

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

September 4, 2024

The Mayor and Council
Municipality of North Middlesex
229 Parkhill Main Street
Parkhill, ON
N0M 2K0

Gentlemen and Mesdames:

Re: Gilbert – Windsor Drain (2024)

In accordance with your instructions, R. Dobbin Engineering has undertaken an examination with regards to providing a drain to service the north portion of the property with Roll Number 000-040-103 and improving the drain on the property with Roll Number 000-040-102 in the Municipality of North Middlesex.

Authorization under the Drainage Act

This Engineers Report that has been prepared under Section 4 and 78 of the Drainage Act as per a petition from an affected Landowner.

R. Dobbin Engineering Inc. was appointed by council on October 4, 2023.

A petition for the drainage by means of a drainage works of an area requiring drainage as described in the petition may be filed with the Clerk of the local Municipality in which the area is situate by,

- (a) the majority in number of the owners, as shown by the last revised assessment roll of lands in the area, including the owners of any roads in the area;
- (b) the owner or owners, as shown by the last revised assessment roll, of lands in the area representing at least 60 per cent of the hectarage in the area;
- (c) where a drainage works is required for a road or part thereof, the engineer, road superintendent or person having jurisdiction over such road or part, despite subsection 61(5);
- (d) where a drainage works is required for the drainage of lands used for agricultural purposes, the Director. R.S.O. 1990, c.D.17, s.4(1).

The petition was determined to be valid based on Section 4 (1) (a) and (d) as the area requiring drainage is identified as the north portion of the property with Roll Number 000-040-103.

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

Existing Conditions

The Gilbert-Windsor Drain outlets into the Morley-Robinson Drain in Lot 18, Concession 13. It heads generally south-easterly as an open channel into Lot 20, Concession 8 ECR. From there, the Gilbert-Windsor Main Drain continues as a tile drain to the center of Lot 22, Concession 8 ECR. The drain consists of tile branches known as Branch "A", Branch "B", and Branch "C" as shown on the plan included in this report.

Under an Engineer's Report dated June 12, 1969 Branches "A", "B" and "C" were constructed, a portion of the Main Drain previously included as part of the Morley-Robinson Municipal Drains was incorporated as part of the Gilbert-Windsor and the open channel was extended upstream.

Under an Engineer's Report dated May 14, 1981 Branch "A" and the Main Drain were enclosed approximately 150m downstream of the outlet of Branch "A" in the NE ¼ of Lot 19, Concession 8 ECR. In order to accomplish this the two drains were intercepted 150m upstream of their outlet and rerouted north through higher ground in order to provide adequate cover. The open drain was also cleaned throughout its length.

On-Site Meeting

A site meeting was held on December 18th, 2023.

The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Municipality of North Middlesex)

- Kelly Robinson (Landowner)
- Lynda Charbonneau (Landowner)
- Clayton Charbonneau (Landowner)
- Tom Shackleton (Landowner)
- James Rowe (Landowner)
- Jared Tweedle (County of Middlesex)
- Daniel Roelands (Landowner)
- Matt Roelands (Landowner)
- Andrew Henry (Landowner)
- Rob Windsor (Landowner)

The following is a brief summary of the meeting:

- General discussion of the Drainage Act and Landowners rights under the Drainage Act.
- Landowners were made aware that a petition was received from the property with Roll Number 000-040-103 in order to provide adequate drainage for the north portion of their property. The owner requested that a stub extend 6m east of the roadside ditch on the east side of Windsor Road.
- R. Dobbin Engineering stated that the requirement under the Drainage Act is to take a project to a sufficient outlet. With the proposed drain tying into a twinned drain from 1981 improvements will likely be required to this portion of the drainage system in order to satisfy a sufficient outlet.
- The owners of the property with Roll Number 000-040-102 requested that the improvements to Branch “A” extend to the west side of Cassidy Road.

No adverse soil conditions were noted at the site meeting.

Discussion

Following the site meeting, R. Dobbin Engineering reached out to the Landowners of the properties with Roll Number 000-040-102 and 000-040-099. The Landowners wished to pursue an enclosure of the open channel portion of the main drain in order to enclose the entire drain on the property with Roll Number 000-040-102 and to replace the existing access culvert on the property with Roll Number 000-040-099.

Cleaning out the channel downstream of the proposed tile outlet was investigated in order to obtain more freeboard. However, with the elevation of the downstream culvert it was determined that this would not provide much value to the drainage works.

Draft Report

A draft report, dated July 17, 2024 was sent to all the affected Landowners and a meeting was held on September 4, 2024 to go over the report and address any questions and concerns related to the draft report. At the meeting no major concerns were brought forward. The following were present at the meeting:

- Josh Warner (R. Dobbin Engineering)
- Joanne Sadler (Municipality of North Middlesex)
- Kristyn Wilson (Municipality of North Middlesex)
- Marion Robinson (Landowner)
- Daniel Roelands (Landowner)
- Rob Windsor (Landowner)
- Jared Tweedle (County of Middlesex)
- Jason O'Neil (Landowner)

Drain Classification

The Gilbert-Windsor Drain is currently Not Rated according to the Department of Fisheries and Oceans (DFO) classification as presented by the Ontario Ministry of Agriculture, Food and Rural Affairs' Agricultural Information Atlas.

The proposed work shall be carried out during low flows in the channel. The work area is to be maintained in a dry condition during construction by the Contractor.

Approvals

The drain will require approval from the Ausable Bayfield Conservation Authority and the Department of Fisheries and Oceans. Construction cannot commence without necessary approvals.

Design

The proposed tile drain shall be designed to accommodate a drainage coefficient of 38mm / 24 hours. Tile design criteria includes a minimum tile depth of 760mm.

Recommendations

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

1. A tile drain known as the Gilbert-Windsor Drain Branch "D" shall be constructed from just east of Windsor Road and tie into the Gilbert-Windsor Drain Branch "A" in Lot 20, Concession 8 ECR.
2. The Gilbert-Windsor Drain Branch "A" shall be replaced from the west side of Cassidy Road to its outlet into the Main Drain. The existing tile drain in this section shall be abandoned.

3. The Gilbert-Windsor Main Drain shall be replaced from its outlet into the open channel to its connection with Branch "A". The existing tile in this section shall be abandoned. The open channel portion of the Gilbert-Windsor Drain Main Drain in the property with Roll Number 000-040-102 and approximately 15m into the property with Roll Number 000-040-099 shall be enclosed.

Estimate of Cost

It is recommended that the work be carried out in accordance with the accompanying Specification of Work and Profile that forms part of this Report. There has been prepared an Estimate of Cost in the amount of \$319,865, including engineering of the report, attending the Meeting to Consider the Report, attending the Court of Revision, and an estimate for tendering, contract administration and inspection. Appearances before appeal bodies have not been included in the cost estimate.

A plan has been prepared showing the location of the work and the approximate drainage area. A profile is included showing the depths and grades of the proposed work.

Assessment

As per Section 21 of the Drainage Act, the Engineer in their Report shall assess for benefit and outlet for each parcel of land and road liable for assessment. Lands, roads, buildings, utilities, or other structures that are increased in value or are more easily maintained as a result of the construction, improvement, maintenance, or repair of a drainage works may be assessed for benefit. (Section 22)

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

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

A Schedule of Assessment for the lands and roads affected by the work and therefore liable for the cost thereof will be prepared as per the Drainage Act. Also, assessments may be made against any public utility or road authority, as per Section 26 of the Drainage Act, for any increased cost for the removal or relocation of any of its facilities and plant that may be necessitated by the construction or maintenance of the drainage works.

The cost of any approvals, permits or any extra work, beyond that specified in this Report that is required by any utility, government ministry or organization (federal or

provincial), or road authority shall be assessed to that organization requiring the permit, approval, or extra work.

The estimated cost of the drainage works has been assessed in the following manner:

1. As per Section 26 of the Drainage Act, the roads and utilities have been assessed the increased cost of the drainage works caused by the existence of the works of the public utility or road. The road crossings, with the exception of the extra cost to locate and work around utilities, has been assessed with 100% of the estimated cost assessed as a special benefit assessment to the road authority. The utilities have been assessed 100% of the estimated cost to work around that utility as a special benefit assessment to that utility. These items shall be tendered separately with the actual cost plus a portion of the engineering (25% of the construction cost) being assessed to the owner of the utility or road. The additional costs as a result of the utilities (such as a daylighting and surveying) that are not to be tendered separately have been assessed to the utility as a benefit assessment and shall be pro-rated with the remainder of the drainage works.
2. The additional cost, beyond standard maintenance, to enclose the channel has been assessed to the requesting properties as a special benefit assessment. These costs will be pro-rated with the rest of the drainage works but will not be eligible for grant as per OMAFRA ADIP Policies.
3. Catch Basins have generally been assessed as a benefit assessment with 50% of the estimated cost assessed to the upstream property and 50% assessed to the downstream property.
4. The outlet works have been assessed as an outlet assessment to upstream lands and roads based on equivalent hectares.
5. The remaining cost of the drainage works has generally been assessed with 50% of the cost applied as a benefit assessment and the remainder applied as outlet assessment to the upstream lands and roads based on equivalent hectares.

All final costs included in the cost estimate of this report, except as identified above, shall be pro-rated based on the Composite Schedule of Assessment. Any additional costs shall be assessed in a manner as determined by the Engineer in accordance with the Drainage Act.

Allowances

Under Section 29 of the Drainage Act, the Engineer in his Report shall estimate and allow in money to the Landowner of any land that it is necessary to use for the construction or improvement of a drainage works or for the disposal of material removed from drainage works. This shall be considered an allowance for right-of-way.

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

Allowances have been made, where appropriate, as per Section 29 of the Drainage Act for right-of-way and as per Section 30 of the Drainage Act for damages to lands and crops. Allowances for right of way are based on a land value of \$50,000.00 per hectare. Allowances for crop loss are based on \$2,000.00 per hectare for the first year, \$1,000.00 for the second year (\$3,000.00 per hectare total).

Access and Working Area

Access to the work site for construction and future maintenance shall be from Windsor Road, Cassidy Road and Ausable Drive and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres.

The working area for the construction and future maintenance of the proposed tile drain shall be restricted to a width of 20m along the length of the drainage works normally centred on the proposed tile drain.

For construction only, the working area shall extend 10m past the banks on both sides at the enclosure, in addition to the above.

The working area for channel improvements and maintenance shall be restricted to a width of 15m from the side the excavation is taking place. The working side shall be at the discretion of the Drainage Superintendent.

Restrictions

No trees and shrubs shall be planted nor shall permanent structures be erected within 20m of either side of the proposed drain without prior written permission of Council.

Attention is also drawn to Sections 80 and 82 of the Drainage Act, which refer to the removal of obstructions in a drain and damage caused to a drain.

Agricultural Grant

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

The cost to enclose the channel has been assessed as a special benefit assessment and will not be eligible for grant.

Maintenance

Upon completion of the work, the Gilbert-Windsor Drain Branch “D” shall be repaired and maintained as per the Gilbert-Windsor Drain Branch “D” (Schedule of Assessment No. 1), less any Special Benefit assessment and assessment to the utilities, unless otherwise altered under provisions of the Drainage Act or as outlined below.

The Gilbert-Windsor Main Drain open channel portion shall be repaired and maintained as per Schedule of Maintenance No. 1. The access culvert shall be maintained and repaired with 50% assessed to the benefitting property and 50% assessed upstream based on equivalent hectares contained in the Schedule of Maintenance No. 1. The Ausable Drive culvert shall be assessed to the owner of Ausable Drive as per Section 26 of the Drainage Act. The Gilbert-Windsor Main Drain tile portion shall be repaired and maintained as per Schedule of Maintenance No. 2.

The Gilbert-Windsor Drain Branch “A” shall be repaired and maintained as per Schedule of Maintenance No. 3.

The Gilbert-Windsor Drain Branch “B” shall be repaired and maintained as per Schedule of Maintenance No. 4.

The Gilbert-Windsor Drain Branch “C” shall be repaired and maintained at the expense of the property with Roll Number 000-030-076-01.

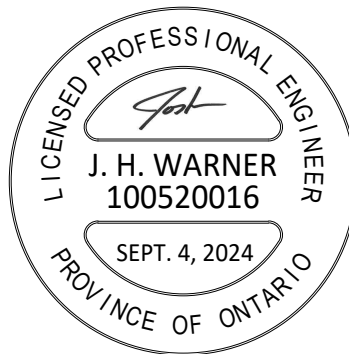
The drainage works shall be maintained as per the specifications and drawings contained in this Engineers Report and the previous reports dated June 12, 1969 and May 14, 1981.

The additional costs as a result of a road or utility shall be assessed to the owner of the road or utility as per Section 26 of the Drainage Act.

Yours truly,



Josh Warner, P. Eng.
R. Dobbin Engineering Inc.



Gilbert-Windsor Drain Branch "A", "D" and Main Drain
Municipality of North Middlesex
September 4, 2024

ALLOWANCES

Allowances have been made as per Sections 29 & 30 of the Drainage Act for Right of Way and damages to lands and crops

Conc.	Lot or part	Roll No.	Owner	Section 29 (\$)	Section 30 (\$)	Total (\$)
8 ECR	W 1/2 Lot 19	000-040-099	P. & S. Barlow	-	120	120
	NE 1/4 Lot 19 & N 1/2 Lot 20	000-040-102	M. & F. Roelands	1,570	4,150	5,720
	Pt. Lot 20	000-040-101	G. & M. Moir	1,110	670	1,780
	Lot 21	000-040-103	R. Windsor	60	100	160
TOTAL ALLOWANCES				\$2,740	\$5,040	\$7,780

Estimate of Cost

<u>Item Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total (\$)</u>
Pre-Construction Meeting	1	LS	200	200
Brushing and Tree Removal	1	LS	1,500	1,500
Remove and Reinstall Fences	1	LS	1,000	1,000
Environmental Considerations	1	LS	800	800
Restoration/Seeding	1	LS	1,500	1,500
<u>Main Drain and Branch 'A'</u>				
Strip and Place Topsoil (Station 0+281 to 0+900) along tile Route	619	m	8	4,952
Locate and Decommission existing Tiles	1	LS	5,000	5,000
Remove and Dispose of Existing CB and Lead at Station 0+900	1	LS	800	800
6m of 900mmø HDPE Pipe c/w Rodent Grate	1	LS	2,500	2,500
825mmø Concrete Pipe	274	m	130	35,620
525mmø Concrete Pipe	141	m	75	10,575
400mmø Concrete Pipe	204	m	60	12,240
Junction Box #1 (1200mm x 900mm) c/w Connections	1	LS	3,200	3,200
Junction Box #2 (900mm x 600mm) c/w Connections	1	LS	2,800	2,800
Catch Basin #3 (1200mm x 900mm) c/w Connections and Berm	1	LS	3,500	3,500
Rip Rap at Outlet (Station 0+281) and Basin	25	tonne	120	3,000
Connect Existing Tiles to Proposed Drain	30	ea	140	4,200
Connect Existing Tiles to Proposed Drain Across Open Channel	5	ea	250	1,250
Remove and Dispose of Existing Culvert at Station 0+287	1	LS	1,000	1,000
Strip Existing Channel (Station 0+281 to 0+366)	85	m	6	510
Fill in Open Channel (Station 0+281 to 0+366)	85	m	50	4,250

<u>Item Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Total (\$)</u>
<u>Branch 'D'</u>				
Locate and Decomission existing Private Tile	1	LS	2,000	2,000
Strip and Place Topsoil (Station 2+000 to 2+313) along tile Route	276	m	8	2,208
Remove and Dispose of Existing CB and Lead at Station 2+157	1	LS	800	800
300mmØ Concrete Tile	276	m	50	13,800
Catch Basin #4 (1200mm x 900mm) c/w Connections and Berm	1	LS	3,500	3,500
Catch Basin #5 (1200mm x 900mm) c/w Connections	1	LS	3,200	3,200
Catch Basin #6 (1200mm x 900mm) c/w Connections and Berm	1	LS	3,500	3,500
Catch Basin #7 (1200mm x 900mm) c/w Connections	1	LS	3,200	3,200
Rip Rap at Basins	25	tonne	120	3,000
Connect Existing Tiles to Proposed Drain	20	ea	140	2,800
<u>Cassidy Road</u>				
Traffic Control	1	LS	2,500	2,500
Grout Existing 600mmØ CSP	27	m	150	4,050
Grout Existing Private Tile under Roadway	1	LS	2,000	2,000
323mmØ Steel Casing Installed by Jack and Bore	32	m	650	20,800
610mmØ Steel Casing Installed by Jack and Bore	28	m	1,400	39,200
Restoration and Ditch Grading	1	LS	3,000	3,000
<u>Windsor Road</u>				
Traffic Control	1	LS	2,000	2,000
Remove and Reinstall Existing 450mmØ HDPE Pipe	1	LS	1,200	1,200
Remove and Dispose of Unsuitable Backfill	1	LS	1,200	1,200
Supply and Install 300mmØ HDPE Pipe	13	LS	350	4,550
Granular "A" Backfill	150	tonne	40	6,000
100% Crushed Granular "A" Backfill	25	tonne	50	1,250
Restoration and Ditch Grading	1	LS	1,000	1,000
Locate and Work Around Fiber and Telecom Line	1	LS	1,200	1,200
Locate and Work Around Watermain	1	LS	800	800
Contingency	1	LS		<u>18,180</u>
			Sub Total	247,335
			Allowances	7,780
			Engineering	36,320
			Daylighting and Surveying of the Schedule of Maintenance Updates	2,600 2,200
			Estimate for Tendering, Inspection and Contract Administration	17,500
			ABCA Fee	750
			Total Estimate excluding HST	314,485
			Non-Recoverable HST (1.76%)	5,380
			Total Estimate	\$ 319,865

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	SofM Update	Benefit	Outlet	Total
Non-Agricultural Lands									
13	Pt. Lot 19 & Pt. Lot 20	0.00	000-030-116	L. Sovereign & S. Dooreleyers		26	-	-	26
7 ECR	Lot 19	0.00	000-040-066	H. Ross		199	-	-	199
	Lot 22	4.50	000-040-063	H. Ross		24	-	865	889
8 ECR	Pt. Lot 19	0.00	000-040-099-01	A. & B. Henry		1	-	-	1
	Pt. Lot 20	3.50	000-040-101	G. & M. Moir		9	-	1,264	1,273
	Pt. Lot 20	0.46	000-040-100-01	M. Dryburgh & D. Mueller		1	-	88	89
						-	260	-	2,217
						11,880			
						2,477			
						<u>124,816</u>			
						\$139,173			

SCHEDULE OF ASSESSMENT NO. 2

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Public Lands								
	Ausable Drive	0.85		Municipality of North Middlesex		-	1,999	1,999
	Windsor Road	0.94		Municipality of North Middlesex	22,880	6,865	2,170	31,915
	Cassidy Road	0.65		County of Middlesex	95,160	8,782	748	104,690
					118,040	15,647	4,917	138,604
Utilities								
	Watermain Utility			Municipality of North Middlesex	960	1,340	-	2,300
	Telecom Utility			Bell Telcom	1,440	1,360	-	2,800
					2,400	2,700	-	5,100
Agricultural Lands								
12	W 1/2 Lot 20 & Pt. Lot 21	2.00	000-030-077	C. Charbonneau		-	1,568	1,568
	E 1/2 Lot 20 & Pt. Lot 21	3.00	000-030-076	K. & M. Robinson		-	2,352	2,352
8 ECR	NE 1/4 Lot 19 & N 1/2 Lot 20	3.20	000-040-102	M. & F. Roelands		10,392	1,227	11,619
	Lot 21	12.14	000-040-103	R. Windsor		2,863	9,519	12,382
					-	13,255	14,666	27,921
Non-Agricultural Lands								
8 ECR	Pt. Lot 20	3.50	000-040-101	G. & M. Moir		6,375	2,692	9,067
					-	6,375	2,692	9,067
Total - Public Lands					138,604			
Total - Utilities					5,100			
Total - Non Agricultural Lands					9,067			
Total Agricultural Lands					27,921			
Total Assessment					\$180,692			

COMPOSITE SCHEDULE OF ASSESSMENT

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Public Lands								
	Ausable Drive	1.70		Municipality of North Middlesex	-	64	4,696	4,760
	Windsor Road	1.04		Municipality of North Middlesex	22,880	6,909	3,297	33,086
	Unopened Right of Way	0.28		Municipality of North Middlesex	-	12	585	597
	Cassidy Road	3.25		County of Middlesex	95,160	12,618	4,263	112,041
					118,040	19,603	12,841	150,484
Utilities								
	Watermain Utility			Municipality of North Middlesex	960	1,340	-	2,300
	Telecom Utility			Bell Telcom	1,440	1,360	-	2,800
					2,400	2,700	-	5,100
Agricultural Lands								
11	Lot 19	0.00	000-030-074-01	G. & C. Geurts	-	1	-	1
	Lot 20	0.00	000-030-075	J. Hoornick	-	1	-	1
	Lot 21	2.40	000-030-076-01	J. Hoornick	-	34	1,671	1,705
12	Lot 19	0.00	000-030-078	L. Charbonneau	-	11	-	11
	W 1/2 Lot 20 & Pt. Lot 21	2.00	000-030-077	C. Charbonneau	-	14	2,290	2,304
	E 1/2 Lot 20 & Pt. Lot 21	4.83	000-030-076	K. & M. Robinson	-	33	4,710	4,743
13	Lot 18	0.00	000-030-115	K. & M. Robinson	-	52	-	52
	Lot 19	0.00	000-030-116-02	M. & F. Roelands	-	97	-	97
7 ECR	Lot 20	1.10	000-040-065	J. O'Neil & T. Peters	-	178	211	389
	Lot 21	6.10	000-040-064	T. & C. Shackleton	-	20	1,172	1,192
8 ECR	Lot 18	0.00	000-040-098	J. & R. Rowe	-	26	-	26
	W 1/2 Lot 19	0.00	000-040-099	P. & S. Barlow	5,056	220	-	5,276
	NE 1/4 Lot 19 & N 1/2 Lot 20	19.30	000-040-102	M. & F. Roelands	17,480	63,237	6,215	86,932
	SE 1/4 Lot 19 & S 1/2 Lot 20	19.00	000-040-100	R. Windsor	-	162	3,651	3,813
	Lot 21	40.06	000-040-103	R. Windsor	-	3,138	23,505	26,643
	W 3/4 Lot 22	30.35	000-040-104	K. & M. Robinson	-	305	13,487	13,792
	E 1/4 Lot 22 & Lot 23	19.80	000-040-105	Ausable Poultry Ltd	-	140	5,620	5,760
					22,536	67,669	62,532	152,737

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Special Benefit	Benefit	Outlet	Total
Non-Agricultural Lands								
13	Pt. Lot 19 & Pt. Lot 20	0.00	000-030-116	L. Sovereign & S. Dooreleyers	-	26	-	26
7 ECR	Lot 19	0.00	000-040-066	H. Ross	-	199	-	199
	Lot 22	4.50	000-040-063	H. Ross	-	24	865	889
8 ECR	Pt. Lot 19	0.00	000-040-099-01	A. & B. Henry	-	1	-	1
	Pt. Lot 20	3.50	000-040-101	G. & M. Moir	-	6,384	3,956	10,340
	Pt. Lot 20	0.46	000-040-100-01	M. Dryburgh & D. Mueller	-	1	88	89
					-	6,635	4,909	11,544
				Total - Public Lands		150,484		
				Total - Utilities		5,100		
				Total - Non Agricultural Lands		11,544		
				Total Agricultural Lands		<u>152,737</u>		
				Total Assessment		\$319,865		

Estimated Net Assessment

Net assessment subject to OMAFRA ADIP Policy and actual construction costs.

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Total Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
Public Lands								
	Ausable Drive	1.70		Municipality of North Middlesex	4,760			4,760
	Windsor Road	1.04		Municipality of North Middlesex	33,086			33,086
	Unopened Right of Way	0.28		Municipality of North Middlesex	597			597
	Cassidy Road	3.25		County of Middlesex	112,041			112,041
Utilities								
	Watermain Utility			Municipality of North Middlesex	2,300			2,300
	Telecom Utility			Bell Telecom	2,800			2,800
Agricultural Lands								
11	Lot 19	0.00	000-030-074-01	G. & C. Geurts	1	-		1
	Lot 20	0.00	000-030-075	J. Hoornick	1	-		1
	Lot 21	2.40	000-030-076-01	J. Hoornick	1,705	568		1,137
12	Lot 19	0.00	000-030-078	L. Charbonneau	11	4		7
	W 1/2 Lot 20 & Pt. Lot 21	2.00	000-030-077	C. Charbonneau	2,304	768		1,536
	E 1/2 Lot 20 & Pt. Lot 21	4.83	000-030-076	K. & M. Robinson	4,743	1,581		3,162
13	Lot 18	0.00	000-030-115	K. & M. Robinson	52	17		35
	Lot 19	0.00	000-030-116-02	M. & F. Roelands	97	32		65
7 ECR	Lot 20	1.10	000-040-065	J. O'Neil & T. Peters	389	130		259
	Lot 21	6.10	000-040-064	T. & C. Shackleton	1,192	397		795
8 ECR	Lot 18	0.00	000-040-098	J. & R. Rowe	26	9		17
	W 1/2 Lot 19	0.00	000-040-099	P. & S. Barlow	5,276	73	120	5,083
	NE 1/4 Lot 19 & N 1/2 Lot 20	19.30	000-040-102	M. & F. Roelands	86,932	23,151	5,720	58,061
	SE 1/4 Lot 19 & S 1/2 Lot 20	19.00	000-040-100	R. Windsor	3,813	1,271		2,542
	Lot 21	40.06	000-040-103	R. Windsor	26,643	8,881	160	17,602
	W 3/4 Lot 22	30.35	000-040-104	K. & M. Robinson	13,792	4,597		9,195
	E 1/4 Lot 22 & Lot 23	19.80	000-040-105	Ausable Poultry Ltd	5,760	1,920		3,840

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Total Assessment (\$)	Estimated Grant (\$)	Allowances (\$)	Estimated Net Assessment (\$)
Non-Agricultural Lands								
13	Pt. Lot 19 & Pt. Lot 20	0.00	000-030-116	L. Sovereign & S. Dooreleyers	26			26
7 ECR	Lot 19	0.00	000-040-066	H. Ross	199			199
	Lot 22	4.50	000-040-063	H. Ross	889			889
8 ECR	Pt. Lot 19	0.00	000-040-099-01	A. & B. Henry	1			1
	Pt. Lot 20	3.50	000-040-101	G. & M. Moir	10,340		1,780	8,560
	Pt. Lot 20	0.46	000-040-100-01	M. Dryburgh & D. Mueller	89			89
					319,865	43,399	7,780	268,686

SCHEDULE OF MAINTENANCE NO. 1
To Maintain the Open Channel Portion of the Gilbert-Windsor Main Drain

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total	Equivalent Hectares
Public Lands								
	Ausable Drive	4.25		Municipality of North Middlesex	-	1.58	1.58	12.75
	Windsor Road	1.04		Municipality of North Middlesex	-	0.51	0.51	3.12
	Unopened Right of Way	0.28		Municipality of North Middlesex	-	0.14	0.14	0.84
	Cassidy Road	5.46		County of Middlesex	-	2.03	2.03	16.39
					-	4.26	4.26	
Agricultural Lands								
11	Lot 19	0.40	000-030-074-01	G. & C. Geurts	-	0.05	0.05	0.40
	Lot 20	2.02	000-030-075	J. Hoornick	-	0.24	0.24	2.02
	Lot 21	2.40	000-030-076-01	J. Hoornick	-	0.39	0.39	2.40
12	Lot 19	17.40	000-030-078	L. Charbonneau	-	2.07	2.07	17.40
	W 1/2 Lot 20 & Pt. Lot 21	19.83	000-030-077	C. Charbonneau	-	2.38	2.38	19.83
	E 1/2 Lot 20 & Pt. Lot 21	19.83	000-030-076	K. & M. Robinson	-	2.38	2.38	19.83
13	Lot 18	5.26	000-030-115	K. & M. Robinson	9.48	-	9.48	5.26
	Lot 19	29.95	000-030-116-02	M. & F. Roelands	16.94	0.73	17.67	29.95
7 ECR	Lot 20	31.57	000-040-065	J. O'Neil & T. Peters	-	4.25	4.25	31.57
	Lot 21	6.10	000-040-064	T. & C. Shackleton	-	1.00	1.00	6.10
8 ECR	Lot 18	14.16	000-040-098	J. & R. Rowe	2.14	1.01	3.15	14.16
	W 1/2 Lot 19	19.58	000-040-099	P. & S. Barlow	17.15	1.64	18.79	19.58
	NE 1/4 Lot 19 & N 1/2 Lot 20	23.88	000-040-102	M. & F. Roelands	-	3.91	3.91	23.88
	SE 1/4 Lot 19 & S 1/2 Lot 20	29.89	000-040-100	R. Windsor	-	4.29	4.29	29.89
	Lot 21	40.06	000-040-103	R. Windsor	-	6.55	6.55	40.06
	W 3/4 Lot 22	30.35	000-040-104	K. & M. Robinson	-	4.96	4.96	30.35
	E 1/4 Lot 22 & Lot 23	19.80	000-040-105	Ausable Poultry Ltd	-	3.24	3.24	19.80
					45.71	39.09	84.80	

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total	Equivalent Hectares
Non-Agricultural Lands								
13	Pt. Lot 19 & Pt. Lot 20	5.75	000-030-116	L. Sovereign & S. Dooreleyers	4.29	0.45	4.74	6.33
7 ECR	Lot 19	30.35	000-040-066	H. Ross	-	4.09	4.09	30.35
	Lot 22	4.50	000-040-063	H. Ross	-	0.74	0.74	4.50
8 ECR	Pt. Lot 19	0.25	000-040-099-01	A. & B. Henry	-	0.04	0.04	0.38
	Pt. Lot 20	6.20	000-040-101	G. & M. Moir	-	1.22	1.22	7.44
	Pt. Lot 20	0.46	000-040-100-01	M. Dryburgh & D. Mueller	-	0.11	0.11	0.69
					4.29	6.65	10.94	
				Total - Public Lands	4.26			
				Total - Non Agricultural Lands	10.94			
				Total Agricultural Lands	<u>84.80</u>			
				Total Assessment	100.00			

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Non-Agricultural Lands							
13	Pt. Lot 19 & Pt. Lot 20	0.00	000-030-116	L. Sovereign & S. Dooreleyers	-	-	-
7 ECR	Lot 19	0.00	000-040-066	H. Ross	-	-	-
	Lot 22	4.50	000-040-063	H. Ross	-	3.64	3.64
8 ECR	Pt. Lot 19	0.00	000-040-099-01	A. & B. Henry	-	-	-
	Pt. Lot 20	3.50	000-040-101	G. & M. Moir	-	0.26	0.26
	Pt. Lot 20	0.46	000-040-100-01	M. Dryburgh & D. Mueller	-	0.14	0.14
					-	4.04	4.04
				Total - Public Lands	3.17		
				Total - Non Agricultural Lands	4.04		
				Total Agricultural Lands	<u>92.79</u>		
				Total Assessment	100.00		

SCHEDULE OF MAINTENANCE NO. 3
To Maintain the Gilbert-Windsor Drain Branch "A"

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit	Outlet	Total
Public Lands							
	Ausable Drive	2.12		Municipality of North Middlesex	-	9.68	9.68
	Windsor Road	1.04		Municipality of North Middlesex	-	7.32	7.32
	Unopened Right of Way	0.28		Municipality of North Middlesex	-	1.97	1.97
	Cassidy Road	1.10		County of Middlesex	-	5.01	5.01
					-	23.98	23.98
Agricultural Lands							
11	Lot 19	0.00	000-030-074-01	G. & C. Geurts	-	-	-
	Lot 20	0.00	000-030-075	J. Hoornick	-	-	-
	Lot 21	2.40	000-030-076-01	J. Hoornick	-	5.63	5.63
12	Lot 19	0.00	000-030-078	L. Charbonneau	-	-	-
	W 1/2 Lot 20 & Pt. Lot 21	2.00	000-030-077	C. Charbonneau	-	0.11	0.11
	E 1/2 Lot 20 & Pt. Lot 21	4.83	000-030-076	K. & M. Robinson	-	3.29	3.29
13	Lot 18	0.00	000-030-115	K. & M. Robinson	-	-	-
	Lot 19	0.00	000-030-116-02	M. & F. Roelands	-	-	-
7 ECR	Lot 20	0.00	000-040-065	J. O'Neil & T. Peters	-	-	-
	Lot 21	0.00	000-040-064	T. & C. Shackleton	-	-	-
8 ECR	Lot 18	0.00	000-040-098	J. & R. Rowe	-	-	-
	W 1/2 Lot 19	0.00	000-040-099	P. & S. Barlow	-	-	-
	NE 1/4 Lot 19 & N 1/2 Lot 20	8.00	000-040-102	M. & F. Roelands	12.66	1.14	13.80
	SE 1/4 Lot 19 & S 1/2 Lot 20	0.00	000-040-100	R. Windsor	-	-	-
	Lot 21	20.54	000-040-103	R. Windsor	16.87	2.61	19.48
	W 3/4 Lot 22	15.18	000-040-104	K. & M. Robinson	16.87	10.46	27.33
	E 1/4 Lot 22 & Lot 23	3.60	000-040-105	Ausable Poultry Ltd	-	6.14	6.14
					46.40	29.38	75.78

Conc.	Lot or Part	Affected Hecatares	Roll No.	Owner	Benefit	Outlet	Total
Non-Agricultural Lands							
13	Pt. Lot 19 & Pt. Lot 20	0.00	000-030-116	L. Sovereign & S. Dooreleyers	-	-	-
7 ECR	Lot 19	0.00	000-040-066	H. Ross	-	-	-
	Lot 22	0.00	000-040-063	H. Ross	-	-	-
8 ECR	Pt. Lot 19	0.00	000-040-099-01	A. & B. Henry	-	-	-
	Pt. Lot 20	3.50	000-040-101	G. & M. Moir	-	0.24	0.24
	Pt. Lot 20	0.00	000-040-100-01	M. Dryburgh & D. Mueller	-	-	-
					-	0.24	0.24
					23.98		
					0.24		
					<u>75.78</u>		
					100.00		

SCHEDULE OF MAINTENANCE NO. 4
To Maintain the Gilbert-Windsor Drain Branch "B"

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit	Outlet	Total
Public Lands							
	Ausable Drive	0.00		Municipality of North Middlesex	-	-	-
	Windsor Road	0.00		Municipality of North Middlesex	-	-	-
	Unopened Right of Way	0.00		Municipality of North Middlesex	-	-	-
	Cassidy Road	0.61		County of Middlesex	-	1.67	1.67
						<hr/>	
					-	1.67	1.67
Agricultural Lands							
11	Lot 19	0.00	000-030-074-01	G. & C. Geurts	-	-	-
	Lot 20	0.00	000-030-075	J. Hoornick	-	-	-
	Lot 21	0.00	000-030-076-01	J. Hoornick	-	-	-
12	Lot 19	0.00	000-030-078	L. Charbonneau	-	-	-
	W 1/2 Lot 20 & Pt. Lot 21	0.00	000-030-077	C. Charbonneau	-	-	-
	E 1/2 Lot 20 & Pt. Lot 21	0.00	000-030-076	K. & M. Robinson	-	-	-
13	Lot 18	0.00	000-030-115	K. & M. Robinson	-	-	-
	Lot 19	0.00	000-030-116-02	M. & F. Roelands	-	-	-
7 ECR	Lot 20	30.35	000-040-065	J. O'Neil & T. Peters	-	27.88	27.88
	Lot 21	0.00	000-040-064	T. & C. Shackleton	-	-	-
8 ECR	Lot 18	6.48	000-040-098	J. & R. Rowe	-	1.59	1.59
	W 1/2 Lot 19	11.74	000-040-099	P. & S. Barlow	20.75	-	20.75
	NE 1/4 Lot 19 & N 1/2 Lot 20	0.00	000-040-102	M. & F. Roelands	-	-	-
	SE 1/4 Lot 19 & S 1/2 Lot 20	15.78	000-040-100	R. Windsor	9.91	3.86	13.77
	Lot 21	0.00	000-040-103	R. Windsor	-	2.18	2.18
	W 3/4 Lot 22	0.00	000-040-104	K. & M. Robinson	-	-	-
	E 1/4 Lot 22 & Lot 23	0.00	000-040-105	Ausable Poultry Ltd	-	-	-
					<hr/>		
					30.66	35.51	66.17

Conc.	Lot or Part	Affected Hectares	Roll No.	Owner	Benefit	Outlet	Total
Non-Agricultural Lands							
13	Pt. Lot 19 & Pt. Lot 20	0.00	000-030-116	L. Sovereign & S. Dooreleyers	-	-	-
7 ECR	Lot 19	30.35	000-040-066	H. Ross	10.57	21.59	32.16
	Lot 22	0.00	000-040-063	H. Ross	-	-	-
8 ECR	Pt. Lot 19	0.00	000-040-099-01	A. & B. Henry	-	-	-
	Pt. Lot 20	0.00	000-040-101	G. & M. Moir	-	-	-
	Pt. Lot 20	0.00	000-040-100-01	M. Dryburgh & D. Mueller	-	-	-
					10.57	21.59	32.16
				Total - Public Lands	1.67		
				Total - Non Agricultural Lands	32.16		
				Total Agricultural Lands	<u>66.17</u>		
				Total Assessment	100.00		

Gilbert-Windsor Drain
Municipality of North Middlesex
September 4, 2024

SPECIFICATION OF WORK

1. Location

The Gilbert-Windsor Drain is located in Lot 18 and 19, Concession 13, Lot 21, Concession 11, Lot 18-23, Concession 8 ECR, and Lot 19, Concession 7 ECR in The Municipality of North Middlesex.

2. Scope of Work

The work included in this specification includes, but is not limited to, the following:

- Supply and installation of concrete tile.
- Three Road Crossings including two completed by Jack and Bore
- Channel Enclosure
- Supply and installation of catch basins structures c/w berms.

3. General

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

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

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

4. Plans and Specifications

This Specification of Work shall take precedence over all plans and general conditions pertaining to the Contract. The Contractor shall provide all labour, equipment, and supervision necessary to complete the work as shown in the Plans and described in these specifications. Any work not described in these specifications shall be completed according to the Ontario Provincial Standard Specifications and Standard Drawings.

5. Health and Safety

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

When applicable the Contractor shall be responsible for traffic control as per the Ontario Traffic Manual Book 7 – Temporary Conditions (latest revision).

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

The Contractor shall also ensure that only competent workers are employed onsite and that appropriate training and certification is supplied to all employees.

6. Utilities

The Contractor is responsible for organizing locates and exposing all the utilities along the length of the drainage works. If any utilities interfere with the proposed drainage works in a manner not shown on the accompanying Estimate of Cost or profile the Contractor shall notify the Drainage Superintendent and Engineer.

The Contractor is responsible for coordinating the replacement of additional utilities with the utility company if they interfere with the proposed drain. All costs for the utility to replace their services will be outside of this report and shall be borne by the utility as per Section 26 of the Drainage Act.

All additional costs to work around and organize replacement of the utilities not included in the estimate shall be tracked separately and the cost plus a portion of the engineering (25% of the cost) shall be borne by that utility.

7. Pre-Construction Meeting

There is a requirement for a pre-construction meeting to be held prior to any construction taking place. The meeting shall be scheduled by the Contractor. The Landowners, Engineer, County of Middlesex and the Municipality of North Middlesex shall be notified of the pre-construction meeting at least 48 hours prior.

8. Benchmarks

The benchmarks are based on geodetic elevations. Elevations are available at the locations shown on the Plan and Profile drawings. Where these elevations are on existing structures to be replaced, they shall be transferred by the Contractor prior to the removal.

The Contractor is required to complete a benchmark loop prior to construction to verify the benchmarks. If discrepancies exist the Contractor must notify the Drainage Superintendent and Engineer prior to completing any work.

9. Traffic Control

Access and driveways to private properties shall not be obstructed longer than the minimum time necessary for the work and shall be reinstated as soon as possible all to the satisfaction of the Engineer. The contractor shall schedule any obstruction of existing driveways with the owners at least two full working days in advance. Roads must be kept open to local traffic and all obstructions and diversions of traffic must be approved by the Engineer or Drainage Superintendent and Roads Superintendent at least two (2) full working days in advance.

- a) The Contractor shall supply, erect and maintain all detour signs and special signs necessary for detours to divert traffic from the area under construction as directed by the Road Superintendent or Engineer. All this work shall be at the Contractor's expense.
- b) The Contractor shall be responsible for supplying, erecting and maintaining all signs, supports, barricades, flashers, cones, etc. in the construction area and at the boundaries of the work as part of the above detours, all to the satisfaction of the Engineer or Drainage Superintendent. All this work shall be done by the Contractor at their own expense.
- c) The Contractor shall not be allowed to proceed with construction activities unless proper signage and flagmen are present. Flagging procedures, signage and detours shall conform to the recommendations of Book 7, Temporary Conditions, Ontario Traffic Manual, issued by the Ministry of Transportation. Conformance shall be enforced by the Ministry of Labour Inspector.

10. Access and Working Area

Access to the work site for construction and future maintenance shall be from Windsor Road, Cassidy Road and Ausable Drive and along the length of the drainage works. Access shall generally be restricted to a width of 6 metres.

The working area for the construction and future maintenance of the proposed tile drain shall be restricted to a width of 20m along the length of the drainage works normally centred on the proposed tile drain.

For construction only, the working area shall extend 10m past the banks on both sides at the enclosure, in addition to the above.

The working area for channel improvements and maintenance shall be restricted to a width of 15m from the side the excavation is taking place. The working side shall be at the discretion of the Drainage Superintendent.

11. Removals

The existing culverts and catch basins, where specified, shall be removed in their entirety. The culvert and the concrete rubble shall be disposed offsite at the expense of the Contractor. Suitable backfill shall be stockpiled adjacent to the site for reuse during installation of the proposed culvert or enclosure. Any broken concrete or rip rap (concrete bags) from the existing structures shall be disposed offsite at the expense of the Contractor.

The Contractor shall work around the existing fences and signs if they are able to. If the existing fences and signs are required to be removed, they shall be removed and re-installed in the same location with the existing materials. The Contractor shall take photos before the removal of any fence and after its reinstallation. All work in connection with fences and signs shall be carried out in a careful manner so they are replaced in as good a condition as the existing materials permit.

12. Brushing and Tree Removal

All brush, trees, woody vegetation, stumps etc. shall be removed for a width of 20 metres along the tile drain. They shall be removed in their entirety including stumps.

A mechanical grinder attached to an excavator be used for the removal of brush and trees. Any brush and trees too large to grind shall be close cut. The Contractor shall stockpile the trees and brush in a single pile on the property in which they were removed or dispose of the trees and brush offsite. The Contractor is responsible for the burning of the trees and brush. The Contractor is responsible for obtaining all necessary permits for any disposal sites. Burning of the trees and brush is subject to local bylaws and guidelines of the Ministry of the Environment Conservation and Parks.

Certain trees may be left in place at the direction of the Drainage Superintendent.

13. Expose and Decommission Existing Drain

The existing tile drains shall be exposed and crushed at the discretion of the Drainage Superintendent or Engineer and Contractor in order to adequately determine the proposed alignment. The proposed tile drains shall generally run adjacent the low runs. Between Station 0+281 and 0+696 the drain shall run approximately 15m north of the low run in order to obtain adequate cover. The previous drains were re-routed north of the low run in 1981 in order to obtain adequate cover.

14. Strip and Place Topsoil

The Contractor shall strip the topsoil for a width of 6m normally centered on the proposed drain. For Branch "D" this shall include the removal of the grassed buffer strip on the property with Roll Number 000-040-102 which is approximately 8m wide. The grassed buffer strip shall not be re-installed in this location. The topsoil shall be stockpiled at the edge of the working allowance for the duration of the tile installation. Once the tile is installed, the Contractor shall level the topsoil over the drain to their pre-construction condition and to a condition that is suitable for cultivation.

15. Strip Existing Channel

The existing channel that is being enclosed shall be stripped. The topsoil shall be stockpiled at the edge of the working allowance. Once the channel is filled and graded to allow for an overflow swale the Contractor shall level the topsoil over the swale.

16. Filling in Channel

The Contractor shall fill in the existing open channel between Station 0+281 and 0+336. This shall be completed with any combination of excess tile material, imported material and re-grading adjacent the channel. The method shall be approved by the contract administrator prior to construction.

The material shall be compacted in no larger than 300mm lifts. The Contractor shall ensure that the channel is backfilled in order to allow for an overland flow route under severe storm events. The filled in channel shall be left in a cultivatable state at the discretion of the Engineer or Drainage Superintendent.

17. Installation of Tile

The Contractor shall supply, install, and backfill the specified sizes of tile and pipe to the depths and grades as shown on the drawings.

Concrete tile shall conform to ASTM C412, extra quality. Tile shall have a circular interior and exterior shape.

Where the concrete tile depth is greater than 2.5m the tile shall be 2000D concrete tile and shall be bedded to the spring line with clear stone. The estimated length of 2000D concrete tile required has been shown as a separate item. Clear stone bedding to the spring line shall be included as part of this item.

HDPE shall be CSA Approved smooth wall gasketed pipe with bell and spigot joints (320 kPa) and shall include clear stone bedding to the spring line under gravel driveways and accesses. Under roadways the road crossing specification shall be used.

The tile drain shall generally run up the existing drain and adjacent the low runs. Between Station 0+281 and 0+696 the drain shall run approximately 15m north of the low run in order to obtain adequate cover. The previous drains were re-routed north of the low run in 1981 in order to obtain adequate cover.

The excess material shall be used to fill in the channel. The Contractor shall ensure a minimum cover of 800mm is achieved above the tile in all cases.

The trenching and laying of the concrete tile shall be done by wheel machine. An excavator must be used in areas of soil instability, unless approved by the Engineer. All tile joints shall be wrapped with a minimum 300mm width of Mirafi P150 (or approved equal) filter fabric. The filter fabric shall be overlapped by 450mm at the top of the tile. The tile shall be laid in straight lines or on smooth gradual curves with a minimum radius or 25m.

Where approved by the Engineer (or specified) concrete tile may be laid in tighter curves by saw cutting joints. The maximum deflection of one concrete tile joint shall be 22 degrees. Turns of greater than 22 degrees shall require the use of manufactured bends (PE smooth wall).

Laser control shall be used to ensure proper grades. The grades calculated on the Profile are to the invert of the tile and pipe with allowances to be made by the Contractor for the wall thickness of the tile and pipe. The depths shown and figured are from ground level to the invert of the pipe along the line of the proposed drain. Should an error appear in the figured depth at any station or stations, the grade shall be made to correspond with that shown on the Profile without extra charge.

Wheel Machine

A wheel machine shall be used to excavate the trench to allow for a round bottom. Prior to backfilling, the tile shall be covered manually to a depth of approx. 100mm over the pipe to ensure that the tile and pipe are not displaced by large clumps of earth. The trench shall be backfilled with excavated material free of stones, broken tile or other deleterious material. All stones larger than 100mm in diameter evident immediately after construction shall be picked up by the Contractor and disposed offsite. The Landowners

are responsible for stones after that. The material shall be left windrowed over the trench to allow for settlement.

Excavator

When concrete tile is installed with an excavator, the tile must be installed as per the manufacturer's recommendations **complete with bedding to the spring line**. Prior to backfilling, the tile shall be covered manually to a depth of approx. 100mm over the pipe to ensure that the tile and pipe are not displaced by large clumps of earth. The trench shall be backfilled with excavated material free of stones, broken tile or other deleterious material. All stones larger than 100mm in diameter evident immediately after construction shall be picked up by the Contractor and disposed offsite. The Landowners are responsible for stones after that. The material shall be left windrowed over the trench to allow for settlement.

If the land level must be lowered in order to carry out trenching operations, then it is up to the Contractor to determine if it is necessary and include any extra cost involved. They shall first strip the topsoil to its full depth and stockpile it along one side of the working width and then grade the area to allow the trenching to be carried out. All excavated material shall be windrowed on the side opposite the trench that the topsoil is stockpiled. After trenching and backfilling operations are complete, the topsoil shall be spread to its original depth.

All areas disturbed by construction, except the material windrowed over the trench, shall be left in a condition suitable for cultivation.

The Contractor shall not operate any trenching or backfill equipment, delivery trucks or equipment, pickup trucks or other vehicles along or over the trench during or after construction. The Contractor shall be responsible for any damage caused by any equipment or vehicles operated over the trench. If the Contractor must cross the trench, he will do so in one area.

The Landowners are also warned not to operate farm equipment over the trench or along the length of the trench for 1 year after construction in order to protect the tile.

Future replacements shall conform to these specifications.

18. Catch Basins

Structure	Station	Type (mm)	Inlet Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
CB #3 c/w Berm	0+900	1200x900	237.17	235.38 (W) 400	235.40 (E) 400

Structure	Station	Type (mm)	Inlet Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
CB #4 c/w Berm	2+157	1200x900	238.14	236.69 (W) 300	236.70 (E) 323
CB #5	2+189	1200x900	238.14	237.03 (W) 323	237.05 (E) 300
CB #6 c/w Berm	2+302	1200x900	239.56	238.26 (W) 300	238.28 (E) 300
CB #7	2+315	1200x900	239.73	238.40 (W) 300	238.41 (E) 300

The catch basins shall be square precast concrete structures as noted above and shall have a birdcage type grate. The ditch inlet catch basins (where denoted DICB) shall have a 2:1 sloped top. The direction in the inlet elevation column denotes the direction the low side of the ditch inlet catch basins shall face. The catch basins shall be located with the backside at the property line and at the locations identified on the Plans. The catch basin elevations shall be 50mm above grade. When specified the catch basins shall have a berm constructed on the downstream end. The top of the berm shall be 0.60m above the inlet elevation. The berm shall have a 2:1 front slope and 5:1 back slope with a 1m wide top. The height and back slopes can be increased under the direction of the Drainage Superintendent in order to reduce erosion and facilitate farming. Care shall be taken to ensure this does not negatively impact upstream lands. The berms shall be constructed using excess materials on site. If more material is required it shall be supplied at the expense of the drainage works.

The catch basins shall be made with the top sections separate from the base sections in order to allow riser sections to be installed or removed as necessary (i.e. the base section shall not extend for more than 150mm above the top of the highest opening in the base section). The wall thickness of all structures shall be 115mm and each shall have a 300mm sump. Birdcage grates shall be manufactured with a bar spacing no larger than 50mm.

The catch basins shall be set at the final elevations as directed by the Drainage Superintendent. The catch basins shall be set on a layer of clear stone. The clear stone shall be extended up to the spring line of the inlet and outlet pipe connections.

The tile at the connection to the catch basins shall be concreted on both the inside and outside prior to backfilling. Any pipe or tile shall not protrude more than 50mm inside the wall.

As part of this item the Contractor shall grade the area in the vicinity of the basin to ensure proper drainage. Rip rap shall be installed around the basins. The rip rap shall be 150mmx300mm c/w filter fabric. The area to receive the rip rap shall first be graded to allow the placement of the rip rap to a depth of 400mm below finished grade. After grading, a layer of filter fabric (Mirafi P150 or approved equal) is to be placed with any joints overlapped a minimum of 600mm. Rip rap shall then be placed with the smaller pieces placed in the gaps and voids to give it a uniform appearance

The Drainage Superintendent or Engineer may change a birdcage type grate on a catch basin to a concrete lid or sloped birdcage grate at the request of a Landowner.

19. Junction Boxes

The junction boxes shall be installed to the elevations and in the locations shown on the drawings as follows:

Structure	Station	Type (mm)	Top Elev. (m)	Outlet Pipe Elev. (m)	Inlet Pipe Elev. (m)
JB #1	0+555	1200x900	234.40	233.25 (W) 825	233.29 (E) / 233.35 (S) 525 / 400
JB #2	0+696=2+000	900x600	234.80	233.96 (W) 525	233.97 (E) / 234.19 (N) 400 / 300

The junction boxes shall be square precast concrete structures as noted above with concrete lids.

The junction boxes shall be made with the top sections separate from the base sections in order to allow riser sections to be installed or removed as necessary (i.e. the base section shall not extend for more than 150mm above the top of the highest opening in the base section). The wall thickness of all structures shall be 115mm and each shall have a 300mm sump. The top of junction boxes shall be set a minimum of 600mm below grade to accommodate farm tillage practices.

The junction boxes shall be set on a layer of clear stone. The clear stone shall be extended up to the top of the inlet and outlet pipe connections

The tile at the connection to the junction boxes shall be concreted on both the inside and outside prior to backfilling. Any pipe or tile shall not protrude more than 50mm inside the wall.

The Drainage Superintendent may change a concrete lid on a junction box to a birdcage type grate creating a catch basin at the request of a Landowner.

20. Subsurface Drainage

All existing subsurface drains encountered during construction of the tile drain shall be connected to the proposed tile drain unless otherwise noted on the drawings or as directed by the Drainage Superintendent. The downstream end shall be plugged to the satisfaction of the Drainage Superintendent.

For 100mm and 150mm subsurface drains, the upstream end of the subsurface drain shall be connected to the tile drain at a 45-degree angle. A suitable length of equivalent sized PE agricultural tubing shall be used to connect the drains. Manufactured fittings shall connect the PE tile to the existing drain and to the concrete tile. The connections shall be carefully backfilled to ensure there is adequate support under the pipe and large clumps of clay do not displace the tile. It is recommended that clear stone be used under the connections at the tile drain.

Where an existing subsurface drain needs to cross the existing open channel to tie into the proposed tile the open channel shall be excavated to its hard bottom. Drainage stone shall be used to bed the pipe from the bottom of the channel to the spring line of the tile.

21. Outlet Works

The outlet works for the drain shall consist of 6m of HDPE smooth wall pipe as shown on the profile (320 kPa) with a manufactured rodent rotating grate. It shall be installed at the outlet to the open channel.

Erosion protection made up of rip rap and filter fabric shall be installed on the channel side slope from the bottom of the channel to the top of the bank and for a distance of 1m on either side of the outlet. Rip rap shall be made up of 150mm to 300mm quarry stone or approved equal. The area to receive the rip rap shall first be graded to allow the placement of the rip rap to a depth of 400mm below finished grade. After grading, a layer of filter fabric (Mirafi P150 or approved equal) is to be placed with any joints overlapped a minimum of 600mm. Rip rap shall then be placed with the smaller pieces placed in the gaps and voids to give it a uniform appearance.

22. Windsor Road Crossing

Where High Density Polyethylene Pipe is specified, the Contractor shall supply, install, and backfill the HPDE smooth wall gasketed pipe with bell and spigot joints (320 KPa) or approved equivalent under road crossings.

The bottom of the excavation for the tile shall be excavated to the required depth with any over excavation backfilled with $\frac{3}{4}$ " clear stone material. When the tile has been installed to the proper grade and depth, the excavation shall be backfilled with $\frac{3}{4}$ " clear stone from 100mm below the tile to 300mm above. Care shall be taken to ensure that the backfill on either side of the culvert does not differ by more than 300mm so that the pipe

is not displaced. Within the roadway, and for a distance of 2m either side, the pipe shall be backfilled from 300mm above the tile with Granular "A". Outside of this, excavated material may be used. The top 150mm shall be 100% crushed Granular "A". If asphalt is specified the asphalt shall be HL4 and HL3 at depths to match the existing thickness.

It is the Contractor's responsibility to locate and expose any utilities prior to the installation of any tile. If there is a conflict with the tile elevation the Contractor is required to notify the Engineer. Any permits that are required by the Road Authority are the responsibility of the Contractor.

The ditch shall be graded to ensure the surface water is collected to the catch basins or maintains the pre-construction flow condition.

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

23. Cassidy Road Culvert and Tile Replacement

The Contractor shall supply and install a steel pipe casing by boring and jacking to the depths and grades as shown on the Profile. The steel casing shall have a minimum thickness of 7.9mm. All work shall be completed in accordance with OPSS 416. Cathodic protection is not required.

24. Grout Existing Culvert and Tile Under Cassidy Road

This item is to include filling the existing tile (if applicable) and Culvert under Cassidy Road with grout.

The grout shall contain 25kg of type 10 Portland Cement per cubic metre. Portland cement shall conform to the requirements of CSA CAN3-A5M. The gradation shall conform to Table 1 of CSA Standard. The slump of unshrinkable fill shall be between 150mm and 200mm. The maximum 28 days compression strength shall not exceed 0.40 MPa, as measured in accordance with CAN-A23.2-9C. At no time will water be added to the concrete on site. Concrete which is unworkable or that is too stiff to produce a satisfactory product is to be discarded.

25. Seeding/Restoration

All areas disturbed by construction shall be returned to their pre-construction state. The road right of way and all previously grassed areas (except the grassed buffer strip in the property with Roll Number 000-040-102) where disturbed by construction, shall be topped with 100mm of screened topsoil and hydroseeded following construction in accordance with the seed mixture, fertilizer and application rate as shown below.

Seed mixture, fertilizer and application rates are as follows:

- Canada Wild Rye (*Elymus Canadensis*), Virginia Wild Rye (*Elymus virginicus*), or Indian grass (*Sorghastrum nutans*)
- Fertilizer (300 kg/ha.) consisting of 8-32-16.
- Hydraulic mulch (2,999 kg/ha.) type “B” and water (52,700 litres/ha.) in accordance with OPSS 572 (hydroseed).

The above seed mixture shall apply unless otherwise approved by the Drainage Superintendent or Engineer.

26. Environmental Considerations

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

- Operate machinery in a manner that minimizes disturbance to the banks of the watercourse.
- Erosion and sediment control measures must be installed prior to construction to prevent sediment from entering the water body.
- Material shall not be in areas regulated by the Conservation Authority or Ministry of Natural Resources.
- All granular and erosion control materials shall be stockpiled a minimum of 3.0m from the top of the bank or excavation. Material shall not be placed in surface water runs or open inlets that enter the channel.
- All activities, including maintenance procedures, shall be controlled to prevent the entry of petroleum products, debris, rubble, concrete, or other deleterious substances into the water. Vehicle and equipment refuelling and maintenance shall be conducted away from the channel, any surface water runs, or open inlets. All waste materials shall be stockpiled well back from the top of the bank and all surface water runs and open inlets that enter the drain.
- When possible, all construction within the open channel shall be carried out during periods of low flow or in dry conditions.
- The Contractor shall conduct regular inspections and maintain erosion and sediment control measures and structures during the course of construction.
- The Contractor shall repair erosion and sediment control measures and structures if damage occurs.
- The Contractor shall remove non-biodegradable erosion and sediment control materials once site is stabilized.
- Remove all construction materials from site upon project completion.

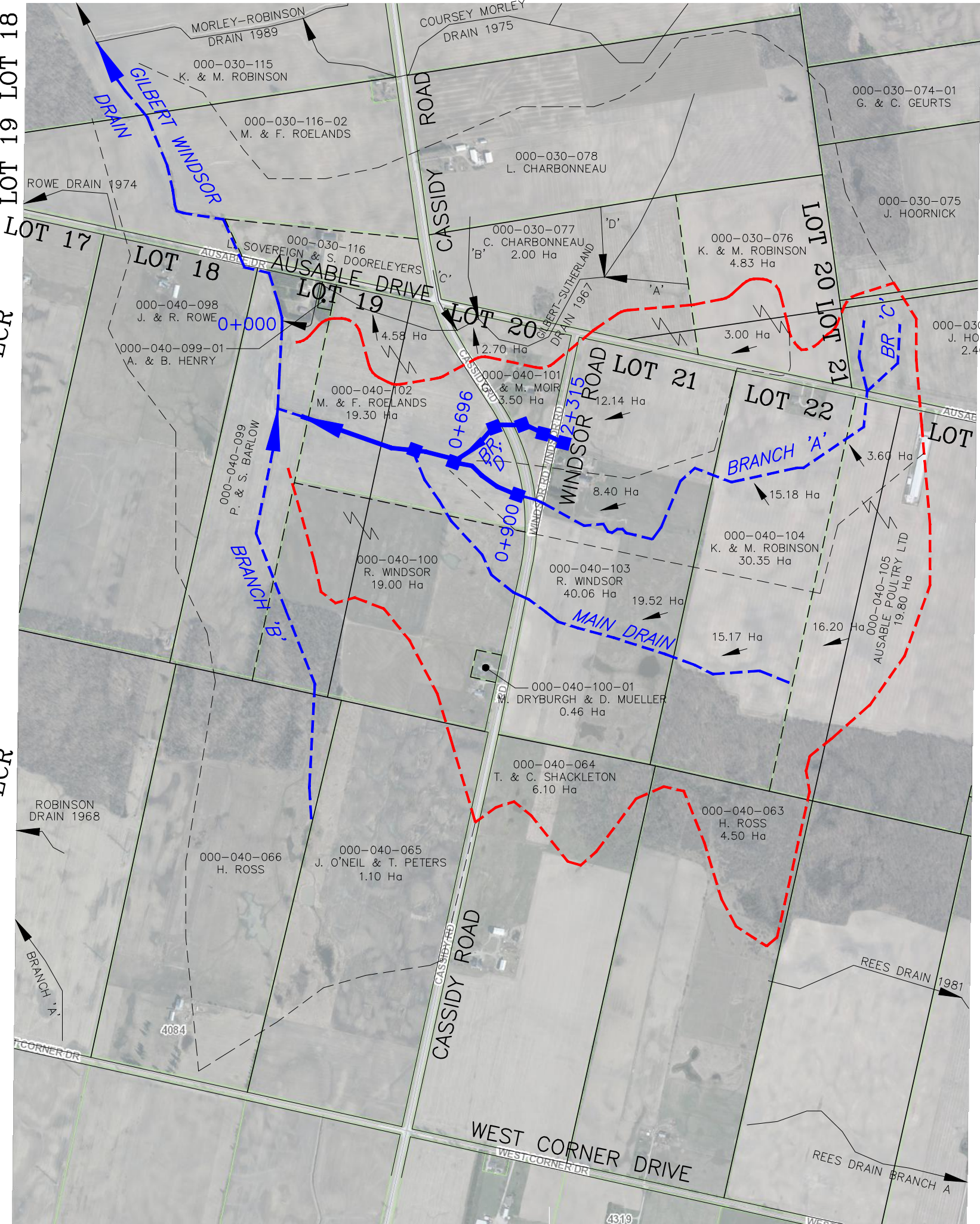
A Light duty silt fencing shall be installed down-gradient of the work for the duration of construction.

The light duty silt fencing shall be supplied and installed in accordance with OPSS 577 and OPSD 219.110. The light duty silt fencing shall be removed once the disturbed area has been re-vegetated.

CONC. 13

CONC. 12





CONC. 11

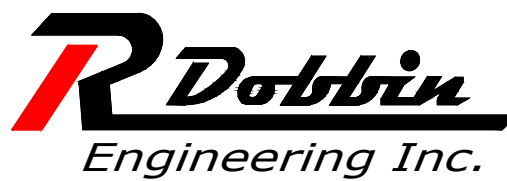
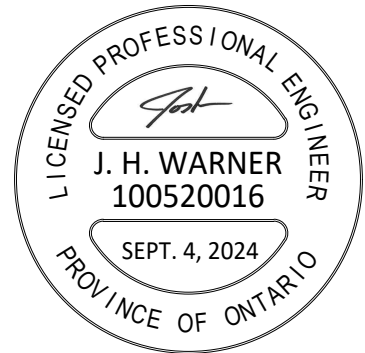


CONC. 8 ECR

CONC. 7 ECR

LEGEND

-  DRAINAGE AREA
-  GILBERT-WINDSOR DRAIN
-  MUNICIPAL DRAIN
-  EXISTING CULVERT

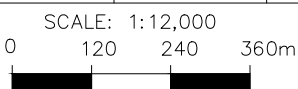


4218 Oil Heritage Road
 Petrolia Ontario, N0N 1R0
 Phone: (519) 882-0032 Fax: (519) 882-2233

DRAWING NAME:
 Gilbert-Windsor Drain Plan

PROJECT No.
 2023-1566

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 4, 2024	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				



MUNICIPALITY of NORTH MIDDLESEX
GILBERT - WINDSOR DRAIN
PLAN

1
OF 5



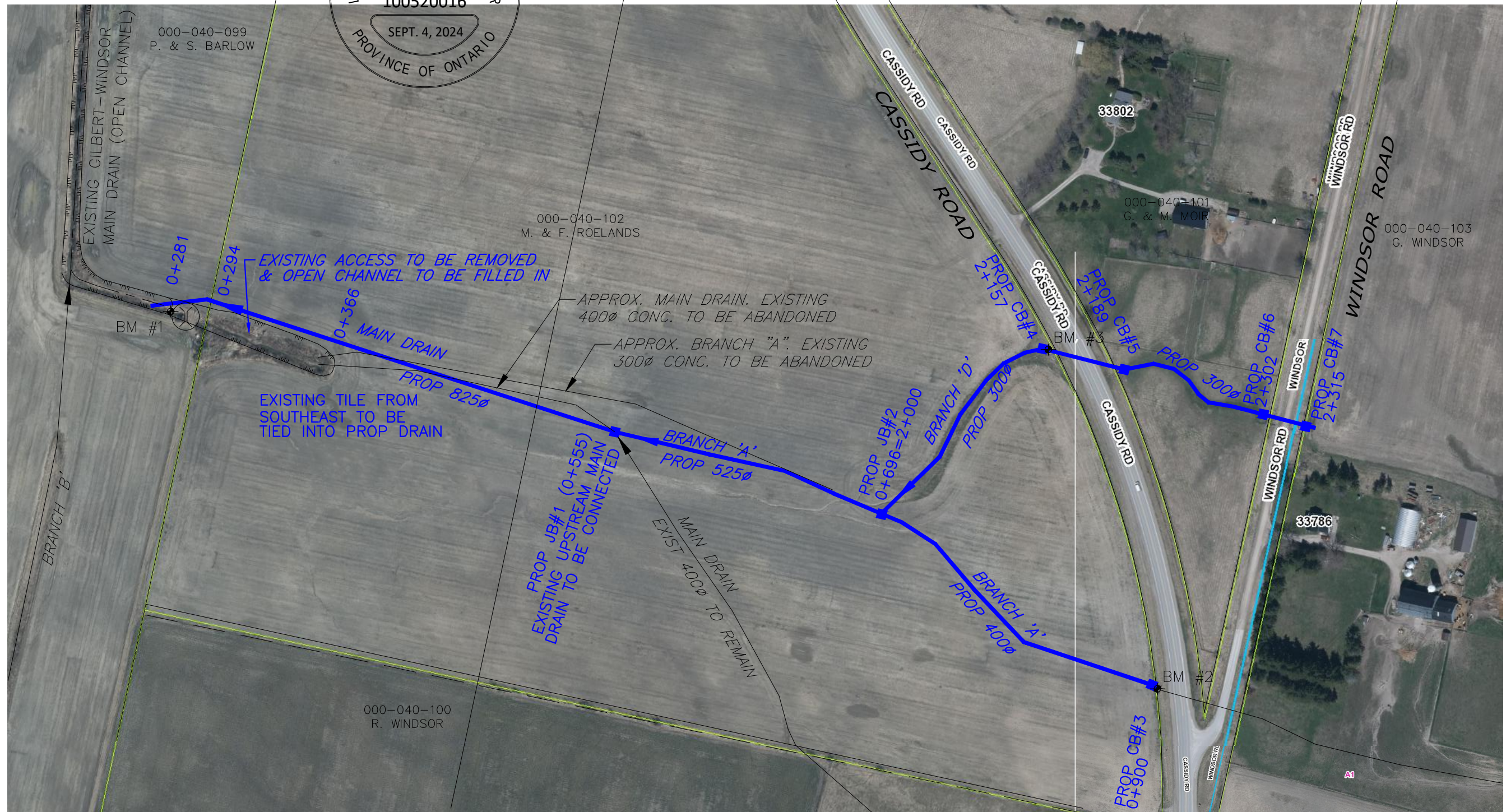
LOT 19

LOT 20

LOT 21

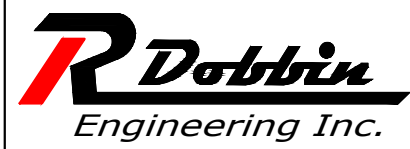


CONC 8 EAST OF CENTRE ROAD



LEGEND

EXISTING CULVERT TO BE REMOVED



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

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 4, 2024	CS
B. VAN RUITENBURG				
DRAWN	SCALE: 1:2500			
C. SAUNDERS	0 33 66 100m			

MUNICIPALITY of NORTH MIDDLESEX
GILBERT - WINDSOR DRAIN
DETAIL PLAN

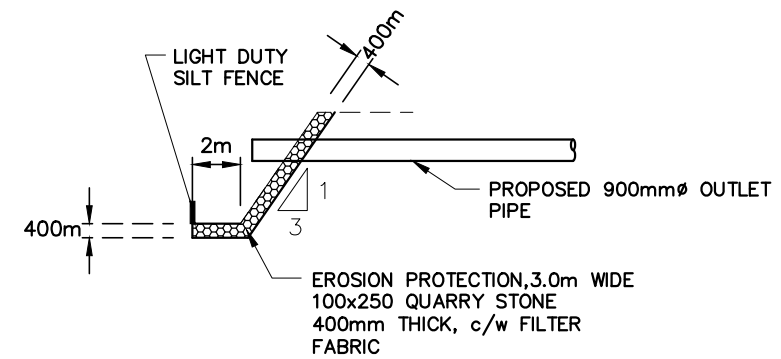
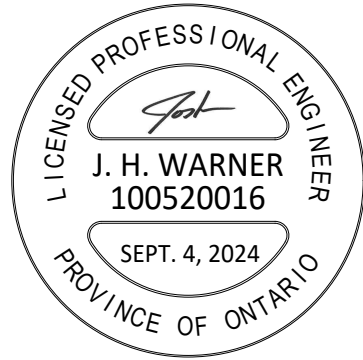
2
OF 5

DRAWING NAME: Gilbert - Windsor Drain Detail Plan
PROJECT No. 2023-1566

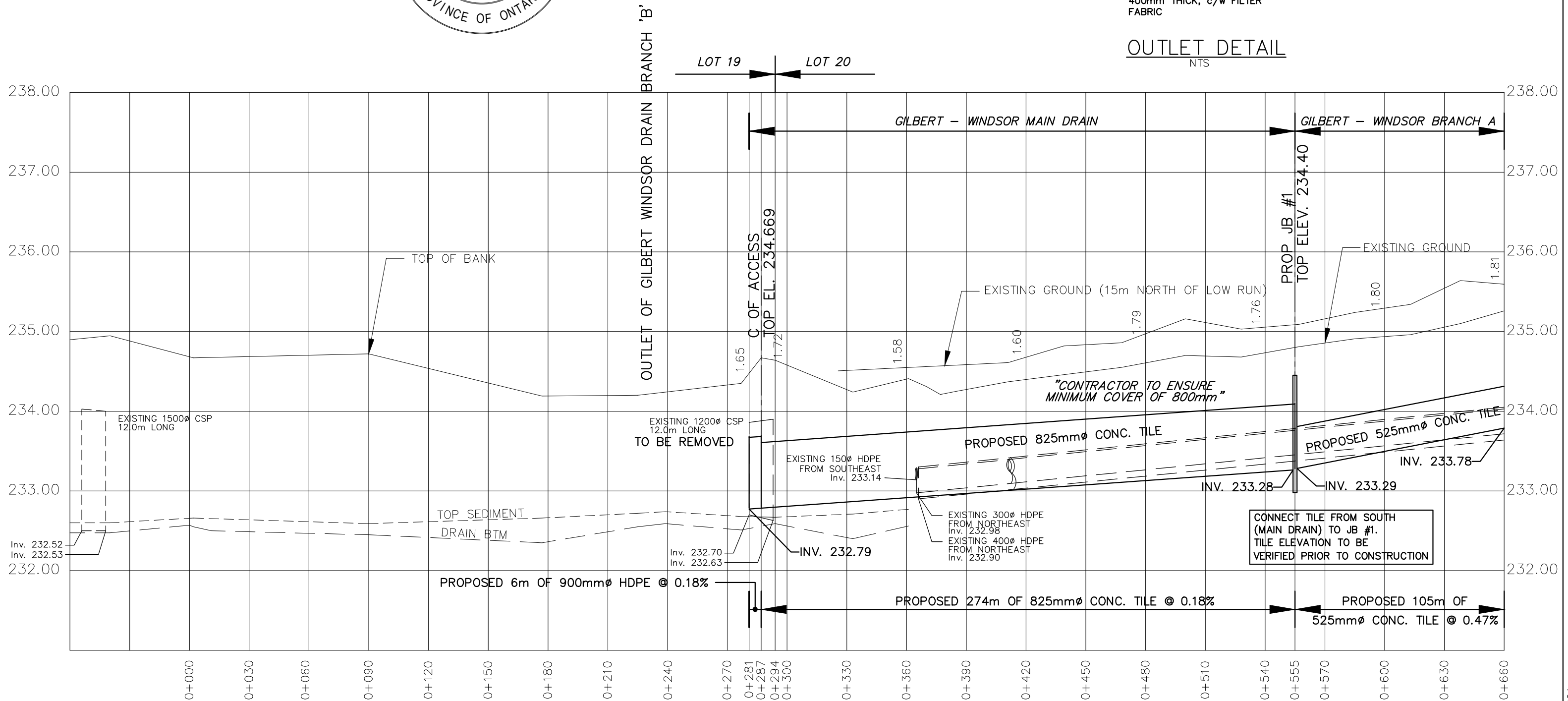
Last Updated: July 11, 2024

GENERAL NOTES

- BENCHMARK No.1 ELEV. 233.86
TOP OF WEST END OF EXISTING 1200 ϕ CSP
AT ACCESS CROSSING ST. 0+287
- UPPER NUMBERS ARE DEPTH FROM
GROUND TO INVERT OF CONCRETE TILE.



OUTLET DETAIL
NTS



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

DRAWING NAME:
Gilbert - Windsor Drain Profile 1

PROJECT No.
2023-1566

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 4, 2024	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

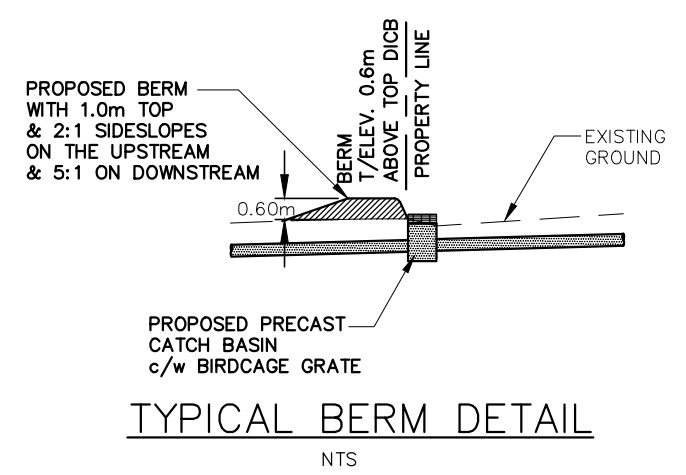
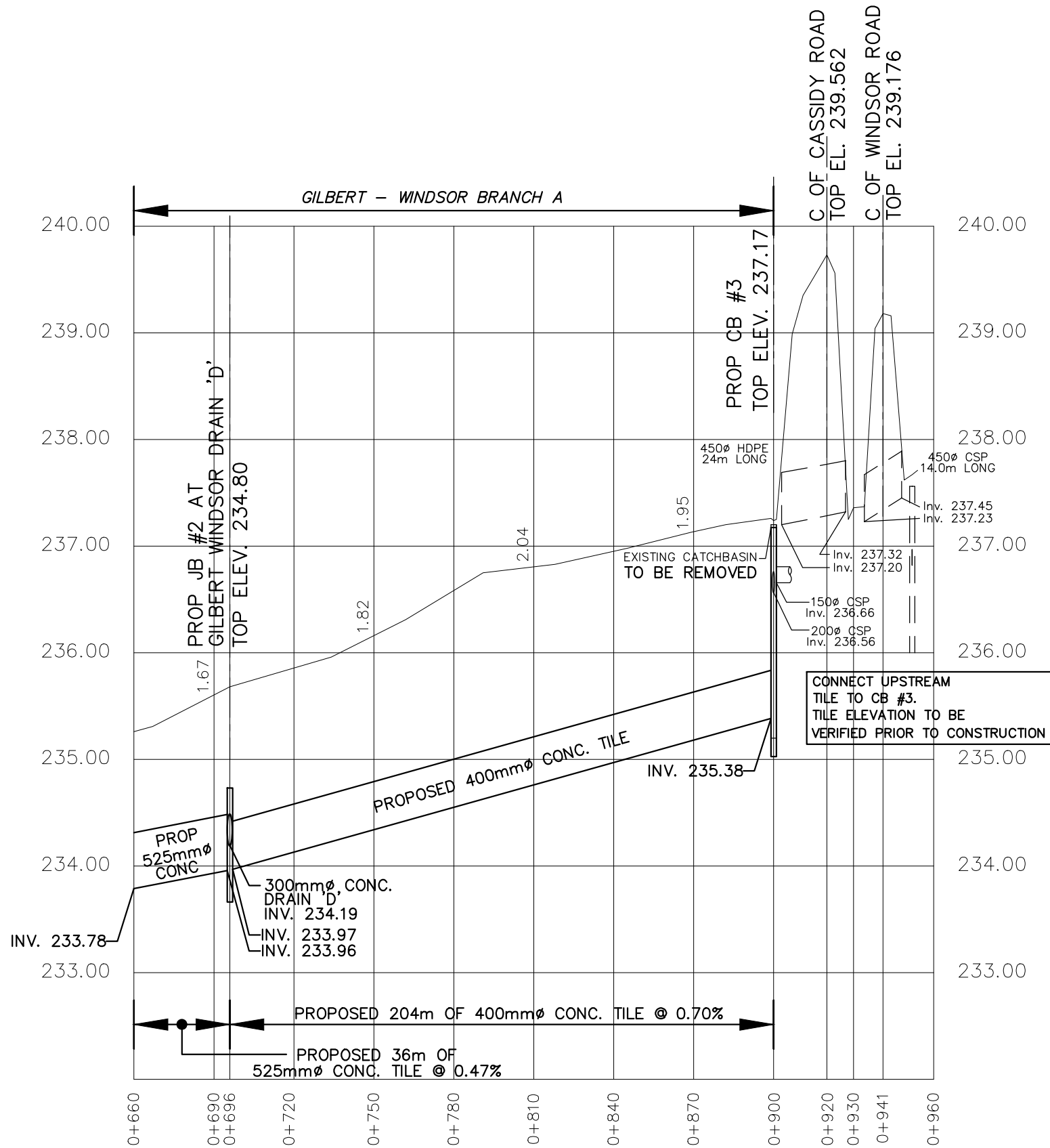
SCALE: 1:2,000
0 20 40 60m

MUNICIPALITY of NORTH MIDDLESEX
GILBERT - WINDSOR DRAIN - MAIN DRAIN & BRANCH A
PROFILE

Last Updated: July 11, 2024

GENERAL NOTES

- BENCHMARK No.2 ELEV. 237.69
TOP OF WEST END OF EXISTING 450Ø HDPE CROSSING CASSIDY ROAD AT ST. 0+920
- UPPER NUMBERS ARE DEPTH FROM GROUND TO INVERT OF CONCRETE TILE.



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

DRAWING NAME:
Gilbert - Windsor Drain Profile 2

PROJECT No.
2023-1566

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 4, 2024	CS
B. VAN RUITENBURG				
DRAWN				
C. SAUNDERS				

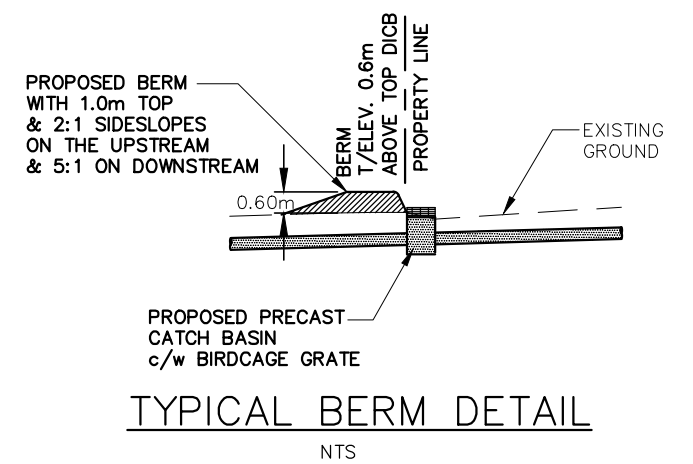
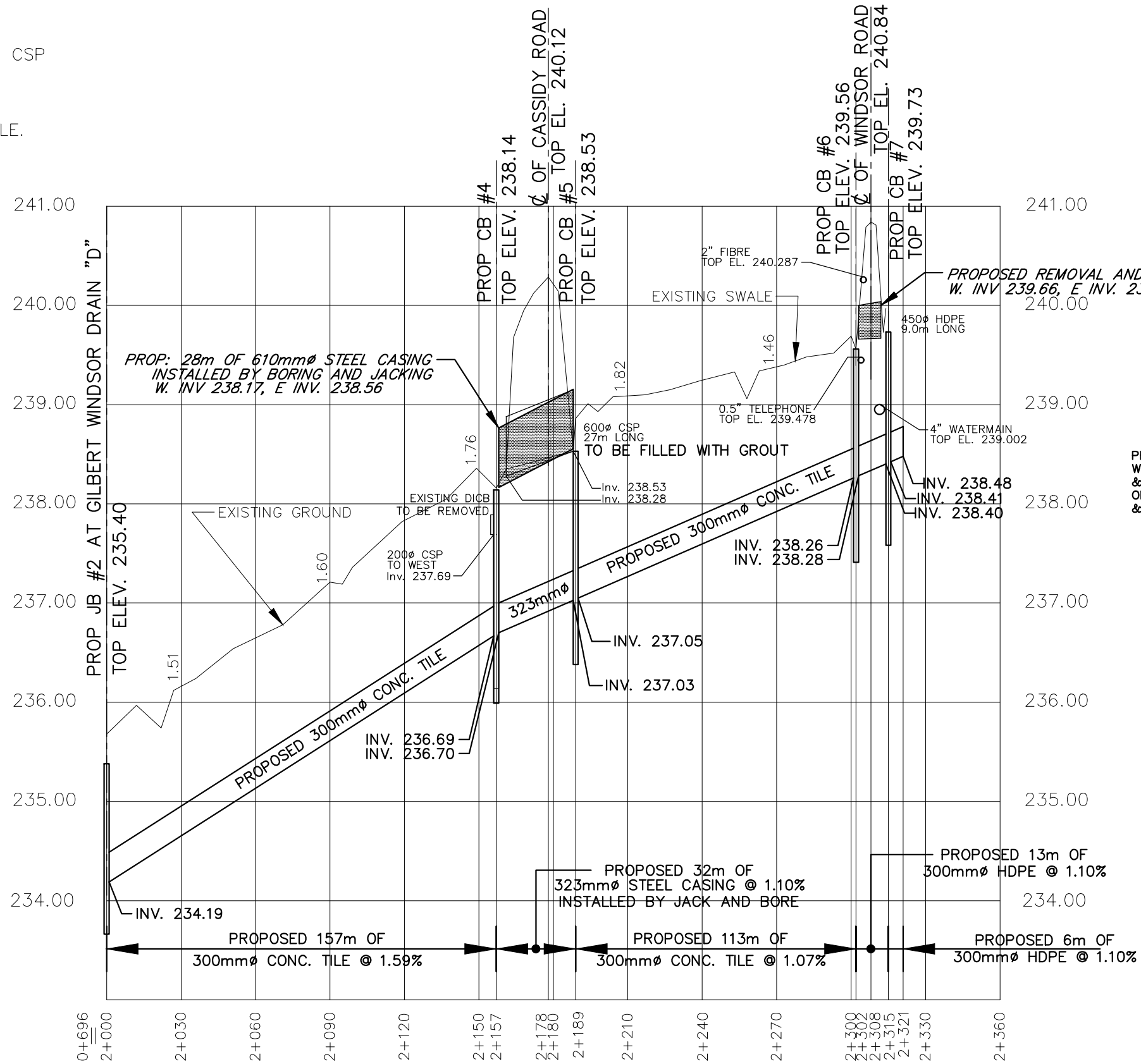
SCALE: 1:2,000
0 20 40 60m

MUNICIPALITY of NORTH MIDDLESEX
GILBERT - WINDSOR DRAIN - BRANCH A
PROFILE

4
OF 5

GENERAL NOTES

- BENCHMARK No.3 ELEV. 238.88
TOP OF WEST END OF EXISTING 600 ϕ CSP
AT STATION 0+159 ON BRANCH "D"
- UPPER NUMBERS ARE DEPTH FROM
GROUND TO INVERT OF CONCRETE TILE.



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

DRAWING NAME:
Gilbert - Windsor Drain Profile 3

PROJECT No.
2023-1566

APPROVED	NO.	REVISIONS	DATE	BY
J. WARNER				
CHECKED	1	FINAL REPORT	SEPT. 4, 2024	CS
B. VAN RUITENBURG				
DRAWN	SCALE: 1:2,000			
C. SAUNDERS	0 20 40 60m			

MUNICIPALITY of NORTH MIDDLESEX GILBERT - WINDSOR DRAIN - BRANCH "D" PROFILE

5
OF 5