

G.I.-30 SEPT. 1976

GEOCRES No. 31E-35DIST. 11 REGION W.P. No. CONT. No. W. O. No. 89-11003STR. SITE No. HWY. No. 520LOCATION Burke Falls, ^{305m W of} old Hwy 11No of PAGES -OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.REMARKS:



Ministry
of
Transportation

Ministère
des
Transports

PHOTOS ENCLOSED 89 01 26

Sec. Hwy 520 - Burks Falls 205 m W of Old Hwy 11



SLOPE 1988

AFTER PLACING NEW GABIONS
PATCH AT PAVEMENT EDGE
GUIDE RAIL POSTS ANCHORED
BEHIND GABIONS.



SLOPE 1988

AFTER PLACING NEW GABIONS

LOOKING WEST

GUIDE RAIL PLACED BEHIND
GABIONS

PROCESSED HOT MIX PLACED
TO PREVENT EROSION



SLOPE 1988
AFTER PLACING NEW GABIONS
LOOKING EAST
GUIDE RAIL PLACED BEHIND
GABIONS
PROCESSED HOT MIX PLACED
TO PREVENT EROSION



SLOPE 1988

PRIOR TO PLACING NEW GABIONS

GUIDE RAIL ON STEEL
DRUMS



1988

DAM DOWNSTREAM FROM
SLOPE

WATER HIGHER AT BASE
OF SLOPE

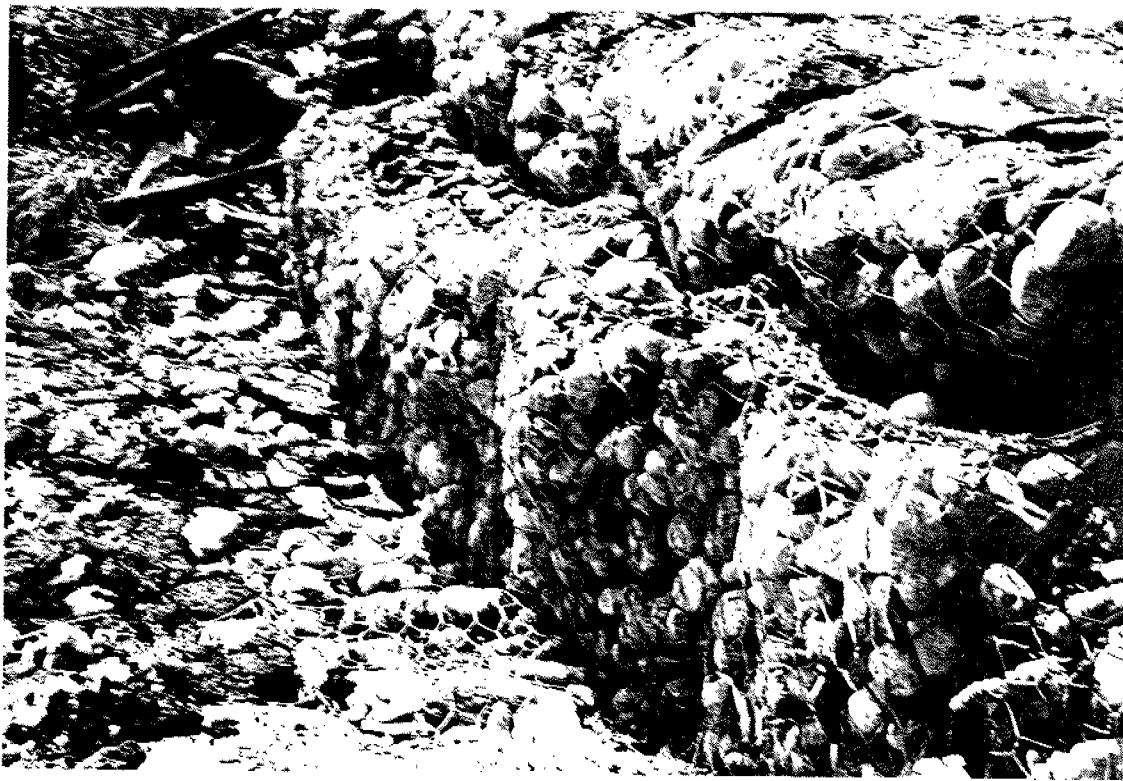


SLOPE 1988

AFTER PLACING NEW GABIONS

SHOWING BASE OF GABIONS

12/2/88



SLOPE 1988

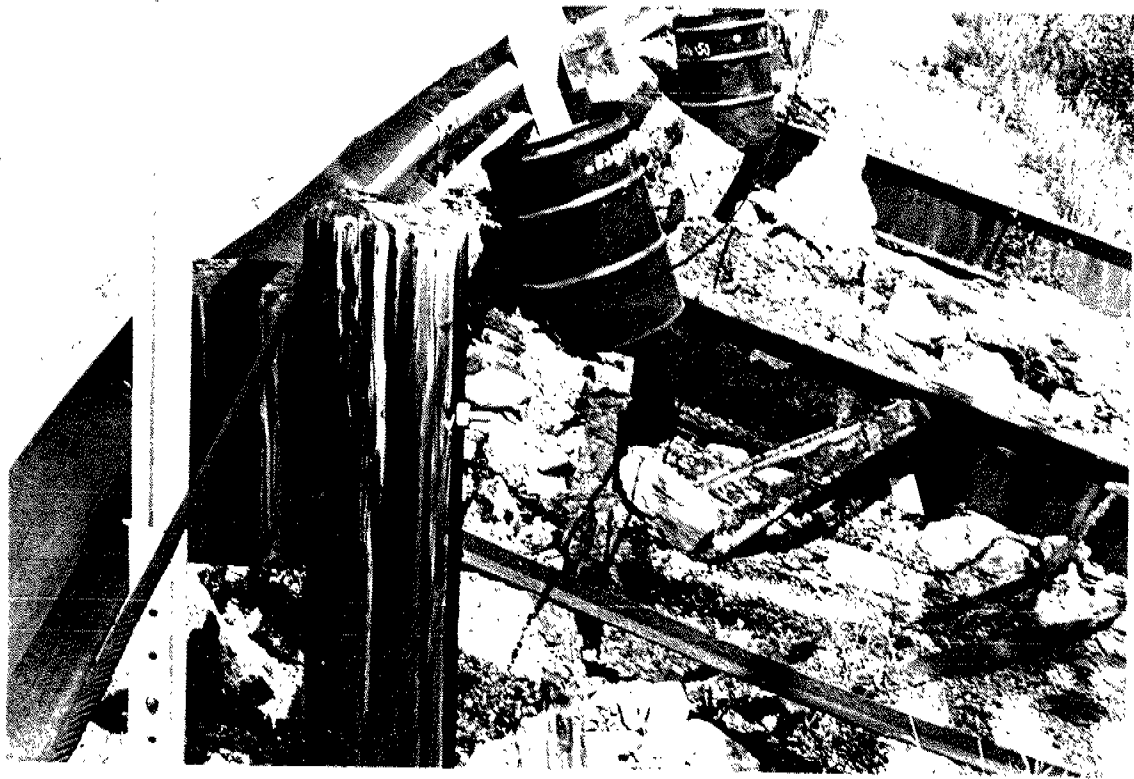
PRIOR TO PLACING NEW
GABIONS

REC. REMOVAL OF TOP SET.

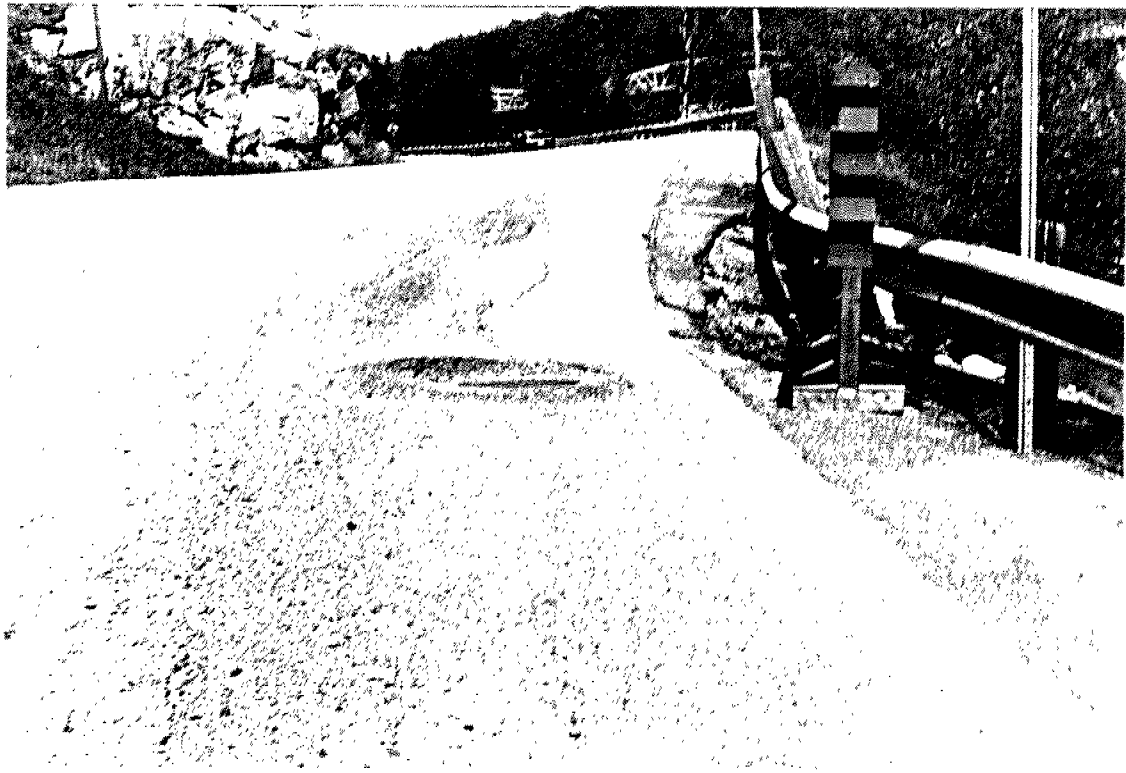


SLOPE 1988

PRIOR TO PLACING NEW GABIONS
NOTE STEEPNESS TO WATER'S
EDGE



SLOPE 1988
PRIOR TO PLACING NEW
GABIONS
GIVE RAIL ON STEEL
DRUMS



SLOPE 1988
PRIOR TO PLACING NEW GABIONS
NOTE SHOULDER AND GUIDE
RAIL

memorandum

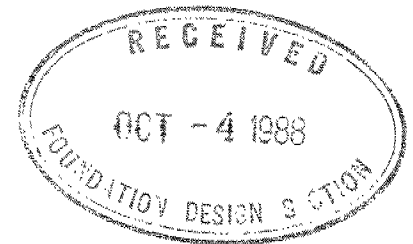


Mr. K. G. Selby
To: Chief Foundation Engineer - West
Foundation Design Section
3rd Floor, Central Building
DOWNSVIEW

Date: 88 09 29

Phone 1-705-472-7900
Ext. 286, 7

FROM: Geotechnical Section
Northern Region



Secondary Highway 520
Burks Falls, 305 m West Old Hwy 11
District # 11, Huntsville

Attached is a copy of a sheet from a set of Contract Drawings, Contract 74-152, showing part of the Secondary Highway in the Village of Burks Falls. Of concern is the site of the existing bridge in the vicinity of Station 10+25. The bridge had to be removed because of the extent of deterioration. When the bridge was removed it was necessary to stabilize the slope.

At present the steel beam guide rail has been made continuous by the use of steel barrels. The slope is unstable because part of the lane closest to the river has settled. There are still some gabions in place which were placed along the abutments on the river side. The embankment slopes from the edge of the pavement to the river. A difference in elevation from the pavement surface to the level of the water was estimated to be about 10 m from existing data with elevation of the water downstream of 925.5 on 1968 03 21 and a dam immediately downstream from the site.

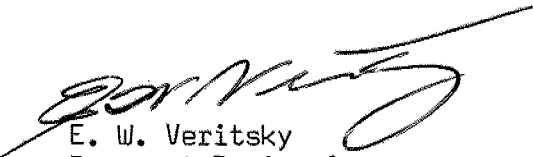
A rockline is shown to the north of the site. A Soils Profile, 11T11-6, prepared for the grading project, could not be located in our files. Utilities include a water line, partly shown on the Plan, a sanitary sewer line with manhole close to the site under the pavement and overhead hydro lines on the slope side of the highway.

In order to set the guide rail the location was discussed with the District Maintenance Staff and it was agreed to provide additional gabions and use some pulverized pavement on the slope over granular materials to prevent erosion. The pavement is to be patched to provide a smooth surface before the coming winter season.

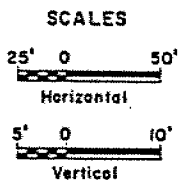
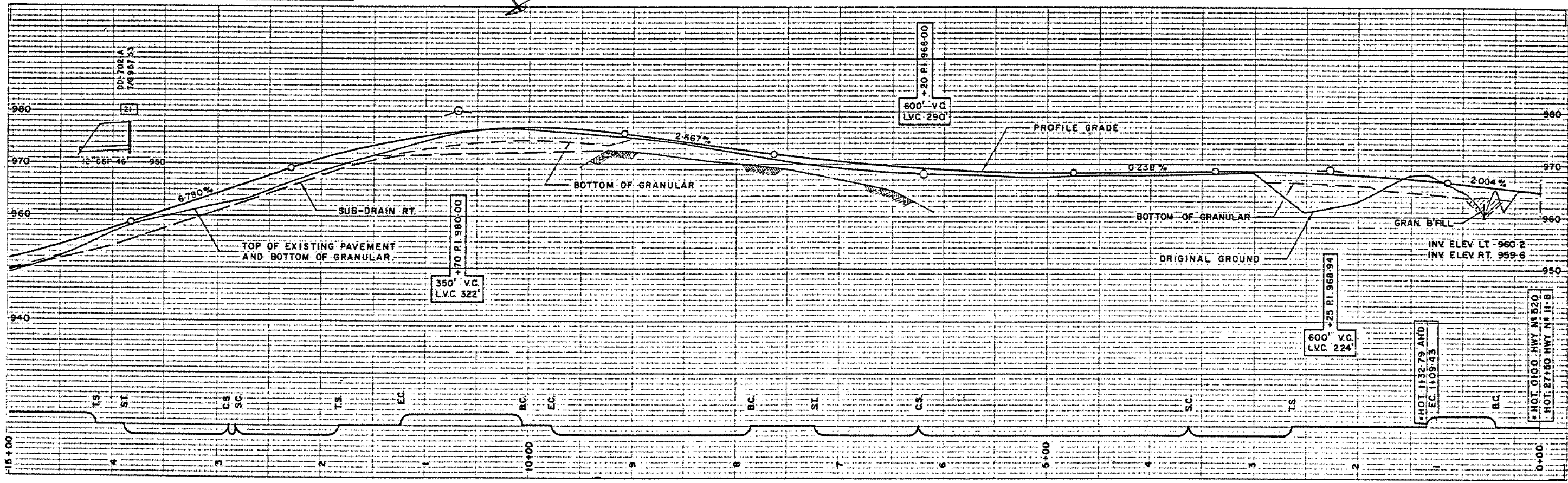
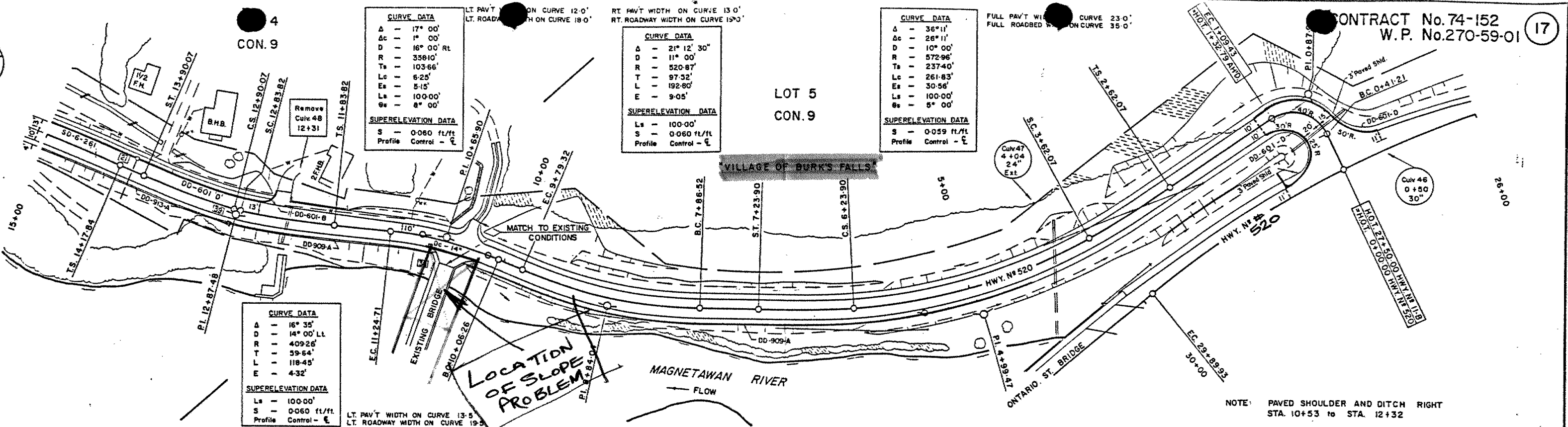
This Section requests a review of the site by the Foundations Section to determine a long term solution. The present treatment may be only temporary because the rock used to fill the gabions previously was not fragmented but rounded and the baskets do not hold their shape. Removal at this time is not practical. It was recommended that the additional gabions to be installed be constructed with fragmented rock.

Solutions to the problem include flattening of the slope with rock fill but this may require a berm into the water which seems to be deep as it is upstream from the dam. It may be possible to construct some type of wall along the base adjacent to the river and use rock fill behind it to flatten the slope. Another consideration is to move the alignment of the highway northerly away from the river. Although there is a rock cut at the northeast which can provide fill, steep entrance restrictions to a property to the north may negate this possible solution.

Personnel from this section would be available for a site review including personnel from the District if so desired, preferably this Fall.


E. W. Veritsky
Pavement Design &
Evaluation Officer

EWV/ap
Attach:
cc: File (2)



				Totals	
variation	EC	720 C.Y.	EC	3,400 C.Y.	4,120 Earth Cut
	St.	600 C.Y.	St.	250 C.Y.	850 Stripping
	EF	1,150 C.Y.	EF	1,050 C.Y.	2,200 Ditching
	RF	720 C.Y.	RC	490 C.Y. (WIDENING)	2,200 Muskeg Excav.
fill			Sh.	70 C.Y.	490 Earth Fill
			RF	100 C.Y.	490 Rock Cut
					70 Shatter
					820 Rock Fill
					Muskeg Backfill

HL 4 SURFACE COURSE 1 1/2" Average (1 1/4" Minimum) HL 4 BINDER COURSE 1 1/2"; HL 2 1" Average (3/4" Minimum)

GRANULAR A GRANULAR C

#68-F-17

WP#270-59-1-2-3

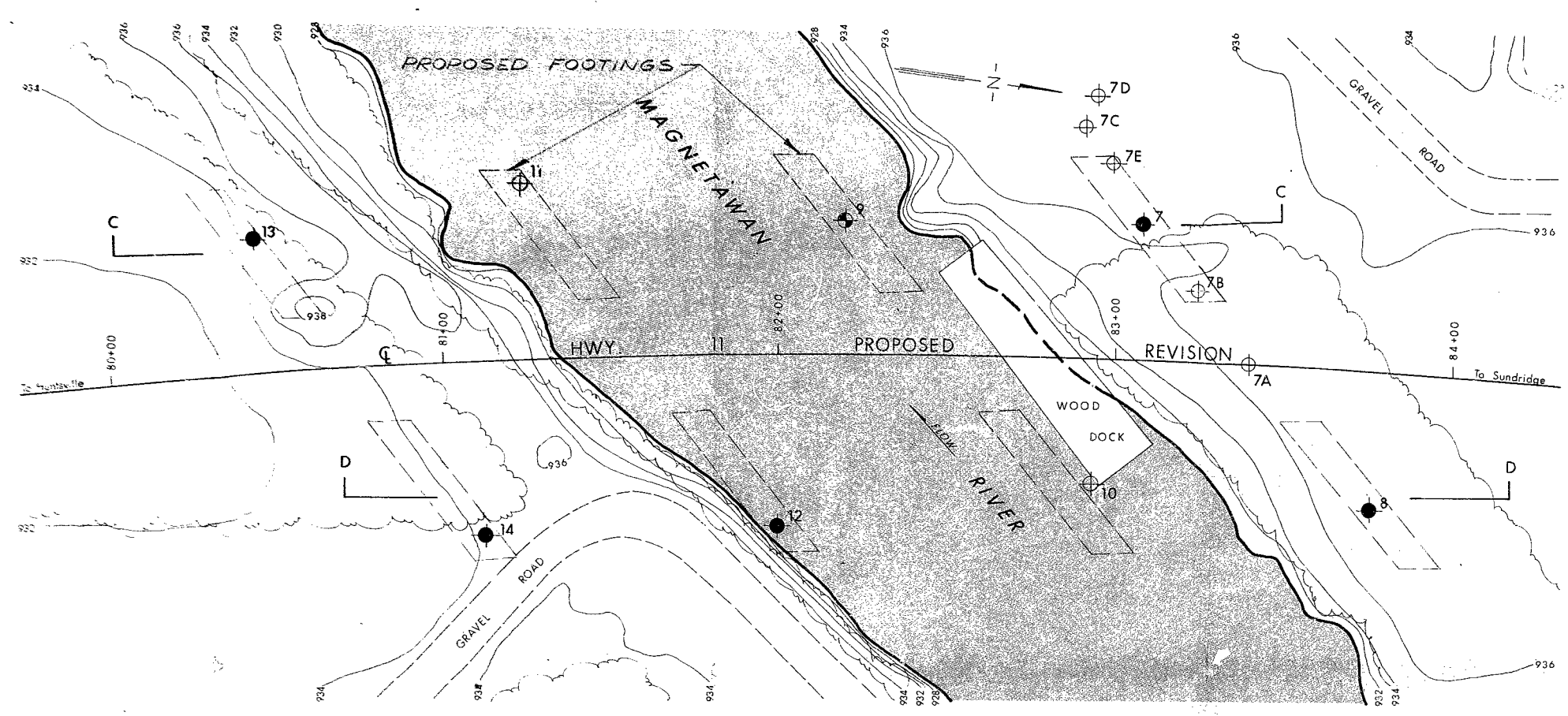
Hwy #11

Hwy #5200

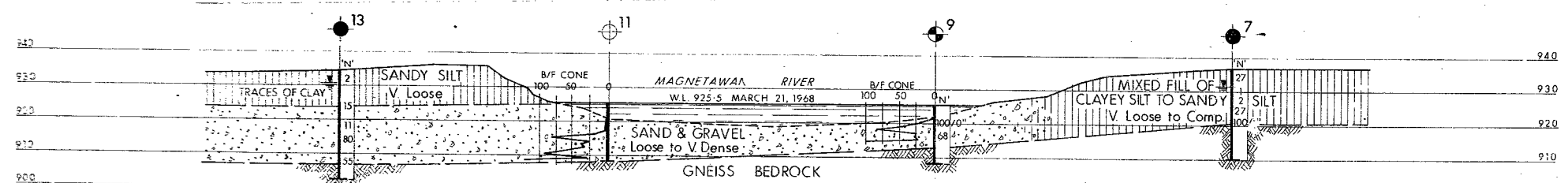
MAGNETAWAN

RIVER & BURK'S

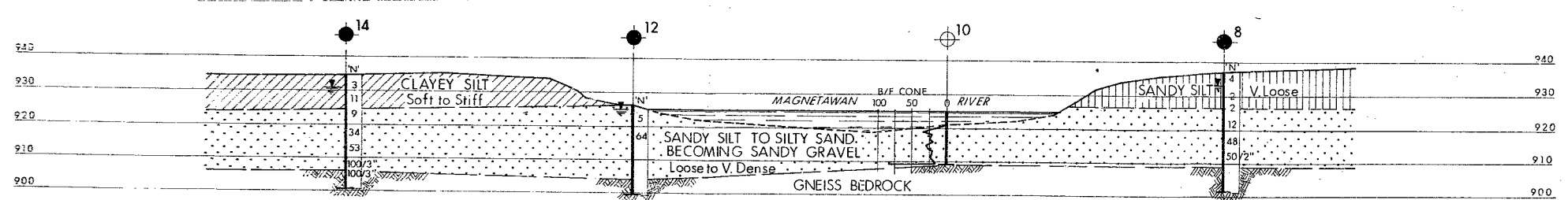
FALLS BY-PASS



PLAN
SCALE 20 10 0 20 40 FT.



C-C



D-D

SECTIONS
SCALE 20 10 0 20 40 FT.

SEE DRAWING NO 68-F-17A

KEY PLAN
SCALE IN MILES

LEGEND			
	Bore Hole		
	Cone Penetration Hole		
	Bore & Cone Penetration Hole		
	Water Levels established at time of field investigation, MARCH 1968		
NO.	ELEVATION	STATION	OFFSET
7	936.3	83+07	40' LT.
7A	936.1	83+40	€
7B	937.0	83+24	21' LT.
7C	936.8	82+90	69' LT.
7D	937.3	82+93	78' LT.
7E	937.0	82+98	58' LT.
8	937.0	83+78	40' RT.
9	925.5	82+18	40' LT.
10	925.0	82+94	38' RT.
11	925.5	81+24	52' LT.
12	926.0	82+00	51' RT.
13	934.6	80+44	40' LT.
14	934.2	81+13	52' 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 and may be subject to considerable error.

REVISIONS	DATE	BY	DESCRIPTION

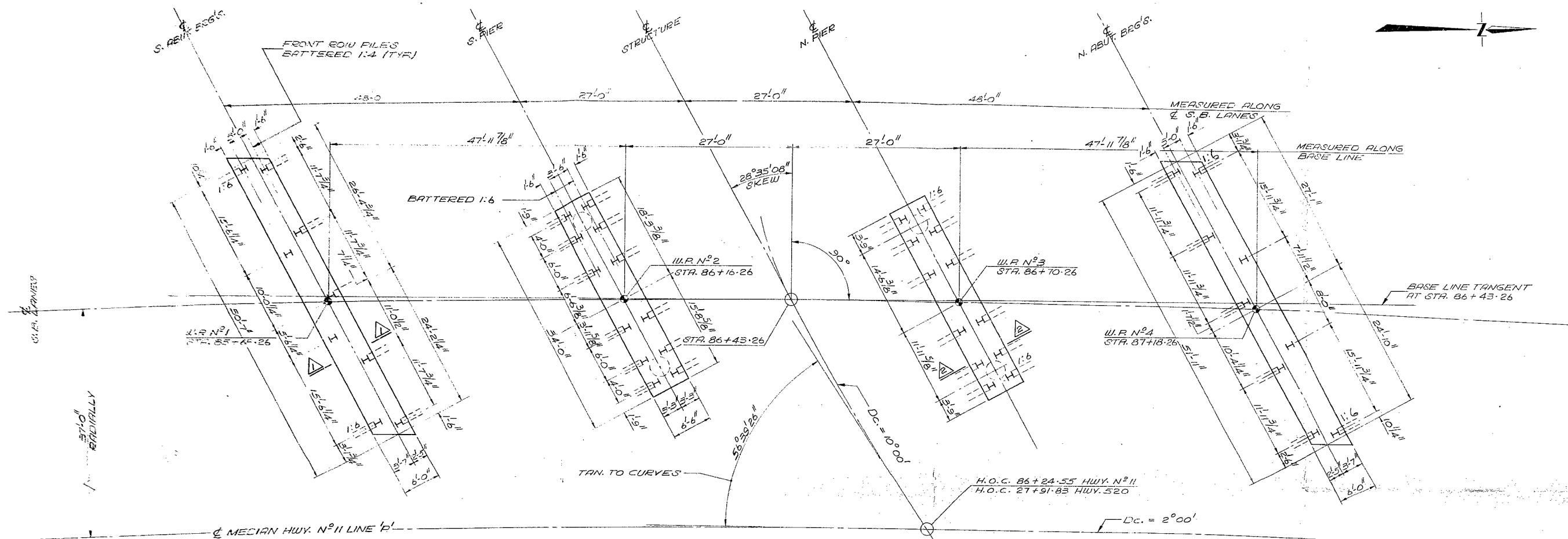
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

MAGNETAWAN RIVER

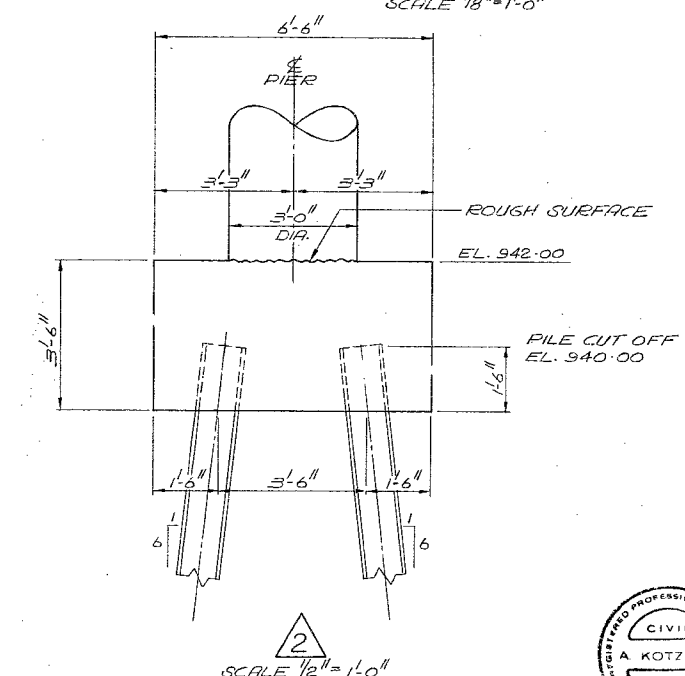
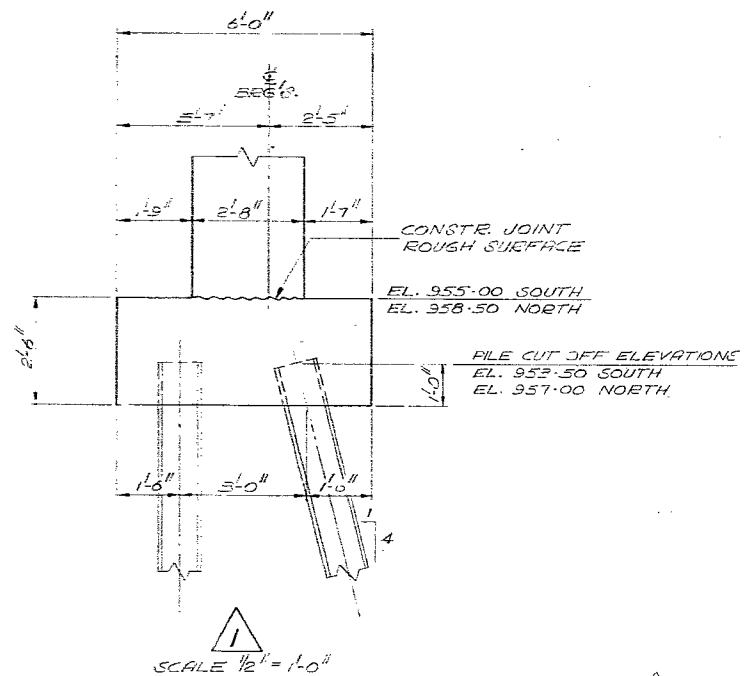
KING'S HIGHWAY NO. 11 REVISION DIST. NO. 11
CO. DIST. OF PARRY SOUND VILLAGE OF BURK'S FALLS
TWP. ARMOUR LOT CON.

BORE HOLE LOCATIONS & SOIL STRATA

SUBM'D. A.B.	CHECKED	W.P. NO. 270-59-1-2	N.S.T. DRAWING NO.
DRAWN S.O.	CHECKED	JOB NO. 68-F-17	68-F-17 B
DATE 27 MAY 1968	SITE NO.	BRIDGE DRAWING NO.	
APPROVED	CONT. NO.		



FOUNDATION LAYOUT
SCALE 1/8" = 1'-0"



LIST OF STEEL H-PILES			
LOCATION	N° OF PILES	SUPPLIED LENGTH	DESIGN LOAD
S. ABUT.	9 ✓	50 46'-0"	70 TONS
S. PIER	12 ✓	35 32'-0"	"
N. PIER	12 ✓	35 32'-0"	"
N. ABUT.	9 ✓	45 49'-0"	"

NOTE
ALL PILES TO BE DRIVEN TO BEDROCK FOR SPICE & DRIVING SHOE DETAIL SEE D-6509-12.

TABLE OF OFFSETS FOR LAYOUT OF W.P. N°1 TO N°4		
W.P. N°	X	Y
1	74'-11 7/8"	11 5/8"
2	27'-0"	1 1/2"
3	27'-0"	1 1/2"
4	74'-11 7/8"	11 5/8"

REVISIONS	DATE	BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS ONTARIO
BRIDGE DIVISION

BURK'S FALLS BY-PASS
SEC. HWY. 520-OVERPASS

KING'S HIGHWAY No. 11 DIST. No. 11
DIST. OF PARRY SOUND
TWP. ARMOUR LOT 3 CON. 8 & 9

FOUNDATION LAYOUT

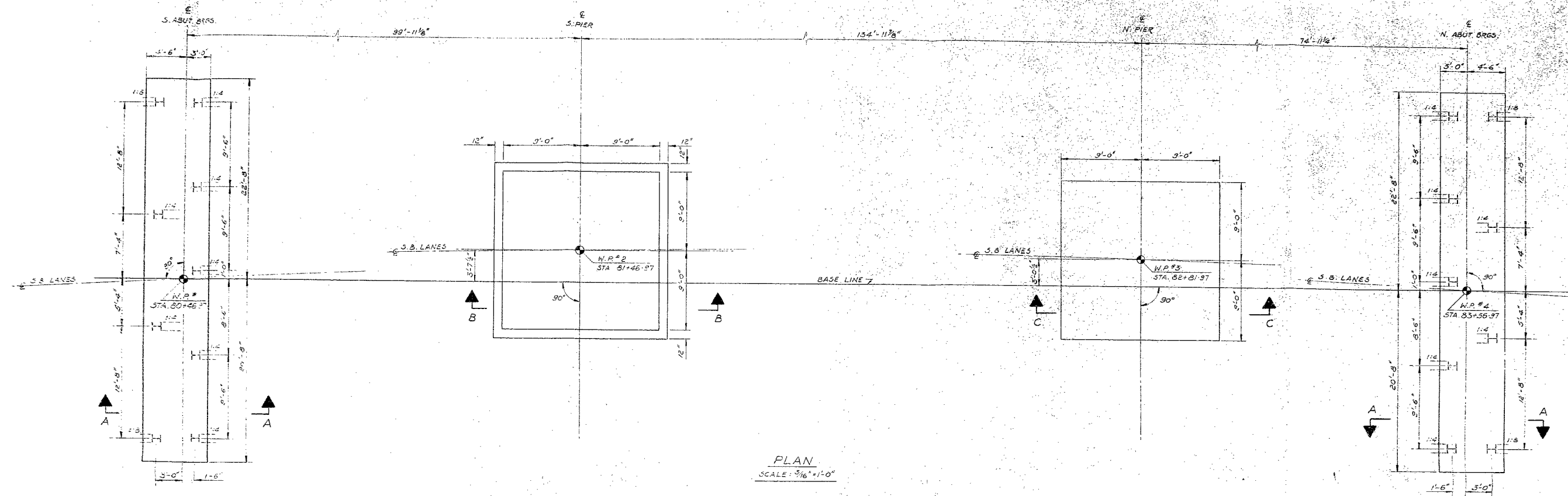
APPROVED _____ SITE No. 44-190 W.P. No. 270-59-3

DESIGN	B.K.	CHECK	V.F.B.	CONTRACT	No.
DRAWING	E.O.N.	CHECK	B.K.	DRAWING	No.
DATE	JULY 69	LOADING	145 20-44		

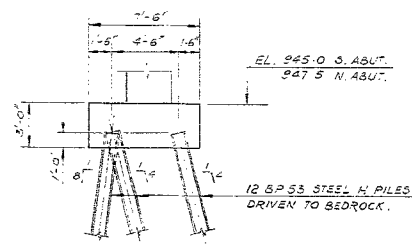
D-6509-3



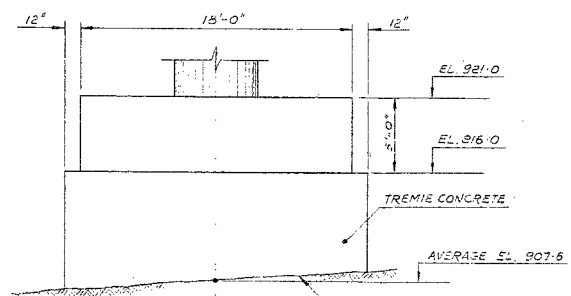
PRINT RECORD	No.	FOR	DATE



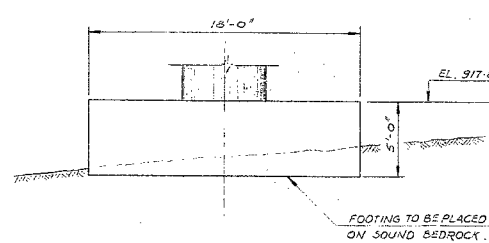
PLAN
SCALE: 3/16"=1'-0"



SECTION 4-A
SCALE: 3/16"=1'-0"



SECTION B-B
SCALE: 3/16"=1'-0"



SECTION C-C
SCALE: 3/16"=1'-0"

LIST OF 12 BP 53 STEEL H-PILES			
LOCATION	No. PILES	SUPPLIED LENGTH	CUT OFF ELEVATION
S. ABUT.	9 ✓	38'-0" ✓	943.00 ✓
N. ABUT.	9 ✓	38'-0" ✓	943.50 ✓



REVISIONS	DATE	BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS ONTARIO
BRIDGE DIVISION

MAGNETAWAN RIVER BRIDGE

BURK'S FALLS BY-PASS

KING'S HIGHWAY No. 11

DIST. No. 11

DIST. OF PARRY SOUND

TWP. ARMOUR

LOT 3

CON. 5

FOOTING LAYOUT

APPROVED	ENGINEER	CONTRACT No.	DATE	LOADING	W.P. No.
DESIGN	C.F.F.	CHECK	V.F.B.		
DRAWING	P.A.	CHECK	C.F.F.		
DATE	JUNE 1959	LOADING	H-20-44		

D-6510-3

DEPARTMENT OF HIGHWAYS ONTARIO

MEMORANDUM

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Division,
Admin. Bldg.

FROM: Foundation Section,
Materials & Testing Div.,
Room 107, Lab. Bldg.

Attention: Mr. S. McComb

DATE: May 21, 1968

JUN 14 1968

OUR FILE REF.

IN REPLY TO

SUBJECT:

FOUNDATION INVESTIGATION REPORT
At the Proposed
Crossings of Highway #11 over the
Magnetawan River - W.P. 270-59-1-2
And Highway #520 - W.P. 270-59-3
District #11 (Huntsville)
-- W.J. 68-F-17 --

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

We believe that the factual data and recommendations contained therein, will prove adequate for your design requirements. Should additional information be required, please feel free to contact our Office.

AGS/MaeF
Attach.

cc: Messrs. B. R. Davis (2)
H. A. Tregaskes
D. W. Farren
H. McArthur
W. S. Aitken
J. B. Curtis
T. J. Kovich
B. A. Singh

Foundations Files
Gen. Files

A. G. Sternac
A. G. Sternac
PRINCIPAL FOUNDATION ENGINEER

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 8. MISCELLANEOUS.
-

FOUNDATION INVESTIGATION REPORT
At the Proposed
Crossings of Highway #11 over the
Magnetawan River - W.P. 270-59-1-2
And Highway #520 - W.P. 270-59-3
District #11 (Huntsville)
-- W.J. 68-F-17 --

1. INTRODUCTION:

The Foundation Section was requested by Mr. J. E. Curtis, Regional Bridge Location Engineer, Northern Region, to carry out soil investigations at the sites of the proposed crossings of Hwy. #11 over the Magnetawan River and over Hwy. #520. The memo containing the request, was dated February 28, 1968.

It is understood that only two lanes of the proposed four-lane bypass are intended to be built for the time being; nevertheless, investigations for both the northbound and southbound structures were suggested in view of economics.

A field and laboratory investigation was therefore undertaken by this Section, in order to determine the existing soil conditions. This report comprises the results of these studies, together with recommendations as to the foundations of the proposed structures and the stability of the approach embankments.

2. DESCRIPTION OF THE SITE:

The proposed crossings are situated at approx. one mile west of the existing Hwy. #11 bridge over the Magnetawan River, in the town of Burks Falls. The immediate vicinity north of the river at the proposed crossing is flat, formed by the river valley. Right north of Hwy. #520 (Ryerson Creek) the terrain rises with slopes of 2 horizontal to 1 vertical and steeper. Bedrock outcrops, consisting of metamorphic rocks, are visible some 1/2 mile east of the proposed crossing. Adjacent to the south banks of the river, the area is quite hilly.

2. DESCRIPTION OF THE SITE: (cont'd.) ...

The site is partially built up with family houses; south of the river it is also occupied by farms. Right at the crossing site, between the river and Hwy. #520, the foundations of some earlier industrial buildings (tannery) were found, together with partially filled excavations or former underground facilities.

Geologically, the area belongs to the physiographic region known as the "Canadian Shield".

3. FIELD AND LABORATORY INVESTIGATION:

Some ten sampled boreholes and, in addition, twelve dynamic cone penetration tests, were implemented during the course of the field work. The borings were carried out by means of two diamond core drills, adapted for soil sampling purposes. The boreholes and penetration tests were placed at the proposed footing locations. Penetration tests #7A to #7E were all located at or near the proposed river bridge abutment of the southbound lane, in order to find the depth and extent of the underground portion of the former tannery building. Samples within the overburden were recovered by means of 2-inch O.D. split-spoon samplers and occasionally, by 2-inch I.D. Shelby tubes. Standard and dynamic cone penetration tests were carried out by using a driving energy of 350 ft.-lbs.

The locations and elevations of the boreholes and cone penetrations are marked on Drawings #68-F-17A and B.

Soil samples were visually examined and identified upon recovery, and again in the laboratory. All the samples were subjected to simple tests of moisture contents, toughness, dilatancy, acidity, etc. Some representative samples were further tested in order to define plasticity properties and grain-size distributions.

Test results are compiled on the borelogs, appended to this report.

cont'd. /3 ...

4. SUBSOIL CONDITIONS:

4.1) General:

The overburden was found to consist of a cohesive clayey silt to silt layer, followed by a non-plastic silty sand, changing gradually to gravelly sand and sandy gravel.

Bedrock was proved in several boreholes.

A brief description of the soils is given below:

4.2) Clayey Silt to Silt:

The 6-ft. to 15-ft. thick surficial stratum was identified to be clayey silt, occasionally sandy silt, with numerous brown oxidized pockets. The layer has slight plasticity, the plastic limit moisture contents ranging from 19 to 22%, and those of the liquid limits from 25 to 38%. The natural moisture contents of the samples were found to lie between the plastic and liquid limits, and in a few cases, above the liquid limits.

The consistency of this material varies between very soft and hard, corresponding to standard penetration 'N' values of 1 blow/ft. and 71 blows/ft. The upper portion of the layer is organic topsoil.

4.3) Silty Sand to Sandy Silt becoming Sandy Gravel:

This material was found to underlie the clayey silt, extending to the upper surface of the bedrock, around el. 906 - 911 ft. The layer is of a granular nature, being somewhat finer at the upper portion, gradually becoming much coarser at the deeper elevation, with some 30 - 40% gravel-size particles. The relative density of the deposit varies between very loose to very dense (Standard penetration 'N' values of 2 to much above 100 blows/ft.). The quick reaction of the silty sand to 'boiling' conditions was observed in a few boreholes, pushing the sand up within the casings under the hydrostatic pressure surrounding the casings.

cont'd. /4 ...

4. SUBSOIL CONDITIONS: (cont'd.) ...

4.4) Bedrock:

Bedrock was proved by diamond drilling to depths of 5 - 10 ft. in several borsholes. The upper surface of the bedrock was observed to be between el. 906 ft. and 911 ft., except around the north abutment and north pier locations of the northbound lane of the proposed Magnetawan River structure, where the bedrock was found somewhat higher at el. 920 ft. and 913 ft., respectively. The bedrock was identified to be a metamorphic gneiss with occasional layers of schist.

5. WATER CONDITIONS:

A relatively high groundwater level was observed in the boreholes, lying within the upper 6 ft. of the overburden. Some seepage towards the Magnetawan River is apparent from the hydrostatic gradient of about 15 ft. head over a distance of approx. 500 ft. The equilibrium water levels, established in the borings during the time of the field work, are marked on the borelogs and on the soil profiles.

The ice surface of the river was at el. 925.1 ft. at the beginning of the field investigations. The ice gradually broke during the field work and some slight rise of the river was noticed.

There is an existing well on the proposed right-of-way. The depth of the well is 90 ft. and the prevailing water level in the well is around 6 ft. below ground surface.

6. DISCUSSION AND RECOMMENDATIONS:

As was mentioned earlier, the proposal calls for the construction of two structures along the proposed Hwy. #11 Burks Falls bypass over the Magnetawan River (W.P. 270-59-1-2) and over Hwy. #520 (W.P. 270-59-3). Both bridges are designed to be three-span twin structures. Recommendations are given as follows, for the footings of both twin structures; however, only 2 lanes are intended to be built for the time being.

6. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

It is felt that the great variations in the consistencies and relative densities within the overburden rule out the economical design of spread footings in shallow depths.

It is suggested, therefore, that the footings be supported on steel H-piles driven to bedrock. On account of the shallow overburden, relatively short sections of H-piles will be necessary.

The approximate elevations of the bedrock surface at the locations of both twin structures are tabulated below.

Structure	Approx. Elevation of Bedrock Surface (Ft.)
Magnetawan River (Northbound)	906 - 909
" " (Southbound)	907 - 920
Highway #520 (Northbound)	909 - 911
" " (Southbound)	906 - 911

The approximate bedrock elevations are also marked on the soil profiles on Drawings #68-F-17A and B.

The full structural strength of the H-sections used may be assumed on the piles driven to sound rock for design purposes. It is to be noted that the schist within a metamorphic rock usually consists of sheet-like structure, that lacks strength parallel to the sheets. Since the surface of the bedrock near the river appears to be dipping, it should be ensured that the piles, especially near the river, are well supported on sound rock.

cont'd. /6 ...

6. DISCUSSION AND RECOMMENDATIONS: (cont'd.) ...

Pile caps should be placed at a minimum depth of six ft. below ground level for frost protection. The depth of pile caps within the river bed should be governed by the depth of maximum scour. The Hydrology Section is to be consulted concerning scour. In contemplating spill-through type abutments, the pile caps may be formed within the embankments. Care should be taken not to place bouldery fill at the locations of the abutment footings. The end slopes of the embankments adjacent to the river should be protected with rip-rap up to the highest water level.

The north abutment of the proposed Magnetawan River structure appears to be located at the area where the former tannery building stood. Since this area is not properly filled, and is believed to have underground hollows, it should be re-excavated and refilled with well compacted acceptable material.

No stability problems are foreseen for the approach embankments, provided they are built with slopes of 2 horizontal to 1 vertical. Some settlements due to the presence of soft clayey silt subsoil may, however, occur within a relatively short time. It will be advisable to stage the construction of the fill - especially between the two structures, 6 - 12 months earlier than the structures themselves, so that the larger part of settlements will be completed prior to the opening of the bypass.

7. SUMMARY:

The foundation investigations at the locations of the Magnetawan River and Hwy. #520 bridges, along the proposed Hwy. #11 Burks Falls bypass, are reported.

During the field investigation it was found that the 20 - 30 ft. thick overburden consisted of layers of clayey silt to silt and sandy silt, becoming sandy gravel at the deeper elevations. Metamorphic gneiss bedrock with seams of schist underlay the overburden between el. 906 ft. and 920 ft.

cont'd. 77 ...

7. SUMMARY: (cont'd.) ...

The strength characteristics of the overburden make it unfavourable to support the structures on spread footings at shallow depths, consequently piled foundations are recommended.

Steel H-piles, driven to sound bedrock, will support loads equal to the structural strength of the particular H-sections used. The approximate elevations of the bedrock surface at the locations of each proposed structure are tabulated under Section 6.

No stability problems are foreseen for the approach fills; nevertheless, staging of the construction of the embankments appears to be warranted in order to accommodate time for settlements.

8. MISCELLANEOUS:

The field work carried out during the period March 11 - 26, 1968, was supervised by Mr. A. K. Barsvary, Senior Foundation Engineer, who also wrote this report.

Equipment used was owned and operated by Canadian Longyear Co. Ltd. of North Bay.

Mr. K. G. Selby, Supervising Foundation Engineer, reviewed the report.

May, 1968.

APPENDIX I

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 1

FOUNDATION SECTION

JOB 68-F-17 LOCATION Sta. 86 + 69 55' Lt. of Ø ORIGINATED BY AKB
W.P. 270-59-3 BORING DATE March 12 - 15, 1968 COMPILED BY AKB
DATUM Geodetic BOREHOLE TYPE Washboring, NX, BX & AX Casing CHECKED BY AKB

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT				LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		20	40	60	80	100	WP	WL		
945.6	Ground Level														
0.0	Clayey silt Oxidized Stiff to hard.		1	SS	13	940									▼ 940.0
			2	SS	71										
			3	SS	35										
			4	SS	19	930									
930.6	Silty sand with gravel becoming sandy gravel Compact to very dense.		5	SS	54										15 56 24 5
15.0			6	SS	100 1"	920									
			7		100 1"										
911.6															47 45 (8)
34.0	Bedrock (Gneiss)		8	RC	80 1" Rec.	910									
906.4															
39.2	End of Borehole														

End of cone test
@ El. 914.0'

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING : VISION

JOB 68-8-17

LOCATION

Sta. 87 + 48 64' Rt. of R

ORIGINATED BY AMC

W P 27-59-3

BORING DATE

March 13-14, 1968

COMPILED BY _____ AKE

DATUM Geodetic

BOREHOLE TYPE

Washboring, NY, BY & AX Casing

CHECKED BY _____

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT — W _L		BULK DENSITY P C F	REMARKS	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	SHEAR STRENGTH P S F	PLASTIC LIMIT — W _P	WATER CONTENT — W			
							20 40 60 80 100		W _P — W _L				
917.3	Ground Level												
0.0	Clayey silt to silt. Seams of sand. Firm to hard. Grey		1	SS	5	940						Gr. Sa. Si. C	
			2	SS	7								
			3	SS	62								
933.3													
14.0	Silty sand with some gravel.		4	SS	17	930						0 2 66 32	
927.3	Compact.												
20.0	End of Borehole					920						0 64 33 3	

MATERIALS & TESTING DIVISION

FOUNDATION SECTION

ORIGINATED BY AKB

COMPILED BY AKB

CHECKED BY

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT ——— W _L PLASTIC LIMIT ——— W _P WATER CONTENT ——— W		BULK DENSITY PCF	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	BLOWS / FOOT		20 40 60 80 100	SHEAR STRENGTH P S F	W _P ——— W _L	WATER CONTENT %		
945.7	Ground Level											
0.0												
						940						
						930						
920.0						920						
25.7	End of Cone Test							100/7"				

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 5

FOUNDATION SECTION

JOE

LOCATION _____ Sta. 85 + 20 55' Lt. of E

ORIGINATED BY 40

W D 270-59-3

BORING DATE March 19-20, 1968

COMPILED BY ARC

DATUM Geodetic

BOREHOLE TYPE Washboring, NX Casing

CHECKED BY _____

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT		LIQUID LIMIT _____ % PLASTIC LIMIT _____ % WATER CONTENT _____ %		BULK DENSITY PCF	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	BLOWS / FOOT		SHEAR STRENGTH P S F		WATER CONTENT %			
938.6	Ground Level											
937.0	Mixed fill of clayey silt.		1	SS	3	930						
932.1	Soft		2	TW	PM							
6.5	Sandy silt to silty sand becoming gravelly sand. Loose to very dense.	3	SS	9								
		4	SS	6								
		5	SS	47								
		6	SS	100-15"								
906.6	Boulder		7	SS	100-1"	910						Gr. Sa. Si. Cl. 19 18 57 6
32.0	End of Borehole Presale Bedrock		8	RC	0%							

RECORD OF BOREHOLE NO. 6

MATERIALS & TESTING DIVISION

DATUM Geodetic




BOREHOLE TYPE Washboring NX Casing

FOUNDATION SECTION

ORIGINATED BY AKB

COMPILED BY _____AKE

CHECKED BY _____

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE			LIQUID LIMIT — W _L PLASTIC LIMIT — W _P WATER CONTENT — W			BULK DENSITY PCF	REMARKS		
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV. SCALE	SHEAR STRENGTH P S F			WATER CONTENT % 10 20 30					
934.6	Ground Level													Gr. Sa. 51.01	
930.6	Clayey silt to silt. Very stiff to hard.		1	SS	20	930								0 3 72 25 931.0	
			2	SS	62										
920.1	Silty sand becoming sandy gravel. Loose to very dense.		3	SS	27	920								40 38 21 1	
			4	SS	8										
			5	SS	41										
			6	SS	101										
900.1	End of Borehole Probable Bedrock		7	SS	115 1/2"	910									

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

JOB 68-F-17

LOCATION

Sta. 83 + 07 40' Lt. of \varnothing

ORIGINATED BY

FOUNDATION SECTION

W P 270-59-1-2

BORING DATE

March 18-19, 1968

COMPILED BY

DATUM Geodetic

BOREHOLE TYPE

Washburning, NX Casing

CHECKED BY

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 7A,B,C,D, & E

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB <u>68-F-17</u>	LOCATION <u>Magnetawan River & Hwy. 11 Rev.</u>	ORIGINATED BY <u>AKB</u>
W.P. <u>270-59-1-2</u>	BORING DATE <u>March 19, 1968</u>	COMPILED BY <u>AKB</u>
DATUM <u>Geodetic</u>	BOREHOLE TYPE <u>Dynamic Cone Penetrations</u>	CHECKED BY <u>SR</u>

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 8

FOUNDATION SECTION

JOB 68-5-17

LOCATION

Sta. 83 + 78 40' Rt. of Z

ORIGINATED BY AKB

W P 270-59-1-2

Boring Date

March 18-19, 1968

COMPILED BY AKC

DATUM Geodetic

BOREHOLE TYPE

Washboring, NX Casino

CHECKED BY

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 9

FOUNDATION SECTION

JOB 68-E-17

LOCATION Sta. 82 + 18 40 ft. Lt. of \varnothing

ORIGINATED BY AKB

W. P. 270-59-1-2

BORING DATE March 21, 1968

COMPILED BY AKB

DATUM Geodetic

BOREHOLE TYPE _____

CHECKED BY

[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 10

FOUNDATION SECTION

JOB 68-F-17

LOCATION Sta. 82 + 94 38' Rt. of Ø

ORIGINATED BY AKB

W. P. 270-59-1-2

BORING DATE March 18, 1968

COMPILED BY AKB

DATUM Geodetic

BOREHOLE TYPE Cone Penetration

CHECKED BY *AKB*

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE				LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W			BULK DENSITY PCF	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	20	40	60	80	100	Wp		
925.0	Ice Level														
0.0	River Water														
921.0															
4.0															
909.0															
16.0	End of Cone Test														

920

910

refusal

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 11

FOUNDATION SECTION

JOB 68-F-17 LOCATION Sta. 81 + 24 52: Lt. of E ORIGINATED BY AKB
W.P. 270-59-1-2 BORING DATE March 26, 1968 COMPILED BY AKB
DATUM Geodetic BOREHOLE TYPE Dynamic Cone Penetration CHECKED BY AKB

SOIL PROFILE			SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT 20 40 60 80 100 SHEAR STRENGTH P.S.F.	LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W WP — W — WL WATER CONTENT %	BULK DENSITY PCF	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT					
925.5	Water Level									
0.0	River									
921.0										
4.5										
908.0										
17.5	End of Cone test						refusal			

CHECKED BY

FOUNDATION SECTION

[illegible]

FOUNDATION SECTION

CHECKED BY

[illegible]

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

Q _u	UNCONFINED COMPRESSION	L.V.	LABORATORY VANE
Q	UNDRAINED TRIAXIAL	F.V.	FIELD VANE
Q _{cd}	CONSOLIDATED UNDRAINED TRIAXIAL	C	CONSOLIDATION
Q _d	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	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_c	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

MEMORANDUM

To: Mr. A. G. Stermac
Principal Foundations Engr.
Materials & Testing
Downsview

FROM: Bridge Planning Section
Northern Region

DATE: February 28, 1968

OUR FILE REF.

IN REPLY TO

SUBJECT:

Burk's Falls By-pass (Highway 11)
at the Magnetewan River
W. P. 270-59-1-2; B. S. 44-188
and
Highway 520 Overpass
W. P. 270-59-3; B. S. 44-190

Enclosed herewith find a preliminary bridge site plan marked up to indicate the probable footing locations for the above mentioned crossings together with a rough indication of the proposed grade. Will you kindly arrange to have the necessary foundation investigation carried out to enable us to proceed with the design of the required structures. A stability analysis should be made to ensure that there will be no problems with the approach fills.

The line has been established in the field, however, should you experience any difficulty in locating the stakes etc., I am sure you will be able to locate the footings relative to the existing buildings, docks, roads etc. until such time as the District can re-establish same to your satisfaction.

Food and accommodation will be available in the Town of Burk's Falls immediately to the east.

To date the property owners have not been contacted, however, should you experience any difficulty in obtaining permission to enter from the owners Mr. R. Keenan, Regional Property Supervisor of North Bay has volunteered to approach any of the land owners.

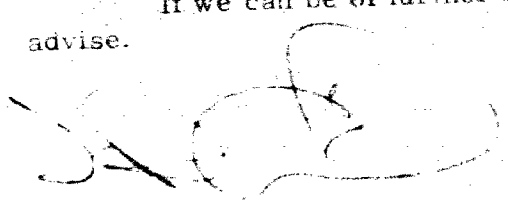
It is the current intention to construct on two lanes of the proposed four lane by-pass, however, it was felt that the additional cost

Cont'd...

incurred in investigating both the north bound and south bound structures would be warranted in view of the future mobilization costs etc.

There is an existing well on the proposed right of way. The Functional Planning Section endeavoured to find out the sub-soil conditions encountered in the construction of this well, however, this information was not made available to them. The well, I believe, belongs to the Town of Burk's Falls.

If we can be of further assistance in this matter kindly advise.



J. B. Curtis
Regional Bridge Location Engineer

cc: Mr. A. Crowley

MEMORANDUM

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

FROM: C.S. Grebski,
Bridge Office

ATTENTION:

DATE: July 15, 1969

OUR FILE REF.

IN REPLY TO

SUBJECT: Burk's Falls By-Pass
Sec. Hwy. 520 Overpass
W.P. 270-59-3, Site 44-190
Highway 11, District No. 11

68-F-17

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:rd


C.S. Grebski,
Bridge Design Engineer

Attach.

c.c. Foundation Section

[Faint handwritten notes and stamps at the bottom of the page, including a circular stamp with the number 1682.]

HEAD OFFICE REVIEW REPORT

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

DATE: August 16, 1974

W.P.: 270-59-01, 2 & 3 CONTRACT: 75

HIGHWAY: 11 & 520

TYPE OF WORK: Grading, Drainage, Granular Base, Paving and Structure

LOCATION: Burk's Falls Diversion

31 E - 35

GEOCRE No.

DISTRICT: 11

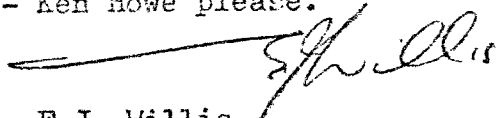
ADVERTISING DATE: 1975

ATTENDANCE:

E.J. Orr	P. Peacock	W. Bennett	B. Giroux
J.R. Wear	L.R. Eadie	J. Jenkins	A. Prakash
E.J. Willis	R.A. Verscheure	D. Pinel	H. Becker
H. McArthur	G. Wrong	J. Davidson	C. Farrell

POINTS OF DISCUSSION:

1. Earth Borrow to be reviewed - Mr. Peacock with District (may delete).
2. Regional forces are to be requested to arrange for extra bore-hole data - Mr. Wrong said that more borings are taken now than previously.
3. Mr. Eadie requested that a Regional review be made of disposition of roads to Burk's Falls.
4. Structural Office to check cover^{cover} reinforcing steel in deck slabs. (Post review so advised that cover adequate.)
5. Structural Steel to be pre-ordered - Ken Howe please.


E.J. Willis,
Project Review Supervisor
for:
J.R. Wear,
Project Review Engineer

EJW/jk
cc: G.F. Wetherall J. Crannie
S. McCombie E.J. Willis
W.J. Peck M. Stoyanoff
R.S. Chapman C. Grebski
J. Fuckle W.R. Bennett
W. Melinyshyn C. Mirza
G. Wrong P. Peacock
R.A. Verscheure K. Howe
B. Giroux



68-F-17

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-3
CONTRACTOR P. J. CONSTRUCTION DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE REINHOLD PIER WEIGHT HEIGHT OF FALL OR ENERGY 9.9
TYPE OF ANVIL OR CAP BEARING ANVIL WEIGHT OF ANVIL OR CAP 1,100 lbs
PILE DETAILS H.P. 12x53 20' LONG BATTER: VERTICAL
PILE NO. 2 LOCATION NORTH END BRIDGE OVER R.R. CROSS DATE DRIVEN AUG. 8/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
50	1			26	12		51			76	
	2			27	11		52			77	
	3			28	11		53			78	
	4			29	11		54			79	
	5			30	11		55			80	
	6	1 Blow		31	16		56			81	
	7			32	20		57			82	
	8			33	18		58			83	
	9			34	15		59			84	
	10			35	15		60			85	
	11			36	15		61			86	
	12			37	15		62			87	
	13			38	19		63			88	
	14	7		39	21		64			89	
	15	9		40	26		65			90	
	16	14		41	50		66			91	
	17	16		42	91		67			92	
	18	16		43	76		68			93	
	19	16		44	101		69			94	
	20	16		45	115		70			95	
	21	16		46	120		71			96	
	22	16		47	140		72			97	
	23	16		48			73			98	
	24	16		49			74			99	
	25	16		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	18	18	20	22	22	25
MEASURED REBOUND IN INCHES	5	5	5	5	5	5
FINAL LENGTH OF PILE	47'-1"					
FINAL CUT OFF ELEVATION	957.12					

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED [Signature]
NAME (PRINT) PAUL TELL
DATE AUG. 8 FRI 1975
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-3
CONTRACTOR BERMINGHAM CONST DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE BERMINGHAM WEIGHT 300 HEIGHT OF FALL OR ENERGY
TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 6100 lbs
PILE DETAILS H.P. 12x53 32' LONG BATTER: 6:1
PILE NO. 12 LOCATION NORTH PIER FOOTING OVERPASS DATE DRIVEN AUG 11/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
32	1			26	25		51			76	
	2			7	47		52			77	
	3				56		53			78	
	4	20		29	99		54			79	
	5	10		30	109		55			80	
	6	11		31	189		56			81	
	7	11		32			57			82	
	8	10		33			58			83	
	9	10		34			59			84	
	10	9		35			60			85	
	11	8		36			61			86	
	12	8		37			62			87	
	13	7		38			63			88	
	14	7		39			64			89	
	15	6		40			65			90	
	16	8		41			66			91	
	17	13		42			67			92	
	18	15		43			68			93	
	19	17		44			69			94	
	20	17		45			70			95	
	21	13		46			71			96	
	22	14		47			72			97	
	23	12		48			73			98	
	24	13		49			74			99	
	25	18		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	20	20	20	20	20	25
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	31' 11"					FINAL CUT OFF ELEVATION 740.12

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED [Signature]
NAME (PRINT) CARL BELL
DATE AUG 11 1975
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-3
CONTRACTOR BERMINHAM CONST DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BERMINHAMMER ³⁰⁰ WEIGHT _____ HEIGHT OF FALL OR ENERGY 9.9"
TYPE OF ANVIL OR CAP BERMINHAM WEIGHT OF ANVIL OR CAP 1,100 lbs
PILE DETAILS H.P. 12x53 50' LONG BATTER: 6:1
PILE NO. 1 LOCATION NORTH ABUT. BURKS FALLS OVERPASS DATE DRIVEN AUG 11/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
50	1	1		26	13		51			76	
	2			27	13		52			77	
	3			28	13		53			78	
	4			29	11		54			79	
	5	1 BLOW		30	12		55			80	
	6			31	13		56			81	
	7			32	14		57			82	
	8			33	14		58			83	
	9			34	15		59			84	
	10	7		35	15		60			85	
	11	7		36	14		61			86	
	12	8		37	16		62			87	
	13	9		38	18		63			88	
	14	8		39	37		64			89	
	15	8		40	69		65			90	
	16	8		41	165		66			91	
	17	8		42	294		67			92	
	18	8		43			68			93	
	19	8		44			69			94	
	20	7		45			70			95	
	21	7		46			71			96	
	22	7		47			72			97	
	23	7		48			73			98	
	24	11		49			74			99	
	25	14		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	25	27	28	30	30	31
MEASURED REBOUND IN INCHES	NONE	NONE	NONE	NONE	NONE	NONE
FINAL LENGTH OF PILE	43'10"			FINAL CUT OFF ELEVATION 957.12		

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED [Signature]
NAME (PRINT) John Dill
DATE AUG 11/75
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-3
CONTRACTOR BERMINGHAM CONST DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BERMINGHAMMER WEIGHT _____ HEIGHT OF FALL OR ENERGY _____
TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 15100 lbs
PILE DETAILS H.P. x 12 x 53 32' LONG BATTER: 1:6
PILE NO. 2 LOCATION SOUTH RIVER FOOTING BURNS FALLS OVERPASS DATE DRIVEN AUG. 12/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
32	1	1		26	17		51			76	
	2			27	15		52			77	
	3			28	15		53			78	
	4			29	27		54			79	
	5			30	70		55			80	
	6			31	104		56			81	
	7	20		32			57			82	
	8	8		33			58			83	
	9	7		34			59			84	
	10	6		35			60			85	
	11	5		36			61			86	
	12	5		37			62			87	
	13	4		38			63			88	
	14	4		39			64			89	
	15	4		40			65			90	
	16	4		41			66			91	
	17	3		42			67			92	
	18	3		43			68			93	
	19	3		44			69			94	
	20	17		45			70			95	
	21	11		46			71			96	
	22	11		47			72			97	
	23	12		48			73			98	
	24	14		49			74			99	
	25	23		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	18	18	20	20	23	25
MEASURED REBOUND IN INCHES	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
FINAL LENGTH OF PILE	31.9"			FINAL CUT OFF ELEVATION 940.11		

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED

NAME (PRINT) CARL TSELL

DATE AUG. 12 1975

ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-3
CONTRACTOR BERMINGHAM CONST DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BERMINGHAMER³⁰⁰ WEIGHT _____ HEIGHT OF FALL OR ENERGY 9'9"
TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 12100 lbs
PILE DETAILS 11.8 12x53 32' LONG BATTER: 6:1
PILE NO. 12 LOCATION SOUTH PIER BURKS FRI OVERPASS DATE DRIVEN AUG 175

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
26	1		26	14		51			76		
	2		27	14		52			77		
	3		28	18		53			78		
	4		29	29		54			79		
	5		30	39		55			80		
	6		31	91		56			81		
	7		32	125		57			82		
	8		33			58			83		
	9	9	34			59			84		
	10	20	35			60			85		
	11	7	36			61			86		
	12	9	37			62			87		
	13	20	38			63			88		
	14	20	39			64			89		
	15	5	40			65			90		
	16	3	41			66			91		
	17	4	42			67			92		
	18	10	43			68			93		
	19	10	44			69			94		
	20	11	45			70			95		
	21	12	46			71			96		
	22	15	47			72			97		
	23	10	48			73			98		
	24	13	49			74			99		
	25	12	50			75			100		

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	15	15	10	18	20	20
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	33'7"			FINAL CUT OFF ELEVATION 940.11		

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED

NAME (PRINT) CARL BELL

DATE AUG. 12 1975

ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTE:
A SPlice
WAS REQUIRED

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-3
CONTRACTOR BIRMINGHAM CONST DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE PLEMINGHAMMER 300 WEIGHT _____ HEIGHT OF FALL OR ENERGY _____
TYPE OF ANVIL OR CAP BIRMINGHAM WEIGHT OF ANVIL OR CAP 1,100 lbs
PILE DETAILS HP 12x53 32' LONG BATTER: 6:1
PILE NO. 7 LOCATION ADRIAN PIKE BRIDGE OVERPASS DATE DRIVEN AUG. 12 / 75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
32	1	1		26	80		51			76	
	2			27	79		52			77	
	3			28	110		53			78	
	4	14		29	153		54			79	
	5	7		30			55			80	
	6	8		31			56			81	
	7	8		32			57			82	
	8	7		33			58			83	
	9	6		34			59			84	
	10	6		35			60			85	
	11	6		36			61			86	
	12	6		37			62			87	
	13	6		38			63			88	
	14	6		39			64			89	
	15	6		40			65			90	
	16	5		41			66			91	
	17	6		42			67			92	
	18	7		43			68			93	
	19	7		44			69			94	
	20	8		45			70			95	
	21	8		46			71			96	
	22			47			72			97	
	23	9		48			73			98	
	24	19		49			74			99	
	25	31		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	18	20	20	20	25	27
MEASURED REBOUND IN INCHES	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
FINAL LENGTH OF PILE	29'4"			FINAL CUT OFF ELEVATION 940.12		

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED C. J. Bell
NAME (PRINT) CARL BELL
DATE Aug 12 1975
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-2
CONTRACTOR BERMINGHAM CONST. DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE BERMINGHAMMER-300 WEIGHT _____ HEIGHT OF FALL OR ENERGY _____
TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 1,100 lbs
PILE DETAILS HP 12x53 38' LONG BATTER: 4:1
PILE NO. 7 LOCATION SOUTH ABUT. MAGNETEWAU RIVER BR. DATE DRIVEN AUG 13/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
28	1		26	10		51			76		
	2		27	8		52			77		
	3		28	9		53			78		
	4		29	8		54			79		
	5	16	30	8		55			80		
	6	7	31	9		56			81		
	7	5	32	9		57			82		
	8	6	33	8		58			83		
	9	6	34	6		59			84		
	10	5	35	8		60			85		
	11	3	36	8		61			86		
	12	4	37	20		62			87		
	13	3	38	100		63			88		
	14	4	39			64			89		
	15	4	40			65			90		
	16	4	41			66			91		
	17	5	42			67			92		
	18	7	43			68			93		
	19	7	44			69			94		
	20	6	45			70			95		
	21	6	46			71			96		
	22	9	47			72			97		
	23	7	48			73			98		
	24	9	49			74			99		
	25	11	50			75			100		

NOTE
A SPLICE
WAS REQUIRED

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	15	15	15	20	20	25
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	39' 1"					FINAL CUT OFF ELEVATION 943.0

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED Carl Bell
NAME (PRINT) CARL BELL
DATE AUG 13/75
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 270-59-2
CONTRACTOR BERMINGHAM CONST DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE BERMINGHAMMER WEIGHT _____ HEIGHT OF FALL OR ENERGY _____
TYPE OF ANVIL OR CAP BERMINGHAM-300 WEIGHT OF ANVIL OR CAP 1,100 lbs
PILE DETAILS HP 12x53 38' LONG BATTER: 8:1
PILE NO. 6 LOCATION SOUTH ABUT MAGNETEWAN RIVER BR DATE DRIVEN AUG 14/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
38	1	1		26	13		51			76	
	2			27	10		52			77	
	3			28	12		53			78	
	4			29	12		54			79	
	5			30	14		55			80	
	6			31	16		56			81	
	7			32	14		57			82	
	8	24		33	14		58			83	
	9	5		34	14		59			84	
	10	5		35	13		60			85	
	11	5		36	14		61			86	
	12	5		37	18		62			87	
	13	5		38	33		63			88	
	14	5		39	103		64			89	
	15	4		40	154		65			90	
	16	4		41			66			91	
	17	5		42			67			92	
	18	6		43			68			93	
	19	7		44			69			94	
	20	8		45			70			95	
	21	8		46			71			96	
	22	7		47			72			97	
	23	8		48			73			98	
	24	10		49			74			99	
	25	11		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	15	18	20	20	25	30
MEASURED REBOUND IN INCHES	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
FINAL LENGTH OF PILE	41'2"					FINAL CUT OFF ELEVATION 943.0

REPORT TO BE SENT TO: -

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED Carl Bell
NAME (PRINT) CARL BELL
DATE AUG 14/75
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTE:
A SPLICE
WAS REQUIRED

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 190
CONTRACTOR BERMINGHAM STEEL DESIGN LOAD OF PILE 5 TONS
HAMMER DETAILS: TYPE DIESEL WEIGHT 4,800 HEIGHT OF FALL OR ENERGY 9.9'
TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 6,100
PILE DETAILS HP 12 x 53 46' BATTER: 1:4
PILE NO. 5 LOCATION SOUTH ABUT. RIVERS FALLS OVERPASS DATE DRIVEN SEPT. 15 1975

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
46	1	2		26	23		51			76	
	2			27	24		52			77	
	3			28	23		53			78	
	4			29	23		54			79	
	5	5		30	18		55			80	
	6	6		31	23		56			81	
	7	6		32	21		57			82	
	8	9		33	23		58			83	
	9	13		34	23		59			84	
	10	15		35	24		60			85	
	11	14		36	25		61			86	
	12	10		37	27		62			87	
	13	14		38	30		63			88	
	14	13		39	28		64			89	
	15	15		40	28		65			90	
	16	15		41	27		66			91	
	17	15		42	28		67			92	
	18	15		43	25		68			93	
	19	18		44	65		69			94	
	20	23		45	90		70			95	
	21	27		46			71			96	
	22	26		47			72			97	
	23	26		48			73			98	
	24	27		49			74			99	
	25	25		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	2	8	10	12	12	15
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	46.0			FINAL CUT OFF ELEVATION 953.61		

REPORT TO BE SENT TO: -

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED Carl Bell
NAME (PRINT) CARL BELL
DATE SEPT. 15 1975
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 44-190
CONTRACTOR BERMINGHAM STEEL DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE DIESEL BERMINGHAMMER B225 WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 9.9'
TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 6,100
PILE DETAILS H.P. 12 x 53 46' BATTER: 1:4
PILE NO. 5 LOCATION SOUTH ABUT. BURKS FALLS OVERPASS DATE DRIVEN SEPT. 15/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
46	1	2		26	23		51			76	
	2			27	24		52			77	
	3			28	23		53			78	
	4	✓		29	23		54			79	
	5	5		30	18		55			80	
	6	6		31	23		56			81	
	7	6		32	21		57			82	
	8	9		33	23		58			83	
	9	13		34	23		59			84	
	10	15		35	24		60			85	
	11	14		36	25		61			86	
	12	10		37	27		62			87	
	13	14		38	30		63			88	
	14	13		39	28		64			89	
	15	15		40	28		65			90	
	16	15		41	27		66			91	
	17	15		42	28		67			92	
	18	15		43	25		68			93	
	19	18		44	65		69			94	
	20	23		45	90		70			95	
	21	27		46			71			96	
	22	26		47			72			97	
	23	26		48			73			98	
	24	27		49			74			99	
	25	25		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	8	8	10	12	12	15
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	46.0			FINAL CUT OFF ELEVATION 953.61		

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED Carl Bell
NAME (PRINT) CARL BELL
DATE SEPT. 15 1975
ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

In general this form should be completed for every tenth pile in a group, but at least one is required for every pier and abutment.

Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 44-188
CONTRACTOR BIRMINGHAM STEEL DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE DIESEL WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 9'9"
TYPE OF ANVIL OR CAP BIRMINGHAM WEIGHT OF ANVIL OR CAP 16,000
PILE DETAILS H.P. 12x50 23 BATTER: 1:4
PILE NO. 4 LOCATION NORTH ABUT. MAGNETEWAN RIVER BR. DATE DRIVEN SEPT. 16/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
28	1	1		26			51			76	
	2			27			52			77	
	3			28			53			78	
	4	3		29			54			79	
	5	2		30			55			80	
	6	3		31			56			81	
	7	4		32			57			82	
	8	4		33			58			83	
	9	3		34			59			84	
	10	5		35			60			85	
	11	2		36			61			86	
	12	2		37			62			87	
	13	1		38			63			88	
	14	1		39			64			89	
	15	1		40			65			90	
	16	3		41			66			91	
	17	6		42			67			92	
	18	7		43			68			93	
	19	7		44			69			94	
	20	11		45			70			95	
	21	19		46			71			96	
	22	20		47			72			97	
	23	36		48			73			98	
	24	57		49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	9	10	14	14	18	18
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	25' 10"					FINAL CUT OFF ELEVATION 945.50

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO

SIGNED

NAME (PRINT)

DATE

ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

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Piles driven vertically should be selected where possible.

Pile Details must include type, dimensions and weight per foot, details of shoe, and slope of batter: e.g. 12 3/4" O.D. steel tube x 0.251" @ 33 lbs. per foot vertical. 12 3/4" x 1/2" steel plate shoe.

Details for the final six inches of penetration must be completed for all piles except in the case of an end bearing pile driven to bedrock. Final length of pile, and final cut off elevation must always be given.

The total length being driven is the full length of the pile and remains unchanged until a length is cut off or spliced on.

The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 11 CONTRACT NO. 74-152 STRUCTURE W.P. NO. 44-188
 CONTRACTOR BERMINGHAM STEEL DESIGN LOAD OF PILE 70 TONS
 HAMMER DETAILS: TYPE DIESEL BERMINGHAMMER 5225 WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 9'9"
 TYPE OF ANVIL OR CAP BERMINGHAM WEIGHT OF ANVIL OR CAP 11,000
 PILE DETAILS H.P. 12x53 28 BATTER: 1:4
 PILE NO. 9 LOCATION NORTH ABUT. MAGNETEWAU RIVER BR. DATE DRIVEN SEPT. 16/75

TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
28	1	1		26			51			76	
	2			27			52			77	
	3			28			53			78	
	4	3		29			54			79	
	5	2		30			55			80	
	6	3		31			56			81	
	7	4		32			57			82	
	8	4		33			58			83	
	9	3		34			59			84	
	10	5		35			60			85	
	11	2		36			61			86	
	12	2		37			62			87	
	13	1		38			63			88	
	14	1		39			64			89	
	15	1		40			65			90	
	16	3		41			66			91	
	17	6		42			67			92	
	18	7		43			68			93	
	19	7		44			69			94	
	20	11		45			70			95	
	21	19		46			71			96	
	22	20		47			72			97	
	23	36		48			73			98	
	24	57		49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	8	10	14	14	18	18
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	25' 10"			FINAL CUT OFF ELEVATION 945.50		

REPORT TO BE SENT TO: -

GEOTECHNICAL OFFICE
 ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
 MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
 DOWNSVIEW, ONTARIO

SIGNED Carl Bell
 NAME (PRINT) CARL BELL
 DATE SEPT. 16 1975
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

NOTES:

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The penetration in blows per foot must be recorded for every foot of penetration of the pile.

Measured rebounds recorded on this form must be the average for each individual inch for the final six inches of penetration.