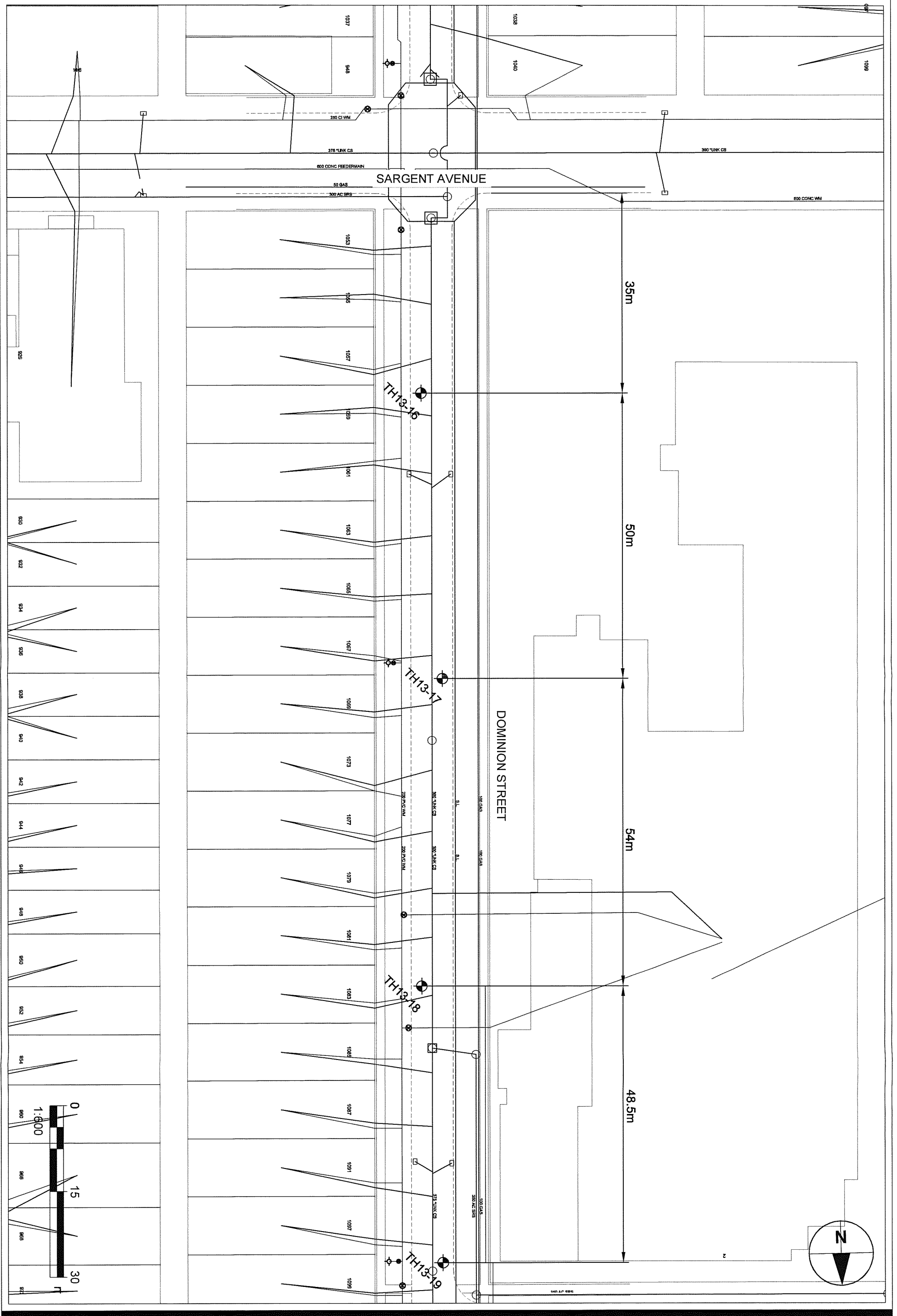
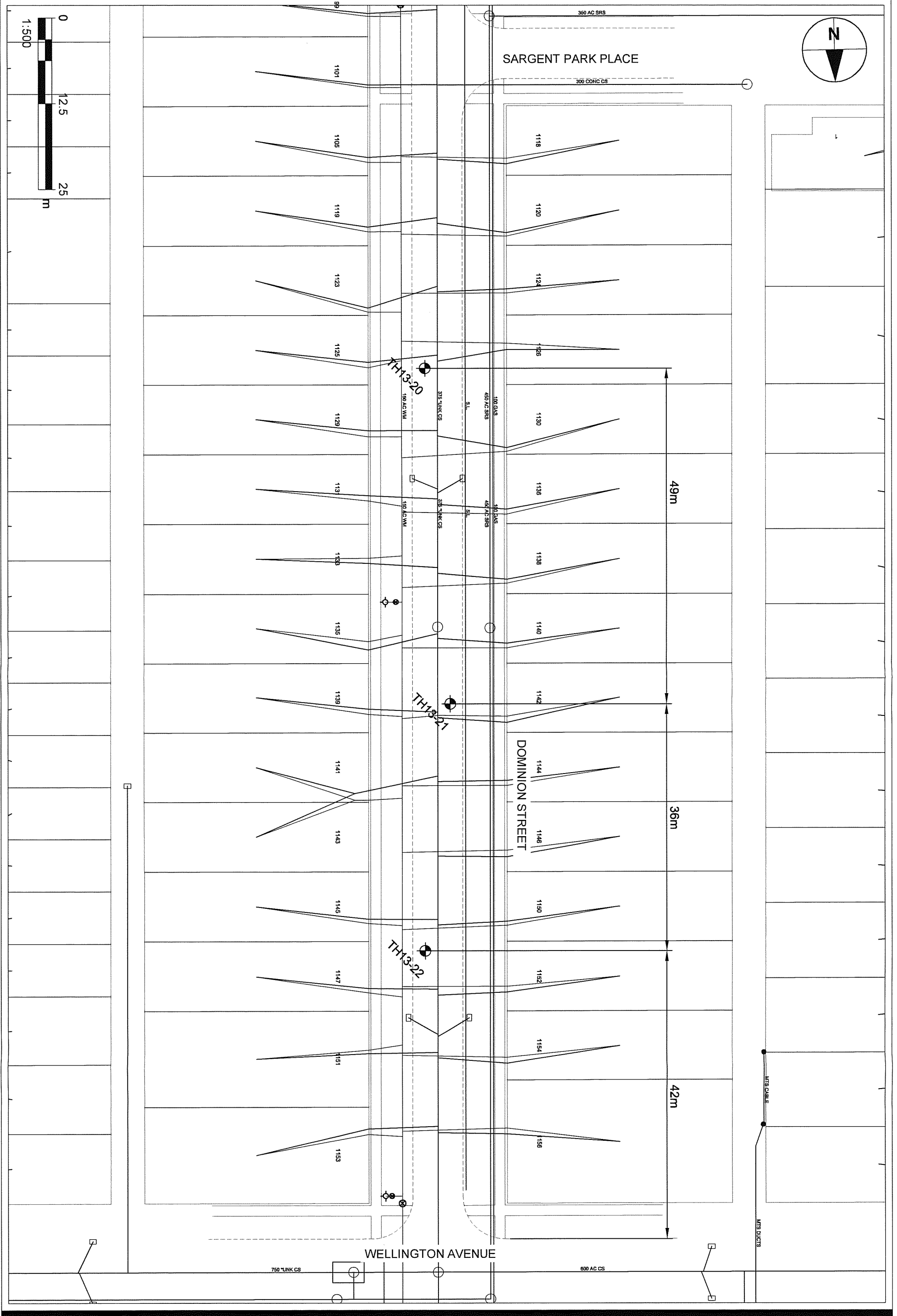


APPENDIX 'A'

GEOTECHNICAL REPORT







Photograph 1. Dominion Street – TH13-16



Photograph 2. Dominion Street – TH13-17



Photograph 3. Dominion Street – TH13-18



Photograph 4. Dominion Street – TH13-19



Photograph 5. Dominion Street – TH13-20



Photograph 6. Dominion Street – TH13-21



Photograph 7. Dominion Street – TH13-22



PUBLIC WORKS DEPARTMENT • SERVICE DES TRAVAUX PUBLICS

Engineering Division • Division de l'ingénierie

GEOTECHNICAL INVESTIGATION

STREET RECONSTRUCTION

Revised October 28th, 2008

Fieldwork

1. Clear all underground services at each testhole location.
2. Test holes required every 50 m with a minimum of 3 test holes per street.
3. Record location of testhole (offset from curb, distance from cross street and house number).
4. Drill 150 mm-diameter core in pavement.
5. Drill 125 mm-diameter testhole into fill materials and subgrade
6. If a service trench backfilled with granular materials is encountered, another hole shall be drilled to define the existing sub-surface conditions.
7. Testhole to be drilled to depth of 2 m \pm 150 mm below surface of the pavement.
8. Recover pavement core sample and representative samples of soil (fill materials, pavement structure materials and subgrade).
9. Measure and record pavement section exposed in the testhole (thickness of concrete or asphalt and different types of pavement structure materials).
10. Pavement structure materials to be identified as crushed limestone or granular fill and the maximum aggregate size of the material (20 mm, 50 mm or 150 mm).
11. Log soil profile for the subgrade.
12. Representative samples of soil must be obtained at the following depths below the bottom of the pavement structure materials - 0.1 m, 0.4 m, 0.7 m, 1.0 m, 1.3 m, 1.6 m, etc. Ensure a sample is obtained from each soil type encountered in the testhole.
13. Make note of any water seepage into the testhole.
14. Backfill testhole with native materials and additional granular fill, if required. Patch pavement surface with hot mix asphalt or high strength durable concrete mix.
15. Return core sample from the pavement and soil samples to the laboratory.

Lab Work

1. Test all soil samples for moisture content.
2. Photograph core samples recovered from the pavement surface.
3. Conduct tests for plasticity index and hydrometer analysis on selected soil samples which are between 0.5 m and 1 m below top of pavement (this is the sub-grade on which the pavement and sub-base will be built). The selection will be based upon visual classification and moisture content test results, with a minimum of one sample of each soil type per street to be tested.
4. Prepare testhole logs and classify subgrade (based on hydrometer) as follows;
 - < 30% silt - classify as clay
 - 30% - 50% silt - classify as silty clay
 - 50% - 70% silt - classify as clayey silt
 - > 70% silt - classify as silt

Prepared by: The National Testing Laboratories Limited and Eng-Tech Consulting

Embrace the Spirit • Vivez l'esprit

AECOM Canada Ltd.

GENERAL STATEMENT

NORMAL VARIABILITY OF SUBSURFACE CONDITIONS

The scope of the investigation presented herein is limited to an investigation of the subsurface conditions as to suitability for the proposed project. This report has been prepared to aid in the evaluation of the site and to assist the engineer in the design of the facilities. Our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of earth work, foundations and similar. In the event of any changes in the basic design or location of the structures as outlined in this report or plan, we should be given the opportunity to review the changes and to modify or reaffirm in writing the conclusions and recommendations of this report.

The analysis and recommendations presented in this report are based on the data obtained from the borings and test pit excavations made at the locations indicated on the site plans and from other information discussed herein. This report is based on the assumption that the subsurface conditions everywhere are not significantly different from those disclosed by the borings and excavations. However, variations in soil conditions may exist between the excavations and, also, general groundwater levels and conditions may fluctuate from time to time. The nature and extent of the variations may not become evident until construction. If subsurface conditions differ from those encountered in the exploratory borings and excavations, are observed or encountered during construction, or appear to be present beneath or beyond excavations, we should be advised at once so that we can observe and review these conditions and reconsider our recommendations where necessary.

Since it is possible for conditions to vary from those assumed in the analysis and upon which our conclusions and recommendations are based, a contingency fund should be included in the construction budget to allow for the possibility of variations which may result in modification of the design and construction procedures.

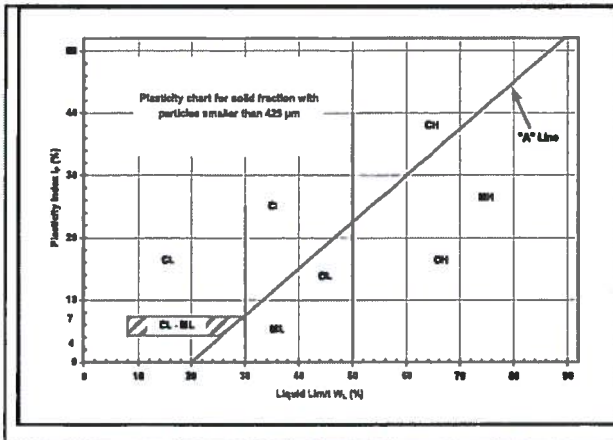
In order to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated, we recommend that all construction operations dealing with earth work and the foundations be observed by an experienced soils engineer. We can be retained to provide these services for you during construction. In addition, we can be retained to review the plans and specifications that have been prepared to check for substantial conformance with the conclusions and recommendations contained in our report.

EXPLANATION OF FIELD & LABORATORY TEST DATA

Description			AECOM Log Symbols	USCS Classification	Laboratory Classification Criteria				
					Fines (%)	Grading	Plasticity	Notes	
COARSE GRAINED SOILS	GRAVELS (More than 50% of coarse fraction of gravel size)	CLEAN GRAVELS (Little or no fines)	Well graded gravels, sandy gravels, with little or no fines		GW	0-5	$C_u > 4$ $1 < C_c < 3$	Dual symbols if 5-12% fines. Dual symbols if above "A" line and $4 < W_p < 7$ $C_u = \frac{D_{60}}{D_{10}}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	
			Poorly graded gravels, sandy gravels, with little or no fines		GP	0-5	Not satisfying GW requirements		
		DIRTY GRAVELS (With some fines)	Silty gravels, silty sandy gravels		GM	> 12			Atterberg limits below "A" line or $W_p < 4$
			Clayey gravels, clayey sandy gravels		GC	> 12			Atterberg limits above "A" line or $W_p < 7$
	SANDS (More than 50% of coarse fraction of sand size)	CLEAN SANDS (Little or no fines)	Well graded sands, gravelly sands, with little or no fines		SW	0-5	$C_u > 6$ $1 < C_c < 3$		
			Poorly graded sands, gravelly sands, with little or no fines		SP	0-5	Not satisfying SW requirements		
		DIRTY SANDS (With some fines)	Silty sands, sand-silt mixtures		SM	> 12			Atterberg limits below "A" line or $W_p < 4$
			Clayey sands, sand-clay mixtures		SC	> 12			Atterberg limits above "A" line or $W_p < 7$
FINE GRAINED SOILS	SILTS (Below 'A' line negligible organic content)	$W_L < 50$	Inorganic silts, silty or clayey fine sands, with slight plasticity		ML		Classification is Based upon Plasticity Chart		
		$W_L > 50$	Inorganic silts of high plasticity		MH				
	CLAYS (Above 'A' line negligible organic content)	$W_L < 30$	Inorganic clays, silty clays, sandy clays of low plasticity, lean clays		CL				
		$30 < W_L < 50$	Inorganic clays and silty clays of medium plasticity		CI				
		$W_L > 50$	Inorganic clays of high plasticity, fat clays		CH				
	ORGANIC SILTS & CLAYS (Below 'A' line)	$W_L < 50$	Organic silts and organic silty clays of low plasticity		OL				
		$W_L > 50$	Organic clays of high plasticity		OH				
	HIGHLY ORGANIC SOILS		Peat and other highly organic soils		Pt	Von Post Classification Limit		Strong colour or odour, and often fibrous texture	
	Asphalt		Till			AECOM			
	Concrete		Bedrock (Undifferentiated)						
	Fill		Bedrock (Limestone)						

When the above classification terms are used in this report or test hole logs, the designated fractions may be visually estimated and not measured.

NOT USED TO CLASSIFY SUBGRADE. REFER TO CITY OF WINNIPEG SPECS FOR GEOTECHNICAL INVESTIGATION STREET RECONSTRUCTION (OCT. 2008)



FRACTION	SEIVE SIZE (mm)		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
	Passing	Retained	Percent	Identifier
Gravel	Coarse	76	19	35-50 and
	Fine	19	4.75	
Sand	Coarse	4.75	2.00	20-35 "y" or "ey"
	Medium	2.00	0.425	
	Fine	0.425	0.075	
Silt (non-plastic) or Clay (plastic)	< 0.075 mm		10-20	some
1-10 trace				

* for example: gravelly, sandy clayey, silty

Definition of Oversize Material
 COBBLES: 76mm to 300mm diameter
 BOULDERS: >300mm diameter

LEGEND OF SYMBOLS

Laboratory and field tests are identified as follows:

- q_u - undrained shear strength (kPa) derived from unconfined compression testing.
- T_v - undrained shear strength (kPa) measured using a torvane
- pp - undrained shear strength (kPa) measured using a pocket penetrometer.
- L_v - undrained shear strength (kPa) measured using a lab vane.
- F_v - undrained shear strength (kPa) measured using a field vane.
- γ - bulk unit weight (kN/m³).
- SPT - Standard Penetration Test. Recorded as number of blows (N) from a 63.5 kg hammer dropped 0.76 m (free fall) which is required to drive a 51 mm O.D. Raymond type sampler 0.30 m into the soil.
- DPPT - Drive Point Pentrometer Test. Recorded as number of blows from a 63.5 kg hammer dropped 0.76 m (free fall) which is required to drive a 50 mm drive point 0.30 m into the soil.
- w - moisture content (W_L, W_P)

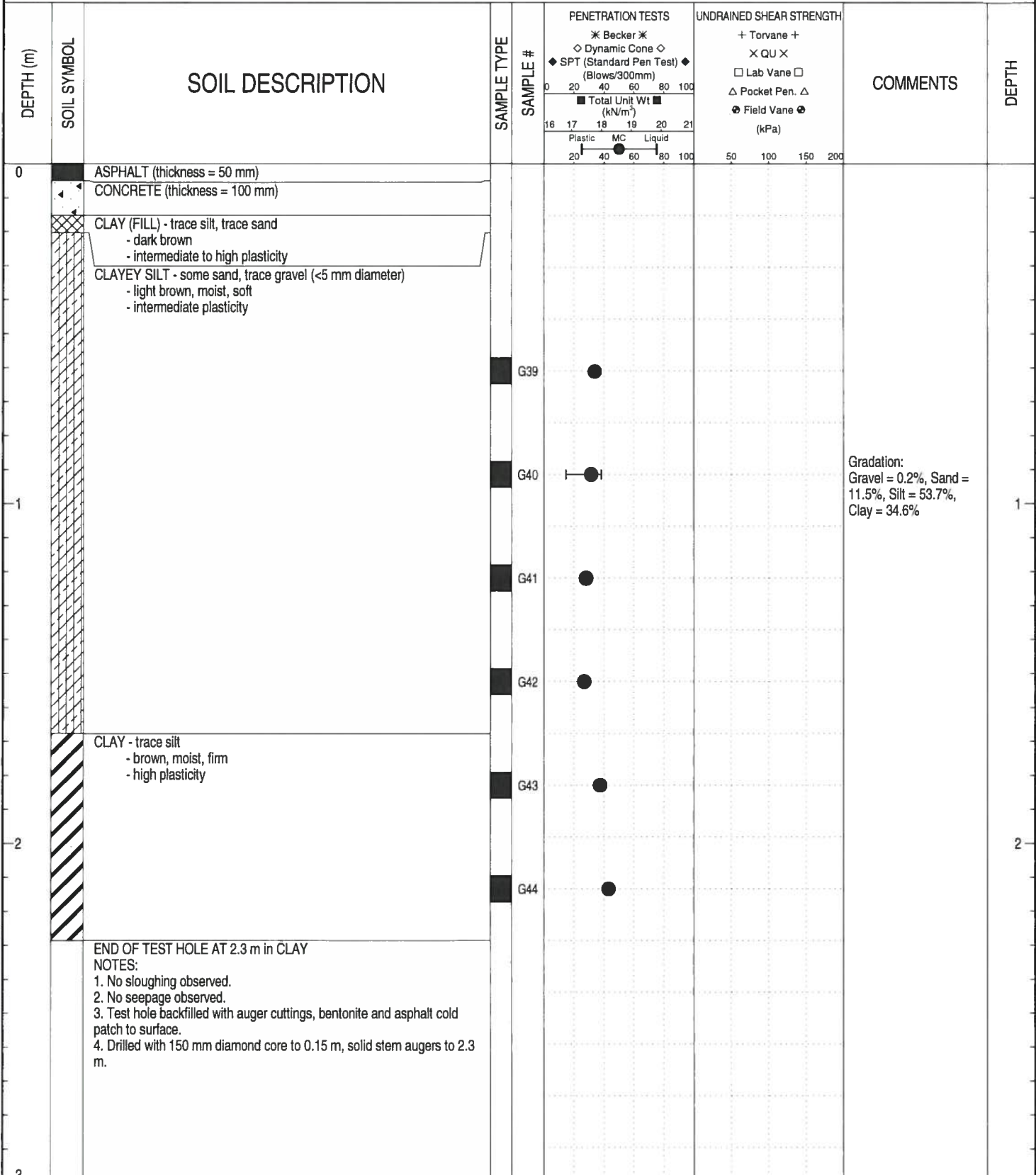
The undrained shear strength (Su) of a cohesive soil can be related to its consistency as follows:

Su (kPa)	CONSISTENCY
<12	very soft
12 – 25	soft
25 – 50	medium or firm
50 – 100	stiff
100 – 200	very stiff
200	hard

The resistance (N) of a non-cohesive soil can be related to compactness condition as follows

N – BLOWS/0.30 m	COMPACTNESS
0 - 4	very loose
4 - 10	loose
10 - 30	compact
30 - 50	dense
50	very dense

PROJECT: Local Streets Package 13-R-06	CLIENT: City of Winnipeg	TESTHOLE NO: TH13-16
LOCATION: Dominion Street; 35 m North of Sargent Avenue; Northbound Lane, 2.0 m West of Curb		PROJECT NO.: 60299291
CONTRACTOR: Maple Leaf Drilling Ltd	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TEST HOLE DOMINION.GPJ UMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.30 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 5/10/13
PROJECT ENGINEER: Kevin Rae	Page 1 of 1

PROJECT: Local Streets Package 13-R-06	CLIENT: City of Winnipeg	TESTHOLE NO: TH13-17
LOCATION: Dominion Street; 85 m North of Sargent Avenue; Southbound Lane, 2.0 m East of Curb	PROJECT NO.: 60299291	
CONTRACTOR: Maple Leaf Drilling Ltd	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◊ Dynamic Cone ◊ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt ■ (kN/m ³)	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa)				
0		ASPHALT (thickness = 25 mm) CONCRETE (thickness = 162 mm)								
		CLAY (FILL) - trace silt, trace sand - dark brown - intermediate to high plasticity		G32	●					
		SILT - some clay, trace sand - light brown, frozen to 1.2 m, moist, soft when thawed - low to intermediate plasticity		G33	●					
				G34	●					
				G35	●					
		CLAY - trace to some silt - brown, moist, stiff - high plasticity		G36	●					
				G37	●		+ △			
		- some silt below 2.1 m		G38	●		△			
		END OF TEST HOLE AT 2.3 m in CLAY								

NOTES:
 1. No sloughing observed.
 2. No seepage observed.
 3. Test hole backfilled with auger cuttings, bentonite and asphalt cold patch to surface.
 4. Drilled with 150 mm diamond core to 0.187 m, solid stem augers to 2.3 m.

LOG OF TEST HOLE DOMINION.GPJ LUMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.30 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 5/10/13
PROJECT ENGINEER: Kevin Rae	Page 1 of 1

PROJECT: Local Streets Package 13-R-06 CLIENT: City of Winnipeg TESTHOLE NO: TH13-18
 LOCATION: Dominion Street; 56 m South of Sargent Park Place, Northbound Lane, 2.0 m West of Curb PROJECT NO.: 60299291
 CONTRACTOR: Maple Leaf Drilling Ltd METHOD: 125 mm SSA with 150 mm Coring ELEVATION (m):
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt ■ (kN/m ³) Plastic MC Liquid 20 40 60 80 100	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa) 50 100 150 200				
0		ASPHALT (thickness = 25 mm) CONCRTE (thickness = 150 mm)								
		CLAY (FILL) - trace silt, trace sand - dark brown - intermediate to high plasticity								
		CLAY - trace silt - brown, frozen, moist, firm when thawed - high plasticity		G26	●					
1		SILT - some sand, trace clay - light brown, moist, soft - low plasticity		G27	●					1
				G28	●					
				G29	●					
				G30	●					
2				G31	●					2
3		END OF TEST HOLE AT 2.3 m in SILT NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, bentonite and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.175 m, solid stem augers to 2.3 m.								

LOG OF TEST HOLE DOMINION.GPJ UMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche COMPLETION DEPTH: 2.30 m
 REVIEWED BY: Jared Baldwin COMPLETION DATE: 5/10/13
 PROJECT ENGINEER: Kevin Rae Page 1 of 1

PROJECT: Local Streets Package 13-R-06	CLIENT: City of Winnipeg	TESTHOLE NO: TH13-19
LOCATION: Dominion Street; 7.5 m South of Sargent Park Place, Southbound Lane, 2.0 m East of Curb		PROJECT NO.: 60299291
CONTRACTOR: Maple Leaf Drilling Ltd	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) Total Unit Wt (kN/m) Plastic MC Liquid 20 40 60 80 100	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa)	50	100		
0		ASPHALT (thickness = 45 mm) CONCRETE (thickness = 200 mm)								
		CLAY (FILL) - trace silt, trace sand - dark brown - intermediate to high plasticity								
		CLAY - some silt, trace sand, trace gravel (<5 mm) - brown, frozen to 1.2 m, moist, firm when thawed - high plasticity								
1										
				G22	●	—				
				G23	●					
				G24	●		△			
				G25	●		△			
2										
									Gradation: Gravel = 0.3%, Sand = 1.4%, Silt = 14.8%, Clay = 83.5%	
3		END OF TEST HOLE AT 2.3 m in CLAY NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, bentonite and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.245 m, solid stem augers to 2.3 m.								

LOG OF TEST HOLE DOMINION.GPJ UMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.30 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 5/10/13
PROJECT ENGINEER: Kevin Rae	Page 1 of 1

PROJECT: Local Streets Package 13-R-06	CLIENT: City of Winnipeg	TESTHOLE NO: TH13-20
LOCATION: Dominion Street; 127 m South of Wellington Avenue, Northbound Lane, 1.5 m West of Curb		PROJECT NO.: 60299291
CONTRACTOR: Maple Leaf Drilling Ltd	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt ■ (kN/m ²) Plastic MC Liquid 20 40 60 80 100	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa) 50 100 150 200				
0		ASPHALT (thickness = 25 mm) CONCRETE (thickness = 162 mm)								
		CLAY (FILL) - trace silt, trace sand - dark brown - intermediate to high plasticity		G15	●					
		SILT - some clay, some sand - light brown, moist, soft - low to intermediate plasticity		G16	●					
				G17	●					
				G18	●					
		CLAY - trace silt - brown, moist, firm - high plasticity		G19	●					
		- some silt below 1.7 m		G20	●		+ △			
				G21	●		+△			
2.3		END OF TEST HOLE AT 2.3 m in CLAY NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, bentonite and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.187 m, solid stem augers to 2.3 m.								

LOG OF TEST HOLE DOMINION.GPJ UMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.30 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 5/10/13
PROJECT ENGINEER: Kevin Rae	Page 1 of 1

PROJECT: Local Streets Package 13-R-06	CLIENT: City of Winnipeg	TESTHOLE NO: TH13-21
LOCATION: Dominion Street; 78 m South of Wellington Avenue, Southbound Lane, 1.5 m East of Curb		PROJECT NO.: 60299291
CONTRACTOR: Maple Leaf Drilling Ltd	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt ■ (kN/m ³)	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ●	(kPa)			
0		ASPHALT (thickness = 25 mm) CONCRETE (thickness = 175 mm)								
		CLAY (FILL) - trace silt, trace sand - dark brown - intermediate to high plasticity		G8	●					
		CLAYEY SILT - trace sand, trace gravel (<5 mm) - light brown, moist, soft - intermediate plasticity		G9	●				Gradation: Gravel = 0.4%, Sand = 6.7%, Silt = 50.4%, Clay = 42.6%	
				G10	●					
				G11	●					
				G12	●					
		CLAY - trace silt, trace gypsum - brown, moist, stiff - high plasticity		G13	●					
		- firm below 2.1 m		G14	●			+ △		
		END OF TEST HOLE AT 2.3 m in CLAY NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, bentonite and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.20 m, solid stem augers to 2.3 m.								

LOG OF TEST HOLE DOMINION.GPJ UMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.30 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 5/10/13
PROJECT ENGINEER: Kevin Rae	Page 1 of 1

PROJECT: Local Streets Package 13-R-06	CLIENT: City of Winnipeg	TESTHOLE NO: TH13-22
LOCATION: Dominion Street; 42 m South of Wellington Avenue, Northbound Lane, 2.0 m West of Curb		PROJECT NO.: 60299291
CONTRACTOR: Maple Leaf Drilling Ltd	METHOD: 125 mm SSA with 150 mm Coring	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	DEPTH
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt ■ (kN/m ³) Plastic MC Liquid 20 40 60 80 100	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ● Field Vane ● (kPa) 50 100 150 200				
0		ASPHALT (thickness = 75 mm)								
		CONCRETE (thickness = 175 mm)								
		CLAY (FILL) - trace silt, trace sand - dark brown - intermediate to high plasticity		G1	●					
		SILT - some clay, some sand - light brown, moist, soft - low to intermediate plasticity		G2	●					
				G3	●					
		CLAY AND SILT - trace sand - brown, moist, soft - intermediate plasticity		G4	●					
		CLAY - trace silt, trace gypsum - brown, firm, moist - high plasticity		G5	●		+△			
				G6	●		△			
		- some silt below 2.0 m		G7	●		△			
		END OF TEST HOLE AT 2.3 m in CLAY NOTES: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings, bentonite and asphalt cold patch to surface. 4. Drilled with 150 mm diamond core to 0.25 m, solid stem augers to 2.3 m.								

LOG OF TEST HOLE DOMINION.GPJ LUMA WINN.GDT 5/21/13



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 2.30 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 5/10/13
PROJECT ENGINEER: Kevin Rae	Page 1 of 1

City of Winnipeg
Local Streets Package 12-R-06
Geotechnical Investigation

Test Hole No.	Test Hole Location	Pavement Surface		Pavement Structure Material		Subgrade Description	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits			
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index	
TH13-16	Dominion Street; Northbound Lane, 35 m North of Sargent Avenue, 2.0 m West of Curb	Asphalt	50	None	n/a	Clayey Silt	0.6	33.9								
						Clayey Silt	0.9	31.2	0.2	11.5	53.7	34.6	37.7	14.4	23.3	
						Clayey Silt	1.2	27.9								
						Clayey Silt	1.5	26.8								
						Clay	1.8	37.6								
						Clay	2.1	42.9								
TH13-17	Dominion Street; Southbound Lane, 85 m North of Sargent Avenue, 2.0 m East of Curb	Asphalt	25	None	n/a	Clay Fill	0.3	34.3								
						Silt	0.6	26.2								
						Silt	0.9	23.6								
						Silt	1.2	20.2								
						Clay	1.5	25.6								
						Clay	1.8	40.8								
TH13-18	Dominion Street; Northbound Lane, 56 m South of Sargent Park Place, 2.0 m West of Curb	Asphalt	25	None	n/a	Clay	0.6	26.9								
						Silt	0.9	25.8								
						Silt	1.2	22.1								
						Silt	1.5	19.6								
						Silt	1.8	19.9								
						Silt	2.1	23.3								
TH13-19	Dominion Street; Southbound Lane, 7.5 m South of Sargent Park Place, 2.0 m East of Curb	Asphalt	45	None	n/a	Clay	1.2	28.6	0.3	1.4	14.8	83.5	72.5	20.8	51.7	
						Clay	1.5	39.7								
						Clay	1.8	45.3								
						Clay	2.1	48.1								
TH13-20	Dominion Street; Northbound Lane, 127 m South of Wellington Avenue, 1.5 m West of Curb	Asphalt	25	None	n/a	Clay Fill	0.25	27.8								
						Silt	0.6	25.4								
						Silt	0.9	18.9								
						Silt	1.2	21.0								
						Clay	1.5	27.2								
						Clay	1.8	39.1								
		Clay	2.1	45.1												

City of Winnipeg
Local Streets Package 12-R-06
Geotechnical Investigation

Test Hole No.	Test Hole Location	Pavement Surface		Pavement Structure Material		Subgrade Description	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH13-21	Dominion Street; Southbound Lane, 78 m South of Wellington Avenue, 1.5 m East of Curb	Asphalt	25	None	n/a	Clay Fill	0.3	36.7							
		Concrete	175			Clayey Silt	0.6	28.4	0.4	6.7	50.4	42.6	42.9	15.3	27.5
						Clayey Silt	0.9	25.1							
						Clayey Silt	1.2	20.1							
						Clayey Silt	1.5	20.8							
						Clay	2.0	31.5							
		Clay	2.3			43.8									
TH13-22	Dominion Street; Northbound Lane, 42 m South of Wellington Avenue, 2.0 m East of Curb	Asphalt	75	None	n/a	Clay Fill	0.3	28.4							
		Concrete	175			Silt	0.6	17.9							
						Silt	0.9	16.5							
						Clay and Silt	1.2	21.9							
						Clay	1.5	49.9							
						Clay	1.8	42.5							
		Clay	2.1			47.6									