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Item No. 11.2

**Committee of the Whole
April 26, 2016
Halifax Regional Council
May 31, 2016**

TO: Mayor Savage and Members of Halifax Regional Council
Original Signed by 

SUBMITTED BY: _____
John Traves, Q.C., Acting Chief Administrative Officer
Original Signed _____
Brad Anguish, Acting Deputy Chief Administrative Officer

DATE: December 8, 2015

SUBJECT: Supplementary Staff Report - Proposed By-Law L-400, A By-law Respecting Lot Grading

SUPPLEMENTARY REPORT

ORIGIN

October 6, 2015, that Halifax Regional Council:

1. direct staff to prepare a Supplementary Report and draft amendments to Proposed By-Law Lot By-Law L-400, A By-law respecting Lot Grading in keeping with the specific direction given by Halifax Regional Council to include the entire municipality; and,
2. that consideration of this matter be deferred until such time as the requested supplementary staff report is received by Halifax Regional Council.

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, 2008. C. 39, section 353 allows Council to make by-laws regarding stormwater management, grading and drainage.

RECOMMENDATION

It is recommended that the Committee of the Whole:

1. Move first reading and schedule a public hearing to consider the adoption of the proposed By-law L - 400 – A By-law Respecting Lot Grading, as contained in Attachment A, to replace By-law L-300 – A By-law Respecting Lot Grading and Drainage;
2. Repeal By-law L-300 – A By-law Respecting Lot Grading and Drainage, the existing by-law that regulates lot grading;
3. Amend Administrative Order 15 Respecting License, Permit and Processing Fees as contained in Attachment C; and
4. Direct staff to begin consultations with the Development Liaison Group concerning the content of a Stormwater By-law as outlined in this report.

BACKGROUND

Development of a consolidated Lot Grading By-law and a new Stormwater Management By-law are two actions previously approved by Regional Council which are part of a consolidated approach to an integrated stormwater management policy.

The new consolidated Lot Grading By-law was presented to Regional Council on September 8, 2015, and the matter was referred to Committee of the Whole for debate. On October 6, 2015 the proposed by-law was discussed at Committee of the Whole, and Regional Council subsequently directed staff to draft amendments to the By-law to include the entire municipality.

Amendments to the Proposed Lot-Grading By-law

The draft Lot Grading By-law that was presented to Regional Council proposed expanding the application of the By-law beyond 1 and 2 unit residential new construction, to include all forms of low density residential new construction covered by Part 9 of the Building Code. Elimination of the security deposit, enhanced remedy and appeal provisions, and clarity around transferring obligations between property owners were also added, as outlined in the report dated July 5, 2015 (see Attachment E).

Like By-law L-300, the proposed new Lot Grading By-law presented to Committee of the Whole on October 6, 2015 continued to apply only to new homes that are connected to a central sewer. After discussion at Committee of the Whole, Regional Council directed staff to amend the draft by-law so it would apply to new home construction across the Municipality and not just in areas that are connected to the central wastewater system. The By-law attached to this report removes this requirement, so that the proposed by-law will apply to all low volume residential construction, whether or not the building is connected to a central sewer. In this manner the By-law as drafted will apply to all low volume residential construction, which falls under Part 9 of the National Building Code, regardless of where it is located in the Municipality.

DISCUSSION

The Lot Grading General Specifications have been amended to include standards for residential buildings that are built on larger lots with on-site well and septic services. The majority of these new provisions can be found in sections 2.3 and 3.2 of the specifications contained in Schedule A to the proposed By-law.

New construction that is not connected to a central sewer must submit a site plan for an on-site septic disposal system to the Province of Nova Scotia. The on-site disposal system plan indicates basic site characteristics, and it is expected that this plan can also serve as a lot grading plan if the required grading information is added. Although this will avoid the need to submit two different site plans, the certification requirements of the Province and the Municipality will still be different. For example, an engineer, surveyor, or landscape architect will need to certify the plan for lot grading purposes; and either an engineer or licensed installer of septic systems will need to certify the plan for the septic disposal system.

Administrative Order 15

When the proposed Lot Grading By-law was first presented to Regional Council on September 8, 2015 the corresponding amendment to Administrative Order 15, Respecting License, Permit and Processing Fees was not included in the package. The amendment to Administrative Order 15, which updates the reference to the proper by-law for the purpose of charging the fee for a Lot Grading Permit, is included with the Supplemental Report and can be found in Appendix C. There is no proposed change to the Lot Grading Permit fee, which will remain at \$75.00.

FINANCIAL IMPLICATIONS

The effort needed to administer a consolidated Lot Grading By-law will be accommodated within existing Planning & Development resources.

The resource and financial implications of the future Stormwater By-law will be provided at a later date, as the contents and approach of the by-law are developed.

RISK CONSIDERATION

There are no significant risks associated with the recommendations in this Report. To reach this conclusion, consideration was given to operational, financial, and environmental risks.

COMMUNITY ENGAGEMENT

Focused discussions with the development have occurred through an internal staff committee known as the Development Liaison Group. Formal community engagement will occur with the formal by-law adoption process.

ENVIRONMENTAL IMPLICATIONS

Adopting a regional lot grading by-law will reduce drainage complaints, protect property, and promote protection of the environment by decreasing stormwater run-off and increasing soil adsorption of stormwater.

Developing a regional stormwater by-law will protect water quality and is in accordance with the Regional Plan, Policy SU-7.

ALTERNATIVES

1. Council could decide not to adopt the proposed Lot Grading By-law. This option is not recommended as the current iteration of the proposed Lot Grading By-law reflects the direction from Regional Council.
2. Council could decide not to direct staff to begin consultations with the Development Liaison Group concerning the content of a Stormwater By-law as outlined in the report dated July 5, 2015 and attached to this report as Attachment E. This option is not recommended for the reasons outlined in the report contained in Attachment E.
3. Council may decide to change the Lot Grading Permit fee amount.

ATTACHMENTS

- Attachment A - By-law L-400, the Lot Grading By-law
- Attachment B - Showing Proposed Changes to Administrative Order 15
- Attachment C - Amending Administrative Order
- Attachment D - Incorporating Changes to Administrative Order 15
- Attachment E - Recommendation Report dated July 5, 2015 re: Lot Grading and Stormwater Management By-laws

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.php> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

Report Prepared by: Peter Duncan, Infrastructure Policy & Standards Program Manager, 902.490.5449

Report Approved by: _____
Bob Bjerke, Director Planning & Development, 902.490.1627

HALIFAX REGIONAL MUNICIPALITY
BY-LAW L-400
RESPECTING LOT GRADING

Short Title

1. This By-law shall be known as By-law L-400 and may be cited as the “Lot Grading By-law”.

Interpretation

2. In this By-law:

(a) “Approved Subdivision Grading Plan” means a grading plan in a form acceptable to the Engineer, which is approved at the time of final subdivision approval and as may be amended from time to time by the Municipality which illustrates the drainage systems and patterns common to two or more lots in a subdivision;

(b) “building area” means the greatest horizontal area of a building above grade within the outside surface of exterior walls;

(c) “building height” means the number of storeys contained between the roof and the floor of the first storey;

(d) “Committee” means the Appeals Committee established pursuant to By-law A-100, the *Appeals Committee By-law*;

(e) “Council” means the Regional Council of the Municipality;

(f) "deficiency report" means a report prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer describing the uncompleted construction requirements, as related to the grading and drainage works shown on the Lot Grading Plan;

(g) "development" means the definition found in the *Halifax Regional Municipality Charter* as amended from time to time;

(h) "drainage" means a system of natural or artificial drains;

(j) "Engineer" means the definition found in the *Halifax Regional Municipality Charter* as amended from time to time;

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- (k) "first storey" means the upper most storey having its floor level not more than two (2) metres above grade;
- (l) "grade" means, as applied to the determination of building height, the lowest of the average levels of finished ground adjoining each exterior wall of a building but does not include localised depressions for vehicle or pedestrian entrances;
- (m) "grading" means the alteration of land levels, including the addition or removal of topsoil or other material of any kind;
- (n) "Landscape Architect" means a person who is a member in good standing in the Canadian Society of Landscape Architects;
- (o) "Lot Grading and Drainage General Specification" means the latest edition of the specifications contained in Schedule A to this By-law;
- (p) "Lot Grading Certificate" means a plan or report, prepared in accordance with the Lot Grading and Drainage General Specification and in a form acceptable to the Engineer, depicting the recorded grading and drainage works on a lot of land as proposed on the Lot Grading Plan;
- (q) "Lot Grading Permit" means a permit issued under the provisions of this By-law;
- (r) "Lot Grading Plan" means a plan of final grading of land for an individual lot of land prepared in accordance with the Lot Grading and Drainage General Specification;
- (s) "Municipality" means Halifax Regional Municipality;
- (t) "Nova Scotia Land Surveyor" means a registered or licensed member, in good standing, of the Association of Nova Scotia Land Surveyors;
- (u) "owner" includes as it refers to the owner of property:
- (i) a part owner, joint owner, tenant in common or joint tenant of the whole or any part of land or a building,
 - (ii) in the case of the absence or incapacity of the person having title to the land or building, a trustee, an executor, a guardian, an agent, a

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mortgagee in possession or a person having the care or control of the land or building,

(iii) a person who occupies shores, beaches or shoals, and

(iv) in the absence of proof to the contrary, the person assessed for the property;

(v) "person" means a natural person, corporation, partnership, an association, society, firm, agent, trustee, or registered Canadian charitable organization as defined in section 3(bc) of the *Charter*, and includes the heirs, executors or other legal representatives of a person, or owner;

(w) "Professional Engineer" means a registered or licensed member in good standing of the Association of Professional Engineers of Nova Scotia;

(x) "residential building" means any structure used or intended to be used for supporting a principally or majority residential use but excludes commercial residential uses such as a hotel, motel or hostel;

(y) "sanitary sewerage system" means a system which is publicly owned and maintained and which consists of pipes or conduits receiving or carrying water-borne wastes and includes any trunk sewers, pumping stations and treatment plants; and

(z) "subdivision" means the division of any area of land into two or more parcels, and includes a resubdivision and a consolidation of two or more parcels.

Application and Administration

3. This By-law shall apply to the development of all lots in the Municipality where the structure is:

(a) a residential building;

(b) less than 600 square metres in building area; and

(c) three (3) or fewer storeys in building height.

4. Notwithstanding section 3, this By-law shall not apply to the following:

(a) a renovation of an existing building that does not involve changes to the building footprint or changes to the lot grading and drainage patterns;

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(b) new building construction where lot grading is regulated by a Development Agreement; and

(c) a building designed to be situated on a site conforming with CSA Z240.10.1, Site Preparation, Foundation, and Anchorage of Manufactured Homes.

General Requirements

5. Nothing in this By-law shall exempt any person from complying with any other by-law or requirement of the Municipality, or from obtaining any license, permission, permit, authority or approval required by any other by-law of the Municipality or statute or regulation of the Province of Nova Scotia.

6. Where the provisions of this By-law conflict with those of any other By-law of the Municipality or any statute or regulation of the Province of Nova Scotia, the more stringent requirements shall prevail.

Lot Grading Permit Application Procedure

7. Subject to section 3, no lot shall be developed unless a Lot Grading Permit has been issued by the Municipality.

8. An application for a Lot Grading Permit shall be made at the time of application for a building permit.

9. An application for a Lot Grading Permit shall include a Lot Grading Plan prepared in accordance with the Lot Grading and Drainage General Specification as follows:

(a) where an Approved Subdivision Grading Plan exists, and the drainage patterns depicted on the approved Subdivision Grading Plan are to be preserved, the Lot Grading Plan is to be prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer; or

(b) where an Approved Subdivision Grading Plan does not exist, or the drainage patterns depicted on the Approved Subdivision Grading Plan are to be varied, the Lot Grading Plan is to be prepared by a Professional Engineer.

10. Where an Approved Subdivision Grading Plan exists, the Lot Grading Plan shall be consistent with the Approved Subdivision Grading Plan, subject to variations approved by the Municipality.

11. A Lot Grading Plan is deemed to be approved when it meets the requirements of this By-law and a Lot Grading Permit has been issued by the Municipality.

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Lot Grading Certificate

12. (1) No person shall occupy a building as set out in Section 3 unless a Lot Grading Certificate has been submitted to the Municipality.

(2) The Lot Grading Certificate shall confirm that the lot has been constructed in accordance with the Lot Grading Plan and shall be prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer.

13. Where variations depicted on the Lot Grading Plan exist the Lot Grading Plan shall be subject to review and approval by the Municipality.

14. Notwithstanding section 12, a residential building may be occupied prior to receipt of a Lot Grading Certificate where the following is filed with the Municipality:

(a) a deficiency report prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer, in a form acceptable to the Engineer, setting forth details of the work to be completed; and

(b) an undertaking by the owner stating that:

(i) the uncompleted work required by the Lot Grading Plan and the deficiency report will be completed, and

(ii) the Lot Grading Certificate shall be submitted

within a period of nine (9) months.

Orders by the Engineer

15. (1) When the owner fails to comply with this By-law the Engineer may issue an Order to the owner and the owner shall, at the owner's sole expense, bring the lot into compliance with the by-law.

(2) An Order issued pursuant to subsection (1) of this section shall specify the date on which the lot is to be brought into compliance.

(3) (a) An owner may, within fourteen (14) calendar days of being served with an Order that was issued pursuant to subsection (1) of this section, appeal the Order of the Engineer to the Committee.

(b) The day an owner receives a notice shall not be counted in determining the fourteen (14) calendar day period.

(c) Where the fourteenth calendar day falls on a day that the Municipal Clerk's office is not open, the final appeal date is the next business day.

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(4) An appeal pursuant to subsection (3) shall be commenced by filing a written notice with the Municipal Clerk which clearly states the grounds for the appeal.

(5) If the owner files an appeal, but the Committee is not scheduled to meet before the date on which the lot is to be brought into compliance, the Order shall be held in abeyance until the Committee has rendered its decision on appeal.

(6) After hearing an appeal pursuant to subsection (3) of this section the Committee may:

- (a) deny the appeal,
- (b) allow the appeal and reverse the decision of the Engineer, or
- (c) make any decision the Engineer could have made under this By-law.

(7) The Engineer may cause the lot to be brought into compliance if the owner does not comply with an Order to bring the lot into compliance on the date specified in the Order

16. Where the Municipality lawfully causes work to be done pursuant to this By-law, the cost of the work, with interest at the rate determined by the Council, by policy, from the date of the completion of the work until the date of payment, is a first lien on the property upon which, or for the benefit of which, the work was done.

Permit Fees

17. An application for a Lot Grading Permit shall be accompanied by a payment of the prescribed fee as set out in Administrative Order 15.

18. Notwithstanding the provision of section 17, no Lot Grading Permit fee shall be required where the Lot Grading Permit is for lands owned by the Municipality.

Offence and Penalty

19.

- (1) A person who
 - (a) violates a provision of this By-law, Lot Grading Permit, undertaking or an order in force in accordance with this By-law;
 - (b) fails to do anything required by a Lot Grading Permit, undertaking or order in force in accordance with this By-law;
 - (c) permits anything to be done in violation of this By-law, Lot Grading Permit, undertaking or order in force in accordance with this By-law; or

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(d) obstructs or hinders any person in the performance of their duties under this By-law, Lot Grading Permit, undertaking or order in force in accordance with this By-law,

is guilty of an offence.

(2) A person who commits an offence is liable, upon summary conviction, to a penalty of not less than one hundred dollars and not more than ten thousand dollars and in default of payment, to imprisonment for a term of not more than two months.

(3) Every day during which an offence pursuant to subsection (1) continues is a separate offence.

(4) In addition to any other remedy provided for by this By-law, Council may authorize an action or other legal proceeding to be brought in the Supreme Court of Nova Scotia for any or all of the remedies provided by this Section.

(5) In addition to a fine imposed for contravening a provision of this By-law, a judge may order the person to comply with the provision or order, under which the person was convicted, within the time specified in the order.

Repeal of By-Law

20. The following By-law is hereby repealed:

Halifax Regional Municipality By-law L-300

Done and passed in Council this ____ day of _____, 2016.

MAYOR

MUNICIPAL CLERK

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I, Kevin Arjoon, Municipal Clerk for the Halifax Regional Municipality, hereby certify that the above-noted by-law was passed at a meeting of the Halifax Regional Council held on _____, 2016.

Kevin Arjoon
Municipal Clerk

SCHEDULE A
LOT GRADING GENERAL SPECIFICATION

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1. INTRODUCTION

1.1. General

A storm drainage system is as a group of interacting, interrelated, and interdependent elements carrying discharges in response to rain and snow. These discharges include overland flow, subsurface flow, and snowmelt.

A complete and properly functioning Storm Drainage System includes a variety of components which may be grouped into two categories:

“Community Systems” being those elements which serve two or more lots. For example, roadside ditches, culverts, roadways, curbs and gutters, street and backyard catchbasins, pipes or conduits, retention ponds, watercourses, floodplains, and drainage swales and ground elevations along common lot lines or in easements.

“Individual Lot Systems” being those elements which serve a single lot and are contained within its limits. For example, swales contained within lot limits, gently graded lot areas, slopes, roof downspouts, individual seepage pits, French Drains, building lateral, parking lot catchbasins and conduits.

1.2. Objectives

The Storm Drainage Systems, be they Community Systems or Individual Lot Systems, designed within the context of the Lot Grading By-law, and the siting and grading of the house, shall achieve the following objectives:

- (a) To prevent loss of life and to protect structures and property from significant damage and expense, including that which is expected to be experienced during the 1 in 100 year storm event.
- (b) To provide for convenient and reasonable use of lot areas during and following rain and snow events and from subsurface or groundwater flow, e.g. continuously saturated backyard, significant continuous icing.
- (c) To provide for safe use of lot and street areas, e.g. excessive depth of flow or water storage, significant continuous icing.
- (d) To avoid drainage problems or other conditions that result in unreasonable maintenance obligations on the Owner or Municipality, e.g. significant or regular de-icing operations.
- (e) To provide protection from erosion from surface flow, subsurface flow, or groundwater, e.g. slope stabilization.

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- (f) To direct water away from buildings in order to especially prevent basement flooding and damage to the foundation drain.
- (g) To prevent standing water and soil saturation detrimental to buildings, driveways, walkways, landscaped areas and other use of the lot within the developed area.

In addition to the foregoing, and with particular relevance in areas where an Approved Subdivision Grading Plan does not exist, the Municipality may require information to demonstrate that the overall Storm Drainage System Objectives are achieved:

- (a) To adequately convey flow from upstream sources.
- (b) To prevent and/or mitigate the adverse effects of stormwater flow on downstream or adjacent properties, such as erosion, or flooding due to inadequate downstream capacity or grading.
- (c) To preserve natural watercourses.
- (d) To minimize the long term effect of development of receiving watercourses and groundwater.
- (e) To maintain pre-development drainage patterns unless some motivating factor to change the pattern exists, e.g. conflict with other objectives (capacity).

In the case where an Approved Subdivision Grading Plan exists and Community Systems have been designed and/or constructed, it shall be an objective that the Individual Lot Systems conform to the Community Systems. Grades established at the lot limits by the Approved Subdivision Grading Plan are to be maintained, subject to variations permitted under Section 4.0.

In the preparation of a design that meets the above objectives, an attractive living environment is important and consideration should be given to the following factors:

- (a) Aesthetic conditions relating to lot grading, e.g. creating space on the lot that is convenient as a play area, usually in the back yard.
- (b) The preservation of desirable site features where practical, e.g. minimizing disturbance, retaining trees.
- (c) Providing for variance in front yard setbacks along a street and for establishing a roof profile which is aesthetically pleasing.
- (d) Locating slopes and boundary lines such that tops and bottoms of slopes are at property boundaries.
- (e) Avoiding excessive deep swales.
- (f) Placing easements on one side of boundary line.
- (g) Where swales and French Drains are contemplated at the base of a significant slope, it is recommended that the swale be located at the toe of the slope.

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- (h) Locating driveways to allow convenient and safe ingress and egress.
- (i) Creating consistent grading lot to lot.

Those above items are desirable but not addressing these factors fully will not lead to rejection or approval of a Lot Grading Plan.

2. DESIGN CRITERIA – LOT GRADING

The Design Criteria for lot grading are to cover the more common aspects of design encountered in lot grading and drainage development. Local conditions may influence the Design Criteria and design requirements, for example, circumstances where soils are not free draining may require a flatter maximum permissible slope. In cases where these Criteria need to be expanded or additional criteria are required, the Recommendations and Stormwater Policy manual prepared by Halifax County Storm Drainage Task Force and the latest edition of Municipal Design Guidelines, and the latest edition of the Halifax Regional Water Commission Design and Construction Specifications shall be used as appropriate. Additional requirements affecting design are contained in other relevant documents, such as the National Building Code.

The Design Criteria reflect the experience of Halifax Regional Municipality as related to typical design requirements. The Criteria are provided for information and will serve as the benchmark for review of Lot Grading Plans in typical circumstances. However, the Design Criteria are not considered rigid. To better meet the objectives, alternate design approaches may be proposed. This will not be discouraged by the municipality.

The purpose of the Design Criteria is to provide guidance in the provision of drainage systems offering acceptable service which is consistent with the lowest possible initial construction and ongoing maintenance costs and effort.

The Design Criteria as outlined herein, are not intended to eliminate the necessity for detailed design, rather they are intended to standardize the approaches, design criteria, and methods of construction to be utilized in the installation of drainage systems. Further, it is not the intention of the Municipality to stifle innovation. Where variations from this document are justified or required and where alternate approaches can produce the desired results, such approaches will be considered for approval. In considering requests for variations from these design criteria, the Engineer shall take into consideration such factors as safety, nuisance, system maintenance, life cycle costs, environmental issues, natural topography, etc. Designs shall be accompanied by statements of certification to the effect that designs have been completed in accordance with these guidelines. Where standards other than those outlined in this document are used, all appropriate documents and plans shall clearly indicate those areas of difference. The acceptance by the Municipality of the design of the proposed drainage systems shall not relieve the designer of the responsibility of proper design. The designer retains full responsibility and liability for his/her work.

2.1. Community Systems for areas where a sanitary sewerage system is provided

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In most instances where an Approved Subdivision Grading Plan exists, the design of Community Systems will not be required as they will have been established by the Approved Subdivision Grading Plan. However, in certain instances, most likely in the case of new building construction on previously approved or in-fill lots, the design of Community Systems may be required in order to meet the objectives of the Lot Grading By-law.

In designing Community Systems, the focus is on those drainage elements which affect more than one property, e.g. common backyard swales/catchbasins, grading along common property boundaries. **It is critical that the designer ensure that sufficient Community Systems are in place and/or contemplated and depicted such that individual Lot Systems can be designed and constructed in a fashion that allows for a properly functioning overall Storm Drainage System for the Owner while striving for an attractive living environment. It is intended that Community Systems will not have to be altered as a consequence of design of detailed Individual Lot Systems (although this is provided for in Section 4.0). Therefore, it is strongly recommended to carry out preliminary design of the Individual Lot Systems serving the lots in accordance with the requirements of the Lot Grading By-law.**

Community Systems are to be designed in accordance with the Municipal Design Guidelines and in accordance with the following criteria:

Ground Surface

- The area between the street right of way and the curb shall slope towards the curb at a maximum slope of 2% but not greater than 4%.
- The maximum slope shall be 3:1 (H:V) unless constructed on in situ rock or unless otherwise approved by the Engineer (certification of slope stability by a geotechnical engineer may be required for approval). The top and bottom of banks shall be rounded for convenient maintenance. Notwithstanding the foregoing, a suitably graded slope is required with appropriate surface treatment to provide for long term stability.
- Where required, retaining walls shall be designed with due consideration given to soundness of material, stability, safety (including provision for a handrail or safety fencing), maintenance, and other relevant factors. Retaining walls with a height greater than 1 metre shall be designed by and the construction certified by a Professional Engineer, and shall be located completely on private property including footings.
- Where a cut intercepts the groundwater table creating potential drainage and icing problems, special measures will be required to address potential drainage problems.

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- Where areas are disturbed, stabilization is to be provided to prevent erosion.

Swales Applied to Residential Dwellings

- Swales shall be blended into the landscape to the greatest extent possible in order to provide a natural appearance (See Figure 1a: Swale Cross Section).
- The minimum grade along any swale shall be 2%. The minimum grade may be reduced to 1% where underdrains are incorporated (See Figure 1b: Swale and Underdrain Cross Section). Grades are encouraged to be, where possible, steeper than the minimum.
- Where the swale intercepts subsurface water, the swale shall incorporate underdrains, regardless of slope (See Figure 1b: Swale and Underdrain Cross Section).
- The side slope for any swale shall be flatter than 33% (3 horizontal: 1 vertical).
- The maximum depth of flow in any swale shall be 250 mm in the 1 in 100 year storm.
- All swales shall be designed to accommodate the 1 in 100 year stormwater flow.
- An overflow route shall be provided to direct overflow to major drainage systems. The 1 in 100 year water level along such route shall be lower than the lowest opening to the adjacent buildings.
- Sharp corners shall be avoided in swale design.
- Steeply sloping swales shall have appropriate surface treatment to prevent erosion.

Underdrains

- Underdrains, as detailed in Figure 1b: Swale and Underdrain Cross Section, are to be used to remove surface and subsurface water to drain wet areas and other areas of poor drainage, or where minimum slopes with respect to lot surface or swales cannot be achieved.
- Underdrains are not permitted to discharge onto street surfaces, walkways, private properties, or any other location where there would be an impact inconsistent with the objectives of the Lot Grading By-law.
- Underdrains shall be located a sufficient distance from any part of the building foundation to avoid impacts to building foundations and/or adjacent structures when the underdrain is replaced.

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Easements

- Easements shall be provided for all swales which in the opinion of the Engineer require such legal conveyances. Generally, easements will be required when a significant number of lots depend on the swale.
- Public easements shall be provided for all catchbasins and associated stormwater pipes constructed in conformance with the HRM and Halifax Water standards.
- A minimum easement width of 6 metres is required for public easements as per HRM and Halifax Water requirements.
- A minimum easement width of 4.5 metres is required for private easements.

2.2. Individual Lot Systems for areas where a sanitary sewerage system is provided

During design of Individual Lot Systems, the focus is on the lot and house grading and house locations inside the lot boundaries. It is intended that there be no change to the grading along the exterior boundary (Community System) or other Community System located within the lot, subject to the provisions of Section 4.0 – Variances.

Individual Lot Systems are to be designed in accordance with the Design Criteria for Community Systems with the following additions:

Buildings

- Building and site design should respect the topography and natural drainage of the site in order to reduce the magnitude of lot grading required, the need for retaining walls, and the need for piped drainage systems.
- To promote groundwater recharge and to minimize the increase in peak runoff, roof downspouts are not to be connected to the piped storm sewer system subject to variation approved by Halifax Regional Municipality.
- Roof downspouts are to be positioned such that, where possible, discharge onto driveways or adjoining property is avoided. It is recommended that roof downspouts are discharged to splash pads.
- The interrelationship of the house location and the Storm Drainage Systems is important in achieving the objectives of the Lot Grading By-law. Strategically locating the house can allow for Storm Drainage Systems to be constructed which are relatively inexpensive and require a low level of maintenance. On the other hand, a poorly selected house location may require that elaborate systems be constructed which will require significant on-going maintenance. With this in

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mind, and within the context of the Lot Grading By-law, the house location will be examined with a view of addressing the objectives of the Lot Grading By-law.

- Entrance elevation to building openings, e.g. windows, doors, stairwells, garage entrances, shall be set such that the objectives of the Lot Grading By-law are met.

Ground Surface

- The ground elevation adjacent to the foundation wall must be at least 150 mm below the top of the foundation wall.
- All surfaces must slope away from the building as follows:
 - Front yard – the front yard shall be continuously graded to drain away from the building towards the street.
 - Back yard – the back yard shall be graded to drain away from the building for a minimum distance of 3 metres with a minimum drop of 150 mm.
 - Side yard – where permitted by applicable land use by-law and/or by development agreement, the side yards shall be graded to drain away from the building a minimum distance of 1.2 metres with a minimum drop of 150 mm.
- All landscaped lot surfaces shall have a minimum slope of 2%, unless otherwise provided for in this Schedule. Grades are encouraged to be, where possible, steeper than the minimum.
- The maximum slope on any lot surface shall be 3:1 (H:V) unless constructed on in situ rock or unless otherwise approved by the Engineer. Certification of slope stability by a geotechnical engineer may be required for approval as well as consideration of other issues such as maintenance and erosion. The top and bottom of banks shall be rounded for convenient maintenance. Notwithstanding the foregoing, a suitably graded slope is required with surface treatment to provide for long term stability.
- Where areas are disturbed, stabilization is to be provided to prevent erosion.

Driveways/parking/Open Areas

- The portion of the driveway within the front yard shall be graded to drain away from the building towards the street and to prevent the direct discharge of water onto adjacent property.
- Driveway slopes shall not be less than 2%.

Attachment A
Proposed By-Law L-400

- For paved or impervious areas greater than 100 square metres, additional information and design requirements with respect to grading and drainage may be required.

2.3 Design Criteria for Lots not provided with a sanitary sewerage system

- The basement floor is to be set at an elevation high enough such that the footing drain can slope away from the foundation at a grade not less than 2% to a point on the lot above grade at the discharge point. There is to be free and natural drainage away from the discharge point.
- The ground elevation adjacent to the foundation wall must be at least 150 mm below the top of the foundation wall.
- The ground must slope away from the building or house at a minimum of 2% for at least 6 metres.
- The maximum slope within 6 metres of the building or house shall be 33% or 3 horz to 1 vert.
- Where a watercourse is on or adjacent to the lot, the basement floor must be at least 600 mm above the 1:100 year flood level. Where the 1:100 year flood level is not shown, the basement floor must be at least 3 metres above the ordinary high water mark of the watercourse.
- Where the proposed footing drain is shown discharging to the roadside ditch, the basement floor must be a minimum of 300 mm above the lowest centerline road elevation in front of the house,
- Where the proposed footing drain is shown discharging to the roadside ditch, the invert of the outlet of the footing drain pipe must be a minimum of 600 mm above the ditch invert.

3. INFORMATION REQUIREMENTS

Several documents are to be prepared during the process outlined in the Lot Grading By-law: Lot Grading Plan; Lot Grading Certificate; Deficiency Report; and, Owner Undertaking for Completion. Indicative samples of each of these documents are found under Figure 2 through Figure 5.

3.1. Lot Grading Plan for lots with a sanitary sewerage system (See Figure 2 for sample)

The Lot Grading Plan illustrates the Individual Lot Systems for a lot of land and its relationship to the Community Systems surrounding and within the lot of land. The Lot Grading Plan generally illustrates a specific building type for the lot and how the

Attachment A
Proposed By-Law L-400

grading fits into the Approved Lot Grading Plan when one exists, and/or the adjacent existing topography.

General

- The Lot Grading Plan shall be drawn at a scale of 1:250 (1 inch = 20 feet) and is to be displayed on ledger paper (280 mm x 430 mm)(11" x 17"). One lot is to be shown on each Lot Grading Plan. The layout of the information on the Lot Grading Plan shall conform to that shown on Figure 2.
- A Title Block shall be used indicating the following:
 - The name of the Subdivision, Approved Lot Number, Street, and the community.
 - The name of the Building Permit Owner.
 - The name, firm, and address of the professional preparing the plan.
 - Scale
 - Date (original and revisions)
- A grid north arrow shall be shown.
- Existing and proposed elevations are to be related to geodetic datum or the datum of the Approved Subdivision Grading Plan, if not geodetic.
- A legend giving an explanation of symbology is to be provided. The standard Legend depicted on Figure 2 is to be used.
- Appropriate notes relative to construction requirements are to be provided.
- Distances along the exterior boundary of the lot are to be shown.
- PID number is to be shown.

Existing Conditions

- Existing Information, to be field collected and representative of conditions at the time of Lot Grading Permit Application, is to be expressed as spot elevations and contours at maximum 750 mm intervals on the specific lot and adjacent lots to adequately illustrate the drainage interrelation between properties with common property lines and the existing topography.

Attachment A
Proposed By-Law L-400

- Centreline street elevations and related to the chainage on the profile record drawings where such drawings exist.
- Top of curb elevations at sideline extensions and driveway cuts.
- Existing Storm Drainage System Elements, e.g. catchbasins, swales.
- Public or private easements or rights-of-way.
- Utility poles, fire hydrants, traffic signs, or other surface features adjacent to the lot.
- Where a lot is adjacent to a watercourse or a major drain system exits on the lot, the normal water elevation in the 1 in 100 year water levels.
- Where buildings exist on adjacent lots, the elevation at the adjoining corners of the building if located within 10 metres of the lot limit.
- Any other items affecting stormwater drainage. As a minimum, existing elevation information is to extend 6 metres onto adjacent properties.

Proposed Grading

- The proposed elevations for all lot corners as well as intermediate points of grade change on all lot lines and sloped surfaces. The frequency of proposed elevations shall depend upon the degree of development (with developed areas requiring more detailed information) and also upon the topography. Where an Approved Subdivision Grading Plan exists, the proposed elevations along the lot limits are to conform to the Approved Subdivision Grading Plan, subject to Section 6.0 – Variances.
- All swales along the proposed elevations at all lot lines or changes in direction of slope of the swale.
- All catchbasins, or other drainage structures, within and adjacent to the lot along with the grade elevation of the catchbasins and the invert of all inlet and outlet pipes.
- All areas that are to be left in an undisturbed condition.
- Significant proposed slopes greater than 4:1 (H:V).
- Proposed surface treatment of disturbed areas is to be indicated.
- Direction of surface flow to be indicated by arrows so that the proposed drainage patterns on all areas of the lot are clearly indicated.

Attachment A
Proposed By-Law L-400

- Split in drainage direction is to be shown.

Proposed Building and Appurtenances

- The exact outline of the building, walkways, driveways, and external appendages (decks).
- The horizontal relationship of the main building to the lot limits.
- The proposed basement floor elevation(s) together with the floor elevation(s) of garages (if any).
- The elevation and configuration of basement walls.
- Where openings in the basement are proposed e.g. windows, doors, information is to be included on the Lot Grading Plan relating to the location and construction of the opening to ensure the requirements of the Lot Grading By-law are met.
- Roof downspout locations and direction.
- The proposed ground elevations at the building corners and other appropriate points of grade change along the building walls.
- Proposed grading and design details of any retaining walls.
- The location of the lateral trench accessing the building and the existing lateral or mainline elevations at the point of service connection.
- Design details and location information for any other drainage appurtenance.

3.2. Lot Grading Plan for Lots without a sanitary sewerage system

- Existing geodetic elevations from field measurements shown on the plan as spot elevations and contours for the area to be disturbed but not less than 15 m (50 ft) from all sides of the house and the road from the centerline to the back of ditch.
- Any watercourses, drainage ditches, drainage easements, utilities, or other storm drainage elements on or adjacent to the lot.
- The proposed building, house or garage showing basement floor elevation, wall heights, and finished exterior elevations adjacent to the foundation walls.
- Finished elevations on the disturbed areas at a spacing sufficient to show the intended grading of the disturbed area.

Attachment A
Proposed By-Law L-400

- The location of proposed septic field, septic tank, pipes connecting to building or house to the septic system, or any other infrastructure related to the wastewater system.
- Proposed driveway and any proposed retaining walls.
- Footing drain pipe to be shown from building to discharge point.
- Proposed well and conduits connecting well to building.

3.3. Lot Grading Certificate (See Figures 3a and 3b)

The Lot Grading Certificate shall provide certification that the Storm Drainage Systems on the lot have been constructed in accordance with the Approved Lot Grading Plan and is to be prepared as presented in either Figure 3a or 3b. The Certificate is to be issued only when the works have been completed and deficiency items do not exist.

Tolerances

Proposed grading and slope information is to be confirmed as being constructed on the Lot Grading Certificate as follows:

- Where the as-built design elevation or slope is within the indicated tolerance, a graphical or written confirmation is acceptable. All changes of elevations on the approved Lot Grading Plan shall be identified in red adjacent to the original elevation.
- Where the as-built design elevation or slope is not within the indicated tolerance, the as-built result is to be specifically shown.
 - Constructed elevation at lot lines shall match the proposed elevation as indicated on the Approved Lot Grading Plan within 5 cm.
 - Grades along sloped surfaces or swales that are at the minimum or maximum allowable grades shall match the grades indicated on the Approved Lot Grading Plan, or deviate to the permitted side of the minimum or maximum.
 - Additional elevations or slopes not covered above must meet the intent of the Approved Lot Grading Plan.

3.4. Deficiency Report (See Figure 4)

A Deficiency Report, prepared as presented in Figure 4, is to be shown when construction has not been fully completed in accordance with the Approved Lot Grading Plan and Occupancy is being sought. The Deficiency Report must itemize the work not completed.

Attachment A
Proposed By-Law L-400

The Deficiency Report is to also include statements to the effect that, although full construction is not completed, the condition of the lot relative to lot grading and drainage does not create an unsafe situation for the occupant of the lot of adjoining owners.

3.5. Owner Undertaking for Completion (See Figure 5)

The Owner Undertaking for Completion, prepared as presented in Figure 5, is to accompany the Deficiency Report when an Occupancy is being sought.

This document is to provide a statement by the Owner confirming the following:

- a) That they will cause to completion of the construction to take place within a nine (9) month period from the date of occupancy; and,
- b) In the event that completions do not occur, The Owner agrees that the Municipality may construct the deficient works.

4. VARIANCES

It is anticipated that site conditions and/or innovative building techniques may justify variations to the Individual Lot Systems and possibly the Community System to enable a lot to be developed in a specific manner. In considering variances to Community Systems of previously approve Individual Lot Systems, the objectives outline in Section 3.0 of the Specification must be met and be demonstrated as proven to be met by the Owner.

In addition to the overall objectives of the Lot Grading By-law, specific requests for variances to the Individual Lot Systems and Community Systems must address the following points:

1. What aspect or component of the existing Individual Lot System or Community System is being requested to be modified in order to achieve the owner's desired development?
2. Will any main or accessory buildings on adjoining properties be affected with respect to any flood risk damage as a result of the requested variance?
3. Will any municipal infrastructure be placed in a greater flood risk potential as a result of the requested variance?
4. Where appropriate, calculations must be provided indicating the design capacity of the receiving systems with and without the requested variance.
5. Information must be provided with respect to major and minor watersheds contributing to the specific site of the variance.
6. Where required by the Municipality, proof/acknowledgement that abutting property owners have been informed about the variance request (include names of contact persons and telephone numbers).

Attachment A
Proposed By-Law L-400

Following receipt of this information, the Engineer will review all of the information provided and determine if the variance to the Individual Lot System or Community Systems will be permitted.

It should be understood that the review process associated with a Lot Grading Permit, in cases where variances have been applied for, will be in excess of the normal review time for those owner requesting approval that confirm with the Community Systems and Individual Lot Systems established.

FIGURE 1a: SWALE CROSS SECTION

N.T.S

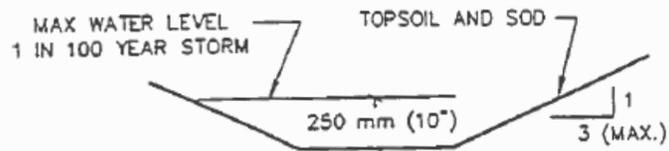


FIGURE 1b: SWALE AND UNDERDRAIN CROSS SECTION

N.T.S

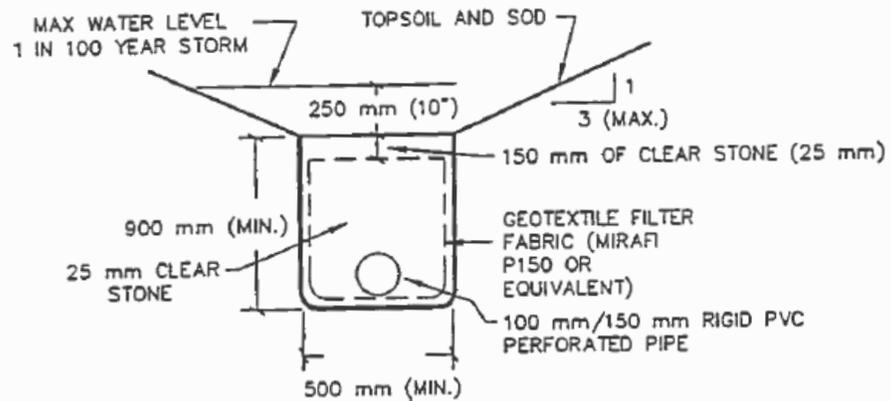


FIGURE 2

LEGEND

EXISTING ELEVATION	.....	1/32" = 1'
PROPOSED ELEVATION	.....	1/32" = 1'
SEWERAGE MAIN HEAD	.....	1/32" = 1'
TOP OF MAIN SEWER	.....	1/32" = 1'
PROPOSED BASEMENT FLOOR ELEVATION	.....	1/32" = 1'
FLOOR FINISH FOR EXISTENT	.....	1/32" = 1'
DIRECTION OF SEWERAGE	.....	1/32" = 1'
GRADE OF PROPERTY LINE	.....	1/32" = 1'
WATER VALVE	.....	1/32" = 1'
PIPE INFRANT	.....	1/32" = 1'
GRASS PATCH	.....	1/32" = 1'
WATERMANS	.....	1/32" = 1'
SEWERAGE MAIN	.....	1/32" = 1'
SEWER MAIN	.....	1/32" = 1'
PROPOSED LATERAL LINE	.....	1/32" = 1'
CONCRETE	.....	1/32" = 1'
STEEL	.....	1/32" = 1'
PROPOSED TERRAZZO	.....	1/32" = 1'
UNDESIGNED AREA	.....	1/32" = 1'

- NOTES**
- 1) LATERALS MUST BE PERFORMED IN SUCH A WAY TO INSURE POSITIVE DRAINAGE OF SEWERAGE FROM ALL DWELLINGS.
 - 2) SEWER LATERALS MUST BE EXPOSED TO INSPECTION FOR PROPER TO SPACING & PROPER CONNECTION FOR BE MADE TO SINKS.
 - 3) MINIMUM VERTICAL DISTANCE FROM TOP OF FOUNDATION WALL TO GRADE TO BE 6" EXCEPT AT CURVE CORNERS.
 - 4) CONTRACTOR TO VERIFY FOUNDATION EXISTING GRADERS AND BUILDING PLANS PRIOR TO CONSTRUCTION.
 - 5) CURTAINS ARE LINED ON TOPOGRAPHICAL SURVEYS WITH AN INTERVAL OF 2 FEET AND SUFFICIENT CURVE GRADES FROM TO BEING CONSTRUCTION.
 - 6) ALL EXPOSED AREAS TO BE FINISHED WITH GRADE, ASPHALT OR TYPICAL AND CURTAINS TO BE PROTECTED.
 - 7) A CURTAIN OR UNDERPINNING FOR FOUNDATION AND EXISTING FOUNDATION CONSTRUCTION - THE DESIGN SHALL BE MADE BY DESIGNER SEPARATELY.

VICTORIA ESTATES - PHASE 2

LOT GRADING PLAN SHOWING PROPOSED DWELLING LOCATION ON LOTS 224A and 224B VICTORIA CRESCENT TIMBERLEA, HALIFAX COUNTY PROVINCE OF NOVA SCOTIA

123 PROJECT CONSULTANTS
 QUINCY PLACE, SUITE 1210
 2307 WYVE ROAD
 DARTMOUTH, NOVA SCOTIA
 B3B 4Y3
 P: (902) 555-1234
 FAX: (902) 555-4321



SCALE: 1 INCH = 20 FEET
 1998

SIGNATURE
 OCTOBER 4, 1998



MUNICIPALITY USE ONLY:

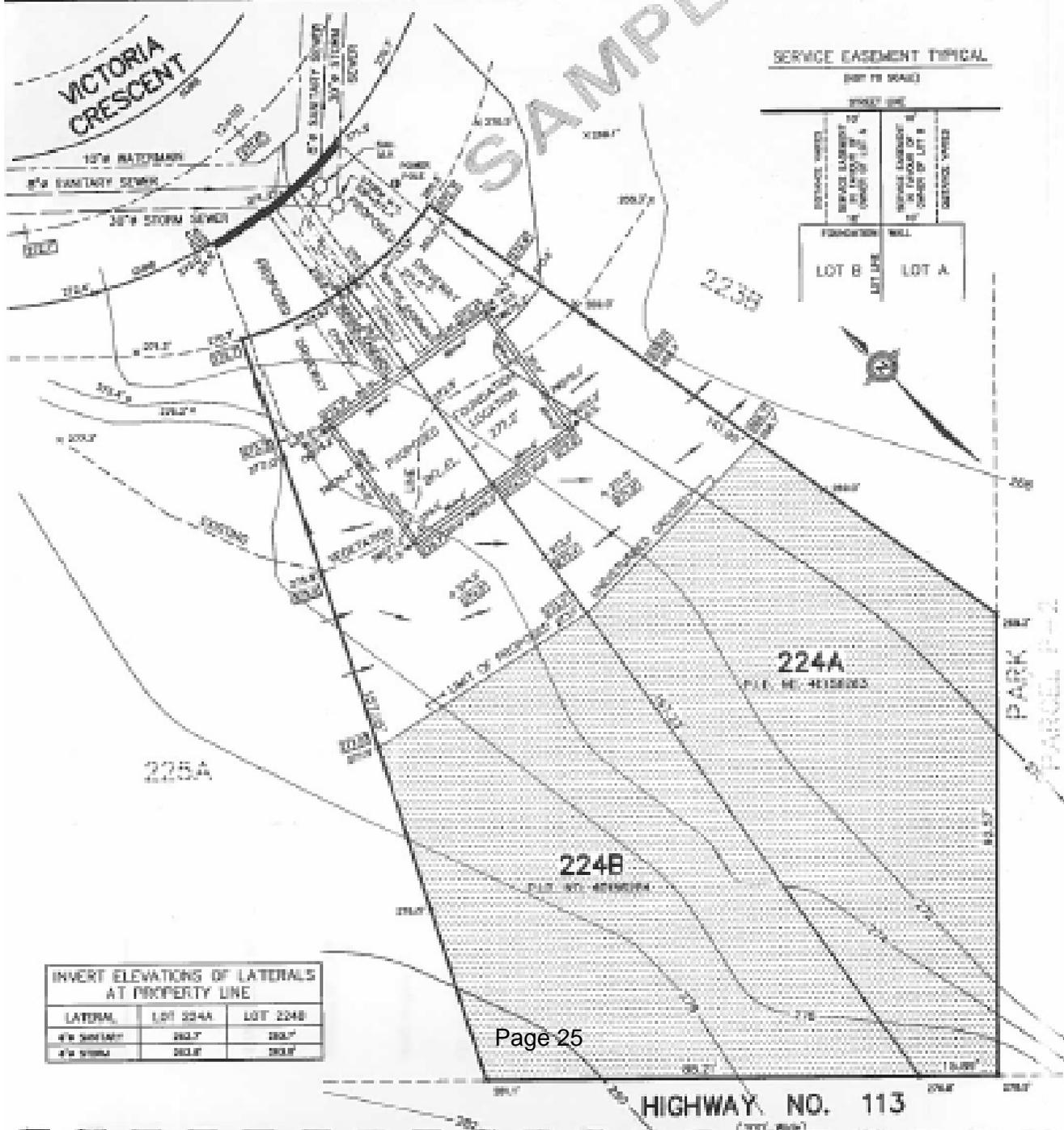
1) APPLICATION FOR LOT GRADING PERMIT APPLICANT: _____

2) PERMISSION TO GRANT: TO CHECKER FOR LOT GRADING AND SEWERAGE PLAN IN COMPLIANCE WITH THIS PLAN AND THE LOT GRADING BY-LAW.

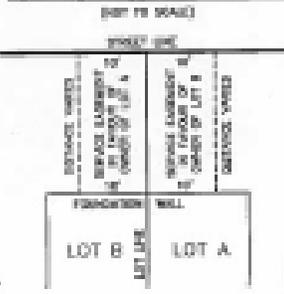
DATE: _____

CONDITIONS: _____

AGC BUILDER LTD.
 1234 APPLE STREET
 HALIFAX, NOVA SCOTIA
 B3L 6G4
 P: (902) 555-8883



SERVICE EASEMENT TYPICAL



INVERT ELEVATIONS OF LATERALS AT PROPERTY LINE

LATERAL	LOT 224A	LOT 224B
4" SANITARY	263.7	263.7
4" STORM	263.8	263.8

LOT GRADING CERTIFICATE

**<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF
APPLICABLE>**

Relating to the Lot Grading Plan dated <DATE>, and prepared by < NAME OF
PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

With respect to the foregoing, I provide herein the following statements:

- (1) That I have performed sufficient site inspections, including a final inspection on _____, 20___, to confirm that the lot grading and drainage works for the subject lots have been substantially constructed in accordance with the above referenced Lot Grading Plan.
- (2) That I have reviewed the design depicted on the Lot Grading Plan, and confirm that the intent of this design has been met.
- (3) That sufficient field measurements have been taken such that I can state that substantive deviations from the Lot Grading pan, and described in the "Tolerances" section of the Lot Grading and Drainage General Specification do not exist.

Signature

Name:

Date:

STAMP

LOT GRADING CERTIFICATE

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to the Lot Grading Plan dated <DATE>, and prepared by <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

With respect to the foregoing, I provide herein the following statements:

- (1) That I have performed sufficient site inspections, including a final inspection on _____, 20____, to confirm that the lot grading and drainage works for the subject lots have been substantially constructed in accordance with the above referenced Lot Grading Plan.
- (2) That I have reviewed the design depicted on the Lot Grading Plan, and confirm that the intent of this design has been met.
- (3) That, based on field measurements taken, deviations from the Lot Grading Plan, beyond those described in the "Tolerances" section of the Lot Grading and Drainage General Specifications exist. It is my professional opinion that the deviations are not substantive in nature as related to the performance of the works in meeting the objectives of the Lot Grading By-law. In making this statement, I accept responsibility for the impact of the deviations only and report that I have advised the <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT> of the deviations. Responsibility for the Lot Grading Plan resides with the <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>. For clarity, the deviations as related to the Community Systems are depicted on the attached copy of the Lot Grading Plan.

Signature

Name:

Date:

STAMP

DEFICIENCY REPORT

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to the Lot Grading Plan dated <DATE>, and prepared by <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

I, _____, hereby confirm that I have performed site inspections at the subject lots to state that the following items are not completed as of _____, 20 ____ as related to required construction in accordance with the Lot Grading Plan.

[PROVIDE LISTING OF UNCOMPLETED WORKS]

[ESTIMATED COSTS ARE NOT REQUIRED]

I further confirm that it is my professional opinion that the conditions of the site relative to lot grading and drainage do not represent an undue hazard to the occupants of the dwellings on these or adjoining lots.

Signature

STAMP

Name:

Date:

OWNER UNDERTAKING FOR COMPLETION

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to: (a) Lot Grading Plan dated <DATE>, and prepared by <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

(c) Deficiency Report dated _____, 20____.

I, _____, hereby confirm that I am the Owner for the above indicated Lot and provide herein the following statements:

- a) That I have reviewed the aforementioned Deficiency Report and undertake to cause the identified construction to be completed within nine (9) months from the date of this document.
- b) That at the completion of construction, I shall cause a Lot Grading Certificate to be prepared and forwarded to the Municipality in accordance with the requirements of the Lot Grading By-law.
- c) That I undertake that I shall provide a copy of this Undertaking:
 - a. to any person who obtains an interest in the property, and
 - b. to their legal representative, if applicable

if the lot is conveyed or transferred prior to the issuance of a Lot Grading Certificate.

Signature

Name:

STAMP

**Attachment B
(Showing Proposed Changes to AO 15)**

HALIFAX REGIONAL MUNICIPALITY

ADMINISTRATIVE ORDER NUMBER 15

Respecting License, Permit And Processing Fees

By-law #	Short Title	Section	Fee
2. By-law 70 (County) L-400	Lot Grading By-law	S.7.1 17	\$75.00
3. By-law 23290	Grade Alteration By-law	S.6	\$75.00
4. By-law O-109	Open Air Burning By-law Residential Commercial	s.10(1)	No Fee \$50.00

**Attachment C
(Amending Administrative Order)**

HALIFAX REGIONAL MUNICIPALITY

ADMINISTRATIVE ORDER NUMBER 15

Respecting License, Permit And Processing Fees

BE IT RESOLVED by the Council of the Halifax Regional Municipality that Administrative Order 15, the *License, Permit and Processing Fees* Administrative Order is amended as follows:

1. The item identified as number 2 in the first table located in the Administrative Order is amended:
 - (a) by striking out the number and word “70 (County)” after the word “By-law” in the first row of the table column titled “By-law #”;
 - (b) by adding the letter and number “L-400” after the word “By-law” in the first row of the table column titled “By-law #”;
 - (c) by striking out the number “7.1” after the letter and period “S” in first row of the third table column titled “Section”; and,
 - (d) by adding the number “17” after the letter and period “S” in first row of the third table column titled “Section”.

**Attachment D
(Showing Proposed Changes to AO 15)**

HALIFAX REGIONAL MUNICIPALITY

ADMINISTRATIVE ORDER NUMBER 15

Respecting License, Permit And Processing Fees

By-law #	Short Title	Section	Fee
2. By-law L-400	Lot Grading By-law	S. 17	\$75.00
3. By-law 23290	Grade Alteration By-law	S.6	\$75.00
4. By-law O-109	Open Air Burning By-law Residential Commercial	s.10(1)	No Fee \$50.00

HALIFAX

P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Item No. 3

Halifax Regional Council
September 8, 2015
Committee of the Whole
October 6, 2015

TO: Mayor Savage and Members of Halifax Regional Council

Original signed by 

SUBMITTED BY:

Richard Butts, Chief Administrative Officer

Original Signed by 

Mike Labrecque, Deputy Chief Administrative Officer

DATE: July 5, 2015

SUBJECT: Lot Grading and Stormwater Management By-laws

ORIGIN

October 22, 2013 Motion moved and passed by Regional Council directing staff to:

1. Prepare, for Public Hearing, a consolidated Regional Lot Grading By-law based on the objectives outlined in the September 11, 2013 staff report;
2. Develop a Memorandum of Understanding on Erosion and Sedimentation Control with Halifax Water, Nova Scotia Environment, Clean Nova Scotia and the Nova Scotia Homebuilding Association;
3. Continue to develop a Stormwater Management By-law based on the objectives outlined in the September 11, 2013 staff report;
4. Develop a standardized Environment Section template for consideration of objectives outside the scope of the Lot Grading By-law or Stormwater Management By-law, for future secondary planning projects; and
5. Align the Streets By-law to the Wastewater Rules and Regulations with respect to substances originating on private property, crossing the right-of-way and entering the storm system.

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, 2008. C. 39. section 353 allows Council to make by-laws regarding stormwater management, grading and drainage.

RECOMMENDATION

Recommend that Regional Council:

1. Move first reading and schedule a public hearing to consider the adoption of the proposed By-law L-400 – A By-law Respecting Lot Grading, as contained in Attachment A, to replace By-law L-300 – A By-law Respecting Lot Grading and Drainage;

RECOMMENDATION CONTINUED PAGE 2

2. Repeal By-law L-300 – A By-law Respecting Lot Grading and Drainage, the existing by-law that regulates lot grading; and
3. Direct staff to begin consultations with the Development Liaison Group concerning the content of a Stormwater By-law as outlined in this report.

BACKGROUND

Development of a consolidated Lot Grading By-law and a new Stormwater Management By-law are two actions previously approved by Regional Council which are part of a consolidated approach to an integrated stormwater policy. This policy approach strives to protect public safety, protect the environment, and encourage economic development.

Other key actions include clarifying roles and responsibilities relating to stormwater services, and developing a long term funding plan to address flooding problems.

Lot Grading and Drainage By-law

Regional Council has given direction for staff to develop a consolidated Lot Grading By-law, with specific objectives that include the following:

- Include the entire Municipality (refer to Attachment A, page 3: Application and Administration - Section 3);
- Streamline the deposit system and consider an alternative approach to remedy (refer to Attachment A, page 5: Orders by the Engineer -Sections 15 & 16);
- Include a requirement for minimum soil depth; and,
- More effectively address uncompleted landscaping (refer to Attachment A, page 5: Orders by the Engineer -Sections 15 & 16).

Stormwater Management By-law

The Regional Plan includes policy that establishes objectives for a stormwater management by-law as follows:

- Methods to reduce increased stormwater flow, flooding, erosion, groundwater contamination, and inflow into wastewater systems caused by development;
- Using naturally occurring vegetation in stormwater management plans;
- Reducing site disturbance in new developments;
- Reducing sediments, nutrients and contaminants being discharged to watercourses; and,
- Recommendations specific to a development area made in a watershed study carried out as part of a detailed planning exercise.

DISCUSSION

In broad terms the objective of a **stormwater management by-law** is to protect water quality, reduce flooding, and prevent any detrimental effects of uncontrolled runoff associated with land development.

A stormwater management by-law achieves this by:

- Requiring best management practices when land is developed;
- By requiring sedimentation and erosion control plans during construction activities; and,
- Requiring on-going maintenance of privately owned stormwater systems.

“Best management practices” are design features intended to control run-off at the source and include roof top storage, infiltration areas, retention areas, catch basin restrictors, oil and grit separators, etc. A list of common best management practises is provided on Attachment B.

The primary objectives of a **lot grading by-law** are protection of property from flood damage and erosion, and safe and convenient use of property.

Notwithstanding, provisions of a lot grading by-law such as reduced slopes and disconnection of roof leaders are typically all that are needed for stormwater control associated with low density residential development.¹ For this reason, the Stormwater Management By-law does not need to apply to low density residential development, if a consolidated lot grading by-law is adopted.

The first part of this report deals with a lot grading by-law for low density residential development, and the second part deals with a stormwater management by-law to address the balance of land development.

PART I - LOT GRADING BY-LAW

A working committee of the Development Liaison Group was formed to facilitate focused stakeholder review of the by-law. The draft by-law that is attached to this report has not been released prior to this Council meeting, but the Development Liaison Group is in general agreement with the approach and provisions in the draft by-law. The provisions of the draft by-law, as they relate to the objectives previously approved by Regional Council are discussed below.

Include the entire Municipality

(Refer to Attachment A, page 3: Application and Administration - Section 3)

The current Lot Grading By-law applies to 1 and 2 unit residential development, where the buildings are connected to a central wastewater system, and does not apply to the former Town of Bedford where the Grade Alteration By-law is in effect.

Regional Council has previously given direction to extend the by-law to include the entire municipality. This gives rise to two key areas that need to be considered for inclusion in a consolidated lot grading by-law as discussed below:

1. *Former Town of Bedford*

The former Town of Bedford is subject to a grade alteration by-law which regulates all grade alteration whether or not the grading is related to a development approval. For practical purposes, lot grading approvals for low density residential development in the former Town of Bedford follow the same process and have been subject to the same standards as lot grading in the rest of the serviced areas of the municipality.

The new Lot Grading By-law will now apply to low density residential development in the former Town of Bedford. The balance of the provisions of the Grade Alteration By-law would remain in place on an interim basis, and reviewed during the development of a Stormwater Management By-law.

2. *Areas not serviced with a central wastewater system*

The Environment and Sustainability Standing Committee (ESSC) previously discussed the need to extend the by-law to development beyond the Urban Service Area, which is not serviced with a central wastewater system.

A review of drainage complaints since 2005 indicates that on average 50 drainage complaints per year have been received from properties that are NOT served with a central wastewater system. Of this amount, approximately 30 per year appear to be related to deficiencies in the road or ditch drainage system and would not be addressed by a lot grading and drainage by-law. A computerized work management system is scheduled to be implemented in 2015/2016 which will

¹ Stormwater Management Guidelines, Dillon Consulting, March 2006

help determine the exact nature and extent of drainage complaints, but the data collected since 2005 indicates that drainage complaints in these areas are not widespread. For this reason, the proposed by-law does not propose to extend to developments beyond the Urban Service Area.

Alternatively, it is recommended that a communication strategy for homeowners be developed in conjunction with the Nova Scotia Homebuilders Association. The effectiveness of this approach will be monitored and a report can be provided at a future date on the specific need for lot grading regulations in areas with private well and septic systems.

Deposit System and Remedy Provisions

(Refer to Attachment A, page 5: Orders by the Engineer -Sections 15 & 16)

It is fairly common that a residence is occupied prior to completing lot grading, typically due to either freeze-up conditions, or a homeowner wishes to complete landscaping on their own. The current by-law requires a \$1,000 deposit if an occupancy permit is required prior to completion of the lot grading.

This provision has been in place since the original lot grading by-law was adopted in 1996 and has proven ineffective at achieving completion of lot grading after occupancy of the building. The amount is too little to affect repairs, and while the current by-law provides for the Municipality to repair or correct defective work the municipality must take legal action to recover costs.

Additionally, the deposit is often paid by the builder, is not a deterrent to the home owner, and has only served to impose an administrative burden on the Municipality.

The proposed by-law removes the requirement for the \$1,000 deposit, but includes remedy provisions which allow the municipality to carry out surveys and correct defective or un-completed work if needed; and place a lien on the property to recover costs. The proposed by-law also no longer refers to an occupancy permit, and uses the act of simply occupying a building as the appropriate trigger for compliance.

Top Spoil Depth

Providing adequate top soil is critical to support vegetation, as well as for effective infiltration of stormwater. The ESSC previously discussed the benefits of establishing a minimum top soil depth of 4 inches in a consolidated by-law which is consistent with current practice in the development industry. Typically, 3 -4 inches of top soil is placed prior to laying sods which, in turn, includes an additional 1 inch of top soil "packed" with the sod.

However, this provision is very burdensome and time-consuming to enforce and is not common in other jurisdictions. The Municipality does not have the resources to carry out the required measurements in the field, and certification of soil depth would be an added cost of compliance for the homeowner. In order to be meaningful, a professional must either install grade stakes and witness the placing of the top soil or conduct before and after surveys.

For this reason, the proposed by-law attached to this report does not stipulate a minimum depth of top soil.

Sedimentation and Erosion Control

Disturbed surfaces are required to be stabilized in the current by-law as a requirement of the Lot Grading General Specifications. This requirement will remain, however formal sedimentation and erosion control plans are not required on an individual lot basis.

In addition, in large scale developments the majority of control structures should already have been in place prior to the construction of roads and services. For this reason, relying on the lot grading by-law for sedimentation and erosion control can be ineffective in large scale developments.

A more comprehensive approach to sedimentation and erosion control will be taken under the Stormwater Management By-law as discussed below. Developing a stormwater management by-law will include an examination of sedimentation and erosion control requirements, including what types of development should be subject, at what stage of development, and will determine the appropriate by-law or regulation.

Definition of Low Density Residential

(refer to Attachment A, page 3: Application and Administration - Section 3)

Currently the Lot Grading By-law applies only to 1 and 2 unit residential development, and staff is recommending expanding the definition of low density residential development to be consistent with the National Building Code. Part 9 of the National Building Code defines a "*Small Buildings*" category as buildings that do not exceed 600 sq. m. (6,460 s.f.) in area and three storeys in height. This provides a rational basis on which to define "*Low Density*", so the proposed by-law applies to all residential development that is less than 600 sq. m., does not exceed 3 storeys in height, and is connected to a central sewer.

Buildings not covered by the definition of "Small Buildings" are larger multi-unit residential, institutional, commercial or industrial development (MICI), and are required to involve the appropriate design professionals for building design, site servicing and grading.

This approach has the added benefit of creating clear lines of regulatory control between a lot grading by-law, and a potential stormwater management by-law for MICI sites, as discussed in Part II of this report.

Homeowner Education

As previously mentioned, a joint education program in conjunction with the NS Homebuilders Association is recommended to reinforce the importance of lot grading in rural areas.

There has also been a need identified to inform homeowners of their obligations under the by-law in the Urban Service Area, particularly in the case where a home owner agrees to complete their own landscaping.

Examples of collaborations in recent years include the RainYards Homeowners Stormwater Management Awareness program with Clean Foundation and with Ecology Action Centre on public stormwater management.

PART II - STORMWATER MANAGEMENT BY-LAW

As mentioned previously, a stormwater management by-law does not generally need to apply to low density residential development. The balance of the discussion in this report is intended to apply to multiple-unit, institutional, commercial, and industrial (MICI) development.

In order to satisfy the requirements of Regional Plan Policy, the by-law should contain three broad sets of provisions:

1. Provide standards and requirements for stormwater management and erosion control plans prior to development;
2. Establish requirements for on-going maintenance of privately owned stormwater systems; and,
3. Implement recommendations made in watershed studies for specific areas.

Each of these sets of provisions is discussed below.

Stormwater Management and Erosion Control Plans

Water quality is a Provincial matter, but the Province of Nova Scotia does not have strict end-of-pipe discharge standards for stormwater in the same manner as treated wastewater effluent. Rather, the Province regulates the construction of stormwater systems and requires that the owner of the system is capable of owning and maintaining the system. This approach is consistent with other Provinces.

Prior to approving the installation of a new stormwater system, the Province requires a developer to show that post-development run-off will not exceed pre-development levels. The most effective way to balance pre- and post- development impacts is to manage stormwater at the source when individual sites are being developed. There is however no consistent approach or requirement for managing stormwater at source in private developments, which often necessitates publicly owned retention ponds or a reliance on natural features to manage stormwater runoff from a development.

Stormwater management for private development is delegated to the municipality in the HRM Charter, but to date has not been applied consistently to all forms of development. Provisions and standards are found in various legislation and specifications including the Subdivision By-law, the Municipal Service Systems General Design Guidelines, the Halifax Water Design and Construction Specifications, site-specific development agreements, and to some extent the National Building Code.

The approach described above overlooks best management practices that control runoff at source in a much more effective and less costly manner.

A stormwater by-law that applies consistent standards for managing stormwater runoff at source will allow the Province to rely on source control in private developments as well, thus eliminating or reducing the need for expensive publicly owned infrastructure to balance pre and post development impacts.

The municipality also regulates development activities in very limited circumstances that may give rise to sediments and other pollutants leaving a construction site. For example, the Top Soil Removal By-law of the former Halifax County Municipality regulates stripping of top soil from land parcels greater than 1 acre in specific areas as defined in the by-law. In addition, development agreements may contain provisions relating to erosion control and other best management practises aimed at improving water quality.

The Stormwater By-law contemplated by the Regional Plan will provide comprehensive standards and requirements for stormwater management plans and erosion control for all site disturbance activity; whether or not related to a development proposal. This includes building site development, installing roads and services as part of a subdivision approval, stripping top soil in general, or any other stand-alone site development such as constructing a parking lot.

In broad terms, the standards currently exist, and the by-law will apply them on a consistent basis to the appropriate types of development.

Maintenance of Private Stormwater Systems

The effectiveness of stormwater systems on removing pollutants almost always relies on regular maintenance. Features such as catch basin sumps, oil and grease separators, and dynamic grit separators all require routine cleaning and grit removal in order to function properly. Requirements for on-going maintenance of privately owned stormwater systems are often found in development agreements to varying degrees, but the approach is ad hoc and inconsistent. A by-law would apply a consistent set of maintenance standards and obligations to all privately owned systems in the municipality.

For example, a privately owned shopping mall that was required to install a proprietary grit removal system as part of a development agreement would now be required to keep the chamber free from accumulated grit and other debris such as lumber and bricks.

Watershed Studies

As previously mentioned, impacts to water quality that arise from the development of land are not regulated by strict end-of-pipe standards. Alternatively in detailed plan areas, the nature and form of development is regulated and the impact on receiving waters is measured. Watershed studies are used to inform the land use policies, and it is anticipated that a by-law will be an effective tool to implement specific recommendations related to site design criteria.

Similar provisions are currently found in some development agreements, and the policy anticipates that these provisions should be included in a by-law.

In addition to the Top Soil Removal By-law (former County of Halifax), overlapping provisions are also found in the Grade Alteration By-law (former Town of Bedford). A review of these by-laws and possible repeal will be undertaken during the development of a Stormwater Management By-law.

FINANCIAL IMPLICATIONS

The effort needed to administer a consolidated Lot Grading By-law will be accommodated within existing 2015-16 Planning & Development resources.

Additional costs for homeowner education – estimated at \$5,000/year for three years – will be funded from cost centre D935, Energy and Environment.

The resource and financial implications of the future Stormwater By-law will be provided at a later date, as the contents and approach of the by-law are developed.

COMMUNITY ENGAGEMENT

Focussed discussions with the development have occurred through an internal staff committee known as the Development Liaison Group. Formal community engagement will occur with the formal by-law adoption process.

ENVIRONMENTAL IMPLICATIONS

Adopting a regional lot grading by-law will reduce drainage complaints, protect property, and promote protection of the environment by decreasing stormwater run-off and increasing soil adsorption of stormwater.

Developing a regional stormwater by-law will protect water quality and is in accordance with the Regional Plan, Policy SU-7.

ALTERNATIVES

1. Council could decide not to adopt the proposed Lot Grading By-law. This option is not recommended for the reasons outlined in this report.
2. Council could decide to amend the proposed by-law. This option is not recommended for the reasons outlined in this report.
3. Council could decide not to direct staff to begin consultations with the Development Liaison Group concerning the content of a Stormwater By-law as outlined in this report. This option is not recommended for the reasons outlined in this report.

ATTACHMENTS

Attachment A – By-law L-400, the Lot Grading By-law

Attachment B – Summary of Most Frequently Used Best Management Practices

A copy of this report can be obtained online at <http://www.halifax.ca/commcoun/index.php> then choose the appropriate Community Council and meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

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Original Signed

**HALIFAX REGIONAL MUNICIPALITY
BY-LAW L-400
RESPECTING LOT GRADING**

Short Title

1. This By-law shall be known as By-law L-400 and may be cited as the “Lot Grading By-law”.

Interpretation

2. In this By-law:
 - (a) “Approved Subdivision Grading Plan” means a grading plan, which is approved at the time of final subdivision approval and as may be amended from time to time by the Municipality which illustrates the drainage systems and patterns common to two or more lots in a subdivision;
 - (b) “building area” means the greatest horizontal area of a building above grade within the outside surface of exterior walls;
 - (c) “building height” means the number of storeys contained between the roof and the floor of the first storey;
 - (d) “Committee” means the Appeals Committee established pursuant to By-law A-100, the *Appeals Committee By-law*;
 - (e) “Council” means the Regional Council of the Municipality;
 - (f) "deficiency report" means a report prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer describing the uncompleted construction requirements, as related to the grading and drainage works shown on the Lot Grading Plan;
 - (g) "development" means the definition found in the *Halifax Regional Municipality Charter* as amended from time to time;
 - (h) "drainage" means a system of natural or artificial drains;
 - (j) "Engineer" means the definition found in the *Halifax Regional Municipality Charter* as amended from time to time;

(k) "first storey" means the upper most storey having its floor level not more than two (2) metres above grade;

(l) "grade" means, as applied to the determination of building height, the lowest of the average levels of finished ground adjoining each exterior wall of a building but does not include localised depressions for vehicle or pedestrian entrances;

(m) "grading" means the alteration of land levels, including the addition or removal of topsoil or other material of any kind;

(n) "Landscape Architect" means a person who is a member in good standing in the Canadian Society of Landscape Architects;

(o) "Lot Grading and Drainage General Specification" means the latest edition of the specifications contained in Schedule A to this By-law;

(p) "Lot Grading Certificate" means a plan or report, prepared in accordance with the Lot Grading and Drainage General Specification and in a form acceptable to the Engineer, depicting the recorded grading and drainage works on a lot of land as proposed on the Lot Grading Plan;

(q) "Lot Grading Permit" means a permit issued under the provisions of this By-law;

(r) "Lot Grading Plan" means a plan of final grading of land for an individual lot of land prepared in accordance with the Lot Grading and Drainage General Specification;

(s) "Municipality" means Halifax Regional Municipality;

(t) "Nova Scotia Land Surveyor" means a registered or licensed member, in good standing, of the Association of Nova Scotia Land Surveyors;

(u) "owner" includes as it refers to the owner of property:

(i) a part owner, joint owner, tenant in common or joint tenant of the whole or any part of land or a building,

(ii) in the case of the absence or incapacity of the person having title to the land or building, a trustee, an executor, a guardian, an agent, a

mortgagee in possession or a person having the care or control of the land or building,

(iii) a person who occupies shores, beaches or shoals, and

(iv) in the absence of proof to the contrary, the person assessed for the property;

(v) "person" means a natural person, corporation, partnership, an association, society, firm, agent, trustee, or registered Canadian charitable organization as defined in section 3(bc) of the *Charter*, and includes the heirs, executors or other legal representatives of a person, or owner;

(w) "Professional Engineer" means a registered or licensed member in good standing of the Association of Professional Engineers of Nova Scotia;

(x) "residential building" means any structure used or intended to be used for supporting a principally or majority residential use but excludes commercial residential uses such as a hotel, motel or hostel;

(y) "sanitary sewerage system" means a system which is publicly owned and maintained and which consists of pipes or conduits receiving or carrying water-borne wastes and includes any trunk sewers, pumping stations and treatment plants; and

(z) "subdivision" means the division of any area of land into two or more parcels, and includes a resubdivision and a consolidation of two or more parcels.

Application and Administration

3. This By-law shall apply to the development of all lots in the Municipality where the structure is:

(a) a residential building;

(b) less than 600 square metres in building area;

(c) three (3) or fewer storeys in building height; and

(d) located within an area where a sanitary sewerage system is provided or is to be provided anywhere in the Municipality.

4. Notwithstanding section 3, this By-law shall not apply to the following:
 - (a) a renovation of an existing building that does not involve changes to the building footprint or changes to the lot grading and drainage patterns;
 - (b) new building construction where lot grading is regulated by a Development Agreement; and
 - (c) a building designed to be situated on a site conforming with CSA Z240.10.1, Site Preparation, Foundation, and Anchorage of Manufactured Homes.

General Requirements

5. Nothing in this By-law shall exempt any person from complying with any other by-law or requirement of the Municipality, or from obtaining any license, permission, permit, authority or approval required by any other by-law of the Municipality or statute or regulation of the Province of Nova Scotia.

6. Where the provisions of this By-law conflict with those of any other By-law of the Municipality or any statute or regulation of the Province of Nova Scotia, the more stringent requirements shall prevail.

Lot Grading Permit Application Procedure

7. Subject to section 3, no lot shall be developed unless a Lot Grading Permit has been issued by the Municipality.

8. An application for a Lot Grading Permit shall be made at the time of application for a building permit.

9. An application for a Lot Grading Permit shall include the following:

(a) a Lot Grading Plan prepared in accordance with the Lot Grading and Drainage General Specification as follows:

(i) where an Approved Subdivision Grading Plan exists, and the drainage patterns depicted on the approved Subdivision Grading Plan are to be preserved, the Lot Grading Plan is to be prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer; or

(ii) where an Approved Subdivision Grading Plan does not exist, or the drainage patterns depicted on the Approved Subdivision Grading Plan are to be varied, the Lot Grading Plan is to be prepared by a Professional Engineer.

10. Where an Approved Subdivision Grading Plan exists, the Lot Grading Plan shall be consistent with the Approved Subdivision Grading Plan, subject to variations approved by the Municipality.

11. A Lot Grading Plan is deemed to be approved when it meets the requirements of this By-law and a Lot Grading Permit has been issued by the Municipality.

Lot Grading Certificate

12. (1) No person shall occupy a building as set out in Section 3 unless a Lot Grading Certificate has been submitted to the Municipality.

(2) The Lot Grading Certificate shall confirm that the lot has been constructed in accordance with the Lot Grading Plan and shall be prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer.

13. Where variations depicted on the Lot Grading Plan exist the Lot Grading Plan shall be subject to review and approval by the Municipality.

14. Notwithstanding section 12, a residential building may be occupied prior to receipt of a Lot Grading Certificate where the following is filed with the Municipality:

(a) a deficiency report prepared by a Nova Scotia Land Surveyor, a Landscape Architect, or a Professional Engineer, in a form acceptable to the Engineer, setting forth details of the work to be completed; and

(b) an undertaking by the owner stating that:

(i) the uncompleted work required by the Lot Grading Plan and the deficiency report will be completed, and

(ii) the Lot Grading Certificate shall be submitted

within a period of nine (9) months.

Orders by the Engineer

15. (1) When the owner fails to comply with this By-law the Engineer may issue an Order to the owner and the owner shall, at the owner's sole expense, bring the lot into compliance with the by-law.

(2) An Order issued pursuant to subsection (1) of this section shall specify the date on which the lot is to be brought into compliance.

(3) (a) An owner may, within fourteen (14) calendar days of being served with an Order that was issued pursuant to subsection (1) of this section, appeal the Order of the Engineer to the Committee.

(b) The day an owner receives a notice shall not be counted in determining the fourteen (14) calendar day period.

(c) Where the fourteenth calendar day falls on a day that the Municipal Clerk's office is not open, the final appeal date is the next business day.

(4) An appeal pursuant to subsection (3) shall be commenced by filing a written notice with the Municipal Clerk which clearly states the grounds for the appeal.

(5) If the owner files an appeal, but the Committee is not scheduled to meet before the date on which the lot is to be brought into compliance, the Order shall be held in abeyance until the Committee has rendered its decision on appeal.

(6) After hearing an appeal pursuant to subsection (3) of this section the Committee may:

(a) deny the appeal,

(b) allow the appeal and reverse the decision of the Engineer, or

(c) make any decision the Engineer could have made under this By-law.

(7) The Engineer may cause the lot to be brought into compliance if the owner does not comply with an Order to bring the lot into compliance on the date specified in the Order

16. Where the Municipality lawfully causes work to be done pursuant to this By-law, the cost of the work, with interest at the rate determined by the Council, by policy, from the date of the completion of the work until the date of payment, is a first lien on the property upon which, or for the benefit of which, the work was done.

Permit Fees

17. An application for a Lot Grading Permit shall be accompanied by a payment of the prescribed fee as set out in Administrative Order 15.

18. Notwithstanding the provision of section 17, no Lot Grading Permit fee shall be required where the Lot Grading Permit is for lands owned by the Municipality.

Offence and Penalty

19.

(1) A person who

- (a) violates a provision of this By-law, Lot Grading Permit, undertaking or an order in force in accordance with this By-law;
- (b) fails to do anything required by a Lot Grading Permit, undertaking or order in force in accordance with this By-law;
- (c) permits anything to be done in violation of this By-law, Lot Grading Permit, undertaking or order in force in accordance with this By-law; or
- (d) obstructs or hinders any person in the performance of their duties under this By-law, Lot Grading Permit, undertaking or order in force in accordance with this By-law,

is guilty of an offence.

(2) A person who commits an offence is liable, upon summary conviction, to a penalty of not less than one hundred dollars and not more than ten thousand dollars and in default of payment, to imprisonment for a term of not more than two months.

(3) Every day during which an offence pursuant to subsection (1) continues is a separate offence.

(4) In addition to any other remedy provided for by this By-law, Council may authorize an action or other legal proceeding to be brought in the Supreme Court of Nova Scotia for any or all of the remedies provided by this Section.

(5) In addition to a fine imposed for contravening a provision of this By-law, a judge may order the person to comply with the provision or order, under which the person was convicted, within the time specified in the order.

Repeal Of By-Laws

20. The following By-law is hereby repealed:

Halifax Regional Municipality By-law L-300

Done and passed in Council this ____ day of _____, 2015.

MAYOR

MUNICIPAL CLERK

I, Cathy Mellett, Municipal Clerk for the Halifax Regional Municipality, hereby certify that the above-noted by-law was passed at a meeting of the Halifax Regional Council held on _____, 2015.

Cathy Mellett
Municipal Clerk

SCHEDULE A
LOT GRADING GENERAL SPECIFICATION

1. INTRODUCTION

1.1. General

A storm drainage system is as a group of interacting, interrelated, and interdependent elements carrying discharges in response to rain and snow. These discharges include overland flow, subsurface flow, and snowmelt.

A complete and properly functioning Storm Drainage System includes a variety of components which may be grouped into two categories:

“Community Systems” being those elements which serve two or more lots. For example, roadside ditches, culverts, roadways, curbs and gutters, street and backyard catchbasins, pipes or conduits, retention ponds, watercourses, floodplains, and drainage swales and ground elevations along common lot lines or in easements.

“Individual Lot Systems” being those elements which serve a single lot and are contained within its limits. For example, swales contained within lot limits, gently graded lot areas, slopes, roof downspouts, individual seepage pits, French Drains, building lateral, parking lot catchbasins and conduits.

1.2. Objectives

The Storm Drainage Systems, be they Community Systems or Individual Lot Systems, design within the context of the Lot Grading By-law, and the siting and grading of the house, shall achieve the following objectives:

- (a) To prevent loss of life and to protect structures and property from significant damage and expense, including that which is expected to be experienced during the 1 in 100 year storm event.
- (b) To provide for convenient and reasonable use of lot areas during and following rain and snow events and from subsurface or groundwater flow, e.g. continuously saturated backyard, significant continuous icing.
- (c) To provide for safe use of lot and street areas, e.g. excessive depth of flow or water storage, significant continuous icing.
- (d) To avoid drainage problems or other conditions that result in unreasonable maintenance obligations on the Owner or Municipality, e.g. significant or regular de-icing operations.
- (e) To provide protection from erosion from surface flow, subsurface flow, or groundwater, e.g. slope stabilization.

- (f) To direct water away from buildings in order to especially prevent basement flooding and damage to the foundation drain.
- (g) To prevent standing water and soil saturation detrimental to buildings, driveways, walkways, landscaped areas and other use of the lot.

In addition to the foregoing, and with particular relevance in areas where an Approved Subdivision Grading Plan does not exist, the Municipality may require information to demonstrate that the overall Storm Drainage System Objectives are achieved:

- (a) To adequately convey flow from upstream sources.
- (b) To prevent and/or mitigate the adverse effects of stormwater flow on downstream or adjacent properties, such as erosion, or flooding due to inadequate downstream capacity or grading.
- (c) To preserve natural watercourses.
- (d) To minimize the long term effect of development of receiving watercourses and groundwater.
- (e) To maintain pre-development drainage patterns unless some motivating factor to change the pattern exists, e.g. conflict with other objectives (capacity).

In the case where an Approved Subdivision Grading Plan exists and Community Systems have been designed and/or constructed, it shall be an objective that the Individual Lot Systems conform to the Community Systems. Grades established at the lot limits by the Approved Subdivision Grading Plan are to be maintained, subject to variations permitted under Section 6.0.

In the preparation of a design that meets the above objectives, an attractive living environment is important and consideration should be given to the following factors:

- (a) Aesthetic conditions relating to lot grading, e.g. creating space on the lot that is convenient as a play area, usually in the back yard.
- (b) The preservation of desirable site features where practical, e.g. minimizing disturbance, retaining trees.
- (c) Providing for variance in front yard setbacks along a street and for establishing a roof profile which is aesthetically pleasing.
- (d) Locating slopes and boundary lines such that tops and bottoms of slopes are at property boundaries.
- (e) Avoiding excessive deep swales.
- (f) Placing easements on one side of boundary line.
- (g) Where swales and French Drains are contemplated at the base of a significant slope, it is recommended that the swale be located at the toe of the slope.

- (h) Locating driveways to allow convenient and safe ingress and egress.
- (i) Creating consistent grading lot to lot.

Those above items are desirable but not addressing these factors fully will not lead to rejection or approval of a Lot Grading Plan.

2. DESIGN CRITERIA – LOT GRADING

The Design Criteria for lot grading are to cover the more common aspects of design encountered in lot grading and drainage development. Local conditions may influence the Design Criteria and design requirements, for example, circumstances where soils are not free draining may require a flatter maximum permissible slope. In cases where these Criteria need to be expanded or additional criteria are required, the Recommendations and Stormwater Policy manual prepared by Halifax County Storm Drainage Task Force and the latest edition of Municipal Design Guidelines, and the latest edition of the Halifax Regional Water Commission Design and Construction Specifications shall be used as appropriate. Additional requirements affecting design are contained in other relevant documents, such as the National Building Code.

The Design Criteria reflect the experience of Halifax Regional Municipality as related to typical design requirements. The Criteria are provided for information and will serve as the benchmark for review of Lot Grading Plans in typical circumstances. However, the Design Criteria are not considered rigid. To better meet the objectives, alternate design approaches may be proposed. This will not be discouraged by the municipality.

The purpose of the Design Criteria is to provide guidance in the provision of drainage systems offering acceptable service which is consistent with the lowest possible initial construction and ongoing maintenance costs and effort.

The Design Criteria as outlined herein, are not intended to eliminate the necessity for detailed design, rather they are intended to standardize the approaches, design criteria, and methods of construction to be utilized in the installation of drainage systems. Further, it is not the intention of the Municipality to stifle innovation. Where variations from this document are justified or required and where alternate approaches can produce the desired results, such approaches will be considered for approval. In considering requests for variations from these design criteria, the Engineer shall take into consideration such factors as safety, nuisance, system maintenance, life cycle costs, environmental issues, natural topography, etc. Designs shall be accompanied by statements of certification to the effect that designs have been completed in accordance with these guidelines. Where standards other than those outlined in this document are used, all appropriate documents and plans shall clearly indicate those areas of difference. The acceptance by the Municipality of the design of the proposed drainage systems shall not relieve the designer of the responsibility of proper design. The designer retains full responsibility and liability for his/her work.

2.1. Community Systems

In most instances where an Approved Subdivision Grading Plan exists, the design of Community Systems will not be required as they will have been established by the Approved Subdivision Grading Plan. However, in certain instances, most likely in the case of new building construction on previously approved or in-fill lots, the design of Community Systems may be required in order to meet the objectives of the Lot Grading By-law.

In designing Community Systems, the focus is on those drainage elements which affect more than one property, e.g. common backyard swales/catchbasins, grading along common property boundaries. **It is critical that the designer ensure that sufficient Community Systems are in place and/or contemplated and depicted such that individual Lot Systems can be designed and constructed in a fashion that allows for a properly functioning overall Storm Drainage System for the Owner while striving for an attractive living environment. It is intended that Community Systems will not have to be altered as a consequence of design of detailed Individual Lot Systems (although this is provided for in Section 6.0). Therefore, it is strongly recommended to carry out preliminary design of the Individual Lot Systems serving the lots in accordance with the requirements of the Lot Grading By-law.**

Community Systems are to be designed in accordance with the Municipal Design Guidelines and in accordance with the following criteria:

Ground Surface

- The area between the street right of way and the curb shall slope towards the curb at a maximum slope of 2% but not greater than 4%.
- The maximum slope shall be 3:1 (H:V) unless constructed on in situ rock or unless otherwise approved by the Engineer (certification of slope stability by a geotechnical engineer may be required for approval). The top and bottom of banks shall be rounded for convenient maintenance. Notwithstanding the foregoing, a suitably graded slope is required with appropriate surface treatment to provide for long term stability.
- Where required, retaining walls shall be designed with due consideration given to soundness of material, stability, safety (including provision for a handrail or safety fencing), maintenance, and other relevant factors. Retaining walls with a height greater than 1 metre shall be designed by and the construction certified by a Professional Engineer, and shall be located completely on private property including footings.

- Where a cut intercepts the groundwater table creating potential drainage and icing problems, special measures will be required to address potential drainage problems.
- Where areas are disturbed, stabilization is to be provided to prevent erosion.

Swales Applied to Residential Dwellings

- Swales shall be blended into the landscape to the greatest extent possible in order to provide a natural appearance (See Figure 1a: Swale Cross Section).
- The minimum grade along any swale shall be 2%. The minimum grade may be reduced to 1% where underdrains are incorporated (See Figure 1b: Swale and Underdrain Cross Section). Grades are encouraged to be, where possible, steeper than the minimum.
- Where the swale intercepts subsurface water, the swale shall incorporate underdrains, regardless of slope (See Figure 1b: Swale and Underdrain Cross Section).
- The side slope for any swale shall be flatter than 33% (3 horizontal: 1 vertical).
- The maximum depth of flow in any swale shall be 250 mm in the 1 in 100 year storm.
- All swales shall be designed to accommodate the 1 in 100 year stormwater flow.
- An overflow route shall be provided to direct overflow to major drainage systems. The 1 in 100 year water level along such route shall be lower than the lowest opening to the adjacent buildings.
- Sharp corners shall be avoided in swale design.
- Steeply sloping swales shall have appropriate surface treatment to prevent erosion.

Underdrains

- Underdrains, as detailed in Figure 1b: Swale and Underdrain Cross Section, are to be used to remove surface and subsurface water to drain wet areas and other areas of poor drainage, or where minimum slopes with respect to lot surface or swales cannot be achieved.
- Underdrains are not permitted to discharge onto street surfaces, walkways, private properties, or any other location where there would be an impact inconsistent with the objectives of the Lot Grading By-law.

- Underdrains shall be located a sufficient distance from any part of the building foundation to avoid impacts to building foundations and/or adjacent structures when the underdrain is replaced.

Easements

- Easements shall be provided for all swales which in the opinion of the Engineer require such legal conveyances. Generally, easements will be required when a significant number of lots depend on the swale.
- Public easements shall be provided for all catchbasins and associated stormwater pipes constructed in conformance with the HRM and Halifax Water standards.
- A minimum easement width of 6 metres is required for public easements as per HRM and Halifax Water requirements.
- A minimum easement width of 4.5 metres is required for private easements.

2.2. Individual Lot Systems

During design of Individual Lot Systems, the focus is on the lot and house grading and house locations inside the lot boundaries. It is intended that there be no change to the grading along the exterior boundary (Community System) or other Community System located within the lot, subject to the provisions of Section 6.0 – Variances.

Individual Lot Systems are to be designed in accordance with the Design Criteria for Community Systems with the following additions:

Buildings

- Building and site design should respect the topography and natural drainage of the site in order to reduce the magnitude of lot grading required, the need for retaining walls, and the need for piped drainage systems.
- To promote groundwater recharge and to minimize the increase in peak runoff, roof downspouts are not to be connected to the piped storm sewer system subject to variation approved by Halifax Regional Municipality.
- Roof downspouts are to be positioned such that, where possible, discharge onto driveways or adjoining property is avoided. It is recommended that roof downspouts are discharged to splash pads.
- The interrelationship of the house location and the Storm Drainage Systems is important in achieving the objectives of the Lot Grading By-law. Strategically locating the house can allow for Storm Drainage Systems to be constructed

which are relatively inexpensive and require a low level of maintenance. On the other hand, a poorly selected house location may require that elaborate systems be constructed which will require significant on-going maintenance. With this in mind, and within the context of the Lot Grading By-law, the house location will be examined with a view of addressing the objectives of the Lot Grading By-law.

- Entrance elevation to building openings, e.g. windows, doors, stairwells, garage entrances, shall be set such that the objectives of the Lot Grading By-law are met.

Ground Surface

- All surfaces must slope away from the building as follows:
 - Front yard – the front yard shall be continuously graded to drain away from the building towards the street.
 - Back yard – the back yard shall be graded to drain away from the building for a minimum distance of 3 metres with a minimum drop of 150 mm.
 - Side yard – where permitted by applicable land use by-law and/or by development agreement, the side yards shall be graded to drain away from the building a minimum distance of 1.2 metres with a minimum drop of 150 mm.
- All landscaped lot surfaces shall have a minimum slope of 2%, unless otherwise provided for in this Schedule. Grades are encouraged to be, where possible, steeper than the minimum.
- The maximum slope on any lot surface shall be 3:1 (H:V) unless constructed on in situ rock or unless otherwise approved by the Engineer. Certification of slope stability by a geotechnical engineer may be required for approval as well as consideration of other issues such as maintenance and erosion. The top and bottom of banks shall be rounded for convenient maintenance. Notwithstanding the foregoing, a suitably graded slope is required with surface treatment to provide for long term stability.
- Where areas are disturbed, stabilization is to be provided to prevent erosion.

Driveways/parking/Open Areas

- The portion of the driveway within the front yard shall be graded to drain away from the building towards the street and to prevent the direct discharge of water onto adjacent property.
- Driveway slopes shall not be less than 2%.

- For paved or impervious areas greater than 100 square metres, additional information and design requirements with respect to grading and drainage may be required.

3. INFORMATION REQUIREMENTS

Several documents are to be prepared during the process outlined in the Lot Grading By-law: Lot Grading Plan; Lot Grading Certificate; Deficiency Report; and, Owner Undertaking for Completion. Indicative samples of each of these documents are found under Figure 2 through Figure 5.

3.1. Lot Grading Plan (See Figure 2 for sample)

The Lot Grading Plan illustrates the Individual Lot Systems for a lot of land and its relationship to the Community Systems surrounding and within the lot of land. The Lot Grading Plan generally illustrates a specific building type for the lot and how the grading fits into the Approved Lot Grading Plan when one exists, and/or the adjacent existing topography.

General

- The Lot Grading Plan shall be drawn at a scale of 1:250 (1 inch = 20 feet) and is to be displayed on ledger paper (280 mm x 430 mm)(11" x 17"). One lot is to be shown on each Lot Grading Plan. The layout of the information on the Lot Grading Plan shall conform to that shown on Figure 2.
- A Title Block shall be used indicating the following:
 - The name of the Subdivision, Approved Lot Number, Street, and the community.
 - The name of the Building Permit Owner.
 - The name, firm, and address of the professional preparing the plan.
 - Scale
 - Date (original and revisions)
- A grid north arrow shall be shown.
- Existing and proposed elevations are to be related to geodetic datum or the datum of the Approved Subdivision Grading Plan, if not geodetic.
- A legend giving an explanation of symbology is to be provided. The standard Legend depicted on Figure 2 is to be used.

- Appropriate notes relative to construction requirements are to be provided.
- Distances along the exterior boundary of the lot are to be shown.
- PID number is to be shown.

Existing Conditions

- Existing Information, to be field collected and representative of conditions at the time of Lot Grading Permit Application, is to be expressed as spot elevations and contours at maximum 750 mm intervals on the specific lot and adjacent lots to adequately illustrate the drainage interrelation between properties with common property lines and the existing topography.
- Centreline street elevations and related to the chainage on the profile record drawings where such drawings exist.
- Top of curb elevations at sideline extensions and driveway cuts.
- Existing Storm Drainage System Elements, e.g. catchbasins, swales.
- Public or private easements or rights-of-way.
- Utility poles, fire hydrants, traffic signs, or other surface features adjacent to the lot.
- Where a lot is adjacent to a watercourse or a major drain system exits on the lot, the normal water elevation in the 1 in 100 year water levels.
- Where buildings exist on adjacent lots, the elevation at the adjoining corners of the building if located within 10 metres of the lot limit.
- Any other items affecting stormwater drainage. As a minimum, existing elevation information is to extend 6 metres onto adjacent properties.

Proposed Grading

- The proposed elevations for all lot corners as well as intermediate points of grade change on all lot lines and sloped surfaces. The frequency of proposed elevations shall depend upon the degree of development (with developed areas requiring more detailed information) and also upon the topography. Where an Approved Subdivision Grading Plan exists, the proposed elevations along the lot limits are to conform to the Approved Subdivision Grading Plan, subject to Section 6.0 – Variances.

- All swales along the proposed elevations at all lot lines or changes in direction of slope of the swale.
- All catchbasins, or other drainage structures, within and adjacent to the lot along with the grade elevation of the catchbasins and the invert of all inlet and outlet pipes.
- All areas that are to be left in an undisturbed condition.
- Significant proposed slopes greater than 4:1 (H:V).
- Proposed surface treatment of disturbed areas is to be indicated.
- Direction of surface flow to be indicated by arrows so that the proposed drainage patterns on all areas of the lot are clearly indicated.
- Split in drainage direction is to be shown.

Proposed Building and Appurtenances

- The exact outline of the building, walkways, driveways, and external appendages (decks).
- The horizontal relationship of the main building to the lot limits.
- The proposed basement floor elevation(s) together with the floor elevation(s) of garages (if any).
- The elevation and configuration of basement walls.
- Where openings in the basement are proposed e.g. windows, doors, information is to be included on the Lot Grading Plan relating to the location and construction of the opening to ensure the requirements of the Lot Grading By-law are met.
- Roof downspout locations and direction.
- The proposed ground elevations at the building corners and other appropriate points of grade change along the building walls.
- Proposed grading and design details of any retaining walls.
- The location of the lateral trench accessing the building and the existing lateral or mainline elevations at the point of service connection.
- Design details and location information for any other drainage appurtenance.

3.2. Lot Grading Certificate (See Figures 3a and 3b)

The Lot Grading Certificate shall provide certification that the Storm Drainage Systems on the lot have been constructed in accordance with the Approved Lot Grading Plan and is to be prepared as presented in either Figure 3a or 3b. The Certificate is to be issued only when the works have been completed and deficiency items do not exist.

Tolerances

Proposed grading and slope information is to be confirmed as being constructed on the Lot Grading Certificate as follows:

- Where the as-built design elevation or slope is within the indicated tolerance, a graphical or written confirmation is acceptable. All changes of elevations on the approved Lot Grading Plan shall be identified in red adjacent to the original elevation.
- Where the as-built design elevation or slope is not within the indicated tolerance, the as-built result is to be specifically shown.
 - Constructed elevation at lot lines shall match the proposed elevation as indicated on the Approved Lot Grading Plan within 5 cm.
 - Grades along sloped surfaces or swales that are at the minimum or maximum allowable grades shall match the grades indicated on the Approved Lot Grading Plan, or deviate to the permitted side of the minimum or maximum.
 - Additional elevations or slopes not covered above must meet the intent of the Approved Lot Grading Plan.

3.3. Deficiency Report (See Figure 4)

A Deficiency Report, prepared as presented in Figure 4, is to be shown when construction has not been fully completed in accordance with the Approved Lot Grading Plan and Occupancy is being sought. The Deficiency Report must itemize the work not completed.

The Deficiency Report is to also include statements to the effect that, although full construction is not completed, the condition of the lot relative to lot grading and drainage does not create an unsafe situation for the occupant of the lot of adjoining owners.

3.4. Owner Undertaking for Completion (See Figure 5)

The Owner Undertaking for Completion, prepared as presented in Figure 5, is to accompany the Deficiency Report when an Occupancy is being sought.

This document is to provide a statement by the Owner confirming the following:

- a) That they will cause to completion of the construction to take place within a nine (9) month period from the date of occupancy; and,
- b) In the event that completions do not occur, The Owner agrees that the Municipality may construct the deficient works.

4. VARIANCES

It is anticipated that site conditions and/or innovative building techniques may justify variations to the Individual Lot Systems and possibly the Community System to enable a lot to be developed in a specific manner. In considering variances to Community Systems of previously approve Individual Lot Systems, the objectives outline in Section 3.0 of the Specification must be met and be demonstrated as proven to be met by the Owner.

In addition to the overall objectives of the Lot Grading By-law, specific requests for variances to the Individual Lot Systems and Community Systems must address the following points:

1. What aspect or component of the existing Individual Lot System or Community System is being requested to be modified in order to achieve the owner's desired development?
2. Will any main or accessory buildings on adjoining properties be affected with respect to any flood risk damage as a result of the requested variance?
3. Will any municipal infrastructure be placed in a greater flood risk potential as a result of the requested variance?
4. Where appropriate, calculations must be provided indicating the design capacity of the receiving systems with and without the requested variance.
5. Information must be provided with respect to major and minor watersheds contributing to the specific site of the variance.
6. Where required by the Municipality, proof/acknowledgement that abutting property owners have been informed about the variance request (include names of contact persons and telephone numbers).

Following receipt of this information, the Engineer will review all of the information provided and determine if the variance to the Individual Lot System or Community Systems will be permitted.

It should be understood that the review process associated with a Lot Grading Permit, in cases where variances have been applied for, will be in excess of the normal review time for those owner requesting approval that confirm with the Community Systems and Individual Lot Systems established.

FIGURE 1a: SWALE CROSS SECTION

N.T.S

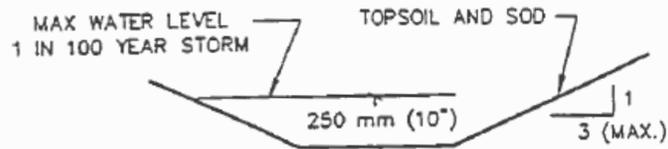


FIGURE 1b: SWALE AND UNDERDRAIN CROSS SECTION

N.T.S

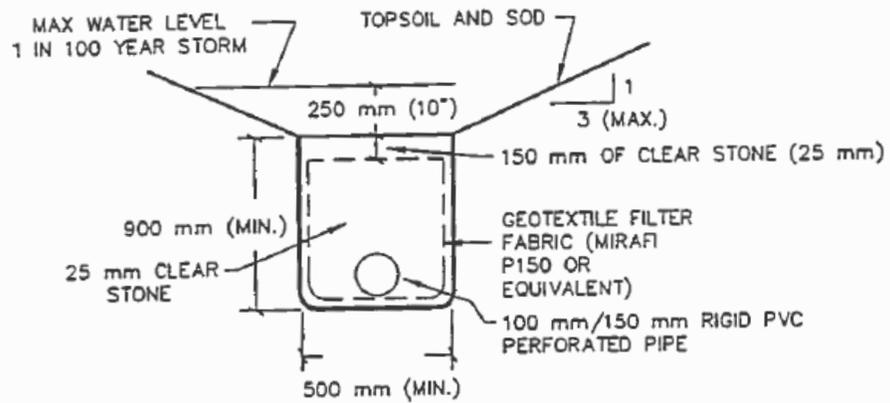


FIGURE 2

- LEGEND**
- EXISTING ELEVATION 1" = 10'
 - PROPOSED ELEVATION 1" = 10'
 - FOUNDATION WALL HEIGHT 1" = 10'
 - TOP OF WALL ELEVATION 1" = 10'
 - PROPOSED BASEMENT FLOOR ELEVATION 1" = 10'
 - FUND OFFERING FOR ELEVATION 1" = 10'
 - DIRECTION OF DRAINAGE 1" = 10'
 - SHALL ON PROPERTY LINE 1" = 10'
 - WATER MAIN 1" = 10'
 - STORM SEWER 1" = 10'
 - PROPOSED LATERAL LINE 1" = 10'
 - EXISTING CENTER 1" = 10'
 - PROPOSED CENTERLINE 1" = 10'
 - UNDEVELOPED AREA 1" = 10'

- NOTES**
- 1) FOUNDATION WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING DEPARTMENT OF THE PROVINCE OF NOVA SCOTIA.
 - 2) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 3) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 4) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 5) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 6) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 7) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 8) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 9) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.
 - 10) FOUNDATION WALLS SHALL BE CONSTRUCTED TO A MINIMUM OF 12" ABOVE FINISHED GRADE.

VICTORIA ESTATES - PHASE 2

LOT GRADING PLAN SHOWING PROPOSED DWELLING LOCATION ON LOTS 224A and 224B
 VICTORIA CRESCENT
 TIMBERLEA, HALIFAX COUNTY
 PROVINCE OF NOVA SCOTIA

123 PROJECT CONSULTANTS
 2307 WYSE DRIVE
 DARTMOUTH, NOVA SCOTIA
 B3B 4G3
 TEL: (902) 555-1234
 FAX: (902) 555-4321



SCALE: 1" = 20 FEET
 1998

SIGNATURE
 OCTOBER 5, 1998

MUNICIPALITY USE ONLY:

1) APPLICATION FOR LOT GRADING PERMIT: _____

2) FOUNDATION IS SHOWN BY: _____

3) COMPARE THE LOT GRADING AND FOUNDATION WALL TO THE PLAN AND THE CITY RECORDS BY-LAW.

APPLICANT: _____

DATE: _____

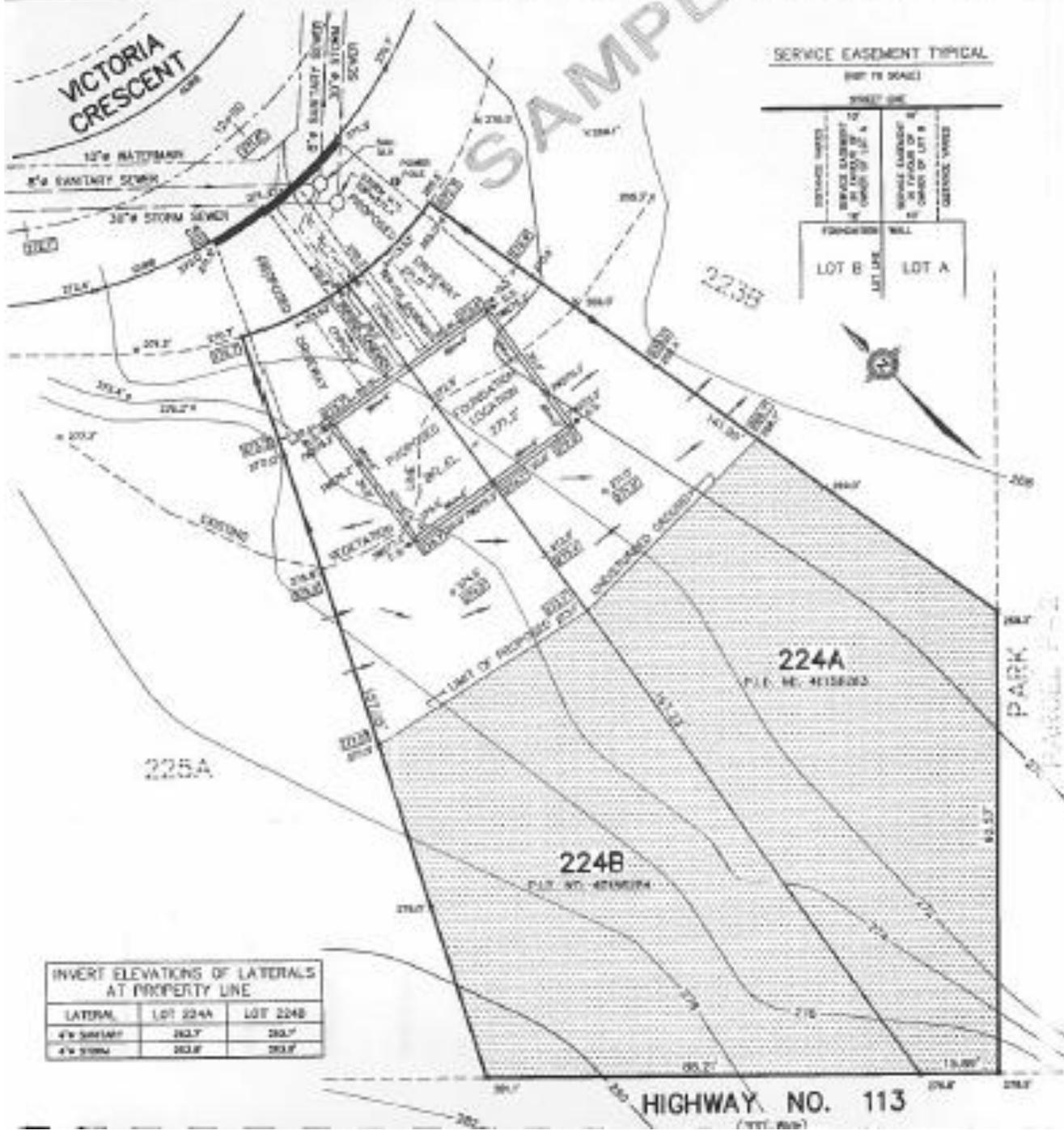
ISSUED PERMIT #: _____

DESIGNER: _____

DATE: _____

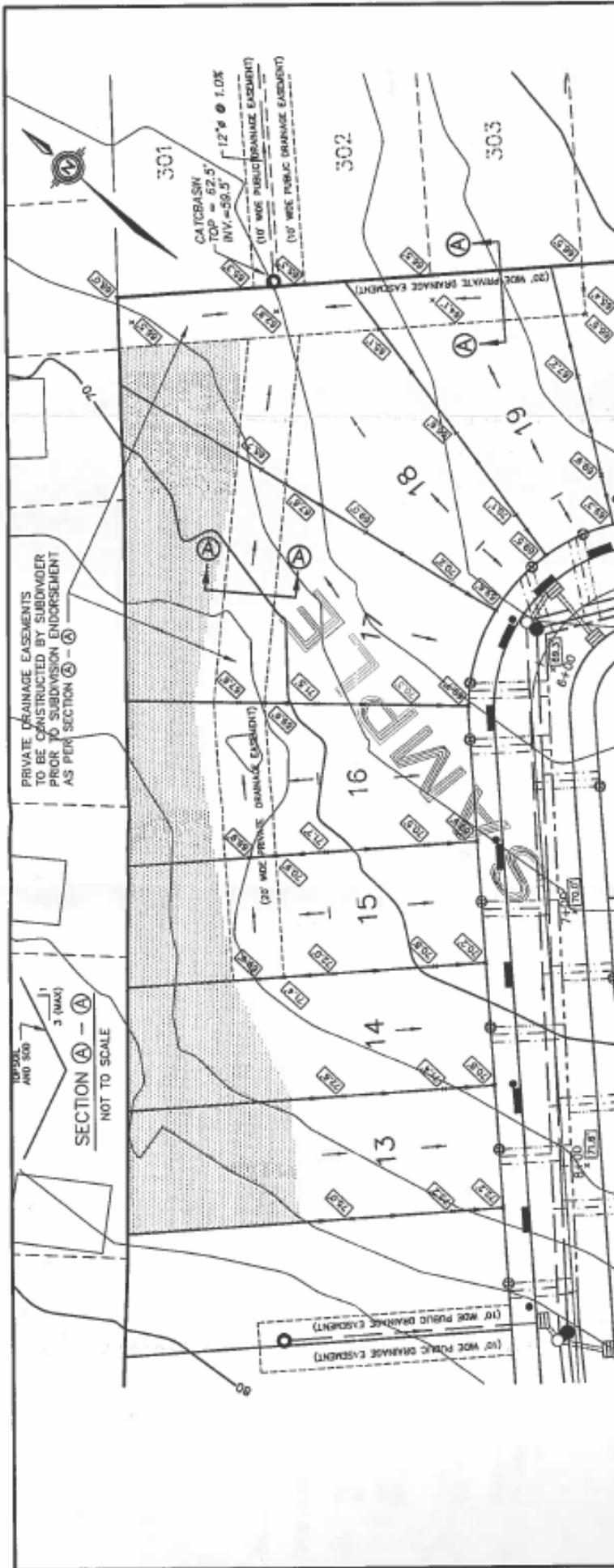
CHIEF ENGINEER: _____

ABC BUILDER LTD.
 1234 APPLE STREET
 HALIFAX, NOVA SCOTIA
 B3L 0G4
 TEL: (902) 555-8888



INVERT ELEVATIONS OF LATERALS AT PROPERTY LINE

LATERAL	LOT 224A	LOT 224B
4" 500MM	263.7	263.7
4" 500MM	263.8	263.7



PROJECT
VICTORIA ESTATES - PHASE 2
TIMBERLEA, HALIFAX COUNTY
REGAL DEVELOPMENTS LIMITED

SHEET DESCRIPTION
SUBDIVISION GRADING PLAN
LOTS 11-19

DATE APRIL 28, 1996
HORIZ. SCALE 1" = 40'
VERT. SCALE 2" INT.
DRAWN T.L.M.
CHECKED R.A.H.
DWG. # 95073-01

SHEET 1 OF 1
FIGURE 2

NO.	REVISION	APP'D	DATE
0	ISSUED FOR REVIEW		04/28/96



123 PROJECT CONSULTANTS
QUINCY PLACE, SUITE 1289
2387 WYSE ROAD
DARTMOUTH, NOVA SCOTIA
B5T 6Y3
PH: (902) 555-1234
FAX: (902) 555-4321

VICTORIA CRESCENT

LEGEND

DESCRIPTION	SYMBOL
DRIVEWAY OUT (10' SNG., 16' DBL.)	
EXISTING GRADE CONTOUR	
DIRECTION OF SURFACE DRAINAGE	
SWALE ON PROPERTY LINE	
EXISTING ELEV., DESIGN ELEV.	
APPROXIMATE LIMIT OF PROPOSED UNDISTURBED AREAS	
SELECTED SLOPES STEEPER THAN 4H:1V	

CONTOURS ARE BASED ON FIELD SURVEY AND REPRESENT PRE-CONSTRUCTION EXISTING GRADE.
CONTOUR INTERVAL = 2 FEET

LOT GRADING CERTIFICATE

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to the Lot Grading Plan dated <DATE>, and prepared by < NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

With respect to the foregoing, I provide herein the following statements:

- (1) That I have performed sufficient site inspections, including a final inspection on _____, 20____, to confirm that the lot grading and drainage works for the subject lots have been substantially constructed in accordance with the above referenced Lot Grading Plan.
- (2) That I have reviewed the design depicted on the Lot Grading Plan, and confirm that the intent of this design has been met.
- (3) That sufficient field measurements have been taken such that I can state that substantive deviations from the Lot Grading pan, and described in the "Tolerances" section of the Lot Grading and Drainage General Specification do not exist.

Signature

Name:

Date:

STAMP

LOT GRADING CERTIFICATE

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to the Lot Grading Plan dated <DATE>, and prepared by <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

With respect to the foregoing, I provide herein the following statements:

- (1) That I have performed sufficient site inspections, including a final inspection on _____, 20____, to confirm that the lot grading and drainage works for the subject lots have been substantially constructed in accordance with the above referenced Lot Grading Plan.
- (2) That I have reviewed the design depicted on the Lot Grading Plan, and confirm that the intent of this design has been met.
- (3) That, based on field measurements taken, deviations from the Lot Grading Plan, beyond those described in the "Tolerances" section of the Lot Grading and Drainage General Specifications exist. It is my professional opinion that the deviations are not substantive in nature as related to the performance of the works in meeting the objectives of the Lot Grading By-law. In making this statement, I accept responsibility for the impact of the deviations only and report that I have advised the <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT> of the deviations. Responsibility for the Lot Grading Plan resides with the <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>. For clarity, the deviations as related to the Community Systems are depicted on the attached copy of the Lot Grading Plan.

Signature

STAMP

Name:

Date:

DEFICIENCY REPORT

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to the Lot Grading Plan dated <DATE>, and prepared by <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>

I, _____, hereby confirm that I have performed site inspections at the subject lots to state that the following items are not completed as of _____, 20 ____ as related to required construction in accordance with the Lot Grading Plan.

[PROVIDE LISTING OF UNCOMPLETED WORKS]

[ESTIMATED COSTS ARE NOT REQUIRED]

I further confirm that it is my professional opinion that the conditions of the site relative to lot grading and drainage do not represent an undue hazard to the occupants of the dwellings on these or adjoining lots.

Signature

STAMP

Name:

Date:

OWNER UNDERTAKING FOR COMPLETION

<LOCATION OF PROPERTY INCLUDING LOT NUMBER AND SUBDIVISION NAME IF APPLICABLE>

Relating to: (a) Lot Grading Plan dated <DATE>, and prepared by <NAME OF PROFESSIONAL ENGINEER, NS LAND SURVEYOR, OR LANDSCAPE ARCHIECT>
(c) Deficiency Report dated _____, 20____.

I, _____, hereby confirm that I am the Owner for the above indicated Lot and provide herein the following statements:

- a) That I have reviewed the aforementioned Deficiency Report and undertake to cause the identified construction to be completed within nine (9) months from the date of this document.
- b) That at the completion of construction, I shall cause a Lot Grading Certificate to be prepared and forwarded to the Municipality in accordance with the requirements of the Lot Grading By-law.
- c) That I undertake that I shall provide a copy of this Undertaking:
 - a. to any person who obtains an interest in the property, and
 - b. to their legal representative, if applicable

if the lot is conveyed or transferred prior to the issuance of a Lot Grading Certificate.

Signature

Name:

STAMP

ATTACHMENT B

SUMMARY OF MOST FREQUENTLY USED BEST MANAGEMENT PRACTISES

Urban Stormwater Management Alternatives		
Source Control	Conveyance Control	End of Pipe Control
<ul style="list-style-type: none">• Rooftop Runoff• Disconnection of Foundation Drains• Catchbasin Restrictors• Lot Control• Rooftop Detention• Permeable Pavers• Slope Stabilization and Erosion Control Measures• Compost Berm• Rain Garden	<ul style="list-style-type: none">• Vegetated Swales• Channel/Outlet Protection• Pervious Pipe Systems• Pervious Catchbasins• Wet Swale• Permanent Check Dams	<ul style="list-style-type: none">• Detention/Retention Facilities• Underground Tanks• Wetlands• Infiltration Basins/Trenches• Filter/Buffer Strips• Sand Filters• Oil and Grit Separators

Source: Stormwater Management Guidelines, Dillon Consulting, March 2006