



SECTION 9: POST LOT DEVELOPMENT ISSUES

9.0 INTRODUCTION

This section covers issues related to utility infrastructure constructed or installed after lot servicing takes place, including lot grading and sump pumps. This information is provided for information only, since the Alberta Building Code governs all construction within private property.

9.0.1 GENERAL

The overall design principles described in the introduction to these standards are the basis on which all construction is undertaken in the City of Lethbridge. Often, a combination of principles will come into play when designing a particular component of the system.

9.0.2 LEVEL OF SERVICE OBJECTIVES

Lot Grading and Drainage Control within the City of Lethbridge has evolved from the following needs:

- i. To reduce the amount of storm water inflow entering the Wastewater Collection System via foundation drains.
- ii. To ensure functional surface drainage to protect private property from flooding caused by stormwater runoff.

9.1 LOT GRADING AND DRAINAGE

9.1.1 LOT GRADING DESIGN CRITERIA

Lot grading design is based upon the Overall Major (Overland) Drainage System Grading Plan prepared for a development area at the Outline Plan stage, and in conjunction with the Storm Water Management Plan for the area.

- i. The minimum Finish Grade Elevation at the building(s) for all lots adjacent to trapped lows is to be a minimum of 500mm above the 1:100 year ponding elevation for the trapped low.
- ii. Split-drainage is the recommended drainage arrangement for lots in the City of Lethbridge.
- iii. Lots can be dished out to a maximum of 0.5m below the highest finished lot grade elevation. The City would prefer the subgrade outside the building envelope drain away from the center of the lot.



- iv. Fixed grade control must be provided at the back of each lot. The grade control may take the following forms:
 - a. The finished lane for lots backing onto lanes.
 - b. A concrete swale for lots draining front to back, or having split drainage, except where the lots back onto a linear open space.
 - c. A fence or concrete grade beam for lots draining back to front.
- v. Positive swale drainage must be provided between lots that back onto each other. The swale must be concrete.
- vi. Design elevations must be provided at the following critical boundary locations on each lot:
 - a. All lot corners.
 - b. Points measured 8.0 m along the side property lines from the front property line.
 - c. Points measured 10.0 m along the side property lines from the back property line.
 - d. Any point along the property line where a grade change occurs.
- vii. The interior lot grading design must provide the following minimum slopes:
 - a. A 10% slope for the first 2.0 m away from the foundation. If the distance between the foundation and edge of lot is less than 2.0 m, the finish grade elevation must be a minimum of 150 mm above the edge of lot elevation.
 - b. After the first 2.0 m, the remainder of the lot is to slope at 2% to the edge of lot.
 - c. A 2% slope along sod (grassed) swales located on the common property line between lots.
 - d. A 0.6% slope along asphalt and concrete swales located on the common property lines between lots.
- viii. Interior lot grading will be constructed to the following tolerances (based on the approved design finish grade elevation = 0.0 m):
 - a. Clay grade -200 mm to -100 mm
 - b. Topsoil grade -100 mm to 0 mm
 - c. Sod or Grass grade -50 mm to +50 mm
- ix. Reverse driveways are not permitted unless the runoff can be directed away from the structure and off the property in a controlled fashion.

9.1.2 LOT GRADING CONTROL

Lot Grading Control Procedures have been developed by the City of Lethbridge, the Urban Development Institute, and the Lethbridge Home Builders Association in an attempt to control the vertical elevation and proper lot grading for buildings constructed in subdivisions.



Developers will be responsible for Lot Grade Control on Lots serviced after February 28th, 1994. The City will assign a portion of the Developers Letter of Credit (or an alternate form of credit acceptable to the City) as required by the subdivision Service Agreement as a performance bond for Lot Grade Control.

The Developer may obtain a security deposit from the Builder or Home Buyer to ensure Lot Grading is completed as per design.

The Developers Project Engineer provides the lot grading design to the City for approval. The Developers contractor then rough-grades the subdivision and constructs the underground utilities and surface features. After construction is complete, the Project Engineer then confirms any changes to the lot grading design and submits any changes to the City for approval.

The Developer provides the approved Lot Grading Design information to Builders, Home Designers, and Legal Surveyors. The Builders, Home Designers, and Legal Surveyors then prepare house and plot plans for submission to the Developer or his Representative for approval. The Builder will then submit the house and plot plans to the Development Services Department for approval.

All plot plans are required to be stamped with a Vertical Grade Control Stamp. This stamp is to ensure that the Vertical Grade Elevations placed on the plot plan are those grades approved by the Developers' Engineer and match with those elevations that have been approved for the development. It is the responsibility of the Builder to ensure that the building is constructed and the lot graded according to the specified elevations. Developers are required to arrange with the purchaser of the lot as to how the stamp is to be obtained.

9.1.3 DOWNSPOUT DISCHARGE

- i. It is recommended that downspouts discharge to a splash pad, or a surface of concrete or other impervious materials, that is positively graded to convey the runoff a minimum of 1.2 m horizontally away from the building and adjacent properties.
- ii. Splash pads are to be securely anchored to the foundation wall at the design finish grade elevation as per the Splash Pad Detail Drawing LG-1 in the City of Lethbridge Construction Specifications.
- iii. Except for commercial buildings, industrial buildings and multi-family apartment containing more than 6 units, downspouts and roof leaders shall not be connected directly to the storm sewer system but shall discharge to the surface of the ground and flow overland before entering the storm water system. Downspouts may not be connected to the Wastewater Collection (Sanitary Sewer) system by any means.



9.1.4 FOUNDATION DRAINAGE

9.1.4.1 Foundation Drainage (Weeping Tile) Requirements

- i. The bottom of every exterior foundation wall shall be drained as per the Building and Plumbing Codes.
- ii. Foundation drains cannot be connected to the Wastewater Collection (Sanitary Sewer) system.

9.1.4.2 Discharge of Foundation Drainage Water

- i. All buildings are required to drain foundation water into a sump which, in turn, discharges the water to such sewers designated as *storm sewers* or *foundation drainage collectors*.
- ii. Sumps discharging to storm sewers or foundation drainage collectors shall be pumped to the main by a pressure service connection as per detail drawing *Sump with Pumped discharge to Storm Sewer or Foundation Drain Collector*, Detail Drawing LG-2 in the City of Lethbridge Construction Specifications.
- iii. Properties zoned for non-residential land uses and for medium and high density multi-family residential must retain runoff volumes in excess of the 1 in 5 year return period and up to a 1 in 100 year return period on site. The excess runoff control may take the form of parking lot, rooftop, or underground storage, as well as wet or dry ponds. Infrastructure Services shall approve runoff control designs.
- iv. Sump pump outlets and roof leaders shall discharge flows no closer than 1.0m from the property line. Where possible, drainage across property lines shall be spread to encourage sheet flow and reduce concentrated erosive flows.