DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT. 1976

GEOCRES No. 30M12-79

DIST. 6 REGION Central

W.P. No. 127-66-44

CONT. No. 76-120

W. O. No. 73-11054

STR. SITE No. 24-331

HWY. No.

LOCATION Proposed Ramp W - Dixie Rd. Over Heart Lake Road, Bridge # 48

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 4

REMARKS: documents to be unfolded before microfilming

FOUNDATION INVESTIGATION REPORT
For
Ramp 'W-Dixie' Overpass Over
Heart Lake Road, Bridge #48
W.P. 127-66-44, Site #24-331
District #6, Toronto

INTRODUCTION

This report contains the results of a foundation investigation carried out at the site of the above mentioned project. Field work was carried out during the period July 17th to 19th, 1973 utilizing diamond drilling equipment adapted for soil and rock sampling purposes. BXL size core samples were obtained to prove bedrock.

SITE DESCRIPTION AND GEOLOGY

The site of the proposed structure is about 300 feet south of the existing Hwy. 401 and Heart Lake Road intersection in the City of Mississauga. The topography of the area is flat to undulating. The land is utilized for farming purposes.

Physiographically, the site is located in the region referred to as the "Peel Plain". Across this plain, rivers and streams have cut deep valleys and consequently, there are no large undrained depressions, swamps or bogs, although in many of the interstream areas the drainage is imperfect.

The characteristic deposit in the area is composed of a cohesive glacial till underlain by shale bedrock.

SUBSURFACE CONDITIONS

General

The predominant stratum across the site is a heterogeneous mixture of clayey silt to silty clay, sand and gravel (glacial till), underlain by shale bedrock at a depth of 6 to 7 feet below ground surface. The boundaries between the overburden and bedrock are shown on the Record of Borehole Sheets contained in the Appendix. The estimated stratigraphical profile shown on Dwg. #24-331-2 of the Contract Drawings is based upon this information. From ground level downwards, the overburden and bedrock details are described as follows:

Heterogeneous Mixture of Clayey Silt to Silty Clay, Sand and Gravel (Glacial Till)

A deposit of heterogeneous mixture of clayey silt to silty clay, sand and gravel (glacial till) was encountered immediately below ground surface. The thickness of this deposit is about 7 feet across the site.

Atterberg Limit tests were performed on samples of the glacial till. The results, which are shown on the Record of Borehole Sheets, are tabulated below:

		Range
Liquid Limit W_L	(%)	34-47
Plastic Limit W_p	(%)	23-29
Natural Moisture Content W	(%)	11-19

Based on these values it is estimated that the cohesive deposit has a matrix which is inorganic and of low to intermediate plasticity.

Results of the grain-size distribution tests for typical samples of the cohesive stratum are shown in an envelope form (Fig. #1) contained in the Appendix.

Standard Penetration tests carried out within this glacial deposit gave 'N' values ranging from 24 to in excess of 100 blows per foot. Based on these values it is estimated that the consistency of the glacial till is very stiff to hard.

Bedrock

The glacial till is underlain by bedrock, the surface of which was found to vary between elevations 557 and 561.

The bedrock is mainly shale interbedded with occasional limestone bands. The upper 1.5 feet to 5 feet of the bedrock was found to be in a weathered condition and below this it is considered to be sound.

Groundwater

During the period of the field investigation (July, 1973), groundwater level observations were carried out in the open boreholes.

Observations indicate that the groundwater level varied between elevations 559 and 560, i.e. 5 feet to 8 feet below the existing ground surface.

M. Devata, P. Eng.
Supervising Engineer

MD/jf
December, 1976

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO

ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

RECORD OF BOREHOLE No 1

WP 127-66-44 LOCATION Co-ords. N.15,857,072 E. 959,826 ORIGINATED BY VK

DIST 6 HWY 401 & 403 BORING DATE July 17, 1973 COMPILED BY VK

DATUM Geodetic BOREHOLE TYPE Drill with tricone BXL bits & Cone Test CHECKED BY [illegible]

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES 'N' VALUES	GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE)	LIQUID LIMIT w_L / PLASTIC LIMIT w_P / WATER CONTENT w (w_P — w — w_L) / WATER CONTENT % (20 40 60)	UNIT WEIGHT γ	REMARKS % GR SA SI CL
564.4	Ground Level									
0.0	Het.mix.of clayey silt, sand & gravel (Glacial Till)		1	SS	24	560		○ —		
557.4	Very Stiff to Hard		2	SS	56			○ —		13 13 52 22
7.0	weathered sound		3	BXL	Rec 90%					
	Shale Bedrock with interbedded limestone layers		4	BXL	Rec 100%	550				
			5	BXL	Rec 100%					
			6	BXL	Rec 100%	540				
			7	BXL	Rec 95%					
			8	BXL	Rec 100%	530				
524.1			9	BXL	100%					
40.3	End of Borehole					520				

20
15 ◇ 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO

ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

RECORD OF BOREHOLE No 2

WP 127-66-44 LOCATION Co-ords. N.15,857,066 E.959,729 ORIGINATED BY VK

DIST 6 HWY 401 & 403 BORING DATE July 19, 1973 COMPILED BY VK

DATUM Geodetic BOREHOLE TYPE Drill with tricone and BXL Bits CHECKED BY

ELEV / DEPTH	DESCRIPTION	STRAT PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES 'N' VALUES	GROUND WATER ELEV	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE)	LIQUID LIMIT w_L / PLASTIC LIMIT w_P / WATER CONTENT w (w_P — w — w_L) / WATER CONTENT % (20 40 60)	UNIT WEIGHT γ	REMARKS / % GR SA SI CL
568.0	Ground Level									
0.0	Het.mix.of silty clay sand & gravel (Glacial Till)		1	SS	24			○ ⊢⊣		
561.0	Very Stiff to Hard		2	SS	130			○ ⊢		29 12 34 25
7.0	Weathered		3	BXL	80%	560				
	Sound		4	BXL	Rec 60%					
			5	BXL	Rec 100%	550				
	Shale Bedrock with interbedded limestone layers		6	BXL	Rec 100%					
			7	BXL	Rec 100%	540				
			8	BXL	Rec 100%					
528.0			9	BXL	Rec 100%	530				
40.0	End of Borehole									

20
15 ◇ 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS - ONTARIO

ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

RECORD OF BOREHOLE No 3

WP 127-65-44 LOCATION Co-ords. N.15,857,017 E.959,737 ORIGINATED BY VK

DIST 6 HWY 401 & 403 BORING DATE July 3, 1973 COMPILED BY VK

DATUM Geodetic BOREHOLE TYPE Drill with tricone and BXL Bits CHECKED BY

ELEV / DEPTH	DESCRIPTION	STRAT. PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES 'N' VALUES	GROUND WATER ELEV
567.7	Ground Level					
0.0	Het.mix.of silty clay sand and gravel (Glacial Till)		1	SS	52	
560.7	Hard Brown-Grey		2	SS	72	560
7.0	Grey Weathered		3	SS	100/3"	
			4	BXL	Rec 40%	
	Sound Shale Bedrock with interbedded limestone layers		5	BXL	Rec 90%	550
549.8						
17.9	End of Borehole					540

DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100

SHEAR STRENGTH ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE

LIQUID LIMIT —— w_L PLASTIC LIMIT —— w_p WATER CONTENT —— w w_p w w_L WATER CONTENT % 20 40 60

UNIT WEIGHT γ

REMARKS	% GR	SA	SI	CL
	9	6	64	21

20 15 ◇ 5 10 % STRAIN AT FAILURE

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS--ONTARIO

ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE - SOIL MECHANICS SECTION

RECORD OF BOREHOLE No 4

WP 127-66-44 LOCATION Co-ords. N.15,857,127 E.959,827 ORIGINATED BY V.K.

DIST 6 HWY 401 & 403 BORING DATE July 4, 1973 COMPILED BY V.K.

DATUM Geodetic BOREHOLE TYPE Drill with tricone and BXL Bits CHECKED BY [illegible]

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC CONE PENETRATION RESISTANCE PLOT	LIQUID LIMIT w_L / PLASTIC LIMIT w_P / WATER CONTENT w	UNIT WEIGHT	REMARKS
ELEV / DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES	ELEV	20 40 60 80 100 SHEAR STRENGTH ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE	w_P — w — w_L WATER CONTENT % 20 40 60	γ	% GR SA SI CL
564.4	Ground Level									
0.0	Het.mix.of silty clay sand and gravel (Glacial till)		1	SS	50	560		○ ⊢		
557.9	Hard Brown-grey		2	SS	126/10"			○ ⊢		1 5 72 22
6.5	Grey Weathered		3	BXL	Rec 60%					
	Sound Shale Bedrock with interbedded limestone layers		4	BXL	Rec 100%	550				
546.4										
18.0	End of Borehole					540				

20
15 ◇ 5 % STRAIN AT FAILURE
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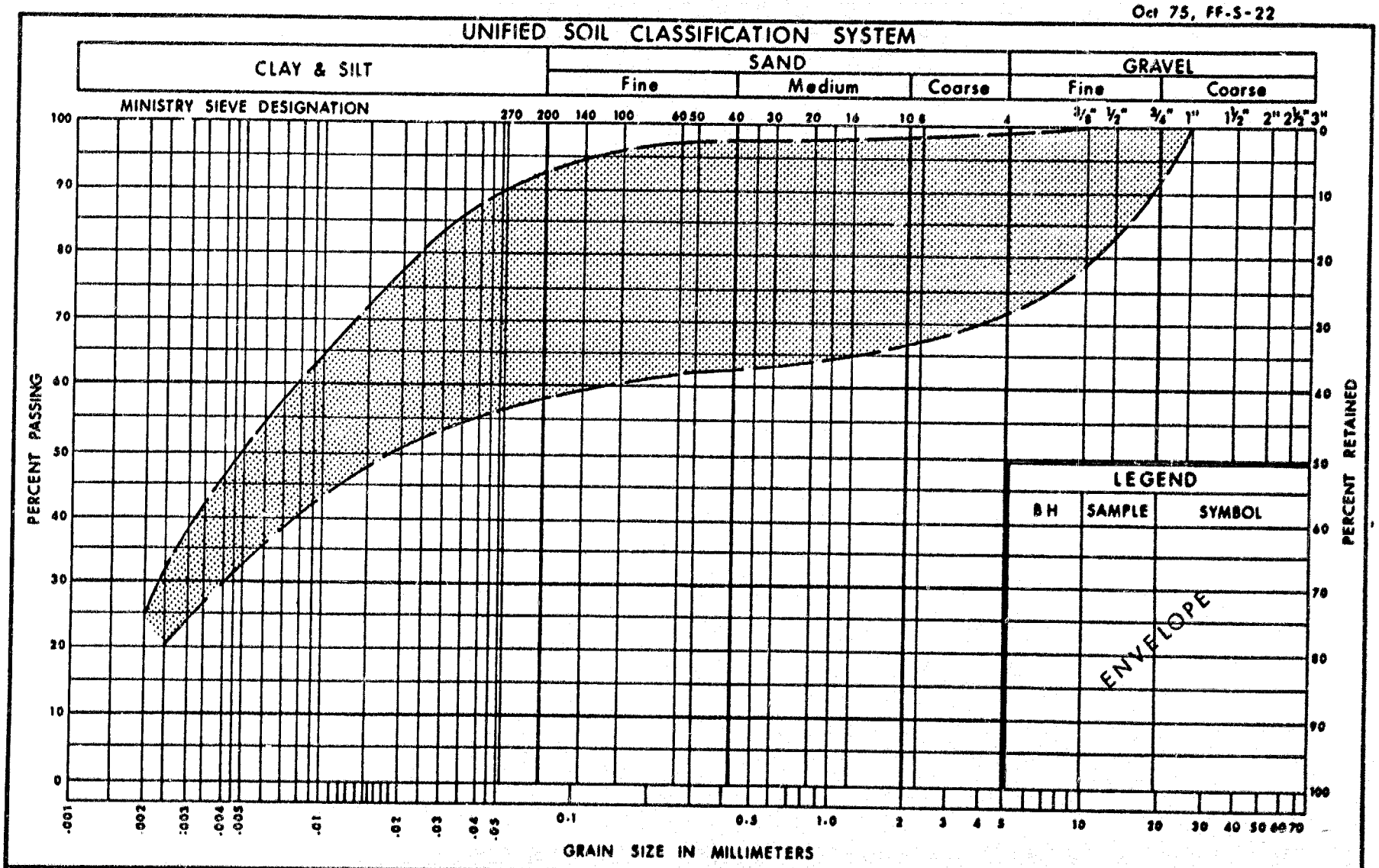
OFFICE REPORT ON SOIL EXPLORATION



Ministry of Transportation and Communications
Ontario
ENGINEERING SERVICES BRANCH

GRAIN SIZE DISTRIBUTION
GLACIAL TILL
HET MIXTURE OF CLAYEY SILT TO SILTY CLAY, SAND & GRAVEL

FIG No	1
W P	127-66-44

FOUNDATION INVESTIGATION REPORT
For
Proposed Ramp W - Dixie Road
over Heart Lake Road
Town of Mississauga
County of Peel
Bridge No. 48 Site No. 24-331
District No. 6 (Toronto)
W.O. 73-11054 - W.P. 127-66-44

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1. INTRODUCTION:

In conjunction with the proposed Hwy. 401/403/410 interchange complex, it is planned to construct a bridge to carry the Ramp W - Dixie Road over Heart Lake Road, (Bridge No. 48), Town of Mississauga, County of Peel, District No. 6, Toronto.

The Foundations Office was requested to carry out a sub-surface investigation at the site of the above-mentioned structure. The request was contained in a memo from Mr. G.C.E. Burkhardt, Regional Structural Planning Engineer, Central Region, dated July 16, 1973.

Subsequently, an investigation was carried out by this office to determine the subsoil and groundwater conditions at this site. This report contains all the factual data obtained from this investigation, together with recommendations pertaining to the design of the proposed structure foundations and the stability of the approach cuts.

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2. DESCRIPTION OF THE SITE AND GEOLOGY:

The site of the proposed structure is about 300 feet south of the existing Hwy. 401 and Heart Lake Road intersection, in the Town of Mississauga. The topography of the area is flat to undulating. The land is utilized for farming purposes.

Physiographically, the site is located in the region referred to as the "Peel Plain". Across this plain, rivers and streams have cut deep valleys and consequently, there are no large undrained depressions, swamps or bogs, although in many of the interstream areas the drainage is imperfect.

The characteristic deposit in the area is composed of a cohesive glacial till underlain by shale bedrock.

3. FIELD INVESTIGATION AND LABORATORY WORK:

Two sampled boreholes, one of which was accompanied with a dynamic cone test, were put down in the vicinity of the proposed bridge structure. In addition two adjacent boreholes (Nos. 3 and 4) from previous site investigations (W.O. 73-11046) were incorporated in this report.

The borings were advanced by means of a diamond drill machine adapted for soil sampling purposes.

At required depths 2" O.D. split-spoon samples were recovered. The sampling was carried out in accordance with the requirements of the Standard Penetration Test. The bedrock was proven by obtaining BXL size core samples.

The locations and elevations of all the borings were surveyed in the field by construction personnel from the District Office in Toronto, and are shown on Drawing No. 73-110544A, together with an inferred stratigraphical profile. All elevations in the report are referenced to a Geodetic Datum.

All samples were visually examined and identified in the field and subsequently in the laboratory. Following this examination, laboratory testing was carried out on selected representative samples to determine the physical properties of the overburden, namely:

Natural Moisture Contents
Atterberg Limits
Grain-Size Distributions

The results of this testing are plotted on the Record of Borehole sheets.

4. SUBSOIL AND BEDROCK CONDITIONS:

4.1) General:

The predominant stratum across the site is a

...4

heterogeneous mixture of clayey silt to silty clay, sand and gravel (glacial till), underlain by shale bedrock.

4.2) Heterogeneous Mixture of Clayey Silt to Silty Clay, Sand and Gravel (Glacial Till):

A deposit of heterogeneous mixture of clayey silt to silty clay, sand and gravel (glacial till) was encountered at all boring locations. The thickness of this deposit is about 7 feet across the site.

Atterberg Limit tests were performed on samples of the glacial till. The results, which are shown on the Record of Borehole sheets, are tabulated below:

		Range	Average
Liquid Limit	W_L (%)	34-47	38
Plastic Limit	W_P (%)	23-29	26
Natural Moisture Content	W (%)	11.5-18.5	16

Based on these values it is estimated that the cohesive deposit has a matrix which is inorganic and of low to intermediate plasticity.

Results of the grain-size distribution tests for typical samples of the cohesive stratum are shown in the individual Record of Borehole sheets contained in Appendix I.

Standard Penetration tests, carried out within this glacial deposit, are plotted on the Record of Borehole sheets. The testing gave 'N' values ranging from 24 to in excess of 100 blows per foot. It is estimated that the consistency of the glacial till is very stiff to hard.

4.3) Shale Bedrock:

The glacial till is underlain by bedrock which was proven at four of the boring locations by obtaining BXL size core samples. Over the site, the bedrock surface was found to vary between elevations 557.4 (Borehole No. 1) and 561.0 (Borehole No. 2).

The bedrock is mainly shale interbedded with occasional limestone bands. The upper 1.5 feet (Borehole No. 1) to 5 feet (Borehole No. 2) of the bedrock was found to be in a weathered condition.

5. GROUNDWATER CONDITIONS:

The groundwater level across the site during the period of the investigation (July, 1973) was observed by taking readings in the open boreholes. The results of the observations are shown on the Record of Borehole sheets, as well as on Drawing No. 73-11054A.

The observations indicate that the groundwater level across the site is located between elevations 559.4 and 560.4, i.e. 4.8 feet to 8 feet below existing ground surface.

6. DISCUSSION AND RECOMMENDATIONS:

6.1) General:

It is proposed to construct a single-span bridge to carry the Ramp W - Dixie Road over Heart Lake Road (Bridge No. 48). This structure will be part of the proposed Hwys. 401/403/410 interchange complex, in the Town of Mississauga, District No. 6, Toronto.

The proposed single-span structure will be 76 feet wide. The profile grade of Ramp W - Dixie Road in the vicinity of the structure will vary from elevations 550 to 551.5, while that of Heart Lake Road will be at elevation 529. The existing grade of Heart Lake Road is at elevation 574 in the vicinity of the proposed structure while the surrounding terrain varies between elevations 564 and 568. Therefore, cuts up to 17 feet will be necessary for the Ramp W - Dixie Road, and an additional cut of up to 22 feet will be required to reach the proposed grade of Heart Lake Road in the vicinity of the strucutre.

As described in the previous paragraphs of this report, the subsoil at the site consists of a relatively shallow (±7 feet) deposit of cohesive galcial till, followed by shale bedrock.

6.2) Closed Type Abutment Foundations:

The proposed profile grade of Heart Lake Road at this crossing is at about elevation 529, which is well below the estimated bedrock surface. Therefore, it is recommended that closed type abutments be supported on spread footing type foundations located within the shale bedrock. A minimum of 4 feet earth cover should be provided to the underside of the footings since the shale is considered susceptible to frost action. Taking this into consideration, the footings should be founded at or below elevation 525. An allowable bearing value of up to 10 t.s.f. may be used in designing the footings so founded. The horizontal resistance of the footing may be computed using a coefficient of friction of 1.0 between rough concrete surface and the shale bedrock.

In order to simplify dewatering for the footing excavations, it is recommended that the approach cuts be completed to profile grades prior to the construction of the structure foundations. If this procedure is followed, the resulting depth of excavation for the footings will be in the order of 4 feet. Any minor groundwater seepage or surface

runoff into the excavation can be handled by ordinary pumping methods.

The settlement of the footings will be negligible in magnitude, provided that measures are taken to prevent the shale from being softened by groundwater seepage or uncontrolled surface runoff. It may be advantageous to protect the shale, at the footing foundation level, by covering it with a lean concrete working slab immediately after the completion of the excavation.

If the structure is designed as a rigid frame, then a coefficient of earth pressure at rest (Ko) of 0.5 should be assumed for the granular backfill placed behind the wall, when designing the abutments. However, if some movement of the wall is permitted, then a coefficient of active earth pressure (Ka) of 0.33 can be used.

In order to relieve the building of excess hydrostatic pressure behind the walls, suitable drainage measures should be provided. This can be accomplished by providing weep holes at the base of the walls in accordance with current M.T.C. standards.

6.3) Approach Cuts:

The approach cuts for Ramp W - Dixie Road overpass up to 17 feet deep, will be made through the cohesive glacial

till and partially into the upper section of the shale bedrock. No stability problems are anticipated. The recommended cut slopes will be discussed in the following paragraphs.

However, in order to reach the proposed grade of Heart Lake Road, an additional cut of ±22 feet deep will be required. This cut will be made through the shale bedrock.

According to experience gained during the construction of Hwy. 427 - Q.E.W. interchange, where the shale bedrock was of the same formation as that at this site, the shale, once exposed to the atmosphere, proved to be susceptible to weathering and erosion. Therefore, it is recommended that the cuts through the shale bedrock be treated as earth cuts and be constructed with 2:1 slopes and protected with an adequate cover of topsoil and sodded.

The groundwater level established during the period of field investigation, is up to 30 feet above the bottom of the proposed approach cut. Some seepage through and consequently local sloughing of the shale can be expected. However, this problem will be temporary in duration, and minor in nature, since the excavation will result in a general lowering of the groundwater level along the cut sections.

7. MISCELLANEOUS:

The field work was carried out during July 17 to 19,

1973, under the supervision of Mr. V. Korlu, Project Foundations Engineer, who also prepared this report.

Drilling equipment was owned and operated by Longyear Company of Toronto.

The entire project was under the general supervision of Mr. M. Devata, Supervising Foundations Engineer, who also reviewed this report.

REGISTERED PROFESSIONAL ENGINEER
CIVIL
V. KORLU
PROVINCE OF ONTARIO

V. Korlu, P. Eng.

M. Devata, P. Eng.

VK/zh
October 16, 1973.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS–ONTARIO

DESIGN SERVICES BRANCH — FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 1

JOB 73-11054 — LOCATION Co-ord's. 15, 857, 072N; 959, 826E — ORIGINATED BY V.K.

W.P. 127-66-44 — BORING DATE July 17, 1973 — COMPILED BY V.K.

DATUM Geodetic — BOREHOLE TYPE Drill with tricone and BXL bits — CHECKED BY

SOIL PROFILE ELEV./DEPTH	DESCRIPTION	STRAT. PLOT	SAMPLES NUMBER	TYPE	BLOWS/FOOT	ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT 20 40 60 80 100 — SHEAR STRENGTH P.S.F. o UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE	LIQUID LIMIT W_L — PLASTIC LIMIT W_P — WATER CONTENT W — WATER CONTENT % 20 40 60	BULK DENSITY γ P.C.F.	REMARKS GR. SA. SI. CL.
564.4	Ground Level									
0.0	Het. mix. of clayey si., sa. & grav. Glacial Till		1	SS	24	560		o—⊣		▼elev. 559.4 13 13 52 22
557.4	Very stiff to hard		2	SS	56			o ⊣		
7.0	Weathered									
8.5	Sound		3	BXL	90% Rec					
					100%	550				
			4	BXL	Rec					
	Shale bedrock		5	BXL	100% Rec					
			6	BXL	100 Rec	540				
			7	BXL	95% Rec					
			8	BXL	100% Rec	530				
524.1			9	BXL	100%					
40.3	End of Borehole.									

20
15 ⊹ 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS – ONTARIO

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 2

JOB 73-11054 LOCATION Co-ord's. 15, 857, 066N; 959, 729E ORIGINATED BY V.K.

W.P. 127-66-44 BORING DATE July 19, 1973 COMPILED BY V.K.

DATUM Geodetic BOREHOLE TYPE Drill with tricone and BXL Bits CHECKED BY

SOIL PROFILE ELEV./DEPTH	DESCRIPTION	STRAT. PLOT	SAMPLES NUMBER	TYPE	BLOWS/FOOT	ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS/FOOT / SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE	LIQUID LIMIT W_L / PLASTIC LIMIT W_P / WATER CONTENT W — WATER CONTENT % 20 40 60	BULK DENSITY γ P.C.F.	REMARKS GR.SA.SI.CL.
568.0	Ground Level									
0.0	Het. mix. of silty clay, sa. & grav. Glac. Till		1	SS	24					
561.0	V. stiff to hard		2	SS	130					29 12 34 25 ▼ elev. 560.0
7.0	Weathered		3	BXL	80% REC	560				
556.0			4	BXL	60% Rec					
12.0	Sound		5	BXL	100% Rec	550				
	Shale bedrock		6	BXL	100% Rec					
			7	BXL	100% Rec	540				
			8	BXL	100% Rec					
528.0			9	BXL	100% Rec	530				
40.0	End of Borehole.									

20
15 ◇ 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS – ONTARIO

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 3

JOB 73-11054 LOCATION Co-ords. 15, 857,017N; 952,732E ORIGINATED BY V.K.

W.P. 127-65-44 BORING DATE July 3, 1973 COMPILED BY V.K.

DATUM Geodetic BOREHOLE TYPE Drill with tricone and BXL bits CHECKED BY

SOIL PROFILE ELEV. / DEPTH	DESCRIPTION	STRAT. PLOT	SAMPLES NUMBER	TYPE	BLOWS/FOOT	ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT; SHEAR STRENGTH P.S.F. ○ 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 % 20 40 60	BULK DENSITY γ P.C.F.	REMARKS GR. SA. SI. C
567.7	Ground Level									
0.0	Hetc. mix of silty clay, sa. & grav. Glac. Till		1	SS	52					
560.7	Hard Brown-grey		2	SS	72	560		o —		9 6 64 2 ▼ elev. 560.2
7.0	Grey Weathered		3	SS	40% 3"					
556.2			4	BXL	Rec					
11.5	Sound Shale bedrock		5	BXL	90% Rec					
549.8										
17.9	End of Borehole.									

20
15 ◇ 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS–ONTARIO

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE No 4

FOUNDATIONS OFFICE

JOB 23-11054 LOCATION Co-ord's. 15, 852. 127N; 959. 827E ORIGINATED BY V.K.

W.P. 127-66-44 BORING DATE July 4, 1973 COMPILED BY V.K.

DATUM Geodetic BOREHOLE TYPE Drill with Tricone and BXL Bits CHECKED BY ✓

SOIL PROFILE ELEV. / DEPTH	DESCRIPTION	STRAT. PLOT	SAMPLES NUMBER	TYPE	BLOWS/FOOT	ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT — SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE	LIQUID LIMIT w_L — PLASTIC LIMIT w_p — WATER CONTENT w — WATER CONTENT % 20 40 60	BULK DENSITY γ P.C.F.	REMARKS GR. SA. SI. CL
564.4	Ground Level									
0.0	Het. mix. of silty clay, sa. & grav. Glac. Till		1	SS	50	560		o		Telev. 560.4 1 5 72 22
557.9	Hard Brown-grey		2	SS	25/2"			o		
6.5	Grey									
554.4	Weathered									
10.0	Sound Shale bedrock		3	BXL	60% Rec					
						550				
546.4			4	BXL	100% Rec					
18.0	End of Borehole.									

OFFICE REPORT ON SOIL EXPLORATION

20
15 ◇ 5 % STRAIN AT FAILURE
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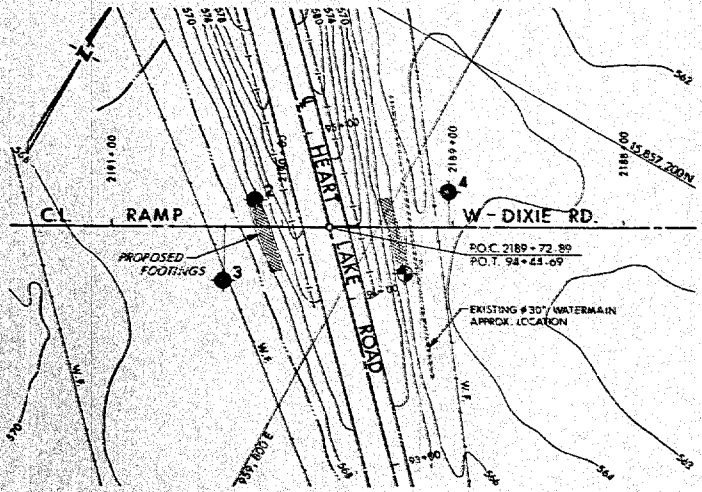
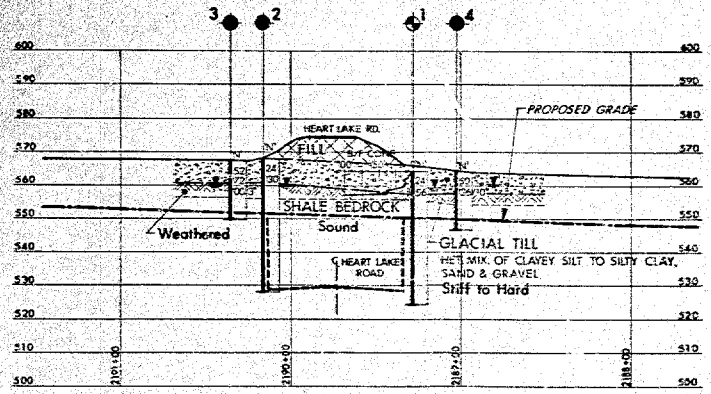


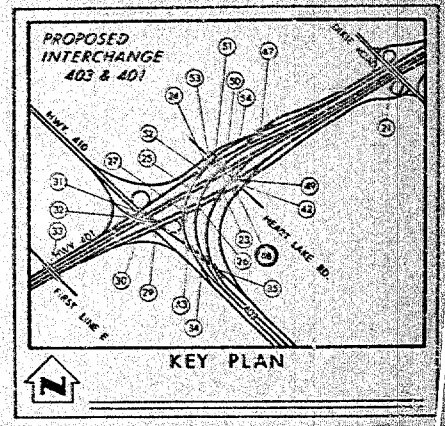
PLAN

40 20 0 SCALE 40 80 FT.



PROFILE

HORIZ. 40 20 0 SCALE 40 80 FT.
VERT. 20 10 0 20 40 FT.



LEGEND

- Bore Hole
- Cone Penetration Test
- Bore Hole & Cone Test
- Water Levels established at time of field investigation, July 1973.

NO.	ELEVATION	CO-ORDINATES NORTH	CO-ORDINATES EAST
1	564.4	15,857,072	959,826
2	568.0	15,857,066	959,729
3	567.7	15,857,017	959,737
4	564.4	15,857,127	959,827

NOTE FOR CONTRACT DOCUMENT:
The complete foundation investigation report for this structure may be examined at the Structural Office and Foundations Office, Downsview, and at the TORONTO 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
DESIGN SERVICES BRANCH — FOUNDATIONS OFFICE

BRIDGE No. 48

RAMP W - DIXIE RD. OVER HEART LAKE RD.

HIGHWAY NO. 401/403 DIST. NO. 6
CO. PEEL
TOWN OF MISSISSAUGA LOT CON

BORE HOLE LOCATIONS & SOIL STRATA

SUBMD. V.K.	CHECKED	W.P. NO. 127-66-44	DRAWING NO. 73-11054A
DRAWN S.R.	CHECKED	W.O. NO. 73-11054	
DATE OCTOBER 2, 1973.		SITE NO.	BRIDGE DRAWING NO.
APPROVED PRINCIPAL FOUNDATION ENGINEER		CONT. NO.	

REF. No. FENCO 3983-3K-1

Ministry of Transportation and Communications
Ontario

Memorandum

To: Mr. M. R. Ernesaks,
Regional Manager,
Regional Planning and Design,
3501 Dufferin Street.

From: Structural Office,
West Bldg., Downsview.

Attention:

Date: October 13, 1976.

Our File Ref.

In Reply to

Subject: W.P. 127-66-44, Site 24-331,
Bridge #48,
Highway 403, District 6.

Please find enclosed two copies of the D4 and Special Provisions for your use.

One copy of the D4 and Special Provisions is also being forwarded to the following:

District Office
Systems Design Project Review Section
Structural Material Section
Structural Design Office
Estimating Office
Assistant Construction Engineer (Structures)
Regional Structural Planning Engineer
Structural Maintenance Engineer
Soil Mechanics Section

The following data is also submitted to the Estimating Section:

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

Prints were mailed to you previously.

N. Zoltay

N. Zoltay,
Structural Contract
Specifications Engineer.

NZ/im
Encl.
c.c. W. Lin
J. Wear
H. Greenland
J. Kuprevicius
B. Giroux
A. E. McKim
E. Van Beilen
C. Mirza
R. Fitzgibbon
J. Anderson
G. Burkhardt

RECEIVED
GEOTECHNICAL OFFICE
OCT 13 1976
SOIL MECHANICS
MINISTRY OF TRANSPORTATION & COMMUNICATIONS

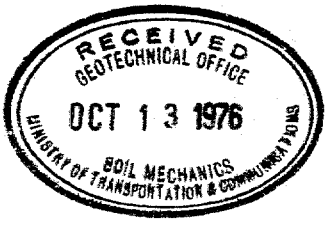
MD

RAMP "W-DIXIE" OVERPASS

OVER HEART LAKE ROAD. BRIDGE #48

W.P. 127-66-44

HIGHWAY 403 DISTRICT 6



Ministry of Transportation and Communications
Ontario

Sheet 1 of 1

PROPOSED SPECIAL PROVISION

DESIGN DIVISION

W.P. No. 127-66-04 Contract No. _____ District No. 6 Hwy. No. _____ Date Oct. 5, 1976

Location Ramp W-Dixie Overpass at Heart Lake Road Type of work Bridge

1. Initiated by (Give Names, Divisions, District & Jurisdictions, etc.)
   Structural Office

2. (a) This S.P. is new (✓) [X].
   This S.P. replaces No. _____ in the Special Provisions Manual.
   This S.P. modifies the following Specification requirement:
   MTC Form _____ Section _____ Page(s) _____ Paragraph _____
   Remarks as follows:

   (b) Explanation of Intent

   State construction sequence

3. Title and Text as follows:
   Specification No(s). _____ Item No(s). _____
   TITLE GENERAL
   Subtitle _____

   The Contractor shall construct Bridge #42 prior to commencement of work for Bridge #48.

   The above described construction staging requirement is deemed to be necessary because:
   (a) a portion of the foundation of Bridge #42 is below the foundation of Bridge #48,
   (b) the contractor is not to be permitted to use Bridge #48 to support falsework.

	Region		Head Office	
Detailed by:	N. Zoltay	Date October 1976		Date
Approved by:	M. Stoyanoff	Date October 1976		Date

DB-RD-90 7-74

NOTE TO REGIONAL PLANNING AND DESIGN OFFICE.

Add the following special provisions.

(1) SP No. 194 Formwork and Falsework

(2) SP No. 196 Installation of Steel Pins

(3) SP No. 907 Transverse Stressing System (Item No. 7)
Longitudinal Stressing System (Item No. 8)

(4) SP No. 908 Asphalt Membrane Waterproofing (Item No. 14)

(5) Special SP General

The following items are to be checked and/or completed by the Regional Planning and Design Office:

(a) Detours and maintenance of traffic

(b) Earth Excavation required for placing Granular Backfill.

(c) Supply and Place Granular Backfill to bridge, and Water for Compaction.

(d) Supply and Place C.S. Pipe Subdrains (DD-74-29)

(e) Asphalt Wearing Surface on Bridge Deck and Approach Slab is 138 tons.

(f) Embedded Work in Bridge (Lighting)

(g) The need for mechanical finishing is to be determined by the Structural Review Committee. If the resulting decision is that mechanical finishing of bridge deck is not required the necessary special SP will be forwarded by the Structural Office.

NOTE: The approach slab, and paving are not part of the bridge portion of the contract, therefore the applicable tender items, materials, and special provision shall be deleted from the composite SP and D4.

FORM OB-CC-52
REV. MAY 1972

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

PROPOSED WORK

DISTRICT No. 6	D4 No.

Contract No. _____ Project No. _____ W.P. No. 127-66-44 %Capital X %Ordinary _____

District of Toronto Length _____ By Contract X Day Labour _____

Work of Ramp "W-Dixie" Overpass over Heart Lake Road - Bridge #48.

Location _____

Kings Hwy. No. 401 Development Rd. No. _____

Secondary Hwy. No. _____ Other Road Class County Regional Municipality of Peel

Township Mississauga ~~Electoral District~~

PLAN NO	STA	TO STA	PROF NO	STA	TO STA

Bridge Drawing No. 24-331-1 to -16 inclusive and reinforcing steel schedules

Bridge Site No. 24-331 Soil Profile _____ Strip Map _____

ESTIMATED COST

Estimated Tender _____ $ _____

Estimated Material _____ $ _____

Estimated Engineering _____ $ _____

Estimated Sundry Const. _____ $ _____

Total Estimated Cost _____ $ _____

COST DISTRIBUTION

M.T.C.	$ _____	% 100
Other _____	$ _____	% _____
_____	$ _____	% _____
_____	$ _____	% _____
_____	$ _____	% _____

TYPE AND DATE OF AGREEMENT _____

SUBMITTED BY

M. Stoyanoff

Structural Contract Engineer.

Date Oct. 13/76

APPROVED

Construction Engineer _____

Contract Control Engineer _____

Maintenance Engineer _____

Municipal Engineer _____

Date _____

Ministry of Transportation and Communications
Ontario

TENDER

CONTRACT NO. _____ W.P. 127-66-44 Page 1 of 2

ITEM NO.	SPEC. NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
			BROUGHT FORWARD			
1	902	Rock Excavation for Bridge Foundations	cu yd	115		
2	905	Reinforcing Steel (Bridge)	ton	48		
3	905	Reinforcing Steel (Approach Slabs)	ton	5		
4	904	Mass Concrete	cu yd	17		
5	904	Concrete in Bridge Foundations	cu yd	98		
6	904	Concrete in Piers, Abutments and Wingwalls	lump sum			
7	910S SP	Transverse Stressing System	lump sum			
8	910S-SP	Longitudinal Stressing System	lump sum			
9	910S	Prestressed Concrete Bridge Deck	lump sum			
10	904	Concrete in Barrier Wall	lump sum			

SUB-TOTAL _____

TOTAL ESTIMATED TENDER _____

Ministry of Transportation and Communications
Ontario

TENDER

CONTRACT NO. _____ W.P. 127-66-44 Page 2 of

ITEM NO.	SPEC. NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
			BROUGHT FORWARD			
11	904	Concrete in Approach Slabs	lump sum			
12	904	Concrete in Slope Paving	lump sum			
13	908	Steel Parapet Rail	lump sum			
14	914S SP	Asphalt Membrane Waterproofing	sq.ft	7205		
15	914S	Form and Fill Grooves	lf	293		

SUB—TOTAL _____

TOTAL ESTIMATED TENDER _____

FORM OB–CC–54
REV. JULY, 1972.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

W.P. 127-66-44 Contract Nº_____ District Nº 6 Hwy. Nº 401 Date_____

Location_____ Type of work_____

MATERIALS SUPPLIED BY M.T.C. TO CONTRACTOR

Item	Unit	Quantity	Unit Price	Total
Normal Portland Cement (Bridge)	ton	286		
Normal Portland Cement (Approach Slabs)	ton	13		
Materials as follows:	lump sum			
Date and Site Figures				
Steel Pins (18 pins)				
Protection Board (7930 sq.ft. quantity includes additional 10% for overlap)				

Total_____

FORM OB-CC-55
REVISED JUNE, 1967

DEPARTMENT OF HIGHWAYS ONTARIO

WP 127-66-44 Contract Nº. _____ District Nº. 6 Hwy. Nº. 401 Date _____

SUNDRY CONSTRUCTION

Item	Material	Labour	Total
Contingencies: Approx. 3% of Tender	lump sum		
Notes:			
All prices are exclusive of Federal Sales Tax.			
For information as to F.O.B. point for all bridge materials supplied by M.T.C., please contact the Structural Material Section, at least one week before information is required for tender purposes.			
Total Estimated Sundry Construction			

Copies to:

DETAIL OF SUNDRY MATERIAL

	Unit	Quantity	Unit Price	Total
1. Structural Contract Section				
2. Regional Planning and Design Office				
3. Regional Planning and Design Office				
4. Systems Design Project Review Section				
5. Regional Structural Planning Office				
6. District Office.				
7. Structural Material Section				
8. Structural Design Office				
9. Estimating Office				
10. Assistant Construction Engineer (Structures)				
11. Structural Maintenance Engineer				
12. Soil Mechanics Section				
13. Extra				
Total Estimated Materials				

Ministry of Transportation and Communications
Ontario

Memorandum

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

From: Structural Office,
West Building, Downsview.

Attention:

Date: September 30, 1976.

Our File Ref.

In Reply to

Subject:

Bridge #48,
W. P. 127-66-44, Site 24-331,
Highway 401, District 6.

Please find enclosed two sets of prints of drawings 24-331-1 and 3 to 17 inclusive for your use.

One print of drawing 24-331-1 is being forwarded to the Systems Design Project Review Section.

One set of prints is also being forwarded to the following:

Estimating Section
Regional Structural Planning Engineer
Assistant Construction Engineer (Structures)
District Office
Structural Maintenance Section
Soil Mechanics Section.

The D4 and Special Provisions will follow.

N. Zoltay,
Structural Contract
Specifications Engineer.

NZ/cf
Encl.

c.c. J. Wear
B. Giroux
G. Burkhardt
A. McKim
H. Greenland
E. Van Beilen
C. Mirza
R. Fitzgibbon
J. Anderson

RECEIVED
GEOTECHNICAL OFFICE
SEP 30 1976
SOIL MECHANICS
MINISTRY OF TRANSPORTATION & COMMUNICATIONS

HD

Ministry of Transportation and Communications
Ontario

Memorandum

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

From: Structural Office,
West Building, Downsview.

Attention:

Date: September 21, 1976.

Our File Ref.

In Reply to

Subject: Bridge #48,
Overpass over Heart Lake Road
Ramp "W-Dixie",
W.P. # 127-66-44 Site # 24-331
Highway # 401 District #6

Attached herewith we are submitting the final bridge drawings which show the foundation design for this structure. Kindly give us your comments at your earliest convenience.

C. S. Grebski,
Structural Design Engineer.

CSG/cf
Attch.

FINALIZED 27 SEPT 76

letter dated Oct. 07/76

Mr. C.S. Grebski
Structural Design Engineer
Structural Design Section
West Building, Downsview

Soil Mechanics Section
Geotechnical Office
West Building, Downsview

October 27, 1976

Bridge #48
Overpass Over Heart Lake Road
Ramp "W-Dixie"
W.P. 127-66-44, Site 24-331
Hwy. 401, District 6, Toronto

We have reviewed the final bridge drawings for the above mentioned structure. The design complies with our comments submitted in our memorandum dated March 22, 1976. Therefore we have no further comments.

V. Korlu
Project Engineer

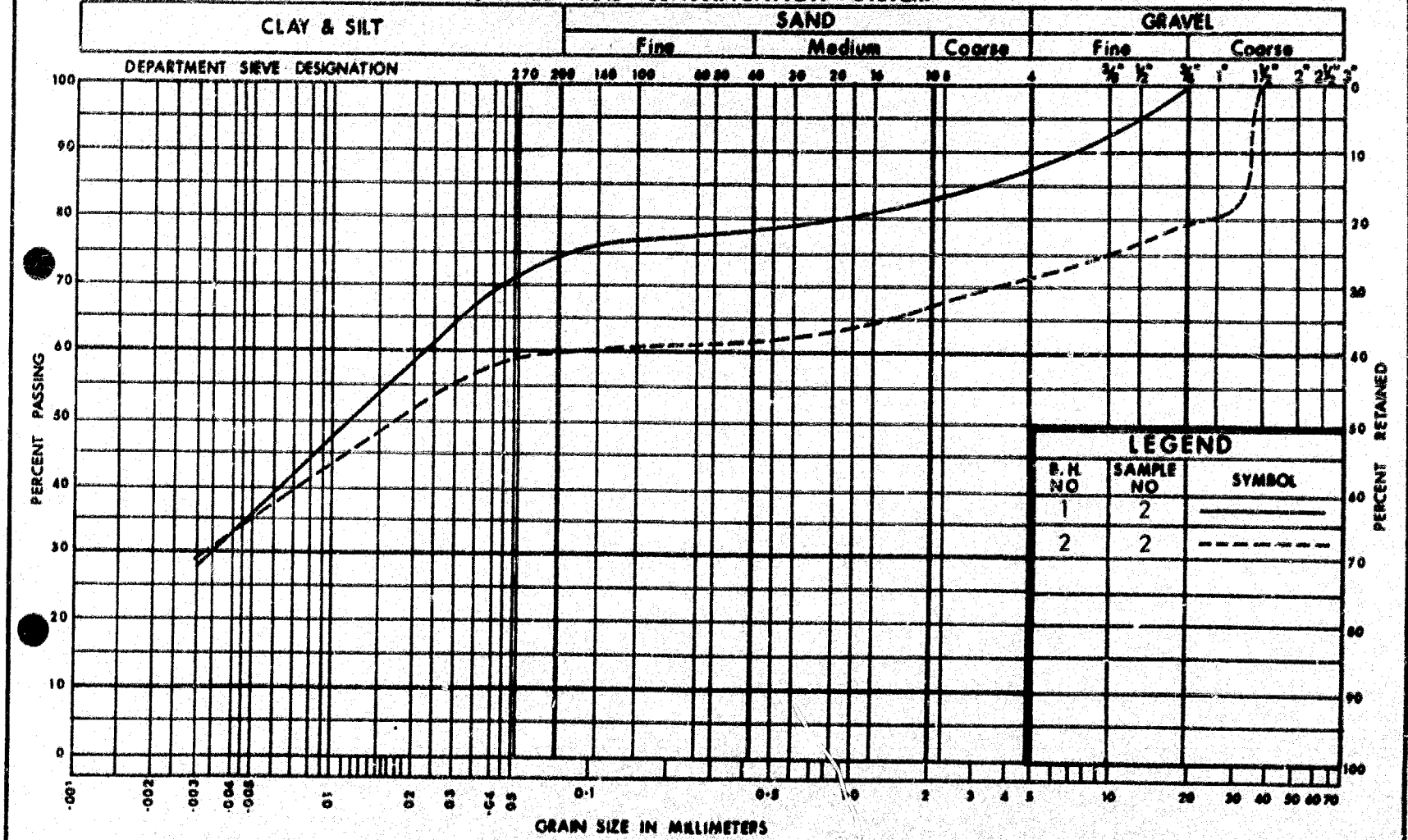
For: M. Devata
Supervising Engineer

MD/VK/gs

cc: G. Burkhardt
Files
Record Services

FORM OD - MT - 17
REV. AUG. 1971

UNIFIED SOIL CLASSIFICATION SYSTEM



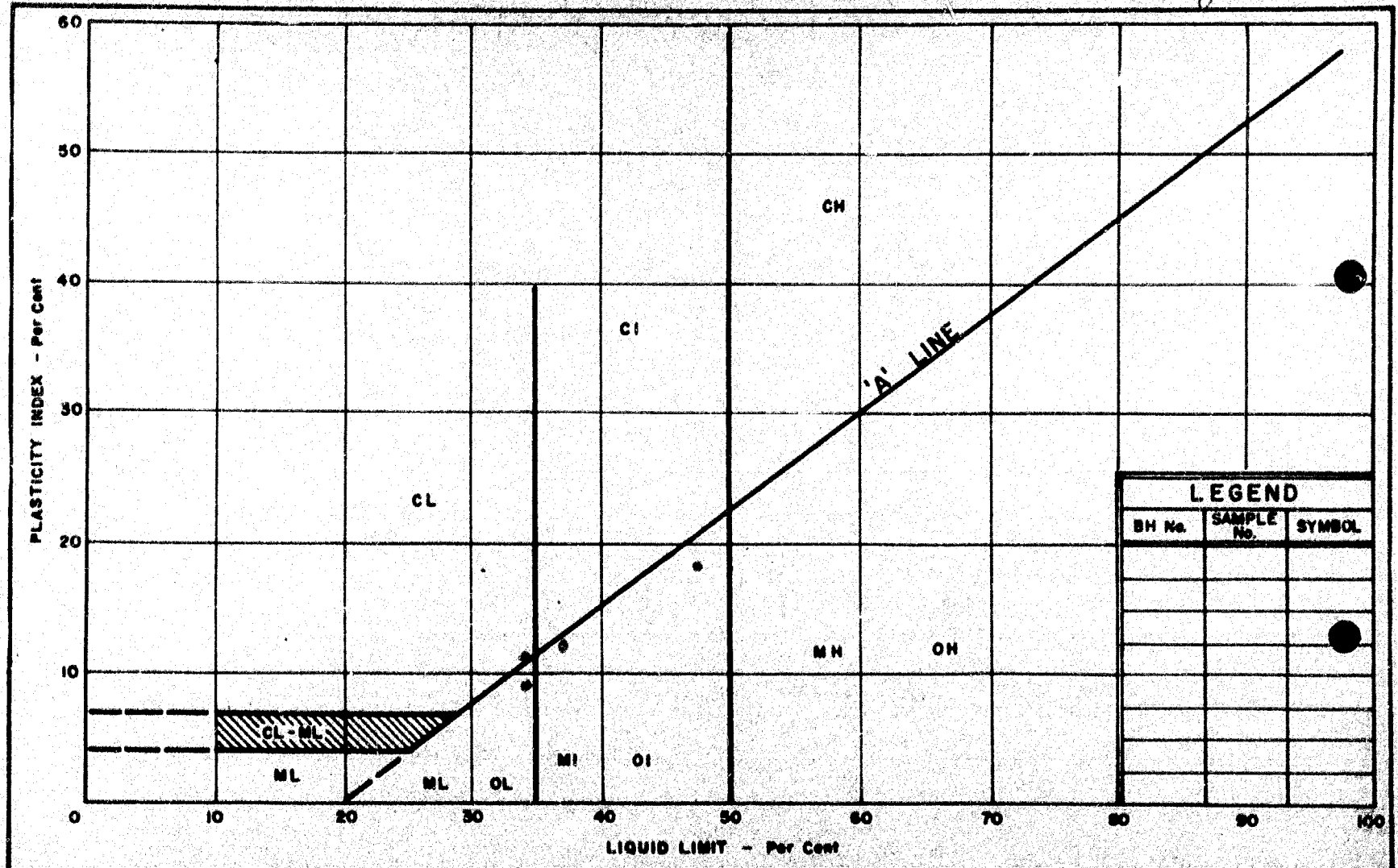
DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS
ONTARIO
DESIGN SERVICES BRANCH

GRAIN SIZE DISTRIBUTION
GLACIAL TILL
HET. MIX. OF CLAYEY SILT, SAND & GRAVEL

W.P. No.	127-66-44
JOB No.	73-11054
FIG.	1

FORM 08-MT-252
REVISED JULY, 1966

Fig. 1



DEPARTMENT OF HIGHWAYS
MATERIALS and TESTING DIVISION

PLASTICITY CHART

Figure 2

W.P. No. 127-66-44
JOB No. 73-11054

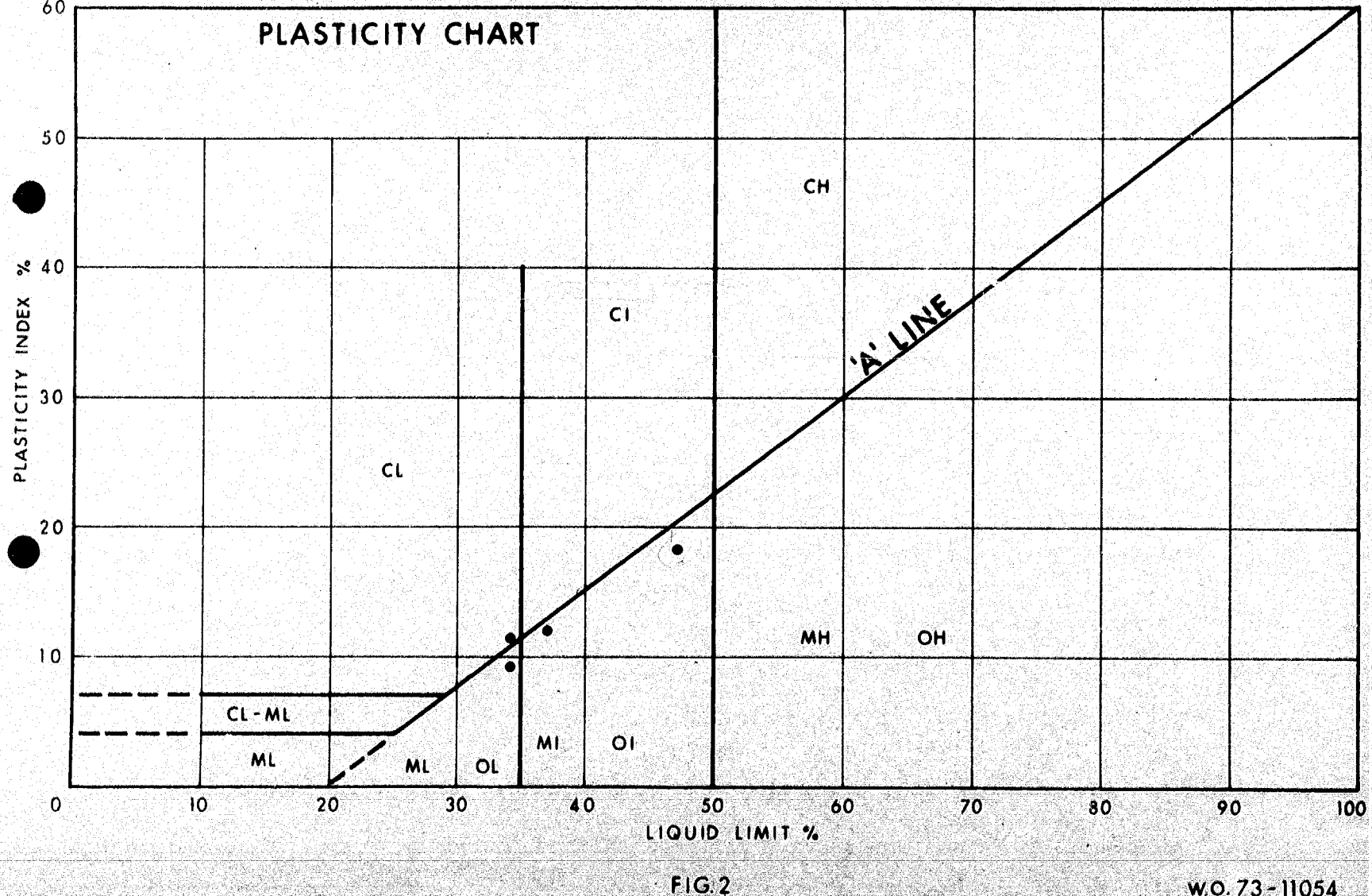


FIG. 2

W.O. 73 - 11054

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 30 H12-79

DIST. 6 REGION CENTRAL

W.P. No. 127-66-44

CONT. No. 76-120

W. O. No. 73-11054

STR. SITE No. 24-331

HWY. No.

LOCATION PROPOSED RAMP W- DIXIE RD.
OVER HEART LAKE RAMP, BRIDGE
48

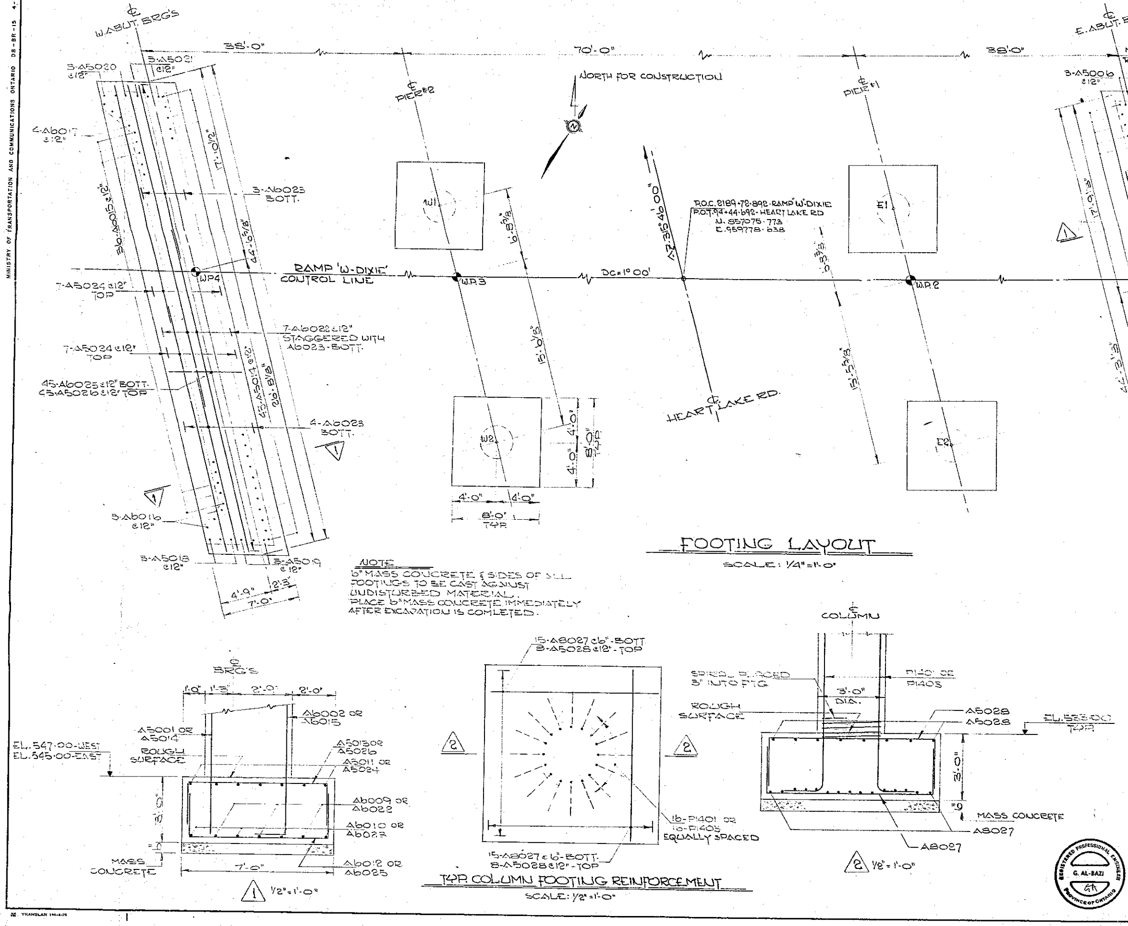
OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT 4

REMARKS:

CONT No	
WP No	127-66-44

RAMP 'W-DIXIE'
OVERPASS OVER HEART LAKE ROAD
BRIDGE 48
FOOTING LAYOUT & REINFORCEMENT

SHEET



W.P. PROVINCIAL CO-ORDINATES

W.P.	STATIONS	CO-ORDINATES NORTH	CO-ORDINATES EAST
1	2188+99.89	857112.42	959841.78
2	2189+37.89	857093.35	959808.97
3	2190+07.89	857058.49	959748.21
4	2190+45.89	857039.94	959715.05

PROVINCIAL CO-ORDINATES OF CENTRE POINT COLUMNS

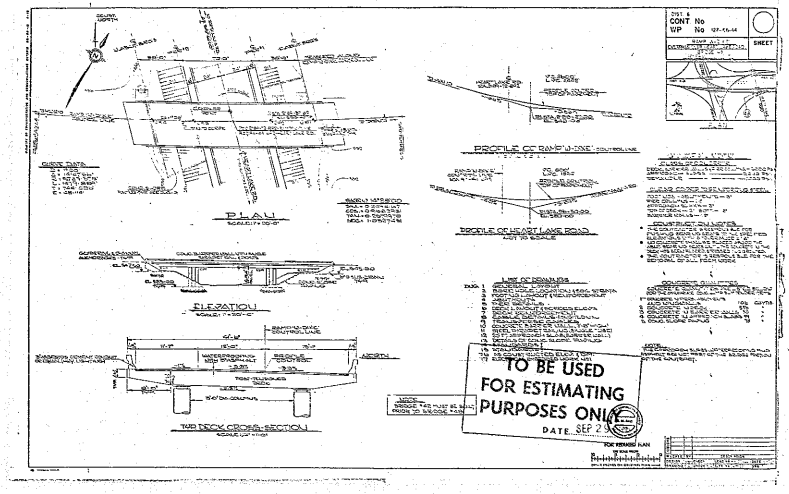
POINT	STATIONS	CO-ORDINATES NORTH	CO-ORDINATES EAST
E1	2189+39.53	857098.05	959804.30
E2	2189+34.13	857082.17	959819.76
W1	2190+09.61	857063.31	959743.52
W2	2190+03.94	857047.38	959759.03

REGISTERED PROFESSIONAL ENGINEER
G. AL-BAZI
PROVINCE OF ONTARIO

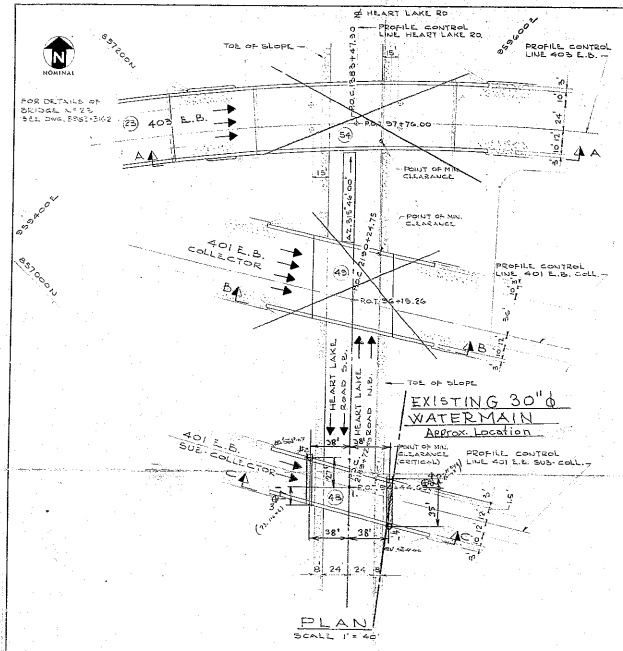
FOR REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

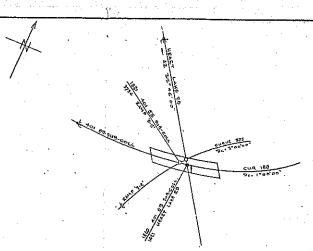
REVISIONS DATE	BY	DESCRIPTION	
DESIGN GA	CHECK D.R.G.	LOADING HS 20-44	DATE SEPT. 76
DRAWING E.A.	CHECK GA	SITE No 24-331	DWG 3

30M12-79


PLAN
PROFILE OF RAMP 'U-ONE' (SOUTHBOUND)
PROFILE OF HEART LAKE ROAD
ELEVATION
TWO DECK CROSS SECTION
TO BE USED
FOR ESTIMATING
PURPOSES ONLY
DATE SEP 2

30M12-79





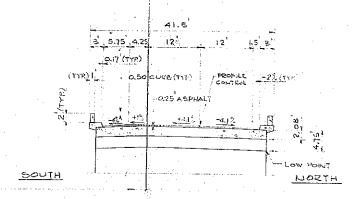
BRIDGE -48
INTERSECTION POINTS

℄ 401 EB SUB-COLL OVER HEART LAKE RD AND UNDER RAMP S-E CONTROL POINTS					
POINT 1050	401 EB SUB COLL	N	857078.773	E	959778.638	S 2159+72.952
POINT 1051	℄ HEART LAKE RD	N	857078.773	E	959778.638	S 0+00.000
POINT 1052	401 EB SUB COLL	N	857078.773	E	959778.638	S 0+00.000
POINT 1053	℄ HEART LAKE RD	N	857078.773	E	959778.638	S 0+00.000
POINT 3704		N	857078.773	E	959778.638	S 2159+71.861
POINT 3705		N	857078.773	E	959778.615	S 142+79.863

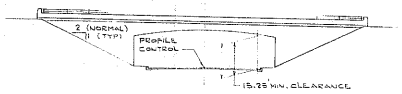
DESCRIPTION OF CHAIN 1051-46

CHAIN POINTS

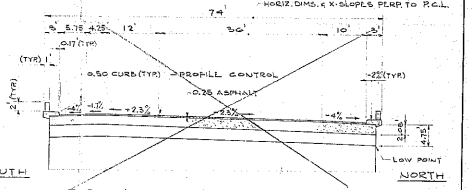
POINT	1050	LK	N	857078.773	E	959778.638	S 2159+72.952
POINT	1051		N	857078.773	E	959778.638	S 0+00.000
POINT	1052		N	857078.773	E	959778.638	S 0+00.000
POINT	1053		N	857078.773	E	959778.638	S 0+00.000
POINT	3704		N	857078.773	E	959778.615	S 142+79.863



TYPICAL DECK SECTION
SCALE 1"=10'
BRIDGE N° 48



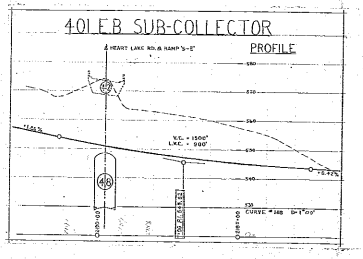
ELEVATION C-C
SCALE 1"=20'
BRIDGE N° 48

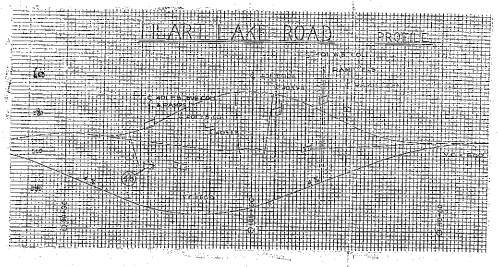


MODIF. DIMS. & X-SLOPES PERP. TO P.G.L.

TYPICAL DECK SECTION BRIDGE N° 49
SCALE 1"=10'

73-110 54





FOR REDUCED PLAN
USE SCALE BELOW
0 1 2 3
3 INCHES ON ORIGINAL PLAN

REVISIONS			FOR REDUCED PLAN USE SCALE BELOW
DATE	BY	DESCRIPTION	

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS
ONTARIO
FOUNDATION OF CANADA ENGINEERING CORPORATION LIMITED

HIGHWAYS 401 AND 403
WEST LIMITS OF HWY. 401-27 INTERCHANGE TO HWY. 10
PRE-DESIGN REPORT
KING'S HIGHWAY No. DIST. No.
CO.
TWP. LOT CON.

BRIDGES N° 48 49 AND 84

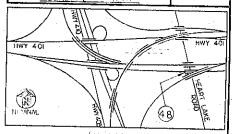
APPROVED (REGIONAL ENGINEER)
SITE No.
W.P. No. 127-66-01
CONTRACT No.
DRAWING No.

DESIGN		CHECK	
DRAWING	W.R.	CHECK	
DATE		LOADING	

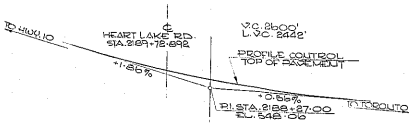
PENCO N° 3983-SK-1

30M12-79

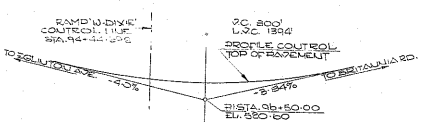
DIST. 6	
CONT No	
WP No 127-66-44	
RAMP 'W-DIXIE' OVERPASS OVER HEART LAKE ROAD BRIDGE 48	SHEET
GENERAL SHT. 1	



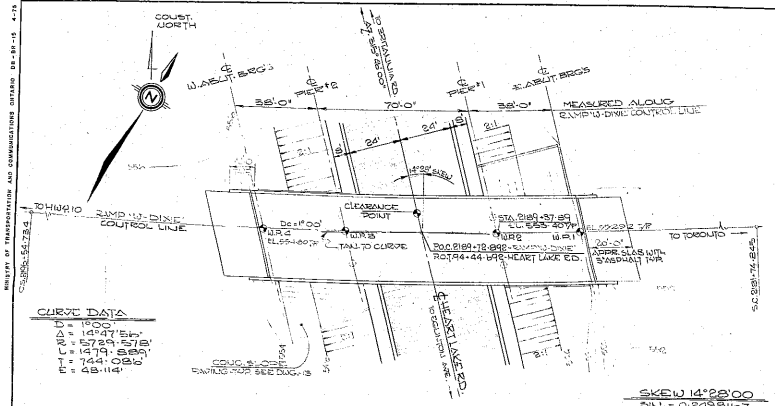
PLAN



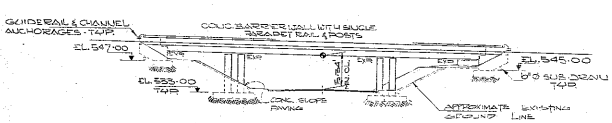
PROFILE OF RAMP 'W-DIXIE' - COUT201. LINE
NOT TO SCALE



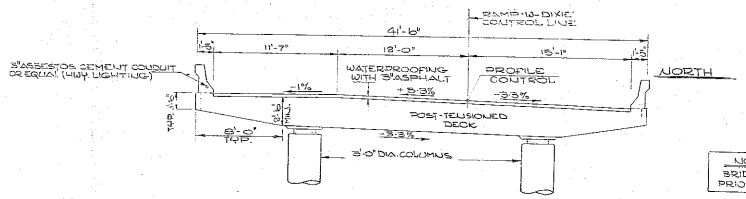
PROFILE OF HEART LAKE ROAD
NOT TO SCALE



PLAN
SCALE: 1" = 20'-0"



ELEVATION
SCALE: 1" = 20'-0"



T4P DECK CROSS-SECTION
SCALE: 1/4" = 1'-0"

NOTE
BRIDGE #42 MUST BE BUILT PRIOR TO BRIDGE #48

LIST OF DRAWINGS

DWG.	
1	GENERAL LAYOUT
2	BOREHOLE LOCATION & SOIL STRATA
3	FOOTING LAYOUT & REINFORCEMENT
4 & 5	ABUTMENTS
6 & 7	PIER UNITS
8	DECK LAYOUT & REINFORCEMENT
9	DECK REINFORCEMENT
10	CABLE DETAILS & CONSTRUCTION
11 & 12	PRESTRESSING COMPUTATIONS
13	CONCRETE BARRIER WALL (T-68" HIGH)
14	STEEL PARAPET RAILING (SINGLE TUBE)
15	24 FT. APPROACH SLAB (BARRIER WALL)
16	DETAILS OF CONC. SLOPE PAVING
17	STANDARDS
18	AS CONSTRUCTED ELEV. & DIM.
19	ELECTRICAL EMBEDDED WORKS
16	ELECTRICAL CONSTRUCTION STANDARDS

GENERAL NOTES

CLASS OF CONCRETE:
TYPICAL BARRIER WALL & PIER COLUMNS - 5000 PSI
REMAINING - 5000 PSI

CLEAR COVER TO REINFORCING STEEL
FOOTINGS - ABUTMENTS - 3"
PIER COLUMNS - 2"
APPROACH SLAB - 2"
TOP OF DECK - 2" BOTT. - 1 1/2"
BARRIER WALLS - 1 1/2"

COUNSTRUCTION NOTES
- THE COUNTRACTOR IS RESPONSIBLE FOR ELEVATING BEARING SEATS TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF ± 1/8"
- NO CONCRETE SHALL BE PLACED ABOVE THE ABUT. BEARING SEATS UNTIL THE CONCRETE IN THE DECK HAS BEEN PLACED, STRESSED AND GROUTED.
- THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL FORM WORK.

CONCRETE QUANTITIES

CONCRETE QUANTITIES ARE LISTED BELOW FOR THE APPROPRIATE CONCRETE ITEMS IN THE TENDER ITEMS.

1	CONCRETE IN PIERS, ABUTMENTS		
2	AND WINGWALLS	106	CUYDS.
3	CONCRETE IN DECK	558	"
4	CONCRETE IN BARRIER WALLS	30	"
	CONCRETE IN APPROACH SLABS	48	"
5	CONC. SLOPE PAVING	78	"

NOTE:
THE APPROACH SLABS, ASPHALTING AND ASPHALT ARE NOT PART OF THE BRIDGE PORTION OF THE CONTRACT.

FOR REDUCED PLAN
USE SCALE BELOW
10 11 12 13
3 INCHES ON ORIGINAL PLAN

REVISIONS		
DATE	BY	DESCRIPTION

DESIGN G.A.-A.B. CHECK G.A.-A.B. LOADING HS 20-44 DATE SEPT/76
DRAWING A.K. CHECKED SITE No 24-331 DWG 1

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO 88-89-15 4-78