VOL. 26
NO. 4

This Old House

TIPS FOR A HEALTHIER, SAFER HOME

WINTER 2021

BASEMENT REMODELS / BUILD A WINE RACK / FIREWOOD STORAGE BENCH / CORK FLOORING

Details Make the Difference

An artful renovation highlights handsome original features in a 1925 house

PLUS:

CHECK OUT OUR **Cottage Community**

IDEA HOUSE

PAGE 15

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FROM THE TOH JOB SITE: BUILDING STRONG BONES

Tom Silva and Kevin O'Connor give the Concord Country Cape a brawny new ridge beam and a structural window wall



ANTHONY TIEULI



Now you can download the latest issue of *TOH* on your tablet before the print issue is available. Go to **thisoldhouse.com/tablet**

COVER Photograph by Stacy Zarin Goldberg | Styled by Kristen Alcorta

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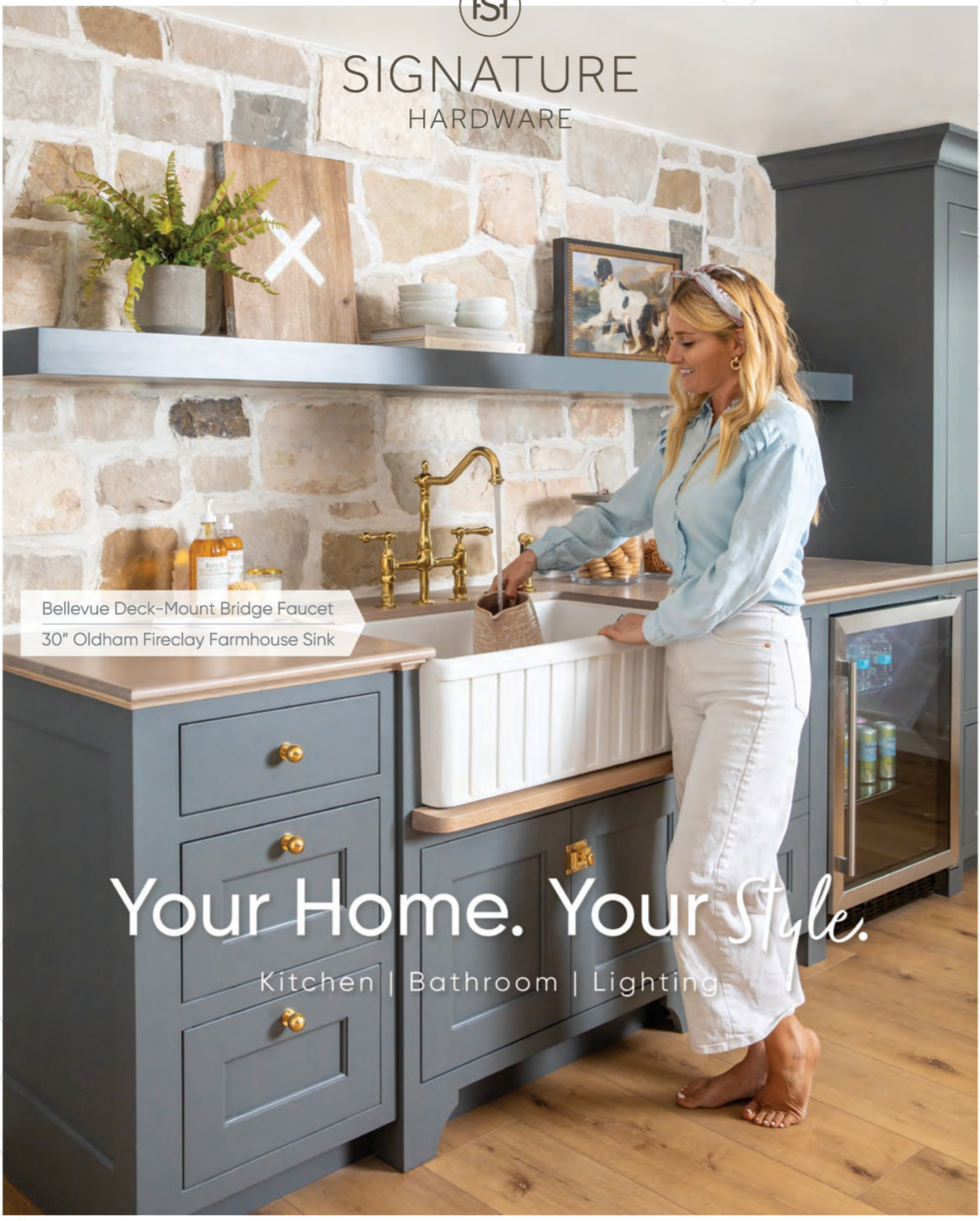
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IDEA FILE: ERIN LITTLE; NUTS & BOLTS: JAY FRAM

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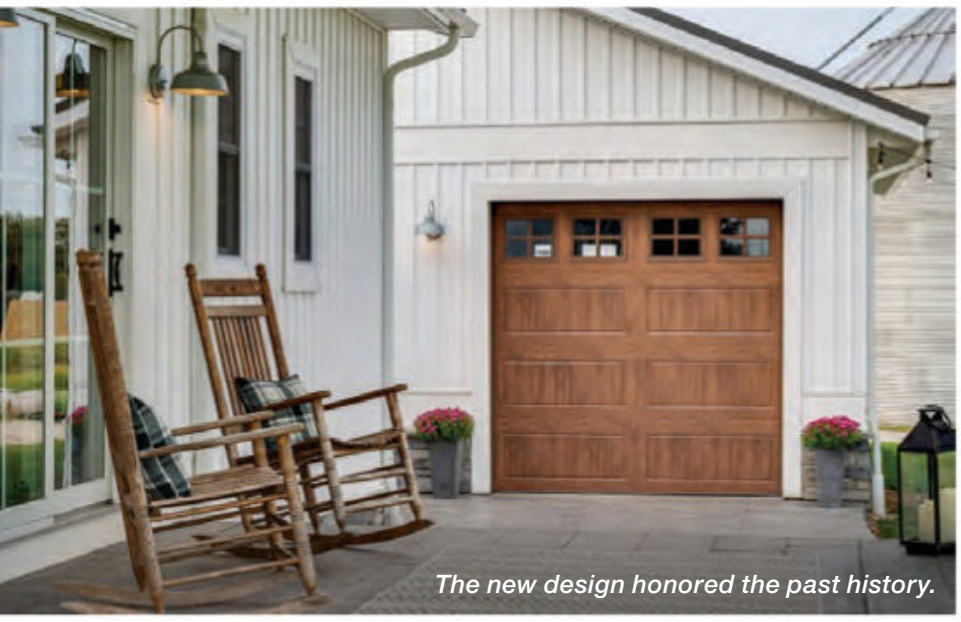
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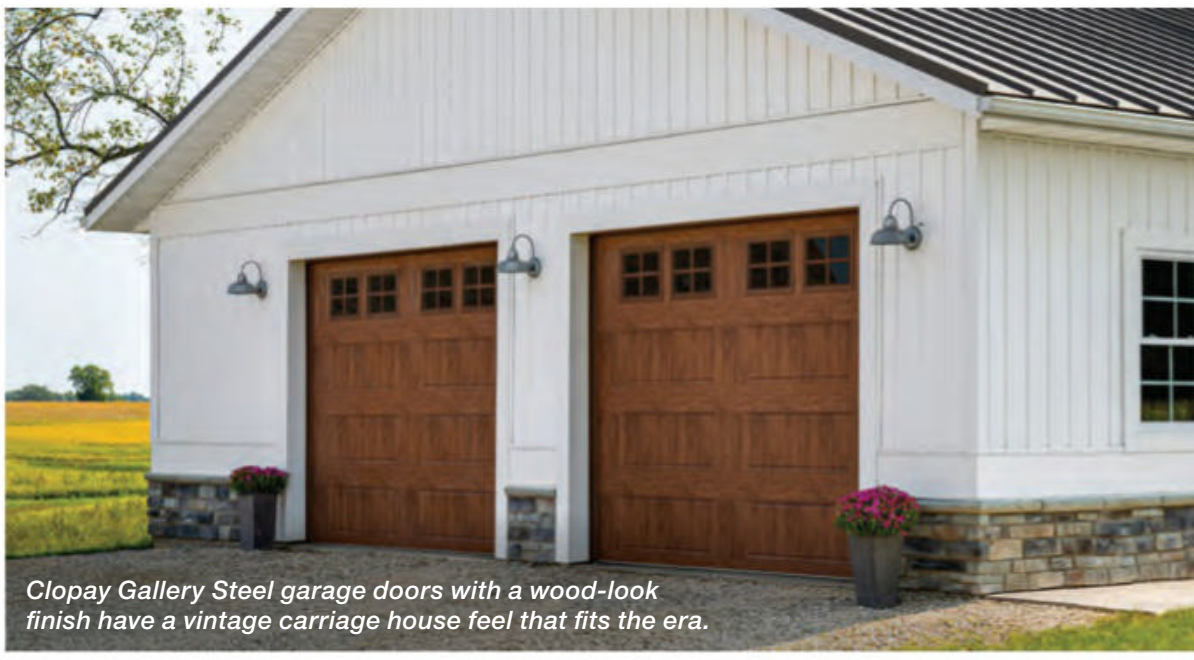
STAYING TRUE TO THE FEELING of a century old family farm guided every decision in designing this new American farmhouse in Northern Ohio.



The new design honored the past history.

When a young couple decided to put down roots on a 100-year-old farmstead, their goal was to restore the original house their great-grandparents had owned. Unknown structural problems hindered their plans, so they did the next best thing and built a new “old house” with modern amenities in the exact same spot.

The garage is a new addition with a surprise feature: a “drive-thru” door on the back side that opens to the patio and yard. It can be opened up to move lawn equipment and toys outside or serve as extra space for outdoor entertaining.



Clopay Gallery Steel garage doors with a wood-look finish have a vintage carriage house feel that fits the era.

See more projects like this in the Clopay LookBook

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A winter's tail...and what may come with it



The other day at lunchtime, walking home from a trip to the post office, a flash of movement on the sidewalk caught my eye. Then a teeny, tiny mouse hurried by, zigzagging toward the street, exposed and uncertain. I staggered backwards a bit, and not just from surprise.

It reminded me that with the noticeable nip in the air, those furry intruders would be joining us at home for the holidays—again. As the cold weather takes hold, they'll invade our cozy domain once more (and evade every trap we set), squeezing through mystery wall crevices, shimmying up radiator pipes, and army-crawling under the bottom of our basement door. Or so I imagine. It's been this way for a few winters now.

I used to think mice were cute. Who doesn't love Stuart Little? When I was 7 or 8, I got a little black mouse from the pet store. I named him Max. At night, I would make hills and valleys in my bedspread and watch Max's twitchy whiskered nose feel the way as he climbed up and down on the cool, soft pads of his feet.

These days the mice I encounter make me recoil. They're pests, not pets, and can bring nasty stuff into the house, including bacteria and viruses. As "Does Your Home Need a Health Check?" (page 60) makes clear, they routinely trail contaminants that mix with house dust, causing allergies and asthma. And vexing as they are, mice aren't even near the top of the list of air-fouling offenders, which includes dust (got plenty of that), an unswept chimney (guilty), and radon (seems we're a couple of decades behind in retesting).

In the Covid-19 era, indoor air quality remains our top home-health concern—and we tend to spend more time inside come winter. The good news: There's a lot we can control when it comes to indoor air pollutants, and pretty simply, too. Regularly maintaining fireplaces and furnaces, for one. Using a HEPA-filter-equipped vacuum—often—for another. Making sure range hoods and bath fans vent to the outdoors. Reading labels to avoid lung-irritating household chemicals. Sealing up air leaks around doors, windows, and plumbing lines—a.k.a. mouse entry points—with a mix of caulk, expanding foam, gaskets, and weatherstripping.

So no more freeloading, my furry unwelcome guests. Tomorrow at lunch, I'm headed to the hardware store.



KATHRYN KELLER,
EDITOR-IN-CHIEF
kathryn@thisoldhouse.com

DAVID YELLEN. HAIR & MAKEUP BY ROBERT HUITRON/ART & STYLE NYC

Five things I learned from this issue:

1 > A lathe can turn out awesome Christmas tree ornaments *(page 8)*.

2 > The average house accumulates 40 pounds of dust per year—no, it's not just your house *(page 63)*.

3 > Cork flooring can be a worry-free choice for under the bathtub *(page 72)*.

4 > Using dark finishes in a basement actually makes the space feel airier *(page 44)*.

5 > Smoke alarms should talk to one another—do yours? *(page 77)*

Around The House

What's happening in the world of **This Old House**



MAKING A CASE

Lasting tribute

SOMETIMES IT EVEN takes a while to cross items off your *want-to-do* list, but this year Nathan Gilbert nailed at least one long-planned project. The *TOH* carpenter finally made good on his goal of building a display case for the treasured ceremonial flag presented to him after his grandfather, Wallace McCarroll, a veteran of World War II, died in 2018. "I'd always wanted to display and preserve my grandfather's flag," says Nathan, who himself served as a Navy Seabee. "Creating a timeless oak display case that lets the flag be a centerpiece does just that." You can catch the complete build on *AskTOH,* Season 19.

Nathan crafted the triangular display case for his grandfather's flag using red oak boards.



25 YEARS AGO IN TOH

WAY TO MAKE an entrance! When Norm Abram sat for our November/December 1996 cover, he shared the steps of Season 18's Nantucket project house with Morgan Bentley, the owners' daughter. Behind them are the original 1887 double doors, which had been buried in a crawl space until Norm helped restore them to their rightful place. We're sure Morgan grew to appreciate them—and the memorable photo op, too.



20 AND COUNTING

Congrats, team TOH! This Old House brought home the gold once more at the 48th Annual Daytime Emmy Awards.

Turn, turn, turn

It all started last year with comments on Tom's Instagram feed (@tomsilvatoh) likening his turned-wood practice pieces to Christmas tree ornaments. Inspired to spread some holiday cheer, he and his daughter, Kate, crafted a dozen ornaments to give away—and an annual tradition was born. (Other IG giveaways have featured his bowls, bats, and pens.) Haven't had the luck of the draw yet? Keep following him, and your turn(ing) may come! Meanwhile, catch the ornament elves at work on Season 20 of *AskTOH.*



Some of the turned ornaments Tom and Kate have made, then given away to a few lucky fans on Instagram.

ORNAMENTS: KATE SILVA











GROUP EFFORT

Backyard barn raising

TOH MASON Mark McCullough was mulling improved digs for his 12 hens, who had survived a fire that destroyed their coop, when the *AskTOH* team decided to swoop in for a good old-fashioned barn raising. With a classic New England barn as inspiration, a split-granite perimeter foundation already laid in place by Mark, and a plan orchestrated on-site by Tom Silva, the group framed the new coop—from sole plate to ridge beam—in a single day last summer. After that, the14-by-14-foot barn would be built out with four roosting stations, a half-dozen egg-laying boxes, a loft ladder, plumbing, and electricity, giving its resident hens plenty to cluck about. In keeping with tradition, it would be clad with boards, painted red, and topped with a green metal roof (see the start-to-finish process on Season 20 of *AskTOH*). "It's a lot of firepower, but having the whole team throw in to help Mark was a ton of fun," sums up Kevin O'Connor of the day's work, quipping, "Anything for the chickens!"

Building from the ground up: (1) Kevin helps check a wall for square. (2) Setting a gable's notched studs. (3) Raising the front gable end together. (4) Heath nails a header in place. (5) The *AskTOH* gang gathers in front of the framed barn.

MIKE CASEY (5)

You did it!

Reader projects, tips, and triumphs

READER TIP



To store garden hoses over the winter, coil them in a 30-gallon trash can. It's neater and easier than hanging them up, and it saves space, too. Last year I managed to coil five hoses in a garbage can and still had room for more!

TOH Insider: Sherry Holtmeyer, Cottage Grove, MN



Kitchen cleanup

TOH Reader: Amanda Hurley, Cape Charles, VA



Ever since I bought this house, my first, in 2013, I wanted white kitchen cabinets, but new ones exceeded my budget. So this year I did the next-best thing and painted the ones I have. With a little help from my dad, they went from floor-matching wood grain to bright white, a time-consuming task as they're not real wood, so they needed a few coats of primer and several coats of finish paint. I also got a beadboard backsplash, added new hardware, and painted the walls. Total cost: under $500. I love the transformation—and I love watching *This Old House*!

Console goals

TOH Insider: Jude Dominique, Albuquerque, NM

Out of a handful of tools and some space in my garage came this entryway cabinet. I designed and built it with maple and MDF, wiring the interior as a charging station and giving the glass an antique-mirror finish. When I was growing up in New York City with parents from Haiti, *TOH* was a home to feel comfortable in and learn from. I'm a self-taught DIYer with modest skills ranging from woodworking to landscaping. This console was inspired by Kevin, Tommy, Richard, Roger, Jenn, Norm, and everyone in between, with thanks to all.





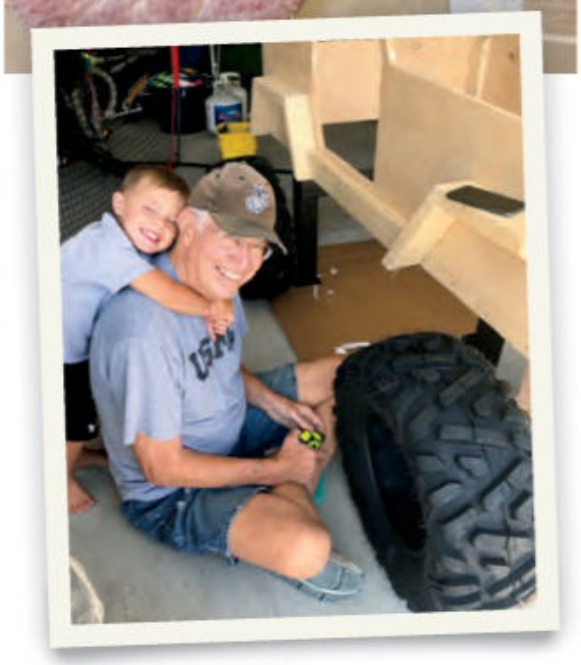




Beds of their dreams

TOH Readers: Kelly Dukes and Amy Bunch, Rochester Hills, MI (and their father, Don Therrian, Troy, MI)

Over the course of the last 14 years, our dad [shown at right] has built a bed for each of his six grandchildren as a gift for their second or third birthdays. Two were made using purchased designs, while the other four were completely custom creations. To complement the train bed (above), Dad also put together a model train track that runs along the perimeter of the room, suspended from the ceiling. His love of woodworking began while watching his own dad build and fix all kinds of things. It would be such a great surprise for him to see his work in your magazine!







Custom wall hanging

TOH Insider: Dan Griffin, Kirkwood, MO

When I saw Jenn Largesse's wall art in your September/October 2020 issue, it really caught my eye. With *TOH* as my primary inspiration, my love of woodworking has grown exponentially this past year, and I decided to go for it. I sanded down pieces from a lath bundle, then mixed in some scrap ¼-inch molding. After cutting all the ends at a 45-degree angle, finalizing the pattern, and painting, staining, and attaching the pieces to a plywood board, I framed it with more lath, then added a French cleat for hanging. The finished piece was perfect for an empty space in our open plan, where it's been challenging to find the right art. That's one reason I made my own!

READER TIP



Before opening a new can of paint, take a photo of the formula printed on the label and store it on your computer. It's a foolproof way to duplicate the correct color later on.

TOH Reader:
Mark Hammarlund, Seattle

Want to share? Write to us at **youdidit@thisoldhouse.com**

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Breathing Easier at the Idea House

Concerns about indoor air quality and moisture control are front-and-center these days. Learn how Jerry Effren achieved healthier IAQ at the **TOH Cottage Community Idea House**, with **Panasonic Ventilation Solutions**



AS FEATURED IN This Old House Idea House COTTAGE COMMUNITY 2021

We are dedicated to delivering healthy indoor living solutions, so everyone thrives.



Over the past 30 years, custom-home builder Jerry Effren has seen houses become ever more efficient, sealed up with tighter and tighter building envelopes. “The goal was always to build homes that would stay comfortable, while expending less energy and costing less to keep them that way. You’d achieve that with things like adding insulation inside the walls, replacing drafty windows—pretty much anything to keep the warm air in and the cold air out,” Effren explains. “But all of that insulating meant that little to no air was escaping, and no fresh air was getting in.”

This tightly sealed environment led to an unintended consequence: poor indoor air quality. Without an exchange of fresh air, toxins from things like cooking vapors, cleaning products, VOCs, and viruses can build up, posing health and comfort issues. Excess moisture can cause mold and mildew, leading to a host of allergic reactions and other health issues—and even structural damage, if left unresolved.

> **“The good news is, better indoor air quality can be achieved with the help of mechanical ventilation. Here at the Cottage Community, we relied on a mix of innovative Panasonic products for a healthier indoor environment.”** — JERRY EFFREN, GREYROCK HOMES

1. An energy recovery ventilator (ERV) to increase whole-home airflow

Panasonic’s IntelliBalance™ 200 ERV is a balanced ventilation solution that exhausts stale air from inside, and exchanges it with fresh, filtered air from outside.

2. A high-powered range hood to clear the kitchen air

The Panasonic WhisperHood IAQ® range hood features an innovative Capture Efficiency Plate that helps trap and eliminate contaminants right at the source. “And it’s ultraquiet, living up to its ‘Whisper’ name,” says Effren.

3. A variety of powerful bathroom ventilation fans that do double duty

“The primary bathroom features three different fans: The WhisperRecessed® LED™ ventilation fan/light combination in the water closet looks like a simple recessed can light, but it’s also a fan that helps remove odors. The WhisperGreen® Select™ fan/light in the shower removes excess moisture while providing additional light. And the WhisperWarm® DC™ fan/light/heater delivers warmth and comfort as you step out of the tub or shower.”

Healthy living starts with a healthy home







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There's an Effortless App for That

Smarter home products are meant to make life easier, but it can be a bit confusing to figure out how to use them. Thanks to a free, user-friendly app from **Leviton**, now you can take control of your smart devices, with ease.

TOH 2021 Cottage Community building-and-design duo Jerry and Sandy Effren know that smart controls can make some of us feel…less than smart.



"Homeowners want the safety and peace of mind that smart controls provide, but they don't want the headache of learning how to use them," Jerry says.

That's why, here at the Cottage Community, the Effrens incorporated a series of smart controls from Leviton that integrate effortlessly with a free and easy-to-use app. "Using the My Leviton app, I can manage all of the Decora Smart® switches, dimmers, and plugs from anywhere, using my favorite voice assistant. So I can ask Alexa to dim the lights for movie night. Or we can ask Siri to turn the lights on when we pull into the driveway," says Sandy. "We can also use the app to set prescheduled events, like 'Turn the porch lights on at 6 P.M.,' or to set certain lights to randomize for vacation purposes."

And while you may have seen a lot of smart switches that turn lights on and off, Leviton has created smart dimmers. "I have orchestrated a series of 'scenes'—like Dinner Time, Movie Night, and Party—so we just ask Alexa to set the scene for perfectly dimmed mood lighting every time," says Sandy.



Beyond lighting, My Leviton also controls load-center activities to alert homeowners of potential electrical issues. Jerry explains, "We installed smart breakers that monitor the real-time energy consumption of anything plugged into their branch circuit. For example, a breaker can identify an oven that's been left on, and in the app I can remotely control that circuit if I want to trip it. And if the refrigerator's breaker trips on its own? I'll get an alert through the app, so we can take immediate action to avoid coming home to a fridge full of spoiled food."

It's easy to set up the My Leviton app using your iOS or Android device. Simply create an account and follow the on-screen prompts to connect to your Wi-Fi network, and you'll be on your way to voice-activated convenience and control.

My Leviton works with Hey Google, Amazon Alexa, and Apple Siri (HomeKit). Get the free My Leviton mobile app on the App Store or on Google Play.

AS FEATURED IN This Old House Idea House COTTAGE COMMUNITY 2021

Learn more about Leviton's electrical solutions at **Leviton.com**

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IDEA/FILE

WINTER 2021

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INSPIRING SPACES, DESIGN DETAILS, AND FINISHING TOUCHES



The open kitchen and dining area can host casual breakfasts at the island as well as formal meals around a table that expands to seat up to 10.

Idea House

Packed with possibilities

Light, bright interiors with ample open space and treetop views serve a variety of lifestyle needs in a neighborhood of duplexes laid out with flexibility in mind

BY TED CUSHMAN | PHOTOGRAPHY BY ERIN LITTLE



Nestled in a leafy cul-de-sac, the duplex cottages have a common driveway and a shared patio with a pergola in back, to help create a sense of community. Front porches encourage conversation, while plenty of windows and rows of skylights brighten the interiors.

ONE-LEVEL LIVING FOR EMPTY NESTERS

A main floor that meets seniors' needs combines with spaces above and below for adult children and live-in caregivers

On the first floor, an open-concept kitchen/dining/living area makes mingling with houseguests easy and comfortable. Pale paint colors and plenty of natural light are a boon to aging eyes.

The changing needs of homeowners was top of mind for builder Jerry Effren and his interior-designer wife, Sandy, when they set out to create a pocket neighborhood in Norwalk, Connecticut, with their longtime collaborator, architect Jim Jamieson. The last 18 months have seen plenty of shifts in housing demand, as people moved out of major cities, embraced working remotely, and reassessed their living situations, perhaps making room for extended family. Factor in the natural rhythms of life that influence how people want to live, with empty nesters eager to downsize and young families looking for space to grow into, and the Effrens were sure that their latest project needed to put a premium on flexibility. The result is our second TOH Idea House of 2021: a duplex of two 3,000-square-foot cottage-style homes that can suit a variety of lifestyles.

On the main level, the homes have identical layouts, with a bedroom suite, an open-plan kitchen/dining/living area, and a mudroom and laundry off the garage. Entered from the living room, a screened-in back porch overlooks the woods and the winding Five Mile River.

Upstairs, there are two floor plans to choose from: one with three bedrooms, two baths, and an office; the other with a second bedroom suite, plus two bedrooms that share a bath. The latter might appeal to a young family with grandparents who have moved in, Sandy says. Empty nesters might prefer the other layout, she adds, which allows for aging in place comfortably, while providing separate spaces for grown children who visit often.

Both basements offer a large family room for a TV den, a play space, or a teen hangout. There's also a bonus room with its own bath that's perfect as a hobby or fitness space or, since each basement has a separate entrance, a bedroom suite for a live-in caregiver or "a college kid who wants his own space," Sandy says.

Low-maintenance living is appealing to all, so the Effrens used stylish, durable materials throughout, from fiberglass windows to luxury vinyl flooring. "We packed in a lot of useful details," Jerry sums up. "These are adaptable, multigenerational duplexes that will work for everybody."

THIS PAGE
GARAGE DOORS: **Clopay**
SKYLIGHTS, SUN TUNNELS: **VELUX**
SIDING: **LP SmartSide**
ROOFING: **GAF**
GUTTER GUARDS: **All Weather Armour**
SHEATHING AND TAPE: **ZIP System**
FENCING AND PERGOLA (NOT SHOWN): **Walpole Outdoors**

1. Modern casement windows with slim black frames and muntins usher in daylight; the matching sliding door opens onto the screened-in porch. A gas fireplace ensures the space is warm and inviting.

2. The living room's 10-foot-long built-in holds two desks and a top row of storage cabinets for seldom-used items. The easy-care quartz desktop is convenient for paying bills and answering e-mails.

3. A laundry area off the mudroom is accessible from both the garage and the kitchen. Cabinets keep supplies out of view; a metal hanging rod won't sag under the weight of wet garments.

4. While the well-lit home has dimmable recessed lighting throughout, dramatic pendant fixtures highlight key areas. In the high-ceilinged entry, Sandy chose an iron and gold-leaf chandelier with tiered rings "to soften the angles in the space," she says.

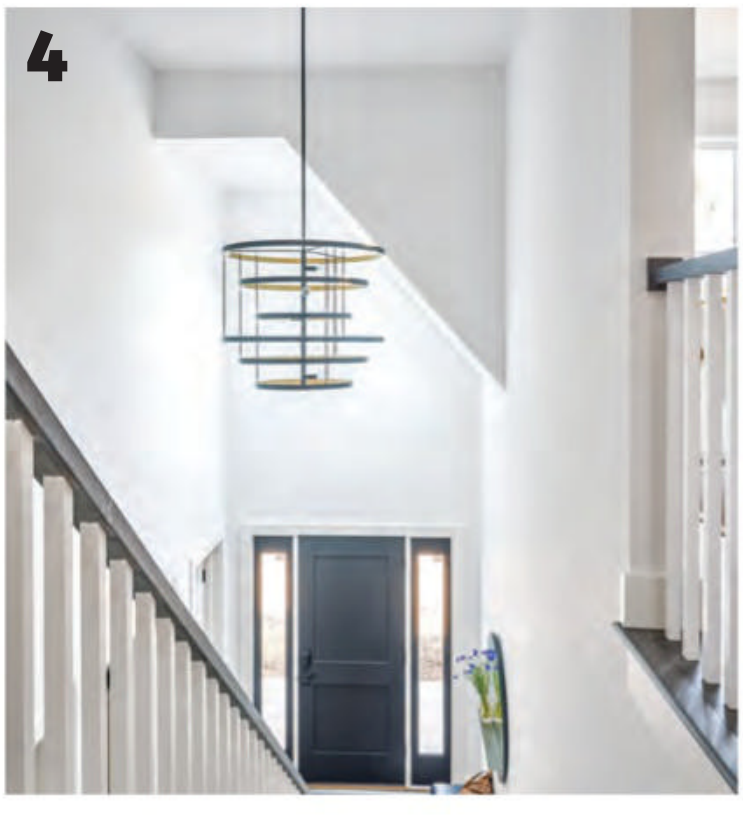
5. Cone-shaped pendants draw the eye to the kitchen island, with its workstation sink, pull-down faucet, and durable quartz countertop. Upholstered stools make for back-friendly seating. Pale-gray Shaker-style cabinets provide clean-lined storage. A gas cooktop with knobs in the front and stacked wall ovens raised waist-to-shoulder high offer an ergonomic plus when putting together meals.

STYLED BY ANNA MOLVIK


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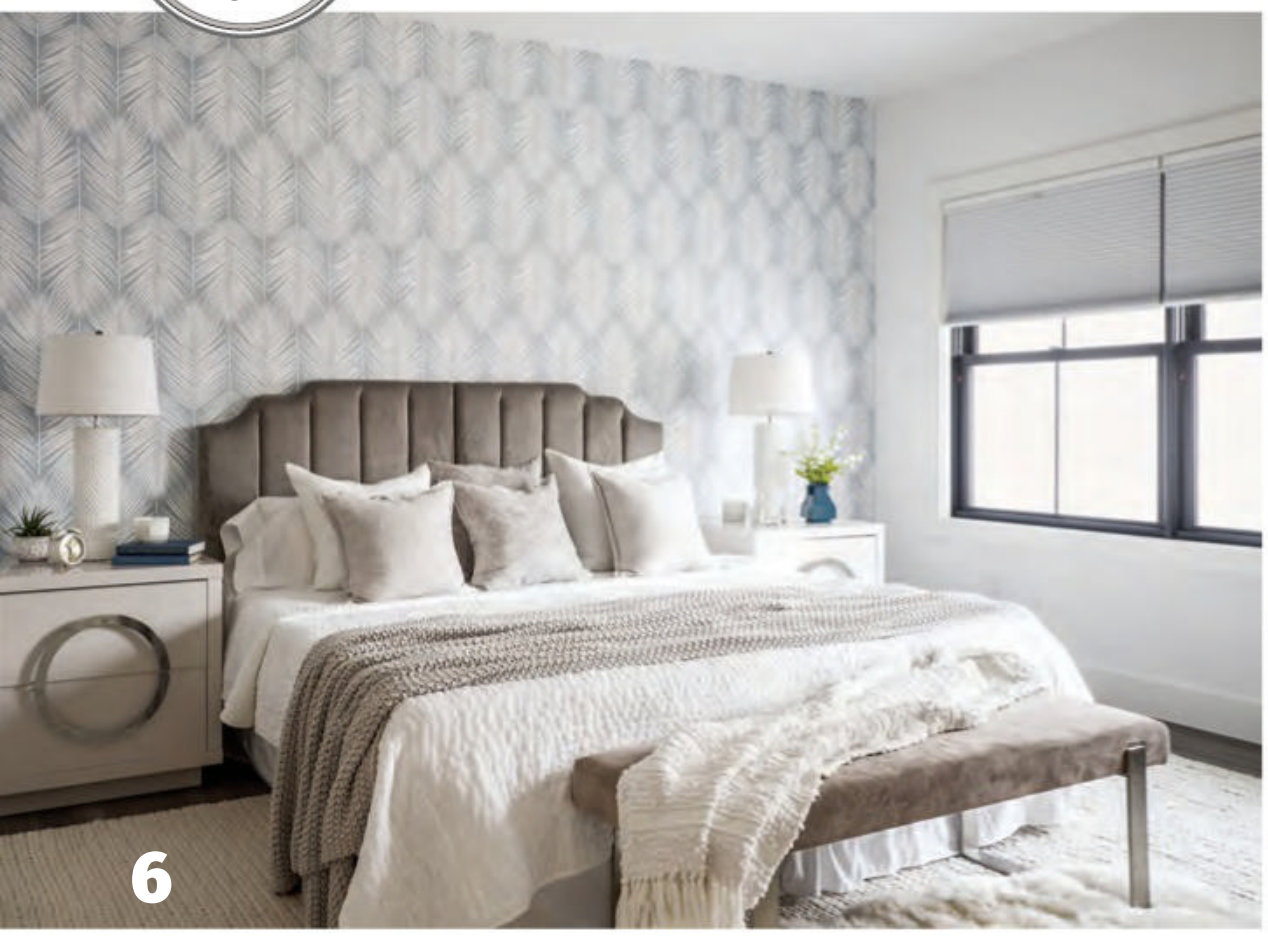

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THIS PAGE
ELECTRICAL PRODUCTS: **Leviton**
LIGHTING: **Generation Lighting, from Chloe Winston Lighting Design**
WINDOWS AND PATIO DOORS: **Marvin**
KITCHEN SINK AND FAUCET: **Elkay**
CABINETRY: **Mantra**
VENT HOOD: **Panasonic**
KITCHEN APPLIANCES: **GE Profile, from Aitoro Appliance**
TILE: **Tile America**
COUNTERTOPS: **Caesarstone**
DRYWALL: **National Gypsum**
FLOORING: **PermShield**
SUBFLOORING: **AdvanTech**
INSULATION: **Rockwool**
HVAC: **Trane**
BUILDING SUPPLIES: **Ring's End**

SEE IT ALL! Check out every feature of this 2021 Idea House at **thisoldhouse.com/norwalk-duplex**



6

THESE PAGES
BATHROOM VANITIES, FIXTURES, AND LIGHTING: **Signature Hardware**
BATH VENT FAN: **Panasonic**
TILE: **Tile America**
PAINT: **Benjamin Moore**



7

Easy-access main suite

Comfortable and convenient, the first-floor bedroom and bath offer the option of a private retreat without having to navigate stairs.

6. In the bedroom, which is spacious enough for a king-size bed, a barefoot-friendly woven wool rug, cotton linens, and a gray velvet headboard and bench envelop the space in soft colors and textures. An accent wall covered in a pale-blue feather-print wallpaper gives the space an extra style boost.

7. The main bath's double-sink vanity has large, easy-to-grasp bar handles, high-arc faucets, and a stain-resistant quartz top. A bottom shelf offers tidy towel storage. The twin medicine-cabinet mirrors have built-in LED lights along both sides to brighten the space without casting unflattering shadows—as well as built-in wireless speakers and USB ports for charging smartphones and electric toothbrushes.

8. For barrier-free bathing, there's a wide-open curbless shower with a generous grab bar. "Because there's a sloped floor and a linear drain along the back wall, you don't need a glass enclosure," Sandy points out. More-agile residents can relax in the sculptural freestanding acrylic soaking tub. Porcelain tiles with a subtle raked texture add a touch of understated luxury.



8

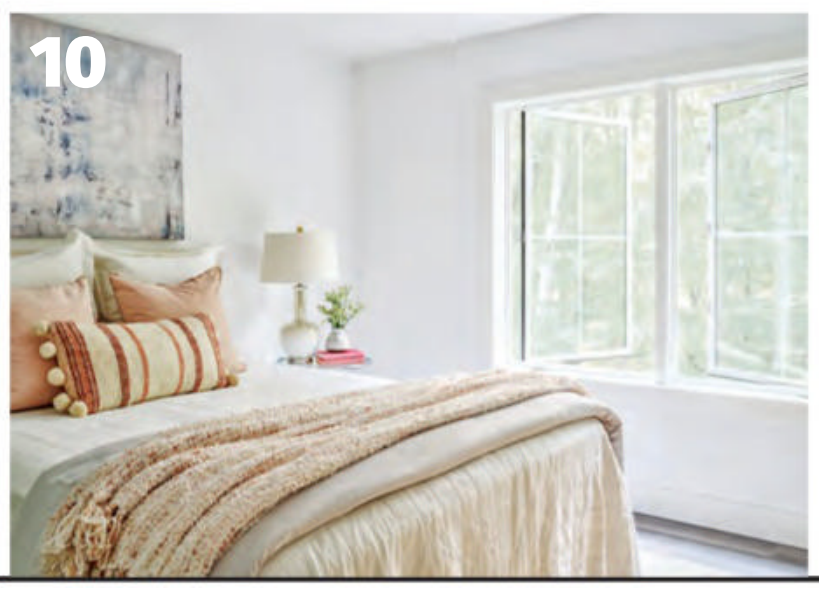


Flexible guest quarters

Rooms on the second floor can be put to use in a variety of ways by family and friends—whether they're just visiting or plan to stay for a while.

9. Open to the hallway, the den can function as a library, a lounge, or an office for an adult child. "That way, they aren't walking around your living room talking on Zoom calls all day," Jerry says. Here, a board-and-batten accent wall, painted a sophisticated dark green, adds a handsome backdrop for a stylish desk setup.

10. Adjacent to the den and overlooking the woods, this airy bedroom has its own en suite bath with a spacious shower. Two additional bedrooms across the hall share a bath with double sinks and a tub/shower.

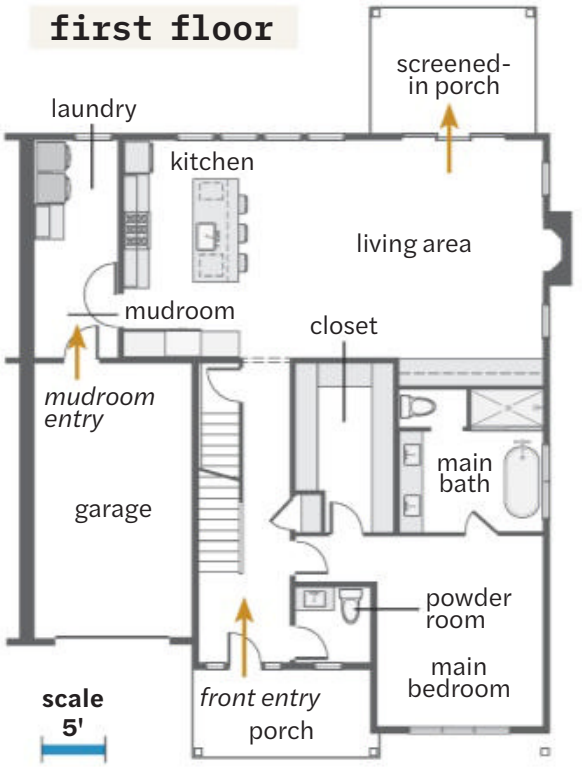


FLOOR PLANS: IAN WORPOLE

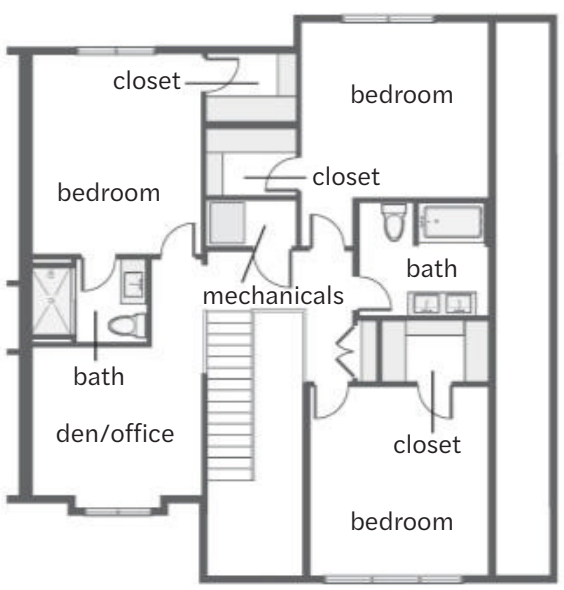
UNIT #10

Located on the right side of the duplex, this 3,000-square-foot home was designed with empty nesters in mind, with access to everything that's needed to live comfortably on one level. On the second floor, three additional bedrooms, two full baths, and a den/office give guests plenty of room to spread out.

first floor



second floor





Getaway spaces

The home's layout balances openness and connection with private spaces where residents and guests alike can retreat.

11. Off the first-floor living area, the screened-in porch floats above the sloped backyard, offering the feeling of a tree house. Two skylights (not shown) bring in even more sunlight and views. Easy-care PVC tongue-and-groove flooring resists fading and scratching while standing up to all kinds of weather.

12. In the finished basement, a 13-by-13-foot room can be set up as a workspace, a home gym, or a hobby room, like this art studio. The egress window brings in natural light and a landscaped view, thanks to steps that function as planters. Because the room has its own bath, it can also serve as a bonus bedroom.



THIS PAGE PORCH FLOOR AND CEILING: **Aeratis** BASEMENT EGRESS: **The BILCO Company**

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BUILDER JERRY EFFREN of Greyrock Homes chooses building materials with specific attributes in mind: In addition to durability, efficiency, and ease of care, "I look for products that help prevent issues before they happen," Effren says. At the TOH Cottage Community, the first two homes are surrounded by trees and foliage out back, and Effren knew that debris buildup could potentially become a problem up on the roof. To protect the homes, Effren chose ArmourGuard gutter guards. Smartly designed to keep debris out, ArmourGuard's unique micro-mesh design allows water to continue to flow through freely, so there's no risk of the water building up and causing soffit and fascia rot, or mold growth. And there's an added element of protection: "Climbing ladders to clean debris from clogged gutters can be harmful to homeowners, too," says Effren. "This product eliminates that risk."

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13



14

LOTS OF OPTIONS FOR YOUNG FAMILIES

Two primary suites allow parents to be near kids, and grandparents to be comfortable downstairs

The same open kitchen/dining/living area works well for parents who want to keep an eye on young kids while cooking.

13. This white kitchen gets a modern farmhouse feel from industrial-style metal pendants and barstools. The apron sink with its pull-down faucet is "big enough to bathe a child or dog in," Sandy says. Low-maintenance finishes cut down on cleaning: Quartz countertops repel messes, stainless-steel appliances are fingerprint resistant, and the marble-look backsplash tile is made from easy-care recycled glass with a matte finish.

14. In the dining area, a generous table can host game night as well as a pizza party. Plenty of elbowroom around the perimeter means there's always space for one more.

15. An uninterrupted sight line from the living room to the kitchen lets the cook be part of the action. Hard-wearing vinyl plank flooring has a casual, beachy look that brightens the rooms. The gas fireplace's modern surround is made of slate. Black-rimmed patio doors repeat the windows' muntins.

THESE PAGES
KITCHEN SINK AND FAUCET: **Elkay**
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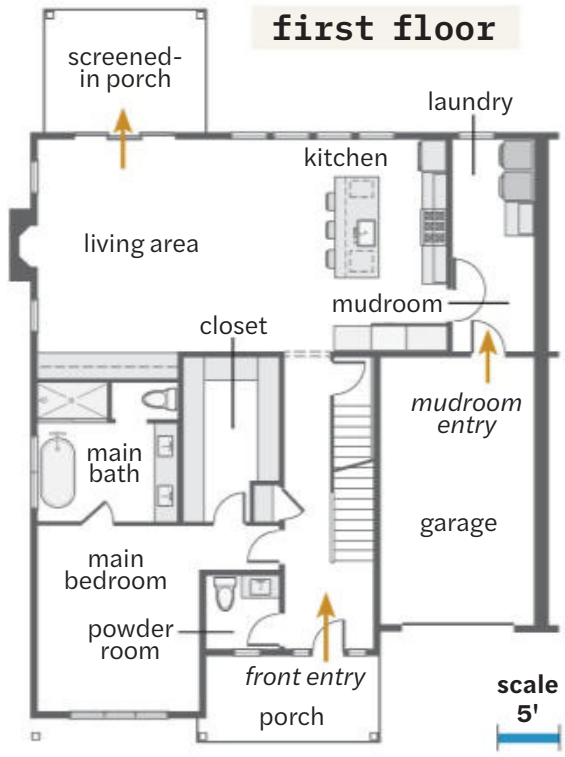




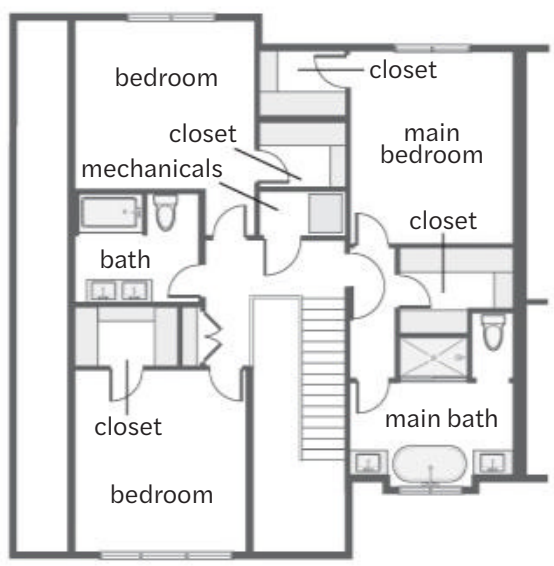
UNIT #9

Located on the left side of the duplex, this spacious home has the same square footage as the one next door, but its layout has been modified to better suit a young family. The parents' bedroom suite is on the second floor with the kids' bedrooms; grandparents could occupy the bedroom suite on the first floor.

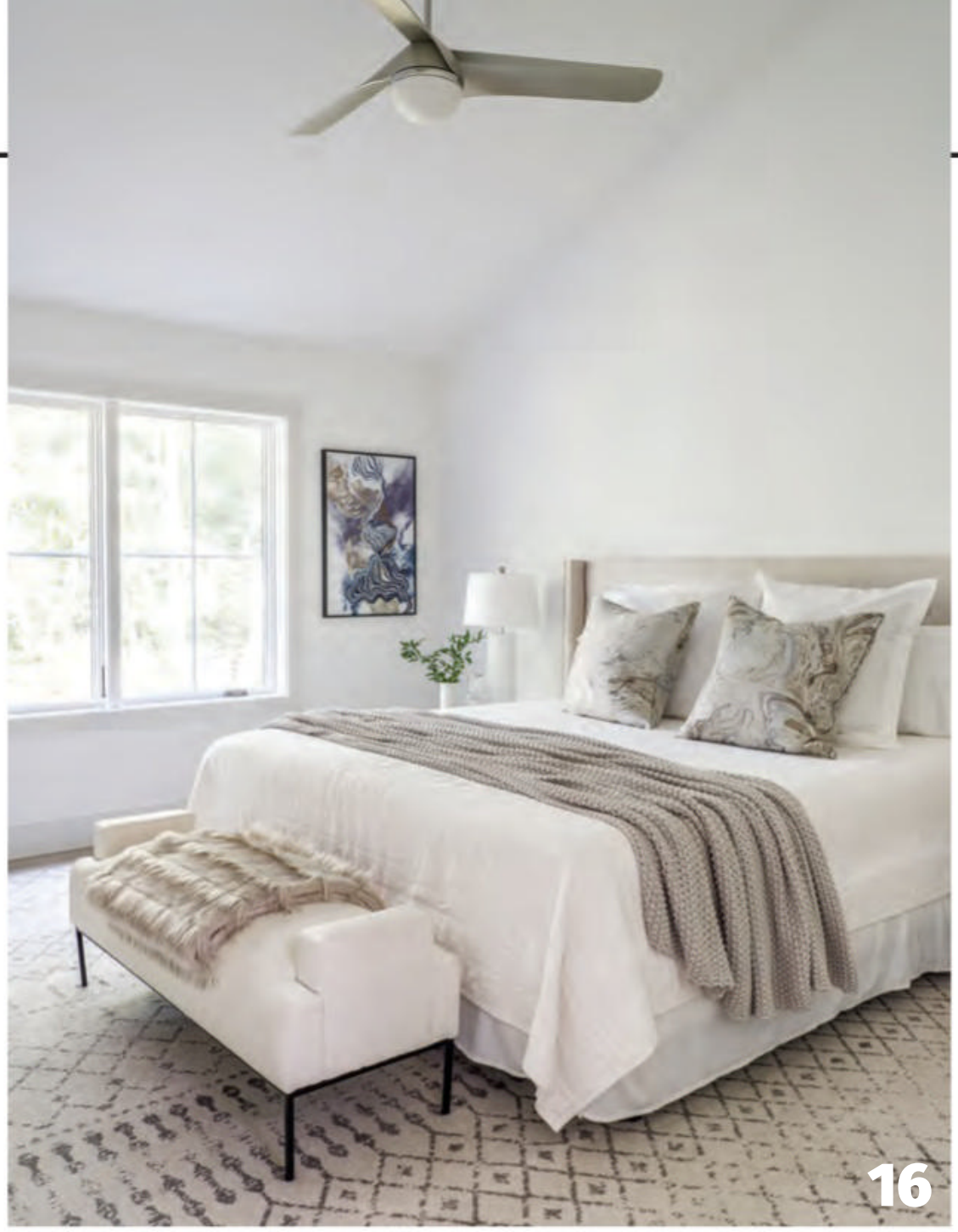
first floor



second floor



FLOOR PLANS: IAN WORPOLE





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Peaceful retreat

A second bedroom-and-bath suite upstairs lets parents unwind—but they're just a few steps away if their children need them.

16. Vaulted ceilings add welcome airiness in this bedroom—and everywhere else the roof framing allows. A walk-in closet lined with built-ins (not shown) keeps the sleeping area serene and uncluttered.

17. In the en suite bath, two separate vanities on either side of the oval soaking tub allow couples to spread out in their own personal space. The medicine cabinets have adjustable LED lighting, in-door magnifying mirrors, and built-in wireless speakers that can stream a playlist from a smartphone or tablet.

18. Inside the shower's frameless glass enclosure, a rainhead and an adjustable handheld wand offer all the water power that's needed. Black porcelain hex tile underfoot coordinates with the room's sleek porcelain herringbone floor.







Just for kids

Across the hall from the parents' suite, two children's bedrooms are separated by a shared full bath in between them.

19. In the nursery, a soft-as-a-cloud beanbag chair and an animal-shaped ottoman coordinate with the accent wall's sky-themed wallpaper. A spacious closet (not shown) holds plenty of baby supplies, as does a linen closet just outside the door.

20. Furnished in a fun space theme for a grade-schooler, the back bedroom has casement windows with prefinished pine trim ready to be painted a kid-friendly color.

21. The shared bath has no windows, but you'd never know it: A large skylight ushers in abundant natural light. The vanity top is scratch-resistant black granite. On the floor, large square porcelain tiles with a bold star pattern add a bit of whimsy. "It's a lot of fun for a kids' bath, but it's not babyish," Sandy says. "It will grow with them."

18+

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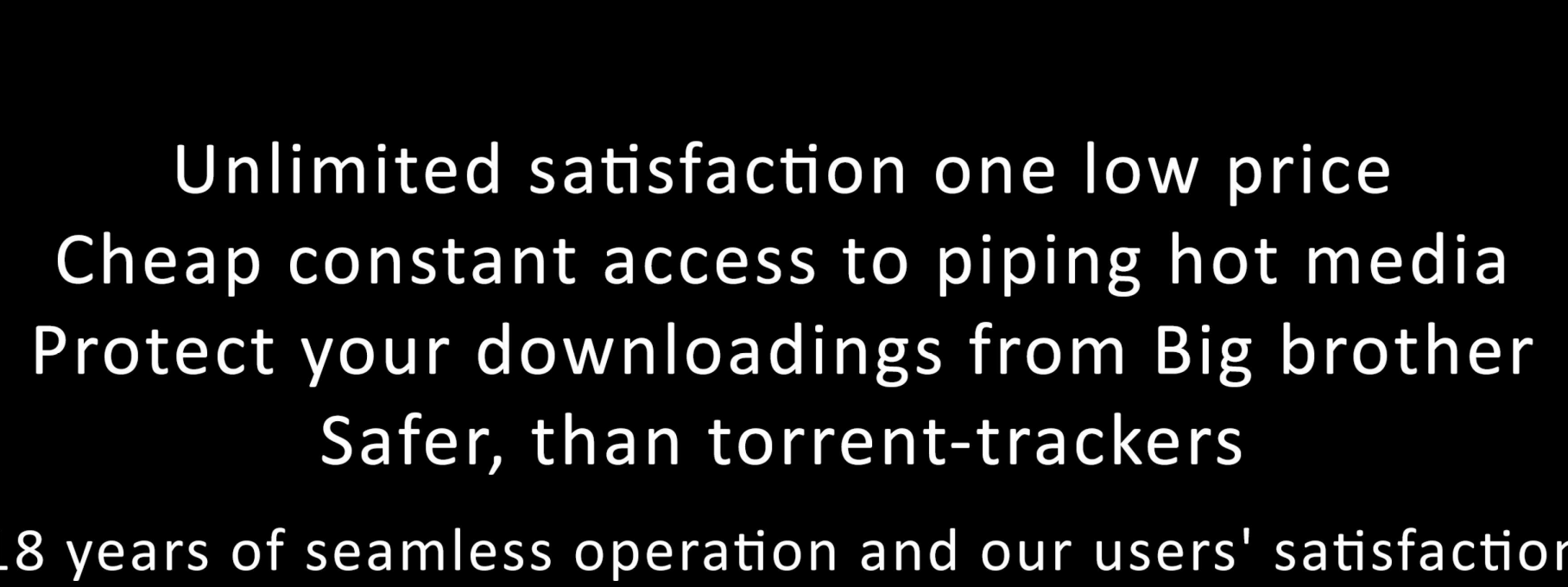
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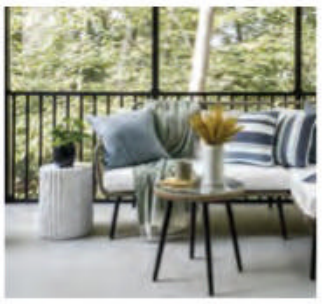
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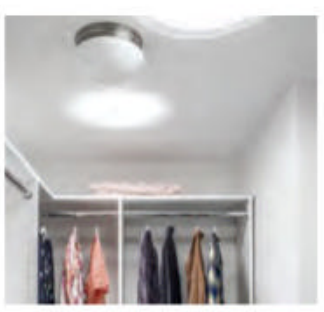
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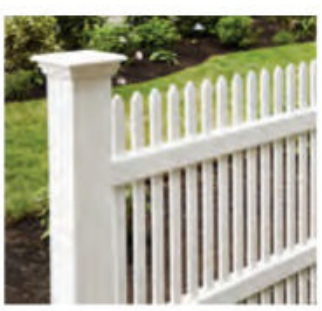
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Easier Access. Safer Egress.

Learn how innovative products from The BILCO Company add accessibility, safety—and beauty—to the **TOH 2021 Cottage Community Idea House**

When builder Jerry Effren designed the TOH 2021 Cottage Community homes, he carved



out surprisingly ample basement space. "Basements have a reputation for being dark, stuffy, and uninviting. Here, we wanted to create additional usable living space that homeowners and guests would truly enjoy," he explains. In the first of two units in the duplex model home, Effren designed a spa-worthy yoga/Pilates room. "In addition to providing code-compliant egress, this ScapeWEL® Egress Window Well floods the room with natural light and fresh air—commodities that are hard to come by in lower-level living spaces. And the steps can be landscaped with plants, creating a view that transports you out of that typical basement space."

For easy access to larger items like bicycles and seasonal furniture, Effren added another point of egress with a Classic Series steel basement door. BILCO doors feature gas-spring lift assistance for easy, one-handed operation. And the optional factory-applied powder-coat finish provides a durable, weather-resistant coating. Says Effren, "These products are the best combination of code compliance, lower maintenance, and more convenience."





BILCO ScapeWEL® Window Wells (above) and Classic Series Basement Doors (at left) meet IRC 2021 building code requirements for emergency egress.

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Aeratis Heritage porch floor in Battleship Gray, above, and Aeratis Traditions ceiling board, left.

The Cottage Community homes were designed to embrace their surroundings, with plenty of outdoor spaces for the occupants to enjoy. As builder Jerry Effren explains, "the back of the property overlooks the Five Mile River, just through the trees. It's a really scenic, relaxing spot; we added a screened porch on the main floor that takes advantage of the sweeping views and fresh air. It's a natural extension of the main living space, and perfect for morning coffee or dining alfresco."

With the goal of creating a beautiful, low-maintenance space, Effren used Aeratis Heritage solid extruded PVC tongue-and-groove porch planks. Ideal for covered and uncovered spaces, Aeratis is the only manufactured porch-floor product that's guaranteed not to expand or contract, so it won't buckle or bow. The prefinished boards are made with slight color variations and subtle, random streaking to match the richness and depth of natural wood. Says Effren, "You're getting an authentic wood look in a highly durable, fade-resistant product that's ADA compliant for slip resistance, both wet and dry. And it's lighter and easier to install than wood, too." And because Heritage boards are double-sided, the patio space underneath enjoys a finished ceiling look from the underside.

Speaking of ceilings, Effren extended the view overhead with a pair of skylights. "The sky view really draws the eye upward, so we needed a finished ceiling. We used Aeratis Traditions ceiling board to mimic authentic beadboard; I think it adds a lot of charm." The only true double-sided, historically accurate, and paint-ready PVC ceiling board on the market, Traditions is weather, fade, and pest resistant, and easy to clean.

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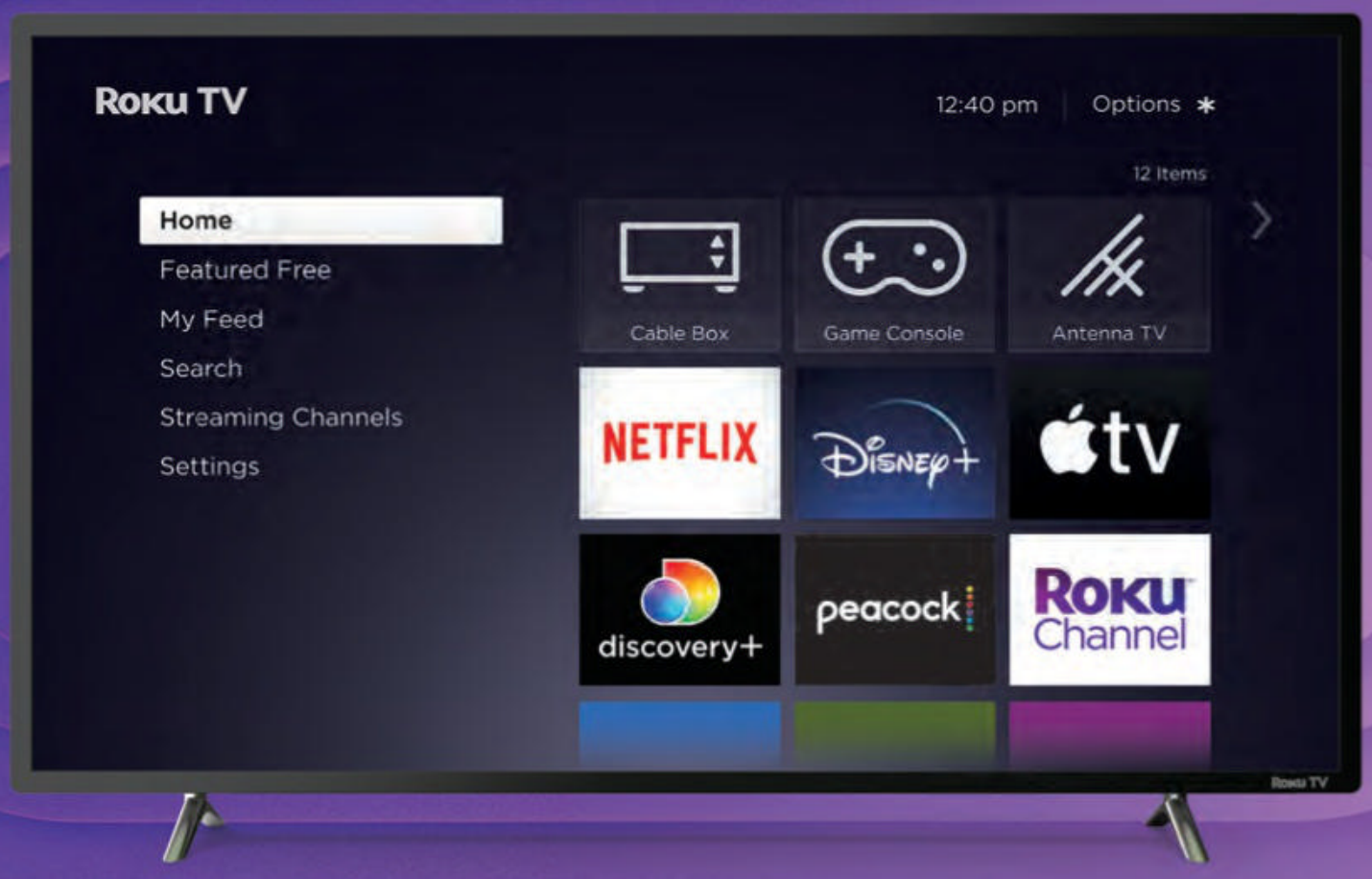
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Before & After: Kitchen

Every inch counts

A design pro upgrades her family's cook space, improving its function, flow, and finishes while making the most of its existing footprint

BY NINA MALKIN

Bumping out, adding on—big changes like these can really blow a budget. So it was a given when Rachel and Chad Alcorn renovated the kitchen in their 1928 Tudor-style home in Glen Ellyn, IL, that they would not be adding square footage or moving walls. "We wanted to add storage, prep surfaces, light, and a more open feel, but we didn't have unlimited funds," says Rachel. Also key: retaining treasured original details, including a trio of casement-style sink windows and a dining nook with an arched opening. Luckily, as an interior designer, Rachel knew just how to maximize the existing 200 square feet, trading dated finishes for a character-rich look that includes a pine-paneled ceiling, blue base cabinets, and counters made of pale marble that continues up the walls.

First, to brighten the space and add an airier feel, Rachel removed the upper portion of the range wall that's shared with the dining room, where light streams in from a bank of tall windows. On the dining room side, a raised walnut breakfast bar adds more casual seating. Just inside the entry to the room, right off the foyer, she built in an antique pine cabinet to serve as a pantry, another warm wood accent that makes the new kitchen feel as though it was added onto over time.

Now the space seems larger and functions better, yet still feels cozy. "We love that the kitchen is eclectic and warm, with improved flow, way more counter space, and updates that are in character with our home's architecture," Rachel says. A perfect fit all around.

STYLED BY JENNIFER DECLEENE





↑ On the homeowners' list of musts: keeping the original wood casement windows above the sink and adding a lighter look overall. Painting the windows white to match the cabinets, running the marble counters onto the backsplash and up to the ceiling, and swapping a soffit for a trio of black library-style sconces accomplished both goals.

BEFORE Relics from the 1960s, slab-front maple cabinets stained a dark, orangey-brown closed in the small space. White laminate counters and basic ceramic tiles were equally dated.

Photography by Nathan Kirkman

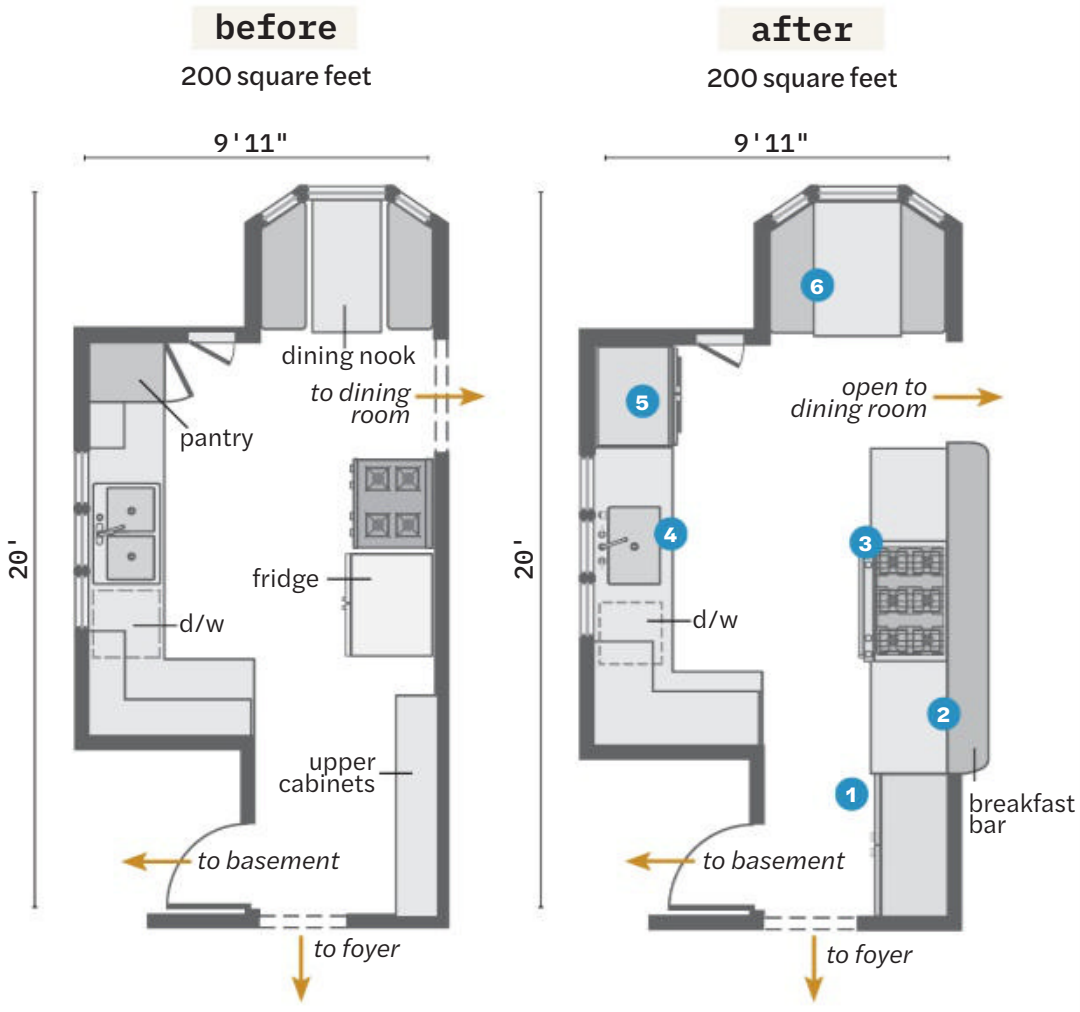




Chad and Rachel Alcorn, and their children, (from left) Charlotte, Soren, and Mira, lived with the existing kitchen for six years before tackling the renovation.

"A backsplash can look too busy in a small kitchen, so we carried the marble from the counters up to the ceiling for simplicity and to create a cohesive look," says Rachel.

FLOOR PLANS



Not altering the existing footprint preserved the scale of the 1928 house. Maximizing every inch added storage and prep space; removing a wall added light and air.

1. Built in a cupboard opposite the basement door to serve as a pantry and hold the microwave, adding base and crown molding stained to match its antique pine.

2. Removed about 14 feet of wall to open up the kitchen to the dining room and its wall of windows; added base cabinets and counters on either side of the range, plus a breakfast bar for more prep space and seating.

3. Shifted the range about 2½ feet away from the passageway to the dining room, adding landing space on either side and drawer storage.

4. Removed a ceiling soffit and valance over the sink; put in three sconces for task lighting.

5. Relocated the fridge to the right of the sink, where a built-in pantry had stood.

6. Added hidden storage with hinged-top benches built in on both sides of the dining nook.

FLOOR PLANS: IAN WORPOLE



After removing the old maple cabinets, Rachel brought back the warmth and charm of wood with a tongue-and-groove pine ceiling and a large 19th-century cupboard. Base and crown were added to build in the 8-foot-tall cabinet, which, at 3 feet wide and 2 feet deep, serves quite well as pantry and microwave storage.



EXPERT ADVICE

"Forget 'bigger is better.' Think carefully about how a space is used, and by whom, to guide you toward optimal square footage when renovating."

RACHEL ALCORN,
owner and principal, Two Hands Interiors



Removing much of the wall between the kitchen and dining room opened up a sight line from the range wall through tall dining room windows. A rich blue paint on the base cabinets "adds color without overwhelming," says Rachel.



Newly refurbished, the kitchen's original exhaust fan turns on automatically when the door is opened with an oak-handled iron hook. "It has a pretty strong draw so it can clear out cooking fumes," says Rachel. "It works great!" The narrow cabinet below it, also original, holds shelves for spices.

GET THE LOOK

Period-style pieces from different eras mix with timeless finishes for an easygoing, eclectic look

1. Space-age lighting / ARHAUS
"A sixties-style chandelier can be a star in the kitchen where other lighting is simple," says Rachel. Sputnik Chandelier, $599; arhaus.com

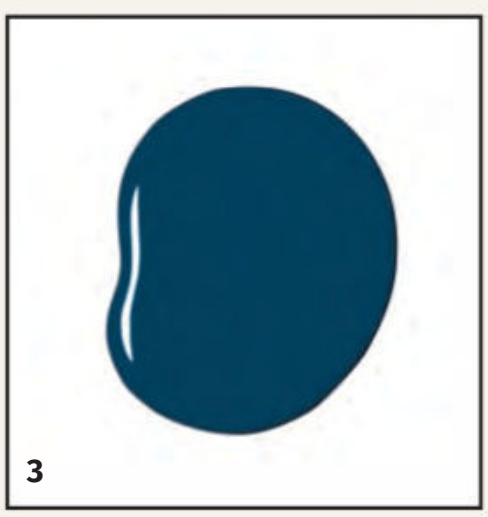
2. Iron-look pulls / SIGNATURE HARDWARE
Matte black hardware offers a handsome counterpoint to glowing brass accents. Hadey Iron Cabinet Pull, $14, and Cast Iron Round Knob, $10; signaturehardware.com

3. Blue cabinet paint / SHERWIN-WILLIAMS
"Deep blue is a good choice for base cabinets—it's grounding, yet adds personality," Rachel says. Try Duration Home Interior Acrylic Latex in Loyal Blue, from $73 per gallon; sherwin-williams.com

4. High-shine faucet / KINGSTON BRASS
A gooseneck spout with lever handles and a side spray in a glossy brass finish has a traditional look that suits many vintage homes. Widespread Kitchen Faucet in Polished Brass, $370; kingstonbrass.com


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Clean Water. Clear Conscience.

Here's how a filtered-water dispenser became a favorite commodity in the **TOH 2021 Modern Barnhouse** workshop

When TOH Modern Barnhouse owner/designer Amy Matthews was shopping around for an efficient water dispenser for her workshop, she didn't expect to become a passionate advocate for one.

"I hate the thought of buying plastic-bottled water," Matthews says. "It's incredibly wasteful, not to mention that storing several cases at a time takes up valuable space."

Enter Elkay's **ezH2O Liv™**: a built-in, hands-free dispenser of filtered water. The NSF-certified filter reduces lead and other harmful contaminants, and a helpful status light indicates when it's time to change the filter. The LED-backlit Green Ticker™ counts the equivalent number of bottles served without adding to the landfill—"which my son gets a real kick out of, and so do I," says Matthews. And the sleek, modern design fits in with any style decor.

"So far, every visitor has fallen in love with this machine. If I had anything to complain about, it's that I didn't install one in the main house straightaway," laughs Matthews. "But now that I know how easy it is to retrofit it into the existing water line, that's the next project on my to-do list."





SHOWN: ezH2O Liv™ Built-in Filtered Water Dispenser; Dependabilt Compartment Sink, and Centerset Wall-Mount Faucet, all by Elkay.

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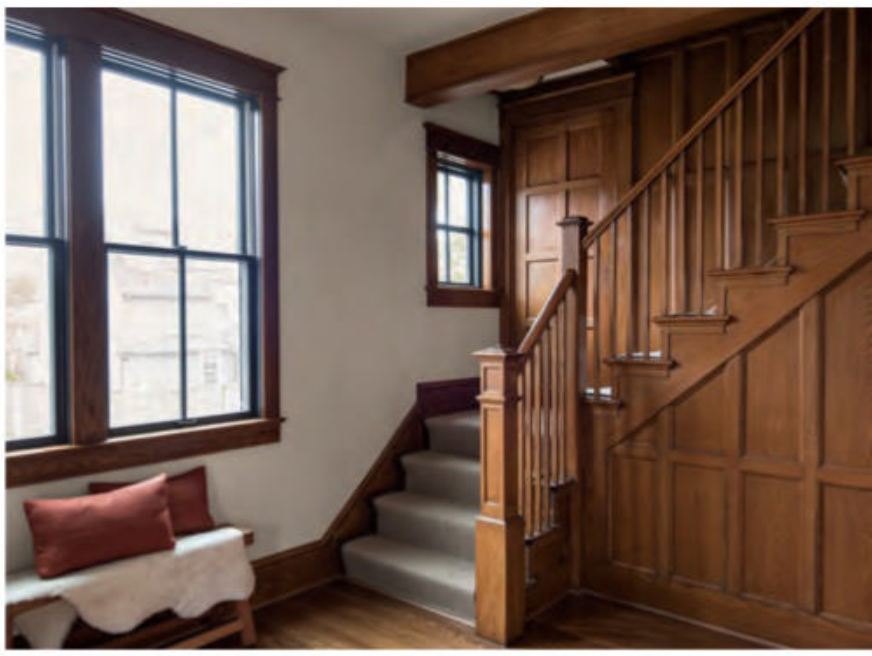
Before & After: First Floor

Old house, modern appeal

A minimalist approach to renovating a 1925 house maximizes the available light, allowing original features, including Craftsman-style millwork, to shine

BY JILL CONNORS

Often the best way to honor an old house is simply to highlight its good bones. That principle guided the renovation of this 1925 house, where prized original features remained in place. "It felt like an old-soul house with lots of potential, and I had always wanted a renovation project," says Scott Moren about why he purchased the place, located in Washington, D.C. So, after living in the house for eight months and hiring an architect for initial plans and permits, Scott teamed up with designer Evelyn Pierce Smith for the remodel. Her overall approach: Keep the period charm and chestnut woodwork, brighten up with new windows, rework previous rear additions, and better utilize the space. Enlarging the kitchen allowed for the pro-grade appliances Scott wanted, as well as a bright breakfast nook. Turning a screened porch into a four-season sunroom yielded a favorite hangout for him and his yellow Lab, Grayson. But when company comes over, it's the living room that beckons. "The first things that drew me to the house were the woodwork and the fireplace," says Scott. "It's nice to have friends over and sit around the fire. It's now an easy house for people to gather in."



New two-over-two windows throughout brighten the entry, as do the custom transom and sidelights that surround the front door, which moved to expand the living room (top). The original oak floors and chestnut woodwork are set off by warm-white walls and pared-down furnishings. The stair balustrade and chestnut paneling (above) are also original. A paneled door at the landing is now fixed in place; it had led down several steps into the kitchen.

Photography by Laura Metzler



The homeowner scrubbed the limestone fireplace of surface grime with dish soap and water. Tall, narrow double-hungs replaced the smaller original windows.

A taller, wider doorway with French doors now channels light into the dining room, where two chandeliers from the living room now hang. All the new windows are painted black to set off the chestnut casings.



LIVING ROOM: STACY ZARIN GOLDBERG; STYLED BY KRISTEN ALCORTA. BEFORES: COURTESY HOMEVISIT (3)

THE BEFORES

Heavy furnishings and color-drenched walls detracted from the house's strong bones and handsome chestnut millwork. Old, uninsulated wood windows were worn and drafty.



1. Entry



2. Living room



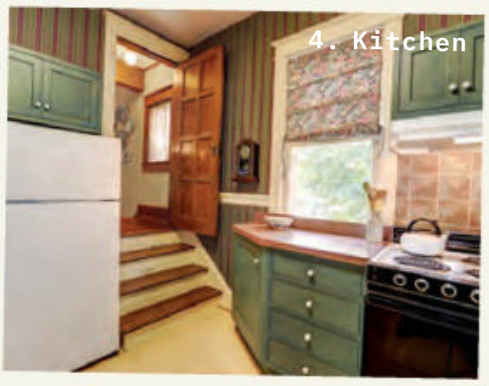
3. Dining room

1. The front entry and living room were one long space, bisected by the original paneled front door.

2. The living room's limestone fireplace was flanked by two square windows that let in little light. A pair of bronze chandeliers hung in the space.

3. An elaborately patterned wallpaper above the stained chair rail and bright blue paint below gave the dining room a Victorian-era feel. Radiators were functional but hogged floor space.

THE BEFORES


4. Kitchen


5. Family room


6. Powder room


7. Screened porch

4. An extra entry off the stairway stole valuable space in the kitchen.

5. The vaulted family room addition had sliders to the adjacent screened porch.

6. The powder room had a radiator and a window view onto the screened porch.

7. A rear addition, the tiled, screened-in porch was open to the weather.



The range wall now fills in where the kitchen's old stair entry had been. White cabinets and soft-gray tilework, including a patterned floor of interlocking concrete arabesque shapes, add a light, bright look.

The breakfast nook, in the rebuilt family room space, features a window bay where the fireplace had been; the vaulted ceiling was lowered to match the kitchen's. Wire-brushed reclaimed oak beams are a decorative accent.



BEFORE: COURTESY HOMEVISIT (4)



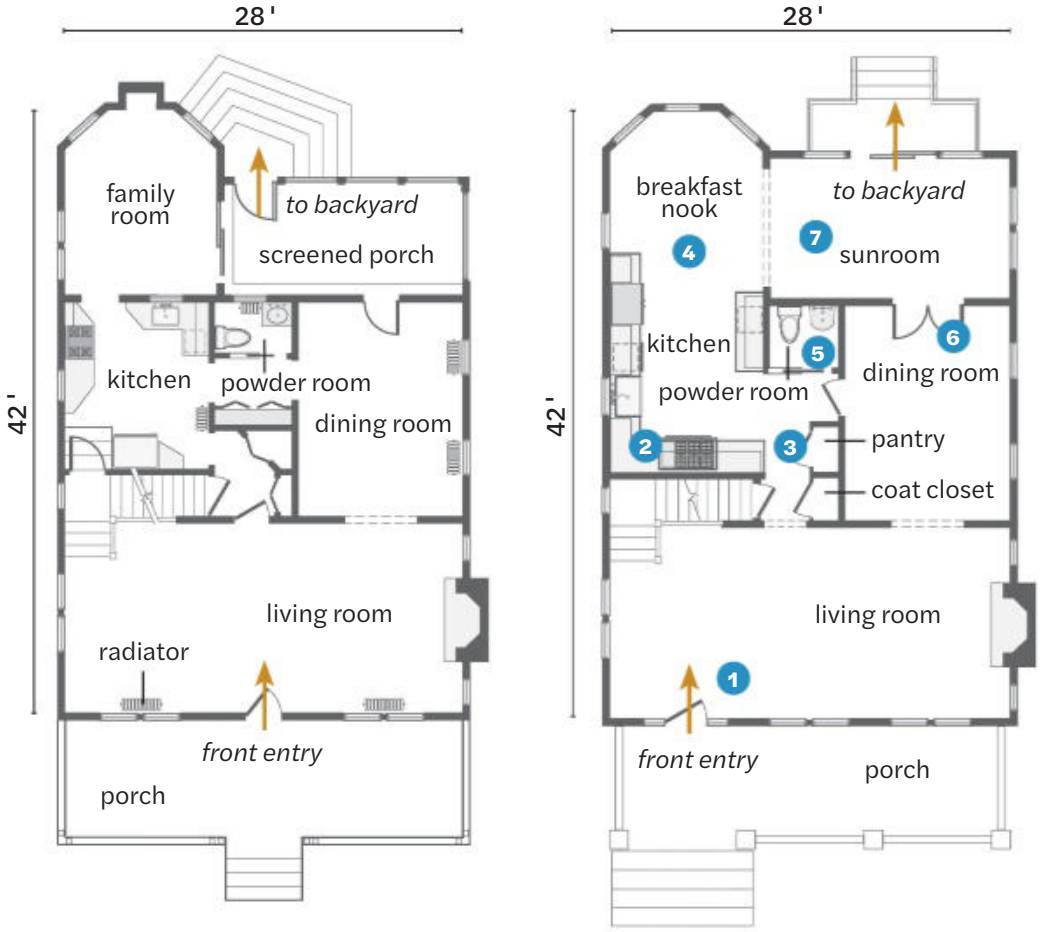
The powder room's paneled wall was modeled after originals elsewhere, and covers an area once occupied by a window and a radiator. A salvaged sink adds vintage cred (as does a third bronze chandelier, found in pieces in the basement).



The former screened-in porch was rebuilt as a sunroom and the step-down eliminated; cantilevering the back wall over the foundation gained 2 feet. Tall windows, patio doors to the backyard, and white-painted casings brighten the space.

POWDER ROOM: STACY ZARIN GOLDBERG; STYLED BY KRISTEN ALCORTA. FLOOR PLANS: IAN WORPOLE

FLOOR PLANS



Moving the front door, swapping radiators for forced-air heat, making the kitchen bigger, and rebuilding rear additions updated the layout.

1. Moved the front door toward the stairs to enlarge the living room; shifted two windows.

2. Removed steps and a doorway leading into the kitchen to gain a usable range wall.

3. Swapped two small closets and a shallow pantry for side-by-side pantry and coat closets.

4. Demoed the old sink wall to annex the former family room, enlarging the kitchen and creating a breakfast nook in a new window bay.

5. Closed up a window in the powder room and relocated the toilet.

6. Made the doorway between the dining room and sunroom wider and a foot taller, at 8 feet; added French doors to invite in more natural light.

7. Rebuilt the screened porch as a sunroom, cantilevering the back wall over the foundation to gain 2 feet; added patio doors leading to new back stairs.



BELOW-GRADE BEAUTY A cushy U-shaped sectional, an 85-inch TV, and a well-equipped kitchenette elevate this family gathering space. Low drawers double as seating with back cushions hung from leather straps. Custom art, which nods to the couple's alma maters, flanks the big screen for a gallery-wall effect.



Found Space

WHAT LIES BENEATH

(Yes, we're talking basements)

→ The dusty walls, exposed ceilings, and hulking systems of an unfinished basement can divulge much about the age and condition of a house, as well as its mechanical beating heart. But for the renovation obsessed, those raw spaces often offer something more: a land of untapped potential. Forget dark, damp, and cobwebby. These homeowners and designers envision comfortable, even elegant spaces for recreation, relaxation, and entertaining down there, no busting through and building new exterior walls required. Witness the inviting remodels here and on the following pages.

BY KATHRYN O'SHEA-EVANS

A MULTI-GEN HANGOUT

At nearly 1,200 square feet, the basement of this 2015 Neocolonial in Glen Ellyn, IL, had plenty of available space. But with raw-concrete floors, bare bulbs in junction boxes in the ceiling, and no interior walls, it had become a dumping ground for cast-off furniture, with a lackluster kids' area. "It was truly a shell, left unfinished until the kids were older and they had a vision for it," says Rachel Alcorn of Two Hands Interiors, who, with her partner, Karen Javier, was enlisted to spiff up the space.

THE WISH LIST Homeowner Jenny Rieger and her husband, Paul, asked for a cozy, fun hangout their ninth, eighth, and fifth graders would like but that adults could love, optimized for the latter with sophisticated finishes and plush places to escape to. "They wanted a space where the kids could knock about, play pool, and have friends over, but didn't want it to feel super juvenile, so it would be comfortable for grown-ups, too," Alcorn says.

THE PLAN The designers dreamed up a scheme that would deliver the welcoming, clubby feel of a wood-paneled library—but with a cool vibe. The main event: a 728-square-foot family room, itself divided into dedicated spots for a game of pool, quality time in front of the TV, and refreshments at the ready in a kitchenette, with a locked wine fridge alongside. The rest of the space would be divided into a gym, a kids' hobby space, and a full bath. Ten-foot ceilings allowed the Two Hands team to hide ductwork in soffits around the perimeter of the finished space. In the TV area, adding a framed inset of stained wood beams in the center made the soffits disappear. When the homeowners asked for white walls, the designers guided them toward a compromise, adding a back wall of stained paneling. "It's counterintuitive, but if everything is light or white, it doesn't expand the space," Alcorn says. "Adding contrast with lights and darks draws the eye around the room and makes it feel bigger."

THE RESULT A sophisticated lower level the whole family can enjoy. Jenny's favorite feature? The pool table, which turns into a Ping-Pong table by adding a conversion top, and has seen plenty of use. "We've loved having another space for the kids to do their homework and hang out. And it's a perfect place to entertain guests," she says, thanks to its multiple seating areas and that happy-hour-ready kitchenette. Talk about a warm welcome.





BEFORE Unpainted drywall lined an ad hoc TV area for the kids. Pipes and conduit loomed overhead in the open ceiling.

BRING ON MOVIE NIGHT The whole family can pile onto the sectional, which takes pride of place in the revamped TV room. It also handles sleepover spillover.

GATHERING PLACE Homeowners Paul and Jenny Rieger got just what they asked for: a basement space that works well for kids Paul Jr., 15, Anna, 13, and Evie, 10, and their friends, as well as for grown-up get-togethers.



Photography by Michael Kaskel







COOL KITCHENETTE Tucked into dark-wood cabinetry are two refrigerator drawers and a dishwasher, stacks of paper plates, and a garbage pullout. A microwave is handy for popcorn and snacks. “Everything you need for pizza-and-a-movie night,” Alcorn says.

COZY CONTRAST The same cabinetmaker built the paneled wall behind the pool table. “It gives the other half of the room a finished look,” Alcorn says. Stools at the snack bar offer extra perches that are easy to move around as needed.

FUN MEETS FUNCTIONAL

When architectural designer Anthony Wilder first set foot in this 948-square-foot basement in a 1950s Colonial Revival in Washington, D.C., "it looked like it had been through World War II," he says jokingly. "It was a catchall, with a worn vinyl floor and low-hanging ductwork you had to duck under." Exposed fluorescent tubes cast an eerie glow; a few shelves under the stairs and an old built-in with a TV provided a mishmash of storage.

THE WISH LIST Homeowner Jamie Edwards and her husband, Daniel, tasked Wilder and architect Gary Lofdahl with creating a multiuse space with areas for TV viewing and foosball playing; wine storage behind lock and key; a guest room that could do double duty as a home gym; and a drop zone by the door to the garage. The impetus? "Our kids were getting to be teenagers, and I thought I would love it if they brought their friends here rather than going to other people's homes," Jamie says.

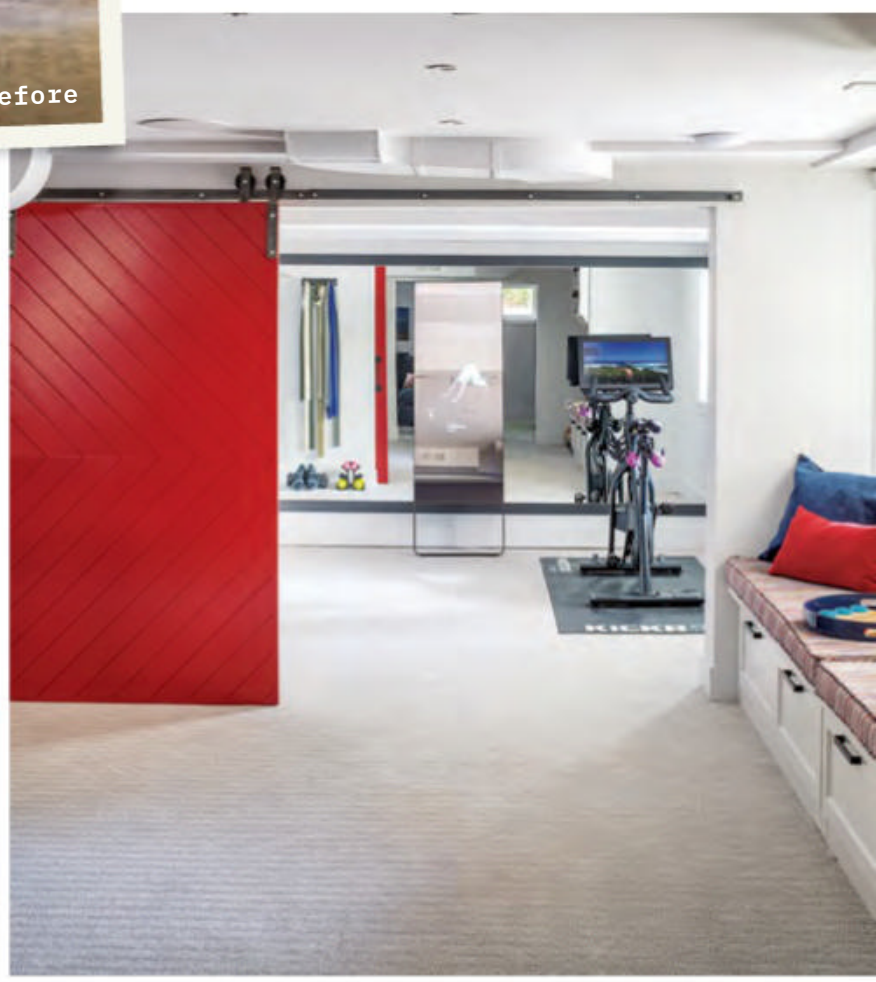
THE PLAN First up: replacing the bulky, exposed ducts with slimmer versions that could be tucked up near the ceiling and painted white to blend in. "That gained a foot in height in some areas and made an enormous difference," Wilder says. His team also added discreet, puck-size recessed lights between the ceiling joists, and turned a load-bearing partition wall into a focal point, with a large-screen TV framed in paneling. New walls and doors hide the mechanicals and the remodeled laundry room, but elsewhere the goal was to keep the space as open as possible. To that end, they laid out the 22-by-16-foot main area with the foosball table, an under-the-stairs wine room, and open mudroom cubbies. On the other side of the had-to-stay support wall, the 22-by-15-foot TV room got upgraded built-ins and a sofa to sink into. A big barn door that mostly remains open can slide shut to partition off the 11-by-11-foot convertible gym/guest room. But arguably, the most vital tweak here is something you can't see, but feel. "You have to have a top-of-the-line dehumidifier in a finished basement, because you want it to be super dry," Wilder says.

THE RESULT "It used to be quite arctic down there, but now the big circular space is very inviting," Jamie says. "My husband, who said early on that the project would be like putting lipstick on a pig, has been humbled and shamed!"





BEFORE The 1950s cellar had just 6½ feet of headroom in some areas, with lots of low-hanging ductwork and exposed wiring.



MOVABLE PARTITION To expand the usable space, a custom red barn door sections off a workout area that converts to a guest room with a blow-up mattress that hides away. "An open door takes up a lot of room," Wilder says. "This is like a sliding wall."

Photography by John Cole



CLEAN AND TIDY Mudroom cubbies are designed to keep the family organized and the new wool carpet clean and barefoot-friendly (its herringbone pattern was chosen to sync up with the owner's tie art). A central foosball table has lots of elbowroom.

WINE TIME An upgrade from a few storage shelves built under the stairs, the new "wine room," about 3½ feet deep and 8½ feet wide, can hold up to 364 bottles. Flanked by fixed panels, French doors put the collection on display—and lock up tight.

LAID BACK The team kept the space as open as possible, to give it an airier feel. To make a load-bearing partition wall that had to stay look purposeful, they hung the TV there, framing it with shiplap in a chevron pattern and painted a warm gray.







EXPERT ADVICE

"The idea is to keep it from looking like a basement. Add mirrors to bounce light around the room; we often use mirrored French doors. If there's headroom, put in a ceiling fan to keep the air moving."

ANTHONY WILDER,
owner, Anthony Wilder Design/Build

A MOVIE DEN AND MORE

With boys aged 12 and 17 in the house, the owners of this 1930s Colonial Revival in Westfield, NJ, wanted to create a place the teens could call their own. "Their mom is hyper-neat and wants her boys to keep it tidy on the first and second floors, so she wanted a space where they could just relax," says designer Miriam Silver Verga, whose firm, Mimi & Hill, honchoed the basement transformation. "It was very cramped," she says of the partially finished and seriously outdated existing lower level. "You could throw toys down there and call it a playroom, but you wouldn't have wanted to entertain there," she adds, guessing the low ceilings and linoleum floor dated to the 1950s.

THE WISH LIST The couple wanted a finished basement with a footprint as large as the upstairs. That meant digging out around the foundation walls to gain more usable space for a new full bath and laundry room, and carving out a pleasant exercise space in addition to the 850-square-foot centerpiece: a cozy, comfortable hangout for the boys and their friends.

THE PLAN Jacking up the house and digging out the floor created an additional 625 square feet for the new bath and laundry room. It also yielded up to 2 extra inches in ceiling height elsewhere, adding needed airiness in a TV hangout with no windows (there's a small one in the laundry, one in the bath, and two in the gym).

No matter: All eyes are on the screen in this cozy teen retreat, designed with multiple seating areas, including—a particular point of pride for the design team—custom bar-height tables made from thick slabs of Dekton solid surface on specially fabricated steel legs. "It looks like concrete, but is absolutely indestructible and has a great patina," Verga says. A snack station tucked under the stairs puts soda and chips at the ready and cleverly conceals the perimeter footing that protrudes about 12 inches into the room.

THE RESULT "Different levels of seating make watching movies and sports together a dream because everyone has room to spread out," says Verga. "The youngest son is an avid movie buff, so there are hundreds of movies down there. It's a place where the kids can relax a little, play video games with their friends, and just be boys." Call it the no-nagging-allowed clubhouse.







BEFORE Jacking up the house and digging down yielded a higher ceiling in the sons' lounge area, plus enough usable raw space to add a laundry (above), a full bath, and an exercise room.

Photography by Toni Deis



SECTIONAL APPEAL "In older houses, it can be hard to get big furniture pieces down the stairs," Verga says. This modular sofa made for easy transport and offers plenty of space to stretch out in while watching movies or playing video games.

SELF-SERVE A soda fridge, snack drawers, and a garbage pullout built into the nook under the stairs means there's no need to run up to the kitchen for refreshments. Light-reflecting mosaic tile on the walls of the alcove adds a soft, warm glow.



KICK-BACK CORNER
A pair of low-slung chairs perfect for gaming match the overstuffed sofa's comfort factor. Area rugs help warm up floors covered with vinyl planks that have a realistic wood-grain look.

SPACE EFFICIENT
Multiple levels of seating create a stadium effect for watching movies and sports, with upholstered stools at bar-height tables behind the sofa. A veneer of peel-and-stick gray barn wood installed on the diagonal adds texture to the TV wall.





EXPERT ADVICE

"You don't have to go light and bright. Sometimes a finished basement is about embracing the benefit of the darkness, which can create a cozy environment."

MIRIAM SILVER VERGA, *principal designer, Mimi & Hill*


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KNOW-HOW YOU NEED TO GET HOME UPGRADES DONE RIGHT

From the TOH Job Site

Building strong bones

As work progresses on the Concord Country Cape project house, Tom and Kevin spend a day putting together a beefy ridge beam and a sturdy structural window wall

BY TED CUSHMAN

PHOTOGRAPHY BY ANTHONY TIEULI



Tom and Kevin assemble a new ridge beam using three LVLs, the center one set higher to follow the angle of the rafters.

Lincoln and Megan Pasquina took a bold path when they decided to add on to their antique Cape in Concord, MA. Working with architect Andrew Sidford, they settled on a design for their addition that merges modern style with the house's traditional form. At the heart of the new plan is a high-ceilinged, open family room with a view onto the backyard. "As you step through from the kitchen into the new family room, you'll have vaulted ceilings and a wall of glass," says *TOH* host Kevin O'Connor. "That is the transition between old and new."

That wall of glass is more than a visual treat, however. It also does important structural work. "It's trying to hold all that glass, but it also has to hold up the roofline above it," says Kevin. *TOH* general contractor Tom Silva adds, "You have to think about the weight, obviously, but you also have to think about the lateral force of the wind against it. So it has to be really stiff."

The dramatic modern addition also means giving the old house a new ridge beam. "We're changing the pitch of the original roof, and extending its length to grab that new addition. So we're putting a new spine into the old house," says Kevin.

Key to both structural elements is the use of engineered lumber: manufactured beams and posts that offer strength and stiffness that's harder to get from regular sawn wood. Up ahead: See how the high-capacity new structures come together.

FAST FACT

››› An LVL beam is 50 percent stiffer and two to three times stronger than sawn lumber of comparable size.

Making the most of the view

Engineered posts and beams create a strong wall to support big window openings

TO MEET THE window wall's structural requirements, Tom and Kevin used laminated veneer lumber (LVL) for the top beam and headers, and parallel strand lumber (PSL) for the posts. They fastened the posts to the beam with hardened structural steel screws, and hung the lower window headers from the posts using blind-nailed steel connectors. Sheathing the wall with structural panels ensured the necessary shear strength.



1. Tom lays out the top and bottom wall plates. These pencil lines on the horizontal members will show him and Kevin where to nail the studs, cripples, and posts that support the heavy windows and the roof load.



2. Using a battery-powered impact driver, Kevin screws through the 5½-inch-thick LVL beam to attach a supporting PSL post. The self-tapping hardened steel screws need no pre-drilling.



3. Heavy 3-by-6-foot lower windows will be held up by windowsills supported by cripple studs. Here, Tom and Kevin tap a sill into place, to be attached with framing nails. Ordinary 2×6 lumber suffices to frame this part of the wall.



4. Tom sets a steel hanger for a window header. Like the engineered header itself, this steel connector has a lab-tested carrying capacity; this helps an engineer design the wall to carry the required loads while allowing wide window openings in the structure.



5. Kevin and Tom tap an LVL header into place above one of the lower window openings (the smaller upper openings will hold 3-by-3-foot windows). Straight, stiff, and strong, LVL members don't have the potential for crowning, bowing, or twisting that sometimes shows up in sawn wood.



6. Kevin nails a sheathing panel into place over the framed-up wall. Wall sheathing like this helps to stiffen the wall against racking, contributes to an airtight and water-resistant enclosure, and provides a good substrate for nailing on siding.

7. The crew teams up to stand the wall. "We could have used heavy equipment," says Kevin, "but when you have the bodies on-site, sometimes that's just easier." Push-pull poles at the corners of the wall help keep it from toppling after it reaches the vertical position.





8. A view from the backyard. "This is probably the most significant wall in the house," says architect Sidford of the new window wall. When completed, it will offer wide, open views over the new deck out to the field and woods at the back of the property. It will also usher plenty of natural light into the high-ceilinged family room and kitchen.

Marrying old structure with new

A three-layer LVL ridge beam will support the weight of the addition's complex roofline















IN PLACE OF THE house's original 2×10 ridge beam, Tom and Kevin installed a built-up beam using three LVLs. Building the beam on the ground would have been easier, but the hefty assembly would have been too much for the telehandler to lift at the end of its boom extension. So Tom and Kevin pieced the beam together in place.

To account for the roof pitch, they offset the center piece above the others. "If you follow the pitch of the rafters, the center LVL pushes up to stay in the plane of the roof," Tom explains. "So when you lay the sheathing on the roof, you have nailing at the top, and your sheathing isn't floating in the air."

1. To make room for the fat new ridge beam, Tom and Kevin cut back the ends of the existing rafters on the old part of the house. Here, Kevin uses a reciprocating saw to make his cuts.

2. Strapped to the telehandler's boom, the first of the heavy LVLs is lifted up to the roof and Tom and Kevin's waiting hands. Staging is in place for needed support as they move the LVL into position.

3. Using a battery-powered impact driver, Tom screws the first piece of LVL onto the end of a rafter.

4. The crew uses the telehandler to lift the second LVL up to Tom and Kevin. The machine assist requires some careful maneuvering to make sure the 22-foot-long LVL doesn't hit existing structure.

5. Tom attaches the second LVL, which is raised up a few inches to allow for the slope of the roof. Shims set it plumb.

6. Using a torpedo level, Kevin does a final check for plumb.

7. Kevin screws the last LVL in place. The three-layer beam will carry a substantial load from the modern addition's roof.



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Smart Home

Keeping tabs on your house

Protect your property from porch pirates, intruders, and more with a smart home-security system you can set up in an afternoon

BY CHRISTOPHER NULL

After four years of living with a traditional wired security system at his Mariposa, CA, home, Jim Allen was ready for a change. "I was tired of walking through the door with my arms full of groceries thinking, *I've got 30 seconds to turn off that alarm,*" he recalls. He was also paying $40 per month for professional monitoring, with a price hike looming. So Jim canceled his service—which took nearly a week of customer service calls—and installed a smart home-security package himself.

Most smart home security is designed with DIY in mind. There's generally no pro installation called for, and no contract required. Homeowners affix sensors to doors and windows and set up motion detectors and cameras themselves; everything is connected to a Wi-Fi-enabled hub and controlled via a mobile app. Unlike old-school security offerings, these smart systems give homeowners instant information about what's going on in their homes via their smartphones. And they communicate wirelessly with monitoring and emergency services instead of relying on a landline that could be cut by an intruder.

As for smart security cameras, they are evolving rapidly, most notably with improvements in night-vision technology. Grainy black-and-white footage is being replaced by crisper, high-resolution infrared video and newer full-color modes. Thanks to new facial recognition technologies, in the not-so-distant future, cameras will be able to tell not just that someone is approaching but whether they're a stranger or part of the family, reducing false alarms.

THE SMART SECURITY DIFFERENCE

"I appreciate that I can see what's going on in my home no matter where I am—one time I checked in from a cruise ship," says Jim, who set up a SimpliSafe system. "And when I arrive home, I can disarm the system and unlock the door from my driveway." A smart alarm can be voice-controlled, too, if connected to a voice assistant such as an Amazon Echo or a Google Nest device.

Systems also can be customized with add-ons that traditional wired alarms don't offer, such as water-leak and smoke detectors, as well as temperature sensors that send you a smartphone alert if your pipes are at risk of freezing and bursting. Jim upgraded his own with leak sensors at his sinks and smoke sensors that will alert him if a fire ignites.

Some companies, such as Ring, also include a feature in their mobile app that lets neighbors share and comment on one another's videos, creating a virtual Neighborhood Watch.

WHAT TO LOOK FOR IN A SYSTEM

For most homeowners, the easiest and most cost-effective solution is a whole-house smart security system. It comes with a hub or control panel with a siren, a handful of magnetic sensors that are triggered when a door or window is opened, a motion sensor that detects

TOH PRO TIP



Ross Trethewey
Home Technology Expert

"While any Internet-connected device has the potential to be hacked, setting strong passwords and turning on two-factor authentication provides a lot of protection. To secure your video clips from prying eyes, choose a company that offers advanced encryption."

INSTALLATION: COURTESY RING

movement in a room, and sometimes a security camera. But if you only need to monitor a small area, such as a sliding patio door, a front entryway, or part of the backyard, there are also stand-alone options that can be purchased à la carte, such as iHome's iSB01 motion sensor ($30; ihomeaudio.com), which detects unexpected activity in a room, and the affordable Wyze Cam v3 ($30; wyze.com), a simple indoor/outdoor camera.

Be sure any camera installed outside is rated for outdoor use; you can also check the IP (ingress protection) rating, which indicates how well it will stand up to the elements, including water (look for IP55 or higher). If the camera requires AC power, consider how you'll run a line to the power supply when deciding where to place it. If it's battery powered, mount it where it can be easily retrieved for periodic recharging.

Most major brands offer monitoring as an upgrade. This can be worth paying for, especially if you travel frequently or are often out of wireless range. For as little as $4.99 a month (with the option to cancel anytime), most monitoring companies will call if an alarm is tripped and will send first responders to your home if you don't answer within a set amount of time, or if you request help.

For Jim, the money he's saving is a major plus, but what he likes most about his smart home-security system is that it keeps him informed and in control 24/7. "I can always check my phone to see exactly what's going on in my house," he says. "I have total access."

COMPARING SMART SECURITY GEAR

These popular whole-house systems all offer starter packages with hubs and door/window sensors, plus plenty of extras, but their prices and features vary widely



Blue by ADT
bluebyadt.com

WHAT YOU GET: The Starter System ($220) comes with a hub and two door/window sensors.

ADD-ON OPTIONS: Doorbell, outdoor and indoor cameras ($200 each); motion sensor ($25); flood and temperature sensor ($35).

PROS: Access to the same quality monitoring service ($20 per month) used by wired-alarm customers.

CONS: No smoke sensor available. Utilitarian design.



SimpliSafe
simplisafe.com

WHAT YOU GET: The Essentials package ($259) comes with a hub, three door/window sensors, and a motion sensor.

ADD-ON OPTIONS: Doorbell, outdoor and indoor cameras ($99–$170 each); glass-break sensor ($35); smoke detector ($30); carbon monoxide sensor ($50); temperature sensor ($30); water sensor ($20); smart lock ($99).

PROS: Established brand with dependable, relatively stylish hardware.

CONS: Monitoring service is pricey at $25 per month. Indoor camera feels flimsy.



Wyze
wyze.com

WHAT YOU GET: The Core Starter Kit ($70) has a hub, two door/window sensors, and a motion sensor.

ADD-ON OPTIONS: Doorbell, outdoor and indoor cameras ($27–$51 each).

PROS: Very good video quality despite the reasonable price tag. Sleek hardware design. Professional monitoring is only $4.99 per month, the most affordable on the market.

CONS: No smoke sensor available.



Ring Alarm
ring.com

WHAT YOU GET: The Alarm Security Kit ($200) comes with a hub, one door/window sensor, and a motion sensor. Monitoring is $20 per month.

ADD-ON OPTIONS: Doorbell, outdoor and indoor cameras, some with motion-activated lights ($60–$250 each); a smoke alarm listener that sends an alert when existing smoke alarms go off ($35); flood and freeze sensor ($35).

PROS: Compatible with other brands' "Works with Ring" devices.

CONS: Extra door/window sensors are pricey at $20 each.



Vivint
vivint.com

WHAT YOU GET: The Starter Kit ($599, plus $45 per month for monitoring) includes a hub, two door/window sensors, a motion sensor, and a leak detector. Or sign a five-year contract and pay $60 per month.

ADD-ON OPTIONS: Doorbell, outdoor and indoor cameras ($200–$400 each); smoke and carbon monoxide detectors ($100); glass-break sensors ($100); smart lock ($180).

PROS: Sophisticated, easy-to-use equipment. Works with third-party Z-Wave devices.

CONS: Expensive. Pro installation required.

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Why Dark Stain Works

See how dramatic black stain added impact and interest to the Nordic-inspired interiors of the **TOH 2021 Modern Barnhouse**

In keeping with the principles of Scandinavian design, TOH 2021 Modern Barnhouse owner/designer Amy Matthews incorporated elements of light oak and cedar against a serene backdrop. But she also wanted to create a sleek, contrasting element in the mostly neutral spaces.

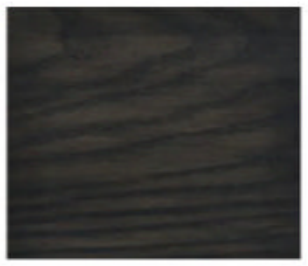


"By staining key black wood accents throughout the house, it creates interest and helps ground the open spaces. I chose Minwax® Oil-Based Penetrating Stain; it deposits color but allows the wood grain to shine through, so it feels warm instead of stark," says Matthews.

Sue Kim, Minwax color and design expert, agrees: "Unlike paint, even the darkest and boldest colors can work with the beauty of wood and capture the natural grain patterns to add a unique finish to any space."

To get the look, Matthews recruited a few friends to help stain cedar planks for the dramatic two-story hearth that pushes through to the home gym on the second floor, and opted to stain a series of interior doors to create grand entrances. "Minwax's oil-based formula adhered smoothly to the wood in a single coat, and dried in just under two hours. And since it comes in True Black, there was no need for premixing, which saved a lot of time and ensured a uniform finish."





Minwax Oil-Based Penetrating Stain is available in 36 colors, including True Black (shown).







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Does Your Home Need a Health Check?

Meet the pros focused on uncovering—and addressing—problems like leaky ductwork, poor ventilation, and airborne contaminants that could be undermining your health

BY DAN DiCLERICO

PHOTOGRAPHY BY JAY FRAM



It might not have been their dream home, but Jacki and Vance Vilandre felt good about their three-bedroom starter townhouse, with its open floor plan and cathedral ceilings, in Hillsboro, Oregon, near the Intel offices where Vance worked. Not long after moving in, though, the couple, along with their two young children, started experiencing a range of respiratory ailments. Jacki had lived with asthma most of her life, but within just a few days, her symptoms became so severe that she was put on steroids and a nebulizer. Over the next few weeks, the kids developed chronic nosebleeds and nagging coughs. Vance had nightly sneezing fits that interfered with his sleep, and he felt run-down all the time. The doctor's appointments and medical bills piled up.

"We were all just getting sicker and sicker," says Jacki. They began to suspect their house might be to blame, because a noxious smell would spill from the forced-air registers whenever the heat kicked on. Another clue: Vance's energy seemed to pick up during long stints at the office. The family tried room humidifiers and air purifiers, to no avail. "I finally said to Vance, we have to get someone in here to look at this house," Jackie recalls. That someone ended up being Robert Brierley,



DRAFT DETECTOR Healthy-home contractors like Robert Brierley conduct blower door tests to identify air leaks that can bring pollutants into living spaces. With all exterior openings, including any vents, closed off and all interior doors open, an airtight panel with a powerful fan is fit into the front door. The fan pulls air out of the house, lowering the pressure indoors; then, outdoor air comes in through any cracks and gaps that need sealing.

an HVAC technician with Revival Energy Group. He's part of a new breed of service professionals known broadly as home performance contractors, who specialize in healthy housing, .

The home performance industry has been around for several decades; in its early days, the focus was on energy efficiency. More recently, its growth has been driven by a mounting interest in healthy home environments—in particular, indoor air quality. Even before the pandemic, nearly a third of U.S. homeowners were worried that some aspect of their house was having a negative health impact, with concerns about indoor air quality topping the list, according to Harvard's Joint Center for Housing Studies. The figure is almost certainly higher now that people have been spending more time at home.

"Sick building syndrome" is known to be an issue in newer, tightly built homes, but older houses can also trigger health

DIY home health assessment

If you answer yes to any of these questions, your home isn't as healthy as it could be. If it's yes to most of them, consider bringing in a home performance pro for a complete analysis.

☐ Does anyone in your household have chronic, unexplained health symptoms?

☐ Are there any water leaks or consistently damp areas?

☐ Are most of the floors carpeted?

☐ If your house was built before 1978, could there be any lead-based paint inside or outside, and could any of it be peeling or flaking?

☐ Does the kitchen or do any of the bathrooms lack a working exhaust fan that vents to the outside?

☐ Are there drafts in the house?

☐ Are you unaware of your house's radon levels?

☐ If you have a forced-air HVAC system, is it equipped with only a basic flat-panel air filter?

☐ Could your home have asbestos—in furnace insulation, pipe wrap, or old vinyl flooring, for example—that's damaged, loose, or flaking?

☐ Do you live within a half-mile of an airport, highway, or industrial complex?

☐ Do you notice any musty or unpleasant smells in your house?

☐ Do you regularly use chemical-based cleaning supplies indoors?

☐ Have you seen cockroaches, mice, or other pests inside recently?

problems, especially if they have outdated HVAC systems or maintenance problems such as peeling paint. The medical community has taken notice. "When a patient comes in with uncontrolled asthma, it's usually triggered by something in the home environment, whether it's airborne toxins or a wet basement that's causing mold to circulate throughout the house," says Brian Christman, vice-chair for clinical affairs at Vanderbilt University and a spokesperson with the American Lung Association.

At the Vilandres' house, which was built in 2000, Brierley methodically went about conducting a full battery of air-quality tests. He set up a blower door test to measure airflow and leakage throughout the house, including the HVAC ductwork for the forced-air system. He also used a plug-in air monitor to check levels of dust, chemical pollutants, carbon monoxide, and relative humidity over several days.

The results told a clear story: An oversize furnace was lowering the air pressure in the house, causing dusty air from the attic—laced with chemicals from the cellulose loose-fill insulation installed there—to seep in through cracks in the ceiling. Leaky ductwork was bringing even more attic air into the living spaces. Gaps throughout the building envelope were causing drafts and contributing to low relative humidity. "With everything flying around that house, it was like living in the dust chamber of a vacuum cleaner," Brierley says.

To correct the issues, he and his team first air-sealed the attic and applied caulk and foam sealant around the many recessed lights in the living room's cathedral ceiling. Ductwork was sealed with a combination of mastic, mesh tape, and nylon straps. Since replacing the furnace was cost-prohibitive, Brierley was able to reduce the negative pressure in the house by lowering the fan speed and trimming the bottoms of the doors in the upstairs bedrooms to allow air in those spaces to circulate back into the system.

To bring fresh air into the house and manage humidity levels, Brierley installed a balanced mechanical ventilation system to remove stuffy indoor air and replace it with equal amounts of outdoor air that's warmed to room temperature. Finally, he installed an in-line air cleaner in the ductwork, which uses ultraviolet light and activated carbon cells to scrub the air of any remaining chemicals.

These upgrades cost the Vilandres about $5,000, but they say it was worth every penny. "The change was almost instant," says Jacki. "I went from being on so many asthma medications to just a basic maintenance inhaler, the kids' nosebleeds stopped, and we could all finally sleep through the night." Brierley's follow-up tests showed that chemical pollutants went from a dangerous level of 1,467 parts per million (ppm) to an acceptable 359 ppm. Duct leakage dropped from 18 percent to 5 percent, lowering dust levels and energy costs alike. And the relative humidity inside rose to an ear-, nose-, and throat-friendly 52 percent.

Thankfully, the average house isn't plagued by so many serious—or costly—health issues. But there's room for improvement in most homes, whether it's dusty carpeting or a creosote-lined chimney that's undermining air quality. Up ahead: a look at the major trouble spots home performance contractors like Brierley seek out, along with expert strategies for a lasting cure.

> "With everything flying around that house, it was like living in the dust chamber of a vacuum cleaner."
>
> —**ROBERT BRIERLEY,** *home performance contractor*



THERMAL IMAGING An infrared camera used as part of the blower door test reveals voids in the walls, ceilings, and floors. "It pinpoints air leaks by identifying changes in temperature," Brierley says. He also uses a humidity sensor to measure moisture levels throughout the house.



COMPARING AIR PRESSURE A digital manometer measures the home's indoor air pressure along with the atmospheric pressure outside via two tubes: One stays inside, the other is placed outside a window. If the readings are very different, air will move in or out of the house through gaps and cracks to compensate, potentially bringing pollutants indoors.

What a home health expert looks for

Home performance contractors generally take a three-pronged remediation approach when they determine a house has poor air quality: controlling pollutants at the source, introducing balanced mechanical ventilation, and improving air filtration. Here are the top contaminants they find—starting with the most common—along with their source-control strategies.

1

Dust

Because it's sticky, dust collects allergens such as pollen as well as toxins such as lead, and even bacteria and viruses. In a dusty house, "pollutants are constantly settling and then being redistributed by daily activities," explains Larry Zarker, CEO of the Building Performance Institute (BPI).

▸ **FIND IT** Dust collects on surfaces and settles into carpets, upholstery, and curtains. "The average house accumulates over 40 pounds of dust a year," says Sam Rashkin, an architect and former national director of the EPA's Energy Star for Homes program. Drafts exacerbate the problem: "We see many cases where interior air leaks bring toxic dust from the attic or crawl space into the home," says Brierley.

▸ **CONTROL IT** With forced-air HVAC, using a pleated furnace filter is an effective way to reduce dust (see page 67 for details). Seal leaky ducts to keep dusty air from seeping in and circulating through the house. Vacuum floors and upholstery regularly, ideally with a machine that has a HEPA filter. If possible, swap carpets for washable rugs.

2

Moisture

Excess moisture can breed mold, which may exacerbate allergies and asthma. But even if mold isn't a problem, "chronic dampness allows microbes like bacteria to thrive," says Zarker. Moisture can also accelerate chemical activity in the air; for example, the off-gassing of formaldehyde increases in high humidity. Moisture undermines a house's structure, too, causing wood to warp, metal to corrode, and mortar to crumble; this allows in yet more moisture, creating a vicious cycle of contaminants, and possibly inviting in pests as well.

▸ **FIND IT** Moisture builds up quickly in poorly ventilated kitchens and baths and anywhere there's been a water leak.

▸ **CONTROL IT** To keep rainwater out, clear gutters regularly, make sure downspouts are intact, and check that leaders are carrying water at least 5 feet away from the house. Stay on top of plumbing leaks and clogs; a quick check of the water meter when no water-consuming appliances are running can tip you off to hidden leaks. Ensure that relative humidity levels inside are in the optimum range of 30 to 50 percent by using humidifiers or dehumidifiers as needed.

3

VOCs

Short-term exposure to volatile organic compounds (VOCs) such as benzene and formaldehyde can cause headaches and dizziness as well as eye, nose, and throat irritation.

Long-term exposure can lead to liver and kidney damage, and even cancer.

▸ **FIND THEM** Countless household products and building materials off-gas VOCs, including paints, cleaning solutions, carpet, and fiberglass insulation. Furniture treated with flame retardants is another major source of VOCs, Brierley says.

▸ **CONTROL THEM** Choose low- or no-VOC paints. Avoid vinyl shower curtains and window blinds and household items made from composite wood; these products can have high concentrations of VOCs.



SEALING DUCTS Pros like Brierley use mastic to ensure ducts are airtight; this keeps pollutants from combustion appliances as well as pollutants found in attics and basements from seeping in and getting circulated throughout the house.

4

Radon

This odorless gas, which comes from the natural breakdown of uranium in soil, rock, and groundwater, is the second leading cause of lung cancer in the U.S.

▸ **FIND IT** Radon typically enters through cracks in the foundation and gaps around service pipes. It mostly accumulates in the lowest parts of a house, such as the basement or crawl space. Nearly 1 in 15 U.S. homes has elevated radon levels. DIY radon test kits are available online, at home centers, or through your state radon program. These tests measure radon levels over several days. The EPA recommends testing at least every two years as well as after you or your immediate neighbors do a major renovation, since disturbing the ground can release the gas.

▸ **CONTROL IT** If test results show radon levels of 4 picocuries per liter or higher, hire a pro to put in a radon mitigation system to capture the gas beneath the house and vent it outside. Retest every two years to make sure levels stay low.

5

Smoke

Smoke from fireplaces and cooking has high levels of particulate matter and VOCs that can trigger respiratory issues.

▸ **FIND IT** A wood-burning fireplace is a major source of smoke, but a poorly ventilated kitchen can also be a problem area.

▸ **CONTROL IT** Burn firewood sparingly, and make sure it's been seasoned. Have your chimney cleaned annually by a chimney sweep certified by the Chimney Safety Institute of America (CSIA) to prevent the buildup of creosote, which can irritate the skin, eyes, and lungs. Make sure your kitchen cooktop has a range hood that vents to the outdoors. "The capture rate should be somewhere between 70 and 80 percent," says Rashkin.

6

Carbon monoxide

Even low concentrations of this odorless gas can lead to chest pain. And CO poisoning causes more than 400 deaths and 50,000 emergency room visits each year.

▸ **FIND IT** All fuel-burning appliances, such as clothes dryers, water heaters, and furnaces, produce small amounts of CO.

▸ **CONTROL IT** Have fuel-burning equipment serviced annually by a pro; this includes having a central heating system—furnace, flues, and chimneys—cleaned, inspected, and tuned up. Install CO detectors on walls or ceilings on every level of the house, and within 10 feet of each bedroom door to ensure you hear the alarm and wake up. Keep them 15 feet from heating and cooking appliances and out of bathrooms to avoid nuisance alarms.

7

Lead

Exposure to lead, a heavy metal, can affect many parts of the body, including the nervous system. It is particularly harmful to children, causing slowed growth and behavioral and learning problems.

▸ **FIND IT** Lead paint and lead-lined plumbing pipes are common in homes built before 1978. DIY kits are available to test for lead paint and lead in tap water.

▸ **CONTROL IT** The presence of lead paint isn't an automatic cause for alarm; it has to be disturbed and released into the air



FURNACE EXAM Properly maintaining a home's HVAC system helps keep airborne contaminants like dust and carbon monoxide out of living spaces. Here, Brierley inspects the equipment so he can fine-tune it as needed. For a gas furnace like this one, his maintenance checklist includes cleaning the burners, flushing the condensate drains, and adjusting fan settings and airflow speeds.

to become a hazard. If it's peeling or flaking, it will need to be encapsulated or removed. If you're doing a major renovation, your contractor should follow the EPA's Lead Renovation, Repair and Painting (RRP) guidelines. As for lead in drinking water, some states and utilities will cover the cost of replacing a lead service line that brings water into the house. A reverse osmosis system will remove it, as will some carbon filters, as long as they meet the NSF/ANSI standard for removing lead.

8

Asbestos

Decades ago, this mineral's strong, flexible fibers were used to make many building materials. Like lead, asbestos is only a health concern when it is disturbed and becomes airborne. Breathing in asbestos fibers can lead to a chronic lung disease known as asbestosis as well as mesothelioma, an aggressive cancer.

▸ **FIND IT** Particularly if your house was built before the 1980s, there may be asbestos fibers in the insulation around boilers and furnace ducts; in vinyl tiles, as well as the adhesives used to install them; in acoustical ceiling tiles, including those with a popcorn texture; and in joint compounds used for walls and ceilings. If you notice frayed insulation or worn-out flooring tiles and don't know if they contain asbestos, have them tested by a pro.

▸ **CONTROL IT** Asbestos material in good condition can be left alone. If it becomes damaged and needs removal, however, the work should be done only by a contractor licensed by your state to perform asbestos abatement.

9

Pests

Cockroach droppings and body parts as well as rodent urine can mix with house dust and become airborne, triggering allergy and asthma symptoms.

▸ **FIND THEM** Pests travel throughout the house and can be found almost anywhere, drawn by food, water, and shelter. More than 30 percent of U.S. households reported seeing rodents during the last 12 months.

▸ **CONTROL THEM** Wipe up spills and crumbs immediately, don't let trash linger, and if you have pets, empty out or cover their food bowls when not in use. To keep pests from entering the house in the first place, seal up any cracks and crevices in your home's exterior (around windows, doors, vents, and plumbing lines), with a combination of caulk, expandable foam sealant, gaskets, and weatherstripping.

Three ways to ventilate

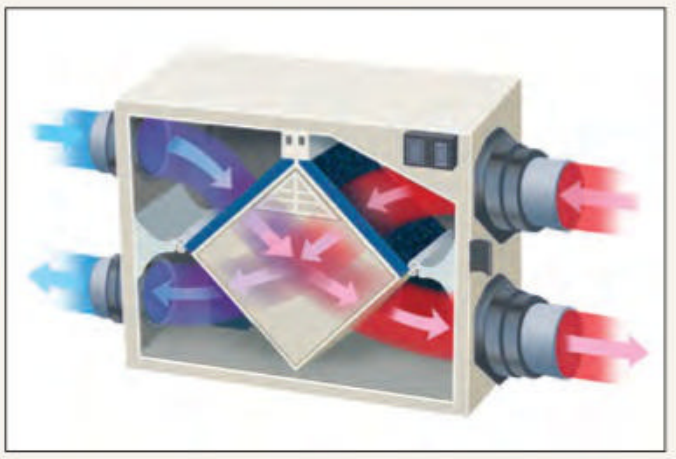
No matter how diligent you are about source control, "residual contaminants like dust, pollen, and VOCs will find their way in," says Rashkin. Cracking a window lets in fresh air but also wastes energy and can introduce outdoor pollutants such as smog. That's why mechanical ventilation is so important.

Back in 2004, *TOH* plumbing and heating expert Richard Trethewey learned this the hard way when he built his dream house on the coast of Massachusetts. He incorporated much of what he'd learned from his decades at *TOH*, from radiant heating to an ice and water shield. "But like the shoemaker's kids, I didn't put in enough mechanical ventilation," he says now. "I thought, *We're right on the water, I'll open the windows to let in the fresh sea air.*" He didn't take into account that he was often on the road for long stretches. "We'd come home and the air would be stale. You could smell whatever we'd made to eat the week prior," Richard recalls. He ended up putting in a whole-house ERV after construction was complete—at a significantly higher cost. "Now the air is clean, and there's incredible thermal comfort. I'll never live in a house without a fresh air system again."

Here's a look at mechanical ventilation solutions for different homes, climates, and budgets.

The gold standard

An energy recovery ventilator (ERV) delivers fresh air to the house. And because it brings in outdoor air and removes indoor air in equal amounts, there's no change in pressure. In the winter, warm indoor air heats up cold incoming air, while in the summer the opposite happens. Not only does that save energy, it helps balance humidity levels throughout the year. In homes with forced-air heating or cooling, the ERV will usually be tied into the existing ductwork. It can also be installed independently with its own ducts, a good option for homes with electric or hydronic heat. ERVs cost between $1,000 and $1,500, and installation is another $1,000 to $3,000. "I would love to see an ERV in every house in America, but not everyone can afford that or has room for the equipment and ductwork," says *TOH* home technology expert Ross Trethewey.



An ERV brings in fresh air from outside while expelling stale indoor air. The two airstreams pass by each other, without mixing, in an exchange core, allowing for an efficient transfer of heat and moisture from the old stream to the new one.

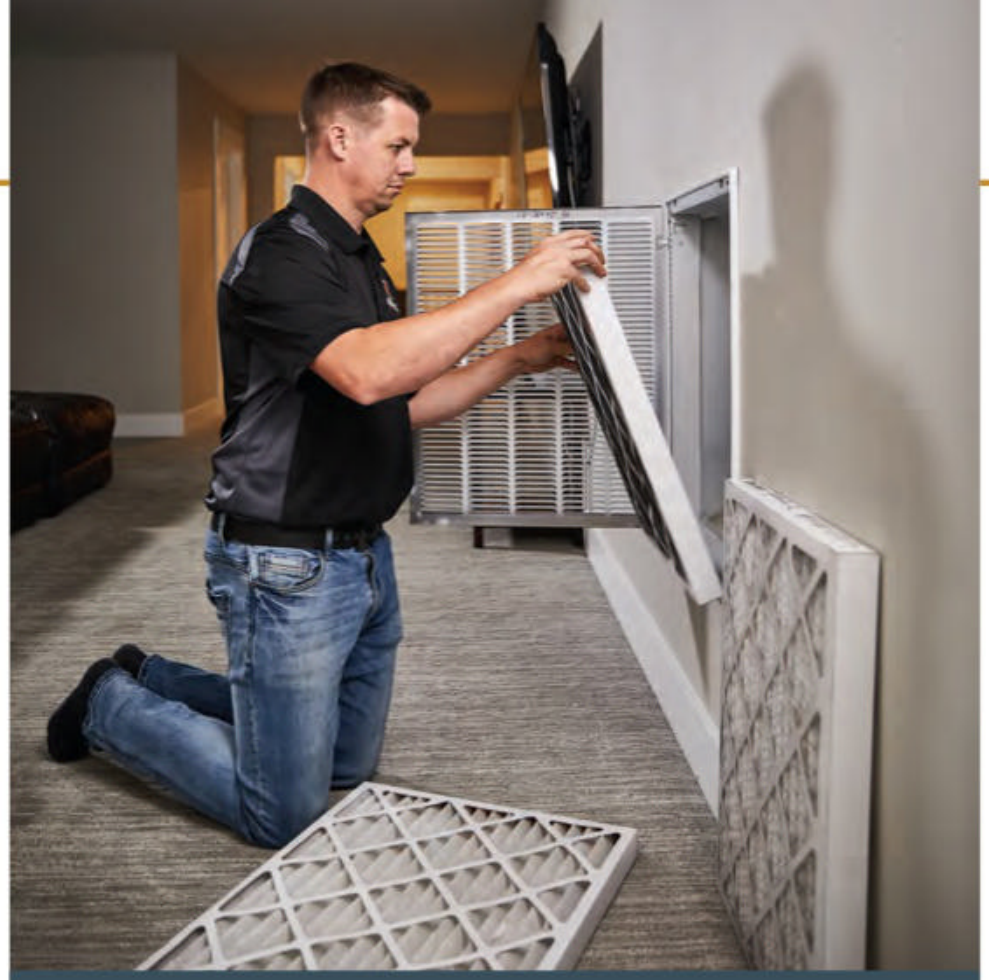
The next-best option in cooler climates

A whole-house exhaust-only system expels stale indoor air and puts the house under negative pressure; fresh outdoor air then seeps in through gaps in the house to fill the vacuum. It costs $300 to $500 and usually consists of a single, centrally located fan. A bath fan rated for continuous, quiet use can function as one. So can an attic fan, but make sure it's sized and installed by a pro so it doesn't cause combustion appliances to back draft. Homeowners in areas with long, hot summers should avoid exhaust-only ventilation, Rashkin says, since "depressurization can pull humid outdoor air into the construction assembly, where it may condense on drywall and cause rot or mold."

The next-best option in hot, humid climates

A whole-house supply-only system, made up of a central supply fan connected to ducts, draws outdoor air in through a fresh-air intake. This puts the house under positive pressure, which pushes stale air out through leaky spots. Unlike central AC, it doesn't use refrigerant to cool the air, but some systems filter and dehumidify the air as it enters the home. The average cost is $600; features like filtration up the price to $1,000 or more. Again, consider your climate: "Supply-only ventilation isn't ideal in regions with long, cold winters, because pressurization can push warm indoor air into framing cavities and the attic, where it can condense on cold sheathing, leading to damage or mold," Rashkin says.

ILLUSTRATION: IAN WORPOLE



CLEARING THE AIR Brierley installs a 4-inch pleated filter in the grille of an air return. Many systems come fitted with basic 1-inch filters. A thicker filter captures more particulates as they circulate and doesn't need to be changed as often. Be aware that if you want to upgrade to a thicker filter, a pro will likely need to modify the rack that holds it.

Upgrade your filter

Most forced-air systems have flimsy, 1-inch-thick spun-fiberglass filters, or "rock catchers" as Richard calls them, that aren't effective at capturing contaminants. A pleated filter has more surface area, "so it's going to remove many more pollutants," says Rashkin, who recommends 4-inch pleated filters for most homeowners. Filters carry MERV (minimum efficiency reporting value) ratings, and the higher the number, the more particles it will trap. But most household systems aren't built to handle a filter with a very high MERV rating; usually, something between MERV 8 and 12 will work the best. Check your furnace manual or consult with an HVAC pro to be sure.

> Despite their greater surface area, pleated filters don't impede airflow, so they won't put stress on a furnace's motor."
>
> —ROBERT BRIERLEY

The next step up in filtration is a device called an air scrubber that's tied into the ductwork near the air handler; it uses UV light and a catalytic process to zap airborne germs, viruses, and VOCs. "It's a nice add-on for the highly health-conscious," says Richard, "but it needs to be installed by an experienced pro to ensure proper airflow." The devices start around $800 installed. If your home doesn't have forced air, you can put in a freestanding unit; typically, it's installed in the attic and ducted to individual rooms.

What to do next?

If you think you may have an air-quality problem, getting your home assessed by a home performance contractor starts at about $500. While the home performance industry has been around for decades, the focus on health is relatively new, so do your homework before hiring a contractor.

> **Start by searching** for a certified pro with a Healthy Home Evaluator (HHE) certificate at bpihomeowner.org; that's the website of the Building Performance Institute (BPI), the standards-setting body of the home performance industry, which started the HHE program in 2016.

> **As always,** look for a pro who answers your questions thoroughly, ask for references, and make the calls to follow up.

> **During an assessment,** expect the contractor to use advanced sensors and surveillance equipment to monitor air quality and identify contaminants.

Not ready to call in a pro? A smart indoor-air-quality monitor such as the Wave Plus ($230; airthings.com) is a good way to gather some information. "A device that measures contaminants like particulate matter, total VOCs, carbon monoxide, radon, temperature, and humidity can give you a good sense of the health of your house," says Ross.

Home Finances

Play it safe—and save

Home improvements that reduce risk can yield lower home insurance costs

BY ELLEN STARK



An older house can be expensive to insure. If you want to be able to replace distinctive building materials and architectural features in the event of a loss, you may need to increase your policy limits for the structure or add optional coverages. "There definitely are concerns for older homes that often lead to higher costs," says Karen Collins, assistant vice president of personal lines at the American Property Casualty Insurance Association, a trade group. "Being able to access the materials or the craftsmanship needed to re-create your home can drive up costs."

That's not the only challenge to finding affordable insurance. Even if your home is just 30 or 40 years old, an outdated roof, plumbing, or electrical system can raise the cost of insurance, or even make qualifying for a policy difficult. Making upgrades that leave your home safer from accidents, break-ins, and natural disasters can help.

KNOW YOUR HOME'S HISTORY

If you haven't owned your house for long, you may not know what problems the previous owners experienced—but your insurer does, and a spotty history could translate to a higher premium. Insurers look for problems that could be recurring, like burst pipes, kitchen fires, or break-ins in a high-crime area.

You can see what insurance claims have been filed in the past by requesting a free copy of your Comprehensive Loss Underwriting Exchange (CLUE) report (order one at consumer.risk.lexisnexis.com). Treat that as a guide to what you may need to get fixed. "When insurers see that the house has had losses, they will ask if repairs have been made that would prevent similar ones in the future," says the Insurance Information Institute's Janet Ruiz.

BEEF UP SAFETY AND SECURITY

Upgrades that will alert you to safety problems quickly can earn you a

Illustration by Peter and Maria Hoey

discount on your homeowners policy. For protection against break-ins, that can mean cameras and an alarm system, especially if it's connected to local authorities. A home security system may qualify you for a discount of up to 5 percent on your premiums, says Ruiz.

Insurers like to see hardwired smoke detectors throughout and a fire extinguisher in the kitchen. A sprinkler system can also earn you a better rate.

WATCH FOR WATER LEAKS

Old pipes and valves in your home raise the risk of leaks and water damage. "People underestimate how frequently water damage occurs and how significant it can be," says Sarah Jacobs, vice president of personal lines product development at Nationwide. Nearly a third of home insurance claims are from water damage, Jacobs adds, with the average running around $10,000. Many insurers will offer a discount for installing water-leak detectors near the kitchen sink, washing machine, water heater, and other flood-prone spots—even as much as 10 percent. By alerting you to a minor drip early, these monitors can limit the damage; some even shut off the water. As smart home technology becomes more widespread, some insurers are also starting to offer discounts for monitoring systems that connect to an app on your phone (for more, see Smart Home, page 57).

UPDATE THE INFRASTRUCTURE

"Once a home hits forty years," says Ruiz, "the plumbing, electrical, and foundation are considered old because of changes in building codes and upgrades in materials." An older home might have corroded valves and leaky pipes, or outdated wiring. If you can show your insurer that you've made upgrades, you could save as much as 5 percent on your premium. In rare instances, old wiring might make your home uninsurable—say, if a high percentage is knob-and-tube or aluminum.

The average life span for a roof will depend on the material and the weather in your area, and can be as little as 20 years (for asphalt shingles) and as long as 50 (for slate and tile). "Newer roofs can earn discounts with most carriers, often those no more than ten years old, especially in states prone to hailstorms or high winds," says Collins.

Another problem with an old roof is that if it's damaged in a disaster, your insurance may not cover the full tab to replace it. "Insurers are really penalizing people with roofs older than ten years," says Amy Bach, executive director, United Policyholders, a consumer advocacy organization based in San Francisco. Policies often pay the depreciated cash value of a roof, not the replacement value, leaving you on the hook for much of that cost, Bach says. The same goes if you have to replace old electrical and plumbing systems—so make sure your policy will pay to install a system that's up to today's standards.

PREP FOR NATURAL DISASTERS

In areas of the country prone to natural disasters, such as hurricanes, earthquakes, or wildfires, certain home improvements may lower the price of insurance. "Mitigation that helps reduce your risk of loss or the extent of damage may earn a discount," says Collins. In high-risk areas, some insurers might require certain mitigation to allow you to qualify for a policy in the first place.

In hurricane regions, your roof is key, and in addition to having a newer one insurers may want to see it tied down. In areas where earthquakes are common, your foundation is important, and may need to be retrofitted with braces and bolts, says Ruiz. (California residents may qualify for state funding to help cover the cost.) You also might earn a discount for adding a seismic shutoff valve on your gas line.

The recent rash of wildfires in western states is upending the insurance market there. "People are getting dropped in fire-prone areas," says Bach. "It doesn't matter what you've done, it's where you are."

Taking steps to harden your home against a wildfire probably won't mean a better price, but it may be the only way to get a policy. That means building with fire-resistant roof and deck materials, landscaping safe zones near the house, and adding water storage tanks, mesh over vents to keep out embers, and dual-pane heat-resistant windows. "We're frustrated that insurers are not rewarding people for wildfire risk reduction," says Bach. "But we are putting pressure on them to take risk-reduction measures into account, and the tide is turning."



EXPERT ADVICE

"Keep in mind that homeowners insurance covers accidents on your property as well as your home itself. Potential hazards, including swimming pools and trampolines, fall into a category of 'attractive nuisances' that insurers see as liability risks, and can result in higher premiums."

KAREN COLLINS, *assistant vice president, American Property Casualty Insurance Association*

all about

Cork flooring

It's cushiony underfoot, easy to care for, and far more versatile than you might think. Here's what you need to know about choosing and using this resilient natural floor material in your home **BY JOSH GARSKOF**

The bark of the cork oak tree has been used to seal champagne bottles since the 1600s, but it was a pretty new idea to use it as flooring in 1937, when it was installed at Frank Lloyd Wright's Fallingwater. Visit the iconic house today, and you'll see much of that cork still in service, a testament to its durability. The material was prized for its warm natural look, noise-dampening ability, and ergonomic comfort—and still is. "Many adults with back issues who can't stand on hardwood or tile for very long love cork," says Joel Hirshberg, co-owner of Iowa-based Green Building Supply, who has been selling the flooring for 21 years.

It's also a sustainable choice. Cork is harvested by carefully peeling off the outer layer of a mature *Quercus suber;* the harvest doesn't damage the evergreen tree, which regrows its bark roughly every nine years. Cork is made into two types of flooring: glue-down tiles and click-together planks. In 2019, waterproof cork planks hit the market, making cork floating floors viable anywhere in the house, even bathrooms and laundry rooms. Cork flooring now comes in a wide variety of looks, too, from classic speckled designs to a range of colors to finishes that mimic wood and stone. But while today's cork works with all kinds of interiors, its inherent characteristics remain its strongest sell. "I installed a floating cork floor over vinyl tile in my living room, dining room, kitchen, mudroom, and den," says Texas interior designer Amity Worrel, who has worked with cork for more than two decades. "When I drop things they do not break, they bounce. And when my kids run through the house at breakneck speed, their footfalls do not interrupt my Zoom calls," she says. Up ahead: how to use cork flooring in rooms of your own.

Photograph by Michael J. Lee

VITALS

What does it cost?
About $5 to $10 per square foot. Pro installation adds $2 to $3 per square foot for a floating floor and about $6 to $10 for glue-down.

How long does it last?
Both glue-down and floating cork can last 40 years or more if they're carefully maintained—otherwise expect 15 to 20 years.

DIY or hire it out?
Floating cork clicks together without fasteners or adhesive, making installation a DIY-friendly job. Glue-down cork requires a perfectly flat subfloor and quick-setting adhesive, so in most cases, installation is best left to a pro.

How much maintenance?
Cork requires the same routine care as a wood floor: vacuuming, damp mopping, and protection from sliding chair legs and grit-covered footwear. Most cork flooring needs recoating with polyurethane every 3 to 10 years, depending on how much use it gets.

Where to buy it?
A flooring store, green-building supplier, or manufacturer's website will have the best selection and service.

What's the warranty?
It will range from 15 years to "lifetime," or as long as you own the house. There should be one for the cork and one for the finish.

A checkerboard floor is a kitchen classic; these glue-down cork tiles make it back-friendly, too. *SHOWN: Duro Design's Barriga Natural and Baltico Stormy White, about $8 per sq. ft.*

Is cork flooring right for you?

Here are some pluses and minuses to consider

PROS

✚ **RESILIENT AND COMFORTABLE** A cubic inch of cork bark holds about 200 million air cells—so even a quarter-inch of cork in a floating floor offers ample cushioning for your feet and back.

✚ **WARM AND QUIET UNDERFOOT** Its air cells make cork a natural thermal and acoustic insulator. Cork flooring is an especially good choice in colder climates.

✚ **MOLD, INSECT, AND FIRE RESISTANT** Cork contains an antimicrobial wax called suberin that also repels moisture, mold, bugs, and even fire.

✚ **DAMAGED SPOTS CAN BE REPLACED** If tiles or planks get gouged, the affected pieces can be removed and new ones swapped in.

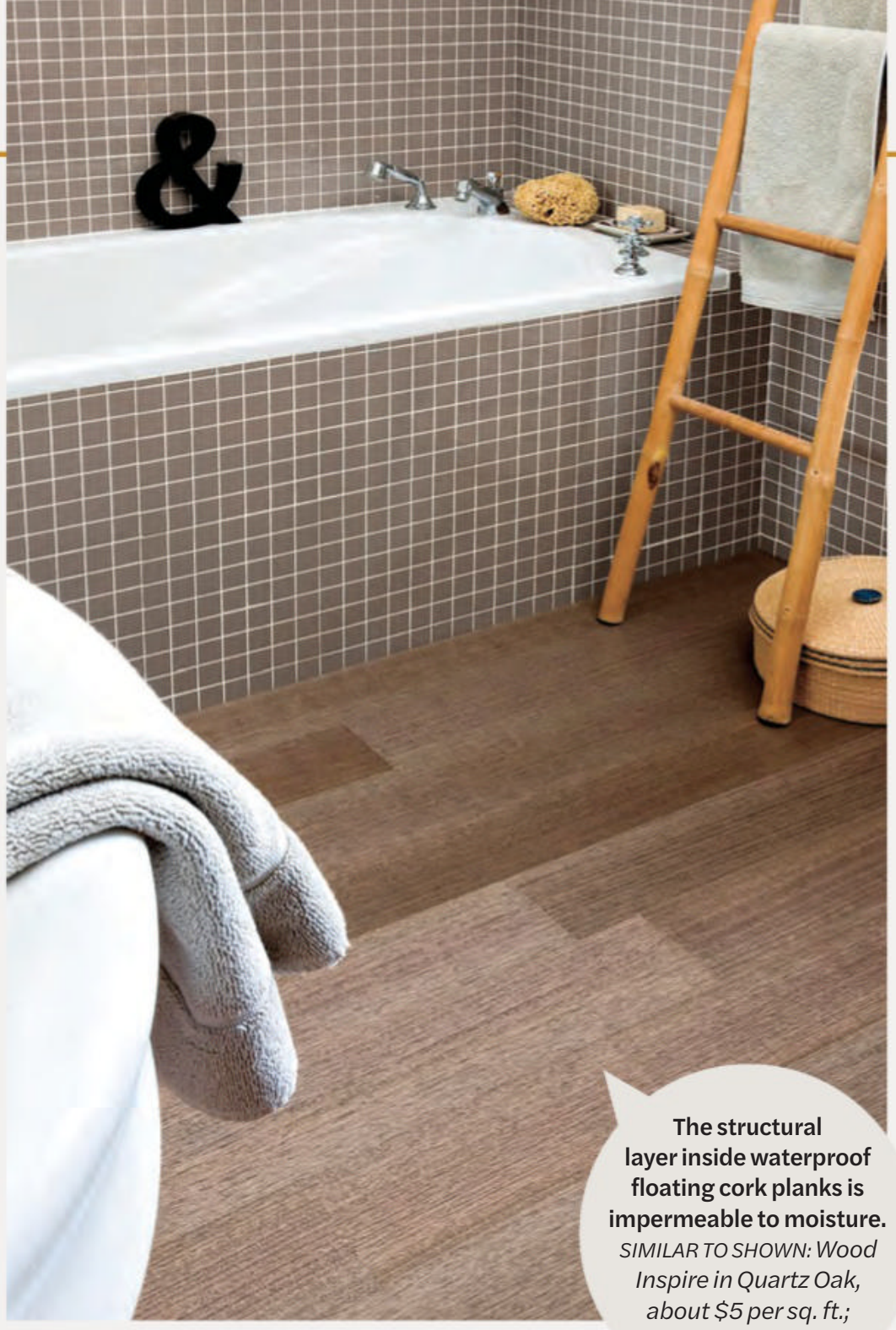
✚ **ECO-FRIENDLY CHOICE** In addition to regrowing their bark roughly every nine years, cork oaks can live for 200 years or more. Cork forests absorb millions of tons of carbon each year.

CONS

x **FADES IN DIRECT SUN** Unless it's a wood-look product with a PET (plastic) top layer, cork flooring—including products printed to look like stone or colored with stain—will lighten with exposure to ultraviolet light. The UV protectants in a clear coat provide some buffer, but not as much as UV-blocking windows or window film. Without these precautions, it's best to avoid cork in areas that get a lot of direct sunlight.

x **PRONE TO SCRATCHING** Like other natural flooring such as wood and linoleum, cork can get abraded over time, especially if you have pets. If that's a concern, avoid it in high-traffic areas, or be prepared to refresh the top coat regularly.

x **HARD TO TELL WHEN IT'S TIME TO RECOAT** The visual complexity of many cork floors can make it difficult to see when the finish is wearing away and a new coat of polyurethane is needed. Poor maintenance will shorten its life span.



The structural layer inside waterproof floating cork planks is impermeable to moisture. *SIMILAR TO SHOWN: Wood Inspire in Quartz Oak, about $5 per sq. ft.; amorimwise.us*

GAME CHANGER

Waterproof floating floors

ITS NATURAL WAX makes cork inherently water resistant. But the high-density fiberboard (HDF) layer that typically stiffens floating floor planks and forms their click-and-lock fastening system can absorb moisture that seeps into the seams between the planks. That's what makes waterproof click-together cork such a big deal: It replaces the standard HDF structural layer with one made from cork that's been impregnated with high-density polyethylene (HDPE) plastic. "Although it's derived from petroleum, it is free of chemicals like formaldehyde or PVC, and is a favorite among people with allergies and chemical sensitivities," says Hirshberg, who has seen a 300 percent spike in cork flooring sales since waterproof planks were introduced. The HDPE makes floating cork floors a great choice for full baths and laundry rooms. In the wettest locations, Hirshberg recommends following manufacturer instructions for gluing down the waterproof planks rather than floating them; that way, if water does work its way down between planks, it's unlikely to lead to mold growth or rot underneath.

COURTESY REALCORKFLOORS.COM

CORK TWO WAYS

Their costs are similar, but the two types of cork flooring are manufactured and installed differently

click-and-lock floating planks



BEST FOR: DIY installation, including over existing flooring such as vinyl or tile

➔ These planks click together and have an HDF or HDPE core that's typically sandwiched between layers of agglomerated cork, which is ground-up cork pressed together with adhesives. They come in a range of looks: Many products have cork veneers, often stained or photo-printed with a realistic wood or stone image. Boards can be laid horizontally, vertically, or diagonally, allowing for certain patterns like herringbone. Floating cork usually has beveled edges and almost always comes with a long-lasting polyurethane-based factory finish. Planks are often 36 inches long and 7½ or 12 inches wide, although some products with wood or stone looks come in tiles and squares.

glue-down tiles



BEST FOR: a showpiece pattern or an authentic mid-century look

➔ These tiles get adhered to the subfloor and have been made the same way for 75 years: Agglomerated cork is pressed into blocks, sliced into sheets, and cut into tiles. They're either homogeneous—meaning the material looks the same throughout—or heterogeneous, which means they have a veneer layer that may be stained or printed. Most are 3⁄16 of an inch thick and are prefinished with polyurethane (a few old-school products come unfinished or coated with wax). What sets them apart from floating cork is that they're available in a wide range of colors, sizes, and shapes, such as triangles and pentagons, allowing for endless mosaic patterns, like stars and geometrics.

SEE IF IT HAS A RATING

Some cork products are labeled according to one of two classification systems for resilient flooring. This means the manufacturer tested and rated the flooring's resistance to abrasion, impact, staining, fire, and moisture. When in doubt, order a higher level for your project; this ensures a more durable floor and finish, says Gonçalo Marques of Amorim Cork Flooring, the world's largest producer of cork products.

RATING	RECOMMENDED FOR	HOUSEHOLD USES
21 or **AC1**	Moderate residential use	Bedrooms and closets
22 or **AC2**	General residential use	Living and dining rooms
23 or **AC3**	Heavy residential use	Hallways and entryways
31 or **AC3**	Moderate commercial use *(hotels & small offices)*	Kitchens and other high-traffic areas
32 or **AC4**	General commercial use *(large offices & cafés)*	Any hardworking room in the house
33 or **AC5**	Heavy commercial use *(government buildings & department stores)*	Spaces that get a lot of abuse, such as home gyms

MEG REINHARDT (2)

>> SHOP SMARTER

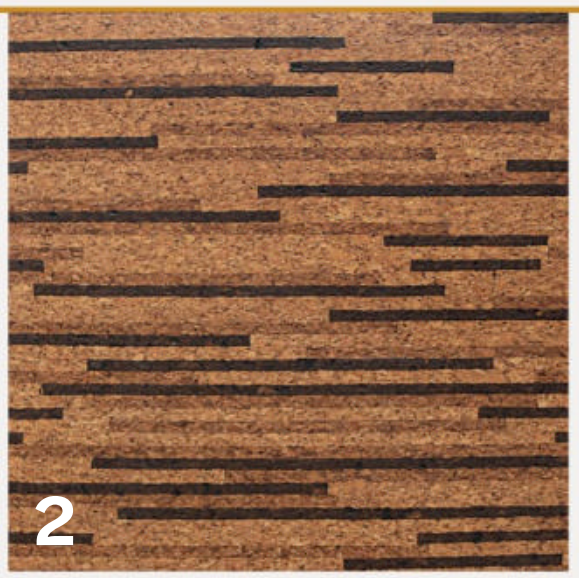
Marks of quality to keep in mind

> **Cork from the Mediterranean** is more resilient than cork from Asia, which comes from a different tree species, *Quercus variabilis.*

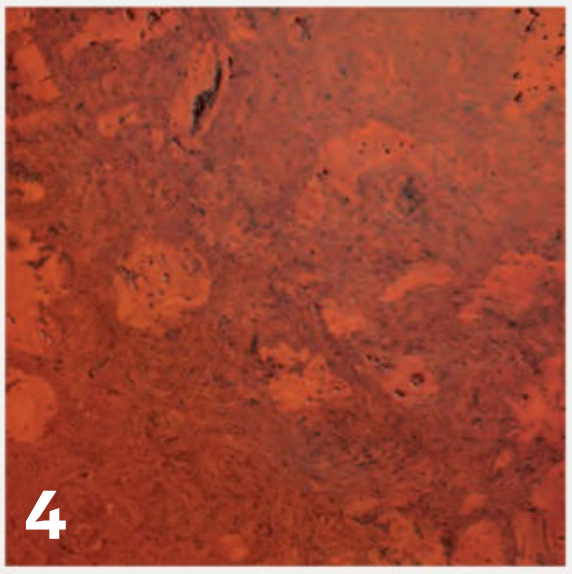
> To ensure cork flooring **has no formaldehyde and won't release VOCs,** look for independent certifications such as GreenGuard Gold and Global GreenTag.

> Most cork flooring with a veneer top has a wear layer 2mm to 3mm thick. Check the spec sheets and **choose products with the thickest wear layer:** They will be more resilient and durable.

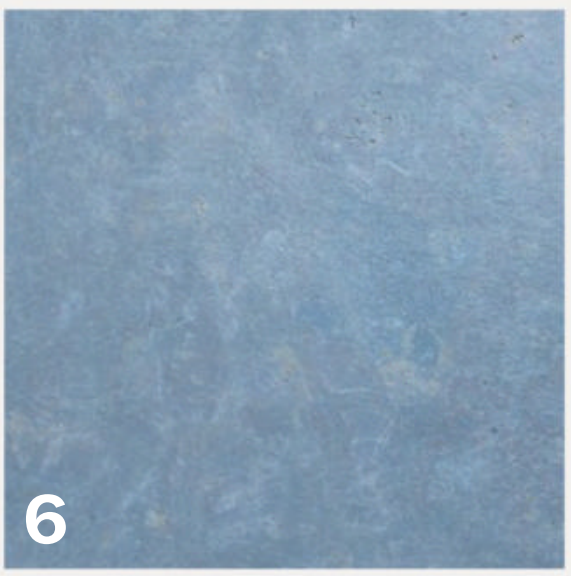
















A range of looks

Cork flooring comes in a wide variety of colors and patterns

1. DRAMATIC VEINING Made from offcuts produced by the wine cork industry, this click flooring has a bold marbled pattern. *Shown: Marmo Creme 12×36×7/16-inch plank, about $7 per sq. ft.; novafloorings.com*

2. STAGGERED STRIPES Because this glue-down tile is made from homogeneous, or "through-color," cork, it can be sanded and refinished. *Shown: Tigress 12×24×3/16-inch tile, about $7 per sq. ft.; apccork.com*

3. FAUX STONE This slate-look click flooring's AC5 rating means it will hold up to heavy traffic at home. *Shown: Serenity Collection 17 23/32×24 13/32×7/16-inch rectangle in Hearth Slate , about $8.50 per sq. ft.; wecork.com*

4. HARVEST HUE Order this 3/16-inch-thick glue-down flooring in any size or shape; its earthy orange color is an instant warm-up. *Shown: Nugget tile in Tangerine, about $10 per sq. ft.; corkfloor.com*

5. CLASSIC CORK With veneer cut from a full sheet of bark—no agglomerated pieces—this click plank's square edges create a seamless look once installed. *Shown: Avant Garde Collection 11 7/8×35 9/16×7/16-inch plank in Canyon, about $9 per sq. ft.; wecork.com*

6. VERSATILE SHADE Available in dozens of shapes, this glue-down cork's soothing blue color is a natural for subtle patterns. *Shown: Nugget 3/16-inch-thick tile in Powder Blue, about $9 per sq. ft.; corkfloor.com*

7. TILE EFFECT It may look like limestone, but this click flooring has a springy feel underfoot. *Shown: Cork Essence 48 1/32×7 9/32×3/8-inch plank in Flock Moonlight, about $6 per sq. ft.; wicanders.us*

8. WOOD LOOK This narrow, waterproof click plank comes embossed with realistic graining and knots. *Shown: Wood Inspire 48 15/64×7 31/64×9/32-inch plank in Sprucewood, about $6 per sq. ft.; amorimwise.us*

MEG REINHARDT (8)



Floating floor planks click together with the help of a hammer and a tapping block made from flooring scrap.

MUST-KNOW INSTALLATION INFO

With any type of cork, order at least 10 percent more than is needed to allow for any cutting mistakes and to ensure there's a good supply of replacement tiles or planks for the future. Acclimate glue-down cork tiles and floating-floor planks for three days before installation—and, as with other natural flooring products such as wood and bamboo, avoid laying them during humid weather. Test a concrete subfloor with a moisture meter; depending on the manufacturer's installation guidelines, you may need to apply a moisture sealer. If you're installing glue-down tiles, make sure that product is compatible with your adhesive.

- **FLOATING CORK FLOORS** have a strong, rigid middle layer, so they can be installed over an existing floor or subfloor; using a foam underlayment in between helps soften any imperfections. Start in a corner and work from left to right or right to left; use an aluminum straightedge—not the walls—to keep your rows straight. A hammer or mallet and a tapping block will assist in clicking the planks together without damaging the flooring. To allow the floor to expand due to changes in temperature and humidity, leave a ½-inch gap along the perimeter. If you remove existing baseboards, they will cover the gap when they are reinstalled; otherwise, cover the gap with ¾-inch quarter round.

- **GLUE-DOWN TILES** require a perfectly smooth subfloor; otherwise, dips and bumps will transfer to the finished floor surface. To fix an uneven wood subfloor, typically underlayment plywood is nailed down over it; with concrete, floor-leveling compound may be used. Both the subfloor and the back of the tiles are painted with a quick-setting contact cement before tiles are placed. This type of adhesive is unforgiving: As soon as the surfaces meet, that tile's placement is permanent. Some manufacturers now offer heavy-duty double-sided tape to simplify the job. This is still a project for the most meticulous DIYers—especially when piecing together intricate patterns.

Care and maintenance

PROTECT > While most dents eventually disappear on their own, cork is prone to scratching. To prevent abrasion, consider implementing a leave-your-shoes-at-the-door policy, add felt buttons to the bottoms of furniture legs, and set door sweeps just above floor level.

CLEAN > Vacuum as often as daily to remove grit that can otherwise get ground into the finish and scuff it. Once a week, use a just-damp mop and an oil-free wood-floor cleaner, such as Bona's.

RECOAT > Most types of cork flooring should be recoated with water-based polyurethane every 3 to 10 years, depending on the abuse it takes. One exception: Wood-look cork with a PET finish can't be recoated. Assess the condition of the finish annually. To recoat, prep the floor according to manufacturer instructions—often with a light screening to rough up the finish without sanding into the cork itself—then apply three coats of polyurethane. This process can be tackled by any handy homeowner.

Repair TIPS

Deep scratches or divots in cork without a veneer or printed surface can be filled with color-matched wood putty found at hardware stores—and all cork can be spot-replaced. For floating floors, start by removing the baseboard or quarter round at the end of the room where the last row of cork was laid, then carefully unlink planks until you free the damaged piece. Glue-down tiles can be spot-replaced by scraping up the damaged tile and gluing down a new one.

ISTOCK

Reduce your risk of a house fire

Unsure where to begin? Start with the action items here

BY CHARLES BICKFORD

Your home is your haven, a place of comfort and security. But in one respect, it may hold hazards you haven't thought much about. "People feel safest from fires when they're at home, but in reality, that's where they are at greatest risk," says Susan McKelvey of the National Fire Protection Association (NFPA).

Every year, firefighters respond to some 353,000 house fires, primarily caused by cooking, space heaters, and faulty wiring. And with the prevalence of synthetic building materials and furnishings, combined with open floor plans, today's fires burn faster than ever. "Together, these things create an ideal environment for fires to grow and spread quickly," McKelvey says. Luckily, there are preventive measures and simple maintenance tasks that can make your home significantly more firesafe.

PUT A FIRE EXTINGUISHER IN THE KITCHEN

To lower the risk of a cooking fire, keep the cooktop clean, grease-free, and clear of clutter. If one does break out, don't douse it with water; if grease or oil has caught fire, water will only spread the



To operate a fire extinguisher, remember the acronym **PASS:**

- **PULL** the pin, with the nozzle pointing away from you.
- **AIM** low, directly at the base of the fire.
- **SQUEEZE** the lever slowly and evenly.
- **SWEEP** the nozzle from side to side.

flames. Instead, turn off the heat source and cover the flames with a pan lid, or smother them with salt or baking soda.

In the event that's unsuccessful, it's a good idea to have a fire extinguisher on hand. The NFPA recommends a multipurpose model that can be used on all types of fires; a 5-pound unit should be easy to maneuver but large enough to put out a small kitchen fire. "When fighting a fire with an extinguisher, make sure everyone else is getting out of the house, and don't put yourself in a situation where you block yourself from exiting," warns McKelvey, who suggests asking if your local fire department offers training on how to use an extinguisher.

UPGRADE YOUR SMOKE ALARMS

If it's been years since you've replaced your smoke alarms, know that standards have changed. Fire code now mandates that they be interconnected. "These provide the best protection because when one alarm sounds, they all do," McKelvey says. Older homes can use battery-operated smoke alarms that communicate wirelessly. Hardwired smoke alarms, which rely on batteries only as a backup if the power fails, are mandated in new construction and also may be required during a major renovation.

Whatever their power source, all smoke alarms use photoelectric or ionization sensors to detect smoke. Photoelectric sensors respond faster to smoke from a smoldering fire; ionization sensors respond faster to smoke from a flaming fire. Because there's no way to predict the type of fire that might break out, the U.S. Fire Administration recommends installing both kinds or choosing dual-sensor alarms. Since steam and moving air can trigger false alarms, mount them at least 3 feet away from forced-air registers, ceiling fans, and the entries to kitchens and full baths.

ILLUSTRATION: PETER SUCHESKI

TOH PRO TIP



HEATH EASTMAN
Master Electrician

"There are lots of small, easy things homeowners can do to eliminate electrical fire hazards. Inspect cords often for damage or strain. Keep them off the floor. And match lightbulbs to the recommended wattage to decrease the chance of fixtures overheating."

PROTECT AGAINST ARC FAULTS

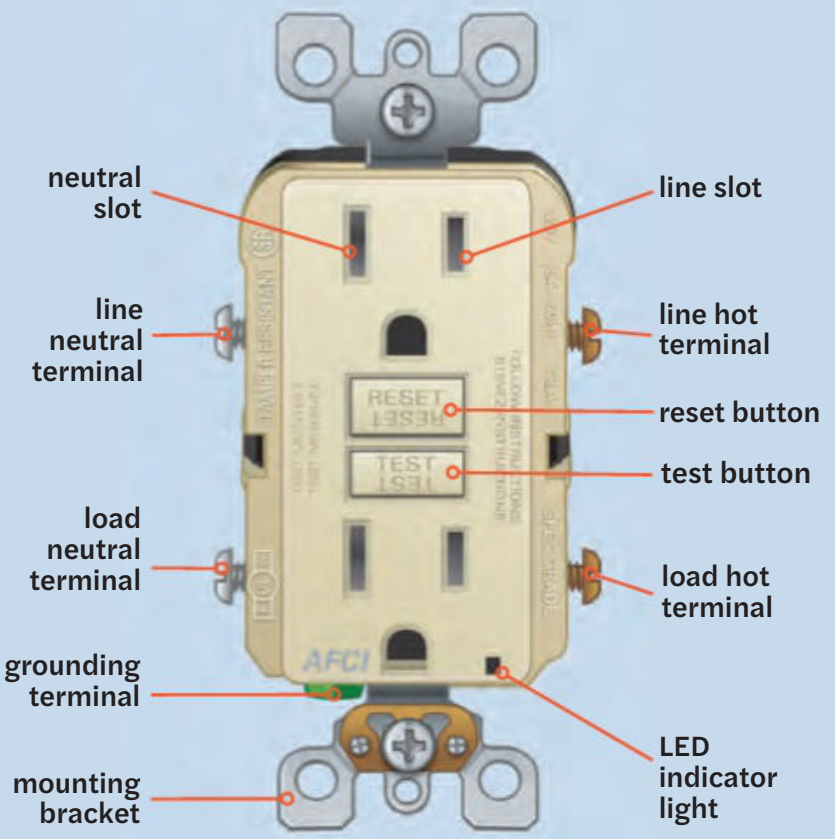
Electrical short circuits, in which current is accidentally discharged from an exposed wire, can create sparks hot enough to start a fire. Also known as arc faults, they can be caused by a frayed power cord or by hitting a wire when driving a nail into a wall. "This type of damage easily goes unnoticed, so it's important to take preventive measures," says *TOH* master electrician Heath Eastman. AFCIs, or arc-fault circuit interrupters, monitor the current in a circuit; if they detect an arc fault, they shut off the power along that circuit.

A 2020 update to the National Electrical Code requires AFCIs in nearly every part of the house, including closets, laundry rooms, and hallways; bathrooms and garages are exempt but require ground-fault circuit interrupters (GFCIs). AFCIs can be installed in a circuit-breaker panel by an electrician to protect the whole house, or they can be added as AFCI outlets. The latter can be a DIY fix. Not every outlet needs an

HOW IT WORKS

AFCI outlet

An arc-fault interrupter detects shorts, or accidental discharges of electricity, in damaged wiring; it then shuts off power to the circuit. If an AFCI outlet detects an arc fault, the indicator light goes out, and it's time to call in a pro.



WATCH See Heath install an AFCI circuit breaker at **thisoldhouse.com/AFCI**

upgrade; if installed on the first outlet of a circuit branch, the AFCI will protect the entire branch. If you tackle the work yourself, be sure to turn off power at the breaker to that particular outlet, and use a plug-in circuit tester to verify that the outlet is not powered before proceeding. Once installed, AFCIs will signal you if there's a problem. "AFCI outlets are very homeowner-friendly," says Heath. "If everything is working properly, a green LED light at the bottom will be lit. If there's an arc fault, the device will trip, and the green light goes out." At that point, you should contact a licensed electrician to track down the source of the problem.

USE SPACE HEATERS WITH CARE

Space heaters are the second leading cause of house fires. Look for a model that has fire-prevention features such as a tip-over safety switch and overheat protection; it should also be UL or ETL listed, which means it has passed independent safety tests. Fan-assisted heaters with ceramic or metal heating elements are good choices: They warm up a room effectively while maintaining a low operating temperature. Avoid kerosene heaters; because they use active combustion instead of electricity, they're a fire hazard, and they also generate emissions.

When using a space heater, follow the manufacturer's instructions to the letter: Keep it at least 3 feet away from anything that can potentially catch fire, and never leave it unattended, including while sleeping. It should be plugged directly into a wall outlet that's not being used to power anything else. Never plug a space heater into a power strip or extension cord; connecting a device that draws more power than the cords are designed to handle increases the electrical resistance. This, in turn, can cause them to overheat, melting the insulation and exposing the wires, which can spark and cause a fire.



THE SCIENCE OF HOUSE FIRES

Much of what we know about how house fires spread comes from research done at the Underwriters Laboratories Fire Safety Research Institute. At this 75,000-square-foot facility in Northbrook, IL, mock rooms and even entire houses are built, lit on fire, and safely observed (above, engineers test fire door performance). Here, a few things they've learned in the last 60 years.

→ **Synthetic and engineered-wood furnishings,** such as sofas manufactured with polyurethane foam and MDF TV stands, burn eight times faster than items made with natural materials such as cotton batting and solid wood. As a result, homeowners today have an average of 3 minutes to get out of the house safely during a fire, compared with 17 minutes 40 years ago.

→ **Fiber cement** is one of the most firesafe siding options available: It can be exposed to direct flames for more than 15 minutes without igniting. Vinyl siding, by contrast, catches fire in as little as 40 seconds.

→ **In an attic fire,** rigid closed-cell foam board (expanded polystyrene) ignites about seven times faster than open-cell spray foam insulation.

→ **A closed door** can reduce the temperature in a room by 900°F and keep carbon monoxide levels 10 times lower during a fire. That's why experts recommend sleeping with bedroom doors shut.

HANDLE WORKSHOP COMBUSTIBLES SAFELY

Although it's rare, piled-up oily rags can spontaneously combust: As the oil dries, it releases heat that can build up in an enclosed space. *TOH* general contractor Tom Silva recalls a near miss on a job site back when he was working for his dad; they had worked for hours refinishing cabinets with teak oil. "We spent the day soaking rags in teak oil, rubbing them on the cabinets, and throwing them in a pile," he recalls. "Later that night, the homeowner called and said she smelled something funny. We drove back over and saw that, in the corner, the rags were smoldering. Another couple of minutes and they would have gone up in flames."

Tom recommends laying individual oily rags out flat or hanging them up until dry. As a further precaution, the dry rags should be soaked with water before disposal.

Piles of sawdust can also spontaneously combust, and under the right conditions, airborne sawdust can be

COURTESY UL

ignited by a spark. To prevent sawdust buildup, work in a well-ventilated area and thoroughly vacuum all surfaces with a wet/dry vac on a regular basis.

MAINTAIN THE FIREPLACE

All fireplaces should get annual maintenance. With wood burners, cleaning the chimney flues once a year avoids the buildup of creosote, an oily by-product of wood fires that accumulates in chimneys and is flammable. "This is especially important in homes with older masonry chimneys," says Charlie Halbert, a veteran home inspector based in Connecticut. Mortar between the bricks deteriorates over time, resulting in gaps; if creosote residue in the chimney catches fire, the flames can spread through those gaps to the wood framing, Halbert explains. To keep your flues clean, find a chimney sweep who is certified by the Chimney Safety Institute of America (csia.org). And make sure your hearth setup is code compliant, with all combustible trim, including wood mantel and surround, located at least 12 inches away from the top edge of the firebox.

KEEP THE DRYER DUCT CLEAR

When a dryer's lint trap or exhaust duct is clogged by lint, airflow becomes restricted. This can cause the dryer to overheat, which then can ignite the accumulated fibers.

Clear the lint-trap screen after every load of laundry, and vacuum the slot it slides into periodically with a flexible crevice attachment. The dryer vent should get a thorough cleaning at least once a year and as often as two or three times a year in a busy household. After disconnecting the dryer from its power source, detach the duct from the dryer. Use a dryer vent brush, available at most hardware stores, to remove lint from the full length of the duct; there are also kits with extension poles and rotary brush heads that can make the job easier.

If you still have an accordion-style dryer duct made of vinyl or flexible foil, replace it: These trap lint in the folds and are not fire resistant. A rigid aluminum duct, installed in the shortest run possible, is safest. As a bonus, this will make the dryer operate more efficiently by decreasing airflow resistance.

RENOVATING? CONSIDER A SPRINKLER SYSTEM

If installed during construction, a sprinkler system costs an average of $1.35 per square foot. Currently, sprinkler systems for new one- and two-family homes are code-mandated in a few states, and experts expect the list to grow. Residential systems are usually "wet pipe," with sprinkler heads connected to pipes that offer a continuous supply of water. The pipes are either a closed, or stand-alone, system or they're integrated into the house's plumbing. Both types rely on the house's water supply, but when drawn from a well, a stand-alone system is often connected to a dedicated reservoir tank. The sprinkler heads release water once they reach a certain temperature. When one sprinkler head goes off, the entire system doesn't get activated—only heads triggered by heat will spray.

Retrofitting a sprinkler system when you're not renovating is more complex, as it requires opening up walls and ceilings and drilling through framing. As a result, the cost when major work isn't already under way is about double, says Vickie Pritchett of the National Fire Sprinkler Association. But the expense may very well be worth it when you consider that fire sprinklers reduce the risk of dying in a house fire by more than 80 percent. As Pritchett says, "There's no better peace of mind."

TOH PRO TIP



MARK McCULLOUGH
Mason

"A gap between your firebox and hearth can be a fire hazard: If an ember sneaks down into the crack without you noticing, it can ignite the subfloor or framing. Fill any gaps with thinset mortar, which easily stands up to the heat from a fireplace."

HOW IT WORKS

Fire sprinkler head

As the tube's liquid expands in response to heat, it breaks the glass; its dye color indicates the temperature at which this happens (red means 155°F). This releases the plug, causing water to spray over the deflector in a fan-shaped pattern.

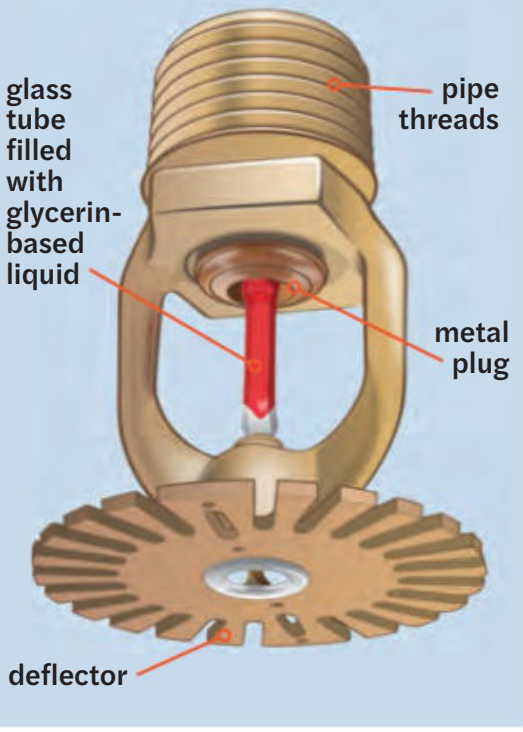


ILLUSTRATION: PETER SUCHESKI

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FAST & EASY PROJECT SOLUTIONS, PRESENTED BY SAKRETE

Installing a Modern House-Number Sign

AS FEATURED IN This Old House Idea House MODERN BARNHOUSE 2021

Never one to pass on the chance to upcycle materials, **TOH 2021 Modern Barnhouse owner/designer Amy Matthews** was inspired to create a house-number sign from leftover cedar siding affixed to a frame of pressure-treated 4×4s. Follow along as she uses **Sakrete High-Strength Concrete Mix** to secure this modern welcome at the entrance to her property.



1 | Dig your postholes; they should be one-third the depth of the post's length and three times the diameter of its width. Place 4 to 6 inches of gravel as a base, and compact.



2 | Place Sakrete High-Strength Concrete Mix into a mortar pan. Form a crater in the dry mix for the addition of clean, potable water. Aim for a workable mix; take care not to let it get too soupy.*



3 | Stand your posts in the center of each hole, and ensure the structure is plumb from all sides. Brace the structure to keep it upright as you work.



4 | Fill each posthole evenly with mixed concrete. Tamp down to remove any air voids.



5 | Allow concrete to set for 24 hours before removing the brace and attaching back and side trim pieces.



The result? A sturdy, custom piece that's sure to stand securely at the edge of Matthews's property for years to come.

Before You Begin

Check with your local municipality to ensure your plan complies with code requirements for your area. And always be sure to call 811 before beginning any digging project, to protect yourself and others from unintentionally hitting underground utility lines.

PRO TIP

Check your local forecast. The air, mix, and substrate temperatures of your work environment should be between 40° and 90°F, with no rain in the forecast within 24 hours of application.

** See Calculator on sakrete.com for recommendations.*

Sakrete High-Strength Concrete Mix is a preblended mixture of sand, coarse aggregate, and cementitious materials chosen for strength and long-lasting quality. For more project solutions, inspiration, and how-to instructions, visit **sakrete.com**



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WORKSHOP

WINTER 2021

VOL. 26 | NO. 4

NEW PRODUCTS, PRO ADVICE, AND HOW-TO PROJECTS



VINTAGE-WOOD HOLDER FOR YOUR VINTAGES
Tom shows off the four-tier wine rack, with slots for hanging stemware, that he and Kevin, below, fashioned from salvaged pine.

Skill: Moderate
Cost: About $500
Time: 6–7 hours (2 people)



[Build It]

Salvaged-wood wine rack

TOH general contractor Tom Silva and **TOH host Kevin O'Connor** transform an old wood beam into one-of-a-kind wine storage

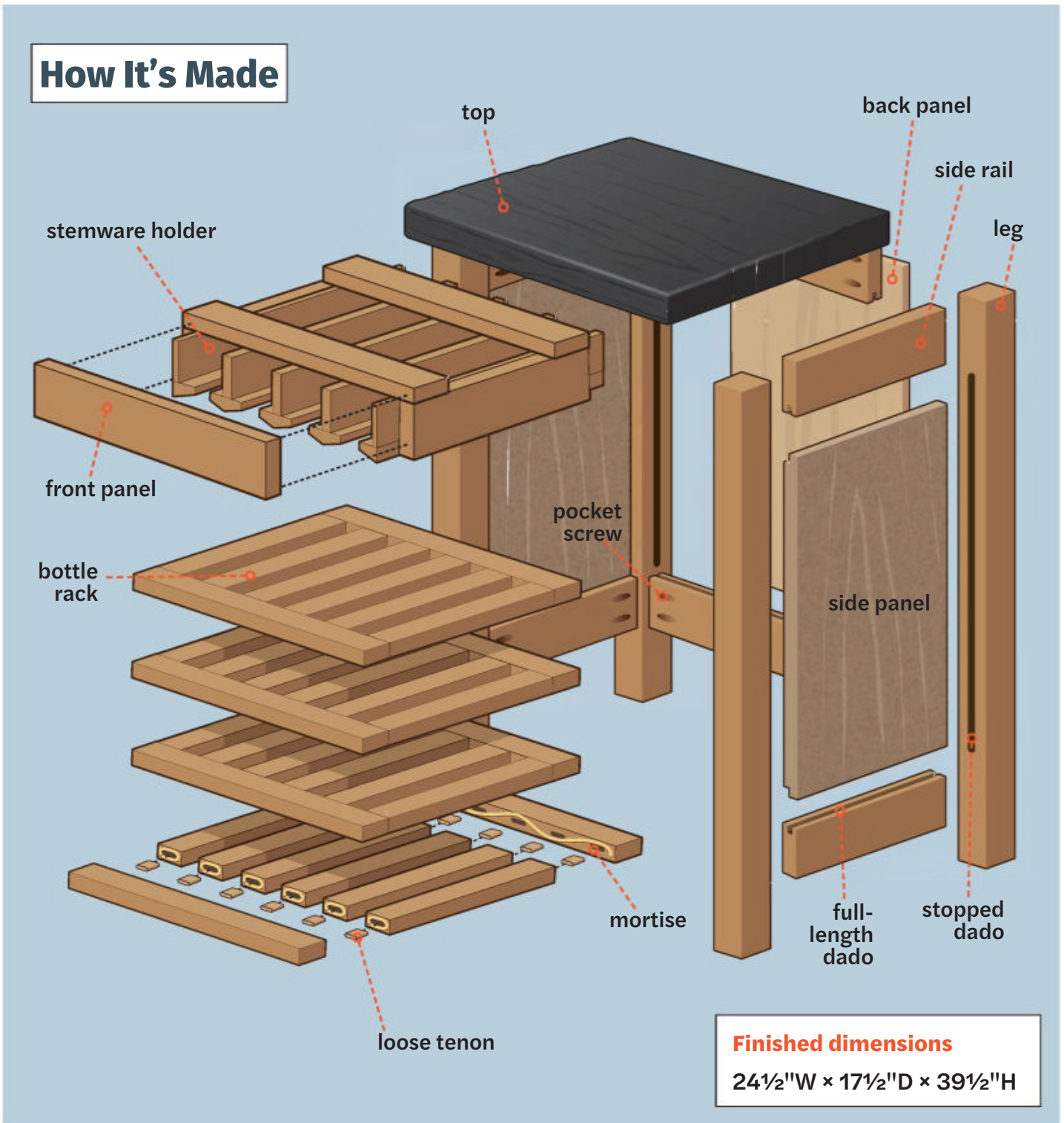
BY THOMAS BAKER | PHOTOGRAPHY BY COLLEEN McQUAID

As a contractor working on old houses, Tom often has to remove old beams and floorboards to make way for new materials. But he's careful to save some of those wood remnants—which may have been milled hundreds of years ago—and keep them out of the dumpster. "I look for old wood with stable knots and tight grain that takes a stain really nice," Tom says. "It's a little more effort to clean up the old boards, but I think it's worth it."

For this wine-rack project, Tom and Kevin milled all the parts from a weathered 8-by-10-inch-by-12-foot-long white pine beam and some worn 17-inch-wide pine floorboards from Tom's stockpile, saving as much of the wood's aged patina as they could.

Don't have your own cache of salvaged wood? No worries—all the parts can be made from lumberyard stock, using the cut list at thisoldhouse.com. You could also mix in salvaged pieces from one of the many sellers that specialize in reclaimed wood (see "Sourcing Salvaged Wood," opposite page). Either way, you'll end up with a handsome, functional piece for storing stemware and a nice collection of wine, which also puts your woodworking skills on display.

How It's Made



Finished dimensions
24½"W × 17½"D × 39½"H

WATCH See Tom and Kevin build this project at **thisoldhouse.com/wine-rack**

TOOLS

- ❑ table saw
- ❑ sliding compound-miter saw
- ❑ thickness planer
- ❑ orbital sander
- ❑ bar clamps
- ❑ router table
- ❑ featherboard
- ❑ loose-tenon joiner
- ❑ hammer or rubber mallet
- ❑ brad nailer, bit, and stop
- ❑ framing square


Tom cut most of the rack's parts from this old beam.

MATERIALS

- ❑ 5/4×4 stock, 12 linear feet
- ❑ 5/4×4 stock, 8 linear feet
- ❑ 1×1 stock, 9 linear feet
- ❑ 8/4×8/4 stock, 14 linear feet
- ❑ two 1-inch panels, 12½ by 28½ inches
- ❑ ½-inch plywood panel, 19¼ by 8½ inches
- ❑ wood glue
- ❑ 5×30mm loose tenons
- ❑ 2-inch brad nails
- ❑ 150-grit sandpaper
- ❑ wipe-on polyurethane
- ❑ black polyurethane stain
- ❑ gloss polyurethane

ILLUSTRATION BY PETER SUCHESKI

STEP-BY-STEP

1] Cut the pieces to size. Following the cut list at thisoldhouse.com, use a table saw to rip the pieces to width. Cut them to length with a miter saw. Cut the ½-inch panel for the cabinet back on a table saw. (Run any salvaged wood through a thickness planer.)

2] Make the top. Edge-glue and clamp together the two pieces for the top; if using salvaged lumber, glue together the sawn edges. Wipe up excess glue with a damp rag. Wait 30 minutes before removing the clamps.

3] Dado the legs and rails. Chuck a ½-inch router bit in a router table. Set its depth to ½ inch; adjust its fence to offset the dado ⅛ inch to the outside. Stabilize the workpiece with a featherboard and make stopped, 28-inch-long dadoes in each leg and a continuous dado in one edge of each rail.

4] Rabbet the sides. Adjust the router fence to cut a ½-inch-by-½-inch rabbet into all the edges of each sidepiece. Sand and round over all the edges; sand salvaged-wood panels gently to preserve the wood's patina.

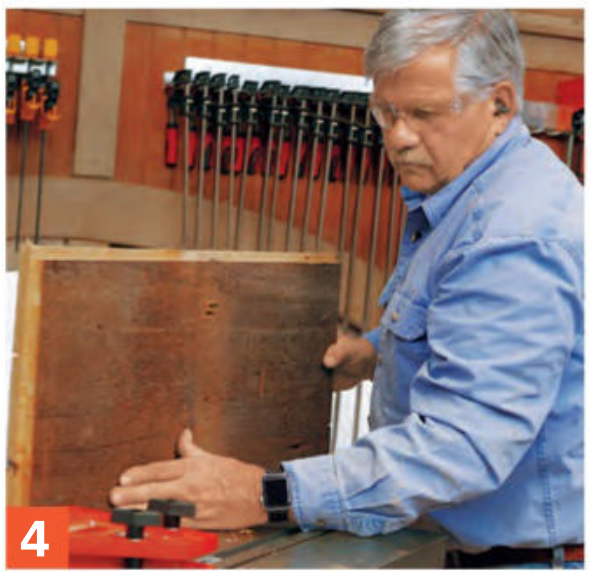
5] Prep for pocket screws. Using a pocket-hole jig, drill a pair of pocket holes into the ends of each rail. Lay one leg on the workbench, with the dadoes positioned as shown. Hold a rail piece vertically on the leg so the dadoes line up, and the rail sits flush with the top ends of the leg. Drive two pocket screws into the leg, as shown.

6] Assemble the sides. Fit the side-panel rabbets into the dadoes of the leg-and-rail assembly. Slip a side rail onto the panel's rabbet and tap it snug. Pocket-screw the end of the rail to the leg, as in Step 5. Assemble a second sidepiece the same way. Place it facedown and, following the instructions in Step 5, pocket-screw two vertical rails to one of its legs to hold the back panel.













SOURCING SALVAGED WOOD

Because it's heavy and expensive to ship, start by searching local suppliers, including architectural salvage lots, as well as Craigslist, for reclaimed wood. Some sellers on Etsy also have offerings suited to small projects. To save yourself time, avoid wood that's been painted or has to be denailed.




7


8


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11


12

STEP-BY-STEP (CONTINUED)

7] Make the bottle racks. Using a loose-tenon joiner, cut mortises into the ends and sides of the rack pieces. Add glue to each mortise, insert tenons into the end pieces, and tap the sidepiece mortises into them; wipe up excess glue. Make three more racks in the same way.

8] Attach the bottle racks. Lay one sidepiece facedown on a workbench. Using a framing square, mark the legs where each rack will go. Dab glue on the marks closest to the cabinet's bottom, set an assembled rack on the dabs, and brad-nail it to the leg. Repeat.

9] Finish the cabinet assembly. Slide the plywood back panel into the dadoes of the vertical rails assembled in Step 6. Use a framing square to find the centers of the racks on the panel's back side; brad-nail the panel to them. Lay the remaining sidepiece next to the back panel assembly. Dab glue on the side-piece legs, then turn the entire cabinet assembly onto the dabs; fit the back panel into the leg dado. Brad-nail the shelves to the legs at the dabs. Finish connecting the sides by driving pocket-hole screws into the front and back legs.

10] Make the stemware holders. On a table saw, rip side-by-side, 15-degree bevels in the ⅝×4 stock. Cut the pieces to length and round over the edges with a block plane. Glue a 1×2 to the unbeveled side. When the glue dries, cut one in half lengthwise.

11] Add the stemware holders. Line them up parallel to one another, with the half-width pieces on either side, as shown, and brad-nail two crosspieces on top of them. Insert the assembled holders into the cabinet above the top shelf and pull them up against horizontal 1×s inside the cabinet's top, front and back. Glue and nail the crosspieces to them.

12] Secure the top. Fasten the top to the cabinet from underneath with screws. Finish the legs and sides with five coats of wipe-on polyurethane. Coat the top with a black polyurethane stain, followed by three coats of gloss polyurethane.

TIP

SCAN FOR HIDDEN METAL

When working with salvaged wood, a hand-held metal detector, like those used for airport security, is an essential tool for locating buried nails, which can damage planer blades, router bits, and joiners. Run the wand methodically over the surface. When a sensor is activated—most detectors have visual and audio alerts—stop and extract the metal. Then scan the surface again to ensure you didn't miss anything.



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Above: Colonial-style swan-neck bail pulls. Above Left: Victorian ebonized wood and brass drop pulls in Antique-by-Hand finish. Lower Left: Crystal cabinet knobs in an array of shapes and sizes. Center: Brass label holders keep things organized throughout the house. Below: Classic brass cabinet latch with oval turn-piece.



HouseofAntiqueHardware.com

[Tool Lab]

Ten tool belt must-haves

TOH editor Chris Ermides shares some finds he's come to rely on

PHOTOGRAPHY BY TIM SOTER

One of the habits I've carried with me since my days as a working carpenter is to always wear a tool belt when I'm doing projects around my house. Having the necessary hand tools readily accessible improves my efficiency—and the end result.

These days, I tackle most repair and remodeling tasks on my own, whether carpentry, plumbing, or electrical. I find the work rewarding, but have enough experience to know when I'm in over my head and need to call in a pro.

As my skills have evolved, so has my hand-tool collection. Having the right one for any job makes the task more pleasurable. After all, we're passionate about working on our own homes because we enjoy the process. Discovering—and using—great tools makes the process fun.

On these pages, you'll find an assortment of hand-tool picks that have passed my personal performance tests; each one does its intended job with ease and precision. The fact that they are all reasonably priced—nothing here costs more than $50—and can slip easily into a pocket on my tool belt is a nice bonus.



01. Versatile folding saw

Silky Gomboy • $50 | amazon.com

I didn't realize how much I needed this saw until I actually had it in my tool pouch. Now I keep it with me no matter what kind of carpentry work I'm doing; its super-sharp teeth cut fast through rough framing and smoothly through finish trim. It comes in a variety of lengths and tooth configurations. I've used my 240mm model to undercut door jambs, finish stair stringers, and fine-tune window stools, and it's proved useful for yard work and camping, too. A hard plastic sheath is included, but I prefer to fold the blade into its handle and stash it directly in my pouch.

02. Basic side cutters

Diagonal Cutting Pliers • $28 | channellock.com

No matter how careful you are, sometimes a pneumatic nail catches the grain wrong and pops out the side of a window or door jamb. At that point, the best approach usually is to pull the nail through or clip it off below the surface. That's where my pair of 7-inch Channellocks comes in. Their drop-forged jaws and anvil-style cutting edges are perfect for reaching in and grabbing those errant nails to either extract them or snip them off.



03. Precision line snapper

Tajima Chalk-Rite II Ultra-Thin Chalk Line • $34 | tajimatool.com

I've snapped (and broken) a lot of chalk lines in my career, but this one is my favorite. I like that it has a very thin braided line, just .02 inch wide, so the lines it snaps are far more precise than standard chalk reels, which usually have strings that are twice as thick. And it has a couple of other features that I really like: a fast-retracting reel, thanks to a five-gear winding mechanism, and a lock at the end of the box to keep the line secure when not in use.





05. A better marker

Pica-Dry Longlife Automatic Pencil

$28 for two | amazon.com

Carpenters' pencils are as easy to come by as they are to lose. (There must be a thousand out there with my teeth marks on them.) When I discovered this pencil, it replaced all my chewed-on wood ones. It has an integrated pencil sharpener in its sheath (far left). The pencil itself can be fitted with a variety of specialized leads for marking any surface: wet or dry, rough or glossy, oily or dusty, bright or dark. I use mine all the time—and haven't lost it yet!



04. No-wing-nut bevel square

Shinwa Sliding T-Bevel

$25 | leevalley.com

Bevel squares are invaluable for copying or bisecting angles, which makes them invaluable for setting up miter saws to make precise cuts. Inexpensive squares typically have a wing nut at the pivot point for locking the angle in, but that nut often gets in the way, preventing the tool from lying flat, and it's not that easy to tighten.

A couple of years ago, I discovered the Shinwa Sliding T-Bevel. It has an aluminum stock, a stainless-steel blade, and, best of all, an easy-to-grip thumbscrew located at the end of the stock. Voilà! No more interfering wing nut.





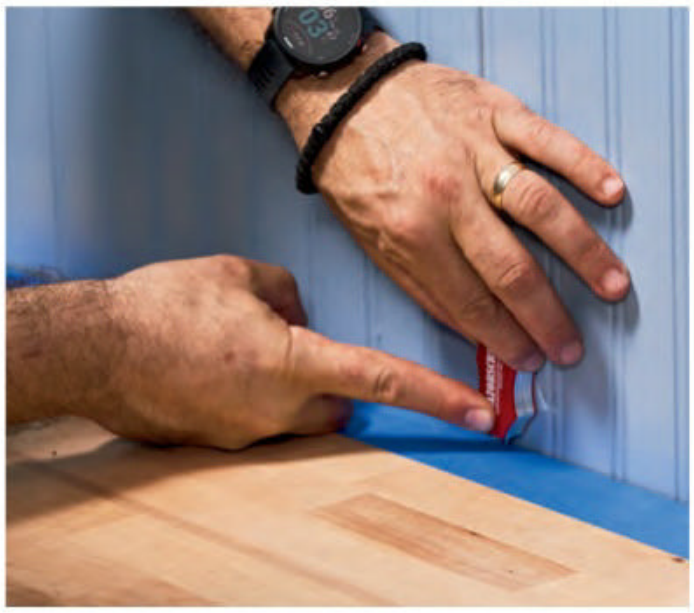
06. Cut miters by hand

Crescent Wiss Molding Miter Snips

$20 | crescenttool.com

When installing narrow pieces of trim, like base shoe molding and screen bead, making cuts with a miter saw is a tad overkill. These molding snips, with their built-in angle guide, are a great alternative. Where they really shine is when I'm running base shoe: I can move from piece to piece, cutting and installing as I go; there's no getting up and going back and forth to the saw. They're accurate enough for softer, factory-primed moldings. And unlike a miter saw, they don't send little pieces flying when they cut returns.

TOOLS: MEG REINHARDT





07. The secret to a tight fit

RazorScribe Pro
from $28 | razorscribe.com

I especially value tools dreamed up by people who work in the trades. Their inventions are often simple but ingenious, with hidden uses built into them. California-based general contractor Dave Brallier came up with the idea for this little scribing tool when he needed a no-gap fit along the edges of some expensive paneling. While a basic compass and pencil are my usual go-tos for scribing, this tool comes out when I need a more precise line than a pencil can provide. Its razor-blade head, with either a plastic or an aluminum body, shines when scribing smooth surfaces, both horizontal and vertical: countertops, baseboards, shelving, you name it. The added benefit? Its built-in magnet makes a great stud finder.



08. Breathe easy

GVS Elipse P100 Half-mask Respirator
$35 | rockler.com

While it's not technically a tool, I'm including this respirator because I often keep it on my tool belt. I discovered it about five years ago, and found its low-profile design to be so lightweight and comfortable (or as comfortable as a respirator can be) that now I don't wear any other kind. Its filters are NIOSH-approved to protect against silica and wood dust, asbestos, and lead fumes. The mask has no silicone or latex, and comes in two sizes: S/M and M/L. Plus, it's affordable and has readily available replacement filters ($15). I recommend buying the carrying case ($12), as well, to keep it clean.





09. Alignment checker

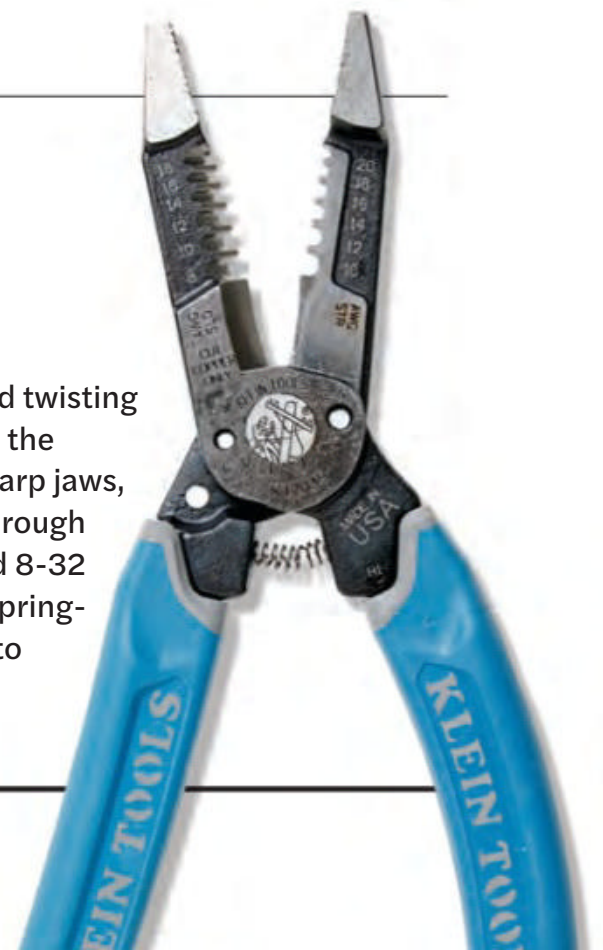
Shinwa Handy String Line • $23 | amazon.com

I often use a string line to set built-ins, line up kitchen cabinets, or check stud alignment. But with a simple string line, you have to tie both ends to a nail or screw to keep it taut. This handy tool simplifies the process. It has a pin on the string end and two pins on its case, allowing you to quickly anchor both ends with minimal damage. And because the string retracts, it maintains tension on its own.

10. Wire wrangler

Klein-Kurve Wire Stripper
$32 | kleintools.com

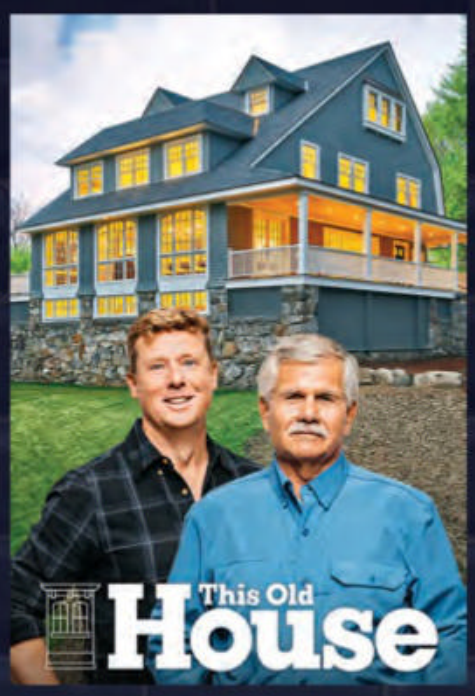
Electrical work involves a lot of cutting, stripping, and twisting of wires, but not all wire strippers out there are up to the task. This stripper most definitely is. Its incredibly sharp jaws, notched to keep from nicking the wire, slice easily through the insulation jacket and will even shear off 6-32 and 8-32 screws. The tool fits comfortably in the hand and is spring-loaded to stay open when in use. You can also use it to twist wires together, though it doesn't have as much leverage as linesman pliers.



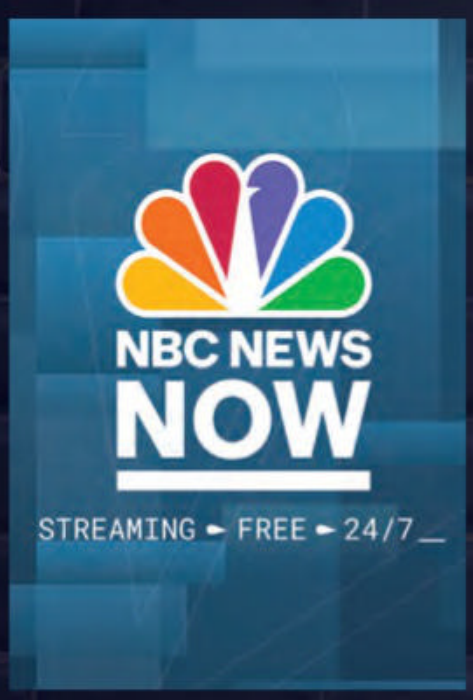
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[What's New]

Top picks

Cool new tools and problem-solving products

BY THOMAS BAKER

1. Flexible lighting

High-Output COB Tape Light

Tightly packed LEDs embedded in a plastic-coated metal strip offer uniform undercabinet, under-shelf, or toekick lighting along the strip's entire 16.4-foot length—no need for extra lenses or diffusers. Can be cut with scissors at 2-inch intervals; it's held in place with a super-strong double-sided tape. *About $12 per linear foot; americanlighting.com*

2. Straight cuts without a cord

Cordless Track Saw TSC 55 KEB-F

Guided by Festool's standard slotted track, this battery-powered tool makes perfectly straight cuts just as fast as its corded cousins, thanks to a thin-kerf blade and a high-torque, brushless motor. In lieu of a blade guard, the saw features a brake that halts the blade instantly in the event of kickback. *$499 (tool only); festoolusa.com*

3. Speedy slicing

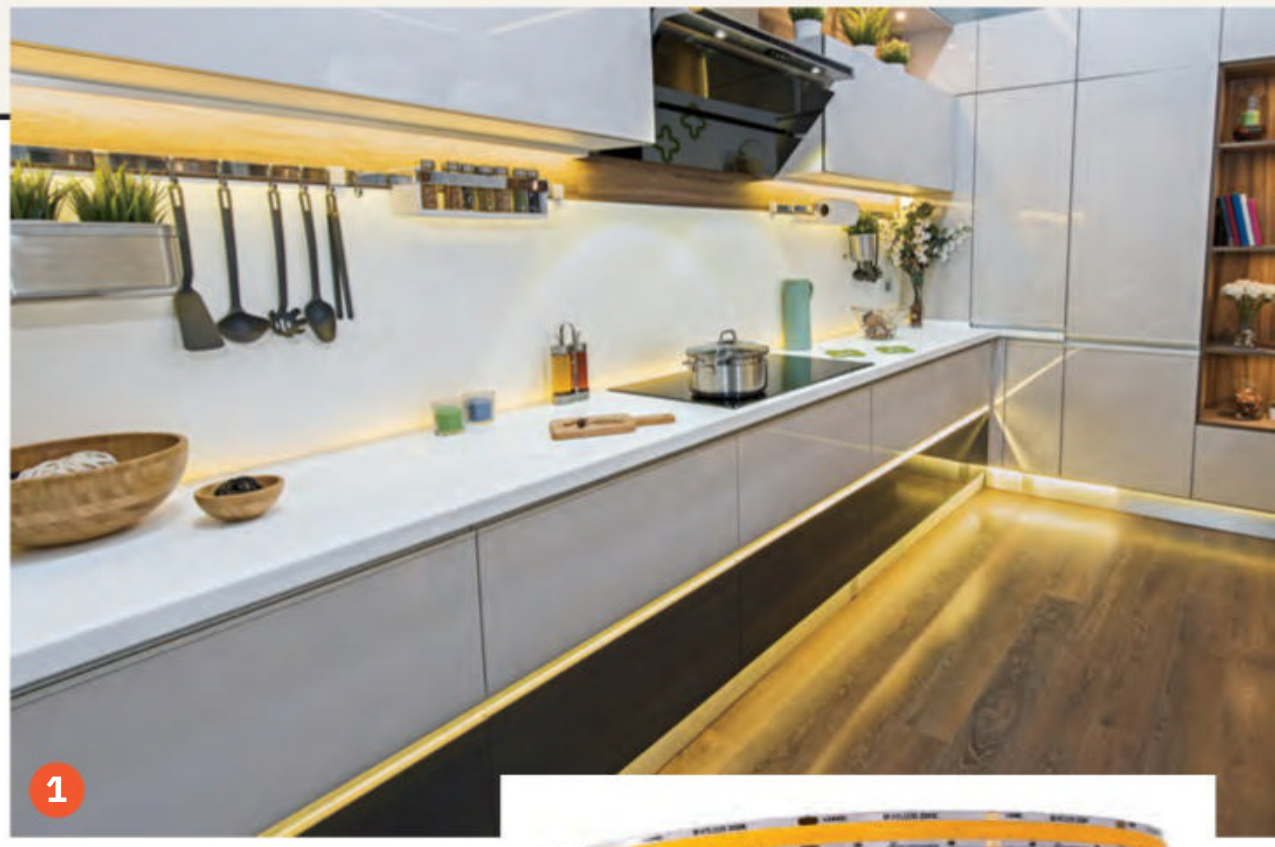
18V Cordless One-Handed Reciprocating Saw

Handy in tight spots, this variable-speed saw weighs just 2.9 pounds and runs at up to 3,200 strokes per minute. Accepts blades from T-shank jigsaws and recip saws. *$129; metabo-hpt.com*

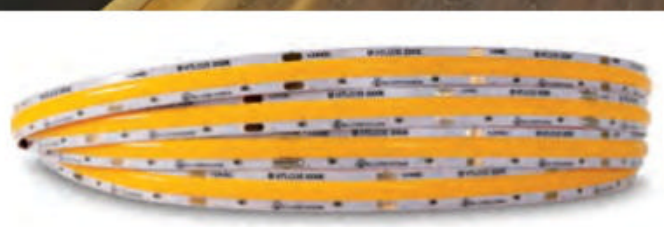
4. Long-lasting sander

SandNET Reusable Hand Sanding Block

This hook-and-loop block has two foam layers—firm for flat surfaces, soft for contours. Comes with five lattice-weave sanding sheets, which last up to 10 times longer than standard sandpaper; when they



1



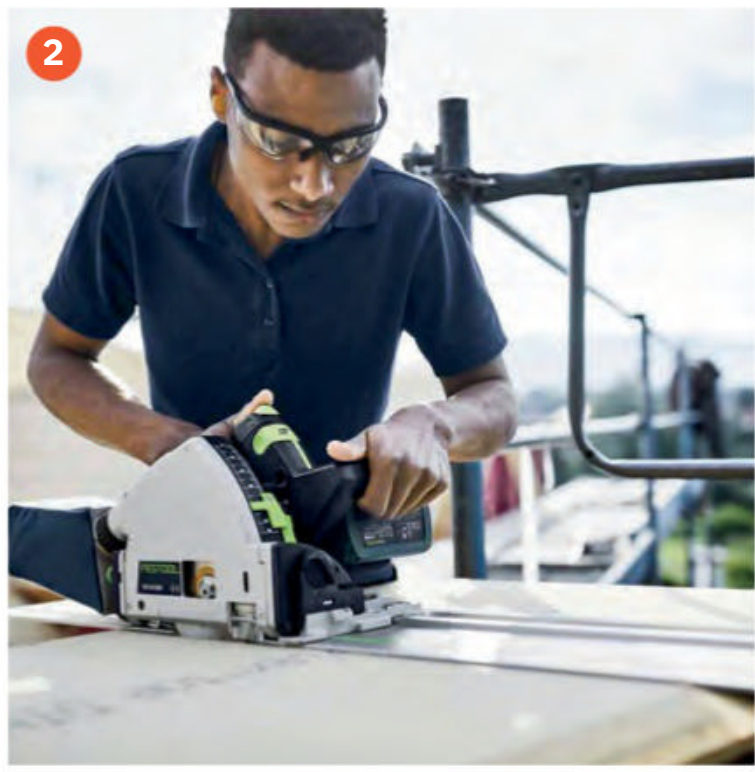
Each "chip-on-board" COB Tape Light comes with a kit for connecting it to a DC power supply.

TOH PRO TIP



NATHAN GILBERT
Carpenter

"Track saws cut only on the track's right side, so always place the splinter guard's edge to the left of the cutline."



2



3



4



TOH PRO TIP



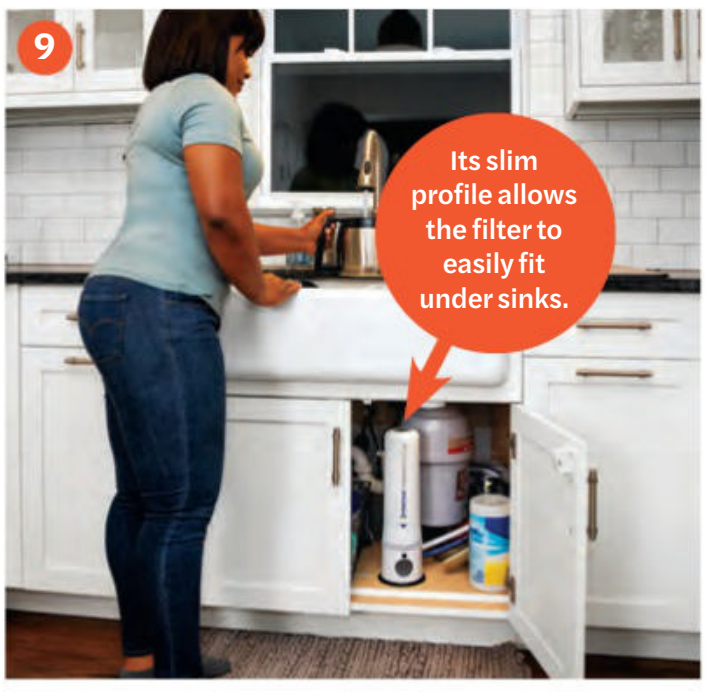
TOM SILVA
General Contractor

"Pin nails are prone to bending and blowing out the side of your work. To keep that from happening, hold the gun in line with the grain of the workpiece."









5. Trim master

M12 23-Gauge Pin Nailer
This compact tool weighs only 4.2 pounds but has the power to shoot pins from ½ to 1⅜ inches long into hardwoods or softwoods, without the hassle of a compressor hose or gas cartridge. *$199 (tool only); milwaukeetool.com*

6. Small and mighty

12V Max Brushless ⅜-Inch Hammer Drill/Driver
Only 6.7 inches long and weighing just 2.3 pounds, this little drill quickly bores through masonry and concrete. The brushless motor delivers 300 inch-pounds of torque at up to 1,750 rpm and 19,500 bpm (blows per minute). *$149; lowes.com*

7. Save your hearing

LINK Aware Noise-Isolating Headphones
These OSHA-compliant ear protectors instantly block harmful high-impact noises, limiting the volume to 85 decibels. The built-in speakers are Bluetooth-enabled. *$130; isotunes.com*

8. No-crank casements

Easy-Slide Operator
You don't open this outward-swinging window with a crank. Instead, you just slide an unobtrusive knob on the side jamb up to open and down to close. Its action is smooth and precise, and much faster than cranking. *$50 upgrade on Impervia fiberglass windows; pella.com*

9. Cleaner water on tap

FreshPoint Easy Flow Under Counter Filtration System
Simple to install and NSF-certified to reduce lead, cysts, and chlorine, this unit's compact charcoal filter delivers up to 3,000 gallons of purified water straight from the faucet. *From $139; pentair.com*

ADVERTISEMENT



AS FEATURED IN This Old House Idea House MODERN BARNHOUSE 2021

Aging Gracefully

With a little help from **Cabot**, **TOH 2021 Modern Barnhouse owner/designer Amy Matthews** got the time-weathered look she wanted—at an accelerated pace



The TOH 2021 Modern Barnhouse is nestled among stately, old-growth trees on a secluded lot in the Saint Croix River Valley. When Amy Matthews first saw the property, she immediately knew it would be the perfect place to build her dream home. She had a contemporary barn-shaped structure in mind, and was looking to create a deep connection with the environment. "Cedar was a natural siding choice for me because I wanted the house to blend in with the wooded surroundings and feel like an organic, yet modern, addition to the landscape."

Matthews intended to let the cedar age to its storied driftwood-gray tone. However, this weathered effect, if derived from nature, would require many years of harsh exposure, which often turns wood dark and unevenly shaded. She opted to have her siding finished with Cabot Bleaching Stain. Uniquely formulated to accelerate the natural weathering process of uncoated exterior wood, Cabot Bleaching Stain initially applies as a delicate gray. "But after only three to six months of exposure, it will gradually turn into that lovely driftwood gray that makes cedar so special," says Matthews. "Beyond the aesthetic appeal, this stain produces a self-protecting finish, and protects the wood from moisture, sun, and mold—critical in the harsh Minnesota climate."



SHOWN: Cedar siding finished with Cabot Bleaching Stain; this product is uniquely formulated to accelerate the natural weathering process of uncoated exterior wood siding, shingles, and shakes.

Scan this code to learn more about Cabot Bleaching Stain.
Visit **cabotstain.com** to learn more about this and other Cabot products.

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[Easy DIY]

Firewood storage bench

TOH DIY expert Jenn Largesse shares how to build a sturdy cedar seat that keeps firewood close

Crackling wood fires have always been an evening tradition in our family, but trekking out to the woodpile to retrieve an armload of logs has never been anyone's favorite activity. So I decided to build something that would put a stockpile of dry wood just outside the door. Instead of the typical log rack, I settled on a storage bench with space for firewood that also provides a convenient seat for taking off snowy boots. The slatted design is quick and easy to put together—there's no complicated joinery—and because it's clad in western red cedar over an inner structure of sturdy cedar 2×s, I can leave it outside year-round, sheltered on our front porch. With our wood supply now just steps from the entry, keeping the fire stoked is less of a chore.

Here's how to build a bench of your own.



MAKING WIDE CUTS Jenn uses her sliding compound-miter saw to cut 1×6 cedar boards to length. She also used the saw to miter the bench's face boards.



WATCH See Jenn build this project at **thisoldhouse.com/house-one/firewood-bench**

GETTING STARTED

Cedar boards are a great choice for this project because they weather the elements, resist rot, and repel insects. But cedar is also quite soft, so expect it to get dinged and nicked as firewood is loaded into and taken out of it.

When buying cedar, pay attention to how thick the boards are; some lumberyards carry ⅞-inch-thick material instead of ¾-inch-thick stock. Both thicknesses will work fine for this project, but thicker boards on the sides will require slightly longer pieces on top.

WHAT YOU NEED FOR THIS PROJECT

TOOLS

- ❑ miter saw
- ❑ drill/driver
- ❑ pocket-hole jig and 6-inch square-drive bit
- ❑ 7/64-inch drill bit
- ❑ rafter square
- ❑ 18-gauge nailer
- ❑ orbital sander

MATERIALS

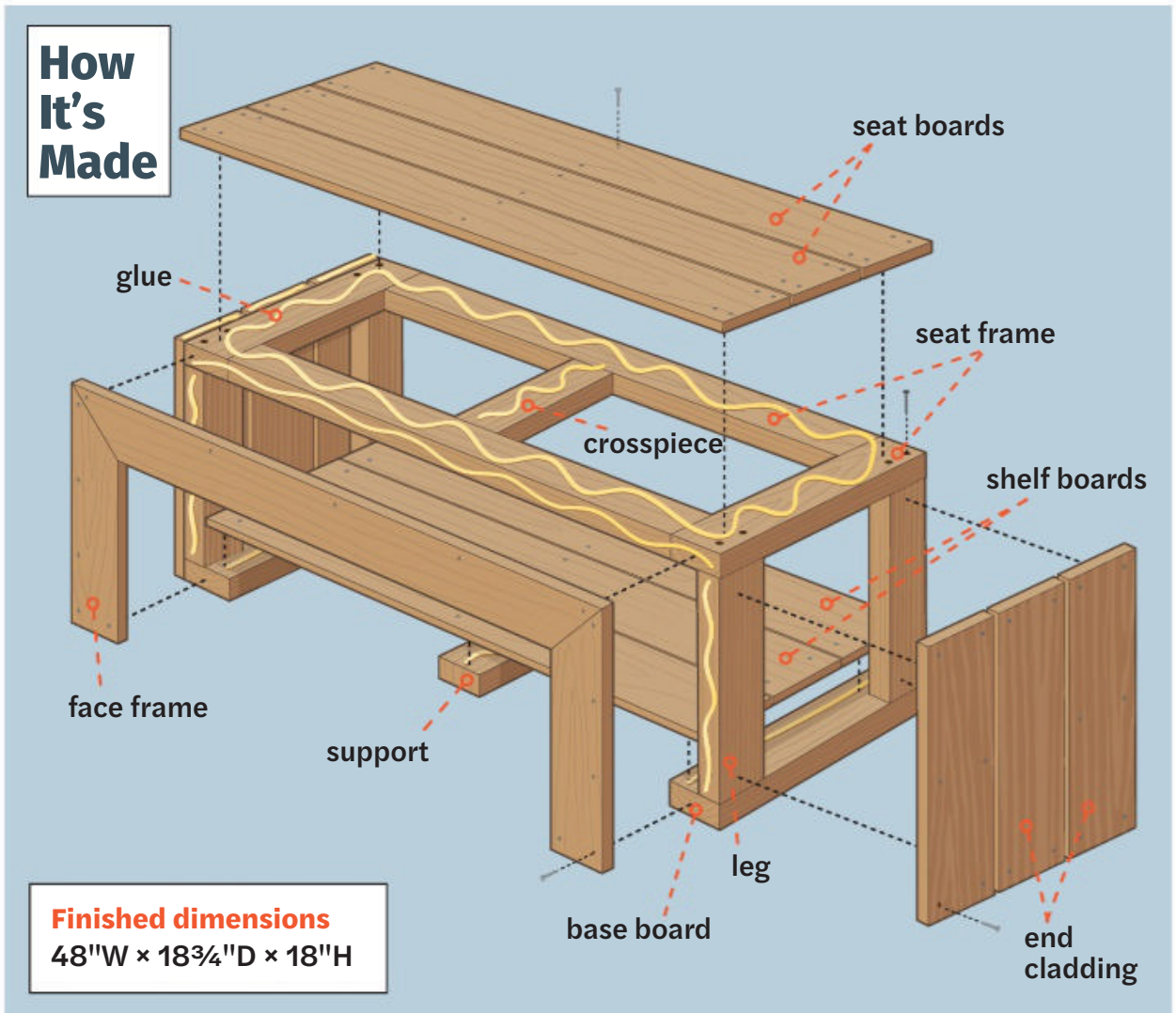
- ❑ three 2×4 cedar boards, each 8 feet long
- ❑ five 1×6 cedar boards, each 8 feet long
- ❑ 3-inch No. 10 stainless-steel deck screws
- ❑ 2½-inch stainless-steel pocket-hole screws
- ❑ 1½-inch 18-gauge nails
- ❑ exterior wood glue



STEP 1

Prep for assembly.

FOLLOWING THE CUT LIST at thisoldhouse.com, use a miter saw to cut the cedar 2×4s and 1×6s to length. Set aside an 8-foot 1×6 for the face frame. Next, use a pocket-hole jig to drill two pocket holes into each end of the long 2×4 seat-frame pieces and the crosspiece, as shown.



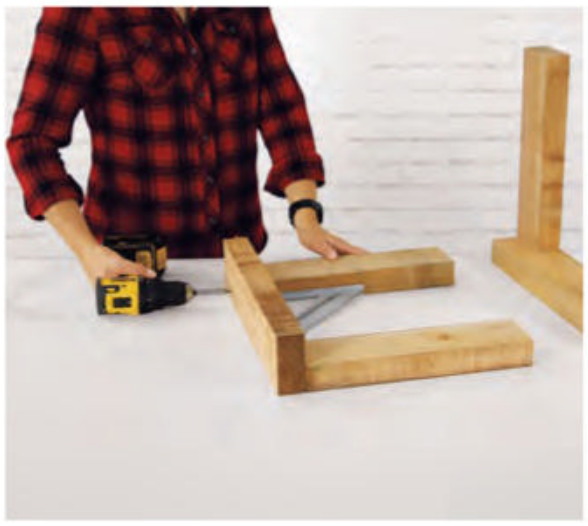


STEP 5

Clad the ends.

APPLY GLUE TO ONE FACE at each end of the 1×6 cedar cladding. Position one vertically against the frame, flush with its back edge, and secure it with 1½-inch nails. Using a ¾-inch-thick spacer, set a second 1× against the first one and nail it to the frame. Nail the third end piece flush with the front edge. Do the same on the bench's other end.

Illustration by Peter Sucheski



STEP 2

Assemble the legs.

SET A 2×4 BASE BOARD ON EDGE and position two leg pieces against it, facedown and aligned with the board's ends. Apply glue to the legs' ends; drill two pilot holes through the base and into the legs. Drive 3-inch deck screws into the pilot holes. A rafter square, shown, keeps the parts perpendicular. Assemble the second leg the same way.



STEP 3

Assemble the top.

WITH THE POCKET HOLES facing up, align and glue together the ends of the 2×4 seat-frame pieces. Keeping them perpendicular with a rafter square, drive pocket-hole screws through the ends of the long boards and into the end boards, as shown. Center the 2×4 crosspiece and install it the same way, with glue and pocket-hole screws.



STEP 4

Attach the top and legs.

STAND THE LEGS UPRIGHT so the base boards face inward. Apply glue to the tops of the legs; set the assembled seat frame on them, flush with their outside edges, pocket holes facing down. Drill two pilot holes through the seat frame and into the top of each leg. Fasten the seat to the legs with deck screws driven through each pilot hole.



STEP 6

Make the seat.

APPLY GLUE TO THE FRAME'S TOP and the end cladding. Position the first cedar seat board flush with the front edge and so it covers the end cladding. Drive nails through the seat board into the end cladding and the frame. Using ¾-inch spacers, nail the next seat board parallel to the first one. Nail the last board flush with the frame's back edge.



STEP 7

Add the shelf and support.

APPLY GLUE TO THE BASE BOARD'S FACE. Bed the shelf ends in the glue. Center the middle board and position the front and back ones flush with their respective frame edges. Nail the shelf boards to the base board. Apply glue to the top face of the 2×4 support. Center it and set its end flush with the frame's back edge; nail the shelf boards to it.



STEP 8

Secure the face frame.

MITER ONE END of each vertical 1×6 face-frame piece and both ends of the horizontal face frame. Apply glue to the front edges of the frame, cedar seat board, and cladding. Nail the pieces to the frame, flush with the top edge of the seat and outside ends of the legs.

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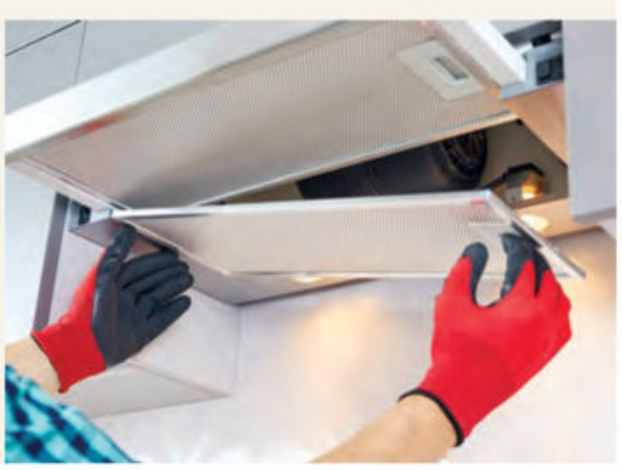
Simple tasks, big payoffs

These small projects will safeguard you and your home through the cold-weather months

BY CAROL J. ALEXANDER

Degrease the range-hood fan and filter

THE DIRT AND GREASE that collect inside your vent hood decrease its efficiency, trap odors, and can even catch fire. Prevent all three by cleaning the hood's filter and drip tray, as well as the fan blades or turbine. Follow the manufacturer's instructions for removing them, then pop the parts in the dishwasher. If they don't fit or are encrusted with gunk, soak them in a 1:1 solution of hot water and a degreaser for at least 10 minutes; scrub, rinse, and dry.



Protect your evergreens



THE UPRIGHT BRANCHES of soft-stemmed conifers like arborvitae and columnar cedars and junipers are vulnerable to splaying, bending, and even breaking when weighed down by heavy loads of snow and ice; it can take up to a year for them to regain their shape. To prevent such damage, loosely tie together the top branches of individual trees with loops of twine. Immature trees benefit from being covered with a loose burlap wrap that extends all the way to the ground. Remove the wraps when the threat of heavy snow has passed.

Touch up painted woodwork

THE HOLIDAY SEASON is a good time to take inventory of any dinged paint on door and window casings or baseboards. To touch them up: Lightly sand the chipped area smooth with 120-grit paper; coat bare wood with an oil-based primer; then dab on paint with a soft artist's brush. If the chip is too deep to sand smooth, apply wood filler, let dry, then sand it with 180-grit paper before priming and painting.



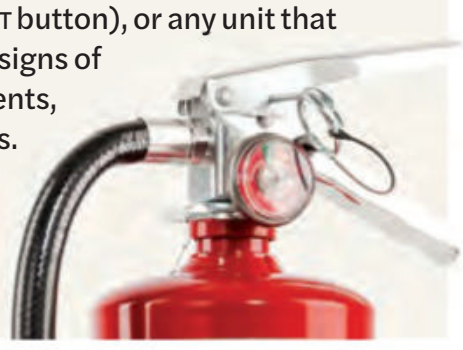


TLC for your hand-held garden tools

YOU WINTERIZE power equipment by changing oil and adding fuel stabilizers, but hand tools that get down and dirty need some care, too. Scrub blades clean with a wire brush, sharpen them with a file as needed, then spray on a thin coat of WD-40 to prevent rust. Sand worn wood handles smooth of splinters, and apply a fresh coat of oil or stain with a rag. If the handle is cracked, replace it with a new one.

Check gauges on fire extinguishers

THE MOMENT TO DISCOVER your fire extinguisher needs a charge is not when you smell smoke. The National Fire Protection Association (NFPA) recommends a monthly inspection to blow dust and insects out of the nozzle and to make sure the pressure gauge shows it's within operable range. If it isn't, look online for a certified fire-protection service to refill it. Replace nonrechargeable units that are low on pressure (push the TEST button), or any unit that shows signs of rust, dents, or leaks.



RANGE HOOD: ISTOCK; GARDEN TOOLS: MEG REINHARDT; FIRE EXTINGUISHER: ISTOCK



Put your gas grill to bed for the season

FIRST, BURN OFF FOOD and grease by running it on HIGH for 15 minutes with the lid down. When cool, scrub the burners with a dry nylon brush. Clean the grates and grease pan with hot soapy water; put them back when dry. Also, remove the ignition battery to prevent it from corroding. If the grill is staying outside, put a weather-proof cover over it. Wheeling the grill into a garage or shed? Disconnect the tank and store it outside. Then wrap the grill's regulator in plastic and aluminum foil to keep insects from crawling in and clogging it.

ATTIC: COURTESY ADO PRODUCTS

TOH PRO TIP



Tom Silva
General Contractor

"If an ice dam at the eaves is causing water to back up into your house, take a box fan into the attic, aim it at the leak, and turn it on. The extra flow of cold air should lower the roof temperature and halt the dripping."



Make sure soffit vents are clear

IN AN UNFINISHED ATTIC, soffit vents work with the ridge vent to ventilate the space and keep it cool. When they're blocked by insulation, the trapped heat can melt snow on the roof, and, if it's cold enough, cause ice to build up at the eaves. So before it snows, check the attic on a sunny day for blocked soffit vents. If you don't see light coming through them, remove the blockage and staple baffles (shown above) at the base of each rafter bay to provide a permanent path for fresh air.



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ask This Old House

Backyard skating rink

We would like to build an ice rink in our yard to keep our four hockey-loving grandkids (and their parents) active this winter. We have the space and a relatively flat yard. How do we go about it? —SUE LEONARD, POMPTON PLAINS, NJ

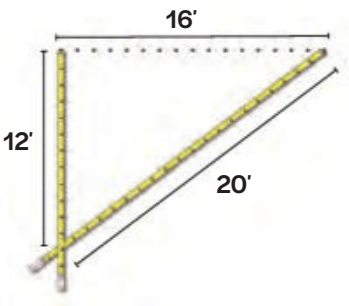
TOH carpenter Nathan Gilbert:

The ideal time to construct an outdoor ice rink is in early winter, after the ground is frozen. You'll need enough 2×12 lumber to surround the rink, some 18-inch-long form stakes to brace the sides, screws and hardware to hold the lumber together, and a single, white waterproof tarp to line the rink. (Because white reflects the sun's heat, it will help keep the ice from melting.) Make sure the tarp is at least 2 feet wider and longer than the rink's final size.

First, assess how level your rink site actually is by driving form stakes into the ground at each corner of your planned rink's footprint. Wrap a string line around the highest stake 3 inches up from the ground (the minimum ice thickness). Stretch it to and wrap it around another stake, and hang a line level on it. When the string is level, measure the distance from the line to the ground at these locations. Ideally, you want the distance to be 8 inches or less. If the slope exceeds this amount, bring in some earth to fill



TIP



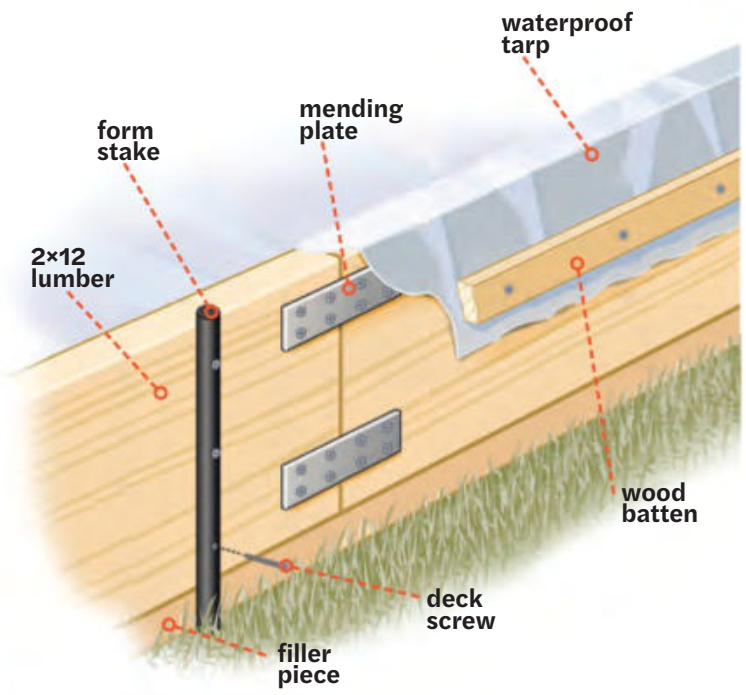
How to make a perfect right angle

Anchor the ends of two tape measures 16 feet apart. Cross their free ends so that the tapes' 12-foot and 20-foot marks line up as shown. This tip works because any triangle with sides three, four, and five units long always contains a 90-degree corner.



JUST ADD WATER TOP: Nathan reinforces the corner of the rink with steel angles. ABOVE: He and *TOH* landscaping contractor Jenn Nawada worked together to assemble the rink sides, then filled the liner with water. The face-off circle is made of lengths of red PEX tubing; the centerline is a painted PVC 1×4.

SARAH CHASSE (2). ILLUSTRATION: IAN WORPOLE



in the area where the soil dips down.

To make each of the rink's long sides, fasten two 16-foot 2×12s—end to end—with a pair of steel mending plates and 1½-inch screws. Tip the lumber on edge and join each corner with three 3-inch deck screws, then add a pair of angle brackets and 1½-inch screws to reinforce each corner. Use the 3-4-5 rule to make sure the 90-degree corners are all square (see Tip). Place the stakes a few inches from each corner and drive them into the ground even with each 2×'s top edge. Now place a spirit level on that edge, get a helper or two to lift a corner until the edge is level, and screw the stake to the lumber. Do the same at the remaining corners, then cut 2× filler pieces to fill the gaps under them. Attach the fillers to the sides with 2× blocks. Pound in the remaining stakes, spacing them evenly around the rink's perimeter, and screw them to the rink sides.

With the rink's frame complete, roll out a 6-mil vinyl liner (tarpsnow.com) inside the lumber frame, unfold it over the frame's top edges, and push it down into the inside corners of the frame. (Don't worry if the liner doesn't drape perfectly at the corners; it just has to be watertight.) Staple the liner's edges against the outside of the frame, then screw battens over the staples.

Now fill the rink with water, and hope for a long, deep freeze. Make sure to dismantle and remove it in early spring, so the lawn has a chance to recover.

TRETHEWEY: SARAH CHASSE. ILLUSTRATION: IAN WORPOLE

TIP



Trap saver

P-traps can lose their slug of water if they aren't vented properly. But if the existing vent stack is hard to reach, and local codes allow its use, an air-admittance vent (studor.net) equalizes pressure in the drains so that traps stay filled.

Missing sink trap

While looking at a house that I was thinking about buying, I peeked under a sink and didn't see a trap on any of the pipes. I assume there's one under the floor, but would that be up to code?

—RAYMOND KNAPP, PERRY, IA

TOH plumbing and heating expert Richard Trethewey:

Every plumbing fixture in a house needs to have a trap on its drain. As the name implies, it traps a slug of water in the drain line, which prevents foul-smelling, flammable sewer gases from entering your home. P-shaped traps are one of the most commonly used fittings in residential plumbing, and I'm fairly sure that if you had gone into the basement of that house, you would have found the sink's trap there.

Locating a trap under a floor is unorthodox, not code legal in some parts of the country, and inconvenient if it ever gets plugged. But as long as it's legal and functioning as intended, let it be.



ADD A TRAP Before Richard is done working on this under-sink drain, he'll be sure to install an easily accessible, properly vented trap. In certain cases, an air-admittance valve may be used to provide the necessary venting (see Tip).

WATCH See how Nathan and Jenn assemble a backyard rink at **thisoldhouse.com/ice-skate**

DIY SMARTS



SHINGLE STRIPPER Tom uses a pitchfork to pry shingles off a roof. Then he'll go back and pull any nails or staples left in the sheathing.

New roof for a garden shed

We have a nearly 20-year-old shed that needs a new roof, not just shingles. The sheathing inside is covered with mildew, even though it has a ridge vent. How should I redo the shed's roof so that mildew will no longer be a problem? —JAY EATON, OXFORD, PA

TOH general contractor Tom Silva: All that mildew could be caused by roof leaks—roofing shingles have a life span of about 20 years—or by moisture coming up from the ground, or in from the sides. Check inside and out for signs of moisture damage. Then strip off the shingles to inspect the condition of the roof. Is your shed sheathed in oriented strand board (OSB), by any chance? That material can be a mildew magnet in moist areas.

Because the shed roof is close to the ground, you can set up some wide staging planks between a couple of ladders to use as your work platform. Standing on the staging, take a four-prong pitchfork and jam its tines under the shingles at the lower edge of the roof. The tines slide between the roofing nails; just lift the fork's handle to pry up the shingles so you can toss them aside. Continue up the roof to its ridge. If there's an underlayment beneath the shingles, remove it in the same way. Do the same thing on the roof's other side.

With the sheathing now exposed, pull the roofing nails and assess its condition. If there are obvious signs of rot, cut them out and replace them with plywood of the same thickness. Then let the roof dry out for a few days. But if the rot is extensive, or if you find wet OSB, remove all the sheathing and install new plywood decking.

With the roof deck now clear on both sides, nail a metal drip edge along the roof's lower edge. Leave a finger-wide gap between the bottom of the drip edge and the shed's fascia board so that rain doesn't wick up to the edge of the sheathing. Add drip edges along the sides of the roof, overlapping their ends onto the drip edges at the eaves and leaving the same finger-wide gap. Next, install the underlayment, which provides extra protection against roof leaks.

For the last step, install the shingles. To see how I do it, go online to watch the video listed below.

BROUGHT TO YOU BY THE HOME DEPOT

Identify mystery circuits

We have a service panel with about 50 circuits, and an adjacent subpanel with another 25 or 30. Very few of them are labeled. Is there a way to tell which circuit breakers control different circuits, without trial-and-error tests?

—MICHAEL HALL, VALATIE, NY

TOH master electrician Heath Eastman:



Yes, there is a way to map existing home circuitry. But before you do, get some stick-on labels to put with each breaker as you identify it.

Start with the circuits that control big-draw items like a well pump, clothes dryer, water heater, and HVAC components such as air handlers and compressors. Most have double-pole breakers, with load ratings of 20 amps or more, and usually are labeled. If not, it's fairly easy to figure out which breaker protects which circuit by flipping the breaker off.

However, the more-numerous lighting and receptacle circuits often are unlabeled. For them, you need a device called a circuit-breaker finder, below, which consists of a transmitter and a receiver. Just plug the transmitter into a receptacle—or into an adapter that screws into a light fixture—and take the receiver to the service panel. When you move the receiver over the breakers, it will light up as you put it over the controlling breaker. Label it and move on to the next one until all the breakers are identified.



CIRCUIT-BREAKER FINDER This two-piece device (kleintools.com) allows you to quickly determine which circuit each breaker is connected to.

SILVA: SARAH CHASSE

WATCH See Tom put a new roof on an old garden shed at **thisoldhouse.com/shed-roof**



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Dress up a fireplace surround

My brick fireplace looks outdated, so I'd like to cover its face with stacked ledgestone. Can you give some guidance on what materials to buy and how to do the installation? —DAVID GOLDA, WARWICK, RI

TOH mason Mark McCullough:

I suggest that you use a manufactured-stone veneer, a concrete product that's molded and colored to look like stacked ledgestone. It goes up faster than natural stone because the pieces interlock, and have relatively uniform thicknesses, which keeps cuts to a minimum. Plus, they have factory-cut corners, so they look thicker than they actually are. Check out the offerings at local masonry supply yards, then provide them with a photo and measurements of your existing surround, to determine how much veneer to order.

To start, cover the fireplace surround with galvanized wire lath, attached with drive-pin anchors placed about 12 inches apart (see Tip). Use a hammer drill and a ¼-inch masonry bit to drill a hole for each anchor into the mortar joints, then hammer in the pin to compress its head against the lath.

Next, mix and apply a coat of Type S mortar to the lath with the straight edge of a notched trowel. Then go over the soft mortar with the notched edge to create a toothed surface.

Let the mortar set for 24 hours before applying the veneer pieces. Use a mason's sponge to moisten the back side of each piece, then butter the back with a thick layer of mortar. Push the piece against the scratch coat and jiggle it to fully meld the mortar with the scratch coat. A few firm taps with a rubber mallet will nudge it into final position. Work from the bottom up, and from the surround's inside corners toward its outside edges. As you lay up successive courses of the veneer, select pieces that create staggered joints, just as you would see in a real stone wall.

For the pieces above the firebox opening, fashion a temporary support to keep them from sagging while the mortar cures. While you're waiting, clean up joints and the veneer with a stiff bristle brush. You can enjoy a fire after the mortar has cured for about 14 days.



FAUX-STONE SURROUND Mark fits a piece of manufactured-stone veneer against the scratch-coat mortar base he prepared earlier. The veneer's irregular shape and coloration are meant to mimic the look of stacked ledgestone.

TIP



Drive-pin masonry anchor

Use mushroom-head, hammer-set fasteners like this (redheadanchoring.com) to secure metal lath, electrical boxes, and conduit clips to masonry surfaces, but not on ceilings; they aren't suitable for overhead support.

How to prevent frozen pipes

We had nine days of freezing weather last winter, which has never happened here before. I'd like to be ready in case it happens again. How do I prep for a freeze so that the pipes don't burst?

—MATTHEW KOSCHTIAL, BERTRAM, TX

Richard Trethewey:



I'm so sorry that you had to suffer through such extreme weather last winter, and I hope that you and you neighbors have recovered from its consequences.

There are many ways you can protect water pipes from freezing, but each preventive measure has its limitations. That's why it makes sense to put in place a combination

MCCULLOUGH: SARAH CHASSE

WATCH See how Mark puts a new face on a fireplace at **thisoldhouse.com/fireplace-upgrade**



FIRST LINE OF DEFENSE
With an R-value of 2, foam pipe wrap offers minimal protection against cold snaps; more involved measures are required to protect pipes from prolonged freezes.

of the strategies explained below.

For starters, cover the hot and cold water lines with foam insulation. It won't stop pipes from freezing in a prolonged cold spell, but it will buy you some time. If you have water lines that run in exterior walls or through unconditioned spaces such as an attic, consider rerouting them inside the building envelope, which can be a buffer against the cold for a while. This would be a good opportunity to install PEX piping, if local building codes allow it; it's more burst resistant than copper pipe. You could also invest in a home-energy upgrade to air seal your home and improve its insulation. Doing so will significantly reduce heat loss during cold weather and keep your house out of danger for a longer time. (It will also make your home more comfortable and energy efficient all year round.) The website energystar.gov offers a wealth of details to help you plan and implement these upgrades.

If freezing weather continues for long enough, even a well-insulated house will become too cold. That's where a backup generator comes in; it can provide the electricity to warm interior spaces, and pipes (see Tip).

Since moving water takes longer to freeze, opening the faucets just enough to maintain a steady drip will help for a time, but this is at best a short-term measure to get you through the night. If it looks like freezing temperatures will last longer than that, a better strategy would be to shut off your home's main water supply, then drain your system as completely as possible. You may still have pockets that will freeze, but they shouldn't create the extreme pressure (as much as 25,000 psi!) that can burst pipes when they're full of water. Even if some pipes do break, closing the main valve will prevent the house from flooding when they finally do thaw out.

PIPE: ISTOCK

TIP



Plug-in pipe wrap
SpeedTrace self-regulating heating cables (briskheat.com) turn on automatically when ambient temperatures approach freezing, and then adjust their heat output to keep pipes safe, even if the temperature drops to −40 degrees F. Installation is simple: Just plug in one end and wrap the cable around the pipe.







NO MORE AIR LEAKS LEFT: Tom taps in the metal channel that houses the retracting sweep. RIGHT: With the mechanism in place, he rehangs the door; then he'll adjust the sweep so that its weatherseals barely graze the threshold when the door is shut.

Stop drafts under doors

The cold drafts that come in beneath our exterior doors have been our most frustrating challenge in our 75-year-old house. We've tried a few door sweeps, but they either hinder the door's operation or don't stop the drafts. Is there a sweep that actually works?

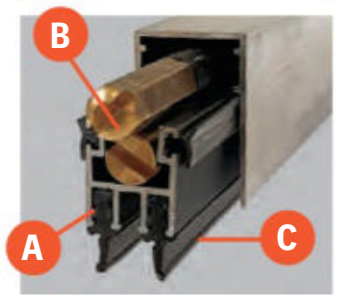
—PAT MALACEK, ST. LOUIS

TOH general contractor Tom Silva:

You may need to look beyond the selection of door sweeps available at your local hardware store and home center, and get a retracting "automatic door bottom," as they're called, like the one I installed above (see Tip). It sits out of sight in a ¾-inch-wide-by-1⅛-inch-deep dado routed into the bottom edge of the door.

Before you rout the dado, remove the door, rest it across a pair of sawhorses, and mark cutlines on the door's bottom edge where the dado will go. Make sure there are no nails in the router's path.

TIP



Retracting door sweep

This automatic door bottom (conservationtechnology.com) retracts into its aluminum channel (A) when the door is opened, allowing it to clear entryway rugs. When the door is closed, the push button (B) retracts and presses a pair of silicone weatherseals (C) tight to the floor.

To plough out the dado, I'd recommend using a lightweight, 1¼-hp trim router with a fence and a ½-inch carbide straight bit. Adjust the fence so the bit will cut next to the top line, then hold the router horizontally and work from left to right. Make a series of shallow passes, each ⅛ inch deeper than the previous one, until you reach full depth. Now flip the door over and repeat the process to complete the dado.

Before installing the sweep's mounting channel, give all the bare wood in the cut a coat of exterior primer to protect against moisture damage. Screw the mounting channel in place, slide the sweep mechanism into the channel, and follow the manufacturer's directions for installing the plate for the push button that operates the mechanism.

Ask This Old House

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SILVA: COLLEEN MCQUAID (2)

WATCH See how Tom installs this retracting door sweep at **thisoldhouse.com/door-sweep**

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3. Paid Distribution Outside the Mails Including Sales Through Dealers and Carriers, Street Vendors, Counter Sales, and Other Paid Distribution Outside USPS:	23,978	23,036
4. Paid Distribution by Other Classes of Mail Through the USPS:	0	0
C. Total Paid Distribution:	359,309	330,385
D. Free or Nominal Rate Distribution		
1. Free or Nominal Rate Outside-County Copies Included on PS Form 3541:	154,377	181,394
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3. Free or Nominal Rate Copies Mailed at Other Classes Through the USPS:	0	0
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E. Total Free or Nominal Rate Distribution:	156,154	183,267
F. Total Distribution:	515,463	513,652
G. Copies Not Distributed:	327	398
H. Total:	515,790	514,050
I. Percent Paid:	69.7%	64.3%

16. Publication of Statement of Ownership will be printed in the Winter 2021 (November/December/January) issue of this publication.

17. SIGNATURE AND DATE: Michael Burton, Chief Revenue Officer of This Old House Ventures, LLC

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

10/15/2021

Michael Burton, Chief Revenue Officer, This Old House Ventures, LLC

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DIRECTORY Winter 2021

2021 IDEA HOUSE Packed with Possibilities *(pp. 15–26)* **Builder:** Jerry Effren, Greyrock Homes, Norwalk, CT; greyrockhomes.com. **Architect:** Jim Jamieson, Jamieson Architects, Weston, CT; jamiesonarchitects.com. **Real estate manager:** Clayton H. Fowler, Spinnaker Real Estate Partners, Norwalk, CT; spinrep.com. **Interior designer:** Sandy Effren, Greyrock Homes. **Lighting design:** Candace Pereira and Rina DiMarte, Chloe Winston Lighting Design, Norwalk, CT; chloewinstonlighting.com. **Interior designer and artwork:** Catherine Devine, Devine Modern Art; devinemodernart.com. **Director of operations:** Kim Hiteshew, Greyrock Homes. **Social media:** Lisa Valerie Photography. **Furniture staging:** Stage To Show. **Garage doors:** clopaydoor.com. **Roofing:** gaf.com. **Siding:** lpcorp.com/smartside. **Insulation:** rockwool.com. **HVAC:** trane.com. **Subflooring:** huberwood.com/advantech. **Gutter guards:** allweatherarmour.com. **Basement egress:** bilco.com. **Sheathing and tape:** huberwood.com/zip-system. **Skylights and sun tunnels:** VELUX; whyskylights.com. **Porch floors and ceilings:** aeratis.com. **Pergola and fencing:** walpoleoutdoors.com. THROUGHOUT > **Electrical products:** leviton.com. **Tile:** tileamerica.com. **Vent hoods and bath vent fans:** Panasonic; whyiaqmatters.com. **Building-materials supply:** ringsend.com. **Kitchen appliances supply:** aitoro.com. **Drywall:** National Gypsum; askforpurple.com/why-purple. **Lighting:** generationlighting.com. **Countertops:** caesarstoneus.com. **Flooring:** permshield.com. **Paint:** benjaminmoore.com. KITCHENS > **Cabinetry:** mantracabinets.com. **Sinks and faucets:** elkay.com. **Appliances:** geappliances.com. BATHROOMS > **Vanities, fixtures, and lighting:** signaturehardware.com.

BEFORE & AFTER: KITCHEN Every Inch Counts *(pp. 31–34)* **Designer:** Rachel Alcorn, Two Hands Interiors, Glen Ellyn, IL; twohandsinteriors.com. **Cabinets, kitchen table:** Andy Mangin; instagram.com/mango_woodworks. **Paint:** Loyal Blue (lower cabinets), sherwin-williams.com; Cloud White (upper cabinets), benjaminmoore.com. **Countertops:** Marble & Granite Supply of Illinois; marble-granites.com. **Sink:** frigidaire.com. **Faucet:** us.kohler.com. **Refrigerator:** fisherpaykel.com/us. **Range:** jennair.com. **Dishwasher:** geappliances.com. **Sconces:** circalighting.com. **Cabinet door mirrors:** Mirrorworks; antiquemirrorglass.com.

BEFORE & AFTER: FIRST FLOOR Old House, Modern Appeal *(pp. 38–41)* **Designer:** Evelyn Pierce Design Studio, LLC, Washington, D.C.; evelynpierce.com. **Architect (initial plans and permits):** Thomas Ahmann, AIA, University Park, MD; ahmannllc.com. **Contractor:** D.J. Oros Construction, LLC, Silver Spring, MD; 301-448-5845. LIVING ROOM > **Paint:** Shoji White (walls), sherwin-williams.com; Onyx (windows, throughout), benjaminmoore.com. DINING ROOM > **Wall covering:** phillipjeffries.com. KITCHEN > **Countertop:** caesarstoneus.com. **Cabinets:** cliqstudios.com. **Backsplash:** annsacks.com. **Floor tile:** artobrick.com. **Sink:** signaturehardware.com. **Faucet:** us.kohler.com. **Paint (walls):** Repose Gray (25 percent) mixed with Passive (75 percent); sherwin-williams.com. **Appliances:** jennair.com. POWDER ROOM > **Paint (walls):** Griffin; sherwin-williams.com. **Faucet and toilet:** Vintage Tub & Bath; vintagetub.com. SUNROOM > **Paint (walls):** Nebulous White; sherwin-williams.com. **Sconces:** rh.com.



FOUND SPACE What Lies Beneath *(pp. 42–49)* A MULTI-GEN HANGOUT > **Designer:** Two Hands Interiors, Glen Ellyn, IL; twohandsinteriors.com. FUN MEETS FUNCTIONAL > **Designer/builder:** Anthony Wilder Design/Build Inc., Cabin John, MD; anthonywilder.com. Anthony Wilder, architectural designer and founder; Gary Lofdahl, AIA, architect; Kirsten Gable, designer; John Botkin, project manager; George Noble, lead carpenter. A MOVIE DEN AND MORE > **Designer:** Mimi & Hill, Westfield, NJ; mimiandhill.com.

RENO PLANNER Does Your Home Need a Health Check? *(pp. 60–67) Thanks to* Robert Brierley, Revival Energy Group, Portland, OR; revivalenergygroup.com.

ALL ABOUT Cork Flooring *(pp. 70–75)* To purchase the Duro Design cork flooring shown on pages 70–71, contact Aronson's at 212-243-4993, or aronsonsfloors.com.

WINTER CHECKLIST Simple Tasks, Big Payoffs *(pp. 100–101) Thanks to* Courville Nurseries, Monroe, CT; courvillenursery.com.

SAVE THIS OLD HOUSE Historic Shotgun House with Deep Roots *(p. 120) Thanks to* Eric Whisman, Franklin County Trust for Historic Preservation, Frankfort, KY; fcthp.org. Alyssa Ollier, digital archivist, Kentucky Historical Society, Frankfort, KY; history.ky.gov. Rev. Leslie Wayne Whitlock, First Corinthian Missionary Baptist Church, Frankfort, KY; firstcorinthianmbc.com.

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ERIN LITTLE

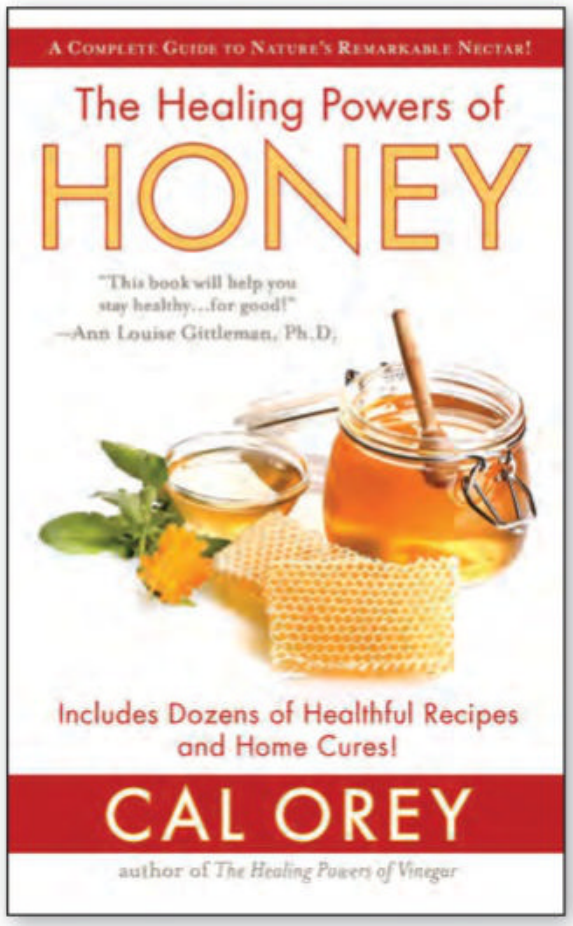
DISCOVER THE LATEST BUZZ ABOUT HONEY

PRAISED for its amazing ability to heal the body, the ancient "nectar of the gods" may just be a 21st century healing miracle — the closest thing we have to a "cure-all" for dozens of ailments from heart disease and heartburn to insomnia, low libido, fatigue, cough and cold, headaches, and more.

If you're a weight-loss warrior, this gooey, golden syrup can even help flatten your belly and whittle your waist!

Surprisingly, 50% of Americans have this nourishing nectar in their kitchen cupboard. Chances are, you do, too, but you haven't even begun to tap into its healing powers. More than a sweetener for tea and toast, **this ancient superfood has been scientifically shown to help:**

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- Fight wrinkles
- MUCH MORE!



SWEET FACT

1.31 POUNDS
Approximate amount of honey each person in the U.S. consumes every year.

Nature's honey. Yes — the same honey that comes from a flower's nectar consumed by the honeybee. In her latest book, The Healing Powers of Honey, bestselling author Cal Orey draws on interviews with doctors, researchers, and beekeepers to reveal the true power of this golden nectar.

Not all honey is the same . . .

Before you start plucking honey from your cupboard and adding it to your food or downing it by the spoonful, order your **FREE COPY** of The Healing Powers of Honey with this special offer.

Inside your **FREE BOOK** you'll discover 30 different healing varieties of honey — each with unique and remarkable "do your body good" powers. For example: Researchers at the Universiti Sains Malaysia reported dozens of studies found tualang **honey can halt the growth of some cancer cells.**

SWEET FACT

2 MILLION
Number of flowers it takes for honeybees to make 1 pound of honey.

Then there's the popular manuka honey, which can help **you beat antibiotic-resistant MRSA and staph bacteria.** Research shows manuka has a high antibacterial potency — great for treating skin infections and aiding digestion. But . . .

There's one little trick you must know before you use it. Make sure it's medical-grade manuka honey. Find out how to tell if it's the real deal in The Healing Powers of Honey.

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Historic shotgun house with deep roots

THE HISTORY Located in Kentucky's state capital, this simple two-story house was built in 1894 as a parsonage for the First Corinthian Missionary Baptist Church. From 1951 to 1960 it was home to Rev. Charles King, a World War I veteran who gained national renown, becoming the first Black elected to a high office in the historically white Southern Baptist Convention. In April, the house was moved across the street to make way for a planned community center. Its new lot adjoins the one on which the Winnie A. Scott Hospital stood; both are included in the sale.

PRICE $85,000
LOCATION
Frankfort, KY
CONTACT
Franklin County Trust for Historic Preservation; preservation@fcthp.org

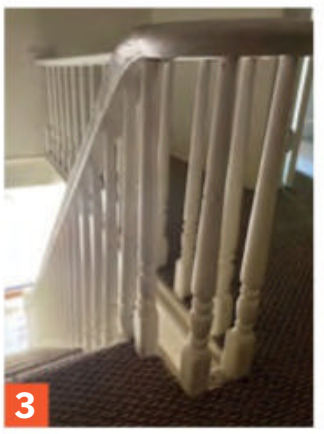
WHY SAVE IT? The 1,580-square-foot house, part of an architecturally diverse historic district and located five blocks from the state capitol and the Governor's Mansion, is one of the last remnants of a significant Black enclave. Many of its original interior features remain, including windows, five-panel doors, stair balustrades, heart-pine floors, and trimwork. Together, the properties, which sit alongside an active riverside park, measure about 160 feet wide by 65 feet deep, offering room to expand the house. Located in what is considered the city's most desirable neighborhood, the house is less than 30 miles from Lexington and within an hour's drive of Louisville.

WHAT IT NEEDS The relocated house rests on a new concrete-and-block foundation that allows space for a half basement. The chimney, porch, and entry steps need rebuilding. Removing the vinyl siding will reveal original poplar clapboards ready to be restored. Inside, the house awaits all-new systems, a kitchen, and baths. Preservation covenants apply, and state and federal tax credits are available. A new owner who embraces the community's past—and present and future—will enjoy the house's simple charms, and guarantee its meaningful place in history. —SUZANNE ZENKEL


1




2


3



4

1. The three-bedroom, two-bath house still bears the I-beam supports that allowed it to be lifted and relocated via flatbed truck; these will be removed and the foundation made whole before the sale. The porch and chimney, removed for transport, will need to be rebuilt. Most of the remaining windows and trim are original.

2. Inside, the living room's coal-burning cast-iron fireplace survived an early-1990s renovation.

3. The main staircase retains its curved handrail, turned balusters, and newel post, now painted.

4. The house, which was relocated across the street, is being offered for sale with the lot adjacent to it, the former site of the Winnie A. Scott Hospital, established in 1915 and seen here in an undated photo. The nine-room hospital was built to serve the then predominantly Black community, and continued to fulfill that mission until 1959.

COURTESY THE KENTUCKY TRUST (4); WINNIE A. SCOTT HOSPITAL: KENTUCKY HISTORICAL SOCIETY

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