

Development Engineering
Procedures and Guidelines Manual
Addendum #1

Town of Oakville

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Drainage Requirements for Land Development

1. Roof Leader Criteria

The Development Engineering Procedures and Guidelines, Section 3.1.3.12 is modified as follows: Line items 1 and 2 to be disregarded; Line item 5 is amended in this Section.

- a) Downspouts shall discharge to grade via concrete splash pads, directed away from the building to prevent erosion and percolation to the weeping tile. Downspouts shall not typically discharge in between houses, only to the front and rear yards. Rainwater harvesting is encouraged, provided any overflow pipes or overflows meet the requirements of this section.
- b) Downspouts shall not have pipes ending at a mutual property line and allowed to discharge onto another property.
- c) Downspouts shall not be directed towards an adjacent property where there is no property line intercept swale; or the volume / velocity may impact that property or interfere with access or pose a safety issue.
- d) For higher density developments or where required by the Town, downspouts may be connected to a municipal storm sewer with permission from the Town in its sole discretion.
- e) Roof leader downspout locations are to be indicated on all plot plans, site grading and site plans.

2. Drainage Criteria (Lot Grading and Drainage)

The Development Engineering Procedures and Guidelines, Section 3.1.4.2 is modified as follows: The following is added to the Section.

- a) Grading and drainage shall provide positive surface drainage directed away from any buildings towards lot line swales, graded to drain to an acceptable outlet point/s.
- b) Drainage shall be directed to an approved outlet location. Where Split or Front-to-Back grading design is utilized to outlet surface drainage; and runoff will or is likely to drain onto another property, a private or municipal rear lot catchbasin is required to be constructed to collect the water and outlet it to the storm sewer or municipal ditch or other suitable outlet. Easements may be required. Should this not be feasible, other approved methods may be proposed. On older infill residential lots, pass-through grading (a portion of a higher lot drains through a lower lot) is not permitted unless specific permission from the Town is obtained.
- c) Where required by site plan, engineering site plan or site alteration, a Stormwater Management Report/ Brief is required.

3. Drainage Criteria (Sump pumps)

The Development Engineering Procedures and Guidelines, Section 3.1.4.2 is modified as follows: The existing sump pump information is to be disregarded. The following is added to the Section.

- a) Sump pumps shall discharge via pipe directly to a storm sewer, where available.
- b) Where a storm sewer does not exist along the frontage or flankage of a property, discharge via pipe shall be directly typically to the back slope of a municipal roadside ditch.
- c) Where a basement excavation is lower than the Static Water Level, sump/s may run continuously therefore discharge to a dry-well (see section 4) located on private property minimum 5.0m from all buildings with an overflow pipe to the storm sewer or back slope of a municipal ditch is required.
- d) Sump pump discharge to grade is only acceptable should the outlets in a), b) and c) not be available. When outletting to grade the discharge pipe must be in either the front or rear of the building. Outletting to the side yard is not permitted.

4. Drainage Criteria (Dry-wells)

The Development Engineering Procedures and Guidelines, Section 3.1.4.2 is modified as follows: The following is added to the Section.

4.1 Why use a Dry-well?

A dry-well is used when conventional storm drainage methods do not work or could be challenged. One of these challenges is the increase of hard surfaces on a property. Typically drainage from a lot is required to be self-contained and directed to an approved outlet point. I.e. overland swale to the municipal right-of-way or municipal ditch, a rear lot storm sewer catchbasin, etc.

4.2 How does a Dry-well Work?

A dry-well takes the immediate stormwater surface (rainwater) runoff and stores it for a short period of time as it allows infiltration or percolation into the adjacent soils. The time taken for discharge depends upon the dry-well shape and size and the surrounding soil's infiltration characteristics. Dry-wells can be constructed in different forms and from a range of materials.

4.3 When can a Dry-well be used?

To utilize a dry-well, there are certain things that must be addressed, these being:

- a) Are there conventional methods of drainage available to you?
- b) The soils at the location for use are tested and have satisfactory infiltration rates (Percolation Test required). **Please note: Dry-wells do not work in all soil types.**

- c) The water table is sufficiently low to allow stormwater percolation.
- d) The site is not on filled ground.
- e) The site does not slope towards the building.
- f) All dry-wells must be no closer to any buildings than 5 metres as per the Ontario Building Code (O.B.C.) If you are close to your property boundaries you should discuss this with your neighbour.

If you cannot meet the above criteria, a dry-well will not be considered for approval.

4.4 Dry-well Design criteria

- a) A report, stamped, signed and dated by a qualified professional engineer is required. The report shall provide data from a percolation test indicating that the soils are suitable, drawdown time of 48 hrs., the sizing is correct for a 25mm rainfall event, a suitable run-off coefficient and a factor of safety has been determined.
- b) Detailed grading drawings, stamped, signed and dated by a qualified professional engineer with the pertinent details of the drainage system shall be included to facilitate the intended construction including but not limited to; drainage area is to be clearly illustrated on the plan, detailed grading information including the "high point" split on all property lines, all downspout locations draining to grade, etc.
- c) The dry-well shall be lined with filter fabric and filled with 19mm clear stone or bigger.
- d) Every dry-well must have one area drain. Dry-wells in excess of 8 m² must have additional drains on the surface to provide for greater surface drainage, a pump out point and to serve as a reminder for current and future owners that the facility exists.
- e) An overflow route from a dry-well may be required, where deemed necessary, by the Town.

5. Lot Grading Certificates (Infill Lots)

The Development Engineering Procedures and Guidelines, Section 3.1.4.8 is modified as follows: The following is added to the Section.

Upon completion of the development works for infill lots, the owner shall supply the Town a Lot Grading Certificate, in the Town approved format, stamped by a Civil Engineer (P.Eng.), Landscape Architect (OALA) or an Ontario Land Surveyor (OLS); certifying that the grading conforms to the approved grading plan/s and that there are no adverse impacts on neighbouring properties.

Municipal SWM Pond Design Guidelines

(Urban Stormwater Management Ponds: Criteria & Design Guidelines)

The Development Engineering Procedures and Guidelines, Section 3.1.3.17 is modified as follows: The following is added to the Section.

1. Urban stormwater management ponds include vertical retaining walls along a portion of its perimeter rather than traditional earthen slopes. Urban ponds can provide benefit through aesthetic enhancement to the public SWM pond areas and reduction of the overall pond footprint, resulting in an overall greater developable area. For applications in the Town of Oakville, urban ponds must comply with the following placement requirements:
 - a) The location of the urban ponds are limited to urban core areas;
 - b) The adjacent land use to the urban wall component must be designated as high density; and
 - c) Urban pond retaining walls must not be located adjacent to Natural Heritage System features such as Stream Corridors, Core Preserve Areas and Linkages.
2. The design guidelines for urban stormwater management ponds contain several additional considerations to those for conventional ponds, including retaining wall design, safety railings and maintenance considerations. Table 1 below presents the design guidelines for urban ponds. In addition, the following considerations must be addressed:
 - a) The proponent must demonstrate that the pond will meet the North Oakville Creeks Subwatershed Study (NOCSS) targets for water quality, erosion and flood storage;
 - b) The proponent is required to meet the Town of Oakville Stormwater Management Pond Policy and Ministry of Environment guidelines for safe side slopes, vegetation and fencing;
 - c) The proponent must provide justification for the urban pond that recognizes the above noted additional considerations as well as community benefits.
3. The Development Engineering, Engineering & Construction and Parks & Open Space departments at the Town of Oakville must be consulted for approval of all Urban Stormwater Management Pond applications. The Development Engineering Department shall work in consultation with Parks and Engineering & Construction to coordinate staff comments on urban pond applications and streamline the review process.
4. Existing stormwater management guidelines from the Town of Oakville and Ministry of Environment must also be addressed when designing urban ponds.
5. For Urban Stormwater Management Ponds the following information, in addition to the existing requirements in the Development Engineering Procedures and Guidelines must be applied:

Urban Pond Design Guidelines

Shape / Size	<ul style="list-style-type: none"> • Shape – minimum 3:1 length: width ratio, preferred 5:1 ratio or greater • The proponent must demonstrate that the pond will meet the NOCSS targets for water quality, erosion and flood storage • Shape of pond and placement of retaining walls shall allow for safe egress rescue efforts in case of emergencies as well as maintenance access (see typical cross section detail)
Pond Block Size	<ul style="list-style-type: none"> • Pond size shall be determined by total flood volume, required side slopes and required shape, including retaining walls • Pond size shall include a perimeter buffer of 7.5m beyond High Water Level (100yr/Regional; highest design elevation) to allow for pathway, maintenance, upland planting and a buffer zone from private property, not to exceed 10% slope
Pond Depth	<ul style="list-style-type: none"> • Total pond depth not to exceed 5.0m, measured from top of pond to the bottom of pond (i.e., including the permanent pool)
Pond Lining	<ul style="list-style-type: none"> • For retaining wall sections, an additional form of lining may be required to minimize water entering area behind wall structure • Retaining wall structures should allow for backfill drainage to relieve hydrostatic pressure behind the wall • Pond lining standards may be subject to change depending on individual site locations, soil composition, water table elevation and sensitivity of receiving water course
Retaining Walls	<ul style="list-style-type: none"> • Retaining walls shall be permitted on a maximum of 50% of the pond perimeter, as measured along the permanent pool • The pond forebay must have at least one side not adjacent to a retaining wall structure to facilitate maintenance access • Retaining walls to be set no closer to the permanent pool than the edge of the '7 to 1' slope zone above the wetted perimeter of the permanent pool. This area shall function as a safety bench to allow safe egress from the pond. • Retaining wall designs shall be stamped by a professional structural and/or geotechnical engineer licensed in the Province of Ontario, and shall be inspected by a licensed geotechnical engineer during installation • Site specific constraints, including soil conditions, must be identified and considered in the feasibility and design of the retaining wall • Retaining walls shall be designed for a 75 year life cycle • Retaining walls shall be designed to withstand live loads from vehicular traffic and heavy maintenance equipment as required, as well as horizontal loadings from safety railings and/or traffic barriers • Double (i.e., tiered) retaining walls are not appropriate due to additional maintenance access and costs

<p>Retaining walls Cont.</p>	<ul style="list-style-type: none"> • The impact of ice and winter weather conditions on retaining walls should be considered in the design • Retaining walls should be north facing where possible to reduce impacts on water temperature and water quality for the pond itself and receiving drainage creeks • Retaining wall designs for urban ponds will be subject to additional review by Town structural staff, and may be subject to additional review fees • Retaining walls should not be placed adjacent to Natural Heritage System features such as Stream Corridors, Core Preserve Areas and Linkages
<p>Safety Railing</p>	<ul style="list-style-type: none"> • Railings shall be installed at the top of retaining walls for public safety • Railings shall be designed in accordance with Town and Ontario Building Code standards for “guard” design
<p>Traffic Barriers</p>	<ul style="list-style-type: none"> • Traffic barriers may be required at the top of retaining walls for ponds in close proximity to roadways. Traffic barriers shall be designed in accordance with the Ontario Highway Bridge Design Code, CSA 56
<p>Maintenance Access</p>	<ul style="list-style-type: none"> • Layout of pond must allocate a minimum of 7.5 meters of open space behind the retaining wall for access of maintenance vehicles. • Access to functional design elements of the SWM facility such as the inlet and outlet must be available. • A designated area for removed sediment materials should be included in the site layout • The location of maintenance access roads must consider the location and context of pedestrian access points as well as trails/sidewalks.
<p>Utilities</p>	<ul style="list-style-type: none"> • If retaining walls are placed alongside roadways, public utilities may be affected • Utilities are recommended to be placed above saturation level of permanent pool to facilitate future maintenance and replacement • Electricity, telephone or cable utilities lines shall not be permitted near pond retaining wall due to potential moisture impacts • Anchors for retaining walls may affect the location of utilities
<p>Pond Landscaping</p>	<ul style="list-style-type: none"> • Trees shall be located in such a manner that the roots do not adversely impact the integrity of pond retaining walls • Where possible, aquatic benches are encouraged around the permanent pool perimeter to support aquatic vegetation and to provide for egress • Landscaping features where retaining walls terminate should be designed to deter access to permanent pool edges
<p>Public Pathways</p>	<ul style="list-style-type: none"> • Path materials should be chosen in accordance with pond aesthetic planning and enhance the overall design of urban ponds and surrounding area • The location of public pathways should consider the movement of pedestrians to enhance the overall urban character of the pond including look-outs and seating areas.

<p>Pond Aesthetics</p>	<ul style="list-style-type: none"> • Consideration for aesthetic enhancement should be incorporated into the approved Landscape Plan to assist with urban pond integration. This plan may include planning of walkways, attractive railings, specific materials or installation methods to be used for retaining wall structures, etc. • Consideration for the prevention/discouragement of graffiti and vandalism of retaining walls and other pond structures should be included in the pond design, landscaping and O&M plans
<p>Perimeter Fencing</p>	<ul style="list-style-type: none"> • Considerations for upgraded fencing alternatives will be made in areas of public use. The fence is property of the Town of Oakville and private gates are prohibited. • Fencing must suit traffic types in the area (i.e., vehicular traffic, pedestrians).
<p>Public Information Signage</p>	<ul style="list-style-type: none"> • All ponds shall include public signage to identify the general operation of the pond, information about the facility, nuisance algae, routine maintenance and frequency of sediment dredging, and list the public restrictions for recreational use. These signs have been prepared by the Town. The developer shall acquire the signs from Town staff who will dictate the number of signs required and their specific locations for placement
<p>Safety Signage</p>	<ul style="list-style-type: none"> • Town of Oakville approved signs should be located at all public points of access to the urban pond facility • Signage should be in accordance with the Town of Oakville’s Stormwater Management Policy, and installed in consultation with the Town staff
<p>Monitoring</p>	<ul style="list-style-type: none"> • Monitoring shall be required per Monitoring Mediation Agreement (July 26, 2007) for water quality, quantity and erosion • Access to sediment forebay, inlet and outlet structures shall be maintained for monitoring purposes. The location of these monitoring sites in areas with retaining walls should be avoided • Performance monitoring of urban ponds shall include provision for the inspection of retaining walls for material and workmanship deficiencies • Refer to Town standards for additional monitoring, maintenance and assumption requirements

Changes to Site Plan procedure (with respect to No Site Alteration Permits)

The following procedure is for clarification of the Town’s 2015 policy of not allowing site alteration or tree removal to occur prior to site plan approval.

Pre-con meeting

The applicant needs to be made aware:

1. If the project (Will or Will not) result in a formal site plan agreement.

2. That no works to advance their development may proceed on the site until final site plan approval has been granted; unless written approval for advance works, due to mitigating circumstances, has been granted by the Director of Development Engineering or his/her delegate.
3. Erosion and siltation controls are now to be shown on the Grading and Drainage plan/s and an Erosion and Sediment Control Detail plan.
4. Following Site Plan approval, the Owner shall provide written notice to the Town's Permits and Inspection Section via Serviceoakville, 48 hours in advance, of the intention to commence active works on the site.

The following notes shall be included on the drawings:

1. *All erosion and sediment controls are to be installed according to approved plans prior to commencement of any earth moving work on the site and shall remain in place until all disturbed areas are stabilized with the intended final ground cover.*
2. *Erosion and sediment controls shall be inspected by the builder/ developer:*
 - a) *Weekly*
 - b) *Before and after any predicted rainfall event*
 - c) *Following an unpredicted rainfall event*
 - d) *Daily, during extended duration rainfall events*
 - e) *After significant snow melt events*
3. *Erosion and Sediment controls shall be maintained in proper working order at all times. Damaged or clogged devices shall be repaired within 48 hours.*
4. *Where a site requires dewatering and where the expelled water can be freely released to a suitable receiver, the expelled water shall be treated to capture suspended particles greater than 40micron in size. The captured sediment shall be disposed of properly per MOECC guidelines. The clean expelled water shall be freely release to a suitable receiver in a manner that does not create downstream issues including but not limited to erosion, flooding – nuisance or otherwise, interference issues, etc.*
5. *Existing storm sewers and drainage ditches adjacent to the works shall be protected at all times from the entry of sediment/silt that may migrate from the site. For storm sewers: all inlets (rear lot catchbasins, road catchbasins, pipe inlets, etc.) must be secured/ fitted with siltation control measures. For drainage ditches: the installation of rock check dams, siltation fencing, and sediment containment devises must be installed to trap and contain sediment. These siltation control devises shall be inspected and maintained per items 2 and 3 above.*

6. *In the event of a spill (release of deleterious material) on or emanating from the Site, the Owner or Owners agent shall immediately notify the MOECC and follow any prescribed clean up procedure. The Owner or Owners agent will additionally immediately notify the Town.*

Procedure - Upon receipt of application

1. Planning to circulate to Development Engineering as normal.
2. Development Engineering to review plans and reports including the addition of erosion and siltation controls and cost estimate for the controls – inclusive of a 50% addition for maintenance (The cost estimate shall be used to define the securities).
3. Development engineering to ensure that the above notes are on the plan.
4. Development Engineering to review the arborist report for tree removals/ protection on site; and protection of trees on municipal property and cost estimate for securities. The security shall be defined as the value of the municipal trees being protected around this site, plus the value of the hoarding to be installed on the site.
5. If there is to be no formal site plan agreement, securities shall be in the form of an L/C or certified cheque. Securities will be held by Finance and noted within AMANDA in the SITE folder or L/C folder.
6. If there is a formal site plan agreement, then the appropriate schedules within the Site Plan agreement must reference the requirement for the posting of these securities.
7. Once the site plan has obtained Site Plan approval, Planning shall notify Permits and Inspections via approval letter that the site has achieved final approval and that the site can now be considered active. Permits and Inspection staff will then inspect and monitor the site.