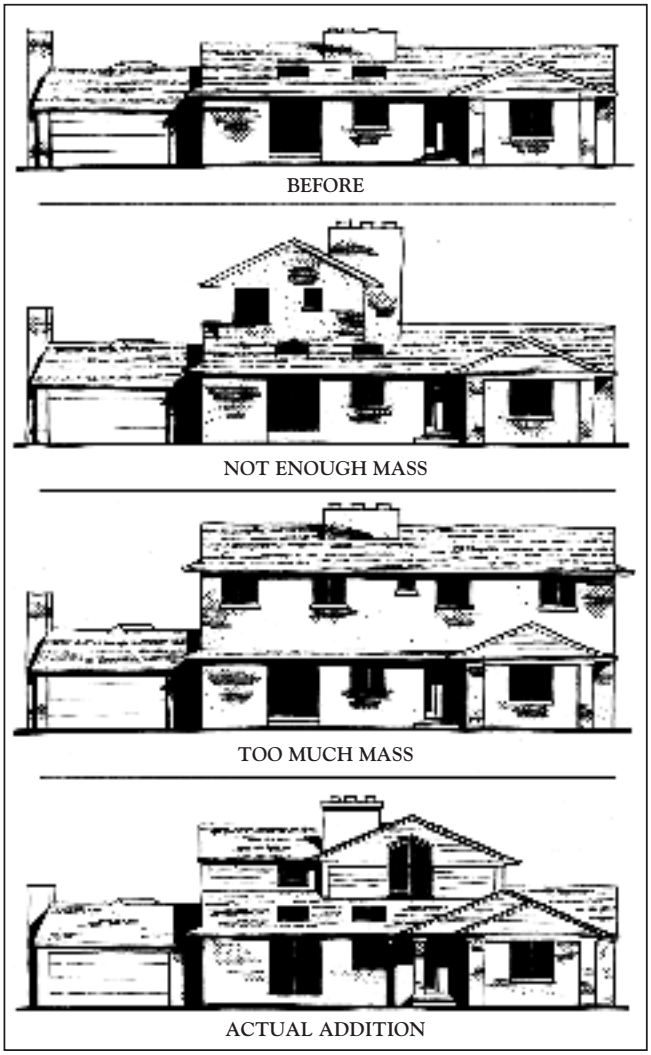

Figure 2. *A second-story addition must be the right size in relation to the existing house in order to blend in well. As shown in this series of illustrations, an addition that is one-third to one-half the square footage of the first floor usually looks best. In the final solution (bottom), the second story was held back considerably from the first story, and a new porch was added to soften the impact of the addition.*

ments from the front facade and repeated them on the rear (see Figure 1).

Begin Drawing With The Plan

Good design starts from the inside out, not the outside in. On most projects, we don't even begin to draw elevations until the plan is well along. Somehow, the logic of a floor plan that is balanced with the original home has always led us to a pleasing exterior.

Good floor plans have to be in scale with the original house. Adding a 30x30 den to a house full of tiny rooms would look and feel ridiculous, and no amount of detail on the exterior would make it blend in properly. This is where diplomacy is called for in discussing floor plans. We have to come up with alternate ways to solve clients' space needs, or gently suggest scaling back their architectural fantasy. Since 99% of the clients we've met want more than they can afford, budget is a powerful tool here.

Considering Mass

The architectural concept of *massing* is nothing more than arranging the larger volumes of the house in relation to each other. Though it may sound esoteric, massing can make or break a second-story addition. A 1952 ranch we recently remodeled is a good example (see Figure 2).

Because of the long, horizontal lines of this style, you have to make sure you have enough mass up there, although you can also destroy the natural lines with too much. We've found that a second story with 1/3 to 1/2 of the first floor area looks best on ranch houses.

We often hold the front of the second floor back from the first floor front wall. On this project where we were dealing with a neighborhood architectural review board nervous about hulking second-story additions, we took the second-floor's front all the way back to the mid-point of the first floor. This reduced the height of the second floor walls and surrounded the new second floor with the original roof.

But while the materials and the roof geometry matched what was below, the addition still looked too stark. So we designed a new entry porch—the original was little more than an extra deep soffit. This new porch keeps rain and snow off arriving guests and provides a transition between the original lower cross-gable roof and the new gable of the second floor.

Matching Roof Lines

In large part, the roof of a building determines its form. But that form should be a familiar one. Nothing announces a bad addition louder than a roof that doesn't match the existing house in type, pitch, details, or materials. You can spot these a block away; often two blocks.

Although some homes mix roof types (for example, a gable-roofed entry to a hip-roofed house), most older homes don't. Matching the roof type—gable, hipped, shed, flat, gambrel, or mansard—is important even if it means compromising on the plan.

One of the classic cases of ignoring this rule is the shed roof that is hung off a ledger on the back of a house: it typically starts just under the second-floor window sills and drops down to an 8-foot wall somewhere out in the backyard at whatever pitch that creates. Another similar design around here is the tract patio cover; we've replaced four of these this year (see Figure 3).

It's also important to duplicate roof details—the size and style of overhangs, fascia, soffits, rafter tails, gutters, and any patterns in the shingling. Matching material is also vital, and often the best

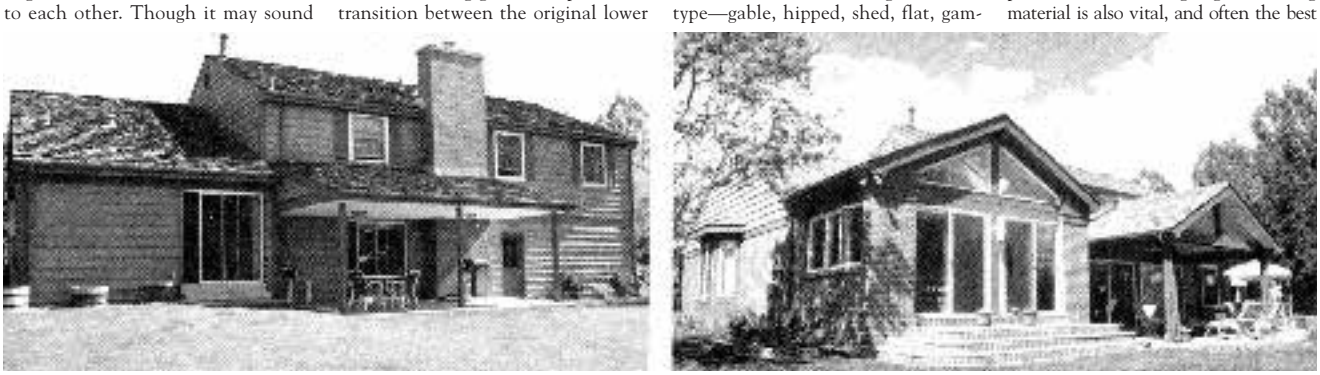

Figure 3. *Matching the existing roof style often means using "cross-gables" at the same pitch, rather than taking the easy route with a shed roof. In replacing this shed patio cover (left), we brought the family room behind it out 6 feet, and added on to the kitchen and breakfast area another 12 feet (right). The family room addition starts out with a shed roof, but then makes the transition to a gable to form the patio cover. The 12-foot ridge height lets south sun penetrate into the family room in winter, while shading the high summer sun. The kitchen wing has trapezoidal windows with no overhang to allow maximum penetration of sunlight into the 21-foot deep space.*

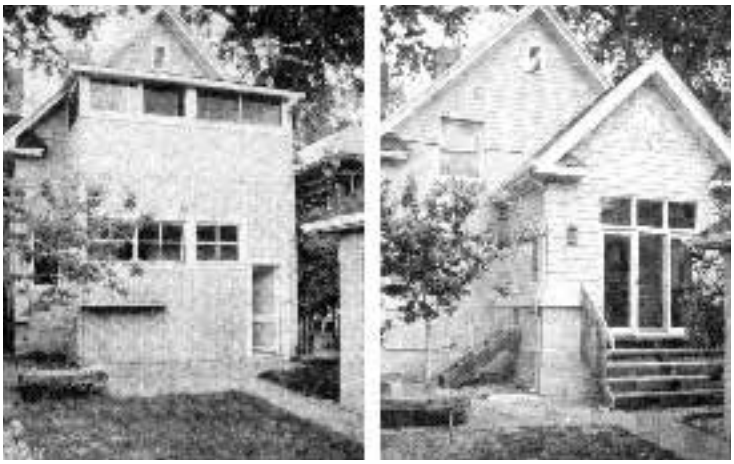

Figure 4. *Matching existing materials is vital to making an addition blend in, but it can overwhelm the budget. In replacing the wood sleeping porch (left) with a breakfast room (right) on this brick Victorian, the solution was to use salvaged brick on only a small part of the addition—in the base and belt course—and shingles on the rest. The flare where brick and shingles meet imitates a detail found at the top of the first-floor brick walls on the front of the house. Since both the brick and gable end shingles of the original house were painted, extending this single color to the addition was an important factor in tying everything together. The diamond-shaped window atop the addition brings high sunlight into the vaulted breakfast room, and adds a distinctive touch.*

solution visually is to reroof both new and old roofs when the addition is built.

One area where we end up compromising a lot is when the owners of a cedar roof home opt for heavyweight fiberglass shingles. Given the lower quality of today's cedar shingles and the abuse they take from Denver's weather extremes, it's hard to argue for them over a roof covering that is cheaper, more fireproof, and carries a 30-year warranty.

The time to be thinking about roofs is when you're drawing the plan. We dot in the existing roof on floor plans to serve as a reminder of where all the ridges, hips and valleys fall when we start laying out the addition. This way we don't end up with thoughtless roof intersections that leave strange transitional areas or tiny gable-ends peeking over the original roof. As an example, take a family room addition at right angles to a 30-foot deep home with a 6/12 roof. We want the new ridge to plane out with the existing ridge, or perhaps come in a foot or two below, so we make sure the addition isn't wider than 30 feet.

One dilemma we often see with roof tie-ins is whether to match the existing top-of-rafter height or finished roof height in older homes with more than one layer of roofing (Denver allows up to three layers; the first is typically cedar shingles on spaced sheathing). It's easiest to design for current conditions, but that will leave the clients with a huge problem 15 years down the road when they tear it all off and find the addition's roof plane is a lot higher than the rest of the roof surface. We've done it both ways, but we prefer to spend the extra dollars to match the existing rafters, and if necessary, build up the roof of the addition with an extra layer or two of decking to get the finished surfaces to plane out.

Selecting Materials

If there's a credo that should be carved into the drafting board of anyone who draws plans for additions it is *Match Existing*. It sounds simple enough with materials, but it never is.

Brickwork is typical. Not only do you need to match the color, size, and texture of the original brick exactly, but also the composition, color, tooling, and joint size of the mortar. This can get very involved (and expensive) because there are often no modern counterparts to old brick sizes. That's why we go to extreme lengths to salvage every brick during demolition. Luckily, pre-war mortar around here was usually sand and lime, and it cleans up easily.

An example of selective use of salvaged materials is a room addition we did last year to a 1½-story, brick Victorian in Denver's Capitol Hill neighborhood. The addition was to replace the rickety, wood-frame sleeping porch addition shown in Figure 4. By borrowing a detail from the gable end on the front of the house, we were able to use wood shingles for most of the addition (which we could find without trouble), and get by with just a base and belt course of brick (which we salvaged during demolition). The result is what almost all our new clients ask for in the initial interview, "an addition that doesn't look like it's been added on."

If you just can't afford to match the original materials, your next option is to complement them with materials commonly used together in the style or period. For instance, brick was often used with stucco on Tudors and Bungalows in this area.

If you're unable to match materials or use complementary ones, the last option is to use materials that offer a contrast. In the 1970s and 1980s, this was common in "historic" commercial renovation—adding glass storefronts to old stone or brick mansions—since duplicating both the original materials and the level of craftsmanship was prohibitively expensive.

But you have to be very careful using this approach, particularly when adding "up." It often results in what our office calls "gifts from the sky" —second-story additions that look like an alien spaceship set down on an unsuspecting bungalow or ranch.

Getting the Windows Right

Mismatched window types and sizes can ruin an otherwise respectable addition. To avoid this, you have to pay attention to proportion and size, match type and details, and align heads, sills, and jambs between the new and old construction.

Make sure the head and sill elevations of the addition match those of the original house, particularly the head. We sometimes lower a sill for effect or to accommodate a special need inside. Vertical alignment is also important; if you can't align both jambs, line up the centerlines.

Matching window types—casement, awning, double-hung, sliding, fixed, or decorative—isn't usually difficult.

But new windows of the same type and size don't always match the old ones in terms of mullion and muntin widths, jamb details, etc. For instance, true divided-light, insulating-glass windows typically have muntins that are easily twice the size of the thin ones on old single-glazed sash. (The quick "solution" is snap-in muntin bars.) We've sometimes been able to salvage old windows from another part of the project.

Another strategy that makes added sense when considering energy efficiency is to change out all the windows in the original home with replacements, matching the old to the new. It is critical to match the new windows to the openings precisely, even if it means custom orders or using stock windows from several manufacturers. Nothing looks quite as bad as huge filler pieces around replacement windows in a masonry wall.

In addition to matching those on the original structure, the new windows should relate to the mass of the new structure. Often, windows on second and third stories are shorter than those on the first floor. Try out different possibilities with tracing paper overlays. Draw an elevation and focus on the solid-to-void relationship of the exterior and the symmetry or asymmetry between all of the exterior elements of the old and new structures.

Some Saving Graces

There are a couple of different design tools that can help "finesse" additions that aren't perfectly matched to the old construction.

Color. This is by far the most cost-effective. If you have any doubts about how important color is in helping to blend new and old construction, try to imagine what Benjamin Henry Latrobe's 1829 North and South Portico additions to the White House would look like painted any color but white. Try to use colors from the original house on the addition, and vice versa. Color can also be used to disguise vents, and mechanical and electrical apparatus. You may see them, but because they are the same color as the background, they tend to disappear.

Landscaping. Sometimes this is the only hope. They say a doctor can bury his mistakes, but a building designer can only plant vines. If nothing else, landscaping softens the hard, sharp edges of new construction. Most additions, when completed, are surrounded by a parched, packed border of dirt—nothing like the years of vegetation that crowd right up to the walls of the original home. With luck, there's money left in the remodeling budget for this last, important bit of finesse. Good plantings can pull the eye toward or away from the building, or emphasize (or de-emphasize) an architectural feature. ■

Doug Walter is a Denver architect who has won numerous awards for his residential designs. His practice, Doug Walter Architects, puts special emphasis on remodeling.

From Dreams to Working Drawings

Our procedure is the same for every project, from a $25,000 kitchen redo to a $250,000 total rebuild. We start with detailed measurements of the existing house—this usually takes a couple of us a full day. We also shoot several rolls of film; it's cheap and invariably saves us a later trip to the site to verify a detail. All this information goes into creating 1/4-inch scale floorplans and elevations of the existing house.

While we are doing this, we ask the clients to fill out a detailed, 14-page questionnaire, asking everything from "What do you like least about your house?" (to identify problems to be solved) to "Does it take long for hot water to get to your sinks?" (to see if they need a larger hot water heater or insulated supply lines).

When the questionnaire comes back, we loan the clients books and magazines from our library, asking them to mark homes, rooms, and details that appeal to them. These images gives us a better picture of what the client expects than words ever can.

We start by showing the client a simple tracing of each floor. On it we note the strengths and weaknesses of the existing plan, drawn both from their questionnaire and from our own perceptions. By introducing a scale drawing of something they already know, we get the clients thinking visually rather than verbally. All subsequent design drawings are done at the same scale, in the same freehand format.

The first two or three design meetings deal strictly with the floorplan. We've found that it's a waste of time to develop elevations for plans that may never get built, and that somehow a good floorplan always seems to lead to very usable elevations. If the client is apprehensive about the overall appearance at this stage, we'll include a little thumbnail perspective showing what we think the project could look like.

Once the plan is fairly well defined, we introduce elevations. We present them in sketches with shadows drawn in to make them more "real." But in a way, these are just worksheets.

What really sells the client on the concept are the freehand perspectives we draw using familiar vantage points inside and out. Invariably, when clients want to talk about something on the home, the perspective is the drawing they refer to.

Design meetings are scheduled a week or two apart. We usually have an adequate solution for basic square footage by the first or second meeting. Then we go through lots of variations on each aspect of the project. We want a design that goes beyond just answering the needs, to one that gets the client excited and helps create a larger, more attractive house that doesn't look like it's been "added onto."

This is a six week process at minimum, and ideally we'd like as much time as it takes to build the project—three to four months—to complete the design and bid review process. Few clients plan that far ahead, so we find ourselves averaging about ten weeks on projects under $75,000 from the day they say "go" to the day the dumpster shows up.

—D.W.