Site Servicing, Grading and Drainage Plan - Town of Oakville

In Compliance with Sentence B-9.14.6.1 of the Ontario Building Code, every site is to be graded so that water will not accumulate at or near the building under construction and will not adversely affect any adjacent lots. The lot grading criteria has been primarily developed to provide guidance to residential development in subdivisions. The basic principles do however apply to lots under site plan development. It should be noted that the grading design for any residential buildings containing three or more dwelling units and for any development other than residential, shall be performed by a licensed professional engineer. Where there is a landscape plan proposed as part of the site plan application, the professional engineer designing the site servicing, grading and drainage plan shall review the landscape plan and shall provide the Town of Oakville with a declaration advising that the proposed landscape works are in conformance with the site servicing, grading and drainage plan. Once construction is completed, the professional designing the site servicing, grading and drainage plan shall provide the Town of Oakville with a Final Lot Grading Certificate and any required Retaining Wall Certificates.

A detailed site servicing, grading and drainage plan must accompany all building permit applications to the Town of Oakville. Building permits will not be issued until the Town of Oakville Development Services Department is satisfied with the proposed site servicing, grading and drainage plan.

Prior to a site servicing, grading and drainage plan submission, contact the following external authorities for specific design criteria should the subject lot abuts or contains:

- A watercourse/valley/creek block regulated by the Halton Region or Credit Valley Conservation Authority
- Ontario Hydro property

- CNR or CPR
- Pipelines or pipeline easements
- If a driveway is proposed on a municipal road within 180m of an intersection with a Provincial Highway (QEW, 403, 407)
- Frontage or access to Regional Roads (Region of Halton or Peel)
- Land adjacent to Lake Ontario (Ministry of Natural Resources and Halton Region Conservation Authority)

The lot grading of landscaped areas and parking lots shall provide a safe path for the drainage route to the surrounding Town of Oakville right of way during storms exceeding the design storm event.

Town of Oakville requires that all roof leader down spout locations are to be indicated on site servicing, grading and drainage plans. Roof leaders can not connect directly to the storm sewer and shall be located in accordance with Town of Oakville Standards.

Town of Oakville also requires that Landscape Plans and Tree Preservation Plan to be reviewed and approved by the consulting Engineer to ensure conformance with approved site servicing, grading and drainage plans. Site servicing, grading and drainage plans shall be designed in accordance with Town of Oakville Development Engineering standards, including Town of Oakville Safe Side Slope requirements.

Town of Oakville Requirements for Site Servicing, Grading and Drainage Plan:

- Information Required on Site Servicing, Grading and Drainage Plan shall be submitted as one lot per letter or ledger sized sheet at a scale of 200:1.
- A key plan with north arrow is required in the upper right hand corner of the sheet. Provide a title block with the name of builder / developer / subdivision, registered plan number, architect /designer company, scale of drawing and date of preparation.
- Provide the as-built location and elevation of storm, sanitary and water services, elevation of culverts, drainage ditches, sidewalks and location of approved erosion and sedimentation controls.

- location of sump pump, discharge point and any dry wells. Provide the existing elevations as per topographic survey indicating existing buildings, drainage patterns and finished first floor elevations for all buildings on adjacent lots.

- Indicate the drainage for all adjacent and proposed lots using arrows to show the direction of drainage and swale locations, length and slope percentage.
- Indicate the house type and elevations of the finished first floor, top of foundation wall, basement floor, underside of the footings and service lateral invert at lot line.
- Indicate the elevations at the lot corners, landings, garage slab and all entrances (indicating the number of risers), the existing roads and catchbasins. Refer all elevations to a geodetic Town of Oakville benchmark.
- Indicate the location, length and percent slope of proposed driveways
- Provide complete details of proposed retaining walls and noise/privacy fencing.

All site servicing, grading and drainage plans must include:

- Erosion and sediment controls
- Town of Oakville bench mark description and elevation
- All abutting streets, right-of-ways, easements
- All utilities on existing roads including storm, sanitary, water, Bell, hydro and gas
- All proposed services to the building (note that all services including Bell and hydro must be provided underground from the existing source to the building)
- Tree Inventory/Arborist Report and Tree Removal/Tree Preservation plan
- Existing grades of abutting roads and proposed grades through new entrances, elevations on a grid throughout the site including lot corners, and a minimum 15m external to the site so that drainage patterns may be evaluated
- All surface drainage routes including swales, ditches, watercourses and their invert elevations and flow direction (flood plain limits)
- The overall surface drainage pattern on the lot is to be shown by flow arrows

- Location of on-site storm sewers, manholes and catchbasins including size and class of pipe and grades
- Ground floor elevations of the building and ground elevation at all building corners, entrances, catchbasins, tops and bottoms at slopes and other locations as required to establish the surface drainage system
- Location of roof downspouts and details of roof hoppers (flow controls)
- Location and size of driveways and culverts
- A legend detailing all symbols used (i.e. catchbasins, retaining walls, road, property line, building line, existing and proposed elevations)

Information regarding the design criteria and standard for sanitary and water servicing must be obtained from the Region of Halton Public Works Department.

The following Town of Oakville design criteria applies to overall residential subdivision drainage control and lot/site specific drainage design.

- Lot specific elevations shall conform with the Town of Oakville approved subdivision control plan.
- All swales shall have a minimum depth of 150mm and a minimum slope of 2% for a maximum length of 60m before outfall to sewer, creek or Town of Oakville/Region of Halton road/block.
- In general, where an upper lot drains onto a lower lot, an interceptor swale shall be located on the lower lot, adjacent to the rear lot line in such a manner as to divert the drainage to the side yard swales of the lower lot.
- Window wells, where required, shall be indirectly connected to the weeping tile system using 100mm drainpipe filled with 19mm clear stone.
- All downspouts shall discharge onto approved sodded areas using splash pads for erosion control. Direct connection of the downspouts to the storm system must have prior approval from the Town of Oakville (high density). The location of the discharge is not to interfere with access or pose a safety hazard.
- Where sump pumps are required, pumps must discharge directly to a storm sewer or a Town of Oakville/ Region of Halton drainage ditch. Discharge of a sump pump to a sideyard is not acceptable.

Town of Oakville Lot Grading Criteria

All yard surfaces front and rear shall have a minimum slope of 2%. Rear yards are to have a maximum grade of 5% for a minimum apron length of 5m distance from the rear face of the dwelling. The maximum slope allowed on any yard surface side, front and rear shall be 3 parts horizontal to 1 part vertical (3:1). Driveway slopes shall be a minimum of 1% and a maximum of 7%. There shall be a 0.6m wide path at a 2% slope away from the foundation around one side of the building, except where side yard setbacks from lot lines do not permit. This flat area allows for a walkway to access the rear of the house.

On-site storm water quantity controls are required where drainage restrictions are established or post-to-pre runoff control is warranted. The modified Rational Method or equivalent may be used for the analysis of simple sites. OTTHYMO/INTERHYMO modeling may be required where warranted or another Model may be dictated by the Watershed Study.

Flow control devices shall be installed on the upstream side of control manholes located on the street line; preferred method is a two-piece adjustable diamond orifice. Orifice openings must have a diameter of no less than 75 mm in order to prevent clogging of the opening. Storm connections from the building roof and foundation drains must be made downstream of the manhole and/or catchbasin inlet controls. Roof drains should be selected to provide the required flows to obtain the designed detention storage.

Pond limits and available storage are to be depicted on the site servicing, grading and drainage plan drawings. Maximum ponding depth in parking areas is not to exceed 250mm, and no ponding shall be in a fire route. No five-year ponding (nuisance) on pavement: use landscaped areas, roofs or underground structures. Lots are to be designed to contain all runoff with major overland spills diverted to approved channels or municipal right-of-ways. External drainage shall be accepted without upstream impacts. An overland drainage route shall be clearly marked on drawings.

The grading of landscaped areas and parking lots shall provide a safe path for the overland drainage route to the surrounding municipal right of way during storms exceeding the design storm event.

If the existing topography requires an infiltration gallery (drywell) to manage the stormwater for a proposed development, the Town of Oakville requires a geotechnical report to support a drywell design brief.

All existing services, utilities and abutting lots are to be shown in dotted lines. All proposed services shall be shown with the solid line. The locations of all service connections shall be shown on the site servicing, grading and drainage plan. The Town of Oakville requires stamped engineering on-site storm water management report and stamped engineering site servicing, grading and drainage plan drawings for site plan approval and to issue building permit.

All retaining walls are to be constructed of a minimum material being pressure treated wood conforming to CAN/CSA-080.1-M89. Retaining walls may also be constructed of poured in place concrete, pre-cast concrete or stone.

Retaining walls exceeding 1m in height are required to have plans submitted to the Town of Oakville Development Services Section stamped by a professional engineer and showing the proposed retaining wall construction.

Fences or rails will be required on all retaining walls that exceed 0.6m in height. The fence must be a minimum height of 1.2m. All retaining walls are to have the face of the wall placed on the lot line in such a manner that any tiebacks etc. are located entirely within the upper lot.

The Town of Oakville requires one tree must be planted for every healthy tree removed. A $300 security deposit is required by the Town of Oakville for each tree to be planted. Replacement trees must be planted on the same property as those removed.

Where it is not possible to properly grow replacement trees on the lot, the security deposit may be donated to the Town of Oakville to plant on nearby Town of Oakville lot. The minimum tree replacement size is a 30-mm caliper (3 cm width) deciduous tree, or a 150-cm high coniferous tree in a five-gallon container, balled in burlap, or in a wire basket.

Final lot grading certificates signed by a registered professional engineer must be submitted to the Town of Oakville upon completion of the lot grading.

Peak regulated post-development flow must not exceed pre-development conditions. The site servicing, grading and drainage should be designed such that the post-development site stormwater run-off is equal to or less than the pre-development site stormwater run-off. If the project will increase the impervious area of a lot, then more stormwater is likely to runoff from the site than before. To prevent this extra stormwater runoff, a filtration-retention device large enough to retain/detain the added stormwater runoff shall be designed and installed.

Site servicing, grading and drainage plan incorporating appropriate stormwater management shall safely convey the site drainage from the Regulatory Storm (defined as the larger of the 100-year storm or the Regional Storm), without causing flood damage and with minimum inconvenience. The minimum on-site runoff retention requires to retain all runoff from a small design rainfall event - typically 5 mm through infiltration, evapotranspiration & rainwater reuse.

All erosion and sediment control plans shall be designed in accordance with the Town of Oakville, Region of Halton and Credit Valley / Halton Region conservation authority guidelines for Erosion & Sediment Control.

We prepare engineered Site Servicing, Grading, Drainage & Erosion/Sediment Control Plans that would fulfill all engineering requirements of the Town of Oakville, Region of Halton and/or Credit Valley/Halton Region Conservation Authority.

Having vast experience in municipal engineering design, we offer effective, innovative and cost-efficient Engineered Site Servicing, Grading and Drainage Plans, Erosion & Sediment Control Plan, and Stormwater Management Plan to our clients.

Our licensed professional engineers' proficiency in conceptualizing municipal engineering designs and plana in accordance with our clients' requirements has made us very successful. Our licensed professional engineers prepare thorough, detailed, and clear "Engineered Site Servicing, Grading and Drainage Plan, Erosion & Sediment Control Plan, and Stormwater Management Plan" to suit our client's needs while also adhering to engineering design requirements of the Town of Oakville, Halton Region, and/or Credit Valley / Halton Region Conservation Authority and submit to the Town of Oakville for review and approval to obtain site plan approvals and building permits.

Site Servicing, grading and drainage plan incorporating applicable Erosion & Sediment Control Plan as per applicable Town of Oakville and Region of Halton Engineering Guidelines/lot grading requirements prepared and stamped by our Licensed Professional Engineers would be ready in 10 business days upon receipt of all the required information and documents. It is important to note that many assumptions, methodologies require varying degrees of engineering judgement that may, or may not, be easily adopted by the reviewing public agencies through their critical review of our reports, plans and drawings. No additional charges for required revisions & changes to our drawings and plans due to the comments from the authorities upon reviewing the drawings prepared by us. Following supporting documents may be required to prepare the required site servicing, grading and drainage plan:

- CAD drawing of the site plan showing the following details:
  - Proposed building location, including porches and steps/stairs
  - Proposed/existing road layout including curbs, sidewalks
  - Proposed /existing fencing including acoustical, privacy and flankage fencing

•CAD drawing of the topographic survey showing the elevations of the following:

Spot elevations within the project site, minimum 5 m outside the lot boundaries including curbs, sidewalks and centre line of the road and at reasonable intervals within the lot and along the boundaries including driveway, lot corners, intermediate points of grade change, the door step elevation and finished floor elevations of adjacent lots

Lateral invert elevations of water, sanitary, storm service connections at the street line.

Grate and invert elevations of all catchbasins

Elevations of any existing swales, ditches, culverts, creeks, watercourses, ravines, and drainage easements/routes complete with inverts.

•Architectural & Structural Drawings showing

Proposed elevations including finished first floor, basement floor, top of foundation wall, underside of footing and garage entrance.

Engineered fill and extended footing information, where required

Sill elevations at side entrances where elevation differs from the finished first floor

The number of risers at each entrance

Proposed roof downspout locations

Proposed Retaining Walls

•Arborist Report & Landscape Architect Drawings Showing

Existing trees to be preserved

Proposed locations for all tree protection zones

•Plan-profile drawings of municipal Sanitary Sewers, Storm Sewers and Watermains

•Record of locates from Ontario One Call (On1Call) for existing utilities.

•If applicable, Location of well(s) and septic system(s) with offsets from the proposed development.

•If applicable, locations of any regulatory flood lines or development limit lines (i.e. setback and slope stability limits from the Credit Valley / Halton Region Conservation Authority).

For Additional Information Contact:

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