APPENDIX ‘A’

GEOTECHNICAL REPORT

Geotechnical Investigation

City of Winnipeg Street Investigation 19-R-6 Waverley Street Granular Renewal
Winnipeg, Manitoba
WX18717
4 March 2019

wood.
Environment & Infrastructure Solutions
440 Dovercourt Drive, Winnipeg Manitoba, Canada R3Y 1N4
Phone: (204) 488-2997
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Geotechnical Investigation
City of Winnipeg Street Investigation 19-R-6 Waverley Street Granular Renewal
Wood Project Number - WX18717

Prepared for:	Dillon Consulting Limited 1558 Willson Place Winnipeg, Manitoba R3T 0Y4
Contact:	Brad Cook, P.Eng.
Report Distribution:	
Dillon Consulting Limited:	Brad Cook, P.Eng.
Third Party:	
Report Classification:	Confidential

	Name	Job Title	Signature
Prepared by:	Caolan McEvoy, E.I.T., C.E.T. / Jorden Wiwcharyk, P.Eng.	Geotechnical Engineer-in-Training / Geotechnical Engineer	
Reviewed by:	Brad Wiebe., P.Eng.	Associate Geotechnical Engineer, Branch Manager	
Project Manager:	Caolan McEvoy, E.I.T., C.E.T.	Geotechnical Engineer-in-Training	
Other Technical Contributors			

Rev.	Date	Revision Notes
0	**04 Mar 2019**	Issued Final to Client

Permit Stamp	Engineer Seal
PROVINCE OF MANITOBA J.P. WIWCHARYK Member 32499 REGISTERED PROFESSIONAL ENGINEER 4 March 2019	ENGINEERS GEOSCIENTISTS MANITOBA Certificate of Authorization Wood Environment & Infrastructure Solutions, A Division of Wood Canada Limited No. 6834

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1.0 Introduction

At the authorization of Mr. Brad Cook, P. Eng., of Dillon Consulting Limited (Dillon), Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood), completed a test hole drilling program related to the evaluation and rehabilitation of an approximant 4.2 km stretch of Waverley Street from Grandmont Boulevard to the City Limit.

The geotechnical investigation was completed in accordance with the Scope of Work and Terms and Conditions outlined in Wood Proposal No. WPG2018.684 dated 19 December 2018.

2.0 Geotechnical Investigation

Prior to initiating drilling, Wood notified public utility providers (i.e. Manitoba Hydro, MTS, Shaw, etc.) of the intent to drill in order to clear public utilities, and where required, met with said representatives on-site.

On 01st and 09th of February 2019, Wood supervised the drilling of a total of fourty-two test holes (TH01 through TH42) on Waverley Street from Grandmont Boulevard to the City Limit. The test hole locations where chosen by Wood based on the City of Winnipeg requirements listed in the RFP No. 833-2018; the test hole locations are described in Appendix A and illustrated in Figure 1. At each test hole location, the offset from shoulder edge and distance from cross street were recorded, measurements where based of a combination of truck oedometer readings and hand measurements (Truck measurements where used when measurements where 0.1 km or greater). All test holes were drilled to a minimum depth of 2.0 m using a truck mounted Mobile B40LX drill rig equipped with 125 mm solid stem augers, owned and operated by Maple Leaf Drilling of Springfield, Manitoba.

During drilling, Wood field personnel visually classified the soil stratigraphy within the test holes in accordance with the RFP No. 833-2018 section F2.2 (d); as well as noted observed seepage and/or sloughing conditions. Soil sampling consisted of grab samples of the auger cuttings obtained at 0.3 m intervals at all test hole locations. All grab samples were retained in sealed plastic bags and shipped to Wood's Winnipeg laboratory for review and selected testing.

Following completion of the field drilling program, a laboratory testing program was conducted on all soil samples obtained from the test holes. The laboratory testing program consisted of moisture content determinations for all samples collected, as well as Atterberg limits particle size distributions (hydrometer method) on selected samples. A summary of the Atterberg limit and particle size distribution are presented in Appendix B. Detailed test hole logs summarizing the sampling, field testing, laboratory test results, and subsurface conditions encountered at the test hole locations are presented in Appendix C.

Actual depths noted on the test hole logs may vary by ± 0.3 m from those recorded due to the method by which the soil cuttings are returned to the surface. Summaries of the terms and symbols used on the test hole logs and of the Modified Unified Soil Classification System are also presented in Appendix C. A summary of the test hole information, location and lab testing data is also provided in the Appendix A summary tables.

3.0 Closure

The findings of this report were based on the results of field and laboratory investigations at test hole locations determined based on the City of Winnipeg requirements.

The site investigation was conducted for the sole purpose of profiling the pavement and subsurface conditions. Although no environmental issues were identified during the fieldwork, this does not indicate that no such issues exist. If the owner or other parties have any concern regarding the presence of environmental issues, then an appropriate level environmental assessment should be conducted.

Soil conditions, by their nature, can be highly variable across a site. The placement of fill and prior construction activities on a site can contribute to the variability especially near surface soil conditions. A contingency should always be included in any construction budget to allow for the possibility of variation in soil conditions, which may result in modification of any potential design and construction procedures which may arise from this factual investigative report.

Respectfully submitted,

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited

Figures

Figure 1: Test Hole Location Plan

NOTES: SITE FEATURES AND LOCATIONS ARE APPROXIMATE ONLY. IMAGES FROM GOOGLE EARTH PRO AND TOPO MAPS.

LEGEND:

TEST HOLE

REVISION	BY	DATE
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CLIENT:

DILLON CONSULTING LIMITED

wood.

440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

DWN BY:	MD
CHK'D BY:	BW
DATUM:	NAD83
PROJECTION:	UTM Zone 14 U
SCALE:	AS SHOWN

CITY OF WINNIPEG STREET INVESTIGATION
19-R-6 WAVERLEY STREET GRANULAR ROAD RECONSTRUCTION
WINNIPEG, MANITOBA

TEST HOLE LOCATION PLAN

DATE:	MARCH 2019
PROJECT NO:	WX18717
REV. NO.:	A
FIGURE NO:	FIGURE 1

Appendix A

Test Hole Summary Tables

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH01	18.5 m South of Grandmont Blvd, 3.0 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	10.3							
				CLAY FILL	0.2	0.3	23.2							
				CLAY	0.5	0.7	33.9							
				CLAY	0.8	1.0	34.5							
				CLAY	1.1	1.3	35.3							
				CLAY	1.4	1.6	34.1							
				SILT	1.7	1.9	41.2							
TH02	140 m South of Grandmont Blvd, 2.5 m West of East shoulder	Granular Fill	300	GRANULAR FILL	0.0	0.1	3.6							
				CLAY	0.3	0.5	25.0							
				CLAY	0.5	0.7	26.9							
				CLAY	0.8	1.0	28.2							
				CLAY	1.1	1.3	29.5							
				CLAY	1.4	1.6	26.1							
				CLAY	1.7	1.9	27.8							
TH03	253 m South of Grandmont Blvd, 3.0 m East of West shoulder	Granular Fill	390	GRANULAR FILL	0.0	0.1	4.4							
				GRANULAR FILL	0.2	0.4	10.7							
				CLAY	0.5	0.7	28.9							
				CLAY	0.8	1.0	30.0							
				CLAY	1.1	1.3	28.7							
				CLAY	1.4	1.6	28.7							
				CLAY	1.7	1.9	29.3							
TH04	340 m South of Grandmont Blvd, 3.0 m West of East shoulder	Granular Fill	175	GRANULAR FILL	0.0	0.1	3.4							
				CLAY	0.2	0.4	25.2							
				CLAY	0.5	0.7	26.9							
				CLAY	0.8	1.0	27.1							
				CLAY	1.1	1.3	27.4							
				CLAY	1.4	1.6	35.2							
				CLAY	1.7	1.9	39.6							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH05	419 m South of Grandmont Blvd, 3.0 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	3.8							
				CLAY	0.2	0.4	21.9	0	23.1	43.8	33	50	18	32
				CLAY	0.5	0.7	28.8							
				CLAY	0.8	1.0	28.4							
				CLAY	1.1	1.3	28.9							
				CLAY	1.4	1.6	34.7							
				CLAY	1.7	1.9	37.0							
TH06	540 m South of Grandmont Blvd, 3.0 m West of East shoulder	Granular Fill	175	GRANULAR FILL	0.0	0.1	4.7							
				CLAY FILL	0.2	0.4	28.2							
				CLAY	0.5	0.7	26.6							
				CLAY	0.8	1.0	28.8							
				CLAY	1.1	1.3	27.7							
				CLAY	1.4	1.6	35.2							
				CLAY	1.7	1.9	39.6							
TH07	619 m South of Grandmont Blvd, 3.0 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	6.6							
				CLAY	0.2	0.4	18.7							
				CLAY	0.5	0.7	26.4							
				CLAY	0.8	1.0	27.1							
				CLAY	1.1	1.3	27.1							
				CLAY	1.4	1.6	28.6							
				CLAY	1.7	1.9	26.1							
TH08	740 m South of Grandmont Blvd, 3.0 m West of East shoulder	Granular Fill	175	GRANULAR FILL	0.0	0.1	4.1							
				CLAY FILL	0.2	0.4	25.6							
				CLAY FILL	0.5	0.7	20.4	0	7.2	51.3	39.5	44	15	29
				CLAY	0.8	1.0	30.0							
				CLAY	1.1	1.3	26.4							
				CLAY	1.4	1.6	26.6							
				CLAY	1.7	1.9	23.5							

wood.

SUMMARY TABLE

Client: Dillion Construction
Project No: WX18717
Project: City of Winnipeg Waverley Street Investigation
Auger Diameter: 125 mm Solid Stem Auger
Date Drilled: 01-Feb-2019 and 09-Feb-2019
Street: Waverley Street
Drilled By: Caolan McEvoy

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH09	528.2 m North of Rue Des Trappistes, 3.5 m East of West shoulder	Granular Fill	100	GRANULAR FILL	0.0	0.1	6.0							
				CLAY	0.2	0.4	20.2							
				CLAY	0.5	0.7	29.3							
				CLAY	0.8	1.0	28.7							
				CLAY	1.1	1.3	28.5							
				CLAY	1.4	1.6	29.6							
				CLAY	1.7	1.9	30.9							
TH10	413 m North of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	7.8							
				CLAY	0.2	0.4	21.3							
				CLAY	0.5	0.7	29.0							
				CLAY	0.8	1.0	31.1							
				CLAY	1.1	1.3	31.0							
				CLAY	1.4	1.6	29.4							
				CLAY	1.7	1.9	31.7							
TH11	382 m North of Rue Des Trappistes, 2.9 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	4.0							
				CLAY	0.2	0.4	26.2							
				CLAY	0.5	0.7	35.8							
				CLAY	0.8	1.0	36.4							
				CLAY	1.1	1.3	33.9							
				CLAY	1.4	1.6	33.0							
				CLAY	1.7	1.9	32.5							
TH12	213 m North of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	250	GRANULAR FILL	0.0	0.1	3.6							
				CLAY	0.2	0.4	17.9							
				CLAY	0.5	0.7	33.0							
				CLAY	0.8	1.0	32.8							
				CLAY	1.1	1.3	31.7							
				CLAY	1.4	1.6	31.8							
				CLAY	1.7	1.9	34.4							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH13	113 m North of Rue Des Trappistes, 3.3 m East of West shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	5.2							
				CLAY FILL	0.2	0.4	22.0							
				CLAY FILL	0.5	0.7	21.6							
				CLAY	0.8	1.0	31.2							
				CLAY	1.1	1.3	30.0							
				SILT	1.7	1.8	21.1							
				CLAY	1.8	2.0	28.5							
TH14	13 m North of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	275	GRANULAR FILL	0.0	0.1	2.6							
				CLAY	0.3	0.4	18.1							
				CLAY	0.5	0.7	28.7							
				CLAY	0.8	1.0	30.2							
				CLAY	1.1	1.3	29.0							
				CLAY	1.4	1.6	29.2							
				CLAY	1.7	1.9	29.0							
TH15	87 m South of Rue Des Trappistes, 3.5 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	3.7							
				CLAY	0.2	0.4	20.3							
				CLAY	0.5	0.7	38.9							
				CLAY	0.8	1.0	38.3							
				CLAY	1.1	1.3	36.2							
				CLAY	1.4	1.6	30.7							
				CLAY	1.7	1.9	34.4							
TH16	137 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	225	GRANULAR FILL	0.0	0.1	3.9							
				CLAY	0.2	0.4	19.7							
				CLAY	0.5	0.7	29.3							
				CLAY	0.8	1.0	28.0							
				CLAY	1.1	1.3	28.4							
				CLAY	1.4	1.6	28.2							
				CLAY	1.7	1.9	32.4							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH17	287 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	3.8							
				CLAY FILL	0.2	0.4	27.1							
				CLAY FILL	0.5	0.7	35.5							
				CLAY FILL	0.8	1.0	34.2							
				CLAY FILL	1.1	1.3	27.5							
				CLAY FILL	1.4	1.6	26.1							
				SILT	1.7	1.9	24.0							
TH18	337 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	8.6							
				CLAY FILL	0.2	0.4	27.0							
				SILT	0.6	0.8	29.3							
				SILT	0.8	1.0	25.6	0	5.6	57.3	36.5	41	14	27
				SILT	1.1	1.3	24.5	0	5.8	58.8	35.2	37	14	23
				CLAY	1.5	1.7	25.6							
				CLAY	1.7	1.9	29.5							
TH19	487 m South of Rue Des Trappistes, 3.3 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	4.8							
				CLAY	0.2	0.4	21.7							
				CLAY	0.5	0.7	34.7							
				CLAY	0.8	1.0	26.7							
				CLAY	1.1	1.3	27.1							
				CLAY	1.4	1.6	25.8							
				CLAY	1.7	1.9	29.0							
TH20	564 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	250	GRANULAR FILL	0.0	0.1	2.9							
				CLAY	0.2	0.4	31.9							
				SILT	0.5	0.7	26.7							
				SILT	0.8	1.0	27.1	0	5	58.3	36.4	36	14	22
				SILT	1.1	1.3	21.8							
				CLAY	1.5	1.7	31.7							
				CLAY	1.7	1.9	33.3							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH21	687 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	50	GRANULAR FILL	0.0	0.1	7.1							
				CLAY FILL	0.2	0.4	26.4							
				CLAY FILL	0.5	0.7	44.0							
				CLAY	0.8	1.0	29.8							
				CLAY	1.1	1.3	35.5							
				CLAY	1.4	1.6	30.0							
				CLAY	1.7	1.9	34.0							
TH22	762 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	250	GRANULAR FILL	0.0	0.1	2.1							
				CLAY	0.2	0.4	23.6							
				CLAY	0.5	0.7	40.1							
				CLAY	0.8	1.0	32.2							
				CLAY	1.1	1.3	31.4							
				CLAY	1.4	1.6	30.1							
				CLAY	1.7	1.9	28.8							
TH23	987 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	2.9							
				CLAY	0.2	0.4	31.0							
				CLAY	0.5	0.7	28.2							
				CLAY	0.8	1.0	25.7							
				CLAY	1.1	1.3	24.2							
				CLAY	1.4	1.6	24.2							
				CLAY	1.7	1.9	25.6							
TH24	1087 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	2.6							
				CLAY	0.2	0.4	25.1							
				CLAY	0.5	0.7	25.5							
				CLAY	0.8	1.0	28.9							
				CLAY	1.1	1.3	28.6							
				CLAY	1.4	1.6	29.4							
				CLAY	1.7	1.9	28.1							

wood.

SUMMARY TABLE

Client: Dillion Construction
Project No: WX18717
Project: City of Winnipeg Waverley Street Investigation
Auger Diameter: 125 mm Solid Stem Auger
Date Drilled: 01-Feb-2019 and 09-Feb-2019
Street: Waverley Street
Drilled By: Caolan McEvoy

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH25	1187 m South of Rue Des Trappistes, 3.1 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	3.5							
				CLAY	0.2	0.4	25.9							
				CLAY	0.5	0.7	27.6							
				CLAY	0.8	1.0	27.2							
				CLAY	1.1	1.3	27.0							
				CLAY	1.4	1.6	28.2							
				CLAY	1.7	1.9	31.0							
TH26	1286 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	125	GRANULAR FILL	0.0	0.1	2.8							
				CLAY	0.2	0.4	25.1							
				CLAY	0.5	0.7	26.6							
				CLAY	0.8	1.0	27.5							
				SILT	1.1	1.3	22.2							
				SILT	1.4	1.6	30.2							
				CLAY	1.7	1.9	30.3							
TH27	1387 m South of Rue Des Trappistes, 3.1 m East of West shoulder	Granular Fill	225	GRANULAR FILL	0.0	0.1	2.6							
				CLAY FILL	0.2	0.4	22.6							
				CLAY	0.6	0.8	26.2							
				CLAY	0.8	1.0	29.9							
				CLAY	1.1	1.3	30.0							
				CLAY	1.4	1.6	28.4							
				CLAY	1.7	1.9	30.0							
TH28	1486 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	125	GRANULAR FILL	0.0	0.1	3.6							
				CLAY	0.2	0.4	30.4							
				CLAY	0.5	0.7	31.2							
				CLAY	0.8	1.0	30.0							
				CLAY	1.1	1.3	30.9							
				CLAY	1.4	1.6	28.7							
				CLAY	1.7	1.9	27.7							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH29	1587 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	225	GRANULAR FILL	0.0	0.1	2.8							
				CLAY FILL	0.2	0.4	23.3							
				SILT	0.5	0.7	30.3	0	13.2	51.9	34.6	42	15	27
				SILT	0.9	1.1	26.5	0	19.3	57.8	22.8	31	14	17
				CLAY	1.2	1.4	30.9							
				CLAY	1.4	1.6	29.3							
				CLAY	1.7	1.9	30.5							
TH30	1686 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	11.2							
				CLAY	0.2	0.4	27.0							
				CLAY	0.5	0.7	25.4							
				CLAY	0.8	1.0	26.6							
				CLAY	1.1	1.3	30.2							
				SILT	1.5	1.7	31.2							
				SILT	1.7	1.9	31.9							
TH31	1787 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	3.8							
				CLAY	0.2	0.4	27.8							
				CLAY	0.5	0.7	33.9							
				CLAY	0.8	1.0	31.5							
				CLAY	1.1	1.3	34.4							
				CLAY	1.4	1.6	31.6							
				CLAY	1.7	1.9	32.4							
TH32	1886 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	6.1							
				CLAY	0.2	0.4	27.6							
				CLAY	0.5	0.7	30.8							
				CLAY	0.8	1.0	28.4							
				CLAY	1.1	1.3	28.1							
				CLAY	1.4	1.6	27.5							
				CLAY	1.7	1.9	27.7							

wood.

SUMMARY TABLE

Client: Dillion Construction
Project No: WX18717
Project: City of Winnipeg Waverley Street Investigation
Auger Diameter: 125 mm Solid Stem Auger
Date Drilled: 01-Feb-2019 and 09-Feb-2019
Street: Waverley Street
Drilled By: Caolan McEvoy

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH33	1987m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	3.6							
				CLAY	0.2	0.4	26.3							
				CLAY	0.5	0.7	36.1							
				CLAY	0.8	1.0	36.8							
				CLAY	1.1	1.3	38.5							
				CLAY	1.4	1.6	33.4							
				CLAY	1.7	1.9	34.7							
TH34	2086 m South of Rue Des Trappistes, 2.5 m West of East shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	6.1							
				CLAY	0.2	0.4	26.5							
				CLAY	0.5	0.7	24.2							
				CLAY	0.8	1.0	25.2							
				CLAY	1.1	1.3	26.0							
				CLAY	1.4	1.6	23.1							
				CLAY	1.7	1.9	27.0							
TH35	2187 m South of Rue Des Trappistes, 2.5 m East of West shoulder	Granular Fill	200	GRANULAR FILL	0.0	0.1	3.1							
				CLAY	0.2	0.4	15.4							
				CLAY	0.5	0.7	33.4							
				CLAY	0.8	1.0	34.4							
				CLAY	1.1	1.3	35.0							
				CLAY	1.4	1.6	33.8							
				CLAY	1.7	1.9	33.7							
TH36	2286 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	100	GRANULAR FILL	0.0	0.1	4.5							
				CLAY	0.2	0.4	27.0							
				CLAY	0.5	0.7	24.5							
				CLAY	0.8	1.0	27.5							
				CLAY	1.1	1.3	27.1							
				CLAY	1.4	1.6	28.5							
				CLAY	1.7	1.9	30.3							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH37	2386 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	4.2							
				CLAY	0.2	0.4	23.4							
				CLAY	0.5	0.7	24.5							
				CLAY	0.8	1.0	25.2							
				CLAY	1.1	1.3	24.9							
				CLAY	1.4	1.6	23.8							
				CLAY	1.7	1.9	27.2	0	1.2	22.4	76.5	102	24	78
TH38	2486 m South of Rue Des Trappistes, 2.5 m West of East shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	4.0							
				CLAY	0.2	0.4	27.4							
				CLAY	0.5	0.7	30.5							
				CLAY	0.8	1.0	30.8							
				CLAY	1.1	1.3	30.8							
				CLAY	1.4	1.6	26.8							
				SILT	1.7	1.9	28.5							
TH39	2586 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	125	GRANULAR FILL	0.0	0.1	11.3							
				CLAY	0.2	0.4	24.3							
				CLAY	0.5	0.7	31.5							
				CLAY	0.8	1.0	27.2							
				CLAY	1.1	1.3	31.1							
				CLAY	1.4	1.6	33.9							
				CLAY	1.7	1.9	32.6							
TH40	2686 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	11.1							
				CLAY FILL	0.2	0.4	20.4							
				CLAY	0.5	0.7	22.7							
				CLAY	0.8	1.0	22.8							
				CLAY	1.1	1.3	24.7							
				CLAY	1.4	1.6	22.8							
				SILT	1.8	2.0	20.0							

wood.

SUMMARY TABLE

Client: Dillion Construction

Project: City of Winnipeg Waverley Street Investigation

Date Drilled: 01-Feb-2019 and 09-Feb-2019

Drilled By: Caolan McEvoy

Project No: WX18717

Auger Diameter: 125 mm Solid Stem Auger

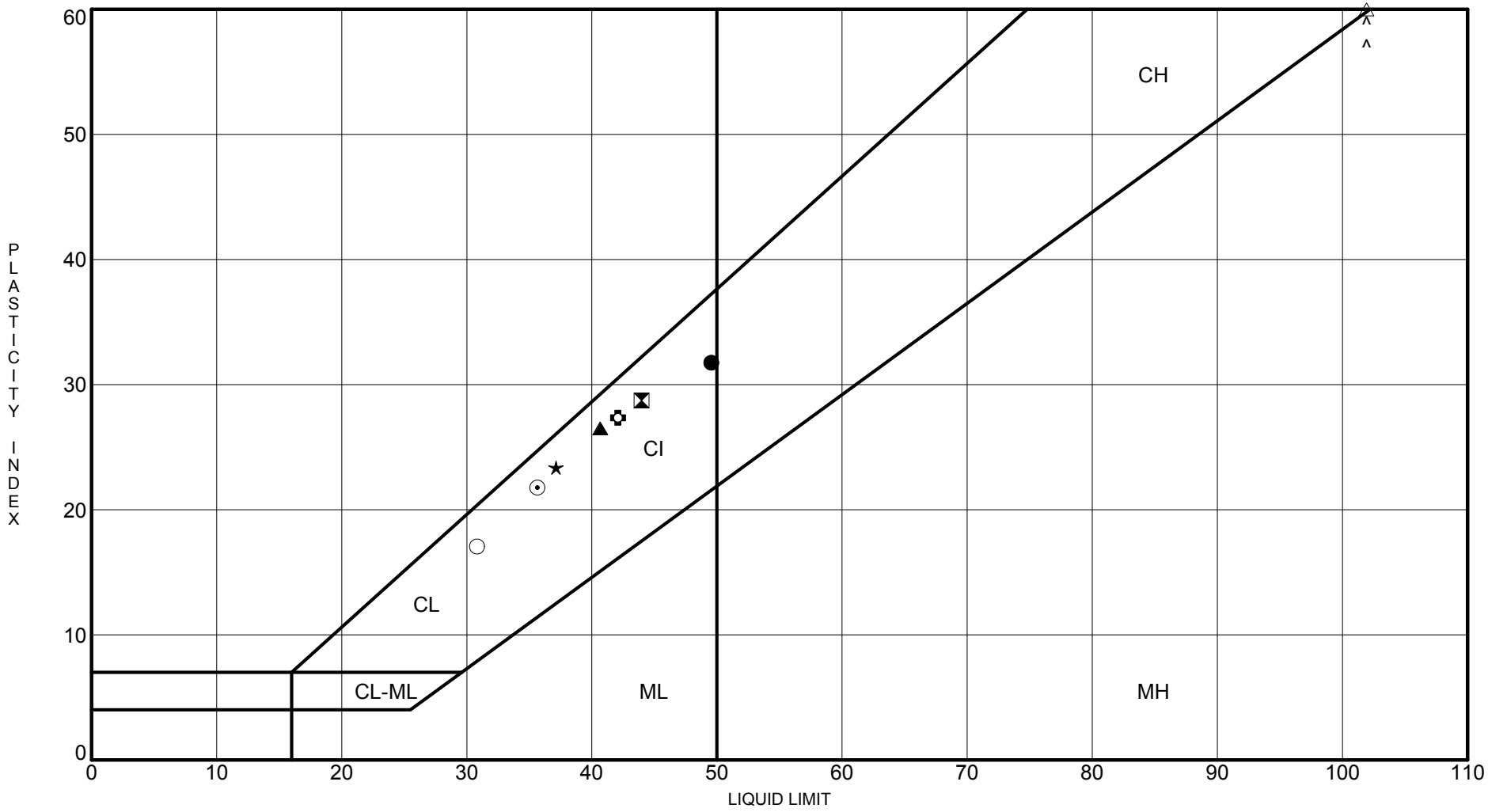
Street: Waverley Street

Test Hole No.	Test Hole Location	Pavement Surface		Soil Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)		Top	Bottom		Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid	Plastic	Plasticity Index
TH41	2786 m South of Rue Des Trappistes, 3.0 m East of West shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	4.0							
				CLAY	0.2	0.4	28.8							
				CLAY	0.5	0.7	31.4							
				CLAY	0.8	1.0	31.2							
				CLAY	1.1	1.3	30.6							
				SILT	1.4	1.6	30.1							
				SILT	1.7	1.9	29.1							
TH42	2886 m South of Rue Des Trappistes, 3.0 m West of East shoulder	Granular Fill	150	GRANULAR FILL	0.0	0.1	5.7							
				CLAY	0.2	0.4	17.6							
				CLAY	0.5	0.7	21.2							
				CLAY	0.8	1.0	24.1							
				CLAY	1.1	1.3	25.0							
				CLAY	1.4	1.6	22.1							
				CLAY	1.7	1.9	19.8							

Appendix B

Laboratory Test Reports

CLIENT: Dillon Consulting Limited	PROJECT: City of Winnipeg Street Investigation	PROJECT: WX18717



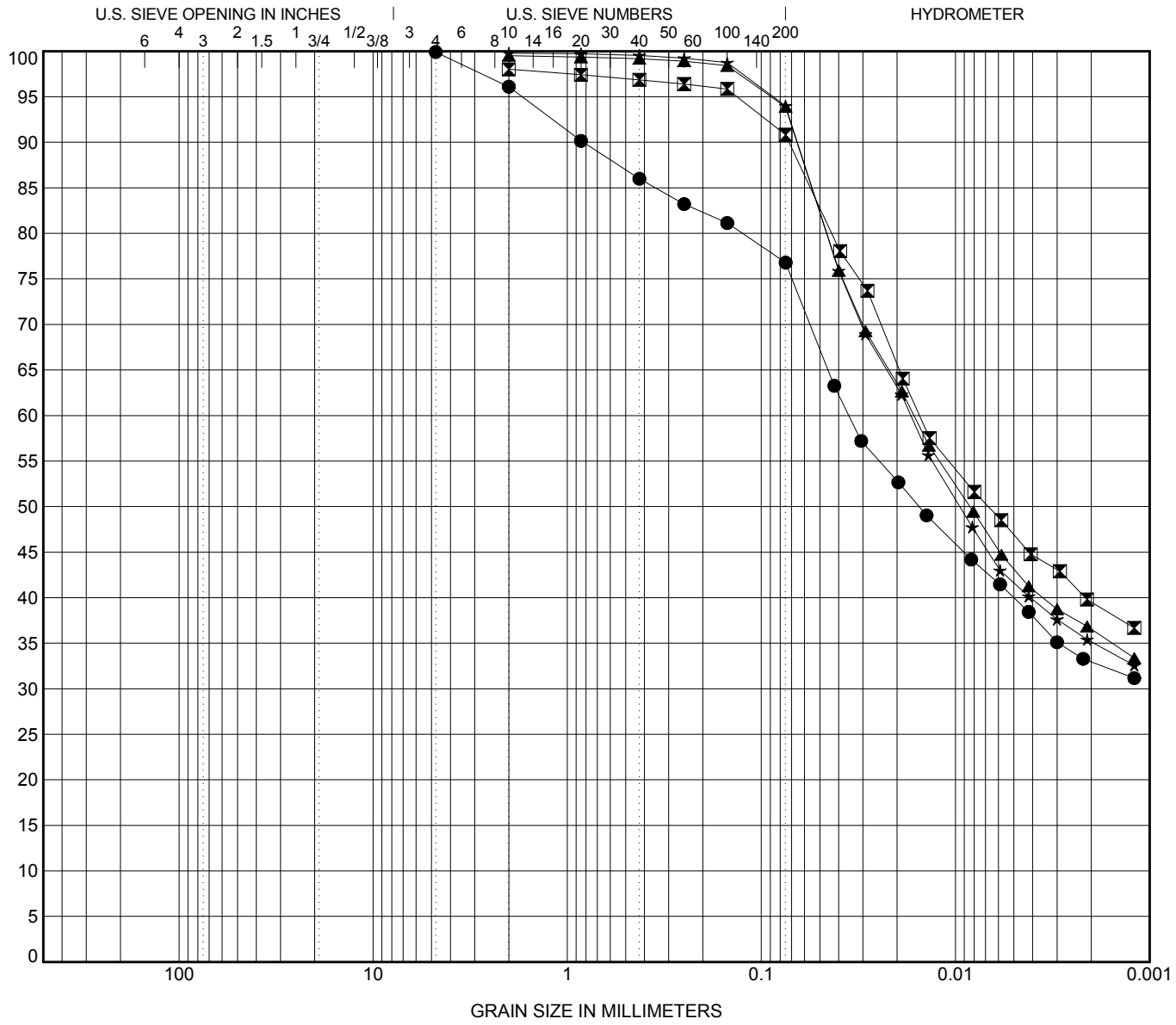
Borehole	Depth (m)	LL	PL	PI
● TH05	0.2	50	18	32
⊠ TH08	0.5	44	15	29
▲ TH18	0.8	41	14	27
★ TH18	1.1	37	14	23
⊙ TH20	0.8	36	14	22

Borehole	Depth (m)	LL	PL	PI
✿ TH29	0.5	42	15	27
○ TH29	0.9	31	14	17
△ TH37	1.7	102	24	78

ATTERBERG LIMIT RESULTS

GRAIN SIZE DISTRIBUTION

CLIENT: Dillon Consulting Limited | PROJECT: City of Winnipeg Street Investigation | PROJECT NO: WX18717



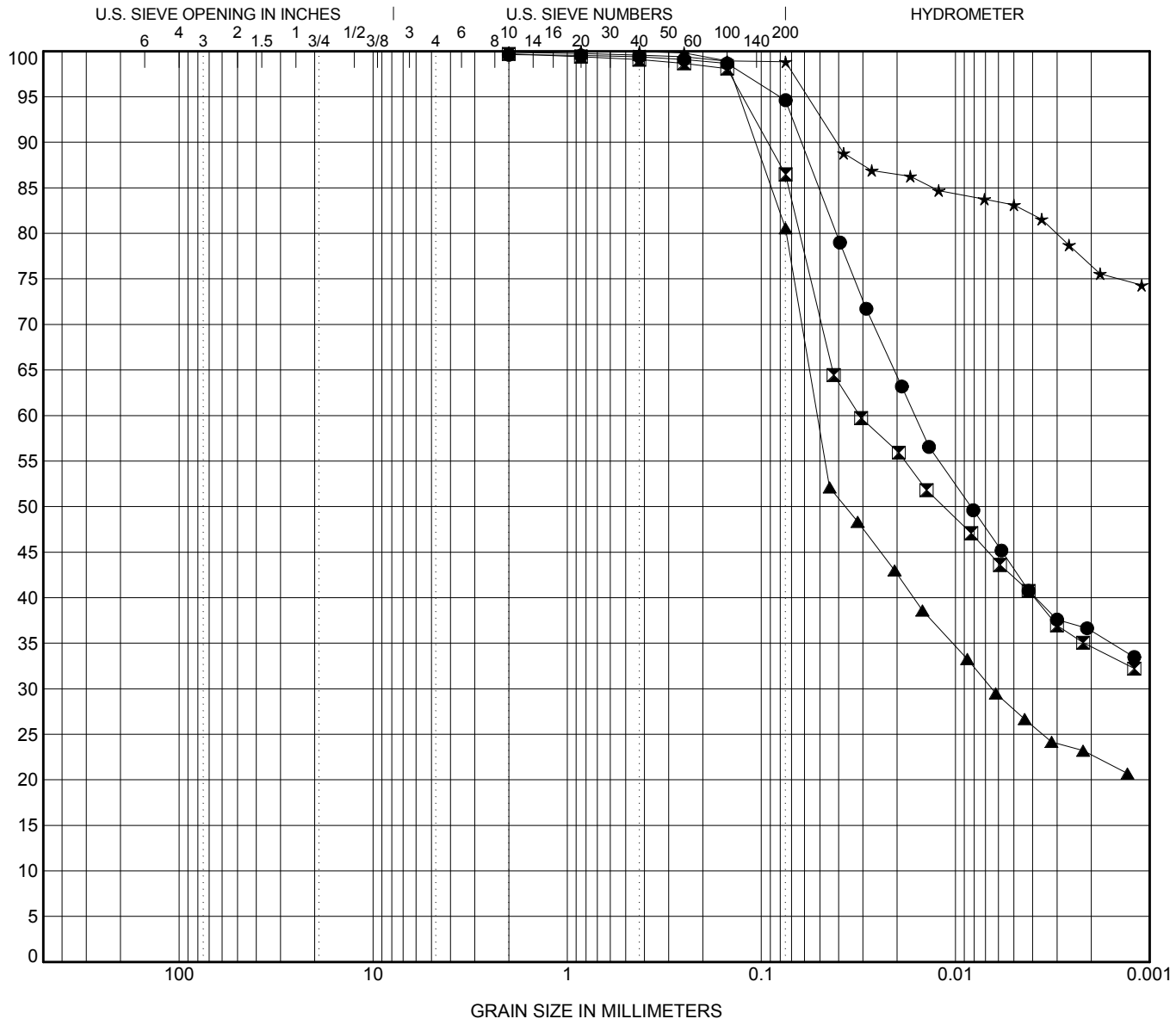
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample No.	Classification	LL	PL	PI	Cc	Cu
●	**TH05**	**FAT CLAY with SAND(CH)**	**50**	**18**	**32**		
⊠	**TH08**	**LEAN CLAY(CI)**	**44**	**15**	**29**		
▲	**TH18**	**LEAN CLAY(CI)**	**41**	**14**	**27**		
★	**TH18**	**LEAN CLAY(CI)**	**37**	**14**	**23**		

	Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**TH05**	**4.76**	**0.035**			**0.0**	**23.1**	**43.8**	**33.0**
⊠	**TH08**	**2**	**0.015**				**7.2**	**51.3**	**39.5**
▲	**TH18**	**2**	**0.016**				**5.6**	**57.3**	**36.5**
★	**TH18**	**2**	**0.017**				**5.8**	**58.8**	**35.2**

GRAIN SIZE DISTRIBUTION

CLIENT: Dillon Consulting Limited	PROJECT: City of Winnipeg Street Investigation	PROJECT NO: WX18717



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample No.	Classification	LL	PL	PI	Cc	Cu
●	**TH20**	**LEAN CLAY(CI)**	**36**	**14**	**22**		
⊠	**TH29**	**LEAN CLAY(CI)**	**42**	**15**	**27**		
▲	**TH29**	**LEAN CLAY with SAND(CI)**	**31**	**14**	**17**		
★	**TH37**	**FAT CLAY(CH)**	**102**	**24**	**78**		

	Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**TH20**	**2**	**0.016**				**5.0**	**58.3**	**36.4**
⊠	**TH29**	**2**	**0.031**				**13.2**	**51.9**	**34.6**
▲	**TH29**	**2**	**0.051**	**0.006**			**19.3**	**57.8**	**22.8**
★	**TH37**	**0.85**				**0.0**	**1.2**	**22.4**	**76.5**

WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:02 PM (GRAIN SIZE FOR MAT CLIENTS)

Appendix C

Test Hole Logs

EXPLANATION OF TERMS AND SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of field investigation and subsequent laboratory testing are described in these pages.

It should be noted that materials, boundaries and conditions have been established only at the borehole locations at the time of investigation and are not necessarily representative of subsurface conditions elsewhere across the site.

TEST DATA

Data obtained during the field investigation and from laboratory testing are shown at the appropriate depth interval.

Abbreviations, graphic symbols, and relevant test method designations are as follows:

*C	Consolidation test	*ST	Swelling test
D_R	Relative density	TV	Torvane shear strength
*k	Permeability coefficient	VS	Vane shear strength
*MA	Mechanical grain size analysis	w	Natural Moisture Content (ASTM D2216)
	and hydrometer test	w_l	Liquid limit (ASTM D 423)
N	Standard Penetration Test (CSA A119.1-60)	w_p	Plastic Limit (ASTM D 424)
N_d	Dynamic cone penetration test	E_f	Unit strain at failure
NP	Non plastic soil	γ	Unit weight of soil or rock
pp	Pocket penetrometer strength	γ_d	Dry unit weight of soil or rock
*q	Triaxial compression test	ρ	Density of soil or rock
q_u	Unconfined compressive strength	ρ_d	Dry Density of soil or rock
*SB	Shearbox test	C_u	Undrained shear strength
SO_4	Concentration of water-soluble sulphate	→	Seepage
		▼	Observed water level

* The results of these tests are usually reported separately

Soils are classified and described according to their engineering properties and behaviour.

The soil of each stratum is described using the Unified Soil Classification System[1] modified slightly so that an inorganic clay of "medium plasticity" is recognized.

The modifying adjectives used to define the actual or estimated percentage range by weight of minor components are consistent with the Canadian Foundation Engineering Manual[2].

Relative Density and Consistency:

Cohesionless Soils

Relative Density	SPT (N) Value
Very Loose	0-4
Loose	4-10
Compact	10-30
Dense	30-50
Very Dense	>50

Cohesive Soils

Consistency	Undrained Shear Strength c_u (kPa)	Approximate SPT (N) Value
Very Soft	0-12	0-2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

Standard Penetration Resistance ("N" value)
The number of blows by a 63.6kg hammer dropped 760 mm to drive a 50 mm diameter open sampler attached to "A" drill rods for a distance of 300 mm after an initial penetration of 150 mm.

[1] "Unified Soil Classification System", Technical Memorandum 36-357 prepared by Waterways Experiment Station, Vicksburg, Mississippi, Corps of Engineers, U.S. Army. Vol. 1 March 1953.

[2] "Canadian Foundation Engineering Manual", 3rd Edition, Canadian Geotechnical Society, 1992.

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISIONS			SYMBOLS: USCS	SYMBOLS: GRAPH	SYMBOLS: COLOUR	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75um)	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75mm	CLEAN GRAVELS (TRACE OR NO FINES)	GW		RED	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u=D_{60}/D_{10}$ >4; $C_c=(D_{30})^2/(D_{10}xD_{60})$ = 1 to 3
			GP		RED	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY GRAVELS (WITH SOME OR MORE FINES)	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR PI LESS THAN 4
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE "A" LINE AND PI MORE THAN 7
	SANDS MORE THAN HALF THE COARSE FRACTION SMALLER THAN 4.75mm	CLEAN SANDS (TRACE OR NO FINES)	SW		RED	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u=D_{60}/D_{10}$ >6; $C_c=(D_{30})^2/(D_{10}xD_{60})$ = 1 to 3
			SP		RED	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY SANDS (WITH SOME OR MORE FINES)	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR PI LESS THAN 4
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE "A" LINE AND PI MORE THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75um)	SILTS BELOW "A" LINE NEGLIGIBLE ORGANIC CONTENT	W_L < 50%	ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)
		W_L > 50%	MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SAND OR SILTY SOILS	
	CLAYS ABOVE "A" LINE NEGLIGIBLE ORGANIC CONTENT	W_L < 30%	CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS	
		30% < W_L < 50%	CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	
		W_L > 50%	CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC SILTS & CLAYS BELOW "A" LINE	W_L < 50%	OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G. SF IS A MIXTURE OF SAND WITH SILT OR CLAY
		W_L > 50%	OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	
HIGHLY ORGANIC SOILS			PT		ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR, AND OFTEN FIBROUS TEXTURE

SPECIAL SYMBOLS

LIMESTONE		OILSAND	
SANDSTONE		SHALE	
SILTSTONE		FILL (UNDIFFERENTIATED)	

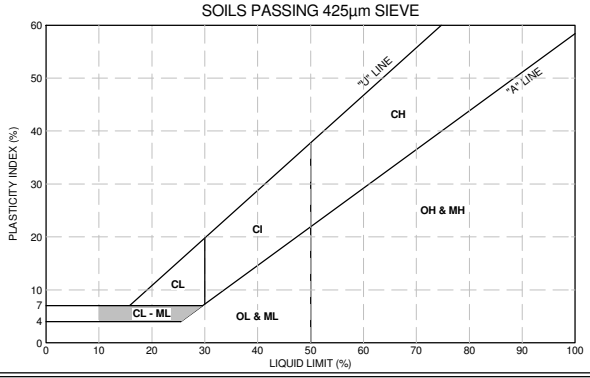
SOIL COMPONENTS

FRACTION	U.S. STANDARD METRIC SIEVE SIZE		DEFINING RANGES OF PERCENT BY WEIGHT OF MINOR COMPONENTS	
GRAVEL	PASSING	RETAINED	PERCENT	DESCRIPTOR
COARSE	76mm	19mm		
FINE	19mm	4.75mm	35 - 50	AND
SAND				
COARSE	4.75mm	2.00mm	30 - 35	Y / EY
MEDIUM	2.00mm	425µm	10 - 20	SOME
FINE	425µm	75µm		
FINES (SILT OR CLAY BASED ON PLASTICITY)	75µm		1 - 10	TRACE

OVERSIZED MATERIAL

ROUNDED OR SUBROUNDED:	NOT ROUNDED:
COBBLES 76mm to 200mm BOULDERS > 200mm	ROCK FRAGMENTS ? 76mm ROCKS > 0.76 CUBIC METRE IN VOLUME

PLASTICITY CHART FOR SOILS PASSING 425µm SIEVE



NOTES:

1. ALL SIEVE SIZES MENTIONED ARE U.S. STANDARD ASTM E.11.
2. COARSE GRAINED SOILS WITH TRACE TO SOME FINES GIVEN COMBINED GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH TRACE TO SOME CLAY.
3. DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

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PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH01**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
		CH	CLAY (FILL) - silty, trace gravel, high plastic, frozen, dark grey		2			
		CH	CLAY - silty, high plastic, frozen to 1.7m, grey		3			
1					4			1
					5			
					6			
		ML	SILT - trace clay, trace sand, low plastic, moist, soft, light brown		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

wood.

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LOGGED BY: CM	COMPLETION DEPTH: 2 m
REVIEWED BY: JW	COMPLETION DATE: 1 February 2019
Figure No.	Sheet 1 of 1

WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH02**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (300 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.6m, frequent silt inclusions		3			
1		CH			4			1
			- below 1.4m, brown mottled grey		5			
			- below 1.5m, grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

wood.

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LOGGED BY: CM	COMPLETION DEPTH: 2 m
REVIEWED BY: JW	COMPLETION DATE: 9 February 2019
Figure No.	Sheet 1 of 1

WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH03**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (390 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
					2			
			CLAY - silty, high plastic, frozen to 1.5m, dark grey		3			
1		CH			4			1
					5			
			- from 1.5m to 2.0m, stiff, moist		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH04**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (175 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, high plastic, frozen to 2.0m, dark grey		2			
					3			
			- below 0.8m, grey, occasional silt		4			
1		CH	- below 1.1m, brown mottled grey		5			1
					6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE					2
3			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH05**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, sandy, high plastic, frozen to 1.5m, dark grey, occasional organic inclusions		2		Particle Size Analysis - Sample 2 @ 0.2m: Gravel= 0.0% Sand= 23.1% Silt= 43.8% Clay= 33.0%	
			- below 0.5m, trace sand, grey		3			
1		CH			4			1
					5			
			- below 1.5m, stiff, moist, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH06**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (175 mm thick) - - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
		CH	CLAY (FILL) - silty, trace sand, high plastic, frozen, dark grey		2			
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey, occasional organic inclusions		3			
			- below 0.8m, no organic inclusions		4			
1		CH	- below 1.2m, trace sand, grey		5			1
			- below 1.4m, no sand, frequent silt inclusions, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH07**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, high plastic, frozen to 2.0m, grey		2			
					3			
					4			
1		CH			5			1
			- below 1.5m, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH08**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (175 mm thick) - - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			SILT (FILL) - clayey, trace sand, medium plastic, frozen, dark grey		2			
		ML-CI	- below 0.5m, abundant silt inclusions		3		Particle Size Analysis - Sample 3 @ 0.5m: Sand= 7.2% Silt= 51.3% Clay= 39.5%	
1			CLAY - silty, high plastic, frozen to 2.0m, dark grey, frequent organic inclusions		4			1
			- below 1.1m, grey, frequently silt inclusions, no organic inclusions		5			
		CH	- below 1.4m, brown mottled grey		6			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand		7			2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH09**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (100 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, high plastic, frozen to 2.0m, grey to brown		2			
			- below 0.5m, grey		3			
1		CH			4			1
					5			
			- below 1.7m, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH10**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, high plastic, frozen to 2.0m, grey to brown		2			
					3			
			- below 1.8m, frequent silt inclusions		4			
1		CH						1
					5			
			- below 4.3m, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE					2
			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH11**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 1.5m, dark grey		2			
					3			
					4			
1		CH	- below 1.1m, no sand, greyish brown		5			1
			- below 1.5m, very stiff, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH12**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (250 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
					3			
			- below 0.8m, grey, occasional sulphate inclusions, occasional silt inclusions		4			
1		CH			5			1
			- below 1.4m, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH13**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
		CH	CLAY (FILL) - silty, trace sand, trace gravel, high plastic, occasional gravel layers (~50mm to 100mm thick)		2			
					3			
			CLAY - silty, high plastic, frozen to 1.7m, grey		4			
1		CH			5			1
		ML	SILT - trace clay, trace sand, low plastic, very moist, soft, light brown		6			
		CH	CLAY - silty, high plastic, moist, stiff, brown mottled grey		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH14**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (275 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.5m, grey, occasional silt inclusions		3			
1		CH	- below 0.9m, grey mottled brown		4			1
					5			
					6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH15**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed limestone, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace gravel, trace sand, high plastic, frozen to 1.7m, dark grey		2			
			- below 0.5m, no gravel, grey		3			
1		CH			4			1
					5			
					6			
			- below 1.7m, brown mottled grey, moist, stiff		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH16**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (225 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.5m, grey, occasional silt inclusions		3			
1		CH			4			1
					5			
			- below 1.4m, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE					2
3			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH17**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY (FILL) - silty, trace sand, trace gravel, high plastic, frozen to 1.7m, dark grey		2			
					3			
		CH	- below 0.9m, dark grey with large brown pockets (~50mm diameter)		4			
1					5			1
					6			
		ML	SILT - some clay, trace sand, low plastic, very moist, soft, light brown		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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REVIEWED BY: JW	COMPLETION DATE: 1 February 2019
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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH18**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
		CH	CLAY (FILL) - silty, trace sand, frozen, dark grey		2			
		MI	SILT - clayey, trace sand, trace clay, medium plastic, frozen, light brown		3			
1					4		Particle Size Analysis - Sample 4 @ 0.8m: Sand= 5.6% Silt= 57.3% Clay= 36.5%	1
					5		Particle Size Analysis - Sample 5 @ 1.1m: Sand= 5.8% Silt= 58.8% Clay= 35.2%	
		CH	CLAY - silty, high plastic, frozen to 2.0m, brown mottled grey, frequent silt inclusions		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH19**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, trace gravel, high plastic, frozen to 1.7m, dark grey		2			
					3			
			- below 0.8m, grey, no sand, no gravel		4			
1		CH			5			1
					6			
			- below 1.7m, stiff, moist		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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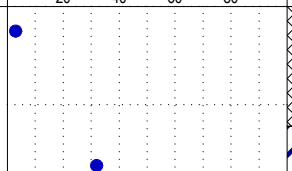
WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH20**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (250 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			
		CH	CLAY - silty, trace sand, high plastic, frozen, dark grey		2			
		MI	SILT - clayey, trace sand, medium plastic, frozen, light brown		3			
					4		Particle Size Analysis - Sample 4 @ 0.8m: Sand= 5.0% Silt= 58.3% Clay= 36.4%	
1								1
					5			
		CH	CLAY - silty, high plastic, frozen to 2.0m, brown mottled grey, frequent silt inclusions		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH21**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (50 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY (FILL) - silty, trace sand, high plastic, frozen, dark grey		2			
		CH	- at 0.5m, gravel layer (~50mm thick)		3			
1			CLAY - silty, high plastic, frozen to 1.5m, grey		4			1
		CH	- below 1.5m, moist, stiff		5			
					6			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE		7			2
3			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH22**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (250 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey - from 0.3m to 0.5m, frequent organic inclusions		2			
					3			
1		CH	- below 0.9m, grey, frequent oxidation inclusions from silt		4			1
			- below 1.2m, brown mottled grey		5			
					6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH23**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, high plastic, frozen to 1.5m, dark grey		2			
					3			
			- below 0.8m, grey clay inclusions (~50mm diameter)		4			
1		CH						1
			- below 1.2m, grey		5			
			- below 1.5m, moist, stiff		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH24**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.5m, grey, frequent silt inclusions		3			
1		CH	- below 1.1m, brown mottled grey		4			1
					5			
					6			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE		7			2
3			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH25**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 1.7m, dark grey		2			
					3			
			- below 0.8m, grey, no sand		4			
1		CH			5			1
					6			
			- below 1.7m, brown mottled grey, moist, stiff		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH26**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (125 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen, dark grey		2			
		CH	- below 0.6m, brown, frequent silt inclusions		3			
1					4			1
		ML	SILT - trace sand, trace clay, low plastic, frozen, light brown		5			
					6			
		CH	CLAY - silty, high plastic, frozen to 2.0m, brown mottled grey, frequent silt inclusions		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:03 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH27**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (225 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
		CH	CLAY (FILL) - silty, trace sand, high plastic, frozen, dark grey		2			
			CLAY - silty, trace sand, high plastic, frozen to 1.7m, dark grey		3			
			- below 0.8m, no sand		4			
1			- below 0.9m, grey					1
		CH			5			
					6			
			- below 1.7m, moist, stiff		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH28**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (125 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.6m, grey, occasional silt inclusions		3			
1		CH			4			1
			- below 1.4m, brown mottled grey		5			
					6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH29**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (225 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
		CH	CLAY (FILL) - silty, some sand, some gravel, high plastic, frozen, dark grey		2			
		MI	SILT - clayey, trace sand, medium plastic, frozen, light greyish brown		3		Particle Size Analysis - Sample 3 @ 0.5m: Sand= 13.2% Silt= 51.9% Clay= 34.6%	
1		CL-ML	SILT - clayey, some sand, low plastic, frozen, light greyish brown		4		Particle Size Analysis - Sample 4 @ 0.9m: Sand= 19.3% Silt= 57.8% Clay= 22.8%	1
		CH	CLAY - silty, high plastic, frozen to 1.7m, grey to brown, frequent silt lenses		5			
			- below 1.7m, moist, stiff		6			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand		7			2
3								

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REVIEWED BY: JW	COMPLETION DATE: 1 February 2019
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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH30**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
		CH	CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.5m, grey, occasional silt inclusions		3			
1					4			1
			- below 1.2m, brown mottled grey		5			
		ML	SILT - trace clay, trace sand, low plastic, very moist, soft, light brown		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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REVIEWED BY: JW	COMPLETION DATE: 9 February 2019
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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH31**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 1.7m, dark grey		2			
			- below 0.4m, occasional organic inclusions		3			
1		CH			4			1
					5			
			- below 1.5m, grey, no sand		6			
			- below 1.7m, stiff, moist, brown mottled grey		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH32**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.6m, grey, trace silt inclusions		3			
1		CH			4			1
			- below 1.4m, brown mottled grey		5			
					6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE					2
			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH33**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 1.7m, dark grey		2			
			- below 0.6m, grey, no sand		3			
1		CH			4			1
					5			
					6			
			- below 1.7m, brown mottled grey, stiff, moist		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH34**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
			- below 0.5m, grey, occasional silt inclusions		3			
1		CH			4			1
			- below 1.2m, brown mottled grey		5			
					6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH35**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (200 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 1.7m, brown		2			
			- below 0.5m, grey					
			- below 0.6m, dark grey		3			
			- below 0.9m, grey		4			
1		CH			5			1
			- below 1.5m, brown mottled grey		6			
			- below 1.7m, stiff, moist		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH36**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | 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			GP	GRANULAR FILL (100 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			
				CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
				- below 0.6m, grey, occasional silt inclusions		3			
				- below 0.9m, occasional sulphate inclusions		4			
1			CH	- below 1.1m, brown mottled grey					1
						5			
						6			
						7			
2				TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3									

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PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH37**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			
			CLAY - silty, trace sand, high plastic, frozen to 1.7m, dark grey		2			
			- below 0.5m, brown		3			
1		CH			4			1
			- below 1.2m, brown mottled grey		5			
					6			
			- below 1.7m, some silt, stiff, moist		7		Particle Size Analysis - Sample 7 @ 1.7m: Gravel= 0.0% Sand= 1.2% Silt= 22.4% Clay= 76.5%	
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH38**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
					3			
		CH			4			
1			- below 1.1m, brown mottled grey		5			1
					6			
		ML	SILT - trace sand, trace clay, low plastic, moist, soft, light brown		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH39**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (125 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, high plastic, frozen 2.0m, dark grey		2			
					3			
					4			
1		CH			5			1
			- below 1.4m, grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE					2
			Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					
3								

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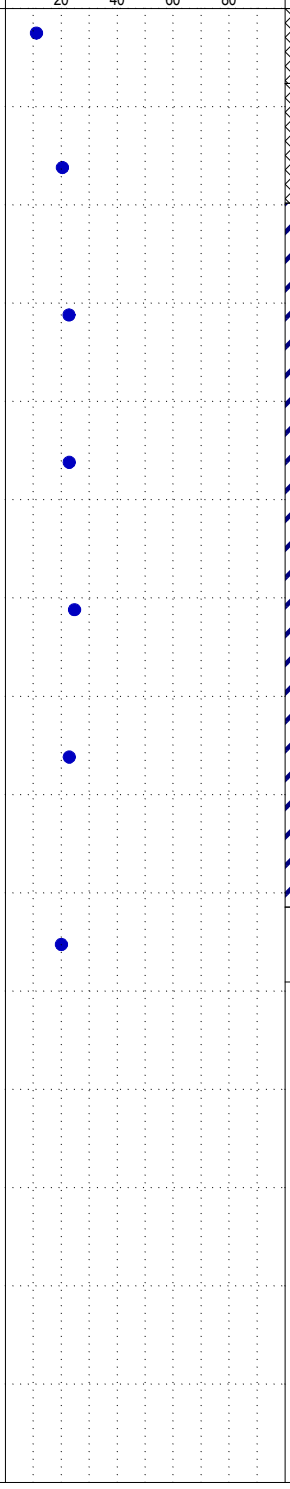
WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH40**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
		CH	CLAY (FILL) - silty, trace sand, trace gravel, high plastic, frozen, dark grey		2			
		CH	CLAY - silty, high plastic, frozen, grey		3			
1		CH	- below 0.9m, brown mottled grey		4			1
		CH			5			
		CH			6			
		ML	SILT - trace clay, trace sand, low plastic, frozen to 2.0m, light brown		7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH41**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick) - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 1.5m, dark grey		2			
			- below 0.5m, grey		3			
		CH			4			
1					5			1
		ML	SILT - trace clay, trace sand, low plastic, very moist to wet, soft, light brown		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

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WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)

PROJECT: City of Winnipeg Waverley Street Investigation	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: **TH42**
CLIENT: Dillon Consulting Limited	DRILL RIG: Mobile B40LX Truck Mounted	PROJECT No: WX18717
LOCATION: Waverley Street	DRILL METHOD: 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

☒ POCKET PENETROMETER (kPa) ☒ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

DEPTH (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0		GP	GRANULAR FILL (150 mm thick - 20 mm crushed granular A-Base, poorly graded, fine grained, frozen, light brown		1			0
			CLAY - silty, trace sand, high plastic, frozen to 2.0m, dark grey		2			
					3			
			- below 0.8m, grey, occasional silt inclusions		4			
1		CH			5			1
			- below 1.5m, brown mottled grey		6			
					7			
2			TEST HOLE TERMINATED AT 2.0m BELOW EXISTING GRADE Notes: - No sloughing was observed during drilling. - No seepage was observed during drilling. - Test hole remained open to 2.0m below grade prior to backfilling. - Test hole was backfilled with auger cuttings, bentonite, and sand					2
3								

wood.

Wood Environment & Infrastructure Solutions
a division of Wood Canada Limited

LOGGED BY: CM	COMPLETION DEPTH: 2 m
REVIEWED BY: JW	COMPLETION DATE: 9 February 2019
Figure No.	Sheet 1 of 1

WX18717 DILLON CONSTRUCTION - CITY OF WINNIPEG STREET INVESTIGATION - WAVERLY STREET.GPJ 19/03/04 03:04 PM (WPG - GEOTECH LOG 1)