CAHI REPORTER

Connecticut Association of Home Inspectors, Inc. July 2003

President's Corner

by Bernie Caliendo

Here it is 2 years into licensing and many things still need to be taught to Consumer Protection about our profession. Please read my Licensing Board article for more details. Maybe complaints from inspectors instead of being about inspectors may educate them.

On a lighter note, the CAHI Board of Directors will be meeting in September to elect or reappoint new officers for the coming year. As stipulated in our governing by-laws, the President & Vice-President may only serve 2 consecutive terms. With September fast approaching, and my 2 years as President coming to an end, this month's meeting will be the last meeting I will be presiding over as President.

Don't forget there is no meeting in August. I will have more thanks for everyones support in the August newsletter. I would just like to remind everyone that we have begun a new licensing renewal period and CAHI will continue to bring some of the best continuing education presentations available. Needing 20 hours of continuing education is one thing, obtaining as much as possible is something else !

Continuing Education & Training

July 23rd

Todd Forselius

OVERHEAD DOOR

This month Todd Forselius of Overhead Door will be our featured speaker. Todd will discuss different overhead door and opener components. He will also speak about safety items that we should be looking for.

BEST BUY of the MONTH

TELESTEPS TELESCOPIC LADDER
Model 326

- 2.5 ft minimum to 12.5 ft maximum
- Meet ANSI type II OSHA Standard
- 225 lbs. Rated

SALE PRICE $ 249.99
Free Shipping, No Tax
www.amazon.com

Meeting Information

Monthly meetings are held on the **FOURTH WEDNESDAY** of each month at **Donato's Restaurant** -270 Washington Avenue (Rt 5) Exit 12, I-91, N. Haven, CT 203-239-6011. Dinner @ 6 pm, Meeting starts @ 7 pm

Important Donato's Policy Change

Donato's is no longer willing to extend their daily specials to us after 6:00pm. If you want to continue to get this meal you must be there before 6:00

NO AUGUST MEETING IS SCHEDULED

Check Out New & Improved CAHI website

www.ct-inspectors.com

CAHI Officers/Directors 2003-2004

President/Director..... Bernie Caliendo/Windsor
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Director .....Bob Dattilo/Thomaston
860-283-8600
Director ..... Mike DeLugan/Tolland
860-870-7814
Director .....Bill Hirsch/New Canaan
203-966-8801
Director .....Dwight Uffer/Hebron
860-649-6765

How to Contact CAHI

If you have comments, questions, suggestions or concerns please call one of the CAHI officers listed above.

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CT Licensing Board

Bernie Caliendo ..... CAHI
Dana Fox..... CAHI
Rich Kobylenski..... CAHI
Ron Passaro .....ASHI
Susan A. Connors.....Attorney
Denise Robalard..... Realtor

2 Positions Open

The Licensing Board meetings are held at 9:30 in room 117 at Consumer Protection, 165 Capitol Ave, in Hartford. The public is always welcome. E-mail Bernie Caliendo for the latest meeting schedule at:
bsurehomeinspect@juno.com

Licensing Board Update

Submitted by Bernie Caliendo

By now you all should have received the letter sent out to all licensed home inspectors by Consumer Protection. As there is still some confusion as to what and why items have to be handed out to consumers at an inspection, the Board directed the DCP to mail out just what had to be handed out. The DCP stated that they would send out a letter directing everyone to go to their web site. Some of us stated that some licensed inspectors did not have access to the internet, thus, the Board directed them (DCP) to send out a copy of all documents that are required. As you can see, the DCP got it wrong again. So here is what is required:

(1) Disclosure to Consumer
(2) Standards of Practice
(3) Code of Ethics

The State statue states that the "Disclosure to Consumer" must be handed out PRIOR to the inspection. By the Licensing Board making the "Standards of Practice" and the Code of Ethics" part of this document, it is mandatory that the consumer receive all three of these prior to the start of the inspection. The inspector is obligated to sign, date, and record their license number on the clients copy. Due to the fact that the Legislature screwed up item # 12 in the limitations and exclusions clause in the Standards of Practice, the DCP sent out everyone a letter dated October 2, 2002 advising of this error. I recommend that you include this letter with the above documents and get some form signed stating that they have received these documents and kept with your records. **If you go to CAHI's web site you can download this entire package**. From the front page go to "**Helpful Information**" then hit "**Standards & Ethics**". This will open a PDF file and allow you to download or print these documents.

CAHI has done it right. If you go to the DCP web site, you have to go to Home Improvement Contractor section to find home inspector, and on & on & on. Board members have tried to tell them we are a profession not a trade, but I guess they think they know best.

CAHI Information

www.ct-inspectors.com

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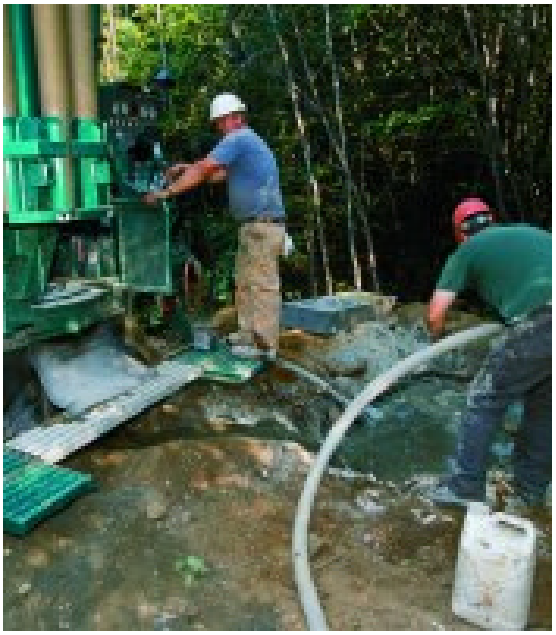
ALL ABOUT WELLS

by Jeffrey Twitchell

Reprinted from Smart HomeOwner #8
Nov/Dec 2002

One of the most-often-overlooked details of building a home in a rural setting is the well. Many people think there is plenty of clean and safe water waiting below the surface for them to use. Only after drilling the well do they find that this is not true. The water is often of poor quality or insufficient quantity. To make matters worse, there is often no money left in the budget to buy treatment equipment and no space in the home to place it. With a little pre-planning, all of this can be avoided. So let's take a look at what you should know before selecting the well site and building your home.



This photo shows a mud pit. A non-porous bentonite clay and water mixture is poured into the hole as it is being drilled. This forces the drilling fines out of the hole. Think of the wood chips that come out of holes drilled in wood, only the size of these "earth chips" and the depth of the drilled hole make the mud necessary to clear the debris.

Hydrologic Cycle

When thinking about water and wells, the best starting point is the hydrologic cycle. This is a combination of processes that continually recycles the water here on earth. The processes include precipitation, runoff, evaporation, transpiration, percolation and storage. Approximately 70 percent of the water that precipitates from the sky evaporates directly into the atmosphere. The remaining 30 percent runs off into streams, lakes and rivers or percolates into the ground. The water that percolates into the ground either gets used by plants or makes its way into the soil and rocks below ground, where it is stored until it seeps back into the streams, lakes and oceans. The replenishing of the water in the ground is called recharge. All of the water is eventually put back into the atmosphere either by the transpiration from plants or evaporation from the various bodies of water. It is interesting to note that very little of this water is made available in the ground for us to extract for drinking. As a matter of fact, only about 1 percent of the water on the earth is available for our use. The rest is in the oceans (97 percent) or in the polar ice caps (2 percent).

The water that percolates into the ground and reaches the saturated pores of the soil or fractured bedrock is called ground water. The area in which the water is stored is called an aquifer. Aquifers are formations that have both high porosity and permeability. Porosity is defined as the percentage of pore space in the ground where the water is stored, and permeability is the measure of the capacity for flow through the porous material. Solid bedrock — such as granite — becomes an aquifer, not because the rock itself is porous but because there are fissures in the rock that create areas of storage. If these fissures are large enough they will allow the water to move, making the formation both porous and permeable. In the case of gravel or sand, the water actually sits between the individual grains of material. If the grains are not too fine, the gravel or sand will also be permeable. Many people think that we draw our water from underground lakes or streams. This is, for the most part, not true. The only place that one would find an underground stream flowing is in an area of limestone caves. Most of the time, the movement of water in the aquifer would be imperceptible, unless the water is pumped or viewed over very long periods of time.

How Much Water Do You Need?

Most people use anywhere from 50 to 75 gallons of water per day. This seems like a lot until you consider the extra load that laundry puts on the system. It is wise to base water usage on the number of bedrooms in the house. Assuming two occupants per bedroom and 50 gallons per day per person, then the demand for a three-bedroom house would be 300 gallons per day. This water will generally be used during the morning and evening, for a typical duration during any one part being about two hours. In the case of a three-bedroom house, the well will need to yield 300 gallons in four hours, or approximately 1.25 gallons per minute.

If the well does not yield water at this rate, all is not lost. It simply means the water will need to be stored for use during these peak loads. This can be done in the well or in the home. Simply drilling the well deeper creates well storage. If the well is 6 inches in diameter, each foot of the well will hold approximately 1.5 gallons of water. If the depth of the water in the well is 100 feet, the well will hold 150 gallons of water. This would be the amount of water required for one of the peak-load periods in the example above. The well would have time to recover over the time between the use periods. See the table on page 43 to help determine the requirements for your well.

Types of Wells

Wells are used to extract water from the aquifer. In general, wells fall into three categories — dug wells, driven points and drilled wells.

Dug wells are either excavated by hand or dug with a mechanical excavator. Because dug wells are generally shallow (10 to 20 feet), the water is usually a combination of surface water and ground water. A dug well that collects ground water flowing into it from fissures in the bedrock is usually called a spring.

Driven points are pipes that have one end sealed off in the shape of a point. The walls of the pipe have holes that are covered with screens to keep sand and gravel from getting inside the well. The point is driven into the ground and is then connected to a pump that pulls the water through the screens covering the holes in the pipe. Points, like dug wells, are generally shallow and usually produce a combination of ground and surface water.

Drilled wells are formed by boring a hole into the ground. These wells are generally a few hundred feet deep, although they have been drilled to over 1,000 feet.

One of the most misunderstood concepts in wells is the difference between drilled and artesian wells. These terms will very often be used interchangeably. A drilled well is any well that has been created by the hammering of a round bit into the ground. The hole created in this process is called a borehole. A drilled well might or might not be an artesian well. The well is called artesian if the water rises in the well above its point of entry. The well will be called a flowing artesian if the water rises high enough to flow out of the top.

Locating the Well

Selection of the location of the well should be done at the same time as the location of the home, septic drain field, power entrance and driveway access. The well needs to be located at least 100 feet from septic drain fields (yours or your neighbors), buried tanks containing potential pollutants and livestock yards. The area should be well-drained and the land should be sloped away from the well. Give consideration to the cost of piping from the well to the house. Areas that have bedrock close to the surface may prevent placing the supply pipe from the well below the local frost line. This will create a potential for freezing. You should enlist the help of your well driller in selecting the location of the well. He or she will have local knowledge of the area that will be of help in this process.

Contrary to popular beliefs, well contractors are not that concerned with finding the water on a site. While many people may have notions of contractors roaming a home site with dowsing rods or fancy ground-penetrating radar equipment in order to pinpoint the exact location of an underground spring, where a well is dug depends more on the considerations in the above paragraph. Except in extreme cases, a well contractor will find water just about anywhere on a home site. They just may have to dig a little deeper in some places than in others.

Construction

Since most wells today are drilled wells, our focus will be on this type. Drilled wells can be created with either a modern rotary hammer drill or with a cable tool. Most well contractors today use a rotary hammer drill. The cable-tool drilling rig was the first type of drilling device used to drill deep wells. Cable-tool drilling is slower than a rotary hammer. A well created with a cable-drilling rig is quite often referred to as a pounded or driven well. The hole is drilled by lifting the bit with the cable and dropping it. The force of gravity pounds or drives the bit into the earth. This process is halted periodically, and the hole is cleaned out with a device called a bailer. The bailer is lowered on a cable to the bottom of the hole where it scoops out drilling debris.

There are two techniques of drilling with rotary hammer drills. One method, called drill-through or underreaming, sets the casing in place as the hole is drilled. The casing is placed over the drill rod and follows the drill into the ground. The second method drills the hole, extracts the bit and then places the casing. The underreaming technique is a newer method of drilling. Underreaming works well in difficult situations where the unconsolidated overburden tends to collapse into the hole.

With either method, a bedrock well is constructed by drilling through the overburden and into the bedrock. The debris formed by the drilling process is pushed from the hole during the drilling with either air or a slurry of clay and water called mud. The casing will extend through the overburden and several feet into the solid bedrock. A seal is formed between the bedrock and casing with a device called a drive shoe. The drive shoe is a hardened steel cylinder that is attached to the end of the casing. The shoe is driven into the rock with the drilling rig. This is called setting the casing. Once the casing is set, applying pressure inside the casing will check the seal. If the seal leaks, drilling will continue and the casing will be set farther into the rock. Many states require a minimum distance that the casing will extend into the rock. You should check with your state's drinking-water program for this requirement (actual program names vary from state to state, but asking authorities for the drinking-water program will get you where you need to go).

Once the casing is set and the annular space around the casing is grouted, the drilling will continue until a sufficient quantity of water is found. The yield and static level will be checked to determine if there is enough water being produced. Once enough water is found, the well will be flushed and cleaned to remove any debris from the borehole and aquifer. This process is called well development.

If the yield of the well is low and drilling deeper isn't a good option, a technique called hydrofracturing is sometimes employed. The process pressurizes the well borehole below the casing with water. Pressures of a few hundred to a few thousand pounds per square inch are exerted in the hole. This flow of water into the aquifer will sometimes clear the fractures of debris and increase the yield of the well. You should rely on your driller's experience to decide if this is a reasonable option.

Sometimes water of sufficient quantity is found before hitting bedrock. This is true in areas where the overburden is sand and gravel left from the glaciers. If the well is deep enough to prevent biological contamination from the surface and the yield is high enough, the well will be developed. A screen will be attached to the end of the casing. The screen is a short piece of pipe that is sealed at one end. The side of the pipe has slits that allow water to enter and keep sand and gravel out. The area around the outside of the screen may be filled with course material to aid in holding out fine sand and silt.

Once the well is developed, the casing is cut off above the ground. The casing should extend above the ground far enough to prevent any runoff from entering the top of the well and contaminating the water. Many states have minimum requirements for this distance. The top of the well should be covered with a sanitary seal. This seal should be vented. The vent provides a place for air to enter and leave the well as the static level of the well changes during water use. The vent needs to be protected from the entrance of insects and small animals that could fall into the water. Again, many states have requirements for these seals.

The final step in the construction is the sanitization of the well. This usually consists of dosing the well with calcium hypochlorite (a form of chlorine) at a recommended concentration. Check with your local drinking-water program to see what their recommendations are. Use chlorine tabs or crystals that are designed and certified for this purpose. Instructions for their use are on the container. Although chlorine bleach can be used to obtain the desired concentration, it tends to float on top of the water and not get down to the bottom of the well. The tabs and crystals will sink to the bottom and slowly dissolve. If the pump is installed shortly after drilling, then the sanitization can be done after the pump installation. This will prevent the necessity of sanitizing twice.

Choosing the Pump Pressure Tank and Controls

Choosing the right pump and pressure tank for your system — although not complicated — does require knowledge beyond the scope of this article. This means that you will have to rely on the knowledge of the professional that you choose to install the pumping system. Very often, the well driller will provide this service. There are some things you should know that will help you determine if you are getting the right pumping system:

- A pump rated at a higher gpm (gallons per minute) is not necessarily better than one rated at a lower gpm.
- The horsepower of the pump can be more important than the rated gpm.
- Generally, a well with a very low static level will require a larger horsepower pump.
- Make sure the pump will be able to deliver an adequate flow at the lowest expected static level of the well.
- The pump should not be sized to deliver water faster than the well can provide it.
- The pressure tank should be sized on draw-down capacity, not the volume of the tank.
- The pressure tank should be sized to allow a one-minute minimum run time for each pump cycle. A larger tank than this will provide fewer pump cycles and longer pump life. If you can afford a larger tank, get it.
- Wells with static levels that vary dramatically should have a pump and system that can handle these variations without damage.
- Consider electronic pump-protection controls that will shut the pump down if it runs out of water or encounters some other problem. These controls will prevent relatively minor problems from becoming serious catastrophes.

Choosing a Well Contractor

You should start your planning process by contacting your local government to determine what rules (including permits), if any, apply to drilling a new well. As when choosing any contractor, you should get a few references. To select a well driller, you should consider the following:

- Is he licensed to drill wells in your state or area?
- Will he provide details of the construction of the well?
- How will he develop the well?
- What will he do if you don't get enough water?
- How will he determine the yield?
- How will he sanitize the well?
- What are the costs of drilling with an estimate?
- If he is installing the pump and controls, how will he select the size of the pump and pressure tank?
- Will you get a copy of the drilling log along with pump and pressure-tank specification?
- What guarantees does he provide?

A professional well driller and friend of mine also makes the point that some drillers may not be well versed in the use of “mud” and, therefore, may not be able to complete a well that requires this technique. So choose a contractor that is experienced and able to use all of the techniques required to drill and develop a well.

Water Testing

As water passes down through the overburden, it dissolves minerals into the water along with any other contaminants that might be in the soil. Testing for these must be done to ensure you have a safe source of water. Before you drink any of the water, you should perform what is called a safety check. This will test for bacteria, nitrates and nitrites. These contaminants can cause immediate health risks. The other parameters that should be tested will only cause problems with long periods of exposure. To get a better idea of what these are, check out the March/April 2002 issue of Smart HomeOwner and read the article Water Without Worry.

Now let’s say the water tests fine, but it either has some odor, color or staining problems. Don’t count on solving the problem by letting the water run. Using the water under normal conditions for a couple of weeks before getting water-treatment equipment is not bad advice; just don’t count on it solving the problem. If, after a few weeks of use, the problems have not cleared up, contact a local water-treatment professional to get help. Be prepared to spend $2,000 or more. Treatment systems can be very expensive, and costs of $10,000 or more are not unheard of.

Drilling a well can be a trying experience. There are always the elements of the unknown and unpredictable. The well contractor is only providing a source of water — they have no control over the quality. So allow plenty of money in the budget to not only drill the well, but also to treat the water, if necessary. Get the well in as soon as possible, and run the water each day. The volume should be equal to what you are likely to use in a day. Do this for a couple of weeks. This will give you a chance to see what the water will be like with normal use. This will also let you know how much of that money you have set aside for the water system can be spent elsewhere in the house.

Jeff Twitchell is vice president of Air & Water Quality Inc., Windham, Maine.