

**DRAINAGE REPORT
FOR THE**

**EAST TOWNLINE DRAIN
(ST. CLAIR OUTLET)**

TOWN OF TECUMSEH



(FINAL)
13 FEBRUARY 2019
MARK D. HERNANDEZ, P.ENG.
FILE No. 14-9921
TECUMSEH FILE NO. E09ET(32)

Mayor and Council
The Corporation of the Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario
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Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh

Mayor and Council:

Instructions

The Municipality received a request from the landowners of Roll No. 570-48900 for the repair and improvement of the East Townline Drain on 29 May 2014. The Municipality was contacted by the landowner and a meeting was held on-site on 8 September 2014 to better understand the nature of the request. It was discussed that their concerns included the following:

- Localized depressions along an enclosed section of drain (lawn enclosure) in front of Municipal No. 1951 Manning Road (Roll No. 570-48500).
- A new road culvert required for a proposed intersection. The location of this road culvert fronts municipally owned lands but would provide temporary access to lands westerly that are proposed to be developed.
- Failing access culverts denoted herein as Bridge Nos. 9 and 17

In addition, the Municipality received phone calls from residents concerning bank failures and the need for brushing on the downstream reaches of the drain. Council accepted the request under Section 78 of the Drainage Act and on 15th July 2014 appointed Dillon Consulting Limited to prepare a report.


Summary of Changes Following PIC Meeting

The intent of the Public Information Centre (PIC) meeting is to provide the stakeholders with an opportunity to review the draft document and provide input and discuss any concerns. The minutes from the PIC meeting are attached as Schedule 'A-1' herein. Subsequent to the PIC meeting, the owner of Roll No. 570-48500 advised that the proposed enclosure which they had requested initially is not required at this time and may be brought forward under a separate report in the future. Also included, subsequent to the PIC meeting, the owner of Roll No. 570-48350 requested Bridge No. 6 be replaced with an additional 6 metre top width rather than under the future maintenance provisions.

As a result, the revisions made to the report are as follows:

1. The watershed boundary for the Cyr Drain was revised and area under Block 'C' was reduced.
2. Block 'C' assessment factors for lands and roads were revised.
3. The watershed boundary for the Antaya Drain was revised to include the rear yards of lands fronting Lesperance Road.

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4. The watershed boundary for the portion of East Townline Drain being improved under this report was shifted to the centreline of County Road No. 19 right-of-way excluding the lands within the Town of Lakeshore.
 5. The works associated with the proposed development, including the drain enclosure and rerouting of the Baillargeon Drain were removed from the report and the costs associated were assessed to Roll No. 570-48500.
 6. We provided the specifications for Bridge No. 22 in the report under future maintenance.
 7. The addition of allowances under Section 29 and 30 for Roll No. 570-48500.

A second Public Information Centre (PIC) meeting was held as the Town had become aware that not all of the landowners were given notice of the initial PIC meeting. The minutes from this second meeting are attached as Schedule 'A-2' herein. Subsequently, there were additional revisions requested, as follows:

1. Union Gas requested that their bridge (Bridge No. 16) be able to accommodate a dump truck and hiab and the report was revised accordingly.
2. The Town of Tecumseh advised Roll No. 570-48700 (Mario Valente) was added to Roll No. 570-48800 (2024120 Ontario Ltd.). As a result, Bridge No. 11 was assessed as a secondary access bridge.
3. Roll No. 570-03100 (Brian J. Berry) requested his acreage be reduced from 5.49 acres to 4.36 acres as per a legal survey provided to us.

Watershed Description

The East Townline Drain commences at the north side of County Road 42, and flows northerly along the west side of Manning Road (County Road No. 19) to its outlet into Lake St. Clair where it is pumped into the lake. The total length is approximately 5,100 metres. The watershed area encompasses approximately 474.72 ha (1,173.07 acres) which consists of approximately 43.06 ha within the Town of Lakeshore; 15.09 ha within County of Essex Roads and the remainder of 416.57 ha within the Town of Tecumseh.

The East Townline Drain provides outlet for the Antaya Drain, Baillargeon Drain, Cyr Drain, Manning Road Drain and several urban storm sewer systems. The lands comprising the watershed are of mixed agricultural, residential, commercial and light industrial land uses. There is little topographic relief. From the Ontario Soil Survey, the principle surficial soil in the study area is described as Brookston Clay. Brookston Clay is characterized as a very slow draining soil type.

Subsequent to the last improvements made to the East Townline Drain south of County Road No. 22 during the 1980's, the growth that has taken place around the Manning Road Corridor from County Road 22 northerly to Riverside Drive, has resulted in the need for drain enclosures. More recently, the East Townline Drain Pump Station Outlet to Lake St. Clair was replaced to provide improved outlet capacity.

Drain History

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

- **7 September 2012 by Tom H. Marentette, P.Eng.:** The report provided for removal and replacement of the existing pump station as well as demolition and removal of the existing bridge on Riverside Drive. Also, included was the supply and installation of concrete box culvert sections to connect the existing drain to the

new pump station and improvements to the drain outlet on the shoreline of Lake St. Clair.

- **12 September 2005 by Bruce Crozier, P.Eng.:** The report provided for the enclosing of the drain from the south side of Tecumseh Road northerly to a point north of St. Gregory's Road with a 3000 mm x 1800 mm precast concrete box culvert as part of the reconstruction of Manning and Tecumseh Roads.
- **5 May 2005 by Bruce Crozier, P.Eng.:** The report provided for the enclosing of the drain from the Via Rail tracks southerly to a point north of County Road 22 with a 3000 mm x 1800 mm precast concrete box culvert to allow for reconstruction of that section of Manning Road.
- **17 April 1995 by Lou Zarlenga, P.Eng.:** The report provided for the partial enclosure of the drain from an existing 2400 mm diameter CSP, approximately 55 m south of the centerline of the Via Rail tracks to the north edge of Tecumseh Road.
- **18 January 1982 by L.G. Eansor, P.Eng.:** The report found the drain from County Road 42 to Lake St. Clair to be hydraulically adequate and in a good state of repair and requiring only minimal cleaning. Existing culverts were examined at that time and most were found to have adequate capacity. Deficient culverts were recommended for replacement. Some minor improvements to the pump were also recommended. **This is the governing by-law for the section of the drain which is the subject of this report.**

On-Site Meeting

Two on-site meetings were held on September 23, 2014 and October 16, 2014, respectively. A record of the meetings is provided in Schedule 'A' which is appended hereto.

The information we received prior to and during the site meetings can be summarized as follows:

- No further work is recommended at the outlet as the pump station and outlet construction were recently completed.
- Localized depressions have been identified along an enclosed section of drain (lawn enclosure) in front of Municipal No. 1951 Manning Road (Roll No. 570-48500).
- A new road culvert required for a proposed development. The location of this road culvert fronts municipally owned lands but would provide temporary access to lands westerly that are proposed to be developed. We understand that an Environmental Assessment for the area, undertaken by the County of Essex, identified this crossing as temporary, with the permanent access located further upstream.
- Failing access culverts denoted herein as Bridge Nos. 9 and 17.
- There are plans to relocate the section of open drain between Riverside Drive and St. Thomas Street as part of a future report. It is understood that this work is currently proposed within a five year timeframe. As such, this section of drain was to be reviewed to address concerns raised with bank failures and clearing and brushing needs. Temporary repairs to existing road bridges are being undertaken by the Municipality.

- No concerns were raised with the enclosed section of the drain from north of St. Gregory's to south of County Road 22. In addition, proposed intersection improvements at County Road 19 and County Road 22 are expected to require alterations to the drain under a future drainage report.
- Several concerns were raised with the open section of drain between County Road 22 and the upstream limit of the drain at County Road 42 including:
 - Poor service from the drain / water ponding
 - Culverts and headwalls in need of replacement
 - Bank failures
 - New culvert required to provide for a proposed development
 - The effect of the proposed development (Manning Road Secondary Planning Area MRSPA) and confirming the existing drain cross section is adequate.

Survey

Our survey and examination of the East Townline Drain was carried out in October 2014. Additional drain cross sectional data was collected in January 2015. The survey comprised the recording of topographic data, examining the channel for available depth, and analysing hydraulic capacity of existing access culverts necessary to provide sufficient drainage. We commenced the survey at the north end of the box culvert under County Road No. 22. We then proceeded upstream along the channel, parallel to and along the west side of Manning Road (County Road No. 19), to its head at County Road No. 42.

Our survey revealed a significant amount of overgrown brush and vegetation with frequent accumulation of debris, forming blockages within the channel. There is a uniform build up of sediment averaging 300 mm (12 inches) above the design bottom set out in the previous 1982 engineer's report which is being closely matched as shown on new design profile appended herein. Erosion of the drain banks was observed at some locations where surface water inlets exist.

Existing Conditions and Recommendations

The last report for repair and improvement of the drain was completed in 1982. The drain will require a bottom cleanout to align with the 1982 profile with minor adjustments as shown on the profile attached. Generally, the drain banks are reasonably well grassed and stabilized. However, there are locations where the drain banks have washed out or failed that will require repair and protection using stone rip-rap.

All of the access bridges were inspected during the course of our investigation. Our assessment identified culverts that are in poor condition, good condition and culverts that are still in serviceable condition, but will likely require replacement in the next 5 to 10 years. Our analysis found the hydraulic capacity of Bridge No. 2 and Bridge Nos. 8 through 14 are inadequate and will require immediate replacement. Bridge Nos. 16 through 21 are recommended for replacement due to pipe and end wall condition, inadequate top width and insufficient hydraulic capacity. Bridge No. 22 is relatively new and has been identified as future maintenance.

It should be noted that there is limited available cover for many of the bridge locations. To address this limitation, Ultra-Flo pipe and pipe arches were considered to meet both the cover and flow requirements.

The impact of the proposed development (MRSPA) was reviewed to determine if the outflow from the proposed stormwater management pond would increase the flows in the East Townline Drain. The pond is proposed to be west of the East Townline Drain and immediately north of the Canadian Pacific Railway. Our analysis shows that the existing conditions are considered 'worst case' and so constitute the basis of our design. This is due to the stormwater being stored in the pond and discharged slowly over time. As the timing of the proposed development is not yet known at this time, the culverts have been designed for existing conditions despite the potential for decreased peak flows in the future.

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

Bridge No. 1: Station 0+131 - Desro Drive Bridge

A 24.5 m long, 1800 mm diameter corrugated steel pipe with stone rip-rap end protection and asphalt surface is an existing road crossing. A culvert was shown at this location on the profile in the 1982 report. It was shown as a 12.2 m length and new sections were added at each end when Desro Drive was constructed in 1989.

We anticipate that this culvert will require replacement within the next 10 years or sooner if conditions warrant. We recommend that in the future the culvert be replaced with a new 25 m long, 1800 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and restoration of asphalt roadway.

Bridge No. 2: Station 0+251 - Fire Hydrant Access - Town of Tecumseh

A 6.2 m long, 1600 mm diameter corrugated steel pipe with concrete jute bag end protection provides access to an existing hydrant. This culvert was shown on the profile in the 1982 report. The culvert is not in use at the present time for vehicular traffic.

The culvert is deficient in hydraulic capacity and requires immediate replacement. We recommend that the culvert be replaced with a new 12.5 m long, 1800 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls and filter fabric underlay providing a minimum 4 metre wide grassed surface.

Bridge No. 3: Station 0+367 - Jamsyl Drive - Town of Tecumseh

A 30 m long, 1800 mm corrugated steel pipe (CSP) with rip-rap end protection and asphalt surface is an existing road crossing. This bridge was installed when Jamsyl Drive was constructed in 1994.

We anticipate that this culvert will require replacement within the next 10 years or sooner if conditions warrant. We recommend that in the future the culvert be replaced with a new 30 m long, 1800 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and restoration of asphalt roadway.

Bridge No. 4: Station 0+514 - Mary & Daniel Marion (Roll No. 570-48200)

A 6.3 m long, 2000 mm diameter corrugated steel pipe (CSP) with broken concrete end protection and gravel driveway provides access to this property. This culvert was shown on the profile for the 1982 report as a 2000 mm diameter pipe.

We anticipate that this culvert will require replacement within the next 10 years or sooner if conditions warrant. We recommend that in the future the culvert be replaced with a new 14.5 m long, 1650 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls and filter fabric underlay providing a minimum 3.1 m wide gravel surface.

Bridge No. 5: Station 0+564 - James Sylvestre Developments Limited Jamsyl Limited Partnership (Roll No. 570-48300)

A 12 m long, 2010 mm x 1530 mm corrugated steel pipe arch (CSPA) with concrete jute bag end protection and asphalt driveway provides access to this property. The origin of this culvert is unknown. This culvert is in good condition.

We recommend that in the future the culvert be replaced with a new 12.0 m long, 1650 mm diameter aluminized Ultra Flo pipe complete with concrete jute bag end walls.

Bridge No. 6: Station 0+652 – JSNC Holdings Inc. (Roll No. 570-48350) & Jamsyl Group Inc. (Roll No. 570-48380) – Shared Bridge

A 10.9 m long, 2500 mm x 1940 mm corrugated steel pipe arch (CSPA) with concrete jute bag end protection and asphalt driveway provides a shared access between two properties. This culvert was shown on the 1982 profile.

We anticipate that this culvert will require replacement within the next 10 years or sooner if conditions warrant. The landowner requested an additional 6 metres added to the 9 metre top width. Therefore, we recommend that the culvert be replaced with a new 24.5 m long, 1650 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls and filter fabric underlay providing a minimum 15 m wide asphalt driveway surface.

Bridge No. 7: Station 0+745 - Sylvester Drive - Town of Tecumseh

A 23.8 m long, 2010 mm x 1530 mm corrugated steel pipe arch (CSPA) with concrete jute bag end protection and asphalt surface is an existing road crossing. This culvert was installed when Sylvester Drive was constructed in 1994. This culvert is in good condition.

We recommend that in the future the culvert be replaced with a new 33.0 m long, 1800 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and restoration of asphalt roadway.

Bridge No. 8A: Station 0+853 – Jeannette Sylvestre Trustee 851381 Ontario Ltd. (Roll No. 570-48460)

We recommend a new culvert be installed with a new 20 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo pipe arch complete with sloped stone end walls and filter fabric underlay. The driveway shall provide a 12.2 m wide grassed top width for the severed parcel.

Bridge No. 8B: Station 0+895 – Jeannette Sylvestre (Roll No. 570-48470)

We recommend a new culvert be installed with a new 20 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo pipe arch complete with sloped stone end walls and filter fabric underlay. The driveway shall provide a 12.2 m wide grassed top width for the severed parcel.

Bridge No. 8C: Station 1+032 – James Sylvestre Developments Ltd. (Roll No. 570-48500)

A 40.3 m long, 1200 mm diameter corrugated steel pipe with some broken concrete end protection and asphalt driveway provides access to this property. This culvert was shown in the 1982 profile, although it was shown as a 4.0 m long, 1200 mm diameter pipe at the time. The culvert is deficient in hydraulic capacity and requires immediate replacement. We recommend that the culvert be replaced with a new 48 m long, 1200 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls and filter fabric underlay and a 7.3 m wide asphalt driveable surface and the remainder as a lawn enclosure.

Bridge No. 9: Station 1+106 – James Sylvestre (Roll No. 570-48595)

A 9.3 m long, 1200 mm diameter corrugated steel pipe with broken concrete end protection provides access to this property. The origin of this culvert is unknown. The culvert is deficient in hydraulic capacity and requires immediate replacement. We recommend that the culvert be replaced with a new 14 m long, 1200 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls and filter fabric underlay providing a minimum 6.1 m wide gravel driveway surface.

Bridge No. 10: Station 1+163 – Jerry and Melissa Bolivar (Roll No. 570-48600)

A 7.9 m long, 1200 mm diameter corrugated steel pipe with broken concrete end protection and an asphalt driveway surface provides access to this property. This culvert was shown in the 1982 report. This culvert is deficient in hydraulic capacity and requires immediate replacement. We recommend that the culvert be replaced with a new 14 m long, 1200 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 6.1 m wide asphalt driveway surface.

Bridge No. 11: Station 1+208 – 2024120 Ontario Ltd. (Roll No. 570-48800)

A 7.8 m long, 1200 mm diameter corrugated steel pipe with broken concrete end protection and a grass driveway provides access to this property. This culvert was shown in the 1982 report. The culvert is deficient in hydraulic capacity, end wall protection and top width and requires immediate replacement. We recommend that the culvert be replaced with a new 17 m long, 1200 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 9 m wide gravel driveway surface.

Bridge No. 12: Station 1+358 - 2024120 Ontario Ltd. / Fire Hydrant Access (Roll No. 570-48800/Town of Tecumseh)

A 7.6 m long, 1200 mm diameter corrugated steel pipe with broken concrete end protection and gravel driveway provides access to this property. This culvert was shown in the 1982 report. It is deficient in hydraulic capacity, end protection and top width and requires immediate replacement. We recommend that the culvert be replaced with a new 21 m long (including 4 m length for hydrant access), 1200 mm diameter aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 9 m wide gravel driveway surface.

The culvert is used at the present time for vehicular traffic but is also required for access to a fire hydrant.

Bridge No. 13: Station 1+546 – Fire Hydrant Access-Town of Tecumseh

A 7.3 m long, 600 mm diameter corrugated steel pipe with broken concrete end protection and earth driveway provides secondary access to this property. This culvert was shown on the 1982 profile. It also provides access to a fire hydrant. It is deficient in hydraulic capacity, end wall protection and top width and requires immediate replacement. After consultation with the landowner, the culvert for farm access shall be removed. We recommend that the culvert for access to the hydrant be replaced with a new 10.5 m, 1160 mm x 920 mm aluminized Ultra Flo pipe arch complete with sloped stone end walls, filter fabric underlay and providing a minimum 4 m wide grassed surface.

Bridge No. 14: Station 1+689 – Fire Hydrant Access-Town of Tecumseh

A 7.7 m long, 700 mm diameter corrugated steel pipe with concrete jute bag end protection and gravel driveway provides secondary access to this property. This culvert was shown on the 1982 profile. It also provides access to a fire hydrant. It is deficient in hydraulic capacity and requires immediate replacement. After consultation with the landowner, the culvert for farm access shall be removed. We recommend that the culvert be replaced with a new 10 m long, 1160 mm x 920 mm aluminized Ultra Flo pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 4 m wide grassed surface.

Bridge No. 15: Canadian Pacific Railway Crossing - Station 1+898 (Roll No. 590-01100)

A 6.2 m long, 1.83 m span x 1.2 m rise concrete box culvert provides a crossing for the railway. This culvert was shown on the 1982 profile. A stamp on the culvert wall indicates that it was constructed in 1910. We understand that the CPR inspects their bridges on a regular basis and will identify when it is necessary to replace this bridge. This bridge shall remain in place.

Bridge No. 16: Station 1+949 - Union Gas Ltd. (Roll No. 570-48810)

A 13.7 m long, 900 mm diameter corrugated steel pipe with rip-rap end protection provides access to this property. The origin of this culvert is unknown, but it is apparent that it was installed for the Union Gas property. This culvert is deficient in hydraulic capacity, positive grade and requires replacement. We recommend that the culvert be replaced with a new 18.5 m long, 1200 mm diameter aluminized corrugated steel pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 7.3 m wide gravel driveway surface.

The culvert is used at the present time for vehicular traffic but is also required for access to a fire hydrant.

Bridge No. 17: Station 2+097 – James Sylvestre Developments Ltd. (Roll No. 570-48900)

A 7.7 m long, 900 mm diameter corrugated steel pipe with broken concrete end protection provides access to this property. This culvert was shown in the 1982 report. This culvert is deficient in hydraulic capacity and requires replacement. We recommend that the culvert be replaced with a new 14.5 m long, 1010 mm x 790 mm aluminized Ultra Flo pipe arch complete with sloped stone end walls, filter fabric underlay and providing a minimum 9 m wide gravel driveway surface.

Bridge No. 18: Station 2+276 – Herbert A. and Mary J. Drew (Roll No. 570-49000)

A 6.4 m long, 750 mm diameter corrugated steel pipe with timber end protection provides access to this property. This culvert was shown on the 1982 report. This culvert is deficient in hydraulic capacity and requires replacement. We recommend that the culvert be replaced with a new 12 m long, 1150 x 820 mm aluminized corrugated steel pipe arch complete with sloped stone end walls, filter fabric underlay and providing a minimum 6.1 m gravel driveway surface.

Bridge No. 19: Station 2+318 – Fire Hydrant Access-Town of Tecumseh

A 6.6 m long, 1000 mm diameter corrugated steel pipe with no end protection provides access to this property. This culvert was shown in the 1982 report. It serves a fire hydrant. This culvert requires replacement. We recommend that the culvert be replaced with a new 10.5 m long, 1000 mm diameter aluminized corrugated steel pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 4 m wide grassed surface.

Bridge No. 20: Station 2+446 – Garry W. LeClair (Roll No. 570-49100)

A 7.0 m long, 1000 mm diameter corrugated steel pipe with stone end protection provides access to this property. The origin of this culvert is unknown. This culvert requires replacement. We recommend that the culvert be replaced with a new 12.5 m long, 1000 mm diameter aluminized corrugated steel pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 6.1 m wide gravel driveway surface.

Bridge No. 21: Station 2+633 - Hydro One Networks Inc.

The length and size of the culvert was unable to be identified during investigation as it was buried. The origin of this culvert is unknown. This culvert requires replacement. We recommend that the culvert be replaced with a new 15 m long, 700 mm diameter aluminized corrugated steel pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 9 m wide gravel driveway surface.

Bridge No. 22: Station 2+689 - Rosaire J. Baillargeon (Roll No. 570-00200)

A 9.4 m long, 600 mm diameter corrugated steel pipe with timber end protection provides access to this property. The origin of this culvert is unknown. This culvert is in good condition.

We recommend that in the future the culvert be replaced with a new 12 m long, 600 mm diameter aluminized corrugated steel pipe complete with sloped stone end walls, filter fabric underlay and providing a minimum 6.1 m wide gravel driveway surface.

Design Considerations

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

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

Allowances

In accordance with Section 29 of the Drainage Act, we have made a determination of the amount to be paid for land taken for 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 \$26,450 per hectare. This value was derived from the MPAC assessment of the subject lands.

In accordance with Section 30 of the Drainage Act, we have made a determination of the amount to be paid for damages to the lands and crops (if any) occasioned by the operation of equipment and the disposal of material excavated from the drain within the designated working corridor adjacent to properties along the west side of the East Townline Drain.

Throughout the length of the work, the excavated material is to be disposed of as set out in the Special Provisions in Schedule 'F' herein. The allowance for damages is calculated at a rate of \$3,707 per hectare (\$1,500 per acre). Schedule "B" shows the distribution of these allowances for a corridor area designated to be 10.0 metres wide on the west side of

the drain for the placement and spreading of drain spoils.

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 East Townline Drain be repaired and improved as described below:

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
1.	Brushing of the drain from Station 0+000 to Station 2+700 including removal off-site with trimming and/or removal of existing trees within the drain as required to accommodate the drainage works. The work shall include disposal of brush by means of stockpiling and burning where permitted or alternatively trucked off-site.	\$3,500.00
2.	Excavation, trucking and/or levelling of excavated materials works, as follows:	
	a) Excavation of the drain bottom as follows:	
	i) Station 0+000 to Station 2+700, totalling approximately 2,700 lineal metres of drain and approximately 1,100 m ³ of material.	\$18,900.00
	ii) Additional excavation to widen drain (west bank) from Station 0+144 to Station 0+244 and Station 0+810 to Station 0+843.	\$800.00
	b) Levelling of excavated materials as follows:	
	i) At all agricultural properties totalling approximately 700 m ³ of material.	\$2,100.00
	c) Trucking of excavated materials off-site, as follows:	
	i) At all non-agricultural properties and grassed lawns, totalling approximately 400 m ³ of material.	\$7,600.00
	ii) At drain bank widening Station 0+144 to Station 0+244 and Station 0+810 to Station 0+843, totalling approximately 200 m ³ of material.	\$3,800.00
3.	Stone erosion protection on drain banks, as follows:	
	a) Station 0+939 Baillargeon Drain enters – Supply and install 60 m ² (300 mm thick) of stone erosion protection including filter fabric underlay.	\$3,900.00
4.	Seeding, as follows:	
	a) Seeding of 1.0 m wide grass buffer strip beyond the top of bank on the west side of the drain from Station 0+000 to Station 2+700 with the exception of the residential lawns and existing buffer strips (approximately 1,300 m ²).	\$2,600.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	b) Seeding of west drain bank Station 0+144 to Station 0+244 and Station 0+810 to Station 0+843 (approximately 450 m ²)	\$1,500.00
5.	Open drain realignment on north side of County Road No. 22 at Sta. 0-090 to Sta. 0-115, as follows:	
	a) Excavation to realign and reshape drain, fill in old alignment and compaction, stone erosion protection (approximately 130 m ²) and hydro-seeding (approximately 160 m ²). Excess fill materials to be hauled away. Salvage existing stone erosion protection for re-use.	\$11,000.00
6.	New access bridge works, as follows:	
	a) <u>Bridge No. 8A - Station 0+853 (Roll No. 570-48460)</u> - The work is to include site clean-up and restoration within the working area. Supply and place a new 20.0 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo spiral rib steel pipe arch with a 2.8 mm thickness (see specifications) complete with clear stone bedding up to springline with filter fabric overlay (approximately 60 tonnes), full Granular 'B' backfill material (approximately 230 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), providing a minimum 12.2 m (40 ft.) grassed top width with sloping stone end walls c/w filter fabric underlay (approximately 50 m ²). The work shall include grading of topsoil and seeding for top width (approximately 160 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$29,200.00
	b) <u>Bridge No. 8B - Station 0+895 (Roll No. 570-48470)</u> - The work is to include site clean-up and restoration within the working area. Supply and place a new 20.0 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo spiral rib steel pipe arch with a 2.8 mm thickness (see specifications) complete with clear stone bedding up to springline with filter fabric overlay (approximately 60 tonnes), full Granular 'B' backfill material (approximately 230 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), providing a minimum 12.2 m (40 ft.) grassed top width with sloping stone end walls c/w filter fabric underlay (approximately 50 m ²). The work shall include grading of topsoil and seeding for top width (approximately 160 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$29,200.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
7.	Private access bridge replacement works, as follows:	
	a) <u>Bridge No. 6 (Shared Driveway) - Station 0+652 (Roll No. 570-48350 & Roll No. 570-48380)</u> - Removal and disposal of existing 10.9 m long, 2500 x 1950 mm pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and installation of a new 24.5 m long, 1650 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications). Clear stone bedding material beneath pipe, minimum 150 mm thickness (approximately 25 tonnes), full Granular 'A' backfill (crushed limestone) (approximately 405 tonnes), compacted under driveway providing a minimum 9 m (30 ft.) driveable top width with an additional 6 m top width to the north totalling 15 m (49.2 ft.) top width, asphalt restoration, 80 mm HL3 layer (approximately 25 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), sloping stone end walls c/w filter fabric underlay (approximately 55 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$45,350.00
	b) <u>Bridge No. 8C (Driveway and Lawn Enclosure) - Station 1+032 (Roll No. 570-48500)</u> - Removal and disposal of existing 40.3 m long, 1200 mm diameter CSP lawn enclosure, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and installation of a new 48 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications). Clear stone bedding material beneath pipe, minimum 150 mm thickness (approximately 40 tonnes), full Granular 'A' backfill (crushed limestone) (approximately 240 tonnes), compacted under driveway providing a minimum 7.3 m (24 ft.) driveable top width, asphalt restoration, 80 mm HL3 layer (approximately 10 tonnes), and the remaining portion as a lawn enclosure, full Granular 'B' backfill material to 300 mm above pipe for enclosure portion (approximately 220 tonnes), clean native backfill material above for enclosure (approximately 90 m ³). The work shall include grading of topsoil and seeding for enclosure (approximately 250 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$51,900.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	c) Costs to hydro-excavate existing Bridge No. 8 to investigate settlement over culvert.	<u>\$870.00</u>
	<u>Sub-Total Bridge No. 8C</u>	\$52,770.00
	d) Bridge No. 9 - Station 1+106 (Roll No. 570-48595) - Removal of existing 9.3 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 14.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), full Granular 'B' backfill material to the underside of the Granular 'A' driveway materials for driveway portion (approximately 120 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), Granular 'A' driveway materials (approximately 35 tonnes), providing a minimum 6.1 m (20 ft.) driveable top width, sloping stone end walls c/w filter fabric underlay (approximately 30 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$15,700.00
	e) Bridge No. 10 - Station 1+163 (Roll No. 570-48600) - Removal of existing 7.9 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 14.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), full Granular 'A' backfill material to underside of asphalt surface (approximately 155 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 35 m ²) providing a minimum 6.1 m (20 ft.) driveable top width and asphalt restoration, 80 mm HL3 layer (approximately 5 tonnes). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$18,850.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	f) <u>Bridge No. 11 - Station 1+208 (Roll No. 570-48800)</u> (Secondary Access) - Removal of existing 7.8 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 17.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), full Granular 'B' backfill material to the underside of the Granular 'A' driveway materials (approximately 145 tonnes), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 35 m ²) providing a minimum 9 m (30 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$18,400.00
	g) <u>Bridge No. 12 - Station 1+358 (Roll No. 570-48800)</u> (Primary Access) - Removal of existing 7.6 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 21.0 m long (including 4 m length for hydrant access), 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 20 tonnes), full Granular 'B' backfill material up to the underside of the Granular 'A' driveway materials (approximately 165 tonnes), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 30 m ²) providing a minimum 9 m (30 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense. (90% cost portion)	\$18,720.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	<p>h) <u>Bridge No. 17 - Station 2+097 (Roll No. 570-48900)</u> - Removal of existing 7.7 m long, 900 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 14.5 m long, 1010 mm x 790 mm aluminized Ultra Flo spiral rib steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 25 tonnes), full Granular 'B' backfill material from springline of pipe culvert to the underside of the Granular 'A' driveway materials (approximately 30 tonnes), Granular 'A' driveway materials (approximately 35 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 20 m²) providing a minimum 9.0 m (30 ft.) driveable top width including rerouting of farm ditch at north end of pipe complete with sloping stone (approximately 10m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.</p>	\$15,650.00
	<p>i) <u>Bridge No. 18 - Station 2+276 (Roll No. 570-49000)</u> - Removal of existing 6.4 m, 750 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 12.0 m long, 1150 x 820 mm aluminized corrugated steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 20 tonnes), Granular 'B' backfill to underside of Granular 'A' driveway material (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m³), Granular 'A' driveway surface materials (approximately 25 tonnes) and sloping stone end walls c/w filter fabric underlay (approximately 20 m²) providing a minimum 6.1 m (20 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.</p>	\$9,550.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	j) Bridge No. 20 - Station 2+446 (Roll No. 570-49100) - Removal of existing 7 m long, 1000 mm diameter pipe and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 12.5 m long, 1000 mm diameter aluminized corrugated steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 10 tonnes), full Granular 'B' backfill up to underside of Granular 'A' driveway material (approximately 70 tonnes), clean native surface layer beyond driveway (approximately 20 m³), Granular 'A' driveway materials (approximately 30 tonnes) and sloping stone end walls c/w filter fabric underlay (approximately 30 m²) providing a minimum 6.1 m (20 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$10,200.00
8.	Private access bridge cleaning works, as follows:	
	a) Bridges No. 4, 5 and 22 – Clean three (3) existing bridges.	\$1,500.00
9.	Temporary Silt Control Measures During Construction	<u>\$650.00</u>
	SUB-TOTAL	\$321,440.00
10.	Allowances under Section 29 for land taken for the establishment of permanent grass buffer strips along the drain.	\$4,425.00
11.	Allowances under Section 30 for damages to adjoining lands where spoil materials placed.	\$4,800.00
12.	Site meeting, drain survey, design, assessments and report preparation including expenses and incidentals.	\$92,891.00
13.	Costs associated with the Baillargeon Drain Outlet Extension	\$15,000.00
14.	Costs associated with PIC meeting revisions and proposed development	\$4,000.00
15.	Tender Documents and Contract Administration	\$2,500.00
16.	ERCA application review and permit fee	<u>\$800.00</u>
	TOTAL ESTIMATE – EAST TOWNLINE DRAIN (OPEN DRAIN IMPROVEMENTS) EXCLUDING NON PRO-RATABLE SECTION 26 COSTS	<u>\$445,856.00</u>

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	SECTION 26 NON PRO-RATABLE COSTS	
17.	Hydrant access bridge replacement works, as follows:	
	a) <u>Bridge No. 2 - Station 0+251 (Hydrant Access)</u> - Removal of existing 6.2 m long, 1600 mm diameter C.S.P. pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up, seeding of disturbed drain banks and restoration within the working area. Supply and place a new 12.5 m long, 1800 mm diameter aluminized Ultra Flo spiral rib steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), Granular 'B' backfill up to 410 mm above pipe (approximately 145 tonnes), clean native backfill material above (approximately 10 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 45 m ²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 40 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$18,450.00
	b) <u>Bridge No. 12 - Station 1+358 (Hydrant Access)</u> (10% cost portion)	\$2,080.00
	c) <u>Bridge No. 13 - Station 1+546 (Hydrant Access)</u> - Removal of existing 7.3 m long, 600 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include seeding of disturbed drain banks and restoration within the working area. Supply and place a new 10.5 m long, 1160 mm x 920 mm aluminized Ultra Flo spiral rib steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 20 tonnes), Granular 'B' backfill up to 300 mm above pipe (approximately 45 tonnes), clean native backfill material above to driveway surface (approximately 30 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 45 m ²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 25 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$12,350.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	d) <u>Bridge No. 14 - Station 1+689 (Hydrant Access)</u> - Removal of existing 7.7 m long, 700 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up, seeding of disturbed drain banks and restoration within the working area. Supply and place a new 10.0 m long, 1160 mm x 920 mm aluminized Ultra Flo spiral rib steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 15 tonnes), Granular 'B' backfill up to driveway surface (approximately 55 tonnes), and sloping stone end walls c/w filter fabric underlay (approximately 30 m ²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 25 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$10,950.00
	e) <u>Bridge No. 16 - Station 1+949 (Hydrant Access)</u> (25% cost portion)	\$4,325.00
	f) <u>Bridge No. 19 - Station 2+318 (Hydrant Access)</u> - Remove existing 6.6 m long, 1000 mm diameter pipe, removal of brush within the working area with disposal of debris and vegetative materials off the site, clean-up and restoration within the working area. Supply and place a new 10.5 m long, 1000 mm diameter aluminized corrugated steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 10 tonnes), Granular 'B' backfill up to the springline of the pipe (approximately 10 tonnes), clean native backfill material from springline of pipe culvert to driveway surface (approximately 25 m ³), clean native surface layer beyond driveway (approximately 20 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 30 m ²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 25 m ²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$7,550.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
18.	Union Gas access bridge replacement works, as follows:	
	a) <u>Bridge No. 16 - Station 1+949 (Union Gas Ltd.-Roll No. 570-48810)</u> - Removal of existing 13.7 m long, 900 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 18.5 m long, 1200 mm diameter aluminized corrugated steel pipe culvert with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), Granular 'B' backfill up to springline of pipe (approximately 40 tonnes), clean native backfill material from springline of pipe culvert to the underside of the Granular 'A' driveway materials (approximately 85 m ³), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 30 m ²) providing a minimum 7.3 m (24 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense. (75% cost portion)	\$12,975.00
19.	Hydro One access bridge replacement works, as follows:	
	a) <u>Bridge No. 21 - Station 2+633 (Hydro One Networks Inc.)</u> - Removal of existing pipe and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 15.0 m long, 700 mm diameter aluminized corrugated steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 10 tonnes), Granular 'B' backfill up to the springline of the pipe (approximately 10 tonnes), clean native backfill material from springline of pipe culvert to the underside of the Granular 'A' driveway materials (approximately 35 m ³), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m ³), and sloping stone end walls c/w filter fabric underlay (approximately 25 m ²) providing a minimum 9.0 m (30 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.	\$8,500.00
20.	Bridge cleaning works, as follows:	
	a) <u>Bridge No. 1-Desro Drive</u> – Clean existing 1800 mm diameter CSP bridge (24.5 m long).	\$1,300.00

EAST TOWNLINE DRAIN COST ESTIMATE		
Item	Description	Amount
	b) <u>Bridge No. 3-Jamsyl Drive</u> – Clean existing 1800 mm diameter CSP bridge (30 m long).	\$1,300.00
	c) <u>Bridge No. 7-Sylvestre Drive</u> – Clean existing 2010 x 1530 mm CSPA bridge (24 m long).	\$1,300.00
	d) <u>Bridge No. 15-Canadian Pacific Railway Bridge</u> – Clean existing 1.83 m span x 1.2 m rise concrete box (6.2 m long).	\$1,500.00
21.	Costs to repair CSP pipe damaged by Union Gas at existing Bridge No. 8.	\$590.00
	SUB-TOTAL SECTION 26 NON PRO-RATABLE COSTS	\$83,170.00
22.	Engineering cost apportionment	\$15,612.00
	TOTAL SECTION 26 NON PRO-RATABLE COSTS	\$98,782.00
	OVERALL TOTAL ESTIMATE – EAST TOWNLINE DRAIN IMPROVEMENTS (Excluding Applicable Taxes)	<u>\$544,638.00</u>

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.

Assessment of Costs

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

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

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

Assessment Rationale-Open Drain Improvements

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


The above estimated costs have been assessed 50% as a Benefit assessment and 50% as an Outlet Liability assessment against all upstream lands and roads within the drainage area.

1. For tile main outlet repairs including stone erosion protection as required, at the location of the said main tile outlets, the Drainage Superintendent and/or Engineer may direct the contractor to make these repairs at the expense of the landowner. Private tile repairs shall be assessed 100% against the property on which the said tile exists.
2. Bank failure repairs caused by surface water inlets on abutting lands along this section of the drain shall be assessed 100% to the abutting landowner if the failure is on the west side of the drain and 100% to the Road Authority if the failure is on the east side of the drain.
3. Open drain realignment north of County Road No. 22 costs have been assessed 50% against the abutting property (Roll No. 240-14400) as a non-proratable assessment and the remaining 50% against the County of Essex under Section 26 of the Drainage Act and shall be a non-proratable assessment.
4. Cost associated with the Baillargeon Drain Outlet have been assessed 100% to Roll No. 570-48500 and shall be a non-proratable assessment.

Assessment Rationale for Special Benefit Assessments (Bridge Replacements)

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

1. Shared Access Bridge installation costs for Bridge No. 6 has been assessed 25% against Roll No. 570-48350 and 25% against Roll No. 570-48380 and the remaining 50% as an Outlet assessment to the upstream lands and roads.
2. Increased costs to provide an additional 6 metre top width for Bridge No. 6 have been assessed 100% against the adjacent landowner Roll No. 570-48350.
3. Access Bridge installation costs for Bridge No. 8A (Station 0+853) has been assessed 100% against the abutting property Roll No. 570-48460.
4. Access Bridge installation costs for Bridge No. 8B (Station 0+985) has been assessed 100% against the abutting property Roll No. 570-48470.
5. Access Bridge installation costs representing the driveway portion of Bridge No. 8C (Station 1+032-Primary Access) has been assessed 50% against the abutting property Roll No. 570-48500 and the remaining 50% is assessed as an Outlet assessment against the upstream lands and roads within the East Townline Drain watershed.
6. Enclosure costs representing part of Bridge No. 8C (Station 1+032) has been assessed 100% to Roll No. 570-48500.
7. Access Bridge installation costs representing part of Bridge No. 9 (Station 1+106-Primary Access) has been assessed 50% against the abutting property Roll No. 570-48595 and the remaining 50% is assessed as an Outlet assessment against the upstream lands and roads within the East Townline Drain watershed.

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8. Access Bridge replacement costs for Bridges No. 10, 17, 18 and 20 has been assessed 50% against the abutting property and the remaining 50% is assessed as an Outlet assessment against the upstream lands and roads within the East Townline Drain watershed.
 9. Access Bridge replacement costs for Bridge No. 11 (Station 1+208) has been assessed 100% against the abutting property Roll No. 570-48800.
 10. Access Bridge replacement costs for Bridge No. 12 has been assessed 45% against the abutting property Roll No. 570-48800, 10% to Town of Tecumseh Public Works Department under Section 26 of the Drainage Act and the remaining 45% as an Outlet assessment against the upstream lands and roads within the East Townline Drain watershed. The assessment against the Town of Tecumseh Public Works Department shall be a non-proratable assessment.
 11. Increased costs to provide asphalt driveway surfaces have been assessed 100% against the adjacent landowner.
 12. An engineering cost portion of \$1,300.00 each for the design provisions on the future replacement of Bridge Nos. 4, 5 and 22 has been assessed 50% against the abutting property and the remaining 50% as an Outlet assessment to the upstream lands and roads.
 13. Access bridge replacements costs for Bridges No. 2, 13, 14 & 19 have been assessed 100% against the Town of Tecumseh Public Works Department under Section 26 of the Drainage Act and shall be a non-proratable assessment.
 14. An engineering cost portion of \$1,330.00 each for the design provisions on the future replacement of Bridge Nos. 1, 3 and 7 has been assessed 100% against the Town of Tecumseh Road Authority under Section 26 of the Drainage Act and shall be a non-proratable assessment.
 15. Bridge cleaning costs for Bridge No. 15 has been assessed 100% against Canadian Pacific Railway under Section 26 of the Drainage Act and shall be a non-proratable assessment.
 16. Access bridge replacement costs for Bridge No. 16 (Roll No. 570-48810 Union Gas Ltd.) has been assessed 75% against the abutting property and the remaining 25% against the Town of Tecumseh Public Works Department under Section 26 of the Drainage Act and shall be a non-proratable assessment.
 17. Access Bridge replacement costs to provide access to the hydro corridor on Bridge No. 21 has been assessed 100% against Hydro One Networks Inc. 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)

After completion, the East Townline Drain shall be maintained by the Town of Tecumseh at the expense of the lands and road herein assessed in Schedule E-1,” and in the same relative proportions subject, of course, to any variations that may be made under the authority of the Drainage Act. The assessments are based on an arbitrary amount of \$20,000.00.

Future Maintenance (Private Access Bridges)


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

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

Schedule ‘E-2’ represents all the lands and roads upstream of Bridge No. 1 and is applicable to other primary access bridges located further upstream by including only those properties that are upstream of the said bridge. The assessment is based on an arbitrary amount of \$10,000.00 of future access bridge maintenance costs.

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

Bridge No.	Type	Owner(s)	Special Benefit	Outlet
1	Road	Town of Tecumseh Road Authority (Section 26)	100%	0%
2	Fire Hydrant Access	Town of Tecumseh Public Works (Section 26)	100%	0%
3	Road	Town of Tecumseh Road Authority (Section 26)	100%	0%
4	Primary	Roll No. 570-48200	50%	50%
5	Primary	Roll No. 570-48300	50%	50%
6	Shared	Roll No. 570-48350	25%	50%
6	Shared	Roll No. 570-48380	25%	
6	Additional top width	Roll No. 570-48350	100%	0%
7	Road	Town of Tecumseh Road Authority (Section 26)	100%	0%
8A	Primary	Roll No. 570-48460	50%	50%



Bridge No.	Type	Owner(s)	Special Benefit	Outlet
8B	Primary	Roll No. 570-48470	50%	50%
8C	Primary	Roll No. 570-48500	50%	50%
8C	Enclosure	Roll No. 570-48500	100%	0%
9	Primary	Roll No. 570-48595	50%	50%
10	Primary	Roll No. 570-48600	50%	50%
11	Secondary	Roll No. 570-48800	100%	0%
12	Primary	Roll No. 570-48800	45%	45%
12	Fire Hydrant Access	Town of Tecumseh Public Works (Section 26)	10%	0%
13A	Fire Hydrant Access	Town of Tecumseh Public Works (Section 26)	100%	0%
14A	Fire Hydrant Access	Town of Tecumseh Public Works (Section 26)	100%	0%
16	Union Gas	Roll No. 570-48810	75%	0%
16	Fire Hydrant Access	Town of Tecumseh Public Works (Section 26)	25%	0%
17	Primary	Roll No. 570-48900	50%	50%
18	Primary	Roll No. 570-49000	50%	50%
19	Fire Hydrant Access	Town of Tecumseh Public Works (Section 26)	100%	0%
20	Primary	Roll No. 570-49100	50%	50%
21	Hydro	Hydro One Networks Inc.	100%	0%
22	Primary	Roll No. 570-00200	50%	50%

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 15 - Overall Watershed Plan

Page 2 of 15 - Property Owners

Page 3 of 15 - Profile 1

Page 4 of 15 - Profile 2

Page 5 of 15 -	Cross Sections
Page 6 of 15 -	Bridge No. 8C Drain Enclosure Details
Page 7 of 15 -	Bridge Design Table
Page 8 of 15 -	Farm Bridge Details
Page 9 of 15 -	Residential Bridge Details
Page 10 of 15 -	Arch Pipe Bridge Details
Page 11 of 15 -	Asphalt Surface Bridge Details
Page 12 of 15 -	Jute Bag End Wall Details
Page 13 of 15 -	Hydrant Bridge Details
Page 14 of 15 -	Hydrant Bridge (Arch) Details
Page 15 of 15 -	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.

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, Food and Rural Affairs in accordance with Section 88 of the Drainage Act, for this grant, as well as for all other grants for which this work may be eligible.

Respectfully submitted,

DILLON CONSULTING LIMITED



Mark D. Hernandez, P.Eng.

MDH:prc:wlb:ges



SCHEDULE 'A – SITE MEETING NO. 1'

**EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) – TOWN OF TECUMSEH
SEPTEMBER 23, 2014
Location: 1951 Manning Road**

In Attendance (see sign-in sheet attached)

Cal Heincke	Paul Moraud
Garry LeClair	Sharan Wajiha
Bill MacCelland	John Curphey
Carlo DiCocco	Howard Smith
Dennis Leach	Melvin Orr
Debbie Lockney-Wessel	Trisha Sylvestre
Mike Cundari	Jeff Sylvestre
Gary Newton	Jim Sylvestre
Diana Legge	John Green
Josie Fabbri-Jarsich	
Sam Paglia – Town of Tecumseh	
Mark Hernandez – Dillon Consulting Limited	

Mr. Paglia introduced himself as the Drainage Superintendent for the Town of Tecumseh and Mr. Hernandez of Dillon Consulting as the drainage engineer for the project. Mr. Paglia explained that the meeting is a formal meeting under the Drainage Act and that the East Townline Drain is a Municipal Drain having status under the Act. Further it was noted that the Drainage Act is a provincial Act falling under the purview of the Ontario Ministry of Agriculture, Food and Rural Affairs but is administered by the local municipalities.

It was noted that due to an issue with the invitations for this site meeting, a separate site meeting will be required for Lakeshore residents and the County of Essex who did not receive the notices.

It was discussed that the Town received a formal request from a landowner south of County Road 22 who has concerns including: existing culverts that are failing, the requirement for a new culvert and poor performance of the drain / water ponding for extended periods. In addition, the Town received concerns regarding the need for brushing north of St Gregory's. Bank failures were also noted north of St. Gregory's which is approximately 1820 metres north of County Road No. 22.

It was discussed that upstream of County Road 22 there are areas of vegetation, sedimentation and bank failures that will have to be reviewed in more detail during the survey of the drain. Further, it was discussed that the culverts will be reviewed during the survey as many of them are expected to be near the end of their life expectancy. The culverts will be reviewed for condition, hydraulic capacity, top width and the state of the end walls.

Residents expressed concern with the proposed development and the potential effect on the performance of the drain. It was discussed that the pre and post development flows will have to be considered. It was discussed that land use changes will be considered across the watershed and not just within the proposed development. A resident noted that they wanted the open section of the drain reviewed for capacity and not just the culverts.

It was confirmed that the open channel design established in the previous report will be reviewed to determine whether or not it is sufficient or if it should be modified.

It was discussed that the Town has plans to relocate the open section of drain north of St. Gregory's into Lakewood Park. This work is expected to take place in approximately a five year time frame and will have to be completed under a separate report. The intention is to repair the bank failures and complete the brushing as requested. Further improvements, unless required due to safety concerns, would be sacrificial if the drain is relocated.

No concerns were raised with respect to the enclosed section of drain from County Road 22 to St. Gregory's. It was discussed that this project will be subject to the requirements of the Essex Region Conservation Authority, Department of Fisheries and Oceans and Ministry of Natural Resources. It was noted that the drain classification will have to be confirmed.

A resident noted that they have tiled a portion of their property which now flows away from the East Townline Watershed. It was discussed that tile mapping, surveys and other information should be brought forward to the engineer so that they can be considered as the watershed boundaries are reviewed.

It was noted that the proposed work may affect the Baillargeon Drain and will have to be considered in the design.

Following this meeting the next steps include: a topographical survey of the drain and preparation of a draft report. The draft report will be circulated to the landowners and a public meeting will be held to discuss the contents of the draft report. In particular feedback will be requested if there are any revisions to the watershed boundaries, ownership changes, or similar concerns. The public meeting will be an opportunity to discuss the report and answer questions prior to the formal board meetings. Following the public meeting, the report will be finalized.

The Drainage Act mandates that two meetings be held in front of Council. The first is the Meeting to Consider which addresses the technical aspects of the report. The second is the Court of Revision which considers assessments. If there are no appeals, Council passes the report into bylaw and the Town can proceed to tender the project. Notices are sent out in advance to advise of the meeting dates. A current copy of the report is provided with the notice.

There is a grant program available through OMAFRA, whereby properties that have the farm class tax rate are eligible for a one-third grant. The municipality applies for the grant on behalf of the landowners and bills the landowners the net cost of their assessment after grant. Further, the municipality can work with qualifying landowners to debenture costs.

EAST TOWNLINE DRAIN (ST. CLAIR OUTLET)
SITE MEETING, SEPTEMBER 23, 2014

SIGN-IN SHEET

Name	Address	Email
CAL HEINCKE	12826 LANOUE ST	_____
Nancy Le Clair	2465 Offenberg Rd	
Bill MacLellan	12888 Cenire	
DI COCCO CARLO	1794 LESPERANCE RD	
DENNIS LEACH	2031 ROXANNE DR.	
Debbie Lockrey-Wissal	12368 Chastany Tecumseh	
MIKE CUNDARI	12095 INTERSECTION RD. TEC.	
GARY NEWTON	1843 LESPERANCE RD.	
Diana Legge	1519 Cortina Crest	
JOSIE FABBRI - JACUSCH	12372 CHARLENE LANE	

EAST TOWNLINE DRAIN (ST. CLAIR OUTLET)
SITE MEETING, SEPTEMBER 23, 2014

SIGN-IN SHEET

Name	Address	Email
Paul Manning	1921 Lepperson Rd	
WATINA SHABAN	1529 Heatherly Dr.	
JOHN CUEPHEY		
HOWARD SMITH	179 MANNING RD	
MELVIA GAA	1910 Manning Rd.	
TRISHA SYLVESTER	1951 MANNING RD.	
SAM PAGLIA	TOWN OF YERUMSEK.	
DEE SYLVESTER	1951 MANNING	
Jim SYLVESTER	1865 MANNING	
JOHN GREEN	12809 Lemire	

SCHEDULE 'A – SITE MEETING NO. 2'

EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) – TOWN OF TECUMSEH

OCTOBER 16, 2014

Location: Parking Lot Northwest of Manning Road and County Road 22

In Attendance (see sign-in sheet attached)

Sandy Stankov-Coco
Franca Vollpatti
Peter Delisle
Blake Lucas
? Vittello
Danny Vujovic – County of Essex
Jill Fiorito – Town of Lakeshore
Sam Paglia – Town of Tecumseh
Peter Bziuk – County of Essex
Mark Hernandez – Dillon Consulting Limited

Mr. Paglia introduced himself as the Drainage Superintendent for the Town of Tecumseh, Ms. Jill Fiorito as Drainage Superintendent for the Town of Lakeshore and Mr. Hernandez of Dillon Consulting as the drainage engineer for the project. Mr. Paglia explained that the meeting is a formal meeting under the Drainage Act and that the East Townline Drain is a Municipal Drain having status under the Act. Further it was noted that the Drainage Act is a provincial Act falling under the purview of the Ontario Ministry of Agriculture, Food and Rural Affairs but is administered by the local municipalities.

It was noted that due to an issue with the invitations for the first site meeting, Lakeshore residents and the County of Essex did not receive the notices. As such, this second meeting is being held to ensure that all landowners have an opportunity to be part of the process.

It was discussed that the Town received a formal request from a landowner south of County Road 22 who has concerns including: existing culverts that are failing, the requirement for a new culvert and poor performance of the drain / water ponding for extended periods. In addition, the Town received concerns regarding the need for brushing north of St Gregory's. Bank failures were also noted north of St. Gregory's. The Town of Tecumseh confirmed that the current report is not current and does not provide them the information they require to complete and assess the work.

It was discussed that upstream of County Road 22 there are areas of vegetation, sedimentation and bank failures that will have to be reviewed in more detail during the survey of the drain. Further, it was discussed that the culverts will be reviewed during the survey as many of them are expected to be near the end of their life expectancy. The culverts will be reviewed for condition, hydraulic capacity, top width and the state of the end walls.

It was discussed that the Town has plans to relocate the open section of drain north of St. Gregory's into Lakewood Park. This work is expected to take place in approximately a five year time frame and will have to be completed under a separate report. The intention is to repair the bank failures and complete the brushing as requested. Further improvements, unless required due to safety concerns, would be sacrificial if the drain is relocated.

No concerns were raised with respect to the enclosed section of drain from County Road 22 to St. Gregory's.

It was discussed that this project will be subject to the requirements of the Essex Region Conservation Authority, Department of Fisheries and Oceans and Ministry of Natural Resources. It was noted that the drain classification will have to be confirmed.

A resident noted that they have a recent severance of their property. This will be reviewed.

A resident noted that the drain on the east side of Manning Road was recently repaired. Lakeshore's Drainage Superintendent will forward the report.

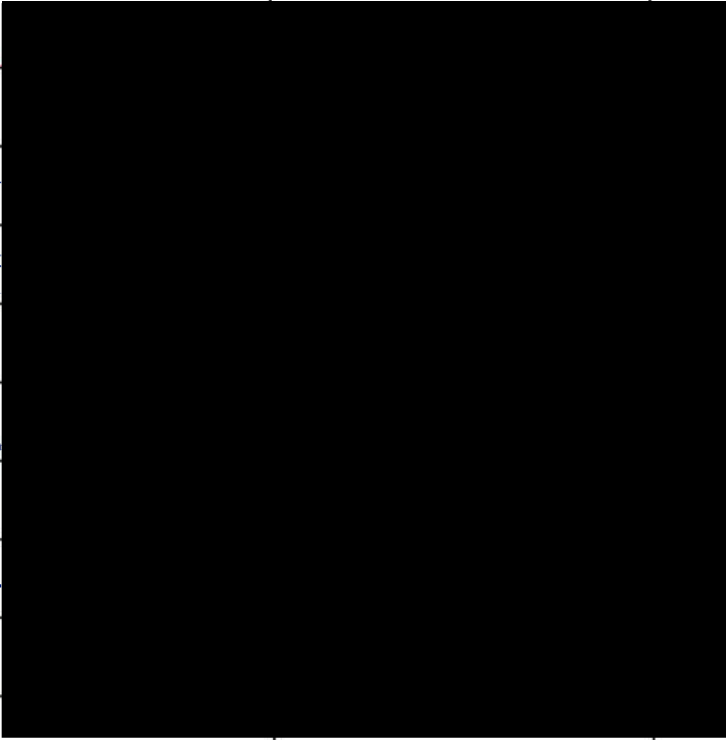
Following this meeting the next steps include: a topographical survey of the drain and preparation of a draft report. The draft report will be circulated to the landowners and a public meeting will be held to discuss the contents of the draft report. In particular feedback will be requested if there are any revisions to the watershed boundaries, ownership changes, or similar concerns. The public meeting will be an opportunity to discuss the report and answer questions prior to the formal board meetings. Following the public meeting, the report will be finalized.

Landowners were encouraged to stay involved in the process and advise of any questions or concerns.

The Drainage Act mandates that two meetings be held in front of Council. The first is the Meeting to Consider which addresses the technical aspects of the report. The second is the Court of Revision which considers assessments. If there are no appeals, Council passes the report into bylaw and the Town can proceed to tender the project. Notices are sent out in advance to advise of the meeting dates. A current copy of the report is provided with the notice.

There is a grant program available through OMAFRA, whereby properties that have the farm class tax rate are eligible for a one-third grant. The municipality applies for the grant on behalf of the landowners and bills the landowners the net cost of their assessment after grant. Further, the municipality can work with qualifying landowners to debenture costs.

October 16, 2014

NAME	ADDRESS	PHONE	EMAIL
<i>Sandy Stankov - Coco</i>			
ESSEX COUNTY			
DANIEL VUTOLIC			
Franca Volpatti	2170 Manning Rd		
PETER DELISLE	4173 ELMSLEAD		
BLAKE LUCAS	1654 MANNING RD		
Jill Florio	Town of Lakeshore		
<i>Don Vitell</i>			
SAM PAGLIA	TOWN OF TECUMSEH		
PETER BZEMIL	COUNTY OF ESSEX		



SCHEDULE 'A-1'

EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) – TOWN OF TECUMSEH

JUNE 15, 2017

PUBLIC INFORMATION CENTRE NOTES

- Union Gas bore hole culvert repair – Special Benefit assessment to Union Gas
- Repair of depressions along lawn enclosure – Special Benefit assessment to landowner
- Watershed not in Lakeshore (pull back to centerline of road)
- Block 'C' lands and roads at same cost per acre-to be revisited
- Westlake Road goes to Cyr – should be removed from assessment
- Sylvestre ok with receiving three (3) reports (not necessary for all Sylvestre owned properties)
- Temporary Manning/County Road No. 22 Improvements – no anticipated affect to the drain
 - Ultimate improvements in downstream section – distant future
 - County will pay special benefit future costs
- Discussion re: staging of construction downstream first? – depends on contractor
- Revise watershed around Cyr Drain
- Spoils spread on farmland not on residential
- Antaya Drain watershed to be revised
- Report revisions anticipated to take a couple of months
- Revisit Bridge 22 – only 17 years old

Notes taken by Mark Hernandez

SCHEDULE 'A-2'

EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) – TOWN OF TECUMSEH OCTOBER 23, 2018 @ TECUMSEH TOWN HALL PUBLIC INFORMATION CENTRE NO. 2 – MEETING NOTES

- The Town of Tecumseh scheduled a second Public Information Centre (PIC) when it became apparent that many landowners did not receive the invitation for PIC #1.
- Three invitations were sent out for this meeting:
 - One for landowners who received the previous invite and have a copy of the report.
 - One for landowners who did not receive the previous invite and who have an assessment anticipated below \$50. A link to the report on the Town's website was provided.
 - One for landowners who did not receive the previous invite and who have an assessment anticipated above \$50. A copy of the report was provided.
- Correct the name for Roll # 570-01800.
- The watershed is typically established based on previous reports as well as any changes to the watershed (ex. tiling of fields, redirecting of flows) since the previous report was completed. If the landowners have any specific concerns about the watershed, then the Engineer will look into the matter further. The watershed was established with the report for the pump station and outlet which was completed in 2012.
- Benefit assessments were discussed.
- There are some lands which flow to another drain first, ex. Antaya Drain. Ultimately the water uses the East Townline Drain which is why there is an assessment for the proposed work.
- The report in question only addresses the East Townline Drain. There is a separate appointment for repair and improvements to the Antaya Drain which will have a separate assessment.
- The Town will be cleaning the Baillargeon Drain under maintenance. The costs will be held until the Town can get an updated assessment schedule.
- The improvements to the upstream section of the East Townline Drain will not create an issue for the lands downstream along the East Townline Drain.
- Ultraflo pipe has been specified due to constraints in achieving the necessary cover over the pipe. The pipe has a smooth interior wall which provides better flow than a traditional corrugated steel pipe. This means that a smaller pipe diameter can convey additional flow. Adequate cover over pipes is required to maintain their structural integrity.
- A 1:2 year storm design has been used. The road culverts have been designed to 1:5 year and checked for overtopping for a 1:10 year design event. The repair and improvements to the drain will result in a better level of service from the drain but will not prevent standing water from larger rain events. However, the improved drain will help to reduce the extent and duration of standing water.
- The widening of CR19 is not anticipated to happen any time soon. The costs associated with impacts to the drain due to the road works would be borne by the Road Authority.
- Assessments from the Town come in the form of a separate invoice. It is not automatically added to taxes. It typically follows six to seven months after completion of construction.

- When construction is complete, the Town will send out a Notice of Warranty. This will be an opportunity for residents to notify the Town if there are any concerns with the quality of construction. The Contractor will be responsible for the quality of their work with a 1 year warranty period.
- Grants are available to properties which have the Farm Tax Class Rate. The grant is one-third of the assessment. The Town applies on behalf of the landowners and bills the landowners net of the grant.
- The Town can assist landowners if they have assessments of \$5000 or more by debenturing the cost.
- If properties are having drainage issues that are not along a municipal drain, they can contact the Public Works department at the Town to review the situation further.
- There will be a separate appointment under the Drainage Act for the future relocation of the East Townline Drain north of St. Gregorys Road. This is required due to proposed improvements to Manning Road. It is anticipated that the Road Authority will be responsible for most if not all of the associated costs.

"SCHEDULE B"
SCHEDULE OF ALLOWANCES
EAST TOWNLIN DRAIN (ST. CLAIR OUTLET)
TOWN OF TECUMSEH

Roll No.	Con.	Description	Owner	Section 30 Damages	Section 29 Land	Total Allowances
570-48460	1	Pt. Lot 156	Jeannette Sylvestre Trustee & 851381 Ontario Ltd.	\$175.00	\$124.00	\$299.00
570-48470	3	Pt. Lot 156	Jeannette Sylvestre	\$170.00	\$121.00	\$291.00
570-48500	3	Pt. Lots 155 & 156	James Sylvestre Developments Ltd.	\$140.00	\$100.00	\$240.00
570-48700			Mario Valente	\$555.00	\$396.00	\$951.00
570-48800	3	Pt. Lots 155 & 156	2024120 Ontario Ltd.	\$1,850.00	\$1,320.00	\$3,170.00
570-48900	3	Pt. Lots 155 & 156	James Sylvestre Developments	\$1,074.00	\$766.00	\$1,840.00
	-		Hydro One Networks Inc.	\$740.00	\$528.00	\$1,268.00
570-00200	1	Pt. Lot 156	Rosaire J. Baillargeon	\$96.00	\$70.00	\$166.00
240-14400	-	Plan 12M393 Pt. Blk 99 RP12R18713 Pts. 1,3,6-14 Pt. Pts. 4&5	Walker Crossings Ltd.	\$0.00	\$1,000.00	\$1,000.00
TOTAL ALLOWANCES				\$4,800.00	\$4,425.00	\$9,225.00

"SCHEDULE C"
SCHEDULE OF ASSESSMENT
EAST TOWNLINE DRAIN (ST. CLAIR OUTLET)
TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 19	5.59	2.26	County of Essex	\$6,495.00	\$11,116.00	\$6,928.00	\$24,539.00
Desro Drive	2.28	0.92	Town of Tecumseh	\$0.00	\$251.00	\$260.00	\$511.00
Jamsyl Drive	2.37	0.96	Town of Tecumseh	\$0.00	\$259.00	\$298.00	\$557.00
Sylvestre Drive	6.15	2.49	Town of Tecumseh	\$0.00	\$526.00	\$998.00	\$1,524.00
(Unopened Road Allowance)	1.77	0.72	Town of Tecumseh	\$0.00	\$147.00	\$202.00	\$349.00
Block 'C'							
Lands	186.80	75.60	Town of Tecumseh	\$0.00	\$8,494.00	\$30,070.00	\$38,564.00
Roads	43.24	17.50	Town of Tecumseh	\$0.00	\$3,281.00	\$11,735.00	\$15,016.00
Total on Municipal Lands.....				\$6,495.00	\$24,074.00	\$50,491.00	\$81,060.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-47900	1	Pt. Lot 156	6.22	2.52	1583912 Ontario Ltd.	\$0.00	\$296.00	\$142.00	\$438.00
570-47903	1	Pt. Lot 156	2.42	0.98	Windsor Poirier Inc.	\$0.00	\$42.00	\$63.00	\$105.00
570-47904	1	Pt. Lot 155	2.16	0.87	2036610 Ontario Ltd.	\$0.00	\$40.00	\$60.00	\$100.00
570-47810	1	Pt. Lot 154 &	2.00	0.81	Jamsyl Group Inc.	\$0.00	\$38.00	\$56.00	\$94.00
570-47812	1	Pt. Lot 155	1.27	0.51	Clairmont Financial Group Inc.	\$0.00	\$33.00	\$49.00	\$82.00
570-05200	2	Pt. Lot 152	3.80	1.54	Romano & Jadranka Zohil	\$0.00	\$58.00	\$85.00	\$143.00
570-04410		Plan 395 Pt. Lot 6 RP12R15273 Pts. 3&4 Pt. Lot 6	3.99	1.61	1046399 Ontario Ltd.	\$0.00	\$60.00	\$214.00	\$274.00
570-04092		Plan 395 Pt. Lot 6 RP12R15820 Pt. 5 Pt. Lot 6	0.80	0.32	Rocco & Anna Lecce	\$0.00	\$29.00	\$102.00	\$131.00
570-47920	2	Pt. Lot 156	0.54	0.22	Louis Power Sewing Ltd.	\$0.00	\$24.00	\$36.00	\$60.00
570-47916	1	Pt. Lot 156	0.59	0.24	Sersa Holdings Inc.	\$0.00	\$25.00	\$38.00	\$63.00
570-47914	1	Pt. Lot 156	0.48	0.19	Guy Mantha & Cheryl Demarse	\$0.00	\$21.00	\$32.00	\$53.00
570-47910	2	Pt. Lot 156	0.49	0.20	Teddan Investments Inc.	\$0.00	\$22.00	\$34.00	\$56.00
570-47909	2	Pt. Lot 156	0.49	0.20	944792 Ontario Inc.	\$0.00	\$22.00	\$34.00	\$56.00
570-47905	2	Pt. Lot 156	1.75	0.71	851312 Ontario Ltd.	\$0.00	\$37.00	\$55.00	\$92.00
570-48000	2	Pt. Lot 155 & 156	8.84	3.58	Balbir S. & Geetinder K. Kooner	\$0.00	\$492.00	\$210.00	\$702.00
570-48005	1	Pt. Lot 156	2.76	1.12	1403440 Ontario Inc.	\$0.00	\$523.00	\$73.00	\$596.00
570-47880	1	Pt. Lot 155	1.76	0.71	Chalut Holdings Inc.	\$0.00	\$37.00	\$54.00	\$91.00
570-47890	1	Pt. Lot 155	1.07	0.43	2062098 Ontario Ltd.	\$0.00	\$31.00	\$46.00	\$77.00
570-47895	1	Pt. Lot 155	0.67	0.27	Jamsyl Group Inc.	\$0.00	\$27.00	\$40.00	\$67.00
570-47894	1	Pt. Lot 155	2.06	0.83	2221836 Ontario Limited	\$0.00	\$38.00	\$57.00	\$95.00
570-48114	1	Pt. Lot 155	0.78	0.32	James Sylvestre Developments Ltd.	\$0.00	\$29.00	\$43.00	\$72.00
570-48112	1	Pt. Lot 155	0.78	0.32	Jamsyl Group Inc.	\$0.00	\$29.00	\$48.00	\$77.00
570-48110	1	Pt. Lot 155	2.79	1.13	Jamsyl Group Inc.	\$0.00	\$44.00	\$74.00	\$118.00
570-48120	1	Pt. Lot 155	2.10	0.85	Jamsyl Group Inc.	\$0.00	\$39.00	\$65.00	\$104.00
570-48130	1	Pt. Lot 155	9.33	3.78	Jamsyl Group Inc.	\$0.00	\$142.00	\$245.00	\$387.00
570-48300	1	Pt. Lot 156	4.14	1.68	James Sylvestre Developments Ltd. & Jamsyl Limited Partnership	\$650.00	\$170.00	\$115.00	\$935.00
570-48200	2	Pt. Lot 156	0.79	0.32	Mary E. & Daniel A. Marion	\$650.00	\$175.00	\$52.00	\$877.00
570-48350	1	Pt. Lot 156	3.83	1.55	JSNC Holdings Inc.	\$29,383.00	\$380.00	\$108.00	\$29,871.00
570-48380	1	Pt. Lot 156	1.03	0.42	Jamsyl Group Inc.	\$8,983.00	\$162.00	\$83.00	\$9,228.00

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-48400	2	Pt. Lot 155	1.45	0.59	2211211 Ontario Ltd.	\$0.00	\$208.00	\$92.00	\$300.00
570-48403	1	Pt. Lot 156	0.95	0.38	Watson-Hayes Land Development Inc.	\$0.00	\$30.00	\$80.00	\$110.00
570-48405	1	Pt. Lot 156	0.59	0.24	True-All Wall Systems Ltd.	\$0.00	\$25.00	\$67.00	\$92.00
570-48406	1	Pt. Lot 156	0.89	0.36	1560896 Ontario Inc.	\$0.00	\$30.00	\$80.00	\$110.00
570-48407	1	Pt. Lot 155	0.49	0.20	7264119 Canada Corporation	\$0.00	\$22.00	\$60.00	\$82.00
570-48139		12R14315, Pts. 19-22	0.75	0.30	Karen J. Holdstock	\$0.00	\$28.00	\$75.00	\$103.00
570-48409	2	Pt. Lot 156	0.55	0.22	1287667 Ontario Ltd.	\$0.00	\$24.00	\$64.00	\$88.00
570-48410	2	Pt. Lot 156	0.58	0.23	Innovative Coating Systems Inc.	\$0.00	\$25.00	\$66.00	\$91.00
570-48415	2	Pt. Lot 156	0.87	0.35	Jamsyl Limited Partnership	\$0.00	\$29.00	\$79.00	\$108.00
570-48420	1	Pt. Lot 155	2.04	0.83	Breakthrough Inc.	\$0.00	\$38.00	\$104.00	\$142.00
570-48430	2	Pt. Lot 155	1.67	0.68	Jamsyl Limited Partnership	\$0.00	\$353.00	\$99.00	\$452.00
570-48600	3	Pt. Lot 156	0.50	0.20	Jerry & Melissa Bolivar	\$11,490.00	\$143.00	\$133.00	\$11,766.00
570-48810	3	Pt. Lot 155	0.59	0.24	Union Gas Ltd.	\$0.00	\$176.00	\$287.00	\$463.00
570-03100	3	Pt. Lot 152 & 153	4.36	1.76	Brian J. Berry	\$0.00	\$66.00	\$755.00	\$821.00
570-03101	3	Pt. Lot 152	0.31	0.13	Peter H. & Helen D. Hormann	\$0.00	\$15.00	\$190.00	\$205.00
570-49000	3	Pt. Lot 154	3.16	1.28	Herbert A. & Mary J. Drew	\$5,406.00	\$230.00	\$2,126.00	\$7,762.00
570-49100	3	Pt. Lot 156	4.70	1.90	Garry W. Leclair	\$5,774.00	\$645.00	\$4,583.00	\$11,002.00
570-00699	3	Pt. Lot 153	1.34	0.54	James Sylvestre Developments Ltd.	\$0.00	\$34.00	\$431.00	\$465.00
570-00100	12	Gore 156	0.35	0.14	Elie Alagha	\$0.00	\$16.00	\$1,205.00	\$1,221.00
570-00101	1	Pt. Lot 156	0.25	0.10	Kartar & Company Ltd.	\$0.00	\$11.00	\$861.00	\$872.00
570-00300	3	S. Pt. Lot 153	0.43	0.17	Bradley J. Chauvin & Ruth A. Chittle	\$0.00	\$19.00	\$1,463.00	\$1,482.00
590-01100			8.86	3.59	Canadian Pacific Railway	\$0.00	\$253.00	\$1,634.00	\$1,887.00
590-00500			32.32	13.08	Hydro One Networks Inc.	\$0.00	\$1,353.00	\$5,700.00	\$7,053.00
240-14400		Plan 12M393 Pt. Blk 99 RP12R18713 Pts. 1,3,6-14 Pt. Pts. 4&5	7.04	2.85	Walker Crossings Ltd.	\$6,495.00	\$0.00	\$0.00	\$6,495.00
570-02600	3	N. Pt. Lot 152	0.50	0.20 *	Farina G. Keuhfuss	\$0.00	\$11.00	\$156.00	\$167.00
570-02500	3	Pt. Lot 152	0.50	0.20 *	Marie A. Gagnier	\$0.00	\$11.00	\$156.00	\$167.00
570-02400	3	N. Pt. Lot 152	0.50	0.20 *	Carole Kitching	\$0.00	\$11.00	\$156.00	\$167.00
570-02300	3	N. Pt. Lot 152	0.50	0.20 *	Blaze, Anka & Ljubica Ristovski	\$0.00	\$11.00	\$156.00	\$167.00
570-02200	3	N. Pt. Lot 152	0.50	0.20 *	Brian & Karen Rutherford	\$0.00	\$11.00	\$156.00	\$167.00
570-02100	3	N. Pt. Lot 152	0.50	0.20 *	Norman J. & Mary A. Lee	\$0.00	\$11.00	\$156.00	\$167.00
570-02000	3	N. Pt. Lot 152	0.50	0.20 *	Lahmber S. & Kulwant K. Pahal	\$0.00	\$11.00	\$156.00	\$167.00
570-01900	3	N. Pt. Lot 152	0.50	0.20 *	Daniel R. Beaulieu	\$0.00	\$11.00	\$156.00	\$167.00
570-01800	3	S. Pt. Lot 152	0.50	0.20 *	Paula Adams	\$0.00	\$11.00	\$156.00	\$167.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$68,831.00	\$6,937.00	\$23,951.00	\$99,719.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-04000	2	Pt. Lot 153	20.87	8.45	860831 Ontario Ltd.	\$0.00	\$316.00	\$866.00	\$1,182.00
570-47800	1	Pt. Lot 155	3.32	1.34	Jamsyl Group Inc.	\$0.00	\$50.00	\$74.00	\$124.00
570-47875	1	Pt. Lot 154 & 155	31.38	12.70	Jamsyl Group Inc.	\$0.00	\$476.00	\$704.00	\$1,180.00
570-47850	1	Pt. Lot 154 & 155	2.70	1.09	Jamsyl Group Inc.	\$0.00	\$41.00	\$60.00	\$101.00
570-48010	1	Pt. Lot 156	6.06	2.45	Jamsyl Group Inc.	\$0.00	\$92.00	\$152.00	\$244.00
570-48030	1	Pt. Lot 156	3.40	1.38	Jamsyl Group Inc.	\$0.00	\$52.00	\$86.00	\$138.00
570-48040	1	Pt. Lot 155 & 156	4.93	2.00	Jamsyl Group Inc.	\$0.00	\$75.00	\$111.00	\$186.00
570-48050	1	Pt. Lot 155	1.61	0.65	James Sylvestre Development Ltd.	\$0.00	\$24.00	\$37.00	\$61.00
570-47865	1	Pt. Lot 155	1.78	0.72	Jamsyl Group Inc.	\$0.00	\$27.00	\$40.00	\$67.00
570-48100	2	Pt. Lot 155 & 156	8.89	3.60	James Sylvestre Development Ltd.	\$0.00	\$281.00	\$229.00	\$510.00

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
570-48301	1	Pt. Lot 156	3.12	1.26	Jamsyl Group Inc Limited Partnership	\$0.00	\$47.00	\$88.00	\$135.00
570-48408	1	Pt. Lot 155 & 156	5.72	2.31	James Sylvestre Developments Ltd.	\$0.00	\$87.00	\$228.00	\$315.00
570-48460	1	Pt. Lot 156	2.88	1.17	Jeannette Sylvestre trustee & 851381 Ontario Ltd.	\$33,056.00	\$226.00	\$156.00	\$33,438.00
570-48470	3	Pt. Lot 156	2.75	1.11	Jeannette Sylvestre	\$33,056.00	\$251.00	\$148.00	\$33,455.00
570-48480	3	Pt. Lot 156	10.00	4.05	851381 Ontario Ltd.	\$0.00	\$152.00	\$543.00	\$695.00
570-48500	3	Pt. Lot 155 & 156	31.50	12.75	James Sylvestre Developments Ltd.	\$99,156.00	\$1,079.00	\$1,710.00	\$101,945.00
570-48595	1	Pt. Gore & Lot 156	1.00	0.40	James Sylvestre	\$8,887.00	\$166.00	\$92.00	\$9,145.00
570-48800	3	Pt. Lot 155 & 156	107.99	43.70	2024120 Ontario Ltd.	\$30,505.00	\$3,862.00	\$19,206.00	\$53,573.00
570-48900	3	Pt. Lot 154 & 155	27.70	11.21	James Sylvestre Developments	\$8,858.00	\$1,568.00	\$8,505.00	\$18,931.00
570-48950	3	Pt. Lot 153	10.29	4.16	James Sylvestre Developments Ltd.	\$0.00	\$156.00	\$1,903.00	\$2,059.00
570-00200	1	Pt. Lot 156	5.83	2.36	Rosaire J. Baillargeon	\$650.00	\$413.00	\$6,530.00	\$7,593.00
Total on Privately-Owned - Agricultural Lands.....						\$214,168.00	\$9,441.00	\$41,468.00	\$265,077.00

SECTION 26 INCREASED COSTS - NON PRO-RATABLE

Roll No.	Con.	Description	Owner	Special Benefit	Benefit	Outlet	Total Assessment
Desro Drive			Town of Tecumseh	\$2,808.00	\$0.00	\$0.00	\$2,808.00
Jamsyl Drive			Town of Tecumseh	\$2,808.00	\$0.00	\$0.00	\$2,808.00
Sylvestre Drive			Town of Tecumseh	\$2,808.00	\$0.00	\$0.00	\$2,808.00
Public Utility (Fire Hydrant Access)			Town of Tecumseh Public Works Department	\$63,342.00	\$0.00	\$0.00	\$63,342.00
590-00500			Hydro One Networks Inc.	\$9,666.00	\$0.00	\$0.00	\$9,666.00
570-48810			Union Gas Ltd.	\$14,754.00	\$0.00	\$0.00	\$14,754.00
590-01100			Canadian Pacific Railway	\$2,006.00	\$0.00	\$0.00	\$2,006.00
			Union Gas	\$590.00	\$0.00	\$0.00	\$590.00
Total Section 26 Increased Costs (Non Pro-ratable).....				\$98,782.00	\$0.00	\$0.00	\$98,782.00
TOTAL ASSESSMENT				\$388,276.00	\$40,452.00	\$115,910.00	\$544,638.00

(Acres) (Ha.)

Total Area: 691.19 279.70

* denotes cut off benefit

"SCHEDULE D"
DETAILS OF SPECIAL BENEFIT
EAST TOWNLINE DRAIN (ST. CLAIR OUTLET)
TOWN OF TECUMSEH

SPECIAL BENEFIT ASSESSMENT
(GENERAL DESCRIPTION OF SPECIAL BENEFIT)

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
570-48200	Mary E. & Daniel A. Marion	<u>Bridge No. 4</u> -Station 0+514 (Future Replacement) (50%)	\$0.00	\$650.00	\$650.00
570-48300	James Sylvestre Developments Ltd. & Jamsyl Limited Partnership	<u>Bridge No. 5</u> -Station 0+564 (Future Replacement) (50%)	\$0.00	\$650.00	\$650.00
570-48350	JSNC Holdings Inc.	<u>Bridge No. 6</u> -Station 0+652 Supply & install a new 24.5 m, 1650 mm diameter Ultra Flo spiral rib pipe bridge (Shared 25%)	\$5,730.00	\$757.00	\$6,487.00
		<u>Bridge No. 6</u> -Station 0+652 Additional 6 m top width to the north (100%)	\$15,280.00	\$2,018.00	\$17,298.00
		<u>Bridge No. 6</u> -Station 0+652 Asphalt driveway surface (100%)	\$4,945.00	\$653.00	\$5,598.00
Total Special Benefit - Roll No. 570-48350			\$25,955.00	\$3,428.00	\$29,383.00
570-48380	Jamsyl Group Inc.	<u>Bridge No. 6</u> -Station 0+652 Supply & install a new 24.5 m, 1650 mm diameter Ultra Flo spiral rib pipe bridge (Shared 25%)	\$5,730.00	\$757.00	\$6,487.00
		<u>Bridge No. 6</u> -Station 0+652 Asphalt driveway surface (100%)	\$2,205.00	\$291.00	\$2,496.00
Total Special Benefit - Roll No. 570-48380			\$7,935.00	\$1,048.00	\$8,983.00
570-48500	James Sylvestre Developments Ltd.	<u>Bridge No. 8C</u> -Sta.1+024-1+040-Replace existing 16 m, 1200 mm diameter CSP bridge with a new 16.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge (50%)	\$10,675.00	\$1,410.00	\$12,085.00
		<u>Bridge No. 8C</u> - Asphalt driveway surface. (100%)	\$2,950.00	\$390.00	\$3,340.00
		<u>Bridge No. 8C</u> - Costs to hydro-excavate ex. Bridge to investigate settlement over culvert (100%)	\$870.00	\$0.00	\$870.00
		<u>Bridge No. 8C Lawn Enclosure</u> -Supply & install a new 32.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge (100%)	\$27,600.00	\$3,645.00	\$31,245.00
		Costs associated with Drain Enclosure proposed subsequently removed. (Non Pro-ratable)	\$0.00	\$32,616.00	\$32,616.00
		Costs associated with the Baillargeon Drain Outlet Extension (Non Pro-ratable)	\$0.00	\$15,000.00	\$15,000.00
		Costs associated with PIC meeting revisions and proposed development	\$0.00	\$4,000.00	\$4,000.00
Total Special Benefit - Roll No. 570-48500			\$42,095.00	\$57,061.00	\$99,156.00
570-48470	Jeannette Sylvestre	<u>Bridge No. 8B</u> -Sta. 0+895-Supply & install a new 20.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge (100%)	\$29,200.00	\$3,856.00	\$33,056.00
570-48460	Jeannette Sylvestre trustee & 851381 Ontario Ltd.	<u>Bridge No. 8A</u> - Sta. 0+853-Supply & install a new 20.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge (100%)	\$29,200.00	\$3,856.00	\$33,056.00
570-48595	James Sylvestre	<u>Bridge No. 9</u> -Station 1+106-Replace existing 9.3 m, 1200 mm diameter CSP bridge with a new 14.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge complete with sloping stone end walls (50%)	\$7,850.00	\$1,037.00	\$8,887.00

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
570-48600	Jerry & Melissa Bolivar	<u>Bridge No. 10</u> -Station 1+163-Replace existing 7.9 m, 1200 mm diameter CSP bridge with a new 14.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge complete with sloping stone end walls (50%)	\$8,700.00	\$1,149.00	\$9,849.00
570-48600	Jerry & Melissa Bolivar	<u>Bridge No. 10</u> - Asphalt driveway surface. (100%)	\$1,450.00	\$191.00	\$1,641.00
Total Special Benefit - Roll No. 570-48600			\$10,150.00	\$1,340.00	\$11,490.00
570-48800	2024120 Ontario Ltd.	<u>Bridge No. 11</u> -Station 1+208-Replace existing 7.8 m, 1200 mm diameter CSP bridge with a new 17.0 m, 1200 mm diameter Ultra Flo spiral rib pipe bridge complete with sloping stone end walls (100%)	\$18,400.00	\$2,430.00	\$20,830.00
570-48800	2024120 Ontario Ltd.	<u>Bridge No. 12</u> -Station 1+358-(Primary Access) Replace existing 7.6 m, 1200 mm diameter CSP bridge with a new 21 m (including 4 m length for hydrant access), 1200 mm diameter Ultra Flo spiral rib pipe bridge complete with sloping stone end walls (45%)	\$8,546.00	\$1,129.00	\$9,675.00
Total Special Benefit - Roll No. 570-48800			\$26,946.00	\$3,559.00	\$30,505.00
570-48900	James Sylvestre Developments Ltd.	<u>Bridge No. 17</u> -Station 2+097-Replace existing 7.7 m, 900 mm diameter CSP bridge with a new 14.5 m, 1010 mm x 790 mm Ultra Flo spiral rib arch pipe bridge complete with sloping stone end walls , reroute ex. farm ditch (50%)	\$7,825.00	\$1,033.00	\$8,858.00
570-49000	Herbert A. & Mary J. Drew	<u>Bridge No. 18</u> -Station 2+276-Replace existing 6.4 m, 750 mm diameter CSP bridge with a new 12.0 m, 1150x820 mm diameter corrugated steel pipe arch (CSPA) bridge complete with sloping stone end walls (50%)	\$4,775.00	\$631.00	\$5,406.00
570-49100	Garry W. LeClair	<u>Bridge No. 20</u> -Station 2+446-Replace existing 7 m, 1000 mm diameter CSP bridge with a new 12.5 m, 1000 mm diameter corrugated steel pipe bridge complete with sloping stone end walls (50%)	\$5,100.00	\$674.00	\$5,774.00
570-00200	Rosaire J. Baillargeon	<u>Bridge No. 22</u> -Station 2+689-(Future Replacement) (50%)	\$0.00	\$650.00	\$650.00
240-14400	Walker Crossings Ltd.	Open drain realignment on North side of County Road No. 22 at Sta. 0-090 to Sta. 0-115 including stone erosion protection and hydro-seeding (50%)	\$5,500.00	\$995.00	\$6,495.00
County Road No. 19	County of Essex	Open drain realignment on North side of County Road No. 22 at Sta. 0-090 to Sta. 0-115 including stone erosion protection and hydro-seeding (50%)	\$5,500.00	\$995.00	\$6,495.00
Total Special Benefit Assessment (Excl. Non Pro-Ratable Costs).....			\$208,031.00	\$81,463.00	\$289,494.00

**SPECIAL BENEFIT ASSESSMENT
(SECTION 26 - NON PRO-RATABLE COSTS)**

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
Desro Drive	Town of Tecumseh	<u>Bridge No. 1</u> -Station 0+131 (Bridge cleaning costs and Future Replacement) (100%)	\$1,300.00	\$1,508.00	\$2,808.00
Jamsyl Drive	Town of Tecumseh	<u>Bridge No. 3</u> -Station 0+367 (Bridge cleaning costs and Future Replacement) (100%)	\$1,300.00	\$1,508.00	\$2,808.00

Roll No.	Owner	Item Description	Estimated Cost	Cost of Report	Special Benefit
Sylvestre Drive	Town of Tecumseh	<u>Bridge No. 7</u> -Station 0+745 (Bridge cleaning costs and Future Replacement) (100%)	\$1,300.00	\$1,508.00	\$2,808.00
		Total Special Benefit - Town of Tecumseh	\$3,900.00	\$4,524.00	\$8,424.00
	Town of Tecumseh Public Works Department	<u>Bridge No. 2</u> - Station 0+251 -Bridge replacement costs for fire hydrant access bridge approx. 12.5 m long, 1800 mm diameter Ultra Flo spiral rib pipe bridge (100%)	\$18,450.00	\$2,530.00	\$20,980.00
	Town of Tecumseh Public Works Department	<u>Bridge No. 12</u> - Station 1+358 (10%)	\$2,080.00	\$285.00	\$2,365.00
	Town of Tecumseh Public Works Department	<u>Bridge No. 13</u> - Station 1+546 -Bridge replacement costs for fire hydrant access bridge approx. 10.5 m long, 1160 x 920 mm Ultra Flo spiral rib pipe arch bridge (100%)	\$12,350.00	\$1,693.00	\$14,043.00
	Town of Tecumseh Public Works Department	<u>Bridge No. 14</u> - Station 1+689 -Bridge replacement costs for fire hydrant access bridge approx. 10 m long, 1160 x 920 mm Ultra Flo spiral rib pipe arch bridge (100%)	\$10,950.00	\$1,502.00	\$12,452.00
	Town of Tecumseh Public Works Department	<u>Bridge No. 16</u> - Station 1+949 (25%)	\$4,325.00	\$593.00	\$4,918.00
	Town of Tecumseh Public Works Department	<u>Bridge No. 19</u> - Station 2+318 - Bridge replacement costs for fire hydrant access bridge approx. 10.5 m long, 1000 mm diameter corrugated steel pipe bridge complete with sloping stone end walls (100%)	\$7,550.00	\$1,034.00	\$8,584.00
		Total Special Benefit - Town of Tecumseh Public	\$55,705.00	\$7,637.00	\$63,342.00
590-01100	Canadian Pacific Railway	<u>Bridge No. 15</u> - Station 1+898 (100%)	\$1,500.00	\$506.00	\$2,006.00
570-48810	Union Gas Ltd.	<u>Bridge No. 16</u> - Station 1+949 Replace existing 13.7 m, 900 mm diameter CSP bridge with a new 17 m long (including 4 m length for hydrant access), 1200 mm diameter corrugated steel pipe bridge (75%)	\$12,975.00	\$1,779.00	\$14,754.00
590-00500	Hydro One Networks Inc.	<u>Bridge No. 21</u> -Station 2+633-Replace existing bridge (unknown pipe size & length) with a new 15.0 m, 700 mm diameter corrugated steel pipe bridge complete with sloping stone end walls (100%)	\$8,500.00	\$1,166.00	\$9,666.00
	Union Gas	<u>Bridge No. 8C</u> - Costs to repair damaged CSP (100%)	\$590.00	\$0.00	\$590.00
Total Special Benefit Assessment (Non Pro-Ratable Costs).....			\$83,170.00	\$15,612.00	\$98,782.00
OVERALL TOTAL SPECIAL BENEFIT ASSESSMENT					\$388,276.00

"SCHEDULE E-1"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (OPEN DRAIN)
EAST TOWNLIN DRAIN (ST. CLAIR OUTLET)
TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 19	5.59	2.26	County of Essex	\$0.00	\$2,748.00	\$230.00	\$2,978.00
Desro Drive	2.28	0.92	Town of Tecumseh	\$0.00	\$62.00	\$64.00	\$126.00
Jamsyl Drive	2.37	0.96	Town of Tecumseh	\$0.00	\$64.00	\$74.00	\$138.00
Sylvestre Drive	6.15	2.49	Town of Tecumseh	\$0.00	\$130.00	\$215.00	\$345.00
(Unopened Road Allowance)	1.77	0.72	Town of Tecumseh	\$0.00	\$36.00	\$32.00	\$68.00
Block 'C'							
Lands	186.80	75.60	Town of Tecumseh	\$0.00	\$2,095.00	\$4,127.00	\$6,222.00
Roads	43.24	17.50	Town of Tecumseh	\$0.00	\$810.00	\$1,592.00	\$2,402.00
Total on Municipal Lands.....				\$0.00	\$5,945.00	\$6,334.00	\$12,279.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-47900	1	Pt. Lot 156	6.22	2.52	1583912 Ontario Ltd.	\$0.00	\$73.00	\$35.00	\$108.00
570-47903	1	Pt. Lot 156	2.42	0.98	Windsor Poirier Inc.	\$0.00	\$10.00	\$16.00	\$26.00
570-47904	1	Pt. Lot 155	2.16	0.87	2036610 Ontario Ltd.	\$0.00	\$10.00	\$15.00	\$25.00
570-47810	1	Pt. Lot 154 &	2.00	0.81	Jamsyl Group Inc.	\$0.00	\$9.00	\$14.00	\$23.00
570-47812	1	Pt. Lot 155	1.27	0.51	Clairmont Financial Group Inc.	\$0.00	\$8.00	\$12.00	\$20.00
570-05200	2	Pt. Lot 152	3.80	1.54	Romano & Jadranka Zohil	\$0.00	\$14.00	\$21.00	\$35.00
570-04410		Plan 395 Pt. Lot 6 RP12R15273 Pts. 3&4 Pt. Lot 6	3.99	1.61	1046399 Ontario Ltd.	\$0.00	\$15.00	\$29.00	\$44.00
570-04092		Plan 395 Pt. Lot 6 RP12R15820 Pt. 5 Pt. Lot 6	0.80	0.32	Rocco & Anna Lecce	\$0.00	\$7.00	\$11.00	\$18.00
570-47920	2	Pt. Lot 156	0.54	0.22	Louis Power Sewing Ltd.	\$0.00	\$6.00	\$9.00	\$15.00
570-47916	1	Pt. Lot 156	0.59	0.24	Sersa Holdings Inc.	\$0.00	\$6.00	\$9.00	\$15.00
570-47914	1	Pt. Lot 156	0.48	0.19	Guy Mantha & Cheryl Demarse	\$0.00	\$5.00	\$8.00	\$13.00
570-47910	2	Pt. Lot 156	0.49	0.20	Teddan Investments Inc.	\$0.00	\$6.00	\$8.00	\$14.00
570-47909	2	Pt. Lot 156	0.49	0.20	944792 Ontario Inc.	\$0.00	\$6.00	\$8.00	\$14.00
570-47905	2	Pt. Lot 156	1.75	0.71	851312 Ontario Ltd.	\$0.00	\$9.00	\$14.00	\$23.00
570-48000	2	Pt. Lot 155 & 156	8.84	3.58	Balbir S. & Geetinder K. Kooner	\$0.00	\$122.00	\$52.00	\$174.00
570-48005	1	Pt. Lot 156	2.76	1.12	1403440 Ontario Inc.	\$0.00	\$129.00	\$18.00	\$147.00
570-47880	1	Pt. Lot 155	1.76	0.71	Chalut Holdings Inc.	\$0.00	\$9.00	\$13.00	\$22.00
570-47890	1	Pt. Lot 155	1.07	0.43	2062098 Ontario Ltd.	\$0.00	\$8.00	\$11.00	\$19.00
570-47895	1	Pt. Lot 155	0.67	0.27	Jamsyl Group Inc.	\$0.00	\$7.00	\$10.00	\$17.00
570-47894	1	Pt. Lot 155	2.06	0.83	2221836 Ontario Limited	\$0.00	\$10.00	\$14.00	\$24.00
570-48114	1	Pt. Lot 155	0.78	0.32	James Sylvestre Developments Ltd.	\$0.00	\$7.00	\$11.00	\$18.00
570-48112	1	Pt. Lot 155	0.78	0.32	Jamsyl Group Inc.	\$0.00	\$7.00	\$12.00	\$19.00
570-48110	1	Pt. Lot 155	2.79	1.13	Jamsyl Group Inc.	\$0.00	\$11.00	\$18.00	\$29.00
570-48120	1	Pt. Lot 155	2.10	0.85	Jamsyl Group Inc.	\$0.00	\$10.00	\$16.00	\$26.00
570-48130	1	Pt. Lot 155	9.33	3.78	Jamsyl Group Inc.	\$0.00	\$35.00	\$58.00	\$93.00
570-48300	1	Pt. Lot 156	4.14	1.68	James Sylvestre Developments Ltd. & Jamsyl Limited Partnership	\$0.00	\$42.00	\$27.00	\$69.00

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
570-48200	2	Pt. Lot 156	0.79	0.32	Mary E. & Daniel A. Marion	\$0.00	\$43.00	\$12.00	\$55.00
570-48350	1	Pt. Lot 156	3.83	1.55	JSNC Holdings Inc.	\$0.00	\$94.00	\$26.00	\$120.00
570-48380	1	Pt. Lot 156	1.03	0.42	Jamsyl Group Inc.	\$0.00	\$40.00	\$14.00	\$54.00
570-48400	2	Pt. Lot 155	1.45	0.59	2211211 Ontario Ltd.	\$0.00	\$52.00	\$16.00	\$68.00
570-48403	1	Pt. Lot 156	0.95	0.38	Watson-Hayes Land Development Inc	\$0.00	\$7.00	\$14.00	\$21.00
570-48405	1	Pt. Lot 156	0.59	0.24	True-All Wall Systems Ltd.	\$0.00	\$6.00	\$12.00	\$18.00
570-48406	1	Pt. Lot 156	0.89	0.36	1560896 Ontario Inc.	\$0.00	\$7.00	\$14.00	\$21.00
570-48407	1	Pt. Lot 155	0.49	0.20	7264119 Canada Corporation	\$0.00	\$6.00	\$10.00	\$16.00
570-48139		12R14315, Pts. 19-22	0.75	0.30	Karen J. Holdstock	\$0.00	\$7.00	\$13.00	\$20.00
570-48409	2	Pt. Lot 156	0.55	0.22	1287667 Ontario Ltd.	\$0.00	\$6.00	\$11.00	\$17.00
570-48410	2	Pt. Lot 156	0.58	0.23	Innovative Coating Systems Inc.	\$0.00	\$6.00	\$11.00	\$17.00
570-48415	2	Pt. Lot 156	0.87	0.35	Jamsyl Limited Partnership	\$0.00	\$7.00	\$14.00	\$21.00
570-48420	1	Pt. Lot 155	2.04	0.83	Breakthrough Inc.	\$0.00	\$10.00	\$18.00	\$28.00
570-48430	2	Pt. Lot 155	1.67	0.68	Jamsyl Limited Partnership	\$0.00	\$87.00	\$17.00	\$104.00
570-48600	3	Pt. Lot 156	0.50	0.20	Jerry & Melissa Bolivar	\$0.00	\$35.00	\$12.00	\$47.00
570-48810	3	Pt. Lot 155	0.59	0.24	Union Gas Ltd.	\$0.00	\$43.00	\$16.00	\$59.00
570-03100	3	Pt. Lot 152	4.36	1.76	Brian J. Berry	\$0.00	\$16.00	\$41.00	\$57.00
570-03101	3	Pt. Lot 152	0.31	0.13	Peter H. & Helen D. Hormann	\$0.00	\$4.00	\$9.00	\$13.00
570-49000	3	Pt. Lot 154	3.16	1.28	Herbert A. & Mary J. Drew	\$0.00	\$57.00	\$32.00	\$89.00
570-49100	3	Pt. Lot 156	4.70	1.90	Garry W. Leclair	\$0.00	\$160.00	\$48.00	\$208.00
570-00699	3	Pt. Lot 153	1.34	0.54	James Sylvestre Developments Ltd.	\$0.00	\$8.00	\$21.00	\$29.00
570-00100	12	Gore 156	0.35	0.14	Elie Alagha	\$0.00	\$4.00	\$11.00	\$15.00
570-00101	1	Pt. Lot 156	0.25	0.10	Kartar & Company Ltd.	\$0.00	\$3.00	\$8.00	\$11.00
570-00300	3	S. Pt. Lot 153	0.43	0.17	Bradley J. Chauvin & Ruth A. Chittle	\$0.00	\$5.00	\$14.00	\$19.00
590-01100			8.86	3.59	Canadian Pacific Railway	\$0.00	\$63.00	\$83.00	\$146.00
590-00500			32.32	13.08	Hydro One Networks Inc.	\$0.00	\$335.00	\$325.00	\$660.00
570-02600	3	N. Pt. Lot 152	0.50	0.20	* Farina G. Keuhfuss	\$0.00	\$3.00	\$7.00	\$10.00
570-02500	3	Pt. Lot 152	0.50	0.20	* Marie A. Gagnier	\$0.00	\$3.00	\$7.00	\$10.00
570-02400	3	N. Pt. Lot 152	0.50	0.20	* Carole Kitching	\$0.00	\$3.00	\$7.00	\$10.00
570-02300	3	N. Pt. Lot 152	0.50	0.20	* Blaze, Anka & Ljubica Ristovski	\$0.00	\$3.00	\$7.00	\$10.00
570-02200	3	N. Pt. Lot 152	0.50	0.20	* Brian & Karen Rutherford	\$0.00	\$3.00	\$7.00	\$10.00
570-02100	3	N. Pt. Lot 152	0.50	0.20	* Norman J. & Mary A. Lee	\$0.00	\$3.00	\$7.00	\$10.00
570-02000	3	N. Pt. Lot 152	0.50	0.20	* Lahmber S. & Kulwant K. Pahal	\$0.00	\$3.00	\$7.00	\$10.00
570-01900	3	N. Pt. Lot 152	0.50	0.20	* Daniel R. Beaulieu	\$0.00	\$3.00	\$7.00	\$10.00
570-01800	3	S. Pt. Lot 152	0.50	0.20	* Paula Adams	\$0.00	\$3.00	\$7.00	\$10.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$1,719.00	\$1,354.00	\$3,073.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
570-04000	2	Pt. Lot 153	20.87	8.45	860831 Ontario Ltd.	\$0.00	\$78.00	\$154.00	\$232.00
570-47800	1	Pt. Lot 155	3.32	1.34	Jamsyl Group Inc.	\$0.00	\$12.00	\$18.00	\$30.00
570-47875	1	Pt. Lot 154 & 155	31.38	12.70	Jamsyl Group Inc.	\$0.00	\$118.00	\$174.00	\$292.00
570-47850	1	Pt. Lot 154 & 155	2.70	1.09	Jamsyl Group Inc.	\$0.00	\$10.00	\$15.00	\$25.00
570-48010	1	Pt. Lot 156	6.06	2.45	Jamsyl Group Inc.	\$0.00	\$23.00	\$38.00	\$61.00
570-48030	1	Pt. Lot 156	3.40	1.38	Jamsyl Group Inc.	\$0.00	\$13.00	\$21.00	\$34.00
570-48040	1	Pt. Lot 155 & 156	4.93	2.00	Jamsyl Group Inc.	\$0.00	\$19.00	\$27.00	\$46.00
570-48050	1	Pt. Lot 155	1.61	0.65	James Sylvestre Development Ltd.	\$0.00	\$6.00	\$9.00	\$15.00
570-47865	1	Pt. Lot 155	1.78	0.72	Jamsyl Group Inc.	\$0.00	\$7.00	\$10.00	\$17.00
570-48100	2	Pt. Lot 155 & 156	8.89	3.60	James Sylvestre Development Ltd.	\$0.00	\$70.00	\$57.00	\$127.00
570-48301	1	Pt. Lot 156	3.12	1.26	Jamsyl Group Inc Limited Partnership	\$0.00	\$12.00	\$21.00	\$33.00
570-48408	1	Pt. Lot 155 & 156	5.72	2.31	James Sylvestre Developments Ltd.	\$0.00	\$21.00	\$38.00	\$59.00
570-48460	1	Pt. Lot 156	2.88	1.17	Jeannette Sylvestre trustee & 851381 Ontario Ltd.	\$0.00	\$56.00	\$21.00	\$77.00

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-48470	3	Pt. Lot 156	2.75	1.11	Jeannette Sylvestre	\$0.00	\$62.00	\$20.00	\$82.00
570-48480	3	Pt. Lot 156	10.00	4.05	851381 Ontario Ltd.	\$0.00	\$37.00	\$74.00	\$111.00
570-48500	3	Pt. Lot 155 & 156	31.50	12.75	James Sylvestre Developments Ltd.	\$0.00	\$267.00	\$232.00	\$499.00
570-48595	1	Pt. Gore & Lot 156	1.00	0.40	James Sylvestre	\$0.00	\$41.00	\$8.00	\$49.00
570-48800	3	Pt. Lot 155 & 156	107.99	43.70	2024120 Ontario Ltd.	\$0.00	\$955.00	\$943.00	\$1,898.00
570-48900	3	Pt. Lot 154 & 155	27.70	11.21	James Sylvestre Developments	\$0.00	\$388.00	\$271.00	\$659.00
570-48950	3	Pt. Lot 153	10.29	4.16	James Sylvestre Developments Ltd.	\$0.00	\$39.00	\$97.00	\$136.00
570-00200	1	Pt. Lot 156	5.83	2.36	Rosaire J. Baillargeon	\$0.00	\$102.00	\$64.00	\$166.00
Total on Privately-Owned - Agricultural Lands.....						\$0.00	\$2,336.00	\$2,312.00	\$4,648.00
TOTAL ASSESSMENT						\$0.00	\$10,000.00	\$10,000.00	\$20,000.00
			(Acres)	(Ha.)					
Total Area:			684.15	276.85					

* denotes cut off benefit

"SCHEDULE E-2"
SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE (BRIDGES)
EAST TOWNLINE DRAIN (ST. CLAIR OUTLET)
TOWN OF TECUMSEH

MUNICIPAL LANDS:

Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 19	5.59	2.26	County of Essex	\$0.00	\$0.00	\$203.00	\$203.00
Desro Drive	2.28	0.92	Town of Tecumseh	\$0.00	\$0.00	\$85.00	\$85.00
Jamsyl Drive	2.37	0.96	Town of Tecumseh	\$0.00	\$0.00	\$89.00	\$89.00
Sylvestre Drive	6.15	2.49	Town of Tecumseh	\$0.00	\$0.00	\$231.00	\$231.00
(Unopened Road Allowance)	1.77	0.72	Town of Tecumseh	\$0.00	\$0.00	\$33.00	\$33.00
Block 'C'							
Lands	186.80	75.60	Town of Tecumseh	\$0.00	\$0.00	\$4,200.00	\$4,200.00
Roads	43.24	17.50	Town of Tecumseh	\$0.00	\$0.00	\$1,620.00	\$1,620.00
Total on Municipal Lands.....				\$0.00	\$0.00	\$6,461.00	\$6,461.00

PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-47900	1	Pt. Lot 156	6.22	2.52	1583912 Ontario Ltd.	\$0.00	\$0.00	\$47.00	\$47.00
570-47903	1	Pt. Lot 156	2.42	0.98	Windsor Poirier Inc.	\$0.00	\$0.00	\$21.00	\$21.00
570-47904	1	Pt. Lot 155	2.16	0.87	2036610 Ontario Ltd.	\$0.00	\$0.00	\$20.00	\$20.00
570-47810	1	Pt. Lot 154 &	2.00	0.81	Jamsyl Group Inc.	\$0.00	\$0.00	\$19.00	\$19.00
570-47812	1	Pt. Lot 155	1.27	0.51	Clairmont Financial Group Inc.	\$0.00	\$0.00	\$17.00	\$17.00
570-05200	2	Pt. Lot 152	3.80	1.54	Romano & Jadranka Zohil	\$0.00	\$0.00	\$29.00	\$29.00
570-04410		Plan 395 Pt. Lot 6 RP12R15273 Pts. 3&4 Pt. Lot 6	3.99	1.61	1046399 Ontario Ltd.	\$0.00	\$0.00	\$30.00	\$30.00
570-04092		Plan 395 Pt. Lot 6 RP12R15820 Pt. 5 Pt. Lot 6	0.80	0.32	Rocco & Anna Lecce	\$0.00	\$0.00	\$14.00	\$14.00
570-47920	2	Pt. Lot 156	0.54	0.22	Louis Power Sewing Ltd.	\$0.00	\$0.00	\$12.00	\$12.00
570-47916	1	Pt. Lot 156	0.59	0.24	Sersa Holdings Inc.	\$0.00	\$0.00	\$12.00	\$12.00
570-47914	1	Pt. Lot 156	0.48	0.19	Guy Mantha & Cheryl Demarse	\$0.00	\$0.00	\$11.00	\$11.00
570-47910	2	Pt. Lot 156	0.49	0.20	Teddian Investments Inc.	\$0.00	\$0.00	\$11.00	\$11.00
570-47909	2	Pt. Lot 156	0.49	0.20	944792 Ontario Inc.	\$0.00	\$0.00	\$11.00	\$11.00
570-47905	2	Pt. Lot 156	1.75	0.71	851312 Ontario Ltd.	\$0.00	\$0.00	\$18.00	\$18.00
570-48000	2	Pt. Lot 155 & 156	8.84	3.58	Balbir S. & Geetinder K. Kooner	\$0.00	\$0.00	\$66.00	\$66.00
570-48005	1	Pt. Lot 156	2.76	1.12	1403440 Ontario Inc.	\$0.00	\$0.00	\$22.00	\$22.00
570-47880	1	Pt. Lot 155	1.76	0.71	Chalut Holdings Inc.	\$0.00	\$0.00	\$18.00	\$18.00
570-47890	1	Pt. Lot 155	1.07	0.43	2062098 Ontario Ltd.	\$0.00	\$0.00	\$16.00	\$16.00
570-47895	1	Pt. Lot 155	0.67	0.27	Jamsyl Group Inc.	\$0.00	\$0.00	\$13.00	\$13.00
570-47894	1	Pt. Lot 155	2.06	0.83	2221836 Ontario Limited	\$0.00	\$0.00	\$19.00	\$19.00
570-48114	1	Pt. Lot 155	0.78	0.32	James Sylvestre Developments Ltd.	\$0.00	\$0.00	\$14.00	\$14.00
570-48112	1	Pt. Lot 155	0.78	0.32	Jamsyl Group Inc.	\$0.00	\$0.00	\$14.00	\$14.00
570-48110	1	Pt. Lot 155	2.79	1.13	Jamsyl Group Inc.	\$0.00	\$0.00	\$22.00	\$22.00
570-48120	1	Pt. Lot 155	2.10	0.85	Jamsyl Group Inc.	\$0.00	\$0.00	\$19.00	\$19.00
570-48130	1	Pt. Lot 155	9.33	3.78	Jamsyl Group Inc.	\$0.00	\$0.00	\$70.00	\$70.00
570-48300	1	Pt. Lot 156	4.14	1.68	James Sylvestre Developments Ltd. & Jamsyl Limited Partnership	\$0.00	\$0.00	\$31.00	\$31.00
570-48200	2	Pt. Lot 156	0.79	0.32	Mary E. & Daniel A. Marion	\$0.00	\$0.00	\$14.00	\$14.00
570-48350	1	Pt. Lot 156	3.83	1.55	JSNC Holdings Inc.	\$0.00	\$0.00	\$29.00	\$29.00
570-48380	1	Pt. Lot 156	1.03	0.42	Jamsyl Group Inc.	\$0.00	\$0.00	\$15.00	\$15.00

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-48400	2	Pt. Lot 155	1.45	0.59	2211211 Ontario Ltd.	\$0.00	\$0.00	\$17.00	\$17.00
570-48403	1	Pt. Lot 156	0.95	0.38	Watson-Hayes Land Development Inc	\$0.00	\$0.00	\$15.00	\$15.00
570-48405	1	Pt. Lot 156	0.59	0.24	True-All Wall Systems Ltd.	\$0.00	\$0.00	\$12.00	\$12.00
570-48406	1	Pt. Lot 156	0.89	0.36	1560896 Ontario Inc.	\$0.00	\$0.00	\$15.00	\$15.00
570-48407	1	Pt. Lot 155	0.49	0.20	7264119 Canada Corporation	\$0.00	\$0.00	\$11.00	\$11.00
570-48139		12R14315, Pts. 19-22	0.75	0.30	Karen J. Holdstock	\$0.00	\$0.00	\$14.00	\$14.00
570-48409	2	Pt. Lot 156	0.55	0.22	1287667 Ontario Ltd.	\$0.00	\$0.00	\$12.00	\$12.00
570-48410	2	Pt. Lot 156	0.58	0.23	Innovative Coating Systems Inc.	\$0.00	\$0.00	\$12.00	\$12.00
570-48415	2	Pt. Lot 156	0.87	0.35	Jamsyl Limited Partnership	\$0.00	\$0.00	\$15.00	\$15.00
570-48420	1	Pt. Lot 155	2.04	0.83	Breakthrough Inc.	\$0.00	\$0.00	\$19.00	\$19.00
570-48430	2	Pt. Lot 155	1.67	0.68	Jamsyl Limited Partnership	\$0.00	\$0.00	\$18.00	\$18.00
570-48600	3	Pt. Lot 156	0.50	0.20	Jerry & Melissa Bolivar	\$0.00	\$0.00	\$11.00	\$11.00
570-48810	3	Pt. Lot 155	0.59	0.24	Union Gas Ltd.	\$0.00	\$0.00	\$12.00	\$12.00
570-03100	3	& 153	4.36	1.76	Brian J. Berry	\$0.00	\$0.00	\$33.00	\$33.00
570-03101	3	Pt. Lot 152	0.31	0.13	Peter H. & Helen D. Hormann	\$0.00	\$0.00	\$7.00	\$7.00
570-49000	3	Pt. Lot 154	3.16	1.28	Herbert A. & Mary J. Drew	\$0.00	\$0.00	\$24.00	\$24.00
570-49100	3	Pt. Lot 156	4.70	1.90	Garry W. Leclair	\$0.00	\$0.00	\$35.00	\$35.00
570-00699	3	Pt. Lot 153	1.34	0.54	James Sylvestre Developments Ltd.	\$0.00	\$0.00	\$17.00	\$17.00
570-00100	12	Gore 156	0.35	0.14	Elie Alagha	\$0.00	\$0.00	\$8.00	\$8.00
570-00101	1	Pt. Lot 156	0.25	0.10	Kartar & Company Ltd.	\$0.00	\$0.00	\$6.00	\$6.00
570-00300	3	S. Pt. Lot 153	0.43	0.17	Bradley J. Chauvin & Ruth A. Chittle	\$0.00	\$0.00	\$9.00	\$9.00
590-01100			8.86	3.59	Canadian Pacific Railway	\$0.00	\$0.00	\$66.00	\$66.00
590-00500			32.32	13.08	Hydro One Networks Inc.	\$0.00	\$0.00	\$242.00	\$242.00
570-02600	3	N. Pt. Lot 152	0.50	0.20 *	Farina G. Keuhfuss	\$0.00	\$0.00	\$6.00	\$6.00
570-02500	3	Pt. Lot 152	0.50	0.20 *	Marie A. Gagnier	\$0.00	\$0.00	\$6.00	\$6.00
570-02400	3	N. Pt. Lot 152	0.50	0.20 *	Carole Kitching	\$0.00	\$0.00	\$6.00	\$6.00
570-02300	3	N. Pt. Lot 152	0.50	0.20 *	Blaze, Anka & Ljubica Ristovski	\$0.00	\$0.00	\$6.00	\$6.00
570-02200	3	N. Pt. Lot 152	0.50	0.20 *	Brian & Karen Rutherford	\$0.00	\$0.00	\$6.00	\$6.00
570-02100	3	N. Pt. Lot 152	0.50	0.20 *	Norman J. & Mary A. Lee	\$0.00	\$0.00	\$6.00	\$6.00
570-02000	3	N. Pt. Lot 152	0.50	0.20 *	Lahmber S. & Kulwant K. Pahal	\$0.00	\$0.00	\$6.00	\$6.00
570-01900	3	N. Pt. Lot 152	0.50	0.20 *	Daniel R. Beaulieu	\$0.00	\$0.00	\$6.00	\$6.00
570-01800	3	S. Pt. Lot 152	0.50	0.20 *	Paula Adams	\$0.00	\$0.00	\$6.00	\$6.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$0.00	\$1,338.00	\$1,338.00

PRIVATELY-OWNED - AGRICULTURAL LANDS

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-04000	2	Pt. Lot 153	20.87	8.45	860831 Ontario Ltd.	\$0.00	\$0.00	\$156.00	\$156.00
570-47800	1	Pt. Lot 155	3.32	1.34	Jamsyl Group Inc.	\$0.00	\$0.00	\$25.00	\$25.00
570-47875	1	Pt. Lot 154 & 155	31.38	12.70	Jamsyl Group Inc.	\$0.00	\$0.00	\$235.00	\$235.00
570-47850	1	Pt. Lot 154 & 155	2.70	1.09	Jamsyl Group Inc.	\$0.00	\$0.00	\$20.00	\$20.00
570-48010	1	Pt. Lot 156	6.06	2.45	Jamsyl Group Inc.	\$0.00	\$0.00	\$45.00	\$45.00
570-48030	1	Pt. Lot 156	3.40	1.38	Jamsyl Group Inc.	\$0.00	\$0.00	\$26.00	\$26.00
570-48040	1	Pt. Lot 155 & 156	4.93	2.00	Jamsyl Group Inc.	\$0.00	\$0.00	\$37.00	\$37.00
570-48050	1	Pt. Lot 155	1.61	0.65	James Sylvestre Development Ltd.	\$0.00	\$0.00	\$12.00	\$12.00
570-47865	1	Pt. Lot 155	1.78	0.72	Jamsyl Group Inc.	\$0.00	\$0.00	\$13.00	\$13.00
570-48100	2	Pt. Lot 155 & 156	8.89	3.60	James Sylvestre Development Ltd.	\$0.00	\$0.00	\$67.00	\$67.00
570-48301	1	Pt. Lot 156	3.12	1.26	Jamsyl Group Inc Limited Partnership	\$0.00	\$0.00	\$23.00	\$23.00
570-48408	1	Pt. Lot 155 & 156	5.72	2.31	James Sylvestre Developments Ltd.	\$0.00	\$0.00	\$43.00	\$43.00
570-48460	1	Pt. Lot 156	2.88	1.17	Jeannette Sylvestre trustee & 851381 Ontario Ltd.	\$0.00	\$0.00	\$22.00	\$22.00
570-48470	3	Pt. Lot 156	2.75	1.11	Jeannette Sylvestre	\$0.00	\$0.00	\$21.00	\$21.00
570-48480	3	Pt. Lot 156	10.00	4.05	851381 Ontario Ltd.	\$0.00	\$0.00	\$75.00	\$75.00

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
570-48500	3	Pt. Lot 155 & 156	31.50	12.75	James Sylvestre Developments Ltd.	\$0.00	\$0.00	\$236.00	\$236.00
570-48595	1	Pt. Gore & Lot 156	1.00	0.40	James Sylvestre	\$0.00	\$0.00	\$7.00	\$7.00
570-48800	3	Pt. Lot 155 & 156	107.99	43.70	2024120 Ontario Ltd.	\$0.00	\$0.00	\$809.00	\$809.00
570-48900	3	Pt. Lot 154 & 155	27.70	11.21	James Sylvestre Developments	\$0.00	\$0.00	\$208.00	\$208.00
570-48950	3	Pt. Lot 153	10.29	4.16	James Sylvestre Developments Ltd.	\$0.00	\$0.00	\$77.00	\$77.00
570-00200	1	Pt. Lot 156	5.83	2.36	Rosaire J. Baillargeon	\$0.00	\$0.00	\$44.00	\$44.00
Total on Privately-Owned - Agricultural Lands.....						\$0.00	\$0.00	\$2,201.00	\$2,201.00
TOTAL ASSESSMENT						\$0.00	\$0.00	\$10,000.00	\$10,000.00
			(Acres)	(Ha.)					

Total Area: 684.15 276.85

* denotes cut off benefit

"SCHEDULE F"
DRAINAGE REPORT FOR THE
EAST TOWNLINE DRAIN (ST. CLAIR OUTLET)
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, equipment and materials** to complete the following items:

- Brushing of the drain from Station 0+000 to Station 2+700 including removal off-site with trimming and/or removal of existing trees within the drain as required to accommodate the drainage works. The work shall include disposal of brush by means of stockpiling and burning where permitted or alternatively trucked off-site.
- Excavation, trucking and/or levelling of excavated materials works, as follows:
 - Excavation of the drain bottom as follows:
 - Station 0+000 to Station 2+700, totalling approximately 2,700 lineal metres of drain and approximately 1,100 m³ of material.
 - Additional excavation to widen drain (west bank) from Station 0+144 to Station 0+244 and Station 0+810 to Station 0+843.
 - Levelling of excavated materials as follows:
 - At all agricultural properties totalling approximately 700 m³ of material.
 - Trucking of excavated materials off-site, as follows:
 - At all residential properties and grassed lawns, totalling approximately 400 m³ of material.
 - At drain bank widening Station 0+144 to Station 0+244 and Station 0+810 to Station 0+843, totalling approximately 200 m³ of material.
- Stone erosion protection on drain banks, as follows:
 - Station 0+939 Baillargeon Drain enters – Supply and install 60 m² (300 mm thick) of stone erosion protection including filter fabric underlay.
- Seeding of grass buffer strips, as follows:
 - Seeding of 1.0 m wide grass buffer strip beyond the top of bank on the west side of the drain from Station 0+000 to Station 2+700 with the exception of the residential lawns and existing buffer strips (approximately 1,300 m²).

- Seeding of west drain bank Station 0+144 to Station 0+244 and Station 0+810 to Station 0+843 (approximately 450 m²).
- Station 0+939 Baillargeon Drain enters – Supply and install 60 m² (300 mm thick) of stone erosion protection including filter fabric underlay.
- Open drain realignment on north side of County Road No. 22 at Sta. 0-090 to Sta. 0-115, as follows:
 - Excavation to realign and reshape drain, fill in old alignment and compaction, stone erosion protection (approximately 130 m²) and hydro-seeding (approximately 160 m²). Excess fill materials to be hauled away. Salvage existing stone erosion protection for re-use.(50% cost portion)
- New access bridge works, as follows:
 - Bridge No. 8A - Station 0+853 (Roll No. 570-48460) - The work is to include site clean-up and restoration within the working area. Supply and place a new 20.0 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo spiral rib steel pipe arch with a 2.8 mm thickness (see specifications) complete with clear stone bedding up to springline with filter fabric overlay (approximately 60 tonnes), full Granular 'B' backfill material (approximately 230 tonnes), clean native surface layer beyond driveway (approximately 20 m³), providing a minimum 12.2 m (40 ft.) grassed top width with sloping stone end walls c/w filter fabric underlay (approximately 50 m²). The work shall include grading of topsoil and seeding for top width (approximately 160 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
 - Bridge No. 8B - Station 0+895 (Roll No. 570-48470) - The work is to include site clean-up and restoration within the working area. Supply and place a new 20.0 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo spiral rib steel pipe arch with a 2.8 mm thickness (see specifications) complete with clear stone bedding up to springline with filter fabric overlay (approximately 60 tonnes), full Granular 'B' backfill material (approximately 230 tonnes), clean native surface layer beyond driveway (approximately 20 m³), providing a minimum 12.2 m (40 ft.) grassed top width with sloping stone end walls c/w filter fabric underlay (approximately 50 m²). The work shall include grading of topsoil and seeding for top width (approximately 160 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Private access bridge replacement works, as follows:
 - Bridge No. 6 (Shared Driveway) - Station 0+652 (Roll No. 570-48350 & Roll No. 570-48380) - Removal and disposal of existing 10.9 m long, 2500 x 1950 mm pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and installation of a new 24.5 m long, 1650 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications). Clear stone bedding material beneath pipe, minimum 150 mm thickness (approximately 25 tonnes), full Granular 'A' backfill (crushed limestone) (approximately 405 tonnes), compacted under driveway providing a minimum 9 m (30 ft.) driveable top width with an additional 6 m top width to the north totalling 15 m (49.2 ft.) top width, asphalt restoration, 80 mm HL3 layer (approximately 25 tonnes), clean native surface layer beyond

driveway (approximately 20 m³), sloping stone end walls c/w filter fabric underlay (approximately 55 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

- Bridge No. 8C (Driveway and Lawn Enclosure) - Station 1+032 (Roll No. 570-48500) - Removal and disposal of existing 40.3 m long, 1200 mm diameter CSP lawn enclosure, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and installation of a new 48 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications). Clear stone bedding material beneath pipe, minimum 150 mm thickness (approximately 40 tonnes), full Granular 'A' backfill (crushed limestone) (approximately 240 tonnes), compacted under driveway providing a minimum 7.3 m (24 ft.) driveable top width, asphalt restoration, 80 mm HL3 layer (approximately 10 tonnes), and the remaining portion as a lawn enclosure, full Granular 'B' backfill material to 300 mm above pipe for enclosure portion (approximately 220 tonnes), clean native backfill material above for enclosure (approximately 90 m³). The work shall include grading of topsoil and seeding for enclosure (approximately 250 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Costs to hydro-excavate existing Bridge No. 8 to investigate settlement over culvert.
- Bridge No. 9 - Station 1+106 (Roll No. 570-48595) - Removal of existing 9.3 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 14.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), full Granular 'B' backfill material to the underside of the Granular 'A' driveway materials for driveway portion (approximately 120 tonnes), clean native surface layer beyond driveway (approximately 20 m³), Granular 'A' driveway materials (approximately 35 tonnes), providing a minimum 6.1 m (20 ft.) driveable top width, sloping stone end walls c/w filter fabric underlay (approximately 30 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Bridge No. 10 - Station 1+163 (Roll No. 570-48600) - Removal of existing 7.9 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 14.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), full Granular 'A' backfill material to underside of asphalt surface (approximately 155 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 35 m²) providing a minimum 6.1 m (20 ft.) driveable top width and asphalt restoration, 80 mm HL3 layer (approximately 5 tonnes). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

- Bridge No. 11 - Station 1+208 (Roll No. 570-48800) -Removal of existing 7.8 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 17.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), full Granular 'B' backfill material to the underside of the Granular 'A' driveway materials (approximately 145 tonnes), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 35 m²) providing a minimum 9 m (30 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Bridge No. 12 - Station 1+358 (Roll No. 570-48800) (Primary Access) - Removal of existing 7.6 m long, 1200 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 21.0 m long (including 4 m length for hydrant access), 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 20 tonnes), full Granular 'B' backfill material up to the underside of the Granular 'A' driveway materials (approximately 165 tonnes), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 30 m²) providing a minimum 9 m (30 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Bridge No. 17 - Station 2+097 (Roll No. 570-48900) - Removal of existing 7.7 m long, 900 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 14.5 m long, 1010 mm x 790 mm aluminized Ultra Flo spiral rib steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 25 tonnes), full Granular 'B' backfill material from springline of pipe culvert to the underside of the Granular 'A' driveway materials (approximately 30 tonnes), Granular 'A' driveway materials (approximately 35 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 20 m²) providing a minimum 9.0 m (30 ft.) driveable top width including rerouting of farm ditch at north end of pipe complete with sloping stone (approximately 10m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Bridge No. 18 - Station 2+276 (Roll No. 570-49000) - Removal of existing 6.4 m, 750 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 12.0 m long, 1150 x 820 mm aluminized corrugated steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 20

tonnes), Granular 'B' backfill to underside of Granular 'A' driveway material (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m³), Granular 'A' driveway surface materials (approximately 25 tonnes) and sloping stone end walls c/w filter fabric underlay (approximately 20 m²) providing a minimum 6.1 m (20 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

- Bridge No. 20 - Station 2+446 (Roll No. 570-49100) - Removal of existing 7 m long, 1000 mm diameter pipe and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 12.5 m long, 1000 mm diameter aluminized corrugated steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 10 tonnes), full Granular 'B' backfill up to underside of Granular 'A' driveway material (approximately 70 tonnes), clean native surface layer beyond driveway (approximately 20 m³), Granular 'A' driveway materials (approximately 30 tonnes) and sloping stone end walls c/w filter fabric underlay (approximately 30 m²) providing a minimum 6.1 m (20 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Private access bridge cleaning works, as follows:
 - Bridges No. 4, 5 and 22 – Clean three (3) existing bridges.
- Temporary Silt Control Measures During Construction
- Hydrant access bridge replacement works, as follows:
 - Bridge No. 2 - Station 0+251 (Hydrant Access) - Removal of existing 6.2 m long, 1600 mm diameter C.S.P. pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up, seeding of disturbed drain banks and restoration within the working area. Supply and place a new 12.5 m long, 1800 mm diameter aluminized Ultra Flo spiral rib steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), Granular 'B' backfill up to 410 mm above pipe (approximately 145 tonnes), clean native backfill material above (approximately 10 m³), and sloping stone end walls c/w filter fabric underlay (approximately 45 m²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 40 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
 - Bridge No. 12 - Station 1+358 (Hydrant Access) (10% cost portion)
 - Bridge No. 13 - Station 1+546 (Hydrant Access) - Removal of existing 7.3 m long, 600 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up, seeding of disturbed drain banks and restoration within the working area. Supply and place a new 10.5 m long, 1160 mm x 920mm aluminized Ultra Flo spiral rib steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 20 tonnes), Granular 'B' backfill up to 300 mm above pipe (approximately 45 tonnes), clean native backfill material above to driveway surface

(approximately 30 m³), and sloping stone end walls c/w filter fabric underlay (approximately 45 m²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 25 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

- Bridge No. 14 - Station 1+546 (Hydrant Access) - Removal of existing 7.7 m long, 700 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up, seeding of disturbed drain banks and restoration within the working area. Supply and place a new 10.0 m long, 1160 mm x 920 mm aluminized Ultra Flo spiral rib steel pipe arch culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding up to springline of pipe (approximately 15 tonnes), Granular 'B' backfill up to driveway surface (approximately 55 tonnes), and sloping stone end walls c/w filter fabric underlay (approximately 30 m²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 25 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.
- Bridge No. 16 - Station 1+949 (Hydrant Access) (25% cost portion)
- Bridge No. 19 - Station 2+318 (Roll No. 570-49100 Hydrant Access) - Remove existing 6.6 m long, 1000 mm diameter pipe, removal of brush within the working area with disposal of debris and vegetative materials off the site, clean-up and restoration within the working area. Supply and place a new 10.5 m long, 1000 mm diameter aluminized corrugated steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 10 tonnes), Granular 'B' backfill up to the springline of the pipe (approximately 10 tonnes), clean native backfill material from springline of pipe culvert to driveway surface (approximately 25 m³), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 30 m²) providing a minimum 4.0 m (13 ft.) grassed top width. The work shall include grading of topsoil and seeding for top width surface (approximately 25 m²). All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

➤ Union Gas access bridge replacement works, as follows:

- Bridge No. 16 - Station 1+949 (570-48810) - Removal of existing 13.7 m long, 900 mm diameter pipe, existing end walls and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 18.5 m long, 1200 mm diameter aluminized corrugated steel pipe culvert with a 2.8 mm thickness (see specifications) complete with clear stone bedding (approximately 15 tonnes), Granular 'B' backfill up to springline of pipe (approximately 40 tonnes), clean native backfill material from springline of pipe culvert to the underside of the Granular 'A' driveway materials (approximately 85 m³), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 30 m²) providing a minimum 7.3

m (24 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

➤ Hydro One access bridge replacement works, as follows:

- Bridge No 21 - Station 2+633 (Hydro One Networks Inc.) - Removal of existing pipe and backfill off-site that is not suitable for native backfill. The work is to include site clean-up and restoration within the working area. Supply and place a new 15.0 m long, 700 mm diameter aluminized corrugated steel pipe culvert with a 2.0 mm thickness (see specifications) complete with clear stone bedding (approximately 10 tonnes), Granular 'B' backfill up to the springline of the pipe (approximately 10 tonnes), clean native backfill material from springline of pipe culvert to the underside of the Granular 'A' driveway materials (approximately 35 m³), Granular 'A' driveway materials (approximately 40 tonnes), clean native surface layer beyond driveway (approximately 20 m³), and sloping stone end walls c/w filter fabric underlay (approximately 25 m²) providing a minimum 9.0 m (30 ft.) driveable top width. All surplus native materials resulting from the culvert installation are to be trucked away to an approved dumping site at the Contractor's expense.

➤ Road bridge cleaning works, as follows:

- Bridge No. 1-Desro Drive Bridge – Clean existing 1800 mm diameter CSP bridge (24.5 m long).
- Bridge No. 3-Jamsyl Drive Bridge – Clean existing 1800 mm diameter CSP bridge (30 m long).
- Bridge No. 7-Sylvestre Drive Bridge – Clean existing 2010 x 1530 mm CSPA bridge (24 m long).
- Bridge No. 15-Canadian Pacific Railway Bridge – Clean existing 1.83 m span x 1.2 m rise concrete box (6.2 m long).
- Costs to repair CSP pipe damaged by Union Gas at existing Bridge No. 8C.
- Open drain realignment on North side of County Road No. 22 at Sta. 0+090 to Sta. 0+115. (50% cost portion)

3.0 ACCESS TO THE WORK

Access to the drain shall be from Manning Road (County Road No. 19) and the working corridor. The Contractor shall make his/her own arrangements for any additional access for his/her convenience. All road areas and grass lawn areas disturbed shall be restored to original conditions at the Contractor's expense.

4.0 WORKING CORRIDOR

For the repair and improvement of the East Townline Drain, the working corridor shall be 10 metres west of the west top of bank from Sta. 0+000 to Sta. 2+700 which includes the 1.0 metre grass buffer strip as described in Section 7.0. This will also provide access for equipment and temporary placement of excavated materials. 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 for all non-agricultural properties shall be from the adjacent road allowance only and all excavated materials at these properties shall be hauled away in accordance with Section 6.4.

One lane of County Road No. 19 shall remain open during the construction period and traffic control (found in General Specifications) maintained at all times. The working area for bridge construction shall be restricted to a radius of 20.0 metres from the centre of the bridge location. 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.

SPECIAL PROVISIONS – OPEN DRAIN

5.0 BRUSHING

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

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

Following completion of the work, the Contractor is to trim up any broken or damaged limbs on trees which remain standing, disposing of the branches cut off along with other brush and leaving the trees in a neat and tidy condition. Brush and trees removed from the working area are to be put into piles by the Contractor, in locations where they can be safely burned, and to be burned by the Contractor after obtaining the necessary permits, as required. If, in the opinion of the Drainage Superintendent, any of the piles are too wet or green to be burned, he shall so advise the Contractor to haul away the unburned materials to an approved dump site. Prior to, and during the course of burning operations, the Contractor shall comply with the current guidelines prepared by the Air Quality Branch of the Ontario Ministry of Environment and shall ensure that the Environmental Protection Act is not violated. Since the trees and brush that are cut off flush with the earth surface may sprout new growth later, it is strongly recommended that the Municipality make arrangements for spraying this new growth at the appropriate time so as to kill the trees and brush.

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

6.0 EXCAVATION AND LEVELLING OF EXCAVATED MATERIALS

6.1 Excavation of Existing Drain Channel

In all cases, the Contractor shall use the benchmarks to establish the proposed grade. However, for convenience, the drawings provide the approximate depth from the surface of the ground and from the existing drain bottom to the proposed grades. The Contractor shall not excavate deeper than the 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 6.3. Materials deposited on the farmlands shall be within the working corridors, at least 1.0 m from the top of the drain bank, or as specified on the drawings. Upon allowing drying of excavated materials (if necessary) and as approved by the Drainage Superintendent, the Contractor shall level excavated materials in accordance with Section 6.3. 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 8.0.

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

Where there are existing grass buffer strips, the excavated material shall be deposited beyond the buffer strip. The excavator, if possible, should not occupy the grass buffer strip. If it is found absolutely necessary to occupy the grass buffer strip, the contractor shall repair any damage and reseed the damaged area.

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.

It is possible that some tile ends will have to be repaired as well as some surface drain outlets and bank failures. These repairs are to be at the expense of the landowner. See Assessment Rationale-Open Drain Improvements section of the report which covers these repairs.

6.2 Cleaning of Private Access Culverts

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.

6.3 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 150 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.

6.4 Trucking of Excavated Materials

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

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

7.0 GRASS BUFFER STRIPS

A 1.0 metre wide grass buffer shall be established and preserved immediately adjacent to the west 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 8.0 of the Special Provisions.

8.0 SEEDING OF GRASS BUFFER STRIPS

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

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

<i>Creeping Red Fescue</i>	20%
<i>Meadow Fescue</i>	30%
<i>Tall Fescue</i>	30%
<i>Timothy</i>	10%
<i>White Clover</i>	10%

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

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

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

9.0 BRIDGE CONSTRUCTION

9.1 Location of New Bridges

The replacement of Bridge Nos. 6, 8 through 21 inclusive shall be constructed in accordance with the specifications and drawings attached hereto. The centerline of the new culverts shall be located to align with the existing laneway in each case.

9.2 Removal of Existing Culverts

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

9.3 Materials for New Bridges

Materials shall be as follows:

Culvert Pipe

Bridge No. 2 – Station 0+251: *New 12.5 m long, 1800 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 6 – Station 0+652: *New 24.5 m long, 1650 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 8A– Station 0+853: *New 20.0 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo spiral rib steel pipe arch, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 8B– Station 0+895: *New 20.0 m long, 1850 mm span x 1400 mm rise aluminized Ultra Flo spiral rib steel pipe arch, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 8C– Station 1+032: *New 48.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 9 – Station 1+106: *New 14.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 10 – Station 1+163: *New 14.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 11 – Station 1+208: *New 17.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 12 – Station 1+358: *New 21.0 m long, 1200 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.*

Bridge No. 13 – Station 1+546: New 10.5 m long, 1160 mm x 920 mm aluminized Ultra Flo spiral rib steel pipe arch, wall thickness of 2.0 mm with rerolled ends.

Bridge No. 14 – Station 1+689: New 10.0 m long, 1160 mm x 920 mm aluminized Ultra Flo spiral rib steel pipe arch, wall thickness of 2.0 mm with rerolled ends.

Bridge No. 16 – Station 1+949: New 18.5 m long, 1200 mm diameter aluminized corrugated steel pipe, wall thickness of 2.8 mm with rerolled ends.

Bridge No. 17 – Station 2+097: New 14.5 m long, 1010 mm x 790 mm aluminized Ultra Flo spiral rib steel pipe arch, wall thickness of 2.0 mm with rerolled ends.

Bridge No. 18 – Station 2+276: New 12.0 m long, 1150 mm x 820 mm aluminized corrugated steel pipe arch, wall thickness of 2.0mm with rerolled ends.

Bridge No. 19 – Station 2+316: New 10.5 m long, 1000 mm aluminized corrugated steel pipe, wall thickness of 2.0mm with rerolled ends.

Bridge No. 20 – Station 2+446: New 12.5 m long, 1000 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.0 mm with rerolled ends.

Bridge No. 21 – Station 2+633: New 15.0 m long, 700 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.0 mm with rerolled ends.

Note: New Ultra Flo spiral rib steel pipe culverts shall be joined with aluminized Hugger band and 'O' Ring gasket couplers (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.

New CSP culverts shall be joined with annular aluminized corrugated wide bolt and angle couplers (minimum of 8 corrugation overlap and 2.8 mm wall thickness) and no single pipe less than 6.0 m in length. All pipes connected with couplers shall abut to each other with no more than a 25 mm gap between pipes prior to installation of the coupler and wrapped with filter fabric.

*Pipe Bedding Below
Pipe*

20-25 mm clear stone conforming to OPSS Division 10.

*Backfill up to Pipe
Culvert Springline
(Arch Pipe)*

20-25 mm clear stone conforming to OPSS Division 10.

<i>Backfill up to Pipe Culvert Springline (Round Pipe)</i>	<i>Granular 'B' conforming to OPSS Division 10.</i>
<i>Backfill 300 mm above top of Pipe (Rigid pipe)</i>	<i>Granular 'B' conforming to OPSS Division 10.</i>
<i>Backfill Above Pipe Springline up to Bottom of Driveway Surface Materials (Farm Access Bridges)</i>	<i>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.</i>
<i>Backfill Material (Residential Access Bridges)</i>	<i>Granular 'B' conforming to OPSS Division 10.</i>
<i>Backfill Material (Residential Access Bridges w/ Asphalt Surface)</i>	<i>Granular 'A' made from crushed limestone conforming to OPSS Division 10. Minimum 200 mm thickness.</i>
<i>Gravel Driveway Surface</i>	<i>Granular 'A' made from crushed limestone conforming to OPSS Division 10. Minimum 200 mm thickness.</i>
<i>Erosion Stone</i>	<i>All stone to be used for erosion protection shall be 125 - 250 mm clear quarried rock or OPSS.Muni 1004, minimum 300 mm thickness.</i>
<i>Driveway Buffer Strips</i>	<i>Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances.</i>
<i>Filter Fabric</i>	<i>"Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC or approved equivalent.</i>

10.0 ACCESS BRIDGE WORK – FUTURE REPLACEMENT

10.1 Location of New Bridges

The future replacement Bridge Nos. 1, 3, 4, 5, 7 and 22 shall be constructed in accordance with the specifications and drawings attached hereto. The centerline of the new culvert shall be located to align itself with the existing laneway in each case.

10.2 Removal of Existing Culverts

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

10.3 Materials for New Bridges

Materials shall be as follows:

Culvert Pipe

Bridge No. 1 – Station 0+131: New 24.5 m long, 1800 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.

Bridge No. 3 – Station 0+367: New 30.0 m long, 1800 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.

Bridge No. 4 – Station 0+514: New 14.5 m long, 1650 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.

Bridge No. 5 – Station 0+564: New 12.0 m long, 1650 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.

Bridge No. 7 – Station 0+745: New 33.0 m long, 1800 mm diameter aluminized Ultra Flo spiral rib steel pipe, wall thickness of 2.8 mm with rerolled ends.

Note: New Ultra Flo spiral rib steel pipe culverts shall be joined with aluminized Hugger band and 'O' Ring gasket couplers (2.8 mm wall thickness) and no single pipe less than 6.0 m in length. All pipes connected with couplers shall abut to each other with no more than a 25 mm gap between pipes prior to installation of the coupler and wrapped with filter fabric.

Bridge No. 22 – Station 2+689: New 12.0 m long, 600 mm diameter aluminized Type II corrugated steel pipe (CSP), wall thickness of 2.0 mm and 68 mm x 13 mm corrugations with rerolled ends.

New CSP culverts shall be joined with annular aluminized corrugated wide bolt and angle couplers (minimum of 8 corrugation overlap and 2.8 mm wall thickness) and no single pipe less than 6.0 m in length. All pipes connected with couplers shall abut to each other with no more than a 25 mm gap between pipes prior to installation of the coupler and wrapped with filter fabric.

Pipe Bedding Below Pipe

20-25 mm clear stone conforming to OPSS Division 10.

Backfill up to Pipe Culvert Springline

Granular 'B' conforming to OPSS Division 10.

Backfill 300 mm above top of Pipe (Rigid Pipe) (Farm Access Bridges)

Granular 'B' conforming to OPSS Division 10.

Backfill Material (Residential Access Bridges)

Granular 'B' conforming to OPSS Division 10.

<i>Backfill Material (Residential Access Bridges w/ Asphalt Surface)</i>	<i>Granular 'A' made from crushed limestone conforming to OPSS Division 10. Minimum 200 mm thickness.</i>
<i>Gravel Driveway Surface</i>	<i>Granular 'A' made from crushed limestone conforming to OPSS Division 10. Minimum 200 mm thickness.</i>
<i>Erosion Stone</i>	<i>All stone to be used for erosion protection shall be 125 - 250 mm clear quarried rock or OPSS.Muni 1004, minimum 300 mm thickness.</i>
<i>Vertical End Walls</i>	<i>Concrete filled jute bags as specified.</i>
<i>Driveway Buffer Strips</i>	<i>Dry native material free of topsoil, organic matter, broken concrete, steel, wood and deleterious substances.</i>
<i>Filter Fabric</i>	<i>"Non-Woven" geotextile filter fabric with a minimum strength equal to or greater than Terrafix 270R, Amoco 4546, Mirafi 140NC or approved equivalent.</i>

10.4 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.

10.5 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.

10.6 Concrete Filled Jute Bag Vertical End Walls

Where specified and after the Contractor has set in place the new pipe for the access culvert, he shall completely backfill the same and install new concrete jute bag end wall at the location indicated on the drawings. When constructing the concrete jute bag end wall, the Contractor shall place the bags so that the completed end wall shall have a slope inward from the bottom of the pipe to the top of the finished end wall, the slope of the end wall shall be one unit horizontal to five units vertical. The Contractor shall completely backfill behind the new concrete jute bag end wall with granular material, Granular 'B' as per OPSS 1010 from a minimum 200 mm below the pipe up to the underside of driveway material. The Granular 'B' material shall be compacted in place with a standard proctor density of 100%.

The placing of the jute bag end wall and the backfilling shall be performed in lifts simultaneously. In coordination with the placing of the concrete filled jute bag end wall and the backfilling, the Contractor shall also place a continuous layer of filter fabric backing (Terrafix 270R or approved equal). The filter fabric shall extend up on both sides from the inside face of end wall starting from the base of the concrete filled jute bag end wall to the top of the driveway surface. The granular backfill shall be placed and compacted in lifts not to exceed 300 mm (12") in thickness.

The concrete jute bag end wall shall be constructed by filling jute bags with concrete. All concrete used to fill the jute bags shall have a minimum compressive strength of 25 MPa in 28 days and shall be provided and placed only as a wet mix, under no circumstance, shall the concrete to be used for filling the jute bags, be placed as a dry mix. The jute bags, before being filled with concrete, shall have a dimension of 460 mm x 660 mm (18" x 26"). The jute bags shall be filled with concrete so that they are laid flat; they will be approximately 100 mm (4") thick, 300 mm (12") to 380 mm (15") wide and 460 mm (18") long. The concrete jute bag end wall to be provided at the end of the pipe shall be a single bag wall construction or as specified otherwise. The concrete filled bags shall be laid so that the 460 mm (18") dimension is parallel with the length of the new pipe.

The concrete filled bags shall be laid on a footing of plain concrete being 460 mm (18") wide, extending for the full length of the wall, and from 0.3 metres (1.0 ft) below the bottom of the corrugated pipe to the bottom of the culvert pipe. All concrete used for the footing shall have a minimum compressive strength of 25 MPa in 28 days. The concrete filled jute bags shall extend from the top of the concrete footing to the top of the driveway. The completed jute bag end wall shall be securely embedded a minimum of 0.50 metres (20") into the side slopes of the drain.

The top three (3) layers of the concrete filled jute bags shall be fully mortared in place by using a mixture composed of 3 parts of clean sharp sand to 1 part of Portland cement. Upon completion of the jute bag end wall the Contractor shall cap the top row of concrete filled bags with a layer of plain concrete, 150 mm (6") thick, and hand trowelled to obtain an aesthetic finish. The Contractor shall fill all voids between the concrete filled jute bags and the C.S.P. with concrete, particular care being taken underneath the pipe haunches to fill in all voids.

10.7 Granular 'A' Driveway

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

10.8 Asphalt Driveway Restoration

Asphalt driveways shall be constructed as follows:

- 80 mm HL3 Surface Asphalt (two 40 mm lifts)
- 200 mm Granular 'A'

10.9 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.

10.10 Lateral Tile Drains

Should the Contractor encounter any lateral tiles within the proposed culvert limits not shown on the 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.

10.11 Site Clean-up and Restoration

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

GENERAL SPECIFICATIONS

1.0 AGREEMENT AND GENERAL CONDITIONS

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

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

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

2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS

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

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

3.0 MAINTENANCE PERIOD

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

4.0 GENERAL CO-ORDINATION

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

5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES

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

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

6.0 CONTRACTOR'S LIABILITY

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

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

7.0 PROPERTY BARS AND SURVEY MONUMENTS

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

8.0 MAINTENANCE OF FLOW

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

9.0 ONTARIO PROVINCIAL STANDARDS

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

10.0 APPROVALS, PERMITS AND NOTICES

The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all Municipal, Provincial, Federal and other authorities having jurisdiction in respect to any matters embraced in this Contract. The Contractor shall obtain all approvals and permits and notify the affected authorities when carrying out work in the vicinity of any public utility, power, underground cables, railways, etc.

11.0 SUBLETTING

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

12.0 TIME OF COMPLETION

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

13.0 TRAFFIC CONTROL

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

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

14.0 SITE CLEAN-UP AND RESTORATION

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

15.0 UTILITY RELOCATION WORKS

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

16.0 FINAL INSPECTION

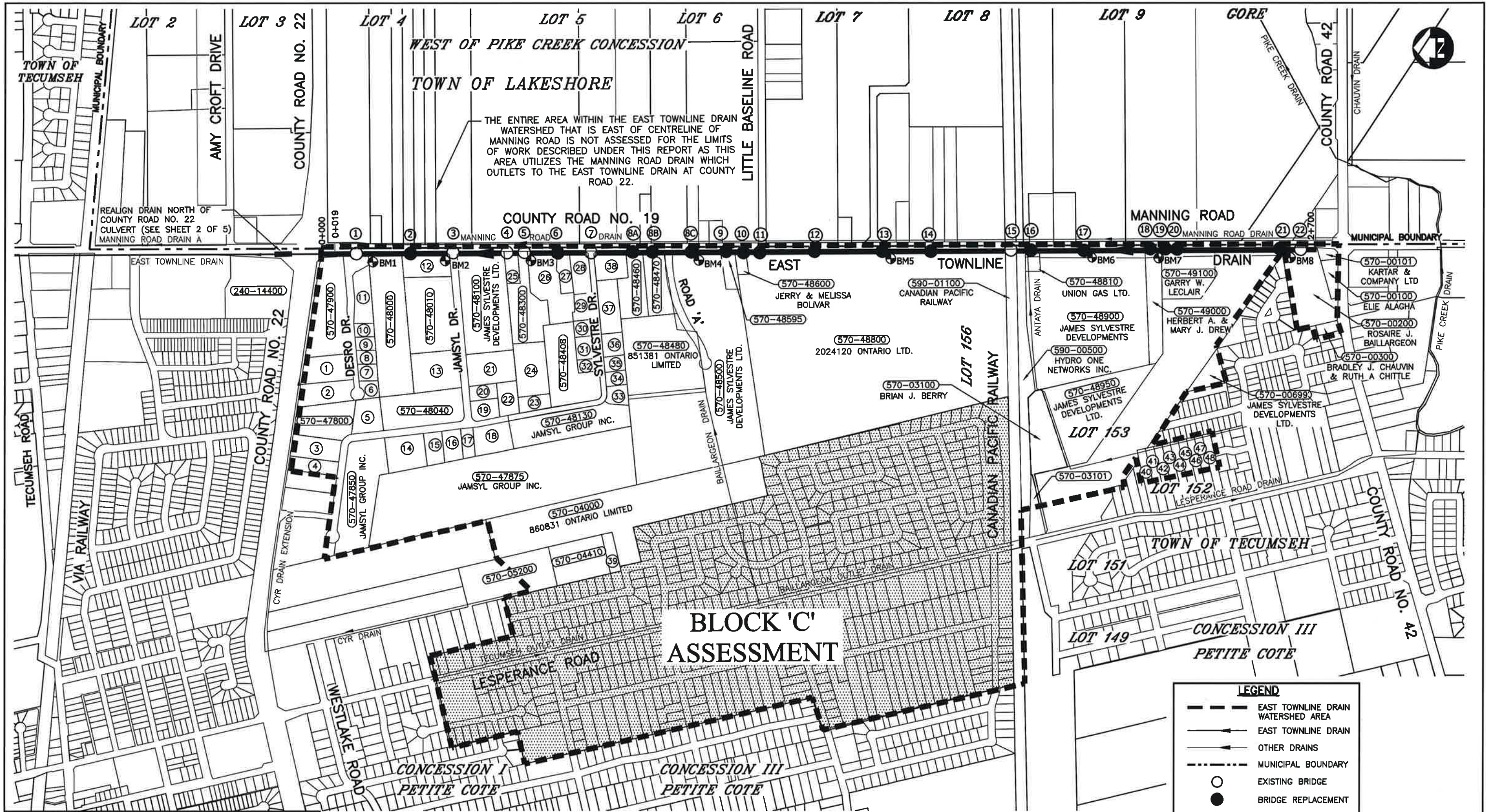
All work shall be carried out to the satisfaction of the Drainage Superintendent for the Municipality, in compliance with the specifications, drawings and the Drainage Act. Upon completion of the project, the work will be inspected by the Engineer and the Drainage Superintendent. Any deficiencies noted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

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

17.0 FISHERIES CONCERNS

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

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BLOCK 'C' ASSESSMENT

OVERALL WATERSHED PLAN
SCALE-1:10,000

LEGEND

- EAST TOWNLINE DRAIN WATERSHED AREA
- EAST TOWNLINE DRAIN
- OTHER DRAINS
- MUNICIPAL BOUNDARY
- EXISTING BRIDGE
- BRIDGE REPLACEMENT
- LOCAL BENCHMARK

NOTE: FOR SMALL LAND PARCELS
SEE PAGE 2 FOR OWNERSHIPS



Conditions of Use

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Do not scale dimensions from drawing.

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No.	ISSUED FOR	DATE	BY
4	FINAL REPORT SUBMISSION	FEB. 13/19	MDH
3	PUBLIC INFORMATION CENTRE NO. 2 REVIEW	OCT. 23/18	MDH
2	PUBLIC INFORMATION CENTRE REVIEW	MAY 24/17	MDH
1	CLIENT REVIEW	FEB. 8/17	MDH

DESIGN	MDH	REVIEWED BY	FRF
DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

DILLON CONSULTING

PROJECT NO. 14-9921

DRAWING SCALES BASED ON A 11" X 17" SHEET

'SCHEDULE G'

Drainage Report for the
EAST TOWNLINE DRAIN
(ST. CLAIR OUTLET)
Town of Tecumseh

SHEET TITLE
OVERALL WATERSHED PLAN

PAGE NO.
1 of 15

Feb 14, 2019 - 11:17am G:\CAD\149921\03-Drainage\149921-DRN-WATERSHD (FINALFeb2019).dwg

REFERENCE NO.	ROLL No.	OWNER NAME
47	570-01900	Daniel R. Beaulieu
48	570-01800	Paul A. Adams
	570-03101	Peter H. & Helene D. Hormann
	570-04410	1046399 Ontario Ltd.
	570-05200	Romano & Jadranka Zohll
	570-47800	Jameyl Group Inc.
	570-47900	1583912 Ontario Ltd.
	570-48000	Balbir S. & Geetinder K. Kooner
	570-48010	Jameyl Group Inc.
	570-48040	Jameyl Group Inc.
	570-48408	James Sylvestre Development Ltd.
	570-48300	James Sylvestre Developments Ltd. Jameyl Limited Partnership
	570-48460	Jeanette Sylvestre Trustee - 851381 Ontario Ltd.
	570-48470	Jeanette Sylvestre
	570-48595	James Sylvestre



4	FINAL REPORT SUBMISSION	FEB. 13/19	MDH
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ON A 11" X 17" SHEET

SHEET TITLE	PROPERTY OWNERS & DETAILS
PAGE NO.	2 of 15

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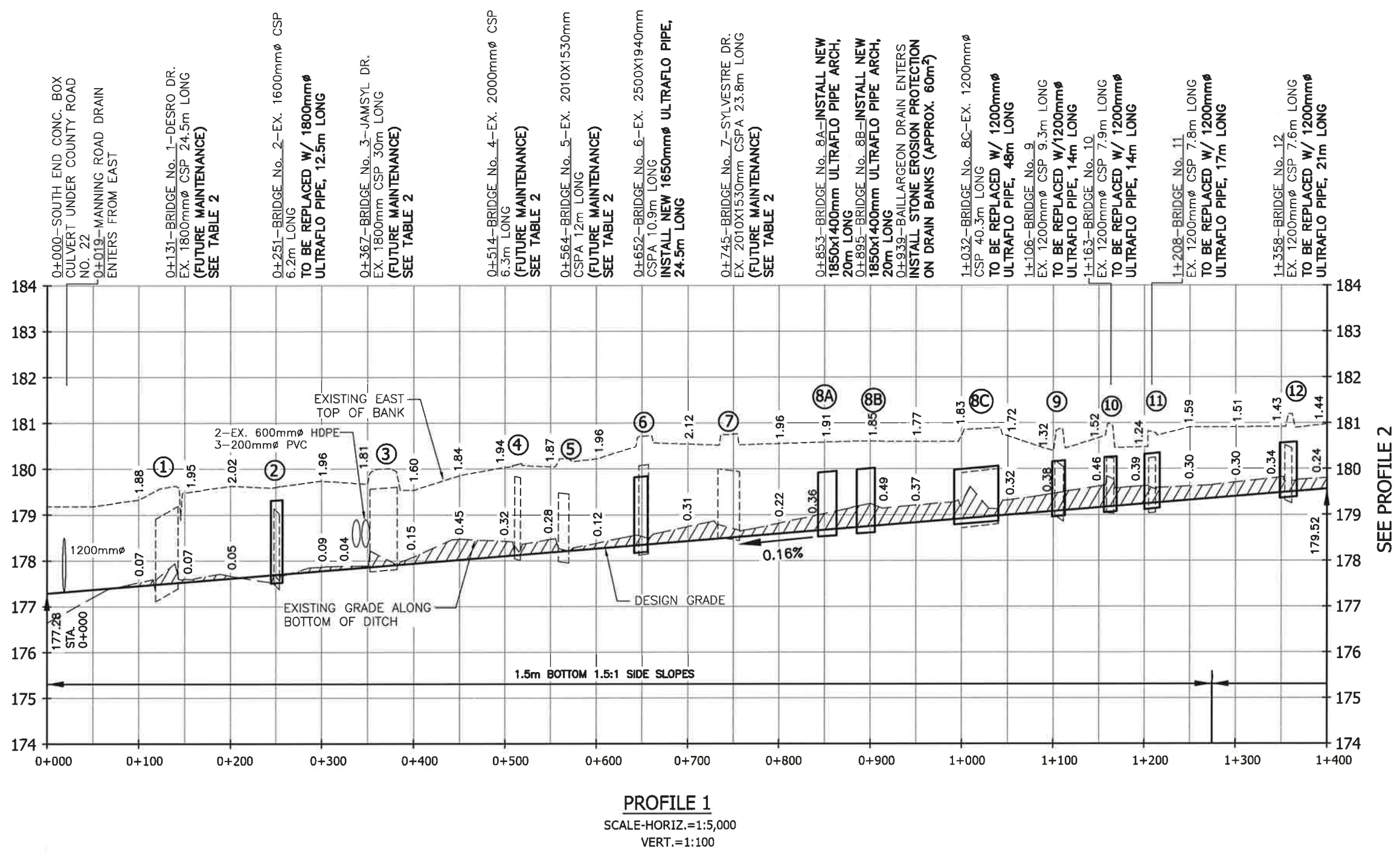
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1	CLIENT REVIEW	FEB. 8/17	MDH

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DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

	PROJECT NO.	14-9921
	DRAWING SCALES BASED ON A 11" X 17" SHEET	

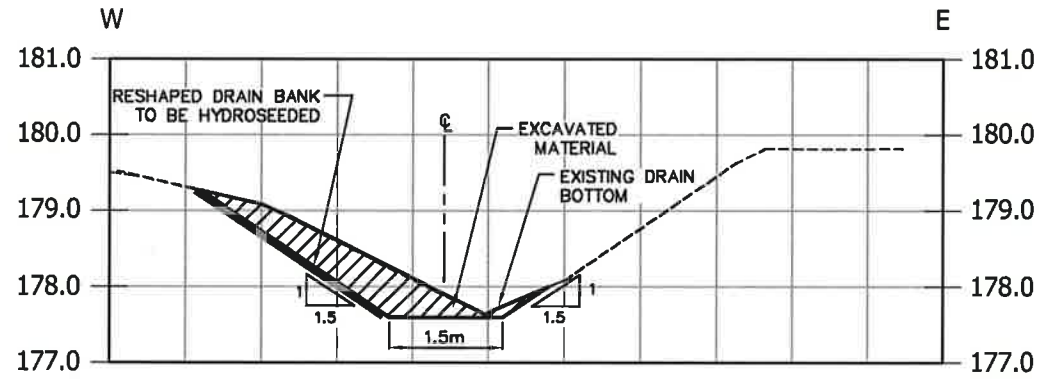
'SCHEDULE G' Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh	
SHEET TITLE	PROFILE 1
PAGE NO.	3 of 15



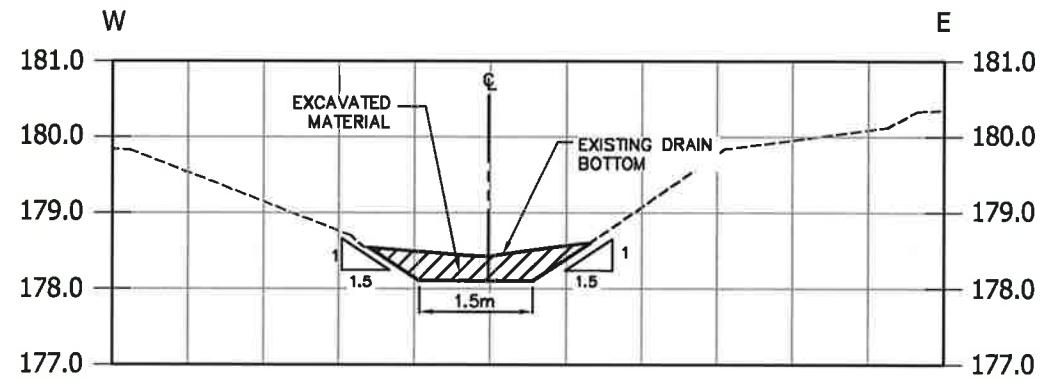
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VERT.=1:100

SEE PROFILE 2

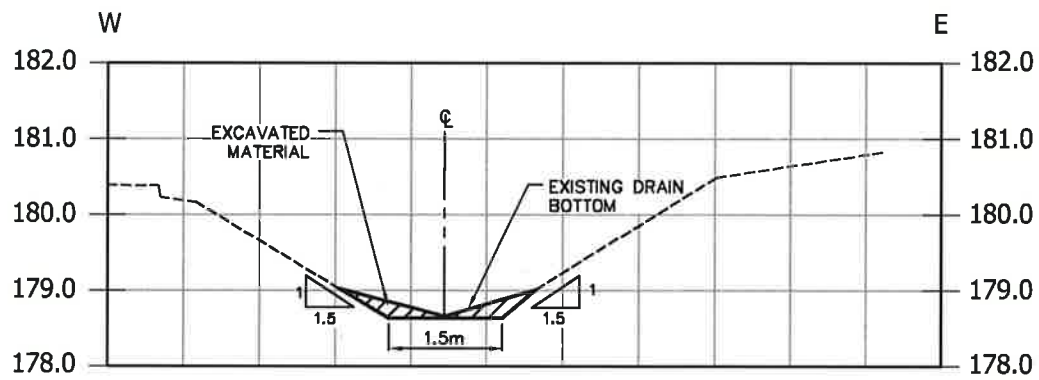
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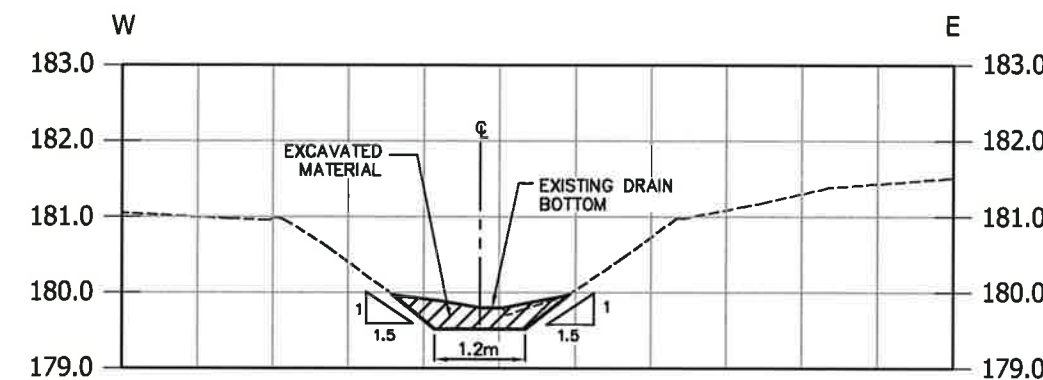
CROSS SECTION STA. 0+150
SCALE-1:100



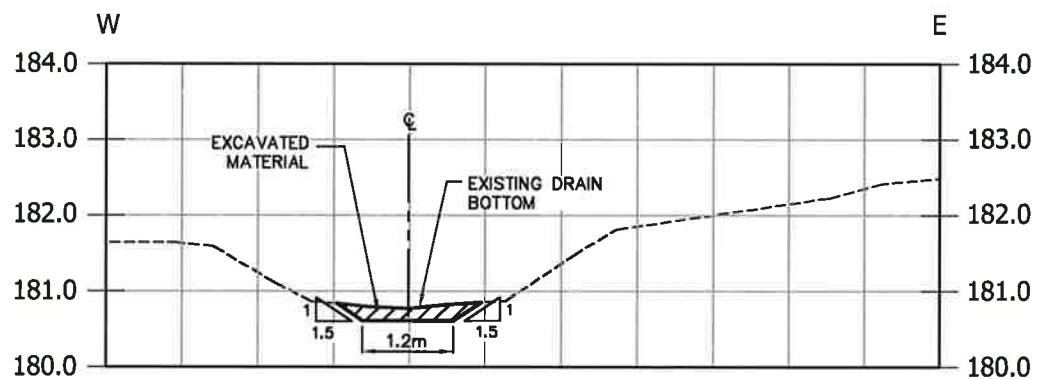
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SCALE-1:100



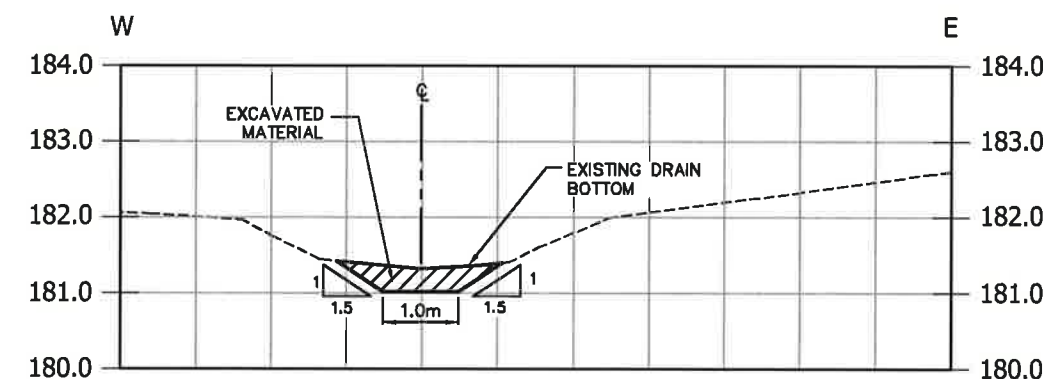
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SCALE-1:100



CROSS SECTION STA. 1+400
SCALE-1:100



CROSS SECTION STA. 2+000
SCALE-1:100



CROSS SECTION STA. 2+500
SCALE-1:100

SITE BENCHMARKS

BM1-TOP OF NUT ON FIRE HYDRANT AT
STATION 0+145.
ELEVATION=180.11m

BM2-TOP OF NUT ON FIRE HYDRANT AT
STATION 0+359.
ELEVATION=180.70m

BM3-TOP OF NUT ON FIRE HYDRANT AT
STATION 0+572.
ELEVATION=180.65m

BM4-TOP OF NUT ON FIRE HYDRANT AT
STATION 1+044.
ELEVATION=181.28m

BM5-TOP OF NUT ON FIRE HYDRANT AT
STATION 1+552.
ELEVATION=182.00m

BM6-TOP OF NAIL IN EAST FACE OF
HYDRO POLE ON WEST SIDE OF COUNTY
ROAD NO. 19 AT STATION 2+106.
ELEVATION=182.26m

BM7-TOP OF NUT ON FIRE HYDRANT AT
STATION 2+314.
ELEVATION=182.71m

BM8-TOP OF NAIL IN WEST SIDE OF
WOOD POST ON WEST SIDE COUNTY
ROAD NO. 19 AT STATION 2+642.
ELEVATION=183.17m

NOTE: CONTRACTOR TO VERIFY BENCHMARKS
PRIOR TO CONSTRUCTION.



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DESIGN	MDH	REVIEWED BY	FRF
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SCALE	AS SHOWN		

	
PROJECT NO.	14-9921
DRAWING SCALES BASED ON A 11" X 17" SHEET	

'SCHEDULE G'

Drainage Report for the
EAST TOWNLINE DRAIN
(ST. CLAIR OUTLET)
Town of Tecumseh

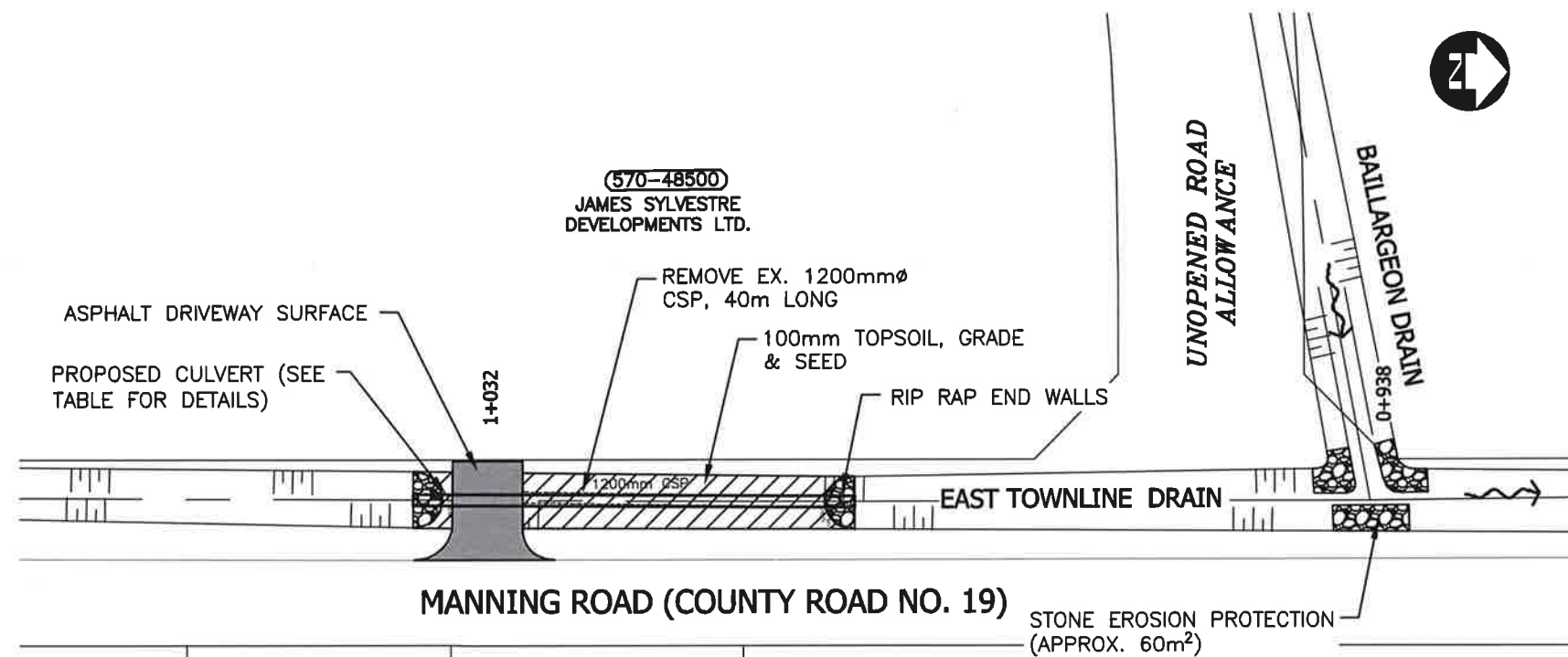
SHEET TITLE

CROSS SECTIONS

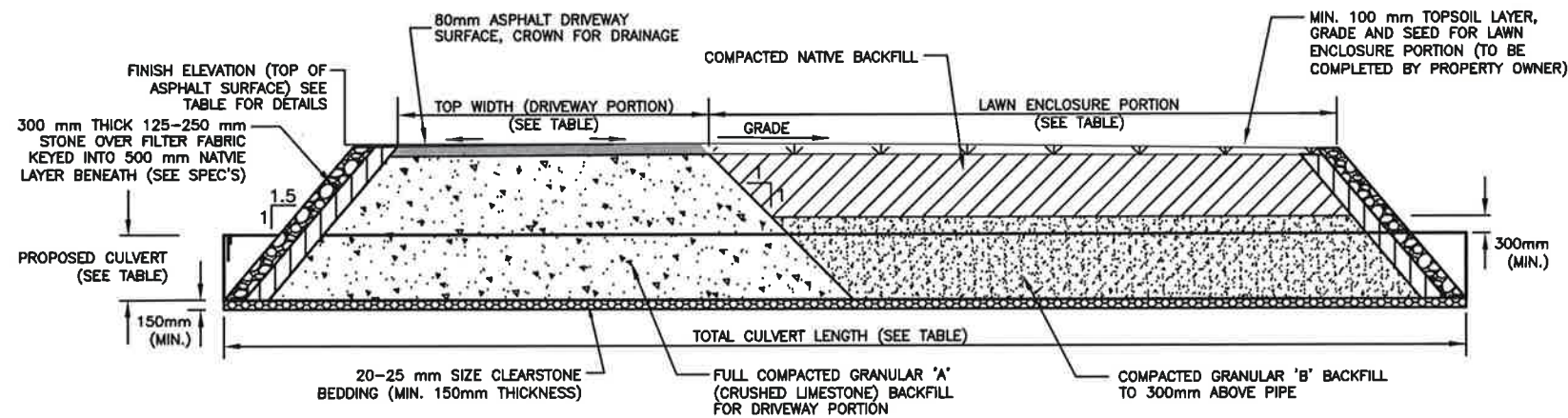
PAGE NO.

5 of 15

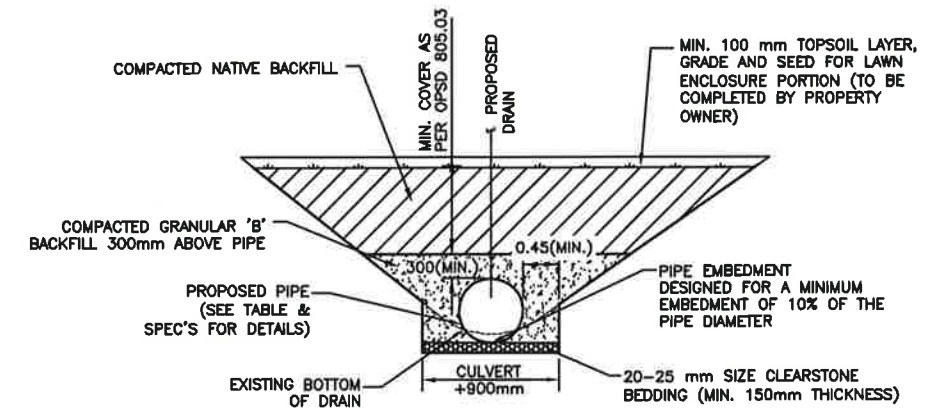
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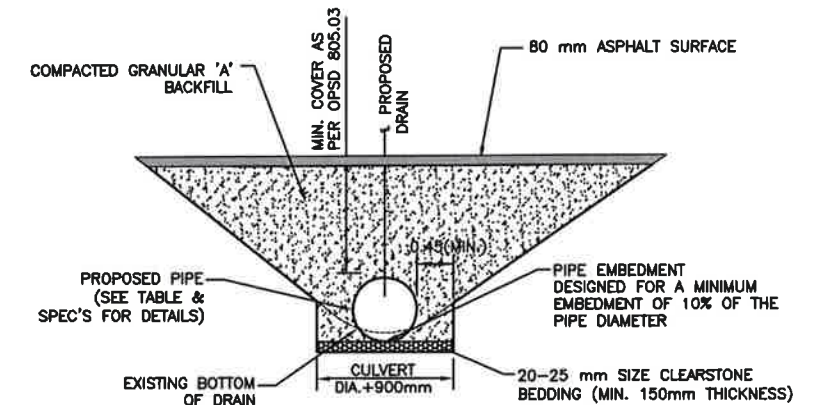
BRIDGE NO. 8C ENCLOSURE DETAIL
NOT TO SCALE



LONGITUDINAL SECTION
N.T.S.



DRAIN ENCLOSURE CROSS SECTION
N.T.S.



DRIVEWAY CROSS SECTION
N.T.S.



Conditions of Use

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2	PUBLIC INFORMATION CENTRE REVIEW	MAY 24/17	MDH
1	CLIENT REVIEW	FEB. 8/17	MDH

DESIGN	MDH	REVIEWED BY	FRF
DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

	
PROJECT NO.	14-9921
DRAWING SCALES BASED ON A 11" X 17" SHEET	

'SCHEDULE G'

Drainage Report for the
EAST TOWNLINE DRAIN
(ST. CLAIR OUTLET)
Town of Tecumseh

SHEET TITLE
BRIDGE NO. 8C DRAIN ENCLOSURE DETAILS

PAGE NO.
6 of 15

Feb 14, 2019 - 11:27am G:\CAD\149921\03-Drainage\149921-DRN-CON (FINAL Feb 2019).dwg

TABLE 1 – ACCESS BRIDGE DESIGN INFORMATION

DESCRIPTION	BRIDGE No. 2	BRIDGE No. 6	BRIDGE No. 8A	BRIDGE No. 8B	BRIDGE No. 8C	BRIDGE No. 9	BRIDGE No. 10	BRIDGE No. 11	BRIDGE No. 12	BRIDGE No. 13	BRIDGE No. 14	BRIDGE No. 16	BRIDGE No. 17	BRIDGE No. 18	BRIDGE No. 19	BRIDGE No. 20	BRIDGE No. 21
BRIDGE & LOCATION (STA.)	0+251	0+652	0+853	0+895	1+032	1+106	1+163	1+208	1+358	1+546	1+689	1+949	2+097	2+276	2+318	2+446	2+633
BRIDGE TYPE	HYDRANT	SHARED COMMERCIAL	COMMERCIAL	COMMERCIAL	RES/FARM	RESIDENTIAL	RESIDENTIAL	FARM	HYDRANT/ FARM	HYDRANT	HYDRANT	HYDRANT/ UNION GAS	FARM	RESIDENTIAL	HYDRANT	RESIDENTIAL	HYDRO ONE
PIPE INVERT ELEV. U/S SIDE(m)	177.52	178.18	178.51	178.58	178.82	178.93	179.07	179.14	179.38	179.71	180.03	180.47	180.59	180.70	180.73	180.75	181.36
PIPE INVERT ELEV. D/S SIDE(m)	177.51	178.14	178.49	178.56	178.74	178.91	179.05	179.13	179.37	179.70	180.02	180.45	180.57	180.68	180.72	180.74	181.32
TOP OF & DRIVEWAY SURFACE ELEV. (m)	179.60	180.61	180.60	180.60	181.00	180.70	180.86	181.15	181.20	181.50	181.52	182.04	181.68	181.94	182.00	182.11	182.60
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	177.68	178.32	178.64	178.71	178.93	179.04	179.19	179.26	179.50	179.80	180.10	180.59	180.67	180.78	180.80	185.35	181.41
MIN. TOP WIDTH OF DRIVEWAY (m)	4.0	15.0	12.2	12.2	7.3	6.1	6.1	9.0	9.0	4.0	4.0	7.3	9.0	6.1	4.0	6.1	9.0
MIN. CULVERT GRADE (%)	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.16%	0.21%	0.10%	0.10%	0.10%	0.10%	0.10%	0.28%
CULVERT TYPE	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	CSP	ULTRA FLO	CSPA	CSP	CSP	CSP
CULVERT MATERIAL	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.
CULVERT LENGTH (m)	12.5	24.5	16.0	16.0	48.0	14.0	14.0	17.0	21.0	10.5	10.0	18.5	14.5	12.0	10.5	12.5	15.0
CULVERT THICKNESS (mm)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.0	2.0	2.8	2.0	2.0	2.0	2.0	2.0
CULVERT CORRUGATIONS (mm)	–	–	–	–	–	–	–	–	–	–	–	125X25	–	68x13	68x13	68x13	68x13
PIPE SIZE (mm)	1800	1650	1850X1400	1850X1400	1200	1200	1200	1200	1200	1160X920	1160X920	1200	1010X790	1150x820	1000	1000	700
CULVERT ENDWALL TYPE	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING	SLOPING

TABLE 2 – FUTURE ACCESS BRIDGE DESIGN INFORMATION

DESCRIPTION	BRIDGE No. 1 (FUTURE)	BRIDGE No. 3 (FUTURE)	BRIDGE No. 4 (FUTURE)	BRIDGE No. 5 (FUTURE)	BRIDGE No. 7 (FUTURE)	BRIDGE No. 22 (FUTURE)
BRIDGE LOCATION (STA.)	0+131	0+367	0+514	0+564	0+745	2+689
BRIDGE TYPE	ROAD	ROAD	RESIDENTIAL	COMMERCIAL	ROAD	RESIDENTIAL
PIPE INVERT ELEV. U/S SIDE(m)	177.33	177.72	177.98	178.06	178.32	181.51
PIPE INVERT ELEV. D/S SIDE(m)	177.29	177.67	177.96	178.03	178.27	181.48
TOP OF & DRIVEWAY/ROAD SURFACE ELEV. (m)	179.58	179.99	180.11	180.24	180.70	182.66
DRAIN BOTTOM (m) (DESIGN) (AT CENTRELINE OF CULVERT)	177.49	177.87	178.10	178.18	178.47	181.57
MIN. TOP WIDTH OF DRIVEWAY (m)	–	–	6.1	9.0	–	6.1
MIN. CULVERT GRADE (%)	0.16%	0.16%	0.16%	0.16%	0.16%	0.28%
CULVERT TYPE	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	ULTRA FLO	CSP
CULVERT MATERIAL	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.	ALUM.
CULVERT LENGTH (m)	24.5	30.0	14.5	12.0	33.0	12.0
CULVERT THICKNESS (mm)	2.8	2.8	2.8	2.8	2.8	2.0
CULVERT CORRUGATIONS (mm)	–	–	–	–	–	68x13
PIPE SIZE (mm)	1800	1800	1650	1650	1800	600
CULVERT ENDWALL TYPE	SLOPING	SLOPING	SLOPING	JUTE BAG	SLOPING	SLOPING



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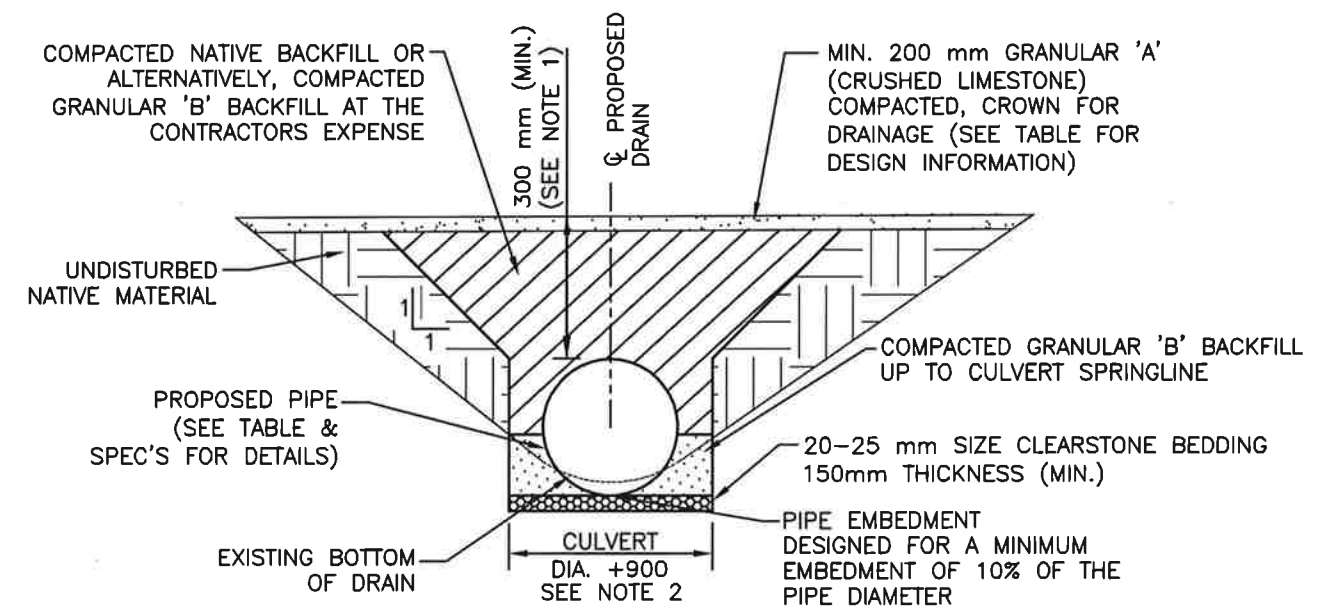
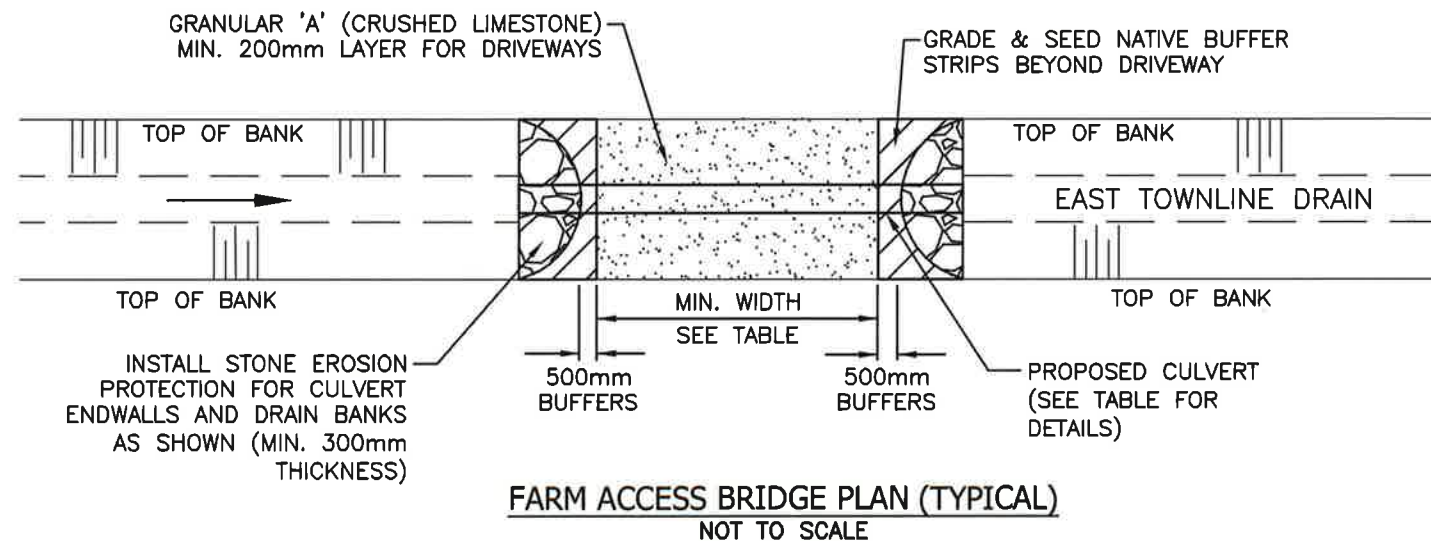
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4	FINAL REPORT SUBMISSION	FEB. 13/19	MDH		
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1	CLIENT REVIEW	FEB. 8/17	MDH		
No.	ISSUED FOR	DATE	BY		

DESIGN	MDH	REVIEWED BY	FRF
DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

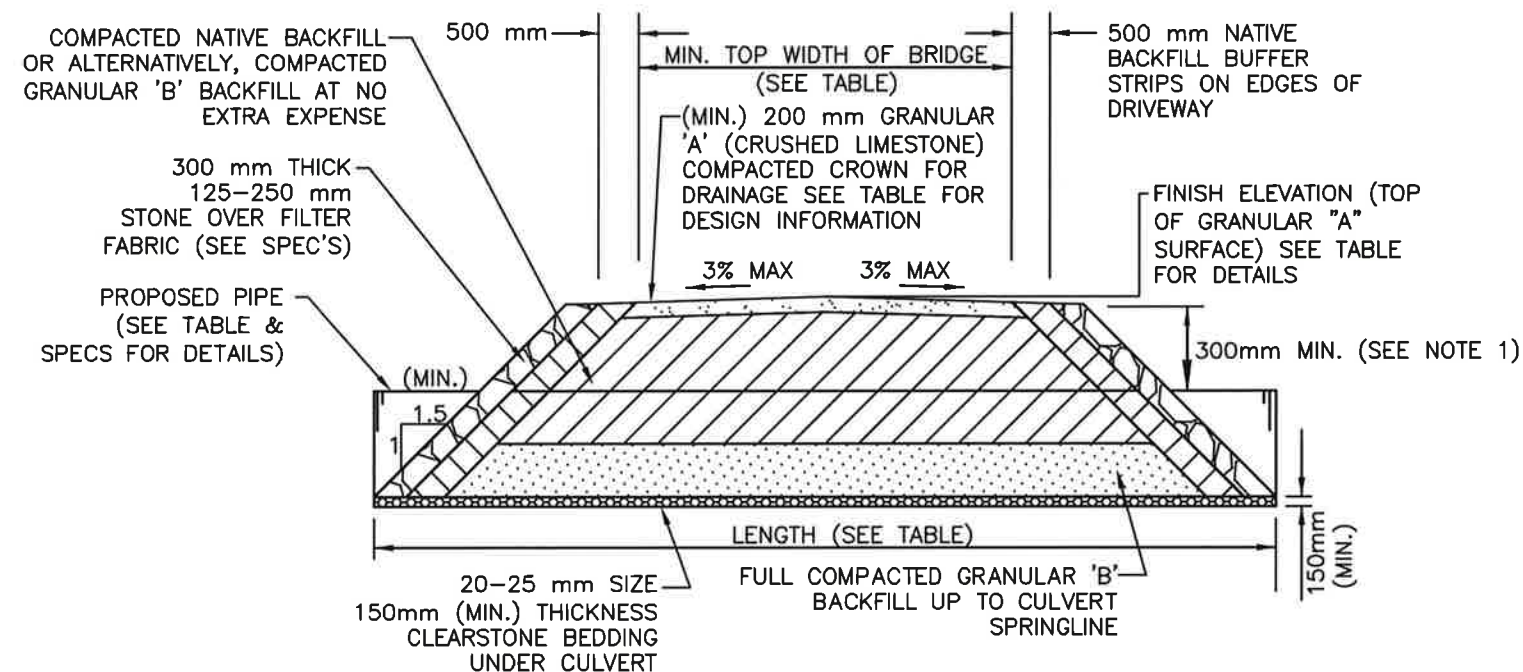
PROJECT NO.	14-9921
DRAWING SCALES BASED ON A 11" X 17" SHEET	

'SCHEDULE G'	
Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh	
SHEET TITLE	BRIDGE DESIGN TABLE
PAGE NO.	7 of 15



NOTE 1: FOR ULTRAFLO ALUMINIZED STEEL RIBBED PIPE OF LARGER DIAMETER, THE MINIMUM COVER IS 410mm FOR 1650mm ϕ AND 450mm FOR 1800mm ϕ .

NOTE 2: ULTRAFLO ALUMINIZED STEEL RIBBED PIPE REQUIRES PIPE BEDDING TO EXTEND 300mm ABOVE THE PIPE AS PER OPSD 802.03 & MINIMUM 600 mm WIDE ON EACH SIDE OF PIPE AS PER ASTM 796 (D+1200).



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DESIGN	REVIEWED BY
MDH	FRF
DRAWN	CHECKED BY
WLB	TRO
DATE	
FEBRUARY 13, 2019	
SCALE	
AS SHOWN	



'SCHEDULE G'

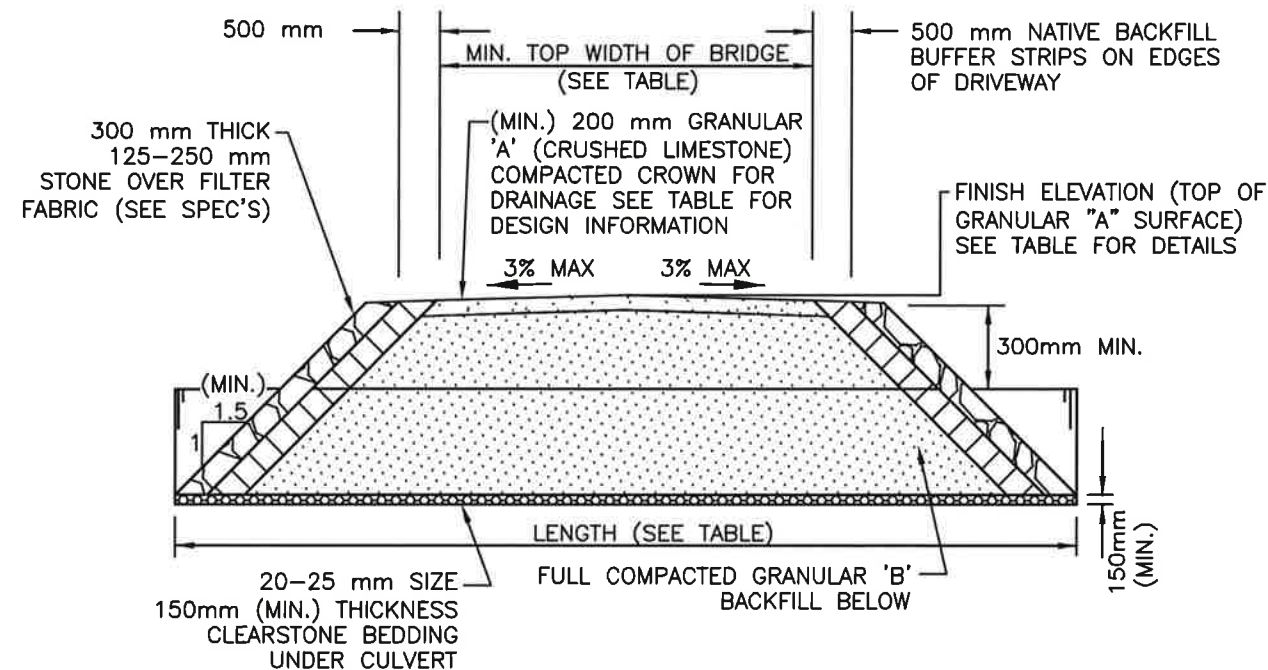
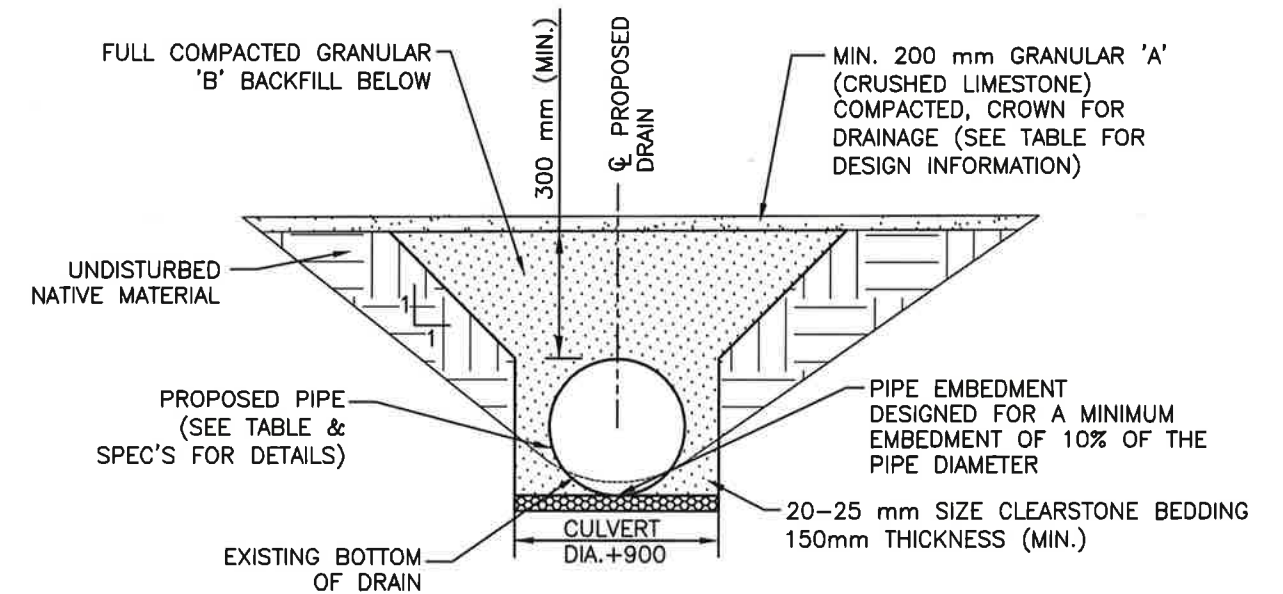
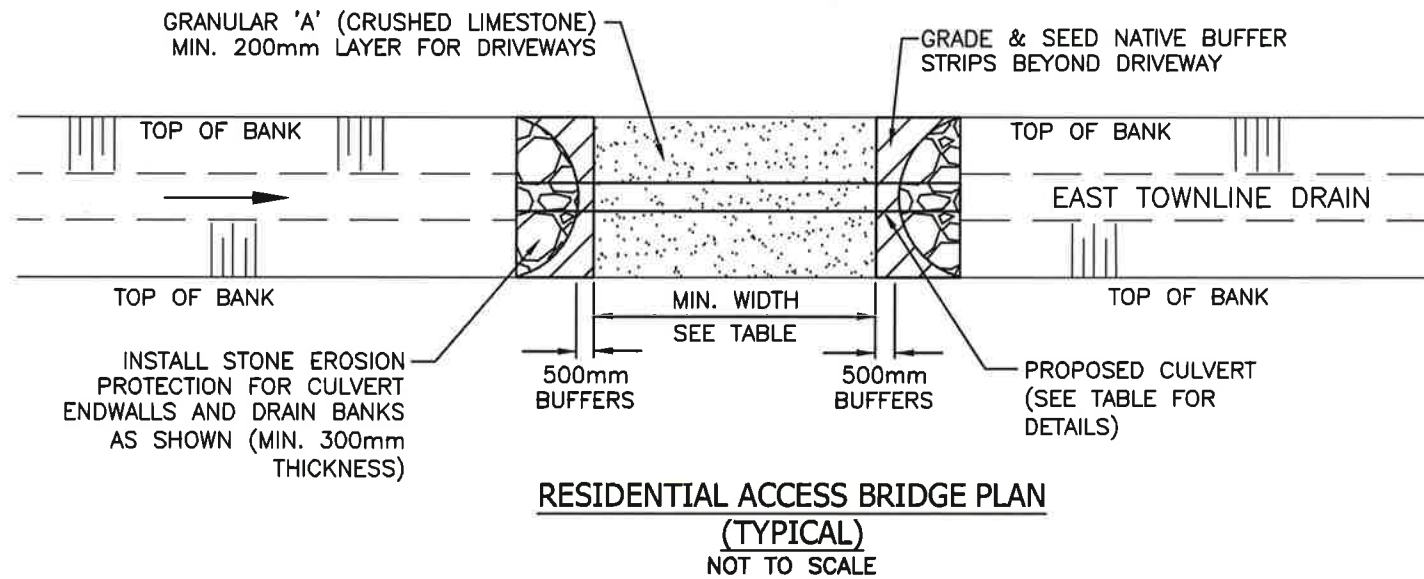
Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh

SHEET TITLE

FARM BRIDGE DETAILS

PAGE NO.

8 of 15



NOTE 1: FOR ULTRAFLO ALUMINIZED STEEL RIBBED PIPE OF LARGER DIAMETER, THE MINIMUM COVER IS 410mm FOR 1650mm ϕ AND 450mm FOR 1800mm ϕ .

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DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

PROJECT NO.	14-9921
DRAWING SCALES BASED ON A 11" X 17" SHEET	

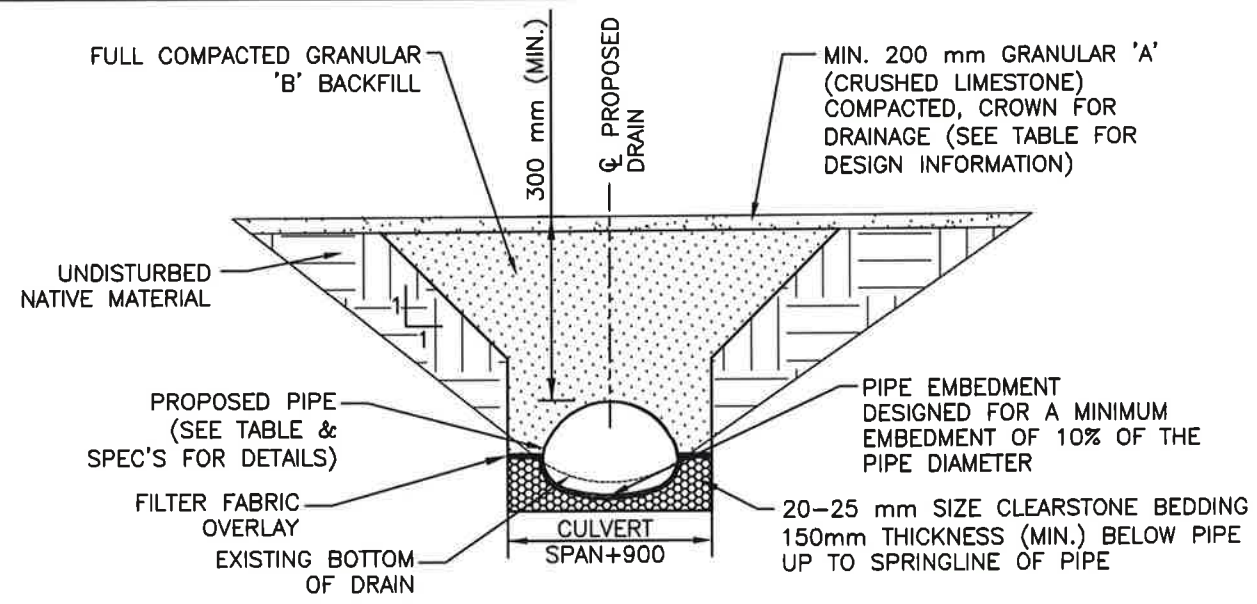
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Drainage Report for the
EAST TOWNLINE DRAIN
(ST. CLAIR OUTLET)
Town of Tecumseh

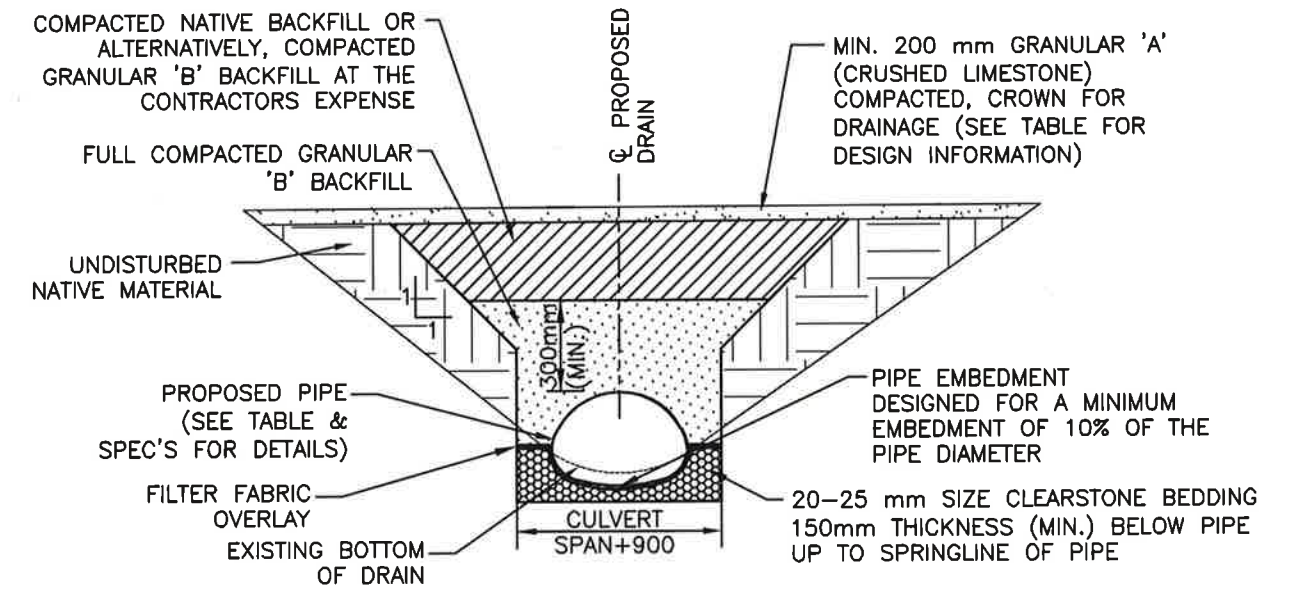
SHEET TITLE
RESIDENTIAL BRIDGE DETAILS

PAGE NO.
9 of 15

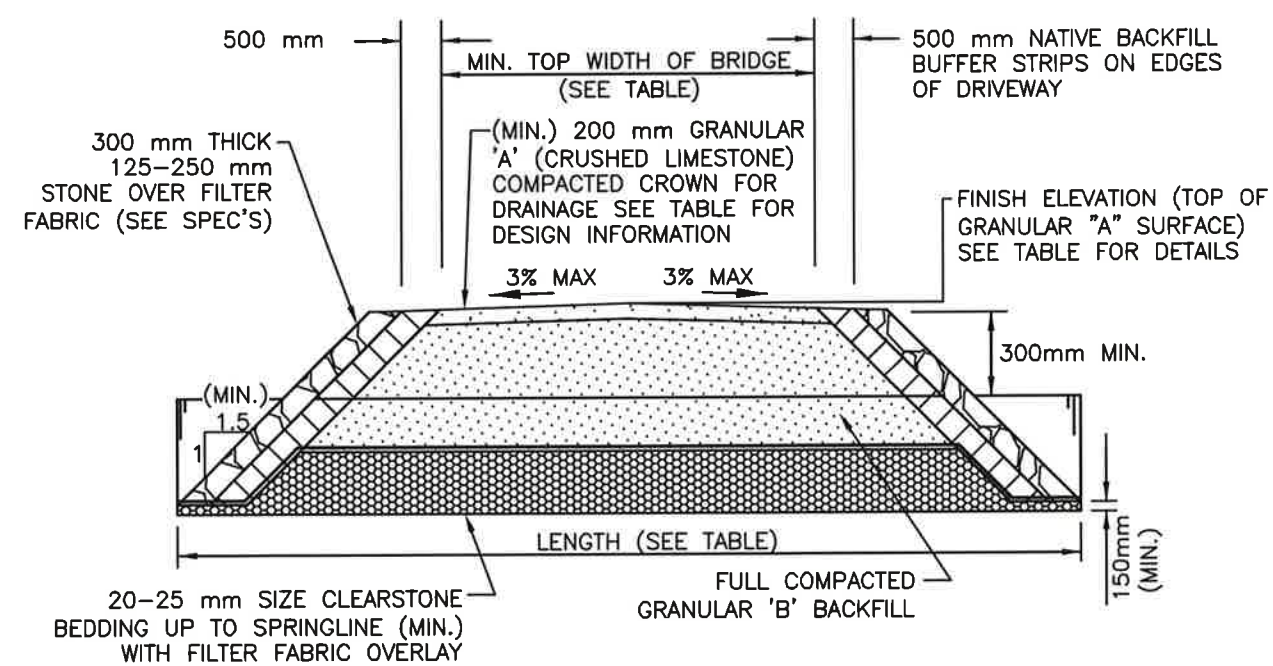
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ACCESS BRIDGE CROSS SECTION (ARCH)
(BRIDGE NO. 8A, 8B & 18)
NOT TO SCALE

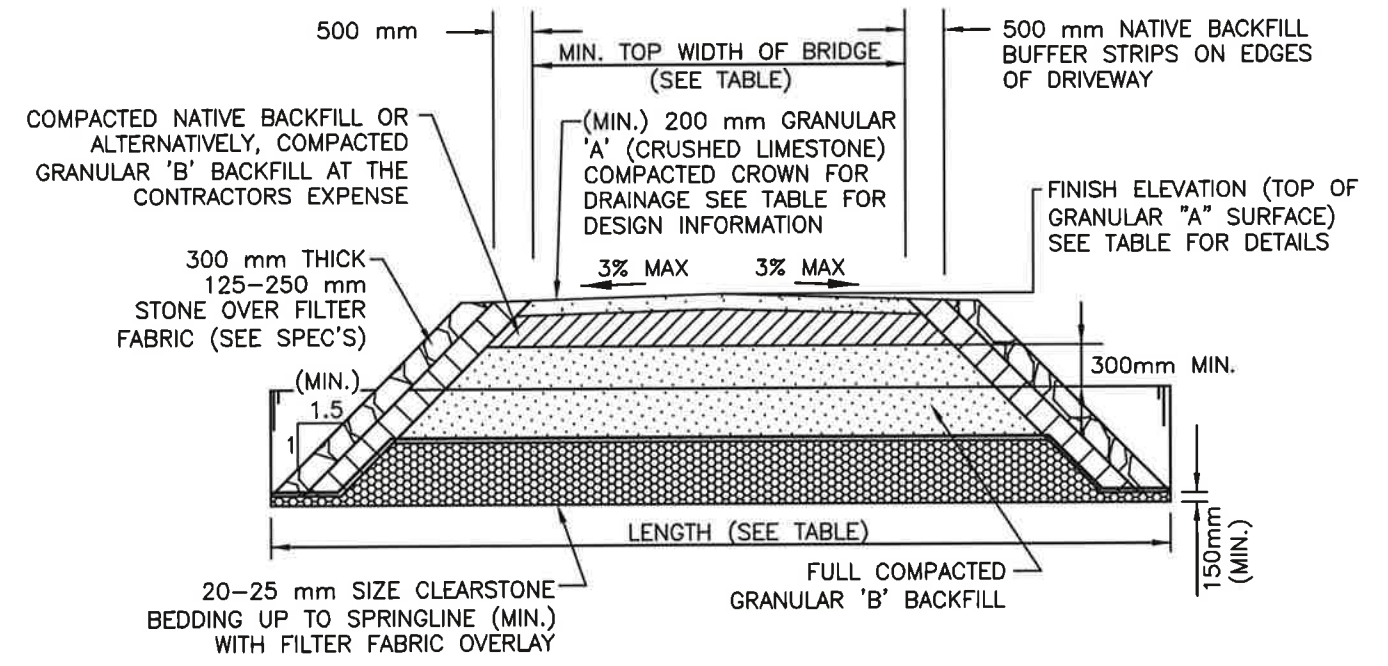


ACCESS BRIDGE CROSS SECTION (ARCH)
(BRIDGE NO. 17)
NOT TO SCALE



ACCESS BRIDGE LONGITUDINAL SECTION (ARCH)
(BRIDGE NO. 8A, 8B & 18)
NOT TO SCALE

NOTE: FOR BRIDGE NO. 8A & 8B TOP WIDTH TO BE MIN. 100mm TOPSOIL & SEEDED



ACCESS BRIDGE LONGITUDINAL SECTION (ARCH)
(BRIDGE NO. 17)
NOT TO SCALE

NOTE 1: ULTRAFLO ALUMINIZED STEEL RIBBED PIPE REQUIRES PIPE BEDDING TO EXTEND 300mm ABOVE THE PIPE AS PER OPSD 802.03.



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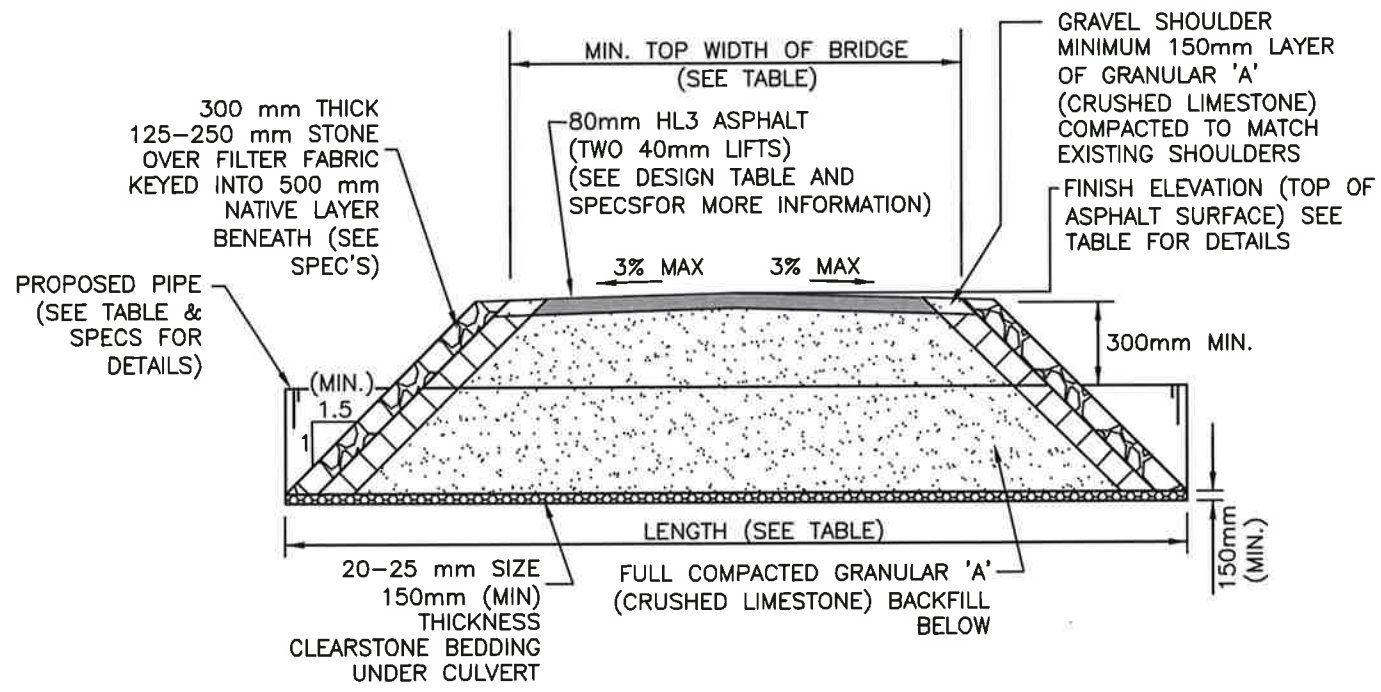
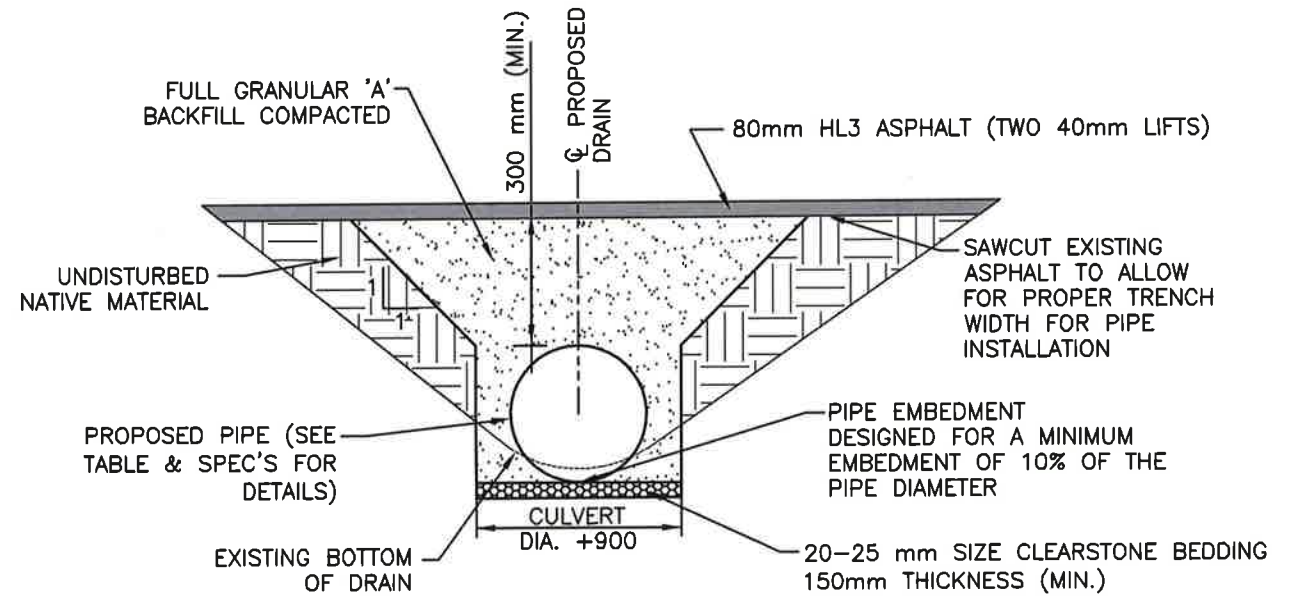
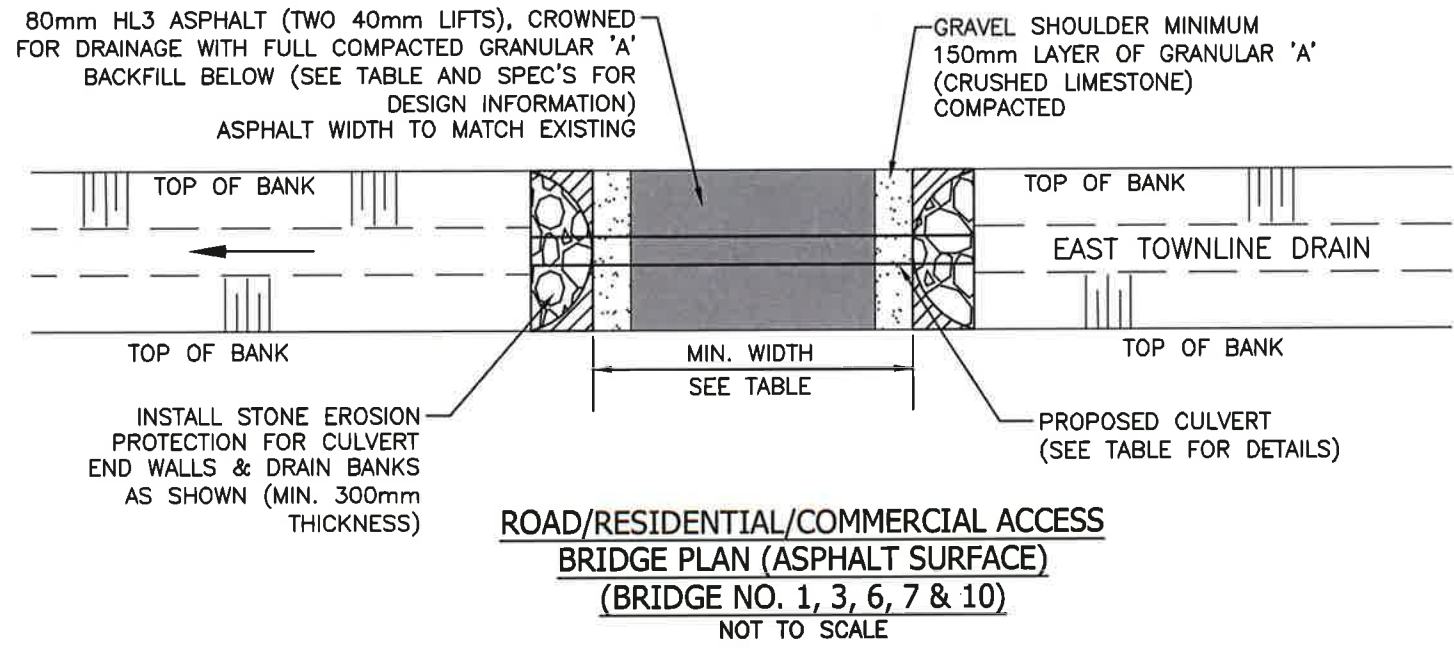
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DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

DILLON CONSULTING

PROJECT NO. 14-9921

DRAWING SCALES BASED ON A 11" X 17" SHEET

'SCHEDULE G'	
Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh	
SHEET TITLE	ARCH PIPE BRIDGE DETAILS
PAGE NO.	10 of 15



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ROAD/RESIDENTIAL/COMMERCIAL ACCESS BRIDGE
LONGITUDINAL SECTION (ASPHALT SURFACE)
(BRIDGE NO. 1, 3, 6, 7 & 10)
 NOT TO SCALE

Conditions of Use

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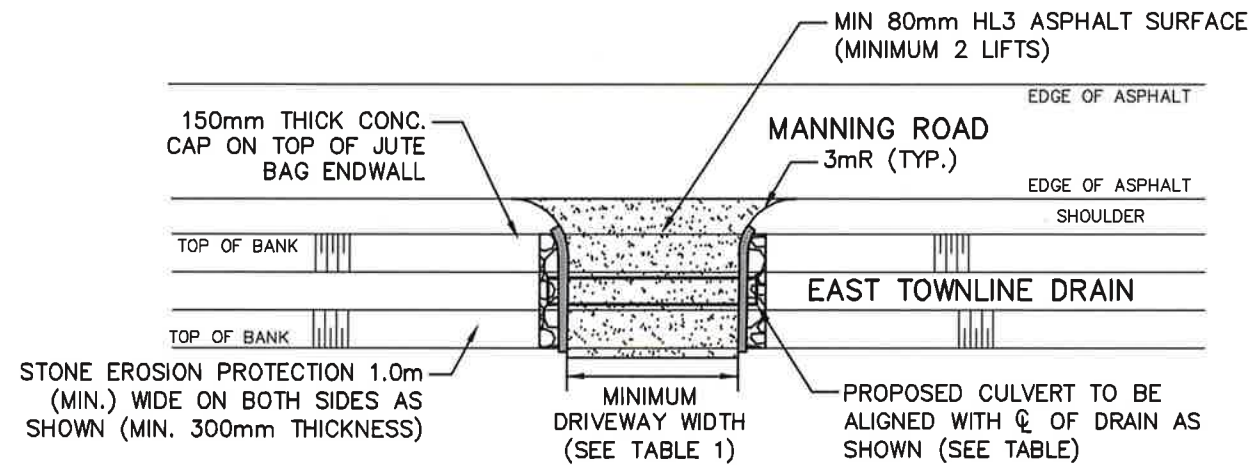
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1	CLIENT REVIEW	FEB. 8/17	MDH

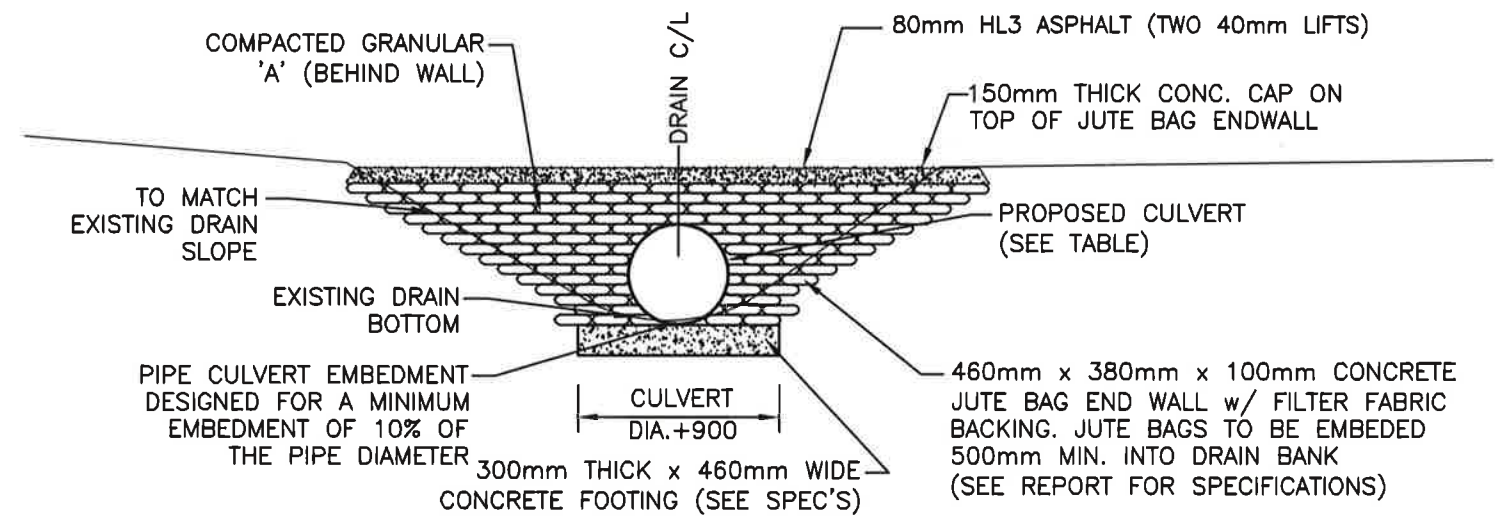
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DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

PROJECT NO.	14-9921
DRAWING SCALES BASED ON A 11" X 17" SHEET	

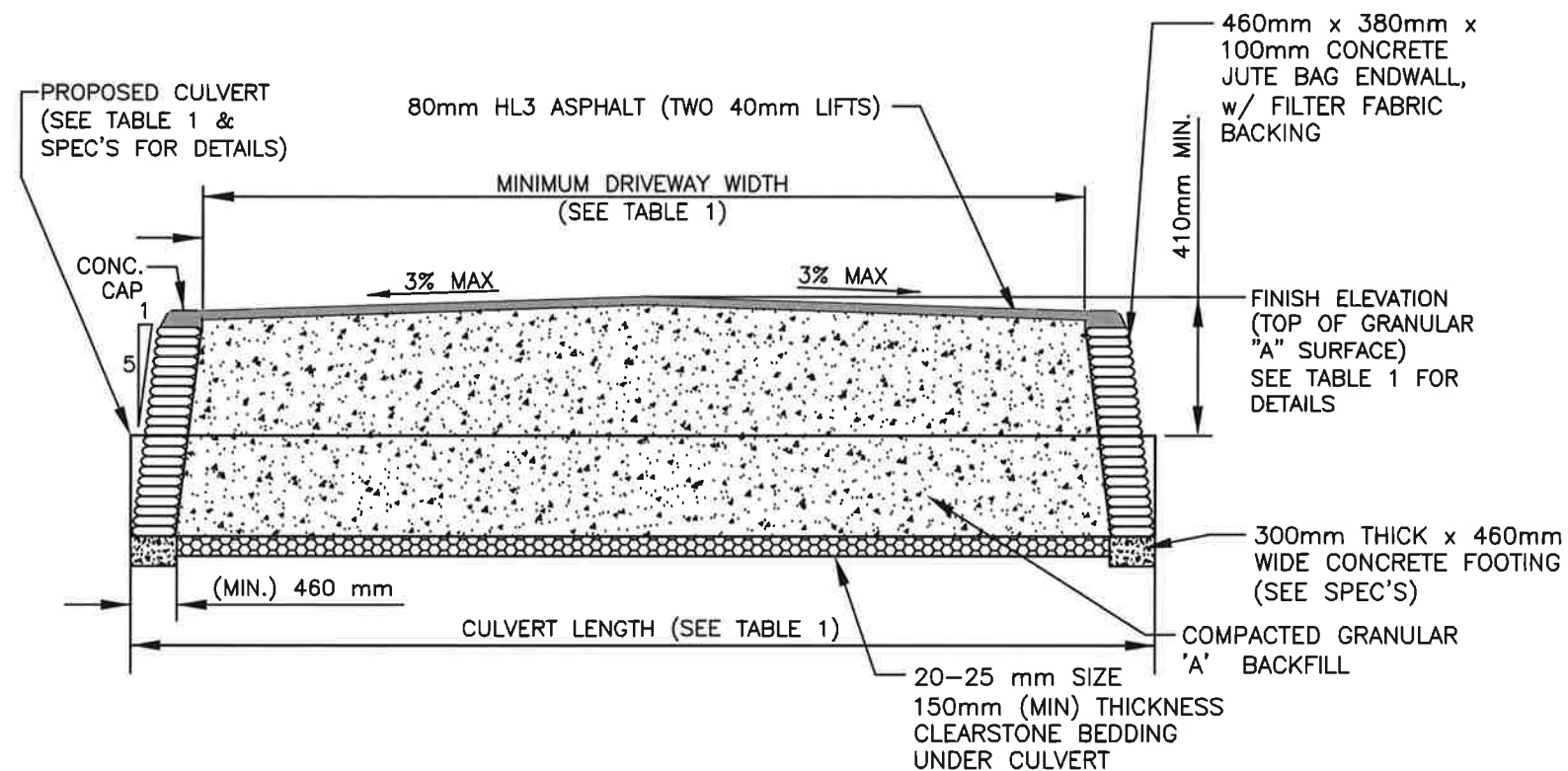
'SCHEDULE G' Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh	
SHEET TITLE	RESIDENTIAL/COMMERCIAL ACCESS BRIDGE (ASPHALT SURFACE) DETAILS
PAGE NO.	11 of 15



ACCESS BRIDGE PLAN
(ASPHALT SURFACE/JUTE BAG END WALLS)
(BRIDGE NO. 5)
NOT TO SCALE



ACCESS BRIDGE CROSS SECTION
(ASPHALT SURFACE/JUTE BAG END WALLS)
(BRIDGE NO. 5)
NOT TO SCALE



ACCESS BRIDGE LONGITUDINAL SECTION
(ASPHALT SURFACE/JUTE BAG END WALLS)
(BRIDGE NO. 5)
NOT TO SCALE



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SCALE	AS SHOWN		

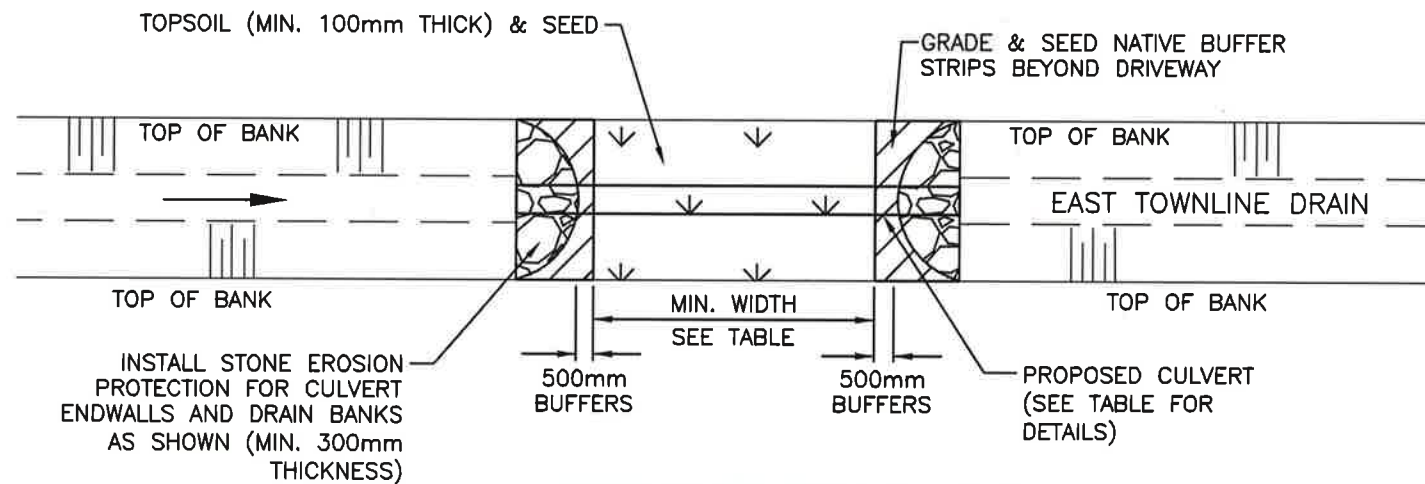
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DRAWING SCALES BASED ON A 11" X 17" SHEET		

'SCHEDULE G'

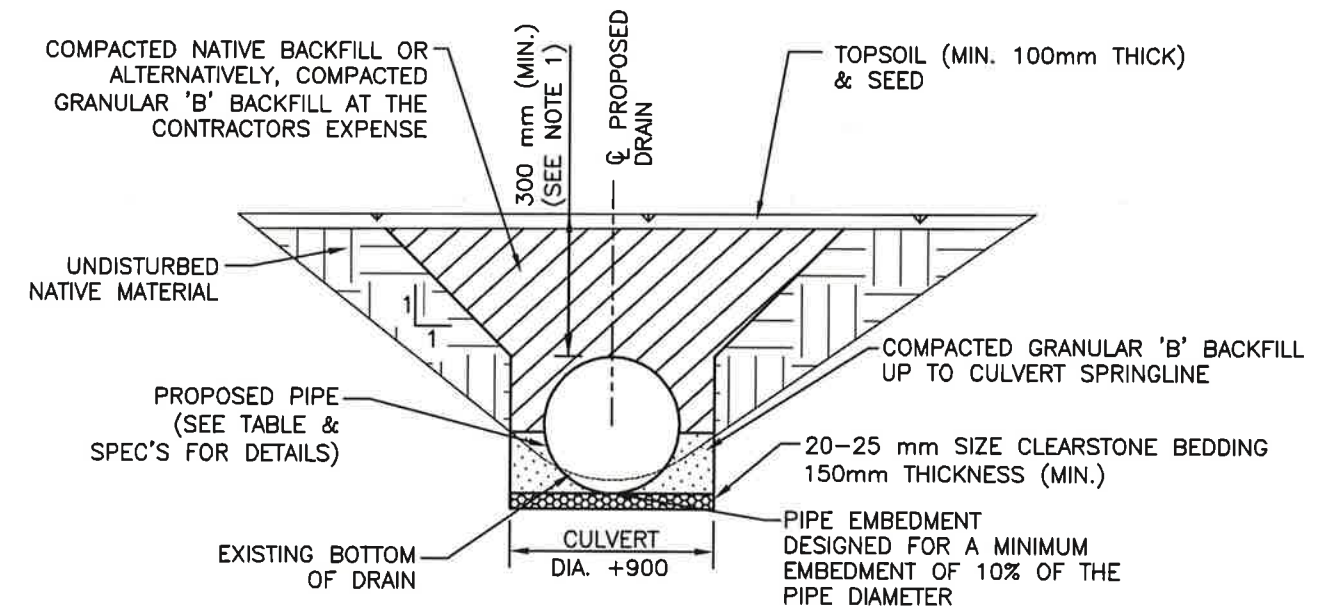
Drainage Report for the
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Town of Tecumseh

SHEET TITLE
JUTE BAG END WALL DETAILS

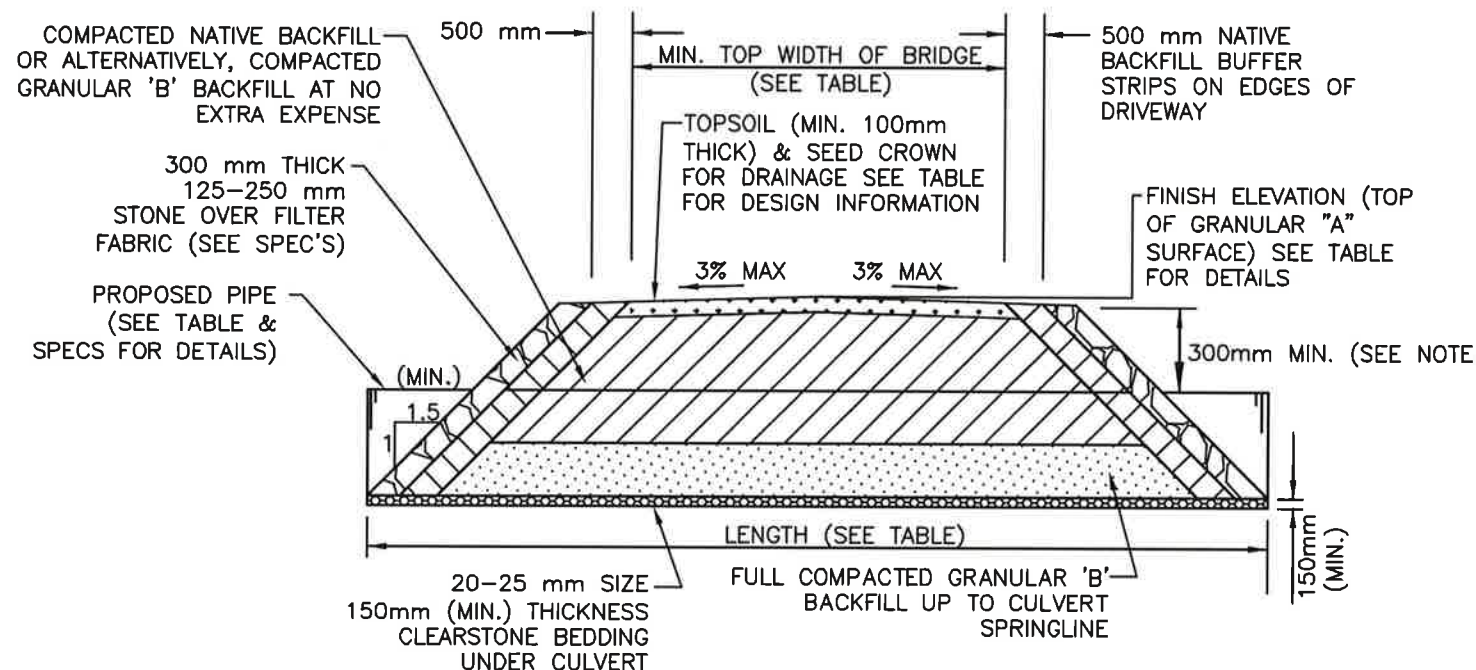
PAGE NO.
12 of 15



HYDRANT ACCESS BRIDGE PLAN
(BRIDGE NOS. 2 & 19)
NOT TO SCALE



HYDRANT ACCESS BRIDGE CROSS SECTION
(BRIDGE NOS. 2 & 19)
NOT TO SCALE



HYDRANT ACCESS BRIDGE
LONGITUDINAL SECTION (BRIDGE NOS. 2 & 19)
NOT TO SCALE

NOTE 1: FOR ULTRAFLO ALUMINIZED STEEL RIBBED PIPE OF LARGER DIAMETER, THE MINIMUM COVER IS 410mm FOR 1650mm ϕ AND 450mm FOR 1800mm ϕ .

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'SCHEDULE G'

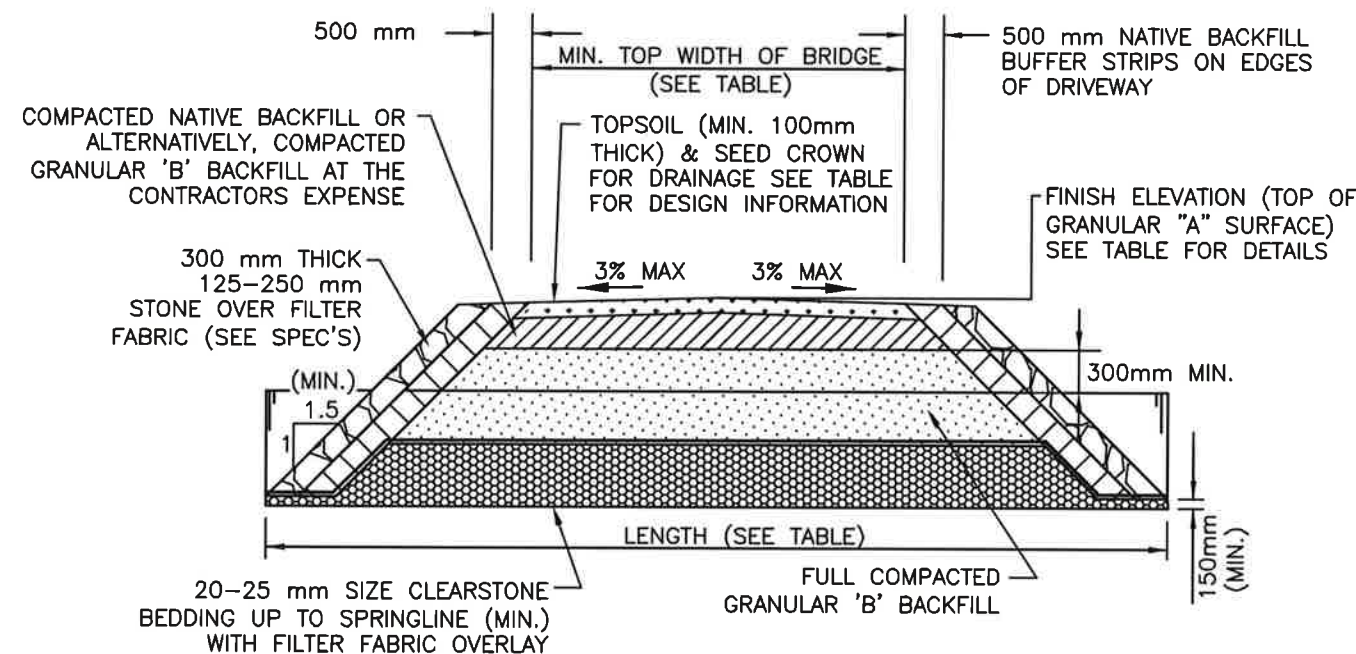
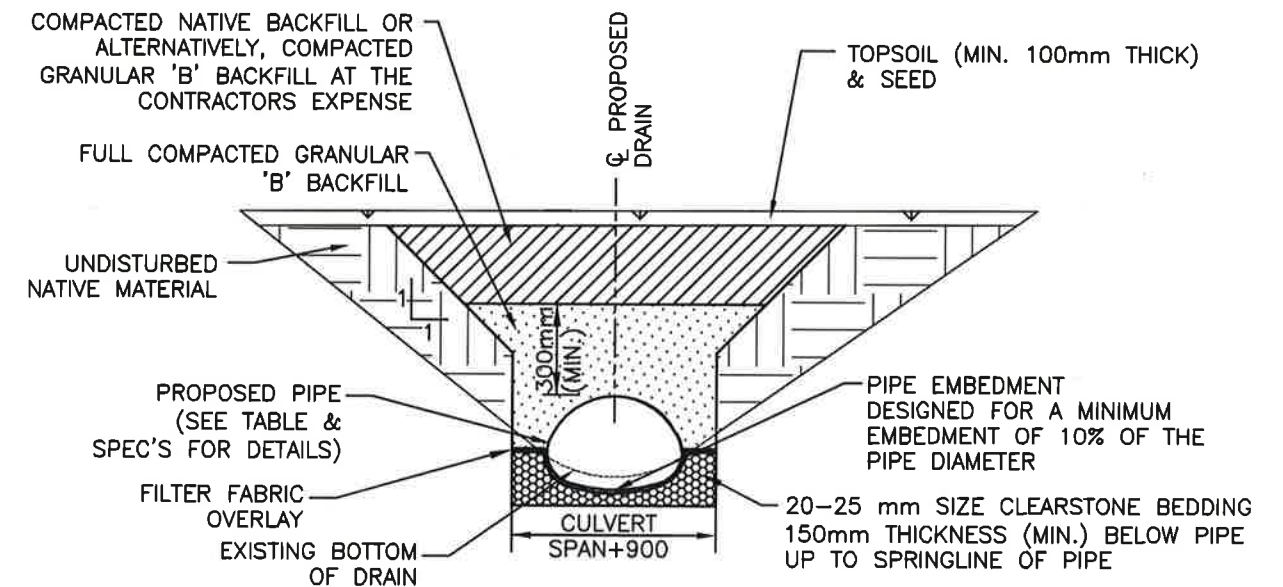
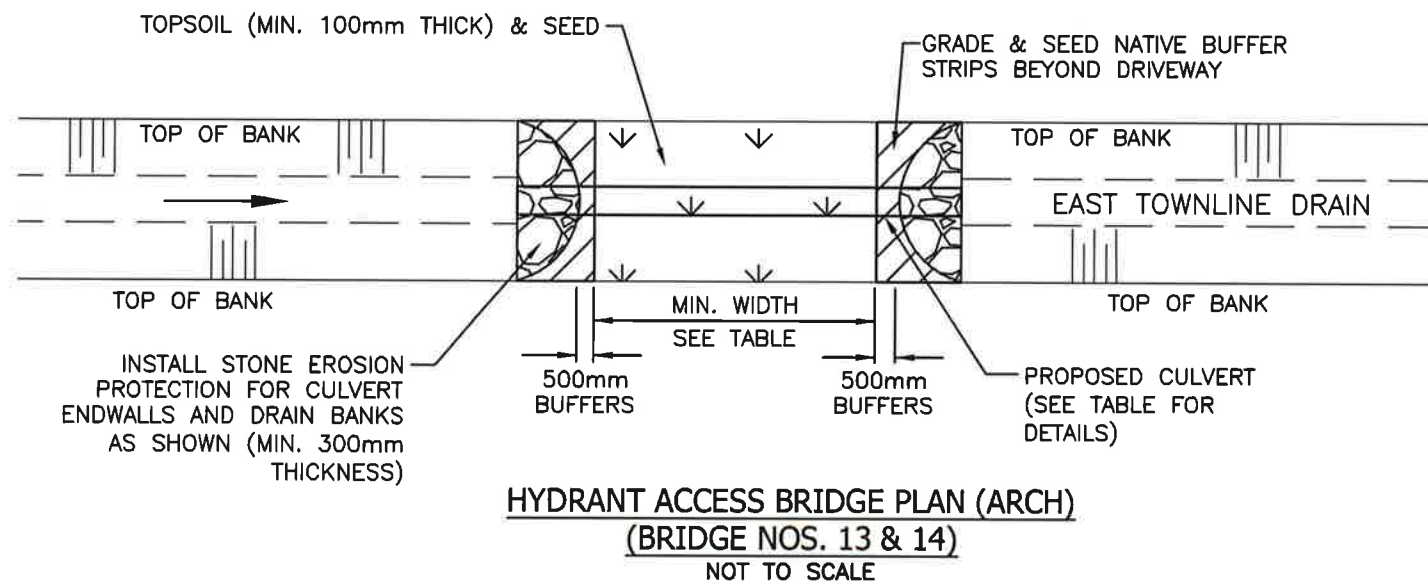
Drainage Report for the
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Town of Tecumseh

SHEET TITLE

HYDRANT BRIDGE DETAILS

PAGE NO.

13 of 15



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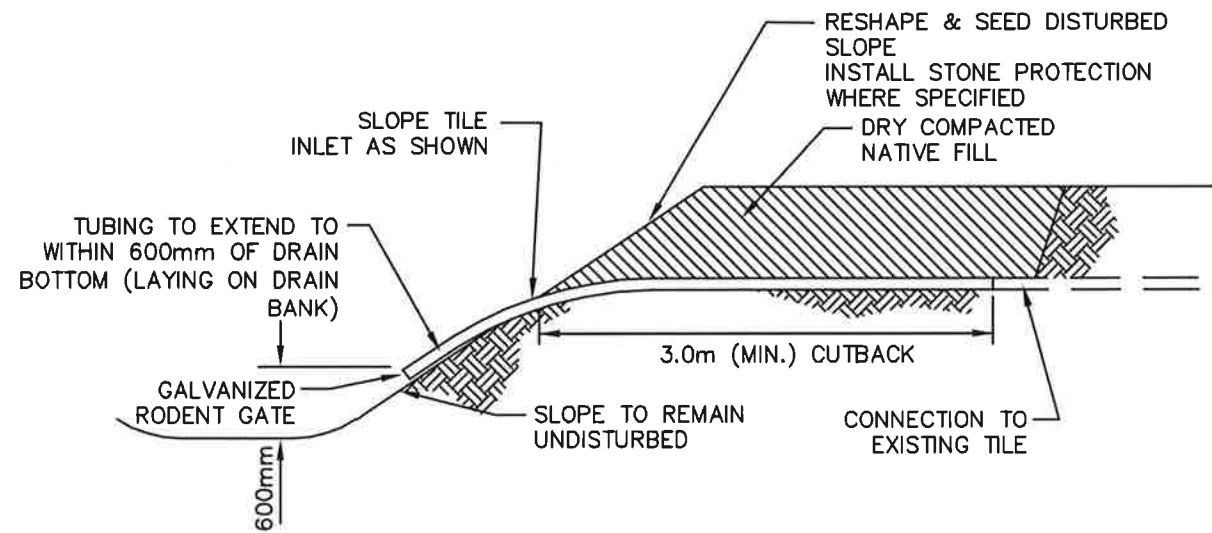
No.	ISSUED FOR	DATE	BY
4	FINAL REPORT SUBMISSION	FEB. 13/19	MDH
3	PUBLIC INFORMATION CENTRE NO. 2 REVIEW	OCT. 23/18	MDH
2	PUBLIC INFORMATION CENTRE REVIEW	MAY 24/17	MDH
1	CLIENT REVIEW	FEB. 8/17	MDH

DESIGN	MDH	REVIEWED BY	FRF
DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

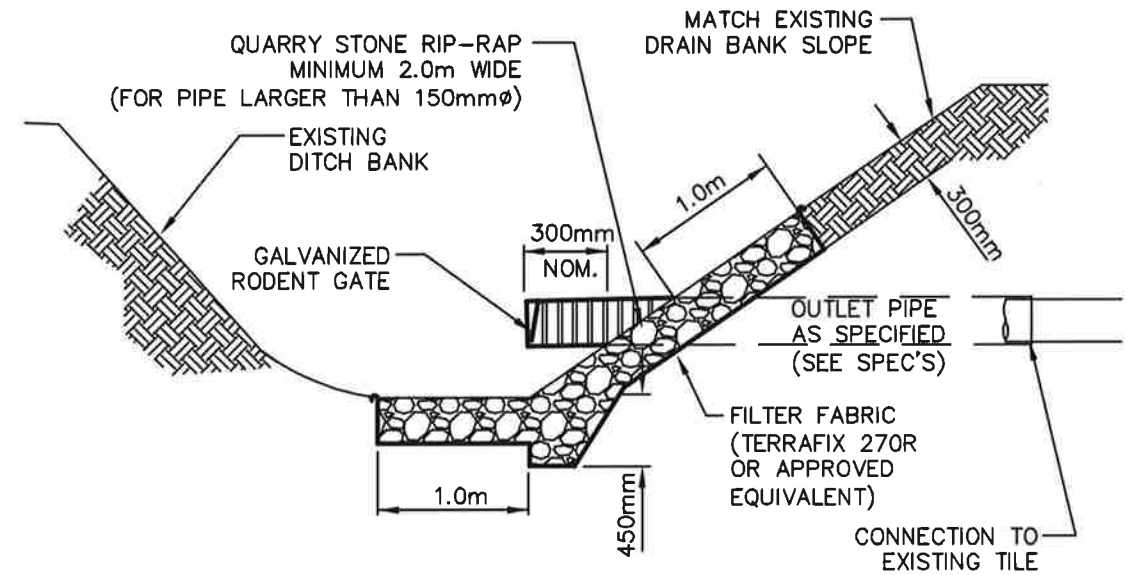
PROJECT NO. 14-9921	
DRAWING SCALES BASED ON A 11" X 17" SHEET	

'SCHEDULE G'	
Drainage Report for the EAST TOWNLINE DRAIN (ST. CLAIR OUTLET) Town of Tecumseh	
SHEET TITLE	HYDRANT BRIDGE (ARCH) DETAILS
PAGE NO.	14 of 15

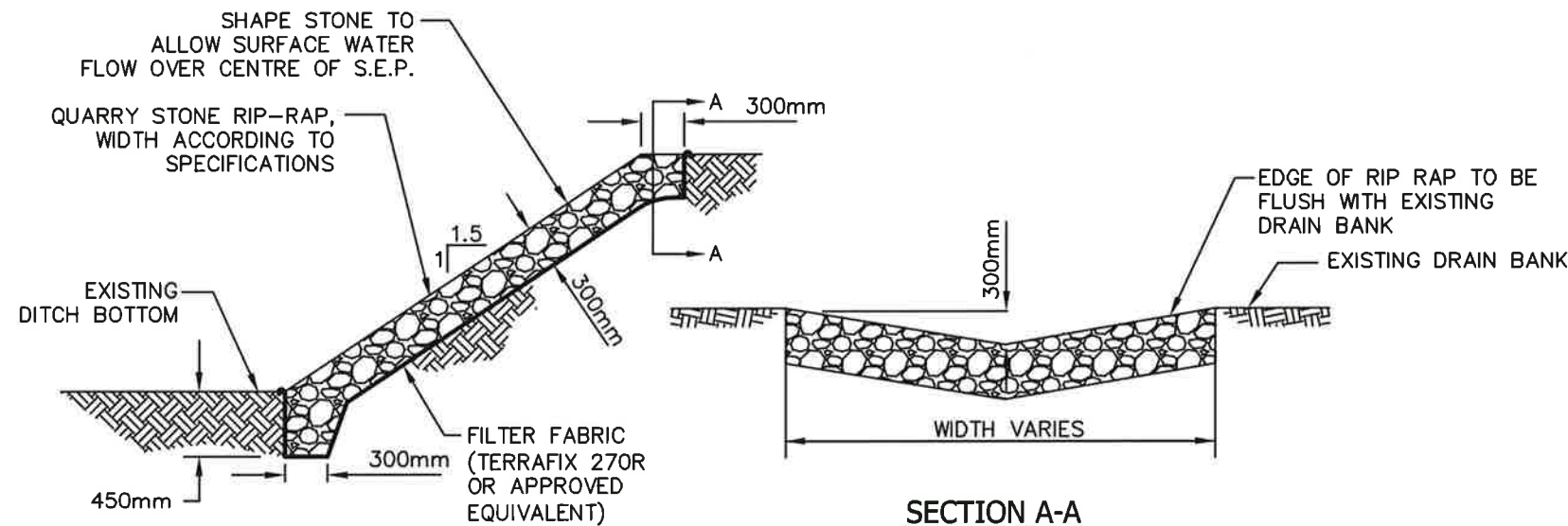
Feb 14, 2019 - 11:33am C:\CAD\149921\03-Drainage\149921-DRN-CON (FINALFeb2019).dwg



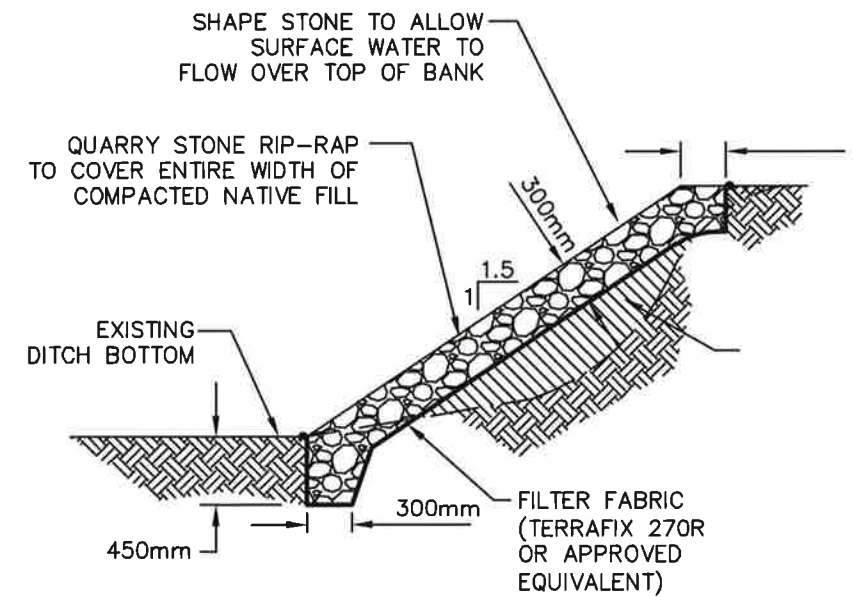
**TYPICAL DRAINAGE TUBING TILE INLET
REPLACEMENT DETAIL**
(FOR TILES 150mmØ OR SMALLER)
NOT TO SCALE



TYPICAL CSP TILE INLET REPLACEMENT DETAIL
NOT TO SCALE



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



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



Conditions of Use

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

Do not scale dimensions from drawing.

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

No.	ISSUED FOR	DATE	BY
4	FINAL REPORT SUBMISSION	FEB. 13/19	MDH
3	PUBLIC INFORMATION CENTRE NO. 2 REVIEW	OCT. 23/18	MDH
2	PUBLIC INFORMATION CENTRE REVIEW	MAY 24/17	MDH
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DESIGN	MDH	REVIEWED BY	FRF
DRAWN	WLB	CHECKED BY	TRO
DATE	FEBRUARY 13, 2019		
SCALE	AS SHOWN		

	
PROJECT NO.	14-9921
DRAWING SCALES BASED ON A 11" X 17" SHEET	

'SCHEDULE G'

Drainage Report for the
EAST TOWNLINE DRAIN
(ST. CLAIR OUTLET)
Town of Tecumseh

SHEET TITLE

MISCELLANEOUS DETAILS

PAGE NO.

15 of 15