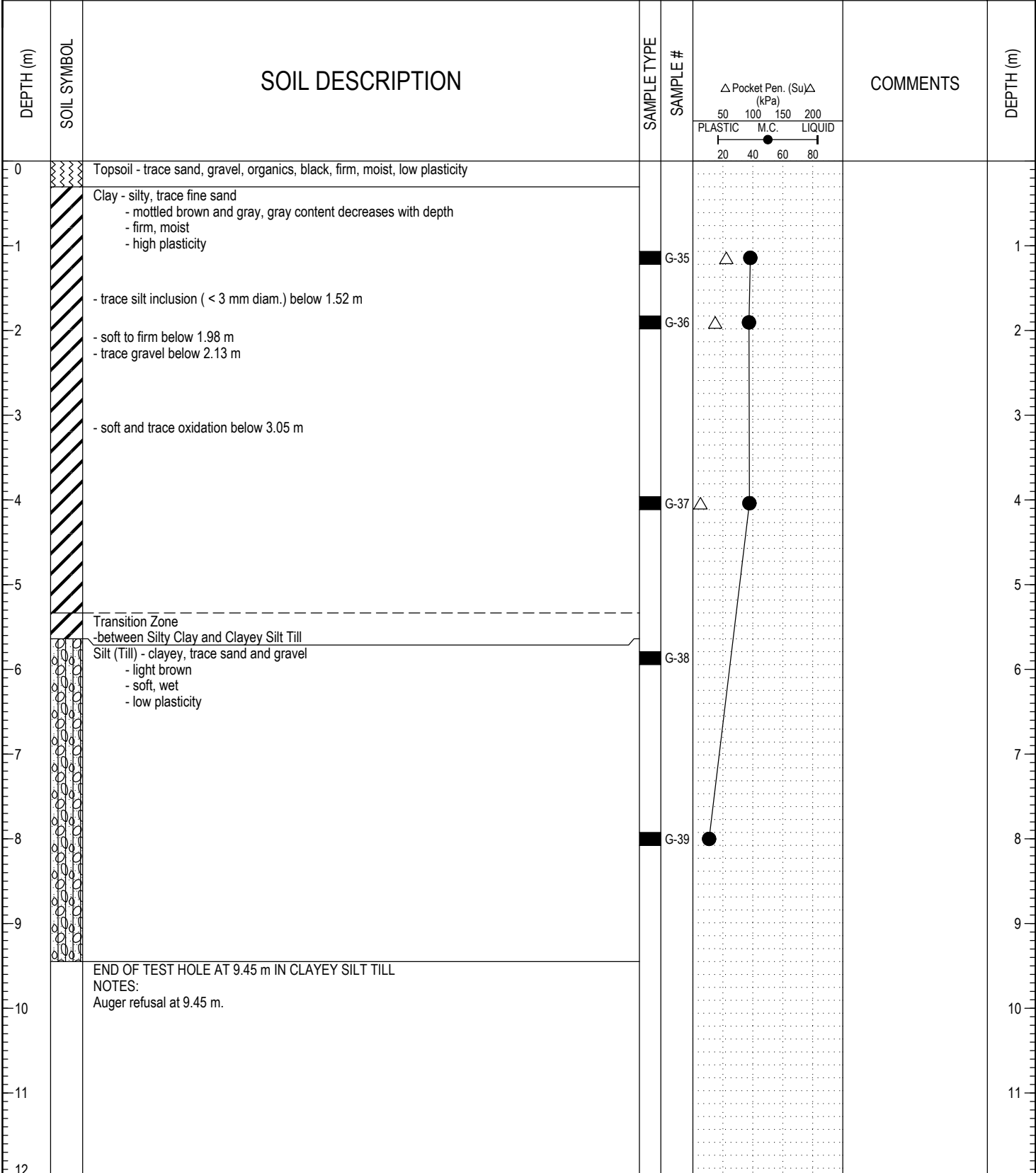


**APPENDIX A**

**TEST HOLE LOGS**

PROJECT: Moorgate/Strathmillan Sewer Relief Project	CLIENT: City of Winnipeg - Water and Waste Dept.	TESTHOLE NO: TH-04
LOCATION: Corner of Strathmillan Rd. and Lodge Ave., 4 metres east of curb.		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Paddock Drilling Ltd.	METHOD: 5" Soil Stem Auger with Acker MP5-T Rig	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE STRATH-1.GPJ UMA.GDT 1/12/03



LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 9.45 m
REVIEWED BY: Jeff Tallin	COMPLETION DATE: 24/9/02
PROJECT ENGINEER: Nelson Ferreira	Page 1 of 1

PROJECT: Moorgate/Strathmillan Sewer Relief Project	CLIENT: City of Winnipeg - Water and Waste Dept.	TESTHOLE NO: <b>TH-19</b>
LOCATION: 10 metres north of Trail Ave, 2 metres west of curb on Mount Royal Rd.		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Paddock Drilling Ltd.	METHOD: 5" Soil Stem Auger with Acker MP5-T Rig	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input 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 #	Pocket Pen. (Su) $\Delta$ (kPa)		COMMENTS	DEPTH (m)
					PLASTIC	LIQUID		
0		Topsoil - trace sand, gravel, black, firm, moist, low plasticity						
1		Clay (Fill) - silty, trace fine sand, organics - black - stiff, moist - high plasticity		G-15				1
2		Clay - silty, trace fine sand - mottled brown and gray - firm, moist - high plasticity		G-16	$\Delta$			2
3		Clay - silty, trace fine sand - mottled brown and gray - firm, moist - high plasticity		G-17	$\Delta$	$\bullet$		3
4		- trace gravel, silt inclusions (< 3 mm diam.) and soft to firm below 3.35 m		G-18	$\Delta$	$\bullet$		4
5				G-19		$\bullet$		5
6		Silt (Till) - clayey, trace sand and gravel, light brown - soft to firm, moist, low plasticity		G-20	$\Delta$			6
7		END OF TEST HOLE AT 6.71 m IN CLAYEY SILT TILL NOTES: Auger Refusal at 6.71 m.						7
8								8
9								9
10								10
11								11
12								12

LOG OF TESTHOLE STRATH-1.GPJ UMA.GDT 1/12/03



LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 6.71 m
REVIEWED BY: Jeff Tallin	COMPLETION DATE: 23/9/02
PROJECT ENGINEER: Nelson Ferreira	Page 1 of 1

PROJECT: Moorgate/Strathmillan Sewer Relief Project	CLIENT: City of Winnipeg - Water and Waste Dept.	TESTHOLE NO: TH-20
LOCATION: Corner of Mount Royal Rd. and Lodge Ave.		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Paddock Drilling Ltd.	METHOD: 5" Solid Stem Auger with Acker MP5-T Rig	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input 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 #	Pocket Pen. (Su) (kPa)		COMMENTS	DEPTH (m)
					PLASTIC	LIQUID		
0	Topsoil - trace sand, gravel, black, firm, moist, low plasticity							
0.5	Clay (Fill) - silty, trace fine sand, organics - black - stiff, moist - high plasticity		GRAB	G-7	●			
1.0	Clay - silty, trace fine sand, dark gray - stiff, moist, high plasticity		GRAB	G-8	●			1
2.0	Clay - silty, trace fine sand, silt inclusions, gravel - mottled brown and gray - firm, moist - high plasticity		GRAB	G-9	●	△		2
3.5	Transition Zone - between Silty Clay and Clayey Silt Till							
4.0			GRAB	G-10	●	△		4
5.0	Silt (Till) - clayey, trace sand and gravel, light brown - soft to firm, moist to wet, low to medium plasticity		GRAB	G-11	●			5
5.5	Silt (Till) - trace fine sand and clay - light brown - dense, moist - none to low plasticity		GRAB	G-12	●			5.5
6.0	Silt (Till) - clayey, trace sand and gravel - light brown - soft to firm, moist - low plasticity		GRAB	G-13	●			6
7.0	- some fine sand below 7.31 m		GRAB	G-14	●			7
8.23	END OF TEST HOLE AT 8.23 m IN CLAYEY SILT TILL NOTES: Auger refusal at 8.23 m.							8.23

LOG OF TESTHOLE STRATH-1.GPJ UMA.GDT 1/12/03



LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 8.23 m
REVIEWED BY: Jeff Tallin	COMPLETION DATE: 23/9/02
PROJECT ENGINEER: Nelson Ferreira	Page 1 of 1

PROJECT: Moorgate/Strathmillan Sewer Relief Project	CLIENT: City of Winnipeg - Water and Waste Dept.	TESTHOLE NO: TH-21
LOCATION: Corner of Mount Royal Rd. and Fiddler Ave..		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Paddock Drilling Ltd.	METHOD: 5" Solid Stem Auger with Acker MP5-T Rig	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input 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 #	PLASTIC	M.C.	LIQUID	COMMENTS	DEPTH (m)
0		Topsoil - some organics, black, soft to firm, moist, low plasticity							
0.5		Clay - silty, trace fine sand, organics - gray, stiff - moist, medium to high plasticity							
1.5		Silt - clayey, trace fine sand, brown, firm - moist to wet, low plasticity	GRAB	G-1					1
1.8		Silt - clayey, trace fine sand, brown, firm - moist to wet, low plasticity	GRAB	G-2					1.8
2.0		Clay - silty, trace fine sand, silt inclusions (< 3 mm diam.) - mottled brown and gray - stiff, moist - high plasticity							2
2.7		- trace gravel below 2.70 m							2.7
3.3		- soft below 3.30 m							3.3
4.0			GRAB	G-3					4
4.2			GRAB	G-4					4.2
4.8			GRAB	G-5					4.8
5.0		Silt (Till) - clayey, some sand, trace gravel - light brown - soft to firm, moist - none to low plasticity							5
6.9		END OF TEST HOLE AT 6.91 m IN CLAYEY SILT TILL NOTES: Auger refusal 6.91 m							6.9
7.0									7
7.1									7.1
7.2									7.2
7.3									7.3
7.4									7.4
7.5									7.5
7.6									7.6
7.7									7.7
7.8									7.8
7.9									7.9
8.0									8
8.1									8.1
8.2									8.2
8.3									8.3
8.4									8.4
8.5									8.5
8.6									8.6
8.7									8.7
8.8									8.8
8.9									8.9
9.0									9
9.1									9.1
9.2									9.2
9.3									9.3
9.4									9.4
9.5									9.5
9.6									9.6
9.7									9.7
9.8									9.8
9.9									9.9
10.0									10
10.1									10.1
10.2									10.2
10.3									10.3
10.4									10.4
10.5									10.5
10.6									10.6
10.7									10.7
10.8									10.8
10.9									10.9
11.0									11
11.1									11.1
11.2									11.2
11.3									11.3
11.4									11.4
11.5									11.5
11.6									11.6
11.7									11.7
11.8									11.8
11.9									11.9
12.0									12

LOG OF TESTHOLE STRATH-1.GPJ UMA.GDT 1/12/03

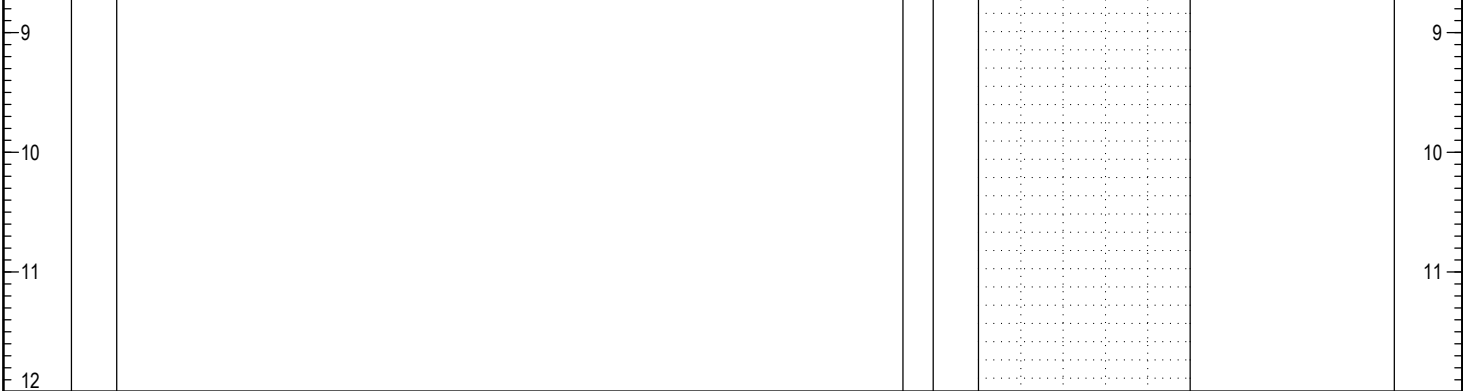


LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 7.01 m
REVIEWED BY: Jeff Tallin	COMPLETION DATE: 23/9/02
PROJECT ENGINEER: Nelson Ferreira	Page 1 of 1

PROJECT: Moorgate Strathmillan Sewer Relief	CLIENT: City of Winnipeg	TESTHOLE NO: TH-28
LOCATION: West of 139 Lodge Ave at intersection of Hearne Ave.		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Maple Leaf Drilling Ltd.	METHOD: 125 mm solid stem augers.	ELEVATION (m):

SAMPLE TYPE  GRAB  SHELBY TUBE  SPLIT SPOON  BULK  NO RECOVERY  CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PLASTIC	M.C.	LIQUID	COMMENTS	DEPTH (m)
0		TOPSOIL							
0		CLAY - black - dry - firm - medium plasticity - trace rootlets above 1.1 m (3.5')	<input checked="" type="checkbox"/>	3G14					
3		CLAY - silty, trace 10 mm diameter silt inclusions - brown - moist - stiff - medium plasticity	<input checked="" type="checkbox"/>	3G15					
4			<input checked="" type="checkbox"/>	3G16					
6		SILT (TILL) - some boulders - dry - loose to dense	<input checked="" type="checkbox"/>	3G17					
7			<input checked="" type="checkbox"/>	3G18					
8		END OF TEST HOLE AT METRES (24') IN SILT TILL - no seepage - no sloughing							



LOG OF TESTHOLE TEST HOLE LOGS.GPJ UMA.GDT 1/12/03



LOGGED BY: Darryl Schmidt	COMPLETION DEPTH: 7.32 m
REVIEWED BY: Darryl Schmidt	COMPLETION DATE: 1/10/03
PROJECT ENGINEER: Jeff Tallin	Page 1 of 1

PROJECT: Moorgate Strathmillan Sewer Relief	CLIENT: City of Winnipeg	TESTHOLE NO: TH-29
LOCATION: Between 42 and 58 Fidler Ave., 1.5 m south of south edge of pavement.		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Maple Leaf Drilling Ltd.	METHOD: 125 mm solid stem augers.	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input 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 #	PLASTIC	M.C.	LIQUID	COMMENTS	DEPTH (m)
0		TOPSOIL							
0 to 5		CLAY - trace silt inclusions - brown - dry - firm - medium plasticity	<input checked="" type="checkbox"/>	4G25					
			<input checked="" type="checkbox"/>	4G26					
			<input checked="" type="checkbox"/>	4G27					
5 to 7		SILT - trace stones - dry - dense  - sand seams below 5.8 m (19')	<input checked="" type="checkbox"/>	4G28					
7 to 8		SILT (TILL) - trace stones, trace boulders - red - dry	<input checked="" type="checkbox"/>	4G29					
8 to 12		END OF TEST HOLE AT METRES (25') IN SILT TILL - sloughing to 7.3 metres (24') - seepage at 4.3 metres (14')							

LOG OF TESTHOLE TESTHOLE LOGS.GPJ UMA.GDT 1/12/03



LOGGED BY: Darryl Schmidt	COMPLETION DEPTH: 7.62 m
REVIEWED BY: Darryl Schmidt	COMPLETION DATE: 1/10/03
PROJECT ENGINEER: Jeff Tallin	Page 1 of 1

PROJECT: Moorgate Strathmillan Sewer Relief	CLIENT: City of Winnipeg	TESTHOLE NO: TH-30
LOCATION: Northeast corner of intersection of Kane Ave. and Mount Royal Rd., 1.5 m north of north curbline		PROJECT NO.: 41-02-D265-096-03
CONTRACTOR: Maple Leaf Drilling Ltd.	METHOD: 125 mm solid stem augers.	ELEVATION (m):
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input 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 #	PLASTIC	M.C.	LIQUID	COMMENTS	DEPTH (m)
0		TOPSOIL							
0		CLAY - trace roots, black, dry, low plasticity							
1		SILT - light brown, dry, loose, compact							
1		CLAY - trace silt inclusions - brown - dry to moist	<input checked="" type="checkbox"/>	5G30					
3		CLAY - trace silt inclusions - brown - dry to moist	<input checked="" type="checkbox"/>	5G31					
4		CLAY - trace silt inclusions - brown - dry to moist	<input checked="" type="checkbox"/>	5G32					
5		SILT (TILL) - sandy, some stones - red - dry - dense	<input checked="" type="checkbox"/>	5G33					
7		END OF TEST HOLE AT 6.7 METRES (22') IN SILT TILL - sloughing below 6.2 metres (20.5') - no seepage							

LOG OF TESTHOLE TESTHOLE LOGS.GPJ UMA.GDT 1/12/03



LOGGED BY: Darryl Schmidt	COMPLETION DEPTH: 6.71 m
REVIEWED BY: Darryl Schmidt	COMPLETION DATE: 1/10/03
PROJECT ENGINEER: Jeff Tallin	Page 1 of 1