NORTH BRANCH OF EAST BRANCH OF N0. 47 DRAIN

Drain Re-Alignment at Road 5 East Geographic Township of Gosfield South



TOWN OF KINGSVILLE

2021 Division Road North Kingsville, Ontario N9Y 2Y9 519-733-2305

Rood Engineering Inc.

Consulting Engineers 9 Nelson Street Leamington, Ontario N8H 1G6 519-322-1621

> Project REI2024D017 2024-12-23

Rood Engineering Inc.

Consulting Engineers

December 23rd, 2024

Mayor and Municipal Council Corporation of the Town of Kingsville 2021 Division Road North Kingsville, Ontario N9Y 2Y9

Mayor Rogers and Members of Council:

NORTH BRANCH OF EAST BRANCH OF NO. 47 DRAIN Drain Realignment at Road 5 East Geographic Twp. of Gosfield South *Project REI2024D017* Town of Kingsville, County of Essex

I. INTRODUCTION

In accordance with the instructions received from you by letter of April 3rd, 2024, from your Drainage Superintendent, Lu-Ann Marentette, we have prepared the following report that provides for the realignment of a portion of the North Branch of East Branch of No. 47 Drain. This proposed new alignment is intended to realign a portion of the open drain immediately north of Road 5 East with the road crossings being replaced under Road 5 East and Division Road (County Road 29), also resulting in the expansion of the road boulevard on the east side of Division Road, enhancing the intersection for traffic and infrastructure.

The North Branch of East Branch of No. 47 Drain currently comprises of an open Municipal drain with a number of access bridges generally located along the east side of Division Road (County Road 29) north of Road 5 East and extending from its outlet in the East Branch of No. 47 Drain at Road 5 East northerly and then northeasterly along the north limit of Lot 263 South Talbot Road Concession to its upper end just past the midpoint of Lot 263, South Talbot Road Concession. The drain was constructed pursuant to the Drainage Act. A plan showing the North Branch of East Branch of No. 47 Drain alignment, its approximate watershed, as well as the general location of the above-mentioned road crossings, is included herein as part of the report.

Our appointment and the works related to the construction of the drain realignment of the North Branch of East Branch of No. 47 Drain, proposed under this report, is in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2021". We have performed all of the necessary survey, investigations, etcetera for the proposed realignment of the North Branch of East Branch of No. 47 Drain and we report thereon as follows.

II. <u>BACKGROUND</u>

From our review of the Town's drainage files, we have determined that the part of the North Branch of East Branch of No. 47 Drain encompassing the affected open drain and road crossings was last repaired under an Engineer's Report dated June 10th, 1970, prepared by William Setterington, P.Eng. The work included in said report consisted of brushing and cleaning of the drain as well as bridge cleaning.

The Schedule of Assessment in the latest drainage report was used to establish the upstream watershed area of the North Branch of East Branch of No. 47 Drain.

III. PRELIMINARY EXAMINATION AND ON-SITE MEETING

After reviewing all of the available drainage information and documentation provided by the Drainage Superintendent, we arranged with Town staff to schedule an on-site meeting for April 23rd, 2024. The following people were in attendance at said meeting: Linda Ludke, Paul Welker, Mark Fishleigh (County of Essex), Lu-Ann Marentette (Drainage Superintendent), David Montigny (Rood Engineering) and Gerard Rood (Rood Engineering).

It was discussed that the existing drain alignment is being adjusted to better align the open drain with the road crossings replacements under Road 5 East and Division Road (County Road 29). The bridge replacement works are being completed by Landmark Engineers Inc. at the request of the Road Authorities. Rood Engineering Inc. has been appointed to review the drain alignment proposed as part of Landmark Engineers Inc.'s design of the replacement road crossings and author a drainage report to legalize the new location of the drain and provide for compensation for lands taken and damages as required.

Because the road crossings are replacement bridges, the cost of the new replacement bridges construction, as well as all the cost for the preparation of the Engineer's Report would typically be shared by the abutting owner and upstream lands and roads. However, because the drain realignment and bridge replacements will be a benefit to the Road Authorities, they will be assessed a one-time Special Benefit for that work.

The overall drainage report procedure, future maintenance processes, grant eligibility and allowances for land taken were generally reviewed with the owners. They were also advised that the works will be subject to the approval of the Department of Fisheries and Oceans (DFO), the Ministry of Natural Resources and Forestry (MNRF), Ministry of Environment Conservation & Parks (MECP) and the Essex Region Conservation Authority (ERCA).

IV. FIELD SURVEY AND INVESTIGATIONS

Following the on-site meeting, we reviewed design plans for the construction of the drain realignment provided by Landmark Engineers Inc.

We reviewed the ERCA and DFO Species at Risk mapping for fish and mussels and the Town made initial submissions to ERCA regarding their requirements. Any DFO requirements for work that would be proposed to be carried out on the North Branch of East Branch of No. 47 Drain was investigated. A response from the Conservation Authority was received by email on April 22nd, 2024, and indicated that the Town must apply for a permit and follow standard mitigation requirements.

The MNRF Species at Risk former Town agreement with MNRF pursuant to Section 23 of the "Endangered Species Act, 2007" expired as of June 30th, 2015. The former agreements are replaced with new legislation provisions under Ontario Regulation 242/08, Section 23.9 which allows repairs, maintenance, and improvements to be conducted by the Town within existing municipal drains and is administered by the MECP. These works are exempt from Sections 9 and 10 of the Endangered Species Act provided that the rules in the regulations are followed. When eligible, the new regulations allow Municipalities to give notice to MNRF by registering their drainage activities through an online registry system.

V. FINDINGS AND RECOMMENDATIONS

Based on our investigations, examinations, and discussions with the affected property owners, we would recommend that the portion of drain of the North Branch of East Branch of No. 47 Drain, immediately north of Road 5 East, be realigned at the location and to the general parameters as established in the design drawings prepared by Landmark Engineers Inc. attached herein.

During the course of our investigations, this drainage project was discussed and reviewed with ERCA, to deal with any Authority and DFO issues and comments related to this Municipal drain. The ERCA mapping indicates no concerns for the area of the proposed works under this drainage report. The DFO Species at Risk screening maps confirm that there are no Species at Risk Fish or Mussels identified in this area. The North Branch of East Branch of No. 47 Drain is located within the Regulated Area and is under the jurisdiction of ERCA, and therefore all work has to comply with the current mitigation provisions of ERCA and DFO. Details of these mitigation measures are included in the Specifications and <u>Appendix "REI-A"</u> forming part of this report.

As is now required under the new Endangered Species Act (ESA), 2007 Provincial Legislation, we have reviewed the former MNRF agreement with the Town. The MNRF mapping has basically confirmed that there are no foreseen impacts to natural heritage features or endangered or threatened species on this project; therefore, a permit or agreement under the ESA (2007) is not necessary at this time. Because turtles and snakes are mobile and indicated as sensitive in the area, we have included herein a copy of the MNRF mitigation requirements for them in <u>Appendix</u> "REI-B".

Providing mitigation requirements are implemented it was concluded that present wildlife Species at Risk will be protected from negative impacts and will not contravene with Section 9 (species protection) or Section 10 (habitat protection) of the ESA (2007). Based on this information we find that the Town can proceed with the eligible repairs, maintenance, and improvements to the drain as they are exempt under Sections 9 and 10 of the Act, provided that they follow the rules within Ontario Regulation 242/08. To address these requirements the Town has established comprehensive mitigation measures as well as species identification guides for reference. Copies of the measures and guides shall be provided to the successful Tenderer for use during construction, and these documents are available for viewing by any interested parties at the Town office.

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Based on all of the above, we recommend that the portion of drain of the North Branch of East Branch of No. 47 Drain, immediately north of Road 5 East, be realigned in accordance with this report, the attached specifications and the accompanying drawings, and that all works associated with same be carried out in accordance with Section 78 of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2021". We further recommend that the existing portion of the drain that is being filled in be abandoned in accordance with Section 19 of the Drainage Act.

VI. <u>ALLOWANCES</u>

We have provided that all of the work on the open drain will generally be completed from the west side of the drain. The Contractor will be required to restore any existing grassed buffer and roadway areas damaged by the work. We recommend that any materials removed from the open drain or existing bridges, be spread on the adjacent open lands to the northeast of the drain for disposal by the Contractor, beyond the limits of any existing grass buffer or driveway access. Based on all of the above we find that allowances for damages are payable pursuant to Sections 29 and 30 of the Drainage Act.

We find that the provision of access along the east bank of the drain and disposal of excavated material on the abutting farmlands requires payment for the land necessary to carry out same. We therefore recommend that the following owners be compensated for all work areas that will be impacted, including land taken for realignment of the drain and for damages to lands and crops, if any, namely:

<u>ltem</u>	<u>Owner(s) Name(s)</u>	<u>Roll No.</u>	Legal Description	<u>Damage</u> Land Ta	<u>es &</u> Iken
1)	Linda Ludke	(410-06100)	Part of Lot 12, Concession 5 ED	\$	809.00
ΤΟΤΑΙ	L FOR ALLOWANCES AND	DAMAGES		\$	809.00

These values for allowances and damages are based on an 8.0m wide strip of land parallel to and immediately adjacent to the drain or grassed buffer and driveway, for a length of 20.0m for the parcel abutting the east side of the Municipal drain, resulting in a total area of 0.04 acres.

These values for allowances and damages are also based on a value of \$1,225.00 per acre (\$3,027.00 per hectare) for the affected lands and crops, if any. These allowances provide for a spread depth of 100mm and are calculated using a rate per acre of \$700.00 for year one, \$350.00 for year two and \$175.00 for the third year. The impact after 3 years is considered negligible. The land taken for the realignment of the drain is compensated at \$19,250.00 per acre (\$47,567.00 per hectare) to reflect the current FCC average land values for Kingsville and included in the total payment.

We have provided for this in our estimate as is provided for under Sections 29 and 30 of the "Drainage Act, R.S.O. 1990, Chapter D.17, as amended 2021".

VII. ESTIMATE OF COST

Our estimate of the total cost of this work including all incidental expenses is the sum of **<u>FIFTEEN</u> <u>THOUSAND ONE HUNDRED SIXTY DOLLARS (\$15,160.00)</u>, made up as follows:</u>**

CONSTRUCTION

ltem 1)	Provide all labour, equipment and material to construct the
	realignment of the open drain including, clearing and grubbing
	of existing vegetation, excavation of new drain alignment,
	infilling existing open drain, compaction, cleanup and
	restoration, including topsoil, seed and mulch, complete.

		Lump Sum	\$	8,500.00
	Estimated Net H.S.T. (1.76%)			\$ 150.00
	TOTAL FOR CONSTRUCTION		\$	8,650.00
<u>IN(</u>	CIDENTALS			
1)	Report, Estimate, and Specifications		\$	3,500.00
2)	Assistants, Expenses, Drawings, Duplication Cost of Report and Drawings		\$	1,000.00
3)	Estimated Cost of Final Inspection		\$	500.00
4) 5)	Estimated Net H.S.T. on Items Above (1.76%) Estimated Cost of E.R.C.A. permit		\$ \$	88.00 500.00
6)	Estimated Contingency Allowance		\$	113.00

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Report – North Branch of East Branch of No. 47 Drain Drain Realignment at Road 5 East Town of Kingsville - REI2024D017	2024-12-23
TOTAL FOR INCIDENTALS	\$ 5,701.00
TOTAL FOR DAMAGES AND ALLOWANCES (brought forward)	\$ 809.00
TOTAL FOR CONSTRUCTION (brought forward)	\$ 8,650.00
TOTAL ESTIMATE	\$ 15,160.00

VIII. DRAWINGS AND SPECIFICATIONS

As part of this report, we have attached Landmark Engineers Inc.'s design drawings for the construction of the drain realignment. The design drawings show the subject work and the details of the drain realignment. The design drawings are attached to the back of this report and are labelled **Appendix "REI-C"**.

Also attached, we have prepared Specifications which set out the required construction details for the proposed drain realignment.

IX. CONSTRUCTION SCHEDULE OF ASSESSMENT

We would recommend that all of the total costs associated with the construction of the drain realignment, and the preparation of this Engineer's report, be assessed against the Road Authorities of the Town of Kingsville and the County of Essex. A Construction Schedule of Assessment has been prepared and included herein to indicate the lands and roads assessed for the drain realignment.

X. FUTURE MAINTENANCE

We recommend that the drain realignment as identified herein, be maintained in the future as part of the drainage works. We would also recommend that the drain, for which the maintenance costs are to be shared with the upstream lands and roads within the watershed, be maintained by the Town and that said maintenance would include works to the bridge culvert, bedding, backfill and end treatment. If any fencing, gate, decorative walls, guardrails, or other special features exist that will be impacted by the maintenance work, they are also to be removed and restored or replaced as part of the bridge maintenance work. However, the cost of the supply and installation of any surface materials other than Granular "A" material and the cost of removal and restoration or replacement, if necessary, of any special features, shall be totally assessed to the benefiting adjoining owner(s) served by said drain.

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After the completion of all of the works included within this report, the portion of the North Branch of East Branch of No. 47 Drain realigned under this report shall be maintained in the future by the Town of Kingsville. Furthermore, if any maintenance work is required to same, we recommend that all future maintenance costs be assessed on a pro-rata basis in accordance with the values in the current applicable drainage report and by-law Schedule of Assessment.

The above provisions for the future maintenance of this drain realignment, being constructed under this report, shall remain as aforesaid until otherwise determined under the provisions of the "Drainage Act, R.S.O. 1990, Chapter D.17 as amended 2021".

All of which is respectfully submitted.

Rood **E**ngineering **I**nc.

Gerard Rood

Gerard Rood, P.Eng.

/dm

att.

ROOD ENGINEERING INC. Consulting Engineers 9 Nelson Street LEAMINGTON, Ontario N8H 1G6



CONSTRUCTION SCHEDULE OF ASSESSMENT NORTH BRANCH OF EAST BRANCH OF NO. 47 DRAIN (Bridge Replacement & Drain Re-alignment at Road 5 East) Town of Kingsville

3. MUNICIPAL	LANDS: Con. or											
Tax Roll	Plan	Lot or Part	Acres	Acres	Hectares			Value of	Value of	Value o	of Special	TOTAL
<u>No.</u>	<u>No.</u>	<u>of Lot</u>	<u>Owned</u>	<u>Afft'd</u>	<u>Afft'd</u>	<u>Owner's Name</u>		<u>Benefit</u>	<u>Outlet</u>	<u>Be</u>	<u>nefit</u>	VALUE
		Road 5 East		1.00	0.405	Town of Kingsville	\$	3,790.00	\$ 11,370.00	\$	-	\$ 15,160.00
		Total on Municij	pal Lands				. \$	3,790.00	\$ 11,370.00	\$	-	\$ 15,160.00
		TOTAL ASSESSM	ENT	1.00	0.40		\$	3,790.00	\$ 11,370.00	\$	-	\$ 15,160.00
1 Hectare = 2.4	471 Acres											
Project No. REI	12024D01	7										

December 23rd, 2024

SPECIFICATIONS

NORTH BRANCH OF EAST BRANCH OF NO. 47 DRAIN

Drain Realignment at Road 5 East

(Geographic Township of Gosfield South)

TOWN OF KINGSVILLE

I. <u>GENERAL SCOPE OF WORK</u>

The North Branch of East Branch of No. 47 Drain currently comprises of an open Municipal drain generally located along the east side of Division Road (County Road 29) north of Road 5 East and extending from its outlet in the East Branch of No. 47 Drain at Road 5 East northerly and then northeasterly along the north limit of Lot 263 South Talbot Road Concession to its upper end just past the midpoint of Lot 263, South Talbot Road Concession. The work under this project generally comprises of the realignment of a portion of the drain immediately north of Road 5 East. The existing drain channel backfilled with compacted excavation material from the diversion cut and restoration with topsoil, seed and mulch.

All work shall be carried out in accordance with these specifications, the plans forming part of this drainage project, as well as the Standard Details included in <u>Appendix "REI-C"</u>. The realigned portion of the drain shall be of the size, type, depth, etcetera, as is shown in the accompanying drawings, and as may be further laid out at the site at the time of construction. All work carried out under this project shall be completed to the full satisfaction of the Town Drainage Superintendent and the Consulting Engineer.

II. E.R.C.A. AND D.F.O. CONSIDERATIONS

The Contractor will be required to implement stringent erosion and sedimentation controls during the course of the work to help minimize the amount of silt and sediment being carried downstream into the North Branch of East Branch of No. 47 Drain. It is intended that work on this project be carried out during relatively dry weather to ensure proper site and drain conditions and to avoid conflicts with sediment being deposited into the outlet drainage system. All disturbed areas shall be restored as quickly as possible with grass seeding and mulching installed to ensure a protective cover and to minimize any erosion from the work sites subsequent to construction. The Contractor may be required to provide temporary silt fencing and straw bales as outlined further in these specifications.

All of the work shall be carried out in accordance with any permits or authorizations issued by the Essex Region Conservation Authority (ERCA) or the Department of Fisheries and Oceans (DFO), copies of which will be provided, if available, and the notes in <u>Appendix "REI-A"</u>. The Contractor is advised that no work may be carried out in the existing drain from March 15th to June 30th of any given year because the drain is directly connected to a downstream area that is classified as sensitive to impacts on aquatic life and habitat by ERCA and DFO.

As part of its work, the Contractor will implement the following measures that will ensure that any potential adverse effects on fish and fish habitat will be mitigated:

- a) As per standard requirements, work will not be conducted at times when flows in the drain are elevated due to local rain events, storms, or seasonal floods. Work will be done in the dry.
- b) All disturbed soils on the drain banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be hauled away and disposed of at a suitable site, or spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the drain.
- c) To prevent sediment entry into the Drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and their Contractors to ensure that sediment and erosion control measures are functioning properly and are maintained and upgraded as required.
- d) Silt or sand accumulated in the barrier traps must be removed and stabilized on land once the site is stabilized.
- e) All activities including maintenance procedures should be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicular refuelling and maintenance should be conducted away from the water.

III. MNRF & MECP ENDANGERED SPECIES ACT CONSIDERATIONS

The Ministry of Natural Resources & Forestry (MNRF) Species at Risk former Town agreement with M.N.R.F. pursuant to Section 23 of the "Endangered Species Act, 2007" expired as of June 30th, 2015. The former agreements are replaced with new regulation provisions under Ontario Regulation 242/08 administered by the Ministry of Environment, Conservation and Parks (MECP). The Contractor is to note that the MECP screening process by way of a Species at Risk (SAR) review of the MECP "Endangered Species Act, 2007" (ESA) will be completed as a self-assessment by the Town pursuant to Section 23.9 of the ESA prior to construction. This Section allows the Town to conduct eligible works of repair, maintenance, and improvements to existing municipal

drains under the Drainage Act, and exemptions from Sections 9 and 10 of the ESA, provided that the requirements are followed in accordance with Ontario Regulation 242/08. The results of the review will be provided to the Contractor and copies of the mitigation measures, habitat protection and identification sheets will be included within <u>Appendix "REI-B"</u>.

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When eligible, the new regulations allow Municipalities to give notice to MNRF by registering their drainage activities through an online registry system.

The MNRF and MECP mapping has basically confirmed that snake species including Butler's Garter Snake and Eastern Fox Snake are threatened and endangered, respectively, on this project. Because snakes are mobile and indicated as sensitive and endangered in the area, we have included herein a copy of the MNRF and MECP mitigation requirements for them in **Appendix "REI-B"**. Providing mitigation requirements are implemented, it was concluded that present wildlife Species at Risk will be protected from negative impacts and the works will not contravene Section 9 (species protection) or Section 10 (habitat protection) of the Endangered Species Act, 2007.

The Contractor is to review <u>Appendix "REI-B"</u> in detail and is required to comply in all regards with the contents of said MNRF and MECP measures, and follow the special requirements therein included during construction. Throughout the course of construction, the Contractor will be responsible to ensure that all necessary provisions are undertaken to protect all species at risk and their habitats including those in the Natural Heritage Information Centre NHIC table in the Appendix. If a threatened or sensitive species is encountered, the Contractor shall notify the Town and MNRF and MECP and provide all the equipment and materials stipulated by the mitigation requirements for handling the species and cooperate fully with the Town and MNRF and MECP staff in the handling of the species.

IV. ACCESS TO WORK

The Contractor is advised that the majority of the work to be carried out on this project extends across and to the north side of Road 5 East along the east side of Division Road (County Road 29) and the west side of the North Branch of East Branch of No. 47 Drain. The Contractor shall have access for the full width of the roadway abutting the proposed drainage works and the agricultural lands to the north for the drain realignment work. The Contractor may utilize the right-of-way and roadways as necessary, to permit the completion of all of the work required to be carried out for this project, as set out in the plans and in these specifications, along with a sufficient area in the vicinity of the drain to carry out any ancillary work.

The Contractor shall ensure that the traveling public is protected at all times while utilizing the roadway for its access. The Contractor shall provide traffic control, including flag persons when required. Should the Contractor have to close Road 5 East or Division Road (County Road 29) for the proposed works, it shall obtain the permission of the Town Drainage Superintendent or Consulting Engineer and arrange to provide the necessary notification of detours around the site.

The Contractor shall also ensure that all emergency services, school bus companies, etcetera are contacted about the disruption to access at least 48 hours in advance of same. All detour routes shall be established in consultation with the County of Essex and Kingsville Works Departments.

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Throughout the course of the work, it is imperative that the Contractor protect as much landscaping and vegetation as possible when accessing along the drain. Due to the extent of the work and the area for carrying out the work, the Contractor will be required to carry out all of the necessary steps to direct traffic and provide temporary diversion of traffic around work sites, including provision of all lights, signs, flag persons, and barricades required to protect the safety of the traveling public. Any accesses or areas used in carrying out the works are to be fully restored to their original conditions by the Contractor at its cost, including topsoil placement and lawn restoration as directed by the Town Drainage Superintendent and the Consulting Engineer. Restoration shall include but not be limited to all necessary levelling, grading, shaping, topsoil, seeding, mulching, and granular placement required to make good any damage caused.

V. <u>REMOVAL OF BRUSH, TREES AND RUBBISH</u>

Where there is any brush, trees or rubbish along the course of the drainage works, including the full width of the work access, all such brush, trees or rubbish shall be close cut and grubbed out, and the whole shall be chipped up for recycling, burned or otherwise satisfactorily disposed of by the Contractor. The brush and trees removed along the course of the work are to be put into piles by the Contractor in locations where they can be safely chipped and disposed of, or burned by it, or hauled away and disposed of by the Contractor to a site to be obtained by it at its expense. Prior to and during the course of any burning operations, the Contractor shall comply with the guidelines prepared by the Air Quality Branch of the Ontario Ministry of the Environment; and shall ensure that the Environmental Protection Act is not violated. The Contractor will be required to notify the local fire authorities to obtain any permits and cooperate with them in the carrying out of any work. The removal of brush and trees shall be carried out in close consultation with the Town Drainage Superintendent or Consulting Engineer to ensure that no decorative trees or shrubs are disturbed by the operations of the Contractor that can be saved. It is the intent of this project to save as many trees and bushes as practical within the roadway allowances and on private lands. Where decorative trees or shrubs are located directly over drainage pipes, the Contractor shall carefully extract same and turn them over to the Owner when requested to do so and shall cooperate with the Owner in the reinstallation of same if required.

The Contractor shall protect all other trees, bushes, and shrubs located along the length of the drainage works except for those trees that are established, in consultation with the Town Drainage Superintendent, the Consulting Engineer, and the Owners, to be removed as part of the works. The Contractor shall note that protecting and saving the trees may require the Contractor to carry out hand work around the trees, bushes, and shrubs to complete the necessary final site grading and restoration.

Following the completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which are to remain standing, and it shall dispose of said branches along with other brush, thus leaving the trees in a neat and tidy condition.

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The Contractor shall remove all deleterious materials and rubbish along the course of the open drain in the location of the work areas and any such materials located in the bridge culverts and enclosures while carrying out its cleaning of same. All such deleterious materials and rubbish shall be loaded up and hauled away by the Contractor to a site to be obtained by it at its cost.

VI. <u>FENCING</u>

Where it is necessary to take down any fence to proceed with the work, the same shall be done by the Contractor across or along that portion of the work where such fence is located. The Contractor will be required to exercise extreme care in the removal of any fencing so as to cause a minimum of damage to same. The Contractor will be required to reinstall any fence that is taken down in order to proceed with the work, and the fence shall be reinstated in a neat and workmanlike manner. The Contractor will not be required to procure any new materials for rebuilding the fence provided that it has used reasonable care in the removal and replacement of same. When any fence is removed by the Contractor, and the Owner thereof deems it advisable and procures new material for replacing the fence so removed, the Contractor shall replace the fence using the new materials and the materials from the present fence shall remain the property of the Owner.

VII. DETAILS OF OPEN DRAIN WORK

The open drain shall be excavated to the lines, levels, grades and cross-sections as shown on the accompanying drawings, or as may be further established by the Town Drainage Superintendent or the Engineer at the time of the work. The drain shall be carefully excavated so as not to disturb the existing banks, rock protection and vegetation, except for those portions of the drain where widening or restoration of a stable drain bank configuration is required particularly at the realignment portion. The bottom width of the drain and the sideslopes of the excavation shall conform to the dimensions given on the drawings.

The drain shall be of the size, type, depth, etcetera as shown on the accompanying drawings. When completed, the drain shall have a uniform and even bottom and in no case shall such bottom project above the grade line, as shown on the accompanying drawings. The finished side slopes of the drain shall be 2.0 metres horizontal to 1.0 metre vertical.

The excavated material is to be placed in the abandoned alignment of the open drain and any left-over material shall be cast onto the adjoining lands to the east and shall be well and evenly spread over a sufficient area so that no portion of the excavated earth is more than 100mm in depth. The material shall be kept at least 1.2 metres clear from the finished edge of the drain,

2024-12-23

care being taken not to fill up any existing tiles, ditches, furrows or drains with the excavated material. The excavated material to be placed in the abandoned drain alignment and to be spread upon the lands shall be free from rocks, cobbles, boulders, stumps, rubble, rubbish or other similar material and these materials, if encountered, shall be hauled away by the Contractor and disposed of at a site to be obtained by it at its expense.

Where the drain crosses any lawn, garden, orchard, parking, roadway or driveway areas, the excavated material for the full width of the above-mentioned areas shall be hauled away by the Contractor and disposed of to a site to be obtained by the Contractor at its expense. All work at the disposal site shall be established between the Contractor and the site owner. The Contractor shall be responsible for any permits required and shall provide copies of same to the Town and Consulting Engineer when requested.

Where there is any brush or rubbish in the course of the drain, including both side slopes of the drain, all such brush or rubbish shall be close cut and grubbed out. Where there is any brush or rubbish where the earth is to be spread, or on that strip of land between where the earth is to be spread and the edge of the drain, all such brush or rubbish shall be close cut and grubbed out. The whole is to be burned, chipped or otherwise satisfactorily disposed of by the Contractor.

VIII. ANCILLARY WORK

During the course of any work to the open drain along the length of the project, the Contractor will be required to protect or extend any existing tile ends or swales and connect them to the drainage works to maintain the drainage from the adjacent lands. All existing tiles shall be extended utilizing solid Big 'O' "standard tile ends" or equal plastic pipe of the same diameter as the existing tile and shall be installed in accordance with the "Standard Lateral Tile Detail" included in the plans, unless otherwise noted. Connections shall be made using a manufacturer's coupling where possible. Wherever possible, tiles shall be extended to outlet beyond the end of any access culverts. When required, openings into new pipes shall be neatly bored, saw cut or burned with a torch to the satisfaction of the Town Drainage Superintendent or the Consulting Engineer. All cuts to steel pipes shall be touched up with a thick coat of zinc rich paint (Galvicon or equal) in accordance with the manufacturer's recommendations. For other connections, the Contractor shall utilize a grouted connection. Grouted mortar joints shall be composed of three (3) parts of clean, sharp sand to one (1) part of Portland cement with just sufficient water added to provide a stiff plastic mix, and the mortar connection shall be performed to the full satisfaction of the Town Drainage Superintendent or the Consulting Engineer. The mortar joint shall be of a sufficient mass around the full circumference of the joint on the exterior side to ensure a tight, solid seal. The Contractor is to note that any intercepted pipes along the length of the existing open drain are to be extended and connected to the open drain unless otherwise noted in the accompanying drawings. Any disturbed grass areas shall be fully restored with topsoil, seed and mulch.

All good, clean, native fill material or topsoil to be utilized, where applicable, shall be compacted in place to a minimum Standard Proctor Density of 95%. All of the backfill material, equipment used, and method of compacting the backfill material shall be provided and performed to the full satisfaction of the Town Drainage Superintendent or Consulting Engineer.

Although it is anticipated that the drain realignment works shall be undertaken in the dry, the Contractor shall supply and install a temporary straw bale or silt curtain check dam in the drain bottom immediately downstream of the site during the time of construction. The straw bale or silt curtain check dam shall be to the satisfaction of the Town Drainage Superintendent or Consulting Engineer and must be removed upon completion of the construction. The check dam materials may be reused subject to their condition. All costs associated with the supply and installation of this straw bale or silt curtain check dam shall be included in the cost bid for the bridge replacements and installations.

IX. TOPSOIL, SEED AND MULCH

The Contractor shall be required to restore all existing grassed areas and drain side slopes damaged by the construction and/or cutting of the drain cross section, by placing topsoil, and then seed and mulch over said areas including any specific areas noted on the bridge details. The Contractor shall be required to provide all the material and to cover the above-mentioned surfaces with approximately 50mm of good, clean, dry topsoil on slopes and 100mm of good, clean, dry topsoil on horizontal surfaces, fine graded and spread in place ready for seeding and mulching. The placing and grading of any topsoil shall be carefully and meticulously carried out in accordance with Ontario Provincial Standard Specifications, Form 802 dated November 2010, or as subsequently amended, or as amended by these specifications and be readied for the seeding and mulching process. The seeding and mulching of all of the above-mentioned areas shall comply in all regards to Ontario Provincial Standard Specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications, Form 803 dated November 2010 and Form 804, dated November 2013, or as subsequently amended, or as amended by these specifications. The seeding mixture shall be the Standard Roadside Mix (Canada No. 1 Lawn Grass Seed Mixture) as set out in OPSS 804. All cleanup and restoration work shall be performed to the full satisfaction of the Town Drainage Superintendent or Engineer.

When all of the work has been completed, the Contractor shall ensure that positive drainage is provided to all areas; and shall ensure that the site is left in a neat and workmanlike manner, all to the full satisfaction of the Town Drainage Superintendent or Engineer.

X. <u>GENERAL CONDITIONS</u>

a) The Town Drainage Superintendent or Consulting Engineer shall have authority to carry out minor changes to the work where such changes do not lessen the efficiency of the work.

- b) The Contractor shall satisfy itself as to the exact location, nature and extent of any existing structure, utility or other object which it may encounter during the course of the work. The Contractor shall indemnify and save harmless the County of Essex, Town of Kingsville and the Consulting Engineer and their representatives for any damages which it may cause or sustain during the progress of the work. It shall not hold the County of Essex, Town of Kingsville or the Consulting Engineer liable for any legal action arising out of any claims brought about by such damage caused by it.
- c) The Contractor shall provide a sufficient number of layout stakes and grade points so that the Drainage Superintendent and Consulting Engineer can review same and check that the work will generally conform to the design and project intent.
- d) The Contractor will be responsible for any damage caused by it to any portion of the Town road system, especially to the travelled portion. When excavation work is being carried out and the excavation equipment is placed on the travelled portion of the road, the travelled portion shall be protected by having the excavation equipment placed on satisfactory timber planks or timber pads. If any part of the travelled portion of the road is damaged by the Contractor, the Town shall have the right to have the necessary repair work done by its' employees and the cost of all labour and materials used to carry out the repair work shall be deducted from the Contractor's contract and credited to the Town. The Contractor, upon completing the works, shall clean all debris and junk, etcetera, from the roadside of the drain, and leave the site in a neat and workmanlike manner. The Contractor shall be responsible for keeping all public roadways utilized for hauling materials free and clear of mud and debris.
- e) The Contractor shall provide all necessary lights, signs, and barricades to protect the public. All work shall be carried out in accordance with the requirements of the Occupational Health and Safety Act, and latest amendments thereto. If traffic control is required on this project, signing is to comply with the M.T.O. Manual of Uniform Traffic Control Devices (M.U.T.C.D.) for Roadway Work Operations and Ontario Traffic Manual Book 7.
- f) During the course of the work the Contractor shall be required to connect existing drainage pipes to the Municipal Drain. In the event that polluted flows are discovered, the Contractor shall delay the connection of the pipe and leave the end exposed and alert the Town, the Drainage Superintendent and the Consulting Engineer so that steps can be taken by the Town to address the concern with the owner and the appropriate authorities. Where necessary the Contractor shall cooperate with the Town in providing temporary measures to divert the drain or safely barricade same. Should the connection be found acceptable by the authorities, the Contractor shall complete the connection of the drain as provided for in the specifications, at no extra cost to the project.
- g) Following the completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which are to remain standing, and it shall dispose of said branches along with other brush, thus leaving the trees in a neat and tidy condition.

- h) The whole of the work shall be satisfactorily cleaned up, and during the course of the construction, no work shall be left in any untidy or incomplete state before subsequent portions are undertaken.
- During the course of the project the Contractor shall deal with any excess soil management from the project in accordance with Ontario Reg 406/19 pursuant to the Environmental Protection Act, R.S.O. 1990, c. E.19 and any subsequent amendments to same.
- j) All driveways, laneways and access bridges, or any other means of access on to the job site shall be fully restored to their former condition at the Contractor's expense. Before authorizing Final Payment, the Town Drainage Superintendent and the Consulting Engineer shall inspect the work in order to be sure that the proper restoration has been performed. In the event that the Contractor fails to satisfactorily clean up any portion of these accesses, the Consulting Engineer shall order such cleanup to be carried out by others and the cost of same be deducted from any monies owing to the Contractor.
- k) The Contractor will be required to submit to the Town, a Certificate of Good Standing from the Workplace Safety and Insurance Board prior to the commencement of the work and the Contractor will be required to submit to the Town, a Certificate of Clearance for the project from the Workplace Safety and Insurance Board before Final Payment is made to the Contractor.
- I) The Contractor shall furnish a Performance and Maintenance Bond along with a separate Labour and Material Payment Bond within ten (10) days after notification of the execution of the Agreement by the Town. One copy of said bonds shall be bound into each of the executed sets of the Contract. Each Performance and Maintenance Bond and Labour and Material Payment Bond shall be in the amount of 100% of the total Tender Price. All Bonds shall be executed under corporate seal by the Contractor and a surety company, authorized by law to carry out business in the Province of Ontario. The Bonds shall be acceptable to the Town in every way and shall guarantee faithful performance of the contract during the period of the contract, including the period of guaranteed maintenance which will be in effect for twelve (12) months after substantial completion of the works.

The Tenderer shall include the cost of bonds in the unit price of the Tender items as no additional payment will be made in this regard.

m) The Contractor shall be required, as part of this Contract, to provide Comprehensive Liability Insurance coverage for not less than \$5,000,000.00 on this project; and shall name the County of Essex, Town of Kingsville and its' officials and the Consulting Engineer and their staff as additional insured under the policy. The Contractor must submit a copy of this policy to both the Town Clerk and the Consulting Engineer prior to the commencement of work.

- n) Monthly progress orders for payment shall be furnished the Contractor by the Town Drainage Superintendent. Said orders shall be for not more than 90% of the value of the work done and the materials furnished on the site. The paying of the full 90% does not imply that any portion of the work has been accepted. The remaining 10% will be paid 60 days after the final acceptance and completion of the work and payment shall not be authorized until the Contractor provides the following:
 - i) a Certificate of Clearance for the project from the Workplace Safety and Insurance Board
 - ii) proof of advertising
 - iii) a Statutory Declaration, in a form satisfactory to the Engineer and the Town, that all liabilities incurred by the Contractor and its Sub-Contractors in carrying out the Contract have been discharged and that all liens in respect of the Contract and Sub-Contracts thereunder have expired or have been satisfied, discharged or provided for by payment into Court.

The Contractor shall satisfy the Consulting Engineer or Town that there are no liens or claims against the work and that all of the requirements as per the Construction Act, 2018 and its' subsequent amendments have been adhered to by the Contractor.

- o) In the event that the Specifications, Information to Tenderers, or the Form of Agreement do not apply to a specific condition or circumstance with respect to this project, the applicable section or sections from the Canadian Construction Documents Committee C.C.D.C.2 shall govern and be used to establish the requirements of the work.
- p) Should extra work be required by the Town Drainage Superintendent or Consulting Engineer, and it is done on a time and material basis, the actual cost of the work will be paid to the Contractor with a 15% markup on the total actual cost of labour, equipment and materials needed to complete the extra work.
- q) The Contractor shall provide shop drawings of the proposed wall for decorative precast concrete block headwalls for approval by the Drainage Superintendent or Engineer prior to construction.

APPENDIX "REI-A"

STANDARD E.R.C.A. AND D.F.O. MITIGATION REQUIREMENTS

As part of its work, the Contractor will implement the following measures that will ensure that any potential adverse effects on fish and fish habitat will be mitigated:

- 1. As per standard requirements, work will not be conducted at times when flows in the drain are elevated due to local rain events, storms, or seasonal floods. Work will be done in the dry.
- 2. All disturbed soils on the drain banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be hauled away and disposed of at a suitable site, or spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the drain.
- 3. To prevent sediment entry into the drain in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with the related Ontario Provincial Standards. It is incumbent on the proponent and Contractors to ensure that sediment and erosion control measures are functioning properly and maintained/upgraded as required.
- 4. Silt or sand accumulated in the barrier traps must be removed and stabilized on land once the site is stabilized.
- 5. All activities including maintenance procedures should be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicular refuelling and maintenance should be conducted away from the water.
- 6. Any drain banks trimmed outside of the July 1st to September 15th timing window will require bio-degradable erosion control blankets to be installed to promote re-vegetation and to protect the slope from erosion in the interim.

SECTION II

SPECIFICATIONS

FOR FISH SALVAGE

GENERAL SECTION 201

The Work shall include the capture, salvage and release of fish that are trapped or stranded as the result of the Contractor's operations, at locations identified in the Fish Salvage Plan, and in co-operation with the Essex Region Conservation Authority (E.R.C.A.).

Fish capture shall be performed prior to dewatering, and in such manner that will minimize the injury to the fish.

MATERIALS SECTION 202

All materials required for fish capture, salvage and release shall be supplied by the Contractor.

CONSTRUCTION SECTION 203

The Contractor shall not commence any fish capture, salvage and release work until the Fish Salvage Plan has been accepted by the Consultant and the Conservation Authority. All work shall be performed in accordance with the Fish Salvage Plan unless otherwise determined by the Consultant or the Conservation Authority.

The Contractor shall ensure an ice-free pool is maintained throughout all fish capture and release operations.

All fish shall be captured within the area specified and released at an acceptable location in the downstream water body. Fish shall be captured by electro fishing, netting, seining, trapping, or other method acceptable to the Consultant and/or the Conservation Authority.

MEASUREMENT AND PAYMENT SECTION 204

Payment for this Work will be included in the price bid for drainage work components or made at the lump sum price bid for "Fish Capture and Release". The lump sum price will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant.

Measures to Avoid Causing Harm to Fish and Fish Habitat

If you are conducting a project near water, it is your responsibility to ensure you avoid causing <u>serious harm to fish</u> in compliance with the *Fisheries Act*. The following advice will help you avoid causing harm and comply with the *Act*.

PLEASE NOTE: This advice applies to all project types and replaces all "Operational Statements" previously produced by DFO for different project types in all regions.

Measures

- Time work in water to respect <u>timing windows</u> to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.
- Minimize duration of in-water work.
- Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
- Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
- Design and plan activities and works in waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
- Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.
- Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.
- Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, or other chemicals do not enter the watercourse.
- Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

- Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. 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 waterbody or settling basin and runoff water is clear. The plan should, where applicable, include:
 - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
 - Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
 - Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).
 - 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.
 - Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
 - Repairs to erosion and sediment control measures and structures if damage occurs.
 - Removal of non-biodegradable erosion and sediment control materials once site is stabilized.
- Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.
- Immediately 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.
- Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.
- 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.
- Remove all construction materials from site upon project completion.

- Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.
- Retain a qualified environmental professional to ensure applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site.
- Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
 - In freshwater, follow these measures for design and installation of intake end of pipe fish screens to protect fish where water is extracted from fish-bearing waters:
 - Screens should be located in areas and depths of water with low concentrations of fish throughout the year.
 - Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
 - The screen face should be oriented in the same direction as the flow.
 - Ensure openings in the guides and seals are less than the opening criteria to make "fish tight".
 - Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
 - Structural support should be provided to the screen panels to prevent sagging and collapse of the screen.
 - Large cylindrical and box-type screens should have a manifold installed in them to ensure even water velocity distribution across the screen surface. The ends of the structure should be made out of solid materials and the end of the manifold capped.
 - Heavier cages or trash racks can be fabricated out of bar or grating to protect the finer fish screen, especially where there is debris loading (woody material, leaves, algae mats, etc.). A 150 mm (6 in.) spacing between bars is typical.
 - Provision should be made for the removal, inspection, and cleaning of screens.
 - Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
 - Pumps should be shut down when fish screens are removed for inspection and cleaning.
- Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.
 - If explosives are required as part of a project (e.g., removal of structures such as piers, pilings, footings; removal of obstructions such as beaver dams; or preparation of a river or lake bottom for installation of a structure such as a dam or water intake), the potential for impacts to fish and fish habitat should be minimized by implementing the following measures:

- Time in-water work requiring the use of explosives to prevent disruption of vulnerable fish life stages, including eggs and larvae, by adhering to appropriate fisheries <u>timing windows</u>.
- Isolate the work site to exclude fish from within the blast area by using bubble/air curtains (i.e., a column of bubbled water extending from the substrate to the water surface as generated by forcing large volumes of air through a perforated pipe/hose), cofferdams or aquadams.
- Remove any fish trapped within the isolated area and release unharmed beyond the blast area prior to initiating blasting
- Minimize blast charge weights used and subdivide each charge into a series of smaller charges in blast holes (i.e., decking) with a minimum 25 millisecond (1/1000 seconds) delay between charge detonations (see Figure 1).
- Back-fill blast holes (stemmed) with sand or gravel to grade or to streambed/water interface to confine the blast.
- Place blasting mats over top of holes to minimize scattering of blast debris around the area.
- Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products.
- Remove all blasting debris and other associated equipment/products from the blast area.

Figure 1: Sample Blasting Arrangement



Per Fig. 1: 20 kg total weight of charge; 25 msecs delay between charges and blast holes; and decking of charges within holes.

• Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.

- Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
- Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.
- 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.

Date modified:

2013-11-25

APPENDIX "REI-B"

North Branch of East Branch No. 47 Drain

Kingsville – REI2024D017

D.F.O. Mapping



SCHEDULE C

MITIGATION PLAN

The Municipality shall undertake measures to minimize adverse effects on species at risk in accordance with the general conditions described in Part B and taxa-specific conditions described in Part C, and the monitoring and reporting requirements described in Part D of this Mitigation Plan.

PART A. DEFINITIONS

1. Definitions:

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1.1. In this Schedule, the following words shall have the following meanings:

"DFO" means Fisheries and Oceans Canada;

"MNR" means the Aylmer District Office of the Ministry of Natural Resources;

"Contact" means to contact the MNR in accordance with the notification/contact schedule provided to the Municipality by the MNR Designated Representative from time to time;

"Holding Tub" means a large, light-coloured container fitted with a non-airtight latchable lid approved by the MNR for the temporary storage of captured snakes, turtles, amphibians, birds or eggs;

"Interagency Notification Form" means the form issued by DFO, available at www.dfompo.gc.ca, which is required to be completed when a drain is being maintained or constructed;

"Monitoring and Reporting Form" means the document that must be completed by the Municipality in accordance with Part D to this Schedule and will be provided to the Municipality;

"Ontario Operational Statement" means one of the documents issued by DFO, available at www.dfo-mpo.gc.ca, that sets out the conditions and measures to be incorporated into a project in order to avoid negative impacts to fish and fish habitat in Ontario, as modified from time to time;

"Process Charts" means the charts attached as Part E to this Schedule which describe the steps set out in this Mitigation Plan;

"Seasonal Timing Windows Chart" means the chart attached as Part G to this schedule which describes the Sensitive Periods applicable to each Taxonomic Group;

"Sensitive Area" means a geographic area in the Municipality where additional mitigation measures are required to be undertaken for one or more Taxonomic Groups;

"Sensitive Areas Map" means any one of the maps attached as Part F to this schedule which sets out the applicable Sensitive Areas;

"Sensitive Period" means a time of year set out in the Seasonal Timing Windows Chart during which taxa-specific mitigation measures are required to be undertaken for a Taxonomic Group because of ambient air/water temperatures, water-levels or important life-history stages; "Taxonomic Group" means the distinct group comprising one or more Species based on their taxonomic relationship and common approaches to mitigating adverse effects (i.e., fish, mussels, turtles, snakes, amphibians, birds or plants); and

"Work Zone" means the geographic area in the Municipality where an Activity in respect of one of the Drainage Works is being conducted.

1.2. For greater certainty, any defined terms that are not defined in section 1.1 have the same meanings as in the Agreement.

PART B. GENERAL MEASURES TO MINIMIZE ADVERSE EFFECTS

2. Process Charts

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2.1. The general steps set out in this Part B are visually described in the Process Charts (Part E).

3. Review of Documentation

- 3.1. Prior to conducting any Activities in respect of the Drainage Works the Municipality shall determine if conditions apply to the place, time or manner in which the Municipality wishes to pursue them by reviewing:
 - (a) the Sensitive Areas Maps (Part F) to determine if the Work Zone for the proposed Activities will occur within a Sensitive Area;
 - (b) the DFO Reference Guide for Fish and Mussel Species at Risk Distribution Maps: A Referral Review Tool for Projects Affecting Aquatic Species at Risk;
 - (c) the Seasonal Timing Windows Chart (Part G) to determine if the proposed Activities will occur during a Sensitive Period for one or more of the Taxonomic Groups; and
 - (d) the Process Charts to determine if prior notification is required;
 - (e) the mitigation measures for each applicable Taxonomic Group in Part C to determine what additional site-specific mitigation measures, if any, are required.
- 3.2. The Municipality shall document the results of the review undertaken in accordance with section 3.1 using the Monitoring and Reporting Form.

4. Sensitive Areas Maps

4.1. The Sensitive Areas Maps contain sensitive information about the distribution of species at risk, are provided for the sole purpose of informing this Agreement and are not to be copied or distributed for any other purposes or to any other party without the prior written authorization of the MNR Designated Representative.

5. Prior Notification to Seek Direction

- 5.1. If, after completing the review of documents described in section 3.1, the Municipality determines that the proposed Activities will be undertaken:
 - (a) in a place;
 - (b) at a time; or
 - (c) in a manner,

that requires prior notification in accordance with the Process Charts, the Municipality shall provide prior notification to the MNR in order for the MNR to determine if the Municipality must undertake additional site-specific or Species-specific mitigation

measures to minimize adverse effects on the Species and, if applicable, to identify such measures.

- 5.2. The prior notification under section 5.1 shall include a completed Interagency Notification Form:
 - (a) in respect of maintenance/repair where the proposed Activities are being undertaken pursuant to subsection 3(18) or section 74 of the *Drainage Act*; or
 - (b) in respect of construction/improvement where the proposed Activities are being undertaken pursuant to section 77 or 78 of the *Drainage Act*.
- 5.3. Where an Activity is undertaken in accordance with section 124 of the *Drainage Act* and would otherwise have required prior notification under section 5.1, the Municipality shall Contact the MNR by email prior to the commencement of the Activity, and complete and submit the applicable Interagency Notification Form within one week of the Activity's completion, unless otherwise directed in writing by the MNR Designated Representative.

6. General Mitigation Measures

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- 6.1. Notwithstanding that prior notification or additional mitigation measures may be required in accordance with this schedule, in undertaking any Activity at any time in respect of the Drainage Works the Municipality shall:
 - (a) undertake the mitigation measures for sediment control and for erosion control and bank stabilization set out in The Drain Primer (Cliff Evanitski 2008) published by DFO (ISBN 978-0-662-48027-3), unless otherwise authorized in writing by the MNR Designated Representative;
 - (b) use net free, 100% biodegradable erosion control blanket for all erosion control or bank stabilization done in conjunction with their Activities or, if authorized in writing by the MNR Designated Representative, alternative erosion control blankets that provide equal or greater protection to individual Species; and
 - (c) where applicable, follow the guidelines set out in the following Ontario Operational Statements:
 - (i) Beaver Dam Removal;
 - (ii) Bridge Maintenance;
 - (iii) Culvert Maintenance;
 - (iv) Isolated Pond Construction;
 - (v) Maintenance of Riparian Vegetation in Existing Right of Ways; and
 - (vi) Temporary Stream Crossing.

PART C. TAXA-SPECIFIC MEASURES TO MINIMIZE ADVERSE EFFECTS

ADDITIONAL MITIGATION MEASURES FOR FISH SPECIES

7. Activities undertaken in Sensitive Areas for Fish

- 7.1. Subject to section 7.2, where a proposed Activity will occur in a Sensitive Area for a fish Species, the Municipality shall contact the MNR to seek further direction.
- 7.2. Section 7.1 does not apply where the applicable Drainage Works are:
 - (a) in a naturally dry condition;
 - (b) classified as a Class F drain under DFO's Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario (ISBN 0-662-72748-7); or
 - (c) a closed drain.

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ADDITIONAL MITIGATION MEASURES FOR MUSSEL SPECIES

8. Activities undertaken in Sensitive Areas for Mussels

- 8.1. Subject to section 8.2, where a proposed Activity will occur in a Sensitive Area for a mussel Species, the Municipality shall contact the MNR to seek further direction.
- 8.2. Section 8.1 does not apply where the applicable Drainage Works are:
 - (a) in a naturally dry condition;
 - (b) classified as a Class F drain in DFO's Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario (ISBN 0-662-72748-7); or
 - (c) a closed drain.

ADDITIONAL MITIGATION MEASURES FOR TURTLE SPECIES

9. Training and Required On Site Materials for Turtles

- 9.1. The Municipality will ensure any person:
 - (a) involved in the capture, temporary holding, transfer and release of any turtle Species has received training in proper turtle handling procedures; and
 - (b) who undertakes an Activity has a minimum of two Holding Tubs and cotton sacks on site at all times.

10. Activities undertaken in Sensitive Areas and Sensitive Periods for Turtles

- 10.1. Subject to section 10.2, where a proposed Activity will occur in a Sensitive Area for any turtle Species and during a Sensitive Period for that Species, the Municipality shall:
 - (a) not undertake any Activities that include the excavation of sediment or disturbance to banks during the applicable Sensitive Period unless otherwise authorized;
 - (b) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative;
 - (c) avoid draw-down and de-watering of the Sensitive Area during the applicable Sensitive Period; and

- (d) if authorized by the MNR Designated Representative under (a) above to undertake Activities that include excavation of sediment or disturbance of banks, in addition to any other measures required under (b) above, ensure any person undertaking an Activity has at least two Holding Tubs on site at all times.
- 10.2. Section 10.1 does not apply where the applicable Drainage Works are:
 - (a) in a naturally dry condition;
 - (b) classified as a Class F drain in DFO's Class Authorization System for the Maintenance of Agricultural Municipal Drains in Ontario (ISBN 0-662-72748-7); or
 - (c) a closed drain.

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11. Measures for Encounters with Turtles During a Sensitive Period

- 11.1. Where one or more individuals belonging to a turtle Species is encountered in the undertaking of an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:
 - (a) capture and transfer all uninjured individuals of that Species into a Holding Tub;
 - (b) capture and transfer all individuals injured as a result of the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals;
 - (c) ensure that the Holding Tubs with the captured individuals are stored at a cool temperature to prevent freezing until the individuals can be transferred; and
 - (d) immediately Contact the MNR to seek direction and to arrange for the transfer of the individual turtles.

12. Measures for Encounters with Turtles Laying Eggs or Nest Sites

- 12.1. Where one or more individuals belonging to a turtle Species laying eggs, or an active nest site of any turtle Species, is encountered in undertaking an Activity in a Work Zone, the Municipality shall:
 - (a) not disturb a turtle encountered laying eggs and not conduct any Activities within 20 metres of the turtle while it is laying eggs;
 - (b) collect any displaced or damaged eggs and capture any injured dispersing juveniles and transfer them to a Holding Tub;
 - (c) store all captured injured individuals and collected eggs out of direct sunlight;
 - (d) immediately Contact the MNR to seek direction and to arrange for the transfer of any injured individuals and eggs;
 - (e) immediately stop any disturbance to the nest site and recover exposed portions with soil or organic material to protect the integrity of the remaining individuals;
 - (f) not drive any equipment over the nest site or conduct any Activities within 5 metres of the nest site;
 - (g) not place any dredged materials removed from the Drainage Works on top of the nest site;
 - (h) mark out the physical location of the nest site for the duration of the project but not by any means that might increase the susceptibility of the nest to predation or poaching; and
 - (i) where there are no collected eggs or captured individuals, record relevant information and Contact the MNR within 72 hours to provide information on the location of the nest site.

13. Measures for Encounters with Turtles Outside of a Sensitive Period

- 13.1. Where one or more individuals belonging to a turtle Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:
 - (a) briefly stop the Activity for a reasonable period of time to allow any uninjured individual turtles of that Species to leave the Work Zone;
 - (b) where individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (a) above, capture all uninjured individuals and release them in accordance with section 14.1;
 - (c) where circumstances do not allow for their immediate release, transfer captured uninjured individuals for a maximum of 24 hours into a Holding Tub which shall be stored out of direct sunlight and then release them in accordance with section 14.1;
 - (d) capture and transfer any individuals that have been injured into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
 - (e) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

14. Release of Captured Individuals Outside of a Sensitive Period

- 14.1. Where uninjured individuals are captured under section 13.1, they shall be released:
 - (a) within 24 hours of capture;
 - (b) in an area immediately adjacent to the Drainage Works;
 - (c) in an area that will not be further impacted by the undertaking of any Activity; and
 - (d) not more than 250 metres from the capture site.
- 14.2. Following a release under section 14.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

15. Measures for Dead Turtles

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- 15.1. Where one or more individuals of a turtle Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a turtle Species within the Work Zone, the Municipality shall:
 - (a) place any dead turtles in a Holding Tub outside of direct sunlight; and
 - (b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the dead individuals.

ADDITIONAL MITIGATION MEASURES FOR SNAKE SPECIES

16. Training and Required On Site Materials for Snakes

- 16.1. The Municipality will ensure any person:
 - (a) involved in the capture, temporary holding, transfer and release of any snake Species has received training in proper snake handling procedures; and
 - (b) who undertakes an Activity has a minimum of two Holding Tubs and cotton sacks on site at all times.

17. Activities undertaken in Sensitive Areas and Sensitive Periods for Snakes

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- 17.1. Where a proposed Activity involves physical infrastructure (e.g., culverts, pump houses, etc.) and will occur in a Sensitive Area for any snake Species and during a Sensitive Period Hibernation for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.
- 17.2. Where a proposed Activity will occur at or adjacent to a known hibernacula (as identified by the MNR) for any snake Species and during a *Sensitive Period Staging* for that Species, the Municipality shall:
 - (a) erect effective temporary snake barriers approved by the MNR that will not pose a risk of entanglement for snakes and that shall be secured so that individual snakes may not pass over or under the barrier or between any openings to enter or re-enter the Work Zone;
 - (b) inspect the temporary snake barriers daily during periods when snakes are active, capture any individuals incidentally encountered within the area bounded by the snake barrier and release the captured individuals in accordance with section 21.1; and
 - (c) remove the temporary snake barriers immediately upon completion of the Activity.
- 17.3. Where a proposed Activity that does not involve physical infrastructure will occur in a Sensitive Area for any snake Species and during a *Sensitive Period Staging* for that Species, the Municipality shall undertake the Activity outside of the Sensitive Period, unless otherwise authorized by and in accordance with any site-specific measures provided in writing by the MNR Designated Representative.

18. Measures for Encounters with Snakes During a Sensitive Period

- 18.1. Where one or more individuals belonging to a snake Species is encountered, or should an active hibernacula be uncovered, while conducting an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) during a Sensitive Period for that Species, the Municipality shall:
 - (a) capture and transfer all injured and uninjured individual snakes of that Species into individual light-coloured, drawstring cotton sacks;
 - (b) place all cotton sacks filled with the captured individuals into a Holding Tub;
 - (c) ensure that the Holding Tub with the captured individuals is stored at a cool temperature to protect the snakes from freezing until the individuals can be retrieved or transferred;
 - (d) if an active hibernacula is uncovered, cease all Activities at the hibernacula site; and
 - (e) immediately Contact the MNR to seek direction and to arrange for the transfer and/or retrieval.

19. Measures for Encounters with Snake Nests

- 19.1. Where an active nest of any of the snake Species is encountered and disturbed while undertaking an Activity in any part of a Work Zone, the Municipality shall:
 - (a) collect any displaced or damaged eggs and transfer them to a Holding Tub;
 - (b) capture and transfer all injured dispersing juveniles of that Species into a lightcoloured drawstring cotton sack;
 - (c) place all cotton sacks with the captured injured individuals into a Holding Tub;

- (d) ensure that the Holding Tub with the captured injured individuals is stored out of direct sunlight;
- (e) immediately Contact the MNR to seek direction and to arrange for the transfer of the injured individuals;
- (f) immediately stop any disturbance to the nest site and loosely cover exposed portions with soil or organic material to protect the integrity of the remaining individuals;
- (g) not drive any equipment over the nest site or conduct any Activities within 5 metres of the nest site;
- (h) not place any dredged materials removed from the Drainage Works on top of the nest site;
- (i) mark out the physical location of the nest site but not by any means that might increase the susceptibility of the nest to predation or poaching; and
- (j) where there are no collected eggs or captured individuals, Contact the MNR within 72 hours to provide information on the location of the nest site.

20. Measures for Encounters with Snakes Outside of a Sensitive Period

- 20.1. Where one or more individuals belonging to a snake Species is encountered while undertaking an Activity in any part of a Work Zone (including, but not limited to, a Sensitive Area) but outside of any Sensitive Period for that Species, the Municipality shall:
 - (a) follow the requirements in section 16;

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- (b) briefly stop the Activity for a reasonable period of time to allow any uninjured individual snakes of that Species to leave the Work Zone;
- (c) if the individuals do not leave the Work Zone after the Activity is briefly stopped in accordance with (b) above, capture all uninjured individuals and release them in accordance with section 21.1;
- (d) where circumstances do not allow for the immediate release of captured uninjured individuals, they may be transferred into individual, light-coloured, drawstring cotton sacks before placing them in a Holding Tub which shall be stored out of direct sunlight for a maximum of 24 hours before releasing them in accordance with section 21.1;
- (e) capture and transfer any individuals injured as a result of conducting the Activities into a Holding Tub separate from any Holding Tub containing uninjured individuals; and
- (f) store all captured injured individuals out of direct sunlight and immediately Contact the MNR to seek direction and to arrange for their transfer.

21. Release of Captured Individuals Outside of a Sensitive Period

- 21.1. Where uninjured individuals are captured under section 20.1, they shall be released:
 - (a) within 24 hours of capture;
 - (b) in an area immediately adjacent to the Drainage Works where there is natural vegetation cover;
 - (c) in an area that will not be further impacted by the undertaking of any Activity; and
 - (d) not more than 250 metres from the capture site.

21.2. Following a release under section 21.1, the Municipality shall Contact the MNR within 72 hours of the release to provide information on the name of the Drainage Works, the location of the encounter and the location of the release site.

22. Measures for Dead Snakes

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- 22.1. Where one or more individuals belonging to a snake Species is killed as a result of an Activity in a Work Zone, or if a person undertaking an Activity finds a deceased individual of a snake Species within the Work Zone, the Municipality shall:
 - (a) collect and transfer any dead individuals into a Holding Tub outside of direct sunlight; and
 - (b) Contact the MNR within 72 hours to seek direction and to arrange for the transfer of the carcasses of the dead individuals.

ADDITIONAL MITIGATION MEASURES FOR HERBACEOUS PLANTS

23. Activities Undertaken in Sensitive Areas for Herbaceous Plants

- 23.1. Where a proposed Activity will occur that involves physical disturbance to vegetated banks or the killing and/or removal of vegetation through chemical or mechanical means in a Sensitive Area for any herbaceous plant Species, the Municipality shall:
 - (a) undertake the Activity outside of the Sensitive Period, unless otherwise authorized;
 - (b) limit equipment access and operations to the side of the Drainage Works that will minimize disturbances where any of the plant Species occur;
 - (c) locate temporary storage sites for excavated sediments or bank materials on areas of open soil away from where any of the plant Species are likely to occur;
 - (d) not use any broad spectrum herbicides in Sensitive Areas; and
 - (e) undertake Activities in accordance with any additional site-specific measures provided in writing by the MNR Designated Representative.

ADDITIONAL MITIGATION MEASURES FOR TREE SPECIES

24. Additional Measures for Butternut

- 24.1. Where Butternuts may exist in a Work Zone and may be affected by an Activity, the Municipality shall:
 - (a) identify and mark as retainable trees all individual Butternut trees within the Work Zone during work planning site visits unless the individual Butternut has been assessed as a non-retainable tree due to infection by Butternut canker by a person designated by the Minister as a Butternut Health Assessor;
 - (b) retain and avoid disturbance to all individuals identified under (a) above that have been identified as retainable trees or that have not been assessed, unless otherwise authorized in writing by the MNR Designated Representative;
 - (c) conduct Activities by:
 - (i) limiting equipment access and operations to the side of the Drainage Works that will minimize disturbance to where any of the individual Butternut trees occur,
 - (ii) working around trees,









Seasonal Timing Windows Chart

Date Codes	15-79-984	12-2		Mo	nthly	Interv	als:	E=Early	(day	s 1-10); I	A=Mide	die(da	ys 1	1-20)); L=	=Late	ə(da	ys 2	1-31)			
Dates	Jan	Feb	1	lar	1	Apr		May		Jun	J	ui		Aug		and a	Sapi	t		Oct		Nov	Dec
			E	ML	E	ML	E	ML	- E	ML	EI	M L	ε	M	L	E	M	L	Ε	M	L		Constant of the
Taxa/Common Name									23 I.S.V						0.00				-				
Aquatic Species									T														
Fish		IF in a	a Sen	sitive A	vea l	dentifie	d on	Maps T	HEN	Prior Not	ification	n to th	e MN	IR is	rea	uired	l (re	dard	less	of tin	ne o	f vear)	
Mussels		IF in a	a Sen	sitive A	rea l	dentifie	d on	Maps T	HEN	Prior Not	ification	n to th	e MN	IR is	req	uired	(re	gard	less	of tin	ne o	f vear)	
Turtles													Γ					7					
Fowler's Toad															6								
Jefferson Salamander																							
Townshiel Section							+-												\square				
Terresulai Species					-																		
Snakes - Hibernation																							
Snakes - Staging			-																				-
Butler's Gartersnake - Hibernation					1100																		
Butler's Gartersnake - Staging																			-				
Herbaceous Plants					\square								-			-				- 1			
Birds																		_					
NOT a Sensitive Time	IF NO S	ensitive	Area	s Identi	fied o	on Man	s TH		Prior	Notificati	on to th	e MN	Risr	equi	red								
Sensitive Time	IF in a S	Sensitive	Area	Identif	ied o	n Maps	THE	EN Prior	Noti	fication to	the MI	VR is r	equi	red									
On-site Consultation	IF in a l	lighly Se	ensitiv	/e Area	(e.g.	, a kno	wn h	ibemac	ula) 7	HEN On-	site co	nsulta	tion v	vith t	he I	MNR	is re	equir	red				

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Staging refers to the time just after emergence from hibernation in the spring and the aggregation of individuals in the fall just prior to entering into hibernation sites.

North Branch of East Branch No. 47 Drain Kingsville

NHIC Data

REI2024D017

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
714295	SPECIES	Snapping Turtle	Chelydra serpentina	S4	SC	SC	17LG5661	
714295	SPECIES	Massasauga (Carolinian population)	Sistrurus catenatus pop. 2	S1	END	END	17LG5661	

APPENDIX "REI-C"

CONTRACT DRAWINGS FOR COUNTY OF ESSEX PROJECT No. 234 COUNTY OF ESSEX RFT# IPS-2024-C29832-234-KT COUNTY ROAD 29 & KINGSVILLE **ROAD 5 CULVERT REPLACEMENTS** CULVERT ID#: C-29-032





(519) 972-8052 Phone: (519) 972-8644 Fax: www.landmarkengineers.ca

DRAWING LIST:

23-023-01 - EXISTING CONDITIONS & REMOVALS 23-023-02 - PROPOSED CULVERT WORKS 1 23-023-03 - PROPOSED CULVERT WORKS 2 23-023-04 - MISCELIANEOUS DETAILS 23-023-05 - PAVING PLAN & SITE RESTORATION 23-023-06 - TRAFFIC CONTROL / DETOUR PLAN

GENERAL NOTES:

- TOWN OF KINGSVILLE. NOR LANDMARK ENGINEERS GUARANTEES THE ACCURACY OF THIS INFORMATION
- PRIOR TO CONSTRUCTION. IT IS THE WORKS.
- TO PROCEEDING WITH THE AFFECTED WORK
- ARRANGE FOR ON-SITE MONITORING DURING CONSTRUCTION

CONSTRUCTION NOTES:

- ASSOCIATED REGULATIONS FOR CONSTRUCTION PROJECTS
- ROADSIDE DITCHES AT ALL TIMES DURING CONSTRUCTION
- DURING REMOVALS OPERATIONS, THE CONTRACTOR SHALL PREVENT ANY DEBRIS AND / OR EFFLUENT FROM THE REMOVALS PROCESS
- CROSSING OR MAKING USE OF ANY PRIVATE PROPERTY OUTSIDE THE LIMITS OF THE SITE. IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PRIVATE DRIVEWAYS DURING CONSTRUCTION
- PROJECT SPECIFICATIONS FOR DETAILS)
- 7. ALL EXTRANEOUS MATERIALS SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED LOCATION
- OF KINGSVILLE) USING TOPSOIL, SEED & MULCH, AS SPECIFIED.

APPROVALS & ENVIRONMENTAL PROTECTION NOTES:

- 2. THE CONTRACTOR SHALL KEEP A PHYSICAL COPY OF ALL PERMITS AND APPROVAL DOCUMENTS ON-SITE FOR THE DURATION OF THE PROJECT.
- CARE NOT TO DISTURB ANY SPECIES-AT-RISK FOR THE DURATION OF THE PROJECT
- WATERWAYS.

SITE BENCHMARK:

TOP NUT OF FIRE HYDRANT AT NORTHWEST CORNER OF INTERSECTION OF COUNTY ROAD 29 & KINGSVILLE ROAD 5 ELEV. = 196.53m





THE TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS ARE BASED ON SURVEYS AND SITE RECONNAISSANCE BY LANDMARK ENGINEERS. NEITHER THE COUNTY OF ESSEX, THE

THE LOCATIONS OF EXISTING UTILITIES AND SERVICES SHOWN ON THESE PLANS ARE APPROXIMATE AND MUST BE VERIFIED BY FIELD LOCATES COORDINATED BY THE CONTRACTOR S SOLE RESPONSIBILITY TO COORDINATE AND ARRANGE FOR FIELD LOCATES OF ALL UTILITIES IN THE VICINITY OF THE PROPOSEL

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS RELEVANT TO THE PROPOSED WORK AND TO REPORT ANY DISCREPANCIES TO THE ENGINEER (IN WRITING) PRIOR

THE CONTRACTOR IS RESPONSIBLE FOR THE VERIFICATION AND PROTECTION OF ALL EXISTING UTILITIES, SERVICES, STRUCTURES, ROADWAYS, ETC. DURING CONSTRUCTION. THIS SHALL INCLUDE THE USE OF A HYDROVAC TRUCK TO DAYLIGHT THE EXISTING HIGH-PRESSURE GAS MAINS AT EACH END OF THE WORK ZONE AND COORDINATING WITH ENBRIDGE GAS TO

BEFORE MOBILIZING ANY MATERIALS AND/OR EQUIPMENT TO THE SITE, THE CONTRACTOR SHALL PREPARE AND SUBMIT A DETAILED WRITTEN WORK PLAN AND PROJECT SCHEDULE TO BOTH THE OWNER AND THE ENGINEER. DESCRIBING THE METHODOLOGY, SEQUENCING, AND ANTICIPATED DURATION FOR EACH OF THE PRIMARY ELEMENTS OF THE PROPOSED WORKS.

ALL WORK ASSOCIATED WITH THIS PROJECT SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND THE

2. THE CONTRACTOR SHALL ENSURE THAT FLOW IS MAINTAINED ON THE EAST BRANCH OF THE No. 47 DRAIN, THE NORTH BRANCH OF THE EAST BRANCH OF THE No. 47 DRAIN, AND ALL

4. THE CONTRACTOR SHALL CONFINE THEIR WORK TO THE PUBLIC RIGHT-OF-WAY AND THE ESTABLISHED LIMITS OF THE SITE. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR

6. THE CONTRACTOR SHALL NOTE THAT VARIOUS SPECIES-AT-RISK (INCLUDING TURTLES, SNAKES) HAVE POTENTIAL HABITAT WITHIN THE VICINITY OF THE PROPOSED WORKS AND COULD BE ENCOUNTERED ON-SITE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ANY SPECIES-AT-RISK THAT ARE ENCOUNTERED ON-SITE. (REFER TO THE

8. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY THE NEW CONSTRUCTION TO THEIR ORIGINAL CONDITION (AND TO THE SATISFACTION OF THE COUNTY OF ESSEX & THE TOWN

COPIES OF PERMITS AND APPROVAL DOCUMENTS FOR THE PROJECT ISSUED BY THE ESSEX REGION CONSERVATION AUTHORITY (ERCA), THE ONTARIO MINITSRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP), AND/OR FISHERIES AND OCEANS CANADA (DFO) WILL BE PROVIDED FOR THE CONTRACTOR'S REFERENCE AND INFORMATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FAMILIARIZE THEMSELVES WITH THESE DOCUMENTS AND TO ABIDE BY ALL CONDITIONS OF APPROVAL

THE CONTRACTOR SHALL NOTE THE POTENTIAL FOR SPECIES-AT-RISK (SAR) TURTLES AND SNAKES TO BE ENCOUNTERED AT THE PROJECT SITE. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE SAR MITIGATION PROTOCOLS OUTLINED IN THE ENVIRONMENTAL SPECIAL PROVISIONS OF THE CONSTRUCTION SPECIFICATIONS AND SHALL TAKE

4. NOT WITHSTANDING THE ABOVE, THE CONTRACTOR SHALL TAKE CARE TO MINIMIZE THE ENTRY OF ANY DEBRIS AND/OR EFFLUENT INTO ADJACENT WATERWAYS DURING EXCAVATION, SAWCUTTING AND/OR REMOVALS OPERATIONS. THE CONTRACTOR SHALL SUPPLY AND DEPLOY TARPS AS NEEDED TO PREVENT DEBRIS AND/OR EFFLUENT FROM ENTERING THE



DATE: AUGUST 2024 **PROJECT NO.: 23-023**







PLAN - EXISTING CONDITIONS & REMOVALS

		Copyright reserved. This drawing is an instrument of service for the project specified. The drawing and	detail legend	client
Description GN SUBMITTAL	Date 12 JULY 2024	design are exclusive property of LANDMARK ENGINEERS INC. and may not be used in whole or in in part without the ENGINEER'S written consent.	A	COUNTY OF ESSEX
DR TENDER	28 AUG. 2024			R
DR CONSTRUCTION	16 OCT. 2024			
		SHOWN ON THIS DRAWING AND WHERE		
		THE ENGINEER FOR CLARIFICATION BEFORE	A DETAIL NU.	
		PROCEEDING WITH ANY PORTION OF THE WORK	B SHEET WHERE DETAIL REQ'D	
		IN THE CONTRACT.	C SHEET DETAIL DRAWN ON	

LEGEND			
	PROPERTY LINES		
	ROAD CENTERLINE OVERHEAD UTILITIES		
——— В ———	BELL CABLE (UNDERGROUND)		
GAS	WATER MAIN		
	STATIONING & CULVERT LAYOUT REFERENCE POINT		
	(TO BE MARKED IN THE FIELD AT: 4661166.88N; 356459.78E)		
	UTILITY POLE		
	BELL PEDESTAL		
- 1 81.2	EXISTING GRADE		
	TRAFFIC SIGN		
	EXISTING CONCRETE CULVERTS (TO BE REMOVED)		
	AREA TO BE CLEARED AND GRUBBED		
	COUNTY	ROAD 29	
	Ч	0.30m	
▼ 1.50m	— 1.50m — 2.15m — -		EAST
100mm THICK <i></i> J ASPHALT SURFACE	200mm THICK CONCRETE PASE	SLAR	m THICK ALT SURFACE
	275mm TO 325mm THICK ASPH	alt surface (varies)	
TYPICA	L SECTION - EXISTIN	IG CONDITIONS (COUNTY RC	AD 29)
SCALE: 1:50			<i>I</i>
€ KINGSVILLE ELEV. = 196	RD. 5 5.16m 2.	70m ———	
TOP OF CUL ELEV. = 195	VERT		
<u>SOFFIT</u> ELEV. = 195	5.50m 2.	10m	
	3.6m ² OPENI	WATERWAY NG AREA	
DRAIN BOTTO	M (AP		
ELEV. = 193	5.70m	OPEN BOTTOM DRAIN	
TYPICA	L SECTION - EXISTIN	IG CONDITIONS (CULVERT A)	
SCALE: 1:50			
€ COUNTY RI ELEV. = 196	D. 29 5.05m 3.	40m —	
TOP OF CUL ELEV. = 195	VERT [5.70m]		
SOFFIT ELEV. = 195	.40m 2.	80m	
	4.5m ² OPENI	WATERWAY AREA	
DRAIN BOTTO	M (AP	PROX.)	
ELEV. = 193	5.60m	OPEN BOTTOM DRAIN	
TYPICA	L SECTION - EXISTIN	IG CONDITIONS (CULVERT B)	
SCALE: 1:50			all dimensions are in
			IVILINCO unless otherwise shown
project		drawing title	project no. 23-023
	OUNTY ROAD 29 NGSVILLE ROAD 5	EXISTING CONDITIONS & REMOVALS	drawing no. 23-023-01
CULVE	RT REPLACEMENTS		sheet no. 1 of 6

scale	
	AS SHOWN



CUL	VERT LAYOUT	POINTS
POINT #	NORTHING	EASTING
P1	4661168.62	356459.90
P2	4661182.76	356460.83
P3	4661167.11	356456.21
P4	4661168.71	356431.87
RF	4661166.88	356459.78







drawn by	JEN
date	JAN. 2024
designed by	DTK
date	JAN. 2024
checked by	DTK



revisions	
No.	
0	90% C
1	ISSUE
2	ISSUED
З	
4	
5	
6	

	ନ୍ଦ DRAIN	Ð
3.35m 1.00m		
2% (MIN.) TRECAST TRADUCT (TYP.) – SEE DETAIL D3		
	EAST BR. OF THE No. 47 DRAIN	
<u>1.5</u>	1 EXTEND ROUND STONE LINING	
• • • • • • • • • • • • • • • • • • •	OVER GEOTEXTILE AT LEAST 2.5m BEYOND EACH CULVERT END (TYP.)	
TER MAIN	NEW CULVERT OUTLET INV. ELEV. = 193.40m	
CATION (APPROX.)	150mm (MIN.) GRADED CLEAR STONE BEDDING	
	-	
D1 PROFILE SECTION - C	ULVERT A	
DFING AND N BOARD		
RIBUTION SLAB AS 3920.110 (USE 15M O.C. EACH WAY)		
ES OF DISTRIBUTION SLAB		
N. – TYPICAL)		
P OF SLAB (TYP.) ALL DRAINS IN CENTER		
PRECAST UNIT FORMED -METALLIC MATERIAL (TYP.)		
ONE LINING DEEP)		
NALL - UPSTREAM END ONLY)		
-50mmø PREFORMED HOLES - FILL WITH NON-SHRINK G	IN CULVERT GROUT AFTER	
-450mm-LONG 20M DOWELS INTO APRON WALL USING AC	– ANCHOR RYLIC ADHESIVE	
(MIN. EMBEDMENT 300mm) 203mm		
150mm (MIN.) GRADED CLEA	AR C	
900mm • •		
-3-15M DOWELS @ 300mm 0.0	··	
2 2 SCALE: 1:25	L OUT-OFF VVALL	all dimensions are in METRES
project	drawing title	unless otherwise shown project no.
COUNTY ROAD 29	PROPOSED	23-023 drawing no.
& KINGSVILLE ROAD 5 CULVERT REPLACEMENTS	CULVERT WORKS 1	23-023-02
		sheet no. C of 6





LATE	ral pipe	CONNECTIO	DNS – SEE	D8, SHEET 3
	SIZE (mm)	STATION (m)	LOCATION	EXTENSION MATERIAL
А	300	0+078.5W	NORTH SIDE	CONCRETE PIPE
В	200	0+080.1W	SOUTH SIDE	CONCRETE PIPE
С	500	0+090.0W	SOUTH SIDE	CONCRETE PIPE
D	300	0+094.3W	SOUTH SIDE	CONCRETE PIPE

NOTE: DEPICTED LOCATIONS OF LATERAL PIPES ARE APPROXIMATE - CONTRACTOR TO FIELD VERIFY

		all dimensions are in METRES unless otherwise shown
project	drawing title	project no. 23-023
COUNTY ROAD 29 & KINGSVILLE ROAD 5	PROPOSED CULVERT WORKS 2	drawing no. 23-023-03
CULVERT REPLACEMENTS		sheet no. 3 of 6
		scale AS SHOWN







7	Engineers Inc.			seal	seal	revisions	
	2280 Ambassador Drive Windsor, Ontario, Canada N9C 4E4 Phone: (519) 972-8052	drawn by date	JEN JAN, 2024	ST CON ST		No. 0 1	90% DES
	Fax: (519) 972-8644 www.landmarkengineers.ca	designed by date	DTK JAN. 2024	B. T. KILLEN		2 3 4	ISSUED F
	approved by	checked by date	DTK JAN. 2024	The OF OF OWLING		5	

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COUNTY ROAD 29
& KINGSVILLE ROAD 5
CULVERT REPLACEMENTS

MISCELLANEOUS DETAILS

project no.	23	3-02	3	
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		IN THE CONTRACT.	C SHEET DETAIL DRAWN ON	

