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APPENDIX 'A' GEOTECHNICAL REPORT



GEOTECHNICAL INVESTIGATION RESIDENTIAL STREETS RECONSTRUCTION WINNIPEG, MANITOBA

Submitted to:

MMM Group Limited

111-93 Lombard Avenue Winnipeg, Manitoba R3B 3B1

Attention: Mr. Vilko Maroti

Submitted by:

Amec Foster Wheeler Environment & Infrastructure

440 Dovercourt Drive Winnipeg, Manitoba R3Y 1N4

21 January 2015

Amec Foster Wheeler File No. WX17565R1

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1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure (Amec Foster Wheeler), was retained by MMM Group Limited (MMM) to conduct a pavement coring and geotechnical investigation for proposed upgrading projects for several streets in Winnipeg, Manitoba. The investigation was conducted on sections of 13 residential Winnipeg streets, as follows:

Coring and Geotechnical Investigation:

Andrews Street: Jefferson Avenue To Hartford Avenue

Church Avenue: Aikins Street to Salter Street
 Machray Avenue: Main Street to Emslie Street

Powers Street: Burrows Avenue To Pritchard Avenue

Redwood Avenue: Battery Street to Sergeant Tommy Prince Street

Coring Only:

Airlies Street: Merriwood Avenue to Jefferson Avenue

Ashmore Drive: Mandalay Drive to Adsum Drive
 Burrows Avenue: Keewatin Street to Dorset Street
 Duval Street: Adsum Drive to Margate Road
 Hallet Street: Rover Avenue to Euclid Avenue

Redwood Avenue: Shaughnessy Street to Sheppard Street

Rose Hill Place: Rose Hill Way to Rose Hill Way
 Rose Hill Way: Garton Avenue to Rose Hill Place.

The purpose of the investigation was to determine the pavement condition and soil profile at selected locations along the subject section of each street. The numbers of test holes per street were determined by MMM. Amec Foster Wheeler selected the test hole locations and confirmed the locations with MMM prior to the investigation.

2.0 SITE CONDITIONS

At the streets investigated, the roadway surface consisted of either asphalt or concrete. At the time of the investigation, the roadways were snow and ice covered and therefore a detailed review of the pavement condition was not possible. Typical of roads in the Winnipeg area, the roads were generally flat lying and level, with local slopes between catch basins to facilitate drainage.

3.0 FIELD INVESTIGATON

Prior to coring and drilling, Amec Foster Wheeler had public underground utilities located. Between 3 and 9 December 2014, following utility clearances, all 40 test hole locations were cored in order to determine the asphalt and/or concrete thicknesses. Because of variable conditions encountered in the initial coring at Airlies Street and Hallet Street, two additional locations were cored on each of these streets on 15 January 2015. All coring was completed

with a 150 mm diameter diamond coring barrel. Each of the cores was photographed and photos are presented in Appendix B.

On 4 and 5 December 2014, Amec Foster Wheeler supervised the drilling of 24 test holes by Maple Leaf Drilling Ltd. using their B40 truck mounted drill rig, equipped with 125 mm solid stem augers. The test holes were drilled in previously cored locations except for Powers Street TH05 which was obstructed by parked vehicles, and Church Street TH03, which conflicted with underground utilities, and were drilled through the pavement about 3 m away from the cored location. The coring and test hole locations are shown on Figures 1 to 6. Amec Foster Wheeler provided traffic control using flashing light-board trailers, cones, and signs from Guardian Traffic Services.

All soils observed during test hole drilling were visually classified on site according to the Modified Unified Soil Classification System and in accordance with the City of Winnipeg geotechnical guidelines. Groundwater and drilling conditions, as well as any pertinent subsurface observations, were also recorded at the time of the investigation.

Disturbed soil samples were taken at 0.3 m intervals from the auger flights in each test hole. All soil samples obtained during the field investigation were labelled, sealed in plastic bags to limit moisture loss and transported to Amec Foster Wheeler's soils laboratory in Winnipeg for further examination and testing. The test hole logs are presented in Appendix A, Figures 7 to 30, and show the soil profile, results of the field and laboratory testing, and comments relative to groundwater and sloughing conditions encountered.

Each test hole was backfilled with the auger cuttings and patched with asphalt after coring and drilling, with excess cuttings removed from the road.

4.0 LABORATORY TESTING

Soil samples were returned to Amec Foster Wheeler's soils laboratory in Winnipeg for geotechnical laboratory testing. The soil samples were visually classified and tested for in-situ moisture contents, and selected samples were tested for Atterberg limits and hydrometer analysis, in accordance with City requirements.

5.0 SUBSURFACE CONDITIONS

The generalized stratigraphy, as noted in the test holes for each investigated street is summarized in the following sections. It should be noted that the maximum gravel sizes noted are inferred, since drilling in freezing conditions can break the gravel into finer particles. Detailed soil stratigraphy is illustrated in the test hole logs presented in Appendix A.

5.1 Andrews Street – Test Holes TH01 to TH06

Concrete pavement, between 130 and 155 mm thick, was present at the ground surface at every test hole, and was underlain by 80 to 460 mm of clay fill. Alternating layers of native clay and silt, between 0.3 to 0.7 m thick, were encountered below the pavement and fill layers and extended to the maximum depths explored. The ground was frozen to 0.5 to 0.8 m below the pavement surface.

The clay fill generally contained variable silt, sand, and gravel, and was medium to high plastic, damp to moist, firm to stiff or friable when thawed, and brown or grey.

The silt generally contained trace to some clay, and was low plastic, moist to very moist, soft to stiff, grey or tan-brown, and contained occasional clay inclusions.

The native clay generally contained variable silt (some silt to silty), and was high plastic, damp to moist, stiff to very stiff, and brown or grey.

Table 1 summarizes the thickness and types of pavements and soils encountered at each of the test hole locations on Andrews Street.

TH02 Test Hole # **TH01** TH03 **TH04 TH05 TH06** Concrete 145 155 130 140 145 150 Fill - Clay 80 305 320 460 460 165 460 Clay 700 610 Silt 900 300 760 610 610 460 Clay 300 610 760 460 Silt 300 460 Clay

Table 1: Andrews Street Pavement and Soil Thickness (mm)

5.2 Church Avenue – Test Holes TH01 to TH04

Asphalt pavement, between 27 and 65 mm thick, was present at the ground surface at every test hole, and was underlain by 30 to 120 mm of gravel fill. In TH02 and TH03 the asphalt pavement was observed to contain two distinct layers. In TH02 and TH03 clay fill between 275 and 640 mm thick was encountered below the gravel fill. Alternating layers of native high plastic clay and low plastic silt, between 0.3 to 0.8 m thick, were encountered below the pavement and fill layers and extended to the maximum depths explored. The ground was frozen to 0.5 to 0.8 m below the pavement surface.

The gravel fill was generally well graded, compact, with sub-rounded to angular particles, was damp to moist, and had maximum aggregate diameters between 19 and 50 mm at the test hole locations.

The clay fill generally was silty and contained traces of sand and gravel, was high plastic, damp to moist, firm or friable when thawed, and grey.

The silt generally contained trace to some clay, and was low plastic, moist to very moist, soft to stiff, and tan-brown.

The native clay generally contained variable silt (some silt to silty), and was high plastic, damp to moist, firm to very stiff, and brown or grey.

Table 2 summarizes the thickness and types of pavements and soils encountered at each of the test hole locations on Church Street.

Test Hole #	TH01	TH02	TH03	TH04
Asphalt	30	25+28	28+37	27
Fill – Gravel	120	120	60	30
Fill – Clay		275	640	
Clay	610		300	670
Silt	1070	760	760	300
Clav		610	610	760

Table 2: Church Avenue Pavement and Soil Thickness (mm)

5.3 Machray Avenue - Test Holes TH01 to TH04

Asphalt pavement, between 73 and 133 mm thick, was present at the ground surface at every test hole. In TH01 the asphalt pavement was observed to contain two distinct layers, and in TH03 the asphalt pavement was underlain by concrete pavement measuring 95 mm thick. Gravel fill between 30 and 90 mm thick was encountered immediately below the pavement in all test holes. The gravel fill in TH04 was underlain by a 150 mm thick layer of clay fill. In TH01 to TH03, native high plastic clay was encountered immediately below the pavement and fill layers and extended to the test hole termination depths. In TH02 a layer of silt 0.8 m thick was encountered between layers of the clay. In TH04 a layer of silt 1.2 m thick was encountered immediately below the fill, and was underlain by clay which extended to the maximum depth explored. The ground was frozen up to 0.6 m below the pavement surface.

The gravel fill was poorly graded in TH02, but was otherwise generally well graded. The gravel was compact, with sub-rounded to angular particles, was damp, brown or grey, and had maximum aggregate diameters between 12 and 25 mm at the test hole locations.

The clay fill was silty and contained traces of sand and gravel, was high plastic, damp to moist, friable when thawed, and grev.

The silt generally contained trace to some clay, and was low to medium plastic, moist to very moist, soft to stiff, and tan-brown.

The native clay generally contained variable silt (some silt to silty), and was high plastic, damp to moist, stiff to very stiff, and brown or grey.

Table 3 summarizes the thickness and types of pavements and soils encountered at each of the test hole locations on Machray Avenue.

Table 3: Machray Avenue Pavement and Soil Thickness (mm)

Test Hole #	TH01	TH02	TH03	TH04
Asphalt	52+37	133	73	110
Concrete	0	0	95	0
Fill – Gravel	90	30	60	45
Fill – Clay				150
Clay	1650	760	1580	
Silt		760		1220
Clay		150		300

5.4 Powers Street – Test Holes TH01 to TH05

Asphalt pavement, between 20 and 90 mm thick, was present at the ground surface at every test hole. In TH04 the asphalt pavement was observed to contain two distinct layers. The asphalt was underlain by 30 to 120 mm of concrete rubble or gravel fill in all test holes. In TH04 and TH05 clay fill was encountered immediately below the rubble or gravel fill. The pavement and fill layers were underlain by high plastic clay in all test holes, and extended to the maximum depths explored. In TH01, TH02, and TH05 a layer of silt, between 0.3 and 0.6 m thick, was encountered within the clay layer. The ground was frozen to 0.6 to 0.8 m below the pavement surface.

The gravel fill was generally well graded, compact, with sub-rounded to angular particles, was damp, brown or grey, and had maximum aggregate diameters between 19 and 50 mm at the test hole locations.

The clay fill contained variable silt (silty to "and silt") and traces of sand and gravel, was high plastic, damp to moist, stiff or friable when thawed, and brown or grey.

The silt generally contained some clay, and was low plastic, moist to very moist, very soft to soft, and tan-brown.

The native clay generally contained variable silt (trace silt to silty), and was high plastic, damp to moist, soft to very stiff, and black, grey or brown.

Table 4 summarizes the thickness and types of pavements and soils encountered at each of the test hole locations on Powers Street.

Table 4: Powers Street Pavement and Soil Thickness (mm)

Test Hole #	TH01	TH02	TH03	TH04	TH05
Asphalt	54	35	20	15+75	30
Concrete	100			30	
Concrete	(Rubble)			(Rubble)	
Fill – Gravel		120	120		120
Fill – Clay				185	610
Clay	460	610	1830	1520	460
Silt	610	550			300
Clay	610	520			300

5.5 Redwood Avenue (Battery St. to Sgt. Tommy Prince St.) – Test Holes TH01 to TH05

Asphalt pavement, between 45 and 105 mm thick, was present at the ground surface at every test hole, and was underlain by gravel fill between 25 and 185 mm thick. In all test holes a layer of silt, between 0.5 and 0.9 m thick, was encountered immediately below the pavement and fill layers and was underlain by high plastic clay, which extended to the maximum depths explored. The ground was frozen up to 0.3 m below the pavement surface.

The gravel fill was poorly graded in TH03 but otherwise generally well graded, compact, with sub-rounded to angular particles, and was damp, brown or grey, and had maximum aggregate diameters between 12 and 35 mm.

The silt generally contained trace to some clay, and was low plastic, moist to very moist, soft to very stiff, and tan-brown.

The native clay generally contained variable silt (some silt to silty), and was high plastic, moist, firm to very stiff, and brown or grey.

Table 5 summarizes the thickness and types of pavements and soils encountered at each of the test hole locations on Redwood Avenue between Battery Street and Sergeant Tommy Prince Street.

Table 5: Redwood Avenue (Battery St. to Sgt. Tommy Prince St.) Pavement and Soil Thickness (mm)

Test Hole #	TH01	TH02	TH03	TH04	TH05
Asphalt	55	60	105	45	78
Fill - Gravel	170	105	25	185	65
Silt	530	750	940	820	620
Clay	1370	1220	1070	1070	1370

5.6 Coring Summary

Table 6 summarizes the thickness and types of pavements encountered at each of the coring locations not previously described with the drilling results. Photographs of all cores along with detailed coring location descriptions are presented in Appendix B.

Table 6: Pavement Thickness (mm)

Street	Pavement	Core #								
Sireet	Туре	C01	C02	C03	C04					
Airlies Street	Asphalt	42	0	60	55					
Airiles Street	Concrete	Rubble	158	150	160					
Ashmore Drive	Asphalt	0	0	0						
Asimole Drive	Concrete	154	155	140						
	Asphalt	55	0	45	50					
Hallet Street	Concrete	0	150	230	50 (Rubble) + 130					
Burrows Avenue	Asphalt	78	28							
Dullows Avellue	Concrete	235	220							
Duval Street	Asphalt	0	0							
Duvai Street	Concrete	145	140							
Redwood Avenue	Asphalt	0	0	0						
(Shaughnessy St. to Sheppard St.)	Concrete	235	225	190						
Rose Hill Way	Asphalt	0	0							
Nose IIII way	Concrete	155	175							

The results from the initial and additional cores on Airlies Street and Hallet Street were as follows:

Airlies Street

- C01 indicated asphalt over concrete rubble. This location was not subsequently drilled and the depth of rubble was not determined.
- C02 indicated concrete with no asphalt overlay. Since the street was covered in approximately 10 cm of compacted snow and ice during the coring, no visual assessment of the pavement surface was made.
- C03 and C04 showed asphalt over a concrete pavement structure.

Hallet Street

- C01 indicated asphalt over a gravel base. It is possible that there was additional
 concrete below the gravel base. This location was not subsequently drilled and the
 depth of gravel was not determined.
- C02 indicated concrete with no asphalt overlay. Since the street was covered in approximately 10 cm of compacted snow and ice during the coring, no visual assessment of the pavement surface was made.
- C03 showed asphalt over a concrete pavement structure.
- C04 showed asphalt over concrete rubble over weathered but intact concrete.

6.0 CLOSURE

The findings of this report were based on the results of field and laboratory investigations at test hole locations as selected by MMM Group Limited.

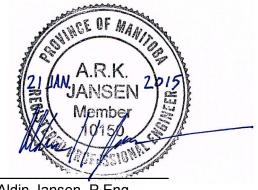
The site investigation was conducted for the sole purpose of profiling the pavement and subsurface conditions. Although no environmental issues were identified during the fieldwork, this does not indicate that no such issues exist. If the owner or other parties have any concern regarding the presence of environmental issues, then an appropriate level environmental assessment should be conducted.

Soil conditions, by their nature, can be highly variable across a site. The placement of fill and prior construction activities on a site can contribute to the variability especially near surface soil conditions. A contingency should always be included in any construction budget to allow for the possibility of variation in soil conditions, which may result in modification of any potential design and construction procedures which may arise from this factual investigative report.

This report was prepared exclusively for MMM Group Limited, and their clients and agents for the proposed development as described in the report. The data provided herein are presented in a factual manner only with no engineering interpretation provided, and should not be used for any other purpose, or by any other parties, without review and advice from a qualified geotechnical engineer. No other warranty, expressed or implied, is given.

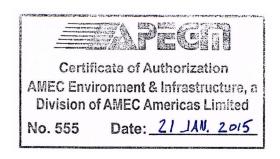
Sincerely,

Amec Foster Wheeler Environment & Infrastructure



Aldin Jansen, P.Eng. Geotechnical Engineer

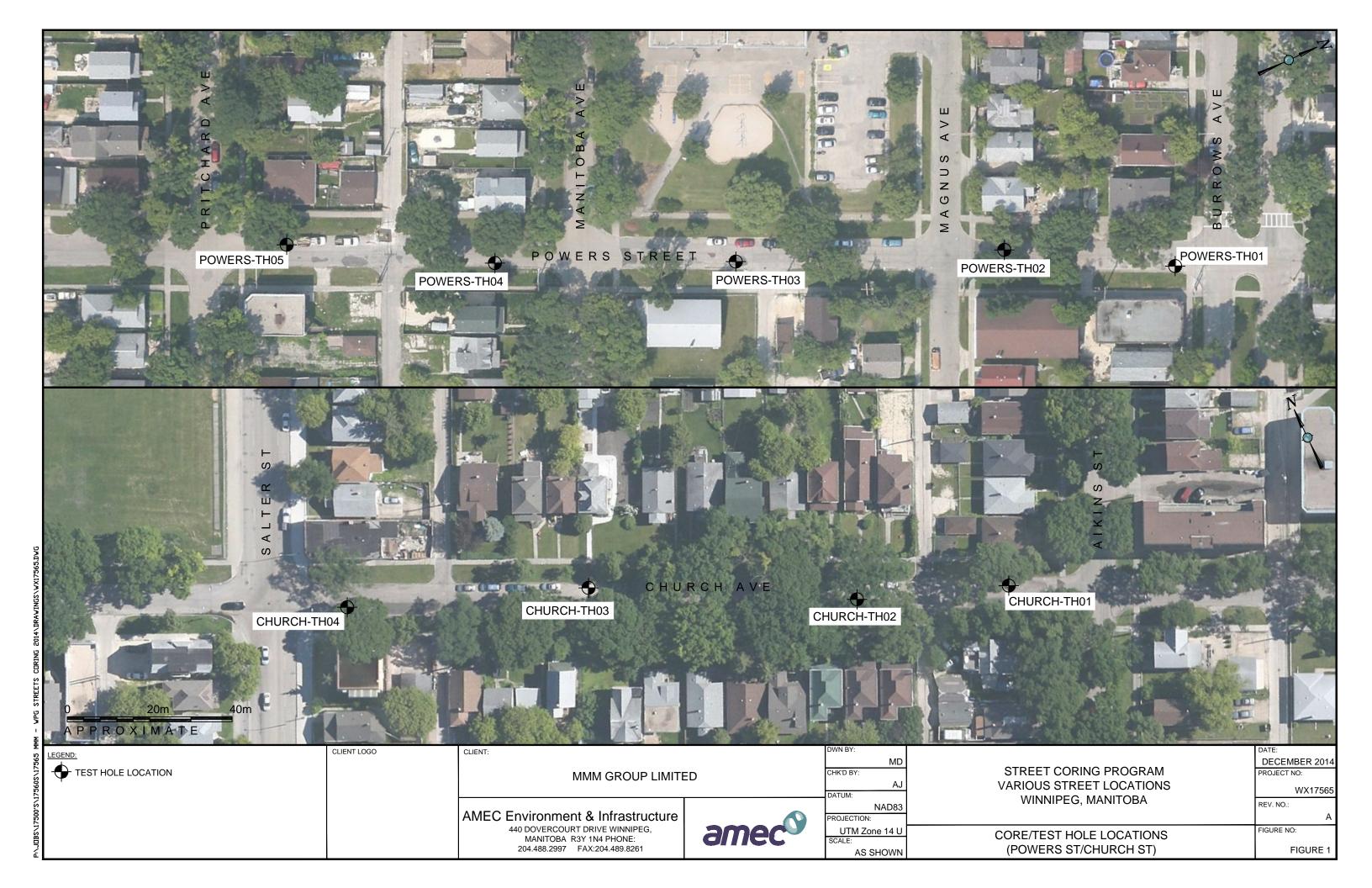
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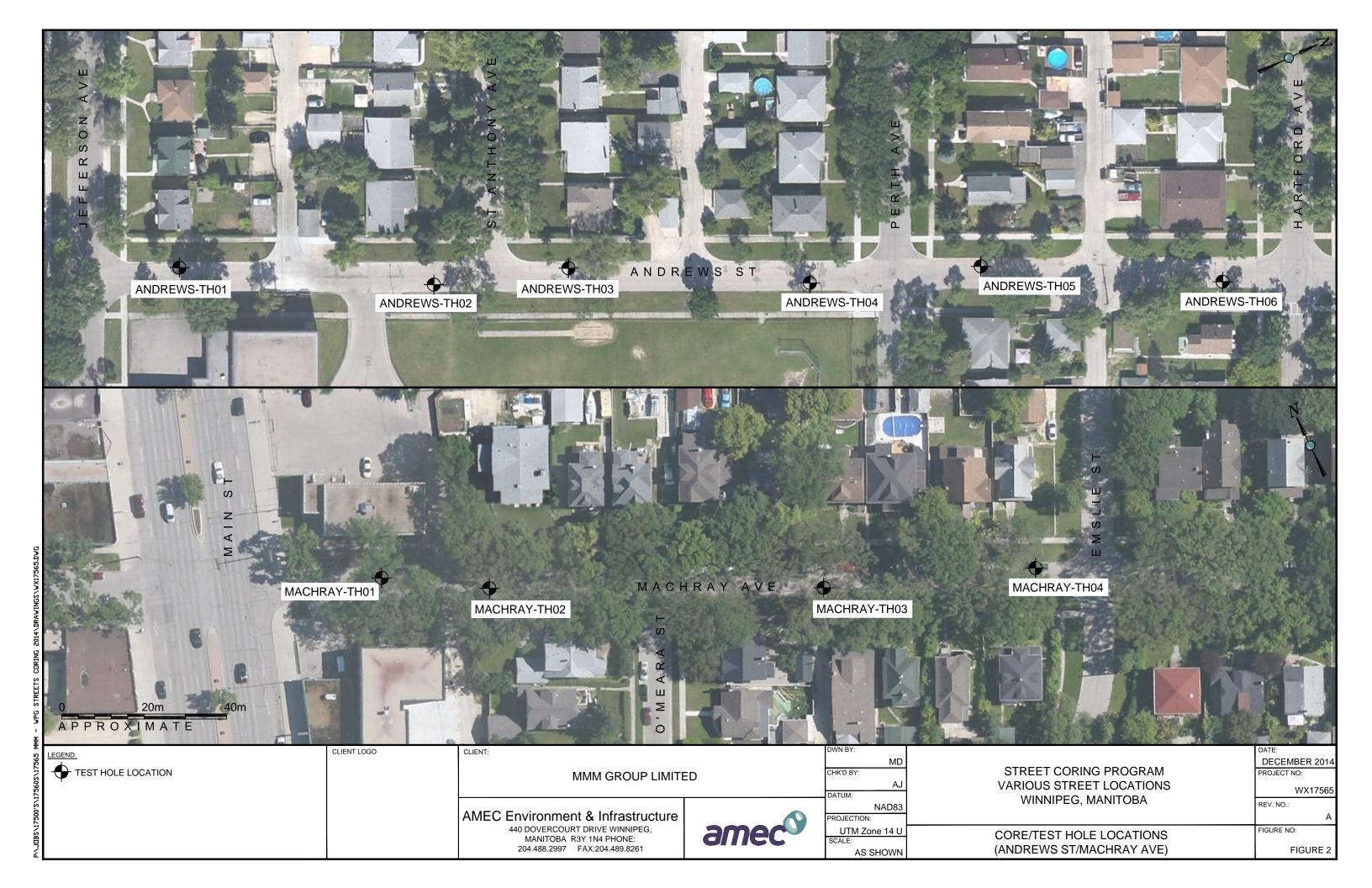


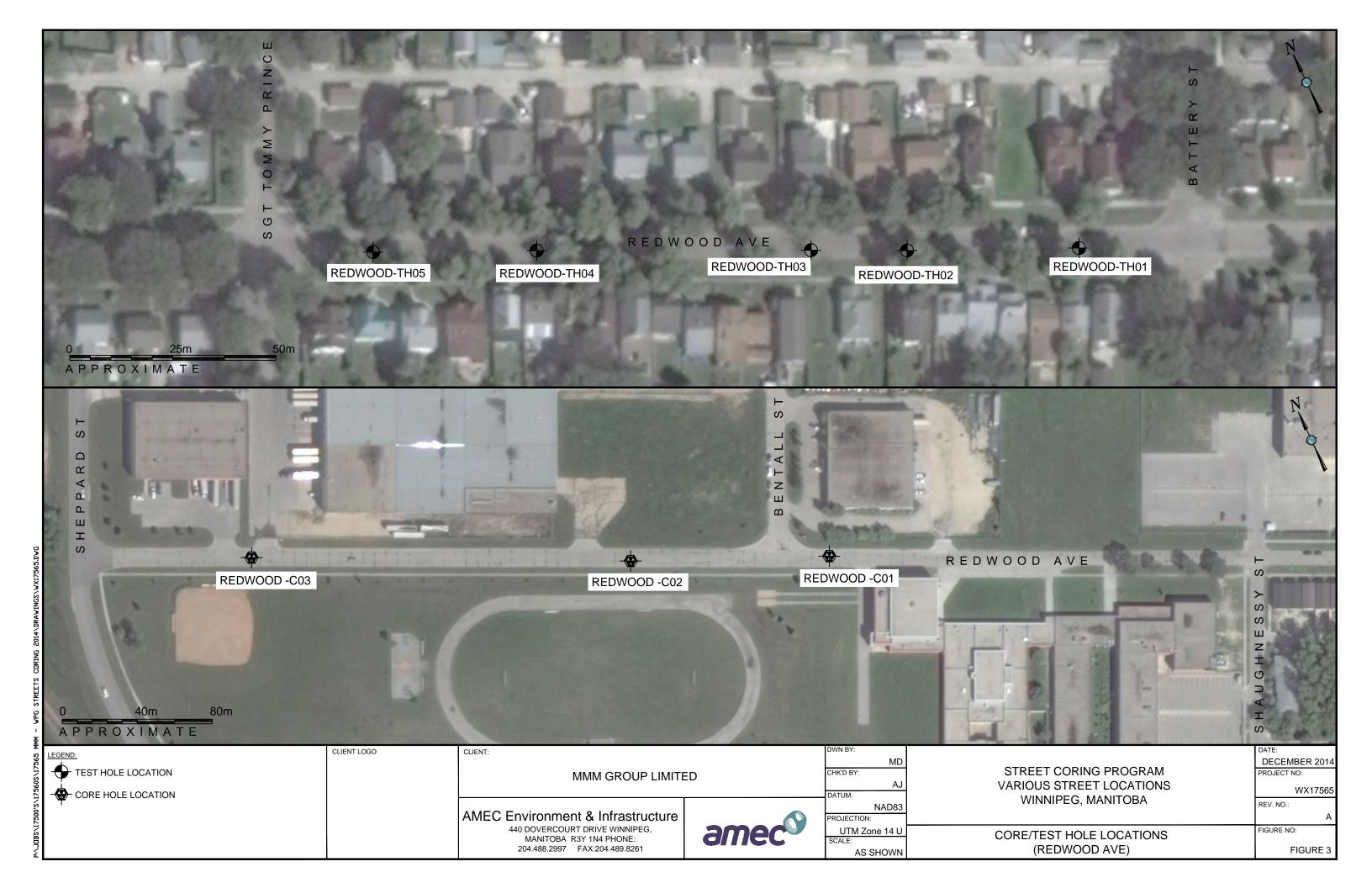
Harley Pankratz, P.Eng. Senior Associate Geotechnical Engineer VP; Eastern Prairies and Northern Alberta

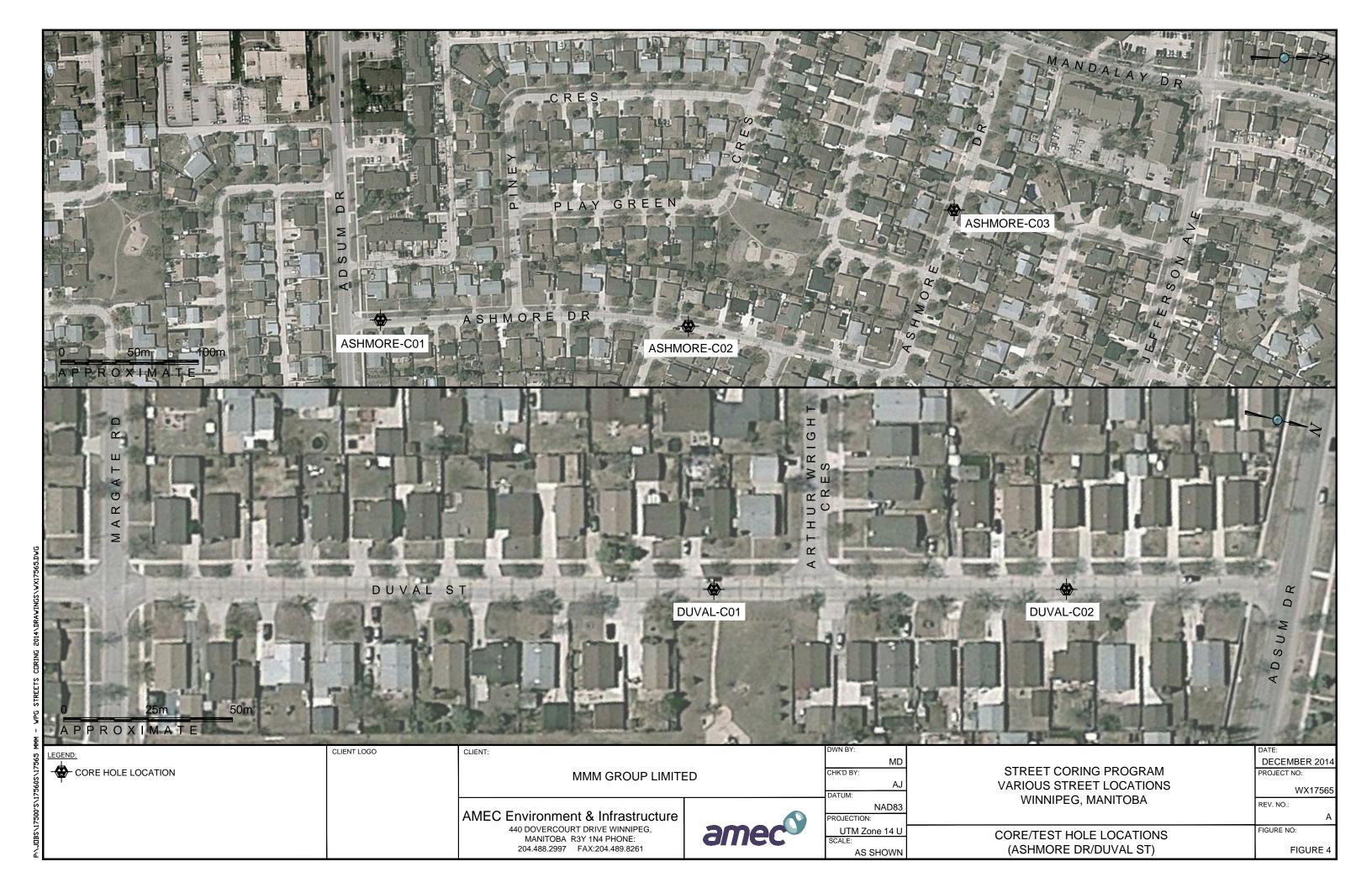


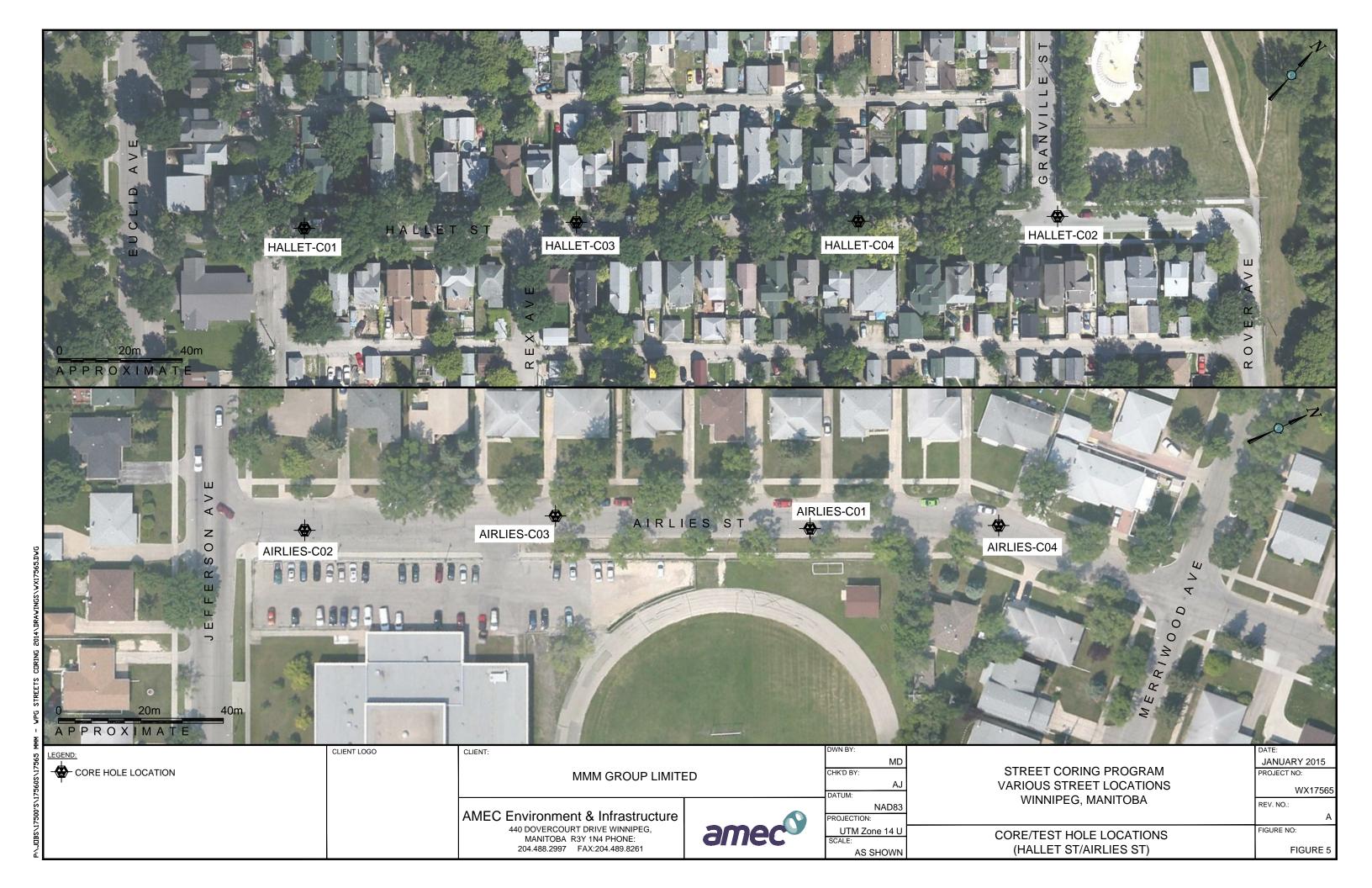
FIGURES















APPENDIX A TEST HOLE LOGS

						DD#15D DV 14 1 1 (D ##					_	DODELIOLENO A L TUAL				
	OJECT: Residential Street Reconstruction Program					DRILLED BY: Maple Leaf Drilling				-	BORE HOLE NO: Andrews - TH01					
CLIEN	NT: MMM Group L	₋td.				DRILL	TYPE: B40				F	PROJE	ECT NO: WX17565			
LOCA	TION: Various St	reets				DRILL	METHOD: 125				E	ELEVA	ATION:			
SAMF	PLE TYPE	Shelby 7	Гubе		✓ No Recov	ery	SPT (N)		Grab Sample			Split-Pe				
BACK	FILL TYPE	Bentonit	e	[Pea Grav	el	Drill Cutting	gs [:	Grout			Slough	Sand			
Depth (m)	■POCKET PENETRO 100 200 :	300 400	ᅴ귕ㅣ	MUSCS			SOIL DESCRIP			SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)		
0	20 40			CONC	CONCRET	E (145 r	nm thick)						- frozen to 0.6 m			
-				CH	CLAY - sor	me silt, tr	sandy, high plasti race sand, high pla , occasional silt in	astic, damp t			1 2			-		
- - -	32			CH	- moist, ve	ry stiff, g	reyish brown belo	w 0.6 m			3		Particle Size Analysis @ 0.5m: Gravel= 0.0% Sand= 1.0% Silt= 22.0% Clay= 77.0%	- - -		
- 1 -	1 1 28						w plastic, moist, s				4 5			- -1 -		
-	■ <u>2</u> #			CL			st, soft, tan-brown				6			-		
-	22	· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · ·			-		ional oxidation inc				7			- - -		
- 2 - -					SURFACE Notes: No sloughi remained of hole was b	ng or secopen to fo	epage were obser ull depth and was with auger cutting d with cold-patch	ved during d dry prior to b s and bento	rilling. Test hole backfilling. Test					- -2 - -		
CHNICAL - REVISED)														- - - -		
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17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)														- - -		
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MM				AME	EC		LOGGED			_		ETION DEPTH: 1.8 m	11.1			
7565	amec ^o wii			Winnipeg,	peg, Manitoba REVIEWED BY: AJ Figure No. A1					+	OIVIPL	PLETION DATE: 5 December 2014 Page 1 of 1				
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		TOT D 11 (1.1 Other at De sonaturation Draw							DDULED DV A4 1 1 4 D 100						DODE HOLE NO. 4 1 TUGO													
		ROJECT: Residential Street Reconstruction Program CLIENT: MMM Group Ltd.						Program					-	BORE HOLE NO: Andrews - TH02														
						_									DF	RILL T	YPE: I	B40					F	PROJE	ECT NO: WX	(17565		
	LOCA	TIO	N:	Va	riou	us S	Stre	ets							DF	RILL N	1ETHO	D: 125	mm So				E	ELEVA	ATION:			
	SAMP	LE	ΤY	PΕ				S	helb	y Tu	be			No Recov	very		SF	PT (N)			b Sample			Split-Pe	n [Core		
	BACK	FIL	L T	YPE	Ξ			В	ento	nite			[Pea Grav	rel		Dr	ill Cuttings	3	Gro	out			Slough	<u> </u>	Sand		
	Depth (m)		10 PO 10	O CKET O ASTIC	20 PEI 20	0 NETF	300 ROME 300) ETER)	400 (kPa 400 QUID		IOMNY IION		MUSCS		SOIL DESCRIPTION SAMPLE TYPE				SPT (N)	COMP	MENTS		Depth (m)					
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)	0			244	44		60		80				DNC CH CH CH	CLAY - silt occasional - brownish TEST HOL SURFACE Notes:	L) - Dle, (c) Dle, (c	silty, sadark groottled groottled groottled groottled groottled groottled groottles gr	plastic, moi plast	st, stiff, g moist, so st, very s 7 m AT 1.8 m e observind was d r cuttings	reyish b oft, tan-b tiff, grey BELOW ed durin ry prior and be	rown, occorown PAVEMI g drilling.to backfill	n, casional silt n, ENT Test hole ling. Test		1 2 3 4 5 6 7		- frozen to 0.8	m	1 - 1	
- WINNIPEG STREETS.GPJ	- - - - 4				 			 																			 - - - -	
MM-	4									LOGGE	ED BY: A	AL.		С	OMPLI	ETION DEPTH	: 1.8 m											
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1756	d	amec [©] Wind				vinnipeg,	peg, Manitoba Figure No. A2					+				Page 1	of 1											
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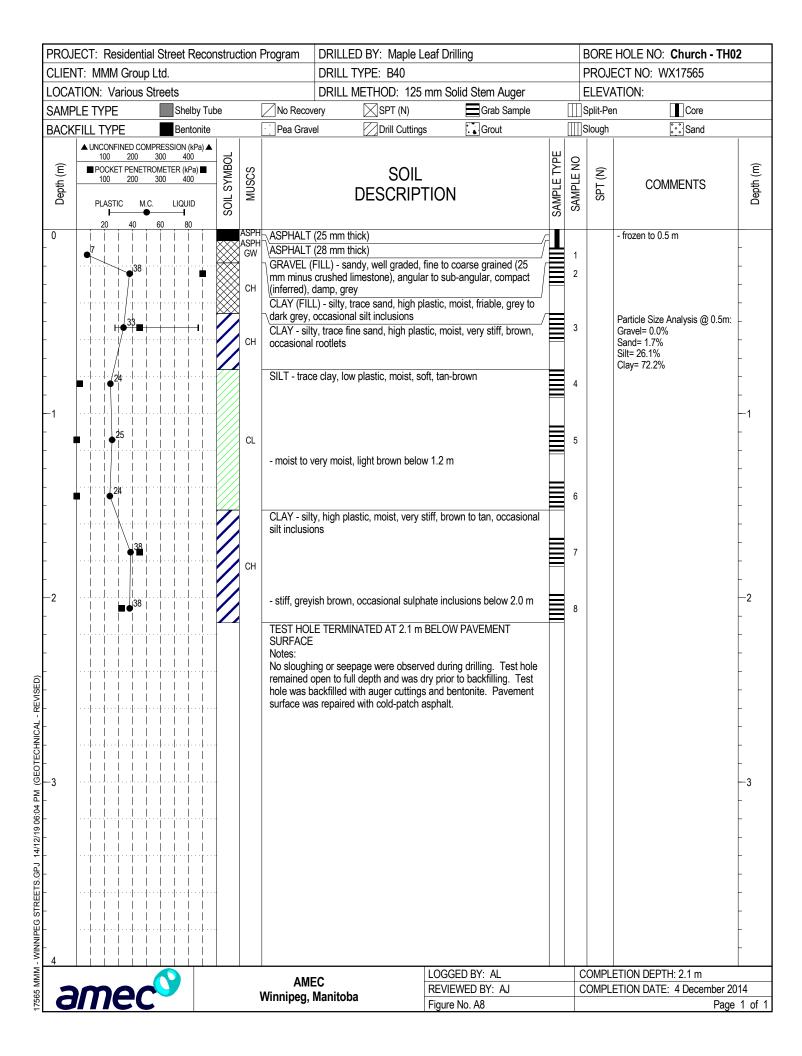
										DODELIOLENO A L TURA			
PROJ	ECT: Residential S	Street Reconstruc	tion Pr	rogram					E	BORE HOLE NO: Andrews - TH03			
CLIEN	NT: MMM Group Ltd	d.			DRILL	TYPE: B40			F	PROJE	ECT NO: WX17565		
LOCA	TION: Various Stre	ets			DRILL		m Solid Stem Auger		E	ELEVA	ATION:		
SAMF	PLE TYPE	Shelby Tube		No Recove	ery	SPT (N)	Grab Sample			Split-Pe			
BACK	FILL TYPE	Bentonite	· .	Pea Grave	l	Drill Cuttings	Grout			Slough	::: Sand		
Depth (m)	■ UNCONFINED COMPRE 100 200 300 ■ POCKET PENETROMI 100 200 300 PLASTIC M.C. 1 0 600	0 400 ETER (kPa) ■ 0 400 S IIOS	MUSCS	SOIL DESCRIPTION SAMPLE 17PB S				SPT (N)	COMMENTS	Depth (m)			
0	20 40 60	80	CONC	CONCRETE	E (130 m	nm thick)					- frozen to 0.8 m		
- - - -	30 30 30 30 30 30 30 30 30 30 30 30 30 3		CH S	grey to dark SILT - some	grey e clay, lo y inclusi	w plastic, firm, greyi ions	gravel, high plastic, friable	e, 1	2			- - - -	
- - -1 - -	1 1 1 1 1 1 1 1 1 1		i	inclusions b	elow 0.8	astic, moist, very stif	orown, occasional clay		3			- -1 -	
-	1 1 1 40					tiff below 1.5 m			5			- - -	
AL - REVISED)			1	SURFACE Notes: No sloughin remained op hole was ba	g or see oen to fu	ill depth and was dry	during drilling. Test hole prior to backfilling. Test nd bentonite. Pavement					- -2 - - - -	
17565 MMM - WINNIPEG STREETS GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)												-3	
1 - WINNIPEG STREETS.GPJ 1												- - - -	
MM	AN AN				C		OGGED BY: AL		_		ETION DEPTH: 1.8 m	24.4	
265	amec [®] Winnip					າລ ⊢	EVIEWED BY: AJ		C	OMPLI	ETION DATE: 5 December 20		
4			-	. 5,			igure No. A3				Page	1 of 1	

	Т			DODE HOLE NO. Andrews THOA				
PROJECT: Residential Street Re	econstruction Program	DRILLED BY: Maple Leaf	Drilling		BORE HOLE NO: Andrews - TH04			
CLIENT: MMM Group Ltd.		DRILL TYPE: B40		PRO	JECT NO: WX17565			
LOCATION: Various Streets		DRILL METHOD: 125 mm		ELEV	/ATION:			
SAMPLE TYPE Shelby	by Tube No Recove		Grab Sample	Split-P				
BACKFILL TYPE Benton	onite Pea Grave	el Drill Cuttings	Grout	Slough	Sand			
▲ UNCONFINED COMPRESSION (KP: 100 200 300 400 ■ POCKET PENETROMETER (KPa) 100 200 300 400 PLASTIC M.C. LIQUID 100 400 60 80	L SYMBOL MUSCS	SOIL DESCRIPTIO	SAMPLE NO SPT (N)	COMMENTS	Depth (m)			
20 40 60 80 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	CLAY (FILL friable, grey - and SILT, and tan, free SILT - some CLAY - silty inclusions, I CH - greyish brownish greyish greyis	rown, very stiff below 1.5 m grey, stiff below 1.7 m E TERMINATED AT 1.8 m BEL	oft, tan-brown ick below 0.9 m sional silt and sulphate OW PAVEMENT uring drilling. Test hole for to backfilling. Test lebentonite. Pavement	1 2 3 4 5 6 6 7 7	- frozen to 0.6 m Particle Size Analysis @ 0.8m: Gravel= 0.0% Sand= 2.5% Silt= 82.7% Clay= 14.7%			
					-			
4		10	GGED BY: AL	COMP	LETION DEPTH: 1.8 m			
	AME Winnings N	:C	VIEWED BY: AJ	COMPLETION DEPTH. 1.6 III COMPLETION DATE: 5 December 2014				
amec ⁹	Winnipeg, N	vianit∩na ⊨—	ure No. A4		Page 1			

													DODELIOLENO A L TUGE			
	ROJECT: Residential Street Reconstruction Program					Program	·				-	BORE HOLE NO: Andrews - TH05				
CLIEN	NT: MMM Group I	Ltd.					DRILL	TYPE: B40				F	PROJE	ECT NO: WX17565		
LOCA	ATION: Various St	treets						METHOD: 12				E	LEVA	ATION:		
SAMF	PLE TYPE	Shelb	y Tub	е		✓ No Recov	ery	SPT (N)		Grab Sample			plit-Per			
BACK	KFILL TYPE	Bento			[Pea Grav	el	Drill Cuttin	igs :	Grout	[∭s	lough	Sand Sand	1	
Depth (m)	PLASTIC M.C.	300 400 DMETER (KPa 300 400 LIQUID	a) II	SOIL SYMBOL	MUSCS		SOIL DESCRIPTION SAMPLE 17PE				SPT (N)	COMMENTS	Depth (m)			
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) The state of the st	20 40	60 80 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		200	CONC CI CH	SILT - trac clay inclus - occasional CLAY - silt occasional - moist, stil TEST HOL SURFACE Notes: No sloughi remained of hole was be	e clay, loions al ~5 mm y, high p silt inclu ff below E TERM ng or seppen to fo ackfilled	SILT, some sand grey ow plastic, moist, on clay inclusions to musions	soft, tan-brow below 0.9 m oist, very stiff m BELOW PA rved during d dry prior to b gs and bentor	rn, occasional greyish brown, VEMENT rilling. Test hole ackfilling. Test		1 2 3 4 5 6		- frozen to 0.5 m	-1 1 2 3	
- WINNIPEG								1,000-	D)(_A)			01.5	TION DEPTH 4.5	-		
MMM					AMI	EC		LOGGED			_		ETION DEPTH: 1.8 m	0014		
7565	amec [©] Winr					ninea Manitoha				COMPLETION DATE: 5 Decembe						
=								Figure No.	ΑU				Page	e 1 of 1		

PROJ	ECT: Residential	Street Reconstruction	n Program					ВС	BORE HOLE NO: Andrews - TH06		
CLIEN	NT: MMM Group L	₋td.		DRILL TYPE	: B40			PF	ROJECT NO: WX17565		
LOCA	TION: Various St	reets		DRILL METH	10D: 125 mm S	Solid Stem Auger		EL	LEVATION:		
SAMP	PLE TYPE	Shelby Tube	No Reco		SPT (N)	Grab Sample			olit-Pen		
BACK	FILL TYPE	Bentonite	Pea Grav	rel 🛮	Drill Cuttings	Grout	[∭Slc	ough Sand	1	
Depth (m)	POCKET PENETRO 100 200 S	300 400 METER (kPa) ■ 300 400 LIQUID LIQUID		DES	SOIL SCRIPTION	N	SAMPLE TYPE	SAMPLE NO	COMMENTS	Depth (m)	
0	20 40	60 80	NC	ΓE (150 mm thicl	,				- frozen to 0.8 m	-	
-	21 1		friable, da	CLAY (FILL) - silty, some sand, trace gravel, high plastic, damp, friable, dark grey to black CLAY - silty, high plastic, frozen, very stiff (inferred), dark grey,				1		-	
			occasiona	ty, high plastic, fi I silt inclusions	ozen, very stiff (ir	nferred), dark grey,					
			1					2			
-	/28 · · · ·			vey, low plastic, o light greyish bro		onal to frequent clay		3		-	
-		C C		brown, occasion	al clay inclusions	below 1.2 m		4		-	
			CLAY - sil		noist, very stiff, gr			5			
-		c		greyish brown b	pelow 1.7 m			6		-	
- - -2			TEST HOI SURFACE Notes:		O AT 1.8 m BELO	W PAVEMENT				- - -2	
-			No slough remained hole was to	open to full depth backfilled with au	n and was dry pric	ing drilling. Test hole or to backfilling. Test pentonite. Pavement t.				-	
SED)											
AL - REVIS										-	
TECHNIC										-	
OB —3										-3	
2/19 06:04										-	
.GPJ 14/1.											
STREETS										-	
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) A The state of the									-		
4				LOG	GED BY: AL		CO	 MPLETION DEPTH: 1.8 m			
265 M	mec		AM Winnipeg,		REVI	EWED BY: AJ		_	MPLETION DATE: 5 Decem		
175	リコノ		····inpeg,		Figur	e No. A6				Page 1 of 1	

						D		T= ==			
	JECT: Residential Street F	Reconstructio	n Program						BORE HOLE NO: Church - TH01		
	NT: MMM Group Ltd.			DRILL TYP					IECT NO: WX17565		
	ATION: Various Streets			!		Solid Stem Auger			ATION:		
-		lby Tube	No Recov		SPT (N)	Grab Sample		Split-Pe			
BACK		tonite	Pea Grav	el /	Drill Cuttings	Grout		Slough	Sand Sand		
Depth (m)	▲ UNCONFINED COMPRESSION (100 200 300 40 ■ POCKET PENETROMETER (kf 100 200 300 40 PLASTIC M.C. LIQUI	O Pa) ■ O O O O O O O O O O O O O O O O O O		DE	SOIL ESCRIPTIO	DN	SAMPLE TYPE	SAMPLE NO SPT (N)	COMMENTS	Depth (m)	
17565 MMM - WINNIPEG STREETS GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17665 MMM - WINNIPEG STREETS GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17665 MMM - WINNIPEG STREETS GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)		",	GRAVEL (mm minus moist, grey	y, stiff TERMINAT To gor seepage pen to full depactfilled with a care of the	clayey, well grad to sub-rounded, , damp, firm, grey brown below 0.6 medium plastic, n 1.7 m ED AT 1.8 m BEI be were observed opth and was dry p	noist, soft, tan-brown OW PAVEMENT during drilling. Test holorior to backfilling. Test do bentonite. Pavement	e e	1 2 3 4 4 5 6 6 7 7	- frozen to 0.6 m	-1 -1 -1 1 2 3	
WINNIPEG STREET										- - -	
4					IC	GGED BY: AL		COMPI	LETION DEPTH: 1.8 m		
2 MK			AME			VIEWED BY: AJ			LETION DATE: 4 December 20	<u>'014</u>	
1756	mec [©]		Winnipeg,	Manitoba		jure No. A7		20.00		e 1 of	
					1 6				9-		



PROJE	ECT: Residential Street F	Reconstruct	ion F	Program	DRILLED BY: Maple Leaf Drilling				I	BORE HOLE NO: Church - TH03			
CLIEN	T: MMM Group Ltd.								I	PROJECT NO: WX17565			
LOCAT	ΓΙΟΝ: Various Streets				DRILL	METHOD: 125	5 mm Solid	d Stem Auger		I	ELEVA	ATION:	
SAMPL	LE TYPE Shell	by Tube		No Recove	ery	SPT (N)		Grab Sample			Split-Pe		
BACKE	FILL TYPE Bent	onite	[Pea Grave	el	Drill Cutting	gs	Grout			Slough	::: Sand	
Depth (m)	▲ UNCONFINED COMPRESSION (k 100 200 300 400 ■ POCKET PENETROMETER (kP 100 200 300 400 PLASTIC M.C. LIQUID	■ (see (c)	MUSCS			SOIL DESCRIP			SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) The state of the st	20 40 60 80 6		CH CH	crushed lim damp, light CLAY (FILL friable, grey - frequent si CLAY - silty frequent sil SILT - som - occasional CLAY - silty occasional TEST HOL SURFACE Notes: No sloughir remained o hole was be considered to be silved to be	37 mm (and the state of the sta	thick) andy, well graded, angular to subar trace sand and graded ions, grey-tan bel lastic, moist, stiff, ons ow plastic, very molecular to subar clusions below 1.1 lastic, moist, very ent silt inclusions	ravel, high plow 0.6 m greyish brootst, soft, tall oist, soft, tall oist, greyis and lenses in BELOW Fried during dry prior to gs and bent	pact (inferred), plastic, damp, wm, occasional to m-brown h brown, ~5 mm thick PAVEMENT drilling. Test hole backfilling. Test		1 2 3 4 5 6 7 8 8		- frozen to 0.8 m Particle Size Analysis @ 1.1m: Gravel= 0.0% Sand= 5.6% Silt= 78.1% Clay= 16.4%	
- WINNIPEG STREETS.C													- - -
WW T							LOGGED	BY: AL	1	С	OMPL	ETION DEPTH: 2.1 m	1
35 Mi	mec		1.	AME Vinnipeg, I		na		ED BY: AJ		-		ETION DATE: 4 December 20)14
amec Winn					viallitol	Ja	Figure No	o. A9				Page	1 of 1

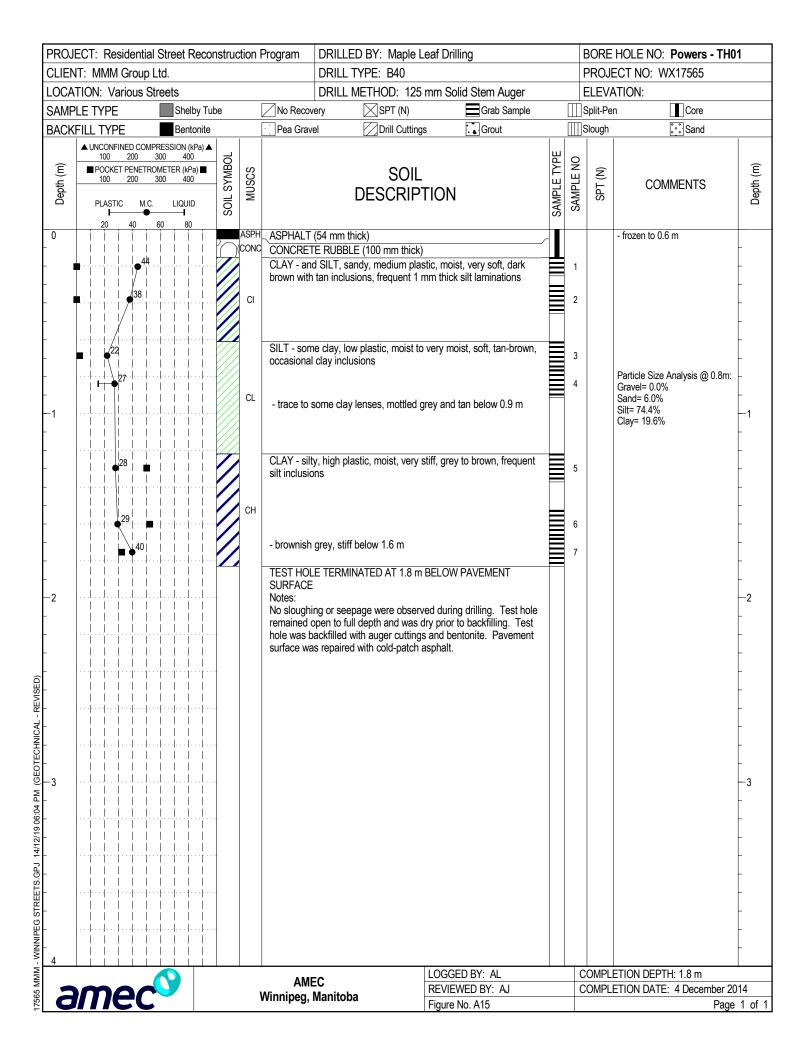
	IFOT B						F = =				
	JECT: Residential Street F	Reconstruc	tion F	<u> </u>					BORE HOLE NO: Church - TH04		
	NT: MMM Group Ltd.			DRILL TYPE: B40	- 0 11 10/			ECT NO: WX17565			
—	ATION: Various Streets		ı		5 mm Solid Stem Auger	ſ		ATION:			
—		by Tube		No Recovery SPT (N)	Grab Sample		Split-P				
BACK		tonite		Pea Gravel Drill Cuttir	gs Grout		Slough	Sand Sand			
Depth (m)	▲ UNCONFINED COMPRESSION (100 200 300 40 ■ POCKET PENETROMETER (kF 100 200 300 40 PLASTIC M.C. LIQUI	SOIL SYMBOL	MUSCS	SOII DESCRIF		SAMPLE TYPE	SAMPLE NO SPT (N)	COMMENTS	Depth (m)		
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)	20 40 60 80)	CH CH	ASPHALT (27 mm thick) GRAVEL (FILL) - sandy, some clay grained (19 mm minus), sub-angular (inferred), damp, grey CLAY - silty, trace sand, high plastic occasional silt inclusions - firm below 0.5 m - dark grey below 0.6 m SILT - trace clay, low plastic, moist, CLAY - silty, high plastic, moist, soft inclusions - occasional to frequent silt lenses ~ TEST HOLE TERMINATED AT 1.8 r SURFACE Notes: No sloughing or seepage were obse remained open to full depth and was hole was backfilled with auger cuttin surface was repaired with cold-patch	to sub-rounded, compact damp, stiff, brownish grey, soft, tan-brown to light brown brown, occasional silt methods below 1.7 m m BELOW PAVEMENT rved during drilling. Test hole dry prior to backfilling. Test gs and bentonite. Pavement		1 2 3 4 5 6 6 7	- frozen to 0.8 m			
DELININIM - W					LOCCED BY. AL		COMP	ETION DEPTH 4.0	-		
MM	mec®			AMEC	LOGGED BY: AL REVIEWED BY: AJ			LETION DEPTH: 1.8 m LETION DATE: 4 December 20	01/		
7565	<i>imec</i>		١	Winnipeg, Manitoba	Figure No. A10		CONPI		1 of '		
-		1			i iguio ito. A io		1	rage	, , ()		

PROJ	JECT: Residential Street F	Reconstruction	n Program	DRILLED BY: Maple Leaf Drilling					BORE HOLE NO: Machray - TH01			
CLIEN	NT: MMM Group Ltd.								ROJE	ECT NO: WX17565		
LOCA	ATION: Various Streets			DRILL ME	THOD: 125 mr	n Solid Stem Auge	er	EL	_EVA	TION:		
SAMF	PLE TYPE Shel	by Tube	No Recove	ery	SPT (N)	Grab Sam	ple	∭Sp	lit-Per			
BACK	KFILL TYPE Bent	tonite	Pea Grave		Drill Cuttings	Grout		Slo	ough	Sand		
Depth (m)	▲ UNCONFINED COMPRESSION (I 100 200 300 400 ■ POCKET PENETROMETER (KP 100 200 300 400 PLASTIC M.C. LIQUII	SOIL SYMBOL		DI	SOIL ESCRIPTI	ON	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)	
1	20 40 60 80	",	ASPHALT (GRAVEL (Forushed lime CLAY - silty dark grey to compare to compare the c	estone), ang v, trace organ	, well graded, fine ular, compact (in nics, high plastic,	e grained (19 mm mir ferred), damp, light b moist, stiff to very sti	nus prown/	1 1 2 3 3 4 4 5 5 6 6		- frozen to 0.5 m Particle Size Analysis @ 0.5m: Gravel= 0.0% Sand= 2.2% Silt= 30.1% Clay= 67.8%	- - - - - - - - -	
FECHNICAL - REVISED)			1.5 m - occasiona TEST HOL SURFACE Notes: No sloughir remained o hole was ba	TERMINAT TERMINAT Terminal or seepage Terminal departments of the seepage Termina	silt inclusions be TED AT 1.8 m BE e were observed epth and was dry	LOW PAVEMENT during drilling. Test prior to backfilling. Tend bentonite. Pavem	hole	7			- - - - - - - - -	
17565 MMM - WINNIPEG STREETS GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) The state of the st											- -3 - - - - - -	
MM _	mec®		AME	C	_	OGGED BY: AL				ETION DEPTH: 1.8 m	4.4	
7565	mec		Winnipeg, I		_	EVIEWED BY: AJ gure No. A11		100	IVIPLE	ETION DATE: 5 December 20	14 1 of 1	
-					[[guit 110. A 11				гауе	ı UI I	

PROJ	JECT: Residential Street	Reconstruction	Program DRILI	LED BY: Maple Leaf D	Prilling		BORE	HOLE NO: Machray - Th	102
-	NT: MMM Group Ltd.			L TYPE: B40				ECT NO: WX17565	
-	ATION: Various Streets			L METHOD: 125 mm				ATION:	
-		elby Tube	No Recovery	SPT (N)	Grab Sample		Split-Pe		
BACK		ntonite	Pea Gravel	Drill Cuttings	Grout	Ш	Slough	Sand Sand	1
Depth (m)	■ POCKET PENETROMETER (NUSCS		SOIL DESCRIPTIO	N	SAMPLE TYPE SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
-1	34	ASPH ASPH CH	GRAVEL (FILL) - s mm minus), sub-ro brown CLAY - silty, high p occasional sulphat - greyish brown, or	sandy, trace clay, poorly gounded, compact (inferred	d), damp, dark greyish stiff, grey to dark grey,	3			- - - - - - - -
NICAL - REVISED)	23	CL CH	CLAY - silty, high inclusions TEST HOLE TERN SURFACE Notes: No sloughing or se remained open to hole was backfilled	brown below 1.2 m brown below 1.5 m plastic, damp, stiff, brown MINATED AT 1.8 m BELC sepage were observed du full depth and was dry pri d with auger cuttings and red with cold-patch aspha	OW PAVEMENT ring drilling. Test hole or to backfilling. Test bentonite. Pavement	5 6 7			
17565 MMM - WINNIPEG STREFTS, GPJ 14/12/19 06:04 PM (GEOTECHNICAL - PEVISED) The state of the s									- -3 - - - - -
Z Z			AMEC		GED BY: AL			ETION DEPTH: 1.8 m	044
7565	<u>mec[©]</u>	,	Winnipeg, Manito	nna ⊢—	re No. A12		COMPL	ETION DATE: 5 December 2	014 e 1 of 1
_		1		rigu	IO 110. AIZ			raye	, 1 01 1

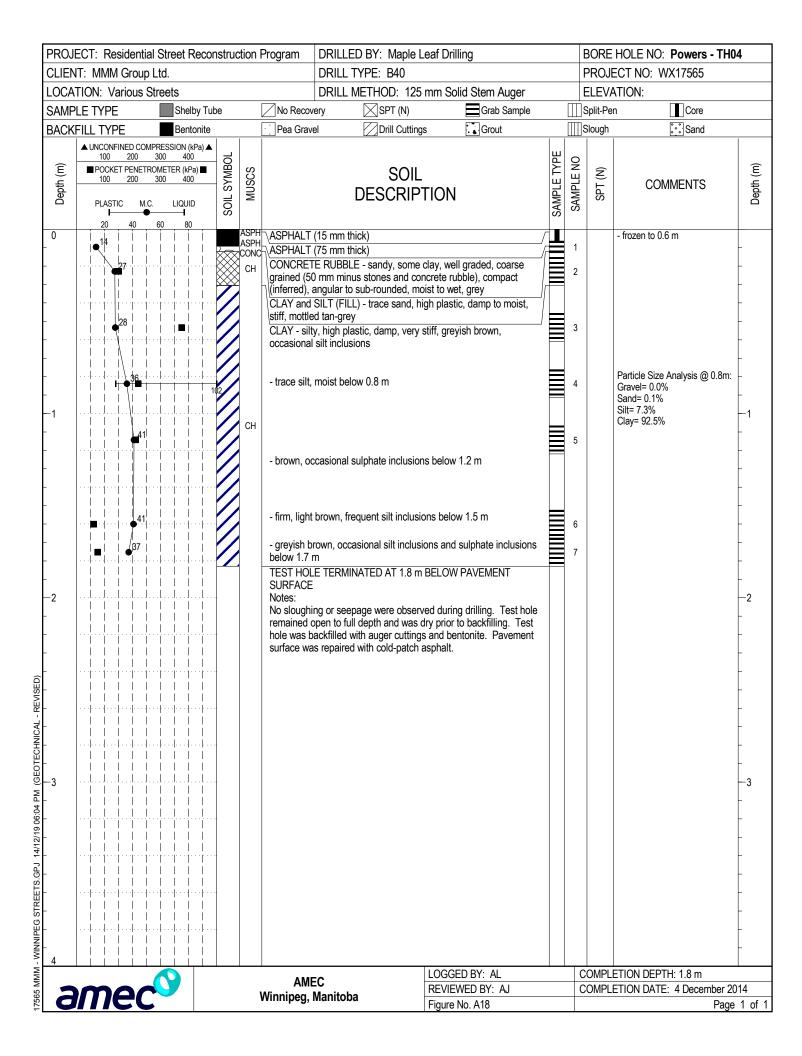
PR∩I	ECT: Residential Street F	Reconstruction	Program DRII	LLED BY: Maple Leaf	Drilling		BORE	HOLE NO: Machray - TH	103
	NT: MMM Group Ltd.	(COOTION GOLIOTI	_	LL TYPE: B40		PROJECT NO: WX17565			
	TION: Various Streets			LL METHOD: 125 mm	Solid Stem Auger			ATION:	
		by Tube	No Recovery	SPT (N)	Grab Sample	П	Split-Pe		
—		tonite	Pea Gravel	Drill Cuttings	Grout		Slough	Sand	
Depth (m)	■ UNCONFINED COMPRESSION (I 100 200 300 400 100 200 300 400 100 200 300 400 100 100 100 100 100 100 100 100 1	SOIL SYMBOL		SOIL DESCRIPTIO	Ν	SAMPLE TYPE	SPT (N)	COMMENTS	Depth (m)
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)	31 32 32 3 34 3 34 3 34 3 34 3 34 3 34 3	ASPH CONC GW	CONCRETE (95 GRAVEL (FILL) - mm minus crushe grey CLAY - trace orga - moist, dark grey - very stiff, occasi - trace fine sand l - stiff below 1.7 m TEST HOLE TER SURFACE Notes: No sloughing or s remained open to hole was backfille	mm thick) - sandy, some clay, well ged limestone), angular, coanic, high plastic, damp, so below 0.6 m ional grey silt inclusions to below 1.2 m	mpact (inferred), damp, stiff, dark grey to black elow 0.9 m OW PAVEMENT uring drilling. Test hole for to backfilling. Test lentonite. Pavement			- frozen to 0.6 m	
65 MMN	mec®		AMEC Winnipeg, Manit	RE	GGED BY: AL VIEWED BY: AJ			ETION DEPTH: 1.8 m ETION DATE: 5 December 20	
175	<u> </u>		npeg, maint	Fig	ure No. A13			Page	e 1 of

											_			
	PROJECT: Residential Street Reconstruction Program						DRILLED BY: Maple Leaf Drilling				BORE HOLE NO: Machray - TH04			
CLIEN	NT: MMM Group L	₋td.				DRILL TYPE: B40				PROJECT NO: WX17565				
LOCA	ATION: Various St	reets				DRILL	METHOD: 125 i				ELE,	VATION:		
SAMF	PLE TYPE	Shelby To	ube		✓ No Recov	ery	SPT (N)	Grab			Split-F			
BACK	(FILL TYPE	Bentonite	9		Pea Grave	el	Drill Cuttings	Grout	t		Sloug	h Sand		
Depth (m)	POCKET PENETRO 100 200 :	300 400	SOIL SYMBOL	MUSCS			SOIL DESCRIPT	TION		SAMPLE TYPE	SPT (N)	COMMENTS	Depth (m)	
0		0 00		ASPH	ASPHALT	(110 mn	n thick)					- frozen to 0.3 m		
17565 MMM - WINNIPEG STREETS, GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS, GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS, GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)	111 33 33 34 34 34 34 34			ASPH GW CH	GRAVEL (I) (25 mm compact (ii) CLAY (FILL) moist, friab SILT - som occasional - light greyi - clayey, lo below 1.2 r CLAY - silt occasional TEST HOL SURFACE Notes: No sloughi remained of hole was b	FILL) - s nus crus nferred), L) - silty, le, grey le clay, le clay, le clay inc lish brow w to mean y, high p silt inclu. E TERM	andy, some clay, we shed limestone), and damp, grey trace sand and gra ow plastic, very moi lusions In below 0.9 m Idium plastic, stiff, free plastic, moist, very si	gular to sub-rounde vel, high plastic, da st, soft, tan-brown, equent clay inclusion tiff, greyish brown, BELOW PAVEMEN and bentonite. Pa	amp to Test hole ig. Test		1	Particle Size Analysis @ 0.5m: Gravel= 0.0% Sand= 6.8% Silt= 77.6% Clay= 15.6%	1 1 2 3	
89														
N P														
Z - 4														
¥ E			-1		ABAF			LOGGED BY: AL			COMF	PLETION DEPTH: 1.8 m		
65 M	mec			,	AME Winnipeg		na ⊦	REVIEWED BY: A	٩J			PLETION DATE: 5 December 2		
175	amec Winnipe						~u	Figure No. A14				Page	e 1 of 1	



PR∩	JECT: Residential Street F	Reconstruction	Program DI	RILLED BY: Maple Leaf	Drilling		BORF	HOLE NO: Powers - THO	12
	NT: MMM Group Ltd.	(COOTIST GOTIO		RILL TYPE: B40	Drilling		PROJECT NO: WX17565		
	ATION: Various Streets			RILL METHOD: 125 mm	Solid Stem Auger			ATION:	
		lby Tube	No Recovery	SPT (N)	Grab Sample	П	Split-Pe		
		tonite	Pea Gravel	Drill Cuttings	Grout		Slough	:::\Sand	
D/ (O)	▲ UNCONFINED COMPRESSION (I	kPa) ▲	l		o. o			V. V 04.114	T
Depth (m)	100 200 300 400 ■ POCKET PENETROMETER (kF 100 200 300 400 400 400 400 400 400 400 400 4	L SYMBOL		SOIL DESCRIPTIO)N	SAMPLE TYPE SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
-11	20 40 60 80	ASP GW CH	GRAVEL (FLL grained (25 mm (inferred), dam CLAY - silty, tr - greyish brown SILT - some cl occasional cla	L) - sandy, trace silt, well gram minus), angular to sub-rounp, light greyish brown, occarace sand, high plastic, moism, frequent silt lenses ~10 mlay, low plastic, moist, tan-br	inded, compact sional asphalt fragments t, friable, grey to black m thick below 0.5 m	1 2 3 3 4 4 5 5 6 6		- frozen to 0.6 m	- - - - - - - - - - - - -
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			SURFACE Notes: No sloughing oremained oper hole was back	TERMINATED AT 1.8 m BEL or seepage were observed on to full depth and was dry p filled with auger cuttings and epaired with cold-patch asph	uring drilling. Test hole ior to backfilling. Test bentonite. Pavement	7			2 2
- WINNIPEG STREETS.GPJ 14/1									-
Σ			AMEC	LO	GGED BY: AL		COMPL	ETION DEPTH: 1.8 m	
65 N	mec®		Winnipeg, Ma	nit∩na —	VIEWED BY: AJ		COMPL	ETION DATE: 4 December 20	
175	<u>IIIICC</u>		Trimipey, Ma	Fig	ure No. A16			Page	1 of '

DDC	IFOT, Donisianstin Oten 17	7000001	tie !	Dragram DDILLED DV: M- 1 1	a of Drillin =		DOD	TUOLE NO. Da TUO				
	JECT: Residential Street F	Reconstruc	tion	<u> </u>	DRILLED BY: Maple Leaf Drilling DRILL TYPE: B40				BORE HOLE NO: Powers - TH03 PROJECT NO: WX17565			
	NT: MMM Group Ltd. ATION: Various Streets				mm Solid Stem Auger			ATION:				
		lby Tube		No Recovery SPT (N)	Grab Sample	[Split-P					
		tonite		Pea Gravel Drill Cutting			Slough					
DACE	▲ UNCONFINED COMPRESSION (S Glout			Sanu	Т			
Depth (m)	100 200 300 40 ■ POCKET PENETROMETER (kF 100 200 300 40 PLASTIC M.C. LIQUI	O Pa) ■ O O O O O O O O O O O O O O O O O O	MUSCS	SOIL DESCRIP		SAMPLE TYPE	SAMPLE NO SPT (N)	COMMENTS	Depth (m)			
0	20 40 60 80		ASPH	ASPHALT (20 mm thick)		7		- frozen to 0.5 m	+			
-	41 29 29		GW	GRAVEL (FILL) - sandy, well graded, crushed limestone), angular to sub-ardamp, light brown CLAY - silty, trace sand, high plastic, black	ngular, compact (inferred),		1 2	110201 to 0.0 111	-			
+				- moist, very stiff below 0.6 m					-			
- - -1	29			- stiff, grey, occasional silt inclusions	below 0.9 m		4		- - -1			
-	34		CH				5		- - -			
- - - -	39			- soft to firm, tan-brown with frequent from 1.5 to 1.7 m - brown, occasional sulphate inclusion			6		-			
_2				TEST HOLE TERMINATED AT 2.0 m SURFACE	BELOW PAVEMENT		7		_2			
SED)				Notes: No sloughing or seepage were observemained open to full depth and was hole was backfilled with auger cutting surface was repaired with cold-patch	dry prior to backfilling. Test s and bentonite. Pavement				-			
TECHNICAL - REV									-			
17565 MMM - WINNIPEG STREETS, GP 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) The state of the st									-3 -			
REETS.GPJ 14/12									-			
ATS SAMINIPEG STR									- - -			
MM MM				AMEC	LOGGED BY: AL			LETION DEPTH: 1.8 m				
,565	amec [©]		1	Winnipeg, Manitoba	REVIEWED BY: AJ		COMP	LETION DATE: 4 December 20				
-					Figure No. A17			Page	1 of 1			



DDA	IFOT, Dooldonti-1 Other 15)	Drogram	III ED DV: Marila I a f	Drilling		DODE	HOLENO Barras TIM	
	JECT: Residential Street F	Reconstruction		ILLED BY: Maple Leaf	Drilling			HOLE NO: Powers - THO	J5
	NT: MMM Group Ltd. ATION: Various Streets			ILL TYPE: B40	Calid Ctam Augar			ECT NO: WX17565 ATION:	
—		lby Tube	No Recovery	ILL METHOD: 125 mm SPT (N)	Grab Sample	П	Split-Pe		
-		-	Pea Gravel	Drill Cuttings	Grout		Slough	sii Core \$:*: Sand	
BAC	KFILL TYPE Bent A UNCONFINED COMPRESSION (I	tonite	Pea Graver	Drill Cuttings	Glout	Ш	Slough	Sanu	T
Depth (m)	100 200 300 40 ■ POCKET PENETROMETER (kF 100 200 300 40 PLASTIC M.C. LIQUI	L SYMBOL		SOIL DESCRIPTIO	N	SAMPLE TYPE	SPT (N)	COMMENTS	Depth (m)
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) 17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)	29 40 60 86 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	CH CH	GRAVEL (FILL) mm minus crusi (inferred), damp CLAY (FILL) - s moist, friable, da CLAY - silty, hig occasional to free SILT - some cla inclusions CLAY - silty, hig brown TEST HOLE TE SURFACE Notes: No sloughing or remained open hole was backfil	nm thick) - sandy, well graded, fine the limestone), angular to so, yellowish brown lilty, some sand, trace fine gark brown with grey silt inclusions by low plastic, moist, soft, mottle equent silt inclusions by, low plastic, moist, soft, to see the plastic, damp to moist, vor see the plastic damp to moist, vor	gravel, high plastic, usions ed tan and grey, en-brown, frequent clay ery stiff, dark greyish OW PAVEMENT uring drilling. Test hole for to backfilling. Test lentonite. Pavement	3 3 4 4 5 5 6 6 7 7		- frozen to 0.8 m	-1 -1 -2 -3
WINNIPEG STREETS.GP.									-
> 4 ≥ 4				10	GGED BY: AL		COMDI	ETION DEPTH: 1.8 m	
MA MA	amec [©]		AMEC	DE	JEWED BY: AL			ETION DEPTH: 1.8 m ETION DATE: 4 December 20	014
7565	<i>imec</i>		Winnipeg, Man	itona —	ure No. A19		JOIVIPL		014 e 1 of
=				Figi	JI G INU. A 13			rage	i UI

	JECT: Residential Street F	Reconstruction	n Program		ED BY: Maple Le	eaf Drilling			+	E HOLE NO: Redwood - TI	H01
	NT: MMM Group Ltd.				TYPE: B40				_	JECT NO: WX17565	
	ATION: Various Streets					mm Solid Stem A			1	/ATION:	
	_	by Tube	No Reco		SPT (N)	Grab			Split-F		
BACK		tonite	Pea Grav	el	Drill Cuttings	Grout		Щ	Slough	n 🚉 Sand	
Depth (m)	▲ UNCONFINED COMPRESSION (I 100 200 300 400 ■ POCKET PENETROMETER (KP 100 200 300 400 PLASTIC M.C. LIQUIL	SOIL SYMBOL			SOIL DESCRIPT	TION		SAMPLE TYPE	SPT (N)	COMMENTS	Depth (m)
0 - - - - - - - - - - -	20 40 60 80	ASI Gl	GRAVEL (crushed lir damp, ligh SILT - trace - some clae CLAY - sil and sulpha	FILL) - sa nestone), t grey-ligh e clay, low y, firm bel	andy, well graded, f angular to sub-ang at brown w plastic, moist, so low 0.6 m astic, moist, stiff, g	ine grained (19 mm gular, compact (infe ft, light brown	erred),		3	- hard drilling in frozen gravel fill	- - - - - - - - - - -
EVISED)	38		- firm below TEST HOI SURFACE Notes: No slough remained hole was be	w 2.0 m E TERMI Ing or see open to fue to ackfilled was a second or second	page were observe	BELOW PAVEMEN ed during drilling. T ry prior to backfilling and bentonite. Pa sphalt.	Test hole g. Test				- - - - - - - -
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)			Surface We	о торано	a mui colu-patoli a	орнын.					- - - - - - - - -
MM			AM		-	LOGGED BY: AL				LETION DEPTH: 2.1 m	
565 N	mec®		Winnipeg,		1a ⊦	REVIEWED BY: A	/ J		COMP	LETION DATE: 5 December 20	
4			13,			Figure No. A20				Page	1 of 1

PROJ	ECT: Residential Street F	Reconstruction Program	DRILLED BY: Maple Le	eaf Drilling		BORE	HOLE NO: Redwood - Th	102
CLIEN	NT: MMM Group Ltd.		DRILL TYPE: B40			PROJ	ECT NO: WX17565	
LOCA	TION: Various Streets		DRILL METHOD: 125 r	nm Solid Stem Auger		ELEV	ATION:	
SAMF	PLE TYPE Shel	lby Tube	covery SPT (N)	Grab Sample		Split-Pe	en Core	
BACK	FILL TYPE Bent	tonite Pea Gra	avel Drill Cuttings	Grout		Slough	Sand	
Depth (m)	■ UNCONFINED COMPRESSION (I 100 200 300 400 100 200 300 400 100 200 300 400 100 100 100 100 100 100 100 100 1	SOIL SYMBOL	SOIL DESCRIPT	ION	SAMPLE TYPE	SPT (N)	COMMENTS	Depth (m)
0 - - -	20 70 00 00	ASPH ASPHAL GW GRAVEL angular t SILT - tra	.T (60 mm thick) _ (FILL) - sandy, well graded, fit to subangular, compact (inferreace clay, low plastic, moist, sof	ed), damp, light brown	1 2		- hard drilling in frozen gravel fill	-
-	23	- very sti	ff below 0.8 m		3		Particle Size Analysis @ 0.5m: Gravel= 0.0% Sand= 6.4% Silt= 75.7% Clay= 17.9%	-
1 - -	28	occasion	silty, high plastic, moist, stiff to nal to frequent silt lenses ~5 mm I tan-brown below 1.2 m	very stiff, greyish brown, n thick	5			-1 -
		CH - dark gr	eyish brown, very stiff below 1.	5 m	6			_
- - -2		- stiff bel	ow 1.8 m		7			- - -2
-		SURFAC Notes: No sloug	phing or seepage were observe	ed during drilling. Test hole	8			-
ECHNICAL - REVISED		hole was	d open to full depth and was dr backfilled with auger cuttings was repaired with cold-patch as	and bentonite. Pavement				- - -
.04 PM (GEOT								3
14/12/19 06								
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)								- - -
4			150	LOGGED BY: AL		COMPL	ETION DEPTH: 2.1 m	
65 M _i	mec®		VIEC 1 Manitoha	REVIEWED BY: AJ			ETION DATE: 5 December 20)14
175	IIIICC 1	wininpeg	j, maintoba	Figure No. A21			Page	1 of 1

				T					
	ECT: Residential Street F	Reconstruction	Program	DRILLED BY: Maple	Leaf Drilling			HOLE NO: Redwood - T	H03
CLIEN	NT: MMM Group Ltd.			DRILL TYPE: B40			PROJ	ECT NO: WX17565	
LOCA	TION: Various Streets				5 mm Solid Stem Auger		ELEV	ATION:	
SAMF	PLE TYPE Shel	lby Tube	No Recov	very SPT (N)	Grab Sampl	le 🗌	Split-Pe		
BACK	FILL TYPE Bent	tonite	Pea Grav	vel Drill Cutti	ngs Grout		Slough	઼ ≎≎ Sand	
Depth (m)	■ UNCONFINED COMPRESSION (I 100 200 300 400 100 200 300 400 100 200 300 400 100 100 100 100 100 100 100 100 1	SOIL SYMBOL MUSCS		SOI DESCRIF		SAMPLE TYPE	SPT (N)	COMMENTS	Depth (m)
1	20 40 60 80	ASPH GP ML	GRAVEL ((12 mm sub-angula SILT - trace) - occasiona	inus with occasional 35 m ar to sub-rounded, compa se clay, low plastic, moist, al clay lenses ~3mm thick	ct (inferred), light brown soft, light brown to below 0.6 m		3	- frozen to 0.1 m - hard drilling in gravel fill	- - - - - - - - -
-2				grey below 1.8 m					-
-			SURFACE Notes: No sloughi remained of hole was b	LE TERMINATED AT 2.1 ing or seepage were obse	erved during drilling. Test h s dry prior to backfilling. Te gs and bentonite. Paveme	st	3		-
—3 ₩									-3
2) 14/12/19 06:04 P									- - -
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)									-
MM	mec®		AME	EC	LOGGED BY: AL			ETION DEPTH: 2.1 m	
265 1	Mer		Winnipeg,		REVIEWED BY: AJ		COMPL	ETION DATE: 5 December 20	
<u> </u>				· 	Figure No. A22			Page	e 1 of 1

			1					_			
	JECT: Residential Street F	Reconstruction			Y: Maple Leaf	Drilling				.E NO: Redwood - T	H04
	NT: MMM Group Ltd.			DRILL TYPE				_		NO: WX17565	
	ATION: Various Streets					Solid Stem Auger			VATIO		
		by Tube	No Recove	·	SPT (N)	Grab Sample		Split		Core	
BACK		tonite	Pea Grave		Drill Cuttings	Grout		Slou	gh I	Sand	1
Depth (m)	▲ UNCONFINED COMPRESSION (k 100 200 300 400 ■ POCKET PENETROMETER (kP 100 200 300 400 PLASTIC M.C. LIQUIT	SOIL SYMBOL		DE	SOIL SCRIPTIC	N	SAMPLE TYPE	SAMPLE NO		COMMENTS	Depth (m)
0	20 40 60 80	"	GRAVEL (Fangular to s SILT - some CLAY - some occasional s TEST HOLE SURFACE Notes: No sloughin	ub-rounded, ce clay, low plasses silt, high plassilt inclusions E TERMINATE g or seepage	exempact (inferred) stic, moist to very astic, moist, stiff, of below 2.0 m ED AT 2.1 m BEL were observed d	OW PAVEMENT uring drilling. Test hole		1 2 3 4 5 6 7 8 8	Parti Grav Sanc Silt=	cle Size Analysis @ 1.1m: el= 0.0% = 0.8% 14.8% = 84.4%	- - - - - - - - - - - - - - - - - - -
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED)			remained of hole was ba surface was	en to full dep ckfilled with a repaired with	th and was dry pi uger cuttings and cold-patch asph	ior to backfilling. Test bentonite. Pavement		COM	PLETIO	N DEPTH: 2.1 m	- - - - - - - - - - -
MM _	mec [®]		AME	С		GGED BY: AL /IEWED BY: AJ				N DEPTH: 2.1 m N DATE: 5 December 20	014
7565	mec		Winnipeg, N	/lanitoba		ure No. A23		CON	FLETIU		1 of 1
_		1			1.19					. ugo	

PR∩	JECT: Residential Street F	Reconstru	rtion	Program DRILLED BY: Maple	Leaf Drilling		R∩R	E HOLE NO: Redwood - 1	 TH05
	NT: MMM Group Ltd.	\cconstruc	LIOIT	DRILL TYPE: B40	Lear Drilling			JECT NO: WX17565	11103
	ATION: Various Streets				5 mm Solid Stem Auger			/ATION:	
		lby Tube		No Recovery SPT (N)	Grab Sample		Split-I		
-		tonite		Pea Gravel Drill Cutting			Sloug		
D/ 101	▲ UNCONFINED COMPRESSION (kPa).▲			<u>. •</u>	\top			$\overline{}$
Depth (m)	100 200 300 40 ■ POCKET PENETROMETER (kf. 100 200 300 40 PLASTIC M.C. LIQUI	O Pa) ■ O O O O O O O O O O O O O O O O O O	MUSCS	SOIL DESCRIP		SAMPLE TYPE	SAMPLE NO SPT (N)	COMMENTS	Depth (m)
0	20 40 60 80		ASPH					- frozen to 0.2 m	
_	27		GW	GRAVEL (FILL) - sandy, well graded, mm minus), angular to sub-rounded, light brown SILT - some clay, low plastic, moist,	compact (inferred), damp,		1 2	- hard drilling in gravel fill	
-	24		CL	- stiff to very stiff below 0.5 m			3		-
- - -1				CLAY - silty, high plastic, moist, stiff occasional silt inclusions	to very stiff, greyish brown,		4		- - -1
-	1 1 140 1 1 1 1 1 1 1 1 1						5		- - -
-	45		СН				6		-
-							7		- - -
- 2				- firm, occasional sulphate inclusions			8		-2 -
-				TEST HOLE TERMINATED AT 2.1 m SURFACE Notes:	1 BELOW PAVEMENT				-
17565 MMM - WINNIPEG STREETS.GPJ 14/12/19 06:04 PM (GEOTECHNICAL - REVISED) The state of the st				No sloughing or seepage were obser remained open to full depth and was hole was backfilled with auger cutting surface was repaired with cold-patch	dry prior to backfilling. Test and bentonite. Pavement				- - -
OTECH -		 							-
M4 GE -3		l 							-3
2/19 06:0									-
GPJ 14/1									-
REETS.									-
IPEG ST									-
Ž .									-
4 W				AMEC	LOGGED BY: AL		COMF	PLETION DEPTH: 2.1 m	
95 MI	amec [©]		,	AMEC Winnipeg, Manitoba	REVIEWED BY: AJ			PLETION DATE: 5 December 2	2014
175(リロてし			vviiriipey, maiilloba	Figure No. A24			Pag	je 1 of

MMM Group Limited WX17565R1 - Geotechnical Investigation Residential Streets Reconstruction Winnipeg, Manitoba 21 January 2015



APPENDIX B

CORE PHOTOS



Photo 1: C01: Northbound lane at 884 Airlies Street, 1.0 m from curb

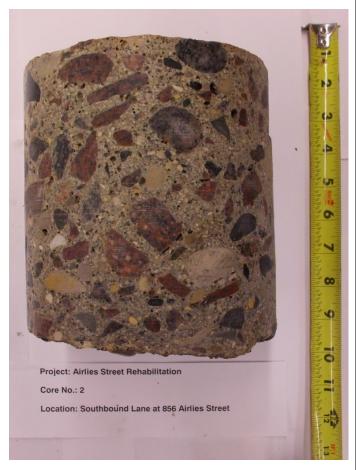


Photo 2: C02: Southbound lane at 856 Airlies Street, 1.0 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION
AIRLIES STREET
WINNIPEG, MANITOBA





Photo 3: C03: Southbound lane at 872 Airlies Street, 5.0 m from curb

Photo 4: C04: Northbound lane at 896 Airlies Street, 3.0 m from curb



GEOTECHNICAL INVESTIGATION AIRLIES STREET WINNIPEG, MANITOBA

January 2015 Project No.: WX17565 Figure: B2

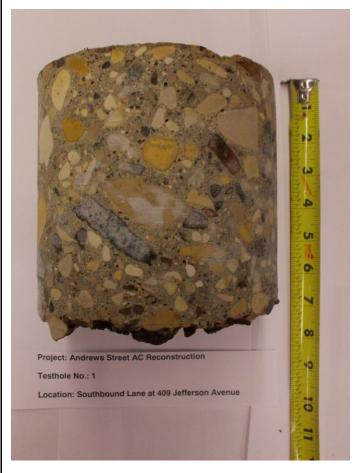


Photo 1: TH01: Southbound lane at 409 Jefferson Avenue, 1.0 m from curb



Photo 2: TH02: Northbound lane at 418 St. Anthony Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION ANDREWS STREET WINNIPEG, MANITOBA



Photo 3: TH03: Southbound lane at 417 St. Anthony Street, 1.0 m from curb



Photo 4: TH04: Northbound lane at 418 Perth Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION ANDREWS STREET WINNIPEG, MANITOBA



Photo 5: TH05: Southbound lane at 401 Perth Avenue, 1.0 m from curb



Photo 6: TH06: Northbound lane at 412 Hartford Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION ANDREWS STREET WINNIPEG, MANITOBA

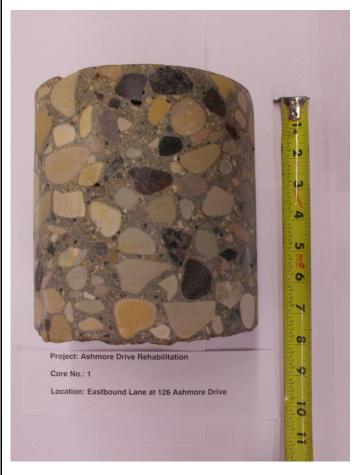


Photo 1: C01: Eastbound lane at 126 Ashmore Drive, 0.9 m from curb

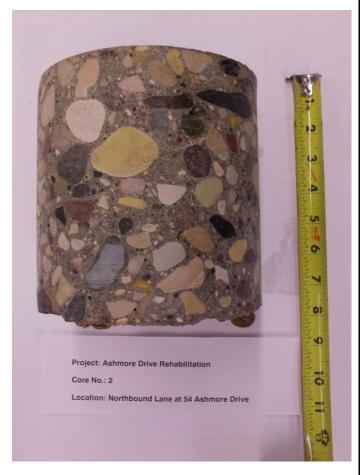


Photo 2: C02: Northbound lane at 54 Ashmore Drive, 1.0 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION
ASHMORE DRIVE
WINNIPEG, MANITOBA

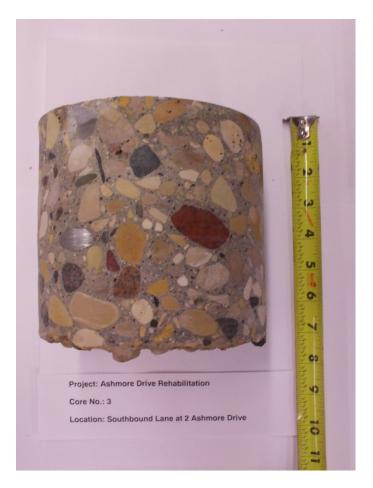


Photo 3: C03: Southbound lane at 2 Ashmore Drive, 1.5 m from curb



GEOTECHNICAL INVESTIGATION ASHMORE DRIVE WINNIPEG, MANITOBA



Photo 1: C01: Eastbound lane 100 m east of Keewatin Street



Photo 2: C02: Westbound lane 20 m west of **Dorset Street**



GEOTECHNICAL INVESTIGATION BURROWS AVENUE WINNIPEG, MANITOBA

MMM Group



Photo 1: C01: Westbound lane at 464 Aikins Street, 1.0 m from curb



Photo 2: C02: Eastbound lane at 311 Church Avenue, 1.0 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION CHURCH AVENUE WINNIPEG, MANITOBA

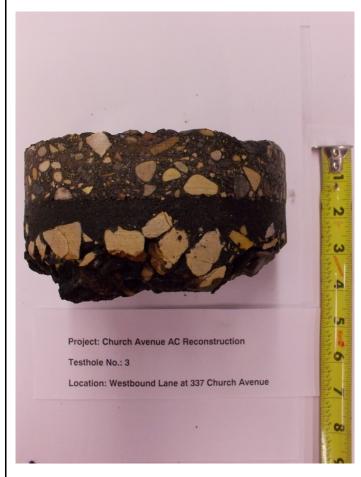


Photo 3: C03: Westbound lane at 337 Church Avenue, 1.5 m from curb



Photo 4: C04: Eastbound lane at 350 Church Avenue, 1 m from curb



GEOTECHNICAL INVESTIGATION CHURCH AVENUE WINNIPEG, MANITOBA

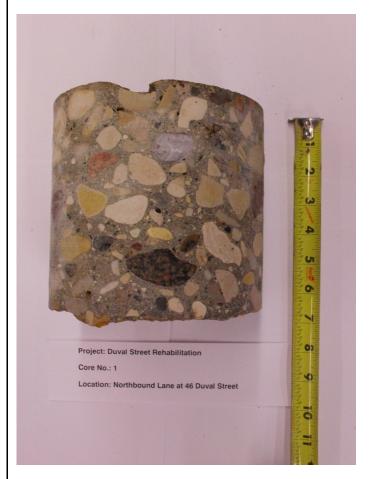


Photo 1: C01: Northbound lane at 46 Duval Street, 0.5 m from curb

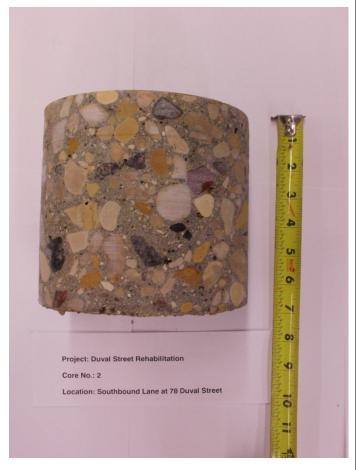


Photo 2: C02: Southbound lane at 78 Duval Street, 0.6 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION
DUVAL STREET
WINNIPEG, MANITOBA



Photo 1: C01: Eastbound lane at 133 Hallet Street, 0.9 m from curb

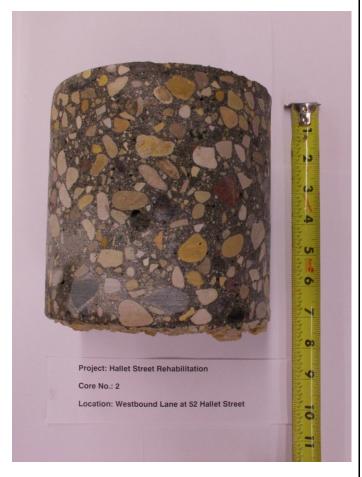


Photo 2: C02: Westbound lane at 52 Hallet Street, 1.0 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION HALLET STREET WINNIPEG, MANITOBA



Photo 3: C03: Westbound lane at 105 Hallet Street, 2.0 m from curb



Photo 4: C04: Eastbound lane between 72 and 78 Hallet Street, 1.5 m from curb



GEOTECHNICAL INVESTIGATION
HALLET STREET
WINNIPEG, MANITOBA

Drawn: N/A Scale: N/A January 2015 Project No.: WX17565 Figure: B13



Photo 1: TH01: Westbound lane at 178 Machray Avenue, 1.0 m from curb



Photo 2: TH02: Eastbound lane at 177 Machray Avenue, 1.0 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION MACHRAY AVENUE WINNIPEG, MANITOBA



Photo 3: TH03: Eastbound lane between 155 and 167 Machray Avenue, 1.0 m from curb

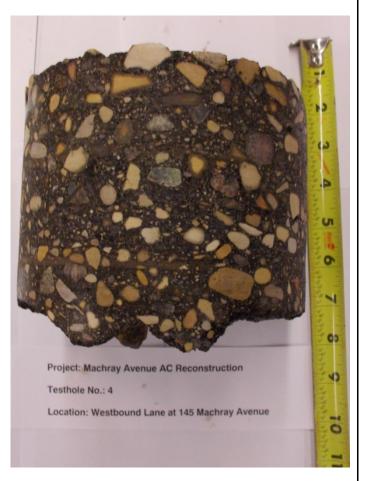


Photo 4: TH04: Westbound lane at 145 Machray Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION
MACHRAY AVENUE
WINNIPEG, MANITOBA



Photo 1: TH01: Northbound lane at 470 Burrows Avenue, 1.0 m from curb



Photo 2: TH02: Southbound lane at 210 Powers Street, 1.5 m from curb



MMM Group

Drawn: N/A Scale: N/A

GEOTECHNICAL INVESTIGATION POWERS STREET WINNIPEG, MANITOBA



Photo 3: Testhole 03: Southbound lane at 201 Powers Street, 1.5 m from curb



Photo 4: Testhole 04: Northbound lane at 572 Manitoba Avenue, 1 m of curb



GEOTECHNICAL INVESTIGATION POWERS STREET WINNIPEG, MANITOBA



Photo 5: TH05: Southbound lane at 471 Pritchard Avenue, 1.5 m from curb

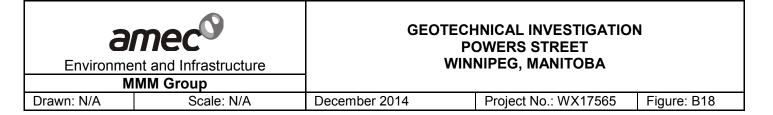




Photo 1: TH01: Westbound lane at 1030 Redwood Avenue, 1.0 m from curb

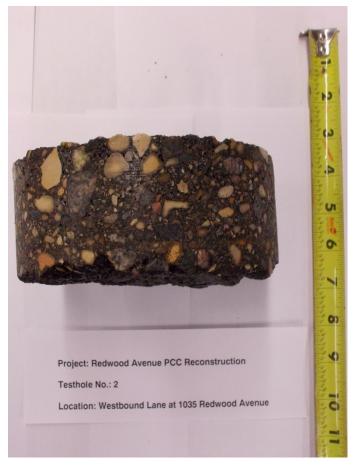


Photo 2: TH02: Westbound lane at 1035 Redwood Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION
REDWOOD AVENUE (BATTERY TO SGT. TOMMY PRINCE)
WINNIPEG, MANITOBA



Photo 3: TH03: Eastbound lane at 1050 Redwood Avenue, 1.0 m from curb



Photo 4: TH04: Westbound lane at 1066 Redwood Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION
REDWOOD AVENUE (BATTERY TO SGT. TOMMY PRINCE)
WINNIPEG, MANITOBA



Photo 5: TH05: Eastbound lane at 1078 Redwood

Avenue, 1.0 m from curb



GEOTECHNICAL INVESTIGATION REDWOOD AVENUE (BATTERY TO SGT. TOMMY PRINCE) WINNIPEG, MANITOBA



Photo 1: C01: Westbound lane 2m east of west corner of 19 Bentall Street, 1.0 m from curb



Photo 2: C02: Eastbound lane 75m west of Bentall Street, 1.5 m from curb



GEOTECHNICAL INVESTIGATION
REDWOOD AVENUE (SHAUGHNESSY TO SHEPPARD)
WINNIPEG, MANITOBA

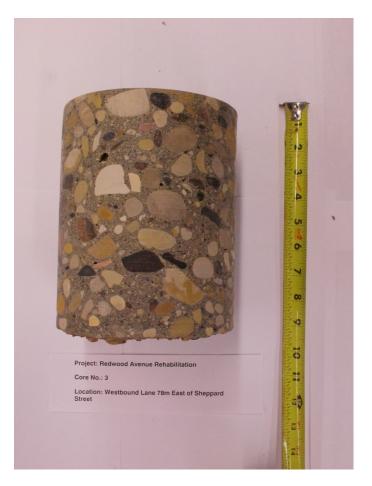


Photo 3: C03: Westbound lane 78 m east of Sheppard Street, 1.8 m from curb



GEOTECHNICAL INVESTIGATION REDWOOD AVENUE (SHAUGHNESSY TO SHEPPARD) WINNIPEG, MANITOBA



Photo 1: C01: Northbound lane at 67 Rose Hill Way, 0.3 m from curb



Photo 2: C02: 2.0 m from outside curb at 131 Rose Hill Way



GEOTECHNICAL INVESTIGATION ROSE HILL WAY WINNIPEG, MANITOBA