

**DRAINAGE REPORT  
FOR THE**

**REALIGNMENT OF THE  
11<sup>TH</sup> CONCESSION DRAIN**

**IN THE  
TOWN OF TECUMSEH**



(FINAL)  
12 JUNE 2026  
MARK D. HERNANDEZ, P.ENG.  
FILE NO. 18-8338  
TECUMSEH FILE No. Eo9EL(35)

File No. 18-8338

Mayor and Council  
The Corporation of the Town of Tecumseh  
917 Lesperance Road  
Tecumseh, Ontario  
N8N 1W9

**Drainage Report for the  
REALIGNMENT OF THE 11<sup>TH</sup> CONCESSION DRAIN  
In the  
Town of Tecumseh**

Mayor and Council:

**Instructions**

The Municipality received a request from the County of Essex dated 30 April 2018 to repair and improve the municipal drains along County Road No. 42 as part of the County Road No. 42 reconstruction project. Council accepted the request under Section 78 of the Drainage Act and on 27 August 2018 appointed Dillon Consulting Limited to prepare a report. The Municipality made a single appointment for the following drains:

- St. Louis Drain
- 11<sup>th</sup> Concession Drain
- Banwell Road Drain
- Klondyke & Branch Drain
- Lesperance Road Drain East & West
- Dame & East Branch Drain

**Background**

The County of Essex is undertaking the reconstruction of County Road No. 42 which includes construction of a new storm sewer to facilitate the change from a rural to an urban road cross section. The new storm sewer will be incorporated as a municipal drain referred to as the County Road No. 42 Drain, supplanting the existing municipal drains within the road allowance. This drain is proposed to extend from the west limit of the Town of Tecumseh municipal boundary and outlet into the Pike Creek Drain east of County Road No. 19 (Manning Road) within the Municipality of Lakeshore. As part of the same project, 11<sup>th</sup> Concession Road and Banwell Road (which constitute County Road No. 43) will be relocated westerly such that the two roads align at a single intersection with County Road No. 42. The proposed work is recognized to have various impacts to the existing municipal drainage infrastructure and as such the Municipality has made the appointment under the Act to incorporate the new drainage works and rectify any impacts to the remaining municipal drains and associated assessment schedules for future maintenance.



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As there are several drains affected by the proposed work, this appointment has been separated out into separate reports for the new and existing drains. This will assist the drainage superintendents with the implementation of future maintenance. This report addresses the connection of the 11<sup>th</sup> Concession Drain to the new County Road No. 42 Drain. It also provides updated schedules of assessments for future maintenance for the remaining portion of the 11<sup>th</sup> Concession Drain.

### **Watershed Description**

The current watershed area is approximately 35 hectares (85 acres). As part of this project, the watershed area will be reduced to approximately 17.6 hectares (43.5 acres) which includes the area contributing from the 11<sup>th</sup> Concession Drain Branch. The lands comprising the watershed are of mixed residential and agricultural uses. There is little topographic relief. From the Ontario Soil Survey, the principle surficial soil in the study area is described as Brookston Clay, which is considered to have very poor drainage.

### **Drain History**

The recent history of Engineers' reports for the 11<sup>th</sup> Concession Drain follows:

- **7 February 2023 by Mark D. Hernandez, P.Eng.:** The report recommended the incorporation of a new private storm drain including a section of existing storm drain for new residential and existing residential lots. The new drain will be known as the 11<sup>th</sup> Concession Drain Branch and outlet into the 11<sup>th</sup> Concession Drain.
- **10 February 2014 by Mark D. Hernandez, P.Eng.:** The report recommended the incorporation of a private access culvert as part of the 11<sup>th</sup> Concession Drain.
- **13 April 2006 by Tim R. Oliver, P.Eng.:** The report recommended the installation of a secondary access bridge for Roll No. 560-05400.
- **4 April 2000 by Lou Zarlenga, P.Eng.:** The report recommended a new farm access culvert and enclosure for Roll No. 560-04100. This report is an addendum Drainage Report No. 2.
- **25 September 1998 by Lou Zarlenga, P.Eng.:** The report recommended the repair and improvement including widening and deepening of the open drain and the lowering and replacement of multiple access culverts.
- **16 September 1976 by Maurice Armstrong, P.Eng.:** The recommended work included the cleaning of the entire 11<sup>th</sup> Concession Drain.

### **On-Site Meeting**

We conducted an on-site meeting on 2 October 2018. A record of the meeting is provided in Schedule 'A', which is appended hereto.

### **Survey**

The survey was completed in 2018 as part of the detailed design assignment for the County Road No. 42 and County Road No. 43 realignment.

## **Design Considerations**

The stormwater management report for County Roads No. 42 and No. 43 authored by Dillon Consulting Limited (September 2021) recommended that the County Road No. 42 Drain provide a 5-year level of service to the road, and a 2-year level of service to the lands within its watershed. Drainage connections provided to existing lands and future developments will have limited capacity in accordance with the stormwater management report. The report further specifies that runoff generated in storm events greater than the 2-year storm is expected to either temporarily pond within private property, or flow overland within the road right-of-ways as the topography allows. The level of service provided by the 11<sup>th</sup> Concession Drain will not be reduced as part of this work. The stormwater report informed this report and should be referred to for further details.

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

## **Allowances**

In accordance with Sections 29 and 30 of the Drainage Act, we do not anticipate any lands being damaged or taken as a result of the proposed drainage works. Any residential properties and grassed areas shall be restored to original conditions as part of the work. Therefore, 'Schedule B' for Allowances has not been included.

## **Recommendations and Cost Estimate**

We recommend the portion of the 11<sup>th</sup> Concession Drain be realigned at the intersection with the construction of a new storm sewer and outlet directly into the new County Road No. 42 Drain, as shown on the Drawings provided herein.

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 11<sup>th</sup> Concession Drain be realigned as described below:

<b>Item</b>	<b>Description</b>	<b>Amount</b>
	<b><u>OPEN DRAIN WORK</u></b>	
1.	Removal and disposal of existing 29 m of 600 mm diameter corrugated steel pipe, catch basin, headwall off-site and backfill with full depth of Granular 'A' material.	\$10,000.00
2.	Supply and install concrete A257.2 65-D storm sewers, as follows:	
	a) Sta. 0+000 to Sta. 0+041.2 - Supply and install 41.2 m of 750 mm diameter reinforced A257.2 65-D concrete pipe.	\$56,000.00
3.	Supply and install concrete storm manholes, as follows:	
	a) STMH41 - 1800 mm diameter (1 required)	\$18,500.00

<b>Item</b>	<b>Description</b>	<b>Amount</b>
4.	Connect existing 600 mm diameter storm sewer into STMH41.	\$7,000.00
5.	Temporary Silt Control Measures During Construction	<u>\$1,200.00</u>
	<b>SUB-TOTAL – EXCLUDING SECTION 26 COSTS</b>	<b>\$92,700.00</b>
6.	Survey, Report, Assessment and Final Inspection (cost portion)	\$41,650.00
7.	Expenses and incidentals (cost portion)	<u>\$1,500.00</u>
	<b>TOTAL – EXCLUDING SECTION 26 COSTS</b>	<b>\$135,850.00</b>

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

#### **Assessment of Costs**

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

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

We have assessed the estimated costs against the affected lands and roads as listed in Schedule 'C' under "Value of Special Benefit," "Value of Benefit" and "Value of Outlet." Since there is only one Special Benefit assessment, a separate schedule for Details of Special Benefit (Schedule 'D') is not required or included herein.

#### **Assessment Rationale**

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

1. As the proposed recommendations are directly a result of the proposed road reconstruction improvements of County Road No. 42, all associated costs of the drainage works, including the engineering cost portion, shall be assessed 100% against the County of Essex.

#### **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**

We recommend that future work of repair and maintenance of the realigned portion of the 11<sup>th</sup> Concession Drain be carried out by the Municipality and the costs assessed against the affected lands and roads as described below. The Schedule of Assessment has been developed on the basis of an arbitrary cost of \$10,000.00.

1. All work shall be assessed 100% against the lands and roads listed in Schedule 'E' in the same relative proportions as the amounts listed under "Value of Benefit" and "Value of Outlet."

These provisions for maintenance are subject to any other variations that may be made under the authority of the Drainage Act.

We further recommend that future works of repair and maintenance of the remaining section of the 11<sup>th</sup> Concession Drain upstream of the recommended works be carried out by the Town of Tecumseh and in accordance with the technical specifications and assessment contained in the governing bylaws for the 11<sup>th</sup> Concession Drain.

### **Construction and Design Drawings**

The work included in this report will be performed under the contract for the Reconstruction of County Road No. 42. Drawings and specifications have been prepared for the County Road No. 42 construction, and they must adhere to the new drain grade, alignment, sizes, materials, location and maintenance holes shown in this drainage report and shall be in general compliance with this report.

### **Drawings and Specifications**

Attached to this report is "Schedule F," which contains specifications setting out the details of the recommended works, and "Schedule G," which represents the following drawings that are also attached to this report:

- Page 1 of 3: Watershed Plan**
- Page 2 of 3: Drain Realignment Detail & Profile**
- Page 3 of 3: 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. The necessary approvals for the recommended works have been acquired from Essex Region Conservation Authority, Department of Fisheries and Oceans and Ministry of Environment, Conservation and Parks. Construction of the works shall be carried out in accordance with all mitigation measures, timing windows, standard practices and other applicable 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. In this particular circumstance, the entire cost of the work will be levied against the County of Essex and therefore, none of the assessed cost is eligible for a grant from the Ministry of Agriculture, Food and Rural Affairs, however some properties may be eligible for grant for future maintenance works.

Respectfully submitted,

**DILLON CONSULTING LIMITED**



Mark D. Hernandez, P.Eng.

MDH:wlb:lld

## SCHEDULE 'A'

### County Road 42 Drains – Minutes of Onsite Meeting Tuesday October 2, 2018 – Tecumseh Council Chambers

General discussion regarding the Drainage Act

- Provincial Act but it is the responsibility of the municipalities to implement.
- Act is over 100 years old.
- Copy of the Act can be found on E-Laws Ontario Website.
- 'User Pay System' unlike sewers owned by the municipality.
- The process can generally be described as follows:
  - Request submitted
  - Engineer is appointed by the municipality
  - Conservation Authority notified.
  - Site meeting held
  - Field work completed
  - Draft report prepared
  - Public Information Centre (not required by the Act)
  - Report finalized
  - Meeting to Consider
  - Court of Revision
  - Construction (if no appeals)

What is a Municipal Drain?

- Means that the drain has status under a municipal bylaw
- The drain would have been established through the Drainage Act
- The drain will have a report which outlines pertinent information about the drain

What is the purpose of the site meeting in general?

- Gather information
  - Opportunity for landowners to provide feedback about the performance of the drain
  - Opportunity for landowners to comment on the drainage area.
    - Not everyone in attendance may be in the watershed.

What is the nature of the request(s)?

- Request from the County of Essex for 7 drains including:
  - Klondyke Drain
  - Leperance Road West Drain
  - Leperance Road East Drain
  - Dame Drain, Branch and Extension
  - 11<sup>th</sup> Concession Drain
  - Banwell Drain

- St. Louis Drain
- 5 go to Pike Creek and 2 go to through the City via other drains to Little River
- The County of Essex has retained Dillon Consulting to undertake the design for the reconstruction of County Road 42 from the City/Tecumseh boundary to the Pike Creek and the diversion of County Road 43.
  - The project generally entails widening of the road and the addition of bike lanes and sidewalks.
  - The additional width will affect the municipal drains and is the reason for Dillon's appointment under the Drainage Act.
  - The drains will likely be enclosed but may also be realigned and consolidated, however, the design has not yet been completed.
- Currently our appointment only pertains to how the drains will be impacted by the proposed roadwork
  - We do not intend to look upstream unless the Town receives a request in writing from a landowner.

#### Who is going to pay and how?

- The assessment will ultimately depend on the scope of work
  - It is anticipated that the County will pay most if not all of the costs
  - Typically, upstream landowners receive a small assessment for the equivalent value of maintaining the drain as it exists today.
    - If the drain is in good condition, then this does not apply.
- The engineer determines the assessment
  - Assessment is detailed in report for each property in the watershed
  - Block assessments are used for built up areas
- Grants are available for properties with Farm Class Tax Rate (1/3)
- The Municipality will bill the landowners after the work is complete for their net assessment

#### What should I expect in the report?

- All landowners receive copies of the draft report with their notice for the PIC, Meeting to Consider and Court of Revision
- Reports generally contain:
  - Background information about the request
  - Watershed drawing
  - History of the drain
  - Design considerations
  - Recommended work
  - Cost estimate
  - Meeting minutes
  - Assessments including FM provisions
  - Drawings
  - Specifications

### How landowners will be affected during Construction

- Typically, only landowners along the drain affected by construction
  - Working corridors are defined in the report
- Work must result in the same or better level of service
- The quality of work is typically monitored during construction by the Drainage Superintendent
  - The Engineer is required to complete a final inspection

### Environmental requirements

- DFO, MNRF and ERCA

### Next Steps

- Topographical survey will be completed and then the preparation of the report will commence
- PIC
- Board meetings

### Discussion:

- 1) Concern with respect to flooding – New drain will have to meet established level of service.
- 2) The scope of work cannot go upstream on an existing drain unless specifically requested by a landowner.
- 3) Town owned storm sewers are managed through Public Works.
- 4) Existing ditches will be cleaned out and enclosed.
- 5) Any new subdivision will have to manage their stormwater with a pond and/or other measures. They will not be allowed to release their flows with no controls.
- 6) The value of the work is not yet known. The request comes from the County to undertake the road improvements.
- 7) New pipes cannot be sized for major storm events as it would be cost prohibitive. Pre and post ponding will be reviewed during design.
- 8) The improvements to Pike Creek are being undertaken via a separate appointment and is unrelated to the County's request.
- 9) The new storm sewer will be under the improved / widened roadway.
- 10) The timing for the improvements will depend on the County's phasing and timing for the road improvements.
- 11) It is not clear whether drainage improvements could result in MPAC assessment changes.
- 12) Landowners can send additional questions at a later date via email or phone call.

*Minutes taken by Mark Hernandez, P.Eng.*

**"SCHEDULE C"**  
**SCHEDULE OF ASSESSMENT**  
**REALIGNMENT OF THE 11TH CONCESSION DRAIN**  
**TOWN OF TECUMSEH**

**MUNICIPAL LANDS:**

Description	Area Affected (Acres)    (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 43	4.80	1.94	County of Essex	\$135,850.00	\$0.00	\$0.00	\$135,850.00
Total on Municipal Lands.....				\$135,850.00	\$0.00	\$0.00	\$135,850.00
<b>TOTAL ASSESSMENT .....</b>				<b>\$135,850.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$135,850.00</b>

	(Acres)	(Ha.)
<b>Total Area:</b>	<b>4.80</b>	<b>1.94</b>

**"SCHEDULE E"**  
**SCHEDULE OF ASSESSMENT FOR FUTURE MAINTENANCE**  
**REALIGNMENT OF THE 11TH CONCESSION DRAIN**  
**TOWN OF TECUMSEH**

**MUNICIPAL LANDS:**

Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
County Road No. 43	4.80	1.94	County of Essex	\$0.00	\$4,596.00	\$939.00	\$5,535.00
Total on Municipal Lands.....				\$0.00	\$4,596.00	\$939.00	\$5,535.00

**PRIVATELY-OWNED - NON-AGRICULTURAL LANDS:**

Roll No.	Con.	Description	Area Affected (Acres) (Ha.)		Owner	Special Benefit	Benefit	Outlet	Total Assessment
560-04005	11	Pt. Lot 17 RP12R29909 Pts. 2 & 3	3.76	1.52	Jamie A. Balkwill	\$0.00	\$171.00	\$147.00	\$318.00
560-04007	11	Pt. Lot 17 RP 12R29909 Pt. 1	1.24	0.50	Jamie A. Balkwill	\$0.00	\$100.00	\$86.00	\$186.00
560-04120	11	Pt. Lot 17 RP12R17414 Pt. 1	0.72	0.29	Scott Mackenzie	\$0.00	\$83.00	\$71.00	\$154.00
560-04201	11	Pt. Lot 18 RP12R4040 Pt. 6	1.00	0.40	Ridvan Ciellza	\$0.00	\$90.00	\$77.00	\$167.00
560-04200	11	S. Pt. Lot 18 RP12R4040 Pt. 5	1.00	0.40	Thuan Huynh & Khanh Pham	\$0.00	\$90.00	\$77.00	\$167.00
560-04300	11	S. Pt. Lot 18 RP12R5571 Pt. 2	0.17	0.07	Kirandeep & Harjinder Cheema	\$0.00	\$24.00	\$20.00	\$44.00
560-04303	11	W. Pt. Lot 18 RP12R4040 Pt. 4	1.00	0.40	Pierino & Pierina Civitillo	\$0.00	\$90.00	\$77.00	\$167.00
560-04420	11	Pt. Lot 18 RP12R24711 Pt. 1	1.04	0.42	Christine M. Nostadt	\$0.00	\$93.00	\$80.00	\$173.00
560-04450	11	Pt. Lot 18 RP12R10224 Pt. 1	0.50	0.20	Deborah D. Tracey	\$0.00	\$68.00	\$58.00	\$126.00
560-04501	11	Pt. Lot 19 RP12R4040 Pt. 1	0.69	0.28	Brian & Elisa Houston	\$0.00	\$82.00	\$70.00	\$152.00
560-04600	11	N. Pt. Lot 19	0.43	0.17	Robert J. McArthur & Madeleine M. Blais	\$0.00	\$57.00	\$49.00	\$106.00
560-03506	10	Pt. Gore Pt. Lot 19 RP12R10865 Pt. Pts. 1&6	0.40	0.16	Christopher B. & Sherri-Lynn A. Roberts	\$0.00	\$54.00	\$46.00	\$100.00

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
560-03507	10	Pt. Gore Pt. Lot 19 RP12R10865 Pts. 2&7	0.23	0.09	Shelly Hodare	\$0.00	\$30.00	\$26.00	\$56.00
560-03508	10	Pt. Gore Pt. Lot 19 RP12R10865 Pts. 3&8	0.23	0.09	Catherine J. Urban	\$0.00	\$30.00	\$26.00	\$56.00
560-03509	10	Pt. Gore Pt. Lot 19 RP12R10865 Pts. 4&9	0.23	0.09	Danny & Alana McIntyre	\$0.00	\$30.00	\$26.00	\$56.00
560-03510	10	Pt. Gore Pt. Lot 19 RP12R10865 Pts. 5&10	0.23	0.09	Luminita & Laurentiu R. Vasu	\$0.00	\$30.00	\$26.00	\$56.00
560-03526	10	Pt. Lot 19 RP12R25489 Pt. 4	0.38	0.15	Bruno L. & Lana R. Altobelli	\$0.00	\$51.00	\$43.00	\$94.00
560-03525	10	Pt. Lot 19 RP12R25489 Pt. 3	0.25	0.10	Dana Azar	\$0.00	\$34.00	\$29.00	\$63.00
560-03511	10	Pt. Lot 19 RP12R25489 Pt. 2	0.25	0.10	Su Lee, Pi Jong & Jiyeun Lim	\$0.00	\$34.00	\$29.00	\$63.00
560-03524	10	Pt. Lot 19 RP12R25489 Pt. 1	0.28	0.11	Gagandeep & Manjeet Japra	\$0.00	\$37.00	\$32.00	\$69.00
Total on Privately-Owned - Non-Agricultural Lands.....						\$0.00	\$1,278.00	\$1,095.00	\$2,373.00

**PRIVATELY-OWNED - AGRICULTURAL LANDS:**

Roll No.	Con.	Description	Area Affected		Owner	Special Benefit	Benefit	Outlet	Total Assessment
			(Acres)	(Ha.)					
560-04100	11	N. Pt. Lot 17	5.28	2.14	Kevin & Lorrie L. MacKenzie	\$0.00	\$241.00	\$207.00	\$448.00
560-04170	11	Pt. Lot 18 RP12R4040 Pt. 7	2.12	0.86	Janet E. Lavin	\$0.00	\$97.00	\$83.00	\$180.00
560-04400	11	W. Pt. Lot 18 RP12R5571 Pt. Pt. 1	7.28	2.95	Deborah D. Tracey	\$0.00	\$332.00	\$285.00	\$617.00
560-04500	11	N. Pt. Lot 18 RP124040 Pt. 2	10.00	4.05	Petronilla Civitillo & Cristina A. Shahbazi	\$0.00	\$456.00	\$391.00	\$847.00
Total on Privately-Owned - Agricultural Lands.....						\$0.00	\$1,126.00	\$966.00	\$2,092.00
<b>TOTAL ASSESSMENT .....</b>						<b>\$0.00</b>	<b>\$7,000.00</b>	<b>\$3,000.00</b>	<b>\$10,000.00</b>
			(Acres)	(Ha.)					
<b>Total Area:</b>			<b>43.51</b>	<b>17.57</b>					

”SCHEDULE F”  
DRAINAGE REPORT FOR THE  
**REALIGNMENT OF THE 11<sup>TH</sup> CONCESSION DRAIN**  
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:

- Removal and disposal of existing 29 m of 600 mm diameter corrugated steel pipe, catch basin, headwall off-site and backfill with full depth of Granular ‘A’ material.
- Supply and install concrete A257.2 65-D storm sewers, as follows:
  - Sta. 0+000 to Sta. 0+041.2 - Supply and install 41.2 m of 750 mm diameter reinforced A257.2 65-D concrete pipe.
- Supply and install concrete storm manholes, as follows:
  - STMH41 - 1800 mm diameter (1 required)
- Connect existing 600 mm diameter storm sewer into STMH41.
- Temporary Silt Control Measures During Construction

**3.0 ACCESS TO THE WORK**

Access to the drain shall be from the 11<sup>th</sup> Concession Road (County Road No. 43) and County Road No. 42. 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 AREA**

The working area shall be within the County Road No. 42 and County Road No. 43 right-of-way.

For future maintenance of the portion of drain along County Road No. 43, the working area shall be as per the 1998 Zarlenga report with some updates based on land use. Stationing as per 1998 Zarlenga report.

- Station 1+903A to Station 1+986A – An area measuring 7.6 metres (25 feet) wide and adjacent to the east top of the drain shall be used.

- Station 2+099A to Station 2+240 – An area measuring 7.6 metres (25 feet) wide and adjacent to the east top of the drain shall be used.
- Station 2+379A to Station 2+584A - An area measuring 7.6 metres (25 feet) wide and adjacent to the east top of the drain shall be used.

The Contractor shall restrict his equipment to the working corridor as specified in this Section. Any damage resulting from non-compliance with this Section shall be borne by the Contractor.

Should the contractor elect to make use of any private lands outside the designated area, he will be responsible to negotiate any terms for use of these lands with the property owner and be responsible for any damages that occur.

## SPECIAL PROVISIONS – CONCRETE PIPE AND MANHOLES

### 5.0 STORM SEWERS AND CULVERTS

#### General

OPSS.MUNI 407, 409, 410 and 514 shall apply and govern the work except as amended or extended herein.

#### Scope of Work

Storm sewers and culverts shall be supplied and installed as shown on the Contract Drawings and described herein including connections to existing sewers or manholes, private service connections, reconnection of existing catchbasins and private drain connections, and supply and installation of grates.

The new sewers and culverts shall be kept dry at all times by pumping or other means.

#### Excavation

The Contractor shall note that the installation of storm sewers shall be completed with full height trench support in order to minimize trench width and restoration requirements. The Contractor shall be responsible to ensure that the use of engineered or prefabricated trench support systems are appropriate to comply with all regulations issued by the Ministry of Labour for the Province of Ontario in regard to work in open trenches.

The Contractor shall be responsible for the full costs of repair or replacement of asphalt pavement, as determined by the Engineer, including excavation, removal of existing asphalt, Granular “A”, paving equipment, labour, traffic control, and any other costs associated with replacement of asphalt which is damaged by the Contractor’s negligence as part of this work. The repair/replacement shall be inspected and approved by the Engineer and the County prior to project completion.

The Contractor will be responsible for minimizing disturbance to existing hydro and telecommunication poles including guy poles. The Contractor shall provide support as required and coordinate with Hydro One for support of Hydro One owned poles.

#### Excavated Materials

All excavated materials determined by the Engineer to be unsuitable or in excess for backfill, including earth, rock, broken concrete, rubble and broken asphalt, shall be removed from the work by the Contractor. The Contractor shall make arrangement for disposal and must comply with legislation governing disposal sites as outlined within the Contract Documents.

All excess material, as well as select native material which is to be used for backfill is to be placed directly into trucks and either hauled from the site or used to backfill the sewer trench, in accordance with the Contract Drawings.

The cost of removal and disposal of excess materials shall be included in the Contractor’s Tender unit prices for storm sewers and culverts.

No sidecasting of excavated materials will be permitted without the approval of the Engineer.

### Utility Supports

Where required, the Contractor shall construct utility supports following specifications and requirements of the respective Utility Companies. Utility supports shall be considered incidental to sewer construction. No payment shall be made for supports either temporary or permanent.

Utility supports shall be constructed as required by the respective utility companies per their respective standards and guidelines as outlined therein.

### Control of Water

The Contractor shall be solely responsible for ensuring that all work is carried out in the dry and that partially completed work shall remain dry.

The method(s) of controlling surface or sub-surface water shall be by pumping or other methods as may be approved by the Engineer.

The Contractor shall assume full responsibility for all damages done to the works through the influence of water. They shall immediately repair any damage so caused without cost to the Owner.

No extra payment will be allowed for dewatering regardless of the method used.

### Pipe Material

All storm sewer pipe material shall be as indicated on the Contract Drawings.

HDPE culverts shall be CSA approved and have a pressure rating of 320 kPa PVC culverts shall be DR 35.

### Maximum Acceptable Grade Tolerances

Maximum acceptable deviations in the sewer grade shall be +/-0.02% which is equivalent to 20 mm in 100 m of installation.

### Bedding & Cover Material

Class "B" bedding and cover material shall be Granular "A", compacted to 98 percent of the Standard Proctor Maximum Dry Density, to the dimensions detailed on the Contract Drawings (300 mm above the top of the pipe) unless under roadway.

The use of "sewer stone" bedding which complies with the following gradation specification will be permitted. In the presence of existing, fine-grained granular material, the pipe bedding is to be completely enclosed in a non-woven geotextile to prevent infiltration of fines.

<u>Sieve Designation (inches)</u>	<u>Percent Passing</u>
1	100
3/4	96-100
5/8	78-93
1/2	51-88
3/8	26-62
No. 4	5-14
No. 8	0-5

### Backfill & Compaction

Sewer trench backfill shall be Granular “A” or recycled material under all paved surfaces including driveways, sidewalks and trails, and within 1 metre of back of curb and 1 metre from the edge of shoulder unless otherwise specified. Select native material is acceptable at other locations.

Granular backfill material is to be mechanically compacted to a minimum of 100 percent of the Standard Proctor Maximum Dry Density in maximum 300 mm lifts. Native backfill material is to be mechanically compacted to a minimum of 98 percent of the Standard Proctor Maximum Dry Density in maximum 300 mm lifts.

Backfilling operations are to follow immediately behind sewer and culvert installation. Where bracing, shoring and/or sheeting is used to support the sides of the excavation or to prevent movements that could damage other services or adjacent pavements, this support shall be removed as backfilling proceeds.

### Non-Shrink Fill Material

Portland cement stabilized granular backfill, known as non-shrink fill, shall be used to backfill excavations within the limits of the roadway, including a distance up to 1 m from the edge of shoulder, where working space is limited. This includes excavations adjacent to structures such as manholes and catchbasins, or any other location where standard hoe-pack equipment cannot be used for mechanical compaction of backfill material.

Materials to be used for non-shrink fill material shall have the following properties:

- a) Cement type - Normal Portland.
- b) Aggregate shall be Granular “A” or Granular “B” Type 1 with 100 percent passing the 1.5 inch sieve.
- c) Slump at point of discharge shall be 150 mm to 200 mm.
- d) Admixtures shall conform to OPSS 1303 but calcium chloride or pozzolanic mineral admixtures shall not be used. Air entraining admixtures may be added if desired to reduce segregation.
- e) Minimum 24-hour strength to be 70 kilopascals and minimum 28 day strength to be 700 kilopascals.

Mix proportions shall be selected in accordance with the latest revision of Section 14 of CSA Specification CAN3-A23.1-M77 where applicable. Approximate proportion per cubic yard for estimating only, - 19 kg of cement, 1637 kg of Granular “A”.

Non-shrink fill material shall flow into the excavation so that the entire space is filled and be excavatable in the future.

### Maintenance of Flow in Sewers, Drains and Ditches

The Contractor shall, at its own cost and expense, permanently provide for and maintain the flow of all sewers, catchbasin leads, drains, ditches, and water courses which may be encountered during the progress of the work, including the connection of existing drains to the new sewer.

Should the Contractor wish to divert, block or otherwise impede or alter flows in any existing sewers, drains, ditches or waste courses, it shall be required to submit details and sketches of its proposed methods, to the Engineer and/or Conservation Authority, DFO, MNR and other regulatory agencies for approval, prior to proceeding.

This submission shall include any emergency measures which may be required in the event of heavy rainfalls, sewer surcharging, flooding, etc. The Contractor shall provide written confirmation that all materials used have been removed and the sewers, drains, ditches or water courses have been restored to original condition or to the satisfaction of the Engineer. Such restoration may include but not be limited to the flushing of sewers, topsoil, planting of grass or vegetation, rip rap.

#### Connection to Existing Sewers and Culverts

The Contractor to note that all new connections into the existing storm sewer requires the use of a Kor-N-Seal connection or approved equal as agreed by the Engineer and the County.

All connections to existing culverts shall be made using approved couplers.

#### Closed Circuit Television Inspection

The Contractor shall have the sewers flushed and professionally videoed, in accordance with OPSS 409 and to the satisfaction of the Engineer. All installed sewers are to be flushed, and camera inspected at the start and end of maintenance (two inspections). Reports are to be provided to the Engineer for review. Installed culverts are exempt from this requirement.

The Contractor shall satisfy themselves of the acceptability of installed sewers prior to completing restoration. Any restoration over installed sewers that have not been CCTV inspected and reviewed and accepted by the Engineer shall be done at the Contractor's own risk.

The Owner and the Engineer reserve the right to direct the Contractor to conduct a CCTV inspection during the course of construction if it is deemed appropriate to investigate the quality of the Contractor's work. The Contractor shall schedule this work to ensure that a representative of the Owner and the Engineer are on-site full-time during this CCTV inspection.

A provisional item for CCTV inspection of existing sewers to determine private drain connection locations has been included and is to be used if locating private drain connections cannot be done by other means.

#### Quality Control of Concrete Sewer Pipe

The Owner reserves the right to have third party inspection completed on a section of concrete pipe at locations as decided by the Owner and Engineer. Testing methods will be non-destructive in nature, unless there is sufficient reasoning to perform more invasive testing to confirm the pipe meets quality standards, as deemed by the Owner and Engineer.

Should unacceptable pipe materials be encountered, the cost of labour, materials and equipment necessary to remove the unacceptable work, as well as the costs associated with undertaking the third party inspection of the work, shall be borne by the Contractor.

## **6.0 STORM MANHOLES**

### General

OPSS.MUNI 407 shall apply and govern except as amended or extended herein.

### Scope of Work

Precast concrete manholes are to be supplied and installed in conjunction with the installation of the sewer and shall be equipped with cast iron frames and covers to OPSD 401.010 (Type A), ladder rungs to OPSD 405.020 and adjustment units shall be IPEX Lifesaver Adjustment Rings. Type 20 cement shall be used for all manholes.

The Contractor shall consider the elevation of the future road as shown in the drawings when placing adjustment rings and shall ensure that there is an adequate number of adjustment rings to facilitate lowering of the roadway in a future roadwork contract.

The Contractor shall be responsible to ensure that the use of engineered or prefabricated trench support systems are appropriate to satisfy the requirements of the Occupational Health and Safety Act.

The location of private drain connections may be revised depending on final locations confirmed with landowners. An extra credit to the tendered price shall only be considered if there is a 300 mm or more difference between the as-built depth to invert and the design depth to invert.

#### Backfill

Backfill shall be Granular "A", mechanically compacted to 100 percent of the Standard Proctor Maximum Dry Density. Handheld mechanical compaction equipment or non-shrink fill shall be used where other conventional compaction equipment cannot be used.

#### Utility Supports

Where required, the Contractor shall construct utility supports following specifications and requirements of the respective Utility Companies. Utility supports shall be considered incidental to sewer construction. No payment shall be made for supports either temporary or permanent.

Utility supports shall be constructed as required by the respective utility companies per their respective standards and guidelines as outlined therein.

### **7.0 ALIGNMENT AND REMOVAL OF EXISTING STEEL PIPE AND CONCRETE HEADWALL**

The Contractor shall remove the existing steel pipe and concrete headwall entirely as the work progresses upstream. After the existing tile drain has been removed it shall be disposed of off-site at an approved disposal location. Excavations shall be backfilled with Granular "A" material under all paved surfaces compacted in maximum 150 mm lifts to 98 percent of their maximum dry density. Imported clean native materials shall be supplied, placed and compacted to 98 percent of their maximum dry density in all other areas outside of road. The Contractor to topsoil (minimum 100 mm thickness), fine grade and seed all disturbed areas.

The Contractor shall maintain all drainage prior to removing existing steel culvert pipe and headwall.

### **8.0 SITE CLEANUP AND RESTORATION**

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

## **GENERAL SPECIFICATIONS**

### **1.0 AGREEMENT AND GENERAL CONDITIONS**

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

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

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

### **2.0 EXAMINATION OF SITE, PLANS AND SPECIFICATIONS**

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

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

### **3.0 MAINTENANCE PERIOD**

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

### **4.0 GENERAL CO-ORDINATION**

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

## **5.0 RESPONSIBILITY FOR DAMAGES TO UTILITIES**

The Contractor shall note that overhead and underground utilities such as hydro, gas, telephone and water are not necessarily shown on the drawings. It is the Contractor's responsibility to contact utility companies for information regarding utilities, to exercise the necessary care in construction operations and to take other precautions to safeguard the utilities from damage. All work on or adjacent to any utility, pipeline, railway, etc., is to be carried out in accordance with the requirements of the utility, pipeline, railway, or other, as the case may be, and its specifications for such work are to be followed as if they were part of this specification. The Contractor will be liable for any damage to utilities.

## **6.0 CONTRACTOR'S LIABILITY**

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

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

## **7.0 PROPERTY BARS AND SURVEY MONUMENTS**

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

## **8.0 MAINTENANCE OF FLOW**

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

## **9.0 ONTARIO PROVINCIAL STANDARDS**

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

## **10.0 APPROVALS, PERMITS AND NOTICES**

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

## **11.0 SUBLETTING**

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

## **12.0 TIME OF COMPLETION**

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

## **13.0 TRAFFIC CONTROL**

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

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

## **14.0 SITE CLEANUP AND RESTORATION**

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

## **15.0 UTILITY RELOCATION WORKS**

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

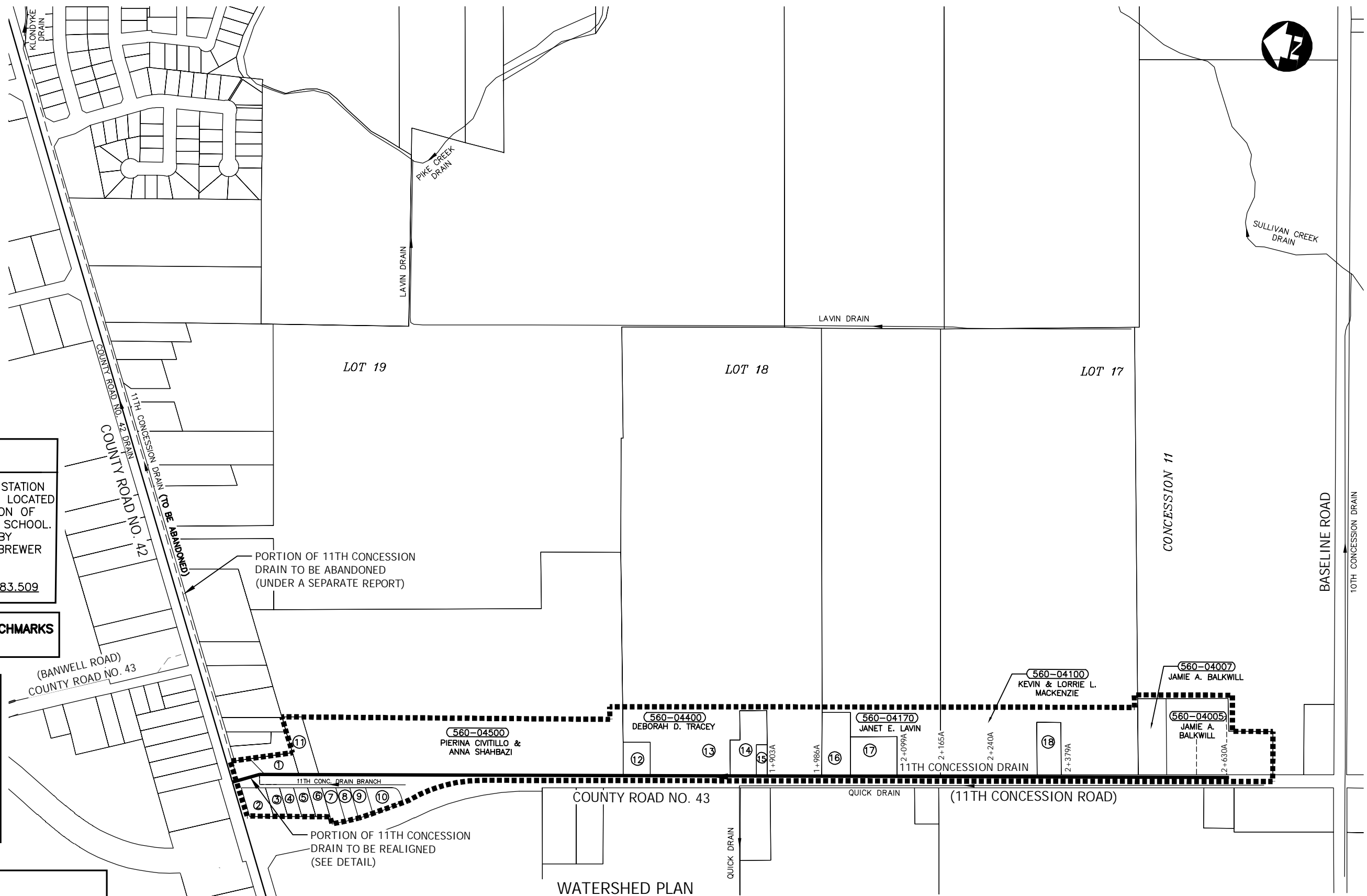
## **16.0 FINAL INSPECTION**

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

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

## **17.0 FISHERIES CONCERNS**

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



**SITE BENCHMARK**

PKNAIL IN TOP OF CONCRETE PUMP STATION ON NORTH SIDE OF SHIELDS AVENUE LOCATED OPPOSITE THE NORTHERLY PRODUCTION OF THE EAST WALL OF TECUMSEH VISTA SCHOOL. GEODETIC BENCHMARK ESTABLISHED BY VERHAEGEN STUBBERFIELD HARTLEY BREWER BEZAIRE INC, DECEMBER 2012 4-26338 05  
 PK NAIL ELEVATION=183.509

**NOTE: CONTRACTOR TO VERIFY BENCHMARKS PRIOR TO CONSTRUCTION.**

**LEGEND**

- 11TH CONCESSION DRAIN DRAINAGE AREA
- 11TH CONCESSION DRAIN
- OTHER DRAINS
- - - OTHER DRAINS (TO BE ABANDONED)



**Conditions of Use**

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No.	ISSUED FOR	DATE	BY
3	FINAL REPORT SUBMISSION	JUNE 12/26	MDH
2	ERCA REVIEW	APR. 21/25	MDH
1	CLIENT REVIEW	JAN. 21/25	MDH

DESIGN	REVIEWED BY
MDH	CDP
DRAWN	CHECKED BY
OEM/WLB	TRO
DATE	June 12, 2026
SCALE	AS SHOWN

PROJECT NO. 18-8338

DRAWING SCALES BASED ON A 11" X 17" SHEET

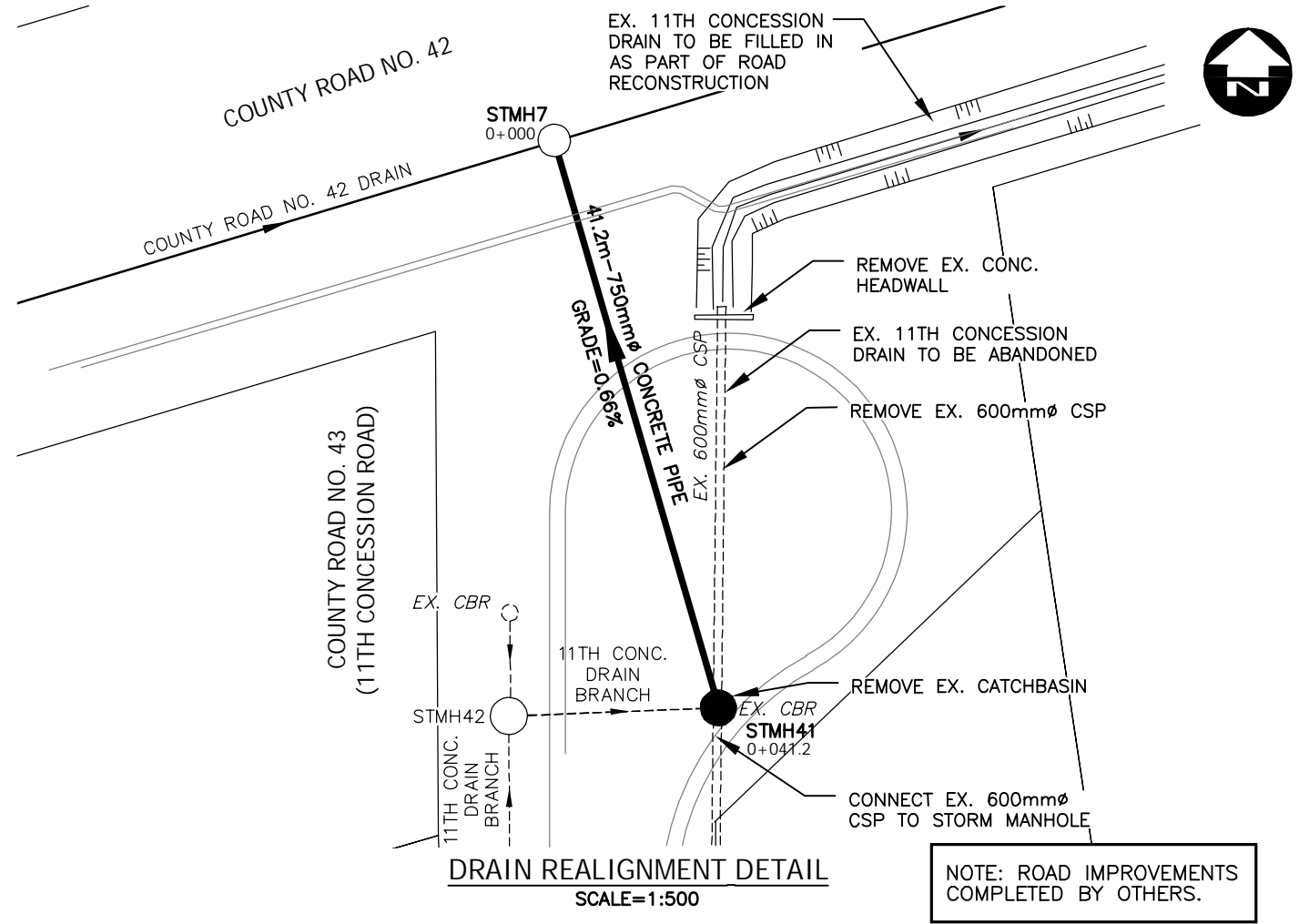
'SCHEDULE G'

Drainage Report for the  
**REALIGNMENT OF THE  
 11TH CONCESSION DRAIN**  
 Town of Tecumseh

SHEET TITLE: **WATERSHED PLAN**

PAGE NO. 1 of 3

**WATERSHED PLAN**  
 SCALE=1:6,000



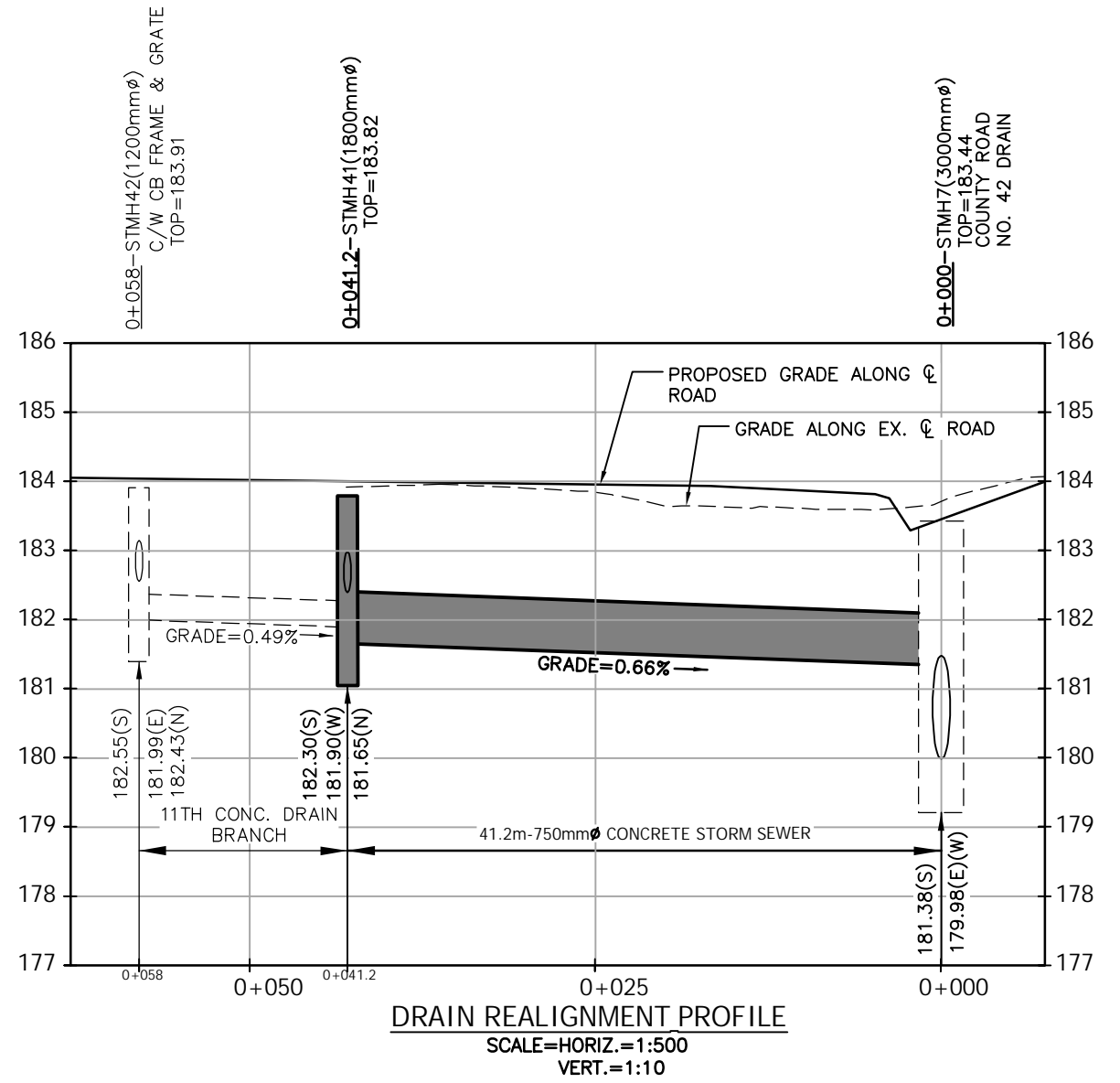
NOTE: ROAD IMPROVEMENTS COMPLETED BY OTHERS.

**LEGEND**

- NEW MANHOLE
- EXISTING MANHOLE

**TABLE 1 - PARCEL OWNERSHIP**

PARCEL #	ROLL NUMBER	OWNER
1	560-04600	ROBERT J. MCARTHUR & MADELEINE M. BLAIS
2	560-03506	CHRISTOPHER B. & SHERRI-LYNN A. ROBERTS
3	560-03507	SHELLY HODARE
4	560-03508	CATHERINE J. URBAN
5	560-03509	DANNY & ALANA MCINTYRE
6	560-03510	LUMINITA & LAURENTIU R. VASU
7	560-03524	GAGANDEEP & MANJEET JAPRA
8	560-03511	SU LEE, PI JONG & JIYEUN LIM
9	560-03525	DANA AZAR
10	560-03526	BRUNO L. & LANA R. ALTABELLI
11	560-04501	BRIAN & ELISA HOUSTON
12	560-04450	DEBORAH D. TRACEY
13	560-04420	CHRISTINE M. NOSTADT
14	560-04303	PIERINO & PIERINA CIVITILLO
15	560-04300	KIRANDEEP & HARJINDER CHEEMA
16	560-04200	THUAN HUYNH & KHANH PHAM
17	560-04201	RIDVAN CIELLZA
18	560-04120	SCOTT MACKENZIE



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DESIGN	MDH	REVIEWED BY	CDP
DRAWN	WLB	CHECKED BY	TRO
DATE	June 12, 2026		
SCALE	AS SHOWN		

**DILLON CONSULTING**

PROJECT NO. 18-8338

DRAWING SCALES BASED ON A 11" X 17" SHEET

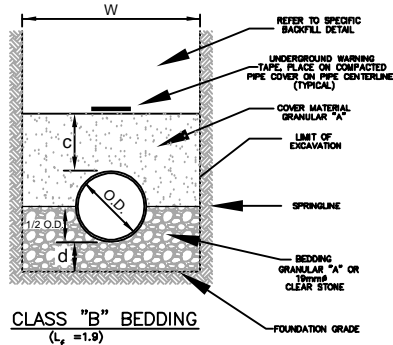
'SCHEDULE G'

Drainage Report for the  
**REALIGNMENT OF THE 11TH CONCESSION DRAIN**  
Town of Tecumseh

SHEET TITLE  
**DRAIN REALIGNMENT DETAIL & PROFILE**

PAGE NO. 2 of 3

NOMINAL PIPE INSIDE DIAMETER D (mm)	MINIMUM TRENCH WIDTH W (mm)	MINIMUM BEDDING BELOW d (mm) (SEE NOTE 2)	MINIMUM COVER OVER PIPE C (mm)
<b>RIGID PIPE</b>			
675 or less	O.D. + 450	150	300
750 to 1500	O.D. + 600	225	300
1650 and over	O.D. + 800	300	300
<b>FLEXIBLE PIPE</b>			
under 1200	O.D. + 600	150	300
1200 to 1650	O.D. + 800	225	400
1800 and over	O.D. + 1000	225	500

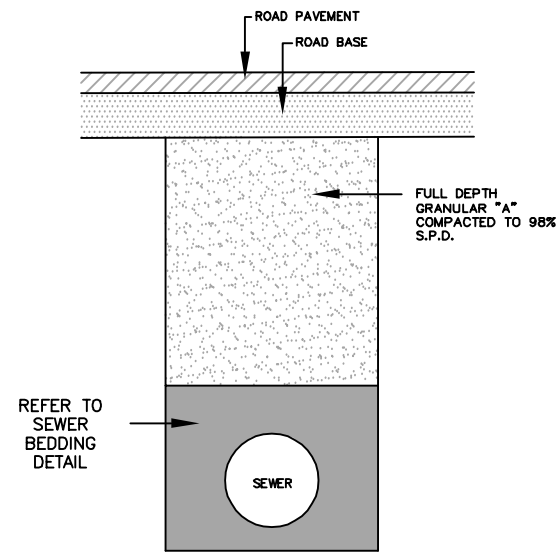


**CLASS "B" BEDDING**  
( $t_f = 1.9$ )  
**BEDDING FOR RIGID AND FLEXIBLE PIPE SEWERS**

**NOTES:**

- O.D. = OUTSIDE DIAMETER OF PIPE.
- IN ROCK TRENCHES, BEDDING DEPTH (d) BELOW WATERMAINS AND SEWER PIPES SHALL BE INCREASED TO 300mm.
- FOR PURPOSE OF CONTRACT SPECIFICATIONS BEDDING INCLUDES BEDDING, HAUNCHING AND COVER MATERIAL.
- GRANULAR "A" BEDDING SHALL NOT CONTAIN RECYCLED ASPHALT.
- ALL BEDDING MATERIAL MUST BE COMPACTED TO 98% STANDARD PROCTOR DENSITY.

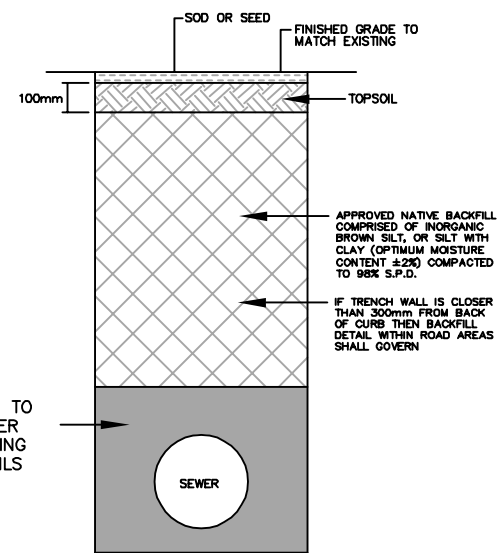
**STORM SEWERS**



**BACKFILL DETAIL**  
**WITHIN ROAD AREAS**  
NOT TO SCALE

**NOTES:**

- SLOPING OF TRENCH WALLS SHALL NOT BE PERMITTED.
- SHEETING OR TRENCH SUPPORT SYSTEM FOR ALL SOILS SHALL CONFORM TO O.H.S.A. REG. 213/91 OR CURRENT.



**BACKFILL DETAIL**  
**WITHIN GRASSED AREA**  
NOT TO SCALE

**NOTES:**

- SLOPING OF TRENCH WALLS SHALL NOT BE PERMITTED.
- SHEETING OR TRENCH SUPPORT SYSTEM FOR ALL SOILS SHALL CONFORM TO O.H.S.A. REG. 213/91 OR CURRENT.

**ALTERNATIVES**

**NOTES:**

- For sump detail, see OPSD 701.010.
- Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
- Precast concrete components shall be according to OPSD 701.030, 701.031, 701.050, 701.051, 703.012, 703.022, and 706.020.
- Structures exceeding 5.0m in depth shall include safety platform according to OPSD 404.020 or 404.022.
- Pipe support shall be according to OPSD 708.020.
- For benching and pipe opening details, see OPSD 701.021.
- For adjustment unit and frame installation, see OPSD 704.010.
- All dimensions are nominal.
- All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
Nov 2014 Rev 5  
**PRECAST CONCRETE MAINTENANCE HOLE**  
1800mm DIAMETER  
**OPSD 701.012**

**NOTES:**

- Covers shall be Type A or Type B, as specified.
- All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING  
Nov 2018 Rev 4  
**CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES**  
**OPSD 401.010**

**LICENSED PROFESSIONAL ENGINEER**  
M. D. HERNANDEZ  
100078099  
June 15/26  
PROVINCE OF ONTARIO

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MDH	CDP
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WLB	TRO
DATE	June 12, 2026
SCALE	AS SHOWN

**DILLON CONSULTING**

PROJECT NO. 18-8338  
DRAWING SCALES BASED ON A 11" X 17" SHEET

**SCHEDULE G**

Drainage Report for the  
**REALIGNMENT OF THE 11TH CONCESSION DRAIN**  
Town of Tecumseh

SHEET TITLE: **DETAILS**  
PAGE NO.: 3 of 3