Template Version: C420120419 - RW

APPENDIX 'A' GEOTECHNICAL REPORT

Template Version: C420120419 - RW

APPENDIX 'A' - GEOTECHNICAL REPORT

GEOTECHNICAL REPORT FOR:

- I. BURROWS AVENUE FROM MCPHILLIPS STREET TO SGT TOMMY PRINCE STREET
- II. MAGNUS AVENUE FROM PARR STREET TO MCKENZIE STREET
- III. IRVING PLACE FROM GRANDVIEW STREET TO HENDERSON HIGHWAY
- IV. BRAZIER STREET FROM JAMISON AVENUE TO DONALDA AVENUE

The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in pavement structure and/or soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.



#6 – 854 Marion Street, Winnipeg, Manitoba R2J 0K4 Phone: (204) 233-1694 Fax: (204) 235-1579 E-mail: eng_tech@mts.net www.eng-tech.ca

February 20, 2013

File No.: 12-037-02

Engineering Division
Public Works Department
City of Winnipeg
106 -- 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTENTION: Mr. Derek Teperto, C.E.T.

RE:

2013 City of Winnipeg Residential Street Renewal Program

Dear Mr. Teperto.

1.0 Introduction

ENG-TECH Consulting Limited (ENG-TECH) was retained by City of Winnipeg to conduct a geotechnical investigation on selected streets in the City of Winnipeg. The purpose of the geotechnical investigation was to identify the pavement structure and the underlying soil stratigraphy. In addition, a laboratory testing program consisting of moisture contents, atterberg limits and particle size analyses were conducted to confirm the classification of the underlain soils.

2.0 Scope of Work

The scope of work for the project was as follows:

- Core a total of 24 holes through the existing pavement structure on Magnus Avenue (between Mckenzie Street & Parr Street), Burrows Avenue (McPhillips Street to Sgt. Tommy Prince Street), Irving Place (Grandview Street to Henderson Highway), and Brazier Street (Jamison Avenue to Donalda Street) using a 150 mm diameter core barrel. Retain the cores for thickness measurements and photographs in our laboratory.
- Drill a test hole at each cored location to a depth of 2 m +/- 150 mm below the surface of the pavement. Classify the underlying soils and collect samples from the auger flights at regular intervals. Retain the samples for laboratory analysis and confirmatory classification.
- Complete a report outlining the work conducted including test hole summary tables with laboratory test results, and photographs of the cores.

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3.0 Field Program

ENG-TECH conducted the coring and test hole drilling program on January 14th and 15th, 2013. All test holes were re-located from the original designations due to the presence of underground services. and are shown in Figures 1 to 4. The test holes were drilled using 125 mm diameter solid stem continuous flight augers using an Acker MP8 truck mounted drill rig owned and operated by Paddock Drilling Ltd. Twenty four (24) test holes were advanced from 2.1 to 2.3 m below surface of pavement. Soil samples were collected at regular depth intervals and at stratigraphic changes off the auger flights. All test holes were backfilled with the sand and capped with cold mix asphalt upon the completion of drilling. The core thicknesses and stratigraphy at the location of each test hole are outlined on Tables 1 to 4.

4.0 Laboratory Program

The soil samples collected and the pavement structure cores were retained for analysis in our laboratory. The moisture content of each sample was determined and select samples were tested for particle size analysis and atterberg limits. The pavement structure core thicknesses were confirmed and the cores photographed. The moisture content, particle size and atterberg limit results are summarized on Tables 1 to 4. The photographs of the cores and site plans are attached.

6.0 Closure

ENG-TECH trusts this is all the information required. If you have any questions, please contact the undersigned.

Sincerely.

ENG-TECH Consulting Limited

Reviewed by

Danny Holfeld, Principal

Manager of Operations

Clark Hryhoruk, M.Sc., P. Eng.

Principal, Geotechnical Engineer

CDH/wg

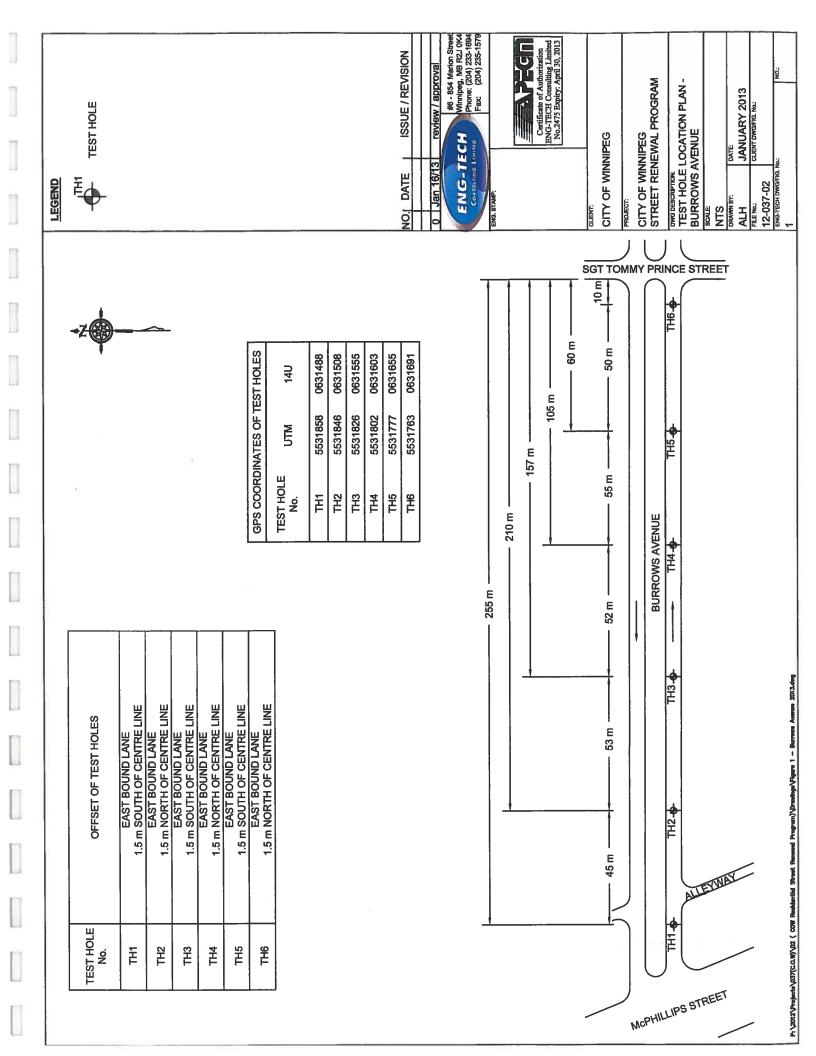
Figure 1 of 4 - Test Hole Location Plan - Burrows Avenue Attachments:

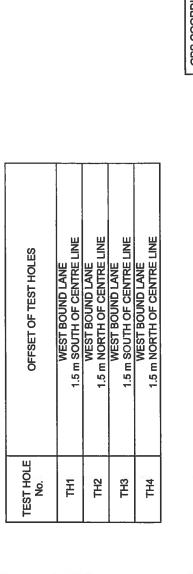
> Figure 2 of 4 - Test Hole Location Plan - Magnus Avenue Figure 3 of 4 – Test Hole Location Plan – Irving Place Figure 4 of 4 - Test Hole Location Plan - Brazier Street

Table 1 – Summary of Pavement Structure – Burrows Avenue (3 pages) Table 2 – Summary of Pavement Structure – Magnus Avenue (2 pages) Table 3 – Summary of Pavement Structure – Irving Place (2 pages)

Table 4 – Summary of Pavement Structure – Brazier Street (5 pages)

Photograph of Cores – Burrows Avenue (2 sheets) Photograph of Cores - Magnus Avenue (2 sheet) Photograph of Cores - Irving Place (2 sheet) Photograph of Cores – Brazier Street (4 sheet)



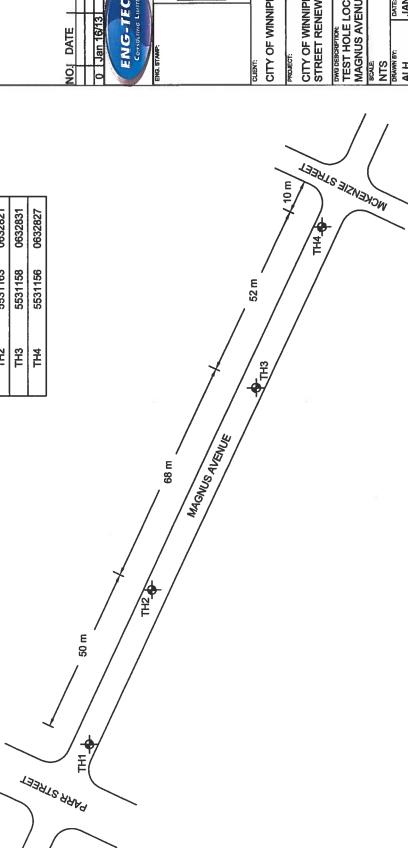


TEST HOLE

LEGEND

GPS COORDINATES OF TEST HOLES
MT2
5531218
5531163
5531158
5531156

ISSUE / REVISION	Jan 16/13 review / approval #6-854 Marion Stree #6-854 Marion Stree #75 CH	Certificate of Authorization ENG-TECH Consulting Limited No.2475 Expiry: April 30, 2013	NNNIPEG	PROJECT: CITY OF WINNIPEG STREET RENEWAL PROGRAM	OWN DESCRETOR: TTEST HOLE LOCATION PLAN - MAGNUS AVENUE		JANUARY 2013	CLIENT DWG/FIG. No.:	
NO. DATE	ENG-TL	ENG. STAMP.	CITY OF WINNIPEG	PROJECT: CITY OF WINNIPEG STREET RENEWAL	DWG DESCRETORS TEST HOLE LOCA MAGNUS AVENUE	SCALE: NTS	DRAWN BY: ALH	FILE No: 12-037-02	
					/				

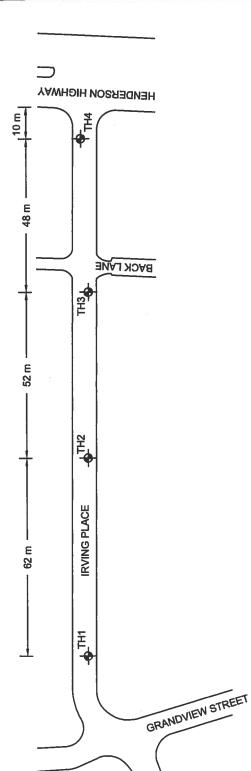




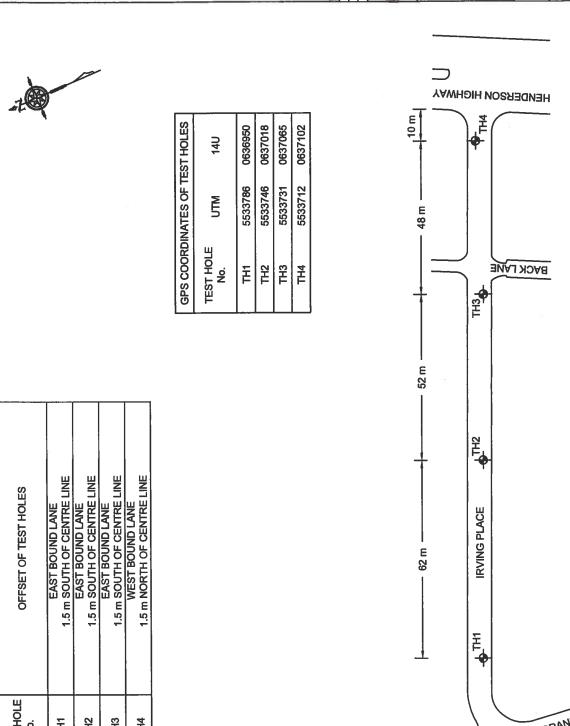
TEST HOLE No.	OFFSET OF TEST HOLES
TH1	EAST BOUND LANE 1.5 m SOUTH OF CENTRE LINE
TH2	EAST BOUND LANE 1.5 m SOUTH OF CENTRE LINE
ТНЗ	EAST BOUND LANE 1.5 m SOUTH OF CENTRE LINE
TH4	WEST BOUND LANE 1.5 m NORTH OF CENTRE LINE

LEGEND

ISSUE / REVISION	#8 - 854 Marion Stree #8 - 854 Marion Stree Winnipeg, MB R2J 0K Phone: (204) 233-169 Fax: (204) 233-157	Certificate of Authorization RNG-TECH Consulting Limited No.2473 Expiry: April 30, 2013	NIPEG	PROJECT: CITY OF WINNIPEG STREET RENEWAL PROGRAM	OWG DESCRETOR: TEST HOLE LOCATION PLAN - RVING PLACE		DATE: JANUARY 2013	LIENT DWG/FIG. No.:	NO.:
NO. DATE	ENG-TECH	BKG. STAMP.	CITY OF WINNIPEG	PROJECT: CITY OF WINNIPEG STREET RENEWAL	DWG DESCRIPTION: TEST HOLE LO IRVING PLACE	SCALE: NTS	DRAWN 67: ALH	FLE No.: 12-037-02	ENG-TECH DWG/FIG. No.:
				_					

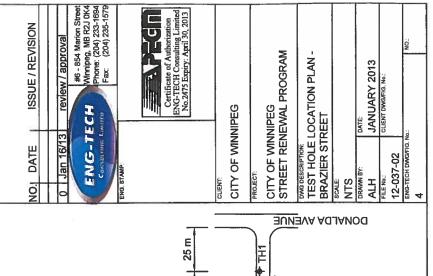


P:\2012\Projects\457(C.Q.W)\42 (COM Revidential Street Reneral Program)\Anadogs\Figure 3 - Indeg Place 2013.deg



									2.	
OFFSET OF TEST HOLES	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1.5 m WEST OF CENTRE LINE	SOUTH BOUND LANE 1,5 m WEST OF CENTRE LINE	SOUTH BOUND LÂNE 1.5 m WEST OF CENTRE LINE
TEST HOLE No.	Ŧ	TH2	TH3	TH4	THS	TH6	TH7	TH8	TH9	TH10

ORDII	GPS COORDINATES OF TEST HOLES	EST HOLES
TEST HOLE No.	MTD	140
TH.	5531344	0636041
TH2	5531304	0636017
TH3	5531250	0635997
TH4	5531207	0635975
TH5	5531180	0635964
TH6	5531146	0635944
TH7	5531109	0635919
тнв	5531063	0635906
ТН9	5531028	0635892
TH10	5530997	0635872



50 m

58 m

- 37 m

40 m

42 m

38 m

40 m

45 m

35 m

BRAZIER STREET

Ŧ

TH6

MUNROE AVENUE

BACK LANE

WINTERTON AVENUE

BACK LANE

BACK LANE

WASHINGTON AVENUE

BACK LANE

JAMISON AVENUE

OTTAWA AVENUE

P: \Z012\Projects\Z37(Z.Q.W)\Z2 (Z013 City of Winnipeg Residential Street Renewal Program)\Drawings\Figure 4 - Brader Street Z013.dwg



TEST HOLE

LEGEND

Table 1 Summary of Pavement Structure

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City of Winnipeg 2013 Residential Street Renewal Program

Attorbo

Teet Hole		Pavemen	Pavement Surface	Pavement Structure Material	cture Material	Subarade	Sample	Moisture	Ŧ	Hydrometer Analysis	Analysis		•	Atterberg Limits	stir
Number	Test Hole Location	Type	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Siit (%)	Clay (%)	Liquid	Plastic Limit	Plasticity Index
			8										•		
							0.1	39.7							
						Silty Clay	0.4	38.9							
						(Fill)	0.7	40.7							
-	Burrows Avenue	Asphait	77	Granular	152	器	1.0	39.9							
			>	Size 20mm)			1.3	23.7					·-		
						Sifty Clay	1.6	40.8							
							1.9	41.8							
						Silty Clay (Fill)	0.1	25.9	0.2	5.9	63.0	30.9	39	18	21
						Sit	0.4	19.8	0.0	9.3	85.8	4.9	56	17	6
_						Clayey Silt	0.7	18.9							
2	Burrows Avenue	Asphalt	120	ı	ı		1.0	27.9							
			277			į	1.3	39.5							
						Sifty Clay	1.6	49.6							
							1.9	52.7							



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Table 1 Summary of Pavement Structure

City of Winnipeg 2013 Residential Street Renewal Program

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	Pavemen	Pavement Surface	Pavement Str.	Pavement Structure Material	Cubarada	Cample	Moieture	H	Hydrometer Analysis	Analysis		•	Atterberg Limits	nits
Test Hole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Siit (%)	Clay (%)	Liquid	Plastic Limit	Plasticity Index
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				Sifty Clay (Fill)	0.1	46.9				-		·	
					Clay (Fill)	0.4	37.8	0.0	1.9	25.2	72.9	72	37	35
	3	,			Silty Clay	0.7	36.9		_					
Burrows Avenue	Aspnan	7 28	(Maximum Size 9.5mm)	51	(Fill)	1.0	34.9							
		}				1.3	44.8							
					Silty clay	1.6	43.7							
						1.9	48.6							
;					Silty Clay (Fill)	0.1	28.1							
					Clayey Sift	0.4	17.6							
			_		Silty Clay	0.7	27.9	0.0	5.1	43.3	51.6	35	15	20
Burrows Avenue	Asphait	99	1	1	Clayey Sift	1.0	30.0							
		<u> </u>				1.3	23.9							
					Silty Clay	1.6	23.9	95.						
						1.9	22.2		_					



Table 1 Summary of Pavement Structure

City of Winnipeg 2013 Residential Street Renewal Program

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	<u> </u>		· · ·												
mits	Plasticity Index			18											
Atterberg Limits	Plastic Limit			15											
•	Liquid			33											
	Clay (%)			39.7											
. Analysis	Sit (%)			53.8											
Hydrometer Analysis	Sand (%)		· .	6.5											
H	Gravel (%)			0.0											
Moisture	Content (%)	27.6	23.6	34.9	24.0	23.4	27.8	45.1	35.1	32.8	36.9	37.5	24.5	39.2	45.5
Sample	Depth (m)	0.1	0.4	2.0	1.0	1.3	1.6	1.9	0.1	0.4	0.7	1.0	1.3	1.6	1.9
Subarade	Description	Siit (Fiil)	Silt	Clayey Sitt		Six		Sifty Clay		Siity Clay		ä	io O	3	Sinty Clay
xure Material	Thickness (mm)		_		1							51			
Pavement Structure Material	Туре				8							Granular (Maximum	olze (z. Milli)		
t Surface	Thickness (mm)				112	127						99	9		
Pavement Surface	Туре	п			Asphalt	Concrete						Asphalt			9
	Test Hole Location				Burrows Avenue							Burrows Avenue			
Toct Hole	Number				က							9			



Table 2

Summary of Pavement Structure

City of Winnipeg 2013 Residential Street Renewal Program

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Page 1 of 2

Tect Hole		Рачете	Pavement Surface	Pavement Structure Material	ture Material	Subarade	Sample	Moisture	Ŧ	Hydrometer Analysis	nalysis		Æ	Atterberg Limits	iits
Number	Number Test Hole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index

ndex									49					
רושנו									22					
									71					
(%)									55.4					
- 8									41.4					
(%)									3.1					
(%)									0.1			,		
	34.9	30.4	15.6	16.2	32.7	26.9	33.9	31.2	28.3	11.8	31.0	19.4	17.9	33.9
	0.1	0.4	0.7	1.0	1.3	1.6	1.9	0.1	0,4	0.7	1.0	1.3	1.6	1.9
	Silty Clay	(Fill)		ii.	100	Clayey our	Silty Clay	Silty Clay	(Fill)		3	Clayey oill		Sii
(mm)				1							ı			
ads.				ı			ļ				ı			
(mm)				33	184						43	9		
adf.	!			Asphalt	Concrete						Asphalt			
				Magnus Avenue			-	•			Magnus Avenue			
				-							2			



Table 2 Summary of Pavement Structure

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Test Hole Location	Pavemen	Pavement Surface	Pavement Str	Pavement Structure Material	Subgrade	Sample	Moisture	Ŧ	Hydrometer Analysis	Analysis	- 1		Atterberg Limits	nits
	Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	# (%)	% % %	Limit	Limit	Index
1														
	7.				Silty Clay (Fill)	0.1	25.0							
					Clayey Silt	0.4	24.2	0.0	3.9	59.1	37.0	35	15	20
					Siit	0.7	10.2	0.0	8.0	78.8	13.2	NP	NP	NP
Magnus Avenue	Asphalt	45	ı	ı		1.0	33.8							
	Concrete	222			Sinty Clay	1.3	38.2							
					Clayey Silt	1.6	38.9							
					Silty Clay	1.9	51.1							
					Silty Clay (Fill)	0.1	37.6							
		<u></u>			Clayey Silt	0.4	31.9							
					Sit	0.7	22.1							
Magnus Avenue	Asphalt	¥ 8	ı	1		1.0	15.6							
	Concrete	677			Č	1.3	33.2							
	-				Sinty Clay	1.6	39.1							
						1.9	47.2							

Note: NP = None Plastic



Table 3 Summary of Pavement Structure

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nits	Plasticity Index	:	54		2						43										
Atterberg Limits	Plastic Limit		23								19										
	Liquid		77								62										
	Clay (%)		68.9								59.1										
Analysis	Silt (%)		27.4								35.4										
Hydrometer Analysis	Sand (%)		2.8								3.4										
Hyo	Gravel (%)		6.0								2.1										
Moisture	Content (%)	33.9	31.5	26.2	31.9	30.9	36.6	34.3	29.6	29.6	33.2	30.8	28.7	30.2	33.4						
Sample	Depth (m)	0.1	0.4	2.0	1.0	1.3	1.6	1.9	0.1	0.4	2.0	1.0	1.3	1.6	1.9						
Subarade	Description				Silty Clay	ì						Silty Clay (Fill)									
ture Material	Thickness (mm)			,	ı							1									
Pavement Structure Material	Туре			-	ı					1											
t Surface	Thickness (mm)				135					ų		151									
Pavement Surface	Туре				Concrete							Concrete									
,	Test Hole Location				Irving Place					*		Irving Place									
	Number		··· <u> </u>		-							7									



Table 3 Summary of Pavement Structure

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Toot Holo		Pavemen	Pavement Surface	Pavement Structure Material	ıcture Material	Subarade	Sample	Moisture	Ŧ	Hydrometer Analysis	Analysis		¥	Atterberg Limits	mits
Number	Test Hole Location	Type	Thickness (mm)	Type	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
										ļ	rii.	ŀ			
							0.1	32.6							
							0.4	31.6							
							0.7	35.8							
ю	Irving Place	Concrete	151	1	ı	Silty Clay (Fill)	1.0	41.4							
							1.3	29.9							
							1.6	35.0							
							1.9	30.9							
							0.1	36.4							
							0.4	37.4							
							0.7	37.5							
4	Irving Place	Concrete	149	ı	1	Silty Clay (Fill)	1.0	35.5							
							1.3	35.7							
							1.6	34.4							
							1.9	31.7							



Table 4 Summary of Pavement Structure

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		Pavement Surface	t Surface	Pavement Structure Material	cture Material	of control of	olume	Moietrie	H	Hydrometer Analysis	Analysis		•	Atterberg Limits	nits
Test Hole Number	Test Hole Location	Type	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic Limit	Plasticity Index
						Sifty Clay (Fill)	0.1	26.5							
							0.4	28.9							
						# N	0.7	13.0	0.0	4.7	90.5	4.8	21	18	က
-	Brazier Street	Asphalt	43	Granular (Maximum	25		1.0	23.9						7.	
		Concrete	142	Size 40mm)		č	1.3	24.5							
						Sinty Clay	1.6	35.5							
							1.9	46.2							
							0.1	41.3							
						Silty Clay (Fill)	0.4	44.2							
							0.7	31.4					_		
2	Brazier Street	Asphalt	94 %	Granular (Maximum	92	Clayey Silt	1.0	28.2							
		Concrete		Size zomini		Silt	1.3	24.4							
						31.0	1.6	39.1							_
						Siny ciay	1.9	45.1							



Table 4
Summary of Pavement Structure

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Toct Hole			Pavement Surface	Pavement Structure Material	cture Material	Subarade	Sample	Moisture	Î	Hydrometer Analysis	Analysis		*	Atterberg Limits	its
Number	Test Hole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Sit (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
								:							
			987.5				0.1	16.8							
							0.4	38.8							
						Sifty Clay (Fill)	0.7	35.1							
ო	Brazier Street	Asphalt	26	Granular (Maximum	178		1.0	34.6							
		Concrete	86	Size1z.3mm)			1.3	34.3							
						Clayey Silt (Fill)	1.6	27.5							
						Sifty Clay	1.9	29.1			-				
						Silty Clay (Fill)	0.1	38.6					t.		
						Clayey Silt	0.4	40.3	0:0	1.7	51.0	47.3	45	18	27
		:				Sit	0.7	19.9							·
4	Brazier Street	Asphait	32	Granular (Maximum Size 12 5mm)	25		1.0	36.9							
	***	555	3	(_	<u> </u>	1.3	36.6							
						olity ciay	1.6	43.5							-
							1.9	46.4							



Table 4 Summary of Pavement Structure

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Too H	-	Pavement Surface	t Surface	Pavement Structure Material	cture Material	Subarade	Sample	Moisture	Ŧ	Hydrometer Analysis	Analysis		∀	Atterberg Limits	its
Number	Test Hole Location	Type	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Siit (%)	Clay (%)	Liquid	Plastic Limit	Plasticity Index
							0.1	34.3							
						Silty Clay (Fill)	0.4	46.8	0.0	1.4	41.2	57.4	77	23	54
							0.7	40.9		-					
ĸ	Brazier Street	Asphalt	51	Granular (Maximum	51		1.0	39.4							
		Congrete	85	Size 12.3mm)		<u>.</u>	1.3	38.9							
						ointy Clay	1.6	49.0							
							1.9	54.2					ı		
							0.1	33.7							
							0.4	34.5							
						Silty Clay (Fill)	2.0	29.7							
ဖ	Brazier Street	Asphalt	7 22	Granular (Maximum Size 12 5mm)	38	7	1.0	32.1							
			3	7.50			1.3	37.5							
						i di	1.6	44.0							
						Silty Clay	1.9	46.0							



Table 4
Summary of Pavement Structure

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Test Hole		Pavemen	Pavement Surface	Pavement Structure Material	cture Material	Subgrade	Sample	Moisture	Î	Hydrometer Analysis	Analysis		A	Atterberg Limits	nits
Number	Test Hole Location	Туре	Thickness (mm)	Type	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic Limit	Plasticity Index
					7	Silty Clay (Fill)	0.1	30.0			30 %	144			
						Clayey Silt	0.4	32.1	5.0	10.4	64.8	8.8	69	21	48
					•	Silty Clay	0.7	28.8							
7	Brazier Street	Asphalt	49	Granular (Maximum	51	(Fill)	1.0	21.0							
		Concrete	66 6	Size 12.5mm)		ä	1.3	19.6		22					
						i i	1.6	22.4				-			
		-				Silty Clay	1.9	40.1							
							0.1	39.5							
						Silty Clay	0.4	40.5							
			i			(Fill)	0.7	32.1							
œ	Brazier Street	Asphalt	54	Granular (Maximum	25		1.0	31.6				*			
		3 5 5 5 6 7	25	SIZE 12.3011111)			1.3	36.9							
			a e			Silty Clay	1.6	38.5							
							1.9	46.3							



Table 4 Summary of Pavement Structure

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Hydrometer Analysis Atterberg Limits	Gravel Sand Silt Clay Liquid Plastic Plasticity (%) (%) (%) Limit Limit Index				
Moisture	Content (%)				
Sample	Depth (m)				
Subgrade	Description				
cture Material	Thickness (mm)				
Pavement Structure Mater	Туре				
t Surface	Thickness (mm)				
Pavement Surface	Туре				
	Number lest Hole Location				
Test Hole	Number				

_													 -	
YDDII									53					
									27					
									80					
(%)									45.3					
(%)		-							52.1					
(%)									2.6					
(%)									0.0					
	37.9	40.8	30.8	30.6	32.3	40.7	44.8	33.8	38.5	37.1	37.1	29.5	23.8	24.4
	0.1	0.4	0.7	1.0	1.3	1.6	1.9	0.1	0.4	0.7	1.0	1.3	1.6	1.9
			Silty Clay (Fill)			(H)	olity Clay	Silty Clay (Fill)	Clayey Silt (Fill)	Silty Clay	(Fill)		Silt	
(mim)				102						2	25			
				Granular (Maximum	Size zumm)						Granular (Maximum	252 201111)		
(mm)			_	51	8						41	761		
,			± 04	Concrete							Asphalt			
				Brazier Street							Brazier Street			
Ī				თ							10			





Burrows Avenue Mcphillips Street to Sgt. Tommy Prince Street

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Burrows Avenue Mcphillips Street to Sgt. Tommy Prince Street







Magnus Avenue
Parr Street to Mckenzie Street

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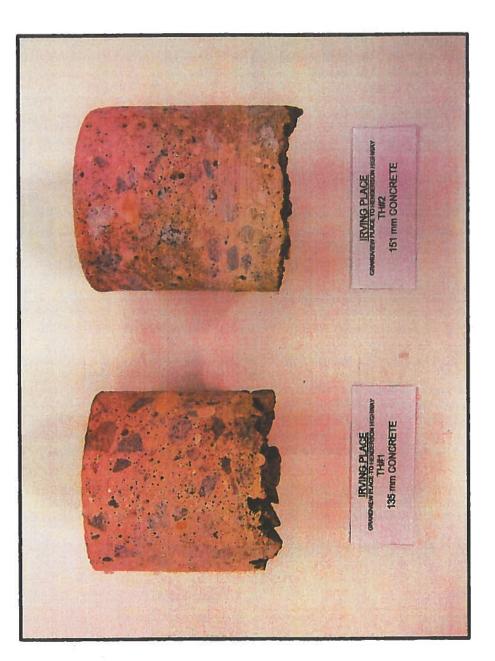
Magnus Avenue Parr Street to Mckenzie Street

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File No: 12-037-02

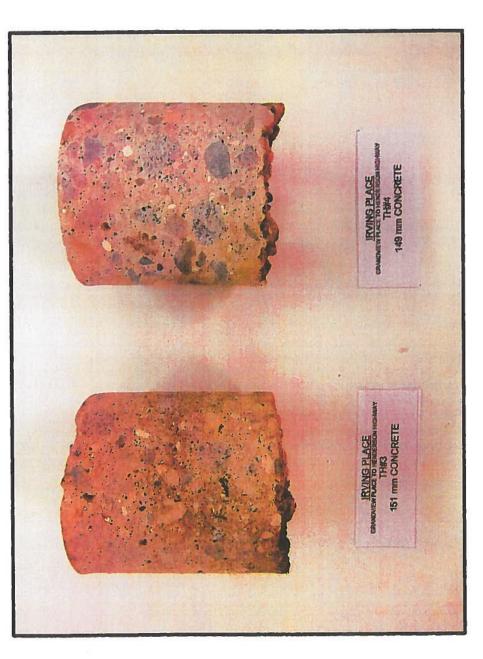
City of Winnipeg 2013 CITY OF WINNIPEG RESIDENTIAL STREET RENEWAL PROGRAM



Irving PfaceGrandview Street to Henderson Highway

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Irving Place Grandview Street to Henderson Highway





Brazier Street Jamison Avenue to Donalda Street

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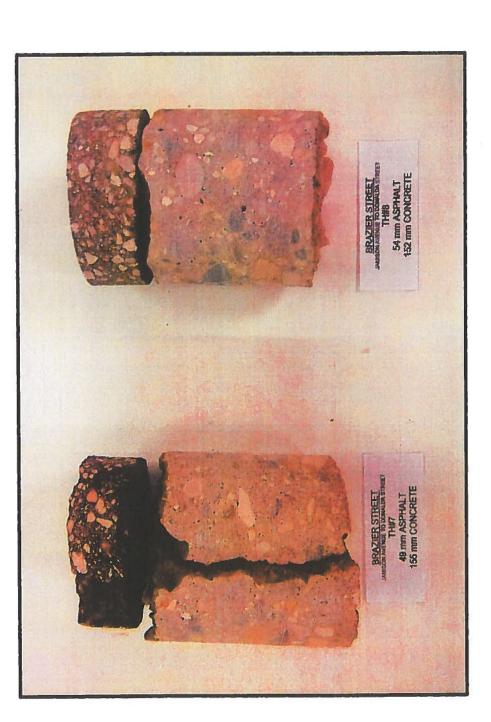




Brazier Street Jamison Avenue to Donalda Street

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Brazier Street Jamison Avenue to Donalda Street





Brazier Street Jamison Avenue to Donalda Street