

	Roadside Ditch Alteration within the Public Road Allowance	
	Policy Category:	
	Policy No.: 2018-109-01	Implementing Procedure No.:
Approving Authority: Council		Effective Date: Feb 3, 2020
Approved or Last Reviewed Date: NA		Next Review Year: February 2025 or sooner if required
Area(s) this policy applies to: Operations Department, By-Law Enforcement, City's Right of Way		Owner Department: Operations Department
Related Policy(ies): Road Occupancy By-law 2018-109		

Note: Questions about this policy should be directed to the Owner Department.

1. Purpose Statement
The City of Markham has responsibility for the maintenance and repair of highways under municipal jurisdiction by virtue of clause 44 (3) (c) of the Municipal Act, S.O. 2001, c.25. In addition, The City has passed road occupancy by-law 2018-109 with respect to Highways, under clause 11 (3) (1), and with respect to Drainage and Flood Control under clause 11 (3) (6) of the Municipal Act, S.O. 2001, c.25. Consistent with the purpose of the Ontario Water Resources Act, the City must have regard for protection and management of Ontario's waters, including stormwater management. Ditches provide an important part in the overall stormwater management systems throughout the City and therefore, any proposed alterations to a roadside ditch or stormwater conveyance system must be subject to an appropriate approval process. The purpose of this policy is to document the circumstances and general process requirements for the City to permit filling or alteration of drainage ditches and to remove unauthorized existing ditch infilling or alteration within the municipal road allowance. Adherence to a policy will insure ditch alterations are undertaken in a controlled and consistent manner.
2. Applicability and Scope Statement
Subject to this policy are requests received by the City from property owners for roadside ditch alteration or identification of unauthorized ditch infilling/alteration through observations by City, resident enquiries or as drainage or other issues arise.
3. Background
An open-channel or ditch cut into the natural terrain along the Municipal Road Allowance is the most economical method to create drainage collection/conveyance systems for draining the road bases and collecting roadway surface water and groundwater within the road allowance. Ditches collect and convey stormwater runoff and snowmelt from both municipal and public properties efficiently and require minimum maintenance. Roadside ditches are a necessary component of any semi-urban or rural road cross section and provide several stormwater management functions such



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as downstream peak flow reduction, improved water quality of receiving water bodies and reduction of erosion at outlets, in addition to preventing surface runoff from pooling on the roadways and/or surrounding property. The Provincial Policy Statement promotes green infrastructure to enhance stormwater management through ecological and hydrological functions.

A roadside ditch also provides snow storage area below the elevation of the road surface thereby reducing the potential for snow drifting over the road and providing a snow stockpile area.

Ditches provide a critical outlet for public and private surface drainage, roadway sub-grade drainage. Ditches have a greater drainage capacity than piped systems and promote the natural recharge of groundwater by allowing surface flows to infiltrate underground through the ditch bottom and banks. The vegetated cover of ditches assist with the natural filtering and settlement of particulates from runoff, thus improving the quality of stormwater and snowmelt. Open ditches are much less sensitive to the adverse impacts associated with foliage, debris, and sedimentation during storm events. Moreover, properly designed ditches provide peak flow attenuation and reduce flow velocities that otherwise contribute to erosion problems at the outlet.

When a ditch is filled, altered or replaced with a pipe, the stormwater management benefits are compromised. Moreover, the culvert inlets are susceptible to blockage by branches, foliage, debris and sedimentation, which further decrease their effectiveness and in time are subject to deterioration and collapse. Ditch alterations specifically infills, immediately decrease the capacity of the roadside drainage system and with each subsequent ditch infill the capacity deficiency is compounded. The disruption of flow from a single property can negatively impact the integrity of the entire drainage area resulting in localized ponding and flooding of roadways and properties. Poorly drained road bases advance the deterioration of roadway surfaces resulting in the costly maintenance and/or replacement of asphalt treatments. The cumulative impact of many ditch infilling projects within the same drainage area is likely to increase downstream peak flow rates, create erosion problems at outlets and degrade the quality of runoff reaching surface water body receivers.

4. Definitions

Refer to Road Occupancy By-Law 2018-109 for additional definitions pertaining to this policy.

City Staff means employees of the City of Markham.

Conveyance means the positive grade, connectivity and capacity requirements to transmit storm water from one area to another.

Council means the municipal Council of The Corporation of the City of Markham.

Culvert means a corrugated steel pipe (CSP), concrete pipe or box structure, or CSA approved 320 kPa PVC or HDPE pipe located within a roadside ditch to facilitate vehicular or pedestrian access crossing of a Ditch usually at a Driveway/entrance.

Director means the Director of Operations Department for the City or designate.

Ditch means a natural or artificial watercourse ranging from a depression, or swale, to an open channel that conveys storm water runoff from both public and private properties. The primary purpose for a roadside ditch is to drain the road surface, road base and sub-grade as well as the surface drainage of the boulevard.

Ditch Alteration means the addition of earthworks, landscaping works and pipes to a ditch system to eliminate a defined ditch conveyance system for storm water.

Ditch Infill means the replacement of a ditch with a culvert/pipe covered by earth and sod.

Drainage basin means the extent of the area served by a ditch drainage system.



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Driveway/entrance means portion of the boulevard improved for the purpose of providing vehicle access to an adjacent property.

Encroachment means Any device, equipment, object, structure or vegetation that is located on, over, along, across, under or in a highway, or any portion thereof, but excluding any vegetation planted or any device, equipment, object, or structure installed and maintained by the City.

Foundation Drainage means groundwater collected by the weeping tiles installed around the footings of a dwelling, collected in an internal sump pit and discharged to the surface by a sump pump to drain overland or conveyed in a pipe underground to discharge into the ditch system.

Municipal Road Allowance means the property dedicated as public road allowance by authority of the City of Markham.

Owner means the registered owner of land abutting a Municipal Road Allowance.

Proponent means the Owner of the land that is subject to the application for altering/filling a roadside ditch.

Right-of-Way means that portion of the Municipal Road Allowance ordinarily used for the location of roads, sewers, watermain, sidewalks and walkways.

Roadside Ditch means the open channel within the Municipal Road Allowance and installed for the purpose of collecting and channelling road and adjacent surface drainage runoff or snowmelt.

Storm water quality means the condition of the surface water from a sediment or pollutant loading perspective that requires addressing prior to discharge to a receiving watercourse.

Storm water quantity means the volume of surface water required to be collected and conveyed by a ditch system or a piped sewer system.

Sub-grade Drainage means the groundwater collected by the granular road base structure.

Swale means shallow grassed drainage channels with gently sloping sides.

Work means the removal of a ditch alteration and/or reinstatement of an open-channel roadside ditch.

5. Policy Statements

A. GENERAL PROVISIONS

1. No Person shall alter, fill, pipe, or encroach roadside ditches without first having obtained a Roadside Ditch Alteration permit.
2. The City may consider permitting the piping or filling of certain portions or sections of a roadside ditch only for purpose of driveway/entrance or if it has been determined to be beneficial to the operation or maintenance of the City road.
3. The City will not permit the piping or filling of a roadside ditch if the basis of the request is:
 - a) for aesthetic purposes to suit the abutting private property owner's current or proposed landscaping; or
 - b) to be of benefit to the abutting private property owner only (i.e., ease of lawn mowing)
4. No tile drainage, foundation drainage pipe, sump pump discharge or roof leader pipe shall discharge directly into a municipal Ditch, except where no suitable alternative outlet exists on the lot.

5. Ditch infill shall not be permitted where high ground water table conditions exist and is dependent on the ditch for outlet and conveyance.
6. All temporary ditch alterations encountered through construction activity or project shall be removed as a consequence of the work, and replaced by an appropriately sized open ditch.

B. DITCH INFILLING

1. Maintaining an existing ditch alteration or consideration of the implementation of a ditch alteration request will be at the sole discretion of the Director and may be in consultation with Engineering and Environmental Services Departments as deemed necessary.
2. The City will require the proponent of a ditch alteration proposal or maintaining an existing ditch alteration to undertake a storm drainage assessment to determine ditch piping and filling impacts on the drainage system area. This assessment is to be undertaken by a qualified and experienced professional engineer, at the expense of the proponent.

Although some engineering assessments will vary in extent regardless of the complexity of the study, the content of the assessment is to include as a minimum, but not be limited to, the following:

- Confirm the ditch system is not a Municipal Drain;
 - Determine the impact of ditch alteration on wetlands and fish habitat as well as existing municipal infrastructure.
 - Determine the feasibility of altering the ditch system;
 - Identify the drainage basin or catchment area and tributary;
 - Identify outlets, routing and grade requirements;
 - Identify allowable and design flows;
 - Confirm outlet capacity;
 - Determine the impact on the outlet;
 - Determine storm water quantity & quality requirements;
 - Determine erosion control requirements;
 - Assess ditch alteration impacts for major storm event system response and performance;
 - Maintain, or improve, existing levels of service;
3. Once storm drainage assessment report reviewed and ditch infilling is allowed by the City, the proponent shall submit a detailed engineering drawing for ditch infill that must include as a minimum, but not be limited to the following:
 - Existing ditch and surrounding area elevations including road centreline and edge of pavement for a minimum distance of 30m in either direction of the property limits and/or along the existing ditch/ drainage system as applicable.
 - Proposed elevations of the pipe inverts, catchbasin and other applicable storm sewer structures inverts and top of grate elevations, as well as finished grade elevations to provide positive surface drainage to the proposed catchbasin lids.
 - Catchbasins and/or approved inlet structures must be provided at each property line within the ditch infilling limits.

- Interim cleanout/access structures where required.
 - Typical cross-section(s) must be provided to demonstrate that drainage may be accommodated for the private properties, boulevard ditch and roadway.
 - Method for collection of municipal road base drainage
 - The minimum cover over the pipe obvert shall be 0.15 metres.
 - The minimum grade of the pipe exceeds 1% to provide sufficient cleaning velocity.
 - The finished elevation of fill material in the ditch must be shaped to form a swale, provide a minimum positive grade of 0.5% and remain a minimum of 450 mm below the elevation of the edge of the road surface.
 - Storm sewer pipe sizing calculations based on a delineation of the total catchment area for stormwater received by the existing ditch.
 - Outline the entire downstream drainage corridor/ system to the ultimate outlet watercourse/ water body, demonstrating sufficient capacity in the downstream system.
 - Note that pipe installations shall be completed in accordance with the requirements of the latest version of the Ontario Provincial Standard Specification No. 421 (OPSS 421) and all related specifications.
4. If the engineering assessment and/or design does not address all of the above noted criteria to the satisfaction of the City, the permit application will be denied.
 5. The City will determine whether or not an Environmental Compliance Approval (ECA) is required from the Ministry of the Environment, Conservation and Parks (MECP) for ditch infilling works in accordance with the Ontario Water Resources Act, Section 53 (Sewage Works). If ECA is required, The City will notify the Owner accordingly. As the proposed works would be within a City owned road allowance, the Director would be required to sign the ECA application form. However, the property Owner would be subject to the MEPC fees associated with the application.
 6. The adjacent property owner that has been granted permission to alter the roadside ditch with piping and/or filling, or the connection of a foundation drain, does not have ownership of the affected area of the road allowance. The private property owner has no rights to claim the alteration, piping and/or filling of the roadside ditch is permanent, should the City require that the drainage system be returned to an open ditch.
 7. If the City has granted a private property owner permission, by issuing a permit, to alter, pipe or fill the adjacent roadside ditch, all the installation and material costs are the responsibility of the proponent.
 8. If the Director determines that additional work, such as ditch regrading, rock removal or brushing is required to properly convey stormwater to a sufficient outlet as a result of the proposed ditch alteration, all costs for the work by the City Forces will be borne by the proponent.
 9. Where a proposed piping or filling of a roadside ditch crosses or is located above an existing underground utility;

- a) the proponent must (at their expense) obtain a clearance letter or certificate from the owner of the underground utility that provides satisfactory evidence that the proposal will not be detrimental to the existing utility; and
- b) any required extensions or modifications to the existing utility to accommodate the grades of the proposed piping or filling of the ditch will be provided at the expense of the proponent.

C. EXISTING DITCH INFILL

1. Any existing ditch infill within the Municipal Road Allowance deemed to be negatively impacting municipal assets or the collection and/or conveyance of stormwater along its length or within the surrounding area shall be removed and replaced by an appropriately sized open ditch.
2. Any existing ditch infill culvert identified as collapsed or having experienced a structural failure be permanently removed and replaced with the appropriately sized open ditch.
3. In the event of removal and ditch channel reinstatement, there will be no compensation to Owners who may have financed the original installation of a ditch infill adjacent their property.
4. In the event that a situation or condition arises which requires the City to remove, either in whole or in part, the piping and/or fill materials, the drainage system will be reinstated to an open ditch condition. No compensation for the previously installed works will be provided.

D. DRIVEWAY/ENTRANCE OVER A ROADSIDE DITCH

1. No person shall construct, extend or alter an entrance/driveway or install or extend a culvert pipe within a highway under the jurisdiction of the City without the Owner first receiving Roadside Ditch Alteration permit issued by the City.
2. All works related to constructing a new entrance/driveway or modifying an existing entrance/driveway over a roadside ditches shall be carried out in accordance with the approved permit, plan and the City's standards and/or special conditions.
3. Pre-construction inspection is conducted by the City to assess the proposed entrance and determine final location, the diameter, gauge and length of the culvert and any required special conditions.
4. The Owner is responsible for all aspects of construction, including but not limited to; supply of a new culvert pipe and backfill material, rip rap, labour, and traffic control. Work may be done by the owner or a contractor engaged by the owner; however, ultimate responsibility for installation rests with the owner.
5. Driveway culverts shall be Corrugated Steel Pipe with a 2.0 mm minimum thickness or High Density Polyethylene (HDPE). Pipe diameter shall be a minimum of 400 mm, and the length shall satisfy City requirements.

6. The invert or base of the culvert may be partially buried / embedded into the ditch bottom to a maximum depth of 10% of the culvert diameter, or as needed to allow sufficient cover and maintain ditch gradient to the satisfaction of the City.
7. Elevation of culvert must be such that positive drainage is maintained throughout Ditch network and no standing water is created as a result of the installation.
8. Where a culvert installation may pose a chance of frost heave, due to lack of cover material, and pipe capacity is not at issue, the City may approve the use of a culvert less than 400 mm in diameter.
9. The Contractor/Owner shall contact Operations Departments at 905-475-4714 or OCS@markham.ca to arrange a site inspection of the culvert installation prior to placement of backfill material to confirm installed elevations and that suitable bedding and cover have been provided for the pipe prior to placement of backfill. At least two business days is required for notifying the City.
10. Pipe installations shall be completed in accordance with the requirements of the latest version of the Ontario Provincial Standard Specification No. 421 (OPSS 421) and all related specifications.
11. Property owners with ditches adjacent to their property are expected to:
 - Maintain the driveway culvert and ditch area;
 - Remove leaves and other debris as they accumulate in the ditch;
 - Avoid altering grades, yard slopes, or obstructing the drainage system in any way; and
 - Comply with Keep Markham Beautiful (Maintenance) By-law 2017-27 (e.g. section 5.0) accordingly.

E. APPLICATION AND APPROVAL PROCESS

1. The proponent of a proposal to alter, pipe and/or fill a roadside ditch will be required to submit a Roadside Ditch Alteration application form along with the application fees, support documents such as an engineering assessment report, approved engineering lot grading plan, detailed engineering design, etc. A Letter of Credit/Security Deposit may also be required, if requested by the Director.
2. City Staff will conduct a site inspection and field review of the proposal and meet with the proponent if necessary.
3. If the Director is satisfied that the ditch alteration, piping and/or filling can be completed in accordance with this policy, the Permit will be approved, but may be subject to conditions specific to the application.
4. If the Director determines that an engineering assessment report is required to assess the impact of the alteration, the proponent will be advised of this requirement and the application will be held until that assessment can be completed to the satisfaction of the Director.



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5. If the proposal is approved and prior to pipe installation, the proponent will contact the City staff for an inspection.
6. Upon completion of the installation, the proponent will contact City staff for a final inspection. If the Director is satisfied that all the requirements of the permit have been met, and no corrective measures are required, the proponent's Security Deposit will be returned if applicable.
7. In the event that the Director determines there are deficiencies to the installation or damage to City road allowance and corrective action is required the Director will provide written notice to the proponent. If the proponent fails to correct any identified deficiencies or repairs within 30 days of receiving the written notice, the City may draw from the proponent's Security Deposit to recover its cost to correct the deficiencies and/or include costs onto the property tax roll. Any remaining Security Deposit balance will then be returned to the proponent.
8. Where an existing driveway crossing culvert has reached or exceeded its scheduled service life, an application may be made for the city to replace culvert at the city's expense.

F. CONTRAVENTIONS

1. Non-compliant or unauthorized ditch alteration, piping and/or filling that has taken place before the adoption of the Roadside Ditch Alteration Policy shall be considered for removal through a progressive approach. Initially, only those alterations that are identified, at City discretion, as either;
 - i) contributing to a drainage or road maintenance issue, or
 - ii) within the project limits of a capital works or ditching project.
2. Non-compliant or unauthorized ditch filling that was installed before adoption of the Ditch Alteration Policy will be removed as part of a systematic approach to roadside ditching projects undertaken by the City of Markham.
3. Non-compliant or unauthorized ditch alteration, piping and/or filling that takes place after the adoption of the Roadside Ditch Alteration Policy will be enforced in accordance with this policy. In some situations, the Owner or Proponent may apply for a Roadside Ditch Alteration Permit, pay the required fees and have the works inspected by the Director. If the Director determines that the ditch alteration can remain, the proponent will be required to provide plans and photos to be kept on file. If the Director determines that the ditch alteration must be removed because of a potential drainage or road maintenance issue, the cost of removal shall be borne by the responsible property owner or added to the property tax roll.

G. DELEGATED AUTHORITY

The Director shall have delegated authority to:

1. Interpret and apply this policy at their discretion
2. Revise or amend technical or administrative nature of this policy as deemed necessary

6. Roles and Responsibilities

This section identifies the principal roles and responsibilities assigned to City Departments for the policy. More detailed roles and responsibilities may be captured in a separate procedures document.

1. Operations Department will:

- Be the initial point of contact for Roadside Ditch Alteration related enquiries.
- Receive inquiries regarding roadside ditch drainage concerns/requests.
- Coordinate of interdepartmental activities involved in policy creation and implementation.
- Process and manage applications for Roadside ditch alteration permits.
- Determine applicable permit fees and amount of a Letter of Credit/Security Deposit if required.
- Educate permit applicants regarding policy.
- Investigate and identify any altered roadside ditch which may not be in compliance with conditions of the policy or permit.
- Direct roadside ditch drainage issues to the road supervisor.
- Provide supporting information in determining technical requirements.
- Assess existing non-compliant ditch alterations.
- Direct enforcement requirements.
- Replace existing Driveway/entrance culvert that has reached or exceeded their scheduled service life.

2. Environmental Services Department will:

- Review Engineering Assessment Report and/or Design Infill Design and Provide comments

3. By-Law Enforcement & Licensing will:

- Provide supporting advice regarding enforcement of policy
- Enforce by-laws, as required, in the event of non-compliance of a property owner to remove ditch alteration.

4. Financial Services will:

- Recover non-payment of fines assessed by Enforcement and Inspections through property taxes, as required.
- Recover costs incurred by the City to remove a non-compliant ditch alteration through property taxes, as required.