

ASK THE INSPECTOR COLUMN FOR JULY 13, 2016
HEADLINE: HOW YOUR 'DWV' WORKS

Lately, I have had a number of clients ask about putting another washroom in their prospective home. For the most part, getting water supply is the easy step; getting that waste water to disappear is often harder. Moving grey and black water is called your drain-waste-vent system (DWV). First, let's understand the two terms. Grey water comes from kitchen and bath sinks, tubs, showers and the laundry tub. Black water is human waste and is discharged from the toilet.

Your DWV system maintains a neutral air pressure in the drains, allowing the flow of waste water down the drain by gravity. Every home has one of these 3-4" diameter pipes, called the main stack, that acts as the primary drain for all the fixtures, including the sinks, toilet and tub or showers. In some parts of North America, it's also called the "True Vent" or "Soil Stack." This vent is the round black pipe you see sticking out the roof. It continues down through the home and becomes the drain out to the municipal sewage system or your septic system, if you live in the country. It can change from allowing air, as a dry vent to moving the grey/black water, called a wet vent in some instances. Some homes may have more than one, such as in a situation where there is a laundry sink, kitchen or bathroom at the opposite end of the home from where the main drain leaves the house. The second one is, not surprisingly, called a secondary stack.

To better understand why you need this vent, think of pouring water out of a full plastic bottle. The water flows out unevenly, often stopping and starting. If, however, you punched a hole in the top of the bottle, the water flows out smoothly. This hole you have added is operating in the same manner as your house vent does; allowing air into the bottle.

Now that you understand how and why, we will add in more terms! A revent is added in a home to assist the sink or shower to properly drain. These vent lines are added to the drain lines coming from your bathrooms and kitchen. They are joined into the main stack above the fixture where the main stack becomes the path for your waste water to flow down this stack or drain. These drains and main stack are usually made of ABS plastic or PVC, if code required. Older homes, built after WW2 and up until the late 60's, have drains and a main stack made of copper. If your home was built before WW2, they are likely made of cast iron. These later drains are on the "hit list" of most home insurance companies, as they are known to decay over time, crack or split and emit sewer gas or actual sewage in some extreme cases.

Some years ago, air admittance valves (AAV) or "cheater" vents arrived on the market. They were supposed to be used for very specific venting issue, a sink in a kitchen island, for example. They did, however, become the quick vent of choice for other uses. I have seen them tucked up under stairs, as the main vent stack for that extra basement bathroom that was just too costly to connect to the main vent in a home. I could write a whole column on the abuse of these vents. The plumbing standards have changed, as have the quality of these AAV's and they are allowed in a much wider application, but still must be inspected and

approved by the plumbing inspector. In an older home they can be very useful when getting connected to the main vent is very difficult.

Your DWV system also contains a number of “clean-outs” that are strategically located to allow the plumber to unclog a blockage created by a buildup of waste in the line. In most municipalities, you are not allowed to cover your main cleanout. This allows the city workers to clear your drain in the event they have a large blockage in their sewer lines. These vents do become blocked at times. Birds, leaves and even ice buildup in the winter can block the top of your vent. If you see bubbles in your toilet, your drains are slow. If you get a sewage smell coming from your sinks, check your vent first. If you hear a “sucking” sound when your sink empties, this is normal.

Lastly, some homes have the main drain discharge from the home above the basement floor and, if you want a laundry sink or bathroom in the basement, you will have to install some manner of system that can pump up the waste water. The first method is to cut out a slot and a good sized hole in the concrete floor, clear out the gravel or soil and set the drains to flow to the hole, which contains the actual pump-up unit. This process and the pump-up unit can easily hit the \$2,000 mark or more, but it is a permanent solution. It's also one where I recommend a licensed plumber does the work. In the case of a bathroom, you have another choice. “Sani-Flo” makes a toilet with a macerating pump unit, which will operate a combination of fixtures from a toilet to a three piece bathroom. These units can be located just about anywhere you have access to the correct drain and venting. You must follow the instructions for a Sani-Flow. I have seen some marginal “homeowner” installations, especially in regard to the electrical supply. These units start under a \$1,000. The only catch with these is that the pumps are noisy when operating. If you are just looking to install a laundry sink, an under sink or beside sink pump-up unit will do nicely and they start in the \$200 range, at most lumber dealers or hardware stores.

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