Town of Tecumseh

Malden Road Drain East (Upper Portion)

Draft Report

File No. 24-8320

6 November 2026

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Submitted by
Dillon Consulting Limited

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Corporation of the Town of Tecumseh

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Drainage Report for the
MALDEN ROAD DRAIN EAST (UPPER PORTION)
Town of Tecumseh

Mayor and Council:

Instructions

The Municipality received a request from the landowner of property Roll No. 400-02400 for a new access culvert over the Malden Road Drain East dated 23 July 2019. Council accepted the request under Section 78 of the Drainage Act and on 17 November 2023 appointed Dillon Consulting Limited to prepare a report. While the original Section 78 request was only for a new bridge, Council has directed us through the appointment to investigate the repair and improvement of the entire drain. The owner of property Roll No. 400-02400 later notified the Town that he no longer required a new bridge crossing.

Our appointment for the Malden Road Drain East has been separated into two reports. This report is for the upper portion of drain which we defined as upstream of the bridge serving Mun. No. 6112 and is intended to provide relief to drainage and flooding concerns resulting from the drain's poor drain condition. A subsequent report for the lower portion of the drain downstream to its outlet into Pike Creek Drain shall be submitted to address mostly access culvert related works.

Watershed Description

The Malden Road Drain East consists of an open channel with a length of 1,930 metres and a watershed area of approximately 556 hectares (1,374 acres). The lands comprising the watershed are a mix of residential and agricultural lands under intense agricultural production with cash crops. There is little topographic relief. The soils are predominantly Brookston Clay. Most of the agricultural land parcels are systematically tiled.

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On-Site Meeting

We conducted an on-site meeting on 18 June 2024. A record of the meeting is provided in Schedule 'A-1', which is appended hereto.

We conducted a second on-site meeting on 8 October 2025. A record is provided in 'A-2', which is also appended hetero.

Survey

Our survey and examination of the Malden Road Drain East was carried out in November 2025. The survey comprised the recording of topographic data and examining the channel for available depth necessary to provide sufficient drainage. We commenced the survey at the outlet of the drain to Pike Creek Drain. We then proceeded upstream along the east limit of Malden Road to its head just north of South Talbot Road.

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 150 mm to 400 mm (6 to 16 inches) above the design bottom in the 1980 engineer's report upstream of County Road No. 34, most notably upstream of the ERCA lands (former railway).

Drain History

The recent history of Engineers' reports for the Malden Road Drain East follows:

- **15 October 1980 by C.G.R. Armstrong, P.Eng.:** The recommended work included the repair and improvement of several drains. The Malden Road Drain East, South Talbot Road Drain East, South Talbot Road Drain West, 12th Line Drain and the Croft Drain were all found to require brushing and cleanout.
- **17 July 1969 by C.G.R. Armstrong, P.Eng.:** The recommended work included the diversion of both the Malden Road Drain East and Malden Road Drain West across the new King's Highway No. 3 right-of-way.
- **8 March 1944 by C.G.R. Armstrong, P.Eng.:** The report recommended the repair and improvement including cleaning and deepening of the Malden Road Drain West, Malden Road Drain East and South Talbot Road Drain West.

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Design Considerations

A Guide for Engineers working under the Drainage Act in Ontario, OMAFA Publication 852 (2018) is the current reference document used by engineers carrying out work on municipal drains under the Act. The 2-year design storm is the recommended design standard applied to municipal drains within rural Ontario specific to open drain channels and low hazard agricultural field access crossings. Similarly, the 5-year design storm is the recommended design standard applied to residential crossings. We have applied these criteria for the Malden Road Drain East.

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 and flooding for short periods of time.

Allowances

In accordance with Sections 29 of the Drainage Act, we have made a determination of the amount to be paid for damages to the lands and for land used 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 the surrounding area used to calculate the value of land taken is $59,300.00 per hectare ($24,000 per acre).

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 $4,448 per hectare ($1,800 per acre). Schedule 'B' shows the distribution of these allowances.

Existing Conditions and Recommendations

The last report for repair and improvement of the drain was completed in 1980. The drain will require a bottom cleanout to align with the 1980 profile with minor adjustments as shown on the profile attached. Drain spoils are recommended to be cast over agricultural lands as specified in the specifications attached herein. Spoils excavated from the drain fronting non-agricultural lands are to be trucked to adjacent agricultural lands for spreading. Generally, the drain banks are reasonably well grassed. However, our examination found areas where the roadside banks show signs of slumping.

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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 Malden Road Drain East be repaired and improved by cleaning the entire drain complete with bridge replacements.

All of the access bridges were inspected during the course of our investigation. Our assessment of the upper portion of drain identified two bridges requiring replacement. Other bridges consisted of new CSP structures or concrete structures in serviceable condition where we do not expect replacement sooner than 10 years.

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. 9: Station 0+660 Essex Region Conservation Authority (Roll No. 590-01000)

Twin 17.0 m long, 1500 mm diameter steel boiler pipes provide access across the drain for this property. Twin culverts were shown at this location on the profile in the 1980 report. While this culvert aligns with the drain design bottom shown in the 1980's report, the culvert has shown to be an impediment to flow, causing sediment build up upstream.

We recommend the culvert be replaced with a new 25.0 m long, 2400 mm diameter aluminized corrugated steel pipe complete with sloping stone end walls with a 6.1 m granular top width with an additional 7.0 m of enclosure necessary to accommodate existing CN Railway owned utilities passing over the bridge.

Bridge No. 10: Station 0+971 Veronika A. & John K. Mogyorody (Roll No. 400-02900)

A 5.4 m long, 2700 mm x 2000 mm corrugated steel pipe arch provides access across the drain for this property. A culvert was shown at this location on the profile in the 1980 report. This culvert is deficient in top width, cover, lacks end protection and has reached the end of its serviceable life.

We recommend the culvert be replaced with a new 22.0 m long, 2800 mm x 1950 mm aluminized corrugated steel pipe arch with sloping stone end walls with a 12.1 m granular driveable top width.

Bridge No. 11: Station 1+066 King's Highway No. 3

A 52 m long, 3.7 m span x 2.1 m rise concrete box culvert provides access across the drain for the highway. A culvert was shown at this location on the profile in the 1980 report.

We recommend this culvert be cleaned.

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Bridge No. 12: Station 1+185 Roberta A. & Daniela B. Schuck (Roll No. 400-02500)

A 7.5 m long, 2.4 m open span concrete culvert provides access across the drain for this property. The origin of this culvert is unknown. We find this culvert has sufficient capacity and recommend it be cleaned and incorporated as part of the drainage works.

Bridge No. 13: Station 1+400 Robert S. & Colleen J. Kennedy (Roll No. 400-02450)

A 6.6 m long, 3000 mm x 2000 mm corrugated steel pipe arch provides access across the drain for this property. The origin of this culvert is unknown. We find this culvert has sufficient capacity and recommend it be cleaned and incorporated as part of the drainage works.

Bridge No. 14: Station 1+454 658727 Ontario Inc. (Roll No. 400-02400)

A 4.9 m long, 2.7 m open span concrete culvert provides access across the drain for this property. The origin of this culvert is unknown. We find this culvert has sufficient capacity and recommend it be cleaned and incorporated as part of the drainage works.

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 Malden Road Drain East be repaired and improved as described below:

Item	Description	Amount
	OPEN DRAIN WORK	
1.	Brushing of the drain from Station 0+594 to Station 1+886 including the disposal by burning on-site or removal off-site with trimming and/or removal of existing trees as required to accommodate the drainage works	$13,500.00
2.	Excavation, levelling and trucking of excavated materials works, as follows:	
	a) Excavation of the drain bottom only, as follows:	
	i. Station 0+594 to Station 1+886, totalling approximately 1,292 lineal metres of drain and approximately 1,200 m^3 of material. **The Contractor shall be responsible for seeding of disturbed drain banks as part of the works.**	$32,000.00

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Item	Description	Amount
	b) Levelling of excavated materials, as follows:	
	i. At all agricultural properties, totalling approximately 1,200 m^3 of material.	$6,000.00
	c) Trucking of excavated materials at all non-agricultural properties and grassed lawns to adjacent agricultural properties for spreading, as follows:	
	i. Station 0+594 to Station 0+646, totalling approximately 20 m^3 of material.	$600.00
	ii. Station 1+110 to Station 1+215, totalling approximately 80 m^3 of material.	$2,400.00
	iii. Station 1+363 to Station 1+427, totalling approximately 65 m^3 of material.	$1,950.00
	iv. Station 1+427 to Station 1+524, totalling approximately 150 m^3 of material.	$4,500.00
	v. Station 1+842 to Station 1+886, totalling approximately 40 m^3 of material.	$1,200.00
3.	Seeding of grass buffer strips, as follows:	
	a) Seeding of 1.0 m wide grass buffer strip beyond the east top of bank from Station 0+677 to Station 1+030.	$1,500.00
	b) Seeding of 1.0 m wide grass buffer strip beyond the east top of bank from Station 1+220 to Station 1+362.	$600.00
	c) Seeding of 1.0 m wide grass buffer strip beyond the east top of bank from Station 1+524 to Station 1+840.	$1,300.00
4.	Private access bridge cleaning works, as follows:	
	a) Bridge No. 12 - Station 1+185 (Roll No. 400-02500) - 7.5 m long, 2.4 m open span concrete culvert.	$2,000.00
	b) Bridge No. 13 - Station 1+400 (Roll No. 400-02450) - 6.6 m long, 3000 x 2000 mm CSPA.	$2,000.00
	c) Bridge No. 14 - Station 1+454 (Roll No. 400-02400) – 4.9 m long, 2.7 m open span concrete culvert.	$2,000.00

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Item	Description	Amount
5.	Private access bridge replacement works, as follows:	
	a) Bridge No. 9 - Station 0+660 (Roll No. 590-01000 -ERCA Trail) (driveway portion) – Removal and disposal of existing twin, 17 m long 1500 mm diameter steel culverts, existing end walls and backfill off-site that are not suitable for native backfill. Supply and installation of a new 18 m long, 2400 mm diameter aluminized corrugated steel pipe (CSP), Clearstone bedding, Granular 'B', clean native or imported native material backfill, Granular 'A' driveway surface materials with 0.5 m wide native buffer strips, sloping stone endwalls. Work includes realigning two existing swales as necessary to accommodate drainage works complete with stone erosion protection with filter fabric underlay in addition to fine grading, placement of topsoil and seeding of disturbed areas.	$81,700.00
	b) Bridge No. 10 - Station 0+971 (Roll No. 400-02900) – Removal and disposal of existing 5.4 m long, 2700 x 2000 mm CSPA, existing end walls and backfill off-site that are not suitable for native backfill. Supply and installation of a new 22.0 m long, 2800 mm x 1950 mm aluminized corrugated steel pipe arch (CSPA), Clearstone bedding, Granular 'B', clean native or imported native material backfill, Granular 'A' driveway surface materials with 0.5 m wide native buffer strips, sloping stone endwalls with filter fabric underlay. Work to include fine grading, placement of topsoil and seeding of disturbed areas.	$79,000.00
6.	Stone Erosion protection works as follows:	
	a) (Roll No. 400-02901) - Station 0+611 – Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 300 mm diameter corrugated steel pipe (CSP) on east drain bank.	$750.00
	b) Station 1+215 – (Donovan Drain) - Supply and install 25 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay on drain banks at outlet.	$3,750.00

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Item	Description	Amount
	c) (Roll Nos. 400-02400 & 400-02450) – Station 1+360 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 375 mm diameter HDPE pipe on east drain bank.	$750.00
	d) (Roll No. 400-02450) – Station 1+395 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 300 mm diameter steel pipe on east drain bank.	$750.00
	e) (Roll No. 400-02450) – Station 1+426 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 200 mm diameter steel pipe on east drain bank.	$750.00
7.	Temporary Silt Control Measures During Construction	$2,000.00
8.	Contingency	$30,000.00
	SUB-TOTAL – EXCLUDING SECTION 26 COSTS	**$271,000.00**
9.	Allowances under Sections 29 and 30	$8,400.00
10.	Survey, Report, Assessment and Final Inspection	$54,500.00
11.	Expenses and incidentals	$1,000.00
12.	Contract administration, onsite services, tendering and periodic inspection.	$18,000.00
13.	ERCA application review and permit fee	$800.00
	TOTAL – EXCLUDING SECTION 26 COSTS	**$353,700.00**
	SECTION 26 NON PRO-RATEABLE COSTS	
14.	Bridge replacement works, as follows:	
	a) Bridge No. 9 – Station 0+660 (ERCA Trail) (Enclosure portion) – Supply and installation of a new 7 m long, 2400 mm diameter aluminized corrugated steel pipe (CSP). Clearstone bedding, Granular 'B' backfill, clean native or imported native material	$22,100.00

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Item	Description	Amount
	backfill. Work includes fine grading, placement of topsoil and seeding of disturbed areas.	
15.	Road Bridge cleaning works, as follows:	
	a) Bridge No. 11 – King's Highway No. 3 - Station 1+066 – Clean existing 3.7 m span x 2.1 m rise concrete box road culvert, 52 m long including trucking of excavated materials/spoils off-site. Work includes coordination and acquiring approvals from MTO.	$42,000.00
16.	**Provisional:** Supply and installation of stone erosion protection (minimum 300 mm thickness) including filter fabric underlay (approximately 200 m^2) on roadside drain banks (various locations along Malden Road) as necessary. Work includes drain bank repair to restore drain side slope in accordance with Drawings. Roadside drain bank repair locations shall be identified during construction and must be approved in writing by the Drainage Superintendent prior to work proceeding.	$40,000.00
17.	Utility work(s), as follows:	
	a) Co-ordination with Enbridge Gas Inc. to facilitate locates of any existing underground pipelines. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).	$500.00
	b) Co-ordination with Bell Canada to facilitate locates of any existing underground lines. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).	$500.00
	c) Co-ordination with CN Railway to facilitate locates of any existing underground utilities crossing Bridge No. 9. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).	$4,000.00
	d) Co-ordination with Town of Tecumseh to facilitate locates of any existing underground water utilities. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).	$500.00

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Item	Description	Amount
17.	Traffic Control per OTM Book 7	$5,000.00
	SUB-TOTAL – SECTION 26 NON PRO-RATEABLE COSTS	**$114,600.00**
18.	Engineering cost portion	$24,500.00
19.	Contract administration, onsite services, tendering and periodic inspection.	$5,000.00
	TOTAL – SECTION 26 NON PRO-RATEABLE COSTS	**$144,100.00**
	TOTAL ESTIMATE – MALDEN ROAD DRAIN EAST	**$497,800.00**

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

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.

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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 repair and improvement of the upper portion of the Malden Road Drain East against the lands and roads listed in Schedule 'C' under "Benefit" and "Outlet Liability."

The above estimated costs have been assessed 40% as a "Benefit" assessment and 60% as an "Outlet Liability" assessment against all upstream lands and roads within the drainage area.

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

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. Tile repairs shall be assessed 100% to the Road Authority if the failure is on the west side of the drain along Malden Road.

2 Bank failure repairs caused by surface water inlets shall be assessed 100% to the abutting landowner if the failure is on the east side of the drain and 100% to the Road Authority if the failure is on the west side of the drain along Malden Road.

3 Costs associated with trucking of material abutting non-agricultural properties where the material would have otherwise been spread have been assessed 100% against the abutting property where the material originated from as a non-proratable assessment.

4 Costs associated with traffic control along Malden Road have been assessed 100% against the Town of Tecumseh Road Authority as a Section 26 non-proratable assessment.

5 Costs associated with coordinating with public utilities for locates and relocation (if necessary) are assessed 100% to the respective utility.

Assessment Rationale for Special Benefit Assessment (Bridges)

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

1 Private access bridge replacement costs for Bridge No. 9 (driveway portion) have been assessed 100% against the abutting property being for the trail owned by the Essex Region Conservation Authority. Costs associated with the enclosure portion for the purposes of protecting existing CN Railway owned utilities have been assessed 100% against CN Railway as a Section 26 non-proratable assessment.

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2 Private access bridge replacement costs for Bridge No. 10 have been assessed 40% against the abutting property and the remaining 60% assessed as an Outlet assessment against the upstream lands and roads within the watershed.

3 Private access bridge cleaning costs for bridge Nos. 12, 13 and 14 have been assessed 40% against the abutting property and the remaining 60% as an Outlet assessment against the upstream lands and roads with the watershed.

4 Road Bridge cleaning costs for Bridge No. 11 (Station 1+066-King's Highway No. 3) have been assessed 100% against the Ministry of Transportation under Section 26 of the Drainage Act and shall be a non-proratable assessment.

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)

We recommend that all future work of repair and/or maintenance on the upper portion of the Malden Road Drain East be carried out by the Town of Tecumseh and assessed against the affected lands and roads as per Schedule 'E-1', and in the same relative proportions subject, of course, to any variations that me be made under the authority of the Drainage Act. The assessments are based on an arbitrary amount of $50,000.00.

1 For future tile main outlet repairs including stone erosion protection as required, at the location of the said main tile outlets, the Drainage Superintendent may direct the contractor to make these repairs at the expense of the abutting landowner. Tile repairs shall be assessed 100% to the Road Authority if the failure is on the west side of the drain along Malden Road.

2 Future bank failure repairs caused by surface water inlets shall be assessed 100% to the abutting landowner if the failure is on the east side of the drain and 100% to the Road Authority if the failure is on the west side of the drain along Malden Road.

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Future Maintenance (Private Access Bridges)

We recommend that future work of repair and maintenance of the upper portion of the Malden Road Drain East 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. 9 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.

Specifically for Bridge Nos. 12, 13 and 14, cost sharing is applicable for cleaning costs and not replacement costs. Replacement of these bridges will require additional investigation and appointment under the provisions of the Drainage Act.

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

Bridge No.	Type	Owner(s)	Special Benefit	Outlet
9	Primary	Roll No. 590-01000 (Essex Region Conservation Authority)	100%	0%
9	Enclosure (7 m)	CN Railway Section 26	100%	0%
10	Primary	Roll No. 400-02900	40%	60%
11	Road	Ministry of Transportation Section 26	100%	0%
12	Primary	Roll No. 400-02500	40%	60%
13	Primary	Roll No. 400-02450	40%	60%
14	Primary	Roll No. 400-02400	40%	60%

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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 6 –Watershed Plan

Page 2 of 6 – Profile

Page 3 of 6 – Cross Sections & Design Table

Page 4 of 6 – Bridge No. 9 Details

Page 5 of 6 – Bridge No. 10 Details

Page 6 of 6 – Miscellaneous Details

Approvals

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

In terms of a review of the proposed works by the Department of Fisheries and Oceans (DFO), we have undertaken a self-assessment and have determined that application requesting review is not required provided works proceed in accordance with DFO's interim code of practice. The Malden Road Drain East had been classified as a 'Type F' drain by DFO. 'Type F' drains experience intermittent water flow only and provide minimal habitat for fish.

As part of the work, the following mitigation measures shall be implemented to avoid any adverse effects to the waterway:

- Works will not be conducted at times when flows are elevated due to the local rain events, storms, or seasonal floods. Work will be done in the dry.
- All distributed soils on both banks and within the channel, including spoil must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works.

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- To prevent sediment entry into the drain, in the event of an unexpected rainfall, slit barriers and/or traps must be placed in the channel during the works and until the site had been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and his/her contractors to ensure that sediment and erosion control measures are functioning and are maintained/upgraded as required.
- All activities should be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water. Vehicular refueling and maintenance should be conducted away from the water.

The Malden Road Drain East may provide habitat to species at risk listed under the Species Conservation Act.

The Town of Tecumseh had developed a mitigation plan document recommending mitigation measures to minimize adverse effects on species at risk including monitoring and reporting requirements should endangered, threatened, or special concern species (fishes, reptiles, amphibians, mollusks, birds, plants, trees) be encountered. The document will be made available to contractors during the tendering process and construction period.

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. 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.

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Respectfully submitted,

DILLON CONSULTING LIMITED

Oliver E. T. Moir, P.Eng.

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Schedule A

Record of Site Meeting

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Meeting Summary

Subject: Malden Road East Drain – On-Site Meeting

Date: June 18, 2024

Location: 12016 County Road No. 34

Our File: 24-8320

Attendees

Ross Coupe	Landowner	Filippo Chirappa	Landowner
Brian Hyland	Landowner	Nick Spidalieri	Landowner
Peter Steeves	Landowner	Julie Didomenico	Landowner
Wayne & Lori Farough	Landowner	Mary Ondic	Landowner
Dwight Farough	Landowner	Rob Schuck	Landowner
Robert Flood	Landowner	Ron Lemmon	Landowner
Rick Chapman	Landowner	Tim Hebert	Landowner
Charles Farough	Landowner	Jim McGuire	Landowner
A. Raith	Landowner	Christine Zahara	Landowner
Cindy & Kevin Nussio	Landowner	Mark Fishleigh	County of Essex
Barry Lemire	Landowner	Anne-Marie Moniz	Town of Tecumseh
Bonnie Nikita	Landowner	Matthew Shiha	Town of Tecumseh
Roger Bigelow	Landowner	Oliver Moir	Dillon

Notes

Item	Discussion	Action by
1.	**Introductions:**	
1.1.	The Town made introductions and explained that Dillon was appointed following a request from an upstream landowner for a bridge replacement. The Town appointed Dillon on the Malden Road East Drain under Section 78 of the Drainage Act to recommend the necessary improvements to the drain. The current assessment schedule does not reflect the current state of the watershed and should also be re-evaluated.	INFO
2.	**Project Background:**	
2.1	Dillon provided background of the existing condition of the drain: • Malden Road Drain East consists of an open drain that serves agricultural and residential lands.	INFO

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Item	Discussion	Action by
	• The current distribution of costs for drain maintenance does not distinguish which landowner pays for which section of drain.	
2.2	Dillon provided an overview of the project: • The report will include new schedule for the distribution of costs associated with future maintenance of the drain. • Project scoping is to be done in collaboration with landowners to provide mitigation for the most pressing drainage issues.	INFO
3.	**Drainage Act Process:**	
3.1	Dillon explained the Drainage Act process: • A request/petition is submitted. • The Engineer is appointed by the Municipality. • The on-site meeting is held. • The report is prepared considering information gathered at the on-site meeting and drain survey. • A meeting is held to consider the technical aspects of the report (Meeting to Consider). • A meeting is being held to consider cost distribution aspects of the report (Court of Revision).	
4.	**Request for Improvement and Report Expectations:**	
4.1	The following improvements are being considered for the repair and improvement of the drain: • Stabilizing banks to address bank failure. • Maintenance of ditches to prevent issues caused by beavers, muskrats, and growth. • Evaluating and potentially replacing culverts along Malden Road East • Section 76 report will show new fair share; cost based on area, frontage, and impervious surfaces. Explanation that frontage benefit's monetary impact varies based on specific circumstances. • Scope of project TBD; emphasis on mitigating factors.	INFO
4.2	Dillon explained the following with respects to project costs: • Concerns raised about project costs; response highlighted the scoping nature of the meeting. • Explanation that the applicable road authority is responsible for runoff from road right-of-way.	

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Item	Discussion	Action by
	• Inquiry about the percentage of costs landowners will bear; response emphasized the need for updated scheduling.	
5.0	**Other Discussion**	
5.1	Issues identified by landowners: • Confirmation that the drain has functioned well in the downstream portion, with no current plans to alter its depth. • Backup under old tracks during heavy rain. • Flooding on church property up to tennis courts. • Muskrats causing issues under South Talbot bridge; backup observed. • Railway culvert seems to be an issue. • Malden Road bridge crossing Pike Creek Drain (immediately downstream of the Malden Road Drain East outlet location) is said to have been installed too low causing a 1 ft water level rise • Discussion preferred for informed decisions regarding bridges; unsure of current conditions under culverts; steel culverts have a lifespan of 50-60 years and have been there for 45 years so far.	INFO
5.2	Other Concerns and Next Steps: • Clarification on the timeline, indicating next year for significant progress. • Confirmation that maintenance of infrastructure, falls under the town's responsibility to administer. • Inquiry about the timeline for completion of the assessment schedule; response suggested completion within the year or longer. • Concerns raised about accessing properties during construction due to reliance on the bridge. • Request for fairness and caution regarding unnecessary work during the project. • Explanation of assessment types, including outlet assessment and frontage benefits. • Mention of OMAFA's grant for drainage works.	
5.3	Next Meeting Interest: Confirmation of interest from participants in attending a subsequent meeting.	

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Errors and/or Omissions

These minutes were prepared by Oliver Moir who should be notified of any errors and/or omissions.

Meeting Summary

Subject: Malden Road East Drain – On-Site Meeting

Date: October 8, 2025

Location: 12016 County Road No. 34

Our File: 24-8320

Attendees

Rob Schuck	Landowner	Todd Lamont	Landowner
Rick Chapman	Landowner	Sherry Dupuis	Landowner
Dan & Chris Zahara	Landowner	Mary Ondic	Landowner
Brian Hyland	Landowner	Lorraine Chiasson	Landowner
Adam Coupe	Landowner	Mark Fishleigh	County of Essex
Craig Racicot	Landowner	Anne-Marie Moniz	Town of Tecumseh
Jerome Racicot	Landowner	Matthew Shiha	Town of Tecumseh
Wayne & Lori Farough	Landowner	Oliver Moir	Dillon

Notes

Item	Discussion	Action by
1.	**Project Background:**	
1.1	The Town provided an update on the project and the works completed by the Town to date: • The Town completed preliminary topographical survey of the drain bottom to investigate the gradeline of the drain. The drain upstream of the old railway bridge (now owned by ERCA) has substantial sedimentation. • The upstream portion of drain is poorly drained considering condition of the drain and the existing ERCA trail bridge which consists of a twin culvert at a seemingly high elevation compared to the rest of the drain. • The Town inspected culverts on the drain and found various states of disrepair, with some culverts requiring immediate repair. • The Town has urgency to have the upstream portion of drain investigated and a new report repaired so the drain may be put back into work order quickly to mitigate flooding of properties in rain events, and proposes the assignment proceed with two reports:	

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Item	Discussion	Action by
	○ The first report would be considered with addressing the ERCA trail culvert and upstream drain cleaning where there are greater capacity concerns. ○ The second report would provide recommendations on work downstream primarily focused on bridge work where works are more substantial and complicated by the residential lands and roadside work.	
2.	**Project Expectations:**	
2.1	Dillon requested that landowners come forward with any tile plans, bridge related requests, development plans, recent changes in drainage patterns so that it may be considered in the report.	
2.2	Dillon provided an overview of expected content of the report: • Recommendations of necessary work related to drain cleanout, bridge works, bank repairs, etc. ○ Bridge owners will be contacted to discuss any requests and so they may understand cost implications. • Cost estimate for the drainage works. • Allowances/compensation to landowners for land used (Section 29) and land damaged and not restored (Section 30 – mostly for agricultural land crop damage). • Explanation of assessments including increased costs to drainage works due the presence of a Road Authority (i.e. Section 26), Benefit, Outlet Liability, and Special Benefit assessments. • Tables outlining how costs are distributed referred to as Schedule of Assessments for Construction and for Future Maintenance. • Construction specifications and drawings.	
2.3	Dillon provided an overview of expected bridge work: • Existing private access bridges on the drain may be considered 'cost sharable' if it is considered the primary access. The portion of costs deemed sharable is at the discretion of the Engineer. • The standard bridge which is considered 'cost sharable' are existing bridges which require replacement and designed to be the lowest cost option that meets the minimum requirements for the drain to function as designed. The most cost-effective bridge depends on the size of the culvert pipe, however typically consists of a gravel driveway top with sloping stone end walls.	

Draft

Item	Discussion	Action by
	• The width of a driveway depends on the use. For residential accesses, the minimum driveway width is 6.1 metres (20'). For farm access culverts, the minimum width depends on the proximity between the top of drain bank and edge of road. The width is chosen based on safe access for farm equipment and ranges between 7.3 metres (25') and 12.1 metres (40'). • Increased costs associated with additional requests not necessary for the drain such as hard surfaces (concrete/asphalt driveways), vertical concrete headwalls (if not necessary for the drain function), and increased top width over the state minimum are paid for by the requesting landowner.	
2.4	Other discussion related to the Drainage Act and the project included: • First report is expected to be distributed in approximately 12 months. Second report will be worked on concurrently however is expected to take longer considering the added complexity of the necessary bridge replacements (approximately 18 months). • Landowners were made aware of the opportunities to be heard (i.e. on-site meeting, public information centre, anytime throughout preparation of the report) and opportunities to appeal (i.e. Council meetings, Tribunal).	
3.	**Other Discussion**	
3.1	Issues identified by landowners: • Owner of properties Mun. No. 6040, 6050 & 6054 Malden Road is considering severance and new bridges. • Owner of 6030 Malden Road is considering vertical concrete block walls. • The Collins Drain (tributary to Malden Road Drain East) is severely out of report. Landowners may submit a request for repair and/or maintenance.	

Errors and/or Omissions

These minutes were prepared by Oliver Moir who should be notified of any errors and/or omissions.

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Schedule B

Schedule of Allowances

Draft

"SCHEDULE B"

SCHEDULE OF ALLOWANCES

MALDEN ROAD DRAIN EAST (UPPER PORTION)

TOWN OF TECUMSEH

Roll No.	Con.	Description	Owner	Section 30 Damages	Section 29 Land	Total Allowances
400-02900	STR	N. Pt. Lot 293	Veronika A. & John K. Mogyorody	$1,550.00	$2,100.00	$3,650.00
400-02400	STR	S. Pt. Lot 293	658727 Ontario Inc.	$2,050.00	$2,700.00	$4,750.00
TOTAL ALLOWANCES				**$3,600.00**	**$4,800.00**	**$8,400.00**

Draft

Schedule C

Schedule of Assessments

Draft

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
MALDEN ROAD DRAIN EAST (UPPER PORTION)
TOWN OF TECUMSEH

ONTARIO LANDS:

Description			Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
King's Highway No. 3			33.80	13.68	Ministry of Transportation	$0.00	$3,879.00	$16,767.00	$20,646.00
400-02800	STR	N. Pt. Lot	0.04	0.02 *	Ministry of Transportation	$0.00	$1.00	$5.00	$6.00
400-02600	STR	N. Pt. Lot	1.59	0.64 *	Ministry of Transportation	$0.00	$11.00	$58.00	$69.00
Total on Ontario Lands.....						$0.00	$3,891.00	$16,830.00	$20,721.00

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
12th Concession Road	5.50	2.23	Town of Tecumseh	$0.00	$369.00	$2,403.00	$2,772.00
11th Concession Road	6.80	2.75	Town of Tecumseh	$0.00	$454.00	$2,963.00	$3,417.00
Malden Road	11.00	4.45	Town of Tecumseh	$0.00	$12,573.00	$4,295.00	$16,868.00
South Talbot Road	13.00	5.26	Town of Tecumseh	$0.00	$869.00	$5,668.00	$6,537.00
Total on Municipal Lands.....				$0.00	$14,265.00	$15,329.00	$29,594.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
400-05800	12	S. Pt. Lot 2	4.55	1.84	Olivia B. & Robert W. Carpenter	$0.00	$122.00	$793.00	$915.00
400-05701	12	Pt. Lot 2	2.00	0.81	Cara L. Andary	$0.00	$33.00	$218.00	$251.00
400-05700	12	N. Pt. Lot 2	1.00	0.40	David Gerard	$0.00	$26.00	$172.00	$198.00
400-05605	12	Pt. Lot 2	3.00	1.21	Kenneth T. Hebert	$0.00	$80.00	$522.00	$602.00
400-01575	11	Pt. Lot 2	1.06	0.43	Clifford & Janet Ellis	$0.00	$28.00	$181.00	$209.00
400-01550	11	Pt. Lot 2	0.60	0.24	Tammy-Jo Parent	$0.00	$22.00	$145.00	$167.00
400-01300	11	N. Pt. Lot 3 S. Pt. Lot 4	11.47	4.64 *	Stephen A. Woodward	$0.00	$77.00	$500.00	$577.00
400-00705	11	Pt. Lot 2	0.49	0.20	Ronald W. Gerard	$0.00	$20.00	$129.00	$149.00
400-00720	11	Pt. Lot 2	1.22	0.49	Peggy A. Gerard	$0.00	$29.00	$190.00	$219.00
400-01000	11	S. Pt. Lot 3	0.81	0.33	Tate E. Farough	$0.00	$26.00	$167.00	$193.00
410-04500	10	S. Pt. Lot 3	4.42	1.79	David G. & Linda L. Tracey	$0.00	$118.00	$772.00	$890.00
410-05100	10	N. Pt. Lot 3	1.06	0.43	Neil J. & Robin M. McFarlane	$0.00	$28.00	$181.00	$209.00
410-05000	10	N. Pt. Lot 4	2.00	0.81	Dan O. & Emilia Grosu	$0.00	$33.00	$218.00	$251.00
410-04900	10	N. Pt. Lot 4	2.47	1.00	Ariana M. Deehan	$0.00	$37.00	$244.00	$281.00
410-03500	10	S. Pt. Lot 3	4.29	1.74	Linda R. & Neil W. Jessop	$0.00	$58.00	$375.00	$433.00
410-03200	10	N. Pt. Lot 3	6.38	2.58	Filippo & Maddalena Chiarappa	$0.00	$85.00	$556.00	$641.00
410-03000	10	S. Pt. Lot 4	0.95	0.38	Raymond P. & Marilyn E. Merlo	$0.00	$26.00	$172.00	$198.00
410-02905	10	Pt. Lot 4	0.49	0.20	Bethany A. Paper	$0.00	$20.00	$129.00	$149.00
410-02900	10	N. Pt. Lot 4	2.38	0.96	Turkish-Canadian Cultural Association of Windsor	$0.00	$37.00	$239.00	$276.00
400-01750	STR	S. Pt. Lot 291	1.24	0.50	William J. & Karen M. Darmon	$0.00	$29.00	$191.00	$220.00
400-01701	STR	Pt. Lot 291	1.00	0.40	Lisa A. Niescior	$0.00	$26.00	$172.00	$198.00
400-01800	STR	Pt. Lot 291	0.19	0.08	Scott P. Diemer	$0.00	$8.00	$52.00	$60.00
400-05500	STR	Pt. Lot 291	45.06	18.24	Terrance M. Power	$0.00	$603.00	$3,405.00	$4,008.00
400-05475	STR	Pt. Lot 291	1.24	0.50	Brittany A. Poynter & Deston A. Lyons	$0.00	$29.00	$166.00	$195.00
400-02000	STR	S. Pt. Lot 292	0.99	0.40	Gerald R. & Hazel V. Farough	$0.00	$26.00	$172.00	$198.00
400-02100	STR	S. Pt. Lot 292	0.51	0.21	James K. & Doreen C. Farough	$0.00	$20.00	$134.00	$154.00
400-02300	STR	S. Pt. Lot 293	0.91	0.37	Roger W. & Robin M. Bigelow	$1,515.00	$448.00	$171.00	$2,134.00
400-02450	STR	Pt. Lot 293	1.00	0.40	Robert S. & Colleen J. Kennedy	$5,839.00	$613.00	$157.00	$6,609.00
400-02500	STR	N. Pt. Lot	10.60	4.29	Robert A. & Daniela B. Shuck	$4,040.00	$1,058.00	$778.00	$5,876.00
400-02901	STR	N. Pt. Lot	0.40	0.16	Cara L. Andary	$1,704.00	$429.00	$16.00	$2,149.00

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Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
590-01000	STR	Pt. Lot 293	4.50	1.82	Essex Region Conservation Authority	$103,131.00	$464.00	$315.00	$103,910.00
Total on Privately-Owned - Non-Agricultural Lands.....						$116,229.00	$4,658.00	$11,632.00	$132,519.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
400-05900	12	Pt. Lot 1	111.92	45.29	Brian W. & Rina L. Hyland	$0.00	$1,497.00	$9,760.00	$11,257.00
400-05850	12	Pt. Lot 1	81.37	32.93	Walter G. & Muriel A. Hyland	$0.00	$1,088.00	$7,097.00	$8,185.00
400-05600	12	Gore EPT 2-	42.32	17.13	Richard A. & Pamela J. Chapman	$0.00	$566.00	$3,692.00	$4,258.00
400-00100	11	E. Pt. Lot 1	20.00	8.09	Karen P. & Jerome E. Racicot	$0.00	$267.00	$1,743.00	$2,010.00
400-01600	11	Pt. Lot 2	50.16	20.30	Daniel & Catherine Davies	$0.00	$671.00	$4,375.00	$5,046.00
400-01500	11	Pt. Lot 2	46.90	18.98	1741057 Ontario Ltd.	$0.00	$627.00	$4,090.00	$4,717.00
400-01400	11	E. Pt. Lot 3	41.50	16.79	Wayne L. & Ila Farough	$0.00	$555.00	$3,618.00	$4,173.00
400-00800	11	Pt. Lot 2	38.13	15.43 *	Ahmed S. Al-Farra	$0.00	$459.00	$2,996.00	$3,455.00
400-00900	11	S. Pt. Lot 3	25.00	10.12	Charles J. Farough	$0.00	$334.00	$2,181.00	$2,515.00
400-00905	11	Pt. Lot 3	24.20	9.79	Wayne L. & Lori A. Farough	$0.00	$324.00	$2,110.00	$2,434.00
400-01001	11	N. Pt. Lot 3	25.20	10.20	Wayne L. & Ila Farough	$0.00	$337.00	$2,198.00	$2,535.00
400-01100	11	Pt. Lot 3	36.95	14.95	Wayne L. & Lori A. Farough	$0.00	$494.00	$3,222.00	$3,716.00
400-01200	11	N. Pt. Lot 4	27.75	11.23	Denis J. & Darlene H. McGuire	$0.00	$371.00	$2,420.00	$2,791.00
410-05200	10	N. Pt. Lot 2	51.00	20.64	Charles J. Farough	$0.00	$682.00	$4,448.00	$5,130.00
410-05150	10	Pt. Lot 3	17.07	6.91	Philip N. & Paul J. Jobin	$0.00	$228.00	$1,489.00	$1,717.00
410-04600	10	S. Pt. Lot 3	20.00	8.09	Robert B. & Susan M. Clarkson	$0.00	$267.00	$1,743.00	$2,010.00
410-04700	10	N. Pt. Lot 3	31.87	12.90	Ralph K. & Joanne C. Lutzmann	$0.00	$426.00	$2,780.00	$3,206.00
410-04800	10	S. Pt. Lot 4	21.00	8.50	Cesare & Bruno Taiariol	$0.00	$281.00	$1,832.00	$2,113.00
410-03600	10	Pt. Lots 2&3	28.92	11.70	Dwight D. Farough	$0.00	$387.00	$2,521.00	$2,908.00
410-02550	10	Pt. Lot 3	18.42	7.45 *	Roberta S. Diemer	$0.00	$248.00	$1,616.00	$1,864.00
410-02600	10	Pt. Lots 3&4	57.03	23.08	Peter A. & Nancy H. Steeves	$0.00	$763.00	$4,974.00	$5,737.00
410-02910	10	Pt. Lot 4	23.30	9.43	Thomas A. & Lorraine M. Collins	$0.00	$312.00	$2,032.00	$2,344.00
410-02800	10	Pt. Lots 4&5	81.86	33.13 *	Thomas A. Collins	$0.00	$980.00	$6,392.00	$7,372.00
400-01700	STR	S. Pt. Lot 291	45.76	18.52	Charles J. Farough	$0.00	$612.00	$3,457.00	$4,069.00
400-01900	STR	S. Pt. Lot 292	50.98	20.63 *	Charles J. Farough	$0.00	$613.00	$3,461.00	$4,074.00
400-02200	STR	S. Pt. Lot 292	50.00	20.23	Charles J. Farough	$0.00	$669.00	$3,776.00	$4,445.00
400-02400	STR	S. Pt. Lot 293	100.74	40.77	658727 Ontario Inc.	$7,163.00	$6,495.00	$8,232.00	$21,890.00
400-02900	STR	N. Pt. Lot	38.00	15.38	Veronika A. & John K. Mogyorody	$39,889.00	$3,733.00	$1,273.00	$44,895.00
Total on Privately-Owned - Agricultural Lands.....						$47,052.00	$24,286.00	$99,528.00	$170,866.00

SECTION 26 INCREASED COSTS (NON PRO-RATABLE)

Roll No.	Con.	Description	Owner	Special Benefit	Benefit	Outlet	Total Assessment
King's Highway No. 3			Ministry of Transportation	$52,812.00	$0.00	$0.00	$52,812.00
Malden Road			Town of Tecumseh	$56,582.00	$0.00	$0.00	$56,582.00
Public Utility			Enbridge Gas Inc.	$629.00	$0.00	$0.00	$629.00
Public Utility			Bell Canada	$629.00	$0.00	$0.00	$629.00
Public Utility			CN Railway	$32,819.00	$0.00	$0.00	$32,819.00
Public Utility			Town of Tecumseh	$629.00	$0.00	$0.00	$629.00
Total Section 26 & Non-Agricultural Lands (Non Pro-ratable).....				$144,100.00	$0.00	$0.00	$144,100.00

TOTAL ASSESSMENT	**$307,381.00**	**$47,100.00**	**$143,319.00**	**$497,800.00**
	(Acres)	(Ha.)				
Total Area:	**1,397.36**	**565.47**				

***denotes reduced assessment for surface water only**

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Schedule D

Details of Special Benefit

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"SCHEDULE D"
DETAILS OF SPECIAL BENEFIT
MALDEN ROAD DRAIN EAST (UPPER PORTION)
TOWN OF TECUMSEH

SPECIAL BENEFIT ASSESSMENT
(NON - AGRICULTURAL LANDS)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
400-02300	Roger W. & Robin M. Bigelow	Trucking of excavated materials Station 1+842 to Station 1+886 (approximately 40 $m^{3)}$ to adjacent agricultural lands for spreading. (100%)	$1,200.00	$315.00	$1,515.00
400-02450	Robert S. & Colleen J. Kennedy	Trucking of excavated materials Station 1+363 to Station 1+427 (approximately 65 m^3) to adjacent agricultural lands for spreading. (100%)	$1,950.00	$512.00	$2,462.00
		Bridge No. 13 – Station 1+400 – Clean existing 3000 x 2000 mm CSPA, 6.6 m long including trucking of excavated materials/spoils off-site. (40%)	$800.00	$210.00	$1,010.00
		Station 1+360 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 375 mm diameter HDPE pipe on east drain bank. (50%)	$375.00	$98.00	$473.00
		Station 1+395 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 300 mm diameter steel pipe on east drain bank. (100%)	$750.00	$197.00	$947.00
		Station 1+426 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 200 mm diameter steel pipe on east drain bank. (100%)	$750.00	$197.00	$947.00
		Total Special Benefit - Roll No. 400-02450	$4,625.00	$1,214.00	$5,839.00
400-02500	Robert A. & Daniela B. Shuck	Trucking of excavated materials Station 1+110 to Station 1+215 (approximately 80 $m^{3)}$ to adjacent agricultural lands for spreading. (100%)	$2,400.00	$630.00	$3,030.00
		Bridge No. 12 – Station 1+185 – Clean existing 2.4 m open span concrete culvert, 7.5 m long including trucking of excavated materials/spoils off-site. (40%)	$800.00	$210.00	$1,010.00
		Total Special Benefit - Roll No. 400-02500	$3,200.00	$840.00	$4,040.00
400-02901	Cara L. Andary	Trucking of excavated materials Station 0+594 to Station 0+646 (approximately 20 $m^{3)}$ to adjacent agricultural lands for spreading. (100%)	$600.00	$157.00	$757.00

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Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
400-02901	Cara L. Andary	Station 0+611 – Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 300 mm diameter corrugated steel pipe (CSP) on east drain bank. (100%)	$750.00	$197.00	$947.00
		Total Special Benefit - Roll No. 400-02901	$1,350.00	$354.00	$1,704.00
590-01000	Essex Region Conservation Authority	Bridge No. 9 - Station 0+660 (Driveway Portion) – Replace existing twin, 17 m long 1500 mm diameter steel culverts, existing end walls with a new 18 m long, 2400 mm diameter aluminized corrugated steel pipe (CSP) complete with sloping stone end walls. (100%)	$81,700.00	$21,431.00	$103,131.00
Total Special Benefit Assessment (Non - Agricultural Lands)……			$92,075.00	$24,154.00	$116,229.00

SPECIAL BENEFIT ASSESSMENT

(AGRICULTURAL LANDS)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
400-02400	658727 Ontario Inc.	Trucking of excavated materials Station 1+427 to Station 1+524 (approximately 150 $m^{3)}$ to adjacent lands for spreading. (100%)	$4,500.00	$1,180.00	$5,680.00
		Bridge No. 14 – Station 1+454 – Clean existing 2.7 m open span concrete culvert, 4.9 m long including trucking of excavated materials/spoils off-site. (40%)	$800.00	$210.00	$1,010.00
		Station 1+360 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 375 mm diameter HDPE pipe on east drain bank. (50%)	$375.00	$98.00	$473.00
		Total Special Benefit - Roll No. 400-02400	$5,675.00	$1,488.00	$7,163.00
400-02900	Veronika A. & John K. Mogyorody	Bridge No. 10 - Station 0+971 Replace existing 5.4 m long, 2700 x 2000 mm CSPA, existing end walls with a new 22 m long, 2800 mm x 1950 mm aluminized corrugated steel pipe arch (CSPA) complete with sloping stone endwalls. (40%)	$31,600.00	$8,289.00	$39,889.00
Total Special Benefit Assessment (Agricultural Lands)……			$37,275.00	$9,777.00	$47,052.00

(SECTION 26 NON PRO-RATABLE)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
Public Utility	CN Railway	Bridge No. 9 - Station 0+660 (Enclosure Portion) - Supply & install a new 7 m long, 2400 mm diameter aluminized corrugated steel pipe (CSP). (100%)	$22,100.00	$5,689.00	$27,789.00

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Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
Public Utility	CN Railway	Co-ordination with CN Railway to facilitate locates of any existing underground utilities crossing Bridge No. 9.	$4,000.00	$1,030.00	$5,030.00
		Total Special Benefit - CN Railway	$26,100.00	$6,719.00	$32,819.00
King's Highway No. 3	Ministry of Transportation	Bridge No. 11 – King's Highway No. 3 - Station 1+066 – Clean existing 3.7 m span x 2.1 m rise concrete box road culvert, 52 m long including trucking of excavated materials/spoils off-site. (100%)	$42,000.00	$10,812.00	$52,812.00
Malden Road	Town of Tecumseh	Traffic Control per OTM Book 7	$5,000.00	$1,287.00	$6,287.00
		Supply and installation of stone erosion protection (min. 300 mm thickness) including filter fabric underlay at various locations. (approx. 200 m^2)	$40,000.00	$10,295.00	$50,295.00
		Total Special Benefit - Town of Tecumseh	$45,000.00	$11,582.00	$56,582.00
Public Utility	Enbridge Gas Inc.	Co-ordination with Enbridge Gas Inc. to facilitate locates of any existing underground pipelines.	$500.00	$129.00	$629.00
Public Utility	Bell Canada	Co-ordination with Bell Canada to facilitate locates of any existing underground lines.	$500.00	$129.00	$629.00
Public Utility	Town of Tecumseh	Co-ordination with Town of Tecumseh to facilitate locates of any existing underground water utilities.	$500.00	$129.00	$629.00
Total Special Benefit Assessment (Section 26 & Non-Agricultural Lands Non Pro-Ratable)			$114,600.00	$29,500.00	$144,100.00
OVERALL TOTAL SPECIAL BENEFIT ASSESSMENT					**$307,381.00**

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Schedule E

Future Maintenance Assessment

Draft

"SCHEDULE E-1"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (OPEN DRAIN)
MALDEN ROAD DRAIN EAST (UPPER PORTION)
TOWN OF TECUMSEH

ONTARIO LANDS:

Description			Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
King's Highway No. 3			33.80	13.68	Ministry of Transportation	$0.00	$1,647.00	$3,096.00	$4,743.00
400-02800	STR	N. Pt. Lot	0.04	0.02 *	Ministry of Transportation	$0.00	$1.00	$1.00	$2.00
400-02600	STR	N. Pt. Lot	1.59	0.64 *	Ministry of Transportation	$0.00	$4.00	$11.00	$15.00
Total on Ontario Lands.....						$0.00	$1,652.00	$3,108.00	$4,760.00

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
12th Concession Road	5.50	2.23	Town of Tecumseh	$0.00	$156.00	$515.00	$671.00
11th Concession Road	6.80	2.75	Town of Tecumseh	$0.00	$193.00	$635.00	$828.00
Malden Road	11.00	4.45	Town of Tecumseh	$0.00	$5,342.00	$1,027.00	$6,369.00
South Talbot Road	13.00	5.26	Town of Tecumseh	$0.00	$369.00	$1,215.00	$1,584.00
Total on Municipal Lands.....				$0.00	$6,060.00	$3,392.00	$9,452.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
400-05800	12	S. Pt. Lot 2	4.55	1.84	Olivia B. & Robert W. Carpenter	$0.00	$52.00	$170.00	$222.00
400-05701	12	Pt. Lot 2	2.00	0.81	Cara L. Andary	$0.00	$14.00	$47.00	$61.00
400-05700	12	N. Pt. Lot 2	1.00	0.40	David Gerard	$0.00	$11.00	$37.00	$48.00
400-05605	12	Pt. Lot 2	3.00	1.21	Kenneth T. Hebert	$0.00	$34.00	$112.00	$146.00
400-01575	11	Pt. Lot 2	1.06	0.43	Clifford & Janet Ellis	$0.00	$12.00	$39.00	$51.00
400-01550	11	Pt. Lot 2	0.60	0.24	Tammy-Jo Parent	$0.00	$9.00	$31.00	$40.00
400-01300	11	N. Pt. Lot 3 S. Pt. Lot 4	11.47	4.64 *	Stephen A. Woodward	$0.00	$33.00	$107.00	$140.00
400-00705	11	Pt. Lot 2	0.49	0.20	Ronald W. Gerard	$0.00	$8.00	$28.00	$36.00
400-00720	11	Pt. Lot 2	1.22	0.49	Peggy A. Gerard	$0.00	$12.00	$41.00	$53.00
400-01000	11	S. Pt. Lot 3	0.81	0.33	Tate E. Farough	$0.00	$11.00	$36.00	$47.00
410-04500	10	S. Pt. Lot 3	4.42	1.79	David G. & Linda L. Tracey	$0.00	$50.00	$165.00	$215.00
410-05100	10	N. Pt. Lot 3	1.06	0.43	Neil J. & Robin M. McFarlane	$0.00	$12.00	$39.00	$51.00
410-05000	10	N. Pt. Lot 4	2.00	0.81	Dan O. & Emilia Grosu	$0.00	$14.00	$47.00	$61.00
410-04900	10	N. Pt. Lot 4	2.47	1.00	Ariana M. Deehan	$0.00	$16.00	$52.00	$68.00
410-03500	10	S. Pt. Lot 3	4.29	1.74	Linda R. & Neil W. Jessop	$0.00	$24.00	$80.00	$104.00
410-03200	10	N. Pt. Lot 3	6.38	2.58	Filippo & Maddalena Chiarappa	$0.00	$36.00	$119.00	$155.00
410-03000	10	S. Pt. Lot 4	0.95	0.38	Raymond P. & Marilyn E. Merlo	$0.00	$11.00	$37.00	$48.00
410-02905	10	Pt. Lot 4	0.49	0.20	Bethany A. Paper	$0.00	$8.00	$28.00	$36.00
410-02900	10	N. Pt. Lot 4	2.38	0.96	Turkish-Canadian Cultural Association of Windsor	$0.00	$16.00	$51.00	$67.00
400-01750	STR	S. Pt. Lot 291	1.24	0.50	William J. & Karen M. Darmon	$0.00	$12.00	$41.00	$53.00
400-01701	STR	Pt. Lot 291	1.00	0.40	Lisa A. Niescior	$0.00	$11.00	$37.00	$48.00
400-01800	STR	Pt. Lot 291	0.19	0.08	Scott P. Diemer	$0.00	$3.00	$11.00	$14.00
400-05500	STR	Pt. Lot 291	45.06	18.24	Terrance M. Power	$0.00	$256.00	$619.00	$875.00
400-05475	STR	Pt. Lot 291	1.24	0.50	Brittany A. Poynter & Deston A. Lyons	$0.00	$12.00	$30.00	$42.00
400-02000	STR	S. Pt. Lot 292	0.99	0.40	Gerald R. & Hazel V. Farough	$0.00	$11.00	$37.00	$48.00
400-02100	STR	S. Pt. Lot 292	0.51	0.21	James K. & Doreen C. Farough	$0.00	$9.00	$29.00	$38.00
400-02300	STR	S. Pt. Lot 293	0.91	0.37	Roger W. & Robin M. Bigelow	$0.00	$190.00	$37.00	$227.00
400-02450	STR	Pt. Lot 293	1.00	0.40	Robert S. & Colleen J. Kennedy	$0.00	$260.00	$30.00	$290.00
400-02500	STR	N. Pt. Lot	10.60	4.29	Robert A. & Daniela B. Shuck	$0.00	$449.00	$146.00	$595.00
400-02901	STR	N. Pt. Lot 293	0.40	0.16	Cara L. Andary	$0.00	$182.00	$6.00	$188.00

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Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
590-01000	STR	Pt. Lot 293	4.50	1.82	Essex Region Conservation Authority	$0.00	$197.00	$134.00	$331.00
Total on Privately-Owned - Non-Agricultural Lands.....						$0.00	$1,975.00	$2,423.00	$4,398.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
400-05900	12	Pt. Lot 1	111.92	45.29	Brian W. & Rina L. Hyland	$0.00	$636.00	$2,092.00	$2,728.00
400-05850	12	Pt. Lot 1	81.37	32.93	Walter G. & Muriel A. Hyland	$0.00	$462.00	$1,521.00	$1,983.00
400-05600	12	Gore EPT 2-	42.32	17.13	Richard A. & Pamela J. Chapman	$0.00	$240.00	$791.00	$1,031.00
400-00100	11	E. Pt. Lot 1	20.00	8.09	Karen P. & Jerome E. Racicot	$0.00	$114.00	$374.00	$488.00
400-01600	11	Pt. Lot 2	50.16	20.30	Daniel & Catherine Davies	$0.00	$285.00	$938.00	$1,223.00
400-01500	11	Pt. Lot 2	46.90	18.98	1741057 Ontario Ltd.	$0.00	$266.00	$877.00	$1,143.00
400-01400	11	E. Pt. Lot 3	41.50	16.79	Wayne L. & Ila Farough	$0.00	$236.00	$776.00	$1,012.00
400-00800	11	Pt. Lot 2	38.13	15.43 *	Ahmed S. Al-Farra	$0.00	$195.00	$642.00	$837.00
400-00900	11	S. Pt. Lot 3	25.00	10.12	Charles J. Farough	$0.00	$142.00	$468.00	$610.00
400-00905	11	Pt. Lot 3	24.20	9.79	Wayne L. & Lori A. Farough	$0.00	$137.00	$452.00	$589.00
400-01001	11	N. Pt. Lot 3	25.20	10.20	Wayne L. & Ila Farough	$0.00	$143.00	$471.00	$614.00
400-01100	11	Pt. Lot 3	36.95	14.95	Wayne L. & Lori A. Farough	$0.00	$210.00	$691.00	$901.00
400-01200	11	N. Pt. Lot 4	27.75	11.23	Denis J. & Darlene H. McGuire	$0.00	$158.00	$519.00	$677.00
410-05200	10	N. Pt. Lot 2	51.00	20.64	Charles J. Farough	$0.00	$290.00	$954.00	$1,244.00
410-05150	10	Pt. Lot 3	17.07	6.91	Philip N. & Paul J. Jobin	$0.00	$97.00	$319.00	$416.00
410-04600	10	S. Pt. Lot 3	20.00	8.09	Robert B. & Susan M. Clarkson	$0.00	$114.00	$374.00	$488.00
410-04700	10	N. Pt. Lot 3	31.87	12.90	Ralph K. & Joanne C. Lutzmann	$0.00	$181.00	$596.00	$777.00
410-04800	10	S. Pt. Lot 4	21.00	8.50	Cesare & Bruno Taiariol	$0.00	$119.00	$393.00	$512.00
410-03600	10	Pt. Lots 2&3	28.92	11.70	Dwight D. Farough	$0.00	$164.00	$541.00	$705.00
410-02550	10	Pt. Lot 3	18.42	7.45 *	Roberta S. Diemer	$0.00	$105.00	$346.00	$451.00
410-02600	10	Pt. Lots 3&4	57.03	23.08	Peter A. & Nancy H. Steeves	$0.00	$324.00	$1,066.00	$1,390.00
410-02910	10	Pt. Lot 4	23.30	9.43	Thomas A. & Lorraine M. Collins	$0.00	$132.00	$436.00	$568.00
410-02800	10	Pt. Lots 4&5	81.86	33.13 *	Thomas A. Collins	$0.00	$416.00	$1,370.00	$1,786.00
400-01700	STR	S. Pt. Lot 291	45.76	18.52	Charles J. Farough	$0.00	$260.00	$629.00	$889.00
400-01900	STR	S. Pt. Lot 292	50.98	20.63 *	Charles J. Farough	$0.00	$260.00	$630.00	$890.00
400-02200	STR	S. Pt. Lot 292	50.00	20.23	Charles J. Farough	$0.00	$284.00	$687.00	$971.00
400-02400	STR	S. Pt. Lot 293	100.74	40.77	658727 Ontario Inc.	$0.00	$2,758.00	$1,648.00	$4,406.00
400-02900	STR	N. Pt. Lot	38.00	15.38	Veronika A. & John K. Mogyorody	$0.00	$1,585.00	$476.00	$2,061.00
Total on Privately-Owned - Agricultural Lands.....						$0.00	$10,313.00	$21,077.00	$31,390.00

TOTAL ASSESSMENT	**$0.00**	**$20,000.00**	**$30,000.00**	**$50,000.00**

	(Acres)	(Ha.)
Total Area:	**1,397.36**	**565.47**

***denotes reduced assessment for surface water only**

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"SCHEDULE E-2"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (BRIDGES)
MALDEN ROAD DRAIN EAST (UPPER PORTION)
TOWN OF TECUMSEH

ONTARIO LANDS:

Description			Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
King's Highway No. 3			33.80	13.68	Ministry of Transportation	$0.00	$0.00	$1,352.00	$1,352.00
400-02800	STR	N. Pt. Lot 292	0.04	0.02 *	Ministry of Transportation	$0.00	$0.00	$1.00	$1.00
400-02600	STR	N. Pt. Lot 292	1.59	0.64 *	Ministry of Transportation	$0.00	$0.00	$5.00	$5.00
Total on Ontario Lands.....						$0.00	$0.00	$1,358.00	$1,358.00

MUNICIPAL LANDS:

Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
12th Concession Road	5.50	2.23	Town of Tecumseh	$0.00	$0.00	$157.00	$157.00
11th Concession Road	6.80	2.75	Town of Tecumseh	$0.00	$0.00	$194.00	$194.00
Malden Road	11.00	4.45	Town of Tecumseh	$0.00	$0.00	$298.00	$298.00
South Talbot Road	13.00	5.26	Town of Tecumseh	$0.00	$0.00	$371.00	$371.00
Total on Municipal Lands.....				$0.00	$0.00	$1,020.00	$1,020.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
400-05800	12	S. Pt. Lot 2	4.55	1.84	Olivia B. & Robert W. Carpenter	$0.00	$0.00	$52.00	$52.00
400-05701	12	Pt. Lot 2	2.00	0.81	Cara L. Andary	$0.00	$0.00	$14.00	$14.00
400-05700	12	N. Pt. Lot 2	1.00	0.40	David Gerard	$0.00	$0.00	$11.00	$11.00
400-05605	12	Pt. Lot 2	3.00	1.21	Kenneth T. Hebert	$0.00	$0.00	$34.00	$34.00
400-01575	11	Pt. Lot 2	1.06	0.43	Clifford & Janet Ellis	$0.00	$0.00	$12.00	$12.00
400-01550	11	Pt. Lot 2	0.60	0.24	Tammy-Jo Parent	$0.00	$0.00	$9.00	$9.00
400-01300	11	N. Pt. Lot 3 S. Pt. Lot 4	11.47	4.64 *	Stephen A. Woodward	$0.00	$0.00	$33.00	$33.00
400-00705	11	Pt. Lot 2	0.49	0.20	Ronald W. Gerard	$0.00	$0.00	$8.00	$8.00
400-00720	11	Pt. Lot 2	1.22	0.49	Peggy A. Gerard	$0.00	$0.00	$12.00	$12.00
400-01000	11	S. Pt. Lot 3	0.81	0.33	Tate E. Farough	$0.00	$0.00	$11.00	$11.00
410-04500	10	S. Pt. Lot 3	4.42	1.79	David G. & Linda L. Tracey	$0.00	$0.00	$51.00	$51.00
410-05100	10	N. Pt. Lot 3	1.06	0.43	Neil J. & Robin M. McFarlane	$0.00	$0.00	$12.00	$12.00
410-05000	10	N. Pt. Lot 4	2.00	0.81	Dan O. & Emilia Grosu	$0.00	$0.00	$14.00	$14.00
410-04900	10	N. Pt. Lot 4	2.47	1.00	Ariana M. Deehan	$0.00	$0.00	$16.00	$16.00
410-03500	10	S. Pt. Lot 3	4.29	1.74	Linda R. & Neil W. Jessop	$0.00	$0.00	$25.00	$25.00
410-03200	10	N. Pt. Lot 3	6.38	2.58	Filippo & Maddalena Chiarappa	$0.00	$0.00	$36.00	$36.00
410-03000	10	S. Pt. Lot 4	0.95	0.38	Raymond P. & Marilyn E. Merlo	$0.00	$0.00	$11.00	$11.00
410-02905	10	Pt. Lot 4	0.49	0.20	Bethany A. Paper	$0.00	$0.00	$8.00	$8.00
410-02900	10	N. Pt. Lot 4	2.38	0.96	Turkish-Canadian Cultural Association of Windsor	$0.00	$0.00	$16.00	$16.00
400-01750	STR	S. Pt. Lot 291	1.24	0.50	William J. & Karen M. Darmon	$0.00	$0.00	$13.00	$13.00
400-01701	STR	Pt. Lot 291	1.00	0.40	Lisa A. Niescior	$0.00	$0.00	$11.00	$11.00
400-01800	STR	Pt. Lot 291	0.19	0.08	Scott P. Diemer	$0.00	$0.00	$3.00	$3.00
400-05500	STR	Pt. Lot 291	45.06	18.24	Terrance M. Power	$0.00	$0.00	$257.00	$257.00
400-05475	STR	Pt. Lot 291	1.24	0.50	Brittany A. Poynter & Deston A. Lyons	$0.00	$0.00	$13.00	$13.00
400-02000	STR	S. Pt. Lot 292	0.99	0.40	Gerald R. & Hazel V. Farough	$0.00	$0.00	$11.00	$11.00
400-02100	STR	S. Pt. Lot 292	0.51	0.21	James K. & Doreen C. Farough	$0.00	$0.00	$9.00	$9.00
400-02300	STR	S. Pt. Lot 293	0.91	0.37	Roger W. & Robin M. Bigelow	$0.00	$0.00	$11.00	$11.00
400-02450	STR	Pt. Lot 293	1.00	0.40	Robert S. & Colleen J. Kennedy	$0.00	$0.00	$11.00	$11.00
400-02500	STR	N. Pt. Lot 293	10.60	4.29	Robert A. & Daniela B. Shuck	$0.00	$0.00	$61.00	$61.00

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Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
590-01000	STR	Pt. Lot 293	4.50	1.82	Essex Region Conservation Authority	$0.00	$0.00	$39.00	$39.00
Total on Privately-Owned - Non-Agricultural Lands.....						$0.00	$0.00	$824.00	$824.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected (Acres)	(Ha.)	Owner	Special Benefit	Benefit	Outlet	Total Assessment
400-05900	12	Pt. Lot 1	111.92	45.29	Brian W. & Rina L. Hyland	$0.00	$0.00	$639.00	$639.00
400-05850	12	Pt. Lot 1	81.37	32.93	Walter G. & Muriel A. Hyland	$0.00	$0.00	$465.00	$465.00
400-05600	12	Gore EPT 2-	42.32	17.13	Richard A. & Pamela J. Chapman	$0.00	$0.00	$242.00	$242.00
400-00100	11	E. Pt. Lot 1	20.00	8.09	Karen P. & Jerome E. Racicot	$0.00	$0.00	$114.00	$114.00
400-01600	11	Pt. Lot 2	50.16	20.30	Daniel & Catherine Davies	$0.00	$0.00	$287.00	$287.00
400-01500	11	Pt. Lot 2	46.90	18.98	1741057 Ontario Ltd.	$0.00	$0.00	$268.00	$268.00
400-01400	11	E. Pt. Lot 3	41.50	16.79	Wayne L. & Ila Farough	$0.00	$0.00	$237.00	$237.00
400-00800	11	Pt. Lot 2	38.13	15.43 *	Ahmed S. Al-Farra	$0.00	$0.00	$196.00	$196.00
400-00900	11	S. Pt. Lot 3	25.00	10.12	Charles J. Farough	$0.00	$0.00	$143.00	$143.00
400-00905	11	Pt. Lot 3	24.20	9.79	Wayne L. & Lori A. Farough	$0.00	$0.00	$138.00	$138.00
400-01001	11	N. Pt. Lot 3	25.20	10.20	Wayne L. & Ila Farough	$0.00	$0.00	$144.00	$144.00
400-01100	11	Pt. Lot 3	36.95	14.95	Wayne L. & Lori A. Farough	$0.00	$0.00	$211.00	$211.00
400-01200	11	N. Pt. Lot 4	27.75	11.23	Denis J. & Darlene H. McGuire	$0.00	$0.00	$159.00	$159.00
410-05200	10	N. Pt. Lot 2	51.00	20.64	Charles J. Farough	$0.00	$0.00	$291.00	$291.00
410-05150	10	Pt. Lot 3	17.07	6.91	Philip N. & Paul J. Jobin	$0.00	$0.00	$98.00	$98.00
410-04600	10	S. Pt. Lot 3	20.00	8.09	Robert B. & Susan M. Clarkson	$0.00	$0.00	$114.00	$114.00
410-04700	10	N. Pt. Lot 3	31.87	12.90	Ralph K. & Joanne C. Lutzmann	$0.00	$0.00	$182.00	$182.00
410-04800	10	S. Pt. Lot 4	21.00	8.50	Cesare & Bruno Taiariol	$0.00	$0.00	$120.00	$120.00
410-03600	10	Pt. Lots 2&3	28.92	11.70	Dwight D. Farough	$0.00	$0.00	$165.00	$165.00
410-02550	10	Pt. Lot 3	18.42	7.45 *	Roberta S. Diemer	$0.00	$0.00	$106.00	$106.00
410-02600	10	Pt. Lots 3&4	57.03	23.08	Peter A. & Nancy H. Steeves	$0.00	$0.00	$326.00	$326.00
410-02910	10	Pt. Lot 4	23.30	9.43	Thomas A. & Lorraine M. Collins	$0.00	$0.00	$133.00	$133.00
410-02800	10	Pt. Lots 4&5	81.86	33.13 *	Thomas A. Collins	$0.00	$0.00	$419.00	$419.00
400-01700	STR	S. Pt. Lot 291	45.76	18.52	Charles J. Farough	$0.00	$0.00	$261.00	$261.00
400-01900	STR	S. Pt. Lot 292	50.98	20.63 *	Charles J. Farough	$0.00	$0.00	$262.00	$262.00
400-02200	STR	S. Pt. Lot 292	50.00	20.23	Charles J. Farough	$0.00	$0.00	$286.00	$286.00
400-02400	STR	S. Pt. Lot 293	100.74	40.77	658727 Ontario Inc.	$0.00	$0.00	$575.00	$575.00
400-02900	STR	N. Pt. Lot 293	38.00	15.38	Veronika A. & John K. Mogyorody	$0.00	$0.00	$217.00	$217.00
Total on Privately-Owned - Agricultural Lands.....						$0.00	$0.00	$6,798.00	$6,798.00
TOTAL ASSESSMENT						**$0.00**	**$0.00**	**$10,000.00**	**$10,000.00**

	(Acres)	(Ha.)
Total Area:	**1,396.96**	**565.31**

***denotes reduced assessment for surface water only**

Draft

Schedule F

Specifications

Draft

"Schedule F"

Drainage Report for the

Malden Road Drain East (Upper Portion)

in the Town of Tecumseh

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+594 to Station 1+886 including the disposal by burning on-site or removal off-site with trimming and/or removal of existing trees as required to accommodate the drainage works
- Excavation, levelling and trucking of excavated materials works, as follows:
  - Excavation of the drain bottom only, as follows:
    - Station 0+594 to Station 1+886, totalling approximately 1,292 lineal metres of drain and approximately 1,200 m^3 of material. The Contractor shall be responsible for seeding of disturbed drain banks as part of the works.
  - Levelling of excavated materials, as follows:
    - At all agricultural properties, totalling approximately 1,200 m^3 of material.
  - Trucking of excavated materials at all non-agricultural properties and grassed lawns to adjacent agricultural properties for spreading, as follows:
    - Station 0+594 to Station 0+646, totalling approximately 20 m^3 of material.
    - Station 1+110 to Station 1+215, totalling approximately 80 m^3 of material.
    - Station 1+363 to Station 1+427, totalling approximately 65 m^3 of material.
    - Station 1+427 to Station 1+524, totalling approximately 150 m^3 of material.
    - Station 1+842 to Station 1+886, totalling approximately 40 m^3 of material.

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- Seeding of grass buffer strips, as follows:
  - Seeding of 1.0 m wide grass buffer strip beyond the east top of bank from Station 0+677 to Station 1+030.
  - Seeding of 1.0 m wide grass buffer strip beyond the east top of bank from Station 1+220 to Station 1+362.
  - Seeding of 1.0 m wide grass buffer strip beyond the east top of bank from Station 1+524 to Station 1+840.
- Private access bridge cleaning works, as follows:
  - Bridge No. 12 - Station 1+185 (Roll No. 400-02500) - 7.5 m long, 2.4 m open span concrete culvert.
  - Bridge No. 13 - Station 1+400 (Roll No. 400-02450) - 6.6 m long, 3000 x 2000 mm CSPA.
  - Bridge No. 14 - Station 1+454 (Roll No. 400-02400) – 4.9 m long, 2.7 m open span concrete culvert.
- Private access bridge replacement works, as follows:
  - Bridge No. 9 - Station 0+660 (Roll No. 590-01000 - ERCA Trail) (driveway portion) – Removal and disposal of existing twin, 17 m long 1500 mm diameter steel culverts, existing end walls and backfill off-site that are not suitable for native backfill. Supply and installation of a new 18 m long, 2400 mm diameter aluminized corrugated steel pipe (CSP), Clearstone bedding, Granular 'B', clean native or imported native material backfill, Granular 'A' driveway surface materials with 0.5 m wide native buffer strips, sloping stone endwalls. Work includes realigning two existing swales as necessary to accommodate drainage works complete with stone erosion protection with filter fabric underlay in addition to fine grading, placement of topsoil and seeding of disturbed areas.
  - Bridge No. 10 - Station 0+971 (Roll No. 400-02900) – Removal and disposal of existing 5.4 m long, 2700 x 2000 mm CSPA, existing end walls and backfill off-site that are not suitable for native backfill. Supply and installation of a new 22.0 m long, 2800 mm x 1950 mm aluminized corrugated steel pipe arch (CSPA), Clearstone bedding, Granular 'B', clean native or imported native material backfill, Granular 'A' driveway surface materials with 0.5 m wide native buffer strips, sloping stone endwalls with filter fabric underlay. Work to include fine grading, placement of topsoil and seeding of disturbed areas.
- Stone Erosion protection works as follows:
  - (Roll No. 400-02901) - Station 0+611 – Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 300 mm diameter corrugated steel pipe (CSP) on east drain bank.
  - Station 1+215 – (Donovan Drain) - Supply and install 25 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay on drain banks at outlet.

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- (Roll Nos. 400-02400 & 400-02450) – Station 1+360 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 375 mm diameter HDPE pipe on east drain bank.
- (Roll No. 400-02450) – Station 1+395 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 300 mm diameter steel pipe on east drain bank.
- (Roll No. 400-02450) – Station 1+426 - Supply and install 5 m^2 (min. 300 mm thick) of stone erosion protection (SEP) including new filter fabric underlay around existing 200 mm diameter steel pipe on east drain bank.

- Temporary Silt Control Measures During Construction
- Bridge replacement works, as follows:
  - Bridge No. 9 – Station 0+660 (ERCA Trail) (Enclosure portion) – Supply and installation of a new 7 m long, 2400 mm diameter aluminized corrugated steel pipe (CSP). Clearstone bedding, Granular 'B' backfill, clean native or imported native material backfill. Work includes fine grading, placement of topsoil and seeding of disturbed areas.
- Road Bridge cleaning works, as follows:
  - Bridge No. 11 – King's Highway No. 3 - Station 1+066 – Clean existing 3.7 m span x 2.1 m rise concrete box road culvert, 52 m long including trucking of excavated materials/spoils off-site. Work includes coordination and acquiring approvals from MTO.
- **Provisional:** Supply and installation of stone erosion protection (minimum 300 mm thickness) including filter fabric underlay (approximately 200 m^2) on roadside drain banks (various locations along Malden Road) as necessary. Work includes drain bank repair to restore drain side slope in accordance with Drawings. Roadside drain bank repair locations shall be identified during construction and must be approved in writing by the Drainage Superintendent prior to work proceeding.
- Utility work(s), as follows:
  - Co-ordination with Enbridge Gas Inc. to facilitate locates of any existing underground pipelines. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).
  - Co-ordination with Bell Canada to facilitate locates of any existing underground lines. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).
  - Co-ordination with CN Railway to facilitate locates of any existing underground utilities crossing Bridge No. 9. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).

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- Co-ordination with Town of Tecumseh to facilitate locates of any existing underground water utilities. Any increased costs as a result of the drainage works if any (actual costs) are at the expense of the operating utility as per Section 26 of the Drainage Act).
- Traffic Control per OTM Book 7

3.0 ACCESS TO THE WORK

Access to the drain shall be from Malden Road and the working corridor. The Contractor shall make his/her own arrangements for any additional access for his/her convenience. In addition, the Contractor shall be allowed to utilize any of the legal access culverts within the municipal drain for access if required. All road areas and grass lawn areas disturbed shall be restored to original conditions at the Contractor's expense.

4.0 WORKING AREA

For the repair and improvement of the upper portion of the Malden Road Drain East, the working corridor shall be 10 metres east of the east top of bank which includes a 1.0 m grass buffer strip. This will also provide access for equipment and temporary placement of excavating materials. One lane of Malden Road shall remain open during the construction period and traffic control (found in General Specifications) maintained at all times. Any damages to lands and/or roads from the Contractor's work within the working area for the bridge sites shall be rectified to pre-existing conditions at his expense.

The Contractor shall restrict his equipment to the working corridors as specified in this Section. Any damage resulting from non-compliance with this Section shall be borne by the Contractor. The working corridor shall be measured from the top of the drain bank and shall be as follows:

FROM STA.	TO STA.	PRIMARY (See Note 1)	SECONDARY (See Note 2)
0+000	0+677	Malden Road (road allowance)	6.0m wide on east side of drain
0+677	1+031	10.0 m wide on east side of drain	-
1+031	1+215	Malden Road (road allowance)	6.0m wide on east side of drain
1+215	1+363	10.0 m wide on east side of drain	-
1+363	1+524	Malden Road (road allowance)	6.0m wide on east side of drain
1+524	1+842	10.0 m wide on east side of drain	-
1+842	1+886	Malden Road (road allowance)	6.0m wide on east side of drain

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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 along side 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.

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Special Provisions - General

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.

The Contractor shall apply for and obtain a permit under By-Law 2021-50 and shall be responsible for complying with all requirements for open-air burning under the By-Law, obtaining all utility locates in the area of each approved burn site; and be held responsible for liabilities related to the burning of the brush and smoke generated. The Contractor would be required to submit a Burn Permit Application to the Fire Department including detailed information on the burn process, extinguishing method, map of burn piles as well as a signature from the landowner acknowledging burning will occur on their property. The Contractor shall in no way be guaranteed to burn except with the explicit permission from the Fire Department.

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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 GRADELINES 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 2.0 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 or Section 6.3.

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 6.3. Excavated material shall not be placed on dykes, in ditches, tiles or depressions intended to conduct water into the drain. 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.

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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.

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, gardens and drain banks resulting from his/her non-compliance with these Specifications. Where necessary, to remove a fence for the purpose of excavating the drain (if any), the Contractor shall remove it in such a manner as not to damage any portion thereof. The fence shall be replaced immediately upon completion of the excavation in that area. The Contractor shall include his/her cost, any new materials that may not be salvageable due to damage by removal and reinstallation of the fence.

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 from the drain fronting non-agricultural lands are to be trucked to an adjacent primary working corridor. Excavated materials which are to be hauled off site 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 is to adhere to Ontario Regulation 406/19 On-Site and Excess Soil Management.

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.

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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

A 1.0 metre wide grass buffer shall be established and preserved immediately adjacent to the east bank 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 Special Provisions.

9.0 SEEDING

Drain banks and 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 m^2.

Fertilizer shall be 8-32-16 applied at 350 kg per 10,000 m^2. It shall be in granular form, dry, free from lumps and in bags bearing the label of the manufacturer, indicating mass and analysis.

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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

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 cleaning work, as follows:

- Bridge No. 11 - Station 1+066 (King's Highway No. 3), 52 m long, 3.7 m x 2.1 m concrete box culvert.
- Bridge No. 12 - Station 1+185 (Roll No.400-02500), 7.5 m long, 2.4 m open span concrete culvert.
- Bridge No. 13 - Station 1+400 (Roll No. 400-02450), 6.6 m long, 3000 mm x 2000 mm corrugated steel pipe arch (CSPA).
- Bridge No. 14 - Station 1+454 (Roll No. 400-02400), 4.9 m long, 2.7 m open span concrete culvert.

11.0 ACCESS BRIDGE WORK

11.1 Location of New Private Access Bridges

The new culverts shall be installed as shown on the drawings attached hereto. The centerline of the new culvert shall be located to align itself with the existing laneway unless otherwise specified.

11.2 Removal of Existing Private Access Bridges

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.

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11.3 Materials for New Private Access Bridges

Materials shall be as follows:

Culvert Pipe	**Bridge No. 9 - Station 0+660:** *New 25.0 long, 2400 mm diameter aluminized Type II corrugated steel pipe (CSP) wall thickness of 3.5 mm and 125 mm x 25 mm corrugations with rerolled ends.* **Bridge No. 10 - Station 0+971:** *New 22.0 long, 2800 mm x 1950 mm aluminized Type II corrugated steel pipe arch (CSPA) wall thickness of 3.5 mm and 125 mm x 25 mm corrugations with rerolled ends.* *New culvert 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	*19 mm clearstone conforming to OPSS Division 10.*
Backfill up to Pipe Culvert Springline (Arch Pipe)	*19 mm clearstone conforming to OPSS Division 10.*
Backfill up to Pipe Culvert Springline (Round Pipe)	*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 200 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.*

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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.*

11.4 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; imported clean native materials shall be supplied, placed and compacted to 95% of their maximum dry density. All backfill material shall be installed and compacted in maximum 250 mm thick lifts.

11.5 Sloping Stone End Walls

End walls shall be constructed of quarry stone rip-rap, 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 and wrapping around the drain banks to align with the ends of the new pipe culvert. The minimum thickness requirement of the erosion stone layer is 300 mm with no portion of the filter fabric to be exposed to sunlight.

11.6 Granular 'A' Driveway

The Contractor shall construct the driveway with a maximum 3% longitudinal grade approach over the new culvert providing a minimum 500 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.

11.7 Native Materials

Native materials suitable for use as backfill, as defined under Section 10.2, 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.

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11.8 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.

11.9 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.

12.0 TEMPORARY EROSION & SEDIMENT CONTROL

It is incumbent on the Contractor to keep sediment out of the receiving drainage system through his/her operations and use of temporary erosion and sediment control (ESC) measures. ESC measures shall follow applicable OPSDs and be regularly inspected and maintained throughout the duration of the project at the cost of the contractor. Any temporary ESC measures shall be removed, and the drain restored following establishment of vegetation on the drain banks and completion of the project.

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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.

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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.

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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.

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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.

Draft

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.

Draft

Drawings

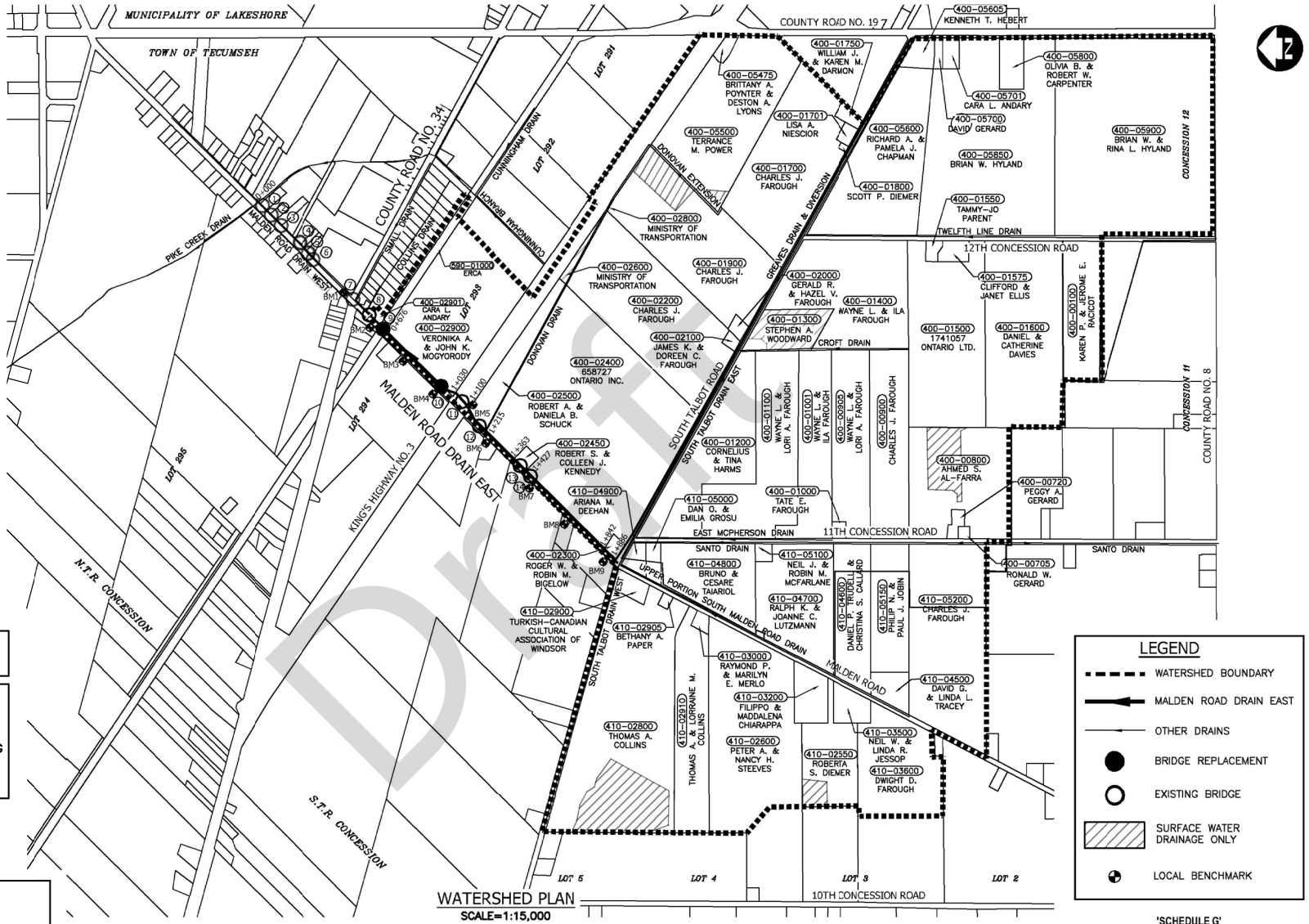
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SITE BENCHMARKS

BM1–TOP OF ℄ OF NORTH END OF CONC. CULVERT BRIDGE NO. 7 CROSSING COUNTY ROAD NO. 34 AT STATION 0+480. ELEVATION=190.76m
BM2–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 0+627. ELEVATION=191.20m
BM3–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 0+806. ELEVATION=190.88m
BM4–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 0+980. ELEVATION=191.38m
BM5–TOP OF ℄ OF SOUTH END OF CONC. CULVERT BRIDGE NO. 11 CROSSING KING'S HIGHWAY NO. 3 AT STATION 1+091. ELEVATION=191.00m
BM6–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 1+250. ELEVATION=191.64m
BM7–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 1+461. ELEVATION=191.53m
BM8–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 1+672. ELEVATION=191.70m
BM9–TOP OF FIRE HYDRANT ON WEST SIDE OF MALDEN ROAD AT STATION 1+875. ELEVATION=192.00m

NOTE: CONTRACTOR TO VERIFY BENCHMARKS PRIOR TO CONSTRUCTION.

NOTE: CONTRACTOR SHALL ARRANGE TO HAVE ALL UTILITY LOCATES COMPLETED ONSITE PRIOR TO ANY EXCAVATION WORK. DILLON CONSULTING LIMITED DOES NOT GUARANTEE THE ACCURACY OF THE EXISTING UTILITIES SHOWN ON THE DRAWINGS. CONTRACTOR TO VERIFY THE LOCATION PRIOR TO COMMENCING WORK.



LEGEND

- WATERSHED BOUNDARY
- MALDEN ROAD DRAIN EAST
- OTHER DRAINS
- BRIDGE REPLACEMENT
- EXISTING BRIDGE
- SURFACE WATER DRAINAGE ONLY
- LOCAL BENCHMARK

'SCHEDULE G'

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No.	ISSUED FOR	DATE	BY
2	PUBLIC INFORMATION CENTRE	NOV. 6/26	OEM
1	CLIENT REVIEW	SEPT. 23/26	OEM

DESIGN JAO | REVIEWED BY VJH
DRAWN WLB | CHECKED BY OEM
DATE November 6, 2026
SCALE AS SHOWN

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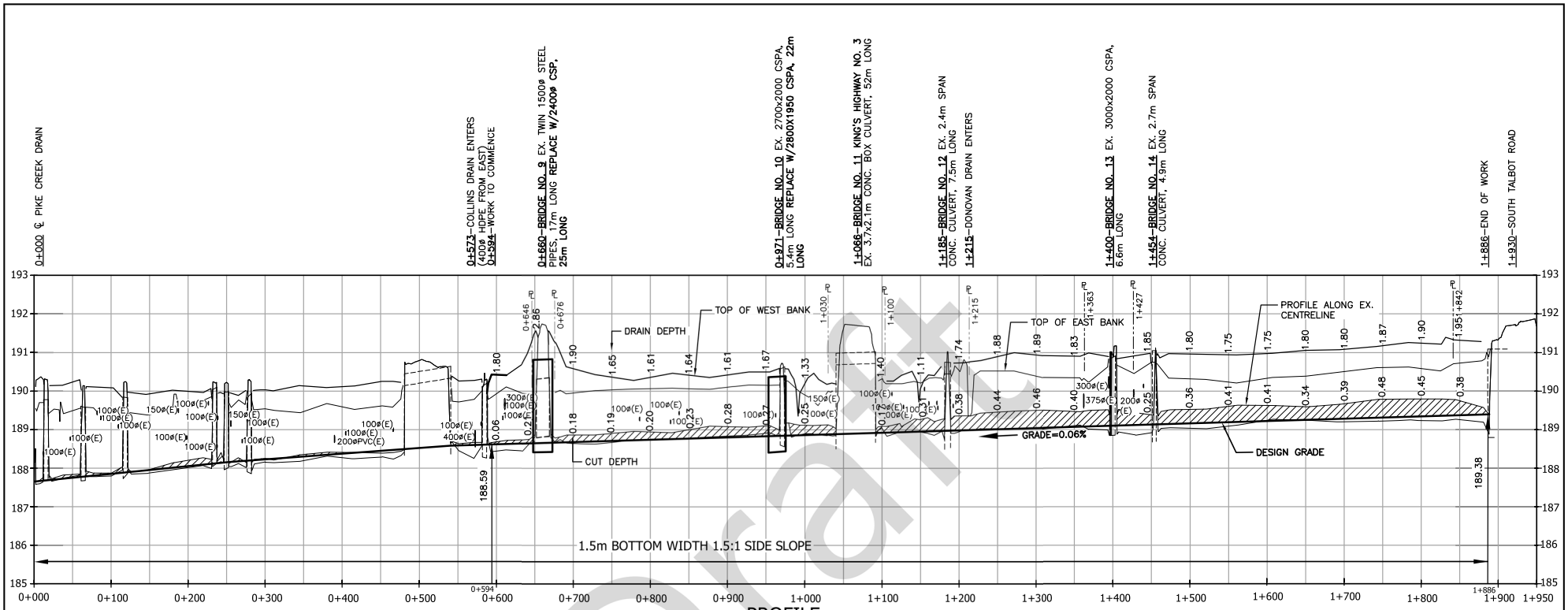
PROJECT NO. 24-8320
DRAWING SCALES BASED ON A 11" X 17" SHEET

Drainage Report for the
MALDEN ROAD DRAIN EAST (UPPER PORTION)
Town of Tecumseh

SHEET TITLE WATERSHED PLAN
PAGE NO. 1 of 6

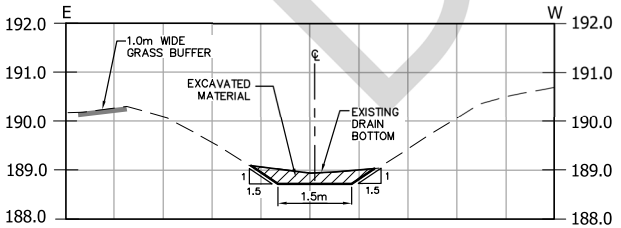
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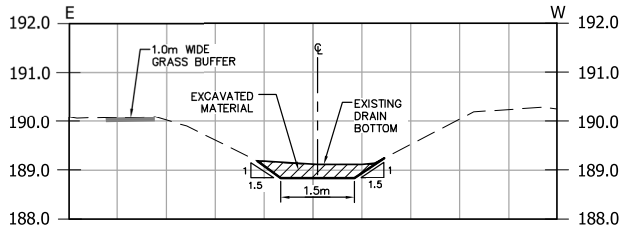


PROFILE

SCALE–HORIZ.=1:5,000
VERT.=1:100



CROSS SECTION STA. 0+800 (LOOKING UPSTREAM)
SCALE–1:100



CROSS SECTION STA. 1+000 (LOOKING UPSTREAM)
SCALE–1:100

'SCHEDULE G'

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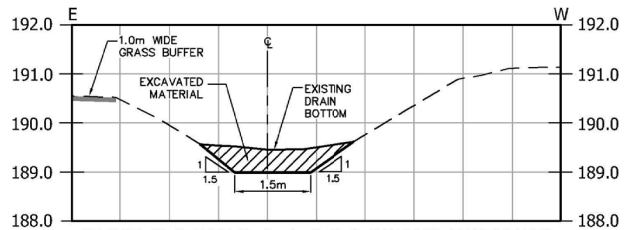
DILLON

Drainage Report for the
MALDEN ROAD DRAIN EAST
(UPPER PORTION)
Town of Tecumseh

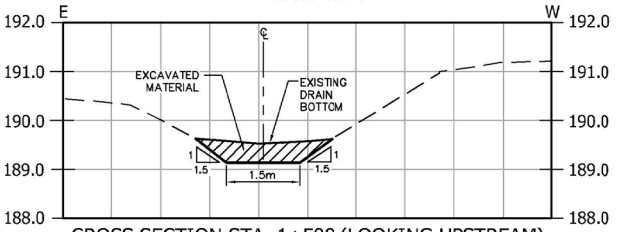
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SHEET TITLE	PROFILE
DRAWING SCALES BASED ON A 11" X 17" SHEET	
PAGE NO.	2 of 6

Draft

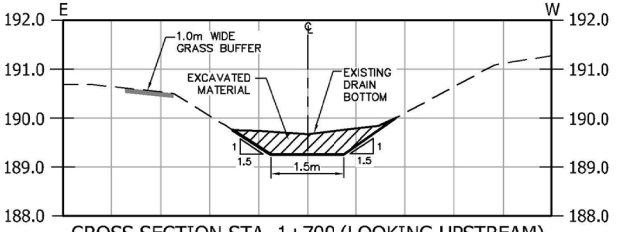
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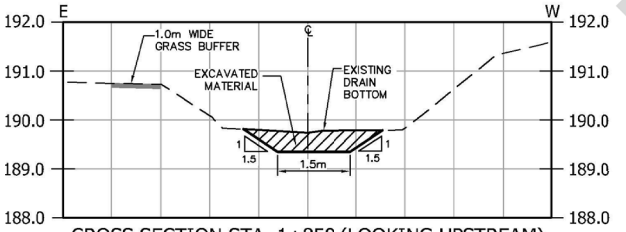
CROSS SECTION STA. 1+250 (LOOKING UPSTREAM)
SCALE–1:100



CROSS SECTION STA. 1+500 (LOOKING UPSTREAM)
SCALE–1:100



CROSS SECTION STA. 1+700 (LOOKING UPSTREAM)
SCALE–1:100



CROSS SECTION STA. 1+850 (LOOKING UPSTREAM)
SCALE–1:100

TABLE 1 – BRIDGE DESIGN INFORMATION

DESCRIPTION	BRIDGE No. 9	BRIDGE No. 10
BRIDGE ℄ LOCATION (STA.)	0+660	0+971
BRIDGE TYPE	TRAIL	FARM
PIPE INVERT ELEV. U/S SIDE(m)	188.40	188.44
PIPE INVERT ELEV. D/S SIDE(m)	188.38	188.41
TOP OF ℄ DRIVEWAY SURFACE ELEV. (m)	191.72	190.91
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	188.63	188.82
MIN. TOP WIDTH OF DRIVEWAY (m)	6.1	12.1
MIN. CULVERT GRADE (%)	0.10%	0.10%
CULVERT TYPE	CSP	CSPA
CULVERT MATERIAL	ALUMINIZED	ALUMINIZED
CULVERT LENGTH (m)	25.0	22.0
CULVERT THICKNESS (mm)	3.5	3.5
CULVERT CORRUGATIONS (mm)	125x25	125x25
PIPE SIZE (mm)	2400	2800x1950
CULVERT ENDWALL TYPE	SLOPING	SLOPING

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DESIGN: JAO | REVIEWED BY: VJH
DRAWN: WLB | CHECKED BY: OEM
DATE: November 6, 2026
SCALE: AS SHOWN

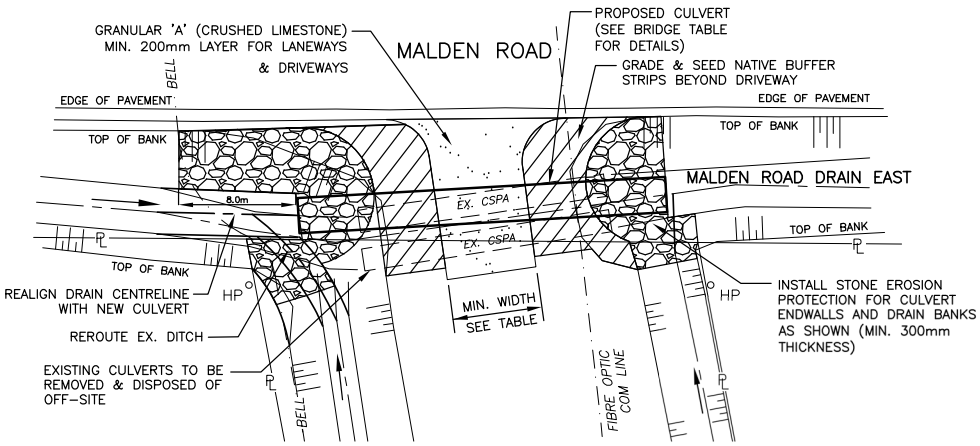
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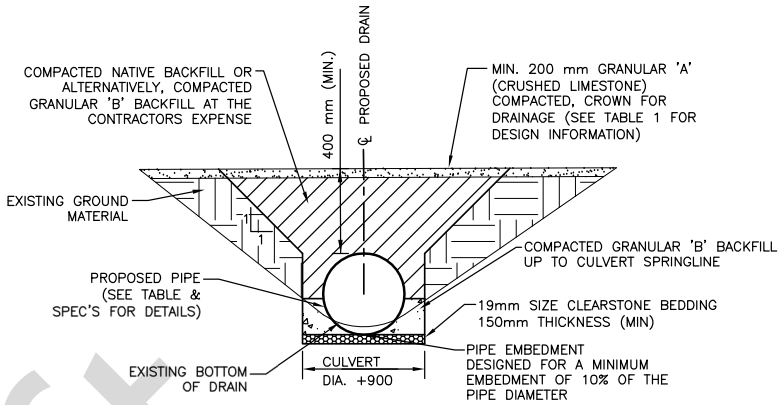
Drainage Report for the
MALDEN ROAD DRAIN EAST
(UPPER PORTION)
Town of Tecumseh

PROJECT NO. 24-8320
SHEET TITLE: CROSS SECTIONS & DESIGN TABLE
DRAWING SCALES BASED ON A 11" X 17" SHEET
PAGE NO. 3 of 6

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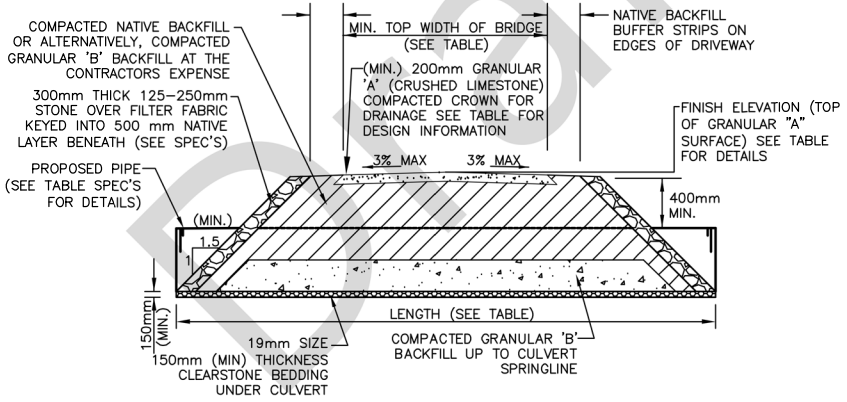


BRIDGE NO. 9 PLAN
NOT TO SCALE



BRIDGE NO. 9 CROSS SECTION
NOT TO SCALE

NOTE: CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING THIRD PARTY INSPECTION AND PROTECTING EXISTING UTILITIES TO THE UTILITY OWNER'S SATISFACTION.



BRIDGE NO. 9 LONGITUDINAL SECTION
NOT TO SCALE

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REVIEWED BY	VJH
DRAWN	WLB
CHECKED BY	OEM
DATE	November 6, 2026
SCALE	AS SHOWN

DILLON

Drainage Report for the
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Town of Tecumseh

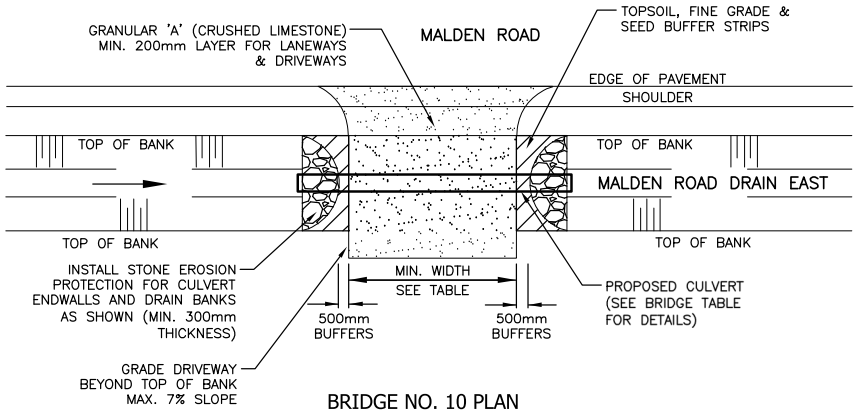
PROJECT NO. 24-8320

SHEET TITLE BRIDGE NO. 9 DETAILS

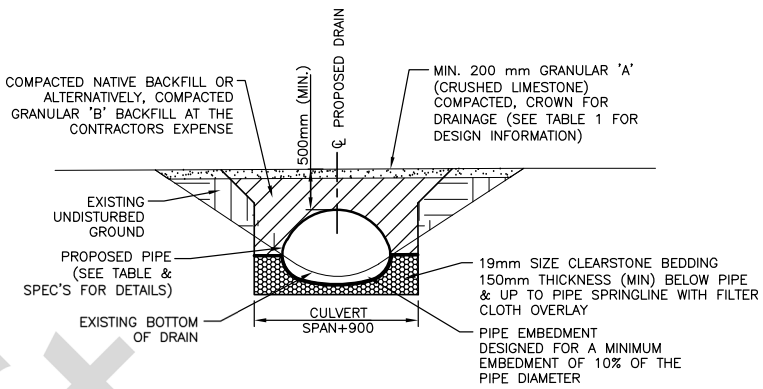
DRAWING SCALES BASED ON A 11" X 17" SHEET

PAGE NO. 4 of 6

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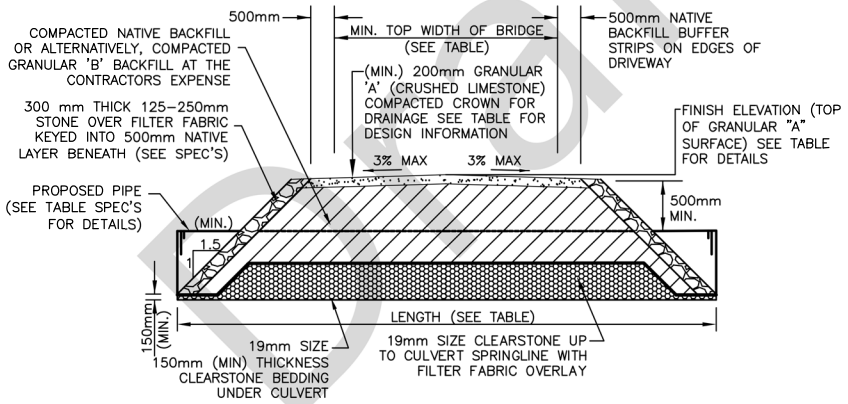


BRIDGE NO. 10 PLAN
NOT TO SCALE



BRIDGE NO. 10 CROSS SECTION
NOT TO SCALE

NOTE: DRIVEWAY CENTRELINE TO BE SHIFTED APPROXIMATELY 4m DOWNSTREAM FROM EXISTING LOCATION.



BRIDGE NO. 10 LONGITUDINAL SECTION
NOT TO SCALE

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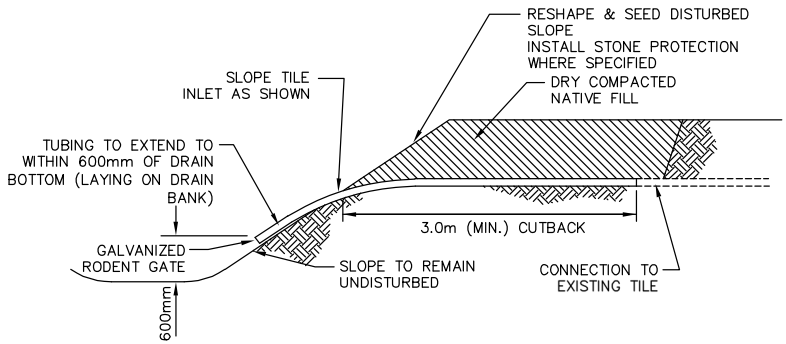
DESIGN	JAO
REVIEWED BY	VJH
DRAWN	WLB
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DATE	November 6, 2026
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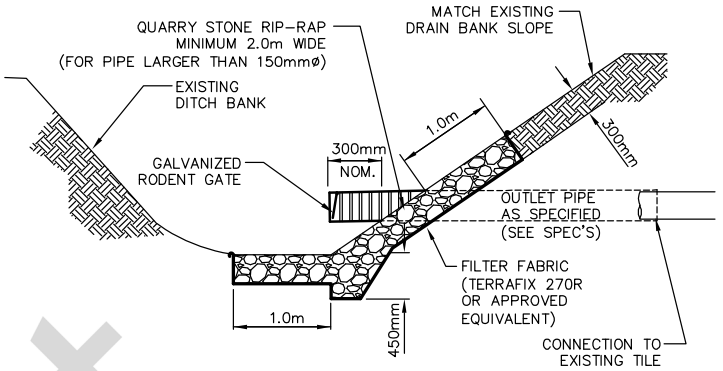
Drainage Report for the
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Town of Tecumseh

PROJECT NO.	24-8320
SHEET TITLE	BRIDGE NO. 10 DETAILS
DRAWING SCALES BASED ON A 11" X 17" SHEET	
PAGE NO.	5 of 6

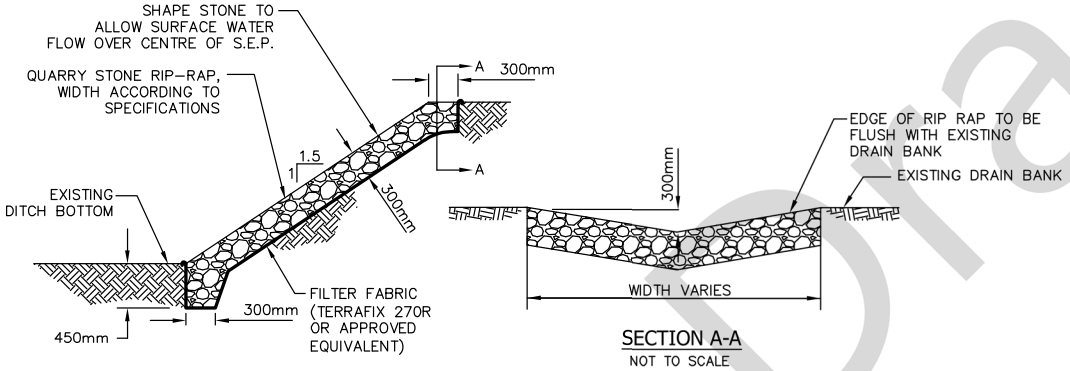
Nov 05, 2026 - 2:26pm P:\2024\248320 Malden Road East Drain\2. Work\Drawings\248320-03-DRN-CON (Upper) Nov26.dwg



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

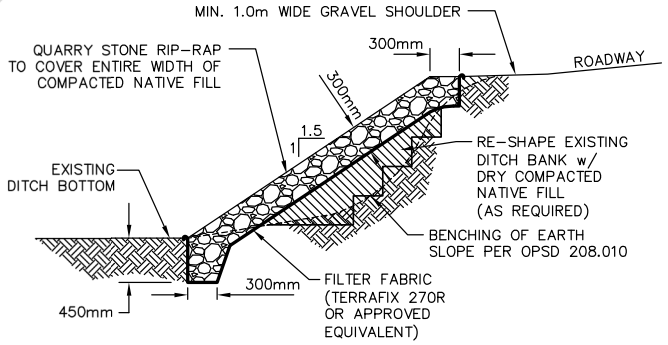


TYPICAL CSP TILE INLET
REPLACEMENT DETAIL
NOT TO SCALE



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

SECTION A-A
NOT TO SCALE



TYPICAL DITCH BANK REPAIR
DETAIL w/ BACKFILLING & RIP-RAP
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Drainage Report for the
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(UPPER PORTION)
Town of Tecumseh

PROJECT NO.	24-8320
SHEET TITLE	MISCELLANEOUS DETAILS
DRAWING SCALES BASED ON A 11" X 17" SHEET	
PAGE NO.	6 of 6

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