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DIST. 8 REGION EASTERN

W.P. No. 62-73-02

CONT. No. 74-131

W. O. No. 73-11083

STR. SITE No. 7-110

HWY. No. _____

LOCATION HOVE ISLAND FERRY
SERVICE

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 0

REMARKS: @documents to be unfolded
before microfilmed

MEMORANDUM

31C - 119

TO: Mr. T.C. Kingsland, (2)
Regional Structural Planning Eng.,
Eastern Region,
Kingston, Ontario.

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

ATTENTION:

DATE: October 16, 1973.

OUR FILE REF.

IN REPLY TO

OCT 22 1973

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For
Proposed Terminals
Howe Island Ferry Service
Site No. 7-110
Twp. of Pittsburgh and Howe Island
County of Frontenac
District No. 8 (Kingston)
W.O. 73-11083 - W.P. 62-73-02

CONT 74-131

Attached we are forwarding to you our detailed foundation investigation report on the subsoil conditions existing at the above-mentioned site.

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

MD/AGS/zh

A.G. Stermac
for A.G. Stermac,
PRINCIPAL FOUNDATIONS ENGINEER.

Attch.

cc: E.J. Orr
B.R. Davis
A. Rutka
A.J. Percy
V.A. Snell
B.J. Giroux
E.R. Saint
G.A. Wrong
B.A. Singh
Mar-Land Eng. Ltd.

Foundations Files
Documents

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FOUNDATION INVESTIGATION REPORT
For
Proposed Terminals
Howe Island Ferry Service
Site No. 7-110
Twps. of Pittsburgh and Howe Island
County of Frontenac
District No. 8 (Kingston)
W.O. 73-11083 - W.P. 62-73-02

1. INTRODUCTION:

The present Howe Island Ferry Service is being operated by the County of Frontenac. The service is provided by a cabled ferry having a capacity of three passenger cars. No ferry service is provided in winter months. It is proposed to replace the cable ferry with a new one having a capacity of nine passenger cars. The new ferry service will be operated by the Ministry of Transportation and Communications. As a result of this, new terminals are required on both the Mainland side and Island side. The Foundations Office was requested to carry out a subsurface investigation at the proposed terminal sites. The request was contained in two memos from Mr. T.C. Kingsland, Regional Structural Planning Engineer, Eastern Region, dated August 27, 1973 (In-shore Scheme) and October 1, 1973 (Off-shore Scheme). This office, subsequently carried out the necessary investigations to determine the subsoil, bedrock and groundwater conditions at the site.

This report contains the factual information obtained from this investigation, together with recommendations pertaining to the design of the cribs and the stability of the related rockfill causeways for the proposed terminals.

2. DESCRIPTION OF THE SITE AND GEOLOGY:

The site is located about one mile south of the intersection of Hwy. 2 and Joyceville Road, in the Townships of Pittsburgh and Howe Island, County of Frontenac. At this location, the 1,000 foot wide Batteau Channel of St. Lawrence River separates the mainland and Howe Island.

The site is situated in the physiographical region of "Leeds Knobs and Flats". In this region, the characteristic landform consists of numerous rock-knobs with the area inbetween filled with clay left by the Champlain Sea. The rock-knobs of the Frontenac axis are relatively bare because the shallow covering of drift was removed by the waves of Champlain Sea.

3. FIELD INVESTIGATION AND LABORATORY WORK:

Four boreholes were put down for the Inshore scheme of the proposed ferry terminals. Preference was given to an alternative scheme (Offshore scheme) after the completion of the original field investigation. Four additional boreholes were therefore put down for the new scheme. The borings were carried out using conventional diamond drill rigs. For the boreholes put down through water, the drill was mounted on a raft.

Where possible, samples of the overburden were taken using a split spoon sampler. The sampler was advanced with a driving energy of 350 ft.-lb. per blow in accordance with the specifications for Standard Penetration Test.

The bedrock was proven at all boring locations by obtaining BX size rock core samples.

Surveying in the field was carried out by personnel from Engineering Survey Section, Eastern Region. All elevations are referenced to a Geodetic Datum.

The subsoil and bedrock conditions encountered at the borings are presented on the Record of Borehole sheets, contained in the Appendix. The locations and elevations of the boreholes are shown on Drawing No. 73-11083A.

Soil samples were carefully identified and classified in the field and subsequently in the laboratory. Following this inspection laboratory tests were carried out on representative samples to determine the physical properties of the overburden, namely:

- Natural Moisture Contents
- Organic Contents
- Grain-Size Distributions

Rock core samples were identified by Mr. G. Woda, Geologist.

4. SUBSOIL AND BEDROCK CONDITIONS:

The overburden at this site is generally shallow. The boreholes put down on or close to the shore (Borehole Nos. 11 - 14 inclusive) revealed that the bedrock is overlain by a layer of fill material (sand, gravel with occasional cobble-sized limestone rock fragments) or natural granular deposit (sand, silt, gravel and boulders).

Four boreholes (Borehole Nos. 15 - 18 inclusive) were put down up to 250 feet away from existing shoreline. At these boring locations, an organic deposit of 5 (Borehole No. 17) to 11 (Borehole No. 15) feet thick was found at the existing river bottom. Underlying this organic deposit is

a thin layer of sandy silt to sand and gravel, with boulders. The thickness of this granular deposit varies from 1 (Borehole No. 17) to 8.4 (Borehole No. 18) feet. Standard Penetration Testing carried out within this stratum gave 'N' values ranging from 11 to 20 blows/foot, indicating that the relative density of the granular deposit is compact.

Bedrock was proven at all boring locations by obtaining up to 7 feet of BX size rock core samples. The bedrock surface was found to vary between elevations 247.4 (Bore hole No. 14) and 200.5 (Borehole No. 18).

At the mainland side (refer to Borehole Nos. 11, 12, 15 and 16), the bedrock was found to be a dioritic gneiss. Elsewhere, limestone bedrock was found except at Borehole No. 17 where the limestone is underlain by sandstone. In general, the bedrock was in a fairly sound condition.

5. GROUNDWATER CONDITIONS:

Groundwater level observations were carried out during the field investigation by taking water level readings in the open boreholes put down on the shore. The observations indicate that groundwater level varies between elevations 246.8 (Borehole No. 14) and 247.0 (Borehole No. 11), corresponding to levels from 1.2 to 2 feet below the existing ground surface.

At the time of the field investigation, the water level of the St. Lawrence River in the vicinity of the site was at elevation 245.8.

6. DISCUSSIONS AND RECOMMENDATIONS:

6.1) General:

As mentioned elsewhere in this report, it was proposed to improve the present Howe Island Ferry service by replacing the existing cabled ferry with a new one having

a capacity of nine passenger cars. Originally, it was planned to modify the existing terminals to accommodate the larger ferry. However, considerations are being given to an alternative (Off-shore) scheme. In the new scheme, new terminals will be constructed approximately 30 feet (Island Terminal) to 80 feet (Mainland Terminal) off the existing shoreline. At these locations, up to 11 feet of organic silt was found at the existing river bottom. This organic layer is underlain by a granular deposit up to 8 feet thick, which is in turn underlain by bedrock.

At the time of the preparation of this report, it was learnt that the Off-shore scheme will be adopted. Recommendations pertaining to the foundation design of the terminals for this scheme will be discussed in the subsection to follow:

6.2) Off-Shore Scheme:

In this scheme, the terminal consists of a transfer ramp and three cribs. The proposed locations were shown Drawing No. 73-11083A. It is understood that the ramp-supporting cribs will be connected to the Island and the mainland by causeways of 30 feet and 80 feet long, respectively. If rock fill is used, these causeways may be constructed with 1-1/2:1 slopes, using end-dumping method.

The boreholes put down at the locations of the proposed cribs revealed that a very soft organic silt exists at the river bottom, which is underlain by a thin layer of granular deposit, followed by bedrock. It is recommended that the timber cribs should extend down to the granular deposit or to the bedrock surface. The organic material within the cribs should be removed and replaced with sand and gravel or rock fill. At the time of the preparation of this report, the type of timber cribs or the construction procedures were not finalized. Therefore, these aspects

will be discussed in detail at a later date when finalized data becomes available.

The existing organic deposit would be very scour susceptible. To ensure the stability of the cribs, it is considered necessary to provide the cribs with a scour protection measure in the form of a mattress of graded rock fill around the cribs. The thickness of the mattress would depend on the hydrological requirements.

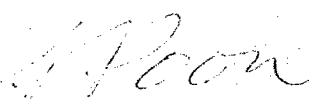
In designing the ramp supporting cribs, the effect of the rock fill causeway behind the cribs should be taken into consideration. A coefficient of active earth pressure (K_a) of 0.3 may be used.

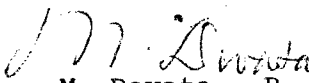
7. MISCELLANEOUS:

The field work was carried out under the supervision of Messrs. C.S. Poon and J. Bangs, Project Foundations Engineers. Mr. C.S. Poon prepared this report.

The drilling equipment used between September 6 and 12, 1973 was owned and operated by P.V.K. and Sons Drilling Company of Burford, Ontario. Between October 1 and 10, 1973, the drilling equipment was owned and operated by Johnston Drilling Company, Ottawa, Ontario.

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


C.S. Poon, P. Eng.


M. Devata, P. Eng.



CSP/zh

October 16, 1973.

APPENDIX I

RECORD OF BOREHOLE NO. 11

FOUNDATIONS OFFICE

LOCATION As shown on Drawing



ORIGINATED BY C.S.D.

BORING DATE September 7, 1973

COMPILED BY C.S.D.

BOREHOLE TYPE Wash Boring, BX Rock Core

CHECKED BY:

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w w_p — w — w_L		BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE		WATER CONTENT %			
249.0 0.0	Ground Level Fill material											GR. SA. SI. CL.
	sand & gravel (with cobble sized limestone rock fill)											
241.3 7.7	Bedrock		1	BXL RC	100% Rec	240						
	gneiss											
236.5 12.5	End of Borehole.		2	BXL RC	100% Rec							
						230						

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 12

JOB 73-11083

LOCATION As Shown on Drawing

ORIGINATED BY B.

W.P. 62-73-02

BORING DATE September 11 - 12, 1973

COMPILED BY C.S.D.

DATUM Geodetic

BOREHOLE TYPE Wash Boring, BX Rock Core

CHECKED BY [Signature]

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT				LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w w_p — w — w_L				BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE				WATER CONTENT %					
245.8 0.0	La'e Level														GR. SA. SI. CL.	
241.4 4.4	water															
238.5 7.3	Rock fill and/or cobbles					21.0										
233.5 12.3	Bedrock Gneiss sound		1	BX RC	92% Rec											
	End of Borehole.					230										

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 13

FOUNDATIONS OFFICE

JOB 73-11083

LOCATION As Shown on Drawing

ORIGINATED BY J.B.

W.P. 62-73-02

BORING DATE September 11, 1973

COMPILED BY C.S.P.

DATUM

BOREHOLE TYPE Wash Boring and BX Rec Core

CHECKED BY *MC*

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		SHEAR STRENGTH P.S.F.					w_p ——— w ——— w_L				
							○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE									
45.8 0.0	Lake Level														P.C.F. GR. SA. SI. CL.	
41.3 4.5	water															
35.3 10.5	Boulders, silt, sand and gravel.		1	BX	25% Rec	24.0										
	Grey		2	BX RC	20% Rec											
	Bedrock		3	BX RC	65% Rec											
31.3 14.5	Limestone grey sound		4	BX RC	99% Rec											
	End of Borehole.					230										

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 14

FOUNDATIONS OFFICE

JOB 73-11083

LOCATION As Shown on Drawing

ORIGINATED BY F.B.

W.P. 62-73-02

BORING DATE September 10, 1973

COMPILED BY C.S.

DATUM

BOREHOLE TYPE Wash Boring

CHECKED BY [Signature]

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE				LIQUID LIMIT — w_L				BULK DENSITY	REMARKS	
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		BLOWS / FOOT				PLASTIC LIMIT — w_p						WATER CONTENT — w
							SHEAR STRENGTH P.S.F.				WATER CONTENT %						
248.0	Ground Level																
0.0	Fill material																
0.6	sand gravel																
	Bedrock		1	BX	100%												
	Limestone			RC	Rec												
	Grey sound																
239.5			2	BX	72%	240											
8.5	End of Borehole.																
						230											

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 15

JOB 75-11083

LOCATION As Shown on Drawing

ORIGINATED BY J.B.

W.P. 62-73-02

BORING DATE October 3, 1973

COMPILED BY C.S.P.

DATUM Geodetic

BOREHOLE TYPE Wash boring and BX Rock Core

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE				LIQUID LIMIT — w_L			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		BLOWS / FOOT				PLASTIC LIMIT — w_p				
							SHEAR STRENGTH P.S.F.				WATER CONTENT — w				
245.8 0.0	Lake Level														GR. SA. SI. CL
	Water					240									
237.8 8.0	Organic silt, trace sand. Greyish brown Very soft		1	SS	PM										
			2	SS	PM	230									Org. 6.3%
226.8 19.0	silt and sand loose to compact Grey		3	SS	12										4 64 28 4
224.0 21.8	Bedrock Gneiss sound		4	BX RC	100% Rec	220									
219.0 26.8	End of Borehole.					210									

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 16

JOB 73-11083

LOCATION As Shown on Drawing

ORIGINATED BY J.B.

W.P. 62-73-02

BORING DATE October 1, 1973

COMPILED BY C.S.P.

DATUM Geodetic

BOREHOLE TYPE Wash Boring, and BX Rock Core

CHECKED BY *SK*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT				LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w w_p — w — w_L				BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE				WATER CONTENT % 10 20 30					
245.8 0.0	Lake Level					240									GR.SA.SI.CL	
239.4 6.4	Water															
	Organic silt, shells															
	Grey															
231.3 14.5	Very soft		1	SS	PM	230									Org. 7.74% 17 61 16 6	
	sand and gravel															
	Grey compact		2	SS	18											
229.4 16.4	Bedrock															
	Gneiss		3	BX RC	90% Rec											
	sound		4	BX RC	100% Rec											
223.9 21.9	End of Borehole.					220										

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 17

JOB 73-11083

LOCATION As Shown on Drawing

ORIGINATED BY J.B.

W.P. 62-73-02

BORING DATE October 1, 1973

COMPILED BY C.S.P.

DATUM Geodetic

BOREHOLE TYPE Wash Boring and BX Rock Core

CHECKED BY *SK*

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		SHEAR STRENGTH P.S.F.				WATER CONTENT %					
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DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 18

JOB 73-11083

LOCATION As Shown on Drawing

ORIGINATED BY J.B.

W.P. 62-73-02

BORING DATE October 3, 1973

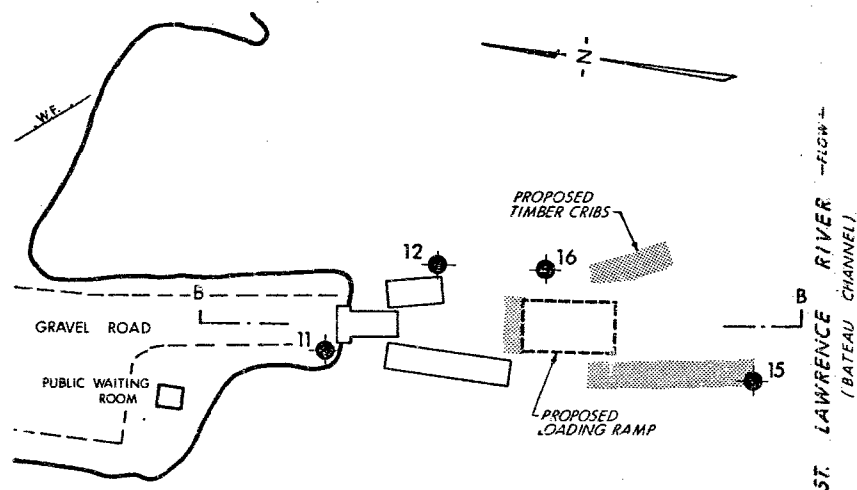
COMPILED BY C.S.P.

DATUM Geodetic

BOREHOLE TYPE Wash Boring and BX Rock Core

CHECKED BY

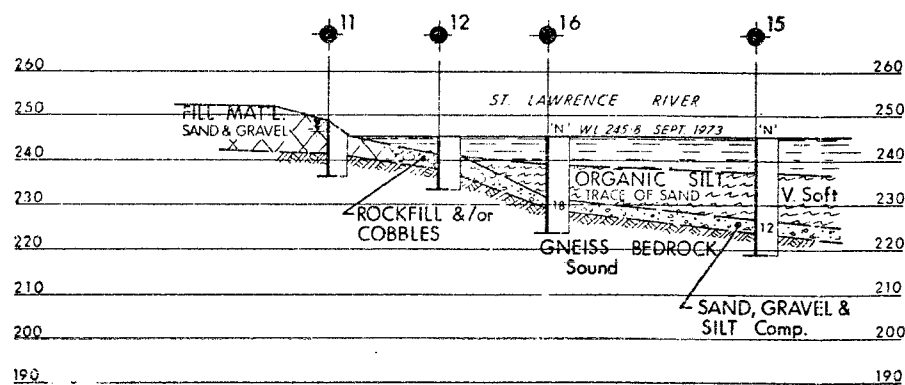
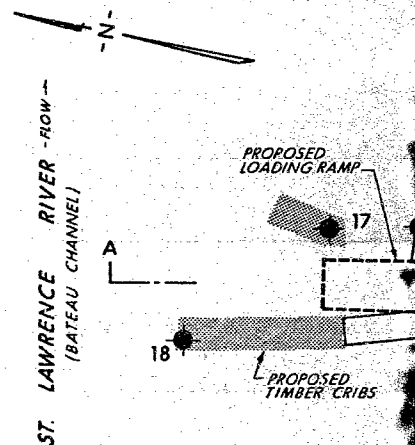
SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT				LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w			BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F.				WATER CONTENT % 10 20 30				
45.8 0.0	Lake Level														
						240									
	Water					230									
						220									
18.8 27.0	Organic silt, traces of sand		1	SS	PM										
	Black														
	Very soft														
208.9			2	SS	PM	210									Org. 4.65%
36.9	Sand and gravel (with boulders below elev. 207)		3	SS	20										80 16 (4)
	Grey														
	Compact		4	BX RC	32% Rec										
200.5															
45.3	Bedrock -					200									
	Limestone		5	BX RC	65% Rec										
96.1	sound														
49.7	End of Borehole.														



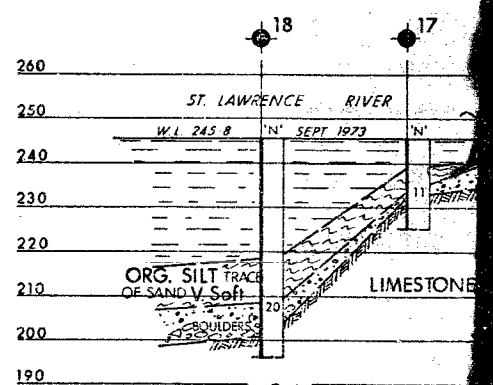
MAINLAND TERMINAL

PLANS

40 20 0 SCALE 40 80 FT.

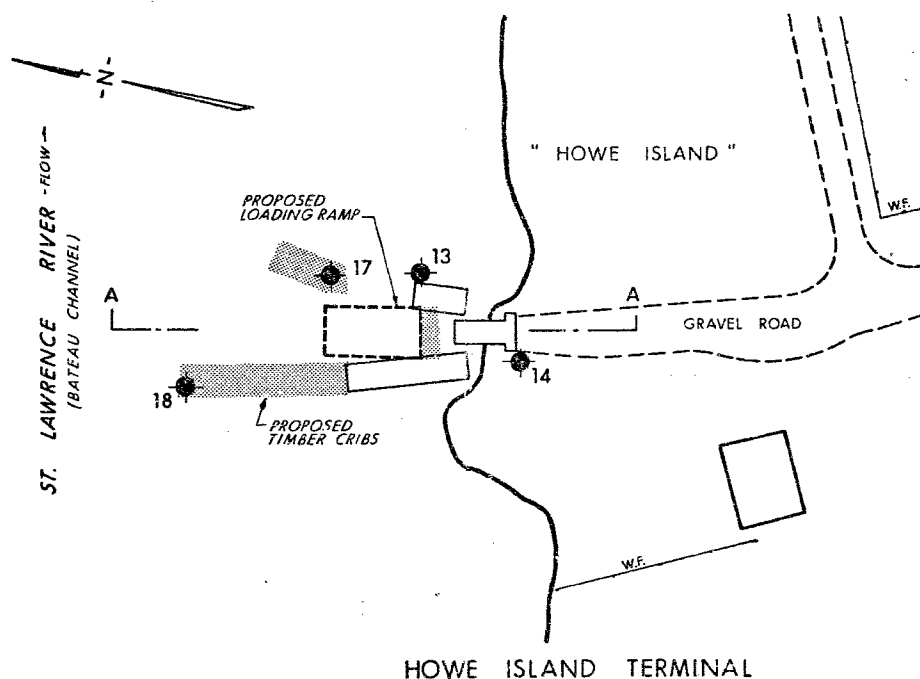


B - B



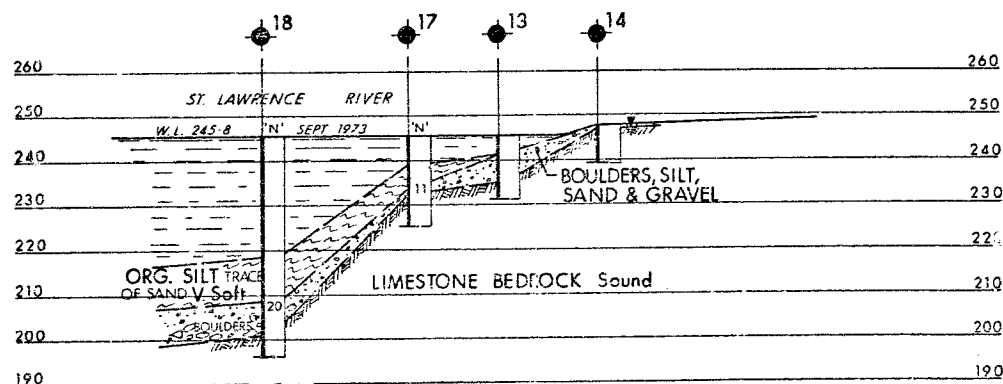
SECTIONS

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



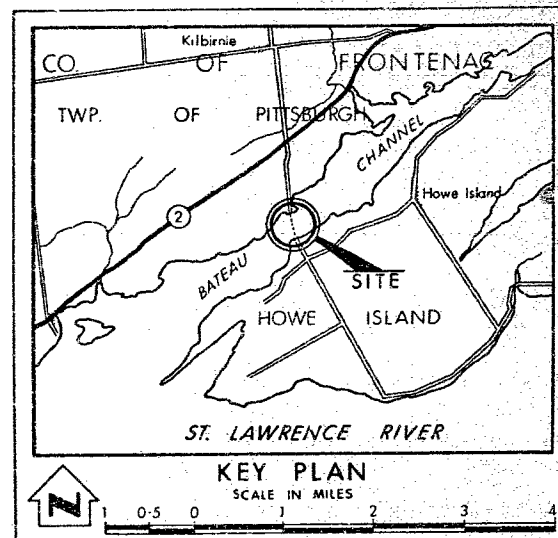
PLANS

0 SCALE 40 80 FT.



SECTIONS

0 SCALE 20 40 80 FT.



LEGEND

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

NO.	ELEVATION	
11	249.0	
12	245.8	
13	245.8	
14	248.0	
15	245.8	
16	245.8	
17	245.8	
18	245.8	

LOCATIONS AS SHOWN ON DRAWING

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

PROPOSED TERMINALS HOWE ISLAND FERRY SERVICE

HIGHWAY NO. — DIST. NO. 8

CC. FRONTENAC
TWP. PITTSBURGH & HOWE ISLAND

BORE HOLE LOCATIONS & SOIL STRATA

SUBWD. C. P.	CHECKED <input checked="" type="checkbox"/>	W.P. NO. 62-73-02	DRAWING NO.
DRAWN S O	CHECKED <input checked="" type="checkbox"/>	W.O. NO. 73-11083	73-11083A
DATE 17 OCT 1973	SITE NO.		BRIDGE DRAWING NO.
APPROVED	CONT. NO.		

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



MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundations Engineer,
Downsview, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: 27 August 1973.

OUR FILE REF.

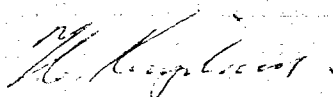
IN REPLY TO

SUBJECT: W.P. 25-73-01 - Wolfe Island Ferry Service 73-11071
W.P. 52-73-02 - Howe Island Ferry Service 73-11023

With reference to the foundation investigation carried out by your office for the proposed Wolfe Island Ferry Terminal (see your Report reference W.O. 72-11164 dated April 12, 1973), I now enclose copy of letter dated August 23, 1973, from Mar-Land Engineering Limited requesting further foundations information at the proposed ferry terminals for the above-mentioned projects.

I shall be glad if you will put in hand the required foundation investigation. We understand from you that this further information can be obtained at fairly short notice.

As stated in Mar-Land's letter, a meeting is being held today in Kingston to discuss the above-mentioned projects. I will let you know if any further information becomes available at that meeting.



T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
encl.

c.c. P. D. Billings
A. J. Percy
E. R. Saint
V. Snell
L. G. Timson
R. J. Forrest

73-11083

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

Mr. A. G. Stermac,
Principal Foundations Engineer,
Downsview, Ontario.

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: Mr. M. Devata *MS*

DATE: 1 October 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: W.P. 62-73-02 - Howe Island Ferry Service
District 8 - Kingston

Further to our conversation on Friday, September 28th, regarding the extra boreholes required at this site, it would now appear that at no time was Mar-Land Engineering authorized to request these directly from your office, bypassing the Regional Structural Planning office. However, due to the urgency of the project, we hereby confirm the request and we would be pleased if you could start the foundation investigation at the earliest time.

Even though a misunderstanding has arisen from our previous arrangement to submit your findings directly to Mar-Land Engineering, we would be pleased if the arrangements could be retained for this extra work only.



For: A. Van Dalen
T. C. Kingsland
Regional Structural Planning Engineer

AV/TCK/hl

c. c. B. R. Davis
P. D. Billings
R. Forrest
C. S. Grebski - Att. K. Bassi

Design Services Branch,
1201 Wilson Avenue,
Donnasview, Ontario.
M3M 1J6

Telephone: 248-3262.

October 1, 1973.

Johnston Drilling Co. Ltd.,
P.O. Box 4134,
Postal Station 'E',
Ottawa, Ontario.
K1S 5B2

Dear Sirs:

This letter confirms our request of September 28, 1973,
for the supply of a diamond drill and raft together with all
necessary equipment, as specified under the terms of our Contract
Agreement, at Kingston, Ontario, on October 1, 1973.

Mobilization will be from Ottawa, Ontario.

Our Project Number is W.O. 73-11083. ✓

Yours truly,



A. G. Stermac,
PRINCIPAL FOUNDATIONS ENGINEER.

HL/ao

G.C. W. W. Fry
(Attn: Mrs. M. Porter)

Foundations Files
Documents

A. S. Stemma
Attn: M. Neusta

Structural Planning Office,
Postal Bag 4000,
Kingston, Ontario, K7L 5A3,
3 October 1973.

Mar-Land Engineering Limited,
Consulting Engineers,
14 Dorchester Avenue,
Toronto, Ontario,
M8Z 4W3.

Attention: Mr. G. McFarlane, P. Eng.
Vice President

Dear Sirs:

SUBJECT: Howe Island Ferry Service
 W.P. 62-73-02, Site 7-110
 District 8 - Kingston

As a result of your request to our Foundations Office to have additional foundation investigations carried out at the above site, we have now received directly from the supervising engineer in the field preliminary information on two boreholes.

Borehole on Mainland

Location: 65 ft. out and 25 ft. east
 7 ft. - water
 7 ft. - organic silt
 2 ft. - gravel
 Bedrock

Borehole on Howe Island

Location: 55 ft. out and 25 ft. east
 8 ft. - water
 5 ft. - organic silt
 1 ft. - sand
 Bedrock

One further borehole is expected to be completed today, the results of which will be conveyed to you as soon as possible.

Please note that in the event any further foundation investigations at either this site or the Wolfe Island site may become necessary, all requests to our Foundations Office should be handled through this office. We will endeavour to expedite such requests as efficiently as possible.

Yours truly,

A. Van Dalen
For: T. C. Kingsland
Regional Structural Planning Engineer

AV/TCK/hl

c.c. (n.i.o.o.)
P. D. Billings
A. G. Stermac - Att. M. Devata
B. R. Davis
A. J. Percy
C. S. Grebski - Att. K. Bassi

File 73-11083

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. M. Devata
Supervising Foundations Engineer
Foundations Office

FROM: Regional Structural Office
Kingston, Ontario

ATTENTION:

DATE: November 2, 1973

OUR FILE REF.

IN REPLY TO

SUBJECT: W.P. 62-73-01, Howe Island Ferry Service

Further to our telephone discussion yesterday, I enclose herewith, one copy each of sheets 3 and 4 of Mar-Land Engineering's preliminary drawings for the above mentioned crossing, showing the Bore Hole data displayed in a manner which is not in keeping with Ministry procedure for presenting this information.

Attached also is a copy of my letter to Mar-Land Engineering dated November 2, 1973 which is self-explanatory.



T.C. Kingsland
Regional Structural Planning Engineer

TCK:sl

Encl.

Regional Structural Office
355 Counter Street
Postal Bag 4000
Kingston, Ontario
K7L 5A3

November 2, 1973

Mar-Land Engineering Limited
Box 46, Postal Station "U"
14, Dorchester Avenue
TORONTO 18, Ontario

Attention: Mr. G. McFarlane

Dear Sirs:

Re: W.P. 62-73-01, Howe Island Ferry Service

Further to our discussions at the meeting in Kingston on Wednesday, October 31, 1973, concerning the possible shortage of materials, I should be glad to receive from you an approximate estimate of quantity, sizes and types of timber required for the crib work on the Howe Island Docks so that our Head Office Materials Section can assess any possible problem in obtaining supplies. If a severe problem exists, it seems likely that M.T.C. will pre-order the material. The normal procedure is for the contractor to supply timber.

With regard to the foundation information shown on sheets 3 and 4 of your drawings, we consider that it would be more suitable to follow the M.T.C. standard procedure of including the Bore Hole location and soil Strata drawings contained in the Foundation report. This drawing is usually included in the Structure detail drawings immediately following the General Arrangement drawings.

.....2

November 2, 1973

Mr. M. Devata, Foundation Office, has been asked to provide you with the necessary transparencies, at your request, to enable you to make the necessary prints.

Please contact Mr. Devata or the Drafting Supervisor, in the Foundations Office, who will supply your requirements.

Yours truly

T. C. Kingsland
Regional Structural Planning Engineer

TCK:cab

c.c P. D. Billings
A. J. Percy
E. G. Timson
V. A. Snell
A. G. Stermac
Attention: M. Devata

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

Copy for the information of

Mr. A. G. Stermac

168
3-11083
file off

Materials and Testing Office, Postal Bag 4000, Kingston, Ontario

November 2nd, 1973

Mar-Land Engineering,
14 Dorchester Avenue,
TORONTO, Ontario.

Att: Mr. G. McFarlane

Dear Sir:

Mr. L. Timson of our office requested that I contact you with respect to the proposed dock construction for the Howe Island Ferry Service location about 1 mile south of the intersection of Hwy. # 2 and Joyceville Road.

It is understood that new terminals will be constructed from the existing terminal locations approximately 30' (Island Terminal) and 80' (Mainland Terminal).

Quarries contain sound limestone rock in the vicinity of the project. On the mainland, a quarry is located approximately 2 miles north of the terminal along the west side of Joyceville Rd. On the Island, there is a small limestone rock quarry about 1000' south of the terminal.

It is anticipated that granular and hot mix asphalt materials will be obtained from the commercial sources just east of Kingston.

It is recommended that the proposed fills and excavation backfill outlined in the foundations report consist of rock borrow fill material. M. T. C. specification is adequate for this material and construction. Provision should be made for 3" H. L. 5 asphalt ($1\frac{1}{2}$ " surface course + $1\frac{1}{2}$ " binder course) over 9" Granular 'A' over the rock fill subgrade.

Yours truly,

A. M. Batten,
Senior Soils Supervisor

AMB/sgp

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. T. C. Kingsland, (2) FROM: Foundations Office,
Regional Structural Planning Eng., Design Services Branch,
Eastern Region, West Bldg., Downsview.
Kingston, Ontario.

ATTENTION: DATE: November 30, 1973.

OUR FILE REF. IN REPLY TO

SUBJECT: Record of Borehole Sheets,
Howe Island Ferry Service,
Site #7-110
Twps. of Pittsburgh and Howe Island
County of Frontenac
District #8 (Kingston)
W.O. 73-11083 -- W.P. 62-73-02

Attached we are forwarding to you the revised Record of Borehole sheets for B.H.'s #15 to #18, inclusive, in which the additional laboratory test results were included. This information should be included in our Foundation Report No. W.O. 73-11083 submitted on October 22, 1973. Please destroy the original Record of Borehole sheets.

Should you have any queries regarding this project, please feel free to contact this office.

MD/ao
Attn.

c.c. E. J. Orr
B. R. Davis
A. Rutka
A. J. Percy
V. A. Snell
B. J. Giroux
E. R. Saint
G. A. Wrong
B. A. Singh
Mar-Land Eng. Ltd.

M. Devata
M. Devata,
SUPERVISING FOUNDATIONS ENG.

Foundations Files
Documents