

Foreword;

The City of Welland receives numerous requests to reimburse homeowners for deposits relating to lot grading in various subdivisions in the municipality, each year. The City of Welland enters into subdivision agreements with developers who wish to develop land in Welland. These subdivision agreements set out various requirements the developer must satisfy in order to fulfill his responsibilities in accordance with the said agreement.

One of the requirements is a lot grading deposit. The developer, through his consulting engineer, submits a proposed lot grading plan intended to show how he will deal with storm water in the subdivision. Once approved and accepted by the City, during the approval stage, the City takes securities for the development. The security for lot grading is currently \$1,000 per lot to a maximum of \$50,000 per separate development. This in essence holds the developer responsible for the lot grading on a per lot basis as well as the subdivision as a whole, until such time as the lot grading for the subdivision has been approved by the City. This is done by the developer's consulting engineer certifying that the lot grading corresponds to the approved plan.

The City is aware that some developers will subsequently charge builders or purchasers of lots (or subsequent builders themselves may directly charge purchasers of lots) various fees for lot grading, security, damage deposits, or other matters, which fees may be equal to or greater than the above-mentioned lot grading deposits. Unfortunately, these fees have no bearing on the subdivision agreement that the developer has entered into with the City. These fees are not collected by the developer or the builder on behalf of the City, nor are they passed on to the City, but are collected by the developer and/or the builder pursuant to an agreement between the developer and/or the builder and the subsequent builder or purchaser of the lot. These fees are enforceable pursuant to these agreements only. The City is not responsible for the collection of these fees or the return of same, as the City is only obligated to deal with the deposits given by the developer to the City, and any returns of those deposits in accordance with the subdivision agreement entered into by the parties.

Below is an excerpt from the City of Welland Municipal Standards relating to Lot Grading. The full version of the Municipal Standards can be found on the City Website.

If you have any further questions please do not hesitate to contact Scott Richardson, C.E.T. at 905-735-1700 ext. 2222 for further information.

10 LOT GRADING AND DRAINAGE

10.1 General

The following statements of objectives of the Lot Grading and Drainage Policy are used as the premise upon which the policy contained herein is based.

- a) To ensure the establishment and certification of a grading scheme for developed lands by means of relative ground elevations in accordance with good drainage practices.
- b) To determine a point in time up to which the City and Subdivider/Owner/Builder are responsible for the establishment of the grading scheme and after which the maintenance of the grading and drainage becomes the owner's responsibility.
- c) To ensure maintenance of, or acceptable revisions to, the grading and drainage scheme established on lands developed under this policy through the Building Permit applications for future works which require excavation. (i.e. garages, in-ground swimming pools, building additions, etc.)
- d) To ensure surface drainage is self-contained within the lands being developed and to ensure surface drainage from or on adjacent lands is accommodated or not adversely affected.
- e) The grading, drainage and building construction should be such that unanticipated storm water does not enter the sanitary sewer system.
- f) The grading and drainage on lands developed under this policy should be congenial with nature and thus preserve the natural terrain as much as possible.
- g) Grading and drainage schemes shall include erosion and sediment control measures.

10.1.1 Requirements Under the Policy

All subdivision agreements for the development of subdivisions in the City of Welland shall include the following requirements. These requirements apply to the entire subdivision with the exception of blocks that are under site plan control.

10.2 Roof Leaders and Sump Pumps

Roof drain connections to storm laterals are expressly prohibited. Roof drains should discharge at the front of the building to grade, with 900mm drain extensions, with flows directed away from the building foundations, as per the Ontario Building Code, and without erosion or inconvenience to others. Unless otherwise approved by the City Engineer, run-off from roof drains and sump pumps shall flow across pervious ground surfaces prior to entering the storm system.

NOTE; All foundation drainage must be directed to sump pumps and discharged to grade or a storm lateral if so installed.

10.3 Design Requirements

10.3.1 Step 1 - Creation and Approval of Subdivision Design Plans

- a) The initial step is the preparation, as part of the subdivision design plans, of a subdivision grade control plan. These plans outline the development and construction of the subdivision, which includes the overall drainage pattern through the establishment of relative surface elevations as well as how the subdivision will appear upon completion.

While the subdivision design plans include various drawings, the preceding plans may be of particular importance to the lot grading and drainage design as per the requirements of the corresponding Subdivider's Agreement:

- Trees to be Saved and Protected Plan;
- Rehabilitation and Naturalization Plan;
- Landscaping Concept Plan/Planting Plan;
- Subdivision Grading Plan.

Upon completion of the subdivision design plans, they will be submitted to the City for comments and once the comments have been addressed the City will stamp and approve the subdivision design plans. There may also be other municipal, provincial, federal and conservation regulatory authorities whose approval is also required.

- b) At the time of execution of the Subdivider's Agreement, the Subdivider shall convey to the City, at the Subdivider's expense and in a form satisfactory to the City Solicitor, easements for all rear yard catchbasins.

10.3.2 Step 2 - Creation and Approval of the Subdivider's Agreement

The Subdivider's Agreement is the legal document that clearly defines the roles, responsibilities and obligations of the City of Welland and the Subdivider with respect to the land outlined in the agreement. The Subdivider's Agreement is typically drafted in conjunction with the preparation of the subdivision design plans, to ensure the Subdivider's Agreement accurately encompasses all the design elements, and is only finalized upon the approval of the subdivision design plans.

The Subdivider's Agreement outlines among other things, the documentation and procedures required by the City to facilitate:

- onsite commencement of primary grading work;
 - the release of a lot from the Subdivider's Agreement;
 - the return of security deposits.
- a) At the time of execution of the Subdivision Agreement or phase thereof, the Owner shall deposit with the City as surety for carrying out the provisions of the Subdivision Design Plans the amount as approved by council from time to time on a per lot basis, with a maximum deposit as per Appendix B, 'Schedules' - Cost Estimate for the entire subdivision or phase. The deposit shall be either cash or a Letter of Credit, and the format shall be in accordance with Appendix B. This Owner's Grading Deposit shall be returned upon inspection by the City to ensure that this work has been

properly carried out as set out in Section 10.3.3, subject to any amounts retained under item (b) below.

Land development cannot commence until the Owner has posted all applicable deposits or letter of credits.

- b) Should the City become aware of drainage problems arising as a result of non-compliance to the requirements of this policy, the City will inform the Owner's Design Consultant who will be responsible for resolving the problem, acting as the Owner's Representative for all engineering and drainage works. **The City will give the Design Consultant fourteen (14) days notice to correct the problems.** Upon failure of the Design Consultant to rectify the problems, the City will inform the Owner or his consultant that the City will use the Owner's Grading Deposit to cover the costs of rectifying the problems. Any remedial work in excess of the amount of the Owner's Grading Deposit shall be the responsibility of the Owner.

10.3.3 Step 3 - Land Development

Once all the appropriate documents are complete and have received all required approvals, construction may begin. The standard order of construction is as follows:

- i. Installation of erosion control measures;
- ii. Area grading operations including earthworks;
- iii. Installation of deep services (sanitary, storm and water);
- iv. Preparation of the road base, including granular, base asphalt and concrete curb and gutter.

Depending on site-specific conditions certain stages may not be relevant and upon written consent from the City of Welland, as discussed on a case-by-case basis, may be omitted.

10.3.3.1 Erosion Control

Shall be based on NPCA specifications.

10.3.3.2 Owner's Responsibility

It shall be the Owner's responsibility to ensure that the grading of lots within the subdivision is in accordance with the latest revision of the Subdivision Lot Grading Plan. In this regard, the Owner shall ensure that all offers to purchase lots within the subdivision include a statement outlining the responsibility of subsequent owners to adhere to the Lot Grading and Drainage Policy.

10.3.3.3 Revisions to Subdivision Design Plans

- a) Prior to acceptance of the subdivision by the City, any requests for revision to the Subdivision Lot Grading Plan to accommodate proposed or as constructed deviations from the plan, shall be made in writing by the Design Consultant, to the City.
- b) A revision will only be granted by the City if deemed reasonable.

- c) A fee shall be charged to the Subdivider for any revisions required in this regard; the amount of the fee shall be dependent upon the extent of the required revisions.

10.3.3.4 Rough Site Grading Requirements

The Consultant shall certify that the following grading works shall be undertaken and maintain throughout construction:

- a) Installation, to grade, of all rear yard catchbasin including connections to the main sewers;
- b) Rough grading of all lots and blocks to generally conform to the Subdivision Grade Control Plan;
- c) Construction and maintenance of erosion control devices deemed necessary (subject to weather conditions).

10.3.3.5 Detailed Lot Grading Requirements

- a) Prior to the issuance of a Building Permit for each lot, the Builder or Owner shall submit to the City two (2) copies of the Detailed Lot Grading Plan, as approved by the Consultant along with the building permit application.
- b) The plans must take into consideration, among other factors the suitability of the type of building proposed for a lot.
- c) Since the Subdivision Design Plans were prepared without the knowledge of the individual house designs, the City will recognize minor variations, as approved by the Consultant, provided that they do not alter the intent of the above Grade Control Plan.
- d) Where a revision to the Subdivision Lot Grading Plan is necessary to accommodate a proposed grading plan which does not conform to the Subdivision Lot Grading Plan, the Builder/Owner must submit a written request to the Consultant for a revision. The request shall be accompanied by written assurance that the owners of adjacent lands have no objection to the proposed revision.

10.3.3.6 Construction Recommendations

- a) Top of Foundation wall is consistent with the requirements of the Grading Plan and a minimum 200 mm above finished grade for vinyl or wood installations.
- b) Prior to commencing framing and prior to the City backfill inspection, the Professional Engineer or Ontario Land Surveyor, who approved the detailed lot grading plan, shall ensure that the top of the foundation is at the correct elevation and a signed verification is to be submitted to the City Building Division.
- c) If an error is found at this stage, before proceeding with construction:
 - i) the error is to be corrected, or;
 - ii) if it is not reasonably possible to correct the error, then the builder must submit a request for a revision, in writing,

through the Subdivider in accordance with Section 10.3.3.2 of the policy.

- iii) Failure to follow the above procedure (c) may result in forfeit of the lot grading deposit. The grading of a lot shall be considered to be complete when the building has been erected and the lands have been graded and seeded/sodded. Seeding/sodding shall be done within two months after occupancy of the building, or by the following July 1st should occupancy take place in the winter months.

10.3.3.7 Lots of Record

Lots of Record are lots which have been created through severances or an alternate process. The lots will have urban services, i.e. sanitary and water. The Building Division will require the submission of two (2) copies of the Lot Grading Plan, prepared and stamped by an Engineer or Ontario Land Surveyor.

The lot grading deposit will be required at the time of submission of the plan.

Upon completion of the lot grading; a Certificate of Conformance will be required from the issuing Engineer or Ontario Land Surveyor prior to release of the lot grading deposit.

10.3.3.8 Unserviced Lots

Unserviced Lots are lots without sanitary and water, located within the urban area of the City. In order to service a lot, a short-form agreement shall be required to address the sanitary and water servicing of the lot and work within the municipal right-of-way. Fees may be required for the servicing of the lot and shall be based on the cost of construction.

The Building Division will require the submission of two (2) copies of the Lot Grading Plan, prepared and stamped by an Engineer or Ontario Land Surveyor. A lot grading deposit will be required at the time of submission of the plan.

Upon completion of the work, a Certificate of Conformance for the lot grading will be required from the issuing Engineer or Ontario Land Surveyor as well as the Service Record forms for the sanitary and water services. Their information will be required prior to the release of the deposit.

10.3.3.9 Vacant Lots in Assumed Subdivisions

From time to time the City will assume subdivisions which have not been fully built-out. In those situations, the City will require submission of two (2) copies of the Lot Grading Plan, prepared and stamped by an Engineer or Ontario Land Surveyor. The Lot Grading Plan shall be in accordance with the overall Lot Grading Plan approved by the City at the time of Subdivision design approval. A lot grading deposit will be required at the time of submission to the Building Division. Upon completion of the lot grading, a Certificate of Conformance will be requested from the Engineer or Ontario Land Surveyor prior to the release of the lot grading deposit.

10.4 Approvals

10.4.1 Step 4 - As-Constructed Detailed Lot Grading Plan

- a) Upon completion of the grading as noted in Section 10.3.3.5, prior to landscaping or fencing, the Builder shall be required to submit to the Consultant one copy of the As-constructed Lot Grading Plan, prepared by a qualified Ontario Land Surveyor or Professional Engineer, which shall indicate the house footprint and the finished elevations of the grade control points as shown on and in accordance with the approved Detailed Lot Grading Plan.
- b) This As-constructed Detailed Lot Grading Plan shall be prepared and certified by a Professional Engineer or an Ontario Land Surveyor, certifying that it corresponds to the approved lot grading plan. The Owner's Consultant will require the as-constructed Lot Grading Plan and upon his approval forward the plan to the City.
- c) Where a revision to the Subdivision Lot Grading Plan is necessary to accommodate completed grading not in conformance with the Detailed Lot Grading Plan and Subdivision Lot Grading Plan, the Builder must submit the request for a revision, in writing, through the Subdivider in accordance with Section 10.3.3.2 of the policy.
- d) The Consultant will appropriately stamp and sign the as-constructed Lot Grading Plan once they are satisfied that the as-constructed Lot Grading Plan complies with the approved Lot Grading Design Plan.

10.4.2 Step 5 - Grading Conformance Certificate

- a) The As-constructed Grading Plan of a lot that has been certified by the Design Consultant and accepted by the City to be in conformance with the latest revision of the Subdivision Lot Grading Plan shall be known as the Grading Conformance Certificate.
- b) The date on the Grading Conformance Certificate shall mark the end of the Owner's/Builder's responsibility to the lot grading and the beginning of the Owner's responsibility to maintain the grading and drainage scheme.
- c) Individual conformance certificates may not be issued. If the City Engineer deems it appropriate a number of lots will be confirmed together. Numerous properties can drain to a certain catch basin and these properties shall be known as drainage areas. These separate drainage areas will be submitted together.

10.4.3 Step 6 - Building Permits

Once the Owner has received a signed and stamped copy of the approved Detailed Lot Grading Plan from the consultant, the plan is submitted to the City for the purpose of obtaining a building permit. Before a building permit can be issued certain criteria must be met:

- The subdivision plan has been registered with the Land Registry Office;
- All storm and sanitary sewers and watermain lines are installed and operational;
- Roads are complete to base asphalt;

- All valves have been located in operated in the presence of City Staff;
- The Detailed Lot Grading Plan has been approved by the Consultant and submitted to the City;
- City Staff have commissioned the watermain;
- Street and traffic sign installation is complete.
- An Agreement with the governing electrical Utility is in place.
- Approval from the Hydro Electrical Authority that the street lighting is installed and energized.

10.4.3.1 Release of Owner's Grading Deposit

- a) When Grading Conformance Certificates have been issued for a substantial number of lots within the subdivision, the City will release the Owner's Grading Deposit. The City will retain that amount required as surety for the remaining uncertified lots in accordance with Section 10.3.2 (a).
- b) Annually thereafter, the City may release further portions of the Owner's Grading Deposit in the same manner as described above.
- c) The balance of the Owner's Grading Deposit less any amounts retained under Section 10.3.2 (a) will be released upon acceptance of the subdivision by the City. The City will not accept a subdivision until the following matters have been complied with:
 - i) the completion of all works stipulated in the Subdivision Agreement;
 - ii) the issuance of Grading Conformance Certificates for all lots within the subdivision for which building permits have been issued. Acceptance of the subdivision may be granted if Grading Conformance Certificates have not been issued for some of these lots. In this event, the City may retain a sufficient portion of the Owner's Grading Deposit to cover these uncompleted lots.

10.4.4 Step 7 - New Building Construction After Acceptance of the Subdivision

Building Construction may start once the building permit is issued for a property. The construction of a new house on a lot within the subdivision after acceptance of the subdivision by the City shall be subject to all the technical and grading requirements and design guidelines for the Detailed Lot Grading Plans and approved As-construction Plans

The Permit Applicant will be required to submit to the City a (as per council approval and noted in Appendix B, 'Schedules' - Site Plan Control Application) Lot Grading Deposit along with two (2) copies of the Detailed Lot Grading Plan, prepared by a Professional Engineer or Ontario Land Surveyor, with the Permit Application for approval by the City. Upon completion of the grading, an As-constructed Detailed Lot Grading Plan, prepared by a Professional Engineer or Ontario Land Surveyor, will be submitted by the Applicant to the City for acceptance. Upon acceptance by the City, the Lot Grading Deposit may be returned to the Applicant.

10.4.5 Step 8 - Subdivider Requests Final Inspection from the Consultant

Once the house is fully constructed and the property is fine graded, top-soiled and sodded, the Subdivider will secure the services of the Consultant responsible for reviewing all the data and the Consultant will either certify or reject the lot grading upon inspection.

If the inspection reveals any deficiencies, the Owner's Consultant will notify the Subdivider what further work is required. It is the Owner's responsibility to ensure the required work is completed in accordance with their Consultants recommendations.

Upon completion of the required work, the Owner's Consultant will re-inspect the property. This process will continue until the Consultant certifies the work conforms to the Detailed Lot Grading Plan.

10.5 Grading Design Requirements and Guidelines

10.5.1 Technical Requirements for Subdivision Grade Control Plans

Subdivision Grade Control Plans shall be prepared in conformance with this section, and with regard to the Design Guidelines. All elevations are relative to the geodetic benchmark elevation(s).

The Subdivision Grade Control Plan shall be prepared at a scale of 1:500, be on a standard A1 (596mm x 841mm) size sheet and clearly illustrate the following:

- a) legend, north direction, name of subdivision, location, description and elevation of geodetic benchmark(s), date of preparation of plan and any subsequent revisions clearly identified in the revision column;
- b) property boundaries and lot and block numbers or designations;
- c) existing and proposed contours and elevations;
- d) existing elevations and drainage from lands adjacent to the subdivision and, if the drainage from these lands is towards the proposed subdivision, the existing information shall be obtained to the high point of this drainage or at least to the adjacent street;
- e) location of sewer maintenance holes, hydrants, sidewalks, catchbasins and rear yard catchbasins;
- f) proposed elevations at the centre line of the finished road and relative data showing distances and slopes between these elevations;
- g) existing and proposed ground elevations at the corner of each lot or block with suitable intermediate elevations as required;
- h) existing and proposed ground elevations at the house;
- i) location, elevation and longitudinal slopes at the invert of swales together with rear yard catchbasins elevations and drainage arrows showing the direction of swale drainage;
- j) any drainage obstruction such as berms, retaining walls, sound barriers, silt traps, vegetation, etc.;
- k) artificial or natural impoundments;

- l) existing trees and vegetation, as they affect proposed drainage and catchbasin schemes and which are to be saved;
- m) if any lots or blocks are not suitable for the construction of certain types of buildings or features (i.e. split-levels, walkout basements, etc.) because of the sanitary sewer depth, grading and drainage pattern, this should be clearly indicated on the plan.

10.5.2 Technical Requirements for Individual Site and Grade Control Plans

Detailed Lot Grading Plans for individual lots shall be prepared in conformance with this section, and with regard to the Design Guidelines set out in Section 10.5.3 of the policy.

1. The plan shall be at a scale of 1:250.
2. The plan shall be on a legal size sheet, or a standard A1 size sheet if required.
3. The plan shall include the identification and certification information consistent with the overall grading plan.
4. The plan shall clearly illustrate the following:
 - a) General Information
 - i) shape and dimensions of lot;
 - ii) house location and shape (type);
 - iii) abutting street names;
 - iv) existing or proposed curbs, catchbasins, sidewalks, utility plant, hydrant, driveway location(s) within the municipal road allowance;
 - v) proposed patios, decks, porches, chimneys, environmental control units (air conditioners, heat pumps, etc.), swimming pools, etc.;
 - vi) existing trees to be saved;
 - vii) location of proposed entrances, and outside stairwells;
 - viii) location of easements for rear yard catchbasins and leads or other utilities.
 - b) Drainage and Grading Information
 - i) specific lot grading with drainage arrows to indicate direction of surface drainage flow;
 - ii) location and direction of flow of swales;
 - iii) existing or proposed geodetic ground elevations at each corner of the lot, at high and low points, at changes in slope of ground, where a change in the direction of flow occurs, at the corners of the house and at entrances to outside stairwells;
 - iv) existing or proposed elevation of the centre line of road, sidewalk or top of ditch abutting the subject lands;
 - v) elevations of top of footing, top of the foundation wall, and ground floor;
 - vi) elevation for finished garage floor and entrance elevations, if different from floor elevations;

- vii) elevation of the rim of any rear yard or on site catchbasin(s) to which flow from the lot is directed;
- viii) ground elevations on adjacent lands, if drainage is to cross these lands to a catchbasin or other outlet of these lands;
- ix) location of downspouts and direction of discharge. (NOTE: No downspouts shall be directed so as adversely affect adjacent property or outlet directly to driveways);
- x) location of terraces and retaining walls;
- xi) any slope that exceeds three horizontal to one vertical, including side slopes of swales;
- xii) elevation of top step of outside stairwells (to be a minimum of 150mm above the adjacent ground).

10.5.3 Design Guidelines for Subdivision Lot Grading

The following guidelines should be considered when designing the grading on lots. Many of the guidelines set out are illustrated in the sample drawings in Appendix C, 'Standard Drawings'.

- a) All surface drainage, including downspout discharge, shall be directed away from the building(s), including adjacent existing or future buildings.
- b) Unless otherwise stipulated, the lot shall have a minimum slope of 2% and a maximum slope of 6%. Average slopes between 6% and 10% can be achieved by combining a 6% maximum slope with a 3 to 1 slope at the rear of the lot/block.
- c) Should the average slope exceed 10%, the City Engineer may require a retaining structure to reduce the grade differential to an acceptable amount. Notwithstanding the above, elevation changes exceeding one metre in height shall require a retaining structure.
- d) The maximum slope between the dwelling unit and the side property line shall be 3 to 1. Otherwise, appropriate steps or retaining structures shall be required.
- e) Terraces between lots shall be located on the lower lot with the top of the terrace slope at the lot line.
- f) Drainage flows shall be confined to defined swales which shall be located as far from the dwelling units as possible.
- g) Swales shall have a minimum grade of 1.0%, and a maximum grade of 6%.
- h) The swale depth shall not exceed 500 mm.
- i) The side slope of swales shall not be steeper than 3 to 1.
- j) The alignment of swales shall not change more than 45 degrees unless otherwise approved.
- k) Rear yard swales shall be located:
 - i) Centred on the rear lot line if adjoining lots are within the same subdivision;
 - ii) Entirely on the subject lot if the adjoining land is outside the subdivision.

- l) The maximum length of a rear yard swale from the high point to the outlet (rear yard catchbasin or other suitable outlet shall be 50 m unless otherwise approved. This maximum length of swale may be varied at the discretion of the City Engineer depending on lot size, topography, and drainage area.
- m) Generally speaking, all semi-detached and minimum sized lots shall have rear lot drainage schemes. Side yard swales shall only be permitted with approval of City Engineer, if the construction of such swales can be accommodated properly.
- o) The minimum grade on driveways shall be 2%. The desirable maximum grade on driveways shall be 7% with an absolute maximum grade of 10%.
- p) Depressed driveways sloping toward the dwelling units are not allowed.
- q) Side and back entrances and stairwells shall not be located adjacent to main swales or downspouts.
- r) Window-wells should preferably be avoided but where they are required, special care shall be taken to ensure that surface water from overland flow and other sources such as downspouts shall not enter these wells. The edge of the window-well shall be higher than the adjacent ground.
- s) The brick-line must be at least 150 mm above the finished grade. If Vinyl or wood is used the minimum shall be 200mm.
- t) Downspouts must discharge to grade with 900mm extensions to grass surfaces.
- u) Downspouts must direct the flow away from the building, not onto walks or driveways and not onto adjacent property.
- v) All lots must conform to a split drainage design unless otherwise approved by the City Engineer.