

TABLE OF CONTENTS

1. INTRODUCTION.
 2. DESCRIPTION OF SITE.
 3. FIELD PROCEDURE:
 - 3.1) Pile Driving.
 - 3.2) Pile Testing.
 4. DISCUSSION OF RESULTS.
 5. SUMMARY.
 6. MISCELLANEOUS.
-

- REPORT ON PILE LOADING TESTS -
CARRIED OUT DURING CONSTRUCTION
OF THE DESJARDINS CANAL BRIDGE,
W. J. 62-F-49 -- Cont. 61-174.
District No. 4.

1. INTRODUCTION:

A series of pile loading tests was carried out during the construction of the new bridge over the Desjardins Canal. The new structure will carry the E.B.L. of the Chedoke Expressway over the Desjardins Canal located in the west end of Hamilton.

The purpose of the loading tests was to ensure that the required capacities of the various piles were being achieved. In view of the fact that the pile driving at this site was controlled by means of a dynamic pile driving formula, the loading tests also afforded an opportunity to check to some degree, the validity of the results obtained by this method of control.

2. DESCRIPTION OF SITE:

The Desjardins Canal lies in the west end of Hamilton and connects Hamilton Harbour to Cootes Paradise. The canal is about 100' wide and about 10' deep at the location of the new bridge.

Physiographically, the site forms part of the Lake Iroquois offshore deposits consisting mainly of fine-grained sands, becoming silty with depth and resting on early Lake Iroquois clays. The deposits are generally stratified.

3. FIELD PROCEDURE:

3.1) Pile Driving:

The piles were driven by means of a Delmag D-12 diesel hammer. Driving was terminated at the point when an ultimate capacity in excess of 3 times the design load was computed by means of the Hiley Formula given by $R = \frac{n W H}{s + c/2}$ where $n W H$ is the useful energy of the hammer per blow, s is the penetration inches per blow, and c is the measured rebound of the pile in inches, R being the ultimate capacity in tons.

All records pertaining to the driving and testing of piles are included in the Appendix of this report.

3.2) Pile Testing:

The loading tests were carried out, in general, in accordance with the National Building Code of Canada. No test was carried out to failure, although in one case, the pile was loaded to 75% of the theoretical ultimate capacity computed by means of the Hiley Formula. The load was applied to the piles by jacking between the pile under test, and a reaction beam connected to adjacent piles. Two deflection gauges were attached to each pile, an average value being taken as the true deflection. The maximum difference between gauge readings was about .01". The final load on the piles was maintained for a period of 24 hours.

cont'd. /3 ...

4. DISCUSSION OF RESULTS:

It is clear from an examination of the loading test results that the design capacities for the various piles were achieved by the particular method of control by means of the dynamic formula, using a safety factor of 3 when applying the formula. What is not clear, however, is the true value of the safety factor which, of course, can only be established if loading tests are carried out to failure. In this case, economic and other factors ruled out this possibility.

Values of the ultimate pile capacity using a method outlined by Meyerhof (Proceedings of the American Society of Civil Engineers, Jan. 1956), have been obtained for each pile driven, from the formula

$$R = 4 N A_p + \frac{N A_s}{50} \quad \text{where -}$$

R = Ultimate capacity of pile.

A_p = Area of pile tip.

A_s = Area of pile shaft in ground.

N = Standard Penetration value at pile tip.

\bar{N} = Average Standard Penetration value to full depth of pile.

cont'd. /4 ...

4. DISCUSSION OF RESULTS: (cont'd.) ...

A comparison of the theoretical ultimate capacities computed by:

(1) The Hiley Formula with measurements made during pile driving; and

(2) Meyerhof's method using values obtained from Standard Penetration tests carried out during the original foundation investigation, are given below; and

(3) Coefficient of settlement ρ which is the slope of the load/settlement curve, on the initial straight part of the curve.

Pile No.	Length (ft.)	R_1 Hiley (tons)	R_2 Meyerhof (tons)	$\frac{R_2}{R_1} \times 100$	Test Load (tons)	Net Deflection (inches)	ρ T/in.
20	41	218	196	90%	80	0.0835	750
19	65	213	320	150%	165	0.3705	440
14	17	276	287	104%	50	0.2775	119
12	21	372	153	56%	50	0.201	95
2	22	182	97	53%	50	0.516	100
1	15	243	207	86%	50	0.2585	115

It will be noticed that in about 50% of the cases, a good agreement exists, and in the majority of cases, the estimate using Meyerhof's method is smaller than that obtained by the Hiley Formula. It would be dangerous to draw too many positive conclusions from the results of this series of tests for reasons already mentioned, but the inference is that the dynamic formula used to control the driving

cont'd. /5 ...

4. DISCUSSION OF RESULTS: (cont'd.) ...

of piles can give satisfactory results in a fine-grained, non-cohesive subsoil, when a suitable safety factor is assumed. It would probably be unwise to use a safety factor lower than 3.0 unless sufficient loading tests have been carried out to justify a lower value. With regard to the Meyerhof method of estimating pile capacities in this type of subsoil, it appears that reasonable results can be obtained if sufficient field data are available.

5. SUMMARY:

The results of a series of pile tests carried out on Contract #61-174 are reported. The tests indicated that satisfactory design capacities were achieved, and that the method of control of pile driving by means of a dynamic formula is useful in a fine-grained, non-cohesive subsoil, such as is present at this particular site.

6. MISCELLANEOUS:

The pile loading tests were carried out during the period May 4th '62 to August 3rd '62, under the supervision of Messrs. H. Szymanski and W. Kulmatickas. This report was written by Mr. K. G. Selby.

January 1963

SECRET
1

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 61-174 STRUCTURE DESJARDIN CANAL BRIDGE W.B.L.

CONTRACTOR BERMINGHAM CONST CO. DESIGN LOAD OF PILE 40 TONS

HAMMER DETAILS: TYPE O-12 WEIGHT 138 T. HEIGHT OF FALL OR ENERGY 22500

TYPE OF ANVIL OR CAP STD-D12 WEIGHT OF ANVIL OR CAP 0.25 T.

PILE DETAILS 12 3/4" x 0.25" x 33 16/ft STEEL TUBE

PILE NO. 19 LOCATION S. ABUTMENT - FOOTING. DATE DRIVEN JUNE 29/62.

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'	1	2	66'	26	11		51	38		76	
	2	2		27	10		52	35		77	
	3	3		28	10		53	37		78	
	4	5		29	11		54	35		79	
	5	5		30	15		55	38		80	
	6	7		31	13		56	72		81	
	7	18		32	15		57	78		82	
	8	15		33	14		58	75		83	
	9	13		34	15		59	66		84	
	10	12		35	19	75'2"	60	65		85	
	11	8		36	22		61	60		86	
	12	12		37	26		62	91		87	
	13	12		38	30		63	95		88	
	14	13		39	35		64	80		89	
	15	12		40	37		65	240/9"		90	
	16	13		41	37		66			91	
	17	13		42	33		67			92	
	18	14		43	32		68			93	
	19	12		44	34		69			94	
	20	11		45	41		70			95	
	21	10		46	34		71			96	
	22	10		47	39		72			97	
	23	9		48	44		73			98	
	24	9		49	41		74			99	
	25	11		50	39		75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	22	24	25	27	29	29
MEASURED REBOUND IN INCHES	0.6	0.6	0.6	0.6	0.6	0.6
FINAL LENGTH OF PILE	65'33			FINAL CUT OFF ELEVATION		
				266'00		

REPORT TO BE SENT TO: - PRINCIPAL FOUNDATION ENGINEER
 MATERIALS & RESEARCH DIVISION
 DEPARTMENT OF HIGHWAYS
 PARLIAMENT BUILDINGS
 TORONTO, ONTARIO

SIGNED F. Feenstra
 NAME (PRINT) F. FEENSTRA
 DATE JULY 10/62

ATTACH SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 61-174 STRUCTURE DESJARDIN CANAL BRIDGE

CONTRACTOR BERMINGHAM CONST. CO. DESIGN LOAD OF PILE 25 T.

HAMMER DETAILS: TYPE D-12 WEIGHT 1.38 T. HEIGHT OF FALL OR ENERGY 22,500

TYPE OF ANVIL OR CAP STD-D12 WEIGHT OF ANVIL OR CAP 0.25 T.

PILE DETAILS BUTT DIA. 12" UNTREATED CLASS "A" OAK PILES

PILE NO. 14 LOCATION N.E. PILE CAP DATE DRIVEN JUNE 7/62

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.
17'	1	0		26			51			76	
	2	1		27			52			77	
	3	5		28			53			78	
	4	12		29			54			79	
	5	15		30			55			80	
	6	14		31			56			81	
	7	21		32			57			82	
	8	31		33			58			83	
	9	38		34			59			84	
	10	56		35			60			85	
	11	50		36			61			86	
	12	52		37			62			87	
	13	58		38			63			88	
	14	72		39			64			89	
	15	87		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	8	8	8	8	9	9
MEASURED REBOUND IN INCHES	1/2"	1/2"	1/2"	1/2"	3/4"	1/2"
FINAL LENGTH OF PILE	17'0			FINAL CUT OFF ELEVATION		

REPORT TO BE SENT TO: - PRINCIPAL FOUNDATION ENGINEER
MATERIALS & RESEARCH DIVISION
DEPARTMENT OF HIGHWAYS
PARLIAMENT BUILDINGS
TORO ONTARIO

SIGNED [Signature]
NAME (PRINT) W. KULMATICAS
DATE JUNE 8 - 1962

SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION — PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 61-174 STRUCTURE DESJARDINS CANAL BRIDGE.
CONTRACTOR BERMINGHAM CONST. CO. DESIGN LOAD OF PILE 25 T.
HAMMER DETAILS: TYPE D12 WEIGHT 1387 HEIGHT OF FALL OR ENERGY 22500
TYPE OF ANVIL OR CAP STD - D12 WEIGHT OF ANVIL OR CAP 0.25 T.
PILE DETAILS BUTT DIA. 11 3/4" CLASS 'A' UNTREATED OAK PILES
PILE NO. 12 LOCATION N.W. PILE CAP DATE DRIVEN JUNE 7/62

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	0		26			51			76	
	2	0		27			52			77	
	3	0		28			53			78	
	4	0		29			54			79	
	5	0		30			55			80	
	6	0		31			56			81	
	7			32			57			82	
	8	1 BLOW		33			58			83	
	9			34			59			84	
	10	3		35			60			85	
	11	8		36			61			86	
	12	14		37			62			87	
	13	32		38			63			88	
	14	78		39			64			89	
	15	116		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	12	12	14	12	12	13
MEASURED REBOUND IN INCHES	3/8"	3/8"	1/2"	1/2"	1/4"	1/4"
FINAL LENGTH OF PILE	21'0		FINAL CUT OFF ELEVATION		237.75	

REPORT TO BE SENT TO: — PRINCIPAL FOUNDATION ENGINEER
MATERIALS & RESEARCH DIVISION
DEPARTMENT OF HIGHWAYS
PARLIAMENT BUILDINGS
TORONTO ONTARIO

SIGNED [Signature]
NAME (PRINT) W. KULMATICAS
DATE JUNE 8-1962
SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 61-174 STRUCTURE DESJARDINS CANAL BRIDGE
 CONTRACTOR BERMINGHAM CONSTR. DESIGN LOAD OF PILE 25 TONS
 HAMMER DETAILS: TYPE D 12 WEIGHT 1.38 T. HEIGHT OF FALL OR ENERGY 22,500
 TYPE OF ANVIL OR CAP STAN. — D 12 WEIGHT OF ANVIL OR CAP 0.25 T.
 PILE DETAILS CLASS B — UNTREATED TIMBER PILE
 PILE NO. 2 LOCATION SOUTH PIER — WEST PILE CAP DATE DRIVEN 4 MAY 1962

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'	1	SUNK	26	51			76				
	2	UNDER	27	52			77				
	3	ITS	28	53			78				
	4	OWN	29	54			79				
	5	WEIGHT	30	55			80				
	6		31	56			81				
	7		32	57			82				
	8	2	33	58			83				
	9	1	34	59			84				
	10	1	35	60			85				
	11	1	36	61			86				
	12	3	37	62			87				
	13	14	38	63			88				
	14	39	39	64			89				
	15	88	40	65			90				
	16	85	41	66			91				
	17	57	42	67			92				
	18	52	43	68			93				
	19	53	44	69			94				
	20	49	45	70			95				
	21	75	46	71			96				
	22	128	47	72			97				
	23	75+43 FOR 6"	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	10	10	10	10	10	10
MEASURED REBOUND IN INCHES	0.75	0.75	0.75	0.75	0.75	0.75
FINAL LENGTH OF PILE <u>22.5'</u>	FINAL CUT OFF ELEVATION <u>236.75</u>					

REPORT TO BE SENT TO: - PRINCIPAL FOUNDATION ENGINEER
 MATERIALS & RESEARCH DIVISION
 DEPARTMENT OF HIGHWAYS
 PARLIAMENT BUILDINGS
 TORONTO, ONTARIO

SIGNED H. Szymanski
 NAME (PRINT) H. SZYMANSKI
 DATE 4 MAY 1962

SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 61-174 STRUCTURE DESJARDINS CANAL BRIDGE
CONTRACTOR BERMINGHAM CONSTR. DESIGN LOAD OF PILE 25 TONS
HAMMER DETAILS: TYPE D 12 WEIGHT 1.38 T. HEIGHT OF FALL OR ENERGY 22500
TYPE OF ANVIL OR CAP STAN. — D 12 WEIGHT OF ANVIL OR CAP 0.25 T.
PILE DETAILS CLASS B UNTREATED TIMBER PILE
PILE NO. 1 LOCATION SOUTH PIER — EAST PILE CAP DATE DRIVEN 4 MAY 1962

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.
36'	1	SUNK		26			51			76	
	2	UNDER ITS		27			52			77	
	3	OWN WEIGHT		28			53			78	
	4	7		29			54			79	
	5	25		30			55			80	
	6	12		31			56			81	
	7	22		32			57			82	
	8	34		33			58			83	
	9	25		34			59			84	
	10	34		35			60			85	
	11	45		36			61			86	
	12	48		37			62			87	
	13	53		38			63			88	
	14	67		39			64			89	
	15	130		40			65			90	
	16	106+24		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	10	10	10	10	11	11
MEASURED REBOUND IN INCHES	0.55	0.55	0.55	0.55	0.55	0.55
FINAL LENGTH OF PILE	15.0'			FINAL CUT OFF ELEVATION		
				236.75		

REPORT TO BE SENT TO: - PRINCIPAL FOUNDATION ENGINEER
MATERIALS & RESEARCH DIVISION
DEPARTMENT OF HIGHWAYS
PARLIAMENT BUILDINGS
TORO ONTARIO

SIGNED H. Szymanski
NAME (PRINT) H. SZYMANSKI
DATE 4 MAY 1962
ON SKETCH OF PILE NUMBERING SYSTEM

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

DISTRICT NO. 4 CONTRACT NO. 51-174 STRUCTURE DESJARDIN CANAL BRIDGE
CONTRACTOR BERMINGHAM CONST. CO. DESIGN LOAD OF PILE 40 TONS
HAMMER DETAILS: TYPE D-12 WEIGHT 1387 HEIGHT OF FALL OR ENERGY 22,500
TYPE OF ANVIL OR CAP STD - D12 WEIGHT OF ANVIL OR CAP 0.25 T
PILE DETAILS 12 3/4" x 0.25" x 33.10/FT. STEEL TUBE
PILE NO. 20 LOCATION N. ABUTMENT - FOOTING DATE DRIVEN JUNE 30/62

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	1		26	2		51			76	
	2	2		27	2		52			77	
	3	2		28	4		53			78	
	4	4		29	6		54			79	
	5	6		30	12		55			80	
	6	12		31	11		56			81	
	7	12		32	6+2		57			82	
	8	13		33	10		58			83	
	9	13		34	13		59			84	
	10	13		35	14		60			85	
	11	11		36	19		61			86	
	12	10		37	32		62			87	
	13	9		38	52		63			88	
	14	9		39	70		64			89	
	15	10		40	125		65			90	
	16	10		41	220		66			91	
	17	10		42			67			92	
	18	10		43			68			93	
	19	9		44			69			94	
	20	5+5		45			70			95	
	21	3		46			71			96	
	22	2		47			72			97	
	23	5		48			73			98	
	24	2		49			74			99	
	25	2		50			75			100	

DETAILS FOR FINAL SIX INCHES OF PENETRATION	1	2	3	4	5	6
BLOWS PER INCH	10	10	10	10	10	10
MEASURED REBOUND IN INCHES	.6	.6	.6	.6	.6	.6
FINAL LENGTH OF PILE	41'08			FINAL CUT OFF ELEVATION 266'00		

REPORT TO BE SENT TO: - PRINCIPAL FOUNDATION ENGINEER
MATERIALS & RESEARCH DIVISION
DEPARTMENT OF HIGHWAYS
PARLIAMENT BUILDINGS
TORONTO, ONTARIO

SIGNED H. Szymanski
NAME (PRINT) H. SZYMANSKI

DATE JULY 30/1962

SKETCH OF PILE NUMBERING SYSTEM

RESULTS OF TEST PILE №1

GROSS SETTLEMENT = 0.7035

REBOUND = 0.4450

NET SETTLEMENT = 0.2585

PILE LOADING TEST №1

DESIGNS CANAL BRIDGE

CHEYENNE EXHWY - W BOUND LANE

62-P-49 WF 103-60-1 CONTRACT #1-174

DRIVEN - MAY 4/62 TESTED - MAY 7, 1962

PILE TYPE - CLASS "B" TIMBER UNTREATED

LENGTH AFTER CUTOFF 18'0"

FINAL CUT OFF ELEV. 2267.5 TIP ELEV. 2217.5

LOAD IN TONS

LOAD - TIME

LOAD IN TONS

TIME IN HOURS

LOAD - MOVEMENT

TIME - MOVEMENT

MOVEMENT IN INCHES

RESULTS OF TEST PILE Nº2

GROSS SETTLEMENT = 0.8025

REBOUND = 0.2865

NET SETTLEMENT = 0.5160

PILE LOADING TEST Nº 2

DESJARDINS CANAL BRIDGE

CHEDoke EXPWY-WEST BOUND LANE

62-F-49 WP 193-60-1 CONTRACT 61-174

DRIVEN- MAY 4/62 TESTED- MAY 9, 1962

PILE TYPE-CLASS "B" TIMBER UNTREATED

LENGTH AFTER CUT OFF 22'5"

FINAL CUT OFF ELEV. 236.75 TIP ELEV. 214.75

LOAD IN TONS

LOAD-TIME

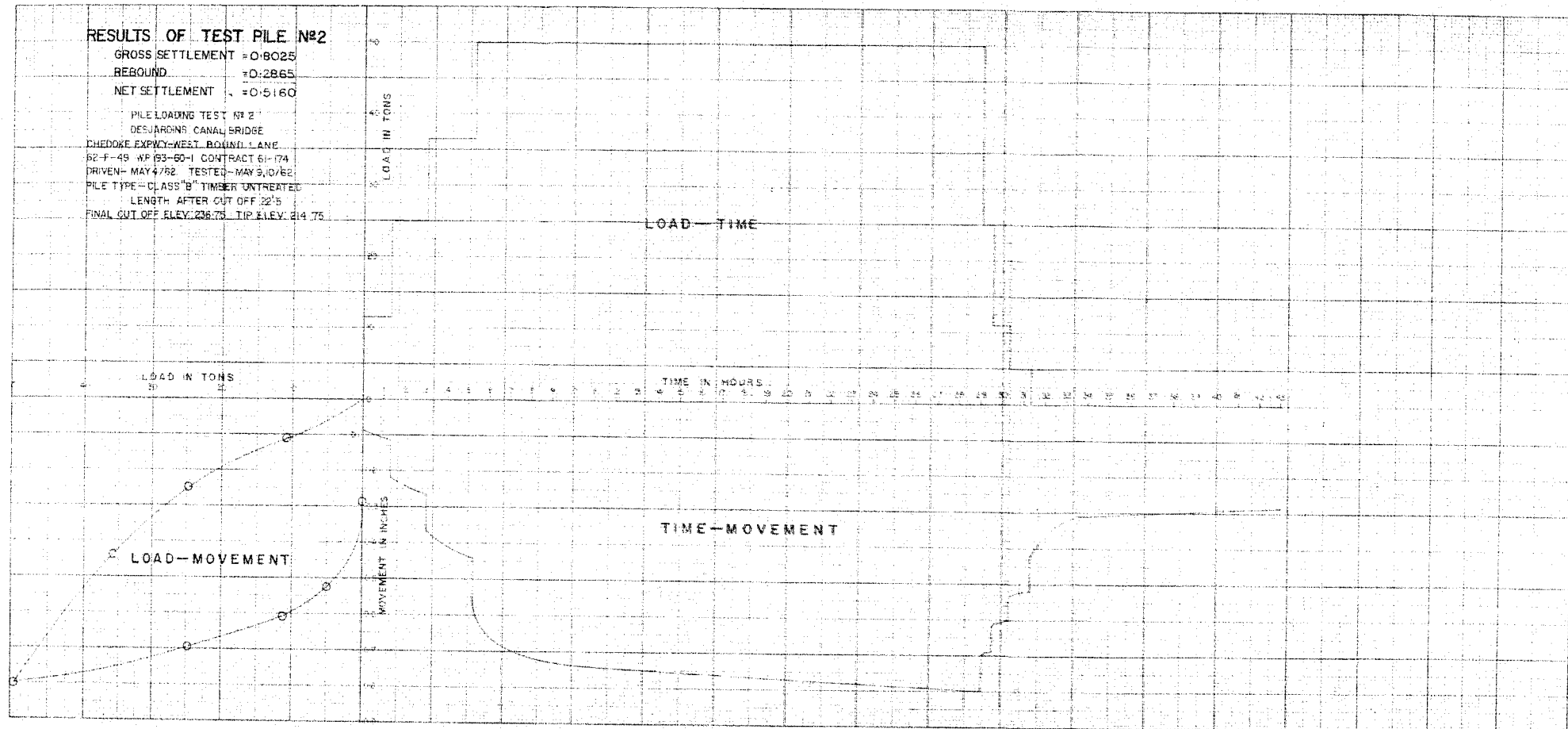
LOAD IN TONS

TIME IN HOURS

LOAD-MOVEMENT

MOVEMENT IN INCHES

TIME-MOVEMENT



RESULTS OF TEST PILE №12

GROSS SETTLEMENT = 0.574

REBOUND = 0.373

NET SETTLEMENT = 0.201"

PILE LOADING TEST №12

DESJARDINS CANAL BRIDGE

CHECKSKE EXPIRY -- N.A. PILE CAP

62-F-49 W.P. 193-60-1 CONTRACT 61-174

DRIVEN - JUNE 7/62 TESTED - JUNE 14/62

PILE TYPE - PILE BUTT 10 1/2" DIA. UNTREATED

CLASS 'A' OAK PILE

LENGTH AFTER CUT OFF - 15'0"

FINAL CUT OFF ELEV. 257.75 PIPE ELEV. 214.32

LOAD IN TONS

LOAD - TIME

LOAD IN TONS

TIME IN HOURS

LOAD - MOVEMENT

MOVEMENT IN INCHES

TIME - MOVEMENT

RESULTS OF TEST PILE №14

GROSS SETTLEMENT=0.4515

REBOUND =0.1740

NET SETTLEMENT =0.2775"

PILE LOADING TEST №14

DESIJARDINS CANAL BRIDGE

CHEROKEE EXPRESS - PILE PILE CAP

REF. 45 WR 193-60-1 CONTRACT 61-474

DRIVEN-JUNE 7/62 TESTED-JUNE 12-13/62

PILE TYPE PILE BUTT 12" DIA. UNTREATED

CLASS "A" OAK PILE

LENGTH AFTER CUT OFF-17'0"

FINAL CUT OFF ELEV: 237.75 TIP EL 220.75

LOAD IN TONS

LOAD-TIME

LOAD IN TONS

TIME IN HOURS

TIME-MOVEMENT

LOAD-MOVEMENT

MOVEMENT IN INCHES

RESULTS OF TEST PILE №19

GROSS SETTLEMENT 0.7495

REBOUND 0.3790

NET SETTLEMENT 0.3705

PILE LOADING TEST № 19

DESGARDINS CANAL BRIDGE

CHEDOKE EXPWY - S. ABUTMENT FOOTING

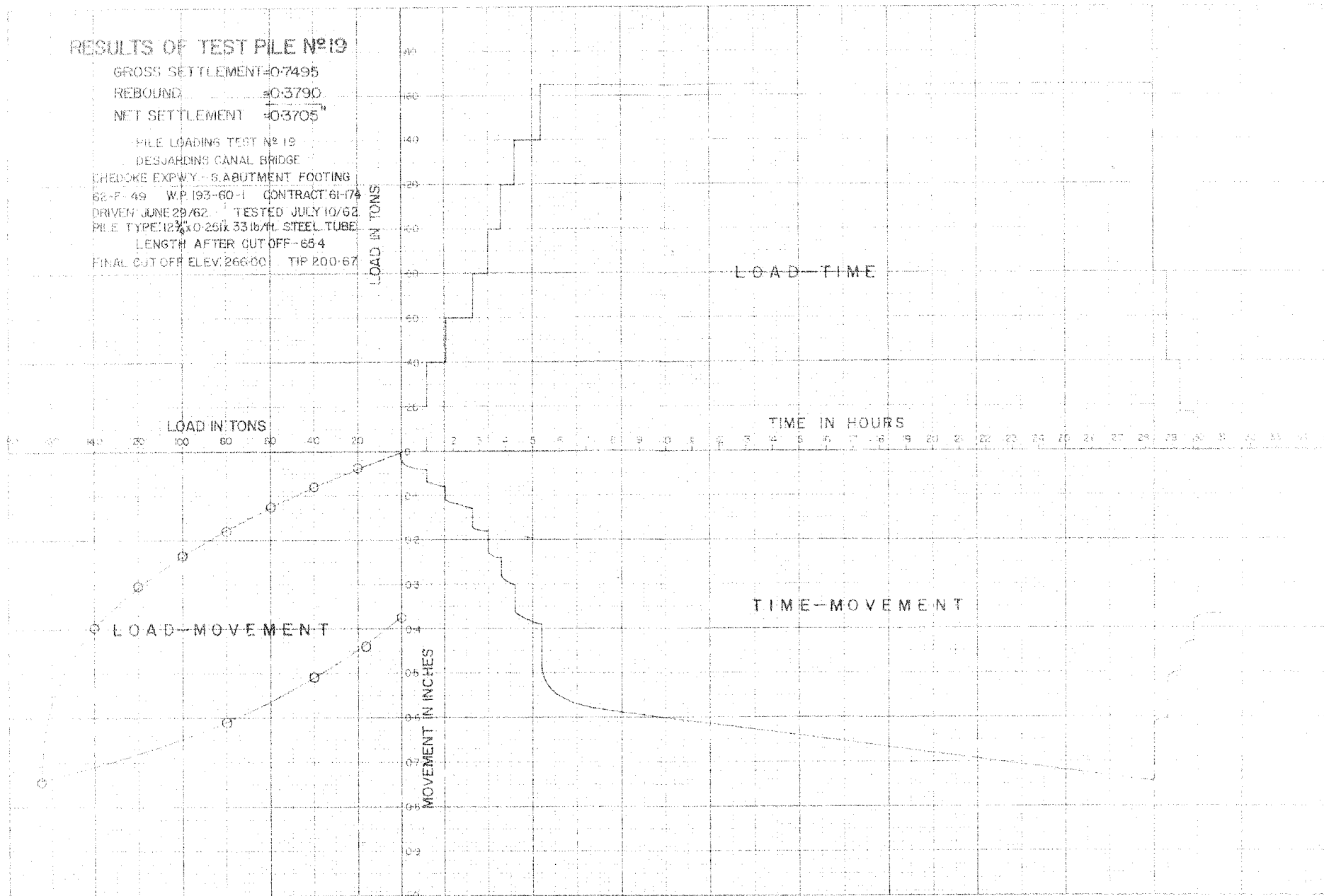
62-P-49 W.P. 193-60-1 CONTRACT 61-174

DRIVEN JUNE 29/62 TESTED JULY 10/62

PILE TYPE: 12 3/4" X 0.251 X 33.15 M. STEEL TUBE

LENGTH AFTER CUT OFF - 65.4

FINAL CUT OFF ELEV: 266.00 TIP 200.67



RESULTS OF TEST PILE NO 20

GROSS SETTLEMENT = 0.2400

REBOUND = 0.1565

NET SETTLEMENT = 0.0835"

PILE LOADING TEST NO 20

DESJARDINS CANAL BRIDGE

CHECKED BY: N. ABUTMENT FOOTING

82-F-40 APR 53-60 CONTRACT 8-174

DRIVEN JULY 30/52 TESTED AUG 2-3/52

PILE TYPE: 12" x 25" x 35lb/ft STEEL TUBE

LENGTH AFTER CUT OFF 4'00"

FINAL CUT OFF ELEV. 286.00' E.P. 115.7004 32

LOAD IN TONS

LOAD - TIME

LOAD IN TONS

TIME IN SECS

TIME - MOVEMENT

LOAD - MOVEMENT

MOVEMENT IN INCHES

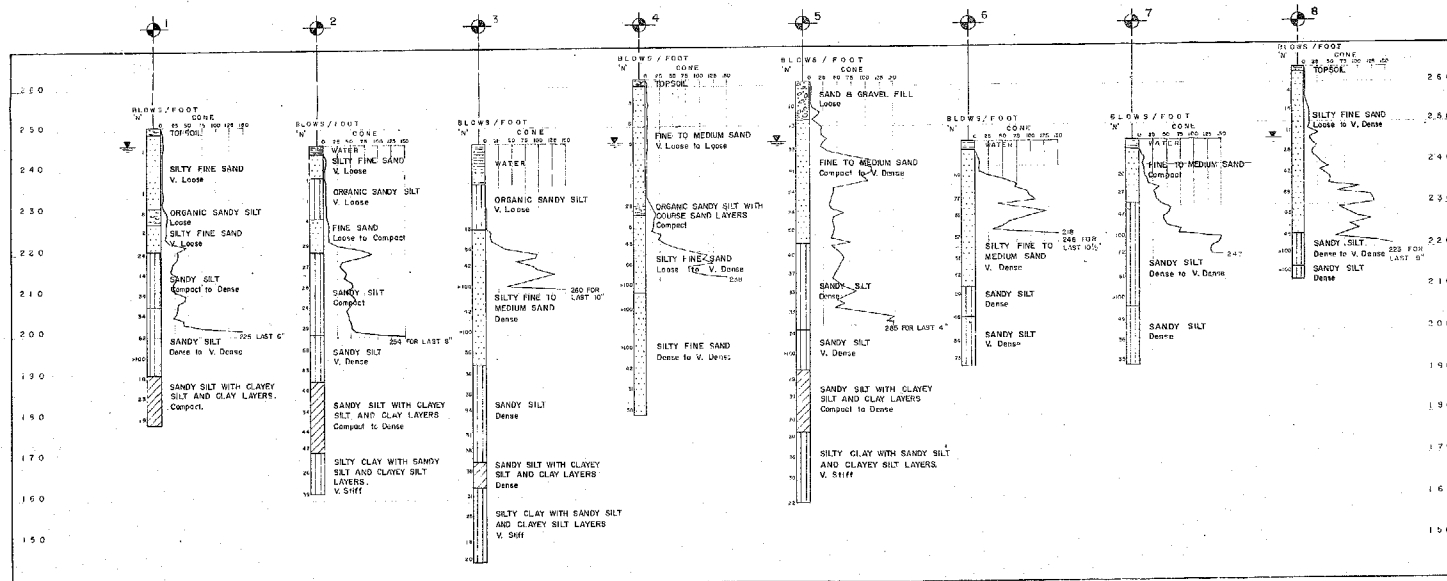
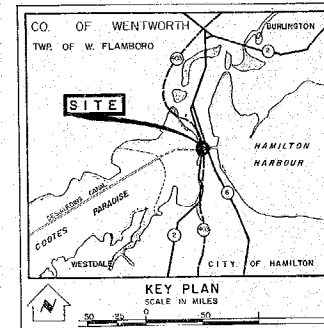
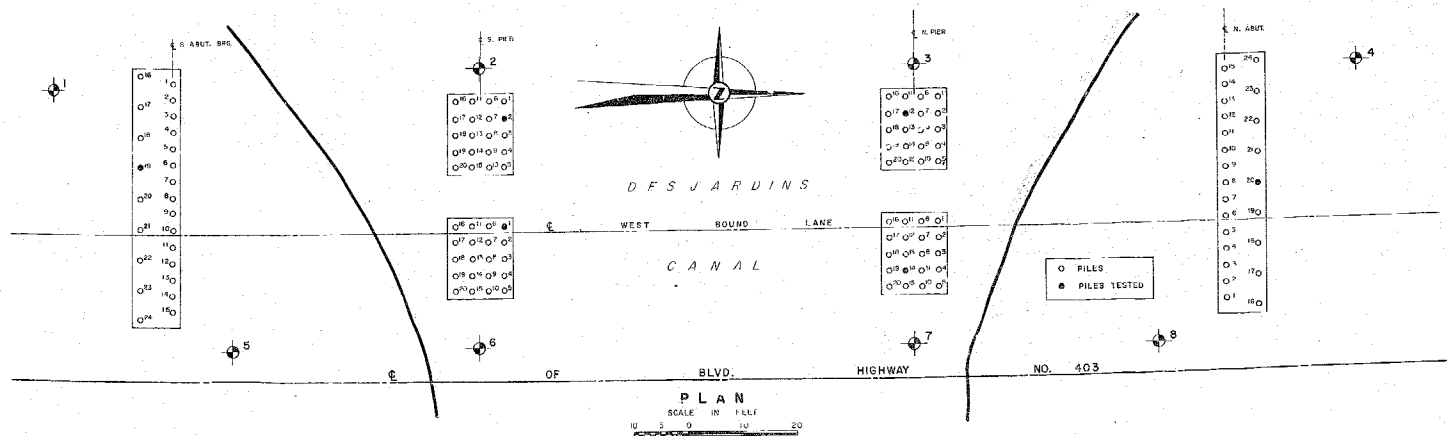
62-F-49

W.P. # 193-60-1

Hwy # 403 W.B.L.

DESJARDINS

CANAL



BOREHOLE STRATIGRAPHY

LEGEND			
	Bore Hole		
	Cone Penetration Hole		
	Bore & Cone Penetration Hole		
	Water Levels established at time of field investigation (May 1960)		
	N' - Standard Penetration Resistance		
	CONE - Dynamic		
NO.	ELEVATION	STATION	OFFSET

NOTE: Bore Hole data taken from Section report 57067

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.

DEPARTMENT OF HIGHWAYS - ONTARIO MATERIALS & RESEARCH DIVISION - FOUNDATION SECTION			
HIGHWAY NO. 403 AND DESJARDINS CANAL BRIDGE			
PILE LOADING TESTS			
ORIGINATED BY: SECUNY	DISTRICT NO. 4	DATE: 26 SEPT. 1962	
DRAWN BY: MUMFORD	N.R. NO. 193-60-1	JOB NO. 62-F-49	
CHECKED: <i>CHP</i>	CONTRACT NO.	DRAWING NO.	
APPROVED: <i>R.J. Smith</i>	61-174	62-F-49 A	