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

CAHI MONTHLY NEWS

January 2016 Volume 9, Issue 1

Presidents Corner

Welcome 2016! I think it is going to be a very interesting year and I am looking forward to it. I hope everyone had a very happy Holiday season and enjoyed some time off with family. The weather has been in favor of a good start to the 2016 housing market. No excuses for not getting out there and looking for your dream home.

Hopefully by the time this newsletter hits your computers, we will have engaged the services of a new website company. Scott Monforte and I meet with a company who's representatives were energetic and seemed very interested in taking over our website. They will be managing it every step of the way and will be adding the ability to blog from it. We will also be launching our Facebook and LinkedIn pages as well. All in an effort to generate traffic which will generate referrals for our members.

The board's main objective this year is a membership drive. We would like to increase membership whenever possible. As always, we plan on strengthening our organization and making our presence known.

Scott Monforte is putting together yet another Law seminar that promises to be educating and entertaining. Scott and the education committee are also working hard to line up speakers for our monthly education.

So, get all your business needs in order for this new year! Lets get out there and show Realtors and the consumers why referring a CAHI member is in their best interest. I wish you all a successful and prosperous 2016!

Stan Bajerski

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

Meeting Dates!

JANUARY 27th Meeting

Building Envelopes
by Hydro Gap

Advance Notice for CAHI Members

Friday, FEB. 19th

Law Seminar
with Kent Mawhinney

See Page 2 for Reservation Information

Home Inspection Law Seminar

The Connecticut Association of Home Inspectors (CAHI) invites you to attend an exciting and informative Home Inspection Law Seminar presented by Connecticut's premier home inspection law expert, Attorney Kent Mawhinney.

Attorney Mawhinney presents home inspection legal issues in an interesting and informative manner which includes tips and anecdotes that help keep the material fresh year after year.

In addition to enjoying the camaraderie of fellow inspectors, this is the only seminar that offers the following included in your fee:

Dinner

Certificate of Completion

***** New Location *****
Billy Tees in Cromwell, CT

Here are the details:

Date:	**Friday, February 19th, 2016**
Time:	**Dinner 5:00pm – 6:00 pm; Seminar 6:00 pm to 9:00 pm**
Location:	**Billy Tees – 150 Sebethe Dr, Cromwell, CT 06416**
Price:	**$99.00 – Pay online, by check or at January meeting**

(Registration Ends February 18th 2016)

Please mail payments to the following address:
Stanley J. Bajerski
40 Victory Court
Milford, Ct 06460

DPH: Time to Test for Radon

DPH offering free radon test kits during January, National Radon Action Month

Hartford — The Connecticut State Department of Public Health (DPH) urges Connecticut residents to test their homes for radon gas, the leading cause of lung cancer in non-smokers. Health officials estimate that radon is responsible for more than 21,000 lung cancer deaths each year in the United States.

Radon is a radioactive gas formed from the decay of naturally occurring uranium. It is found in rock, soil and water. Radon in outdoor air poses a relatively low risk to human health, but it can enter homes from the surrounding soil and become a health hazard inside buildings.

Radon is odorless and invisible, and people often don't know this silent killer could be in their homes. That is why testing for radon and reducing elevated levels of this poisonous gas is so important. It could save the lives of you and your loved ones.

The DPH Radon Program recommends that all Connecticut homes be tested for radon. Testing is recommended in the winter months, when radon tends to build up indoors. Testing homes for radon is simple and inexpensive. Connecticut residents may obtain a free radon test kit by completing an online form on the DPH Radon Program website (www.ct.gov/dph/radon). Test kits will be available during the month of January and while supplies last. Test kits can also be purchased from the American Lung Association of New England by calling 1-800-LUNG-USA or at your local hardware store.

The U.S. Environmental Protection Agency recommends that homes with radon levels at or above 4.0 pCi/L be fixed. Homeowners should consider reducing their potential lung cancer risk by fixing homes with radon levels between 2 pCi/L and 4 pCi/L. Smokers exposed to radon have a much higher risk for developing lung cancer.

Radon problems can be corrected by a qualified radon contractor, with costs typically ranging between $1,200 and $1,500. A homeowner should hire a qualified radon mitigation (reduction) contractor to decrease airborne radon levels.

To learn more about radon and to obtain a list of qualified radon mitigation contractors, please visit the DPH Radon Program web site at www.ct.gov/dph/radon. The site also includes additional resources including a video that provides step-by-step instructions on how to test your home for radon.

Carbon Monoxide Alarms -
Give Your Loved Ones A Gift That Can Save Their Lives

CO is a silent killer that can only be detected with a properly working CO Alarm

Hartford – Looking for that last minute holiday gift for family or friends? This season, show your loved ones how much you care about their safety by giving a gift that can save their lives - a carbon monoxide (CO) alarm. Health officials recommend having one on each level of a house or apartment.

CO is an invisible, odorless gas that can be fatal. The symptoms of CO poisoning can mimic those of the flu, including headache, fatigue, dizziness, nausea, vomiting, or loss of consciousness. CO detectors are the only way to know that the deadly gas is present.

Every winter, hundreds of Connecticut residents are taken to the emergency department due to carbon monoxide exposure from malfunctioning furnaces, fireplaces, improperly placed portable generators and indoor use of charcoal grills. Across the country, unintentional CO poisoning kills over 400 Americans each year.

"The most important thing that you can do to prevent carbon monoxide poisoning is to have properly functioning CO alarms in your house or apartment," said Department of Public Health Epidemiologist Brian Toal. "Alarms save the lives of many people each year."

Batteries in battery-powered alarms need to be replaced based on manufacturers recommendations, and units should be tested every month. However, using a test button only tests whether the circuitry is operating correctly, not the accuracy of the sensor. Alarms have a recommended replacement age, which can be obtained from the product literature or from the manufacturer.

"Like any appliance, CO alarms have a limited lifespan, which is generally 5-7 years depending on the alarm manufacturer," Toal said. "These devices lose their sensitivity over time, so the fresher, the better."

CO alarms should be installed on every level of the home, outside of sleeping areas, and in the basement. CO alarms should not be located in kitchens near a cooking source, because steam and particles generated during cooking can prevent the CO alarm from working properly.

The Connecticut Department of Public Health offers some tips to help you choose a carbon monoxide alarm for your home.

- Choose carbon monoxide alarms that are UL listed (Underwriter Laboratories).
- Choose a CO alarm with an electrochemical sensor. This is the most sensitive and accurate type.
- Choose a model with a digital readout and a "peak level" memory retention feature. The display can give you an early heads up if the CO level is inching up or is higher than usual. It is also helpful for emergency personnel if they suspect CO poisoning.
- If you have small children, you may consider buying a 'talking' CO detector. Some studies have shown voice warnings to be more effective in waking children than bells, buzzers or horns.
- If you currently have a carbon monoxide alarm, check the back of the unit for either a build date or an expiration date. If there's no date or it's more than five years old, replace it.

DPH also advises residents to have their heating systems serviced each year, and reminds everyone that portable generators should never be used inside your home, basement, or garage. Generators should be located at least 20 feet ways from windows, doors, and vents.

For more information about how to protect yourself and loved ones from carbon monoxide, visit www.ct.gov/dph/co.

In Memory Of

JOHN B. DeROSA

1966 - 2015

John DeRosa was the CAHI newsletter publisher for many years. He fought a valiant battle against cancer for some time, while still trying to keep his commitment to CAHI as our publisher.

Our hearts and prayers go out to John and his family.

May God Bless.

TOM FEIZA CONTRIBUTES TO CAHI NEWSLETTER

I would like to follow up on an article that was presented in a past newsletter. The article was not written by a CAHI member. In it was mention of the book How To Operate Your Home written by Tom Feiza. The excerpt in the article contained a derogatory remark about Tom's book. I have since reviewed the book and found it to be very well written and illustrated. I would recommend it to all for your perusal and library.

I have asked Tom to be a contributor to our newsletter and he has graciously accepted. You will find his first contribution in this edition. Thank you Tom Feiza.

Stan Bajerski

HI Dewpoint for Home Inspectors

Insider Tips for Smart Inspectors

Indoor Moisture: It's a Jungle In There

By Tom Feiza, Mr. Fix-It, Inc.
HowToOperateYourHome.com

Cold-climate moisture issues are related to the dew point temperature of the air. Dew point confuses some people, but it's just basic science.

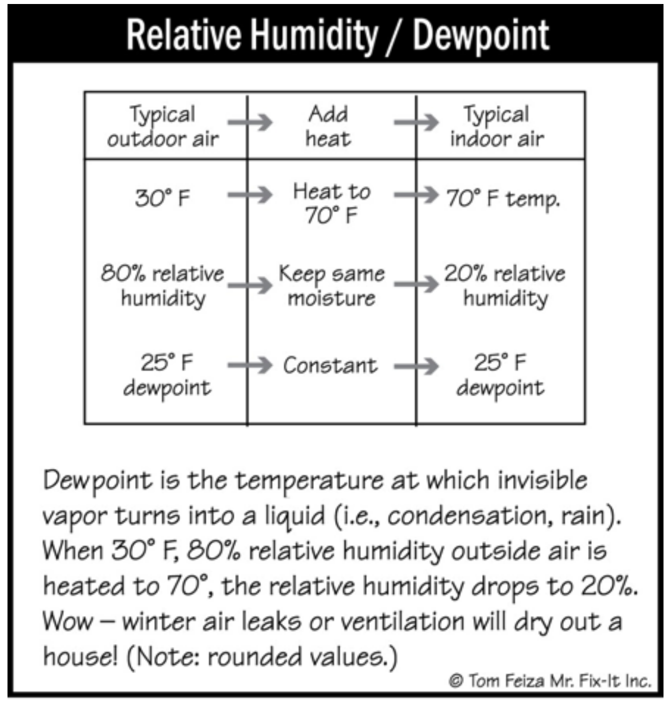
Dew point basics

If the outdoor air temperature drops below the dew point temperature, condensation occurs as rain. You've seen how it rains when a cold front moves in. If the temperature of a hard surface is below the dew point temperature of the air in contact with that surface, water condenses on the surface.

Invisible water vapor is always present in the air. When that air contacts a surface below the dew point temperature, the invisible vapor condenses as visible moisture. If you see moisture forming on a surface, think: "The temperature of the surface is below the dew point temperature of the air." That's all you need to remember.

Take it inside

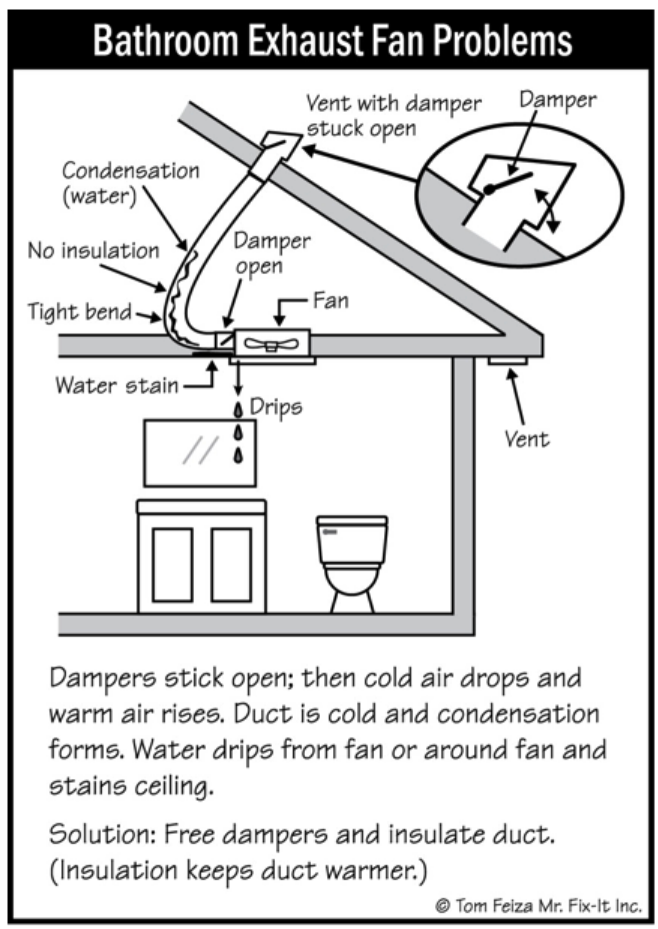
What does dew point mean to home inspectors? We need a basic understanding of the dew point to understand several issues. For instance, think of a drafty old house in a cold climate. Air leaking in from the outdoors made the interior of this house cool and dry – and kids had great fun shuffling their feet on the rug to create shocks from static electricity.



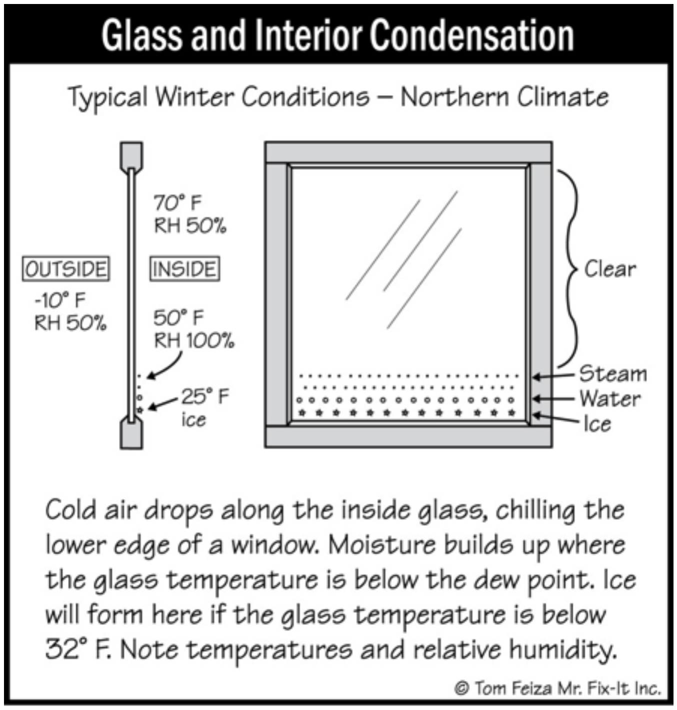
M054

Illustration M054 shows that when we take typical outside air at 30 degrees F and 80% relative humidity and heat it to 70 degrees F indoors, the relative humidity drops to 20% but the dew point stays at 25 degrees F. That cold outside air moves into a home and really dries it out. There is no condensation on interior surfaces, because the indoor temperature is above the dew point of 25 F.

Think about a bath fan with dripping around the housing or below the discharge (illustration V007). When the damper sticks open, warm air moves up into the cold duct or cold air drops into the duct. The duct is below the dew point temperature of the air, and moisture forms.



V007



D090

Another example is condensation on cold windows (illustration D090). Window glass is often the coldest surface in the home. Cold air drops along the glass to the sill. If the window has an interior screen or shade, the radiant heat of the room can't reach the glass, and the shade holds in the cold air. The glass, cooled by the outdoor temperature, is below the dew point temperature of the air, and condensation forms. If the temperature is below 32 degrees F, ice will form.

Your message on window condensation

What should you tell customers with window condensation problems? "The temperature of the glass is below the dew point temperature." There are two ways to remedy this: raise the temperature of the glass, or reduce the moisture in the air. Glass temperature increases along with higher outdoor temperature, higher indoor temperature, open shades, or even indoor air movement. Set up a small fan to blow air on the problem window and the moisture will go away, because air movement raises the temperature of the glass.

Always remember the answer to condensation questions: "The surface temperature is below the dew point temperature." And remember the solution – raise the surface temperature or lower the moisture level in the air around the cool surface.

Tom Feiza has been a professional home inspector since 1992 and has a degree in engineering. Through HowToOperateYourHome.com, he provides high-quality marketing materials that help professional home inspectors boost their business.

Ice Dams:
Curing the Curse of Midwinter

April may seem the cruelest month to poets, but for roofs in snow country, it's midwinter that, deals the meanest punch, bringing snow and ice out of the gray sky to create ice dams, the beasts that tear off gutters and trim, lift shingles, and send melting water into soffits and walls.

Ice dams form when a warm attic melts snow on the roof deck, sending water trickling down to the house's eaves, where it freezes. The underlying problem — a temperature difference between the warm roof deck and the cold eaves — is aggravated as snow thickens and temperatures drop: Accumulating snow traps more heat beneath the roof deck, while falling temperatures leave the eaves, which don't receive the heat rising into and out of the attic, ever colder. Thus ice dams grow biggest when a cold snap follows a big snow.

In theory, avoiding these problems is simple: Insulate and seal the attic to keep warm air from reaching the roof, and use a ridge-and-soffit vent system to move air along the underside of the roof deck so that it maintains a uniform, cool temperature from soffit to ridge.

In reality, says Paul Fisette, a builder, consultant, and professor of building materials and wood technology at the University of Massachusetts, achieving these objectives can be difficult. Fisette, who has examined scores of ice-dammed houses, says your options in preventing or curing ice dams will be determined largely by a house's framing.

Brand-new houses are easy: Leave enough room at the eaves for at least R-38 of attic insulation and an inch of ventilation space over the exterior wall plate; then carefully install the insulation, a continuous air barrier separating the living space from the underside of the roof, and a ridge-andsoffit vent system. The resulting energy-efficient house shouldn't get ice dams.

Older houses are tougher. With diligence you can usually plug most of the numerous leaks into the attic. But older roof framing often leaves too little room in the eaves to fit both adequate insulation and a space above for a ventilation path above the exterior wall plate. In such situations, Fisette recommends using high- R-value foam insulation (R-6 per inch) to insulate between the top plate and the roof deck, leaving an inch or so above for ventilation. Seal any possible leak sites there or elsewhere with caulk or expanding foam, and you've probably done the best you can do. (Some contractors prefer installing ventilation baffles and a vertical block in the plane of the outer wall, then spraying the space inside the blocking full of insulating foam such as Icynene.

For eaves spaces hidden behind kneewalls, some contractors insert baffles and blocks and then blow the entire space full of cellulose.) If those steps don't solve the problem, says Fisette, you're left with "solutions" that may eliminate the ice dams but leave the underlying heat-loss problem.

These include:

- Installing sheet-metal ice belts along the bottom of the roof. This can prevent ice dams if you've done a good job of insulating the eaves space and attic.
- Building a double roof, with vertically running sleepers supporting a second deck atop the first. The space between the roof decks then serves as the ventilation space — an expensive solution, but one that works well and lets you completely fill the eaves space with insulation.
- Installing a metal roof. This will solve the ice dam problem but not the heat-loss problem.
- Installing self-sticking rubberized sheets beneath the roof shingles. This will not prevent ice dams, but may prevent damaging infiltration of water from them.

Ice can destroy gutters and trim and send harmful moisture into eaves and wall cavities. Though it's tricky to do in older homes, the solution is to install an air barrier between the attic and living space, insulate well above the top plates, and provide soffit-to-ridge ventilation.

NEW ENGLAND UPDATE • NEW ENGLAND UPDATE • NEW ENGLAND UPDATE

NE *FEBRUARY*

More Ice Dam Information

The next two informational pages "Problem Venting" and "Metal Roofs" as well as the article "Defeating Ice Dam" were written by Henri De Marne and appeared in the May 1988 issue of JLC. Although these first appeared some time ago, the information about problems with and tips about preventing ice dams is still valuable.

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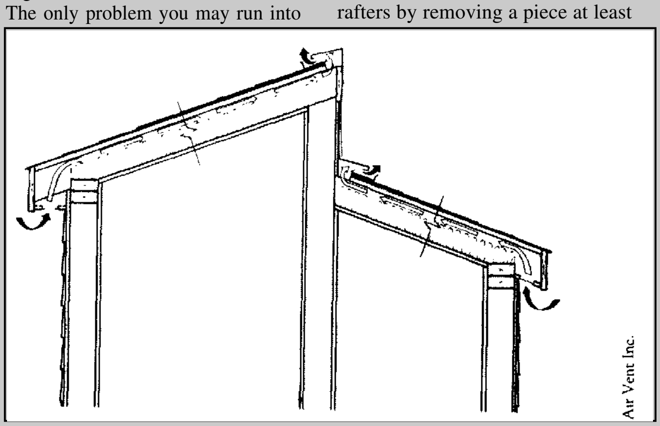
Problem Venting

How to Handle Hips, Valleys, Sheds & Skylights

When you're working with a straight gable roof, it's not hard to provide effective ventilation. But add an ell, or a few dormers, hips, or other curve balls, and the job can get a lot more complicated, if not impossible. In most cases, "effective ventilation" can only be achieved by using a combination of continuous soffit and ridge vents. This is the approach applied to all the situations discussed below unless otherwise specified.

Roofs with valleys (where an ell ties in) and conventional flat ceilings are not that difficult to handle. The only problem you may run into is the difference in length between the soffit and ridge. More ridge than soffit venting can lead to weather infiltration through the ridge vent, because the ridge will function as both an air intake and exhaust under some wind conditions. In order to maintain the desirable ratio between soffit and ridge-half at the soffits (combined) and half at the ridge-you may have to double up the soffit-vent strips in the shorter soffit areas.

In the case of ells with cathedral ceilings, the only solution seems to be to notch the tops of the jack rafters by removing a piece at least 1½, inches deep and as long as possible near the valley rafter, letting the plywood sheathing bridge the gap. Cut the vertical leg of the notch parallel to the valley rafter to help increase air flow. Since rafters are generally oversized in cold regions to allow for added insulation, this should not present a structural problem.



Major vent manufacturers make special vents for shed roofs and clerestories.

Valleys at small dormers can be treated as discussed above.

Hip roofs present a different set of problems. Here, soffit venting is far greater than ridge venting-a more desirable situation than the reverse. (In fact, a little extra soffit venting is probably optimal.) If there are flat ceilings below the attic, just provide soffit venting on all four sides and full-length ridge venting.

In the case of cathedral ceilings in a hip area it gets more complicated. Notching of the jack-rafter tops where they tie into the hip rafters will allow some air movement. (As with valleys, cut the vertical leg of the notch parallel with the hip rafter.) If there's not a small attic space at the top to ventilate into, you'll need to also notch where the hip rafters meet the ridge to allow the air to reach the ridge vent.

An alternative is to install a baffled ridge vent over the upper portion of the hip (although I've never actually done this). If you go this route, make sure you use a baffled vent with the extra weather protection of a fiberglass filter, such as the one made by Air Vent. Be sure you leave a slot open in the sheathing on each side of the hip rafter.

On a complete four-way hip (with no gable ridge), you'll need to vent at the top with a cupola, or with a raised roof cap-made by raising the uppermost portion of each face of the roof and installing Utility Vents on all four sides (similar to the steep-roof ridge vent described in the accompanying article and shown in Figure 5).

Skylights, ever popular, interrupt the ventilation of rafter bays below and above them. The only strategy here is to notch the rafter tops near the headers to allow air to move to the adjacent rafter spaces. In this case, be as generous as you can in cutting the length of the notches (plywood can easily bridge 16 inches) and cut their vertical legs on a slant following the direction of the air movement: outward at the base of the skylight and inward at its top.

Shed roofs are easy to handle. Use a standard soffit vent strip at the eave. At the ridge, use a half ridge vent with the back flashing turned down at the ridge. These are available from leading vent manufacturers.

Where a shed roof ties into the wall of a second story, such as at a clerestory, use a half ridge vent with the back flashing turned up so it can be tucked under the siding. These are also available from vent manufacturers (see illustration).

If you are faced with the job of providing ventilation at the soffit of a house with no overhangs, some manufacturers offer drip-edge strips and entire fascias with venting at the bottom.

The main problem you face in these situations is finding the product. The hard part usually is familiarizing your local lumber supplier with what's available and getting him to order it. The best defense is to know exactly what you need and want and to order it well in advance of its scheduled installation.

One of the leading manufacturers and a pioneer of ventilation products is Air Vent, Inc., 4801 N. Prospect Road, Peoria Hts., IL 61614; 800/247-8368 (outside Illinois); 309/688-5020. Ask for their product catalog; you'll find a vent for every conceivable situation you are likely to encounter.

Browning Metal Products Co. also has a number of the vents mentioned above although it doesn't have as wide a selection as Air Vent, Inc. Their address is: P.O. Box 2405, Norcross, GA 30091; 800/841-8970 (outside Georgia) and 800/241-3135 (within Georgia).

—HdM

Metal Roofs:

Not the Answer to All Your Problems

If you like metal roofing, use standing-seam — not corrugated or V-crimp — which are prone to condensantion underneath. But metal roofing, along, will not cure ice dams.

Metal roofs applied over old wood or asphalt shingles, or when installed over poorly insulated old houses, do not produce problems. However, when installed on well-insulated houses, it is not unusual to find the roof "leaking" after a clear, cold winter night, around 10:30 to 11:00 a.m. the next morning when the sun is shining on the roof.

The "leak" is really melting frost. The frost forms under the metal roof as the sun goes down, and melts as the sun warms the metal the next day.

Moisture comes in contact with the underside of the metal roofing in several ways. It can convect from the living spaces below through openings around ceiling fixtures, bathroom fans, chimneys, plumbing-vent pipes, electric outlets, and attic accesses. These high openings create "false chimneys," drawing in cold air from lower cracks and crevices and leaking out the top.

This stack effect is tncreased when the temperature of the metal is warmed by the sun's rays. As soon as the sun hides behind a cloud or sets for the night, the metal cools fast and condensation occurs, followed quickly, by frosting.

Another contributor to condensation and frosting under a metal roof is outside air circulating through its corrugations, "V's, or the vented space left under the roof. Again, this process is aggravated by the sun's heat as the warmed metal draws in more exterior air which is warmed as it moves upward and absorbs additional moisture that may have worked its way from inside the house.

At the end of the day, particularly on clear, cold days, the metal cools fast. Night radiation can bring the metal's temperature 10 to 15°F lower than the ambient air, aggravating the situation. The entire underside of the metal roof--ing can be coated with a layer of frost.

As the sun warms it the next day—or when the ambient air temperature rises above freezing—the frost melts. Unless it is checked by a water-shedding membrane, it rains on the insulation and leaks into the house.

What can be done about this? If the metal roof is standing-seam, it is usually installed over solid sheathing covered with felt underlayment. Since there is no place for air to flow there should be no problem.

But most nailed-on (or screwed-on, as they should be) metal sheets are applied over strapped sheathing nailed across the tops of the rafters between which lies fiberglass insulation. You guessed it: You've got a problem!

If there is a plastic vapor retarder below the ceiling insulation, it may hold the water for a long time without anyone noticing the problem — unless a light fixture or bath fan starts dripping, or water finds its way between joints of the plastic and shows up through the drywall beneath it.

On sloping ceilings, the condensate will run to the wall plate and will show up where wall and ceiling meet unless the ceiling plastic was applied first and is overlapped by the wall plastic. In that case water will run down inside the insulated wall cavities, perhaps undetected for a long time.

In certain cathedral ceiling construction (often found in log homes) tongue-and-groove ceiling boards form both the finish ceiling and the roof deck. Rigid insulation goes over the boards with no air-vapor retarder installed other than the aluminum skins cm the insulation. Then strapping is nailed from rake to rake and the metal sheets are fastened onto them.

Again, the condensate will find the joints of the rigid insulation sheets and run through the joints in the tongue-and-groove ceiling boards. Taping the joints of the insulation sheets from above is one solution, but it does not solve the problem of condensate napped by the strapping and even following the nails through the insulation into the deck below. In one case I investigated, the nails holding the strapping were so rusted that the carpenters were able to remove the strapping by hand. It would not have been too long before the roof blew off in a strong wind or just slid down to the ground.

There are simple solutions, but they raise the cost of this roofing installation which is often selected because of its budget price in the first place.

Based on extensive experience with these problems, I believe a corrugated metal roof needs a water shedding membrane and a way to discharge the condensate harmlessly to the outside. All roofs I design or specify have these elements.

If a standard rafter systems is used with fiberglass insulation, there should be an air space of at least 1½ inches between the insulation and the sheathing. The sheathing is covered with metal edging and 30-pound felt-as if it were to be shingled. The air spaces under the sheathing should have soffit-vent strips at the bottom and a slot in the sheathing at the top covered with fly screening (see illustration).

Now, 2x3s on edge are nailed through the sheathing into the rafters. The tails extend an inch or two beyond the metal drip edge at the eaves and a new fascia is applied to them.

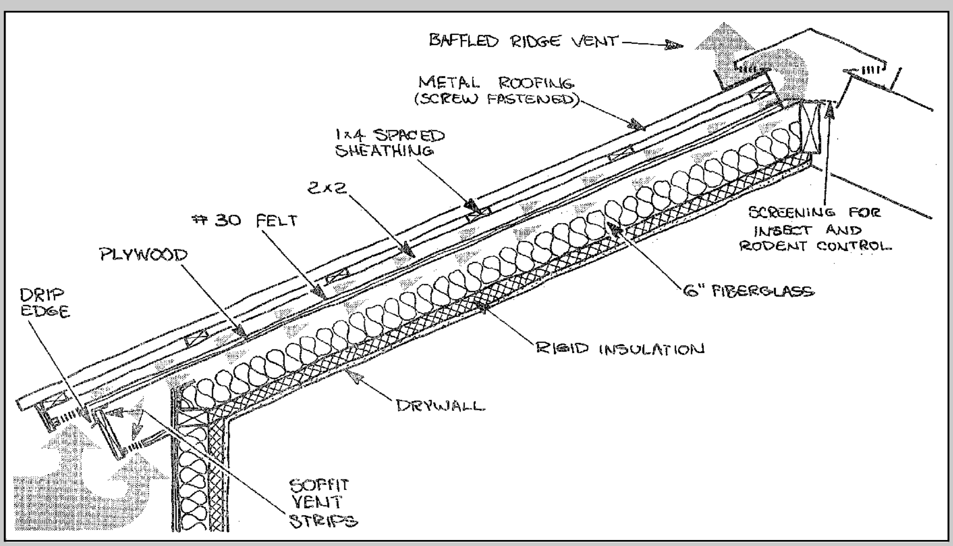
Next, nail spaced sheathing across the 2x3s and screw the metal sheets to it (with Woodtight screws) leaving a vent space at the top. Use filler strips to seal the corrugations, or in the case of V-crimp panels, make your own with pieces of pressure-treated wood and fasten a baffled ridge vent at the top.

Where rigid insulation is applied over the wood deck of a cathedral ceiling, you will undoubtedly have it contained within a wood perimeter curb. You will need to build a grid of the same depth to serve as underpinnings to the sheathing. Now cover the insulation and the grid with ¼-inch thick Aspenite. Tack it only enough to hold it in place temporarily and staple 30-pound felt over it. Then proceed as explained above.

You can think up your own variations as long as you keep the essential principles in mind: provide a vented space, a water-shedding membrane, and drainage for condensate under all metal roofs (except as noted above for standing seam roofs applied over solid felt-covered decks).

This will give you a trouble-free metal roof, but not a cheap one. If you want metal, look into standing seam, which doesn't have the condensation problems of the corrugated type. Or if you want economy, stick with a simple asphalt or fiberglass-shingled roof.

—*HdM*



In a cold climate, corrugated metal roofing requires double strapping to safely drain away condensate. To avoid cost and complexity of this "double roof," you could use standing-seam metal or plain old asphalt or fiberglass shingles.

DEFEATING ICE DAMS

BY HENRI DE MARNE

PROPERLY BALANCED SOFFIT AND RIDGE VENTILATION IS THE ONLY FOOLPROOF APPROACH

Ice dams are not peculiar to northern regions: They can and do occur in any area of the U.S. with a total mean snowfall of six or more inches annually-nearly three fourths of the continental United States, according to U.S. Weather Bureau data.

Most of us are familiar with how ice dams form, and the damage they can cause. But few of us seem to know how to prevent them or, at least, limit their damage.

Ice-Dam Basics

For those unschooled in the mechanics of ice dams, a quick review may be helpful. On the roof of an *unheated* building snow will melt gradually from the perimeter first, while slowly sinking over the entire blanket. On a *heated* building, the snow will melt in the same pattern if the roof is properly designed and built. On a roof with ice-dam problems, however, the snow will soon take the shape of a wedge. It is paper-thin at the top where it melts fastest from warmed attic air that has risen to the peak, and thickest at the eaves, where it ends in a ridge of ice. In old houses with little or no attic insulation the roof area above the attic will soon be bare, but snow and ice will cling to the overhangs.

Most roofs, unfortunately, have too little insulation for the climate or insulation that is installed sloppily. In addition, few roofs have adequate ventilation, and many have none at all.

Heat from the. living quarters works its way through the ceiling insulation or convects into the attic (or rafter spaces in a cathedral ceiling) through unsealed openings around chimneys, bathroom fans, recessed light fixtures, plumbing vents, electric wires, or attic hatches. This warms the attic air and the roof sheathing to temperatures above the freezing point. The snow blanket begins to melt and the melt water runs down the roof where it freezes as it reaches the end of the insulating snow blanket or a cold eave. Ice begins to build up and can get as thick as a foot or more. Once this happens, run-off from the melting snow begins to pond behind the ice curb and finds its way under the roof shingles and into the building.

In houses with overhangs and steep roofs, water penetration may end there. In shallower roofs or during winters of heavy snowfall, however, water may penetrate the attic and walls and even the inside finishes, particularly at door and window heads where the leakage is often first noticed.

If the water penetrates only at the overhangs, there may never be serious consequences such as wood decay since the wood will dry as warm weather returns. This is especially true where there is adequate soffit venting at each rafter bay, either deliberate or by unintentional cracks between the various cornice components. But where water has penetrated within attic and walls, a fact not always evident to the eye, damage can result over a single winter.

I recently investigated a new well-insulated house with a ventilated roof that the owner expected would give her problem-free service. Instead she got heavy ice damming and a huge crop of long icicles. She was not aware that water had backed up inside the walls. The giveaway was red wood-extractives bleeding from between the cedar clapboards below areas where ice had severely built up, such as valleys. Also, an icicle about 1½ inches in diameter had formed a stalactite-like pillar down the foundation wall, from the bottom of the wall sheathing all the way to the bottom of a basement window well. This ice column came from behind the sheathing indicating that a lot of water leaked into the insulated cavity.

How wet the insulation got and whether it sagged can't be known without opening the walls or inspecting them with infrared equipment. Perhaps the wall will dry in time without inflicting serious damage-perhaps only the paint or wallpaper will peel. But consider that there is a plastic vapor barrier behind the drywall and plywood sheathing outside. How will the moisture escape?

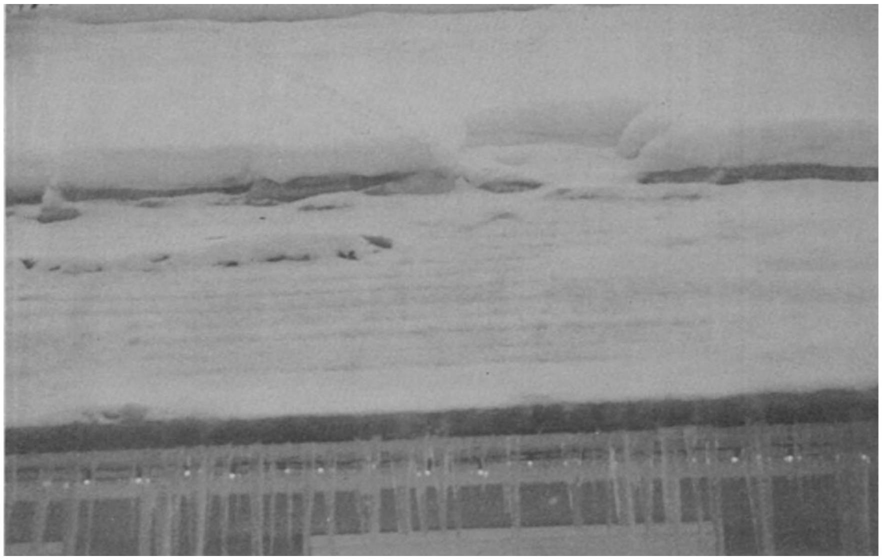
Regardless of the age and construction of a house, however, ice dams and the water damage they cause should not be allowed to continue. What are the solutions?

Attempted Cures

Many years ago I saw an architect-designed house that had no overhangs at all. The architect-owner told me that this was his way to overcome ice dams: Since there were no cold cornices, the water wouldn't freeze. It was a novel idea at the time and I anxiously waited for winter to find out whether he had hit on something.

Alas, the results were not as expected. Snow melt-water froze as it came out from under the snow blanket

Electric cables do not prevent ice dams — they merely change their shape into a distinctive zigzag pattern.



Keeping the lower portion of the roof clean with a shovel or snow rake only shifts the ice dam farther up the roof to the bottom of the snow blanket.

In heavy snow country, the fewer valleys in the design, the better.

and ice sheets covered walls and windows like a frozen waterfall.

Shoveling all the snow off the roof or building the roof so that it will shed its snow cover after each snowfall are two very effective ways to prevent ice dams. However, the former is not too practical, hard on the roof covering, and dangerous to life and limb.

Removing the snow partially from the bottom of the roof by means of a snow rake, while standing on the ground or on a ladder, only results in a secondary ice dam forming higher up the roof at the bottom of the snow blanket. All that has been accomplished is to shift the water leakage higher where it can create more havoc with the ceiling insulation and finish.

Every fall, hardware stores heavily advertise electric roof cables as a sure means of solving the ice-dam problem. Instructions recommend their installation in a zigzag pattern at the eaves of the roof and in valleys, gutters, and downspouts. Secondary ice dams form just out of reach of the tape and the situation is further aggravated by the fact that we now have "V"s of ice catching the water.

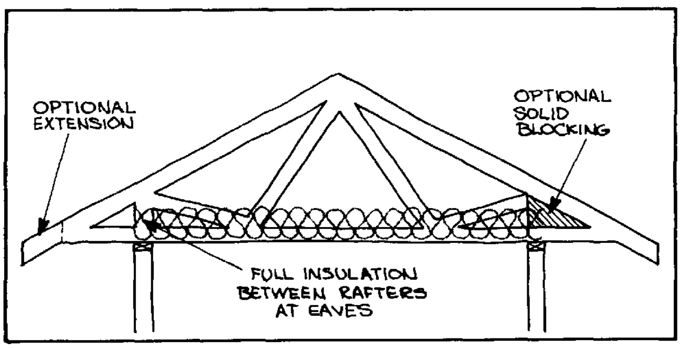


Figure 1. If you use trusses, order them with an elevated seat to accommodate a full thickness of insulation at the eaves. Note the vertical support at the bearing point.

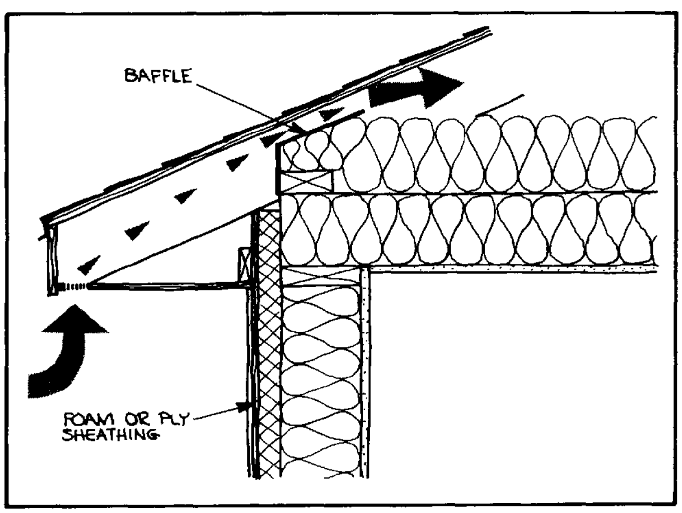


Figure 2. To get extra room for insulation with conventional rafters, you can set a second top plate above the ceiling joists. You may want to tie rafter to joist with metal connectors.

Metal ice belts are very commonly used in heavy snow areas and many contractors swear by them. They are certainly more effective at eliminating leakage than the previously mentioned methods, but are no panacea. Secondary ice dams form at the upper edge of the metal band after it has shed the ice that formed on it. And do you really want a roof with a 3-foot or wider metal edge if you can avoid it? Why do so many contractors still install these unsightly devices when far better means are available?

W.R. Grace, the pioneer of the now widely used bitumen membrane, came out several years ago with its Bituthene Ice and Water Shield. There are now several competitors on the market. The material comes in a 3-foot-wide roll and is self-adhering to clean roof sheathing. It is applied at the eaves, in valleys, and around skylights-wherever the possibility of water ponding behind ice dams exists. In houses with wide overhangs and shallow roofs, it may be advisable to use more than one strip at the eaves in order to obtain at least two feet of coverage above the line of the wall plate.

The roof covering is simply nailed right through the membrane, which seals around the nails much like a puncture-proof tire does.

But as effective as this underlaid membrane is, you should only use it where you can't design in the best solution: insulation and ventilation. Indeed, ice on any roof covering is undesirable: It's weight and destructive action can tear granules right off the base felts of shingles, dislodge slates, or break the bond of felt plies and metal gravel stops in built-up roofs.

Design Solutions

Ice dams, with what we know today, are inexcusable in new houses. First, the designer should avoid roof details that make good ventilation difficult or impossible. They should set aside their artistic egos and design a roof that's practical for the climate.

Valleys are one of the worst offenders. If dormers are necessary, use shed dormers instead of "A" roofs, which converge the snow into the valleys. Avoid secondary gables as decorations over front doors or half circle windows. You can design attractive houses with the plain gable roofs found on most of the old farm houses and Capes of New England. Get rid of valleys and you are well on the way to resolving the problem, if you follow it up with the right combination of insulation and ventilation.

The goals are:

- to reduce heat loss to the attic by using ample insulation installed well
- to carefully seal all ceiling air leaks mentioned earlier by means of foaming urethane, packed mineral wool, caulking, weatherstripping, or sheet metal, as appropriate
- to very carefully install an effective air-vapor retarder on the winter-warm side of the ceiling and walls
- to provide ample and effective ventilation to quickly remove from the attic whatever heat gets through the insulation before it has a chance to warm the sheathing

Particularly vulnerable areas are the wall platelines. Standard construction generally leaves very little space for insulation over the top plate. And often, insulation over the plate blocks any air passage from soffits to attic space. In new construction, however, it's easy to allow space for both the full thickness of insulation and adequate ventilation at the plates.

Raised Heels

If you're using trusses, order them with an elevated seat (Figure 1). Otherwise set a secondary 2x4 plate on top of the ceiling joists at the eaves and set the rafters on top of it instead of next to the joists (Figure 2). Use metal fasteners to tie rafter ends to the plate and joists if you need stronger anchoring here.

In order to ensure that the air channels at the eaves remain unblocked as the insulation fluffs up, I strongly recommend using insulation baffles. I personally do not like molded-polystyrene baffles because they do not cover the vulnerable lower ends of the insulation batt, offer a rather shallow air slot, and do not ventilate the entire width of the rafter bay. Condensation can occur in the remaining unventilated area.

I prefer cardboard baffles, which can easily be altered to fit any insulation thickness (Figure 3). One manufacturer of a HUD-approved baffle is Edwil Manufacturing (103 Timber Ridge Drive, Ashland, VA 23005; 800/446-1687). The cardboard baffles have the advantage of providing a pocket that seals the lower end of the insulation, preventing soffit air from washing through and reducing its R-factor. Another strategy with elevated rafter seats is to carry the foam or plywood sheathing all the way to the rafters thus sealing the ends of the insulation (shown in Figure 2). For retrofits, I use a site-built plywood baffle with extended arms for slipping it into place (Figure 4).

The depth of the air space generally recommended is 1½ inches. I would suggest providing more wherever possible, as cold winter air is very heavy and sluggish.

The insulation thickness at the eaves should be at least R-38 for northern regions. (Incidentally, effective levels of insulation and ventilation for cold climates in winter apply as well to the hotter southern regions in summer.)

Can't Have Too Much

Much has been said and written about attic ventilation. Our Canadian friends even recommend, under certain circumstances, no ventilation at all. But you won't find me on their side in this argument; I've seen far too many problems with unventilated roofs.

HUD's minimum property standards offer guidance on how much ventilation to have. But again, I have seen problem-free roofs with far less than the recommended ventilation levels, while others that appeared to meet the standards had horrendous ice problems. prefer, therefore, to be guided by the commonsense rule that says that there is no such thing as too much ventilation in an attic.

We still find many technical writers advocating the use of gable vents. This is puzzling to me. Anyone who has studied the subject should know that no ventilation system, except for continuous soffit and ridge vents, does a complete job of venting an attic.

Gable louvers only function when the wind is blowing against them, and then they ventilate only partially. Combined with soffit vents, their performance is not much better.

Other types of vents, such as cupolas, roof vents and fans, turbines, or soffit vents alone, do not do a thorough job. There are always large areas of the sheathing that do not get ventilated.

On the other hand, a balanced combination of soffit and ridge vents encourages a continuous air wash of every square inch of sheathing where condensation is most likely to occur.

All Vents Not Equal

But not all ridge vents are created equal. The only type that should be used is a *baffled* ridge vent. The baffle deflects wind blowing up on the roof. This both increases the airflow from the attic (due to the venturi effect), and prevents the penetration of water and snow. Conversely, ridge vents without baffles can admit water and snow in large quantities, wetting insulation and ruining ceilings. Some are banned by a number of local officials for this reason.

In the course of my practice I have witnessed attics with several inches of freshly blown snow lying on top of the insulation below an unbaffled ridge vent. A responsible contractor should not use such products.

I would also caution builders not to use cheap plastic ridge vents; I have seen roof leaks that were due to cracks in these products.

The better ridge vents are made of metal (more later on a relatively new, molded polyethylene model) and have an integral metal baffle. (Do not accept accessory plastic wind baffles.) In heavy snow regions, however, even the best aluminum ridge vents can collapse from the weight of a deep, wet dump. To prevent this, order enough joint blocks so that you can insert one every 24 inches maximum into the ridge-vent sections before installation.

Most metal ridge vents available commercially are manufactured for shallow to medium-pitch roofs. When used on steeper roofs, they must be bent to fit the pitch. This closes their throats and reduces the air flow, while also exposing the louvered sections to wind-driven snow and rain (since the louvers are now above the baffle). Ridge vents should not be used when they need to be deformed to fit.

Some manufacturers make a version of their standard ridge vent for steeper roofs, or recommend installing a wedge under the base of the vent to reduce the pitch of the roof. I am not excited about either suggestion. I prefer a site-built vent that makes use of a product called the Utility Vent (Air Vent, Inc., 4801 N. Prospect Rd., Peoria Heights, IL 61614; 800/247-8368). The utility vent is nothing more than a half ridge vent (see Figure 5 for installation procedure).

Air Vent, Inc. recently came out with a molded, flexible polyethylene ridge vent, called Shinglevent, which seems to answer all ridge venting problems; it bends to any roof pitch, is covered by the roof covering, is strong enough to withstand a heavy, wet snow load, and is baffled. In addition, it has a fiberglass filter to prevent snow penetration when the ridge vent is installed without balanced soffit ventilation. This filter, if installed carefully, is also useful in preventing insect penetration into the attic. One concern is that the ventilation slots are so big that the ubiquitous paper wasps could enter and build their nests, blocking the ventilation system. I would prefer smaller screening but am told the extrusion process does not permit it.

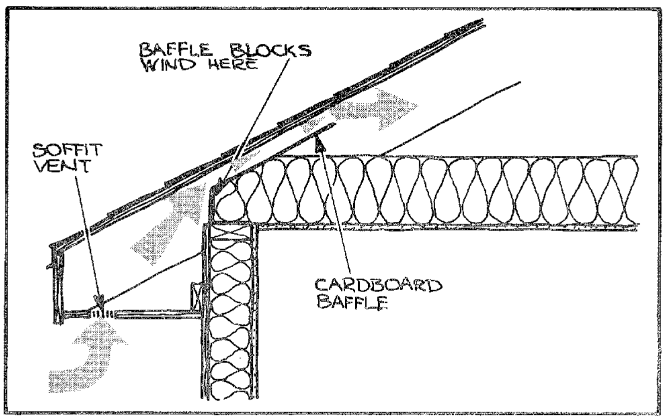


Figure 3. Cardboard baffles have stapling flanges for easy installation. They also have the advantage of folding over the end of the insulation to block out wind penetration.

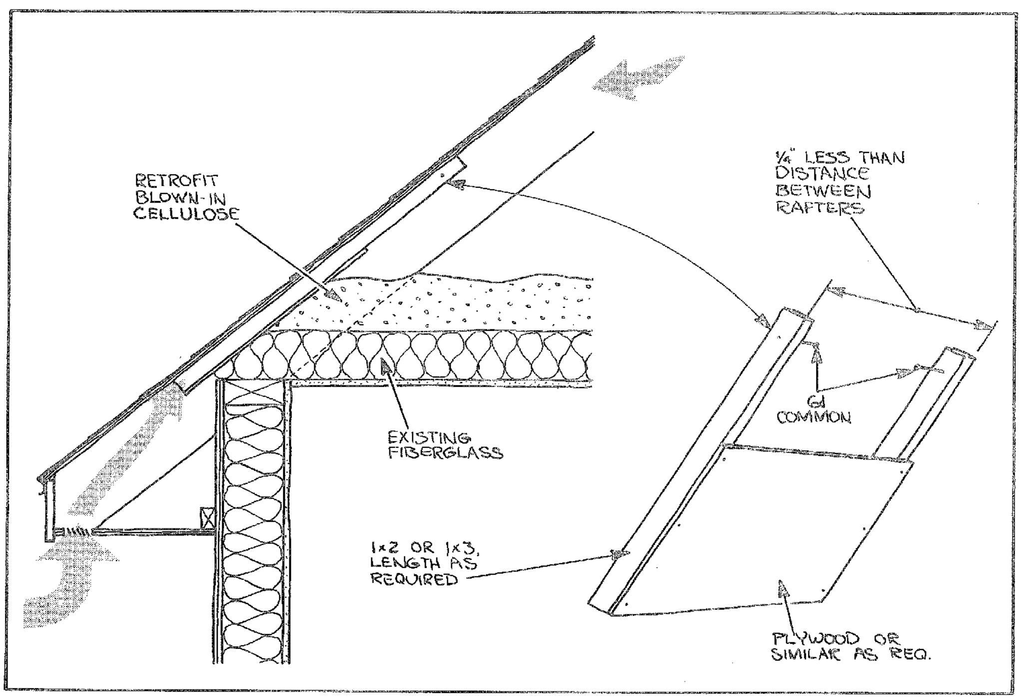


Figure 4. For retrofits, you can fashion baffles from strapping and thin plywood. The strapping extensions form handles to slip the baffle in place, and a convenient place to nail.

With cathedral ceilings, you must take great care to seal all possible paths of convection of moist, heated air from the living spaces into the rafter spaces. Recessed lights are out.

Cathedral Ceiling Retrofit

Readers may be interested in a case history. The roof panels of a pre-cut house in northern Vermont were panelized and built of 2x4s, 16 inches on-center, with a plastic vapor retarder towards the inside, R-11 fiberglass batts, and plywood glued and nailed to both faces. This formed a cathedral roof that was covered with cedar shakes with felt strips interlaid. The ice-dam problem was very serious and eventually the eaves rotted.

The roof was retrofitted by the addition of one-inch extruded polystyrene over the old sheathing. Two-by-three sleepers were fastened on edge over the rigid insulation from eave to ridge but extending three inches past the old fascia. New sheathing was nailed over the sleepers and covered with new fiberglass shingles. Continuous soffit venting was installed under the projection of the sleepers as was a new fascia. Ridge venting was also Installed. In the last four winters not a sign of ice damming was seen. This same system can be used to retrofit uninsulated cathedral ceilings with exposed wood decking (Figure 6).

Cathedral ceilings provide the builder with additional challenges. With such ceilings, it is even more important to pay close attention to design and workmanship. You must take great care to seal all possible paths of convection of moist, heated air from the living spaces into the rafter spaces and to provide the best possible air-vapor retarder. Recessed lights are out.

The amount of insulation is limited by the depth of the rafters and the ventilation space. The preferred system, in my opinion, is to allow a 2-inch minimum air space under the sheathing, fill the rest of the rafter spaces with fiberglass insulation, and fasten rigid insulation below the rafters.

Now, what will assure that the

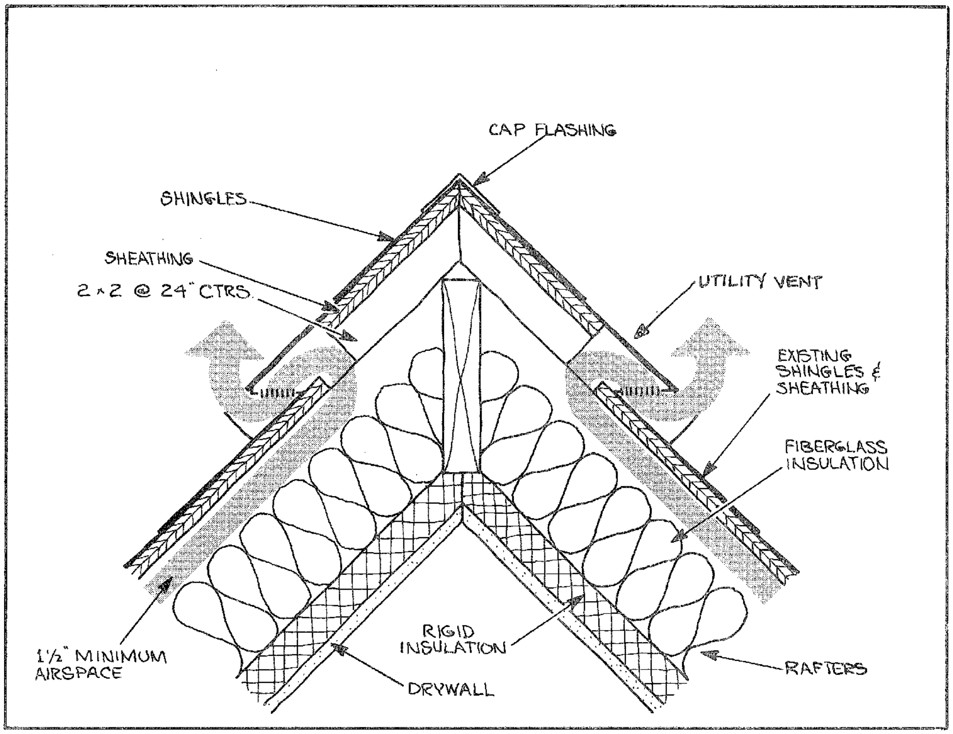


Figure 5. A standard baffle won't work well on steep pitches. A simple site-built vent with two half vents (such as Air Vent's Utility Vent) does the trick.

2-inch airspace will not be restricted by the fiberglaas insulation, which might fluff up? Instead of the molded polystyrene vents discussed above, I would suggest tightly stapling nylon cord zigzag to the sides of the rafters no less than two inches below the sheathing. Preferably use two staples at each point and drive them in with a follow-up blow, if necessary.

Another method is to nail 1x3s to the sides of the rafters just below the sheathing and to staple the nylon cord to their edges (Figure 7). This is a stronger, fail-safe system, though more costly.

In conclusion, it is not hard to build an ice-free roof in new construction and it is inexcusable not to do so. It is, however, often much harder to accomplish this in existing houses. Wherever the levels of insulation and ventilation can be improved enough to reach this goal, that is what should be done. Rut where this is not possible, the next best alternative is to install a product such as W.R. Grace's Ice & Water Shield at the eaves and at all other leak prone points of the roof.

No other procedure, except a metal roof steep enough to shed snow, is truly safe or foolproof. But keep in mind, before replacing the existing roof with metal, that it too has its potential problems (see "Metal Roofs"). ■

Henry de Marne, a remodeling contractor for many years, is now a building consultant in Waitsfeld, Vt.

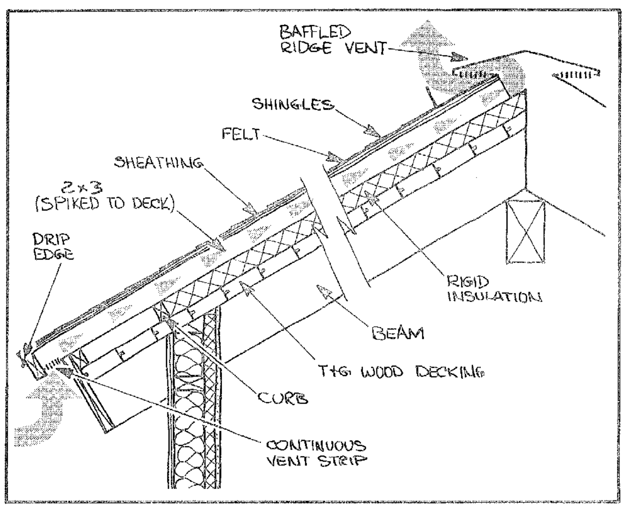


Figure 6. To retrofit insulation into a cathedral ceiling with exposed wood decking (common on log homes and vacation homes) insulation and ventilation must go on top.

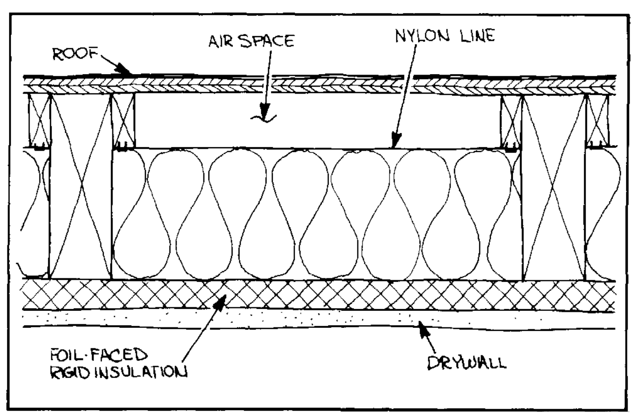


Figure 7. One way to keep insulation from fluffing up and blocking the 2-inch airspace is to string nylon mason's line in a zigzag pattern up the rafter bay

Philips CFL Recall

Philips Lighting North America Agrees to Pay $2 Million Civil Penalty for Failure to Report Defective Lamps and Implement Compliance Program

Philips Lighting recalled 1.86 million lamps in 2011.
November 24, 2015
Release Number: 16-048

Recalled Philips Marathon fluorescent lamps

WASHINGTON, D.C. – The U.S. Consumer Product Safety Commission (CPSC) announced today that Philips Lighting North America Corp., of Somerset, N.J., has agreed to pay a $2 million civil penalty to the government. The penalty settles charges that the company knowingly failed to report to CPSC, as required by federal law, information about a defect and an unreasonable risk of serious injury with EnergySaver (a/k/a/ “Marathon” or “Marathon Classic”) compact fluorescent lamps.

After numerous complaints about glass separating from the body of the lamps and striking people and objects, and attempting multiple design changes to fix the problem, Philips failed to report the matter to CPSC. The incidents resulted in 10 reports of lacerations and seven reports of property damage.

In addition to paying the $2 million civil penalty, Philips has agreed to implement and maintain a compliance program to ensure compliance with the Consumer Product Safety Act (CPSA) and a related system of internal controls and procedures.

The compliance program requires written standards and policies and written procedures to ensure that all information regarding the firm's compliance with the CPSA, including reports and complaints, whether an injury is referenced or not, is conveyed to the firm's responsible employees.

The compliance program also must address:

- confidential employee reporting of compliance concerns to a senior manager;
- effective communication of compliance policies and procedures, including training;
- senior management responsibility for, and board oversight of, compliance; and
- requirements for record retention.

The lamps were recalled in August 2011, after Philips had manufactured about 1.86 million units. Grocery and home center stores, online retailers, and professional electrical distributors sold the lamps from March 2007 through July 2011 for between $11 and $24 each.

Philips does not admit to CPSC staff's charges.

The penalty agreement has been accepted provisionally by the Commission by a 4 to 1 vote.

The U.S. Consumer Product Safety Commission is charged with protecting the public from unreasonable risks of injury or death associated with the use of thousands of types of consumer products under the agency's jurisdiction. Deaths, injuries, and property damage from consumer product incidents cost the nation more than $1 trillion annually. CPSC is committed to protecting consumers and families from products that pose a fire, electrical, chemical or mechanical hazard. CPSC's work to help ensure the safety of consumer products - such as toys, cribs, power tools, cigarette lighters and household chemicals -– contributed to a decline in the rate of deaths and injuries associated with consumer products over the past 40 years.

Federal law bars any person from selling products subject to a publicly-announced voluntary recall by a manufacturer or a mandatory recall ordered by the Commission.

To report a dangerous product or a product-related injury go online to www.SaferProducts.gov or call CPSC's Hotline at 800-638-2772 or teletypewriter at 301-595-7054 for the hearing impaired. Consumers can obtain news release and recall information at www.cpsc.gov, on Twitter @USCPSC or by subscribing to CPSC's free e-mail newsletters.

Carrier AC Recall

Carrier Recalls to Repair Packaged Terminal Air Conditioners, Heat Pumps Including Previously Recalled Units Due to Fire Hazard

The power cord plug can overheat, posing a fire hazard to consumers.
Recall date: December 22, 2015
Recall number: 16-065

Carrier PTAC/ PTHP unit

Recall Summary

Name of product:
Packaged Terminal Air Conditioners (PTAC) and Heat Pumps (PTHP)

Hazard:
The power cord plug can overheat, posing a fire hazard to consumers.

Repair

Consumer Contact:
Carrier at 800-761-8492 from 8 a.m. to 6 p.m. ET Monday through Friday, or online at www.carrier.com and click on Important Product Safety Recall for more information.

Report an Incident Involving this Product

Recall Details

Units
About 285,000 (About 185,000 were previously recalled in November 2007)

Description
This recall involves Packaged Terminal Air Conditioners (PTAC) and Packaged Terminal Heat Pumps (PTHP) sold under the Bryant, Carrier and Fast brand names. Recalled units include those with original power cords and those that received a supplemental power cord as part of the 2007 recall. The recalled units have capacities of 7,000; 9,000; 12,000 and 15,000 BTUs and plug into 208/230 volt, 20 amp outlets.

The following brands and eight models are being recalled:

- Carrier models 52CE, 52CQ, 52PE and 52PQ;
- Bryant models 840 and 841; and
- Fast models 840 and 841

Model and serial numbers are located on the ratings/data plate on the right front of the unit, underneath the removable front panel. A complete list of the serial numbers involved in this recall is available by calling Carrier or at www.carrier.com.

Incidents/Injuries
Carrier has received reports of approximately 47 incidents of overheating. Two of the reported incidents involved hotel fires. One of the reported fires involved a consumer suffering burns and smoke inhalation. The other incidents involved scorched or melted cord heads or wall outlets with no injuries reported.

Remedy
Consumers should stop using and unplug the recalled units, and contact Carrier to receive a free replacement cord.

Sold at
HVAC dealers and factory-direct sales from January 2002 through December 2009 for between $425 and $675.

Manufacturer(s)
Carrier Corporation, of Farmington, Conn.

Manufactured in
Mexico

Contact CAHI c/o

Scott Monforte
39 Baker St.
Milford, CT. 06461

Email: info@ctinspectors.com

Web: www.ctinspectors.com

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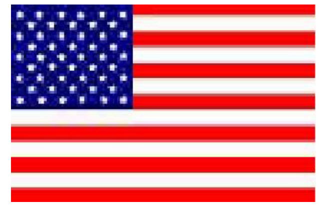

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Please thank them for their service when you have a chance.

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

The public is always welcome.

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