

Lot Grading Maintenance



Lot Grading After the Final Grade Stage

It is the Property Owner's responsibility to maintain the surface grades, in perpetuity, to the standards established at the time that the Final Grade Approval was issued. The City of Edmonton may, at any time, require maintenance of the lot grading if alterations or settlements have resulted in surface drainage problems. This requirement is enforceable under the provisions of Drainage Bylaw 18093.

Basement Flooding

Basement flooding is largely caused by surface flooding, infiltration through basement cracks, or sewer backup. Sewer backup is largely preventable through the installation of backwater valves, a plumbing code requirement in the City of Edmonton since 1988. Lot grading is the best defense against surface flooding and infiltration. Typical home insurance does not provide coverage for flooding related to surface flooding events; therefore, maintaining the slopes and swales of the approved lot grading could prove to be one of the best investments a property owner could make.

Rainfall

An average residential property in the Edmonton area will receive approximately 350 millimetres of rain between May and October. This translates to about 140,000 litres of stormwater which must be managed and directed; 50,000 litres of this total comes from the roof of a typical home. A normal rainfall that produces 6 to 10 mm of rain would send almost 1,000 litres of water from the roof to a concentrated area on the ground. While some of this water can be captured and used to support landscape and lifestyle choices, the remainder must be directed to flow away from your home and off your lot without causing damage.

Foundation Grading

The soil around your home is not compacted when it is replaced to backfill the basement excavation. This is a typical building practice in Alberta because unsupported foundation walls cannot withstand the pressure generated by standard compacting techniques. See *Diagram A*.

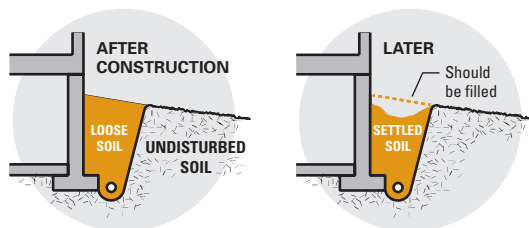


Diagram A

Diagram B

This practice may result in some settlement next to the foundation over time and can create negative grading. See *Diagram B*. Many factors influence the pace and severity of settlement, including seasonal construction, rainfall events, and even landscape choices. As settlement occurs, it becomes necessary to redo proper foundation grading by adding additional soil to reestablish the required 10% slope away from the building. Decorative mulches should be removed and clay should be added to recreate the slope. In extreme cases, topsoil and grass may have to be removed prior to adding additional clay. The City of Edmonton does not recommend using topsoil to reestablish foundation grading as topsoil does not shed water in the same manner as clay.

Water Adjacent to the Foundation

Water will accelerate the settlement process. Minimize the amount of water that the foundation grading receives by ensuring that all downspout extensions are in place after grass cutting or other maintenance tasks. If there is a sump pump outlet pipe, it should discharge onto a splash pad to minimize the risk of water flowing back down the foundation wall and overloading the system. See *Diagram C*.

Rain barrels should have an overflow outlet that will discharge water to a location that is past the excavation zone (approximately 1.2 metres). Watering plants and shrubs in this zone should be limited to the minimum amount required to sustain the plants.

Window Wells

Window wells are installed to accommodate foundation grading that ensures positive slope away from the home. Positive foundation drainage (draining away from the building foundation) is the most important defense against water entering the basement. Ideally, water does not enter window well openings. However, water that does enter the window well should flow down the drain tile, installed at the time of construction, to the weeping tile system. Window wells should be kept free of debris or leaves to ensure that water can enter the drain tile and flow to the weeping tile.

Eavestroughing and Downspouts

Stormwater collected by the eavestroughs is channeled to the ground through the downspouts. This results in a substantial concentration of flow at the discharge points. To protect your home as well as your neighbours' homes, downspout extensions should project past the excavation zone by approximately 1.2 metres, but must not discharge directly onto adjacent property. Eavestroughs should be cleaned and inspected regularly to ensure unrestricted water movement with no overflows. Downspout extensions minimize foundation zone saturation which increases the risk of water entering the basement (infiltration flooding), or frost heaving the sidewalks, driveways, and decks. See *Diagram D*.

Swales

Swales are shallow, sloped channels that convey stormwater and groundwater to a public right-of-way. Typically, property line swales are shared by adjacent properties and serve to provide surface drainage for both lots. See *Diagram E*. Internal swales may also be present on the lot and must also be maintained if needed. See *Diagram F*.

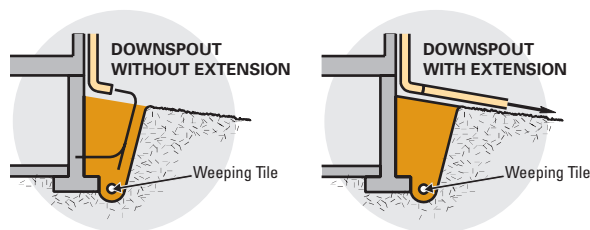


Diagram C

Diagram D

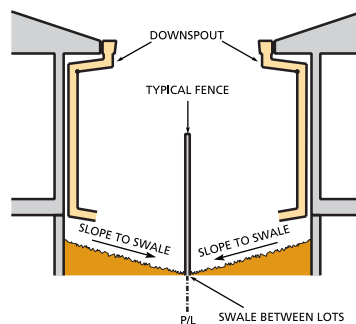


Diagram E

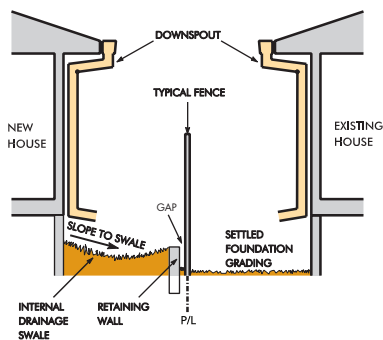


Diagram F

Settlements or blockages in drainage swales become obvious during rain events but are relatively easy to fix with the addition of soil or the removal of a blockage. Consultation with adjacent property owners is advised when considering repairs to a common property line swale.

Lot Grading Plans

Lot Grading Plans have been part of the approval process for residential properties since 1989. The plans are required for all new developments and are approved by the City of Edmonton. Lot Grading Plans specify design elevations, surface gradients, lot types, swale locations, and other drainage information required for lot grading. A Lot Grading Plan establishes the drainage relationship between adjacent properties and its approval is an effective basis for the control of lot grading. There are two typical lot types for single-family and duplex properties: Rear to Front Surface Drainage and Split Surface Drainage. *See Diagrams on right.*

For more information on the Lot Grading Approval Procedure, refer to the *Lot Grading Guidelines - Residential Properties*.

Maintenance Checklist

The maintenance inspection should include all aspects of surface drainage and any potential impact on adjacent properties.

- Downspouts discharge to the ground surface past the excavation zone and within the property.
- Positive slope exists away from the foundation walls. *See Diagram D.*
- Drainage swales convey surface drainage off the lot without impacting adjacent properties. *See Diagram F and Rear to Front Surface Drainage for typical examples.*
- Settlements under steps or decks are properly backfilled.
- Window wells are debris free to ensure efficient drainage.

Property Insurance

Generally speaking, damages caused by overland flooding or infiltration through cracks are not insurable.

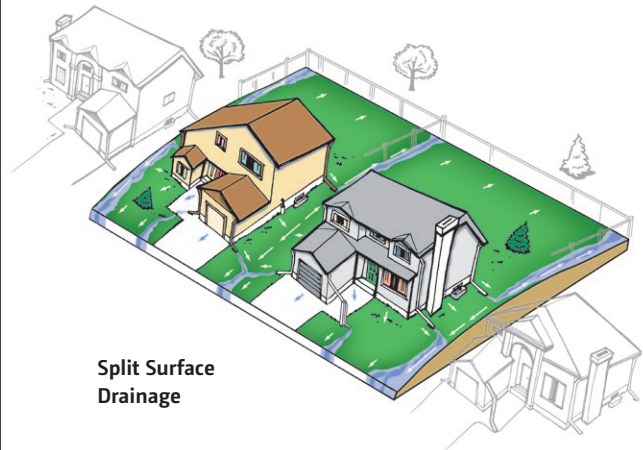
Additional Sources of information

Insurance Bureau of Canada

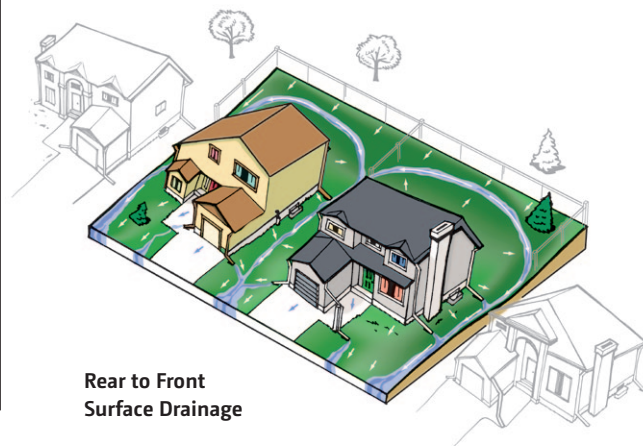
www.ibc.ca

Institute for Catastrophic Loss Reduction

www.iclr.org



Split Surface Drainage



Rear to Front Surface Drainage

For More Information

Lot Grading Inspections - Refer to the “Lot Grading Inspections - Residential Properties” brochure.

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