# McKENZIE DRAIN SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin



Tel. (519) 672-4100 Fax (519) 433-9351 Email: mail@spriet.on.ca www.spriet.on.ca

Our Job No. 221131 August 17, 2022

# McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

To the Mayor and Council of the Municipality of West Elgin

Mayor and Council:

We are pleased to present our report on the reconstruction of the South Branch and the St. Thomas Moore Branch of the McKenzie Municipal Drain serving parts of Lots 6 and 7, Concession 7 in the Municipality of West Elgin. The total watershed area contains approximately 4.3 hectares.

#### **AUTHORIZATION**

This report was prepared pursuant to Section 78 of the Drainage Act. Instructions were received from your Municipality with respect to a motion of Council. The work was initiated by a request signed by one of the affected landowners.

#### **HISTORY**

The McKenzie Drain was last reconstructed pursuant to a report submitted by J.M. Spriet, P. Eng. dated February 26, 2010, and consisted of the reconstruction of the McKenzie Drain from its outlet at the Wismer Drain to its head where it connects to the Lusty Drain. The report also called for the replacement of the St. Thomas Moore Branch and the construction of Branch 'A' and Branch 'B' drains. In total, the report called for the installation of 1,097 lineal meters of 250mm to 750mm diameter concrete field tile and sewer pipe.

#### **EXISTING DRAINAGE CONDITIONS**

A site meeting was held with respect to the project and through later discussions, the owners reported the following:

- that the landowners, 1050165 Ontario Inc. (Roll No. 20-144), indicated their intention to sever residential lots from their lands along Furnival Road
- that, further to the above, they required the relocation of two branches of the McKenzie Drain to accommodate the current and possible future severances. The current severances have a condition which requires each lot to have a legal outlet



#### **EXISTING DRAINAGE CONDITIONS** (cont'd)

A field investigation and survey were completed. Upon reviewing our findings, we note the following:

- that the South Branch and the St. Thomas Moore Branch will need to be relocated and extended to service the proposed and possible future severances
- that, due to the recent reconstruction of Furnival Road, the watershed area for the St. Thomas Moore Branch has changed with the lands in Lot 7, being the former school grounds, as well as a portion of the road, no longer are tributary to it

Preliminary design, cost estimates and assessments were prepared, and an informal consultation was held to review the findings and preliminary proposals. Further input and requests were provided by the affected owners at that time and at later dates. Based on the proposed design it was decided to proceed with the request.

#### **DESIGN CONSIDERATIONS**

The Drainage Coefficient method contained in the "DRAINAGE GUIDE FOR ONTARIO", Publication 29 by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) is typically used to design municipal drains. The Drainage Coefficient defines a depth of water that can be removed in a 24-hour period and is expressed in millimetres per 24 hours. The coefficient used to design this drain with respect to capacity was 38mm per 24 hrs.

We would like to point out that there have been indications of sandy soil conditions. It should be noted that no formal soil investigation has been made, with this information being provided by the owners.

The proposed design and report have been generally completed using the "GUIDE FOR ENGINEERS WORKING UNDER THE DRAINAGE ACT IN ONTARIO" OMAFRA Publication 852.

#### **RECOMMENDATIONS**

We are therefore recommending the following:

- that the South Branch Drain be reconstructed and now include a Branch 'C', commencing at the Main Drain and travel east and north along the limits of the lots to provide the upstream lands with an outlet, and each lot with a legal outlet
- that the St. Thomas Moore Branch Drain be reconstructed and now include a Branch 'D', commencing at the Main Drain and travel east and north along the limits of each lot to provide the upstream lands with an outlet and each possible future lot with a legal outlet
- that catchbasins be installed along the course of the drain to alleviate surface flows and ponding



#### **RECOMMENDATIONS** (cont'd)

- that the lot grading plan be required for each lot and that it be created in accordance with the noted grading directions as shown on Drawing 2
- that no direct connection between any weeping tiles, floor drains, and the proposed drain be permitted. All connections must be indirect via a sump pump and check valve

#### **ENVIRONMENTAL CONSIDERATIONS AND MITIGATION MEASURES**

There are no significant wetlands or sensitive areas within the affected watershed area or along the route of the drains. The proposed construction of the McKenzie Drain South Branch and St. Thomas Moore Branch includes surface inlets which greatly helps reduce the overland surface flows and any subsequent erosion. A temporary flow check of silt fencing is to be installed in the ditch downstream of the tile outlet for the duration of the construction.

#### SUMMARY OF PROPOSED WORK

The proposed work consists of approximately 717 lineal meters of 200mm to 250mm (10") diameter HDPE sewer pipe, including related appurtenances.

#### **SCHEDULES**

Four schedules are attached hereto and form part of this report, being Schedule 'A' - Allowances, Schedule 'B' - Cost Estimate, Schedule 'C' - Assessment for Construction, and Schedule 'D' - Assessment for Maintenance.

Schedule 'A' - Allowances. In accordance with Section 29 of the Drainage Act, allowances are provided for right-of-way along the route of the drain as defined below.

Schedule 'B' - Cost Estimate. This schedule provides for a detailed cost estimate of the proposed work which is in the amount of \$122,200.00. This estimate includes engineering and administrative costs associated with this project.

Schedule 'C' - Assessment for Construction. This schedule outlines the distribution of the total estimated cost of construction over the roads and lands which are involved.

Schedule 'D' - Assessment for Maintenance. In accordance with Section 38 of the Drainage Act, this schedule outlines the distribution of future repair and/or maintenance costs for portions of, or the entire drainage works.

Drawing No.'s 1 and 2, Job No. 221131, and specifications form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.

#### **ALLOWANCES**

**RIGHT-OF-WAY** Section 29 of the Drainage Act provides for an allowance to the owners whose land must be used for the construction, repair, or future maintenance of a drainage works.

For tile drains where the owners will be able to continue to use the land, the allowance provides for the right to enter upon such lands, and at various times for the purpose of inspecting such drain, removing obstructions, and making repairs. Also, the allowance provides for the restrictions imposed on those lands to protect the right-of-way from obstruction or derogation. The amounts granted for right-of-way on tile drains is based on a percentage of the value of the land designated for future maintenance. Therefore, the amounts granted are based on \$6,670.00/ha. through cropped lands. This value is multiplied by the hectares derived from the width granted for future maintenance and the applicable lengths.

#### **ASSESSMENT DEFINITIONS**

In accordance with the Drainage Act, lands that make use of a drainage works are liable for assessment for part of the cost of constructing and maintaining the system. These liabilities are known as benefit, outlet liability and special benefit liability as set out under Sections 22, 23, 24 and 26 of the Act.

**BENEFIT** as defined in the Drainage Act means the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair, or maintenance of a drainage works such as will result in a higher market value or increased crop production or improved appearance or better control of surface or sub-surface water, or any other advantages relating to the betterment of lands, roads, buildings, or other structures.

**OUTLET** liability is assessed to lands or roads that may make use of a drainage works as an outlet either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek, or watercourse.

In addition, a Public Utility or Road Authority shall be assessed for and pay all the increased cost to a drainage works due to the construction and operation of the Public Utility or Road Authority. This may be shown as either benefit or special assessment.

#### **ASSESSMENT**

A modified "Todgham Method" was used to calculate the assessments shown on Schedule 'D'- Assessment for Maintenance. This entailed breaking down the costs of the drain into sections along its route.

The remainder is then separated into Benefit and Outlet costs. The Benefit cost is distributed to those properties receiving benefit as defined under "Assessment Definitions", with such properties usually being located along or close to the route of the drain. The Outlet Costs are distributed to all properties within the watershed area of that section on an adjusted basis. The areas are adjusted for location along that section, and relative run-off rates. Due to their different relative run-off rates roads and residential properties have been assessed for outlet at higher rates than cleared farmlands.



#### ASSESSMENT (cont'd)

McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH

The actual cost of the work involving this report is to be assessed as shown in Schedule 'C' -Assessment for Construction.

#### **MAINTENANCE**

Upon completion of construction, all owners are hereby made aware of Sections 80 and 82 of the Drainage Act which forbid the obstruction of or damage or injury to a municipal drain.

After completion, the South Branch, Branch 'C', the St. Thomas Moore Branch, and Branch D of the McKenzie Drain shall be maintained by the Municipality of West Elgin at the expense of all upstream lands and roads assessed in Schedule 'D' - Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act.

Repairs or improvements to any road culvert or sub-surface road crossing required by the performance of this work and for future repair and/or replacement, shall be the responsibility of the applicable Road Authority, entirely at their cost.

Respectfully submitted,

J.M. Spriet, P.Eng.

SPRIET ASSOCIATES LONDON LIMITED

JMS:bv

950.00

#### SCHEDULE 'A' - ALLOWANCES

# McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

In accordance with Section 29 of the Drainage Act, we determine the allowances payable to owners entitled thereto as follows:

concess		LOT ROLL NUMBER (Owner)		Section 29 Right-of-Way			TOTALS	
SOUTH BRANCH								
7 7 7 7	Pt. Pt. Pt. Pt.	6 6 6 6	20-144 (1050165 Ontario Inc.) \$ 1,010.00 20-144-01 (Part 1) 10.00 20-144-02 (Part 2) 230.00 20-144-03 (Part 3) 230.00 20-144-04 (Part 4) 230.00					
			Total Allowances	\$	1,710.00	\$ ====	1,710.00	
			TOTAL ALLOWANCES ON THE SC	DUTH	BRANCH	\$_	1,710.00	
BRANCH "	C" <u>'</u>							
7 7 7 7 7	Pt. Pt. Pt. Pt.	6 6 6 6	20-144 (1050165 Ontario Inc) 20-144-01 (Part 1) 20-144-02 (Part 2) 20-144-03 (Part 3) 20-144-04 (Part 4)	\$	410.00 10.00 230.00 230.00 230.00	\$	410.00 10.00 230.00 230.00 230.00	
			Total Allowances	\$	1,110.00	\$	1,110.00	
	* *	1,110.00						
ST. THOMAS MOORE BRANCH								
7	Pt.	6	20-144 (1050165 Ontario Inc)	\$	950.00	\$	950.00	
			Total Allowances	\$	950.00	\$	950.00	
				==	=======	====	=======	

TOTAL ALLOWANCES ON THE ST. THOMAS MOORE BRANCH

#### SCHEDULE 'A' - ALLOWANCES (cont'd)

### McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

BRANCH "D"

7	Pt.	6	20-144 (1050165 Ontario Inc)	\$	950.00	\$	950.00	
				Part 2007 2007 2007		====:	======	
			Total Allowances	\$	950.00	\$	950.00	

TOTAL ALLOWANCES ON BRANCH "D" \$ 950.00

TOTAL ALLOWANCES ON THE McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH \$ 4,720.00

#### McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH

#### Municipality of West Elgin

We have made an estimate of the cost of the proposed work which is outlined in detail as follows:

#### **SOUTH BRANCH**

	Installation of the following H.D.P.E. Pipe, including supply and installation of		
	granular bedding around pipe.  223 meters of 200mm dia. H.D.P.E. Pipe	\$	9,500.00
	33 meters of 250mm dia. H.D.P.E. Pipe	\$	1,500.00
	Supply of the above listed pipe	\$	6,500.00
	Strip, stockpile and relevel topsoil from tile trench and adjacent working area	•	4 500 00
	(4m wide) specified on drawings (approx. 256m)	\$	1,500.00
	Supply and install two 600mm x 600mm on-line catchbasins, and connect existing 600mm x 600mm offset catchbasin including berms,		
	ditching, wyes, any required prefab fittings	\$	5,500.00
	Exposing and locating existing tile drains and utilities	\$	900.00
	Tile connections and contingencies	\$	1,300.00
	Allowances under Section 29 of the Drainage Act	\$	1,710.00
BRA	NCH "C"		
	Installation of the following H.D.P.E. Pipe, including supply and installation of granular bedding around pipe.		
	166 meters of 200mm dia. H.D.P.E. Pipe	\$	7,100.00
	Supply of the above listed pipe	\$	4,000.00
	Strip, stockpile and relevel topsoil from tile trench and adjacent working area		
	(4m wide) specified on drawings (approx. 166m)	\$	1,000.00
	Supply and install four 600mm x 600mm on-line catchbasins,		
	including grates, berms, ditching, wyes and any required prefab fittings	\$	10,500.00
	Exposing and locating existing tile drains and utilities	\$	900.00
	Tile connections and contingencies	\$	1,200.00
	Allowances under Section 29 of the Drainage Act	\$	1,110.00

# McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

#### ST. THOMAS MOORE BRANCH

Installation of the following H.D.P.E. Pipe, including supply and installation of granular bedding around pipe.	
132 meters of 200mm dia. H.D.P.E. Pipe	\$ 5,600.00
11 meters of 250mm dia. H.D.P.E. Pipe	\$ 500.00
Supply of the above listed pipe	\$ 3,600.00
Strip, stockpile and relevel topsoil from tile trench and adjacent working area	
(4m wide) specified on drawings (approx. 143m)	\$ 900.00
Supply and install two 600mm x 600mm on-line catchbasins and connect existing 600mm x 600mm catchbasin including grates, berms	
ditching, wyes and any required prefab fittings	\$ 5,500.00
Exposing and locating existing tile drains and utilities	\$ 900.00
Tile connections and contingencies	\$ 900.00
Allowances under Section 29 of the Drainage Act	\$ 950.00
BRANCH "D"	
Installation of the following H.D.P.E. Pipe, including supply and installation of granular bedding around pipe.	
142 meters of 200mm dia. H.D.P.E. Pipe	\$ 6,000.00
Supply of the above listed pipe	\$ 3,400.00
Strip, stockpile and relevel topsoil from tile trench and adjacent working area	
(4m wide) specified on drawings (approx. 142m)	\$ 900.00
Supply and install four 600mm x 600mm on-line catchbasins,	
including grates, berms, ditching, wyes and any required prefab fittings	\$ 10,000.00
Exposing and locating existing tile drains and utilities	\$ 900.00
Tile connections and contingencies	\$ 1,100.00
Allowances under Section 29 of the Drainage Act	\$ 950.00

#### SCHEDULE 'B' - COST ESTIMATE (cont'd)

# McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

#### **ADMINISTRATION**

TOTAL ESTIMATED COST	\$	122,200.00
Supervision and Final Inspection	\$_	3,270.00
Expenses	\$	1,280.00
Survey, Plan and Final Report	\$	18,460.00
Interest and Net Harmonized Sales Tax	\$	2,870.00

#### SCHEDULE 'C'-ASSESSMENT FOR CONSTRUCTION

#### McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH

#### **Municipality of West Elgin**

Job No. 221321

August 17, 2022

\* = Non-agricultural

**HECTARES** 

CON. LOT AFFECTED ROLL No. (OWNER) BENEFIT OUTLET TOTAL

MCKENZIE DRAIN

We assess the entire cost of this report to the landowner 1050165 Ontario Inc (Roll No 20-144)

122,200.00

TOTAL ASSESSMENT ON THE McKENZIE DRIAN \$ 122,200.00

#### SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

# McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

Job No. 221321

August 17, 2022

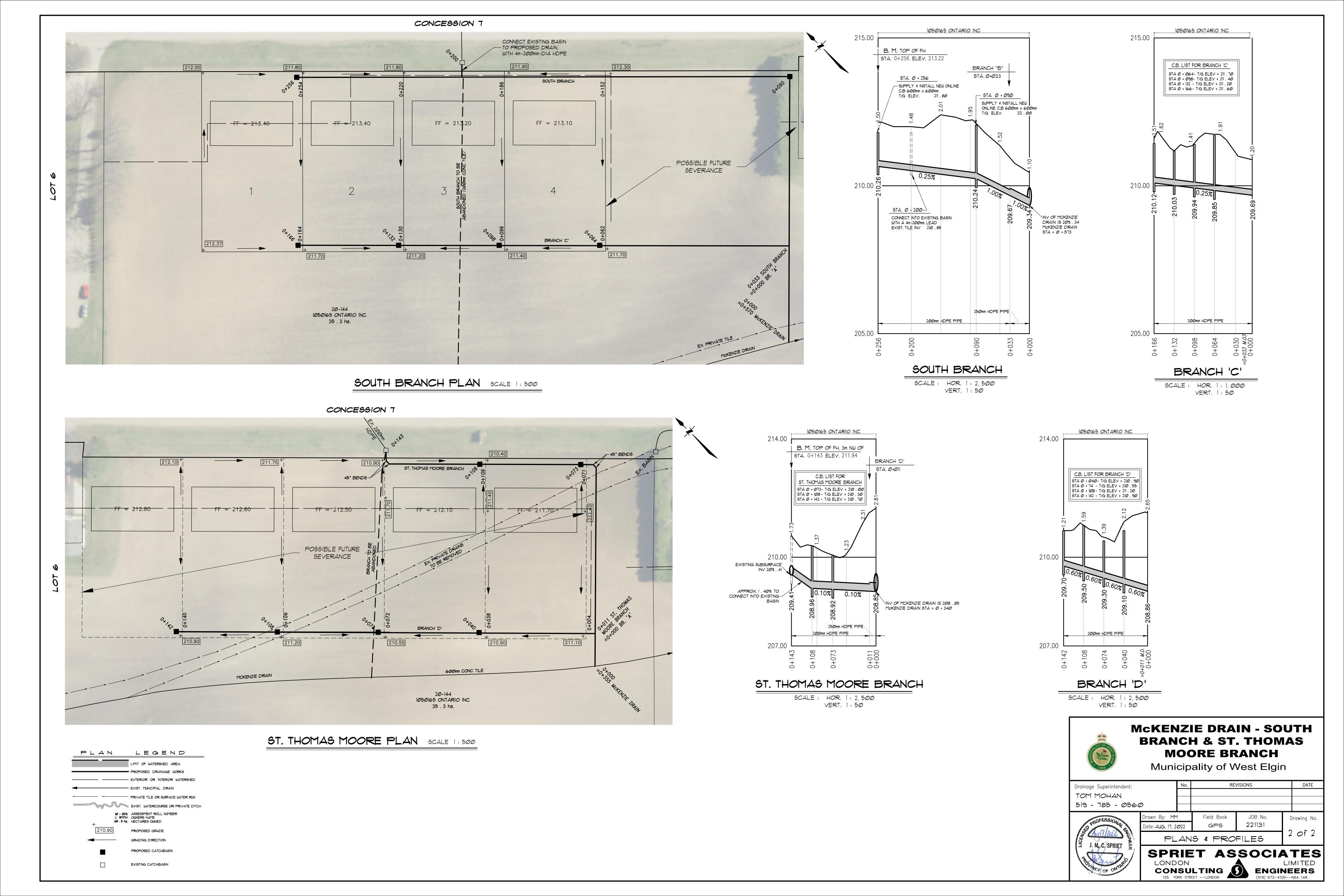
CON.			HECTARES AFFECTED ROLL No. (OWNER)		PERCENTAGE OF MAINTENANCE COST				
SOUTH BRANCH									
7		Pt.	6	0.13	20-148 (M. & L. Champigny)	1.5 %			
7		Pt.	6	0.03	20-149 (W. & B. Roest)	0.1			
7		Pt.	6	0.40	20-144 (1050165 Ontario Inc.)	30.4			
7		Pt.	6	0.21	20-144-01 (Part 1)	2.8			
7		Pt.	6	0.21	20-144-02 (Part 2)	9.0			
7		Pt.	6	0.21	20-144-03 (Part 3)	9.0			
7		Pt.	6	0.21	20-144-04 (Part 4)	8.2			
7		Pt.	7	0.04	20-161 (J. Ossel)	0.3			
7		Pt.	7	0.01	20-158 (J. & E. Ókolisan)	0.1			
7		Pt.	7	0.19	20-157 (K. Schhweitzer)	1.5			
7		Pt.	7	0.11	20-156 (R. & G. McFadden)	0.9			
7		Pt.	7	0.10	20-155 (E. & B. McFadden)	0.8			
7		Pt.	7	0.12	20-154-02 (D. Thompson)	0.9			
7		Pt.	7	0.05	20-153 (J. & K. Ginzel)	0.3			
7		Pt.	7	0.01	20-152-10 (K. Quann & W. Kauzen)	0.1			
	====== 65.9 %								
Furnival	Road			0.90	County of Elgin	====== 34.1 %			
						======			
			ТОТ	AL ASSE	SSMENT ON ROADS	34.1 %			
	TOTAL	ASSI	ESSI	MENT FO	R MAINTENANCE OF SOUTH BRANCH	100.0 %			
BRANCH "C	· · ·								
7		Pt.	6	0.07	20-148 (M. & L. Champigny)	4.4 %			
7		Pt.	6	0.22	20-144 (1050165 Ontario Inc)	36.0			
7		Pt.	6	0.10	20-144-01 (Part 1)	6.3			
7		Pt.	6	0.15	20-144-02 (Part 2)	10.3			
7		Pt.	6	0.15	20-144-03 (Part 3)	22.4			
7		Pt.	6	0.15	20-144-04 (Part 4)	20.6			
			TOT	AL ASSE	SSMENT ON LANDS	====== 100.0 %			
					<del>-</del>				
	то	TAL	ASS	ESSMEN	IT FOR MAINTENANCE OF BRANCH 'C	;' 100.0 %			

#### SCHEDULE 'D' - COST ESTIMATE (cont'd)

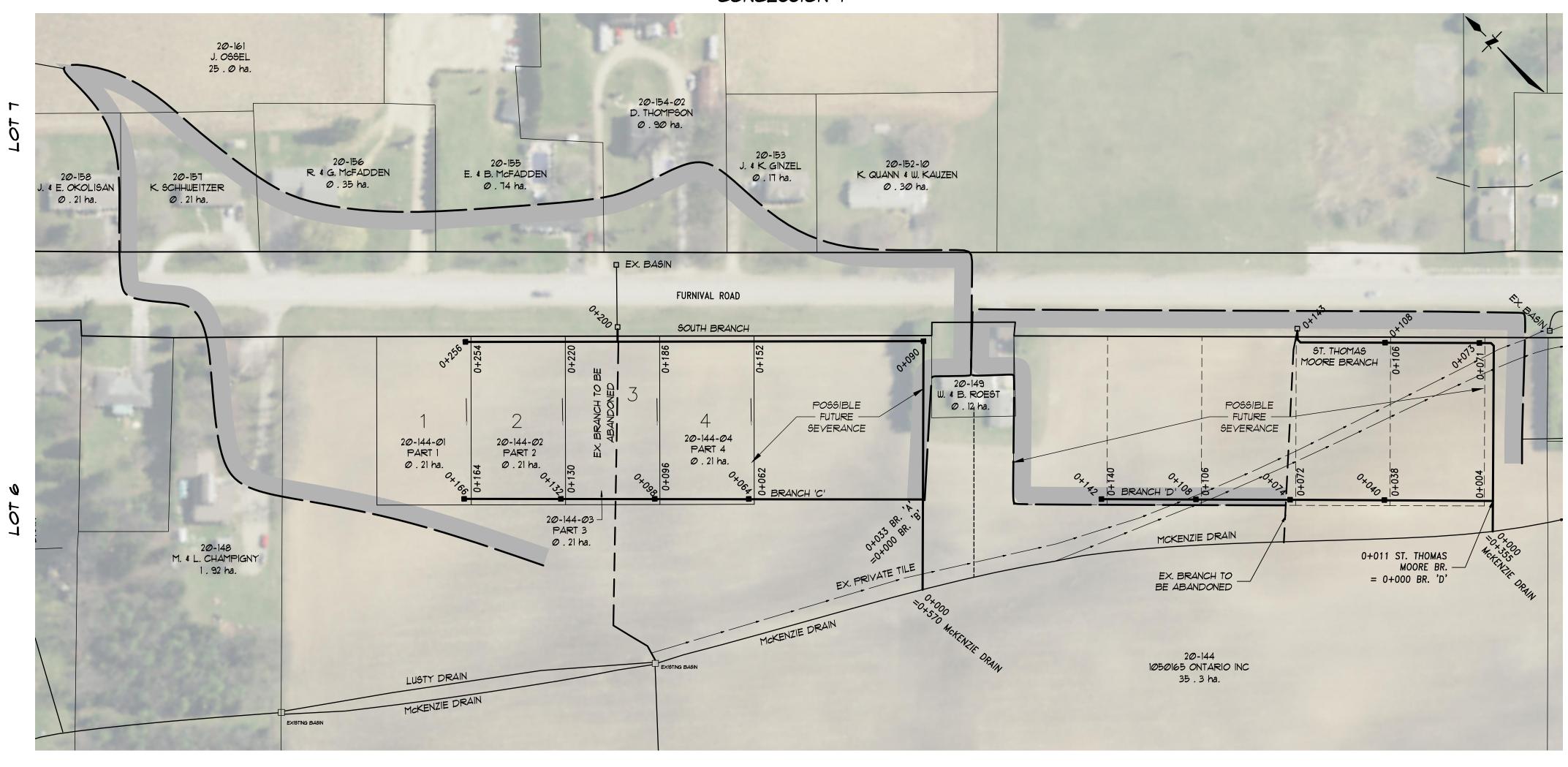
### McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH Municipality of West Elgin

#### ST. THOMAS MOORE BRANCH

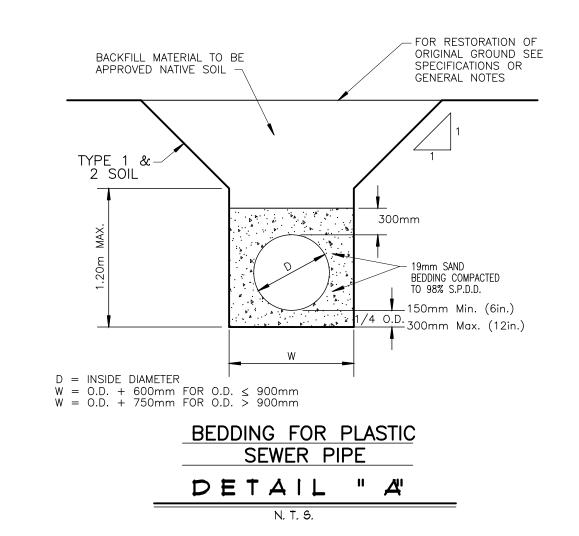
7 7	Pt. Pt.	6 6	0.03 0.07	20-149 (W. & B. Roest) 20-144 (1050165 Ontario Inc)	1.7 % 78.2
		тот	AL ASSE	SSMENT ON LANDS	79.9 %
Furnival Road			0.18	County of Elgin	20.1 %
		TOT	AL ASSE	SSMENT ON ROADS	20.1 %
TOTAL ASSESSM	100.0 %				
BRANCH "D"					
7	Pt.	6	0.01	20-144 (1050165 Ontario Inc)	100.0 %
		TOT	AL ASSE	SSMENT ON LANDS	100.0 %
т	OTAL	ASS	ESSMEN	NT FOR MAINTENANCE OF BRANCH 'D'	100.0 %



#### CONCESSION T



WATERSHED PLAN SCALE 1: 1,000



#### GENERAL NOTES

- 1/ OUR SPECIFICATIONS DATED JANUARY 2020 APPLY TO THIS PROJECT.
- 2/ THE WORKING WIDTH AVAILABLE TO THE CONTRACTOR TO CONSTRUCT THE NEW DRAINS SHALL CONSIST OF THOSE LANDS IMMEDIATELY ADJACENT TO THE DRAIN AND CONNECTIONS AND SHALL NOT EXCEED THE FOLLOWING AVERAGE WIDTHS.

  CLOSED PORTIONS 15 meters

THE WORKING WIDTH FOR PURPOSES OF FUTURE MAINTENANCE SHALL BE 6m.

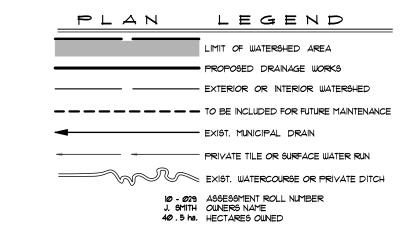
- 3/ ALL OWNERS ALONG THE COURSE OF THE DRAIN SHALL MAKE AN ACCESS ROUTE FROM THE NEAREST ROAD TO THE DRAIN LOCATION AVAILABLE TO THE CONTRACTOR THE AVERAGE WIDTH OF THIS ROUTE SHALL NOT EXCEED 8 METERS. THE ACCESS ROUTE SHALL ALSO APPLY FOR FUTURE MAINTENANCE PURPOSES.
- 4/ a) ALL UTILITIES TO BE LOCATED AND EXPOSED PRIOR TO CONSTRUCTION SO THAT THE NEW TILE GRADES CAN BE CONFIRMED. IF THERE IS A CONFLICT IN ELEVATION BETWEEN THE PROPOSED DRAIN AND THE UTILITY, THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY.

  b) CONTRACTOR TO NOTIFY ALL UTILITIES 12 HOURS PRIOR TO HIS SCHEDULED TIME FOR STARTING THE ABOVE WORK.
- 5/CONTRACTOR TO ARRANGE A PRE-CONSTRUCTION MEETING WITH THE ENGINEER, DRAINAGE SUPERINTENDENT, AND THE AFFECTED OWNERS. ALL PARTIES SHALL RECEIVE 48 HOURS NOTICE TO THE MEETING.

#### CLOSED PORTIONS

SETTLEMENT HAS OCCURRED .

- 6/ ALL CONCRETE AND PLASTIC TILE AND PIPE TO CONFORM TO "SECTION C. I " IN THE SPECIFICATIONS.
  a) SEWER PIPE TO BE H. D. P. E. PLASTIC 320 KPA (BELL & SPIGOT WITH RUBBER GASKETS, CONFORMING TO C.S.A. 1026-08), PVC ULTRA RIB OR PVC SDR 35, OR HDPE DR-11 PIPE .
- 1/ ALL CATCHBASINS SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH "SECTION C. 16 "
  IN THE SPECIFICATIONS , EXCEPT AS FOLLOWS :
  a) ALL CATCHBASIN LEADS TO BE CONNECTED TO NEW TILE DRAIN WITH PRE-FABRICATED " WYE "
- 8/ EXACT LOCATION OF NEW DRAIN TO BE DETERMINED AT TIME OF CONSTRUCTION BY DRAINAGE SUPERINTENDENT OR ENGINEER.
- 9/ a) INSTALLATION OF TILE AND TRENCH WIDTHS SHALL BE IN ACCORDANCE WITH "SECTION C TILE DRAIN" IN THE SPECIFICATIONS .
  b) NO MACHINERY SHALL CROSS OVER THE MOUNDED BACKFILLED TILE TRENCHES UNTIL SUFFICIENT





### McKENZIE DRAIN - SOUTH BRANCH & ST. THOMAS MOORE BRANCH

Municipality of West Elgin

Drainage Superintendent:

TOM MOHAN

519 - 785 - 0560

Drawn By: MM Field Book JOB No.

Date: AUG. 17, 2022

PLAN, DETAIL, & NOTES

DATE

DATE

No. REVISIONS

DATE

1 of 2

