

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

30M5-101

PROCESS No.

TO: G.C.E. Burkhardt (3)
Regional Structural Planning Engineer
Central Region
3501 Dufferin St., Downsview

FROM: Soil Mechanics Section
Geotechnical Office
West Bldg.

ATTENTION:

DATE: January 30, 1976

OUR FILE REF.

IN REPLY TO

FEB 10 1976

SUBJECT:

FOUNDATION INVESTIGATION REPORT

For

W.P. 125-66-02 & 03
Site 10-275
QEW District 4
Dorval Drive Underpass
0.4 miles West of Kerr St. Interchange

Attached we are forwarding to you our detailed Foundation Investigation Report on the subsoil conditions existing at the above mentioned site.

We believe that the factual data and recommendations contained therein will prove adequate for your requirements. Should additional information be required, please do not hesitate to contact our Office.

K.G. Selby

K.G. Selby
Supervising Engineer

KGS/bp

cc: R.S. Pillar Files
C.S. Grebski Record Services
B.J. Giroux
G.A. Wrong
M.R. Ernesaks
D. Gunter
C.R. Robertson

R. Hore
A.E. McKim
J. Anderson)
R. Fitzgibbon) Memo only
G. Sloan)

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FOUNDATION INVESTIGATION REPORT

For

W.P. 125-66-02 & 03

Site 10-275

QEW District 4

Dorval Drive Underpass

0.4 miles West of Kerr St. Interchange

1. INTRODUCTION

This report is to provide information for the design and construction of the structure and its approaches proposed for the above mentioned site. It will also deal with a proposed retaining wall which will run parallel to the South Service Road in the southwest quadrant of the Q.E.W. Dorval Drive interchange.

The subsoil information is based on 12 sampled boreholes from three of which cored samples of shale bedrock were obtained. Seven dynamic cone penetration tests were also carried out.

2. SITE DESCRIPTION

The proposed site is in the Town of Oakville approximately 0.4 miles west of the Kerr St. and Q.E.W. interchange. The area south of the Q.E.W. is occupied by light industry while to the north the countryside is still undeveloped. The land in the area is gently rolling with a general gradient to the south toward Lake Ontario.

3. SUBSOIL

The subsoil consists of 8 to 12 feet of glacial till overlying shale bedrock.

The till material is largely granular in nature, but in the area north of the Q.E.W. and in pockets elsewhere contains sufficient clayey silt to cause it to act as a plastic soil. Grain size distribution is shown as an envelope in Fig. 1 of the appendix. Gravel content generally ranges from 30 to 50 per cent with numerous cobbles and boulders also being found, especially in the area south of the highway. Standard Penetration 'N' values vary from less than 10 to in excess of 100 blows per foot. This is partially due to variations in

soil density which ranges from loose to very dense and partially due to the split-spoon contacting cobbles and boulders.

The shale bedrock is red with occasional grey green seams and may be characterized as being severely to moderately weathered.

No groundwater was encountered in the boreholes during field operations.

4. DISCUSSION AND RECOMMENDATIONS

(4.1) Discussion

Dorval Drive will pass over the Q.E.W. on a two span structure with each span being 115 feet in length. Approach embankments will be approximately 20 feet in height.

Due to the grade difference between the South Service Road and W-N.S. ramp a retaining wall will be required in the southwest quadrant of the interchange.

(4.2) Spread Footings

The structure may be founded on spread footings within the shale bedrock with a loading of 10 tons per sq. ft. Suitable founding elevations are listed below.

North Abutment	-	366.0
Centre Pier	-	362.0
South Abutment	-	362.0

(4.3) Perched Abutments

As an alternative the structure may be built with perched abutments supported on steel H-piles driven to bedrock. In this case it is estimated that these piles will achieve their allowable structural capacity at elevation 364 ± for the north abutment and elevation 360 ± for the south abutment.

(4.4) Retaining Wall

The retaining wall may be supported on spread footings founded in the Glacial Till overburden with a design loading of $2\frac{1}{2}$ tons per sq. ft. Resistance to sliding may be calculated using a coefficient of friction of .45 between the glacial till and the base of the footing. The founding elevation should be 358.0 between station 17+25 and 18+25, South Service Road, and at elevation 360.0 from station 18+25 to 20+25. Alternately the spread footings may be placed within the shale bedrock with a loading of 10 tons per sq. ft. In this case the founding elevation would be 350.0 from station 17+25 to 19+25, South Service Road, and at elevation 352.0 from station 19+25 to 20+25.

As an alternative the wall may be supported on steel H-piles driven to bedrock. These piles should achieve their allowable structural capacity at elevation $348 \pm$ between stations 17+25 and 19+25, South Service Road, and at elevation $351 \pm$ between stations 19+25 and 20+25.

(4.5) Approach Embankments

No stability problems are anticipated with embankment fills (20 ft) if 2:1 slopes are employed. If the abutments are perched in the fill, cobbles exceeding 3" in diameter should be removed from the fill in areas through which piles will have to be driven.

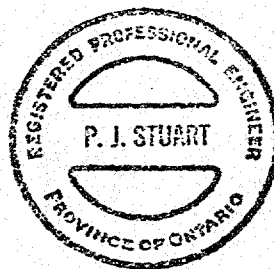
(4.6) General

The shale bedrock deteriorates rapidly on contact with air and water. For this reason a concrete working slab should be poured to protect the shale in the footing excavations as soon as possible after it is exposed.

For computation of sliding resistance a coefficient of friction of .45 may be assumed to apply between the base of the footing and the shale bedrock. If greater sliding resistance is required it should be obtained through the use of a key in the shale.

Backfill to the retaining wall should be in accordance with SD-4-58.
In this case K_a may be assumed to be .33.

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



A handwritten signature in black ink, appearing to read "Peter Stuart".

Peter Stuart, P. Eng.
Project Engineer

A handwritten signature in black ink, appearing to read "Ken Selby".

Ken Selby, P. Eng.
Supervising Engineer

APPENDIX

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO
ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 1

WP 125-66-02 LOCATION Co-ords. 786,312 N; 946,765 E. ORIGINATED BY PJS
DIST 4 HWY QEW BORING DATE December 17, 1975 COMPILED BY PJS
DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger & BXL 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 γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	w_p	w	w_L		
379.5	Ground Level															
0.0	Sand & gravel with silt, trace of clay (Glacial Till)		1	SS	8											
369.5	Loose															
10.0	(Red) Shale, severely to moderately weathered		2	SS	100	370										
363.5			3	BXL	90											
16.0	End of Borehole					360										

RECORD OF BOREHOLE NO 2

WP 125-66-02 LOCATION Co-ords. 786,271 N; 946,728 E. ORIGINATED BY PJS
 DIST 4 HWY QEW BORING DATE December 17, 1975 COMPILED BY PJS
 DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger 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 γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	w_p	w	w_L		
379.6	Ground Level															
0.0	Sand & gravel with silt, trace of clay (Glacial Till)		1	SS	6											
371.6	Loose		2	SS	80											
8.0	(Red) Shale, severely to moderately weathered		3	SS	88/6	370										
			4	SS	100/6	6"										
364.4			5	SS	75/2											
15.2	End of Borehole					360										

RECORD OF BOREHOLE No 3

[illegible]

15 ²⁰ 5 % STRAIN AT FAILURE

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 4

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT	LIQUID LIMIT ———— w_L	PLASTIC LIMIT ———— w_p	UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	N° VALUES		20 40 60 80 100	WATER CONTENT ———— w	WATER CONTENT %		
							SHEAR STRENGTH	$w_p \quad w \quad w_L$			
							O UNCONFINED + FIELD VANE				
							● QUICK TRIAXIAL x B VANE				
								10 20 30	% GR SA SI CL		
0.0	Gravel & sand, some silt, trace of clay, numerous boulders (Glacial Till) Very Dense		1	SS	80						35 46 (19)
376.7	(Red) Shale		2	SS	68						
13.0	End of Borehole		3	SS	100	6"					
						360					

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO
ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 5

WP 125-66-02 LOCATION Cs-ords. 786,188 N; 946,765 E. ORIGINATED BY PJS
 DIST 4 HWY QEW BORING DATE December 18, 1975 COMPILED BY PJS
 DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger 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 γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	W_p	W	W_L		
376.8	Ground Level															
0.0	Gravel & sand, some silt, trace of clay, numerous boulders (Glacial Till)		1	SS	10											
	Compact to Very Dense		2	SS	25.7	370										
			3	SS	82											
363.7	(Red) Shale		4	SS	100.8	360										
13.1	End of Borehole															

OFFICE REPORT ON SOIL EXPLORATION

OFFICE REPORT ON SOIL EXPLORATION

OFFICE REPORT ON SOIL EXPLORATION

RECORD OF BOREHOLE No 7

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT		LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w		UNIT WEIGHT γ	REMARKS		
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		SHEAR STRENGTH						WATER CONTENT % 10 20 30	
							○ UNCONFINED + "IF" D VANE ● QUICK TRIAXIAL x L&B VANE							
375.7	Ground Level													
0.0	Gravel & sand, some silt, trace of clay, numerous boulders (Glacial Till)		1	SS	50									
			2	SS	58.7									
	Compact to Very Dense		3	SS	24									
363.7	(Red) Shale		4	SS	15.7		No further progress with auger possible							
14.4	End of Borehole													

15 ϕ 5 % STRAIN AT FAILURE

RECORD OF BOREHOLE NO 8

WP 125-66-02 LOCATION Co-ords. 786,108 N: 946,836 E. ORIGINATED BY PJS
 DIST 4 HWY QEW BORING DATE December 21, 1975 COMPILED BY PJS
 DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger & BXL Core 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 γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	w_p	w	w_L		
376.0	Ground Level															
0.0	Gravel & sand, some silt, trace of clay, numerous boulders		1	SS	53	370										
	(Glacial Till)		2	SS	25/2											
	Very Dense		3	SS	79											
36.0																
12.0	(Red) Shale, severely to moderately weathered		4	BXL	90%	360										
359.6																
16.4	End of Borehole															

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO
ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 9

WP 125-66-03 LOCATION Co-ords. 785,672 N; 947,003 E. ORIGINATED BY PJS
DIST 4 HWY QEW BORING DATE December 18, 1975 COMPILED BY PJS
DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × 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 γ	REMARKS % GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	N' VALUES					
361.0	Ground Level									
0.0	Gravel & sand, some silt, trace of clay, numerous boulders (Glacial Till)		1	SS	19					43 38 (19)
353.0	Compact to Very Dense (Red) Shale		2	SS	100	8"				
350.5			3	SS	100	5"				
10.5	End of Borehole									

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS—ONTARIO
ENGINEERING SERVICES BRANCH—GEOTECHNICAL OFFICE—SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 10

WP 125-66-03 LOCATION Co-ords. 785,682 N; 946,913 E. ORIGINATED BY PJS
DIST 4 HWY QEW BORING DATE December 18, 1975 COMPILED BY PJS
DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger 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 γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	VALUES	20	40	60	80	100	w_p	w	w_L		
363.0	Ground Level														
0.0	Gravel & sand, some silt, traces of clay, numerous boulders (Glacial Till)		1	SS	63/9"										54 26 15 5
352.0	Dense to Very Dense		2	SS	45										
350.0	(Red) Shale		3	SS	100/9"										
13.0	End of Borehole		4	SS	100/5"										

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO
ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION

RECORD OF BOREHOLE NO 11

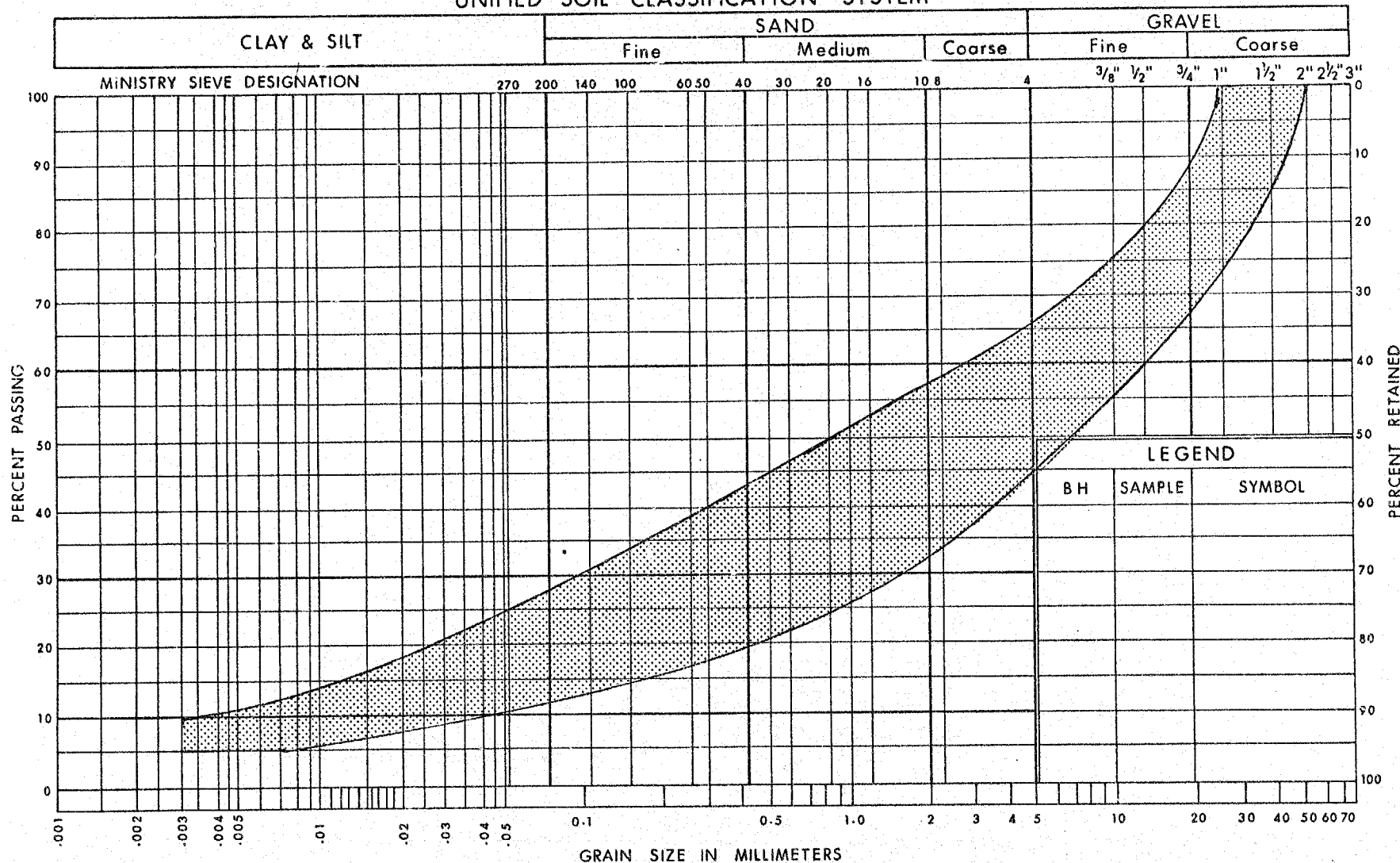
WP 125-66-03 LOCATION Co-ords. 785,668 N; 946,808 E. ORIGINATED BY PJS
DIST 4 HWY QEW BORING DATE December 23, 1975 COMPILED BY PJS
DATUM Geodetic BOREHOLE TYPE Hollow Stem Auger & BXL Core CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT					LIQUID LIMIT W_L PLASTIC LIMIT W_P WATER CONTENT W			UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20	40	60	80	100	W_P	W	W_L		
363.9	Ground Level															
0.0	Gravel & sand, some silt, trace of clay, numerous boulders (Glacial Till)		1	SS	103	360										
353.9	Very Dense		2	SS	50/2"											
10.0	(Red) Shale, severely to moderately weathered		3	BXL	90%	350										
349.6																
14.3	End of Borehole															

SOIL PROFILE			SAMPLES			GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT	LIQUID LIMIT ——— w_L	PLASTIC LIMIT ——— w_p	UNIT WEIGHT γ	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES		20 40 60 80 100	SHEAR STRENGTH	WATER CONTENT — w		
366.8	Ground Level										
0.0	Gravel & sand, some silt, trace of clay numerous boulders, (Glacial Till)		1	SS	8	"	Split spoon bouncing				35 18 33 14
355.8	Loose to Very Dense		2	SS	35.5	"					
354.0	(Red) Shale		3	SS	50.7	"					
12.8	End of Borehole		4	SS	67	"					48 27 21 4
			5	SS	90.4	"					
						350					

15 ²⁰ 5 % STRAIN AT FAILURE
10

UNIFIED SOIL CLASSIFICATION SYSTEM



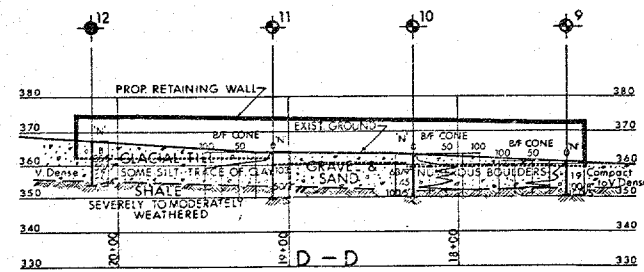
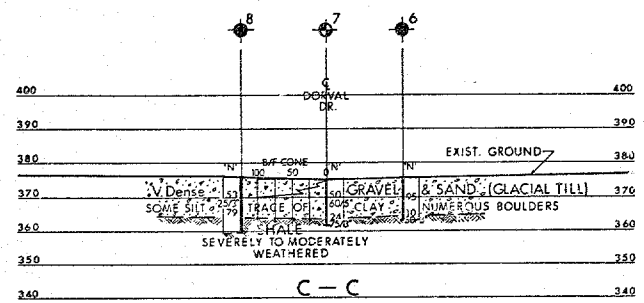
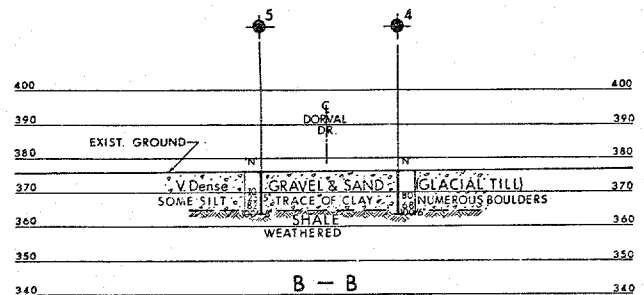
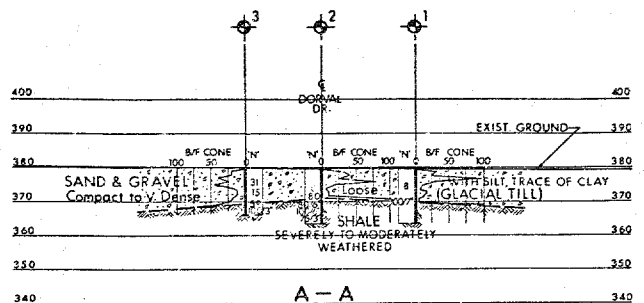
Ontario
ENGINEERING SERVICES BRANCH

Ministry of
Transportation and
Communications

GRAIN SIZE DISTRIBUTION
GRAVEL & SAND
SOME SILT TRACE OF CLAY NUMEROUS BOULDERS

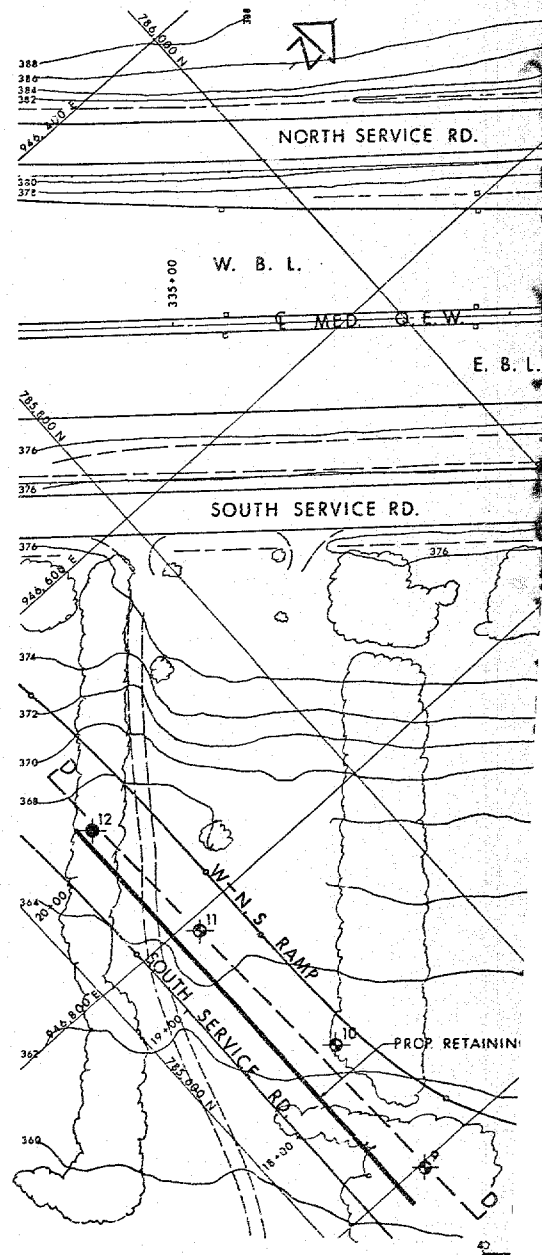
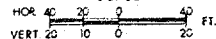
FIG No 1

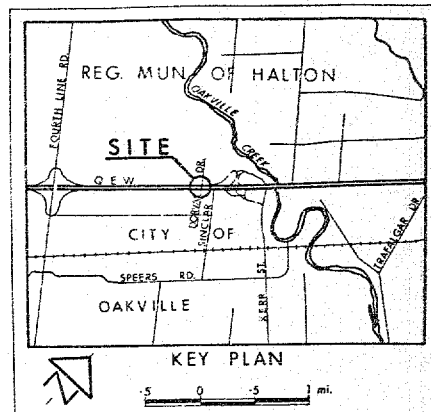
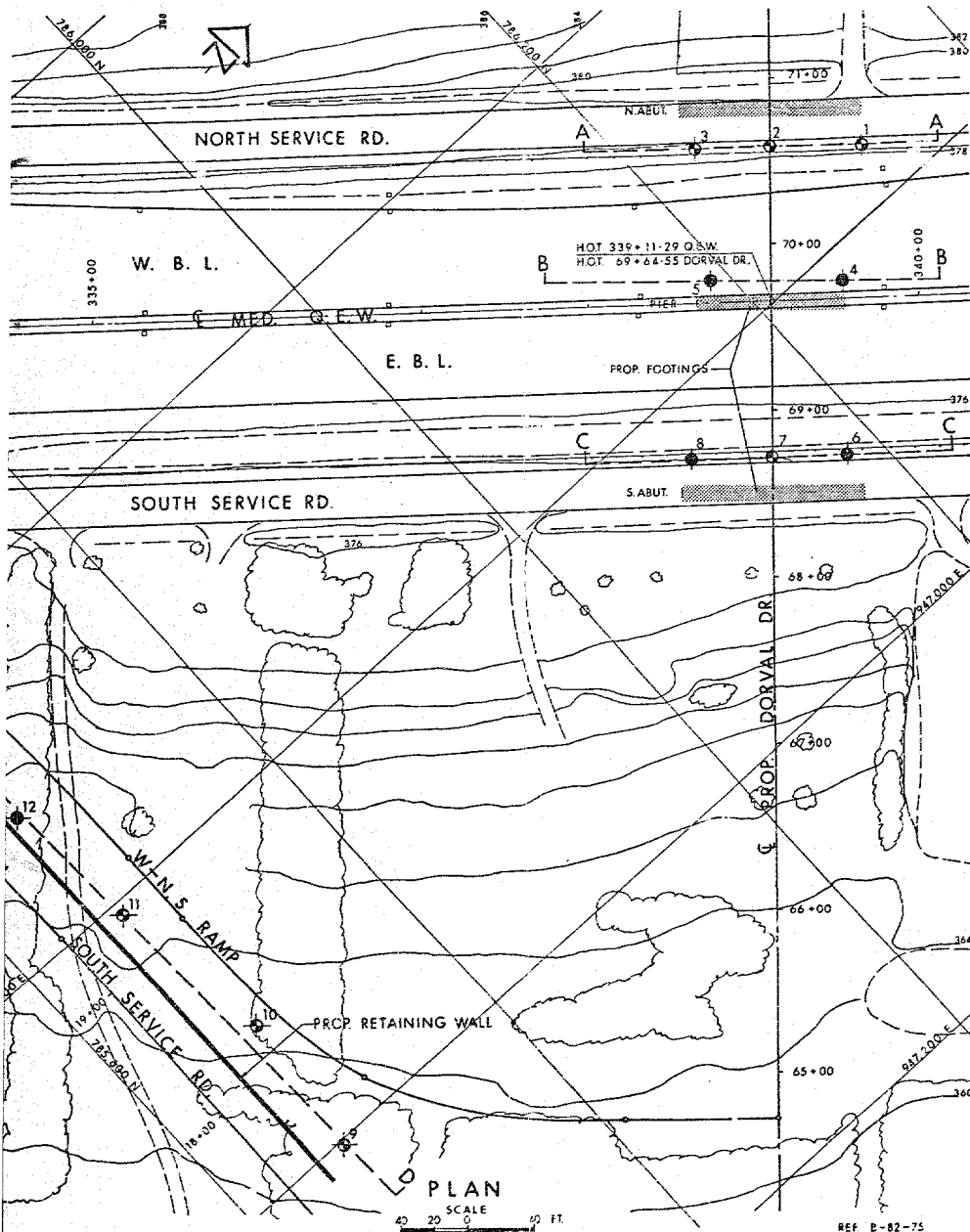
W P 125-66-02/03



SECTIONS

SCALE





LEGEND			
	Bore Hole		
	Dynamic Core Penetration Resistance Test B/F CONE: Blows/Ft. Cone Test (150 ft. lbs. energy/blow)		
	Bore Hole & Cone Test		
	Water Levels established at time of field investigation. NO Water Levels established		
NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	379.5	786,312	946,765
2	379.6	786,271	946,728
3	379.9	786,236	946,700
4	376.7	786,248	946,818
5	376.6	786,188	946,765
6	375.5	786,180	946,897
7	375.7	786,145	946,868
8	376.0	786,108	946,836
9	361.0	785,672	947,003
10	363.0	785,682	946,913
11	363.9	785,668	946,809
12	366.8	785,661	946,723

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

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 HAMILTON District Office.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS-ONTARIO ENGINEERING SERVICES BRANCH-GEOTECHNICAL OFFICE-SOIL MECHANICS SECTION			
Q.E.W. & DORVAL DR. AND RETAINING WALL			
HIGHWAY NO. <u>Q.E.W.</u>		DIST NO. <u>4</u>	
REG. MUNICIPALITY OF <u>HALTON</u>			
CITY OF <u>OAKVILLE</u>		LOT	CON
BORE HOLE LOCATIONS & SOIL STRATA			
SUBMD P.5	CHECKED	W.P. NO. 125-66-07&CS	TRAINING NO.
DRAWN O.E.I.	CHECKED		1256602 & 03A
DATE 4 FEB 1976		FILE NO. 10-275	BRIDGE DRAWING NO.
APPROVED		CONT. NO.	



Memorandum

To: Mr. D.A. Waller
Area Construction Engineer

From: Quality Assurance Section
Construction Office
Central Region

Attention:

Date: 1977 08 29

Our File Ref.

In Reply to

Subject: RE: Contract 77-73 Sewer outfalls
Stat. 25+00 and 36+00 Kerr Street

Further to our Site Meeting of August 26th 1977 attended by:-

D.A. Waller
J. Regan
R.E. Davis
P.F. Webber
E. Gray
K. Saarits

and the letter from Mr. P.F. Webber of 1977 08 19, the following is a Summary of our recommendations.

At approx. Stat. 36+00 Kerr St. a 36" to 42" sewer outfall has been constructed down the west bank of Oakville Creek with a drop of approx. 40 feet over a distance of approx. 78 feet.

A failure has now occurred in the backfill and it is apparent the the rock rubble used as shown in the drawings is still unstable and a further slippage could cause damage to the sewer and create enviornmental problems in the Oakville Creek.

In order to stabilize the slope it was agreed that an extension of approx. 5 feet would have to be added to M.H.9 and a rubble berm constructed on the bottom of sewer outfall backfill with the toe of slope beginning at the end of the sewer, rising to the top of the new elevation of M.H.9 and then gradually flattening towards the existing slope.

It was also agreed that some of the material between M.H.11 and M.H. 10 would be removed in order to decrease the load and some granular "A" placed on this portion to prevent erosion.

At Stat. 25+00 Kerr St. a 30" sewer outfall has been constructed with a drop of approx. 70 feet over a distance of 116 feet. At this time no major failure in the backfill has occured but there is some evidence of slippage.



To prevent a failure it was agreed that the last section of the outfall pipe should be extended by approx. 30 feet which would allow the water from the pipe to drop directly into the creek and prevent erosion of the outlet ditch.

It was also agreed that the top portion of the slope between M.H. 18 and M.H. 17 would be cut down to minimize loading of the backfill and top soiled and seeded.



K. Saarits
Regional Quality Assurance
Supervisor

KS:ja

For: R.P. Northwood
Head, Quality Assurance

c.c. J. Regan
R.E. Davis
P.F. Webber
E. Gray
M. Devata ✓
A. Barsvery

HEAD OFFICE REVIEW SUMMARY

BOARDROOMS E-1 and E-2
DOWNSVIEW M3M 1J8, Ontario

DATE: December 12, 1976

✓ W.P. ⁰²³ 125-66-01 CONTRACT 76-118 HIGHWAY QEW

TYPE OF WORK Grading, Drainage, Granular Base, Hot Mix Paving & Structures

LOCATION Dorval Dr. Interchange U'Pass 3.3 Miles East of Hwy 25

DISTRICT 4 ADVERTISING DATE December 1, 1976

ATTENDANCE

J.B. Wilkes	W. Greskow	J. Davidson	W. Berkis
R.S. Pillar	R.A. Verscheure	E. Cross	D. Thrasher
J.R. Wear	G. Wrong	W. Bennett	B. Giroux
E.J. Willis	K. Selby	J. Crannie	D. Mieh
			W. McFarlane

POINTS OF DISCUSSION

1. Disposal of excess material - Mr. Thrasher felt that S.W. Quadrant of Bronte Interchange exhibited a potential disposal area and Project Manager is requested to pursue for providing site.
2. Contingency arrangement should be reviewed in view of fact that Board Order from Railway Company is outstanding.
3. Although Mr. Crannie felt that sewer should be by Unit Price this office feels no action is necessary as Borings and Drawings would appear to satisfy current guidelines.
4. 'Unnecessary' work at sewer outlet on slope to Oakville Creek to be eradicated and allowance, in Sundry, for repairs after construction, to be reviewed.
5. Maintaining traffic on QEW - Timing to be revised
6. Underground utilities special provision accepted as read except that reference to "250' per working day" in 2nd para. should be deleted and replaced with "All excavation to be backfilled at day's end" and "Devices" in the last para. should be qualified.

EJW:kc

c.c. F.G. Allen	J. Crannie
M.R. Ernesaks	E.J. Willis
D. Gunter	M. Stoyanoff
C.R. Robertson	C. Grebski
R.C. Minaker	W.R. Bennett
J. Heffernan	R.S. Pillar
G. Wrong	P. McWatt
C. Mirza	
B. Giroux	

E. J. Willis
Supervisor
Contract Documentation

for:

J. R. Wear
Head
Contract Review Section





Memorandum

C. Miza
149

To: Mr. M. R. Ernesaks,
Regional Manager,
Regional Planning & Design,
Central Region, Toronto.

From: Structural Office,
West Building, Downsview.

Attention:

Date: October 14, 1976.

Our File Ref.

In Reply to

Subject: Dorval Drive Underpass,
W. P. 125-66-02, Site 10 275,
Highway Q.E.W., District 4.

The quantity calculations for the above project have now been completed.

Would you please arrange for your copy of the D4 to be updated as follows:

Tender Items

Item #2	Earth Excavation for Bridge Foundations	49 cu. yd.
Item #3	Rock Excavation for Bridge Foundations	49 cu. yd.
Item #7	Reinforcing Steel (Bridge)	171 ton
Item #8	Reinforcing Steel (Approach Slabs)	11 ton
Item #9	Mass Concrete	10 cu. yd.
Item #10	Concrete in Bridge Foundations	333 cu. yd.
Item #21	Asphalt Membrane Waterproofing	18,100 sq. ft.
Item #22	Form and Fill Grooves	930 l.f.

Materials Supplied by MTC to Contractor

Normal Portland Cement (Bridge)	1162 ton
Normal Portland Cement (Approach Slabs)	34 ton
Protection Board	19,910 sq. ft.
Steel Pins	28 pins

....2



In addition the approximate quantity of granular backfill is 1259 cu. yd. and total quantity of asphalt wearing surface on bridge deck and approach slabs is 412 ton.

Please also note the following data is submitted to the Estimating Section:

- (a) E.C.B. output for the reinforcing steel (Structure)
- (b) E.C.B. output for the reinforcing steel (Approach Slabs)
- (c) E.C.B. output for the concrete quantities.

REH/cf

R. E. Haynes
R. E. Haynes,
Structural Project Engineer.

c.c. J. Wear
C. Robertson
J. Kuprevicius
B. Giroux
A. McKim
G. Burkhardt
E. Van Beilen
C. Mirza
N. Zoltay.

Mr. W. H. Routers.
Planning and Design Office.
Central Region.

Mr. W. P. Greskow.

Materials and Testing Office
Central Region.

April 12, 1976

W. P. 125-66-01 Q.E.W., and Dorval Drive Interchange
Treatment of Existing and proposed fill area - Dorval Drive.

Following your request, and a field visit to the above site with Mr. J. Regan, Construction Supervisor, Hamilton District, a series of test holes were placed through the existing fill (Fig.2).

The results from these borings show that the fill material consists mainly of medium clay, with a mixture of limestone and weathered shale fragments. However, as shown in the log of test holes (Power Auger borings T.H. #3), this clay fill is underlain by layers of wood, concrete blocks, wire, topsoil - which can be described as some form of industrial waste.

A high moisture content and a lack of compaction were also evident in all of the test holes. Laboratory results of samples taken from the clay fill material indicated a maximum Field Moisture Content of 14.3%.

not very high

The encountering of this industrial waste type material led to a series of discussions with representatives from the Hamilton District Office, Foundation Office, and the Town of Oakville. Consequently, it was decided that the use of a back hoe should be employed to establish the limits of the waste material.

However, the test-pits (Fig.2) placed by the back hoe and the results did not drastically change the findings of the power auger borings, but a more precise measurement of the various layers could be obtained, and the industrial waste material was for the most part an isolated area which would not present any construction problems.

From the above findings, the following recommendation for the treatment of the existing fill area, and to accommodate the fill material from the Dorval Drive / C.N.R. Subway, Town of Oakville should be implemented.

*Peter: -
Please note and
advise if anything
not as you saw the
problem*

Kes



Cont'd...

*KAS
↓
Peter Stewart
↓
File*

1. Remove line of trees within existing fill area (Fig.2) and remove stumps by bulldozing.
2. The removing or excavation of existing fill, as anticipated, will not be necessary as consolidation over a period of at least one year prior to letting the Ministry's Contract will be sufficient to prevent differential settlement at a later date.
3. In the placing of new fill (fill material from the Dorval Drive/C.N.R. Subway are proposed Truck Inspection Station). It should be placed adjacent to existing fill with an 8' horizontal width keying-in or benching operation (Fig.1). This should also be done on the southerly limits of the existing fill).

A copy of the log of test holes and test pits are attached for your information.

Should additional information be required, please do not hesitate to contact this Office.


D. A. Mullett
Project Soils Supervisor

for

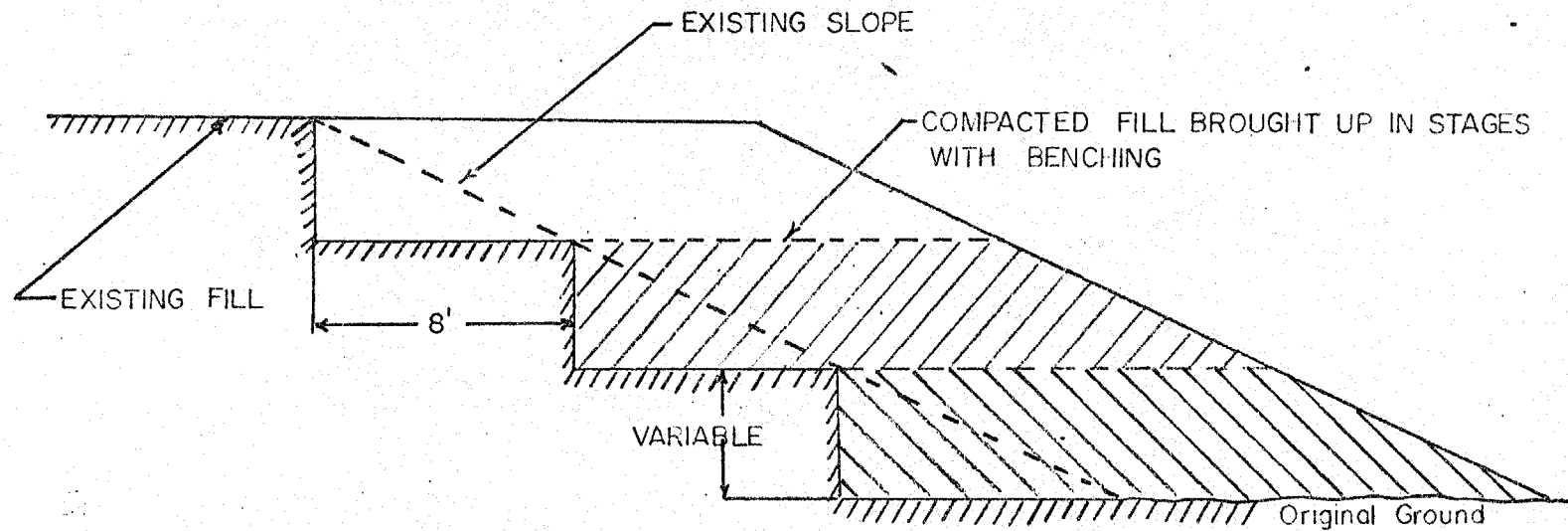
P. F. Weber.
Senior Soils Supervisor

DAM/PPW/ks

cc-D.A.Waller,Cons.Eng.Hamilton Dist.
C.Mirza., Foundation Office
B.Cannon, Director Public Works, Town of Oakville.

Att:

FIG. I



NOTE:

Benches are to be excavated one level at a time and the compacted fill brought up before the next benching level is excavated.

BENCHING
OF
EXISTING FILL
DORVAL DRIVE

W.P. 125-66-01
STATION 65+50 - 68+00±



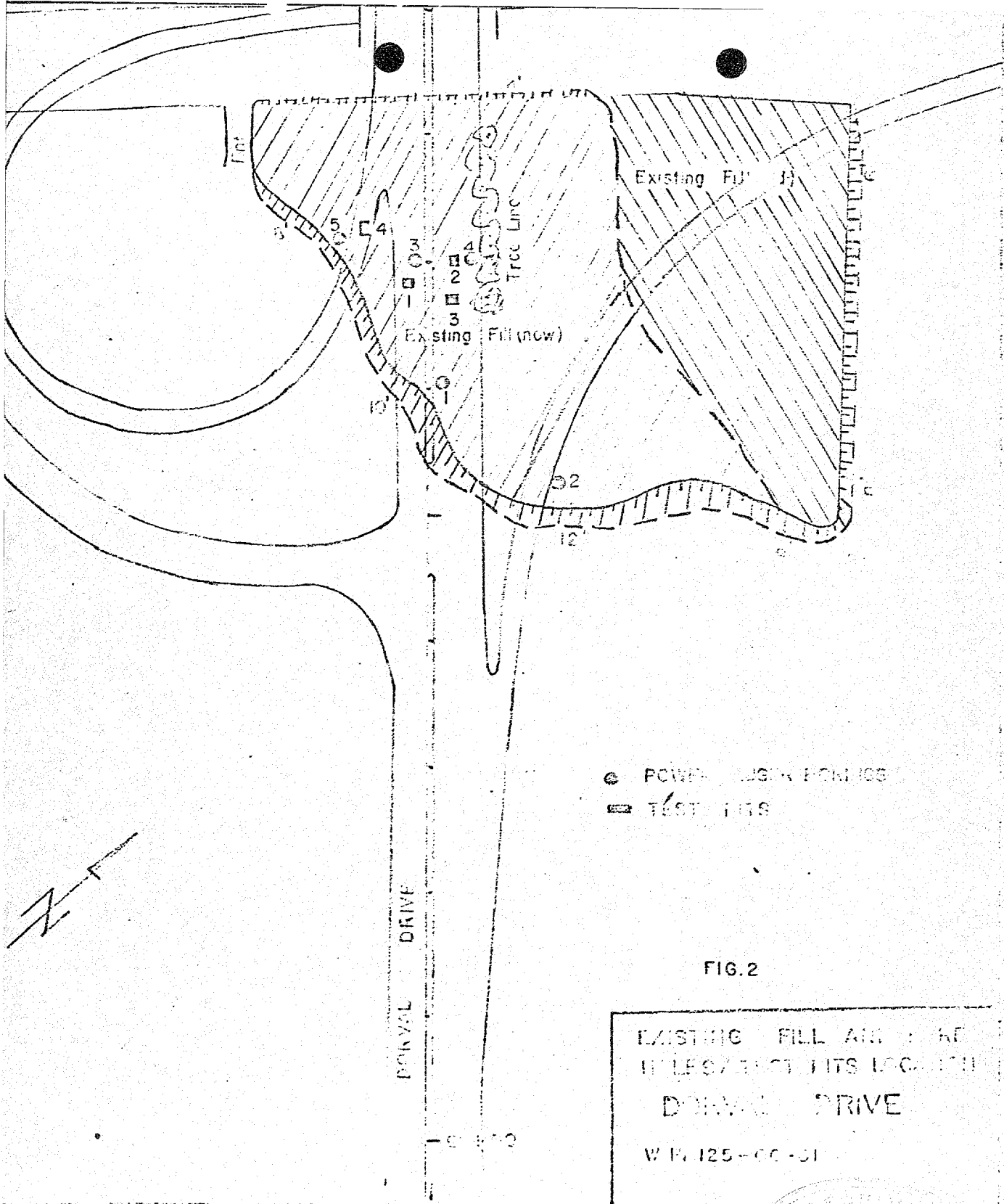
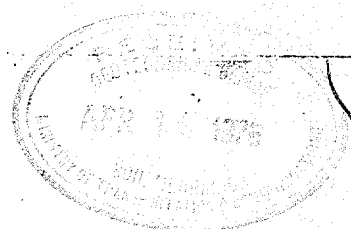


FIG. 2

EXISTING FILL AREA RE
 UNLESS TEST PITS LOCATED
 POKVAL DRIVE
 W.P. 125-CC-01



POWER AUGER BORINGS

B.H. #1

0 - 12' Red Br.M.Cl.Fill wet (containing limestone slabs and weathered shale - no compaction) F.M. 14.3%

12' - 13' Br.So.Cl., Lo and Tps., Mix (original ground)

B.H. #2

0 - 8½' Br.Stoney, Sa., Cl., Lo., and M.Cl. fill dry - moist, fairly dense

8½' N.F.P. Limestone and Concrete Slabs (Fill)P

B.H. #3

0 - 6' Red.Br.M.Cl., fill wet (containing limestone and shale fragments - no compaction) F.M. 126%

6' - 11' Industrial waste - consists of tps., wood, concrete blocks, wire, metal etc.,

11' - 12' Dk.Br.Stoney Cl.Lo., and Tps., mix (original ground).

B.H. #4

0' - 8' Br.Stoney, Sa., Cl., Lo., and M.Clay.Fill, moist - wet.

8' - 10' Br.Sa.Lo and Tps., mix moist

B.H. #5

0 - 6' Br.Sa.Cl.Lo and M.Cl.Mix Fill.moist wet

6' + N.F.P. Concrete Slabs (Fill)

TEST PITS WITH BACKHOE

T.P. #1.

0 - 6' Red.Br.Cl.Fill Wet (contains limestone and Weathered Shale).

6' - 12' Industrial waste (tps., wood, concrete blocks, wire, metal

12' - 13' Br.Cl.Lo and Tps. Mix (original ground)

T.P. #2

0 - 5' Br.Cl.Fill Moist - Wet

5' - 7' Wood, stones, Conc.blocks.

7' - 11½' Red Bro.Cl. Fill Moist-Wet



T.P. #3

0 - 6 $\frac{1}{2}$ ' Red.Br.Cl.Fill., Moist-Wet (some tps.mix)
6 $\frac{1}{2}$ ' - 7 $\frac{1}{2}$ ' Wood, Stones Conc.Blocks.
7 $\frac{1}{2}$ ' + Br. Cl. Fill Wet

T.P. #4

0 - 7' Br. Cl. Fill Moist-Wet (Tps. Mix)
7' - 10' Wood Asph. and Tps. Mix
10' + Red.Br. Cl. Fill Wet.





Memorandum

To: See Below

From: W.H. Roters,
Planning and Design Office,
Central Region.

Attention:

Date: February 4, 1976.

Our File Ref.

In Reply to

Subject: W.P. 125-66-01,
Dorval Drive/Q.E.W. Interchange,
Town of Oakville,
District 4, Hamilton.

The Planning and Design Office, Central Region, is presently involved in the detail design for the above project. The project completion date is November, 1976 and in order to minimize the possibilities of major changes in the latter stages, this office proposes to hold regular monthly meetings with the offices and people concerned so as to keep you up-to-date on the progress of the job and to involve you immediately in any problems that may arise.

The first meeting will be on February 12, 1976 at 9:30 a.m., Central Region Offices, 3501 Dufferin Street, Boardroom "B" on the second floor, and we request that you and/or your representative(s) attend. A list of future meeting dates will be issued at that time.

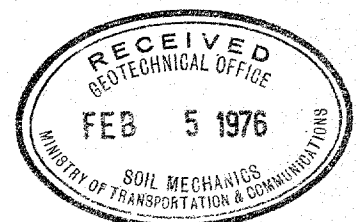
W.H. Roters,
Area Manager.

WHR:sm

cc: C.R. Robertson
R.D. Gunter
Z.J. Byblow
G.C.E. Burkhardt
H.A. Aron
R.A. Shannon
R. Fitzgibbon
J.R. Wear
C. Mirza
V.R. Berkis

Ken:

Please appoint someone from your group to participate, but only at special meetings where our input would be of value to the project. Thanks!
Cann





Memorandum

To: Mr. C. Mirza,
Head, Soil Mechanics Section,
West Building.

From: G.C.E. Burkhardt,
Structural Planning Office,
3501 Dufferin Street.

Attention:

Date: November 19, 1975

Our File Ref.

In Reply to

Subject:

Proposed Retaining Wall at
Dorval Drive Interchange
Site 10- W.P. 125-66-03
Hwy. Q.E.W. District 4.

The Regional Planning and Design Office has informed this office that a retaining wall will be required as part of the above mentioned project.

The proposed wall will be located in the S.W. quadrant of the interchange, between the South Service Road and Ramp W-N.S. The wall will be approximately 14' in height and will extend approximately 300' between Sta. 17 + 25 and Sta. 20 + 25.

Could your office please prepare a Foundation Investigation Report for the area of the proposed wall.

I have enclosed a plan showing the approximate location of the proposed wall and a preliminary profile of the roadways on either side of the wall.

The scheduled completion date would be the same as that for the Dorval Drive Underpass structure which is December 31, 1975.

If further information is required please contact this office.

DH Bye

D. H. Bye,
Structural Planning Supervisor,
for:
G.C.E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

DHB:vk

c.c. R. Fitzgibbon
W. Roters
J. Anderson
E. Shedler





Memorandum

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Head, Soil Mechanics Section,
West Building.

From: G.C.E. Burkhardt,
Structural Planning Office,
3501 Dufferin Street.

Attention:

Date: November 19, 1975

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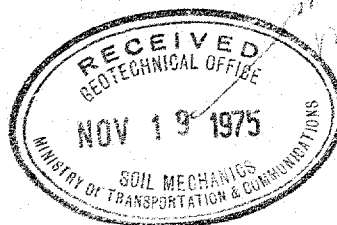
If further information is required please contact this office.

DH Bye

D. H. Bye,
Structural Planning Supervisor,
for:
G.C.E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

DHB:vk

c.c. R. Fitzgibbon
W. Roters
J. Anderson
E. Shedler





Memorandum

To: Mr. C. Mirza,
Head, Soil Mechanics Section,
West Building.

From: G.C.E. Burkhardt,
Structural Planning Office,
3501 Dufferin Street.

Attention:

Date: October 28, 1975.

Our File Ref.

In Reply to

Subject:

Proposed Dorval Drive Underpass
Site 10-275 W.P.125-66-02
Hwy. Q.E.W. District 4.

The Town of Oakville is in the process of extending Dorval Drive (formerly Margaret Drive). To coincide with this extension an underpass structure and interchange will be provided where Dorval Drive crosses the Q.E.W. The location of the proposed crossing will be approximately 2200' west of existing Kerr Street. The ~~C~~ of Dorval Drive has been staked in the field by the Engineering Surveys Office.

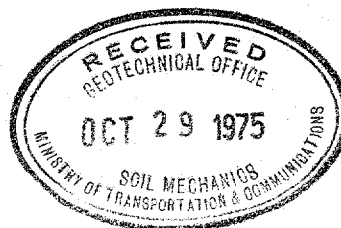
Could your office please prepare a Foundation Investigation Report in order that the Structural Office can carry out the design of the proposed structure.

I have enclosed the following drawings to assist you in the preparation of this report. The approximate locations of the footings for the structure are indicated in red on the Site Plan.

Bridge Site Plan - Ultimate Alignment	2 copies
Dorval Drive Preliminary Profile	2 copies
Q.E.W. Existing Profile	2 copies
Q.E.W. & Dorval Drive Cross Sections	2 copies
Site Photos	

The Q.E.W. will be reconstructed in two stages. For the interim stage the structure will be built but the existing Q.E.W. alignment will be maintained. The structure though, will be constructed to suit the ultimate alignment. At the ultimate stage, an additional 2 lanes will be added to the Q.E.W. and the alignment will be revised.

Some of the existing services located in the area of the proposed structure are, overhead Hydro, buried Bell Canada, water mains, gas pipe lines, and storm sewers. The exact locations of these services have not been defined as yet.

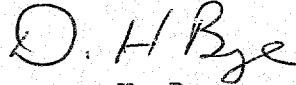


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Open Card
Not used - cancelled Oct 29/75

The scheduled completion date for the Foundation Investigation Report is December 31, 1975.

If further information is required that might assist you in the completion of the report please contact this office.



Duncan H. Bye,
Structural Planning Supervisor,
for:
G.C.E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

DHB:vk

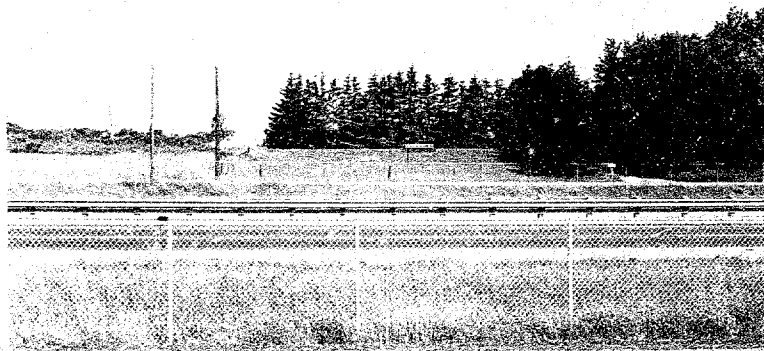
Att.

c.c. W. Roters
R. Fitzgibbon
J. Anderson
E. Shedler

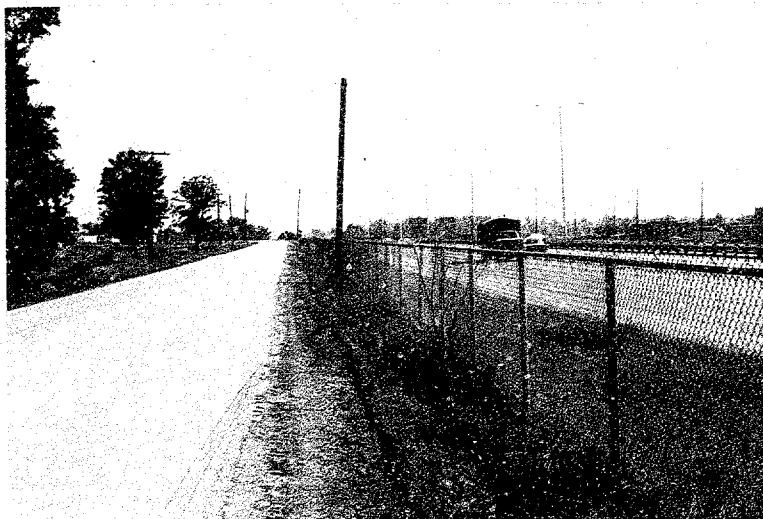
DORVAL DRIVE UNDERPASS

SITE 10-275

WP 125-65-02



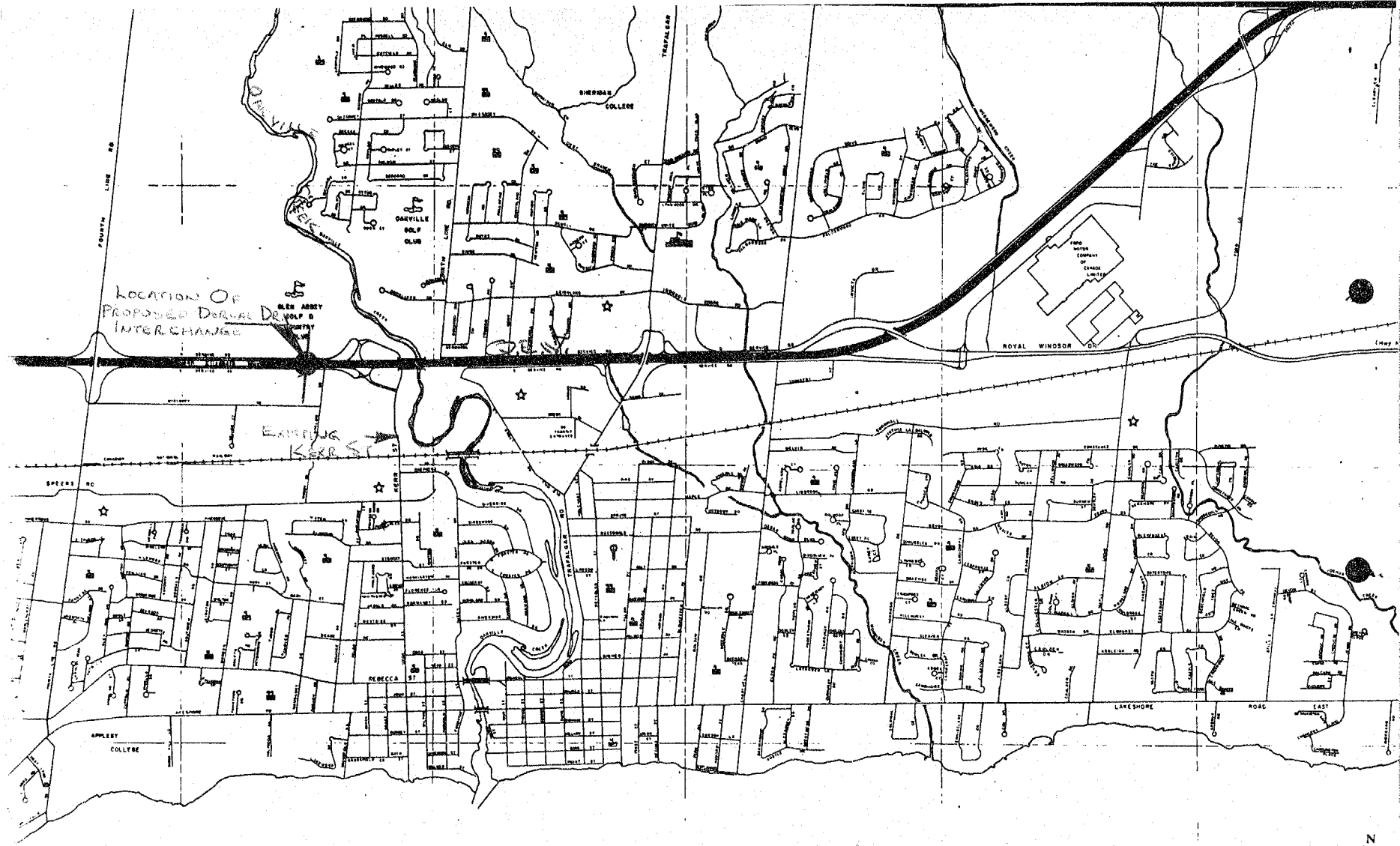
LOOKING NORTH



LOOKING E. ALONG M. SERV. RD.



LOOKING SOUTH



DOCUMENTATION

GEOCRES No. 3045-101

DIST 4 REGION Central

W.P. No. 125-66-02/0.3

CONT. No. 77-13

W. O. No. _____

STR. SITE No. 10-275

HWY. No. _____

LOCATION Dorval Drive W'pass,
& Retaining Wall at Dorval
Drive.

OVER-LOT DATA TO BE DISCLOSED IN THIS REPORT 1

REMARKS: _____

CONT No
WP No 125-BE-02

DUNEL DRIVE UNDERPASS
GENERAL PLAN



SHEET

- Notes**
1. SEE PLAN OF CONSTRUCTION FOR DETAILS OF CONSTRUCTION.
 2. SEE PLAN OF CONSTRUCTION FOR DETAILS OF CONSTRUCTION.
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CONSTRUCTION NOTES

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23. SEE PLAN OF CONSTRUCTION FOR DETAILS OF CONSTRUCTION.

**TO BE USED
FOR ESTIMATING
PURPOSES ONLY**

DATE SEP 15

EM PL 55-25

CUT, FILL, AND OTHER DATA

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3+00			
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