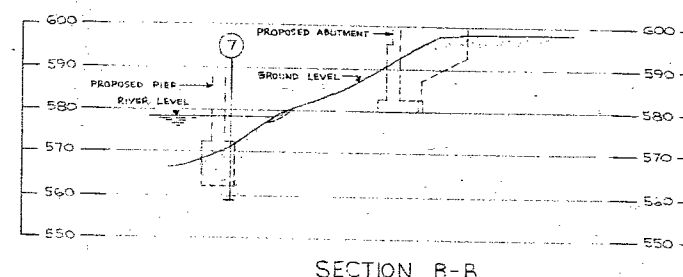
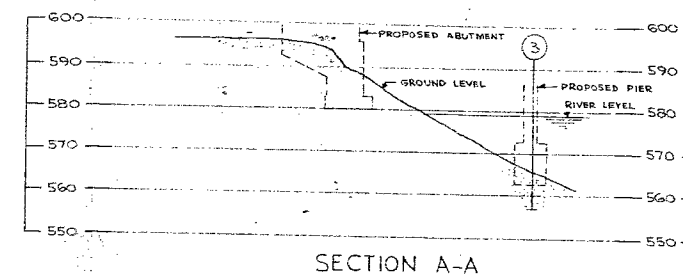
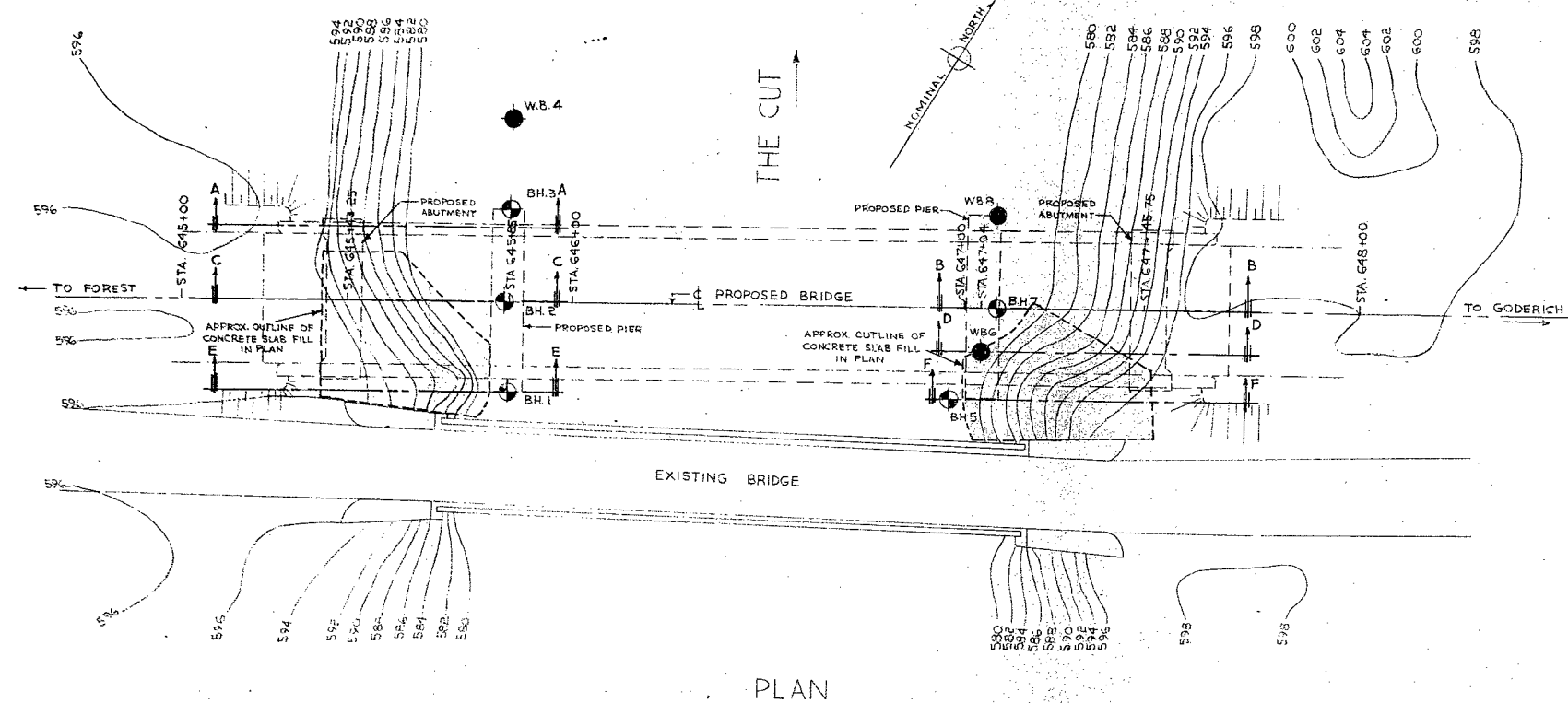
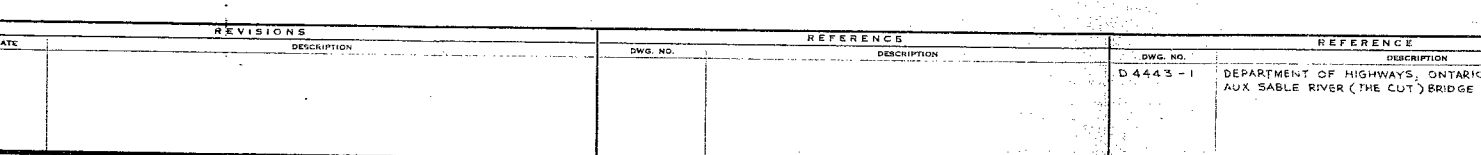
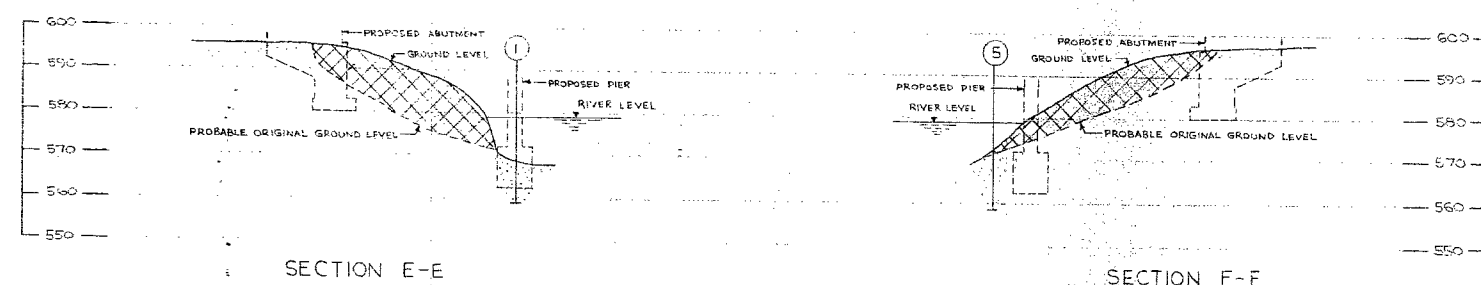
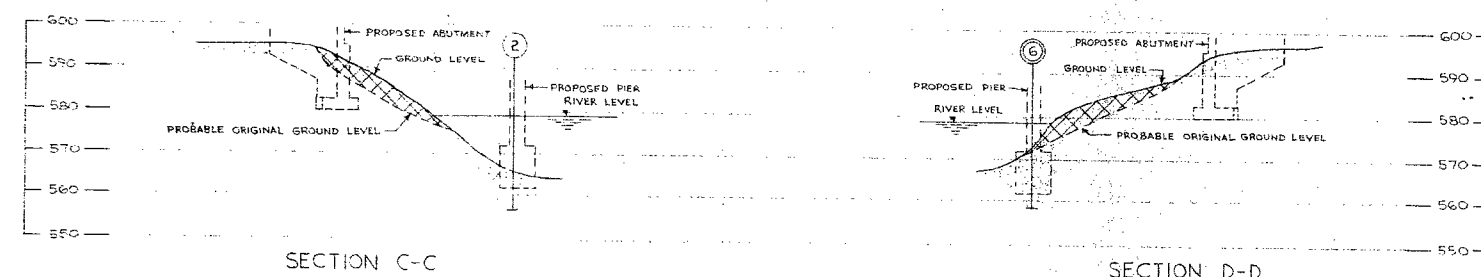
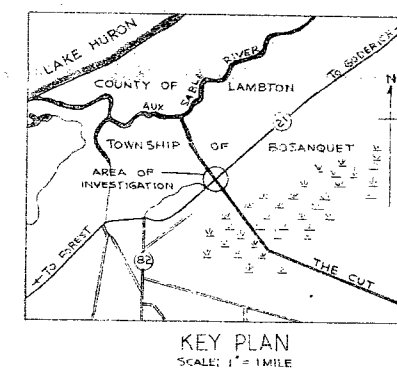


#60-F-230
W.P. # 143-59
Hwy. #21
ROCK FILL SURVEY
PROP. AUX SABLE
R. CUT BRIDGE
NEAR PT. FRANKS



429850 E
4785600 N 17 40P4 W



STRATIGRAPHY

- CONCRETE SLAB FILL
- LOOSE TO VERY DENSE GRAY SAND

LEGEND

- BOREHOLE IN PLAN
- BOREHOLE IN ELEVATION
- WASHBORING IN PLAN
- WASHBORING IN ELEVATION

SPECIAL NOTE: DATA CONCERNING THE VARIATION OF STRATA HAVE BEEN OBTAINED AT BOREHOLE LOCATIONS ONLY. THE STRATIGRAPHY BETWEEN BOREHOLES HAS BEEN INFERRED FROM GEOLOGICAL EVIDENCE AND SO MAY VARY FROM THAT SHOWN.

REVISIONS		REFERENCE		REFERENCE	
MARK	DATE	DESCRIPTION	DWG. NO.	DESCRIPTION	DWG. NO.
			D.4443-1	DEPARTMENT OF HIGHWAYS, ONTARIO - BRIDGE OFFICE	
				AUX SABLE RIVER (THE CUT) BRIDGE - GENERAL PLAN	
				PROPOSED BRIDGE	
				NEAR PORT FRANKS	
				BORING PLAN AND SECTIONS	

DEPARTMENT OF HIGHWAYS, ONTARIO
TORONTO

DATE: APRIL 13, 1960 SCALE: 1" = 20'-0"

GEOCON LTD

MADE BY: J.A. CHD. BY: R.S. APPD. BY: J.A.

No. S7068-1

Mr. A. M. Teye,
Bridge Engineer.
Materials & Research Section.

April 26, 1960.

FOUNDATION INVESTIGATION -- by
Gecon, Limited.

Attention: Mr. S. McCombie.

Re: Aux Sable River (the cut)
Hwy. No. 21 - Dist. No. 1
W.P. 143-59.

As requested, we are forwarding the information concerning rock fill at the proposed structure location. Drawing No. 5706B-1 indicates that considerable fill consisting of concrete slabs 1 ft. thick, exists at both proposed abutment locations. It will not be possible to drive sheet piling through this rock and concrete fill.

It should be noted that the depth of this rock fill has been determined from ground contours and not proven by drilling. For this reason, an error of 2 to 3 feet may exist in the actual depth of the rock and concrete fill.

If we can be of further assistance, please contact the Foundation Section.

KP/MdeF
Attach.

L. G. Soderman,
PRINCIPAL SOILS & FOUNDATIONS ENGR.

Per:

cc: Messrs. A. M. Teye (2)
H. A. Tregaskes
D. G. Ramsay
A. Gater
G. U. Howell
J. Roy
A. Watt
Foundations Office
Gen. Files.


(K. Peaker,
FOUNDATION FIELD SUPERVISING ENGR.)

S7068
REPORT
TO
DEPARTMENT OF HIGHWAYS, ONTARIO
ON
ROCK FILL SURVEY
PIER AND ABUTMENT LOCATIONS
PROPOSED AUX SABLE RIVER CUT BRIDGE
HIGHWAY 21, NEAR PORT FRANKS, ONTARIO

Distribution:

- 10 copies - Department of Highways, Ontario,
Downsview, Ontario.
- 2 copies - Geocon Ltd,
Rexdale, Ontario.

April 19th, 1960

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TELEPHONE UN. 6-7632

DISTRICT OFFICES

14 HAAS ROAD
REXDALE, TORONTO, ONT.
TEL. CH. 4-8641

1425 WEST PENDER ST.
VANCOUVER 5, B.C.
TEL. MU. 1-8926

Rexdale, Ontario,
April 19th, 1960.

Department of Highways, Ontario,
Materials and Research Section,
Downsview, Ontario.

Attention: Mr. L. G. Soderman, P. Eng.,
Principal Soils and Foundation Engineer.

Re: Rock Fill Survey,
Pier and Abutment Locations,
Proposed Aux Sable River Cut Bridge,
Highway 21,
Near Port Franks, Ontario.

Dear Sirs:

This letter reports the results of the above work carried out in accordance with your letter of authorization dated March 30th, 1960. The object of this work was to determine by probings the extent of rock fill present at the abutment and pier locations of the proposed highway bridge.

The site is located immediately north of the existing highway 21 bridge spanning the Aux Sable River Cut near Port Franks, Ontario.

The field work was carried out between April 6th, 1960 and April 11th, 1960 inclusive. A total of 8 borings was put down in BX size using a motorized tripod mounted on a barrel raft. A detailed log of each boring is given on the Office Reports on Soil Exploration in Appendix I. The locations of the borings, together with sections showing the approximate extent of the fill, inferred from the results of the boreholes and visual inspection of the site, are shown on the attached Drawing S7068-1.

Elevations are referred to Geodetic datum and were obtained from Geodetic Bench Mark No. 13 R having an elevation of 596.62. The bench mark consists of a tablet located, about 3 feet above the bridge seat, on the south east end of the south west face of the north east concrete abutment of the existing bridge.

From available information, it is known that the fill behind the abutments of the existing bridge was washed away during the period of river high water level in 1954. Following this, the area around the abutments was backfilled with large rock and broken concrete sizes to prevent further scour during high water level conditions. A detailed soils investigation carried out by others at the site shows that outside the fill areas, the site is covered by an extensive deposit of loose to very dense grey sand.

SUMMARY OF RESULTS

A visual inspection of the area of the proposed bridge crossing, to the north of the existing bridge, indicated that fill consisting mainly of broken concrete slabs, about 1 foot in thickness, covers the river banks. The approximate extent of the fill in plan, determined by visual inspection above the river water level and by borings and probings in the river, is shown on Drawing S7068-1. The probable thickness of the fill, as indicated on the sections shown on the drawing, was determined by visual inspection and estimated from the shape of the existing contour plan of the river banks.

On the west bank of the river the concrete slabs comprising the fill range from about 1 to 10 feet in side dimension with an average side dimension of about 5 feet. Some boulders up to about 3 feet in side are also present within the fill. At the east bank of

Department of Highways, Ontario,
April 19th, 1960,
Page 3.

SUMMARY OF RESULTS (continued)

the river the individual concrete sizes range from a few inches to about 4 feet in side with an average side dimension of about 2 feet. The upper few feet of the fill on both the east and west banks consist of a heterogeneous mixture of silt, sand, gravel, broken concrete and asphalt sizes with appreciable organic content. At river bottom, within the area of the proposed west pier location, a few boulders were encountered. At the proposed east pier location, a layer of boulders, about 1 foot in thickness, was encountered.

Below the fill at borings 5 and 6 and at river bottom at the other boring locations is a stratum of loose to very dense grey sand which was penetrated for a maximum depth of about 13 feet. The stratum, in the upper few feet, generally contains some pieces of semi-decayed wood, sea shells and small pockets of silt. Some subrounded gravel sizes up to 3/4 inches in size were encountered in the stratum.

We trust that this letter report, which was written by R. Sorokoski and checked by J.L. Seychuk, gives you the factual information that you require. If we can be of any further assistance, please give us a call.

Yours very truly,

GEOCON LTD

R. Sorokoski

RS/dw
S7068

R. Sorokoski, P. Eng.,
Soils Engineer.

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APPENDIX I

OFFICE REPORTS ON SOIL EXPLORATION

GEOCON

EXPLANATION OF THE FORM "OFFICE REPORT ON SOIL EXPLORATION"

The object of this form is to enable a comprehensive study of the soil to be made by combining on one sheet all of the information obtained from the boring. An explanation of the various columns of the report follows.

ELEVATION AND DEPTH

This column gives the elevation and depth of boundaries between the various soil strata. The elevation is referred to the datum shown in the general heading.

WATER CONDITIONS

In this column the water level in the casing at the time of boring or the water table in the ground, determined by a series of observations in a piezometer or standpipe, is indicated to scale by a horizontal line with the symbol W.L. or W.T. above the line. A notation of any complicated groundwater conditions will be made in this column.

DESCRIPTION

A description of the soil, using standard terminology, is contained in this column. The consistency of cohesive soils and the relative density of non-cohesive soils are described by the following terms:

<u>Consistency</u>	<u>U-Strength Tons/sq. ft.</u>	<u>Relative Density</u>	<u>Standard Penetration Resistance. Blows/ft.</u>
Very soft	0.03 to 0.25	Very loose	0 to 4
Soft	0.25 to 0.5	Loose	4 to 10
Firm	0.5 to 1.0	Compact	10 to 30
Stiff	1.0 to 2.0	Dense	30 to 50
Very stiff	2.0 to 4.0	Very dense	over 50
Hard	over 4.0		

STRATIGRAPHIC PLOT

The stratigraphic plot follows the standard symbols of the National Research Council, Canada.

ELEVATION SCALE

The information in all columns is plotted to a true elevation scale which is shown in this column.

GRAPHS

The main body of the report forms a graph which is used to plot to correct elevation the important soil properties which are obtained through field and laboratory tests. The scales and symbols for the plotting are shown at the head of the column.

OTHER TESTS

In this column are shown, by symbol, the other field or laboratory tests which have been performed on the soil and for which the results have not been plotted on the above graph.

SAMPLES

The first three columns describe the condition, type and number of each sample obtained from the boring. The location and extent of each sample is plotted to scale.

In the last column is shown the penetration resistance in blows of 4200 inch-pounds required to drive one foot of the sampler into the ground. When a 2 inch Drive Sampler is used the result obtained is termed the "Standard Penetration Resistance".

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OFFICE REPORT ON SOIL EXPLORATION

CONTRACT 57068 BORING # 1 AND 2 DATUM GEODETIC CASING BX
 BORING DATE APRIL 8, 1960 REPORT DATE APRIL 10, 1960 COMPILED BY J.A. CHECKED BY
 SAMPLER HAMMER WT. 140 LBS. DROP 30 INCHES (PENETRATION RESISTANCES CONVERTED TO BLOWS OF 4200 IN - LBS. ENERGY)

SAMPLE CONDITION

DISTURBED
 FAIR
 GOOD
 LOST

SAMPLE TYPES

A.S. - AUGER SAMPLE
 S.T. - SLOTTED TUBE
 W.S. - WASHED SAMPLE
 D.O. - DRIVE-OPEN
 D.F. - DRIVE-FOOT VALVE
 C.S. - CHUNK SAMPLE
 F.S. - FOIL SAMPLE
 S.O. - SLEEVE-OPEN
 S.F. - SLEEVE-FOOT VALVE
 T.O. - THIN WALLED OPEN
 R.C. - ROCK CORE

ABBREVIATIONS

V - IN-SITU VANE TEST
 M - MECHANICAL ANALYSIS
 U - UNCONFINED COMPRESSION
 QC - TRIAXIAL CONSOLIDATED QUICK
 Q - TRIAXIAL QUICK
 S - TRIAXIAL SLOW
 W - WET UNIT WEIGHT
 K - PERMEABILITY
 C - CONSOLIDATION
 WL - WATER LEVEL IN CASING
 WT - WATER TABLE IN SOIL

SOIL PROFILE				SAMPLES			
ELEV. DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT. PLOT	ELEVATION SCALE	OTHER TESTS	CONDITION	PENETRATION RESISTANCE BLOWS FT.
				WATER CONTENT W% NAT. LW Δ Pw			
				DYNAMIC PENETRATION TEST BLOWS PER FOOT			
579.0 0.0		RIVER LEVEL		580			
568.7 10.3		RIVER BOTTOM		570			
559.0 20.0		LOOSE TO VERY DENSE GREY SAND		560			
		END OF HOLE		550			
579.0 0.0		RIVER LEVEL		580			
565.4 13.6		RIVER BOTTOM		570			
557.0 22.0		LOOSE TO VERY DENSE GREY SAND		560			
		END OF HOLE					

OFFICE REPORT ON SOIL EXPLORATION

SAMPLE CONDITION

SAMPLE TYPES

ABBREVIATIONS

	DISTURBED
	FAIR
	GOOD
	LOST

A.S. - AUGER SAMPLE
S.T. - SLOTTED TUBE
W.S. - WASHED SAMPLE
D.O. - DRIVE-OPEN
D.F. - DRIVE-FOOT VALVE
C.S. - CHUNK SAMPLE

F.S. - FOIL SAMPLE
S.O. - SLEEVE-OPEN
S.F. - SLEEVE-FOOT VALVE
T.O. - THIN WALLED OPEN
R.C. - ROCK CORE

V - IN-SITU VANE TEST
M - MECHANICAL ANALYSIS
U - UNCONFINED COMPRESSION
QC - TRIAXIAL CONSOLIDATED QUICK
Q - TRIAXIAL QUICK
S - TRIAXIAL SLOW

WET UNIT WEIGHT
 K. PERMEABILITY
 C. CONSOLIDATION
 WL. WATER LEVEL IN CASING
 WT. WATER TABLE IN SOIL

SOIL PROFILE				ELEVATION SCALE				OTHER TESTS	SAMPLES			
ELEV. DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT PLOT		WATER CONTENT W%				CONDITION	TYPE	NUMBER	PENETRATION RESISTANCE BLOWS/FT.
					DYNAMIC PENETRATION TEST BLOWS PER FOOT							
579.0 0.0		RIVER LEVEL		580	3							
				570								
565.0 14.0		RIVER BOTTOM		560								
557.0 22.0		LOOSE TO DENSE GREY SAND		560	4			X	W.S.	1	1	
		END OF HOLE		550								
				550								
578.8 0.0		RIVER LEVEL		580	4							
				570								
568.8 10.0		RIVER BOTTOM		560								
		GREY SAND		560	4			X	W.S.	1	1	
558.8 20.0		END OF HOLE		550								
				550								

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OFFICE REPORT ON SOIL EXPLORATION

CONTRACT 57068 BORING # 5 AND WASH BORING 6 DATUM GEODETIC CASING BX
 BORING DATE APRIL 9, 1960 REPORT DATE APRIL 12, 1960 COMPILED BY J.A. CHECKED BY rl
 SAMPLER HAMMER WT. 140 LBS. DROP 30 INCHES (PENETRATION RESISTANCES CONVERTED TO BLOWS OF 4200 IN - LBS. ENERGY)

SAMPLE CONDITION



A.S. - AUGER SAMPLE
 S.T. - SLOTTED TUBE
 W.S. - WASHED SAMPLE
 D.O. - DRIVE-OPEN
 D.F. - DRIVE-FOOT VALVE
 C.S. - CHUNK SAMPLE

SAMPLE TYPES

F.S. - FOIL SAMPLE
 S.O. - SLEEVE-OPEN
 S.F. - SLEEVE-FOOT VALVE
 T.O. - THIN WALLED OPEN
 R.C. - ROCK CORE

ABBREVIATIONS

V - IN-SITU VANE TEST
 M - MECHANICAL ANALYSIS
 U - UNCONFINED COMPRESSION
 QC - TRIAXIAL CONSOLIDATED QUICK
 Q - TRIAXIAL QUICK
 S - TRIAXIAL SLOW
 γ - WET UNIT WEIGHT
 K - PERMEABILITY
 C - CONSOLIDATION
 - - WATER LEVEL IN CASING
 - - WATER TABLE IN SOIL

SOIL PROFILE

SAMPLES

SOIL PROFILE								SAMPLES				
ELEVN. DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT. PLOT	ELEVATION SCALE	WATER CONTENT W%			OTHER TESTS	CONDITION	TYPE	NUMBER	PENETRATION RESISTANCE BLOWS/FT.
					DYNAMIC PENETRATION TEST BLOWS PER FOOT							
578.8 0.0		RIVER LEVEL		580								
572.3 7.6		RIVER BOTTOM		570								
		CONCRETE SLAB FILL										
		LOOSE TO DENSE GREY SAND		560								
558.8 20.0		END OF HOLE		550								
578.8 0.0		RIVER LEVEL		580								
572.8 7.0		RIVER BOTTOM		570								
		CONCRETE SLAB FILL										
		GREY SAND		560								
558.8 20.0		END OF HOLE		550								

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OFFICE REPORT ON SOIL EXPLORATION

CONTRACT 57068 BORING # 7 AND WASH BORING B DATUM GEODETIC CASING BX
 BORING DATE APRIL 9, 1960 REPORT DATE APRIL 12, 1960 COMPILED BY J.A. CHECKED BY R.L.
 SAMPLER HAMMER WT. 140 LBS. DROP 30 INCHES (PENETRATION RESISTANCES CONVERTED TO BLOWS OF 4200 IN - LBS. ENERGY)

SAMPLE CONDITION



DISTURBED
FAIR
GOOD
LOST

SAMPLE TYPES

A.S. - AUGER SAMPLE
S.T. - SLOTTED TUBE
W.S. - WASHED SAMPLE
D.O. - DRIVE-OPEN
D.F. - DRIVE-FOOT VALVE
C.S. - CHUNK SAMPLE
F.S. - FOIL SAMPLE
S.O. - SLEEVE-OPEN
S.F. - SLEEVE-FOOT VALVE
T.O. - THIN WALLED OPEN
R.C. - ROCK CORE

ABBREVIATIONS

V - IN-SITU VANE TEST
M - MECHANICAL ANALYSIS
U - UNCONFINED COMPRESSION
Qc - TRIAXIAL CONSOLIDATED QUICK
Q - TRIAXIAL QUICK
S - TRIAXIAL SLOW
γ - WET UNIT WEIGHT
K - PERMEABILITY
C - CONSOLIDATION
WL - WATER LEVEL IN CASING
WT - WATER TABLE IN SOIL

SOIL PROFILE

SAMPLES

SOIL PROFILE														OTHER TESTS	SAMPLES										
ELEV. DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT. PLOT	ELEVATION SCALE											CONDITION	TYPE	NUMBER	PENETRATION RESISTANCE BLOWS/FT.							
					WATER CONTENT W% ○ NAT. □ LW ▲ Pw																				
					DYNAMIC PENETRATION TEST BLOWS PER FOOT																				
578.8 0.0		RIVER LEVEL		580	<div>7</div>																				
571.0 7.8		RIVER BOTTOM		570																					
558.8 20.0		LOOSE TO DENSE GREY SAND		560																					
		END OF HOLE		550																					
578.8 0.0		RIVER LEVEL		580	<div>8</div>																				
569.6 9.2		RIVER BOTTOM		570																					
558.8 20.0		GREY SAND		560																					
		END OF HOLE		550																					