Homeowner's Guide
Foundation Water PenetrationTips

TIPS TO IDENTIFY WATER PENETRATION PROBLEMS / CRACKING BASEMENTS

MAINTAINING YOUR HOME BASEMENT FOUNDATION BY HOMEOWNER PREVENTATIVE MAINTENANCE

LUX WATERPROOF PROGRAM

Introduction

Every year, millions of litres of water flow around our home foundations. Most people don't think about how the water is collected, or where it goes. It's a different matter though when a torrential storm comes, the drainage system falters or there is water in the basement.

Water damage from flooding costs time, money and inconvenience. Fortunately, there are many things you can do to reduce your risk. Prevention and maintenance are the keys. Looking at your home now and fixing any problem areas before the next major rainstorm can save you a lot of grief.

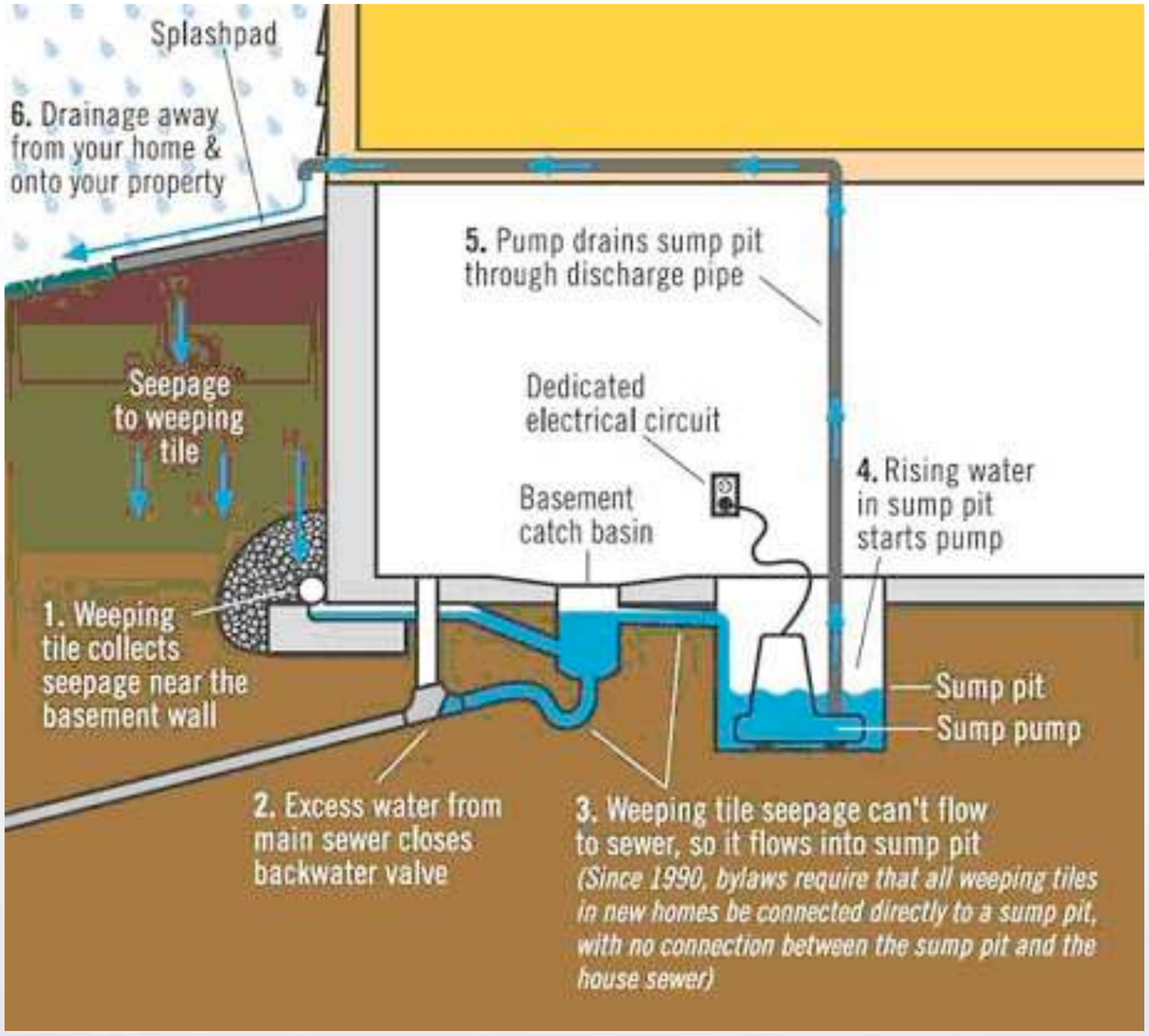
The Lux Waterproof Program contains information that can help you identify problem areas and properly upgrade, repair or maintain your home's drainage system. This booklet is filled with practical drainage tips, and projects that you can do yourself.

Details of various maintenance tips are provided throughout. Even if you prefer to hire a professional, this booklet offers knowledge and insights that may help you make a more informed choice. It is recommended that you obtain three quotes and ask for references, particularly if you are unfamiliar with the company or individual.

This booklet is not exhaustive, but covers the main causes of water penetrations and direct effect of not maintaining your home maintenance.

Fact: 10mm of rain from your roof = 1200 litres of water

Understanding Homes Drainage Systems



Why Homes Flood

Many areas of Canada gets about 30 Inches of rain and snow melt annually, some areas considerably more. Most of this rain comes from thunderstorms or hurricane like conditions that will drop a large amount of water in a concentrated area in a short period of time. When a major storm hits, a large volume of water enters your home drainage system and it can easily become overwhelmed due to the intensity of volume and a lack of maintenance of a homeowner. Snow poses a similar problem in the spring in the event of a rapid snowmelt.

Water will enter your basement in a number of ways such as:

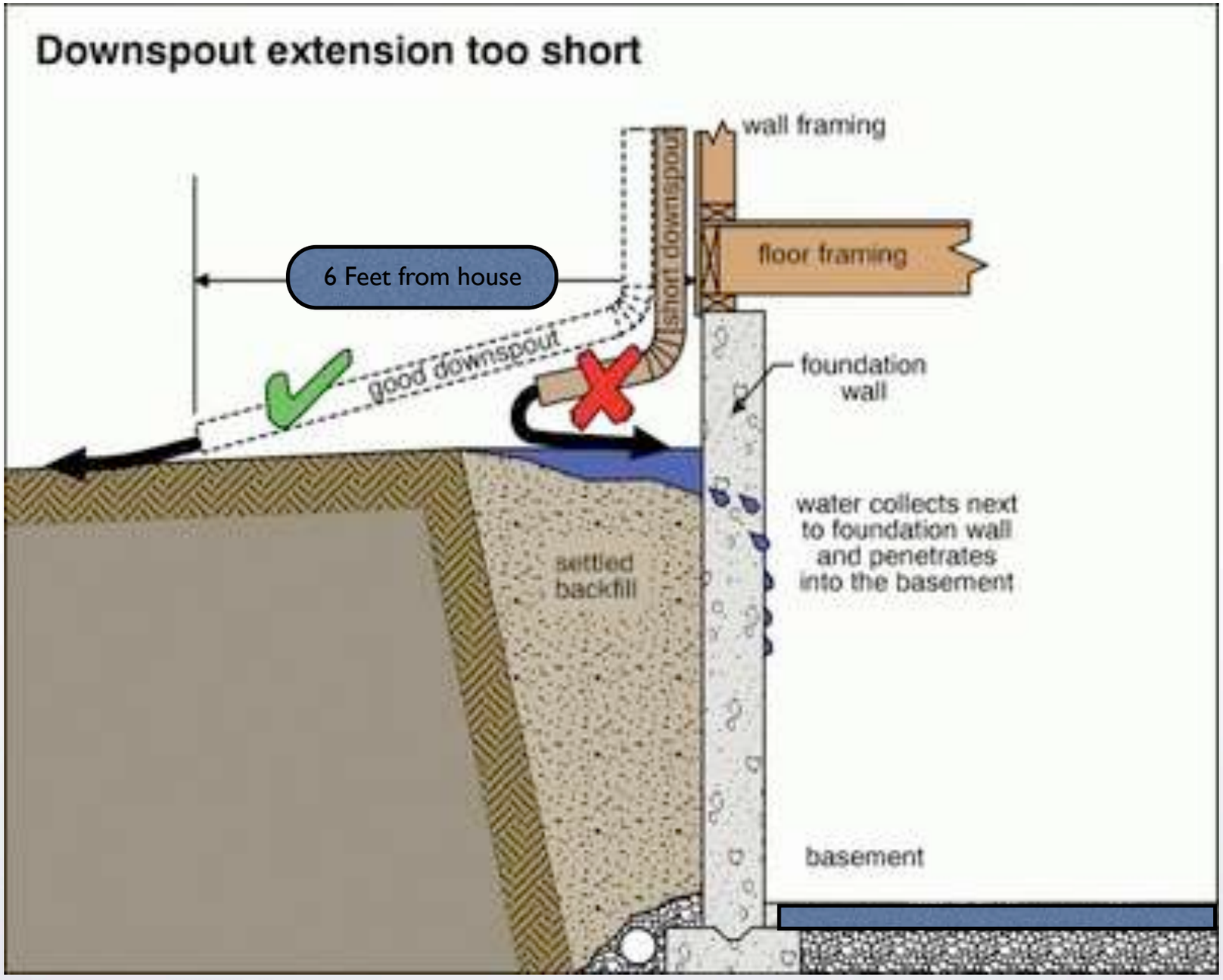
- √ A crack in the foundation wall of your basement
- √ Poor lot drainage
- √ Failure of the weeping tiles or foundation drain
- √ Overflowing eavestroughs or lack of
- √ Downspouts draining into your foundation
- √ Back up of wastewater in the sewer system
- √ Failure of the sump pump
- √ Natural Disaster

Fixing the problems from Top of the House to Bottom

✓ **Eavestroughs and Downspouts** - Water travels out of your eavestroughs into the downspouts. If the water is dumping into your foundation, it drains directly to the weeping tile and can easily overload your homes drainage. Downspout extension should be 6 ft from your basement wall and drain away from your house (and not your neighbours).

Long term risks if you do not have downspout extensions: By having your downspouts draining into the foundation from your roof, water is penetrating next to the foundation wall during rainfall. Over time this water could be eroding soil from under the house footings, which can lead to cracking of foundation walls and more serious structural failure. The significance of the above is very important factor, As an example, using the formula 10mm of rain from your roof = 1200 litres of water. Over a period of 18 months, a home in NFLD with an annual rainfall of 46 inches (not including Snow melt) will have 2,250,000 litres of rain water drained directly from a roof into a homeowner's foundation walls without downspout extensions. Imagine, this is the equivalent of an olympic size pool (2,500,000L) having been drained at your foundation walls and weeping tile systems.

Fixing the problems from Top of the House to Bottom



Fixing the problems from Top of the House to Bottom

✓ **Lot Grading** - If the land around your home slopes in toward the foundation, big problems will result. Surface water will travel directly to your foundation and into the weeping tile around the basement which will easily overload your home's drainage. Your land around the foundation must be sloped 1 inch every 6 feet minimum away from the home. Always ensure the land slopes away from the foundation and your home and not to your neighbours. This includes driveways, patios, sidewalks etc.

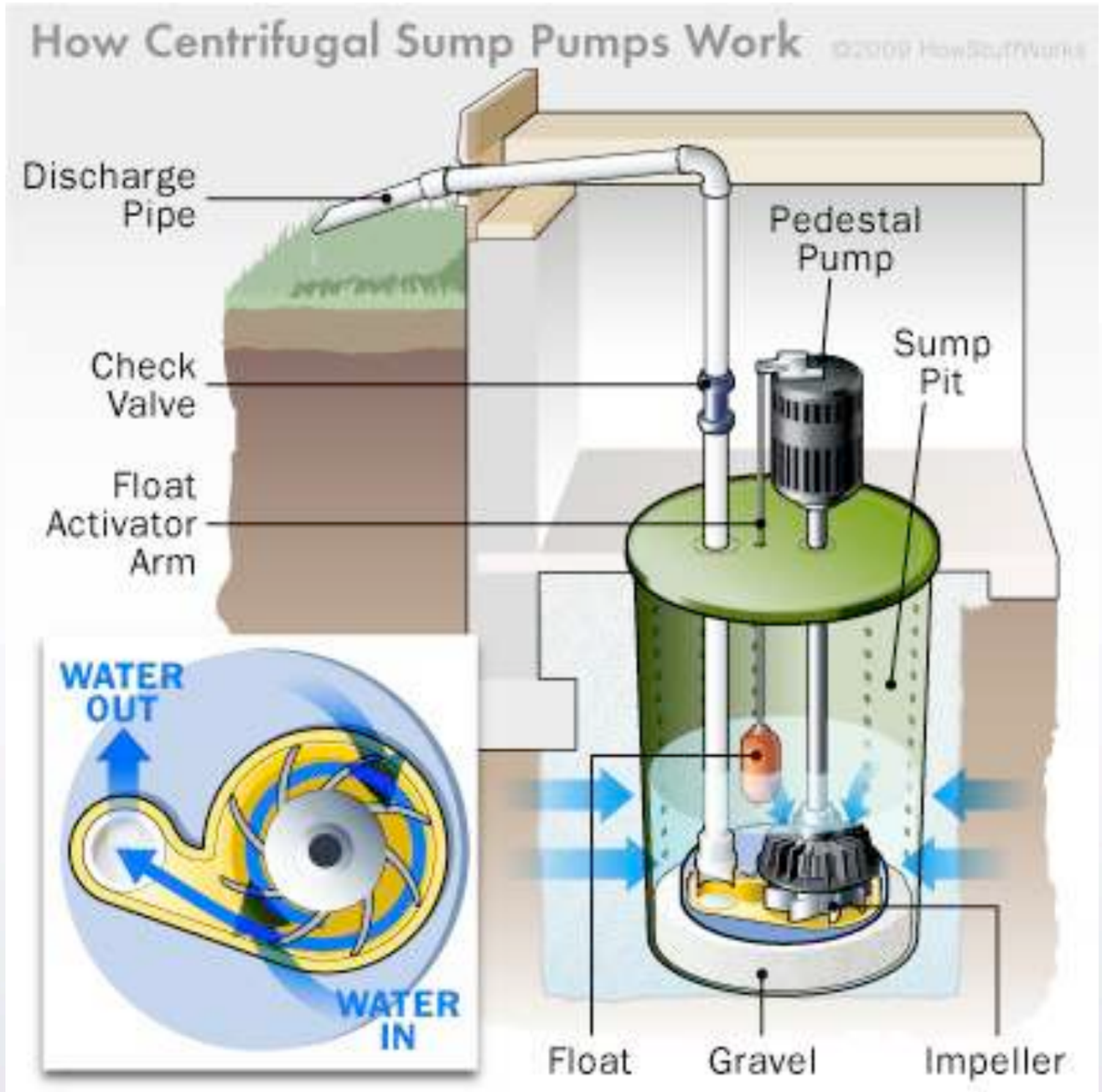
Long term risks if you do not have good lot grading: By having your lot grading draining into the foundation, water is penetrating next to the foundation wall during rainfall or surface water events. Over time this water could be eroding soil from under the house footings, which can lead to cracking of foundation walls and more serious structural failure.

Fixing the problems from Top of the House to Bottom

✓ **Sump Pit & Pump** - A sump pit drainage system includes a sump pit, a sump pump and a discharge pipe. The sump pit, set into the basement floor, collects water from the weeping tiles around your basement, The pump pushes the water outside your house through the discharge pipe. You must ensure the pump drains the water somewhere onto your property where water can be absorbed, such as your lawn or flower bed. Ensure the water drains away from your foundation and not onto your neighbouring properties.

Long term risks if you do not have good Sump Pit & Pump: Water pressure under your foundation may cause hydrostatic pressure and cause damage to your foundation subfloor overtime. Your basement may flood without a sump pit and pump.

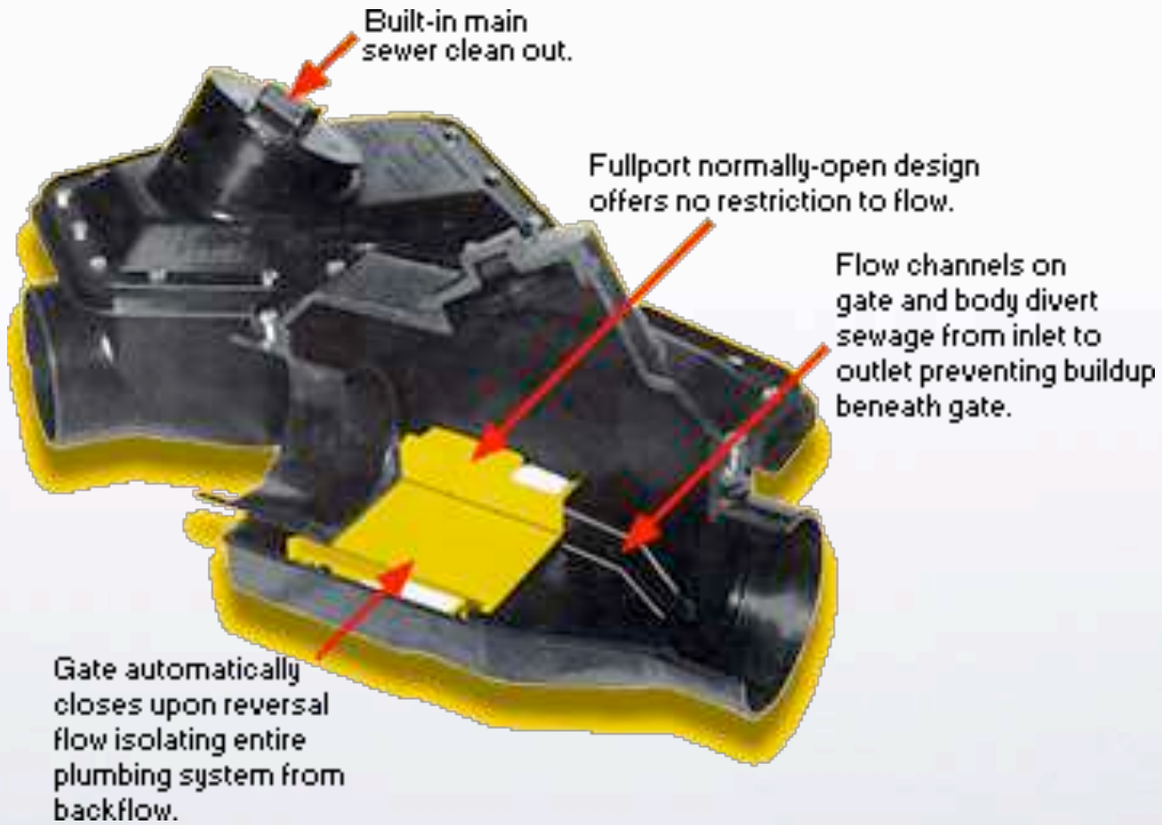
Fixing the problems from Top of the House to Bottom



Fixing the problems from Top of the House to Bottom

✓ **Backwater Valve** - A backwater valve is a device that prevents sewage in an overloaded main sewer or septic field line from backing up into your basement. The valve automatically closes if sewage backs up from the main sewer or septic field. A properly installed backwater valve must be placed so that sewage backup will be stopped and not come out through other outlets in your basement, such as sinks, toilets, showers and laundry tubs. You may require a permit and inspection to install a back flow valve and it is recommended that you use a qualified plumbing contractor.

Long term risks if you do not have a Backwater Valve: Your basement may flood from an overloaded main sewer or septic field line.



Foundation Cracks

√ **Types of Foundation Wall Cracks:** Hairline cracks typically develop within the first year. In most case, the common wall cracks pose no structural concerns of foundation failure. The biggest problem they cause is water leakage. In a Poured concrete foundation, the crack will normally run vertically or at an angle. It is caused by shrinkage of the concrete as it cures. Settlement cracks are also nearly always vertical. Such Non-structural foundation cracks can be easily repaired by polyurethane foam injection. Cracks more than 1/4 inch wide, horizontal cracks in wall, cracks with misaligned edges or continuing movement may require professional repair.

√ **Common Causes of Foundation Cracks:** Besides **shrinkage and curing** of concrete. **Water pressure** is one of the most common causes for cracking and bowing concrete. It can push upwards (in what's known as hydrostatic pressure), or push laterally against a wall, especially in colder climates. In colder areas, moisture freezes when it gets cold (and we all know that water expands when it freezes). If there's enough water in the ground, that freezing process puts pressure on the wall - often enough pressure to crack the wall. Once it's cracked, it can now begin to move with changes in the seasons. **Settling** Footers may settle because of the weight on it, or you may be in an area with soils that move. In any case, settling results from shifting.
What you'll see is cracks that develop from that settling.

Foundation Cracks

Typical repair by contractor

Whatever technical foundation crack repair you choose, keep in mind that every solution has its own advantages and disadvantages. You should also take into account the issues of their areas, "as the weather plays an important role in the technique of crack repair base to be used. For example, if living in areas where a large seasonal fluctuation temperature, its base is constantly expanding and contracting. Any foundation crack repair solution you choose should be able to withstand the constant changes or else, their efforts are in vain. The most common solutions used in the repair of poured concrete foundation crack injection epoxy, vinyl board, the injection of polyurethane foam and elastomeric crystalline waterproofing agents.