

Venting Hip Roofs

Q. Can I use a ridge vent to vent a hip roof?

A. Builder Mike Guertin responds: The short answer is yes. I know that venting hip roofs adequately can be difficult, and that many people think that the relatively unobtrusive ridge vents are a better aesthetic option than a bunch of unsightly mushroom vents.

However, I'm not a fan of using ridge vents along hips. I installed ridge vents on the hips of two homes 11 years ago. About six months after the homes were complete, both homeowners had water stains on the second floor ceilings. I found the fiberglass insulation damp beneath a couple of the hips, and I could see where water had dripped along the hip rafters. I thought the leaks were due to a particularly severe thunderstorm and figured it wouldn't happen again. But two weeks later, during a moderate storm, the leaks recurred. I removed the hip vents and haven't had a problem since.

My present roof venting strategy is to use a continuous soffit vent (either a strip vent or a fully vented vinyl soffit), and to use a ridge vent on all true ridges. (I haven't had any callbacks from leaking ridge vents installed on actual ridges.) Some ridge vents work better than others. I think ShingleVent II by Air Vent is better than many of the others. I've found some of the roll type vents subject to installer errors that reduce the net free vent area.

On a hip roof that lacks enough of a ridge for adequate venting, I install roof vents (mushroom vents) cut high on the roof slopes that aren't likely to be viewed.

One of the reasons for installing attic venting is to remove moisture vapor that can condense on roof framing, potentially causing rot in cold climates. If you stop moisture from getting into the attic in the first place by tightening

Leak-Free Metal Roofs

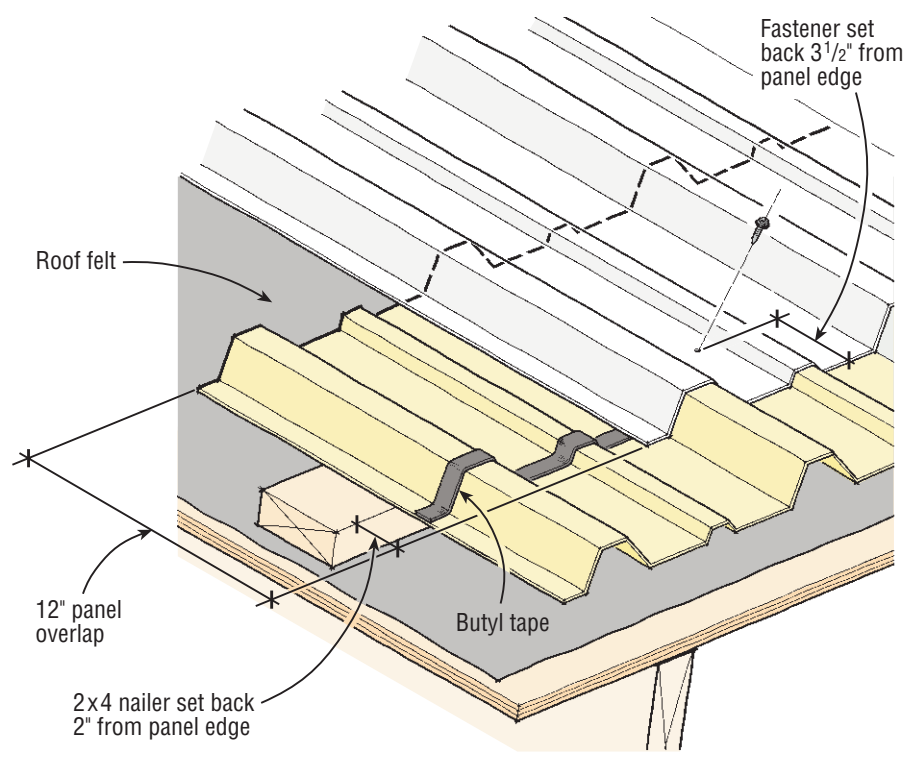
Q. I am installing steel roofing panels with exposed fasteners. Where it is necessary to install two panels between the ridge and the eaves, how much should the panels overlap?

A. Daniel C. Jandzio, wood frame product manager at Fabral, a metal roofing manufacturer, responds: A good rule of thumb for end-lapped panels is to use a 12-inch endlap. If the metal is going over purlins, or nailers, lay out the panel lengths so that the lap occurs over the support. The bottom panel should be long enough to allow for a 1-inch eaves overhang and extend about 6 to 7 inches past the upslope

edge of the endlap support. The top panel should extend 2 inches past the downslope edge of the endlap support.

To prevent leaks, always install the fasteners 3 to 3½ inches up from the end of the overlapping panel, and apply a bead of butyl sealant just downslope of the fasteners (between the weather and the fasteners). I prefer pre-extruded butyl sealant tape, 3/32x1 inch wide. This product is inexpensive, easy to apply, and doesn't hold the panels apart (causing fish-mouthing) at the panel lap. Butyl sealant doesn't cure and will remain tacky for the life of the roof.

Roof Panel Overlap



up the ceiling, you can reduce the need for attic venting. Moisture “piggy-backs” on the air that leaks into the attic. The biggest air leaks you’ll find are at attic access panels or pull-down stairs, standard recessed light cans, regular light fixture electric boxes, hvac ducts and chases, whole-house fans, and the spaces around pipes and wires that run through the top plates of walls. During new construction, these air leaks are easy to address.

Footing Width for Frost-Protected Shallow Foundations

Q. We’ll be building a house on a frost-protected shallow foundation. Are the requirements for sizing the portion of the slab that forms the thickened footing around the perimeter of the slab the same as the requirements for a typical monolithic floating slab?

A. Jay Crandell, a licensed professional engineer and director of the structures and materials division at the NAHB Research Center, responds: Yes, the footing should be sized just as required in the building code for any footing. The key to a frost-protected shallow foundation is simply to place the right type and amount of insulation in the appropriate locations to prevent frost heave from being a problem.

For more information, consult the *Design Guide for Frost-Protected Shallow Foundations*, which is available from the NAHB Research Center for \$30 (800/638-8556; www.nahbrc.org).

Rusting Steel Studs

Q. We are currently building a steel-framed house near the ocean in California. Our site is very close to the water, and I am concerned about rust problems developing in the steel framing. We have already noticed small surface rust spots on some of the steel tracks on the floors. It seems as though these rust spots are being caused by the small particles of metal shavings left in the tracks either from drilling through the studs or where they were screwed together during assembly. I have also noticed that rust is forming on the ends of cut studs. Will the rust stop after the house is closed up, or will the rust spots grow over the years?

A. Corresponding Editor Paul Fiset responds: All structural steel studs should be galvanized. When you build in a coastal environment, you should specify a grade called G-90. G-90 steel has a heavier zinc coating to provide extra protection in hostile environments.

Rust on a steel stud can be compared to rot on a wood stud. When a wall is properly constructed, there is little likelihood of a stud rusting to the point of failure. But it is important to use proper wall construction that shields the framing from exterior elements and minimizes the chance of condensation within the wall cavity.

Normal cutting and drilling of steel studs removes the zinc coating in the cut area. However, in most cases the coating adjacent to the cut will “sacri-

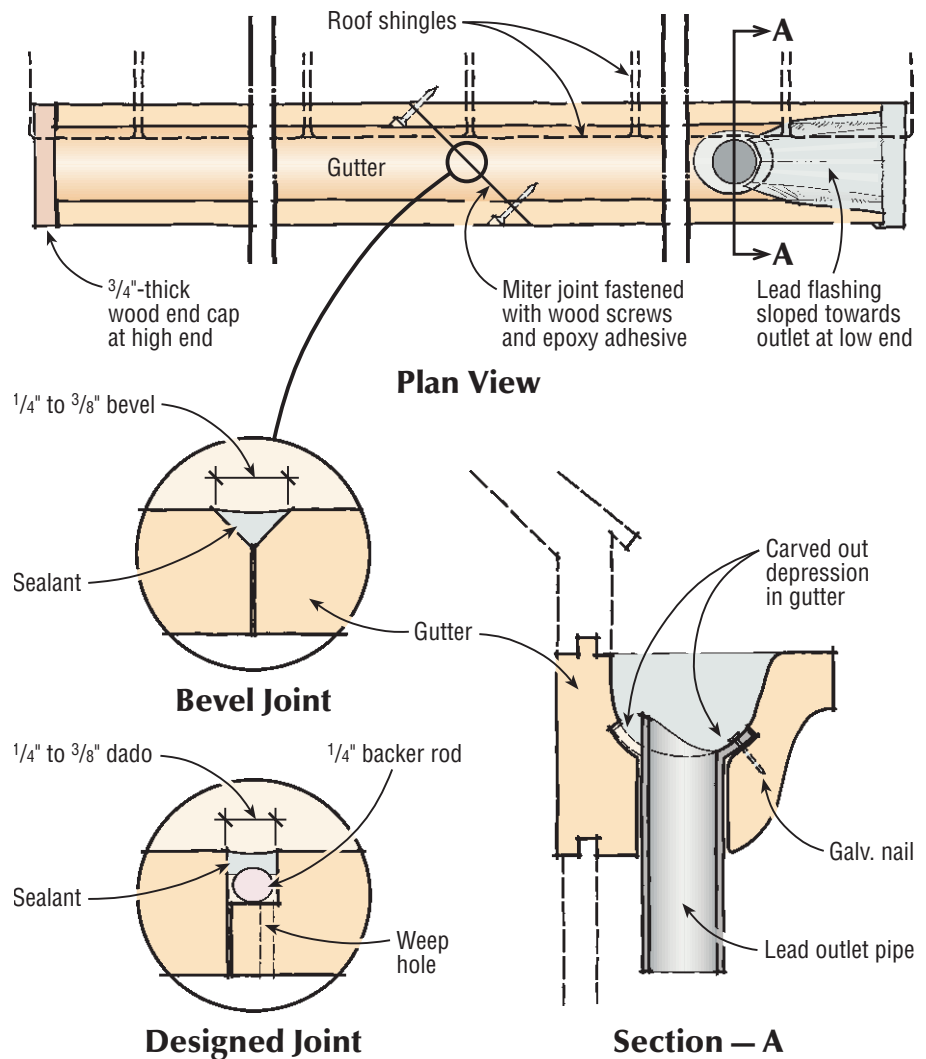
fice” itself to protect the cut area. If you are concerned about areas of extensive rust, such areas can be cleaned with a wire brush, and then sprayed or brushed with a zinc paint called ZRC (ZRC Worldwide, 800/831-3275; www.zrcworldwide.com). The zinc in ZRC is the same material used to galvanize the studs. ZRC can be purchased in a good paint or hardware store.

Installing Wood Gutters

Q. I will be installing a 40-ft. length of wood gutter on a historic house. Can you provide details for joining gutter sections, end capping, and installing the outlets?

A. John Leeke, a preservation consultant from Portland, Maine, responds: To join straight gutter sections, I usually use a

Wood Gutter Details



miter joint, fastened with screws and adhered with epoxy adhesive formulated especially for wood.

The most effective way to seal butt and miter joints is to form a groove along the joint, inside the gutter, and to fill the groove with a sealant. The groove provides a space for enough sealant to make the joint flexible, allowing for expansion and contraction.

One way to create the groove is to rasp a 1/4- to 3/8-inch bevel at the edge of the joint. For better performance, make a “designed joint” by routing a rabbet at one side of the joint (see illustration). Apply release tape to the bottom of the rabbet, or insert backer rod, and then install the sealant. This type of joint will let the sealant flex more than the plain bevel joint. Since no sealed joint will last forever, I drill a weep hole at the bottom of the rabbet to let water out of the joint. Once the joint begins to leak, the weep hole helps prevent decay, and acts as a tell-tale sign, indicating it is time to re-seal the joint, as part of ongoing maintenance.

The traditional way to flash these joints is with lead flashing installed in the gutter trough. Thin sheet lead flashing is better than thicker flashing, because it is more flexible in service. I start by forming a 4-inch-wide lead strip to the contour of the gutter trough, so it laps over the joint 2 inches on each side. Then I scribe the

wood surface along the edge of the lead and chisel out a depression so the lead sits flush with the trough surface. I seal the lead down with flexible sealant along the edges and fasten it in place with galvanized steel or lead-coated copper nails, which I coat myself. If plain copper nails are used, the lead is subject to corrosion due to electrolysis.

A leak-proof outlet can easily be formed with lead pipe. I can usually find thick-walled lead waste pipes right on renovation projects, whenever an old sink is being ripped out. New lead outlets with a flange already formed are available at some building suppliers.

A flush lip on the outlet will allow all the water to drain quickly. First, I drill a hole in the gutter about 1/8 inch larger than the pipe. With a ball peen hammer I gently form a 1/2-inch lip on one end of the pipe. I shape the lip so it lays flat on the trough bottom all around. I scribe the trough to show the outline of the lip. Then I chisel a depression for the lip, so it sits flush with the surface of the trough. Finally, I seal the lip in place with sealant and fasten with 1-inch galvanized steel or lead-coated copper nails.


At the high end of a gutter, I make end caps out of 3/4-inch-thick wood. A simple sheet-metal flashing is not likely to hold up to years of gutter cleaning. At the lower end, I usually install a complex sloping piece of lead flashing, to make sure the short length of gutter from the outlet to the low end

drains back into the outlet.

Wherever end-grain has been exposed — at the various cuts, rabbets, and holes — I seal the end-grain with epoxy consolidant before priming, painting, assembling, sealing, and flashing. This prevents one of the leading causes of wood gutter decay, which is end-grain water penetration. I usually use a one-part polyurethane high-performance sealant, like Sonneborn NP 1.

Installing 20-Amp Breakers

Q. *In a residential rewiring job, I am removing the existing conductors from steel flex conduit and installing new #12 solid wire, pulled through the flex conduit. Can I convert all of the existing 15-amp breakers to 20-amp breakers?*

A. *Master electrician Rex Cauldwell responds:* Yes, you can. Since you have installed 12-gauge wire, and since the breakers are there to protect the wiring, there is no reason you can't install 20-amp breakers — as long as you don't put more than three conductors in the conduit. If you install more than three conductors in the conduit, you would have to start to derate the conductors. 

GOT A QUESTION? Send it to On the House, JLC, 186 Allen Brook Ln., Williston, VT 05495; or e-mail to jlc@bginet.com.

