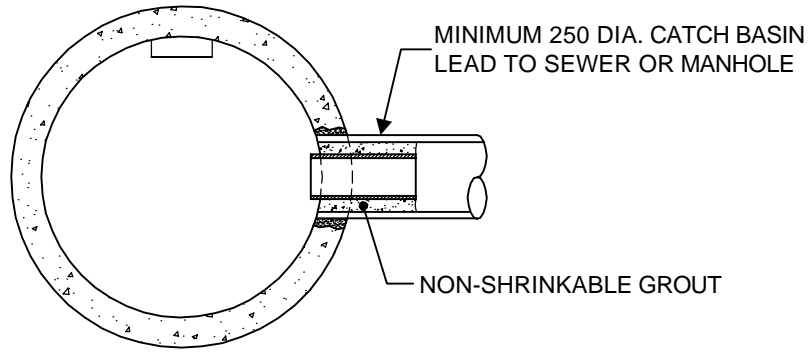


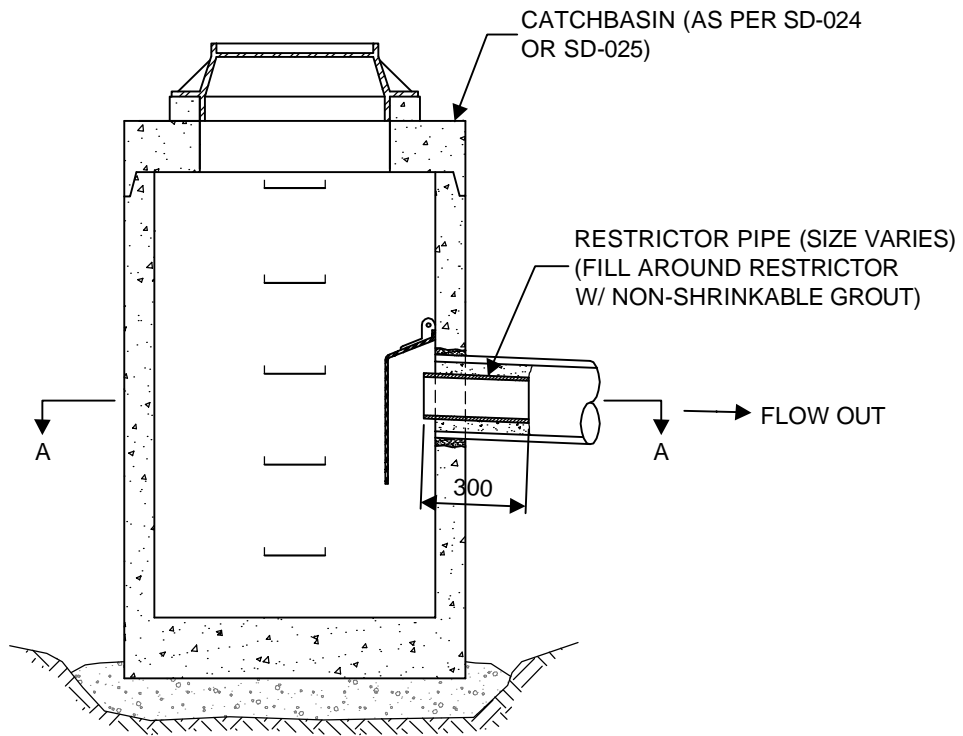
# **APPENDIX 'A'**

## **DETAIL SD-122**

### **GEOTECHNICAL REPORT**



**SECTION A - A**



**OUTLET FLOW RESTRICTOR**

DIMENSIONS IN MILLIMETERS



**THE CITY OF WINNIPEG**  
**WATER & WASTE DEPARTMENT**

Reference Spec. No.

CW 2030 CW 2130 CW 3205 CW 3210

STANDARD PRE-CAST  
 CONCRETE CATCH BASIN  
 C/W OUTLET RESTRICTOR

Designed By:  
 DG

Checked By:  
 SC

Approved:  
 UNDERGROUND WORKS COMMITTEE

Drawn By:  
 CJH

Date: 12-02-06  
 Revision: 0

Scale:  
 N.T.S.

Drawing No.  
 SD-122

---

**GEOTECHNICAL STREET TESTING PROGRAM  
2015 CITY OF WINNIPEG LOCAL IMPROVEMENTS – CONTRACT 1  
WINNIPEG, MANITOBA**

---

**Prepared for:**

**City of Winnipeg  
Public Works Department**

**Project No: 141-24150-00  
May, 2015**



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**[www.wspgroup.com](http://www.wspgroup.com)**

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**Appendix A – BOREHOLE LOGS**

**Appendix B – TEST RESULTS**

## **1.0 SUMMARY**

A geotechnical investigation was conducted for the proposed lane reconstruction projects 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.

Twelve (12) lanes (listed in Table 1), were drilled to at least 3.05 m depth in conjunction with City of Winnipeg (COW) geotechnical investigation guidelines. A total of thirty-six (36) boreholes were drilled.

At minimum, seven (7) grab-bag samples were taken for each borehole at 0.3 m intervals to determine the moisture content for each sample as well as particle size analysis on selected samples.

The subsurface conditions for each lane reconstruction project are summarized for each site. Also included are borehole logs (Appendix A), and test results (Appendix B).

## **2.0 INTRODUCTION**

### **2.1 SCOPE OF WORK AND BACKGROUND**

WSP was retained to undertake a soils investigation for a proposed lane reconstruction and projects in Winnipeg, Manitoba. The purpose of this work was to establish the soil and groundwater conditions at the sites, of which the pavement structure is identified and soil stratigraphy is profiled using the City of Winnipeg (COW) geotechnical investigation guideline. Authorization to proceed with the work was provided by City of Winnipeg.

### **2.2 PROPOSED LANE RECONSTRUCTION PROJECTS**

The proposed lane reconstruction projects are as follows:

**Table 1 - List of Lane Reconstruction Projects**

<b>SITE NO.</b>	<b>LOCATION DETAILS</b>
<b>2</b>	All lanes bounded by Imperial Ave/Pilgrim Ave/St. Annes Rd/Rue Des Meurons
<b>3</b>	All lanes bounded by Loraine St/Oakleigh Pl/St. Mary's Rd/first north-south lane west of St. Anne's Rd
<b>4</b>	Thorndale Ave/Frederick Ave/St. David Rd/St. George Rd
<b>7</b>	East-west lane bounded by Fernwood Ave/Thorndale Ave/St. Mary's Rd/St. David Rd
<b>9</b>	East-west lane bounded by Clonard Ave/Stranmillis Ave/St. Anne's Rd/Rue Des Meurons
<b>12</b>	Edgewood St/Lariviere St/Rue Youville/Seine River including north-south outlet to Edgewood St
<b>14</b>	St. David Rd/Hull Ave/St. Mary's Rd/St. David Pl including east-west outlet to St. David Rd
<b>15</b>	Yardley St/Rue St. Luc/Rue Youville/Bristol Ave
<b>18</b>	Portland Ave/Poplarwood Ave/St. David Rd/Neepawa St
<b>20</b>	East-west lane bounded by Barton Ave/Havelock Ave/St. Anne's Rd/St. Andrew Rd
<b>22</b>	All lanes bounded by Harrowby/Dunraven/egerton/Des Meurons
<b>23</b>	East-west lane bounded by Fifth/Guay/Youville/Des Meurons

### **3.0 FIELD METHODOLOGY**

The subsoils encountered were visually classified to the full extent in the borehole and representative soil samples were recovered at regular depth intervals (every 0.3 m down to 2.13 m).

The field investigation was undertaken between January 14, 2015 and February 3, 2015. A total of thirty-six (36) boreholes were cored and drilled down to 3.05 m depth using a truck-mounted B-40LX rig and CME-55 drilling rig equipped with 125 mm auger. All boreholes were backfilled with auger cuttings/bentonite and capped with cold mix asphalt after completion of drilling (if applicable).

For confirmation, all of the soil samples are tested for moisture contents and selected soil samples between the depth of 0.5 m and 1.0 m were submitted for Particle Size Analysis test (PSA). One Atterberg Limit test was also conducted. The asphalt (if applicable) was measured for thicknesses. Any groundwater seepage and sloughing encountered in the boreholes were noted.

## **4.0 SOIL CONDITIONS**

### **4.1 SUBSURFACE CONDITIONS (SOIL PROFILE AND GROUNDWATER)**

The general soil profile encountered for most boreholes was a top layer of granular fill (typical base course), followed by a layer of clay or silty clay (insitu or fill), which extended to the bottom of each borehole. Some boreholes also revealed a layer of silt between two layers of clay or silty clay.

The granular fill was found to have an approximate thickness ranging from 0.15 m to 0.6 m, averaging around 0.3 m. Nine (9) boreholes also revealed a layer of deteriorated or disintegrated asphalt ranging in thickness from 0.05 m to 0.12 m. In some cases, the suspected asphalt may have been particularly compacted granular material mixed with a sealant.

The clay or silty clay encountered beneath the granular fill ranged from grey to brown and was typically fissured in the upper 1.5 m of the borehole. Some boreholes revealed a layer of clay fill beneath the granular material. The clay fill ranged in thickness from 0.3 m to 1.2 m. The clay fill was largely a mix of brown to grey to black, with some clay fill layers showing a trace of fine gravel.

Various boreholes revealed a layer of silt at an approximate depth ranging from 0.9 m to 2.15 m. The thickness of the silt layer ranged from 0.3 m to 1.5 m and was generally moist to wet.

For each borehole, the groundwater level and depth of frost was measured. The frost ranged in depth from 1.05 m to 1.35 m. No groundwater was encountered after drilling in any of the boreholes.

Detailed descriptions of the soil profiles in each borehole are shown on in the borehole logs in Appendix A.

## **4.2 LABORATORY TESTING**

For each borehole, a minimum of seven (7) grab-bag samples were selected at 0.3 m intervals. Each sample was tested to determine its moisture content. Certain samples in the 0.5 m to 1.0 m range were also tested to determine the particle size, so that the selected sample may be classified into four categories: clay (< 30% silt), silty clay (30% - 50% silt), clayey silt (50% - 70%), and silt (>70%). One Atteberg Limit test was also conducted to determine the plasticity of a selected sample.

Detailed descriptions of the moisture content, PSA and Atterberg Limit test results are shown in Appendix B.



## 5.0 SUMMARY OF SOIL CONDITIONS BY SITE

### SITE 2 - All lanes bounded by Imperial Ave/Pilgrim Ave/St. Annes Rd/Rue Des Meurons

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 34	Lane behind 9 Pilgrim Ave	Asphalt/Granular Fill	75 (deteriorated)	Granular Fill	225	Asphalt, granular fill (typ. base course), clay fill (0.6 m), clay (0.15 m), silt (1.2 m), clay (0.75 m)	3.05 m	8
TH 35	Lane behind 61 Pilgrim Ave	Asphalt/Granular Fill	75 (deteriorated)	Granular Fill	225	Asphalt, granular fill (typ. base course), clay fill (0.6 m), clay (0.45 m), silt (0.3 m), clay (1.35 m)	3.05 m	7
TH 36	Lane behind 109 Pilgrim Ave	Asphalt/Granular Fill	50 (deteriorated)	Granular Fill	400	Asphalt, granular fill (typ. base course), clay fill (0.6 m), clay (0.45 m), silt (0.75 m), clay (0.75 m)	3.05 m	8

### SITE 3 - All lanes bounded by Loraine St/Oakleigh Pl/St. Mary's Rd/first north-south lane west of St. Anne's Rd

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 37	Lane behind 29 Oakleigh Pl	Asphalt/Granular Fill	50 (deteriorated)	Granular Fill	150	Asphalt, granular fill (typ. base course mixed with clay), clay fill (1.3 m), silt (1.35 m), clay (0.15 m)	3.05 m	7
TH 38	Lane behind 21 Oakleigh Pl	Asphalt/Granular Fill	125 (deteriorated)	Granular Fill	225	Asphalt, granular fill (typ. base course mixed with clay), clay fill (0.6 m), clay (0.6 m), silt (1.35 m), clay (0.15 m)	3.05 m	8
TH 39	Lane behind 9/11 Oakleigh Pl	Asphalt/Granular Fill	100 (deteriorated)	Granular Fill	250	Asphalt, granular fill (typ. base course mixed with clay), clay fill (0.3 m), clay (0.9 m), silt (0.9 m), clay (0.6 m)	3.05 m	8

### SITE 4 – All Lanes Bounded by Thorndale Ave/Frederick Ave/St. David Rd/St. George Rd

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 54	Lane behind 100 Thorndale Ave	Granular Fill	-	Granular Fill	450	Granular fill (typ. base course), clay (2.6 m)	3.05 m	7
TH 55	Lane behind 120 Thorndale Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay (2.75 m)	3.05 m	7
TH 56	Lane behind 140 Thorndale Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.3 m), clay (2.45 m)	3.05 m	7

**SITE 7 – East-west lane bounded by Fernwood Ave/Thorndale Ave/St. Mary’s Rd/St. David Rd**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 51	Lane behind 10 Fernwood Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.3 m), clay (2.45 m)	3.05 m	7
TH 52	Lane behind 44/48 Fernwood Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.3 m), clay (1.05 m), silt (1.2 m), clay (0.2 m)	3.05 m	8
TH 53	Lane behind 82 Fernwood Ave	Granular Fill	-	Granular Fill	600	Granular fill (typ. base course mixed with clay), clay fill (0.3 m), clay (2.15 m)	3.05 m	7

**SITE 9 – East-west lane bounded by Clonard Ave/Stranmillis Ave/St. Anne’s Rd/Rue Des Meurons**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 40	Lane behind 11 Stranmillis Ave	Granular Fill	-	Granular Fill	600	Granular fill (typ. limestone base course), clay fill (0.3 m), clay (0.6 m), silt (0.9 m), clay (0.6 m)	3.05 m	8
TH 41	Lane behind 59/63 Stranmillis Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. limestone base course), clay fill (1.05 m), clay (0.15 m), silt (0.45 m), clay (1.05 m)	3.05 m	7
TH 42	Lane behind 105 Stranmillis Ave	Granular Fill	-	Granular Fill	600	Granular fill (typ. limestone base course mixed with clay), clay fill (0.6 m), clay (0.3 m), silt (0.75 m), clay (0.75 m)	3.05 m	7

**SITE 12 – All lanes bounded by Edgewood St/Lariviere St/Rue Youville/Seine River including north-south outlet to Edgewood St**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 45	Lane behind 421 Lariviere St	Granular Fill	-	Granular Fill	100	Granular fill (typ. base course), clay (1.0 m), silt (1.05 m), clay (0.9 m)	3.05 m	7
TH 46	Lane behind 433/435 Lariviere St	Granular Fill	-	Granular Fill	150	Granular fill (typ. base course), clay (1.5 m), silt (0.75 m), clay (0.6 m)	3.05 m	7
TH 47	Lane behind 455 Lariviere St	Granular Fill	-	Granular Fill	200	Granular fill (typ. base course), clay (1.0 m), silt (0.9 m), clay (0.9 m)	3.05 m	7

**SITE 14 – All lanes bounded by St. David Rd/Hull Ave/St. Mary’s Rd/St. David PI including east-west outlet to St. David Rd**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 60	Lane behind 10 St. David PI	Granular Fill	-	Granular Fill	450	Granular fill (typ. base course), silty clay (1.5 m), silt (0.6 m), clay (0.45 m)	3.05 m	7
TH 61	Lane behind 28/30 St. David PI	Granular Fill	-	Granular Fill	600	Granular fill (typ. base course), silty clay (0.45 m), silt (0.45 m), clay (1.5 m)	3.05 m	7
TH 62	Lane behind 36 St. David PI	Granular Fill	-	Granular Fill	450	Granular fill (typ. base course), silty clay (1.7 m), clay (0.9 m)	3.05 m	7

**SITE 15 – All lanes bounded Yardley St/Rue St. Luc/Rue Youville/Bristol Ave**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 22	Lane behind 96 Bristol Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.3 m), clay (0.9 m), silt (0.3 m), clay (1.2 m)	3.05 m	7
TH 23	Lane behind 112 Bristol Ave	Granular Fill	-	Granular Fill	200	Granular fill (typ. base course), clay fill (0.4 m), clay (0.9 m), silt (0.9 m), clay (0.6 m)	3.05 m	7
TH 24	Lane behind 126 Bristol Ave	Granular Fill	-	Granular Fill	200	Granular fill (typ. base course), clay fill (0.4 m), clay (0.9 m), silt (0.75 m), clay (0.75 m)	3.05 m	7

**SITE 18 – All lanes bounded by Portland Ave/Poplarwood Ave/St. David Rd/Neepawa St**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 57	Lane behind 133 Poplarwood Ave	Granular Fill	-	Granular Fill	450	Granular fill (typ. base course), clay (2.6 m)	3.05 m	7
TH 58	Lane behind 113 Poplarwood Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.6 m), clay (0.45 m), silt (0.3 m), clay (1.35 m)	3.05 m	7
TH 59	Lane behind 89 Poplarwood Ave	Granular Fill	-	Granular Fill	150	Granular fill (typ. base course), clay fill (0.45 m), clay (0.75 m), silt (0.9 m), clay (0.75 m)	3.05 m	8

**SITE 20 – East-west lane bounded by Barton Ave/Havelock Ave/St. Anne’s Rd/St. Andrew Rd**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 48	Lane behind 227 Havelock Ave	Granular Fill	-	Granular Fill	600	Granular fill (typ. base course), clay (1.5 m), silt (0.3 m), clay (0.6 m)	3.05 m	8
TH 49	Lane behind 211/215 Havelock Ave	Granular Fill	-	Granular Fill	450	Granular fill (typ. base course mixed with clay), clay (1.65 m), silt (0.3 m), clay (0.6 m)	3.05 m	7
TH 50	Lane behind 199 Havelock Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.3 m), clay (1.05 m), silt (0.6 m), clay (0.75 m)	3.05 m	7

**SITE 22 – All lanes bounded by Harrowby Ave/Dunraven Ave/Egerton Rd/Rue Des Meurons**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 28	Lane behind 129 Dunraven Ave	Asphalt/Granular Fill	50 (deteriorated)	Granular Fill	250	Granular fill (typ. base course), clay fill (0.3 m), silty clay (0.6 m), silt (0.3 m), clay (1.5 m)	3.05 m	7
TH 29	Lane behind 103 Dunraven Ave	Asphalt/Granular Fill	50 (deteriorated)	Granular Fill	400	Granular fill (typ. base course), clay fill (0.3 m), clay (0.3 m), silt (0.6 m), clay (1.35 m)	3.05 m	7
TH 30	Lane behind 79 Dunraven Ave	Asphalt/Granular Fill	50 (deteriorated)	Granular Fill	250	Granular fill (typ. base course), clay fill (0.6 m), silty clay (0.6 m), silt (0.6 m), clay (0.6 m)	3.05 m	7

**SITE 23 – East-west lane bounded by Fifth Ave/Guay Ave/Rue Youville/Rue Des Meurons**

Borehole ID	Borehole Location	Pavement Surface		Pavement Structure Material		Soil Description	Borehole Depth	No. of Samples Taken
		Type	Thickness (mm)	Type	Thickness (mm)			
TH 25	Lane behind 59 Guay Ave	Granular Fill	-	Granular Fill	150	Granular fill (typ. base course), clay fill (0.6 m), clay (0.75 m), silt (1.5 m)	3.05 m	8
TH 26	Lane behind 87 Guay Ave	Granular Fill	-	Granular Fill	150	Granular fill (typ. base course), clay fill (0.45 m), clay (0.9 m), silt (0.9 m), clay (0.6 m)	3.05 m	7
TH 27	Lane behind 111 Guay Ave	Granular Fill	-	Granular Fill	300	Granular fill (typ. base course), clay fill (0.6 m), clay (0.6 m), silt (1.2 m), clay (0.3 m)	3.05 m	7

## 6.0 CLOSURE

The findings and recommendations provided in this report were prepared by WSP (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 borehole(s) and/or excavation(s) examined. If conditions encountered during construction appear to be different than those shown by the borehole(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.

Prepared by: Dana T.G. Bredin, P.Eng  
Reviewed by: Silvestre S. Urbano, P.Eng.



# APPENDIX A



Project No: 141-24150-00

TH 22

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 15 - Alley behind 96 Bristol Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Sandy, trace of gravel				
1		<b>CLAY FILL</b> Grey, dry, fractured	99.7			13.0
2		<b>CLAY</b> Brown, frost to 1.2 m, cohesive below 1.2 m	99.4			31.0
3						37.0
4						35.0
5		<b>SILT</b> Tan-brown, moist	98.5			31.0
6		<b>CLAY</b> Brown, cohesive	98.2			30.0
7						40.0
8						
9						
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1





Project No: 141-24150-00

TH 23

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 15 - Alley behind 112 Bristol Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Sandy, trace of gravel	99.8			
1		<b>CLAY FILL</b> Grey to brown, dry, fractured, trace of gravel	99.4			6.0
2		<b>CLAY</b> Brown, fissured, frost to 1.4 m				12.0
3						34.0
4						36.0
5		<b>SILT</b> Tan-brown, moist	98.5			35.0
6						22.0
7						23.0
8		<b>CLAY</b> Brown, cohesive	97.6			
9						
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 24

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 15 - Alley behind 126 Bristol Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Sandy, trace of gravel	99.8			
1		<b>CLAY FILL</b> Brown, trace of fine gravel	99.4			13.0
2		<b>CLAY</b> Brown, fissured, frost to 1.4 m, SILTY below 1.4 m	98.5			24.0
3						38.0
4						35.0
5		<b>SILT</b> Tan-brown, moist	97.7			30.0
6						23.0
7						26.0
8		<b>CLAY</b> Brown, cohesive	97.0			
9						
10		End of Log				

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 25

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 23 - Alley behind 59 Guay Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course	99.8			
1		<b>CLAY FILL</b> Grey, fractured, trace of gravel above 0.75 m	99.3			18.0
3		<b>CLAY</b> Brown, fissured, frost to 1.2 m, SILTY at 1.4 m	98.5			29.0
5		<b>SILT</b> Tan-brown, moist, clayey below 2.9 m	97.0			36.0
7						32.0
10		End of Log				27.0
						27.0
						25.0

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 26

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 23 - Alley behind 87 Guay Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course	99.8			
1		<b>CLAY FILL</b> Grey, fractured above 0.6 m	99.4			9.0
2		<b>CLAY</b> Grey to brown, stiff, fissured, frost to 1.2 m	98.5			25.0
3						40.0
4						40.0
5		<b>SILT</b> Tan-brown, moist	98.5			35.0
6						24.0
7						25.0
8		<b>CLAY</b> Brown, cohesive	97.6			
9						
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 27

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 23 - Alley behind 111 Guay Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY FILL</b> Grey to black, fractured above 0.9 m	99.7			22.0
2						35.0
3		<b>CLAY</b> Brown, stiff, fissured, frost to 1.2 m	99.1			37.0
4						35.0
5		<b>SILT</b> Tan-brown, moist	98.5			31.0
6						25.0
7						23.0
8						
9		<b>CLAY</b> Brown, cohesive	97.3			
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 28

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 22 - Alley behind 129 Dunraven Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
		<b>ASPHALT</b>	99.9			
		<b>GRANULAR FILL</b> Sand and gravel, typ. base course	99.7			
1		<b>CLAY FILL</b> Grey to black, fractured, dry, trace of gravel	99.4			3.0
2		<b>SILTY CLAY</b> Grey, SILT lenses below 0.9 m, fissured, frost to 1.2 m	98.8			27.0
3		<b>SILT</b> Tan-brown, moist	98.5			53.0
4		<b>CLAY</b> Brown, cohesive	98.5			36.0
5						25.0
6						39.0
7						43.0
8						
9						
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 29

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 22 - Alley behind 103 Dunraven Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
		<b>ASPHALT</b>	99.9			
		<b>GRANULAR FILL</b> Sand and gravel, typ. base course				
1			99.5			4.0
		<b>CLAY FILL</b> Grey, fractured and dry				
2			99.3			33.0
		<b>CLAY</b> Grey, fissured, stiff				
3			98.9			42.0
		<b>SILT</b> Tan-brown, moist, frost to 1.2 m				
4						26.0
5						23.0
6			98.3			30.0
		<b>CLAY</b> Brown, cohesive				
7						43.0
8						
9						
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 30

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 22 - Alley behind 79 Dunraven Ave

Engineer: D.Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
		<b>ASPHALT</b>	99.9			
		<b>GRANULAR FILL</b> Sand and gravel, typ. base course	99.7			13.0
		<b>CLAY FILL</b> Grey, fractured and dry above 0.6 m				33.0
			99.1			35.0
		<b>SILTY CLAY</b> Brown, fissured, frost to 1.2 m, SILTY below 1.2 m				34.0
			98.5			31.0
		<b>SILT</b> Tan-brown, moist				24.0
			97.8			28.0
		<b>CLAY</b> Brown, cohesive				
			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/16/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1





Project No: 141-24150-00

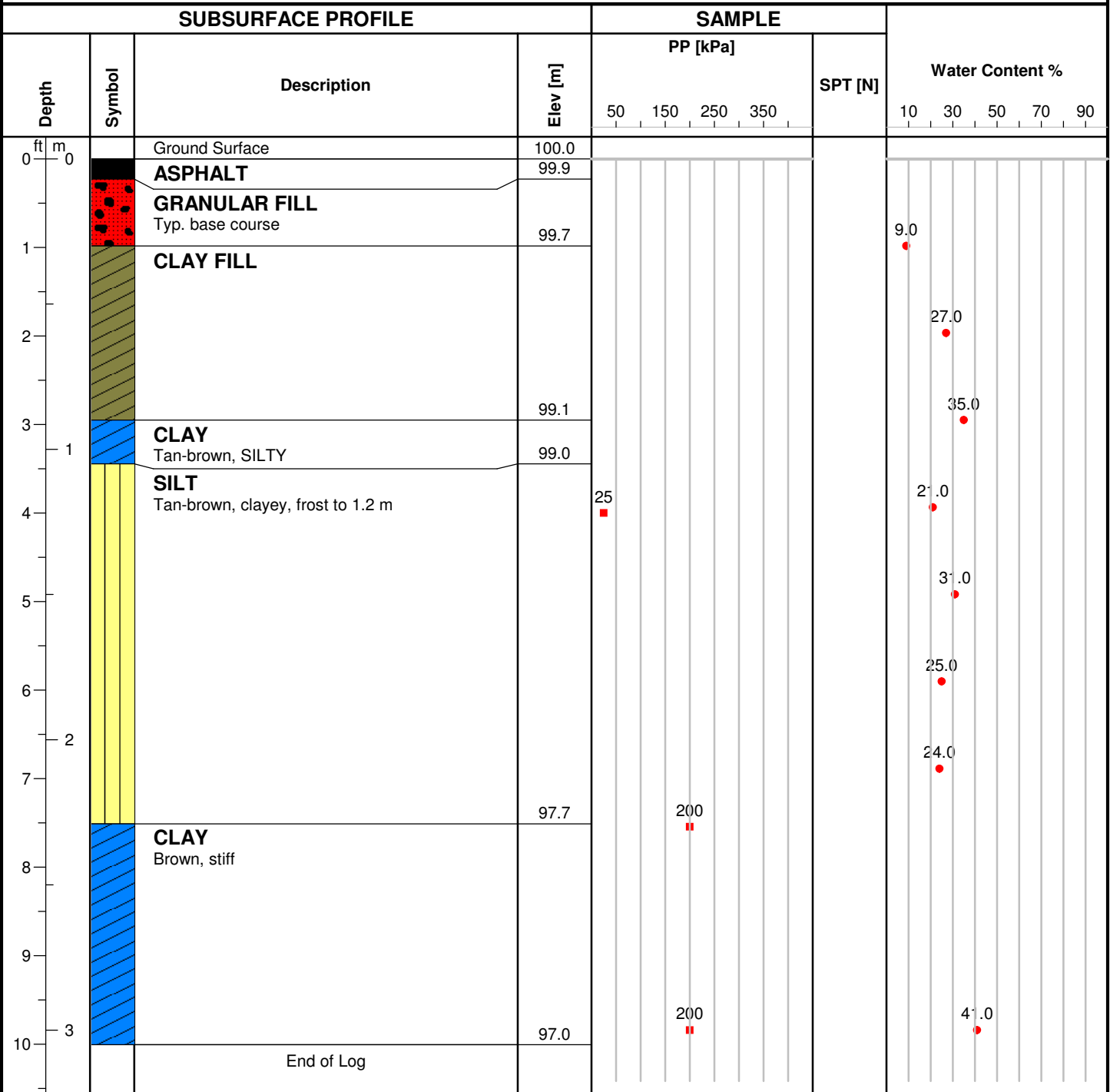
TH 34

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 2 - Alley behind 9 Pilgrim Ave

Engineer: S. Urbano



Drill Method: Auger

Drill Date: 1/19/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 35

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 2 - Alley behind 61 Pilgrim Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>ASPHALT</b> Sealant with gravel				
1		<b>GRANULAR FILL</b> Typ. base course	99.7			6.0
2		<b>CLAY FILL</b>				20.0
3			99.1			41.0
4		<b>CLAY</b> Brown, SILTY, frost to 1.2 m				51.0
5			98.7			28.0
6		<b>SILT</b> Tan-brown, soft				31.0
7			98.3			41.0
8		<b>CLAY</b> Brown, stiff		200		
9						
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/19/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 36

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 2 - Alley behind 109 Pilgrim Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>ASPHALT</b> Sealant with gravel				
1		<b>GRANULAR FILL</b> Typ. base course	99.5			9.0
2		<b>CLAY FILL</b>				28.0
3			99.0			34.0
4		<b>CLAY</b> Brown, frost to 1.35 m	98.5			34.0
5		<b>SILT</b> Tan-brown, soft				31.0
6			97.7			24.0
7						23.0
8		<b>CLAY</b> Brown, stiff				
9						
10			97.0			46.0
		End of Log				

Drill Method: Auger

Drill Date: 1/19/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

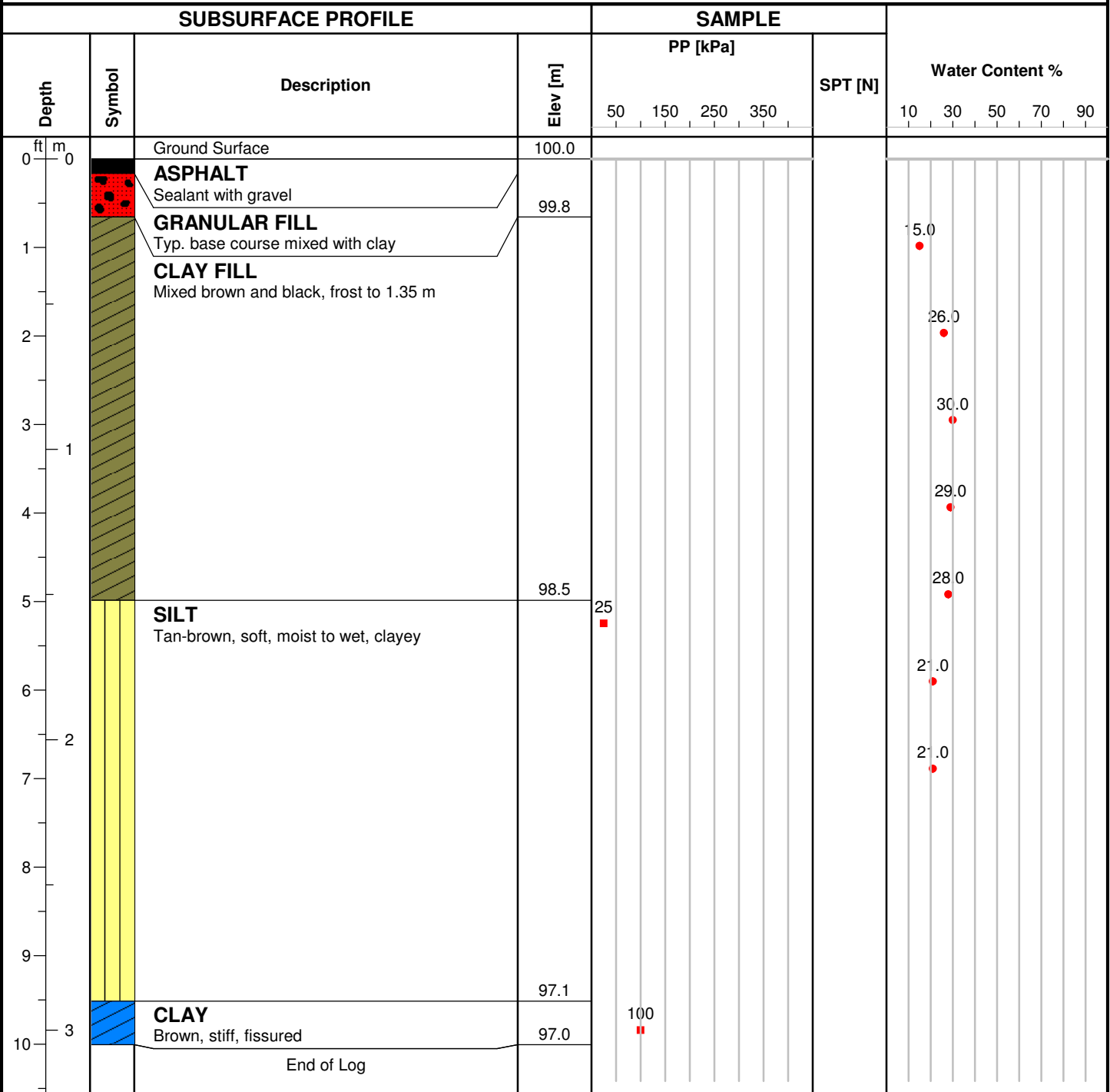
TH 37

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 3 - Alley behind 29 Oakleigh Pl

Engineer: S. Urbano



Drill Method: Auger

Drill Date: 1/20/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

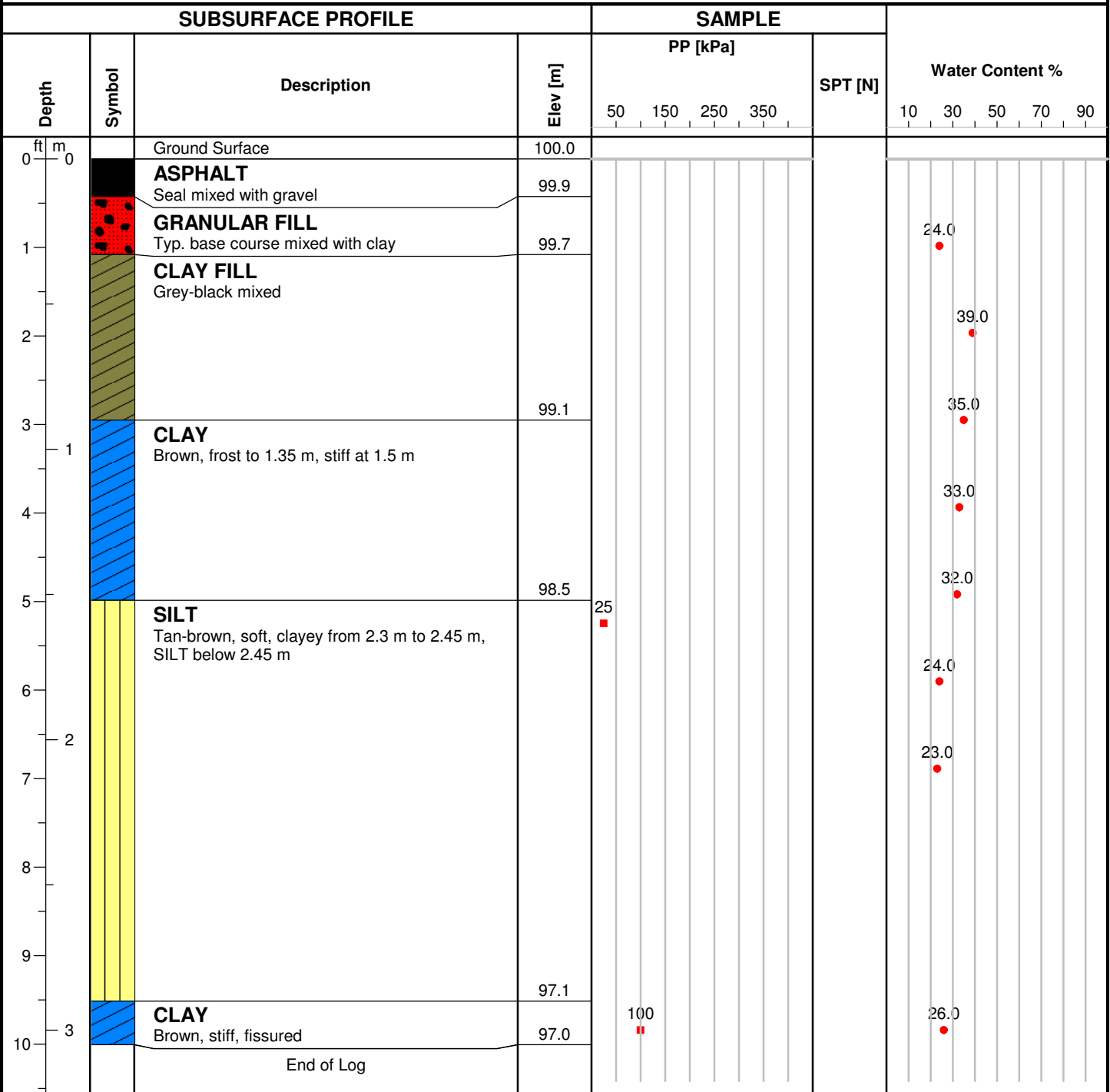
TH 38

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 3 - Alley behind 21 Oakleigh Pl

Engineer: S. Urbano



Drill Method: Auger

Drill Date: 1/20/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 39

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 3 - Alley behind 9/11 Oakleigh Pl

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
		<b>ASPHALT</b> Seal mixed with gravel	99.9			
1		<b>GRANULAR FILL</b> Typ. base course mixed with clay	99.6			33.0
2		<b>CLAY FILL</b> Grey-black mixed	99.4			34.0
3		<b>CLAY</b> Grey-black, frost to 1.35 m				35.0
4						35.0
5			98.5			34.0
6		<b>SILT</b> Tan-brown, soft				25.0
7						21.0
8			97.5			
9		<b>CLAY</b> Brown, stiff, fissured				
10			97.0			44.0
		End of Log				

Drill Method: Auger

Drill Date: 1/20/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 40

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 9 - Alley behind 11 Stranmillis Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1.9		<b>GRANULAR FILL</b> Typ. limestone base course	99.4			8.0
1.9 to 2.9		<b>CLAY FILL</b> Grey-black mixed	99.1			19.0
2.9 to 4.9		<b>CLAY</b> Grey-black, frost to 1.35 m	98.5			37.0
4.9 to 7.9		<b>SILT</b> Tan-brown, soft	97.5			36.0
7.9 to 9.9		<b>CLAY</b> Brown, stiff	97.0	125		36.0
9.9 to 10.0		End of Log				25.0
						23.0
						39.0

Drill Method: Auger

Drill Date: 1/20/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 41

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 9 - Alley behind 59/63 Stranmillis Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. limestone base course				
1			99.7			7.0
1		<b>CLAY FILL</b> Grey-black to brown, trace of fine gravel, frost to 1.35 m				
2						39.0
3						45.0
4						39.0
4			98.7			
5		<b>CLAY</b> Brown	98.5			36.0
5		<b>SILT</b> Tan-brown, soft				
6						26.0
7			98.0			
7		<b>CLAY</b> Brown, stiff				37.0
8						
9						
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/20/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1





Project No: 141-24150-00

TH 42

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 9 - Alley behind 105 Stranmillis Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 2		<b>GRANULAR FILL</b> Typ. limestone base course over geotextile at 0.3 m, granular mixed with clay below 0.3 m	99.4			10.0
2 to 4		<b>CLAY FILL</b> Grey-black mixed	98.8			11.0
4 to 5		<b>CLAY</b> Grey-black	98.5			36.0
5 to 7		<b>SILT</b> Tan-brown, soft	97.7			37.0
7 to 8		<b>CLAY</b> Brown, stiff, fissured	97.0			39.0
8 to 10		End of Log				24.0
						24.0

Drill Method: Auger

Drill Date: 1/20/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

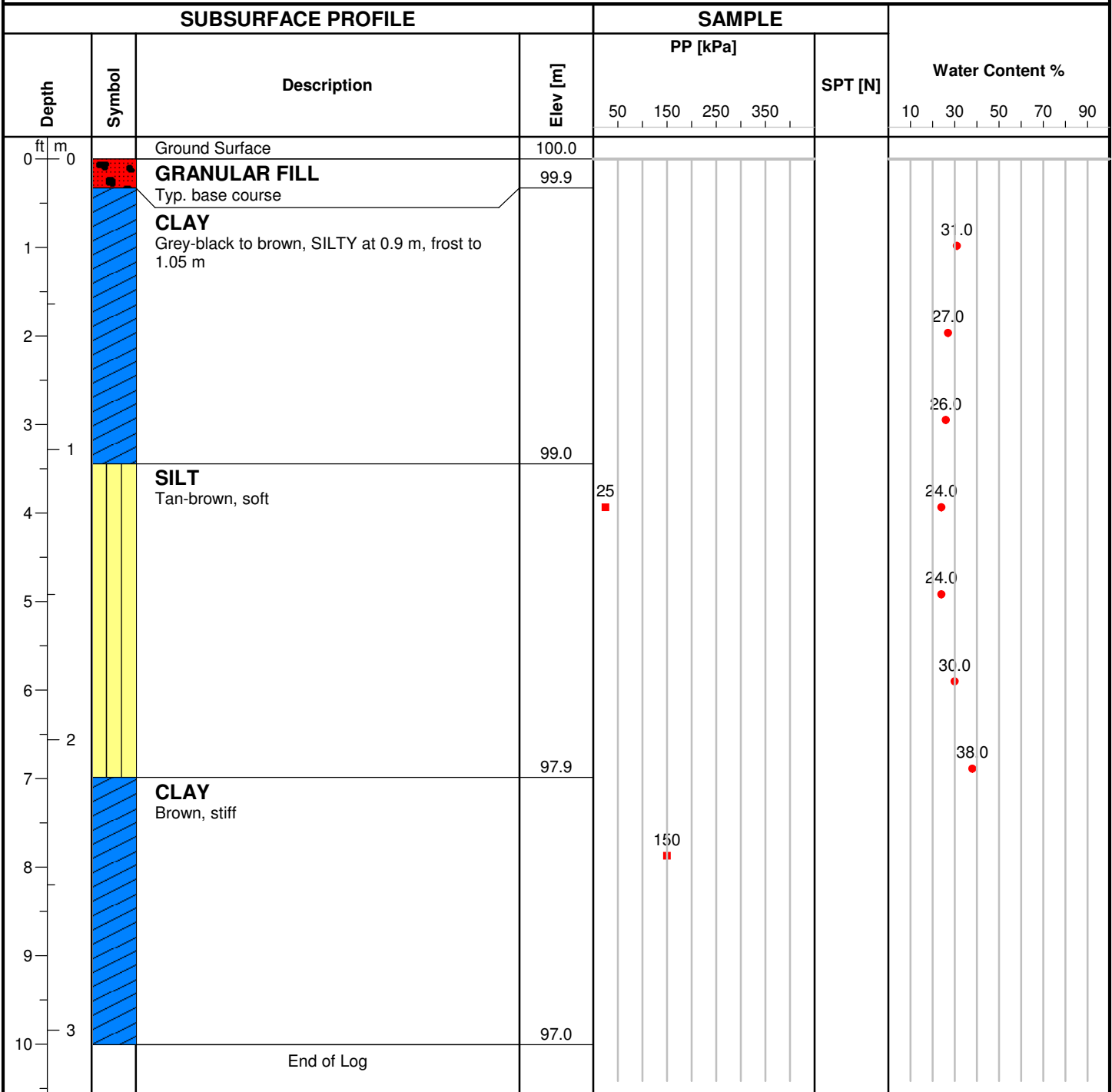
TH 45

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 12 - Alley behind 421 Lariviere St

Engineer: S. Urbano



Drill Method: Auger

Drill Date: 1/22/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 46

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 12 - Alley behind of 433/435 Lariviere St Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course	99.8			
1		<b>CLAY</b> Grey-black, frost to 1.05 m, brown below 1.2 m				37.0
2						37.0
3						38.0
4						37.0
5						33.0
6		<b>SILT</b> Tan-brown, soft, moist to wet	98.3			25.0
7						37.0
8		<b>CLAY</b> Brown, stiff, fissured	97.6			
9						
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/22/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 47

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 12 - Alley behind of 455 Lariviere St

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course	99.8			
1		<b>CLAY</b> Grey-black, brown below 0.6 m, SILTY at 0.9 m, frost to 1.2 m				35.0
2						40.0
3						36.0
4		<b>SILT</b> Tan-brown, soft, moist, stratified with clay from 1.5 m to 2.1 m	98.8			26.0
5						24.0
6						26.0
7		<b>CLAY</b> Brown, stiff	97.9			41.0
8						
9						
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/22/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 48

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 20 - Alley behind 227 Havelock Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1.9		<b>GRANULAR FILL</b> Typ. base course				
1.9 to 6.7		<b>CLAY</b> Grey-black, frost to 1.5 m, brown below 1.5 m, SILTY below 1.5 m	99.4			
6.7 to 7.2		<b>SILT</b> Tan-brown, soft, moist to wet	97.9			
7.2 to 9.8		<b>CLAY</b> Brown, stiff, fissured	97.6			
9.8 to 10.0		End of Log	97.0			

PP [kPa]	SPT [N]	Water Content %
		9.0
		36.0
		38.0
		37.0
100		35.0
		25.0
		25.0
150		
		41.0

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 49

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 20 - Alley behind 211/215 Havelock Ave Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1		<b>GRANULAR FILL</b> Typ. base course, mixed with clay				
1			99.5			6.0
1 to 7		<b>CLAY</b> Grey-black, frost to 1.5 m, brown below 1.5 m				31.0
2						33.0
3						32.0
4						32.0
5				200		31.0
6						26.0
7			97.9	25		
7 to 8		<b>SILT</b> Tan-brown, soft, moist to wet				
8			97.6			
8 to 10		<b>CLAY</b> Brown, stiff, fissured				
9				150		
10			97.0			
		End of Log				

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 50

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 20 - Alley behind 199 Havelock Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY FILL</b> Mixed	99.7			29.0
2		<b>CLAY</b> Grey-black, brown below 1.5 m, frost to 1.5 m	99.4			37.0
3						33.0
4						31.0
5						31.0
6		<b>SILT</b> Tan-brown, soft	98.3	25		26.0
7						23.0
8		<b>CLAY</b> Brown, stiff	97.7	150		
9						
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 51

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 7 - Alley behind 10 Fernwood Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY FILL</b> Mixed	99.7			6.0
2		<b>CLAY</b> Grey-black, brown below 0.9 m, frost to 1.5 m, SILTY at 2.75 m	99.4			38.0
3						31.0
4						34.0
5						30.0
6						34.0
7						41.0
8						
9						
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1





Project No: 141-24150-00

TH 52

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 7 - Alley behind 44/48 Fernwood Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY FILL</b> Mixed	99.7			7.0
2		<b>CLAY</b> Grey-black, brown below 0.9 m, frost to 1.35 m	99.4			27.0
3						39.0
4						37.0
5						40.0
6		<b>SILT</b> SILT stratified with clay from 1.8 m to 2.1 m, SILT below 2.1 m, soft	98.3			24.0
7				25		26.0
8						
9						
10		<b>CLAY</b> Brown, stiff	97.1			
			97.0	175		33.0
		End of Log				

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 53

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 7 - Alley behind 82 Fernwood Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 2		<b>GRANULAR FILL</b> Typ. base course mixed with clay	99.4			7.0
2 to 3		<b>CLAY FILL</b> Mixed	99.1			8.0
3 to 10		<b>CLAY</b> Grey-black, frost to 1.5 m, brown below 1.65 m, SILTY at 1.8 m, clayey below 1.95 m				38.0
						34.0
						35.0
						41.0
				100		44.0
				100		
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 54

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 4 - Alley behind 100 Thorndale Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1		<b>GRANULAR FILL</b> Typ. base course				18.0
1 to 10		<b>CLAY</b> Grey-black, brown below 1.2 m, frost to 1.5 m, SILTY at 2.1 m to 2.25 m, clayey below 2.25 m	99.5			40.0 43.0 38.0 36.0 42.0 40.0
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 55

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 4 - Alley behind 120 Thorndale Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY</b> Grey-black, brown below 1.2 m, frost to 1.5 m	99.7			13.0
2						40.0
3						39.0
4						40.0
5						39.0
6						44.0
7						48.0
8						
9						
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 56

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 4 - Alley behind 140 Thorndale Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY FILL</b> Grey-black	99.7			6.0
2		<b>CLAY</b> Grey-black, frost to 1.5 m, brown below 1.65 m, stiff	99.4			29.0
3						39.0
4						34.0
5						34.0
6						43.0
7						43.0
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 57

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 18 - Alley behind 133 Poplarwood Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 0.9		<b>GRANULAR FILL</b> Typ. base course				
0.9 to 2.75		<b>CLAY</b> Grey-black, SILTY from 0.9 m to 1.2 m, brown below 1.2 m, stiff, frost to 1.5 m, SILTY from 2.6 m, 2.75 m, clayey below 2.75 m	99.5			
2.75 to 9.7				150		7.0, 46.0, 34.0, 27.0, 28.0, 41.0, 48.0
9.7 to 10.0		End of Log	97.0	50		

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 58

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 18 - Alley behind 113 Poplarwood Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course				
1		<b>CLAY FILL</b> Grey-black	99.7			5.0
2						24.0
3		<b>CLAY</b> Grey-black	99.1			46.0
4						41.0
5		<b>SILT</b> Tan-brown, soft	98.6			37.0
6		<b>CLAY</b> Brown, stiff, SILT lenses throughout	98.3	100		40.0
7						35.0
10		End of Log	97.0	100		

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 59

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 18 - Alley behind 89 Poplarwood Ave

Engineer: S. Urbano

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0		<b>GRANULAR FILL</b> Typ. base course	99.8			
1		<b>CLAY FILL</b> Grey-black	99.4			15.0
2		<b>CLAY</b> Grey-black, brown below 0.9 m	98.6			38.0
3						35.0
4						31.0
5		<b>SILT</b> Tan-brown, soft, frost to 1.5 m	97.7	50		27.0
6						24.0
7						26.0
8		<b>CLAY</b> Brown, stiff	97.0	150		
9						
10						49.0
		End of Log				

Drill Method: Auger

Drill Date: 1/26/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1





Project No: 141-24150-00

TH 60

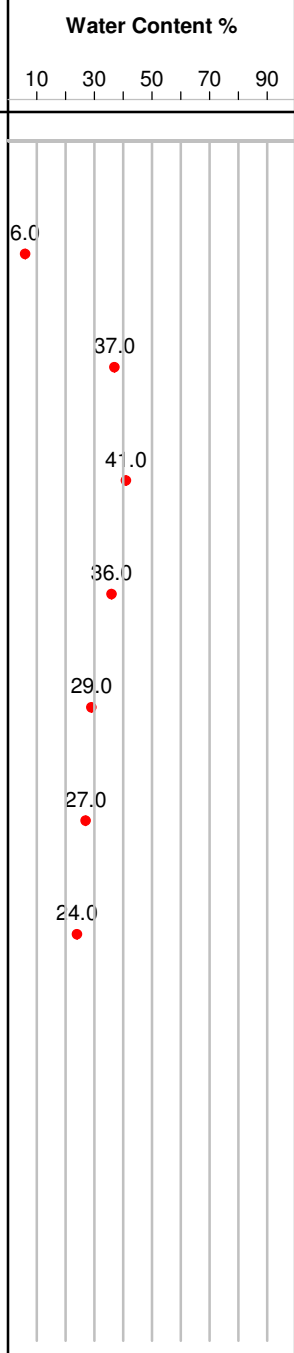
Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 14 - Alley behind of 10 St. David Pl

Engineer: D. Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1		<b>GRANULAR FILL</b> Typ. base course				
1 to 2			99.5			
2 to 6		<b>SILTY CLAY</b> Brown, dry and fractured above 0.6 m, SILTY, frost to 1.5 m				
6 to 7			98.0			
7 to 8		<b>SILT</b> Tan-brown, soft, moist				
8 to 9			97.4			
9 to 10		<b>CLAY</b> Brown, cohesive, soft				
10		End of Log	97.0			



Drill Method: Auger

Drill Date: 2/3/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 61

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 14 - Alley behind of 28/30 St. David Pl

Engineer: D. Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1.8		<b>GRANULAR FILL</b> Typ. base course	99.4			5.0
1.8 to 2.1		<b>SILTY CLAY</b> Brown, dry and fractured	99.0			5.0
2.1 to 5.0		<b>SILT</b> Tan-brown, dry, frost to 1.5 m	98.5			27.0
5.0 to 10.0		<b>CLAY</b> Brown, cohesive, SILTY from 1.8 m to 2.1 m, soft below 2.1 m	97.0			17.0
10.0		End of Log				23.0
						43.0
						39.0

Drill Method: Auger

Drill Date: 2/3/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1



Project No: 141-24150-00

TH 62

Project: 2015 COW Alley Way Improvements

Client: City of Winnipeg

Location: Site 14 - Alley behind 36 St. David Pl, N. of C.L.Engineer: D. Bredin

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Elev [m]	PP [kPa]	SPT [N]	
0		Ground Surface	100.0			
0 to 1		<b>GRANULAR FILL</b> Typ. base course				17.0
1 to 7		<b>SILTY CLAY</b> Brown, fissured, frost to 1.5 m, SILTY to 2.1 m	99.5			43.0 34.0 32.0 34.0 33.0
7 to 10		<b>CLAY</b> Brown, cohesive	97.9			42.0
10		End of Log	97.0			

Drill Method: Auger

Drill Date: 2/3/2015

Hole Size: 125 mm

WSP  
1600 Buffalo Pl.  
Winnipeg, MB  
R3T 6B8

Elevation: 100 m

Checked By: S.Urbano

Sheet: 1 of 1

## APPENDIX B

1402 Notre Dame Avenue, Winnipeg, MB R3E 3G5  
 Winnipeg, Manitoba Phone: 204 697-3854 Cell: 204 997-1355  
 Email: hmanalo@mts.net

<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-02-21 & 22
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 4, 2015	<b>TESTED BY:</b> GP

Test Hole No.	21	21	21	21	21
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	193.8	174.3	196.8	221.9	237.9
Wt Dry Sample + Tare	158.1	128.9	154.1	181.8	194.2
Wt Water	35.7	45.4	42.7	40.1	43.7
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	153.9	124.7	149.9	177.6	190.0
<b>Moisture Content (%)</b>	<b>23</b>	<b>36</b>	<b>28</b>	<b>23</b>	<b>23</b>
Test Hole No.	21	21			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	162.5	204.1			
Wt Dry Sample + Tare	116.6	153			
Wt Water	45.9	51.1			
Wt Tare	4.2	4.2			
Wt Dry Sample	112.4	148.8			
<b>Moisture Content (%)</b>	<b>41</b>	<b>34</b>			
Test Hole No.	22	22	22	22	22
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	219.3	154.4	159.8	208.8	183.1
Wt Dry Sample + Tare	193.8	118.9	117.7	155.3	140.8
Wt Water	25.5	35.5	42.1	53.5	42.3
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	189.7	114.8	113.6	151.2	136.7
<b>Moisture Content (%)</b>	<b>13</b>	<b>31</b>	<b>37</b>	<b>35</b>	<b>31</b>
Test Hole No.	22	22			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	225.5	180.6			
Wt Dry Sample + Tare	174	130.6			
Wt Water	51.5	50			
Wt Tare	4.1	4.1			
Wt Dry Sample	169.9	126.5			
<b>Moisture Content (%)</b>	<b>30</b>	<b>40</b>			

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 Winnipeg, Manitoba Phone: 204 697-3854 Cell: 204 997-1355  
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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-23 & 24		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 4, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>	<b>23</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	242.9	231.2	154.2	170.2	193.8
Wt Dry Sample + Tare	230.1	206.8	116	126.1	145
Wt Water	12.8	24.4	38.2	44.1	48.8
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	225.9	202.6	111.8	121.9	140.8
<b>Moisture Content (%)</b>	<b>6</b>	<b>12</b>	<b>34</b>	<b>36</b>	<b>35</b>
Test Hole No.	<b>23</b>	<b>23</b>			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	246.3	238.7			
Wt Dry Sample + Tare	202.5	195.1			
Wt Water	43.8	43.6			
Wt Tare	4.2	4.2			
Wt Dry Sample	198.3	190.9			
<b>Moisture Content (%)</b>	<b>22</b>	<b>23</b>			
Test Hole No.	<b>24</b>	<b>24</b>	<b>24</b>	<b>24</b>	<b>24</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	238.8	206.9	141.9	154.3	168.6
Wt Dry Sample + Tare	212.5	168.3	103.8	115.3	130.6
Wt Water	26.3	38.6	38.1	39	38
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	208.4	164.2	99.7	111.2	126.5
<b>Moisture Content (%)</b>	<b>13</b>	<b>24</b>	<b>38</b>	<b>35</b>	<b>30</b>
Test Hole No.	<b>24</b>	<b>24</b>			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	262.8	219.2			
Wt Dry Sample + Tare	214.7	175.4			
Wt Water	48.1	43.8			
Wt Tare	4.1	4.1			
Wt Dry Sample	210.6	171.3			
<b>Moisture Content (%)</b>	<b>23</b>	<b>26</b>			

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 Winnipeg, Manitoba Phone: 204 697-3854 Cell: 204 997-1355  
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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-25 & 26		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 5, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	25	25	25	25	25
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	223.7	177.5	191.5	167.9	185.1
Wt Dry Sample + Tare	190.4	139	141.9	128.3	140.9
Wt Water	33.3	38.5	49.6	39.6	44.2
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	186.2	134.8	137.7	124.1	136.7
<b>Moisture Content (%)</b>	<b>18</b>	<b>29</b>	<b>36</b>	<b>32</b>	<b>32</b>
Test Hole No.	25	25	25		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	233.3	251.9	263.7		
Wt Dry Sample + Tare	184.3	199.9	211.6		
Wt Water	49	52	52.1		
Wt Tare	4.2	4.2	4.2		
Wt Dry Sample	180.1	195.7	207.4		
<b>Moisture Content (%)</b>	<b>27</b>	<b>27</b>	<b>25</b>		
Test Hole No.	26	26	26	26	26
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	235.5	198.2	163.1	164.2	219.3
Wt Dry Sample + Tare	215.6	159	117.6	118.6	163.9
Wt Water	19.9	39.2	45.5	45.6	55.4
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	211.5	154.9	113.5	114.5	159.8
<b>Moisture Content (%)</b>	<b>9</b>	<b>25</b>	<b>40</b>	<b>40</b>	<b>35</b>
Test Hole No.	26	26			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	266.6	260.3			
Wt Dry Sample + Tare	215.9	209.2			
Wt Water	50.7	51.1			
Wt Tare	4.1	4.1			
Wt Dry Sample	211.8	205.1			
<b>Moisture Content (%)</b>	<b>24</b>	<b>25</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-27 & 28		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 5, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	27	27	27	27	27
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	210.3	147.8	175.7	206.4	191.5
Wt Dry Sample + Tare	173.5	110.2	129.6	154.2	147
Wt Water	36.8	37.6	46.1	52.2	44.5
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	169.4	106.1	125.5	150.1	142.9
<b>Moisture Content (%)</b>	<b>22</b>	<b>35</b>	<b>37</b>	<b>35</b>	<b>31</b>
Test Hole No.	27	27			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	202.3	236.8			
Wt Dry Sample + Tare	162.8	193.6			
Wt Water	39.5	43.2			
Wt Tare	4.1	4.1			
Wt Dry Sample	158.7	189.5			
<b>Moisture Content (%)</b>	<b>25</b>	<b>23</b>			
Test Hole No.	28	28	28	28	28
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	223.2	194.3	179.3	201.7	259.1
Wt Dry Sample + Tare	216.4	154.2	118.9	149.2	208.9
Wt Water	6.8	40.1	60.4	52.5	50.2
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	212.2	150.0	114.7	145.0	204.7
<b>Moisture Content (%)</b>	<b>3</b>	<b>27</b>	<b>53</b>	<b>36</b>	<b>25</b>
Test Hole No.	28	28			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	181.8	177.5			
Wt Dry Sample + Tare	131.7	125.1			
Wt Water	50.1	52.4			
Wt Tare	4.2	4.2			
Wt Dry Sample	127.5	120.9			
<b>Moisture Content (%)</b>	<b>39</b>	<b>43</b>			



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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-29 & 30		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 5, 2015		<b>TESTED BY:</b> GP		

Test Hole No.	29	29	29	29	29
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	248.9	156.3	164.8	226.2	248.6
Wt Dry Sample + Tare	238.4	118.3	117.1	180.6	203.6
Wt Water	10.5	38	47.7	45.6	45
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	234.2	114.1	112.9	176.4	199.4
<b>Moisture Content (%)</b>	<b>4</b>	<b>33</b>	<b>42</b>	<b>26</b>	<b>23</b>

Test Hole No.	29	29			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	228.5	198.3			
Wt Dry Sample + Tare	176.3	140.3			
Wt Water	52.2	58			
Wt Tare	4.2	4.2			
Wt Dry Sample	172.1	136.1			
<b>Moisture Content (%)</b>	<b>30</b>	<b>43</b>			

Test Hole No.	30	30	30	30	30
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	241.1	206.8	190.7	203.8	180.6
Wt Dry Sample + Tare	214.3	156	142.7	152.7	138.4
Wt Water	26.8	50.8	48	51.1	42.2
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	210.1	151.8	138.5	148.5	134.2
<b>Moisture Content (%)</b>	<b>13</b>	<b>33</b>	<b>35</b>	<b>34</b>	<b>31</b>

Test Hole No.	30	30			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	264.8	251.6			
Wt Dry Sample + Tare	214.4	197.6			
Wt Water	50.4	54			
Wt Tare	4.2	4.2			
Wt Dry Sample	210.2	193.4			
<b>Moisture Content (%)</b>	<b>24</b>	<b>28</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-04-3&4		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Jan. 26, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	33	33	33	33	33
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	198.7	197.9	142.5	142.7	140.3
Wt Dry Sample + Tare	183.8	160.5	108	108.6	106.7
Wt Water	14.9	37.4	34.5	34.1	33.6
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	179.6	156.3	103.8	104.4	102.5
<b>Moisture Content (%)</b>	<b>8</b>	<b>24</b>	<b>33</b>	<b>33</b>	<b>33</b>
Test Hole No.	33	33			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	149.5	152.3			
Wt Dry Sample + Tare	114.1	116.4			
Wt Water	35.4	35.9			
Wt Tare	4.2	4.2			
Wt Dry Sample	109.9	112.2			
<b>Moisture Content (%)</b>	<b>32</b>	<b>32</b>			
Test Hole No.	34	34	34	34	34
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	198.6	198.7	122.9	163.8	132.8
Wt Dry Sample + Tare	182.9	157.1	92.4	136.3	102.2
Wt Water	15.7	41.6	30.5	27.5	30.6
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	178.7	152.9	88.2	132.1	98.0
<b>Moisture Content (%)</b>	<b>9</b>	<b>27</b>	<b>35</b>	<b>21</b>	<b>31</b>
Test Hole No.	34	34	34		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	181.9	165.4	134.3		
Wt Dry Sample + Tare	145.9	133.7	96.6		
Wt Water	36	31.7	37.7		
Wt Tare	4.2	4.2	4.2		
Wt Dry Sample	141.7	129.5	92.4		
<b>Moisture Content (%)</b>	<b>25</b>	<b>24</b>	<b>41</b>		

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-04-5&6		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Jan. 26, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	35	35	35	35	35
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	197.5	218.4	134.4	149.3	175.2
Wt Dry Sample + Tare	186.7	183.3	96.8	100.6	138
Wt Water	10.8	35.1	37.6	48.7	37.2
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	182.5	179.1	92.6	96.4	133.8
<b>Moisture Content (%)</b>	<b>6</b>	<b>20</b>	<b>41</b>	<b>51</b>	<b>28</b>
Test Hole No.	35	35			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	139.8	121.8			
Wt Dry Sample + Tare	108	87.9			
Wt Water	31.8	33.9			
Wt Tare	4.2	4.2			
Wt Dry Sample	103.8	83.7			
<b>Moisture Content (%)</b>	<b>31</b>	<b>41</b>			
Test Hole No.	36	36	36	36	36
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	228.6	160.9	135.9	138.7	133.4
Wt Dry Sample + Tare	209.7	126.9	102.3	104.8	103
Wt Water	18.9	34	33.6	33.9	30.4
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	205.6	122.8	98.2	100.7	98.9
<b>Moisture Content (%)</b>	<b>9</b>	<b>28</b>	<b>34</b>	<b>34</b>	<b>31</b>
Test Hole No.	36	36	36		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	197.3	217.9	136.7		
Wt Dry Sample + Tare	160.3	177.5	94.7		
Wt Water	37	40.4	42		
Wt Tare	4.1	4.1	4.1		
Wt Dry Sample	156.2	173.4	90.6		
<b>Moisture Content (%)</b>	<b>24</b>	<b>23</b>	<b>46</b>		

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-04-7&8
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Jan. 27, 2015	<b>TESTED BY:</b> GP

Test Hole No.	37	37	37	37	37
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	188.8	181.5	155.6	168.4	165.6
Wt Dry Sample + Tare	164.1	144.8	121.1	131	130.7
Wt Water	24.7	36.7	34.5	37.4	34.9
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	159.9	140.6	116.9	126.8	126.5
<b>Moisture Content (%)</b>	<b>15</b>	<b>26</b>	<b>30</b>	<b>29</b>	<b>28</b>
Test Hole No.	37	37			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	190.9	185.8			
Wt Dry Sample + Tare	158.7	154.2			
Wt Water	32.2	31.6			
Wt Tare	4.2	4.2			
Wt Dry Sample	154.5	150.0			
<b>Moisture Content (%)</b>	<b>21</b>	<b>21</b>			
Test Hole No.	38	38	38	38	38
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	170.1	140.6	145.1	125.7	147.4
Wt Dry Sample + Tare	137.7	102.6	108.9	95.4	112.4
Wt Water	32.4	38	36.2	30.3	35
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	133.5	98.4	104.7	91.2	108.2
<b>Moisture Content (%)</b>	<b>24</b>	<b>39</b>	<b>35</b>	<b>33</b>	<b>32</b>
Test Hole No.	38	38	38		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	152.2	225.3	145.6		
Wt Dry Sample + Tare	123.3	183.9	116.6		
Wt Water	28.9	41.4	29		
Wt Tare	4.2	4.2	4.2		
Wt Dry Sample	119.1	179.7	112.4		
<b>Moisture Content (%)</b>	<b>24</b>	<b>23</b>	<b>26</b>		

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1			<b>PROJECT NO:</b> 15-04-9&10	
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 2015			<b>SAMPLED BY:</b> SU	
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Jan. 27, 2015			<b>TESTED BY:</b> GP	
Test Hole No.	<b>39</b>	<b>39</b>	<b>39</b>	<b>39</b>	<b>39</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	157.6	152.1	108.3	146.9	147.3
Wt Dry Sample + Tare	119.7	114.8	81.5	109.8	110.9
Wt Water	37.9	37.3	26.8	37.1	36.4
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	115.5	110.6	77.3	105.6	106.7
<b>Moisture Content (%)</b>	<b>33</b>	<b>34</b>	<b>35</b>	<b>35</b>	<b>34</b>
Test Hole No.	<b>39</b>	<b>39</b>	<b>39</b>		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	184.9	153.5	112.3		
Wt Dry Sample + Tare	148.9	127.5	79.5		
Wt Water	36	26	32.8		
Wt Tare	4.2	4.2	4.2		
Wt Dry Sample	144.7	123.3	75.3		
<b>Moisture Content (%)</b>	<b>25</b>	<b>21</b>	<b>44</b>		
Test Hole No.	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>40</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	210	214.8	124.8	128.4	124.5
Wt Dry Sample + Tare	195.3	180.7	92	95.3	92.6
Wt Water	14.7	34.1	32.8	33.1	31.9
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	191.1	176.5	87.8	91.1	88.4
<b>Moisture Content (%)</b>	<b>8</b>	<b>19</b>	<b>37</b>	<b>36</b>	<b>36</b>
Test Hole No.	<b>40</b>	<b>40</b>	<b>40</b>		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	138.9	209.4	109.9		
Wt Dry Sample + Tare	112.1	170.4	80.1		
Wt Water	26.8	39	29.8		
Wt Tare	4.2	4.2	4.2		
Wt Dry Sample	107.9	166.2	75.9		
<b>Moisture Content (%)</b>	<b>25</b>	<b>23</b>	<b>39</b>		

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<b>CLIENT: WSP Group</b>	<b>TEST NO: 1</b>	<b>PROJECT NO: 15-04-11&amp;12</b>
<b>PROJECT: City of Wpg 2015 Alleys</b>	<b>DATE SAMPLED: Jan. 2015</b>	<b>SAMPLED BY: SU</b>
<b>PROJECT CONTACT: S. Urbano</b>	<b>DATE TESTED: Jan. 27, 2015</b>	<b>TESTED BY: GP</b>

Test Hole No.	<b>41</b>	<b>41</b>	<b>41</b>	<b>41</b>	<b>41</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	226.5	143.7	115.9	125.9	136.9
Wt Dry Sample + Tare	212.6	104.4	81.1	91.9	101.5
Wt Water	13.9	39.3	34.8	34	35.4
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	208.4	100.2	76.9	87.7	97.3
<b>Moisture Content (%)</b>	<b>7</b>	<b>39</b>	<b>45</b>	<b>39</b>	<b>36</b>
Test Hole No.	<b>41</b>	<b>41</b>			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	154.6	153.7			
Wt Dry Sample + Tare	124	113.3			
Wt Water	30.6	40.4			
Wt Tare	4.2	4.2			
Wt Dry Sample	119.8	109.1			
<b>Moisture Content (%)</b>	<b>26</b>	<b>37</b>			
Test Hole No.	<b>42</b>	<b>42</b>	<b>42</b>	<b>42</b>	<b>42</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	238.5	232.7	164.9	147.4	139.4
Wt Dry Sample + Tare	217.8	210.6	122.5	108.9	101.7
Wt Water	20.7	22.1	42.4	38.5	37.7
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	213.6	206.4	118.3	104.7	97.5
<b>Moisture Content (%)</b>	<b>10</b>	<b>11</b>	<b>36</b>	<b>37</b>	<b>39</b>
Test Hole No.	<b>42</b>	<b>42</b>			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	205.9	224.4			
Wt Dry Sample + Tare	166.5	181.7			
Wt Water	39.4	42.7			
Wt Tare	4.2	4.2			
Wt Dry Sample	162.3	177.5			
<b>Moisture Content (%)</b>	<b>24</b>	<b>24</b>			

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<b>CLIENT: WSP Group</b>	<b>TEST NO: 1</b>		<b>PROJECT NO: 15-04-15&amp;16</b>		
<b>PROJECT: City of Wpg 2015 Alleys</b>	<b>DATE SAMPLED: Jan. 2015</b>		<b>SAMPLED BY: SU</b>		
<b>PROJECT CONTACT: S. Urbano</b>	<b>DATE TESTED: Jan. 28, 2015</b>		<b>TESTED BY: GP</b>		
Test Hole No.	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>45</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	165.2	158.5	190.2	199.8	188.5
Wt Dry Sample + Tare	127	125.8	152.3	161.5	152.5
Wt Water	38.2	32.7	37.9	38.3	36
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	122.9	121.7	148.2	157.4	148.4
<b>Moisture Content (%)</b>	<b>31</b>	<b>27</b>	<b>26</b>	<b>24</b>	<b>24</b>
Test Hole No.	<b>45</b>	<b>45</b>			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	162.2	140.1			
Wt Dry Sample + Tare	125.5	102.8			
Wt Water	36.7	37.3			
Wt Tare	4.1	4.1			
Wt Dry Sample	121.4	98.7			
<b>Moisture Content (%)</b>	<b>30</b>	<b>38</b>			
Test Hole No.	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>46</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	155.3	135.8	142.8	162.2	161.7
Wt Dry Sample + Tare	114.5	100.6	104.9	119.5	122.4
Wt Water	40.8	35.2	37.9	42.7	39.3
Wt Tare	4.4	4.4	4.4	4.4	4.4
Wt Dry Sample	110.1	96.2	100.5	115.1	118.0
<b>Moisture Content (%)</b>	<b>37</b>	<b>37</b>	<b>38</b>	<b>37</b>	<b>33</b>
Test Hole No.	<b>46</b>	<b>46</b>	<b>46</b>		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	237.9	238.8	171.9		
Wt Dry Sample + Tare	190.9	192.4	126.6		
Wt Water	47	46.4	45.3		
Wt Tare	4.4	4.4	4.4		
Wt Dry Sample	186.5	188.0	122.2		
<b>Moisture Content (%)</b>	<b>25</b>	<b>25</b>	<b>37</b>		

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-04-17
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Jan. 28, 2015	<b>TESTED BY:</b> GP

Test Hole No.	47	47	47	47	47
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	144.7	148.6	158.2	247.3	203.5
Wt Dry Sample + Tare	108.9	108.4	118.2	197.3	165.9
Wt Water	35.8	40.2	40	50	37.6
Wt Tare	6.5	7.2	6.5	7.2	7.1
Wt Dry Sample	102.4	101.2	111.7	190.1	158.8
<b>Moisture Content (%)</b>	<b>35</b>	<b>40</b>	<b>36</b>	<b>26</b>	<b>24</b>
Test Hole No.	47	47			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	205.9	143.6			
Wt Dry Sample + Tare	164.6	104.2			
Wt Water	41.3	39.4			
Wt Tare	7.2	7.3			
Wt Dry Sample	157.4	96.9			
<b>Moisture Content (%)</b>	<b>26</b>	<b>41</b>			
Test Hole No.					
Depth					
Tare No.					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
<b>Moisture Content (%)</b>					
Test Hole No.					
Depth					
Tare No.					
Wt Wet Sample + Tare					
Wt Dry Sample + Tare					
Wt Water					
Wt Tare					
Wt Dry Sample					
<b>Moisture Content (%)</b>					



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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-48 & 49		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 2, 2015		<b>TESTED BY:</b> GP		

Test Hole No.	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	186.6	134.7	161.7	163.5	197.5
Wt Dry Sample + Tare	172.3	100.2	118.6	120.7	147.8
Wt Water	14.3	34.5	43.1	42.8	49.7
Wt Tare	4.5	4.5	4.5	4.5	4.5
Wt Dry Sample	167.8	95.7	114.1	116.2	143.3
<b>Moisture Content (%)</b>	<b>9</b>	<b>36</b>	<b>38</b>	<b>37</b>	<b>35</b>

Test Hole No.	<b>48</b>	<b>48</b>	<b>48</b>		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	218.4	223.6	182.1		
Wt Dry Sample + Tare	175.9	180.1	130.3		
Wt Water	42.5	43.5	51.8		
Wt Tare	4.5	4.5	4.5		
Wt Dry Sample	171.4	175.6	125.8		
<b>Moisture Content (%)</b>	<b>25</b>	<b>25</b>	<b>41</b>		

Test Hole No.	<b>49</b>	<b>49</b>	<b>49</b>	<b>49</b>	<b>49</b>
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	213.5	145.9	158.1	161.8	179.1
Wt Dry Sample + Tare	202.2	112.1	120.2	123.7	136.7
Wt Water	11.3	33.8	37.9	38.1	42.4
Wt Tare	4.6	4.6	4.6	4.6	4.6
Wt Dry Sample	197.6	107.5	115.6	119.1	132.1
<b>Moisture Content (%)</b>	<b>6</b>	<b>31</b>	<b>33</b>	<b>32</b>	<b>32</b>

Test Hole No.	<b>49</b>	<b>49</b>			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	183.6	201.2			
Wt Dry Sample + Tare	141.7	161.1			
Wt Water	41.9	40.1			
Wt Tare	4.6	4.6			
Wt Dry Sample	137.1	156.5			
<b>Moisture Content (%)</b>	<b>31</b>	<b>26</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-02-50 & 51
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 2, 2015	<b>TESTED BY:</b> GP

Test Hole No.	50	50	50	50	50
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	156.4	176.1	185.6	160.5	188.3
Wt Dry Sample + Tare	122.5	130	140.2	123.7	144.8
Wt Water	33.9	46.1	45.4	36.8	43.5
Wt Tare	4.6	4.6	4.6	4.6	4.6
Wt Dry Sample	117.9	125.4	135.6	119.1	140.2
<b>Moisture Content (%)</b>	<b>29</b>	<b>37</b>	<b>33</b>	<b>31</b>	<b>31</b>
Test Hole No.	50	50			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	217.8	218.4			
Wt Dry Sample + Tare	174.2	177.8			
Wt Water	43.6	40.6			
Wt Tare	4.6	4.6			
Wt Dry Sample	169.6	173.2			
<b>Moisture Content (%)</b>	<b>26</b>	<b>23</b>			
Test Hole No.	51	51	51	51	51
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	205.8	162.8	164.2	168.1	208.4
Wt Dry Sample + Tare	195.2	119.4	126.1	126.6	161.3
Wt Water	10.6	43.4	38.1	41.5	47.1
Wt Tare	4.3	4.3	4.3	4.3	4.3
Wt Dry Sample	190.9	115.1	121.8	122.3	157.0
<b>Moisture Content (%)</b>	<b>6</b>	<b>38</b>	<b>31</b>	<b>34</b>	<b>30</b>
Test Hole No.	51	51			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	158.8	176.6			
Wt Dry Sample + Tare	119.9	126.3			
Wt Water	38.9	50.3			
Wt Tare	4.3	4.3			
Wt Dry Sample	115.6	122.0			
<b>Moisture Content (%)</b>	<b>34</b>	<b>41</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1			<b>PROJECT NO:</b> 15-02-52 & 53	
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015			<b>SAMPLED BY:</b> SU	
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 3, 2015			<b>TESTED BY:</b> GP	

Test Hole No.	52	52	52	52	52
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	218.2	162.6	161.1	196.8	186.7
Wt Dry Sample + Tare	203.4	129.3	116.9	144.5	135.1
Wt Water	14.8	33.3	44.2	52.3	51.6
Wt Tare	4.5	4.5	4.5	4.5	4.5
Wt Dry Sample	198.9	124.8	112.4	140.0	130.6
<b>Moisture Content (%)</b>	<b>7</b>	<b>27</b>	<b>39</b>	<b>37</b>	<b>40</b>

Test Hole No.	52	52	52		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	239.9	185.8	196.3		
Wt Dry Sample + Tare	194.4	148.7	148.8		
Wt Water	45.5	37.1	47.5		
Wt Tare	4.5	4.5	4.5		
Wt Dry Sample	189.9	144.2	144.3		
<b>Moisture Content (%)</b>	<b>24</b>	<b>26</b>	<b>33</b>		

Test Hole No.	53	53	53	53	53
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	220.6	190.8	157.4	149.3	180.7
Wt Dry Sample + Tare	207.2	177.3	115.1	112.1	134.6
Wt Water	13.4	13.5	42.3	37.2	46.1
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	203.0	173.1	110.9	107.9	130.4
<b>Moisture Content (%)</b>	<b>7</b>	<b>8</b>	<b>38</b>	<b>34</b>	<b>35</b>

Test Hole No.	53	53			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	184.9	162.2			
Wt Dry Sample + Tare	132.8	113.6			
Wt Water	52.1	48.6			
Wt Tare	4.2	4.2			
Wt Dry Sample	128.6	109.4			
<b>Moisture Content (%)</b>	<b>41</b>	<b>44</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-02-54 & 55
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 3, 2015	<b>TESTED BY:</b> GP

Test Hole No.	54	54	54	54	54
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	192.3	155.3	157.2	171.5	182.9
Wt Dry Sample + Tare	163.9	112.2	111.3	125.6	136
Wt Water	28.4	43.1	45.9	45.9	46.9
Wt Tare	4.5	4.5	4.5	4.5	4.5
Wt Dry Sample	159.4	107.7	106.8	121.1	131.5
<b>Moisture Content (%)</b>	<b>18</b>	<b>40</b>	<b>43</b>	<b>38</b>	<b>36</b>
Test Hole No.	54	54			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	158.7	202.9			
Wt Dry Sample + Tare	112.8	146.3			
Wt Water	45.9	56.6			
Wt Tare	4.5	4.5			
Wt Dry Sample	108.3	141.8			
<b>Moisture Content (%)</b>	<b>42</b>	<b>40</b>			
Test Hole No.	55	55	55	55	55
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	221	153	147.2	152.6	158.5
Wt Dry Sample + Tare	196.9	110.6	107.4	110	114.9
Wt Water	24.1	42.4	39.8	42.6	43.6
Wt Tare	4.3	4.3	4.3	4.3	4.3
Wt Dry Sample	192.6	106.3	103.1	105.7	110.6
<b>Moisture Content (%)</b>	<b>13</b>	<b>40</b>	<b>39</b>	<b>40</b>	<b>39</b>
Test Hole No.	55	55			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	160.7	155.5			
Wt Dry Sample + Tare	112.6	106.5			
Wt Water	48.1	49			
Wt Tare	4.3	4.3			
Wt Dry Sample	108.3	102.2			
<b>Moisture Content (%)</b>	<b>44</b>	<b>48</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-56 & 57		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 3, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	56	56	56	56	56
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	240.1	149.9	157.7	177.8	179.4
Wt Dry Sample + Tare	225.8	117.1	114.7	133.4	134.9
Wt Water	14.3	32.8	43	44.4	44.5
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	221.6	112.9	110.5	129.2	130.7
<b>Moisture Content (%)</b>	<b>6</b>	<b>29</b>	<b>39</b>	<b>34</b>	<b>34</b>
Test Hole No.	56	56			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	168.2	177.3			
Wt Dry Sample + Tare	118.7	125.1			
Wt Water	49.5	52.2			
Wt Tare	4.2	4.2			
Wt Dry Sample	114.5	120.9			
<b>Moisture Content (%)</b>	<b>43</b>	<b>43</b>			
Test Hole No.	57	57	57	57	57
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	226.2	128.7	154.7	212.6	223.6
Wt Dry Sample + Tare	211.8	89.7	116.9	168.5	176
Wt Water	14.4	39	37.8	44.1	47.6
Wt Tare	4.1	4.1	4.1	4.1	4.1
Wt Dry Sample	207.7	85.6	112.8	164.4	171.9
<b>Moisture Content (%)</b>	<b>7</b>	<b>46</b>	<b>34</b>	<b>27</b>	<b>28</b>
Test Hole No.	57	57			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	200.3	169.3			
Wt Dry Sample + Tare	142.8	116.1			
Wt Water	57.5	53.2			
Wt Tare	4.1	4.1			
Wt Dry Sample	138.7	112.0			
<b>Moisture Content (%)</b>	<b>41</b>	<b>48</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1		<b>PROJECT NO:</b> 15-02-58 & 59		
<b>PROJECT:</b> City of Wpg 2015 Alleys	<b>DATE SAMPLED:</b> Jan. 29, 2015		<b>SAMPLED BY:</b> SU		
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> February 4, 2015		<b>TESTED BY:</b> GP		
Test Hole No.	58	58	58	58	58
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	218.8	174.3	146.4	173.5	263.3
Wt Dry Sample + Tare	208.5	141.3	101.6	124.3	192.9
Wt Water	10.3	33	44.8	49.2	70.4
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	204.3	137.1	97.4	120.1	188.7
<b>Moisture Content (%)</b>	<b>5</b>	<b>24</b>	<b>46</b>	<b>41</b>	<b>37</b>
Test Hole No.	58	58			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	165.7	195.2			
Wt Dry Sample + Tare	119.9	145.6			
Wt Water	45.8	49.6			
Wt Tare	4.2	4.2			
Wt Dry Sample	115.7	141.4			
<b>Moisture Content (%)</b>	<b>40</b>	<b>35</b>			
Test Hole No.	59	59	59	59	59
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	231.7	145.2	152.2	175.9	209.8
Wt Dry Sample + Tare	202.8	106.6	113.7	135.1	166.4
Wt Water	28.9	38.6	38.5	40.8	43.4
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	198.6	102.4	109.5	130.9	162.2
<b>Moisture Content (%)</b>	<b>15</b>	<b>38</b>	<b>35</b>	<b>31</b>	<b>27</b>
Test Hole No.	59	59	59		
Depth	6 ft	7 ft	10 ft		
Tare No.					
Wt Wet Sample + Tare	231.9	213.1	154.9		
Wt Dry Sample + Tare	187.7	169.8	105.1		
Wt Water	44.2	43.3	49.8		
Wt Tare	4.2	4.2	4.2		
Wt Dry Sample	183.5	165.6	100.9		
<b>Moisture Content (%)</b>	<b>24</b>	<b>26</b>	<b>49</b>		

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-02-5
<b>PROJECT:</b> City of Winnipeg 2015 Alleys	<b>DATE SAMPLED:</b> Feb. 23, 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Feb. 26, 2015	<b>TESTED BY:</b> GP

Test Hole No.	60	60	60	60	60
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	219.3	163.6	166.5	210.4	202.3
Wt Dry Sample + Tare	206.6	120.9	119.2	155.9	158.3
Wt Water	12.7	42.7	47.3	54.5	44
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	202.4	116.7	115.0	151.7	154.1
<b>Moisture Content (%)</b>	<b>6</b>	<b>37</b>	<b>41</b>	<b>36</b>	<b>29</b>
Test Hole No.	60	60			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	206.1	221.5			
Wt Dry Sample + Tare	163.4	180.1			
Wt Water	42.7	41.4			
Wt Tare	4.2	4.2			
Wt Dry Sample	159.2	175.9			
<b>Moisture Content (%)</b>	<b>27</b>	<b>24</b>			
Hole No.	61	61	61	61	61
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	216.2	212.6	178.3	193.1	207.4
Wt Dry Sample + Tare	206.8	185.7	141	165.2	168.8
Wt Water	9.4	26.9	37.3	27.9	38.6
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	202.6	181.5	136.8	161.0	164.6
<b>Moisture Content (%)</b>	<b>5</b>	<b>15</b>	<b>27</b>	<b>17</b>	<b>23</b>
Hole No.	61	61			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	178.6	214.7			
Wt Dry Sample + Tare	126.1	155.9			
Wt Water	52.5	58.8			
Wt Tare	4.2	4.2			
Wt Dry Sample	121.9	151.7			
<b>Moisture Content (%)</b>	<b>43</b>	<b>39</b>			

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<b>CLIENT:</b> WSP Group	<b>TEST NO:</b> 1	<b>PROJECT NO:</b> 15-02-5
<b>PROJECT:</b> City of Winnipeg 2015 Alleys	<b>DATE SAMPLED:</b> Feb. 23, 2015	<b>SAMPLED BY:</b> SU
<b>PROJECT CONTACT:</b> S. Urbano	<b>DATE TESTED:</b> Feb. 26, 2015	<b>TESTED BY:</b> GP

Test Hole No.	62	62	62	62	62
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	207.8	176.9	170.9	181.4	182.6
Wt Dry Sample + Tare	178.9	125.1	128.4	138.1	137.5
Wt Water	28.9	51.8	42.5	43.3	45.1
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	174.7	120.9	124.2	133.9	133.3
<b>Moisture Content (%)</b>	<b>17</b>	<b>43</b>	<b>34</b>	<b>32</b>	<b>34</b>
Test Hole No.	62	62			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	201.7	156.5			
Wt Dry Sample + Tare	152.5	111.8			
Wt Water	49.2	44.7			
Wt Tare	4.2	4.2			
Wt Dry Sample	148.3	107.6			
<b>Moisture Content (%)</b>	<b>33</b>	<b>42</b>			
Hole No.	63	63	63	63	63
Depth	1 ft	2 ft	3 ft	4 ft	5 ft
Tare No.					
Wt Wet Sample + Tare	192.7	201.5	180.4	157.8	163.5
Wt Dry Sample + Tare	179.3	181.2	133.7	116.9	119.4
Wt Water	13.4	20.3	46.7	40.9	44.1
Wt Tare	4.2	4.2	4.2	4.2	4.2
Wt Dry Sample	175.1	177.0	129.5	112.7	115.2
<b>Moisture Content (%)</b>	<b>8</b>	<b>11</b>	<b>36</b>	<b>36</b>	<b>38</b>
Hole No.	63	63			
Depth	6 ft	7 ft			
Tare No.					
Wt Wet Sample + Tare	178.2	168.3			
Wt Dry Sample + Tare	132.4	124.9			
Wt Water	45.8	43.4			
Wt Tare	4.2	4.2			
Wt Dry Sample	128.2	120.7			
<b>Moisture Content (%)</b>	<b>36</b>	<b>36</b>			



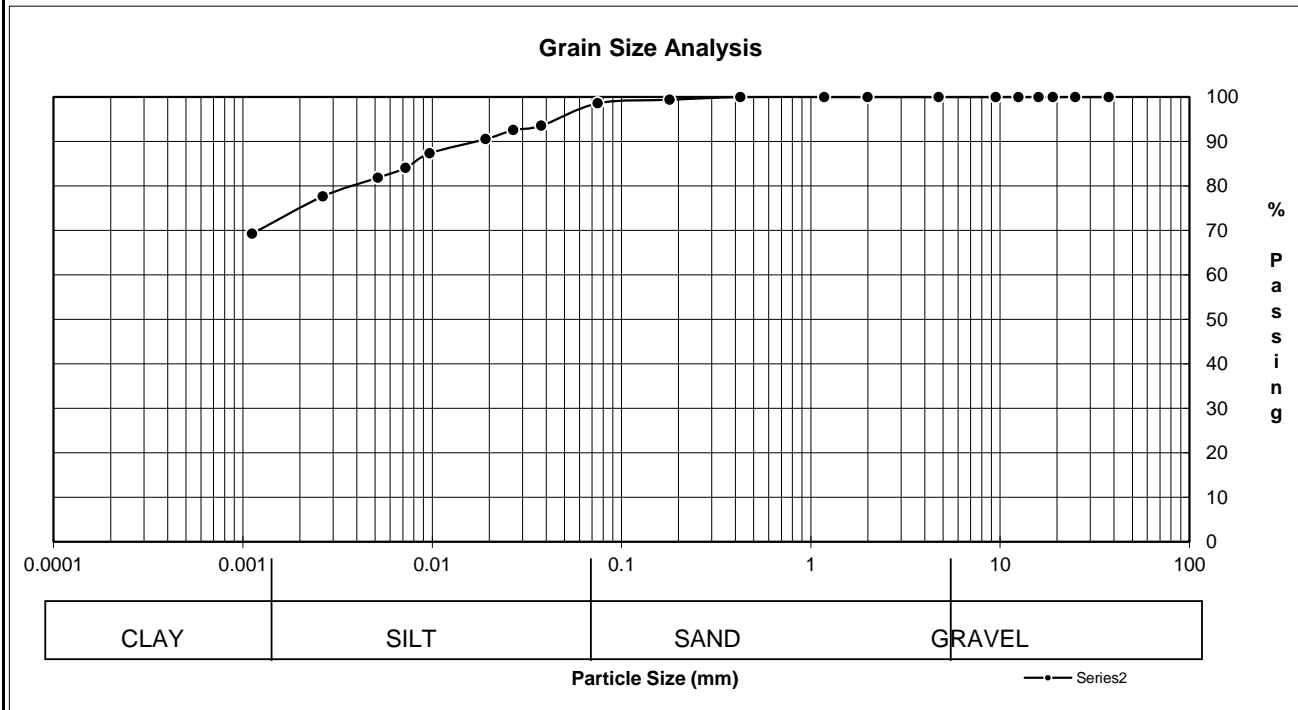
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH22 @ 3'</b> <b>Sample No.</b> <b>15</b> 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	0.0377	93.6
		9.50	100.0	0.0268	92.6
		4.75	100.0	0.0191	90.6
		2.00	100.0	0.0097	87.4
		1.18	100.0	0.0072	84.1
0.425	100.0	0.0052	81.9		
0.180	99.4	0.0026	77.7		
0.075	98.6	0.0011	69.3		



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as clay.	Gravel		D30
1 Sand			D60	
30 Silt			Cu	#DIV/0!
69 Clay			Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

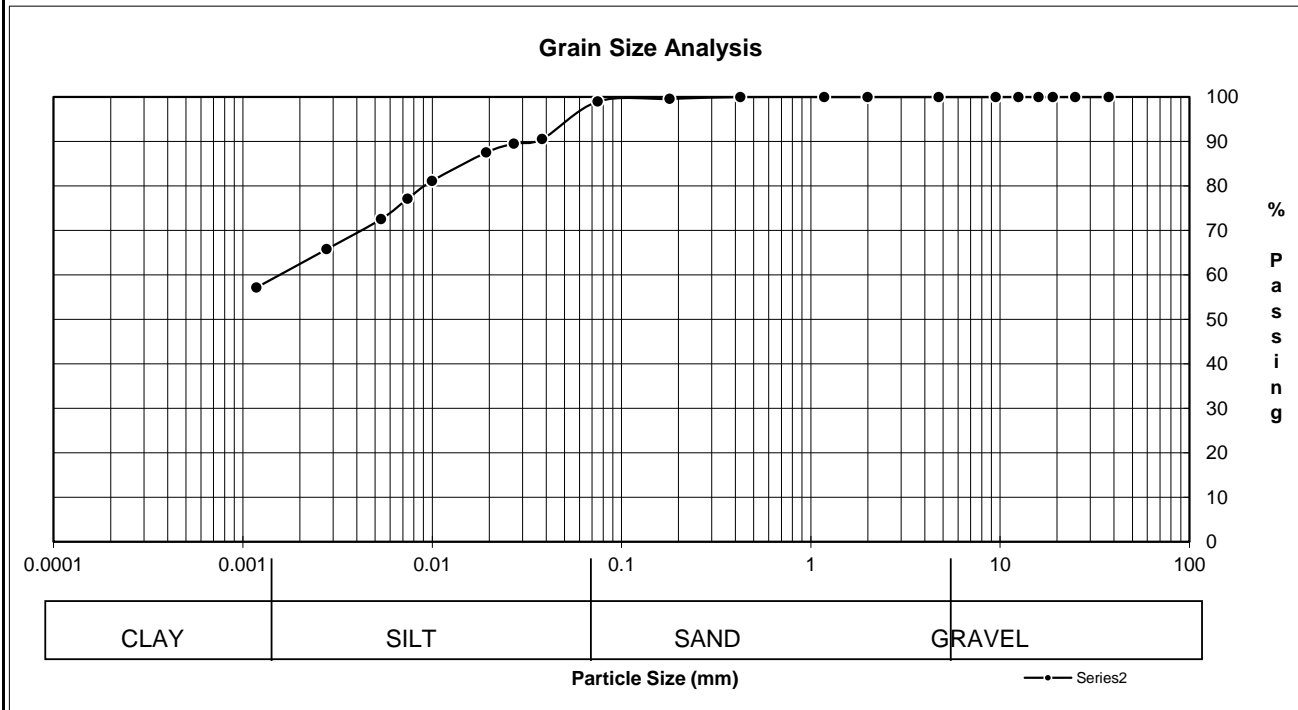
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH29 @ 3'</b> <b>Sample No.</b> <b>16</b> 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	0.0380	90.5
		9.50	100.0	0.0270	89.5
		4.75	100.0	0.0193	87.5
		2.00	100.0	0.0100	81.1
		1.18	100.0	0.0074	77.1
0.425	100.0	0.0054	72.6		
0.180	99.6	0.0028	65.8		
0.075	99.0	0.0012	57.2		



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as silty clay.	1	Gravel	D30
42		Sand	D60	0.00118
57		Silt	Cu	#DIV/0!
		Clay	Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

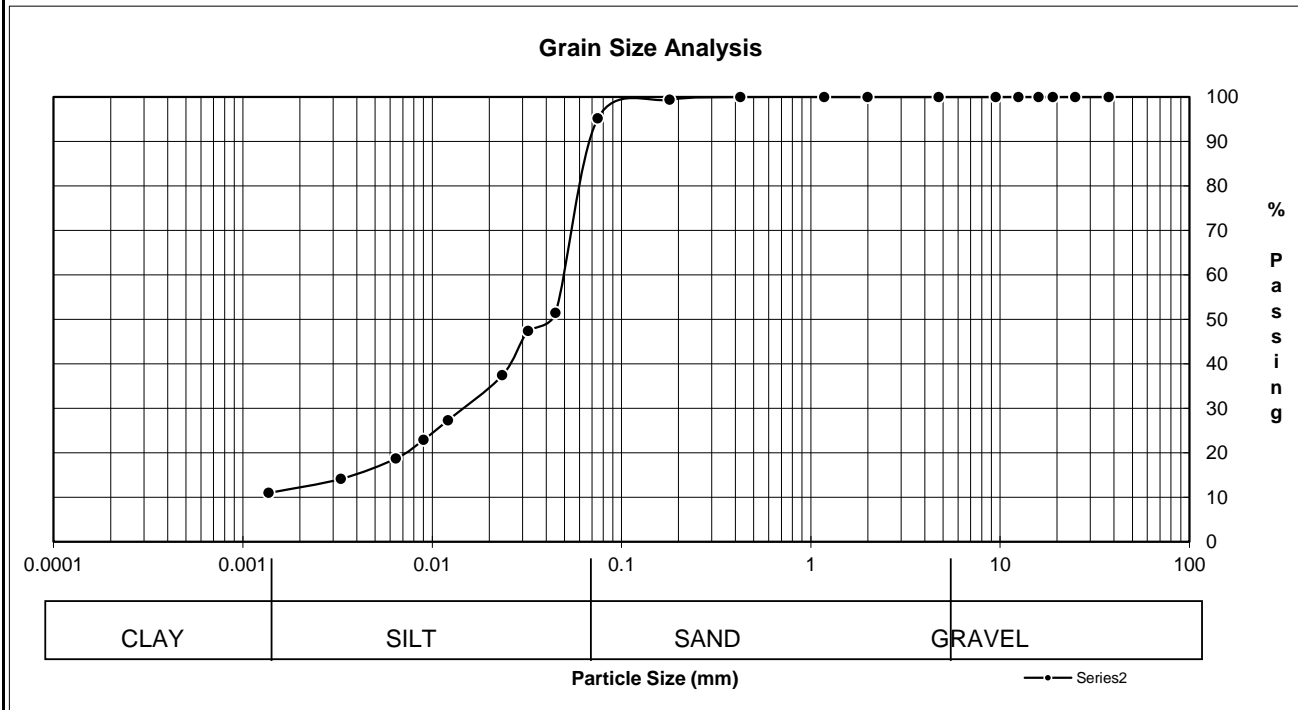
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH29 @ 5'</b> Sample No. <b>17</b> 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	0.0448	51.4
		9.50	100.0	0.0321	47.4
		4.75	100.0	0.0235	37.4
		2.00	100.0	0.0121	27.3
		1.18	100.0	0.0090	22.9
0.425	100.0	0.0064	18.8		
0.180	99.4	0.0033	14.2		
0.075	95.2	0.0014	11.0		



SOIL DESCRIPTION	% Composition		Liquid Limit / Plasticity	
	The sample tested can be classified as silty loam.	5	Sand	D10
84		Silt	D30	0.01210
11		Clay	D60	0.04475
			Cu	#DIV/0!
		Cc	#DIV/0!	

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

REVIEWED BY: Hermie Manalo

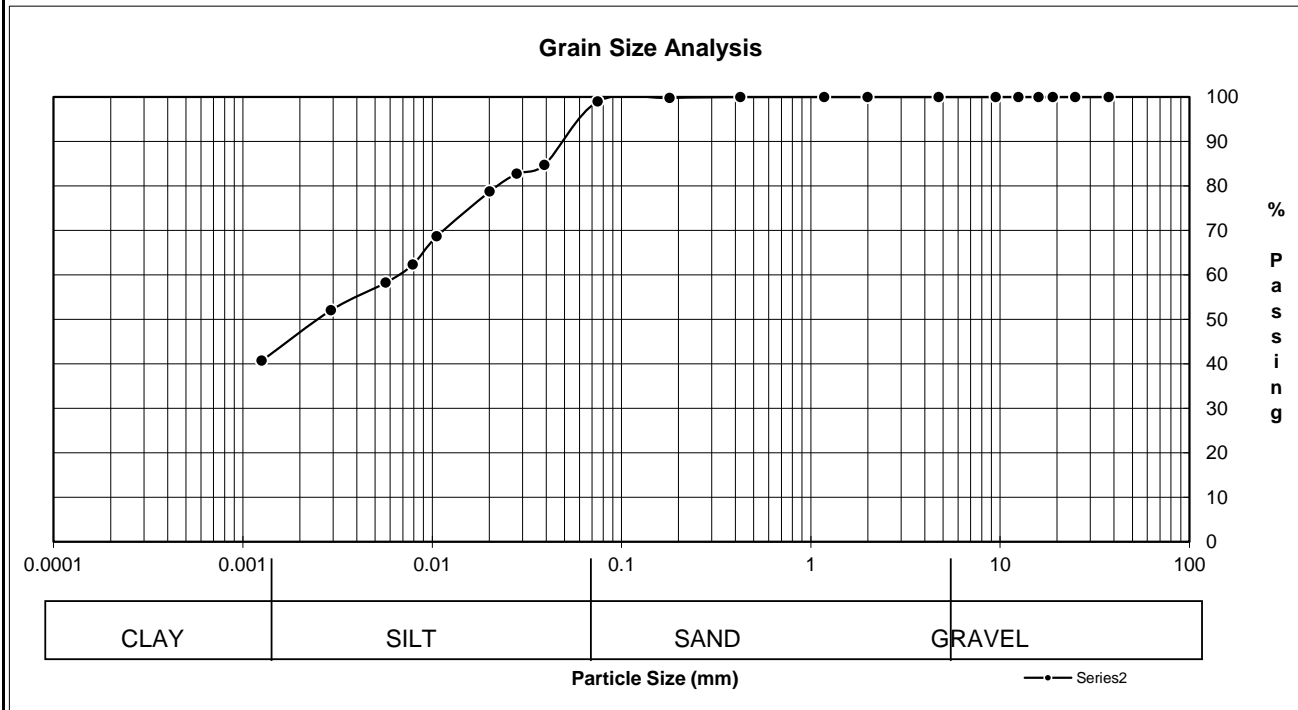
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH34 @ 3'</b> Sample No. <b>19</b> 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	0.0392	84.7
		9.50	100.0	0.0280	82.7
		4.75	100.0	0.0201	78.7
		2.00	100.0	0.0106	68.7
		1.18	100.0	0.0079	62.4
	0.425	100.0	0.0057	58.3	
	0.180	99.8	0.0029	52.1	
	0.075	99.0	0.0013	40.7	



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as silty clay.	Gravel		D30
1 Sand			D60	0.00567
58 Silt			Cu	#DIV/0!
41 Clay			Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

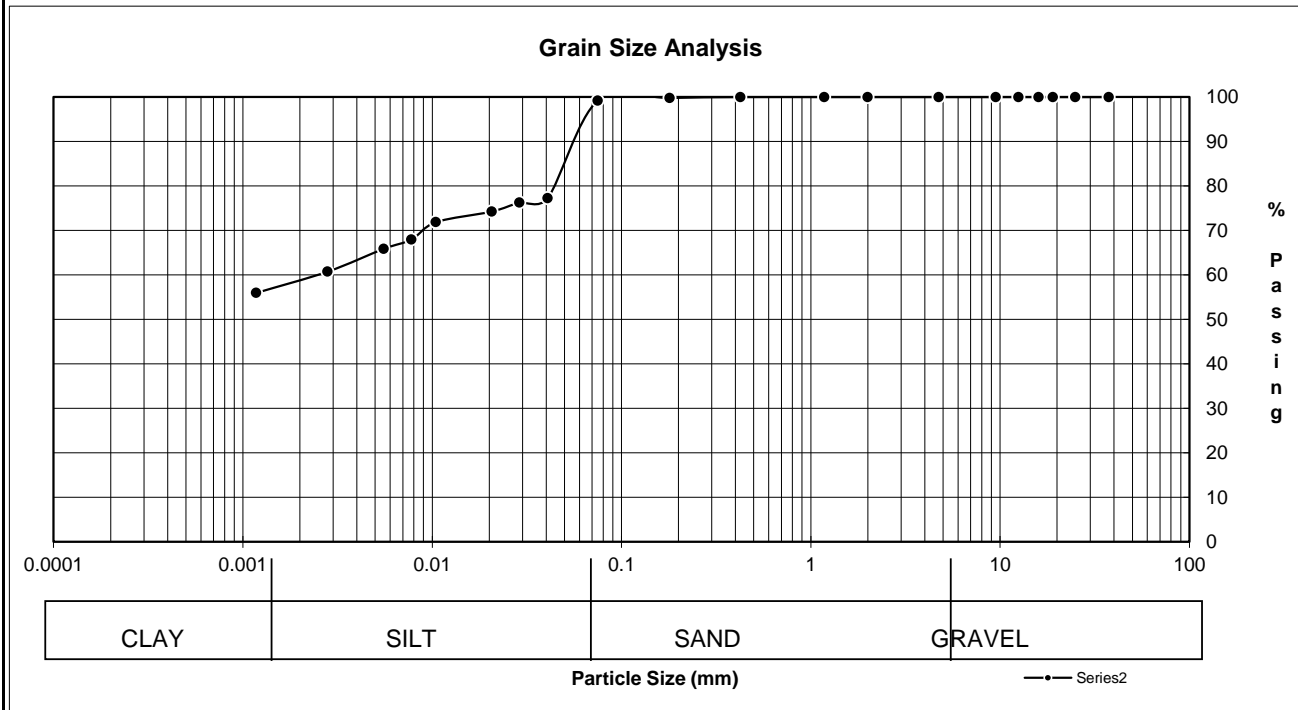
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH38 @ 2'</b> Sample No. <b>3</b> 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	0.0407	77.3
		9.50	100.0	0.0289	76.3
		4.75	100.0	0.0206	74.3
		2.00	100.0	0.0105	71.9
		1.18	100.0	0.0078	68.0
0.425	100.0	0.0055	65.9		
0.180	99.8	0.0028	60.8		
0.075	99.2	0.0012	56.0		



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as silty clay.	Gravel		D30
1 Sand			D60	0.00117
43 Silt			Cu	#DIV/0!
56 Clay			Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

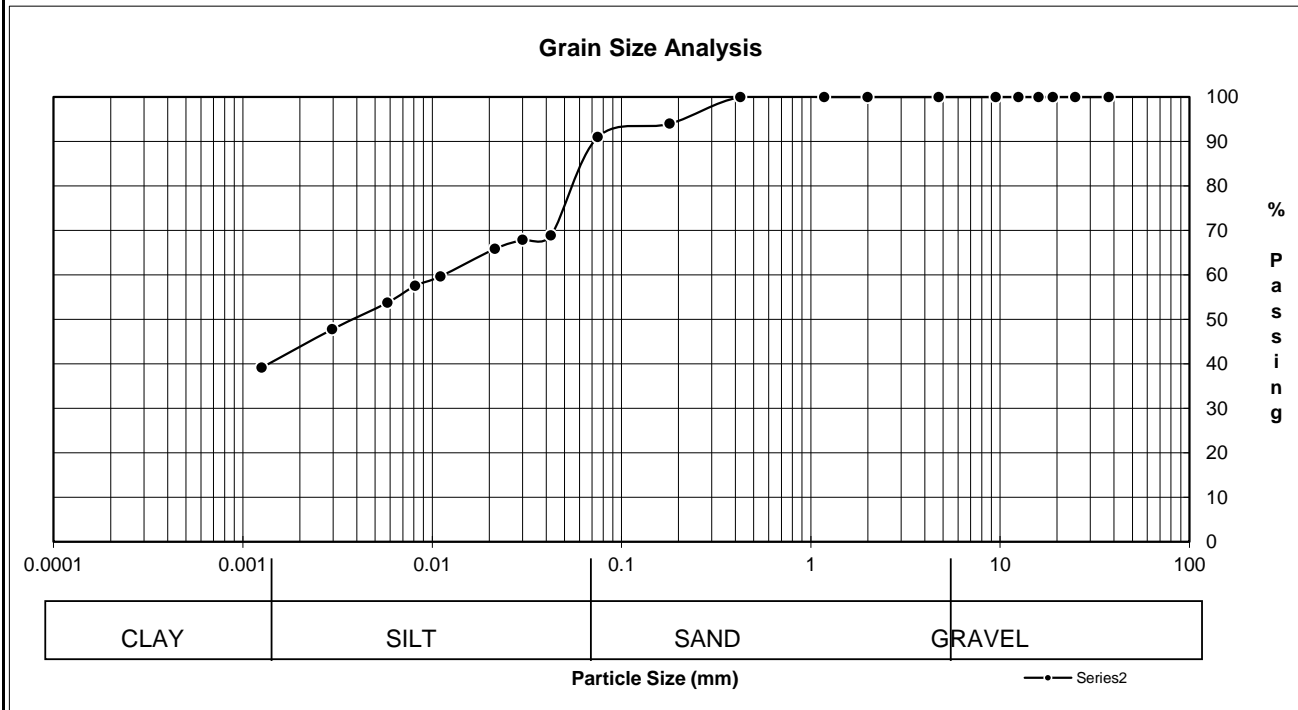
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH41 @ 2'</b> Sample No. <b>4</b> 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	0.0424	68.9
		9.50	100.0	0.0301	67.9
		4.75	100.0	0.0214	65.9
		2.00	100.0	0.0110	59.7
		1.18	100.0	0.0081	57.6
0.425	100.0	0.0058	53.8		
0.180	94.0	0.0030	47.8		
0.075	91.0	0.0013	39.2		



SOIL DESCRIPTION	% Composition		Liquid Limit / Plasticity Index	
	The sample tested can be classified as silty clay.	9	Sand	D10
52		Silt	D30	
39		Clay	D60	0.01104
			Cu	#DIV/0!
		Cc	#DIV/0!	

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

REVIEWED BY: Hermie Manalo

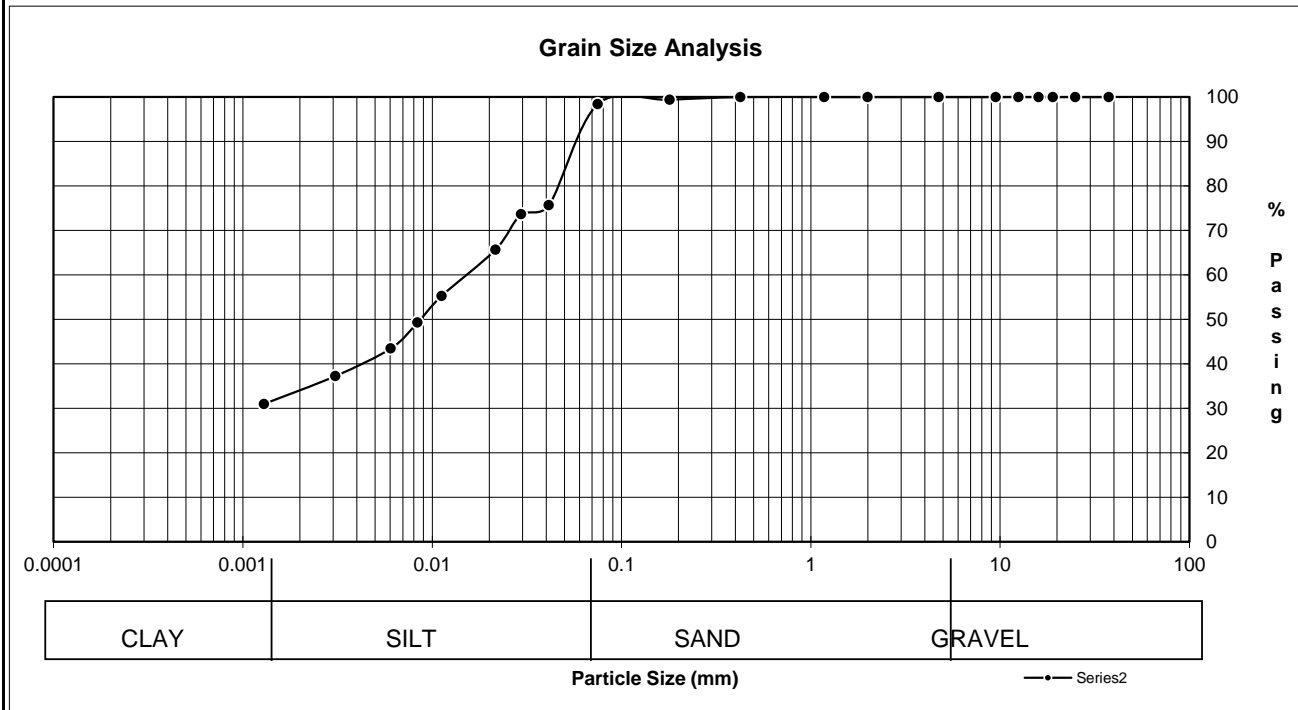
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH47 @ 3'</b> Sample No. <b>5</b> 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	0.0414	75.7
		9.50	100.0	0.0295	73.7
		4.75	100.0	0.0216	65.7
		2.00	100.0	0.0112	55.3
		1.18	100.0	0.0084	49.3
0.425	100.0	0.0060	43.5		
0.180	99.4	0.0031	37.3		
0.075	98.4	0.0013	31.0		



SOIL DESCRIPTION	% Composition		D10	D30	D60	Cu	Cc
	Gravel	Sand					
The sample tested can be classified as silty clay loam.	2	Sand				0.01121	#DIV/0!
	67	Silt					#DIV/0!
	31	Clay					#DIV/0!

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

REVIEWED BY: Hermie Manalo

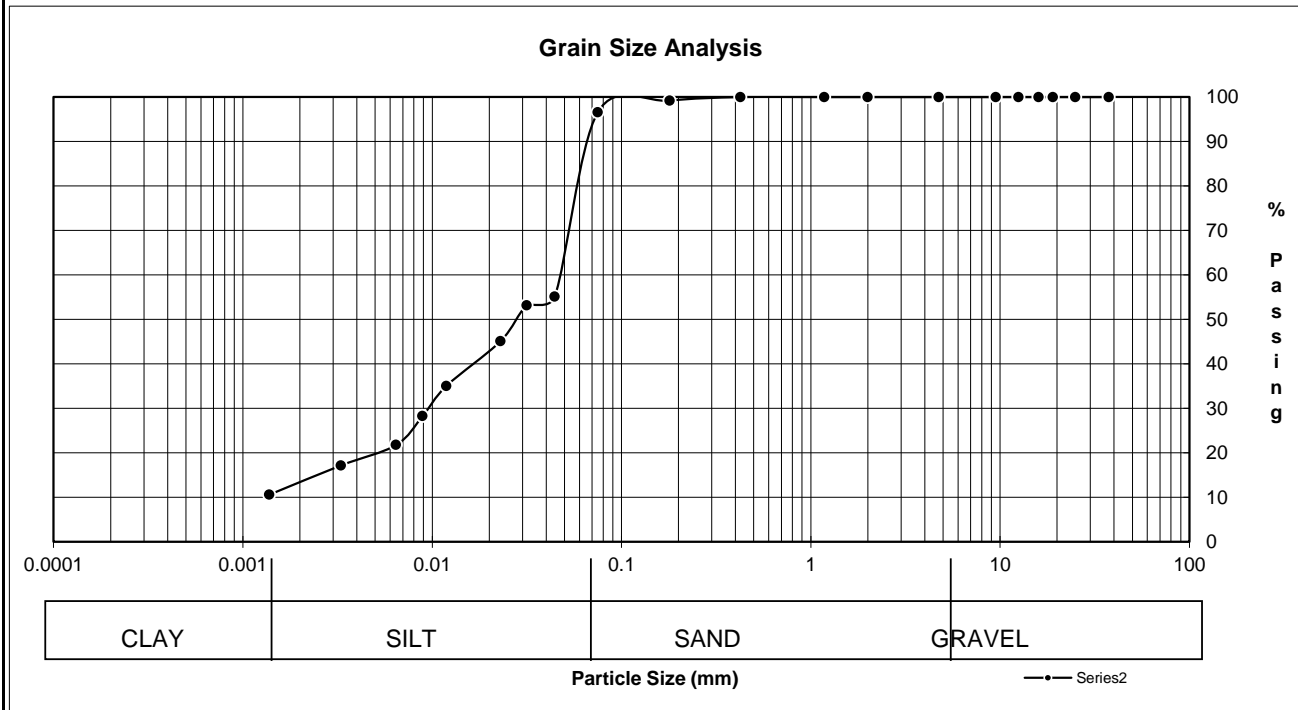
## PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

 CLIENT: WSP Canada  
 1600 Buffalo Place  
 Winnipeg, MB R3T 6B8

PROJECT NO.

 ATTN:  
 PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH47 @ 5'</b> <b>Sample No.</b> <b>6</b> 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	0.0444	55.1
		9.50	100.0	0.0316	53.1
		4.75	100.0	0.0230	45.1
		2.00	100.0	0.0119	35.0
		1.18	100.0	0.0089	28.3
0.425	100.0	0.0064	21.8		
0.180	99.2	0.0033	17.2		
0.075	96.6	0.0014	10.6		



SOIL DESCRIPTION	% Composition		Liquid Limit / Plasticity	
	The sample tested can be classified as silt loam.	3	Gravel	D10
86		Sand	D30	0.01121
11		Silt	D60	#DIV/0!
11		Clay	Cu	#DIV/0!
			Cc	#DIV/0!

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



REVIEWED BY: Hermie Manalo



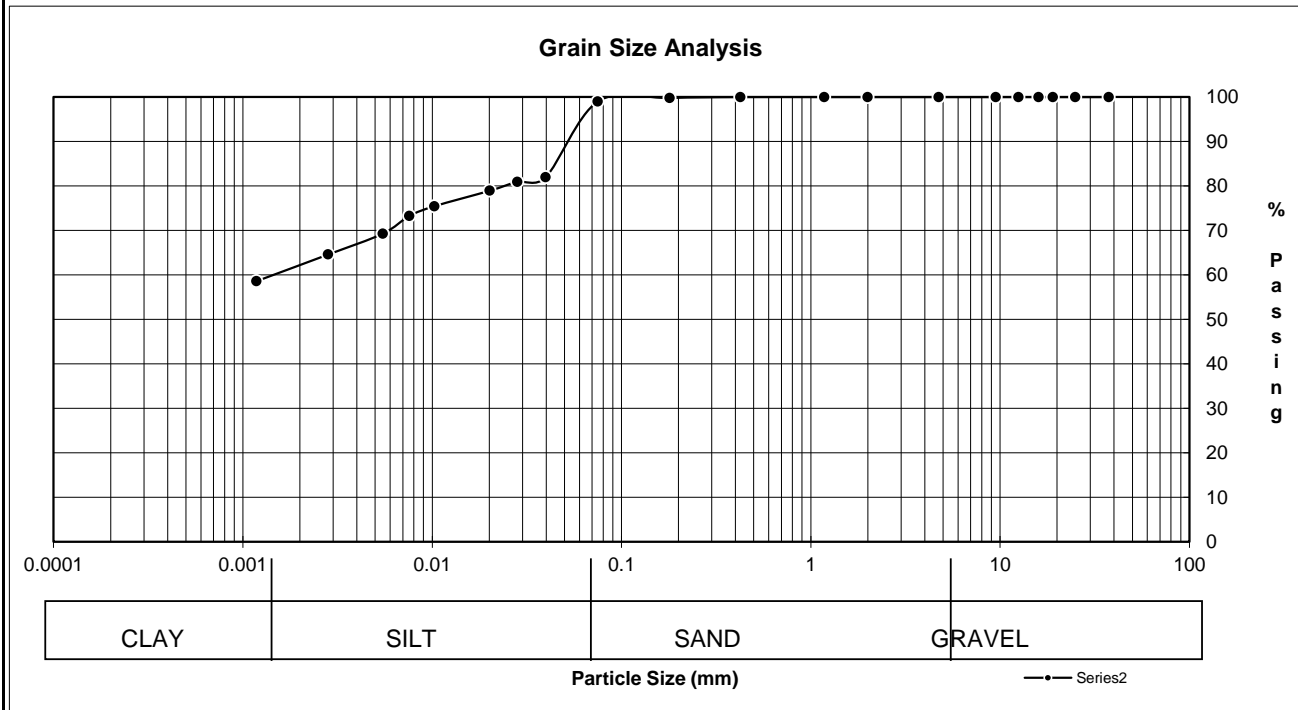
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH50 @ 2'</b> Sample No. <b>7</b> 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	0.0397	81.9
		9.50	100.0	0.0282	80.9
		4.75	100.0	0.0201	78.9
		2.00	100.0	0.0103	75.5
		1.18	100.0	0.0076	73.3
0.425	100.0	0.0055	69.3		
0.180	99.8	0.0028	64.6		
0.075	99.0	0.0012	58.6		



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as silty clay.	1	Gravel	D30
40		Sand	D60	0.00117
59		Silt	Cu	#DIV/0!
		Clay	Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

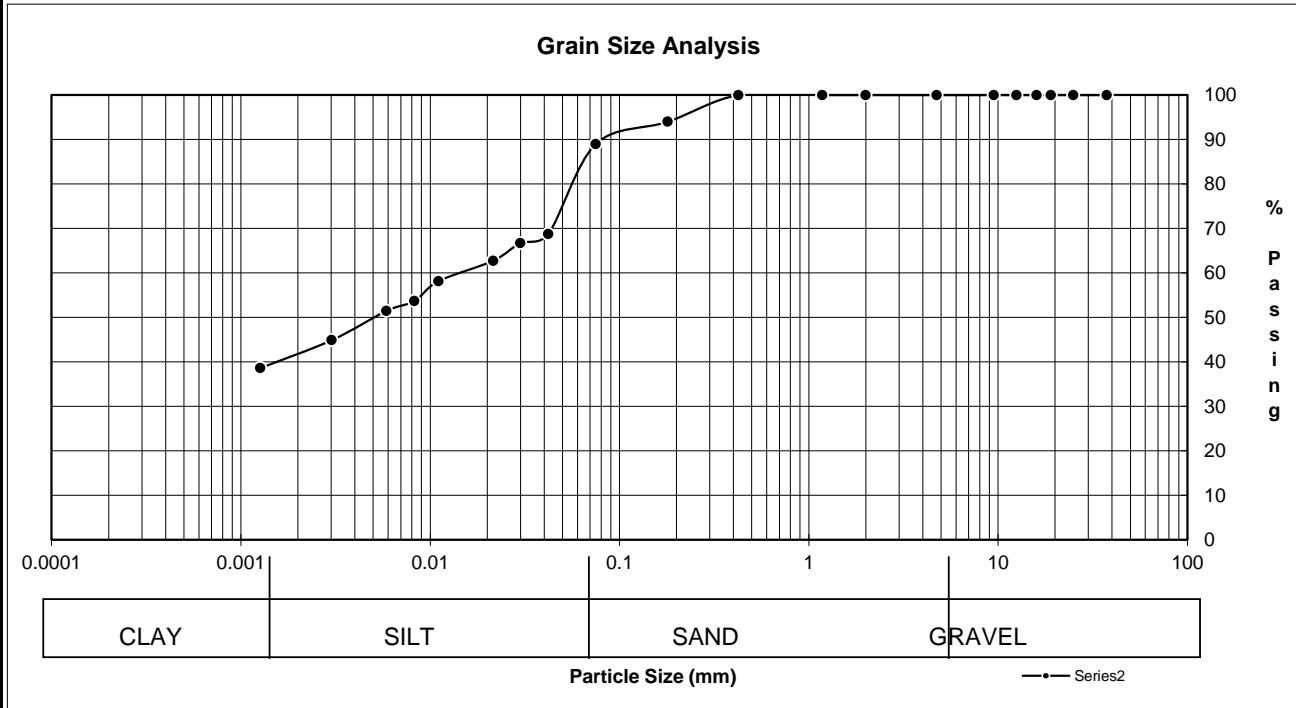
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH56 @ 2'</b> <b>Sample No. 8</b> 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	68.8
		9.50	100.0	0.0300	66.8
		4.75	100.0	0.0215	62.8
		2.00	100.0	0.0111	58.2
		1.18	100.0	0.0082	53.7
	0.425	100.0	0.0059	51.5	
	0.180	94.0	0.0030	44.9	
	0.075	89.0	0.0013	38.6	



SOIL DESCRIPTION	% Composition		Liquid Limit / Plasticity Index	
	The sample tested can be classified as silty clay.	Gravel		D10
11 Sand			D30	
50 Silt			D60	0.01106
39 Clay			Cu	#DIV/0!
			Cc	#DIV/0!

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

*H. Manalo*

REVIEWED BY: Hermie Manalo

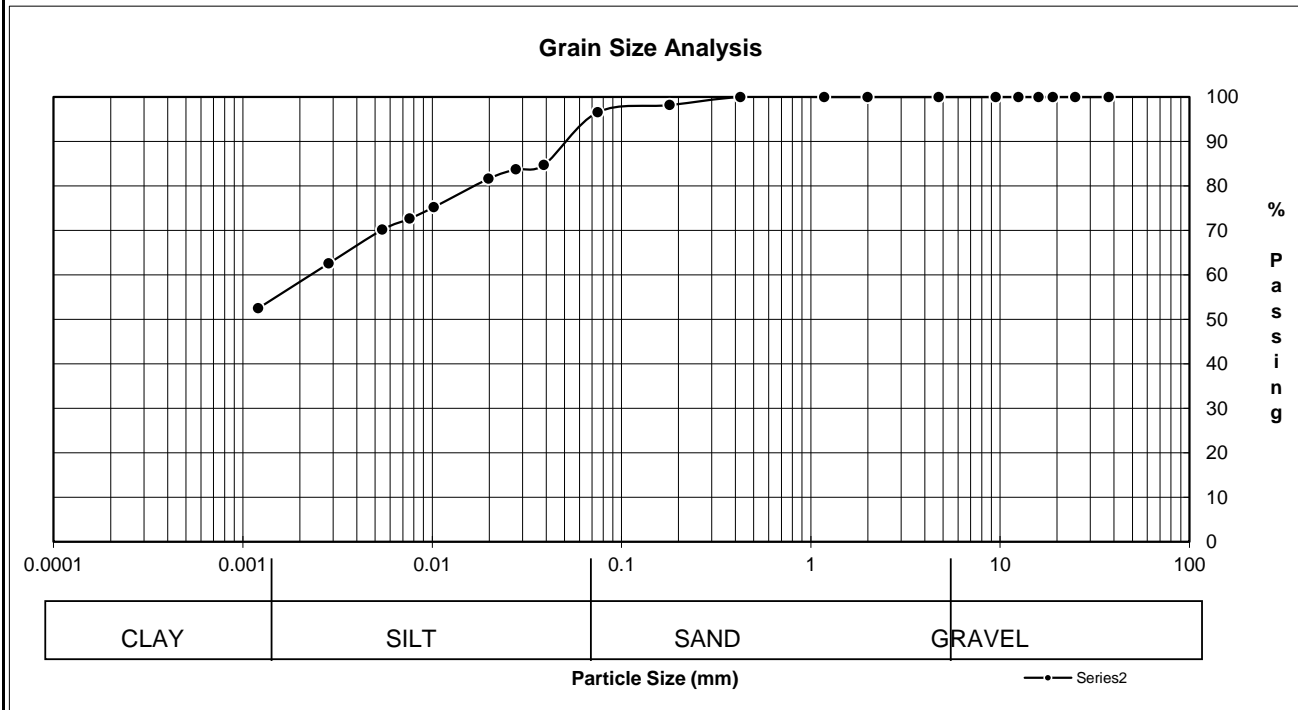
**PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT**

CLIENT: WSP Canada  
1600 Buffalo Place  
Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH59 @ 2'</b> Sample No. <b>9</b> 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	0.0389	84.7
		9.50	100.0	0.0276	83.7
		4.75	100.0	0.0198	81.6
		2.00	100.0	0.0102	75.2
		1.18	100.0	0.0076	72.7
0.425	100.0	0.0054	70.2		
0.180	98.2	0.0028	62.6		
0.075	96.6	0.0012	52.5		



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as silty clay.	Gravel		D30
3 Sand			D60	0.00120
45 Silt			Cu	#DIV/0!
52 Clay			Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

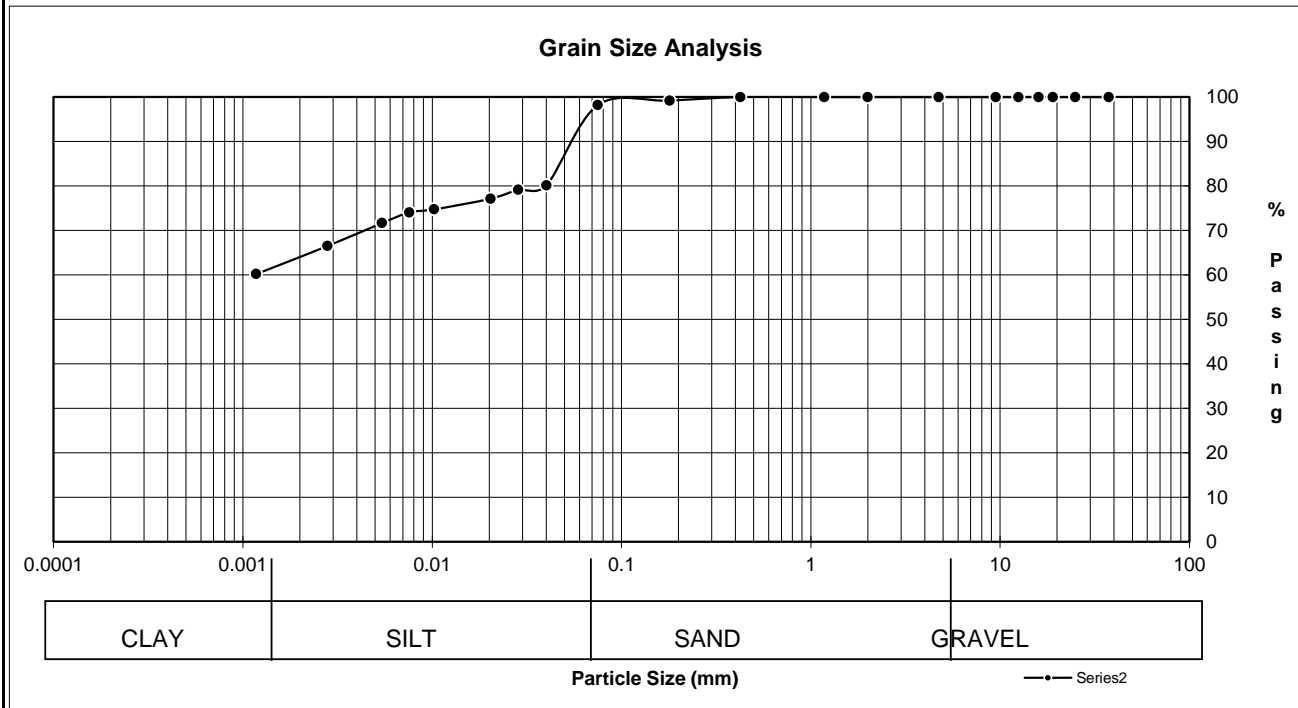
## PARTICLE SIZE ANALYSIS OF SOILS TEST REPORT

CLIENT: WSP Canada  
 1600 Buffalo Place  
 Winnipeg, MB R3T 6B8

PROJECT NO.

ATTN:  
 PROJECT: COW Alley Renewal

Date Sampled: unknown	Date Received: Jan/Feb/15	Sieve Analysis		Hydrometer Analysis	
Sampled By: Client	Date Tested: 16-Mar-15	Sieve (mm)	% Passing	Diameter	% Finer
<b>Material Identification</b> B.H./T.H. No. <b>TH62 @ 2'</b> <b>Sample No. 10</b> 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	0.0401	80.1	
	9.50	100.0	0.0285	79.1	
	4.75	100.0	0.0203	77.1	
	2.00	100.0	0.0102	74.8	
	1.18	100.0	0.0076	74.1	
0.425	100.0	0.0054	71.7		
0.180	99.2	0.0028	66.5		
0.075	98.2	0.0012	60.2		



SOIL DESCRIPTION	% Composition		D10	
	The sample tested can be classified as silty clay.	2	Gravel	D30
38		Sand	D60	0.00118
60		Silt	Cu	#DIV/0!
		Clay	Cc	#DIV/0!

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

REVIEWED BY: Hermie Manalo

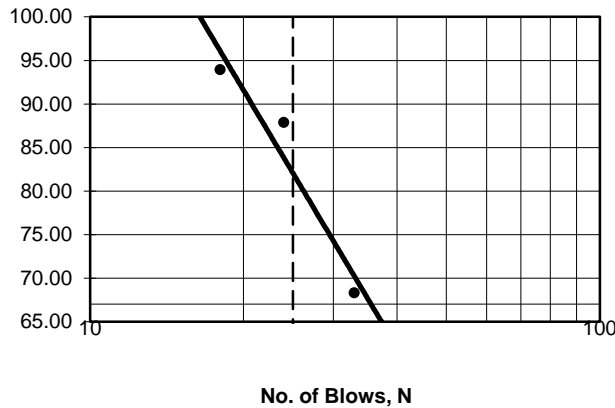
## ATTERBERG LIMITS

<b>CLIENT:</b> WSP Canada Inc. 1600 Buffalo Place Winnipeg, MB R3T 6B8 <b>ATTENTION:</b> Silvetre Urbano, P. Eng. <b>PROJECT:</b> COW Alley Renewal	<b>PROJECT NO.:</b>
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### Liquid Limit Determination

Dish No.:	1	2	3		Liquid Limit 25 Blows
Wet Soil + Dish:	11.1	10.4	10.7		
Dry Soil + Dish:	8.3	7.5	7.6		
Moisture:	2.8	2.9	3.1		
Dish:	4.2	4.2	4.3		
Dry Soil:	4.1	3.3	3.3		
% Moisture:	68.29	87.88	93.94		
No. of Blows:	33	24	18		
<b>Liquid Limits:</b>	<b>70.63</b>	<b>87.45</b>	<b>90.28</b>		

**Liquid Limit**



### Material Identification:

T.H./B.H. No. BH 14-02  
 SS5 @15ft.  
 Depth: 15 ft

Liquid Limit, %: 82.78  
 Plastic Limit, %: 32.11  
 Plasticity Index: 50.67  
 (LL-PL)

### Plastic Limit Determination

Dish No.:	1	2	3		
Wet Soil + Dish:	10.8	10.4	10.9		
Dry Soil + Dish:	9.3	8.8	9.3		
Moisture:	1.5	1.6	1.6		
Dish:	4.2	4.3	4.2		
Dry Soil:	5.1	4.5	5.1		
% Moisture:	29.41	35.56	31.37		
<b>Average:</b>					<b>32.11</b>

Test Method : ASTM: D4318, D2216  
 HMCL Tech: ECS



Reviewed by: Hermie Manalo