

DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT 1970

GEOCRES No. 31G-192

DIST. 9 REGION Eastern

W.P. No. 60-75-01

CONT. No. 75-423

W. O. No. _____

STR. SITE No. 31-230

HWY. No. 401

LOCATION Alterations at Fraser Rd.
Underpass

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. _____

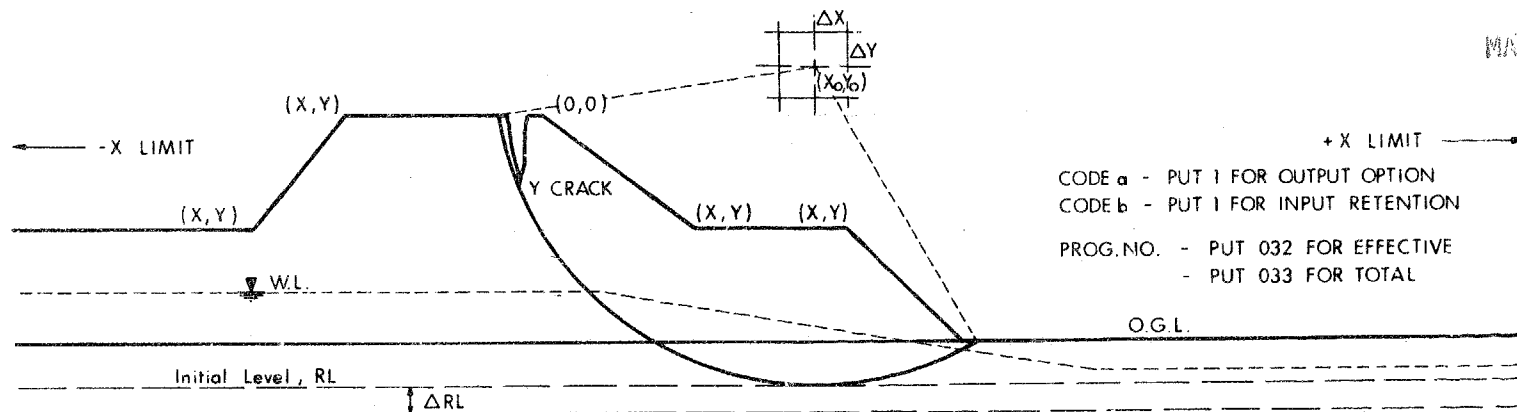
REMARKS ① documents to be unfolded
before microfilming

② TO BE ADDED TO EXISTING MICROFILM.

SLOPE STABILITY ANALYSIS - (BISHOP METHOD)

INPUT SHEET 1

MAY 23 1975



CODE a - PUT 1 FOR OUTPUT OPTION
 CODE b - PUT 1 FOR INPUT RETENTION
 PROG.NO. - PUT 032 FOR EFFECTIVE
 - PUT 033 FOR TOTAL

PROG. NO.	a	b	PROGRAM TITLE	MADE BY	W.P.	JOB NO.
033			FRASER RD. UNDERPASS, TOTAL, KERN	3.1.2.3.24.3	K. W. ZIELEWSKI	107-59

PROG. NO.	a	b
033		

NO. OF SLICES	INITIAL CIRCLE CENTRE	ΔX	ΔY	Y CO-ORD. OF RL	Δ RL	NO. OF LEVELS	Y CO-ORD. OF CRACK	NO. OF POINTS	-X CO-ORD. OF LIMIT LINE	+X CO-ORD. OF LIMIT LINE
X₀	Y₀							X SIDE	X SIDE	
25	60°	-50°	10°	10°	24°	4°	7	15°	1	5
									-100°	300°

SLOPE SURFACE		SLOPE SURFACE		SLOPE SURFACE		SLOPE SURFACE									
2	X	11	Y	21	X	31	Y	41	X	51	Y	61	X	71	Y
B	-100.0		0.0		22.0		11.0		75.0		11.0		92.0		23.0
B	11.00		20.0		300.0		20.0	
B
B
B

SECTION DETAILS

REMARKS

SECTION NUMBER	X CO-ORD. FEET	SOIL TYPE	Y CO-ORD. OF UPPER SOIL BOUNDARY FEET	WATER LEVEL	
8	11	28	31	41	
C	1	-1.00:0	1	0:0	24:0
C	1	:	2	24:0	:
C	1	:	3	26:0	:
C	1	:	4	31:0	:
C	1	:	5	36:0	:
C	1	:	6	41:0	:
C	1	:	7	46:0	:
C	2	0:0	1	0:0	24:0
C	2	:	2	24:0	:
C	2	:	3	26:0	:
C	2	:	4	31:0	:
C	2	:	5	36:0	:
C	2	:	6	41:0	:
C	2	:	7	46:0	:
C	3	22:0	1	11:0	24:0
C	3	:	2	24:0	:
C	3	:	3	26:0	:
C	3	:	4	31:0	:
C	3	:	5	36:0	:
C	3	:	6	41:0	:
C	3	:	7	46:0	:
C	4	7.5:0	1	11:0	24:0
C	4	:	2	24:0	:
C	4	:	3	26:0	:
C	4	:	4	31:0	:

SECTION DETAILS

SECTION NUMBER	X CO-ORD. FEET	SOIL TYPE	Y CO-ORD. OF UPPER SOIL BOUNDARY FEET	WATER LEVEL
8	11	28	31	41
C	A		5	36.0
C	A		6	4.10
C	A		7	4.60
C	5	82.0	1	16.0
C	5		2	24.0
C	5		3	26.0
C	5		4	31.0
C	5		5	36.0
C	5		6	4.10
C	5		7	4.60
C	6	92.0	1	23.0
C	6		2	23.0
C	6		3	26.0
C	6		4	31.0
C	6		5	36.0
C	6		6	4.10
C	6		7	4.60
C	7	110.0	1	20.0
C	7		2	20.0
C	7		3	26.0
C	7		4	31.0
C	7		5	36.0
C	7		6	4.10
C	7		7	4.60
C	8	30.00	1	20.0

REMARKS

REMARKS

[illegible]

BOARDROOMS: E-1 and E-2
DOWNSVIEW, ONTARIO

DATE: October 17, 1975

W P.: 60-75-01

CONTRACT: 75-423

HIGHWAY: 401

TYPE OF WORK: Grading, Drainage, Granular Base, Hot Mix Paving

LOCATION: Hwy.401 - Fraser Road Interchange

DISTRICT: 9 - Ottawa

ADVERTISING DATE: November 12, 1975

ATTENDANCE:

J.B. Wilkes	R.S. Pillar	D. Thrasher	H. Chyc
E.J. Orr	F.G. Allen	R. Molaro	D. Hopper
J.R. Wear	R.A. Verscheure	W. Bennett	B. Giroux
Fenco	G. Wrong	J. Crannie	D. Mieh
			W. Oberlander

POINTS OF DISCUSSION:

1. Systems Design Office to review desirability of a paved shoulder design.
2. Discussions centered on traffic movements, detours and the park site. The Region is to study the conditions and propose a solution which would be suitable to the motoring public.
3. Because of the lack of any formal agreement on the approval of funds from outside sources, the advertising date of November 12, 1975 is no longer valid. A new date has not yet been set.
4. The special provision dealing with Maintenance of Traffic was amended, at the Committee's direction, by deleting the second sentence of paragraph one and both sentences of paragraph two.

EJW/DMM/kc

c.c. P.D. Billings
J.J. Radbone
E.R. Saint
J.M. Childs
H.B. McKay
Fenco (R.Treflin)
W. Melinshyn
G. Wrong
C. Mirza
B. Giroux
J. Crannie
E.J. Willis
M. Stoyanoff
C. Grebski
W.R. Bennett
Head, Specifications Office
R.S. Pillar

for David M. Mieh
E.J. Willis
Supervisor, Contract Documentation
for:
J.R. Wear
Head, Contract Review Section



Many,

I think murtje crew did some work on this project.



Memorandum

To: Mr. T.C. Kingsland
Reg. Structural Planning Engineer
Eastern Region
Kingston

From: Soil Mechanics Section
Geotechnical Office
West Bldg., Downsview

Attention:

Date: May 28, 1975

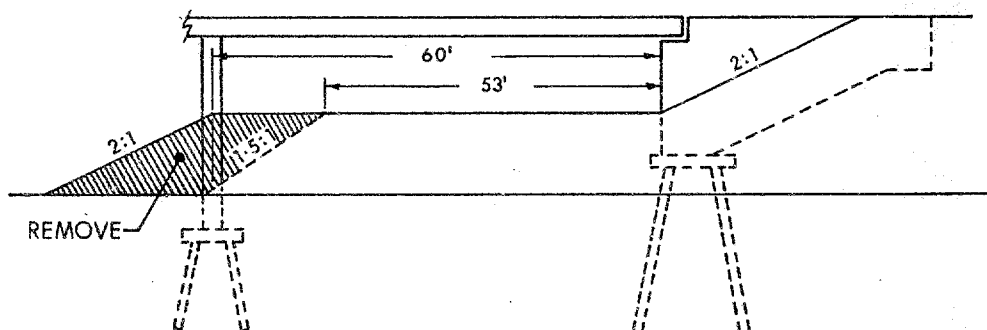
Our File Ref.

In Reply to

Subject: FRASER ROAD UNDERPASS - ALTERATIONS
Highway 401
District 9 (Ottawa)
W.P. 60-75-01 Site 31-230

We have carried out analyses to investigate the stability of forward slopes with the revised geometry, as requested by you.

The proposal entails the construction of a 12 ft. lane under each end of the bridge. This would result in reducing the overall length of the forward slopes by 12 ft. This reduction in length would be achieved by making the forward of the berm 1.5 horizontal to 1 vertical, from the present slope of 2 horizontal to 1 vertical and by decreasing the length of berm to 53 ft. from the present 60 ft., as shown below.



The analysis shows that the slope as shown above has adequate factor of safety against failure.

A. Prakash

A. Prakash
Senior Engineer
For
M. Devata
Supervising Engineer

c.c. P.D. Billings
A.J. Percy Attn: H.R. McIntyre
A.G. Boucher
R. Forrest
H. Chyc
C.S. Grebski Attn: K. Bassi
E.R. Saint
Files ✓
Record Services



Memorandum

To: A. J. Percy
Manager, Planning & Design Office
Kingston

From: Materials & Testing Office
Kingston

Attention: H. R. B. McIntyre

Date: May 27, 1975

Our File Ref.

In Reply to

Subject: W.P. 60-75-01, Hwy. # 401 and Fraser Road
Proposed Interchange Construction

Preliminary investigation at the site of the above noted proposed interchange indicates the following:

The project is located in a clay plain area. Foundation borings indicated an approximate 20' depth of soft clay subsurface material at the Fraser Road - Hwy. # 401 structure underpass and approach fills.

The area is characterized by a series of northeast -- southwest oriented drumlinoid ridges with intervening clay flats or plain areas. A large drumlin ridge is located approximately 1 mile west of the project. These ridges usually contain stoney or bouldery sandy loam till that is suitable for use as fill construction provided that the large boulders are removed or excluded sufficient to allow proper compaction operations. It is expected that most of the subgrade fill will be borrowed from one of these ridges. An average 1 - 2 mile haul may be assumed.

Granular material suitable for asphalt aggregates and granular base and sub-base material is scarce within the immediate vicinity of the project.

The closest known available granular suitable for base and sub-base is located approximately 7 miles north of Williamstown along the county road between Martintown and Raphael. An old beach deposit in this area contains coarse granular suitable for Granular "A" and "C" production. A primary crusher may be required to produce the Granular "C" from this area. The material in this deposit is unsuitable for asphalt aggregates. The haul distance to the project is approximately 12 miles.

Along the Boudette River in Quebec approximately 2-3 miles from the Ontario boundary there are spillway deposited gravel pits suitable for granular base and asphalt aggregates at an approximate 14 mile haul to the project.

Alternate to the above noted aggregate and base sources, limestone quarries located 3 - 4 miles north of Cornwall contain suitable asphalt aggregate at an approximate 12 mile haul to the project.

The Hwy. #401 concrete pavement is in good condition in the immediate vicinity of Fraser Road such that the proposed interchange leg pavement should match it's surface. There are occasional slight transverse cracks in the pavement slabs but the pavement rides good and the cracks have little or no affect on it.

The Fraser Road structure and approaches were originally constructed under Contract 67-18. Settlement of the approach fills associated with consolidation of the underlying foundation material necessitated restoration of the approach pavement a few years after construction was completed. Approximately 9" to 12" settlement occurred after construction. The pavement, curb and gutter etc. was restored under Contract 71-101. The asphalt pavement has performed well since restoration and is now in good condition. It is proposed that the interchange leg pavement match the surface of the existing County Road pavement. The Fraser Road structure now has an exposed concrete deck. It is presumed that this will be water proofed and paved with 3" asphalt. Such treatment should be jointed into the County Road pavement at 50' to 75' from the ends of the structure. If there are widening tapers to the structure in this vicinity, the construction joint should coincide with the ends of such tapers.

It is anticipated that the proposed pavement for the interchange legs will consist of 4" asphalt over 6" Granular "A" and 9" Granular "C". Asphalt will probably consist of $1\frac{1}{2}$ " HL 4 surface course, $1\frac{1}{2}$ " HL 4 binder course and 1" HL 2 binder course.

A Service Road proposal is indicated in the northwest quadrant. More details as to the function of this road will be required before asphalt and granular depths can be determined.

On the Township service road revision in the southeast quadrant, it is anticipated to provide for 6" Granular "A" over 6" Granular "C".

A soils investigation is presently being carried out on the proposed interchange legs including speed change tapers on Highway #401. Bore hole and laboratory test data will be available for inclusion on the contract documents. Any old ditch crossings will require cleanout in addition to normal stripping requirements.

The proposed interchange legs will entail an approximate 6' fill at the approaches to Fraser Road. The Soils Mechanics Office have computed probable consolidation effects of such a fill on the basis of the investigation data that was obtained for the Fraser Road structure and approach fill design. Settlement of about 1" is anticipated. Most of this should occur during construction. Little or no problem is anticipated with respect to the performance of the interchange leg pavement.

*This information
by letter
from Cedar*

A final detail Soils Design Report will be prepared.

A. M. Batten

A. M. Batten
Senior Soils Supervisor

AMB:sh

c.c. P. D. Billings
J. M. Childs
G. A. Wrong
T. Kingsland
C. Mirza -- Attention: M. Devata ✓
R. J. Forrest
T. C. Kingsland





Memorandum

To: Mr. M. Devata,
Supervising Engineer,
Soil Mechanics Section,
Downsview, Ontario.

From: Structural Planning Office,
Kingston, Ontario.

Attention:

Date: 13 May 1975

Our File Ref.

In Reply to

Subject: W.P. 60-75-01, Site 31-230
Alterations at Fraser Road Underpass
Highway 401, District 9-Ottawa



Further to our recent telephone discussion, I confirm that we shall be glad to receive your recommendations concerning the proposal to construct a **Parcel A Interchange** at the above structure. We are enclosing copy of General Plan for the structure drawing D-5888-1 and Boring Plan & Soil Stratigraphy Section drawing D-5888-2.

The proposal will entail the construction of a further 12 ft. lane under each end of the bridge. A minimum widening at each end of 12 ft. is envisaged.

Your views are sought as to the advisability of removing part of the north and south longitudinal berms under the structure in order to accommodate the proposed extra lanes. The existing berms are approximately 80 ft. in length in the longitudinal direction.

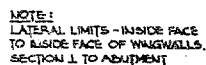
If stability considerations preclude partial removal of the berms without alternative support being provided, we shall be glad to receive your views on alternatives, such as sheet piling, or excavating part of the sensitive clay layer and replacing it with suitable material.

I understand that this project is to be treated as urgent and we shall be glad therefore to have your recommendations as soon as possible.

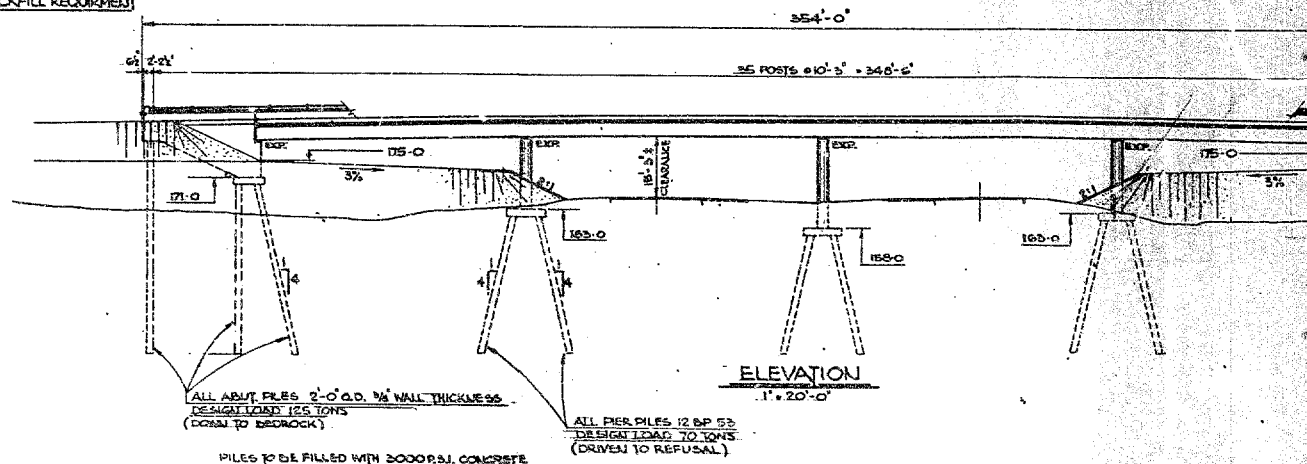
T. C. Kingsland
Regional Structural Planning Engineer

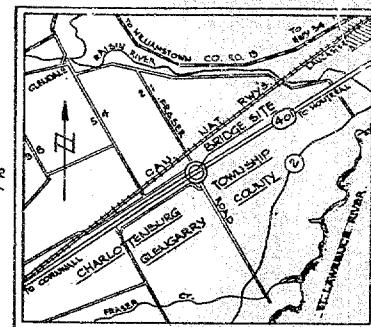
TCK/hl
encl.

c.c. P. D. Billings
A. J. Percy - Att. H. R. McIntyre
A. G. Boucher
R. Forrest
H. Chyc
C. S. Grebski - Att. K. Bassi



190 _____
180 _____
170 _____
160 _____
150 _____





1. 10.1 = 1.10

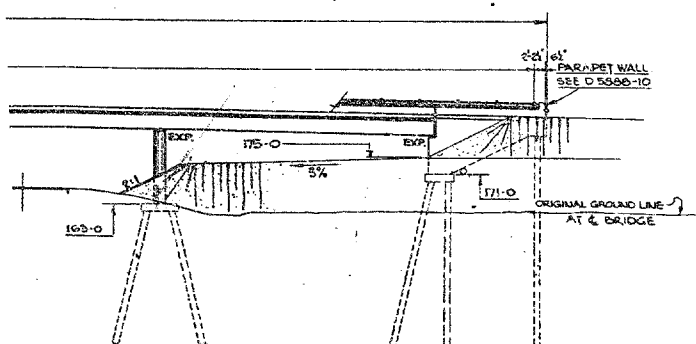
GENERAL NOTES

CONSTRUCTION NOTES - THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BEARING SEATS DEAD LEVEL TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF $\pm 1/8"$. THE BALLAST WALLS SHALL NOT BE CAST UNTIL ALL BEAMS ARE IN POSITION.

DRAWING LIST

D5898-1 GENERAL PLAN

- 2 BORE HOLE LOCATION & SOIL STRATA
- 3 FOOTINGS & PIERS DIMENSION & REINF.
- 4 ABUTM. DIMENSION & REINF.
- 5 DECK & APPR. SLAB DIMENSION & REINF.
- 6 PRESTRESSED GIRDER & BEARINGS
- 7 DETAILS OF SLOPE PAVING
- 8 BEARING PLATES
- 9 STD. PARAPET RAIL
- 10 STD. DETAILS

[illegible]

DEPARTMENT OF HIGHWAYS ONTARIO
BRIDGE DIVISION

FRASER ROAD UNDERPASS

2.8 MI. WEST OF JCT. HWY 2 & 34

KING'S HIGHWAY No. 40

DIST. No. 5

CO. GLENGARRY

TWP. CHARLOTTENBURG

CON.

GENERAL PLAN

SITE No. 21-2

W.P. No. 107-59

APPROVED

107-55

[illegible]

DATE: _____

CONTRACT
No.

	67-11
--	-------

DESIGN	1
DRAWING	1

DECK	5
DECK	5

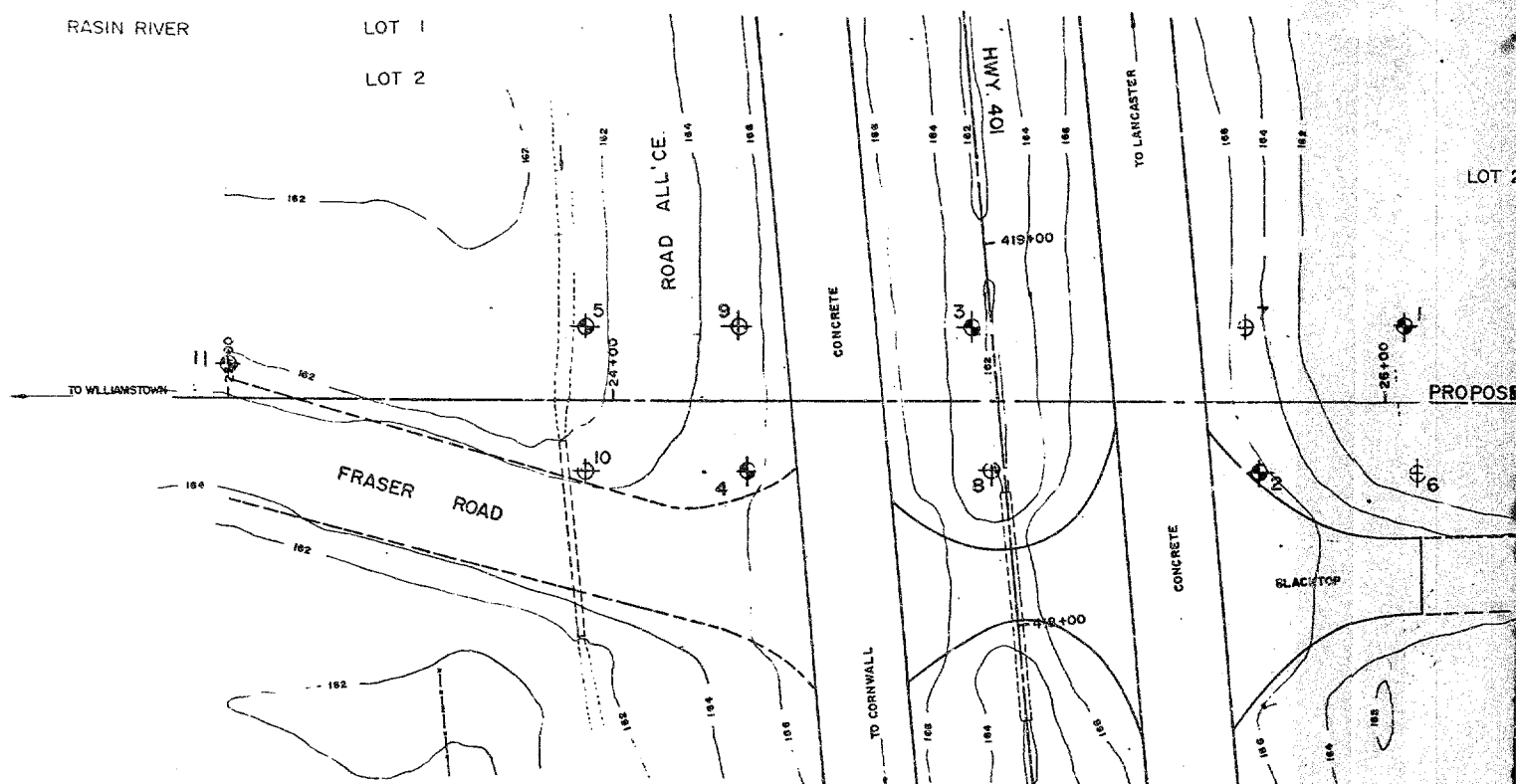
1994.

300

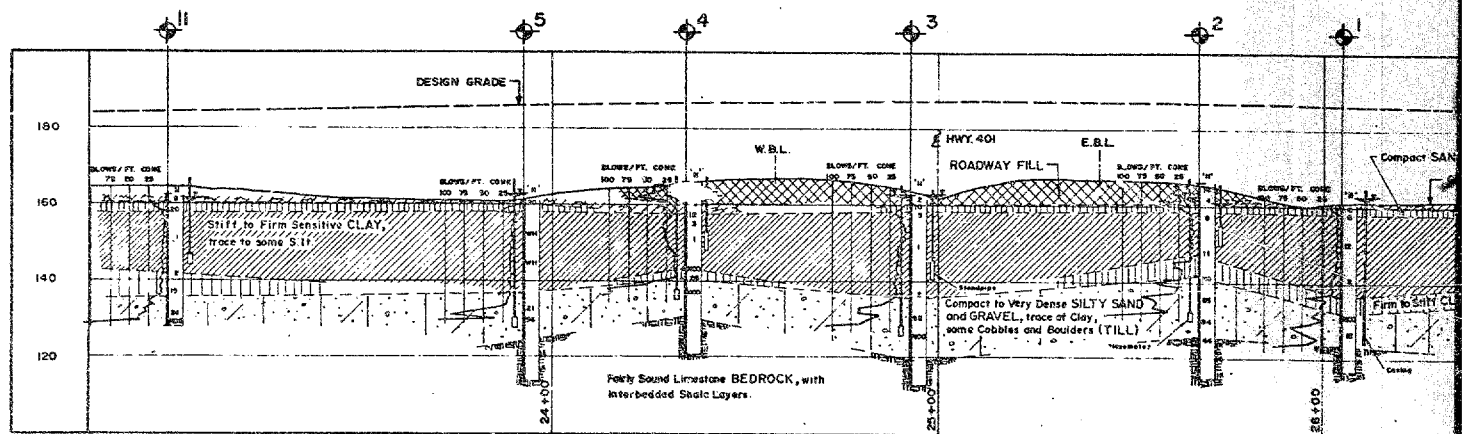
FIRST CON SOUTH OF
RASIN RIVER

LOT 1

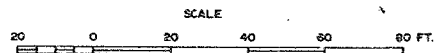
LOT 2

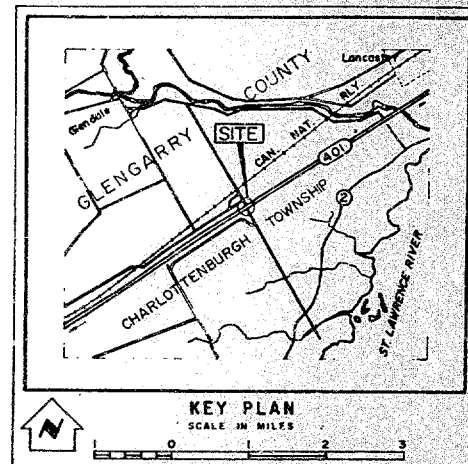
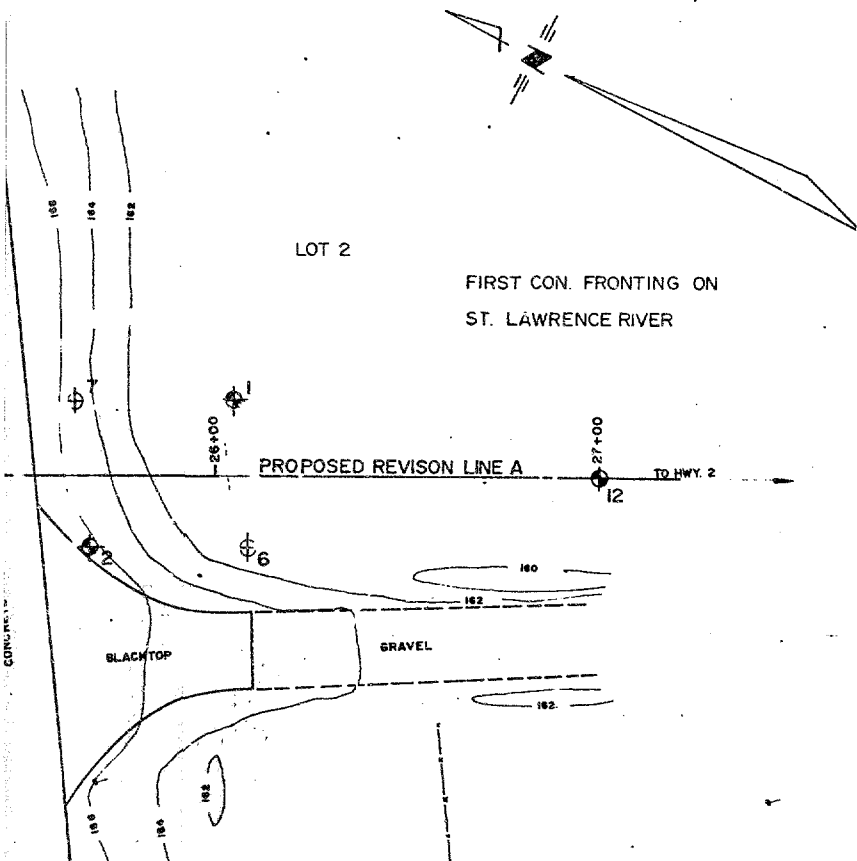


PLAN



SECTION ALONG PROPOSED REVISION FRASER RD, LINE A

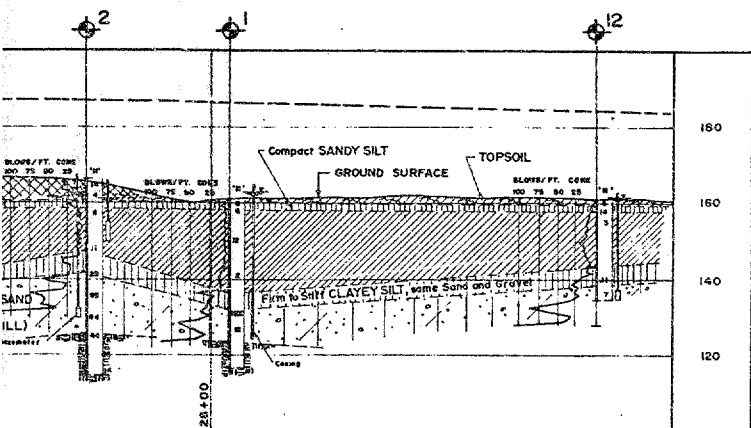




LEGEND			
	Bore Hole		
	Cone Penetration Hole		
	Bore & Cone Penetration Hole		
	Water Levels established at time of field investigation. (DEC. 3, 1965)		

NO.	ELEVATION	STATION	OFFSET
1	160.8	26+05	18.5' LEFT
2	166.1	25+69	18.5' RIGHT
3	162.7	24+93	19' LEFT
4	165.9	24+35	18.5' RIGHT
5	161.2	23+93	18.5' LEFT
6	160.7	26+08	18.5' RIGHT
7	165.0	25+65	19' LEFT
8	161.9	24+96	18' RIGHT
9	165.9	24+32	19' LEFT
10	163.7	23+93	18.5' RIGHT
11	162.1	23+00	9' LEFT
12	160.9	27+00	LINE A

NOTE
The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence and may be subject to considerable error.



REVISIONS	DATE	BY	DESCRIPTION

H.Q. GOLDER AND ASSOCIATES LIMITED

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

PROPOSED REVISION FRASER ROAD,
LINE A

KING'S HIGHWAY NO. 401 DIST. NO. 9
CO. OF GLENGARRY
TWP. OF CHARLOTTENBURGH LOT 2 CON. 1

BORING PLAN & SOIL STRATIGRAPHY SECTION

SUBM'D	CHECKED J.B.	W.P. NO. 107 - 59	M.B.T. DRAWING NO.
DRAWN M.W.	CHECKED	JOB NO. 65135	FIGURE 1
DATE DEC. 3, 1965.		SITE NO.	BRIDGE DRAWING NO.
APPROVED		CONT NO. 67-18	D5888-2

REFERENCE No. E-4605-1

RD. LINE A

80 FT.



Memorandum

To: Mr. M. Devata,
Supervising Engineer,
Soil Mechanics Section,
Downsview, Ontario.

From: Structural Planning Office,
Kingston, Ontario.

Attention:

Date: 13 May 1975

Our File Ref.

In Reply to

Subject: W.P. 60-75-01, Site 31-230
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Highway 401, District 9-Ottawa



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T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
encl.

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