Surface Water Management

A GUIDE TO PROTECTING YOUR HOME

Protect your home from water damage and flooding through smart surface water management practices.

DID YOU KNOW?

Annually, the Canadian prairies can receive up to 17 inches of rain between the months of May to October.

On a typical lot, just 6 mm of rainfall can produce more than 2,500 litres of water. That's enough to fill over 1,000 bathtubs in a year!

For example, 6 mm of rain falling on the roof of a 2,000 sq. ft. home creates about 1,200 litres of water—all of it needing to go somewhere.

And it's not just rainfall. Add in the annual spring snowmelt plus the water used to maintain your lawn and flowerbeds, and you're managing a significant amount of water on your property.

This guide will help you protect your home from water damage and flooding through smart Surface Water Management practices.

Underwritten by the New Home Insurance (Canada) Corporation.

Protecting Your Investment

When you purchase a new home, the lot and grading are the responsibility of the homeowner. Ground settlement and even water entering your home may not be covered if proper grades are not maintained or leaks occur due to the installation of improper landscaping. Refer to the tools available such as this Surface Water Management brochure and our Guide to the Care and Maintenance of Your New Home to keep your new home in top shape.

As a new homeowner, protecting your investment by ensuring you keep up with regular maintenance is as important as having warranty and insurance to preserve your home and stop problems before they occur. It is important for you to know that a defect resulting from improper maintenance is not covered under home warranty.

Ground Settlement

Settlement of the soil around your home is a normal occurrence—and maintaining it is the homeowner's responsibility.

During construction, the excavation for your basement typically extends three to four feet beyond the foundation walls to allow room for formwork and, if required, weeping tile and crushed rock. Because the backfill soil is less compact than the untouched ground surrounding it, water can easily become trapped in this excavated area next to your foundation.

Fill low spots: Once the soil has settled, remove the topsoil and fill the low area with compacted clay, sloping it away from the foundation. Avoid using topsoil alone, as it does not provide proper drainage. After compacting the clay, you can add topsoil back on top.

Watch the slope: If clay backfill around your home settles, the ground may slope toward the foundation instead of away. This can direct water against your foundation and lead to unwanted basement leaks.

Lot Grading

In residential construction, a builder is generally responsible for bringing a lot to the required rough grade elevation outlined in the approved grading plan. This plan details the surface water drainage patterns and swales required for the lot.

The final grade (topsoil) should not exceed depths of four inches (or as required by the local lot grading bylaw). The final grade should be six inches below all wood surfaces.

Note: Some municipalities require an approved lot grading certificate. This certificate verifies that proper grading elevations and drainage patterns have been established.

With regular maintenance, homeowners can minimize the amount of water trapped near the foundation by:

Ensuring downspout extensions are clear of debris

Filing settlement areas with clay (not topsoil) with a positive slope away from the foundation.

Using caution when watering flowerbeds near the foundation to minimize water pressure next to the foundation.

Eavestroughs & Downspouts

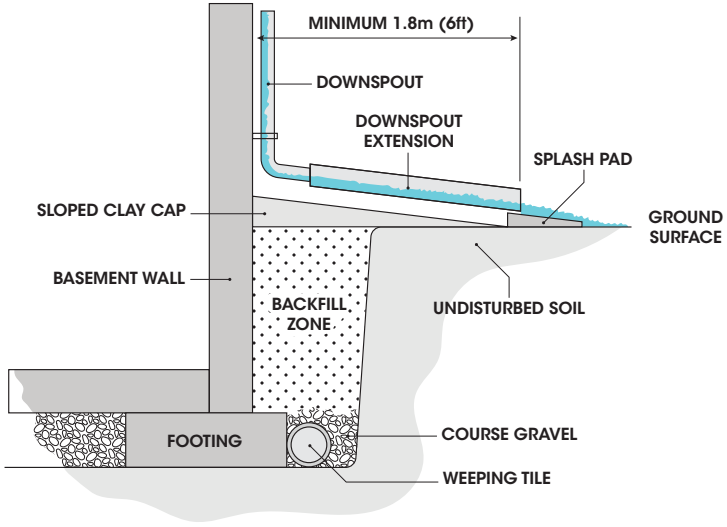
Eavestroughs and downspouts channel water off the roof and away from the foundation into designed drainage swales. These swales direct water off the lot.

Eavestroughs clogged with debris can cause the water to overflow and become trapped next to your foundation.

If a downspout extension does not direct water away from the foundation, water may collect adjacent to the foundation wall. Downspouts should be positioned to drain into a property line swale or toward the street or back lane.

They should not be directed towards a neighbouring home. Downspout extensions should extend beyond the backfilled area (a minimum of four feet).

Downspout extensions should be used year round. Water that collects in the soil adjacent to foundation walls increases the potential for water penetration into the basement. When this water freezes, frost heave can occur and potentially lift decks, driveways and sidewalks. Frost heaves can also cause foundation problems. Extending the downspout into a drain buried in the soil is not recommended.



Rainwater Leaders

A Rainwater Leader is a pipe that connects the downspout to the storm drainage system. When it rains or when the snow on your roof melts, the water travels down the downspouts and into the storm system. Rainwater leader installation is determined by the municipality, so not every home will have this.

Swales

Swales are shallow depressions in the rough grade designed to direct surface water runoff away from the home.

Swales are usually located along property lines and occasionally at the rear of the lot. Depending on the general slope of the lot, additional drainage swales may be required.

Swale drainage should be directed to the nearest street, lane or storm water management lake – not to backfilled areas or a neighbour's yard.

The slope of a swale must be maintained to ensure water movement away from the foundation. Altering the swale should be avoided, as alterations could result in flooding.

Each lot must conform to the approved grading plan for directing surface water to municipal streets or swales. Lot-to-lot drainage is generally not permitted.

Window Wells

Keep your window wells clear of leaves, dirt, and other debris so water can properly drain into the weeping tile system.

If your municipality requires window wells, they must be installed according to local building codes. To help prevent surface water from entering, the top of the window well should sit at least 2 inches (50 mm) above the finished grade.

Image Description: Concrete swale along property line.

Image Description: Removing debris from window well.

Sump System

Sump systems (sump pump and pit in the basement area) remove water that accumulates at the footing level around the foundation, or in some instances, from under the basement slab.

If the sump pump runs continuously, it is possible the water being pumped out is seeping back down against the foundation wall and is simply being recirculated. To avoid this, ensure there is proper surface grade to direct water from the foundation.

Your system may discharge into the storm system or above grade. Installing a discharge hose will also move the water collected in your sump pump pit further away from your home.

As part of your maintenance program, ensure the sump pump is working, and remember to test it yearly.

Weeping Tile

Weeping tile installed at the footing is designed to manage subsurface ground water.

Weeping tile is not a primary defense to control surface water.

Rather, it assists with the removal of water at the base of the foundation, especially during heavy spring thawas and prolonged rains.

Note: Not all municipalities require weeping tile. Installation often depends on soil type and the local water table.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Landscaping

Landscaping must maintain the Surface Water Management plan. In the process of final landscaping, do not alter the rough grade of the property. Maintaining the function of the swale isa necessity.

The rough grade design typically allows for approximately four inches of topsoil and sod.

Ideally, flowerbeds should not be placed immediately adjacent to the foundation. Watering may overload the drainage system. Flowerbeds must be designed carefully if placed next to the foundation wall.

If you are adding outdoor elements such as a patio, swimming pool or hot tub, or are altering your home's elevation for aesthetic purposes, the original drainage plan will not function as designed. Proper drainage away from the home and towards the street or drainage swale must be planned along with these projects to ensure they are satisfactorily retained. Check with local drainage bylaws when making changes to your lot.

Careful attention is required in the design, installation and maintenance of your irrigation system. For example:

- Sprinkler heads should not direct water against the foundation or cladding
- When avoidable, sprinkler heads should not be placed within the backfill area near the foundation
- Rain sensors can be added to avoid overwatering
- Connections to the system should be secure
- The systems must be serviced regularly to avoid damage to piping (e.g. splits from freezing).

You can maintain surface drainage patterns annually by filling depressions and settlements as they occur. (See Settlement section of this brochure for more details).

Seasonal Maintenance Calendar

SPRING

- Inspect and make sure all downspouts are in the lowered position and extend at least 4 feet away from the home into a drainage swale or directed away from the home.
- Make sure all your drainage systems (sumps, drains,) are working properly and that water drains away from your home. If it does not, take corrective actions immediately.
- Check for settlement around hardscaping elements like patios, walkways and all landscaping to ensure good drainage away from the home. Repair to ensure proper slope.
- Examine your lot and look for low spots holding water or settlement of soil around the foundation, under decks and porches leading to water running back to toward the home. Repair as required to maintain proper grading away from the home.
- Check for leaves, debris and any blockage in gutters, eavestrough, downspouts and rainwater leaders (if applicable).
- Remove leaves and debris from window wells.

SUMMER

- Inspect the foundation, basement or crawl space for cracks or abnormal conditions. Minor cracks due to minor settlement or shrinkage is normal.
- Inspect irrigation or sprinklers for leaks and direct all spray heads away from the home's foundation.
- Check for damaged downspouts or leaks in the eavestrough and repair immediately.
- Do not allow trees or shrubs to grow near the foundation. Planters or gardens should not be located near the home.
- Check for leaks from the hose bib when connected to a garden hose or attachment.
- Check all landscaping and outdoor features to ensure good drainage away from the home.

FALL

- Check for leaves, debris and any blockage in gutters, eavestrough, downspouts and rainwater leaders (if applicable).
- Remove garden hoses and any attachment from the exterior hose bib before freezing temperatures.
- Drain and winterize inground sprinkler systems before freezing temperatures.
- Remove leaves and debris from window wells.

WINTER

- Check for ice dams on the overhangs of the roof in freezing or snow conditions.
- Do not pile snow against the side of your home.
- If adding an outdoor element like an ice-rink, provide for drainage away from the home before it melts in the spring.
- Keep downspouts clear from blockage from snow or ice buildup.
- Inspect concrete flatwork, asphalt or pavers for signs of frost heaving. These areas will likely require attention in the spring or summer as frost heave is often due to insufficient surface water management or proper grading.

Alberta New Home Warranty Program

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