

APPENDIX 'A' - GEOTECHNICAL INVESTIGATION REPORT

LOGAN AVENUE PAVEMENT GEOTECHNICAL INVESTIGATION REPORT

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.

GEOTECHNICAL INVESTIGATION REPORT

Appendix A
Geotechnical Investigation
February 2, 2016

Appendix A GEOTECHNICAL INVESTIGATION

V:\1233\active\123312306\0300_drawing\0303_model_files\c3d\12306_logan_keewatin_black_rhlp.dwg 1
2016/01/22 10:30 AM By: Bun. Sofhea



ORIGINAL SHEET - ISO 8.5x11 H - v14.06

January, 2016
123312306



Stantec Consulting Ltd.
 Suite 500, 311 Portage Avenue
 Winnipeg MB Canada R3B 2B9
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 www.stantec.com



Notes

- IMAGE SOURCE: GOOGLE MAPS
- SITE: LOGAN AVENUE FROM KEEWATIN STREET TO BLAKE STREET

Client/Project

CITY OF WINNIPEG
 2016 REGIONAL STREET RENEWAL PROGRAM
 WINNIPEG, MB

Figure No.

1

Title

TESTHOLE LOCATION PLAN

V:\1233\active\123312306_0300_drawing\0303_model_files\c3d\12306_logan_keewatin_blake_rhp.dwg 2
2016/01/22 10:30 AM By: Bun. Sothea



ORIGINAL SHEET - ISO 8.5x11 H - v14.06

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Legend
 TESTHOLE

Notes
 • IMAGE SOURCE: GOOGLE MAPS
 • SITE: LOGAN AVENUE FROM
 KEEWATIN STREET TO LOGAN
 STREET

Client/Project
 CITY OF WINNIPEG
 2016 REGIONAL STREET RENEWAL PROGRAM
 WINNIPEG, MB

Figure No.
2

Title
 TESTHOLE LOCATION PLAN

**TABLE 1
2016 REGIONAL STREET RENEWAL PROGRAM
LOGAN AVENUE FROM KEEWATIN STREET TO BLAKE STREET
GEOTECHNICAL INVESTIGATION**

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Logan Avenue 25.5 m East of Northeast corner of Keewatin Street and Logan Avenue 4.5 m South of North curb	Asphalt	245	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	190												
TH02	Logan Avenue 4.5 m North of South curb from property lines 1688 and 1692 Logan Avenue	Asphalt	250	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	340												
TH03	Logan Avenue 8.5 m North of South curb from property lines 1668 and 1672 Logan Avenue	Asphalt	240	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	350												
TH04	Logan Avenue 4.5 m North of South curb from property lines 1656 and 1660 Logan Avenue	Asphalt	180	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	335												
TH05	Logan Avenue 8.5 m North of South curb from property lines 1644 and 1648 Logan Avenue	Asphalt	205	-	-	Silt	0.9	18	0.1	9.7	76.2	14.0	24	17	7
		Concrete	430												
TH06	Logan Avenue 4.5 m North of South curb from property lines 1628 and 1632 Logan Avenue	Asphalt	200	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	370												
TH07	Logan Avenue 8.5 m North of South curb from property lines 1616 and 1620 Logan Avenue	Asphalt	200	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	410												
TH08	Logan Avenue 4.5 m North of South curb, 0.5 m West from property lines 1600 and 1604 Logan Avenue	Asphalt	220	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	385												
TH09	Logan Avenue 8.5 m North of South curb from property lines 1580 and 1584 Logan Avenue	Asphalt	245	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	320												
TH10	Logan Avenue 4.5 m North of South curb from property lines 1558 and 1562 Logan Avenue	Asphalt	190	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	385												
TH11	Logan Avenue 4.5 m North of South curb, 0.5 m West from property lines 1546 and 1550 Logan Avenue	Asphalt	225	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	275												
TH12	Logan Avenue 4.5 m North of South curb from property lines 1534 and 1538 Logan Avenue	Asphalt	215	-	-	Clay Fill	0.9	30	2.6	18.2	24.9	54.3	70	24	46
		Concrete	345												

TH01 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel								2
				X GS	24						
1	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	21						
				X GS	20						4
				X GS	20						
	CH		Stiff brown fat CLAY (CH)	X GS	35						6
2				X GS	49						
			TESTHOLE LOCATION: 25.5 m East of Northeast corner of Keewatin Street and Logan Avenue, 4.5 m South of North curb. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								8
3											10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH02 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel	X GS	20						2
1	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	20						
				X GS	19						4
				X GS	19						
2	CH		Stiff brown fat CLAY (CH)	X GS	40						6
				X GS	47						
3			TESTHOLE LOCATION: 4.5 m North of South curb from property lines 1688 and 1692 Logan Avenue. NOTE: Testhole moved to Eastbound median lane due to City of Winnipeg underground services. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								8
											10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH03 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								2
	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	16						4
1				X GS	21						
				X GS	21						
				X GS	21						
	CH		Stiff brown fat CLAY (CH)	X GS	46						6
2				X GS	52						
			TESTHOLE LOCATION: 8.5 m North of South curb from property lines 1668 and 1672 Logan Avenue.								8
			NOTE: Testhole moved to Westbound median lane due to Hydro underground services.								
			<ul style="list-style-type: none"> • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m. 								10
3											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH04 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 15, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel								2
				X GS	22						
1	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay								
				X GS	23						
				X GS	23						4
				X GS	22						
				X GS	24						6
2	CH		Stiff brown fat CLAY (CH)								
				X GS	48						
			TESTHOLE LOCATION: 4.5 m North of South curb from property lines 1656 and 1660 Logan Avenue.								8
			<ul style="list-style-type: none"> • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m. 								
3											10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH05 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
1	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay Particle Size Analysis at 0.9 m: 0.1% Gravel, 9.7% Sand, 76.2% Silt, 14.0% Clay	X GS	22						2
				X GS	18						
				X GS	19						4
				X GS	20						
2	CH		Firm brown fat CLAY (CH)	X GS	34						6
				X GS	39						
3			TESTHOLE LOCATION: 8.5 m North of South curb from property lines 1644 and 1648 Logan Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								8
											10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH06 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel	X GS	26						2
				X GS	27						
1				X GS	24						4
	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	23						6
2				X GS	24						
				X GS	24						
3			TESTHOLE LOCATION: 4.5 m North of South curb from property lines 1628 and 1632 Logan Avenue. NOTE: Testhole moved to Eastbound median lane due to City of Winnipeg underground services. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH07 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)		
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa			
0	AS		ASPHALT								0		
	CO		CONCRETE								2		
	FL		FILL: brown clay with some silt and some sand, trace gravel	X GS	12						2		
1	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	22							4	
				X GS	22								6
				X GS	27								6
2				X GS	24								10
3	TESTHOLE LOCATION: 8.5 m North of South curb from property lines 1616 and 1620 Logan Avenue. NOTE: Testhole moved to Westbound median lane due to Hydro underground services. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.										12		

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH08 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel	X GS	30						2
1				X GS	30						
	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	22						4
				X GS	21						
	CH		Stiff brown fat CLAY (CH)	X GS	34						6
	ML		Soft tan SILT (ML)	X GS	28						
2	CH		Stiff brown fat CLAY (CH)	X GS	43						
			TESTHOLE LOCATION: 4.5 m North of South curb, 0.5 m West from property lines 1600 and 1604 Logan Avenue.								8
			NOTE: During coring activities, wooden rail tie was observed underneath the asphalt. Testhole moved 0.5 m west from original location.								
3			<ul style="list-style-type: none"> No groundwater seepage or soil sloughing was observed during or upon completion of drilling. Testhole terminated at a depth of 2.1 m. 								10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH09 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 14, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	22						2
1				X GS	22						4
				X GS	21						6
2	CH		Stiff brown fat CLAY (CH)	X GS	50						8
3			TESTHOLE LOCATION: 8.5 m North of South curb from property lines 1580 and 1584 Logan Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH10 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 15, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel	X GS	14						2
1				X GS	24						
				X GS	23						4
				X GS	25						
2	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	23						6
				X GS	23						
3			TESTHOLE LOCATION: 4.5 m North of South curb from property lines 1558 and 1562 Logan Avenue. NOTE: Testhole moved to Eastbound median lane due to City of Winnipeg underground services. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								8
											10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal



TH11 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 15, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel	X GS	14	○					2
1				X GS	25	○					4
	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	24	○					6
2				X GS	23	○					8
				X GS	20	○					10
3				X GS	22	○					12
			TESTHOLE LOCATION: 4.5 m North of South curb, 0.5 m West from property lines 1546 and 1550 Logan Avenue. NOTE: Testhole moved to Eastbound median lane due to Hydro and City of Winnipeg underground services. During coring activities, wooden rail tie was observed below the asphalt. Testhole moved 0.5 m from original location. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								
Sample Type: GS - Grab Sample SPT - Standard Penetration Test ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test Piezometer Backfill Type: <input checked="" type="checkbox"/> Bentonite <input checked="" type="checkbox"/> Drill Cuttings <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Slough				Logged by: Nestor Abarca Reviewed by: German Leal							

TH12 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312306
 PROJECT 2016 Regional Street Renewal Program DATUM _____ NORTHING _____
 LOCATION Logan Avenue from Keewatin Street to Blake Street ELEVATION _____ EASTING _____
 DRILLING DATE January 15, 2016 DRILLING CO. Maple Leaf Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES			<input type="checkbox"/> Insitu Shear Vane (kPa) <input type="checkbox"/> Torvane on Grab Samples (kPa) <input type="checkbox"/> Pocket Penetrometer (kPa)				DEPTH (ft)
				TYPE	NUMBER	MOISTURE CONTENT (%)	50kPa	100kPa	150kPa	200kPa	
0	AS		ASPHALT								0
	CO		CONCRETE								
	FL		FILL: brown clay with some silt and some sand, trace gravel Particle Size Analysis at 0.9 m: 2.6% Gravel, 18.2% Sand, 24.9% Silt, 54.3% Clay	X GS	32						2
1	FL		Particle Size Analysis at 0.9 m: 2.6% Gravel, 18.2% Sand, 24.9% Silt, 54.3% Clay	X GS	30						4
	FL			X GS	29						
	ML		Soft tan SILT (ML) - trace gravel - trace sand - some clay	X GS	27						6
2	ML			X GS	22						
	CH		Stiff brown fat CLAY (CH)	X GS	37						
3			TESTHOLE LOCATION: 4.5 m North of South curb from property lines 1534 and 1538 Logan Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.								10
											12

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
 ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test
 Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca
 Reviewed by: German Leal





Photo 1 – Core sample from Testhole TH01



Photo 2 – Core sample from Testhole TH02



Photo 3 – Core sample from Testhole TH03



Photo 4 – Core sample from Testhole TH04



Photo 5 – Core sample from Testhole TH05



Photo 6 – Core sample from Testhole TH06



Photo 7 – Core sample from Testhole TH07



Photo 8 – Core sample from Testhole TH08



Photo 9 – Core sample from Testhole TH09



Photo 10 – Core sample from Testhole TH10



Photo 11 – Core sample from Testhole TH11



Photo 12 – Core sample from Testhole TH12