

# **APPENDIX 'A'**

# **GEOTECHNICAL REPORT**

## **APPENDIX 'A' - GEOTECHNICAL REPORT**

### **GEOTECHNICAL REPORT FOR:**

- i. Pritchard Avenue from Main Street to Austin Street North
- ii. Moncton Avenue from Louelda Street to Besant Street

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.

## **TEST HOLE LOCATION PLANS AND TEST HOLE LOGS**

PRITCHARD AVENUE FROM MAIN STREET TO AUSTIN STREET NORTH

AND

MONCTON AVENUE FROM LOUELDA STREET TO BESANT STREET

P:\Jobs\15900\15970\15974 Stantec - Calisse St. Boniface\Drawings\WX15974 - CAISSE ST. BONAITH LOC PLAN - APR 2009.dwg



AMEC Earth & Environmental  
440 DOVERCOURT DRIVE  
WINNIPEG, MANITOBA R3Y 1N4  
PHONE: 204.488.2997 FAX:204.489.8261

CLIENT:  
CITY OF WINNIPEG

LEGEND  
● TEST HOLE LOCATION

NOTE: SITE FEATURE LOCATIONS ARE APPROXIMATE



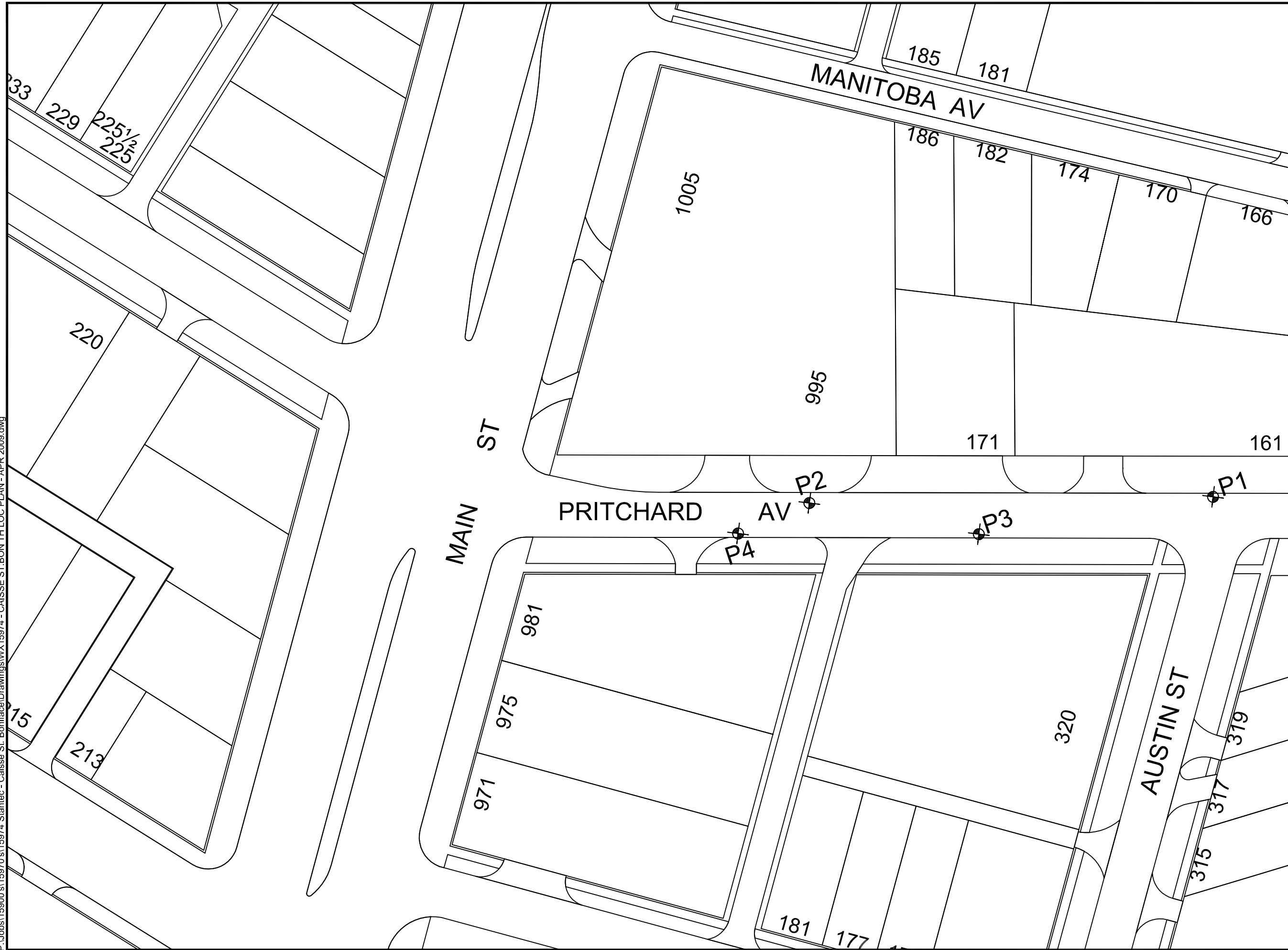
NO.	REVISION	DATE	BY

GEOTECHNICAL INVESTIGATION  
RESIDENTIAL STREETS RECONSTRUCTION  
MONCTON, PRITCHARD AVENUE  
WINNIPEG, MANITOBA

TEST HOLE LOCATION

SCALE: NTS  
DATE: JANUARY 2011  
DRAWN BY: SHJ  
PROJECT NO.: WX10720

FIGURE 1




P:\Jobs\15900\15970\15970\15974 Stantec - Calisse St. Boniface\Drawings\WX15974 - Calisse St. Boniface Loc Plan - APR 2009.dwg

PRINCE RUPERT AV

LOUELDA

**amec**  
 AMEC Earth & Environmental  
 440 DOVERCOURT DRIVE  
 WINNIPEG, MANITOBA R3Y 1N4  
 PHONE: 204.488.2997 FAX: 204.489.8261

CLIENT:  
 CITY OF WINNIPEG

LEGEND  
 TEST HOLE LOCATION

NOTE: SITE FEATURE LOCATIONS ARE APPROXIMATE



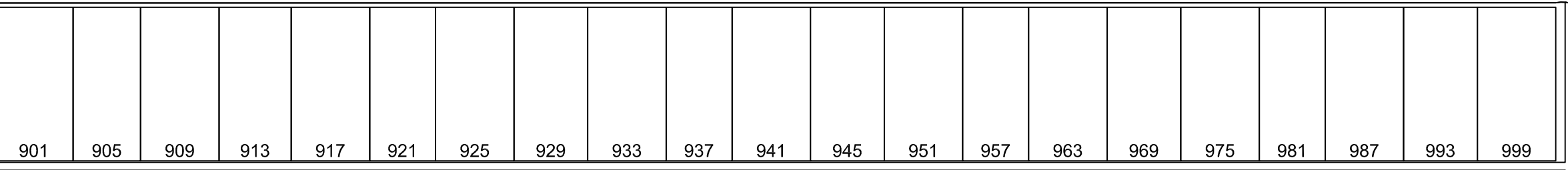
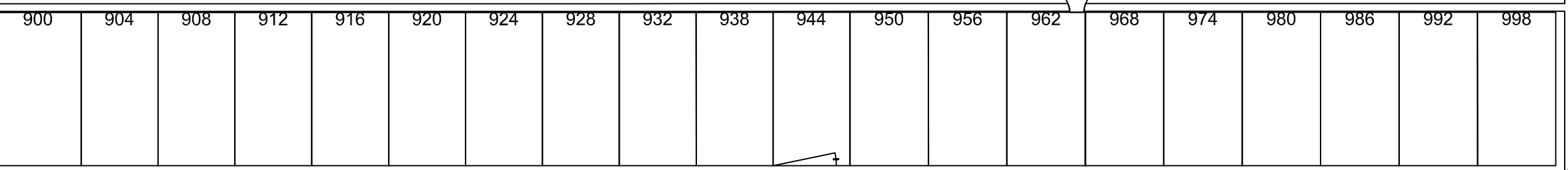
NO.	REVISION	DATE	BY

GEOTECHNICAL INVESTIGATION  
 RESIDENTIAL STREETS RECONSTRUCTION  
 MONCTON, PRITCHARD AVENUE  
 WINNIPEG, MANITOBA

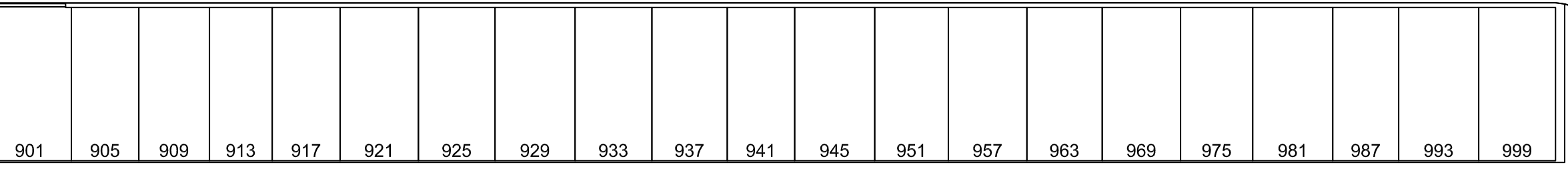
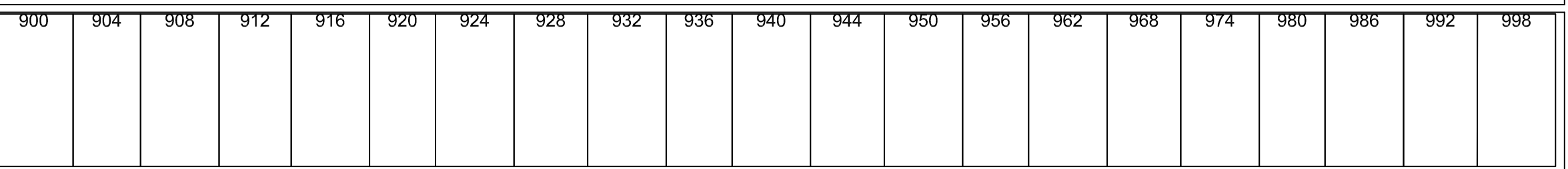
TEST HOLE LOCATION

SCALE: NTS  
 DATE: JANUARY 2011  
 DRAWN BY: SHJ  
 PROJECT NO.: WX10720

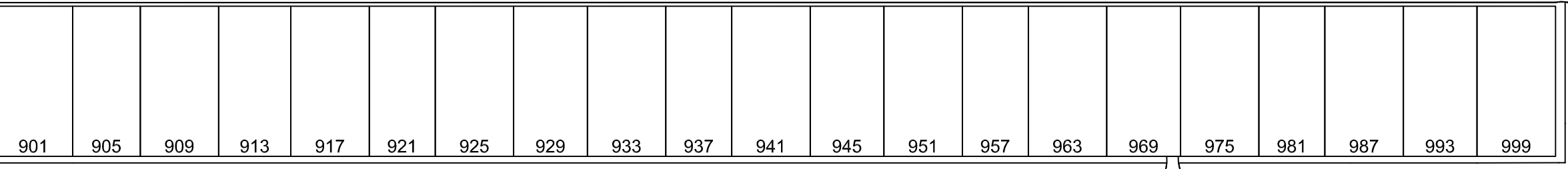
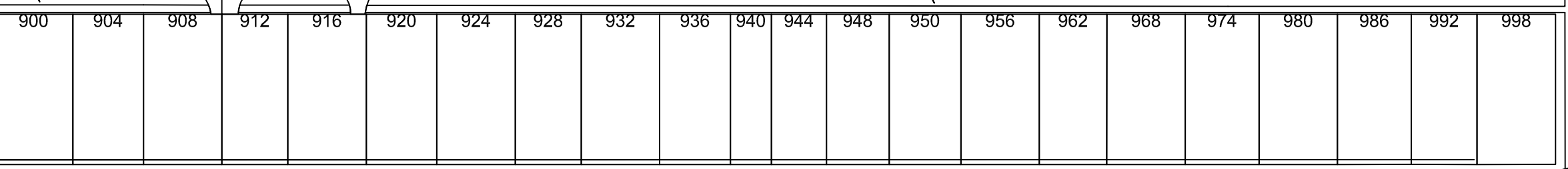
FIGURE 2



GOVERNMENT AV



MONCTON AV



MUNROE AV

44

47

44

41

50

99

605

595

BESANT ST

LOUELDA ST

PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: M1	
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720	
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:	
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout
				<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
				<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

Depth (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	▲	■							
0			ASPH CONC	ASPHALT (25mm) CONCRETE (175mm)					
0.1			CI-CH	CLAY (FILL) - some silt, gravel and sand, medium to high plastic, moist, very stiff, dark grey		1		Grain Size Distribution Results @ 0.9m: Gravel=17.7% Sand=22.9% Silt=28.8% Clay=30.6%	
0.2			CI-CH			2			
0.3			CH	CLAY - some silt, high plastic, moist, stiff, dark grey		3			
0.4			CH			4			
0.5			ML	SILT - low plastic, wet, soft, brown		5			
0.6			ML			6			
0.7			CH	CLAY - silty, high plastic, moist, stiff, dark grey		7			
0.8			CH	- very stiff below 2.4m		8			
2.6				TEST HOLE TERMINATED AT 2.6m BELOW TOP OF CONCRETE					

	AMEC Earth and Environmental Winnipeg, Manitoba	LOGGED BY: RJ	COMPLETION DEPTH: 2.6 m
		REVIEWED BY: TG/JW	COMPLETION DATE: November 24, 2010
		Figure No. 4	Page 1 of 1

10720-B COW STREETS.GPJ 11/01/14 05:49 PM (GEOTECHNICAL REVISED)

PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: M2	
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720	
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:	
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout
				<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
				<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

Depth (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	▲	■							
0			ASPH CONC	ASPHALT (25mm) CONCRETE (150mm)					
			CH	CLAY - silty, high plastic, moist, very stiff, dark grey		1			
			ML	SILT - clayey, low plastic, wet, very soft, brown		2			
			ML	- some clay below 1.5m		3			
			ML			4			
			ML			5			
			ML			6			
			CH	CLAY - silty, high plastic, damp, very stiff, dark grey		7			
			CH	- moist to very moist below 2.4m		8			
				TEST HOLE TERMINATED AT 2.6m BELOW TOP OF CONCRETE					
				NOTES: - Neither sloughing nor seepage noted during drilling. - Test hole backfilled with auger cuttings and bentonite. - Pavement surface repaired with cold patch asphalt.					

10720-B COW STREETS.GPJ 11/01/14 05:49 PM (GEOTECHNICAL REVISED)



AMEC Earth and Environmental  
Winnipeg, Manitoba

LOGGED BY: RJ

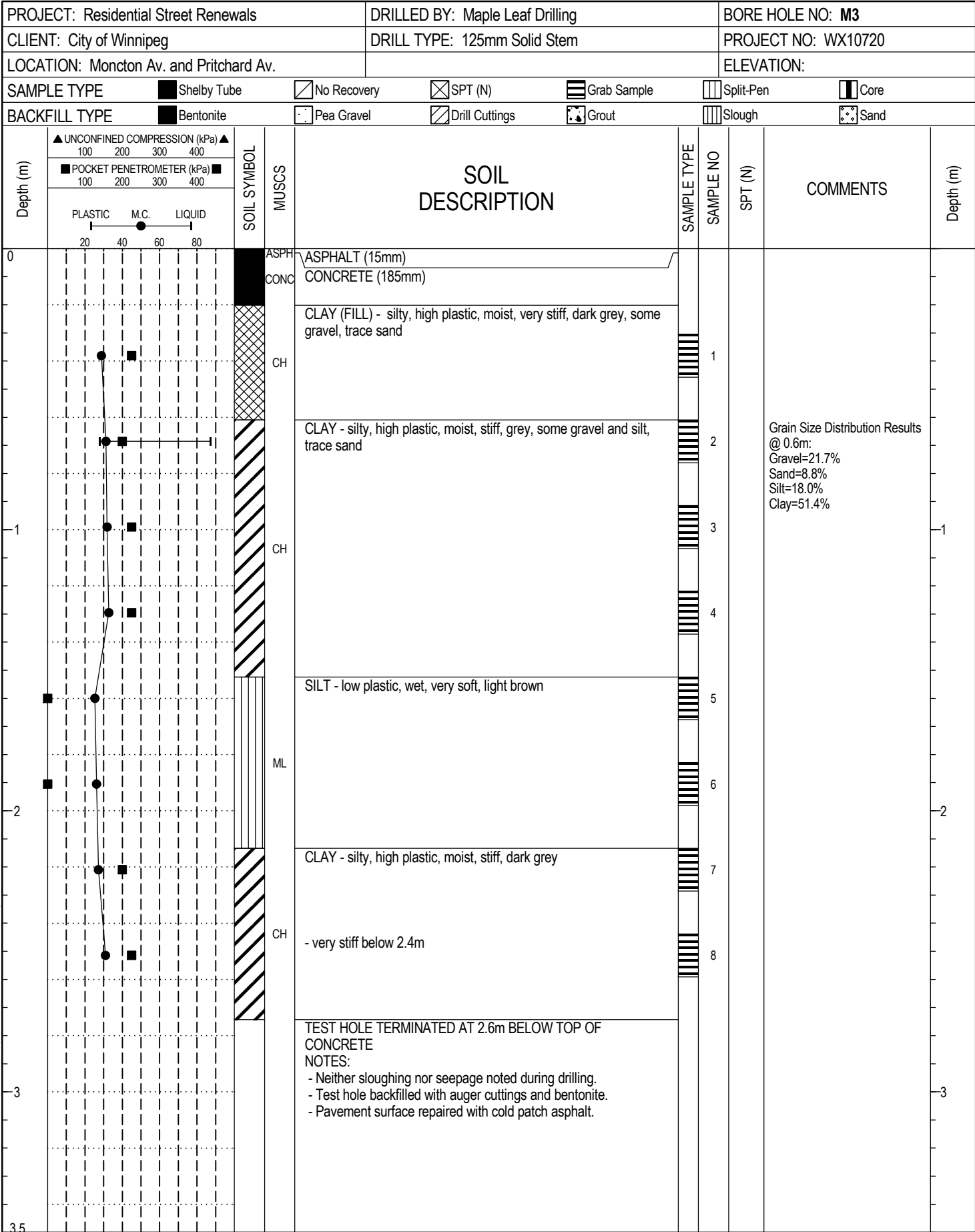
REVIEWED BY: TG/JW

Figure No. 5

COMPLETION DEPTH: 2.6 m

COMPLETION DATE: November 24, 2010

Page 1 of 1



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PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: M4	
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720	
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:	
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout
				<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
				<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

Depth (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	▲	■								
0			ASPH		ASPHALT (50mm)					
			CONC		CONCRETE (150mm)					
			CH		CLAY (FILL) - silty, high plastic, moist, very stiff, dark grey, trace gravel		1			
			CH		CLAY - silty, high plastic, moist, stiff, grey, trace gravel		2			
1			CL		SILT - clayey, low plastic, wet, very soft, light brown		3			1
			CL				4			
			CL				5			
			CH		CLAY - silty, high plastic, moist, stiff, dark grey		6			
2			CH				7			2
					- very stiff below 2.4m		8			
3					TEST HOLE TERMINATED AT 2.6m BELOW TOP OF CONCRETE					3
					NOTES:					
					- Neither sloughing nor seepage noted during drilling.					
					- Test hole backfilled with auger cuttings and bentonite.					
					- Pavement surface repaired with cold patch asphalt.					
3.5										

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REVIEWED BY: TG/JW

Figure No. 7

COMPLETION DEPTH: 2.6 m

COMPLETION DATE: November 24, 2010

Page 1 of 1

PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: P1						
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720						
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:						
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube <input type="checkbox"/> No Recovery <input checked="" type="checkbox"/> SPT (N) <input type="checkbox"/> Grab Sample <input type="checkbox"/> Split-Pen <input type="checkbox"/> Core								
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Pea Gravel <input checked="" type="checkbox"/> Drill Cuttings <input type="checkbox"/> Grout <input type="checkbox"/> Slough <input type="checkbox"/> Sand								
Depth (m)	▲ UNCONFINED COMPRESSION (kPa) ▲ 100    200    300    400		SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	■ POCKET PENETROMETER (kPa) ■ 100    200    300    400									
	PLASTIC    M.C.    LIQUID 20    40    60    80									
0			ASPH		ASPHALT (100mm)					
			CONC		CONCRETE (200mm)					
			CH		CLAY (FILL) - silty, high plastic, moist, very stiff, grey, trace sand	1				
			CH		CLAY - high plastic, moist, stiff, grey, some silt, trace sand	2				
1			CL		SILT - clayey, low plastic, moist, very soft, light brown	3			Grain Size Distribution Results @ 0.6m: Gravel=0.7% Sand=7.8% Silt=23.5% Clay=68.0% Grain Size Distribution Results @ 0.9m: Gravel=0.0% Sand=2.1% Silt=71.5% Clay=26.4%	
					- trace grey clay below 1.2m	4				
					CLAY - silty, high plastic, moist, stiff, grey	5				
2			CH		- moist to very moist, firm below 2.1m	6				
						7				
						8				
					TEST HOLE TERMINATED AT 2.6m BELOW BOTTOM OF CONCRETE					
					NOTES: - Neither sloughing nor seepage was observed during drilling. - Test hole backfilled with bentonite and auger cuttings. - Pavement repaired with cold-patch asphalt.					
3										
3.5										

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Figure No. 8

COMPLETION DEPTH: 2.6 m

COMPLETION DATE: November 24, 2010

Page 1 of 1

PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: P2	
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720	
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:	
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout
				<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
				<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

Depth (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	▲	■								
0			ASPH		ASPHALT (150mm)					
0.1			CH		CLAY (FILL) - silty, high plastic, moist, stiff, brown to grey, trace gravel - trace silt below 0.3m		1			
0.2			CH				2			
0.3			CL		SILT - clayey, low plastic, moist, very soft, brown		3			1
0.4			CL				4			
0.5			CL				5			
0.6			CH		CLAY - silty, high plastic, moist, stiff, dark grey, trace sand - moist to very moist, firm below 2.1m		6			2
0.7			CH				7			
0.8							8			
2.6					TEST HOLE TERMINATED AT 2.6m BELOW BOTTOM OF CONCRETE					

	LOGGED BY: RJ	COMPLETION DEPTH: 2.6 m
	REVIEWED BY: TG/JW	COMPLETION DATE: November 24, 2010
	Figure No. 9	Page 1 of 1

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REVIEWED BY: TG/JW  
Figure No. 9

COMPLETION DEPTH: 2.6 m  
COMPLETION DATE: November 24, 2010

PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: P3						
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720						
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:						
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample					
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout					
				<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core					
				<input type="checkbox"/> Slough	<input type="checkbox"/> Sand					
Depth (m)	▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400 ■ POCKET PENETROMETER (kPa) ■ 100 200 300 400 PLASTIC M.C. LIQUID 20 40 60 80		SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	0	ASPH								
			CH	CLAY (FILL) - silty, high plastic, moist, very stiff, brown to grey, trace gravel - stiff below 0.3m		1				
			CL	SILT - clayey, low plastic, moist, very soft, brown		2				
1			CL			3				1
			CH	CLAY - silty, high plastic, moist, stiff, dark grey - moist to very moist below 1.8m		4				
			CH			5				
2			CH			6				2
						7				
						8				
3					TEST HOLE TERMINATED AT 2.6m BELOW BOTTOM OF CONCRETE					3
3.5					NOTES: - Neither sloughing nor seepage was observed during drilling. - Test hole backfilled with bentonite and auger cuttings. - Pavement repaired with cold-patch asphalt.					

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Winnipeg, Manitoba

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Figure No. 10

COMPLETION DEPTH: 2.6 m  
COMPLETION DATE: November 24, 2010

PROJECT: Residential Street Renewals		DRILLED BY: Maple Leaf Drilling		BORE HOLE NO: P4	
CLIENT: City of Winnipeg		DRILL TYPE: 125mm Solid Stem		PROJECT NO: WX10720	
LOCATION: Moncton Av. and Pritchard Av.				ELEVATION:	
SAMPLE TYPE		<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample
BACKFILL TYPE		<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout
				<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
				<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

Depth (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
	▲	■							
0			ASPH	ASPHALT (150mm)					
			CH	CLAY - silty, high plastic, moist, very stiff, brown to grey, trace sand		1			
			CL	SILT - clayey, low plastic, moist, very soft, brown, trace sand to 1.2m		2			
1			CL			3			1
			CL			4			
			CL			5			
2			CH	CLAY - silty, high plastic, moist, very stiff, dark grey		6			2
			CH	- moist to very moist, stiff below 2.1m		7			
						8			
3				TEST HOLE TERMINATED AT 2.6m BELOW BOTTOM OF CONCRETE					3
3.5				NOTES: - Neither sloughing nor seepage was observed during drilling. - Test hole backfilled with bentonite and auger cuttings. - Pavement repaired with cold-patch asphalt.					

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REVIEWED BY: TG/JW  
Figure No. 11

COMPLETION DEPTH: 2.6 m  
COMPLETION DATE: November 24, 2010

## **CORE PHOTOS**


PRITCHARD AVENUE FROM MAIN STREET TO AUSTIN STREET NORTH  
(P1 – P4)

AND

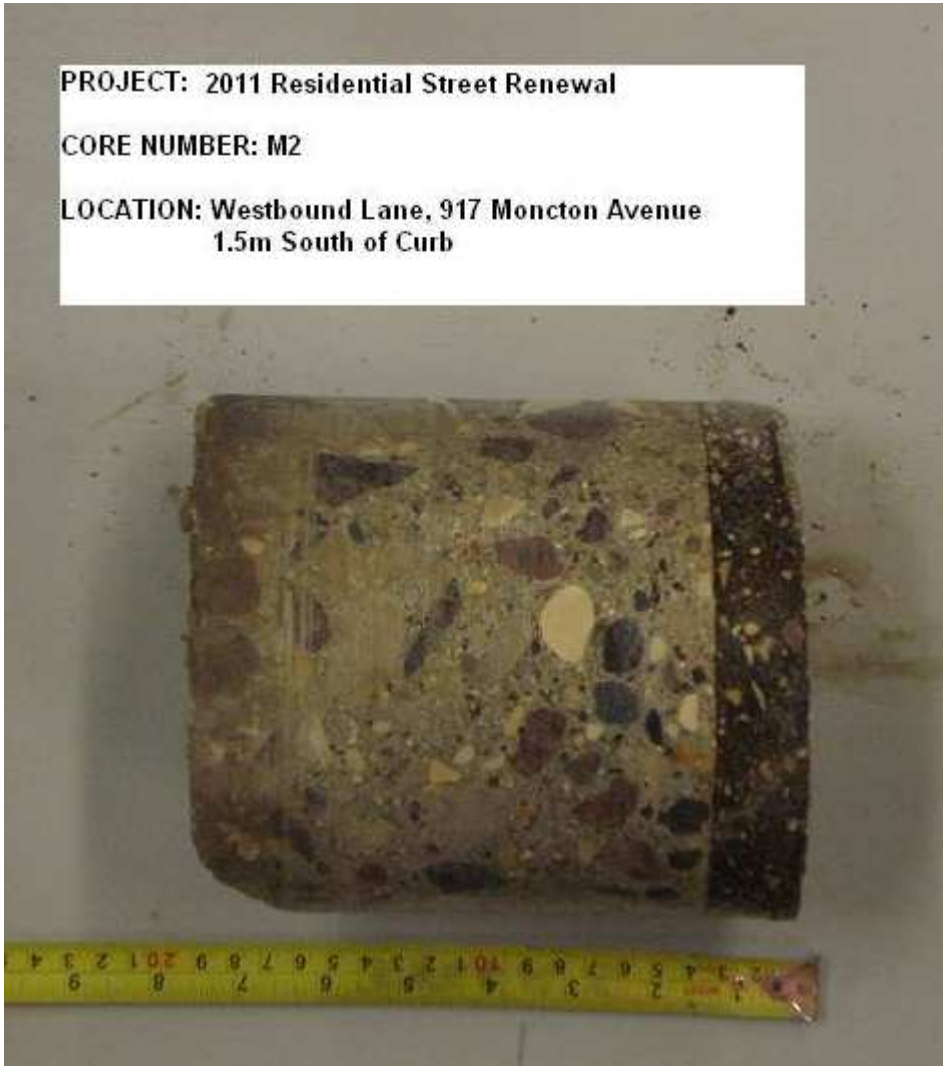
MONCTON AVENUE FROM LOUELDA STREET TO BESANT STREET  
(M1 – M4)

**PROJECT: 2011 Residential Street Renewal**  
**CORE NUMBER: M1**  
**LOCATION: Eastbound Lane, 900 Moncton Avenue**  
**1.5m North of Curb**



	<b>CORE NUMBER M1</b>
 <b>AMEC Earth &amp; Environmental</b>	<b>CORE PHOTOGRAPHS</b> <b>2011 RESIDENTIAL STREET RENEWAL</b> <b>WINNIPEG, MANTOBA</b>

**PROJECT: 2011 Residential Street Renewal**  
**CORE NUMBER: M2**  
**LOCATION: Westbound Lane, 917 Moncton Avenue  
1.5m South of Curb**



**CORE NUMBER M2**



**AMEC Earth & Environmental**

**CORE PHOTOGRAPHS  
2011 RESIDENTIAL STREET RENEWAL  
WINNIPEG, MANTOBA**



**PROJECT:** 2011 Residential Street Renewal  
**CORE NUMBER:** M3  
**LOCATION:** Eastbound Lane, 950 Moncton Avenue  
1.5m North of Curb




**CORE NUMBER M3**



**AMEC Earth & Environmental**

**CORE PHOTOGRAPHS  
2011 RESIDENTIAL STREET RENEWAL  
WINNIPEG, MANTOBA**



	<b>CORE NUMBER M4</b>
 <b>AMEC Earth &amp; Environmental</b>	<b>CORE PHOTOGRAPHS 2011 RESIDENTIAL STREET RENEWAL WINNIPEG, MANTOBA</b>

**PROJECT: 2010 COW Residential Street Renewal**  
**CORE NUMBER: P1**  
**LOCATION: Westbound Lane, Intersection of Pritchard Avenue and Austin Street North  
1.5m South of Curb**



**CORE NUMBER P1**



**AMEC Earth & Environmental**

**CORE PHOTOGRAPHS  
2011 RESIDENTIAL STREET RENEWAL  
WINNIPEG, MANTOBA**



**PROJECT: 2010 COW Residential Street Renewal**  
**CORE NUMBER: P2**  
**LOCATION: Westbound Lane, Adjacent to 995 Main Street  
1m South of Curb**



**CORE NUMBER P2**



**AMEC Earth & Environmental**

**CORE PHOTOGRAPHS  
2011 RESIDENTIAL STREET RENEWAL  
WINNIPEG, MANTOBA**

**PROJECT:** 2011 Residential Street Renewal  
**CORE NUMBER:** P3  
**LOCATION:** Eastbound Lane, 171 Pritchard Avenue  
1.5m North of Curb




**CORE NUMBER P3**



**AMEC Earth & Environmental**

**CORE PHOTOGRAPHS  
2011 RESIDENTIAL STREET RENEWAL  
WINNIPEG, MANTOBA**



	<b>CORE NUMBER P4</b>
 <b>AMEC Earth &amp; Environmental</b>	<b>CORE PHOTOGRAPHS 2011 RESIDENTIAL STREET RENEWAL WINNIPEG, MANTOBA</b>