

**DRAINAGE REPORT  
FOR  
DRAIN ENCLOSURE  
FOR  
PART OF THE EAST TOWNLINE DRAIN  
SOUTH OF LANOUE STREET  
IN THE  
TOWN OF TECUMSEH**

**BRUCE D. CROZIER ENGINEERING INC.  
CONSULTING ENGINEER  
1940 DEER RUN ROAD, R.R.#4  
LEAMINGTON, ONTARIO  
N8H 3V7**

**PROJECT REFERENCE BC-04-007**

September 12, 2005

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

**Mayor McNamara and Councillors**

**SUBJECT: Drainage Report  
Drain Enclosure  
For a Part of the East Townline Drain, South of Lanoue Street  
In the Town of Tecumseh  
Our Project Reference BC-04-007**

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**1.0 AUTHORIZATION**

Pursuant to Section 78 of the Drainage Act, the Town of Tecumseh has requested that repair and improvements be made to a part of the East Townline Drain. The Town of Tecumseh, acting as the initiating Municipality subsequently requested the firm of Bruce D. Crozier Engineering Inc. to make an examination and to prepare a report under the provision of "The Drainage Act 1990".

As requested by the Town of Tecumseh we have made an examination of the area requiring drainage along County Road 19 in the Town of Tecumseh. The survey of the drain has been provided to us by R. Lucente Engineering Inc., Consulting Engineers. The survey included topographical information along with measurements and cross-sections of the existing open drain, known as the East Townline Drain, being a municipal drain and I report thereon as follows.

**2.0 PURPOSE OF REPORT**

The County of Essex is currently proposing to carry out a major road reconstruction program on the northerly portion of County Road 19. A part of that project is to widen the existing travelled portion of the road in order to add addition traffic and turning lanes.

The existing East Townline Drain along a section of the proposed County Road 19 reconstruction project, is primarily an open drain with some road and driveway bridges. Since the travelled surface of Manning Road is proposed to be widened it will encroach into the existing open drain.

It is therefore proposed to enclose a portion of the existing East Townline Drain between the south side of Lanoue Street being Station 1+463.60 to a point approximately 225 metres south of Sylvestre Drive being Station 0+225.

This report therefore provides a description of the recommended work to be undertaken. Since the need to have this work completed is a direct result of the proposed County Road 19 reconstruction, all of the costs for the project will be assessed to and paid by the County of Essex.

**3.0 ORDER OF PROCEDURE UNDER THE DRAINAGE ACT**

**A) SECTION 78 DRAIN**

The following is the general order of procedure that is followed to repair and improve a municipal drainage system pursuant to Section 78 of The Drainage Act.

- a) Council determines that repair and improvements are required.
- b) Council appoints an engineer.
- c) Engineer conducts on site meeting.
- d) Engineer conducts survey of the drain.
- e) Need for preparation of a Preliminary Report is decided.

- f) Engineer completes and provides Preliminary Report.
- g) Council considers Preliminary Report at a public meeting with affected landowners and decides on option(s) with which to proceed.
- h) Engineer prepares Final Drainage Report and provides copy to the Municipality.
- i) Council considers drainage report at a public meeting with the affected landowners.
- j) At the meeting for consideration the Municipal Council may adopt the Drainage Report. If adopted the Municipal Clerk prepares a provisional by-law for the recommended work and sends copies of the by-law to affected parties and arranges a second meeting of Council for the Court of Revision.
- k) The Court of Revision is held at a subsequent meeting with the affected landowners to discuss any disputes regarding assessment of cost to lands and roads.
- l) Council passes by-law for construction of the work after statutory waiting periods and appeal periods expire.
- m) Tenders are received by the Municipality to perform the recommended work and construction is carried out. Inspection of the construction work may be provided by the Town Drainage Superintendent or by an inspector from the engineering office.
- n) Upon completion of construction the Municipal Clerk will finalize all applicable costs and submit grant applications to the Ministry of Agriculture, Food and Rural Affairs, if applicable. The clerk will then send a final net assessment to the affected landowners.

#### **4.0 CURRENT DRAINAGE REPORT**

The latest drainage report on file for the East Townline Drain and pumping station is one prepared by M.M. Dillon Ltd. and dated July 1981. The report was revised in September 1981, a second revision was prepared in January 1982 and a third revision was prepared in May 1982.

#### **5.0 SITE MEETING**

A meeting was held at the office of R. Lucente Engineering Inc. on February 17<sup>th</sup>, 2004, at the meeting was Mr. Rocco Lucente, P. Eng., Prime Consultant for the County Road 19 Reconstruction Project, Mr. John Pawlowski from R. Lucente Engineering Inc. and Bruce D. Crozier, P. Eng., from Bruce D. Crozier Engineering Inc.

The proposed reconstruction of County Road 19 between Lanoue Street at Station 1+143.60 to Station 0+000 was discussed. To determine what affect this reconstruction would have on the open East Townline Drain. It was determined that the proposed widening of the travelled surface of Manning Road would position the proposed west concrete curb and gutter approximately along the top of the west bank of the open drain.

It was therefore decided that the existing open East Townline Drain would have to be enclosed between the south side of Lanoue Street from Station 1+463.60 to a distance of 225 m south of Sylvestre Drive.

The type of enclosure was also discussed, it was determined that since the enclosure would be located under the new travelled road, with very little cover that the enclosure should be a concrete box culvert, designed to withstand the traffic loads of the proposed reconstructed road.

#### **6.0 SURVEY**

Since a topographical survey of the site had already been completed by R. Lucente Engineering Inc. for the design of the road reconstruction. We were provided with base plans showing the topographical information along the length of the proposed drain enclosure.

The topographical information was used to prepare drawings for the drain enclosure from

Station 0+000 which is located 225 metres south of Sylvestre Drive to the south side of Lanoue Street.

## 7.0 EXISTING SITE CONDITIONS

- a) Between Station 1+463.60 to Station 1+065.80, there is an existing open drain which has evidence of sediment building up in the bottom and minor evidence of isolated bank slippage.
- b) Between Station 1+065.80 to Station 0+984.00 there is an existing 3000 mm x 1800 mm concrete culvert under County Road 22, which is still in good condition.
- c) Between Station 0+984.00 to Station 0+010 there is an existing open drain which has evidence of sediment build up in the bottom and minor evidence of isolated bank slippage.

## 8.0 RECOMMENDATIONS

As stated previously in this report, the purpose of the report is to enclose a portion of the East Townline Drain to provide for the reconstruction of County Road 19. We would therefore recommend that the following work be performed on the East Townline Drain.

- 1) The existing open drain between Station 0+010 to Station 0+221.5 should be enclosed with 3000 mm x 1500 mm concrete box culvert.
- 2) The existing 2200 mm diameter C.S.P. under Sylvestre Drive between 0+221.5 and Station 0+246 should be removed and replaced with 3000 mm x 1500 mm concrete box culvert.
- 3) The existing open drain between Station 0+246 to Station 0+597 should be enclosed with 3000 mm x 1500 mm concrete box culvert along with removing existing access culverts.
- 4) The existing 1800 mm diameter C.S.P. under Jamsyl Drive, between Station 0+597 and Station 0+626.40 should be removed and replaced with 3000 mm x 1500 mm concrete box culvert.
- 5) The existing open drain between Station 0+626.40 to Station 0+836.20 should be enclosed with 3000 mm x 1500 mm concrete box culvert, along with removing existing access culverts.
- 6) The existing 1800 mm C.S.P. under Desro Drive, between Station 0+836.20 to Station 0+860.40, should be removed and replaced with 3000 mm x 1500 mm concrete box culvert.
- 7) The existing open drain between Station 0+860.40 to Station 0+984.00 should be enclosed with 3000 mm x 1500 mm concrete box culvert with appurtenances, bends, reducers, tees and manholes.
- 8) Existing 3000 mm x 1800 mm concrete culvert under County Road 22 between Station 0+984.00 to Station 1+065.80 to remain in place with a new 200 mm thick concrete floor poured for its full length.
- 9) Existing open drain between Station 1+065.80 to Station 1+463.60 should be enclosed with 2400 mm x 1800 mm concrete box culverts, to connect to existing 2400 mm x 1800 mm concrete box culvert under Lanoue Street.
- 10) There are a number of lateral pipes along the length of the drain which are recommended to be reconnected to the new box culverts, some of the existing lateral pipes are proposed to be altered in size, pipe material, alignment and length.

The construction of these alterations is recommended to be carried out under this report, however, the lateral piping is not recommended to become a part of the East Townline Drain under the provisions of "The Drainage Act 1990".

We would therefore recommend that the work necessary to enclose this portion of the East Townline Drain be carried out under the provisions of "The Drainage Act 1990".

We would further recommend that any future maintenance costs for the lateral piping, catch water basins and offset manhole and appurtenances that is proposed to be connected to the new concrete box culverts is the complete responsibility of the road authority or private property owners which are being serviced by said lateral piping and not a part of the East Townline Drain.

## **9.0 DRAWINGS**

Attached to this report is Drawing No. BC-04-007, Sheets 1 to 10 which consists of a plan showing the location of the proposed work, together with the profile and details of the recommended work.

## **10.0 PROPOSED WORK**

In general the proposed work would involve the enclosing of the existing open drain between Station 0+000 to Station 0+221.5, Station 0+246 to Station 0+597, Station 0+626.40 to Station 0+836.20, Station 0+860.40 to Station 0+984.00, with new concrete box culverts. The work would also involve the improvement or replacement of existing access culverts, between Station 0+221.50 to Station 0+246, Station 0+597 to Station 0+626.40, Station 0+836.20 to Station 0+860.40, Station 0+984.0 to Station 1+065.80.

The work will also include the installation of gabion stone in baskets, erosion protection and a concrete headwall between Station 0+000 and Station 0+010.

## **11.0 ASSESSMENT**

We would recommend that the total cost of this work be assessed to the County of Essex as part of the County Road 19 reconstruction project.

## **12.0 MAINTENANCE**

We would further recommend that this drainage work be kept up and maintained at the expense of the lands and roads with the exception of the lateral pipes, catch water basins and offset manhole which shall be assessed totally to the properties or roads being serviced by these appurtenances.

## **13.0 DEFINITION OF DRAIN COMPONENTS**

For the purpose of defining the actual components of the Municipal Drain, the East Townline Drain shall consist of the drain from Station 0+000 to Station 1+463.60 including all concrete box culverts, improvements to concrete bridges, gabion stone in wire basket, erosion protection, and all appurtenances.

## **14.0 FUTURE MAINTENANCE ISSUES**

Working Area - The working areas to be designated for future maintenance purposes and the municipality should keep the working area clear of obstructions.

## **15.0 FEDERAL FISHERIES ACT**

The Essex Region Conservation Authority will review the recommended works of this report and will provide notice of project if required due to any fish habitat concerns.

## **16.0 LATERAL DRAINS**

The cost of maintaining private service connections, private tile outlets, catch water basins and off set manholes into the Drain is the responsibility of the landowner for which said works are servicing.

All of which is respectfully submitted.

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N8H 3V7

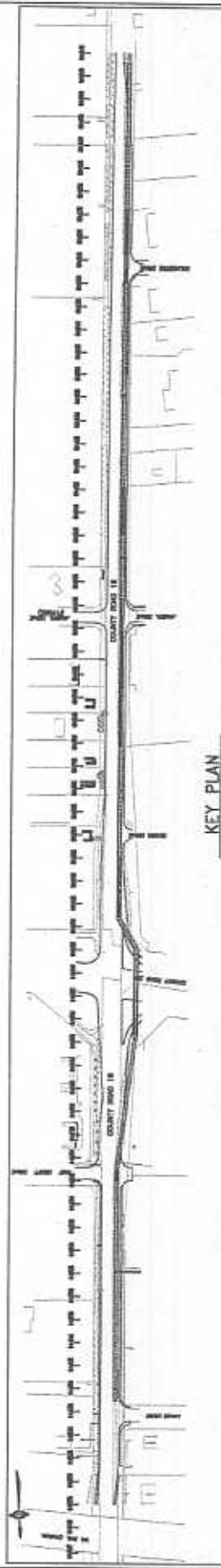
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Bruce D. Crozier, P. Eng.

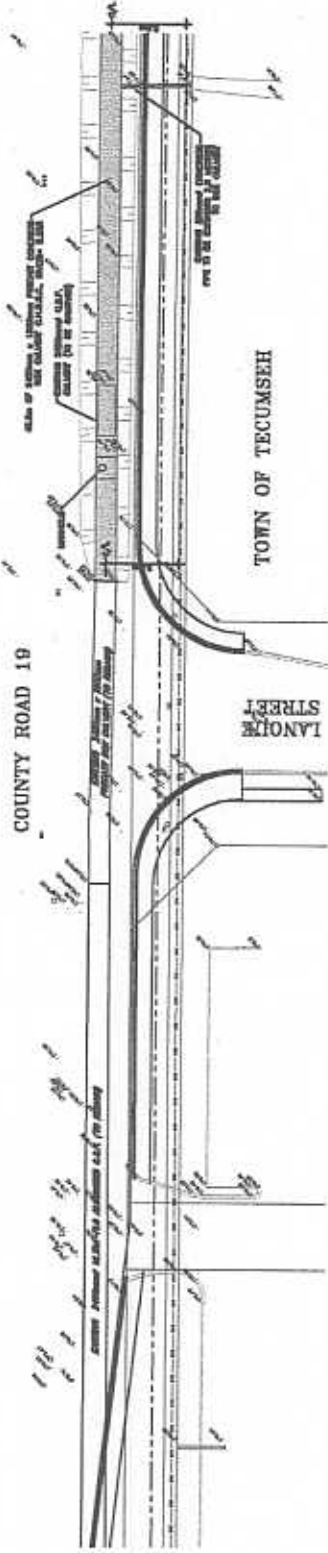
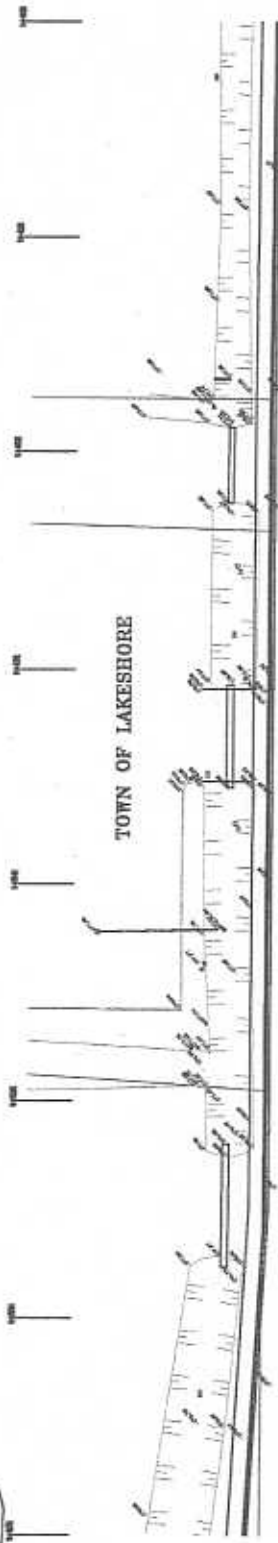
# EAST TOWNLINE DRAIN SOUTH OF LANOUÉ STREET IN THE TOWN OF TECUMSEH IN THE COUNTY OF ESSEX ONTARIO

**LIST OF DRAWINGS**

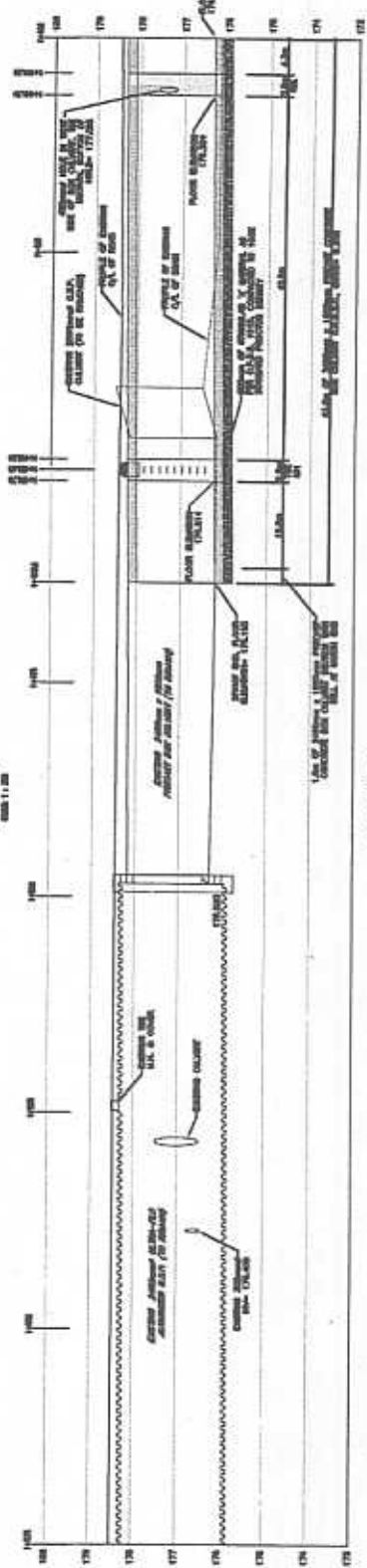
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- 2- PLAN & PROFILE STA. 0+000 TO STA. 0+175
- 3- PLAN & PROFILE STA. 0+175 TO STA. 0+350
- 4- PLAN & PROFILE STA. 0+350 TO STA. 0+525
- 5- PLAN & PROFILE STA. 0+525 TO STA. 0+700
- 6- PLAN & PROFILE STA. 0+700 TO STA. 0+875
- 7- PLAN & PROFILE STA. 0+875 TO STA. 1+050
- 8- PLAN & PROFILE STA. 1+050 TO STA. 1+225
- 9- PLAN & PROFILE STA. 1+225 TO STA. 1+400
- 10- PLAN & PROFILE STA. 1+400 TO STA. 1+575



<b>DRAFT</b>		<b>R. LUCENTE ENGINEERING INC.</b> CONSULTING ENGINEERS <small>111 Main Street, 4th Floor Tecumseh, Ont. N0G 1L0</small>		<b>BC-04-007</b>
<b>DRAFT</b>	<b>REVISIONS</b>	<b>DATE</b>	<b>SEP 12/05</b> AS NOTED A.P. B.D.C.	<b>BC-1</b>
<b>EAST TOWNLINE DRAIN</b> TOWN OF TECUMSEH		<b>TITLE PAGE</b>		
<b>BRUCE D. CROZIER</b> ENGINEERING INC. <small>CONSULTING ENGINEERS</small>		<b>BC-04-007</b>		



**PLAN**  
SCALE 1" = 100'



**PROFILE**  
SCALE 1" = 10'

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C-201-000001-01

DATE	REVISIONS

**EAST TOWNLINE DRAIN**  
TOWN OF TECUMSEH  
**PLAN & PROFILE STA. 1+400**  
**TO STA. 1+575**

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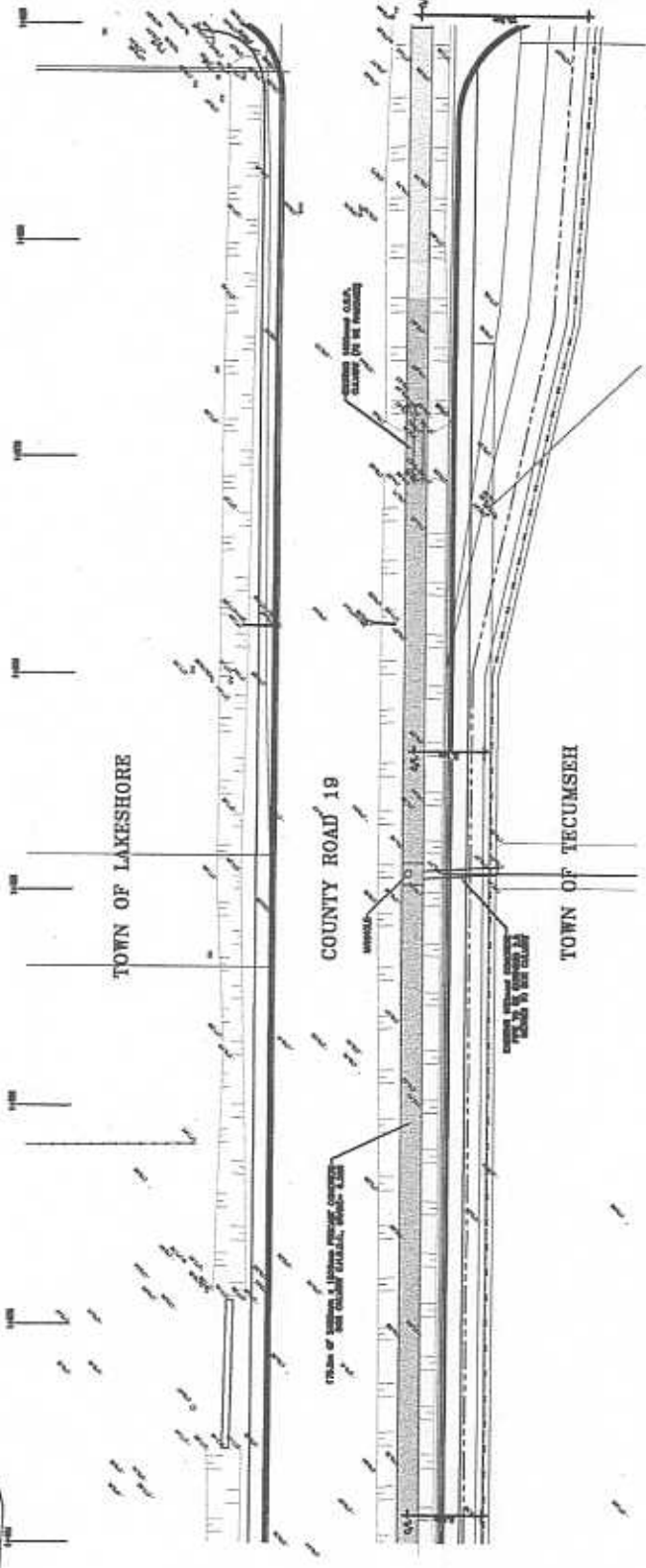


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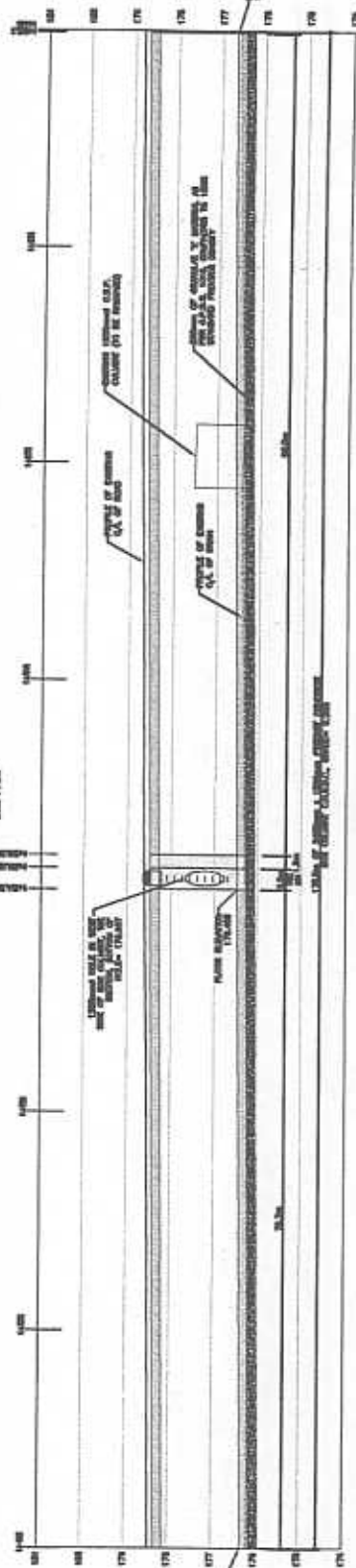
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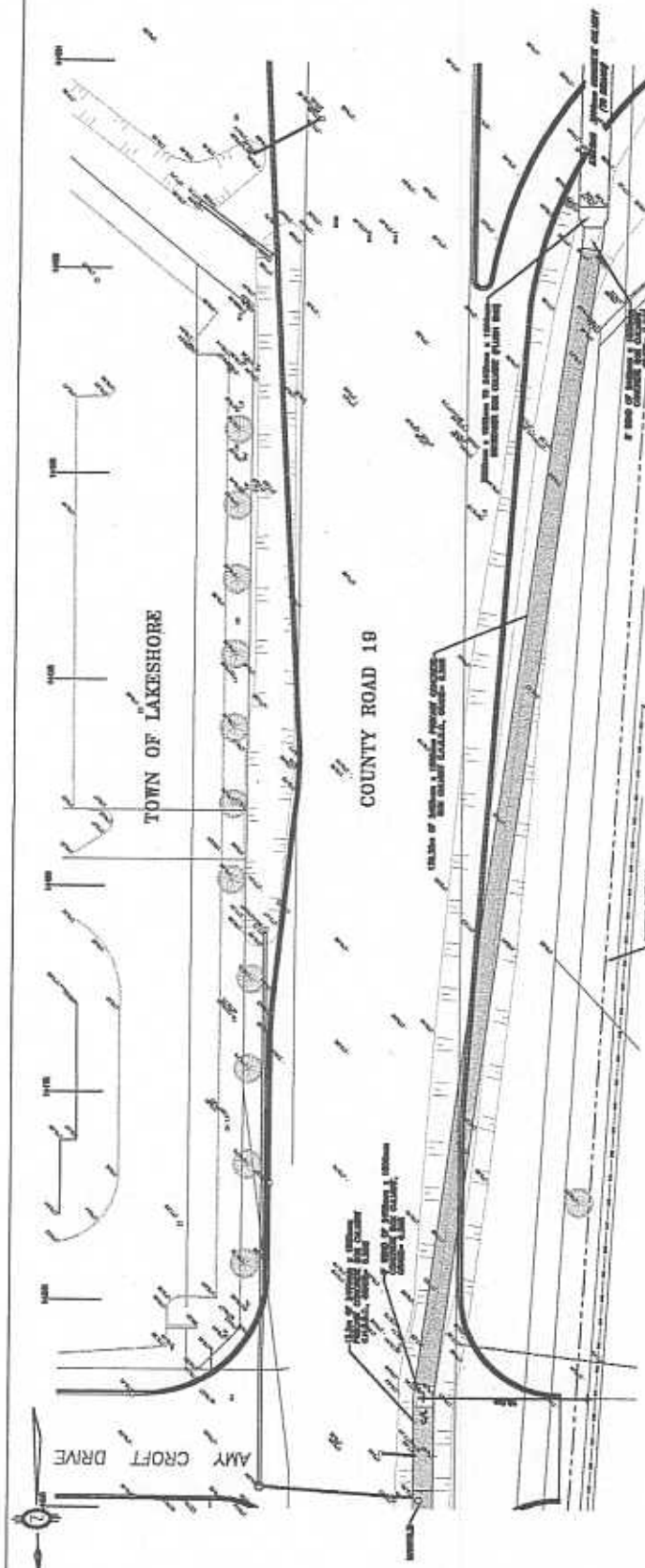


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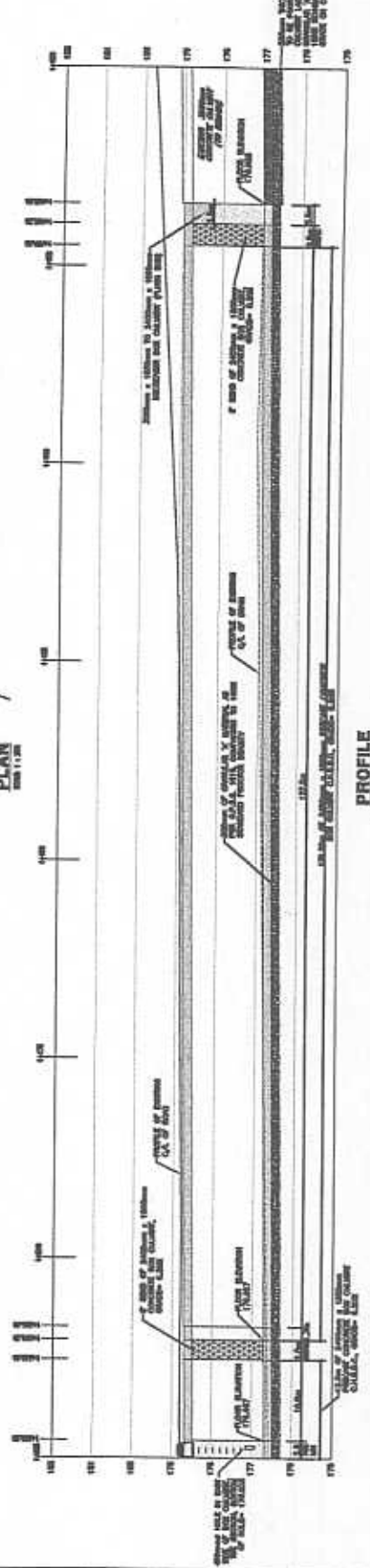


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DRAFT			<b>BRUCE D. GROZIER</b> <b>ENGINEERING INC.</b> <small>CONSULTING ENGINEERS</small> <small>1000 W. 10th St., Suite 100, Tecumseh, MI 48857</small>		BC-04-007 DRAFT
	R. LUCENTE ENGINEERING INC. <small>CONSULTING ENGINEERS</small> <small>200 N. Main St., Suite 100, Tecumseh, MI 48857</small>		DATE: _____ REVISIONS: _____	SEPT 12/05 AS NOTED A.P. B.A.C.	BC-3
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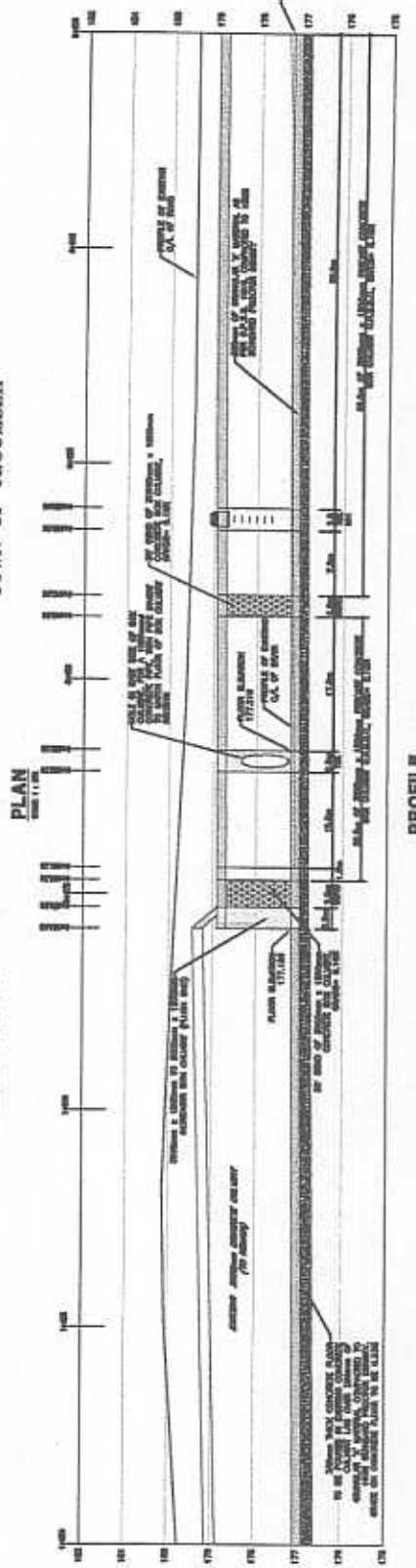
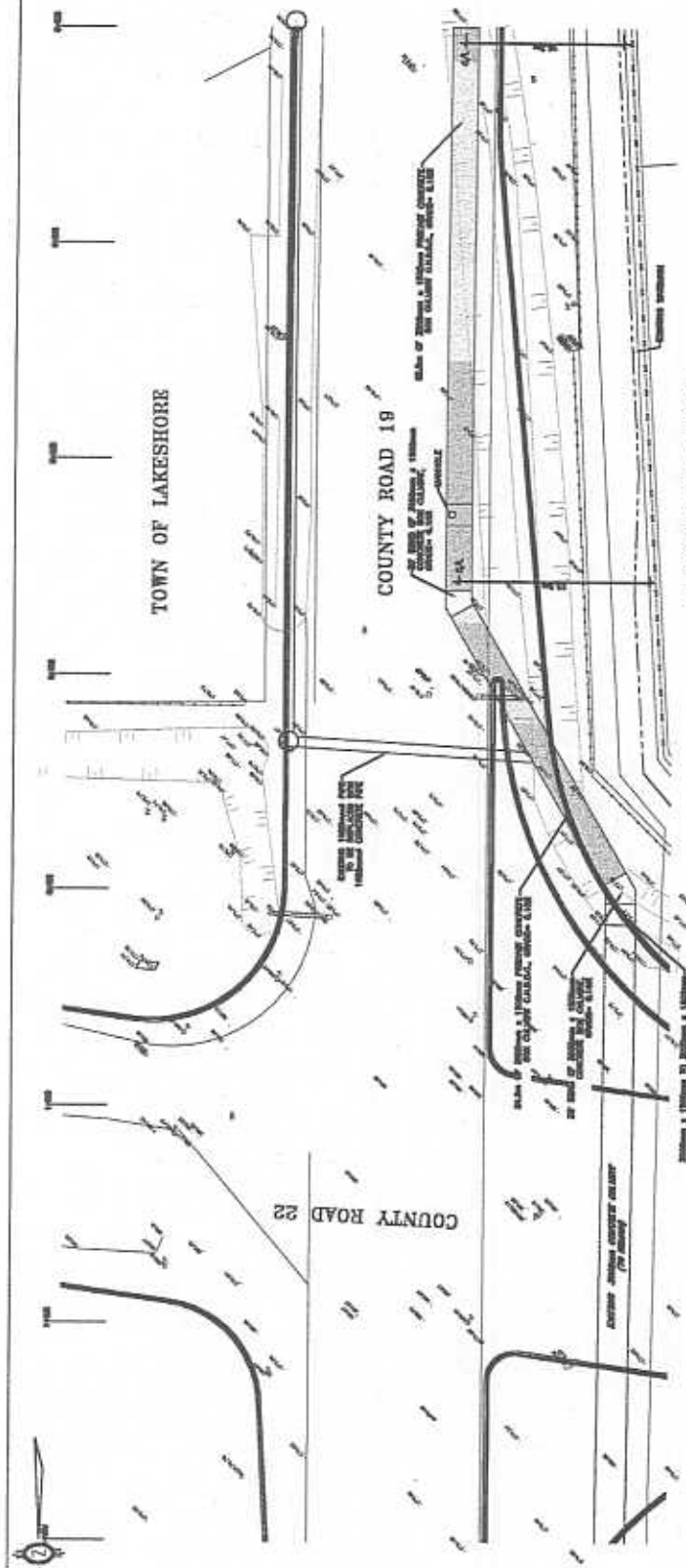


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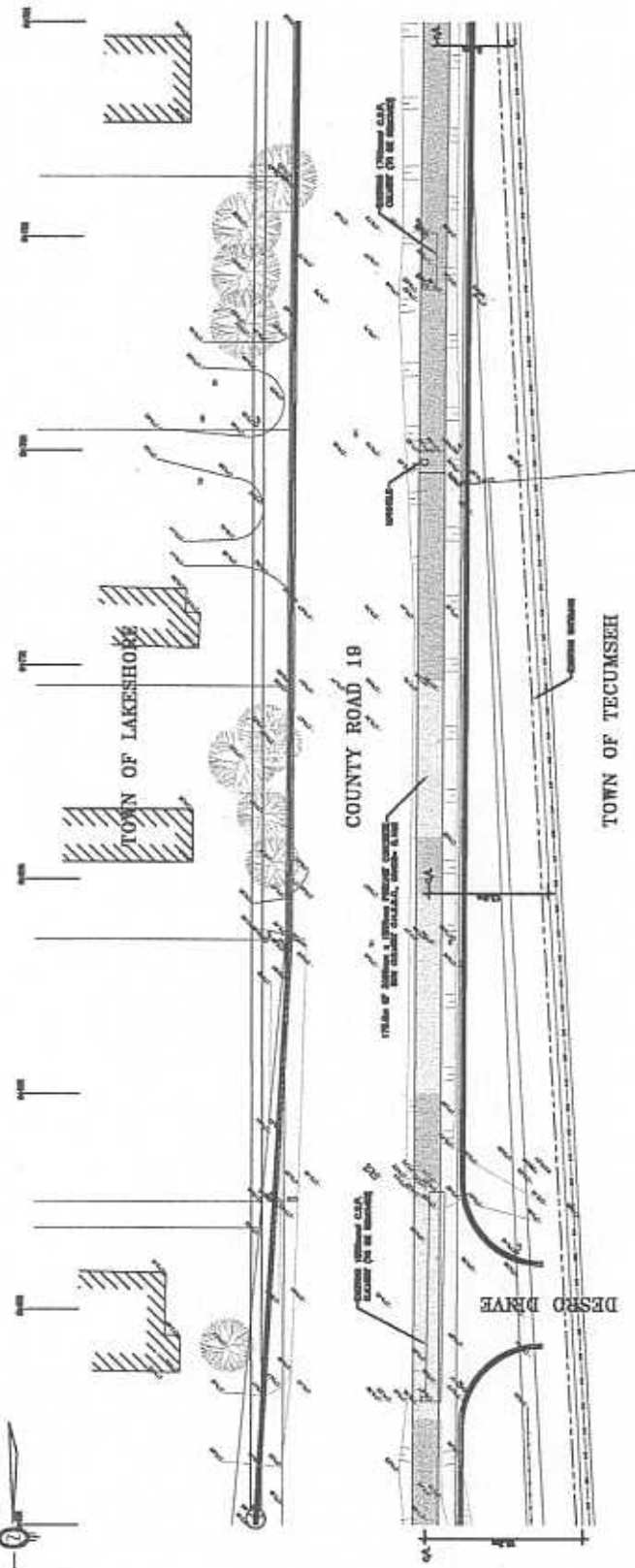
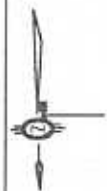


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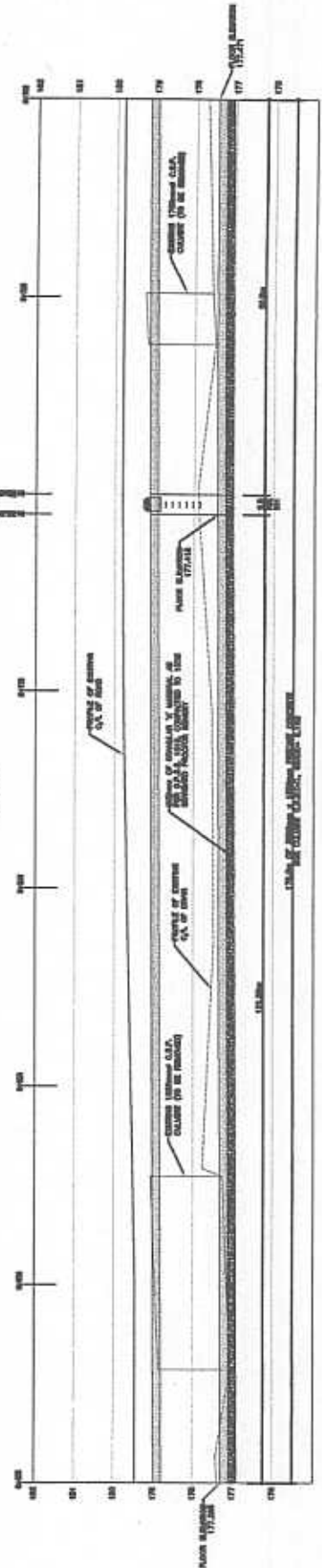
	<b>R. LUCENTE ENGINEERING INC.</b> CONSULTING ENGINEERS <small>241 West Main Street          Tecumseh, Michigan 48857          Phone: 517.253.2200          Fax: 517.253.2201</small>	<b>BRUCE D. CROZIER</b> ENGINEERING INC. <small>1000 West Main Street          Tecumseh, Michigan 48857          Phone: 517.253.2200          Fax: 517.253.2201</small>	BC-04-007 DRAWING NO. <b>BC-4</b>
	DATE REVISIONS PLAN & PROFILE STA. 1+050 TO STA. 1+225	SEPT 12/05 AS NOTED A.P. B.D.G.	<b>DRAFT</b>



<b>R. LUCENTE ENGINEERING INC.</b> CONSULTING ENGINEERS 211 Lake Park, Ltd. #1 Markham, Ontario L3R 9V7	DATE: _____ REVISIONS: _____ DRAWN BY: _____ CHECKED BY: _____	EAST TOWNLINE DRAIN TOWN OF TECUMSEH PLAN & PROFILE STA. 0+875 TO STA. 1+050	SEPT 12/06 AS NOTED BY: AC R.S.O.C.	<b>BRUCK D. CROZIER</b> ENGINEERING INC. CONSULTING ENGINEERS 1000 Highway 7 Markham, Ontario	BC-04-007 DRAWING NO. <b>BC-5</b>
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PLAN  
SHEET 11 OF 12



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SHEET 12 OF 12

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DATE

REVISIONS

SEPT 12/05  
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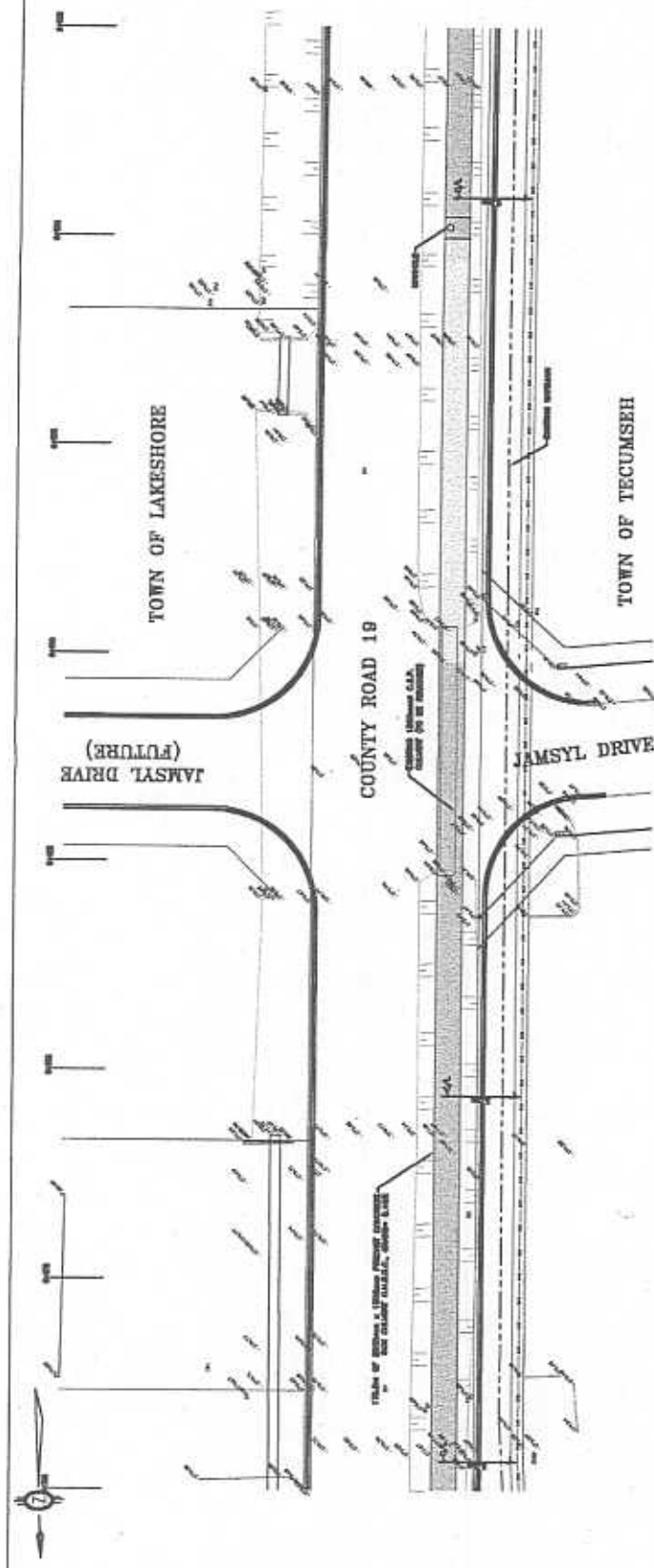
EAST TOWNLINE DRAIN  
TOWN OF TECUMSEH  
PLAN & PROFILE STA. 0+700  
TO STA. 0+875

BRUCE D. CROZIER  
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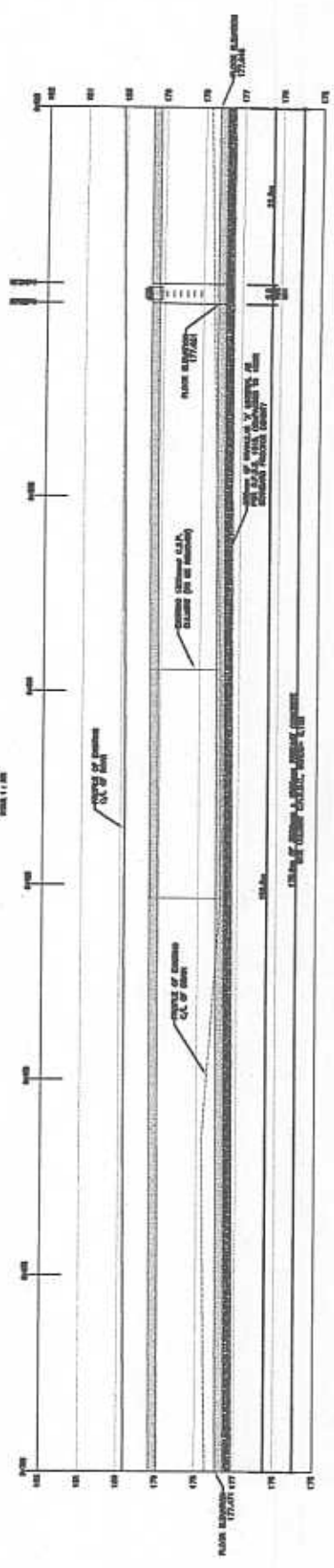
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PLAN  
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PROFILE  
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R. LUCENTE ENGINEERING INC.  
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181 Main Street, Unit 1  
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L3R 0K8

DATE: \_\_\_\_\_

REVISIONS:

NO.	DESCRIPTION	DATE

PROJECT: EAST TOWNLINE DRAIN  
TOWN OF TECUMSEH

PLAN & PROFILE STA. 0+525  
TO STA. 0+700

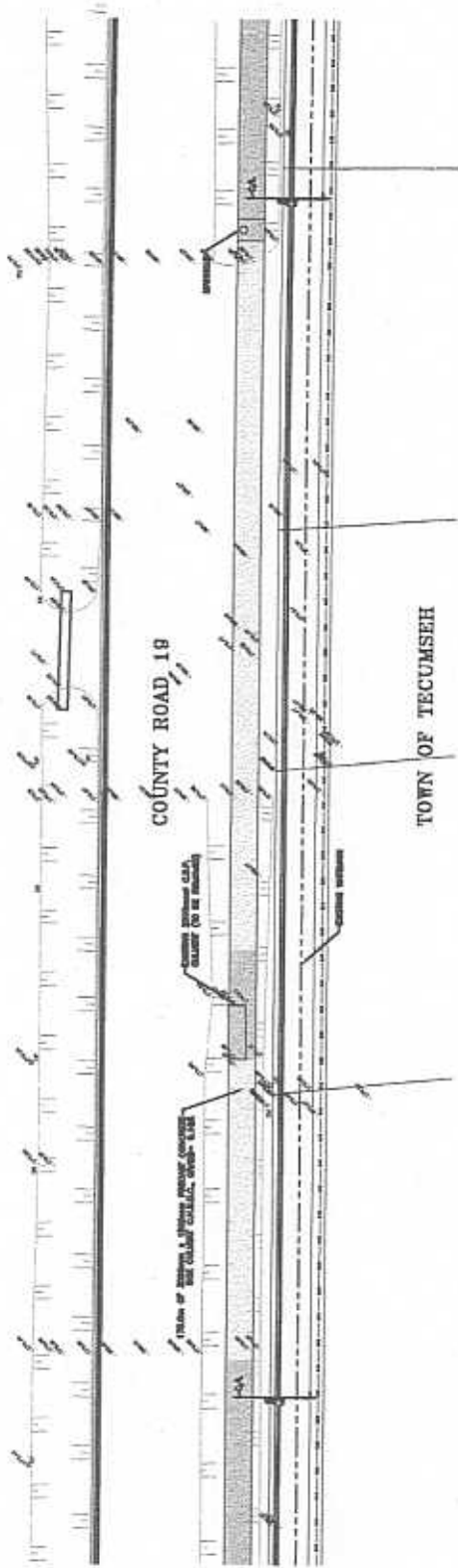
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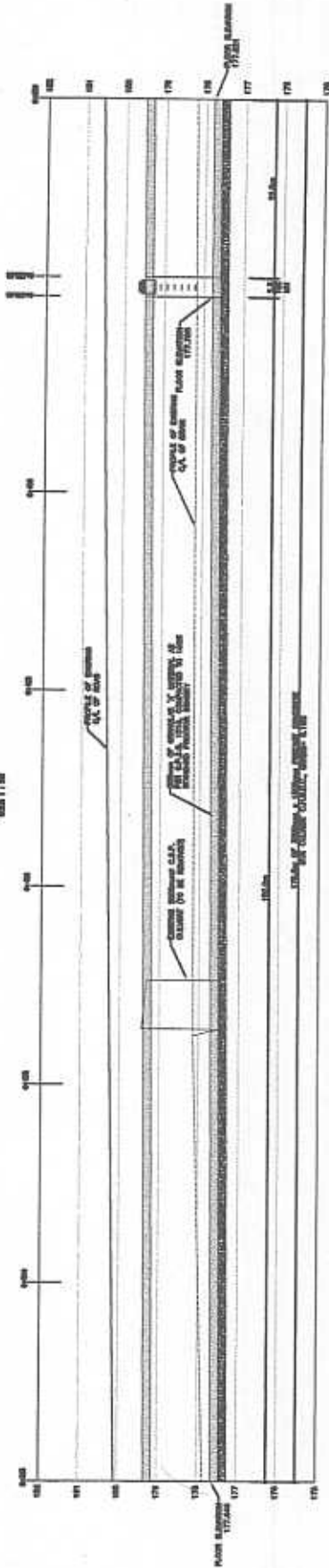
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TOWN OF LAKESHORE



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REVISIONS

DATE

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EAST TOWNLINE DRAIN  
TOWN OF TECUMSEH

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TO STA. 0+525

EC-04-007

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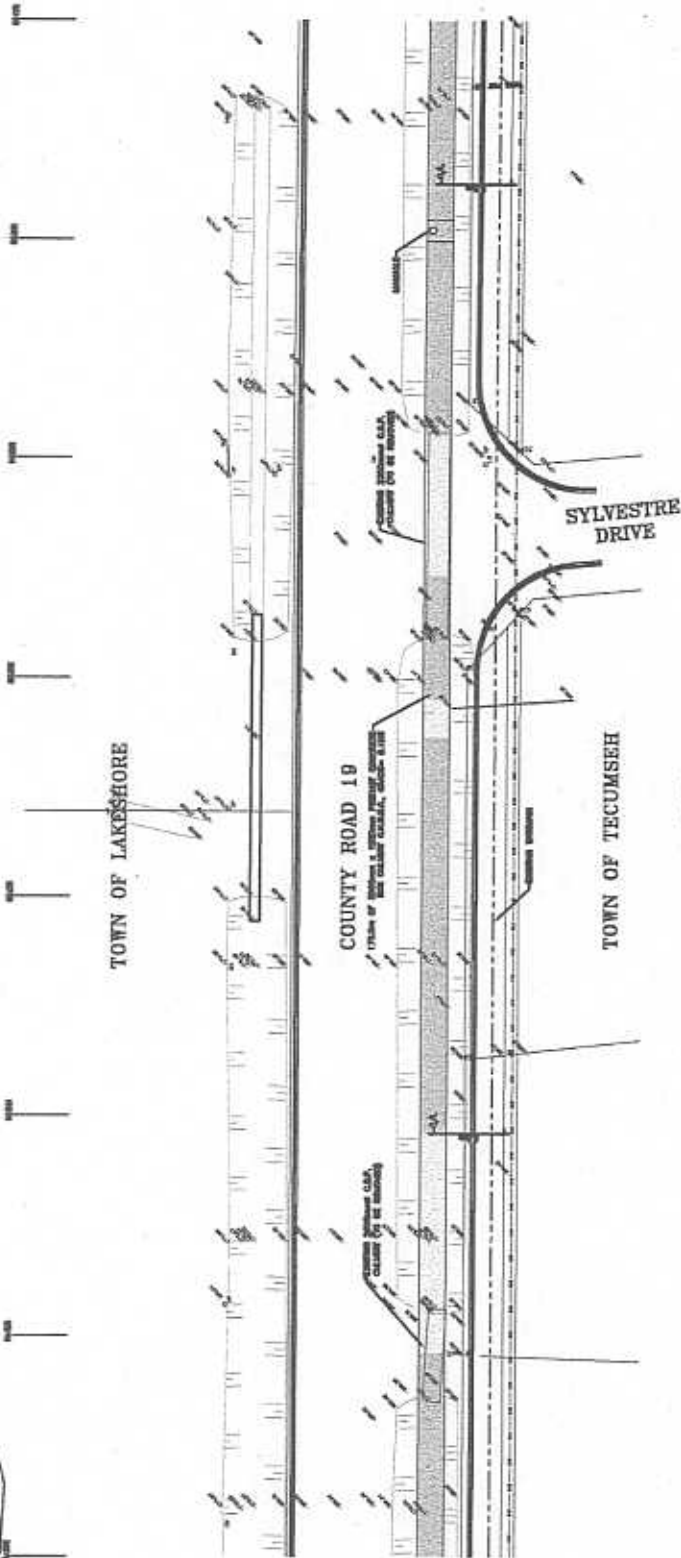
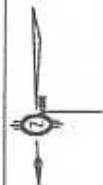
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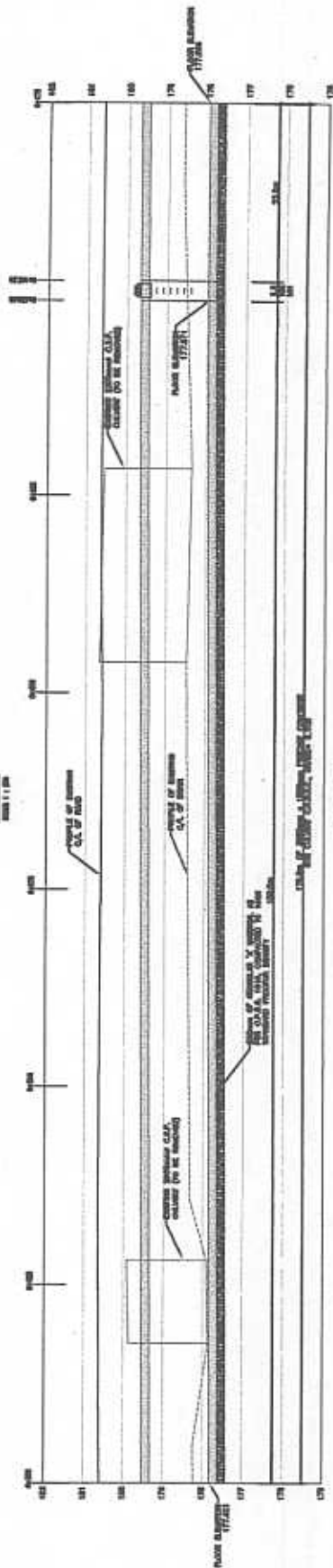
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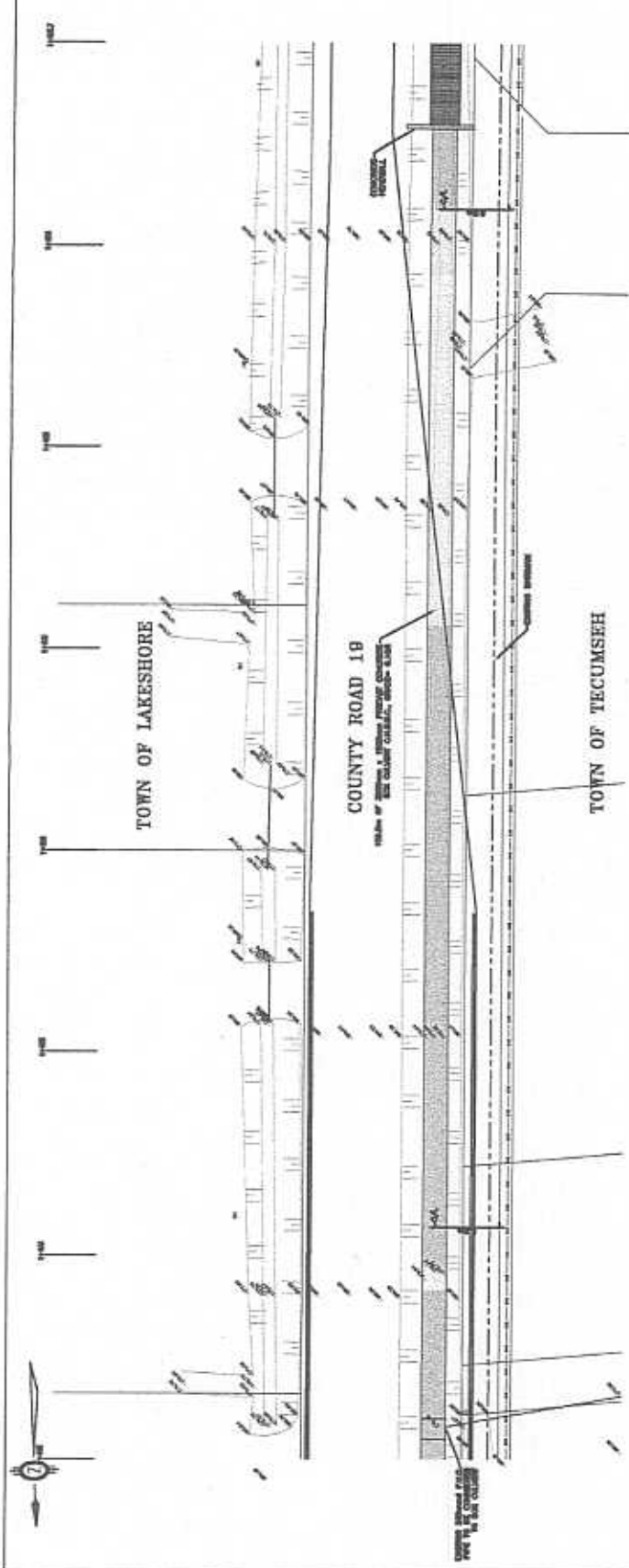


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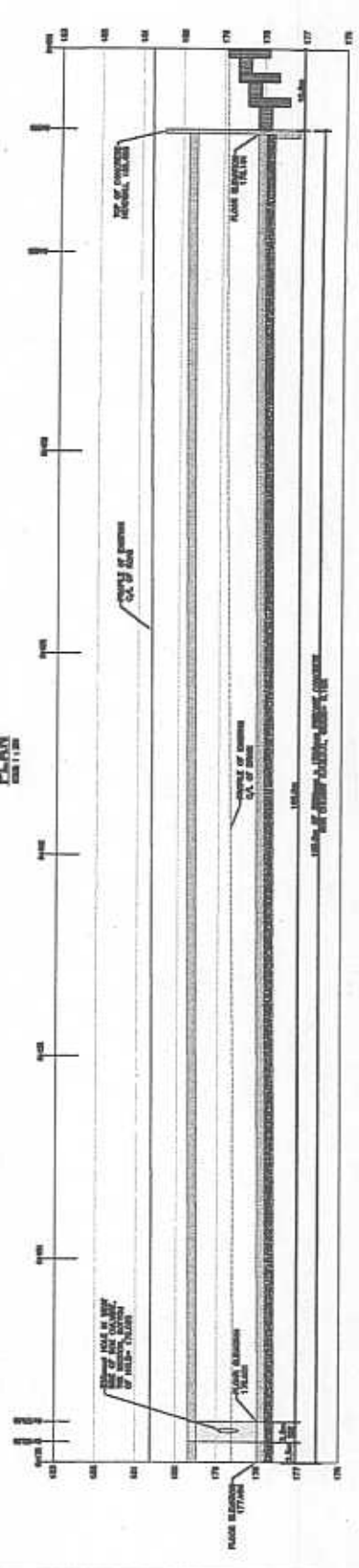


PROFILE  
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DRAFT		<b>BRUCE D. CROZIER ENGINEERING INC.</b> <small>CONSULTING ENGINEERS 1000 W. WINDYBROOK DR. SUITE 100 TECUMSEH, ONT. N0G 1L0</small>	DATE: <b>SEPT 12/03</b> BY: <b>AS NOTED</b> CHECKED BY: <b>A.P.</b> APPROVED BY: <b>B.D.C.</b>	PROJECT: <b>EAST TOWNLINE DRAIN</b> LOCATION: <b>TOWN OF TECUMSEH</b> DRAWING: <b>PLAN &amp; PROFILE STA. 0+175 TO STA. 0+350</b>	SHEET NO: <b>BC-04-007</b> OF: <b>BC-9</b>
			REVISIONS:	R. LUCENTE ENGINEERING INC. CONSULTING ENGINEERS <small>111 W. Main St. Suite 201 Tecumseh, Ont. N0G 1L0 Phone: 519-203-1111 Fax: 519-203-1112</small>	



PLAN  
SCALE 1"=100'



PROFILE  
SCALE 1"=10'

<b>R. LUCENTE ENGINEERING INC.</b> CONSULTING ENGINEERS 201 S. Main St., 2nd Fl. Tecumseh, Mich. 48860 Phone: 517-253-1111 Fax: 517-253-1112	DATE: _____ REVISIONS: _____ EAST TOWNLINE DRAIN TOWN OF TECUMSEH PLAN & PROFILE STA. 0+000 TO STA. 0+175	SIGNED: _____ DATE: _____ AS NOTED A.P. B.D.C.	SIGNED: _____ DATE: _____ BRUCE D. CROZIER ENGINEERING INC. CONSULTING ENGINEERS 1000 S. Main St., 2nd Fl. Tecumseh, Mich. 48860 Phone: 517-253-1111 Fax: 517-253-1112	BC-04-007 DRAFT BC-10
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