

CAHI MONTHLY NEWS



Presidents Corner

I don't know about you, but for me this Spring more than any other is GREATLY welcomed. It was a long winter to say the least, cabin fever multiplied by ten for me but I am ready to get into the swing of things and roll right into the summer. If things stay the way they are, its going to be a busy one, but you should always find some downtime time for yourself especially in the world we live in today. Mental health days are ESSENTIAL for essential workers.

Regarding the real estate market, it's a very strange one to say the least. I have been told by several clients that they do not really like the home they are buying but they lost so many bids that they do not want to get back into it. I would not want to be buying a house today, but I will sure inspect it.

Allow me to use the current market frenzy as a Segway to articles our editor has included in this newsletter. One discusses a trend that has been developing in NY called a "walk and talk". Until I read this article, I had never heard of it. After reading the article and putting my jaw back in a working position I thought it would be prudent to address it with the membership.

It appears that the current RE market in NY has begun to create a potential "cancellation" of the home inspection process that has become so near and dear to us. A "mutation" or "variant" of it has developed. It is a short walk through of a home as the conductor of the excursion verbally describes what he or she sees visually. There is no report, no agreement and apparently a reduced fee. And it's not always performed by a bonified home inspector. Many Realtors have favored the practice to reach closings quicker in a strong seller's market, according to the article. Quite frankly, while the market IS crazy, I'm not hearing RE participants in my neck of the woods complaining about closing time frames. They are more likely to comment on the lack of inventory and the time it takes to find a home and get an accepted offer.

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Meeting Dates!

April 28th

CT Pest Solutions, LLC

Presenter - King James



May 26th

Ultra Clean Air, LLC

Presenter - Gary Smith



June 23rd

Modular Homes

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 also broadcast via Zoom.

Meetings are still free to members but RESERVATIONS are a MUST.

Reservations can be made at our CAHI website.

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.

Presidents Message Continued:

So finally, the dreaded report is a thing of the past. We should all rejoice....yes? Not so fast Mickey. Liability was always high in our profession. Now it would be off the charts. With no documentation, any “untalked” defect rearing its ugly head after purchase would turn into a he said she said fiasco. Participating in this practice would be professional suicide for inspectors, Realtors and closing attorneys.

We will be discussing this matter with the state licensing board and the Department of Consumer Protection. The process goes against all home inspection statutes as written. For a licensed home inspector in this state to perform a walk and talk would be grounds for disciplinary action by the state. And honestly, the Real Estate profession, if supportive of it should be admonished as well.

The board of the Connecticut Association of Home Inspectors, INC. is advising that CAHI members refrain from participating in this practice or any similar variation of it. It will increase liability, provide substandard results for the consumer and erode the integrity that all of the past and present inspectors of the state of Connecticut and this country have work so hard to build. If you find this mutation creeping into your daily life, please let us know. Remain vigilant and persistent in convincing your potential clients that even in this frenzied market the traditional home inspection is essential before purchasing a home.

The newsletter also brings some attention to outside marketing to the home inspection profession regarding add-on services. It's almost become as bad as telemarketers and extending your vehicle warranty. Pool inspections, sewer inspections, air quality, repair pricing, infrared, drones, voodoo magic. Only this wave is asking you to foot the bill for expensive training and equipment, to jump into a market that has not been proven and act as an expert in these fields because “they” said you are, all while increasing your liability along the way while they make money. I'm not your father, but be careful. Once you run out one of these add-ons, you are perceived as an expert in that field. YOU'RE NOT! Your expertise is home inspections. If you need add-ons to increase your income, then consider raising your prices or use the money you would have paid to train and purchase equipment to better market your business and book more inspections instead. The home inspection fee is the biggest bang for your buck. That's what you do and hopefully you do it well. If you feel you must go down the add-on “rabbit hole” make sure there is an actual value to your client. Most of it is “smoke and mirrors” especially if performed by a novice. Too many times I get calls from Realtors and other home inspector's clients who have paid money for add-on services who are asking me “what do I do with this now”.

Stan

“An educated person is one who has learned that information almost always turns out to be at best incomplete and very often false, misleading, fictitious, mendacious - just dead wrong.”

— **Russell Baker**

Position Statement on “Walk and Talk” Inspections

THE PERILS OF WALK & TALKS

ATTENTION: NY State Licensed Home Inspectors

The NYSAHI Board of Directors has been investigating a matter of substantial concern and this BULLETIN is sent to inform you of information that we have collected and our understanding of the growing practice of Walk & Talk “home inspections” in New York State.

Walk & Talks, also known as “Walk-Though Consultations”, are characterized by short duration (perhaps only 30 minutes), usually no contract, no written report and substantially reduced fee as compared to a NYS Standard Home Inspection. These are performed by a consultant, sometimes a Licensed Home Inspector, who walks through a home with a Buyer client and discusses various conditions observed.

Walk & Talks have become more frequent due to market pressure with limited housing supply during COVID. Some involved in selling a home have favored the practice to reach closing quicker in a strong seller’s market. Buyers are attracted to the reduced cost of the “inspection” and because a Walk & Talk can be done at a showing before making an offer. Also, relying on a Walk & Talk, Buyers often waive a Home Inspection contingency making their purchase offer more attractive in a competitive environment. Sellers may specifically encourage this in their offers for sale. We were advised that in some places in New York State the practice has become common and is encouraged by real estate industry professionals.

In response to our inquiry, the NYSAHI Board was advised by the Department of State, that regulates our profession, that since there is no written report produced, Walk & Talks are not Home Inspections under the professional licensing law and are not regulated. They also advised that Licensed Home Inspectors are accordingly not prohibited in that law from engaging in Walk & Talks.

However, further exploring the practice, we have come to believe that Walk & Talks are contrary to the public interest that our State’s Home Inspection Professional Licensing Law was enacted to protect, and that all parties, especially Licensed Home Inspectors, that engage in the practice do so at great risk. Following are considerations that have led us to this conclusion:

Buyers

- o Anyone can perform a Walk & Talk. There are no professional standards. Very unqualified persons may engage in the practice.
- o Buyers have limited legal recourse against any unlicensed consultant.
- o Even if performed by a Licensed Home Inspector, a Walk & Talk is by far substandard to a State regulated Home Inspection. It is not possible to properly evaluate all of the

systems of a home in a short walk through. Undisclosed issues and unanticipated expenses are sure to arise after sale.

- o Without a written Home Inspection report a buyer has no professionally documented tool to use as a reliable basis for negotiation.
- o There is no Code of Ethics to protect a Buyer from collusion between their Walk & Talk consultant and others involved in the sale or from conflicts of interest.

Sellers

- o Accepting a purchase offer waiving a Home Inspection, especially if in any way encouraged by the Seller, can expose the Seller to a claim for damages resulting from undocumented defects and/or those not detected in a Walk & Talk. Did the Seller prevent the Buyer from exercising due diligence? Did the Seller imply that waiving the inspection contingency was a requirement of sale? A real Home Inspection protects both Buyer and Seller.

Realtors, Lawyers, Mortgage Brokers...

- o Real Estate professionals and allied professionals can be named in legal actions if they in any way recommend a Walk & Talk in lieu of a Home Inspection or for a Buyer to waive a Home Inspection. Realtors, especially, have a duty to both Buyer and Seller to recommend a Home Inspection prior to sale.

The Public

- o Walk & Talks fast-track the home buying process, shorting due diligence at a time when it is most needed for a perhaps life changing major investment.

Licensed Home Inspectors !!!

- Any service you perform without a written report is very likely not covered by your insurance. Without a report that service is not a Home Inspection and Home Inspection is your insured business. Your company and perhaps all your personal assets are on the line.
- As a licensed professional you are held to a higher standard under the law. Regardless of anything you say or agree to, a Buyer has a rightful expectation to trust you to protect them from buying a house with undisclosed defects. Will you find them all in a half-hour?
- Without a written Home Inspection report, any legal action against you may be based on hearsay. This can place you at a considerable disadvantage and in an indefensible position in court.
- Providing a Walk & Talk could be considered encouraging the Buyer to purchase a home without a Home Inspection exposing you to substantial liability.
- A Walk & Talk performed without a contract further increases liability.

- Lawsuits against Home Inspectors involved in Walk & Talks are increasing.

We have come to believe that the practice of Walk & Talk is contrary to the public interest and the spirit of the law that established our profession which recognizes that “A home inspection has a direct and vital impact on the quality of life for all home buyers”. We also believe that Licensed Home Inspectors engaging in such practice undermine the credibility of our profession by offering an unreliable and far inferior service compared to a Home Inspection conducted within the Standards of Practice. We remind you all that “In performing home inspection services, home inspectors shall adhere to the highest principles of ethical conduct. “ We do not believe it is ethical for a Home Inspector to engage in this questionable practice because Buyers may reasonably, but in ignorance, rely on a Walk & Talk conducted by a Licensed Home Inspector to be equivalent to a true Home Inspection.

Sincerely,
NYSAHI Board of Directors

- *NYSAHI serves Licensed Home Inspectors statewide by monitoring current events, legislation and regulation, by lobbying government in the interest of the profession and by keeping NYS Home Inspectors abreast of important developments. We are supported by our regional professional associations and by donations from individual Home Inspectors. Please make sure to do your part to sustain our activities. Individuals are encouraged to contribute \$75 per year to become or remain a sustaining member of NYSAHI. [click here](#)*

Sincerely,

Annie-Laurie Hunter
NYSAHI
Website
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Editors Note:

This article is for our members who also work in the Empire State but also something our Nutmeg State members should be aware of. What happens in NY, NJ, RI, and MA could spread to here.

Solar: The Future Is Bright

by Mark Buhler, Certified Residential Appraiser at CMP Appraisals

Solar panels are becoming an issue that appraisers are increasingly confronted with. The proliferation of solar in some markets has raised issues for homeowners, buyers, sellers, Realtors®, lenders and appraisers. Among the concerns for homeowners is the return on investment and the safety of solar panels. Realtors® are experiencing marketability issues in purchase transactions involving properties with solar. Lenders and appraisers need to determine when and how to analyze the contributory value of solar.

Here is a short introduction to the state of the solar market and how it relates to appraisers and Realtors®.

Homeowners and Solar

One of the most common objections from homebuyers is the idea that solar is too expensive or that the return on investment does not make sense. In 2018, the average cost of a solar installation nationwide was between \$2.57 and \$3.35 per watt, depending on the market area. The average cost of a 5kW solar panel array, before the Federal Solar Tax Credit, is currently around \$15,000. After factoring in the 26% tax credit, the average net cost is \$11,000. Some markets have state and local incentives which may further reduce the net costs.

The time required to recoup the initial investment varies depending on the amount of energy your system produces and the cost of electricity in your area. Increasing energy prices and declining cost of solar has significantly shortened the break-even term over the past 10 years. The high energy cost states such as California and Hawaii have the shortest return on investment.

Clouds, Rain, Snow, Wind and Hail

Solar panels are not dependent on sunlight, merely the sun's ultraviolet (UV) rays. A solar array will continue to generate energy when it is cloudy, but its efficiency will be reduced. UV rays and ambient light will penetrate clouds and solar panels will continue to generate electricity. This effect is similar to getting a sunburn on an overcast day.

Rain and snow do not have much effect on solar panels. Solar panels heat up when generating energy. Snow will melt due to the heat and slide off due to the tilt of the installed panels. Accumulated snow will need to be removed; a snow-covered panel has no solar access and will cease to produce energy. Rain can help with the maintenance by keeping the panels clean. The threat of wind ripping the panels off the roof is minimal. Rooftop panels are securely mounted to roofing beams and high-quality solar panels can withstand high winds and heavy hail storms.

Night Time

Solar panels only produce electricity when they are exposed to sunlight and UV rays. Solar panels do not produce energy at night. There are two ways to combat this issue: net metering and battery storage. Net metering occurs when your solar panels produce more electricity than your property uses. The excess energy is fed back to the grid and you earn credit that you can draw on when

your solar panels are not producing. Think of it as an energy bank account. When you over-produce, you put energy in your bank account. When you need to draw down on your balance because the solar is not producing enough to power your property, you withdraw from your energy account. Net metering is not available in all markets because some utilities have discontinued it.

With battery storage added to a solar panel system, the excess energy is stored on site instead of feeding it back to the grid. The stored energy can be used in your property at night. When the battery is full, the excess will go back to the grid. If the battery is depleted during the night, you will draw electricity from the grid. Battery storage is gaining in popularity, due to reduced costs and advances in technology.

Fires and Firefighters

Solar panels can create problems for firefighters. Recent fire codes require panels to be spaced so that firefighters have access to walk between the panels and can cut holes in roofs for venting heat and smoke. Solar panels are also required to have clearly labeled shut off mechanisms to “de-electrify” the system, thus reducing the danger to firefighters.

Realtors® and Solar

Realtors® are beginning to experience challenges with solar. When a property with solar is listed for sale by a real estate agent, marketability issues can arise. If the solar array is leased, the agent must not only market and sell the property, but also the solar lease. The added financial burden on the buyer can price them out of the transaction. A knowledgeable real estate agent might be able to sell the benefit of solar, but often the seller ends up paying off the lease to facilitate the purchase transaction. Realtors® who are able to demonstrate the value of an owned solar array should be able to sell a property at a premium, and likely get more listings of solar properties.

Appraisers and Solar

Under what circumstances does an appraiser consider placing value on solar panels? Most appraisers know that if solar is leased, they do not have to consider the contributory value of the solar array. There are additional scenarios where they are off the hook to consider placing value on the solar. According to the Fannie Mae Selling Guide, the solar panels may NOT be included in the appraised value of the property if the solar panels are 1) leased, 2) under a Power Purchase Agreement (PPA) or 3) have a Solar Loan with a UCC-1 Filing. Under these three scenarios, most appraisers breathe a sigh of relief because they are under no obligation to determine contributory value. However, an appraiser should analyze the lease, PPA or Solar loan to determine any possible effect on the marketability of the property. If solar is owned, an appraiser is obligated to determine the contributory value of the solar, if any.

Valuing Solar

USPAP Standards Rule 1-1a states that an appraiser must correctly employ recognized methods and techniques to determine contributory value of any feature. There are three approaches to value: market, cost and income approaches. The valuation of solar can employ all three of the approaches to value. Paired data is the most widely recognized method. The cost approach is helpful, but I can already hear the appraiser mantra in the background, “Cost doesn’t equal value,” which is true. The income approach is a foreign approach to most residential appraisers, but

income capitalization can be utilized to determine the value of an income stream. In the case of solar, the income stream is the recognized energy savings. This can be determined with pre and post utility bill comparisons.

All three of these methods are “recognized methods and techniques” that require a trained appraiser to implement. Weighing or reconciling the results of the three methods is similar to placing the most weight on a certain comparable. An appraiser may give the most weight to the income or market approach, with the cost approach lending support to the conclusion. Determining contributory value via the three approaches to value can be challenging, especially in markets where there is a lack of data.

Finding Data

In many markets, MLS data regarding solar is lacking detail or accuracy. Other MLS systems have no data at all. Appraisers rely on MLS for accurate data, but often find incorrect or unreliable information in their MLS. Tax Assessor information is virtually non-existent for solar data. Building permits, homeowner records and solar installers are potential sources of data. The data may be scarce or unavailable, but if possible, an appraiser should consider all three approaches to value to determine if value exists for the panels.

The building code in my home state of California changed in 2020 to require all new residential construction be built zero net energy (ZNE), which means the property is required to produce as much electricity as it uses. Needless to say, California appraisers are seeing an increasing number of appraisal assignments of properties with solar. Appraisers in California, and in markets where solar is prevalent, may want to take notice and prepare themselves for the challenge. There are many good books, articles, classes and webinars on this topic. If solar is prevalent in your market, and valuation of solar is an issue for you, I strongly suggest that you gain the necessary competency to tackle these assignments. Knowledge can be as powerful as the sun’s rays.



Editors Note:

Prior to including this advertisement, I sent a copy to your Board Members. All those who responded thought this was a terrible idea. Cost to play is high and liability is probably even higher. Be careful. Many organizations or people see home inspectors as a way to make more money for themselves.

LEAKTRONICS

ELECTRONIC LEAK DETECTION EQUIPMENT



PERFORMING THOROUGH POOL INSPECTIONS

While the Real Estate Market thrives, providing inspections on properties that have swimming pools means customers will demand the facts regarding the entire property from you. Delivering a detailed report on where and why a pool needs repair is something a Home Inspector can deliver better than most; when that Home Inspector has the equipment and training to deliver the facts.

Visual inspections alone don't provide the insight home buyers need before they take the keys to a property. Finding costly issues that should have been identified during the inspection leads to lawsuits, poor customer reviews and ultimately to unhappy home buyers who will come back at you for the money they spent to get those facts. LeakTronics enables Home inspectors to deliver thorough findings reports and to get paid for the work. Here's how:



LeakTronics CEO Darren Merlob is the global authority on how swimming pools are installed and managed and why they fail. With more than 30 years of swimming pool installation, inspection and repair experience, Darren has worked on and advised for some of the biggest and most elaborate pools in the world, and he has taken that knowledge and created LeakTronics Swimming Pool Inspection program.

Home Inspectors are increasing their income, widening their reach into the marketplace and becoming the goto solution for home buyers and home owners who want the facts on their pools, and who pay to get those facts delivered with expertise. Visual inspections don't verify the key issues that cause a pool to leak. Providing a proper leak detection and 300 Point Inspection guarantees results and gets Home Inspectors paid for doing the job right.

Right now, Home Inspectors can enroll in the Swimming Pool Leak Detection Online Platform with the Pro Complete Leak Detection Kit and will automatically get upgraded to the 300 Point Inspection with Leak Detection Online Training Platform, will receive a Free SM-1 Side-Mic for enhanced listening potential when identifying leaks in pools, will receive Yellow Line Upgrades on all 3 Hydrophones in the equipment set and will receive a 5-Year Extended Equipment Warranty to guarantee repair or replacement on the equipment, even if damage was caused by the user themselves. (Reg. \$7200)

The Complete Leak Detection Training and Equipment Program is \$4350 and the upgrade to the \$5550 Inspection program is free. Click to see the Inspection Training Platform [Here](#) and click the button below to take advantage of this promotion.

HERE TO TAKE ADVANTAGE OF THIS SPECIAL

Use Coupon Code: [trainingupgrade](#)



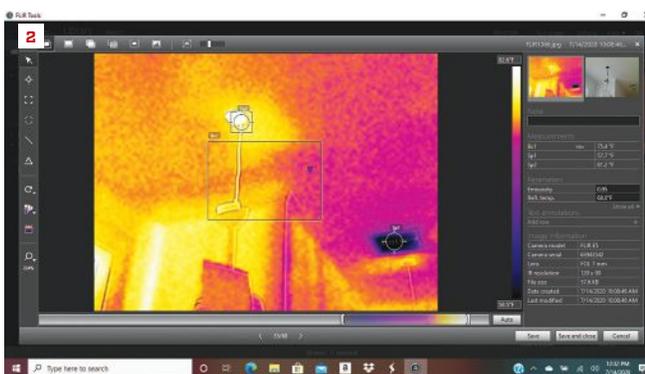
[CLICK TO SEE THE PRO COMPLETE LEAK DETECTION KIT](#)

BEAT THE FRANCHISE COMPANIES

You're the first to know, LeakTronics is offering a campaign to enable service companies to handle any and all calls from a customer when they have leaks on their properties. Pool, Plumbing, Irrigation - we have the training and complete equipment package to handle all jobs with authority. It's everything American Leak Detection claims to offer, but you'll do it right, and you'll be able to offer it right now! Don't lose business again; provide everything a customer needs and be the one call your community makes for all leak detection work.

[CLICK HERE TO LEARN MORE](#)

BY BILL ROBINSON



Photos by Bill Robinson

The author's inspection case **(1)** contains a range of tools for measuring moisture. Of these, the thermal camera is often the one he pulls out first to scan a site for possible hidden moisture. Dark areas on the image **(2)** indicate cool areas—places that may be wet and need further investigation.

Moisture Detection Tools

Several years ago, when I was contracting in California, a big part of my business was installing windows. At one point, a manufacturer representative told me that the manufacturer would void the warranty on windows in the 5- to 6-foot range if there were fasteners directly nailed through the mounting flange at the header. This warranty requirement existed because most header stock on the West Coast at that time was full-dimension, green stock. It was so heavy with water, you could be splashed when you cut into it with a saw. Understandably, window makers were concerned about what would happen to the flange fasteners as those big, wet headers dried out and shrank. The solution, the rep told me, was be sure to install fasteners into header stock that measured below 15% moisture content. If I could document that, the installation could be warranted. But at the time, I had no idea how to measure lumber moisture content.

Learning about measuring moisture content started me down a path that led to my acquiring a Pelican case full of diagnostic tools **(1)**, most of which are designed to measure moisture in one form or another within building materials and in the environment inside or outside buildings. These days, I live and work in New Orleans. I was drawn here shortly after Hurricane Katrina devastated large swaths of the city, and I saw how I could be useful in helping to rebuild the 9th Ward, which was particularly devastated by floods from Katrina and subsequent storms. For this work, and for ongoing work here in this hot, humid climate, reading moisture is a big part of defining effective building solutions.

In this article, I will “unpack” my case. Not only do the tools within allow me to derive quantifiable moisture measurements, but just as important, many of them streamline how I document the problems I encounter, which helps me communicate the solutions I come up with to clients and subcontractors. Data is everything. I have learned that to be convincing and to educate clients, it is essential to have tools that will quantify environmental conditions, including, but not limited to, wood and drywall moisture content (MC), relative humidity (RH), temperature, and observable (that is, graphic) conditions.

Troubleshooting / Moisture Detection Tools



The scale on the author's Mini-Ligno (3) is set for drywall, for which 1% moisture content (MC) is the trigger point; a higher value would indicate an elevated moisture condition. The author finds that the readings from this relatively inexpensive pin meter from Calculated Industries (4) compare favorably to the ones from his other meters. The Delmhorst ProScan (5) can read wood moisture content to a depth of $\frac{3}{4}$ inch without marring finished surfaces.

FIRST PRINCIPLES

First, I'll run through some key points to keep in mind when evaluating buildings that may be at risk from moisture.

BOG. In my reports, I use the term "microbial growth" or BOG (bio-organic growth) rather than saying outright, "You have mold in your home." This growth exists in homes all the time and becomes a problem only when a certain level is reached. But since I am not a licensed mold inspector, it is not my place to define when that level has been reached. My job is to stay in front of the problem and identify where the weak links are that might result in it becoming a problem over time.

Wood decay, or rot, typically occurs at 28% moisture content. Mold typically begins to grow on wood and other cellulose-containing building materials at 21% MC, and some mold can continue to thrive at 16% MC. This puts those green headers I mentioned earlier into perspective: 19% MC is a dangerous number because it's in a range that can support biological growth. For the work I do in New Orleans, we need to be careful not to cover things up at any time, but particularly after a flood, when the

moisture content is high. I shoot for 15% MC on the meter before even considering burying a material in an assembly.

Termites are a big problem here in the South, and they are becoming a bigger problem in many places farther north. Keeping wood below 15% MC is also the threshold we strive for to help reduce termite destruction.

Drywall is not the same as wood. Though 15% MC is a reasonably safe threshold for wood, 1% MC is the threshold for drywall and plaster. It's critical to have a device that can be calibrated to read accurately in that range.

Wood products. Some engineered wood products come from the mill at 4% MC, while others can be as high as 25% MC. The wide range underscores the need to acclimate all these products to the environment where they will be installed. Inside, in conditioned spaces, the equilibrium moisture content (EMC) of building materials can range from 6% to 8% in dry climates to around 10% to 12% in more humid climate zones. On the exterior, wood and other hygroscopic materials will equalize to a moisture content matching the outside temperature and humidity. The

range of these conditions varies widely in the U.S. (For more on understanding EMC, see "Managing Wood Movement," Feb/21).

As we build with more precision to meet energy codes, and we increasingly face storms, fires, and flooding, we need to understand environmental conditions with precision. If we can't measure those conditions, we don't have a prayer of a chance of building durable, efficient, healthy, and resilient homes.

THERMAL CAMERAS

A thermal camera reads infrared radiation, and shows surface temperatures. But it can be used to highlight moisture problems as well as thermal losses. When wet materials dry, they become cooler—like what happens to the temperature of skin when you perspire: The skin surface cools. The same thing happens with building materials, provided the air temperature is warm enough to allow evaporation. The cooler surfaces show up on a camera as darker colors. Of course, something showing up on the image at a lower temperature can simply be cooler, not necessarily wet. But if I scan an area, and it shows up with patches

that are cooler, that gives me a clue to chase down: It may indicate a wetter, not just a cooler, area, and I know a little analysis is called for.

I always begin a building investigation looking for moisture accumulation using a thermal camera, and work it in tandem with a moisture meter to check for elevated moisture content. The thermal camera simply gives me the best place to “look” further with my moisture meter.

The camera image is especially useful for identifying potential condensing surfaces, where liquid water exists. These are the most likely places for microbial growth to occur. In image (2) on page 27, the AC register, shown clearly in dark purple, had been cooled enough by the supply airflow to drop the grille surface below the dew point. This resulted in dripping water and led to biological organic growth on the surface. I will discuss the environmental conditions detected using Kestrel meters later in the article.

Flir thermal camera. Thermal cameras are becoming more available and more affordable. I use a Flir E5, which is relatively inexpensive for a thermal camera. I paid around \$1,500 for mine several years ago. There are less expensive models and even devices that will connect to a smartphone to provide some thermal imaging. I like stand-alone ones that can connect to a computer and provide more-precise images that can be output as records. The camera I use can take two images: a thermal image and a black-and-white image that highlights the dark areas most likely to be moisture. With the Flir tools, temperatures can be pinpointed on the image where there might be an anomaly of interest.

MOISTURE METERS

The one most important diagnostic tool every building contractor should own is a moisture meter. In my work, I use two general types—lower-cost pin meters, which require you to push two small metal pins into the wood surface—and more expensive, contactless meters.

Mini-Ligno S/DC. This pin-type moisture meter runs about \$100. It’s the first one I bought, and I still use it quite often, particularly for evaluating building materials

before I install them or when scoping out a house that has suffered a flood or a leak.

With the Mini-Ligno, I can select from four scales: “Relative” compares different locations; I use this to establish the baseline moisture content in a known dry area to compare with other areas that may be wetter. “Drywall” checks the moisture content of drywall and plaster; in this case, the scale is set to a trigger point around 1% MC. In addition, the meter has two scales for wood, depending on how wet the wood is. In most cases, I do not concern myself with selecting different species of wood. I am more interested in relative readings.

AccuMaster XT. There are lower-cost pin meters available that can provide accurate readings. One stand-out is the AccuMaster XT from Calculated Industries, which costs about \$45. Its readings compare favorably to my Mini-Ligno’s, and while it might not be as adjustable, it can still be adjusted to low, medium, and high percentage ranges for different types of materials and moisture levels. It would make a great starter meter for someone beginning to develop a habit of checking moisture content. If I succeed at anything with this article, I hope it’s to persuade every contractor to use a moisture meter. Cost is not the issue.

Delmhorst ProScan pinless moisture meter. This meter uses scanning technology to detect moisture below the surface of materials. The two main attractions of pinless meters are:

- Moisture detection to 3/4 inch.
- No marring of surfaces.

The ProScan can be set to several different species of wood and to a reference scale for nonwood materials. It is the first pinless meter I used, and I have always been satisfied with the reading. But recently, I have been attracted to devices that can also help me document jobs.

Wagner Orion 950 pinless meter. I like this pinless meter primarily for its ability to save and record several readings, including moisture content, equilibrium moisture content (EMC), relative humidity, temperature, time, date, and location. EMC is a particularly good reading for use in acclimating building materials—it’s a calculation of the moisture content relative



Location: livingrom
Product: pergo
Coverage: 100.0 square feet
Date: 01/08/2020

MC Avg (%)	MC High (%)	MC Low (%)	EMC Avg (%)	RH Avg (%)	Temp Avg (F)
8.8	10.4	7.4	8.0	42	73

Material	s.g.	Depth	Battery (%)
Wood	59	3/4	100

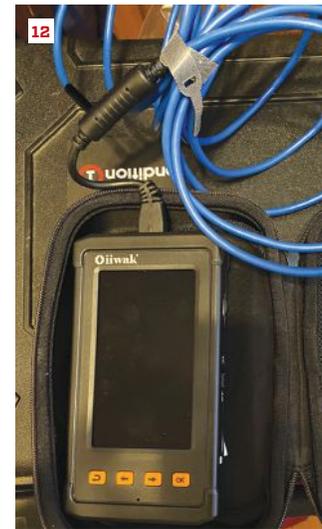
No	MC (%)	EMC (%)	Temp (F)	EMC (%)	Time
1	10.4	8.0	73	8.8	20:39
2	8.8	8.0	73	8.8	20:39
3	7.4	8.0	73	8.8	20:39

The Orion 950 (6) is a contactless moisture meter that can deliver calculated results on the author’s phone (7) and can send a report via email (8).

Troubleshooting / Moisture Detection Tools



Readings	
Reading Date	Refresh Rate
9/27/20, 11:30:51 AM	5 seconds
Temperature	79.6°F
Relative Humidity	53.2%
DeltaT	12.3°F
Heat Stress Index	79.7°F
Dew Point	61.1°F
Psycho Wet Bulb Temperature	67.3°F
Wind Chill	79.5°F
Barometric Pressure	29.96inHg
Station Pressure	29.96inHg
Density Altitude	1514ft
Humidity Ratio	80.4gpp
Air Density	0.073lb/ft ³



The Kestrel 5200 (9) senses a broad range of environmental factors; for evaluating buildings, the author relies most often on the humidity ratio. He can read and record this device via Bluetooth on his phone (10) and share the results via email. The author also uses a pair of smaller, Kestrel D2 sensors (11) for measuring the humidity ratio at various elevations in a room. For looking into building cavities, he uses an Oiiwak borescope with a digital display (12).

to the temperature and humidity recorded in the surrounding environment. It's the target moisture content, so to speak, for the actual environmental conditions of the space you're in.

DATA RECORDERS

Increasingly, I have become interested in not only measuring moisture in materials, but also tracking and recording environmental conditions on the jobsite. This helps me better understand condensation potentials and predict where problems might occur. There is quite a range of environmental data to measure, but for my purposes, what I find most useful is humidity ratio, or grains. When the humidity ratio is above 100, comfort and moisture problems tend to result.

Kestrel environmental data recorders.

I use two types of recorders made by Kestrel: The larger 5200 is useful for more detailed reports, and the smaller D2 (I have two) I like for quick readings in attics, in crawlspaces, and on poles at various elevations in a room. These readings are essential to analyzing why certain things are happening.

For example, when there is water drip-

ping from HVAC registers on high ceilings, I can attach one of the small D2s to a Zip-Wall pole and take temperature, relative humidity, and dew-point readings at the ceiling register to compare with readings at countertop height and floor level. I have discovered that in older homes when new high-SEER HVAC systems replace older, less energy-efficient systems, the newer system puts out colder air. And humid air, much like hot air, is buoyant. This means that the RH and dew point are likely to be higher near tall ceilings. Combine that with cooler air that may be cooling the register grille to below dew point, and you get dripping water. Using the Kestrel recorders, I am better able to document and explain what is happening. Both models allow me to capture a range of conditions and output those in an email to the client.

OTHER USEFUL GADGETS

So far, I have covered the most basic devices for measuring critical environmental conditions. Here are a few others I depend on.

Manometer. Measuring air pressure dynamics deserves its own article. Positive and negative pressures with reference to

the outside play a big role in how a building takes in and expels air along with moisture and energy. Here in the hot, humid South, a negative pressure with reference to the exterior can pull hot and humid air into the interior, triggering moisture accumulation, microbial growth, staining, and compromised health. For measuring pressure dynamics, I use a Retrotec manometer (ones from Energy Conservatory are also highly recommended) to develop strategies for air-sealing and duct reconfiguration.

Borescope. For looking inside building assemblies, I use a 5.5mm Oiiwak borescope. The Oiiwak has a nice interface that allows me to capture and output images that I can share with clients.

Not to be left off this list of essential tools are those I use to capture the data: a smartphone, a tablet, and Rite in the Rain note pads (when it's pouring outside, I prefer not to pull out my electronics). These are essential and deserve a place in the case.

Bill Robinson is based in New Orleans, where he focuses on solving building envelope and hot/humid-climate performance issues. Follow him on Instagram: @bandannabil.

BY VINCENT SALANDRO



1

1. Wood-Grain Composite Decking

Sporting a wood-grain finish and reduced pattern repetition for a more natural look, MoistureShield Meridian capped decking also offers the scratch resistance and low maintenance of a wood-plastic composite. The 1x6 deck boards come in three colors, in square-edge and grooved versions, and in 12-, 16-, and 20-foot lengths. Meridian is currently available in the Northeast and will roll out to additional regions later in 2021. Pricing varies. moistureshield.com



2

2. DensDeck Gypsum Roof Coverboard

Georgia-Pacific's DensDeck StormX Prime Roof Board, a water-resistant gypsum roof coverboard, is designed to help prepare commercial rooftops to resist impact and punctures caused by wind-borne debris as well as severe hail (defined as hail more than 1⁵/₈ inches in diameter). StormX is classified for use in approved assemblies meeting FM Global's Very Severe Hail (diameter greater than 2 inches) Standard set in 2019. Contact distributors for pricing. buildgp.com



3

3. Smart Air Control System

When Fantech's new Eco-Touch Auto IAQ controller recognizes elevated VOCs in the home, it ramps up ventilation from Fantech Fresh Air appliances to bring in more fresh air while removing stale air to the outdoors. The controller also monitors relative humidity and adjusts air intake accordingly. Homeowners use a touchscreen control panel to set automatic night and day preferences or to operate the controller manually. The system retails for \$165. fantech.net



4

4. Composite-Fiber Siding

Rise Siding is composed of 94% recycled carpet fiber, but its vertical wood-grain texture mimics the look of real wood. Notably, the siding comes in 20-foot lengths, which will help installers minimize seams and reduce jobsite waste. Available in two widths, the siding is prefinished in a choice of white or one of seven colors. According to the manufacturer, the siding resists decay, rot, and freeze-thaw damage; features two-sided water protection; and has minimal expansion and contraction rates. Priced competitively with composite and fiber-cement siding, Rise Siding is available nationwide. risebuildingproducts.com

Products

6. Expanded Ridge Premium Collection

Envision Building Products added 20-foot-long square-edge boards and 16- and 20-foot grooved-edge boards (to meet demand from deck builders who prefer to use hidden fasteners) to its Ridge Premium collection. The boards feature a high-density cap, which the manufacturer says is bonded to the core with heat and pressure to squeeze out air pockets and create a deeply grained surface. The boards are available in black walnut, gunstock, and vintage oak colors, with companion skirting available in all three colors as well. envisiondecking.com



7. Residential Aluminum Railing

Designed for easy installation, Fortress Building Products' Al¹³ Home railing consists of powder-coated aluminum panels with preattached brackets. The railing system comes in 2- and 3-inch over-the-post or proud-post options, and in a black-sand or white-matte finish. Customers can customize the panels with vertical cable or Pure View Glass infill. fortressbp.com



10



10. Premade Outside Corner Boards

LP Building Solutions recently added SmartSide Outside Corners to its line of engineered wood siding. This accessory promises to save time and, because the corner seam is prefixed, will reportedly reduce water intrusion. The Outside Corners are available in deep-grain cedar texture and come preprimed for better paint adhesion, according to the manufacturer. lpcorp.com

Q I'm remodeling a client's unfinished basement, which has just two small windows. Are windows required in a basement that is converted to living space, and if so, how many are needed and what size do they need to be?

A Mike Whalen, a project manager (CRPM) with DBS Remodel in Poughkeepsie, N.Y., responds: Most building codes not only require windows for egress, but also enforce criteria as to their size and placement. Natural light and ventilation requirements based on the square footage of the converted living space also typically have to be met.

In Dutchess County, N.Y., where I work, we're governed by the Residential Code of New York State (RCNYS), although a handful of municipalities, including the City of Poughkeepsie, tend to be more strict. We make it a point to stay on top of any changes or additions to the codes because some towns may have fine-tuned the requirements for basement conversions. In gener-

al, though, the requirements we adhere to regarding basements converted to living space are the following.

Emergency egress. The first priority is to provide egress or an "emergency escape and rescue opening" for the basement. All basement areas larger than 200 square feet and any habitable space must have a second means of egress with a minimum open area of 5.7 square feet. Where basements contain one or more sleeping rooms, an egress opening is required in each sleeping room. The RCNYS code mandates that "the egress openings are required to open directly into a public way, or to a yard or court that opens to a public way."

When a home or townhouse is equipped with an automatic sprinkler system, how-

ever, it may not be required to have emergency escape and rescue openings. I have yet to encounter that scenario; be sure to check with your local code officials regarding that exception.

Minimum opening area. The basement egress opening must have a net clear opening of not less than 5.7 square feet, a minimum net clear height of 24 inches, and a minimum net clear width of 20 inches. For basement conversion projects, we almost always install casement egress windows because they are the most efficient way to comply with this requirement. Double-hung egress windows can be used, but they require a much bigger opening, usually making them impractical for this application.

Window sill height. While the sill



Habitable basement space larger than 200 square feet needs to have a second means of egress with a minimum open area of 5.7 square feet, a minimum net height of 24 inches, a minimum net width of 20 inches, and a sill that is no more than 44 inches off the floor (1). Window wells deeper than 44 inches require a ladder or steps (2). This Wellcraft (wellcraftwells.com) prefab unit comes with a polycarbonate lid (3).

Photos by Mike Whalen

Q&A / Basement Egress

cannot be more than 44 inches off the finish floor, we like to err on side of being lower when we install basement egress windows, so we plan for a maximum sill height of 42 inches off the finish floor. Having the concrete-cutting sub cut holes in an existing foundation is expensive and invasive, and we want to get it right the first time.

Below-grade window wells. According to the RCNYS, “the horizontal area of the window well shall be not less than 9 square feet, with a horizontal projection and width of not less than 36 inches. The area of the window well shall allow the emergency escape and rescue opening to be fully opened.”

Back when we used to make the window wells out of railroad ties or landscape pavers, we took pains to coordinate the horizontal area of a well with the casement egress windows (the outswing of the casement had the potential to cut into the area of the escape well). But today’s prefab polyethylene window wells take the guesswork out of meeting code. They are sized to meet nationwide International Residential Code (IRC) requirements related to horizontal area and are configured for any ladder-and-step stipulations that may be required due

to the depth of the well (deeper prefab polyethylene well units have integral ladders and steps that conform to code).

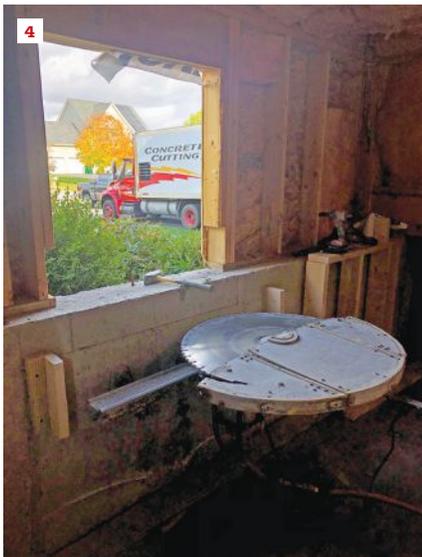
Drainage. Window wells need to have proper drainage, either with a connection to the building’s foundation drainage system or by a code-approved alternative method. A drainage system is not required where the foundation is on well-drained soil or sand-gravel-mixture soils. When we install a window well where the soils do not drain particularly well, we over-excavate the hole 2 feet on either side and in front of the prefab well, insert 4-inch drain that’s ready to go to daylight, and backfill with washed stone. If the well still shows signs of slow percolation, we bring the pipe to daylight. That is often challenging, but it has to be done to prevent water from backing up and draining into the egress window.

Grade floor openings. A “grade floor opening” also qualifies. This means the sill height of the opening or window is not more than 44 inches above or below the adjacent grade. If this is confirmed, the opening can be reduced to 5 square feet. We run into this often on basement conversion projects where the grade allows for knee

walls to be framed on half-height foundations. These walls typically have existing basement windows, but in almost every case, they do not meet minimum opening area specifications, so they need to be enlarged (see photos, below).

Light and ventilation. Under the RCNYS, habitable basement rooms are required to have an aggregate glazing area of not less than 8% of the floor area to provide natural lighting. The RCNYS also has a natural ventilation requirement that the window opening area has to be equal to at least 4% of the floor area. We typically comply with these natural lighting and ventilation requirements with the installation of an egress window, although there are exceptions.

Under certain circumstances, artificial lighting capable of providing an average of 6 foot-candles 30 inches above the floor is allowed in lieu of natural lighting, and a mechanical ventilation system capable of providing a 0.35 air exchange per hour is allowed. Of course, the requirements in your jurisdiction may be different, so always check with your local building official regarding these exceptions.



A typical occurrence at “grade floor openings” is that an existing window doesn’t meet minimum opening area requirements. Here, an existing double-hung window was removed and the opening enlarged (4). The author recommends erring on the side of caution when going to the expense of cutting concrete, with a maximum sill height of 42 inches off the finish floor (5, 6).

Energize CT Update and Current Rebates

The “No Copay” period ended on 1 April. New Copay amount is reported to be a modest \$50. Just got a new flyer from my contact who manages a very active company that provides high quality energy audits. Also provided is a list of current rebates for Energize CT recommended improvements.

Home Energy SolutionsSM Energy Audit



Getting a handle on your home's energy use is an important first step toward saving energy and money.

The Challenge

As a Connecticut resident you probably experience some of the highest energy costs in the United States and are paying more than you should to heat and cool your home. What most residents don't know is help is available through the Connecticut HES program, designed to make your home more energy efficient.

The Solution

CMC Energy offers an energy-saving evaluation and installation from a BPI certified technician. The CMC technicians use blower doors and duct blaster diagnostic tools to pinpoint building and duct leakage. They will change all the light bulbs to LED bulbs, spray insulation in windows and door frames as needed. All the ductwork and any other openings will be sealed and weather stripping will be installed on all the doors throughout the home.

The Results

Through the HES program, the average homeowner receives about \$1,000 in services and saves between \$200-\$250 on their annual energy bills. All residential customers of Eversource, UI, CNG, and SCG are eligible for the program and pay into its funding through a combined public benefits charge that can be found on their utility bill.

Rebates & Reports

Rebates are left behind to incentivize you to upgrade items such as insulation and heating/cooling equipment. Our technicians will also provide information on additional discounts that may be available to you.

“CMC was recommended by the contractor we hired to insulate our home. Moses and Chris arrived on time, thoroughly explained what they would be doing and more importantly spent the time to go over the rebates we would qualify for as a result of the improvements we were having done. I was expecting they would finish in 2-3 hours. They were at my home the entire day sealing air leaks I wasn't aware of and conducted a complete test of my entire HVAC system. I would highly recommend CMC and was well worth the copay.”

- DAVID A., September 17, 2019

“Esther and Diane were very helpful arranging for our energy audit. Rob performed the actual process actually pinpointing improvements we could make for the biggest impact. We decided to upgrade insulation first, and the audit secured a rebate toward this project, also suggesting contractors and financing. The audit itself took a few hours, and the techs provided energy saving bulbs, shower heads, faucet aerators, then caulked/sealed an unbelievable amount of air leaks that were revealed. I highly recommend this program.”

- SCOTT M., November 7, 2019



Energize Connecticut – programs funded by a charge on customer energy bills.



ct.cmcenergy.com
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CMC Energy Services
60 Church Street, Suite 3D, Yalesville, CT 06492

Rebates for Energize CT

Home Comfort

Rebate Type : Instant Rebate*  | Must Pre-qualify with HES**  | Mail In 

AMOUNT	EQUIPMENT	PER	Rebate Type
up to \$1.70	Insulation	Square Foot	 
\$50	Window	Window	 
\$100	Triple Pane Window	Standalone Window	

Heating and Cooling Systems

Rebate Type : Instant Rebate  | Must Pre-qualify with HES  | Mail In 

AMOUNT	EQUIPMENT	PER	Rebate Type
up to \$100	ENERGY STAR® Certified, WiFi enabled smart thermostats	Qualifying Unit	
\$750	Natural Gas boilers	Qualifying Unit	
\$650	Natural Gas furnaces	Qualifying Unit	
\$35	Boiler Circulator pumps	Qualifying Unit	
up to \$500	Ductless Split Heat Pumps	Ton	
up to \$500	Central Ducted Heat Pumps	Ton	
up to \$1,000	Ducted & Ductless Air-Source Heat Pumps with Home Energy Solutions	Ton	 
\$750 to \$1,500	ENERGY STAR Geothermal Heat Pumps	Ton	
\$200/unit	ENERGY STAR Central Air Conditioners	Qualifying Unit	

Water Heating

Rebate Type : Instant Rebate* 

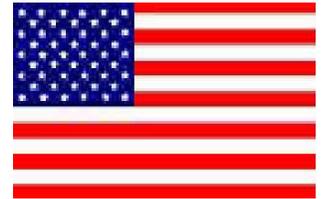
AMOUNT	EQUIPMENT	PER	Rebate Type
up to \$750	ENERGY STAR Heat Pump Water Heaters	Qualifying Unit	
up to \$300	High-efficiency Natural Gas-fired Tankless Water Heaters	Qualifying Unit	

**Contact CAHI c/o
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		Joseph Pelliccio		
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		Dan Kristiansen		
		They have served as our primary leaders and in other capacities since 1992.		
		Please thank them for their service when you have a chance.		

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