

Council Information Memo

To: Mayor Burton and Members of Council

From: Philip Kelly, Manager – Design & Construction
Jose Herrera, Manager – Works Operations
Paul Allen, Manager – Infrastructure & Asset Management Planning

CC: Jane Clohecy, CAO
Phoebe Fu, Community Infrastructure Commissioner

Date: November 26, 2024

Subject: Town Practices – Ditches and Driveway Culverts

Comments:

This memo responds to a request raised by Council on May 25, 2020, for the following information:

1. That staff report on what the stormwater management standards are for ditches and culverts in residential areas including the design standards for depth, width and slope of ditches, the accepted materials in ditches such as plantings, stones or retaining walls, the process for property owners to make any changes to adjacent ditches as well as water retention and conveyance standards for ditches.
2. That staff update the Town of Oakville web site to include this information in a user friendly and accessible format.
3. That staff report on options, such as the use of a standard leaflet distributed to property owners, to improve proactive communications about the Town's standards, maintenance plans and upcoming works for stormwater ditches and culverts particularly on residential streets including for regular inspections

These items are addressed as Items 1, 2 and 3 below respectively.

Prior to addressing items 1, 2 and 3, staff have provided a brief overview of ditches in the town; as well as how the town addresses issues pertaining to ditches from both an operational budget and capital budget perspective. Information on property owner responsibilities is also provided.

Overview and Benefits of Ditches

The town has approximately 240 km of roadside ditches. Some of these areas also have storm sewers with storm inlet catchbasins located in the ditches. In the urban portion of Oakville, the majority of ditched streets are located south of Highway 403.

Ditches are a form of green infrastructure within the town. Ditches convey flows in both the more frequent small rainfall events and the larger rainfall events. They also provide some opportunity for infiltration and filtering of stormwater.

The Stormwater Master Plan recommends that “the natural ditched ROWs should be maintained where possible, as they provide an informal water quality benefit that should be formalized at the time of roadway reconstruction.” As part of the design of capital road projects, a green infrastructure review is completed. If existing roadside ditches cannot be maintained due to the other infrastructure requirements of the project, other opportunities to incorporate green infrastructure into the road design are reviewed.

In March 2022, staff presented an overview and roadmap of the town-wide Rainwater Management Plan (RWMP). The purpose of the RWMP is to develop a long-term infrastructure plan and supporting financing strategy that maintains the infrastructure’s state of good repair and identifies improvements to help build resiliency against impacts of climate change. Overall, this plan looks at the various types of stormwater infrastructure that help to mitigate flooding, control erosion, reduce pollution and maintain water quality. The RWM Strategy is the overarching umbrella that combines all the work that has been done to date and develops a comprehensive way of planning and implementing stormwater-related infrastructure into the future. It will encompass all town-owned tangible and natural assets related to pipes, culverts, shoreline, harbor shoreline, piers, riverine systems, stormwater ponds as well as ditches.

As part of the development of the RWMP, a formalized program was created to assess, identify improvements and develop a capital program for ditch and drainage solutions. Details of the new program were outlined in Appendix A of the July 27, 2023 Town-wide Rainwater Management Strategy Update report: [Appendix A Townwide Rainwater Management July Update](#)

Ditch Works Through Town Operating Budget

The Town allocates funding through the annual Operating Budget for ditch maintenance. This work is limited to small sections at specific property addresses based on resident’s complaints submitted for review by Works Operations staff in the priority sequence received. This funding is used to improve drainage in ditches where poor drainage has been observed by staff and/or the public. Typical work undertaken through the Operating Budget includes:

- Removal of sediment / debris from ditches via regrading the ditch line to create a positive slope. This work may also include the removal of material placed in ditches by property owners to flatten grassed areas.
- Cleaning sediment and obstructions out of driveway culverts. While driveway culvert maintenance is a private property owner responsibility, the Town will clear driveway culverts, where required, to facilitate better drainage in areas of concern.
- Removing vegetation such as shrubs or trees which may grow at culvert inlets, outlets or within the ditches themselves.
- Cleaning/flushing of privately owned driveway culverts in an area where no ditch regrading is being completed to assist in establishing positive flow in the drainage system may be carried out by the Town if the homeowner has difficulty clearing any blockages.

Ditch Works Through Town Capital Budget

Ditch improvements undertaken through the town's operational budget are typically shorter sections of ditches where minor works can improve the flow in the ditch system. Capital budget projects are used where ditch improvements over longer sections are required as outlined below:

- Ditches/driveway culverts may be rehabilitated or reconstructed over larger areas through the capital program where the ditches are associated with a roadway where other capital works are being undertaken on the roadway.
- Ditches/driveway culverts may be rehabilitated or reconstructed through a capital project focussed on improving stormwater conveyance in an area. For example, the Saville Area Stormwater System Improvement Study will include ditch regrading over long distances along with driveway culvert works.

Further, the town has identified several areas, or "hotspots", where ditch drainage has historically been problematic. These ditch drainage "hotspots" will, for the most part, be addressed through the delivery of capital projects by the town. The table in Figure 1 lists the ten ditch drainage hotspots, in no particular order, and the capital project that they are associated with.

Through the capital budget the town currently allocates funding regularly for ditch "condition assessments," and this practice started in 2022 and continued through to 2024. The ditching program condition assessments will identify drainage issues and recommended remedial measures in prioritized roadside ditches. Remedial measures can include ditch regrading, culvert adjustments/replacement, etc. The remedial measures will be implemented through regular maintenance activities or through individual capital projects starting in 2025 at select locations.

APPENDIX B – DITCH DRAINAGE HOTSPOTS

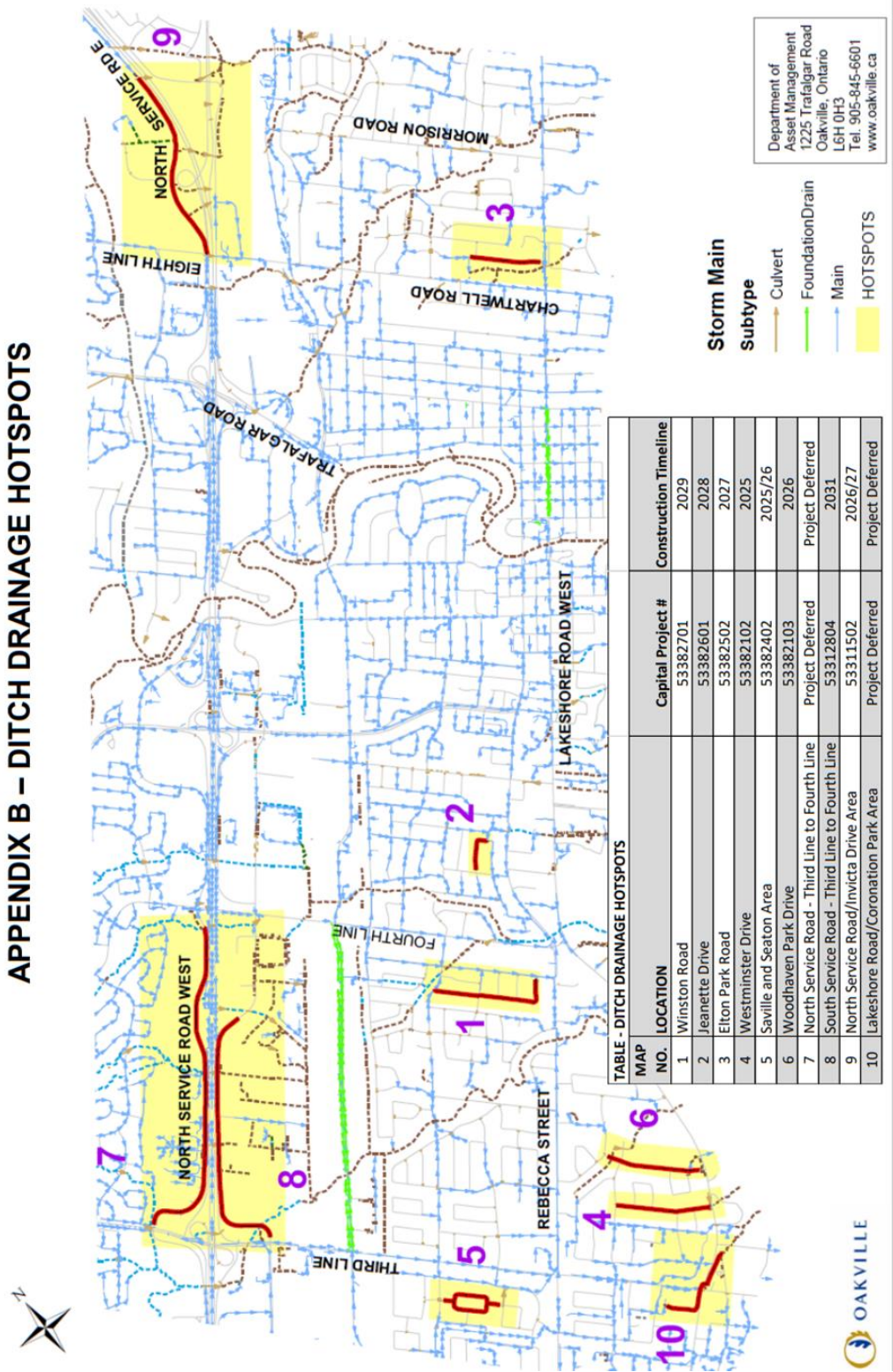


Figure 1: Ditch Drainage Hotspots

Property Owner Responsibilities

Property Owner Responsibilities for Maintenance of Driveway Culverts and Ditches

Driveway culverts and their associated appurtenances (e.g. headwalls) are the responsibility of the property owner, including both maintenance of the culvert and replacement once the culvert is at the end of its service life.

Maintenance of driveway culverts by property owners includes:

- Maintaining a clear and unobstructed flow path through the culvert. This may require occasional clearing of leaves, branches, dirt, debris which may build up in the culvert from time to time,
- Ensuring that any landscaping materials such as retaining walls or stones do not block inlets or outlets,
- Inspecting culverts regularly to ensure they are in good working order.

Property owners, as per the current Property Maintenance By-law, are also responsible for routine maintenance of the ditches which includes grass cutting.

Replacement of Driveway Culverts

Replacement of driveway culverts once they reach the end of their service life, or in the event that they become damaged before the end of their service life, is a property owner responsibility.

The majority of driveway culverts in Oakville are made of Corrugated Steel Pipe (CSP) which has a lifespan of approximately 50 years. Over time, these culverts may become damaged or rust and eventually become structurally unsound and need to be replaced.

In accordance with the Municipal Right of Way By-law, an excavation permit is required when replacing a driveway culvert. Often when driveway work is also required, such as widening or relocation of a driveway, one driveway permit is issued for the driveway and culvert work.

If the town becomes aware that a driveway culvert needs to be replaced, a letter is sent to the property owner requesting that the driveway culvert be replaced by a specific date. The letter also advises the property owner that town staff can be contacted to review the new driveway culvert grade elevations as installed by the property owner to ensure positive drainage exists prior to restoration of driveway and any sod restoration being completed. Approximately 50 percent of property owners seek the guidance of the town when replacing their driveway culvert.

The balance of this memo will address Items 1, 2 and 3 which were raised by Council.

Item 1 - Stormwater Management Standards for Ditches and Culverts

Figure 2 illustrates the town's current practices with respect to driveway culvert installations and ditch grading. While every existing site is different, the town's objective is that the ditches have positive drainage and that the ditch side slopes are graded no steeper than 3:1 to allow for safe lawn maintenance activities by property owners. Ideally the slope along the centre line of the ditch is 2 percent or greater, however many existing ditches - by design - were constructed at flatter slopes due to topography of the area. Ditches with slopes less than 2 percent are more likely to have wet inverts and ponding water than ditches with more grade. There is no minimum depth or width requirement for a roadside ditch.

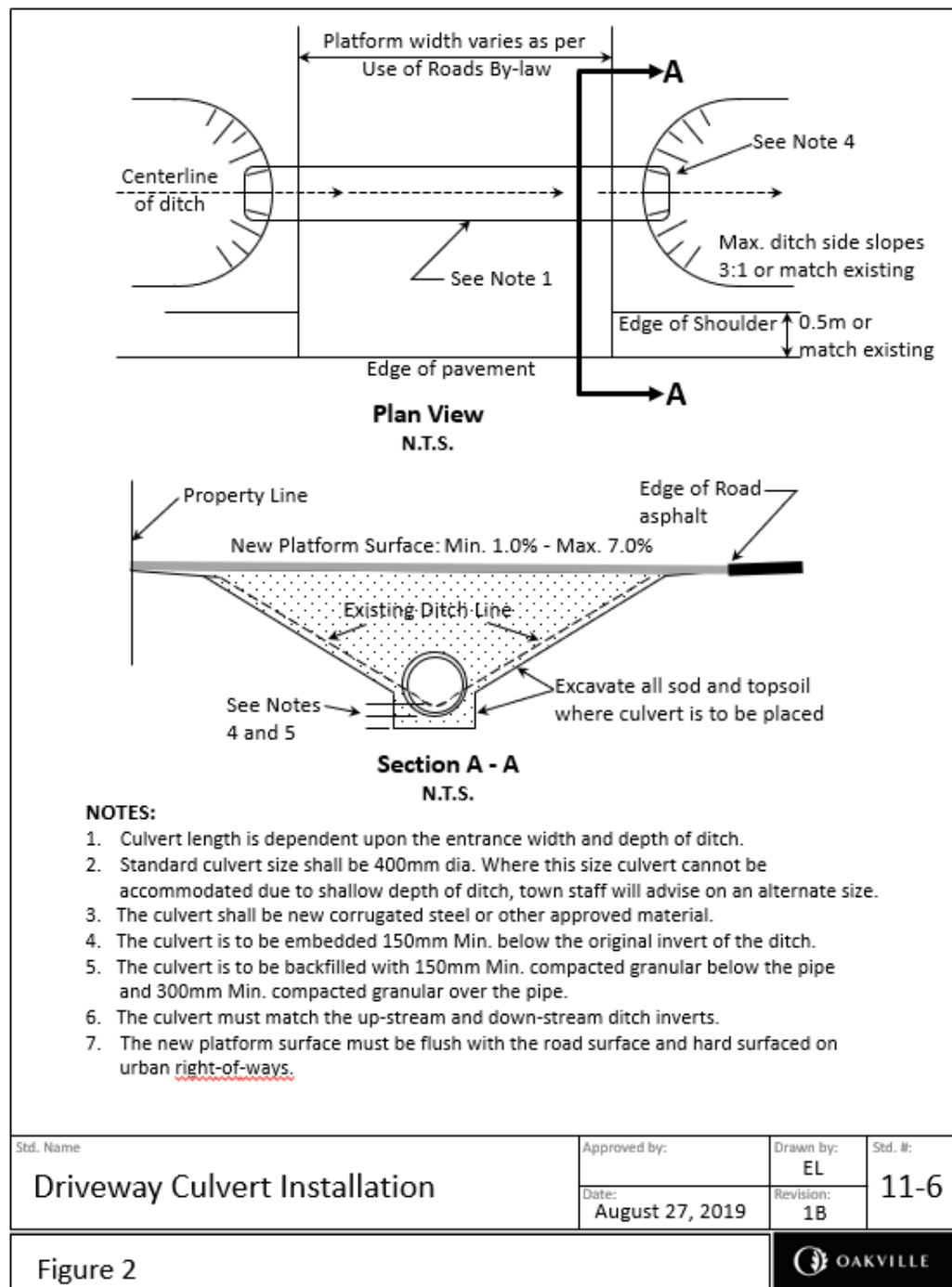
Grass is the preferred material within ditches as grass both stabilizes the soil and provides filtration benefits. In areas where ditch flow is fairly continuous, granular materials are also acceptable as is leaving the bottom of the ditch unvegetated.

New developments do not include ditches within the road allowance, as current design standards in residential areas implement an urban cross section with curbs, boulevards with street trees, and both a minor system (storm sewers) and a major system (overland flow routes on public rights-of-way) to safely route stormwater flows to an outlet. Although new ditches are not currently built, existing ditches are maintained and improved where required and are often preserved for their green infrastructure benefits and to preserve the character of a neighbourhood.

The minimum acceptable diameter is 400 mm for new or replacement driveway culverts to help ensure the ditches provide adequate drainage. Larger culvert sizes are specified for ditches that serve large drainage areas.

Driveway culverts may be corrugated steel pipe culvert (CSP), PVC "Big O" or high-density polyethylene (HDPE) pipe.

If a property owner has concerns with ditch drainage, they should contact ServiceOakville to initiate a service request and Roads and Works Operations will investigate and undertake minor regrading works, if required. Property owners are advised not to regrade, pipe or fill in the ditch in front of their property. If a property owner wishes to make changes to the grading of their ditch, they should contact the Transportation and Engineering Department for guidance. Any work in a ditch beyond routine driveway culvert cleaning and grass cutting requires a permit from the Transportation and Engineering Department.



Item 2 - Current / Expanded Communication on Oakville.ca

The operation of the ditch networks throughout the town is a shared responsibility between both the town and private property owners. The town currently has some limited information on Oakville.ca regarding ditches and driveway culverts. In Q4 2024 and by the end of Q1 2025, ahead of the spring snowmelt and rains, staff will expand the available information on the town's website.

The webpage and communications materials updates will include information on:

- Property Owner Responsibilities for Maintenance of Driveway Culverts and Ditches
- Replacement of Driveway Culverts
- Benefits of Ditches
- Town Ditch Maintenance Works
- Town Ditch Regrading or Improvement Projects

In Spring 2025, in advance of spring snow melt and rains, an awareness campaign will be launched to raise awareness of the importance of ditches and ditch maintenance. This campaign will use digital screens at town facilities and libraries, social media posts and digital advertisements, articles in town e-newsletters, direct communications to community groups and resident associations, and/or roadside mobile signs to share these important messages.

Item 3 - Current / Expanded Communication on Ditches Associated with Town Works/Permits

Since 2021, door hangers have been used to advise residents of upcoming ditch related works in their neighbourhoods by Roads and Works Operations. The 2025 door hanger will be updated to include a link to the expanded ditch information on the town's website noted above under Item 2.

The town also currently uses email notifications, where appropriate, to help inform neighbourhoods that ditch work will be undertaken. For example, in 2023 the town undertook ditch work in the neighbourhood where the Saville Area Stormwater System Improvement Study was being undertaken. A neighbourhood email list was available to the study team, and this list was used to send notification prior to the ditch work being undertaken. The door hanger notice described above was also used in this example.

Conclusion

The sections above both respond to the request from Council and provide Council with some additional information concerning ditches and driveway culverts within the Town of Oakville. Should any issues arise that members of Council need additional information on, please feel free to contact the authors.