

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 31C-155

DIST. 8 REGION

W.P. No. 222-86-00

CONT. No. 89-404

W. O. No.

STR. SITE No. N/A

HWY. No. N/A

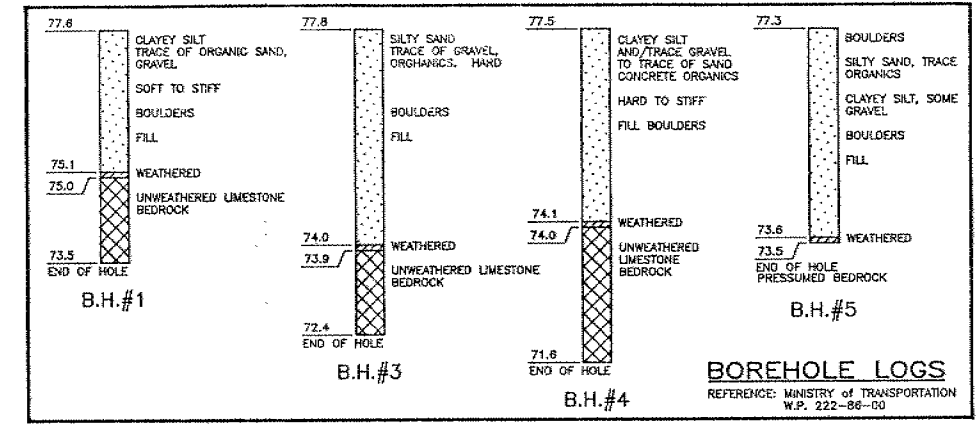
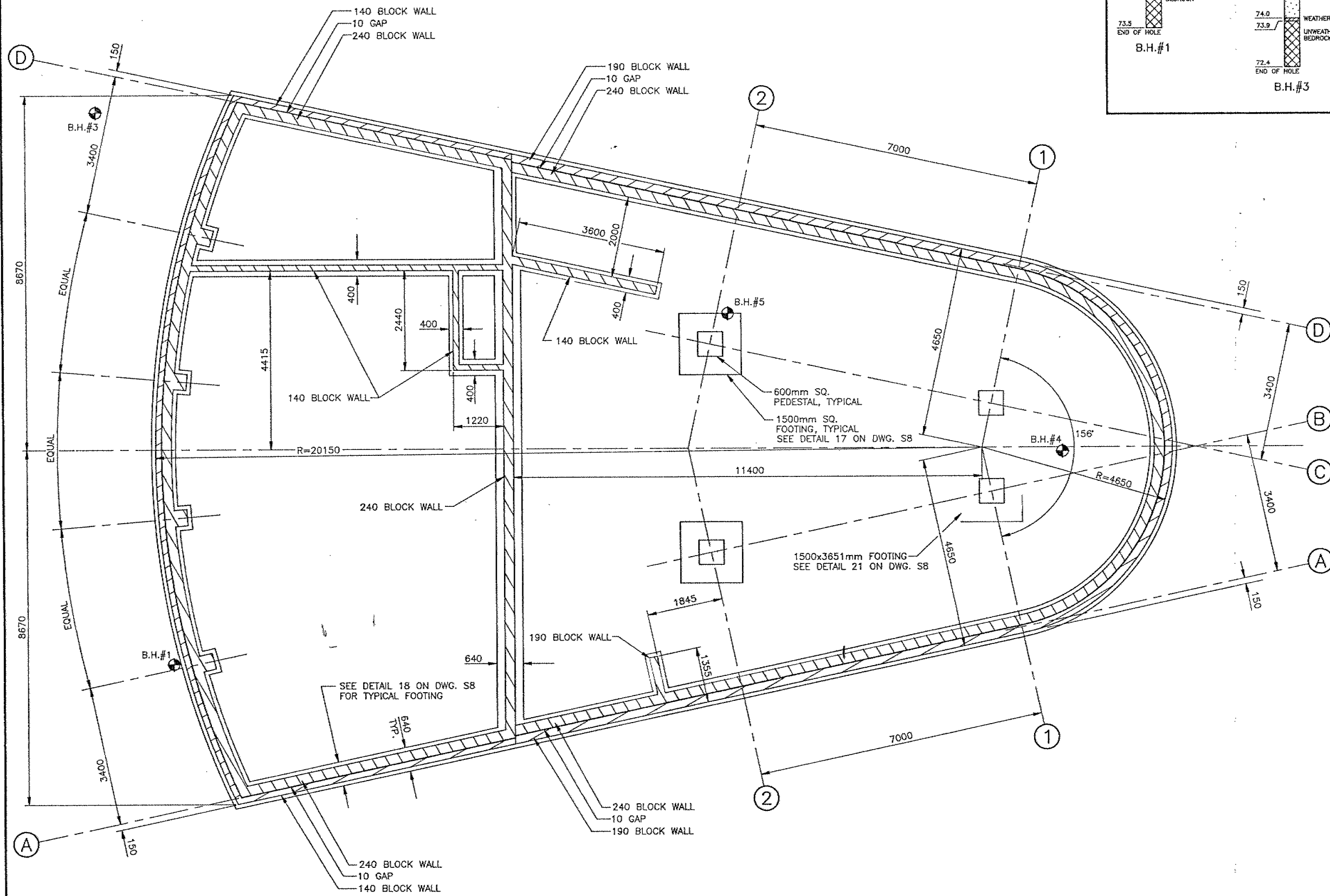
LOCATION Barrack St. Dock Facility
Wolfe Island Ferry Terminal

No of PAGES -

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OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS:



- NOTES:**
- SEE DRAWING S5 FOR GENERAL NOTES
 - SEE DRAWING S5 FOR BLOCK WALL REINFORCING
 - FOOTINGS TO BE FOUNDED ON COMPACTED GRANULAR 'A' CAPABLE OF SUSTAINING A BEARING LOAD (ALLOWABLE) OF 346 KPa. FOOTING SHALL NOT BE CAST UNTIL THE FOUNDING MATERIALS HAVE BEEN INSPECTED AND APPROVED BY THE ENGINEER.
 - ALL FOOTING CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 20 MPa. THE SUPPLY, PLACEMENT AND CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH CAN3-A23.1-M77 AND CAN3-A23.2-M77.

No	REVISION	By	DATE

Reference Key

A	A - DETAIL NO
B	B - DRAWING NO WHERE DETAILED

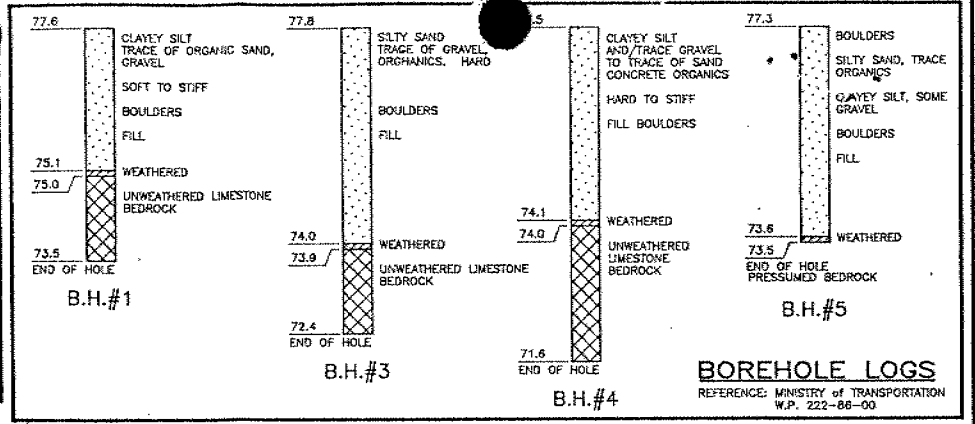
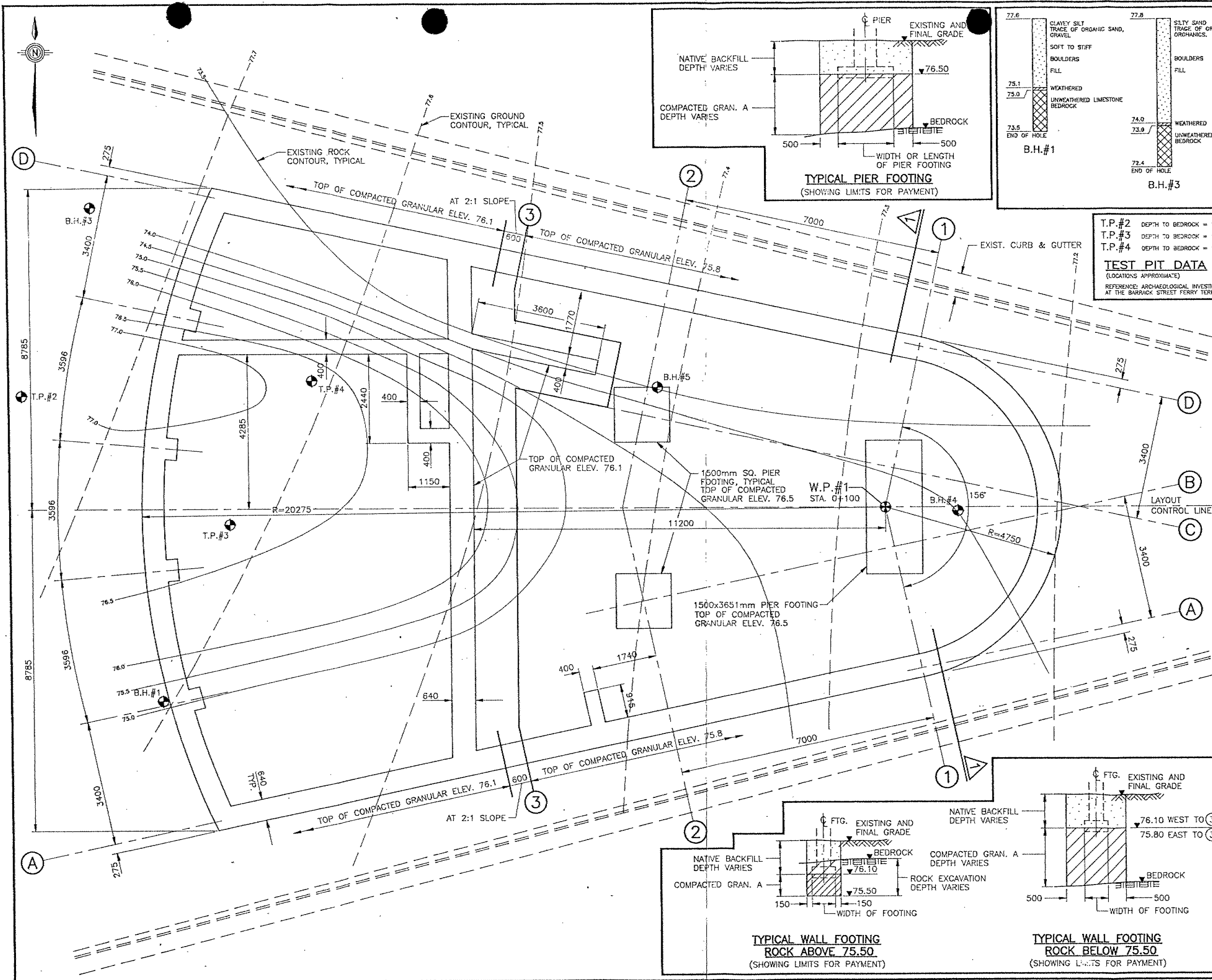


McNEELY ENGINEERING & STRUCTURES LTD.
CONSULTING ENGINEERS
815 PRINCESS STREET
KINGSTON, ONTARIO K7L 1G6
PHONE (613) 542-0800

DINGLIS & DOWNEY Architects Inc.
11 Princess St., Suite 305, Kingston, Ont. K7L 1A1
Tel. (613) 544-9183

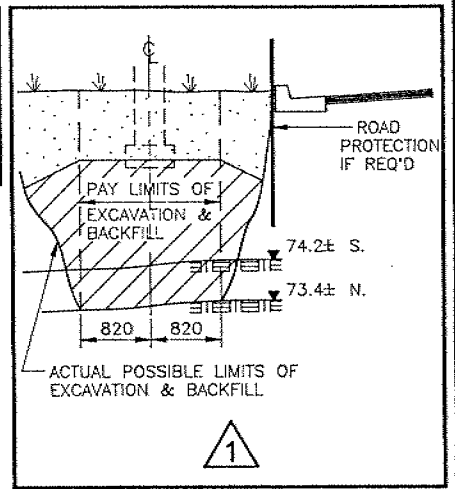
WOLFE ISLAND FERRY TERMINAL BUILDING
Barrack St., Kingston Ont.

FOUNDATION PLAN	
Drawn By P.C.M.	Checked By S.T.R.
Scale 1:50	Date 12 JULY 1989
MTO Project No WP 222-86-00	



TEST PIT DATA
(LOCATIONS APPROXIMATE)
REFERENCE: ARCHAEOLOGICAL INVESTIGATION AT THE BARRACK STREET FERRY TERMINAL

TEST PIT	DEPTH TO BEDROCK
T.P.#2	DEPTH TO BEDROCK = 1.0m ±
T.P.#3	DEPTH TO BEDROCK = 1.0m ±
T.P.#4	DEPTH TO BEDROCK = 1.0m ±



NO	REVISION	By	DATE

Reference Key
A - DETAIL NO
B - DRAWING NO WHERE DETAILED



McNEELY ENGINEERING & STRUCTURES LTD.
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WOLFE ISLAND FERRY TERMINAL BUILDING
Barrack St., Kingston Ont.

FOUNDATION PLAN
SHOWING LIMITS OF EXCAVATION & BACKFILL

Drawn By	P.C.M.	Checked By	D.K.M.
Scale	1:50	Date	5 SEPT. 1989
MTO Project No W.P. 222-86-00			88-32 SS-2

memorandum



To: Dave McAvoy
Planning and Design Section
Eastern Region

Date: 1989 08 24

From: Foundation Design Section
Room 315, Central Building

RE: Wolfe Island Ferry Terminal Building
Barrack Street Dock at Ontario Street
Contract 89-404, (W.P. 222-86-00)
Hwy. #2, District 8, Kingston

As requested we have reviewed the McNeely Engineering letter dated August 21, 1989.

Our recommendation is changed so that footings may be founded on Granular 'A' pads that extend 1 m beyond the plan limits of the footings. That is, the requirement for 1:1 side slopes on the pad is withdrawn. It is understood that the McNeely design assumes bearing capacities not exceeding 200 kPa and that Sheet S-1 of the contract package will be changed to eliminate the inconsistency with the 346 kPa noted. Also the contract drawings should be changed to clarify that the Granular 'A' pad should be founded on bedrock.

If there are any questions, please advise.

A handwritten signature in cursive script that reads "D.H. Dundas".

D.H. Dundas, P. Eng.
Sr. Foundation Engineer

DHD/mmj

memo.

To: Fik

Date: 89 08 22

Re: WP 222-86-00

Contract 89-401

Wolfe Island Ferry Terminal Building
Barrack St. Dock at Ontario Street
Bay #2, Dsh 8, Kingston

Further to Dave McNairy's (P&D Eastern Ltd.) telefax of 89 08 21 enclosing their consultant's (McNeely Eng) comments about our recommendations for 1:1 side slopes on the granular facing pads:

- McNeely states that this requirement would result in excavation of most of site and that costs would be increased by \$20 k. This was checked and although most of the site would be dug up, this estimate of cost increase would be closer to \$10 k.
- McNeely states that the 1:1 requirement is something added by us at the review stage. This is true because it was not clearly stated in the original foundation recommendations. I checked with Pam Marbo who wrote the original report and she had intended for 1:1 slopes to be incorporated.
- McNeely states that their loading assumption was 200 kPa. This is inconsistent with the notes in the contract package Vol 5-1 which indicate a load of 346 kPa.
- The contract drawings do not indicate the subexcavation geometry and I am concerned that vertical excavations will not be feasible. I have concern that overburden should be excavated

to bedrock and that the excavation should be stable until granular placed.

In conclusion, after discussion with Pamela Marks who wrote original report, an recommendation is that the granular pad need only extend 1 m from plan limits of footings. However the contract drawings should be changed to reflect the 200 kPa assumption of McNealy instead of the 346 kPa statement on drawing S-1 and the details of subexcavation should be clarified to ensure granular pad is on bedrock and not mixed with material sloughed from sides or bottom of excavation.

These comments were made to Dr. McNealy in telephone conversation of 89.08.24 and followed up by speedy memo.

J.H. Burdett
Sr. Foundation Eng.

REPLY
COPYSEND
TO

D.R. HUDDLE, PROJECT MANAGER

PLANNING & DESIGN

EASTERN REGION

DEPT

DATE

FOUNDATION DESIGN SECTION

89 08 09

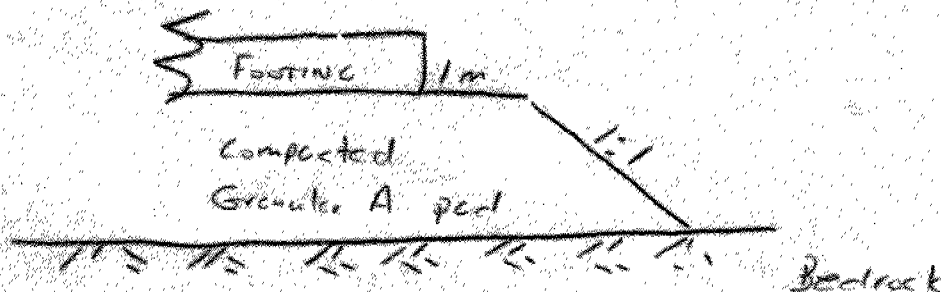
SUBJECT

W.P. 222-86-00, Contract 89-904 Wolfe Island Ferry Terminal Bldg.

Barrack St. Dock at Ontario St. (Hwy. #2) Dist. 8, Kingston

FURTHER TO OUR TELEPHONE CONVERSATION OF AUG. 9/89, WE HAVE REVIEWED THE CONTRACT DRAWINGS AND DOCUMENTS FOR THIS PROJECT. AS DISCUSSED, WE RECOMMEND THAT THE DETAILS FOR CONSTRUCTION OF THE FOOTINGS ON GRANULAR PADS SHOULD BE CLARIFIED ON DRAWING 5-1. THE GRANULAR 'A' PAD SHOULD BE FOUNDED IN BEDROCK AND COMPACTED IN ACCORDANCE TO INTB STANDARDS. IN PLAN IT SHOULD EXTEND 1 M BEYOND THE FOOTING AT THE FOOTING LEVEL. IN SECTION THE SIDE SLOPES SHOULD BE 1H:1V AS ILLUSTRATED BELOW.

REPLY

NTS
SECTION

REPLY FROM

D.H. Dundas
Sr. Foundation Engineer

REPLY DATE

memorandum



Geocra No 31C-155

To: T. Murphy
Head, Geotechnical Section
Eastern Region

Date: April 7, 1989.

Attn: R. Scott

From: Foundation Design Section
Room 315, Central Building

RE: W.P. 222-86-00, Barrack Street Dock Facility
Wolfe Island Ferry Terminal Building
City of Kingston, District 8, Kingston

The following is a summary of the results of our foundation investigation at the above mentioned site. We are also providing bearing capacity values and recommendations for the foundation design of the new building. Should any additional information be required at this time, please contact this office.

Subsurface Conditions

The fieldwork consisted of four boreholes and three dynamic cone penetration tests. The borings were advanced by solid stem continuous flight augers, NX casing and BQ core barrel using a truck mounted auger machine. Sampling was performed to a maximum depth of 5.9 m to elevation 71.6 m and the cone tests to a maximum depth of 3.2 m to elevation 74.3 m.

Subsurface Conditions

The subsoil was found to consist of fill material. The fill consisted of organic silty sand, (organic) clayey silt and boulders. (See the borehole logs for details). The rock fill was found below elevation 1.3 m in boreholes 1 and 3 and within the top 1.3 m in borehole 5.

Underlying the various fill materials is weathered bedrock and unweathered limestone bedrock, of the Gull River formation, found from 2.6 to 3.9 m below the existing ground level, at the following elevations:

<u>Borehole</u>	<u>Elevation (m)</u>	
	<u>Weathered</u>	<u>Unweathered</u>
1	75.1	75.0
3	74.0	73.9
4	74.0	74.0

The groundwater level was not established within the boreholes. The water level will however follow the lake water level.

Recommendations

It is proposed to build a two-storey structure on the southeast corner of the triangular grassed area.

Proposed Structure

The existing overburden consists of variable fill material and in some areas has been recently subexcavated and backfilled. For this reason, bearing capacities for the overburden cannot be determined and the following two foundation recommendation alternatives are being made;

1. Place the footings on sound bedrock. For the purposes of the O.H.B.D.C. the following design values are recommended:

Factored Bearing Capacity at U.L.S. - 1600 kPa.

For the forces resisting sliding failure, an angle of 35 degrees may be used.

2. The fill may be subexcavated to bedrock and a uniformly thick, well compacted granular pad of Granular "A" should be placed on to which the footings may be founded. The granular pad should be 1 m wider and longer than the bearing area. For the purposes of the O.H.B.D.C., the following design values are recommended:

Factored Capacity at U.L.S. - 900 kPa

Bearing Capacity at S.L.S. Type II - 346 kPa

For the forces resisting sliding failure, an angle of 35 degrees may be used.

Frost Protection


All footings require a minimum of 1.5 m of earth cover for frost protection measured from the base of the footing.

Dewatering

Concrete should be placed in the "dry". This should not be a problem unless the water table is encountered.

Miscellaneous

The fieldwork for this investigation was carried out under the supervision of Mrs. Pamela Marks, Foundation Engineer. The equipment was owned and operated by Master Soil Investigations. This report was prepared by P. Marks and reviewed by Mr. P. Payer.


for P. Marks, P. Eng.
Foundation Engineer

for
M. Devata, P. Eng.
Chief Fondation Engineer

ROCK CORE DESCRIPTION
WP 222-86-00

1../1

CORE RECOVERY					CORE DESCRIPTION	
BH #	RC #	DEPTH (m)	CR* (%)	RQD* (%)	DEPTH (m)	DESCRIPTION
1	5	2.59-4.14	100	70	2.59-4.14	LIMESTONE, light to medium grey; very fine grained, shaley, slightly calcareous, very thickly bedded; medium strong to weak rock; slightly weathered to unweathered; closely spaced fractures: flat, rough; vertical, rough, undulating.
3B	6	3.89-5.41	100	46	3.89-5.41	LIMESTONE, light to medium grey; argillaceous, very fine grained, medium bedded, thinly laminated; medium strong to weak rock; slightly weathered; close to very close spaced fractures: flat, rough to smooth. Intensely fractured zone from 4.95-5.16 m.
4	5 6	3.45-4.37 4.37-5.89	97 95	13 77	3.45-5.89	LIMESTONE, light to medium light grey; argillaceous, ver fine grained, medium bedded, thinly laminated; medium strong to weak rock; slightly weathered; close to very close spaced fractures: flat, rough.

Logged by: S. A. Senior, Soils and Aggregates Section.

*CR = CORE RECOVERY (NOTE: Depths are approximated in zones of poor core recovery.)

*RQD = ROCK QUALITY DESIGNATION



RECORD OF BOREHOLE No /

METRIC

W P 222-86-00

LOCATION CO-ORDS N 4898 958.8; E 306 487.7

ORIGINATED BY P.M.

DIST 8 HWY N/A

BOREHOLE TYPE CONTINUOUS FLIGHT AUGER (S.S.)

COMPILED BY P.M.

DATUM GEODETIC

DATE 89-03-07 TO 89-03-09

CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT Wp	NATURAL MOISTURE CONTENT W	LIQUID LIMIT Wl	UNIT WEIGHT Y	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20	40					
77.6	GROUND LEVEL													
0.0	CLAYEY SILT TRACE ORGANICS, SAND, GRAVEL SOFT TO STIFF BOULDERS FILL		1	AS										
5			2	SS										
75.1			3	SS										
73.5	WEATHERED Unweathered Limestone BEDROCK		5	RC 100%										
4.1	END OF BOREHOLE													
	* WATER LEVEL NOT ESTABLISHED													



RECORD OF BOREHOLE No 3

METRIC

W P 222-86-00

LOCATION Co-ords. N 4 898 971.3; E 306 485.5

ORIGINATED BY P.M.

DIST 8 HWY N/A

BOREHOLE TYPE CONTINUOUS FLIGHT AUGER (S.S.)

COMPILED BY P.M.

DATUM GEODETIC

DATE 89-03-07 to 89-03-09

CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 2		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	N' VALUES			20 40 60 80 100	20 40 60 80 100					
77.8	GROUND LEVEL													
0.0	SILTY SAND		1	SS	60	8.9cm								
	TRACE OF GRAVEL, ORGANICS HARD		2	SS	77									
	BOULDERS		3	SS	60	2.5cm								
	FILL		4	SS	60	7.5cm								
74.0			5	SS	60	5.0cm								
3.8	Weathered - Unweathered Limestone Bedrock		6	RC	100%									
72.4				BQ										
5.4	END OF BOREHOLE													
	*WATER LEVEL NOT ESTABLISHED													



RECORD OF BOREHOLE No 4

METRIC

W P 222-86-00 LOCATION CO-ORDS. N 4 898 964.3; E 306 509.6 ORIGINATED BY P.M.
DIST 8 HWY N/A BOREHOLE TYPE CONTINUOUS FLIGHT AUGER (C.S.S.) COMPILED BY P.M.
DATUM GEODETIC DATE 89-03-07 to 89-03-08 CHECKED BY _____

SOIL PROFILE			SAMPLES		GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT <u>2</u>		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			20 40 60 80 100	20 40 60 80 100					
77.5	GROUND LEVEL												
0.0	CLAYEY SILT AND TRACE GRAVEL TO TRACE OF SAND CONCRETE ORGANICS HARD TO STIFF		1	SS	74								
5			2	SS	16								
10	FILL BOULDER WEATHERED		3	SS	12								
14.1	Unweathered Limestone Bedrock		4	SS	60	0.0cm							
15			5	RE	97%	*							
16			6	RC	95%	BQ							
20	END OF BOREHOLE												
21.6													
25	* WATER LEVEL NOT ESTABLISHED												
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													
80													
85													
90													
95													
100													

OFFICE REPORT ON SOIL EXPLORATION



RECORD OF BOREHOLE No 5

METRIC

W P 222-86-00

LOCATION CO-ORDS. N 4 898 966.3; E 306 500.5

ORIGINATED BY P.M.

DIST 8 HWY N/A

BOREHOLE TYPE CONTINUOUS FLIGHT AUGER (S.S.)

COMPILED BY P.M.

DATUM GEODETIC

DATE 89-03-08

CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT	PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES								
77.3	GROUND LEVEL												
77.3	BOULDERS												
77.3	SILTY SAND, TRACE ORGANICS		1	SS	32								
77.3	CLAYEY SILT, SOME GRAVEL		2	SS	14								
77.3			3	SS	36								
77.3	BOULDERS		4	SS	62	12.5cm							
77.3	FILL												
77.3	WEATHERED CALCS.												
77.3	END OF BOREHOLE												
77.3	PRESUMED BEDROCK												
77.3	*WATER LEVEL NOT ESTABLISHED												

memorandum



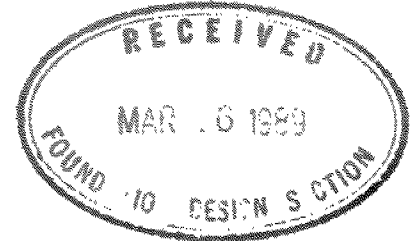
To: M. S. Devata
Chief Foundation Engineer
Foundation Design Section
Room 315, Central Building

Date: March 15, 1989

Attn: P. Marks

File No: 3162-2-4-113

From: Soils and Aggregates Section
Engineering Materials Office
Room 311, Central Building




Re: Borehole Core Descriptions
Wolfe Island Ferry Terminal Building, Kingston, Ont.
W. P. 222-86-00

As requested by your section, core from three (3) boreholes was logged, and a description is appended. Depth to bedrock and depth to top of unweathered rock in each borehole are tabulated below:

Borehole Number	Depth to Bedrock in meters below ground surface	Depth to Unweathered Rock (including slightly weath- ered) in meters below ground surface
1	2.49*	2.59
3B	3.78*	3.89
4	3.43	3.45

* - depths estimated from indirect determinations.

Bedrock is **LIMESTONE** of the Gull River Formation. If you have any questions, please contact me.


S. A. Senior,
Geological Engineer

Attachment

ROCK CORE DESCRIPTION

WP 222-86-00

1../1

CORE RECOVERY					CORE DESCRIPTION	
BH #	RC #	DEPTH (m)	CR* (%)	RQD* (%)	DEPTH (m)	DESCRIPTION
1	5	2.59-4.14	100	70	2.59-4.14	LIMESTONE, light to medium grey; very fine grained, shaley, slightly calcareous, very thickly bedded; medium strong to weak rock; slightly weathered to unweathered; closely spaced fractures: flat, rough; vertical, rough, undulating.
3B	6	3.89-5.41	100	46	3.89-5.41	LIMESTONE, light to medium grey; argillaceous, very fine grained, medium bedded, thinly laminated; medium strong to weak rock; slightly weathered; close to very close spaced fractures: flat, rough to smooth. Intensely fractured zone from 4.95-5.16 m.
4	5 6	3.45-4.37 4.37-5.89	97 95	13 77	3.45-5.89	LIMESTONE, light to medium light grey; argillaceous, very fine grained, medium bedded, thinly laminated; medium strong to weak rock; slightly weathered; close to very close spaced fractures: flat, rough.

Logged by: S. A. Senior, Soils and Aggregates Section.

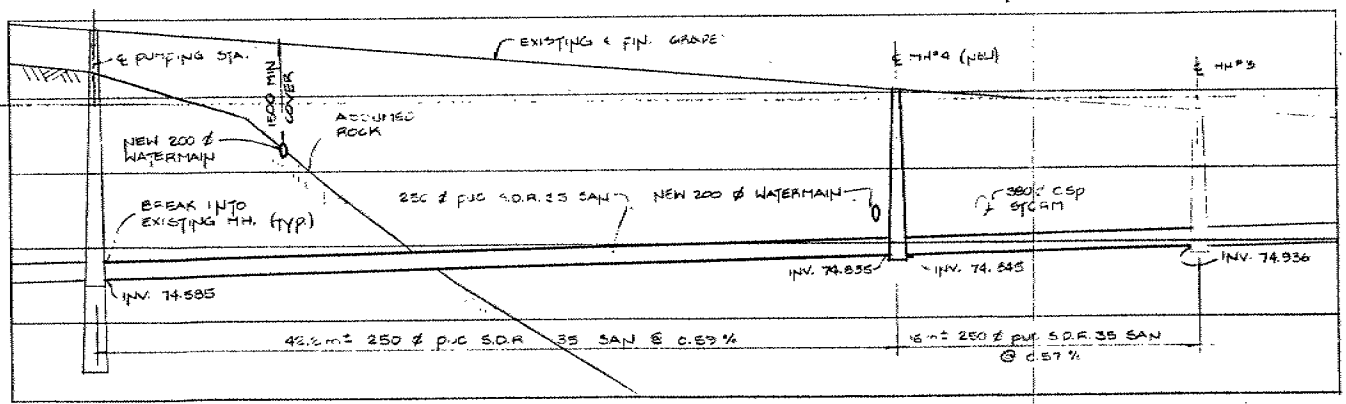
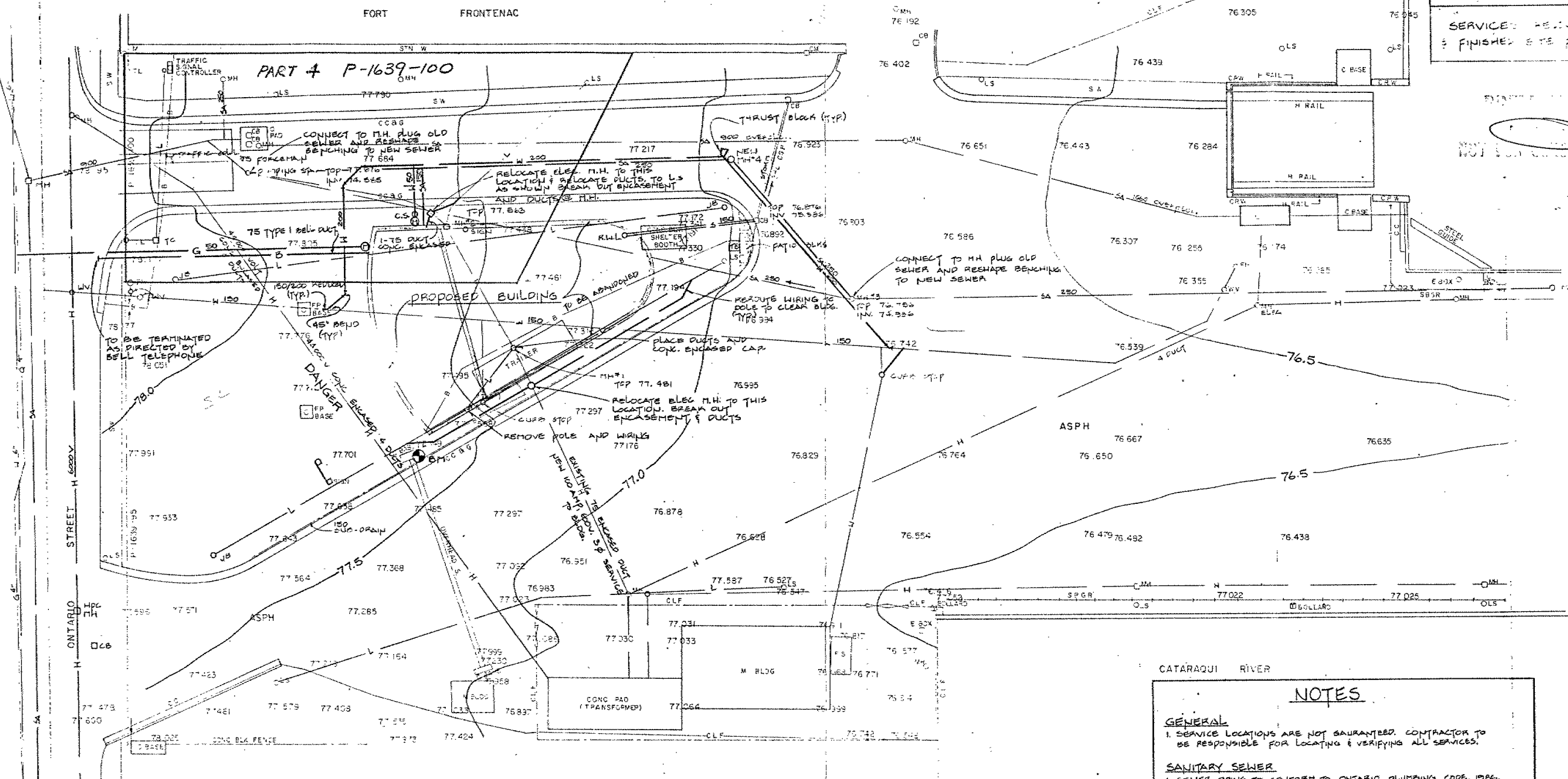
*CR = CORE RECOVERY (NOTE: Depths are approximated in zones of poor core recovery.)

*RQD = ROCK QUALITY DESIGNATION

BM
ELEV. 77.642
CUT CROSS ON S.E.
CORNER OF CONC. BASE
OF NORTH LEG OF
OVERHEAD SIGN

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

PLATE No	CONT No	SHEET
	WP No	
WOLFE ISLAND FERRY SERVICE		
SERVICES RELOCATING & FINISHED TO PLAN		



ELEVATION - NEW SANITARY SEWER
SCALE HORIZ. = 1:200
VERT. = 1:50

NOTES

GENERAL
1. SERVICE LOCATIONS ARE NOT GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR LOCATING & VERIFYING ALL SERVICES.

SANITARY SEWER
1. SEWER PIPING TO CONFORM TO ONTARIO PLUMBING CODE, 1986.
2. NEW 250 DIA. SEWER TO BE P.V.C. TYPED JOINT WITH S.D.R. 35, INCLUDE BREAKING INTO EXISTING M.H.S & REMOVAL OF EXISTING PIPE.

WATERMAIN
1. WATERMAIN TO BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE P.U.C. AND TO THEIR APPROVAL.
2. NEW 200 DIA. WATERMAIN TO BE CLASS B2 DUCTILE IRON CEMENT LINED PIPE AND MECHANICAL FITTINGS.
3. INSTALL THRUST BLOCKS TO BE CONSTRUCTED AT ALL BENDS.

ELECTRICAL
1. ELECTRICAL WIRING, MANHOLES, DUCTS AND ENCASUREMENTS TO BE IN ACCORDANCE WITH C.E.B.P. AND P.U.C. REQUIREMENTS AND TO THEIR APPROVAL.
2. WHERE MANHOLES ARE REMOVED ALL EXPOSED WIRING IS TO BE DUCTED AND CONCRETE ENCASED AND WHERE RELOCATED ENCASUREMENTS AND DUCTS ARE TO BE REMOVED. ALL WIRING REMOVAL AND RECONNECTION IS CONSIDERED INCIDENTAL.
3. 50mm WATER SERVICE TO BE TYPE 'K' SOFT COPPER PIPE; CONNECTIONS SHALL CONFORM TO ASTM B 88 COMPLETE WITH CURB STOP.

