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G.I.-30 SEPT 1976

GEOCRES No. 30M12-94

DIST. 6 REGION Central

W.P. No. 48-71-02

CONT. No. 78-111

W. O. No. 72-11023

STR. SITE No. _____

HWY. No. _____

LOCATION Proposed Twin O'pass Structure
at Hwy. 427 and Woodbine
Racetrack Entrance Road

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 3

REMARKS: documents to be unfolded
before microfilming

FOUNDATION INVESTIGATION REPORT
For
Proposed Twin Overpass Structures
At the Crossing of Hwy. 427
And Woodbine Racetrack Entrance Road
Borough of Etobicoke, County of York
District No. 6 (Toronto)
W.O. 72-11023 -- W.P. 48-71-02

1. INTRODUCTION:

The Foundations Office was requested to carry out a subsurface investigation for the twin single span structures to be constructed at the crossing of the proposed Hwy. 427 and Woodbine Racetrack Entrance Road, in the Borough of Etobicoke, County of York. The request was contained in a memo from the Bridge Office (Mr. G.C.E. Burkhardt, Regional Structural Planning Engineer, Central Region) dated January 31, 1972. Subsequently, an investigation was carried out by this Office to determine the subsoil, bedrock and groundwater conditions at the site.

The results of the investigation are presented in this report, together with our recommendations for the design of the structure foundations as well as the stability considerations associated with the approach fills.

2. DESCRIPTION OF SITE AND GEOLOGY:

The site is located immediately to the east of the existing Indian Line road, approximately 1 mile south of Rexdale Blvd. in the Borough of Etobicoke. The area, which is within the Woodbine Racetrack compound, is grass covered. The terrain is flat to undulating in relief between elevations 540 and 550. The grade of the existing Woodbine Racetrack

entrance road is at the level of the surrounding ground.

The site is located in the physiographic region known as the "Peel Plain." The characteristic deposit in this region is a ground moraine laid down during the Wisconsinian Glacial Age. In the vicinity of the area under investigation, the moraine is primarily composed of a cohesive glacial till whose thickness generally ranges from 60 to 70 feet. The overburden is underlain by grey shale bedrock of the Meaford-Dundas formation, Ordovician Period. Available geological information indicates that the surface of the bedrock is at about elevation 470 ft.

3. FIELD AND LABORATORY WORK:

Five boreholes, each of which was accompanied by a dynamic cone penetration test, was put out by augering five boreholes. Each down during the field investigation. The boreholes and the cone penetration tests were advanced by means of a continuous flight auger machine (C.M.E.) adapted for soil sampling purposes.

At required depths samples were obtained by means of a 2 inch O.D. split spoon sampler. The method of driving the split spoon conformed to the specifications for the Standard Penetration Test. The same method was used to advance the dynamic cone penetration tests. Bedrock was proven at two of the boring locations by obtaining BX size rock core samples.

During sampling and drilling operations, detailed logs of the borings were made. These logs contain a record of the drilling and sampling techniques used, together with the soil types and bedrock encountered. The location and elevation of all the boreholes are shown on Drawing No. W.O. 72-11023A, together with estimated stratigraphical sections across the site. Surveying was carried out by the personnel from the Central Region Engineering Survey Section. The elevations given in this report are referred to a Geodetic datum.

All samples were subjected to a careful visual examination in the field and subsequently in the laboratory. Following this examination, laboratory testing was carried out on selected representative samples to determine the following physical properties of the overburden.

Natural Moisture Content

Atterberg Limits

Grain-Size Distribution

The results of these tests are plotted on the Record of Borelog sheets as well as on Figure #1, all of which are located in Appendix I of this report.

4. SUBSOIL AND BEDROCK CONDITIONS:

4.1) General:

The predominant structure across the site is a cohesive glacial till, the thickness of which varies from 60.5 to 64 feet. This cohesive deposit is underlain by shale bedrock.

The boundaries of the various deposits, as determined in the boreholes, are shown on the accompanying Record of Borehole sheets. The stratigraphical sections, shown on Drawing No. 72-11023A, have been inferred from this data. From ground surface downward, the soil types and bedrock encountered are as follows.

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

Directly beneath a nominal topsoil cover (1 foot) across the site is a glacial till stratum which is composed of a heterogeneous mixture of clayey silt with sand and gravel. The thickness of this glacial till varies from 60.5 to 64 feet.

In Boreholes 3 and 4 the upper 5 ft. is made up of fill material whose composition is similar to that of the

glacial till; a trace of organic matter is, however, present throughout. In Boreholes 2, 3, 4 and 5 a layer of silty sand varying in thickness from 3 feet (B.H. 4) to 10 feet (B.H. 2) was intersected at elevations between 505 and 508. Grain-size distribution curves for samples of the cohesive stratum, obtained with a 2" O.D. split-spoon sampler, are shown on Figure No. 1 in Appendix I.

Atterberg limit tests were performed on samples of the glacial till. The results are tabulated below:

		<u>Range</u>	<u>Average</u>
(W _L) Liquid Limit	(%)	17 - 39	28
(W _p) Plastic Limit	(%)	12 - 22	17
(W) Natural Moisture Content	(%)	6.5 - 28	17

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

The Standard Penetration Tests, carried out within this glacial till stratum, are plotted on Record of Borehole sheets. This testing gave "N" value range of 10 to greater than 100 blows per foot. Based on this testing it is estimated that the consistency of this cohesive deposit varies from stiff to hard. The penetration testing carried out in the granular layers within the glacial till indicate that the relative density of this layer ranges from compact to very dense.

4.3) Shale Bedrock:

The cohesive glacial till is directly underlain by bedrock which was proven in two of the boreholes by obtaining BX size rock core samples. In the remainder of the boreholes the bedrock surface was inferred to exist at the level where the auger met practical refusal. The surface of the bedrock across the site varies from elevations 479 to 482.5 which corresponds to depths of from 60.5 to 64 feet below existing

ground surface.

The bedrock is composed of a grey shale. The upper 8.5 to 10.5 feet is in a weathered condition. Below this zone the bedrock is in a reasonably sound condition as evidenced by the high percentage of core recovery.

5. GROUNDWATER CONDITIONS:

The groundwater level conditions across the site, during the period of the field investigation (February 1972), were observed by taking readings in the open boreholes. The results of the readings are shown on the borelog sheets, as well as on Drawing No. 72-11023A.

The observations indicate that the groundwater level was located between elevations 539 and 542; i.e., 2 to 4 ft. below existing ground surface.

6. DISCUSSION AND RECOMMENDATIONS:

6.1) General:

It is proposed to extend the present Airport Expressway, northerly toward Finch Ave. following closely to the existing Indian Line Road. This expressway will be designated as Hwy. 427. A number of structure crossings will be required along this expressway. This report will deal with one of these crossings, namely, the proposed twin 65 ft. wide single span (65') structures to be constructed at the crossing of Hwy. #427 and the realigned Woodbine Racetrack Entrance Road, in the Borough of Etobicoke. The structures will be approximately 65 feet apart, this open median may be closed at a later date.

It is understood that the grade of the Woodbine Entrance Roadway, in the vicinity of the crossing, will vary between elevations 536 and 538; i.e., the roadway will be some 5 to 7 feet below existing ground surface. The grade of Hwy. #427 is to be at about elevation 569. At these

grades the maximum height of the approaches will be of the order of 26 and 33 feet in the transverse and longitudinal direction, respectively.

The predominant stratum across the site is a stiff to hard cohesive glacial till, whose thickness ranges from 60.5 to 64 feet. This deposit is underlain by shale bedrock.

6.2) Structure Foundations:

The closed type abutments can be supported on spread footings located in the competent cohesive glacial till. A minimum of 4 feet of cover should be provided above the underside of the footings for frost protection purposes. Footings so founded could be designed using an allowable bearing value of 2.5 t.s.f.

The base of the footings will be located below the groundwater level recorded during the period of the field investigation. In this regard it is recommended that the foundation elements be constructed only after the Woodbine Entrance Road cut has been made and the permanent drainage lower the prevailing groundwater level at the abutment locations. The excavations will be carried out within the relatively impervious cohesive glacial till. Accordingly, no major dewatering problems are anticipated. Any minor seepage from granular seams, located throughout the glacial till deposit, could be handled by using conventional techniques such as pumping from sumps.

Settlement will be induced in the cohesive glacial till by the imposed footing pressure. The cohesive till is highly preconsolidated, therefore, the settlement will be of a recompression nature; i.e., it will take place during or immediately following the construction period. Providing care is taken to ensure that the foundation subsoil is not softened by uncontrolled surface runoff or groundwater seepage, this settlement should not exceed 1 inch. In this regard it would be advantageous to place a lean concrete working slab over the subsoil; this slab should be placed as soon as the excavations reach the footing foundation level.

If the structures are designed as rigid frames, then a coefficient of earth pressure at rest (K_o) of 0.5 should be assumed for the granular fill placed behind the walls, when designing the abutments. However, if some movement of the wall is permitted, then a coefficient of active earth pressure (K_a) of 0.33 can be used.

The granular backfill behind the wall should be allowed to drain in order to prevent the buildup of excess hydrostatic groundwater pressures in this area. This can be accomplished by providing weep holes at the base of the walls. The location and spacing of these weep holes should comply with current M.T.C. practices.

It is recommended that a value of 2,000 p.s.f. be assumed for the adhesion between the rough based concrete footings and the underlying cohesive glacial till, when computing the sliding resistance of the abutments.

The closed-type vertical wall sections will be inherently stable with respect to a deep-seated rotational type of failure occurring within the cohesive subsoil located beneath the spread footings.

6.3) Approach Fill Embankments:

The approach embankments will have a maximum height of 26 feet. No stability problems are anticipated provided the fill is properly compacted and the standard 2:1 slopes are employed.

The cohesive foundation subsoil will settle due to the fill loading. This settlement should be of the order of 1 to 2 inches; it will occur during or immediately following fill placement.

7. MISCELLANEOUS:

The field work for this project was carried out during the period of February 21 to March 2, 1972, under the

supervision of Mr. V. Korlu, Project Foundations Engineer,
who also wrote this report.

The report was reviewed by Mr. M. Devata, Supervising
Foundations Engineer.

The equipment used was owned and operated by Master
Soil Investigation Ltd., Toronto.

V. Korlu

V. Korlu, P. Eng.



M. Devata

M. Devata, P. Eng.

VK/ao

Sept. 15, 1972.

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 1

JOB 72-11023

LOCATION Co-ords. 15,881,282 N; 969,965 E.

ORIGINATED BY VK

W.P. 48-71-02

BORING DATE Feb. 21, 1972

COMPILED BY VK

DATUM Geodetic

BOREHOLE TYPE Auger & sample with C.M.E. machine

CHECKED BY *[Signature]*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w			BULK DENSITY γ	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		20	40	60	80	100	w_p	w	w_L		
543.5	Ground Level															
0.0	Het. mix. of clayey silt, sand & gravel. (Glacial Till)	Δ	1	SS	12	540										541.0
		Δ	2	SS	14											2 27 57 14
533.5	Brown	Δ	3	SS	16											
10.0	Grey	Δ	4	SS	27	530										
	Stiff to Hard	Δ	5	SS	25											
		Δ	6	SS	27											
		Δ	7	SS	27											
		Δ	8	SS	33	520										
		Δ	9	SS	17											
		Δ	10	SS	23	510										
		Δ	11	SS	99											
		Δ	12	SS	89	500										
		Δ	13	SS	40											
		Δ	14	SS	41	490										
		Δ	15	SS	92											
480.5	Weathered Shale	Δ	16	SS	100.5"	480										
		Δ	17	BXL	100%											
		Δ	18	BXL	50%											
470.0	Sound Shale Bedrock	Δ				470										
73.5	Grey	Δ	19	BXL	100%											
465.5	End of Borehole	Δ														
78.0						460										

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 2

JOB 72-11023

LOCATION Co-ords. 15,881,208 N; 969,804 E.

ORIGINATED BY VK

W.P. 48-71-02

BORING DATE February 27, 1972

COMPILED BY VK

DATUM Geodetic

BOREHOLE TYPE Auger & sample with C.M.E.

CHECKED BY *[Signature]*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		20	40	60	80	100	w_p	w	w_L		
543.0	Ground Level															
0.0	Het. mix. of clayey silt, sand & gravel. (Glacial Till)		1	SS	13	540						10	1			Shl.
			2	SS	13											6 15 54 25
532.0	Brown		3	SS	20											
11.0	Grey		4	SS	22	530										
	Stiff to Hard		5	SS	16											
			6	SS	23											
			7	SS	22	520										
			8	SS	24											
			9	SS	32	510						10	1			
505.0			10	SS	26											0 48 47 5
38.0	Silty sand with traces of clay.		11	SS	87	500										
495.0	Very Dense															
48.0			12	SS	22	490										
482.7																
60.3	Weathered Shale Bedrock		13	SS	100	480										
472.8			14	SS	100	470										
70.2	End of Borehole															

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 3

JOB 72-11023

LOCATION Co-ords. 15,881,274 N; 969,870 E.

ORIGINATED BY VK

W.P. 48-71-02

BORING DATE March 2, 1972

COMPILED BY VK

DATUM Geodetic

BOREHOLE TYPE Auger and sample with C.M.E. machine

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT				LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		20	40	60	80	100	w_p	w	w_L	
544.0	Ground Level														
0.0	Silty clay with some sand & gravel, traces of organics. Stiff														542.
539.0			1	SS	15	540									3 38 48 11
5.0	Het. mix of clayey		2	SS	25										
533.0	Brown		3	SS	20										
11.0	Grey		4	SS	19	530									
	silt, sand & gravel		5	SS	14										
	(Glacial Till)		6	SS	18										
	with occ. layers of silty clay.		7	SS	10	520									
			8	SS	19										
	Stiff to Hard		9	SS	18	510									
508.5			10	SS	32										0 30 69 1
35.5	Silty sand with traces of clay.		11	SS	62										
501.0	Very Dense					500									
43.0			12	SS	18	490									
			13	SS	110	480									
480.0															
64.0	Weathered Shale					470									
473.8															
70.2	End of Borehole														

OFFICE REPORT SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 4

JOB 72-11-23

LOCATION Co-ords. 15,881,340 N; 969,940 E.

ORIGINATED BY VK

W.P. 48-71-02

BORING DATE Feb. 24, 1972

COMPILED BY VK

DATUM Geodetic

BOREHOLE TYPE Auger and sample with C.M.E. Machine

CHECKED BY *ML*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w			BULK DENSITY γ	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		20	40	60	80	100	w_p	w	w_L		
543.8	Ground Level															
0.0	Silty clay with some sand & gravel, traces of organics. Stiff		1	SS	9	540										541.1
538.8			2	SS	12											1 24 57 1
5.0	Het. mix of clayey		3	SS	48											
532.8	Brown		4	SS	16											
11.0	Grey		5	SS	23											
	silt, sand & gravel		6	SS	23											
	(Glacial Till)		7	SS	25											
	Stiff to Hard		8	SS	24											
			9	SS	14											
507.8			10	SS	29											
36.0	Silty sand & thin layers of clay. Compact		11	SS	90											
504.8			12	SS	46											
39.0			13	SS	59											
479.8			14	SS	100											
64.0	Weathered Shale		15	SS	100											
473.3			16	SS	100											
70.5	End of Borehole															

OFFICE REPORT SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 5

JOB 72-11023

LOCATION Co-ords. 15,881,266 N; 969,775 E.

ORIGINATED BY VK

W.P. 48-71-02

BORING DATE Feb. 29, 1972

COMPILED BY VK

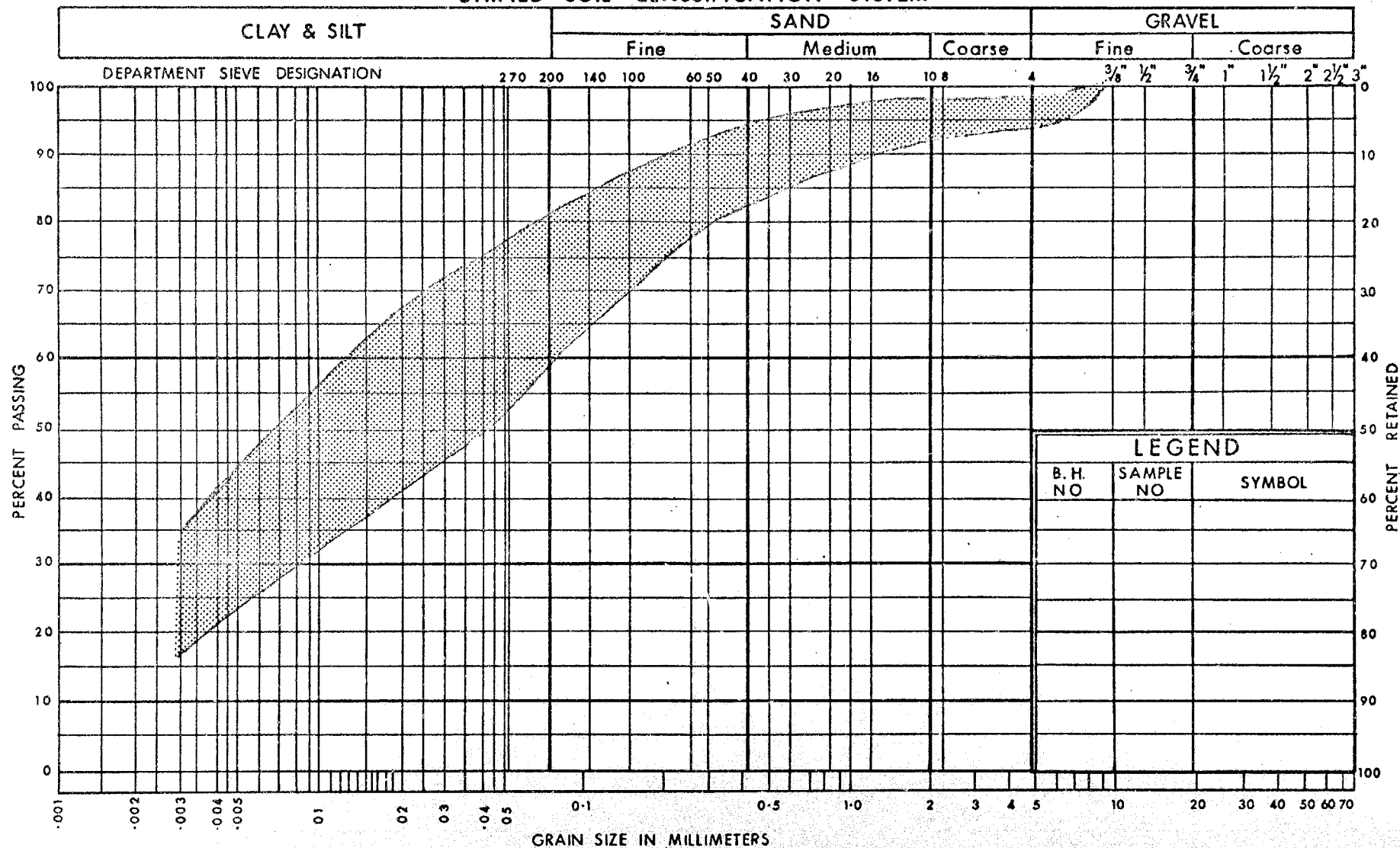
DATUM Geodetic

BOREHOLE TYPE Auger and sample with C.M.E. machine

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT			LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		20 40 60 80 100			w_p — w — w_L				
							SHEAR STRENGTH P.S.F.			WATER CONTENT %				
							○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE			10 20 30				
543.2	Ground Level													
0.0	Het. mix. of clayey silty sand and gravel (Glacial Till)		1	SS	10	540								539.
			2	SS	15									8 34 41 1
531.7	Brown		3	SS	21									
11.5	Grey		4	SS	28	530								
	Stiff to Hard		5	SS	20									
			6	SS	24									
			7	SS	30	520								
			8	SS	29									
			9	SS	23	510								
509.2														
34.0	Silty sand & traces of clay & grav. Compact		10	SS	17									1 82 (17)
506.2			11	SS	100	500								
37.0														
498.2														
45.0	Silty sand & traces of clay and gravel.		12	SS	10	490								1 86 (13)
489.2	Compact													
54.0														
			13	SS	100	480								
479.2														
64.0	Weathered Shale Bedrock													
470.7			14	SS	100	470								
72.5	Sound Shale Bedrock		15	BXL	27%									
467.7			16	BXL	100%									
75.5	End of Borehole													

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT
OF
TRANSPORTATION AND COMMUNICATIONS



DESIGN SERVICES BRANCH

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

W.P. No. 48-71-02

JOB No. 72 - 11023

FIG. 1

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. G.C.E. Burkhardt,
Regional Structural Planning Eng.,
Central Region,
90 Floral Pkwy., Downsview.

FROM: Foundations Office,
Design Services Branch,
West Bldg., Downsview.

ATTENTION:

DATE: January 18, 1973.

OUR FILE REF.

IN REPLY TO

JAN 24 1973

SUBJECT:

ADDENDUM TO THE
FOUNDATION INVESTIGATION REPORT
For
Proposed Hwy. #427 Overpass at Woodbine
Racetrack Entrance Road
Borough of Etobicoke, County of York
District #6 (Toronto)
W.O. 72-11023 -- W.P. 38-71-02
48

A foundation investigation was carried out by this Office at the above-mentioned location and the results were submitted in our Foundation Report #W.O. 72-11023 dated September 25, 1972. Since the submission of report, a revision has been proposed which would, in effect, require a three span spillthrough type of structure in place of a single span structure. As a result of this, we have initiated an additional field investigation to determine the subsoil conditions for the revised scheme of a three span structure.

The additional information, consisting of two sampled boreholes (B.H. #6 & #7) has now been completed and a revised drawing showing the estimated stratigraphical sections is enclosed. The recent borings revealed similar subsoil conditions to those encountered in the original investigation. Based on these results our recommendations pertaining to a three span structure foundations and approaches are as follows:

The proposed grade of the Woodbine Entrance Roadway, in the vicinity of the crossing, will vary between elevation 536 and elevation 538; i.e., the roadway will be some 5 to 7 ft. below existing ground surface. The grade of Hwy. #427 is about elevation 569. At these grades the maximum height of the approaches will be of the order of 26 and 33 feet in the transverse and longitudinal direction, respectively. No stability problems are anticipated for the standard 2:1 approaches.

January 18, 1973.

The piers can be supported on spread footings located in the competent cohesive glacial till. A minimum earth cover of 4 ft. should be provided above the underside of the footing for frost protection purposes. Footings so founded could be designed using an allowable bearing pressure of 2.5 t.s.f. Settlement considerations and dewatering problems discussed in our original foundation report W.O. #72-11023 with regard to spread footings for closed type abutments are applicable for the proposed pier foundations of the new three span structure.

The abutments can be 'perched' within the approach fills and supported on spread footings. The fill material below the tops of the footings should consist of well compacted Granular 'A' and should extend for a horizontal distance of at least 10 ft. from the footing edges in the plane of the footing tops. This portion of the fill should be constructed with side slopes of 2:1. The remainder of the fill should be completed to about profile grade for a distance of 50 ft. behind the abutments before re-excavating for the abutment footings. A design load of 2.5 t.s.f. may be used for the abutment foundations.

As an alternative the abutments 'perched' within the approaches can be supported on end-bearing piles driven to shale bedrock. The allowable loads will be dependent on the pile section chosen. For example, a safe design load of 95 tons may be used for 14 BP 73 steel 'H' piles.

This memo together with our revised Drawing #72-11023A and borelog sheets should be included in our original Foundation Investigation Report. Should you require any additional information with regard to this project, please feel free to contact this Office.

MD/ao

Attch.

cc: E. J. Orr

B. R. Davis

A. Rutka

R. S. Pillar

H. Greenland

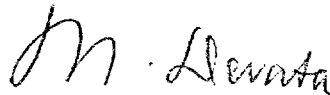
B. J. Giroux

C. Mirza

G. A. Wrong

B. A. Singh

McCormick, Rankin & Associates Ltd.

Foundations Files
DocumentsM. Devata,
SUPERVISING FOUNDATIONS ENGINEER.

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 6

JOB 72-11023

LOCATION Co-ords. 881,348 N; 969,858 E.

ORIGINATED BY VK

W.P. 10-69-09 48-71-02

BORING DATE Nov. 13, 1972

COMPILED BY VK

DATUM Geodetic

BOREHOLE TYPE Auger & sample with QTE Machine

CHECKED BY *W*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT					LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		20	40	60	80	100	w_p	w	w_L		
543.8	Ground Level															
0.0																
	Brown		1	SS	31	540										
	Grey		2	SS	15											
	Heterogeneous mixture		3	SS	24											
	of clayey silt, sand		4	SS	24	530										
	and gravel		5	SS	20											
	(Glacial Till)		6	SS	24											
	Stiff to Hard		7	SS	19											
			8	SS	21	520										
			9	SS	13											
			10	TW	PH	510										
			11	SS	169	500										
494.8																
49.0	Silty sand and few		12	SS	45	490										
	gravel.															
486.8	Dense															
57.0																
			13	SS	57											
460.8																
63.0	Bedrock					480										
477.8	Weathered Shale															
66.0	End of Borehole					470										

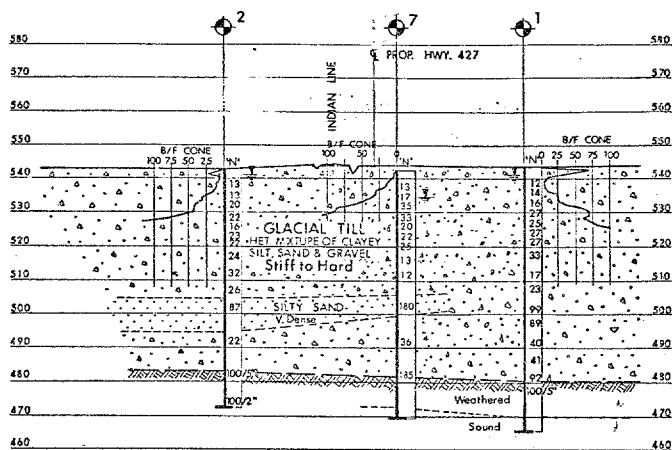
ORIGINATED BY VK

COMPILED BY VK

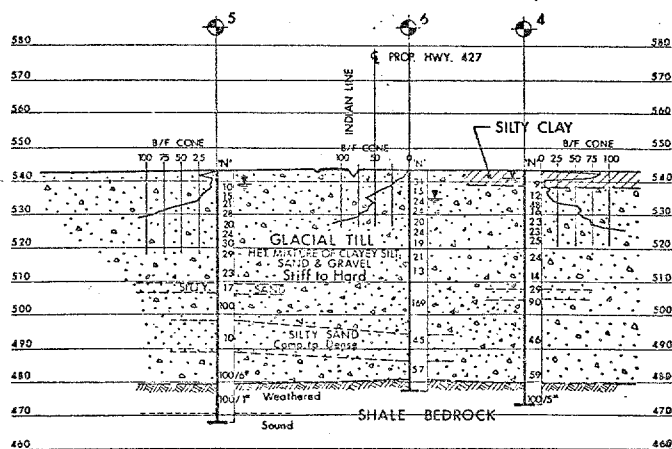
CHECKED BY AK

20
15 ϕ 5 % STRAIN AT FAILURE
10

OFFICE REPORT ON SOIL EXPLORATION

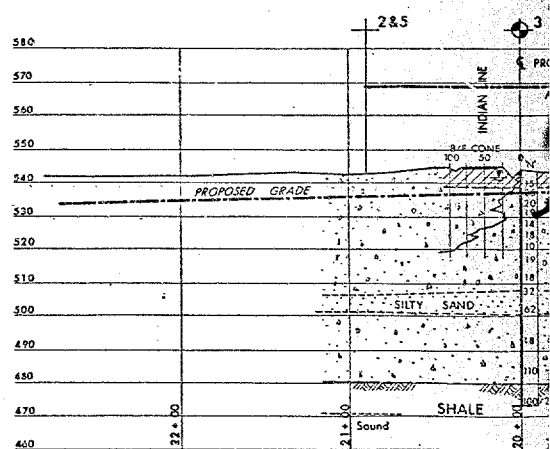
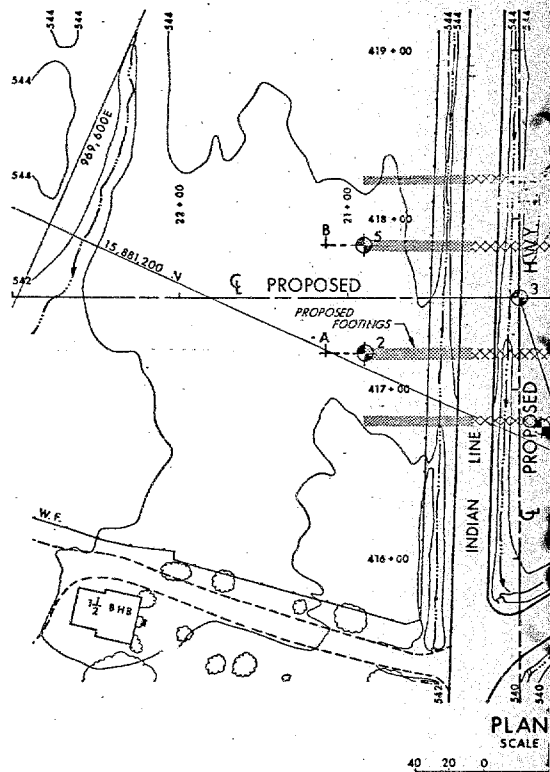


A-A

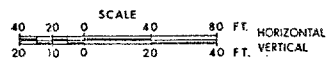


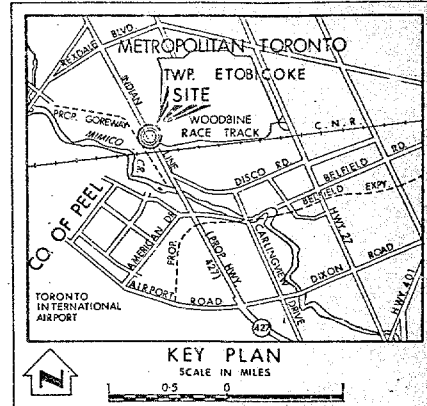
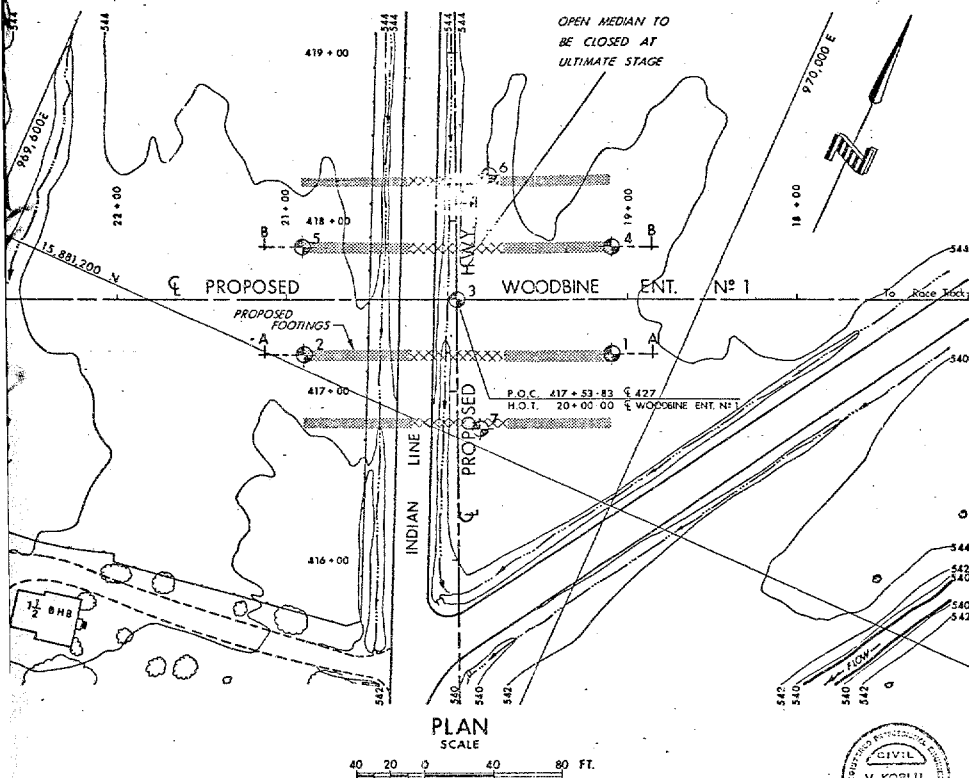
B-B

SECTIONS



PROFILE - WOOD





LEGEND			
	Bore Hole		
	Cone Penetration Test		
	Bore Hole & Cone Test		
	Water Levels established at time of field investigation, FEB., MAR. & NOV. 1972		
NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	543-5	15,881,282	969,965
2	543-0	15,881,208	969,804
3	544-0	15,881,274	969,870
4	543-8	15,881,340	969,940
5	543-2	15,881,266	969,775
6	543-8	15,881,348	969,858
7	542-3	15,881,210	969,913

— 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
DEC 72	50		BORE HOLES 6 & 7 ADDED, 5TH THIS ALTERED
			DESIGNER

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS
DESIGN SERVICES BRANCH — FOUNDATIONS OFFICE

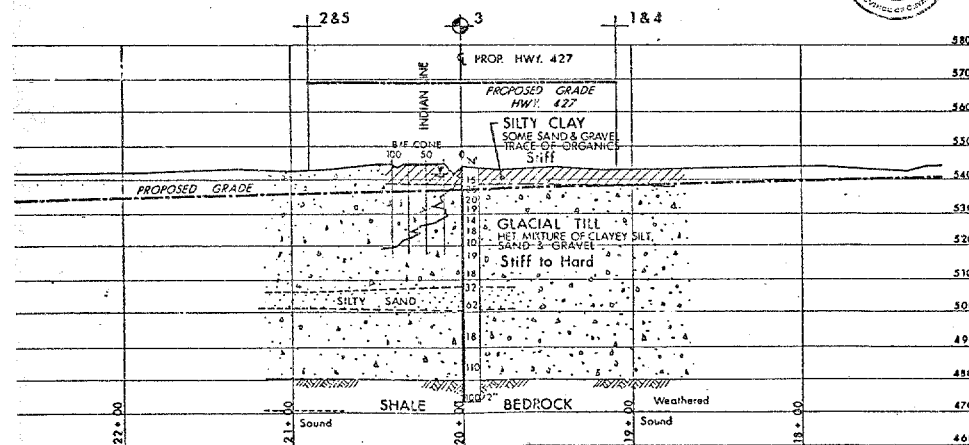
WOODBINE ENT. N° 1

HIGHWAY NO. PROP. 427 DIST. NO. 6
CO. YORK METRO TORONTO
TWP. ETOBICOKE LOT CON.

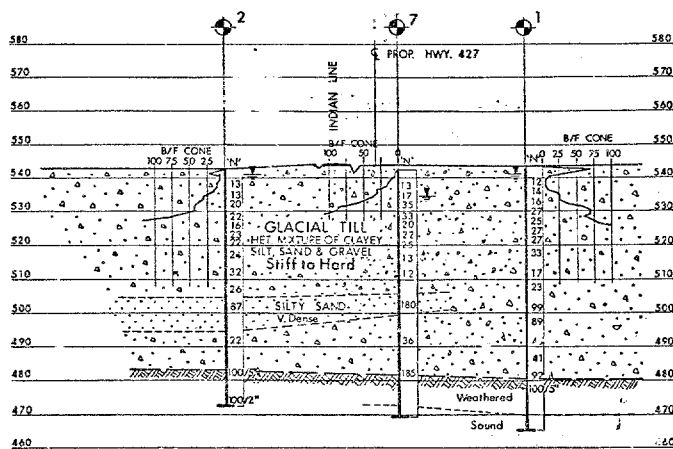
BORE HOLE LOCATIONS & SOIL STRATA

SUBPD. V.K. CHECKED	SWP NO. 48-71-02	DRAWING NO.
DRAWN O.E. CHECKED	JOB NO. 72-11023	72-11023A
DATE AUG. 10, 1972	SITE NO.	BRIDGE DRAWING NO.
APPROVED [Signature]	CONT. NO.	

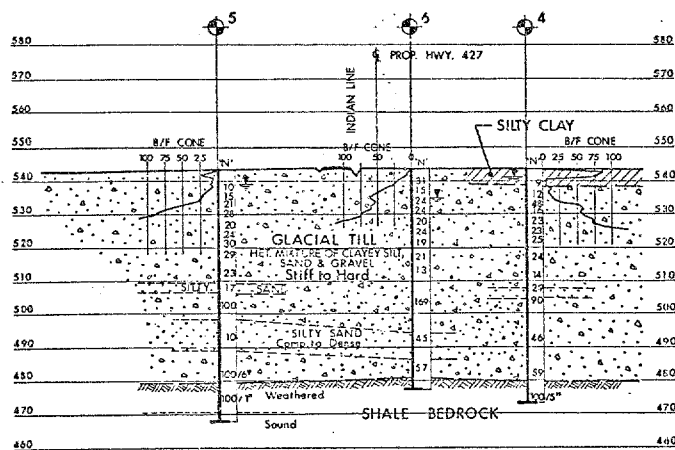
REF. N° B 80-92



80 FT. HORIZONTAL
40 FT. VERTICAL

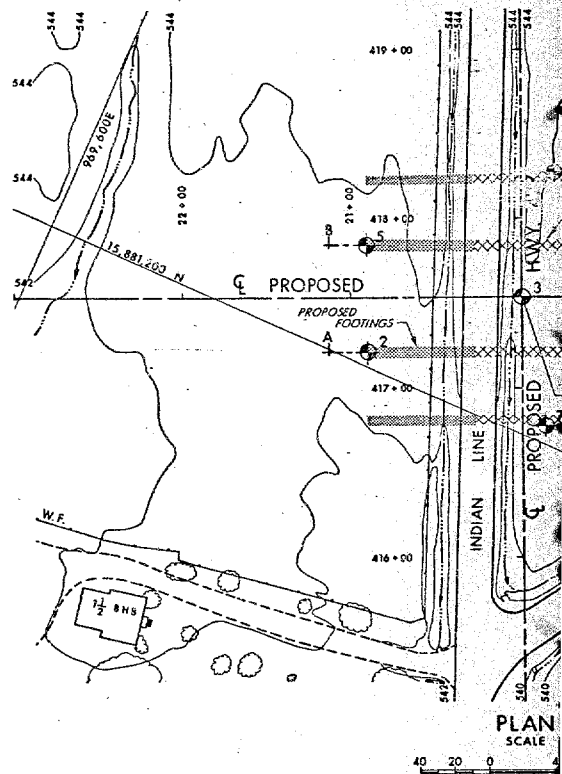
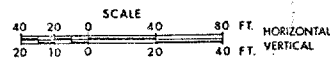


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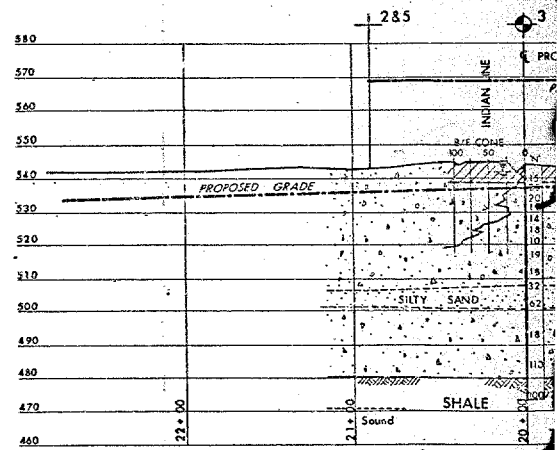


B-B

SECTIONS



PLAN SCALE



C PROFILE - WOOD

Mr. W. L. Lin
Design Engineer, Eastern Section
Structural Office
West Bldg, Downsview

Soil Mechanics Section
Engineering Materials Office
3rd Floor, Central Building

78 03 21

Re: Hwy.427 Overpass at Woodbine
Racetrack, Entrance #1,
W.P. #48-71-02, Site #37-983
Highway #427, District #6, Toronto

We have reviewed the final bridge plan drawings (Drawing #1 and #3) dated January 1978, for the above mentioned structure and have the following comments.

1. The piers are founded on spread footings at about elevation 535.0. At this elevation a safe bearing value of 2.5 t.s.f. is recommended.
2. In our letter dated November 2, 1977 we recommended the support of perched abutments in the approach fills, placed on a core of well compacted granular "A" material with 2.5 t.s.f. design load. Alternatively, we recommended a #14 timber pile support driven to tip elevation 520.0 with a safe load of 25 tons/pile. According to the final plan drawings, the abutments are supported on 12 HP53 steel H-piles driven to bedrock. However, the final choice should be based on economic or other necessitating considerations.

MP We have no other comments.

V. Korlu
Project Engineer

For: M. Devata
Supervising Engineer

VK/ig

cc: G.C.E Burkhardt
Files✓

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

72-11023 (Continuation)
(Addendum)

TO: Mr. A. G. Stermac,
Principal Foundation Engineer,
West Building.

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

ATTENTION:

DATE: November 3, 1972.

OUR FILE REF.

IN REPLY TO

SUBJECT: Proposed Highway 427 Overpass at
Woodbine Racetrack Entrance,
(Approx. 0.9 mi. south of Rexdale Blvd.),
W.P. 48-71-02; Site 37-983; W.O. 72-11023,
District 6, Toronto.

During the last progress meeting held for the section of Highway 427 comprised between Highway 401 and Morningstar Drive it was generally agreed that a three span spillthrough type of structure would be desirable at above crossing.


The final choice between this proposal and the single span previously assumed and dealt with in your Foundation Report W.O. 72-11023 will depend on economic considerations, aesthetics, etc.

To enable your office to carry out the additional field investigation please find attached two 1" = 40' plans showing the intended scheme.

We would like to point out that the present stage construction set for contract #3 (from C.N.R. Overhead northerly to Morningstar Drive) specifies that the east section of the Woodbine Overpass must be constructed first, in order to keep traffic on Indian Line.

This means that the cut for the Woodbine Entrance will not be completed at that time and therefore the footing excavations will require pumping. Such requirement was discussed briefly and received verbal approval from Mr. M. DeVata - Supervising Foundations Engineer, on October 19, 1972.

MDB:lc
Attach.


M. D. Bendayan,
STRUCTURAL PLANNING ENGINEER,
for:
G. C. E. Burkhardt,
REG. STRUCTURAL PLANNING ENG.

c.c. R. Fitzgibbon
J. Anderson

DOCUMENT MICROFILMING IDENTIFICATION

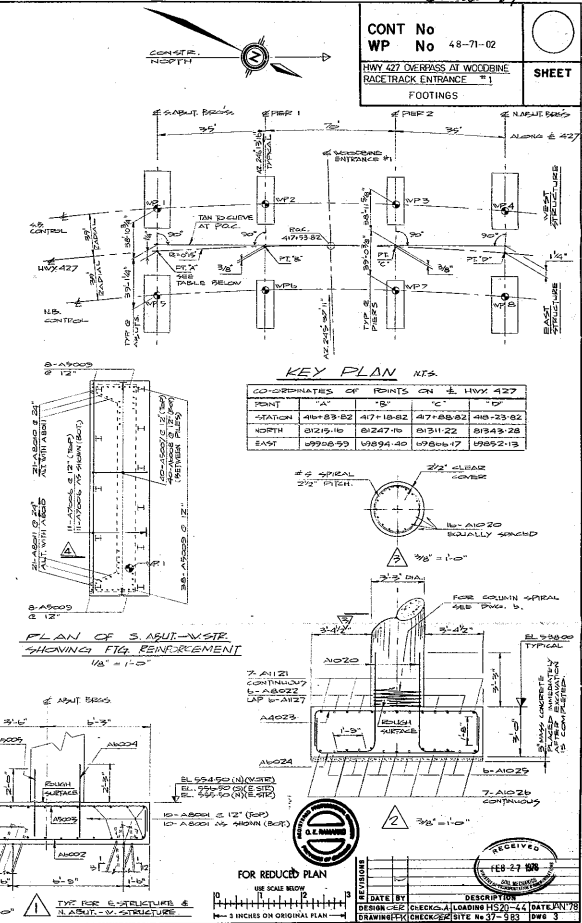
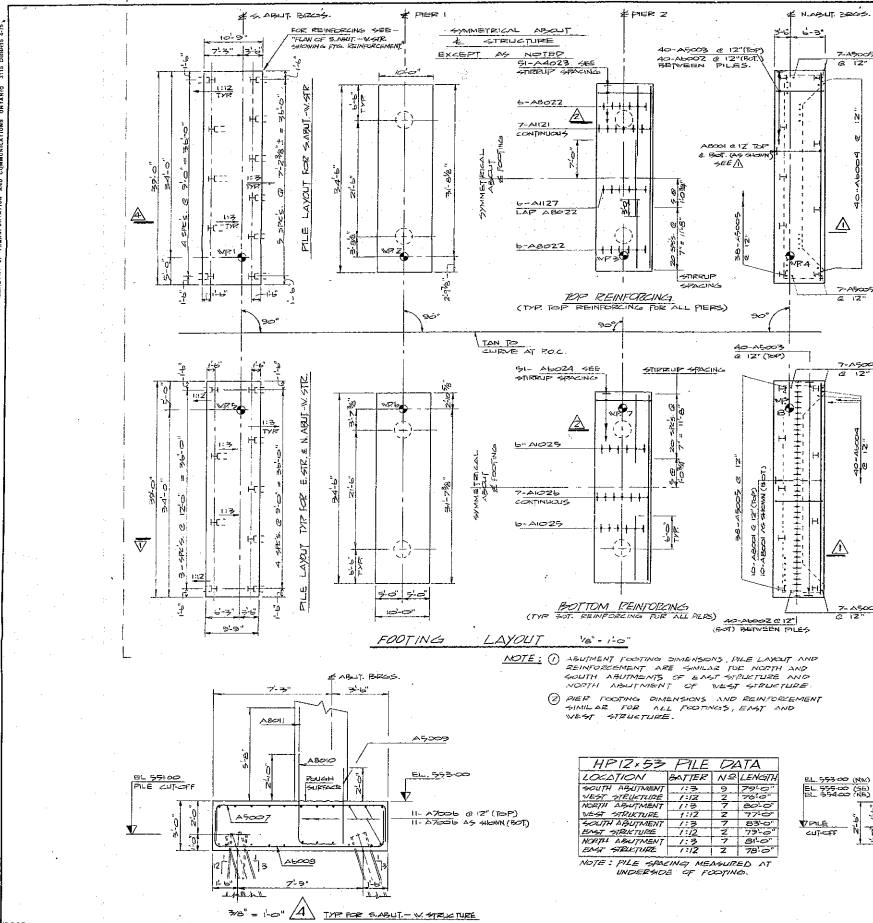
GEOCRES No. 30 H D - 64DIST. 6 REGION CENTRALW.P. No. 48-71-02CONT. No. 78-111W. O. No. 78-11023

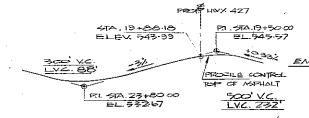
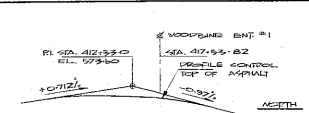
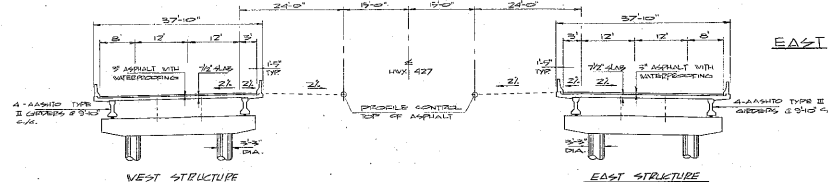
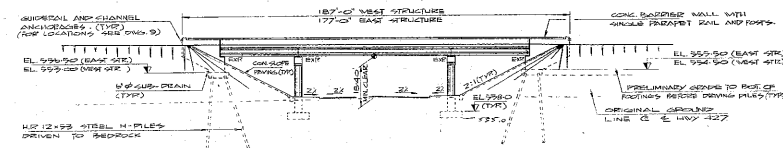
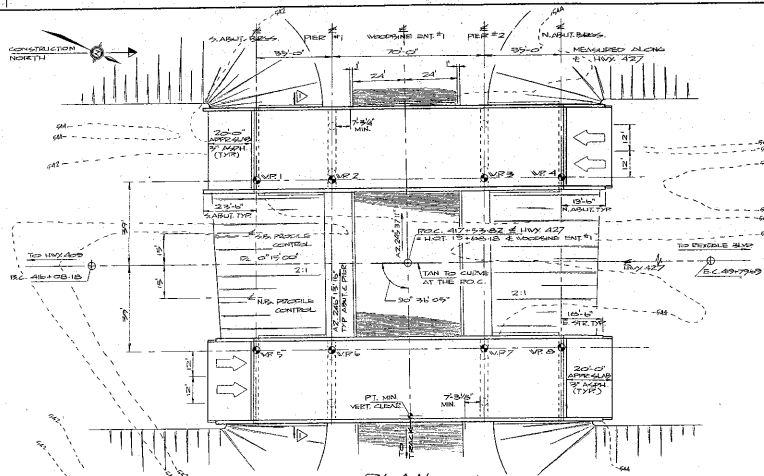
STR. SITE No. _____

HWY. No. _____

LOCATION PERFORD TOWN D'ARRE STROUVILLEAT HWY 417 AND MOOREHEAD TALETRAILENTRANCE 63CHANGING DIRECTIONS TO BE INDICATED WITH THIS REPORT 3

REMARKS: _____





WORKING POINT DATA

POINT	STATION	ELEVATION	COORDINATES
VP1	461.8834	540.19	84177.44 48872.90
VP2	461.8888	540.79	84271.44 48552.71
VP3	461.8871	541.41	84279.40 48380.48
VP4	461.8770	542.20	84327.95 48166.45
VP5	461.8750	543.19	84360.80 48140.27
VP6	461.8760	543.96	84362.80 47930.09
VP7	461.8888	543.49	84326.74 48241.88
VP8	461.8734	543.19	84333.00 48083.62
P.C.	461.8746	-	84344.00 47994.46
P.O.E.	461.8732	-	84279.79 48380.24
P.T.	461.8749	-	84344.34 47992.21

CONCRETE QUANTITIES

ITEM	QUANTITY	UNIT
1. CONCRETE IN PIER, ABUTMENTS AND WINGWALLS	140	CU YD
2. CONCRETE IN VEECH AND PARAPET WALLS	27	CU YD
3. CONCRETE IN BARRIER WALLS	44	CU YD
4. CONCRETE IN APPROACH SLAB	45	CU YD
5. CONCRETE IN GROUND FILLING	45	CU YD

FOR REDUCED PLAN

DATE	BY	DESCRIPTION
1978	1	DESIGNED BY
1978	2	CHECKED BY
1978	3	APPROVED BY

DISTRICT 6
 CONT No
 No 48-71-02
 HWY 427 OVERPASS AT WOODBINE RACETRACK ENTRANCE #1
 GENERAL DRAWING

GENERAL NOTES
 CLAS OF CONCRETE
 PRESTRESSING NUMBER 5000 PSI
 CLEAR COVER TO REINFORCING STEEL
 FOOTINGS AND FOUNDATIONS 3"
 DECK TOP 2"
 BOTTOM 12"
 PIER 12"
 APPROACH SLAB 2 1/2"
 REMAINDER 2" NOTED

CONSTRUCTION NOTES
 THE CONTRACTOR IS RESPONSIBLE FOR
 PROVIDING THE BEARING SEATS TO THE
 SPECIFIED ELEVATIONS WITH A
 TOLERANCE OF ± 1/4"
 NO CONCRETE SHALL BE PLACED AROUND
 THE BEARING SEATS UNTIL CONCRETE
 IN THE DECK HAS BEEN PLACED

- LIST OF DRAWINGS
- 37-285-1 - GENERAL DRAWING
 - 2 - BOX HOLE LOCATIONS & SOL. STUDY
 - 3 - FOOTINGS
 - 4 - ABUTMENTS - EAST STRUCTURE
 - 5 - ABUTMENTS - WEST STRUCTURE
 - 6 - PIERS
 - 7 - PRESTRESSED CONCRETE & BEARINGS
 - 8 - CULVERTS - REINFORCEMENT
 - 9 - BARRIER WALL
 - 10 - OVERALL DIMENSIONS - SINGLE TRAIL
 - 11 - 20 FT. APPROACH SLAB
 - 12 - DETAILS OF OVER-SHAPE PAVING
 - 13 - AS COMPLETED GROUND PLAN
 - 14 - STANDARD DETAILS I
 - 15 - STANDARD DETAILS II
 - 16 - EXPANSION JOINTS

TT2M #164 ELEV 545.784
 ON EAST FACE 2' SOUTH OF THE NORTH
 CORNER OF A 1/2" DIAMETER PIER ON
 THE WEST SIDE OF MEDIAN LINE
 BEING MADE OF LESS THAN 1/2"
 GROUND TO BE

RECEIVED
 FEB 27 1978
 O.L. NUMBER
 1

