

THE CORPORATION OF THE TOWN OF AMHERSTBURG

BY-LAW NO. 2018 - 84

**By-law to provide for the Culvert Replacement on the Renaud Drain based on the
Drainage Report by R. Dobbins Engineering Inc.**

WHEREAS as request for repair and improvement of the Renaud Drain was received under section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg felt it necessary to appoint an engineer for the purpose of preparation of an engineer's report for the repair and improvement under section 78 of the Drainage Act;

WHEREAS Council of the Corporation of the Town of Amherstburg has authorized Mike Gerrits, P. Eng., R. Dobbins Engineering Inc., to prepare a report and said engineer's report dated July 17, 2018, can be referenced as Schedule A, located in the Clerk's Department agreement file # 2018-84.

WHEREAS \$21,866.00 is the amount to be contributed by the Town of Amherstburg for the drainage works;

WHEREAS the report was considered by the Amherstburg Drainage Board at the meeting held on Tuesday, August 7th, 2018;

AND WHEREAS the schedule of assessment as presented by R. Dobbins Engineering Inc. was further revised for the Court of Revision held on Wednesday, September 5th 2018 and is attached;

NOW THEREFORE the Council of the Corporation of the Town of Amherstburg hereby enacts as follows:

1. AUTHORIZATION

The attached report is adopted and the drainage works is authorized and shall be completed as specified in the report

2. BORROWING

The Corporation of the Town of Amherstburg may borrow on the credit of the Corporation the amount of \$21,866.00 being the amount necessary for the improvements of the drainage works.

This project being the Culvert Replacement on the Renaud Drain.

3. DEBENTURE(S)

The Corporation may issue debenture(s) for the amount borrowed less the total amount of:

- (a) Grants received under section 85 of the Drainage Act;
- (b) Monies paid as allowances;
- (c) Commuted payments made in respect of lands and roads assessed with the municipality;
- (d) Money paid under subsection 61(3) of the Drainage Act; and
- (e) Money assessed in and payable by another municipality.

4. PAYMENT

Such debenture(s) shall be made payable within 5 years from the date of the debenture(s) shall bear interest at a rate not higher than 1% more than the municipal lending rates as posted by The Town of Amherstburg's Bank's Prime

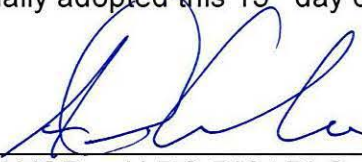
Lending Rate on the date of sale of such debenture(s).

- (1) A special equal annual rate sufficient to redeem the principal and interest on the debenture(s) shall be levied upon the lands and roads as shown in the schedule and shall be collected in the same manner and at the same as other taxes are collected in each year for 5 years after the passing of this by-law.
- (2) For paying the amount \$0.00 being the amount assessed upon the lands and roads belonging to or controlled by the municipality a special rate sufficient to pay the amount assessed plus interest thereon shall be levied upon the whole rateable property in the Town of Amherstburg in each year for 5 years after the passing of this by-law to be collected in the same manner and at the same time as other taxes collected.
- (3) All assessments of \$1000.00 or less are payable in the first year in which the assessments are imposed.

5. SCHEDULE OF ASSESSMENTS OF LANDS AND ROADS

Property Description				Estimated Assessment as per Report	Estimated Grants 33 1/3%	Equal Bi-Annual Rate to be Imposed
Lot or Part Lot No.	Concession	Geographic Township	Parcel Roll No.			
S ½ Lot 94	8	Malden	610-04700	\$1,316.00	\$438.67	877.33
Pt. N ½ Lot 95	9	Malden	610-05200	\$13,505.00	\$4,501.62	1.995.46
W Pt. Lot 96 & SW ¼ Lot 95	9	Malden	610-03310	\$3,806.00	\$1,268.65	562.36
Total				\$21,866.00	\$6,208.94	

Read a first and second time and provisionally adopted this 13th day of August, 2018.



 MAYOR – ALDO DICARLO



 CLERK – PAULA PARKER

Read a third time and finally passed this 9th day of October, 2018.



 MAYOR – ALDO DICARLO



 CLERK – PAULA PARKER

July 17, 2018

The Mayor and Council
Town of Amherstburg
271 Sandwich Street South
Amherstburg, Ontario
N9V 2A5

Gentlemen and Mesdames:

Re: Culvert Replacement on the Renaud Drain

As instructed, we have undertaken an examination of the Renaud Drain with regards to an investigation of an existing access culvert and replacing it as required based on the condition and travel width. The access culvert addressed in this report is located in Pt. of the N ½ of Lot 95, Concession 9 (Roll No. 610-05200) in the Town of Amherstburg (former geographic Township of Malden).

Authorization under the Drainage Act

This Engineers Report has been prepared under Section 78 of the Drainage Act as per the request of an affected Landowner.

Section 78 of the Drainage Act states that, where, for the better use, maintenance or repair of any drainage works constructed under a bylaw passed under this Act, or of lands or roads, it is considered expedient to change the course of the drainage works, or to make a new outlet for the whole or any part of the drainage works, or to construct a tile drain under the bed of the whole or any part of the drainage works as ancillary thereto, or to construct, reconstruct or extend embankments, walls, dykes, dams, reservoirs, bridges, pumping stations, or other protective works as ancillary to the drainage works, or to otherwise improve, extend to an outlet or alter the drainage works or to cover the whole or any part of it, or to consolidate two or more drainage works, the Council whose duty it is to maintain and repair the drainage works or any part thereof may, without a petition required under Section 4 but on the report of an Engineer appointed by it, undertake and complete the drainage works as set forth in such report.

Existing Drainage

The existing drainage works consists of approximately 3,100 metres of open channel that outlets into the McLean Drain in Lot 2, Concession 8. The drain then heads in a southerly direction along the west side of Walker Road until the south side of Alma Street. The drain then heads in a westerly direction until the east side of Concession Road 9 where it then heads in a southerly direction until the north side of Essex County Road 18.

The open channel of the Renaud Drain was maintained in 2017. Under an Engineer's Report dated March 28, 2001 the maintenance schedule for the Renaud Drain was updated. Prior to that, the Renaud Drain was last improved under an Engineer's Report dated March 10, 2000 where an access culvert was replaced. Under an Engineer's Report dated October 19, 1982 the channel was improved and culverts were replaced.

Drain Classification

The Renaud Drain is currently classified as a class "F" drain from its top end to the south side of Alma Street. From the south side of Alma Street to its outlet into the McLean Drain the Renaud Drain is classified as a class "E" Drain. These classifications are according to the Ontario Ministry of Agriculture, Food and Rural Affairs' Agricultural Information Atlas.

Class "F" drains are intermittent or ephemeral (dry for more than two consecutive months). Authorization is not required if work is done in the dry.

The proposed work will be done in the class "F" portion of the drain and will have very little effect on the drainage works if carried out during low flows in the channel. The work area is to be maintained in a dry condition during construction by the Contractor.

A self assessment was done for the proposed work and should not require DFO approval provided Best Management Practices are followed. However, the report and the DFO's Request for Review Form were submitted on June 26, 2018 to ensure compliance.

The Essex Region Conservation Authority (ERCA) was contacted via an email dated June 26, 2018 to inform them of the project. Written confirmation from the ERCA was requested with respect to their intention to proceed or waive the right to an environmental appraisal. The ERCA has yet to confirm if an environmental appraisal is required on this project. Construction shall not commence without ERCA approval.

Onsite Meeting

An onsite meeting was held on June 14, 2018 to discuss the replacement of the culvert in Pt. of the N ½ of Lot 95, Concession 9 as it is in very poor condition. It was discussed that this culvert have an extended travel width to accommodate trucks. The Landowner was made aware that the extra cost to extend a culvert beyond that necessary to provide a 6m top width would be assessed to the benefitting property.

Discussion

The existing culvert in Pt. of the N ½ of Lot 95 (Roll No. 610-05200) consists of 8.8m of a 1200mm dia. CSP with concrete bag headwalls. The pipe is in very poor condition with large holes forming at the surface of the access due to holes in the culvert. The access is currently unusable.

The Landowner was contacted on June 15, 2018 to discuss the culvert lengths and associated costs estimates. The Landowner requested a 16m culvert (c/w rip rap ends), which would provide a top width of approximately 10 metres. The Landowner was made aware that the addition culvert length beyond the standard 6 metre top width will be assessed to the requesting property as a benefit assessment.

Recommendations

It is therefore recommended that the following work be carried out:

1. Remove and replace the access culvert in Pt. of the N ½ of Lot 95, Concession 9 (Roll No. 610-05200) with 16m of a 1400mm dia. CSP c/w rip rap endwalls.

Design

The proposed Renaud Drain access culvert shall be designed to accommodate a minimum 1 in 5 year storm event.

Estimate of Cost

It is recommended that the work be carried out in accordance with the accompanying Specification of Work and the Profile, which form part of this Report. There has been prepared an Estimate of Cost in the amount of \$21,866.00, including the cost of engineering. A Plan has been prepared showing the location of the work and the approximate drainage area.

Assessment

As per Section 21 of the Drainage Act, the Engineer in his report shall assess for benefit and outlet for each parcel of land and road liable for assessment.

Lands, roads, buildings, utilities, or other structures that are increased in value or are more easily maintained as a result of the construction, improvement, maintenance, or repair of a drainage works may be assessed for benefit. (Section 22)

Lands and roads that use a drainage works as an outlet, or for which, when the drainage works is constructed or improved, an improved outlet is provided either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek, or watercourse may be assessed for outlet. The assessment for outlet shall be based on the volume and rate of flow of the water artificially caused to flow into the drainage works from the lands and roads liable for such assessments. (Section 23)

The Engineer may assess for special benefit any lands for which special benefits have been provided by the drainage works. (Section 24)

A Schedule of Assessment for lands and roads affected by the work and therefore liable for the cost thereof has been prepared as per the Drainage Act. Any affected public utility or road authority shall be assessed, as per Section 26 of the Drainage Act, any increased costs for the removal or relocation of any of its facilities and plant that may be necessitated by construction or future maintenance and repair work. The cost of any fees for permits or approvals or any extra work required by any affected utility, road authority, conservation authority, ministry, government agency, etc., federal or provincial, shall be assessed to that organization requiring the permit, approval, or extra work.

1. The culvert in Pt. of the N ½ of Lot 95 has been assessed with 12 metres of the culvert assessed with 60% of the cost applied as benefit assessment to the Landowner of the property and the remainder of the cost assessed as an outlet assessment on upstream lands and roads based on equivalent hectares. A 12 metre culvert will provide the standard 6 metre top width and as such, costs beyond that have been assessed as a benefit assessment to the Landowner of the property. Based on the above, the 16m culvert has been assessed with 63% of the cost applied as benefit assessment to the owner of the property and the remainder of the cost assessed as an outlet assessment on upstream lands and roads based on equivalent hectares

Allowances

Under Section 29 of the Drainage Act, the Engineer in their report shall estimate and allow in money to the Owner of any land that it is necessary to use for the construction or improvement of a drainage works or for the disposal of material removed from a drainage works. This shall be considered an allowance for right of way. Section 29 allowances will not be provided since the work includes improving an existing drain.

Under Section 30 of the Drainage Act, the Engineer shall determine the amount to be paid to persons entitled thereto to damage, if any, to ornamental trees, fences, land, and crops occasioned by the disposal of material removed from a drainage works. This shall be considered an allowance for damages. Section 30 allowances will be provided under this report.

Allowances for crop loss are based on \$1,500.00 per hectare for the first year and \$750.00 for the second year (\$2,250.00 per hectare total).

Access and Working Area

The working area at the culvert shall extend 10 metres from the bank and for 10 metres along the channel on either side of the culvert.

Access for installation of the access culvert and also for any future maintenance and repair shall be from Concession Road 9.

Restrictions

No trees and shrubs shall be planted nor shall permanent structures be erected within 10 metres of either side of the proposed drain without prior written permission of Council. If trees are planted that interfere with access for future maintenance of the drainage works, they shall be removed at the expense of the Landowner.

Attention is also drawn to Sections 80 and 82 of the Drainage Act that refers to the obstruction of a drainage works.

Agricultural Grant

It is recommended that application for subsidy be made for eligible agricultural properties. Any assessments against non agricultural properties are shown separately in the Schedule of Assessment.

Maintenance

The culvert in Pt. of the N ½ of Lot 95 shall generally be maintained and repaired with 63% of the cost assessed to the benefitting property and the remainder assessed to upstream properties based on equivalent hectares.

If a Landowner requests an additional length of culvert beyond that specified in this report, the extra cost shall be borne by the Landowner making the request including the future maintenance and repair. Each property is allowed one access culvert for each municipal drain with any second culvert on the property maintained and repaired 100% by the Landowner.

These above conditions will apply unless otherwise altered under the provisions of the Drainage Act.

All of the above is submitted for your consideration.

Yours truly,



July 17, 2018

Mike Gerrits, P. Eng.



Culvert Replacement on the Renaud Drain
Town of Amherstburg
July 17, 2018

ALLOWANCES

Allowances have been made as per Sections 30 of the Drainage Act for damages to lands and crops

Conc.	Lot or part	Roll No.	Owner	Section 29	Section 30	Total
9	Pt. N 1/2 Lot 95	610-05200	M. Schwab & T. Dube	-	100	100
TOTAL ALLOWANCES				\$0	\$100	\$100

Estimate of Cost

Replace Culvert on the Renaud Drain.

Allowances: 100

	<u>Quantity</u>	<u>Unit</u>	<u>Material</u>	<u>Labour</u>	
Replace Culvert (Pt. N 1/2 Lot 95, Concession 9)					
Removal of existing structure		LS	-	480	
Supply & install 1400mm dia. CSP	16.0	m	5,670	640	
Supply & install bedding material	55.0	tonne	1,100	960	
Supply and install backfill material	75.0	tonne	-	640	
Supply & install Granular 'A'	40.0	tonne	1,000	320	
Supply & install rip rap endwalls	25.0	tonne	1,500	640	
			9,270	3,680	12,950
Silt Fence	1.0	LS	300	-	300
Extra Material for Backfill (Culvert Extension)	40.0	tonne	600	-	600
Miscellaneous					700
					14,650
					4,310
					540
					1,695
					300
					21,495
					371
					\$21,866

SCHEDULE OF ASSESSMENT

Conc.	Lot or Part	Affected Acres	Affected Hect.	Roll No.	Owner	Culvert		Total	Equivalent Ha.
						Benefit	Outlet		
3. Municipal Lands: Roads									
	Concession Road 9	4.97	2.01		Town of Amherstburg	-	807	807	6.03
	Essex County Road 18	1.68	0.68		County of Essex	-	364	364	2.72
						-	1,171	1,171	
					Total Benefit	-			
					Total Outlet	1,171			
					Total - Municipal Lands: Roads	1,171			
4. Privately Owned Non-Agricultural Lands									
9	Pt. Lot 96	0.27	0.11	610-03300	A. & M. Laforet	-	29	29	0.22
	Pt. Lot 96	0.27	0.11	610-03200	A. Greenham	-	29	29	0.22
	Pt. Lot 96	0.27	0.11	610-03100	B. Theriault	-	29	29	0.22
	Pt. Lot 96	0.67	0.27	610-03000	T. & K. Tofflemire	-	72	72	0.54
	Pt. Lot 96	1.09	0.44	610-02990	A. & J. McCormick	-	118	118	0.88
	Pt. Lot 96	1.63	0.66	610-02002	F. Gyori	-	177	177	1.32
	Pt. Lot 96	0.82	0.33	610-02100	C. & P. Gyori	-	88	88	0.66
						-	542	542	
					Total Benefit	-			
					Total Outlet	542			
					Total - Privately Owned Non-Agricultural Lands	542			

Conc.	Lot or Part	Affected Acres	Affected Hect.	Roll No.	Owner	Culvert		Total	Equivalent Ha.
						Benefit	Outlet		
5. Privately Owned Agricultural Lands (Eligible for Available Grants)									
8	SE 1/4 Lot 93	1.01	0.41	610-03400	M. Schwab & T. Dube	-	55	55	0.41
	N 1/2 Lot 93	16.01	6.48	610-04600	P. Meloche	-	867	867	6.48
	S 1/2 Lot 94	23.45	9.49	610-04700	B. & S. Laramie	-	1,270	1,270	9.49
	N 1/2 Lot 94	4.30	1.74	610-04900	C. Allen	-	233	233	1.74
9	Pt. N 1/2 Lot 95	0.00	0.00	610-05200	M. Schwab & T. Dube	13,798	-	13,798	0.00
	W Pt. Lot 96 & SW 1/4 Lot 95	67.83	27.45	610-03310	2352259 Ontario Inc.	-	3,674	3,674	27.45
	E Pt. W 1/2 Lot 96	2.17	0.88	610-02900	2352259 Ontario Inc.	-	118	118	0.88
	W 1/4 Lot 97	2.55	1.03	610-02000	P. & P. Greenham	-	138	138	1.03
						13,798	6,355	20,153	
					Total Benefit	13,798			
					Total Outlet	<u>6,355</u>			
					Total - Privately Owned Agricultural Lands (Eligible for Available Grants)			20,153	
					Total - Municipal Lands: Roads			1,171	
					Total Privately Owned Non-Agricultural Lands			<u>542</u>	
					Total Assessment			\$21,866	

Culvert Replacement on the Renaud Drain
Town of Amherstburg
July 17, 2018

SPECIFICATION OF WORK

1. Scope of Work

The work to be included in this specification includes the replacement of an access culvert on the Renaud Drain in Pt. of the N ½ of Lot 95, Concession 9 (Roll No. 610-05200) in the Town of Amherstburg.

2. General

Each tenderer must inspect the site prior to submitting their tender and satisfy themselves by personal examination as to the local conditions that may be encountered during this project. The Contractor shall make allowance in the tender for any difficulties which they may encounter. Quantities or any information supplied by the Engineer is not guaranteed and is for reference only.

All work and materials shall be to the satisfaction of the Drainage Superintendent who may vary these specifications as to minor details but in no way decrease the proposed capacity of the drain.

The Contractor shall be responsible for the notification of all utilities prior to the start of construction.

3. Plans and Specifications

These specifications shall apply and be part of the contract along with the General Specifications for Open Drains. This specification of work shall take precedence over all plans and general conditions pertaining to the contract. The Contractor shall provide all labour, equipment, and supervision necessary to complete the work as shown in the plans and described in these specifications. Any work not described in these specifications shall be completed according to the Ontario Provincial Standard Specifications and Standard Drawings.

4. Health and Safety

The Contractor at all times shall be responsible for health and safety on the worksite including ensuring that all employees wear suitable personal protective equipment including safety boots and hard hats.

The Contractor shall be responsible for traffic control as per the Ontario Traffic Manual Book 7 – Temporary Conditions (latest revision) when working on public road allowances. A copy of a traffic control plan shall be kept on site at all times. The Contractor shall maintain suitable barricades, warning lights, and temporary traffic notices, at his expense, in their proper position to protect the public both day and night. Flagmen are the responsibility of the Contractor when working on the road allowance and when entering or exiting a worksite onto a roadway.

The Contractor shall be responsible to ensure that all procedures are followed under the Occupational Health and Safety Act to ensure that work sites are safe and that accidents are prevented. In the event of a serious or recurring problem, a notice of noncompliance will be issued. The Contractor will be responsible for reacting immediately to any deficiency and correcting any potential health and safety risk. Continuous disregard for any requirement of the Occupational Health and Safety Act could be cause for the issuance of a stop work order or even termination of the contract.

He shall also ensure that only competent workmen are employed onsite and that appropriate training and certification is supplied to all employees.

5. Workplace Safety and Insurance Board

Upon award of the contract and prior to commencement of work, the Contractor shall furnish the Town of Amherstburg with a satisfactory Certificate of Insurance (COI) containing the information below, for the period of the execution of the work:

- i. A Commercial General Liability (CGL) policy that shall be not less than 5 million dollars per occurrence.
- ii. The CGL policy shall include bodily injury including death, personal injury, property damage, tenants legal liability, non-owned automobile and contain a cross liability/severability of interest clause. The certificate must also include acknowledgement that coverage under the policy specifically extends to the works in question. The COI shall name the Town of Amherstburg as additional insured to the policy.

- iii. The CGL policy shall not contain any exclusion or limitation in respect to shoring, underpinning, raising or demolition of any building or structure, pile driving, caisson work, collapse of any structure or subsidence of any property, structure or land from any cause.
- iv. The Contractor shall note that where construction works are performed within lands owned by the County of Essex or Ministry of Transportation the CGL policy shall also name the County of Essex and/or the Ministry of Transportation as additional insured to the policy.
- v. The liability insurance shall be endorsed to provide that the policy shall not be altered, cancelled or allowed to lapse without 30 days prior written notice to the Town of Amherstburg.

6. MNR Drain Registration

The Contractor is advised that the Town of Amherstburg has conducted an "Endangered Species Act Review" and has registered its drainage activities with the Ministry of Natural Resources and Forestry.

The Town of Amherstburg, in pursuant to the Endangered Species Act Municipal Agreement, has identified the potential presence of certain species within the project area. It is the responsibility of the Contractor to make certain that necessary provisions are undertaken to ensure the protection of all species at risk and their habitats throughout the course of construction. It is also the responsibility of the Contractor to make itself familiar with the following documents:

1. Town of Amherstburg – Complete Mitigation Documents
2. Town of Amherstburg - Additional Mitigation Measures for Snakes Species
3. Town of Amherstburg - Additional Mitigation Measures for Turtle Species
4. Snakes of Ontario Identifier Guide
5. Turtles of Ontario Identifier Guide

These documents will be provided to the successful bidder.

The Contractor will be responsible for providing the necessary equipment and materials required by the mitigation plans and shall contact the Town of Amherstburg Drainage

Superintendent immediately if any endangered species are encountered during construction.

7. Removal of Existing Access Culvert

The existing access culvert shall be removed in its entirety from the open channel. The steel culvert and the concrete rubble shall be disposed offsite at the expense of the Contractor. Suitable backfill shall be stockpiled adjacent to the site for reuse during installation of the proposed culvert. Any broken concrete or rip rap (concrete bags) from the existing structure shall be disposed offsite by the Contractor.

8. Installation of Access Culvert

The Contractor shall supply, install, and backfill aluminized corrugated steel pipe with a minimum wall thickness of 2.8mm in all cases. All corrugation profiles shall be of helical lockseam manufacture using 68 x 13mm corrugations for 1600mm dia. pipe and smaller and 125 x 25mm corrugations for 1800mm dia. pipe and larger. Pipe with 125 x 25mm corrugations shall be used if 68 x 13mm corrugations are not available. Future culvert replacement shall be to the same specifications.

The culvert under this report shall be examined after any cleanout of the open channel as to its condition. If it is found to be in disrepair (i.e. there are holes corroded in the bottom or sides) it shall be replaced as per these specifications.

The proposed access culvert shall be installed in the same general location as the existing culvert with the proposed south end of the culvert matching the existing south end. This will ensure that the surface swale and culvert across the road will not be blocked. The culvert shall be installed with the invert 10% (minimum 150mm) below the proposed channel bottom elevation, as shown on the drawings. The location of the culvert may be moved a short distance upstream or downstream if approved by the Engineer.

If an owner requests a longer culvert than that specified above, please refer to the report. The culvert length is based on using rip rap ends. If concrete block ends are to be utilized in the future, the culvert shall be 14 metres in length. The culvert may be moved upstream or downstream as necessary to avoid existing tile outlets. If the pipes cannot be avoided they shall be extended upstream or downstream of the proposed culvert and shall be done with non-perforated HDPE agricultural tubing with a manufactured coupling, elbow and rodent grate. Any tile outlets extended as a result of extra length requested by an owner shall be extended at the owner's expense.

The bottom of the excavation shall be excavated to the required depth with any over excavation backfilled with granular material or drainage stone. When the pipe has been installed to the proper grade and depth, the excavation shall be backfilled with granular or drainage stone from the bottom of the excavation to the springline of the pipe. Care shall be taken to ensure that the backfill on either side of the culvert does not differ by more than 300mm so that the pipe is not displaced. The access culverts shall be backfilled from the springline to finished grade with excavated material and granular "B1" to within 300mm of finished grade. The top 300mm shall be backfilled with compacted granular "A" material to finished grade.

Note that if excavated material is found unsuitable for backfill purposes, then granular material will be required as backfill. Unit prices shall be established in any tender for the disposal of the excavated material and the import of approved granular material at the expense of the drainage works.

All backfill shall be free from deleterious material. All granular bedding material shall be mechanically compacted to 95% modified standard proctor density. All backfill material above the springline shall be mechanically compacted to 95% modified proctor density using appropriate compaction equipment.

Rip rap ends are to be used with 1.5:1 side slopes. The rip rap shall consist of 100mm x 250mm quarry stone or approved equal. The area to receive the rip rap shall be graded to a depth of 400mm below finished grade. Filter fabric (Terrafix 270R or approved equal) shall then be placed with any joints overlapped a minimum 600mm. The quarry stone shall then be placed with the smaller pieces placed in the gaps and voids to give it a uniform appearance.

If concrete blocks are used the culvert shall be 14 metres in length. The concrete blocks shall have dimensions of approx. 600mm x 600mm x 1200mm, 600mm x 600mm x 2400mm or 300mm x 600mm x 1200mm as required. The top of the culvert shall govern block elevation. The correct block shall be set with the top of the block equal to the top of the culvert. The blocks shall be set at each end of the culvert so that each row of blocks will be offset approx. 100mm from the row below. The bottom row shall consist of one block placed parallel to the culvert. The blocks shall be imbedded a minimum of 300mm into each bank and shall extend into the drain bottom to match the pipe invert or below.

The blocks shall be placed over a layer of filter fabric (Terrafix 270R or approved equal). The culvert shall be backfilled in conjunction with the placement of the blocks. The gaps between the culvert and the blocks shall be filled with concrete cinder blocks/bricks and mortar to give the endwall a finished appearance.

8. Environmental Considerations

The Contractor shall take care to adhere to the following considerations.

1. All excavated and stockpiled material shall be placed a minimum of 1.5 metres from the top of the bank. Material shall not be placed in surface water runs or open inlets that enter the channel.
2. All granular and erosion control materials shall be stockpiled a minimum of 1.5 metres from the top of the bank. Material shall not be placed in surface water runs or open inlets that enter the channel.
3. All activities, including maintenance procedures, shall be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicle and equipment refuelling and maintenance shall be conducted away from the channel, any surface water runs, or open inlets. All waste materials shall be stockpiled well back from the top of the bank and all surface water runs and open inlets that enter the drain.
4. All construction in the channel shall be carried out during periods of low flow. The Contractor shall maintain a dry working area during construction. The Contractor shall install a silt fence downstream of the work area. The silt fence shall consist of filter fabric or manufactured silt fence supported with posts. A temporary dam consisting of excavated material shall be constructed upstream and downstream of the work area if working during low water flow. The temporary dams shall be covered with filter fabric or plastic that shall be anchored with rip rap material or broken concrete. Water shall be bailed and pumped from the work area to an area downstream of the temporary dam and upstream of the silt fence. Water will be controlled in the area between the two temporary dams for the duration of construction using pumps, if necessary.

After completion of the construction, the temporary dams and any collected sediment shall be removed. The final removal shall be the silt fence. By following the above procedure, the work should have little or no impact on the existing channel if carried out during low flows. Timing restrictions should not apply, in my opinion, if the above procedures are followed.

5. The Contractor shall take care to adhere to the following Best Management Practices prepared by the Department of Fisheries and Ocean.
 - a) Culvert Replacements in Municipal Drains (Appendix A)

6. The Contractor shall take care to familiarize them with the Town of Amherstburg's mitigation documents and species identification guidelines which will be provided to the successful bidder.

9. Benchmarks

The benchmarks are based on geodetic elevations. Elevations are available at the culvert locations shown on the drawings. Where these elevations are on existing structures to be replaced, they shall be moved prior to the removal of the culverts.

10. Culvert Maintenance

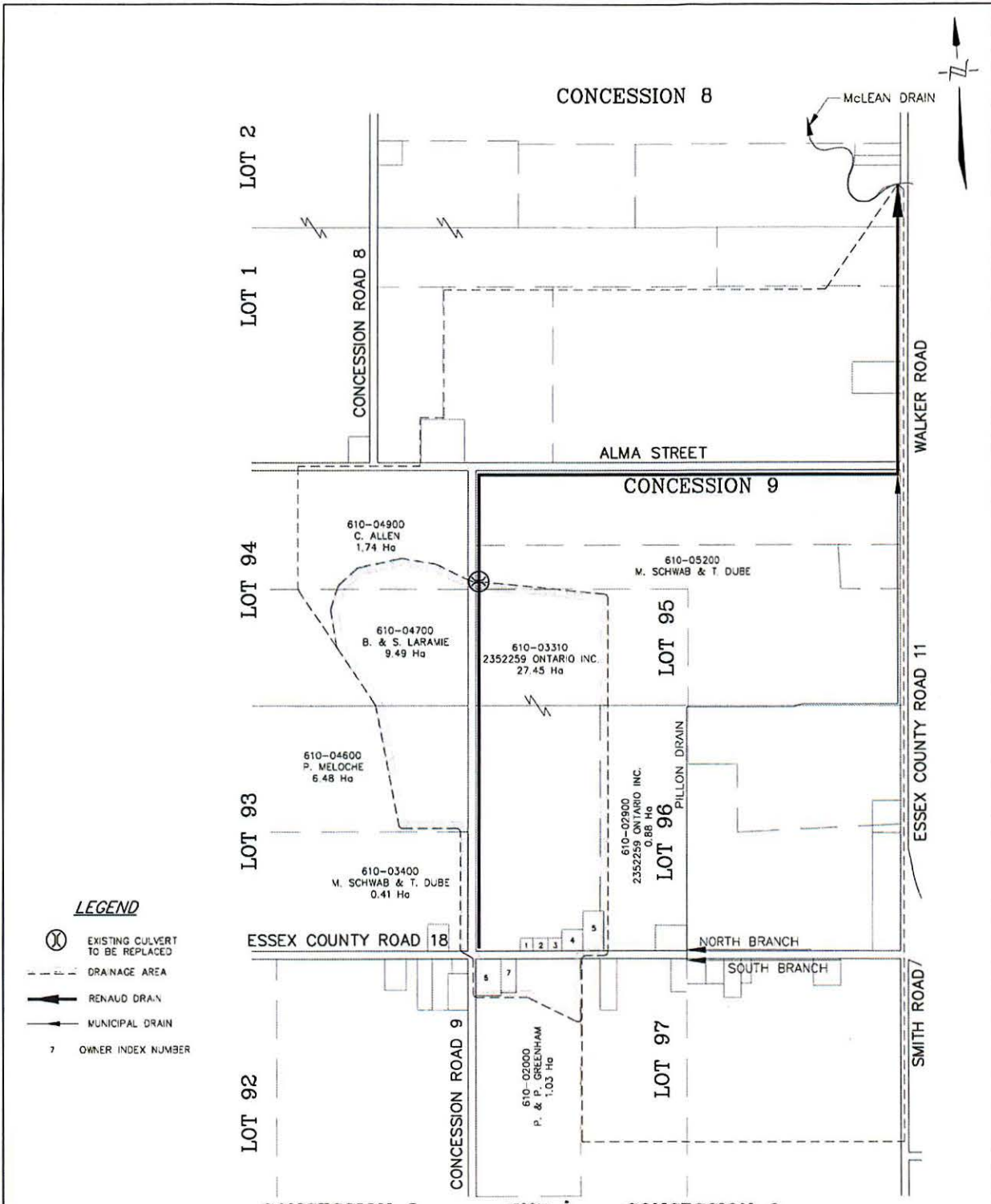
The Contractor shall be responsible for maintenance of the access culverts for a period of one year after their installation. This will include repairing any settlement areas on the travel surface with granular "A".

11. Miscellaneous

Any subsurface drains encountered upstream of the culvert that conflict with the proposed culvert shall be extended to an outlet to the open channel to the approval of the Drainage Superintendent.

Any fences that must be removed to allow construction or maintenance shall be reinstalled by the Contractor using the existing materials.

It will be the Landowner's responsibility to mark all tile and tile mains prior to maintenance being carried out.



- OWNER INDEX NUMBER**
- 610-03300 A. & M. LAFORET 0.11 Ha
 - 610-03200 A. GREENHAM 0.11 Ha
 - 610-03100 B. THERIAULT 0.11 Ha
 - 610-03000 T. & K. TOFFLEMIRE 0.27 Ha
 - 610-02990 A. & J. MCCORMICK 0.44 Ha
 - 610-02002 D. GYOR 0.66 Ha
 - 610-02100 C. & P. GYORI 0.33 Ha



R Dobbin Engineering Inc.
 4218 Oil Heritage Road
 Petrolia Ontario, N0N 1R0
 Phone: (519) 882-0032 Fax: (519) 882-2233

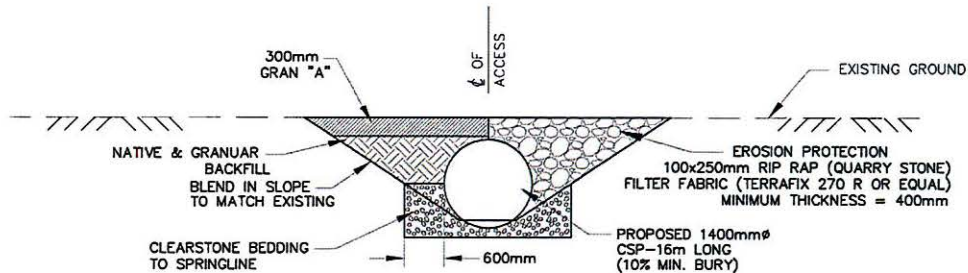
APPROVED M. GERRITS	SCALE	PLAN		
CHECKED B. VAN RIJTENBERG	NO.	REVISIONS	DATE	BY
DRAWN J. WARNER	1	FINAL REPORT	JULY 17, 2018	JW

TOWN of AMHERSTBURG
 CULVERT REPLACEMENT ON THE RENAUD DRAIN
 PLAN

1 OF 2

DRAWING NAME: Culvert Replacement on the Renaud Drain Plan PROJECT No. 2018-932

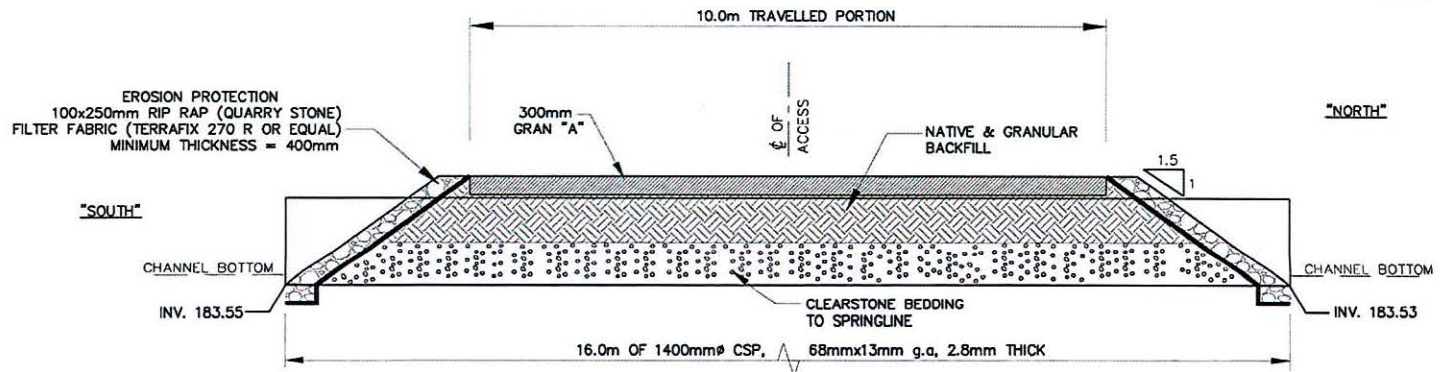
Last Updated: July 17, 2018



PROPOSED PIPE END SECTION

BENCHMARK No.1 ELEV. 184.360
 TOP EAST END OF EXISTING 375mm ϕ HDPE UNDER CONCESSION ROAD 9 APPROXIMATELY 3 METRES SOUTH OF EXISTING 1050mm ϕ CSP BEING REPLACED

BENCHMARK No.2 ELEV. 184.920
 TOP OF NORTH END OF EXISTING 1050mm ϕ CSP BEING REPLACED



NOTE:
 ALL GRANULARS COMPACTED TO 98% MODIFIED PROCTOR DENSITY

PROPOSED CROSS-SECTION



4218 Oil Heritage Road
 Petrolia Ontario, N0N 1R0
 Phone: (519) 882-0032 Fax: (519) 882-2233

DRAWING NAME: Culvert Replacement on the Renaud Drain Culvert Detail PROJECT No. 2018-932

APPROVED	NO.	REVISIONS	DATE	BY
M. GERRITS				
CHECKED	1	FINAL REPORT	JULY 17, 2018	JW
B. VAN RUITENBURG				
DRAWN				
J. WARNER				

SCALE 1:75

TOWN of AMHERSTBURG
CULVERT REPLACEMENT ON THE RENAUD DRAIN
CULVERT DETAIL

2
OF 2

APPENDIX A

Best Management Practices – Culvert Replacements in Municipal Drains

This document describes the conditions on which one may proceed with a culvert replacement in a municipal drain without DFO approval/notification. All municipal, provincial, or federal legislation that applies to the work being proposed must be respected. If the conditions/requirements below cannot be met, please complete the drain notification form and submit it to the Fisheries Protection Program form review at: FisheriesProtection@dfo-mpo.gc.ca.

Potential Impacts to Fish Habitat

- Infilling fish habitat by encroachment of the water crossing footprint or channel realignment to accommodate culvert
- Harmful substrate alteration of fish habitat (e.g. blockage of groundwater upwellings, critical SAR habitat, spawning areas)
- Removal of riparian vegetation and cover along the banks of the municipal drain
- Removal of edge habitat (e.g. undercut bank, shallower areas with lower velocity, aquatic vegetation) creation of barriers to fish movement (e.g. perched crossings, velocity barriers, alteration of the natural stream gradient)
- Alteration of channel flow velocity and/or depth (e.g. oversized culvert resulting in insufficient depth for fish passage at low flow or undersized culvert resulting in a flow velocity barrier at high flow)
- Alteration of channel morphology and sediment transport processes caused by the physical structure of the crossing resulting in upstream and downstream sediment aggradation/erosion
- Re-entry of sediment that was removed/stockpiled into the watercourse
- Erosion downstream from sudden release of water due to the failure of site isolation
- Stranding of fish in isolated ponds following de-watering of the site
- Impingement or entrainment of fish when de-watering pumps are used
- Short term or chronic transport of deleterious substances, including sediment, into fish habitat from construction or road drainage

Requirements

The following requirements must be met:

- There are no aquatic Species at Risk present in the work zone or impact zone. To confirm there are no aquatic Species at Risk present, refer to the document, [A Guide for Interpreting Fish and Mussel Species at Risk Maps in Ontario](http://www.dfo-mpo.gc.ca/Library/356763.pdf) which can be found at: <http://www.dfo-mpo.gc.ca/Library/356763.pdf>. Links for Ontario Conservation Area specific fish and mussel maps that include critical habitat extents and a list of aquatic Species at Risk found within the conservation authority boundary can be found on Page 5 of [A Guide for Interpreting Fish and Mussel Species at Risk Maps in Ontario](http://www.dfo-mpo.gc.ca/Library/356763.pdf).
- The culvert is embedded into the streambed and must allow for the free passage of fish.
- The work involves like-for-like replacements of existing road or private access culverts on all drain types without SAR.
- On C and F Drains only, this can also include replacements with extensions and end walls for the purposes of providing the property or road with safe access, but the project permanent footprint will not increase more than 250 m² below the high water mark.
- The project does not involve replacing a bridge or arch with one or more culverts installed in parallel or a larger-diameter culvert with more than one culvert installed in parallel.

- The project does not involve building more than one culvert installed in parallel on a single watercourse crossing site (e.g. twin culvert).
- The project does not involve temporarily narrowing the watercourse to an extent or for a duration that is likely to cause erosion, structural instability or fish passage problems.
- The municipal drain has no flow/low flow or is frozen to the bottom at the time of the replacement.
- In-water work is scheduled to respect timing windows (Tables 1 and 2) to protect fish, including their eggs, juveniles, spawning adults, and/or the organisms upon which they feed.
- The work can be conducted using the Culvert Removal Method described below and Standard Measures to Avoid Causing *Serious Harm to Fish* will be implemented when required.

Note: If your project must be conducted without delay in response to an emergency (e.g. the project is required to address an emergency that poses a risk to public health or safety or to the environment or property), you may apply for an Emergency Authorization (<http://www.dfo-mpo.gc.ca/asp/forceDownload.asp?FilePath=/pnw-ppe/reviews-revues/Emergency-Authorizations-Autorisations-Urgences-eng.pdf>).

Culvert Removal Methodology

- Plan/manage the work site in a manner that prevents sediment from entering the municipal drain by installing sediment and erosion control materials where required. Ensure that a sediment and erosion control plan is developed and modified as necessary for the site.
- Where required, install effective erosion and sediment control measures before starting work to prevent sediment from entering the municipal drain.
- Implement site isolation measures when in-water work is required.
 - Install an impervious barrier upstream of the work area (Figure 1). If possible, install a secondary barrier upstream of the work area for added protection.
 - Attempt to drive out the fish from the work area and then install the impervious barrier downstream of the work area. This may reduce or eliminate the need for a fish salvage.
 - When the drain is flowing, maintain downstream flows (e.g. bypass water around the work site using pumps or flume pipes; Figure 2). Provide temporary energy dissipation measures (e.g. rip-rap) at discharge point of the hose or temporary outlet pipe when required. Routinely inspect bypass pump and hose or pipe to ensure proper operation. Inspect discharge point for erosion and reposition hose/pipe or install additional temporary energy dissipation material as needed.
 - Dewater the isolated work area. The hose for a pump may discharge along the top of the bank into existing vegetation; however, the area should be monitored for signs of erosion. Reposition the hose or install additional temporary energy dissipation material as needed.
 - A fish screen with openings no larger than 2.54 mm (0.10 inches) should be equipped on any pump used during the operation. Note: Additional information regarding fish screens can be found in the DFO Freshwater Intake End-of-Pipe Fish Screen Guideline document (<http://www.dfo-mpo.gc.ca/Library/223669.pdf>).
 - Collect any fish present in the isolated work area and relocate them downstream.
 - Fish salvage operations must be conducted under a license issued by the Ontario Ministry of Natural Resources and Forestry (MNRF). The MNRF should be contacted well in advance of any work to obtain the required fish collection license.
- Install the culvert so that it is embedded into the streambed; ensure the culvert remains passable (e.g. does not become perched) by fish and wildlife.

- Decommission the site isolation in a manner that minimizes the introduction of sediment. The downstream isolation barrier shall gradually be removed first, to equalize water levels inside and outside of the isolated area and to allow suspended sediments to settle.
- Stabilize and remove waste from the site.
- Where required, maintain effective erosion and sediment control measures until complete re-vegetation of disturbed areas is achieved.



Figure 2. Isolation of Site

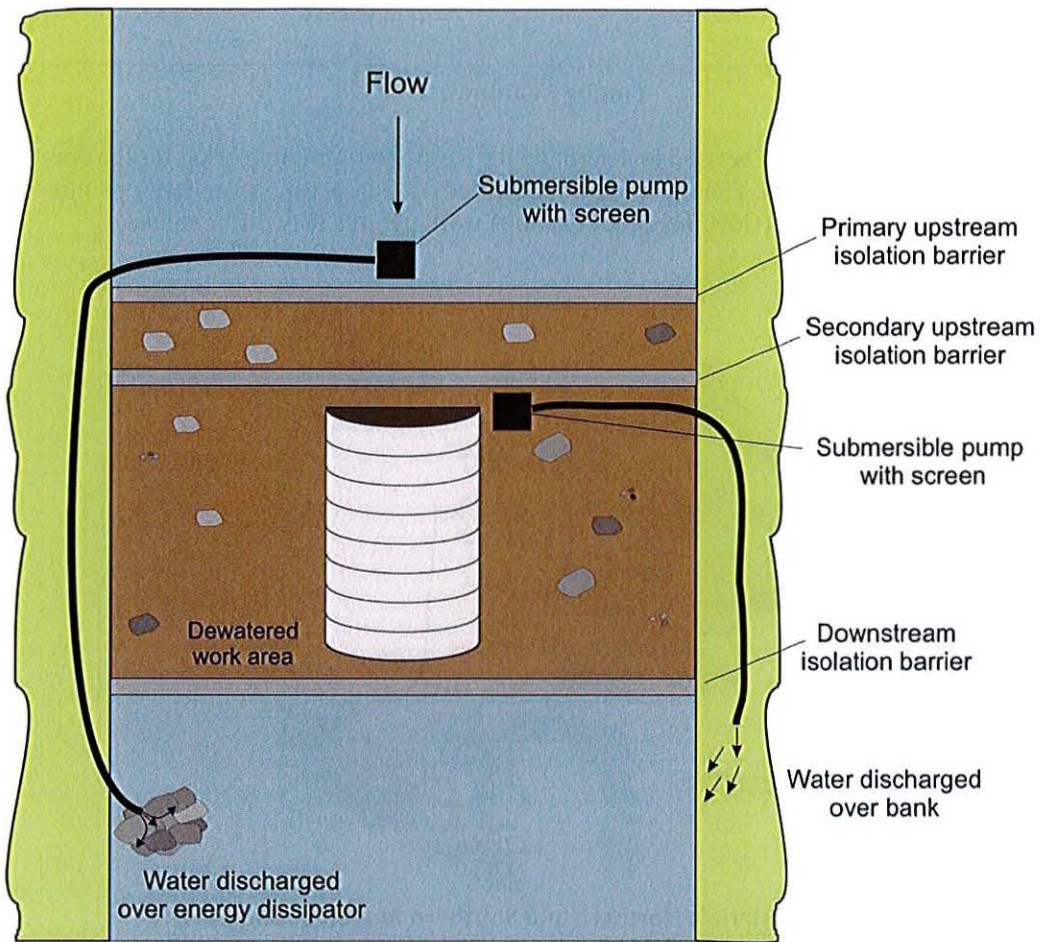


Figure 3. Isolation and Bypass Diversion when Working In-Water

Timing Windows

Figure 1 and Tables 1 and 2 can be used to determine the Restricted Activity period for the drain based on its classification. Note: Timing windows identified on [Conservation Authority](#) permits or [Ministry of Natural Resources](#) (Government of Ontario) work permits may differ and take precedence.



Figure 1. Ontario's Northern and Southern Region boundaries for determining application of restricted activity timing windows.

Table 1. Restricted Activity timing windows for the protection of spawning fish and developing eggs and fry in the Northern Region. Dates represent when work should be avoided.

DRAIN TYPE	RESTRICTED ACTIVITY PERIOD
A	SEPTEMBER 1 TO JULY 15
B	SEPTEMBER 1 TO JULY 15
C	APRIL 1 TO JULY 15
D	SEPTEMBER 1 TO JULY 15
E	APRIL 1 TO JULY 15

Table 2. Restricted Activity timing windows for the protection of spawning fish and developing eggs and fry in the Southern Region. Dates represent when work should be avoided.

DRAIN TYPE	RESTRICTED ACTIVITY PERIOD
A	SEPTEMBER 15 TO JULY 15
B	MARCH 15 TO JULY 15
C	MARCH 15 TO JULY 15
D	OCTOBER 1 TO JULY 15
E	MARCH 15 TO JULY 15

Standard Measures to Avoid Causing *Serious Harm to Fish*

When implementing a culvert removal project in a municipal drain, the *Fisheries Act* still requires an individual/company to ensure they avoid causing *serious harm to fish* during any activities in or near water. The following advice will help one avoid causing harm and comply with the *Act* (for additional information see <http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html>).

1. Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
2. Whenever possible, operate machinery on land above the high water mark or on ice and in a manner that minimizes disturbance to the banks and bed of the municipal drain.
 - Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks.
 - Limit machinery fording of the municipal drain to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the municipal drain are required, construct a temporary crossing structure.
 - Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.
 - Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
3. Install effective sediment and erosion control measures before starting work to prevent sediment from entering the municipal drain. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
4. Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the municipal drain and runoff water is clear.
5. Undertake all in-water activities in isolation of open or flowing water while maintaining the natural flow of water downstream and avoid introducing sediment into the municipal drain.
6. Ensure applicable permits for relocating fish are obtained and relocate any fish that become trapped in isolated pools or stranded in newly flooded areas to the main channel of the watercourse.
7. Ensure that the water that is being pumped/diverted from the site is filtered (sediment remove) prior to being released (e.g. pumping/diversion of water to a vegetated area).
8. Implement measures for containing and stabilizing waste material (e.g. dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
9. Stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
10. If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
11. Remove all construction materials from site upon project completion.