

CAHI MONTHLY NEWS



Presidents Corner



December 2019 Volume 12, Issue 12

Season greetings.

The holiday season is upon us. A time of year to reflect upon the past as well as look forward with hope and aspirations to the year ahead. As I have mentioned before, in past writings, I feel blessed to be part of an industry that helps people and in some cases touches generations to come. We are all advocates searching for issues within the homes we inspect that can in many cases have a profound impact on families moving forward absent our findings.

As the year comes to an end and a new one begins I encourage everyone to take brief moments of pause during your inspections. Steal and soak in small moments of excitement radiating from your first time home buyers. Appreciate the moments presented by families downsizing and transitioning to empty nesters and reflect on more somber moments when a family's legacy has transitioned on.

Life moves fast...waits for no one. Cherish every moment with friends and family.

May health, happiness and good fortune await all of you and yours in the coming year.

Best,

Dan Kristiansen
President



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Meeting Dates!

December

No Meeting



January 16th

Law Seminar

Presented by

Kent Mawhinney

See website for Details



January 22nd

Meeting

Septic Inspections

Presenter Brad Korth

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



Lost Contact with Your Friends in CAHI

As we make changes in our home inspection businesses and lives, we change email addresses, phone numbers and addresses. It is difficult to inform all of your contacts of these changes. To help stream line informing fellow CAHI members, you can send these changes to me via email, phone or text message.

When I am informed of changes, the changes will be included in the next CAHI newsletter and provided to our Secretary, Jim Enowitch. *Contact information will not be provided to nonmembers or marketing schemes.*

You can send information to my email, ading5@aol.com or call/text my cell phone, 203 376-8452.

Your Editor's Note: Although this article concerns New Jersey, legal beagles like to draw from trends in neighboring jurisdictions. They do this to support their clients but efforts can result in future changes for others. This article is food for thought.

Editor's Note: *The New Jersey Consumer Fraud Act allows monetary penalties for violators, but exempts "learned professionals," with the theory being that because these professions have testing, licensing and regulatory requirements, the consumer is adequately protected by these existing safeguards.*

Inspectors & New Jersey Consumer Fraud Act

by Craig W. Alexander, Esq.

The home inspection is a well-established part of the homebuying process. Buyers rely upon the inspection to identify problems with the dwelling before the closing, and the inspection report forms the basis for demanding repairs or credits. Together with mortgage brokers, inspectors are an integral part of the residential real estate team, and most real estate agents have a list of preferred inspectors to recommend to their clients.

The Appellate Division in the State of New Jersey has recently ruled, however, that despite their expertise and professional status, home inspectors are not "learned professionals" entitled to exemption from liability under New Jersey's Consumer Fraud Act (CFA). It is a distinction that has significant ramifications to the home inspection industry.

The CFA is remedial legislation intended to protect consumers and prevent consumer fraud. The Attorney General has the authority to enforce the CFA, but there is also a private cause of action that can result in an award of treble damages and attorney's fees. Claims arising under the CFA include fraudulent billing practices, false advertising, and misrepresentations of material business issues. However, there is a judicially-created exception to the CFA for "learned professionals," such as physicians and attorneys. The exception is significant because it protects those professionals from private CFA claims and the potential exposure of treble damages and legal fees.

In *Shaw v. Shand*, a home inspector failed to identify some problems with the home in the inspection report. After closing, the buyers discovered the problems and incurred substantial repair costs. The buyers sued the inspector under the CFA, and the inspector claimed that as a "semi-professional" he was exempt from liability under the CFA. The Appellate Division in the State of New Jersey concluded that home inspectors are subject to the CFA and that the "learned professional" exemption does not apply.

Opinion does not mean home inspectors are not qualified, as they do operate as a regulated profession. Some inspectors are regulated by the Attorney General's Division of Consumer Affairs and

they must be licensed under the Home Inspection Licensing Act. To be licensed in New Jersey, an inspector must serve 40 hours of apprenticeship with a licensed home inspector and then pass a State-mandated test. A home inspector must keep his license in good standing in order to engage in the home inspection business in New Jersey.

Notwithstanding the training and licensure requirements, the court concluded that home inspection is not a profession requiring extensive “learning or erudition.” To be licensed, a home inspector requires only a high school diploma or its equivalent. The court declared that while a home inspector may be a semi-professional, it is not a “learned professional.” This distinction is important because the court also determined that the judicially created exception to the CFA for learned professionals should not be extended to semi-professionals. As a result, home inspectors will continue to face exposure for treble damages and legal fees from private litigants under the CFA.

The court’s opinion is a warning to home inspectors to consider how to better protect themselves from liability. Home inspectors should have engagement letters that clearly outline their scope of work. If a buyer attends the inspection, the inspector should patiently and carefully explain the findings to the buyer. The inspector should also prepare a comprehensive written report, with all potential problems reflected in the report as well as recommendations for further evaluation by specialists. Additional training and education should be implemented.

Inspectors should also consult with insurance brokers and attorneys to determine appropriate levels of coverage and to refine the documents utilized in the inspection process. While high-quality service and effective communication may ultimately be the best safeguard against liability, home inspectors -- like any professional -- should nonetheless act prudently to manage the risks inherent in their industry, and the threat of treble damages under the CFA demands constant care and attention.

Understanding Oil-Fired Water Heaters

December 5, 2019.

Homeowners with oil-fired water heaters have discovered that they have low-cost access to virtually unlimited amounts of hot water. Oilheat's ability to produce a reliable and inexpensive supply of domestic hot water is one of its strongest features.

Although an oil-fired water heater may cost a little more to install up front, its efficiency in heating water means extremely low operating costs over the life of the unit.

Oil-fired water heaters have high recovery rates, which means that they can heat large amounts of water quickly. A water heater's recovery rate is the amount of water for which the unit can raise the temperature 100° in one hour. For example, if the heater can increase the temperature of 40 gallons of water by 100° in an hour, the unit has a 40-gallon recovery rate. Oil-fired water heaters have recovery rates as high as 120 gallons per hour.



Homeowners can contact a heating oil dealer to find out which water heating option is the best one for their home and family. The heating oil company can work with them to make sure the water heater they choose has a sufficient recovery rate for their needs. Two adults, for instance, may never need more than 30 gallons of hot water an hour, but a family of six may need 70 gallons.

Indirect water heaters

Many people in Connecticut now use their oil boilers not only to heat their homes, but to produce hot water for showers, hot tubs, washing machines, dishwashers—you name it. And they get it virtually free in the winter.

This system is known as an indirect-fired water heater, and if the home relies on a boiler for heat, it can be a phenomenal option. Anytime the boiler is heating the home, the indirect water heater works for free.

How an indirect-fired water heater works

- The boiler circulates hot water to a coil inside the water heater.
- The heat from the boiler's hot water transfers from the coil to the water in the tank.
- This system is most efficient in the winter, when the boiler is being used to heat both the home and domestic water. In effect, no extra energy is needed to heat the domestic water—as opposed to with a traditional direct-fired water heater with its own separate burner.
- Because the indirect-fired water heater gets installed as a separate zone with its own thermostat, the boiler “understands” when it needs to produce heat for that tank only—and not send unnecessary heat into the home.

You can learn more about oil-powered hot water by [ordering free copies of the Home Inspectors' Guide to Oilheat](#).

Window Positioning in a Fat Wall

Whenever you build a superinsulated house, you encounter a dilemma. Where do you set your windows in those fat walls—flush to the outside of the wall, flush to the inside of the wall, or somewhere in between? As a Passive House consultant in upstate New York, I have had to analyze this decision from several different perspectives. I've learned that if energy efficiency is the goal, positioning the window in the center of the wall (to be more precise, in the center of the wall's R-value profile) turns out to give the best-performing result.

To predict the thermal performance of a window, I analyze the window as part of the wall assembly using Flixo, a versatile and powerful thermal-bridge-analysis application. Flixo can output a variety of reports, as well as diagrams and illustrations such as the ones shown below. (Learn more about Flixo at certifiers.com/flixo.)

Here, I used Flixo to create a two-dimensional drawing of the window in its rough opening, set the design indoor and outdoor temperatures, and assign each shape a thermal conductivity. Flixo then output the "psi value" (Ψ -value) for the juncture between the window and the opening. The psi value is a correction factor be-

tween the window and the wall assembly accounting for the thermal discontinuity of different materials as well as framing effects.

Using Flixo, I can take a fine-grained look at the window. I model the frame U-value (rate of heat loss), the glazing U-value, the installation psi value, and the psi value at the joint between the glazing and the frame (which is called the spacer). With those four values, I can get a much more accurate overall window U-value than is possible from a standard National Fenestration Rating Council (NFRC) window label. I then input that value into the Passive House Planning Package (PHPP) to see the contribution of the windows, as installed, to the overall heating or cooling demand of the building.

The rainbow drawings shown below are the output from Flixo for three different window installation configurations. One window is placed all the way to the inside of the insulated window buck, one is centered in the wall, and one is placed all the way to the outside. As you can see from the rainbow patterns, the heat flow and temperature gradients in the walls are different.

I analyzed this problem for a new construction project, a 2,559-square-foot house built to Passive House



These images, generated by the software application Flixo, are a graphic representation of heat flow through the complex interface between a window and its framed opening. Warm is indicated by red, cold by purple, and the other colors represent temperatures in between. The flow through and around the centered window most effectively retains heat in the building.

Energy / Window Positioning in a Fat Wall



A mockup of the author's window installation shows the insulated window buck and the window's location near the wall's center of mass.

levels of efficiency. To find the values in the table below, I input the psi values from Flixo into the PHPP. You can see that the difference in the window position carries through to the annual heating demand for the entire house. In this example, keeping the windows in the center is the only option that allows me to meet the Passive House criterion for heating demand, 4.75 kBtu per square foot per year. Setting the window to the outside was worse, and setting it to

the inside was the worst of all. The difference in the numbers might be noise in conventional code-compliant houses with a peak heating demand of 60,000 Btu/hr or so. But in advanced energy-efficient projects, these are make-or-break decisions.

In a high-performance house, there are a number of reasons to think carefully about window placement. Energy consumption, which we've just discussed, is only one consideration. Probably more important is the question of condensation potential and durability. Cold spots in a wall system are vulnerable to condensation; by keeping the window and its surrounding framing warmer, we minimize the risk of condensation. Hand in hand with that concern is the issue of comfort. By eliminating a cold spot in the wall, we avoid a source of discomfort.

We also need to consider aesthetics and think about how the house will look from the street. If the wall is a foot or more thick, you (and your clients) may not want the windows pushed all the way to the inside. Along with this concern, there's the "tunnel vision" effect that may be created when a window is installed all the way to the inside or all the way to the outside.

In addition to those factors, we have to be mindful of the extent of shading that's going to occur on the glass in the various window positions. When the window is installed all the way to the outside, the window buck isn't going to shade the glass much. But when it's installed all the way to the inside, now you have substantial shading on that window—which could be either good or bad, depending on the project.

Assuming you've decided to optimize the window's thermal performance, exactly where in the wall you position the window depends heavily on the characteristics of the particular window. With the Klearwall windows I modeled for this example, the center of R-value of the wall turned out to be the best spot. But if, for example, you have a wood window with an inch of foam or a half-inch of foam on the outside of it with aluminum cladding, that window might need to go in a slightly different location in the wall to be optimized. In any case, that optimal position can be analyzed using a program like Flixo. Or you can ask your window vendor; some vendors are able and willing to do the calculations for you.

Matt Bowers is president of Rochester Passive House Consulting in Rochester, N.Y., and an accredited Passive House Certifier.

WINDOW POSITION	HEAT LOAD (BTU/HR)	ANNUAL HEAT DEMAND (KBTU/SF/YR)	ANNUAL HEAT DEMAND (KBTU/YR)	WINDOW U-VALUE (BTU/HR-FT ² -F)	WINDOW R-VALUE (HR-FT ² -F/BTU)	COMFORT CRITERIA	CONDENSATION POTENTIAL
Outside	10,615	4.78	12,232	0.139	7.19	Not Met	Yes Below -2°F Outside
Middle	10,423	4.56	11,669	0.133	7.52	Met	No
Inside	10,722	4.83	12,360	0.142	7.04	Not Met	Yes Below 3°F Outside

The author's analysis of the position of a high-performance window in a superinsulated wall established that location in the center of the wall yielded the best performance, maximizing the insulation value and removing a condensation risk.

Photo by Matt Bowers

How do I anchor a wood post to old poured-concrete porch steps?

A Don Boivin, a contractor and craftsman from Hyannis, Mass., responds: There are many options for anchoring a post to existing concrete, but the trick for choosing the right anchor is gauging the condition of the concrete. If the concrete is older and unstable, some anchors might be more effective than others. Unfortunately, I know of no good, inexpensive way for a remodeler to test the strength of concrete.

Be aware that by code, guardrails are required when walking surfaces are 30 inches or more above grade, and the posts must be able to resist 200 pounds of lateral pressure. In such cases, it is best to consult an engineer, but even then, it would be difficult to gauge the integrity of the concrete without some method of testing.

Recently, I was able to try several different anchors while installing some posts on a set of old concrete steps. The highest walking surface of these concrete steps was less than 30 inches above grade, so code regulations did not apply.

I could not use surface-mounted post anchors (on the tread surface of the step) because the bolts would have been too close to the edge of the concrete and the width of the steps would have been compromised. Instead, I used the anchors to attach the 4x4 treated posts directly to the sides of the steps, where there was more concrete to bite into.

The first anchors I tried were hefty 1/2-inch-by-6-inch wedge anchors—two for each post. Wedge anchors fit into drilled holes, and tightening a nut on one end of the anchor forces a sleeve on the other end to expand against the sides of the hole, securing the bolt—and the post—in place (1).

I always try to keep fasteners safely away from the nose of the step, which is the weakest point of any step—wood or concrete. An easy way to locate and drill the holes for the anchors is clamping a short piece of 2x4 to the side of the 4x4 post to hold it temporarily at the desired height. After marking on the post where I want the bolts, I drill holes through the posts.

Then I set the post back into place, holding it plumb, and run a masonry bit through the holes in the post to mark the anchor locations in the concrete. Then it's just a matter of drilling the right diameter and depth holes at those locations. Always be sure to clean the dust out of the holes before inserting the anchors.

In this case, I discovered that the concrete was not solid enough for the anchors to tighten in the holes. My next option was anchoring the bolts in epoxy made specifically for concrete. I pushed the epoxy into the holes, bedded the bolts in the mix, and left it to set overnight (2). Epoxy forms a tenacious anchor for the bolts, and it worked for the most part. But I was still not totally satisfied with one of the posts, so I installed an additional hammer-drive anchor (3). Pounding on the center pin of the anchor causes the other end of the anchor to expand and wedge itself against the sides of the hole. For this project, the hammer-drive anchor solved the problem.



Three anchoring options: Epoxy, hammer-drive anchor, and wedge anchor (1). Bolts epoxyed into concrete (2). Post attached with epoxyed bolts and a hammer-drive anchor (3).

NYSAHI President's Letter

**New York State Association of Home Inspectors
Presidents Letter December 2019**

Greetings from the President:

I would like to start by wishing everyone a very happy holiday season. May your holidays be filled with joy, light, and meaning during this season.

Home inspectors have now been licensed in New York State for 14 years. Since the inception of licensure, NYSAHI has taken particular issue with the New York State exam. We tried to work with the Department of State to change the test, but to no avail. So, for the past five years we have worked directly with legislators, squiring a bill around congress to move from the New York State exam to the National Home Inspectors Exam. This year, we achieved that goal.

All home inspector license applicants must now pass the NHIE to become licensed in New York. The new law went into effect immediately upon the Governor's signing on November 27th.

Changing this law was a major undertaking and one that some people thought would never happen. Our lobbyist persisted and NYSAHI directors visited Albany year after year on lobby days to personally meet with legislators to make the case for our cause. We accomplished this goal and are ready to continue forward in our pursuit of professional excellence.

During the next few months we will be reviewing the Standards of Practice and the Code of Ethics. Since they have not been modified since their creation, we think that there are some updates and clarifications that are overdue. And this is where you come in. Over this winter, while the phones are ringing a little less, please look at the SoP and CoE and see if there is anything you think is missing, confusing, unclear, wrong, or shouldn't be there at all. Bring it to your organization, and have your representatives bring it to our board, or email us directly.

If you belong to an organization that is not a member of NYSAHI and would like to join us, have a representative send an email and we will get the ball rolling. We would be happy to have a dialog with you. And we look forward to expanding our board to represent all home inspector organizations in New York.

If you have another issue relating to NYS regulations surrounding home inspectors that you think NYSAHI should address, please let know!

In professional excellence,

Annie-Laurie Hunter
NYSAHI President

ROOFING



Low-Slope Roofing Details That Work Positive slope and easy drainage are keys to success

BY DOUG HORGAN

Low slope (“flat”) roofs are challenging to build, and fail more often—and more disastrously—than steep roofs. Most have no redundancy: A tiny leak goes right into the house. A lot of stored water can build up, so a leak can be a very big problem instead of a little stain on a ceiling. The seams have to be watertight, so the work must be done perfectly. High turnover in the trade means inexperienced crew members.

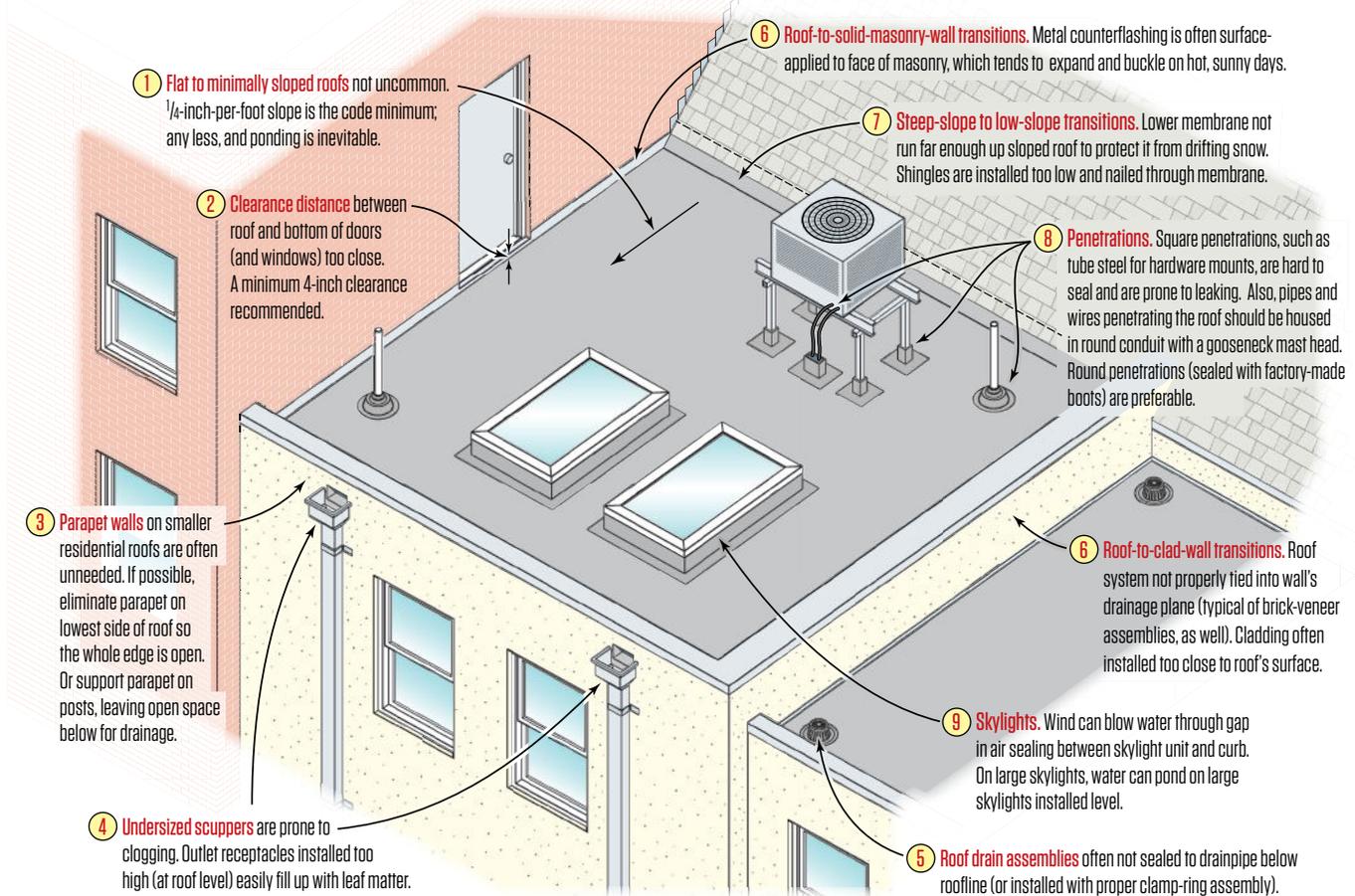
For all these reasons, we’ve had the chance to learn a lot about what can go wrong with low-slope roofs. Some of these lessons have been learned on our own projects, although most were learned by repairing other contractors’ roofs. I’d like to share those trouble spots and explain what we do to prevent the problems we’ve seen.

By “low slope” roofing, we mean any roof that is pitched at less than 4 inches of rise in 12 inches of run, or 4/12 pitch. Regular asphalt shingles and standard skylights will work at pitches of 4/12 or greater, but at lower pitches, you have to use different materials. That includes soldered metal roofing or synthetic membranes. Metal roofs, even fully soldered systems, have drawbacks for low-slope applications. So in this story, I’m going to focus on details for membrane roofing, and in particular, TPO (thermoplastic polyolefin) membranes.

I’ve written on this topic for *JLC* before (see: “Low Slope Roofing: Troubleshooting in Advance,” Jan/16; “Draining Low-Slope Roofs,” Oct/15; and “Steep-Slope to Low-Slope Transitions,” Apr/14). Those stories focused on troubleshooting roof failures; in this story, I’ll

Photos by Doug Horgan; illustrations by Tim Healey

Low-Slope Roofing — Common Trouble Spots



TYPICAL TROUBLE SPOTS

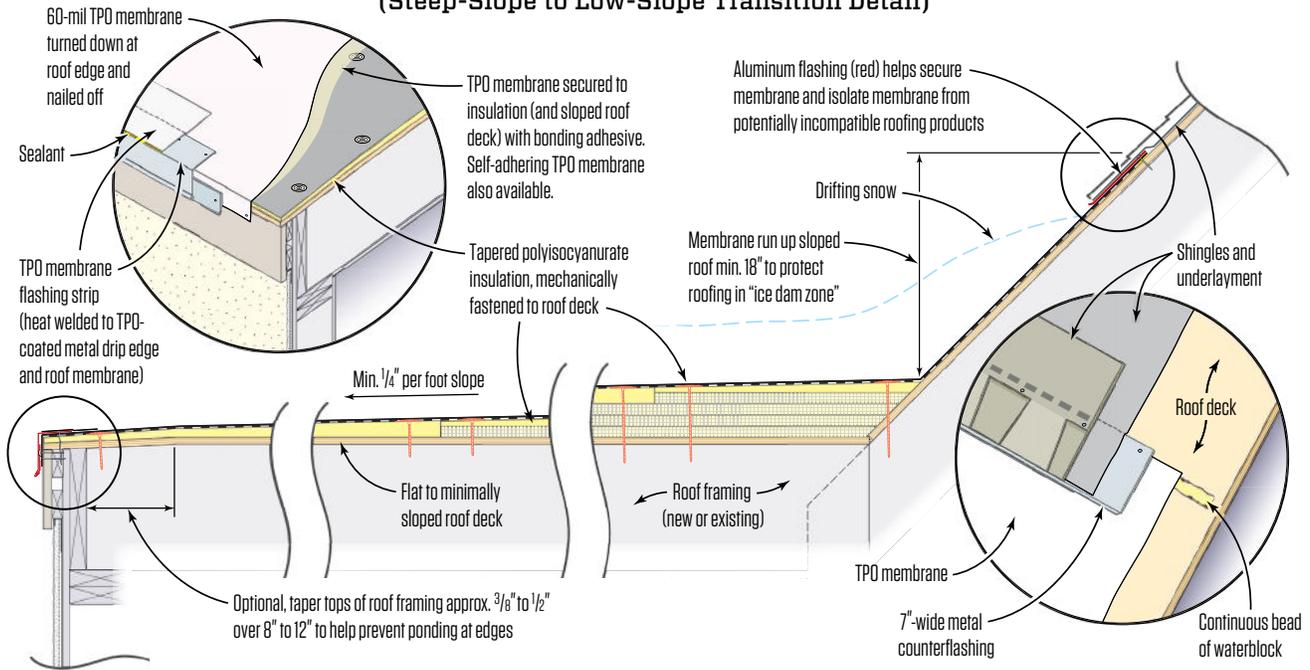
Membrane roofing materials are flexible, tough, and durable. Short of a tree branch dropping through them, they can stand up to conditions on a roof. Trouble can occur, however, at joints, seams, penetrations, and intersections. The illustration above shows areas where careful attention is important.

- 1. Roof Slope.** Dead-level or backward-sloping roofs are prone to ponding. Be careful to maintain a slope of at least 1/4 inch per foot.
- 2. Threshold Clearance.** 8 inches of clearance above the roof is recommended for door and window sills. Where that's not possible, shoot for at least 4 inches (the minimum for good working room).
- 3. Parapets.** Most residential roofs don't actually require parapets. If possible, eliminate the parapet at least on the lowest roof edge to allow water to flow easily off the roof.
- 4. Scuppers.** Compounding the parapet-wall issue, scuppers

are often too small and too few to allow good drainage. Size scuppers at least 8 inches high and 12 inches wide. Mount receptors (conductors) low on the wall.

- 5. Roof Drains.** A poor seal between the drain and the roofing is a typical cause of serious leaks. Use a clamp-ring drain to prevent this.
- 6. Roof-to-Wall Transitions.** Roofing must be properly tied into abutting walls.
- 7. Steep-Slope to Low-Slope Transitions.** Lower flat-roof membrane may not run far enough up the slope to protect against drifting snow and ice. Allow at least 18 to 24 inches of rise for the membrane.
- 8. Penetrations.** Use factory-made boots and seal carefully.
- 9. Skylights.** Skylights may leak from wind-blown rain or ponding water. Slope skylights and seal against air penetration.

A Well-Drained Roof (Steep-Slope to Low-Slope Transition Detail)



A “slope kit” consisting of tapered foam sheets adds slope to a dead-flat roof. A wide-open roof edge is preferable to scuppers because it is less likely to clog. Tapering the rafters at the edge of the roof helps counter the buildup of layers at the edge. Extending the membrane up the adjoining steep roof protects against drifting snow and ice buildup.

focus on solutions that avoid those failures in the first place.

When we encounter trouble on any membrane roof, the problems are always related to joints, edges, and penetrations. Let’s take a look at the details that work in those situations.

SLOPE

Roofing-association manuals, as well as the code book, specify a minimum slope of 1/4 inch per foot for low-slope roofing. One cool trick is to use a “slope kit,” consisting of sheets of foam that are tapered to provide the necessary slope. You can order the foam in different slopes. If, for instance, you wanted to add 1/4 inch per foot to a dead-flat roof, you would get foam that ranges from 1/2 inch thick to 1 1/2 inches thick over 4 feet. You’d start at the bottom edge with a 1/2-inch-to-1 1/2-inch piece, and then at the up-slope side, place a sheet of 1-inch flat foam and layer another piece of the tapered foam on top of it. You would continue on in a similar fashion up the roof to the high point.

ROOF EDGES

When it comes to drainage, open roof edges are preferable to roof drains or scuppers in a parapet wall. Roof drains and scuppers are both prone to clogging and they involve complicated detail-

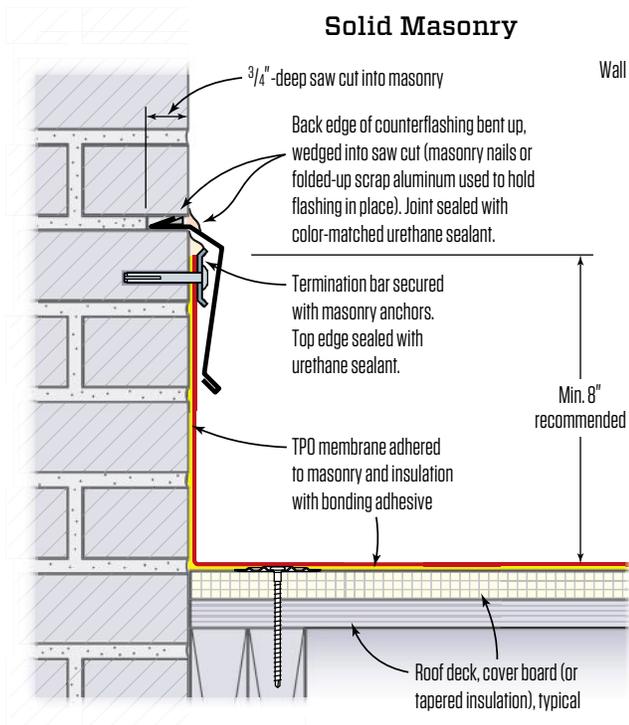
ing that is hard to do right. Most houses in our area don’t actually need parapets: The main purpose of a parapet is to keep wind from sucking the membrane off the roof of a large building, and in our location, the wind forces don’t make this necessary for residences.

At roof edges, multiple layers of material sometimes create a raised edge or a backward slope. To avoid this, we recommend tapering the framing at the roof edge to add a little slope pitching toward the outside. Just cutting a taper of 3/8 inch to nothing over 8 inches, or 1/2 inch to nothing over a foot, is enough to keep all those outside layers below the level of the main roof.

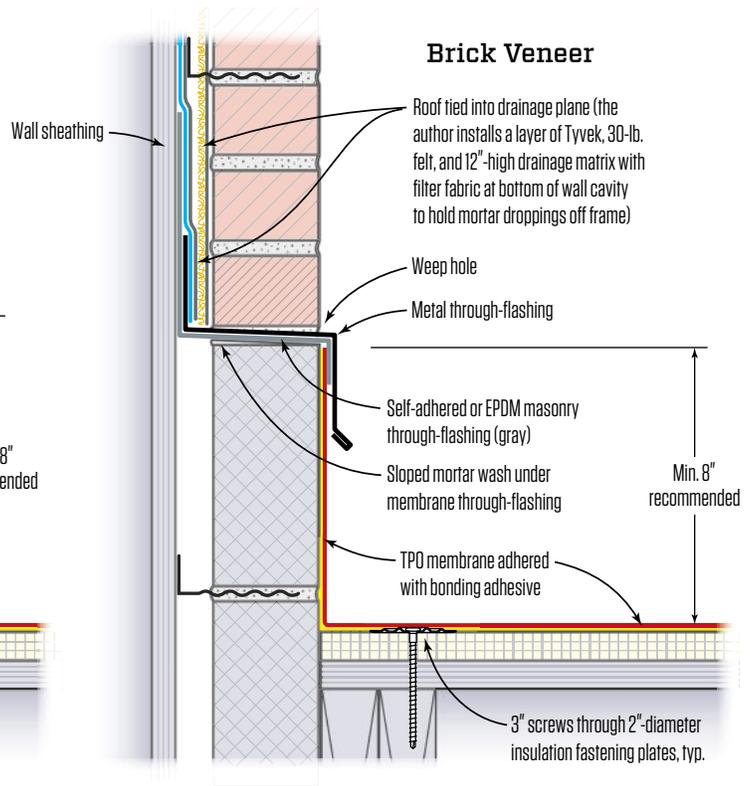
Metal drip edge at the roof edge is difficult to seal against water intrusion. The metal expands and contracts and puts a stress on any sealant you may apply at lap joints. To effectively waterproof this area, we like to follow a detail supplied by manufacturers that calls for running the membrane all the way to the roof edge and down over the fascia. Then we apply the drip edge on top of the membrane, and seal in the top of the metal with another strip of roofing.

As an alternative in locations prone to sliding snow and ice, you could implement a similar method: Attach a strip of roofing to the edge first, apply drip edge over this edge strip, and then apply the main roof membrane on top of this. This isn’t necessary in our D.C. area, but it could be a better alternative in a colder climate.

Roof-to-Wall Details



For solid masonry, the author recommends running the membrane 8 inches up the wall. The membrane is secured at the top with a termination bar and counterflashed.



Masonry veneer requires a through-flashing that ties into the weather-resistive barrier behind the masonry.

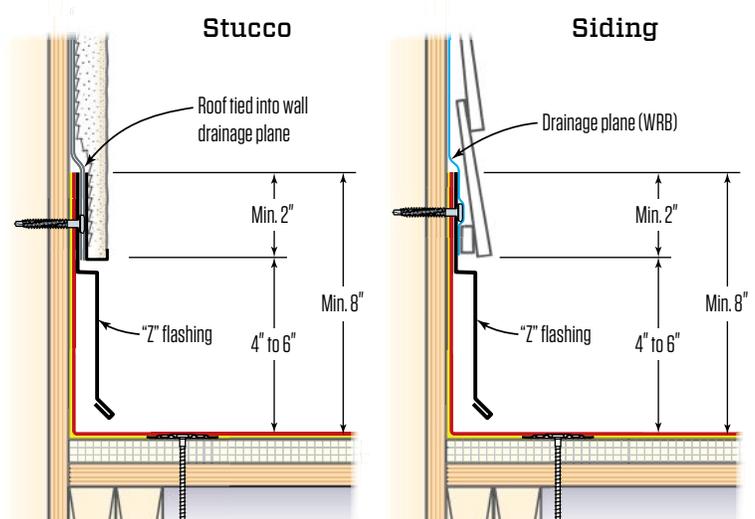
WALL CONNECTIONS

According to the roofing-association manuals, roofing should lap up the wall at least 8 inches at roof-to-wall intersections. In practice, we've had good results with a 4-inch lap, but any lower than that is taking a risk.

When we attach to solid masonry, we generally use a termination bar—a strong piece of metal that we fasten into the wall, that clamps the roofing to the wall. We seal the top of that with sealant, and then we add another flashing over top of it which is set into a 3/4-inch kerf cut into the masonry—deep enough to keep the metal from working itself out of the kerf with expansion and contraction as it heats up or cools off.

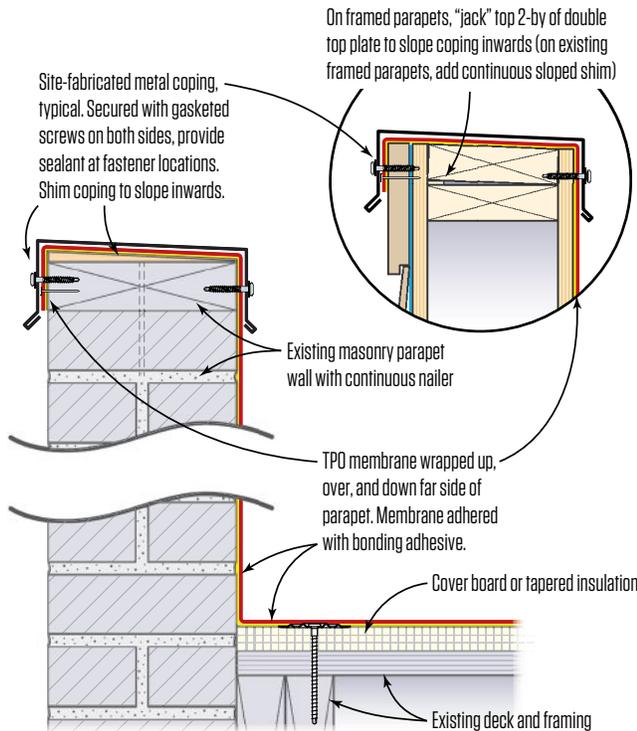
With brick veneer, you can't just kerf into the wall and embed a flashing in this way. Instead, you have to install a through-flashing into the wall that goes all the way back to the wall and ties into the drainage plane.

Under siding, it's enough to run the roofing up the wall and apply flashing over the roofing. Be sure to allow enough clearance between the siding and the roof to allow for reworking the roof in the future.

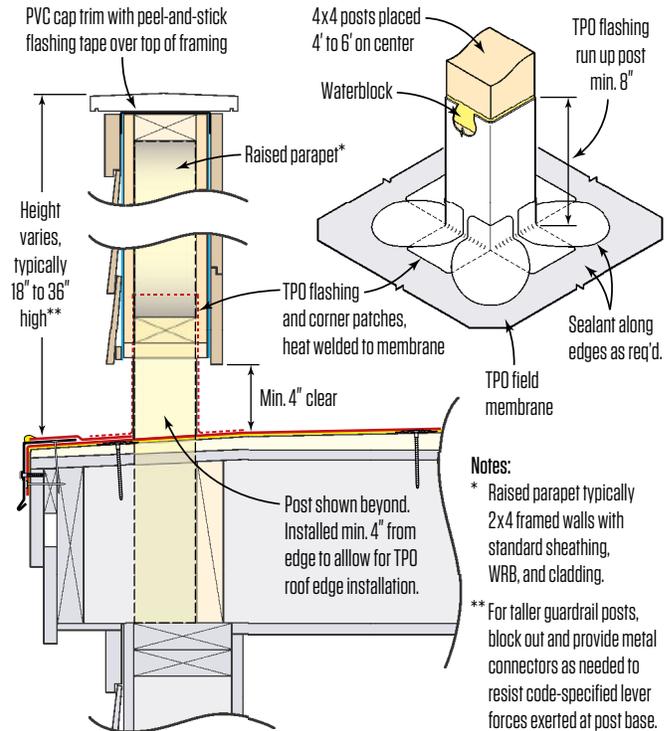


To tie the roofing into stucco or lap siding, the author recommends a "Z" flashing that laps under the weather-resistive barrier.

Parapet Details

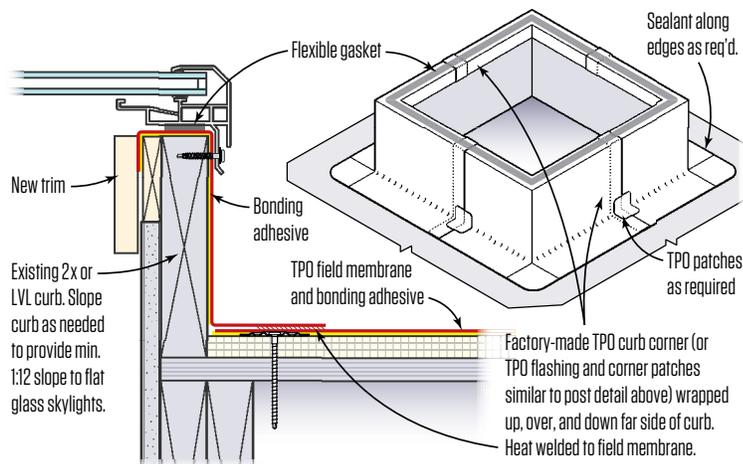


Raised Parapet at Draining Edge



When roofing wraps up and over the top of a parapet wall, waterproofing the coping or trim is less critical. For optimum drainage at the roof's lowest edge, the author prefers a parapet raised on posts as shown above, with the post base wrapped in membrane. The tops of parapets should be shimmed for slope to prevent standing water from collecting.

Sealing Skylights



Preformed skylight curb corners help with wrapping membrane up and into the skylight curb. Skylights should be gasketed to block the intrusion of wind-blown water.

PARAPETS AND SKYLIGHT CURBS

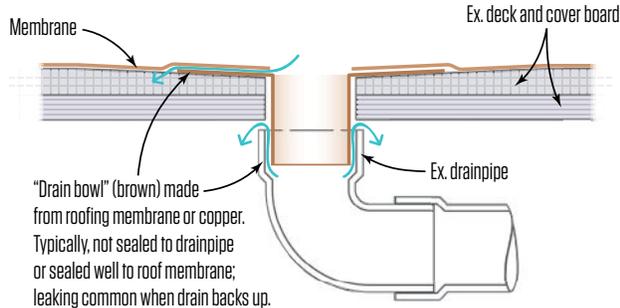
Parapet walls and skylight curbs are similar elements that receive very similar treatment. The pieces of metal on top of parapet walls are not sufficient to keep water out of the assembly, because they develop leaks at the joints due to expansion and contraction. So it's important to run the roof membrane up the parapet, over it, and down onto the other side, and then cap that with the metal.

In an ideal world, you would even slope the top of the parapet a little bit so that water that makes it onto the membrane will run off instead of pooling. Once the membrane is wrapped over the parapet, the metal piece is essentially decorative.

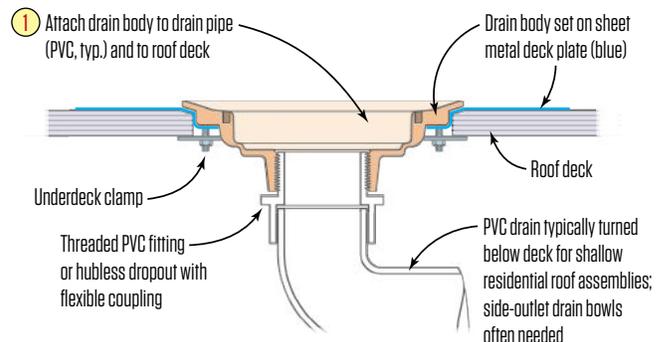
Skylights are a similar situation. The membrane roofing should lap up onto the skylight curb and over it. The curb should be pitched to the outside for drainage. Air-sealing between the skylight unit and the curb is an often-neglected detail that we try to pay attention to, because if there's a gap and the wind is blowing the wrong way, it will suck water right through it.

Roof Drains

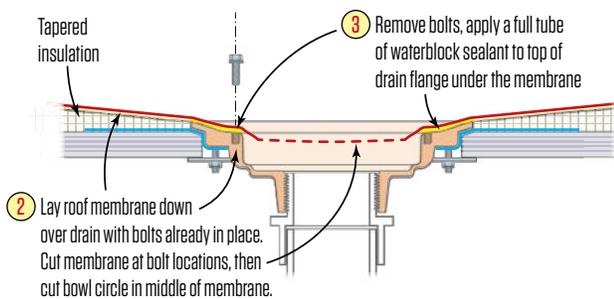
Poorly Detailed Drain



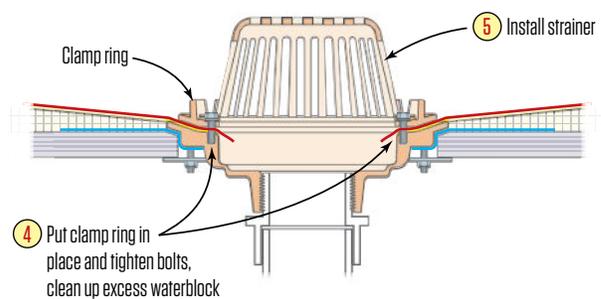
Clamp-Ring Drain: Step 1



Clamp-Ring Drain: Step 2



Clamp-Ring Drain: Step 3



Common flaws in roof drain detailing allow leaks between the membrane and the drain body, and leaks between the drain body and the drainpipe. To avoid this scenario, the author recommends using a clamp-type drain that locks the membrane into the drain body. Watertight pipe connections are also crucial for preventing water from leaking into the building.

ROOF DRAINS AND SCUPPERS

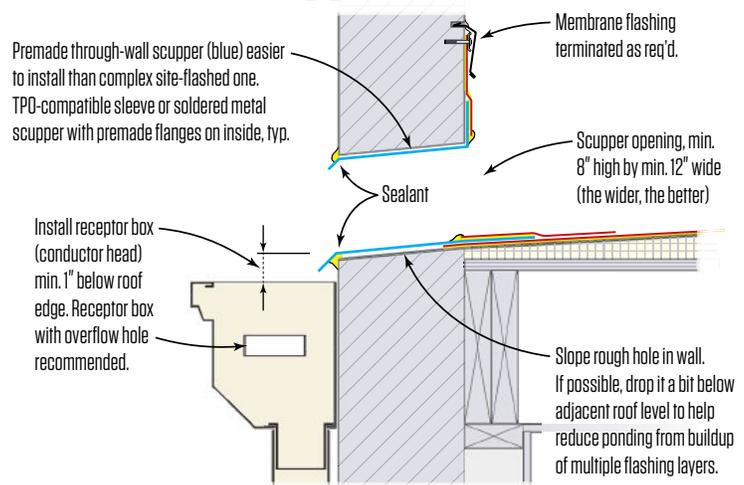
I'm not a fan of roof drains: They're high maintenance, they tend to clog, and there are many ways to do them wrong. I've seen a lot of leaky roof drains. Typically, what happens is that the pipes clog, and if you don't have a perfect seal between the drainpipe and the roofing, the water will back up, overflow the pipe, and run into the house.

Clamp-ring drains are designed to seal the membrane to the top of the drain body. If the pipe backs up, water can't get into the house, and it runs off the roof through the overflow. These are the only acceptable drains on roofs, but whenever there's a choice, I would prefer an open roof edge to any kind of roof drain.

I feel the same way about scuppers as I do about roof drains: They're tricky to detail, and the smaller they are, the more prone they are to clogging with leaves and debris. I have seen 4-inch-tall openings clog; we now recommend 8 inches for scupper opening height and at least 12 inches for width (the wider, the better).

Doug Horgan is vice president for best practices at Bowa.

Scupper Detail



Drain receptors (conductors) are best positioned an inch or more below the scupper outlet so that clogs won't create leaks into the wall or ponding on the roof. Scuppers should be pitched to the outside.

EPA Resources to Help You Promote National Radon Action Month



Did you know that winter is the best time to test homes for radon? Take action for National Radon Action Month (NRAM) and finalize your education and outreach efforts for January and beyond.

The U.S. Environmental Protection Agency (EPA) makes raising awareness and community outreach easy by providing several outreach activity ideas. These include informative videos and public service announcements (PSAs), a radon outreach and event planning kit with implementation tips, and radon testing e-cards to send to friends. Access and download your free radon resources today by clicking on the images below.

EPA Media Campaigns—EPAPSA.com

	AUDIO	VIDEO	VISUALS	SPANISH	RADON
					Holiday Card
				ES	Green Sox
					Eddie's Story
					Dr. Oz
				ES	Build Green
					Consumer Education: What Is Radon?
				ES	Surgeon General's Warning
					"The Man on the Street" <i>Emmy Award, 2000</i>
					"People on the Street"
					"Take the National Radon Test"
					"Rooftops"
					Radon Outreach Kit

Radon Outreach and Event Planning Kit

More Information on NRAM



Welcome and Introduction

Thank you for your interest in EPA's National Radon Program. Radon is a serious health risk facing tens of thousands of Americans. Exposure to radon gas indoors causes more than 20,000 deaths annually in the United States, and it is the number one cause of lung cancer among non-smokers. The challenge is that we can't see or smell radon, so it's easy to forget that radon may be a problem in any home, school or other building in the country. Fortunately there are many opportunities and resources available to increase awareness of radon, promote radon testing and mitigation, and advance the use of radon-resistant new construction practices.

Individuals, groups and organizations concerned about healthy people, buildings and communities are the driving force in getting out messages about the dangers of indoor radon to various audiences, including the public, policymakers, real estate professionals, and the medical community.

You will find information and materials in this Kit that you can use to get the word out about radon. Use these resources to conduct activities that will yield real progress toward reducing radon risk. The materials are designed to be customized, so please feel free to add or delete language or make other changes to better suit your needs.

Radon-Induced Lung Cancer Kills 21,000 Americans Each Year

Radon can be deadly, but remember that the message you are delivering is a hopeful one. Testing for radon and taking action to reduce radon risk can save lives. We wish you the greatest success with your radon outreach activities.

Please visit www.epa.gov/radon for more information about radon health risk and what you and others can do to save lives from radon-induced lung cancer.

The Kit includes helpful suggestions and many useful templates for you to customize.

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Indoor Air Quality (IAQ)



Give Green for Life.

Living green starts from the ground up; so, make sure the air in your home is healthy for your family to breathe. Test your home for radon and build radon-resistant. It's easy.

Just call **866-730-green**
or visit www.epa.gov/radon

HEALTHY & living GREEN

Fred Pavez,
Member of the National
Association of Home Builders
Celebrated Former Football Player

EPA

This information is provided as a public service to help protect our environment and public health. EPA does not endorse this particular builder or any other commercial service or enterprise.

Follow the conversation on social media:

#NationalRadonActionMonth

#radon

BY SYMONE GARVETT



1

1. Durable Aluminum Railing

Deckorators ALX Classic Aluminum Railing aims to provide a durable, yet minimal, deck railing made of heavy-gauge aluminum with a thick powder-coated finish. It is available in 6- and 8-foot lengths and 36- and 42-inch heights in four colors—satin black, matte black, textured white, and weathered brown. According to the manufacturer, the product is easy to install whether deck builders choose the preassembled option or the railing kit. Kit pricing ranges between \$40 to \$45 per foot; preassembled runs \$50 to \$55 per foot. deckorators.com



2



3

2. Paver Support

Designed specifically for thick porcelain tiles rated for exterior use, the Schluter Troba-Level paver support system, or pedestal, supports tiles above the substrate with no bonding required. Because the tiles are not bonded in place, the system allows for natural drainage, ventilation, and easy access to utilities or systems beneath the patio floor. The system is available with several accessories to allow an installer to create a level patio with flush seams and corners. The individual components generally cost \$3 to \$10 each. schluter.com

3. Cedar Shingle Look-Alike

New siding profile Artisan Shingle, the latest addition to James Hardie's Aspyre Collection of fiber-cement siding panels, emulates the width, pattern, and color of cedar shingle siding. The panels measure $\frac{5}{8}$ inch thick and are available primed for paint or in James Hardie's ColorPlus Technology blends. Like all Aspyre products, the Artisan Shingle profile is engineered for particular climates and is made to resist the specific conditions of the climate zone it will be sold in. Contact a local distributor for pricing. jameshardie.com

4



4. Surface-Mount Barn Door Lock

Inox's Surface Mount Barn Door Lock was designed to be easy to install on today's popular barn doors. The stainless steel lock can be installed on the surface of any type of wall or jamb casing to add privacy and function to a room. Its surface installation is ideal for renovation or remodeling projects. Two one-touch thumb levers are available, including an ADA option. Pricing ranges between \$118 to \$188. unisonhardware.com

Products

5. Tankless Electric Water Heater

Rheem EcoSmart Tankless Electric Water Heater uses the EcoSmart brand's self-modulation technology to optimize energy use when heating water. According to the manufacturer, this reduces the unit's potential for energy loss and allows for savings on water heating costs. The whole-home models include the ECO 18, 24, 27, and 36, each named for its kilowatt use. The units are compact and may be installed anywhere with a power source. Pricing ranges from \$200 to \$600, depending on the model. ecosmartus.com



6. Fresh Air Machine

The QFAM QuFresh by Air King Fresh Air Machine provides a constant supply of fresh air from outside the home, allowing builders to meet requirements for residential fresh airflow. Installers can set the precise airflow desired from 40 to 120 cfm for the unit's quiet, energy-efficient fan system, and adjust intake levels for outside humidity and temperature. The unit may be mounted in the home at any convenient point, such as the attic, garage, or laundry room, with the proper duct and power connections. Pricing starts at around \$320. airkinglimited.com



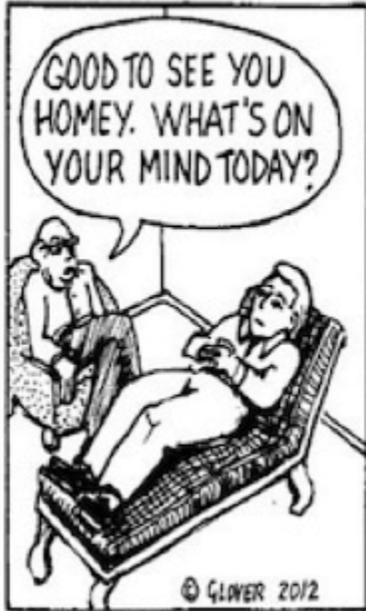
7. PVC Column Wraps

Royal Building Products' cellular PVC Royal Column Wraps are now available in a new finish, sand dune. The PVC column wraps are available in four widths, made to fit around 4x4, 6x6, 8x8, and 12x12 structural posts. Each of these is available in two standard lengths—10 feet and 8 feet 6 inches. A new, 12-foot length is also available in white for 6x6, 8x8, and 12x12 column sizes. The wraps are resistant to moisture and can help to prevent rotting, warping, and insect damage. Contact a local distributor for pricing. royalbuildingproducts.com

8. Self-Draining Vented Wall System

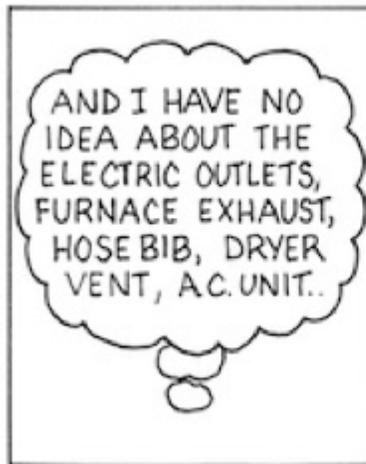
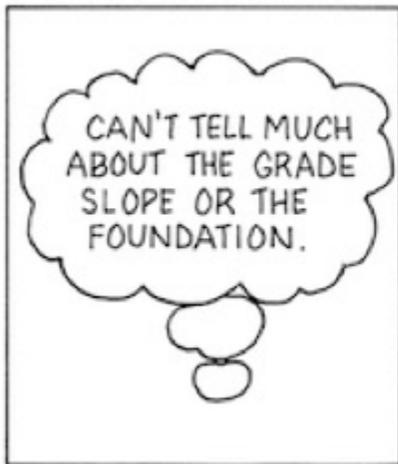
Amico's new Hydrodry system combines a series of five components to create a dedicated drainage and ventilation cavity for use behind veneer stone, masonry siding, and stucco exterior cladding. The system can drain up to 150 gallons of water per hour from within the wall cavity, and vent water vapor through the top of the wall at a rate of 0.8 pounds per hour, according to independent product analysis. The drain screed, designed for use on the bottom of a wall, features built-in drainage and ventilation slots and accommodates a rainscreen up to 10mm wide. Contact a local distributor for pricing. amicoglobal.com





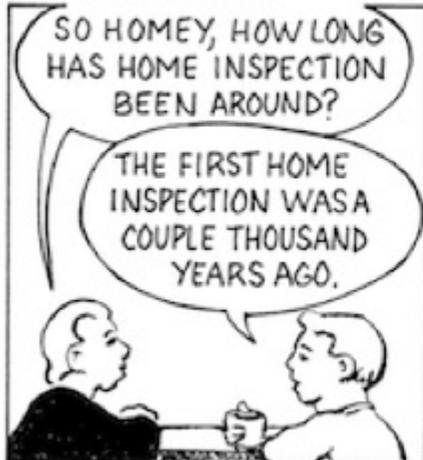
HOMEY SPECTOR

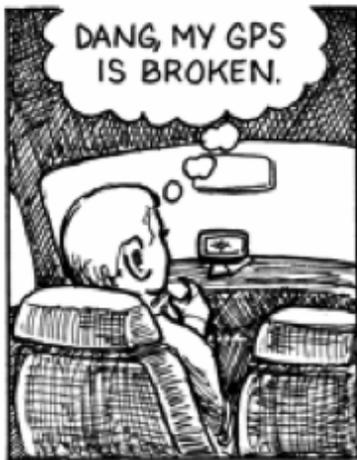
TED GLOVER



HOMEY SPECTOR

TED GLOVER





Homey Spector



Homey Spector

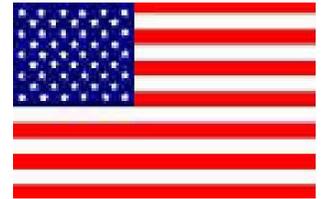


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