APPENDIX 'A'

GEOTECHNICAL REPORT

AVENUE DUCHARME
HOUDE DRIVE TO VILLENEUVE BOULEVARD
GEOTECHNICAL INVESTIGATION

Prepared for
STANTEC
905 WAVERLEY STREET
WINNIPEG, MANITOBA
R3T 5P4

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

March 17, 2010

AVENUE DUCHARME
HOUDE DRIVE TO VILLENEUVE BOULEVARD

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
TH1	18 m east of Houde Drive 1.5 m from north curb	Asphalt	110	Granular Fill	190	-	-	-	-	-	-	-	-	-	-
TH2	3 m west of property line between 1102 and 1106 Avenue Ducharme 1.5 m from north curb	Asphalt	150	Granular Fill	225	-	-	-	-	-	-	-	-	-	-
TH3	6 m west of property line between 1086 and 1090 Avenue Ducharme 1.5 m from north curb	Asphalt	120	Granular Fill	235	-	-	-	-	-	-	-	-	-	-
TH4	4 m east of property line between 1078 and 1082 Avenue Ducharme 1.5 m from north curb	Asphalt	120	Granular Fill	335	-	-	-	-	-	-	-	-	-	-
TH5	3 m west of property line between 1058 and 1062 Avenue Ducharme 1.5 m from south curb	Asphalt	125	Granular Fill	255	Silty Clay	0.9	33	0	14.8	40.1	45.1	45	14	31
TH6	4 m east of property line between 1050 and 1054 Avenue Ducharme 1.5 m from south curb	Asphalt	135	Granular Fill	220	-	-	-	-	-	-	-	-	-	-
TH7	50 m west of Villeneuve Blvd 1.5 m from south curb	Asphalt	110	Granular Fill	270	-	-	-	-	-	-	-	-	-	-
TH8	10 m west of Villeneuve Blvd 1.5 m from south curb	Asphalt	150	Granular Fill	410	-	-	-	-	-	-	-	-	-	-


TH1
TH2
TH3
TH4
TH5
TH6
TH7
TH8
HOUDE DR
DUCHARME
Testhole Location Plan
Avenue Ducharme
2010 Street Renewals
Figure: 1
Scale: NTS
Drawn by: G.L
Reviewed by: DF
Project No.STA-1003
Date:March 17, 2010
THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1928

TESTHOLE TH1

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 18 m east of Houde Dr., 1.5 m from north curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Asphalt	
		Granular Fill - 20 mm maximum aggregate size	
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.6 m - brown below 0.7 m	10, 37, 36, 36, 37, 38, 40
1.0			
1.5			
2.0			
2.5		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m	
3.0			

TESTHOLE TH2

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 3 m west of property line btw 1102 and 1106 Ave Ducharme, 1.5 m from north curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Asphalt	
		Granular Fill - 20 mm maximum aggregate size	
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.6 m - brown below 1.6 m - trace silt below 2 m	5, 29, 32, 32, 34, 35, 28
1.0			
1.5			
2.0			
2.5		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m	
3.0			

TESTHOLE TH3

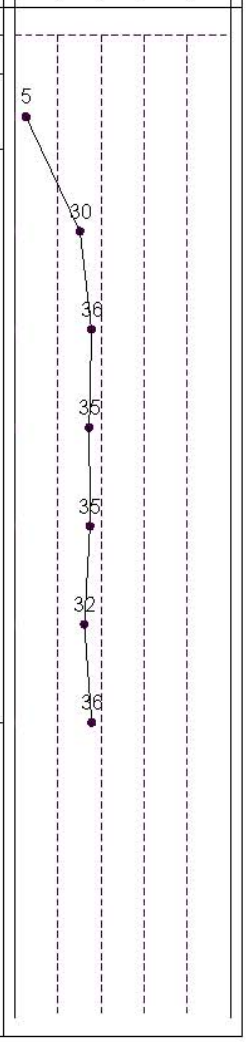
THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 6 m west of property line btw 1086 and 1090 Ave Ducharme, 1.5 m from north curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Depth (m)	Symbol	Description
		Ground Surface
0.0		**Asphalt**
		Granular Fill - 20 mm maximum aggregate size
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.7 m - brown below 1.6 m
1.0		
1.5		
2.0		
2.5		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m
3.0		

Laboratory Testing



TESTHOLE TH4

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 4 m east of property line btw 1078 and 1082 Ave Ducharme, 1.5 m from north curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Asphalt	
		Granular Fill - 20 mm maximum aggregate size	5
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.7 m - brown below 1.3 m	25 30 38 38 38 44
1.0			
1.5			
2.0			
		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m	
2.5			
3.0			

Template Version: C420100203 - RW

TESTHOLE TH5

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 3 m west of property line btw 1058 and 1062 Ave Ducharme, 1.5 m from south curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile | **Laboratory Testing**

Depth (m)	Symbol	Description	Water Content (%) PL 0 25 50 75 100 LL	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface					
		Asphalt					
		Granular Fill - 20 mm maximum aggregate size	7				
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.7 m - brown below 0.7 m	32				
			33	0	14.8	40.1	45.1
1.0			28				
1.5			34				
			29				
2.0			42				
		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m					
2.5							
3.0							

TESTHOLE TH6

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 4 m east of property line btw 1050 and 1054 Ave Ducharme, 1.5 m from south curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Asphalt	
		Granular Fill - 20 mm maximum aggregate size	12
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.7 m - brown below 1.0 m	23
1.0			27
			28
1.5			29
			33
2.0			37
2.5		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m	
3.0			

TESTHOLE TH7

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 50 m west of Villeneuve Blvd, 1.5 m from south curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Asphalt	
		Granular Fill - 20 mm maximum aggregate size	
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.7 m - brown below 1.3 m	5, 26, 30, 34, 35, 34, 35
1.0			
1.5			
2.0			
2.5		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m	
3.0			

TESTHOLE TH8

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2010 Street Renewals
Client: Stantec
Site: Avenue Ducharme, from Houde Dr. to Villeneuve Blvd
Testhole Location: 10 m west of Villeneuve Blvd, 1.5 m from south curb

Date Drilled: February 18, 2010
Depth of Testhole: 2.1 m
Logged by: Farouk Fourar

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Asphalt	
		Granular Fill - 20 mm maximum aggregate size	6
0.5		**Silty Clay** - black, stiff, moist, high plasticity - with trace organic to a depth of 0.9 m - brown below 1.0 m	29 35 34 34 37 37
1.0			
1.5			
2.0			
2.5		• Frost to a depth of 1.2 m • No groundwater seepage or soil sloughing observed during or upon completion of drilling •Testhole terminated at 2.1 m	
3.0			

THE NATIONAL TESTING LABORATORIES LIMITED

Core sample from Testhole TH1

Core sample from Testhole TH2

Core sample from Testhole TH3

Core sample from Testhole TH4

THE NATIONAL TESTING LABORATORIES LIMITED

Core sample from Testhole TH5

Core sample from Testhole TH6

Core sample from Testhole TH7

Core sample from Testhole TH8

LAKE GROVE BAY
GEOTECHNICAL INVESTIGATION

Prepared for
STANTEC
905 WAVERLEY STREET
WINNIPEG, MANITOBA
R3T 5P4

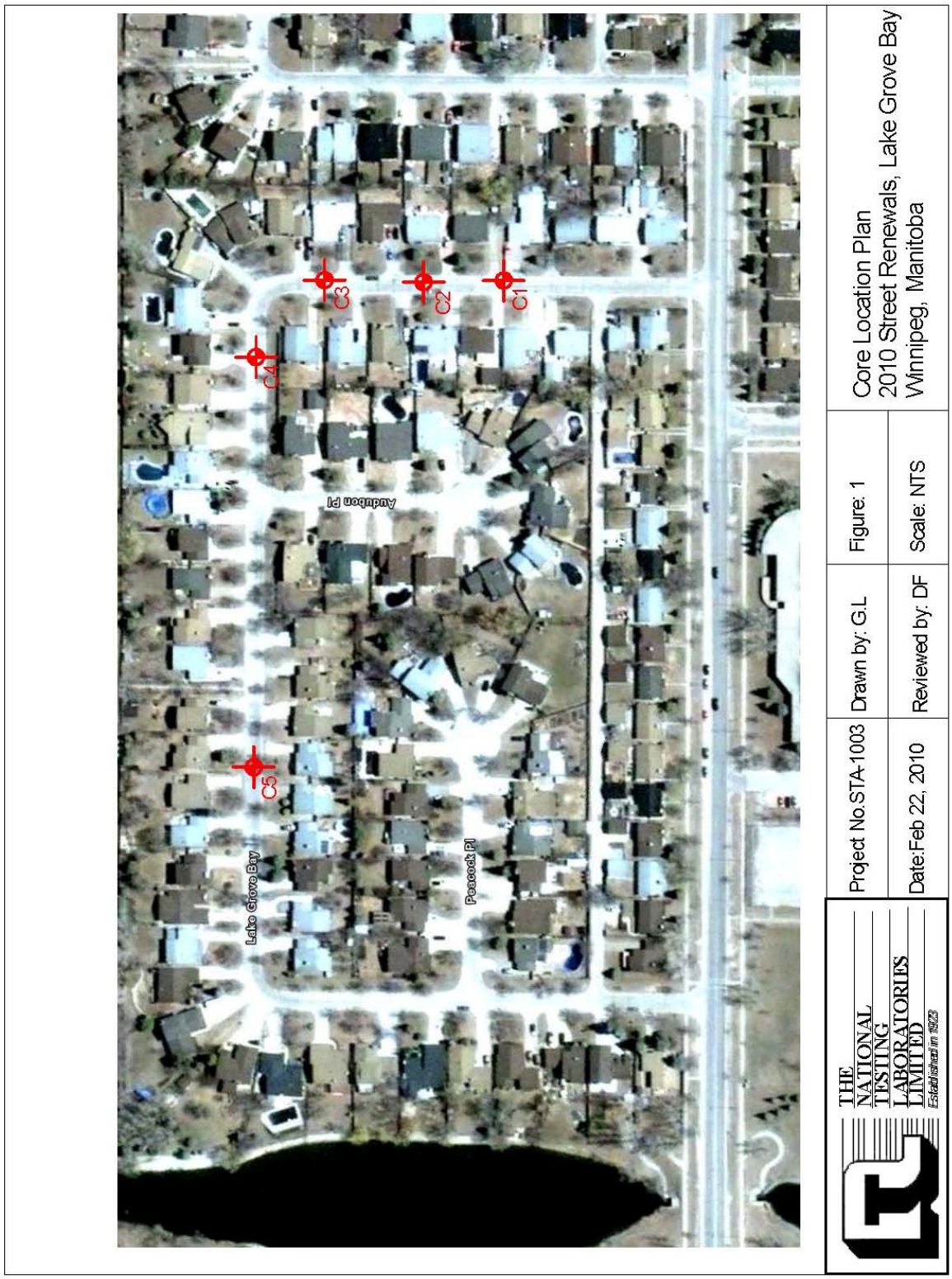
Prepared by
THE NATIONAL TESTING LABORATORIES LIMITED
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4

February 25, 2010

LAKE GROVE BAY GEOTECHNICAL INVESTIGATION

Core ID	Core Location	Pavement Surface		Condition of Core Sample	Concete Compresive Strength (MPa)
		Type	Thickness (mm)		
C1	3 m south of property line between 15 and 19 Lake Grove Bay 1.5 m from east curb	Concrete	150	Good Condition	23.0
C2	7.5 m north of property line between 18 and 22 Lake Grove Bay 2.0 m from west curb	Concrete	130	Good Condition	39.2
C3	9.0 m north of property line between 26 and 30 Lake Grove Bay 1.5 m from west curb	Concrete	150	Fair Condition	23.6
C4	7.0 m east of property line between 50 and 54 Lake Grove Bay 0.1 m south of centre line	Concrete	160	Good Condition	34.2
C5	1.0 m east of property line between 90 and 94 Lake Grove Bay 1.2 m north of centre line	Asphalt	70	Good Condition	N/A
		Concrete	140	Good Condition	25.7

Note: Core samples were submerged in water for 48 hours prior to testing for compressive strength


C5
C4
C3
C2
C1
Lake Grove Bay
Audubon Pl
Peacock Pl
THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1925
Project No.STA-1003
Date:Feb 22, 2010
Drawn by: G.L
Reviewed by: DF
Figure: 1
Scale: NTS
Core Location Plan
2010 Street Renewals, Lake Grove Bay
Winnipeg, Manitoba

THE NATIONAL TESTING LABORATORIES LIMITED

Core sample C1

Core sample C2

Core sample C3

Core sample C4

THE NATIONAL TESTING LABORATORIES LIMITED

Core sample C5

PULBERRY STREET
GEOTECHNICAL INVESTIGATION
MOORE AVENUE TO PARKVILLE DRIVE

Prepared for
STANTEC
905 WAVERLEY STREET
WINNIPEG, MANITOBA
R3T 5P4

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

February 25, 2010

PULBERRY STREET GEOTECHNICAL INVESTIGATION
MOORE AVENUE TO PARKVILLE DRIVE

Core ID	Core Location	Pavement Surface	
		Type	Thickness (mm)
C1	South bound lane 43 m south of Moore Avenue 1.5 m from east curb	Asphalt	55
		Concrete	135
C2	South bound lane 47 m north of Parkville Drive 1.5 m from east curb	Asphalt	65
		Concrete	150

Note: Clay subgrade was observed below the concrete pavement at the core locations


Barrington Ave
Pulberry
Moore Ave
Woodbury Dr
Pulberry St.
Parkville Dr
Weaver Bay
n Ave
C1
C2
THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923
Project No.STA-1003
Date:Feb 22, 2009
Drawn by: G.L
Reviewed by: DF
Figure: 1
Scale: NTS
Core Location Plan
2010 Street Renewals
Pulberry Street

THE NATIONAL TESTING LABORATORIES LIMITED

Core sample C1

Core sample C2