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

CAHI MONTHLY NEWS

May 2018 Volume 11, Issue 5

Presidents Corner

Busy Busy Busy! That's what I hear from realtors and fellow inspectors. It seems that the flowers of May also bring a sales boost and we finally get back to working every day. Let's pray we all stay busy for a very long time.

SCHOLARSHIP TIME: If you have a child in Trade School, College or University, or if they will be attending in the fall, CAHI is offering a $1000. Scholarship again this year.

- The 2 page requirements and application are on the web site.
- A link to the application is at the bottom of the home page.
- Applications must be postmarked no later than June 15th
- Recipients will be notified by the end of July.

Lastly, we continue to have a few openings on our board. We have room for up to three additional directors. We are always looking for extra hands to keep up with the work required to keep you informed and educated. If you would like to serve on the board, please notify myself or any other board member to be considered. If you have some time to just help out now and then, please come forward and offer your services. We would appreciate it.

Bill

May 23rd Meeting – 7:00 to 9:00 PM

Dom DiCenzo and Kevin Miller of Tilcon CT

Dom is the Executive Director of the CT Concrete Promotion state of Connecticut.

Kevin will be presenting **"Concrete- Problems and Solutions"** which will identify causes of why concrete fails, concrete defects, cracking vs crumbling concrete

Location:
Best Western, 201 Washington Ave, North Haven, CT

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

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Meeting Dates!

May 23rd

"Concrete- Problems and Solutions"

Presented by:
Kevin Miller &
Dom DiCenzo

June Meeting

TBD

Revised Client Disclosure Form now on DCP Website

As you may be aware, about one year ago some changes to the exclusions section of the Home Inspection regulations were finalized. These changes were made to correct an error in the way the original regulations were drafted and to make it clear that home inspectors, as part of their basic inspection, are not responsible for detecting or reporting, radon, asbestos, lead paint and lead solder or mold. You can certainly decide to provide these services if you wish – but they are not required to be included in the basic home inspection.

As part of incorporating these changes into the regulation the legal department at the Department of Consumer Protection (DCP) reorganized other parts of the whole regulation most notably by moving the definitions section from the end of the regulation to the beginning – where they probably should have been all along.

As you know the disclosure form we had been using from day one of being licensed and regulated, flowed from the form that the inspector and client signed into a statement of purpose and scope and then into the regulation. I think we all had been handing out or emailing to the clients a copy of that form and the regulations thinking that it was required, and because we had always done it that way.

So when these reorganized regulations came along we had to cut and paste the existing form onto the new regulations. It also was not clear if we should hand out all the regulations or just the portions that related to the actual inspection, as we had in the past.

To try and clarify what it is we are supposed to be handing out to our clients the Home Inspection Licensing Board asked the DCP legal department to review what we had been doing and provide guidance. At our last meeting we received the revised form which is attached to this article. Our lives just got a lot simpler.

As it turns out, all we are required to do is notify the client that we are regulated by the DCP and that there is a state agency they can turn to if they have a problem. There is NO requirement that we hand out the regulations or anything else other than this form. It is very generic and you can have them pre-printed and have the client sign it at the inspection. You could also email it ahead of time and then have a line on your contract where they initial indicating that they did receive the notice by email.

No more multi-page handouts – all you have to do is get this one simple form to the client and get in writing somewhere that they acknowledge that they got it.

Keep in mind that this is all you need to do to comply with the disclosure requirements in the statute. If you would like to give the client more than that – the regulations, the code of ethics, a copy of your high school yearbook picture – knock yourself out. As long as you provide them that form and get them to say they got it in writing – your covered. You can add to that anything else that you would like to.

This form is also now posted on the DCP web site for your information.

I hope this article has helped to clear up any confusion that might have existed about what we need to hand our clients – please feel free to give me a call or shoot me an email if you have any questions.

Bill Stanley
Chairman, Home Inspection Licensing Board
wjstanley@cox.net
203.215.8585

Home Inspection Disclosure Form

The Department of Consumer Protection (DCP) licenses and regulates all Home Inspectors in the state of Connecticut. If you have complaints or questions concerning the licensee's work please call or email DCP at:

Consumer Complaint Center	(860) 713-6300 Toll Free: (800) 842-2649 8:30am-4:30pm	dcp.complaints@ct.gov

Please sign and retain a copy of this disclosure form as proof of receipt.

Consumer:_____ **Date:**_____

Home Inspector: _____ **License No.** _____

Home Inspector Intern: _____ **Permit No.** _____

Chapter 400f of the Connecticut General Statutes and the Regulations of Connecticut State Agencies, Sections §§ 20-491-1—20-491-28. Laws and Regulations can be found at: www.ct.gov/dcp.

Carpenter Bees

SCIENTIFIC NAME
Genera ***Xylocopa*** and ***Ceratina***

Facts
Large vs Small
Within the United States carpenter bees are categorized in two genera – large carpenter bees ***(Xylocopa)*** and small carpenter bees ***(Ceratina)***.

Xylocopa is the group of most likely to make their presence and associated damage known to property owners.

APPEARANCE
What do they look like?
Large carpenter bee:

The most obvious characteristic used to separate large and small bees is size.

Large Carpenter Bee ***Xylocopa***

- anywhere from 12-25 mm long
- similar in size and appearance to bumble bees
- black, greenish black, metallic blue, or purplish blue in color
- yellow sections on the face (males)
- yellowish hairs on the legs, thorax, and abdomen (not as as vibrant or as numerous as they are on bumble bees)
- no visible hairs on the top of the abdomen

Small Carpenter Bee Ceratina

- less than 8 mm long
- dark in color
- metallic appearance
- scant body hairs
- some kind of yellow markings on the body and face.

How Did I Get Carpenter Bees?

Unfinished or weathered wood attracts the robust, black and yellow carpenter bee. While the pests do not eat wood, they excavate tunnels to use as nests. These are usually in the eaves of homes, as well as in decks, siding, fascia boards or porches.

Carpenter bee adults use their nests over the winter and reemerge in the spring. If left alone, the pests may continue to use and expand the same tunnels or find new ones.

How Serious Are Carpenter Bees?

While fairly harmless, carpenter bees increase the number of nests over the course of years, causing noticeable damage to wood. They can also create stains with their feces.

The sudden appearance of carpenter bees crawling out of wood often frightens people. Females can sting, but will only do so if bothered. Males appear aggressive as they fly around people and pets, but they are not harmful since males do not have a stinger. While these pests may cause damage to wood, there are some simple things homeowners can do to keep them away, like painting wood and keeping outside doors closed to prevent carpenter bee access to wood that could be used to construct galleries.

How Do I Get Rid OF Them?

Professional Inspection

Carpenter bee prevention and treatment begins with a thorough inspection performed by your pest management professional (PMP). During the inspection, your technician will inspect to accurately identify the offending pest and locate any damage.

Control Plan

Once the inspection is complete, the pest control plan is prepared. The most effective control method is to apply an insecticide dust to the bee's drill holes and leave the holes open for a few days so returning bees will contact the insecticide.

Once the bees die, the drill holes can be sealed and repainted. Sometimes it may also be useful to apply an aerosol spray to control free flying carpenter bees. While only a temporarily effective method, applying a liquid insecticide to the wood surface is a less time consuming process than applying dust to drill holes. A control technique that does not use insecticides is to paint any bare, exposed wood surfaces that are being attacked with exterior paint or a polyurethane finish. Your PMP will also inspect for weathering that will make it likely that the bees will attack. Also, your PMP may recommend sealing existing bore holes to discourage bees that are searching for possible nesting sites.

Call844-230-7048

SIGNS OF AN INFESTATION

Infestations are easily identified by the presence of the following:

- wood openings – entrance holes in wood
- sawdust – the presence of sawdust on the ground under where the hole is drilled

- pollen & feces – the presence of a yellowish combination of pollen and bee excrement near the entrance hole
- flying – their bothersome flight activity, especially by the males who are protective of their territory, but do not sting.

BEHAVIOR, DIET & HABIT

What do they eat?

Carpenter bees do not eat wood but do feed on plant pollen and nectar.

Do They Sting People?

The female is capable of stinging but seldom does so unless she is provoked or handled. The males do not sting, but they usually make property owners mistakenly interpret protecting their territory for aggression and the possibility of stinging.

Males do look to be very menacing – as they hover and dart after any other flying insects that trespass into their territory and fly near people or pets as they move nearby. However, they will back off and hover a short distance away.

Wood Damage

Large carpenter bees excavate dry, unpainted and weathered wooden objects such as the following:

- doors
- windowsills
- roof eaves
- railings
- decks
- untreated poles
- fences
- wooden lawn furniture

Types of Wood Excavated

One of their favorite items to excavate is the rails and posts of oak split rail fences. They prefer pine, fir, cyprus, oak and redwood, especially if the wood is not covered with bark, is unpainted or unfinished.

The bees sometimes bore into painted wood, especially if the paint covering is old and weathered.

Galleries, or Where Do They Live?

Gallery construction is a labor-intensive process that takes a lot of time and energy. As a result, females often prefer to inhabit existing nests instead of excavating new ones. Refurbished tunnels may increase several feet over several years. When required, females will use their strong mouthparts to chew round nest entrances in flat wood surfaces.

Gallery Entrance Holes

This hole is slightly less than 1/2-inch wide, which is about the diameter of her body and looks much like a carpenter used a 1/2-inch drill to create the opening. The bore hole goes into the wood perpendicular to the wood's grain for about 1-2 inches and then takes a right angle turn continuing as an excavated gallery (tunnel) that runs about 4-8 inches. The female then partitions off brood cells into linear rows. When finished, she places a food ball (made from pollen and regurgitated nectar) inside a brood cell, lays an egg, and blocks the chamber off with chewed wood pulp. After laying eggs, the female dies. The eggs hatch and become larvae that feed on the food ball until they pupate.

Small carpenter bees, or Ceratina, generally excavate twigs and stems to build their nests. Females overwinter as adults in partially or completely excavated stems, and in the spring, the female bee further excavates and creates a brood nest much the same as large bees. The small bees also provision their brood cells with pollen and nectar.

LIFE CYCLE & REPRODUCTION

Carpenter bees have four life stages: egg, larval, pupal, and adult states. It takes about seven weeks for a carpenter bee to reach adulthood, but developmental time may vary depending on temperate or other environmental conditions. Newly developed adults usually remain in their galleries for several weeks and leave their brood cells in April or May.

They mate, feed on pollen and nectar, return to their gallery to overwinter and then emerge the following spring. Large carpenter bees have one generation per year in the northern states, but in southern states like Florida, they may have two or more generations per year.

A particularly interesting characteristic of a few species of Ceratina is they can reproduce without males, a trait known as parthenogenicity.

MORE INFORMATION

Carpenter bees are important pollinators and are very useful in providing this beneficial service to agriculture, plant growers and fruit producers. However, they are also a nuisance and, given time, may cause structural damage resulting from their gallery and borehole excavations. Other nuisances or damage includes:

- Deposition of their excrement/pollen under the entrance hole is unsightly.
- Accumulations of sawdust from their borings and excavations
- Woodpeckers may riddle the wood with holes searching for the immature stages of these bees to eat.

Air-Sealing That Works

An extremely tight shell proves affordable with "universal," repeatable details

BY JAKE BRUTON AND STEVE BACZEK

In recent years, airtightness has become an increasingly important area of focus in residential construction. As of the 2012 International Energy Conservation Code (the "energy code" that underpins Chapter 4 of the IRC), builders must attain a minimum blower-door reading of 3 ACH50. However, our company's goal is to meet or exceed the Passive House level of airtightness, which is 0.60 ACH50.

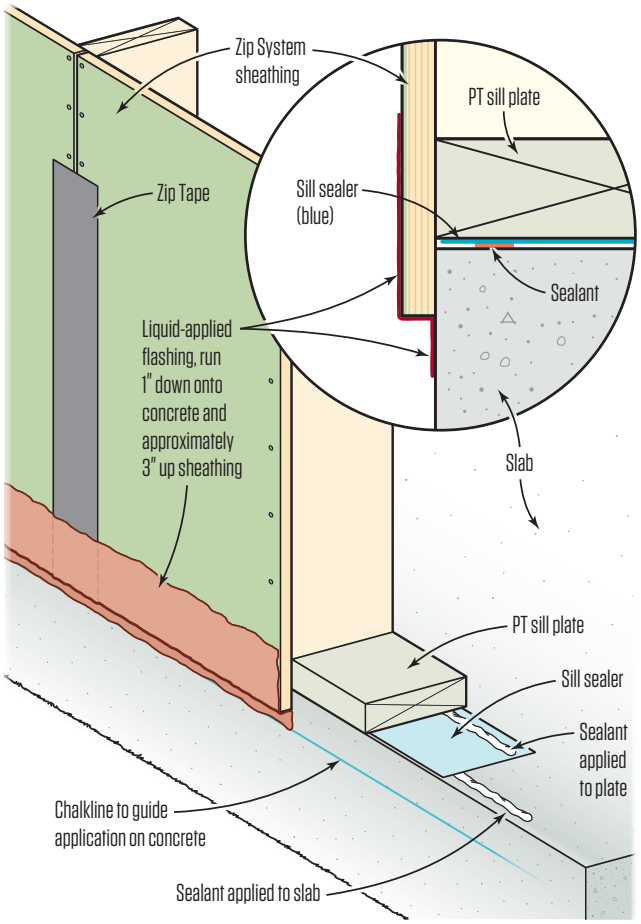
Many builders think that achieving an airtightness number this low requires a significant increase in budget due to costly materials and increased labor. But on the 1,100-square-foot home shown here, we were able to reach our initial goals with an extremely tight budget of $155 per square foot—which, for our typical practices and our market, is very low. We accomplished it by properly managing our materials and their installation.

Photos by Jake Bruton

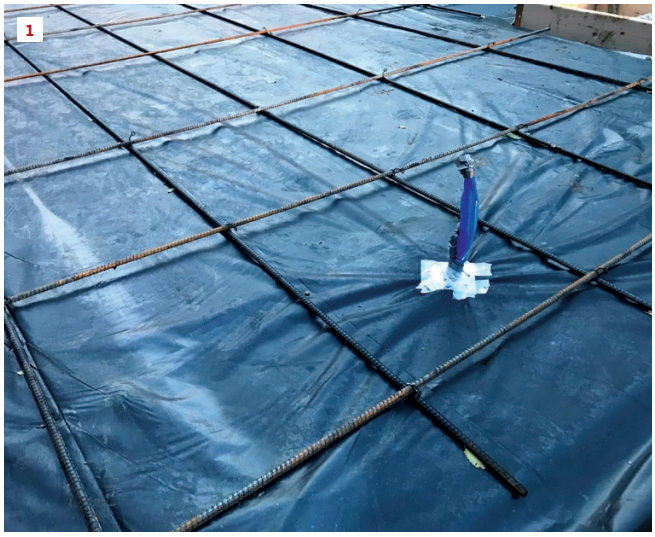
CONSULTING BUILDER PROGRAM

When our clients initially approached us about building a responsibly sized and durable home for their small family, they had concerns about meeting their tight budget and building a high-performance home. In cases like this, my firm institutes our consulting builder program, where I consult with the clients or the project's architect (or both) during the design phase to make meeting the

Air Seal at Base of Wall



Sealing down low. Stack effect—the movement of heated air from the bottom to the top of a house on a cold day—tends to draw air into a home at the base, making air leaks low on the house among the most important to seal. The author's crew accomplishes this in multiple ways. Before the slab is poured, all penetrations are sealed to the sub-slab poly **(1)**, and the author keeps stub-ups separate so they can be sealed effectively (multiple stubs are nearly impossible to seal well). His wall-to-foundation seal (see illustration, left) is applied over and under the "sill seal" (which mostly functions as capillary break) as well as at the base of the wall sheathing.



performance and durability goals easier. The clients pay a consulting fee only if they decide to go with another construction firm. Otherwise, if the clients decide to hire my company, I simply absorb the fee into the construction price for the home. This process lets me build a relationship with clients before they have chosen a builder. More importantly, I no longer have to try to retrofit details like air-sealing into an existing design.

The architects with whom we work are open to designing more-energy-efficient homes and to having a builder involved in the design process. I can't emphasize this enough: The one, simple step of being involved at the start of the design process is the single most important factor in our ability to remain profitable building high-performance homes. It has advanced both my firm's budget management process and our ability to hit energy goals.

Our basic airtightness protocol is founded on our ability to develop air-sealing details that can be repeated easily and become part of our "universal" building toolbox. They have to be simple and cost-effective, and they must rely on methods that can be performed by any of our carpenters with materials from a well-stocked lumber supplier.

AIR-SEALING STARTS AT THE SLAB

The air barrier starts below ground level, under the building. Our first line of defense is 10-mil poly, which we apply directly over the under-slab insulation. We've found that the 10-mil thickness withstands traffic better than the code-required 6-mil and prevents damage that would require us to go back and make repairs. During the installation of the 10-mil poly, all the seams are lapped and taped to ensure an airtight installation. When it's available, we prefer to use one continuous piece of poly.

The Aarow Building crew leaves window and door openings **(2)** sheathed for the duration of the framing. When the frame is complete, they'll come back, fill in doors they left open for access **(3)**, and run their initial blower-door test. Note the white spray paint above the door. All temporary nailers are painted white for easy identification so they can be filled prior to the test.

While it's not too likely that we will develop air leaks through the slab penetrations, we instruct our subs that each individual stub through the slab be taped to the 10-mil poly below the slab. This means each line that penetrates the slab does so alone and is not mated with a handful of other pipes—clusters of pipes are nearly impossible to air seal. By separating the stubs by just a couple of inches, however, we are able to properly seal them.

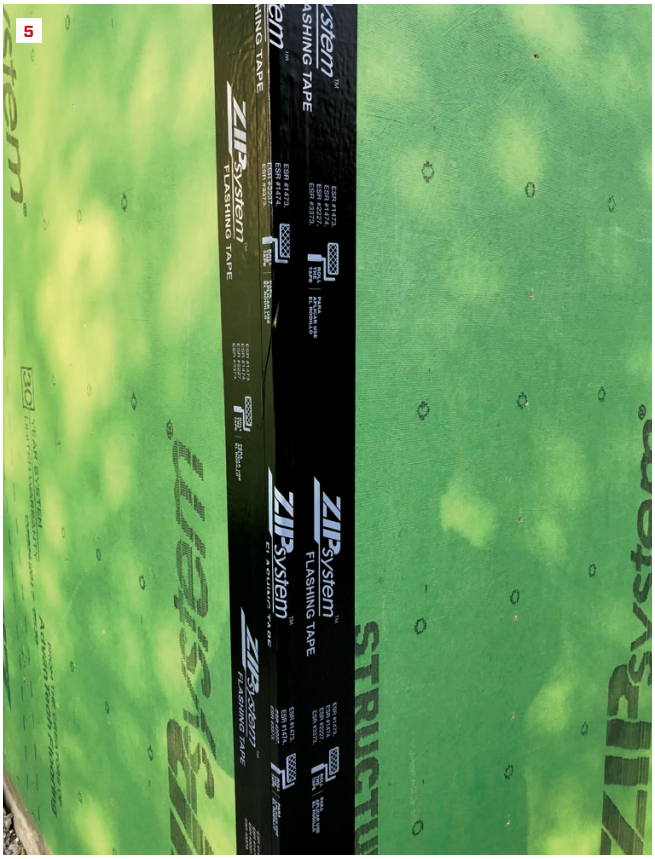
On this home, code required a 3-inch PVC line from below the slab to the roof for a passive radon vent. This radon line ended up being the only roof penetration. In general, we try to avoid roof penetrations, by using approved air-admittance valves for plumbing vents.

FRAMING PROCESS

Once we are ready to frame a home, we have a crew meeting about our goals for the next steps of the project and the methods we will use, and we ask for objections or ideas. We do this on every project; it brings every crew member, no matter how green or seasoned, fully into the process. At this time, we assign one crew member to be in charge of all air-sealing, which will take place over multiple days and include various materials. This ensures we never run into "I thought that was someone else's job."

When it comes to sealing the sill plate to the slab, we not only use the standard foam sill sealer required by code as a capillary break below the pressure-treated sill, but we also add two beads of sealant. In the past, we have used Tremco's acoustical, but on this home, we used Geocel from Proflex. Both products are supposed to have a long service life without curing to a hard finish. This is important, because when things become rigid, they tend to crack, creating leaks.

This home was our first attempt using Geocel. The decision to use it was driven by budget; the Geocel is about half the price of



Corners are areas where Aarow Building ramps up the taping detail. On inside **(4)** and outside **(5)** corners, the crew uses three pieces of tape: first, a single piece that bridges the joint between the meeting panels, and then, a strip on each side of the first piece. Huber makes a 6-inch tape that could work, but it is a special-order item for the author.

Tremco. Also, Geocel is readily available at our supply house. For the majority of homes we build, though, we prefer to use Tremco because we know that its service life can be more than half a century.

We apply the two beads of sealant before we stand the walls. We apply one bead to the pressure-treated plate near what will be the interior, and then staple the sill sealer on like normal. The second bead of sealant is applied to the concrete slab near the outer edge. Placing the beads on opposing sides of the sill sealer creates a non-direct, "Z"-shaped pathway for air movement.

Each joint in the plates is detailed with enough sealant that it squishes out once pushed into place. If it doesn't squish, we pull things apart and add more. Each of the foundation bolts also receives a large glob of the sealant, just in case. I have found that stressing the idea that the sealant is continuous is important to achieving our goals.

ZIP-TAPE SEALING

Now that the walls are standing, we start installing the sheathing. Our homes receive full sheathing using Huber's Zip System. The seams are then taped according to the manufacturer specs. As with the liquid sealants, one crew member is responsible for all taping and rolling, which means everyone else can move on to other tasks. First, we tape all of the horizontal seams of the sheathing on the project and then all the verticals. This creates a shingled effect on all tape joints that will help to shed water from the tape and down the wall, without making a penetration into the envelope.

The only aspect of the Huber instructions from which we deviate is the inside and outside corner taping—we use three pieces of tape instead of the recommended one. We install one piece on the corner, bridging both sides, and roll it. Then we install a strip on each edge of the first piece, as insurance. Make sure to roll the first piece before in-

Continuous air barrier. Air leaks at the top of the wall are sealed with a combination of Zip Tape and Grace Vycor Plus. First, the sheathing is taped to the top plate **(6)**. Strips of 9-inch Vycor Plus lap over this tape **(7, 8)** and extend inside **(9)**. There, they will be taped to strips of OSB that will be installed at the perimeter of the ceiling, forming the air barrier for the lid.

stalling the others; otherwise, air can easily become trapped behind all three layers. We started using this practice because it was difficult to run tape in a straight line in corners, and the three pieces ensure full coverage. Huber makes a 6-inch tape that would work perfectly for this; however, our supply house doesn't stock it and we find it easier to have a method that doesn't require special-order items that can delay the schedule or be overlooked because they're not on site.

For this home, we didn't remove the window or door sheathing during framing, so we could test the envelope before installing the windows. We taped and rolled those openings as if they didn't exist at this stage.

After all the walls are up, we return to the slab-to-wall connection. On this project, we used FastFlash, a liquid flashing product from Prosoco; I also think the fluid-applied sealer from Huber is a superb product. We chalk a line 1 inch down from the top of the slab as a guide, to avoid applying the product too far down for the siding to properly conceal it. Then we apply the Prosoco FastFlash, bridging from the Zip sheathing down to the foundation (see "Air Seal at Base of Wall," page 50).

Flashing the base of the wall requires more attention to detail than anything else discussed so far. It's messy, you're often in the mud, and the area is low and hard to see. But it is an important spot. Of all the air leaks, those low and high on the wall draw in the most air due to stack pressure. If you're going to invest your time on air-sealing, those are the areas to concentrate on.

The wall-to-slab connection is also difficult to detail because the slab concrete is never completely flat or straight. Hence, it requires a lot of added effort to create a solid seal. Keep in mind that leaks here will be impossible to repair after construction is complete, so getting them right the first time is critical.

Tornado Safety

By Roger Edwards
Storm Prediction Center
Norman, Oklahoma

There is no such thing as guaranteed safety inside a tornado. Freak accidents happen; and the most violent tornadoes can level and blow away almost any house and its occupants. Extremely violent EF5 tornadoes are very rare, though. Most tornadoes are actually much weaker and can be survived using these safety ideas...

Prevention and practice before the storm: At home, have a family tornado plan in place, based on the kind of dwelling you live in and the safety tips below. Know where you can take shelter in a matter of seconds, and practice a family tornado drill at least once a year. Have a pre-determined place to meet after a disaster. Flying debris is the greatest danger in tornadoes; so store protective coverings (e.g., mattress, sleeping bags, thick blankets, etc) in or next to your shelter space, ready to use on a few seconds' notice. When a tornado watch is issued, think about the drill and check to make sure all your safety supplies are handy. Turn on local TV, radio or NOAA Weather Radio and stay alert for warnings. Forget about the old notion of opening windows to equalize pressure; the tornado will blast open the windows for you! If you shop frequently at certain stores, learn where there are bathrooms, storage rooms or other interior shelter areas away from windows, and the shortest ways to get there. All administrators of schools, shopping centers, nursing homes, hospitals, sports arenas, stadiums, mobile home communities and offices should have a tornado safety plan in place, with easy-to-read signs posted to direct everyone to a safe, nearby shelter area. Schools and office building managers should regularly run well-coordinated drills. If you are planning to build a house, especially east of the Rockies, consider an underground tornado shelter or an interior "safe room".

Know the signs of a tornado: Weather forecasting science is not perfect and some tornadoes do occur without a tornado warning. There is no substitute for staying alert to the sky. Besides an obviously visible tornado, here are some things to look and listen for:

1. Strong, persistent rotation in the cloud base.
2. Whirling dust or debris on the ground under a cloud base -- tornadoes sometimes have no funnel!
3. Hail or heavy rain followed by either dead calm or a fast, intense wind shift. Many tornadoes are wrapped in heavy precipitation and can't be seen.
4. Day or night - Loud, continuous roar or rumble, which doesn't fade in a few seconds like thunder.
5. Night - Small, bright, blue-green to white flashes at ground level near a thunderstorm (as opposed to silvery lightning up in the clouds). These mean power lines are being snapped by very strong wind, maybe a tornado.
6. Night - Persistent lowering from the cloud base, illuminated or silhouetted by lightning -- especially if it is on the ground or there is a blue-green-white power flash underneath.

WHAT TO DO...

In a house with a basement: Avoid windows. Get in the basement and under some kind of sturdy protection (heavy table or work bench), or cover yourself with a mattress or sleeping bag. Know where very heavy objects rest on the floor above (pianos, refrigerators, waterbeds, etc.) and do not go under them. They may fall down through a weakened floor and crush you. Head protection, such as a helmet, can boost survivability also.

In a house with no basement, a dorm, or an apartment: Avoid windows. Go to the lowest floor, small center room (like a bathroom or closet), under a stairwell, or in an interior hallway with no windows. Crouch as low as possible to the floor, facing down; and cover your head with your hands. A bath tub may offer a shell of partial protection. Even in an interior room, you should cover yourself with some sort of thick padding (mattress, blankets, etc.), to protect against falling debris in case the roof and ceiling fail. A helmet can offer some protection against head injury.

In an office building, hospital, nursing home or skyscraper: Go directly to an enclosed, windowless area in the center of the building -- away from glass and on the lowest floor possible. Then, crouch down and cover your head. Interior stairwells are usually good places to take shelter, and if not crowded, allow you to get to a lower level quickly. Stay off the elevators; you could be trapped in them if the power is lost.

In a mobile home: Get out! Even if your home is tied down, it is not as safe as an underground shelter or permanent, sturdy building. Go to one of those shelters, or to a nearby permanent structure, using your tornado evacuation plan. Most tornadoes can destroy even tied-down mobile homes; and it is best not to play the low odds that yours will make it. This mobile-home safety video from the State of Missouri may be useful in developing your plan.

At school: Follow the drill! Go to the interior hall or windowless room in an orderly way as you are told. Crouch low, head down, and protect the back of your head with your arms. Stay away from windows and large open rooms like gyms and auditoriums.

In a car or truck: Vehicles are extremely risky in a tornado. There is no safe option when caught in a tornado in a car, just slightly less-dangerous ones. If the tornado is visible, far away, and the traffic is light, you may be able to drive out of its path by moving at right angles to the tornado. Seek shelter in a sturdy building, or underground if possible. If you are caught by extreme winds or flying debris, park the car as quickly and safely as possible -- out of the traffic lanes. Stay in the car with the seat belt on. Put your head down below the windows; cover your head with your hands and a blanket, coat, or other cushion if possible. If you can safely get noticeably lower than the level of the roadway,leave your car and lie in that area, covering your head with your hands. Avoid seeking shelter under bridges, which can create deadly traffic hazards while offering little protection against flying debris.

In the open outdoors: If possible, seek shelter in a sturdy building. If not, lie flat and face-down on low ground, protecting the back of your head with your arms. Get as far away from trees and cars as you can; they may be blown onto you in a tornado.

In a shopping mall or large store: Do not panic. Watch for others. Move as quickly as possible to an interior bathroom, storage room or other small enclosed area, away from windows.

In a church or theater: Do not panic. If possible, move quickly but orderly to an interior bathroom or hallway, away from windows. Crouch face-down and protect your head with your arms. If there is no time to do that, get under the seats or pews, protecting your head with your arms or hands.

AFTER THE TORNADO...

Keep your family together and wait for emergency personnel to arrive. Carefully render aid to those who are injured. Stay away from power lines and puddles with wires in them; they may still be carrying electricity! Watch your step to avoid broken glass, nails, and other sharp objects. Stay out of any heavily damaged houses or buildings; they could collapse at any time. Do not use matches or lighters, in case of leaking natural gas pipes or fuel tanks nearby. Remain calm and alert, and listen for information and instructions from emergency crews or local officials.

Following the powerful storms (Tornado/Windshears) that passed through parts of CT on May 15th, the following is one of the press releases

Press Releases
05/16/2018

Residents without Power from Yesterday's Storms Should Take Precautions to Avoid Deadly Carbon Monoxide Poisoning
In the wake of yesterday's storms, which have left thousands of Connecticut residents without power, the Connecticut Department of Public Health (DPH) warns residents of the dangers of carbon monoxide (CO) and asks that they take steps to prevent deadly CO poisoning. DPH cautions residents to ensure proper use of generators to protect against CO poisoning. Generators should be placed at least 20 feet from the house and never inside the house, enclosed porch or attached garage.

CO is an invisible, odorless gas that can be fatal. Breathing in excessive amounts of CO can cause loss of consciousness and death. The symptoms of CO poisoning can mimic those of the flu, including headache, fatigue, dizziness, weakness, nausea, vomiting, chest pain, confusion, or loss of consciousness. People who are sleeping or unconscious can die from CO poisoning before they exhibit any symptoms. DPH warns that anyone exhibiting these symptoms should leave the house immediately and call 911.

Improper use of portable generators have caused more than half of CO poisonings in Connecticut, according to DPH. DPH offers the following safety tips to prevent CO poisoning:

- Never use portable generators or other gasoline-powered equipment (including tools) indoors or in the garage, basement, shed or other enclosed spaces. Even if the garage or shed doors are open, CO gas can still build up to dangerous levels within minutes.

- Place portable generators at least 20-25 feet from your home. There have been instances where exhaust containing CO gas has been blown back into the house and poisoned occupants when outdoor portable generators were close to the house.

- Opening windows and doors, and operating fans is NOT sufficient to prevent buildup of CO in a home.

- Use charcoal and gas grills or camping stoves outdoors only.

DPH developed a video, Carbon Monoxide: The Silent Killer, to help raise awareness of the dangers of CO and how to prevent poisoning. It is available online in English and Spanish by clicking on the following link: https://www.youtube.com/watch?v=Pe-8QcFJ1ME . More information on Carbon Monoxide can also be found on the DPH website by clicking here.

Setting Precast Footings

BY JIM WOLFFER AND STEVE BACZEK

They say the shortest distance between two points is a straight line. That seems easy enough, but things get a bit more complex when the straight line is 78 feet long and there are 11 points along the line that have to be lined up perfectly. That was the challenge that Shoreline Builders, of Scituate, Mass., faced recently when building a new, custom, high-performance residence on Cape Cod. The home was to have a 1,100-square-foot covered porch that measured 78 feet along one side and wrapped around one corner of the house, and many of the standard construction details required an exceptionally high level of precision.

The porch and its roof framing system had to be supported by 20 footings total—16 perimeter footings plus four inside footings to support the wider porch section at the end of the house; the long side of the porch had 11 footings. Because the roof was to be a prefabricated truss system that was ordered about the same time as the footing installation, there was little margin for error or for misalignment of the footings. In addition, the project was located in one of Cape Cod's high-wind zones, so the alignment of all the support and framing components was a critical structural detail specified by the engineer to resist the uplift potential of the large porch roof.

PRECAST FOOTINGS

In reviewing the project with the site contractor, George Botelho, we considered a couple of options for the porch footings: the typical poured-in-place tube footings vs. precast concrete footings. Poured concrete footings pose a number of challenges. The first factor is that they are difficult to install with precise alignment, which was critical to this project. And backfilling tube footings almost inevitably causes the tubes to move a little (and sometimes a lot), which results in a ragged layout. Another consideration when using site-poured tube footings is that they have to be inspected prior to filling, which can often mean a day or more between the placement of the forms and getting them filled. If the soil is at all moist, the tube material can absorb moisture and deform before they can be filled. For these reasons, Botelho suggested that we go with precast footings.

When Botelho started using precast footings a few years back, they were typically made with square tops. But setting a straight line of footings presented a big enough challenge in itself; trying to align the square edges was an additional task that could be eliminated if the footings were cylindrical. So Botelho asked the precast manufacturer to start casting the footings in the round. In the casting process, the manufacturer embedded a fitting in the top of the footing that could accept a threaded eyebolt for lifting and placing the footings. Eventually, these threaded fittings would be the attachment points for the post-base connectors, a critical link in the framing sequence.

The perimeter of the porch required 11 footings along the long section and five additional footings where the porch returned around the corner of the house. Each footing was 5 feet tall and 1 foot in diameter at the top and tapered slightly down to a wide supporting base that was about 30 inches wide and a foot high. When the footings were delivered on site, we were ready to begin installation.

SETTING THE FOOTINGS AT THE SAME HEIGHT

To set the footings, we had to maintain two critical parameters: The 11 footings all had to be set at exactly the same elevation, and they all had to be in a perfectly straight line. With the extremely

Photos by Jim Wolffer

The site crew dug the hole for each precast footing individually, compacting the base of the hole and using a laser level to set the elevation **(1)**. Each footing has an integral fitting for an eyebolt that was used to lift and place the footing **(2)**. After the footings were placed, the crew used the fittings to attach the post connectors.

Backfilling in lifts and compacting between each layer locks the footings in place **(3)**. As the crew compacted the final grade, they sloped it away gradually from the foundation **(4)**. The grade drops just beyond the footings, for the ground gutter **(5)**. Filter fabric covers the grade **(6)** and then wraps back over the crushed stone and drainage pipe **(7)**.

sandy Cape Cod soil, it made sense to excavate each footing separately. The frost depth for this location was 4 feet, so we excavated to exactly that depth below rough grade. Because the precast footings are 5 feet tall, that left 12 inches of vertical play for the drainage layer under the porch that we would install later.

Botelho's crew compacted the base soil in each excavation by hand, setting the depth of each hole with a laser and a measuring stick, which gave the holes the vertical accuracy that we needed **(1)**. The crew used an excavator equipped with a chain for the actual placement of the footings. A hook on the end of the chain grabbed an eyebolt threaded into the fitting on the top of the footing. The excavator easily lifted the footings into place, setting each one on the compacted, undisturbed soil of the hole excavation **(2)**.

GETTING THE FOOTINGS IN A STRAIGHT LINE

Making sure that the footings were in line with each other was as critical as their all being at the same height. We did a quick check of the foundation wall along the edge of the house adjacent to the porch to confirm that it was perfectly straight. We also verified that the outside corner—where the porch returned along the end of the house—was a true 90 degrees. Having the foundation as a reliable reference helped immensely, as it allowed the crew to pull accurate measurements from the face of the foundation wall to place the footings in a straight line.

As the crew placed each footing, they measured off the foundation as well as off the center point of the previous footing. The footings were 8 feet on-center. The crew set up a 100-foot string parallel to the foundation and a second laser as a secondary check of the footing alignment. The string provided a true sight line to work from and the laser provided a continuous line along the tops of the footings.

After setting each footing, the site crew backfilled about 2 feet and compacted the fill, which helped to lock the footings in place **(3)**. After the initial compaction, they quickly checked that the footings were still in perfect alignment. The crew completed the backfilling in two more lifts, compacting each layer and checking after each compaction to make sure the footings stayed in perfect position.

PERIMETER DRAINAGE

Because this home has no roof gutters, it would rely on a perimeter ground-gutter system (see "A Primer on Water Management," Jun/17). The ground gutter is designed to carry groundwater and roof runoff to an area of reclamation on the other side of the site. The porch was to be open to the weather, so we had to tie

Crushed stone filled the area under the porch up to the tops of the footings **(8)**. The crew checked the alignment of the footings at every step, and a taut string confirmed that both the height and the placement of all 11 footings along the 78-foot length of the porch were within 1/8 inch **(9)**. The high degree of accuracy meant that the treated beams supporting the porch were installed without a hitch **(10)**. The precision was critical for engineering the roof frame to withstand severe uplift in this high-wind area **(11)**.

the area below the porch into the ground-gutter system. After the site crew finished backfilling around the footings, they compacted the top layer of soil, sloping the grade away from the foundation slightly toward the outer edge of the porch **(4)**.

Just beyond the line of the footings, the grade dropped sharply about 18 inches to form one side of the ground gutter **(5)**. The crew covered the sloped ground with heavy-duty filter fabric and then added an 8- to 10-inch layer of crushed stone on top of the fabric **(6)**. The crushed stone would drain any water that filtered through the porch floor above. The filter fabric continued beyond the footings to line the ground gutter, and it was intentionally left long so that it could roll back over the stone to fully encapsulate the drain pipe and the stone around it. We centered the drain pipe side-to-side in the ground gutter so that it sat directly below the "drip line" of the porch roof above **(7)**.

PRECISION PAYS OFF

Before the porch framing could begin, we quickly checked the footings again to make sure that they were all still perfectly in line **(8)**. When all was said and done, Botelho and his site crew had placed all of the footings within 1/8 inch on-center of each other **(9)**, a level of accuracy and consistency that would have been difficult or nearly impossible to duplicate with poured-in-place footings.

When the framers arrived, they were pleasantly surprised to find such an accurate layout. The precision of the footing placement allowed them to quickly install the treated frame, columns, and beams for the porch **(10)**. And this precision continued throughout the frame; from the straight and level lines of the footings, the crew efficiently placed the grade beams, posts, roof beams, and roof trusses in perfect alignment **(11)**.

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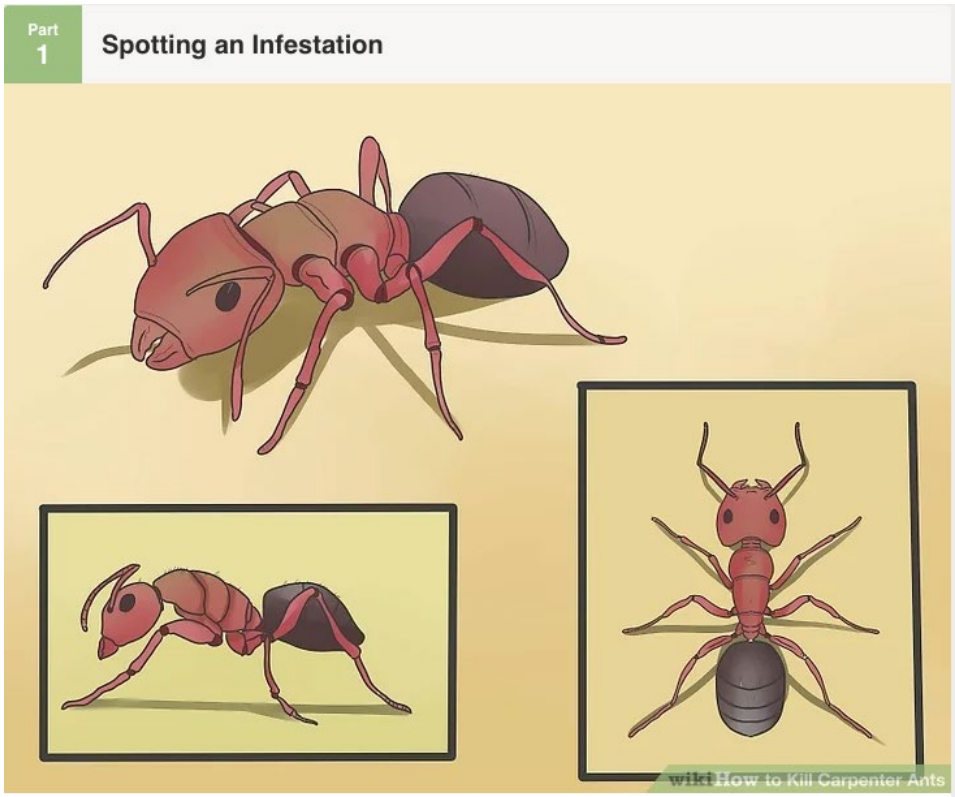
wikiHow to do anything...

How to Kill Carpenter Ants

Carpenter ants are exceptionally common, exceptionally destructive pests. Left unchecked, a carpenter ant infestation can spread rapidly. Because of this, identifying and exterminating carpenter ants as early as possible can help prevent serious structural damage, which can be quite costly to repair. See Step 1 below to start stamping out a carpenter ant infestation before it grows out of control.

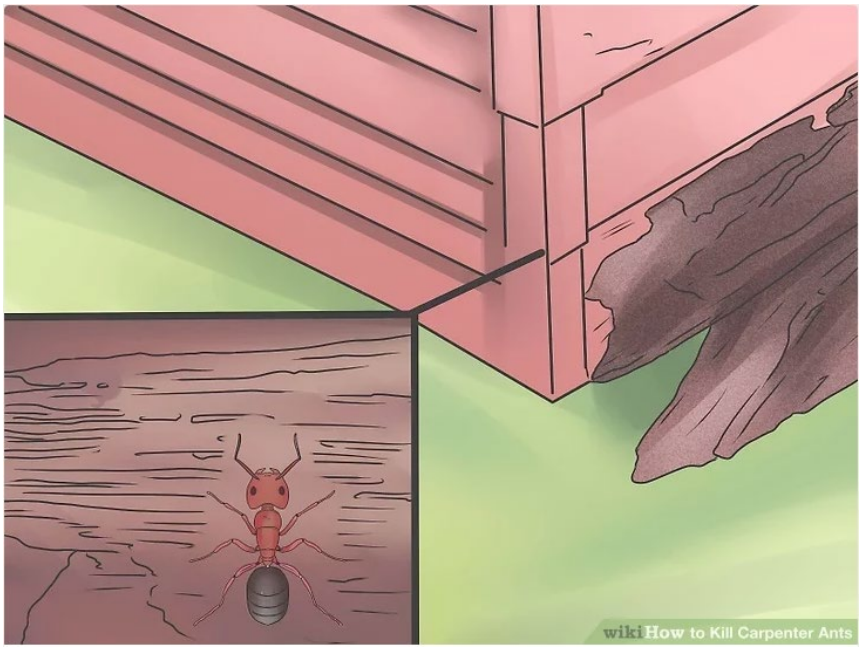


1 Learn how to identify carpenter ants. Carpenter ants are a group of ants belonging to the genus Camponotus, of which there are over 1,000 species.[1] Carpenter ants live on every continent except for Antarctica and, as individual species, have a wide variety of differentiating features. However, certain traits common to the entire genus are useful to know when attempting to decide whether the ants in your home are carpenter ants or another variety. Some common traits to look for are:[2]

- Color: Usually red, black, or an intermediate shade
- Shape: Segmented with oval abdomen and boxy, thin thorax. The tops of carpenter ant

thoraxes typically have a smooth, even curve, rather than an uneven or bumpy one.

- Size: Approximately 3/8”-1/2”, depending on caste
- Antennae: Yes
- Wings: Typical worker ants do not have wings. However, relatively rare male drones may possess them.



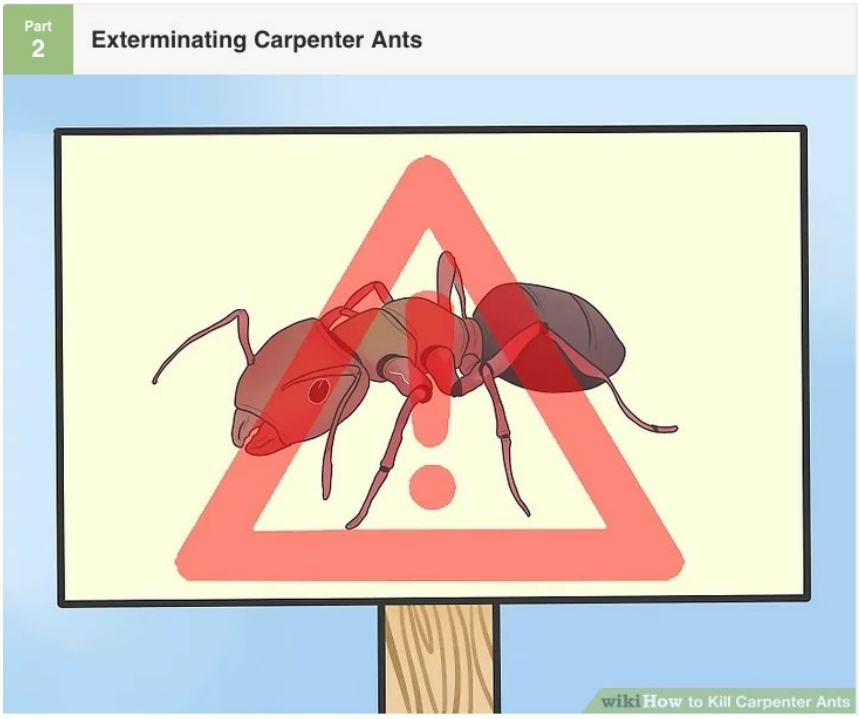
2 **Learn where carpenter ants live.** Carpenter ants can (and will) establish a nest inside or outside of any type of structure, but wooden homes are especially at risk because carpenter ants like to bore tiny tunnels into wood. Unlike termites, carpenter ants don’t eat wood - they only tunnel into the structure to create a nest.[3]

Because moist wood is easier than dry wood for carpenter ants to tunnel through, the interior locations of carpenter ants will often be near a moisture source, like a leaky sink or bath.

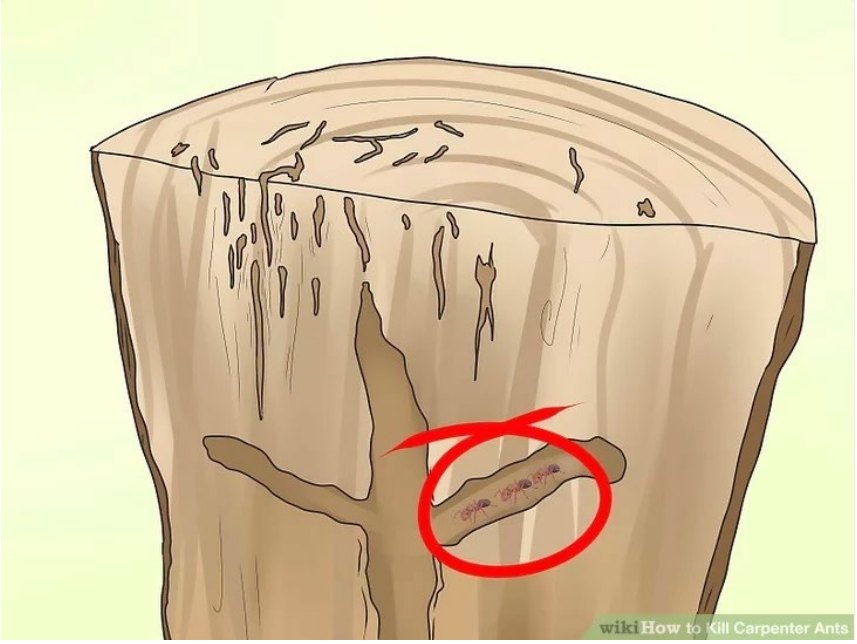
- Sometimes, carpenter ants build a network of one or more satellite or parent colonies outside a structure and travel between these colonies and their foothold indoors, entering the structure through small cracks or openings. In these cases, outdoor colonies will often be located in tree stumps, landscape timbers, wood piles or other sources of damp wood. You can often locate carpenter ant trails between colonies in the early morning or early evening when the carpenter ants are foraging. There tracks are like a thin line.
- When carpenter ants tunnel, they can leave “frass”, a substance resembling tiny wood shavings or sawdust, behind. Frass often contains dead insects. This can provide clues to their nesting location. If you come across small piles of frass in or around your house, carefully inspect the wood nearby for tunnels - probing the suspected wood with a thin screwdriver can reveal hollow spots.

3 **Know where to look for carpenter ant activity.** Though they usually nest in wood, if a carpenter ant colony is within the wall of your home, you may have a hard time finding it. If you suspect you have carpenter ants, it's a good idea to look for them in easily-accessible places where you are likely to find them. Certain common household sites are more supportive of carpenter ant activities than others - especially if these sites are damp and/or have access to food. Look for ants in the following areas:

- Carpets – Check around doors, fireplaces, and other areas with easy access to the outside.
- Patios and foundations
- Areas with vegetation - Ants like to nest and forage in trails out of sight behind any vegetation, tree stumps, branches which rests against foundations, patios, etc. Pull back the vegetation to look for ants. When you find foraging ants, attempt to follow them back to their colony.
- Mulch and leaf litter can harbor numerous types of ants in addition to carpenter ants, such as pavement ants, fire ants, and Argentine ants. Rake mulch back from the ground to check for colonies.
- Floors – Potted plants, compost bends, or any other suitable item that has ground contact can contain carpenter ants.



1 Use caution when dealing with carpenter ants. Though it's unlikely to happen, this warning bears mentioning: don't handle carpenter ants or their nests directly. Carpenter ants are not particularly aggressive and will not usually bite humans. However, when irritated or threatened, they can and will inflict a painful bite. Carpenter ants are also known to spray formic acid into bite wounds, increasing the pain. Though it's not the end of the world to be bitten by carpenter ants, you can avoid unnecessary pain by avoiding touching the ants or their nests unless it's absolutely necessary, in which case you should use long sleeves and gloves.



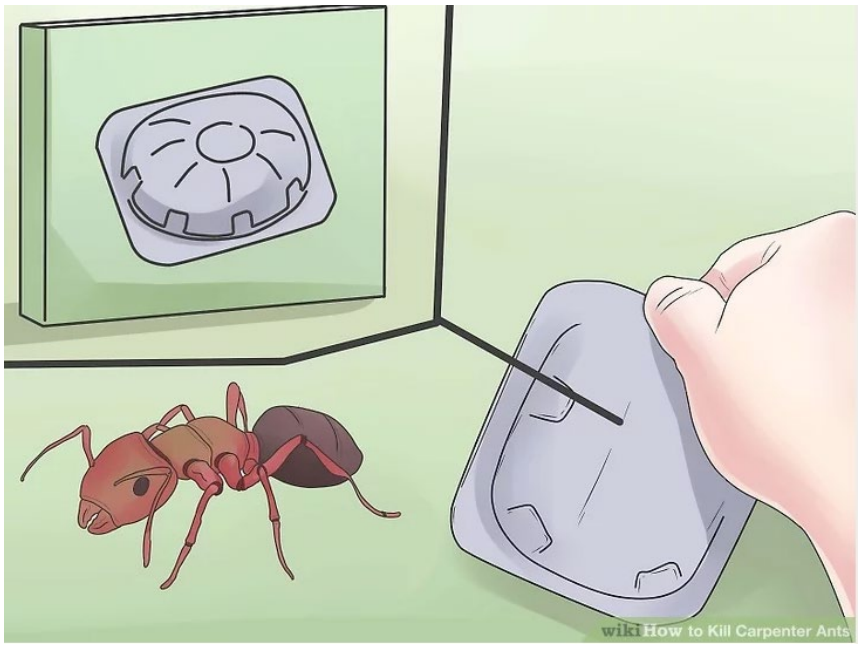
2 Locate the colony or colonies. The first step to exterminating a carpenter ant colony is to find it. To pinpoint the location of colonies in your home, look for ants, small holes, and piles of grass in the

locations discussed in Part One, paying special attention to any areas that appear to contain moist wood. You can also test wood for infestations near the surface by firmly tapping. Wood with extensive burrowing can sound thinner or hollower than unaffected wood. Tapping can also agitate ants, causing them to leave the nest, where you may be able to see them more easily.

- Don't forget that mature nests often have smaller satellite nests nearby, which also must be located to ensure the entire ant infestation is exterminated.

3 **Destroy or remove the colony.** In the case of smaller colonies, or ones that are fairly easy to access, it's sometimes possible to simply get rid of the colony itself. If the colony is outdoors, simply dispose of the affected wood carefully, using impenetrable materials like tarps to protect yourself from the ants as you handle the wood. If the colony has been located indoors, some pest control websites recommend using a vacuum cleaner's hose attachment to disrupt the colony and suck the ants out.[4]

- If using the vacuum cleaner method, be sure to carefully seal and dispose of the dust bag to keep any ants that survive from escaping.
- If you find a colony that has extensively burrowed through the wood in your wall, don't cut the wood out - you risk compromising the structural integrity of your house. Instead, call a professional.



4 **Use baits for ant colonies that cannot be treated directly.** You may not always be able to find carpenter ant colonies. However, if you can find significant numbers of the ants themselves, placing insecticides in their trails can control and eliminate the colony. A variety of baits, traps, and other ant-killing products are available for sale to the general public - visit your local hardware store to check which options are available to you.

- Be very careful when using poison ant bait in houses with small children. Make sure that the child knows not to eat the poison, or, if s/he is too young to understand, keep the child under close supervision.

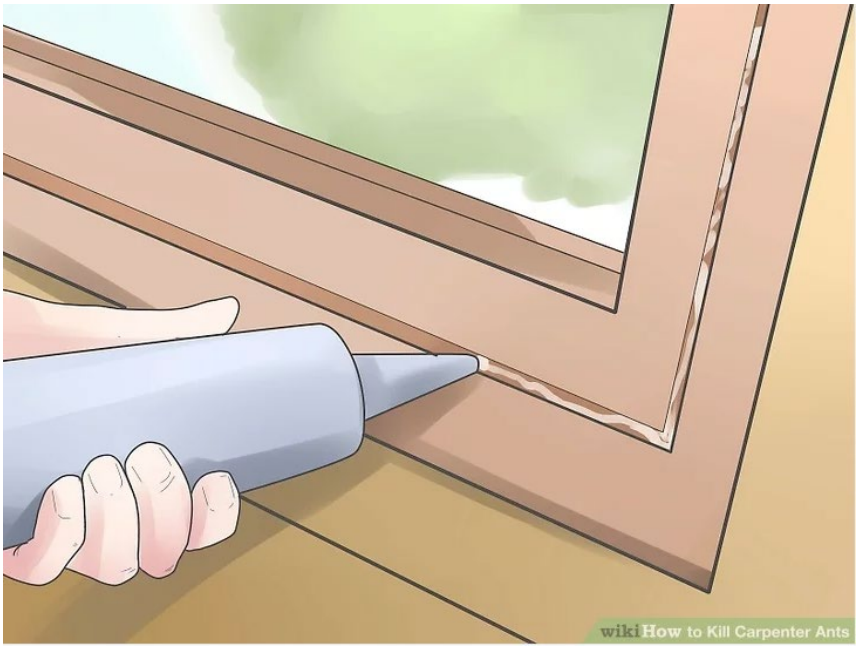
5 **Contact a professional.** If you can't quickly locate and eliminate the colony and you haven't had success with insecticides, it's usually best to contact a professional exterminator. Professionals

have access to insecticides and other tools that aren't available to the general public, but, more importantly, their training and experience allows them to locate and assess carpenter ant infestations much more intelligently than the average person.

- Keep in mind that certain methods that exterminators use to kill ants may require your family to temporarily vacate your house for a day or two.
- Don't delay in contacting a professional - the longer you wait to deal with a carpenter ant infestation, the larger the colony can grow and the more extensive the damage to your wood structure may be.

1 **Eliminate sources of moisture.** Moisture is a big factor in carpenter ant infestations. Often, a patch of wood will become susceptible to infestation after it's been exposed to moisture. By fixing or sealing any leaks that allow water into your house, you can make it much more difficult for carpenter ants to nest. Below are a few suggestions for eliminating the moisture that can contribute to carpenter ant infestations:[5]

- Check around windows for signs of an improper seal
- Check your roof and weather-facing walls for leaks
- Keep basements, attics, and crawl spaces well-ventilated
- Look for and fix leaky pipes
- Clean clogged gutters to eliminate runoff water



2 Seal up entry points, cracks and crevices. If carpenter ants can no longer get in and out your house, any indoor satellite colonies that are being fed by larger outside colonies will become isolated and may die off. Inspect the outside of your home for cracks, holes, and other small spaces that allow the passage of ants - pay special attention to the areas of exterior walls that are closest to the ground or foundation. Seal any holes you find with caulk or a strong putty.
Also check around the points where water and electrical lines enter your home, as these points are extra vulnerable to ant infestation.[6]

3 **Eliminate wood materials near your home.** Because carpenter ants like to make their nests in wood both inside and outside of buildings, finding and eliminating infested wood outside your wood

can keep ants from making their way into your house. Carefully inspect any sources of wood near your home - if infested, move or carefully dispose of these wood sources. Places to look include:[7]

- Stumps
- Firewood piles
- Old trees, especially if their branches touch your house.
- Piles of yard waste

4 **Consider installing an artificial barrier.** If carpenter ants are a recurring problem, you may want to think about installing a small strip of gravel or stones around your home. This “barrier” zone is fairly inhospitable to carpenter ants and may discourage them from crawling into your house through holes near the foundation. Consult with a contractor to discuss the practicality and affordability of such a project at your house, or, if you’re particularly handy, tackle this home improvement project yourself.

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