

New Deck, New Door

by Mark Clement

For many homeowners, adding a deck can lead naturally to thinking about ways to connect the new outdoor living space with the inside of the house. Perhaps there's a field of drywall in the living room's exterior wall that would look better with an atrium door. Or maybe

replacing a double window in the dining room with a slider would let more light into the room and provide access to the deck for entertaining.

When a customer's eyes grow wide contemplating upgrades, a builder doesn't need to be Donald Trump to see the secondary revenue stream. Meeting a customer's needs beyond the deck itself could keep the

crew busy during slowdowns, increase margins, become a gateway to high-end clients, and so on.

Or, it could cost you a boatload. I'm a remodeling carpenter who also builds decks, and I've added a number of doors. There's a lot more to it than it may seem on the surface — enough, anyway, to surprise an unwary deck builder, never mind a homeowner. And there are plenty of places you can lose the money you were hoping to make.

A capable carpenter can handle the framing and setting of the door, along with the flashing, the siding, and the interior trim, but this is not a job for a rookie. Almost certainly, the project will require an electrician, and probably a plumber, too — just coordinating their schedules will complicate the job. I can't cover every scenario in this article, but I will hit the main points I've learned to watch out for.

Homeowner Relations

As a deck builder, you do most of your work outside, which keeps the dust and disruption outside too. Working inside the house, however, ramps up the level of interaction with the homeowners' lives.

In addition to the obvious — cleanliness — communication is key. Let customers know up front that the unexpected may arise. You can't always predict, for example, what is inside a wall: Pipes, wires, and rot don't necessarily make themselves known. And you can't always predict when the subcontractors will show up. The electrician, at least, and the drywall

sub — if you're lucky enough to find one — will have to make multiple visits. Be sure to give yourself an out in the contract for unexpected complications.

I check my subs' typical lead times and rough numbers so I can begin managing my customer's expectations and roughing in a preliminary budget. If I don't know these things, I ask the sub before telling the customer anything specific. Informed homeowners won't drive you crazy with constant phone calls and bad references.

Inside the Wall

When I tackle a wall or window conversion, I know the project will pull me in a lot of directions — from rough carpentry right through persnickety trim details and painting. Most of the items that follow will need to be addressed and detailed in your permit application. In some cases,

Adding an exterior door is more than just carpentry — plan on hiring an electrician, a plumber, and a drywall contractor

Behind the Drywall

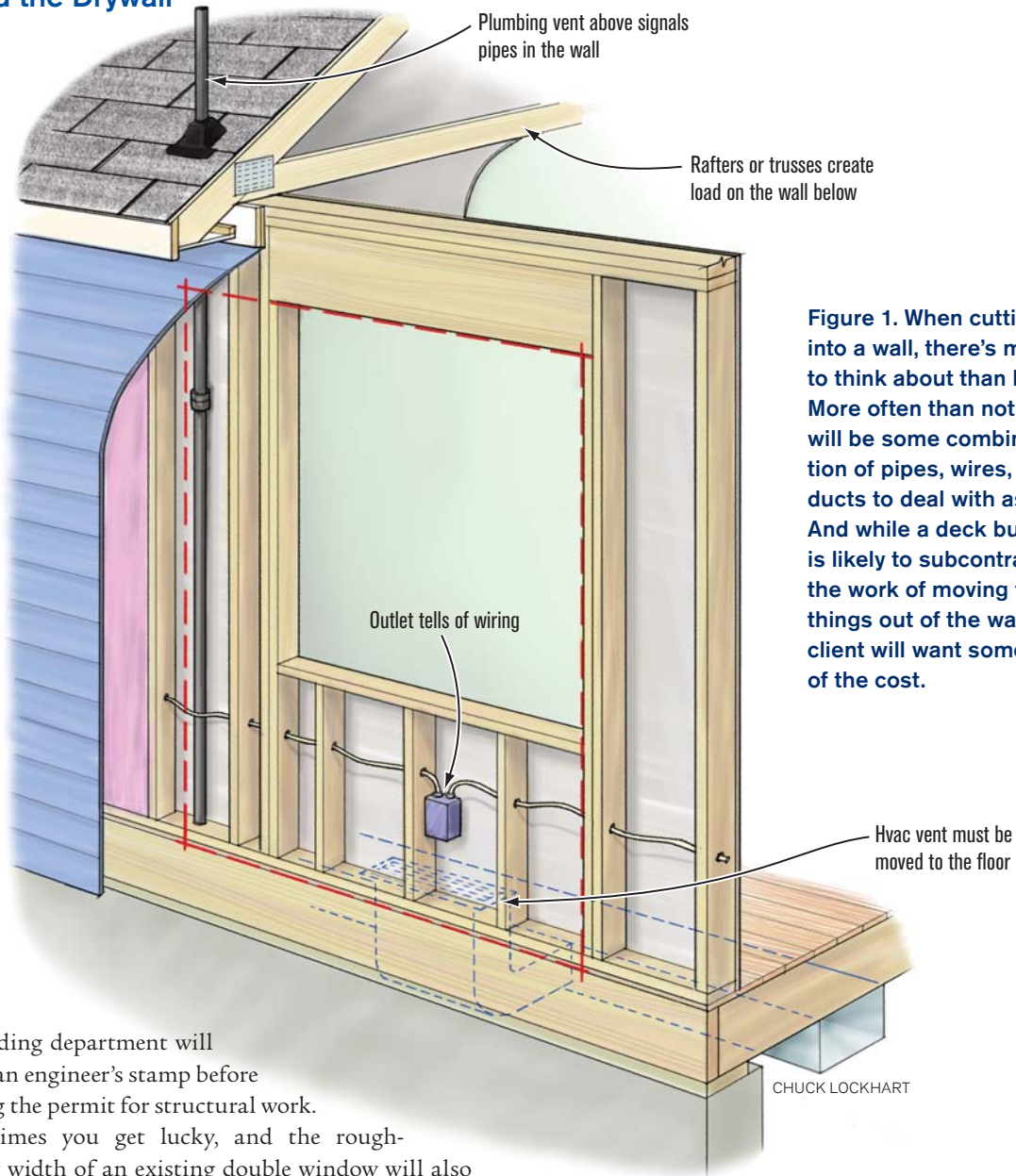


Figure 1. When cutting into a wall, there's more to think about than loads. More often than not, there will be some combination of pipes, wires, and ducts to deal with as well. And while a deck builder is likely to subcontract the work of moving these things out of the way, the client will want some idea of the cost.

the building department will require an engineer's stamp before granting the permit for structural work.

Sometimes you get lucky, and the rough-opening width of an existing double window will also serve for a 6-foot slider. In that case, the existing framing is probably fine. Your biggest concern will be removing the siding, drywall, trim, cripple studs, and bottom plate beneath the window — all fairly basic — and replacing it all with a door unit. The main issues then are the flashing outside and the trim inside. Usually, though, the job is more complicated.

Plumbing. The first part of evaluating the job is easy: First look up, then down, for plumbing (**Figure 1**). If there's a bathroom above, it's even money there will be plumbing in the outside wall. Less obvious is when there's no bath above. If plumbing vents penetrate the roof above

the proposed opening, there may be a bath or laundry room below that vents through the area you're planning to change. Try to get up in the attic to see where the vent comes from. You may have a lot of plumbing to deal with.

In the Northeast, hot-water baseboard heating is pretty common. If that's the heat source, odds are there's a radiator right where the door will go — one more reason it's important to have a good plumber in your address book.

Electrical. There's about a 100 percent chance that wires run through the exterior wall. They'll need to be properly rerouted. Any wires that are terminated need to end in a junction box that's accessible, not buried in the wall.

New Deck, New Door

Sometimes that can be a plus for your customer, as the electrician might be able to handle the junction in a new outlet box.

In any event, at least one outlet will probably have to be added to meet the code requirement of an outlet within 6 feet of each side of a door. Also, you'll probably need to add an outside light and a switch for it; depending on your local building department, you may need to add a switch controlling an indoor light by the door as well. It may be cheaper to add a new light than to wire in a new three-way switch to an existing light.

If the house is heated with electric baseboards, one is usually in the way. So while the electrician is working on the lights, have him take care of the baseboard unit too.

Hvac. In my experience, there's an 80 percent chance an hvac supply is in the floor or the wall beneath an existing door or window. If the vent is in the wall, you'll need to move it to the floor. It's not easy to get an hvac contractor for a job this small, so I often end up doing it myself. It's not difficult if there's access from below.

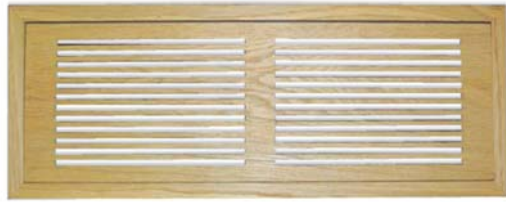


Figure 2. When an hvac grille has to be moved from the wall to the floor, you can buy a cheap metal grille at any home center, or you can class up your project with a hardwood grille to match the flooring.

If there isn't, you have to open up the ceiling below, which means more drywall and painting.

Changing the vent is pretty straightforward. Once you measure the size of the duct, head to your local hvac supplier or big-box home center and buy a floor boot and some duct tape (the good stuff that's got an ICC listing, not the regular fabric duct tape your old boss used to hold together his tool pouch).

Unscrew the existing ducts, cut a hole in the floor for the boot, cut the duct to length, and reassemble. Or when typical materials don't fit, make your own with aluminum coil stock and a sheet metal brake — which is usually what I end up doing. Be sure to tape the seams — leaking ducts are big energy wasters.

The exposed vent apparatus is usually a louvered metal contraption with a lever that sits proud of the floor and thus is easily mangled. Beneath a window, where there's limited traffic, the lever is fairly safe. In front of a door, however, a flush-mount unit is necessary (**Figure 2**). If there's carpet, set it on top of the carpet. For wood floors, the right thing to do is match the species and stain the grille before installing it. I use Cape Cod Air Grilles (800/547-2705; ccairgrilles.com).

The cutout in the floor needs to be right on the money. I use a straightedge and a circ saw. Consider the vent location when you decide which side of a wide door will be the active one. The vent will last considerable longer if you place it in front of the inactive door.

Framing

Check the roof type. A gable or gambrel roof drives most of its weight down through the walls that carry the rafter tails. This load path goes through studs, headers, and floor framing all the way to the foundation. The walls that don't carry rafters (the peaked side) usually carry a lighter load. A hip roof drives most of its force down the corners of the building, but all four sides also carry significant roof weight. In two-story houses, the first-floor walls that are perpendicular to the floor joists also carry

A Shooting Board Makes for Straight Cuts

One piece of 1/4-inch plywood about 12 inches by 8 feet serves as the base. A piece of 1/2-inch plywood that's about 5 inches by 8 feet is the guide. Make sure the edge of the guide piece that will face in is straight.

Glue and screw the guide to the base so that one set of the 8-foot edges align. Set a circular saw on the base with the edge of the saw against the straight edge of the 5-inch piece and rip the base piece. Now you have a zero-clearance edge guide that you can screw to the siding.



Temporary Walls

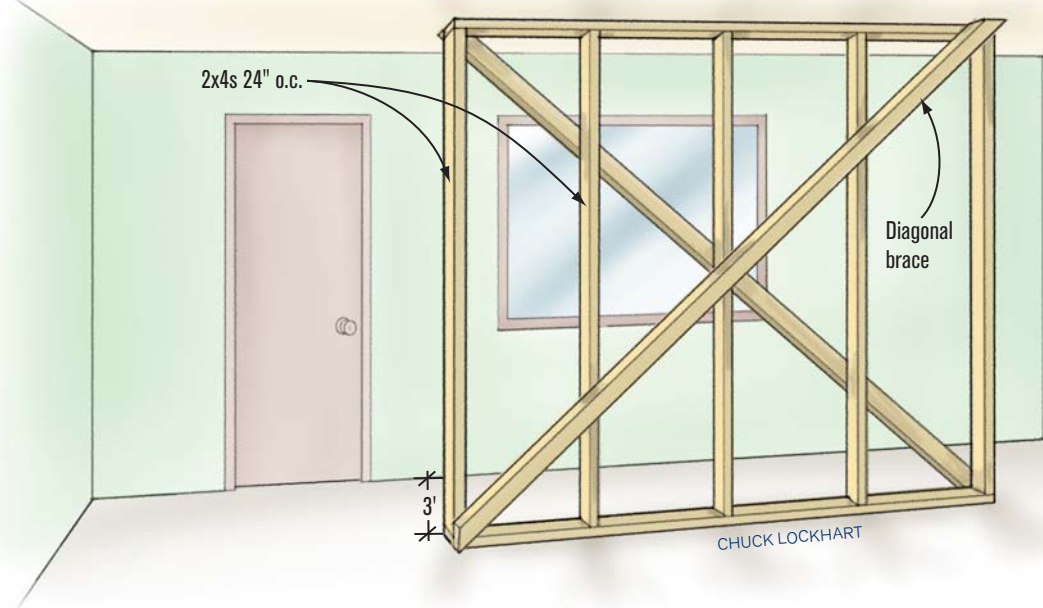


Figure 3. Before any structural work is done, the author wedges in a temporary wall built from 2x4s. Placed about 3 feet from the outside wall to provide working room, the temporary wall supports the load from above. Carpet scraps pad the wall's top and bottom to minimize damage to the flooring and drywall. The temporary wall can be wrapped in plastic sheeting to help contain the dust.

floor loads (these walls are usually the ones carrying the load of the roof). In general, I assume there's a load from above and support the ceiling with a temporary wall.

A masonry or block wall carries not only the roof load, but also the weight of the block, brick, or stone above the opening. Here, you'll probably want to hire a specialist to cut out and properly reinforce the wall. As an added benefit, these contractors usually cart away the half ton of masonry they remove.

The International Residential Code will stipulate minimum sizing requirements for a header and jack studs (the studs the header rests on), based on the configuration of the house. The key word is minimum — you can always overbuild. Check the code, but in most cases, the opening for a 6-foot door or window can be headed off with a double 2x12. I pack it out with a strip of 1/2-inch plywood so the header matches a 2x4 wall thickness.

If it's a 2x6 wall, you can add a piece of 2-inch rigid foam to insulate the header. You'll need double jack studs

under each end of the header. In an 8-foot-high wall, the 2x12 header usually provides exactly the proper rough-opening height. With higher walls, you'll probably need to add cripple studs above.

Shorter walls can be a problem, because sometimes there's not enough room above the door for the requisite header depth. It may be necessary to spend a few hundred bucks on an engineer. One alternative is to use engineered lumber such as LVL for the headers. In many cases, the supplier will provide the engineering with the purchase. A second alternative is to use a steel plate in the header, but here you'll almost certainly need engineering.

Open the Wall

Before cutting into the wall, I build a temporary stud wall, usually 8 feet long, of 2x4s 24 inches on center (**Figure 3**). To protect the ceilings and floors from damage, I wrap the top and bottom plates with carpet samples, then wedge the temporary wall in tightly between the floor and the ceiling to prevent movement. It will probably leave marks on the drywall, but guess what? You'll be painting anyway. If you're lucky, the homeowner has some touch-up paint stashed away. If not, save a scrap of the drywall you remove for color matching at the paint store.

Working inside someone's home is a whole different kettle of fish from working outdoors. I can't tell you the number of times I've had to remind carpenters — despite the presence of the homeowner and the furniture — that someone lives in the house.



Figure 4. An air cleaner such as this Delta unit is intended for small woodshops but does a good job minimizing the dust inside your client's house.

DELTA

Changing the Load Path

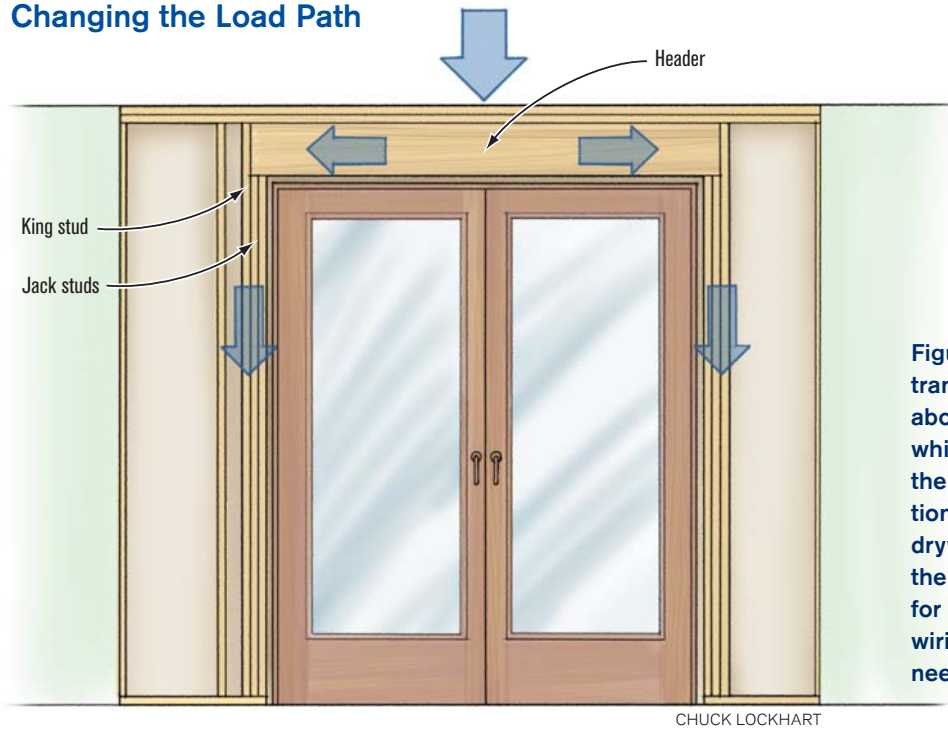


Figure 5. The new header transfers loads from above to the jack studs, which in turn bear on the framing or foundation below. Removing the drywall to either side of the door provides access for nailing and whatever wiring and plumbing may need to be done.

CHUCK LOCKHART

Drop cloths from the entry door into the work area can't hurt, but the main thing is to protect the house from demolition dust and the floors from scratches. Attach thin plastic sheeting to the temporary wall, ceiling, and outside walls with masking tape to control interior dust. I often bring a Delta air cleaner (deltaportercable.com) to the site to knock down airborne dust (**Figure 4, page 4**). Nothing's perfect, but every little bit helps. If there's a window, take it out and use that opening as access, staying mostly out of the customer's house. If the window will be out overnight, have a piece of plywood ready to board up the opening.

I start demo from the inside. This way if I find any surprises that will delay the job, at least I haven't completely opened the house to the weather.

I remove the wallboard (cutting it with a hand-powered drywall saw to minimize dust) about one stud bay wider than the door and usually from floor to ceiling. Opening the wall this wide makes the drywall repair easier, provides access to the sides of the studs for nailing, and gives the plumber and electrician room to work.

The framing demo is pretty easy. A reciprocating saw with a metal-cutting blade makes short work of the nails between the existing studs and the top and bottom plates. Then I pry the studs away from the sheathing. You may need to cut off siding nails that protrude past the

sheathing with a pair of diagonal cutters. Butt the header tight to the underside of the bottom plate and nail into it through the king studs, then fill in with jack studs below its ends (**Figure 5**).

With the header and jack studs in, odds are you'll have to leave the wall open for a few days so the plumber and electrician can work their magic. Be sure to forewarn your homeowner about this.

Siding and Sheathing

After I've installed the header and studs, I send a $\frac{1}{4}$ -inch drill bit through the sheathing and siding at the upper corners of the rough opening to provide reference points for the outside layout. Outside, a line between these holes and a plumb line down from each locates the rough opening, which I mark on the siding.

I start outside by cutting the siding only, not the sheathing yet. I'm careful to keep the siding as intact as possible — the last thing I want is to have to weave new siding into an existing system.

How far back I cut the siding depends on the type of door that I'm installing. If it's got integral trim — brick molding or $\frac{5}{4} \times 4$, for example — I'll carefully lay out the cuts on the siding to the door's outside dimensions, plus $\frac{1}{4}$ inch on each side and the top for wiggle room, flashing, or J-channel.

Flashing Starts With a Sill Pan

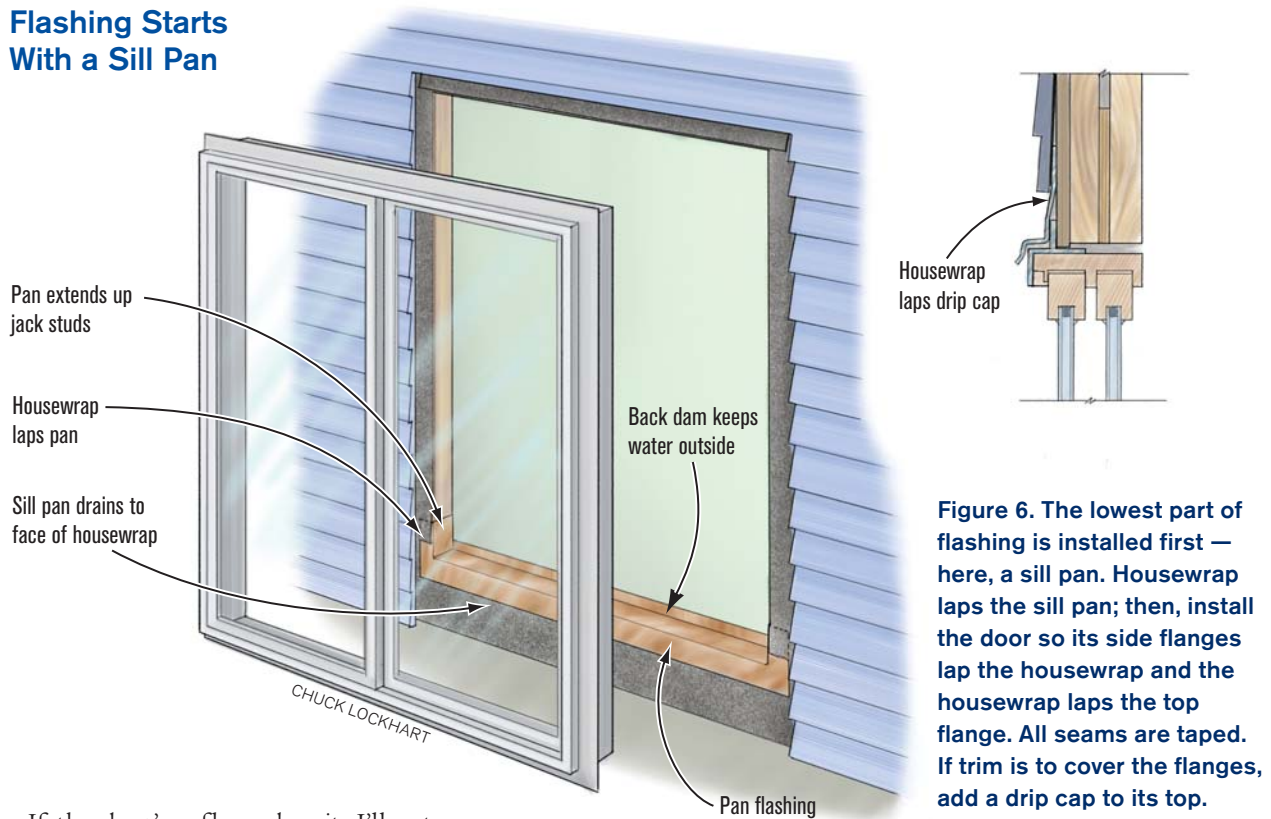


Figure 6. The lowest part of flashing is installed first — here, a sill pan. Housewrap laps the sill pan; then, install the door so its side flanges lap the housewrap and the housewrap laps the top flange. All seams are taped. If trim is to cover the flanges, add a drip cap to its top.

If the door's a flanged unit, I'll cut the siding back an additional $3\frac{3}{4}$ inches on each side and the top so that I can flash the unit and trim around it with $5/4 \times 4$ Azek (877/275-2935, azek.com) or other trim board. I use the rough-opening layout as a reference. Rather than wrestling with math to find how far the unit extends past the rough opening, I mark the center of the rough opening, then measure half the unit dimension to either side to mark the siding.

When the siding is wood, I make as much of the cut as possible with a circular saw, first removing any nails in the saw's path. If anything, set the depth of the cut a little shallow. I'd rather have to finish the cut with a knife than cut into the housewrap. To make the straightest cut possible, I screw a shooting board to the wall (see sidebar "A Shooting Board Makes for Straight Cuts," page 42). Before cutting, I score the siding with a knife along the shooting board to minimize chipping.

To finish the bottom of the cuts, I use a combination of a Japanese pull saw, an angle grinder, a RotoZip, and a reciprocating saw — whatever works. Prime the freshly cut edges of the siding; doing so will make a world of difference in how long the paint around the door will stay on the wall.

With vinyl siding, the layout is the same, but the cut can be made with snips and a utility knife — though I'll use a circ saw every chance I get.

After cutting the siding, I cut out the sheathing with a circular saw and finish up with a reciprocating saw. While it's possible to make the entire cut with a reciprocating saw, it's not a good idea. The vibrations have been known to knock knickknacks and family photos off the walls in adjoining rooms. And consider the time of day when you make these cuts. Do you really want to open up your customer's house at four in the afternoon?

Flashing

Next comes the easy part. I follow the manufacturer's instructions and install the door or window unit, then flash it to the house. Flashing is critical when installing doors and windows. Without it, they'll leak, and you'll face a callback if you're lucky or a mold lawsuit if you aren't. In general, all flashing should be installed like shingles, with upper layers lapping lower layers.

The first step is to install pan flashing on the floor so it drains to the face of the housewrap below (**Figure 6**). You can bend sheet metal to make the pan, sealing the corners with a bituminous membrane such as Grace Vycor (800/354-5414, graceconstruction.com) or BT25XL (Protecto Wrap Company; 877/271-9661, protectowrap.com). You can also make the entire pan from one of these

Sealing a Door With Integral Trim

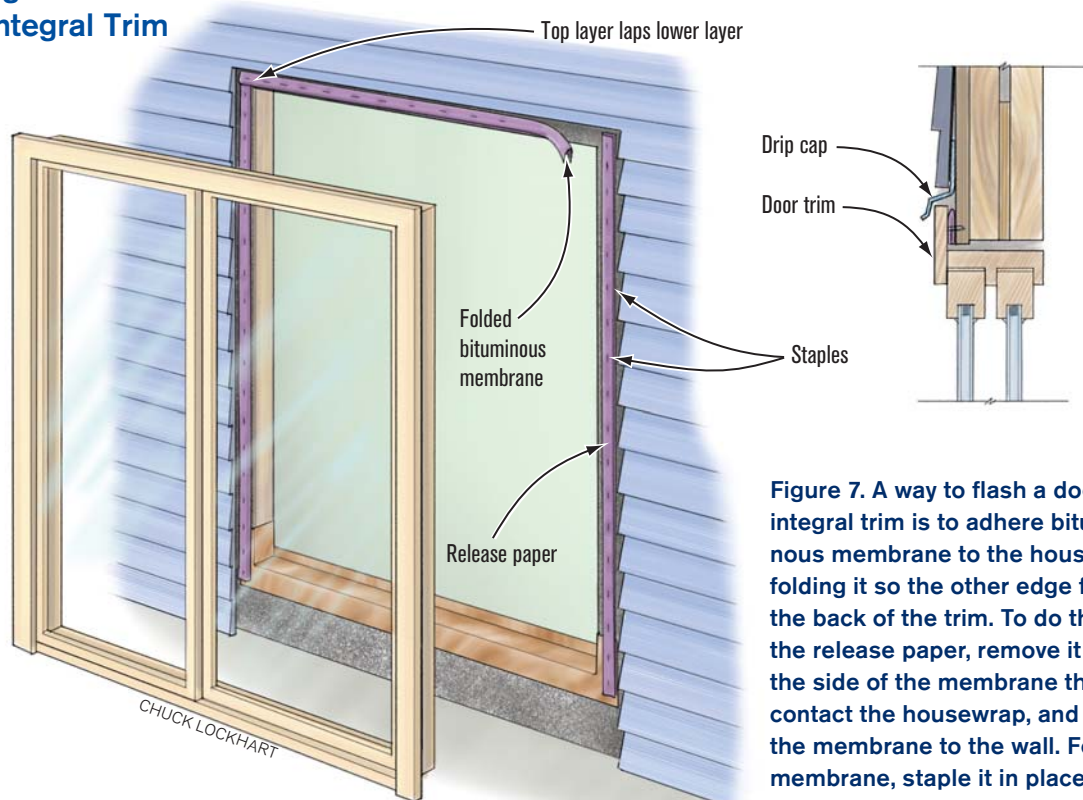


Figure 7. A way to flash a door with integral trim is to adhere bituminous membrane to the housewrap, folding it so the other edge faces the back of the trim. To do this, slit the release paper, remove it from the side of the membrane that will contact the housewrap, and apply the membrane to the wall. Fold the membrane, staple it in place, and remove the remaining paper.

membranes or use a manufactured pan.

If you're installing a flanged door, flashing is pretty easy. Cut the housewrap diagonally at the top corners and fold back the top flap. Install the door so its side flanges cover the housewrap and its top flange is nailed directly to the sheathing. Fold the top flap over the top flange, then use housewrap tape to seal the housewrap to the door and to seal the diagonal cuts you made.

Flashing a door with integral casing is a bit trickier (**Figure 7**). One way is to leave the housewrap intact and apply bituminous membrane that's been folded over so there's a sticky side front and back. One side sticks to the housewrap and the other side sticks to the back of the door trim.

First cut the membrane into strips at least 2 inches wide. Lightly score the center of the release paper along its length, then peel off one side of the paper. Stick the membrane to the wall near where the outer edge of the door trim will go. Fold the membrane so the side with the intact paper faces out, and staple it flat. Pull off the release paper and install the door.

Back in the House

Once the plumber and electrician have finished up, I replace the insulation (making sure to leave no gaps)

and vapor barrier, if there is one. I like to insulate gaps between the door and the wall framing with low-expansion spray foam. However, that voids the warranties of some vinyl door units. In that case, I fill the gap between the door and the framing with appropriately sized foam backer rod, and lay caulk on top of that. The backer rod supports the caulk so you don't pump tube after tube into the opening, and it allows the flexibility needed for a caulk joint to last.

Next comes installing and finishing the new drywall. This is beyond the scope of the article, but it's deceptively difficult and time-consuming work if you're not a practiced hand. If you can find a drywall sub who'll come out and do small jobs, pay him whatever he asks and buy him breakfast and lunch. It will be money well spent. Once the drywall is finished, trim the door with new casing and re-install the base and shoe molding. Then caulk, prime, paint, and clean up.

Compared with installing the door, building the deck should be a walk in the park. ❖

Mark Clement is a remodeler, a deck builder, and a member of the DeckExpo live-demonstration team.