

DOCUMENT MICROFILMING IDENTIFICATION

GEOCREs No. 41J-18

W.P. No. 98-66-00

CONT. No. 70-204

W.O. No. 71-11057

STR. SITE No. 38S-176

HWY. No. 548 DIST. 18

LOCATION ST. JOSEPH ISLAND  
BRIDGE STR. and APPROACHES

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 2

REMARKS: \_\_\_\_\_

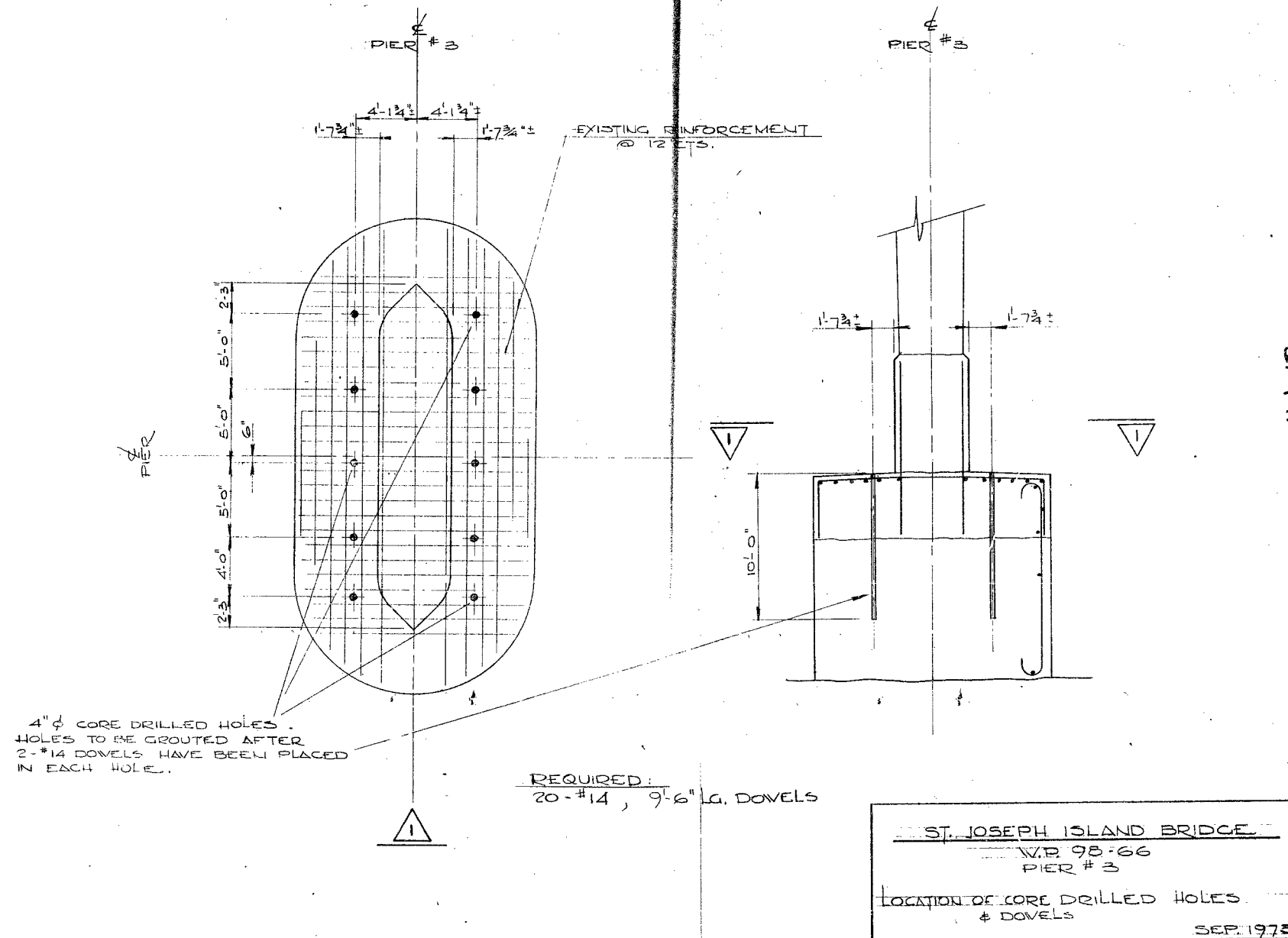
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G.I.-30 SEPT. 1976

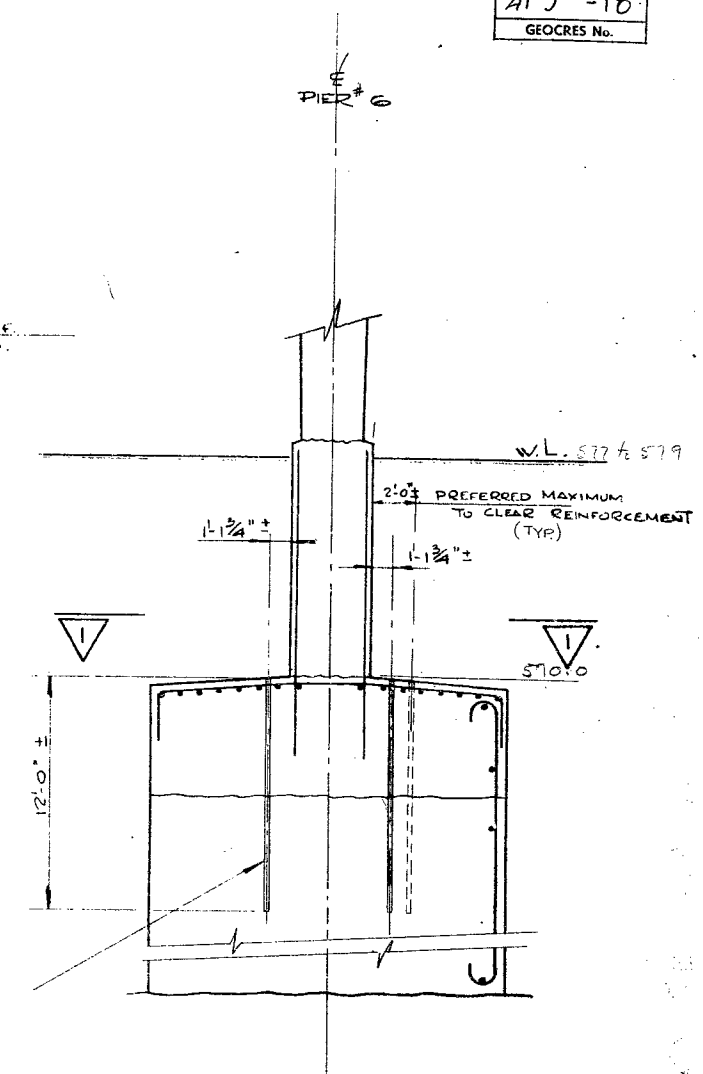
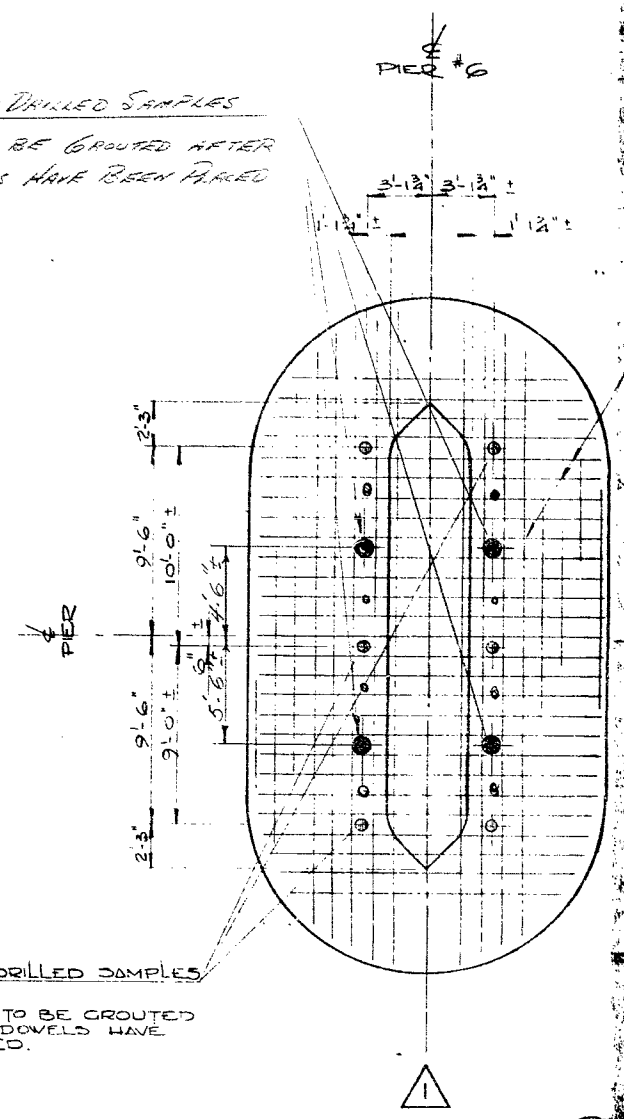
41 J-18  
GEOCRE No.



112

41 J -18  
GEOCRE No.

6"  $\phi$  CORE DRILLED SAMPLES  
HOLES TO BE GROUTED AFTER  
#14 DOWELS HAVE BEEN PLACED



3"  $\phi$  CORE DRILLED SAMPLES  
THE HOLES TO BE GROUTED  
AFTER #14 DOWELS HAVE  
BEEN PLACED.

REQUIRED:  
6 / #14 11'-0" LONG DOWELS.

CONT. 70-204  
ST. JOSEPH ISLAND BRIDGE  
VP 98-66  
LOCATION OF CORE DRILL SAMPLES  
KING, 1972

Received  
Oct 4/73 Foundation Office

St. JOSEPHS ISLAND BRIDGE

APRIL 16, 1963

MESSAGE FROM

BILL BIRCH

BRIDGE OFFICE

SUBSIDANCE OF SOUTH ABUTMENT

LONG AND GRADUAL PROCESS

SUPPOSEDLY ABUTMENT BUILT ON 12 FT OF FILL  
PLACED ON BEDROCK.

REASON FOR SETTLEMENT (SUPPOSED):

LIMESTONE IS CALCARDEOUS AND SHALEY AND  
PROBABLY DISINTEGRATES AND BREAKS UP.

THE CURRENT IS QUITE STRONG AND ICE ACTION  
PRONOUNCED AND EROSION AND SCOURING IS TAKING  
PLACE

PHONED E. SAINT APRIL 16, 1963.

ARRANGED FOR HIM TO GO THERE AND HAVE  
A LOOK

AGS

PHONED J. McALLISTER APRIL 17, 1963

HE WILL GO UP PROBABLY NEXT WEEK AND WILL  
TRY TO GET AS MUCH INFORMATION AS POSSIBLE

AGS

41 J - 18

GEORES 11b.

## MEMORANDUM

To: Mr. A. Stermac,  
Foundation Engineer,  
Room 107,  
Lab. Building.

Bridge Maintenance Section.  
FROM: W. D. Birch,

DATE: April 17, 1963.

OUR FILE REF.

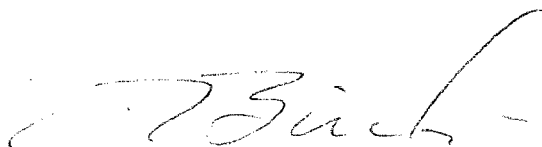
IN REPLY TO

SUBJECT: St. Josephs Island  
90 ft. Truss  
Hwy. No. 548 - District No. 18 13

41 J-18
GEOCRES No.

Following our telephone conversation concerning the subject structure please be advised that your opinion concerning the settlement and tilting of the south abutment will be appreciated.

The structure was constructed about 12 years ago on rock fill but it has never stopped settling. Also, we believe there is scour taking place in the waterway which will ultimately undermine the footing. It is our thought that grouting the area may be useful in preventing further deterioration.



WDB/ea

W. D. Birch,

Bridge Maintenance and Inspection Engineer.

cc. E. J. Orr  
A. M. Toye

## MEMORANDUM

To: Bridge Design Office  
Downsview, Ontario

From: Materials & Research  
North Bay, Ontario

Date: April 29, 1963

Our File Ref.

In Reply To

Subject: Subject A  
Structure at St. Joseph's Island

The above structure was visually inspected on April 24, 1963 and the findings are given in this letter. Attached are a number of photographs to supplement the descriptions.

Viewing the deck, it is immediately noticeable that the area over the South Pier is lower than it has been previously. It was found that fresh repair work has been done at the south side of this pier. This is aimed in supporting the North Ends of the North span girders over their respective bearing seats, which seem to have been broken due to insufficient space allowed for expansion. Inspecting the Rollers over the South Pier pertaining to the middle span, it was found that these have allowed for expansion but did not function in reverse. The forces created by contraction must have been transmitted directly to the piers. It is visible that both piers are slightly tilted toward one another. This could have been helped also by the fact that the bearing plates pertaining to the outside spans have been welded to the flanges of the outside beams and fixed within the concrete by vertical bolts, which are ~~tended~~ in the direction of expansion.

A last factor which may have been involved or may ~~be~~ be the cause of the piers tilted position is the "Freezing and Thaw" cycle, since a considerable amount of erosion was noticed on the rock fill at the abutments. But to investigate this inspection of the footings by a diver would be necessary. The footings are not covered and it is not likely for them to be reaching a depth at which frost action would not affect or aid movement in upward direction.

Subject B - St. Joseph's Island - Erosion failure at the West side of the dock.

The rock fill at this area contains a rather large percentage of fine material and the protective layer of one foot thick grouted rip-rap has not been extended sufficiently deep. Underwater wave action at the toe of the slope is causing the fill material to be running down. This could be remedied by placing rock fill consisting of larger fragments.

MEMORANDUM

To: Mr. T. Stermac  
Principal Foundations Engineer  
Materials & Research  
Downsview, Ontario

FROM: Materials & Research  
North Bay, Ontario

DATE: May 6, 1963

OUR FILE REF.

IN REPLY TO

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SUBJECT: Structure at St. Joseph's Island.

Enclosed are the remaining pictures covering the features discussed on Friday. Hope these give you a better description of the problem.



E.R. Saint

REGIONAL MATERIALS ENGINEER.

ERS/ef

c.c. File.

Mr. A. Stermac.

DEPARTMENT OF HIGHWAYS ONTARIO

MEMORANDUM

AgS

To: Mr. C. S. Grebski,  
Bridge Design Engineer.

FROM A. Radkowski.

ATTENTION:

DATE: June 4, 1971.

41J-18
GEOCRES No.

OUR FILE REF.

IN REPLY TO

SUBJECT: Substructure Excavation,  
St. Joseph Island Bridge,  
Highway #548, District #18,  
W.P. 98-66, Contract 70-204

71-11-057

It has been reported by the District that bedrock for Pier #1 and Pier #4 footings was not encountered at elevations shown on Bridge Plans.

On June, 3, 1971, Mr. A. Cripps and myself visited the site.

Met at site: Mr. W. Sawyer, Construction Engineer,  
Mr. C. McLure, Project Supervisor,  
Mr. B. Gallant from McNamara Marine Ltd.

Situation at Site and Discussions.

Pier #1 Footing:

After overburden material and loose rock was excavated in the pier footing area, bedrock was found to drop abruptly in the north-easterly direction.

Bedrock was not encountered in the north-east area of the footing at elevation shown and after further excavation of 2 ft. below specified bottom of the footing elevation, bedrock was still not found.

Rock in the south and south-east area of the footing was not excavated, and drilling for blasting was in progress.

An attempt was made to unwater the excavation, however, water was seeping and flowing in from the dock area through crib and rock fill at the east side in several places, thus making unwatering impossible without the use of cofferdam, or other means of sealing.

.... /2



Contractor has requested further instructions. It has been agreed that excavation for this footing is to be carried out to the sound bedrock and concrete in the footing to be placed "in the dry" as specified. Mr. A. Cripps suggested that at the east face of the footing probings be made by rod in order to establish possible bedrock profile before method of sealing of the excavation is decided upon.

Pier #4 Footing:

While drilling for blasting in the area of the future footing only loose rock was encountered, where bedrock was expected.

The excavation for present caisson's footing was ready for inspection, although bedrock at the south caisson line was not fully established.

Inspection, carried out by divers hired by the Department, revealed that in the vicinity of caisson line rock was irregular but fairly level. Loose material of 3 to 6 inches was still evident at the caisson's line. A rock outcrop (or big boulder) was encountered in the middle of the footing, which might interfere with the caisson's bracing and has to be removed.

Survey crew was taking soundings in the vicinity of the caisson in order to establish rock profile.

It was suggested by Mr. W. Sawyer, and fully agreed, that in case bedrock at the south side of the caisson will be found lower than shown on plans, excavation is to be carried to that elevation and plinth above top of footing will be placed. This will be done in order not to make changes in the prefabricated caisson. No further difficulties are foreseen.

Status of Construction:

Excavation for Pier #2 and #3 footings was almost completed. No problems were encountered.

Rock blasting for pier footing #5 was completed and excavation of shattered rock was in progress. No difficulties or problems are anticipated.

Docking facility for transfer of concrete to barges for tremie concrete was in evidence.

Contractor was placing rock fill at the north approach to facilitate placing of concrete in Pier #1 footing.

All caissons were at the site and contractor will be ready to proceed with their installation in approximately one week's time.

*A. Radkowski*

A. Radkowski,  
Regional Bridge Design Engineer.

AR/mh

cc: W. Sawyer,  
A. McKim,  
A. Stermac,  
A. Cripps.

AGS

Department of Highways Ontario

Copy for the information of

Mr. A. Stermac

~~Mr. A. McKim~~

Bridge Control Engineer,  
Bridge Office.

A. Radkowski.

June 8, 1971.

Pier #1 Footing -  
St. Joseph Island Bridge,  
Highway #548, District #18,  
Contract 70-204.

71-11-057

Since it has been established that bedrock in the north-east area of the footing is considerably lower than anticipated (i.e. 8 to 10 ft. below bottom footing elevation), we recommend that in this area, and where found necessary, mass tremie concrete be used.

This tremie concrete is to be placed minimum 12 inches beyond theoretical footing faces shown on the plan and approximately up to bottom of the footing elevation.

Bottom of excavation has to be cleared of all overburden material and loose rock.

In case bedrock surface will not be of irregular nature, so as to provide positive keying into rock, pockets into bedrock have to be blasted out, otherwise keying has to be provided by dowels.

To prevent caving in of loose material from the dock area and from the north side, steel sheet piling might be necessary.

A. Radkowski,  
Regional Bridge Design Engineer.

AR/mh

cc: W. Sawyer,  
C. S. Grebski,  
A. Stermac,  
A. Cripps.

XXXXXXXXXXXXXXXXXXXX

MEMORANDUM

TO: C. Grebski,  
Bridge Design Engineer,  
Bridge Office, Administration Building

FROM: K.G. Selby,  
for  
A.G. Stermac

ATTENTION: C. Radkowski,  
Regional Bridge Design Engineer

DATE: June 22, 1971

OUR FILE REF.

IN REPLY TO

41 J - 18  
GEOCRE No.

SUBJECT:

St. Joseph Island Bridge  
W.P. 98-66 W.O. 71-11057  
District 18, Sault Ste. Marie

Following are the results of borings recently carried out for No. 1 Pier footing of the abovementioned structure. The locations of the borings are shown on the attached sketch.

<u>B.H.</u>	<u>Ground Level</u>	<u>Bedrock Surface</u>	<u>Sound Bedrock</u>
1	El. 575.3	El. 567.8	El. 566.2
2	575.2	567.9	565.3
3	578.1	577.7	573.5
4	578 ±	568.6	567.6
5	577.0	575.6	571.7
6	578.5	577.5	575.7
7	578 ±	565.1	562.1
8	576.1	568.9	565.8
9	578 ±	575.8	567.8

The overburden consists of a mixture of clay, sand, gravel and boulders. Between the bedrock surface and the sound bedrock exists a zone of fissured rock partly due to normal weathering and partly due to what appears to be the results of blasting. During the field work, a steel pipe was discovered at the location of B.H.'s #4 and #7. The approximate elevation

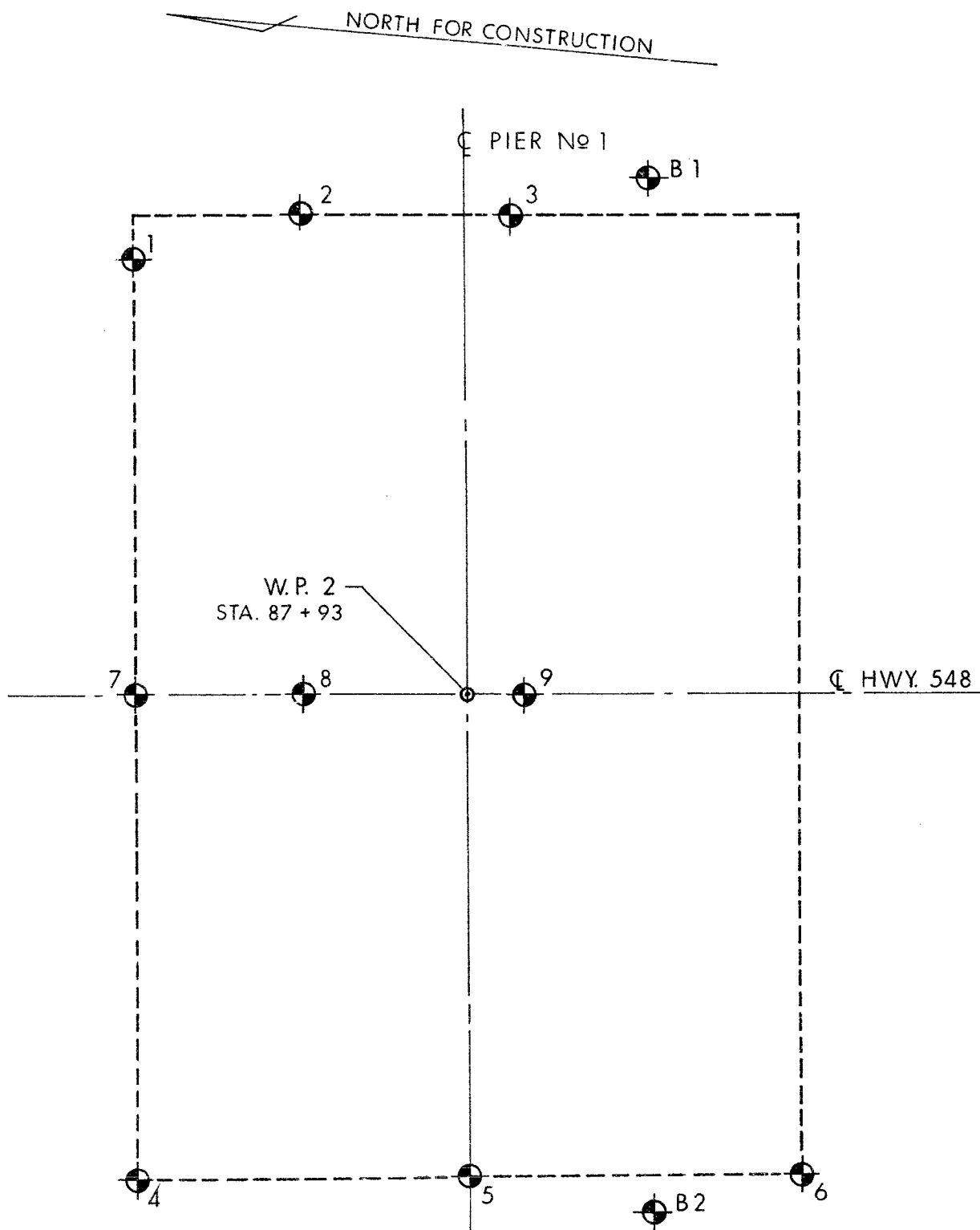
of the bottom of this pipe is 570 ±. The exact location of the pipe at this time is not known.

It is recommended that all overburden, and loose rock from the fissured zone be removed and replaced with mass concrete (tremied if desired), prior to pouring the main structure foundation.

*K. G. Selby*

K. G. Selby,  
Supervising Foundation Engineer  
for: A. G. Stermac,  
Principal Foundation Engineer

c.c.:  
F.G. Allen  
G.R. Browning  
D. Hopper  
C. Grebski  
Foundation Files  
General Files



## BORE HOLE LOCATIONS AT PIER No 1 FOOTING

ST. JOSEPH ISLAND BRIDGE & HWY. NO. 548

Scale :  $\frac{1}{4}" = 1' - 0"$

# FIELD BORING LOG

Rock. At 15-02"

DRILLING CO. <u>LO. 478</u>	DATUM ELEV. <u>531</u>	B.H. NO. <u>1</u>
DRILLER _____	GROUND ELEV. _____	JOB NO. <u>71-11057</u>
ENGINEER <u>RF</u>	CASING SIZE _____	DATE <u>JUNE 9, 1971</u>
SITE LOCATION _____		
HOLE LOCATION _____		
REMARKS _____		

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
		<p>0.0 ————— ————</p> <p>————— ———— WL</p> <p>————— ———— G.L.</p>		
0.0	9.4	DRIVE NX CHISEL & WASH OUT MX: Bottom chisel at 6'		
	10.0	DRILL BX CASING		
10.0	11.1	Av: 1 inch casing Beds: 7" OF Rock	D.C. #1	
	11.0	DRILL BX CASING		
11.0	12.0	DRILL BX CASING	D.C. #2	
	13.00	DRILL BX CASING		
13.00	14.00	DRILL BX CASING 22" - 10' 0" - 10' 0"	D.C. #3	
14.00	15.00	DRILL BX CASING Beds: 10"	D.C. #4	

# FIELD BORING LOG

DRILLING CO. \_\_\_\_\_ DATUM ELEV. \_\_\_\_\_ B.H. NO. 1  
 DRILLER \_\_\_\_\_ GROUND ELEV. \_\_\_\_\_ JOB NO. 71-11057  
 ENGINEER \_\_\_\_\_ CASING SIZE 11 1/2" x 12" DATE June 12, 1971  
 SITE LOCATION \_\_\_\_\_  
 HOLE LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_

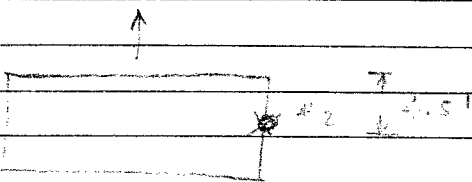
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## FIELD BORING LOG

Rock: 16'

DRILLING CO. Levinson      DATUM ELEV. 781.2      B.H. NO. 2  
 DRILLER \_\_\_\_\_      GROUND ELEV. \_\_\_\_\_      JOB NO. 71-11057  
 ENGINEER \_\_\_\_\_      CASING SIZE \_\_\_\_\_      DATE June 10, 1971  
 SITE LOCATION \_\_\_\_\_  
 HOLE LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
				
		0.0 ————— DOWN ————— W.L.		
		6.3' ————— G.L.		
0.0	11.7	Drill bit chipped out material		
0.0	11.7	Bit chipped		
12.0	14.0	1st. 2' of material Material 2' of material	1.2.1	
14.0	17.0	Material 3'		
17.0	20.0	Material 3'		
20.0	23.0	Material 3'		
23.0	26.0	Material 3'		
26.0	29.0	Material 3'		
29.0	32.0	Material 3'		
32.0	35.0	Material 3'		
35.0	38.0	Material 3'		
38.0	41.0	Material 3'		
41.0	44.0	Material 3'		
44.0	47.0	Material 3'		
47.0	50.0	Material 3'		
50.0	53.0	Material 3'		
53.0	56.0	Material 3'		
56.0	59.0	Material 3'		
59.0	62.0	Material 3'		
62.0	65.0	Material 3'		
65.0	68.0	Material 3'		
68.0	71.0	Material 3'		
71.0	74.0	Material 3'		
74.0	77.0	Material 3'		
77.0	80.0	Material 3'		
80.0	83.0	Material 3'		
83.0	86.0	Material 3'		
86.0	89.0	Material 3'		
89.0	92.0	Material 3'		
92.0	95.0	Material 3'		
95.0	98.0	Material 3'		
98.0	101.0	Material 3'		
101.0	104.0	Material 3'		
104.0	107.0	Material 3'		
107.0	110.0	Material 3'		
110.0	113.0	Material 3'		
113.0	116.0	Material 3'		
116.0	119.0	Material 3'		
119.0	122.0	Material 3'		
122.0	125.0	Material 3'		
125.0	128.0	Material 3'		
128.0	131.0	Material 3'		
131.0	134.0	Material 3'		
134.0	137.0	Material 3'		
137.0	140.0	Material 3'		
140.0	143.0	Material 3'		
143.0	146.0	Material 3'		
146.0	149.0	Material 3'		
149.0	152.0	Material 3'		
152.0	155.0	Material 3'		
155.0	158.0	Material 3'		
158.0	161.0	Material 3'		
161.0	164.0	Material 3'		
164.0	167.0	Material 3'		
167.0	170.0	Material 3'		
170.0	173.0	Material 3'		
173.0	176.0	Material 3'		
176.0	179.0	Material 3'		
179.0	182.0	Material 3'		
182.0	185.0	Material 3'		
185.0	188.0	Material 3'		
188.0	191.0	Material 3'		
191.0	194.0	Material 3'		
194.0	197.0	Material 3'		
197.0	200.0	Material 3'		

# FIELD BORING LOG

DRILLING CO. \_\_\_\_\_ DATUM ELEV. \_\_\_\_\_ B.H. NO. 2  
DRILLER \_\_\_\_\_ GROUND ELEV. \_\_\_\_\_ JOB NO. 71-11057  
ENGINEER \_\_\_\_\_ CASING SIZE \_\_\_\_\_ DATE JUNE 11, 1971  
SITE LOCATION \_\_\_\_\_  
HOLE LOCATION \_\_\_\_\_  
REMARKS \_\_\_\_\_

[illegible]

# FIELD BORING LOG

Podk:  $\phi_{FI}$ .

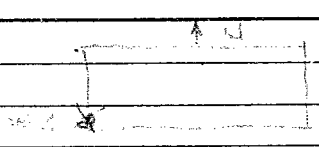
DRILLING CO. Long DATUM ELEV. 531.5 B.H. NO. 3  
DRILLER T.H. GROUND ELEV.  JOB NO. 74-11057  
ENGINEER T.H. CASING SIZE 4-1/2" DATE June 11, 1971  
SITE LOCATION   
HOLE LOCATION   
REMARKS

[illegible]

## FIELD BORING LOG

Rock: 13'

DRILLING CO. Low Price DATUM ELEV. 580.6 B.H. NO. 4  
 DRILLER T.H. GROUND ELEV.  JOB NO. 71-11057  
 ENGINEER W.F. CASING SIZE 4" x 4" DATE June 12, 1971  
 SITE LOCATION   
 HOLE LOCATION   
 REMARKS

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
				
		0.0' - - - - - DATUM (580.6)		
		0.6' - - - - - WL		
		1.0' - - - - - S.L.		
0.0		DRILL Bx CASING		
		DRILL Bx CASING		
0.0	3'-09"	DRILL Bx CASING		
0.0	5'-0	ART. ROCK CORING	P.C.#1	
		DR: 1'-03"; RECOVERY AT 3'-10" (!)		
		( <del>EL. 576.8</del> )		
5.0	8.0	ART. ROCK CORING	P.C.#2	
		DR: 0' x 0' x 0' at 7'-0"		
June 14/71				
3'-09"	11'-09"	DRILL Bx CASING		
		DRILL Bx CASING		
11'-09"	12'-0"	ART. ROCK CORING	P.C.#3	
		DR: DR: 11'-0"		
12'-11"	17'-00"	ART. ROCK CORING	P.C.#4	
		DR: 100%		

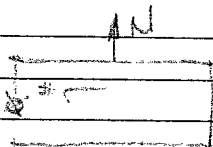
DRILLING CO. Longview Drilling Co.      DATUM ELEV.                           B.H. NO. 4  
 DRILLER T.M.      GROUND ELEV.                           JOB NO. 71-11057  
 ENGINEER                           CASING SIZE 2 1/2"      DATE June 14, 1971  
 SITE LOCATION                       
 HOLE LOCATION                       
 REMARKS

[illegible]

## FIELD BORING LOG

Duck. 9'

DRILLING CO. \_\_\_\_\_ DATUM ELEV. \_\_\_\_\_ B.H. NO. 5  
 DRILLER \_\_\_\_\_ GROUND ELEV. \_\_\_\_\_ JOB NO. 71-11057  
 ENGINEER \_\_\_\_\_ CASING SIZE \_\_\_\_\_ DATE June 14, 1971  
 SITE LOCATION \_\_\_\_\_  
 HOLE LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
				
		0.0 ————— Datum (580.7)		
		0.7 ————— w.l.		
		3.7 ————— G.L. (571.0)		
0.0	1-0	Dr. 1-0' (43")		
4-0	6-10	Dr. 2-0' (43")	P.C.#1	
		"2-0' (43") (2-0' to 4-0')		
6-10	8-0	Dr. 2-0' (43")	P.C.#2	
		"2-0' (43") (6-10' to 8-0')		
8-0	10-0	Dr. 2-0' (43")	P.C.#3	
		"2-0' (43") (8-0' to 10-0')		
10-0	12-0	Dr. 2-0' (43")	P.C.#4	
		"2-0' (43") (10-0' to 12-0')		
12-0	14-0	Dr. 2-0' (43")	P.C.#5	
		"2-0' (43") (12-0' to 14-0')		
		End of Borehole		

# FIELD BORING LOG

Rock: 5'

DRILLING CO. LONGVIEW AD DATUM ELEV. 282.7 B.H. NO. 6  
DRILLER BM GROUND ELEV. \_\_\_\_\_ JOB NO. 71-11057  
ENGINEER PP CASING SIZE 4x DATE JUNE 15, 1971  
SITE LOCATION \_\_\_\_\_  
HOLE LOCATION SW CORNER \_\_\_\_\_  
REMARKS \_\_\_\_\_

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
		0.0' ————— DATUM (580.7)		
		0.4' ————— WL. (574.9)		
		2.2' ————— G.L.		
0.0	3.0	DRILL 4" DIAMETER		
3.0	5'-02"	4" DIAMETER CORING RCD: 4'-11" (Coring at 3'-03")	D.C.#1	
3.0	2.5	DRILL 4" DIAMETER (Coring at 3'-03")		
5'-02"	10'-03"	4" DIAMETER CORING RCD: 26" (Coring)	D.C.#2	
10'-03"	11'-04"	4" DIAMETER CORING RCD: 13" (Coring)	D.C.#3	
		END OF BORING		

## FIELD BORING LOG

Rock: 18'

DRILLING CO. Longwell      DATUM ELEV. 580.1      B.H. NO. 7  
 DRILLER BM      GROUND ELEV. \_\_\_\_\_      JOB NO. 71-11057  
 ENGINEER DPH      CASING SIZE Bx      DATE June 15, 1971  
 SITE LOCATION \_\_\_\_\_  
 HOLE LOCATION 5 \_\_\_\_\_  
 REMARKS \_\_\_\_\_

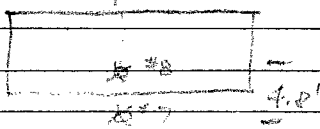
DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
		0.0 ————— DATUM ————— W.L. ————— G.L.		
0.0	6.1	LINE Bx CASING & WATER OUT FILL		
6.1	6.5	DRILL AX CASING Mud cut (Borehole)		
6.5	9'-09"	DRILL AX CASING Casing runs to 9'-09" - Probably the bottom of C.I.P.		
9'-09"	10'-09"	ART 1" dia casing Test 1 of 3	L.C. #1	
9'-09"	13'-00"	LINE AX CASING Test 1 of 3		
13'-00"	13'-00"	DRILL AX CASING Mud cut (Borehole)		
13'-00"	15'-00"	ART 2" dia casing Test 2 of 3 (43") Borehole	L.C. #2	



## FIELD BORING LOG

Rock 14'

DRILLING CO. LEITCH DATUM ELEV. 579.8 B.H. NO. 8  
 DRILLER PH GROUND ELEV.          JOB NO. 71-11057  
 ENGINEER PH CASING SIZE 4x DATE JUNE 16, 1971  
 SITE LOCATION           
 HOLE LOCATION           
 REMARKS         

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OF BLOWS & DISTANCE
FROM	TO			
				
		0.0 ————— Datum (579.8)		
		0.1 ————— WL		
		3.7 ————— G.L.		
0.0	10'-00"	100' Sand & Gravel Hard to dig - hand tool		
9'-00"	10'-00"	100' Sand & Gravel Bldg. 6' at bottom (100')	I.C.#1	
10'-00"	12'-00"	100' Sand & Gravel Bldg. 23" (-5") Rock at 10'-11"	I.C.#2	
12'-00"	15'-00"	100' Sand & Gravel Bldg. 3'-00"; (-5")	I.C.#3	
15'-00"	21'-00"	400' Sand & Gravel Bldg. 5'-02" (-22") (Bldg. 5'-02" (-22") I.C.#4 sand at 17'-00") 400' Sand & Gravel	I.C.#4	
		END OF Borehole		

# FIELD BORING LOG

DRILLING CO. Landmark Inc. DATUM ELEV. 380.1 B.H. NO. 7  
 DRILLER P.M. GROUND ELEV. \_\_\_\_\_ JOB NO. 71-1057  
 ENGINEER TD CASING SIZE 4 DATE JUNE 18, 1971  
 SITE LOCATION \_\_\_\_\_  
 HOLE LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_

[illegible]

Rock 13'

DRILLING CO. \_\_\_\_\_ DATUM ELEV. \_\_\_\_\_ B.H. NO. \_\_\_\_\_  
 DRILLER \_\_\_\_\_ GROUND ELEV. \_\_\_\_\_ JOB NO. \_\_\_\_\_  
 ENGINEER \_\_\_\_\_ CASING SIZE \_\_\_\_\_ DATE \_\_\_\_\_  
 SITE LOCATION \_\_\_\_\_  
 HOLE LOCATION \_\_\_\_\_  
 REMARKS \_\_\_\_\_

DEPTH FEET		DESCRIPTION	SAMPLE TYPE, NO. & RECOVERY	METHOD OR BLOWS & DISTANCE
FROM	TO			
		0.0 ————— Datum (-80.8) 0.6 ————— 10' 6"		
		1.0 ————— 10' 6"		
		4.04' 10' 6" 10' 6"		
4.04'	4.05'	4.0' 10' 6" 10' 6" Tied: 53" (-3") Back to 5.00'	P.C. #1	
9.00'	10.00'	10' 6" 10' 6" Tied: 53"	P.C. #2	
12.00'	13.00'	10' 6" 10' 6" Tied:	P.C. #3	
		Tied to 1.00' 10' 6"		

SKETCH OF ST. JOSEPHS-ISLAND BRIDGE

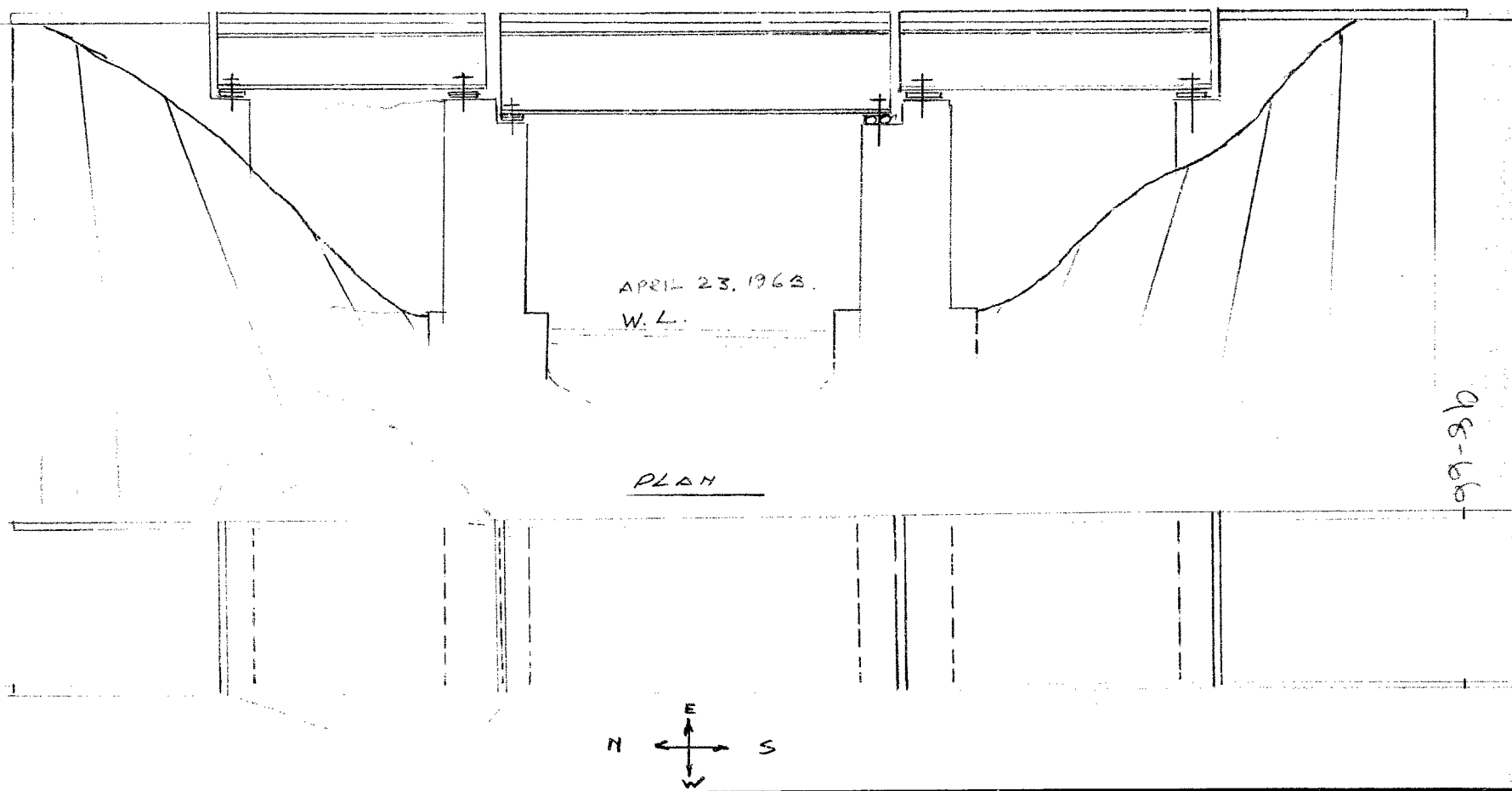
NORTH

SOUTH

TO FERRY

TO ST. JOSEPHS-ISLAND

SIDE-VIEW



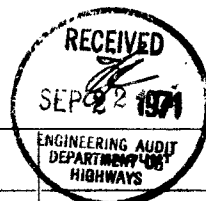


ONTARIO

 DEPARTMENT OF HIGHWAYS  
 FORCE ACCOUNT AND SUNDRY PAYMENT CERTIFICATE

FORM 08-1 (REVISED)

68-4778

 CERTIFICATE NO. 1  
 ST. JOSEPH'S ISLAND
CONTRACT NO. 70-204
 CONTRACTOR McNamara Corporation Ltd.,  
 ADDRESS 707 Don Mills Rd., DON MILLS, Ont.
DISTRICT NO. 19-Sault Ste. Marie
 WHEN WORK IS CARRIED OUT BY FORCE ACCOUNT, THIS MUST BE CLEARLY INDICATED  
 IN DESCRIPTION OF WORK AND SUPPORTED BY THE DAILY WORK RECORDS.


COVERING DATES	PARTICULARS OF ATTACHED INVOICES DESCRIPTION OF WORK	ORDER NO.	
June 1, 2, 3 & 4 1971.	Foundation Investigation at Pier No. 1.	70-204-1	\$1,219.30
June 9, 12 & 18, 1971.	Cone Drilling at Pier No. 1.	70-204-2	\$404.00
		70-204-3	\$1,623.39
	<p>Contractor commenced work on Pier 1 according to the drawings &amp; previous Soils Investigations, however, after considerable digging it was found the solid rock line was not as indicated on the drawings.</p> <p>In order to avoid as much delay as possible, work was started immediately on foundation investigation to determine rock location. This work was carried out on Force Account basis as this was the most feasible method to evaluate the work. No D.U.O. equipment available.</p>		

THE ACCOUNTS LISTED ABOVE COVER WORK NOT INCLUDED IN TENDER IN THE CONTRACT. THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH DEPARTMENTAL REGULATIONS AND PROCEDURES, AND ALL ITEMS HAVE BEEN VERIFIED BY EXAMINATION OF FIELD NOTES, DAILY WORK RECORDS, ETC. NO PART OF THIS ACCOUNT HAS BEEN PAID ON TENDER PAYMENT CERTIFICATE.



CERTIFIED CORRECT

DISTRICT ENGINEER

RECOMMENDED FOR PAYMENT

DIRECTOR OF OPERATIONS

EXTENSIONS AND ADDITIONS CHECKED

APPROVED FOR PAYMENT

CHIEF ACCOUNTANT

DEPUTY MINISTER

TREASURY

DEPARTMENT OF HIGHWAYS  
ONTARIO

MEMO FROM

A. G. STERMAC

DATE OCT 6, 1971

TO \_\_\_\_\_

NOTE FOR FILES

INVESTIGATION AT PIER NO 1  
WAS CARRIED OUT BY THE  
FOUNDATION OFFICE -  
PAUL PAYER IN CHARGE.

AGS

**WYLLIE & UFNAL LIMITED**  
**CONSULTING ENGINEERS**

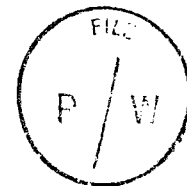
Successors to Laughlin, Wyllie & Ufnal

J. A. WYLLIE, B.E., P.Eng., M.E.I.C., President

C. S. UFNAL, B.A.Sc., P.Eng., M.E.I.C., Vice-President & Sec.-Treas.

1 Greensboro Drive  
Rexdale, Ontario  
Telephone: 248-6105

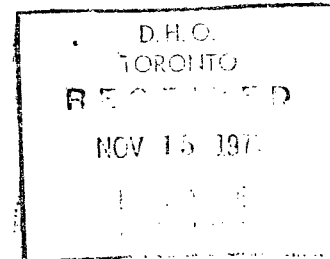
1305 Richmond Road  
Ottawa 14, Ontario  
Telephone: 829-1372



November 11, 1971.

Department of Transportation and Communications,  
Structural Office, West Building,  
DOWNSVIEW, Ontario.

Attention: Mr. C. S. Grebski,  
Structural Design Engineer



Gentlemen:

Re: St. Joseph Island Bridge - Contract #70-204  
Site #38S-176, District #18, Sault Ste. Marie  
Our Project E 373-71

Upon receipt of your letter dated October 12, 1971 and the profiles of the actual top of tremie concrete for each pier, we reviewed our previous calculations and design assumptions and have come to the conclusion that Piers Nos. 3 and 6 are now over-stressed by about 50%, but that all other piers are still satisfactory. Even though our computations are, no doubt, conservative, we recommend that remedial measures be taken to increase the capacity of these foundations.

The simplest method, probably, is to increase the effective length of the dowels into the foundation by drilling and grouting in an equivalent area of steel, placed as close as possible to the original dowels. The form this work might take is as follows:-

Pier No. 3 - Drill 3" diameter holes at 24 in. centres approximately to the bottom of the tremie. In each hole place two #10 reinforcing bars and grout with non-shrink grout. To insure complete grouting, two grout tubes should be used, one on each side of the bar group.

Pier No. 6 - Use the same method as for Pier No. 3, except drill 3½" diameter holes at 18 in. centres and place two #11 reinforcing bars in each hole.

continued.....

Department of Transportation and Communications,  
Downsview, Ontario.

Nov. 11, 1971.

Attention: Mr. C.S. Grebski, Structural Design Engineer

Re: St. Joseph Island Bridge - Contract #70-204, Site #38S-176, District #18,  
Sault Ste. Marie

---

A pre-stressing method could probably be used, but has certain overriding disadvantages, viz :-

- (i) the elements are short for post-tensioning,
- (ii) a sophisticated installation, stressing and grouting procedure is required, which will necessitate the knowledge and presence of experts, giving rise to
- (iii) costs that will be significantly higher.

Yours very truly,

WYLLIE & UFNAL LIMITED

*D. C. Batchelor*

D. C. Batchelor, P.Eng.

DCB/ot



DEPARTMENT OF HIGHWAYS TARIO  
ACTION SLIP

DATE JULY 14/72

TO MR. K. G. SELBY

FROM

A. G. STERMAK  
W.O. 71-11057

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> NOTE AND<br>FILE  | <input type="checkbox"/> PREPARE REPLY FOR<br>MY SIGNATURE |
| <input type="checkbox"/> NOTE AND<br>RETURN TO ME     | <input type="checkbox"/> TAKE APPROPRIATE<br>ACTION        |
| <input type="checkbox"/> RETURN WITH MORE<br>DETAILS  | <input type="checkbox"/> PER YOUR<br>REQUEST               |
| <input type="checkbox"/> NOTE<br>AND SEE ME           | <input type="checkbox"/> FOR YOUR<br>SIGNATURE             |
| <input type="checkbox"/> PLEASE<br>ANSWER             | <input type="checkbox"/> FOR YOUR<br>INFORMATION           |
| <input type="checkbox"/> FOR YOUR<br>APPROVAL         | <input type="checkbox"/> INVESTIGATE AND<br>REPORT         |
| <input type="checkbox"/> RETURN WITH YOUR<br>COMMENTS | <input type="checkbox"/> _____                             |

COMMENTS

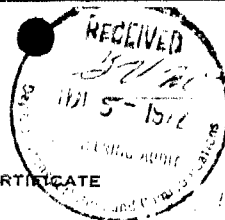
KEN:

THIS IS THE ST. JOSEPH'S  
ISLAND BRIDGE. AT THE TIME  
I THOUGHT THAT IT WOULD AMOUNT  
TO MORE MONEY. \$13,798.00  
DOESN'T SEEM THAT BAD

STOW



ONTARIO

 DEPARTMENT OF HIGHWAYS  
 FORCE ACCOUNT AND SUNDRY PAYMENT CERTIFICATE


FORM 010 (REVISED)

68-477P

CERTIFICATE NO. 7CONTRACTOR McNamara Corporation LimitedCONTRACT NO. 70-204ADDRESS 255 Consumers Road, Willowdale 425, OntarioDISTRICT NO. 18 Sault Ste Marie
 WHEN WORK IS CARRIED OUT BY FORCE ACCOUNT, THIS MUST BE CLEARLY INDICATED  
 IN DESCRIPTION OF WORK AND SUPPORTED BY THE DAILY WORK RECORDS.

Page 1

COVERING DATES	PARTICULARS OF ATTACHED INVOICES DESCRIPTION OF WORK	ORDER NO.	AMOUNT
July 1,5,1971 Aug. 17,21/71 Sept.13,14,23/71	Miscellaneous Cutting and Reshap- ing of reinforcing steel due to Design Change	70-204-5	\$ 534.68 ✓
July 23,26,27,29, 30,Aug. 3/71	Airlift Operation cleaning sand & silt from bedrock for excav- ation at Pier # 1 & N.Abutment	70-204-7 WO 71-32695	5,601.54 ✓
Aug. 4 & 5/71	Placing 35 C.Y. of Concrete as a grout at Pier # 1	70-204-8	1,856.80 ✓
Sept. 1 & 2/71	Pier # 4 Fabricating & Placing an extra mat of reinforcing steel immediately above tremie concrete as recommended by Bridge Office	70-204-12	559.53 ✓
Sept. 13 & 14/71	Airlift Pier # 2 Removing sand & silt from bottom of excavation to expose bedrock	70-204-13	2,302.83 ✓
Sept. 17 & 18/71	Pier # 2, Dewatering & Chipping of laitance from surface of tremie concrete	70-204-14	2,833.18 ✓
Nov. 5/71	Levelling Material at Pier # 1&2 previously piled under Force Acct.	70-204-16	109.44 ✓
		TOTAL	\$13,798.00
Force Account work carried out as the solid rock line was not according to contract drawings, due to the unknown depth of solid rock. A Unit Price could not be negotiated and the most feasible method to evaluate the work was by Force Account			

 THE ACCOUNTS LISTED ABOVE COVER WORK NOT INCLUDED IN TENDER IN THE CONTRACT.  
 THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH DEPARTMENTAL REGULATIONS AND  
 PROCEDURES, AND ALL ITEMS HAVE BEEN VERIFIED BY EXAMINATION OF FIELD NOTES, DAILY  
 WORK RECORDS, ETC. NO PART OF THIS ACCOUNT HAS BEEN PAID ON TENDER PAYMENT  
 CERTIFICATE.

CERTIFIED CORRECT

  
DISTRICT ENGINEER

RECOMMENDED FOR PAYMENT

  
DIRECTOR OF OPERATIONS

EXTENSIONS AND ADDITIONS CHECKED

APPROVED FOR PAYMENT

CHIEF ACCOUNTANT

DEPUTY MINISTER

TREASURY

QUOTATION FROM:

MASTER SOIL INV. LTD.  
104 KENNA RD.  
WESTON ONT.

ST. JOSEPH ISLAND BRIDGE  
PIER #6, CORE DRILLED HOLES  
W.P. 98-66, HWY 548  
DIST #18

Lump Sum PRICES INCLUDE MOBILIZATION,  
DEMOBILIZATION OF EQUIPMENT TO THE SITE,  
AND ALSO ALL NECESSARY MATERIALS INCLUDING  
DIAMONDS. FOUR #14 BOWELS EACH 12' LONG PLACED IN EACH  
HOLE AND GROUTED.

DRILL 4 - NXL CORE HOLES IN CONCRETE  
EACH 12 FT DEEP TOTAL 48 FT.  
Lump Sum PRICE — \$5,500

DRILL 4 - H CORE HOLES IN CONCRETE  
EACH 12 FT DEEP TOTAL 48 FT.  
Lump Sum PRICE — \$6,500

DRILL 4 - 6" CORE HOLES IN CONCRETE  
EACH 12 FT DEEP TOTAL 48 FT.  
Lump Sum PRICE — \$8,000

SIGNED:

*M. D. D. D.*



71-F-57

CANADIAN LONGYEAR, LIMITED  
General Office and Manufacturing Plant  
North Bay, Ontario, Canada  
P.O. BOX 330 — CABLE LONGYEAR

TELEPHONE 474-2800  
TELEX 027694

A. G. Stermac (Principle Foundation Eng.),  
Dept. of Transportation and Communication,  
Design Services Branch,  
West Bldg., 1201 Wilson Ave.,  
Downsview, Ontario. M3M 1J8.

PLEASE REPLY TO  
35 BRYDON DRIVE  
REXDALE, ONTARIO  
TELEPHONE 243-8848  
743-4540.

August 22, 1973.

Attention: Mr. M. Devata(Supervising Foundation Eng.)

Dear Sir:

Following is our lump sum quotation for core drilling and miscellaneous work as required under contract No. 70-204 W. P. No. 98-66.

Our understanding of the work required, is, that core drilling of 4 holes to a depth of 12 feet is required with all reasonable precaution taken to recover a nominal 6" diameter core.

On completion of the drilling, eleven foot long, #14 dowels are to be supplied, installed, and grouted in each of the four holes.

Our price for the above described work, including all costs of mobilization, labour, materials, equipment and living expenses is: \$ 7,150.00

Alternitive a) as above but for 4" core \$ 5,425.00

Alternitive b) as above but for 3" core \$ 4,500.00

We hope this proposal meets with your favourable consideration. Approximately 3 weeks notice would be required to commence work.

Yours truly,  
CANADIAN LONGYEAR LTD.  
*L. S. Pascoli*  
L. S. Pascoli,  
(Branch Mgr. Rexdale)

71-F-57

F. E. JOHNSTON DRILLING CO. LTD.  
DRILLING CONTRACTORS

MAILING ADDRESS  
P.O. BOX 4134, STATION "E", OTTAWA 1, ONTARIO



AUGUST 23, 1973.

MINISTRY OF TRANSPORTATION & COMMUNICATIONS,  
DOWNSVIEW, ONTARIO.

ATTENTION: MR. A. G. STERLAC, PRINCIPAL FOUNDATIONS ENGINEER  
MR. J. DEVATA, SUPERVISING FOUNDATIONS ENGINEER

RE: 4 CORE HOLES  
PIER #6 ON THE ST. JOSEPH ISLAND BRIDGE

GENTLEMEN:

FOLLOWING OUR CONVERSATION OF RECENT DATE PERTAINING TO  
THE ABOVE MENTIONED JOB, WE ARE PREPARED TO PROCEED  
AS FOLLOWS:

METHOD A: TO DRILLING FOUR 4" XL CORE HOLES IN PIER #6  
ON THE ST. JOSEPH ISLAND BRIDGE, 2' FROM THE CENTRE PIER  
THROUGH 9' OF WATER INTO THE BASE OF THE PIER; ROTATE  
4" CASING INTO THE CONCRETE A FEW INCHES, THEN CORE 12'  
OF 4" XL CORE, LABEL AND PLACE IN WOODEN CORE BOXES. THEN  
INSTALL A 12' LENGTH OF 1" REINFORCING BAR IN THE HOLE  
AND BROUT THE ANGLAS BETWEEN THE REBAR AND THE WALL OF THE  
CORED HOLE. THE GROUTING WILL BE CONFINED TO THE CORE  
HOLE ONLY AND TWO BAGS OF QUICK SET CONCRETE WILL BE PLACED  
IN EACH HOLE. THEN OUR PROTECTIVE CASING WILL BE REMOVED.  
AT THIS POINT THE HOLE WILL BE COMPLETE AND SIGNED FOR BY  
AN AUTHORIZED REPRESENTATIVE OF THE M. T. C.

TO SUPPLY ALL NECESSARY LABOUR, RAFTS OR OTHER SET UP  
DEVICES, DRILL, EXPENDABLE ITEMS, MOBILIZATION AND  
DEMOLITION, WE WOULD UNDERTAKE TO DO THESE FOUR (4)  
HOLE 4" XL SIZE AT THE LUMP PRICE OF \$9,000.00

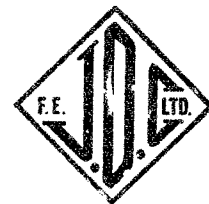
METHOD B: TO DOING WORK IDENTICAL TO THAT DESCRIBED  
IN METHOD A, BUT USING 6" XL CORE, THE LUMP SUM PRICE  
WOULD BE \$12,400.00

METHOD C: TO DRILLING A 6" HOLE, A SPECIAL CORE BARREL  
WOULD HAVE TO BE MADE, SPECIAL LARGE PROTECTION CASING  
MUST BE OBTAINED. THESE SPECIAL ITEMS ARE VERY COSTLY,  
AND AT THIS TIME WE ARE UNABLE TO OBTAIN PRICES IN TIME  
FOR THE TENDER CLOSING.

71-F-57

F. E. JOHNSTON DRILLING CO. LTD.  
DRILLING CONTRACTORS

MAILING ADDRESS  
P.O. BOX 4134, STATION "E", OTTAWA 1, ONTARIO



-2-

THE ABOVE IS CONTINGENT UPON THE FOLLOWING CONDITIONS:

1. ENGINEERING & LAYOUT: ALL ENGINEERING AND LAYOUT IS THE RESPONSIBILITY OF THE M. T. C. BOREHOLE LOCATIONS MUST BE LOCATED AHEAD OF TIME.
2. UTILITIES: ALL UTILITIES, WHETHER OVERHEAD OR UNDERGROUND ARE THE RESPONSIBILITY OF THE M. T. C.
3. FRACTURES: IN CASE OF VOID OR FRACTURE IN THE CONCRETE, THE EXTRA TIME AND EXPENSE OF GROUT WILL BE THE RESPONSIBILITY OF M. T. C.
4. STRUCTURE: F. E. JOHNSTON DRILLING CO. LTD. BEARS NO RESPONSIBILITY FOR STRUCTURAL FAILURES IN THE BRIDGE DUE TO DRILLING OPERATIONS.

YOURS TRULY,  
F.E. JOHNSTON DRILLING CO. LTD.,

SDS:KL

S. D. SMITH,  
TORONTO MANAGER

5. PRICES. THESE PRICES ARE VALID FOR 90 DAYS

only - 29.

SOIL  
INVESTIGATIONS

EARTH  
AUGERING  
HORIZONTAL  
and  
VERTICAL

ROCK and EARTH  
TUNNELS

WELL  
DRILLING  
DOMESTIC  
and  
COMMERCIAL

DIAMOND  
CONCRETE  
CORING  
and  
SAWING

EXPLORATION  
DIAMOND  
DRILLING



# DOMINION SOIL INVESTIGATION LIMITED

CONSULTING SOIL & FOUNDATION ENGINEERS

104 CROCKFORD BLVD., SCARBOROUGH, ONT. M1R 3C6 · (416) 751-6565 · TELEX 02-21210 · CABLES: DOMSOIL

71-F-57

August 27, 1973

Mr. A. G. Stermac,  
Principal Foundations Engineer  
Design Services Branch  
1201 Wilson Avenue  
Downsview M3M 1J8, Ontario.

Attention: Mr. M. Devata,  
Supervising Foundation Engineer

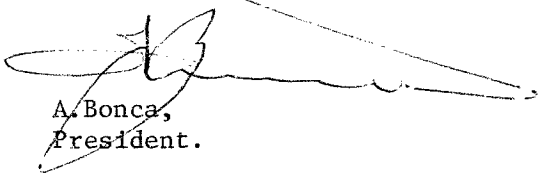
Dear Sir:

Thank you for inviting us to submit a quotation for carrying out core drilling at St. Joseph's Island Bridge near Sault Ste. Marie.

We regret to inform you however that we were unsuccessful in locating a spotted barge to carry out the operation. Therefore we are unable to submit a lump-sum price as requested for the above work.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED



A. Bonca,  
President.

AB:eh

Mr. A. E. McKim,  
Assistant Construction Engineer,  
Construction Branch,  
Central Bldg., Downsview.

71-657

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

Sept. 4, 1973.

St. Joseph Island Bridge,  
W.P. 98-66, Cont. 70-204, Hwy. 548  
District #18, Sault Ste. Marie.

Further to your request, we have approached four drilling companies to supply us lump sum quotation for core drilling four holes and also placing #14 dowel in each drilled hole including necessary grouting at Pier #6 location as per your drawings of the above-mentioned structure. This lump sum price shall include cost of supplying dowels, mobilization, labour, materials, equipment and living expenses. This Office now received all the quotations and the details are as follows:

Name of Drilling Co.	Diameter of the Core		
	6 inch (Special Core Barrel	3 $\frac{29}{32}$ inch (H Size)	2 $\frac{63}{64}$ (N x L Size Double Core Barrel)
Canadian Longyear Ltd.	\$7,150	\$5,425	\$4,500
Master Soil Investigation Ltd.	\$8,000	\$6,500	\$5,500
F.E. Johnston Drilling Co. Ltd.		\$12,200	\$9,800
Dominion Soil Investigation Ltd.	Unable to Submit a Lump Sum Price		

It should be noted drilling a 6" hole, a special core barrel would have to be manufactured and also special measures to obtain the core will be required. In our opinion consideration should be given for 3 inch diameter core since commercially available double core barrel equipment can be used.

We believe that the aforementioned information is sufficient for your immediate requirements. Should you require any additional information, please contact our Office.

MD/ao  
c.c. C. S. Grebski

  
M. Devata,  
SUPERVISING FOUNDATIONS ENGINEER.





71-F-57

CANADIAN LONGYEAR, LIMITED

General Office and Manufacturing Plant  
North Bay, Ontario, Canada  
P.O. BOX 330 — CABLE LONGYEAR  
TELEPHONE 474-2800  
TELEX 027694

Mr. A. G. Stermac, (Principle Foundations Eng.)  
Ministry of Transportation & Communication,  
Design Services Branch,  
1201 Wilson Ave., West Bldg.,  
Downsview, Ontario.

PLEASE REPLY TO  
35 BRYDON DRIVE  
REXDALE, ONTARIO  
TELEPHONE 241-5125  
743-4540

September 7, 1973.

Attention: Mr. M. Devata, (Supervising Foundations Eng.)

Dear Sir:

As per your request by telephone conversation on Sept. 7, 1973;  
in regard to work required under contract #70-204 W.P. # 98-66.

Our understanding is that the required drilling program has  
been changed from 4 holes 12 feet deep, to 12 holes 12 feet deep,  
all to be drilled in one bridge pier; and that you would like us to  
bid on these holes, with core sizes of 3" core, and 2 5/32" and  
that all holes require #14 dowels to be supplied, installed, and  
grouted in each of the twelve holes.

Canadian Longyear's price for this work, including all costs of  
mobilization, labour, materials, equipment, and living expenses is:

For 3 inch core                      \$ 9000.00

For 2 5/32 inch core              \$ 8000.00

We hope this proposal meets with your favourable consideration.  
Approximately 3 weeks notice would be required to commence work.

Yours truly,  
CANADIAN LONGYEAR LIMITED,

R. E. Ralph,  
(Operations Mgr. Rexdale)

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

Copy for the information of

Mr. A. Stermac

---

71-F-57

Mr. A. McKim,  
Construction Engineer,  
Construction Office,  
3rd Floor, Central Building.

Structural Office,  
West Building.

September 19, 1973.

St. Joseph Island Bridge

This will confirm the decision reached in Mr. Stermac's office with you that 12 core holes should be taken at Pier 2, rather than the 4 cores previously requested.

These holes should be grouted after inserting a number fourteen bar.

A sketch showing the location of these core holes will follow.

CSG/jh

c.c. A. Stermac  
A. Radkowski

C. S. Grebski  
Structural Design Engineer

71-F-57

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. A.E. McKim  
Construction Office  
3rd Floor  
Central Bldg., Downsview

FROM: Structural Design Office  
West Bldg.

ATTENTION:

DATE: October 4th, 1973

OUR FILE REF.

IN REPLY TO

SUBJECT:

St. Joseph Island Bridge  
Contract 70-204  
W.P. 98-66, District 18

This will serve to clarify the request to you for drilling and grouting of dowels in the footings of this bridge.

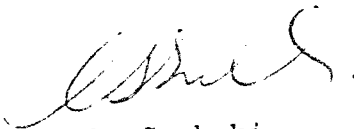
During construction, the tremie concrete was placed higher than shown on the bridge plans at the location of the tremie pipes in the foundations of this bridge. This resulted in shallower footing depths in these locations than called for.

The Consultant who reviewed this bridge was asked his opinion regarding the shallower footings. It was his recommendation to add dowels at Piers 3 and 6. We were not convinced that these dowels were required, provided there was good bond between the tremie concrete and the footing concrete. In order to prove this bond, we requested 6 coreholes be taken in the footing of Pier 6. Dowels were placed and grouted in these holes as the extra cost of this work was comparatively small. This work was done by the contractor; however, the concrete cores which were recovered were in such a condition that it was not possible for the Materials and Testing staff to prove conclusively that there was good bond.

At a meeting held with A. Stermac and A. McKim, it was decided to drill and grout dowels as recommended by the Consultant rather than continue to try to prove bond adequacy.

Attached herewith are sketches showing the dowel requirements for Piers 3 and 6 which are the only piers requiring dowels.

If there is a possibility that a good grouting job can not be obtained due to cold weather, or depth of water we would recommend the use of rock anchors to obtain a mechanical bond; this would of course, increase the cost somewhat.

  
C.S. Grebski  
Structural Design Engineer

CSG:AMF

cc Mr. A. Radkowski  
Mr. A. Stermac



Ontario

71-F-57

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Ministry of  
Transportation  
and  
Communications

CONTRACT 70-204 ST. JOSEPH'S ISLAND STRUCTURE  
SITE 385-76 HWY. 548 DISTRICT NO. 18

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Proposal A:

Drill ten (10) - 4 inch diameter holes in footing of pier no. 3, ten (10) feet long, and fourteen (14) - 4 inch diameter holes in footing of pier no. 6, twelve (12) feet long. Supply and place in each hole two (2) no. 14 dowels, full length (48 dowels), and grout holes.

Price for above work to include costs of all mobilization, labour, materials, equipment and living expenses.

LUMP SUM \$

Proposal B:

Drill eighteen (18) - 2 1/2 inch diameter holes in footing of pier no. 3, ten (10) feet long, and twenty-four (24) - 2 1/2 inch diameter holes in footing of pier no. 6, twelve (12) feet long. Supply and place in each hole one (1) - 1-3/8 inch diameter Williams rock anchor, and grout holes.

Price for above work to include costs of all mobilization, labour, materials, equipment and living expenses.

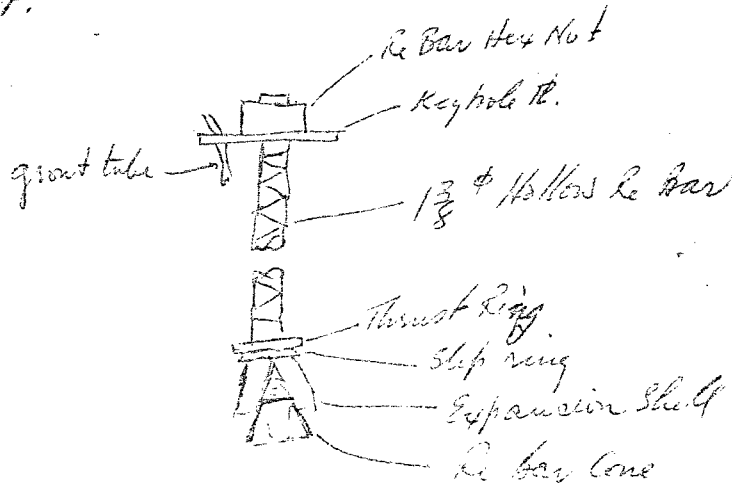
LUMP SUM \$

# St. Joseph's L. Co.

## Rock Bolts (Williams)

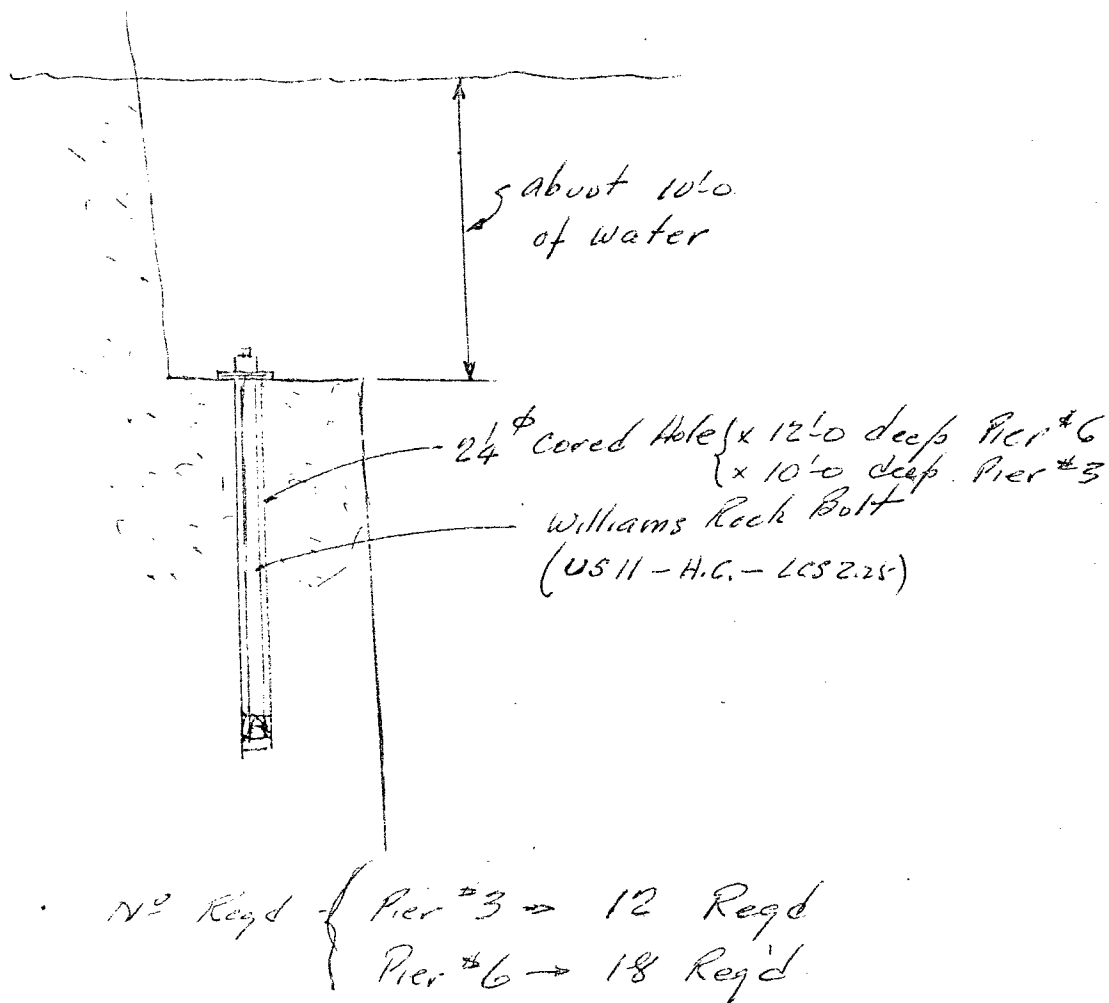
Size req'd to give a max. working ~~shear~~ load of 74,000# is # U5-11HR Hollow Re bar. This is a  $1\frac{3}{8}$ " hollow rod with a required hole to be drilled ~~2 to 2 1/4"~~ 2 to 2 1/4" (2 1/4" preferably)  
 Cost of Rock Bolt assembly - \$60<sup>00</sup> ea. including all taxes for 12'-0" long Rock Bolts.

Will be making these this week at their Ingersoll Plant.



12'-0" long assembly - 60<sup>00</sup> ea. (taxes included)

71-F-57



## MEMORANDUM

71-F-57

To: Mr. A. McKim  
Assistant Construction Engineer,  
Construction Branch  
3rd Floor, Central Bldg.

FROM: Structural Office  
West Bldg.

ATTENTION:

DATE: October 25, 1973

OUR FILE REF.

IN REPLY TO

SUBJECT: St. Joseph Island Bridge  
Contract 70-204  
W.P. 98-66, District 18

We have reviewed the bids received for schemes A & B. The lowest bids were received from Longyear, namely \$15,655.00 for A and \$33,205.00 for B. \*

After discussing this with the designer, Mr. A. Radkowski, we recommend Scheme B ie. the one using rock anchors instead of ordinary dowels. The reason for this choice is that this method provides positive anchorage of the dowel bars and does not rely entirely on a good grouting job.

We realize Scheme A is a more popular choice due to the cost; however, we believe the extra cost of Scheme B is justified for the reasons stated above and considering the size of the bridge.

Enclosed herewith are the original bids as submitted by the three drilling firms.



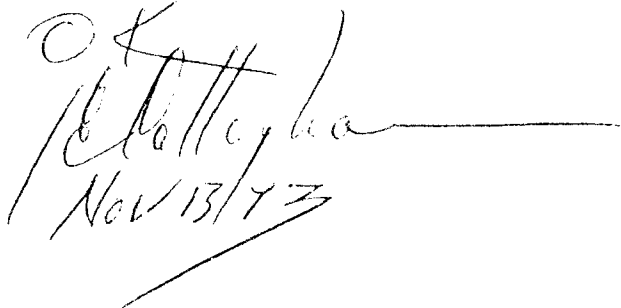
C.S. Grebski  
Structural Design Engineer

CSG:AMF

Encl.

c.c. Mr. A. Radkowski  
Mr. A. Stermac  
Mr. B. Davis

\* Scheme B

OK  
  
Nov 13/73



Ontario

71- F-057

Ministry of  
Transportation  
and  
Communications

Construction office,  
Third Floor, Central Bldg.,  
1201 Wilson Avenue,  
Downsview, Ontario.  
M3M 1J8

November 13, 1973.

F.E. Johnston Drilling Co. Ltd., ,  
P.O. Box 4134, Sta. E.,  
OTTAWA 1, Ontario.

Gentlemen:

Re: St. Joseph's Island Bridge, District 18,  
Contract 70-204, Site 38-S-176.

We wish to inform you that your quotation for  
drilling and grouting anchors in piers 3 and  
6 of the above structure was not the lowest  
one received by the Ministry. We have awarded  
the work to the lowest bidder, but thank you  
for your interest in submitting a quote.

Yours truly,

C.A. Cripps,  
Bridge Construction Liaison Engineer.

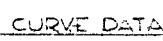
CAC/JC

c.c. B.R. Davis  
T. Stermac ✓



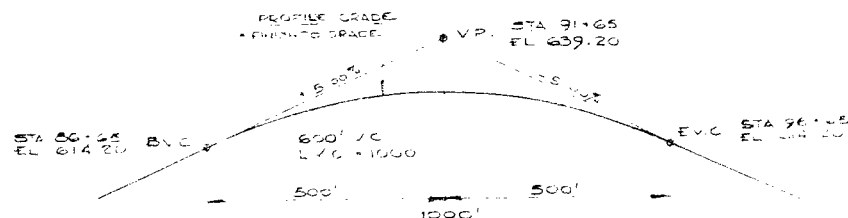
**2 NORTH FOX CONSTRUCTION**

LINE OF RANGE - 1017


$$1^{10} \times 50^1 = 0^{11}$$

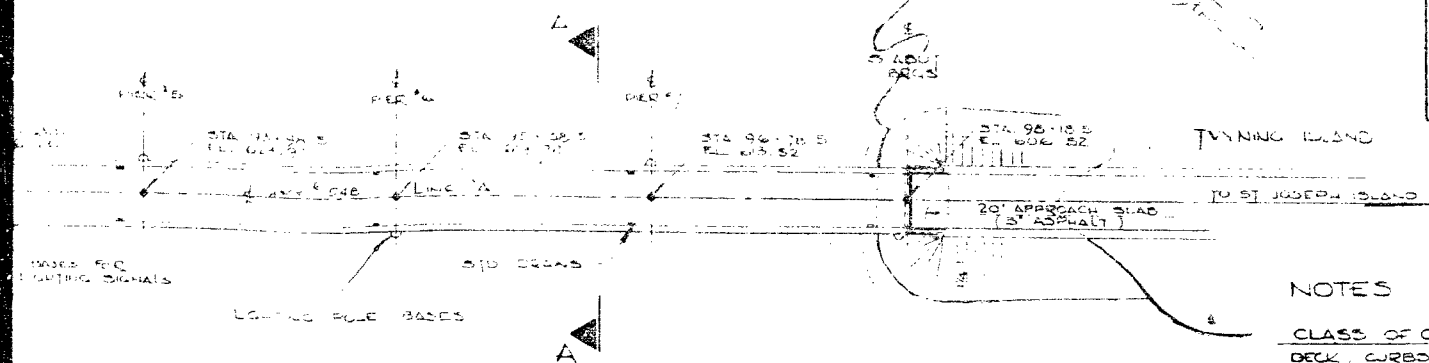
$$I^H = \{I^H_1, \dots, I^H_n\}$$


1 - 2 - 3



41 J - 18

FORM 100



## NOTES

### CLASS OF CONCRETE

DECK CURBS PARAPET WALLS ..... 4000 R.S.I.  
PIER SHEETS AND PLINths ..... 3000 R.S.I.  
REMAINDER (EXCEPT TRIM).....

### CLEAR COVER ON REINFORCING STEEL

FOOTING & ABUTMENTS ..... 3"  
PIERS ..... 2 1/2"  
DECK TOP ..... 1 1/2"  
DECK BOT ..... 1"  
CURBS ..... 2"  
OR AS NOTED

### CONSTRUCTION NOTES

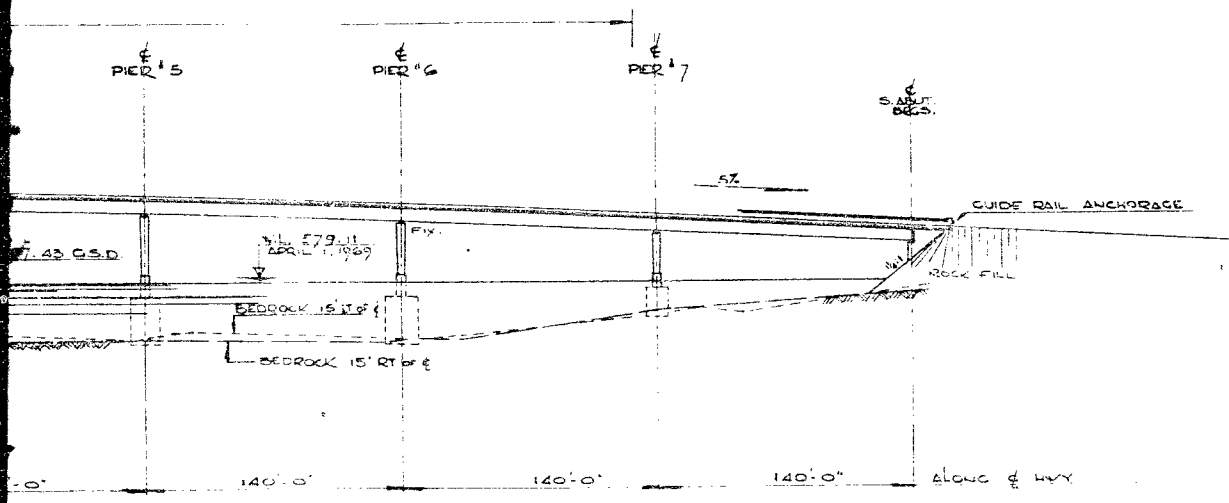
THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BEARING SEATS DEAD LEVEL TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF  $\pm 1/8$  INCH.

UNLESS SHOWN OTHERWISE NO CONCRETE SHALL BE PLACED ABOVE THE BEARING SEATS UNTIL THE CONCRETE IN THE DECK HAS BEEN PLACED.

### LIST OF DRAWINGS

D-6684-1 GENERAL LAYOUT  
-2 TO -8 SUBSTRUCTURE (SEE -3)  
-9 TO -14 STRUCTURAL STEEL (SEE -9)  
-15 DECK I  
-16 DECK II  
-17 SCREED ELEVATIONS  
-18 PARAPET WALL DETAILS  
-19 PARAPET RAIL DETAILS  
-20 EMBEDDED ELECTRICAL WORK  
-21 ELECTRICAL DETAILS I  
-22 ELECTRICAL DETAILS II  
-23 APPROACH SLABS  
-24 STANDARD DETAILS I  
-25 STANDARD DETAILS II

B.M. ELEV. 584.70  
GEODETIC DATUM  
CUT X ON CONC. DOCK  
111.0' LT. OF STA. 87+91



REVISIONS	DATE	BY	DESCRIPTION

## DEPARTMENT OF HIGHWAYS ONTARIO BRIDGE DIVISION

### ST. JOSEPH ISLAND BRIDGE

KING'S HIGHWAY No. 548 DIST. No. 18  
DIST. ALGOMA  
TWP. LOT 38 S-176 CON.

### GENERAL LAYOUT

APPROVED	BRIDGE ENGINEER	SITE No. 353-176	W.P. No. 98-66
DESIGN A.R.	CHECK P.O.L.	CONTRACT No.	70-2045 70-2046
DRAWING W.V.	CHECK A.R.	DRAWING No.	D-6684-1
DATE MAY 1970	LOANED BY 85-20-44		

