

DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT. 1976

GEOCRES No. 40I13-39  
DIST. 2 REGION Southwestern

W.P. No. 41-66-27

CONT. No. 76-122

W. O. No. \_\_\_\_\_

STR. SITE No. 19-521

HWY. No. \_\_\_\_\_

LOCATION Proposed Crossing of  
Hwy. 402 and Adelaide Twp. Rd.  
(2.3 mi W of Hwy 81)

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 4

REMARKS: photos included

## FOUNDATION INVESTIGATION REPORT

For

Sideroad Underpass  
2.3 Miles West of Hwy. 81  
Hwy. 402, District 2, London  
W.P. 41-66-27

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INTRODUCTION

This report contains the results of a foundation investigation which was carried out at the site of the above mentioned project. Field work was performed during the period July 4th to July 8th, 1975 using a continuous flight auger machine equipped with 3½ inch I.D. hollow stem augers.

SITE DESCRIPTION

The site is located some 2.3 miles west of hwy. 81 in Lots 15 and 16, Con. 1 and 2, Township of Adelaide, County of Middlesex. At this location Hwy. 402 Line 'A' crosses an existing surface treated gravel road. The topography in the immediate vicinity of the site maybe described as gently rolling arable land engaged in mixed farming.

SUBSURFACE CONDITIONSGeneral

Subsoil at the site consists of 36 feet of hard to very stiff silty clay followed by at least 40 feet of very dense sandy silt to silty sand in which deposit all borings were terminated. Reference should be made to the Record of Borehole Sheets contained in the report Appendix on which are shown the boundaries between different soil types and summarized results of all laboratory and field tests performed during the investigation.

Reference should also be made to Drawing 19-521-2 of the Contract Drawings on which is shown the locations and elevations of borings, together with the inferred subsoil stratigraphy. A detailed description of the subsoil and the major physical properties in order of occurrence from ground level downwards is given below.

### Silty Clay to Clayey Silt

This deposit extends from below about 12 inches of topsoil to a depth of about 36 feet (elev. 766.5±). Based on results of Atterberg Limits tests, the material in the deposit may be classified as silty clay to clayey silt, liquid limits ranging from 30 to 40 percent and plastic limits from 16 to 19 percent. The field moisture content ranges from 15 to 22 percent with a weighted average of about 20 percent. The undrained shear strength of the overall deposit is estimated to range from about 2000 p.s.f. to about 10,000 p.s.f. This estimate is based mainly on Standard Penetration test 'N' values which range from 17 to 47 blows/foot and on the results of 3 laboratory unconfined compression tests. The higher undrained shear strengths are found to be concentrated in a zone, presumably desiccated, some 7 to 10 feet thick which exists in the upper portion of the deposit to within 3 to 5 feet of the ground surface. In this zone 'N' values range from 25 to 47 blows/foot and the average undrained shear strength is estimated to be in the order of 7000 p.s.f. Below the desiccated zone the undrained shear strength drops to about 2000 p.s.f. and thereafter increases randomly with depth to about 3500 p.s.f.

### Sandy Silt to Silty Sand

This deposit underlies the silty clay to clayey silt and extends to a depth of at least 70 feet below the ground surface which was the maximum depth tested. Based on the results of grain size distribution tests, the material is classified as sandy silt to silty sand. The denseness (or degree of compaction) of the deposit is assessed as 'very dense' on the basis of Standard Penetration Test 'N' values which range from 75 to more than 100 blows/foot. The natural moisture content as determined from laboratory tests ranges randomly from 16 to 24 percent. The material is highly dilatant and might tend to liquify under sustained dynamic loading such as occurs during pile driving.

### Groundwater

Groundwater was observed in one of the three boreholes drilled, at a depth of about 20 feet below the surface (elev. 783±). Due to the low permeability of the subsoil, however, it is believed that the duration of the field work was too short to permit stabilization of groundwater in the holes.

It is believed that the stabilized groundwater level would approximately correspond with the average underside of the desiccated zone at about elev. 790±.

*K. G. Selby*

K.G. Selby, P. Eng.  
Supervising Engineer

KGS/PS/gs  
December, 1976

## ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

## RECORD OF BOREHOLE NO 1

W.P. 41-66-27 LOCATION Co-ord's 15,621,867 N; 1,220,434 ORIGINATED BY RD  
 DIST. 2 HWY. 402 BORING DATE July 4, 1975 COMPILED BY RD  
 DATUM Geodetic BOREHOLE TYPE Hollow Stem Augers, Tricone & Cone Test CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE	LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$ $w_p$ — $w$ — $w_L$ WATER CONTENT %	UNIT WEIGHT $\gamma$ P.C.F.	REMARKS % GR. SA. SI. CL.
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	N' VALUES					
802.8	Ground Level									
0.0	Silty Clay to clayey silt  Very stiff to Hard		1	SS	36	800		○		0 2 52 46
			2	SS	34					
			3	SS	38			○		
			4	SS	32					
			5	SS	20	790		○		
			6	TW	PH		q 3300	○	130	
			7	SS	22	780				
			8	SS	27	770		○		
766.8										
36.0	Sandy silt to silty sand  Very Dense		9	SS	85	760		○		0 3 94 3
			10	SS	98					
			11	SS	117	750		○		0 86 (14)
747.5			12	SS	100.4"					
55.3	End of Borehole Note - W.L. not established									

20  
15  $\diamond$  5 % STRAIN AT FAILURE  
10

## ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

## RECORD OF BOREHOLE NO 2

W.P. 41-66-27

LOCATION Co-ord's 15,621,743 N; 1,220,462 E.

ORIGINATED BY RD

DIST. 2 HWY. 402

BORING DATE July 8/75

COMPILED BY RD

DATUM Geodetic

BOREHOLE TYPE Hollow Stem Auger, Tricone &amp; Cone Test

CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT				LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_p$ WATER CONTENT $w$			UNIT WEIGHT $\gamma$ P.C.F.	REMARKS % GR. SA. SI. CL.
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$w_p$	$w$	$w_L$	
802.5	Ground Level														
0.0	Silty clay to clayey silt		1	SS	40	800									
			2	SS	43										
			3	SS	47										
	Stiff to Hard		4	SS	23										
			5	TW	PH	790									
			6	SS	28										
			7	SS	27	780									
						770									
766.5			8	SS	139/11"										
36.0	Sandy silt to silty sand		9	SS	100/6"	760									
	Very Dense		10	SS	171										
						750									
			11	SS	100/5"	740									
			12	SS	131	730									
726.7			13	SS	100/4"										
75.8	End of Borehole														

20  
15  $\phi$  5 % STRAIN AT FAILURE  
10

## ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

## RECORD OF BOREHOLE NO 3

W.P. 41-66-27

LOCATION Co-ord's 15,621,618 N; 1,220,428 E.

ORIGINATED BY RD

DIST. 2 HWY. 402

BORING DATE July 7/75

COMPILED BY RD

DATUM Geodetic

BOREHOLE TYPE Hollow Stem Augers &amp; Tricone &amp; Cone Test

CHECKED BY

SOIL PROFILE			SAMPLES		GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE	LIQUID LIMIT $w_L$ PLASTIC LIMIT $w_P$ WATER CONTENT $w$ $w_p$ — $w$ — $w_L$ WATER CONTENT % 10 20 30	UNIT WEIGHT $\gamma$ P.C.F.	REMARKS % GR. SA. S! CL
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE					
802.2	Ground Level								
0.0	Silty clay		1	SS	17				
	to clayey		2	SS	28				
	silt		3	SS	27				
	Very stiff to hard		4	SS	25				
			5	SS	29				
			6	SS	19				0 2 53 45
			7	TW	PH				
			8	SS	27				
			9	SS	20				
766.2									
36.0	Sandy silt		10	SS	84				0 32 64 4
	to silty sand		11	SS	92				
	Very Dense		12	SS	75				0 85 (15)
			13	SS	100 4"				
			14	SS	120 5"				
			15	SS	120 4"				
731.9			16	SS	120 4"				0 83 (17)
70.3	End of Borehole								
	Note: W.L. not established								

20  
15 5 % STRAIN AT FAILURE  
10

# FOUNDATION INVESTIGATION REPORT

For

Proposed Crossing of Hwy. 402 and  
Adelaide Twp. Road, Dist. 2, London  
(2.3 Miles West of Hwy. 81)  
W.P. 41-66-27 Site 19-521

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## 1. INTRODUCTION

A request for a foundation investigation at the above site was received from Mr. A.P. Watt, Regional Structural Planning Engineer, Southwestern Region, London.

A field investigation was subsequently carried out by the Soil Mechanics Section to determine the subsoil conditions existing at the site. This report contains the results of our field and laboratory investigations, together with our recommendations relating to the design of the proposed structure foundations.

## 2. DESCRIPTION OF THE SITE

The proposed underpass is located 2.3 miles west of Hwy. 81 and approximately 1 mile south of Hwy. 22. The surrounding area is gently rolling arable land engaged in mixed farming.

## 3. FIELD AND LABORATORY INVESTIGATION PROCEDURES

Field work consisted of three sampled boreholes advanced employing hollow stem augers, as well as three dynamic cone penetration tests.

Disturbed samples were obtained using a 2-inch O.D. split spoon sampler driven according to the specifications for the Standard Penetration Test. 'Undisturbed' samples were recovered using 2-inch I.D. Shelby tubes advanced into the soil hydraulically.



All boreholes were surveyed in the field by personnel from London Region Engineering Surveys Section. The locations and elevations of the boreholes are shown on Drawing No. 416627-A which accompanies this report.

All samples were visually examined and classified at the site as well as in the laboratory. Following this inspection, laboratory tests were carried out on selected representative samples to determine the following physical properties:

Atterberg Limits  
Natural Moisture Content  
Grain-size Distribution  
Undrained Shear Strength

The test results are summarized on the Record of Borehole Sheets contained in the Appendix of this report.

#### 4. SUBSOIL

Subsoil at this site consists of approximately 35 feet of silty clay to clayey silt overlying a deposit of at least 40 feet of silty fine sand to sandy silt in which all three boreholes were terminated.

The silty clay to clayey silt deposit has a hard to stiff consistency with Standard Penetration 'N' values ranging from 19 to 43. The higher values being found in the upper 15 feet represent a desiccated crust.

The sandy silt to silty fine sand has a dense consistency with 'N' values generally in excess of 100.

#### 5. DISCUSSION AND RECOMMENDATIONS

##### 5.1 General

An underpass is proposed to carry the Township Road over Hwy. 402. This will involve the construction of embankments approximately

24 feet in height and a bridge of two spans each of which will be 126 feet in length.

## 5.2 Center Pier

It is recommended that the center pier be supported on spread footings at approximate elevation 799. A net safe bearing pressure of 4 tons per sq. ft. may be used for design purposes. Resistance to sliding may be determined using an adhesion design value of 2000 p.s.f.

## 5.3 Perched Abutments

The abutments may be constructed within the approach fills supported on well compacted granular 'A'. A net safe design load of 2.5 t.s.f. may be assumed. For calculations of sliding resistance, a friction coefficient of .55 may be assumed to apply between the footing and granular 'A'. A construction scheme is outlined in Fig. 1 of the Appendix.

As an alternative, the abutments may be supported on steel tube piles (12-3/4" X 1/4") driven into the desiccated crust to elevation 795. The piles must not be driven below this elevation as undrained shear strength decreases with depth. A safe design load of 25 tons per pile should be assumed for design purposes. Any horizontal loading should be resisted by battered piles.

## 5.4 Settlements

Total short and long term settlements of approximately 2 inches at the abutments and 1-1/2 inches at the center pier are anticipated. The structure design should however accommodate differential settlements of up to 1 inch.

### 5.5 Dewatering

No dewatering problems are anticipated due to the relatively impervious nature of the upper layers of the subsoil.

### 5.6 Approach Embankments

No stability problems are anticipated with embankment fills (24 ft.) if 2:1 slopes are employed. Cobbles exceeding 3" diameter should be removed from fill placed at locations through which piles have to be driven.


### 5.7 Frost Protection

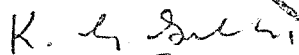
All pile caps or spread footings should be protected against frost action by a minimum 4 feet of cover.

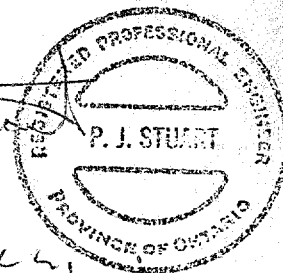
## 6. MISCELLANEOUS

The field work on the project was carried out July 4<sup>th</sup> to July 8<sup>th</sup>, 1975 under the supervision of Mr. R. Donnelly, Student Technician. This report was written by Mr. P.J. Stuart, Project Engineer and reviewed by Mr. K.G. Selby, Supervising Engineer.

The equipment used was owned and operated by Master Soils Investigation Limited.

  
P.J. STUART  
Project Engineer

  
K.G. SELBY  
Supervising Engineer



August 1975

# RECORD OF BOREHOLE No 1

W.P. 41-66-27 LOCATION Co-ord's 15,621,867 N; 1,220,434 ORIGINATED BY RD  
 DIST. 2 HWY. 402 BORING DATE July 4, 1975 COMPILED BY RD  
 DATUM Geodetic BOREHOLE TYPE Hollow Stem Augers & Tricone CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT $W_L$ PLASTIC LIMIT $W_P$ WATER CONTENT $W$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$W_P$	$W$	$W_L$		
802.8	Ground Level															
0.0	Silty Clay to clayey silt		1	SS	36	800										0 2 52 46
			2	SS	34											
			3	SS	38											
	Very stiff to Hard		4	SS	32											
			5	SS	20	790										
			6	TW	PH											
			7	SS	22											
						780										
			8	SS	27	770										
766.8	Sandy silt to silty sand															
36.0			9	SS	85	760										0 3 94 3
	Very Dense		10	SS	98											
			11	SS	117	750										0 86 (14)
747.5			12	SS	100 1/4"											
55.3	End of Borehole Note - W.L. not established															

## ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

## RECORD OF BOREHOLE NO 2

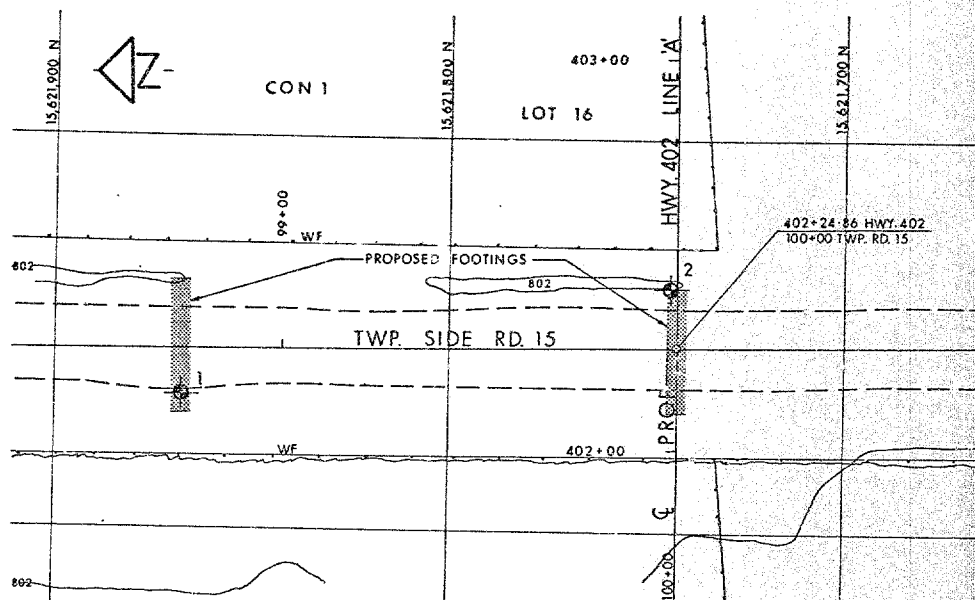
W.P. 41-66-27 LOCATION Co-o-d's 15,621,743 N; 1,220,462 E. ORIGINATED BY RD  
 DIST. 2 HWY. 402 BORING DATE July 8/75 COMPILED BY RD  
 DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger & Tricone CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT $W_L$ PLASTIC LIMIT $W_P$ WATER CONTENT $W$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$W_P$	$W$	$W_L$		
802.5	Ground Level						1000		2000			10	20	30	P.C.F.	GR. SA. SI. CL.
0.0	Silty clay to clayey silt		1	SS	40	800										
			2	SS	43											
			3	SS	47											
			4	SS	23											
	Stiff to Hard		5	TW	PH	790										
			6	SS	28											
						780										
			7	SS	27											
						770										
766.5			8	SS	199	11"										
36.0	Sandy silt to silty sand		9	SS	100	6"										
			10	SS	171											
	Very Dense					750										
			11	SS	100	5"										
						740										
			12	SS	131											
						730										
726.7			13	SS	100	4"										
75.8	End of Borehole															

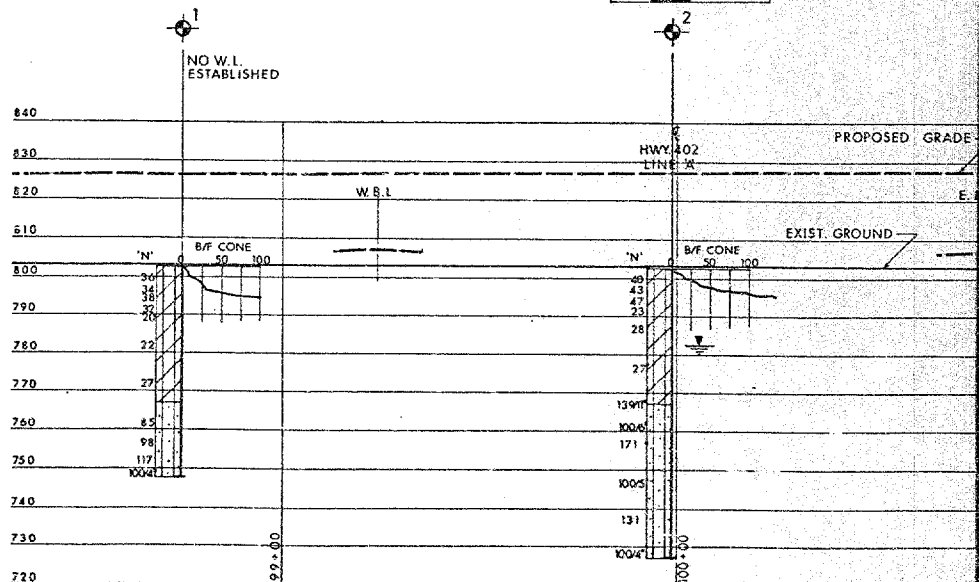
# RECORD OF BOREHOLE NO 3

W.P. 41-66-27 LOCATION Co-ord's 15,621,618 N; 1,220,428 E. ORIGINATED BY RD  
DIST. 2 HWY. 402 BORING DATE July 7/75 COMPILED BY RD  
DATUM Geodetic BOREHOLE TYPE Hollow Stem Augers & Tricone CHECKED BY

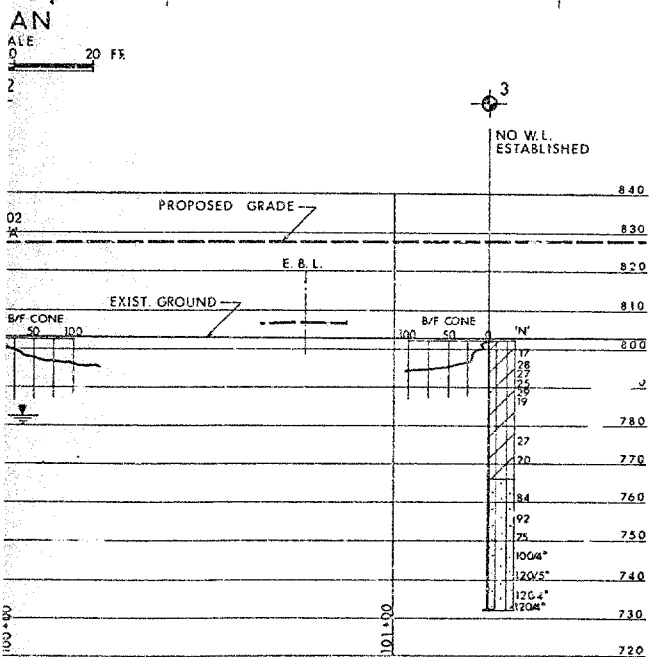
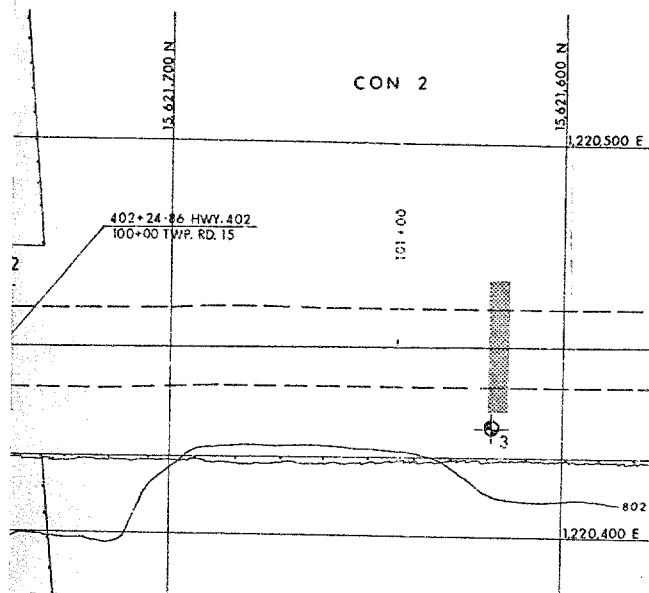
SOIL PROFILE			SAMPLES			GROUND WATER ELEV.	DYNAMIC CONE PENETRATION RESISTANCE PLOT				LIQUID LIMIT — $w_L$ PLASTIC LIMIT — $w_p$ WATER CONTENT — $w$			UNIT WEIGHT $\gamma$	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	$w_p$	$w$	$w_L$	
802.2	Ground Level														
0.0	Silty clay		1	SS	17	800									
	to clayey		2	SS	28										
	silt		3	SS	27										
	Very stiff to hard		4	SS	25	790									
			5	SS	29										
			6	SS	19										0 2 53 45
			7	TW	PH	780									
			8	SS	27										
			9	SS	20	770									
766.2															
36.0	Sandy silt		10	SS	84	760									0 32 64 4
	to silty sand		11	SS	92										
	Very Dense		12	SS	75	750									0 85 (15)
			13	SS	100	740									
			14	SS	120	740									
			15	SS	120	740									
731.9			16	SS	120	740									0 83 (17)
70.3	End of Borehole														
	Note: W.L. not established														



PLAN  
SCALE  
0 20 FT

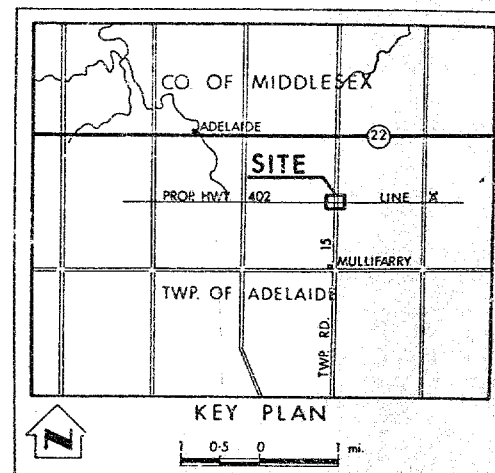


PROFILE  
SCALE  
0 20 FT



FILE  
ALE  
0 20 FT.

REF: E-5379-1 APR. 1975



LEGEND			
	Bore Hole		
	Dynamic Cone Penetration Resistance Test B/F CONE - Blow/Ft. Cone Test (3500 lbs. energy/blow)		
	Bore Hole & Cone Test		
	Water Levels established at time of field investigation, JULY 1975 NO W.L. Established B.H. 1 & 3		
NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	802-8	15,621,867	1,220,434
2	802-5	15,621,743	1,220,462
3	802-2	15,621,618	1,220,428

#### NOTE: FOR CONTRACT DOCUMENTS

The complete foundation investigation report for this structure may be examined at the Structural Office and Foundations Office, Downsview, and at the LONDON District Office.

#### NOTE

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

#### LEGEND:

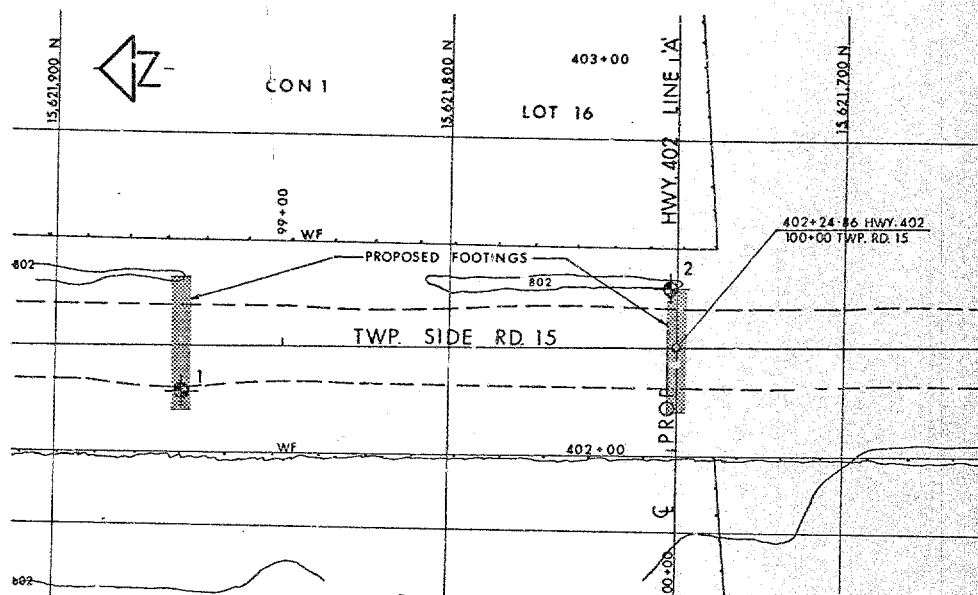
SILTY CLAY TO CLAYEY SILT  
Very Stiff to Hard

SANDY SILT TO SILTY SAND  
Very Dense

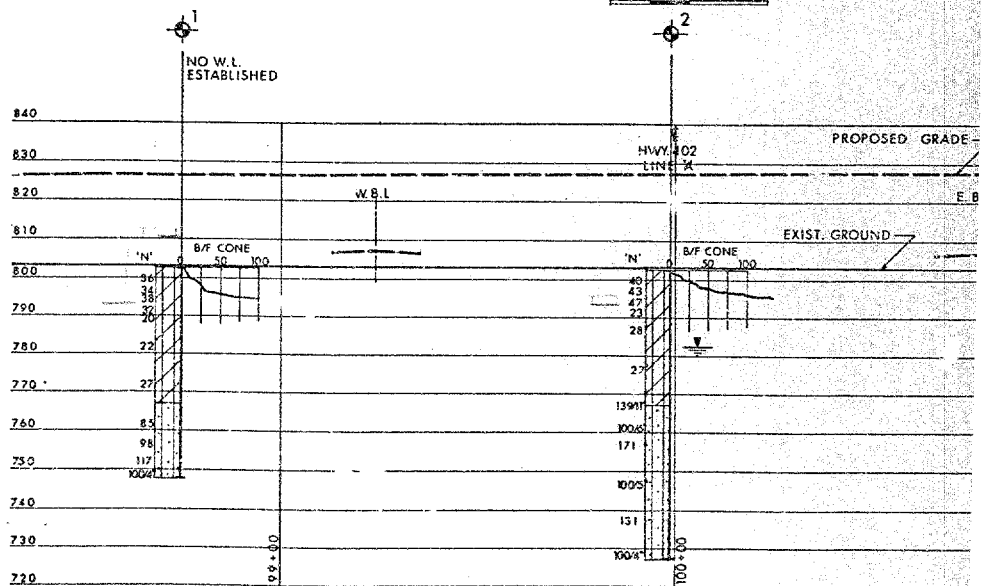
REVISIONS	DATE	BY	DESCRIPTION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS—ONTARIO ENGINEERING SERVICES BRANCH—GEOTECHNICAL OFFICE—SOIL MECHANICS SECTION			
PROPOSED CROSSING TOWNSHIP RD. 15 PROP HWY. NO. 402 LINE 'A'			
HIGHWAY NO. 402	CO. MIDDLESEX		DIST. NO. 2
TWP. ADELAIDE	LOT 15 & 16		CON. 1 & 2
BORE HOLE LOCATIONS & SOIL STRATA			
SUBMD P.S.	CHECKED	W.P. NO. 41-66-27	DRAWING NO.
DRAWN	CHECKED	W.O. NO.	416627-A
DATE 31 JULY 1975	SITE NO. 19-521		BRIDGE DRAWING NO.
APPROVED	CONT. NO.		

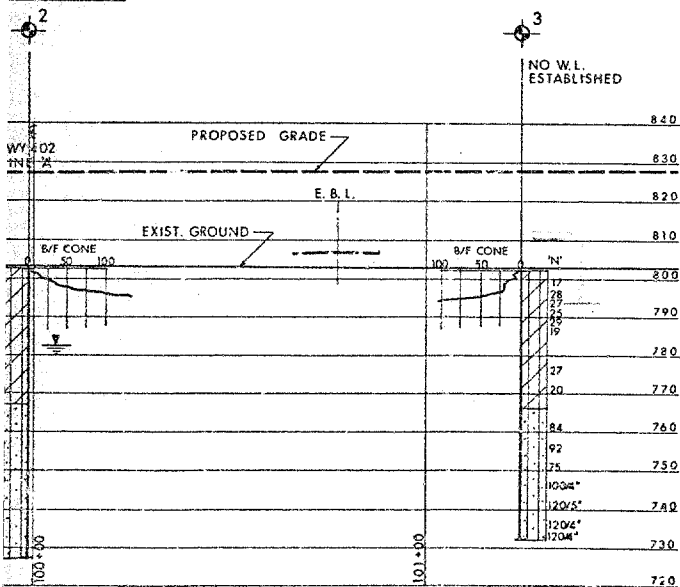
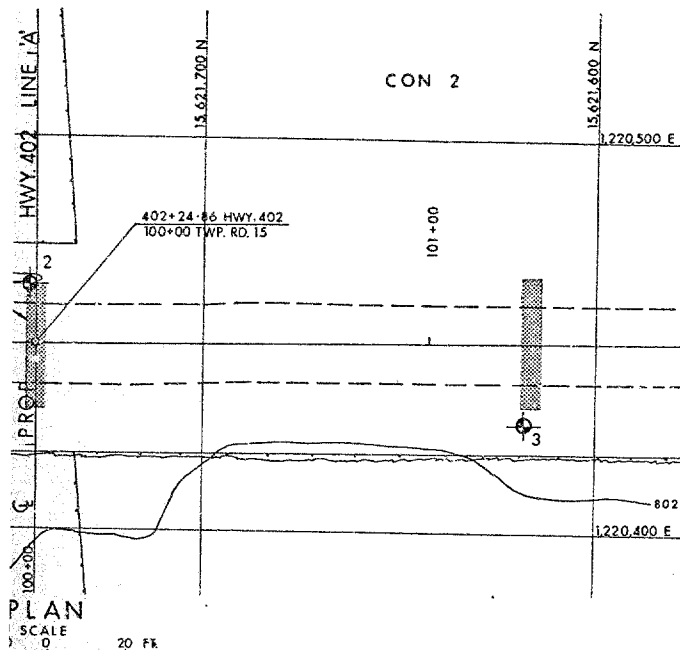




PLAN  
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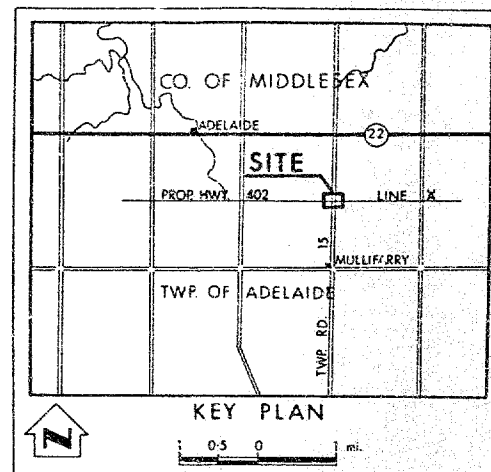
PROFILE  
SCALE  
20 0 20 FT



LEGEND:

SILTY CLAY TO CLAYEY SILT  
Very Stiff to Hard

SANDY SILT TO SILTY SAND  
Very Dense



LEGEND			
	Bore Hole		
	Dynamic Cone Penetration Resistance Test B/F CONE - Blows/Ft. Cone Test (350 ft. lbs. energy/blow)		
	Bore Hole & Cone Test		
	Water Levels established at time of field investigation, JULY 1975 NO W.L. Established B.H. 1 & 3		
NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1.	802.8	15,621,867	1,220,434
2.	802.5	15,621,743	1,220,462
3.	802.2	15,621,618	1,220,428

NOTE: FOR CONTRACT DOCUMENTS  
The complete foundation investigation report for this structure may be examined at the Structural Office and Foundations Office, Downsview, and at the LONDON District Office.

— NOTE —  
The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

REVISIONS		DATE		BY	DESCRIPTION
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS—ONTARIO ENGINEERING SERVICES BRANCH—GEOTECHNICAL OFFICE—SOIL MECHANICS SECTION					
PROPOSED CROSSING TOWNSHIP RD. 15 PROP. HWY. NO. 402 LINE 'A'					
HIGHWAY NO. 402		DIST. NO. 2			
CO. MIDDLESEX					
TWP. ADELAIDE		LCT 15 & 16 CON. 1 & 2			
BORE HOLE LOCATIONS & SOIL STRATA					
SUBMD P.S.	CHECKED	W.P. NO. 41-66-27	DRAWING NO.		
DRAWN	CHECKED	W.D. NO.	416627-A		
DATE 31 JULY 1975	SITE NO. 19-521	BRIDGE DRAWING NO.			
APPROVED	CONT. NO.				

REF: E-5379-1 APR. 1975



## Memorandum

To: Mr. K. G. Selby  
Supervising Engineer  
Soil Mechanics Section  
West Bldg., Downsview

From: Structural Planning Office  
Southwestern Region

Attention:

Date: June 17, 1976

Our File Ref.

In Reply to

Subject: W.P. 41-66-27, Bridge Site 19-521  
Sideroad Underpass  
2.3 miles west of Hwy. 81 (north of Strathroy)  
Highway 402  
District 2, London

On March 26, 1976, you verbally confirmed that a proposed culvert behind the south abutment should be a minimum of 12' from nearest footing to pile.

Enclosed is a sketch prepared by De Leuw Cather showing the relative location of the proposed culvert. On the preliminary drawing a vertical pile is shown closer to the culvert than the battered piles. Please confirm with Structural Office.

May we have your comments regarding any adverse effects this culvert may have on the structure.

S. Jants  
Structural Planning Supervisor

SJ:sm  
Enc.

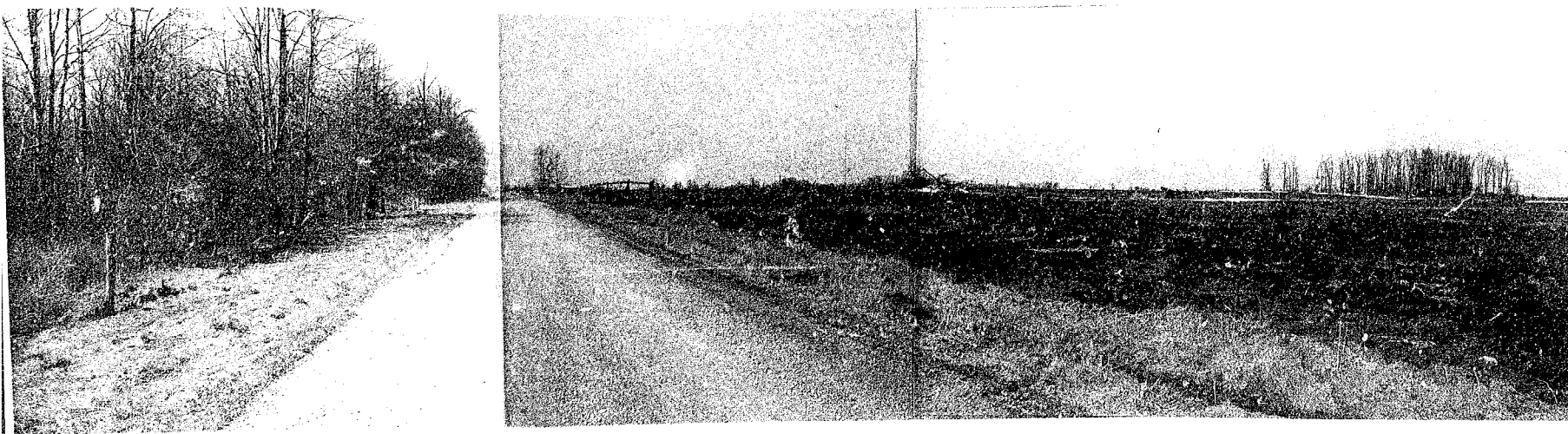




looking east



looking west



General view of site looking north

DOCUMENT WHICH CANNOT BE REPRODUCED

GEOCRES No. 41-13-39

DIST. 2 REGION SOUTHWESTERN

W.P. No. 41-66-27

CONT. No. 76-122

W. O. No. \_\_\_\_\_

STR. SITE No. 19-521

HWY. No. \_\_\_\_\_

LOCATION PROPOSED CROSSING OF

HWY. 402 AND ADELAIDE TWP. RD.

(2.3 MI W OF HWY. 81)

OVERSAMPLING TO BE DONE TO THE REPORT 4

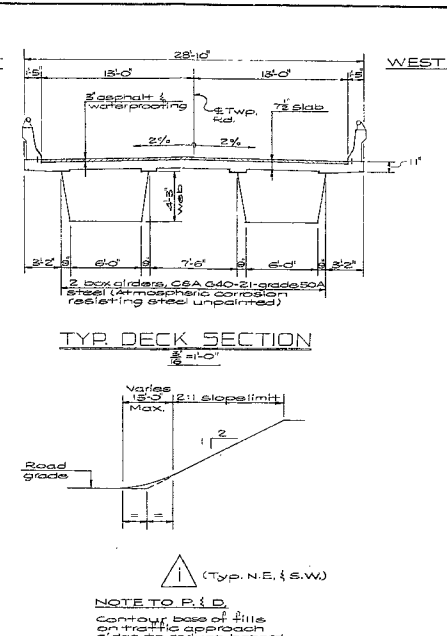
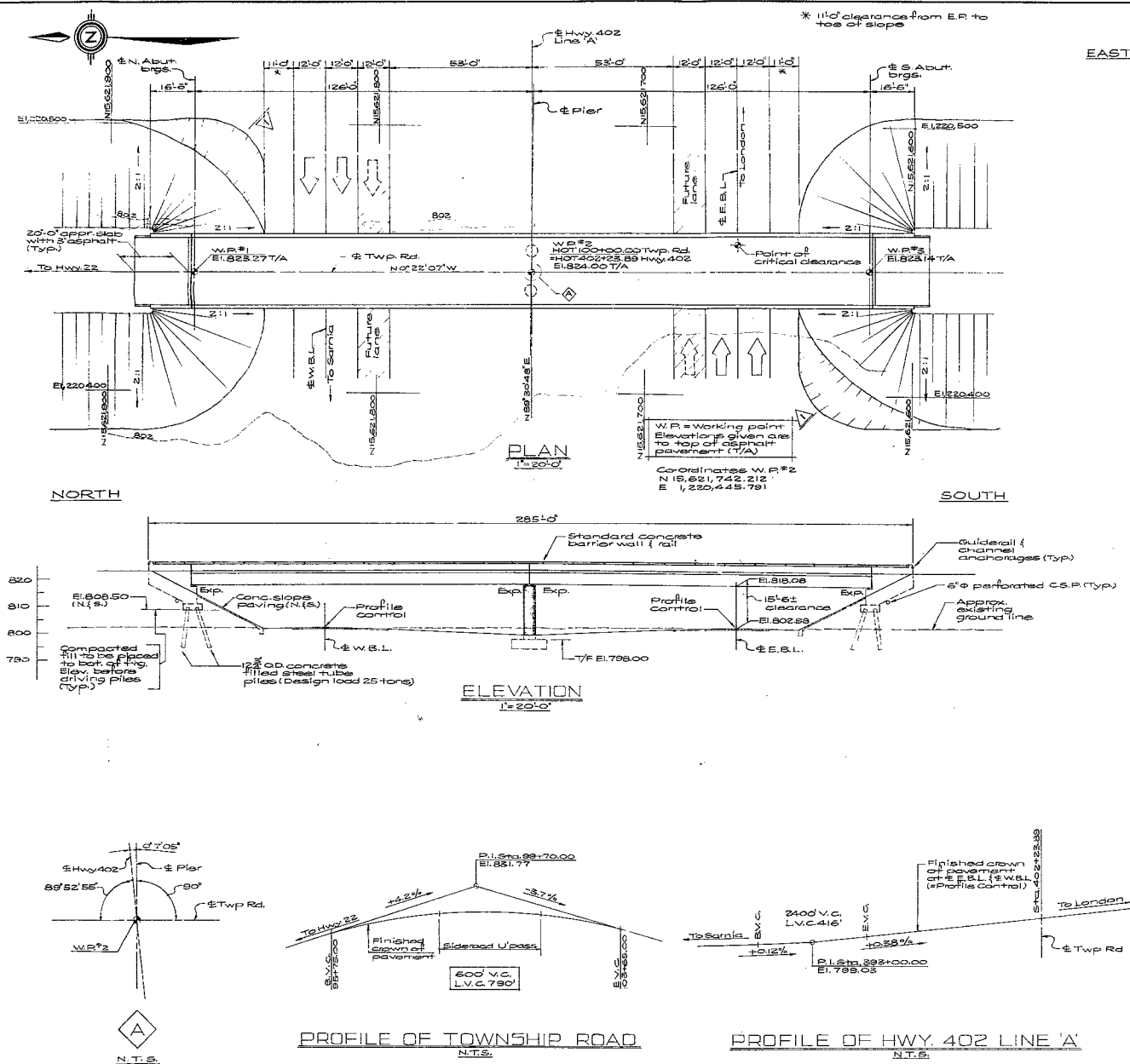
REMARKS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, OTTAWA, ONTARIO, CANADA



- NOTE TO P.I.D.  
Contours base of fill on traffic approach slopes to reduce hazard to traffic.
- LIST OF DRAWINGS
- 19-521-1 General Plan
  - 2 Borehole Location & Soil Strata
  - 3 Foundation Layout
  - 4 Abutments
  - 5 Pier
  - 6 Structural Steel
  - 7 Bearings
  - 8 Deck
  - 9 Concrete Barrier Wall
  - 10 Steel Parapet Railing
  - 11 20 Ft. Approach Slab
  - 12 Details of Conc. Slope Paving
  - 13 Standard Details I
  - 14 Standard Details II
  - 15 Standard Details III
  - 16 As Constructed Elev. & Dim.

40113-39

DIST. No. 2

CONT No  
WP No 41-56-27

SIDEROAD UNDERPASS  
2.3 miles west of Hwy 402

GENERAL PLAN

SHEET

NOTES

Class of Concrete

Deck & barrier walls 4000 P.S.I.

Pier columns 4000 P.S.I.

Remainder 3000 P.S.I.

Or as noted on drawings

Clear Cover on Reinf. Steel

Footings 5"

Abutts & pier columns 3"

Deck 2" top; 1" bot.

Barrier walls 15"

Approach slabs 2"

Or as noted on drawings

Construction Notes

The Contractor is responsible for finishing the bearing seats dead level to the specified elevations with a tolerance of  $\pm 3/8"$ .

No concrete shall be placed above the abutment bearing seats until concrete in the deck has been placed.

Reinforcing Steel

Grade 60 is required for some of the deck reinforcing steel as identified on the deck drawing & re-bar schedule.

CONCRETE QUANTITIES

Concrete quantities are listed below for the appropriate concrete lump sum tender items:

Concrete in pier, abutts 4000 P.S.I. 24 C.Y.

Wingwalls 3000 P.S.I. 80 C.Y.

Concrete in deck 3000 P.S.I. 188 C.Y.

Concrete in barrier walls 3000 P.S.I. 50 C.Y.

Concrete in approach slabs 3000 P.S.I. 33 C.Y.

Concrete in slope paving 3000 P.S.I. 30 C.Y.

STRUCTURAL STEEL QUANTITIES

Total 136 tons

B.M. 802.08

Geodetic Datum

N.T.S. in E. root of 1" maple

374 LT 40113-39

RECEIVED  
JAN 06 1977  
A. KOTZEPF  
PROFESSOR OF CIVIL ENGINEERING

FOR REDUCED PLAN

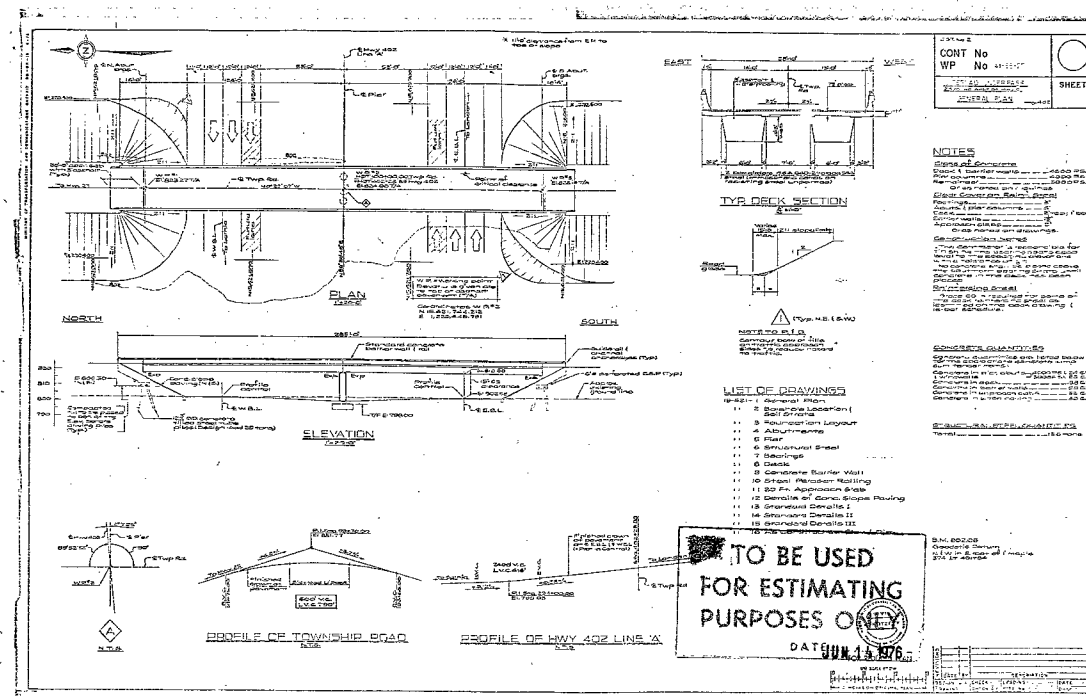
USE SCALE BELOW

10 11 12 13

1"=3 INCHES ON ORIGINAL PLAN

REVISIONS

DATE	BY	DESCRIPTION
DESIGN	A. K.	LOADING HW-20-44
DRAWING	C.C.	CHECK A. K. SITE No 19-521 DWG 1

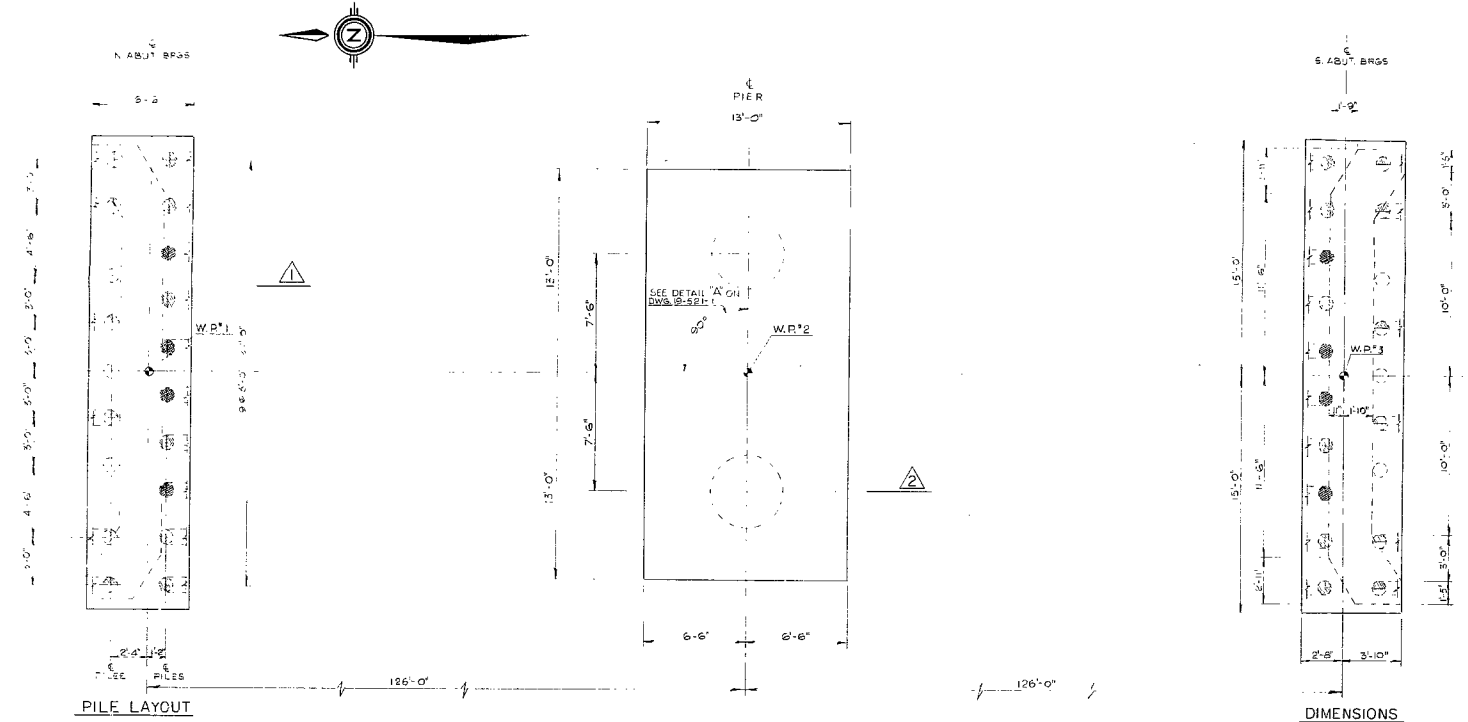




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40113-39

DIST. No 2		
CONT No		
WP No 41-66-27		
SIDEROAD UNDERPASS		SHEET
FOUNDATION LAYOUT		



LEGEND

- PILE BATTERED 3:1
- PILES BATTERED 5:1
- PILE BATTERED 8:1
- PILES DRIVEN VERTICALLY

NOTES:

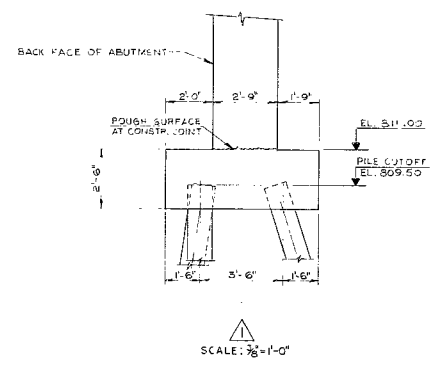
- DIMENSIONS AND PILE LAYOUT SIMILAR FOR 23TH ABUTMENT FOOTINGS.
- ABUTMENT PILE SPACING TO BE MEASURED AT UNDER SIDE OF FOOTING.
- ALL PILES ARE 12 3/4" O.D. x 0.25" WALL THICKNESS STEEL TUBE PILES.
- TUBE PILES TO BE FILLED WITH 3000 P.S.I. CONCRETE AFTER INSTALLATION AND INSPECTION.
- PILES TO BE DRIVEN IN ACCORDANCE WITH SS3-11 USING DESIGN LOAD 25 TONS/PILE BUT NOT BELOW EL. 755 WITHOUT APPROVAL OF THE ENGINEER.

PILES SUPPLIED			
LOCATION	NO	LENGTH	TYPE
N. ABUTMENT IS	15	0'-0"	12 3/4" x 25" WALL THICKNESS
S. ABUTMENT IS	16	0'-0"	STEEL TUBE PILES

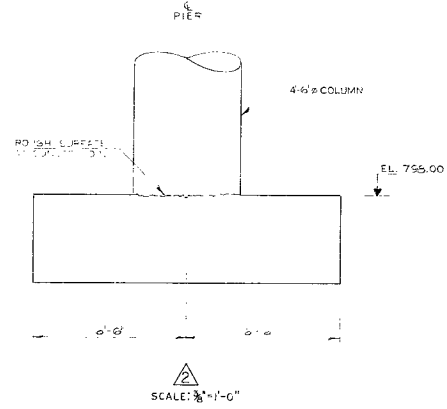
CONCRETE QUANTITY IN TUBE PILES — IS C.Y.

PILE LAYOUT  
SCALE: 1/8" = 1'-0"

DIMENSIONS  
SCALE: 1/8" = 1'-0"



SCALE: 3/8" = 1'-0"



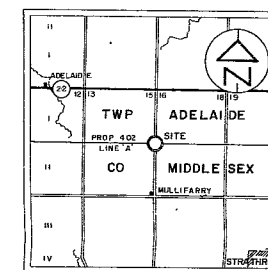
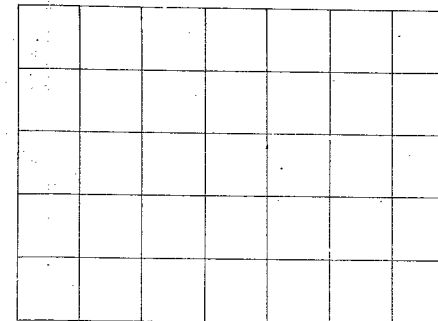
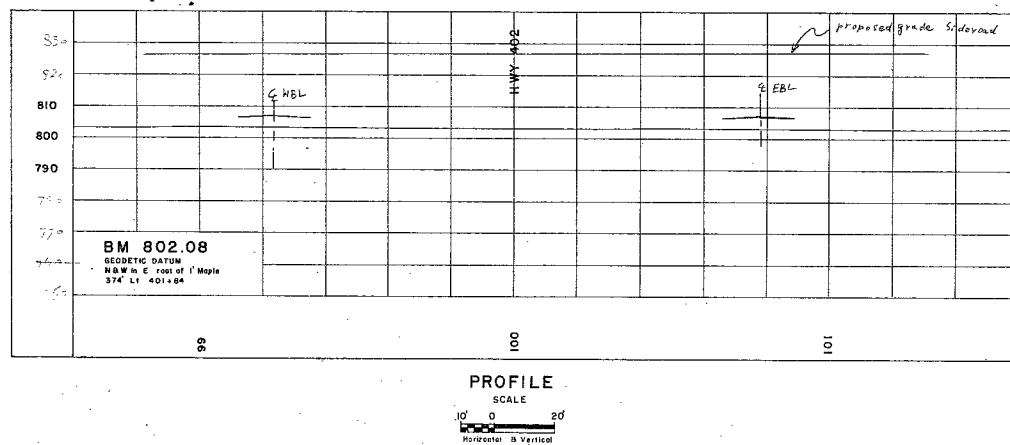
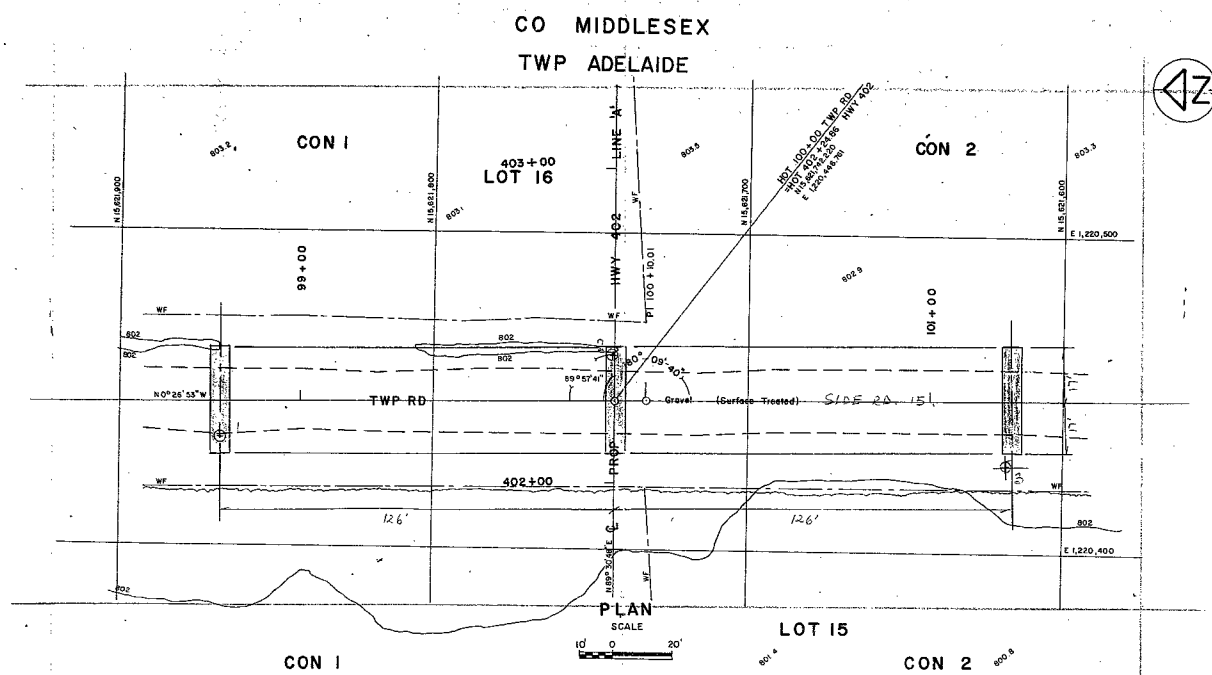
SCALE: 3/8" = 1'-0"



FOR REDUCED PLAN  
USE SCALE BELOW  
10 12 13  
1 2 3  
1/4 3/8 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 2 3/4 3 3 1/4 3 1/2 3 3/4 4 4 1/4 4 1/2 4 3/4 5 5 1/4 5 1/2 5 3/4 6 6 1/4 6 1/2 6 3/4 7 7 1/4 7 1/2 7 3/4 8 8 1/4 8 1/2 8 3/4 9 9 1/4 9 1/2 9 3/4 10  
1/4 3/8 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 2 3/4 3 3 1/4 3 1/2 3 3/4 4 4 1/4 4 1/2 4 3/4 5 5 1/4 5 1/2 5 3/4 6 6 1/4 6 1/2 6 3/4 7 7 1/4 7 1/2 7 3/4 8 8 1/4 8 1/2 8 3/4 9 9 1/4 9 1/2 9 3/4 10  
1/4 3/8 1/2 3/4 1 1 1/4 1 1/2 1 3/4 2 2 1/4 2 1/2 2 3/4 3 3 1/4 3 1/2 3 3/4 4 4 1/4 4 1/2 4 3/4 5 5 1/4 5 1/2 5 3/4 6 6 1/4 6 1/2 6 3/4 7 7 1/4 7 1/2 7 3/4 8 8 1/4 8 1/2 8 3/4 9 9 1/4 9 1/2 9 3/4 10

REVISION	DATE	BY	DESCRIPTION
DESIGN	1/11/77	A.K.	CHECK 75 LOADING 11520 44
DRAWING	2/1/77	A.K.	CHECK 44 SITE No 19-521 DWG 3

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, OTTAWA



KEY PLAN

0.5mi 0 1.0mi

SCALE

WP 41-66-27

DATE	REVISIONS & ADDITIONS	BY	CHKD
6/75	Change Revised & Co-ordinate Grid Added	J. Lammie	G. Hoare

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS  
ONTARIO  
DESIGN DIVISION - DESIGN SERVICES BRANCH  
ENGINEERING SURVEYS OFFICE

BRIDGE SITE  
PROPOSED CROSSING  
AT  
TOWNSHIP ROAD 15  
AND  
PROP KING'S HWY 402 LINE 'A'

LOT 15 & 16 TWP ADELAIDE CON 182 CO MIDDLESEX

SCALE AS SHOWN DISTRICT 2 LONDON REGION SOUTHWESTERN

WP 41-66-01 Date of Survey Plan 3/75 4/75 SITE No 19-521

SURVEY BY Chief of Party R. DAVIDSON Supervisor D. R. FUSEE DRAWN BY Draftsman S. LAROCHE Supervisor G. HOARE

CHECKED BY Draftsman G. HOARE Supervisor G. HOARE

PLAN E-5379-1



40113-39