

City of
Edmonton

Edmonton

Residential Lot Grading Guidelines

Development Services - Lot Grading
edmonton.ca/lotgrading

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Introduction

The Residential Lot Grading Guidelines apply to all small scale residential developments (Single Detached, Semi-Detached, Duplex, Backyard House, and Row House (with individual titled lots for each unit) developments.

The purpose of lot grading is to shape the land to direct stormwater away from buildings and towards a private drainage system or City right-of-way. This assists in protecting buildings and properties from stormwater drainage issues, and is regulated through [Drainage Bylaw 18093](#).

This document is intended to assist property owners, homebuilders and contractors with successful planning and execution of lot grading approvals, including infill plan approval, inspections and compliance with [Drainage Bylaw 18093](#).

This document includes information on site grading during the land development process, the Lot Grading Approval Process, as well as stating the Lot Grading Requirements for all small scale residential developments. Site Servicing Requirements and special information for Infill developments are also explained in this guide.

Please refer to the [Commercial Lot Grading Guidelines](#) for all non residential developments (commercial, industrial, and institutional), large scale residential developments (apartments, row houses and other residential developments with multiple buildings), mixed use developments (a mix of residential and non-residential), and temporary structures.

Bylaws

[Drainage Bylaw 18093](#) - This bylaw regulates surface drainage on public and private property, and establishes the requirements for lot grading approval during the development process. This supports the objectives of protecting people and properties from stormwater drainage while fostering environmental well-being through effective stormwater management.

[EPCOR Wastewater Services Bylaw 20865](#) - EPCOR Water Services Inc. (EWSI) owns and operates public drainage infrastructure in the City of Edmonton. This bylaw establishes the terms and conditions for the protection and use of this drainage infrastructure. For the purposes of lot grading approvals, the bylaw regulates how stormwater is discharged from a private property to the public system.

Site Grading in the Land Development Process

Land Development is the process which takes land from its original state to its built form and ultimate land use. A key part of this process is the engineered planning and construction of features that assist in the management of stormwater, including drainage infrastructure and site grading.

Managing stormwater near its source reduces impact and capacity requirements on downstream infrastructure. This works in conjunction with site grading to reduce flow rates by providing local ponding and storage areas while also protecting the public and properties. Lot grading is an important aspect in conveying stormwater from private property to public infrastructure without causing issues on neighbouring properties and helps to ensure properties work with the stormwater management objectives.

This section explores the different grading stages in the land development process, the different lot drainage styles and the lot grading plans that help achieve stormwater management objectives.

Grading Stages

Subdivision Grading - This is the initial grading of a new subdivision prior to construction of buildings. Completion of this stage is the responsibility of the developer and provides the overall template for the following stages of grading.

Rough Grading - This stage occurs after a building is constructed and consists of shaping the lot, with clay or other equivalent material native to the site, to conform to the approved Lot Grading Plan. A properly rough graded lot provides a solid base and template to place the Final Grade material. Completion of this stage is the responsibility of the property owner, however it is often completed by the developer or homebuilder.

Final Grading - This stage includes placement of topsoil on top of the rough graded lot to conform to the approved Lot Grading Plan. This provides the final layer before landscaping materials are placed. Completion of this stage is the responsibility of the property owner, however it may be completed by the developer or homebuilder.

Landscaping - This final stage includes the placement of sod and other decorative materials such as mulch, woodchips, rocks, shrubs and trees. Completion of this stage is the responsibility of the property owner, however it may be completed by the developer or homebuilder.



Figure 1 - Example of Rough Grade

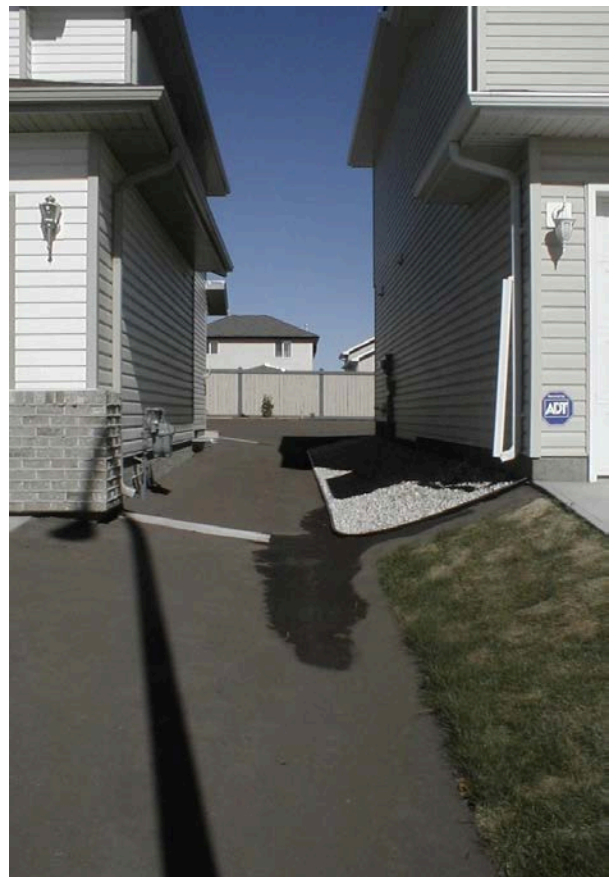


Figure 2 - Example of Final Grade

Lot Drainage Styles

The overall slope of the lot will determine how water drains away from buildings and out to the City right-of-way. Common lot drainage styles that are found within the City of Edmonton are:

- [Type A, B and C - Rear to Front Drainage](#) (Overall slope varies between lot types) - The back of the lot is at a higher elevation than the front of the lot. Water drains away from the buildings towards the side swales and is directed toward the City right-of-way at the front of the lot.
- [Type D - Standard Split Drainage](#) - The high point of elevation is between the front and rear of the lot (location varies). Water drains away from the buildings towards the side swale and is directed away from the high point to either the front or rear of the lot.
- [Type W - Split Surface Drainage with Walkout](#) - The high point of elevation is between the front and rear of the lot (location varies). Water drains away from the buildings towards the side swale and is directed away from the high point to either the front or rear of the lot.
- Transition Lot - A lot on the transition point between two different lot types and combining the drainage style of each type (i.e. One side of a transition lot is Type A - Rear to Front Drainage while the other side is Type D - Standard Split Drainage)

Lot Grading Plans

Lot Grading Plans are designed with the stormwater management objectives and function to convey stormwater away from buildings and towards the City right-of-ways.

Lot grading plans are approved by the City of Edmonton and are required for all new developments. They specify design elevations, surface gradients, lot types, swale locations and other drainage related information. A Lot Grading Plan establishes the grading relationship between adjacent properties and its approval is an effective basis for the control of stormwater drainage.

Infill developments typically do not have subdivision Lot Grading Plans and one must be submitted as part of the Development Permit application. These Lot Grading Plan Requirements are explored in a later section of this document under [Residential Infill Developments - Infill Plan Requirements](#).

Due to the topography of some neighbourhoods, approved lot-to-lot drainage may occur.

Lot Grading Approval

Lot grading inspections and approvals occur at two stages: [Rough Grade](#) and [Final Grade](#). This section explores the inspection fees, lot grading certificate requirements, grading approval time frames and the grading approval process.

Lot Grading Inspection Fees

The Lot Grading Fee is collected at the time of Development Permit application and includes the **first two Rough Grade** and **first two Final Grade** inspections for Single Detached, Semi-Detached, Duplex and Row House developments. Failed inspections will require re-inspection. Each inspection in excess of the two included rough grade and final grade inspections is subject to a re-inspection fee.

Current lot grading inspection fees are found on [Permit Fee Listing, Planning and Development Fee Schedules.](#)

Lot Grading Certificate Requirements

Lot Grading Certificates must be submitted to support both the Rough and Final Grade inspections.

Lot Grading Certificates are as-built plans, prepared by an [Alberta Land Surveyor](#), that provide information about the as-constructed grading and drainage of a lot. This includes design elevations from the approved Lot Grading Plan, existing (as-built) elevations at the time the survey was conducted, the location of the house, garage/parking pad, driveway, walkways, etc. within the lot and other important information regarding the grading of the lot. This provides the Lot Grading Inspector with information required to verify the grading of the lot and helps to identify any problems that may exist.

For the current Lot Grading Certificate requirements please visit [Lot Grading Certificates](#).

Grading Approval Time Frames

The onus is on the person responsible to ensure that lot grading approval is achieved in a timely manner. [Drainage Bylaw 18093](#) establishes these time frames for single-detached, semi-detached, duplex and row house developments as follows:

Rough Grade must be approved within:	<ul style="list-style-type: none"> • 18 months of the building permit being issued for the premises.
Final Grade must be approved within:	<ul style="list-style-type: none"> • 12 months of the Rough Grade Approval; or • 30 months of the building permit being issued for the premises.

Table 1 - Grade Approval Timeframe

The person responsible may choose to bypass the Rough Grade approval and go directly to Final Grade.

All exterior construction, including buildings, concrete driveways, walkways and drainage systems must be completed before applying for rough or final grade approval. It is the builder's responsibility to ensure that roof leaders (downspouts) and foundation drainage systems are installed according to the approved engineering drawings and servicing requirements.

Grading Approval Process

The Grading Approval Process for both Rough and Final Grade is as follows:

1. The applicant completes the grading work and has an [Alberta Land Surveyor](#) prepare an as-built ([Rough or Final Lot Grading Certificate](#)).
2. The applicant [submits](#) the Lot Grading Certificate to the City of Edmonton to initiate the lot grading inspection.

Prior to inspection, please ensure the site is accessible (gates are unlocked), dogs and other animals are contained inside and any materials/objects that would impede the grading inspection or make it difficult to inspect the grading are removed.

For final grade inspections, please ensure the topsoil is smoothly spread out, compacted and ready for sod, liners, rocks, etc.

3. A Lot Grading Inspector will conduct a site inspection to verify that the lot is graded in accordance with the approved [Lot Grading Plan](#), [Lot Grading Requirements](#) and [Drainage Bylaw 18093](#).
4. The applicant will receive an Inspection Report indicating whether the inspection has **Passed** (approved) or **Failed** (deficiencies exist).
 - a. If the Inspection has passed:
 - i. The Inspection Report will indicate approval and a copy of the lot grading certificate will be included. This approval is based on the site conditions observed at the time of the lot grading inspection.
 - b. If the Inspection has failed:
 - i. The Inspection Report will indicate the list of deficiencies to be corrected. Deficiency item locations are labeled "**left**", "**right**", "**front**" and "**back**". The "**front**" of a lot is defined when facing the property from the City street. In the case of a corner lot, the front property line is the shorter of the two that are adjacent to the City street.
 - ii. The applicant must correct the deficiencies within **60 days** (unless otherwise noted) and book their reinspection online. If resubmission of a Lot Grading Certificate is indicated or reinspection fees are outstanding, the reinspection cannot be successfully booked until these are resolved.

To initiate a Rough or Final Lot Grading Inspection (or Re-inspection) and submit the Lot Grading Certificate or pay a reinspection fee, go to: <https://selfserve.edmonton.ca/residentiallotgrading>

Regardless of who applies for grading approval, [Drainage Bylaw 18093](#) states that the person responsible is ultimately accountable for all activities and approvals related to their property.

After Final Grade Approval has been issued, it is the person responsible to [maintain](#) the surface grades in perpetuity. The City of Edmonton may at any time, require maintenance or enforcement of repairs on the lot grading if alterations or settlements result in lot grading problems.

If there is a discrepancy between the Lot Grading Guidelines and [Drainage Bylaw 18093](#), the [Drainage Bylaw 18093](#) will prevail.

Lot Grading Requirements

Lot Grading Requirements establish the minimum standard to efficiently and effectively direct drainage to a City right-of-way. This supports the protection of properties from stormwater while minimizing the impact to neighbouring properties. These requirements are intended to support compliance with [Drainage Bylaw 18093](#).

Design Elevation Tolerance

Approved Lot Grading Plans identify design elevations at specific locations for each property. The Lot Grading Certificate identifies as-built elevations at the same specific locations, as well as additional critical point locations. Grading between design points must be consistent without obstructions or low areas, while maintaining a minimum of 1.5% slope.

The table below establishes the acceptable design elevation tolerances for grading approval:

Grading Stage	Tolerance from Approved Final Grade Design Elevations
Rough Grade (clay)	Between -20 cm and -7 cm
Final Grade on topsoil	Between -10 cm and 0 cm
Final Grade on finished landscaping	Between -10 cm and +10 cm

Table 2 - Design Elevation Tolerances

If rocks, wood chips, mulch or other porous decorative material is to be used for final landscaping, the underlying Rough Grade material must be raised to Final Grade elevations. A proper Final Grade surface for stormwater flow must be established before adding these decorative materials, as stormwater can easily flow through these materials and create ponding at the transition areas. See [Figure 3](#) for a diagram of the issue.

In order for the surveyor to record accurate information, decorative materials should not be placed at or near the design or critical as-built elevation locations. As-built elevations provided on these materials may be subject to recertification to validate drainage functionality and conformance with design tolerance.

The Lot Grading Inspector has the discretion to accept elevations that are not within tolerance when:

- A lot is graded to match an existing walkway, lake, park, curb, sidewalk, road or lane while maintaining positive surface drainage.
- A lot is graded to match an adjacent property and has proper on-site surface drainage (sloping away from the property) that also functions with the adjacent property.

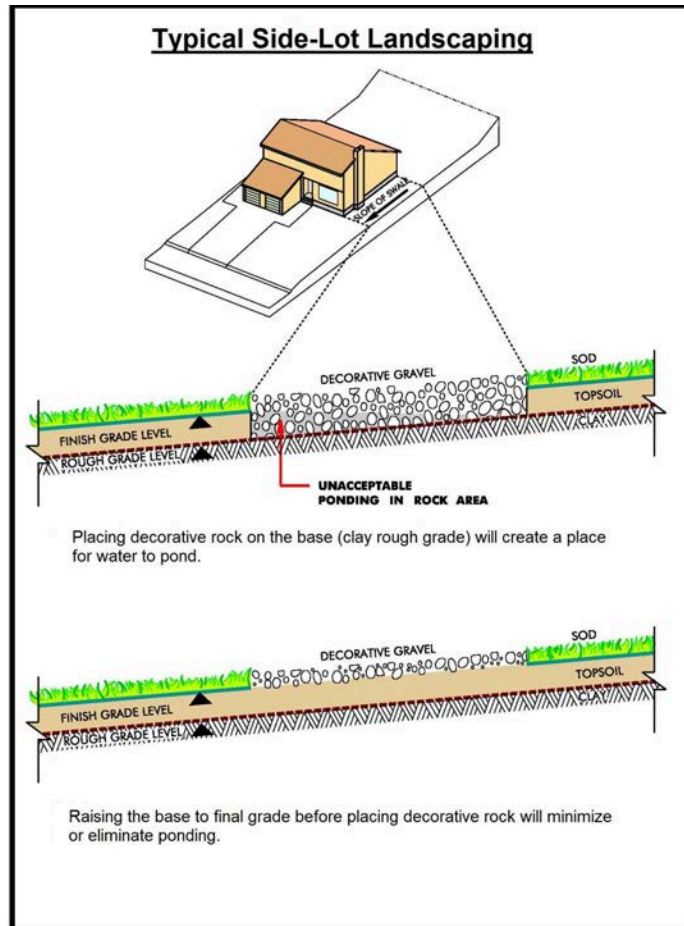


Figure 3 - Decorative Material on Grade

Minimum Slope from Buildings

A sloped (graded) surface is required to effectively drain water away from a building. This reduces the potential for flooding by protecting the foundation walls, weeping tile systems and building openings from stormwater.

Table 3 below establishes the requirements for minimum slope and distance away from buildings, which varies depending on the type of surface adjacent to the building. It also establishes a minimum drop between the building and the drainage swale to assist in adequate slope away from the building where minimum slope-distance cannot be achieved (i.e. the side yard). Figures 4 to 6 supplement these requirements.

Surface Type	Minimum Slope from Building	Minimum Drop from Building to Drainage Swale
Soft Surface/Landscaping - Foundation Walls	5.0% Slope for 2 m	15 cm Drop
Soft Surface/Landscaping - Slab on Grade (i.e. Detached Garages and Parking Pads)	5.0% Slope for 2 m	10 cm Drop
Hard/Impermeable Surface	1.0% Slope	15 cm Drop No minimum drop required if paved from building-to-building (See Figure 6)

Table 3 - Minimum Slope from Buildings

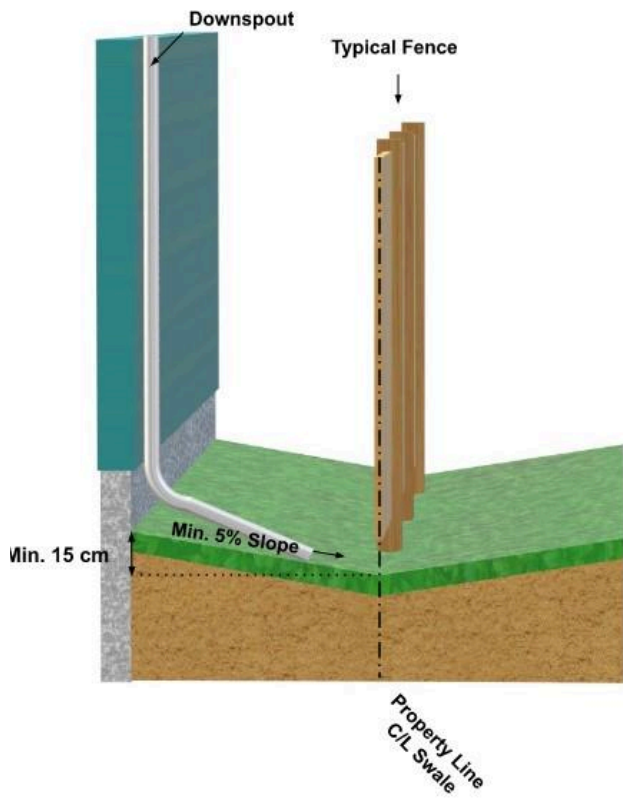


Figure 4 - Grass Swale (Soft Surface)

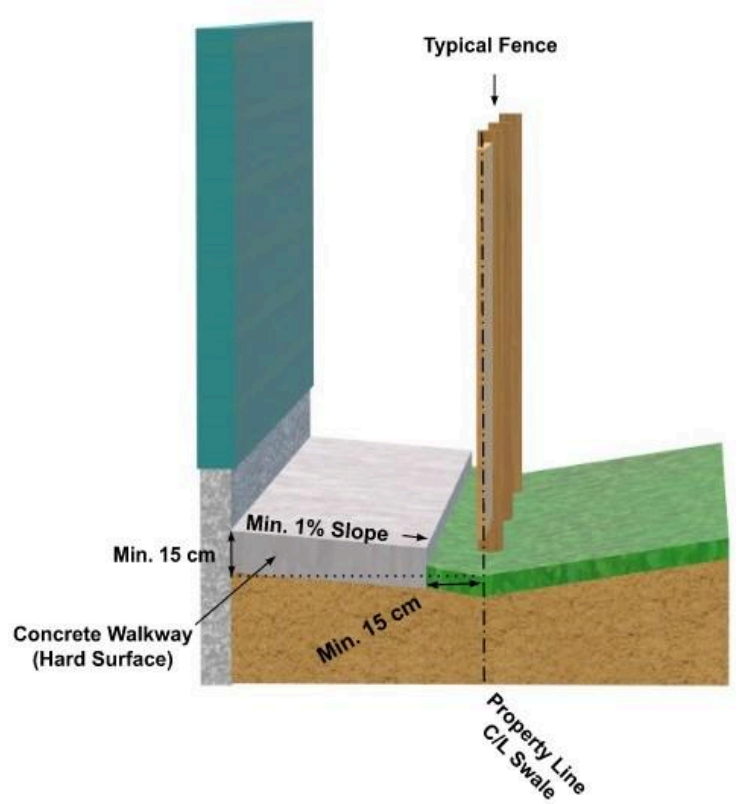


Figure 5 - Swale (Soft Surface) with Concrete Walkway

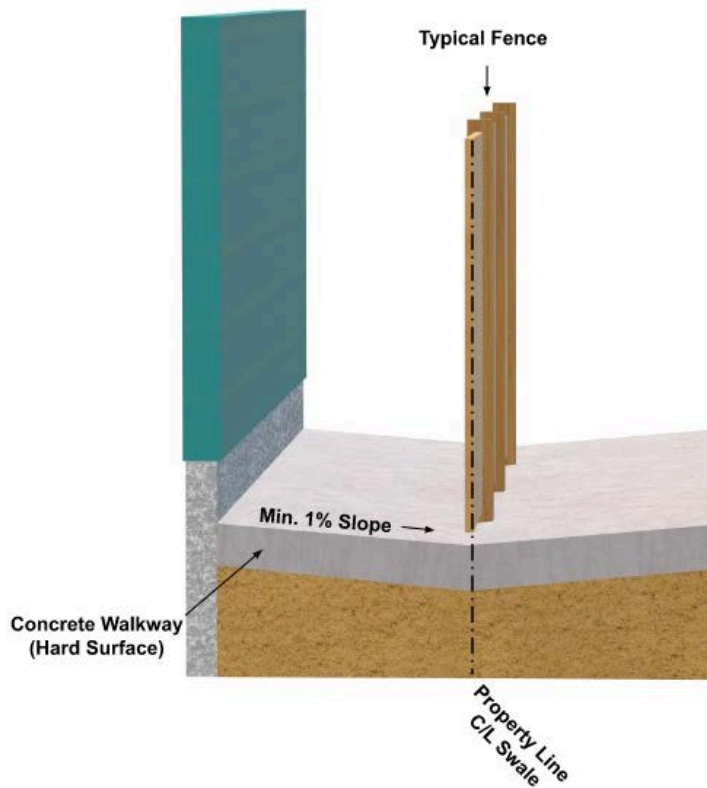


Figure 6 - Concrete Pad with Swale

Drainage Swales

A drainage swale is a shallow, sloped linear depression (a shallow ditch) made of grass or concrete, which carries stormwater towards a City right-of-way (lane or street). There are three types of swales which can be used depending on the location within the property:

- **Common property line drainage swales** are required along the side-yards where common adjacent properties are suitably graded. They must provide a minimum unobstructed width of 15 cm within each property, a minimum depth of 15 cm and a minimum 1.5% slope to direct surface runoff towards a City right-of-way. The grading of the common property drainage swale must allow for the required slope away from the foundation walls of adjacent buildings and must provide drainage functionality for both properties.



Figure 7 - Common Property Line Swale

- **Internal side-yard drainage swales** are required for locations where a common property drainage swales cannot be constructed due to inadequate foundation grading on an adjacent property (This is common for Infill Developments) and within the 1.5 m wide easements found between the homes of Zero Lot Line properties. They must provide a minimum unobstructed width of 15 cm within the developing property, a minimum depth of 15 cm and a minimum 1.5% slope to direct surface runoff towards a City right-of-way.



Figure 8 - Internal Side-Yard Swale

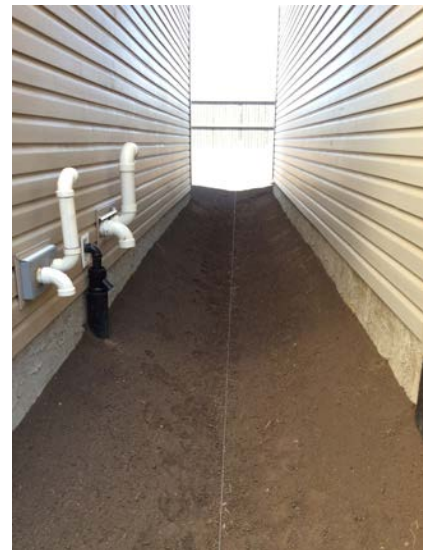


Figure 9 - Internal Zero Lot Line Swale

- **Internal rear-yard swales** are required in the rear yard of lots in order to drain the rear portion of the yard. A rear internal swale is created where the forward slope of the lot meets the rearward slope of the foundation grading or where the slope away from a detached garage meets the slope away from the main building. They must provide a minimum unobstructed width of 15 cm, a minimum depth of 15 cm and a minimum 1.5% slope to direct surface runoff towards the common property line or internal side-yard swales.

Any swales constructed of concrete must provide a minimum unobstructed width of 15 cm within each property, a minimum depth of 10 cm and a minimum 1.0% slope to direct surface runoff towards a City right-of-way.

All swales within the city right-of-way require a minimum 2.0% slope between the property line and the back of sidewalk, curb or rear lane.

Swale Type	Minimum Longitudinal Slope	Minimum Unobstructed Width from Property Line	Minimum Depth
Grass Swale	1.5%	15 cm	15 cm
Concrete Swale	1.0%	15 cm	10 cm
Swales within the City Right-of-way	2.0%	N/A	N/A

Table 4 - Drainage Swale Requirements

Grade contractors are encouraged to indicate the high point on the rear internal swale in order to guide the surveyors and enable them to locate and provide meaningful as-built elevations for the rear internal swale.

Retaining Walls

Retaining walls are required to support substantial differences in elevation between adjacent properties. This most often occurs in the following instances:

- On walkout properties in new developments.
- For Infill development due to the requirement to direct stormwater towards a City right-of-way without impacting existing developments.
- On lots with unintended circumstances, such as low buildings.

All retaining walls that exceed 1.2 m in height and/or are attached to the house are required to be of an engineered design. Refer to the [Alberta Building Codes and Standards](#) for more information.

<p>Retaining Wall Requirements: (less than 1.2 m in height)</p>	<ul style="list-style-type: none"> ● Constructed of concrete or minimum 10 cm x 15 cm (4" x 6") pressure treated timbers. <ul style="list-style-type: none"> ○ Timber walls require a dimpled waterproof membrane. ● Must be self supporting. Cannot touch or be supported by any existing structures or fences. ● Must project below the adjacent ground elevation. ● The top of the wall must be a minimum 15 cm above the bottom of the internal swale and 5 cm above adjacent surface grade. ● Stormwater drainage must be conveyed to a City right-of-way. ● Internal swales must be located entirely within the property.
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Table 5 - Retaining Wall Requirements

Fences and other structures are not retaining walls and cannot be used to retain soil in raised beds or other landscape features. However, if there is no existing fence, one may be built on top of the newly constructed retaining wall provided that the retaining wall is constructed in accordance with the above requirements.



Figure 10 - Wooden retaining wall



Figure 11 - Wooden retaining wall with integrated wooden fence

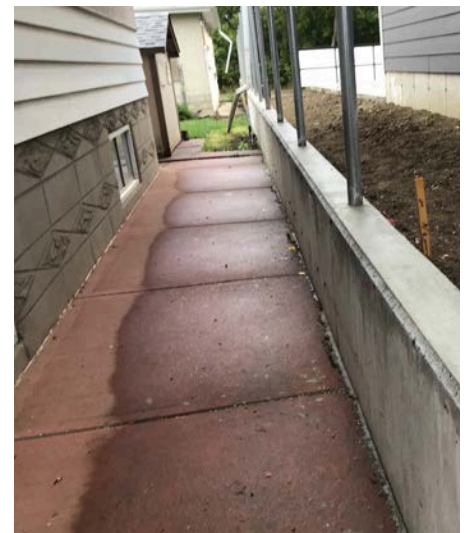


Figure 12 - Concrete retaining wall with integrated chain link fence

Window Wells

Window wells may be required to minimize the risk of flooding when the bottom of a window is at or below Final Grade. Window wells must extend a minimum of 5 cm above the adjacent Final Grade elevation or a minimum of 15 cm above the adjacent Rough Grade elevation. If this minimum cannot be achieved then the window well will need to be raised or extended.

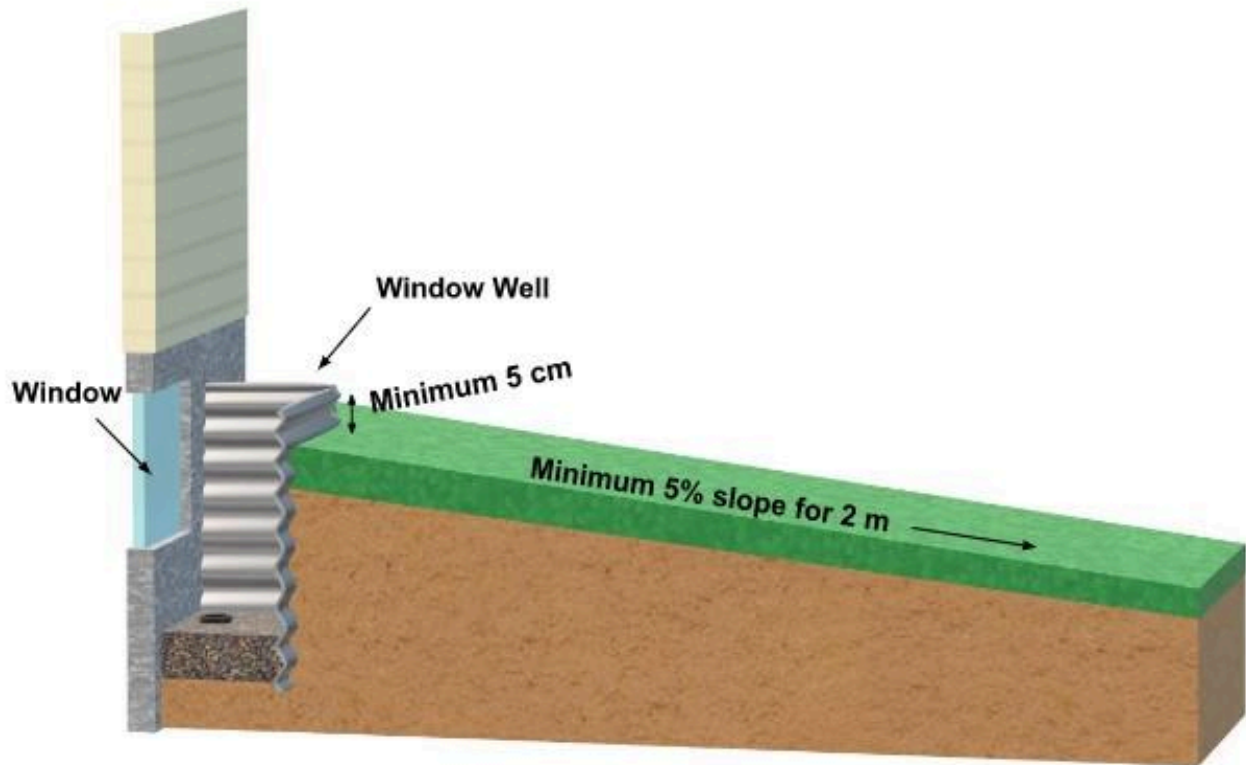


Figure 13 - Window Well

Clay Cap at Back of Concrete Walks or Paved Lanes (Rough Grade only)

To reduce water infiltration into the granular base of concrete walks and paved lanes, non-granular material must be laid against the edge of the concrete walk or asphalt. This will help protect this infrastructure from long term damage.

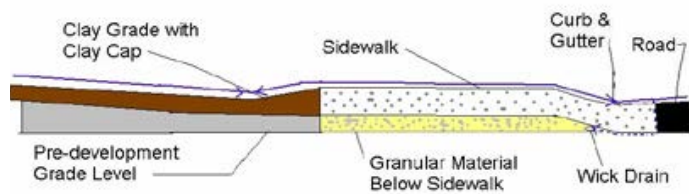


Figure 14 - Clay cap at Rough Grade

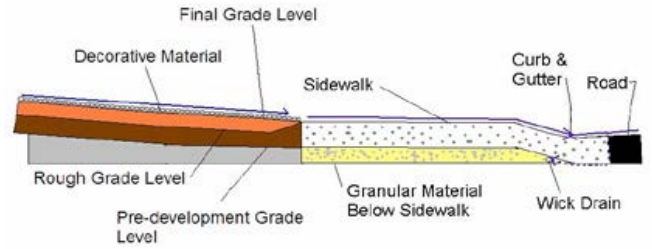


Figure 15 - Clay cap at Final Grade



Figure 16 - Example of clay cap at Rough Grade

Right-of-Ways, Easements and Restrictive Covenants

Many lots have a right-of-way, easement or restrictive covenant registered on Title which often contains development restrictions. The onus is on the person responsible to ensure these restrictions are followed during and after the lot grading process. Title documents are available from an [Alberta Registry Agent](#).

These restrictions may include (but are not limited to) the following:

- Prohibiting the planting of trees and shrubs within a right-of-way or easement.
- Prohibiting the placement of other landscaping features, objects or structures within a right-of-way or easement.
- Restricting downspouts and sump pumps from discharging to the ground on top of bank/ravine lots and instead having them discharge to the storm sewer.



Figure 17 - Major concrete drainage swale easement



Figure 18 - Major grass drainage swale easement

Site Servicing Requirements

EPCOR determines how each property must dispose of water from the roof and the foundation drainage systems through site servicing requirements. This section explains these site servicing requirements as well as the related components of these systems such as downspouts and sump pumps.

Foundation and Storm Service

Site service systems determine how roof and foundation water are removed from a property. The two types of systems are: Foundation Service and Storm Service. Each of these systems have different requirements that must be followed.

Servicing	Service Requirements
Foundation Service	<ul style="list-style-type: none"> • Weeping tile system must be connected to the foundation service provided. • Downspouts must not be connected to the foundation service.
Storm Service	<ul style="list-style-type: none"> • Weeping tile system must be connected to the storm service provided. • All downspouts must be connected to the storm service.

Table 6 - Foundation and Storm Service Requirements

For more information about site servicing requirements, refer to [EPCOR Drainage Connection for Builders and Developers](#) or contact EPCOR Infill Water and Sewer Servicing at 780-496-5444 or email wass.drainage@epcor.com.

Downspouts

Downspouts are pipes that connect to a roof drainage system (eavestroughs) to carry rainwater and snowmelt from the roof to the ground or storm service. A clean and functional roof drainage system protects the roof, siding and foundation from water damage and helps prevent flooding.

Servicing	Downspout Requirements
Foundation Service	<ul style="list-style-type: none"> • All downspouts must be complete with elbows no higher than 30 cm above Final Grade. • All downspouts must be complete with extensions or splash pads. • Downspouts must be directed away from the building and towards the drainage swale. • Discharge points must be a minimum of 1m away from the building. • Discharge points and extensions must be a minimum of 15 cm from an adjacent private or city property. • Downspouts must not be connected to the weeping tile system.
Storm Service	<ul style="list-style-type: none"> • All downspouts must be connected to the storm service provided. • All storm risers must be above the Final Grade elevation. • Downspouts must not discharge to the ground.

Table 7 - Downspout Requirements

All eavestroughs and downspouts must be completed prior to the Rough Grade inspection.

Splash Pads

[Splash pads](#) are solid objects (often concrete or plastic) placed under the discharge points of sump pumps and downspouts that direct water away from the foundation. This helps to minimize soil erosion around the foundation and prevents any discharged water from entering the weeping tile system.

If a direct connection to a storm or a foundation service is not available, splash pads should be placed in the following areas:

- beneath all downspouts draining onto soft landscaping (sod, topsoil or mulch).
- beneath the sump pump discharge outlet where it is draining onto soft landscaping (sod, topsoil or mulch).



Figure 19 - Splash pad under sump discharge

Sump Pump

The sump pump is part of the building's foundation drainage system that collects and discharges the water from the weeping tile. Once the water is collected, it is discharged to the Storm or Foundation service provided or directly to the surface. If the sump pump discharges to the surface it is important to provide a splash pad at the discharge point.

Since 2006, all new Single Detached, Semi-Detached or Duplex developments must provide a "[Foundation Drain Discharge Collection System](#)". These properties must connect the foundation drainage system to a foundation service.

If a sump pump discharge hose is used to discharge the water away from the foundation, it should be disconnected in the winter to prevent freezing in the hose.

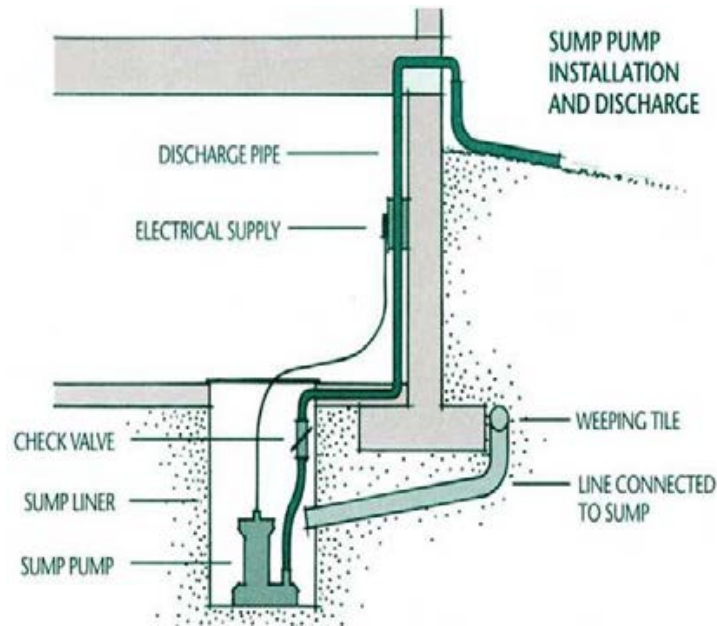


Figure 20 - Sump pit and sump discharge detail

Residential Infill Development

Residential Infill is the practice of constructing and integrating newer buildings into existing neighbourhoods. [Edmonton's City Plan](#) states that 50% of net new units city-wide should be created through infill development. This type of growth creates more housing choices for a growing population, makes better use of existing infrastructure and supports climate resiliency goals through more compact communities.

Part of the redevelopment process is re-grading the lot to comply with the [Drainage Bylaw 18093](#), however most of Edmonton's older neighbourhoods don't have designed grading plans; a requirement which only came into effect in 1989. Therefore, the new development can change and disrupt the current/historic drainage pattern of the neighbourhood. This can create unique challenges that require specific attention to overcome which include:

- Keeping drainage on the lot without crossing property lines.
- Dealing with substantial grade differences between adjacent properties.
- Dealing with drainage issues on adjacent lots where grading maintenance has not been undertaken.

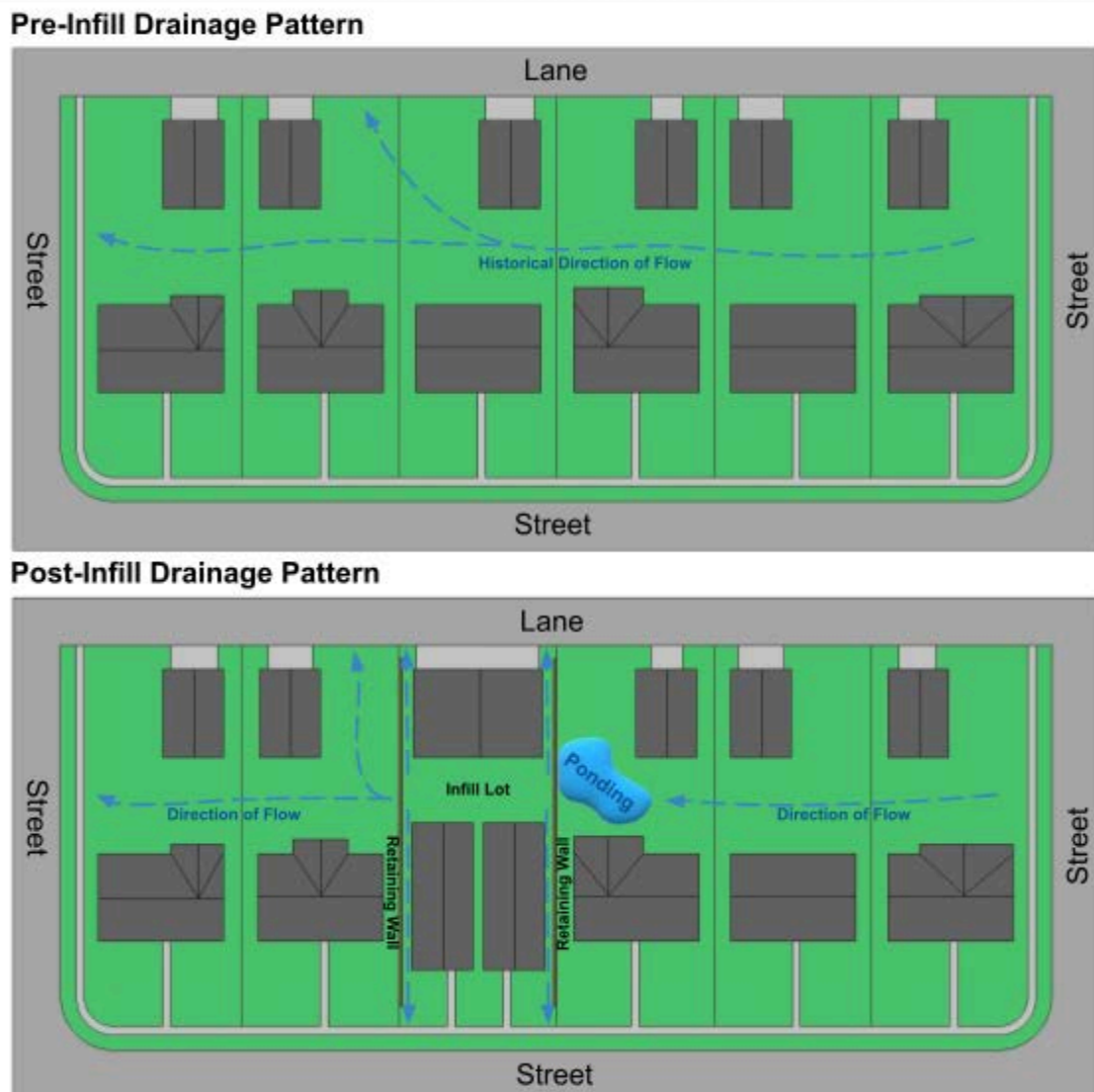


Figure 21 - Disruption of historical neighbourhood drainage pattern post-Infill

Construction Requirements

A Lot Grading Plan defines how the lot will convey stormwater drainage to a City right-of-way without flowing onto adjacent private properties. When creating a Lot Grading Plan the following construction criteria must be followed:

- Contact EPCOR, Infill Water and Sewer Servicing at 780-496-5444 or email wass.drainage@epcor.com for information about servicing for collection and disposal of water from the roof and foundation drainage systems.
- Internal Swales must be designed with the lowest elevation of the final discharge point at the sidewalk, curb or lane. This elevation is to be used when locating critical high points and calculating slopes. The design must provide an elevation difference of 15 cm between the lowest opening (entrance door or window well) and the bottom of the drainage swale. See [Lot Grading Requirements](#).
- Retaining walls are constructed to manage stormwater within the property and to support any elevation difference between a developing property and an adjacent private property. See [Retaining Wall Requirements](#).
- Common property swales are possible where adjacent properties are suitably graded. Such as a new infill development adjacent to an existing approved infill development or where adjacent property owners collaborate to create common property swales by undertaking grading improvements on their properties.
- Plan the demolition and reconstruction processes to **ensure interim control of stormwater drainage during all phases of the redevelopment project** including:
 - Creating internal drainage swales.
 - Controlling roof, downspouts and sump pump discharge.
- Directing or allowing stormwater to flow onto adjacent private property is a [Drainage Bylaw 18093](#) violation.

When creating lot grading design plans, collaboration with adjacent property owners could minimize costs associated with stormwater control.

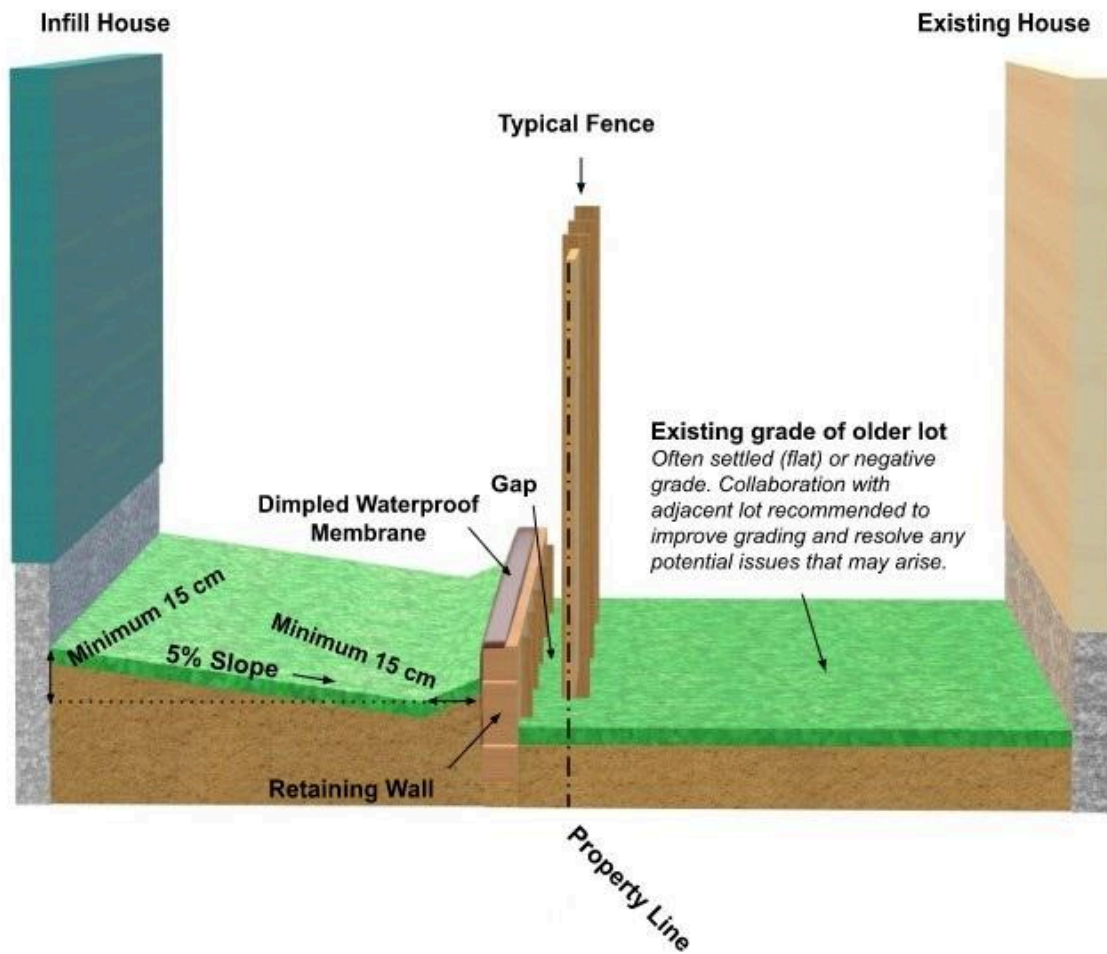


Figure 22 - Infill lot with an internal swale and retaining wall adjacent to an existing house

Infill Plan Requirements

A Lot Grading Plan is required for all proposed development in a mature neighbourhood to support the Development and Building Permit applications.

Single/Semi-Detached Development

The proposed Lot Grading Plan must be submitted with the Development Permit application and must be accepted by the City prior to the issuance of the Development Permit and Building Permit.

For water and sewer connection information refer to [EPCOR Service Connections](#).

Row House (3 units or larger) Development

The proposed Lot Grading Plan, a site mechanical plan and stormwater management (SWM) calculations must be submitted to wass.drainage@epcor.com. Following the EPCOR Infill Water and Sewer Servicing (IWASS) review, the grading plan is forwarded to the City for final review and acceptance.

For water and sewer connection information refer to [EPCOR Service Connections](#).

For the current Lot Grading Plan requirements please visit [Lot Grading Plan - Infill](#)

Re-grading and Landscaping in Mature Neighbourhoods

Re-grading to alter the flow of stormwater drainage on any premises must be supported by an approved Lot Grading Plan. Consulting with adjacent property owners is a critical step when considering any grade changes or downspout location changes that affect stormwater drainage management between neighbouring lots. Changes to a downspout or sump pump discharge location that directs stormwater onto an adjacent private property is a bylaw violation.

Common property swales are ideal to convey stormwater drainage for adjacent properties and internal drainage swales are required when undertaking grading improvements independent of adjacent properties.

Properties Adjacent to Infill Development

For properties with no approved Lot Grading Plan, including properties adjacent to infill developments, [Drainage Bylaw 18093](#) states in Part II - Section 6 that the person responsible or owner of the premises must establish and maintain surface grades and elevations adjacent to buildings in such a way that water drains away from the buildings and towards a City right-of-way.

Collaboration with Neighbours

It is recommended that adjacent property owners are consulted prior to infill development. This creates an opportunity for the adjacent property to consider the existing state of their grading and to take steps to improve the stormwater drainage on their property. In many cases, grading improvements can be made in conjunction with the grading for the infill development and can address many issues or concerns that may occur as a result of the infill construction process. Collaboration with the adjacent properties may also help to fix any neglected grading and encourage common property line swales, thereby eliminating retaining walls and reducing costs. If retaining walls on the adjacent property already exist, consider consulting with the adjacent owner to remove the wall and create a common property line swale.

Lot Grading Issues and Maintenance

Lot grading issues can develop slowly over a period of years, such as settlement at the foundation walls, which can become evident after rainstorms or during snow melt. Re-grading or re-development (infill housing) can also create stormwater drainage issues or highlight existing issues. This may result in basement flooding, property damage or disputes between neighbours.

There is always a potential for flooding to occur, even if it has never happened before. The City encourages the person responsible for a premises to take preventive measures to avoid drainage issues and flooding such as:

- Ensuring eavestroughs are clear of debris and downspouts are extended past the foundation wall.
- Shoveling snow away from window wells, downspouts and foundation walls during snowmelt to provide a path for stormwater to flow to the City right-of-way.
- Fix any settlements that may have occurred to ensure water flows away from the foundation walls.
- Ensuring drainage swales are clear of debris, settlements and functioning properly.
- Contact a restoration company, professional landscaper, grading company/contractor, private home inspector or foundation drainage/repair contractor if major issues arise.

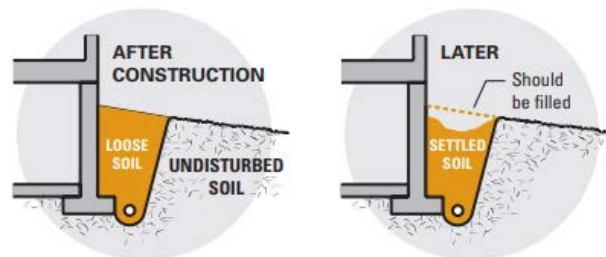


Figure 23 - Settlement

For answers to questions about common drainage disputes refer to our [Frequently Asked Questions](#). For areas developed before 1989, please refer to [Lot Grading Issues](#) on how to deal with stormwater drainage problems.

Remember, all property owners have an equal interest in effective drainage of stormwater. Solutions to most issues involving neighbours can be resolved with open communication.

After Final Grade Approval has been issued, the person responsible is required to [maintain](#) the surface grades in perpetuity. The City of Edmonton may at any time, require maintenance or enforcement of repairs on the lot grading if alterations or settlements result in lot grading problems.

Enforcement

When a Lot Grading Inspector discovers or identifies a situation that is non-compliant with [Drainage Bylaw 18093](#), the inspector may serve a notice to the person responsible for the premises.

Correction of the non-compliant issue must be completed before the deadline specified in the notice. Bylaw penalties and subsequent fines may be imposed for properties when compliance is not achieved by the specified deadline.

In consideration of enforcing [Drainage Bylaw 18093](#), the City takes into account any damaging impact on adjacent properties.

For More Information

Contact Information

311

General Inquiries
7:00am - 7:00pm
Monday-Sunday (Closed Statutory Holidays)
lot.grading@edmonton.ca

Internet Resources

Residential Lot Grading:
www.edmonton.ca/lotgrading

Commercial & Large Scale Residential Lot Grading:
https://www.edmonton.ca/business_economy/lot-grading-commercial

EPCOR

*EPCOR Water Services Inc.,
Infill Water and Sewer Servicing*
780-496-5444
wass.drainage@epcor.com
[Service Connections](#)

EPCOR Flood Prevention Home Inspection
780-412-4500
floodprevention@epcor.com
[Flood Prevention at Home](#)

EPCOR Drainage Services
780-412-4500
epcordrainage@epcor.com
[EPCOR Drainage Services](#)

Documentation

[Drainage Bylaw 18093](#)

[EPCOR Drainage Services and Wastewater Treatment Bylaw 19627](#)

[City of Edmonton Design and Construction Standards Volume 3 Drainage](#)

[Alberta Building Code](#)

Pamphlet Series

["Lot Grading Inspections"](#)
Residential Properties

["Lot Grading Inspections"](#)
Final Grade Stage

["Lot Grading Maintenance"](#)
After Final Grade Stage

Definitions

Adjacent Lot	➤ The neighbouring property that shares a common property line. Also referred to as the “abutting or flanking lot”.
As-built Elevation	➤ The actual/existing elevation of a point based on a benchmark, as determined by a surveyor.
Benchmark	➤ A predetermined elevation (based on a datum) used to set other grade points with elevations.
Bylaw	➤ Rules created and enforced by a municipal government.
Clay	➤ A type of soil mainly made up of soft minerals. This is the common natural soil found underneath the topsoil in and around Edmonton.
Common Property Line	➤ The property line that is shared between adjacent lots.
Downspout	➤ A pipe that connects the eavestrough to either the storm stand pipe or an elbow and extension and directs roof water. Also referred to as a “roof leader”.
Downspout Elbow	➤ A connection of the downspout that forms a bend to redirect the flow of water.
Downspout Extension	➤ A length of downspout (usually hinged) that directs water away from the building.
Drainage	➤ The gravity assisted down and outward flow of water.
Easement	➤ A registered property interest that grants the easement holder the right of use or access on a designated portion of land.
Eavestrough	➤ A connected system of gutters that is used to collect and relay roof water to the downspouts.
Elevation	➤ A height defined by a benchmark.
Erosion	➤ The gradual wearing down of the land caused by flowing water.
Final Grading	➤ The final stage of shaping the lot by adding soil. The stage after Rough Grading but before landscaping.
Foundation Service	➤ An underground pipe that connects a private foundation drainage system (weeping tile) to a storm sewer main and sump pump. This type of service is designed to collect groundwater only.
Foundation Wall	➤ The vertical walls of a foundation that supports the weight of a building or structure.
Grade	➤ The slope of the land or the surface itself.
Grade Differential	➤ A major difference in elevation between two areas. Also referred to as Grade Separation.
Grading	➤ The process of shaping the land to control stormwater surface drainage.
Greenfield	➤ A newer planned subdivision/construction area with an approved subdivision plan.
Hard Surface	➤ A type of hard, impermeable surface. (i.e. concrete, rock or asphalt)
Impermeable	➤ Not allowing water to flow through.

Infill	➤ A newer building/construction project taking place in an older mature neighborhood.
Internal	➤ Being located completely within a lot. (i.e. inside the property lines)
Landscaping	➤ The final surface treatment where decorative materials such as sod, mulch and vegetation are placed. The stage after Final Grading.
LID (Low Impact Development)	➤ A type of stormwater management facility that incorporates plants, engineered soils and natural processes to capture water runoff close to its source and slow it from entering the storm service system.
Lot Grading	➤ The shaping and sloping of the ground to provide a surface for controlling stormwater that conforms to an approved design.
Lot Grading Certificate	➤ A plan showing the design grades, as-built grades and overall structure of the buildings developed on a lot.
Lot Grading Inspector	➤ A City of Edmonton employee who, guided by Approved Design Plans, the Drainage Bylaw 18093 and these Lot Grading Guidelines, inspects private properties for the overall ability to control stormwater by overland or below ground services.
Lot Grading Plan	➤ A plan showing the approved design grades of a subdivision or individual lot.
Low Area	➤ An area requiring “fill material” to restore or establish functional grade.
Mature Neighbourhood	➤ An older established neighbourhood where there is no approved Subdivision Lot Grading Plan.
Negative Grade	➤ Land that slopes towards the foundation or reverse slope (grade) in a swale.
Permeable	➤ A type of surface that allows water to soak through it. (i.e. grass, soil, or gravel)
Positive Grade	➤ Land or grade that is sloping in the designed direction of flow. (i.e. down and away from a foundation wall or in a swale)
Person Responsible	➤ Anyone responsible for the requirements of Drainage Bylaw 18093 including the owner, occupant, tenant, lessee, developer, and/or contractor of the premises
Redline Revision	➤ An accepted change or series of changes to the original drawings of an approved plan.
Restrictive Covenant	➤ A document registered against a title of a property that includes an agreement about how a property may be used and developed.
Retaining Wall	➤ A structure used to support the grade of one side of a swale and/or to retain material in situations requiring grade separation.
Right-of-Way	➤ A portion of land or property defined by ownership and use. It may be described as an easement which grants access rights to individuals to pass over or use the designated land in some way.
Rough Grading	➤ The first of two stages of shaping a lot by manipulating native materials (usually clay) to set the template for the Final Grading stage.
Settlement	➤ The natural settling of grade over time forming flat areas or depressed (low) areas requiring maintenance.
Side Yard	➤ The side portion of a lot, typically between the house foundation wall and the side property lines.

- Slope ➤ The gradient differential between two points of a known or designed elevation and the distance between those points.
- Sod ➤ Grass or the pieces of pre-grown grass cut into strips and used as Landscaping on Final Grade topsoil.
- Soft Surface ➤ A type of permeable surface such as grass and soil. Also referred to as Soft Landscaping.
- Splash Pad ➤ A pad, usually made of concrete or plastic, placed underneath a downspout or sump discharge point directing flow of water and preventing erosion.
- Storm Riser ➤ A pipe that connects a downspout to the storm service. Also referred to as a standpipe.
- Storm Service ➤ Underground piping that connects both the roof (eavestroughs) and foundation drainage system (weeping tile) to a storm sewer main. This type of service collects both groundwater and roof water.
- Stormwater ➤ Surface water resulting from rain and snow.
- Stormwater Management Facility (SWMF) ➤ A parcel of land that is used to collect and contain stormwater.
- Subdivision ➤ A parcel of land that is subdivided into two or more lots.
- Subdivision Plan ➤ A plan showing the legal property boundaries of lots within a subdivision.
- Sump Pit ➤ A low area or pit designed to collect groundwater. Generally it is the lowest point of a building or structure.
- Sump Pump ➤ A mechanical pump that pumps water out of a sump pit.
- Surface Runoff ➤ Water that flows across the land.
- Swale ➤ A shallow, often wide, ditch or low lying area designed with slope, to collect and relay stormwater. Usually located on property lines or at defined locations on a lot.
- Topsoil ➤ Type of material used in the Final Grade stage. Often packed (rolled), establishing the final elevation and slope. Used to define the finished grade surface to control stormwater.
- Weeping Tile ➤ Perforated piping material laid horizontally at the base of the foundation and vertically at window well locations. It collects ground water and releases it to the internal sump pit or storm service.
- Zero Lot Line ➤ A lot in which the outside of one wall of the building is placed on one side of the Titled Lot or side property line.

Quick Reference Guide

Lot Grading Approval

Grading Approval Time Frames

Rough Grade must be approved within:	<ul style="list-style-type: none"> • 18 months of the building permit being issued for the premises.
Final Grade must be approved within:	<ul style="list-style-type: none"> • 12 months of the Rough Grade Approval; or • 30 months of the building permit being issued for the premises.

Table 1 - Grade Approval Timeframe

The person responsible may choose to bypass the Rough Grade approval and go directly to Final Grade.

All exterior construction, including buildings, concrete driveways, walkways and drainage systems must be completed before applying for rough or final grade approval. It is the builder's responsibility to ensure that roof leaders (downspouts) and foundation drainage systems are installed according to the approved engineering drawings and servicing requirements.

Grading Approval Process

Prior to inspection, please ensure the site is accessible (gates are unlocked), dogs and other animals are contained inside and any materials/objects that would impede the grading inspection or make it difficult to inspect the grading are removed.

For final grade inspections, please ensure the topsoil is smoothly spread out, compacted and ready for sod, liners, rocks, etc.

To initiate a Rough or Final Lot Grading Inspection (or Reinspection) and submit the Lot Grading Certificate or pay a reinspection fee, go to: <https://selfserve.edmonton.ca/residentiallotgrading>

Please be aware that under [Drainage Bylaw 18093](#), the person responsible is ultimately accountable for all grading activities and approvals, regardless of who submits the application.

After Final Grade Approval has been issued, the person responsible is required to maintain the surface grades in perpetuity. The City of Edmonton may at any time, require maintenance or enforcement of repairs on the lot grading if alterations or settlements result in lot grading problems.

If there is a discrepancy between the Lot Grading Guidelines and [Drainage Bylaw 18093](#), the [Drainage Bylaw 18093](#) will prevail.

Lot Grading Requirements

Design Elevation Tolerance

Grading Stage	Tolerance from Approved Final Grade Design Elevations
Rough Grade (clay)	Between -20 cm and -7 cm
Final Grade on topsoil	Between -10 cm and 0 cm
Final Grade on finished landscaping	Between -10 cm and +10 cm

Table 2 - Design Elevation Tolerances

In order for the surveyor to record accurate information, decorative materials should not be placed at or near the design or critical as-built elevation locations. As-built elevations provided on these materials may be subject to recertification to validate drainage functionality and conformance with design tolerance.

Minimum Grade Requirements

Surface Type	Minimum Slope from Building	Minimum Drop from Building to Drainage Swale
Soft Surface/Landscaping - Foundation Walls	5.0% Slope for 2 m	15 cm Drop
Soft Surface/Landscaping - Slab on Grade (i.e. Detached Garages and Parking Pads)	5.0% Slope for 2 m	10 cm Drop
Hard/Impermeable Surface	1.0% Slope	15 cm Drop No minimum drop required if paved from building-to-building (See Figure 6)

Table 3 - Minimum Slope from Buildings

Drainage Swales

Swale Type	Minimum Longitudinal Slope	Minimum Unobstructed Width from Property Line	Minimum Depth
Grass Swale	1.5%	15 cm	15 cm
Concrete Swale	1.0%	15 cm	10 cm
Swales within the City Right-of-way	2.0%	N/A	N/A

Table 4 - Drainage Swale Requirements

Grade contractors are encouraged to indicate the high point on the rear internal swale in order to guide the surveyors and enable them to locate and provide meaningful as-built elevations for the rear internal swale.

Retaining Walls

All retaining walls that exceed 1.2 m in height and/or are attached to the house are required to be of an engineered design. Refer to the [Alberta Building Codes and Standards](#) for more information.

<p>Retaining Wall Requirements: (less than 1.2 m in height)</p>	<ul style="list-style-type: none"> ● Constructed of concrete or minimum 10 cm x 15 cm (4" x 6") pressure treated timbers. <ul style="list-style-type: none"> ○ Timber walls require a dimpled waterproof membrane. ● Must be self supporting. Cannot touch or be supported by any existing structures or fences. ● Must project below the adjacent ground elevation. ● The top of the wall must be a minimum 15 cm above the bottom of the internal swale and 5 cm above adjacent surface grade. ● Stormwater drainage must be conveyed to a City right-of-way. ● Internal swales must be located entirely within the property.
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Table 5 - Retaining Wall Requirements

Fences and other structures are not retaining walls and cannot be used to retain soil in raised beds or other landscape features. However, if there is no existing fence, one may be built on top of the newly constructed retaining wall provided that the retaining wall is constructed in accordance with the above requirements.

Site Servicing Requirements

Foundation and Storm Service

Servicing	Service Requirements
Foundation Service	<ul style="list-style-type: none"> • Weeping tile system must be connected to the foundation service provided. • Downspouts must not be connected to the foundation service.
Storm Service	<ul style="list-style-type: none"> • Weeping tile system must be connected to the storm service provided. • All downspouts must be connected to the storm service.

Table 6 - Foundation and Storm Service Requirements

Downspouts

Servicing	Downspout Requirements
Foundation Service	<ul style="list-style-type: none"> • All downspouts must be complete with elbows no higher than 30 cm above Final Grade. • All downspouts must be complete with extensions or splash pads. • Downspouts must be directed away from the building and towards the drainage swale. • Discharge points must be a minimum of 1m away from the building. • Discharge points and extensions must be a minimum of 15 cm from an adjacent private or city property. • Downspouts must not be connected to the weeping tile system.
Storm Service	<ul style="list-style-type: none"> • All downspouts must be connected to the storm service provided. • All storm risers must be above the Final Grade elevation. • Downspouts must not discharge to the ground.

Table 7 - Downspout Requirements

All eavestroughs and downspouts must be completed prior to the Rough Grade inspection.