DRAINAGE REPORT
FOR THE

LACHANCE DRAIN

TOWN OF TECUMSEH
&
CITY OF WINDSOR

DILLON CONSULTING

03 MAY 2019

MARK D. HERNANDEZ, P.ENG.

DILLON FILE No. 17-6772

TECUMSEH FILE NO. E09LA(49)

File No. 17-6772

Mayor and Council
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Drainage Report for the
LACHANCE DRAIN
Town of Tecumseh & City of Windsor

Ladies & Gentlemen:

Instructions

The Municipality put forth a request to repair and improve the Lachance Drain on 15 September 2017. Council accepted the request under Section 78 of the Drainage Act and on 14 November 2017 appointed Dillon Consulting Limited to prepare a report. The Municipality invited affected landowners to attend an on-site meetings on 8 February 2018 and 6 April 2018 to discuss the Municipality's concerns with the performance of the drain, the concerns they have received to date from landowners and to garner any additional comments from landowners. The concerns brought forward at the meeting are as follows:

- The enclosed upstream section of the Lachance Drain has conveyance issues.
- Standing water along the drain corridor is prevalent during heavy rainfalls, especially along the upstream portion of the drain.

Watershed Description

The Lachance Drain commences along the south side of Intersection Road at Shawnee Road where it flows westerly along a closed channel to approximately the western boundary of Lot 148 where it begins to flow in an open channel until the centre of Lot 140. It then flows southerly for 243 metres. At this point the open channel flows westerly for 796 metres. The open channel drain outlets in to the Little River Drain.

The total length of the drain is approximately 2,442 metres. The watershed area is approximately 114.8 ha (284 acres) which consists of approximately 60.74 ha (150.08 acres) within the Town of Tecumseh and 54.06 ha (133.58 acres) within the City of Windsor.

The lands comprising the watershed are under mixed agricultural and residential use. There is little topographic relief. From the Ontario Soil Survey (provided by the Ontario Ministry of Agriculture, Food and Rural Affairs), the principle surficial soil in the study area is described as Brookston Clay. Brookston clay is characterized as a very slow draining soil type. Most of the agricultural land parcels are systematically tiled.

Drain History

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

- **3 August 1968 by C.G.R. Armstrong, P.Eng.:** This report recommend cleaning of the drain to address accumulated sediment.
- **7 September 1988 by Lou Zarlenga, P.Eng.:** This report recommends the improvement of the entire drain including the replacement of all culverts. The existing drain including culverts was found to be in disrepair. Further, a proposed residential development at the upstream end of the Lachance Drain required the improvements which were in addition to the maintenance activities. The report included a recommendation that all excess excavated material be trucked away.

On-Site Meeting

Site meetings were held on 8 February 2018 and 6 April 2018. A record of these meetings is provided in Schedule 'A-1' & Schedule 'A-2', which is appended hereto.

Survey

Our survey and examination of the Lachance Drain was carried out on 26 March 2018. The survey is comprised of the recording of topographic data and the examination of the channel for available depth necessary to provide sufficient drainage. We commenced the survey at the outlet into the Little River Drain. We then proceeded upstream along the channel (parallel to the CP Railway) until it reached Station 0+797. At this point we followed the channel northerly to Station 1+040 where we began following the drain easterly. We followed the channel easterly under Banwell Road to Station 1+700 and then continued easterly along the south side of Intersection Road until Station 2+288. At this point the drain is closed for approximately 150 metres.

Significant changes to the location of the downstream drain were identified. According to the 1988 report, from the new stationing from Station 1 + 048 to Station 0 + 000 the drain continued westerly through the farm fields. At some point in time following the 1988 report, the drain was relocated southerly to follow the railway. This work does not appear to have been completed under the Drainage Act. We however recommend that the drainage alignment shown within this report be known as the Lachance. Therefore, the alignment illustrated in the 1988 report (downstream of Station 1+048) is no longer legal upon the adoption of this report.

In addition, our survey revealed a significant amount of overgrown brush and vegetation with frequent accumulations of debris, forming blockages within the channel. There is a uniform build-up of sediment averaging 460 mm above the design bottom.

Existing Conditions and Recommendations

The last report for repair and improvement of the drain was completed in 1988. The drain will require a bottom cleanout to align with the 1988 profile with adjustments as shown on the profile attached from Station 1+048 to 2+288. From Station 0+000 to Station 1+048 the design grades are shown on the enclosed profile. Generally, the drain banks are reasonably well grassed and stabilized.

All of the access bridges were inspected during the course of our investigation. Our assessment identified culverts that are still in serviceable condition, but Bridge Nos. 3, 4, and 5 will likely require replacement in the next 5 to 10 years. Bridge Nos. 1 and 2 are concrete pipe and are not likely to deteriorate in the next 5 to 10 years.

We also recommend that the enclosed section of drain and existing bridges be flushed.

Since the 1988 report, a sanitary connection at Station 2+318 was constructed. This sanitary connection runs through the enclosed drain creating a partial obstruction. This condition resulted in a sinkhole forming at this location which the Municipality addressed through an emergency repair.

Subsequently, a review was completed to determine whether or not the sanitary connection could be lowered below the drain, however it was deemed untenable due to the shallow elevation at the sanitary main. We recommend that the Town of Tecumseh regularly perform maintenance on the entire closed portion of the drain from Station 2 + 288 to Station 2+440. This maintenance shall include the flushing of the drain, as well as the removal of debris.

Specific structure numbers have been designated for ease of reference between the specifications and the drawings. The locations, dimensions, condition and use of each structure are as follows:

Bridge No. 1: Station 0+581 City of Windsor (Roll No. 090-040-03402)

A 32.5 m long, 1800 mm diameter concrete pipe with rip rap end protection provides for a railway crossing. A culvert was not shown at this location in the 1988 report therefore, its origin is unknown. We recommend the incorporation of this bridge as part of the Lachance Drain.

We recommend that in the future the culvert be replaced with a new 32.5 m long, 1800 mm diameter concrete pipe complete with rip rap end protection with filter fabric underlay.

Bridge No. 2: Station 0+763 City of Windsor (Roll No. 090-040-03502)

A 34.5 m long, 1800 mm diameter concrete pipe with rip rap end protection provides for a railway crossing. A culvert was not shown at this location on the profile in the 1988 report, therefore its origin is unknown. We recommend the incorporation of this bridge as part of the Lachance Drain.

We recommend that in the future the culvert be replaced with a new 34.5 m long, 1800 mm diameter concrete pipe complete with rip rap end protection with filter fabric underlay.

Bridge No. 3: Station 1+048 Pointe East Windsor Limited (Roll No. 090-040-03600)

A 9.2 m long, 1350 mm diameter corrugated steel pipe with rip rap end protection and gravel surface provides a fence and farm crossing. A culvert was shown at this location on the profile in the 1988 report.

We anticipate that this culvert will require replacement within the next 10 years or sooner if conditions warrant. We recommend that in the future the culvert be replaced with a new 18.5 m long, 1400 mm diameter aluminized corrugated steel pipe complete with rip rap end walls with filter fabric underlay, providing a minimum 9.2 m wide gravel surface.

Bridge No. 4: Station 1+227 Pointe East Windsor Limited (Roll No. 090-040-03700)

A 13.9 m long, 1300 mm diameter corrugated steel pipe with rip rap end protection and gravel surface provides access to this property. A culvert was shown at this location on the profile in the 1988 report.

We anticipate that this culvert will require replacement within the next 10 years or sooner if conditions warrant.

We recommend that in the future the culvert be replaced with a new 16.5 m long, 1400 mm diameter aluminized corrugated steel pipe complete with rip rap end walls with filter fabric underlay, providing a minimum 7.3 m wide gravel surface.

Bridge No. 5: Station 1+706 (Banwell Road)

A 13.9 m long, 1880 mm by 1260 mm corrugated steel pipe arch with concrete block end protection and asphalt surface provides a road crossing. A culvert was shown at this location on the profile in the 1988 report.

We anticipate that this culvert will require replacement within the next 5 to 10 years or sooner if conditions warrant. We recommend that in the future the culvert be replaced with a new 15m long, 1800 mm concrete pipe complete with vertical concrete block headwalls and a 6.7 m asphalt driveable top width with 2m wide shoulder extending over to concrete block headwalls.

Design Considerations

The Design and Construction Guidelines published by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) recommends that open drainage systems and farm crossings serving farmlands be designed to effectively contain and convey the peak runoff generated from a storm event having a frequency of occurrence of 1 in 2 years. The open drain use system and farm crossings have been designed accordingly. The road and rail bridges have been designed for a storm event having a frequency of occurrence of 1 in 5 years and analyzed for a 1 in 10 year storm event to confirm that flows do not overtop the roadway. Culvert Master Software was used to perform hydraulic analysis for bridges.

We believe that these design standards should provide a reasonable level of service, but it should be clearly understood that runoff generated from large storms or fast snow melts may sometimes exceed the capacity of the proposed systems and result in surface ponding for short periods of time.

Allowances

In accordance with Sections 29 and 30 of the Drainage Act, we have made a determination of the amount to be paid for damages to the lands, for land taken in the improvements to the drain and the establishment of a permanent 1.0 m wide grass buffer strip as recommended. The average land cost for 2018 provided by the Town of Tecumseh for the surrounding area used to calculate the value of land taken is $17,710 per hectare.

The 1988 report provided Section 29 allowances for lands required to repair and improve the drain. Further, allowances have been made in this report under Section 29 for the lands required to establish a 1 metre wide grass buffer strip along the drain.

Throughout the length of the work, the excavated material is to be disposed of as set out in the Special Provisions in Schedule F herein. In accordance with Section 30 of the Drainage Act, we determined the amount to be paid to the owners for damages to lands and crops (if any) occasioned by the operation of equipment and the disposal of material excavated from the drain. The allowance for damages is calculated at a rate of $3,707 per hectare, ($1,500 per acre).

Recommendations and Cost Estimate

Based on our review of the history, the information obtained during the site meeting and our examination and analysis of the survey data, we recommend that the Lachance Drain be repaired and improved as described below:

Item	Description	Amount
	OPEN DRAIN WORK	
1.	Brushing of the drain including the disposal by burning on-site or removal off-site with trimming and/or removal and disposal existing trees off-site as required to accommodate the drainage works, as follows:	
	a) Light brushing from Station 0+000 to Station 1+048	$6,300.00
	b) Medium brushing from Station 1+048 to Station 2+288	$16,200.00
2.	Excavation and levelling of excavated materials works, as follows:	
	a) Excavation of the drain bottom, as follows:	
	i) Station 0+000 to Station 2+288, totalling approximately 2,288 lineal metres of drain and approximately 710 m^3 of material.	$18,700.00
	b) Levelling of excavated materials, as follows:	
	i) Station 1+040 to Station 2+288, totalling approximately 1,138 lineal metres of drain and approximately 400 m^3 of material.	$1,700.00
	c) Trucking of excavated materials, as follows:	
	i) Station 0+000 to Station 1+040, totalling approximately 1040 lineal metres of drain and approximately 310 m^3 of material (existing fence on the north side of drain to be temporarily removed, where required to obtain access through working corridor).	$5,580.00
3.	Seeding of grass buffer strips, as follows:	
	a) Seeding of 1.0 m wide grass buffer strip beyond the top of bank on the north side of the drain from Station 0+000 to Station 0+790 (approximately 790 m^2).	$3,200.00
	b) Seeding of 1.0 m wide grass buffer strip beyond the west bank from Station 0+790 to Station 1+040 (approximately 250 m^2).	$1,000.00
	c) Seeding of 1.0 m wide grass buffer strips beyond the north and south bank from Station 1+040 to Station 1+700 (approximately 1,320 m^2).	$5,300.00
	d) Seeding of 1.0 m wide grass buffer strip beyond the south bank from Station 1+700 to Station 2+288 (approximately 588 m^2).	$2,400.00
4.	Temporary silt control measures during construction	$650.00

Item	Description	Amount
5.	Private access bridge cleaning works, as follows:	
	a) Bridges No. 1, 2, 3 and 4	$2,000.00
6.	Enclosed drain flushing from Station 2+228 to Station 2+442	$3,000.00
	SUB-TOTAL – EXCLUDING SECTION 26 COSTS	**$66,030.00**
7.	Allowances under Sections 29 and 30	$9,210.00
8.	Survey, report, assessment and final inspection (cost portion)	$45,000.00
9.	Expenses and incidentals (cost portion)	$1,500.00
10.	ERCA application, review and permit fee	$800.00
	TOTAL – EXCLUDING SECTION 26 COSTS	**$122,540.00**
	SECTION 26 NON PRO-RATEABLE COSTS	
11.	Road crossing cleaning works, as follows:	
	a) Cleaning of Bridge 5 – Station 1+700- 13.9 m long, 1880 mm x 1260 mm corrugated steel pipe arch (CSPA) road culvert.	$500.00
	SUB-TOTAL – SECTION 26 NON PRO-RATEABLE COSTS	**$500.00**
12.	Survey, report, assessment and final inspection (cost portion)	$3,500.00
	TOTAL – SECTION 26 NON PRO-RATEABLE COSTS	**$4,000.00**
	TOTAL ESTIMATE – LACHANCE DRAIN	**$126,540.00**

The estimate provided in this report excludes applicable taxes and 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.

Should the Road Authority elect to construct the drainage works across their road right-of-ways (Section 26.0 increased cost items) with their own forces, as per Section 69 of the Drainage Act, R.S.O., 1990, the Road Authority shall remain responsible for their allotment of costs for the preparation of this report as outlined in our estimate. Should the Road Authority elect not to undertake this work, the work items, as noted under Section 26 above, should be kept separate when tendering out the entire drainage works.

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 against the affected lands and roads as listed in Schedule 'C' under "Value of Special Benefit", "Value of Benefit" and "Value of Outlet." Details of the Value of Special Benefit listed in Schedule 'C' are provided in Schedule 'D'.

Assessment Rationale-Open Drain Improvements

We have assessed the above estimated costs for the repair and improvement of the Lachance Drain against the affected lands and roads listing in Schedule "C" under "Benefit" and "Outlet Liability".

The above estimated costs have been assessed 30% as a Benefit assessment and 70% as an Outlet Liability assessment against all upstream lands and roads within the drainage area. This is consistent with the 1988 Zarlenga report.

1. For tile main outlet repairs including stone erosion protection as required, at the location of the said main tile outlets, the Drainage Superintendent and/or Engineer may direct the contractor to make these repairs at the expense of the landowner. Private tile repairs shall be assessed 100% against the property on which the said tile exists.
2. Bank failure repairs caused by surface water inlets on abutting lands along the drain from Station 0+000 to Station 1+700 shall be assessed 100% to the abutting landowner.
3. Bank failure repairs caused by surface water inlets on abutting lands along the drain from Station 1+700 to Station 2+228 shall be assessed 100% to the abutting landowner if the failure is on the south side of the drain and 100% to the Road Authority if the failure is on the north side of the drain.

Assessment Rationale for Special Benefit Assessments (Bridges)

Special Benefit assessment shown in Schedule 'C' and detailed in Schedule 'D' were derived as follows:

1. The bridge cleaning cost of $500.00 plus an engineering cost portion of $2,000.00 each for the design provisions on the future replacement of Bridge Nos. 3 and 4 respectively has been assessed 50% against the abutting property and the remaining 50% as an Outlet assessment to the upstream lands and roads. The costs shall be assessed as a proratable assessment, see Schedule 'D'.
2. The bridge cleaning cost of $500.00 plus an engineering cost portion of $3,000.00 each for the design provisions on the future replacement of Bridge Nos. 1 and 2 has been assessed 100% to the abutting land owners. The costs shall be assessed at a non-proratable assessment, see Schedule 'D'.
3. The bridge cleaning cost of $500.00 plus engineering cost portion of $3,500.00 each for the design provisions on the future replacement of Bridge No. 5 has been assessed 100% against the City of Windsor Road Authority under Section 26 of the Drainage Act and shall be a non-proratable assessment, see Schedule 'D'.

Utilities

It may become necessary to temporarily or permanently relocate utilities that may conflict with the construction recommended under this report. In accordance with Section 26 of the Drainage Act, we assess any relocation cost against the public utility having jurisdiction. Under Section 69 of the Drainage Act, the public utility is at liberty to do the work with its own forces, but if it should not exercise this option within a reasonable time, the Municipality will arrange to have this work completed and the costs will be charged to the appropriate public utility.

Future Maintenance (Open Drain)

After completion, the Lachance Drain shall be maintained by the Town of Tecumseh and the City of Windsor for the respective portion of drain located within each municipality at the expense of the lands and road herein assessed in Schedule E-1," and in the same relative proportions subject, of course, to any variations that may be made under the authority of the Drainage Act. The assessments are based on an arbitrary amount of $20,000.00.

Future Maintenance (Private Access Bridges)

We recommend that future work of repair and maintenance of the Lachance Drain private access bridges be carried out by the Town of Tecumseh at the expense of the property or properties accessed by the bridge and of the lands and roads shown in Schedule 'E-2,' but only to those properties located upstream of each bridge.

Part of the maintenance cost of each bridge will be assessed as a Special Benefit assessment against the property or properties served by the bridge. The remainder of the maintenance cost will be assessed as Outlet assessment only to the lands and roads upstream of each bridge prorated to the assessments shown in Schedule 'E-2.'

Schedule 'E-2' represents all the lands and roads upstream of Bridge No. 3 and is applicable to other primary access bridges located further upstream by including only those properties that are upstream of the said bridge. The assessment is based on an arbitrary amount of $10,000.00 of future access bridge maintenance costs.

The division between Special Benefit and Outlet assessment for each bridge shall be as follows:

Bridge No.	Type	Owner(s)	Special Benefit	Outlet
1	Primary	City of Windsor Roll No. 090-040-03402	100%	0%
2	Primary	City of Windsor Roll No. 090-040-03502	100%	0%
3	Primary	Point East Windsor Limited Roll No. 090-040-03600	50%	50%
4	Primary	Point East Windsor Limited Roll No. 090-040-03700	50%	50%
5	Road	City of Windsor Road Authority (Section 26)	100%	0%

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 9 - Overall Watershed Plan
Page 2 of 9 – Profile- Station 0+000 to Station 1+200
Page 3 of 9 – Profile- Station 1+200 to Station 2+440
Page 4 of 9 – Bridge Design Information
Page 5 of 9 - Future Bridge No. 1 & 2 Replacement
Page 6 of 9 – Future Bridge No. 3 & 4 Replacement
Page 7 of 9 - Future Bridge No. 5 Replacement
Page 8 of 9 – Cross Sections
Page 9 of 9 – Miscellaneous Repair Details

Approvals

The construction and/or improvement to drainage works, including repair and maintenance activities, and all operations connected there 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.

Grants

In accordance with the provisions of Sections 85, 86 and 87 of the Drainage Act, a grant in the amount of 33–1/3 percent of the assessment eligible for a grant may be made in respect to the assessment made under this report upon privately owned lands used for agricultural purposes (eligible for farm tax credit). The assessments levied against privately owned agricultural land must also satisfy all other eligibility criteria set out in the Agricultural Drainage Infrastructure Program policies. Most of the privately owned lands are used for agricultural purposes and are eligible under the A.D.I.P. policies. We are not aware of any lateral drains involved in this work that would not be eligible for a grant. We recommend that application be made to the Ontario Ministry of Agriculture and Food in accordance with Section 88 of the Drainage Act, for this grant, as well as for all other grants for which this work may be eligible.

Respectfully submitted,

DILLON CONSULTING LIMITED

Mark D. Hernandez, P.Eng.
MDH: kaw:lld

SCHEDULE "A-1"

MEETING MINUTES

Subject:	**Lachance Drain- Onsite Meeting Minutes**
Date and Time:	**Thursday Febraury 8th 2018**
Location:	**Town of Tecumseh Council Chambers, 917 Lesperance Rd, Town of Tecumseh**
Our File:	**17-6772**

Attendees

Mark Hernandez	Dillon Consulting
Sam Paglia	Town of Tecumseh
Sign-in sheet attached	

Notes

Item	Discussion	Action By
1.	**General Information Regarding The Drainage Act**	
	• The Drainage act is a Provincial Act that is the responsibility of the municipal government to implement	**INFO.**
	• The act is over 100 years old and can be found on E-Laws	**INFO.**
	• The Act is a user based system, this is dissimilar to municipal sewers.	**INFO.**
	• The drainage process is as follows: o A request is submitted o The Engineer is appointed by the Municipality o Site Meeting held o Survey is completed o The Report is prepared o PIC is held (not required by the Act) o A meeting is set for Consideration (technical aspects of report) o Court of Revisions (cost aspects of report)	**INFO.**
	• The purpose of the site meeting is to gather information from landowners who can provide feedback about the performance of the drain as well as provide other information regarding the drain and watershed.	**INFO.**
2.	**Payment**	
	• Drain Cleanouts o These costs are typically assessed for benefit and outlet per the act. The assessment is based on how much water is sent down the drain and how much of the drain is used.	**INFO.** **INFO.**

- Culvert Replacements
  - When a replacement culverts is required the cost assessment is usually split 50/50.
  - If a new culvert is required the landowner is typically assessed 100% of the cost.
- Special Benefit Assessment **INFO.**
  - These are items that do not affect the function of the drain, these items could include: different headwalls, longer pipes, etc.
- The Engineer determines the assessment. Each assessment will include details for each property that falls within the watershed. **INFO.**
- Grants are available for properties that have a "Farm Class Tax Rate" **INFO.**
- The municipality will bill the landowners after the work is complete for their net assessment. **INFO.**

3. Report Expectations

- All landowners will receive copies of the draft report with their notice for the PIC, Meeting to Consider and the Court of Revision. Reports generally contain: **INFO.**
  - Background information about the request
  - History on the drain
  - Watershed
  - Drawings
  - Design considerations
  - Recommended work
  - Cost estimate
  - Meeting Minutes
  - Assessments including future maintenance provisions
  - Specifications

4. Affects during Construction

- Typically only landowners along the drain will be affected by construction. **INFO.**
  - Working corridors are defined within the report.
- Work shall result in creating either the same or better level or service. **INFO.**
- The quality of work is typically monitored during construction by the Drainage Superintendent. **INFO.**
  - The engineer is required to complete a final inspection.

5. Environmental Requirements

- Department of Fisheries and Oceans, Ministry of Natural Resources and Forestry and Essex Regional Conservation Authority regulations must be followed and permits obtained **INFO.**

by the municipality as required.

6. Next Steps

- Topographical survey will be completed and then the preparation of the report will commence **INFO.**
- PIC Meeting will be held. A notice and draft report will be provided in advance. **INFO.**
- Board Meetings **INFO.**

7. Question from landowner

- Maintenance of roadside drains is the responsibility of the Road Authority. They should contact the road authority directly. **INFO.**

Errors and/or Omissions

These minutes were prepared by Kristine Wilkinson E.I.T., who should be notified of any errors and/or omissions.

TOWN OF Tecumseh
ONTARIO · CANADA

SIGN IN SHEET – LACHANCE Drain – Site Meeting

February 8, 2018 @ 3:00 pm

NAME	ADDRESS	PHONE	EMAIL
Mark Fishleigh	County of Essex	(226) 340-0946	
Cecile Strouds	11938 Intersection	519-735-[illegible]	
Jodi Lachance	1927 Intersection	5199796623	
Marc Lachance	" "	" "	marclachance07@hotmail.com
Mary López	2053 Shawnee	519-979-3414	marylopez568@gmail.com
Anna Petrozzi	2095 Murray Cres	519-735-1392	annapetrozzi59@gmail.com
Jane Whelpton	2004 Shawnee Rd	519-735-4655	
CLEMENT LACHANCE	11945 Intersection	519-735-2556	
GENE LACHANCE	11933 Intersection	9951291	
Rudy Thomas	2098 - Shawnee Rd	979-7500	roadrunner1@cogeco.ca

SCHEDULE "A-2"

MEETING MINUTES

Subject:	**Lachance Drain- Onsite Meeting Minutes**
Date and Time:	**Friday April 6th 2018**
Location:	**Town of Tecumseh Council Chambers, 917 Lesperance Rd, Town of Tecumseh**
Our File:	**17-6772**

Attendees

Mark Hernandez	Dillon Consulting
Kristine Wilkinson	Dillon Consulting
Sam Paglia	Town of Tecumseh
Anna Godo	City of Windsor

Notes

Item	Discussion	Action By
1.	**This meeting was held specifically for the benefit of landowners within the City of Windsor, who had not received a copy of the invitation for the 8 February 2018 meeting. No landowners attended the meeting .**	**N/A**

Errors and/or Omissions

These minutes were prepared by Kristine Wilkinson E.I.T. , who should be notified of any errors and/or omissions.

"SCHEDULE B"

SCHEDULE OF ALLOWANCES

LACHANCE DRAIN

TOWN OF TECUMSEH & CITY OF WINDSOR

TOWN OF TECUMSEH

Roll No.	Con.	Description	Owner	Section 30 Damages	Section 29 Land	Total Allowances
570-34500	3	N. Lot 144 to N. Pt. Lot 147 RP12R13756 Pt. 1	Eugene Lachance	$1,175.00	$625.00	$1,800.00
570-34550	3	Pt. Lot 147 RP12R13756 Pt. 2	Clement Lachance	$500.00	$270.00	$770.00
570-34700	3	Pt. Lot 148	Clement Lachance	$233.00	$128.00	$361.00
TOTAL ALLOWANCES (Town of Tecumseh)				**$1,908.00**	**$1,023.00**	**$2,931.00**

CITY OF WINDSOR

Roll No.	Con.	Description	Owner	Section 30 Damages	Section 29 Land	Total Allowances
070-650-02725	3	Pt. Lots 136-138 RP12R18316	Linamar Corporation	$0.00	$885.00	$885.00
090-040-03402	3	Pt. Lot 139 RP12R24604 Pts. 12, 13 & 17	City of Windsor	$0.00	$320.00	$320.00
090-040-03502	3	N. Pt. Lot 140 RP12R24604 Pts. 5-8	City of Windsor	$0.00	$580.00	$580.00
090-040-03600	3	N. Pt. Lot 140	Pointe East Windsor Limited	$283.00	$301.00	$584.00
090-040-03700	3	N. Pt. Lot 141	Pointe East Windsor Limited	$673.00	$715.00	$1,388.00
090-040-04300	3	Plan 65 Lot 13-18 Pt. Lot 12	Pointe East Windsor Limited	$1,222.00	$1,300.00	$2,522.00
TOTAL ALLOWANCES (City of Windsor)				**$2,178.00**	**$4,101.00**	**$6,279.00**
OVERALL TOTAL ALLOWANCES (Town of Tecumseh & City of Windsor)				**$4,086.00**	**$5,124.00**	**$9,210.00**

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
LACHANCE DRAIN
TOWN OF TECUMSEH & CITY OF WINDSOR

TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Block A							
Lands	18.66	7.55	Town of Tecumseh	$0.00	$1,317.00	$10,426.00	$11,743.00
Roads	6.08	2.46	Town of Tecumseh	$0.00	$142.00	$5,661.00	$5,803.00
Intersection Road	2.84	1.15	Town of Tecumseh	$0.00	$113.00	$2,454.00	$2,567.00
Total on Municipal Lands				$0.00	$1,572.00	$18,541.00	$20,113.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45990	2	Pt. Lot 146 RP12A4263 Pt. 1	1.68	0.68	Kendall Earl Winter	$0.00	$102.00	$379.00	$481.00
570-46100	3	Pt. Lot 145 RP12R10430 Pt. 2	2.37	0.96	Jean & Alec Fauteux	$0.00	$118.00	$438.00	$556.00
570-46150	2	Pt. Lot 145 RP12R10430 Pt. 1	0.99	0.40	Emelie & David Pedro	$0.00	$85.00	$316.00	$401.00
570-46200	3	N. Pt. Lot 144 RP12R11521 Pt. 3	0.82	0.33	Ahad Georgeo	$0.00	$82.00	$306.00	$388.00
570-46202	3	Pt. Lot 144 RP12R21404 Pts. 1&2	0.59	0.24	Veerpal & Tejpaul Sanghera	$0.00	$246.00	$265.00	$511.00
570-46203	3	Pt. Lot 144 RP12R11521 Pts. 4&5	0.79	0.32	Lisa & John Sisti	$0.00	$82.00	$303.00	$385.00
570-46205	3	Pt. Lot 144 RP12R11521 Pts. 6&7	0.79	0.32	Dobrivoje Vukovic	$0.00	$82.00	$303.00	$385.00
590-00500	3		18.31	7.41	Hydro-Electric Power Commission of Ontario	$0.00	$787.00	$3,411.00	$4,198.00
590-01100	3		6.05	2.45	Canadian Pacific Railway	$0.00	$654.00	$2,571.00	$3,225.00
Total on Privately-Owned - Non-Agricultural Lands						$0.00	$2,238.00	$8,292.00	$10,530.00

PRIVATELY-OWNED - AGRICULTURAL LANDS (GRANTABLE)

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45902	2	Lot 147&148 RP12R1064 Pt. 2	6.47	2.62	2034053 Ontario Limited	$0.00	$527.00	$1,169.00	$1,696.00

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45950	2	Pt. Lot 146 RP12R4263 Pt. 2 RP12R5826 Pts. 1&2	6.00	2.43	1486044 Ontario Limited	$0.00	$258.00	$1,032.00	$1,290.00
570-45930	2	W. Pt. Lot 147 RP12R6571 Pt. 1	6.18	2.50	1486044 Ontario Limited	$0.00	$471.00	$1,089.00	$1,560.00
570-34700	3	Pt. Lot 148	19.77	8.00	Clement Henri R Lachance	$0.00	$1,244.00	$3,683.00	$4,927.00
570-34550	3	Pt. Lot 147 RP12R13756 Pt. 2	16.31	6.60	Clement Lachance	$0.00	$1,545.00	$2,908.00	$4,453.00
570-34500	3	N. Lot 144 to N. Pt. Lot 147 RP12R13756 Pt. 1	35.38	14.32	Eugene Lachance	$0.00	$3,507.00	$6,113.00	$9,620.00
Total on Privately-Owned - Agricultural Lands (Grantable).....						$0.00	$7,552.00	$15,994.00	$23,546.00
TOTAL ASSESSMENT (Town of Tecumseh)						**$0.00**	**$11,362.00**	**$42,827.00**	**$54,189.00**

	(Acres)	(Ha.)
Total Area:	**150.08**	**60.74**

CITY OF WINDSOR

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Banwell Road	2.45	0.99	City of Windsor	$0.00	$594.00	$1,955.00	$2,549.00
Total on Municipal Lands.....				$0.00	$594.00	$1,955.00	$2,549.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
090-040-03502	3	N. Pt. Lot 140 RP12R24604 Pts. 5-8	8.33	3.37	City of Windsor	$4,850.00	$2,191.00	$4,910.00	$11,951.00
090-040-03402	3	Pt. Lot 139 RP12R24604 Pts. 12, 13&17	15.22	6.16	City of Windsor	$4,040.00	$1,667.00	$5,238.00	$10,945.00
070-650-02725	3	Pt. Lots 136-138 RP12R18316	20.86	8.44	Linamar Corporation	$3,690.00	$5,239.00	$5,630.00	$14,559.00
070-650-02750	3	Pt. Lots 136-138 RP12R28316 Pt. 6	2.62	1.06	City of Windsor	$0.00	$2,884.00	$309.00	$3,193.00
590-01100	3		9.14	3.70	Canadian Pacific Railway	$0.00	$654.00	$3,801.00	$4,455.00
Total on Privately-Owned - Non-Agricultural Lands.....						$12,580.00	$12,635.00	$19,888.00	$45,103.00

Roll No.	Con.	Description	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment

PRIVATELY-OWNED - AGRICULTURAL LANDS (GRANTABLE)

Roll No.	Con.	Description	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
090-040-04300	3	Plan 65 Lot 13-18 Pt. Lot 12	44.43	17.98	Pointe East Windsor Limited	$0.00	$3,974.00	$7,021.00	$10,995.00
090-040-03700	3	N. Pt. Lot 141	21.35	8.64	Pointe East Windsor Limited	$1,250.00	$2,054.00	$3,049.00	$6,353.00
090-040-03600	3	N. Pt. Lot 140	9.19	3.72	Pointe East Windsor Limited	$1,250.00	$873.00	$1,228.00	$3,351.00
Total on Privately-Owned - Agricultural Lands (Grantable).....						$2,500.00	$6,901.00	$11,298.00	$20,699.00

SECTION 26 & NON-AGRICULTURAL LANDS (NON PRO-RATABLE)

Description	Area Affected (Acres)	Area Affected (Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Banwell Road			City of Windsor	$4,000.00	$0.00	$0.00	$4,000.00
Total on Section 26 & Non-Agricultural Lands (Non Pro-Ratable).....				$4,000.00	$0.00	$0.00	$4,000.00

TOTAL ASSESSMENT (City of Windsor)			**$19,080.00**	**$20,130.00**	**$33,141.00**	**$72,351.00**

	(Acres)	(Ha.)
Total Area:	**133.59**	**54.06**

OVERALL TOTAL ASSESSMENT (Town of Tecumseh & City of Windsor)	**$19,080.00**	**$31,492.00**	**$75,968.00**	**$126,540.00**

"SCHEDULE D"
DETAILS OF SPECIAL BENEFIT
LACHANCE DRAIN
TOWN OF TECUMSEH & CITY OF WINDSOR

SPECIAL BENEFIT ASSESSMENT

(NON - AGRICULTURAL LANDS)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
070-650-2725	Linamar	Trucking and disposal excavated materials (approx. 205 m3)	$3,690.00	$0.00	$3,690.00
090-040-03402	City of Windsor	Bridge No. 1- Station 0+581 (Bridge Cleaning & Future Replacement) (100%)	$500.00	$3,000.00	$3,500.00
		Trucking and disposal excavated materials (approx. 30 m3)	$540.00	$0.00	$540.00
		Subtotal	$1,040.00	$3,000.00	$4,040.00
090-040-03502	City of Windsor	Bridge No. 2- Station 0+763 (Bridge Cleaning & Future Replacement) (100%)	$500.00	$3,000.00	$3,500.00
		Trucking and disposal excavated materials (approx. 75 m3)	$1,350.00	$0.00	$1,350.00
		Subtotal	$1,850.00	$3,000.00	$4,850.00
Total Special Benefit Assessment (Non - Agricultural Lands)……			$6,580.00	$6,000.00	$12,580.00

SPECIAL BENEFIT ASSESSMENT

(AGRICULTURAL LANDS GRANTABLE)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
090-040-03600	Pointe East Windsor Limited	Bridge No. 3- Station 1+048 (Bridge Cleaning & Future Replacement) (50%)	$250.00	$1,000.00	$1,250.00
090-040-03700	Pointe East Windsor Limited	Bridge No. 4- Station 1+227 (Bridge Cleaning & Future Replacement) (50%)	$250.00	$1,000.00	$1,250.00
Total Special Benefit Assessment (Agricultural Lands Grantable)……..			$500.00	$2,000.00	$2,500.00

SPECIAL BENEFIT ASSESSMENT

(SECTION 26 NON - GRANTABLE & NON PRO-RATABLE)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
Banwell Road	City of Windsor	Bridge No. 5- Station 1+706 (Bridge Cleaning & Future Replacement) (100%)	$500.00	$3,500.00	$4,000.00
Total Special Benefit Assessment (Section 26 Non - Grantable & Non Pro-ratable)……			$500.00	$3,500.00	$4,000.00

OVERALL TOTAL SPECIAL BENEFIT ASSESSMENT $19,080.00

"SCHEDULE E-1"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (DRAIN)
LACHANCE DRAIN
TOWN OF TECUMSEH & CITY OF WINDSOR

TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Lands- Block A	18.66	7.55	Town of Tecumseh	$0.00	$249.00	$1,905.00	$2,154.00
Roads- Block A	6.08	2.46	Town of Tecumseh	$0.00	$27.00	$1,034.00	$1,061.00
Intersection Road	2.84	1.15	Town of Tecumseh	$0.00	$21.00	$449.00	$470.00
Total on Municipal Lands……				$0.00	$297.00	$3,388.00	$3,685.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45990	2	Pt. Lot 146 RP12A4263 Pt. 1	1.68	0.68	Kendall Earl Winter	$0.00	$19.00	$69.00	$88.00
570-46100	3	Pt. Lot 145 RP12R10430 Pt. 2	2.37	0.96	Jean & Alec Fauteux	$0.00	$22.00	$80.00	$102.00
570-46150	2	Pt. Lot 145 RP12R10430 Pt. 1	0.99	0.40	Emelie & David Pedro	$0.00	$16.00	$57.00	$73.00
570-46200	3	N. Pt. Lot 144 RP12R11521 Pt. 3	0.82	0.33	Ahad Georgeo	$0.00	$16.00	$56.00	$72.00
570-46202	3	Pt. Lot 144 RP12R21404 Pts. 1&2	0.59	0.24	Veerpal & Tejpaul Sanghera	$0.00	$55.00	$48.00	$103.00
570-46203	3	Pt. Lot 144 RP12R11521 Pts. 4&5	0.79	0.32	Lisa & John Sisti	$0.00	$16.00	$55.00	$71.00
570-46205	3	Pt. Lot 144 RP12R11521 Pts. 6&7	0.79	0.32	Dobrivoje Vukovic	$0.00	$16.00	$55.00	$71.00
590-00500	3		18.31	7.41	Hydro-Electric Power Commission of Ontario	$0.00	$150.00	$624.00	$774.00
590-01100	3		6.05	2.45	Canadian Pacific Railway	$0.00	$125.00	$464.00	$589.00
Total on Privately-Owned - Non-Agricultural Lands……						$0.00	$435.00	$1,508.00	$1,943.00

PRIVATELY-OWNED - AGRICULTURAL LANDS (GRANTABLE)

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45902	2	Lot 147&148 RP12R1064 Pt. 2	6.47	2.62	2034053 Ontario Limited	$0.00	$100.00	$214.00	$314.00
570-45950	2	Pt. Lot 146 RP12R4263 Pt. 2 RP12R5826 Pts. 1&2	6.00	2.43	1486044 Ontario Limited	$0.00	$49.00	$188.00	$237.00

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45930	2	W. Pt. Lot 147 RP12R6571 Pt. 1	6.18	2.50	1486044 Ontario Limited	$0.00	$90.00	$199.00	$289.00
570-34700	3	Pt. Lot 148	19.77	8.00	Clement Henri R Lachance	$0.00	$255.00	$674.00	$929.00
570-34550	3	Pt. Lot 147 RP12R13756 Pt. 2	16.31	6.60	Clement Lachance	$0.00	$332.00	$531.00	$863.00
570-34500	3	N. Lot 144 to N. Pt. Lot 147 RP12R13756 Pt. 1	35.38	14.32	Eugene Lachance	$0.00	$757.00	$1,115.00	$1,872.00
Total on Privately-Owned - Agricultural Lands (Grantable).....						$0.00	$1,583.00	$2,921.00	$4,504.00
TOTAL ASSESSMENT (Town of Tecumseh)						**$0.00**	**$2,315.00**	**$7,817.00**	**$10,132.00**

	(Acres)	(Ha.)
Total Area:	**150.08**	**60.74**

CITY OF WINDSOR

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Banwell Road	2.45	0.99	City of Windsor	$0.00	$116.00	$355.00	$471.00
Total on Municipal Lands.....				$0.00	$116.00	$355.00	$471.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
090-040-03502	3	N. Pt. Lot 140 RP12R24604 Pts. 5-8	8.33	3.37	City of Windsor	$0.00	$500.00	$936.00	$1,436.00
090-040-03402	3	Pt. Lot 139 RP12R24604 Pts. 12, 13&17	15.22	6.16	City of Windsor	$0.00	$363.00	$998.00	$1,361.00
070-650-02725	3	Pt. Lots 136-138 RP12R18316	20.86	8.44	Linamar Corporation	$0.00	$427.00	$1,073.00	$1,500.00
070-650-02750	3	Pt. Lots 136-138 RP12R28316 Pt. 6	2.62	1.06	City of Windsor	$0.00	$673.00	$59.00	$732.00
590-01100	3		9.14	3.70	Canadian Pacific Railway	$0.00	$125.00	$701.00	$826.00
Total on Privately-Owned - Non-Agricultural Lands.....						$0.00	$2,088.00	$3,767.00	$5,855.00

PRIVATELY-OWNED - AGRICULTURAL LANDS (GRANTABLE)

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
090-040-04300	3	Plan 65 Lot 13-18 Pt. Lot 12	44.43	17.98	Pointe East Windsor Limited	$0.00	$850.00	$1,275.00	$2,125.00
090-040-03700	3	N. Pt. Lot 141	21.35	8.64	Pointe East Windsor Limited	$0.00	$442.00	$559.00	$1,001.00
090-040-03600	3	N. Pt. Lot 140	9.19	3.72	Pointe East Windsor Limited	$0.00	$188.00	$228.00	$416.00
Total on Privately-Owned - Agricultural Lands (Grantable).....						$0.00	$1,480.00	$2,062.00	$3,542.00
TOTAL ASSESSMENT (City of Windsor)						**$0.00**	**$3,684.00**	**$6,184.00**	**$9,868.00**

	(Acres)	(Ha.)
Total Area:	**133.59**	**54.06**

OVERALL TOTAL ASSESSMENT (Town of Tecumseh & City of Windsor)						**$0.00**	**$5,999.00**	**$14,001.00**	**$20,000.00**

"SCHEDULE E-2"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (BRIDGES)
LACHANCE DRAIN
TOWN OF TECUMSEH & CITY OF WINDSOR

TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Lands- Block A	18.66	7.55	Town of Tecumseh	$0.00	$0.00	$1,656.00	$1,656.00
Roads- Block A	6.08	2.46	Town of Tecumseh	$0.00	$0.00	$899.00	$899.00
Intersection Road	2.84	1.15	Town of Tecumseh	$0.00	$0.00	$421.00	$421.00
Total on Municipal Lands……				$0.00	$0.00	$2,976.00	$2,976.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45990	2	Pt. Lot 146 RP12A4263 Pt. 1	1.68	0.68	Kendall Earl Winter	$0.00	$0.00	$70.00	$70.00
570-46100	3	Pt. Lot 145 RP12R10430 Pt. 2	2.37	0.96	Jean & Alec Fauteux	$0.00	$0.00	$81.00	$81.00
570-46150	2	Pt. Lot 145 RP12R10430 Pt. 1	0.99	0.40	Emelie & David Pedro	$0.00	$0.00	$58.00	$58.00
570-46200	3	N. Pt. Lot 144 RP12R11521 Pt. 3	0.82	0.33	Ahad Georgeo	$0.00	$0.00	$57.00	$57.00
570-46202	3	Pt. Lot 144 RP12R21404 Pts. 1&2	0.59	0.24	Veerpal & Tejpaul Sanghera	$0.00	$0.00	$49.00	$49.00
570-46203	3	Pt. Lot 144 RP12R11521 Pts. 4&5	0.79	0.32	Lisa & John Sisti	$0.00	$0.00	$56.00	$56.00
570-46205	3	Pt. Lot 144 RP12R11521 Pts. 6&7	0.79	0.32	Dobrivoje Vukovic	$0.00	$0.00	$56.00	$56.00
590-00500	3		18.31	7.41	Hydro-Electric Power Commission of Ontario	$0.00	$0.00	$542.00	$542.00
590-01100	3		6.05	2.45	Canadian Pacific Railway	$0.00	$0.00	$537.00	$537.00
Total on Privately-Owned - Non-Agricultural Lands……						$0.00	$0.00	$1,506.00	$1,506.00

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
PRIVATELY-OWNED - AGRICULTURAL LANDS (GRANTABLE)									
Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-45902	2	Lot 147&148 RP12R1064 Pt. 2	6.47	2.62	2034053 Ontario Limited	$0.00	$0.00	$191.00	$191.00
570-45950	2	Pt. Lot 146 RP12R4263 Pt. 2 RP12R5826 Pts. 1&2	6.00	2.43	1486044 Ontario Limited	$0.00	$0.00	$178.00	$178.00
570-45930	2	W. Pt. Lot 147 RP12R6571 Pt. 1	6.18	2.50	1486044 Ontario Limited	$0.00	$0.00	$183.00	$183.00
570-34700	3	Pt. Lot 148	19.77	8.00	Clement Henri R Lachance	$0.00	$0.00	$585.00	$585.00
570-34550	3	Pt. Lot 147 RP12R13756 Pt. 2	16.31	6.60	Clement Lachance	$0.00	$0.00	$483.00	$483.00
570-34500	3	N. Lot 144 to N. Pt. Lot 147 RP12R13756 Pt. 1	35.38	14.32	Eugene Lachance	$0.00	$0.00	$1,047.00	$1,047.00
Total on Privately-Owned - Agricultural Lands (Grantable).....						$0.00	$0.00	$2,667.00	$2,667.00
TOTAL ASSESSMENT (Town of Tecumseh)						**$0.00**	**$0.00**	**$7,149.00**	**$7,149.00**

	(Acres)	(Ha.)
Total Area:	**150.08**	**60.74**

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment

CITY OF WINDSOR

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Banwell Road	2.45	0.99	City of Windsor	$0.00	$0.00	$362.00	$362.00
Total on Municipal Lands				$0.00	$0.00	$362.00	$362.00

PRIVATELY-OWNED - AGRICULTURAL LANDS (GRANTABLE)

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
090-040-04300	3	Plan 65 Lot 13-18 Pt. Lot 12	44.43	17.98	Pointe East Windsor Limited	$0.00	$0.00	$1,315.00	$1,315.00
090-040-03700	3	N. Pt. Lot 141	21.34	8.64	Pointe East Windsor Limited	$0.00	$0.00	$632.00	$632.00
090-040-03600	3	N. Pt. Lot 140	9.19	3.72	Pointe East Windsor Limited	$0.00	$0.00	$272.00	$272.00
Total on Privately-Owned - Agricultural Lands (Grantable)						$0.00	$0.00	$2,219.00	$2,219.00

TOTAL ASSESSMENT (City of Windsor)	**$0.00**	**$0.00**	**$2,851.00**	**$2,851.00**

	(Acres)	(Ha.)
Total Area:	**77.41**	**31.33**

OVERALL TOTAL ASSESSMENT (Town of Tecumseh & City of Windsor)	**$0.00**	**$0.00**	**$10,000.00**	**$10,000.00**

"SCHEDULE F"
DRAINAGE REPORT FOR THE
LACHANCE DRAIN (LITTLE RIVER OUTLET)
IN THE TOWN OF TECUMSEH & THE CITY OF WINDSOR

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 and materials** to complete the following items:

- Brushing of the drain from Station 0+000 to Station 2+288 including removal off-site with trimming and/or removal of existing trees within the drain as required to accommodate the drainage works. The work shall include disposal of brush by means of stockpiling and burning where permitted or alternatively trucked off-site.
    - Brushing of the drain bottom as follows:
        - Light brushing from Station 0+000 to Station 1+048
        - Medium brushing from Station 1+048 to Station 2+288
- Excavation, trucking and/or levelling of excavated materials works, as follows:
    - Excavation of the drain bottom as follows:
        - Station 0+000 to Station 2+288, totalling approximately 2,288 lineal metres of drain and approximately 710 m^3 of material.
    - Levelling of excavated materials as follows:
        - Station 1+040 to Station 2+288, totalling approximately 1,248 lineal metres of drain and approximately 400 m^3 of material.
    - Trucking of excavated materials, as follows:
        - Station 0+000 to Station 1+040, totalling approximately 1040 lineal metres of drain and approximately 310 m^3 of material (existing fence on the north side of drain to be temporarily removed, where required to obtain access through working corridor).
- Seeding of grass buffer strips, as follows:
    - Seeding of 1.0 m wide grass buffer strip beyond the top of bank on the north side of the drain from Station 0+000 to Station 0+790 (approximately 790 m^2).
    - Seeding of 1.0 m wide grass buffer strip beyond the west bank from Station 0+790 to Station 1+040 (approximately 250 m^2).

- Seeding of 1.0 m wide grass buffer strip beyond the north and south bank from Station 1+040 to Station 1+700 (approximately 1320 m^2).
- Seeding of 1.0 m wide grass buffer strip beyond the south bank from Station 1+700 to Station 2+288 (approximately 588 m^2).

- Private access bridge cleaning works, as follows:
  - Bridges Nos. 1, 2, 3 and 4. Clean four (4) existing bridges.
- Enclosed drain flushing from Station 2+228 to Station 2+442
- Road bridge cleaning works, as follows:
  - Bridge No. 5-Banwell Road Bridge – Station 1+700 approximately 13.9 m long, 1880 mm x 1260 mm corrugated steel pipe arch (CSPA) road culverts.
- Temporary Silt Control Measures During Construction

3.0 ACCESS TO THE WORK

Access to the drain from Station 1+706 to Station 2+288 shall be from the east side of Banwell Road. From Station 1+040 to Station 1+706 access shall be from the west side of Banwell road (just south of Bridge No. 5). The Contractor shall make his/her own arrangements for any additional access for his/her convenience. All road areas and grass lawn areas disturbed shall be restored to original conditions at the Contractor's expense. From Station 0+000 to Station 1+040 access to the drain shall be through property Roll No. 090-040-03502. Existing fence is to be temporarily removed and reinstated following the work. Any damage to the fence is to be at Contractor's expense.

4.0 WORKING AREA

For the repair and improvement of the Lachance Drain, the working corridor shall be 9 metres north of the north top of bank from Station 0+000 to Station 0+533 which includes the 1.0 metre grass buffer strip. From Station 0+533 to Station 0+790 the working corridor shall be 9m wide measured from the north side of the existing fence. From Station 0+790 to Station 1+040 the working corridor shall be 9 metres west of the west top of bank, which includes the 1.0 metre grass buffer. From Station 1+040 to Station 2+228 the working corridor shall be 9 metres south of the south top of bank. Access from Station 1+706 to 2+228 will be from Intersection Road. One lane of Intersection Road shall remain open during the construction period and traffic control (found in General Specifications) maintained at all times.

FROM STA.	TO STA.	PRIMARY (See Note 1)	SECONDARY (See Note 2)
0+000	0+533	9 m wide on north side of drain	-
0+533	0+790	9 m wide on north side of existing fence	-
0+790	1+040	9m on the west side of drain	-
1+040	1+700	9 m wide on south side of drain*	-
1+700	2+228	9 m wide on south side of drain*	Intersection Road (One Lane)

Note 1: Primary working corridor indicates the access corridor along the side of the drain where excavation and levelling is recommended (unless noted otherwise below and/or in the specifications, as well as all purposes listed for Secondary Working Corridors).

Note 2: *Secondary working corridor* indicates the access corridor alongside the drain where construction equipment may travel for the purpose of trucking, drain bank repairs, tile inlet repairs, surface water inlet repairs, grass buffer strips and other miscellaneous works.

No disposal of fill or levelling of materials shall be permitted within a secondary working corridor. As further specified, use of this secondary working corridor may be further restricted due to site condition. Read all specifications, drawings and/or notes before completing works.

Note:** **In the event that a landowner owns the property on both sides of the drain, the landowner can choose which side of the drain to place the spoil. The landowner should advise the Drainage Superintendent of their preference of spoil placement before improvements to the drain are made so that the Drainage Superintendent can notify the Contractor in advance. If the landowner selects the opposite side from the identified working corridor, the contractor may temporarily use the selected side of the drain. The permanent working corridor will remain as identified in this report until revised through a future report under the Act.

SPECIAL PROVISIONS – OPEN DRAIN

5.0 BRUSHING

Brushing shall be carried out on the entire drain within the above identified sections of the drain where required and as specified herein. **All** brush and trees located within the drain side slopes shall be cut parallel to the side slopes, as close to the ground as practicable. Tree branches that overhang the drain shall be trimmed. Small branches and limbs are to be disposed of by the Contractor along with the other brush. Tree stumps, where removed to facilitate the drain excavation and reshaping of the drain banks, may be burned by the Contractor where permitted; otherwise, they shall be disposed of, off the site. The Contractor shall make every effort to preserve mature trees which are beyond the drain side slopes, and the working corridors. If requested to do so by the Drainage Superintendent, the Contractor shall preserve certain mature trees within the designated working corridors (see Section 4.0).

Except as specified herein, all brush and trees shall be stockpiled adjacent to the drain within the working corridors. Stockpiles shall not be less than 100 m apart and shall be a minimum of 2.0 m from the edge of the drain bank. All brush, timber, logs, stumps, large stones or other obstructions and deleterious materials that interfere with the construction of the drain, as encountered along the course of the drain are to be removed from the drain by the Contractor. Large stones and other similar material shall be disposed of by the Contractor off the site.

Following completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which remain standing, disposing of the branches cut off along with other brush and leaving the trees in a neat and tidy condition. Brush and trees removed from the working area 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. 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. Since the trees and brush that are cut off flush with the earth surface may sprout new growth later, it is strongly recommended that the Municipality make arrangements for spraying this new growth at the appropriate time so as to kill the trees and brush.

As part of this work, the Contractor shall remove any loose timber, logs, stumps, large stones or other debris from the drain bottom and from the side slopes. **Timber, logs, stumps, large stones or other debris shall be disposed of off-site**.

6.0 EXCAVATION AND LEVELLING OF EXCAVATED MATERIALS

6.1 Excavation of Existing Drain Channel

In all cases, the Contractor shall use the benchmarks to establish the proposed grade. However, for convenience, the drawings provide the approximate depth from the surface of the ground and from the existing drain bottom to the proposed grades. **THE CONTRACTOR SHALL NOT EXCAVATE DEEPER THAN THE GRADE LINES SHOWN ON THE DRAWINGS**. Should over-excavation of the drain bank occur, the Contractor will **not** be permitted to repair with native material packed into place by the excavator and reshaped. Should over-excavation occur, the Contractor will be required to have a bank repair detail engineered by a Professional Engineer (hired by the Contractor), to ensure long term stability of the bank is maintained. Such repairs shall be subject to approval by the Engineer and will be at no extra cost to the item.

All excavated material shall be handled as specified in Section 6.2. Materials deposited on the farmlands shall be within the working corridors, at least 1.0 m from the top of the drain bank, or as specified on the drawings. Upon allowing drying of excavated materials (if necessary) and as approved by the Drainage Superintendent, the Contractor shall level excavated materials in accordance with Section 6.2. Excavated material shall not be placed on dykes, in ditches, tiles or depressions intended to conduct water into the drain.

Seeding of the disturbed drain banks shall be completed immediately following drain construction and as specified in Section 9.0.

All excavation work shall be done in such a manner as to not harm any vegetation or trees, not identified in this report or by the Drainage Superintendent for clearing. Any damages to trees or vegetation caused by the Contractors work shall be rectified to the satisfaction of the Drainage Superintendent.

The Contractor shall exercise caution around existing tile inlets and shall confirm with the property owners that all tiles have been located and tile ends repaired as specified.

6.2 Levelling of Excavated Materials

Excavation of the drain bottom shall be completed as specified in Section 6.1, above and also as specified below and as shown on the drawings.

Excavated drain materials shall be spread to a depth not to exceed 300 mm, unless specified otherwise on the drawings. The material shall be sufficiently levelled to allow further working by agricultural implements. All stones and other debris removed from the drain, which may interfere with agricultural implements, shall be disposed of off-site. Excavated material shall not be placed on dykes, in ditches, tiles or depressions intended to conduct water into the drain.

6.3 Trucking of Excavated Materials

Excavated materials are the property of the Contractor and trucking of excavated materials to off-site disposal site to be arranged by Contractor for all residential properties.

The Contractor shall be solely responsible for acquiring any and all permits and approvals required prior to hauling and disposal of materials off-site. The Contractor shall restore any such areas which are damaged by his operations, to original or better condition. The Contractor will be held liable for damages to roads, sodded areas and gardens, resulting from his non-compliance with these Specifications.

7.0 STONE EROSION PROTECTION (SEP)

The Contractor shall supply and install the required quantities of graded stone rip-rap erosion protection materials where specified. All stone to be used for erosion protection shall be 125 - 250 mm clear **quarried rock** or OPSS 1001 placed over a non-woven filter fabric Terrafix 270R or approved equivalent. **Concrete rip-rap will not be permitted.**

The minimum thickness requirement of the erosion stone layer is 300 mm with no portion of the filter fabric to be exposed.

8.0 GRASS BUFFER STRIPS

One metre wide grass buffers shall be established and preserved immediately adjacent to the banks of the open channel. Grass buffer strips are to be established as indicated in Section 2.0 'Description of Work'. Establishment of grass buffer strips shall be executed using the same seeding methods as described in Section 9.0 of the General Specifications.

9.0 SEEDING OF DRAIN BANKS & GRASS BUFFER STRIPS

All existing grassed areas disturbed by construction or as identified as new or existing grass buffers shall be seeded as specified herein. The existing ground surface to be seeded shall be loosened to a depth of 25 mm and shall be rendered uniformly loose for that 25 mm depth. 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. If mulching is required, it shall be carried out by the contractor as part of the item's tendered price.

Grass seed shall be Canada No. 1 grass seed mixture meeting the requirements of a Waterway Slough Mixture as supplied by Growmark or approved equal, as follows:

Creeping Red Fescue	*20%*
Meadow Fescue	*30%*
Tall Fescue	*30%*
Timothy	*10%*
White Clover	*10%*

Bags shall bear the label of the supplier indicating the content by species, grade and mass. Seed shall be applied at a rate of 200 kg per 10,000 m².

Fertilizer shall be 8-32-16 applied at 350 kg per 10,000 m². It shall be in granular form, dry, free from lumps and in bags bearing the label of the manufacturer, indicating mass and analysis.

The 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.

10.0 CLEANING OF PRIVATE ACCESS CULVERTS AND ROAD BRIDGES

At the locations listed below, the Contractor shall clean the existing pipes or culverts to their full capacity and cross section or width. The operation may be carried out by mechanical means or by flushing. Any damage resulting from the Contractor's operation shall be rectified at his expense. All material removed from the pipes or culverts shall be transported to a dump site arranged by the Contractor. The Contractor shall be solely responsible for acquiring all permits required for the dump site. The Contractor shall take precautions during the construction period to avoid re-sedimentation of the pipes and culverts. Any sediment deposited as a result of construction activities shall be removed at the Contractor's expense.

- Bridge No. 1 - Station 0+581, 32.5 m long, 1800 mm diameter concrete culvert.
- Bridge No. 2 – Station 0+763, 34.5 m long, 1800 mm diameter concrete culvert.
- Bridge No. 3 – Station 1+048, 9.2 m long, 1350 mm diameter corrugated steel pipe (CSP) culvert.
- Bridge No. 4 – Station 1+227, 13.9 m long, 1300 mm diameter corrugated steel pipe (CSP) culvert.
- Bridge No. 5 – Station 1+706, 13.9 m long, 1880 mm by 1260 mm corrugated steel pipe arch (CSPA) culvert.

11.0 RAIL BRIDGE CONSTRUCTION

11.1 Location of New Bridges

The replacement of Bridge Nos. 1 and 2 inclusive shall be constructed in accordance with the specifications and drawings attached hereto. The centerline of the new culverts shall match the existing culverts respectively.

11.2 Removal of Existing Culverts

The Contractor shall exercise caution when removing these materials as to minimize damage to the drain banks. Any damage to the drain shall be restored to original conditions at the expense of the Contractor. The removed materials (existing culvert debris and end wall materials) shall be hauled away off-site.

11.3 Materials for New Bridges

Materials shall be as follows:

Culvert Pipe	**Bridge No. 1 - Station 0+581:** *New 32.5 metres long, 1800 mm diameter high quality concrete pipe (CSA A-257.2, Class 100-D) complete with clear stone bedding, full Granular 'A' backfill and riverstone substrate embedment.* **Bridge No. 2 - Station 0+763:** *New 34.5 metres long, 1800 mm diameter high quality concrete pipe (CSA A-257.2, Class 100-D) complete with clear stone bedding, full Granular 'A' backfill and riverstone substrate embedment.*
Pipe Bedding Below Pipe	*20-25 mm clear stone conforming to OPSS Division 10.*
Backfill	*Full Granular 'A' backfill compacted to 100% standard proctor maximum dry density.*
Erosion Stone	*All stone to be used for erosion protection shall be 125 - 250 mm clear quarried rock or OPSS 1004, minimum 300 mm thickness.*
Rails and Ties	*Support of the existing rails and ties during the replacement of the concrete pipes must be in strict accordance with CP rail requirements*
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.*

12.0 Culvert Installation

12.1 Reinforced Concrete Pipe

OPSS volume 7 Form 410 shall apply and govern except as extended or amended herein. The size, type and class of sewer pipe shall meet CSA A257.2 standards. For reinforced concrete pipe culverts, the bedding shall be Class 'B' as per OPSD 802.03 using approved materials as noted above. The bedding shall be recessed to receive the hubs of the bell and spigot ends in order to allow the barrel of the pipe to be uniformly supported on compacted granular bedding material for its entire length.

If the culvert pipe is situated within a traveled driveway or roadway the entire width and depth of the trench shall be backfilled with Granular 'A' material and compacted to 100% standard proctor density. Where the culvert is situated beyond the limits of the driveway, the remaining excavation above the bedding shall be backfilled with select native material and mechanically compacted to 95% standard proctor density. The Contractor shall install the pipe using rubber gasket joints and shall be joined in accordance with the manufacturer's instructions using approved gaskets and lubricating materials.

12.2 Sloping Stone End Walls

Sloping stone end walls shall be constructed of quarry stone rip-rap, as shown on the drawings and as specified herein. Each end wall shall extend from the invert of the new culvert to the top of the proposed lane. The end walls shall be sloped 1 vertical to 1.5 horizontal, with a filter fabric underlay surrounding the pipe and spanning across the entire width of the drain. The minimum thickness requirement of the erosion stone layer is 300 mm, with no portion of the filter fabric to be exposed.

13.0 FARM BRIDGE CONSTRUCTION

13.1 Location of New Bridges

The replacement of Bridge Nos. 3 and 4 inclusive shall be constructed in accordance with the specifications and drawings attached hereto. The centerline of the new culverts shall be located to align with the existing laneway in each case.

13.2 Removal of Existing Culverts

The Contractor shall exercise caution when removing these materials as to minimize damage to the drain banks. Any damage to the drain shall be restored to original conditions at the expense of the Contractor. The removed materials (existing culvert debris and end wall materials) shall be hauled away off-site.

13.3 Materials for New Bridges

Materials shall be as follows:

Culvert Pipe

Bridge No. 3 - Station 1+048: *New 18.5 metres long, 1400 mm diameter aluminized Type II corrugated steel pipe (CSP) wall thickness of 2.8 mm and 125 mm x 25 mm corrugations with rerolled ends. New culverts shall be joined with annular aluminized corrugated wide bolt and angle couplers (minimum of 8 corrugation overlap and 2.8 mm wall thickness) and no single pipe less than 6.0 m in length. All pipes connected with couplers shall abut to each other with no more than a 25 mm gap between pipes prior to installation of the coupler and wrapped with filter fabric.*

Bridge No. 4 - Station 1+227: *New 16.5 metres long, 1400 mm diameter aluminized Type II corrugated steel pipe (CSP) wall thickness of 2.8 mm and 125 mm x 25 mm corrugations with rerolled ends. New culverts shall be joined with annular aluminized corrugated wide bolt and angle couplers (minimum of 8 corrugation overlap and 2.8 mm wall thickness) and no single pipe less than 6.0 m in length. All pipes connected with couplers shall abut to each other with no more than a 25 mm gap between pipes prior to installation of the coupler and wrapped with filter fabric.*

Pipe Bedding Below Pipe	*20-25 mm clear stone conforming to OPSS Division 10.*
Backfill up to Pipe Culvert Springline	*Granular 'B' conforming to OPSS Division 10.*
Backfill Above Pipe Springline up to Bottom of Driveway Surface Materials	*Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances. Alternatively, Granular 'A' or 'B' conforming to OPSS Division 10.*
Driveway Surface	*Granular 'A' made from crushed limestone conforming to OPSS Division 10. Minimum 300 mm thickness.*
Erosion Stone	*All stone to be used for erosion protection shall be 125 - 250 mm clear quarried rock or OPSS 1004, minimum 300 mm thickness.*
Buffer Strips	*Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances.*
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.*

14.0 CULVERT INSTALLATION

14.1 Dykes

Suitable dykes shall be constructed in the drain so that the installation of the pipe 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.

14.2 Sloping Stone End Walls

Sloping stone end walls shall be constructed of quarry stone rip-rap, as shown on the drawings and as specified herein. Each end wall shall extend from the invert of the new culvert to the top of the proposed lane. The end walls shall be sloped 1 vertical to 1.5 horizontal, with a filter fabric underlay surrounding the pipe and spanning across the entire width of the drain. The minimum thickness requirement of the erosion stone layer is 300 mm, with no portion of the filter fabric to be exposed.

14.3 Granular 'A' Driveway

The Contractor shall construct the driveway with a maximum 3% longitudinal grade approach over the new culvert providing a minimum 300 mm cover. This work includes the installation of a minimum 200 mm thickness of compacted Granular 'A' (crushed limestone) surface. The minimum top width of the driveway shall be as shown on the drawings.

14.4 Native Materials

Native materials suitable for use as backfill, as defined under Section 13.3, shall be salvaged from the existing bridge site, as required to complete the work as shown on the drawings, **(Native Backfill Zone only)**. Where there is an insufficient amount of native fill materials for backfilling the culvert, the Contractor may elect to import additional dry native materials or alternatively use Granular 'B' at his/her own expense.

14.5 Lateral Tile Drains

Should the Contractor encounter any lateral tiles within the proposed culvert limits not shown on attached drawings, the Contractor shall re-route the outlet tile drain(s) in consultation with the Drainage Superintendent, as required, to accommodate the new culvert.

Tile drain outlets through the wall of the new culvert pipe will not be permitted. All costs associated with re-routing lateral tile drains (if any) shall be at the Contractor's expense.

Care must be taken in handling plastic drain pipe in cold weather to avoid causing damage.

Plastic drain pipe shall be held in position on planned grade immediately after installation by careful placement of backfill material.

15.0 ROAD CROSSING WORK ON OPEN DRAIN

15.1 Existing Structure(s)

The Contractor shall completely remove the existing road bridge(s) as follows:

- Bridge No. 5 - Station 1+706, (Banwell Road), consisting of a 13.9 m long, 1880 mm x 1260 mm corrugated steel pipe arch (CSPA) with concrete block end walls.

Dry, native material, free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances may be used as native backfill for the new bridge beyond the limits of the road surface and shoulders. All excess materials removed from the existing bridge structure that are not suitable to use as native backfill, shall be disposed of, off the site. Such materials include rubber tires, poured concrete end walls, broken concrete, stones, wood, metal, etc.

15.2 Location of Bridge Replacement

The bridge replacements shall be located and installed as shown on the drawings.

15.3 Materials for new bridge

Materials shall be as follows:

Culvert Pipe	**Bridge No. 5 - Station 1+706:** *New 15 metres long, 1800 mm diameter high quality concrete pipe (CSA A-257.2, Class 65-D) complete with clear stone bedding, full Granular 'A' backfill.*
Pipe Bedding Below Pipe	*20-25 mm clear stone conforming to OPSS Division 10.*
Backfill up to Pipe Culvert Springline	*Granular 'A' conforming to OPSS Division 10.*
Beneath Road Surface and Shoulders, Backfill From Pipe Springline to Bottom of Granular 'A' Road Surface.	*Granular 'A' conforming to OPSS Division 10.*
Beyond Road Surface and Shoulders, Backfill Above Pipe Springline to Finished Topsoil Layer	*Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances. Alternatively, Granular 'A' or 'B' conforming to OPSS Division 10.*

Road Surface and Shoulders	*40mm HL4 Asphalt, with 60mm HL8 Base Asphalt, crowned for drainage with full compacted granular 'A' backfill below.*
Erosion Stone	*All stone to be used for erosion protection shall be 125 - 250 mm clear quarried rock or OPSS 1004, minimum 300 mm thickness.*
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.*

15.4 Lateral Tile Drains

The Contractor shall re-route any outlet tile drains, in consultation with the Drainage Superintendent, as required to accommodate the new culverts. Tile drain outlets through the wall of the new culvert pipe will not be permitted. All costs associated with re-routing lateral tile drains (if any) shall be at the Contractor's expense.

15.5 Culvert Installation

Suitable dykes shall be constructed in the drain so that the installation of the pipe 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; native materials shall be compacted to 95% of their maximum dry density.

15.6 Sloping Stone Erosion Protection

Sloping stone erosion protection shall be constructed of quarry stone rip-rap, as shown on the drawings and as specified herein. The erosion protection shall be sloped 1 vertical to 1.5 horizontal, with a filter fabric underlay, with a minimum 1 m wide along the drain banks adjacent to the concrete block headwalls. The minimum thickness requirement of the erosion stone layer is 300 mm, with no portion of the filter fabric to be exposed.

15.7 Native Materials

Native materials suitable for use as backfill, as defined under Section 15.3, shall be salvaged from the existing bridge site as required to complete the work as shown on the drawings. Any surplus native materials (if any) not required in the bridge installation shall be disposed of off-site

15.8 Roadway Restoration

The Contractor shall construct the roadway as shown on the drawings. This work includes the removal of topsoil, placement of compacted full Granular 'A', and the installation of a minimum of 150 mm of thickness compacted Granular 'A' surface (crushed limestone) for road shoulders. The width of the roadway and layout of gravel road shoulders shall be as shown on the drawings.

15.9 Asphalt Driveway Restoration

- 40mm HL4 Asphalt, with 60mm HL8 Base Asphalt,

15.10 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.

15.11 Concrete Block End Wall Restoration

Existing concrete blocks to be salvaged and reused. If insufficient amount of blocks, contractor to supply additional blocks as required. (relocated under concrete block section)

16.0 STONE EROSION PROTECTION (SEP)

The Contractor shall supply and install the required quantities of graded stone rip-rap erosion protection materials where specified. All stone to be used for erosion protection shall be 125 - 250 mm clear **quarried rock** or OPSS 1001 placed over a non-woven filter fabric Terrafix 270R or approved equivalent. **Concrete rip-rap will not be permitted.**

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 control vehicular and pedestrian traffic along roads at all times 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

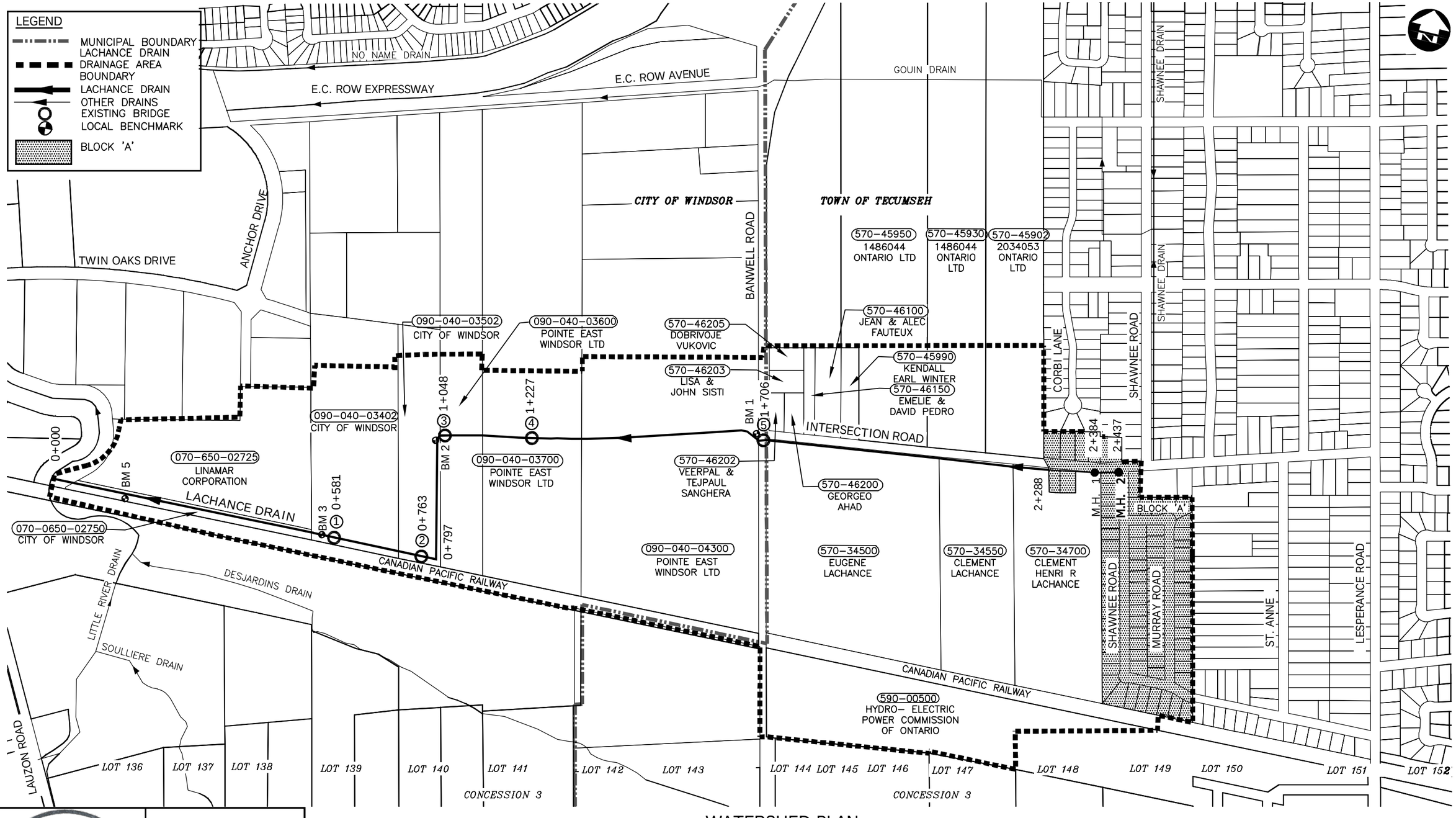
All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent.

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.



WATERSHED PLAN

SCALE=1:7,500

'SCHEDULE G'

LICENSED PROFESSIONAL ENGINEER
M. D. HERNANDEZ
100078099
May 3/19
PROVINCE OF ONTARIO

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1	CLIENT REVIEW	APR 12/19	MDH

DESIGN	MDH
REVIEWED BY	FRF
DRAWN	KAW
CHECKED BY	TRO
DATE	3 MAY 2019
SCALE	AS SHOWN

DILLON CONSULTING

PROJECT NO. 17-6772

DRAWING SCALES BASED ON A 11" X 17" SHEET

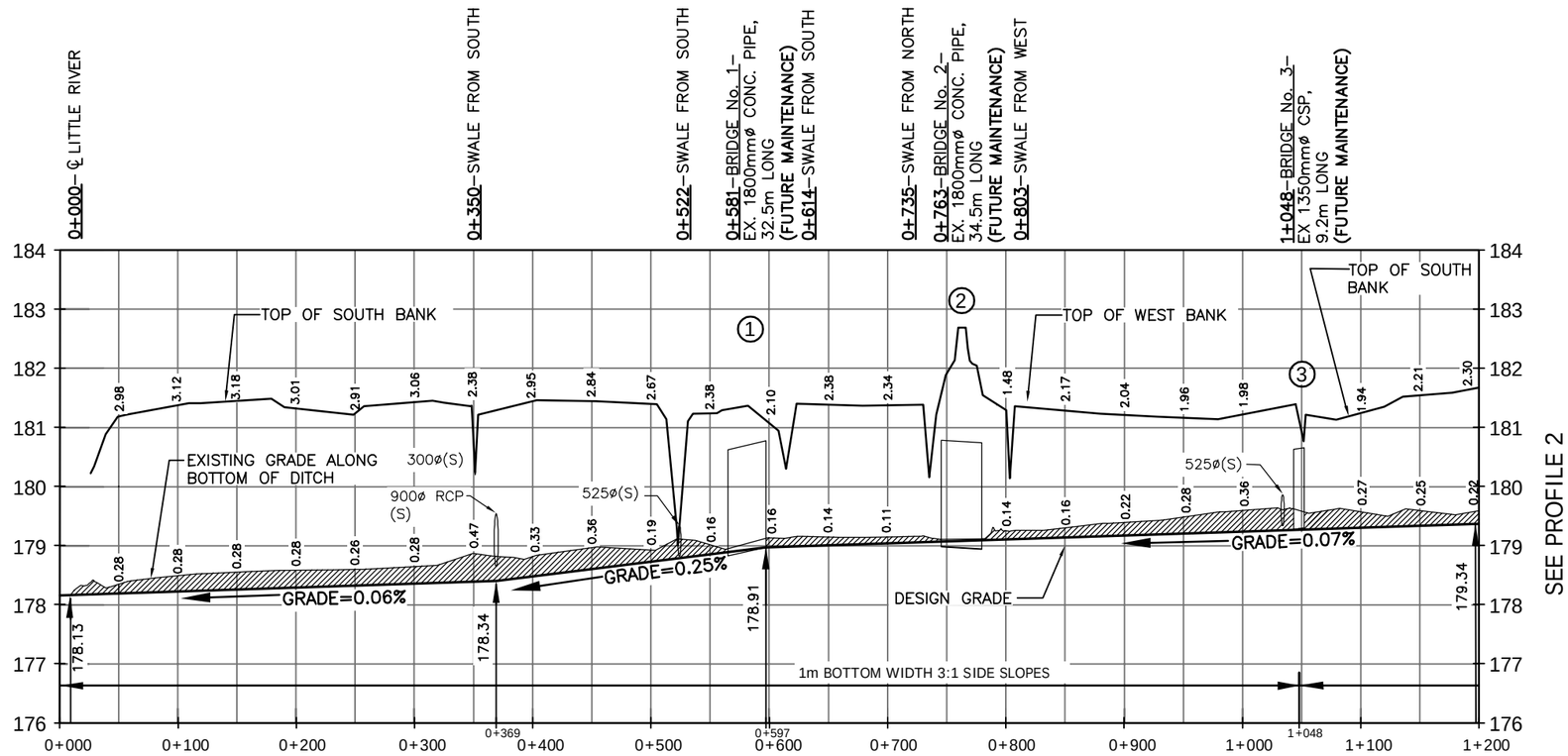
Drainage Report for the

LACHANCE DRAIN

Town of Tecumseh & City of Windsor

SHEET TITLE

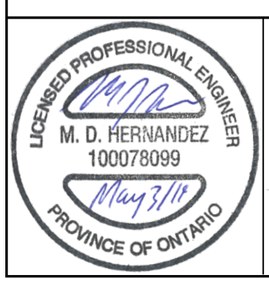
OVERALL WATERSHED PLAN



PROFILE 1

SCALE-HORIZ.=1:5,000
VERT.=1:100

'SCHEDULE G'



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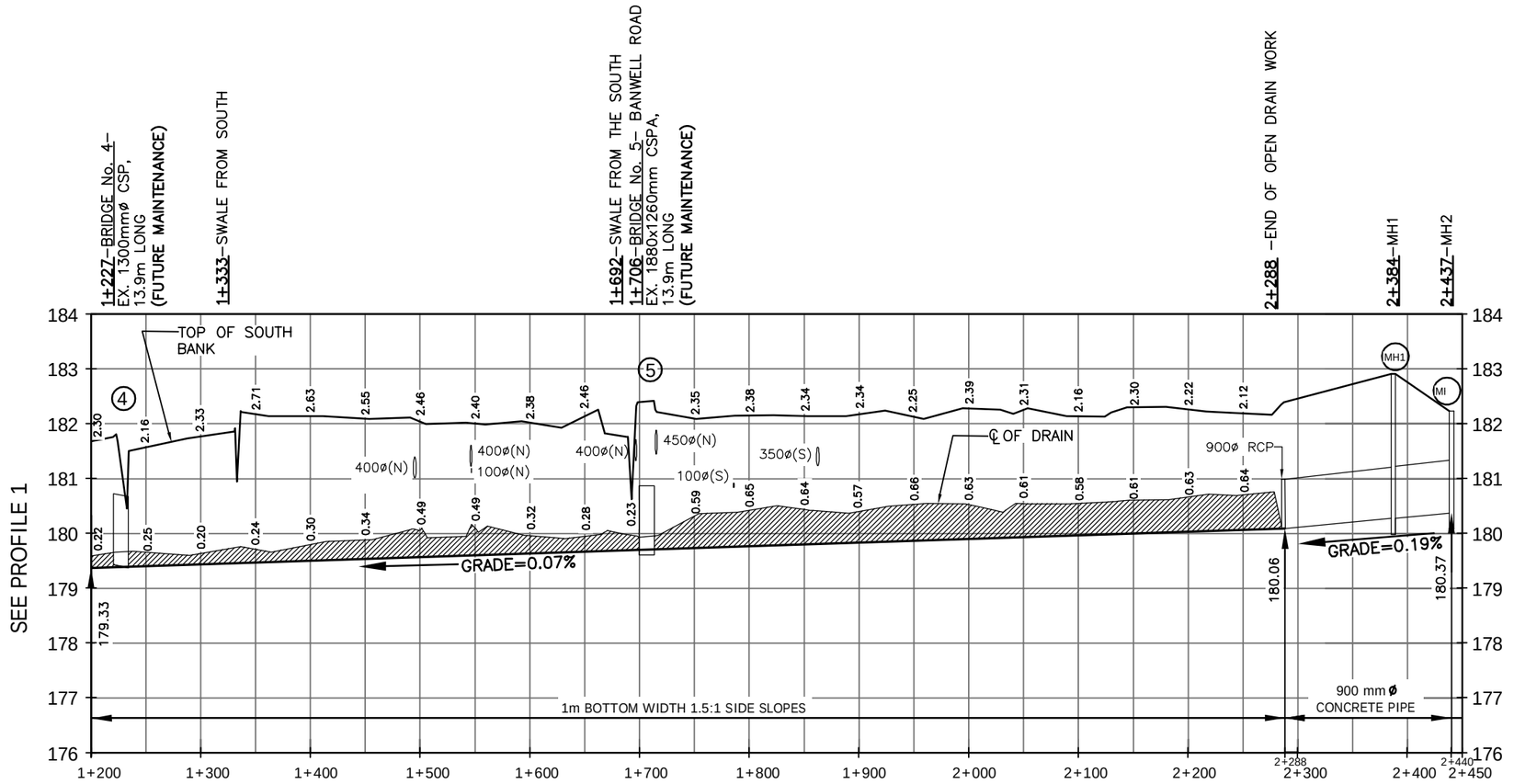
LACHANCE DRAIN
Town of Tecumseh & City of Windsor

SHEET TITLE
PROFILE- STATION 0+000 TO STATION 1+200



PROFILE 2

SCALE-HORIZ.=1:5,000
VERT.=1:100

LICENSED PROFESSIONAL ENGINEER
M. D. HERNANDEZ
100078099
May 3/19
PROVINCE OF ONTARIO

'SCHEDULE G'

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Drainage Report for the

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Town of Tecumseh & City of Windsor

SHEET TITLE
PROFILE- STATION 1+200 TO STATION 2+440

PAGE NO. 3 of 9

TABLE 1 - FUTURE MAINTENANCE BRIDGE DESIGN INFORMATION

DESCRIPTION	BRIDGE No. 1	BRIDGE No. 2	BRIDGE No. 3	BRIDGE No. 4	BRIDGE No. 5
BRIDGE ℄ LOCATION (STA.)	0+581	0+763	1+048	1+227	1+706
BRIDGE TYPE	RAIL	RAIL	FENCE	FARM	ROAD
PIPE INVERT ELEV. U/S SIDE(m)	178.79	178.91	179.13	179.26	179.54
PIPE INVERT ELEV. D/S SIDE(m)	178.76	178.88	179.12	179.24	179.52
TOP OF ℄ DRIVEWAY SURFACE ELEV. (m)	182.38	182.96	181.63	181.77	182.73
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	178.93	179.08	179.26	179.38	179.70
MIN. TOP WIDTH OF DRIVEWAY (m)	32.5	34.5	9.2	7.3	6.7
MIN. CULVERT GRADE (%)	0.25%	0.10%	0.10%	0.10%	0.10%
CULVERT TYPE	CONCRETE	CONCRETE	CSP	CSP	CONCRETE
CULVERT MATERIAL	CONCRETE	CONCRETE	ALUM.	ALUM.	CONCRETE
CULVERT LENGTH (m)	32.5	34.5	18.5	16.5	15.0
CULVERT THICKNESS (mm)	--	--	2.8	2.8	--
CULVERT CORRUGATIONS (mm)	--	--	125x25	125x25	--
PIPE SIZE (mm)	1800	1800	1400	1400	1800
CULVERT ENDWALL TYPE	SLOPING	SLOPING	SLOPING	SLOPING	CONC. BLOCK

SITE BENCHMARKS

BM1–PKNAIL IN TOP OF CONCRETE MANHOLE ON WEST SIDE OF BANWELL ROAD AT INTERSECTION ROAD. PKNAIL IS 0.4M WEST OF THE EDGE AND 0.7M SOUTH OF THE NORTH EDGE AT APPROXIMATELY ST. 1+690
ELEVATION=182.774m

BM2– TOP OF 1350 DIAMETER CONCRETE PIPE, WEST END OF BRIDGE No. 3
ELEVATION=179.86m

BM3– TOP OF 1800 DIAMETER CONCRETE PIPE, WEST END OF BRIDGE No. 1
ELEVATION= 180.83m

NOTE: CONTRACTOR TO VERIFY BENCHMARKS PRIOR TO CONSTRUCTION.

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100078099
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DATE: 3 MAY 2019
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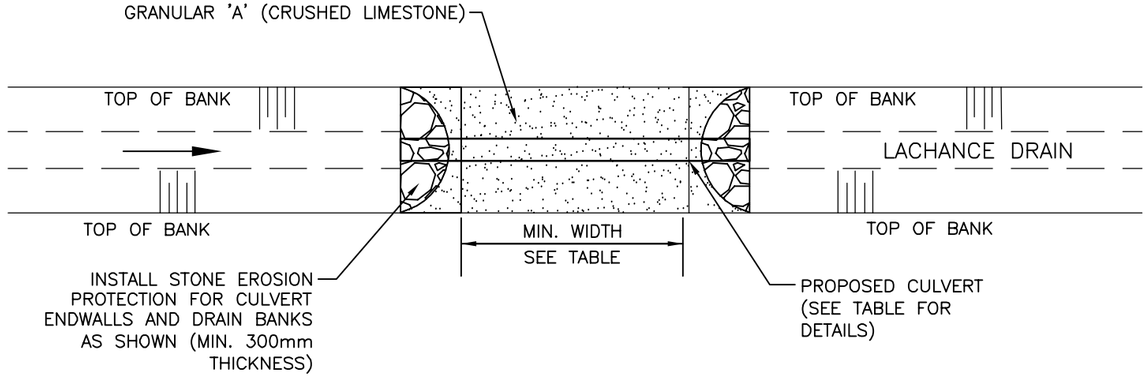
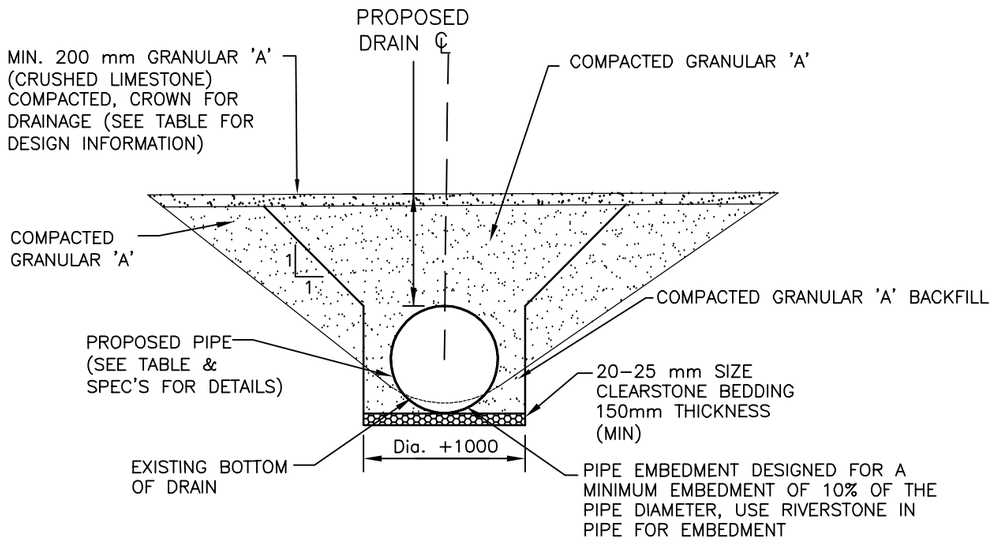
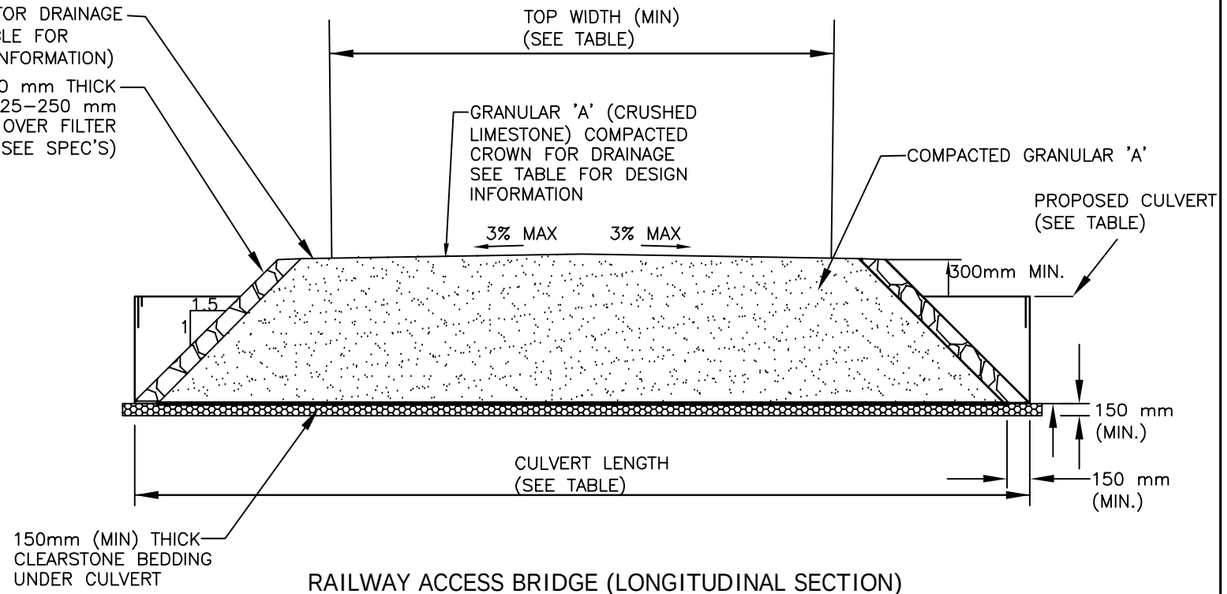
SHEET TITLE
BRIDGE DESIGN INFORMATION



RAILWAY ACCESS BRIDGE PLAN (TYPICAL)
BRIDGE NO. 1 & 2
NOT TO SCALE



RAILWAY ACCESS BRIDGE (CROSS SECTION)
BRIDGE NO. 1 & 2
NOT TO SCALE



RAILWAY ACCESS BRIDGE (LONGITUDINAL SECTION)
BRIDGE NO. 1 & 2
NOT TO SCALE

NOTE: PRIOR TO ANY WORK BEING COMPLETED ON BRIDGES 1 & 2, APPROVAL MUST BE OBTAINED FROM CANADIAN PACIFIC RAILWAY

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Drainage Report for the
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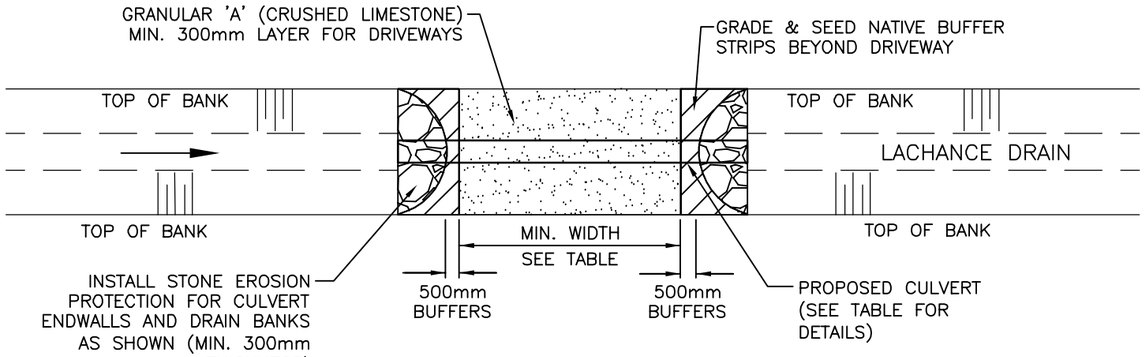
Town of Tecumseh & City of Windsor

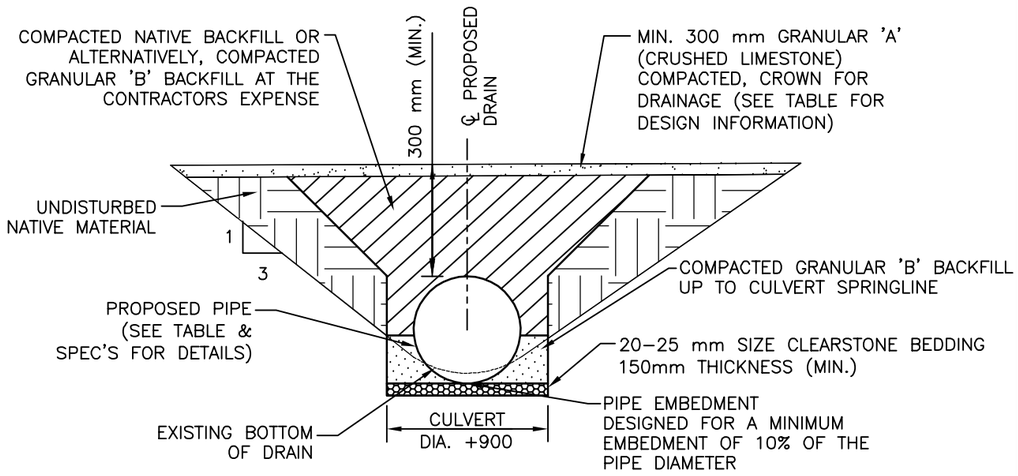
SHEET TITLE
FUTURE BRIDGE REPLACEMENT NO. 1 & 2



FARM ACCESS BRIDGE PLAN (TYPICAL)

BRIDGE NO. 3 & 4

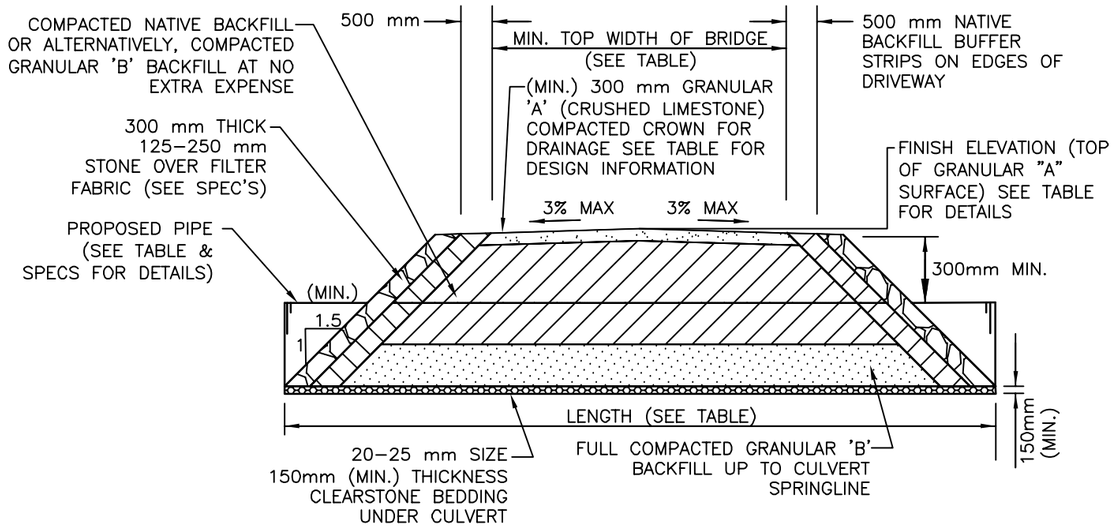
NOT TO SCALE



FARM ACCESS BRIDGE (CROSS SECTION)

BRIDGE NO. 3 & 4

NOT TO SCALE



FARM ACCESS BRIDGE (LONGITUDINAL SECTION)

BRIDGE NO. 3 & 4

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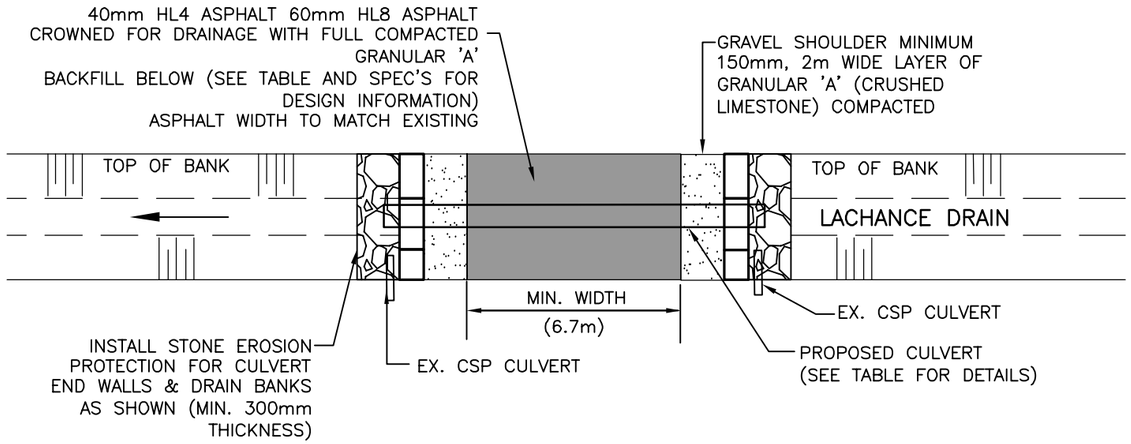
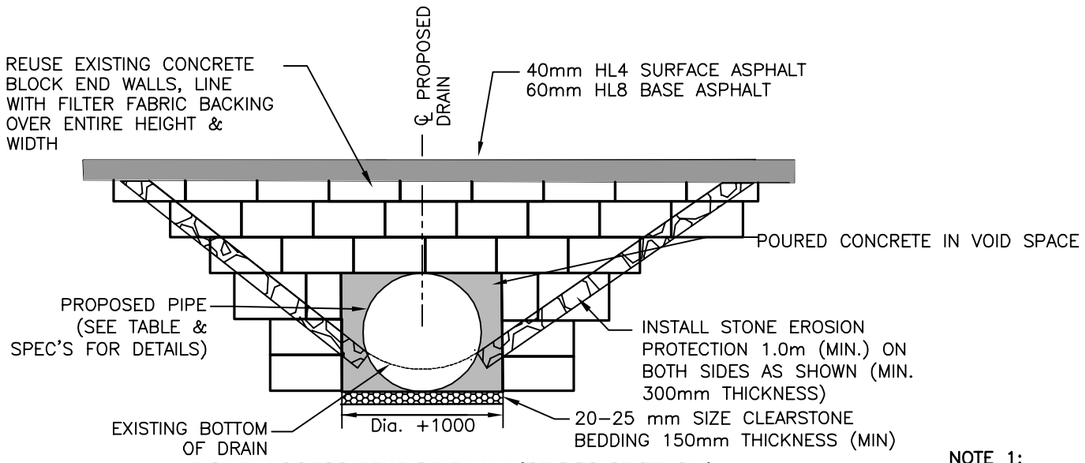
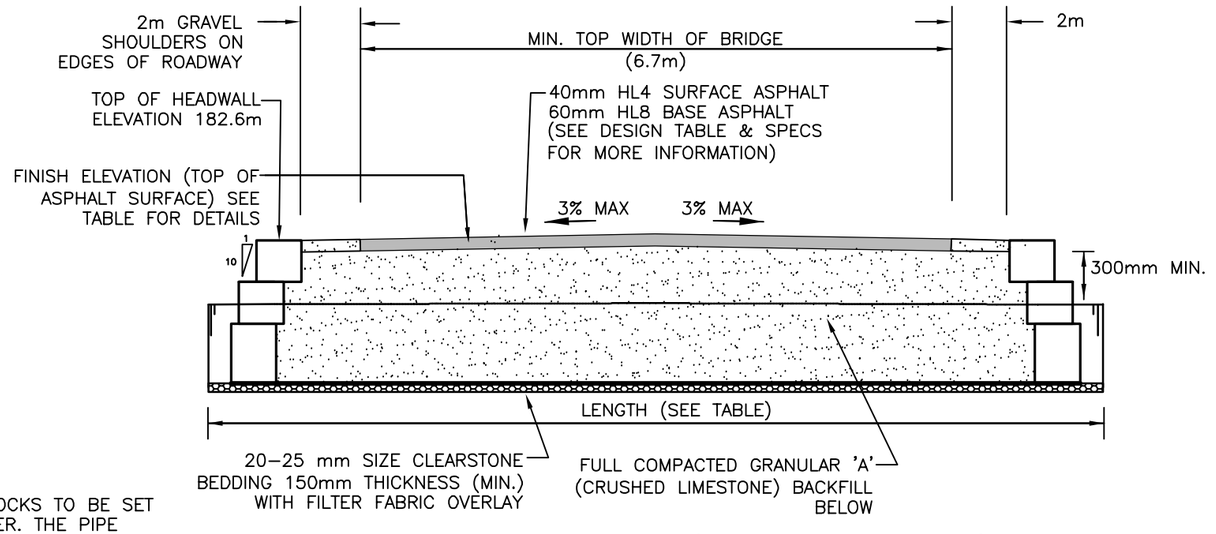


ROAD ACCESS BRIDGE PLAN (TYPICAL)
BRIDGE NO. 5
NOT TO SCALE



ROAD ACCESS BRIDGE PLAN (CROSS SECTION)
BRIDGE NO. 5
NOT TO SCALE

NOTE 1:
CONCRETE BLOCKS TO BE SET AT 10:1 BATTER. THE PIPE CULVERT TO PROTRUDE A MINIMUM 150 mm BEYOND THE LOWEST BLOCK ROW.CONCRETE BLOCK ROWS TO HAVE STAGGERED JOINTS.



ROAD ACCESS BRIDGE PLAN (LONGITUDINAL SECTION)
BRIDGE NO. 5
NOT TO SCALE

LICENSED PROFESSIONAL ENGINEER
M. D. HERNANDEZ
100078099
May 3/19
PROVINCE OF ONTARIO

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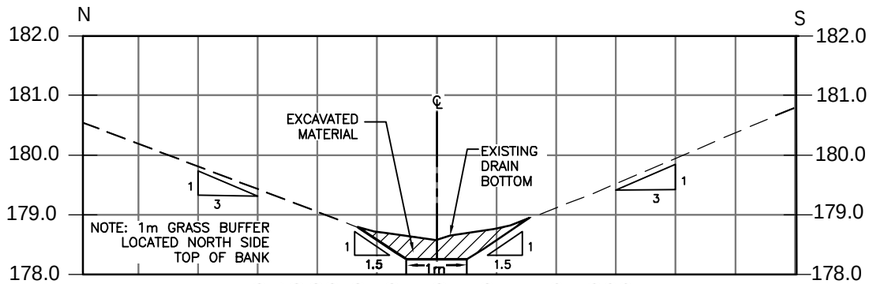
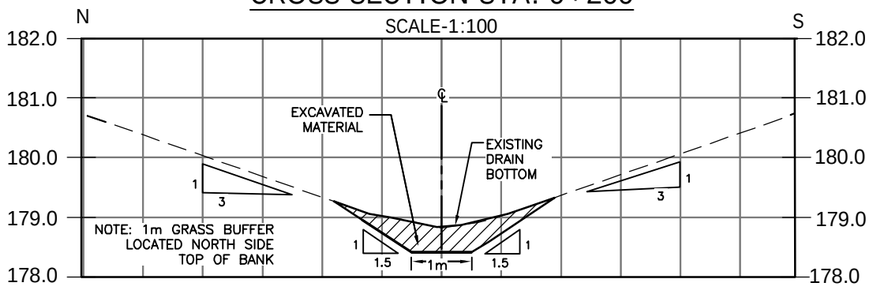


CROSS SECTION STA. 0+200

SCALE-1:100



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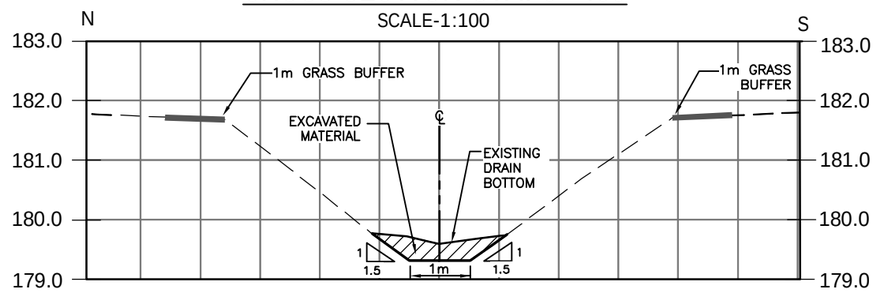

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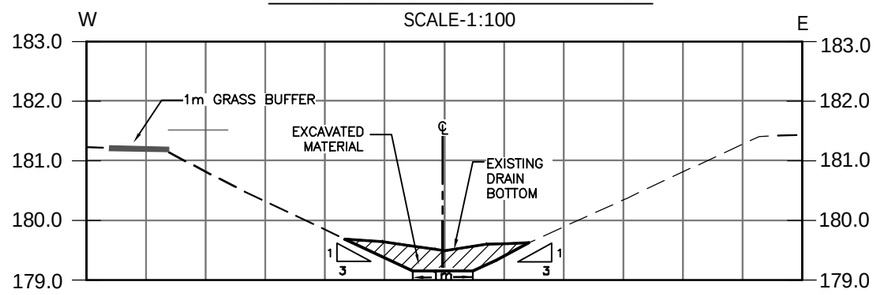

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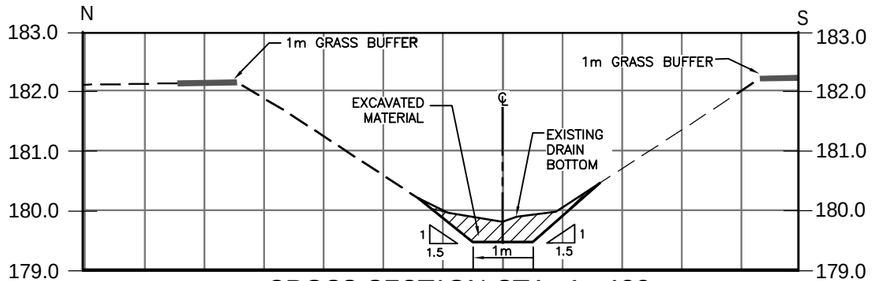

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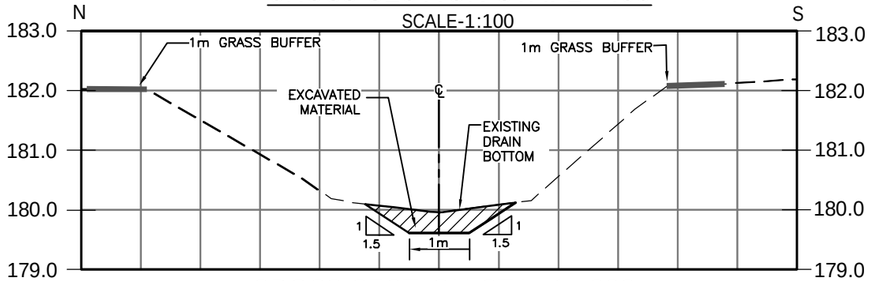

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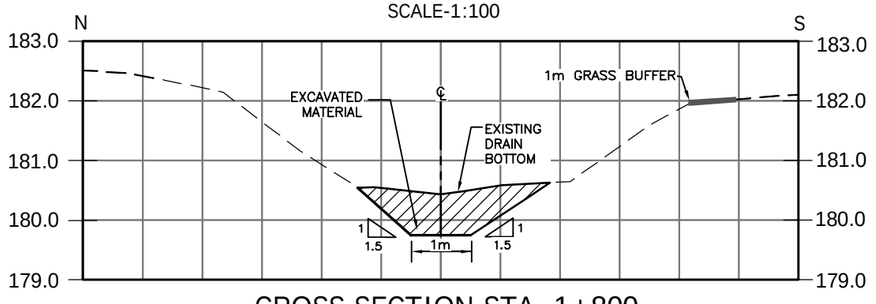

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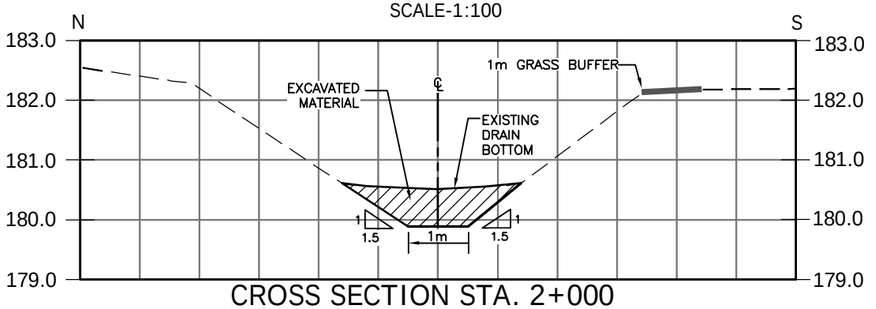

CROSS SECTION STA. 2+000

SCALE-1:100

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DRAWN	CHECKED BY
KAW	TRO

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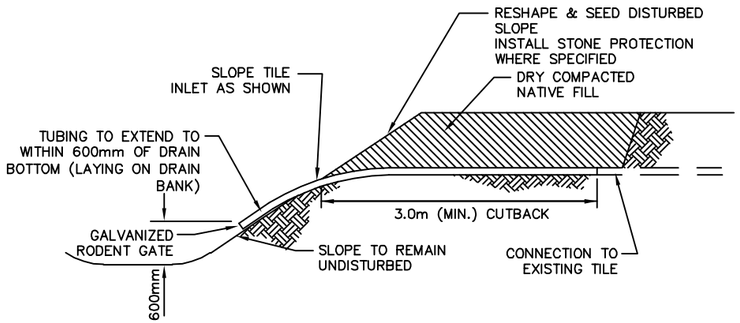
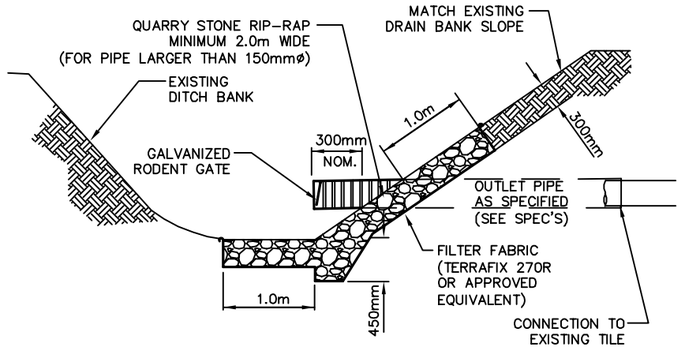
Town of Tecumseh & City of Windsor

SHEET TITLE: CROSS SECTIONS

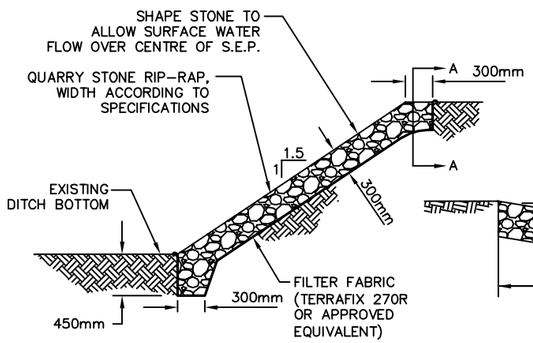
PAGE NO. 8 of 9



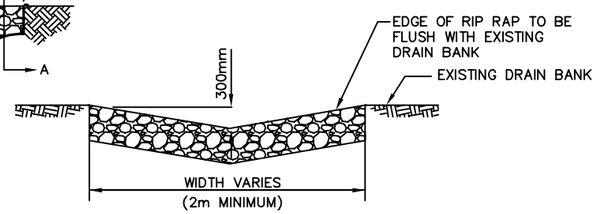
TYPICAL DRAINAGE TUBING TILE INLET
REPLACEMENT DETAIL
(FOR TILES 150mmØ OR SMALLER)
NOT TO SCALE



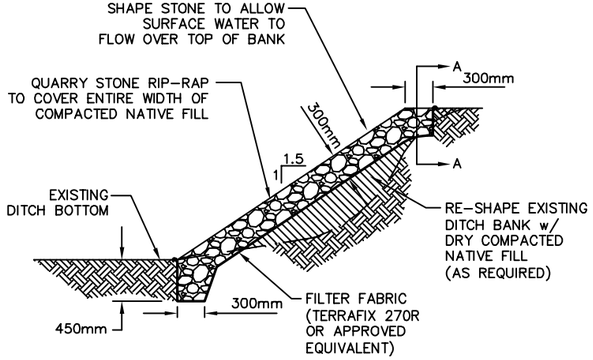
TYPICAL CSP TILE INLET
REPLACEMENT DETAIL
NOT TO SCALE



TYPICAL DITCH BANK WASHOUT
DETAIL w/ RIP-RAP
NOT TO SCALE



SECTION A-A
NOT TO SCALE



TYPICAL DITCH BANK WASHOUT
DETAIL w/ BACKFILLING & RIP-RAP
NOT TO SCALE

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DRAWN KAW	CHECKED BY TRO
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MISCELLANEOUS REPAIR DETAILS