DRAINAGE REPORT
FOR THE

REALIGNMENT OF THE LOWER PORTION OF THE SCHILLER BRANCH DRAIN

IN THE

FORMER TOWNSHIP OF GOSFIELD NORTH

TOWN OF KINGSVILLE

DILLON CONSULTING

FINAL REPORT
15 NOVEMBER 2024
OLIVER E. T. MOIR, P. ENG.
FILE NO. 21-3142

File No. 21-3142

Members of Council
Town of Kingsville
2021 Division Road North
Kingsville, Ontario
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Drainage Report for the
REALIGNMENT OF THE LOWER PORTION OF THE SCHILLER BRANCH DRAIN
In The Former Township of Gosfield North
Now in the Town of Kingsville

Mayor and Members of Council:

Instructions

The Municipality received a request on 23 June 2023 from the Ministry of Transportation Ontario for the realignment of the Schiller Branch Drain and the replacement of four (4) existing access culverts to residential properties. The proposed drainage works are required to facilitate the new road realignment for County Road No. 29. Council accepted the request under Section 78(1) of the Drainage Act for major improvements to a drainage works and on 14 August, 2023 appointed Dillon Consulting Limited to prepare a report.

Watershed Description

The Schiller Branch Drain consists of an open channel along the east side of County Road No. 29 located just south of the Schiller Diversion Drain crossing of the said road and it continues southerly to its outlet into the No. 5 Drain having an overall length of approximately 475 metres. The total watershed area for the Schiller Branch Drain is approximately 23.76 hectares (58.8 acres). The surficial soils are predominately Brookston Clay which is defined as having poor natural drainage.

Drain History

The recent history of Engineers' reports for the Schiller Branch Drain follows:

4 March 2014 by Nick J. Peralta, P.Eng.: The recommended work included the construction of the Schiller Diversion Drain, thereby creating a new drainage outlet to the No. 5 Drain being separate from the Schiller Drain's downstream portion that is located south of where the Rojka Branch of the Schiller Drain enters. From this point, the upstream flows are now being directed across County Road No. 29 to the west side and then proceed southwesterly through Lot 266, South Talbot Road Concession to its outlet, a distance of approximately 300 metres. As for the Schiller Drain along the east side of County Road No. 29, sixteen (16) existing driveway culverts were replaced, and the drain was cleaned.

At the Rojka Branch of the Schiller Drain, a berm was also constructed along the south side of the said drain to provide a drainage divide between the two watersheds for the upper and lower portions of the Schiller Drain. The lower portion of the Schiller Drain was then renamed the Schiller Branch Drain having its original outlet remain the same into the No. 5 Drain.

As a result of these improvements, the potential for future flooding has been alleviated. This report serves as the governing report for Schiller Drain, Schiller Diversion Drain and the Schiller Branch Drain.

Landowner Meeting

A landowner meeting was held on April 22, 2024, to discuss the proposed improvements to the Schiller Branch Drain. A summary of the on-site meeting is provided within Schedule 'A' herein.

Survey

Our survey and examination of the Schiller Branch Drain was carried out in July 2023. The survey comprised the recording of topographic data and examining the channel for available depth necessary to provide sufficient drainage.

Design Considerations

No increase to the existing drainage area or to the stormwater flows will result from the realignment of the Schiller Branch Drain. The drainage area for the north-easterly portion of the new County Road No. 29 extension will be directed into a separate municipal drain. These works form part of a separate report for the construction of the Road 29 Drain having a separate drainage outlet into the No. 5 Drain.

For the realignment of County Road No. 29, north of South Talbot Road, it affects approximately 155 metres of the most downstream portion of the existing Schiller Branch Drain to its outlet. The relocated drain would be approximately 190 metres in length and would follow the east side of the County Road No. 29 realignment before it crosses the road and heads southward to the No. 5 Drain. Within this portion of drain, there are four (4) existing access culverts that were previously replaced as part of the 2014 report that would require relocation and replacement.

For the remaining upstream portion of the Schiller Branch Drain, approximately 320 metres long starting from Mun. No. 72 Division Road southward to and across Mun. No. 94 Division Road, there are no changes or improvements being considered.

In terms of the relocated Schiller Branch Drain, two options were considered and evaluated in terms of feasibility and impacts to private properties as noted below:

- Option No. 1 - relocate open drain further east and replace four (4) existing driveway access culverts including reconstruction of new concrete jute bag vertical headwalls. The work would also include erosion protection in the form of gabion stone being required on the westerly bank of the new drain channel being constructed from an infilling of the original drain location. With a 4:1 foreslope on the westerly drain bank from the road shoulder, 1 metre wide bottom and 2:1 backslope on easterly drain bank the open drain's full cross section would extend approximately 3 to 4 metres into private property requiring additional compensation for the affected

landowners. With an open drain relocation there is also existing utilities including underground gas, water and telecommunication services as well as hydro utility pole that pose a location with the reconstructed drain channel.

- Option No. 2 – enclose the existing Schiller Branch Drain with a piped drain and associated maintenance hole structures and catch basins. This option is less intrusive in terms of property impacts, less utility relocation work and from a cost standpoint, it is anticipated to be a lower cost option compared to relocating the open drain channel and replacing four (4) access culverts. Given the historical correspondence and reviews completed by the Essex Region Conservation Authority (ERCA) and the Department of Fisheries and Oceans (DFO) during the proposed works in the 2014 report, an enclosure of the entire Schiller Branch Drain was previously supported by the said agencies. From a drain capacity standpoint, a larger 1200 mm (48 inches equivalent) diameter pipe size to enclose the downstream portion of the drain across these four existing properties will exceed the capacity of the smaller 1000 mm diameter culvert pipes that currently make up the existing driveway culverts. When existing culverts are in close proximity to each other, like is the case here, they pose a restrictive nature to the drainage flow similar to one longer pipe of comparable size. Given the above options, we hereby recommend Option No. 2 as the preferred option to improve the Schiller Branch Drain and to accompany the County Road No. 29 realignment.

For the downstream crossing of County Road No. 29, denoted herein as Culvert No. 1, we have recommended a 1200 mm diameter concrete culvert. The culvert has been sized to convey the 1 in 25 years storm event for the upstream Schiller Branch Drain flows such that there is no reduced performance to the present drain's capacity or to cause any adverse impacts to adjacent property owners.

Beyond Culvert No. 1, the new drain alignment would continue downstream as an open drain to its outlet into the No. 5 Drain. Within this new open drain, we also recommend a fish refuge pool area consisting of a 10 m long sediment trap and downstream rock check dam. The new drainage outlet will be a considerable improvement over the existing drain's outlet, as it will be better aligned with the direction of flow where it enters into the No. 5 Drain. The present drain's alignment at its outlet was a previous concern raised by several landowners.

In terms of the existing Schiller Branch Drain, specifically the most downstream 155 metres, we recommend its abandonment once it's been supplanted by the new drain alignment, in accordance with Section 19 of the Drainage Act. As part of the roadworks, the old drain portion will be subsequently filled in once the existing four (4) driveway culverts and associative concrete headwalls have been removed along with the removal of brush and vegetation from within the drain.

Allowances

In accordance with Sections 29 and 30 of the Drainage Act, we do not anticipate any agricultural lands being damaged or used as a result of the proposed drainage works. Any damage to the roadway or to existing grassed areas on private properties shall be restored to original conditions as part of the work. Future maintenance of the relocated drainage works will be confined to the road right-of-way. Therefore, Schedule 'B' for Allowances has not been included in this report.

Recommendations and Cost Estimate

Based on our review of the history, the information obtained from our examination of the drain, we recommend the following improvements to the Schiller Branch Drain, as described below:

Item	Description	Amount
	SCHILLER BRANCH DRAIN	
1.	Existing Schiller Branch Drain Removals, as follows:	
	a) Clearing and grubbing within the 155 m long open drain portion including off-site removal and disposal of vegetation. Note: Infilling of this drain portion will be completed as part of the County Road No. 29 roadworks.	$10,000.00
	b) Removal and disposal of four (4) existing driveway culverts including concrete jute bag headwalls off -site.	$12,000.00
2.	New Pipe Drain Alignment, as follows:	
	a) Station 0+000 to Station 0+137 - Supply and installation of 137 metres of new 1200 mm diameter steel reinforced polyethylene pipe (SRPE) corrugated pipe, smooth interior wall, (DuroMaxx or approved equivalent), Quikjoint bell and spigot system, complete with clearstone pipe bedding (150 mm thickness), compacted Granular 'A' crushed limestone backfill up to pipe springline, native backfill above pipe springline, except at driveways where full backfill of Granular 'A' crushed limestone compacted is required. Work to include 100 mm layer of topsoil placement, fine grading, seeding and restoration of all disturbed grassed areas.	$210,000.00
	b) Supply and installation of new 1800 mm diameter concrete maintenance hole complete with frame and cover.	$15,000.00
	c) Supply and installation of new 2400 mm diameter concrete maintenance hole complete with frame and cover.	$25,000.00
	d) Supply and installation of R-50 riprap end treatment at the inlet and outlet ends of pipe (approximately 40 m^2)	$4,000.00
3.	Supply and installation of four (4) new 600mm x 600mm concrete catch basins complete with 3 m long 200 mm diameter PVC lead pipe connections for each catch basin to the main drain pipe.	$14,000.00
4.	Supply and installation of 6 m long 450 mm diameter aluminized steel corrugated steel pipe connection to maintenance hole (MH2) complete with R-50 riprap end treatment at the inlet end of pipe (approximately 5 m^2).	$2,000.00

Item	Description	Amount
5.	Culvert No. 1 – Supply and installation of a new 1200 mm diameter reinforced concrete pipe culvert 29.3 m long, complete with 19 mm clearstone pipe bedding (150 mm thickness), full backfill of Granular 'A' crushed limestone compacted and R-50 riprap end treatment at the inlet and outlet ends of pipe (approximately 80 m^2).	$60,000.00
6.	Excavate new open drain (Sta. 0+168 to Sta. 0+190) 22 m long with 2:1 side slopes and 1.0 m bottom width, including hydro seeding of channel and R-50 riprap for end treatment at future lateral culvert inlet (approximately 20 m^2).	$7,500.00
7.	Excavate sediment trap (10 m long x 1.5 m wide x 0.5 m deep), lined with R-50 riprap (approximately 20 m^2), as well as R-50 riprap rock check dam (approximately 40 m^2).	$8,000.00
8.	Remove and dispose off-site of existing 1350 mm diameter corrugated steel pipe access culvert and endwalls and fully restore No. 5 Drain cross section with R-50 riprap (approximately 100 m^2)	$13,500.00
9.	Temporary silt control measures during construction.	$2,000.00
	SUB-TOTAL	**$383,000.00**
10.	Report, Assessments and Final Inspection.	$39,000.00
11.	Expenses and Incidentals.	$1,000.00
12.	ERCA review and permit fee	$800.00
	TOTAL ESTIMATE – SCHILLER BRANCH DRAIN (excluding Net HST)	**$423,800.00**

The estimate provided in this report was prepared according to current materials and installation prices as of the date of this report. In the event of delays from the time of filing of the report by the Engineer to the time of tendering the work, it is understood that the estimate of cost is subject to inflation. The rate of inflation shall be calculated using the Consumer Price Index applied to the cost of construction from the date of the report to the date of tendering.

Assessment of Costs

The individual assessments are comprised of three (3) assessment components:

i. Benefit (*advantages relating to the betterment of lands, roads, buildings, or other structures resulting from the improvement to the drain).*
ii. Outlet Liability *(part of cost required to provide outlet for lands and roads).*
iii. Special Benefit *(additional work or feature that may not affect function of the drain).*

We have assessed the estimated costs for the Realignment of the Lower portion of the Schiller Branch Drain against the affected roads as listed in Schedule 'C' under "Special Benefit." Details of the Special Benefit assessment listed are provided in the Assessment Rationale below.

Assessment Rationale

Special Benefit assessment shown in Schedule 'C' was derived as follows:

1. As the realignment works are only required for the proposed highway widening, we have assessed 100% of the costs to the Ministry of Transportation Ontario in accordance with Section 26 of the Drainage Act as a non-proratable assessment. Since there are no special benefit assessments to other landowners, Schedule 'D' for the purposes of Special Benefit details has been omitted from this report.

Future Maintenance (Schiller Branch Drain Realigned Pipe Portion)

The future maintenance and repair costs of the pipe portion from Station 0+000 to Station 0+137 shall be assessed in the following distribution below, subject of course, to any variations that may be made under the authority of the Drainage Act.

- 25% to the County of Essex Road Authority
- 15% to property Roll No. 560-00300
- 15% to property Roll No. 560-06400
- 15% to property Roll No. 560-06500
- 15% to property Roll No. 560-06600
- 15% to the upstream lands and roads prorated to the outlet assessment portions listed as per Schedule 'E' herein.

Future Maintenance (Schiller Branch Drain County Road No. 29)

The future maintenance and repair costs of the drain portion across County Road No. 29 including Culvert No. 1 from Station 0+137 to Station 0+168 shall be assessed 100% to the County of Essex Road Authority in accordance with Section 26 of the Drainage Act.

Future Maintenance (Schiller Branch Drain Realigned Open Portion)

The future maintenance and repair costs of the open portion of drain from Sta. 0+168 to Station 0+190 shall be assessed to the lands and roads in the same relative apportionments as to the outlet assessments listed in Schedule 'E' appended hereto. The assessment amount based on an arbitrary $10,000.00 of future drain maintenance costs.

Drawings and Specifications

Attached to this report is Schedule 'F', which are Specifications setting out the details of the recommended works and Schedule 'G' which represent the drawings that are attached to this report.

Page 1 of 4 – **Overall Plan**
Page 2 of 4 – **Plan 1**
Page 3 of 4 – Structure Table & Details
Page 4 of 4 – Profile and Cross Sections

Construction Drawings and Specifications

The work included in this report will be performed under the provincial contract for the Widening of King's Highway No. 3 starting from 0.8 km west of Cameron Sideroad and continuing easterly to 1.8 km west of County Road No. 31. Bridge drawings have been prepared for the construction complete with associated specifications which shall adhere to the elevations, alignment, sizes, materials and location and be generally in compliance with this report.

Approvals

The construction and/or improvement to a drainage works, including repair and maintenance activities, and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced by the proposed works. Prior to any construction or maintenance works, the Municipality or proponent designated on the Municipality's behalf shall obtain all required approvals/permits and confirm any construction limitations including timing windows, mitigation/off-setting measures, standard practices or any other limitations related to in-stream works.

Agency Reviews

The Essex Region Conservation Authority (ERCA) has been previously notified and provided the opportunity to review the proposed drainage works outlined within this report. The Town of Kingsville will subsequently give notice to ERCA and other prescribed persons of an upcoming meeting of Council that will consider and adopt the final report, at which time this meeting is an opportunity to provide input.

In 2021, a Fish and Fish Habitat Impact assessment was undertaken to identify the impacts of the approved improvements to fish and fish habitat within the Highway 3 Study Area. The assessment was completed in accordance with the requirements of the Interim 2020 MTO/DFO/NDMNRF Protocol for Protecting Fish and Fish Habitat on Provincial Transportation Undertakings, Version 4 (Fisheries Protocol) and the guidance provided in MTO's (2020) Interim Environmental Guide for Fish and Fish Habitat (Fish Guide). This assessment was originally based on a relocated open drain portion.

Alternatively, for a partial drain enclosure, it was undertaken through a separate request for review to obtain a letter of advice approval to close in 155 metres or approximately one third of the existing Schiller Branch Drain. With the previous establishment of the Schiller Diversion Drain (300 m long new drain constructed along with three refuge pools), the DFO accepted the habitat assessment report indicating there was no net loss of fish habitat footprint area situated below the highwater mark to consider a full close of the Schiller Branch Drain (approximately 475 metres). No portion of the open drain was previously enclosed as the landowners decided it was cost prohibitive and there were concerns raised about reduced drainage capacity with a fully enclosed drain.

The new roadside drainage ditches to accompany the new County Road No. 29 north-easterly extension provide new fish habitat with a direct connection to the No. 5 Drain at a similar depth such that the habitat footprint area above the ordinary highwater mark exceeds the loss of fish habitat with the enclosure of 155 metres of Schiller Branch Drain.

Respectfully submitted,

DILLON CONSULTING LIMITED

Oliver E. T. Moir, P.Eng.

OEM:wlb:lld

SCHEDULE 'A'
SUMMARY OF LANDOWNER MEETING

April 22, 2024 @ 9:00 a.m.

Unico Building, Kingsville

Present:

Wayne Bell	Ministry of Transportation Ontario
Tyler Schiedel	Ministry of Transportation Ontario
Siva Tharmabala	Ministry of Transportation Ontario
Sinisa Sakic	Ministry of Transportation Ontario
Orion Raes	Green Infrastructure Partners Inc.
Carlo DiMambro	Green Infrastructure Partners Inc.
Abe Froese	Landowner
Dan Harangozo	Landowner
Jerry Vanderwal	Landowner
Rene Paquin	Landowner
Rick Policella	Landowner
Lu-Ann Marentette	Town of Kingsville
Mark Fishleigh	County of Essex Roads Dept.
Bahir Khalil	Peralta Engineering
Heide Mikelsen	Peralta Engineering
Chad Sinkevitch	Peralta Engineering
Clarke Campbell	Dillon Consulting Limited
Tim Oliver	Dillon Consulting Limited

Tim Oliver provided an overview of relevant drainage history of the Schiller Branch Drain referring to the last improvements made to the drain along the north side of County Road No. 18 as part of a 2014 engineer's report and by-law under the Drainage Act. In 2014, the upper portion of Schiller Drain at the confluence with the Rojka Branch of the Schiller Drain was rerouted through a new drain called the Schiller Diversion Drain. This diversion directed all the upstream flows to the west across Division Road and southerly to outlet into the No. 5 Drain further downstream. The downstream portion of the Schiller Drain was renamed the Schiller Branch Drain as a separate drainage system independent from the Schiller Drain and Schiller Diversion Drain. All of the access culverts to the residential properties alongside the Schiller Branch Drain were replaced due to their deteriorated condition. As part of the improvements for the widening of Highway No. 3 that are ongoing, one of the improvements involves the realignment of the Schiller Branch Drain to accommodate the proposed new roadworks for Division Road (County Road No. 29) which entails an easterly extension further north of South Talbot Road over to the current intersection and crossing of Highway 3 for Division Road continuing southerly. The realignment of the drain would follow the new road alignment in front of three existing residential properties and then cross the Division Road extension to a new outlet location into the No. 5 Drain that provides a better alignment and angle of direction for drainage flows to follow the westerly direction of the No. 5 Drain. The current drain's outlet alignment with the No. 5 Drain was a concern being previously raised to be addressed and this proposed relocated Schiller Branch Drain will address this. Options for this new drain realignment are being taken into consideration as to whether an open drain or covered drain would best suit this arrangement. For an open drain option, there would be four (4) existing driveway access culverts being replaced. Alternatively, if the drain is covered in, the size of the culvert for the enclosure would be larger than the driveway culverts and would result in improving the drain's performance compared to its current state. In terms of next steps, the drainage report will be completed in Fall of 2024 and copies will be distributed to landowners and a meeting scheduled before council to adopt the report. Construction work schedule is late 2025, early 2026 timeframe.

Meeting summary prepared by Tim Oliver, P. Eng.

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
REALIGNMENT OF SCHILLER BRANCH DRAIN
TOWN OF KINGSVILLE

ONTARIO LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
King's Highway No. 3	0.00	0.00	Ministry of Transportation Ontario	$423,800.00	$0.00	$0.00	$423,800.00
Total on Ontario Lands……				$423,800.00	$0.00	$0.00	$423,800.00
TOTAL ASSESSMENT				**$423,800.00**	**$0.00**	**$0.00**	**$423,800.00**

SCHEDULE 'E-1'
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE OF THE
LOWER OPEN PORTION OF THE SCHILLER BRANCH DRAIN (STA. 0+168 TO STA. 0+190)
TOWN OF KINGSVILLE

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 29	2.94	1.19	County of Essex	$0.00	$0.00	$2,515.00	$2,515.00
South Talbot Road	0.15	0.06	County of Essex	$0.00	$0.00	$127.00	$127.00
Total on Municipal Lands				$0.00	$0.00	$2,642.00	$2,642.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
560-07800	STR	Pt. Lot 265	13.50	5.46	*	Jimmy Klassen	$0.00	$0.00	$1,545.00	$1,545.00
560-07700	STR	Pt. Lot 265	0.38	0.15		Gerald & Elizabeth Vanderwal	$0.00	$0.00	$197.00	$197.00
560-07600	STR	Pt. Lot 265	0.20	0.08		Daniel J. & Lorna G. Harangozo	$0.00	$0.00	$105.00	$105.00
560-07500	STR	Pt. Lot 265	4.50	1.82	*	David J. & Fern E. Walsh	$0.00	$0.00	$559.00	$559.00
560-07400	STR	Pt. Lot 265	3.16	1.28	*	Peggy J. & Thomas P. Hurst	$0.00	$0.00	$393.00	$393.00
560-07300	STR	Pt. Lot 265	4.04	1.63	*	Brian W. & Pamela R. Osborne	$0.00	$0.00	$500.00	$500.00
560-07200	STR	Pt. Lot 265	5.04	2.04	*	Michael P. & Ashley N. Caza	$0.00	$0.00	$626.00	$626.00
560-07100	STR	Pt. Lot 265	2.35	0.95	*	David A. & Judy L. Tiessen	$0.00	$0.00	$292.00	$292.00
560-07000	STR	Pt. Lot 265	10.50	4.25	*	Michael F. & Joan E. Slade	$0.00	$0.00	$1,305.00	$1,305.00
560-06900	STR	Pt. Lot 265	0.56	0.23		Shirley H. Hearns	$0.00	$0.00	$287.00	$287.00
560-06800	STR	Pt. Lot 265	2.37	0.96	*	Bradly J. & Virginia M. Nelson	$0.00	$0.00	$295.00	$295.00
560-06700	STR	Pt. Lot 265	0.33	0.13		Ronald K. & Donna P. Steinhoff	$0.00	$0.00	$171.00	$171.00
560-06600	STR	Pt. Lot 265	2.85	1.15	*	Rene G. & Virginia R. Paquin	$0.00	$0.00	$353.00	$353.00
560-06500	STR	Pt. Lot 265	4.95	2.00	*	Robert K. Lane	$0.00	$0.00	$614.00	$614.00
560-06400	STR	Pt. Lot 265	0.95	0.38	*	Kevin D. McKellar	$0.00	$0.00	$116.00	$116.00
Total on Privately-Owned - Non-Agricultural Lands							$0.00	$0.00	$7,358.00	$7,358.00
TOTAL ASSESSMENT							**$0.00**	**$0.00**	**$10,000.00**	**$10,000.00**

	(Acres)	(Ha.)
Total Area:	**58.77**	**23.76**

"SCHEDULE F"

DRAINAGE REPORT FOR THE
REALIGNMENT OF THE SCHILLER BRANCH DRAIN
TOWN OF KINGSVILLE

SPECIAL PROVISIONS - GENERAL

1.0 GENERAL SPECIFICATIONS

The General Specifications attached hereto is part of "Schedule F." It also forms part of this specification and is to be read with it, but where there is a difference between the requirements of the General Specifications and those of the Special Provisions which follow, the Special Provisions will take precedence.

2.0 DESCRIPTION OF WORK

The work to be carried out under this Contract includes, but is not limited to, the supply of all **labour, equipment and materials** to complete the following items:

- Existing Schiller Branch Drain Removals, as follows:
  - Clearing and grubbing within the 155 m long open drain portion including off-site removal and disposal of vegetation. Note: Infilling of this drain portion will be completed as part of the County Road No. 29 roadworks.
  - Removal and disposal of four (4) existing driveway culverts including concrete jute bag headwalls off -site.
- New Pipe Drain Alignment, as follows:
  - Station 0+000 to Station 0+137 - Supply and installation of 137 metres of new 1200 mm diameter steel reinforced polyethylene pipe (SRPE) corrugated pipe, smooth interior wall, (DuroMaxx or approved equivalent), Quikjoint bell and spigot system, complete with clearstone pipe bedding (150 mm thickness), compacted Granular 'A' crushed limestone backfill up to pipe springline, native backfill above pipe springline, except at driveways where full backfill of Granular 'A' crushed limestone compacted is required. Work to include 100 mm layer of topsoil placement, fine grading, seeding and restoration of all disturbed grassed areas.
  - Supply and installation of new 1800 mm diameter concrete maintenance hole complete with frame and cover.
  - Supply and installation of new 2400 mm diameter concrete maintenance hole complete with frame and cover.
  - Supply and installation of R-50 riprap end treatment at the inlet and outlet ends of pipe (approximately 40 m^2)
- Supply and installation of four (4) new 600mm x 600mm concrete catch basins complete with 3 m long 200 mm diameter PVC lead pipe connections for each catch basin to the main drain pipe.

- Supply and installation of 6 m long 450 mm diameter aluminized steel corrugated steel pipe connection to maintenance hole (MH2) complete with R-50 riprap end treatment at the inlet end of pipe (approximately 5 m^2).
- Culvert No. 1 – Supply and installation of a new 1200 mm diameter reinforced concrete pipe culvert 29.3 m long, complete with 19 mm clearstone pipe bedding (150 mm thickness), full backfill of Granular 'A' crushed limestone compacted and R-50 riprap end treatment at the inlet and outlet ends of pipe (approximately 80 m^2).
- Excavate new open drain (Sta. 0+168 to Sta. 0+190) 22 m long with 2:1 side slopes and 1.0 m bottom width, including hydro seeding of channel and R-50 riprap for end treatment at future lateral culvert inlet (approximately 20 m^2).
- Excavate sediment trap (10 m long x 1.5 m wide x 0.5 m deep), lined with R-50 riprap (approximately 20 m^2), as well as R-50 riprap rock check dam (approximately 40 m^2).
- Remove and dispose off-site of existing 1350 mm diameter corrugated steel pipe access culvert and endwalls and fully restore No. 5 Drain cross section with R-50 riprap (approximately 100 m^2)
- Temporary silt control measures during construction.

3.0 ACCESS TO THE WORK

Access to the drain shall be from the County Road No. 29 right-of-way. The Contractor shall make his/her own arrangements for any additional access for his/her convenience. All grass areas disturbed shall be restored to original conditions at the Contractor's expense.

4.0 WORKING AREA

The working area for both construction and future maintenance purposes shall be restricted to the road right-of-way. **Any damages to lands and/or roads from the Contractor's work within the working areas for the new drain realignment work shall be rectified to pre-existing conditions at his/her expense.**

5.0 EXISTING DRIVEWAY CULVERT REMOVALS

The Contractor shall provide a minimum of 24 hours advance notice the affected property owners of when each driveway access culvert is scheduled to be removed and the new replacement culvert placement and reopening of the driveway shall be completed within the same day of construction. Existing mailboxes and municipal address signposts where disturbed or requiring relocation shall be coordinated with Canada Post and the Town of Kingsville to ensure the correct positioning and placement occurs with minimal disruption to mail service. The Contractor shall also confirm that no utility services which may cross over of under the existing culvert pipes will delay the reinstatement of the driveways to the affected residences. Where a utility conflict may arise, the Contractor shall be responsible for all costs required to provide a temporary access to the residence.

6.0 CLEARING & GRUBBING DRAIN PRIOR TO INFILLING

Prior to filling the existing drain, all brush and trees within the limits of the channel and within 1 metre from the top of the drain banks and in the designated spread area for the excavated material, are to be cut and those roots and stumps within the channel and on the banks where the filling takes place shall be completely removed to a depth at least 1 metre below the level of the finished grade.

Brush and trees removed from the existing drain are to be put into piles by the Contractor, in locations where they can be safely burned, and to be burned by the contractor after obtaining the necessary permits, as required. If, in the opinion of the Drainage Superintendent, any of the piles are too wet or green to be burned, he shall so advise the Contractor to haul away the unburned materials to an approved dump site or advise the Contractor to obtain an agreement in writing with the owners when to return to burn the materials. Prior to and during the course of burning operations the Contractor shall comply with the current guidelines prepared by the Air Quality Branch of the Ontario Ministry of Environment and shall ensure that the Environmental Protection Act is not violated.

The Contractor shall first consult with and obtain approval from the landowner, Drainage Superintendent and Town of Kingsville Services prior to burning the brush removed from this specified area.

7.0 NEW DRAIN PIPE ALIGNMENT

7.1 Setting Out

The Engineer shall provide the Contractor in writing with benchmarks and points of reference. From these benchmarks and points of reference, the contractor will do his own setting out. The setting out by the Contractor shall include but shall not be limited to the preparation of grade sheets, the installation of centerline stakes, grade stakes, offsets, and sight rails. If, during the setting out, the contractor finds an error in the benchmarks or points of reference provided by the Engineer or is uncertain as to the interpretation of the information provided or the work intended, he shall notify the Engineer immediately for additional verification or clarification before proceeding with construction.

The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions, and alignment of all parts of the work. The Contractor shall be responsible to ensure that the alignment selected results in a minimum depth of cover of 600 mm over the top of the drainage pipe to be installed. If, at any time during the progress of the works, an error shall appear or arise in the position, levels, dimensions, or alignment of any part of the works, the Contractor shall, at his own expense, rectify such error to the satisfaction of the Engineer, unless such error is based on incorrect data supplied in writing by the Engineer.

7.2 Profile

The drainage pipe shall be laid so that its invert shall be at the gradeline shown on the profile, which gradeline is governed by the benchmarks. The profile shows, for the convenience of the Contractors and others, the approximate depth of cut from the surface of the ground at 50 metre intervals, to the final invert of the drainage pipe in metres and decimals of a metre. Benchmarks, which have been established along the course of the drain, shall govern the final elevation of the drain. The locations and elevations of the benchmarks are shown on the drawings.

A variation in grade may be tolerated where the actual capacity of the drain exceeds the required capacity. The as-constructed invert of the drainage pipe shall not deviate from the specified gradeline more than 10% of the internal diameter of the drainage pipe. These deviations are allowable, provided they are gradual over a distance of not less than 10 m. No reverse grade shall be allowed.

7.3 Location of New Tile Drain

The new tile drain shall be installed as shown on the drawings attached hereto.

7.4 Drainage Pipe Materials

7.4.1 SRPE Pipe

Tile Drain (Sta. 0+000 to Sta. 0+137)	*New 1200 mm (48") diameter solid (non-perforated) steel reinforced ribbed polyethylene pipe (SRPE), smooth wall interior (DuroMaxx or approved equivalent) unless otherwise specified conforming to the following specifications: ASTM F2562, AASHTO designation M 335 and MP 40.*
	Joined using gasketed "bell and spigot" QuikJoint system.
Pipe Bedding	*150 mm layer clear stone below pipe and Granular 'A' (crushed limestone) conforming to OPSS Division 10 up to pipe spring line compacted to minimum 98% S.P.D.*
Backfill Above Pipe Spring line (beyond roadways)	*Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substance compacted to minimum 95% S.P.D.*
Backfill Above Pipe Spring line (within roadways)	*Granular 'A'(crushed limestone) conforming to OPSS Division 10 up to pipe spring line compacted to minimum 98% S.P.D..*
Filter Fabric	*"Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC or approved equivalent.*
Erosion Stone	*All stone to be used for erosion protection shall be 125 – 250 mm clear quarried rock or OPSS 1001, minimum 300 mm thickness.*

8.0 PRECAST CONCRETE MAINTENANCE HOLES

OPSS Form 407 and OPSD 701 shall apply and govern except as extended or amended herein. The Contractor shall supply and install precast concrete maintenance holes complete with frames, covers, safety platforms, ladder rungs, adjustment rings. All maintenance holes shall be installed with precast flat cap.

Maintenance holes shall be placed on 300 mm compacted Granular 'A' material and shall be backfilled around with approved granular materials in maximum 300 mm lifts to 98% standard proctor density. Where maintenance holes are located under roadways, backfill shall be non-shrink fill materials (Portland cement stabilized granular backfill as per OPSD standards). All maintenance holes shall come equipped with a minimum 300 mm deep sump unless noted otherwise.

Structures that are identified to be replaced shall be removed and disposed of by the Contractor.

9.0 PRECAST CONCRETE CATCH BASINS

The Contractor shall arrange for the supply and installation of concrete catch basins at the locations and elevations as shown on the Drawings attached herein.

The Contractor shall install all precast structures plumb and true to line and grade. Precast bases shall be set to the specified grade, shall be level, and shall have uniform overall contact with the underlying soil.

Precast concrete catch basins shall conform to the requirements of OPSD 705.01. The floor elevation shall be at least 300 mm below the invert of the outlet pipe in the wall of the catch basins.

Off-line catch basins shall be supplied and installed complete with 200 mm diameter PVC DR35 catch basin lead connected to the new drain with Inserta-Tee.

Pipe placed in the walls for inlet and outlet connections shall extend through the wall a sufficient distance to allow for connections. The pipes shall be trimmed flush with the inside wall and shall be securely sealed into place using grout.

All catch basins shall be supplied with 1 – 150 mm riser section installed on top of the structure so that future adjustments can be made. Catch basins shall be supplied with heavy duty frame and grates per OPSD 400.02.

10.0 HYDRAULIC SEEDING OF NEW DRAIN CHANNEL

The newly established drain banks and all existing grassed areas disturbed by construction shall be hydraulic mulch seeded as specified herein. The surface shall be predominantly fine and free from weeds and other unwanted vegetation. All other loose surface litter shall be removed and disposed of.

The Contractor shall apply a fibre reinforced matrix (FRM) hydromulch engineered with pasteurized wood fibers and cross-linked with dispersible synthetic fibers and exclusive soil bonding agents for immediate and effective soil erosion control on newly constructed drain channels where the sideslopes are 2:1 (horizontal : vertical) such as the FlexGuard product by Fibremulch company or approved equal . The hydromulch should be non-toxic and 100% biodegradable with a minimal curing period and up to 12 months longevity. The hydromulch shall be applied at a minimum rate of 3,300 kg of dry product per 10,000 m^2. It shall be thoroughly mixed with water in a hydraulic seeder and mulcher at a rate of 20 kg of dry product to 225 litres of water. Refer to OPSS.PROV 804 for additional specifications.

Seeding and mulching shall be a one step process in which the seed and hydraulic mulch are applied simultaneously in a water slurry via the hydraulic seeder/mulcher. The materials shall be added to the supply tank while it is being loaded with water. The materials shall be thoroughly mixed into a homogeneous water slurry and shall be distributed uniform, cohesive mat over the prepared surface. The materials shall be measured by mass or by a mass-calibrated volume measurement, acceptable to the Drainage Superintendent.

The hydraulic seeder/mulcher shall be equipped with mechanical agitation equipment capable of mixing the materials into a homogenous state until applied. The discharge pumps and gun nozzles shall be capable of applying the material uniformly. Grass seed shall be MTO roadside seed mixture meeting the requirements as follows:

Creeping Red Fescue	*52%*
Perennial Ryegrass	*35%*
Kentucky Bluegrass	*10%*
White Clover	*3%*

Bags shall bear the label of the supplier indicating the content by species, grade and mass. Seed shall be applied at a rate of 170 kg per 10,000 m^2.

The hydraulic seeding shall be deemed "Completed by the Contractor" when the seed has established in all areas to the satisfaction of the Engineer. Re-seeding and/or other methods required to establish the grass will be given consideration to achieve the end result and the costs shall be incidental to the works.

11.0 STONE EROSION PROTECTION

Erosion protection, within the drain channel, shall be constructed of quarry stone rip-rap (R50) as shown on the drawings and as specified herein. The size of the rip-rap shall mostly vary between 150 mm and 250 diameter. The rip-rap shall be sloped 1 vertical to 1.5 horizontal, with filter fabric underlay spanning across the entire width of the drain. The minimum thickness requirement of the erosion stone layer is 350 mm with no portion of the filter fabric to be exposed.

12.0 SEDIMENT TRAP & ROCK CHECK DAM

The Contractor shall construct a 1.5 m wide x 10 m long x 0.5 m deep sediment trap at the downstream end of Culvert No. 1 from Station 0+168 to Station 0+178. The sediment trap will be lined with R-50 rip rap, minimum 350 mm thick. A temporary rock check shall be installed downstream of the sediment trap between Station 0+178 to Station 0+182. The work shall be in general compliance with OPSD No. 219.220 and OPSD NO. 219-211 respectively. The rock check dam shall be removed at the discretion of the Drainage Superintendent.

13.0 ROAD CULVERT CONSTRUCTION

13.1 Location

The road bridge shall be located and installed as shown on the drawings attached hereto.

13.2 Materials

Materials shall be as follows:

Culvert	*New 29.3 m long, 1200 mm diameter reinforced precast concrete pipe as per CSA A257.2 Class 100D.*
Culvert Bedding	*19 mm clearstone conforming to OPSS Division 10.*
Culvert Backfill	*Granular 'A' conforming to OPSS Division 10.*
Erosion Stone	*All stone to be used for erosion protection shall be R-50 clear quarried rock per OPSS 1004, minimum 350 mm thickness.*
Filter Fabric	*"Non-Woven" geotextile filter fabric with a minimum strength equal or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC, or approved equivalent.*

13.3 Culvert Installation

Suitable dykes shall be constructed in the drain so that the installation of the culvert can be accomplished in the dry. The drain bottom shall be cleaned, prepared, shaped and compacted to suit the new culvert configuration, as shown on the drawings. Granular materials shall be compacted to 100% of their maximum dry density; imported clean native materials shall be supplied, placed, and compacted to 95% of their maximum dry density.

13.4 Site Cleanup and Restoration

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

GENERAL SPECIFICATIONS

1.0 AGREEMENT AND GENERAL CONDITIONS

The part of the Specifications headed "Special Provisions" which is attached hereto forms part of this Specification and is to be read with it. Where there is any difference between the requirements of this General Specification and those of the Special Provisions, the Special Provisions shall govern.

Where the word "Drainage Superintendent" is used in this specification, it shall mean the person, or persons appointed by the Council of the Municipality having jurisdiction to superintend the work.

Tenders will be received, and contracts awarded only in the form of a lump sum contract for the completion of the whole work or of specified sections thereof. The Tenderer agrees to enter into a formal contract with the Municipality upon acceptance of the tender. The General Conditions of the contract and Form of Agreement shall be those of the Stipulated Price Contract CCDC2-Engineers, 1994 or the most recent revision of this document.

2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

Each tenderer must visit the site and review the plans and specifications before submitting his/her tender and must satisfy himself/herself as to the extent of the work and local conditions to be met during the construction. Claims made at any time after submission of his/her tender that there was any misunderstanding of the terms and conditions of the contract relating to site conditions, will not be allowed. The Contractor will be at liberty, before bidding to examine any data in the possession of the Municipality or of the Engineer.

The quantities shown or indicated on the drawings or in the report are estimates only and are for the sole purpose of indicating to the tenderers the general magnitude of the work. The tenderer is responsible for checking the quantities for accuracy prior to submitting his/her tender.

3.0 MAINTENANCE PERIOD

The successful Tenderer shall guarantee the work for a period of one (1) year from the date of acceptance thereof from deficiencies that, in the opinion of the Engineer, were caused by faulty workmanship or materials. The successful Tenderer shall, at his/her own expense, make good and repair deficiencies and every part thereof, all to the satisfaction of the Engineer. Should the successful Tenderer for any cause, fail to do so, then the Municipality may do so and employ such other person or persons as the Engineer may deem proper to make such repairs or do such work, and the whole costs, charges, and expense so incurred may be deducted from any amount due to the Tenderer or may be collected otherwise by the Municipality from the Tenderer.

4.0 GENERAL CO-ORDINATION

The Contractor shall be responsible for the coordination between the working forces of other organizations and utility companies in connection with this work. The Contractor shall have no cause of action against the Municipality or the Engineer for delays based on the allegation that the site of the work was not made available to him by the Municipality or the Engineer by reason of the acts, omissions, misfeasance or non-feasance of other organizations or utility companies engaged in other work.

5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES

The Contractor shall note that overhead and underground utilities such as hydro, gas, telephone and water are not necessarily shown on the drawings. It is the Contractor's responsibility to contact utility companies for information regarding utilities, to exercise the necessary care in construction operations and to take other precautions to safeguard the utilities from damage.

All work on or adjacent to any utility, pipeline, railway, etc., is to be carried out in accordance with the requirements of the utility, pipeline, railway, or other, as the case may be, and its specifications for such work are to be followed as if they were part of this specification. The Contractor will be liable for any damage to utilities.

6.0 CONTRACTOR'S LIABILITY

The Contractor, his/her agents and all workmen or persons under his/her control including sub-contractors, shall use due care that no person or property is injured and that no rights are infringed in the prosecution of the work. The Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect to any injury to persons or property of whatever description and in respect of any infringement of any right, privilege or easement whatever, occasioned in the carrying on of the work, or by any neglect on the Contractor's part.

The Contractor shall indemnify and hold harmless the Municipality and the Engineer, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or attributable to the Contractor's performance of the contract.

7.0 PROPERTY BARS AND SURVEY MONUMENTS

The Contractor shall be responsible for marking and protecting all property bars and survey monuments during construction. All missing, disturbed, or damaged property bars and survey monuments shall be replaced at the Contractor's expense, by an Ontario Land Surveyor.

8.0 MAINTENANCE OF FLOW

The Contractor shall, at his/her own cost and expense, permanently provide for and maintain the flow of all drains, ditches and water courses that may be encountered during the progress of the work.

9.0 ONTARIO PROVINCIAL STANDARDS

Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD) shall apply and govern at all times unless otherwise amended or extended in these Specifications or on the Drawing. Access to the electronic version of the Ontario Provincial Standards is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to http://www.mto.gov.on.ca/english/transrd/. Under the title Technical Manuals is a link to the Ontario Provincial Standards. Users require Adobe Acrobat to view all pdf files.

10.0 APPROVALS, PERMITS AND NOTICES

The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced in this Contract.

The Contractor shall obtain all approvals and permits and notify the affected authorities when carrying out work in the vicinity of any public utility, power, underground cables, railways, etc.

11.0 SUBLETTING

The Contractor shall keep the work under his/her personal control, and shall not assign, transfer, or sublet any portion without first obtaining the written consent of the Municipality.

12.0 TIME OF COMPLETION

The Contractor shall complete all work on or before the date fixed at the time of tendering. The Contractor will be held liable for any damages or expenses occasioned by his/her failure to complete the work on time and for any expenses of inspection, superintending, re-tendering, or re-surveying, due to their neglect or failure to carry out the work in a timely manner.

13.0 TRAFFIC CONTROL

The Contractor will be required to always control vehicular and pedestrian traffic along roads and shall, at his/her own expense, provide for placing and maintaining such barricades, signs, flags, lights and flag persons as may be required to ensure public safety. The Contractor will be solely responsible for controlling traffic and shall appoint a representative to maintain the signs and warning lights at night, on weekends and holidays and at all other times that work is not in progress. All traffic control during construction shall be strictly in accordance with the **Occupational Health and Safety Act** and the current version of the **Ontario Traffic Manuals**. Access to the electronic version of the **Ontario Traffic Manual** is available online through the MTO website, free of charge to all users. To access the electronic standards on the Web go to http://www.mto.gov.on.ca/english/transrd/, click on "Library Catalogue," under the "Title," enter "Ontario Traffic Manual" as the search. Open the applicable "Manual(s)" by choosing the "Access Key," once open look for the "Attachment," click the pdf file. Users require Adobe Acrobat to view all pdf files.

Contractors are reminded of the requirements of the Occupational Health and Safety Act pertaining to Traffic Protection Plans for workers and Traffic Control Plan for Public Safety.

14.0 SITE CLEANUP AND RESTORATION

As part of the work and upon completion, the Contractor shall remove and dispose of, off-site any loose timber, logs, stumps, large stones, rubber tires, cinder blocks or other debris from the drain bottom and from the side slopes. Where the construction works cross a lawn, the Contractor shall take extreme care to avoid damaging the lawn, shrubs and trees encountered. Upon completion of the work, the Contractor shall completely restore the area by the placement and fine grading of topsoil and seeding or sodding the area as specified by the Engineer or Drainage Superintendent.

15.0 UTILITY RELOCATION WORKS

In accordance with Section 26 of the Drainage Act, if utilities are encountered during the installation of the drainage works that conflict with the placement of the new culvert, the operating utility company shall relocate the utility at their own costs. The Contractor however will be responsible to co-ordinate these required relocations (if any) and their co-ordination work shall be considered incidental to the drainage works.

16.0 FINAL INSPECTION

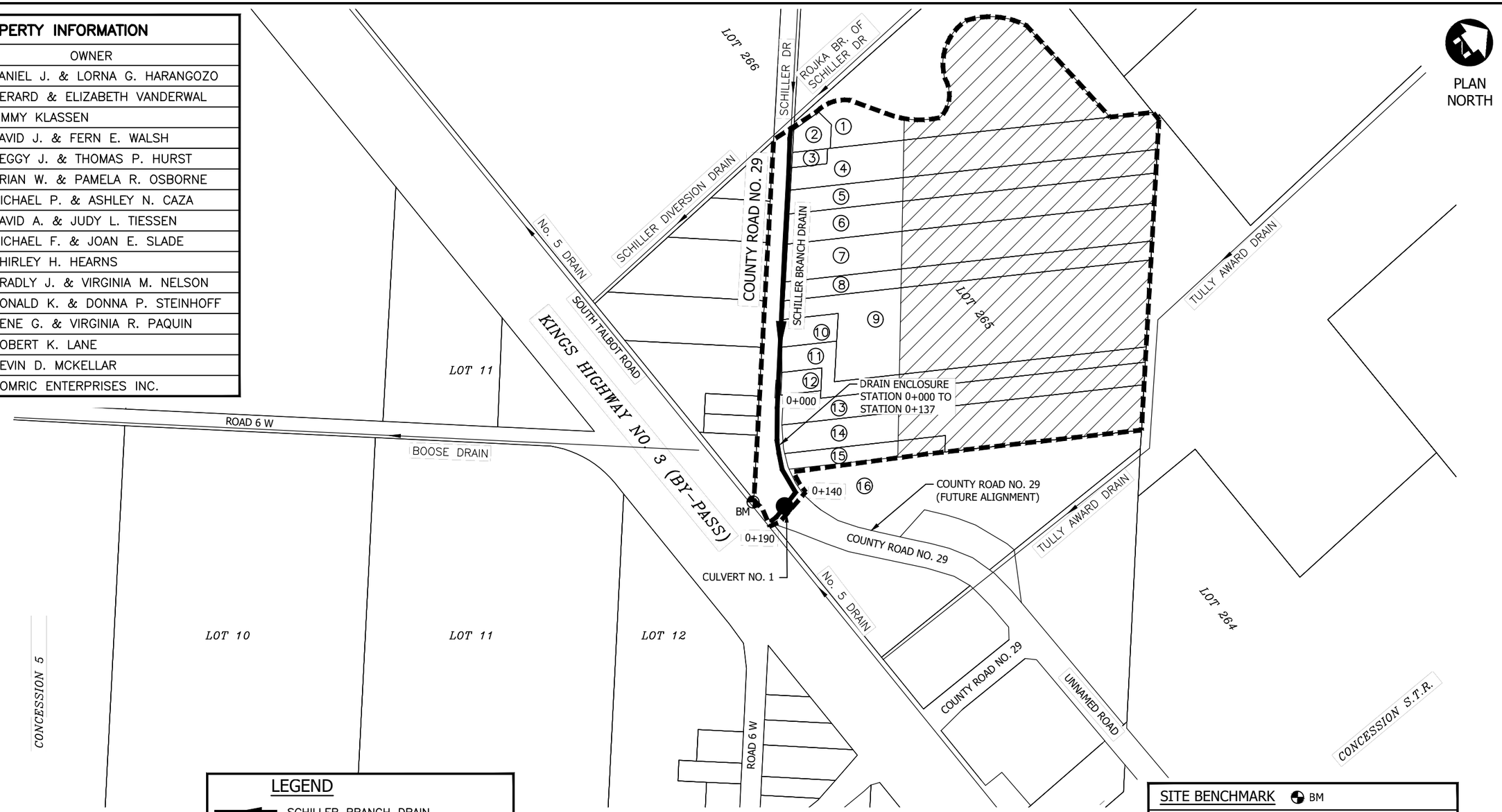
All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent. Any deficiencies noted during the final inspection shall be immediately rectified by the Contractor.

Final inspection will be made by the Engineer within 20 days after the Drainage Superintendent has received notice in writing from the Contractor that the work is completed, or as soon thereafter as weather conditions permit.

17.0 FISHERIES CONCERNS

Standard practices to be followed to minimize disruption to fish habitat include embedment of the culvert a minimum 10% below grade, constructing the work 'in the dry' and cutting only trees necessary to do the work (no clear-cutting). No in-water work is to occur during the timing window unless otherwise approved by the appropriate authorities.

PROPERTY INFORMATION		
ID	ROLL NO.	OWNER
1	560–07600	DANIEL J. & LORNA G. HARANGOZO
2	560–07700	GERARD & ELIZABETH VANDERWAL
3	560–07800	JIMMY KLASSEN
4	560–07500	DAVID J. & FERN E. WALSH
5	560–07400	PEGGY J. & THOMAS P. HURST
6	560–07300	BRIAN W. & PAMELA R. OSBORNE
7	560–07200	MICHAEL P. & ASHLEY N. CAZA
8	560–07100	DAVID A. & JUDY L. TIESSEN
9	560–07000	MICHAEL F. & JOAN E. SLADE
10	560–06900	SHIRLEY H. HEARNS
11	560–06800	BRADLY J. & VIRGINIA M. NELSON
12	560–06700	RONALD K. & DONNA P. STEINHOFF
13	560–06600	RENE G. & VIRGINIA R. PAQUIN
14	560–06500	ROBERT K. LANE
15	560–06400	KEVIN D. MCKELLAR
16	560–00300	DOMRIC ENTERPRISES INC.



OVERALL PLAN
SCALE=1:5,000

LEGEND
- SCHILLER BRANCH DRAIN
- SCHILLER BRANCH DRAIN WATERSHED
- OTHER DRAINS
- NEW ROAD CULVERT
- EXISTING WOODLOT

SITE BENCHMARK — BM

BM– TOP OF CONCRETE BRIDGE DECK WEST END OF EXISTING COUNTY ROAD NO. 29 BRIDGE OVER NO. 5 DRAIN.

ELEVATION=195.76m

NOTE: CONTRACTOR TO VERIFY BENCHMARKS PRIOR TO CONSTRUCTION.

'SCHEDULE G'

LICENSED PROFESSIONAL ENGINEER
O. E. T. MOIR
100505851
2024/11/15
PROVINCE OF ONTARIO

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.

No.	ISSUED FOR	DATE	BY
2	FINAL REPORT SUBMISSION	NOV. 15/24	OEM
1	CLIENT REVIEW	NOV. 1/24	OEM

DESIGN TRO	REVIEWED BY CBC
DRAWN WLB	CHECKED BY OEM
DATE November 15, 2024	
SCALE AS SHOWN	

DILLON CONSULTING

PROJECT NO. 21-3142

DRAWING SCALES BASED ON A 11" X 17" SHEET

Drainage Report for the
REALIGNMENT OF THE LOWER PORTION OF THE SCHILLER BRANCH DRAIN
Town of Kingsville

SHEET TITLE OVERALL PLAN

PAGE NO. 1 of 4

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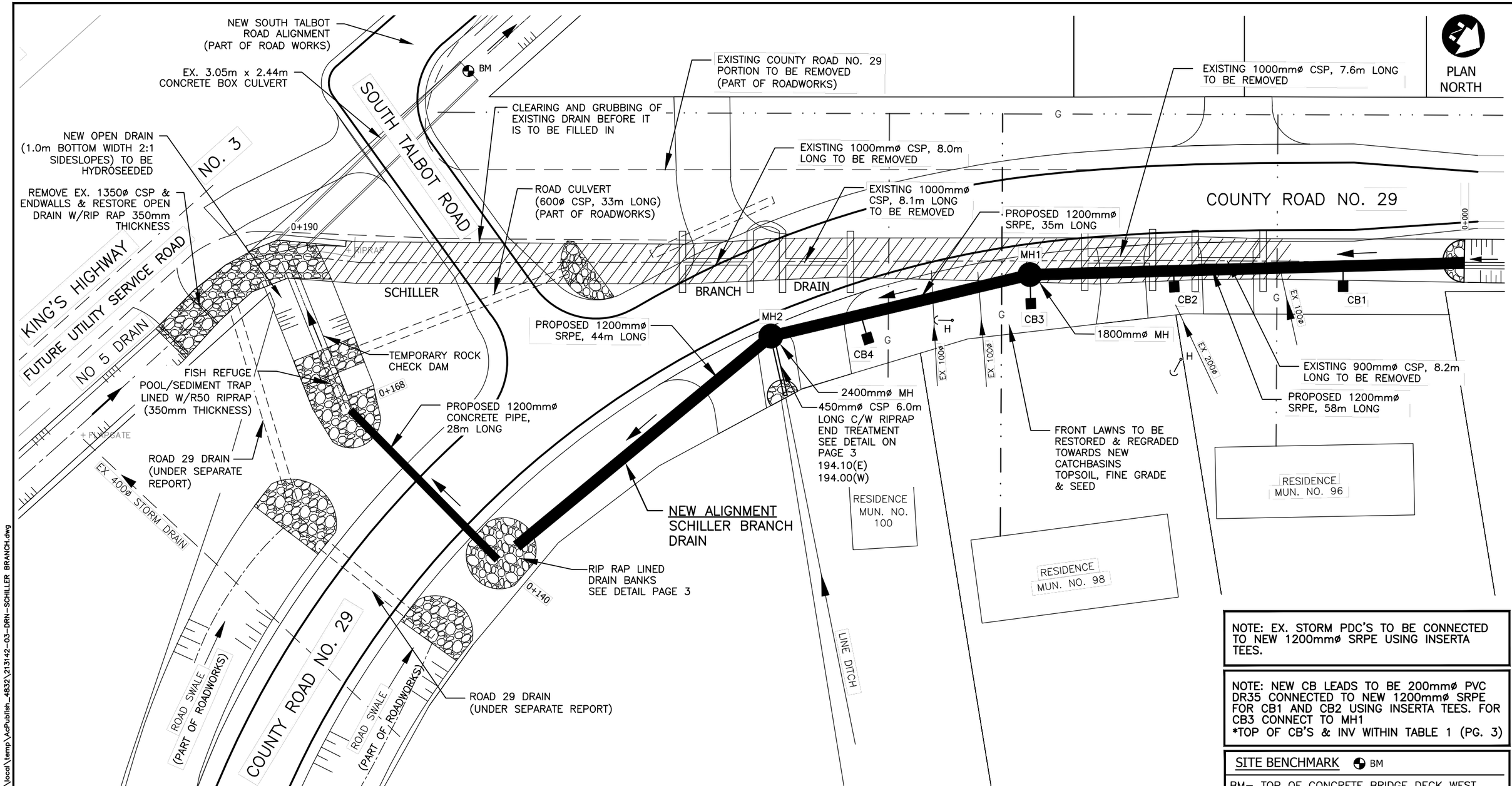

NOTE: EX. STORM PDC'S TO BE CONNECTED TO NEW 1200mmø SRPE USING INSERTA TEES.

NOTE: NEW CB LEADS TO BE 200mmø PVC DR35 CONNECTED TO NEW 1200mmø SRPE FOR CB1 AND CB2 USING INSERTA TEES. FOR CB3 CONNECT TO MH1
*TOP OF CB'S & INV WITHIN TABLE 1 (PG. 3)

SITE BENCHMARK — BM

BM– TOP OF CONCRETE BRIDGE DECK WEST END OF EXISTING COUNTY ROAD NO. 29 BRIDGE OVER NO. 5 DRAIN.

ELEVATION=195.76m

NOTE: CONTRACTOR TO ARRANGE FOR ALL EXISTING UTILITY LOCATES PRIOR TO EXCAVATION

PLAN 1
SCALE=1:500

'SCHEDULE G'

LICENSED PROFESSIONAL ENGINEER
O. E. T. MOIR
100505851
2024/11/15
PROVINCE OF ONTARIO

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.

No.	ISSUED FOR	DATE	BY
2	FINAL REPORT SUBMISSION	NOV. 15/24	OEM
1	CLIENT REVIEW	NOV. 1/24	OEM

DESIGN: TRO	REVIEWED BY: CBC
DRAWN: WLB	CHECKED BY: OEM
DATE: November 15, 2024	
SCALE: AS SHOWN	

DILLON CONSULTING

Drainage Report for the
REALIGNMENT OF THE LOWER PORTION OF THE SCHILLER BRANCH DRAIN
Town of Kingsville

PROJECT NO. 21-3142
DRAWING SCALES BASED ON A 11" X 17" SHEET
SHEET TITLE: PLAN 1
PAGE NO. 2 of 4

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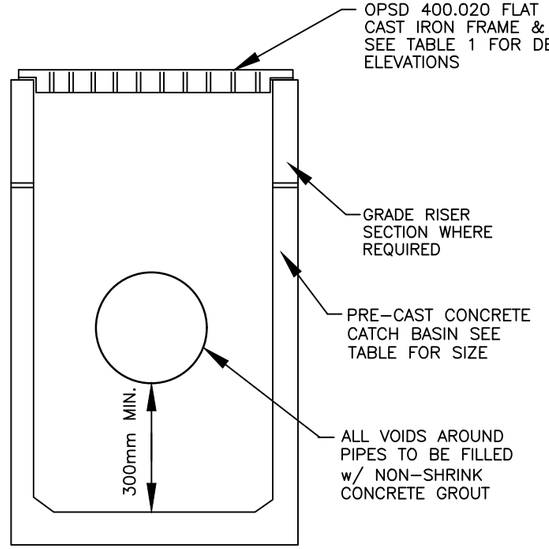
TABLE 1 - SCHILLER BRANCH DRAIN NEW STRUCTURE DETAILS

STRUCTURE No.	SIZE (mm)	RIM ELEVATION (m)	OFFSET DISTANCE FROM ℄ (m)	INVERT ELEVATION (m)
CB1	600x600*	194.90	3.0	W. INV 194.00 (200ø)
CB2	600x600*	194.90	3.0	W. INV 194.00 (200ø)
CB3	600x600*	194.90	3.0	W. INV 194.00 (200ø)
CB4	600x600*	194.90	3.0	W. INV 194.00 (200ø)
MH1	1800ø	195.35	7.6	N. INV 193.32 (1200ø)
				S. INV 193.32 (1200ø)
				E. INV 193.90 (200ø)
MH2	2400ø	195.35	8.2	N. INV 193.28 (1200ø)
				S. INV 193.28(1200ø)
				E. INV 194.00 (450ø)

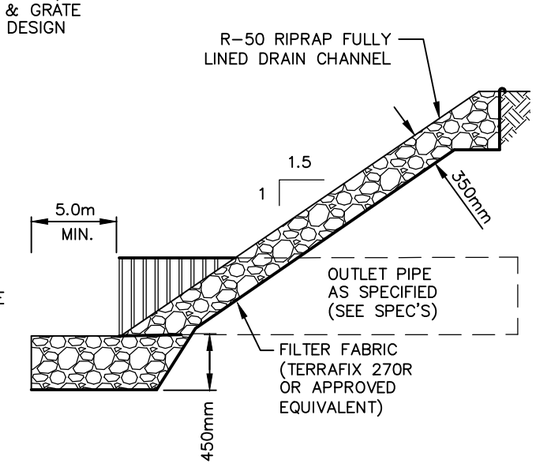
NOTES:

- CBs AS PER OPSD 705.010 WITH 300mm SUMP & FRAME & GRATE AS PER OPSD 400.02 UNLESS OTHERWISE NOTED.
- MHs AS PER APPLICABLE OPSD WITH 300mm SUMP, FLAT CAP, FRAME & GRATE PER OPSD 401.01 UNLESS OTHERWISE NOTED.
- ALL CATCHBASINS TO BE MANUFACTURED TO PROVIDE MINIMUM 150mm OF GRADE ADJUSTMENT UNLESS OTHERWISE NOTED.
- TRENCH BOX TO BE USED DURING PIPE INSTALLATION EXCEPT WHERE UTILITY CROSSINGS PREVENT ITS USE, OTHER MEANS OF TRENCH SUPPORT WILL BE REQUIRED.



TYPICAL CATCH BASIN DETAIL

SCALE – NTS



INLET PIPE DETAIL

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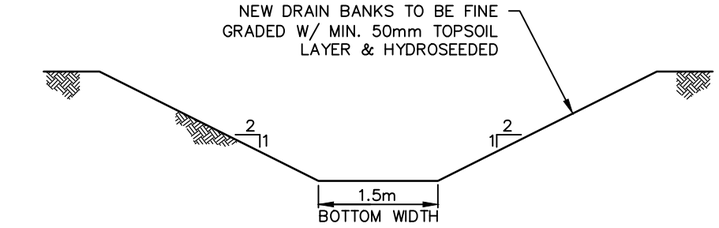
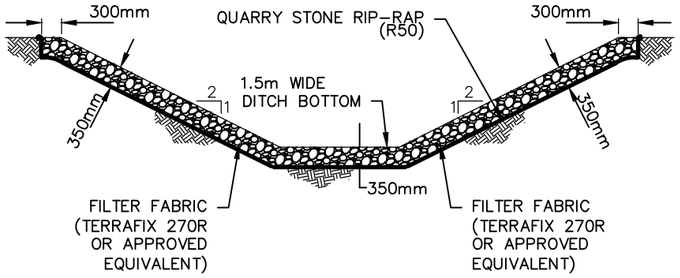


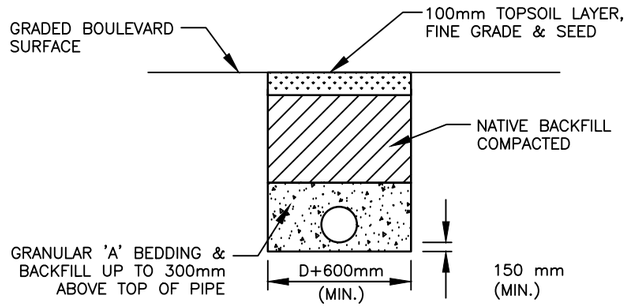
TYPICAL OPEN DRAIN DETAIL WHERE HYDROSEED SPECIFIED

N.T.S.



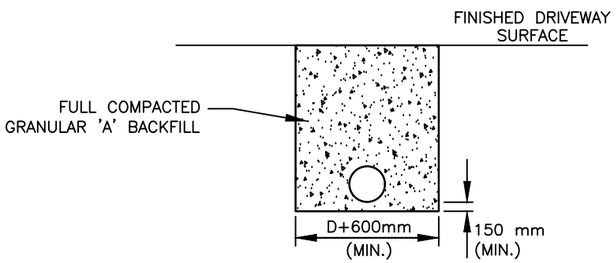
TYPICAL OPEN DRAIN DETAIL WHERE RIP RAP SPECIFIED

N.T.S.



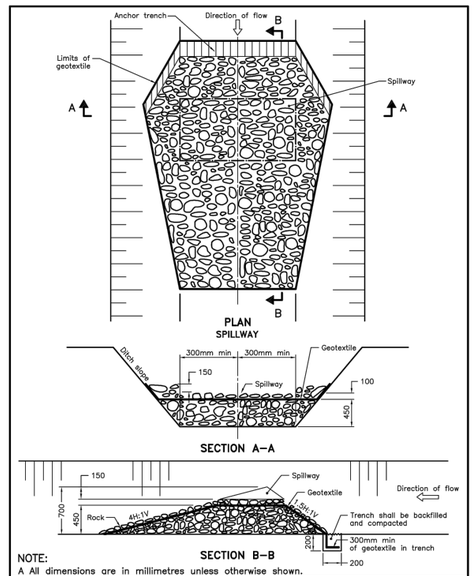
TYPICAL TRENCH DETAIL: BEYOND DRIVEWAY CROSSINGS

SCALE – NTS



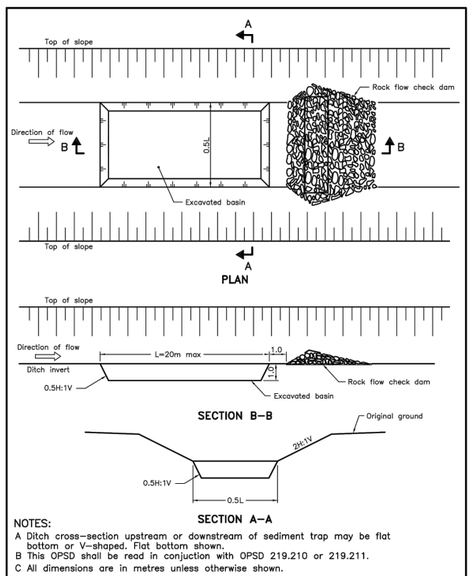
TYPICAL TRENCH DETAIL: DRIVEWAY CROSSINGS

SCALE – NTS



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
TEMPORARY ROCK FLOW CHECK DAM FLAT BOTTOM DITCH		OPSD 219.211



NOTES:
A Ditch cross-section upstream or downstream of sediment trap may be flat bottom or V-shaped. Flat bottom shown.
B This OPSD shall be read in conjuction with OPSD 219.210 or 219.211.
C All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
SEDIMENT TRAP IN DITCH		OPSD 219.220

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.

No.	ISSUED FOR	DATE	BY
2	FINAL REPORT SUBMISSION	NOV. 15/24	OEM
1	CLIENT REVIEW	NOV. 1/24	OEM

DESIGN TRO	REVIEWED BY CBC
DRAWN WLB	CHECKED BY OEM
DATE November 15, 2024	
SCALE AS SHOWN	

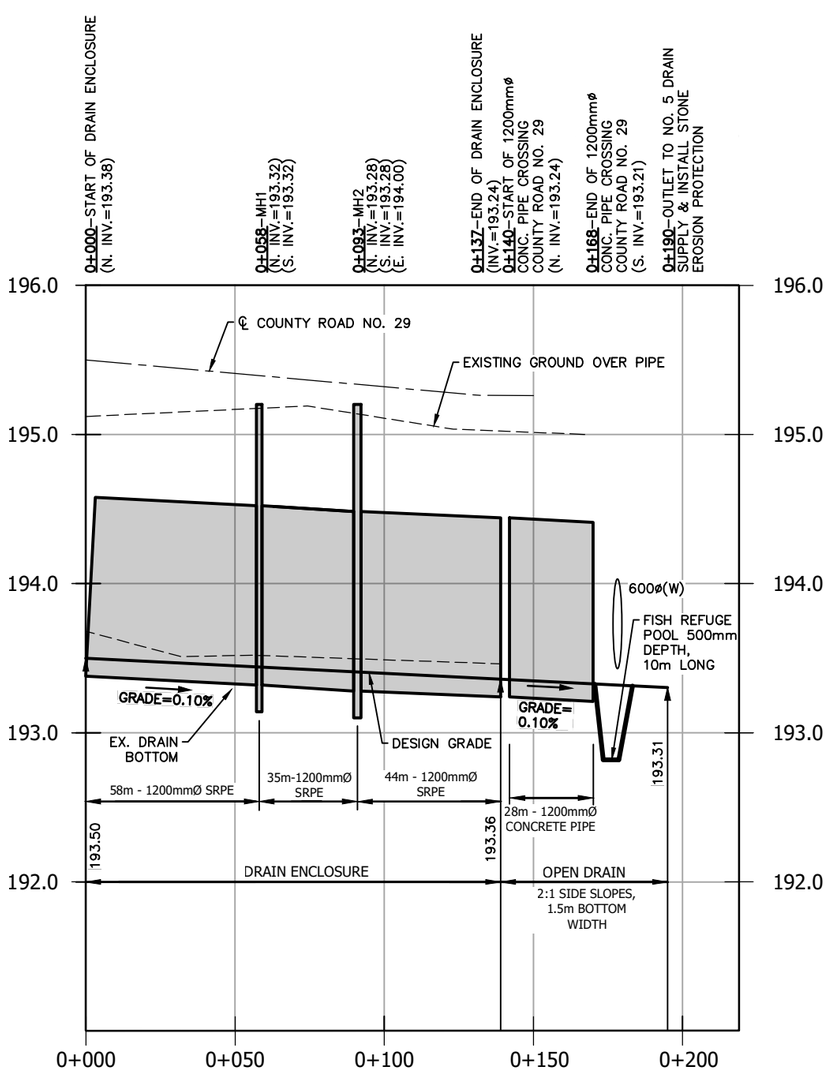
DILLON CONSULTING

'SCHEDULE G'

Drainage Report for the
REALIGNMENT OF THE LOWER PORTION OF THE SCHILLER BRANCH DRAIN
Town of Kingsville

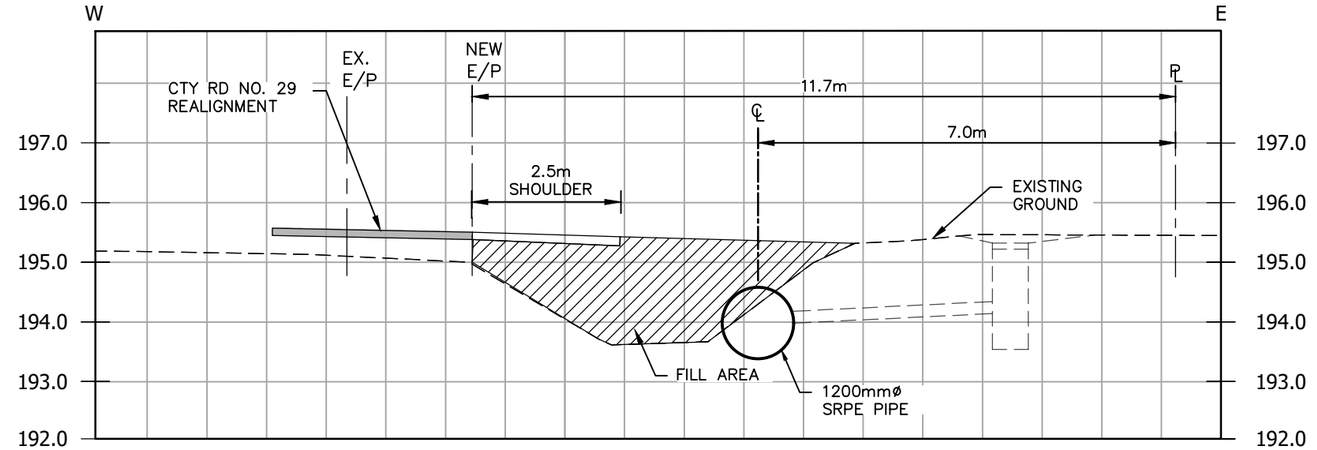
PROJECT NO. 21-3142	SHEET TITLE STRUCTURE TABLE & DETAILS
DRAWING SCALES BASED ON A 11" X 17" SHEET	PAGE NO. 3 of 4

Nov 14, 2024 – 5:32pm C:\Users\330EM\appdata\local\temp\AcPublish_4832\213142-03-DRN-SCHILLER BRANCH.dwg



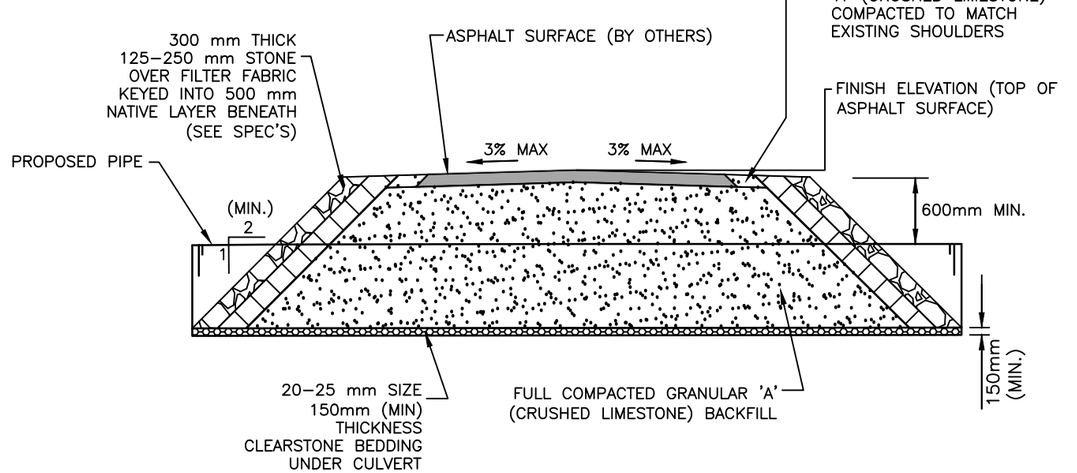
PROFILE

SCALE – HORZ.=1:2,000
VERT.=1:40



CROSS SECTION STA. 0+050 (LOOKING UPSTREAM)

SCALE–1:100



COUNTY ROAD NO. 29 CROSSING LONGITUDINAL SECTION

SCALE–1:100

'SCHEDULE G'

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DESIGN	TRO
REVIEWED BY	CBC
DRAWN	WLB
CHECKED BY	OEM
DATE	November 15, 2024
SCALE	AS SHOWN

DILLON CONSULTING

PROJECT NO. 21-3142

DRAWING SCALES BASED ON A 11" X 17" SHEET

Drainage Report for the
REALIGNMENT OF THE LOWER PORTION OF THE SCHILLER BRANCH DRAIN
Town of Kingsville

SHEET TITLE PROFILE & CROSS-SECTIONS

PAGE NO. 4 of 4

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