

Park Street Municipal Drain Improvement

Information Meeting No. 2

March 7, 2020

Purpose of this Meeting

- Information exchange with stakeholders in the contributing watershed.
- *Design is NOT written in stone and we're looking for feedback.*

Overview

1. Project Background and History
2. Design Criteria and Investigation Results
3. Proposed Design
4. Construction Process
5. Cost Estimates
6. Next Steps

What is a Municipal Drain?

- *Does anyone have experience with Municipal Drains?*
- Drainage Act, R.S.O. 1990
 - Provincial legislation which provides a **system/framework/process** for landowners to gain a **legal or sufficient outlet** for surface and subsurface water from their property through private lands.
 - Administered through the Municipality and the Engineer, with Agency review.

What is a Municipal Drain?

- Community Project
 - Contributing properties have input towards the scale, design, and other aspects of the drainage system.
- User Pay System
 - Each member of the contributing watershed is responsible for a portion of the cost of the drain.
- Legal Existence
 - Provides a Legal Outlet for a property.
 - Legal Standing under associated Municipal By-Law.
- Municipal Infrastructure
 - Maintained by the Municipality on behalf of the affected landowners.

What is a Municipal Drain?



Watershed Boundary

What is a Watershed Boundary?

- A watershed boundary defines an area that drains to a particular watercourse.
- Rain falling on our side of a watershed boundary will flow to our drain and on the other side will flow to another watercourse.
- This line should represent the high ground on your property.



Park Street Municipal Drain

(REVIEW DRAWINGS)

Project Background

Project Background

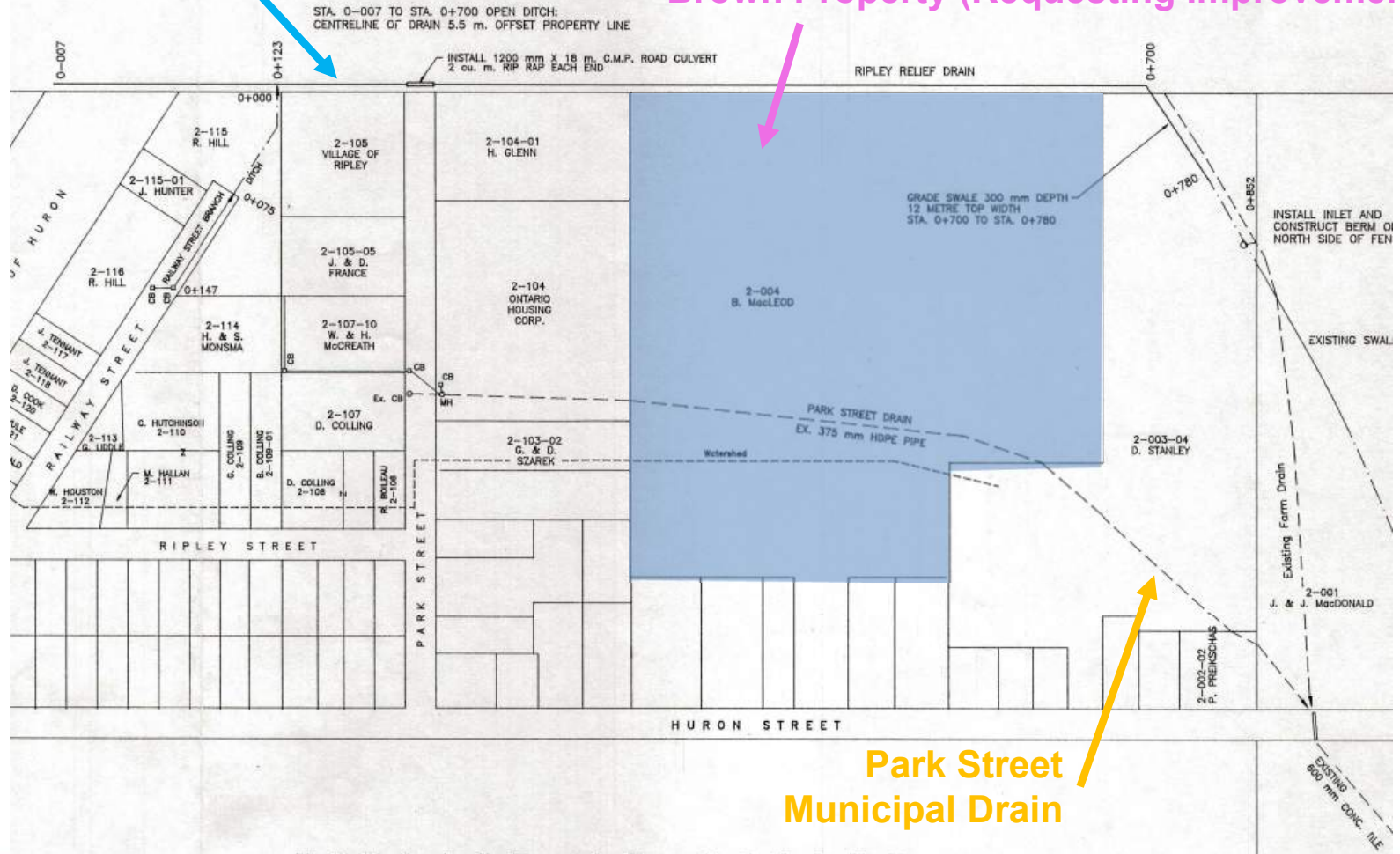
What started this project?

- Request for Improvements to the Park Street Municipal Drain to improve the outlet of the Brown property for development in 2018.
- On-Site Meeting – November 2018
- Information Meeting No. 1 – October 2019

Ripley Relief Municipal Drain

Project Background

Brown Property (Requesting Improvement)



Park Street
Municipal Drain

History

➤ 1906

- Harris Award Drain constructed, servicing the Ripley Street and Park Street watersheds.

➤ 1947

- Ripley storm sewer constructed parallel to Park Street MD.

➤ 1957

- Fair MD construction west of Huron Street, the outlet for the Park Street MD and Ripley Street sewer systems.

➤ 1994

- Park Street MD constructed under a report by W.J. Bartlett, existing drainage systems incorporated.
- Construction of Ripley relief MD and Railway Street drain.

History

➤ 1996

- Storm drainage report for the Village of Ripley completed by B.M. Ross and Associates.

➤ 2018

- Ripley storm sewer reconstruction (obstructed outlet).
- Park Street MD improvement project initiated.

Existing Drainage Systems

➤ Park Street MD (1994)

- Mainly 375 mm dia. (15 inch) single-wall HDPE tubing south of Park Street
- 400 mm CSP crossing under Park Street.
- 200 – 300 mm dia. Dual-wall HDPE upstream of Park Street.

➤ Ripley Street Storm Sewer (1947 and 2018)

- Mainly 300 mm dia. (12 inch) concrete pipe
- Upper section (u/s of Park Street) re-constructed in 2018 with dual-wall HDPE (320 kPa) pipe up to 600 mm dia. (24 inch).
- Currently outlets to the existing sewer at the south intersection of Ripley and Park Streets.

➤ Harris Award Drain (1906)

- Concrete/clay system in the general location of the Ripley and Park drainage systems west of Queen Street (~200 mm dia.)

Existing Drainage Systems

- Fair Municipal Drain (1957)
 - Channel Municipal Drain and the outlet for the existing Park Street Municipal Drain.
- Ripley Relief Drain(1994)
 - Mainly channel municipal drain that outlets to the Fair Municipal Drain downstream of the existing Park Street MD outlet.
- Huron Street (County Road 7) Storm Sewer
 - Currently outlets to the existing Park Street Municipal Drain in the WROW of Huron Street.

Looking u/s along Ex. Park Street MD alignment (Park Street)



Looking d/s along Ex. Park Street MD alignment (Park Street)



**Looking u/s along Ex. Park Street
MD alignment (Stanley Property)**



Looking d/s along Ex. Park Street MD alignment (Stanley Property)



Looking u/s along Ex. Park Street MD alignment (Stanley Property)



Looking u/s along Ex. Park Street MD alignment (Meyer Property)



Looking d/s towards Harris Street
(Martyn Property)



Presumed Harris Award Drain (1906)



Existing Tile Outlets at Huron Street



Existing Tile Outlets at Huron Street



Looking u/s along Ex. Park Street MD alignment (Meyer Property)



Looking d/s along Ex. Park Street MD alignment (Geddes and Dundas Properties)



Looking u/s along Ex. Park Street MD alignment (Geddes and Dundas Properties)



Video of Existing Conditions

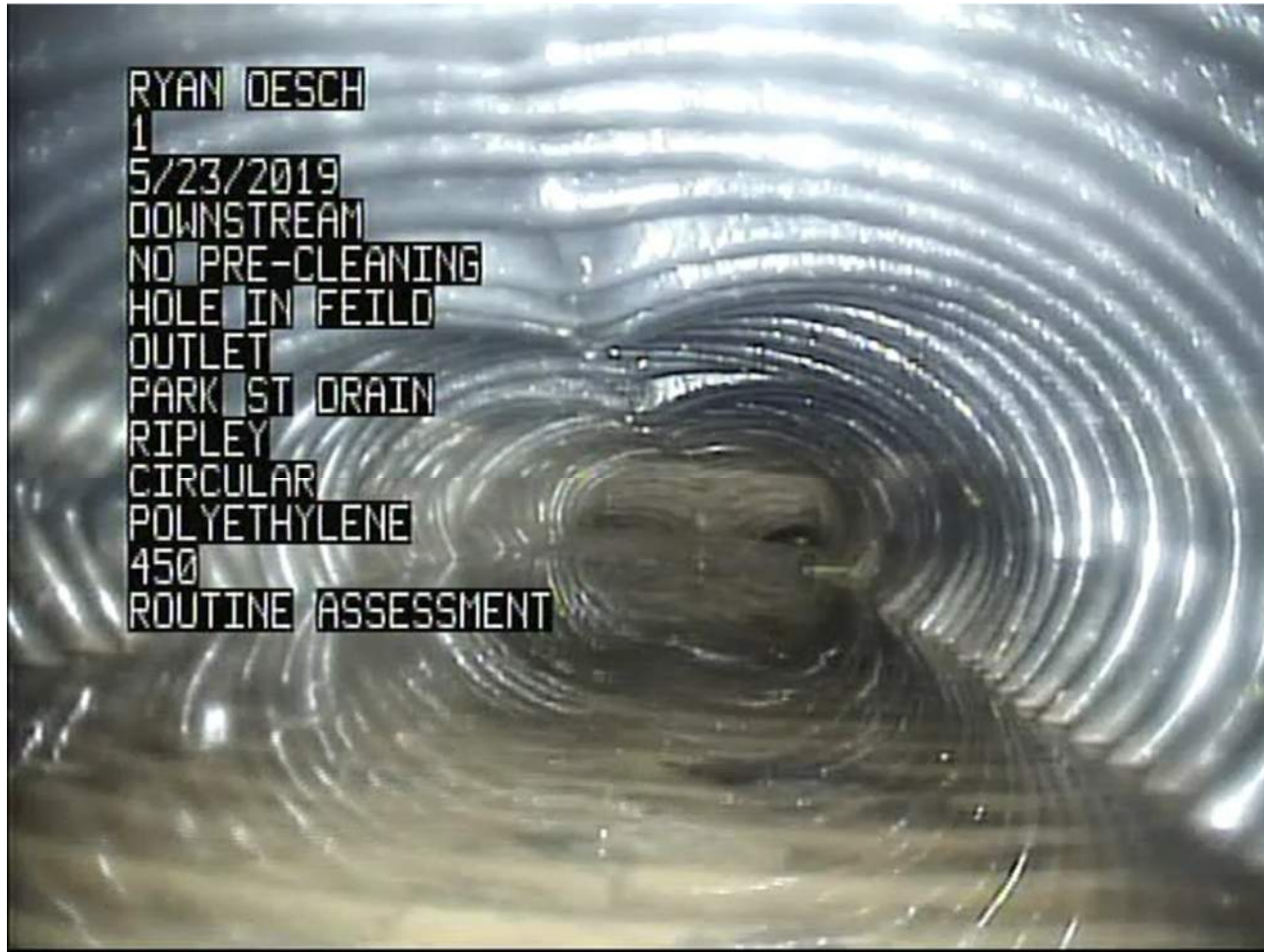
- Camera investigation of existing drainage systems (November 2018 and May 2019):
 - Park Street Municipal Drain (1994)
 - Harris Award Drain (1906)
 - Ripley Street Storm Sewer (1947)



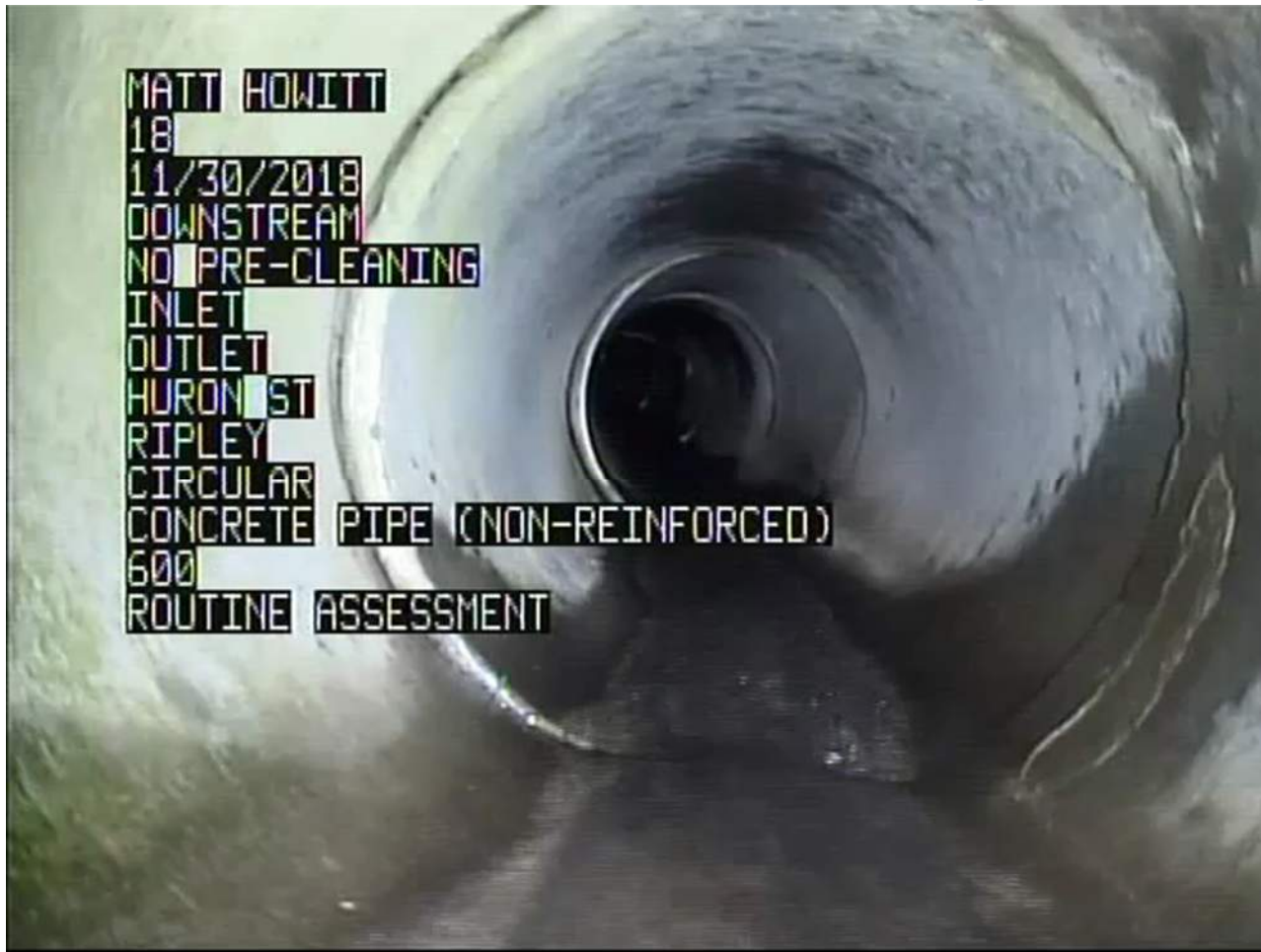
Video of Ex. Park Street MD – U/S of Park Street to Bruce Housing



Video of Ex. Park Street MD – Brown Property



Video of Ex. Park Street MD - Dundas Property



Design Considerations

Design Criteria



- The sub-surface drainage system design sizing is based on a 5-year return period rainfall event (1 in 5-year flood).
- The design will accommodate floods up to the simulated 100-yr event using overland flow paths.
- For larger rainfall events, a SWM pond is typically required to attenuate peak flows to pre-development rates.

Design Criteria



- The Stormwater management report prepared by Cobide Engineering was reviewed and integrated as part of this design.
- The previously developed portion of the Village within the watershed is not currently controlled and would be as part of this project in conjunction with the proposed development.
- Volume control of development runoff (Low Impact Development) was not identified as feasible in the Cobide SWM Report.

Reviewing Agencies

A) Saugeen Valley Conservation Authority (SVCA)

- Potential erosion and flooding risks associated with the project.
- Work in 'regulated areas'

B) Fisheries & Oceans Canada (DFO)

- Work in an Open Drain and potential fish habitat requires approval.
- Federal Species at Risk (SAR).

C) Ministry of Environment, Conservation, and Parks (MECP)

- Environmental Compliance Approval (ECA) application for the entire project.
- Provincial Endangered Species (Formerly through MNRF).

Proposed Design

Park Street Municipal Drain

Questions?

(REVIEW DRAWINGS)

Proposed Design

Huron Street and downstream

Fair Municipal Drain

Geddes Property:

- Approx. 500 m of channel deepening and widening.

Park Street Municipal Drain

Dundas Property:

- Approx. 86 m of 900 mm dia. Pipe and surface grassed swale.

County Road 7 ROW:

- Approx. 20 m of 900 mm dia. Bored crossing.

Proposed Design (cont.)

Upstream of Huron Street to the SWM Pond

Park Street Municipal Drain

MackKay Property:

- Approx. 7 m of 750 mm dia. Pipe and surface grassed swale.

Meyer and Martyn Properties:

- Approx. 60 m of 750 mm dia. Pipe and surface grassed swale.

Stanley Property:

- Approx. 155 m of 750 mm dia. Pipe.
- Approx. 261 m of surface grassed swale.

Brown Property:

- Approx. 106 m of 750 mm dia. Pipe.

Proposed Design (cont.)

Upstream of the SWM Pond to Park Street

Park Street Municipal Drain

Brown Property:

- Approx. 17 m of 975 mm dia. Pipe.
- Approx. 139 m of 900 mm dia. Pipe.
- Approx. 45 m of 750 mm dia. Pipe.

Bruce County Housing Property:

- Approx. 129 m of 600 mm dia. Pipe.

Park Street ROW:

- Approx. 25 m of 450 mm dia. Pipe.

The Construction Process

Construction



Land Used by the Drain:

- Landowners affected by drain construction are given **allowances**.
- Allow Contractors to complete construction when timing windows and project scheduling align.
- Allowances provide compensation to landowners for **Damages** and **Right of Way** (permanent use of the land by the Drain)
- Given for the entire drain corridor, and access routes across private property.

Construction

Excavation and Pipe Installation:

- Topsoil is stripped for the width of the wheel trencher.
- Subsoil excavated and piled separately from the topsoil.



Construction

Pipe Installation:

- Typically Concrete Drainage Tile (CDT) is installed on agricultural land
 - Wrapped with geotextile to keep soil particles out of the drain
- Can also be installed by an Excavator if the pipe is placed on stone bedding



Example of a Municipal Drain Being Installed via Wheel Trencher



Example of a Municipal Drain Being Installed via an Excavator on Stone Bedding

Construction

Wheel Trencher Installation:

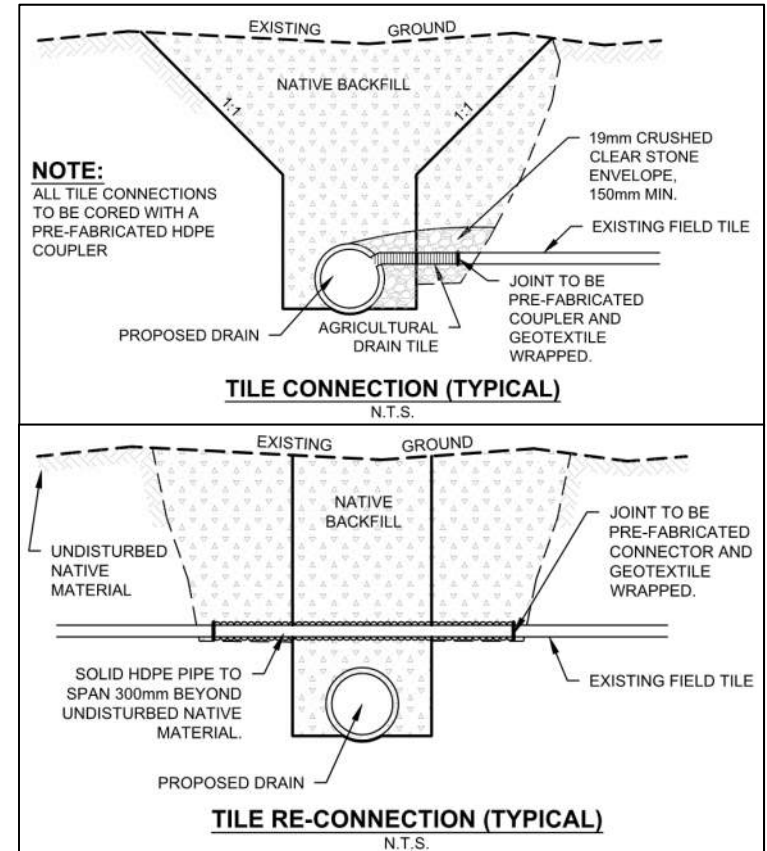


Construction

Private tile connections/re-connections:



Tile connection into a Municipal Drain



Construction

Catchbasins:

- Typically installed at property lines.
- Observation Point for landowners and Drainage Superintendent.
- Installed with rip-rap or grass surface treatment.



Dich inlet catchbasin complete with rip-rap erosion protection



Example of a flat top catchbasin complete with rip-rap erosion protection

Construction



Newly Constructed Stilling Basin

Outlet Stilling Basin:

- Protect the tile outlet
- Sediment Settlement
- Cleanout location for the Drainage Superintendent
- Dissipate energy

Questions?

Construction

Road Crossing - Open Cut:

- Bell and Spigot High Density Polyethylene (HDPE) pipe is typically installed
 - High Strength
 - Long service life



Open Cut Installation Method



Bell and Spigot HDPE Pipe

Construction



Jack and Bore Pipe Installation



Video of Jack and Bore Pipe Installation

Jack and Bore Road Crossing:

- Typically installed under paved roads
- A steel pipe is “pushed” under the road

Project Cost Estimate

Project Costs

What are the Costs Associated with a Municipal Drain Project?

Total Project Cost is comprised of **four separate items**:

- Construction Costs
- Engineering Costs
- Landowner Allowances
- Sundry and Other Project Costs

Project Costs - Construction

Construction Costs:

- Typically represent the greatest costs of the project.
- Some examples include:
 - Pipe installation
 - Outlet stilling basin
 - Catchbasins
 - Road and private crossings
 - Channel excavation
 - Berms/Ponds
 - Clearing/Grubbing/Brushing
 - Etc.



Example of a Municipal Drain Being Installed via Wheel Trencher

Project Costs - Allowances

Section 29 – Allowance for Right-of-Way

- **Allowance “buys” access/use of the land for the drain, and construction and maintenance activities.**
- Land periodically used for access to construct the drain and in any future maintenance/repair work.
- Based on **\$30,000/acre.**
- **Typically a 10 m width in agricultural areas.**
- Typically given on existing municipal drains when it is not clear that they have been provided previously.



Project Costs - Allowances

Section 30 - Allowance for Damages

- **Damages caused to a property** by the construction of the drain or site access (**typically a 20 m width in agricultural areas**).
- Not given if area is **restored** as part of the drain.
- Examples include damage to:
 - Lands and crops.
 - Trees, lawns, fences, and other features.



Project Costs - Engineering

Engineering

Preparation of Engineer's Report

- Survey and Field Investigation
- Drain Design and Drawings
- Creating Assessment Schedules
- Coordination with project Stakeholders
- **Obtain Agency Approvals**
- Report Preparation and Processing
- Presentations to Stakeholders and Council

Construction Services

- Preparation of Tender and Construction Contract
- Periodic Construction Review
- Contract Administration



Field Survey

Project Costs – Sundry and Other

Other Costs

- Conservation Authority Review Fees
- CCTV Camera Investigation
- Soils Investigations

Sundry Costs

- Overall Project Contingency
- Net HST
- Interest



Project Cost Summary

Approximate Cost of Proposed Improvements

Construction	\$580,000
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Fair MD	\$ 30,000
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Park Street D/S	\$150,000
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SWM Pond	\$250,000
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Park Street U/S	<u>\$150,000</u>
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Engineering	\$140,000
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Landowner Allowances	\$45,000
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Sundry and Other Costs	\$85,000
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Total Estimated Cost	\$850,000
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Special Assessments

Roads and Utilities

Section 26 of the Act states:

*“...a public utility or road authority...**shall pay all the increase of cost of such drainage works caused by the existence of the works of the public utility or road authority.**”*

Example of a Road Crossing

Road Authority Pays as a Special Assessment:

20 m Road Crossing (Bore Pipe + Catchbasins)	\$20,000
LESS 20 m Equivalent Drain through Field (Concrete Tile)	(\$1,000)
	<hr/>
	\$19,000

Upstream Landowners Pay:

\$1,000



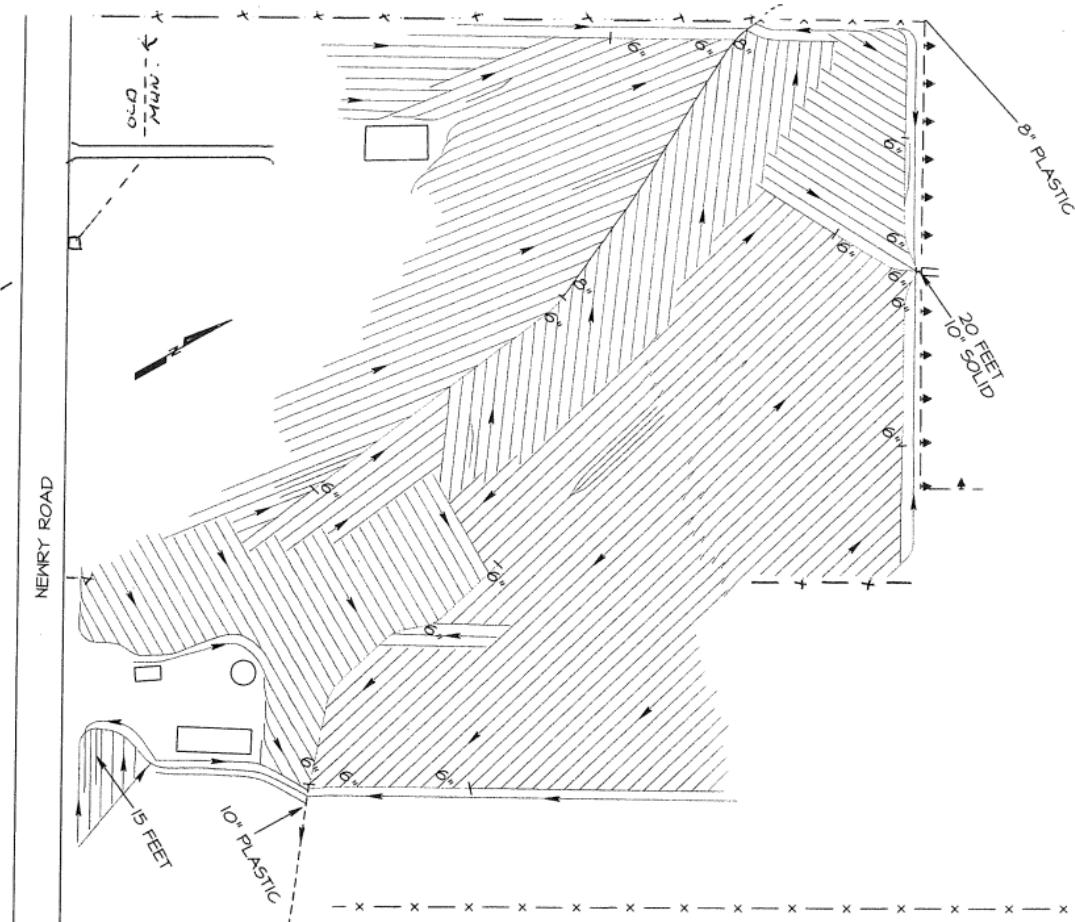
Provincial Grants

- Assessments on land used for agriculture (***Farm Tax Class***) may be eligible for grants through OMAFRA.
- Grant rate in southern Ontario is 1/3 of the assessment on the property for typical Municipal Drainage projects.
- *Drain enclosures are not eligible for ADIP grant*

Additional Information

If available, we ask that property owners provide us with:

1. Farm Tile maps.
2. Sump pump/ downspout connection locations.



Sample Tile Plan

Additional Information



Sandy Soils can cause issues during construction

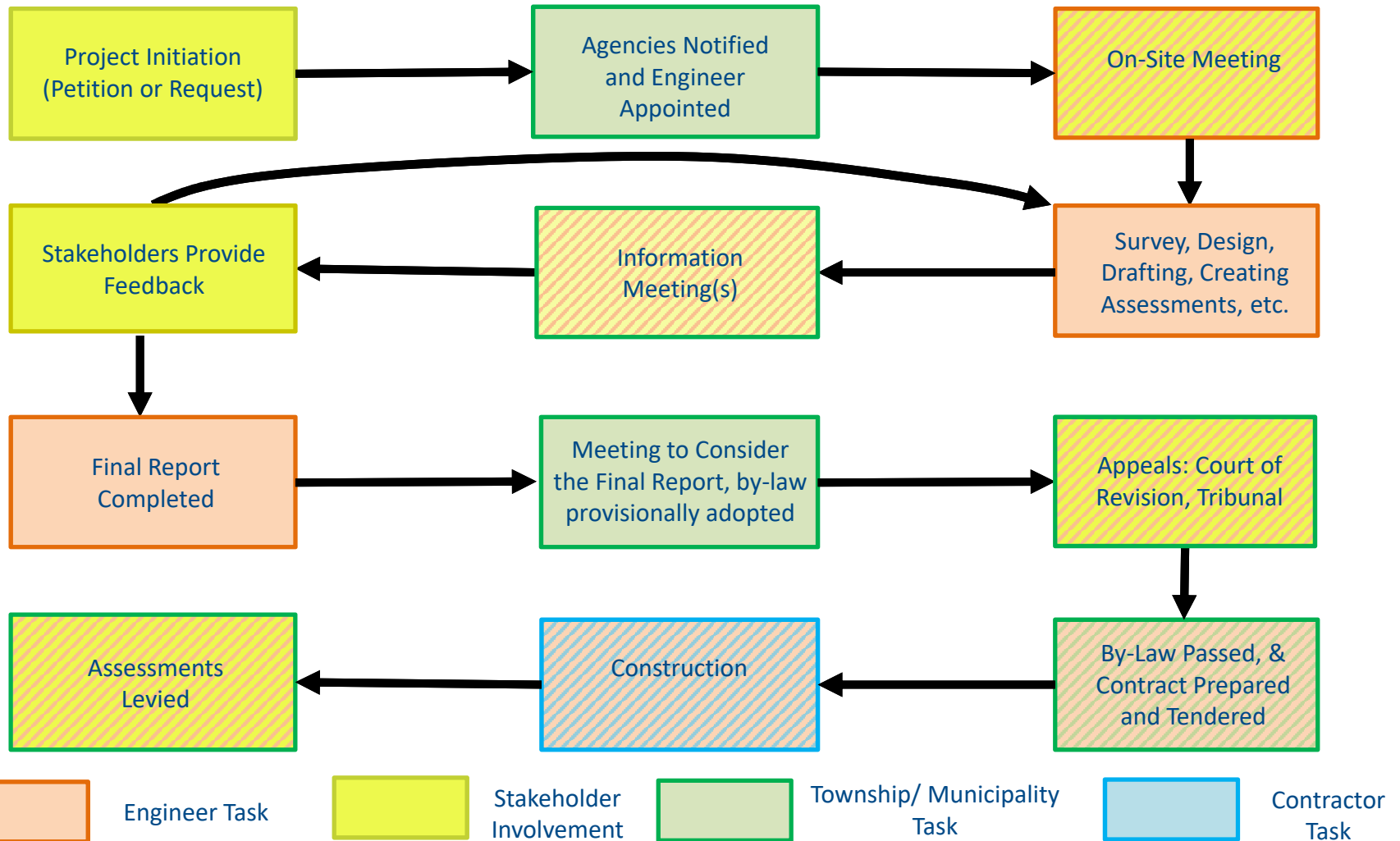


Septic bed locations should be known prior to Construction

2. Local Knowledge

- Any known Soil Conditions?
 - Poor soil conditions can effect design
- Locations of septic systems? Where does the Village sanitary sewer end?
- Other Information?

Typical Municipal Drain Timeline



Next Steps

From this point on what are the “next steps” in the process under the Act?

1. Complete any investigations or design changes as required
2. Complete the final Engineer’s Report (Section 41)
3. Council Completes the Meeting to Consider (Section 41(4))
4. If the Report is favourable to the Town, give 2 readings to a By-Law adopting it (known as the Provisional By-Law – Section 45).
5. Set the date, place & time and hold the Court of Revision (Section 46).
6. Dispose of any other appeals (Sections 47 to 56 inclusive).
7. Give 3rd Reading to Provisional By-Law (Section 58).
8. Obtain approvals and permits from all agencies (DFO, MNRF, NVCA).
9. Tender the project and proceed with Construction (Section 59).
10. Assess costs (Sections 60 & 61), amend By-Law (Section 62) and process Grant Application (Sections 85 to 90).

Questions?

If you have any questions or concerns you can always email or call us
Please grab a business card before you go!

Appealing Assessments

Section 11 the Act states:

“The Engineer **shall**, to the best of the Engineer’s skill, knowledge, judgement and ability, **honestly and faithfully, and without fear of, favour or prejudice against any person**, perform the duty assigned to the Engineer in connection with any drainage works and make a true report thereon. R.S.O. 1990, c. D.17, s.11.”

- It is the Engineer’s responsibility to assess project costs in a manner they feel is fair and unbiased
 - That being said, there are various ways to appeal your assessment for a project

1. Court of Revision

- When the Engineer’s Report is completed any landowner can appeal their assessment to their local council
 - We encourage landowners to do so if they feel that they are being assessed unfairly
 - We recommend that landowners have a sound argument justifying why their assessment should be changed, and which landowner should pay for the reduction in their assessment

2. Agriculture, Food and Rural Affairs Appeal Tribunal

- Drain essentially goes to court
- We like to avoid this type of appeal if at all possible, as legal fees can have a large impact on project costs