APPENDIX ‘A’

GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

GEOTECHNICAL REPORT FOR

1. PULLBERRY STREET
2. RIVERBEND 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.

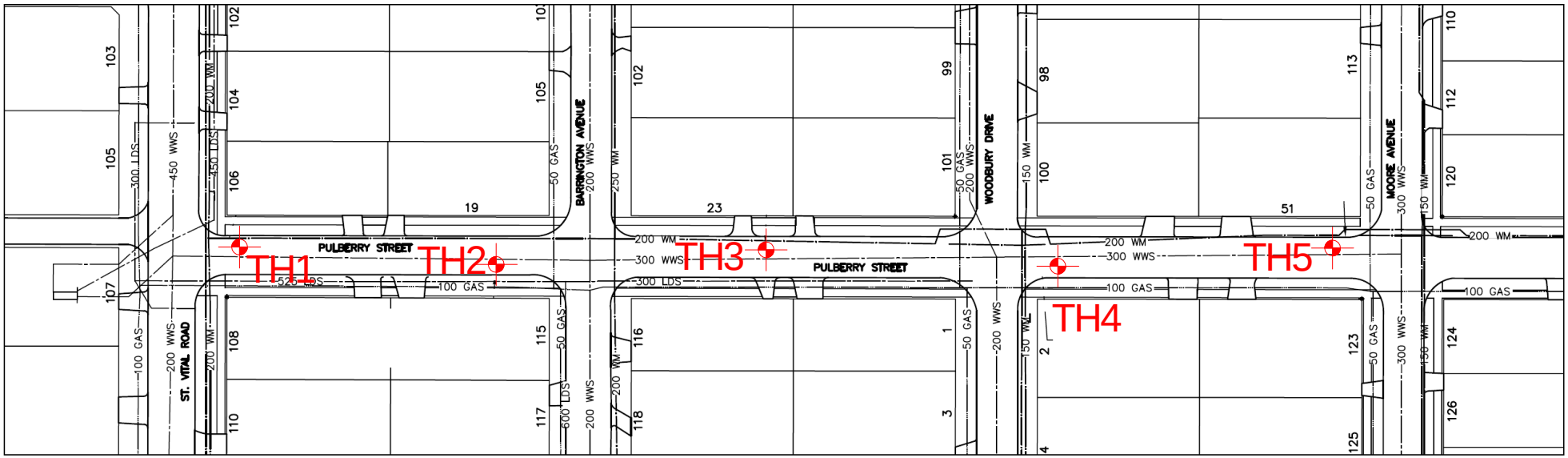
THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

PAVEMENT INVESTIGATI0N
PULBERRY STREET REHABILITATION
ST. VITAL ROAD TO MOORE AVENUE
2012 STREET RENEWAL PROGRAM

Prepared for
CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
106 – 1155 PACIFIC AVENUE
WINNIPEG, MANITOBA
R3E 3P1

Prepared by
THE NATIONAL TESTING LABORATORIES LIMITED
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4

February 3, 2012



THE NATIONAL TESTING LABORATORIES LIMITED *Established in 1923*	Project No.COW-1119	Drawn by: FL	Figure: 1	2012 Street Renewal Program Testhole Location Sketch Pulberry Street Rehabilitation St. Vital Road to Moore Avenue
	Date:Feb.2, 2012	Reviewed by: GL	Scale: NTS	

PAVEMENT INVESTIGATION
PULBERRY STREET REHABILITATION
ST. VITAL ROAD TO MOORE AVENUE
2012 STREET RENEWAL PROGRAM

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Soil 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
TH1	Pulberry Street Centre of northbound lane 8.7 m south of St. Vital Road	Asphalt	100	Clay Fill	1060	clay fill	0.6	32.0	4.0	10.7	23.4	61.9	81	19	62
		Concrete	140												
TH2	Pulberry Street Centre of southbound lane 12 m north of Barrington Avenue	Asphalt	75	Clay Fill	655	clay	0.9	41.0	0.8	1.7	13.3	84.2	105	23	82
		Concrete	145												
TH3	Pulberry Street Centre of northbound lane 35 m south of Barrington Avenue	Asphalt	50	Clay Fill	1650	___	___	___	___	___	___	___	___	___	___
		Concrete	150												
TH4	Pulberry Street Centre of southbound lane 4.5 m south of Woodbury Drive	Asphalt	65	Crushed Limestone	100	___	___	___	___	___	___	___	___	___	___
		Concrete	145	Clay Fill	790										
TH5	Pulberry Street Centre of northbound lane 6 m north of Moore Avenue	Asphalt	75	Clay Fill	1165	___	___	___	___	___	___	___	___	___	___
		Concrete	160												

TESTHOLE TH1

THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

Project Name: Pavement Investgation, Pulberry Street Rehabilitation
Project Location: Winnipeg, Manitoba
Client: City of Winnipeg
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Auger

Date Drilled: January 16, 2012
Depth of Testhole: 2.1 m
Logged by: Trevor Schellenberg
Reviewed by: German Leal

Depth (m)	Symbol	Description	Particle Size Distribution				● Water Content (%)
			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL LL 25 50 75 100
		Asphalt					
		Concrete					
		Clay Fill - black, stiff, moist, high plasticity - silty with some sand - trace fine gravel					●30
0.5			4.0	10.7	23.4	61.9	●32
							●29
1.0							
		Clay - brown, firm, moist, high plasticity					●34
1.5							●36
							●40
2.0							●42
		- No groundwater seepage or soil sloughing was observed during or upon completion of drilling. - Soil was frozen to a depth of 0.9 m. - Testhole was terminated at a depth of 2.1 m.					
2.5							

TESTHOLE TH2

THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

Project Name: Pavement Investgation, Pulberry Street Rehabilitation
Project Location: Winnipeg, Manitoba
Client: City of Winnipeg
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Auger

Date Drilled: January 16, 2012
Depth of Testhole: 2.1 m
Logged by: Trevor Schellenberg
Reviewed by: German Leal

Depth (m)	Symbol	Description	Particle Size Distribution				● Water Content (%)
			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL LL 25 50 75 100
		Asphalt					
		Concrete					
		Clay Fill - black, firm, moist, high plasticity - silty with some sand - trace fine gravel					●38
0.5							●37
		Clay - brown, firm, moist, high plasticity - with some silt	0.8	1.7	13.3	84.2	●41
1.0							●33
1.5							●37
							●39
2.0							●42
		- No groundwater seepage or soil sloughing was observed during or upon completion of drilling. - Soil was frozen to a depth of 0.9 m. - Testhole was terminated at a depth of 2.1 m.					
2.5							

TESTHOLE TH3

THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

Project Name: Pavement Investgation, Pulberry Street Rehabilitation
Project Location: Winnipeg, Manitoba
Client: City of Winnipeg
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Auger

Date Drilled: January 16, 2012
Depth of Testhole: 2.1 m
Logged by: Trevor Schellenberg
Reviewed by: German Leal

Depth (m)	Symbol	Description	● Water Content (%)
		Asphalt	
		Concrete	
		Clay Fill - black, firm, moist, high plasticity - silty with some sand - trace fine gravel - brown below 0.8 m	●33
0.5			●31
			●28
1.0			●40
1.5			●33
		Clay - brown, firm, moist, high plasticity	●40
2.0			●40
		- No groundwater seepage or soil sloughing was observed during or upon completion of drilling. - Soil was frozen to a depth of 0.9 m. - Testhole was terminated at a depth of 2.1 m.	
2.5			

25 50 75 100

TESTHOLE TH4

THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

Project Name: Pavement Investgation, Pulberry Street Rehabilitation
Project Location: Winnipeg, Manitoba
Client: City of Winnipeg
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Auger

Date Drilled: January 26, 2012
Depth of Testhole: 2.1 m
Logged by: Trevor Schellenberg
Reviewed by: German Leal

Depth (m)	Symbol	Description	● Water Content (%)
		Asphalt	
		Concrete	
		Crushed Limestone - 20 mm maximum aggrgate size	●42
0.5		**Clay Fill** - black, stiff, moist, high plasticity - silty with some sand - trace fine gravel - trace organic materials	●34
			●37
1.0		**Clay** - brown, firm, moist, high plasticity - with some silt - trace organic materials	●40
1.5			●38
			●42
2.0			●42
		- No groundwater seepage or soil sloughing was observed during or upon completion of drilling. - Soil was frozen to a depth of 0.9 m. - Testhole was terminated at a depth of 2.1 m.	
2.5			

25 50 75 100

TESTHOLE TH5

THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

Project Name: Pavement Investgation, Pulberry Street Rehabilitation
Project Location: Winnipeg, Manitoba
Client: City of Winnipeg
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Auger

Date Drilled: January 26, 2012
Depth of Testhole: 2.1 m
Logged by: Trevor Schellenberg
Reviewed by: German Leal

Depth (m)	Symbol	Description	● Water Content (%)
		Asphalt	
		Concrete	
		Clay Fill - black, firm, moist, high plasticity - silty with some sand - trace fine to coarse gravel - trace organic materials	●38
0.5			●34
			●39
1.0			●40
		Clay - brown, stiff, moist, high plasticity - firm below 1.7 m	●41
			●48
2.0			●45
		- No groundwater seepage or soil sloughing was observed during or upon completion of drilling. - Soil was frozen to a depth of 0.9 m. - Testhole was terminated at a depth of 2.1 m.	
2.5			

25 50 75 100

Core Sample from Testhole TH1

Core Sample from Testhole TH2

Core Sample from Testhole TH3

Core Sample from Testhole TH4

Core Sample from Testhole TH5

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PAVEMENT INVESTIGATI0N
RIVERBEND AVENUE REHABILITATION
MINNETONKA STREET TO METZ STREET
2012 STREET RENEWAL PROGRAM

Prepared for
CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
106 – 1155 PACIFIC AVENUE
WINNIPEG, MANITOBA
R3E 3P1

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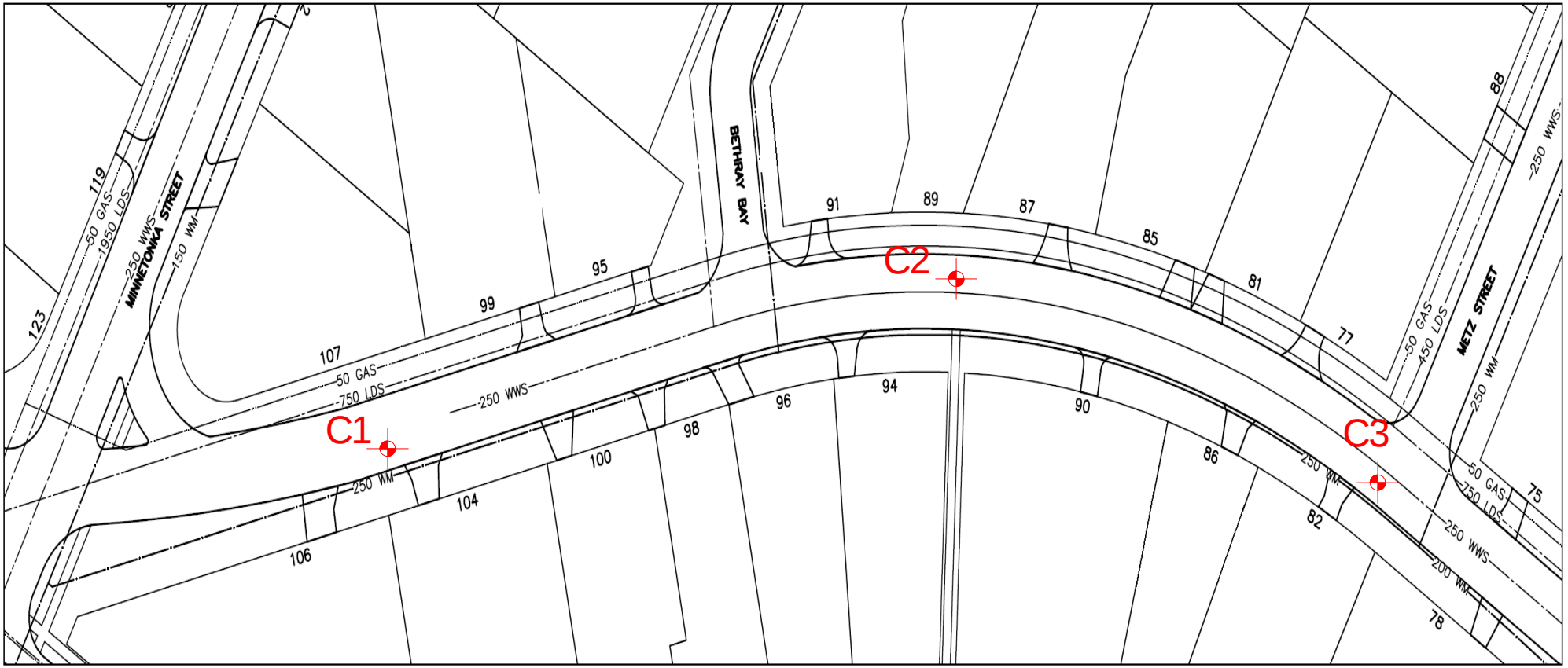
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4

January 18, 2012



THE NATIONAL TESTING LABORATORIES LIMITED *Established in 1923*	Project No.COW - 1119	Drawn by: G.L	Figure: 1	2012 Street Renewal Program Testhole Location Sketch Riverbend Avenue Rehabilitation Minnetonka Street to Metz Street
	Date:Jan 6, 2012	Reviewed by: DF	Scale: NTS	

PAVEMENT INVESTIGATION
RIVERBEND AVENUE REHABILITATION
MINNETONKA STREET TO METZ STREET
2012 STREET RENEWAL PROGRAM

Core ID	Core Location	Pavement Surface		Condition of Core Sample
		Type	Thickness (mm)	
C1	Eastbound lane 1m east of property line between 104 and 106 Riverbend Avenue 2.5 m from south curb	Concrete	185	Good Condition
C2	Westbound lane at property line bewtween 87 and 89 Riverbend Avenue 3.2 m from north curb	Concrete	215	Good Condition
C3	Eastbound lane 6 m west of west edge of driveway at 82 Riverbend Avenue 1.9 m from south curb	Concrete	190	Good Condition

Notes

1. Core locations selected by City of Winnipeg
2. Cores recovered from concrete pavement on January 5, 2012
3. Coreholes patched with winter grade grout

Core Sample C1

Core Sample C2

Core Sample C3