

Toronto Inspection Ltd.

GEO-ENVIRONMENTAL CONSULTANTS

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UNIT 16
MARKHAM, ONTARIO.
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Tel.: 905-940-8509
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May 6, 2003
Project No. 03 LPL 778-02

W.O 2003-11012

Pitura Husson Limited
50 West Wilmont Street, Suite 101
Richmond Hill, Ontario
L4B 1M5

Attention : Mr. Greg Rapp

Re.: Geotechnical Investigation Report
Sanitary Sewer Installation
Highway 10 / 89 and County Road 124
Shelburne, Ontario.

Reference is made to your fax transmittal of May 2, 2003, enclosing Ministry of Transportation's review comments in respect to our above referenced geotechnical investigation report and our letter dated April 11, 2003.

On May 5, 2003, *Toronto Inspection Ltd.* carried out a test pit on the south end of the proposed crossing under King's Highway 10 and 89. The test pit was carried out approximately 2.5 m east of MH 8A, using a backhoe. Samples in the test pit were taken at 0.6 m (2 ft) intervals to the termination depth of 5.3 m below the existing ground level. The samples were identified and logged in the field and were carefully bagged for later visual identification by a geotechnical engineer.

The subsoil stratigraphy, as revealed at the Test Pit location, comprised of a low plasticity to non-plastic clayey silt to a depth of 2.4 m (8 ft) below the existing ground level and was underlain by a deposit of clayey silt till. The clayey silt till deposit comprised of a heterogeneous mixture of clay and silt with trace to some sand, trace of fine gravel. Cobbles were observed in the clayey silt till deposit at a depth of 5 m (elevation 480.8 m) below the existing ground level. The test pit was terminated at a depth of 5.3 m (elevation 480.5 m). No free water was observed in the test pit during and on completion of excavation.

The Log of Test Pit 101 is attached on Drawing 4. A stratigraphic section through Boreholes 2, 1 and Test Pit 101 is shown on Drawing 5.

TORONTO INSPECTION LTD.

The subsoil stratigraphic section indicates that the subsoil at and above the proposed invert of the sanitary sewer, under King's Highway 10 and 89, will consist of clayey silt at Test Pit 101 and sandy silt at Borehole 1 locations. These deposits are of low plasticity to non-plastic and will be very sensitive to construction traffic. Unsupported horizontal tunneling in these materials will not be stable and could result in excessive settlement / collapse of the road above the tunnels.

The clayey silt and the sandy silt deposits are in compact to dense state and it might be difficult to jack liners through these deposits. Loosening of the soil by auguring, in advance of jacking, will be necessary.

Hoping that the additional information will be adequate for the contractor to plan construction of the works specified.

If you have any questions, regarding the above, please contact this office.

Yours very truly,

Toronto Inspection Ltd.

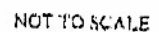


Upkar S. Sappal, P. Eng.
Principal Engineer

Enclosures:

Log of Boreholes 1 and 2 and Test Pit 101
Stratigraphic Section through boreholes & Test Pit

Drawings 2 to 4
Drawing 5



1

Project No 03 LPL 778

Log of Borehole 1

Dwg No 2

Project: Sanitary Sewer Installation

Sheet No 1 of 1

Location: Hwy 10/89 & Dufferin County Road 124, Shelburne

Date Drilled: 26/02/03

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shallow Test

Field Vane Test

Handpump Reading (cm)

Natural Moisture

Plastic and Liquid Limit

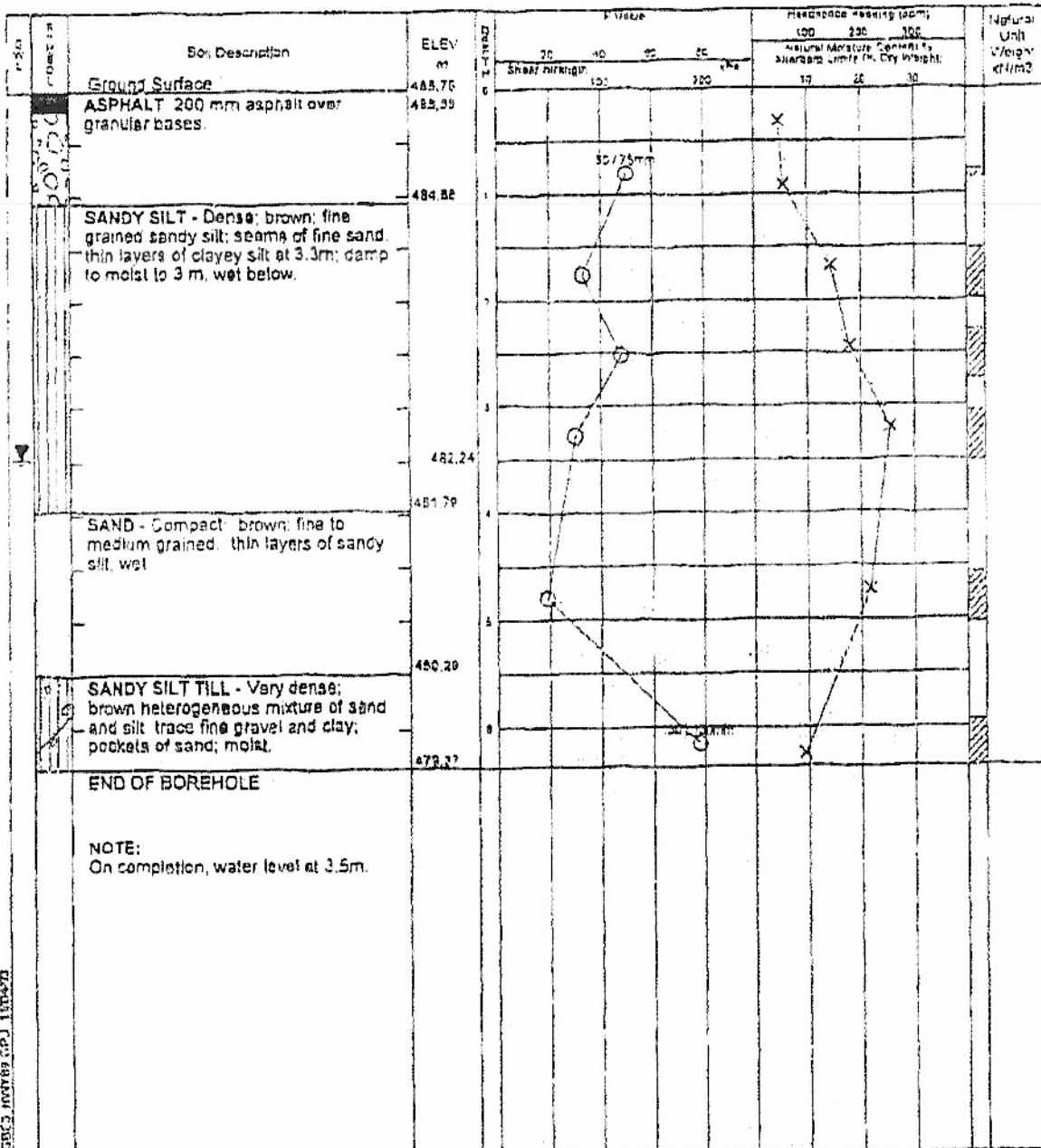
Unclassified Compression

% Strain at Failure

Penetrometer

Drill Type: D-90 Truck

Datum: Ground Surface



NOTE: THE BOREHOLE DATA NEEDS INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No 03 LPL 778

Log of Borehole 2

Dwg No 3

Project Sanitary Sewer Installation

Sheet No. 1 of 1

Location: Hwy 10/89 & Dufferin County Road 124, Shelburne

Date Drilled: 26/02/03

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shelby Tube

Field Vane Test

Headspace Reading (ppm)

Natural Moisture

Plastic and Liquid Limit

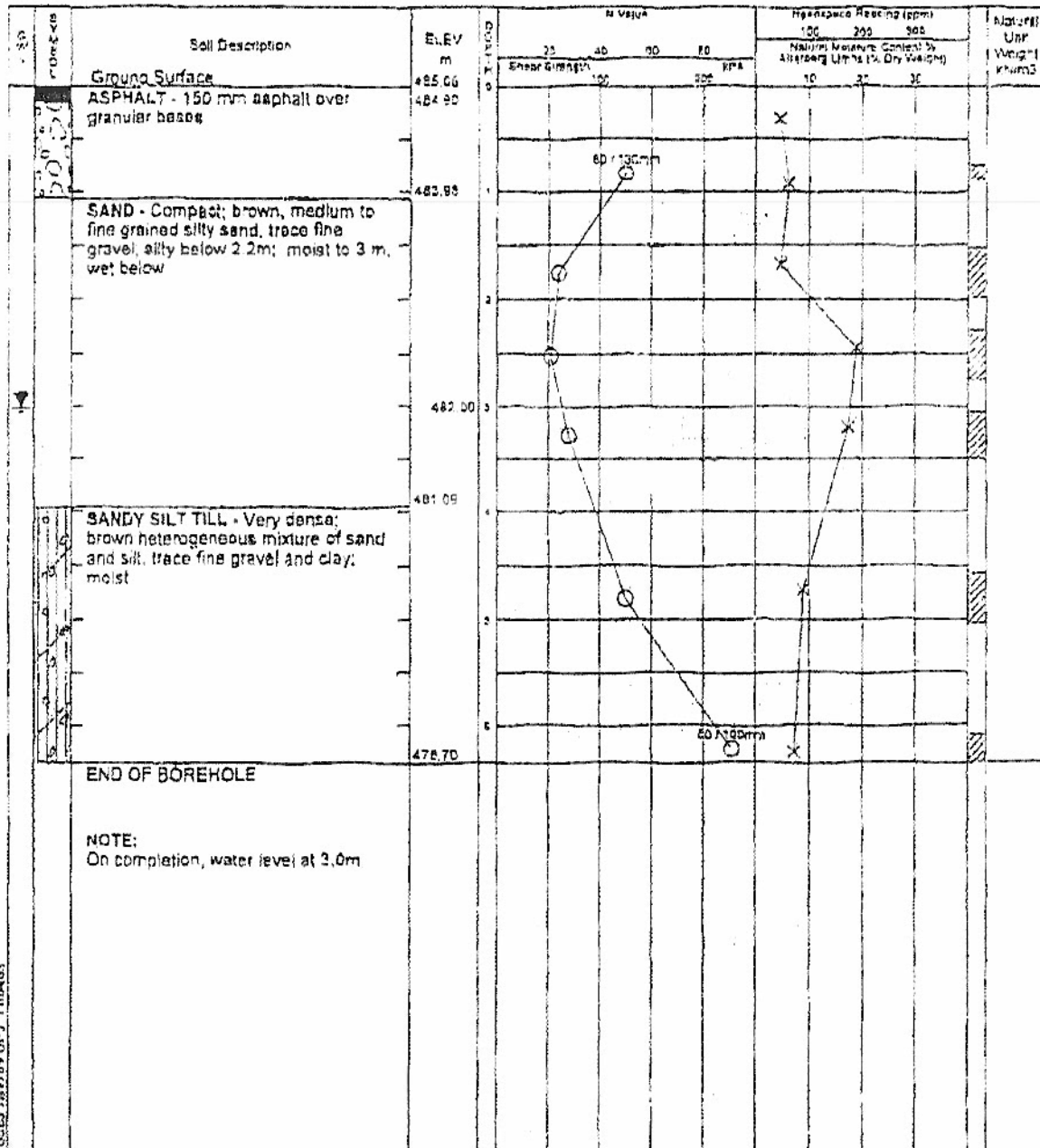
Unconfined Compressive

4. Strain at Failure

Permeability

Drill Type: D-90 Truck

Datum: Ground Surface



NOTE: THE BOREHOLE DATA HEREIN INTERPRETATION ASSISTANCE BY TORONTO INSPECTION LTD. BEFORE USE BY OTHERS

Toronto Inspection Ltd.

Time	Water Level (m)	Depth to Cave (m)

Project No. 03 LPL 778

Log of Borehole TEST PIT 101

Dwg No. 4

Project: Sanitary Sewer Installation

Sheet No. 1 of 1

Location: Hwy 10/89 & Dufferin County Road 124, Shelburne

Date Drilled: 05/05/03

Auger Sample

Moisture Reading (gpm)

Natural Moisture

Plastic and Liquid Limit

Unconfined Compression

to Strain at Failure

Permeability

Drill Type: Backhoe

Dynamic Cone Test

Shelby Tube

Field Vane Test

Datum: Ground Surface

C T V	B Y W O L	Soil Description	ELEV. m	DEPTH m	N Value				Penetration Reading (gpm)			Natural Unit Weight kN/m ³
					25	40	50	60	100	200	300	
					Shear Strength				Moisture Content & Atterberg Limits (% On Weight)			
		Ground Surface	485.80	0	100		200		10	20	30	
		CLAYEY SILT - Brown; clayey silt, trace of very fine grained sand; damp to moist; low plasticity to non-plastic.		1								
	2											
	3											
	4											
	5											
		CLAYEY SILT TILL - Brown; heterogeneous mixture of clay and silt, trace to some sand, trace fine gravel; cobbles at a depth of 5 m; damp to moist.	483.36	6								
	7											
	8											
	9											
	10											
		END OF TEST PIT	480.51	11								
	12											
	13											
	14											
	15											
		NOTE :										
		No free water in the test pit on completion of excavation										

MODE = MEMORY TRANSMISSION

START=MAY-08 09:08

END=MAY-08 09:30

FILE NO. = 191

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05/07/2003 08:33 9057095850

PITURA HUSSON LTD

PAGE 01

Fax

Post-it Fax Note 7671E		Date MAY 8/03	# of pages 1 / 8
To	ANNA Piascile	From	DAVE HARRIS
Co./Dept.	MTO Foundation Group	Co.	MTO Geotechnical
Phone #	416-235-4334	Phone #	519-873-4396
Fax #	416-235-5240	Fax #	519-873-4403



To: Ian Smyth, MTO	From: Greg Rapp
Fax: (519) 873-4600	Pages: 8
Copy:	Date: May 07, 2003
Fax:	File No: 22077
Re: Shelburne No-Frills	

IF YOU DID NOT RECEIVE ALL OF THE PAGES, PLEASE CONTACT THIS OFFICE AS SOON AS POSSIBLE (905) 709-5825

Comments:

Attached is the letter from Toronto Inspection providing additional details on the soils for the sanitary crossing of Highway 10/89. Toronto Inspection completed a test pit near the location of the south bore pit. They did not encounter any bedrock at depths below the invert of the proposed sanitary sewer.

The letter provides recommendations for the contractor on auguring methods and support for the tunnel during construction. This will be provided to the contractor.



Fax

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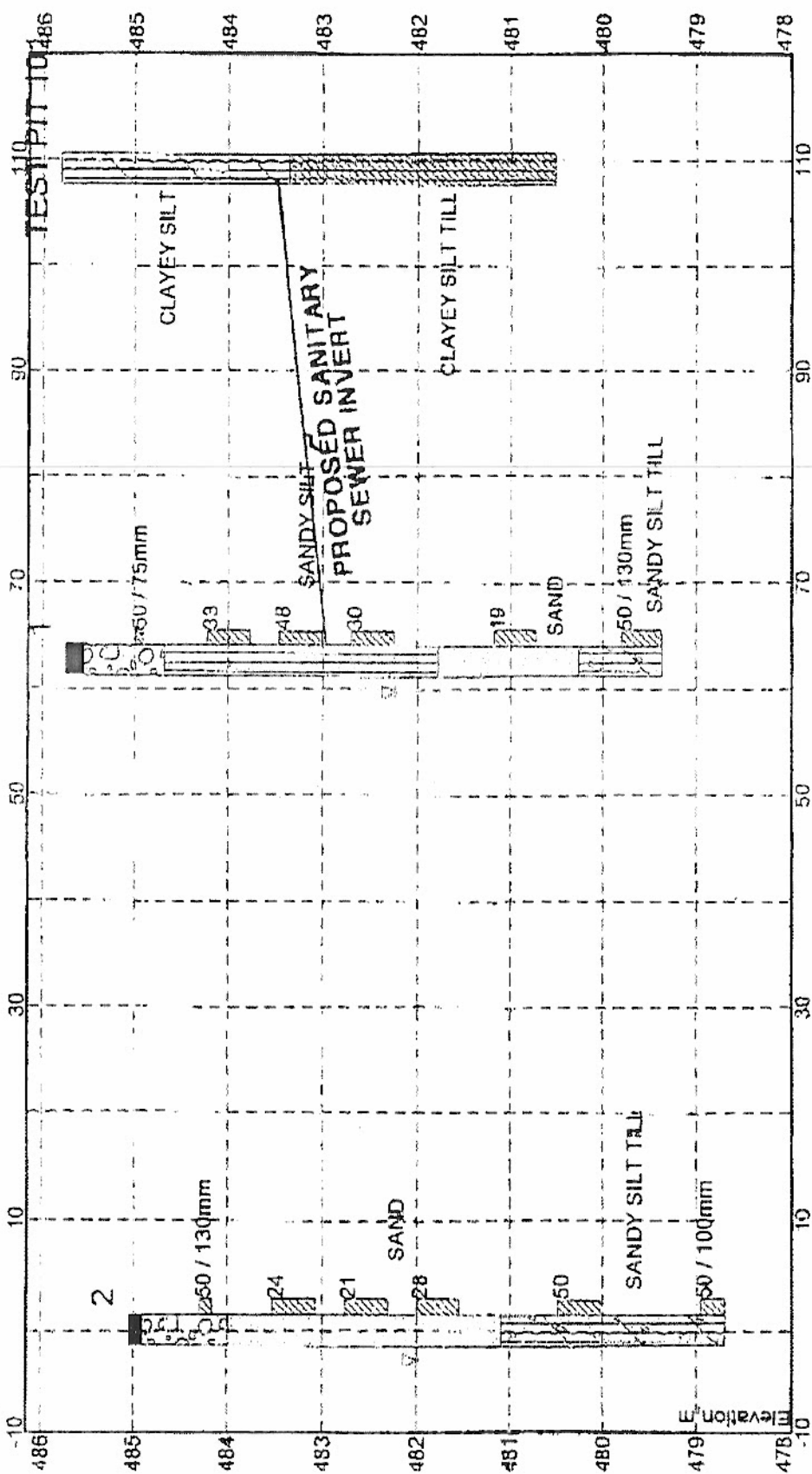
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BH 19
B/R @ 483
BH 18
B/R @ 484



SUBSURFACE STRATIGRAPHY

Section BH 2, BH 1 & TP 101

Sanitary Sewer Installation

Hwy 1000 & DuRien County Road 124, Shelburne

PROJECT #	DATE	DRAWING
03 LPL 778	May 03	5

Toronto Inspection Ltd.

Borehole No	Elev.	Depth
1	485.0	6.4
2	486.0	5.3
TEST PIT 101	485.8	5.3