31E-229

Ministry of Transportation
Ontario

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

(PLEASE REFER TO PAGE 2 IF CLARIFICATION IS REQUIRED)

PREPARED BY DAWN COULSON TITLE RCJ1 DATE JUNE · 23 · 2009

CONTRACT INFOR'N

CONTRACT No. 2008-5114 DIST 52-NORTH EASTERN REGION
STR SITE No. 44-395/ STR WP No. #3 LOCATION SBL - NORTH PIER
PILING CONTRACTOR BURMINGHAM

PILE DETAILS

PILE No. AND LOCATION #10 (ATTACH SKETCH) PILE TYPE HP DESIGN CAPACITY ≥ 3600 kN
SIZE 310 x 110 MASS 110 kg/m PILE SHOE ROCK POINT BATTER 1:12
INITIAL PILE LENGTH 19.900 m

SPLICED	1	2	3	4	5	6
TOTAL LENGTH OF PILE BEING DRIVEN AFTER SPLICING	39.72					

FINAL PILE LENGTH AFTER CUT-OFF 30.120 m

CUT-OFF ELEV 292.300 ACTUAL TIP ELEV 262.180 DESIGN TIP ELEV 253.300

HAMMER DETAILS

MECHANICAL HAMMER TYPE DIESEL B-5505 RATED ENERGY 114000 JOULES/BLOW
DROP HAMMER MASS(W) kg FALL(h) m ENERGY(Wgh)* JOULES/BLOW
MASS OF ANVIL 840 kg MASS OF MECHANICAL HAMMER RAM(W) 4180 kg FOLLOWER USED: YES (NO)
HAMMER CUSHION DETAILS N/A PILE CUSHION DETAILS

GROUND ELEV AT PILE LOCATIONS

DRIVING RECORD

DATE(S)

LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m
0.2	PUSH	6.2	1	12.2		18.2	1	24.2	2	27.2	2	30.2	3
0.4		6.4		12.4		18.4	1	24.4	2	27.4	2	30.4	3
0.6		6.6		12.6	1	18.6	1	24.6	2	27.6	2	30.6	3
0.8		6.8		12.8		18.8	1	24.8	2	27.8	2	30.8	3
1.0		7.0	1	13.0		19.0	3	25.0	2	28.0	2	31.0	3
1.2		7.2		13.2		19.2	3	25.2	2	28.2	2	31.2	3
1.4		7.4		13.4	1	19.4	3	25.4	2	28.4	3	31.4	3
1.6		7.6		13.6		19.6	3	25.6	2	28.6	3	31.6	4
1.8		7.8	1	13.8	1	19.8	3	25.8	2	28.8	3	31.8	4
20.		8.0		14.0		20.0	3	26.0	2	29.0	3	32.0	4
2.2		8.2		14.2	1	20.2	3	26.2	2	29.2	3	32.2	5
2.4		8.4		14.4		20.4	3	26.4	2	29.4	3	32.4	6
2.6		8.6		14.6	1	20.6	3	26.6	2	29.6	3	32.6	6
2.8		8.8		14.8		20.8	3	26.8	2	29.8	3	32.8	7
3.0		9.0	1	15.0	1	21.0	2	27.0	2	30.0	3	33.0	8
3.2		9.2		15.2		21.2	2						
3.4		9.4		15.4	1	21.4	2						
3.6		9.6	1	15.6	1	21.6	2						
3.8		9.8		15.8	1	21.8	2						
4.0		10.0	1	16.0	1	22.0	2						
4.2		10.2		16.2	1	22.2	2						
4.4		10.4		16.4	1	22.4	2						
4.6		10.6	1	16.6	1	22.6	2						
4.8		10.8		16.8	1	22.8	2						
5.0		11.0		17.0	1	23.0	2						
5.2		11.2		17.2	1	23.2	2						
5.4		11.4	1	17.4	1	23.4	2						
5.6	1	11.6		17.6	1	23.6	2						
5.8		11.8		17.8	1	24.0	2						
6.0		12.0	1	18.0	1	24.0	2						

RECORD OF LAST 100mm OF PENETRATION FROM GRAPH PRODUCED ON PILE BLOWS/20mm

PENETRATION	0 TO 20-	20 TO 40	40 TO 60	60 TO 80	80 TO 100
BLOWS/20mm	2.5	2.0	3.0	2.75	2.5
REBOUND(C)	19.25	19.0	19.5	19.75	19.3

*NOTE: g = ACCELERATION DUE TO GRAVITY = 9.81 m/s2

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PH-D-205 REVISED 03/24/01

* C.O #25 CUT-OFF ELEV. = 292.300 (+0.5M)

Ministry of Transportation

BRIDGE CONSTRUCTION - PILE DRIVING RECORD

(PLEASE REFER TO PAGE 2 IF CLARIFICATION IS REQUIRED)

PREPARED BY _____ TITLE _____ DATE _____

CONTRACT INFOR'N

CONTRACT No. 2008-5114 DIST 52- NORTH EASTERN REGION
STR SITE No. 44-395/2 STR WP No. # 3 LOCATION SBL - NORTH PIER
PILING CONTRACTOR

PILE DETAILS

PILE No. AND LOCATION #10 (ATTACH SKETCH) PILE TYPE HP DESIGN CAPACITY ___kN
SIZE 310 x 110 MASS 110 kg/m PILE SHOE ROCK POINT BATTER
INITIAL PILE LENGTH _____ m

SPLICED	1	2	3	4	5	6
TOTAL LENGTH OF PILE BEING DRIVEN AFTER SPLICING						

FINAL PILE LENGTH AFTER CUT-OFF _____ m

CUT-OFF ELEV _____ ACTUAL TIP ELEV _____ DESIGN TIP ELEV

HAMMER DETAILS

MECHANICAL HAMMER TYPE _____ RATED ENERGY _____ JOULES/BLOW
DROP HAMMER MASS(W) _____ kg FALL(h) _____ m ENERGY(Wgh)* _____ JOULES/BLOW
MASS OF ANVIL _____ kg MASS OF MECHANICAL HAMMER RAM(W) _____ kg FOLLOWER USED: YES NO
HAMMER CUSHION DETAILS _____ PILE CUSHION DETAILS

GROUND ELEV AT PILE LOCATIONS _____ DRIVING RECORD DATE(S)

LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATIN BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m
0.2	8	6.2		12.2		18.2		24.2		27.2		30.2	
0.4	8	6.4		12.4		18.4		24.4		27.4		30.4	
0.6	8	6.6		12.6		18.6		24.6		27.6		30.6	
0.8	8	6.8		12.8		18.8		24.8		27.8		30.8	
31 1.0	9	7.0		13.0		19.0		25.0		28.0		31.0	
1.2	11	7.2		13.2		19.2		25.2		28.2		31.2	
1.4		7.4		13.4		19.4		25.4		28.4		31.4	
1.6		7.6		13.6		19.6		25.6		28.6		31.6	
1.8	13	7.8		13.8		19.8		25.8		28.8		31.8	
35 2.0	13	8.0		14.0		20.0		26.0		29.0		32.0	
2.2	13	8.2		14.2		20.2		26.2		29.2		32.2	
2.4	14	8.4		14.4		20.4		26.4		29.4		32.4	
2.6	14	8.6		14.6		20.6		26.6		29.6		32.6	
2.8	110	8.8		14.8		20.8		26.8		29.8		32.8	
36 3.0	14	9.0		15.0		21.0		27.0		30.0		33.0	
3.2	14	9.2		15.2		21.2							
3.4	16	9.4		15.4		21.4							
3.6	15	9.6		15.6		21.6							
3.8	16	9.8		15.8		21.8							
37 4.0	18	10.0		16.0		22.0							
4.2	17	10.2		16.2		22.2							
4.4	20	10.4		16.4		22.4							
4.6	19	10.6		16.6		22.6							
4.8	21	10.8		16.8		22.8							
38	24	11.0		17.0		23.0							
5.2	24	11.2		17.2		23.2							
5.4		11.4		17.4		23.4							
5.6		11.6		17.6		23.6							
5.8		11.8		17.8		24.0							
6.0		12.0		18.0		24.0							

RECORD OF LAST 100mm OF PENETRATION FROM GRAPH PRODUCED ON PILE BLOWS/20mm

PENETRATION	0 TO 20-	20 TO 40	40 TO 60	60 TO 80	80 TO 100
BLOWS/20mm					
REBOUND(C)					

*NOTE: g = ACCELERATION DUE TO GRAVITY = 9.81 m/s2

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Ontario

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(PLEASE REFER TO PAGE 2 IF CLARIFICATION IS REQUIRED)

PREPARED BY DAWN COULSON TITLE RCJ1 DATE JUNE 23/09

CONTRACT INFOR'N

CONTRACT No. 2008-5114 DIST 52-NORTH EASTERN REGION
STR SITE No. 44-395 STR WP No. #3 LOCATION SBL - NORTH PIER
PILING CONTRACTOR BURMINGHAM

PILE DETAILS

PILE No. AND LOCATION #7 (ATTACH SKETCH) PILE TYPE HP DESIGN CAPACITY ≥ 3600 KN
SIZE 310 x 110 MASS 110 kg/m PILE SHOE ROCK POINT BATTER 1:12
INITIAL PILE LENGTH 19.900 m

SPLICED	1	2	3	4	5	6
TOTAL LENGTH OF PILE BEING DRIVEN AFTER SPLICING	39.78					

FINAL PILE LENGTH AFTER CUT-OFF 28.580 m
CUT-OFF ELEV 292.300 * ACTUAL TIP ELEV 263.720 DESIGN TIP ELEV 253.300

HAMMER DETAILS

MECHANICAL HAMMER TYPE DIESEL B-5505 RATED ENERGY 114 000 JOULES/BLOW
DROP HAMMER MASS(W) ____ kg FALL(h) ____ m ENERGY(Wgh)* ____ JOULES/BLOW
MASS OF ANVIL 840 kg MASS OF MECHANICAL HAMMER RAM(W) 4180 kg FOLLOWER USED: YES (NO)
HAMMER CUSHION DETAILS N/A PILE CUSHION DETAILS

GROUND ELEV AT PILE LOCATIONS — DRIVING RECORD — DATE(S)

LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATIN BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m	LENGTH IN GROUND m	PENETRATION BLOWS/0.2m
0.2	PUSH	6.2		12.2		18.2	2	24.2	4	27.2		30.2	
0.4		6.4		12.4		18.4	2	24.4	5	27.4		30.4	
0.6		6.6		12.6	1	18.6	2	24.6	5	27.6		30.6	
0.8		6.8		12.8		18.8	2	24.8	6	27.8		30.8	
1.0		7.0	V	13.0	1	19.0	2	25.0	8	28.0		31.0	
1.2		7.2	1	13.2		19.2	2	25.2	8	28.2		31.2	
1.4		7.4		13.4		19.4	2	25.4	12	28.4		31.4	
1.6		7.6		13.6	1	19.6	2	25.6	13	28.6		31.6	
1.8		7.8		13.8		19.8	2	25.8	15	28.8		31.8	
20.		8.0		14.0		20.0	2	26.0	18	29.0		32.0	
2.2		8.2		14.2	1	20.2	2	26.2	16	29.2		32.2	
2.4		8.4		14.4		20.4	2	26.4	17	29.4		32.4	
2.6		8.6		14.6	1	20.6	2	26.6	20	29.6		32.6	
2.8		8.8		14.8		20.8	2	26.8	24	29.8		32.8	
3.0		9.0	1	15.0	1	21.0	2	27.0	26	30.0		33.0	
3.2		9.2		15.2		21.2	2						
3.4		9.4		15.4	1	21.4	2						
3.6		9.6		15.6		21.6	2						
3.8		9.8		15.8	2	21.8	1						
4.0		10.0		16.0		22.0	2						
4.2		10.2		16.2	2	22.2	3						
4.4		10.4	1	16.4	2	22.4	3						
4.6		10.6		16.6	2	22.6	3						
4.8		10.8		16.8	2	22.8	3						
5.0		11.0	1	17.0	2	23.0	3						
5.2		11.2		17.2	2	23.2	3						
5.4		11.4		17.4	2	23.4	4						
5.6		11.6	1	17.6	2	23.6	4						
5.8		11.8		17.8	2	24.0	4						
6.0	V	12.0	1	18.0	2	24.0	4						

RECORD OF LAST 100mm OF PENETRATION FROM GRAPH PRODUCED ON PILE — BLOWS/20mm

PENETRATION	0 TO 20-	20 TO 40	40 TO 60	60 TO 80	80 TO 100
BLOWS/20mm	2.50	2.75	2.75	3.0	3.0
REBOUND(C)	18.75	18	17.25	17.25	17.75

*NOTE: g = ACCELERATION DUE TO GRAVITY = 9.81 m/s2

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PH-D-205 REVISED 03/24/01

* C.O. # 25 CUT-OFF ELEV. = 292.300 (±0.5m)