Lot Grading Policy

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1.0 Introduction

The issue of lot grading is one of the most important and contentious matters that Councillors, staff, homeowners, builders and developers have to deal with in this community.

The Municipal Engineers Association and Consulting Engineers of Ontario defines a Lot Grading Plan "as an overall grading plan for an individual lot, or subdivision, prepared for the purpose of controlling the overall surface drainage pattern through the establishment of relative surface elevations in accordance with good drainage practice."

Lack of positive lot grading may result in drainage problems for either single or multiple properties. The problems lead to neighbourhood complaints and conflicts.

The drainage problems may lead to damages due to flooding, ponding, seepage into basements, stagnate water with associated odour and perhaps resulting in vermin and insect nuisance and potential health hazards, loss of enjoyment / use of property, etc., insurance claims and threatened law suits between abutting property owners, including the municipality, are common.

The affected property owners become frustrated with the home builder, developer and municipality for failure to carry-out proper design, construction control and / or enforcement.

Upon investigation, the causes of the lot grading / drainage problems can generally be categorized into three types:

- 1. Lack of a Proper Lot Grading Plan and functional drainage outlet.
- 2. Failure to construct / comply with Lot Grading Plan.
- 3. Downstream obstructions by others.

The problems generally come to light in the spring during spring snow melt and run-off, or during times of heavy sustained rainfall.

Often drainage problems come to light within the first year, often after the homeowner has completed landscaping, constructed fences, sheds, etc.

At this time, necessary repairs to provide proper drainage are generally expensive and often limited by physical restriction. Often abutting property owners are also impacted when developing proper drainage outlets.

With proper guidelines for the design, field control and certification of lot grading as well as on-going municipal monitoring and control procedures both during and subsequent to development, lot grading and drainage problems can be significantly reduced and the need for expensive repairs eliminated. Proper lot grading also maximizes the usable area in the rear yard for the homeowner.

1.1 Policy

As a general statement, the City will require that all new lots created by either severance or subdivision have a Lot Grading Plan registered on-title. The property owner will be required to maintain the integrity of lot drainage as shown on the registered Lot Grading Plan.

The policy provides the general requirements for lot grading for new lots created by way of either the subdivision or severance process.

The policy also deals with the general requirements for an As-built Lot Grading Plan with Certification for all lots as a condition of obtaining a building permit for a new home.

Attached at the rear of this Policy document are the Appendices.

Appendix I	Lot Grading Design Guidelines
Appendix II	Requirements for Lot Grading Professionals and Sample Documentation

2.0 Creation of Lots

2.1 Lots Created by way of the Subdivision Process

The developer currently provides a General Subdivision Lot Grading Plan as part of the requirements to register a new subdivision. Typical Lot Grading Plans are described in the "*Lot Grading Design Guidelines*" contained in "*Appendix I*" attached.

As a condition of final acceptance of the subdivision, the developer will be required to construct all rear yard swales including slope cover and outlet systems as necessary. Also, the developer will provide an as-built drawing (drawing of record) showing all rear yard swales and outlet drainage systems as part of the final acceptance of the subdivision.

The developers' responsibility for lot grading will be complete when the General Subdivision Lot Grading Plan is registered and the As-built Rear Yard Swale Lot Grading System (Rear Yard Swale Lot Grading System Plan of Record) is / are accepted by the City.

The developer will be responsible to provide interim drainage measures for new lots created that can not positively drain until the lots are developed. All lots requiring interim drainage measures are to be shown and identified on the As-built Rear Yard Swale Lot Grading Plan. (As-built Rear Yard Swale Plan of Record).

2.1 Lots Created by way of the Subdivision Process - continued

Each building permit application will include a design Lot Grading Plan indicating that grading on the lot will be completed in general accordance with the design Lot Grading Plan for the subdivision and in general accordance with the Master As-Built Lot Grading Plan (plan of record). The Design Lot Grading Plan may be submitted in advance of the building permit application to facilitate an expeditious Technical Services' review of the design plan and building permit application.

The owner / applicant will also agree to provide an As-built Lot Grading Plan (plan of record) at the completion of the construction of the house and lot grading. The As-built Lot Grading Plan will be prepared and certified by a Lot Grading Professional registered with the City. The requirements for Lot Grading Professionals and related documentation are contained in *Appendix II*.

2.2 Lots Created by the Severance Process

The concerns / issues of proper lot grading are as important for lots created by the severance process as in lots created by way of the subdivision process. Often the lots that are created are infill situations within existing urban areas. These properties are often marginal and the last to be developed. Achieving positive drainage solutions are often difficult and may be expensive.

As a condition of approval of the severance, the City must be assured that positive drainage from the proposed new lots can be provided to a positive outlet and that there will be no negative impact on either adjacent or downstream properties.

If drainage easements are required, they must be obtained as part of the severance approval process. They cannot be deferred to the time of building permit application.

Therefore, as a general policy, a Lot Grading Plan will be required as part of each lot created by the severance application process. In unique situations / locations, a Lot Grading Plan may not be required as part of the severance application. In these situations, the applicant will have to demonstrate to the General Manager of Infrastructure & Emergency Services, or his designate, that a Lot Grading Plan is not required.

The specific information required for the Lot Grading Plan will be specific to each site. Therefore, it is recommended that the owner / applicant contact the Technical Services' Section to confirm the specific requirements on a site by site basis.

Typical requirements for this Lot Grading Plan and Certification for lots created by the severance process, are contained in the "Lot Grading Design Guidelines", contained in "Appendix I" attached.

3.0 Building Permit Stage

3.1 Design Lot Grading Plan

As part of the application for a building permit for a new house, the owner / applicant must submit a Design Lot Grading Plan showing how positive drainage of surface water run-off from the lot will be provided and without adversely affecting adjacent properties.

If surface water run-off from the owner / applicant's lot must traverse private property before it reaches a positive downstream drainage outlet, written permission of the affected private property owner to receive the surface run-off water must be submitted with the application. The acceptance by the private property owner would have to be in perpetuity.

Also, as a condition of receiving the building permit, the owner / applicant must agree that after the house is built and the lot grading complete, to provide an Asbuilt Lot Grading Plan prepared and Certified by a Lot Grading Professional registered with the City.

Typical requirements for the "*Site Design Lot Grading Plan*" for Building Permit Applications are contained in the Design Guidelines in "*Appendix I*" attached.

The requirements for Lot Grading Professionals are contained in "Appendix II" attached.

3.2 As-Built Lot Grading Plan and Certification

After the house is constructed and lot grading completed, the owner / applicant must submit an As-built Lot Grading Plan and Certification prepared by a Lot Grading Professional, certifying that grading on the lot is in general conformance with the registered Lot Grading Plan if available and As-built Lot Grading Plan (Lot Grading Plan of Record). If during construction and lot grading the owner / applicant is required to deviate from the design plan and / or registered Lot Grading Plan (if available), the Lot Grading Professional must provide documentation and certification that surface water run-off will be discharged to a positive drainage system and that adjacent or downstream properties will not be impacted. If water run-off is required to traverse adjacent or downstream properties, the owner / applicant must provide written acceptance of the affected property owners to receive the surface water run-off.

A sample copy of a typical "As-built Lot Grading Plan and a copy of Certification Statement", are included in "Appendix II" attached.

3.2 As-Built Lot Grading Plan and Certification - continued

Should the owner not complete the lot grading or submit the required Lot Grading Plan and Certification within nine months of occupancy, the City will put a notice on the building permit file and advise the owner accordingly. Similarly, the Building Permit file will not be closed until the As-built Lot Grading Plan and Certification are received and accepted by the City.

The General Manager of Infrastructure & Emergency Services may give a time extension to complete the lot grading if in his or her opinion the request is valid.

All lot grading matters / concerns that may arise will be the responsibility of the property owner. It will be the responsibility of the property owner to work with their Lot Grading Professional to resolve any lot grading concerns / issues that may arise. The City may facilitate a resolution on behalf of either adjacent or downstream affected property owners.

4.0 Lot Grading for Rural Lot Building Permits

Design and As-built Site Lot Grading Plans will not be required for rural lots greater than 0.4 hectares and with road frontages greater than 50 metres.

5.0 Lot Grading Professionals

The requirements for "Lot Grading Professionals" are contained in "Appendix II" attached.

The Technical Services' Section of the Public Works Department's Engineering Division will maintain a list of approved Lot Grading Professionals. This list will be available to the public.

6.0 A Guide for Residential Lot Grading

Knowledge about lot grading is essential to the success and implementation of the Lot Grading Policy.

The "*Guide for Residential Lot Grading*" will be available at both the City's Technical Services' Section and Building Services' Division, Sudbury and District Home Builders' Association, as well as with local professional civil engineers, architects, surveyors, landscape architects, developers and home building contractors.

The Engineering Division's Technical Services' Staff will provide technical assistance to all owner / applicants applying for a building permit to thoroughly explain the lot grading requirements.

Appendix I

Lot Grading Design Guidelines

1.0 Introduction

These Design Guidelines are to provide general guidance and to assist in the preparation of the rear yard swale, Lot Grading Plans of Subdivision, As-built Lot Grading Plans, Severance Plans and individual Lot Grading Plans.

These Guidelines are to complement existing design standards and planning documents and / or best practices.

These design guidelines will generally be applicable for the majority of locations within the City. However, because of the unique topography in certain areas, design parameters different from the guidelines will be considered by the City.

All submissions received by Technical Services will be reviewed taking these factors into consideration.

2.0 General

- a) Lot grading and resulting drainage patterns shall not adversely affect either adjacent or downstream lands.
- b) Lot grading is to be implemented to facilitate ease of maintenance and maximize use of the land.
- c) All existing perimeter ground elevations of the subject property shall remain undisturbed unless approved otherwise.
- d) All existing surface water run-off / drainage run-off entering the subject property from adjacent lands shall be accommodated by the grading and drainage plan submitted for approval.
- e) Lot drainage shall be contained within the subject property and discharged into an existing municipal rear yard swale or storm sewer drainage system or directly into a natural watercourse in a manner acceptable to the City of Greater Sudbury.
- f) No alterations to existing boundary elevations of adjacent lands shall be undertaken unless written agreement with the adjacent property owner has been obtained and submitted in a format acceptable to the City of Greater Sudbury.
- g) If at the design plan stage, i.e. application for a building permit, it is known that surface water run-off from the owner / applicant's lot must flow across either adjacent and / or downstream properties, the owner / applicant must submit written confirmation of agreement to accept the surface water flow in perpetuity from the affected property owner. The submissions must be received with the design plan.

2.0 General - continued

h) Similarly, if during construction, alterations to the design plan have to be made to drain water across either adjacent and / or downstream properties, letters of acceptance from the affected property owners must be received with the final As-built Lot Grading Plan.

3.0 Recommended Lot Grading Design Criteria

3.1 General

- Minimum front and rear lot gradient is two (2) percent.
- Maximum front and rear lot gradient is seven (7) percent.
- Maximum rear or side yard swale slope shall be three (3) parts horizontal to one (1) part vertical (3h:1v slope).
- Minimum side yard gradient is five (5) percent.
- Maximum side yard gradient is 33 percent (3h:1v side slope).
- Minimum height of top of foundation wall above finished grade is 200 mm. (Mandatory as per Ontario Building Code.)

3.2 Driveways

- The minimum gradient is two (2) percent.
- The gradient on any driveway is four (4) percent.
- The maximum gradient is ten (10) percent.
- It is desirable to install any hydrant, light standard or utility box at least one (1) metre away from the driveway.
- The gradient of the driveway shall be calculated from the back of curb or edge of pavement to the front of the garage or level portion of the driveway. The future provision of a sidewalk on the City road frontage must be taken into consideration when calculating the grade of the driveway.

3.3 Rear Lot Swales

- Rear yard swales with gradient between 0.3 to 0.99 percent grade will be approved with a 150 mm geotextile wrapped perforated subdrain.
- Rear yard swales without subdrains shall have a minimum gradient of one percent.
- All subdrains must discharge to a positive outlet.
- Rear and side yard swale depths shall conform to the following requirements:
 - Minimum depth = 150 mm
 - Maximum rear yard depth = 500 mm
 - Maximum seeded or sodded side slope is 3 horizontal to1 vertical (3h:1v)
- All rear yard slopes shall be provided with vegetative cover consisting of either;
 - number one (1) nursery sod and at least 75 mm of topsoil, or
 - hydroseeding and at least 75 mm of topsoil, or
 - alternative vegetative cover as approved by the City.
- Rear yard swales shall have a maximum length of 150m.
- All rear yard swales may be placed on one side of the property line or split over property lines.
- All rear yard swales will be located on easements to be provided to the City.
- As-built rear yard swales are to be shown on the final As-built Subdivision Lot Grading Plan.
- All rear yard swales will connect to a positive drainage outlet such as a creek, stream or natural drainage outlet. Alternatively, the rear yard swale may discharge into a storm sewer system complete with rear yard catchbasin(s) and enhanced storm sewer systems. All rear yard catchbasin(s) and storm sewer systems may be located either entirely on one property or split between adjoining properties. A minimum 3m wide easement centered over the catchbasin(s) and / or storm sewer system must be provided to the City.

3.4 Rear Yard Swale Easements

- Easements for rear yard swales and related rear yard catchbasins and storm sewer systems, shall have a minimum width of three (3) metres and be centered over the as-built swale.
- All easements must be sufficiently wide to accommodate / permit necessary maintenance or future upkeep / repairs of the swale and / or infrastructure system.

3.5 Side Yard Drainage Swales

- As a general rule, side yard drainage swales will be centered on the property line of adjoining properties.
- Minimum depth of swale is 150 mm.
- Maximum depth of swale is 300 mm.
- Gradient of swale will generally be in conformance with lot grading on the lot, ie. front to back, or split yard.
- On Split Yard Drainage Plans, the side yard drainage swale will generally end at the front of the building closest to street. This will facilitate the run-off to drain onto the front lawns and be absorbed.
- On exceptional cases, the swale will be permitted to extend to near the front property line and discharge into a front yard catchbasin or catchbasin inlet lead.
- Under no circumstances will side yard drainage be permitted to drain directly onto any driveway and / or onto City property, including sidewalk, boulevard and / or roadway.
- Easements are not required on side yard swales.

3.6 General Subdivision Lot Grading Plan

- General Subdivision Lot Grading Plans shall be developed in accordance with this Design Guidelines and / or other standards / designs acceptable to the City.
- Centreline road elevations are to be shown every 15 metres on all Subdivision Lot Grading Plans.
- On individual Lot Grading Plans, the geodetic elevation of top of curb extended from the property line(s) may be used as a benchmark.
- A minimum of one on site geodetic bench mark shall be noted on the plan.

3.7 Severance Lot Grading Plan

• Severance Lot Grading Plans shall be developed in accordance with these Design Guidelines and / or other Design Standards acceptable to the City.

3.8 Building Permit Lot Grading Plan

• Lot Grading Plans for building permit applications shall be developed in accordance with these Design Guidelines and /or other Design Standards acceptable to the City.

4.0 Unique Circumstances

- It is anticipated that lot grading will be able to be completed using the guidelines contained herein for the majority of lots within the City. However, unique situations / locations are anticipated due to the unique topography of the City.
- The General Manager of Infrastructure & Emergency Services, or his or her designate, will give consideration to proposed alternative designs / deviations from these guidelines that are prepared and submitted by design professionals using acceptable design criteria and ensuring that acceptable lot grading can be achieved.

LOT GRADING DESIGN GUIDELINES

Design Guideline Drawings Examples

Drawing No.	Title				
New Subdivision					
LG-101	General Subdivision Grading and Drainage Plan Detail Requirements for Split Drainage				
LG-102	General Subdivision Grading and Drainage Plan Detail Requirements for Back to Front Drainage				
LG-103	General Subdivision Grading and Drainage Plan Detail Requirements for Rear Yard Catchbasin				
LG-104	General Subdivision Grading and Drainage Plan Example Lot Grading Plan				
Severance Applications					
LG-201	Severance Application Typical Lot Grading Plan Requirements Split Drainage				
LG-202	Severance Application Typical Lot Grading Plan Requirements Back to Front Drainage				
LG-203	Severance Application Typical Lot Grading Plan Requirements No Rear Yard Outlet				
Building Permits - Urban Section					
LG-301	Building Permit Typical Lot Grading Plan Requirements Split Drainage, Urban Section				
LG-302	Building Permit Typical Lot Grading Plan Requirements Back to Front Drainage, Urban Section				
Building Permits - Rural Section					
LG-401	Building Permit Typical Lot Grading Plan Requirements Split Drainage, Rural Conditions				
LG-402	Building Permit Typical Lot Grading Plan Requirements Back to Front Drainage, Rural Conditions				
As-Built Plan					
LG-501	Typical Sample As-Built Lot Grading Plan Urban Section				
January 27th, 2005					



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January 27th, 2005

















Appendix II

Requirements for Lot Grading Professionals and Sample Documentation

LOT GRADING PROFESSIONALS

Requirements and Responsibilities of Lot Grading Professionals (L.G.P.'s)

1.0 Introduction

It is the intent of the City to have all final As-built Lot Grading Plans for new house construction carried-out by a Lot Grading Professional (L.G.P.). The L.G.P. will be responsible for the preparation of all as-built drawings and related certification.

A L.G.P. will be required to prepare a Lot Grading Plan for every lot severance application unless approved otherwise.

The L.G.P. will have to certify at the as-built stage that positive drainage has been provided for the lot and that there will be no negative impact / adverse affect on either adjacent or downstream properties. If overland flow is required to traverse either adjacent or downstream property owners, the owner / applicant and / or L.G.P. will have to provide acceptance letters from the impacted property owners as part of the final certification package.

2.0 Qualifications

A L.G.P. may be either a professional civil engineer, architect, land surveyor or landscape architect and / or company providing these services, experienced in lot grading design. The L.G.P. must have a valid Certificate of Authorization to practice in their profession and valid professional liability, i.e., errors and omissions insurance. Other individuals / companies meeting the above criteria / conditions will also be eligible to be a Lot Grading Professional.

With the implementation of this Lot Grading Policy, the City will refer all lot grading problems / concerns / issues that arise subsequent to the acceptance of the As-built Lot Grading Plan and Certification to the property owner to resolve and rectify. It is anticipated that the property owner will work with the L.G.P. of record to resolve any problems / concerns / issues.

In future, the City's function in the resolution of lot grading problems will be one of facilitation of the concerned parties.

The Technical Services' Section will maintain a list of approved L.G.P.'s. To either get on the list or to remain on the list of approved L.G.P.'s, it will be the L.G.P.'s responsibility to ensure that the City's has current valid copies of their certificates of authorization to practice in their profession and valid professional liability, ie., errors and omissions insurance. Any L.G.P.'s records / information that become out-of-date / expired, will be removed from the City's approved list until such time as valid information / records are received by the City.

There will be no cost for registration on the City's approved list of L.G.P.'s.

2.0 Qualifications - continued

The City will provide the approved list to those who request a list of approved L.G.P.'s. The City will not prepare a short list or recommended list of preferred / recommended L.G.P.'s.

All professionals requesting to be approved by the City must submit a current résumé (business profile) describing their experience in lot grading including copies of previous Lot Grading Plans / Certification, if available. Also, copies of their valid Certification of Authorization (or equivalent) and proof of Professional Liability Insurance must be provided.

L.G.P.'s must maintain good standing with regards to the quality of their work to the satisfaction of the General Manager of Infrastructure & Emergency Services.

SAMPLE

On Company Letterhead

Date

City of Greater Sudbury 200 Brady Street P.O. Box 5000, Stn. A Sudbury ON P3A 5P3

ATTENTION: General Manager of Infrastructure & Emergency Services

Re: Lot _____, Plan ______,
Street Address ______

Re: As-Built Lot Grading Plan and Certification:

"I hereby certify that I have performed the necessary field survey and have determined the as-built grades shown on the attached As-built Lot Grading Plan No. _____, Dated _____.

I further certify that the lot grading as shown on the plan, will provide positive drainage of this property and will be taken to a positive natural drainage course or storm sewer system and will not have any adverse affect on either adjacent and / or downstream property owners.

Any letters of permission from adjacent or downstream property owners affected by the lot grading on this property are included herein."

Signature



SAMPLE

City of Greater Sudbury Ville du Grand Sudbury



Date

PO BOX 5000 STN A 200 BRADY STREET SUDBURY ON P3A 5P3

CP 5000 SUCC A 200 RUE BRADY SUDBURY, ON P3A 5P3

705.671..2489

Re: Lot Grading Notice of Non-Compliance

To Owner / Applicant

The City of Greater Sudbury serves notice to the owner(s) of Lot _____ Plan _____, that the lot grading requirements of the City of Greater Sudbury, have not been met for this lot as of ______.

Date

Condition of the Building Permit Application No. _____, dated _____, stated that No. _____ Final Lot Grading Plan and Certification Package was to be submitted to the City within nine (9) months of occupancy of the house.

Said non-compliance may indicate that lot grading or drainage problems exist which affect this lot or adjacent lots.

This notice of non-compliance will remain on the building permit file until notice of compliance is received and accepted by the City.

Your prompt attention to this matter would be appreciated.

Appendix II

Schedule B