

FIELD RECONNAISSANCE REPORT
REQUIRED BY FOUNDATION SECTION
FOR

FD-60
SEPT. 1968

71-11087

W.P. NO. 7-67-02 HIGHWAY NO. 17N DISTRICT 9 PLAN NO. APP-17A PROFILE NO. APP-17S
RIVER CROSSING ☐ GRADE SEPERATION ☐ R.R. X. ☒ OTHER (SPECIFY) _____
ALTERNATE SCHEME (IF ANY) No

EXISTING SITE CONDITIONS

DESCRIPTION:

TOPOGRAPHY: HILLY ☐ ROLLING ☒ VALLEY ☐ GULLIED ☐ FLAT ☐
VEGETATION: TREES ☒ BRUSH ☒ GRASS ☐ SWAMP ☐ FARM CROPS ☒ CLEARED ☐
SNOW COVER: 0"-6" ☐ 6"-12" ☐ >12" ☐
ROCK OUTCROP (SPECIFY LOCATIONS) Approx. 500 ft. West

UNDERGROUND UTILITIES:

UTILITY COMPANY

TELEPHONE NO. FOR DEFINITE LOCATION

Aerial

- 1 Bell Canada markers for underground cable
- 2 C. N. R. telegraph wires north side of tracks
- 3 Bell cables on south side of tracks.
- 4 _____
- 5 _____

EXISTING STRUCTURE(S): N. A.

FOUNDATIONS: SPREAD FOUNDATIONS ☐ SIZE _____ ELEVATION(S) _____
PILES ☐ TYPE _____ LENGTH(S) _____
DESIGN LOAD _____ T.S.F. _____ TONS/PILE _____
CONDITION OF STRUCTURE _____

APPROACHES: CUT ☐ FILL ☐ SIDE SLOPES _____
BERMS YES ☐ NO ☐

OTHER OBSERVATIONS (USE BACK OF SHEET TO DESCRIBE ANY FAILURES IN AREA, PAST PERFORMANCE OF EXISTING APPROACHES & STRUCTURE, ETC.)

ACCESSIBILITY

IS STRUCTURE LOCATED ON D.H.O. RIGHT OF WAY? YES ☐ NO ☒ IF NO,
HAS PERMISSION BEEN OBTAINED TO ENTER PROPERTY? YES ☒ NO ☐ IF NO,
PROPERTY OWNER(S):

NAME

ADDRESS

TELEPHONE NO

- 1 _____
- 2 _____
- 3 _____
- 4 _____

WHO WILL OBTAIN NECESSARY PERMISSION? _____

HAS SITE BEEN SURVEYED & STAKED? YES ☒ NO ☐ IF YES, DATE OF MOST RECENT SURVEY _____

WILL CLEARING BE NECESSARY TO ENTER SITE AREA? YES ☐ NO ☒

IS SITE ACCESSIBLE TO WHEELED VEHICLES? YES ☒ NO ☐

IF RIVER CROSSING:

WILL A RAFT BE NECESSARY? YES ☐ NO ☐ IF YES, GIVE MAX. DEPTH OF WATER _____

CURRENT: SWIFT ☐ MODERATE ☐ SLOW ☐

DRILLING OPERATIONS

NEAREST SOURCE OF WATER (GIVE HAULING DISTANCE, IF KNOWN) Farm app. 800 ft. north of site

ADDITIONAL INVESTIGATION REQUIRED FOR THE FOLLOWING PURPOSES:

ALTERNATE SCHEME: YES ☐ NO ☒ IF YES, SPECIFY _____

HYDROLOGIC REASONS: YES ☐ NO ☐ IF YES, SPECIFY (SCOUR, ETC.) _____

REMARKS

NEAREST AVAILABLE ACCOMODATION: Motels at Renfrew

OTHER COMMENTS: _____

DATE August 3, 1971

REGIONAL BRIDGE PLANNING ENGINEER

A. VanDalen
A. VanDalen for T. C. Kingsland

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

MEMORANDUM

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

FROM: Bridge Section,
Kingston, Ontario.

ATTENTION: Mr. M. Devata

DATE: August 17, 1971.

OUR FILE REF.

IN REPLY TO

SUBJECT: ~~W.P. 7-67-02, C.N.R. Overhead, Site 29-193, 71-11-087~~
W.P. 7-67-04, C.P.R. Overhead, Site 29-195, 71-11-088
Highway 17N, Renfrew By-pass, District 9-Ottawa

Further to my memo of August 10, 1971, I now enclose two partial prints each of Plan 9FP174 and Profile 9FP175, C.N.R. Overhead, and of Plan 9FP176 and 9FP177, C.P.R. Overhead on which we have marked the proposed location of the above structures.

We have tied in the stations for piers and abutments with the line as run in the field and shown the corrected stations in blue. These stations may have to be adjusted slightly when site plans for these structures become available.

Also enclosed are two copies of your field reconnaissance reports.

We will be pleased if you will make arrangements for the necessary foundation investigation and to have your report, the scheduled date for which was September 8, 1971. A new date, however, is to be set by the Program Office.



A. Van Daken

For: T. C. Kingsland
Regional Bridge Planning Engineer

AV/TCK/hl

Encls.

C.C.

Mr. R. Forrest

Mr. S. McCombie

SEP 8/71

Department of Highways Ontario

Copy for the information of

Mr. A. G. Stermac - Att. Mr. M. Devata

AGS

71-11087 BTD

Bridge Section, Postal Bag 4000, Kingston, Ontario

October 5, 1971

Mr. S. Fainbloom,
Area Engineer's Section,
Canadian National Railways,
Belleville, Ontario.

Dear Sir:

SUBJECT: W.P. 7-67-02, Site 29-193,
Canadian National Railways Overhead,
M. 38-5 Renfrew Subdivision,
Highway 17N, District 9 - Ottawa

Further to our telephone conversation today, I confirm our request for permission to enter upon C.N. property at our proposed bridge crossing site at approximately M. 38.5 Renfrew Subdivision.

The persons entering upon the property are personnel from our Foundation Section and their contractors for the purpose of drilling bore holes and taking soil samples in the course of their foundation investigation.

It is understood that entry was made on October 4, 1971. It is agreed that the costs associated with our entry such as the provision of a flagman will be borne by this department.

It is regretted that due to an oversight prior permission to enter was not sought in this case. We will ensure that the established procedures are followed in future cases.

Yours very truly,

T. C. Kingsland
Regional Bridge Planning Engineer

TCK/hl

c.c. - H. A. Forsyth
A. G. Stermac - Att. M. Devata
C. S. Grebski

DEPARTMENT OF HIGHWAYS — ONTARIO
MATERIALS AND TESTING OFFICE
VISUAL CLASSIFICATION SHEET

PROJECT 71-11087 SITE Hwy 17N - C.N.R BOREHOLE No. 1 GROUND ELEVATION _____

SAMPLE NO.	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE										
				GRAVEL SAND SILT & CLAY										
1	0.0 1.6			100	Nil	Dull	Quick	None	Organic Earth	Brown		Very Loose	Sandy loam & fine brown sand	SL
2	1.6 3.0					Dull	None		Earthy	"		Stiff	Clayey silt with some sand	CL
3	3.0 4.6													
4	4.6 6.0													
5	6.0 7.6													
6	7.6 9.0													
7	9.0 11.2													
8	11.2 12.3													

NOTES:- VISUAL CLASSIFICATION MUST BE CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

DEPARTMENT OF HIGHWAYS — ONTARIO
MATERIALS AND TESTING OFFICE
VISUAL CLASSIFICATION SHEET

PROJECT 71-11087 SITE Hwy 17N - C.N.R. BOREHOLE No. 2 GROUND ELEVATION _____

SAMPLE NO	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE										
				GRAVEL SAND SILT & CLAY										
1	3:0'				med		med			gray				
	4:6'	20	-	-	5-8	2-3	slow	med	hard	brown	strong		clayey silty sand of ss	CL
W	6:6'													
	8:0'													
U	10:6'													CL
	12:0'													
Q	14:3'									gray				CL
	16:0'									gray				
U	18:0'													CL
	20:0'												clayey ss	

NOTES:- VISUAL CLASSIFICATION MUST BE CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

DEPARTMENT OF HIGHWAYS — ONTARIO
MATERIALS AND TESTING OFFICE
VISUAL CLASSIFICATION SHEET

PROJECT 71-1108.7 SITE Hay 17N - C.N.R. BOREHOLE No. 3 GROUND ELEVATION _____

SAMPLE No	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE										
				GRAVEL	SAND	SILT & CLAY								
1	3:0 4:6	1/2"	angular	5%	5%	90%				grey			clayey silty sand - 50 - 60%	CL
2	6:0 7:6	1/2"	angular	5%	5%	90%				grey			clayey silty sand - 50 - 60%	CL
3	18:0 20:3	1/2"	angular	5%	5%	90%				grey			clayey silty sand - 50 - 60%	CL
4	20:10 22:10	1/2"	angular	5%	5%	90%				grey			clayey silty sand - 50 - 60%	CL
5	23:0 23:1"		No	RECOVERY										

NOTES:- VISUAL CLASSIFICATION MUST BY CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:-

DEPARTMENT OF HIGHWAYS — ONTARIO
MATERIALS AND TESTING OFFICE
VISUAL CLASSIFICATION SHEET

PROJECT <u>71-11087</u>		SITE <u>Hwy 17N - C.N.R.</u>		BOREHOLE No. <u>4</u>		GROUND ELEVATION _____										
SAMPLE NO.	DEPTH	GRAIN SIZE DISTRIBUTION			DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL		
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE												
				GRAVEL											SAND	SILT & CLAY
1	3:0 4:6															
2	6:0 7:6															
3	8:0 10:6															
7	20:7 22:7															
8	22:7 23:2															

NOTES:— VISUAL CLASSIFICATION MUST BE CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:—

VISUAL CLASSIFICATION SHEET

PROJECT 71-11087 SITE Hwy 10N - C.N.R. BOREHOLE No. 6 GROUND ELEVATION _____

SAMPLE No.	DEPTH	GRAIN SIZE DISTRIBUTION					DRY STRENGTH	SHINE	DIALATANCY	TOUGHNESS	ODOR	COLOUR	ACID TEST	CONSISTENCY OR UNDRAINED SHEAR STRENGTH	CLASSIFICATION WITH DESCRIPTION	SYMBOL	
		LARGEST GRAIN SIZE	SHAPE	PERCENTAGE													
				GRAVEL	SAND	SILT & CLAY											
1	0'0 1'6																
2	3'0 4'6																
3	7'0 8'6																
4	11'0 12'6																
5	15'0 16'6																
																	</

NOTES:— VISUAL CLASSIFICATION MUST BE CARRIED OUT ON ALL SAMPLES BY THE ENGINEER AS SOON AS POSSIBLE AFTER THE SAMPLES REACH THE LABORATORY.

REMARKS:—

MEMORANDUM

TO: Mr. T. C. Kingsland, (2) FROM: Foundations Office,
Regional Bridge Planning Eng., Design Services Branch,
Eastern Region, Downsview, Ontario.
Kingston, Ontario.

ATTENTION:

DATE:

November 1, 1971.

OUR FILE REF.

IN REPLY TO

NOV 4 1971

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For

The Proposed Structure at the
Crossing of Hwy. 17 New E.B.L. and
Canadian National Railway
Twp. of Horton, Co. of Renfrew
District No. 9 (Ottawa)

W.O. 71-11087

W.P. 5-67-01 7-67-02

1. INTRODUCTION:

A request to carry out a foundation investigation at the above mentioned site was contained in a memo dated August 17, 1971, from the Eastern Regional Bridge Section (Mr. T. C. Kingsland, Regional Bridge Planning Engineer). The site is located about 4 miles west of the Town of Renfrew, at Lot 3, Concession 4, in the Township of Horton, County of Renfrew.

At the location of the site the C.N.R. track is raised on an embankment about 5' above the surrounding ground. The general area is gently undulating. Bedrock outcrops are visible about 500 ft. west of the site.

Due to the urgency of this project, we have been requested to submit our written recommendations as soon as the field and laboratory work have been completed. The final report will be submitted after the completion of drawings and borehole logs. A brief review of subsoil conditions, together with our recommendations for the structure foundations and approaches follows.

2. SUBSOIL:

Subsoil over the site consists of a 2 ft. thick surficial deposit of sand followed by 10 to 18 ft. of stiff to hard clayey silt to silty clay with sand seams up to 1/2" thick. This cohesive deposit is followed by 2 to 6 ft. of compact to very dense granular glacial till underlain by crystalline dolomite bedrock. The bedrock at the site was encountered between elevation 472 and elevation 459. The upper 2 to 5 ft. of the bedrock in certain locations is in a loose or fractured condition.

3. RECOMMENDATIONS:

It is proposed to construct a three span structure (35'-72'-35') to carry the E.B.L. of Hwy. 17 New over the C.N.R. track. The piers can be founded on spread footings within the upper cohesive stratum (at elevation 478) with an allowable bearing pressure of 2.5 t.s.f. The abutments can be perched within the approaches and supported on end bearing piles driven to bedrock. The maximum load for the particular pile section chosen can be assumed for design purposes.

As an alternative the entire structure can be supported on end bearing piles driven to bedrock.

Stability problems are not anticipated for the proposed approaches with standard 2:1 slopes. It is estimated that settlements of 3 to 4 inches can be expected under the 34 ft. high embankments, however, this aspect will be discussed in detail in our final Foundation Report.

The complete foundation report for this project will be forwarded to you as soon as possible. If you have any further queries, or if any of the foregoing requires clarification, please do not hesitate to call us.

WGH/co

cc: Messrs. P. R. Davis
A. Rutka
D. W. Farren
S. J. Markiewicz
J. E. Callaghan
E. R. Saint
J. Percy
G. A. Wrong

W. G. Hutton

W. G. Hutton,
Project Foundation Engineer.,
For: M. Devota,
Supervising Foundation Engineer

B. J. Giroux
B. A. Singh
Foundations Files
Documents

MEMORANDUM

TO: Mr. T. C. Kingsland, (2)
Regional Bridge Planning Engineer,
Eastern Region,
Kingston, Ontario.

FROM:

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

ATTENTION:

DATE:

December 2, 1971.

OUR FILE REF.

IN REPLY TO

DEC - 8 1971

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For

The Overhead Structure at the
Crossing of Hwy. #17 'New' (E.B.L.)
And Canadian National Railway
Twp. of Horton - Co. of Renfrew
District No. 9 (Ottawa)
W.O. 71-11087 - W.P. ~~5-67-01~~
7-67-02

Site 29-93

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 do not hesitate to contact our Office.

AGS/ao
Attach.

cc: Messrs. D. W. Farren
B. R. Davis
A. Rutka
S. J. Morkiewicz
J. E. Callaghan
B. J. Giroux
E. R. Saint
G. A. Wrong
B. A. Singh

Foundations Files
Documents

A. G. Stermac
A. G. Stermac,
PRINCIPAL FOUNDATION ENGINEER.

TABLE OF CONTENTS

1. INTRODUCTION.
 2. DESCRIPTION OF THE SITE AND GEOLOGY.
 3. FIELD AND LABORATORY WORK.
 4. SUBSOIL AND BEDROCK CONDITIONS.
 - 4.1) General.
 - 4.2) Clayey Silt to Silty Clay.
 - 4.3) Heterogeneous Mixture of Silt, Sand and Gravel, Trace of Clay (Glacial Till).
 - 4.4) Crystalline Dolomite Bedrock.
 5. GROUNDWATER CONDITIONS.
 6. DISCUSSION AND RECOMMENDATIONS.
 - 6.1) General.
 - 6.2) Approach Embankments.
 - 6.3) Structure Foundations.
 7. MISCELLANEOUS.
-

FOUNDATION INVESTIGATION REPORT
For
The Overhead Structure at the
Crossing of Hwy. #17 'New' (E.B.L.)
And Canadian National Railway
Twp. of Horton - Co. of Renfrew
District No. 9 (Ottawa)
W.O. 71-11087 - W.P. 5-67-01

1. INTRODUCTION:

The Foundation Section was requested to carry out a subsurface investigation at the site of the proposed overhead structure at the crossing of Hwy. #17 'N' and the C.N.R. at Lot 3, Concession 4, in the Township of Horton, County of Renfrew. The request was contained in a memo from Mr. T. C. Kingsland, Regional Bridge Planning Engineer, Eastern Region, dated August 17, 1971. An investigation was subsequently carried out by this Section to determine the subsoil, bedrock and groundwater conditions at this site.

This report contains the factual results obtained from the investigation, together with recommendations pertaining to the foundations of the proposed structure as well as the stability and settlement considerations associated with the approach fills.

2. DESCRIPTION OF THE SITE AND GEOLOGY:

The site is located about 4 miles west of the Town of Renfrew. At the structure location the C.N.R. track is raised on an embankment some 5 ft. high. Shallow ditches run along both sides of the track and a concrete oval culvert crosses under the track at the structure site. The terrain in this area is gently undulating in relief with a low poorly drained area north-east of the site. Bedrock outcrops are visible about 500 ft. west of the site. The surrounding land to the south is cultivated and being used for farming purposes. The land to the north is not being used.

This area is situated at the west edge of the physiographic region known as the 'Ottawa-Valley Clay Plains'. In this region clay deposits are interrupted by ridges of rock and sand. The sensitive marine clay, which was deposited in the geologic past in the Champlain Sea, varies in thickness over the region. West and south of the site the land rises gradually with outcrops of rock marking the edge of the Precambrian shield.

3. FIELD AND LABORATORY WORK:

Nine sampled boreholes, each accompanied by a dynamic cone penetration test, were put down at this site using conventional diamond drill rigs adapted for soil sampling purposes.

Samples of the cohesive stratum, as well as the glacial till deposit were obtained, at specified intervals, in a 2-inch O.D. split-spoon sampler, which was hammered into the soil in accordance with the specifications for the Standard Penetration Test. The same method was used to advance the dynamic cone penetration tests. In the softer portions of the cohesive stratum 2-inch I.D. Shelby tubes were manually pushed into the soil. In addition, field vanes were carried out, where possible, to determine the undrained shear strength of the clay stratum. Bedrock was proven in 8 of the boreholes by obtaining BX size rock core samples.

Groundwater level observations were carried out, during the period of the investigation, in the open boreholes.

The soil, bedrock and groundwater conditions, encountered at the boring locations, are presented on the Record of Borelog sheets appended to this report. The location and elevation of the various boreholes were provided by personnel from the Eastern Region Engineering Surveys Section. The elevations in this report are referenced to a Geodetic datum. The boring locations and elevations are shown on Drawing No. W.O. 71-11087A. One Stratigraphical section inferred from the boring data, is also presented on the aforementioned drawing.

All the samples were subjected to a careful visual examination in the field, and subsequently in the laboratory. Following this examination, laboratory testing was carried out on selected representative samples to determine the following engineering properties of the overburden:

- Bulk Density
- Natural Moisture Content
- Atterberg Limits
- Grain-Size Distribution
- Undrained Shear Strength
- Consolidation Characteristics

The results of this testing are plotted on the Record of Borelog sheets and summarized on Figures No. 1 to 4 inclusive, all contained in the Appendix of this report.

4. SUBSOIL AND BEDROCK CONDITIONS:

4.1) General:

Subsoil over the site consists of a 1 to 2 feet thick surficial deposit of sand followed by the predominant stratum consisting of a firm to hard grey clayey silt to silty clay. The thickness of this deposit varies from 9 to 19 feet. The cohesive subsoil is underlain by a compact to very dense non-cohesive glacial till stratum, whose thickness ranges from 2 to 6 feet. The glacial deposit, in turn, is underlain by crystalline dolomite bedrock.

The boundaries of the various deposits, as determined in the boreholes, are shown on the accompanying borehole sheets. The stratigraphical section, shown on Drawing No. W.O. 71-11087A, was inferred from this data.

From ground surface downward, the various soil types encountered, are as follows:

4.2) Clayey Silt to Silty Clay:

Directly beneath a 1 to 2 foot thick surficial deposit of fine brown sand, or beneath a thin layer of topsoil in the south ditch (B.H.'s #5 & 6), is the predominant stratum across the site,

which is composed of a clayey silt to silty clay of marine origin. The overall thickness of the cohesive soil varies from 9 to 19 feet. The upper 3 feet of the stratum is mottled grey and brown in colour which is an indication that this upper zone has been subjected to some desiccation. Beneath this slightly desiccated zone the clay is grey. Numerous partings and seams of silty sand up to $\frac{1}{2}$ inch thick are present throughout the deposit. Further, at B.H. #5 a 9-inch thick layer of silty sand was encountered near the base of the stratum. Grain-size distribution curves for samples of the cohesive subsoil are shown on Figure #2, located in Appendix 1 of the report.

The properties of the overall stratum, as determined by field and laboratory testing, are presented in tabular form below:

Identity Tests

		<u>Range</u>	<u>Average</u>
Bulk Density (p.c.f.)	(γ)	121 - 129	124
Liquid Limit (%)	(w_L)	27 - 43	33
Plastic Limit (%)	(w_P)	17 - 25	20
Natural Moisture Content (%)	(w)	22 - 33	27

Consolidation Characteristics

Initial Void Ratio	(e_0)	0.68 to 0.76
Compression Index	(C_c)	0.11 to 0.16
Degree of Preconsolidation ($P_c - P'_0$) (t.s.f.)		2.0 to 3.0

Undrained Shear Strength (Cu)
(p.s.f.)

1) Field Tests	960 - >2,000
2) Lab Tests	735 - >2,000

<u>Std. Penetration Resistance Testing</u>	<u>Range</u>	<u>Average</u>
(Blows/ft.)	6 - 39	—

The Atterberg limit tests are also plotted on the Plasticity Chart, Fig. #1. These results indicate that the cohesive subsoil is essentially inorganic with an intermediate plasticity.

The results of the undrained shear strength testing carried out and the standard penetration resistance tests obtained within the stratum indicate that the consistency of the deposit varies from firm to hard.

The consolidation characteristics of the stratum were determined by carrying out two laboratory tests, the results of which are shown as Void Ratio vs. Pressure Plots on Figure #4. The results of these tests indicate that the clay stratum is preconsolidated by about 2 to 3 t.s.f. in excess of existing overburden pressure.

4.3) Heterogeneous Mixture of Silt, Sand and Gravel, Trace of Clay (Glacial Till):

The clayey silt to silty clay stratum is underlain by a non-cohesive glacial till deposit composed of a heterogeneous mixture of silt, sand and gravel with a trace of clay. The overall thickness of this deposit ranges from 2 to 6 ft. In certain borings (B.H. #1, 3, 7 and 9) the glacial till deposit is composed of a silty sand with gravel. At Borehole #2 the lower 3 feet of the glacial till is bouldery in nature. The boulders in this zone were up to 8 inches in size. Grain-size distribution curves for samples of the overall glacial till, are plotted in envelope form on Figure #3.

The Standard Penetration Tests, carried out within the glacial till deposit, are plotted on the Record of Borelog sheets. This testing gave 'N' values which ranged from 8 to 100 blows/ft. Based on these values it is estimated that the relative density of the glacial till deposit ranges from loose to very dense.

4.4) Crystalline Dolomite Bedrock:

The glacial till stratum is directly underlain by bedrock which was proven in 8 of the boreholes, by obtaining 5 to 13 feet of BX and AXT size rock core samples. Over the site the bedrock surface was found to vary between elevations 458.5 and 472.5, which corresponds to depths below ground surface of from 23 to 12 feet, respectively.

The bedrock is composed of a crystalline dolomite. Generally the upper 1 to 7 feet of the bedrock is in a jointed and fractured condition. This fracturing is usually along vertical seams. Below this fractured zone the bedrock is in a sound condition.

5. GROUNDWATER CONDITIONS:

Groundwater level observations were carried out, during the period of the investigation, in the open boreholes. The observations are presented on the individual borelog sheets as well as on Drawing No. W.O. 71-11085A. The results indicate that the water level, across the site, varies between elevations 479 and 480. These water levels correspond to depths below ground surface of from 1 to 5 feet.

6. DISCUSSION AND RECOMMENDATIONS:

6.1) General:

It is proposed to construct a 34 ft. wide three-span (85'-72'-85') overhead structure at the crossing of the C.N.R. and Hwy. #17 'N' (E.B.L.). It is understood that the profile grade of the Hwy. #17 'N' (E.B.L.), in the vicinity of the crossing, will be between elevation 513 and 518. The profile grade of the C.P.R. track is about elevation 488. The associated approach fills will have a maximum height of the order of 34 feet above existing ground surface.

The subsoil across the site is composed of a thin mantle of fine sand followed by a hard to firm grey sensitive clayey silt

to silty clay, which varies from 9 to 19 feet in thickness. The cohesive stratum is underlain by a 2 to 6 feet thick non-cohesive glacial till deposit, which, in turn, is underlain by crystalline dolomite bedrock.

6.2) Approach Embankments:

The critical condition for stability of an embankment generally occurs during or immediately after construction. This being the case, a total stress analysis ($\phi = 0$) provides a suitable means of assessing the stability of the embankment sections. In this method of analysis, stability is governed by the applied loads and by the stress-strain and undrained shear strength properties of the foundation and embankment soils.

Analyses have been carried out, therefore, in terms of total stresses, both manually and by the use of the electronic computer, to determine the stability of the fill sections.

The following assumptions were made:

SOIL PROPERTIES

<u>Elevation</u>	<u>Soil</u>	<u>Parameters</u>		
		<u>Bulk Density (p.s.f.)</u>	<u>Undrained Shear Strength (Cu - p.s.f.)</u>	<u>Effective Angle of Internal Friction (ϕ - °)</u>
518-484	Embankment Fill (2:1 slopes)	140	-	30
484-482	Surficial Sand	120	-	30
482-475	Silty Clay	120	2,200	-
475-470	Silty Clay	120	1,200	-
470-465	Silty Clay	120	950	-
465	Glacial Till	130	-	35

NOTE: Approximate Ground Water Level - Elevation 480.

The results of the computations indicate that earth fills, with a maximum height of 34 feet, would be stable providing standard 2:1 slopes are employed.

The underlying clayey silt to silty clay stratum will settle due to the surcharge loading of the approach fills, over a

long-term period. In addition, some settlement will take place in the underlying granular glacial till deposit which will be negligible in magnitude. The estimated consolidation settlements in the cohesive stratum due to embankment loading, will be in the order of 3 to 4 inches. The total predicted consolidation settlement will take place in a relatively short period of time - e.g. approximately 50 percent within 12 months. It is beneficial to delay the final paving operations of the roadway for as long a period as possible.

6.3) Structure Foundations:

The two piers can be founded on spread footings located within the upper desiccated portion of the cohesive stratum - i.e. at or above elevation 478. For footings founded as recommended an allowable bearing pressure of 2.5 t.s.f. can be used in design. The abutments can be 'perched' within the approaches and supported on end bearing piles driven into the bedrock. If this scheme is adopted, some differential settlements can be expected between the abutments and piers; the magnitude of this settlement could be of the order of 1 inch.

If a higher allowable bearing value is required at the pier locations, the entire structure can be supported on end bearing piles driven to their design load on or into the bedrock. Allowable loads will depend on the pile section chosen (e.g. 14BP74 steel H piles may be designed for 95 tons per pile).

In certain locations, where the upper portion of the bedrock is in a jointed or fractured condition, the piles may penetrate into the bedrock.

For estimating purposes the probable pile tip elevations are given below:

<u>Location</u>	<u>Estimated Pile Tip Elev. (Possible Range)</u>
North Abutment (B.H. #1 & 2)	469 (west side) to 461 (east side)
North Pier (B.H. #3 & 4)	459
South Pier (B.H. #5 & 6)	458 to 461
South Abutment (B.H. #7 & 8)	461 to 464

No bouldery or rock fill should be placed in areas where piles are to be driven.

At least 4 feet of earth cover should be provided to the underside of the pile caps or spread footings for frost protection purposes.

The base of the pier pile cap or spread footing excavations will be below the groundwater level recorded during the period of the investigation. However, no major dewatering problems are anticipated due to the relatively impervious nature of the subsoil. Any groundwater seepage or surface runoff occurring in the excavation could be handled using standard techniques such as pumping from sumps.

7. MISCELLANEOUS:

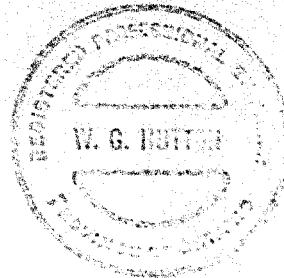
The field work for this project was carried out during the period of September 27 to October 7, 1971, under the supervision of Mr. W. G. Hutton, Project Foundation Engineer, who also prepared the report.

The project was carried out under the general supervision of Mr. M. Devata, Supervising Foundation Engineer, who also reviewed the report.

The equipment used was owned and operated by the
F. E. Johnston Drilling Co. Ltd., Ottawa, and Canadian Longyear
Ltd., Toronto.

W. G. Hutton

W. G. Hutton, P. Eng.



M. Devata

M. Devata, P. Eng.

WGH/ao

November 30, 1971.

APPENDIX I

DEPARTMENT OF HIGHWAYS- ONTARIO

MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 1

FOUNDATION SECTION

JOA 7-1107

LOCATION Sta. 600 + 13 17' E.

ORIGINATED BY NTH

W.P. 7-17-54

BORING DATE Sept. 29 & 30, 1971

COMPILED BY SO

DATA: 10/02/10

BOREHOLE TYPE Washoring & Cone Penetration

CHECKED BY

[illegible]

FOUNDATION SECTION

ORIGINATED BY WFE

COMPILED BY SC

CHECKED BY

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE		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.	WATER CONTENT %				
194.0	Ground Level					400 800 1200 1600 2000	15 20 25				
192.0	Fine Sand. Brown										
2.0	Clayey silt to silty clay		1	SS	4						
	occ. thin silty sand seams up to 1/2" thick throughout.		2	SS	5						
	Stiff to Very Stiff		3	SS	10						
195.0	Gray		4	SS	15						
195.0	Glacial Till Silty sand base of gravel.		5	SS	17						
195.0	Glacial Till Silty sand base of gravel.		6	SS	20						
195.0	Unconsolidated		7	SS	25						
195.0	Unconsolidated		8	SS	25						
195.0	Unconsolidated		9	SS	25						
195.0	Unconsolidated		10	SS	25						
195.0	Unconsolidated		11	SS	25						
195.0	Unconsolidated		12	SS	25						
195.0	Unconsolidated		13	SS	25						
195.0	Unconsolidated		14	SS	25						
195.0	Unconsolidated		15	SS	25						
195.0	Unconsolidated		16	SS	25						
195.0	Unconsolidated		17	SS	25						
195.0	Unconsolidated		18	SS	25						
195.0	Unconsolidated		19	SS	25						
195.0	Unconsolidated		20	SS	25						
195.0	Unconsolidated		21	SS	25						
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195.0	Unconsolidated		31	SS	25						
195.0	Unconsolidated		32	SS	25						
195.0	Unconsolidated		33	SS	25						
195.0	Unconsolidated		34	SS	25						
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195.0	Unconsolidated		173	SS	25						
195.0	Unconsolidated		174	SS	25						
195.0	Unconsolidated		175	SS	25						
195.0	Unconsolidated		176	SS	25						
195.0	Unconsolidated		177	SS	25						
195.0	Unconsolidated		178	SS	25						
195.0	Unconsolidated		179								

FOUNDATION SECTION

ORIGINATED BY IAH

COMPILED BY SO

CHECKED BY

DEPARTMENT OF HIGHWAYS- ONTARIO
MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 4

FOUNDATION SECTION

JOB 71-11087 LOCATION Sta. 601 + 82 17' Lt.

W.P. 7-67-02 BORING DATE Oct. 6, 1971

DATUM Geodetic BOREHOLE TYPE Washboring & Cone

ORIGINATED BY WH

COMPILED BY SO

CHECKED BY *[Signature]*

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT — w_L PLASTIC LIMIT — w_p WATER CONTENT — w			BULK DENSITY P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	20	40	60	80	100	75	30		
183.4	Ground Level															
183.4	Light Sand, Brown															
182.4	Clayey silt to silty clay		1	SS	6	180										
			2	SS	24											
	occ. thin silty sand streaks up to 1/2" thick throughout.		3	SS	8											
			4	SV	10	170										
			5	SV	10											
	Very to Very Stiff		6	SV	10											
	Grey		7	SV	10											
	Bedrock - Crystalline Dolomite, Sound		8	RC	34	160										
	White		9	RC	37											
	End of Borehole					150										

x s10 + s10
 a
 Hammer Bouncing

473.8
 122.9
 123
 1 32 21

DEPARTMENT OF HIGHWAYS- ONTARIO
MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 5

FOUNDATION SECTION

JOB 71-11087

LOCATION Sta. 602 + 00 17' Rt.

ORIGINATED BY WH

W.P. 7-67-02

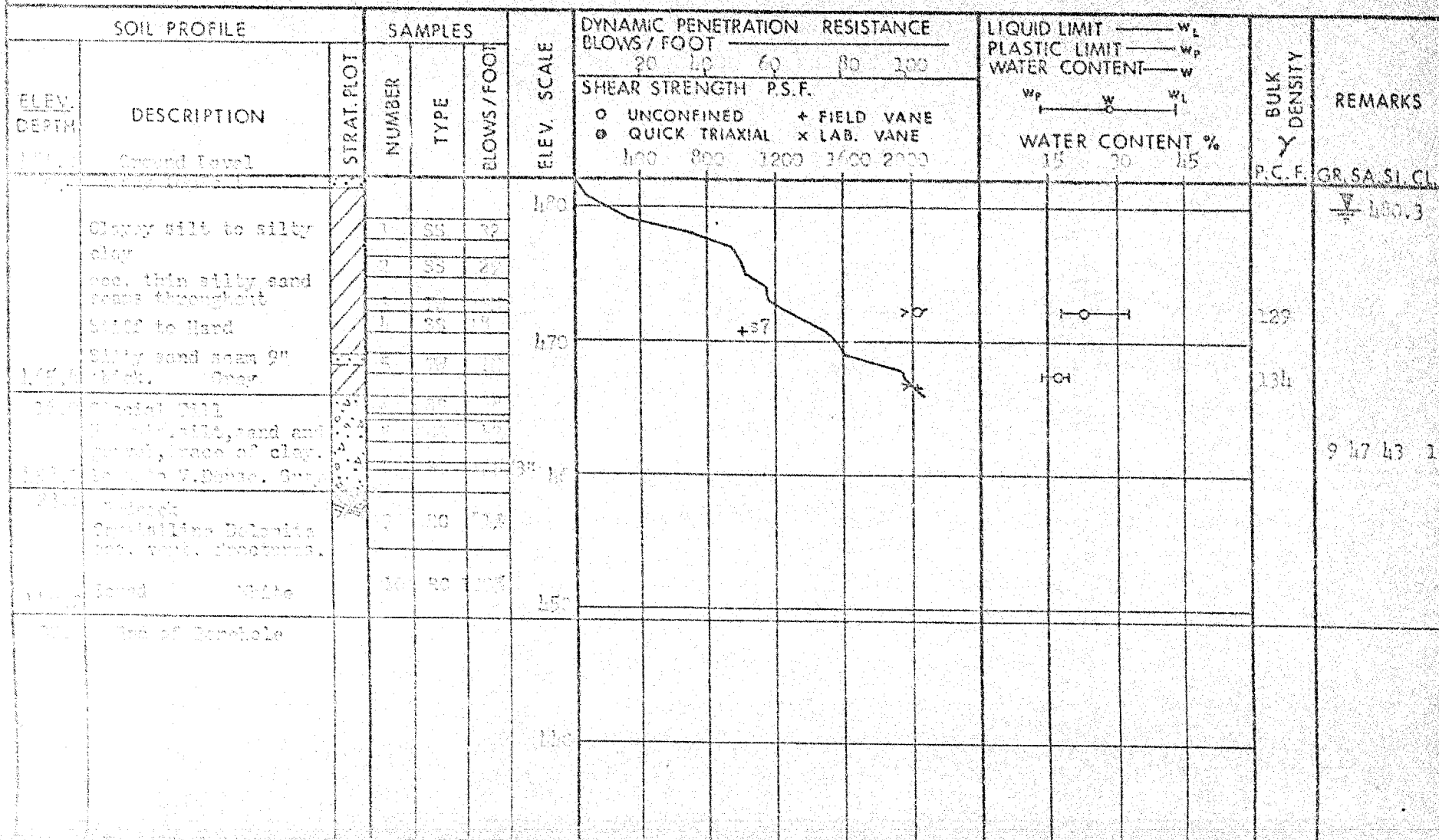
BORING DATE Oct. 1 & 2, 1971

COMPILED BY SO

DATUM Geodetic

BOREHOLE TYPE Washboring & Cone

CHECKED BY



FOUNDATION SECTION

ORIGINATED BY W3

COMPILED BY

CHECKED BY

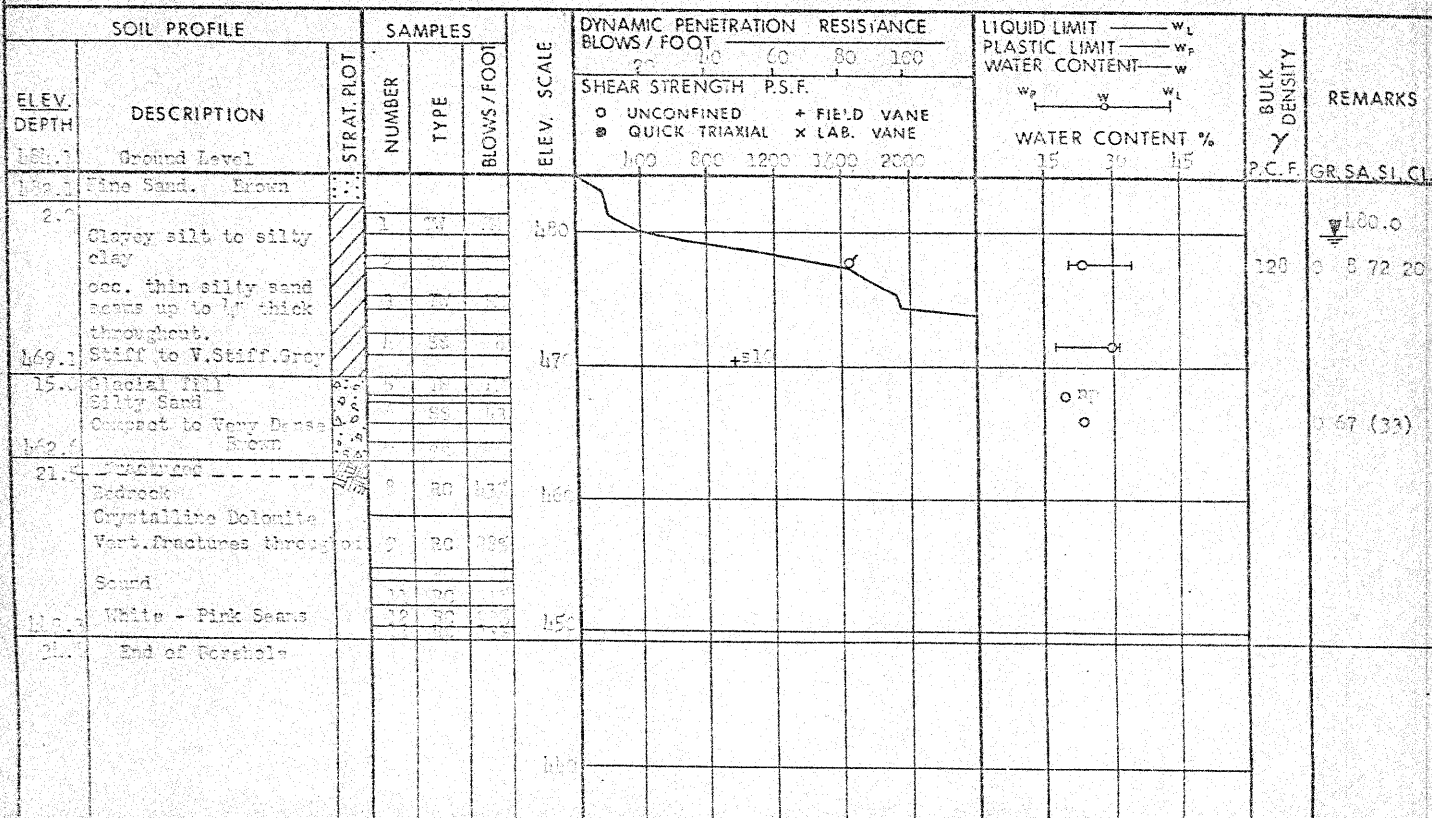
SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LIQUID LIMIT ———— w_L PLASTIC LIMIT ———— w_p WATER CONTENT ———— w	BULK DENSITY γ P.C.F.	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT		SHEAR STRENGTH P.S.F.	WATER CONTENT %		
							○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB. VANE 400 800 1200 1600 2000	w_p ———— w ———— w_L 15 30 45		
179.1	Ground Level					480				
179.0	Clayey silt to silty clay.		1	SS	3					
			2	SS	3					
			3	SS	36					
	Stiff to Hard		4	SS	23					
			5	GW	10					
178.2	Gray					470			122	
178.1	Dark Gray Silty Clay								124	0 2 67
178.0	Bedrock					460				
177.9	Crystalline Dolomite									
177.8	Fault Zone above bedrock									
177.7	Gravelly Sand, Pink Siltstone									
177.6	End of Borehole					450				

DEPARTMENT OF HIGHWAYS- ONTARIO
MATERIALS & TESTING OFFICE

RECORD OF BOREHOLE No. 7

FOUNDATION SECTION

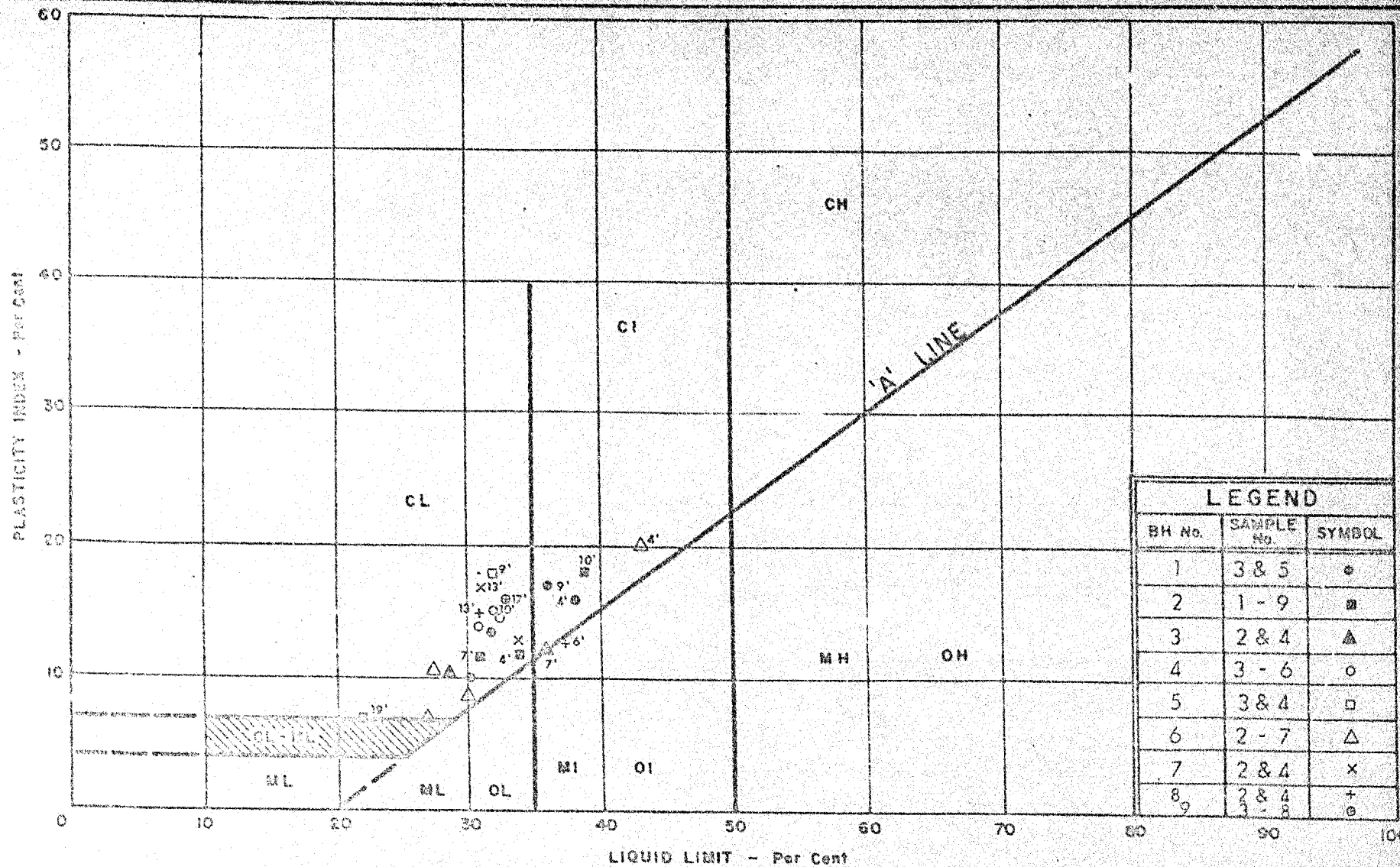
JOB 71-11087 LOCATION Sta. 602 + 25 17' Rt. ORIGINATED BY WH
W.P. 7-67-02 BORING DATE Sept. 28, 29 & 30, 1971 COMPILED BY SO
DATUM Geodetic BOREHOLE TYPE Washboring & Cone CHECKED BY SO



FOUNDATION SECTION

CHECKED BY

[illegible]



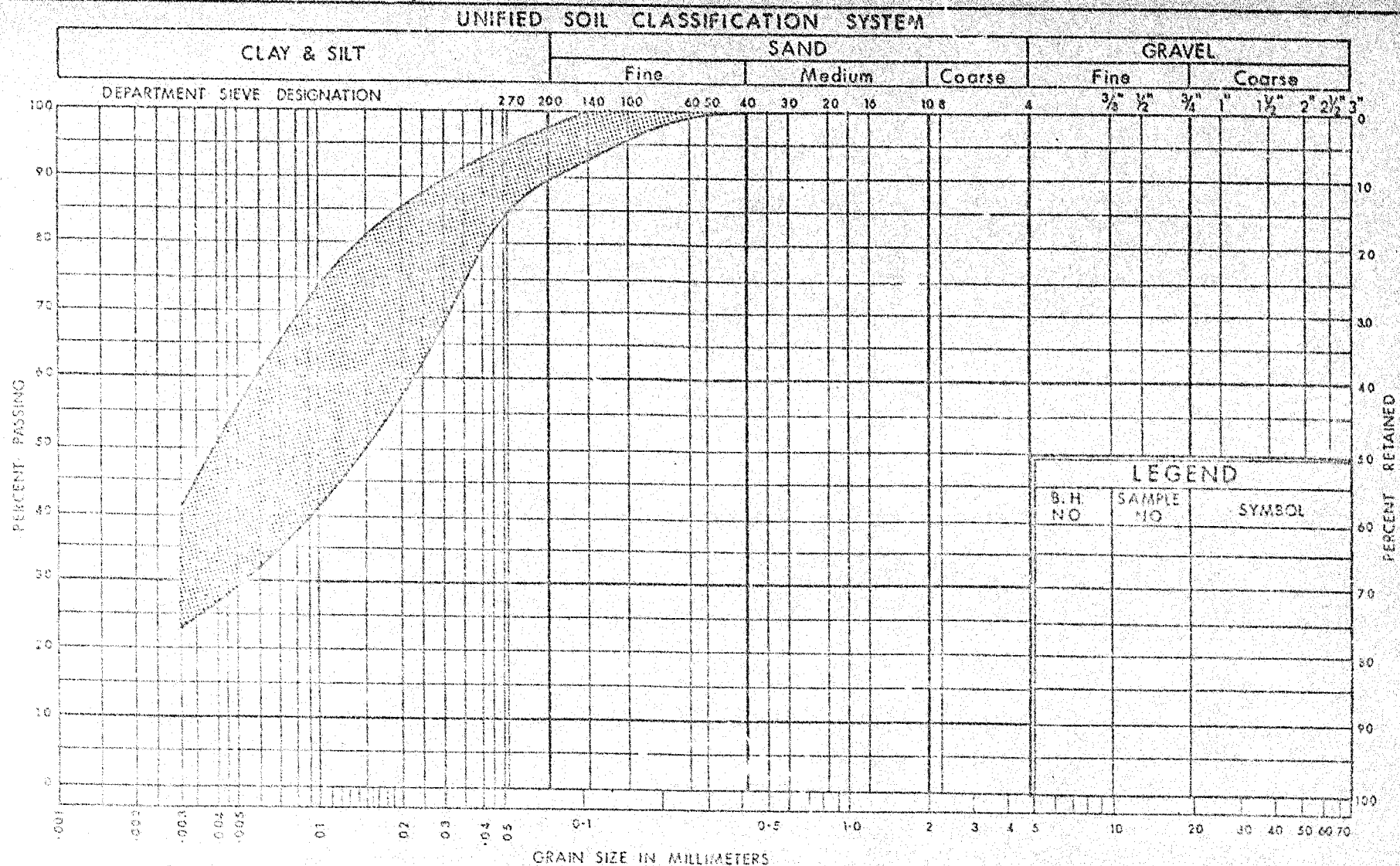
DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

PLASTICITY CHART CLAYEY SILT TO SILTY CLAY

W.P. No. 7 - 67 - 02

JOS No. 71 - 11087

FIG 1



DEPARTMENT
OF
TRANSPORTATION AND COMMUNICATIONS
DESIGN SERVICES
BRANCH

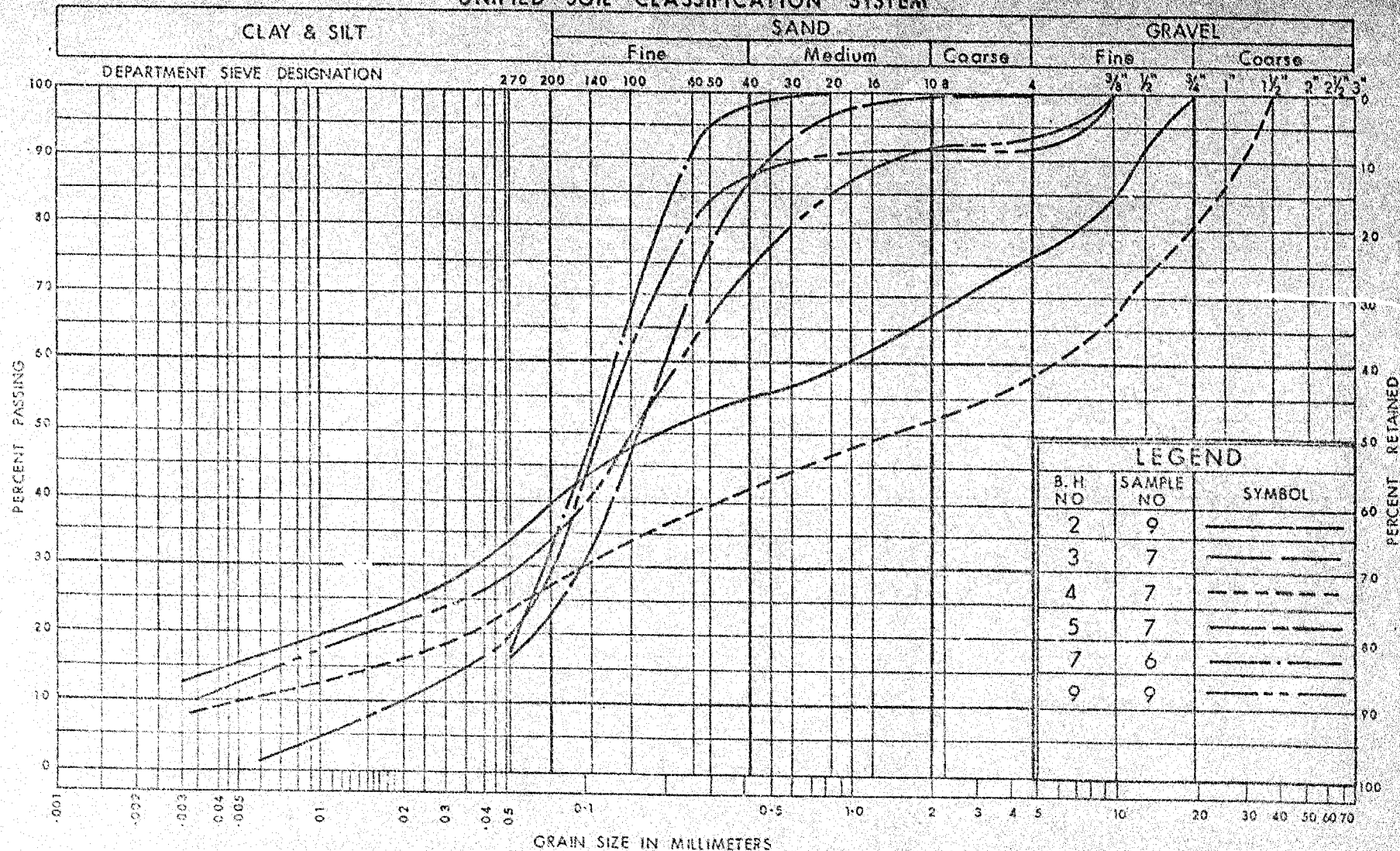
GRAIN SIZE DISTRIBUTION
CLAYEY SILT TO SILTY CLAY
WITH THIN SILTY SAND SEAMS

W.P. No. 7-67-02

JOB No. 71-11078

FIG. 2

UNIFIED SOIL CLASSIFICATION SYSTEM



DEPARTMENT
OF
TRANSPORTATION AND COMMUNICATIONS



DESIGN SERVICES
BRANCH

GRAIN SIZE DISTRIBUTION
GLACIAL TILL
MIXTURE OF SILT, SAND & GRAVEL

W.P. No. 7-67-02

JOB No. 71-11087

FIG. 3

VOID RATIO - PRESSURE CURVES

JOB NO. 71-11078

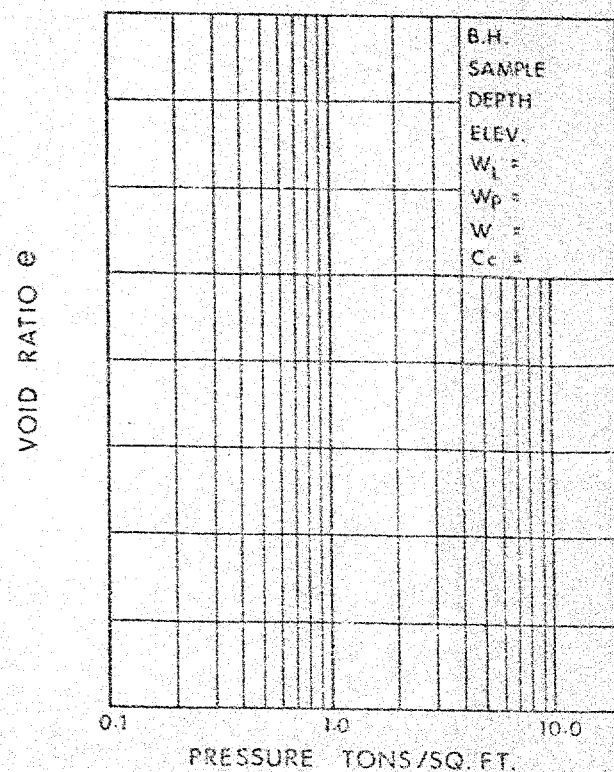
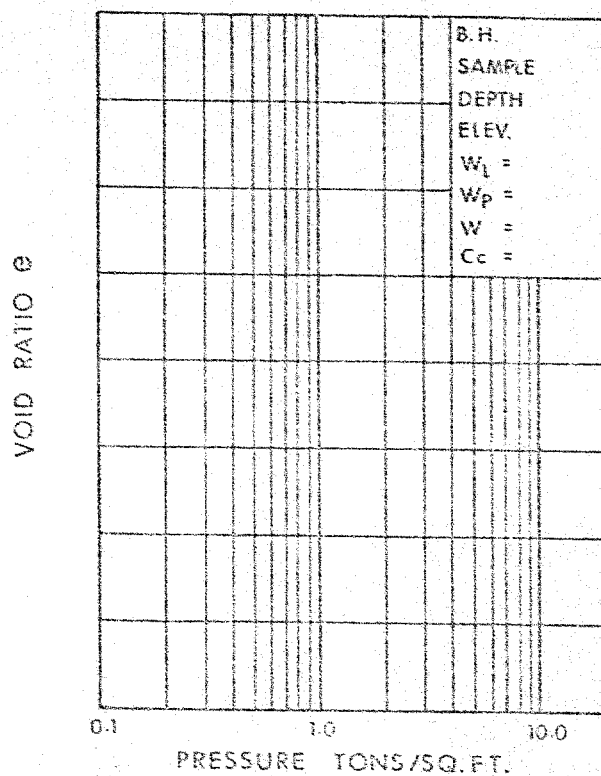
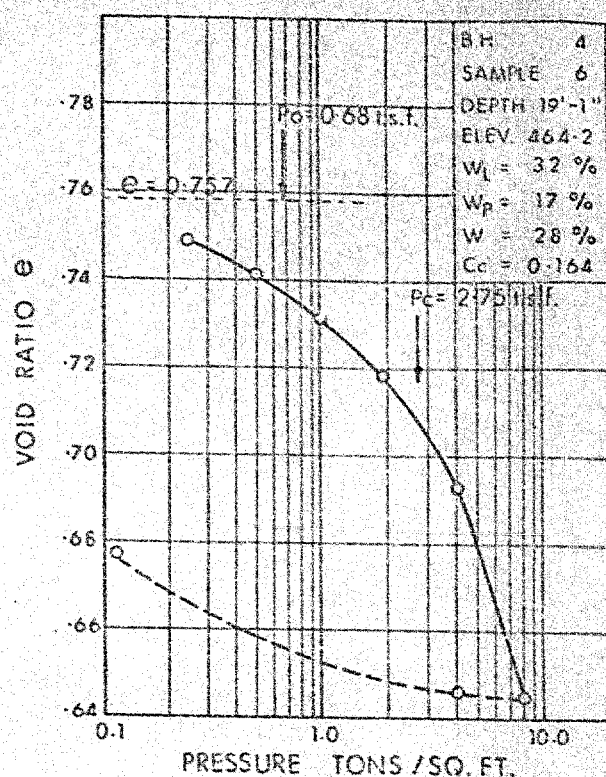
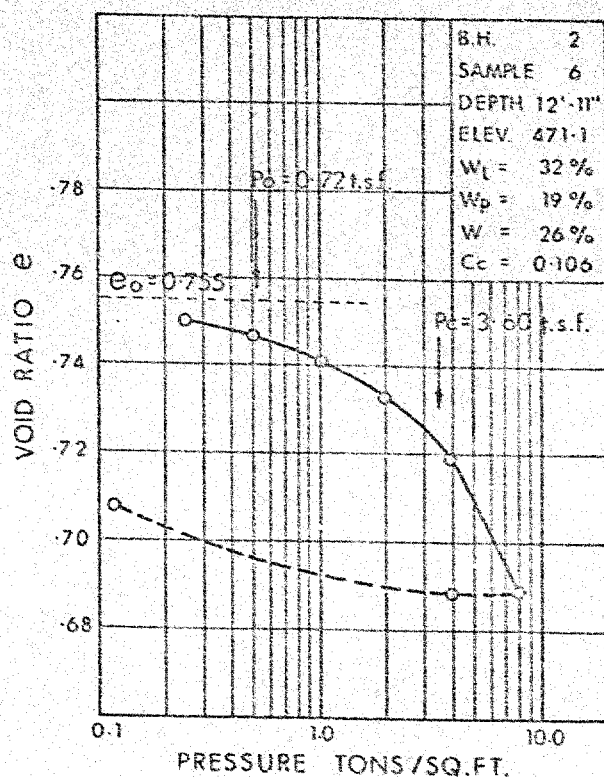


FIG. 4

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 _{cu}	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_r	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_t	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

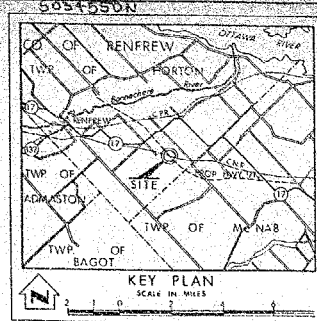
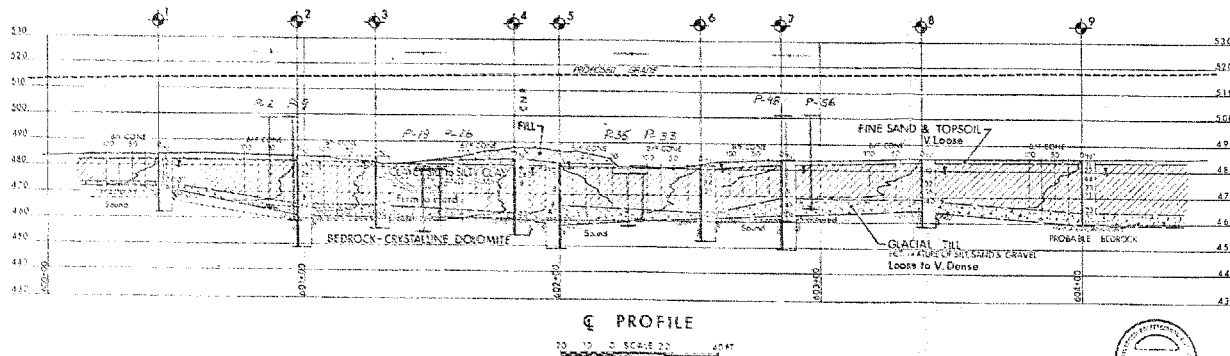
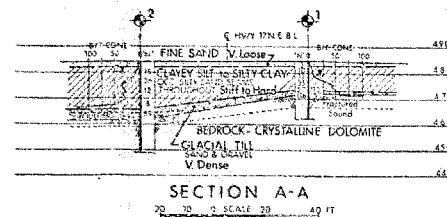
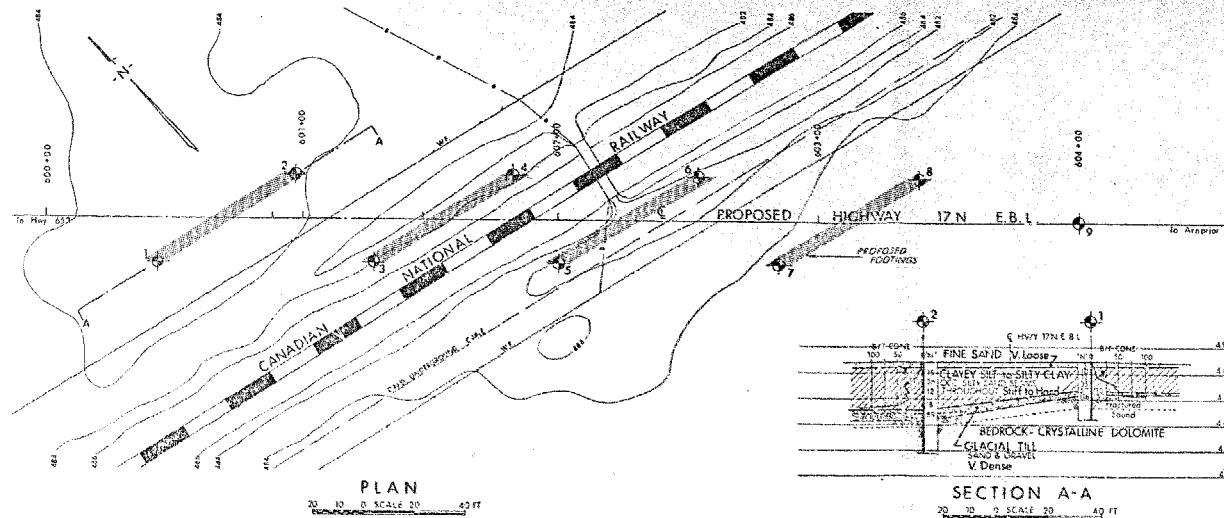
d	DISTANCE FROM TOP OF WALL TO POINT OF APPLICATION OF PRESSURE
δ	ANGLE OF WALL FRICTION
K	DIMENSIONLESS COEFFICIENT TO BE USED WITH VARIOUS SUFFIXES IN EXPRESSIONS REFERRING TO NORMAL STRESS ON WALLS
K_0	COEFFICIENT OF EARTH PRESSURE AT REST

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
- Cone Penetration Test
- Bore Hole & Cone Test
- Water Levels established at time of field investigation April & May 1971

NO	ELEVATION	STATION	OFFSET
1	484.4	600+43	17' RT.
2	484.0	600+57	17' LT.
3	484.0	601+78	17' RT.
4	483.4	601+82	17' LT.
5	481.8	602+00	17' RT.
6	481.4	602+54	17' LT.
7	484.1	603+85	17' RT.
8	484.5	603+59	17' LT.
9	484.6	604+00	0

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.

DATE	BY	DESCRIPTION

DEPARTMENT OF TRANSPORTATION & COMMUNICATIONS
DESIGN SERVICES BRANCH - FOUNDATION OFFICE

CANADIAN NATIONAL RAILWAY

HIGHWAY NO. 17N E.B.I. DIST NO. 9
CO. RENFREW
TWP. HORTON LOT 3 CON. 4

BORE HOLE LOCATIONS & SOIL STRATA

SOUND W.H. ORCADY W.P. NO. 7-27-02 DRAWING NO. 71-11087A
DRAFTS E.C. LOWERY COR NO. 71-11087
DATE 26 NOV 1971 SHEET NO. 1 OF 1 PROJECT DRAWING NO.
APPROVED BY [Signature] CHIEF NG
REVIEW BY [Signature] CHIEF NG



REF NO. E-5219-1

DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

Copy for the information of
A. Stermac

T.C. Kingsland,

Reg. Bridge Planning Engr.,
Kingston Regional Office.

Structural Office,
West Bldg., Downsview.

March 15, 1972.

Re: C.N.R. Overhead,
Approx. 3.8 Miles East of Renfrew,
W.P. #7-67-02, Site #29-193,
Hwy. No. 17N E.B.L., District #9.

71-11-087

Attached herewith are prints of the Preliminary Bridge
Plan Drawing D-29-193-P1 for the above-mentioned structure.

The estimated cost of the proposed structure is
\$148,000.00, which includes tender, materials, engineering and
sundry construction.

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

C.S. Grebski,
Structural Design Engineer.

CSG:sr
Attach.

c.c. A. McKim
B. Davis
A. Stermac (2)
J. Anderson
R. Forrest

*no comments
BTD March 22/72*

FOUNDATION OFFICE

Reference: DS-11 DRAWING

W.P. 7-67-02
W.C. 71-11087

Foundation Report By:

W. G. HUTTON

Review of Design Drawings By:

B. T. DARCH

Design Drawing No.'s.:

PRELIMINARY

D. 29-193-71

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

NO ADDITIONAL ~~COMMENTS~~ COMMENTS REQUIRED.

~~NO~~

Drawings Received

March 15, 1972

Reviewed

March 22, 1972

Signed

B. T. Darch

Mr. C. S. Grebski,
Structural Design Engineer,
Downsview, Ontario.

Structural Planning Office,
Kingston, Ontario.

Mr. K. Bassi

April 18, 1972.

W.P. 7-67-02, Site 29-193,
Canadian National Railway Overhead,
Highway 17N (EBL), District 9-Ottawa

71-11-087

I enclose copy of letter dated April 12, 1972, from C.N.
Regional Engineer-St. Lawrence Region, giving his
comments on Preliminary Plan 29-193-P1.

I have discussed the question of the provision for drainage
at the structure with C.N., Montreal, and they have
notified me that a minimum distance of 17 ft. from G
track to toe of slope will be required and that open ditches
will be required as shown on C.N.'s Minimum Clearance
for Overhead Bridges Diagram. Presumably this will
have to be accomplished by increasing the side spans or
constructing some sort of toe wall at the toes of the slopes.
Another possibility is the steepening of the side slopes
from 2:1 to 1-3/4:1 if Foundations Section agree to this.

T. C. Kingsland
Regional Structural Planning Engineer

TCK/hl
Encl.

c.c. (with encl.)
A. J. Percy
M. Devata

Discussed with Mr. K. Bassi on 20th April/72 with regard
to forward slopes and agreed that we should not use 1 3/4:1
slopes.

M. Devata
20th April/72.

St. Lawrence Region
P.O. Box 8104
Montreal 101, Que.

12 April 1972

Our File: 1620-R-14



STRUCTURE SITE NO. 29-193
W.P. No. 7-67-02

Ontario Department of Transport and Communications
Structural Planning Office
Postal Bag 4000
Kingston, Ont.

Attn: Mr. T.C. Kingsland
Regional Structural Planning Engineer

RE: Proposed Highway 17 (Eastbound) Mileage
38.59 Renfrew Subdivision

Dear Sirs:

Please refer to your letter dated 20 March 1972, in the above connection.

We have reviewed your Preliminary Plan No. 29-193-P1 dated March 1972, and consider the plan satisfactory with the exception that provision for draining our right-of-way ditches should be shown.

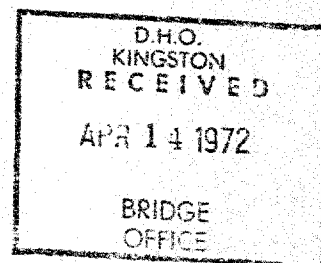
Our C.N.T. pole line will be installed immediately west of pier row number one.

Yours truly

J.R. Brayne
Regional Engineer - Technical Services

Copies made for: (TCK/hl: 18/4/72)

✓ M. Devata
A. J. Percy
C. S. Grobski - Att. K. Bassi

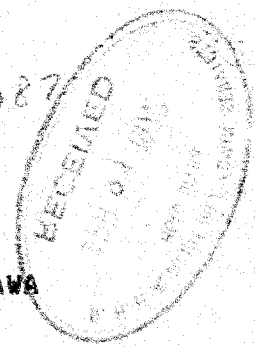


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APR 20 PM 4:11

71-11-087



K

KINR DOWN 2 APR 20/72 400 PVR

I C KINGSLAND REG STRUCTURAL PLAN ENGR

RE CNR OVERHEAD HWY 17 N (E.B.L.) DISTRICT 9 OTTAWA

WP 7-67-02 SITE 29-193

FURTHER TO YOUR MEMO OF APR 18/72 THIS IS ADVISE YOU THAT
SLOPES OF 221 SHOULD BE ADOPTED.

M DIVIDA SUPVRS FOUNDATION ENGR ←

LGE

LGE

M DIVIDA SUPERS FOUNDATION ENGR

SLOPES OF SSI SHOULD BE ADOPTED.

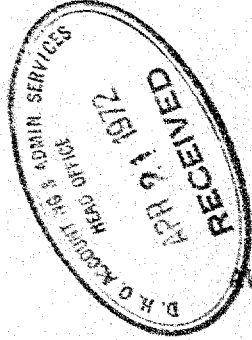
FURTHER TO YOUR MEMO OF APR 18/72 THIS IS ADVISE YOU THAT

WP 7-67-02 SITE 22-122

RE CNR OVERHEAD HWY 17 N (E.B.L.) DISTRICT 9 OTTAWA

T C KINGSLAND REG STRUCTURAL PLAN ENGR

KINR DOWN 2 APR 20/72 400 PVR



71-11-087

10331

MX : INR APR 21/72 1.15 PM

R E P E A T

DOWN 7 A G STERMAC FOUNDATIONS OFFICE

ATT M DEVATA

TORD I K BASSI STRUCTURAL DESIGN OFFICE

KINR COPIES TO

E SAINT

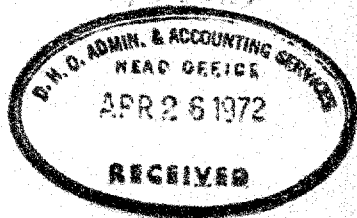
A E IRVING

RE CNR OVERHEAD HWY 17N WP 7-67-02 SITE 29-192

RE YOUR TELETYPE APRIL 20 REGIONAL M AND I HAVE CONFIRMED COARSE
GRANULAR MATERIAL AVAILABLE FOR APPROACHES TO STRUCTURE.

PLEASE CONFIRM TO K BASSI AND SELF IF 1-3/4: 1 SLOPES WILL NOW BE
SUITABLE AT THIS STRUCTURE.

T C KINGSLAND STRUCTURAL PLANNING



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Department of Highways Ontario

Copy for the information of

A. STERMAC

~~Mr. S. Kingland~~

Regional Bridge Planning Engineer
Eastern Region
KINGSTON, Ontario

Structural Office
West Building
DOWNSVIEW, Ontario

June 16, 1972

Canadian National Railway Overhead
(approx. 3.8 miles east of Hanfrew)
W.P. 7-67-02 Site 29-193
Tray. 17 W. (E.S.L.) District 9

71-11-087

Attached herewith are prints of the
revised Preliminary Bridge Plan Drawing D-29-193-P2
for the above mentioned structure.

The estimated cost of the proposed structure
is \$175,000 which includes tender, materials, engineering
and sundry construction.

This plan has been revised to provide the
17-ft. lateral clearance as now required by the C.N.R.

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

CSG/hvh
Encl.

C.S. Grebski
Structural Design Engineer

cc A. McKim
B. Davis
A. Stermac (2)
J. Anderson
R. Forrest

no comments.

M. Devota
20th June/72

See note in the file.

FOUNDATIONS OFFICE

REVIEW OF DESIGN DRAWINGS:

W.P. ..7-67-02.....

W.O. ..71-11087.....

Foundations Report by: ..W..HUTTON.....

Review of Design Drawings by: ..S..AHMAD.....

Design Drawing No.'s: ...29-193-P2.....

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

SINCE THE SUBMISSION OF OUR REPORT, THE BRIDGE HAS BEEN SHORTENED AND RETAINING WALLS ARE BEING CONTEMPLATED AT THE ~~W~~ APPROACHES. STABILITY ANALYSES HAVE BEEN CARRIED OUT FOR THE CRITICAL CONDITION AND RESULTED IN A S.F. = 1.265.

Drawings Received June 20...1972..

Reviewed June 20...1972..

Signed ..Shaham.. Ahmad

June 20/72

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS

MEMORANDUM

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

FROM: C. S. Grebski,
Structural Office,
West Building, DOWNSVIEW.

ATTENTION:

DATE: September 1, 1972.

OUR FILE REF.

IN REPLY TO

SUBJECT:

C.N.R. Overhead,
Approx. 3.8 Miles East of Renfrew,
W.P. #7-67-02, Site #29-193,
Hwy. #17N (E.B.L.), District #9.

71-11-082

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.

Walter Lin

W. LIN,
FOR: C. S. Grebski,
Structural Design Engineer.

CSG:dp
Attach.

cc. Foundation Office.

No comments.
M. Levata
Sept 18/72

Copy to BC
7/10/72
HL

MEMORANDUM

Mr. A. G. Stewart,
Principal Foundation Engineer,
Room 107, West Building.

September 1, 1972.

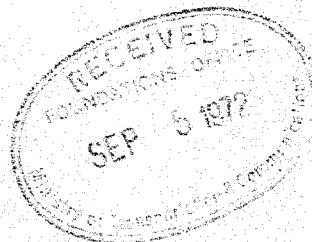
Mr. A. G. Stewart,
Principal Foundation Engineer,
Room 107, West Building,
Ministry of Transportation and Communications.

Reference is made to your letter of August 28, 1972, regarding the design of the structure. The design is acceptable and the structure is being constructed. The design is being reviewed by the Ministry of Transportation and Communications.

Very truly yours,
Mr. A. G. Stewart,
Principal Foundation Engineer.

cc: Mr. A. G. Stewart,
Principal Foundation Engineer.

cc: Mr. A. G. Stewart,
Principal Foundation Engineer.



FOUNDATIONS OFFICE

REVIEW OF DESIGN DRAWINGS:

W.P. 7-67-02.....
W.O. 71-11087.....

Foundations Report by: ..*W. HUTTON*.....
Review of Design Drawings by: ..*SHAHEN... AHMAD*.....
Design Drawing No.'s: ..*29: 193... 1, 3, 4, 5, 10 and 12.*
.....

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

No Comments
SMA

Drawings Received ..*September... 5... 19.72.*
Reviewed ..*September... 18... 19.72.*

Signed ..*Shahen... Ahmad*.....

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

TO: Mr. M. Devata,
Supervising Foundations Engr.,
Foundations Office.

FROM: C. S. Poon,
Project Foundations Engr.,
Foundations Office.

ATTENTION:

DATE: January 2, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT:

*Stability of Crib Wall
Overhead Structure at the Crossing of
Hwy. #17 'New' (E.B.L.) and C.N.R.
Twp. of Horton - Co. of Renfrew
District No. 9 (Ottawa)
W.O. 71-11087 - W.P. 7-67-02*

The height of the above-mentioned crib wall will be increased by some 2 feet. Additional stability analyses were carried out as per verbal request of Mr. K. Bassi of Structural Office. The results indicate that the revised crib wall will be stable with respect to deep-seated rotational type of failure.

CSP/ck

C. S. Poon

C. S. Poon,
Project Foundations Engr.

*The above information was
given to K Bassi by M.D.
CSP. Jan 3/73*

71-11087

MEMORANDUM

TO: M. Devata,
Supervising Foundations Engineer,
Foundations Office.

FROM: Structural Office,
West Building, DOWNSVIEW

ATTENTION:

DATE: January 12th, 1973.

OUR FILE REF.

IN REPLY TO

SUBJECT: C.N.R. Overhead,
W.P.#7-67-02, Site #29-193,
Hwy. #17N (E.B.L.), District #9,
Ottawa.

You may recollect that about three weeks ago you were requested by the writer to check if the stability of the embankments at the above-noted structure would be adversely affected if the bin walls were to be moved approximately 4 feet away from the track and increased in height by 2 feet. After Mr. Poon had investigated the stability, the writer was advised that you could foresee no problems.

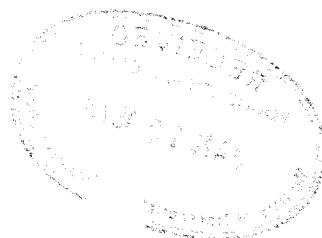
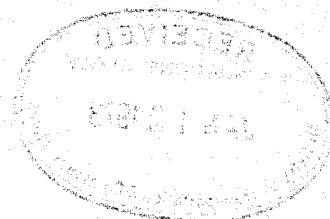
The pertinent drawings have now been revised to suit and prints of plan 29-193-1, -3, and -10 are attached for your information.

K. G. Bassi

K. G. Bassi,
Reg. Structural Design Engineer.

KGB:dp
Attach.

cc. T. C. Kingsland.



no comments
cep. Jan 17/73
M. Devata
Jan 19/73

TO :

FROM :

SUBJECT :

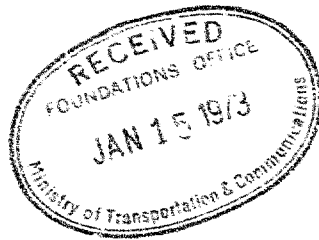
DATE :

BY :

RE :

FILE :

NOTE :



OVER

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE DRAINAGE 325 DRAIN WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "A" PILES BATTER: N/L
PILE NO. 1 LOCATION WEST ABUTMENT ETC. DATE DRIVEN SEPT 4/74

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.
41'2"	1	0		26			51			76	
	2			27			52			77	
	3			28			53			78	
	4			29			54			79	
	5	1		30	24		55			80	
	6	1		31			56			81	
	7	3		32			57			82	
	8			33			58			83	
	9			34			59			84	
	10			35	30		60			85	
	11			36			61			86	
	12	5		37	REARSL		62			87	
	13			38			63			88	
	14			39			64			89	
	15			40			65			90	
	16			41			66			91	
	17	12		42			67			92	
	18			43			68			93	
	19			44			69			94	
	20			45			70			95	
	21	15		46			71			96	
	22			47			72			97	
	23			48			73			98	
	24			49			74			99	
	25	18		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	37'4"			FINAL CUT OFF ELEVATION		

REPORT TO BE SENT TO:-

GEOTECHNICAL OFFICE TIP EL. 499.03
ATTENTION: PRODUCT & PROCESS IMPROVEMENT SECTION,
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS,
DOWNSVIEW, ONTARIO 37.4
461.63

SIGNED GARY MALCOLM
NAME (PRINT) GARY MALCOLM
DATE SEPT 4/74
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. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAMMER 8225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 H PILES BATTER: 10:1
PILE NO. 2 LOCATION WEST ABUTMENT FTG. DATE DRIVEN SEPT 3/74

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.
A1 A'	1			26			51			76	
	2			27			52			77	
	3			28			53			78	
	4			29			54			79	
	5			30			55			80	
	6			31			56			81	
	7			32			57			82	
	8			33			58			83	
	9			34			59			84	
	10			35	REFUSAL		60			85	
	11			36			61			86	
	12			37			62			87	
	13			38			63			88	
	14			39			64			89	
	15			40			65			90	
	16			41			66			91	
	17			42			67			92	
	18			43			68			93	
	19			44			69			94	
	20			45			70			95	
	21			46			71			96	
	22			47			72			97	
	23			48			73			98	
	24			49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	35'3"					
FINAL CUT OFF ELEVATION	A99.01					

REPORT TO BE SENT TO: -

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

SIGNED Nelson R Wood
NAME (PRINT) Nelson R Wood
DATE Sept 3/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIEDEL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BRIDGMAN B-225 DIESEL WEIGHT 6900 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 3:1
 PILE NO. 3 LOCATION WEST ABAT. FTG. DATE DRIVEN SEPT. 3/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	40' 8"					
FINAL CUT OFF ELEVATION	499.08					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
 NAME (PRINT) GARTH MALCOLM
 DATE SEPT. 3/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIVER VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAMMER 8235 DIESEL WEIGHT 1800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 H PILES BATTER: 3:1
PILE NO. A LOCATION WEST ABUTMENT FTG DATE DRIVEN Sept 3/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	41' 10"					FINAL CUT OFF ELEVATION
						Agg. 13

REPORT TO BE SENT TO:-

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

SIGNED Nelson R Wood
NAME (PRINT) Nelson R Wood
DATE Sept 3/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR Rideau Valley Constructors DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Bren. Hammer B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 Lb
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 HP 53 "H" PILES BATTER: 10:1
PILE NO. 5 LOCATION WEST. ABUT. FTG. DATE DRIVEN SEPT. 3/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	<u>37'11"</u>					
FINAL CUT OFF ELEVATION	<u>499.03</u>					

REPORT TO BE SENT TO:-

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

SIGNED Gordon Malcolm
NAME (PRINT) GORDON MALCOLM
DATE SEPT. 3/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAMER R225 DIESEL WEIGHT 6000 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 H. PILES BATTER: 3:1
PILE NO. 6 LOCATION WEST ABUTMENT FTG. DATE DRIVEN SEPT. 3/74

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

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

REPORT TO BE SENT TO:-

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

SIGNED Nelson R. Wood
NAME (PRINT) Nelson R. Wood
DATE Sept. 3/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Bickelmann B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 2500 ft. L.
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 HP 53 "H" PILES BATTER: 10:1
PILE NO. 7 LOCATION WEST ABUT ETC. DATE DRIVEN SEPT. 3/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	37' 9"					
FINAL CUT OFF ELEVATION	499.19					

REPORT TO BE SENT TO:-

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

TIP EL.

499.19
37.6
461.59

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE SEPT. 3/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAMMER 8215 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 H PILES BATTER: 3:1
PILE NO. 8 LOCATION WEST ABUTMENT FTG DATE DRIVEN Sept 3 1974

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

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

REPORT TO BE SENT TO: -

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

TIP EL.

499.19
39.4
459.79

SIGNED Nelson R Wood
NAME (PRINT) Nelson R Wood
DATE Sept 3 1974
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE Brown & Hoare B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "A" PILES BATTER: 10:1
 PILE NO. 9 LOCATION WEST ABUT ETC. DATE DRIVEN AUG. 30/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	40' 1"					
FINAL CUT OFF ELEVATION	499.06					

REPORT TO BE SENT TO:-

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

TIP EL. 459.16

SIGNED: John Malcolm
 NAME (PRINT) John Malcolm
 DATE AUG. 30 / 74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR RISEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAMER B225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. S3 H PILES BATTER: 3:1
PILE NO. 10 LOCATION WEST ABUTMENT FTG DATE DRIVEN SEPT 3/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	40' 2"					
FINAL CUT OFF ELEVATION	499.27					

REPORT TO BE SENT TO: -

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

TIP EL. 499.27
38.2
48.57

SIGNED Nelson R. Wood
NAME (PRINT) Nelson R. Wood
DATE Sept. 3/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR ROSEDALE VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TONS
 HAMMER DETAILS: TYPE Brown & Sharpe B-225 Diesel WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 2500 LB
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
 PILE NO. 11 LOCATION WEST ABUT. ETC. DATE DRIVEN AUG. 30/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	37' 2"					
FINAL CUT OFF ELEVATION	499.04					

REPORT TO BE SENT TO: -

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

SIGNED Garth Malcolm
 NAME (PRINT) GARTH MALCOLM
 DATE AUG. 30/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMER 1225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. S3 H PILES BATTER: NIL
 PILE NO. 12 LOCATION WEST ABUTMENT FTG. DATE DRIVEN SEPT 5 1974

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	36' 9"			FINAL CUT OFF ELEVATION		

REPORT TO BE SENT TO: -

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

SIGNED Nelson R Wood
 NAME (PRINT) Nelson R Wood
 DATE Sept 5/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

TIP EL. 499.01
36.82
462.21

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE BIRMINGHAMER B-225 DIESEL WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 25,000 FT.LBS
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1,100
PILE DETAILS 12 HP 53 "H" PILES BATTER 10:1
PILE NO. 13 LOCATION PIER FTG #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE <u>21' 1"</u>	FINAL CUT OFF ELEVATION <u>478.40</u>					

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74

ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE BIENHOF HAMMER B-225 WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 25.000 Ft Lbs
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1,100 LBS
PILE DETAILS 12 HP 53 "H" PILES BATTER 16 : 1
PILE NO. 14 LOCATION PIER FTG #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	21' 3"			FINAL CUT OFF ELEVATION		
				478.46		

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE G.N.R. OVERHEAD
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 Ton
HAMMER DETAILS: TYPE DIESEL WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 25,000 Ft Lb
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1,100 LBS
PILE DETAILS 12 H.P. 53 "4" PILES BATTER 10:1
PILE NO. 15 LOCATION PIER FTL #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND 'N INCHES						
FINAL LENGTH OF PILE	21' 0"			FINAL CUT OFF ELEVATION 478.41		

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAM 5-225 DIESEL WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 25,000 FT-LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1,100 LBS
PILE DETAILS 12 HP 53 "H" PILES BATTER 10:1
PILE NO. 16 LOCATION PIER Ftg #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	20' 8"			FINAL CUT OFF ELEVATION		

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAM 8-225 DIESEL WEIGHT 6,800 HEIGHT OF FALL OR ENERGY 25000 FLOBS
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100 LBS
PILE DETAILS 12 HP 53 "H" PILES BATTER NIL
PILE NO. 17 LOCATION PIER FTG #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	20' 8"			FINAL CUT OFF ELEVATION		

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

478.5
20.7
499.2

TIP LL.

08-MT-295 3-74

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 76 TON
HAMMER DETAILS: TYPE BIRMINGHAM B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 FT-LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100 LBS
PILE DETAILS 12 HP 53 "H" PILES BATTER 10:1
PILE NO. 18 LOCATION PIER FTG. #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	21' 0"					
FINAL CUT OFF ELEVATION	478.50					

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED GARTH M. MACDONALD
NAME (PRINT) GARTH M. MACDONALD
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRCHAMPTON 8-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 FT LBS
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100 LBS
PILE DETAILS 12 HP 53 "H" PILES BATTER 10:1
PILE NO. 19 LOCATION PIER FTG #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE <u>23' 9"</u>	FINAL CUT OFF ELEVATION <u>478.44</u>					

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED Garth Malcolm
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

ENGINEERING SERVICES BRANCH
SOIL MECHANICS SECTION

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 93-186 STRUCTURE C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAM B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 FT LBS
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100 LBS
PILE DETAILS 12 HP 53 "H" PILES BATTER NIL
PILE NO. 20 LOCATION PIER FTG #1 DATE DRIVEN AUG 14/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	20' 6"			FINAL CUT OFF ELEVATION		
				478.46		

REPORT TO BE SENT TO: - HEAD, SOIL MECHANICS SECTION
ENGINEERING SERVICES BRANCH
MINISTRY OF
TRANSPORTATION AND
COMMUNICATIONS
DOWNSVIEW, ONTARIO

SIGNED GARTH M. NELSON
NAME (PRINT) GARTH M. NELSON
DATE AUG 14/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TONS
HAMMER DETAILS: TYPE Blunt Hammer B225 Diesel WEIGHT 6,000 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1,100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO. 21 LOCATION PIER FTG #1 DATE DRIVEN Aug 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	21' 2"					FINAL CUT OFF ELEVATION 478.41

REPORT TO BE SENT TO:-

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

SIGNED Garth Malcolm
NAME (PRINT) GARTH MALCOLM
DATE Aug 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR Overhead
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BEARING HAMMER B-225 DIE WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 6100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO. 22 LOCATION PIER FG #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	21' 0"					
FINAL CUT OFF ELEVATION	478.44					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
 CONTRACTOR PIDCOCK VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE PIDCOCK B-225 DIESEL WEIGHT 6800 HEIGHT OF "ALL OR ENERGY" 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "A" PILES BATTER: 10:1
 PILE NO. 23 LOCATION PIER Ftg #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE <u>20' 7"</u>	FINAL CUT OFF ELEVATION <u>478.43</u>					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
 NAME (PRINT) GARTH MALCOLM
 DATE AUG 15/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERPASS
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Bicam Hammer B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 Lb
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO. 24 LOCATION PIER FTG #1 DATE DRIVEN Aug. 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	20' 6"					
FINAL CUT OFF ELEVATION	478.45					

REPORT TO BE SENT TO:-

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

SIGNED Gordon Malcolm
NAME (PRINT) GORDON MALCOLM
DATE Aug. 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	20' 1"			FINAL CUT OFF ELEVATION 478.44		

REPORT TO BE SENT TO: -

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

SIGNED GARTH MALCOLM
 NAME (PRINT) GARTH MALCOLM
 DATE AUG 14 / 74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BUSHINGHAM B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "E" PILES BATTER: 10:1
PILE NO. 26 LOCATION PIER Ftg #1 DATE DRIVEN AUG 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	19' 11"					
FINAL CUT OFF ELEVATION	478.44					

REPORT TO BE SENT TO:-

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

SIGNED Garth Malcolm
NAME (PRINT) GARTH MALCOLM
DATE AUG 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR Overhead
CONTRACTOR Rideau Valley Constructors DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Bennett B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" Piles BATTER: 10:1
PILE NO. 27 LOCATION Pier Ftg. #1 DATE DRIVEN Aug 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	19' 11"					
FINAL CUT OFF ELEVATION	478.43					

REPORT TO BE SENT TO:-

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

478.43
19.8
458.63
SIGNED Speth Malcolm
NAME (PRINT) Speth Malcolm
DATE Aug 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. Overhead
CONTRACTOR IDEAL VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Breakdown Hammer B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: NIL
PILE NO. 28 LOCATION Pier Fg #1 DATE DRIVEN Aug 15/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE <u>20' 3"</u>	FINAL CUT OFF ELEVATION <u>478.50</u>					

REPORT TO BE SENT TO:-

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

SIGNED GARTIN MALCOLM
NAME (PRINT) GARTIN MALCOLM
DATE Aug 15/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. CARRIAGE
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE PERCIN HAMMER B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO. 29 LOCATION PIER FC #2 DATE DRIVEN AUG 22/74

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.
	1	0		26			51			76	
	2	0		27			52			77	
	3	2		28			53			78	
	4			29			54			79	
	5			30			55			80	
	6	6		31			56			81	
	7	6		32			57			82	
	8	7		33			58			83	
	9	7		34			59			84	
	10	8		35			60			85	
	11	8		36			61			86	
	12	8		37			62			87	
	13	9		38			63			88	
	14	9		39			64			89	
	15	9		40			65			90	
	16	10		41			66			91	
	17	10		42			67			92	
	18	REFUSAL		43			68			93	
	19			44			69			94	
	20			45			70			95	
	21			46			71			96	
	22			47			72			97	
	23			48			73			98	
	24			49			74			99	
	25			50			75			100	

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

REPORT TO BE SENT TO: -

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

SIGNED GARY MALCOLM
NAME (PRINT) GARY MALCOLM
DATE AUG 22/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Brandham B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 2500
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO 30 LOCATION PIER FG #2 DATE DRIVEN Aug 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	18' 8"			FINAL CUT OFF ELEVATION 478.44		

REPORT TO BE SENT TO:-

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

SIGNED [Signature]
NAME (PRINT) GARTH MACCOLM
DATE Aug 23/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BRANDHAMMER B225 DISEL WEIGHT 16800 HEIGHT OF FALL OR ENERGY 25000 L
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 HP 53 "H" PILES BATTER: 10:1
PILE NO. 31 LOCATION PIER FTOH 2 DATE DRIVEN AUG 22/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	18'10"					
FINAL CUT OFF ELEVATION	478.48					

REPORT TO BE SENT TO: -

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

SIGNED Garth Malcolm
NAME (PRINT) GARTH MALCOLM
DATE AUG 22/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMMER DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 HP 53 H PILES BATTER: 10/1
 PILE NO. 32 LOCATION PIER FOOTING # 2 DATE DRIVEN AUG 22/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	19' 9"					FINAL CUT OFF ELEVATION 478.54

REPORT TO BE SENT TO: -

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

TIP EL.

478.54
19.7

478.84

SIGNED Nelson R Wood
 NAME (PRINT) Nelson R Wood
 DATE AUG 22/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR ROCK VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BRANDER B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53" PILES BATTER: N.L.
PILE NO. 33 LOCATION PIER FTO. #2 DATE DRIVEN AUG. 22/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	17'5"			FINAL CUT OFF ELEVATION		

REPORT TO BE SENT TO: -

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

SIGNED Garth Malcolm
NAME (PRINT) GARTH MALCOLM
DATE AUG 22/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.F. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF MLE 70 TON
 HAMMER DETAILS: TYPE BIRMING HAMMER B225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 [EL-12]
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILES BATTER: 10:1
 PILE NO. 34 LOCATION PIER FTG #2 DATE DRIVEN AUG 22/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	19' 7"					
FINAL CUT OFF ELEVATION	478.50					

REPORT TO BE SENT TO:-

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 22/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR Pierce Valley Constructors DESIGN LOAD OF PILE 70 Ton
 HAMMER DETAILS: TYPE Beckham B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 2500 LB
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILE BATTER: 10:1
 PILE NO. 35 LOCATION PIER Ftg # 2 DATE DRIVEN Aug 23/74

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

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

REPORT TO BE SENT TO: -

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

SIGNED Garth Malcolm
 NAME (PRINT) GARTH MALCOLM
 DATE Aug 23/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRMINGHAMMER ⁸²²⁵ PISSSEL WEIGHT 6000 HEIGHT OF FALL OR ENERGY ²⁵⁰⁰⁰ 14167
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 H PILES BATTER: NIL
PILE NO. 36 LOCATION PIER FTG #2 DATE DRIVEN AUG 22/74

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

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

REPORT TO BE SENT TO:-

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

SIGNED Nelson R. Wood
NAME (PRINT) Nelson R. Wood
DATE AUG 22/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR Adams Valley Constructors DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE Pneumatic B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 L
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
 PILE NO. 37 LOCATION Pike Pt. #2 DATE DRIVEN Aug 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE <u>18' 11"</u>	FINAL CUT OFF ELEVATION <u>478.50</u>					

REPORT TO BE SENT TO: -

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

SIGNED Gareth Malcolm
 NAME (PRINT) GARETH MALCOLM
 DATE Aug 23/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMER ^{B225} DIESEL WEIGHT 6000 HEIGHT OF FALL OR ENERGY 25000 ^{ft.-lb.}
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILES BATTER: 1:10
 PILE NO. 38 LOCATION PIED FTG. #2 DATE DRIVEN AUG 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	18' 10"					
FINAL CUT OFF ELEVATION	478.41					

REPORT TO BE SENT TO: -

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 23/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 13-186 STRUCTURE W.P. NO. CNR OVERHEAD
CONTRACTOR PIDGM VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BIRCHMONT B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 L
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "A" PILES BATTER: 10:1
PILE NO. 39 LOCATION PIER #2 DATE DRIVEN AUG 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	19' 9"					
FINAL CUT OFF ELEVATION	478.42					

REPORT TO BE SENT TO: -

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

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 23/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMMER 8225 WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
DIESEL ft-lb
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILES BATTER: 10:1
 PILE NO. 40 LOCATION PIER FTG #2 DATE DRIVEN AUG. 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	20' 0"					FINAL CUT OFF ELEVATION 478.46

REPORT TO BE SENT TO: -

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG. 23/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERPASS
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BURNINGHAMMER B-225 DRUM WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" P.I.E BATTER: N.L
 PILE NO. 41 LOCATION PIER FTS #2 DATE DRIVEN AUG 22/74

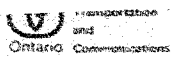
TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.	TOTAL LENGTH BEING DRIVEN	LENGTH IN GROUND	PENETRATION BLOWS / FT.
34'2"	1			26			51			76	
	2			27	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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	17'5"					
FINAL CUT OFF ELEVATION	478.48					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
 NAME (PRINT) GARTH MALCOLM
 DATE AUG 22/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM



BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIVER VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAM ^{B225} DIESEL WEIGHT 6000 HEIGHT OF FALL OR ENERGY 25000 FT-LB
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILES BATTER: 10:1
 PILE 10.3 TION PIER FIG #2 DATE DRIVEN AUG 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	19' 5"					FINAL CUT OFF ELEVATION 478.42

REPORT TO BE SENT TO: -

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

478.42
 18.3
 460.12
 SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 23/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

G1.9 4-74

4-74

OB-MT-285

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE Pier with B-25 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 LB
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "N" PILES BATTER: 10:1
PILE NO. 43 LOCATION PIER ETC # 2 DATE DRIVEN AUG 23/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	18'3"					
FINAL CUT OFF ELEVATION	478.51					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 23/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR BIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMER 8125 WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25500
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H. PILES BATTER: NIL
 PILE NO. 44 LOCATION PIER FIVE #2 DATE DRIVEN AUG 22/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	18' 6"					FINAL CUT OFF ELEVATION 479.52

REPORT TO BE SENT TO:-

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 22/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TONS
 HAMMER DETAILS: TYPE Everett B-225 Diesel WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 3:1
 PILE NO. 45 LOCATION EAST ABUT. FTG. DATE DRIVEN Aug. 28/74

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.
53'6"	1	0		26			51			76	
	2			27	6		52			77	
	3			28			53			78	
	4			29			54			79	
	5			30			55			80	
	6			31			56			81	
	7			32	10		57			82	
	8			33			58			83	
	9			34			59			84	
	10			35	12		60			85	
	11	1		36			61			86	
	12			37			62			87	
	13	2		38			63			88	
	14			39			64			89	
	15			40	15		65			90	
	16			41			66			91	
	17			42			67			92	
	18	3		43	REFUSAL		68			93	
	19			44			69			94	
	20			45			70			95	
	21			46			71			96	
	22			47			72			97	
	23	4		48			73			98	
	24			49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	43' 0" FINAL CUT OFF ELEVATION 500.87					

REPORT TO BE SENT TO: -

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

SIGNED Garry Malcolm
 NAME (PRINT) GARRY MALCOLM
 DATE AUG 28/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIVER VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMER 825 DIESEL WEIGHT 6000 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILES BATTER: 10:1
 PILE NO. 46 LOCATION EAST ABUTMENT FTG DATE DRIVEN AUG 27 1974

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.
50.0	1			26			51			76	
	2			27			52			77	
	3			28			53			78	
	4			29			54			79	
	5			30			55			80	
	6			31			56			81	
	7			32			57			82	
	8			33			58			83	
	9			34			59			84	
	10			35			60			85	
	11			36			61			86	
	12			37			62			87	
	13			38			63			88	
	14			39	RECURIAL		64			89	
	15			40			65			90	
	16			41			66			91	
	17			42			67			92	
	18			43			68			93	
	19			44			69			94	
	20			45			70			95	
	21			46			71			96	
	22			47			72			97	
	23			48			73			98	
	24			49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	39' 3"					FINAL CUT OFF ELEVATION 500.39

REPORT TO BE SENT TO: -

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 27 1974
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 13-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RURAL VALLEY CONTRACTORS DESIGN LOAD OF PILE 70 TON
 HAMMED DETAILS: TYPE Precaution B-225 Drive WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILES BATTER: N.L.
 PILE NO. 47 LOCATION EAST ABUT. ETC. DATE DRIVEN Aug 28/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	37' 4"					
FINAL CUT OFF ELEVATION	500.78					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
 NAME (PRINT) GARTH MALCOLM
 DATE Aug 28/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-196 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE TOTAL
 HAMMER DETAILS: TYPE BIRMINGHAMER R225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 33 H. PILES BATTER: 3:1
 PILE NO. 48 LOCATION EAST ABUTMENT FTG DATE DRIVEN AUG. 28/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	43' 1"					FINAL CUT OFF ELEVATION 500.88

REPORT TO BE SENT TO:-

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE Aug 28/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
CONTRACTOR BROWN VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE BROWN HOBBS B-225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO. 49 LOCATION EAST ABUT. ETC. DATE DRIVEN AUG 27/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	38' 0"					FINAL CUT OFF ELEVATION 500.61

REPORT TO BE SENT TO: -

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

SIGNED Garth Malcolm
NAME (PRINT) GARTH MALCOLM
DATE AUG 27/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
 CONTRACTOR BISSAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMMER 8225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILLS BATTER: 3:1
 PILE NO. 50 LOCATION EAST ABUTMENT FTG DATE DRIVEN AUG 28/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	42' 1"					
FINAL CUT OFF ELEVATION	500.91					

REPORT TO BE SENT TO: -

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

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 28/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE Beaumont B-225 Diesel WEIGHT 6000 HEIGHT OF FALL OR ENERGY 25000 LB
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
 PILE NO. 51 LOCATION EAST ABUT. PILE DATE DRIVEN AUG. 27/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	38' 9"					FINAL CUT OFF ELEVATION 500.69

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
 NAME (PRINT) GARTH MALCOLM
 DATE AUG 27/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMER 8225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000 FT-LB
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 H PILES BATTER: 3:1
 PILE NO. 52 LOCATION EAST ABUTMENT FTG DATE DRIVEN AUG 28 1974

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.
34.2	1			26			51			76	
	2			27			52			77	
	3			28			53			78	
	4			29			54			79	
	5			30			55			80	
	6			31			56			81	
	7			32			57			82	
	8			33			58			83	
	9			34			59			84	
	10			35			60			85	
	11			36			61			86	
	12			37			62			87	
	13			38			63			88	
	14			39			64			89	
	15			40			65			90	
	16			41	REFUSAL		66			91	
	17			42			67			92	
	18			43			68			93	
	19			44			69			94	
	20			45			70			95	
	21			46			71			96	
	22			47			72			97	
	23			48			73			98	
	24			49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	41.6"					FINAL CUT OFF ELEVATION 500.43

REPORT TO BE SENT TO: -

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

TIP EL. 467.59

SIGNED Nelson R. Wood

NAME (PRINT) Nelson R. Wood

DATE AUG 28 1974

ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. C.N.R. OUELLE
CONTRACTOR RODAN VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
HAMMER DETAILS: TYPE PICARDI HAMMER B-225 DIE WEIGHT 6800 HEIGHT OF FALL OR ENERGY 2500 IS
TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
PILE DETAILS 12 H.P. 53 "H" PILES BATTER: 10:1
PILE NO. 53 LOCATION EAST ABUTMENT FTG. DATE DRIVEN AUG 27/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	38' 11"					
FINAL CUT OFF ELEVATION	500.74					

REPORT TO BE SENT TO:-

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

SIGNED GARTH MALCOLM
NAME (PRINT) GARTH MALCOLM
DATE AUG 27/74
ATTACH SKETCH OF PILE NUMBERING SYSTEM



Ministry of
Transportation
and
Communications

ENGINEERING SERVICES BRANCH
GEOTECHNICAL OFFICE

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 2 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMMER B225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.D. 53 H. PILES BATTER: 3% I
 PILE NO. 5A LOCATION EAST ABUTMENT FTG DATE DRIVEN AUG 28/74

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.
57.9'	1			26			51			76	
	2			27			52			77	
	3			28			53			78	
	4			29			54			79	
	5			30			55			80	
	6			31			56			81	
	7			32			57			82	
	8			33			58			83	
	9			34			59			84	
	10			35			60			85	
	11			36			61			86	
	12			37			62			87	
	13			38			63			88	
	14			39			64			89	
	15			40	REFUSAL		65			90	
	16			41			66			91	
	17			42			67			92	
	18			43			68			93	
	19			44			69			94	
	20			45			70			95	
	21			46			71			96	
	22			47			72			97	
	23			48			73			98	
	24			49			74			99	
	25			50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE <u>40' 7"</u>	FINAL CUT OFF ELEVATION <u>500.83</u>					

REPORT TO BE SENT TO:-

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

TIP EL.

SIGNED Nelson R. Wood
 NAME (PRINT) Nelson R. Wood
 DATE AUG 28/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 13-186 STRUCTURE W.P. NO. C.N.R. OVERHEAD
 CONTRACTOR Rideau Valley Constructors DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE Bureau of Standards B-20X Diesel WEIGHT: 6800 HEIGHT OF FALL OR ENERGY 2500 LB
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 H.P. 53 "H" Piles BATTER: 10:1
 PILE NO. 55 LOCATION EAST ABUT. ETC. DATE DRIVEN Aug 27/74

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	37' 5"					FINAL CUT OFF ELEVATION 500.74

REPORT TO BE SENT TO:-

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

SIGNED GARTHA MALCOLM
 NAME (PRINT) GARTHA MALCOLM
 DATE Aug 27/74
 ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 9 CONTRACT NO. 73-186 STRUCTURE W.P. NO. CNR OVERHEAD
 CONTRACTOR RIDEAU VALLEY CONSTRUCTORS DESIGN LOAD OF PILE 70 TON
 HAMMER DETAILS: TYPE BIRMINGHAMMER B225 DIESEL WEIGHT 6800 HEIGHT OF FALL OR ENERGY 25000
 TYPE OF ANVIL OR CAP STEEL WEIGHT OF ANVIL OR CAP 1100
 PILE DETAILS 12 HP 53 HP PILES BATTER: NIL
 PILE NO. 56 LOCATION EAST ABUTMENT FTG DATE DRIVEN AUG 28 1974

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

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH						
MEASURED REBOUND IN INCHES						
FINAL LENGTH OF PILE	35' 8"					FINAL CUT OFF ELEVATION 500.73

REPORT TO BE SENT TO: -

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

500.73
35.7

SIGNED: Nelson R. Wood

NAME (PRINT) Nelson R. Wood

DATE AUG 28 1974

ATTACH SKETCH OF PILE NUMBERING SYSTEM

SUMMARY OF PILE DRIVING RECORDS

W.O. 71-11087 W.P. 7-67-02 CONT. 73-186 DIST. 9
 SITE C.N.R. OVERHEAD (PROV. HWY # 17N)
 DATE DRIVEN AUG 14 - SEPT. 4/74 WEIGHT OF ANVIL 1100 LB
 HAMMER TYPE B-225 WEIGHT 2850 LB ENERGY 25000 FT/LB

LOCATION OF PILES	PILE				ESTIMATED TIP EL. (ft.)	DIFFERENCE Longer(+) Shorter(-) Than Estimated (ft.)	REMARKS
	TYPE	NO.	LENGTH (ft.)	TIP EL. (ft.)			
WEST ABUTMENT	12HP53	1	37.4	461.63		-	
-- --	-- --	2	35.0	464.01		-	
-- --	-- --	3	38.6	460.48		+1.52	
-- --	-- --	4	39.6	459.53		+1.47	
-- --	-- --	5	37.7	461.33	469.0	-	
-- --	-- --	6	39.3	459.95	TO	+1.05	
-- --	-- --	7	37.6	461.59	461.0	-	
-- --	-- --	8	39.4	459.79		+1.21	
-- --	-- --	9	39.9	459.16		+1.84	
-- --	-- --	10	38.2	461.07		-	
-- --	-- --	11	37.0	462.04		-	
-- --	-- --	12	36.8	462.21		-	
PIER FIC. # 1	12HP53	13	21.0	457.4		+1.6	
-- --	-- --	14	21.1	457.85		+1.64	
-- --	-- --	15	20.9	457.57		+1.49	
-- --	-- --	16	20.6	457.84		+1.16	
-- --	-- --	17	20.7	457.8	459.0	+1.2	
-- --	-- --	18	20.9	457.6		+1.4	
-- --	-- --	19	23.7	454.74		+4.26	
-- --	-- --	20	20.5	457.96		+1.04	
-- --	-- --	21	21.1	457.31		+1.69	
-- --	-- --	22	20.9	457.54		+1.46	

PILES DRIVEN TO BEDROCK

SUMMARY OF PILE DRIVING RECORDS

W.O. 71-11087 W.P. 7-67-02 CONT. 73-186 DIST. 9
 SITE C.N.R. OVERHEAD (PROP Hwy ± 17N)
 DATE DRIVEN AUG. 14 - SEPT. 4/74 WEIGHT OF ANVIL 1100 lb
 HAMMER TYPE B-225 WEIGHT 1850 lb ENERGY 25000 FT/LB

LOCATION OF PILES	PILE				ESTIMATED TIP EL. (ft.)	DIFFERENCE Longer(+) Shorter(-) Than Estimated (ft.)	REMARKS
	TYPE	NO.	LENGTH (ft.)	TIP EL. (ft.)			
PIER FTB. # 1	12 HP 53	23	20.5	457.93		+1.07	PILES DRIVEN TO BEDROCK
---	---	24	20.4	458.05		+1.95	
---	---	25	20.1	458.34		+1.66	
---	---	26	19.8	458.64	459.0	+1.36	
---	---	27	19.8	458.63		+1.37	
---	---	28	20.2	458.3		+1.7	
PIER FTB. # 2	12 HP 53	29	18.7	459.8		-	PILES DRIVEN TO BEDROCK
---	---	30	18.6	459.84		-	
---	---	31	18.7	459.78		-	
---	---	32	19.7	458.84		-	
---	---	33	17.4	461.13		-1.13	
---	---	34	19.5	459.0		-	
---	---	35	20.3	458.22	458.0	-	
---	---	36	18.2	460.3	TO	-	
---	---	37	18.8	459.7	461.0	-	
---	---	38	18.7	459.71		-	
---	---	39	19.7	458.72		-	
---	---	40	19.9	458.56		-	
---	---	41	17.4	461.08		-1.08	
---	---	42	18.1	460.12		-	
---	---	43	18.1	460.41		-	
---	---	44	18.5	460.02		-	

61-53 SEP 1978

DOCUMENT MICROFILMING IDENTIFICATION

GEOCRES No. 31F-20

DIST. 9 REGION Eastern

W.P. No. 7-67-02

CONT. No. 73-186

W. O. No. 71-F-087

STR. SITE No. 29-193

HWY. No. 17N

LOCATION Overhead Str. at X-ing of
Hwy #DN (EBL) + CNR

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. 5

REMARKS: DOCUMENTS TO BE UNFOLDED BEFORE
MICROFILMED

