

APPENDIX 'A'

GEOTECHNICAL REPORT

CITY OF WINNIPEG

2018 ALLEY RENEWALS - CONTRACT 2 GEOTECHNICAL REPORT

MARCH 14, 2018





2018 ALLEY RENEWALS
- CONTRACT 2
GEOTECHNICAL REPORT
CITY OF WINNIPEG

FINAL REPORT

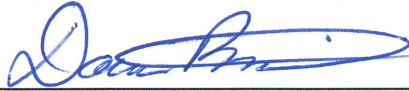
PROJECT NO.: 17M-02283-00
DATE: MARCH 14, 2018

WSP
1600 BUFFALO PLACE
WINNIPEG (MANITOBA) R3T 6B8
CANADA

T: +1 204 477-6650
F: +1 204 474-2864
WSP.COM

SIGNATURES

PREPARED BY



Dana Bredin, P.Eng.
Geotechnical / Civil Engineer



REVIEWED BY



Silvestre Urbano, P.Eng.
Senior Geotechnical Engineer



This report was prepared by WSP Canada Inc. for the account of City of Winnipeg, in accordance with the professional services agreement. The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects WSP Canada Inc.'s best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. WSP Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

The original of the technology-based document sent herewith has been authenticated and will be retained by WSP for a minimum of ten years. Since the file transmitted is now out of WSP's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.



TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	SUB-SURFACE INVESTIGATION AND TESTING.....	1
3	TESTHOLE SUMMARY TABLES	2
4	CLOSURE	6

TABLES

TABLE 3-1 – ARLINGTON/ALVERSTONE ALLEY	2
TABLE 3-2 – SEMPLE/KILBRIDE ALLEY	2
TABLE 3-3 – ROYAL/PARTRIDGE ALLEY	3
TABLE 3-4 – BEVERLEY/TORONTO ALLEY	3
TABLE 3-5 – LIPTON/BANNING ALLEY	4
TABLE 3-6 – SHERBURN/INGERSOLL.....	5

APPENDICES

A	ARLINGTON / ALVERSTONE ALLEY
B	SEMPLE / KILBRIDE ALLEY
C	PARTRIDGE / ROYAL ALLEY
D	BEVERLEY / TORONTO ALLEY
E	LIPTON / BANNING ALLEY
F	SHERBURN / INGERSOLL ALLEY

1 INTRODUCTION

A geotechnical investigation was conducted by WSP Canada Inc. for the proposed 2018 Alley Renewals – Contract 2 Project in Winnipeg, Manitoba. The purpose of this investigation was to assess the general subsurface conditions with respect to identifying the existing pavement structure and the underlying soil profile.

Six alleys were cored and drilled, which includes the following alleys:

- A. Alleys bounded by Arlington St and Alverstone St, Ellice Ave and Sargent Ave
- B. Alleys bounded by Semple Ave and Kilbride Ave, Main St and Aikins St
- C. West/east alley between Royal Ave and Partridge Ave from Powers St to Andrews St
- D. North/south alley between Beverley St and Toronto St from Sargent Ave to Wellington Ave
- E. North/south alley between Lipton St and Banning St from Sargent Ave to Wellington Ave
- F. North/south alley between Sherburn St and Ingersoll St from Wellington Ave to Yarwood Ave

2 SUB-SURFACE INVESTIGATION AND TESTING

The field investigation was undertaken on February 1, 2018 and was completed on February 15, 2018. A total of 21 test holes and cores were completed by Maple Leaf Drilling. The test holes were drilled to a depth of 3.05 m below the road surface using a truck-mounted B-40 rig also equipped with a 125 mm auger. The pavement was cored using a 150 mm diameter coring press. All test holes were backfilled with auger cuttings and bentonite after the completion of the drilling and patched with either cold mix asphalt or quick setting concrete. Testhole locations are noted on the testhole logs and within the test hole summary tables.

The soils encountered were visually classified to the full extent of the test hole. Representative soil samples were recovered at regular intervals, every 0.3 m to 2.1 m as well as one sample at 3.0 m. All of the soil samples were tested for their moisture contents and selected soil samples were submitted for grain size analysis (minimum one per alley). The pavement cores were measured for their thickness and each core was photographed. No groundwater seepage or sloughing was encountered in the test holes during drilling.

The photos of the pavement cores, detailed descriptions of the soil profiles for each test hole, the material test results and the testholes maps are included in Appendices, organized by alley.

3 TESTHOLE SUMMARY TABLES

Table 3-1 – Arlington/Alverstone Alley

TEST HOLE NO.	TESTHOLE LOCATION	PAVEMENT SURFACE		PAVEMENT STRUCTURE MATERIAL		SOIL DESCRIPTION	BOREHOLE DEPTH (m)	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
A-TH1	631463.8 m E 5528426.3 m N Centre of Alley behind 546 Arlington St	Concrete	180	Clay	1920	Clay/Silt/Clay	3.05	8
A-TH2	631476.3 m E 5528535.1 m N Centre of Alley behind 576 Arlington St	Concrete	180	Fill (clayey)	720	Fill/Clay/Silt/Clay	3.05	8
A-TH3	631478.4 m E 5528620.6 m N Centre of Alley behind 606 Arlington St	Asphalt & Concrete (deteriorated)	50 & 200	Clay	200	Clay/Silt/Clay	3.05	8
A-TH4	631480.9 m E 5528712.3 m N Centre of Alley behind 636 Arlington St	Asphalt	230	Fill (clayey)	220	Fill/Silt/Clay	3.05	8

Table 3-2 – Semple/Kilbride Alley

TEST HOLE NO.	TESTHOLE LOCATION	PAVEMENT SURFACE		PAVEMENT STRUCTURE MATERIAL		SOIL DESCRIPTION	BOREHOLE DEPTH (m)	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
B-TH1	635066.5 m E 5533448.0 m N Centre of Alley behind 214 Semple Ave	Concrete	125	Clay	1675	Clay/Silt/Clay	3.05	8
B-TH2	635002.8 m E 5533478.3 m N Centre of Alley behind 234 Semple Ave	Concrete	160	Fill (clayey)	440	Fill/Clay/Silt/Clay	3.05	8

B-TH3	634940.6 m E 5533505.7 m N South side of Alley behind 252 Semple Ave	Concrete	140	Clay	1060	Clay/Silt/Clay	3.05	8
-------	---	----------	-----	------	------	----------------	------	---

Table 3-3 – Royal/Partridge Alley

TEST HOLE NO.	TESTHOLE LOCATION	PAVEMENT SURFACE		PAVEMENT STRUCTURE MATERIAL		SOIL DESCRIPTION	BOREHOLE DEPTH (m)	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
C-TH1	634677.5 m E 5533993.6 m N Centre of Alley behind 369 Royal Ave	Concrete	125	Clay	1225	Clay/Silt/Clay	3.05	8
C-TH2	634613.8 m E 5534023.3 m N Centre of Alley behind 387 Royal Ave	Concrete	150	Fill (clayey)	300	Fill/Clay/Silt/Clay	3.05	8
C-TH3	634549.2 m E 5534053.9 m N Centre of Alley behind 405 Royal Ave	Concrete	140	Granular fill (crushed limestone)	160	Fill/Clay/Silt/Clay	3.05	8

Table 3-4 – Beverley/Toronto Alley

TEST HOLE NO.	TESTHOLE LOCATION	PAVEMENT SURFACE		PAVEMENT STRUCTURE MATERIAL		SOIL DESCRIPTION	BOREHOLE DEPTH (m)	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
D-TH1	631820.3 m E 5528794.7 m N Centre of Alley behind 595 Beverley St	Asphalt & Concrete	100 & 125	Fill (sandy/silty)	375	Fill/Silt/Clay	3.05	8
D-TH2	631824.0 m E 5528899.0 m N Centre of Alley behind 635 Beverley St	Asphalt	100	Fill (sandy/silty)	350	Fill/Clay/Silt/Clay	3.05	8

D-TH3	631826.1 m E 5529003.0 m N Centre of Alley behind 665 Beverley St	Asphalt & Concrete (deteriorated)	50 & 150	Fill (sandy/silty)	150	Fill/Clay/Silt/Clay	3.05	8
D-TH4	631829.3 m E 5529108.2 m N Centre of Alley behind 698 Toronto St	Asphalt & Concrete (deteriorated)	30 & 90	Fill (sandy/silty)	480	Fill/Clay/Silt/Clay	3.05	8

Table 3-5 – Lipton/Banning Alley

TEST HOLE NO.	TESTHOLE LOCATION	PAVEMENT SURFACE		PAVEMENT STRUCTURE MATERIAL		SOIL DESCRIPTION	BOREHOLE DEPTH (m)	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
E-TH1	631263.1 m E 5528811.5 m N Centre of Alley beside 857 Sargent Ave	Asphalt	30	Granular Fill (crushed limestone)	200	Fill/Clay/Silt/Clay	3.05	8
E-TH1	631265.9 m E 5528914.4 m N Centre of Alley behind 741 Lipton St	Asphalt	30	Granular Fill (crushed limestone)	200	Fill/Clay/Silt/Clay	3.05	8
E-TH3	631269.1 m E 5529018.0 m N Centre of Alley behind 765 Lipton St	Asphalt	30	Granular Fill (crushed limestone)	230	Fill/Clay/Silt/Clay	3.05	8
E-TH4	631271.8 m E 5529130.4 m N West side of Alley behind 801 Lipton St	Asphalt	50	Granular Fill (crushed limestone) & Concrete (intact)	150 & 50	Fill/Clay/Silt/Clay	3.05	8

Table 3-6 – Sherburn/Ingersoll

TEST HOLE NO.	TESTHOLE LOCATION	PAVEMENT SURFACE		PAVEMENT STRUCTURE MATERIAL		SOIL DESCRIPTION	BOREHOLE DEPTH (m)	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
F-TH1	631112.0 m E 5529191.3 m N Centre of Alley behind 1044 Sherburn St	Asphalt & Concrete (broken)	30 & 170	Fill (clayey)	1000	Fill/Silt/Clay	3.05	8
F-TH1	631113.0 m E 5529256.7 m N Centre of Alley behind 1061 Sherburn St	Asphalt & Concrete (deteriorated)	30 & 70	Fill (clayey)	200	Fill/Clay/Silt/Clay	3.05	8
F-TH3	631115.0 m E 5529369.7 m N West side of Alley behind 1089 Sherburn St	Concrete	220	Fill (clayey)	680	Fill/Clay/Silt/Clay	3.05	8

4 CLOSURE

The findings and recommendations provided in this report were prepared by WSP Canada Inc. (the Consultant) in accordance with generally accepted professional engineering principles and practices. The recommendations are based on the results of field and laboratory investigations and are reflective only of the actual test hole(s) and/or excavation(s) examined. If conditions encountered during construction appear to be different than those shown by the test hole(s) and/or excavation(s) at this site, the Consultant should be notified immediately in order that the recommendations can be reviewed and modified as necessary to address actual site conditions.

This report is limited in scope to only those items that are specifically referenced in this report. There may be existing conditions that were not recorded in this report. Such conditions were not apparent to the Consultant due to the limitations imposed by the scope of work. The Consultant, therefore, accepts no liability for any costs incurred by the Client for subsequent discovery, manifestation or rectification of such conditions.

This report is intended solely for the Client named as a general indication of the visible or reported physical condition of the items addressed in the report at the time of the geotechnical investigation. The material in this report reflects the Consultant's best judgment in light of the information available to it at the time of preparation.

This report and the information and data contained herein are to be treated as confidential and may be used only by the Client and its officers and employees in relation to the specific project that it was prepared for. Any use a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The report has been written to be read in its entirety, do not use any part of this report as a separate entity.

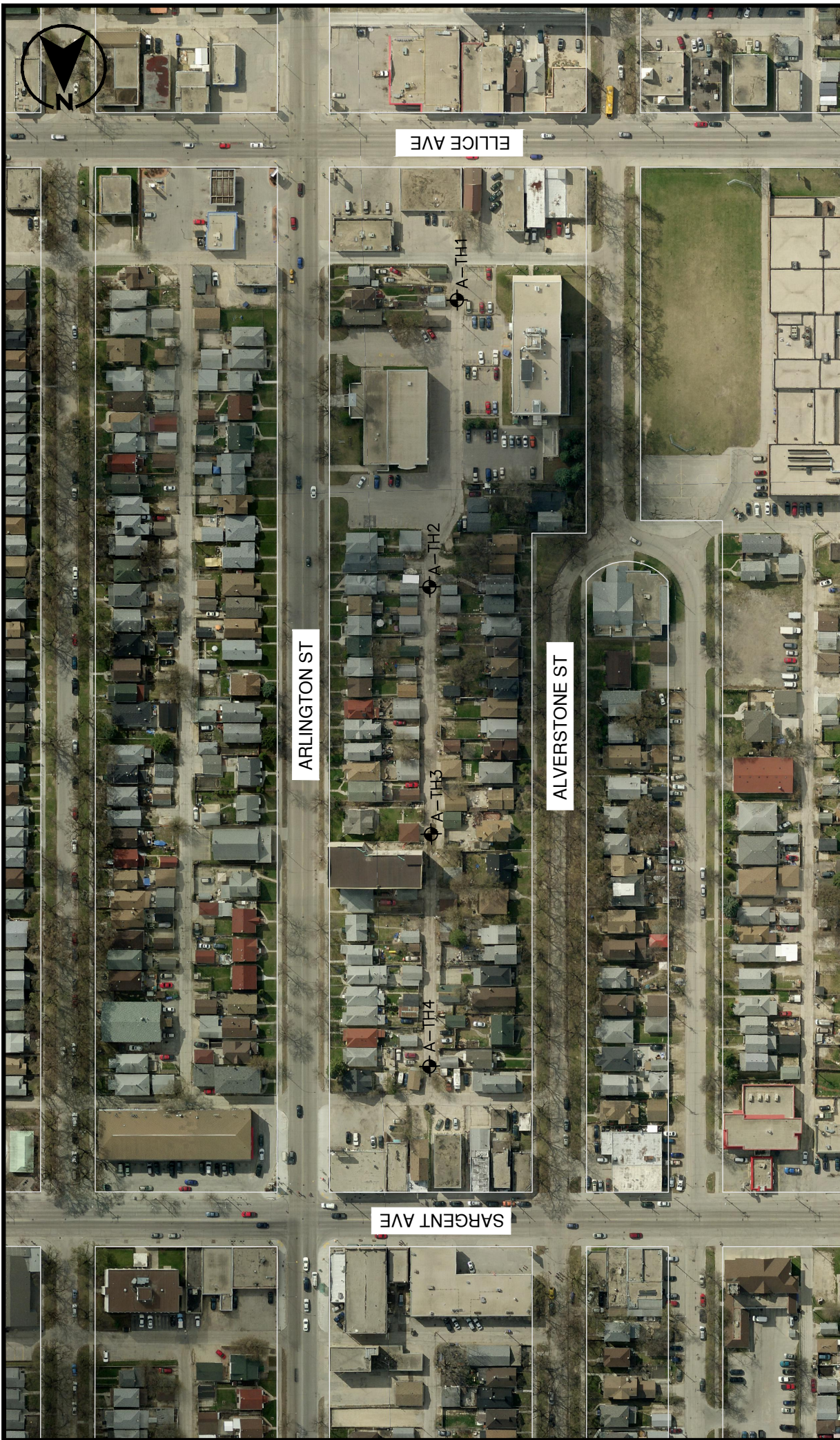
All files, notes, source data, test results and master files are retained by the Consultant and remain the property of the Consultant.

APPENDIX

A

ARLINGTON / ALVERSTONE
ALLEY





1600 BUFFALO PLACE
 WINNEPEG, MANITOBA
 CANADA R3T 6B8
 PHONE: 204-477-6650 FAX: 204-474-2864
 WWW.WSPGROUP.COM

TITLE:

2018 ALLEY RENEWALS – CONTRACT 2
 ARLINGTON/ALVERSTON/SARGENT/ELLICE ALLEY
 TESTHOLE LOCATIONS

SCALE:

1:2000

DATE:

2018/03/14

PROJECT NO:

17M-02283-00

REVISION:

DRAWING NO:

GT-A



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/1/18 COMPLETED 2/1/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Silvestre Urbano CHECKED BY Dana Bredin
 NOTES CL of alley: 631463.8 m E, 5528426.3 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Arlington/Alverstone Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ARLINGTON.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20 40 60 80	20 40 60 80
									PL	MC
									20 40 60 80	20 40 60 80
									PP	Su (kPa)
									100 200 300 400	Field Vane *
				CONCRETE - 180 mm thick, intact						
0.5				CLAY (CH) - Grey-black, fissured	Hand GB 1			47		●
				- Brown below 0.75 m	Hand GB 2			36		●
1.0				- Frost to 1.2 m - Stiff, moist below 1.2 m	Hand GB 3			35		●
					Hand GB 4		75	35	□	●
					Hand GB 5			34		●
2.0					Hand GB 6			36		●
				SILT (ML) - Tan-brown, soft, moist	Hand GB 7			23		●
2.5				CLAY (CH) - Brown, stiff, moist, fissured						
3.0					Hand GB 10		75	48	□	●

- Testhole backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
PROJECT NUMBER 17M-02283-00
DATE STARTED 2/1/18 **COMPLETED** 2/1/18
DRILLING CONTRACTOR Maple Leaf Drilling
DRILLING METHOD Solid Stem Auger - B40 Truck Rig
LOGGED BY Silvestre Urbano **CHECKED BY** Dana Bredin
NOTES CL of alley: 631476.3 m E, 5528535.1m N

PROJECT NAME 2018 Alley Renewals - Contract 2
PROJECT LOCATION Arlington/Alverstone Alley
GROUND ELEVATION _____ **HOLE SIZE** 125 mm
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ARLINGTON.GPJ - GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									20	40	60	80
									20	40	60	80
									PP	Su (kPa)	Field Vane	*
									100	200	300	400
				CONCRETE - 180 mm thick, intact								
0.5				FILL - Clayey, mixed brown and black	Hand GB 1			40				
					Hand GB 2			27				
1.0				CLAY (CH) - Brown, fissured	Hand GB 3			27				
1.5				SILT (ML) - Tan-brown - Frost to 1.35 m - Soft, moist below 1.35 m	Hand GB 4			27				
					Hand GB 5			23				
2.0				CLAY (CH) - Brown, stiff, moist, fissured	Hand GB 6		100	34				
					Hand GB 7			44				
3.0					Hand GB 10		60	54				

- Testhole backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
PROJECT NUMBER 17M-02283-00
DATE STARTED 2/1/18 **COMPLETED** 2/1/18
DRILLING CONTRACTOR Maple Leaf Drilling
DRILLING METHOD Solid Stem Auger - B40 Truck Rig
LOGGED BY Silvestre Urbano **CHECKED BY** Dana Bredin
NOTES CL of alley: 631478.4 m E, 5528620.6 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
PROJECT LOCATION Arlington/Alverstone Alley
GROUND ELEVATION _____ **HOLE SIZE** 125 mm
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ARLINGTON.GPJ_GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20	40 60 80
0.0 - 0.1				ASPHALT - 50 mm thick						
0.1 - 0.2				CONCRETE - 200 mm thick, deteriorated (no core recovered)						
0.2 - 0.3				CLAY (CH) - Grey-black, frozen	Hand GB 1			34		
0.3 - 0.4				SILT (ML) - Tan-brown, clayey	Hand GB 2			26		
0.4 - 0.9				- 87.5% silt; 8.7% clay; 3.8% sand at 0.9 m	Hand GB 3			21		
0.9 - 1.35				- Frost to 1.35 m	Hand GB 4			20		
1.35 - 1.5					Hand GB 5			17		
1.5 - 2.0				CLAY (CH) - Brown, stiff, moist, fissured	Hand GB 6		75	40		
2.0 - 2.4					Hand GB 7			48		
2.4 - 3.0				- Mottled grey and brown below 2.4 m						
3.0 - 3.1					Hand GB 10		50	55		

- Testhole backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
PROJECT NUMBER 17M-02283-00
DATE STARTED 2/1/18 **COMPLETED** 2/1/18
DRILLING CONTRACTOR Maple Leaf Drilling
DRILLING METHOD Solid Stem Auger - B40 Truck Rig
LOGGED BY Silvestre Urbano **CHECKED BY** Dana Bredin
NOTES CL of alley: 631480.9 m E, 5528712.3 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
PROJECT LOCATION Arlington/Alverstone Alley
GROUND ELEVATION _____ **HOLE SIZE** 125 mm
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ARLINGTON.GPJ_GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
0.0 - 0.1				ASPHALT - 140 mm thick layer, followed by rebar and additional 90 mm thick layer										
0.1 - 0.5				FILL - Clayey, grey-black mixed with brown	Hand icon GB 1			26						
0.5 - 1.5				SILT (ML) - Tan-brown, clayey	Hand icon GB 2			28						
1.0 - 1.5					Hand icon GB 3			22						
1.5 - 2.0				- Frost to 1.5 m - Soft, moist below 1.5 m	Hand icon GB 4 Hand icon GB 5			22 22						
2.0 - 2.5				CLAY (CH) - Brown, stiff, moist, fissured	Hand icon GB 6 Hand icon GB 7		75	26 36						
2.5 - 3.0					Hand icon GB 10		60	41						

- Testhole backfilled with auger cuttings and patched with asphalt

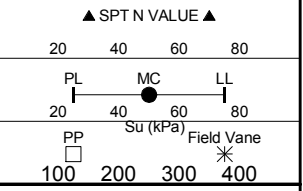




Figure 1 – TH1 Arlington/Alverstone



Figure 2 – TH2 Arlington/Alverstone

Core for TH3 was not recovered, asphalt/concrete was deteriorated.



Figure 3 - TH4 Arlington/Alverstone

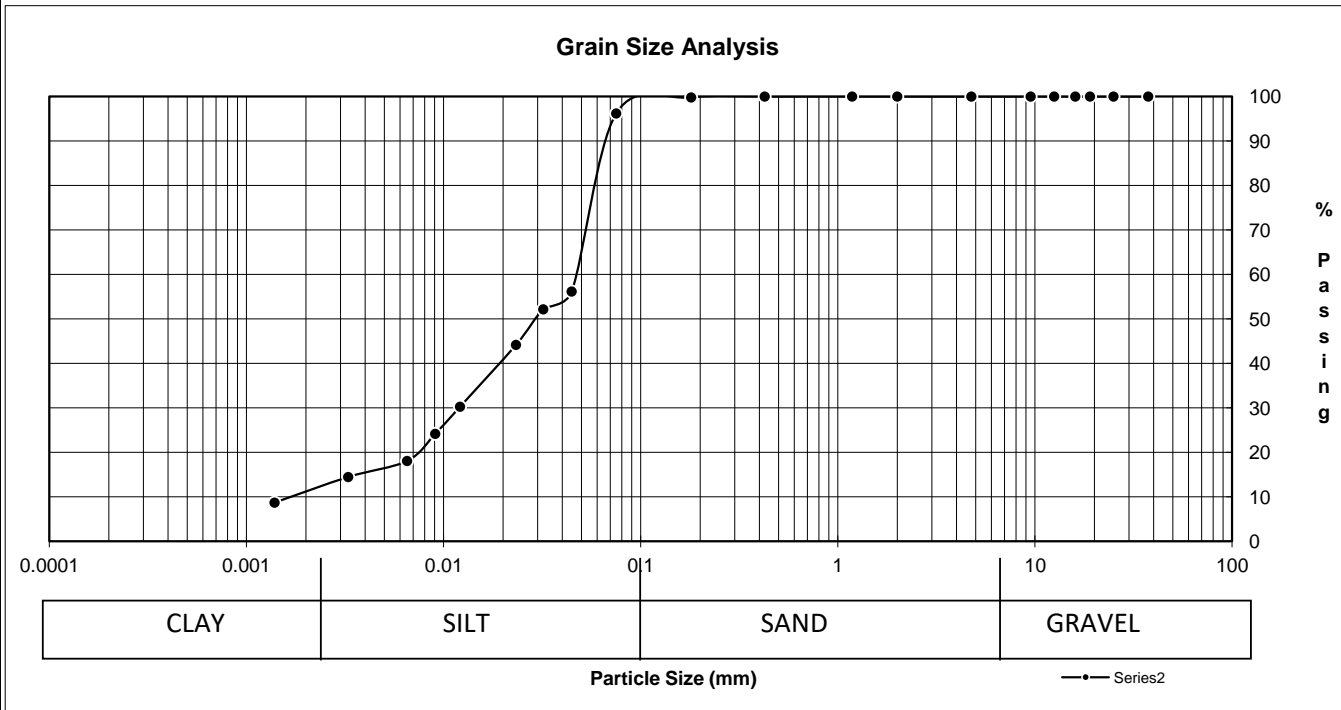
PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT: WSP Canada Group Limited
 Suite 111-93 Lombard Avenue
 Winnipeg, MB R3B 3B1
ATTENTION: Silvestre Urbano
PROJECT: Ellice-Sargent/Arlington-Burnell

PROJECT NO. 103-1803
 3

Date Sampled:	02-Feb-18	Date Received:	02-Feb-18	Sieve Analysis	Hydrometer Analysis
Sampled By:	Client	Date Tested:	08-Feb-18	Sieve (mm) % Passing	Diameter % Finer

Material Identification B.H./T.H. No. TH 3 @3' Sample No. 2 Sample Source Specific Gravity of Material: 2.65	50.00 100.0 37.50 100.0 25.00 100.0 19.00 100.0 16.00 100.0 12.50 100.0 9.50 100.0 4.75 100.0 2.00 100.0 1.18 100.0 0.425 100.0 0.180 99.8 0.075 96.2	0.0446 56.2 0.0320 52.2 0.0233 44.2 0.0121 30.3 0.0091 24.2 0.0065 18.1 0.0033 14.5 0.0014 8.7
---	--	---



SOIL DESCRIPTION	% Composition		D10	0.00139
	3.8	Gravel	D30	0.01210
SILT	87.5	Sand	D60	0.04457
	8.7	Silt	Cu	32.06
	8.7	Clay	Cc	2.36

Remarks: Test Method: ASTM D422, D2216, D4318

Technician: GM



Reviewed by: Hermie Manalo

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 1	PROJECT NO: 103-1803
PROJECT: Ellice Ave - Sargent, Arlington-Burnell	DATE SAMPLED:	SAMPLED BY: Client
PROJECT CONTACT: Silvestret Urbano	DATE TESTED: 2-Feb-2018	TESTED BY: Greg Manalo

TEST LOCATION:

Description	TH 1	TH 1	TH 1	TH 1	TH 1
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	131.40	151.50	148.20	143.60	128.70
Wt Dry Sample + Tare	91.00	112.50	110.90	107.40	97.20
Wt Water	40.40	39.00	37.30	36.20	31.50
Wt Tare	4.40	4.30	4.30	4.20	4.30
Wt Dry Sample	86.60	108.20	106.60	103.20	92.90
Moisture Content (%)	46.7	36.0	35.0	35.1	33.9

Description	TH 1	TH 1	TH 1		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	141.10	201.40	205.50		
Wt Dry Sample + Tare	105.10	164.20	140.60		
Wt Water	36.00	37.20	64.90		
Wt Tare	4.50	4.30	4.40		
Wt Dry Sample	100.60	159.90	136.20		
Moisture Content (%)	35.8	23.3	47.7		

Description	TH 2	TH 2	TH 2	TH 2	TH 2
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	143.80	129.50	128.20	149.20	202.60
Wt Dry Sample + Tare	104.10	102.70	101.50	118.30	165.70
Wt Water	39.70	26.80	26.70	30.90	36.90
Wt Tare	4.50	4.30	4.20	4.20	4.40
Wt Dry Sample	99.60	98.40	97.30	114.10	161.30
Moisture Content (%)	39.9	27.2	27.4	27.1	22.9

Description	TH 2	TH 2	TH 2		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	188.60	128.60	132.80		
Wt Dry Sample + Tare	142.20	90.50	87.60		
Wt Water	46.40	38.10	45.20		
Wt Tare	4.40	4.20	4.20		
Wt Dry Sample	137.80	86.30	83.40		
Moisture Content (%)	33.7	44.1	54.2		

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 1	PROJECT NO: 103-1803
PROJECT: Ellice Ave - Sargent, Arlington-Burnell	DATE SAMPLED:	SAMPLED BY: Client
PROJECT CONTACT: Silvestret Urbano	DATE TESTED: 2-Feb-2018	TESTED BY: Greg Manalo

TEST LOCATION:

Description	TH 3	TH 3	TH 3	TH 3	TH 3
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	116.90	146.70	183.50	133.70	139.80
Wt Dry Sample + Tare	88.50	117.60	152.70	112.10	119.80
Wt Water	28.40	29.10	30.80	21.60	20.00
Wt Tare	4.30	4.20	4.40	4.60	4.30
Wt Dry Sample	84.20	113.40	148.30	107.50	115.50
Moisture Content (%)	33.7	25.7	20.8	20.1	17.3

Description	TH 3	TH 3	TH 3		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	138.30	143.60	167.60		
Wt Dry Sample + Tare	100.10	98.50	109.50		
Wt Water	38.20	45.10	58.10		
Wt Tare	4.30	4.20	4.70		
Wt Dry Sample	95.80	94.30	104.80		
Moisture Content (%)	39.9	47.8	55.4		

Description	TH 4	TH 4	TH 4	TH 4	TH 4
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	147.10	113.60	143.00	189.40	171.50
Wt Dry Sample + Tare	117.40	89.70	117.70	156.10	140.90
Wt Water	29.70	23.90	25.30	33.30	30.60
Wt Tare	4.40	4.20	4.50	4.20	4.30
Wt Dry Sample	113.00	85.50	113.20	151.90	136.60
Moisture Content (%)	26.3	28.0	22.3	21.9	22.4

Description	TH 4	TH 4	TH 4		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	143.90	195.30	160.00		
Wt Dry Sample + Tare	115.10	144.60	114.70		
Wt Water	28.80	50.70	45.30		
Wt Tare	4.30	4.20	4.30		
Wt Dry Sample	110.80	140.40	110.40		
Moisture Content (%)	26.0	36.1	41.0		

APPENDIX

B

SEMPLE / KILBRIDE ALLEY






REVISION:	
SCALE:	1:1000
DATE:	2018/03/14
PROJECT NO:	17M-02283-00
DRAWING NO:	GT-B

TITLE:

2018 ALLEY RENEWALS – CONTRACT 2
 SEMPLE/KILBRIDE/MAIN/AIKINS ALLEY
 TESTHOLE LOCATIONS



1600 BUFFALO PLACE
 WINNEPEG, MANITOBA
 CANADA R3T 6B8
 PHONE: 204-477-6650 FAX : 204-474-2864
 WWW.WSPGROUP.COM



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg

PROJECT NAME 2018 Alley Renewals - Contract 2

PROJECT NUMBER 17M-02283-00

PROJECT LOCATION Semple/Kilbride Alley

DATE STARTED 2/15/18 COMPLETED 2/15/18

GROUND ELEVATION _____ HOLE SIZE 125 mm

DRILLING CONTRACTOR Maple Leaf Drilling

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger - B40 Truck Rig

AT TIME OF DRILLING ---

LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano

AT END OF DRILLING ---

NOTES CL of alley: 635066.5 m E, 5533448.0 m N

AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_SEMPLE.GPJ_GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20	40 60 80
0.0 - 0.45				CONCRETE - 125 mm intact						
0.45 - 1.5				CLAY (CH) - Grey-black - Grey below 0.45 m	GB 1 GB 2 GB 3			32 38 38		
1.5 - 2.0				- Frost to 1.35 m - Stiff, moist below 1.35 m - Mottled grey and brown below 1.5 m	GB 4 GB 5			41 39		
2.0 - 2.8				SILT (ML) - Tan-brown, clayey, firm to soft, moist	GB 6			31		
2.8 - 3.0				CLAY (CH) - Brown, stiff, moist	GB 7			30		
3.0 - 3.3					GB 10			41		

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with concrete



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

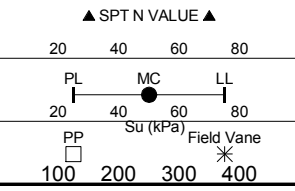
CLIENT City of Winnipeg
PROJECT NUMBER 17M-02283-00
DATE STARTED 2/15/18 **COMPLETED** 2/15/18
DRILLING CONTRACTOR Maple Leaf Drilling
DRILLING METHOD Solid Stem Auger - B40 Truck Rig
LOGGED BY Dana Bredin **CHECKED BY** Silvestre Urbano
NOTES CL of alley: 635002.8 m E, 5533478.3 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
PROJECT LOCATION Semple/Kilbride Alley
GROUND ELEVATION _____ **HOLE SIZE** 125 mm
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_SEMPLE.GPJ_GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20	40 60 80
0.0 - 0.5				CONCRETE - 160 mm intact						
0.5 - 1.0				FILL - Clayey, trace f. gravel, grey-black	Hand GB 1			39		
1.0 - 1.5				CLAY (CH) - Grey	Hand GB 2			31		
1.5 - 2.0				- Frost to 1.35 m - Silty, mottled grey and brown, firm, moist, below 1.5 m	Hand GB 3			29		
2.0 - 2.5				SILT (ML) - Tan-brown, soft, moist	Hand GB 4			33		
2.5 - 3.0				- Clayey below 2.1 m	Hand GB 5			32		
3.0 - 3.5				CLAY (CH) - Brown, stiff, moist	Hand GB 6			23		
3.5 - 4.0					Hand GB 7			27		
4.0 - 4.5					Hand GB 10			45		

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with concrete





WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
PROJECT NUMBER 17M-02283-00
DATE STARTED 2/15/18 **COMPLETED** 2/15/18
DRILLING CONTRACTOR Maple Leaf Drilling
DRILLING METHOD Solid Stem Auger - B40 Truck Rig
LOGGED BY Dana Bredin **CHECKED BY** Silvestre Urbano
NOTES South side of alley: 634940.6 m E, 5533505.7 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
PROJECT LOCATION Seemple/Kilbride Alley
GROUND ELEVATION _____ **HOLE SIZE** 125 mm
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_SEMPLE.GPJ_GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
0.0 - 0.1				CONCRETE - 140 mm intact										
0.1 - 0.45				CLAY (CH) - Grey-black - Grey below 0.45 m	Hand GB 1			33						
0.45 - 0.9				- Silty below 0.9 m - 65.4% clay; 33.4% silt, 1.2% sand	Hand GB 2			32						
0.9 - 1.5				SILT (ML) - Tan-brown, clayey - Frost to 1.5 m - Soft, moist below 1.5 m	Hand GB 3			32						
1.5 - 1.8					Hand GB 4			33						
1.8 - 2.4					Hand GB 5			28						
2.4 - 2.7				CLAY (CH) - Brown, stiff, moist - Silty from 1.8 m to 2.4 m	Hand GB 6			24						
2.7 - 3.0					Hand GB 7			28						
3.0 - 3.3				- Grey below 2.7 m										
3.3 - 3.6					Hand GB 10			47						

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with concrete



Figure 4 - TH1 Semple/Kilbride



Figure 5 - TH2 Semple/Kilbride



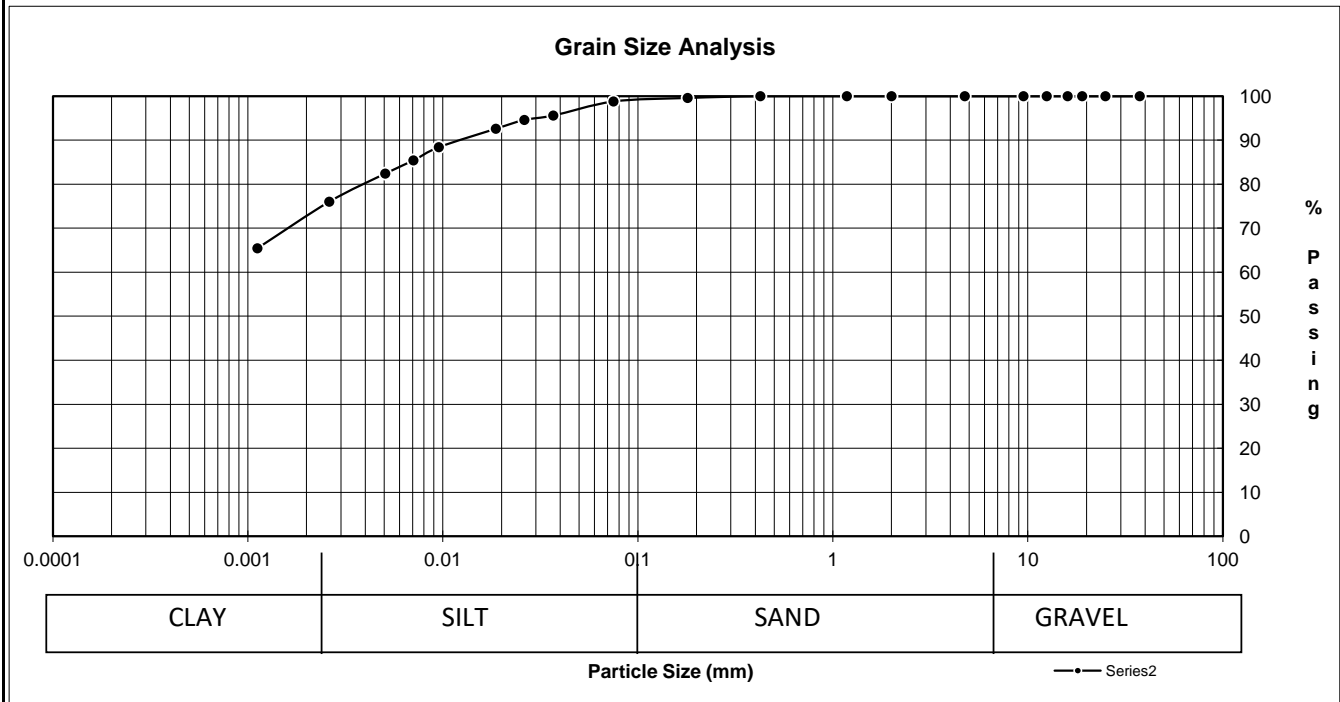
Figure 6 - TH3 Sample/Kilbride

PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT: WSP Canada Group Limited
 Suite 111-93 Lombard Avenue
 Winnipeg, MB R3B 3B1
ATTENTION: Dana Bredin
PROJECT: 17M-02283-00
 Semple

PROJECT NO. 103-1804

Date Sampled:	20-Feb-18	Date Received:	20-Feb-18	Sieve Analysis		Hydrometer Analysis	
Sampled By:	Client	Date Tested:	26-Feb-18	Sieve (mm)	% Passing	Diameter	% Finer
Material Identification B.H./T.H. No. TH 3 @3' Sample No. 5 Sample Source Specific Gravity of Material: 2.65		50.00	100.0				
		37.50	100.0				
		25.00	100.0				
		19.00	100.0				
		16.00	100.0				
		12.50	100.0	0.0368	95.6		
		9.50	100.0	0.0262	94.6		
		4.75	100.0	0.0187	92.6		
		2.00	100.0	0.0095	88.4		
		1.18	100.0	0.0071	85.4		
	0.425	100.0	0.0051	82.4			
	0.180	99.6	0.0026	76.0			
	0.075	98.8	0.0011	65.4			



SOIL DESCRIPTION	% Composition		D10	
	CLAY	1.2	Gravel	D30
33.4		Sand	D60	
65.4		Silt	Cu	#DIV/0!
65.4		Clay	Cc	#DIV/0!

Remarks: Test Method: ASTM D422, D2216, D4318

Technician: GM



Reviewed by: Hermie Manalo

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 014	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 20-Mar-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 23-Feb-2018	TESTED BY: Irvin Araquil
TEST LOCATION: Semple		

Description	TH1	TH1	TH1	TH1	TH1
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	175.10	153.10	156.10	161.40	157.40
Wt Dry Sample + Tare	133.30	112.50	114.30	115.60	114.40
Wt Water	41.80	40.60	41.80	45.80	43.00
Wt Tare	4.20	4.20	4.20	4.20	4.20
Wt Dry Sample	129.10	108.30	110.10	111.40	110.20
Moisture Content (%)	32.4	37.5	38.0	41.1	39.0

Description	TH1	TH1	TH1		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	153.70	159.10	153.80		
Wt Dry Sample + Tare	118.20	123.40	110.60		
Wt Water	35.50	35.70	43.20		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	114.00	119.20	106.40		
Moisture Content (%)	31.1	29.9	40.6		

Description	TH2	TH2	TH2	TH2	TH2
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	152.00	151.60	152.30	158.00	156.10
Wt Dry Sample + Tare	110.60	116.70	119.10	119.70	119.30
Wt Water	41.40	34.90	33.20	38.30	36.80
Wt Tare	4.20	4.20	4.20	4.30	4.20
Wt Dry Sample	106.40	112.50	114.90	115.40	115.10
Moisture Content (%)	38.9	31.0	28.9	33.2	32.0

Description	TH2	TH2	TH2		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	169.60	165.30	157.60		
Wt Dry Sample + Tare	139.10	131.10	110.00		
Wt Water	30.50	34.20	47.60		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	134.90	126.90	105.80		
Moisture Content (%)	22.6	27.0	45.0		

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 014	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 20-Mar-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 23-Feb-2018	TESTED BY: Irvin Araquil
TEST LOCATION: Semple		

Description	TH3	TH3	TH3	TH3	TH3
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	152.30	157.00	248.50	151.10	154.60
Wt Dry Sample + Tare	115.40	120.10	189.70	114.60	122.00
Wt Water	36.90	36.90	58.80	36.50	32.60
Wt Tare	4.20	4.20	4.20	4.20	4.20
Wt Dry Sample	111.20	115.90	185.50	110.40	117.80
Moisture Content (%)	33.2	31.8	31.7	33.1	27.7

Description	TH3	TH3	TH3		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	156.20	156.80	150.30		
Wt Dry Sample + Tare	127.20	123.90	104.00		
Wt Water	29.00	32.90	46.30		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	123.00	119.70	99.80		
Moisture Content (%)	23.6	27.5	46.4		

Description					
Depth (ft)					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
Moisture Content (%)					

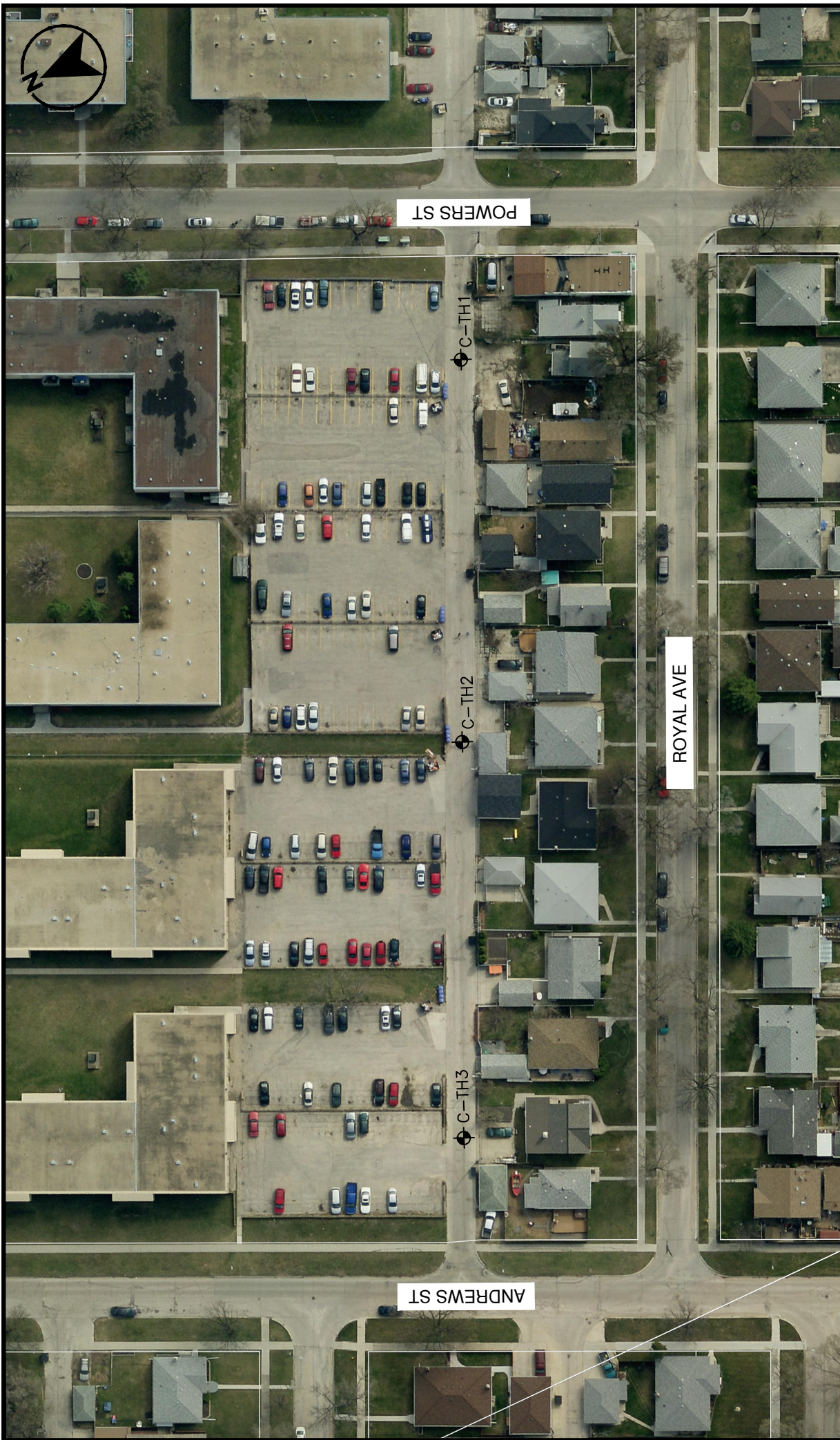
Description					
Depth (ft)					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
Moisture Content (%)					

APPENDIX

C

PARTRIDGE / ROYAL ALLEY






REVISION:	
DRAWING NO:	GT-C

SCALE:	1:1000
DATE:	2018/03/14
PROJECT NO:	17M-02283-00

TITLE:

2018 ALLEY RENEWALS - CONTRACT 2
 ROYAL/PARTRIDGE/ANDREWS/POWERS ALLEY
 TESTHOLE LOCATIONS



1600 BUFFALO PLACE
 WINNIPEG, MANITOBA
 CANADA R3T 6B8
 PHONE: 204-477-6650 FAX: 204-474-2864
 WWW.WSPGROUP.COM

STAMP

REF



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/15/18 COMPLETED 2/15/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 634677.5 m E, 5533993.6 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Royal/Partridge Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
0.0 - 0.1				CONCRETE - 125 mm intact										
0.1 - 0.6				CLAY (CH) - Grey-black - Grey below 0.6 m	GB 1			25						
0.6 - 1.0					GB 2			30						
1.0 - 1.2					GB 3			29						
1.2 - 1.35				- Silty below 1.2 m - Frost to 1.35 m	GB 4			36						
1.35 - 1.5				SILT (ML) - Tan-brown, soft, moist	GB 5			25						
1.5 - 2.1					GB 6			25						
2.1 - 2.5				- Clayey below 2.1 m	GB 7			28						
2.5 - 3.0				CLAY (CH) - Silty, brown, stiff, moist										
3.0 - 3.1					GB 10			42						

- Testhole open to 2.1 m after completion
 - Backfilled with auger cuttings and patched with concrete

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ROYAL.GPJ GINT STD CANADA.GDT 3/13/18



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/15/18 COMPLETED 2/15/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 634613.8 m E, 5534023.3 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Royal/Partridge Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
0.0 - 0.1	[Concrete pattern]			CONCRETE - 150 mm intact										
0.1 - 0.5	[Fill pattern]			FILL - Clayey, silty, trace sand and f. gravel, grey-black	Hand GB 1			31						
0.5 - 1.0	[Clay pattern]			CLAY (CH) - Grey	Hand GB 2			32						
1.0 - 1.5	[Clay pattern]			- Silty below 1.2 m	Hand GB 3			31						
1.5 - 2.0	[Clay pattern]			- Frost to 1.5 m	Hand GB 4			31						
2.0 - 2.5	[Silt pattern]			SILT (ML) - Tan-brown, soft, moist	Hand GB 5			29						
2.5 - 3.0	[Clay pattern]			CLAY (CH) - Grey, stiff, moist	Hand GB 6			23						
3.0 - 3.3	[Clay pattern]			- Brown, silty below 2.4 m	Hand GB 7			31						
3.0 - 3.3	[Clay pattern]				Hand GB 10			28						

- Testhole open to 2.7 m after completion
 - Backfilled with auger cuttings and patched with concrete

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ROYAL.GPJ GINT STD CANADA.GDT 3/13/18



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/15/18 COMPLETED 2/15/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 634549.2 m E, 5534053.9 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Royal/Partridge Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_ROYAL.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
				CONCRETE - 140 mm intact										
				GRANULAR FILL - Crushed limestone	Hand GB 1			13						
0.5				FILL - Clayey, silty, trace sand and f. gravel, grey	Hand GB 2			27						
				- 53.6% silty, 44.4% clay, 2.0% sand at 0.9 m	Hand GB 3			28						
1.0				CLAY (CH) - Grey	Hand GB 4			36						
				- Silty below 1.2 m										
1.5				- Frost to 1.5 m	Hand GB 5			32						
				SILT (ML) - Tan-brown, soft, moist										
				- Clayey below 1.8 m	Hand GB 6			24						
2.0				CLAY (CH) - Brown, stiff, moist	Hand GB 7			26						
2.5														
3.0					Hand GB 10			44						

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with concrete



Figure 7 - TH1 Royal/Partridge



Figure 8 - TH2 Royal/Partridge



Figure 9 - TH3 Royal/Partridge

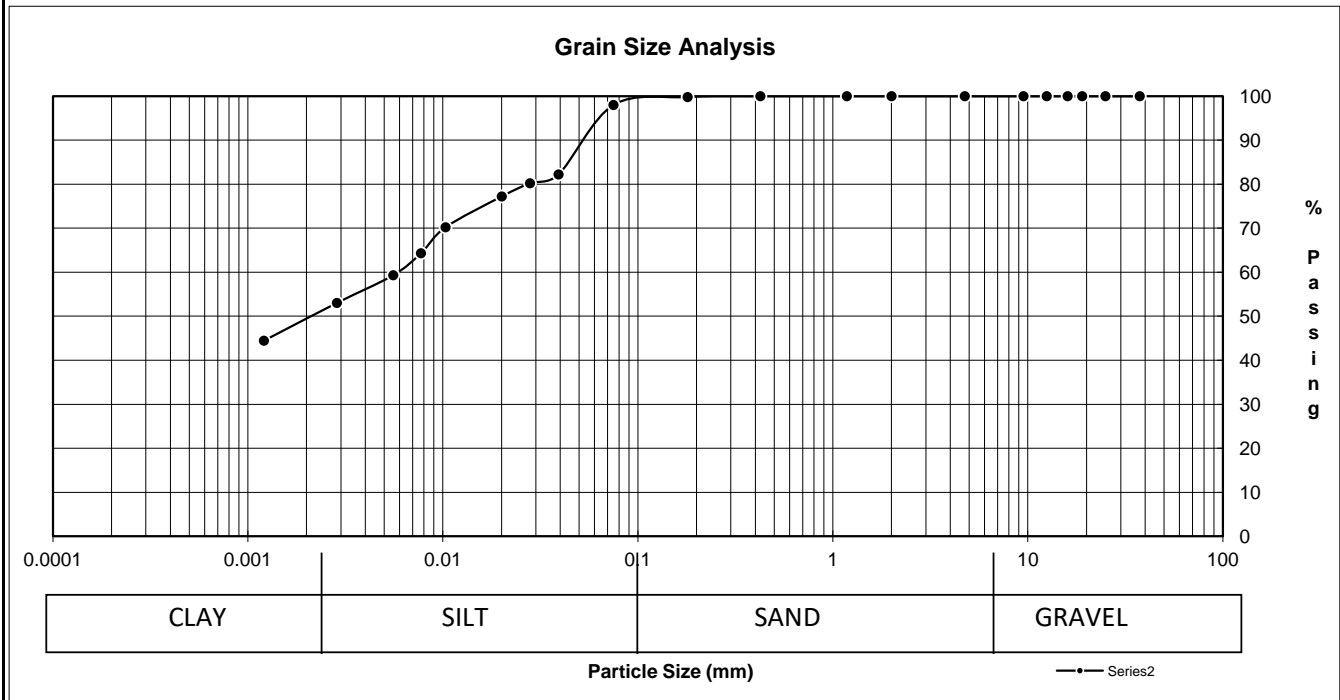
PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT: WSP Canada Group Limited
 Suite 111-93 Lombard Avenue
 Winnipeg, MB R3B 3B1
ATTENTION: Dana Bredin
PROJECT: 17M-02283-00
 Royal

PROJECT NO. 103-1804

Date Sampled: 20-Feb-18	Date Received: 20-Feb-18	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 26-Feb-18	Sieve (mm)	% Passing	Diameter	% Finer
		50.00	100.0		
		37.50	100.0		
		25.00	100.0		
		19.00	100.0		
		16.00	100.0		
		12.50	100.0	0.0392	82.2
		9.50	100.0	0.0280	80.2
		4.75	100.0	0.0200	77.2
		2.00	100.0	0.0103	70.2
		1.18	100.0	0.0077	64.3
		0.425	100.0	0.0056	59.3
		0.180	99.8	0.0029	53.0
		0.075	98.0	0.0012	44.4

Material Identification
 B.H./T.H. No. **TH 3 @3'**
Sample No. **6**
 Sample Source
 Specific Gravity of Material: 2.65



SOIL DESCRIPTION	% Composition		D10	
	SILTY CLAY	2.0	Gravel	D30
53.6		Sand	D60	0.00557
53.6		Silt	Cu	#DIV/0!
44.4		Clay	Cc	#DIV/0!

Remarks: Test Method: ASTM D422, D2216, D4318

Technician: GM



Reviewed by: Hermie Manalo

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 015	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 20-Feb-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 23-Feb-2018	TESTED BY: Greg Manalo
TEST LOCATION: Royal		

Description	TH1	TH1	TH1	TH1	TH1
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	159.60	158.70	134.10	125.00	145.70
Wt Dry Sample + Tare	128.20	123.20	105.10	93.20	117.00
Wt Water	31.40	35.50	29.00	31.80	28.70
Wt Tare	4.20	4.20	4.20	4.10	4.20
Wt Dry Sample	124.00	119.00	100.90	89.10	112.80
Moisture Content (%)	25.3	29.8	28.7	35.7	25.4

Description	TH1	TH1	TH1		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	118.40	161.40	151.40		
Wt Dry Sample + Tare	95.90	127.10	108.30		
Wt Water	22.50	34.30	43.10		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	91.70	122.90	104.10		
Moisture Content (%)	24.5	27.9	41.4		

Description	TH2	TH2	TH2	TH2	TH2
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	119.90	143.70	154.40	156.80	161.10
Wt Dry Sample + Tare	92.40	110.00	118.50	120.70	126.30
Wt Water	27.50	33.70	35.90	36.10	34.80
Wt Tare	4.20	4.20	4.20	4.20	4.20
Wt Dry Sample	88.20	105.80	114.30	116.50	122.10
Moisture Content (%)	31.2	31.9	31.4	31.0	28.5

Description	TH2	TH2	TH2		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	175.10	155.70	171.60		
Wt Dry Sample + Tare	143.50	119.90	135.10		
Wt Water	31.60	35.80	36.50		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	139.30	115.70	130.90		
Moisture Content (%)	22.7	30.9	27.9		

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 015	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 20-Feb-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 23-Feb-2018	TESTED BY: Greg Manalo
TEST LOCATION: Royal		

Description	TH3	TH3	TH3	TH3	TH3
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	140.90	150.80	279.60	131.70	150.70
Wt Dry Sample + Tare	125.30	119.60	219.70	97.70	115.10
Wt Water	15.60	31.20	59.90	34.00	35.60
Wt Tare	4.20	4.20	4.20	4.10	4.10
Wt Dry Sample	121.10	115.40	215.50	93.60	111.00
Moisture Content (%)	12.9	27.0	27.8	36.3	32.1

Description	TH3	TH3	TH3		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	173.30	156.70	168.70		
Wt Dry Sample + Tare	140.90	125.70	118.60		
Wt Water	32.40	31.00	50.10		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	136.70	121.50	114.40		
Moisture Content (%)	23.7	25.5	43.8		

Description					
Depth (ft)					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
Moisture Content (%)					

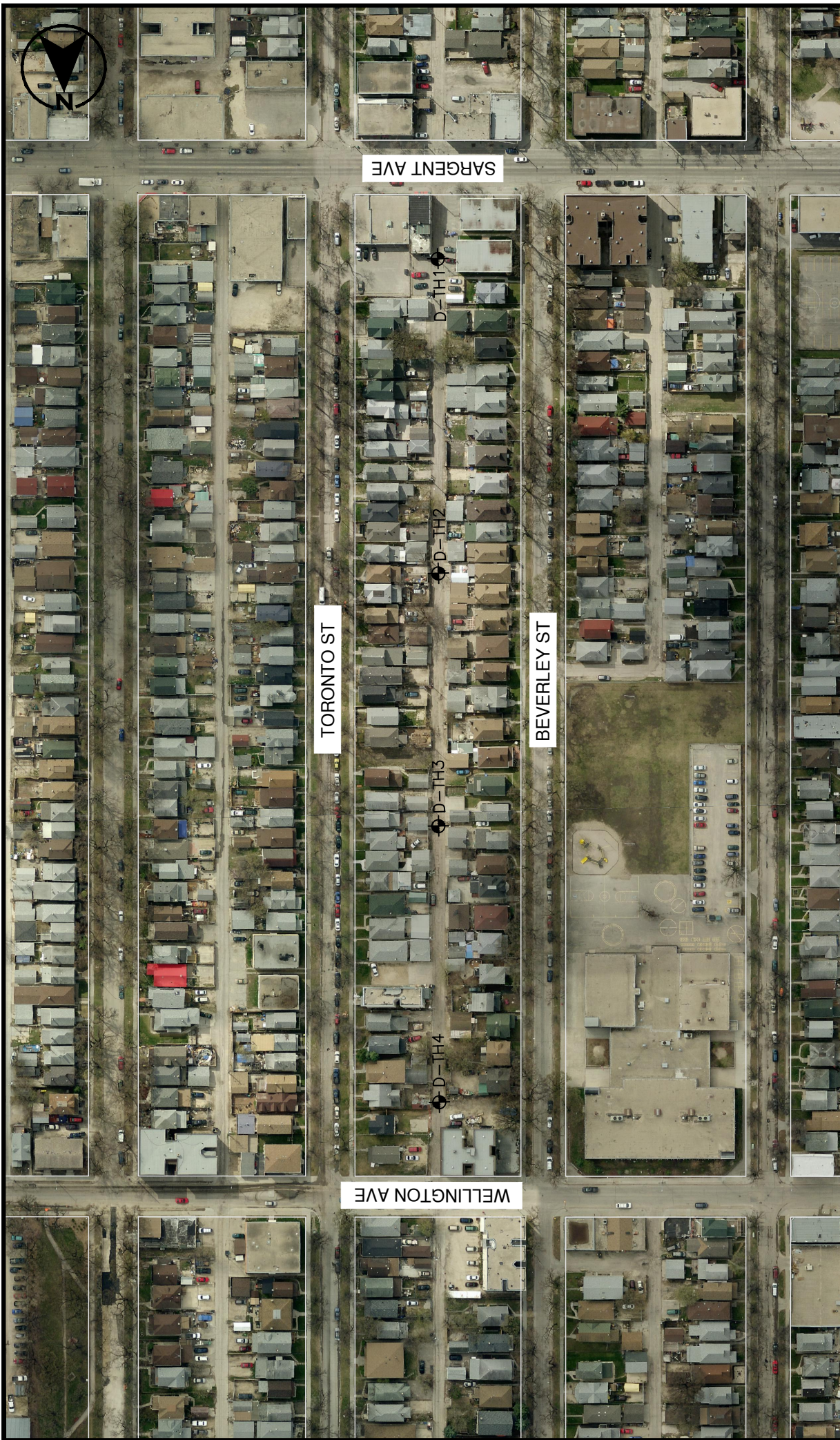
Description					
Depth (ft)					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
Moisture Content (%)					

APPENDIX

D

BEVERLEY / TORONTO ALLEY





TORONTO ST

WELLINGTON AVE

SARGENT AVE

BEVERLEY ST

D-TH4

D-TH3

D-TH2

D-TH1



1600 BUFFALO PLACE
WINNEPEG, MANITOBA
CANADA R3T 6B8
PHONE: 204-477-6650 FAX : 204-474-2864
WWW.WSPGROUP.COM

TITLE:

2018 ALLEY RENEWALS – CONTRACT 2
TORONTO/BEVERLEY/WELLINGTON/SARGENT ALLEY
TESTHOLE LOCATIONS

SCALE:

1:2000

DATE:

2018/03/14

PROJECT NO:

17M-02283-00

REVISION:

DRAWING NO:

GT-D



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg

PROJECT NAME 2018 Alley Renewals - Contract 2

PROJECT NUMBER 17M-02283-00

PROJECT LOCATION Beverly/Toronto Alley

DATE STARTED 2/6/18 COMPLETED 2/6/18

GROUND ELEVATION _____ HOLE SIZE 125 mm

DRILLING CONTRACTOR Maple Leaf Drilling

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger - B40 Truck Rig

AT TIME OF DRILLING ---

LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano

AT END OF DRILLING ---

NOTES CL of alley: 631820.3 m E, 5528794.7 m N

AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
				ASPHALT - 100 mm thick										
				CONCRETE - 125 mm thick, intact										
0.5				FILL - Sandy, silty, trace f. gravel above 0.45 m - Clayey, trace sand and f. gravel, grey below 0.45 m	GB 1 GB 2			9 35						
1.0				SILT (ML) - Tan-brown	GB 3 GB 4			23 20						
1.5				- Frost to 1.35 m - Moist, soft, low plasticity below 1.35 m	GB 5			26						
2.0				CLAY (CH) - Brown, stiff, moist, trace silt inclusions	GB 6 GB 7			32 44						
2.5														
3.0				-Mottled brown and grey below 2.7 m	GB 8			54						

- Testhole open to bottom after completion of drilling.
 - Backfilled with auger cuttings and patched with asphalt.

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_BEVERLEY.GPJ GINT STD CANADA.GDT 3/13/18



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg

PROJECT NAME 2018 Alley Renewals - Contract 2

PROJECT NUMBER 17M-02283-00

PROJECT LOCATION Beverly/Toronto Alley

DATE STARTED 2/6/18 COMPLETED 2/6/18

GROUND ELEVATION _____ HOLE SIZE 125 mm

DRILLING CONTRACTOR Maple Leaf Drilling

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger - B40 Truck Rig

AT TIME OF DRILLING ---

LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano

AT END OF DRILLING ---

NOTES CL of alley: 631824.0 m E, 5528899.0 m N

AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 BEVERLEY.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲								
									20	40	60	80					
0.0 - 0.1				ASPHALT - 100 mm thick													
0.1 - 0.5				FILL - Sandy, silty, trace f. gravel above 0.3 m - Clayey, black-grey, trace sand and f. gravel below 0.3 m	GB 1			14									
0.5 - 1.0				CLAY (CH) - Grey, fissured	GB 2			37									
1.0 - 1.5				- Silty below 1.05 m	GB 3			32									
1.5 - 2.0				SILT (ML) - Tan-brown - Frost to 1.5 m	GB 4			27									
2.0 - 2.5				CLAY (CH) - Brown, stiff, moist, some silt inclusions - Silty, trace f. gravel at 1.8 m	GB 5			22									
2.5 - 3.0				- Silty, trace oxidation below 2.9 m	GB 6			32									
3.0 - 3.5					GB 7			45									
3.5 - 4.0					GB 8			39									

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/6/18 COMPLETED 2/6/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 631826.1 m E, 5529003.0 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Beverly/Toronto Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 BEVERLEY.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20	40
0.0 - 0.05	ASPHALT			ASPHALT - 50 mm thick						
0.05 - 0.15	CONCRETE			CONCRETE - 150 mm thick, deteriorated (no core)	GB 1			11		
0.15 - 0.5	FILL			FILL - Sandy, silty, trace f. gravel	GB 2			40		
0.5 - 1.0	CLAY (CH)			CLAY (CH) - Grey, fissured	GB 3			34		
1.0 - 1.5	CLAY (CH)			CLAY (CH) - Grey, fissured	GB 4			33		
1.5 - 1.8	SILT (ML)			SILT (ML) - Tan-brown, frost to 1.35 m - Soft, moist below 1.35 m	GB 5			23		
1.8 - 2.0	CLAY (CH)			CLAY (CH) - Brown, stiff, moist, trace silt inclusions	GB 6			43		
2.0 - 2.5	CLAY (CH)			CLAY (CH) - Brown, stiff, moist, trace silt inclusions	GB 7			45		
2.5 - 3.0	CLAY (CH)			CLAY (CH) - Brown, stiff, moist, trace silt inclusions	GB 8			47		

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/6/18 COMPLETED 2/6/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 631829.3 m E, 5529108.2 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Beverly/Toronto Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 BEVERLEY.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20	40 60 80
0.0 - 0.05	ASPHALT			ASPHALT - 30 mm thick						
0.05 - 0.1	CONCRETE			CONCRETE - 90 mm thick, deteriorated	GB 1			7		
0.1 - 0.3	FILL			FILL - Sandy, silty, trace f. gravel above 0.3 m - Clayey, black-grey, trace sand and f. gravel below 0.3 m	GB 2			40		
0.3 - 0.9	CLAY (CH)			CLAY (CH) - Silty, mottled grey and brown, fissured	GB 3			35		
0.9 - 1.2	SILT (ML)			SILT (ML) - Tan-brown	GB 4			24		
1.2 - 1.5				- 77.0% silt; 20.8% clay; 2.2% sand at 1.2 m	GB 5			24		
1.5 - 1.55				- Frost to 1.5 m						
1.55 - 2.4	CLAY (CH)			CLAY (CH) - Brown, silty, moist, trace silt inclusions	GB 6			42		
2.4 - 2.55				- Silty, trace oxidation from 2.4 m to 2.55 m	GB 7			46		
2.55 - 3.0					GB 8			50		

- Testhole open to bottom after completion
 - Backfilled with auger cuttings and patched with asphalt



Figure 10 - TH1 Beverley/Toronto



Figure 11 - TH2 Beverley/Toronto



Figure 12 - TH3 Beverley/Toronto



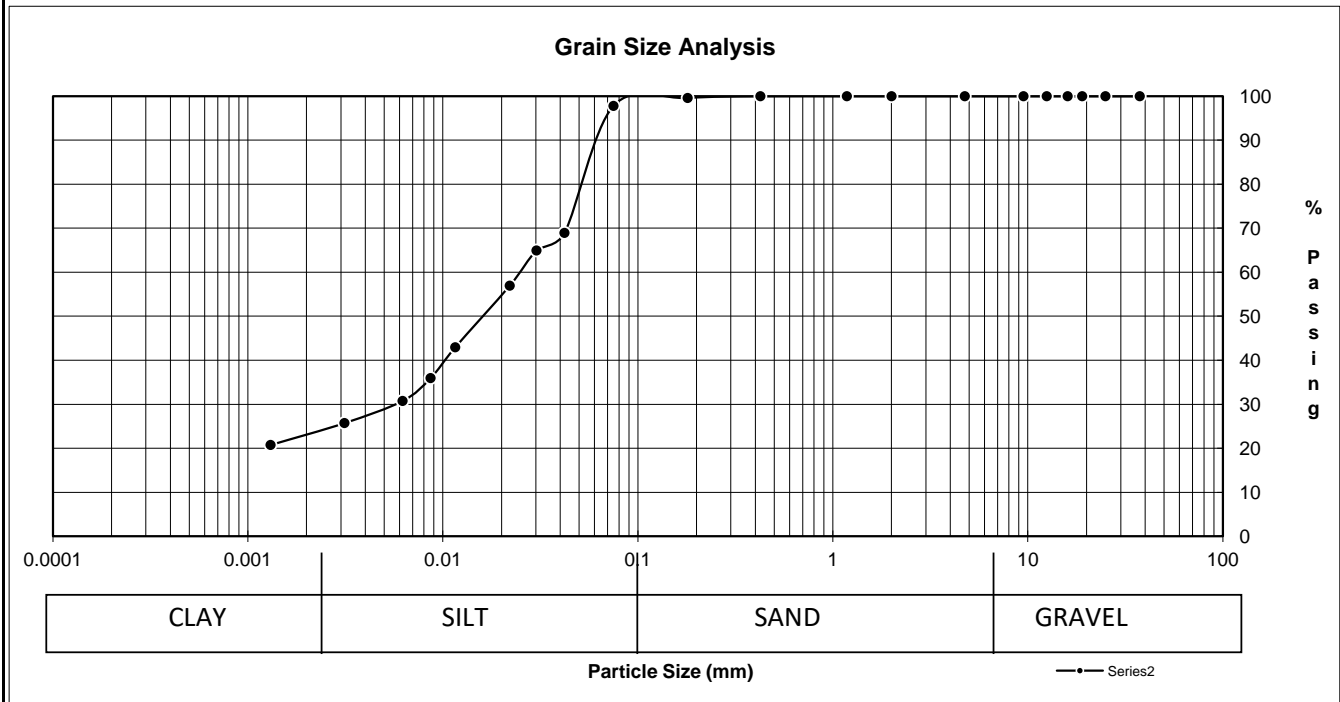
Figure 13 - TH4 Beverley/Toronto

PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT: WSP Canada Group Limited
 Suite 111-93 Lombard Avenue
 Winnipeg, MB R3B 3B1
ATTENTION: Dana Bredin
PROJECT: 17M-02283-00
 Toronto

PROJECT NO. 103-1804

Date Sampled:	12-Feb-18	Date Received:	Sieve Analysis		Hydrometer Analysis		
Sampled By:	Client	Date Tested:	15-Feb-18	Sieve (mm)	% Passing	Diameter	% Finer
Material Identification B.H./T.H. No. TH 4 @4' Sample No. 2 Sample Source Specific Gravity of Material: 2.65			50.00	100.0			
			37.50	100.0			
			25.00	100.0			
			19.00	100.0			
			16.00	100.0			
			12.50	100.0	0.0420	68.9	
			9.50	100.0	0.0302	64.9	
			4.75	100.0	0.0220	56.9	
			2.00	100.0	0.0116	42.9	
			1.18	100.0	0.0086	35.9	
		0.425	100.0	0.0062	30.8		
		0.180	99.6	0.0031	25.7		
		0.075	97.8	0.0013	20.8		



SOIL DESCRIPTION	% Composition		D10	
	SILT LOAM	2.2	Gravel	D30
77.0		Sand	D60	0.02202
77.0		Silt	Cu	#DIV/0!
20.8		Clay	Cc	#DIV/0!

Remarks: Test Method: ASTM D422, D2216, D4318

Technician: GM



Reviewed by: Hermie Manalo

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18-002	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 12-Feb-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 13-Feb-2018	TESTED BY: Greg Manalo
TEST LOCATION: Toronto		

Description	TH1	TH1	TH1	TH1	TH1
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	167.30	136.40	159.30	207.90	176.20
Wt Dry Sample + Tare	154.80	101.90	130.00	173.90	140.50
Wt Water	12.50	34.50	29.30	34.00	35.70
Wt Tare	4.30	4.20	4.00	4.70	4.10
Wt Dry Sample	150.50	97.70	126.00	169.20	136.40
Moisture Content (%)	8.3	35.3	23.3	20.1	26.2

Description	TH1	TH1	TH1		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	214.10	204.50	171.30		
Wt Dry Sample + Tare	162.90	143.10	113.00		
Wt Water	51.20	61.40	58.30		
Wt Tare	4.30	4.20	4.30		
Wt Dry Sample	158.60	138.90	108.70		
Moisture Content (%)	32.3	44.2	53.6		

Description	TH2	TH2	TH2	TH2	TH2
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	206.10	163.60	138.60	195.00	172.20
Wt Dry Sample + Tare	181.40	120.90	105.60	155.00	142.00
Wt Water	24.70	42.70	33.00	40.00	30.20
Wt Tare	4.20	4.30	4.30	4.00	4.30
Wt Dry Sample	177.20	116.60	101.30	151.00	137.70
Moisture Content (%)	13.9	36.6	32.6	26.5	21.9

Description	TH2	TH2	TH2		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	176.80	191.20	164.10		
Wt Dry Sample + Tare	134.50	133.70	119.00		
Wt Water	42.30	57.50	45.10		
Wt Tare	4.10	4.60	4.20		
Wt Dry Sample	130.40	129.10	114.80		
Moisture Content (%)	32.4	44.5	39.3		

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 002	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 12-Feb-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 13-Feb-2018	TESTED BY: Greg Manalo
TEST LOCATION: Toronto		

Description	TH3	TH3	TH3	TH3	TH3
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	232.60	157.60	153.90	168.00	180.10
Wt Dry Sample + Tare	210.60	114.00	116.00	127.00	147.10
Wt Water	22.00	43.60	37.90	41.00	33.00
Wt Tare	4.80	4.20	4.30	4.40	4.30
Wt Dry Sample	205.80	109.80	111.70	122.60	142.80
Moisture Content (%)	10.7	39.7	33.9	33.4	23.1

Description	TH3	TH3	TH3		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	198.90	192.40	129.80		
Wt Dry Sample + Tare	140.20	134.40	89.80		
Wt Water	58.70	58.00	40.00		
Wt Tare	4.20	4.80	4.20		
Wt Dry Sample	136.00	129.60	85.60		
Moisture Content (%)	43.2	44.8	46.7		

Description	TH4	TH4	TH4	TH4	TH4
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	167.20	141.40	164.30	373.80	222.50
Wt Dry Sample + Tare	156.50	102.40	122.90	302.10	180.80
Wt Water	10.70	39.00	41.40	71.70	41.70
Wt Tare	4.20	4.70	4.50	4.10	4.70
Wt Dry Sample	152.30	97.70	118.40	298.00	176.10
Moisture Content (%)	7.0	39.9	35.0	24.1	23.7

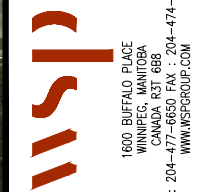
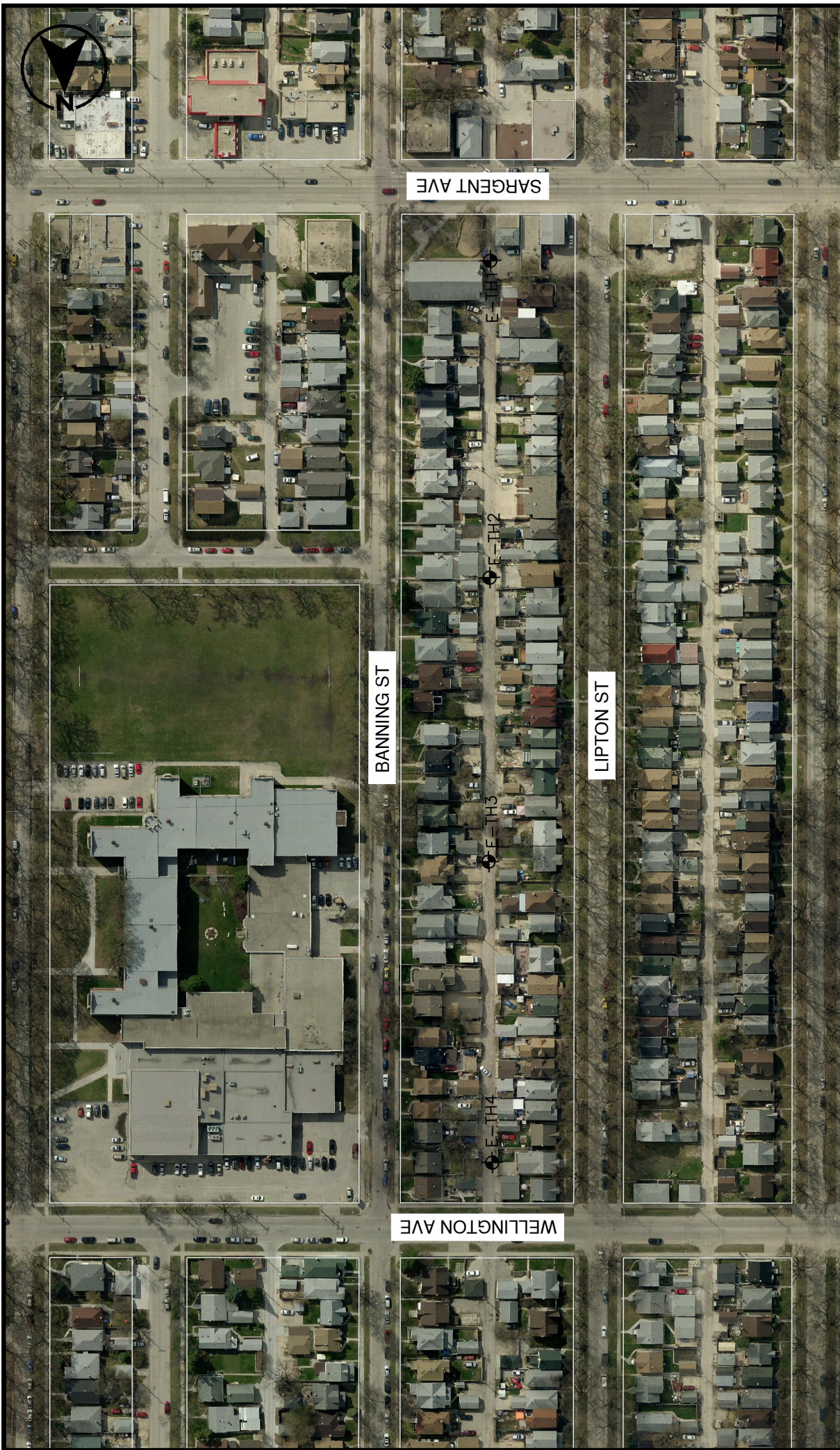
Description	TH4	TH4	TH4		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	145.80	131.50	167.10		
Wt Dry Sample + Tare	104.00	91.30	113.00		
Wt Water	41.80	40.20	54.10		
Wt Tare	4.20	4.20	4.20		
Wt Dry Sample	99.80	87.10	108.80		
Moisture Content (%)	41.9	46.2	49.7		

APPENDIX

E

LIPTON / BANNING ALLEY





1600 BUFFALO PLACE
 WINNEPEG, MANITOBA
 CANADA R3T 6B8
 PHONE: 204-477-6650 FAX: 204-474-2864
 WWW.WSPGROUP.COM

TITLE:

2018 ALLEY RENEWALS – CONTRACT 2
 LIPTON/BANNING/WELLINGTON/SARGENT ALLEY
 TESTHOLE LOCATIONS

SCALE:
 1:2000

DATE:
 2018/03/14

PROJECT NO:
 17M-02283-00

REVISION:

DRAWING NO:

GT-E



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/2/18 COMPLETED 2/2/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Silvestre Urbano CHECKED BY Dana Bredin
 NOTES CL of Alley: 631263.1 m E, 5528811.5 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Lipton/Banning Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 LIPTON.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
				ASPHALT - 30 mm thick										
				GRANULAR FILL - Crushed limestone, 200 mm thick										
0.5				FILL - Clayey, silty, trace sand and f. gravel, grey-black mixed with brown	Hand GB 1			28						
					Hand GB 2			26						
1.0				CLAY (CH) - Grey-black										
				SILT (ML) - Tan-brown, frozen	Hand GB 3			25						
					Hand GB 4			22						
1.5				- Frost to 1.5 m	Hand GB 5			22						
					Hand GB 6			28						
2.0				CLAY (CH) - Brown, stiff, moist, fissured										
					Hand GB 7			33						
2.5														
3.0					Hand GB 10		50	47						

- Testhole backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/2/18 COMPLETED 2/2/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Silvestre Urbano CHECKED BY Dana Bredin
 NOTES CL of Alley: 631264.9 m E, 5528914.4 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Lipton/Banning Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 LIPTON.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲	
									20	40 60 80
				ASPHALT - 30 mm thick						
				GRANULAR FILL - Crushed limestone, 200 mm thick						
0.5				FILL - Clayey, silty, trace sand, mixed grey-black and brown	GB 1			38		
				- 51.9% silt, 38.7% clay, 9.4% sand at 0.6 m	GB 2			48		
				CLAY (CH) - Grey-black	GB 3			58		
1.0				SILT (ML) - Tan-brown, clayey	GB 4			29		
1.5				- Frost to 1.5 m	GB 5			26		
2.0				CLAY (CH) - Brown, very stiff to stiff, moist, fissured	GB 6		150	32		
					GB 7			35		
3.0					GB 10		60	49		

- Testhole backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/2/18 COMPLETED 2/2/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Silvestre Urbano CHECKED BY Dana Bredin
 NOTES CL of Alley: 631268.5 m E, 5529018.0 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Lipton/Banning Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 LIPTON.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									20	40	60	80
									20	40	60	80
									PP	Su (kPa)	Field Vane	*
									100	200	300	400
0.0 - 0.1	ASPHALT - 50 mm thick											
0.1 - 0.3	GRANULAR FILL - Crushed limestone, 230 mm thick											
0.3 - 0.5	FILL - Clayey, silty, trace sand, grey-black				GB 1			27				
					GB 2			36				
0.5 - 1.0	CLAY (CH) - Grey-black				GB 3			33				
1.0 - 1.5	SILT (ML) - Tan-brown, frozen				GB 4			27				
	- Frost to 1.5 m				GB 5			19				
1.5 - 2.0	CLAY (CH) - Brown, very stiff to stiff, moist				GB 6		125	39				
					GB 7			39				
2.0 - 3.0					GB 10		50	53				

-Testhole backfilled with auger cuttings and patched with asphalt



WSP
1600 Buffalo Place
Winnipeg, MB R3T 6B8
Telephone: (204)-477-6650

CLIENT City of Winnipeg

PROJECT NAME 2018 Alley Renewals - Contract 2

PROJECT NUMBER 17M-02283-00

PROJECT LOCATION Lipton/Banning Alley

DATE STARTED 2/2/18 COMPLETED 2/2/18

GROUND ELEVATION _____ HOLE SIZE 125 mm

DRILLING CONTRACTOR Maple Leaf Drilling

GROUND WATER LEVELS:

DRILLING METHOD Solid Stem Auger - B40 Truck Rig

AT TIME OF DRILLING ---

LOGGED BY Silvestre Urbano CHECKED BY Dana Bredin

AT END OF DRILLING ---

NOTES West side of Alley: 631269.8 m E, 5529130.4 m N

AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2 LIPTON.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲					
									20	40	60	80		
0.0 - 0.5				ASPHALT - 50 mm thick GRANULAR FILL - Crushed limestone, 150 mm thick CONCRETE - 50 mm thick, intact	GB 1			30						
0.5 - 1.0				FILL - Clayey, silty, trace sand, grey-black CLAY (CH) - Grey-black SILT (ML) - Tan-brown, frozen	GB 2 GB 3			33 27						
1.0 - 1.5				- Frost to 1.5 m	GB 4 GB 5			21 19						
1.5 - 2.0				CLAY (CH) - Brown, stiff, moist	GB 6		100	33						
2.0 - 2.5					GB 7			37						
2.5 - 3.0				- Mottled grey and brown below 2.7 m	GB 10		60	56						

-Testhole backfilled with auger cuttings and patched with asphalt

Core for TH1 was not recovered, asphalt/concrete was deteriorated.



Figure 14 - TH2 Lipton/Banning



Figure 15 - TH3 Lipton/Banning



Figure 16 - TH4 Lipton/Banning

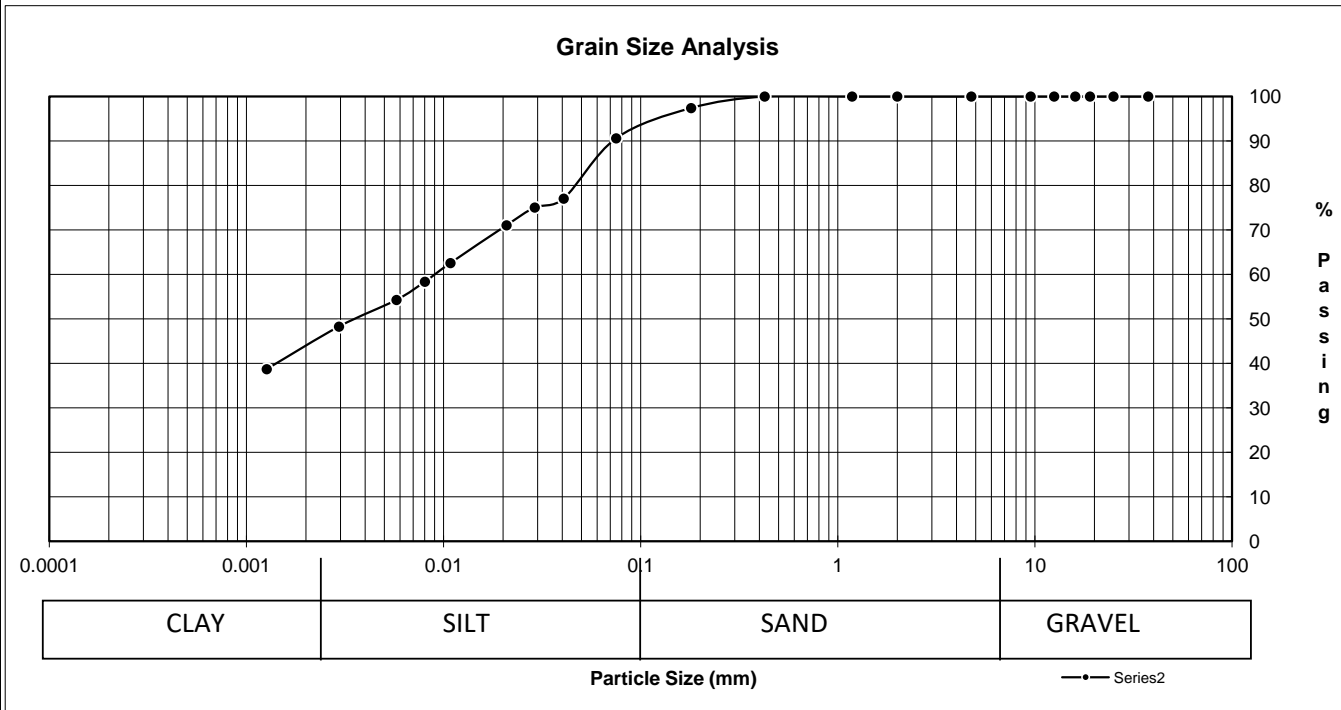
PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT: WSP Canada Group Limited
 Suite 111-93 Lombard Avenue
 Winnipeg, MB R3B 3B1
 ATTENTION: Silvestre Urbano
 PROJECT: Sargent-Wellington/Lipton-Banning

PROJECT NO. 103-1802
 2

Date Sampled: 02-Feb-18	Date Received: 02-Feb-18	Sieve Analysis	Hydrometer Analysis
Sampled By: Client	Date Tested: 08-Feb-18	Sieve (mm) % Passing	Diameter % Finer

<p>Material Identification B.H./T.H. No. TH 2 @2' Sample No. 1 Sample Source Specific Gravity of Material: 2.65</p>	50.00 100.0 37.50 100.0 25.00 100.0 19.00 100.0 16.00 100.0 12.50 100.0 9.50 100.0 4.75 100.0 2.00 100.0 1.18 100.0 0.425 100.0 0.180 97.4 0.075 90.6	0.0406 77.0 0.0290 75.0 0.0208 71.0 0.0108 62.6 0.0080 58.4 0.0058 54.3 0.0029 48.3 0.0013 38.7
--	---	--



SOIL DESCRIPTION	% Composition			
SILTY CLAY LOAM	9.4	Gravel	D10	
	51.9	Sand	D30	
	38.7	Silt	D60	0.00803
		Clay	Cu	#DIV/0!
			Cc	#DIV/0!

Remarks: Test Method: ASTM D422, D2216, D4318
 Technician: GM

Reviewed by: Hermie Manalo

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 1	PROJECT NO: 103-1802
PROJECT: Sargent-Wellington, Lipton-Banning	DATE SAMPLED:	SAMPLED BY: Client
PROJECT CONTACT: Silvestre Urbano	DATE TESTED: 2-Feb-2018	TESTED BY: Greg Manalo

TEST LOCATION:

Description	TH 1	TH 1	TH 1	TH 1	TH 1
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	178.70	128.50	202.40	144.00	176.90
Wt Dry Sample + Tare	140.60	102.80	162.90	118.80	146.20
Wt Water	38.10	25.70	39.50	25.20	30.70
Wt Tare	4.40	4.30	4.30	4.20	4.20
Wt Dry Sample	136.20	98.50	158.60	114.60	142.00
Moisture Content (%)	28.0	26.1	24.9	22.0	21.6

Description	TH 1	TH 1	TH 1		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	206.90	196.90	167.70		
Wt Dry Sample + Tare	162.50	149.40	115.40		
Wt Water	44.40	47.50	52.30		
Wt Tare	4.30	4.90	4.20		
Wt Dry Sample	158.20	144.50	111.20		
Moisture Content (%)	28.1	32.9	47.0		

Description	TH 2	TH 2	TH 2	TH 2	TH 2
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	173.90	208.50	136.80	228.80	169.40
Wt Dry Sample + Tare	127.20	142.60	88.50	178.40	135.20
Wt Water	46.70	65.90	48.30	50.40	34.20
Wt Tare	4.20	4.40	4.70	4.30	4.60
Wt Dry Sample	123.00	138.20	83.80	174.10	130.60
Moisture Content (%)	38.0	47.7	57.6	28.9	26.2

Description	TH 2	TH 2	TH 2		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	165.60	168.60	154.10		
Wt Dry Sample + Tare	126.90	125.90	104.90		
Wt Water	38.70	42.70	49.20		
Wt Tare	4.30	4.20	4.20		
Wt Dry Sample	122.60	121.70	100.70		
Moisture Content (%)	31.6	35.1	48.9		

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 1	PROJECT NO: 103-1802
PROJECT: Sargent-Wellington, Lipton-Banning	DATE SAMPLED:	SAMPLED BY: Client
PROJECT CONTACT: Silvestre Urbano	DATE TESTED: 2-Feb-2018	TESTED BY: Greg Manalo

TEST LOCATION:

Description	TH 3	TH 3	TH 3	TH 3	TH 3
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	135.30	118.70	144.20	146.70	212.00
Wt Dry Sample + Tare	107.40	88.60	109.60	116.50	178.50
Wt Water	27.90	30.10	34.60	30.20	33.50
Wt Tare	4.30	4.30	4.80	4.30	4.30
Wt Dry Sample	103.10	84.30	104.80	112.20	174.20
Moisture Content (%)	27.1	35.7	33.0	26.9	19.2

Description	TH 3	TH 3	TH 3		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	166.40	112.20	157.90		
Wt Dry Sample + Tare	120.70	81.80	105.00		
Wt Water	45.70	30.40	52.90		
Wt Tare	4.20	4.30	4.20		
Wt Dry Sample	116.50	77.50	100.80		
Moisture Content (%)	39.2	39.2	52.5		

Description	TH 4	TH 4	TH 4	TH 4	TH 4
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	153.90	134.10	115.50	161.80	160.20
Wt Dry Sample + Tare	119.70	102.20	91.80	134.10	135.40
Wt Water	34.20	31.90	23.70	27.70	24.80
Wt Tare	4.30	4.50	4.30	4.20	4.40
Wt Dry Sample	115.40	97.70	87.50	129.90	131.00
Moisture Content (%)	29.6	32.7	27.1	21.3	18.9

Description	TH 4	TH 4	TH 4		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	207.20	174.40	143.80		
Wt Dry Sample + Tare	156.40	128.70	94.00		
Wt Water	50.80	45.70	49.80		
Wt Tare	4.20	4.40	4.40		
Wt Dry Sample	152.20	124.30	89.60		
Moisture Content (%)	33.4	36.8	55.6		

APPENDIX

F

SHERBURN / INGERSOLL
ALLEY





1600 BUFFALO PLACE
 WINNEPEG, MANITOBA
 CANADA R3T 6B8
 PHONE: 204-477-6650 FAX: 204-474-2864
 WWW.WSPGROUP.COM

TITLE:

2018 ALLEY RENEWALS – CONTRACT 2
 SHERBURN/INGERSOLL/YARWOOD/WELLINGTON ALLEY
 TESTHOLE LOCATIONS

SCALE:

1:1000

DATE:

2018/03/14

PROJECT NO:

17M-02283-00

REVISION:

DRAWING NO:

GT-F



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/6/18 COMPLETED 2/6/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 631112.0 m E, 5529191.3 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Sherburn/Ingersoll Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_SHERBURN.GPJ_GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲									
									20	40	60	80						
0.0 - 0.05				ASPHALT - 30 mm thick														
0.05 - 0.15				CONCRETE - 170 mm, broken														
0.15 - 0.45				FILL - Clayey, black-grey mixed, trace sand and f. gravel above 0.45 m - Clay mixed with silt, grey-brown, below 0.45 m	GB 1 GB 2			23 26										
0.45 - 0.9				- 57.7% clay; 40.7% silt; 1.6% sand at 0.9 m	GB 3 GB 4			28 27										
0.9 - 1.35				SILT (ML) - Clayey, tan-brown - Frost to 1.35 m - Soft, moist, low plasticity, below 1.35 m	GB 5			23										
1.35 - 1.95				CLAY (CH) - Brown, moist, stiff, high plasticity, trace silt inclusions - Silt pocket, tan-brown, soft, from 1.95 m to 2.1 m	GB 6 GB 7			22 39										
1.95 - 2.1																		
2.1 - 3.0					GB 8			49										

- Testhole dry, open to bottom after drilling.
 - Backfilled with auger cuttings and patched with asphalt.



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/6/18 COMPLETED 2/6/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES CL of alley: 631113.0 m E, 5529256.7 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Sherburn/Ingersoll Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_SHERBURN.GPJ GINT STD CANADA.GDT 3/13/18

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲								
									20	40	60	80					
0.0 - 0.1				ASPHALT - 30 mm thick													
0.1 - 0.2				CONCRETE - 70 mm, deteriorated	GB 1			20									
0.2 - 0.5				FILL - Clayey, grey-black, trace sand and f. gravel													
0.5 - 1.5				CLAY (CH) - Mottled brown and grey	GB 2			22									
1.5 - 2.0				- Frost to 1.35 m - Silty, firm, moist below 1.35 m	GB 3			22									
2.0 - 2.5				SILT (ML) - Tan-brown, soft, moist, low plasticity	GB 4			24									
2.5 - 3.0				CLAY (CH) - Brown, stiff, moist, trace silt inclusions	GB 5			28									
3.0 - 3.5					GB 6			19									
3.5 - 4.0					GB 7			33									
4.0 - 4.5					GB 8			53									

- Testhole dry, open to bottom after completion
 - Backfilled with auger cuttings and patched with asphalt



WSP
 1600 Buffalo Place
 Winnipeg, MB R3T 6B8
 Telephone: (204)-477-6650

CLIENT City of Winnipeg
 PROJECT NUMBER 17M-02283-00
 DATE STARTED 2/6/18 COMPLETED 2/6/18
 DRILLING CONTRACTOR Maple Leaf Drilling
 DRILLING METHOD Solid Stem Auger - B40 Truck Rig
 LOGGED BY Dana Bredin CHECKED BY Silvestre Urbano
 NOTES West of CL of alley: 631115.0 m E, 55299369.7 m N

PROJECT NAME 2018 Alley Renewals - Contract 2
 PROJECT LOCATION Sherburn/Ingersoll Alley
 GROUND ELEVATION _____ HOLE SIZE 125 mm
 GROUND WATER LEVELS:
 AT TIME OF DRILLING ---
 AT END OF DRILLING ---
 AFTER DRILLING ---

DEPTH (m)	GRAPHIC LOG	ELEV. (m)	WATER LEVEL	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	POCKET PEN. (kPa)	MOISTURE CONTENT (%)	▲ SPT N VALUE ▲						
									20	40	60	80			
0.0 - 0.5				CONCRETE - 220 mm intact											
0.5 - 1.0				FILL - Clayey, black-grey mixed, trace sand and f. gravel	GB 1 GB 2			23 36							
1.0 - 1.5				CLAY (CH) - Mottled brown and grey, some silt pockets	GB 3 GB 4			30 32							
1.5 - 2.0				SILT (ML) - Tan-brown - Frost to 1.5 m - Soft, moist below 1.5 m	GB 5 GB 6			29 23							
2.0 - 3.0				CLAY (CH) - Brown, stiff, moist, trace silt inclusions - Trace oxidation at 2.25 m	GB 7 GB 8			30 51							

- Testhole dry, open to bottom after completion
 - Backfilled with auger cuttings and patched with asphalt

GENERAL BH PLOTS - WSP ALLEY_RENEWALS_CONTRACT_2_SHERBURN.GPJ GINT STD CANADA.GDT 3/13/18



Figure 17 - TH1 Sherburn/Ingersoll



Figure 18 - TH2 Sherburn/Ingersoll

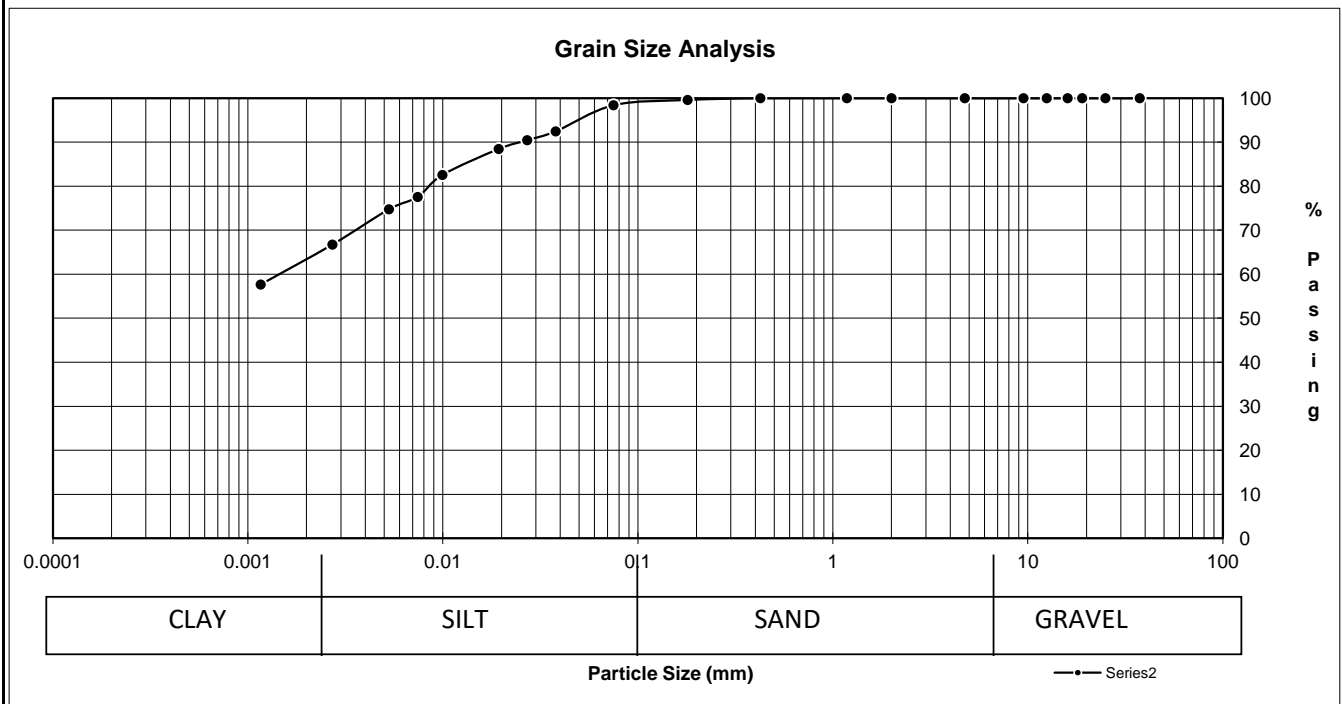


Figure 19 - TH3 Sherburn/Ingersoll

PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT:	WSP Canada Group Limited Suite 111-93 Lombard Avenue Winnipeg, MB R3B 3B1	PROJECT NO. 103-1804
ATTENTION:	Dana Bredin	
PROJECT:	17M-02283-00 Sherburn	

Date Sampled: 12-Feb-18	Date Received: 12-Feb-18	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 15-Feb-18	Sieve (mm)	% Passing	Diameter	% Finer
Material Identification B.H./T.H. No. TH 1 @3' Sample No. 1 Sample Source Specific Gravity of Material: 2.65		50.00	100.0		
		37.50	100.0		
		25.00	100.0		
		19.00	100.0		
		16.00	100.0		
		12.50	100.0	0.0379	92.5
		9.50	100.0	0.0271	90.5
		4.75	100.0	0.0193	88.5
		2.00	100.0	0.0099	82.6
		1.18	100.0	0.0074	77.6
	0.425	100.0	0.0053	74.8	
	0.180	99.6	0.0027	66.7	
	0.075	98.4	0.0012	57.7	



SOIL DESCRIPTION	% Composition		D10	
	SILTY CLAY	1.6	Gravel	D30
40.7		Sand	D60	0.00116
57.7		Silt	Cu	#DIV/0!
57.7		Clay	Cc	#DIV/0!

Remarks: Test Method: ASTM D422, D2216, D4318
Technician: GM

Reviewed by: Hermie Manalo

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 001	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 12-Feb-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 13-Feb-2018	TESTED BY: Greg Manalo
TEST LOCATION: Sherburn		

Description	TH1	TH1	TH1	TH1	TH1
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	170.90	145.20	268.40	192.20	171.20
Wt Dry Sample + Tare	139.70	115.80	210.40	152.10	139.50
Wt Water	31.20	29.40	58.00	40.10	31.70
Wt Tare	4.20	4.20	4.10	4.20	4.20
Wt Dry Sample	135.50	111.60	206.30	147.90	135.30
Moisture Content (%)	23.0	26.3	28.1	27.1	23.4

Description	TH1	TH1	TH1		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	217.90	149.60	155.80		
Wt Dry Sample + Tare	179.50	109.10	106.30		
Wt Water	38.40	40.50	49.50		
Wt Tare	4.30	4.30	4.50		
Wt Dry Sample	175.20	104.80	101.80		
Moisture Content (%)	21.9	38.6	48.6		

Description	TH2	TH2	TH2	TH2	TH2
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	171.40	184.80	176.80	170.50	175.50
Wt Dry Sample + Tare	144.50	152.80	145.90	137.90	138.30
Wt Water	26.90	32.00	30.90	32.60	37.20
Wt Tare	4.30	4.40	4.20	4.30	4.90
Wt Dry Sample	140.20	148.40	141.70	133.60	133.40
Moisture Content (%)	19.2	21.6	21.8	24.4	27.9

Description	TH2	TH2	TH2		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	197.30	180.40	183.10		
Wt Dry Sample + Tare	166.30	136.70	121.20		
Wt Water	31.00	43.70	61.90		
Wt Tare	4.30	4.50	4.30		
Wt Dry Sample	162.00	132.20	116.90		
Moisture Content (%)	19.1	33.1	53.0		

MOISTURE CONTENT OF SOIL (ASTM D2216)

CLIENT: WSP	TEST NO: 18- 001	PROJECT NO: 103-1804
PROJECT: 17M-02283-00	DATE SAMPLED: 12-Feb-2018	SAMPLED BY: Client
PROJECT CONTACT: Dana Bredin	DATE TESTED: 13-Feb-2018	TESTED BY: Greg Manalo
TEST LOCATION: Sherburn		

Description	TH3	TH3	TH3	TH3	TH3
Depth (ft)	1	2	3	4	5
Wt Wet Sample + Tare	190.50	145.00	174.20	189.70	187.80
Wt Dry Sample + Tare	155.80	108.20	134.30	145.10	147.10
Wt Water	34.70	36.80	39.90	44.60	40.70
Wt Tare	4.20	4.60	4.40	4.50	4.20
Wt Dry Sample	151.60	103.60	129.90	140.60	142.90
Moisture Content (%)	22.9	35.5	30.7	31.7	28.5

Description	TH3	TH3	TH3		
Depth (ft)	6	7	10		
Wt Wet Sample + Tare	175.70	174.70	176.30		
Wt Dry Sample + Tare	143.50	135.80	118.40		
Wt Water	32.20	38.90	57.90		
Wt Tare	4.20	4.30	4.20		
Wt Dry Sample	139.30	131.50	114.20		
Moisture Content (%)	23.1	29.6	50.7		

Description					
Depth (ft)					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
Moisture Content (%)					

Description					
Depth (ft)					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
Moisture Content (%)					