*News of Interest for and from the Connecticut Association of Home Inspectors, Inc.*

# CAHI MONTHLY NEWS

December 2017 Volume 10, Issue 12

## Presidents Corner

Wow! The last two months have flown by.

Seminars and Bus Trip
C.A.H.I. has held two seminars and a bus trip in the last 5 weeks. We covered over 2000 years of homebuilding methods in a few weeks.
Old Sturbridge Village provided great insight into the building methods and quality craftmanship of the era.
Larry Janesky and CT Basement Systems demonstrated the latest in construction and home services.
Hats off to Scott Monforte and Woody Dawson for making the arrangements for these great educational programs.

As 2018 dawns you can look forward to more high quality presentations.
Did you know that C.A.H.I. will pay $25 to any member who provides us with a guest speaker for a seminar? We also pay $25 for articles submitted and used in our newsletter. Contact Woody or Scott with suggestions for seminars and contact Al Dingfelder with newsletter articles.

Help Wanted
We need a few good people to help run this organization. Current openings include Secretary and Webmaster. Please contact any board member if you can help organize communications, have a knack for websites or just want to help.

***continued on Page 2***

### MONTHLY MEETINGS – Details & Info

CAHI's regular monthly meetings are held at the Best Western located at 201 Washington Ave (RT 5), North Haven. Meetings are free to members. Most meetings are on the fourth Wednesday of the month from 7-9pm. Guests are always welcome! Guests may attend 2 free monthly meetings to experience our presentations, meet our members, and receive a CE attendance certificate.

Joining CAHI may be done at anytime of the year through our Membership Page

### INSIDE THIS ISSUE

Presidents Corner .....1
Photos of Nov. CAHI Events...3
Large Format Floor Tile.....5
Christmas Safety Tips.....12
Resilient Buildings.....13
CDC - Holiday Health Tips...19
Common Framing Errors.....21
*Realtor Well Water Class....24
Common Roofing Errors.....25
Comics.....31

* *"Time Sensitive" Event*

**Next Meeting!**

**December**

**No Meeting**

**Merry Christmas**

**January**

**Meeting**

**TBA**

## Presidents Corner *continued*

Old Newsletters Wanted
Do you have copies of past C.A.H.I. newsletters?
During the latest website transition we lost quite a few of our older newsletters .

A list of missing copies can be found by going to the front page of the website and clicking on "Lost Newsletters" If you have some to offer please contact bill@ctinspectors.com

***Happy Holidays!!*** Enjoy time with your families and don't forget to thank a vet.

Bill Kievit

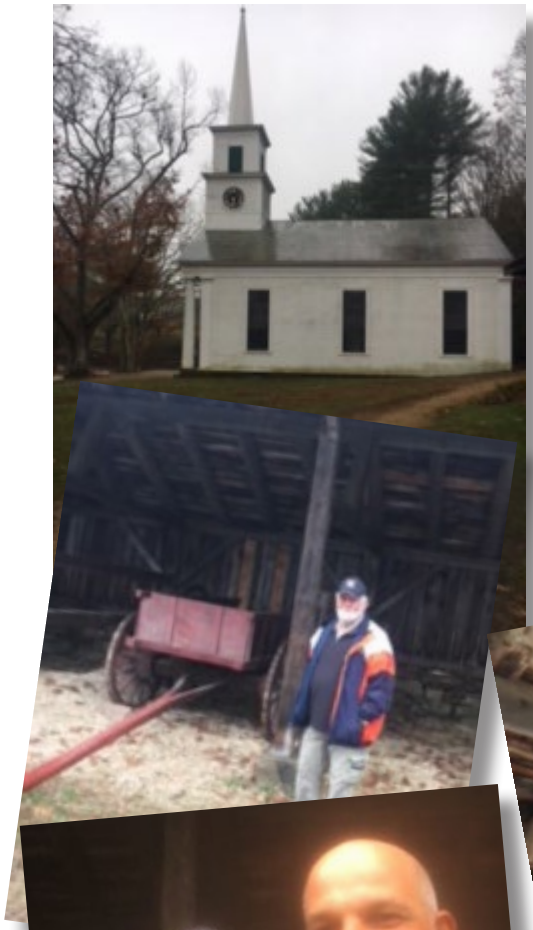
# Editor's Rant

**Rant December 2017:**
**Although just initiated, there will be no "Rant" for December. With Christmas and Chanukah approaching quickly, I need to focus on the positive in my life and our world. You don't need to read about my bitchin. But in January I will come out swinging. Politicians, bankers, do it for cheapers or some other godless group that I would love to stick my boot in their collective ass (my son thinks the TV character Red Foreman and I are the same).**

**I would like to wish all our members and their families a Meaningful Christmas/Chanukah and a Prosperous New Year!**

# Photos from November CAHI Events

## Sturbridge Bus Trip - *"Recently cleared for public viewing."*

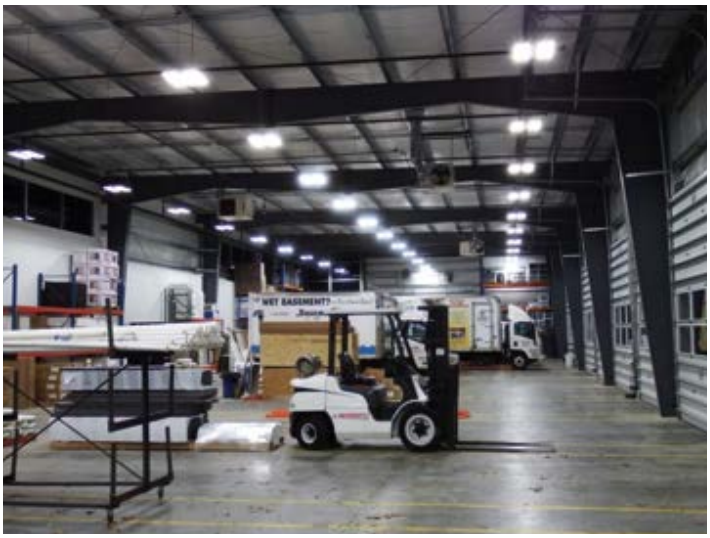





With all the recent media coverage of inappropriate social behavior; our pictures from the Sturbridge Trip are being reviewed to preclude disclosure of any investigable activity. Your editor would never try to get you in trouble. Some photos from the Sturbridge Trip have been declassified and will be leaked to the media. You are seeing them here first on WCAHI.

# Photos from November CAHI Events

## Buffet and Tour of CT Basement Systems/Dr. Energy Saver


# Working With Large-Format Floor Tile

## The size poses challenges that require a different approach

BY TOM MEEHAN

Recently, our most common floor installations have consisted of large tile that looks a lot like wood planks. More than once, we've gotten funny looks from people who were sure that they were looking at a wood floor. At almost 3 feet long and close to 6 inches wide, these tiles have the same basic shape as a board. But this shape brings with it the challenges of installing large-format tile. The Tile Council of North America defines large format as having any edge 15 inches or longer. Because of the size, the chances of lippage (uneven tile edges) or cracking after installation are much greater. For this reason, the TCNA has put out guidelines specific to installing large-format tile.

### A FLAT SUBFLOOR IS A MUST

For a successful installation of large-format floor tile, the most important factor is the flatness of the subfloor. In addition to its strict rules about deflection, the TCNA recommends that the subfloor have no more than 1/8-inch variation in 10 feet—tight tolerances for any subfloor. For this project, I made sure the plywood subfloor was within the TCNA tolerances before I installed a Ditra Mat uncoupling membrane over it.

If the surface of the subfloor had varied by more than 1/8 inch, I would have considered using a poured floor leveler on the worst areas—or on the entire floor—before installing the uncoupling membrane. The only area of this subfloor that was slightly out of level was in a hallway off the main floor. Because the hallway was relatively small (less than 10 square feet), I opted to use a mechanical "leveling" system there, which I describe later in the article. After installing the membrane, I rechecked the floor for flatness by trying to slide a silver dollar (which is just under 1/8 inch thick) under an 8-foot straightedge **(1)**.

Photos by Roe Osborn





Installing large-format tile requires a subfloor that is almost perfectly flat. The author checks the floor by trying to insert a silver dollar (or other 1/8-inch-thick spacer) under an 8-foot straightedge **(1)**. Slight warpage is inevitable with large tile and can cause excessive lippage where the edge of a tile sticks up above an adjacent one **(2)**. For this project and this type of tile, the author installed four courses at a time. To lay out each section, he set four tiles in place and measured across them **(3)**. That measurement then guided his layout line for installing each four-course section across the floor **(4)**.

A flat subfloor is crucial because large-format tiles are seldom perfectly flat. During firing and glazing of a long, narrow strip of clay, some minor distortion can be expected. If two tiles with a 1/16-inch bend are installed side by side, the middle of one tile can be 1/8 inch higher than the end of the other—the lippage that was mentioned earlier **(2)**. An out-of-level floor will compound the problem. As I unpack the boxes, I randomly check the tiles for any major discrepancies, setting aside the worst tiles to be cut for shorter pieces.

## GETTING STARTED

Before I mix any thinset, I scan the room to determine which sides are the most visible. That's where I'll begin my layout. In this case, I decided to start at the front wall of the house and the wall adjacent to the front door. To keep the installation neat and easy to handle, I always put down just a few courses at a time. To minimize lippage, I stagger the ends; for this floor, I started with a quarter of a tile, then a half tile, then a three-quarter tile, and finally, a full tile. With four starter pieces, I worked four courses at a time.

To determine the layout, I set four tiles side by side, leaving 1/8-inch gaps between them for grout lines **(3)**. I measured 23 1/2 inches across the tiles; that measurement would guide my layout lines as the courses progressed across the floor.

The TCNA recommends leaving a 1/4-inch gap around the perimeter of the tile floor for expansion, so for the first section, I measured out 23 7/8 inches from the wall. Using a laser tool, I projected a straight line across the room and drew a line with a waterproof marker **(4)**. Then I was ready to install the tile.

*Tom Meehan, co-author of* Working with Tile, *is a second-generation tile installer who lives and works in Harwich, Mass.*





Tiles for the first course had to be scribed around the threshold of the door **(5)**. Starting the first course with a quarter-size tile in the corner, the author put a full tile over the most trafficked area of the threshold, which helped to minimize the chance for cracking. Avoiding a grout line in the doorway also looked much better. The author marked the end scribe on the full tile and then flipped the tile over to mark the strip he needed to remove along one edge **(6)**. Next, he carefully cut the strip lengthwise in a tile saw **(7)**, flipped the tile over, and finished the cuts from the back **(8)**.

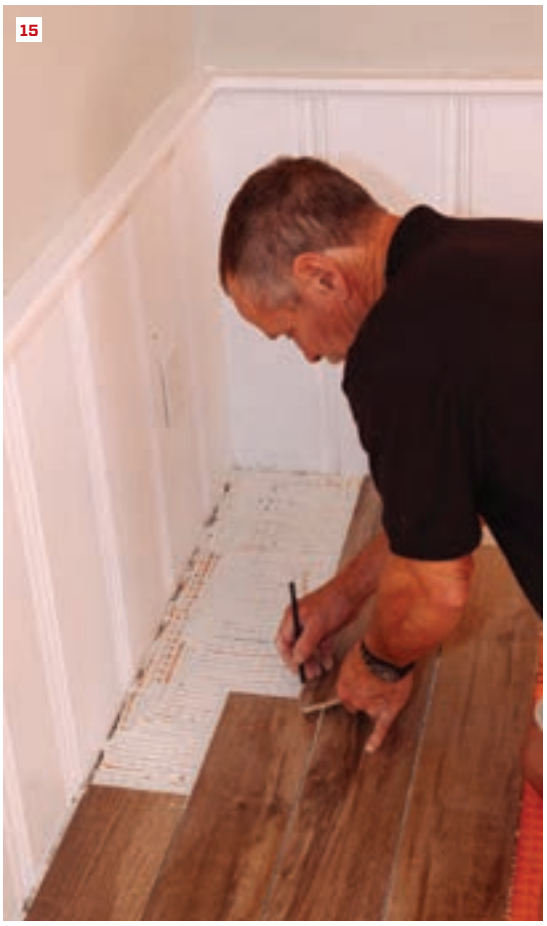




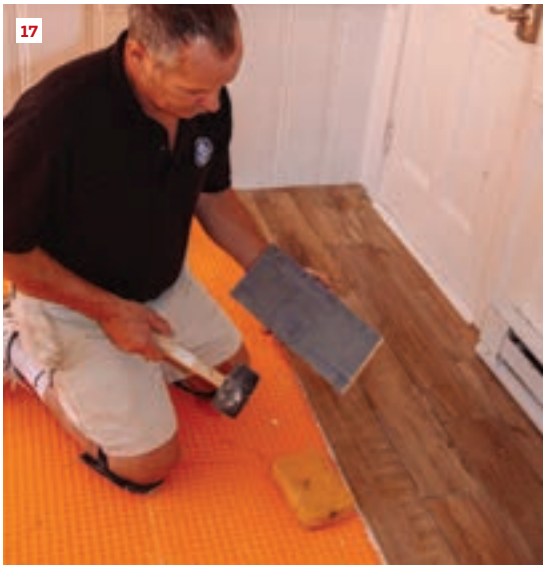
Installation of tile over this uncoupling membrane required two passes of dry-set mortar—thinset that needs to be used over the membrane. The first pass with the flat edge of the trowel forced thinset into the cavities of the membrane **(9)**. The second pass with a 3/8-inch-by-3/8-inch square-notched trowel combed the thinset perpendicular to the long edge of the tile **(10)**. The author applied a skim coat of thinset to each tile **(11)** before pressing it into place **(12)**.



As the author pressed each tile into place, he pushed it side to side about 1/2 inch **(13)**. The perpendicular direction of the trowel lines allows air to escape along the long side of the tile as it beds into the thinset. Every few courses, it's a good idea to lift up a tile and check the coverage of the thinset **(14)**. For large-format tile, the coverage should be at least 85% for interior applications and 90% for exterior ones.




To finish each four-course section, the author marked the lengths of the last tiles in place before cutting and installing them **(15)**, making sure to leave a 1/4-inch expansion space near the wall. The second four-course section was laid out like the first, with a wall-to-wall guideline **(16)** using the measurement from the initial dry layout (see photo 3).



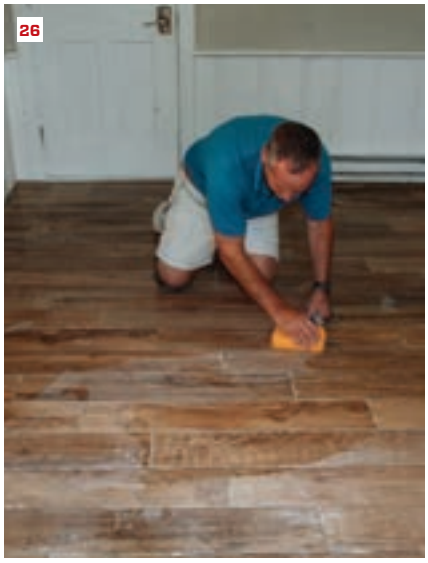
After completing each section, the author tapped down the ends of the tiles to minimize lippage. A short length of 2x6 with a scrap of flexible shower-pan membrane glued to it served as a beating block **(17)**. He tapped the ends of all the tiles with the block and a rubber mallet until their edges were even **(18)**.






The floor of an adjacent hallway was slightly out of level, and for this small area, the author opted to use a mechanical "Lippage Tuning" system from Miracle Sealants. First, he cut and dry-fit all the tile for the hallway space **(19)**. Then, as he bedded each tile into the thinset, he inserted a flat, 1/8-inch spacer at each grout-line intersection **(20)**. After all the tiles were in place, he pushed plastic caps down over the protruding tabs **(21)** and then used a proprietary tool to "ratchet" the caps onto the tabs, aligning the intersecting tile surfaces **(22)**. Each spacer has a breakaway point; once the thinset had cured, a gentle tap with a mallet broke off the tab below the grout line **(23)**.






Before grouting the floor, the author cleaned and prepped the tile. He used a utility knife to scrape out the excess dried thinset from the grout joints **(24)**, and a vacuum to pull the loosened pieces out of the grout lines **(25)**. He then went over the whole floor with a wet sponge to loosen and remove any dried thinset stuck on the surface of the tile. A final wipe with the sponge ensured the floor was ready for grout **(26)**.




The author applied the grout initially with a rubber-edge grout trowel in sweeping diagonal strokes **(27)**. After letting the grout set up for a half hour or so, he went over the surface with a sponge and clean water, rinsing the sponge frequently; this left a light haze on the surface **(28)**. When the haze dried, he went over the tile again with a clean, damp sponge, this time moving only in a direction parallel to the tile planks **(29)**. He made only a single pass with each side of the sponge before rinsing it in clean water. Two days later, he returned and cleaned the floor with a stone and tile cleaner.

# Christmas Safety Tips

**Christmas is a special time of the year for families. NTSI recommends the following safety tips to keep the holiday season joyful.**

## Christmas Tree Safety

- Consider an artificial tree as they are much safer and cleaner
- A real tree should not lose green needles when you tap it on the ground
- Cut one inch off the trunk to help absorb water
- Leave the tree outside until ready to decorate
- The tree stand should hold a minimum of one gallon of water
- Check the water level daily
- Make sure the tree is secured and cannot be knocked over
- Keep the tree away from all heat sources
- Use miniature lights that have cool-burning bulbs
- Always turn off the tree lights when going to bed or leaving the house
- Never use candles even on artificial trees
- Dispose of the tree properly after the holidays

## Home Safety

- Make sure you have a properly working fire alarm
- Use only outdoor lights on the exterior of the home
- Never use worn light strings
- Connect no more than three strands of lights together
- Never use an indoor extension cord outdoors
- Avoid overloading wall outlets and extension cords
- Keep outdoor electrical connectors above ground and out of the snow
- Never use electric lights on a metallic tree
- Extinguish fireplace ashes before going to bed or leaving the house
- After parties, check under and around chairs, sofas and other furniture for smoldering cigarettes if there have been people smoking in the house
- Have at least one working carbon monoxide detector in the house
- Have a fire extinguisher available

**Resource: www.sosnet.com/safety/christmas**

Photo by Matt Risinger

# Flood-Hardy Wall Construction

## Can we build homes that stand up to frequent flooding?

BY TED CUSHMAN

When Hurricane Harvey dumped a record-shattering 50-plus inches of rain on Houston at the end of August, many homes in the low-lying Houston neighborhood of Meyerland were flooded for the third time in just three years.

Homeowners in Meyerland are experienced hands now, and they know the drill: Rip out the drywall, rip out the insulation, rip out the wood floors or the carpet, dump it all at the curb with your ruined furniture, your clothes, and your other belongings, and get ready to file another flood insurance claim.

A few homeowners in Meyerland, however, were fortunate enough to escape flood number three. Meyerland resident Drew Shefman is one: As Harvey approached, Shefman and his family made the news by managing to get their home lifted up 4 feet and set on cribbing barely a week before the storm arrived. Floodwaters fell short of flooding the Shefman home by a scant 6 inches; since then, contractor Arkitektura has come back to lift the house another 6 feet. Today, the house sits 10 feet above grade.

But even elevating a house turned out not to be a fail-safe strategy in Meyerland. According to the *Houston Chronicle*, a nearby home belonging to Jeffrey Tarrand had been elevated 42 inches after tropical storm Allison flooded the area in 2001. Harvey displaced Allison in the record books; Harvey also submerged Jeffrey Tarrand's elevated first floor under 22 inches of water.

## ASSESSING THE RISK

Harvey was an epic storm. It wandered aimlessly around the Texas coast for days after landfall, dropping 40 to 60 inches of rain. And while Harvey flooded many homes that had been flooded repeatedly in the past, it also flooded homes that had never experienced flooding before. An estimated 80% of the flooded area fell outside the boundaries of the government's official flood plain. Harvey's story highlights one of the uncomfortable realities about flood: It's unpredictable.

Based on rainfall alone, Harvey qualifies as a "500-year flood"—meaning that in theory, a similar event would be expected to happen at that location once every 500 years, on average. The official flood-plain maps of the Federal Emergency Management Agency (FEMA) are based on a higher likelihood: a 1% chance of flooding in any given year (the so-called "100-year flood"). But neither term really means what it sounds like it means. Hundred-year floods happen every year, somewhere in the country. And even 500-year floods aren't necessarily all that rare. "By some calculations," researchers Nicholas Pinter, Nicholas Santos, and Rui Hui, of the Center for Watershed Sciences at the University of California-Davis, wrote after Hurricane Harvey, "the current flooding represents the third '500-year' flood in the Houston area in the past three years."

**No matter how advanced the mapping technology, no flood plain map can ever be perfect. "The flood plain moves," says Louisiana State University Professor Claudette Reichel.**

When severe flooding hit Nashville, Tenn., in May 2010, the event was described as a "1,000-year flood." And in 2016, rains that brought devastating floods to Baton Rouge, La., and vicinity also got the "1,000-year" label from the National Weather Service office in Slidell, La.

Climate scientists predict an increasing incidence of heavy rainfall and serious flooding as the earth's atmosphere continues to warm in coming decades. But climate change or no climate change, the sad truth is this: We know it's going to flood. What we don't know is exactly where, exactly when, or exactly how deep.

## THE INSURANCE PROBLEM

The unpredictable nature of flooding is a major challenge for the federally-backed National Flood Insurance Program (NFIP), which is run by FEMA. The agency is midway through a complex and technically difficult reworking of the NFIP's Flood Insurance Rate Maps, or FIRMs, which define the official boundaries of the "flood hazard zone"—the locations where NFIP flood insurance is required for homes carrying federally-backed mortgages. Huge parts of the country still have outdated flood-zone maps that date back to the 1980s and earlier. And even the agency's state-of-the-art new maps, where they have come into force, represent only a best guess, despite the application of advanced ground elevation measurement technology and sophisticated computer modeling.

And no matter how advanced the mapping technology, no map can ever be perfect—because as Claudette Reichel, a professor at the Louisiana State University Agricultural Extension, points out, the flood plain itself is a moving target: Flood risks change from year to year in response to natural and man-made changes in rainfall and flow patterns. When record-setting rainfall soaked Reichel's own region in the summer of 2016, 80% or better of the flooded properties were outside the official flood plain—just like in Houston in the summer of 2017. And just like in Houston, most of the flooded property owners in Louisiana didn't have any flood insurance.

## PRACTICAL PREPAREDNESS

Ideally, says Claudette Reichel, homes in places where flood is a serious risk should be built above the anticipated flood level. But even for new construction, that's an expensive proposition. For an existing house, dollars can be a deal-breaker. The cost of raising an existing home to get it above the flood line is prohibitive for most people, especially if the house is built on a slab foundation.

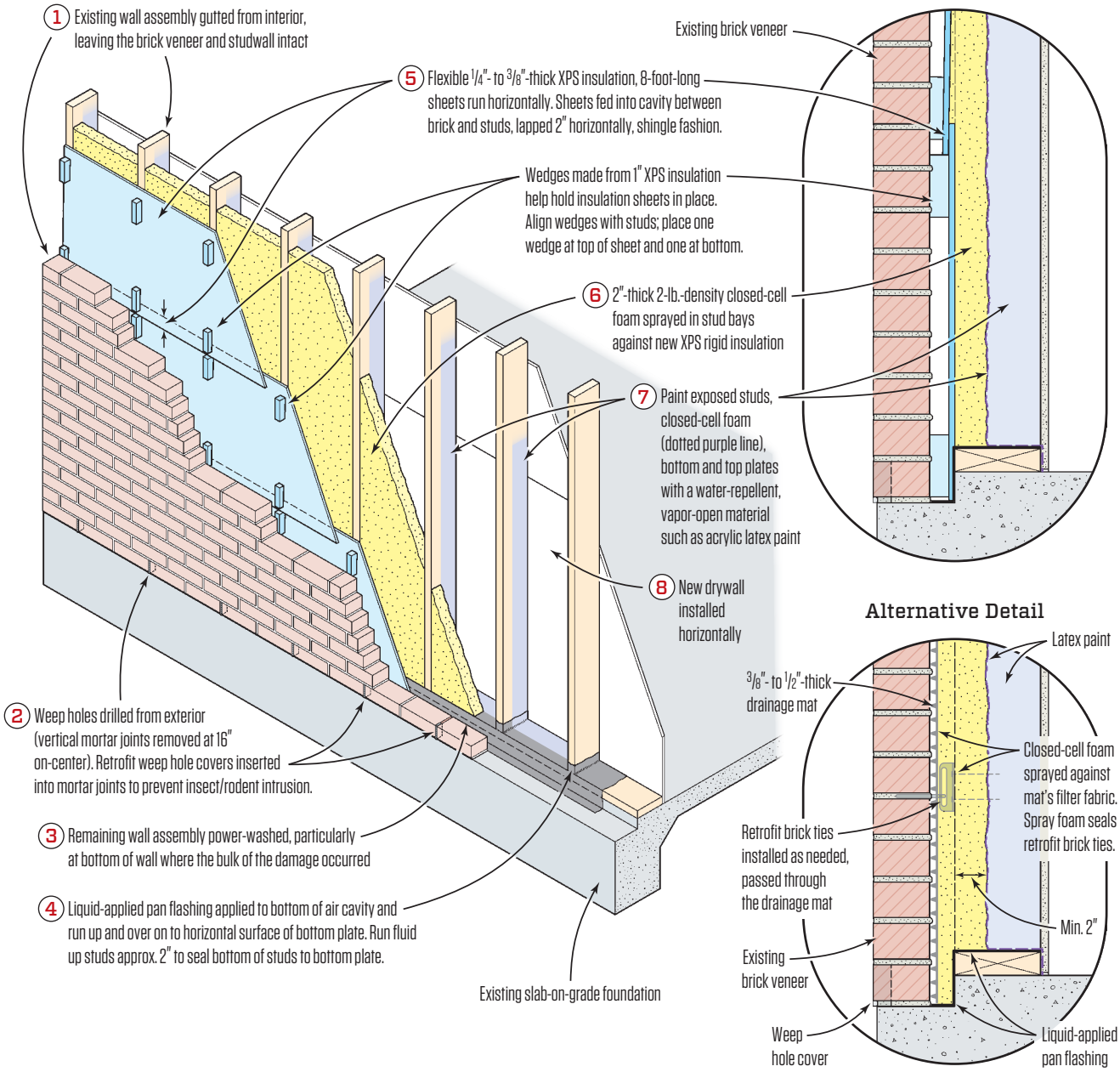
But if the money's not there to raise the house, Reichel says, homeowners still have choices. After Hurricane Katrina flooded New Orleans in 2005, building scientist Joe Lstiburek developed a set of recommended details for rebuilding walls in flood-damaged wood-frame houses that can't be readily elevated (see illustration, page 37), as well as suggestions for flood-tolerant masonry cavity-wall and mass-wall construction (see illustrations, pages 38 and 39).

Lstiburek's post-Katrina rebuilding recommendations focused on typical southern Louisiana construction methods, with modifications intended to make the buildings more tolerant of standing water and easier to open up, clean, dry, and put back into service after a flood. Reichel, who describes the idea as "drainable, dryable, flood-hardy restoration," popularized the details on the LSU Ag Center's website, and continues to educate Louisiana property owners on the concept. And after *JLC*'s *Coastal Contractor* magazine published a drawing of Lstiburek's suggestion for wood-frame walls in 2006, the illustration found its way into FEMA guidance for homeowners repairing their properties after a flood.

Following Hurricane Harvey, Lstiburek has evolved similar guidance tailored to the construction style that's typical of the Houston market, where many homes are built on slabs and clad with brick (see illustration, facing page). In this go-round, Lstiburek is moving away from the idea of saving any interior wall covering. Floodwater tends to be "filthy," Lstiburek observes, and interior wallboard is likely to be ruined every time the property floods—and probably has to come off in any case to allow thorough cleaning and disinfecting of the wall cavity.

Illustrations by Tim Healey

## Flood-Tolerant Wall Reconstruction




In the aftermath of Hurricane Harvey, building scientist Joe Lstiburek has proposed the method shown here for remediating flood-damaged houses in the Houston market, where brick veneer exteriors and slab foundations are common. In theory, the details should reduce water damage and make cleanup and repair easier the next time the building is hit by a flood. The centermost insulation layer is watertight and impermeable, while materials toward the inside and outside faces of the wall allow drying by diffusion.

In this latest incarnation of flood hardy, Lstiburek is assuming that the home's sheathing will also have to come out, leaving the exterior brick cladding exposed from the back. All of the framing as well as the brick has to be washed, scrubbed, rinsed, and disinfected, he says, with particular attention to the base of the wall where dirt and sediment may have collected. Then it has to be dried.

When the wall is ready to be reconstructed, Lstiburek suggests two possible ways to establish an air barrier and drainage plane on the interior side of the brick cladding. One way would be to slide rigid closed-cell extruded polystyrene (XPS) insulation into the cavity between the brick and the studs, jamming the insulation into place with small pieces of XPS to hold it temporarily, and then applying closed-cell spray foam against the XPS and between the studs. This would create an effective air barrier and also achieve some lateral stiffening of the wall structure.

Lstiburek's other suggestion is to place a fabric-faced open-weave drainage plane material such as Benjamin Obdyke Home Slicker against the brick, then apply the spray foam against the fabric for insulation and air-sealing.

Either method would create a drainage and drying gap behind the brick, outboard of the insulated wall. But first, says Lstiburek, the base of the wall should be coated with fluid-applied flashing to make a drain pan at the bottom of the wall. And weep holes should be cut at vertical joints in the bottom course of brick to allow water to exit the cavity.

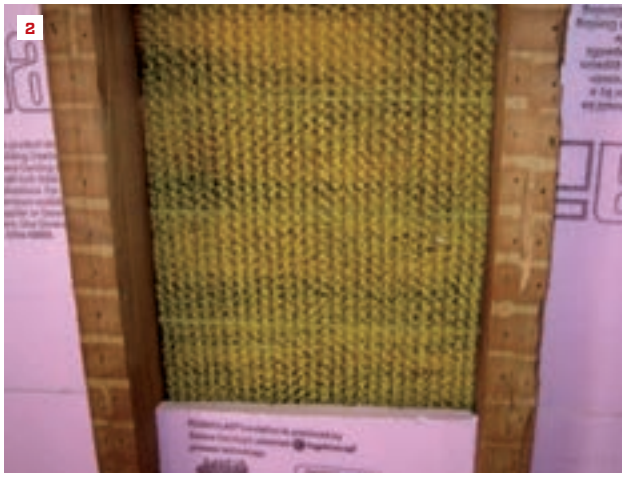
## SAVING HISTORY

Louisiana building-science consultant Paul LaGrange has been working with the LSU Ag Center since the days of Katrina, helping to design and develop the center's LaHouse high-performance home demonstration project. After Katrina, LaGrange found himself working on flood restoration of old balloon-framed New Orleans buildings. Many of the structures were uninsulated, with board siding applied directly to the wood studs.

"Some of these were listed as historic properties, and some weren't," says LaGrange. "But either way, in many cases we weren't able to remove the existing board siding. But we still had to improve the air barrier, the drainage plane, and the thermal barrier. And the way you do that with a historic house is very different from the way you would with a modern-construction home that was platform framed with structural panel or gypsum-board sheathing and interior drywall."

For those older buildings, LaGrange had to work from the interior. The methods he came up with (see photos, right) resemble Joe Lstiburek's recommendations for brick-clad Houston homes: LaGrange placed Home Slicker against the board siding, cut and fit sheets of XPS to hold the drainage fabric in place, and applied closed-cell spray polyurethane to air-seal the wall and lock the components together.

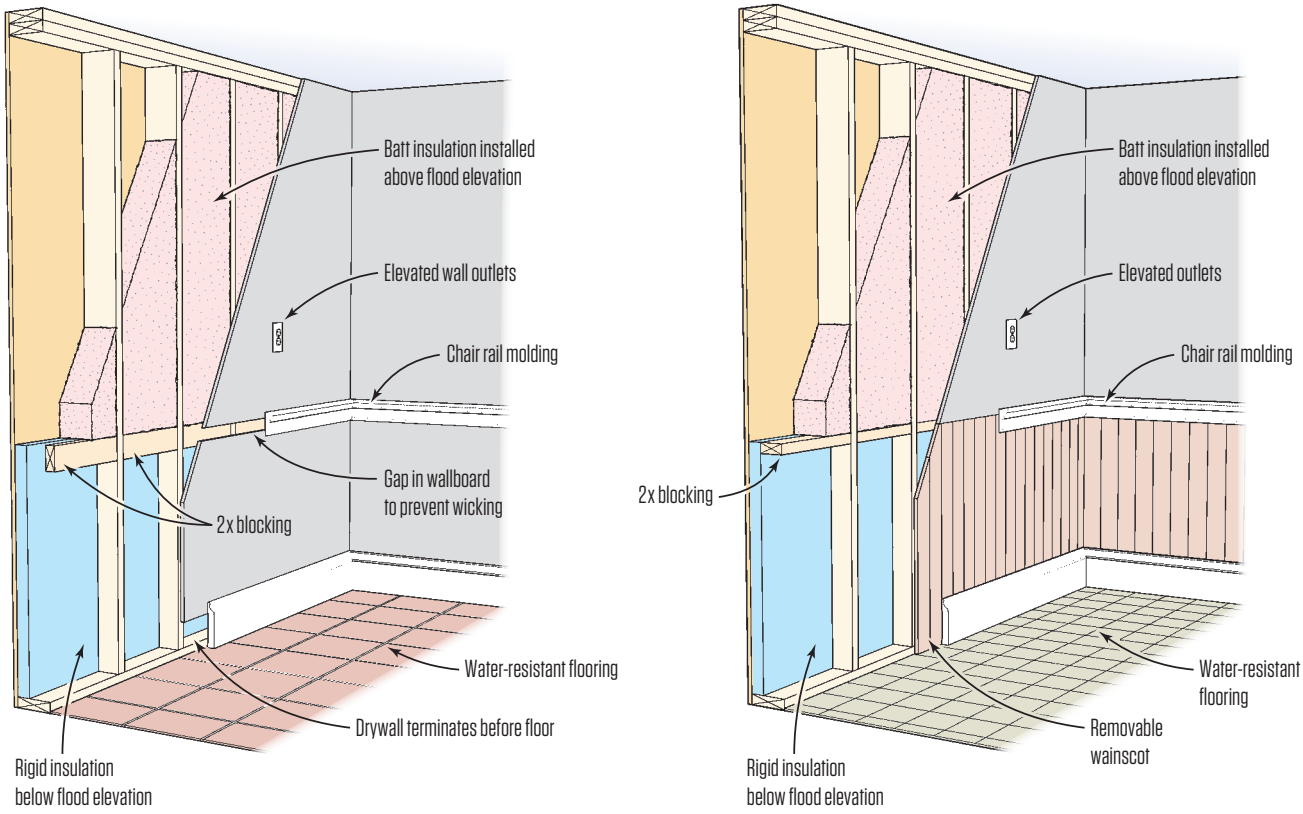
Like Lstiburek's recommendations for Houston, and like the drainable, dryable wall shown on the facing page, LaGrange's solution for balloon-framed houses should make the houses easier to fix in the event that they flood again. But so far, none of the buildings LaGrange worked on have been flooded a second time.



In historic New Orleans buildings where old board siding could not be removed **(1)**, consultant Paul LaGrange opted to place open-weave drain fabric against the wall, set rigid polystyrene insulation board against the drainage material **(2)**, and seal the cavities with closed-cell high-density spray foam insulation **(3)**.

Photos: Paul LaGrange

## Drainable, Dryable Wall Repair




The drawing above illustrates the "wash-and-wear wall" concept for flood repair on existing homes advocated by Professor Claudette Reichel, director of the Lousiana State University (LSU) Ag Center's "LaHouse" project, and included by FEMA as a suggestion in the agency's advice for repairing flooded homes. Upper portions of the wall are left as is, while lower portions receive flood-tolerant materials. If flood recurs, lower portions of the wall will be easier to clean, dry, and put back into service.

### "WASH-AND-WEAR" RECONSTRUCTION

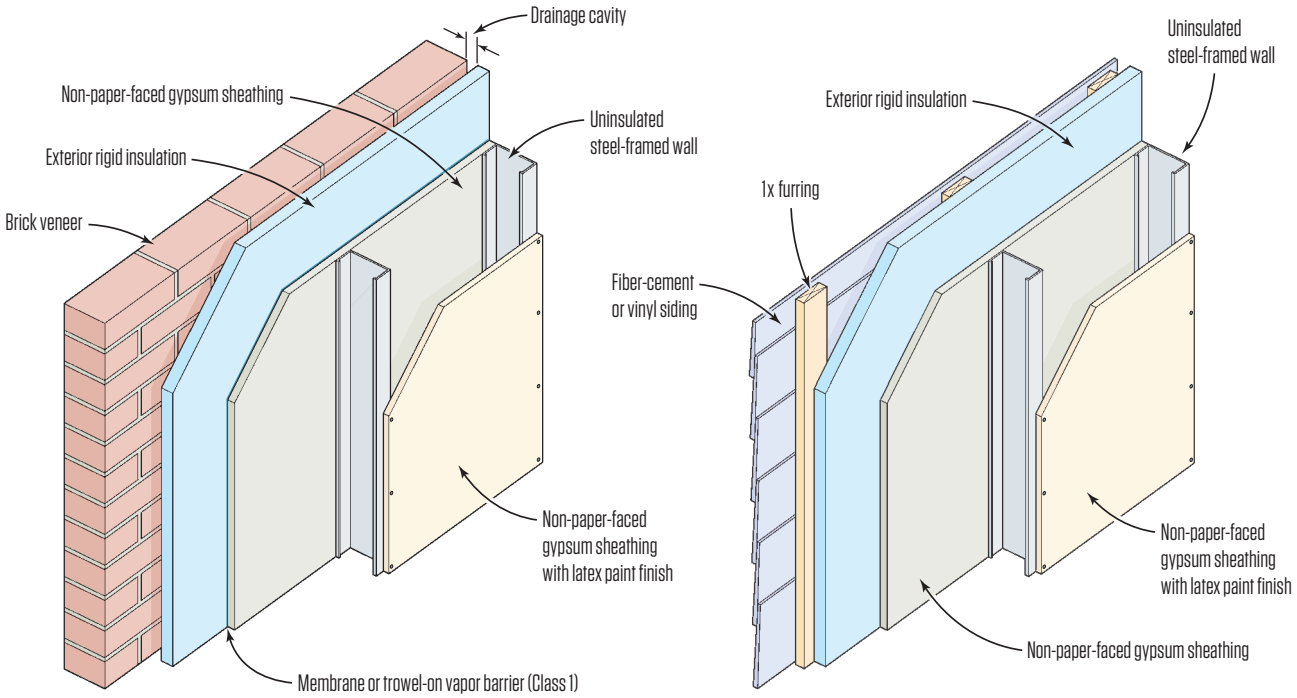
In any flood, the extent of the damage, and the demolition required, will vary depending on how deep the floodwater is, how dirty it is, and how long it sits in the house. In some cases, the interior wallboard may have to be completely stripped out. In others, just the lower wall may need gutting. In a best-case scenario, homeowners might be able to just remove strips of material and flush out the walls. But in any case, says Claudette Reichel, applying flood-hardy methods like the details shown above could save homeowners from months of displacement from their houses.

And unlike elevating the house, "wet floodproofing" (the FEMA term for the technique) isn't an all-or-nothing proposition. Homeowners can apply as much of the approach as they have time or resources for. Says Reichel: "Anything you do reduces your damage next time. You could elevate your water heater and your air conditioner compressor, but maybe not your refrigerator. Or for example, a lot of people in our area went back with floorings that were more resilient—interlocking vinyl flooring was flying off the shelves at the home center—but they didn't necessarily do the drainable dryable wall part."

But any measures taken this time around will pay off in the next flood, says Reichel. "The more wet floodproofing techniques they use, the less the ordeal. They would not be homeless for a year. They would not be competing with everyone else for new materials. All they have to do is clean and dehumidify to speed-dry, and they're back in."

"If they don't elevate their outlets and their switches, and those get underwater, those need to be replaced," cautions Reichel. "But at least the home is still livable. And if it's fresh water, not salt water, you don't have to replace the wiring—just the receptacles."

## Cavity-Wall Assemblies




Above is a rendering of two drainable and dryable cavity-wall assemblies proposed by building-science expert Joe Lstiburek after Hurricane Katrina. The wall designs share several key characteristics: No water-sensitive materials are used in the construction; exterior cavities are drainable and vented to the exterior; and interior cavities can be opened to allow passive or fan-forced drying in the event of a flood, by removing strips of wall material at top and bottom. Lstiburek cautions, however, that floodwaters are usually "filthy," requiring the interior side of the wall to be opened up, scrubbed, rinsed, and disinfected.

### CLEANING AND GUTTING

As *JLC* goes to press this month, Houston is not ready for reconstruction. Thousands of volunteers have flocked to Houston to help, but for now, the job is demolition. "They are focusing on gutting and drying," says Paul LaGrange, "and they are actually drying it right. They are taking that four to eight weeks, depending on how long the water sat, and what products got wet, to dry those facilities. And of course they are sanitizing to prevent organic growth."

In the 2016 Louisiana flood, LaGrange says, some homeowners were in too big a hurry. "They were not drying their homes thoroughly enough, to a 15% moisture content or less, before they started re-insulating and hanging drywall." One common mistake is to measure moisture content at the surface of the wood, says LaGrange: "They weren't inserting the pins of the moisture meter into the center of the wood framing to gather accurate measurements. So you still had moisture that was emerging from the center of that wood, and people were hanging drywall way before their homes were completely dry."

Builder and *JLC* author Matt Risinger, who is based in Austin, Texas, has traveled to the Houston area with volunteers from his church to help gut several homes. At first, says Risinger, it was discouraging. "One of the houses I went to, the water was just absolutely disgusting," he says. "The open-cell insulation was like a sponge. You could push on it and water would spurt out on you."

"But by the end of the day," says Risinger, "once we ripped out all the drywall and the foam, I felt like, 'Okay, this house is salvageable. We're back to a situation as if it was in framing and had gotten wet.' And you know, houses get wet in framing all the time. We can deal with that, if it's dryable."

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

# Holiday Health and Safety Tips


The holidays are a great opportunity to enjoy time with family and friends, celebrate life, to be grateful, and reflect on what's important. They are also a time to appreciate the gift of health. Here are some holiday tips to support your efforts for health and safety this season.

### Wash your hands often.

Keeping hands clean is one of the most important steps you can take to avoid getting sick and spreading germs to others. Wash your hands with soap and clean running water, and rub them together for at least 20 seconds. Cover your mouth and nose with a tissue when you cough or sneeze. If you don't have tissue, cough or sneeze into your upper sleeve or elbow, not your hands.

### Stay warm.

Cold temperatures can cause serious health problems, especially in infants and older adults. Stay dry, and dress warmly in several layers.

### Manage stress.

The holidays don't need to take a toll on your health and pocketbook. Keep your commitments and spending in check. Balance work, home, and play. Get support from family and friends. Keep a relaxed and positive outlook. Make sure to get proper sleep.

### Travel safely.

Whether you're traveling across town or around the world, help ensure your trip is safe. Don't drink and drive, and don't let someone else drink and drive. Wear a seat belt every time you drive or ride in a motor vehicle. Always buckle your child in the car using a child safety seat, booster seat, or seat belt appropriate for his/her height, weight, and age.

### Be smoke-free.

Avoid smoking and breathing other people's smoke. If you smoke, quit today! Call 1-800-QUIT-NOW or talk to your health care provider for help.

### Get check-ups and vaccinations.

Exams and screenings can help find potential problems early, when the chances for treatment and cure are often better. Vaccinations help prevent diseases and save lives. Schedule a visit with your health care provider for needed exams and screenings. Ask what vaccinations and tests you should get based on your age, lifestyle, travel plans, medical history, and family health history.

### Watch the kids.

Children are at high risk for injuries. Keep a watchful eye on your kids when they're eating and playing. Keep potentially dangerous toys, food, drinks, household items, choking hazards (like coins and hard candy), and other objects out of kids' reach. Learn how to provide early treatment for children who are choking. Make sure toys are used properly. Develop rules about acceptable and safe behaviors, including using electronic media.

### Prevent injuries.

Injuries can happen anywhere, and some often occur around the holidays. Use step stools instead of climbing on furniture when hanging decorations. Leave the fireworks to the professionals. Wear a helmet when riding a bicycle or skate-boarding to help prevent head injuries. Keep vaccinations up to date.

Most residential fires occur during the winter months. Keep candles away from children, pets, walkways, trees, and curtains. Never leave fireplaces, stoves, or candles unattended. Don't use generators, grills, or other gasoline- or charcoal-burning devices inside your home or garage. Install a smoke detector and carbon monoxide detector in your home. Test them once a month, and replace batteries twice a year.

### Handle and prepare food safely.

As you prepare holiday meals, keep yourself and your family safe from food-related illness. Wash hands and surfaces often. Avoid cross-contamination by keeping raw meat, poultry, seafood, and eggs (including their juices) away from ready-to-eat foods and eating surfaces. Cook foods to the proper temperature. Refrigerate promptly. Do not leave perishable foods out for more than two hours.

### Eat healthy, and be active.

With balance and moderation, you can enjoy the holidays the healthy way. Choose With balance and moderation, you can enjoy the holidays the healthy way. Choose fresh fruit as a festive and sweet substitute for candy. Limit fats, salt, and sugary foods. Find fun ways to stay active, such as dancing to your favorite holiday music. Be active for at least 2½ hours a week. Help kids and teens be active for at least 1 hour a day.

Click HERE to go to the website and find additional links covering each of these Holiday Tips.

# Field Guide *to* Common Framing Errors

*by David Utterback*

## A building's frame is only as strong as its weakest link. Here are a dozen weak ones to avoid.

Over the past 17 years, first as a builder and then as a representative of the Western Wood Products Association, I have traveled extensively, talking to builders and code officials to see how framing is done throughout the country. While I've found regional differences, I've also found a few serious framing problems that tend to crop up everywhere, again and again.

All of these problems are covered by the model building codes. A given problem might occur because the builder doesn't know better, or because framers are paying more attention to other construction needs. Either way, these framing defects not only cause trouble with code officials, but cause problems big and small down the line.

Here are some of the most common framing errors I come across, along with code-approved, structurally sound solutions.

### Framing Openings Cut in Floors

A common problem occurs with floors when subs cut through joists to make room for plumbing runs, hvac ductwork, or other mechanical elements. The loads these cut joists supported must be properly transferred to other joists. You can do this using header joists, end-nailed across the cut ends of the interrupted joists, to carry loads to the adjacent trimmer joists. Where the header has to span a space less than 4 feet wide, a single header end-nailed to the trimmer joists will do.

Things get more complicated if the header must span more than 4 feet, as in Figure 1. If that's the case, both header and trimmer joists should be doubled. The doubled trimmer joists must be nailed together properly (with spaced pairs of 16-penny nails every 16 inches) so that they act as beams. The header joists must be appropriately anchored to the trimmers. End nails will do for header spans up to 6 feet; beyond that, use hangers. Any tail joists over 12 feet should also be hangered.

When you're framing the floor, check the blueprints to see where any such openings might go, and header off any joists that might be in the way in advance. It's much easier than trying to work from underneath the subfloor later.

### Holes and Notches

Whenever you cut a hole or notch in a joist, that joist is weakened. You (and your subs) should avoid this whenever possible. And when you absolutely have to cut or notch, you should know the rules for doing it in the least destructive manner.

Figure 2 shows proper guidelines for cutting holes and notches. Straying from these guidelines weakens the joists and risks a red tag from the

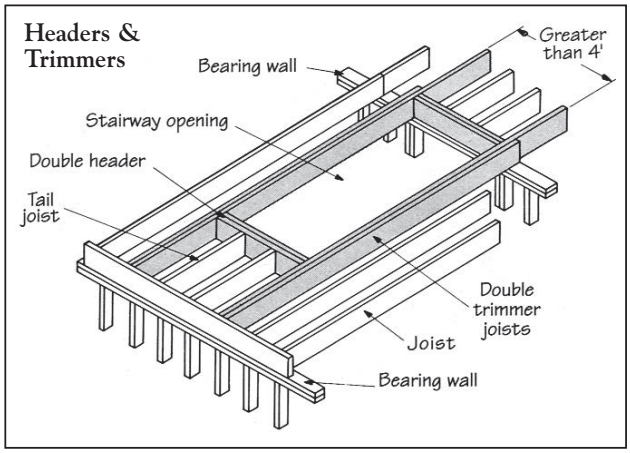



**Figure 1.** *Interrupted joists must be headed off to transfer their loads to adjacent joists. If the header spans more than 4 feet, it must be doubled and the loads transferred to double trimmer joists.*

**Guide for Cutting, Notching, and Boring Joists**

| Joist Size | Maximum Hole | Maximum Notch Depth | Maximum End Notch |
|---|---|---|---|
| 2x4 | None | None | None |
| 2x6 | 1 1/2 | 7/8 | 1 3/8 |
| 2x8 | 2 3/8 | 1 1/4 | 1 7/8 |
| 2x10 | 3 | 1 1/2 | 2 3/8 |
| 2x12 | 3 3/4 | 1 7/8 | 2 7/8 |

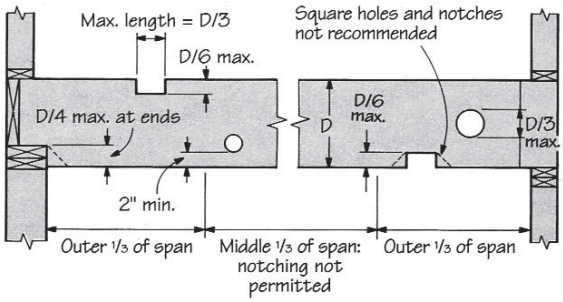



**Figure 2.** *In joists, never cut holes closer than 2 inches to joist edges, nor make them larger than 1/3 the depth of the joist. Also, don't make notches in the middle third of a span where the bending forces are greatest. They should also not be deeper than 1/6 the depth of the joist, or 1/4 the depth if the notch is at the end of the joist. Limit the length of notches to 1/3 of the joist's depth. Use actual, not nominal, dimensions.*

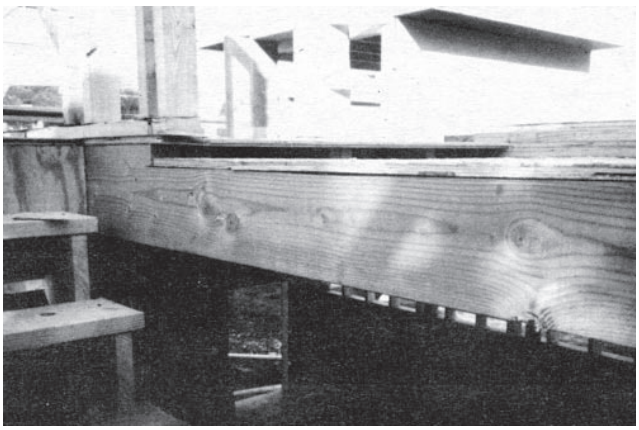


**Figure 3.** *Ripping long notches in floor joists, such as to make room for grouted entry floors, weakens the joists unacceptably and violates all codes. Instead, you need to use smaller dimension milled lumber of a higher grade or set closer together. If necessary, you can fur at the ends to bring non-grouted areas up to level.*

building official. Trying to fix such problems can be very costly, since it usually involves redoing the plumbing and electrical work along with replacing or doubling the joists.

### When Notch Becomes Rip

Occasionally, what might be thought of as a notch turns into a rip, such as when floor joists at the entry of a home are ripped down to allow underlayment for a tile floor (see Figure 3). Unfortunately, ripping wide dimension lumber lowers the grade of the material, and is unacceptable under all building codes. You should frame these areas with narrow joists of a higher grade or stronger species, making sure they can carry the load.

### Bearing Walls on Cantilevers

How far can a conventionally framed cantilever extend and still support a bearing wall?

Most of the confusion about how far a cantilever can extend beyond its support stems from an old rule of thumb used by builders and code officials alike: the rule of "one-to-three." This states that a joist should extend back inside the building at least three times the length of the cantilevered section — if the cantilevered section hangs 2 feet out, the joists should extend at least 6 feet in.

This rule works fine for nonbearing situations. But it does *not* apply to a cantilever that supports a bearing wall. In this situation, the maximum distance that joists can be cantilevered without engineering them is a distance equal to the depth of the joists, as in Figure 4. So if you are using 2x10 floor joists, the maximum cantilever for those joists supporting a bearing wall is 9¼ inches. Beyond this distance, shear becomes a serious factor, as does the bending moment at the support. This combination could eventually cause splitting of the cantilevered joists. The only way to work around this problem is to have it engineered.

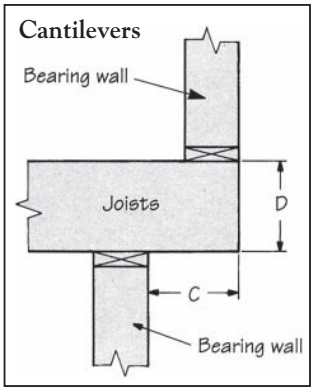



**Figure 4.** *When a cantilever supports a bearing wall, the distance it extends beyond its support (C) should not exceed the depth of the joist (D).*

### Broken Load Paths

A similar alignment problem relates to maintaining vertical load paths. All loads start at the roof and transfer vertically through the building to the foundation. If they aren't transferred properly, you can end up with cracking of interior finishes or sagging framing. Many cracking problems written off to "settling" are actually due to what might be called broken load paths — paths that end up putting loads on areas not meant to carry them. This is one of the most common framing errors I see, and one to which many building inspectors pay close attention.

***Misplaced struts.*** One example I see over and over again is a rafter-supporting strut carried down to a nonbearing partition below. Occasionally I even see these struts resting on "strong backs" — 2x bracing run across the top of the ceiling joists to help brace them. This is a sure way to create cracking in the walls and ceilings below.

Of course, rafters do need to be supported when their lengths exceed their recommended clear spans. But the struts should carry down to bearing partitions, as shown in Figure 5.

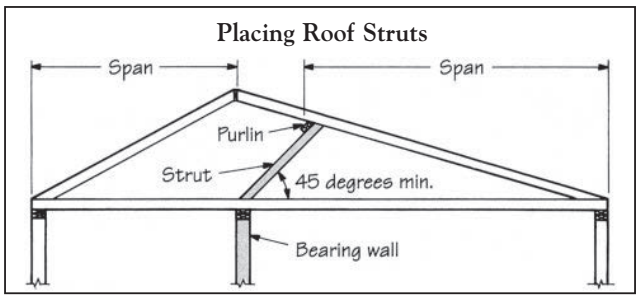



**Figure 5.** *Struts supporting rafters should always land on bearing partitions. Also, the strut should not drop below a 45-degree angle.*

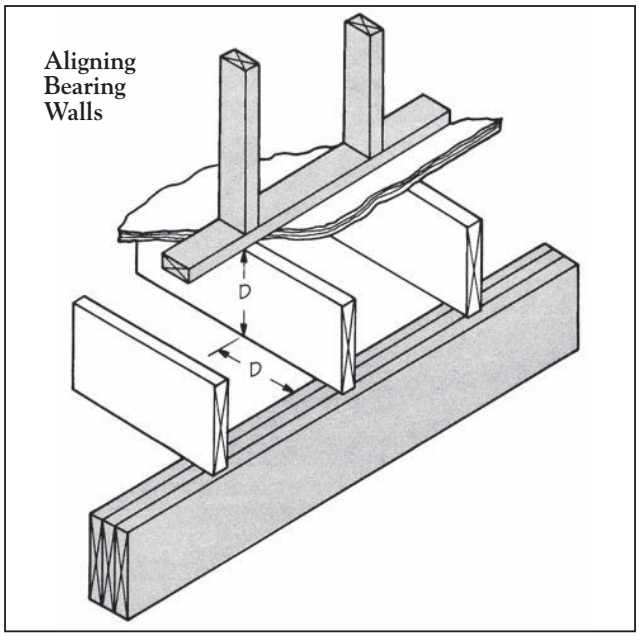



**Figure 6.** *If a bearing wall doesn't line up with the support below, it should lie no farther away than the depth of the joists (D). If the joists are engineered lumber, the walls and support must align exactly.*

The struts should be braced to a purlin running across the rafters above them, and they should form an angle of 45 degrees or greater to the horizontal.

Finally, the struts must support the rafter so that it has no unsupported length longer than its recommended span. If you can't do that and still reach a bearing partition without dropping the strut below 45 degrees, you need to upsize the rafters.

***Misaligned bearing walls.*** In other instances, loads carried by bearing walls or posts must be transferred through floor systems. If the bearing wall or post above doesn't line up closely enough with a bearing wall, post, or beam below, the floor joists in between can be overstressed, causing severe deflection. This can eventually split the joists, as well as cause finish cracking problems.

How closely must they align? Bearing walls supported by floor joists must be within the depth of the joist from their bearing support below (just as with cantilevers), as in Figure 6.

This code requirement applies only to solid sawn wood joists. Engineered products such as wood I-beams are required to have the loads line up *directly* over each other, and special blocking is required. Special engineering of either dimensional or engineered lumber may allow placing loads at other locations, but you shouldn't try it without consulting an engineer first.

***Bringing columns to foundation properly.*** If you use a column to support a beam or other member, make sure it bears on something that can in turn support it. A common mistake is to rest one on the floor, without extra blocking or support beneath. Doing this can crush the underlying joists. Columns shouldn't rest on unsupported floor joists; they should run continuously to the foundation, or (if you must have a clear space beneath) to an engineered beam or header to transfer the load out to other columns or bearing members.

Columns shouldn't rest on rim joists either, for similar reasons. If you need to rest a column at the rim, add full-depth vertical blocking

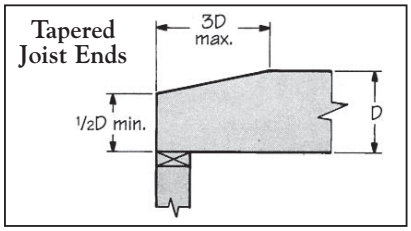



**Figure 7.** *Overtapering joists to fit beneath roofs creates inadequate joist depth at the plate. A proper cut (right) leaves at least half the depth of the joist.*

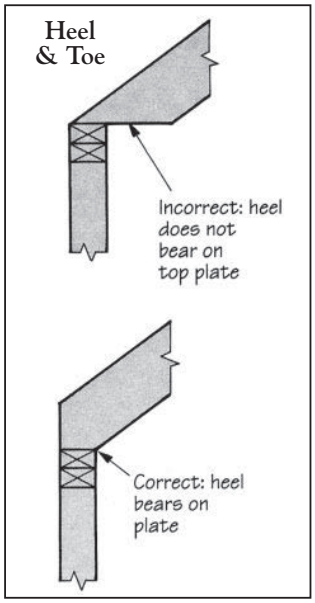



**Figure 8.** *Setting a rafter's toe on the top plate risks splitting the rafter and causing the roof to sag. The inside edge of the level cut, or heel, should rest on the plate.*

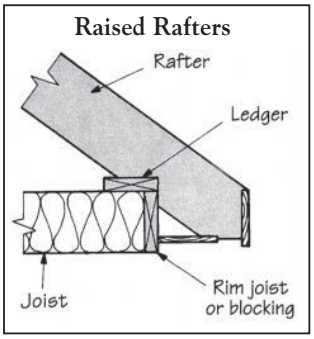



**Figure 9.** *When nailing rafters to a ledger over joists to make room for insulation, use a rim joist to keep the joists from rotating.*

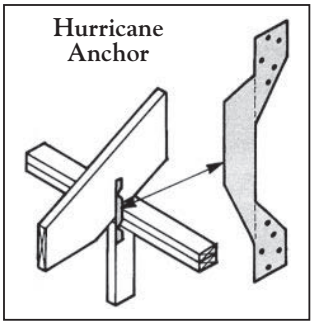



**Figure 10.** *Nailing rafters to plates, and plates to studs, is not always enough to resist high winds. Hurricane anchors at 4-foot intervals will securely tie rafters to studs.*

inside the rim joist the full depth and width of the column base, so that the load is transferred through the blocking to the foundation.

### Puny Hangers

A simple but common framing error is hanging a three-member beam (such as three 2x10s nailed together) from a double joist hanger. This usually occurs because triple hangers are hard to find. But if only two of the three members are supported, then only two carry the load. The third member just goes along for the ride. Toe nails or end nails are not going to make it carry the load.

If you're going to use a hanger, use one that holds everything, and use the right size and the correct nails. Undersized hangers and inappropriate nails will weaken the system.

The correct hanger is necessary to carry the vertical load as well as to laterally support the member to prevent rotation. And without the correct nails, the hanger doesn't mean much. Eight-penny galvanized nails or roofing nails won't do. You can buy regular joist hanger nails that are heavy enough to handle the shear stress, yet only 1 1/2 inches long so that they won't go clear through the lumber and possibly cause a split.

Of course, the best way to support a beam is from beneath. When possible, use a beam pocket or a column directly under the end of the beam. Be sure the full bearing surface of the beam is supported clear to the foundation.

### Tapering Beams and Joists

It's sometimes necessary (or at least convenient) to taper the ends of ceiling joists or beams to keep them under the plane of the roof, as in Figure 7. But by reducing the depth of the joist or beam, you reduce its load-carrying capacity.

If you must taper-cut the ends of ceiling joists, make sure the length of the taper cut does not exceed three times the depth of the member, and that the end of the joist or beam is at least one-half the member's original depth.

With taper-cut beams, you should also check the shear rating. If you can't meet this criteria, you'll probably have to lower the beam into a pocket so that enough cross-section can be left, after taper-cutting, to carry the applied load.

### Rafter Cuts

Another area that inspires excessive cutting is the level cut of the seat of a rafter. Many times, especially on low slope rafters, this level cut becomes a long taper cut on the tension (lower) side of the rafter, as in Figure 8. If the bearing point on the rafter is at the heel (interior side) of the cut, there is no problem. But usually these long cuts put the bearing point near the toe. This reduces the effective size of the rafter, producing stresses that can create splits at the bearing point, and eventually a sagging rafter.

To prevent this, cut your rafters so that the heel rests on the plate. This will mean using a slightly longer rafter. It will also give you a few extra inches between the top of the exterior wall and the roof sheathing. This translates into more room for attic insulation to extend over your outside wall, reducing those cold spots that can cause condensation or ice-dam problems at the eaves.

### Raising the Rafters

Another way to add room for attic insulation at the eaves is to set the rafters atop a ledger board running perpendicular over the ceiling joists, as in Figure 9. Unfortunately, builders who do this often fail to put in a rim joist or block the ends of the joists to prevent them from rolling over. The resulting design creates, in essence, hinges at the top and bottom edge of each joist. With a strong enough lateral force, such as a high wind or a strong tremor, all the joists could rotate and fall over — bringing ledger, rafters, and roof crashing down onto the now-flat joists.

To prevent this, install full depth blocking between all joist ends or a rim joist nailed against the ends of the joists. Either solution will also provide a baffle to prevent air from penetrating the ends of the batts and keep the batts (or blown-in insulation) from creeping into the eaves.

Blocking is also a good idea where joists lap over a center girder at foundation level or over a support wall at second-story level. If the centers are unblocked, the job of keeping the joists upright falls to the nails holding the floor sheathing to the joists. These nails just aren't designed to resist the strong sideways forces created by wind or earthquake. Full-depth 2x blocking over center supports will prevent the joists from rotating in such an event. The blocking also stiffens the floor, since it stops the rotation caused by deflection of the joists under load.

What if a few of these blocks get knocked out by mechanical contractors putting in ductwork or plumbing? That's not usually a problem, as long you don't remove consecutive blocks, so that each joist is blocked on at least one side.

### Connecting Rafter to Wall

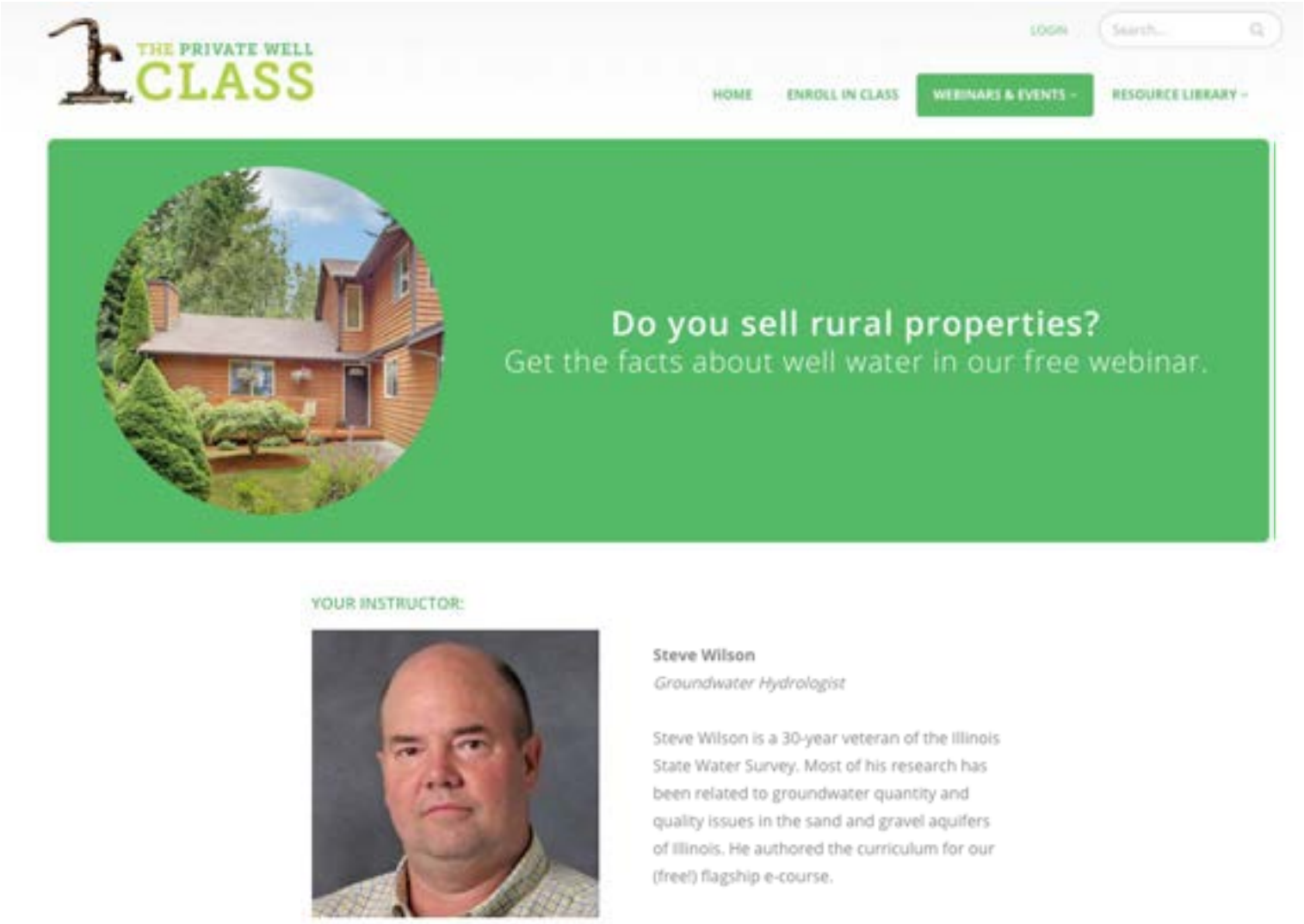
Conventional construction leaves too little connection between rafters and walls. Nails connect rafter to plate and plate to stud, but do nothing to connect the rafters to the wall itself. Such structures are subject to damage from the high, near-hurricane force winds that sooner or later blow across virtually every roof.

As a result, the building codes are beginning to get more restrictive about how rafters and trusses are tied to the rest of the building. For example, the 1991 Uniform Building Code has added Appendix Chapter 25, which applies to high wind areas. Under its requirements, rafters or trusses must be tied not just to the top plate, but to the studs below at 4-foot intervals. This means using some kind of metal connector to provide a positive tie to the studs.

The answer is the hurricane anchor (see Figure 10). You don't need to face a hurricane to need it — winds of roof-damaging gale force blow in most parts of the country. If you build in an area subject to high winds (or seismic conditions), you should consider using these or other holddowns.

*David Utterback, of the Western Wood Products Association, provides technical information and gives building code seminars for building professionals throughout the country.*

# The Private Well Class - Webinars




## What Real Estate Professionals Need to Know about Homes with Well Water

Has well water ever been a tough sell? In this free 90-minute webinar training hosted by The Private Well Class, you'll learn:

- the water well issues that are important to homebuyers,
- how to determine if the well water is safe to drink, and
- what a homeowner needs to know about well care.

**Next Session:** December 12, 2017 at 1pm CST

Register

Photos by Mark Parlee

# Common Roofing Errors

## Details that matter on asphalt shingle roofs

BY MARK PARLEE

I was recently called to consult on an Iowa home that had extensive roof leaks into the finished space. According to the homeowner, the leaks began showing up as water stains on the ceiling in several rooms throughout the house shortly after the roof had been replaced.

The photos on the following pages show the condition of the roof when I saw it three years after it had been installed, and it was immediately evident to me that the roofer had done an exceptionally poor job. The shingles themselves were a decent-quality laminated product, as is usually the case with the roofs I see; however, it's not the shingles but the detailing—namely of the flashings—that determines the quality of an asphalt shingle roof.

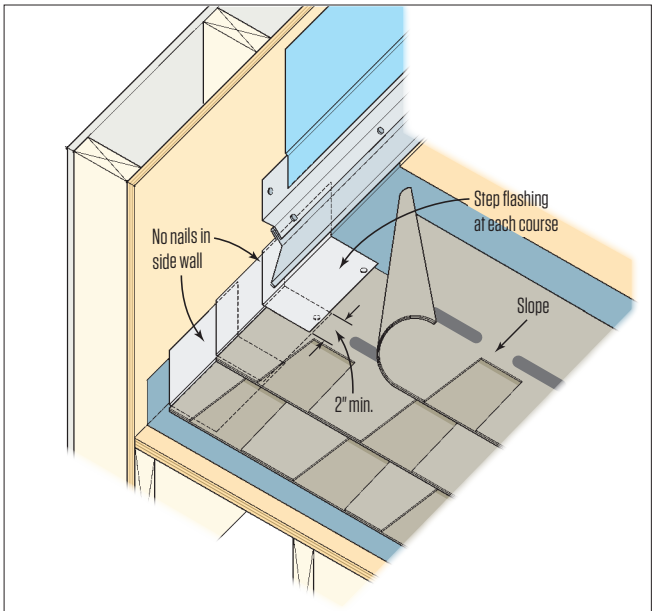
All of the leaks stemmed from poor attention to detail when the shingles were being installed and flashed. These problems included the following:

- There had been a complete failure to install a new step flashing or even to integrate the new shingles with the existing step flashing.
- Shingles had been laid without an adequate offset between courses.
- Shingles had been nailed haphazardly. In many cases, no nails were evident at all, and in others, nails were overdriven or crooked.
- Shingles had not been accurately cut to fit around the roof vents.
- No drip-edge had been installed along any of the roof edges.
- No plumbing vent boots had been installed. Instead, these penetrations had been "black jacked"—asphalt roof cement had simply been smeared around the bases of the vent pipes.

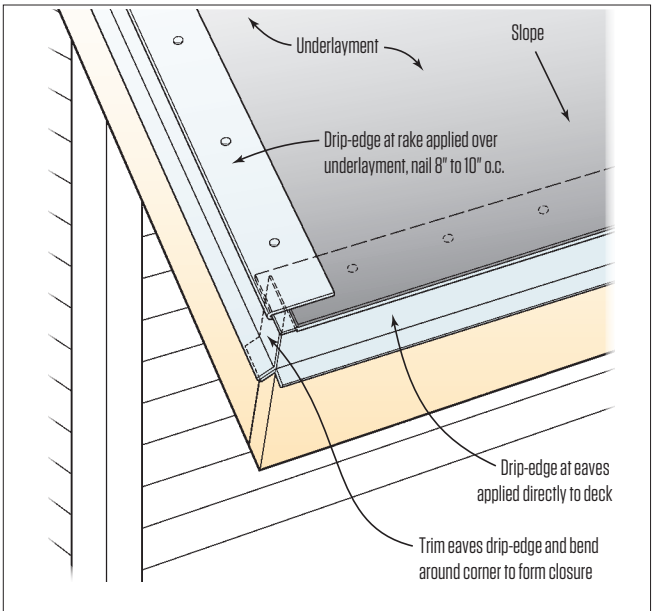
With so many problems, the only solution I could recommend was a complete replacement of the entire roof. What a terrible waste of a three-year-old roof.

While this particular job provided a good opportunity to look at a number of problems all at once, not all asphalt shingle roofs are done this poorly. However, in my experience, many reroofs suffer from at least one or two of these mistakes—and it only takes one to cause a leak.






Step Flashing




Drip-Edge Installation

## STEP FLASHING AND KICKOUTS

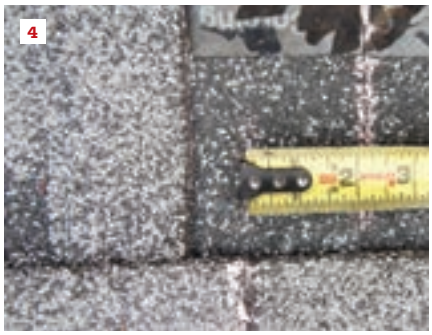
On this job, the roofer completely ignored the existing step flashing and merely tucked the new shingles beneath both the step flashing and the counterflashing **(1)**. These existing flashings were in rough shape and should have been replaced. If the roofer had even made an effort to interlace the shingles between the steps, at least there would not have been a direct leakage path between the shingle surface and the old flashing. As it was, the ceiling areas below this intersection suffered the most damage from water leaks.

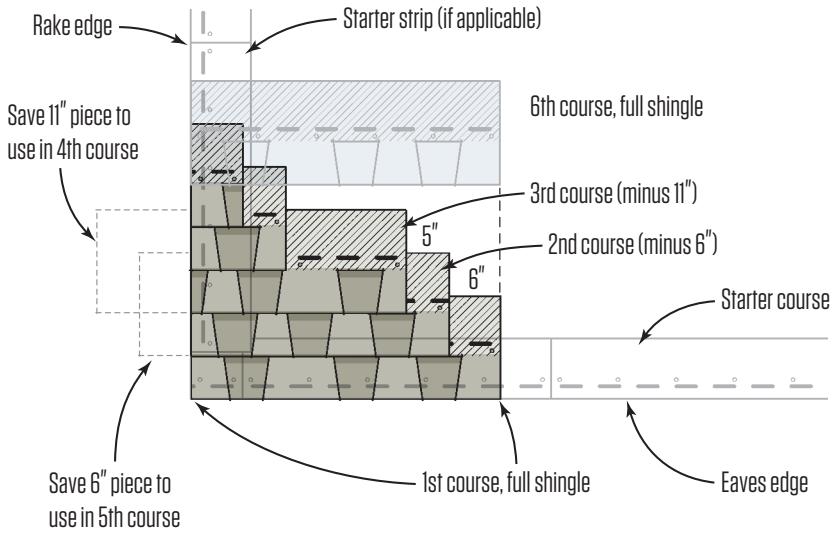
It was obvious that the roofer did not want to deal with the stucco that came down over the sidewall flashing. Had the original counterflashing been addressed more like the counterflashing shown in the "Step Flashing" illustration (above left), destruction of the stucco cladding would not have been necessary to replace the flashings.

**Kickouts,** which direct water into a gutter at the lower end of the roof-wall intersection, are critical for preventing leaks. I covered them in detail in the previous issue of *JLC* (see "Getting Kickout Flashings Right," Apr/16). At the bottom of the roof, large kickouts are essential to deflect the volume of water away from the siding.

## DRIP-EDGE

Metal D flashing, or drip-edge, is sometimes installed only along the eaves edge, but it is actually required by the 2012 International Residential Code (IRC) "at eaves *and gables* of shingle roofs." At


Offsets for Laminated Shingles

**Shingle offsets.** Chalk lines on the roof indicate the breaks in each course of shingles, showing clearly that some of the offsets are less than the required 4-inch minimum **(3)**, which is set by the shingle manufacturer. And in some cases, the offset was only about 2 inches **(4)**. Since most roof dimensions are not an even multiple of standard shingle sizes, fractional shingles—preferably of equal size—are needed to fill out courses. Provided the fraction isn't smaller than the minimum offset (as it is on this roof), this is an aesthetic issue and is much less noticeable with laminated shingles, because of the random appearance of the overlaid pieces, than it is with three-tab shingles.

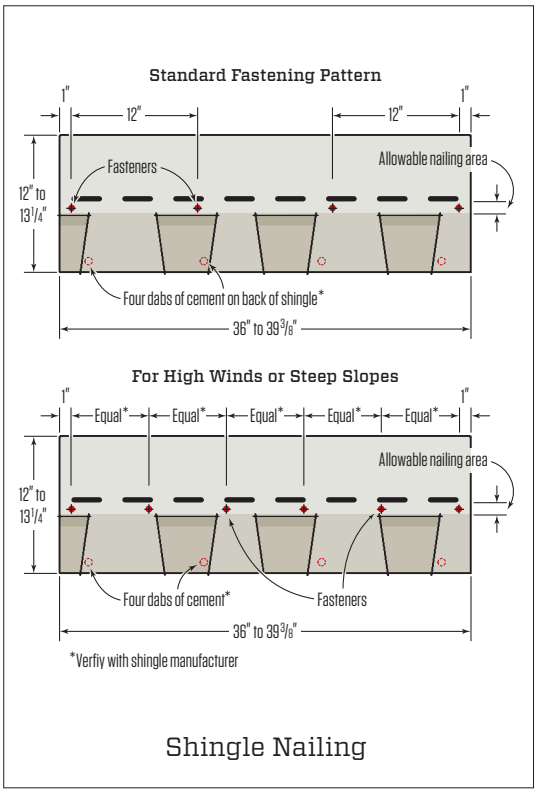
"gables," of course, means along rake edges. The purpose here is to help prevent wind-blown rain and capillary action from directing rainwater and snow melt underneath the underlayment and shingles.

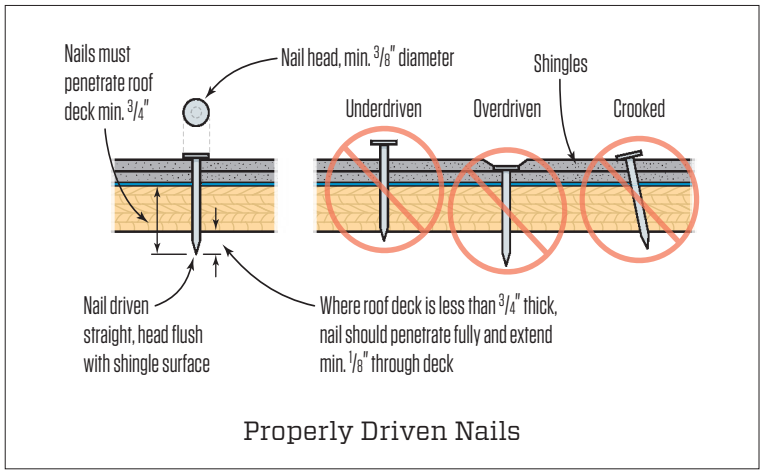
This particular home had a metal fascia. The metal D flashing should overlap the top edge of this fascia; this is important because it helps keep water from getting down behind the fascia and rotting out the subfascia. At the eaves edge, a drip-edge also helps direct runoff into gutters (although additional help may be required; see *Q&A*, page 19).

Photo **(2)** shows that the roofer on this particular job did not install any drip-edge flashing, and you can see how the edge of the sheathing has weathered from exposure to water.

Drip-edge should be installed directly over the edge of the roof sheathing along the eaves. Along the rake edges, however, the drip-edge should be installed after the underlayment is installed (see Drip-Edge Installation, facing page, right). This last detail is commonly overlooked because roofers often want to install all the drip-edge at once. Installing the drip-edge *over* the underlayment at gables—an area especially vulnerable to wind-blown rain—is the best way to ensure that water does not have a clear path beneath the underlayment.

When a single length of drip-edge isn't long enough, overlap the end joints at least 2 inches (a specification required in the 2012 IRC). And be sure to install the lengths high along the rake so they overlay lower pieces to promote drainage.





**Shingle nailing.** When the author inspected the project, no nails were evident at the ends of many of the shingles **(5)**. The standard nailing for asphalt shingles is a four-nail pattern, with nails placed 1 inch from each end of each shingle and then two nails placed 12 inches in from the end nails, as shown in the top of the "Shingle Nailing" illustration (above left). On laminated shingles, this nail spacing is not as immediately apparent as it is on three-tab shingles, where the nails are placed above the cutouts. In high-wind locations and steep-slope applications, a six-nail pattern should be used, as shown in the bottom of the same illustration (above left).

## SHINGLE LAYOUT

Shingle manufacturers specify a minimum overlap, usually in the range of 4 inches to 5 inches. On this roof, the minimum overlap specified by the manufacturer is 4 inches, and the recommended overlap is 6½ inches.

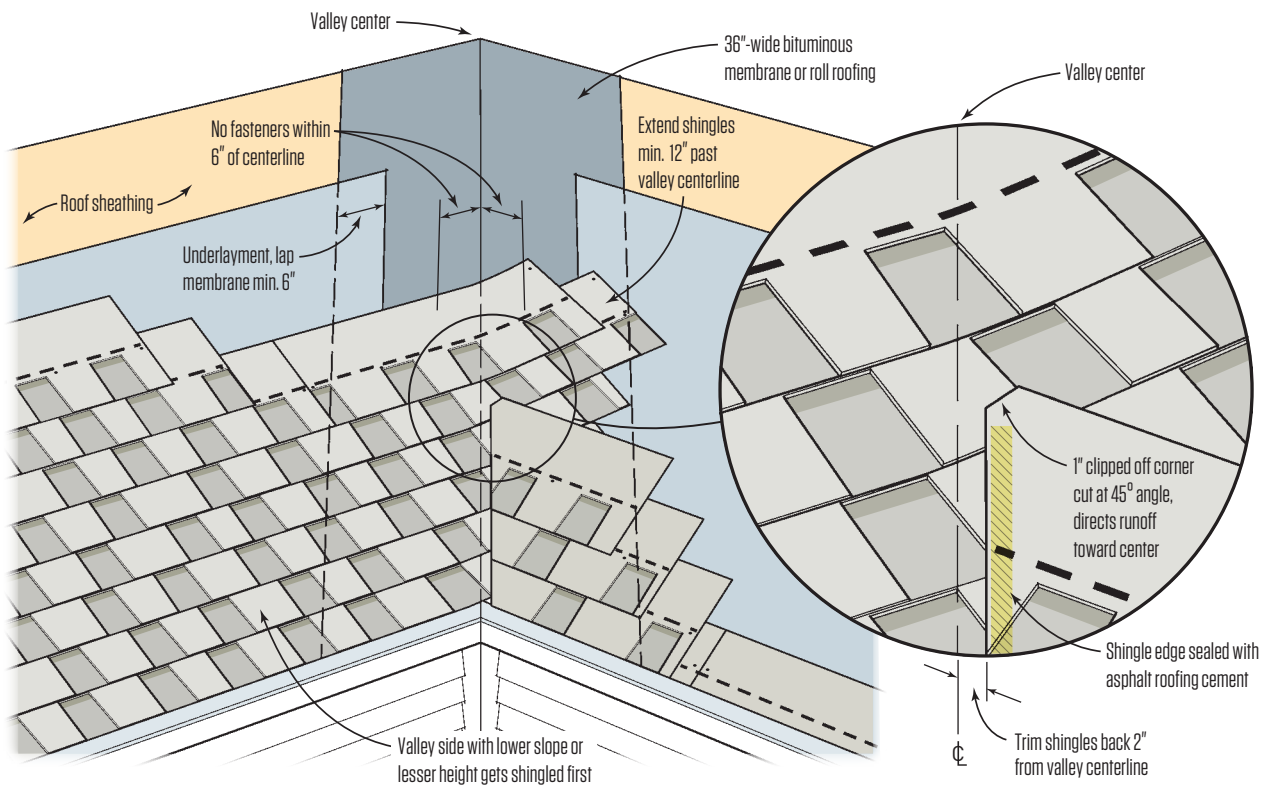
But the way the shingles were installed, the offset was often less than 4 inches—and even as small as 2 inches—which may have accounted for some of the leaks that occurred in the interior near the center of the house. (Bear in mind that it's often difficult to track the exact location of a roof leak, as water often runs down framing members and may end up spoiling interior finishes far from the actual leak site.)

Sticking to the minimum offset helps to keep end joints between shingles at least 2 inches away from the nails at the end of the shingles in the course below.

## SHINGLE NAILING

Most asphalt shingle roofs can be fastened with a four-nail pattern. The key is to keep to a consistent pattern—1 inch from the edges and uniformly spaced across the shingle length.

On this roof, the nailing was sporadic, and in many places, there were no nails visible at all. This is often the result of installers trying to blow through an installation as fast as possible, machine-gunning their way across the roof with pneumatic roofing nailers. When this happens, the likelihood for overdriving nails and driving nails crooked increases (see Properly Driven Nails, top right).




Closed-Cut Valley

Of course, overdriven and crooked nails are still possible in the normal course of production. When they do occur, the fastest repair is to drive the nail so it is fully below the shingle surface, seal the hole with roof cement, and then drive a new nail next to it. If it's not possible to sink the nail head, pull it.

In high-wind regions and on steep roofs, a six-nail pattern is required to reduce the risk of blow-offs (see Shingle Nailing, facing page, left).

## VALLEYS

Because of the sheer volume of water running off the angled roofs draining into a valley, the detailing at roof intersections is some of the most important.

All valleys, regardless of type, should be lined with a minimum 36-inch-wide peel-and-stick membrane. This membrane should be run with the width of the material centered along the length of the valley. The peel-and-stick needs to be installed directly to the roof sheathing before a roofing underlayment is installed.

The majority of roofs in my area have closed-cut valleys, which only require a cut along one side of the valley and can be installed relatively quickly. The right way to do these is shown in the illustration above.

The two most common errors with closed-cut valleys are failing to take the time to seal down the cut edge with roof cement, and failing to clip the top corner of the shingle at the top of the cut (see detail bubble in Closed-Cut Valley, above).

**Penetrations.** "Black jacked" plumbing vents are all too common, but this is not a good way to flash a roof penetration **(6)**. Roofing cement dries out and becomes brittle and will crack. Also, gaps and thin spots open up as the cement dries out and these essentially create funnels running straight into the roof assembly **(7)**. Also shown here is a very poor installation of a self-flashing roof vent **(8)**. The shingles were not cut carefully around the vent but were instead jammed up against the vent, distorting the hood.

Clipping the leading corners on a closed-cut valley is almost never done around here, even though it is very important. As water runs down the valley, it tends to get pulled in by the acute angles at the top edge of each course of shingles along the cut edge of the valley. These points can divert water down the concealed top edge of each shingle course. When the corner is clipped, the water will still slosh onto the corner, but now the edge is pointed into the valley and water is much less likely to run along the top edges of the shingles.

Another type of valley is an open valley, which relies on a formed piece of 26-gauge (minimum) metal at least 24 inches wide. It is by far the most durable and leak-resistant kind of valley, but we almost never see one on the reroofs in this area because of the added cost.

## ROOF PENETRATIONS

Any roof penetrations, including plumbing vents, roof vents, chimneys, and skylights, present direct opportunities for leaks. Plumbing vents and pop-in roof vents are the most common problem areas, and unfortunately, on a lot of reroofs, very little effort is paid to these other than cutting the shingles around them—usually quickly, while running shingle courses.

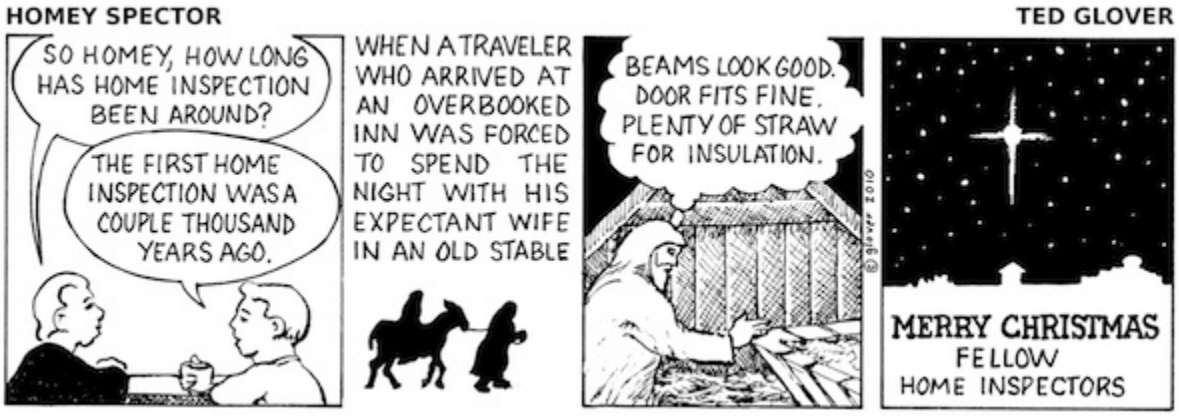
Part of the problem may be that replacement roofs are often sold more as a commodity than as a craft. Consumers shop on the basis of price and many roofers sell jobs on low margins. If there's a short-cut to be taken, they will take it. After all, how many homeowners are likely to go up on the roof and inspect it? So while a good-quality, two-piece plumbing boot costs only $20 to $40, there are often enough vent stacks on the roof that the cost difference between installing boots and simply smearing the base of the vent with roofing cement can be the difference between making a profit, however slim, or losing money.

That, of course, does not justify not installing a proper plumbing boot, but it does speak to the idea that selling a quality roofing job begins with educating the client about long-term roofing performance issues. This will be an uphill battle, particularly as DIY home-improvement media continues to push oversimplified ideas of what it takes to remodel a home.

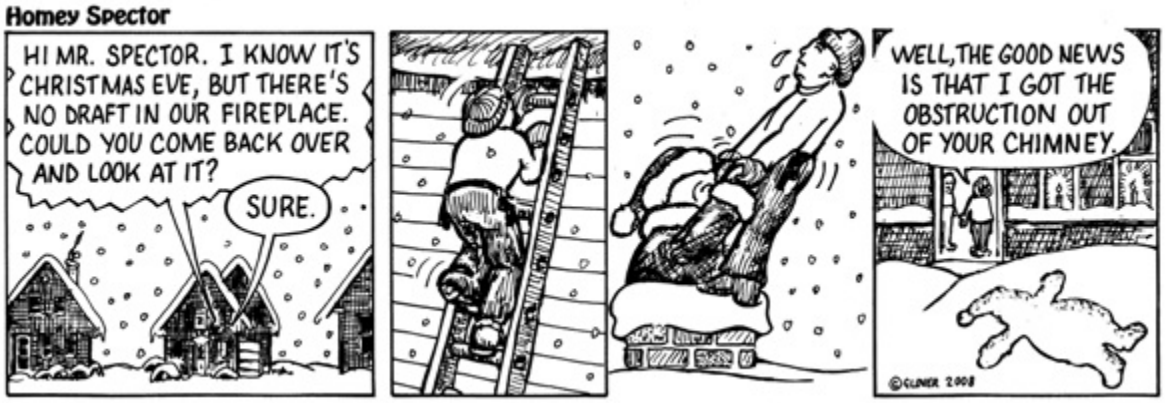
*Mark Parlee, a building-envelope consultant (thebuildingconsultant.com) and builder (www.parleebuilders.com) in Urbandale, Iowa, specializes in exterior renovations and building envelope solutions.*

# Cartoons


Homey Spector
Ted Glover
GOOD TO SEE YOU HOMEY. WHAT'S ON YOUR MIND TODAY?
© GLOVER 2012
NEWER HOMES! THEY DON'T HAVE CHIMNEYS ANY MORE.
DOESN'T THAT MAKE HOME INSPECTIONS EASIER?
SURE, BUT IT MAKES MY HOLIDAY OCCUPATION MUCH MORE DIFFICULT.
Merry Christmas


HOMEY SPECTOR
TED GLOVER
SO HOMEY, HOW LONG HAS HOME INSPECTION BEEN AROUND?
THE FIRST HOME INSPECTION WAS A COUPLE THOUSAND YEARS AGO.
WHEN A TRAVELER WHO ARRIVED AT AN OVERBOOKED INN WAS FORCED TO SPEND THE NIGHT WITH HIS EXPECTANT WIFE IN AN OLD STABLE
BEAMS LOOK GOOD. DOOR FITS FINE. PLENTY OF STRAW FOR INSULATION.
MERRY CHRISTMAS
FELLOW
HOME INSPECTORS


HOMEY SPECTOR
Ted Glover
DANG, MY GPS IS BROKEN.
AND IT'S GONNA BE A FOGGY ONE TODAY.
HELLO, NICK? IT'S HOMEY. CAN I BORROW YOUR GPS?
SURE HOMEY, I'LL BRING HIM OVER.
HIM?
THEN ONE FOGGY CHRISTMAS EVE..
HOMEY SPECTOR


Homey Spector
HI MR. SPECTOR. I KNOW IT'S CHRISTMAS EVE, BUT THERE'S NO DRAFT IN OUR FIREPLACE. COULD YOU COME BACK OVER AND LOOK AT IT?
SURE.
WELL, THE GOOD NEWS IS THAT I GOT THE OBSTRUCTION OUT OF YOUR CHIMNEY.
©GLOVER 2008

**Contact CAHI c/o**

**Scott Monforte**
**39 Baker St.**
**Milford, CT. 06461**

**Email: info@ctinspectors.com**

**Web: www.ctinspectors.com**

***Articles published in CAHI Monthly are the sole opinion of the author. CAHI does not endorse or state a position for or against the content of said articles.***

| CAHI Executive Board | | CAHI Presidents | CT Home Inspection Licensing Board | |
|---|---|---|---|---|
| **President** | William Kievit 860-919-4960 | Stanley Bajerski | William Stanley, Chairman (Cheshire) | Inspector |
| **Vice President** | Woody Dawson 203-272-7400 | Bernie Caliendo | Richard Kobylenski (Coventry) | Inspector |
| **Treasurer** | Open | Robert Dattilo | Lawrence Willette (Tolland) | Inspector |
| **Secretary** | Open | Woody Dawson | Bruce Schaefer (Woodbridge) | Inspector |
| **Director** | Scott Monforte 203-877-4774 | Michael DeLugan | ***Vacant*** | Inspector |
| **Director** | Dan Kristiansen 203-257-0912 | David Hetzel | James O'Neill (West Hartford) | Public Member |
| **Director** | Al Dingfelder 203-376-8452 | Richard Kobylenski | ***Vacant*** | Public Member |
| **Director** | Rob Gutman | Scott Monforte | ***Vacant*** | Public Member |
| | | Joseph Pelliccio | | |
| | | Pete Petrino | | |
| | | Dwight Uffer | | |
| | | They have served as our primary leaders and in other capacities since 1992. Please thank them for their service when you have a chance. | | |

***The Licensing Board meetings are held at 9:30 am***
***Dept of Consumer Protection***
***165 Capitol Avenue. Hartford***

**The public is always welcome.**

**Published by:** Larry Ruddy
Larryhp@cox.net