

12-1105
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

73-92
MEMORANDUM

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

FROM: Structural Planning Office,
Kingston, Ontario.

ATTENTION: [REDACTED]

DATE: August 30, 1972.

OUR FILE REF.

IN REPLY TO

SUBJECT: W.P. 95-61-03, Site 29-98,
Constan Creek Bridge,
(3.4 miles north of Highway 132),
Highway 41, District 10-Bancroft

We are sending you herewith two prints of Bridge Site Plan E-5238-1 on which we have marked the proposed location of the above structure. Also enclosed are two copies of your Field Reconnaissance Report and photographs of the existing bridge.

We would be pleased if you will make arrangements for the necessary foundation investigation and to have your report, the scheduled date for which is November 1st, 1972.

T. C. Kingsland
T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
encls.

c.c. C. S. Grebski - Att. K. Bassi (encl.)
J. Anderson
R. Forrest

Completion Date Nov 1/72

Design Services Branch,
Downsview 464, Ontario.

October 19, 1972.

Telephone: 248-3282.

F. E. Johnston Drilling Co. Ltd.,
P.O. Box 4134,
Postal Station 'E',
Ottawa 1, Ontario.

Dear Sirs:

This letter confirms our request of September 1, 1972, for the supply of a diamond drill together with all necessary equipment, as specified under the terms of our Contract Agreement, at Eganville, Ontario, on September 5, 1972.

Mobilization will be from Ottawa.

Our Project Number is W.O. 72-11105.

Yours truly,

K. G. Selby,

K. G. Selby,
Supervising Foundations Eng.
For: A. G. Stermac,
Principal Foundations Eng.

KGS/ao

cc: W. W. Fry
(Attn: Mrs. M. Andrews)

Foundations Files ✓
Documents

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: October 31, 1972.

OUR FILE REF.

IN REPLY TO NOV - 8 1972

SUBJECT:

31F-57

FOUNDATION INVESTIGATION REPORT

For

The Proposed Crossing at
Constan Creek and Hwy. #41
Lot 10, Con. 6

Twp. of Grattan, Co. of Renfrew
District #10 (Bancroft)

W.O. 72-11105 -- W.P. 95-61-03

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.

AGS/ao
Attach.

cc: E. J. Orr
B. R. Davis
A. Rutka
S. J. Markiewicz
D. A. Osborne-White
N. J. Giroux
E. R. Saint
G. A. Wrong
B. A. Singh

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

Foundations Files ✓
Documents

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FOUNDATION INVESTIGATION REPORT
For
The Proposed Crossing at
Constan Creek and Hwy. #41
Lot 10, Con. 6
Twp. of Grattan, Co. of Renfrew
District #10 (Bancroft)
W.O. 72-11105 -- W.P. 95-61-03

1. INTRODUCTION:

A request for a foundation investigation at the proposed crossing of Constan Creek and Hwy. #41 was received from Mr. T. C. Kingsland, Regional Structural Planning Engineer, in a memorandum dated August 30, 1972.

Following this request, a field investigation was carried out by the Foundations Office to determine the subsoil conditions existing at the site.

This report contains the results of this investigation together with our recommendations pertaining to the design of the proposed new structure foundations.

2. DESCRIPTION OF THE SITE:

The site of the proposed new structure over Constan Creek is located approximately 3.5 mi. north of Jct. Hwy. #41 and Hwy. #132, on Hwy. #41.

The surrounding terrain is rolling and grass covered.

The channel of Constan Creek is approximately 40 ft. wide and 8 ft. deep.

3. FIELD AND LABORATORY INVESTIGATION PROCEDURES:

A total of four sampled boreholes was carried out during the course of the field work. Boring was achieved by means of a conventional diamond drilling equipment adapted for soil sampling purposes. Two of the boreholes were put down in the creek bed for which the drilling rig was raft mounted. During the field work, disturbed samples were obtained by means of a standard split-spoon sampler; the energy used in driving it conformed to the requirements of the Standard Penetration Test. (350 ft.-lbs. per blow) BX and AXT rock coring equipments were used to advance the borings through the bouldery zones.

All boreholes were surveyed in the field by personnel from Bancroft (#10) District.

The locations and elevations of the borings are shown on Drawing No. 72-11105A which accompanies this report.

All samples were visually examined and classified at the site as well as in the laboratory. Following this inspection, laboratory tests were carried out on selected samples to determine the natural moisture content and grain-size distribution.

The test results are summarized on the Record of Borehole sheets contained in the Appendix of this report.

4. SOIL TYPES AND SOIL CONDITIONS:

4.1) General:

Apart from the fill material, generally uniform subsoil conditions were found to prevail over the site area.

The subsoil consists of a granular type deposit with boulders. The estimated stratigraphical profile is shown on Drawing 72-11105A.

A more detailed description of the subsoil with regard to soil types and soil properties follows.

4.2) Fill Material:

This material was encountered in B.H. #3 and #4 from

the existing ground level (elevation 642⁺) to an approximate depth of 10 ft. The material in the deposit consists of sand and gravel with occasional boulders. Standard Penetration Tests carried out within this zone indicate that the relative density is compact.

4.3) Sand and Gravel With Silt and Boulders:

This deposit was intersected in all borings and extends from immediately below the creek water level, or the above-mentioned fill material down to elevation 594⁺ where the borings were terminated.

The material in the deposit consists mainly of sand and gravel with silt and frequent boulder concentrations, with the following average proportions: gravel - 40%, sand - 48%, silt - 12%. Grain-size distribution curves are included in the Appendix of this report (Figure 1). The natural moisture content was found to vary between 5 and 13%. From approximate elevation 615 downward, rock coring techniques were used to advance the borehole due to the heavy boulder concentrations. Boulders up to 2 ft. in diameter were recovered. Based on the results of Standard Penetration Test the relative density ranges from loose to very dense.

5. GROUNDWATER CONDITIONS:

The groundwater level was found to be the same as the water level in the creek.

6. DISCUSSION AND RECOMMENDATIONS:

It is proposed to construct a new bridge at this location. The new centre-line will be coincident with the existing centre-line and the new grade will be some 2 ft. higher than the existing grade. The new structure will be built at a skew angle and will have a clear waterway of about 40 ft. Subsoil at the site consists of sand and gravel with silt and boulders.

The new structure may be founded on spread footings with a design load of 3 t.s.f. at or below elevation 618.0. A

major dewatering problem exists due to the nature of the soil which is likely to 'boil' if subjected to a hydrostatic head. To overcome this problem the footings should be designed and constructed in the following way: Excavation should be carried out under water down to elevation 618.0. Tremie concrete should then be poured up to elevation 624.5. Normal type footings may then be constructed and the concrete poured in the dry. This method is based upon the assumption that the ground or river water level will not be higher than elevation 633 in which event the depth of tremie concrete will have to be increased.

No stability problems are anticipated for the proposed structure approaches provided standard 2:1 slopes are constructed.

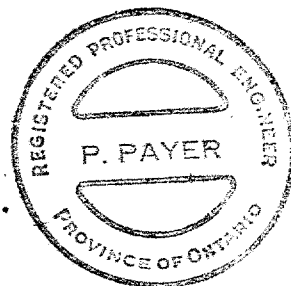
7. MISCELLANEOUS:

The field investigation was carried out during the period of September 11 to 21, 1972, under the supervision of Mr. P. Payer, Project Foundations Engineer, who also prepared this report.

Equipment was owned and operated by F. E. Johnston Drilling Co. Ltd.

This report was reviewed by Mr. K. G. Selby, Supervising Foundations Engineer.

P. Payer
P. Payer, P. Eng.



K. G. Selby
K. G. Selby, P. Eng.

PP/ao
Oct. 26, 1972.

APPENDIX I

DESIGN SERVICES BRANCH

RECORD OF BOREHOLE NO 1

FOUNDATIONS OFFICE

JOB 72-11105

LOCATION Sta. 236 + 36 21' Lt.

W.P. 95-61-03

BORING DATE Sept. 12 & 13, 1972

ORIGINATED BY PP

DATUM Geodetic

BOREHOLE TYPE Washbore and Rock Coring

COMPILED BY PP

CHECKED BY *[Signature]*

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.			w_p — w — w_L WATER CONTENT % 10 20 30				
							○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE							
632.8	Water Level													
0.0	Water					630								
626.2	Ground Level													
6.6	Sand and gravel with occ. boulders.		1	SS	36	620								41 48 (11)
	Compact to Dense		2	SS	6/6"									33 49 (18)
			3	SS	14									
			4	SS	33	610								31 42 (27)
607.8			5	SS	19 1/2"									
25.0	Boulders		6	AXT	14%	600								
			7	AXT	13%									
593.9			8	AXT	34%									
38.9	End of Borehole					590								

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 2

JOB 72-11105

LOCATION Sta. 236 + 50 19' Rt.

ORIGINATED BY PP

W.P. 95-61-03

BORING DATE Sept. 14 & 15, 1972

COMPILED BY PP

DATUM Geodetic

BOREHOLE TYPE Washboring & Rock Coring

CHECKED BY *PP*

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				
632.8	Water Level													
0.0	Water					630								
627.2	Ground Level													
5.6	Sand & gravel with silt. Loose to Dense		1	SS	12									45 49 (6)
			2	SS	7	620								
			3	SS	19									
			4	SS	13									
612.3														29 53 (18)
20.5	Boulders		5	AXT	40%	610								
			6	AXT	24%									
			7	AXT	12%	600								
593.7														
39.1	End of Borehole					590								

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 3

JOB 72-11105

LOCATION Sta. 236 + 85 17' Lt.

W.P. 95-61-03

BORING DATE Sept. 18 & 19, 1972

ORIGINATED BY PP

DATUM Geodetic

BOREHOLE TYPE Washboring and Rock Coring

COMPILED BY PP

CHECKED BY *PP*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE	LIQUID LIMIT w_L PLASTIC LIMIT w_p WATER CONTENT w w_p — w — w_L WATER CONTENT % 10 20 30	BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT						
641.1	Ground Level										
0.0	Sand & gravel with occasional boulders.										
	Compact		1	SS	25						
630.6	Fill Material		2	SS	20						
10.5	Sand & gravel with some silt, occasional boulders.		3	SS	28						
			4	SS	26						
615.1	Compact		5	SS	80.5"						
26.0	Boulders		6	BX	80%						
			7	AXT	50%						
603.4			8	AXT	23%						
37.7	End of Borehole										

OFFICE REPORT ON SOIL EXPLORATION

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE NO 4

JOB 72-11105

LOCATION Sta. 236 + 04 16' Rt.

ORIGINATED BY PP

W.P. 95-61-03

BORING DATE Sept. 20 & 21, 1972

COMPILED BY PP

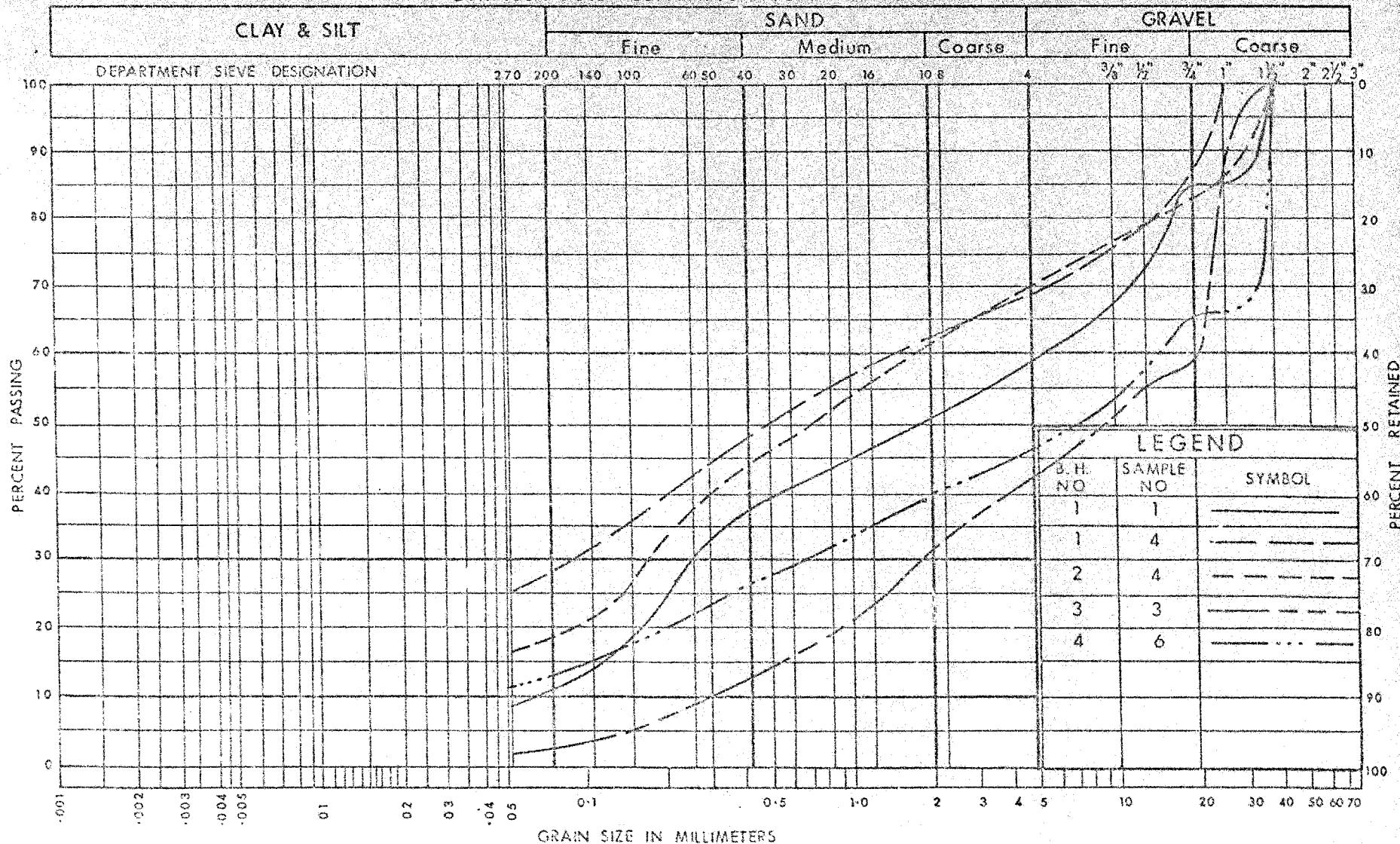
DATUM Geodetic

BOREHOLE TYPE Washboring and Rock Coring

CHECKED BY

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				
							SHEAR STRENGTH P.S.F.			WATER CONTENT — w				
							○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE			w_p — w — w_L WATER CONTENT % 10 20 30				
642.3	Ground Level													
0.0	Sand & gravel with occasional boulders.					640								
	Compact		1	SS	35/4"									
632.1	Fill Material		2	SS	14									
10.2	Sand and gravel with silt & boulders.		3	SS	20/4"	630								
			4	BX	40%									
	Compact to Very Dense		5	SS	24	620								
			6	SS	58									
			7	AXT	5%	610								
607.3			8	AXT	12%									
35.0	End of Borehole					600								

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT
OF
TRANSPORTATION AND COMMUNICATIONS

DESIGN SERVICES
BRANCH

GRAIN SIZE DISTRIBUTION SAND & GRAVEL

W.P. No. 95-61-03

JOB No. 72-11105

FIGURE 1

ABBREVIATIONS USED IN THIS REPORT

PENETRATION RESISTANCE

STANDARD PENETRATION RESISTANCE 'N' - THE NUMBER OF BLOWS REQUIRED TO ADVANCE A STANDARD SPLIT SPOON SAMPLER 12 INCHES INTO THE SUBSOIL, DRIVEN BY MEANS OF A 140 POUND HAMMER FALLING FREELY A DISTANCE OF 30 INCHES.

DYNAMIC PENETRATION RESISTANCE - THE NUMBER OF BLOWS REQUIRED TO ADVANCE A 2 INCH, 60 DEGREE CONE, FITTED TO THE END OF DRILL RODS, 12 INCHES INTO THE SUBSOIL, THE DRIVING ENERGY BEING 350 FOOT POUNDS PER BLOW.

DESCRIPTION OF SOIL

THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE DENSITY OR DENSENESS OF COHESIONLESS SOILS ARE DESCRIBED IN THE FOLLOWING TERMS :-

<u>CONSISTENCY</u>	<u>'N' BLOWS/FT.</u>	<u>c LB./SQ.FT.</u>	<u>DENSENESS</u>	<u>'N' BLOWS/FT.</u>
VERY SOFT	0 - 2	0 - 250	VERY LOOSE	0 - 4
SOFT	2 - 4	250 - 500	LOOSE	4 - 10
FIRM	4 - 8	500 - 1000	COMPACT	10 - 30
STIFF	8 - 15	1000 - 2000	DENSE	30 - 50
VERY STIFF	15 - 30	2000 - 4000	VERY DENSE	> 50
HARD	> 30	> 4000		

TYPE OF SAMPLE

S.S.	SPLIT SPOON	T.W.	THINWALL OPEN
W.S.	WASHED SAMPLE	T.P.	THINWALL PISTON
S.B.	SCRAPER BUCKET SAMPLE	O.S.	OESTERBERG SAMPLE
A.S.	AUGER SAMPLE	F.S.	FOIL SAMPLE
C.S.	CHUNK SAMPLE	R.C.	ROCK CORE
S.T.	SLOTTED TUBE SAMPLE		
	P.H. SAMPLE ADVANCED HYDRAULICALLY		
	P.M. SAMPLE ADVANCED MANUALLY		

SOIL TESTS

Qu	UNCONFINED COMPRESSION	L.V.	LABORATORY VANE
Q	UNDRAINED TRIAXIAL	F.V.	FIELD VANE
Qcu	CONSOLIDATED UNDRAINED TRIAXIAL	C	CONSOLIDATION
Qd	DRAINED TRIAXIAL	S	SENSITIVITY

ABBREVIATIONS USED IN THIS REPORT

SOIL PROPERTIES

γ	UNIT WEIGHT OF SOIL (BULK DENSITY)
γ_s	UNIT WEIGHT OF SOLID PARTICLES
γ_w	UNIT WEIGHT OF WATER
γ_d	UNIT DRY WEIGHT OF SOIL (DRY DENSITY)
γ'	UNIT WEIGHT OF SUBMERGED SOIL
G	SPECIFIC GRAVITY OF SOLID PARTICLES $G = \frac{\gamma_s}{\gamma_w}$
e	VOID RATIO
n	POROSITY
w	WATER CONTENT
S_r	DEGREE OF SATURATION
w_L	LIQUID LIMIT
w_p	PLASTIC LIMIT
I_p	PLASTICITY INDEX
s	SHRINKAGE LIMIT
I_L	LIQUIDITY INDEX = $\frac{w - w_p}{I_p}$
I_C	CONSISTENCY INDEX = $\frac{w_L - w}{I_p}$
e_{max}	VOID RATIO IN LOOSEST STATE
e_{min}	VOID RATIO IN DENSEST STATE
I_D	DENSITY INDEX = $\frac{e_{max} - e}{e_{max} - e_{min}}$
	RELATIVE DENSITY D_r IS ALSO USED
h	HYDRAULIC HEAD OR POTENTIAL
q	RATE OF DISCHARGE
v	VELOCITY OF FLOW
i	HYDRAULIC GRADIENT
k	COEFFICIENT OF PERMEABILITY
j	SEEPAGE FORCE PER UNIT VOLUME
m_v	COEFFICIENT OF VOLUME CHANGE = $\frac{-\Delta e}{(1+e)\Delta\sigma}$
c_v	COEFFICIENT OF CONSOLIDATION
C_c	COMPRESSION INDEX = $\frac{\Delta e}{\Delta \log_{10} \sigma}$
T_v	TIME FACTOR = $\frac{c_v t}{d^2}$ (d, DRAINAGE PATH)
U	DEGREE OF CONSOLIDATION
τ_f	SHEAR STRENGTH
c'	EFFECTIVE COHESION INTERCEPT
ϕ'	EFFECTIVE ANGLE OF SHEARING RESISTANCE, OR FRICTION
c_u	APPARENT COHESION
ϕ_u	APPARENT ANGLE OF SHEARING RESISTANCE, OR FRICTION
μ	COEFFICIENT OF FRICTION
S_i	SENSITIVITY

GENERAL

π	= 3.1416
e	BASE OF NATURAL LOGARITHMS 2.7183
$\log_e a$ OR $\ln a$	NATURAL LOGARITHM OF a
$\log_{10} a$ OR $\log a$	LOGARITHM OF a TO BASE 10
t	TIME
g	ACCELERATION DUE TO GRAVITY
V	VOLUME
W	WEIGHT
M	MOMENT
F	FACTOR OF SAFETY

STRESS AND STRAIN

u	PORE PRESSURE
σ	NORMAL STRESS
σ'	NORMAL EFFECTIVE STRESS ($\bar{\sigma}$ IS ALSO USED)
τ	SHEAR STRESS
ϵ	LINEAR STRAIN
γ	SHEAR STRAIN
ν	POISSON'S RATIO (μ IS ALSO USED)
E	MODULUS OF LINEAR DEFORMATION (YOUNG'S MODULUS)
G	MODULUS OF SHEAR DEFORMATION
K	MODULUS OF COMPRESSIBILITY
η	COEFFICIENT OF VISCOSITY

EARTH PRESSURE

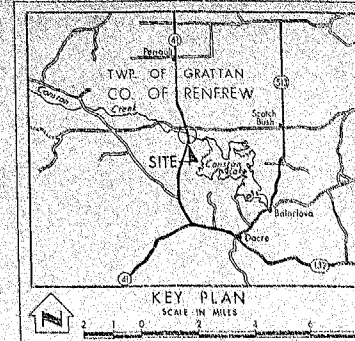
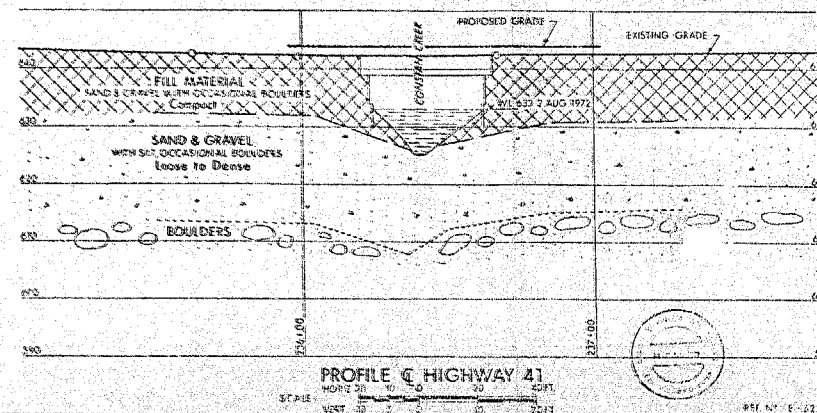
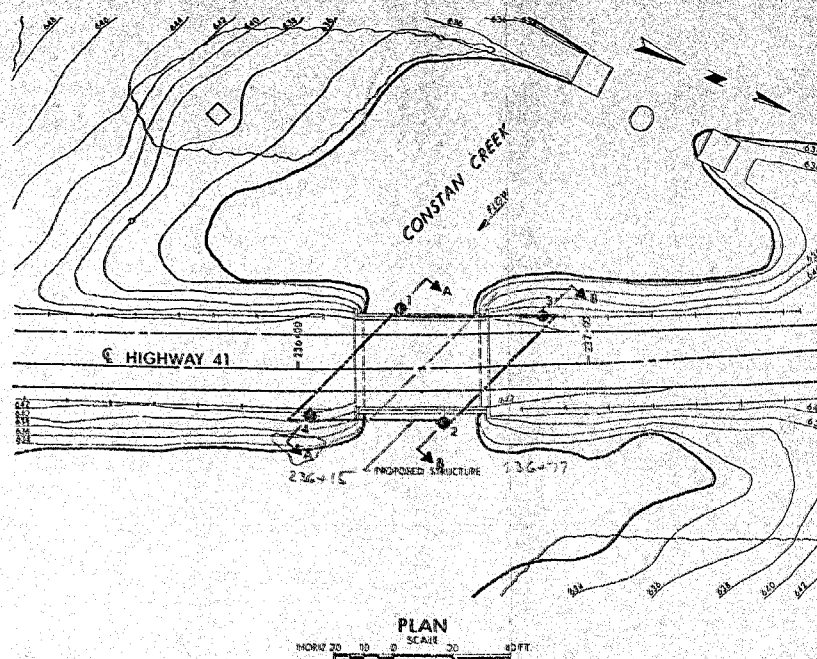
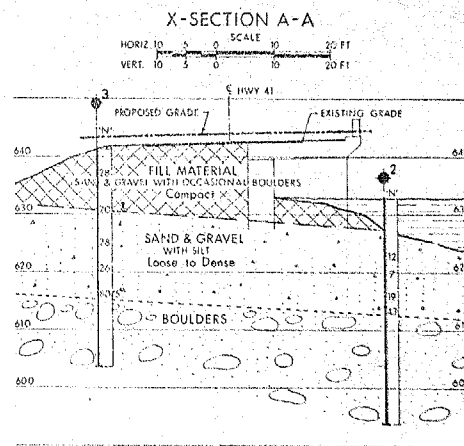
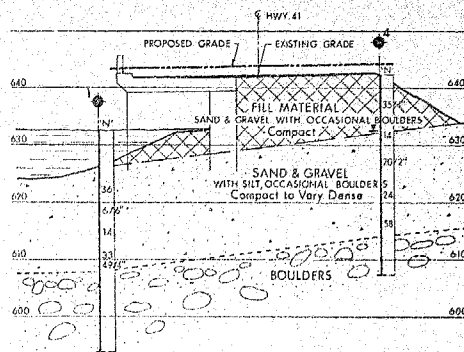
d	DISTANCE FROM TOP OF WALL TO POINT OF APPLICATION OF PRESSURE
δ	ANGLE OF WALL FRICTION
K	DIMENSIONLESS COEFFICIENT TO BE USED WITH VARIOUS SUFFIXES IN EXPRESSIONS REFERRING TO NORMAL STRESS ON WALLS
K_0	COEFFICIENT OF EARTH PRESSURE AT REST

FOUNDATIONS

B	BREADTH OF FOUNDATION
L	LENGTH OF FOUNDATION
D	DEPTH OF FOUNDATION BENEATH GROUND
N	DIMENSIONLESS COEFFICIENT USED WITH A SUFFIX APPLYING TO SPECIFIC GRAVITY, DEPTH AND COHESION ETC. IN THE FORMULA FOR BEARING CAPACITY
k_s	MODULUS OF SUBGRADE REACTION

SLOPES

H	VERTICAL HEIGHT OF SLOPE
D	DEPTH BELOW TOE OF SLOPE TO HARD STRATUM
β	ANGLE OF SLOPE TO HORIZONTAL



LEGEND			
	Bore Hole		
	Conn Penetration Test		
	Bore Hole & Conn Test		
	Water level established at time of field investigation Sept. 1972		

NO.	ELEVATION	STATION	OFFSET
1	632.8	236+36	21' LT.
2	632.8	236+50	19' RT.
3	641.1	236+85	17' LT.
4	642.2	236+04	16' RT.

— 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

CONSTAN CREEK

HIGHWAY NO. 41 DIST. NO. 10
CO. RENFREW
TWP. GRATTAN

BORE HOLE LOCATIONS & SOIL STRATA

SUBMD. REC. CHECKED BY: W.P. NO. 95-61-03
DRAWN BY: CHECKED BY: W.D. NO. 72-1105
DATE: 10/2/72 SITE NO. 72-11105 A
APPROVED BY: [Signature] ENGINEER'S NO. 38001 STATIONED BY: [Signature]

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: T. C. Kingsland,
Reg. Structural Planning Engineer,
EASTERN REGION, Kingston.

FROM: Structural Office,
West Bldg., DOWNSVIEW.

ATTENTION:

DATE: January 11th, 1973.

OUR FILE REF.

IN REPLY TO


SUBJECT: Constan Creek Bridge,
3.4 Miles North of Hwy. #132,
W.P.#95-61-03, Site #29-98,
Hwy. #41, District #10.

72-11-105

Attached herewith are prints of the Preliminary Bridge Plan Drawing D-29-98-P1 for the above-mentioned structure.

The estimated cost of the proposed structure is \$77,000 which includes tender, materials, engineering, and sundry construction.

Any comments or revisions you may have should be submitted within four weeks.



C. S. Grebski,
Structural Design Engineer.

CSG:dp
Attach.

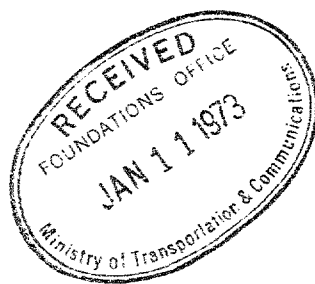
cc. B. R. Davis,
W. D. Birch,
A. E. McKim,
A. Stermac (2), ✓
J. Anderson,
R. Forrest,
M. Stoyanoff, plan only,
W. McFarlane, plan only.

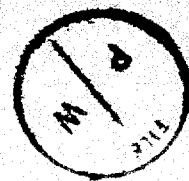
Comments

Design is not
as recommended in the
Foundation Report but is
nevertheless feasible insofar
as foundations are concerned.

K. L. Sullivan

Feb. 12th 1973





A. Stermac,
Principal Foundation Engineer,
Room 107, West Building.

Structural Office,
West Bldg., Downsview.

March 6th, 1973.

Constan Creek Bridge,
3.4 Miles North of Hwy. #132,
W.P.#95-61-03, Site #29-98,
Hwy. #41, District #10.

72-11-105

Attached herewith we are submitting the final bridge
drawings which show the foundation design for this structure.

Kindly give us your comments at your earliest convenience.

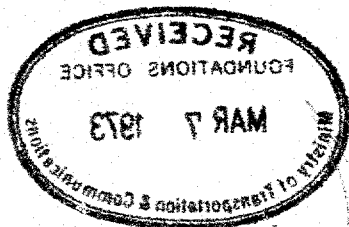
CSG:dp
Attach.

C.S. Grebski,
Structural Design Engineer.

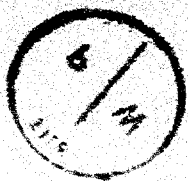
cc. Foundation Office.

No comments :-

K. L. Silby



Handwritten:
Copy to Structural Office
17 April 73



Structural Office,
West Bldg., Downsview.

March 6th, 1973.

A. Steimac,
Principal Foundation Engineer,
Room 107, West Building.

Donatien Creek Bridge,
3.4 Miles North of Hwy. #132,
W.P. #88-61-01, Site #10-02,
Hwy. #41, District #10.

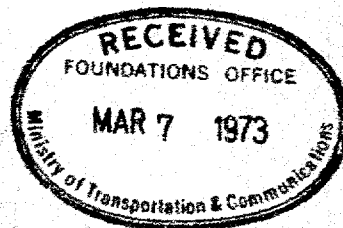
Attached herewith we are submitting the final bridge
plans which show the foundation design for this structure.
Kindly give us your comments at your earliest convenience.

C.S. Giesaki,
Structural Design Engineer.

G:dp
rsh.

Foundation Office.

K.C. Sullivan



FOUNDATIONS OFFICE

REVIEW OF DESIGN DRAWINGS:

W.P. 95-61-03

W.O. 72-11105

Foundation Report By: PP

Review of Design Drawings By: PP

Design Drawing No.'s: Not shown

1. Does footing design comply with our report or subsequent memos? No
2. If answer to 1. is No, is present design acceptable? YES
3. Has sufficient field work been done? YES
4. Are estimated pile lengths shown on Drawings correct?
If not, make a new list. (SEE BELOW)
5. If excavation of unsuitable soil is recommended, is this shown on Drawings? N.A.
6. Are approaches designed in accordance with our report? Check slopes and berm lengths. (1.5:1) O.K.
7. Do you anticipate any construction problems?
i.e., dewatering, stability of temporary slopes or excavations. YES, (PILE DRIVING)
8. Summarize your comments; on separate sheet if necessary.

DUE TO THE BOULDERY SUBSOIL CONDITIONS (FROM EL. 615±)
IT IS POSSIBLE THAT THE 'H' PILES WILL MEET REFUSAL AT
HIGHER ELEVATION(S), ~~THUS~~ WHICH WOULD RESULT IN
SHORTER PILE LENGTHS.

Drawings Received MARCH 21:.....1973..

Reviewed MARCH 23:.....1973..

Signed

P. Payer

HURTY!

MX KINR MAY 11/73 4.25 PM

BANC I D A O WHITE DIST ENGR

KINR TO:

E SAINT M AND T

H MCKAY ENG AUDIT

P BILLINGS REG DIRECTOR

R FORREST PROGRAM OFFICE

T KINGSLAND STRUCTURAL PLANNING

TORD 1 TO:

M STOYANOFF STRUCTURAL CONTROL ENGR

G STERMAC PRINCIPAL FOUNDATION ENGR

B MCGAFFIGAN PROGRAM OFFICE

DOWN 11 TO:

A E MCKIM CONST OFFICE

B GIROUX ESTIMATING OFFICE

TORD 1 - K BASSI STRUCTURAL PLANNING

RE WP 95-65-01 ETC HWYS 41 AND 132, EGANVILLE SOUTHERLY

DISTRICT 10 BANCROFT

PLEASE BE ADVISED THAT A REGIONAL PRE CONTRACT REVIEW WILL BE HELD
FOR THIS PROJECT ON THE FOLLOWING:

DATE - MAY 17TH, 1973

TIME - 10.00 A.M.

PLACE - BOARDROOM 2 KINGSTON REGIONAL OFFICE

D B THOMAS SYSTEMS DESIGN

JM

Discussed with Tom Kingsland
on the phone and agreed that
on presence may not be required.
14 May 73

! MURKIN



W. J. B. B. B.

73-11-102

RECEIVED 10 BANCROFT

PLEASE BE ADVISED THAT A REGIONAL PRE CONTRACT REVIEW WILL BE HELD

FOR THIS PROJECT ON THE FOLLOWING:

DATE - MAY 17, 1973

TIME - 10.00 A.M.

PLACE - BANCROFT & KINGSTON REGIONAL OFFICE

O X ENTERS SYSTEM DESIGN

Handwritten notes at bottom left, including "One person..." and "in the..."

A. STERNA

Mr. K.G. Bassi,
Reg. Structural Design Engineer,
Structural Design Section,
West Building.

Hydrology Office.

September 27, 1973.

Your query of Sept. 26/73

Constan Creek at Hwy. 41
WP 95-61-03 Site 29-98 BW 1805
District #10

Since a piled foundation is not feasible, we recommend in view of the highly scourable subsoil material the following.

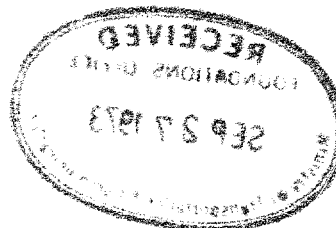
Spread footings on rock-fill (with negligible fine material) at any practical elevation leaving a rockfill and riprap protected waterway area of 350 sq. ft. measured perpendicular to the flow direction and below elev. 636.

If the streambed is not rockfill it should be excavated, have riprap protection, but not be higher than elev. 625. Banks and fill, where not consisting of rockfill, should have riprap protection as recommended in the original hydrology report.

We trust these recommendations present a feasible alternative to the originally proposed piled foundation.

K. B. Jorne
Special Projects Engineer.
for J. D. Harris
Principal Hydrology Engineer.

KBJ/ec
cc. T. C. Kingsland



A. 2787

Hydrology Office.

Mr. R. C. Bassel,
Reg. Structural Design Engineer,
Structural Design Section,
West Building.

September 27, 1973.

Your query of Sept. 26/73

Constant Creek at Hwy. 41
W 41-41-00 S 112-25-98 E 1/4
T14N R10E S12

Since a piled foundation is not feasible, we recommend in view of the
highly accurate special material the following.

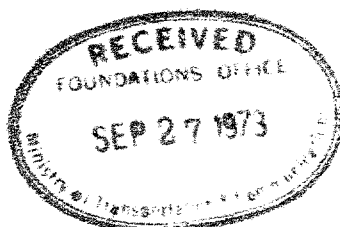
Spread footings on rock fill (with negligible fine material) at any
practical elevation leaving a rockfill and riprap protected waterway
area of 150 sq. ft. measured perpendicular to the flow direction
and below elev. 636.

If the streambed is not rockfill it should be excavated, have riprap
protection, but not be higher than elev. 632. Banks and fill, where
not consisting of rockfill, should have riprap protection as
recommended in the original hydrology report.

We find these recommendations present a feasible alternative to
the originally proposed piled foundation.

J. D. Harris
Special Projects Engineer
for
Principal Hydrology Engineer.

WEL
Mr. T. C. Kinsman



REGISTERED MAIL

Sent to Smiths Construction Co. Arnprior Ltd.
by Looby Builders [Dublin] Limited



ONTARIO

~~DEPARTMENT OF HIGHWAYS~~
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS

NOTIFICATION OF INTENT TO CLAIM

CHIEF ENGINEER,

~~DEPARTMENT OF HIGHWAYS, ONTARIO~~

MINISTRY OF TRANSPORTATION & COMMUNICATIONS, ONTARIO

Against Contract No. 73-92

Date 27th September 19 73

District BANCROFT, Ontario

Location Hwy. #41, Constan Creek Bridge

Sub- Contractor LOOBY BUILDERS [DUBLIN] LIMITED

Prime Contractor: SMITHS CONSTRUCTION

DUBLIN, Ontario, NOK LEO

COMPANY ARNPRIOR LIMITED

In accordance with Paragraph 2, Sub-section 104-1 of Section 104 "Control of the Work" of the "General Conditions of the Contract" D.H.O. Form 100, I/We declare my/our intention to file a claim against the above contract due to the following (Give complete details, attaching separate sheets if necessary.)

For all costs resulting from the revised design of structure foundations on the Constan Creek Bridge.

Notice to Smiths Construction Company Arnprior Limited

Please notify the Chief Engineer immediately in writing
of this Notification of Intent to Claim.

NOTE: Contractor must give this notice to the Chief Engineer and District Engineer within 7 days of his date of commencement on the work out of which this claim arises—Refer—Section 104-1 "General Conditions of the Contract" D.H.O. Form #100 Revised April 1st, 1958.

LOOBY BUILDERS [DUBLIN] LIMITED

Signed *James Looby* Sec.-Treasurer
Contractor or Authorized Representative.

TO BE MADE IN QUADRUPLICATE BY THE CONTRACTOR.
ONE COPY SENT TO DISTRICT ENGINEER—TWO COPIES SENT TO CHIEF ENGINEER.

Mr. D.A.O. White,
District Engineer,
Bancroft.

72-11105

Construction office,
Third Floor, Central Bldg.

October 1, 1973.

Contract 73-92, Constan Creek Bridge,
Site 29-98, Highway 41, District 10.

To confirm my telephone conversation with Mr. Delyea last Thursday, the following changes are to be made on this structure.

The piles are to be deleted and the footings placed on 3' thick tremie seal. This seal should be 6 inches larger all round than the footing.

The trenches are to be backfilled to underside of tremie with a self consolidating crushed rock with a maximum size of 6 inches.

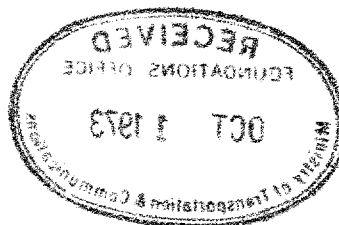
No. 6 bars at 12" cts. 20 feet long are to be placed in the tremie over the trenches, with No. 5 bars at 24" cts. to form a mat.

The stream bed is to consist of 2' thick random riprap below elevation 625, this riprap to extend 20 feet up and downstream from the limits of the structure.

AEM/JC


A.E. McKim,
Asst. Construction Engineer.

c.c. G. Martens
K. Bassi
A.G. Sternac ✓



Construction Office,
Third Floor, Central Bldg.

Mr. D.A. White,
District Engineer,
Bancroft.

October 1, 1973.

Contract 73-93, Constan Creek Bridge,
Site 20-28, Highway 41, District 10.

To confirm by telephone conversation with Mr. DeJoy last
Thursday, the following changes are to be made on this
drawing.

As piles are to be drilled and the footings placed on 3"
thick concrete seal. This seal should be 6 inches larger
all round than the footing.

The trenches are to be backfilled to underside of concrete
with a well consolidating crushed rock with a maximum size
of 6 inches.

0.6 bars at 12" c/c. 10 feet long are to be placed in
the trench over the trench, with No. 5 bars at 12" c/c.
to form a seal.

The stream bed is to consist of 3' thick random riprap
below elevation 625. This riprap to extend 10 feet up and
downstream from the limits of the structure.

A.E. White,
Asst. Construction Engineer.

AMM/JC

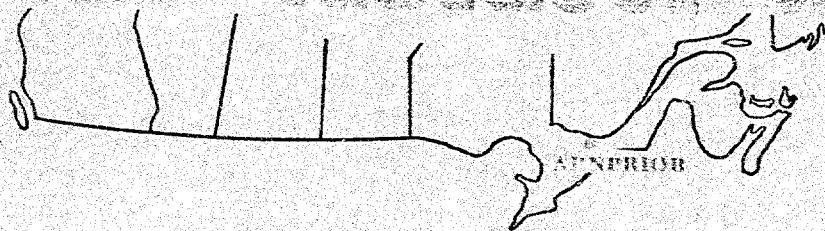
D.C. G. Mathias
K. Bland
A.C. Berman



CRUSHING
FLOATING
GRADING

ROAD BUILDERS
ASPHALT PAVING
EQUIPMENT RENTALS

SMITHS CONSTRUCTION CO.



HIGHWAY 17, ARNPRIOR, ONTARIO, PHONE 623-3144

Arnprior, Ontario
October 1, 1973

Ministry of Transportation and Communications
Box 300
Bancroft, Ontario
K0L 1C0

Attention: Mr. D.A.O. White, P.Eng.
District Engineer

RE: M.T.C. Contract 73-92
Hwy. 41 and 132
Constan Creek Bridge

Dear Sir:

Attached please find "Notification of Intent
To Claim" as filed by the M.T.C. approved Sub-
Contractor, Looby Builders (Dublin) Limited.

We remain,

Yours very truly,

SMITHS CONSTRUCTION COMPANY
ARNPRIOR LIMITED

Per:

N. Smith
Secretary-Treasurer

NS:sm
Encls.

CONSULT	DATE	INITIALS
MANUAL		
MUNICIP.		
SERVICES		
UNITS		
ENG. OFFICE		
SAFETY SUP.		

RECEIVED

OCT 3 - 1973

Ministry of Transportation and Communications
DISTRICT NO. 10
BANCROFT

MEMORANDUM

TO: Mr. J.W. MacDougall,
Claims Engineer,
Ministry of Transportation and
Communications,
DOWNSVIEW 464, Ontario.

FROM: District #10-Bancroft

ATTENTION:

DATE:

OUR FILE REF.

IN REPLY TO

October 3, 1973.

RECEIVED

OCT 4 1973

ENGINEERING CLAIMS
SECTION
M.I.C.

SUBJECT:

Contract 73-92, Highways 41 & 132,
Structure at Constan Creek.

Attached is a letter we have received from Smiths Const. Co. Arnprior Limited, together with copies 1 & 2 of "Notification of Intent to Claim" submitted by Smiths' Sub-Contractor on this structure, Looby Builders (Dublin) Limited.

They are claiming["] for all costs resulting from the revised design of structure foundations on the Constan Creek Bridge."

The following is for your information:

On the completion of the excavation of footings for this structure, our Foundations Office established that the underlying material was too bouldery to permit the driving of H Piles.

In view of this, the foundation was changed. The piles were deleted and the excavation deepened to provide a 3 foot thick Tremie Seal under the footing.

The sub-contractor was delayed while the foundations, as shown in the contract drawings, were reviewed and, subsequently, redesigned by this Ministry.

Fortunately, the pile driving equipment never arrived on the site.



D.A.C. White,
District Engineer.

DAOW/as - Attach.

c.c. J.E. Callaghan, Director, Construction Branch.

Mr. Davis
Mr. Stermac

(72 - 11105)

Mr. L. R. Eadie,
Executive Director,
Operations Division.

J. W. MacDougall,
Claims Engineer.

October 5, 1973.

Re: Claim on Contract 73-92
Smiths Construction Company
Annaprior Limited
Bancroft District

Attached please find for your information, copy of
Notification of Intent to Claim dated September 27, 1973 from
Looby Builders (Dublin) Limited regarding the above contract.

ORIGINAL SIGNED
BY
J. W. MacDOUGALL

J. W. MacDougall,
Claims Engineer.

JWM:dk

Attach.

c.c. - J. E. Wilkes

C. R. Wilmot ✓

P. D. Billings

A. C. Lennox

J. M. Crannie

D. A. O. White

61-30 SEPT. 1976

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 31F-57

DIST. 10 REGION EASTERN

W.P. No. 95-61-03

CONT. No. 73-92

W. O. No. 72-11105

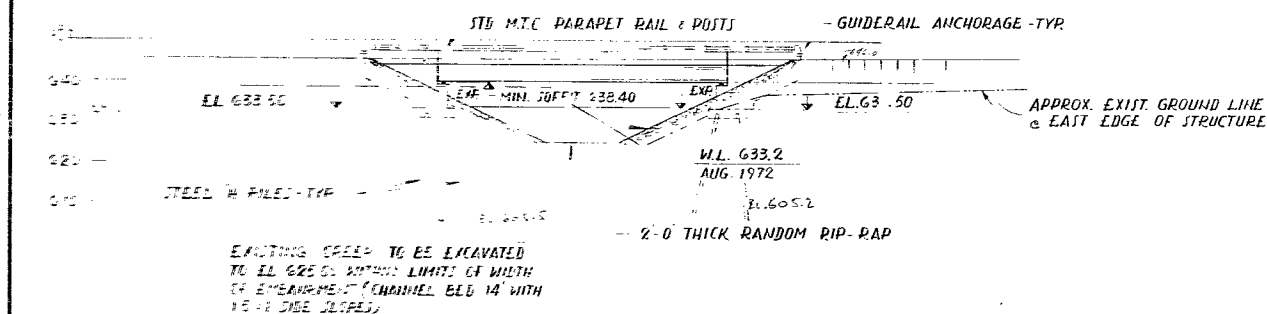
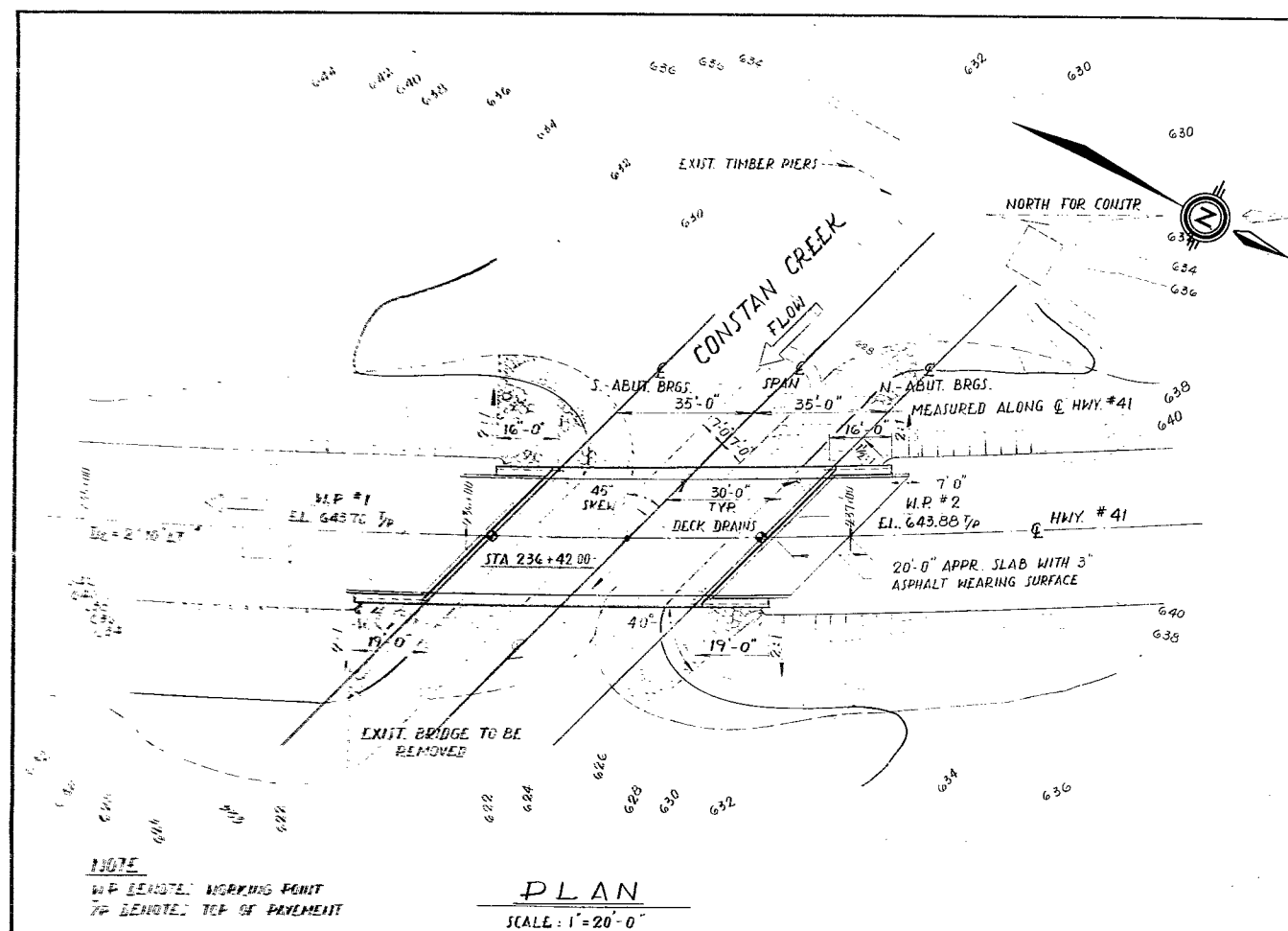
STR. SITE No. 29-098

HWY. No. 41

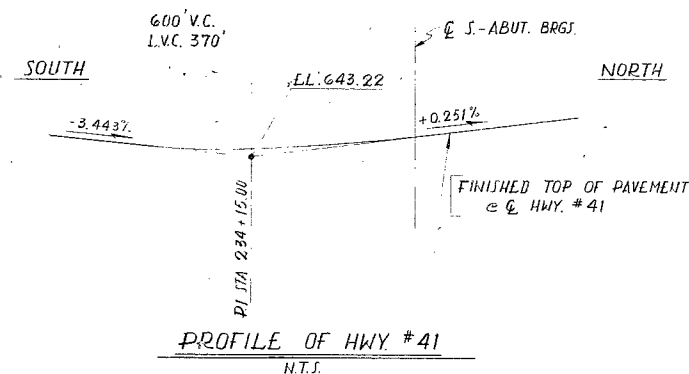
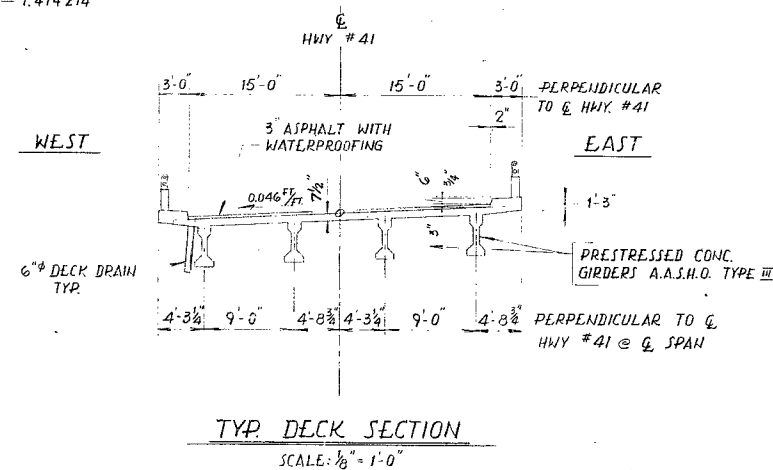
LOCATION CONSTAN CREEK + HWY. 41
BRIDGE

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 2

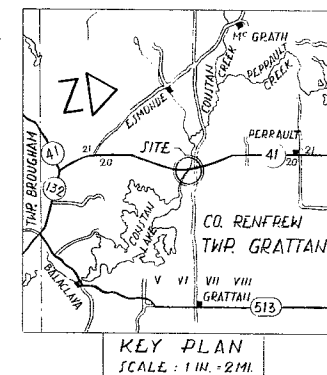
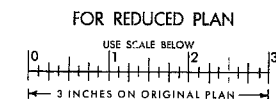
REMARKS: _____



SKEW - 45°
S.H. - 0.707107
C.O.S. - 0.707107
TAN. - 1.000000
SEC. - 1.414214



- LIST OF DRAWINGS**
- SHEET 1 GENERAL LAYOUT
2 BORE HOLE LOCATIONS & SOIL STRATA
3 FOUNDATION LAYOUT & REINF.
4 ABUTMENTS
5 WINGWALLS
6 PRESTRESSED GIRDERS & BEARINGS
7 DECK
8 PARAPET WALL DETAILS
9 STANDARD STEEL PARAPET RAIL
10 20 FOOT APPROACH SLAB
11 STANDARD DETAILS I
SHEET 12 STANDARD DETAILS II



REFERENCE BENCH MARK
B.M. 649.82
GEODEIC DATUM
N 2 1/2 W 1/4 SEC. 20 T. 23 N. R. 22 E.

NOTES

CLASS OF CONCRETE

PRESTRESSED GIRDERS - 5000 P.S.I.
REMAINDER - 3000 P.S.I.

CLEAR COVER ON REINF. STEEL

FOOTINGS & ABUTMENTS 3"
CURBS & APPROACH SLABS 2"
TOP OF DECK 1 1/2", BOT. 1"
PARAPET WALLS 1 1/2"

CONSTRUCTION NOTES

THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BEARING SEATS TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF ± 1/8".
NO CONCRETE SHALL BE PLACED ABOVE THE ABUTMENT BEARING SEATS UNTIL THE CONCRETE IN THE DECK HAS BEEN PLACED.

31F-57

REVISIONS	DATE	BY	DESCRIPTION

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS ONTARIO			
72-4-105			
CONSTAN CREEK BRIDGE (3.4 MILES NORTH OF HWY. 132)			
KING'S HIGHWAY No. 41	CO. RENFREW		DIST. No. 10
TWP. GRATTAH	LOT 19	CON. VI	
- GENERAL LAYOUT -			
APPROVED	STRUCTURAL ENGINEER	CONTRACTOR	
DESIGN H. K. J.	CHECK A. A.	W.P. NO. 95-61-03	
DRAWING A. A.	CHECK J. K. J.	SITE NO. 29-98	SHEET 1
DATE FEB. 73	LOADING W/20-44		

