

1 family handyman[®]

SMART HOME IMPROVEMENT[®]

BUILD YOUR GETAWAY

17 PROJECTS THAT BRING IT TO LIFE

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& A GLASS ENCLOSURE—
LET IT SHINE!

TRIMLESS STYLE

FINISH YOUR WINDOWS
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SEPTEMBER 2021



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CHEVROLET





How many times have you used a shop project as an excuse to escape? Quality time alone with your table saw can be a good thing. For me, it helps clear my head of deadlines, and I'm happy to trade my clean office space for a well-worn workshop. Do-It-Yourself is therapeutic; maybe tools should qualify as health-care expenses.

My best project time, however, is not spent alone. It's with my son in his new house—his starter home is full of project potential. My second-best project time? The project we're unveiling now—"we" as in the entire team of editors and photographers at *Family Handyman*.

This is DIO, not DIY. Building a house—our Getaway—is a Do-It-Ourselves project. Every job we tackled for this project required at least two people. To get it done on time (well, almost), we also hired

professional tradespeople for some of the work. We did not do it ALL ourselves. We know our limitations in time, tools and skills.

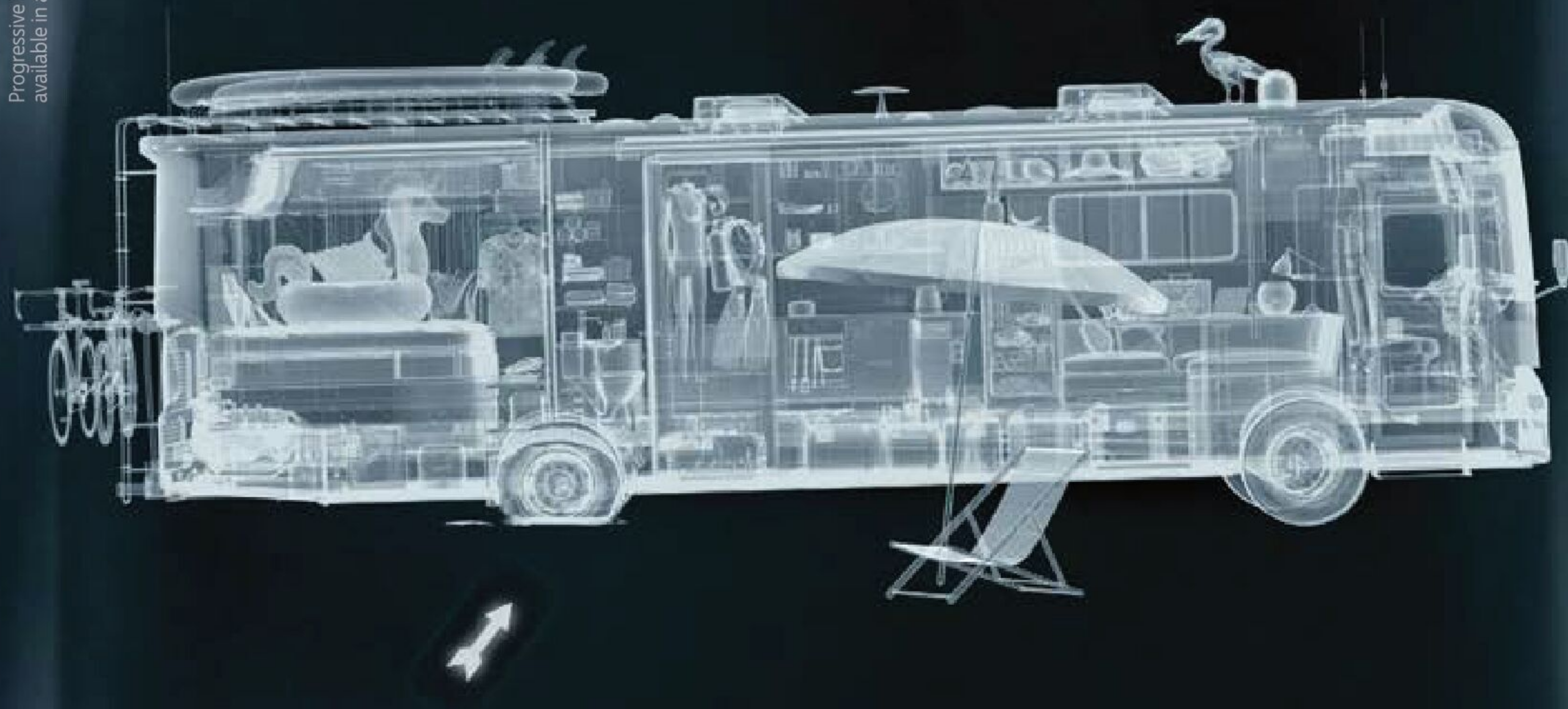
With all this do-it-ourselves activity, plus a photographer and a videographer on-site, there were no lonely work moments. And it was perfect. We shared skills, tools, stories, dad jokes and bad snacks. Too bad I can't remember the jokes. And I definitely can't rinse away the taste of flamin' hot crispy whatever.



Call your best shop mate and get to work on a DIO project. Don't forget the snacks.

GLENN HANSEN
DEPUTY EDITOR

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BEST PRO TIPS

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TOOLS FIRST

The first DIY project ever was the creation of a tool. They're essential, the tools we use, whether you prefer a hand-held bench plane or a 5-hp model with 20-in. capacity and a helical cutting head. We believe you can do anything yourself with the proper tools. And the key word is "proper."

Who decides what's proper? You do, in the end, based on price and availability, plus your skills, needs and storage space. And we're here to help. Starting now, we're increasing our reporting about tools and tool testing. In these pages, on our website, and in videos and online classes, we'll share what we are learning as we test routers, pressure washers, saw blades, work boots and every other tool, product and gadget that helps us DIY.

Our product-testing regimen will be thorough and diverse, and our reporting will be frequent and focused on getting stuff done. It's about the tools, and what they help us fix and create. We know tools and how to evaluate them.

Which tools are you curious about? Let us know and we can add to our list. Email us: editors@familyhandyman.com.

WHY DIY?

What are the top 3 reasons homeowners choose to DIY instead of hiring a pro?

■ REASON #3

To be in **complete control** of a project.

■ REASON #2

DIY is **my hobby**.

■ REASON #1

To **save money** for future projects or other items.

Data from research conducted for *Family Handyman* in April '21. If you have a different reason, let us know: editors@familyhandyman.com.



YOU ARE CORRECT. SO ARE WE.

"It may be OK to hold a drill bit at the base ungloved, but the flutes are sharp," wrote Dana from Indiana. Dana is referring to "Sharp Drill Bits in 30 Seconds" (June '21, p. 69). Editor Brad Holden showed a bit-sharpening technique using a benchtop belt sander. "If the bit jumps while grinding, you can cut yourself," Dana said.

"I agree; it's possible to get cut by sharp drill-bit flutes," Brad said. "However, I put more weight on the possibility of the glove's material being grabbed by the sandpaper belt and pulling my finger down between the sanding belt and the table. I never wear gloves when my fingers are close to sanding belts or spinning blades."

We value safety and like to address its finer points when possible.



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STUFF WE LOVE



OUR FAVORITE DIY TOOLS, MATERIALS + GEAR

TRUCK-BED STORAGE SYSTEM

I've seen my fair share of DIY truck-bed storage systems on job sites. Some are ingenious; most are not. It takes a lot of forethought, design and build time to come up with a versatile, secure and lasting system. I'd just as soon spend the \$1,400 for a DECKED Drawer System rather than build my own.

This system's two long pullouts store up to 200 lbs. of tools and gear. The waterproof deck above them carries a 2,000-lb. payload and keeps your stuff dry and secure. The base-price system includes two toolboxes, one drawer organizer and two drawer dividers; tie-down tracks are available. At decked.com, the company offers its DECKED Drawer System to fit most recent truck makes and models.

MIKE BERNER ASSOCIATE EDITOR



chillthebill

Take steps now to keep your heating bill affordable.



Ice, snow, cold. It's all coming soon for much of the country. While that may or may not be welcome news, nobody wants the high that can come with it. What can you do to help to bring costs down? Spring into action before winter takes hold.

BLOCK AIR LEAKS AT DOORS AND WINDOWS: You can't see it, but air could be leaking from behind interior window and door trim. Carefully remove the trim and take a look. Is there insulation between the jamb and the wall frame? If not, add foam or fiberglass insulation. When you re-install the trim, caulk around it. And consider installing heavy curtains that you can close to help block cold air and open to let in heat from the sun on clear days. Seal air leaks on the exterior by caulking the trim around doors and windows. Close gaps at doors by replacing worn weatherstripping. Adjust the threshold or replace it to seal air leaks at the bottom of the door. If your windows or exterior doors are old and deteriorated, consider replacing them.

SEAL HEATING DUCTS AND AIR VENTS: Caulk heating duct seams (for square air ducts) or wrap with high-temperature aluminum foil tape (for the round ducts). Consider insulating the ducts yourself or hire someone to do it for you. Inspect air vents around the house to make sure they're fully open and air flows freely.

BEEF UP ATTIC INSULATION:

This is one of the most effective ways to save money on heat (and air conditioning in the summer). The U.S. Department of Energy (energy.gov) has free resources to help you determine what insulation to use and how much is best for your situation. You can do the work yourself or hire a contractor.

USE A PROGRAMMABLE THERMOSTAT:

Being able to set times to raise and lower the temperature minimizes heat usage and maximizes your furnace's efficiency. A programmable thermostat like the American Standard AccuLink™ Platinum 850 Control lets you create up to six daily heating (and cooling) schedules. Plus, it has wi-fi connectivity so you can adjust settings remotely and monitor the health of your HVAC system. Set the thermostat as low as possible while still being comfortable—usually that's between 65 and 70 degrees. If you're

gone during the day, consider lowering it even more. At night, you can lower the thermostat by 10 to 15 degrees and still have a comfortable sleep.

TEND TO YOUR FURNACE:

Get your furnace tuned up each year to ensure it's both safe and efficient. If it was installed prior to 2006, you could see as much as 54 percent in energy savings by upgrading to a high-efficiency model like the American Standard Platinum 95 Gas Furnace. It has an Annual Fuel Utilization Efficiency (AFUE) rating of up to 97.3 percent, converting nearly 100 percent of fuel into usable heat. And it's compatible with AccuLink™ Platinum 1050 Control, the American Standard communicating control system that gives you full control of your home's HVAC system.

Don't miss the The Getaway house in this issue. The Family Handyman team designed and built this highly functional and efficient home during the past year using innovative building materials and components, including a furnace, air conditioner, air filtration system and programmable thermostat from American Standard Heating & Air Conditioning.



BUILT TO A HIGHER STANDARD
American Standard
 HEATING & AIR CONDITIONING

TOUGH ENOUGH FOR DEMO

Demo work is difficult enough without having to deal with plastic bags that tear, fall apart or leave a trail of debris all the way to the dumpster. Demo Bags are made of tear-resistant polypropylene and hold up when the heaviest of plastic bags won't. I like the 42-gallon "contractor" size. Smaller and more portable sizes are also available. As long as you have a place to dump your debris, you can reuse them many times, meaning fewer plastic garbage bags in the landfill. A box of 20 Contractor Bags is \$25, so in the long run you'll save money over single-use plastic bags. Find them in home centers and hardware stores.

JAY CORK ASSOCIATE EDITOR



PERSON-POWERED CEMENT MIXER

Mixing concrete in a wheelbarrow takes considerable time and effort. Getting a thorough mix with a dozen bags or so can be a real chunk of work. This Steele Mixer proves its promise of mixing a 60-lb. bag of concrete in a little over half a minute. It requires no fuel or extension cord and is highly portable. Just rock its tub back and forth to get the mix right, then lock it in place for shovel access.

I wish it tipped a bit farther so you could actually pour the concrete as you would with a wheelbarrow. It would also be nice if it had clear marks for how much water to use for one bag, two bags, different bag sizes, etc. However, it's well made and does what it says. A quick rinse after mixing is all the maintenance required. Find it at steelmixer.com for \$300 plus shipping.

BRAD HOLDEN SENIOR EDITOR

LEAVE THE COMPRESSOR AT HOME

Lugging a compressor to the job site to run a nail gun gets tiresome. I'm excited about the growing selection of airless framing guns. Free of the heavy, noisy compressor, and the tether and tangle of an air hose, I can frame faster and more efficiently. I found the Milwaukee and Ridgid nail guns in this category a bit heavier than my older DeWalt pneumatic gun, yet they were well balanced. And without an air hose attached, I could more easily maneuver in tight spaces.

Most major tool manufacturers offer these framing guns in both 21-degree round-head and 30-degree clipped-head nail formats. You'll spend about \$350 for a bare tool, or an additional \$100 for a kit with a battery and charger. You can shop online, but I suggest going to a home center to feel one in your hand before pulling the trigger on a purchase.

JOSH RISBERG LEAD CARPENTER



STUFF WE LOVE

TICK KILLER

I've tried several ways to keep my family and pets safe from deer ticks. Thermacell Tick Control Tubes work to reduce the population of these disease spreaders. I place several small tubes around our property where mice travel. (They're pet-safe, but I hide them from my dogs.) The mice take the permethrin-laced cottony material from the tubes to line their nests. The insecticide then kills the ticks that feed on those mice. It works. A 24-pack costs \$75 and protects up to 1 acre. Available at thermacell.com.

NICK GRZECHOWIAK CHIEF CONTENT OFFICER



FREE

30-DAY PREVIEW

SAVE MONEY!

Learn How
to Maintain Your
Home Yourself.

CHILLING AT THE GETAWAY

This past summer was one of the hottest on record. This Portacool Jetstream 230 made it easier to survive all the consecutive 95-degree days at our Getaway build site. We set up the Portacool in front of our saw station so that every trip to the saw offered an opportunity to chill in the device's cool blast. It was also the place to be for breaks and lunchtime on those steamy workdays.

Portacool uses evaporative cooling, the original air conditioning technology. It's a slow stream of water trickling through a filter media that is then vaporized by a fan drawing air through that filter. Portable units like this are ideal for job sites, barns, shops and even the patio or yard. Our Jetstream unit costs \$1,400 and can potentially cool 900 sq. ft. Portacool makes larger industrial units with cooling capacities of 5,000 sq. ft., or smaller ones such as the 510, which cool about 300 sq. ft. for about \$350. See the entire line at portacool.com.

BILL BERGMANN ASSOCIATE EDITOR



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HANDY HINTS



CLEVER SOLUTIONS FROM OUR READERS



KEEP GLUE FRESH

Tired of having your glue harden before you get a chance to use it all? Store it upside down.

Glue, especially polyurethane glue, hardens when exposed to air. But when the bottle is upside down, no air can get in, so the glue stays fresh.

To build a glue bottle rack, drill a hole the size of the spout into a piece of wood, make sure the cap is on tight, then set the glue bottle in. Leave some wood on the bottom of the hole, so any drips will be confined to the rack and not run all over your workbench. But here's the best part: The glue will be ready to squeeze out when you need it—no more shaking glue down from the bottom!

DON AYERS



SMALL-ENGINE OIL DISPENSER

Want a handy, no-mess way to add oil to small engines? Use a dishwashing detergent squeeze bottle with a push-pull plastic top. Rinse and dry the bottle thoroughly and fill it with oil. You can hold it at any angle and aim the spout into those hard-to-reach oil filler holes. Pull open the top and give the bottle a squeeze to add just what you need.

DAN N. DEVAN

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HINTS
WITH
US

submissions@familyhandyman.com

BRAD POINT
DRILL BIT

REPAIR FOR STRIPPED SCREWS

Sometimes the wood surrounding a screw becomes so torn up that it no longer holds the screw securely. Here's a rock-solid remedy: Drill a 1/4-in. hole to clear the torn fibers, then glue a short piece of 1/4-in. dowel in the hole. When the glue is dry, saw or sand the dowel flush with the board surface, then drill a pilot hole in the dowel and drive in the screw.

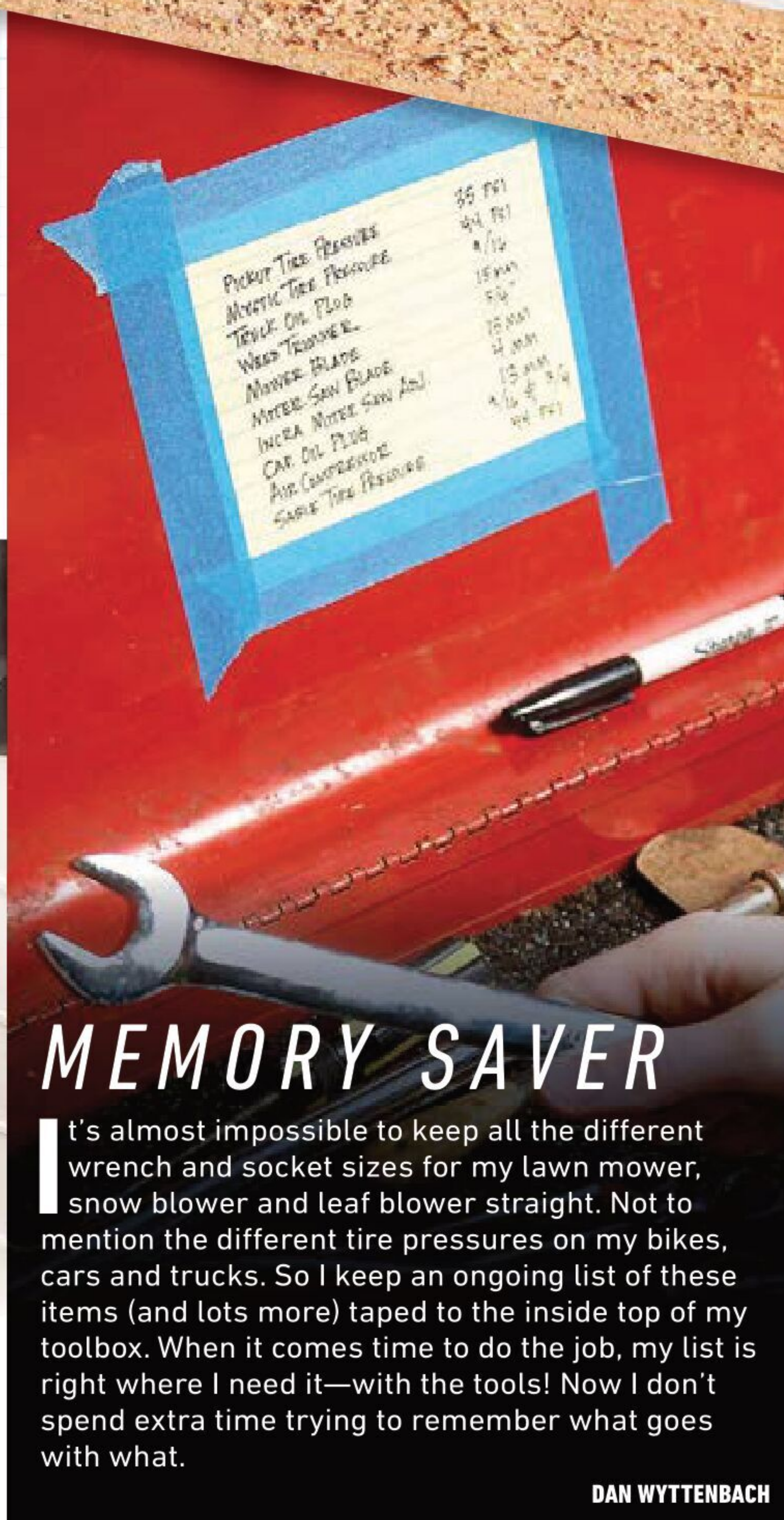
KEN ROSETTE



PUDDLE-FREE LAWN CHAIRS

After a rainstorm, plastic lawn chairs always seem to have a puddle of water in the low spot on the seat and, inevitably, someone sits down on it. Even newer plastic lawn chairs that come with a predrilled hole in the bottom often collect water. To solve the soggy bottom problem, pour some water onto the seat to find the puddles and then drill small drain holes in the low spots.

DAVID WIERSEMA



MEMORY SAVER

It's almost impossible to keep all the different wrench and socket sizes for my lawn mower, snow blower and leaf blower straight. Not to mention the different tire pressures on my bikes, cars and trucks. So I keep an ongoing list of these items (and lots more) taped to the inside top of my toolbox. When it comes time to do the job, my list is right where I need it—with the tools! Now I don't spend extra time trying to remember what goes with what.

DAN WYTENBACH

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HANDY HINTS



GARAGE CEILING BIN STORAGE

If you store stuff in big plastic storage bins and you need a place to put them, how about the garage ceiling? Screw 2x2s to the ceiling framing with 3-1/2-in. screws spaced every 2 ft. Use the bins as a guide for spacing the 2x2s. The lips on the bins should just brush against the 2x2s when you're sliding the bins into place. Then center and screw 1x4s to the 2x2s with 2-in. screws. The garage ceiling is a perfect place to store light and medium-weight seasonal items like holiday decorations and camping gear.

SCOTT PRESTON



"HOT" HOSE TIP

If you're trying to repair a hose by installing a new fitting, you may find it pretty tough to wrestle the barbed end into a stiff rubber hose. Make it easier by softening the end of the hose in a bucket or teakettle of hot water.

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HOMELAB



A TESTING ZONE FOR INNOVATIONS

ADMIRABLE OUTDOOR FAUCET

If we held outdoor water faucets to the same standard as indoor faucets, we'd need to change a whole lot of outdoor spigots. Mostly unattractive, often drippy and seldom appreciated, outdoor faucets are tolerated for their base functionality. Then we shut them off and go indoors. The Aquor outdoor faucet system changes that.

I got an Aquor House Hydrant V1+ to replace a leaky eyesore on the back side of my house. Then I realized it would work better on our Getaway project. As a replacement or for new construction, the Aquor Hydrant is designed to eliminate leaks and simplify hose connections. The stainless steel unit has a freezeproof design, adding security for those of us in cold climates. Installation is simple, whether your home has copper or PEX piping.

To "turn on" the Aquor Hydrant faucet, you plug in the quick-connect hose coupler; there is no screw-type valve. Water pressure and a stainless steel spring keep the interior valve closed until you insert the coupler. Remove the quick-connect coupler and the valve seals shut with the exact same pressure each time. At first glance, I thought the coupler was plastic, and I tend to avoid plastic fittings for outdoor faucet connections. But Aquor makes the coupler from a heavy-duty commercial polymer called Delrin that

withstands high water pressure and the weight of your errant riding mower.

Aquor has years of experience in the marine industry and uses an extra-low-carbon alloy known as "marine-grade steel" for the Hydrant's piping. It's corrosion resistant and more durable than brass. This stainless steel piping is a better insulator than a brass faucet, but the real freeze protection is engineered into the design. An internal valve stops water flow in the heated portion of the wall. Plus, gravity removes excess water whenever you unplug the coupler.

With the coupler unplugged, the attached cover folds over the opening and blends in cleanly with the exterior wall. The Aquor Hydrant also answers security concerns because the faucet can be turned on only with the provided coupler. You can buy the V1+ hydrant online for \$85.

The Aquor Hydrant meets all our requirements for ease of use, drip-free watering and improved appearance. I appreciate the outdoor faucet again.



FREEZEPROOF
WALL HYDRANT

QUICK-CONNECT
HOSE COUPLER

GARDEN HOSE
(25')

VACUUM BREAKER
HOSE CONNECTOR

BY GLENN HANSEN

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Whichever it may be, Log Cabin Days is for you! Let us invite you to come and join the thousands of other like-minded enthusiasts that travel from as far as California to enjoy several days of fellowship during this event.



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If you travel a lot or own a second home, home monitors offer peace of mind, alerting you of a power outage, changes in temperature or humidity, or a water emergency. But most monitoring systems depend on Wi-Fi, so they're useless if there's a power outage. The MarCELL Pro Multisensor, however, relies on a 4G cellular network that's always connected to your cellphone.

Data loads to your phone every eight hours, sending an alert if something is awry. The MarCELL Pro plugs into an outlet, but if the power goes out, an internal lithium-ion battery provides 48-hour backup. The unit costs \$198 plus a subscription plan for \$8.25 per month. You can also purchase eight real-time updates for \$2. The manufacturer says a flood sensor is in the works.



STRONGER STUDS, BETTER INSULATION

"Thermal bridging" is the unwanted transfer of heat through the most conductive parts of your home, such as the studs that frame it. Insulation stops some of the transfer, but the studs—up to 25% of a wall's material—present ample bridges for energy loss. A small percentage of new homes use structurally insulated panels instead of traditional stud walls. And one company is making studs that reduce thermal bridging.

"Tstuds" are pairs of 2x3 studs connected by dowels, creating a replacement for a traditional 2x6. The unique construction of the Tstud, a "trussed stud," reduces thermal bridging and increases the strength of a framed wall. The strength allows 24-in. on-center stud placement instead of the typical 16-in. on-center construction. That makes Tstuds ideal for use as headers, posts and plates. Builders can choose Tstuds filled

with closed-cell foam insulation, or BareNaked Tstuds, which allow builders to use the blow-in insulation of their choice.

An engineered product, Tstuds are consistently straight. That's a dream for any carpenter. Electricians also like Tstuds because they can run wiring without drilling holes in 2x6 studs. Tstuds are widely distributed from the northern United States and Canada.

CUT, ETCH AND PRINT

When Glowforge sent us a printer, we weren't sure what it could do. Is it even a printer? No, in the common sense of the word, it's not. It's a cutter, an etcher, an engraver and more. And it makes you a designer and creator. We didn't fully appreciate the Glowforge at first. Then we found our first real need and created welcome signs for our Getaway home. In the process, we became inspired by all the possibilities.

A Glowforge model is the size and shape of a large paper printer, but, instead of ink, it uses a laser to etch and cut a variety of materials—with unlimited designs and outcomes. Glowforge works on leather, wood, paper, plastic, metal, acrylic, cardboard, ceramic tile—even food like chocolate or cookies. You can cut shapes and stack layers to create 3D objects. Etch photos onto a range of materials or logos onto a laptop cover or a chocolate bar. Engrave names into wood or leather. Simply upload a design—your own or a Glowforge-supplied file—and place your material inside the printer.

All three Glowforge models can accept material up to 2 in. thick. On the Pro model we tested, you can open the front and back of the device to feed through material measuring 19.5 in. wide by however long you want. The Basic and

Plus models can handle material up to 19.5 x 11 in. We also received a Glowforge air filter with our Pro model. It's a necessary addition for laser-cutting and etching indoors.

The Glowforge's internal camera makes multistep operations easy. For example, with processes involving an etched background followed by a cutting step, you can effortlessly adjust the position of the artwork for an error-free finished product. You can even do it remotely. All work is done via Wi-Fi, which is an advantage and a disadvantage. Without a strong signal, or if Wi-Fi goes down, the Glowforge can't work. It relies on cloud-based software and storage for your designs, which means they're easily updatable and accessible. Glowforge is compatible with PC, Mac, tablet and mobile devices. It can accept JPG, PNG, SVG, PDF and other file formats.

Once we figured out the user interface, we were impressed by the tool's capabilities. It can cut and etch much more precisely than a router or other hand-held tool. And it has a size and style that makes it more user-friendly than a CNC (computer numerical control) machine. But it's not fast. Some of the work on our Getaway sign took more than an hour, plus setup and final sanding.



THE GLOWFORGE PRO WE TESTED RETAILS FOR \$6,000, PLUS AN ADDITIONAL \$1,000 FOR THE EXTERNAL FILTER COMPONENT. SO, IN GENERAL, THE PRO IS FOR THOSE WHO CAN TURN THEIR CREATIONS INTO REVENUE. THE GLOWFORGE BASIC MODEL RETAILS FOR ABOUT \$3,000, AND THE PLUS IS \$4,000.

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Thank you to all the patients, nurses, and physicians in our clinical trials.

Results may vary. OPDIVO® + YERVOY® is not approved for patients younger than 18 years of age.

Indication & Important Safety Information for OPDIVO (nivolumab) + YERVOY (ipilimumab)

Only your healthcare professional knows the specifics of your condition and how OPDIVO in combination with YERVOY may fit into your overall therapy. The information below does not take the place of talking with your healthcare professional, so talk to them if you have any questions.

What are OPDIVO and YERVOY?

OPDIVO and YERVOY are prescription medicines used to treat people with a type of advanced stage lung cancer called non-small cell lung cancer (NSCLC). OPDIVO may be used in combination with YERVOY as your first treatment for NSCLC when your lung cancer has spread to other parts of your body (metastatic) **and** your tumors are positive for PD-L1, but do not have an abnormal EGFR or ALK gene.

It is not known if OPDIVO and YERVOY are safe and effective when used in children younger than 18 years of age.

What is the most important information I should know about OPDIVO and YERVOY?

OPDIVO and YERVOY are medicines that may treat certain cancers by working with your immune system. OPDIVO and YERVOY can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become serious or life-threatening and can lead to death and may happen anytime during treatment or even after your treatment has ended. You may have more than one of these problems at the same time. Some of these problems may happen more often when OPDIVO is used in combination with YERVOY.

Call or see your healthcare provider right away if you develop any new or worse signs or symptoms, including

- **Lung problems:** new or worsening cough; shortness of breath; chest pain
- **Intestinal problems:** diarrhea (loose stools) or more frequent bowel movements than usual; stools that are black, tarry, sticky, or have blood or mucus; severe stomach-area (abdominal) pain or tenderness
- **Liver problems:** yellowing of your skin or the whites of your eyes; severe nausea or vomiting; pain on the right side of your stomach area (abdomen); dark urine (tea colored); bleeding or bruising more easily than normal

- **Hormone gland problems:** headaches that will not go away or unusual headaches; eye sensitivity to light; eye problems; rapid heartbeat; increased sweating; extreme tiredness; weight gain or weight loss; feeling more hungry or thirsty than usual; urinating more often than usual; hair loss; feeling cold; constipation; your voice gets deeper; dizziness or fainting; changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness
- **Kidney problems:** decrease in the amount of urine; blood in your urine; swelling in your ankles; loss of appetite
- **Skin problems:** rash; itching; skin blistering or peeling; painful sores or ulcers in mouth or nose, throat, or genital area
- **Eye problems:** blurry vision, double vision, or other vision problems; eye pain or redness

Problems can also happen in other organs and tissues. These are not all of the signs and symptoms of immune system problems that can happen with OPDIVO and YERVOY. Call or see your healthcare provider right away for any new or worsening signs or symptoms, which may include:

- Chest pain; irregular heartbeat; shortness of breath; swelling of ankles
- Confusion; sleepiness; memory problems; changes in mood or behavior; stiff neck; balance problems; tingling or numbness of the arms or legs
- Double vision; blurry vision; sensitivity to light; eye pain; changes in eye sight
- Persistent or severe muscle pain or weakness; muscle cramps
- Low red blood cells; bruising

Getting medical help right away may help keep these problems from becoming more serious.

Your healthcare team will check you for these problems during treatment and may treat you with corticosteroid or hormone replacement medicines. Your healthcare team may also need to delay or completely stop your treatment if you have severe side effects.

What should I tell my healthcare provider before receiving OPDIVO and YERVOY? Before you receive OPDIVO and YERVOY, tell your healthcare provider about all of your medical conditions, including if you:

- have immune system problems such as Crohn's disease, ulcerative colitis, or lupus
- have received an organ transplant



Talk to your doctor about OPDIVO + YERVOY

www.OPDIVOYERVOY.com 1-855-OPDIVOYERVOY

- have received or plan to receive a stem cell transplant that uses donor stem cells (allogeneic)
- have received radiation treatment to your chest area in the past and have received other medicines that are like OPDIVO
- have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome
- are pregnant or plan to become pregnant. OPDIVO and YERVOY can harm your unborn baby
- are breastfeeding or plan to breastfeed. It is not known if OPDIVO or YERVOY passes into your breast milk. Do not breastfeed during treatment with OPDIVO or YERVOY and for 5 months after the last dose of OPDIVO or YERVOY

Females who are able to become pregnant: Your healthcare provider should do a pregnancy test before you start receiving OPDIVO or YERVOY.

- You should use an effective method of birth control during your treatment and for at least 5 months after your last dose of OPDIVO or YERVOY. Talk to your healthcare provider about birth control methods that you can use during this time.
- Tell your healthcare provider right away if you become pregnant or think you are pregnant during treatment with OPDIVO or YERVOY. You or your healthcare provider should contact Bristol Myers Squibb at 1-844-593-7869 as soon as you become aware of the pregnancy.

Tell your healthcare provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Know the medicines you take. Keep a list of them to show your healthcare providers and pharmacist when you get a new medicine.

What are the possible side effects of OPDIVO and YERVOY?

OPDIVO and YERVOY can cause serious side effects, including:

- **See “What is the most important information I should know about OPDIVO + YERVOY?”**
- **Severe infusion reactions.** Tell your healthcare team or nurse right away if you get these symptoms during an infusion of OPDIVO or YERVOY: chills or shaking; itching or rash; flushing; shortness of breath or wheezing; dizziness; feel like passing out; fever; back or neck pain

- **Complications, including graft-versus-host disease (GVHD), of bone marrow (stem cell) transplant that uses donor stem cells (allogeneic).** These complications can be severe and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with OPDIVO or YERVOY. Your healthcare provider will monitor you for these complications.

The most common side effects of OPDIVO when used in combination with YERVOY include: feeling tired; diarrhea; rash; itching; nausea; pain in muscles, bones, and joints; fever; cough; decreased appetite; vomiting; stomach-area (abdominal) pain; shortness of breath; upper respiratory tract infection; headache; low thyroid hormone levels (hypothyroidism); decreased weight; and dizziness.

These are not all the possible side effects of OPDIVO and YERVOY. Call your doctor for medical advice about side effects.

You are encouraged to report side effects of prescription drugs to the FDA. Call 1-800-FDA-1088.

OPDIVO (10 mg/mL) and YERVOY (5 mg/mL) are injections for intravenous (IV) use.

This is a brief summary of the most important information about OPDIVO and YERVOY. For more information, talk with your healthcare providers, call 1-855-673-4861, or go to www.OPDIVO.com.



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AS BIG AS A HOUSE

PROMISES, PRIDE & PREDICAMENTS

Looks like a great spot to get away and relax, doesn't it? And it will be, when we finish the interior. We were so close to revealing our completed Getaway cabin here. We'll reveal it all soon. Meanwhile, read what we learned.

BY GLENN HANSEN

Our most important lesson: The project is often in charge, not us. Yes, we knew there would be uncontrollable elements. Our calendar, our planning and our deadlines could not control the weather or material deliveries.

We will finish it (in fact, we'll be done by the time this is printed). And, rest assured, you too can build your dream getaway. We know you want to. Our research shows that more than 60 percent of you DIYers are interested in a getaway home.

Our Getaway project fills the pages of this issue. We spent the better part of the summer digging and cutting and nailing—and shooting photos and video—to create a start-to-finish plan for building a vacation home. Many of the photos featured aren't the finish shots that we originally planned. That's OK. It might even make a better story. Our goal

from the start was to show the process of building a vacation home, and that's what we're doing. We'll reveal the finished beauty photos in the October/November issue, and you can also see them by scanning the code below.



**HOVER YOUR
CAMERA HERE
TO SEE THE
GETAWAY
REVEAL**

We experienced wins and losses throughout our process; that was expected. We've obsessed over the details so you can succeed with your own dream build. The stories in this issue show that you can win with your own getaway build if you're prepared for challenges like these:



WEATHER

Our site turned muddy and menacing after a little bit of rain. And we had more than "a little bit of rain" early in our project. Heavy equipment got mired in the muck. To move materials became increasingly difficult. It seemed like working in molasses. Of course, it dried out, and most of our operating conditions were quite workable. You'll need to accept the weather-related delays as we did and shift your plans accordingly.

BAD WEATHER CAN AND WILL SLOW WORK, MAKE TASKS MORE DIFFICULT OR DANGEROUS, AND ALTOGETHER STOP CERTAIN PROJECTS INSIDE AND OUT.



MATERIALS

Building a home efficiently and on time requires skills in both logistics and engineering. And it's best accomplished when there's not a lumber shortage. We faced a few challenges—some of our own making—in the materials-acquisition department. Our search for the lowest prices caused material delays. If time is on your side, you can shop for the best prices. If not, buy early and buy extra.

LIFE

Before we broke ground, our boss joked, "Nothing will go wrong during this project." The little things that slow down little projects get multiplied, amplified, into big things on big projects. Stuff happens. We thought our top priority was finishing a house (so we could print a magazine on time). We realized our top priorities are actually our lives, our families and our well-being. Not to get all emotional here, but we laughed and we got angry during this project. We made the necessary adjustments to finish what we could for this issue.

We thought we'd reveal here, with pride, our finished Getaway. Instead, we realized our immense pride in our team of DIYers who accomplished so much more—and we built an amazing house.

CONTRACTORS

We couldn't have built our Getaway without the help of excellent contractors (you'll see some of them here), but not all the workers we hired will get 5-star reviews.

You will need to hire hands to build your house. Those contractors will have other jobs outside of your project. They will show up when they want to, not just when you want them to. Clear communication and agreed-upon expectations will get you through this. Look closely at our DIY or Not story on p. 28. More DIY will give you more control of the build schedule. (It might also require extra doses of pain reliever.)



MEET THE BUILDERS

The makers of the Getaway, contributing in countless ways to help a home come to life:



JOSH RISBERG,
LEAD CARPENTER,
SERVED AS GEN-
ERAL CONTRACTOR
FOR THE GETAWAY.



BRAD HOLDEN,
SENIOR EDITOR,
TOOK ON THE
WINDOWS, SHOWER
AND LANDSCAPING.



MIKE BERNER,
ASSOCIATE EDITOR,
HANDLED THE
ROOF AND THE WRAP-
AROUND DECK.



JAY CORK,
ASSOCIATE EDITOR,
WORKED ON
LIGHTING, HVAC
AND INSULATION.



BILL BERGMANN,
ASSOCIATE EDITOR,
WAS RESPONSIBLE
FOR FRAMING AND
SIDING INSTALLATION.



JOE CRUZ,
ASSOCIATE EDITOR,
INSTALLED THE
KITCHEN ISLAND,
CABINETS AND TRIM.



GLENN HANSEN,
DEPUTY EDITOR,
MANAGED SITE PREP
AND THE STORIES
YOU'LL READ HERE.

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PLAN YOUR GETAWAY

////////////////////
AND KEEP YOUR DREAM DREAMY

BY GLENN HANSEN

Your vacation place is a life goal, a dream realized. It's also a commitment of time and money. Build it for the right reasons. As you draw up building plans, acknowledge those reasons. Declare them on paper—at least to yourself—so your dream stays dreamy.

Here's what we mean: We call our place the Getaway because we all long to get away from something—urban congestion, suburban regularity, the workplace and daily chores.

For your getaway to retain its value in your life, be honest about

why you need this place and what you want it to be.

We're not talking about its monetary value, although you should consider that too. We're talking about its emotional value to you. Why do you want to spend lots of time and money to build a vacation home?

ARE WE THERE YET?

Site selection goes one of two ways: One, you have the perfect location and envision a house there. Or two, you've sketched your dream house and you need the right plot of land.

We had an ideal location in northern Wisconsin. Our hilly and wooded lake lot gave us a family room with big windows, a deck that blends into the surroundings and a bedroom with lake views. Another bonus: We can get there in about a two-hour drive from home.

More-remote sites often require more work. Our woodsy lake place required a good deal of site prep—trees to fell and boulders to move.

Look closely at the unseen too. We're talking utilities. You could choose uber-rustic and go off the grid, with no plumbing or electrical. Not us, though. We wanted electricity, internet and running water—both in and out—and that meant more planning and more permits.

DECISIONS FOR A SECOND HOME

Start with these questions to determine what you will build and how you'll budget.

- Do you want a place for projects or a relaxing zone free from chores?
- How much travel time will you endure for the ultimate in remoteness?
- Do you want room for family and friends, or is this a private hideaway?
- What's your dream locale? Lakeside, riverfront, mountaintop, desert oasis?
- Are you on a tight schedule or can you build over time?

PERMIT ACCEPTANCE

You have to think like a general contractor (if you happen to be one, skip this step). In many states, you can serve as the owner-builder. Our Wisconsin project allowed this, with requirements for certification, residency terms and the number of homes we can build in one year. It's different state by state.

Start with the building inspection office nearest your project. Types of permits you might need include land use, grading, building, electrical, mechanical, plumbing and septic. Permits often have a specific order; you can't get "B" permit until "A" permit is approved. Permits will test your patience; practice acceptance and get through the process.

With a certified builder on staff, we had expert-level guidance that eased permitting processes and communication with any contractors we hired. As an owner-builder, you can save money, but you'll pay with a load of responsibilities. You may also need extra insurance for any workers on-site.



BUDGET HOMEWORK

Your budget creates possibilities, not limits. By outlining all the budget details well in advance, we learned where we could splurge and where we needed to save. For example:

LANDSCAPING We saved thousands of dollars here by reusing trees and boulders from the site.

LUMBER FOR FRAMING Our one-story house has a low-pitched roof, so we budgeted large for roof trusses. But we designed a framing plan to minimize use of expensive 2x4s where we could.

SIDING The steel siding was a style upgrade and a splurge initially. It cost about \$15,000, comparable to wood and more than aluminum or vinyl. But it's low maintenance and sustainably designed. It will look great for years—and we love it.

KITCHEN We built our own cabinets and kitchen island using ready-to-assemble cabinets. The laminate countertop is also a DIY money saver. And it's easy to upgrade a kitchen later if we feel rich.

METAL ROOFING We paid about \$6,000 for metal roofing supplies, including delivery. Traditional asphalt shingles are less expensive but they don't last as long.

INTERIOR TRIM This is a DIY project that easily saved us \$500. Not a ton of money in the big picture, but savings is always appreciated.

To help you get started, you can estimate that your own getaway will cost at least \$125 and up to \$200 per square foot, not including the lot. Read on to see how we built ours. Happy planning.



SKILLS, TOOLS & MATERIALS

With this trinity perfected, your house will come together on time and under budget. In the real world, however, at least one of these three will show up late for work. A general contractor leading your build can minimize this but not eliminate it. We had our own issues with materials and work crews for several projects, including complete changes to mechanical systems mid-build. Be prepared to work through such obstacles; you can't avoid them completely.

DIY OR NOT?

HERE'S WHAT WE DID AND
WHAT WE HIRED OUT

BY GLENN HANSEN

The projects you do yourself will save you money and cost you time. Think carefully about how much you enjoy the DIY process compared with enjoying your Getaway.

DIY what you can do well, and what you have time to learn. You should not DIY projects requiring expensive equipment you don't own or special skills you don't have, especially where safety is concerned. Here's how we answered the DIY Or Not? question.



FRAMING

Whether you're using hand tools or power tools, screws or nails, framing walls is a DIY project. We did rely on pros with heavy equipment to position our floor trusses and the large LVL (laminated veneer lumber) spans we used overhead. Read our plan to see how we saved lumber and money.

WINDOWS

Our Getaway has a lot of windows, some tall and others high. The work does require careful planning—from purchase through installation—as well as muscle. We've installed windows before; it's manageable work needing no special tools. And since we took care of the framing, we knew the window openings were right. Our story looks at choosing windows, and you can find how-to-install stories at familyhandyman.com.

INSULATION

You can DIY rolls of insulation but not blown-in material. You'll need to understand the different types of insulation, what is going where and why. We explain R-value and show you all its contributing elements.

DECK

If you're a regular reader, you know that we know decks. This is a DIY home run for us; it can be for you, too. We dug and poured the deck footings ourselves, built a massive deck and added a cable railing instead of standard posts and balusters. Read how we planned this one.

BATHROOM

A bathroom project can cover every aspect of DIY, at least indoor DIY. You can do some or all of this yourself. Do you enjoy tile work but not plumbing? You got it. Wanna build a vanity cabinet but not wire in the lighting? No problem. We focused our story on the shower with an easy-to-install shower pan and lovely glass doors. You can do it.

WINDOW TRIM

We finished our windows in a trimless drywall-return style. It's a modern and minimal look that can also save you time and money. We show you how to do it yourself with simple tools.

KITCHEN ISLAND, CABINETS & COUNTERTOPS

These are great money-saving DIY projects. We used ready-to-assemble (RTA) cabinets and constructed our own kitchen island. We topped it with an affordable and attractive laminate countertop and an undermount sink—and we tell you how to do it.



? YES, IF...

ROOFING

Most roofing work, especially on a two-story house, is pro-level territory. The roof on our one-story Getaway has a 2/12 pitch, which is relatively flat. If you can do it safely, you can DIY this; we're glad we did. We increased our skills in working with metal roofing, perfect material for a wooded retreat. And we saved money.

SIDING

Installing metal siding requires intermediate to advanced DIY skills, from handling the material to cutting it to the installation and finish. Ask yourself all the DIY questions about costs, tools, time, safety and skills. Lots of ifs here.

HVAC/WATER HEATER

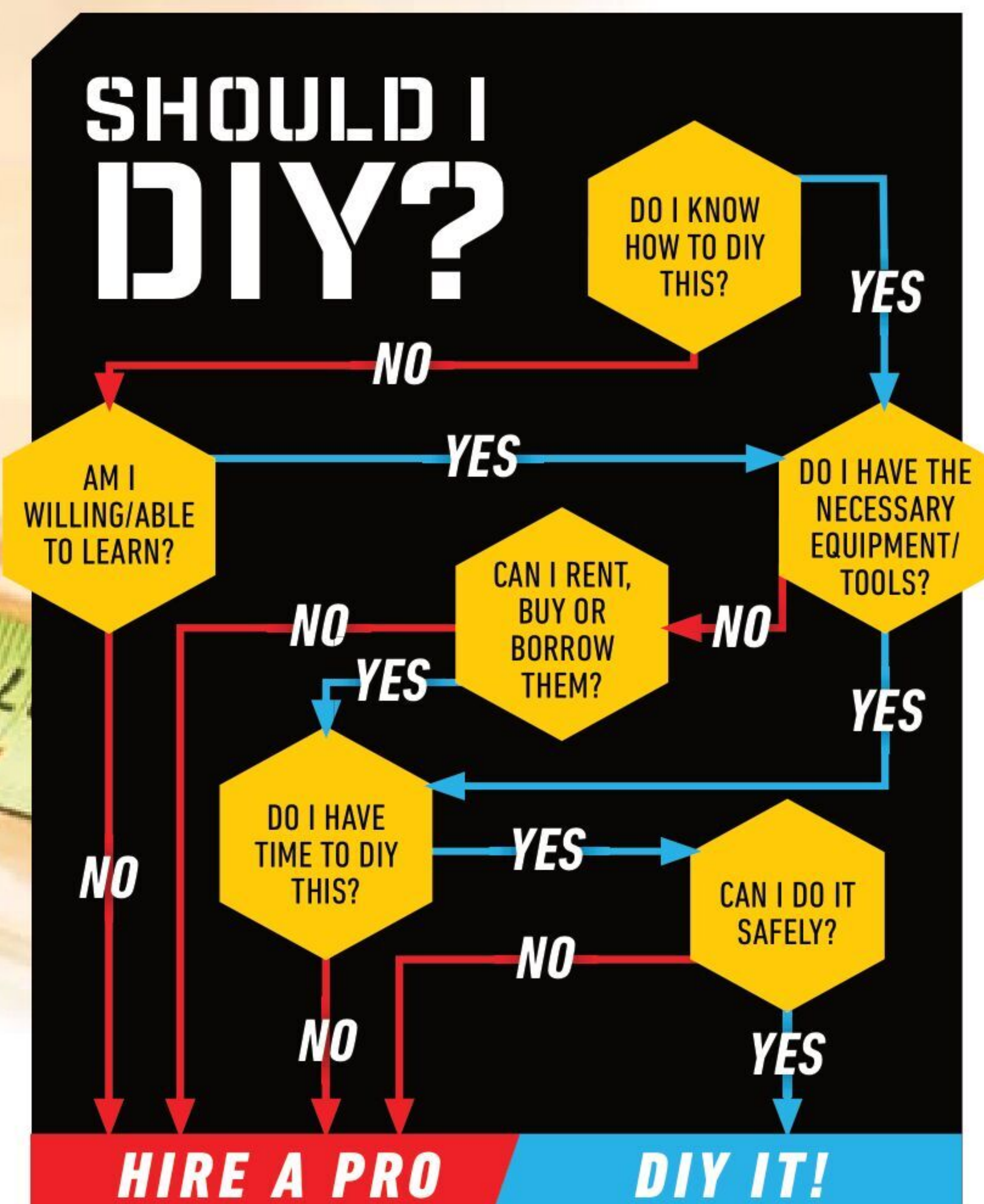
If you've worked with sheet metal and ducting, you could DIY the HVAC and furnace. But it's a big if. And keep in mind that you'll have to work safely with the energy source, too. Our water heater required basic construction skills to secure it and plumbing know-how to connect it. We let the same pro team do both jobs.

LIGHTING

We're not talking about wiring your house. This is about lighting design for each room and installing the lights yourself. If you have that skill and want to experiment with lighting, our story will help you.

LANDSCAPING

If you're low on funds at the end of your project, DIY this. Our budget tightened, but we kept three main landscape ideas: DIY, low maintenance and our desire to reuse as many trees and rocks as we could.



X NO

SITE PREP

You can do some of this work yourself; we did. But not much. We cut down a few trees and watched Irv, our excavator, pull the stumps and roots. Irv's tool? A 20-ton Caterpillar excavator; a used one costs about \$60,000. We installed the silt fence to help with erosion control, but Irv and his Cat dug most of the trench.

FOUNDATION AND BASEMENT

Digging the foundation and building the basement is not a DIY job, not even close. Digging, shaping, positioning and leveling for the foundation involves a mix of massive power (that Caterpillar) and engineering detail. Hire local pros.

The basement—ours was poured concrete—is another call-a-pro project. A well-built foundation and basement walls support the entire house and make the rest of the build go smoothly.

ROLL-UP DOOR

Our goal was to bring the outdoors in with a huge door like the kind you use on your garage. We don't recommend the installation of the roll-up door spring as a DIY project. We left much of this work to professionals. The story about a "garage" door as part of our Getaway space is interesting, with DIY elements and creative design options.



TAKEAWAYS TO NOTE:

- Cut trees yourself
- Let the excavator do the heavy work
- Silt fence is important and required
- Dig safely—call 811
- Save rocks and trees for landscaping

GROUNDBREAKING

SITE PREP FOR SUCCESS

BY GLENN HANSEN

For every phase of our Getaway, we built upon the successful completion of the project before it. Site prep helps launch them all. Celebrate this literal groundbreaking. It's a big step—and you have a lot of work ahead.



CLEARING THE SITE

Begin your site preparation by clearing the property of trees, roots and rocks—materials that will interfere with the building. We knew our property contained no underground utility lines, like gas and electrical. You need to know that it's safe to dig on your site.

Early in this process we anticipated our site's logistical challenges for driving heavy equipment and worker parking. Our narrow driveway was surrounded by woods. And much of the nonwooded land was soft during our early spring start. We knew we had just enough space for the excavator and dump truck to work on-site and remove any

waste. You'll need to know which vehicles can be driven on what soil and where you can store equipment and materials.

We cut down more than a dozen trees from our site. That's mostly easy work with a chain saw, plus careful planning to safely fell trees in the right direction. You can DIY this project and save money, or plan on spending a minimum of \$250 to have a pro cut each tree. We left the pulling of stumps and roots to the excavator team we hired; let the heavy machinery do that backbreaking work. As they began digging, we chose a spot on the property to keep the logs and boulders we'd need for our landscaping. You want to move this heavy material just once until it's needed.



BEFORE YOU TOUCH A SHOVEL, CALL 811, THE NATIONAL "CALL BEFORE YOU DIG" HOTLINE. OR CHECK CALL811.COM



SILT FENCE

After you clear the site and before you begin excavation, you need to install a silt fence for erosion control along a contour line on your property. This tightly woven mesh-fabric fence is supported by wooden or metal stakes. Our excavators quickly dug the long trench runs we needed for our silt fence. Then we worked by hand to set the fabric in place, pounding in the stakes every 8 ft. for the entire run and backfilling the fence to secure it.

The spring weather dumped several inches of rain early in our build, and the fence fabric did its job to contain silt and earth runoff, keeping it from eroding onto wetlands or other property. We checked the fence's low spots after heavy rains. Later, when the ground had stabilized after excavation, we removed the silt fence, disposed of the fabric and saved the wood stakes for reuse.

..... EXCAVATION

An experienced and local excavating crew is essential for site prep. Local crews don't have to transport heavy equipment far, and they know the local terrain and disposal yards. Our original plan was a slab-on-grade construction, meaning far less excavation work. We changed our minds, however, and went for a full basement and a walk-out build. This change increased our costs, but it was worth it considering all we got in return.

Of course, a full basement on paper meant we had to dig a full basement in real life. Our excavator accomplished this in less than a day. Starting with a roughly staked-out site, the team began excavating and moving large loads to strategic locations. They used much of that dirt later as backfill around the foundation or for landscape features. Throughout the earth-moving process, we knew where everything would be placed, from the septic system to utilities to the foundation itself. We dug the well for water later in the process.

As the dig progressed, the excavation team precisely laid out the four corners of the site for location and elevation. Using machine-mounted laser levels, they dug to the exact depth and location so we could begin the next phase: foundation and basement.

FOUNDATION

STRONG, STRAIGHT, SECURE

BY JAY CORK

We initially designed the Getaway to have a slab-

on-grade foundation, but the benefits of pouring a basement changed our minds. Our walkout basement gave us dedicated room for the water heater and furnace. It also increased our living area on the main floor and will allow us even more living space when we decide to finish the basement.

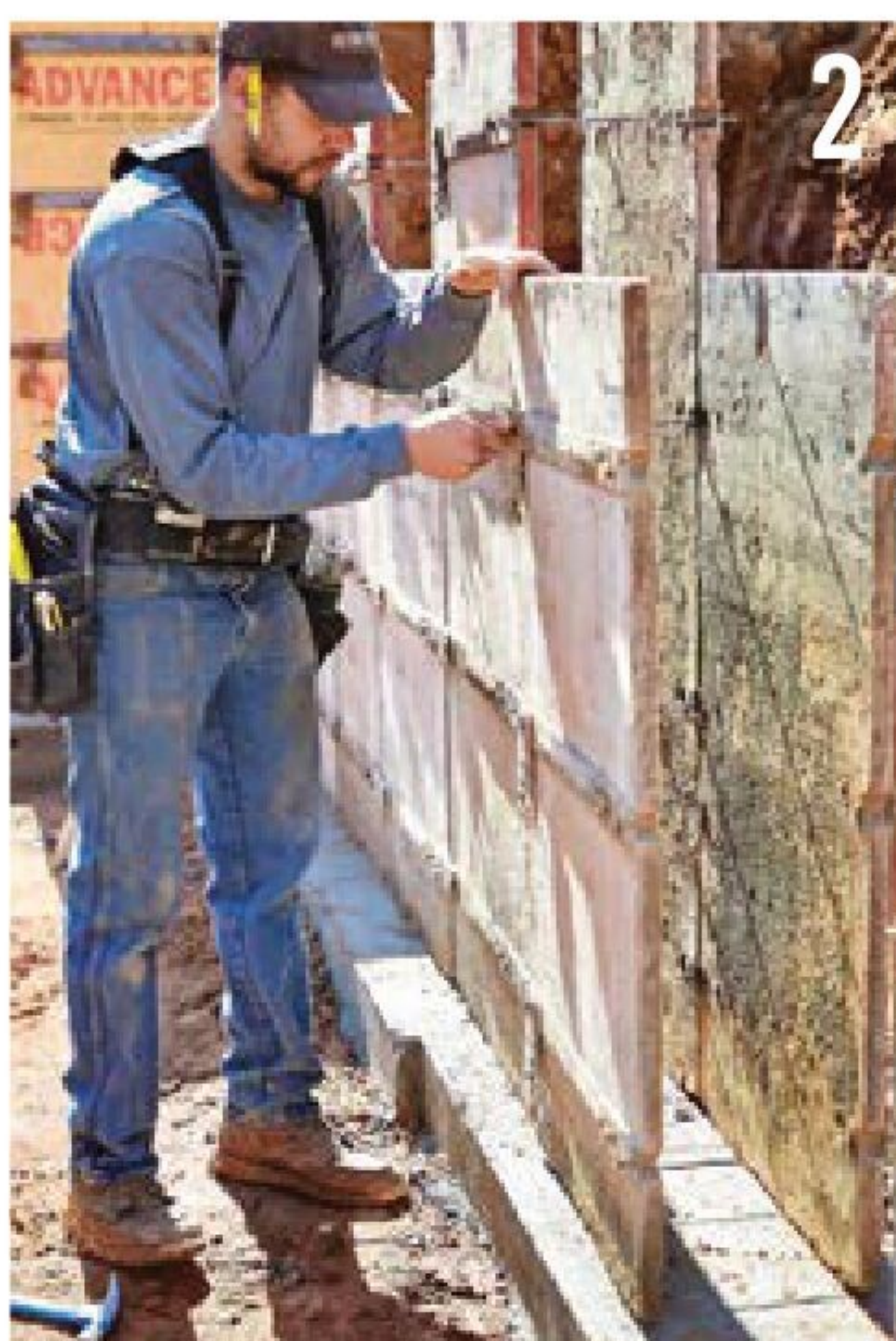
We didn't build the foundation ourselves; it took a dedicated crew with the right equipment. But the process was fascinating and we documented the important steps of this crucial phase of construction.

1 FOOTINGS POURED

Footings support the basement foundation and the entire house. Our crew piped concrete into forms, then placed rebar every 24 in. to strengthen the bond between the footings and the foundation.

2 FORMWORK SET

When the footings were set, plywood panels that form the walls of the basement foundation were placed on the footings. Snap ties held the two form halves together. We placed No. 4 rebar horizontally throughout the forms. For extra strength, we used more rebar than required, but beware—too much can weaken the concrete.





3 THE FOUNDATION POURED

The crew then fed concrete into the foundation forms through a long hose. We chose a high-strength 5,000-psi mix and added steel fiber reinforcement. The fiber added only \$5 per yard to our cost. The extra rebar and the fiber-reinforced concrete will provide the stiffness and strength to withstand cracking from normal shrinkage and expansion during our freeze/thaw cycles.

4 FORMWORK STRIPPED

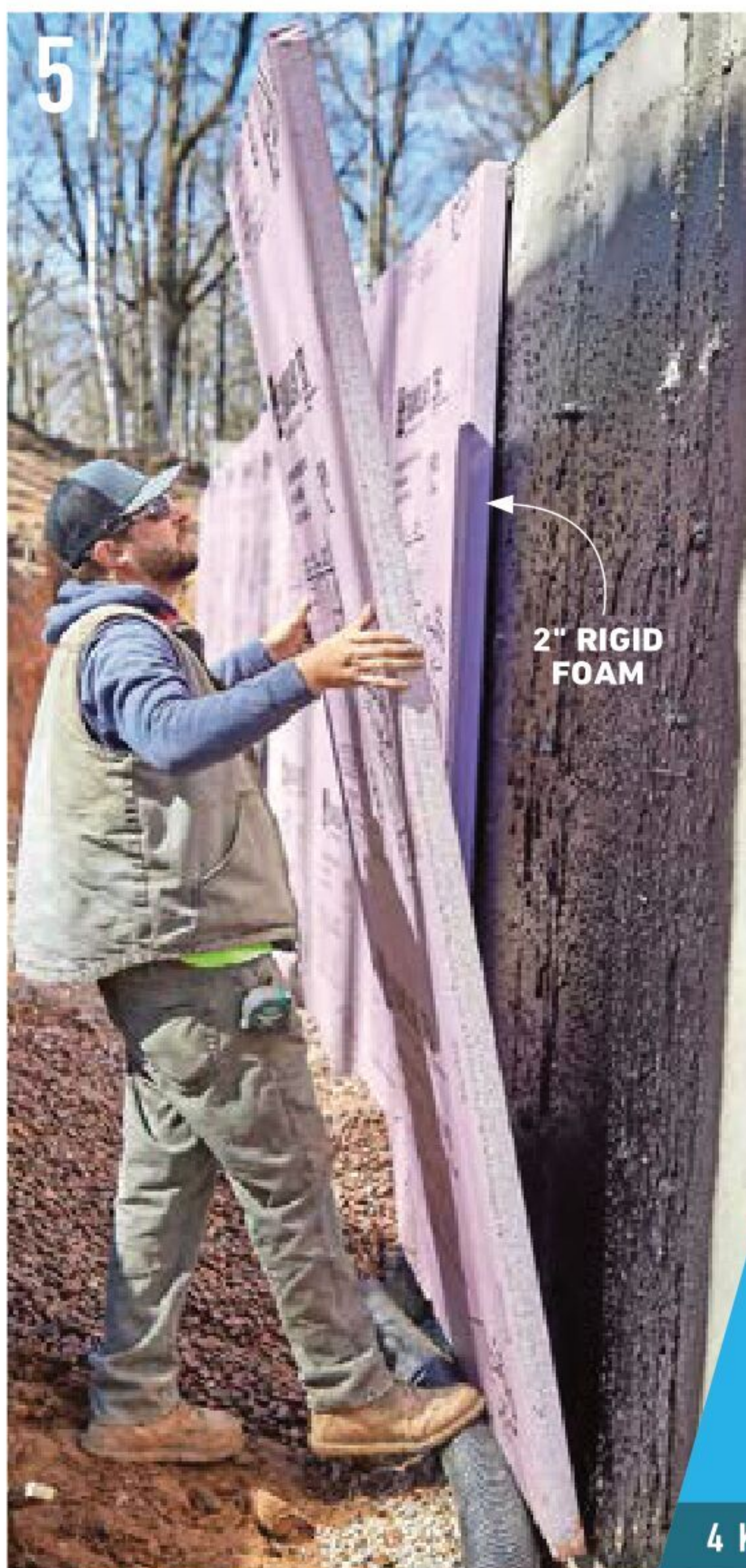
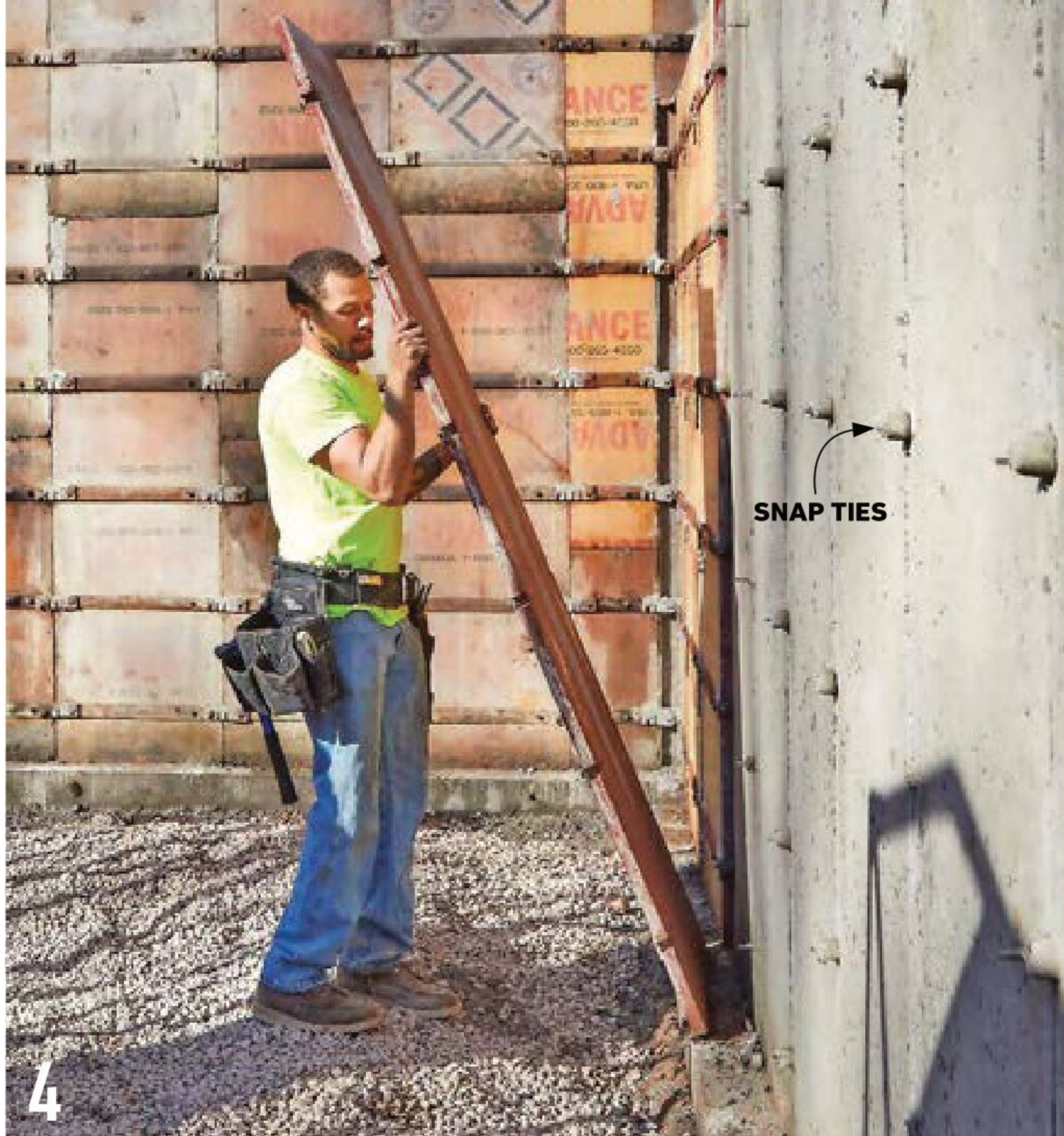
After the concrete was set, the formwork was carefully stripped off. The crew took off the top row first, then the bottom. Once the forms were clear, the heads of the snap ties were removed from the foundation, leaving a smooth surface.

5 WATERPROOFING & INSULATION

The foundation received two layers of protection to guard against moisture intrusion. First, an elastomeric rubber waterproofing membrane was sprayed on the exterior. Next, 2-in. Owens Corning Foamular NGX rigid insulation was attached, providing an R-value of 10, an important addition to the overall insulation plan.

6 DRAIN TILE INSTALLED

We wanted extra protection from water intrusion in our basement, so we decided to put in drain tile. This perforated plastic piping is laid around the foundation to direct water away. First, we laid Class 5 gravel along the perimeter of the footings; then we set the drain tile and covered it with more gravel. Water will now flow toward the septic drain field and away from the basement.



TO SEE
"THE DIRT ON
SEPTIC SYSTEMS"
GO TO PAGE 81

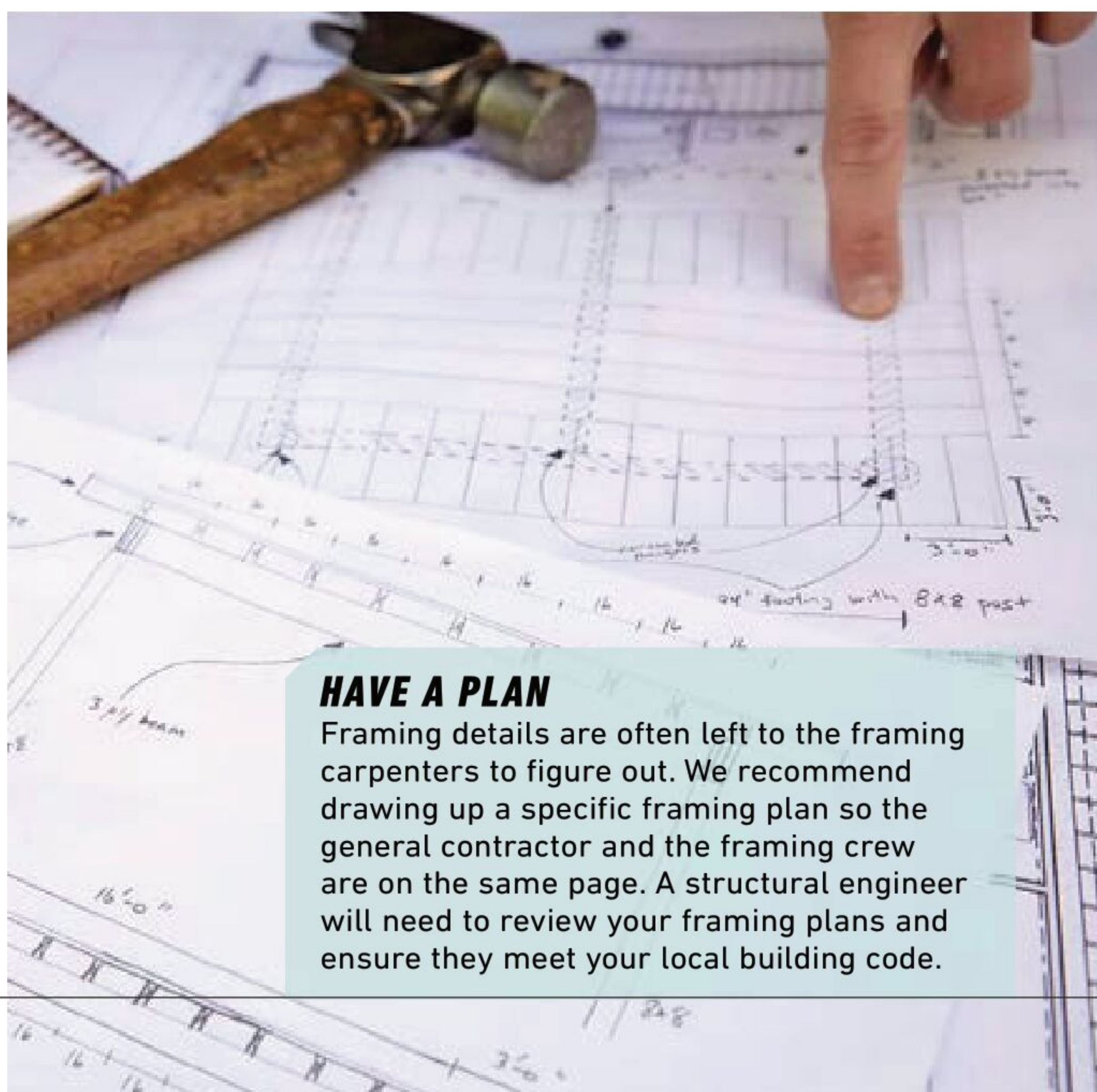
4 KEY QUESTIONS FOR YOUR CONTRACTOR

FRAMING

SAVE MONEY, BUILD STRENGTH

BY BILL BERGMANN

A quality-framed house should be level, square and plumb to make for easy and efficient installation of windows, drywall, flooring and cabinets. Doing it right isn't difficult, but it can be expensive. For our Getaway build, we put together a framing plan that would meet local building codes and deliver high-quality construction while reducing lumber costs.



HAVE A PLAN

Framing details are often left to the framing carpenters to figure out. We recommend drawing up a specific framing plan so the general contractor and the framing crew are on the same page. A structural engineer will need to review your framing plans and ensure they meet your local building code.



SAVE LUMBER THROUGH DESIGN, PLANNING & MANAGEMENT

More than 20 percent of a total construction cost, on average, is dedicated to framing. The National Association of Home Builders says 40 percent of job-site waste is scrap or unused lumber. Wood is increasingly expensive. With careful planning, you can reduce waste and save money. Here's how.

Maximize the use of standard lengths of lumber in your design. Size rooms accordingly: 10 x 12, 12 x 14, etc. Do you want 8-, 9- or 10-ft. walls? Lumber suppliers have precut studs for these wall heights. By choosing standard lengths, you reduce lumber waste and also cut labor time and costs by not making custom-length cuts.

With the architecturally driven designs of our Getaway, we made sure to designate specific uses of any anticipated cutoffs to keep lumber costs down. Many cutoffs were used for joist blocking and drywall backers.

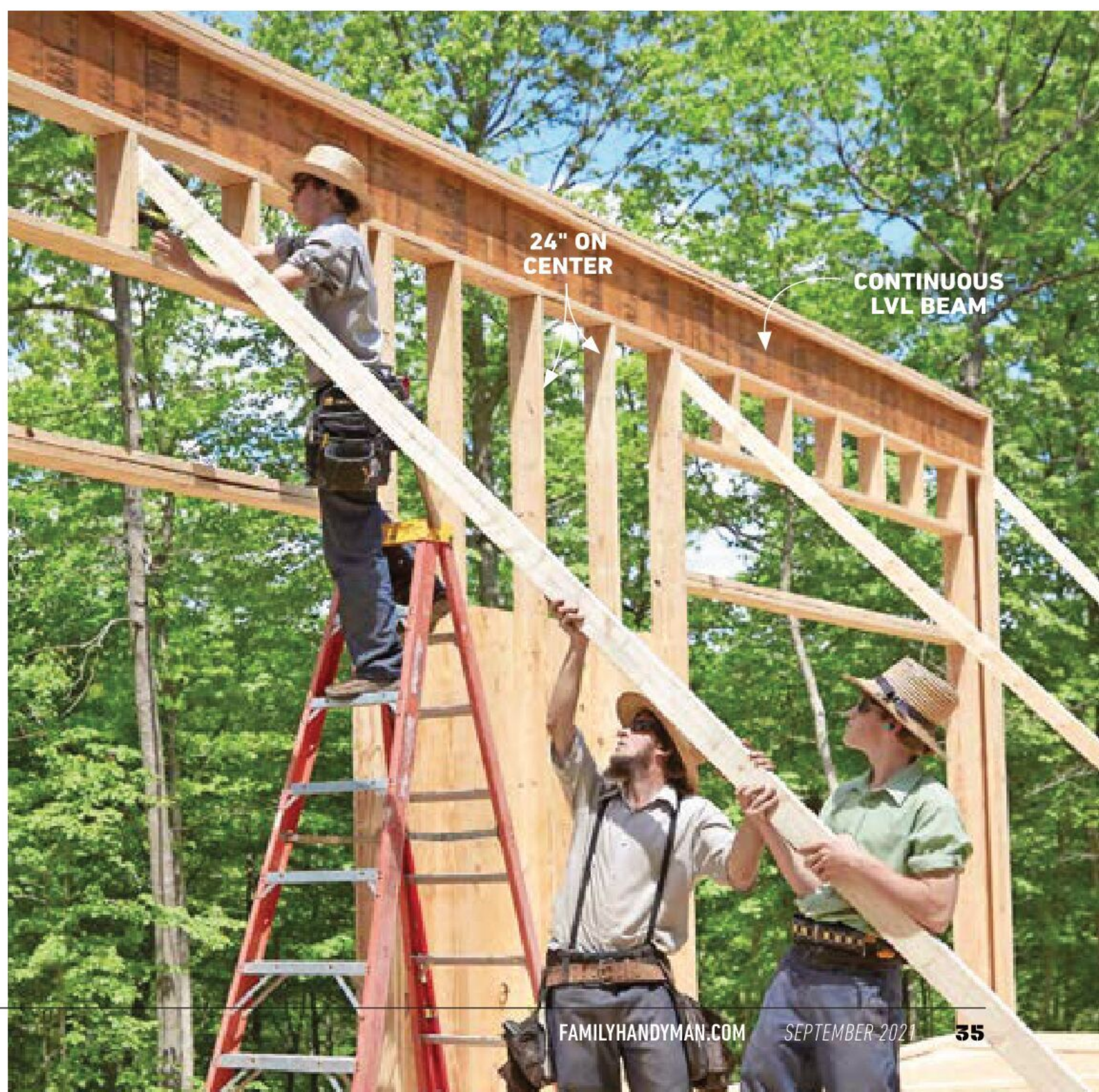
SHOULD I FRAME MY OWN HOUSE?

Want to DIY this one? I'd give the green light to anyone with intermediate carpentry skills, providing they begin with a good plan and focus on working safely. If you choose not to swing a hammer but want to play the role of general contractor, the information here will help you and the framing crew communicate effectively to build a quality home.

FEWER STUDS = INCREASED ENERGY EFFICIENCY

Wood studs make up 25 percent of the exterior wall framing on a typical home. This decreases energy efficiency through thermal bridging, which is the transfer of heat or cold through conductive material, such as your home's structural framing elements. To reduce thermal bridging, we placed LVL beams across the entire front and back of the Getaway. This allowed us to use fewer studs (thermal bridges), spacing studs at 24 in. on center as opposed to the conventional 16 in.

We were also able to reduce the structural framing components around windows and door openings because our LVL beams did that work. Our framing plan allowed us to install less lumber and more insulation in these walls—reducing building costs and saving on energy down the road.



WINDOWS

/////////
DECODING THE NUMBERS
TO MAKE A GOOD DECISION



Whether you're standing in the window aisle at the

home center or studying window specs online, the wide variety of options and add-ons available may seem daunting. You can choose windows that control solar heat gain, let in more or less light, resist condensation and more. On these pages, I'll outline the important numbers and terms you need to know to make informed choices.

WHAT SHOULD YOU PAY FOR?

You can choose plenty of add-ons for your windows, but you'll need to decide what's worth the upcharge.

- When it comes to windows, price isn't always an indicator of performance. Shop around using the selection tool at efficientwindows.org. You can find quality windows below the top price tier.
- Stock sizes or custom? You might think you can save a little money buying in-stock sizes from a home center. Most manufacturers, however, build windows to order, so the idea of "stock sizes" isn't always relevant. Order the sizes you need instead of just grabbing what's available at the store.
- If you're thinking about upgrading to triple glazing to save on energy bills, consider it carefully. It'll take a long time to recoup the expense. In most cases, double-glazed, insulating windows are sufficient. However, if you enjoy sitting by the windows in the winter, compare the cost of double-glazed to triple-glazed and decide if the price difference—sometimes as much as 30 percent—is worth it.
- Grilles, high-end hardware and exotic wood species are decorative only and cost extra. You'll need to weigh the look you want against the added cost. Be aware that grilles might raise the U-factor number slightly.
- Buying windows prepainted does cost extra, but it's a huge time-saver. If I had to choose one thing from this list to splurge on, this would be it.

STEVE URICH

BY BRAD HOLDEN

CHOOSE WINDOWS THAT SUIT YOUR CLIMATE AND LOCATION

When you're window shopping, understanding these terms will help you find windows that will perform well in your climate. For in-depth, location-specific information for your house, use the window selection tool from the National Fenestration Rating Council at efficientwindows.org. What is "fenestration," you ask? Generally, it means any opening in a surface, such as a wall.

1 INSULATING GLASS

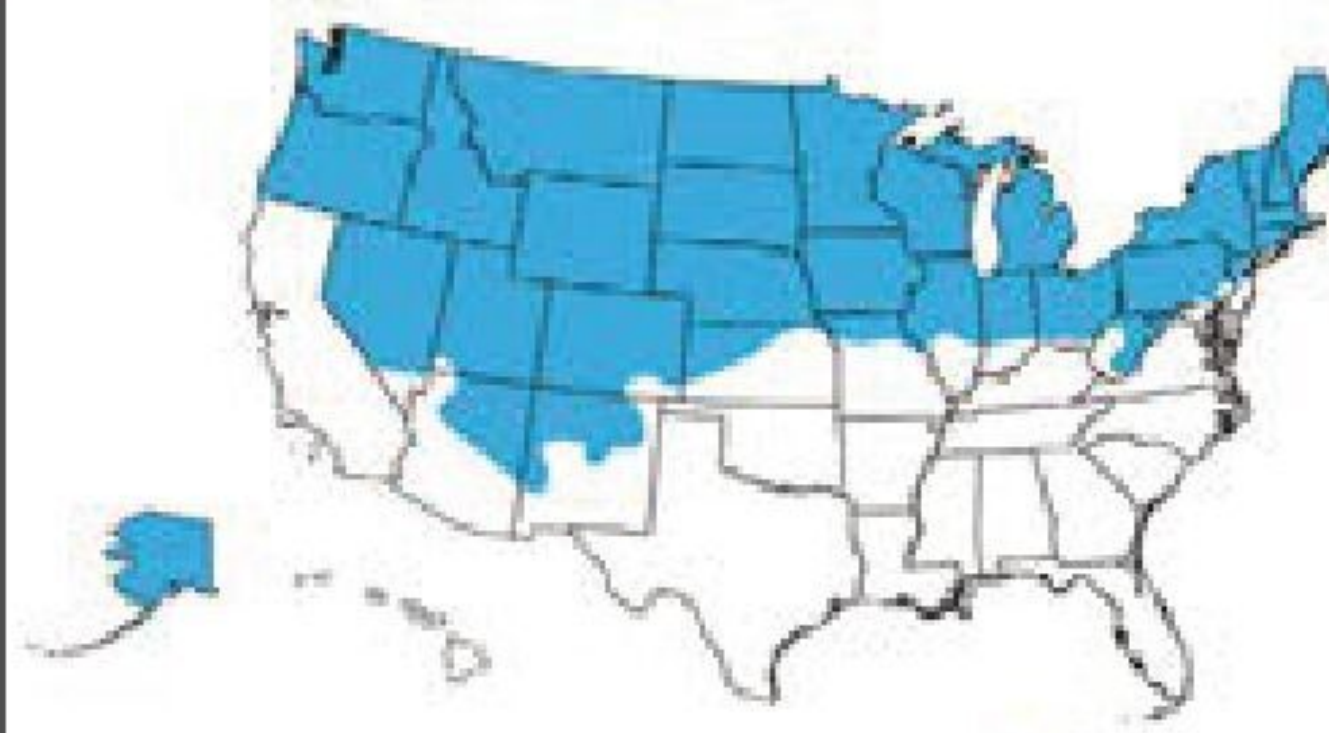
Insulating glass adds a layer of energy efficiency and comfort to your living space. Most new windows have two panes of glass with gas—typically argon—in between the panes.

2 U-FACTOR

The U-factor tells you a window's rate of heat loss. The lower the number, the better the window will keep heat in. Because our Getaway is in a cold climate, we chose windows with a U-factor of 0.27, which meets Energy Star ratings for northern zones. If your windows have a higher U-factor number, you'll want to increase the solar heat gain coefficient (see #6).

3 VISIBLE TRANSMITTANCE

Expressed as a number between 0 and 1, visible transmittance signifies the fraction of the visible sunlight spectrum allowed through a pane of glass. The higher the number, the more light the window lets in. Generally, most people prefer to let in all the light they can, so be aware that a lower solar heat gain coefficient typically means a slight reduction in visible transmittance.

ENERGY STAR® Certified in Highlighted Regions			
	 ■ Certified		
 National Fenestration Rating Council® CERTIFIED	1 World's Best Window Co. Series "2000" Casement Vinyl Clad Wood Frame Double Glazing • Argon Fill • Low E XYZ-X-1-00001-00001 5		
ENERGY PERFORMANCE RATINGS			
2	U-Factor (U.S. / I-P)	Solar Heat Gain Coefficient	
	0.35	0.32	
ADDITIONAL PERFORMANCE RATINGS			
3	Visible Transmittance	Air Leakage (U.S. / I-P)	
	0.51	≤0.3	
4	Condensation Resistance		
	51	—	
Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org			

4 CONDENSATION RESISTANCE

The higher this number, the better your windows are at resisting condensation. This is greatly affected by interior relative humidity.

5 COATINGS

A low-E coating is standard on most windows. The coating is transparent to allow in all the light, but it reflects heat. In warm climates, it's applied to the outer glass to keep heat out. In cold climates, it's applied to the inside glass to retain heat.

6 SOLAR HEAT GAIN COEFFICIENT

Typically a bigger concern in warm climates, solar heat gain is also a consideration here in Wisconsin where summers are hot. The lower the number, the better the window is at blocking heat from the sun. Most people buy windows with the same ratings for the whole house, but it's possible to fine-tune your windows to suit your needs. For example, you can choose windows with a lower number for your south-facing windows and windows with a higher number for your north-facing ones. Some people even buy two sets of sashes for their windows and change them seasonally.

7 AIR LEAKAGE RATING

An air leakage rating from 0.10 to 0.30 is good; most new windows easily meet that standard.

MEET THE EXPERT



STEVE URICH IS THE SENIOR DIRECTOR OF PROGRAMS AT THE NATIONAL FENESTRATION RATING COUNCIL.



SIDING

HOW TO INSTALL DURABLE & STYLISH STEEL SIDING

BY BILL BERGMANN

Your choice of siding defines your home and protects it from all that nature throws its way. Choose well, and your vacation home will blend in with nature while maintaining the architectural style you admire—for years to come.



With the wooded setting of the Getaway, we wanted it all: modern style, durability and low maintenance. We chose Vesta Steel Plank from Quality Edge. Steel siding is gaining popularity, mostly in the form of vertical corrugated panels. We favored the look of Vesta's steel lap-siding products; you can install the material vertically or horizontally. The style was born out of traditional and proven wood shiplap, common on older houses. This modern adaptation in steel has a permanence we couldn't find with other products.

In our budget calculations, this splurge is well worth the upcharge compared with more conventional siding products. What sealed the deal was not only Vesta's warranty and non-fading, rustproof finish, but also its sustainability. Steel is 100% recyclable.

WORKING WITH STEEL PLANK SIDING

Installing Vesta Steel Plank siding is similar to installing vinyl or aluminum siding. Many of the components are the same profile and you install them in the same manner. Vesta does employ some unique components and methods that aid its durability. Its support trim, for example, maintains the rigidity of the siding where it tucks into the J-channel at the top of a wall or below a window.

The Getaway was designed with generous 3-ft.-wide soffits and a 2x8 subfascia on the sides and the front. A soffit this wide would often require additional support framing in the center. However, with a 29-gauge thickness, the plank is stiff enough to bridge that distance. Beyond the subfascia, the only additional soffit framing needed was a 2-by nailing flange against the house. We used a lighter color of Vesta Steel Plank for our soffit material to contrast with the darker siding, and to coordinate with our roof material. We oriented these soffit planks and our outdoor porch ceiling in the same direction



as our decking. The 8-in. fascia trim pieces hid the subfascia and the ends of the soffit planks. The ends against the house are hidden by the J-channel, installed later, that caps the top course of our sidewall planks.

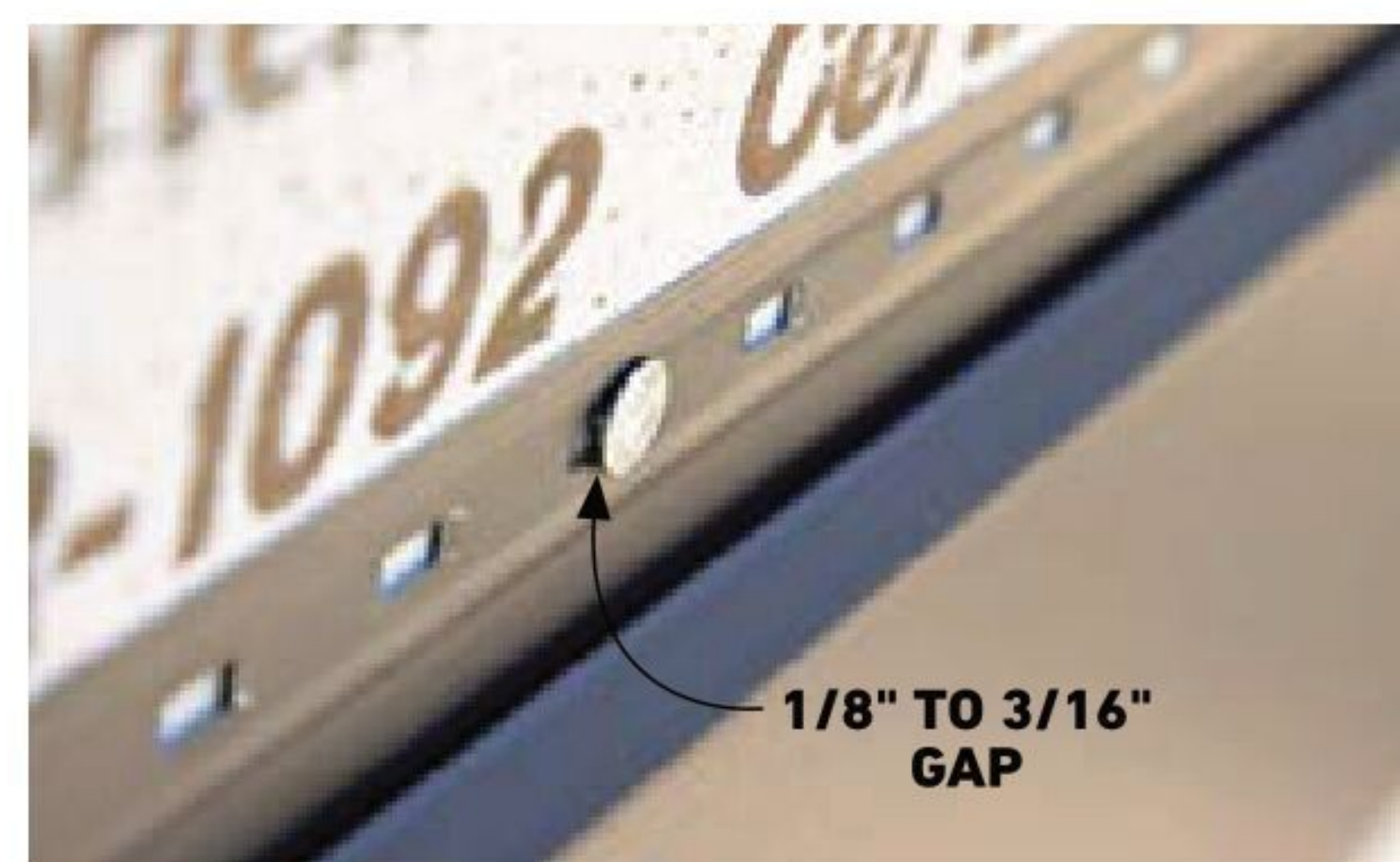
Depending on a home's roof design, you'll need to consider venting the roof and soffit. Our Getaway has vaulted ceilings and therefore no attic, so we insulated the ceiling with closed-cell spray foam. This "hot roof" construction method doesn't require soffit venting. If your roof system requires venting, be sure the framing and the soffit material allow proper airflow.

To begin the bottom-to-top installation of siding, you first measure down from the soffit. Setting the starter strip for the first course is crucial. After calculating to be sure we didn't end up with a skinny course at our windows or the final top row, we snapped a chalk line to indicate the placement of our starter strip. Even with new construction, this line may not be level. It's more important that your siding be parallel to your soffit and windows. With our

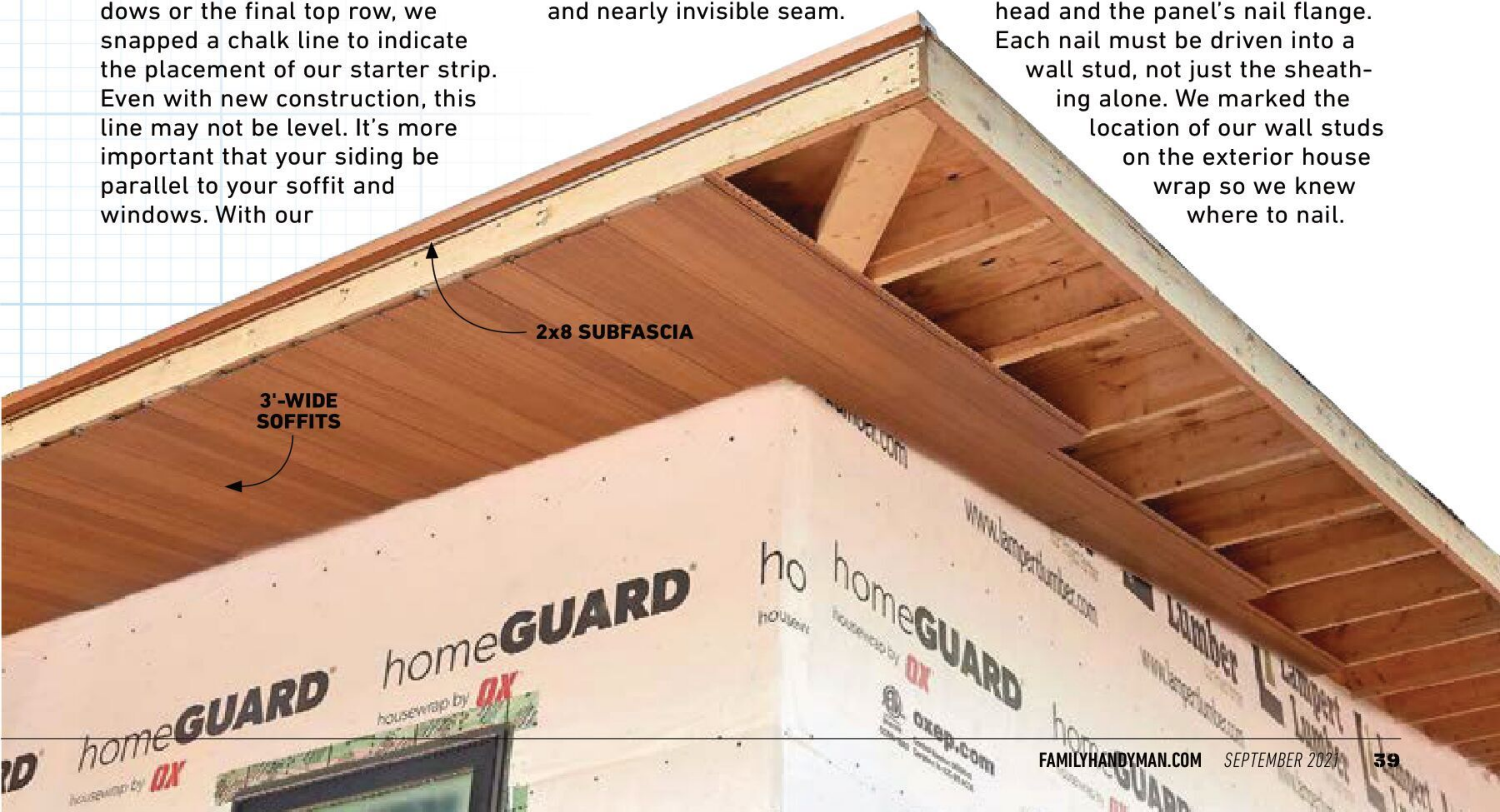


starter course line established, we set multiple parallel lines above it for reference as we sided our way up the wall. The planks fit together consistently, requiring little course adjustment and making for a fast installation.

Making weatherproof, attractive siding joints can be time-consuming, whether the ends of the planks butt together or overlap. With other types of siding, these joints often require caulking or priming, and some tooling for a good fit. The Vesta Plank system uses a clean overlapping interface on the ends of each panel to provide a tight fit and nearly invisible seam.



To allow panels to expand and contract, and to hide variations in the exterior sheathing, proper fastening is vital. A 1/8- to 3/16-in. gap is required between the nail head and the panel's nail flange. Each nail must be driven into a wall stud, not just the sheathing alone. We marked the location of our wall studs on the exterior house wrap so we knew where to nail.



CUTTING STEEL SIDING

Cutting steel siding is easier than you might think, as long as you use the proper tools. A sliding miter saw and a circular saw with a ferrous metal blade are best. Cutting thin steel requires a saw blade with many teeth: An 80-tooth carbide blade yields the cleanest cuts. A grinder or an abrasive type of saw can damage the siding's protective finish, and use of those tools could void the product's warranty.

For making long horizontal cuts or rips, we chose power shears. This tool makes quick work of long cuts of up to 12 ft. We used hand metal shears for precise cuts with J-channel, corner pieces and other components.

We finished this siding installation with a bit of color-coordinated caulking around utility, plumbing and electrical penetrations. The tall lakeside exterior of the Getaway was something to behold with its completed siding. Although a modern design, the structure keeps an organic look; the earthy finish on the siding makes our Getaway appear as if it simply grew out of the woods.



TO SEE
"CUT METAL
LIKE THE PROS"
GO TO PAGE 75

THE RIGHT TOOLS MAKE A DIFFERENCE

INSULATION

ACHIEVE THE R-VALUE YOU NEED

Insulating your home well means more than just filling the walls. All building materials—sheathing, drywall, siding, insulation, windows, even the vapor barrier—contribute to a home's overall R-value. We're building in Climate Zone 6, so code requires us to achieve a minimum R-value of 15. Here's how we met that requirement.



BY JAY CORK

THE "HOT ROOF" OPTION

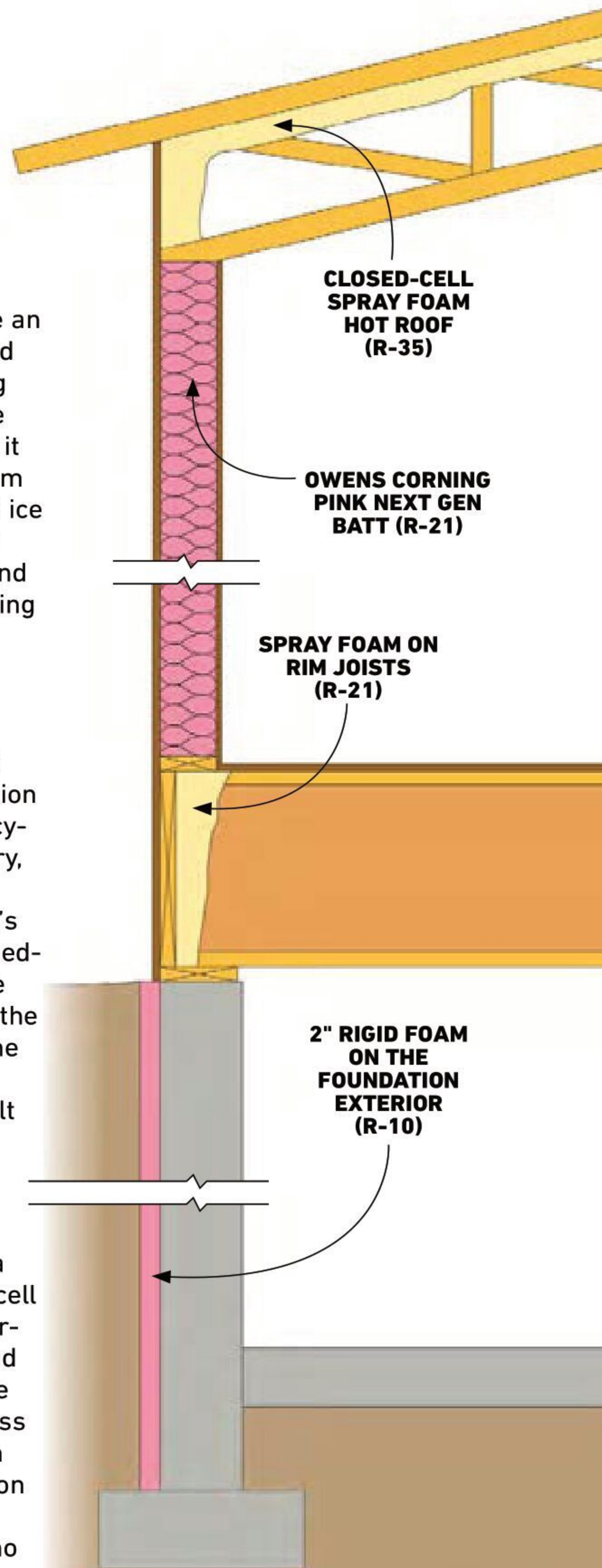
Our Getaway doesn't have an attic. It has an unventilated "hot roof" where installing batts of insulation is more challenging. We insulated it with closed-cell spray foam to eliminate heat loss and ice dams. This option worked great for our metal roof and will also work if you're using asphalt shingles.

BATT INSULATION FOR THE WALLS

Owens Corning PINK Next Gen Fiberglas batt insulation is made of the highest recycled content in the industry, using a new sustainable manufacturing process. It's manufactured to resist shedding and to feel soft to the touch. We love it because the new product eliminates the nasty itch that can make insulation material difficult to work with.

INSULATE THE RIM JOIST

The best way to insulate a rim joist is to use closed-cell spray foam—it is fast, thoroughly seals the space and is actually fun to apply. We were aiming for a thickness of 3 in., which provides an R-21 rating. Rigid insulation is another option for rim joists; adding it requires no special equipment, but it's a time-consuming process.



R-VALUE EXPLAINED

R-value refers to the resistance (R) insulation has to temperature conduction. The higher the R-value, the better a material prevents the flow of heat into (or out of) a structure. The higher R-value you achieve, the more money you'll save on heating and cooling bills.

WRAPAROUND DECK

TO BUILD IT WELL, START WITH A DETAILED PLAN

Deck building is one of my favorite DIY projects. But whenever I start planning a new deck, I'm reminded of the head-scratching work required before I can start swinging a hammer. Over the years I've identified common mistakes and refined my process. Planning, preparing and simply knowing the best way to tackle these critical components can make building a deck easier, faster and less expensive. Here is my process, along with a few tips to help you nail your next DIY deck.



BY MIKE BERNER



MY PLANNING PROCESS

■ START WITH A SKETCH

I start by drawing the shape and proportion of the deck, as well as the orientation of the decking. Include property landmarks: your home's doors and windows, shed, fences, etc. Use graph paper to help with scale.

■ MATCH DECK-BOARD LENGTHS

Deck boards are commonly sold in lengths of 8, 12, 16 and 20 ft. Matching the size of the deck to these

deck-board lengths makes the building process easier and faster, also eliminating undue seams and waste.

■ MIND THE OVERHANG

When you finalize your deck size, shrink it by 1-1/2 in. on all sides that don't attach to a house. This will be the dimension of your deck framing. A 1/2-in.-thick skirt board covers the framing, and the deck boards will hang over that by 1 in.

■ USE A GUIDE

Deck planning involves many details, and even after building many decks, I still refer to the Designed for Code Acceptance 6 (DCA-6) Deck Construction Guide to double-check myself. The charts and diagrams help determine important spans, lumber sizes and fastener requirements. If the information you need isn't in this guide, the local building official is the final authority.

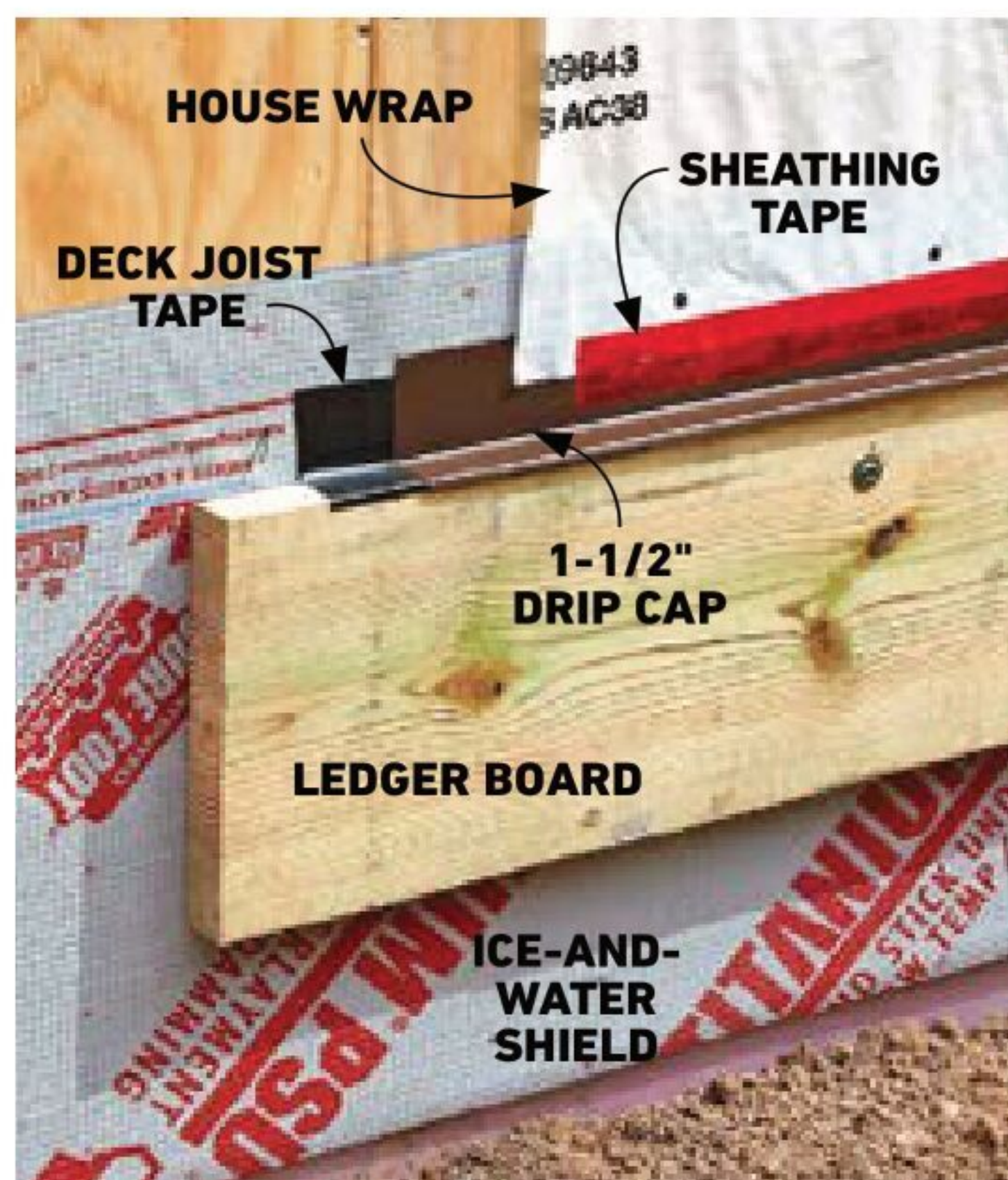


AUGER BIT

DIGGING FOOTINGS

Digging footings is the most nerve-racking part of building a deck. The footing placement needs to be spot-on to keep beam and joist spans to your plan. If your footings are misplaced, the whole job will be more difficult.

To accurately execute your plan, string mason's line between batter boards to get your footings parallel to the house. Our Getaway deck needed 12 footings at least 48 in. deep. We rented a track loader with an auger attachment (check RentalHQ.com) to dig those holes. In one day, we had all our footings marked, dug and ready for concrete.



FLASHING THE LEDGER

The most vulnerable part of a deck is its connection to the house—the ledger board—and the ledger needs to be flashed correctly to keep water away. Before you attach it, roll out a strip of ice-and-water shield onto the sheathing. Apply deck joist tape along the top of the ledger and the wall. Cap it off with aluminum drip cap, then cover the drip cap with house wrap or tarpaper.



ATTACHING THE LEDGER

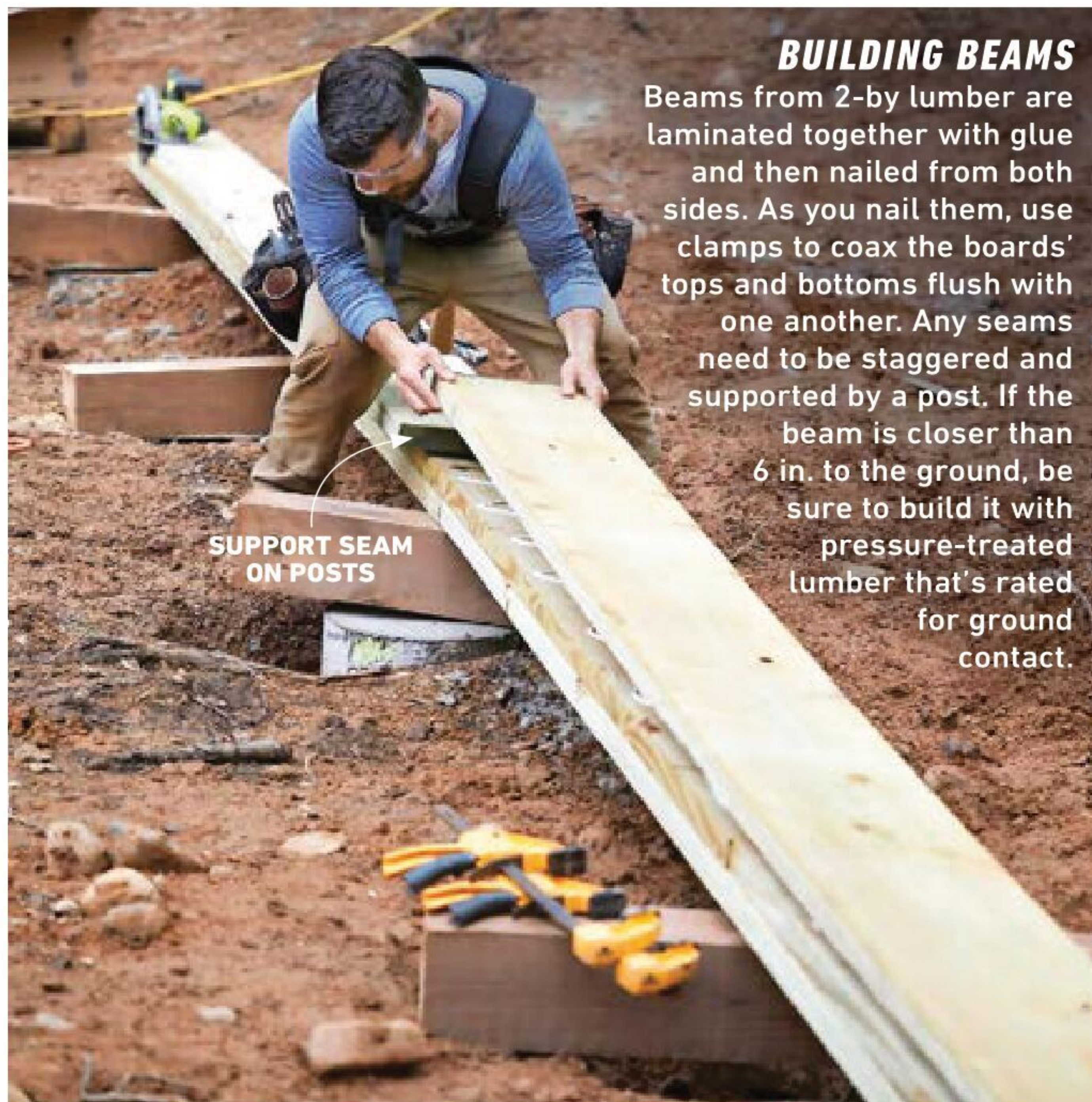
The critical connection at the ledger board is made with specific fasteners and fastener spacing. You can use 1/2-in. through-bolts or 1/2-in. lag bolts, but I prefer ledger-ready structural screws. Available at home centers, they're specifically made for fastening deck ledgers. These structural screws need to be long enough to penetrate the ledger, exterior sheathing and the rim joist of the house. The fasteners should also be spaced and staggered appropriately, and that's determined by the joist span; check the DCA-6.



CONNECTING TO CONCRETE

I had to fasten the Getaway deck to the concrete foundation on one side of the house. When attaching a ledger board to concrete, no flashing is needed, but you will need to use wedge anchors to make the connection.

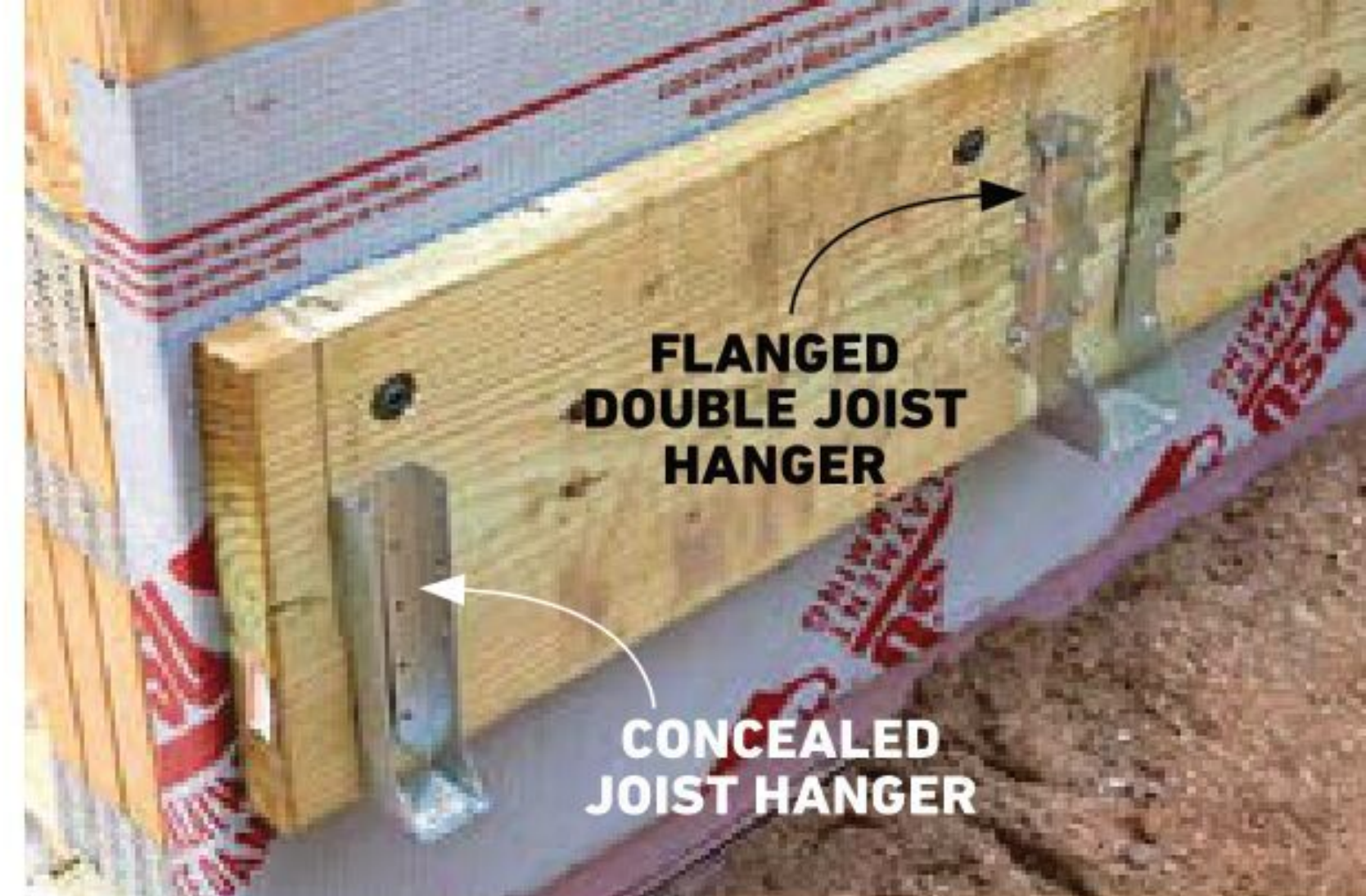




SUPPORT SEAM
ON POSTS

BUILDING BEAMS

Beams from 2-by lumber are laminated together with glue and then nailed from both sides. As you nail them, use clamps to coax the boards' tops and bottoms flush with one another. Any seams need to be staggered and supported by a post. If the beam is closer than 6 in. to the ground, be sure to build it with pressure-treated lumber that's rated for ground contact.



FLANGED
DOUBLE JOIST
HANGER
CONCEALED
JOIST HANGER

GET THE HANGERS RIGHT

Joist hangers are another critical connection. They transfer the load from the joists to the beam and ledger. If you're using 2x12 joists, you need 2x12 hangers. Joist hangers for decks must also meet corrosion standards with a special G-185 coating (some manufacturers label this as ZMAX or Triple Zinc). Stainless steel versions are available for decks built near salt water. When you fasten hangers, nail through every hole in the hanger with the right-size nail specified by the hanger manufacturer.

JOIST & BEAM SPANS MATTER

Joists, beams and posts work together to frame and support your deck. Joists run perpendicular (or at a 45-degree angle) to the decking and shouldn't be spaced more than 16 in. from center to center. The joist span, or distance between beams, determines the size of your joists. The size of the beam determines how you space the footings and support posts. Check the DCA-6 for span charts.



BEAM

NOTCHED
POST

POST-TO-BEAM CONNECTION

The component of a deck that most often gets messed up is the post-to-beam connection. Often the beam is slapped on the side of the post and they are bolted together. This is not good enough: The post, not the bolt, needs to bear the weight of the beam. To do this, make a notch in the post to support the beam. Use a 1/2-in. through-bolt or these easy-to-use screw bolts made for this connection.



SCREW
BOLT



RIM JOIST

INSTALLING THE RIM JOIST

After the joists are installed, a rim joist holds them upright and keeps their spacing consistent. Unlike the other joists, the rim joist carries no load and is nailed to the ends of the joists with 3-in. ring-shank nails.

KILN-DRIED LUMBER IS BETTER

Pressure-treated lumber dries out after the treatment process. It tends to warp, twist and bend while drying, making it a nightmare to attach the deck boards. KDAT, or Kiln-Dried After Treatment, lumber is dried immediately after being treated and will remain straight years after installation.



ADJUSTABLE TRUSS HANGER

TEMPORARY SUPPORT

CONSIDER A LANDING

Instead of a small staircase, a landing will increase the footprint of your deck and make it easier to step on and off. An easy way to attach the landing to the deck is to use adjustable truss hangers that attach to the face of the rim joist and hang low enough to form a 7-in. step.

CHOOSE COMPOSITE DECKING

After you build a solid, long-lasting deck frame, install long-lasting deck boards. I chose the Deckorators Tropics line of decking. The composite material will last decades, it's maintenance free, and the color and grain pattern look like high-end exotic wood.



SOLID EDGE DECK BOARD

FASCIA BOARD

INSTALL MODERN CABLE RAILING

1 SURFACE-MOUNT POSTS

I first determined the post locations while I was framing the deck, and I added extra blocking to fasten the surface-mounted posts. When the decking was done, I positioned the posts over the blocking, fastened them with structural screws and plumbed them with the supplied setscrews. Then I hid the screws by sliding on the post base trim.

2 INSTALL THE RAIL AND SPACERS

Trim the rails with a miter saw so they're 1 in. shorter than the distance between posts. Then fasten a rail bracket to each end, with the cable spacers attached equidistant along the bottom of the rail. Level the rail between the posts, then pre-drill the posts and fasten the rail.

3 FEED THE CABLE

This Deckorators ALX Contemporary Cable Railing System consists of stainless steel cable with a threaded bolt on one end. I fed the cable end through the posts and the rail spacers, then attached a locking nut onto the threaded end.

4 TENSION AND TRIM THE CABLE

At the opposite end, I twisted the provided Pull-Lock fitting onto the cable. I pushed the fitting into the predrilled hole in the post and pulled the cable tight while holding the fitting in place. This Pull-Lock fitting locks onto the cable to hold the tension. Thread and tighten all the cables, starting from the center and working toward the top and bottom alternately. To tension them, hold the threaded stud in place with a hex key and turn the locking nut. Trim the excess cable and threaded stud, and cover both ends with the threaded caps included.



WHAT IT TAKES		
TIME	COST	SKILL LEVEL
1 day	\$65/ft.	Intermediate
TOOLS		
Drill/driver, level, miter saw, screwdriver, hex key, wrench		



METAL ROOFING

GET THE LAYERS RIGHT
FOR A LONG-LASTING ROOF

ICE-AND-WATER
SHIELD

EAVE TRIM

INSIDE FOAM
CLOSURE STRIP

24"

BY MIKE BERNER

With its sleek, modern look, metal panel roofing was our first choice for the Getaway. It has no visible seams and is maintenance free—just a light rain will wash leaves and sticks off the roof. Even better, it won't grow moss and algae in the shade of the Wisconsin woods. A metal roof will reduce cooling costs by reflecting heat and will last 50 to 70 years. Armed with a basic understanding of the anatomy of a metal roof, along with a few tips, you can install one yourself in just a few days.



APPLY THE UNDERLAYMENT

The first layer on top of the plywood or OSB roof deck is the underlayment. For this we chose a self-healing ice-and-water membrane to protect the shallow-pitched roof deck. The tricky part in laying the underlayment is keeping it flat and wrinkle-free. Unroll the underlayment across the roof while removing the bottom half of the adhesive backing. Overlap the previous layer by 6 to 8 in. Once the underlayment is rolled out, cut it flush and pull the rest of the adhesive backing out from underneath.



OUTSIDE FOAM CLOSURE STRIP

RIDGE CAP

GABLE TRIM

It's all about the layers. When it rains, a roof sheds water from one layer to the next until the water runs off the roof. Build roof layers the right way and your home will stay dry inside its entire life.

METAL ROOFING PANEL

BEND TRIM ENDS CLOSED

Before you install the trim, you need to cut and bend the leading end to wrap it around the corner. Make a series of 1-in. cuts with aviation snips at each bend to create tabs. Fold the tabs in with a hand seamer to meet a wall or a corner, or to close a gap created by the trim. Each trim is a different shape, requiring unique cuts and bends.

FASTEN EAVE TRIM

Install the eave trim tight to the fascia, and fasten it to the roof deck over the underlayment with 1-in. roofing nails. In warmer climates, the eave is attached before the underlayment. In northern Wisconsin, where ice dams are common, we install these atop the underlayment to protect the entire roof from those ice dams.

SPLICE AND OVERLAP TRIMS

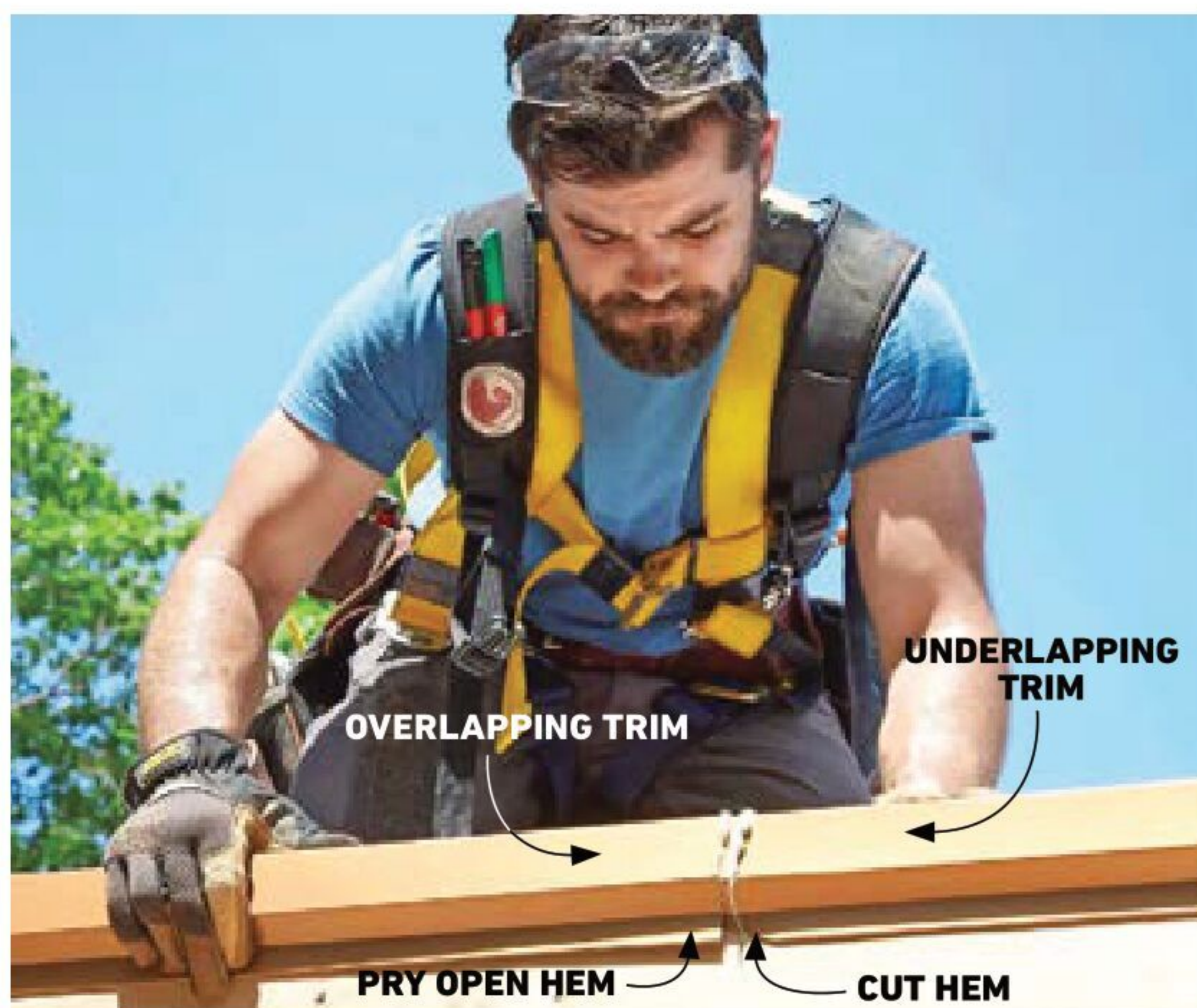
Where two trim ends meet, you'll splice them together. First, cut the bottom hem of the underlapping trim at an angle. After installing the underlapping trim, apply sealant on top. Pry open the bottom hem of the overlapping trim and slide it over the angle-cut hem of the underlapping trim.

EAVE TRIM

GABLE TRIM

MONO PITCH RIDGE CAP

SIDEWALL FLASHING TRIM

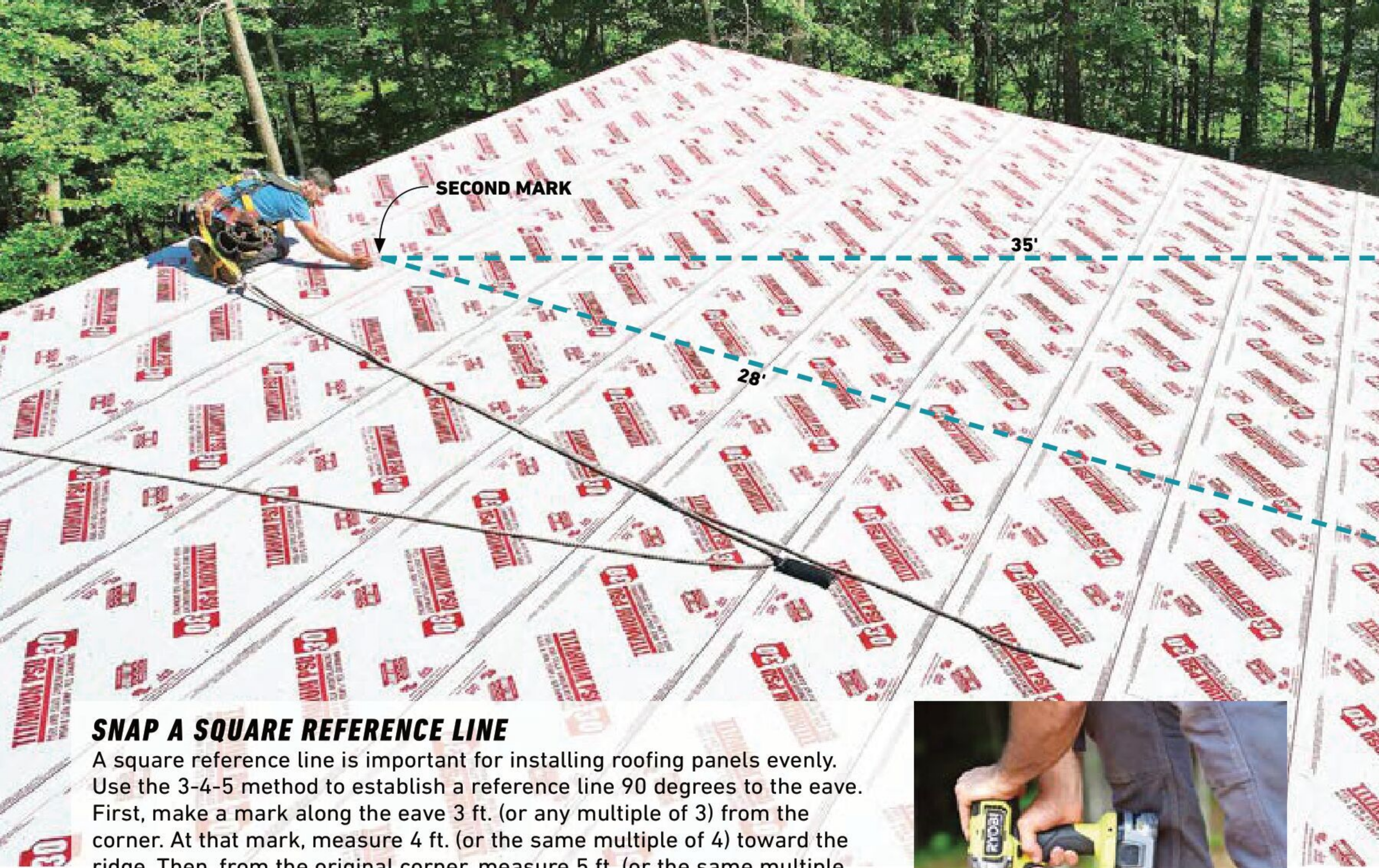


OVERLAPPING TRIM

UNDERLAPPING TRIM

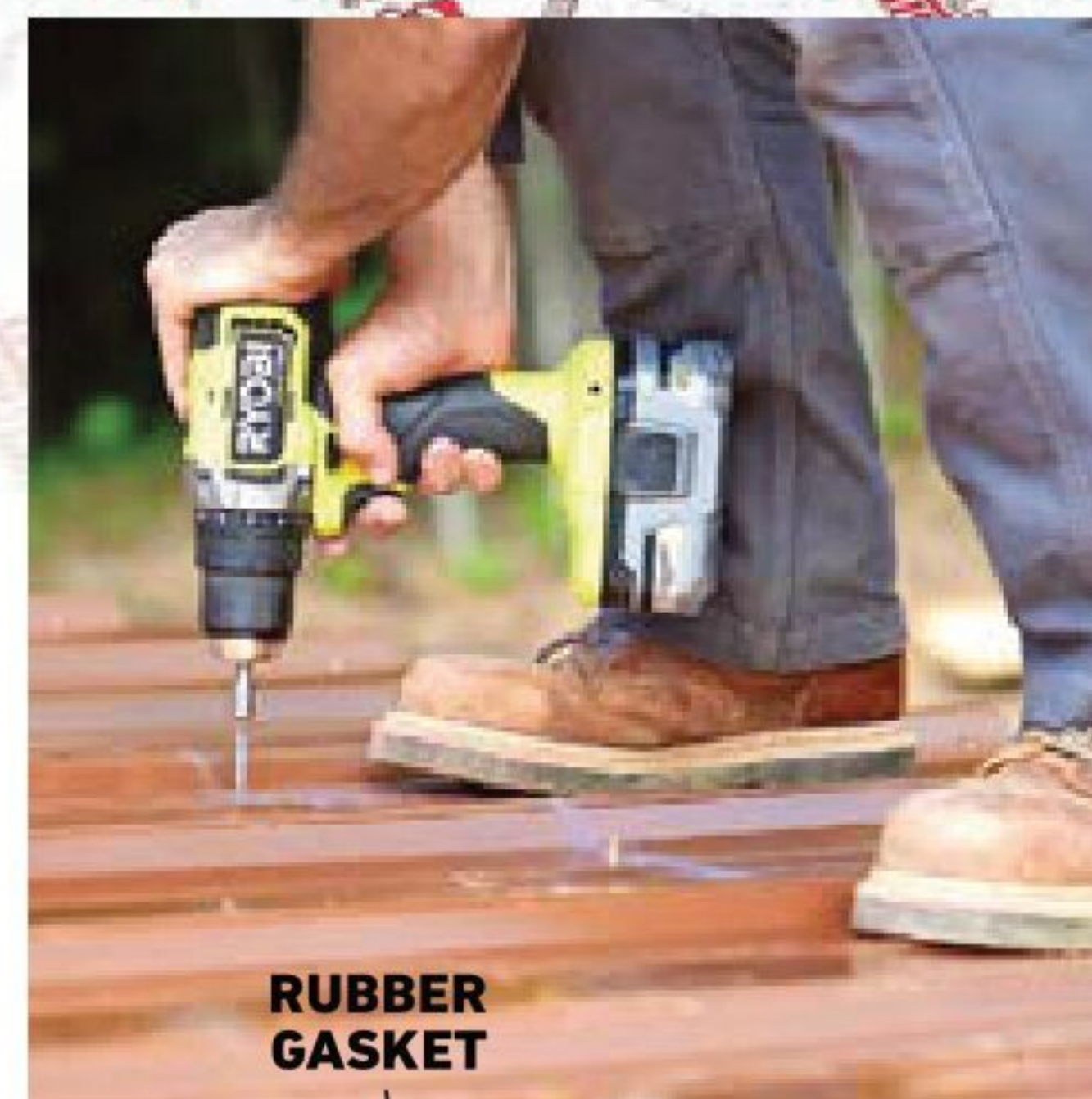
PRY OPEN HEM

CUT HEM

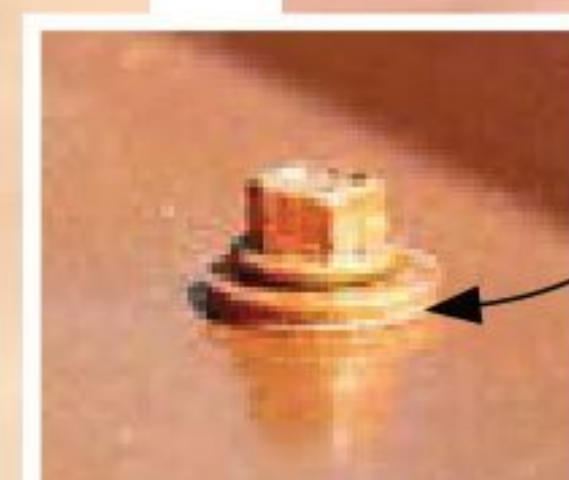


SNAP A SQUARE REFERENCE LINE

A square reference line is important for installing roofing panels evenly. Use the 3-4-5 method to establish a reference line 90 degrees to the eave. First, make a mark along the eave 3 ft. (or any multiple of 3) from the corner. At that mark, measure 4 ft. (or the same multiple of 4) toward the ridge. Then, from the original corner, measure 5 ft. (or the same multiple of 5) and mark where it intersects the second mark. Snap a line from the first 3-ft. mark through the intersection of the second and third marks. Since the Getaway roof is larger, I measured to 21 ft., 28 ft. and 35 ft. (7 times 3, 4 and 5) to make my square reference line.



RUBBER GASKET



DRIVE SCREWS JUST RIGHT

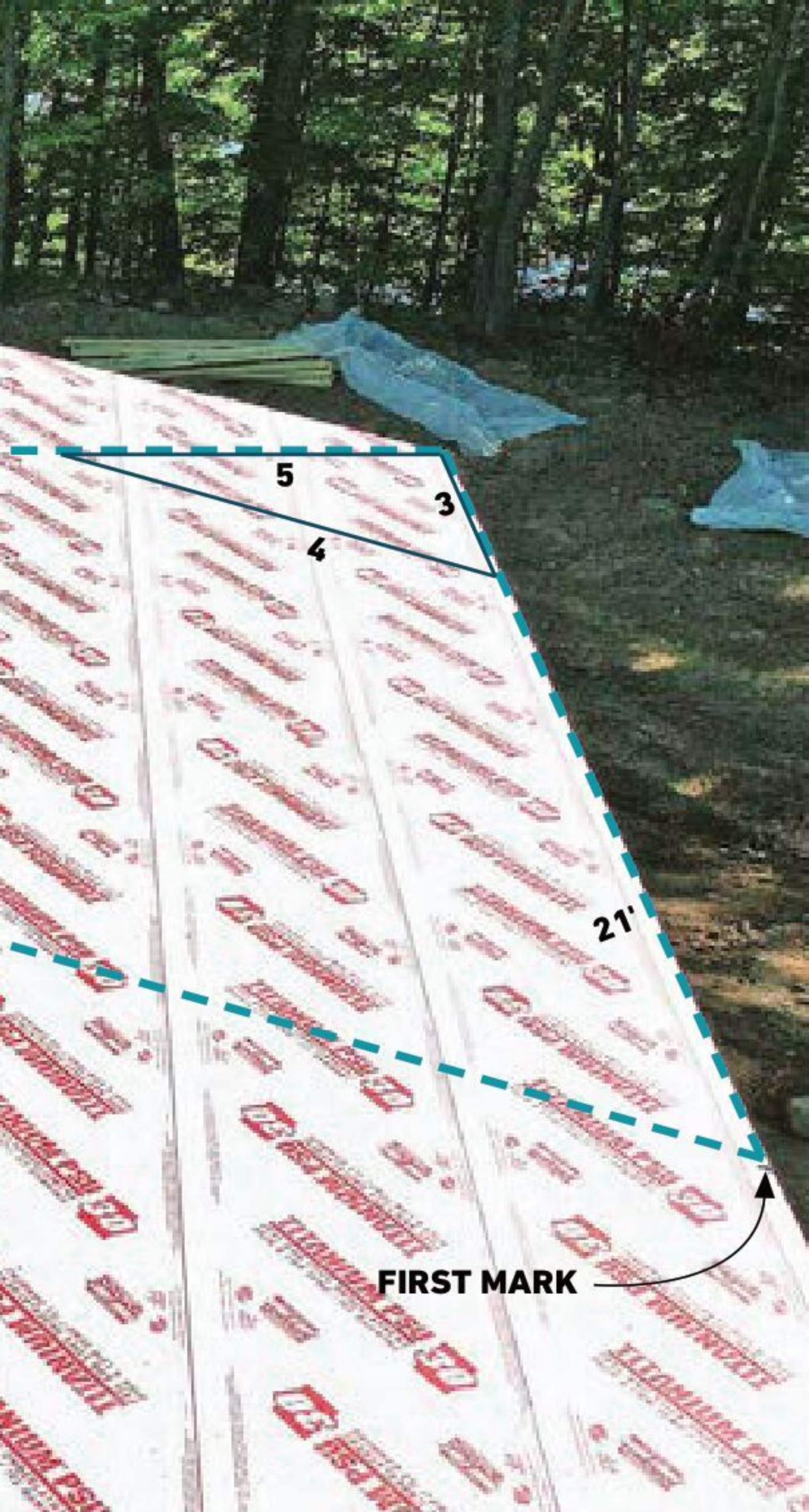


SET THE FIRST PANEL

Place each metal panel on an inside foam closure strip. A strip is shaped to fit to the corrugated underside of the panel and to keep bugs and water from getting underneath. Position the closure strip along the eave about 1 in. from the edge and stick it to the panel with butyl tape. Run a bead of sealant on top of the closure strip, then set your panel so it overhangs beyond the eave by 1 in. Adjust the panel so any measurement from it to the reference line is the same at the top and bottom.

Fastening the panels just right is the key to a watertight roof. Here is what you should know:

- At the eave, place screws on both sides of every rib and lined up to go through the foam closure strip.
- Each row should be spaced no more than 24 in., with one screw at each rib on the overlapping side.
- Start at the bottom, fastening across the panel in rows, working toward the ridge.
- Drive screws to sit flat on the roof; a crooked screw won't seal.
- Don't overtighten or undertighten. Tighten just enough to compress the rubber gasket to the edge of the screw head, not past it.
- Clean up any metal shavings or burrs right away. They will rust.



COVER THE RAKE EDGE

After all the panels are fastened, it's time to attach the gable trim. This cleans up the edge of the panel and keeps rain and snow from getting under the roof panels and siding. After you bend the end of the trim to meet the corner at the eave, apply butyl tape on the underside of the trim, where it lands on the flat part of the roof panels. Press it in place and drive screws every 12 in. right over the butyl tape.



OVERLAP THE PANELS

The two edges of the metal panels are different. The overlapping edge has a shorter rib leg that doesn't contact the roof surface when laid flat. The rib on the underlapped side has a drainage or anti-siphon channel to keep water moving toward the eave. Overlap the last rib on each panel; they should nest together perfectly.

SECURE THE RIDGE CAP

To cap the roof, adhere a line of outside closure strips with butyl tape 4 in. from the top of the peak; this is where you'll fasten the ridge cap to the roof with screws. Apply a bead of sealant on the foam closure, then fit the ridge cap on the peak and fasten it through every rib to the roof deck with 2-in. screws. With the cap of the roof complete, all the water that lands on the roof will be able to exit the roof without ever touching the underlayment.



TO SEE
"CUT METAL
LIKE THE PROS"
GO TO PAGE 75

THE RIGHT TOOLS MAKE A DIFFERENCE



WINDOW TRIM

//////////////////// HOW TO ACHIEVE TRIMLESS WINDOW STYLE

Installing wood trim around windows can be expensive and time-consuming. Drywall returns fix that. Most windows are installed using wood jamb extensions to finish the rough openings; these pieces extend the window jambs to the interior wall. Window trim then covers the jamb extensions, providing the finished and trimmed look we all know.

In the Getaway, we used drywall in place of jamb extensions and wood trim. With this drywall return method, our windows have a modern, trimless look. It required a bit more drywall work, but we saved time and money by eliminating wood trim and its finish carpentry.

WHAT IT TAKES

TIME	COST	SKILL LEVEL
2-4 days	\$200-\$400	Intermediate

TOOLS

Utility knife, T-square, drywall rasp, drywall taping tools, drywall screws and a screw gun, tin snips, staple gun, tape measure

MATERIALS

Corner bead, inside tear-away corner bead, 1/2" drywall, drywall mud, insulation, spray adhesive, 3/8" staples

BY JOE CRUZ

1 PREP THE ROUGH OPENING

Not all windows are perfectly centered in their rough openings. To center a window, you may have to shim the sides, top or bottom of the opening. You want an even reveal around the inside perimeter of the opening between the window and the dry-wall return. You can buy shims or make your own by ripping different thicknesses of wood. Attach the shims to the rough opening with staples or finish nails. Before finishing, always insulate around the window with spray foam or fiberglass insulation.

2 MEASURE & SCORE

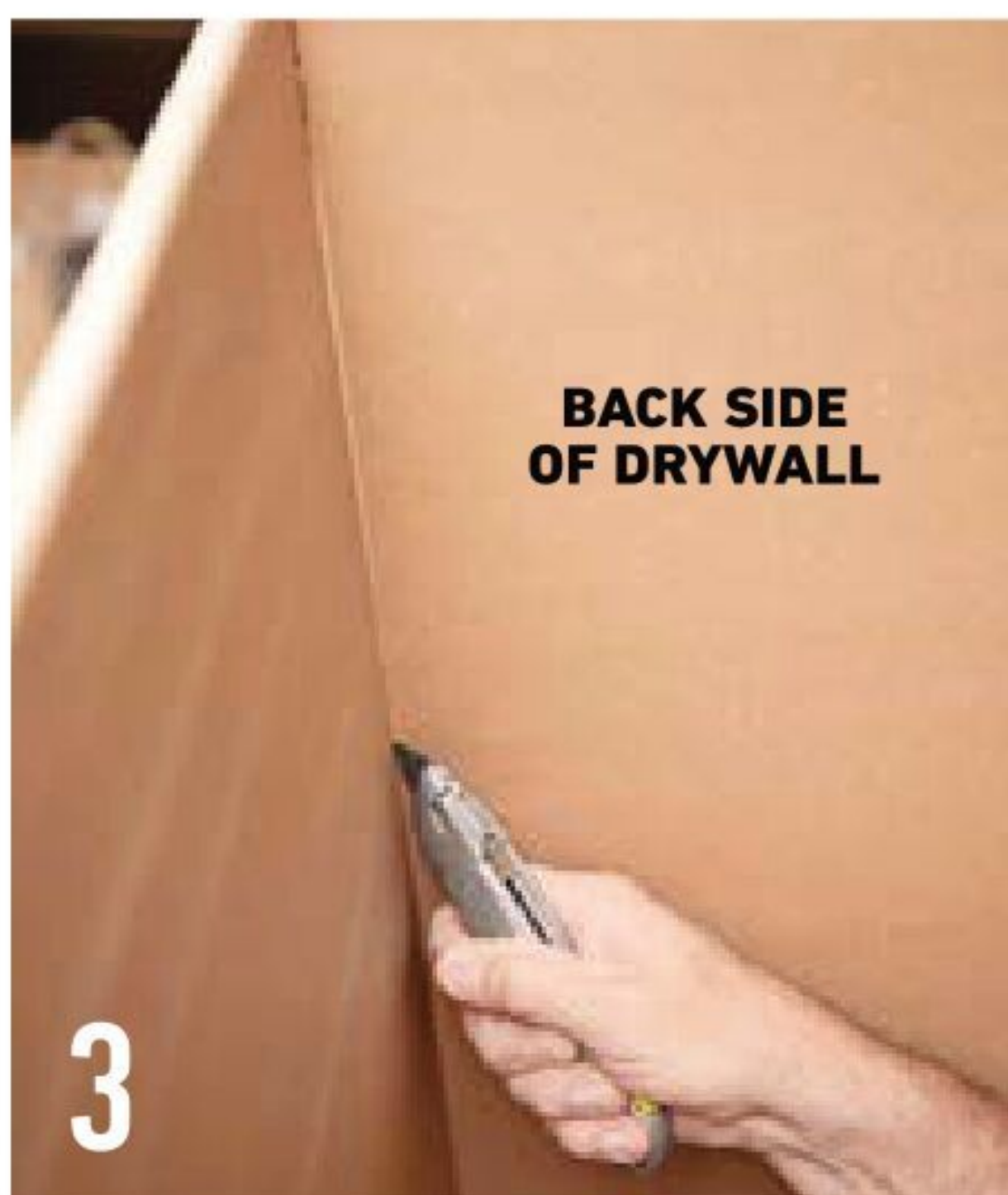
Measure the depth of the window return from the inside face of the window to the wall's outer surface. Subtract 1/4 in. Then, measure the height of the side returns from the top to the bottom of the rough opening. Next, measure the length of the top return from left to right and subtract the thickness of both pieces of drywall. Transfer all these measurements to the dry-wall sheet. Score the drywall along your line using a utility knife and straightedge. You need to cut through only the paper on the first pass.

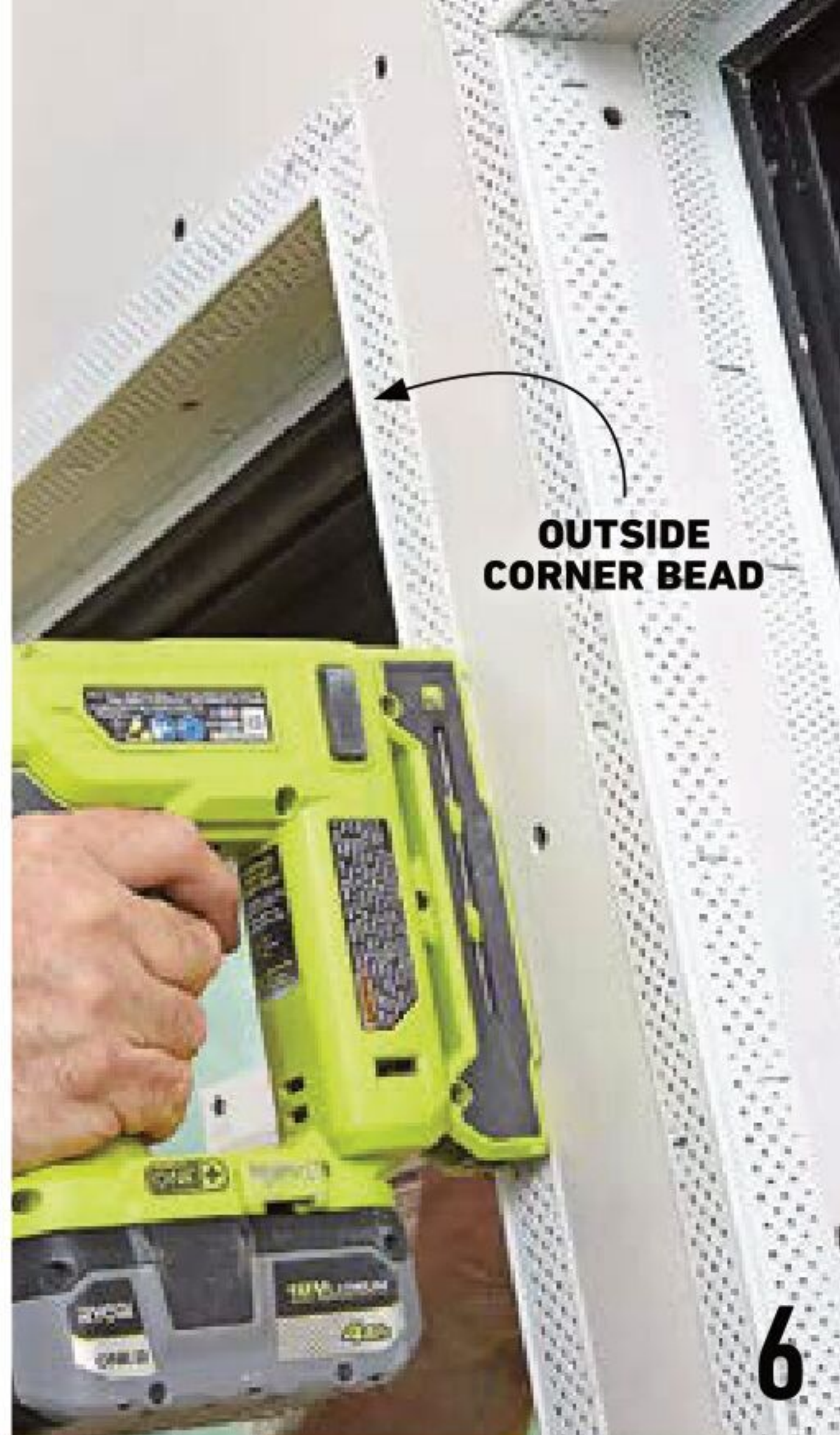
3 CUT THE TOP RETURN

Place a 2x4 beneath that scored line or let the sheet of drywall overhang your work table past the line. Push the board down away from you, and the drywall will snap on the line you cut. Now cut through the back side of the drywall paper along the crease.

4 ATTACH RETURNS

A drywall screw gun helps to set your screws at just the right depth. Drywall screw heads should be below the surface but shouldn't break through the paper. We used a regular drill/driver, but be careful to not drive screws in too deep. Start with the drywall return on the underside of the top window return, keeping it 1/4 in. from the window and flush with the wall. Then place the two sides.





5 CUT & ATTACH INSIDE CORNER BEAD

Cut two of the side tear-away corner beads to length—the same length as the drywall you cut. Dry-fit the pieces, and trim to length. Cut the top and bottom tear-away corner beads so they butt against the two side beads. Trim back the tear-away strips just enough so they don't interfere with the side strips. Attach the two side corner beads first, then the top and bottom ones. Secure all four corner beads to the drywall with spray adhesive and 3/8-in. staples as shown.



6 CUT & ATTACH OUTSIDE CORNER BEAD

Cutting the outside corner bead is similar to making a picture frame, with 45-degree angles on all four corners. Attach the outside corner beads with spray adhesive and staples. If you're removing trim, you'll need to fill the gap between the window return and the drywall before attaching the outside corner bead.

7 MUDDING

With a 9-in. knife, apply a skim coat of joint compound over the corner bead around the outer edge of the whole window, feathering the joint compound out and away from the window as you go. To mud the returns, start in a corner and work your way around all four returns, using a 6-in. knife to apply a skim coat of joint compound. After the compound dries completely, use a 6-in. knife to scrape off any excess around the returns. Apply a final coat of joint compound, let dry and sand.

8 PEEL TEAR-AWAY STRIP

Now it's time to peel the tear-away strip on the inside corner bead, leaving a clean edge and line between the drywall return and the window.

9 WINDOWSILL

A windowsill finishes the opening with a durable, easy-to-clean surface. A composite or PVC material works well for this and won't rot or warp.





BATHROOM

AN EASY SHOWER INSTALL

BY BRAD HOLDEN

When installing a tile shower, the most difficult part is building the sloped base for the floor. By using a prefabricated pan, you can skip that challenge. All you need to do is set the pan and tile the walls.

Built-in wall niches are a snap; they're prefabricated as well. And to let the beautiful tile shine and make the small space seem roomier, install a glass door and enclosure. Here's how:

WHAT IT TAKES

TIME	COST	SKILL LEVEL
2-4 days	\$1,500	Intermediate

TOOLS

Tile saw, trowels and other tiling hand tools, drill/driver, tile drill bits, mortar mixing drill attachment

MATERIALS

Tile, mortar, grout, shower pan (Delta B710912-4836-WH), glass wall and door kit (Delta B912912-4836-SS & 1112912-4836-SS), prefabricated niches, solid surface material





**PREFAB
SHOWER PAN**

1 SET THE SHOWER PAN

Set the pan in place and level it with plastic shims if needed. Lift the pan and staple the shims to the subfloor. Apply construction adhesive to the subfloor and press the pan down onto the shims. Recheck for level. Let the adhesive set for at least 24 hours before you stand in the pan. Some pans require mortar. Our pan from Delta only requires adhesive.



**NICHE
FRAMING**

**PREFAB
SHOWER
NICHE**

2 INSTALL THE NICHE

I installed two niches: one high and one low. The lower one—16 in. off the floor—is both an accessible shelf for small kids and a footrest for leg shaving. Notch studs to accommodate the prefab niches, and add nailers and blocking where necessary. Attach the niches with backer board screws. Apply the rest of the backer board, and then tape and mortar the seams and cover the screw heads. Allow the wall installation to dry overnight.

3 SET THE NICHE LEDGES

Set the niche ledges in place—angled toward the shower—using thin-set. The ledges run the niches' full width. Cut them wide enough to stand proud of the finished tile surface by about 1/2 in. Solid surface material is easy to cut with standard carbide blades.



**SOLID SURFACE
NICHE LEDGE**



TAPED AND MORTARED SEAMS

TAPE TO HOLD LEDGE SLOPE

4

4 TILE AND FINISH OFF THE NICHES

Mix a batch of mortar and install tile on the backs of the niches. Cut the top solid surface material full length and wide enough to stand proud of the finished tile surface by about 1/4 in. Cut the sides to fit between the top and bottom. That way, when you install the sides, they'll support the ends of the top. Use a prop stick to support the center. Angle the bottom ends of the side pieces to match the slope of the ledges.

5 TILE THE WALLS

Mix your mortar, and apply your tile to the walls. Allow the mortar to set at least 24 hours, then grout your tile.

6 ADD THE GLASS WALLS

The installation of glass wall and door kits varies. Our kit from Delta uses jambs on the wall. Use a masonry bit to predrill into the tile to install the jambs. Install each jamb with stainless steel screws, usually included with the kit. Slip the glass panel flange over the jamb.

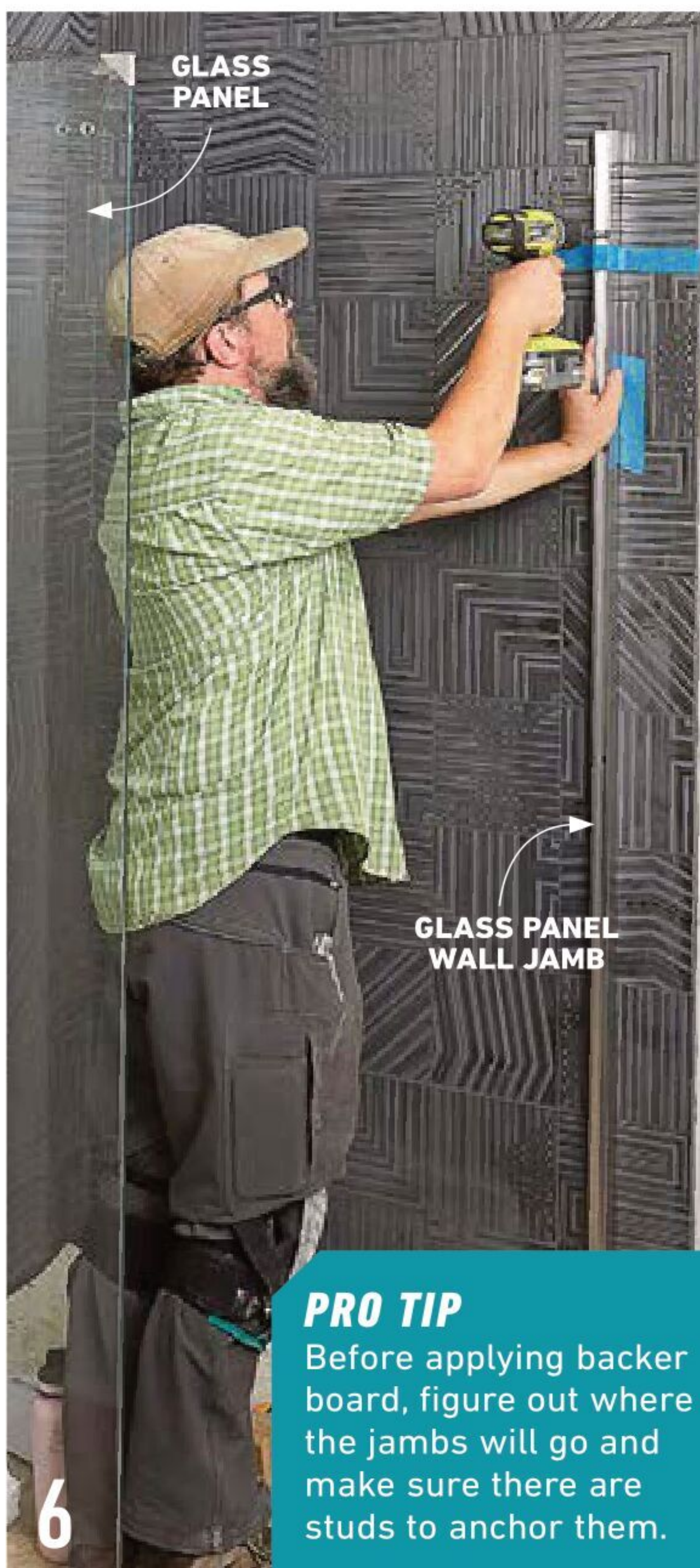
7 HANG THE DOOR

Install the roller track on the panels, making sure it's level, and then fasten the rollers to the door. Hang the door. The rollers will likely have adjustment cams to ensure the door hangs level on the track. Once the installation is plumb and level, screw the panel flanges to the wall jambs and caulk all the seams where the hardware attaches to the walls and pan.



PROP STICK

5



GLASS PANEL

GLASS PANEL WALL JAMB

6



ROLLER

DOOR TRACK

7

PRO TIP

Before applying backer board, figure out where the jambs will go and make sure there are studs to anchor them.

KITCHEN ISLAND

////
**BUILD YOUR OWN WITH
READY-TO-ASSEMBLE
CABINETS**



DESIGN & PLANNING

Consider both form and function when you design your kitchen island. Having a kitchen sink in the island is handy for prepping food, especially for families who cook together. A cooktop or range in a kitchen island, however, isn't recommended because of the possibility of splattering grease on bystanders.

Free online kitchen planners can help you choose styles and colors of doors, drawers and countertops. You'll get a printable itemized list with the costs of all the materials you need. Before you start, check the accessibility of the plumbing and electrical needed for your island. If you're not doing the utility work yourself, get at least two estimates from plumbers and electricians. Check with your city inspector regarding any permits needed.

BY JOE CRUZ

The kitchen island is the central gathering point in any home that has one. It's where meals are prepped, homework is sweated over and birthday candles are blown out. Building a kitchen island using ready-to-assemble cabinets is an inexpensive DIY project that will add more counter space to any kitchen.

1 CABINET ASSEMBLY

RTA cabinet parts are shipped in a flat box; we got ours from the RTA Store (thertastore.com). You assemble them with dowels, glue and screws. Follow the manufacturer's steps to build each box.

2 CABINET PLACEMENT & LEVELING

Place the center cabinet first. (If this cabinet has a sink, drill holes in the bottom of the cabinet for the plumbing and electrical.) Level the cabinet left to right and front to back by turning the adjustable legs. Set and level your next cabinet. Clamp this cabinet to the center one while you connect them with 1-1/4-in. screws. Continue setting, leveling and securing cabinets to one another. Once all are connected, use a 4- or 6-ft. level to verify the whole run is level.

3 SECURING CABINETS TO THE FLOOR

Measure the distance between the floor and the bottom of the cabinets and cut 2x4s to that length to create mounting blocks under the cabinets. We secured our two end cabinets this way. Secure the blocks to the floor with L-brackets and screws. Drive 2-in. screws through the bottoms of the cabinets and into the mounting blocks.

4 CUT PANELS & WRAP THE ISLAND

To create a custom look, cover the ends and backs of the assembled cabinets with overlay panels. These panels can be the full height from cabinet top to floor, or you can stop the panels at the bottom of the cabinet to allow toe-kick space. For a more enclosed look with an overhanging top, extend the end panels past the back of the island; this will also support the overhanging countertop. Measure the distance from the floor to the top of the cabinet. Cut both end panels to that height and the desired width using a track saw or table saw. If you're cutting the end panels from a large 4 x 8-ft. panel, you may need to edge-band the exposed edges.



WHAT IT TAKES

TIME	COST	SKILL LEVEL
1-2 days	\$1,000	Intermediate

TOOLS

Drill/driver, drill bits, circular saw, straightedge, 4-ft. level, clamps

MATERIALS

Ready-to-assemble (RTA) cabinets, panel material, 2x4s, screws (countertop not included)

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5 ATTACH BACK PANELS

If your cabinet island is less than 8 ft. wide, you can use a one-piece back cover panel. If your island—like ours—is longer than 8 ft., you'll need to splice two panels together to make one long back panel.

The two back panels will meet in the middle, with a transition board between them. To make your transition board, rip a 7/8-in. piece of panel material the same height as the back panel. Be sure the piece is edge-banded along one long edge.

To find the overall length of each panel, measure the distance between the two end panels, divide that number in half and subtract 3/8 in. from each half panel. Cut the back panels to

height and length using a circular saw or table saw.

Attach the transition board (Photo 5A) to the end of one of the two back panels using 1-1/4-in. finish screws. (Predrill the screw holes.) Clamp the back panel tight to the back of the cabinets and tight to the end panel.

Secure the back panel (Photo 5B) by driving 1-1/4-in. screws from the inside of each corner of the cabinet into the panel. Attach the second panel the same way, and be sure it's tight to the transition board and the other end panel.

PRO TIP

If the second back panel is too tight, instead of cutting it, loosen the screws on the end panel.

RYOBI

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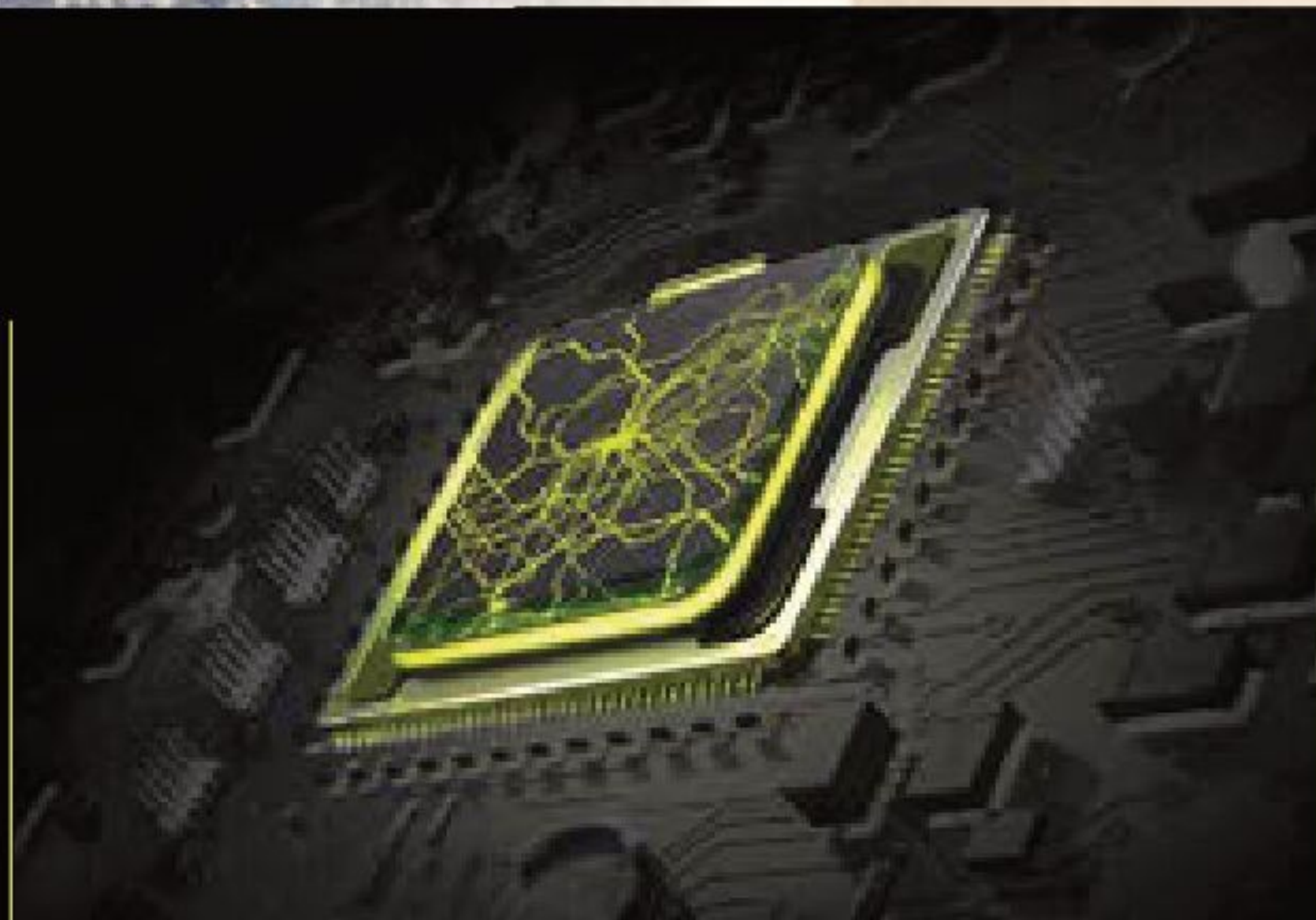
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SINK & COUNTERTOPS

DIY LAMINATE COUNTER WITH AN UNDERMOUNT SINK



BY BILL BERGMANN

Plastic laminate is durable, affordable and easy to maintain. And the bonus? It offers patterns, colors and DIY edge profiles you can't get with other countertop materials. Plus, you can install an undermount sink and do it all yourself.

We built our kitchen island countertop and installed the 33-in. Karran E-540 sink with just basic tools and know-how. Follow the details here and you won't have to worry about water damaging your laminate countertop material.



1

1 PLACE AND CUT OUT SINK

After you size the substrate and apply the laminate to the edges, mark the location of the sink. Place the sink 2-1/2 in. back from the front edge of the countertop and center it on the cabinet. When you're tracing the sink shape onto the substrate, keep your pencil vertical so the cutting line is offset about 1/8 in. Drill a 1/2-in. starter hole and cut out the sink opening with a jigsaw.



1-1/2" x 3/4"
SUPPORT STRIPS

2 LAYING OUT LAMINATE

Rough-cut the sheet of laminate to fit the substrate, leaving an extra 1 in. all around. Place the laminate on the substrate and mark the sink cutout on the bottom.

3 SECURE THE SINK

For a rectangular sink, glue and staple four strips of 3/4-in. particleboard to hold the sink in position by its rim. Use several short blocks to hold a round sink.



4 MAKE SURE IT'S FLUSH

The sink must be perfectly flush with the top of the substrate. Use a carpenter's square to check. You can make small adjustments from below using screws through the support strips. Take your time with this step; the slightest variation can show when you install the laminate.



5 FILL THE GAP

Using a 6-in. putty knife, fill the gap between the sink rim and the substrate with Bondo auto body filler. To extend the setting time and workability, go easy on the hardener. If necessary, mix a second batch to fill any voids, then feather the edges out as far as possible. Once the filler is dry, sand it flush with a belt sander and 120-grit paper. Go light, slow and steady to avoid digging into the substrate.



6 APPLY CONTACT ADHESIVE

Using a short-nap roller, apply contact adhesive to both the substrate and the laminate. Don't apply adhesive to the sink edges or the sink outline on the laminate.

PRO TIP

Apply the painter's tape so it overhangs the top of the sink by 1/4 in. Then cut off the excess with a sharp blade. Apply two rows of 2-in. tape to protect the top 4 in. of the sink bowl walls.



7 APPLY SINK SEAM SEALER

Once the contact adhesive is ready to bond, wipe the sink top with denatured alcohol. Apply the seam adhesive to the perimeter of the sink. Mask the top of the sink bowl with painter's tape to protect it. This sealer sets in less than 30 minutes, so work quickly through the next step.

8 PLACING THE LAMINATE

Contact adhesive sticks immediately; there are no second chances. For precise placement, set 1/2-in. x 1/2-in. standoff sticks on the substrate, and lay the glued laminate on the sticks, making sure it has an equal overhang all around. Starting at the center, remove the sticks one at a time, pressing the laminate down as you go. When it's positioned properly, roll it with a J-roller for a sure bond.



PRO TIP

Lay some leftover substrate over the sink area and weight it with a heavy toolbox or full 5-gallon bucket. Let it sit for 30 minutes to ensure a solid seal between the laminate and the sink.



9 ROUT THE SINK OPENING

Cut a pilot hole to rout over to the sink bowl edge. Trim the laminate using a 10° bevel bit with an oversize bearing (available from Karran). Make a single, slow pass.



10 FINISH EDGES

File the laminate flush with the sink wall using a laminate file. Use a round file for corners. For the final finish sanding, use 80- or 60-micron paper, focusing on the upper 1/4 in. of the bowl wall and the laminate.



PRO TIP

Tape the bottom end of your file so you don't inadvertently scratch the sink bowl.



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LIGHTING

ASSESS YOUR NEEDS ROOM BY ROOM

Our lighting priorities for the Getaway were as clear as LEDs: We wanted to be able to control interior lighting zones to illuminate everything from a big get-together to a quiet evening for two. We also wanted ample light for the deck and entry doors.

FLOOR PLAN KEY

- CAN LIGHTS
- LAMPS
- KITCHEN PENDANT LIGHTS
- BEDROOM PENDANT LIGHTS

Ample natural light gave us more creative freedom for the interior lighting scheme

Greg suggested placing the 6-in. ceiling lights no more than 6 ft. apart. We placed ours just under 5 ft. apart

Place pendants 30 in. above the island

Well-placed three-way switches mean we can control lights from bed

Dimmers allow you to establish multiple zones with convenient control

Greg Martin from Kichler Lighting helped us meet our needs and budget for this project. For the interior, we decided on a combination of flush-mount ceiling lights, pendant lights and lamps with dimmer controls for every zone, plus well-placed three-way switches. For the exterior, Greg suggested sconces for ambient deck lighting, individual floodlights for the entryway and low-voltage path lights to illuminate the steps to the deck.

LIGHTING IN LAYERS

The 6-in. round LED downlights in our ceiling disperse light in broad patterns to fill a space. Pendants create a focal point for task lighting. Lamps add individual style and shine light closer to you.

FUNCTIONALITY + AMBIENCE

In the main bedroom, we bent the rules and chose pendant lights for bedside lamps. These rustic pendant lights from Kichler enhanced the Northwoods vibe.

With this detailed plan on paper, our electrician knew exactly how to wire the house for all lights, plugs and switches.

Use lamps to fill in the space and add individual style

KICHLER ELIAS CONVERTIBLE PENDANT; \$300 (KITCHEN)

KICHLER TUSCANY MINI PENDANT; \$115 (BATH)

KICHLER FOLE 18-IN. PENDANT; \$630 (BEDROOM)

BY JAY CORK

MECHANICALS

HVAC & PLUMBING PLANS



BY JAY CORK

When sized correctly for your home, your furnace and water heater will provide long lives of efficient service.

We estimated the Btu requirements for our furnace by multiplying our square footage by the heating factor for Climate Zone 6 (50 to 60 Btu per square foot). Working with our technician from American Standard Heating & Air Conditioning, we sized our furnace perfectly for our needs at the Getaway.

SAVE PROPANE WITH DUAL FUEL

We chose a dual-fuel air conditioner that supplements our furnace until the outside air temperature drops to around 20 degrees. Below that temperature, the variable-speed furnace will take over to efficiently heat the home. This reduces our annual propane usage.

NO BIG TANK TO HEAT!

We chose a high-efficiency, on-demand tankless water heater, eliminating the big water tank so we don't need to heat 50 gallons of water while we are away from the Getaway. It was also easier and less expensive to install the necessary venting.

BREATHE EASY

Our system makes the most of the fresh air around us. The air exchanger enhances the efficiency of the system by removing stale air and replacing it with outdoor air. The American Standard whole-home air cleaner removes allergens and dust to maximize the quality of the air inside.



BALANCE SIZE WITH DEMAND

Sizing a tankless water heater involved a tricky balance. We looked at maximum demand (in gallons per minute), the incoming water temperature and the desired hot water temperature. Joel Myers of My Plumbers, LLC, helped us determine that 6 gpm is our maximum possible hot water demand. Groundwater in this zone is about 45 degrees, and we want our hot water to be 115 degrees. To accommodate a 70-degree rise at 6 gpm, we chose the gas-powered Navien NPE-240S2.

WELL WATER CHALLENGES

Yes, you can use a tankless water heater with well water, but it will require some maintenance. Sediment and lime scale buildup can be a problem. We will drain and flush our system once a year at least. We can add a sediment filter later on if we determine that annual draining and flushing aren't doing the job.

ROLL-UP DOOR

/////////
OPEN-AIR LIVING

BY JOE CRUZ

At the Getaway, we wanted a full-view experience of the scenery. We love to see the colors of the forest, hear the song of a loon on the lake and smell the fresh air in the morning, and we wanted to be closer to it all. A simple screen door was not enough.

We decided that a roll-up glass wall opening to our deck would enhance each of the senses and nearly double the square footage of our main living area. Many cafes, brewpubs and homeowners are opening up to the industrial chic style of a glass panel roll-up wall instead of a smaller sliding patio door.

THE DOOR.....

To achieve a full-view experience of our natural surroundings, we installed a 9-ft. x 12-ft. Wayne Dalton Contemporary Aluminum Model 8850 garage door with 12 insulated clear glass panels. Staying on point with the contemporary style of the Getaway cabin, the doorframe and tracks were treated with a black powder-coat finish.

A SCREEN

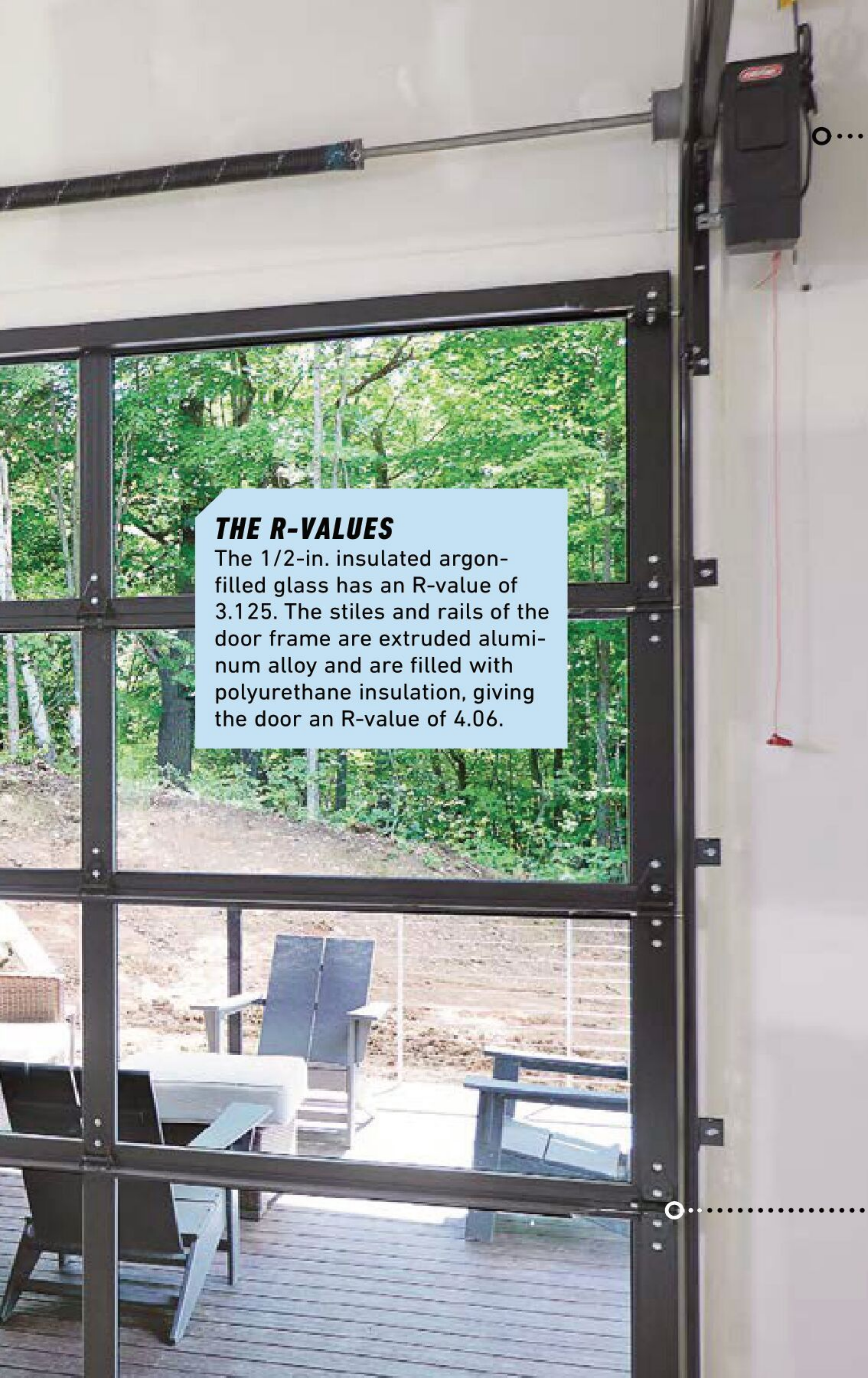
Keeping out the bugs is a definite concern in the Northwoods of Wisconsin. If necessary, we can install a full fiberglass net screen, available for about \$60.

THE APRON.....

Like a garage floor, the apron is slanted, allowing water to flow out and away from the house.

THE BOTTOM SEAL

The bottom rubber seal is designed to keep out pests and debris, and to save on energy costs.



THE R-VALUES

The 1/2-in. insulated argon-filled glass has an R-value of 3.125. The stiles and rails of the door frame are extruded aluminum alloy and are filled with polyurethane insulation, giving the door an R-value of 4.06.

THE ROLLERS

We chose nylon rollers with bearings because they're quiet, rust resistant and long-lasting.

THE TRACK

Your roll-up door track can be attractive if it gets a powder-coat finish, as it should when it's in a living area.



THE OPENER

To complement the open floor plan of our Getaway, we installed a Genie model 6170 wall-mount garage door opener. Because this opener doesn't require a traditional rail and power head hanging from the ceiling, it's ideal for this application. It attaches directly to the garage door's spring tube. This opener has the Aladdin Connect smart garage feature, which enables you to monitor your garage door from a smart device. It also features a wireless wall console and a Bluetooth LED light and door lock.



GO WITH A PRO

No doubt about it; installing a garage door yourself could save you hundreds of dollars. But even for an experienced DIYer, this project would take a good 8 to 12 hours to complete. Let's not forget the danger involved in installing the torsion springs for a roll-up door. Some jobs are best left to the pros who do them every day.



LANDSCAPING

TREE RECYCLING & AN OUTDOOR BENCH

BY BRAD HOLDEN

In a remote location, getting supplies to your site is a challenge, so we used materials already on-site to make our path. We cut “steppingstones” from some big oak trees that we felled during site prep, and then we used a wood chipper to make mulch. We didn’t need to haul in heavy landscape materials, and we recycled organic material back to the forest floor, keeping the natural cycle intact.

WHAT IT TAKES

TIME	COST	SKILL LEVEL
2 days	\$0	Intermediate

TOOLS

Wood chipper, chain saw, shovel, rake, broom

MATERIALS

Trees

1 SET THE STEPPINGSTONES

Bust out your chain saw—with a new, sharp chain—and slice a pile of steppingstones. We cut these about 2 in. thick. Any thinner than that and they crack easily. Set them in your path, spaced at an easy walking pace. It'll take some shuffling to get this just right. You might need to dig out a bit of soil underneath some of the steppingstones to get them to sit level and not rock as you walk on them.

2 LET THE CHIPS FLY

Our DR Power PRO 400 wood chipper is an easily portable 4-in.-capacity unit. We wheeled the chipper down the path, filling in as we moved along so the chips would fall where we needed them. We used both deadfall from the woods and split logs from felled trees.

3 RAKE OUT THE PATH

Once you're done chipping, rake and sweep the wood chips to expose the steppingstones.



A SIMPLE BENCH

You need a place to sit at the end of the path, right? Here's a simple DIY bench. Make concrete forms for the legs from 2x4s and plywood. Fill the forms, allowing the legs to cure. Remove the forms, and attach the seat—our forms allow space for two 2x8s—using lag screws and concrete anchors. For our bench seat, we split and smoothed a slab of oak from the property.

RESOURCE GUIDE

THE PRODUCTS THAT HELPED US BUILD

Whether you're building new or remodeling, your shopping list will be long. From the deck lumber to the grill you fire up for the housewarming party, you'll need a lot of materials, equipment and tools. Take a look at the suppliers that helped us build our Getaway.

RENTALHQ RENTAL EQUIPMENT

RentalHQ.com, managed by the American Rental Association (ARA), makes finding local rental tools, equipment and rental partners easier than ever for do-it-yourself (DIY) homeowners. Search results deliver a list of local ARA-member rental partners carrying the tools and equipment needed to complete your next DIY project.

RentalHQ.com

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BEST PRO TIPS

fh EXPERT ADVICE FROM THE JOB SITE

CUT METAL LIKE THE PROS

THE RIGHT TOOLS MAKE ALL THE DIFFERENCE

BY JAY CORK

To cut metal for siding, roofing and flashing, you need the right tools for the best results. As we were getting ready to roof and side the Getaway, I talked my fellow editors into trying different methods of cutting metal—shears, nibblers and saws—to see what they liked best.

MEET THE EXPERTS



BILL BERGMANN
MANAGED
THE STEEL
SIDING
PROJECT.



MIKE BERNER
WAS IN
CHARGE OF
THE METAL
ROOFING.

SAFETY FIRST

Whenever you cut metal, expect steel shavings to go everywhere. Eye protection is a must. Bill's also wearing latex-coated gloves. While no glove will prevent every cut, the coating provides a cut-resistant layer and extra gripping power.

NIBBLERS FOR PROFILES

Mike loves how clean a nibbler cuts; he says it's the best tool to cut profiles without deforming them. This is also a great tool for cutting round holes for vents. One downside: It punches out tiny pieces of steel, which go everywhere. There's a risk of injury; always wear the appropriate PPE.



SINGLE-CUT SHEARS FOR SPEED

Single-cut shears cut flat stock fast. However, they won't produce smooth edges on both sides of the cut; the cutoff side will always be deformed. These shears are a good choice for trimming ends, but they won't work as well to cut through the middle of a wider sheet.



DOUBLE-CUT SHEARS FOR FLAT STOCK

Mike says double-cut shears work well for straight cuts on flat stock; they cut fast and leave both edges nice and flat, without any curling. However, they tended to deform the shape too much when cutting across the profile. The tool was also the cleanest-cutting he used, producing an easily managed curl.



CIRCULAR SAW FOR SIDING

Circular saws work well for crosscutting metal siding. But don't expect good results with a woodcutting blade—always use blades made for metal. Bill also warns that a regular circular saw will throw bits of steel everywhere. He found that a purpose-built metal-cutting circular saw eliminates most of that debris with a chip catcher. No matter what type of saw you use, always wear a full face shield, not just safety glasses.



USE THE CORRECT SNIPS

Bill taught me something: Aviation snips have colored handles for a reason. Red handles indicate that the snips cut the waste off to the left side; green ones cut it off to the right. Yellow handle snips are perfect for making small notches or cutting in either direction.

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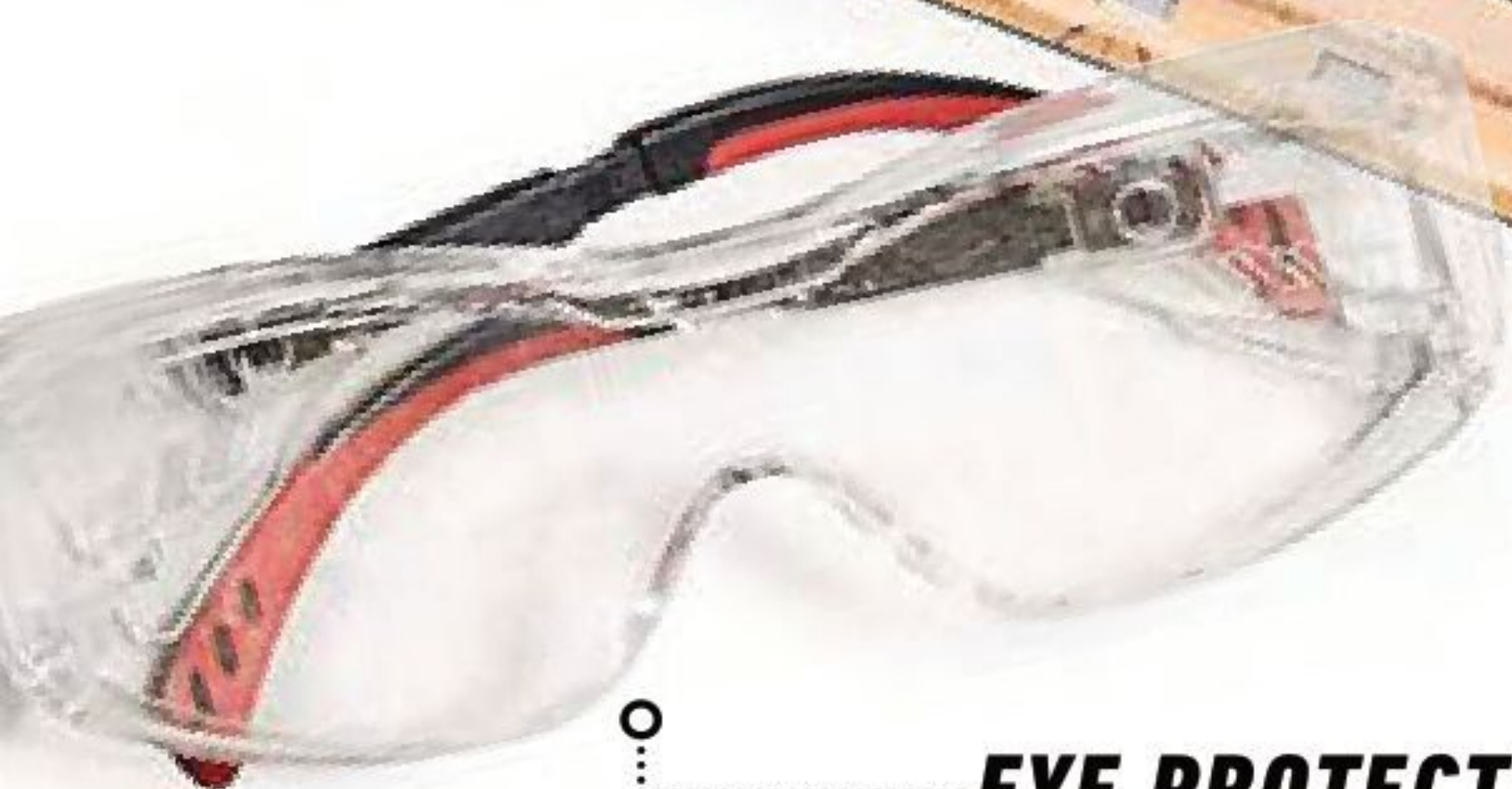
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THE GEAR WE USED

We tried a lot of tools at the Getaway—here are some of our favorites for metal work.



EYE PROTECTION

A small shaving in the eye can send you to the hospital. Always wear eye protection!



GLOVES

No matter how you cut steel, there are going to be sharp edges. Protect your fingers with cut-resistant gloves.



FELT-TIP MARKER

Make easily visible marks with a felt-tip marker.



RIDGID JOBMAX SHEAR

The Ridgid JobMax Shear Head (\$60; attachment only) has a carbide cutter that's easy to replace.



MAKITA CIRCULAR SAW

This model is designed to cut metal—and collect the shavings (\$230; tool only).



..... **MAKITA NIBBLER**
Nibblers do the best job of cutting the ridges and profiles of metal roofing without deforming them (\$360; tool only).



RED HANDLE SNIPS

Use red snips when the waste cut will be on the left side of the line.

..... **GREEN HANDLE SNIPS**

Use green snips when the waste cut will be on the right side of the line.

..... **YELLOW HANDLE SNIPS**

These snips are best for making small cuts and notches.



..... **DOUBLE-CUT SHEARS**

The double-cut shears will leave both sides of the cut equally smooth with no curling (\$240; tool only).

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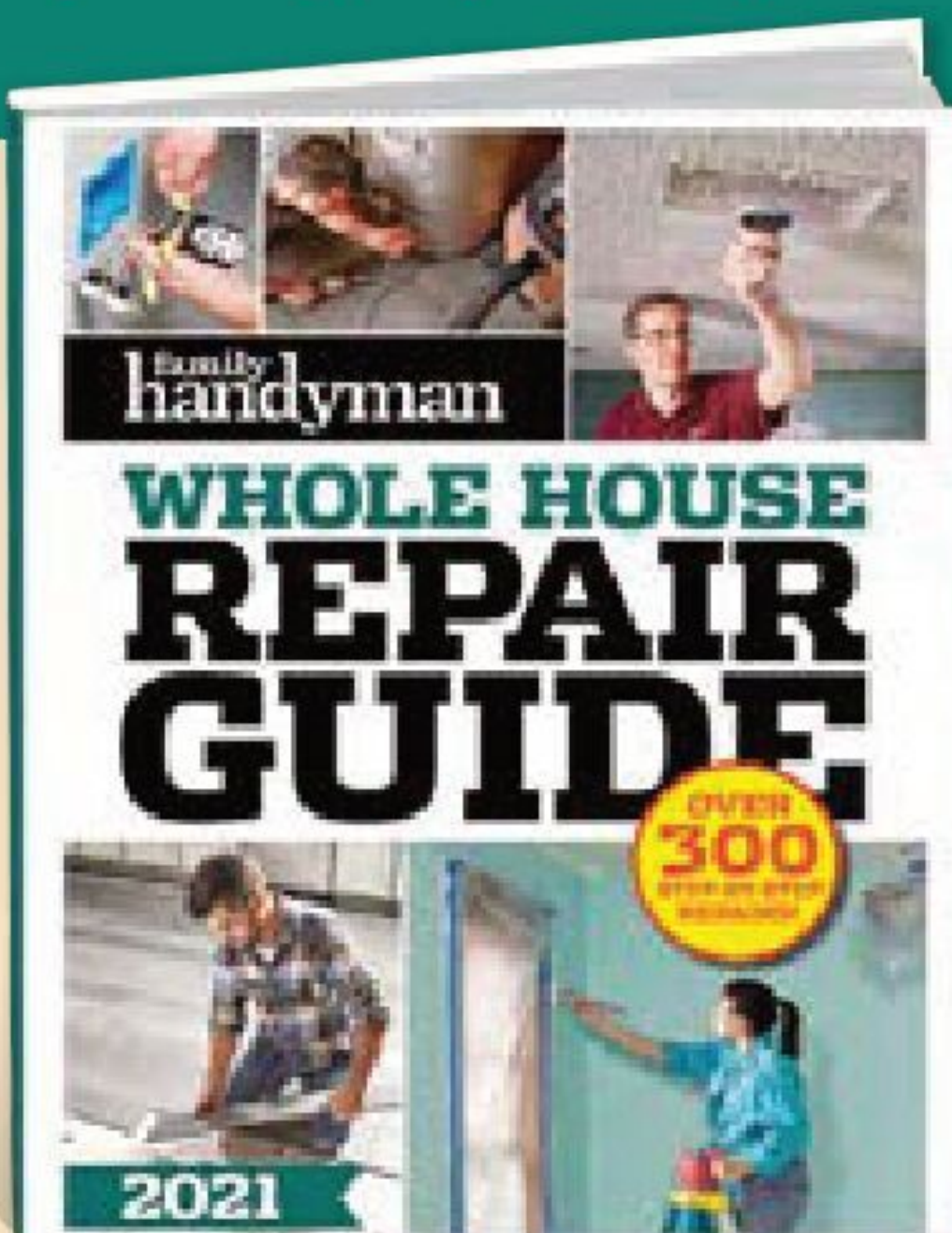
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HOME CARE



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THE DIRT ON SEPTIC SYSTEMS

WHAT YOU
NEED TO KNOW
BEFORE & AFTER
INSTALLATION

BY BRAD HOLDEN

DO

- Keep grass or other vegetation growing on the drain field to prevent erosion and promote evaporation.
- Keep a sketch of your system handy, so you know where to access all of its components.
- Watch for settling soil that might direct water onto the drain field.
- Keep on top of system maintenance.
- Fix leaky faucets and toilets.
- Keep records of repairs, maintenance and your pumping schedule.
- Make sure the tank cover is accessible.
- A septic system can last 25 years or more. Your property will have a second area earmarked for a subsequent septic system. Protect this reserve area from soil compaction.

DON'T

- Plant trees or shrubs near the system. Roots can damage pipes.
- Drive or park on the drain field.
- Build over the drain field or cover it with a hard surface.
- Let faucets run unnecessarily.
- Install automatic sprinklers that water over the system.
- Excessively water the grass on the drain field.
- Put anything but waste and wastewater into the tank.
- Use caustic drain cleaners.

MEET THE EXPERT



SARA HEGER
IS AN INSTRUCTOR AND
RESEARCHER IN THE ONSITE
SEWAGE TREATMENT
PROGRAM AT THE
UNIVERSITY OF MINNESOTA.

WHAT TYPE OF SYSTEM DO YOU NEED?

The soil test determines whether you can install a septic system or just a holding tank. What's the difference?

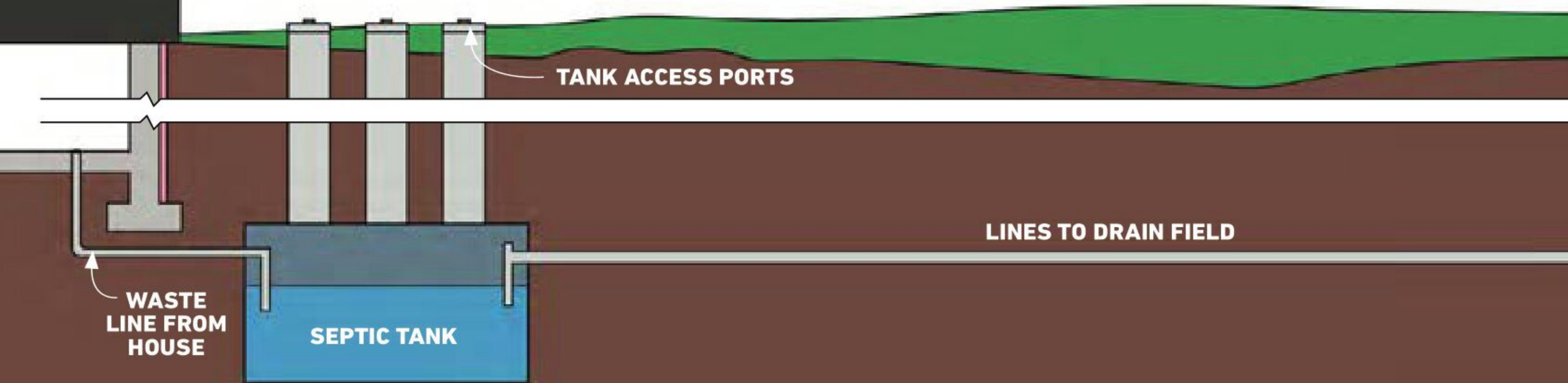
HOLDING TANK: A holding tank stores waste until it needs to be pumped out. It has an alarm to let you know when it's time. Don't ignore the alarm.

SEPTIC SYSTEM: A typical in-ground gravity septic system consists of a septic tank with

lines running to a drain field. The septic tank may have a filter, which removes particles down to 1/8 in., and directs the effluent to the drain field, where the waste is treated and absorbed into the soil.

ADVANCED TREATMENT SYSTEM: A small percentage of homes may need more than a septic tank prior to discharge of the wastewater to the soil.

Common options for advanced pretreatment are aerobic treatment units and media filters. Mound systems can also work if your property has a high water table, very rocky soil or soil that is either too permeable or not permeable enough. This type of system treats and purifies wastewater in an above-ground mound before it enters the soil.



WHAT TYPE OF TANK DO YOU NEED?

Your septic system needs an approved tank. Concrete is the most common, followed by polyethylene tanks. Twin-wall polyethylene tanks are strong but costly. Single-wall poly tanks are susceptible to collapse when they're pumped out, so they should only be used in a case where lot-line restrictions are so tight that the new tank can only reach its destination by collapsing it.

# OF BEDROOMS	SQUARE FOOTAGE OF HOME	TANK CAPACITY
1 OR 2	LESS THAN 1,500	750
3	LESS THAN 2,500	1,000
4	LESS THAN 3,500	1,250
5	LESS THAN 4,500	1,250
6	LESS THAN 5,500	1,315

WHAT SIZE TANK DO YOU NEED?

The graph above is a general guideline. Regulations vary by state.

HOUSEHOLD SIZE (# OF PEOPLE)

	1	2	3	4	5	6	7	8	9	10
500	5.8	2.6	1.5	1.0	0.07	0.04	0.03	0.01		
750	9.1	4.2	2.6	1.8	1.3	1.0	0.07	0.06	0.4	0.3
1,000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
1,250		7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
1,500		9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
1,750			6.5	5.0	3.9	3.1	2.6	2.0	1.9	1.6

WHAT ABOUT MAINTENANCE?

Your drain field and system need monitoring and inspecting. Filters may need cleaning as often as every year, and the tank needs to be pumped out periodically. The chart above shows how often (in years) each tank size needs to be pumped depending on the number of occupants. Again, this is just an example, and regulations vary by state. A typical modern septic tank has three manhole covers: one to access the pump, one to access the filter and one to pump out the tank.

HOW TO HIRE A SEPTIC CONTRACTOR

- Get to know your county zoning or septic permitting department. They'll have a list of licensed contractors.
- Get a referral from someone you know and get references.
- If possible, hire an installer who does both soil testing and septic installation. That shortens the timeline for septic installation, as the contractor already knows the specifics, and doesn't need to do any homework or talk with the soil tester. A case could also be made to get a design and then have several installers bid on the design. In some areas, the permitting authority or an engineer is required to do the design.
- While percolation tests, or "perc tests," are still in use, the trend is moving toward a detailed soil description. A soil description gives a more accurate picture of the absorption rate of your soil, helping the installer design a system optimized for your location.

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Sincerely, A. Macon, Williamsburg, VA

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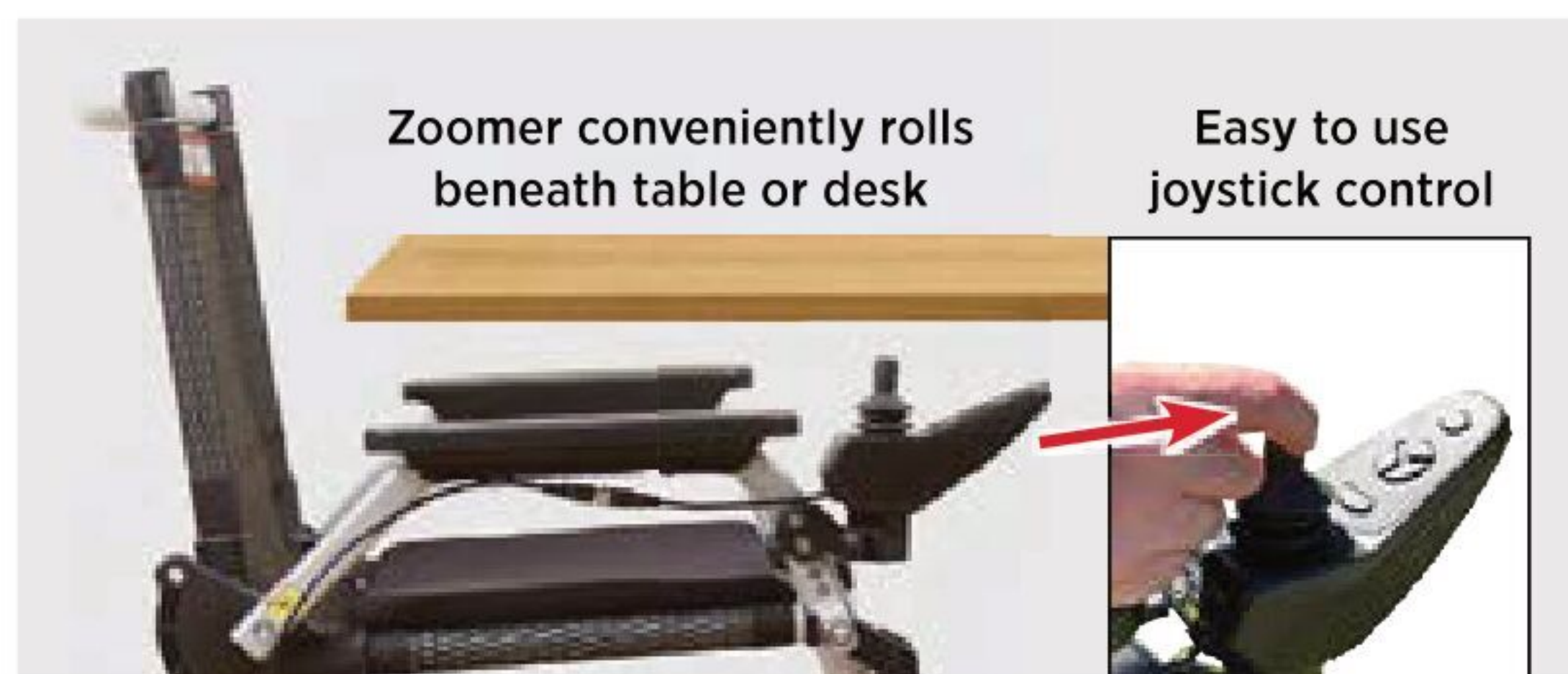


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HOME CARE



IF SOMETHING DOES GO WRONG

If something goes wrong with a system that includes a pump, an alarm will alert you to the problem. If the alarm sounds, don't just call any septic company for repair; call the installer or whoever has been regularly servicing the system. They know your system and may be able to diagnose the problem before they arrive, saving you time and money.

Your installer should provide you and the permitting authority a packet of information that details system maintenance, tank specifics, soil treatment specifics and an as-built map of the system. This detail will be vital in case the system installer/designer isn't available for repair or maintenance.

IN COLD CLIMATES, PROTECT YOUR SEPTIC SYSTEM FROM FREEZING

Like water pipes, your septic system can freeze. Here are some tips to prevent your septic system from freezing.

- Use it. Without hot water going through the system, it's susceptible to freezing, which can damage the tank, the piping, and the filter and its housing, and can cause waste to back up into the house—all costly and undesirable.
- When you have good snow cover over your system, don't shovel it off. The undisturbed snow is good insulation.
- If you don't have adequate snow cover before the temperature drops below freezing, insulate the system using straw bales or purpose-made insulating blankets.
- Stop mowing the grass over the system a few weeks before the end of the growing season. Extra vegetation provides another layer of insulation.
- Don't leave a trickle of water running—as people do to prevent pipes from freezing—as that can be just enough cold water added to your septic system to cause an ice clog.
- If you won't be using the home in the winter, keeping it heated at 56 to 58 degrees F is one option for freeze prevention.

- If you're rarely there during the winter and will be draining your water/winterizing your home, be sure to have the tank pumped out before freezing temperatures set in.
- Bury your septic tank as deep as possible. Septic tanks are buried to help prevent freezing. The maximum depth for a concrete tank is 8 ft. to the top of the tank. Plastic tanks can't be buried as deep as concrete (only a maximum of 24 in.). Burying a tank deep does make maintenance more difficult, as it's hard to see into the corners where sludge can build up.
- After installation, septic tanks "settle" for up to a year. The area over the tank and drain field should be "crowned" to minimize the effect of settling. This is important because water pooling around the tank freezes. If you do have to add more fill as a result of settling, don't use pea gravel around manhole covers. That doesn't redirect the flow away from your system's parts. It allows water to flow toward the tank. The ground can freeze and lift the manhole covers. Then, groundwater flows into the tank, shortening the life of the system.

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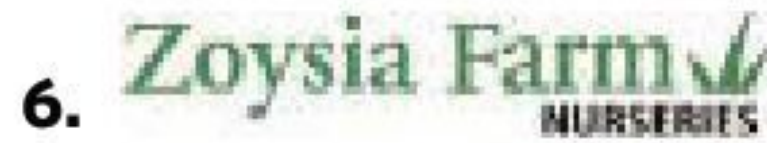


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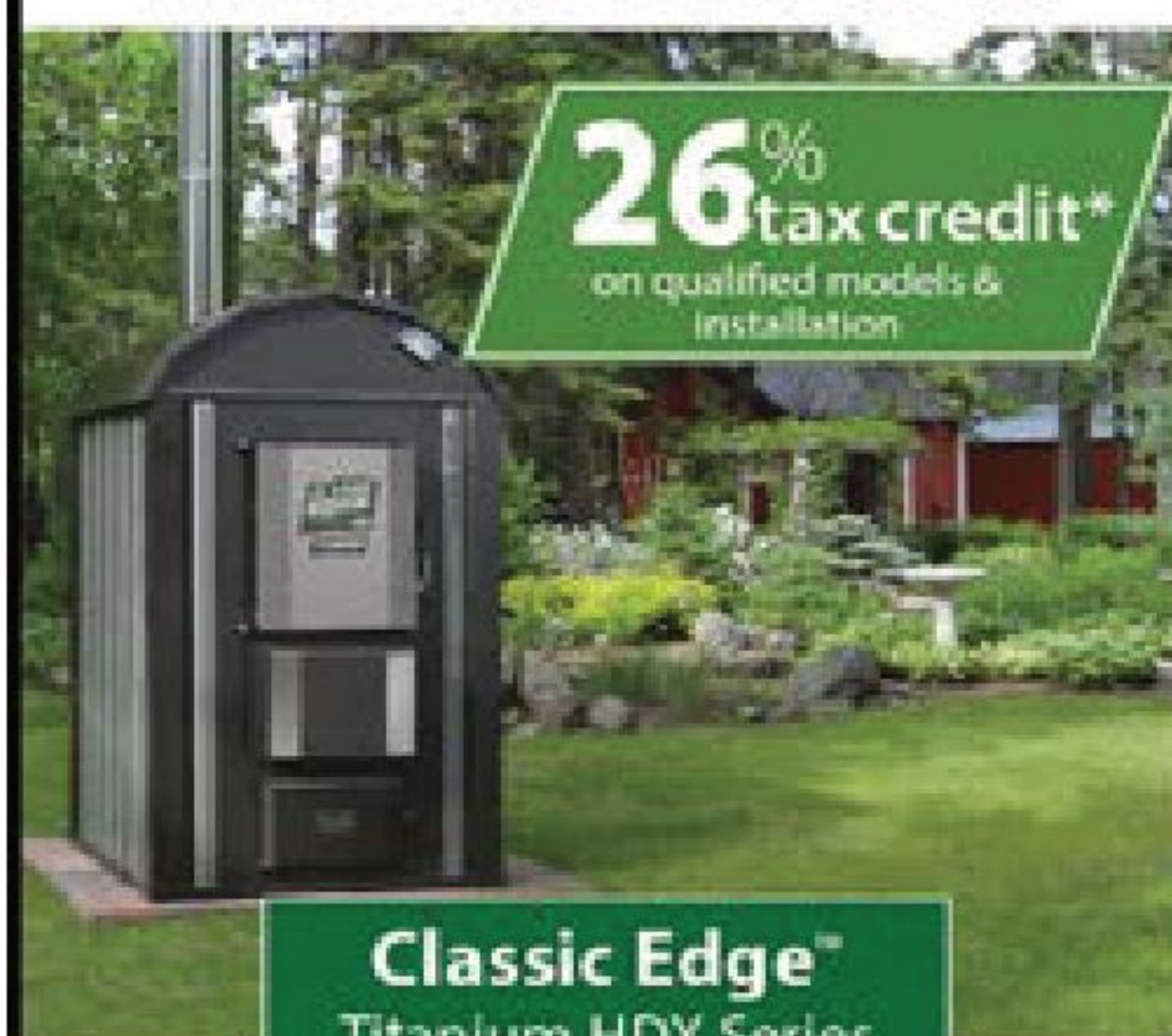
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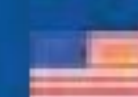


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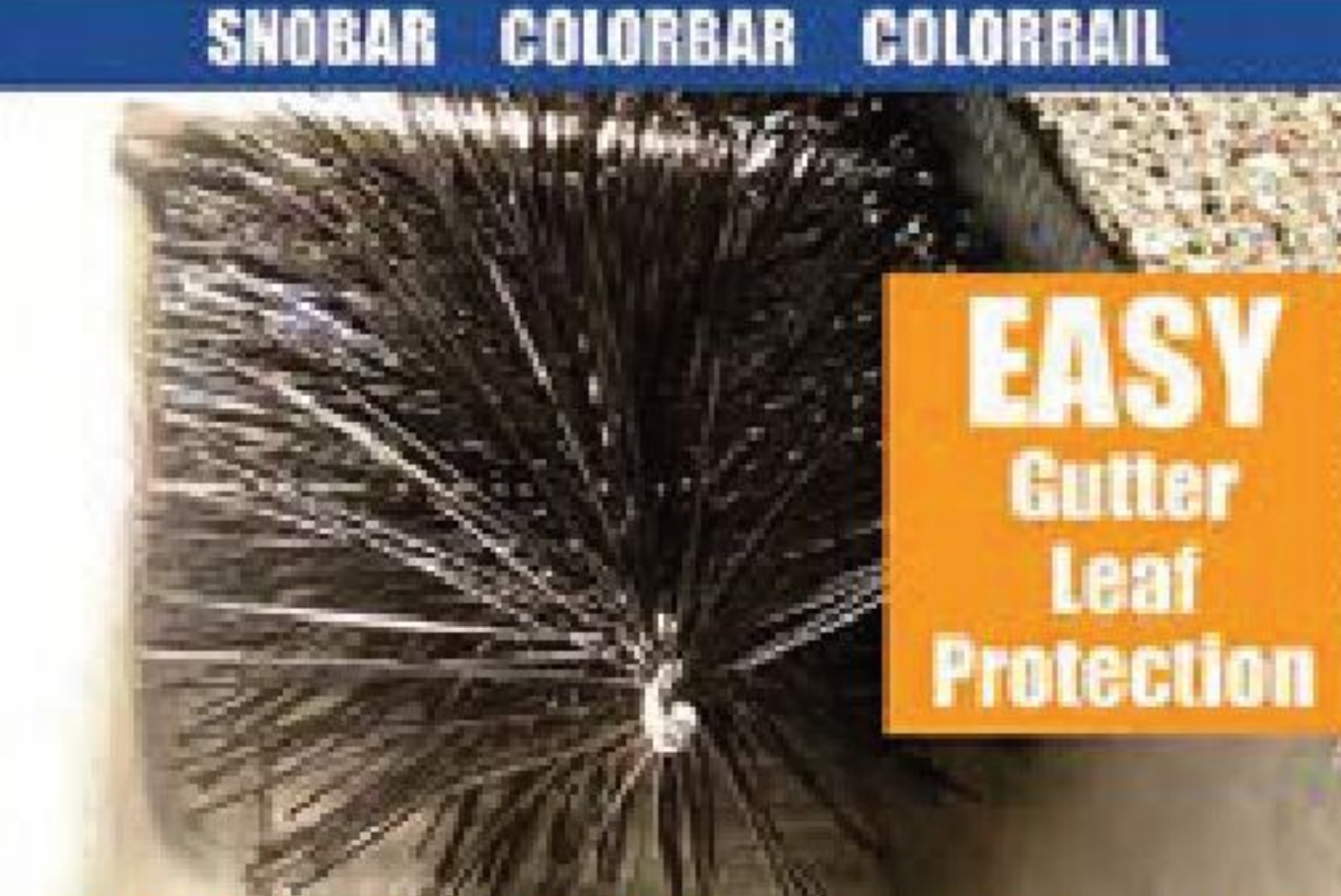
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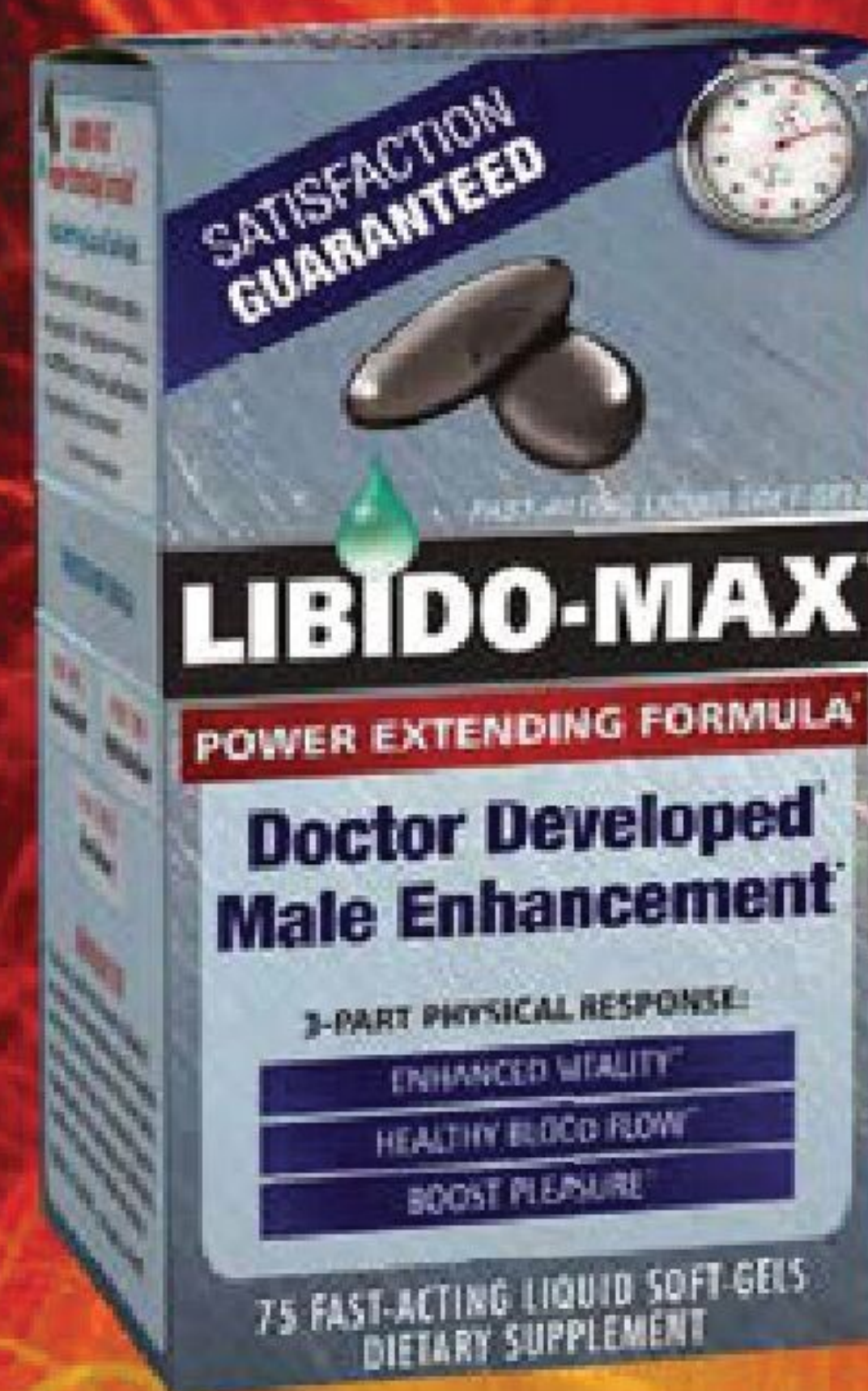
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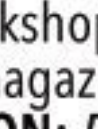
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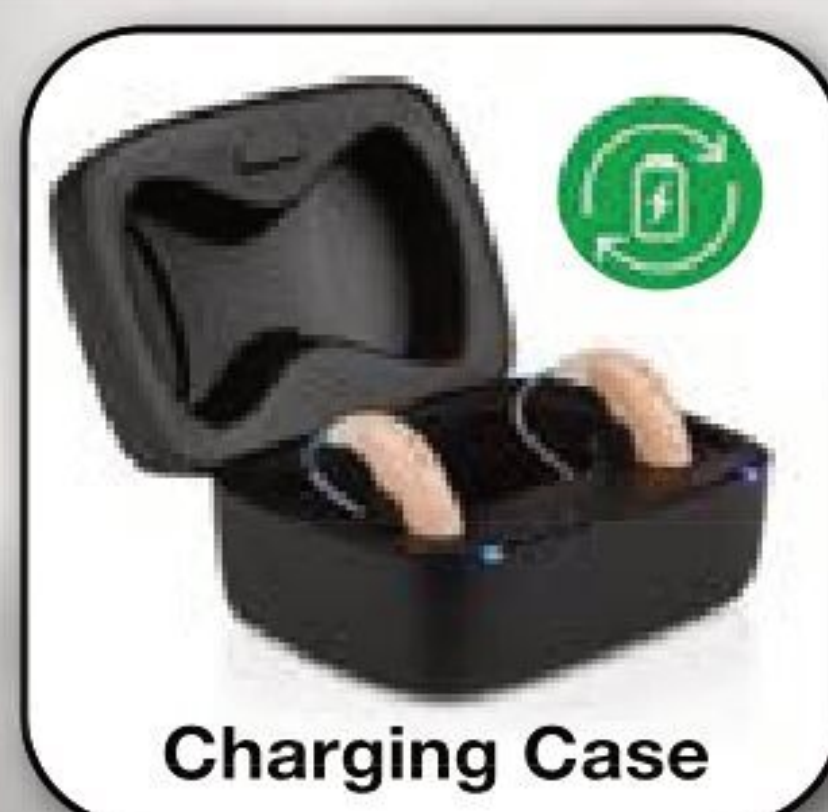


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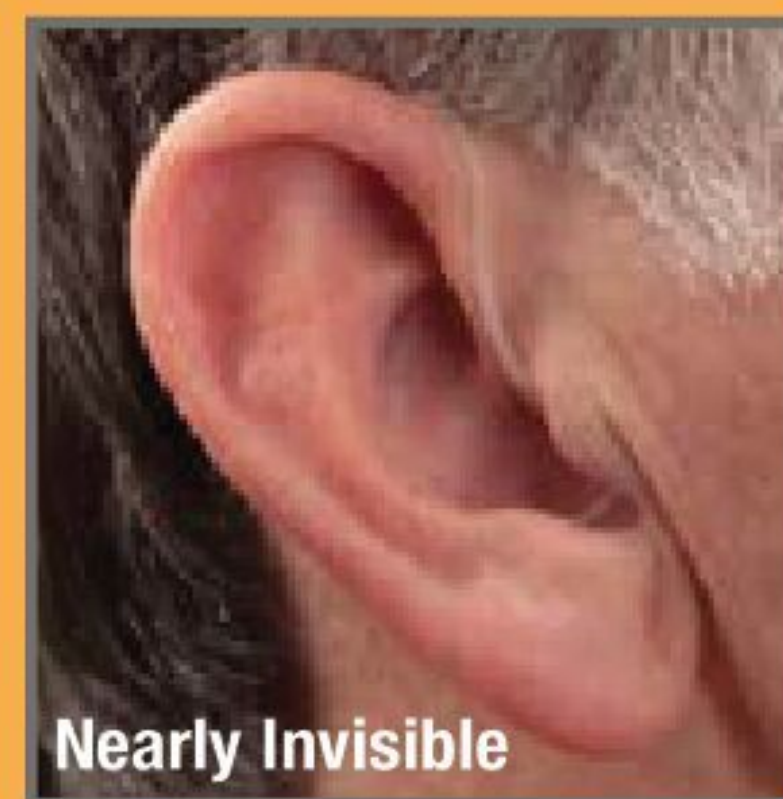
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IF THE TREE FALLS, WILL ANYONE HEAR YOU YELL?

A storm toppled the oak tree next to my house, but amazingly it ended up leaning against the edge of the roof without causing any damage. I climbed on the roof to push the tree away. Just as I was going to start pushing, I realized that as the tree gave way, my momentum might carry me right off the roof! So, instead, I got on my back, inched my way to the edge of the roof, put my feet up on the trunk and pushed as hard as I could.

Success! The tree fell harmlessly to the ground. Only then did I realize that my legs were hanging precariously from the roof's edge. With nothing to push off from, I couldn't inch myself away from the edge! I spent two hours stranded in that position until a friend showed up. Two hours is plenty of time to think about ALL the ways I could have done this better.

BERNIE SCUTARO

A BIT OF A PROBLEM

I was on the couch knitting while my husband was downstairs working on our basement. He was using a 6-ft. flexible drill bit to drill holes through the floor joists in the finished ceiling so he could fish wire through them and install new recessed lights. All of a sudden, I felt the couch vibrate. This went on for about 10 seconds and then stopped. I was totally confused until my husband ran into the

room, looked at the couch and in a very quiet voice said, "Oooops, there's the problem." I peeked over the side of the couch and

saw that the drill bit had come up through the floor, through the wall-to-wall carpeting and through the bottom corner of our leather couch. It was now sticking out the side. Apparently the drill bit had hit a vent and was driven off course. My husband finished the job and the new lights look great. So does our new couch.

CHARLA SCHAFFER

WALL- PAPER QUACK-UP

I decided to surprise my wife by putting up the wallpaper border, crown molding and bullnose trim in our hallway while she was at work. I waited until she left and got busy measuring, cutting, pasting and nailing. It took me all day, but it looked great and I couldn't wait to see her reaction when she got home.

When she stepped into the hallway, she took one look at what I'd done and burst into uncontrollable laughter. I was totally confused until she pointed at the wallpaper border. I looked closely and for the first time noticed that I'd hung it upside down. Ducks were flying belly up, trees were hanging downward, and the sky and ground were inverted.

GREG NEAL



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