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

CAHI MONTHLY NEWS

November 2018 Volume 11, Issue 11

Board of Directors Notes

The Board of Directors continues to provide coordinated effort to ensure quality continuing education at our monthly meeting. Last months presentation on Energy Audits and the state mandated Energize CT program was excellent. Presenters handled many questions from our well educated membership. Turn out by members was good but if you missed it; we are trying to get some kind of electronic copy on the CAHI web site. Look for it when you visit OUR site.

This month we will get a look at use of video cameras by another group of inspection specialists ..... the Septic Specialist. I would never think of trying to steal work from these guys. I just turn on the water and shut the doors and windows when they pop the lid! Roto-Rooter will be showing us their latest high technology equipment.

We have also started planning events for 2019. Plans for January Law Seminar are underway and contacts for other monthly presentations are being worked.

The next meeting of your Board of Directors will be 28 November at 5:00. Later at our monthly membership meeting, we should be able to give the membership an update on new Directors and possibly fill some officer positions. Hear it first at our November membership meeting!

If you have any complaints; call Woody Dawson.

Al Dingfelder
Editor and Director

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!

November 28th Meeting

Topic is

Video Inspection of Sewer and Drainage Systems

Presented by

Alan Sharkany

Roto-Rooter Services Corp

PRO$ PARTNERSHIP FOR REALTY AND OILHEAT SUCCESS™

Home Improvements to Save Energy and Money

While it may not officially be a part of the job description while performing an inspection, we know that buyers look to their home inspector as an expert. They may ask you questions to find out how they can save energy and money when they move into their new oil-heated home. Here are some tips you can pass along that can make a big difference for your client:

- **Keep warm air moving.** Distributing heat evenly by running fans in reverse can help to lower the thermostat and keep the system from running unnecessarily. It's a small solution that can lead to energy savings.
- **Schedule heating system maintenance annually.** Annual maintenance will ensure the system is operating at peak efficiency. This can reduce energy usage by as much as 10%.
- **Add outdoor reset controls to the boiler.** If the home heats with a boiler, outdoor reset controls will allow the boiler's water temperature to automatically adjust, depending on the outdoor temperature. This can save hundreds of dollars annually.
- **Upgrade to a new high-efficiency heating oil system.** With equipment rebates available through Connecticut's Upgrade and Save Program, homeowners can upgrade their system, save 30% or more on their annual energy bills and receive hundreds of dollars of rebates in the process!

BUILDING TOUGH

Photos by Dave Yelovich

Rebuilding a Flooded House

Post-Harvey, a builder sets his new home on a tall crawlspace

BY DAVE YELOVICH

When Hurricane Harvey brought 5 feet of floodwater to my neighborhood in Friendswood, Texas, my family and I faced a choice. Like all of our neighbors' houses, our 1970s-era ranch house was badly damaged. What should we do? Should we repair the house sitting at grade where it stood? Should we elevate the existing house on a new foundation? Or should we tear the whole place down and start over?

But those decisions would have to wait, because after any flood, the first thing they tell you to do is clean up. Partly that's for health reasons: There's going to be a parade of insurance folks and government folks marching through to evaluate things, and the house can't be full of rotted junk. And for insurance reasons, you need to clear out everything that's damaged, make lists, and take plenty of photos to document your losses.

If you let everything sit there waiting for someone to make a decision, insurance policies typically won't cover the increased damage that will result if mold takes over the entire house. Flood insurance coverage usually applies only to the immediate effects of the water, not to things that happen later.

So as soon as the water went down and we could go back to the house, we gutted the walls and put all the debris out at the curb. And then sure enough, along came the insurance people, FEMA, the Small Business Administration (SBA), and all the other federal and local agencies to see what was going on.

IS THE HOUSE WORTH SAVING?

This wasn't our first rodeo. Our house backs up against a creek, and it had flooded 18 inches deep during Tropical Storm Allison in 2001. That time around, flood damages penciled out to about 46% of assessed value, just barely below the 50% threshold that would

Up to the eyebrows. The author's house, which backs onto a creek in Friendswood, Texas, flooded 5 feet deep in Hurricane Harvey **(1)**. All the interior materials and finishes were ruined, including the wood flooring shown here **(2)**.

have required us to elevate the building when we rebuilt.

This time, I knew the damage was much worse. But because of some policy maneuvers by the city, we might theoretically still have the option of repairing the house where it stood. With help from the estimators at my company, we worked up a schedule and got some pricing on that work. I figured the cost of that option at about $150,000.

What if we were to elevate the existing structure, slab and all? That idea was all over the news, so I got a couple of bids. To be sure of being high and dry, we wanted to go up 8 feet, because we had gotten 5 feet of water in the flood. Depending on the company, raising our existing house that high would cost somewhere between $200,000 and $250,000; and then we'd still be facing $150,000 in repair work, plus incidental site work, plus a premium for the fact that the work would be higher up in the air. So bottom line, we'd be looking at $400,000 to $450,000—an awful lot of money for us to come up with, for saving a house that would never be worth that much. The idea seemed like a non-starter.

One of the guys from work said, "Hey Dave, no offense, but you're not getting younger. If you rebuild this house at grade now, can you do this again in five or ten years? Why don't you tear it down and rebuild higher? Because otherwise, you know it will flood again."

It wasn't what we wanted to hear, but he was right. We live on a creek, and creeks go up and down. If we left the house sitting there, we were going to have to gut it out again someday. Preserving and elevating it was too expensive, especially for an outmoded 1970s house. When we took the emotion out of the equation, and just looked at the situation as if we were accountants trying to get the best deal for a client, the answer was clear: Knock it down, rebuild it up in the air, and do the whole thing right.

Cleanup. The first priority in any flood is to clean up, in order to minimize health risks and prevent ongoing damage from mold and rot. The author's family and friends gutted out all the walls **(3)**, revealing existing outdated structural details such as gypsum sheathing and diagonal bracing **(4)**. All the debris was dumped at the curb **(5)**.

WHETHER TO SAVE THE SLAB

The existing house was built in 1975 on a monolithic slab-and-grade-beam foundation. Almost 14 years ago, however, I had installed concrete piers to help support the slab. I knew there were elevation readings taken at that time, so I called the slab company and asked them to re-check the slab's elevation to see if it had moved. After adjusting for the half-inch flooring we had stripped off, they found that the slab hadn't moved even 1/8 inch in 14 years. So that was good.

Then I asked a colleague from work to inspect the slab and assess it. He concluded that there was nothing wrong with the existing slab, and he pointed out that even though our new home would be one story taller than the original house, we were using HardiePlank siding instead of brick veneer—so our new house, although it was larger, would weigh less than the house we were replacing.

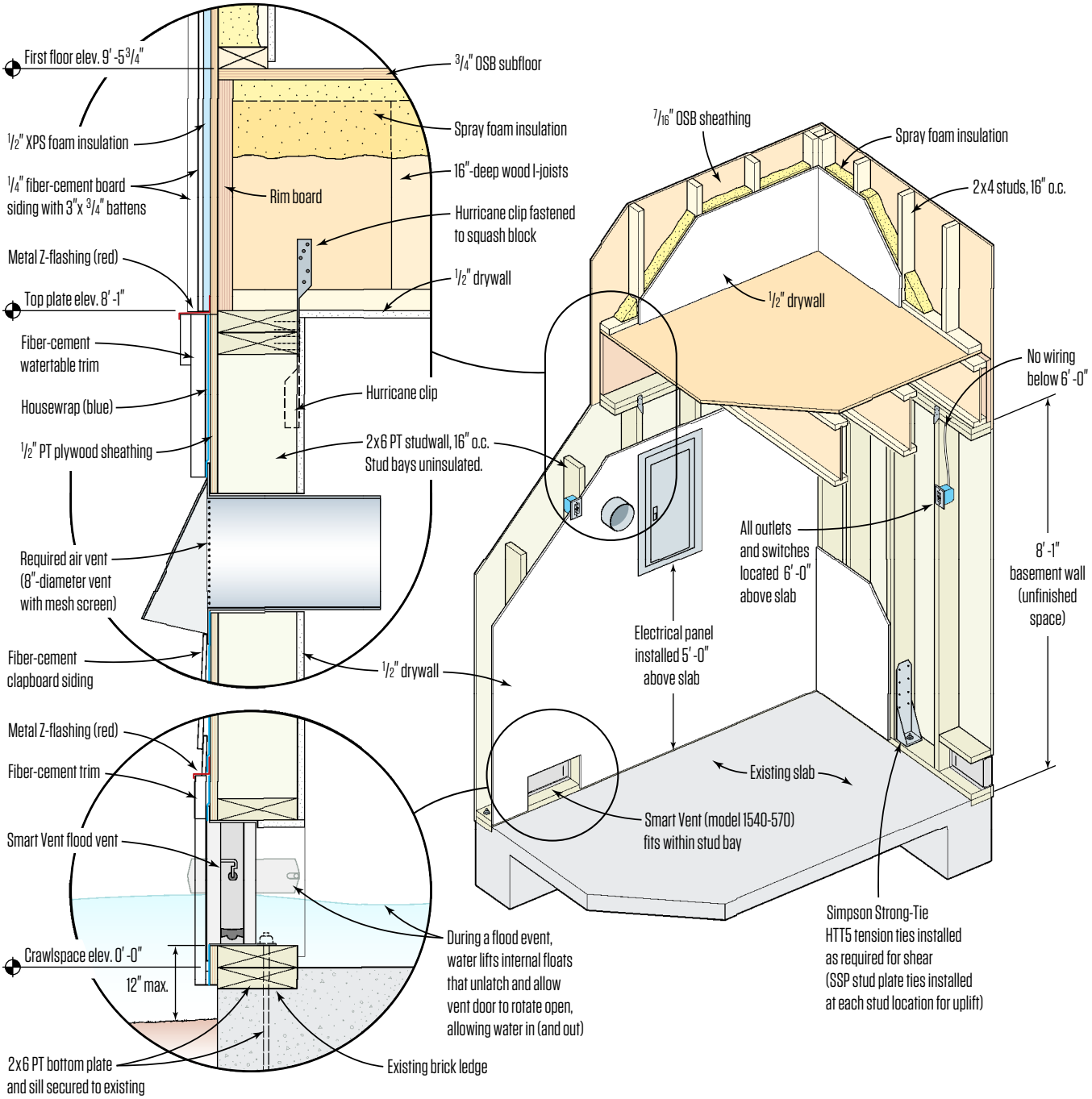
After considering all that, we decided to re-use the existing slab—which saved us about $50,000 compared with the cost of demolishing the slab and building a new foundation to replace it.

HOW HIGH SHOULD WE GO?

When I started to ask questions at the building department, I learned that a new house at this location would need to have the lowest framing member for its first occupied floor situated 2 feet above base flood elevation (BFE). When I had our existing slab surveyed, we found out that the slab sits 6 inches below the BFE. So if I built our new house on a crawlspace, that crawlspace would need to be at least 2 1/2 feet high.

I said to the flood-plain manager, "Well, we flooded 5 feet deep in Harvey. If we duplicate Harvey, and I've built 2 1/2 feet high, we'll just flood again."

Vented Crawlspace for a Flood Plain



The author coined the term "Texas basement" for this 8-foot-tall space, with room for storage, that is detailed like a crawlspace with flood vents at the wall base, ventilation openings near the ceiling, and shear-wall details engineered to handle the uplift and lateral forces of 120-mph hurricane-force winds.

Anchors and vents. The author secured the crawlspace wall sole plates to the existing foundation using Titen HD structural bolts from Simpson Strong-Tie **(6, 7)**. The space's 8-foot walls are detailed as shear walls for windstorm resistance **(8)**, including 4-inch-o.c. nailing and beefy hold-downs. Flood vents operate automatically to relieve water pressure in case of a flood **(9)**.

Besides that, I'm 6 feet tall, and I wanted to be able to use my crawlspace for storage and such, not crawl around it on my stomach. The flood-plain manager told me that I could build higher than 2 1/2 feet if I wanted to; but he could only require me to build 2 1/2 feet high.

Well, studs are 8 feet long, and so is plywood. And considering that we had already experienced 5 feet of floodwater, I decided that if I had to go up anyway, I would go up 8 full feet and have a full one-story space that I could stand up in and use. Technically, it's still a crawlspace, and it would still have to be detailed as a crawlspace: unoccupied, with flood vents and air vents. But I began to call it my "Texas basement."

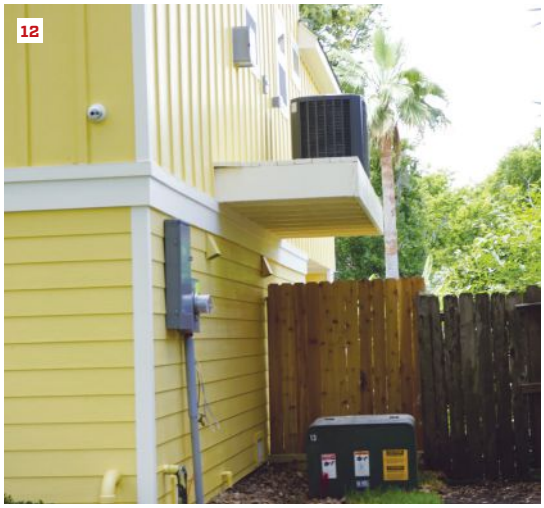
THE TEXAS BASEMENT

The demo company used Bobcats to scrape the slab, and in the process, they either cut off or bent over all the existing anchor bolts. So we had to replace all of those, using Titen HD bolts from Simpson Strong-Tie. The engineer called for 1/2-inch bolts 6 inches long, set at 32 inches on-center, but all my supplier had were 5/8-inch bolts 8 inches long. My engineer was fine with that change—and at the same price for a much beefier connection, so was I. Our guys did wear out a few drill bits putting those bolts in, though—40-year-old concrete is hard.

Besides being in a flood plain, we're also in a hurricane exposure area with a 120-mph design wind speed. So the anchor bolts are just the lowest element in a wind-resisting load path that goes all the way up to the ridge. All the exterior walls, as well as some of the interior partitions in the crawlspace, are detailed as shear walls, with 1/2-inch treated plywood on the treated studs, nailed with galvanized nails at 4 inches on-center in every stud. Some of the interior shear walls go right up through the upper-story partitions all the way up to the ridge. We used Simpson HTT5 hold-downs at the ends of the shear-wall panels, and Simpson SSP stud plate ties to tie studs to the sole plate at the foundation, and Simpson H-2.5A hurricane ties at the top of the wall to tie the studs to the wall plates.

We used treated wood (UC3B, which is rated for aboveground use, but not rated for ground contact) for the entire crawlspace wall system. All the plates are treated, all the studs are treated, and all the posts are treated. The lowest untreated piece of wood is the top plate of the 8-foot lower wall.

Technically, I could have used treated wood for just the part of the structure that lies at or below the BFE. I've seen some buildings on which they've done just that: used an 18-inch-wide strip of treated plywood at the bottom of the wall. But treated plywood is only a few bucks more a sheet, so we framed and sheathed all the way up the "crawlspace" wall with treated studs and plywood. To make sure the framers didn't accidentally mix in any



Resilient details. Hurricane clips at the top of the crawlspace wall form part of the uplift and shear load path **(10)**. Closed-cell spray foam defines the thermal boundary of the first occupied floor **(11)**. Power and mechanicals are elevated above the level of the Harvey floodwaters **(12)**. Screened vents provide cross-ventilation **(13)**, required by code for an uninsulated crawlspace.

untreated wood, we didn't have anything but treated wood shipped to the site until our Texas basement walls were all framed.

We installed about a dozen Smart Vent flood vents, strategically placed around the base of the walls. For aesthetic reasons, we placed them all on the side and back walls; but then again, the back of the house is where the creek is. Smart Vent provided engineering services to spec out the vents. They were easy to install because they're sized to fit neatly between two studs at 16 inches on-center. We just blocked in for them and installed the siding right over the opening. Then we cut the siding out with a recip saw and popped in the vents, adding a little trim for looks.

At the top of the wall, 8-inch round ducts provide the required ventilation. These are also spread around the walls to allow cross-ventilation and are screened to keep the bugs out. On a hot day, the space under the house seems to stay about 10°F cooler than the outdoors.

The "Texas basement" has ceiling lights and wall switches and outlets, but the electrical panel for the space is located 5 feet above the floor, and the outlets and switches are 6 feet up. I've installed shelving at 5 or 6 feet high as well, to keep our belongings dry if it floods. We also lifted the air-conditioning equipment up almost 10 feet, to be above any future floodwaters.

The inside walls of the space are drywalled to comply with the local fire code. The next time our creek floods the house, we'll have to strip that material out and replace it. Otherwise, our 8-foot-tall crawlspace is ready for another Harvey. And we rebuilt our entire house, using modern energy and building-science details, for less than what it would have cost us to elevate the existing one as it stood, not counting repairs.

Dave Yelovich is a compliance officer with Tilson Homes.

2018 REPORT CARD FOR CONNECTICUT'S INFRASTRUCTURE EARNS C-

Nov 01, 2018
Connecticut roads and wastewater are in poor condition

The 2018 Report Card for Connecticut's Infrastructure was released by the Connecticut Society of Civil Engineers (CSCE) Section of the American Society of Civil Engineers (ASCE). According to a ASCE press release, the five categories of infrastructure was given an overall grade of "C-." This report includes an evaluation of the state's bridges, drinking water, rail, roads and wastewater.

However, the state's roads and wastewater are in poor condition, according to the press release. Both earning grades of "D+." Most roads are in poor or fair condition. More than half of the network is over 55 years old. According to the ASCE press release, $30 billion is needed to provide roadway facilities that would meet expectations of roadway users within 30 years.

The state's wastewater infrastructure needs major repairs and rehabilitation due to aging. According to the press release, a $4.6 billion investment is required to eliminate sanitary sewer overflows alone. The state is home to almost 50 sewage plants that have been identified as "high-risk" for flooding during major storms. This is a concern as storms intensify and the infrastructure ages.

"There are bright spots in this report, but it is clear that we must prioritize our infrastructure systems to keep our state competitive and grow our economy," said David Chapman, president of the Connecticut Society of Civil Engineers.

According to the press release, rail earned the highest grade of a "B." About 41 million passengers ride on the Metro-North Railroad system annually, making it the busiest railroad system in the country. The report stated that the Connecticut Department of Transportation (CDOT), has invested nearly $780 million in the New Haven-Hartford-Springfield Line.

The grades are as follows: bridges (C-), drinking water (C-), rail (B), roads (D+) and wastewater (D+).

There were also other major findings in the report. 7.8% of bridges in Connecticut are structurally deficient compared to the 8.9% nationwide, including some of the state's largest and most heavily traveled bridges. Other findings were that more than 3.6 million tons of freight are moved anually on 10 freight railroads and poorly maintained roads and congestion costs driver $2.4 billion annually.

The report also offered solutions to address the state's infrastructure needs. The recommendations included continuing to prioritize investment in infrastructure during budget cycles and modernizing and building resilient infrastructure to prepare for increasingly severe storms.

BY TIM HEALEY

Photos: 1, courtesy Abestorama; 2, Tim Healey

Asbestos fiber is loaded into 100-lb. bags at Ruberoid Co.'s Vermont mine, circa 1950 **(1)**. The Eden-Lowell mine was the first (and largest) commercial asbestos mine in the U.S. Thirty million tons of tailings, upwards of 350 feet high, were left at this 1,550-acre site **(2)**. Trucking the tailings off site as well as turning the mine into a solar farm have been proposed.

Home-Grown Asbestos

According to the U.S. Geological Survey (USGS), there are 142 former asbestos mines in the continental United States. Of these, only a handful of mines in a few states (California, Vermont, Arizona, and North Carolina) have produced large, commercial quantities of asbestos. Starting in the early 1960s, multiple large, open-pit mines in California were brought on line, greatly increasing the country's domestic production. Before that, from roughly 1900 to the late 1950s, "home-grown" asbestos was largely confined to the Eden and Lowell mines at the base of 3,376-foot-high Belvidere Mountain in Northern Vermont.

Chrysotile asbestos or "white asbestos," the most common type of asbestos mined in the U.S., was first discovered in the Belvidere Mountain area in the 1820s. By 1899, two mines on either side of the mountain had opened: the Eden mine on Belvidere's south slope and the Lowell mine (the larger of the two) a mile or so to the east. Geologically, these mines are the southern tip of the Quebec asbestos belt—vast deposits of chrysotile asbestos in Quebec Province, Canada—starting some 60 miles north of the Vermont border with the Jeffrey Mine in the French-Canadian town of "Asbestos" and heading northeast 50 miles to Thetford Mines, Quebec. These Canadian mines were among the largest in the world and they dwarfed U.S. production of asbestos (historically, the U.S. produced enough asbestos for roughly 10% of its manufacturing needs and imported the rest from Canada, Russia, and South Africa).

In 1936, the Ruberoid Co. (maker of building products such as asbestos-cement shingles, house sidings, and protective paints) bought the Belvidere Mountain quarries from local owners and began what would be the country's first modern, large-scale open-pit asbestos mining operation. Ruberoid merged with General Aniline & Film in 1967 (changing its name to the GAF Corp.) and continued its mining operation. But as health issues associated with asbestos came more into public focus in the early 1970s, and costs to comply with new environmental regulations (the Clean Air Act of 1970 classified asbestos as a hazardous air pollutant) mounted, GAF scheduled to close the mine in 1975.

In an effort to save hundreds of jobs (the mine was the largest employer in the region), its workers bought the mine from GAF. They raised $2 million for the purchase (most of which was used to retrofit the plant for the required environmental dust-control equipment) and named the new company the Vermont Asbestos Group (VAG). In 1977, the Copperopolis mine in California eclipsed the Eden-Lowell mine as the biggest producer of asbestos in the U.S.

From the late 1970s to early 1990s, VAG survived ownership battles, labor strikes, and dwindling demand for its product. No longer profitable, the Eden-Lowell asbestos mine officially shut down all operations in 1993, 25 years ago.

CRUMBLING FOUNDATIONS

(Courtesy: NBC Connecticut)

(Courtesy: NBC Connecticut)

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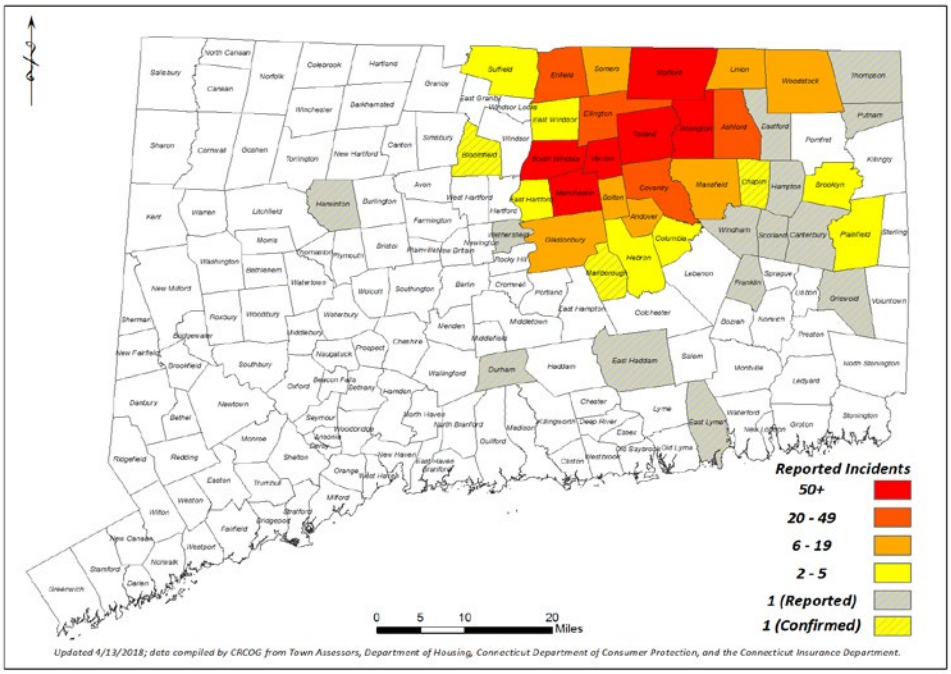
BACKGROUND:

Upwards of 35,000 plus homes in the north, east, and central parts of Connecticut are facing a potentially devastating issue due to the presence of a naturally occurring iron sulfide originating from a quarry in Willington. The mineral—pyrrhotite—causes the slow deterioration of concrete foundations when exposed to oxygen and water. While the presence of pyrrhotite indicates the potential for concrete deterioration, its existence alone does not necessarily cause it. Homes and structures in approximately 41 towns may be affected by what appears to be a slow moving natural disaster. As a structure continues to deteriorate, it often becomes unsound. Cracking, flaking, bowing, and separation of the concrete has already appeared on some homes built between 1983 and 2015.

The cracking starts small and can take more than a decade to appear. Cracks that go horizontal or splinter out like a web are the most concerning. A rust color or white powder may appear. The dry wall of a finished basement may need to be removed to examine the concrete, although the damage is often visible on the outside of the home.

The damage is irreversible. The most effective repair is to replace the existing foundation with a new one that does not contain pyrrhotite. The cost to replace a foundation can differ based on multiple factors, but current estimates range between $150,000 and $250,000 per home.

Town's Identified by CRCOG as having been impacted by Crumbling Foundations



TESTING FOR PYRRHOTITE:

Homeowners in Connecticut who believe their home's foundation may be at risk for crumbling or is showing signs of cracking should consider testing the foundation by hiring an engineer to conduct a VISUAL or CORE test of their foundation. At this time, the only test that determines the definite presence of pyrrhotite is CORE testing.

The following link provides a list of Structural Engineering Services for inspection resources: Crumbling Concrete Foundations Qualified Vendor List | CRCOG. CRCOG can also be contacted at 860-724-4277 or emailed at foundationtesting@crcog.org.

The Capitol Region Council of Governments (CRCOG) is assisting the state with providing testing reimbursements:

- VISUAL inspection reimbursement is 100% of the cost, up to $400. Costs for testing can range from $400 - $1000, depending on the Engineering firm conducting the test.
- CORE testing reimbursement for a maximum of 2 samples is 50% of the cost, up to $2000. Costs for testing can range from $1400 - $4000 depending on how many samples are taken and to which lab they are sent.

Once the foundation has been inspected, an application for testing reimbursement can be completed at: www.foundationtesting.org. Homeowners in Coventry, Columbia, Tolland, Ashford, Bolton, Union, and Willington who wish to have their foundations tested, should contact their municipal official. Funding through a Community Development Block Grant (CDBG) has been provided to these municipalities for testing.

FUNDING ASSISTANCE FOR FOUNDATION REPLACEMENT:

The Crumbling Foundation Assistance Fund, has been incorporated as the **Connecticut Foundation Solutions Indemnity Company, LLC (CFSIC)** and is expected to be fully operational in the FALL of 2018.

Michael Maglaras & Company, based in Ashford, Connecticut has been chosen to take on the assignment of Superintendent. The Superintendent will work with the Board of Directors, and will be responsible for overseeing the implementation of the CFSIC.

An application for funding from the CFSIC can be initiated once the homeowner has proof of the presence of pyrrhotite. (The CFSIC website is currently under development).

This fund is being established through:

- $100 million in state bonding ($20 million/year for the next 5 years)
- Approximately $9 million annually for 10 years through State legislation which imposes a $12 annual surcharge on homeowner's insurance policies.

Funding for foundation replacement will be provided to those who qualify. The CFSIC will be establishing an online website to submit funding applications.

Providers of Remediation Services for replacement of a foundation can be found at: Crumbling Concrete Foundations Qualified Vendor List | CRCOG

SOURCES FOR INFORMATION:

Department of Consumer Protection: Deteriorating Concrete Foundations

Capitol Region Council of Governments: Crumbling Foundations | CRCOG

IRS - Property Casualty Loss Deduction: Deteriorating Residential Concrete Foundations - Statutory Reference

Crumbling Foundations Frequently Asked Questions: FAQ's

FOR RECEIPT OF NOTIFICATIONS & UPDATES REGARDING CRUMBLING FOUNDATIONS, PLEASE EMAIL: DOHCrumblingFoundations@ct.gov

LEGISLATION:

PA 18-179

Summary of PA 18-179:

This bill codifies the residential disclosure report home sellers must provide to purchasers and expands what must be included in it. The new information the bill requires includes:

- disclosures on the building's structure and any improvements made to it, including questions on, among other things, the roof, exterior, driveway, and the types of testing, inspection, or repairs done to the foundation; and
- a new statement on concrete foundations that suggests prospective buyers have the concrete foundation inspected by a licensed profession who is a structural engineer for deterioration due to the presence of pyrrhotite.

The bill allows a member of the CFSIC's board of directors, who owns a residential property with a crumbling foundation, or his or her spouse or dependent child, to apply for and receive assistance from CFSIC. It does so by deeming that such a circumstance does not constitute a conflict of interest, provided that the board member abstains from deliberating, voting, or taking any other action on his or her specific application.

EFFECTIVE DATE: July 1, 2018 for the residential disclosure report provisions, June 2018 for the CFSIC provisions.

PA 18-160

Summary of PA 18-160:

This bill imposes a $12 surcharge on certain homeowners insurance policies issued, renewed, amended, or endorsed between January 1, 2019 and December 31, 2029 to be deposited into the Healthy Homes Fund which the bill establishes.

The bill establishes the Healthy Homes Fund, a separate non lapsing General Fund account to collect insurance surcharge funds to in part help homeowners with concrete foundations damaged from pyrrhotite. Under the bill, within 30 days of receiving the deposit of surcharge funds, 85% of the deposits must be transferred to the Crumbling Foundations Assistance Fund, which is used by the Connecticut Foundation Solutions Indemnity Company, LLC to assist homeowners with crumbling concrete foundations.

EFFECTIVE DATE: January 1, 2019, for the insurance surcharge provisions, and June 2018 for the provisions on the Healthy Homes Fund.

PA 17-2

Summary of PA 17-2 Sec 334 – 348:

- Provides a framework to assist owners of residential buildings (i.e., a one- to four-family dwelling, including condominium and planned development units) with concrete foundations damaged by the presence of pyrrhotite ("crumbling concrete foundations")
- Creates a not-for-profit captive insurance company ("captive") to help homeowners repair or replace crumbling concrete foundations with the lowest possible amount of borrowed funds

* Requires five "incorporators," four of whom must be General Assembly members appointed by the legislative leaders and one appointed by the governor, to incorporate the captive with an organizing committee (the organizing committee members are appointed by the incorporators, but must include four General Assembly members appointed by legislative leaders as ex-officio, non-voting members)

* Captive contains any money deposited or donated to the Crumbling Foundations Assistance Fund (a separate non lapsing General Fund account the bill creates) and is prohibited from returning any donations or using the money for any other purpose

* Requires the captive, among other things, to: (1) establish a volunteer board of directors and allows the legislative leaders to appoint nonvoting, ex-officio members; (2) develop financial assistance eligibility requirements and underwriting guidelines; (3) develop a single, unified financial assistance application for homeowners; (4) provide financial assistance to affected homeowners and help them obtain additional financing if necessary; (6) approve and disburse funds to eligible contractors for repairing or replacing foundations; (7) apply for and receive federal funds; (8) enter into agreements with CHFA and participating lenders to develop additional loan programs for homeowners; and (9) make recommendations to legislative committees to improve the program

* Prohibits the captive from spending more than 10% of money allocated to it in any calendar year on administrative or operational costs

* Subjects the captive to existing laws regulating captive insurance companies but exempts it from having to pay a license fee in its first year or a renewal fee thereafter

* Deems that captive employees and agents are not state employees, but (1) subjects its employees, directors, agents, consultants, and contractors to certain state ethics provisions and (2) allows the Office of State Ethics to enforce these provisions

*Requires the captive to file, in addition to any report required of nonprofit entities, quarterly reports to specified legislative committees on its operations, including town by town information on claims, claim amounts, applications, and application approvals.

* Creates an application and review process and an appeal process for homeowners whose applications are denied

* Sunsets the captive on June 30, 2022, or earlier if its existence is terminated by law, and vests all rights and properties to the state at that time

* Allows DOH to apply for federal funds, and requires it to deposit the money into the Crumbling Foundations Assistance Fund

* Requires the Insurance; Finance, Revenue and Bonding; Planning and Development; Public Safety; and Housing committees to, at least annually, hold a joint public hearing on the captive's operation and financial condition

* Creates the Collapsing Foundations Credit Enhancements Program, administered by CHFA, to help homeowners obtain additional funding necessary to replace or repair crumbling concrete foundations and requires CHFA to publish a plain language summary of the program on its website

* Prohibits the use of recycled material containing pyrrhotite to make structural concrete unless (1) the State Building Inspector adopts a standard and (2) the person selling or offering the concrete provides the purchaser with written notice that the concrete meets the standard

* Makes a violation punishable under the Connecticut Unfair Trade Practices Act (CUTPA)

* Requires municipalities to waive application fees (regardless of any conflicting municipal charters, home rule ordinances, or special acts) and the State Building Inspector to waive education fees for building permit applications to repair or replace crumbling concrete foundations

* Requires the DCP commissioner to include in the residential property condition disclosure report a (1) recommendation that the prospective purchaser have any concrete foundation inspected by a state licensed structural engineer for deterioration caused by the presence of pyrrhotite, (2) question as to whether the seller has knowledge of any testing or inspection by a licensed professional related to the property's foundation, and (3) question as to whether the seller has any knowledge of any repairs related to the property's foundation.

* Requires personal risk insurance policies (e.g., homeowners) and certain condominium master and property insurance policies to allow suit against insurers for up to one year after the date the insured receives a written denial for all or any part of a claim under a property coverage provision for a crumbling concrete foundation

* Allows taxpayers to reduce their Connecticut adjusted gross income by the amount of any financial assistance received from the Crumbling Foundations Assistance Fund or paid to, or on behalf of, an owner of a residential building pursuant to the bill

* Allows municipalities to jointly borrow, or individually bond, to fund projects to abate certain deleterious conditions caused by crumbling concrete

* Establishes an eight-member working group to develop a model quality control plan for quarries and to study the workforce of contractors repairing and replacing crumbling concrete foundations; it must report its findings to the General Law Committee by December 31, 2018, at which point it terminates

* Establishes a special homeowner advocate within DOH responsible for, among other things, coordinating state efforts to assist homeowners with crumbling concrete foundations, helping resolve complaints concerning the captive, working with the federal government, and reporting to General Assembly

* Establishes a training program for contractors repairing or replacing these foundations

EFFECTIVE DATE: Upon passage, with the provision allowing suit against certain insurers for up to one year after a claim denial is applicable to policies issued, renewed, or in effect on or after the bill's effective date; and the tax deduction provisions applicable to taxable years beginning on or after January 1, 2017

PA 16-45

Summary of PA 16-45:

This act makes various changes related to residential and commercial concrete foundations. It requires:

1. Additional documentation to obtain a certificate of occupancy for a new structure for which a concrete

2. Municipalities, at an owner's request, to reassess residential properties with foundation problems;

3. The Department of Consumer Protection (DCP) to investigate the cause or causes of concrete foundation failure; and

4. Executive branch agencies to maintain records related to failing residential concrete foundations as confidential for at least seven years.

EFFECTIVE DATE: May 2016, and applicable to assessment dates beginning on or after that date, except the provision requiring a report to the legislature is effective July 1, 2016 and the provision about certificates of occupancy is effective October 1, 2016.

PRESS RELEASES:

May 2, 2018
DOH Extends Application Deadline For Crumbling Foundations Testing Program

March 8, 2018
DOH Expands Eligibility for Crumbling Foundation Testing Reimbursement

November 28, 2017
Gov. Malloy Announces State Begins Providing Reimbursements to Northeastern Connecticut Homeowners for Testing of Crumbling Foundations

February 17, 2017
Gov. Malloy Proposes Creating State Loan Program to Support Northeastern Connecticut Homeowners Confronting Crumbling Foundations

January 23, 2017
Gov. Malloy Announces State Funding to Conduct Foundation Testing For Homes in Northeastern Connecticut

The previous information was found on the CT Dept of Housing website. To visit the website and access the provided links, click HERE.

Steel Frame Homes vs Wood

Evolution of the Home Building Kit

Why Choose a Steel Framed Home?

As the desire to own a home that leaves a smaller ecological footprint grows, some new trends have emerged in homeownership: steel homes and tiny homes. Steel buildings have been used for industrial buildings for years, but they have recently become popular as homes too.

Steel Frame Home Kits

Pro	Can cost up to 50% less
Pro	Non-combustible
Pro	Stronger than wood
Con	Roof elevations limited by cost
Con	Municipality approval more difficult
Con	Steel has lower insulation value

Wood Frame Home Kits

Pro	Traditional aesthetic
Pro	Wood is a natural insulator
Pro	Easier to find an experienced contractor
Con	Susceptible to rot and insects
Con	Combustible materials throughout
Con	Higher construction costs

Since steel buildings have not been traditionally used as homes, they have a reputation for not being aesthetically pleasing, but this is untrue for the steel homes built by General Steel. The General's buildings can be beautiful and are designed to look like a home, not a warehouse.

Steel Frame House Origins

The idea of using metal to frame homes began in the 19th century in Europe, but they were using cast iron for the frames instead. Then Chicago industrialist Carl Strandlund thought he could solve the housing crisis in the United States with prefabricated porcelain-enameled steel.

Above is the original erection manual and one of the 1,500 Lustron steel frame homes still standing today. These steel homes sold for $8,500 in 1947 when these homes were originally manufactured.

Strandlund's steel framed houses were first introduced after World War II in the United States. There was a sudden demand for housing from the soldiers who were returning home, so the Lustron Company built 2,500 houses for them, but promised 45,000. These homes took 350 hours to put together and contained 3,300 individual pieces. Approximately 1,500 of these homes are still standing today, and many of them are listed in the National Register of Historic Places.

> "It has a sort of late '40s, '50s new modern America appeal," says Megan Wood of the Ohio Historical Society. "And you don't have to paint it, you can clean the walls with Windex, and you can hang things with magnets."

Stronger Than Wood

Steel buildings are more durable than wood, and more resistant to water damage. Steel will not warp or expand like wood does, and it does not rot, so it will be less likely to attract fungus. Termites and other insects who eat wood will also steer clear of a steel home. Steel frames can withstand hurricane force winds, and be designed for seismic activity. Metal is not flammable, which means the house will not give a fire more fuel, like a wooden home would do. Steel house frames are also 25 percent lighter than wooden house frames.

The interior of a metal home can be framed out with wood
allowing you to invest in steel where it is most beneficial - the outer shell

We encourage those interested in steel frame home kits to invest in steel where it counts because steel is much more expensive than wood to create interior partitions and a second floor.

Why Wood Quality is Declining

Wood products have declined in quality in recent years; the hardness and durability have declined, partially because of the protections of old growth forests. This means a wood framed home just cannot stand up to a steel framed home. The bolts used to put a steel framed home together are also incredibly stronger than the nails used to put a wooden home together. Your steel framed home will require significantly less maintenance over the years than a wooden home would, because of its resistance to some of the problems wooden framed homes face.

> "The changing quality characteristics of the wood supply have a profound impact on wood processing and utilization throughout the value recovery chain. They will eventually impact on the forest products industry and affect customer satisfaction. They also raise new issues for forest management to deal with."

Reduce Your Carbon Footprint

While steel is 100 percent recyclable, most steel today is around 85 percent recycled. It is not made with hazardous chemicals and it does not require more processing when it is reused.

Steel homes have numerous insulation options that will help reduce your heating and cooling costs, and therefore, it reduces your carbon footprint. It can "save millions of dollars in energy bills," according to Tanya Schnelzer, the environmental manager at Firestone Building Products, Indianapolis.

> "Continuous insulation saves energy and reduces the carbon footprint. It provides thermal, air, water and vapor control layers in one system and simplifies the construction process," said Gary Parsons, building scientist, Dow Building Solutions, Midland, Mich.

A steel framed home can be equipped with solar paneling too, making your home even greener, and reducing your carbon footprint further.

There are also tax breaks for homes that use green energy, and you can set up your steel home with green energy, saving you money right away.

Financing and Insurance

Banks and other money lenders often see steel as investments that are less risky, which can help you get a loan for building and a mortgage on the property a little easier than a house that is less sturdy. Insurance can also cost you less in a steel framed home because it is resistant to fire, earthquakes, wind, and water damage. It is possible for you to increase your property value and save money on property taxes with a steel home because it can be considered a capital improvement. A capital improvement is a permanent building on your property that will enhance the property's overall value, adapt the property to new uses, or increase the property's useful life.

Construction Timelines

Steel buildings are prefabricated offsite and are easy to assemble when they arrive. These buildings take 50 percent less time to construct than wood or stone buildings do, and you do not have to work with an architect, saving you on costly fees. Putting together your steel framed home is DIY friendly and does not always need the aid of contractors.

Creating Traditional Aesthetic

Your steel home does not have to have steel walls, instead, you can use steel frames and make the walls brick and mortar. You can also use faux finishes for your home, like drywall on the inside or stucco and stone veneer on the exterior, to make your steel framed home look like it was constructed with traditional materials. Steel buildings are designed to bend slightly with the elements; it is called deflection. If you choose to use a faux finish and the building bends, you could end up with cracks in the stucco or brick wall; deflection can be reduced when the building is made, though in some cases it can cost a little more.

Kits for Personal Use

General Steel's metal buildings are custom designed to suit your needs and come in a variety of easy to assemble kits that make a perfect addition to any personal property. Headlined by our popular steel frame homes, we also offer other residential focused buildings such as garages, carports and workshops to add space and functionality to your personal property.

Customization and Expansion

Our steel frame home building kits are completely customizable to give you the floor plan of your dream home, without breaking your budget. Your home's exterior can be designed however you wish, so it does not need to look like a large metal shack; you can make it look as ornate as the Colonial down the street. Steel buildings are also easier to expand upon than traditional buildings. If you reach a point where your home is too small, and it needs to grow, it is not difficult to add on to it, or even make changes to it.

Home and Business

Since General Steel's buildings are so customizable, you can design a building that functions as both your home and business. It is easy to create a single building that functions as both your home and business, warehouse, or workshop, and since it is all custom designed, you can have your dream home and the perfect space for your business, all in one. Since it is easy to expand a steel framed building, you can always make changes to your structure later as your business or family grows.

Barndominiums

Another possibility that has become popular in recent years, for making your steel framed building for both your home and business is barndominiums.

Barndominiums, or "barndos," are large barn-style buildings with living areas for people. Living near

your livestock is a common practice for farmers, but traditionally the home was a separate building from the barn. With a barndo, you can have space for your livestock or whatever else you need room for attached to your home. This can help save you money when buying land, since you do not have to carve out a piece of the land for a separate building to live in, allowing you to maximize the space you have on your property. Your living expenses will also decrease since you will only be paying energy expenses for a single building.

Need help? We're listening.
Let us guide you through your decision.

No matter where you are in the process of building, General Steel has a solution for you. From our simple 3 step building quote to our growing library of project resources, General Steel is the company you've been looking for.

For more information and details about Steel buildings click HERE to visit the website.

BY TIM UHLER

Squeak-Free Floor Sheathing

My dad started building in the late 1970s, and for as long as I can remember, I've worked on the jobsite. As a teenager, I screwed down the subfloor right before carpet went in. Dad would always come in and try and find squeaks. He said that a squeaky floor sends a negative message about the quality of the builder. A squeak-free floor is not difficult to achieve, and it doesn't require a lot of thinking, just the right approach to putting down the subfloor (aka sheathing). Here is the process that has worked well for my framing partner and me for years.

Before you begin, check your floor framing. Whether you've framed the floor with I-joists or with dimensional lumber, be sure that all blocking between joists has been nailed well. Some framers use glue in addition to nails to secure the blocking. Also, joists need to be nailed tightly to any walls or girders that they extend over.

GLUE AND SCREW

The basic principle for creating a squeak-free floor boils down to using good glue and the right fasteners. Some glues have trouble bonding the sheathing to the joists if the lumber is wet or frozen. PL Premium is a great glue that I've had good luck with over the years, but the instructions specifically say that the gluing surface must be dry and free of frost.

Lately, we have come to rely on the latest generation of "foam-to-gel" glues, such as Dap Smartbond and AdvanTech Subfloor Adhesive. These glues go on as foam but quickly turn to an adhesive gel that forms a tenacious bond to just about any material in any condition **(2)**. I like to think of fasteners as clamps that hold the sheathing to the joist while the adhesive cures. The adhesive forms the primary bond. The foam-to-gel formulations dispense onto the joist surfaces faster, and they don't fall off wet or frozen wood. Also, a can of foam-to-gel adhesive goes a lot further than the old caulking-gun cartridges, so I have to reload only about one-sixth as often.

Regardless of the type of glue you use, dirt or dust on the joists will interfere with any glue's ability to properly bond the two surfaces. Get in the habit of knocking excess dirt off your shoes before you walk on the joists.

At right is a bird's eye view of the floor sheathing process. A crew of two works in harmony to sheathe this floor quickly and efficiently. The crew member on the right spreads glue on the joists while the crew member on the left takes sheets from the stack, drops them into place, and tacks them on layout. When the glue is spread for one course, the person gluing will take over dropping and tacking while his partner fastens the sheets with a screw gun.

Photos by Tim Uhler

Most of these adhesives have a working time of about 15 minutes, so apply only the amount of glue that you can cover with sheathing in that amount of time. Once you've spread the glue on the joists, it's important to put the sheathing down and fasten it as quickly as possible. Put glue on all framing members—including joists, beams, and blocking—except the rims. (You will fasten the rims later as you straighten them). Always drive fasteners wherever you have spread glue to hold the sheathing fast to the framing while the glue cures.

When it comes to fasteners, avoid using plain-shank nails to fasten sheathing. As joists dry out over time, plain-shank nails can loosen enough to allow the sheathing to move up and down slightly and squeak. If you choose to nail your floor sheathing, always use ring-shank nails **(3)**. Many manufacturers put a coating on their nails that helps keep them in place. In the past, I've had success with good-quality ring-shank nails to attach sheathing to I-joist floors.

That said, I think that screws are much better for fastening floor sheathing, and stand-up screw guns, such as the PamFast system, make for pretty painless fastening **(4)**. The screws for these guns (made by Pam Fastening, Simpson Quik Drive, Grabber, and Senco) are designed to drive quickly, and they hold well. With 3/4-inch-thick sheathing, we drive 1 3/4-inch screws specifically made for fastening subflooring.

While there are nail-gun options (like Scrail fasteners, which have a twisted-thread shank so they drive faster and hold better), we have found that sheathing a floor with a stand-up screw gun is just fast as using a nailer. It's true that a screw gun delivers a screw slower than a nailer fires a nail, but for a two-person crew, the work flow for the entire job turns out to be the same in the end.

Fasteners should be spaced 6 inches on-center along the edges of the sheathing and 12 inches on-center in the field. Many sheathing manufacturers print marks for spacing fasteners along the 4-foot edges **(5)**. They also print marks for aligning joists on the proper on-center layout, but I rely on actual measurement for putting the joists on the proper layout (more on that process later).

FINDING A RHYTHM

The procedure for sheathing a floor involves steps that are repeated continuously until the floor is done. The first step, which we call "packing the floor," is bringing sheets of sheathing to where they will be installed. The next step is spreading glue on the joists. The sheets then drop into place and are tacked into proper position, and finally, the sheets are fully attached.

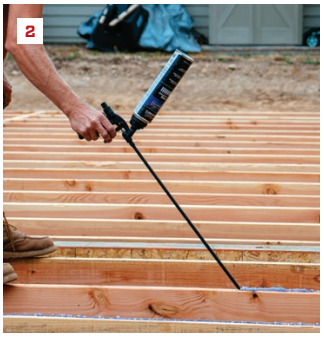
We usually work with a two-person crew in which crew member one has the primary responsibility of gluing and crew member two does most of the fastening. We begin by snapping a line for the first course of sheathing **(6)**. Then, while crew member one spreads glue for the first sheets, crew member two packs the sheets. (Our crew uses a telehandler to bring a pile of sheets to the edge of the foundation, which speeds up the packing process considerably).

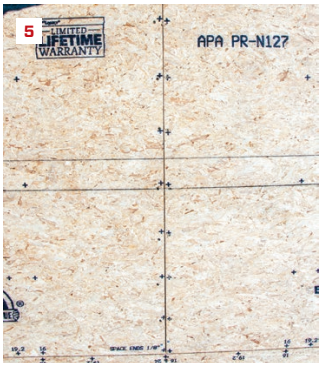
Crew member two drops the sheets into place **(7)** and tacks them with a hand-nail at each corner. At this point, he also pulls a measurement and tacks the joists at the proper spacing along the long edge of the sheathing, usually at either 16 or 24 inches on-center. Special attention is paid to any joist or framing member that might not fall on the even spacing, such as around a stair opening. When the first few sheets are tacked in place, crew member two drives screws in the field to complete the fastening process while crew member one continues spreading glue and tacking in the last sheets.

As the sheets go down for the next rows, the crew taps them against the previous row with a beater board and sledgehammer **(8)**, and tacks them in place as before. The process continues with packing, gluing, and fastening each row until the floor is finished. As you might expect, there is some overlap between the duties of the two crew members. A jammed glue gun can slow down the process, and likewise, if the gluer gets far enough ahead of the fastener, he may put down the glue gun and help pack sheets for the next row. That way, the rhythm and flow continue at an even pace until the entire floor is sheathed.

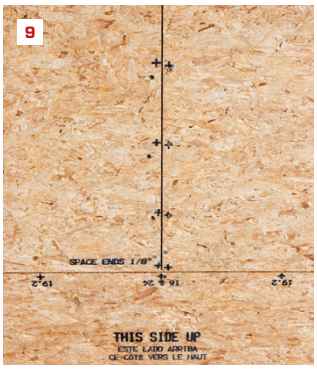
SHEET SPACING

Manufacturers of both plywood and OSB floor sheathing recommend that installers leave a 1/8-inch gap between sheets along the 4-foot edges to allow for swelling. Directions are often printed at the ends of every sheet **(9)**. Some framers use nails or strips of wood





Foam-to-gel glues work on wet or dry wood **(2)**. If fastening sheathing with a nail gun, be sure to use ring-shank or twist-shank nails **(3)**. A stand-up screw gun takes longer to drive each fastener, but is just as fast for the job overall **(4)**. Manufacturers often print the fastener layout on the sheets **(5)**.



The first course starts with a snapped line to keep the course straight **(6)**. A crew member drops a sheet into place, using one foot to keep it from sliding away **(7)**. A sledgehammer and block drive the sheets together **(8)**. Spacing instructions are printed on every sheet **(9)**.

for spacers, but after a while, it's pretty easy to just eyeball the gap. The 8-foot T&G edges are self-spacing, so we tap them tight as they go in. Also, we never put glue along the groove. Many sheathing manufacturers have designed their products to drain at that joint and glue would prevent draining.

Stagger the seams of the sheathing between rows. The starting piece for each row should alternate between a full sheet and a half sheet so that the end seams are staggered between rows. In other words, if you start the first row of sheathing with a full, 4x8 sheet, then the next row should start with a 4x4.

When placing the sheets for the first row, you should always face the tongue toward the perimeter of the building. That way, when you tap the second-row sheets against the first row, the beater block hits against the groove, which is less subject to damage than the tongue.

PREVENTING SQUEAKS

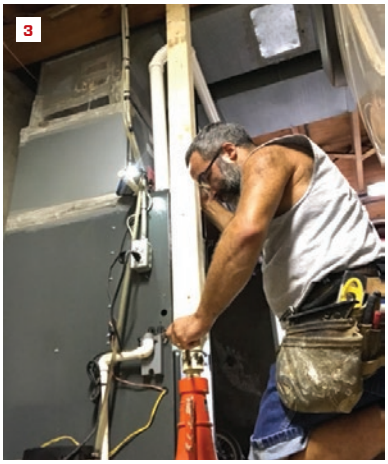
Squeaks can happen—even when you have done a good job installing the sheathing. Here are some tips to help reduce squeaks from other causes.

- Put glue in joist hangers prior to installing the joist, and toenail the top of the joist into the supporting member, such as a beam or girder.
- In this part of the country, we use a lot of top-flange joist hangers to hang joists inside concrete stem walls. Whenever possible, we add a treated 2x6 ledger under the joists after they're installed, pinning the ledger to the concrete with a split-drive fastener under each joist.
- When nailing down wall plates, always make sure the nails hit a solid joist or blocking. On an exterior perimeter wall parallel to the joists, I drive nails every 6 inches along the outside edge to hit the rim.
- When nailing interior walls that land between joists, put down a bead of glue prior to lifting the wall, and then nail the wall to the line.
- For I-joists 14 inches or larger that sit in hangers, spray in gap-filling foam (from a can or gun) on either side to act as a cushion and to prevent minute deflections of the I-joist web.
- Use gap-filling spray foam around pipes and ductwork that run through holes in the joists.

Tim Uhler is a lead carpenter for Pioneer Builders in Port Orchard, Wash. He is a contributing editor to JLC *and* Tools of the Trade. *Follow him on Instagram @awesomeframers.*

For a more detailed discussion on installing squeak-free floor sheathing, go to **www.jlconline.com/training-the-trades/squeak-free-floor-sheathing**.

BY EMANUEL SILVA



The main girder for the house was sitting in an oversize beam pocket with cracked parging around it **(1)**. But the real issue was that the beam was not long enough and provided insufficient bearing **(2)**. A house jack temporarily lifted and supported the girder for the repair **(3)**.

Photos by Emanuel Silva

Fixing a Poorly Supported Beam

This summer, a homeowner called me because she was concerned about the main girder in her 1960s home. She said that an area in her kitchen floor seemed to have dropped slightly over the past year. Close examination revealed a 4-foot-long crack in the floor tiles in that area.

The homeowner had done her homework. She had gone into the basement to examine the floor framing below the dropped area. The end of the girder that supported the ends of all the floor joists seemed to drop down where it ran into the foundation wall. The girder had been mortared into the beam pocket and that mortar had cracked and was falling out on one side. Her first call was to a structural engineer, who came and checked out the problem.

Weighing options. After assessing the issue, the engineer determined that the main girder was too short and did not have enough bearing on the foundation. He provided a number of solutions, which the homeowner explained to me when I arrived at the house. The first option was to install a 4-inch concrete-filled Lally column below the end of the girder, with a 2-foot-square, 1-foot-deep footing. This is what I would have usually done, but in this situation, the heating system had been installed close to where the girder met the foundation wall. Digging out for the footing would have been impossible without first moving the heating system.

An option that had crossed my mind when I first heard about the problem was to replace the girder or sister in a section at the bad end. I've done that on previous remodeling projects and I know the huge scope of that task. With the girder holding up the entire floor system as well as having both plumbing and electrical work connected to it, this option would have meant a long and costly repair.

The next option suggested by the engineer was having a steel bracket fabricated and installed to support the end of the girder. This seemed to be the least invasive and most cost-effective way to solve the problem, so we decided on this approach.

An engineer recommended supporting the girder with a steel bracket, which the author had fabricated locally **(4)**. He dry-fit the bracket and removed any unevenness in the concrete so that the bracket sat perfectly flat against the foundation wall **(5)**. Next, the author replaced the parging around the girder with small stones and Type N mortar **(6)**. The mortar filled in the pocket beside the girder to help prevent it from rolling or twisting under load.

Investigation. After clearing away stored items and debris from where I needed to work, I finally was able to check out the specifics of the problem more closely. The girder terminated in a beam pocket, but that pocket seemed to be much wider than the 6x10 beam needed. At some point, the pocket around the girder had been parged, and I could see a pair of wooden wedges sticking out below the girder **(1)**. The parging was cracked and loose on one side, so I started pulling some of it away.

With the material removed, I looked into the pocket and saw that the end of the girder was just inside the plane of the foundation **(2)**. To make matters worse, the bottom edge of the beam pocket had broken away, probably from having the load of the girder concentrated there. A makeshift solution had been to drive wedges below the girder. Over the years, the wedges had compressed and the parging cracked, allowing the girder to drop down. Luckily, the girder had dropped only a short distance instead of failing completely.

A beefy bracket. The engineer had tossed out the bracket option without offering any specific guidelines for sizing. So after inspecting the girder and taking some measurements, I went to my steel fabricator's shop to have the bracket made.

The fabricator and I sat down and went over the structural requirements for the bracket. He told me that the beam pocket would still be carrying most of the weight of the girder, but the bracket would be there to add supplemental support at the end. (In some jurisdictions, a structural engineer's stamp might be required for the design). The steel bracket that the fabricator made was most likely oversized and more than was needed to provide the additional support for the girder, but even then, it wasn't that expensive (around $75).

The L-shaped bracket was made from 1/2-inch-thick steel stock 6 inches wide. The vertical leg, which would rest against the foundation wall, was 12 inches long, and the horizontal leg that attached to the girder was 4 inches long. To make the bracket even stronger, the fabricator welded a diagonal steel gusset to both legs. Holes for fasteners completed the bracket.

Temporary lift and support. Back at the house, my first task was to jack up the girder and support it temporarily. To keep tabs on exactly how high I raised the girder,

Because the bracket would be bolted into the existing concrete, the author was able to install it before the parging had cured completely. He began by driving structural screws through predrilled holes in the bracket and up into the girder **(7)**. Next, he drilled the proper-size holes for concrete wedge anchors in the existing concrete foundation **(8)** and tightened the nuts to the required torque **(9)**. When the bracket was fastened in place, the author removed the jack temporarily supporting the girder.

I measured down from the girder and made a witness mark on the foundation wall.

I set a 4x4 post on top of a heavy-duty screw jack to do the lifting. After plumbing the post, I screwed it temporarily to the underside of the girder to keep it in place during the lift.

With everything set up, I slowly turned the jack screw to raise the girder **(3)**. Raising the girder too high could be as bad as having it dip down, so at this point I made sure to raise the girder only enough to remove the rest of the loose material, using my witness mark to gauge the lift.

Securing the girder. After confirming that the girder was still at the level that I wanted, I dry-fit the L-bracket and chipped away any excess concrete to make sure the bracket lay completely flat against the foundation **(5)**. I mixed a batch of fairly stiff Type N mortar with water and added a bonding additive to help it adhere to the concrete of the foundation wall. I pressed mortar along with some small stones into the voids around the beam pocket, with a margin trowel **(6)**. After smoothing the mortar flush with the foundation wall, I evened the surface with a stiff brush.

Because the anchors for the bracket were going into the existing foundation, I was able to install the bracket before the parging around the girder had dried completely. I first secured the bracket to the girder, with 3-inch-long Simpson Strong-Tie SDWS timber screws **(7)**. With the screws holding the bracket in position, I turned my attention to anchoring the bracket to the foundation.

I chose to anchor the bracket to the wall with 1/2-inch-diameter Simpson concrete wedge anchors 4 inches long. Using a masonry bit chucked in a hammer drill, I bored the proper-size holes in the foundation for the anchors **(8)**. I used a 5-inch-long bit to ensure that the anchors didn't bottom out.

Wedge anchors have a nut and bolt at one end, and turning the nut expands a circular wedge on the other end that tightens the bolt in the hole. I inserted the three wedge anchors into their holes and tightened them (Simpson specifications require 60 foot pounds of torque) to secure the bracket in place **(9)**. With the girder then safely secured at the proper level, the final step was removing the jack.

A contributing editor to JLC, *Emanuel Silva owns Silva Lightning Builders, in North Andover, Mass.*

JLCONLINE.COM

Products

BY SYMONE GARVETT

3. Bacteria-Killing Light

The ellumi LED bacteria-killing light, first launched as an undercabinet luminaire, is now available as a shower-safe recessed retrofit light. Evolution Lighting and healthcare-solutions-provider Vital Vio combined their respective lighting and bacteria-killing technologies to create the light. Instead of using UV to combat mold, fungi, and bacteria, Vital Vio's proprietary process uses LEDs. The shower light fits standard 5- and 6-inch recessed cans and has both a lighting mode and a disinfection mode. It costs $90. ellumilighting.com

3

10. Solar Roof Shingles

Solar manufacturer Sunflare debuted a series of solar residential shingles at the Solar Power International Show this year. Designed to cover the entire roof, the thin-film shingles install with standard methods and snap-together electrical connectors. The manufacturer says that the lightweight, waterproof shingles are encapsulated in durable, lightweight polymer solar sheets and have a temperature coefficient of -.31% per 1°C (for each degree the shingle warms, its output decreases .31%). Each cell has a by-pass diode, so only shaded cells become inactive if in shadow, according to the maker. Pricing will be available soon. sunflaresolar.com

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11. Smart Ventilation

Home-technology company Alea has launched an air-management platform called Alea Air. The new HVAC system replaces standard registers with smart vents that the manufacturer says can track and adjust temperature and monitor air quality. The vents have 11 sensors and robotic louvers and are enabled by a cloud-learning system that analyzes data and sends instructions to vents based on room-by-room preferences, weather forecasts, occupancy, and room size and orientation. Available in January 2019, a starter kit with three vents and the connectivity Airhub can be preordered for $380. Additional vents cost $120 each. alealabs.com

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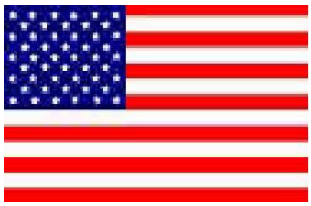

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Director	Dan Kristiansen 203-257-0912	Scott Monforte		
		Joseph Pelliccio		
Director	Al Dingfelder 203-376-8452	Pete Petrino		
		Dwight Uffer		
Director	Rob Gutman 203-501-1566	They have served as our primary leaders and in other capacities since 1992.		
		Please thank them for their service when you have a chance.		

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

The public is always welcome.

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