

**APPENDIX 'A'**  
**GEOTECHNICAL REPORT**



Quality Engineering | Valued Relationships

## **Morrison Hershfield**

### **RFP 547-2023 McGregor-Inkster Geotech. Investigation**

**Prepared for:**

Ron Bruce, P. Eng.

Morrison Hershfield

Suite 1, 59 Scurfield Blvd

Winnipeg, MB.

R3Y 1V2

**Project Number:** 1000-001-33

**Date:** January 22, 2024



Quality Engineering | Valued Relationships

January 22, 2024

Our File No. 1000-001-33

Ron Bruce, P. Eng.  
Morrison Hershfield  
Suite 1, 59 Scurfield Blvd  
Winnipeg, MB.  
R3Y 1V2

**RE: RFP 547-2023 McGregor-Inkster Geotech. Investigation**

---

TREK Geotechnical Inc. is pleased to submit our Final Report for the geotechnical investigation for RFP 547-2023 McGregor-Inkster Geotech. Investigation project.

Please contact the undersigned should you have any questions.

Sincerely,

**TREK Geotechnical Inc.**  
**Per:**

A handwritten signature in blue ink, appearing to read "N. Ferreira", is written over a light blue circular stamp.

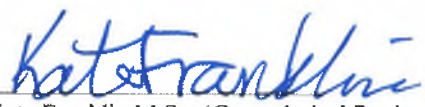
Nelson John Ferreira, Ph.D., P.Eng.  
Senior Geotechnical Engineer

Encl.

## Revision History

Revision No.	Author	Issue Date	Description
0	AD	January 22, 2024	Final Report

## Authorization Signatures

Prepared By:   
Kate Franklin M.Sc. (Geotechnical Engineering)  
Technical Support Specialist



Reviewed By: \_\_\_\_\_  
Nelson John Ferreira, Ph.D., P.Eng.  
Senior Geotechnical Engineer



## Table of Contents

Letter of Transmittal

Revision History and Authorization Signatures

1.0 Introduction ..... 1

2.0 Road Investigation..... 1

3.0 Closure..... 3

Figures

Appendices

## List of Tables

Table 1: Road Investigation Program..... 1

Table 2: CBR Testing Summary ..... 2

## List of Figures

Figure 01 Test Hole and Pavement Core Location Plan – McGregor St (McAdams Av to Church Av)

Figure 02 Test Hole and Pavement Core Location Plan – Inkster Blvd (McGregor St to Main St)

Figure 03 Test Hole and Pavement Core Location Plan – Inkster Blvd (Sinclair St to McGregor St)

Figure 04 Test Hole and Pavement Core Location Plan – Inkster Blvd (Duke St to Airlies St)

Figure 05 Test Hole and Pavement Core Location – Inkster Blvd (Sheppard St to Duke St)

## List of Appendices

- Appendix A Test Hole Logs, Summary Table & Lab Testing Results and Pavement Core Photos –  
McGregor Street (Church Av to McAdam Av) - Recon
- Appendix B Test Hole Logs, Summary Table & Lab Testing Results and Pavement Core Photos –  
Inkster Boulevard (Sinclair St to Main St) - Recon
- Appendix C Test Hole Logs, Summary Table & Lab Testing Results and Pavement Core Photos –  
Inkster Boulevard (McPhillips St to Wiginton St) - Recon
- Appendix D Summary Table, Pavement Core Photos, and Summary of Pavement Compressive  
Strength – Inkster Boulevard

## 1.0 Introduction

This report summarizes the results of the road investigation completed for the RFP 547-2023 McGregor-Inkster Geotech. Investigation project. The project included collecting pavement cores and drilling test holes McGregor Street (Church Avenue to McAdam Avenue) and Inkster Boulevard (Main Street to Milner Street). The test hole information collected describes the pavement structure of the existing road as well as the soil stratigraphy beneath the pavement structure. The investigation was carried out following the City of Winnipeg RFP No. 547-2023.

## 2.0 Road Investigation

The investigation included coring of pavement at 61 locations with drilling of test holes at 24 of the cored locations. Morrison Hershfield selected the investigation locations as shown on Figures 01 to 11 (attached) and the table below summarizes the investigation program per street.

**Table 1: Road Investigation Program**

Street	# of Locations	Investigation
<b>McGregor Street – Recon</b> (Church Av to McAdam Av)	10	Pavement Cores and Test Holes
<b>Inkster Blvd EB - Recon</b> (Main St to Sinclair St)	10	Pavement Cores and Test Holes
<b>Inkster Blvd WB - Recon</b> (McPhillips St to Wiginton St)	4	Pavement Cores and Test Holes
<b>Inkster Blvd EB - Rehab</b> (Sheppard St to Milner St)	3	Pavement Cores
<b>Inkster Blvd EB – Mill/Fill</b> (Fife St to McPhillips St)	9	Pavement Cores
<b>Inkster Blvd WB - Rehab</b> (Lansdowne Av to McPhillips St)	4	Pavement Cores
<b>Inkster Blvd WB - Rehab</b> (Airles St to CPR Tracks)	6	Pavement Cores
<b>Inkster Blvd WB – Mill/Fill</b> (Arlington St to Parr St)	3	Pavement Cores
<b>Inkster Blvd WB - Rehab</b> (Parr St to Andrews St)	8	Pavement Cores
<b>Inkster Blvd EB - Rehab</b> (Salter St to Aikins St)	3	Pavement Cores

The road investigation was conducted between December 14<sup>th</sup> and December 21<sup>st</sup>, 2022. The pavement structure (asphalt/concrete) was cored by Tyler Green of TREK Geotechnical Inc. (TREK) using a portable coring press equipped with a hollow 150 mm or 220 mm diameter diamond core drill bits. The test holes were drilled by Kate Franklin to a depth of 2.0 m below road surface by Maple Leaf Drilling Ltd. using a truck mounted drill rig equipped with 125 mm and 200 mm diameter solid stem augers. The sub-surface conditions were observed during drilling and visually classified by Kate Franklin of

TREK. Other pertinent information such as groundwater and drilling conditions were also recorded during the drilling investigation. Disturbed (auger cuttings) samples and bulk samples retrieved during the sub-surface investigation were transported to TREK’s material testing laboratory for further testing. Pavement core samples were also retrieved and logged at TREK’s material testing laboratory.

Core and test hole logs noted on the summary tables and test hole locations are based on UTM coordinates obtained using a hand-held GPS, and their location relative to the nearest address or intersection, measured distance from the edge of pavement, or other permanent features.

The laboratory testing program consisted of moisture content determination on all samples, as well as Atterberg limits, and grain size analysis (hydrometer methods) on select samples between 0.6 and 0.9 m below pavement as well as Standard Proctor and CBR testing. Information gathered for each street package is included in separate appendices (Appendices A to D). The information provided in the Appendices includes test hole logs, laboratory testing summary tables and results, photos of the concrete cores, and summary of pavement compressive strength.

Thirteen CBR’s were completed on bulk samples of the soil units present below the pavement. Tests were performed on clay and silt materials encountered within the prescribed sample depth for CBR testing and the results are shown in the table below.

**Table 2: CBR Testing Summary**

Sample Description	Street	Depth (m)	SPMDD (kg/m <sup>3</sup> )	Opt. Moisture (%)	Percent Proctor (%)	Moisture Content (%)	CBR Value at 2.54 mm	CBR Value at 5.08 mm
Silt	McGregor Street (TH23-02)	0.9-2.1	1866	13.9	95.2	13.8	6.8%	5.7%
Silt	McGregor Street (TH23-04)	0.9-1.8	1680	19.4	95.2	19.3	2.1%	2.1%
Clay	McGregor Street (TH23-07)	0.9-1.8	1594	23.2	95.0	23.5	2.3%	1.9%
Clay	McGregor Street (TH23-09)	1.5-2.1	1565	24.1	95.1	24.1	3.4%	2.8%
Clay	McGregor Street (TH23-09, TH23-10)	0.9-1.5	1507	26.1	95.0	26.2	2.0%	1.64%
Clay	Inkster Boulevard (TH23-11)	1.5-2.1	1535	26.1	95.5	26.5	2.6%	1.9%
Clay	Inkster Boulevard (TH23-13)	1.5-2.1	1606	23.0	95.0	23.2	2.8%	2.3%
Clay	Inkster Boulevard (TH23-13, TH23-14, TH23-15)	0.9-1.5 0.9-2.1 1.5-2.1	1507	25.1	95.0	25.4	1.7%	1.4%



Sample Description	Street	Depth (m)	SPMDD (kg/m <sup>3</sup> )	Opt. Moisture (%)	Percent Proctor (%)	Moisture Content (%)	CBR Value at 2.54 mm	CBR Value at 5.08 mm
Clay	Inkster Boulevard (TH23-16, TH23-17)	0.9-2.1 0.9-1.5	1514	24.8	95.2	24.8	1.6%	1.4%
Silt	Inkster Boulevard (TH23-19, TH23-11)	0.9-1.5	1907	12.6	95.3	12.6	7.4%	4.5%
Clay	Inkster Boulevard (TH23-19, TH23-20)	1.5-2.1 0.9-2.1	1522	25.8	95.3	25.7	1.5%	1.3%
Silt	Inkster Boulevard (TH23-21, TH23-22, TH23-24, TH23-25)	0.9-1.5 0.9-1.2	1860	13.8	94.9	14.0	10.5%	9.0%
Clay	Inkster Boulevard (TH23-23, TH23-24)	1.2-2.1	1464	28.2	95.1	28.5	1.8%	1.5%

The test hole logs include a description of the soil units encountered during drilling and other pertinent information such as groundwater conditions and a summary of the laboratory testing results. The soils were classified in general accordance with the Unified Soil Classification System (USCS) and the AASHTO soil classification system (American Association of state highway and transportation officials). The AASHTO system classifies soils based on laboratory testing results from Atterberg Limits and grain size testing methods (hydrometer and mechanical sieve method). Where laboratory testing was not conducted, the AASHTO classification of the soils were interpreted based on a visual assessment as indicated with a (I) on the test hole logs and attached tables. For cohesive soils, the AASHTO system uses a combination of testing results to determine the Group Index of the soils and thus, were only determined where sufficient laboratory test data was available.

### 3.0 Closure

The information provided in this report is in accordance with current engineering principles and practices (Standard of Practice). The findings of this report were based on information provided (field investigation, laboratory testing, geometries). Soil conditions are natural deposits that can be highly variable across a site. If sub-surface conditions are different than the conditions previously encountered on-site or those presented here, we should be notified to adjust our findings if necessary.

All information provided in this report is subject to our standard terms and conditions for engineering services, a copy of which is provided to each of our clients with the original scope of work, or a mutually executed standard engineering services agreement. If these conditions are not attached, and you are not already in possession of such terms and conditions, contact our office and you will be promptly provided with a copy.

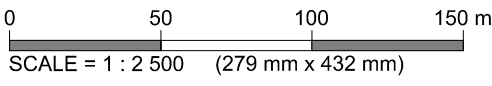
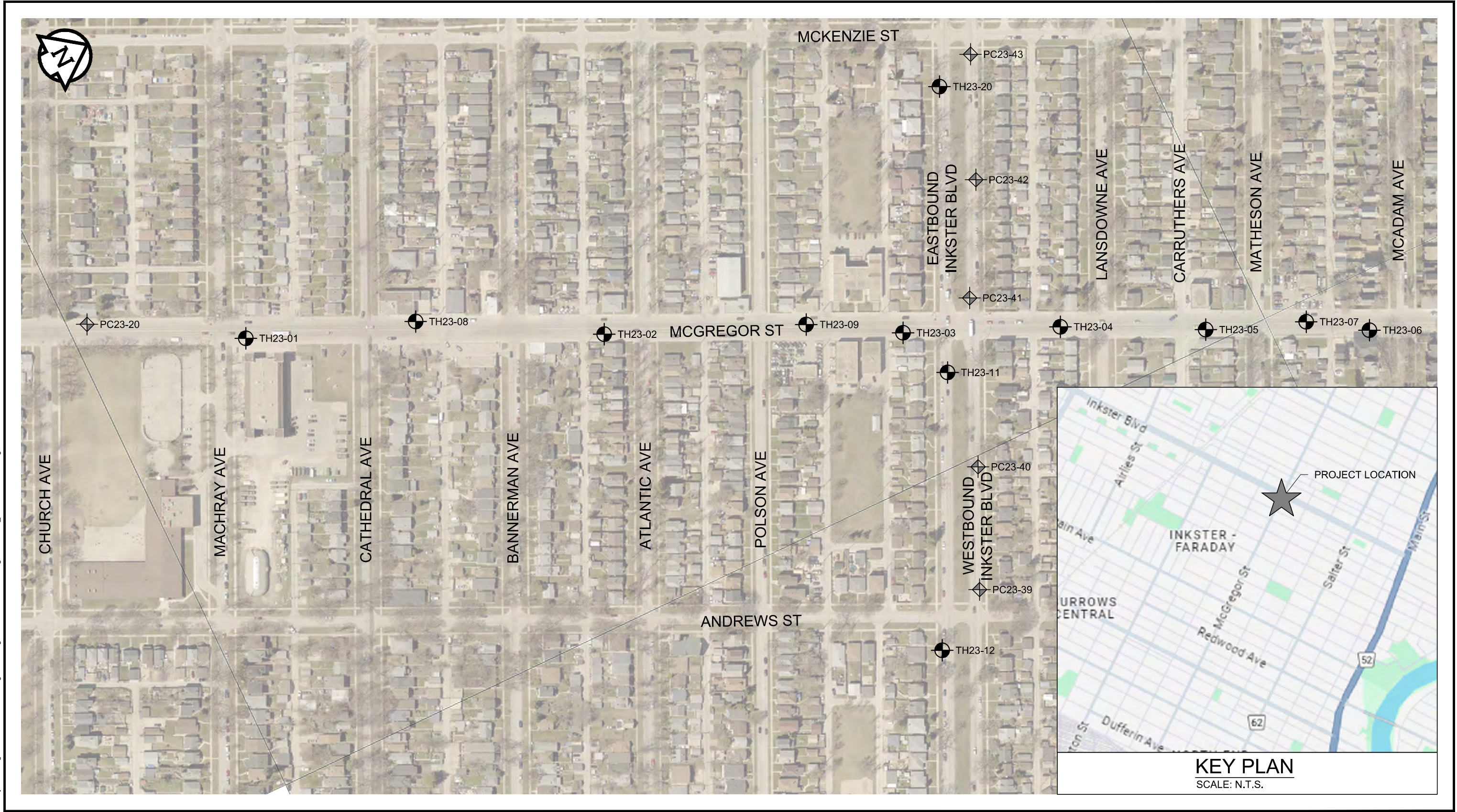


This report has been prepared by TREK Geotechnical Inc. (the Consultant) for the exclusive use of Morrison Hershfield (the Client) and their agents for the work product presented in the report. Any findings or recommendations provided in this report are not to be used or relied upon by any third parties, except as agreed to in writing by the Client and Consultant prior to use.

## Figures

---

Z:\Projects\1000 Soils Lab\Lab Projects\1000-001-33 RFP 547-2023 McGregor-Inkster Geotech. Investigation\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder\Fig 01 2024-01-22 McGregor-Inkster 0\_C-1000-001-33.dwg, 2024-01-23 12:26:26 PM



**LEGEND:**  

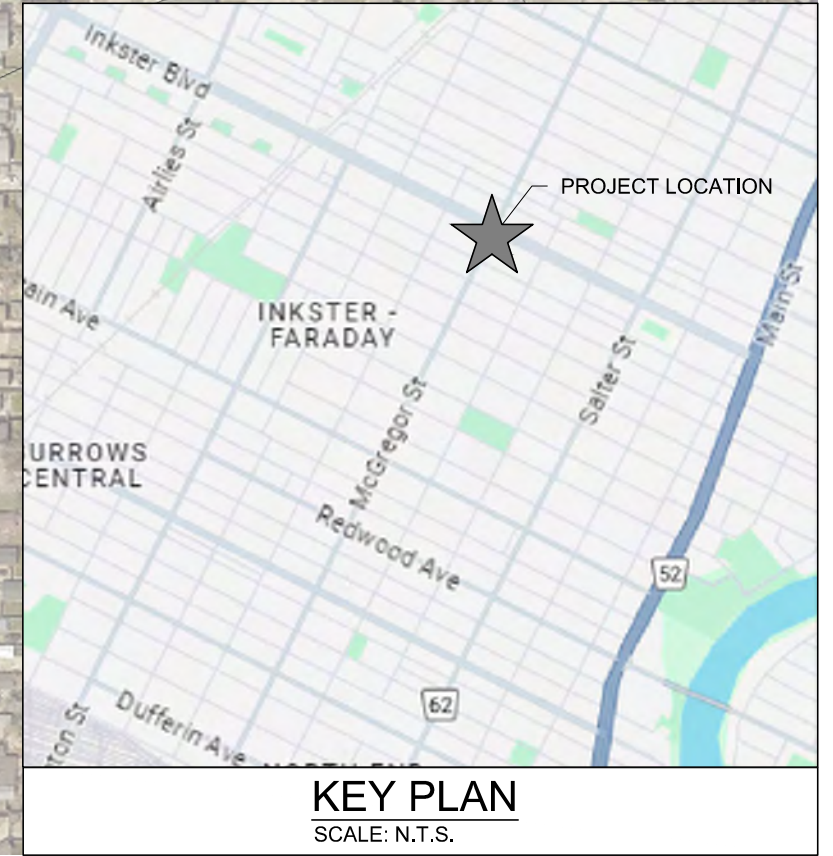



 TEST HOLE (TREK, 2023)  



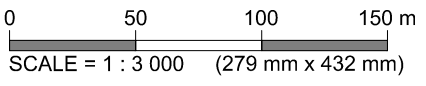
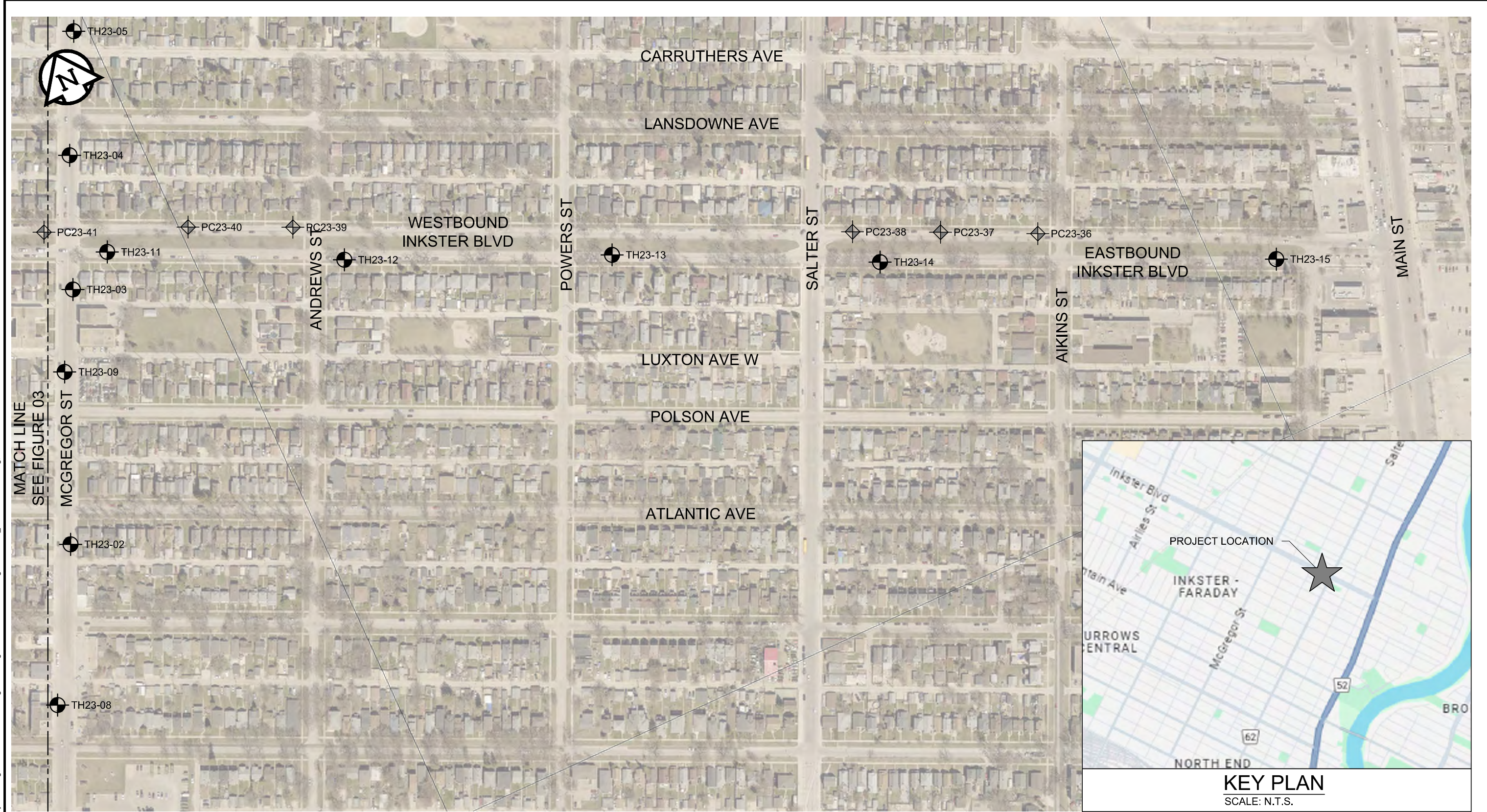

 PAVEMENT CORE (TREK, 2023)

**NOTES:** 1. AERIAL IMAGERY FROM CITY OF WINNIPEG (2021).



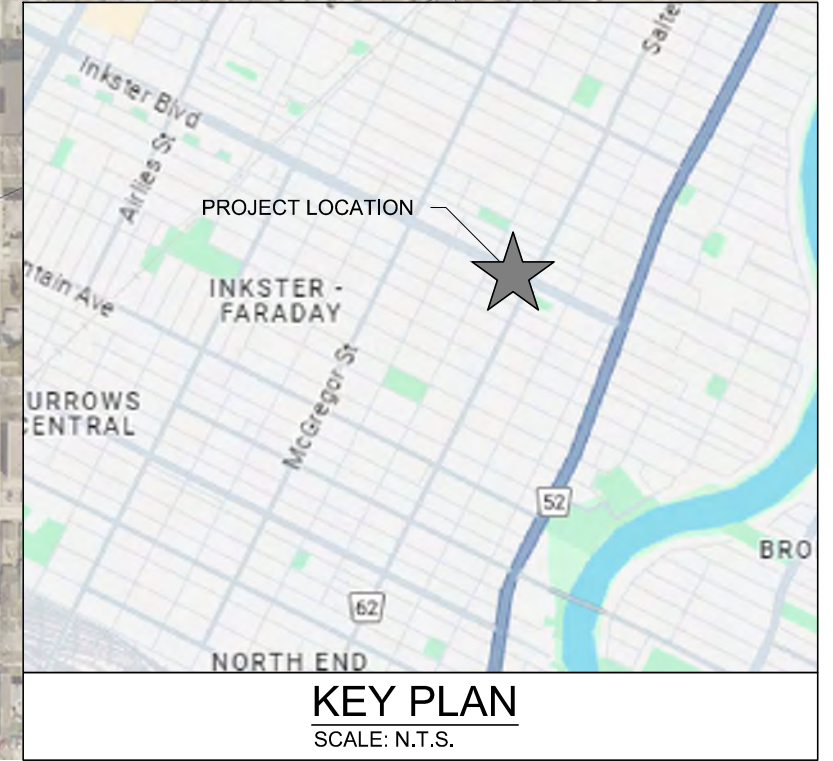
**Figure 01**  
Test Hole and Pavement Core  
Location Plan

Z:\Projects\1000 Soils Lab\Lab Projects\1000-001 Morrison Hershfield\1000-001-33 RFP 547-2023 McGregor-Inkster Geotech. Investigation\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder\Fig 02 2024-01-22 McGregor-Inkster 0\_C 1000-001-33.dwg, 2024-01-23 12:26:00 PM



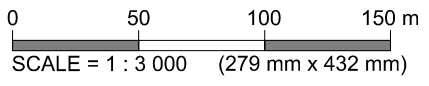
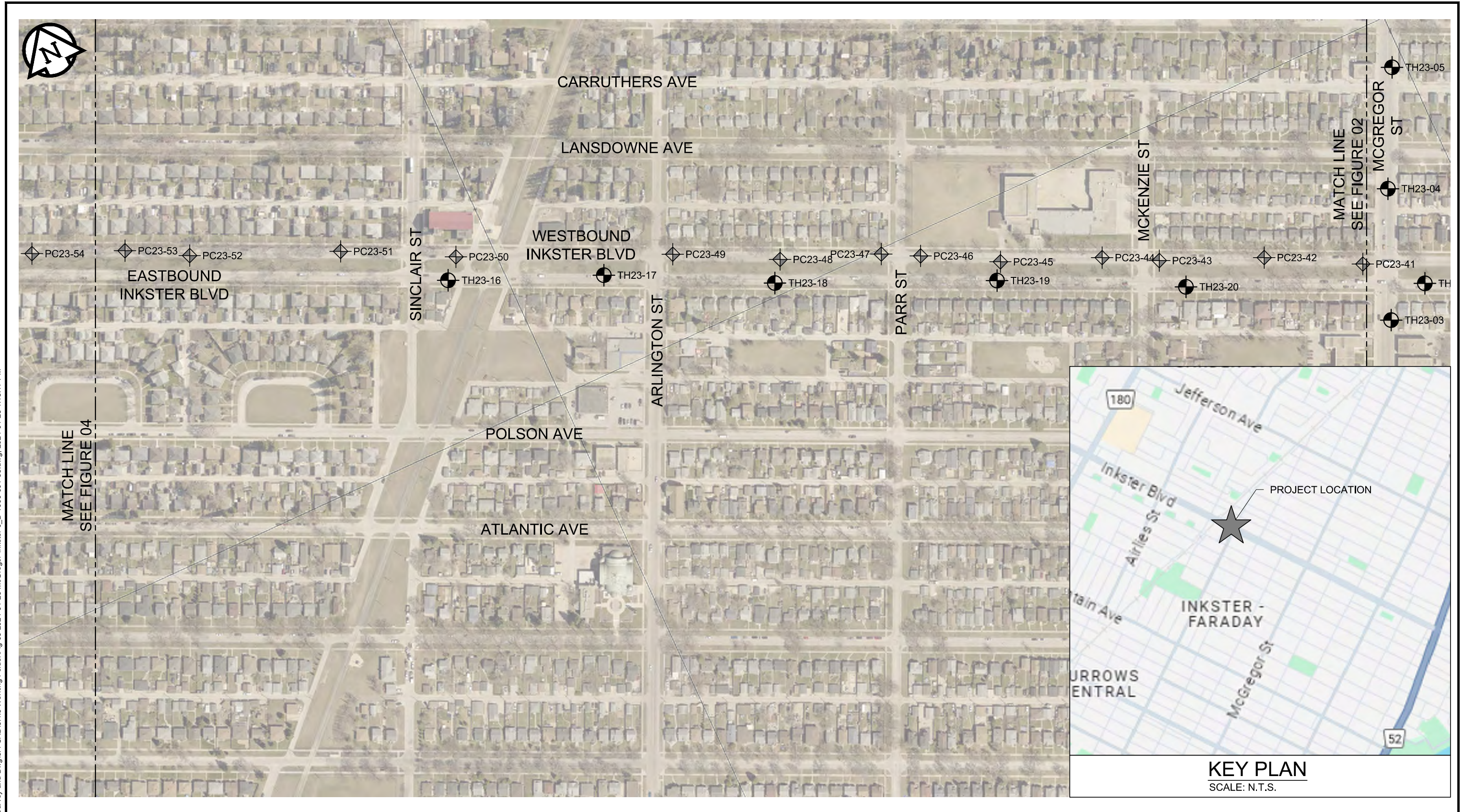
**LEGEND:**  
 PAVEMENT CORE (TREK, 2023)  
 TEST HOLE (TREK, 2023)

**NOTES:** 1. AERIAL IMAGERY FROM CITY OF WINNIPEG (2021).



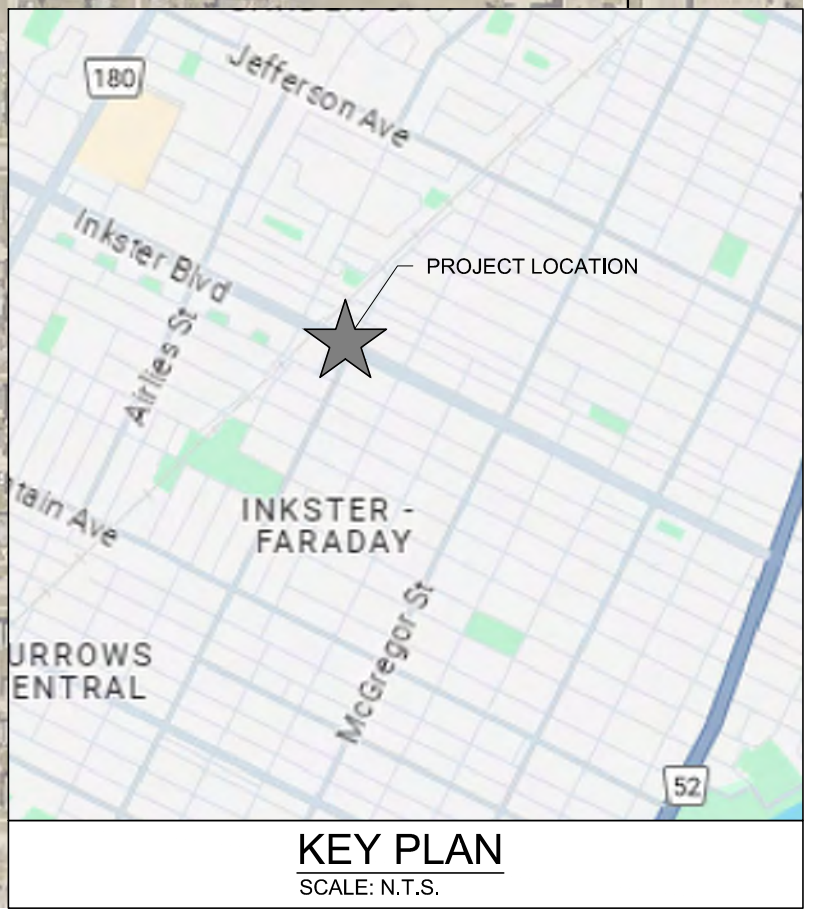
**Figure 02**  
Test Hole and Pavement Core  
Location Plan

Z:\Projects\1000 Soils Lab\Lab Projects\1000-001 Morrison Hershfield\1000-001-33 RFP 547-2023 McGregor-Inkster Geotech. Investigation\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder\Fig 03 2024-01-23 McGregor-Inkster 0\_1000-001-33.dwg, 2024-01-23 1:18:17 PM



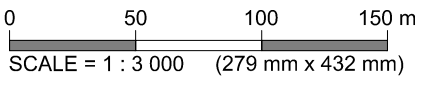
**LEGEND:**  
 ◆ PAVEMENT CORE (TREK, 2023)  
 ● TEST HOLE (TREK, 2023)

**NOTES:** 1. AERIAL IMAGERY FROM CITY OF WINNIPEG (2021).



**Figure 03**  
 Test Hole and Pavement Core  
 Location Plan

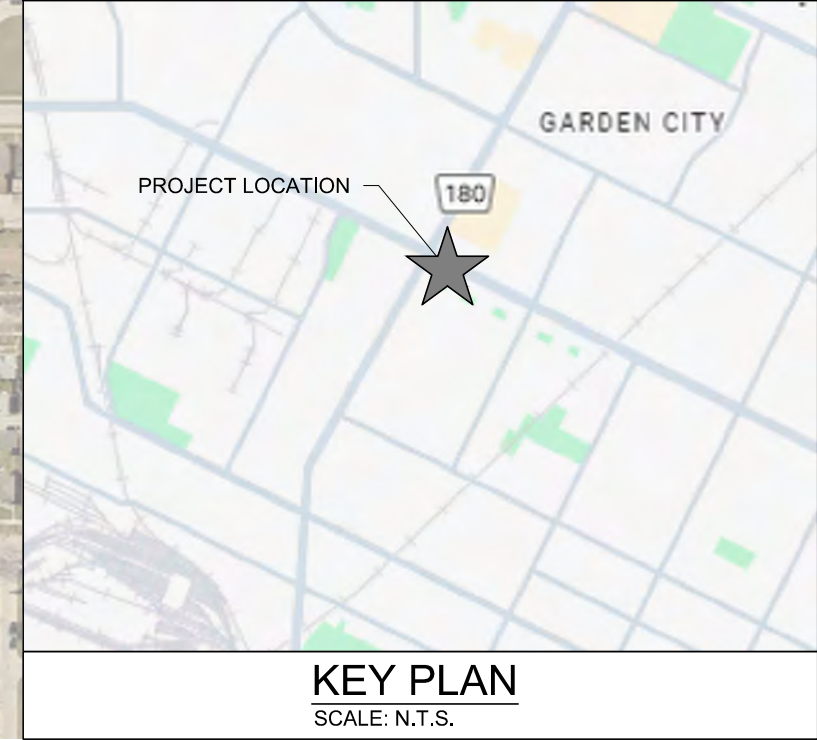
Z:\Projects\1000 Soils Lab\Lab Projects\1000-001-33 Morrison Hershfield\1000-001-33 RFP 547-2023 McGregor-Inkster Geotech. Investigation\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder\Fig 04 2024-01-23 McGregor-Inkster 0\_1000-001-33.dwg, 2024-01-23 1:34:34 PM



**LEGEND:**  
 PAVEMENT CORE (TREK, 2023)  

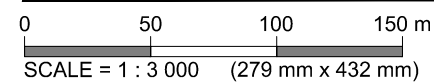
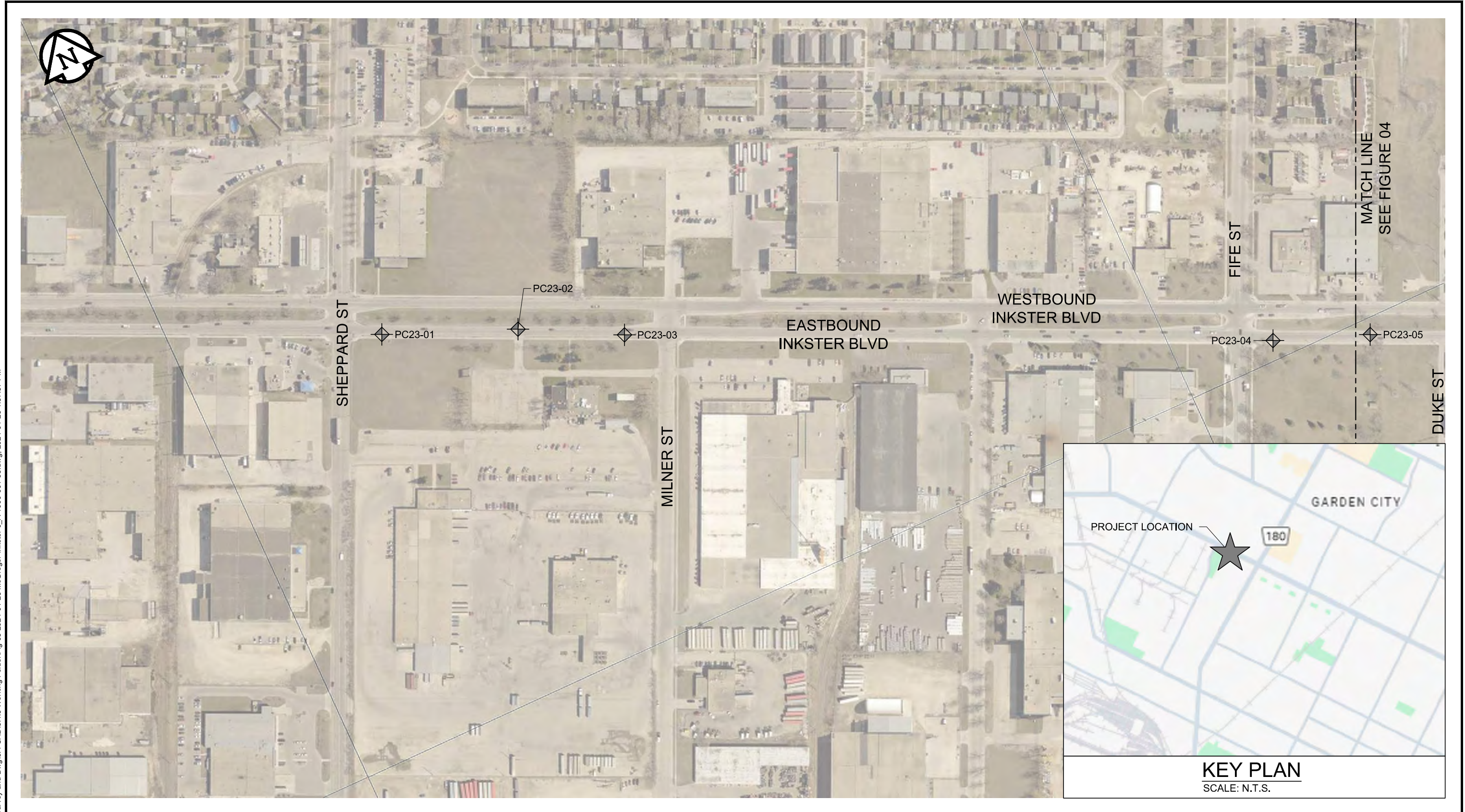
●
 TEST HOLE (TREK, 2023)

**NOTES:** 1. AERIAL IMAGERY FROM CITY OF WINNIPEG (2021).



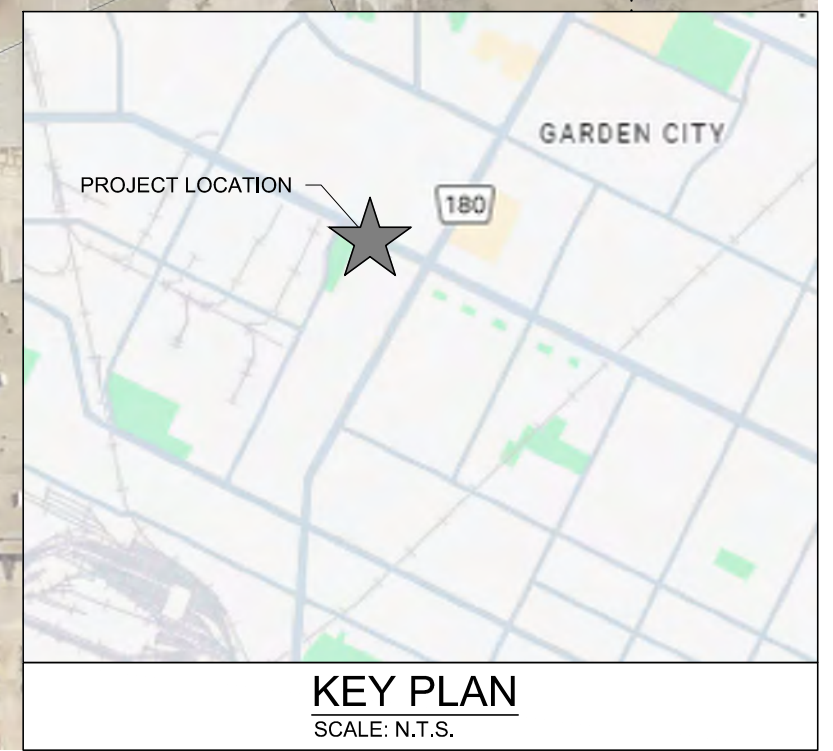
**Figure 04**  
Test Hole and Pavement Core  
Location Plan

Z:\Projects\1000 Soils Lab\Lab Projects\1000-001-33 RFP 547-2023 McGregor-Inkster Geotech. Investigation\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder\Fig 05 2024-01-23 McGregor-Inkster 0\_A 1000-001-33.dwg, 2024-01-23 1:37:57 PM



**LEGEND:**  
 PAVEMENT CORE (TREK, 2023)  
 TEST HOLE (TREK, 2023)

**NOTES:** 1. AERIAL IMAGERY FROM CITY OF WINNIPEG (2021).



**Figure 05**  
Test Hole and Pavement Core  
Location Plan



**Appendix A**  
**Test Hole Logs, Summary Table, Lab Testing Results and**  
**Photographs of Pavement Core Samples**  
**McGregor Steet- Church Avenue to McAdam Avenue**

---

## GENERAL NOTES

- Classifications are based on the Unified Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.
- Descriptions on these test hole logs apply only at the specific test hole locations and at the time the test holes were drilled. Variability of soil and groundwater conditions may exist between test hole locations.
- When the following classification terms are used in this report or test hole logs, the primary and secondary soil fractions may be visually estimated.

Major Divisions	USCS Classification	Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material		
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than 4.75 mm)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3  Not meeting all gradation requirements for GW  Atterberg limits below "A" line or P.I. less than 4  Atterberg limits above "A" line or P.I. greater than 7  $C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3  Not meeting all gradation requirements for SW  Atterberg limits below "A" line or P.I. less than 4  Atterberg limits above "A" line or P.I. greater than 7	ASTM Sieve sizes #10 to #4 #40 to #10 #200 to #40 < #200	Sand	
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines				
			GM	Silty gravels, gravel-sand-silt mixtures				
			GC	Clayey gravels, gravel-sand-silt mixtures				
	Sands (More than half of coarse fraction is smaller than 4.75 mm)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	Determine percentages of sand and gravel from grain size curve, depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:  Less than 5 percent..... GW, GP, SW, SP More than 12 percent..... GM, GC, SM, SC 6 to 12 percent..... Borderline cases requiring dual symbols*	mm 2.00 to 4.75 0.425 to 2.00 0.075 to 0.425 < 0.075	Coarse Medium Fine	
			SP	Poorly-graded sands, gravelly sands, little or no fines				
			SM	Silty sands, sand-silt mixtures				
			SC	Clayey sands, sand-clay mixtures				
			Sands with fines (Appreciable amount of fines)	GM				Silty gravels, gravel-sand-silt mixtures
				GC				Clayey gravels, gravel-sand-silt mixtures
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Sils and Clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	<b>Plasticity Chart</b> Plasticity chart for solid fraction with particles smaller than 0.425 mm 	ASTM Sieve Sizes > 12 in. 3 in. to 12 in. 3/4 in. to 3 in. #4 to 3/4 in.	Material		
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays					
		OL	Organic silts and organic silty clays of low plasticity					
		MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts					
	Sils and Clays (Liquid limit greater than 50)	CH	Inorganic clays of high plasticity, fat clays					
		OH	Organic clays of medium to high plasticity, organic silts					
		Highly Organic Soils	Pt				Peat and other highly organic soils	
							Von Post Classification Limit	Strong colour or odour, and often fibrous texture

\* Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

## Other Symbol Types

	Asphalt		Bedrock (undifferentiated)		Cobbles
	Concrete		Limestone Bedrock		Boulders and Cobbles
	Fill		Cemented Shale		Silt Till
			Non-Cemented Shale		Clay Till

### LEGEND OF ABBREVIATIONS AND SYMBOLS

LL - Liquid Limit (%)	VW - Vibrating Wire Piezometer
PL - Plastic Limit (%)	SI - Slope Inclinator
PI - Plasticity Index (%)	∇ Water Level at Time of Drilling
MC - Moisture Content (%)	▼ Water Level at End of Drilling
SPT - Standard Penetration Test	▼ Water Level After Drilling as Indicated on Test Hole Logs
RQD- Rock Quality Designation	
Qu - Unconfined Compression	
Su - Undrained Shear Strength	

### FRACTION OF SECONDARY SOIL CONSTITUENTS ARE BASED ON THE FOLLOWING TERMINOLOGY

TERM	EXAMPLES	PERCENTAGE
and	and CLAY	35 to 50 percent
"y" or "ey"	clayey, silty	20 to 35 percent
some	some silt	10 to 20 percent
trace	trace gravel	1 to 10 percent
with *	with silt, with sand	> 35 percent

\* Used when the material is classified based on behaviour as a cohesive material

### TERMS DESCRIBING CONSISTENCY OR COMPACTION CONDITION

The Standard Penetration Test blow count (N) of a non-cohesive soil can be related to compactness condition as follows:

<u>Descriptive Terms</u>	<u>SPT (N) (Blows/300 mm)</u>
Very loose	< 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	> 50

The Standard Penetration Test blow count (N) of a cohesive soil can be related to its consistency as follows:

<u>Descriptive Terms</u>	<u>SPT (N) (Blows/300 mm)</u>
Very soft	< 2
Soft	2 to 4
Firm	4 to 8
Stiff	8 to 15
Very stiff	15 to 30
Hard	> 30

The undrained shear strength (Su) of a cohesive soil can be related to its consistency as follows:

<u>Descriptive Terms</u>	<u>Undrained Shear Strength (kPa)</u>
Very soft	< 12
Soft	12 to 25
Firm	25 to 50
Stiff	50 to 100
Very stiff	100 to 200
Hard	> 200



# Sub-Surface Log

Test Hole TH23-01

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532258, E-633459  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 200mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 145 mm thick														
		CONCRETE - 210 mm thick		PC23-12												
		CLAY - silty, trace to some gravel (<20 mm diam.) to 0.6 m, trace sand to 0.6 m														
-0.5		- dark grey		G01												
		- moist, very stiff														
		- high plasticity														
		- AASHTO: A-7-6 (I)		G02												
		- trace silt inclusions (<20mm diam.), grey below 0.6 m														
-1.0		- very stiff to stiff below 1.0 m		G03												
		- brown below 1.2 m														
-1.5				G04												
-2.0				G05												
-2.5				G06												
-3.0				G07												
				G08												
				G09												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Test Hole located in front of #551 McGregor St, Northbound lane, 1.2 m West of the East curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-02

1 of 1

**Client:** Morrison Hershfield **Project Number:** 1000-001-33  
**Project Name:** RFP 547-2023 McGregor-Inkster Geotech. Investigation **Location:** UTM N-5532483, E-633563  
**Contractor:** Maple Leaf Drilling **Ground Elevation:** Top of Pavement m  
**Method:** 125mm Solid Stem Auger, B40 Mobile Truck Mount **Date Drilled:** December 19, 2023

**Sample Type:**  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

**Particle Size Legend:**  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)	
					16	17	18	19	20	21		
0.0 - 0.1		ASPHALT - 125 mm thick										
0.1 - 0.3		CONCRETE - 235 mm thick		PC23-13								
0.3 - 0.9		CLAY - silty, trace to some gravel (<20 mm diam.) to 0.6 m - dark grey - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G10								
0.9 - 1.0				G11								
1.0 - 2.1		SILT - some clay, trace sand - light brown - moist, very soft - low plasticity - AASHTO: A-4 (8)		G12								
2.1 - 2.5				G13								
2.5 - 2.7				G14								
2.7 - 2.9				G15								
2.9 - 3.0		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I) - stiff below 2.5 m		G16								
				G17								
				G18								

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B20).
- Test Hole located West side of #528 Atlantic Av, Northbound lane, 1.4 m West of the East curb.

**Logged By:** Kate Franklin **Reviewed By:** N.J Ferreira **Project Engineer:** Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-03

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532670, E-633651  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 120 mm thick														
0.1 - 0.3		CONCRETE - 220 mm thick		PC23-17												
0.3 - 0.6		CLAY - silty, trace sand, trace gravel (<20 mm diam.) to 0.6 m - dark grey - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G21												
0.6 - 1.0		SILT - some clay - light brown - moist, very soft - low plasticity - AASHTO: A-4 (I)		G22												
1.0 - 1.5				G23												
1.5 - 2.0				G24												
2.0 - 2.5		CLAY - silty, trace silt inclusions (<20 mm diam.) - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G25												
2.5 - 3.0		- stiff below 8.5 m		G26												
				G27												
				G28												
				G29												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Test Hole located West side of #522 Inkster Blvd, Northbound lane, 4.5 m West of the East curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-04

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532770, E-633694  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)
					16	17	18	19	20	21	
0.0 - 0.1		ASPHALT - 130 mm thick									
0.1 - 0.2		CONCRETE - 220 mm thick		PC23-14							
0.2 - 0.5		SILT - clayey, trace sand - light brown - moist, very soft - low to intermediate plasticity - AASHTO: A-6 (I)		G30							
0.5 - 0.9		CLAY - silty, trace sand, trace gravel (<20 mm diam.) to 0.6 m - brown, moist, very stiff, high plasticity, AASHTO: A-7-6 (I)		G31							
0.9 - 1.8		SILT - clayey, trace sand - light brown - moist, very soft - low to intermediate plasticity - AASHTO: A-6 (12)		G32							
1.8 - 3.0		CLAY - silty, trace silt inclusions (<20 mm diam.) - brown - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G33							
				G34							
				G35							
				G36							
				G37							
				G38							

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.8 m depth (B39).
- Test Hole located West side of #504 Lansdowne Av, Northbound lane, 4.5 m West of the East curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-05

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532860, E-633739  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 130 mm thick														
		CONCRETE - 135 mm thick		PC23-15												
-0.5		CLAY - silty, trace sand, trace gravel (<20 mm diam.) - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G40												
				G41												
-1.0		SILT - some clay - light brown - moist, very soft - low plasticity - AASHTO: A-4 (I)		G42												
				G43												
				G44												
-2.0		CLAY - silty - brown, moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G45												
				G46												
-2.5		SILT - clayey - light brown - moist, stiff - intermediate plasticity - AASHTO: A-6 (I)		G47												
				G48												
-3.0		CLAY - silty, trace silt inclusions (<20 mm diam.) - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)														

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Test Hole located in front of #671 McGregor St, Northbound lane, 0.7 m West of the East curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira





# Sub-Surface Log

Test Hole TH23-06

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532962, E-633788  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21						
					Particle Size (%)											
					0	20	40	60	80	100						
					PL	MC	LL				Test Type					
					0	20	40	60	80	100	0	50	100	150	200	250
											<input checked="" type="checkbox"/> Torvane <input type="checkbox"/>	<input checked="" type="checkbox"/> Pocket Pen. <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Qu <input checked="" type="checkbox"/>	<input type="checkbox"/> Field Vane <input type="checkbox"/>		
0.0 - 0.1		ASPHALT - 190 mm thick														
0.1 - 0.2		CONCRETE - 160 mm thick		PC23-16												
0.2 - 1.5		CLAY - silty, trace sand, trace gravel (<20 mm diam.) - dark grey - moist, stiff to very stiff - high plasticity - AASHTO: A-7-6 (I)		G49												
				G50												
				G51												
1.5 - 2.3		SILT - some clay - light brown - moist, very soft - low plasticity - AASHTO: A-4 (I)		G52												
				G53												
				G54												
2.3 - 2.7		CLAY - silty - brown - moist, firm - high plasticity - AASHTO: A-7-6 (I)		G55												
2.7 - 3.0		SILT - clayey - light brown, moist, very soft - intermediate plasticity - AASHTO: A-6 (I)		G56												
3.0 - 3.0		CLAY - silty, trace silt inclusions (<20mm diam.) - brown, moist, firm, high plasticity, AASHTO: A-7-6 (I)		G57												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Test Hole located in front of #677 McGregor St, Northbound lane, 0.8 m West of the East curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-07

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532925, E-633764  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 100 mm thick														
0.1 - 0.3		CONCRETE - 240 mm thick		PC23-18												
0.3 - 1.5		CLAY - silty, trace sand to 0.6 m, trace gravel (<20 mm diam.) to 0.6 m - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (59)		G58												
				G59												
				G60												
				G61												
1.5 - 2.0		SILT - some clay - light brown, moist, very soft - low plasticity - AASHTO: A-4 (I)		G62												
2.0 - 3.0		CLAY - silty - brown - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G63												
				G64												
				G65												
				G66												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.8 m depth (B67).
- Test Hole located in front of #678 McGregor St, Southbound lane, 3.0 m East of the West curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-08

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532369, E-633499  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 19, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.00 - 0.05		ASPHALT - 90 mm thick														
0.05 - 0.15		CONCRETE - 250 mm thick		PC23-19												
0.15 - 3.00		CLAY - silty, trace sand, trace gravel (<20 mm diam.) to 0.6 m - dark grey - moist, stiff to very stiff - high plasticity - AASHTO: A-7-6 (I)  - firm to stiff below 1.5 m		G68												
				G69												
				G70												
				G71												
				G72												
				G73												
				G74												
				G75												
				G76												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Test Hole located East side of #559 Cathedral Av, Southbound lane, 1.0 m East of the West curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-09

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532612, E-633617  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 200mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 120 mm thick														
		CONCRETE - 125 mm thick		PC23-2												
		CLAY - silty, trace gravel (<20 mm diam.) to 0.9 m														
-0.5		- dark grey		G77												
		- moist, stiff to very stiff		G78												
		- high plasticity														
		- AASHTO: A-7-6 (61)		G79												
-1.0		- brown below 0.9 m														
-1.5		- silt pockets (<40mm diam.) between 1.5 and 1.8 m		G80												
				G81												
-2.0				G82												
				G83												
-2.5				G84												
		- stiff below 2.6 m		G85												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.5 m depth (B86A), and 1.5 and 2.1 m depth (B86B).
- Test Hole located East side of #537 Polson Av, Southbound lane, 3.2 m East of the West curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-10

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532163, E-633403  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 200mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)	
					16	17	18	19	20	21		
					Particle Size (%)							
					0	20	40	60	80	100	Test Type	
					PL   MC   LL 0 20 40 60 80 100						<input checked="" type="checkbox"/> Torvane <input type="checkbox"/> <input checked="" type="checkbox"/> Pocket Pen. <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Qu <input checked="" type="checkbox"/> <input type="checkbox"/> Field Vane <input type="checkbox"/>	
		ASPHALT - 130 mm thick										
		CONCRETE - 180 mm thick		PC23-20								
0.5		CLAY - silty, trace gravel (<20 mm diam.) to 0.8 m - dark grey - moist, stiff to very stiff - high plasticity - AASHTO: A-7-6 (74)  - brown below 0.8 m		G87							△ +	
				G88							△ +	
1.0				G89							+ △	
1.5				G90							△ +	
				G91							△ +	
2.0		SILT - clayey - light brown - moist, - very soft - low to intermediate plasticity - AASHTO: A-6 (I)		G92								
				G93								
2.5				G94								
3.0		CLAY - silty - brown, moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G95							△ +	

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.5 m (B96A), and 1.5 and 2.1 m depth (B96B).
- Test Hole located East side of #579 Church Av, Southbound lane, 1.2 m East of the West curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24





RFP 547-2023 McGregor - Inkster Geotech. Investigation  
Sub-Surface Investigation

Test Hole No.	Test Hole Location	Pavement Surface		Pavement Structure Material		Subgrade Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)		Top (m)	Bottom (m)		Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Plastic	Liquid	Plasticity Index
TH23-04	UTM : 5532770 N, 633694 E Located West side of #504 Lansdowne Av, Northbound lane, 4.5 m West of the East curb	Asphalt	130	Concrete	220	Silt, AASHTO: A-6 (I)	0.5	0.6	16							
						Clay, AASHTO: A-7-6 (I)	0.8	0.9	30							
						Silt, AASHTO: A-6 (I2)	1.1	1.2	22	23	72	5	0	16	30	14
						Silt, AASHTO: A-6 (I2)	1.4	1.5	22							
						Clay, AASHTO: A-7-6 (I)	1.7	1.8	54							
						Clay, AASHTO: A-7-6 (I)	2.0	2.1	53							
TH23-05	UTM : 5532860 N, 633739 E Located in front of #671 McGregor St, Northbound lane, 0.7 m West of the East curb	Asphalt	130	Concrete	135	Silt, AASHTO: A-4 (I)	1.1	1.2	22							
						Silt, AASHTO: A-4 (I)	1.4	1.5	23							
						Silt, AASHTO: A-4 (I)	1.7	1.8	21							
						Clay, AASHTO: A-7-6 (I)	2.0	2.1	39							
						Silt, AASHTO: A-4 (I)	2.3	2.4	27							
						Clay, AASHTO: A-7-6 (I)	2.6	2.7	42							
TH23-06	UTM : 5532962 N, 633788 E Located in front of #677 McGregor St, Northbound lane, 0.8 m West of the East curb	Asphalt	190	Concrete	160	Clay, AASHTO: A-7-6 (I)	2.9	3.0	50							
						Clay, AASHTO: A-7-6 (I)	0.5	0.6	38							
						Clay, AASHTO: A-7-6 (I)	0.8	0.9	36							
						Clay, AASHTO: A-7-6 (I)	1.1	1.2	27							
						Silt, AASHTO: A-4 (I)	1.4	1.5	26							
						Silt, AASHTO: A-4 (I)	1.7	1.8	28							
				Silt, AASHTO: A-4 (I)	2.0	2.1	23									
				Clay, AASHTO: A-7-6 (I)	2.3	2.4	39									
				Silt, AASHTO: A-6 (I)	2.6	2.7	37									
				Clay, AASHTO: A-7-6 (I)	2.9	3.0	42									







RFP 547-2023 McGregor - Inkster Geotech. Investigation  
Sub-Surface Investigation

Test Hole No.	Test Hole Location	Pavement Surface		Pavement Structure Material		Subgrade Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)		Top (m)	Bottom (m)		Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Plastic	Liquid	Plasticity Index
TH23-10	UTM : 5532163 N, 633403 E Located East side of #579 Church Av. Southbound lane, 1.2 m East of the West curb	Asphalt	130	Concrete	180	Clay, AASHTO: A-7-6 (74)	0.5	0.6	32							
						Clay, AASHTO: A-7-6 (74)	0.8	0.9	32							
						Clay, AASHTO: A-7-6 (74)	1.1	1.2	33	75	25	0	0	24	88	64
						Clay, AASHTO: A-7-6 (74)	1.4	1.5	32							
						Clay, AASHTO: A-7-6 (74)	1.7	1.8	33							
						Silt, AASHTO: A-6 (I)	2.0	2.1	28							
						Silt, AASHTO: A-6 (I)	2.3	2.4	24							
						Silt, AASHTO: A-6 (I)	2.6	2.7	23							
						Clay, AASHTO: A-7-6 (I)	2.9	3.0	35							



**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-01	TH23-01	TH23-01	TH23-01	TH23-01	TH23-01
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G01	G02	G03	G04	G05	G06
Tare ID	M70	M21	E33	AB54	P27	C18
Mass of tare	6.9	6.8	6.8	6.8	8.5	8.7
Mass wet + tare	190.8	217.8	416.4	203.1	215.4	230.7
Mass dry + tare	148.8	173.2	315.3	153.6	154.3	164.6
Mass water	42.0	44.6	101.1	49.5	61.1	66.1
Mass dry soil	141.9	166.4	308.5	146.8	145.8	155.9
Moisture %	29.6%	26.8%	32.8%	33.7%	41.9%	42.4%

Test Hole	TH23-01	TH23-01	TH23-01	TH23-02	TH23-02	TH23-02
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G07	G08	G09	G10	G11	G12
Tare ID	W36	H72	E136	Z43	C14	E17
Mass of tare	8.7	6.8	8.5	8.5	8.5	6.8
Mass wet + tare	230.4	312.7	223.0	204.8	200.5	470.9
Mass dry + tare	163.2	217.8	155.1	149.5	148.0	382.7
Mass water	67.2	94.9	67.9	55.3	52.5	88.2
Mass dry soil	154.5	211.0	146.6	141.0	139.5	375.9
Moisture %	43.5%	45.0%	46.3%	39.2%	37.6%	23.5%

Test Hole	TH23-02	TH23-02	TH23-02	TH23-02	TH23-02	TH23-02
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G13	G14	G15	G16	G17	G18
Tare ID	W09	A21	E59	D27	W97	W05
Mass of tare	8.4	8.8	8.5	8.6	8.5	8.5
Mass wet + tare	238.8	224.1	232.9	204.2	219.3	212.3
Mass dry + tare	196.9	183.7	188.6	155.5	151.8	145.3
Mass water	41.9	40.4	44.3	48.7	67.5	67.0
Mass dry soil	188.5	174.9	180.1	146.9	143.3	136.8
Moisture %	22.2%	23.1%	24.6%	33.2%	47.1%	49.0%



**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-03	TH23-03	TH23-03	TH23-03	TH23-03	TH23-03
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G21	G22	G23	G24	G25	G26
Tare ID	AB40	Z73	M62	K35	Z80	P28
Mass of tare	6.8	8.7	6.9	8.4	8.5	8.6
Mass wet + tare	229.4	223.4	416.2	226.2	274.2	236.9
Mass dry + tare	172.7	175.8	341.1	187.9	223.0	179.1
Mass water	56.7	47.6	75.1	38.3	51.2	57.8
Mass dry soil	165.9	167.1	334.2	179.5	214.5	170.5
Moisture %	34.2%	28.5%	22.5%	21.3%	23.9%	33.9%

Test Hole	TH23-03	TH23-03	TH23-03	TH23-04	TH23-04	TH23-04
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G27	G28	G29	G30	G31	G32
Tare ID	W24	M26	F26	D45	J82	E48
Mass of tare	8.5	6.8	8.5	8.8	7.1	7.1
Mass wet + tare	216.5	248.4	214.8	217.6	237.7	443.1
Mass dry + tare	158.0	170.7	144.7	188.2	184.4	364.2
Mass water	58.5	77.7	70.1	29.4	53.3	78.9
Mass dry soil	149.5	163.9	136.2	179.4	177.3	357.1
Moisture %	39.1%	47.4%	51.5%	16.4%	30.1%	22.1%

Test Hole	TH23-04	TH23-04	TH23-04	TH23-04	TH23-04	TH23-04
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G33	G34	G35	G36	G37	G38
Tare ID	P22	D500	AB60	E	E49	N57
Mass of tare	8.8	6.8	6.8	6.7	6.9	8.7
Mass wet + tare	227.4	213.8	200.8	202.0	227.9	259.8
Mass dry + tare	187.6	141.2	133.2	135.6	159.2	184.7
Mass water	39.8	72.6	67.6	66.4	68.7	75.1
Mass dry soil	178.8	134.4	126.4	128.9	152.3	176.0
Moisture %	22.3%	54.0%	53.5%	51.5%	45.1%	42.7%



**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-05	TH23-05	TH23-05	TH23-05	TH23-05	TH23-05
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G40	G41	G42	G43	G44	G45
Tare ID	D29	Z23	M80	E25	E39	E04
Mass of tare	8.8	8.4	6.9	6.9	6.8	6.8
Mass wet + tare	212.7	210.0	171.3	191.1	205.3	212.0
Mass dry + tare	162.6	168.5	141.9	157.2	170.3	154.6
Mass water	50.1	41.5	29.4	33.9	35.0	57.4
Mass dry soil	153.8	160.1	135.0	150.3	163.5	147.8
Moisture %	32.6%	25.9%	21.8%	22.6%	21.4%	38.8%

Test Hole	TH23-05	TH23-05	TH23-05	TH23-06	TH23-06	TH23-06
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G46	G47	G48	G49	G50	G51
Tare ID	H22	I72	M96	AC37	N39	A106
Mass of tare	6.7	6.9	6.8	6.8	8.4	8.2
Mass wet + tare	237.5	215.8	158.5	231.7	222.8	219.0
Mass dry + tare	189.0	153.6	107.6	170.1	166.5	174.1
Mass water	48.5	62.2	50.9	61.6	56.3	44.9
Mass dry soil	182.3	146.7	100.8	163.3	158.1	165.9
Moisture %	26.6%	42.4%	50.5%	37.7%	35.6%	27.1%

Test Hole	TH23-06	TH23-06	TH23-06	TH23-06	TH23-06	TH23-06
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G52	G53	G54	G55	G56	G57
Tare ID	C2	P24	C26	AB43	H25	W34
Mass of tare	8.5	8.6	8.5	6.7	8.4	8.6
Mass wet + tare	212.3	224.9	240.5	225.7	227.4	205.8
Mass dry + tare	169.8	177.2	197.3	164.0	168.6	147.8
Mass water	42.5	47.7	43.2	61.7	58.8	58.0
Mass dry soil	161.3	168.6	188.8	157.3	160.2	139.2
Moisture %	26.3%	28.3%	22.9%	39.2%	36.7%	41.7%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-07	TH23-07	TH23-07	TH23-07	TH23-07	TH23-07
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G58	G59	G60	G61	G62	G63
Tare ID	E33	AB05	E89	K11	W55	W19
Mass of tare	8.7	7.1	6.9	8.7	8.7	8.7
Mass wet + tare	222.8	214.9	442.7	212.6	232.3	230.7
Mass dry + tare	172.7	169.9	343.2	168.8	191.5	167.8
Mass water	50.1	45.0	99.5	43.8	40.8	62.9
Mass dry soil	164.0	162.8	336.3	160.1	182.8	159.1
Moisture %	30.5%	27.6%	29.6%	27.4%	22.3%	39.5%

Test Hole	TH23-07	TH23-07	TH23-07	TH23-08	TH23-08	TH23-08
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G64	G65	G66	G68	G69	G70
Tare ID	Z64	AH18	F34	AB46	E108	H49
Mass of tare	8.5	8.6	8.6	6.7	8.6	8.5
Mass wet + tare	227.5	225.2	233.6	213.0	234.9	223.5
Mass dry + tare	172.2	160.6	187.2	162.7	182.8	164.0
Mass water	55.3	64.6	46.4	50.3	52.1	59.5
Mass dry soil	163.7	152.0	178.6	156.0	174.2	155.5
Moisture %	33.8%	42.5%	26.0%	32.2%	29.9%	38.3%

Test Hole	TH23-08	TH23-08	TH23-08	TH23-08	TH23-08	TH23-08
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G71	G72	G73	G74	G75	G76
Tare ID	AC09	F154	D12	AA13	F76	K10
Mass of tare	6.8	8.4	8.5	6.7	8.8	8.5
Mass wet + tare	203.3	221.2	230.8	238.6	237.2	265.9
Mass dry + tare	148.4	147.8	153.8	165.2	165.4	186.6
Mass water	54.9	73.4	77.0	73.4	71.8	79.3
Mass dry soil	141.6	139.4	145.3	158.5	156.6	178.1
Moisture %	38.8%	52.7%	53.0%	46.3%	45.8%	44.5%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Moisture Content Report ASTM D2216-98

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-09	TH23-09	TH23-09	TH23-09	TH23-09	TH23-09
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G77	G78	G79	G80	G81	G82
Tare ID	N59	W81	AC33	D44	F22	E140
Mass of tare	8.5	8.7	6.8	8.4	8.5	8.5
Mass wet + tare	231.5	250.3	440.6	244.3	229.2	238.9
Mass dry + tare	173.8	187.7	330.5	186.1	170.8	183.8
Mass water	57.7	62.6	110.1	58.2	58.4	55.1
Mass dry soil	165.3	179.0	323.7	177.7	162.3	175.3
Moisture %	34.9%	35.0%	34.0%	32.8%	36.0%	31.4%

Test Hole	TH23-09	TH23-09	TH23-09	TH23-10	TH23-10	TH23-10
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G83	G84	G85	G87	G88	G89
Tare ID	Z25	Z107	H21	Z82	Z47	M09
Mass of tare	8.3	8.8	8.5	8.4	8.6	6.9
Mass wet + tare	246.8	223.7	239.4	267.0	215.8	443.9
Mass dry + tare	175.6	159.3	161.2	204.7	165.2	336.0
Mass water	71.2	64.4	78.2	62.3	50.6	107.9
Mass dry soil	167.3	150.5	152.7	196.3	156.6	329.1
Moisture %	42.6%	42.8%	51.2%	31.7%	32.3%	32.8%

Test Hole	TH23-10	TH23-10	TH23-10	TH23-10	TH23-10	TH23-10
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G90	G91	G92	G93	G94	G95
Tare ID	M75	M74	E18	E66	W63	K19
Mass of tare	6.8	6.7	6.8	6.8	8.5	6.8
Mass wet + tare	230.3	225.7	248.2	315.0	271.7	253.3
Mass dry + tare	176.6	171.4	195.8	255.6	223.0	189.4
Mass water	53.7	54.3	52.4	59.4	48.7	63.9
Mass dry soil	169.8	164.7	189.0	248.8	214.5	182.6
Moisture %	31.6%	33.0%	27.7%	23.9%	22.7%	35.0%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

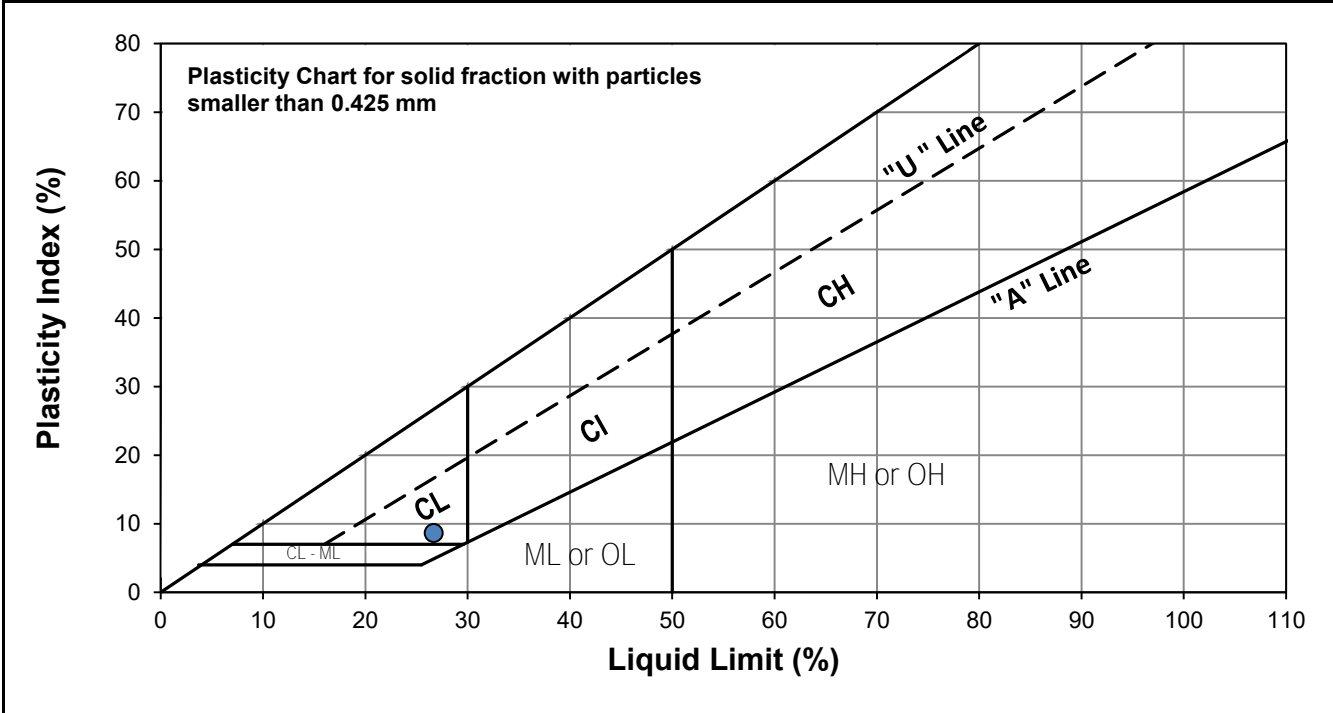


**Test Hole** TH23-02  
**Sample #** G12  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** KM

<b>Liquid Limit</b>	27
<b>Plastic Limit</b>	18
<b>Plasticity Index</b>	9

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	16	20	34
<b>Mass Tare (g)</b>	13.957	13.995	14.053
<b>Mass Wet Soil + Tare (g)</b>	26.237	26.162	25.704
<b>Mass Dry Soil + Tare (g)</b>	23.550	23.541	23.319
<b>Mass Water (g)</b>	2.687	2.621	2.385
<b>Mass Dry Soil (g)</b>	9.593	9.546	9.266
<b>Moisture Content (%)</b>	28.010	27.457	25.739



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	13.975	14.096			
<b>Mass Wet Soil + Tare (g)</b>	21.260	21.730			
<b>Mass Dry Soil + Tare (g)</b>	20.146	20.558			
<b>Mass Water (g)</b>	1.114	1.172			
<b>Mass Dry Soil (g)</b>	6.171	6.462			
<b>Moisture Content (%)</b>	18.052	18.137			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

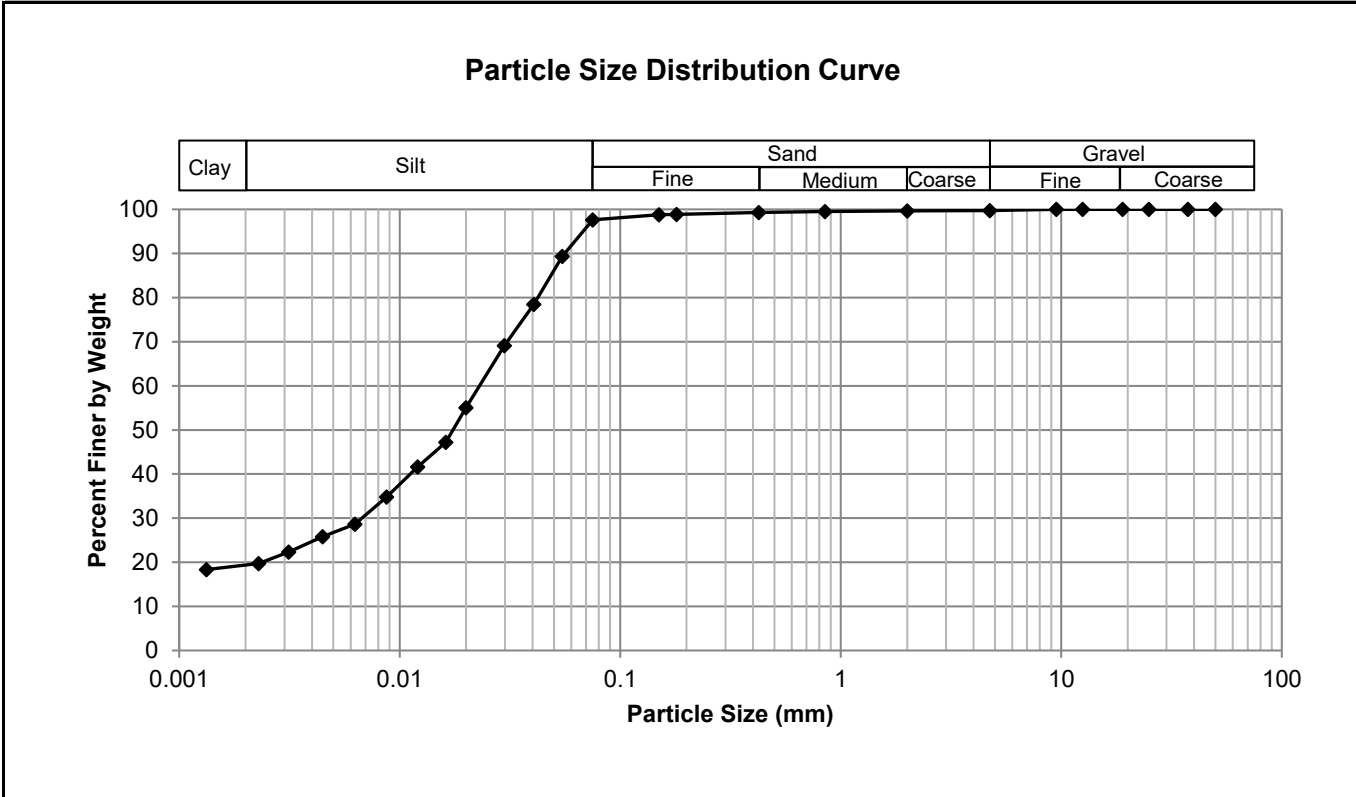
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-02  
**Sample #** G12  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 11-Jan-24  
**Technician** CK/KF

<b>Gravel</b>	0.3%
<b>Sand</b>	2.1%
<b>Silt</b>	78.3%
<b>Clay</b>	19.4%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	99.71	0.0750	97.64
37.5	100.00	2.00	99.65	0.0545	89.35
25.0	100.00	0.850	99.49	0.0406	78.44
19.0	100.00	0.425	99.28	0.0298	69.10
12.5	100.00	0.180	98.87	0.0199	55.03
9.50	100.00	0.150	98.76	0.0162	47.24
4.75	99.71	0.075	97.64	0.0121	41.63
				0.0087	34.78
				0.0063	28.64
				0.0045	25.83
				0.0031	22.32
				0.0023	19.73
				0.0013	18.35





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

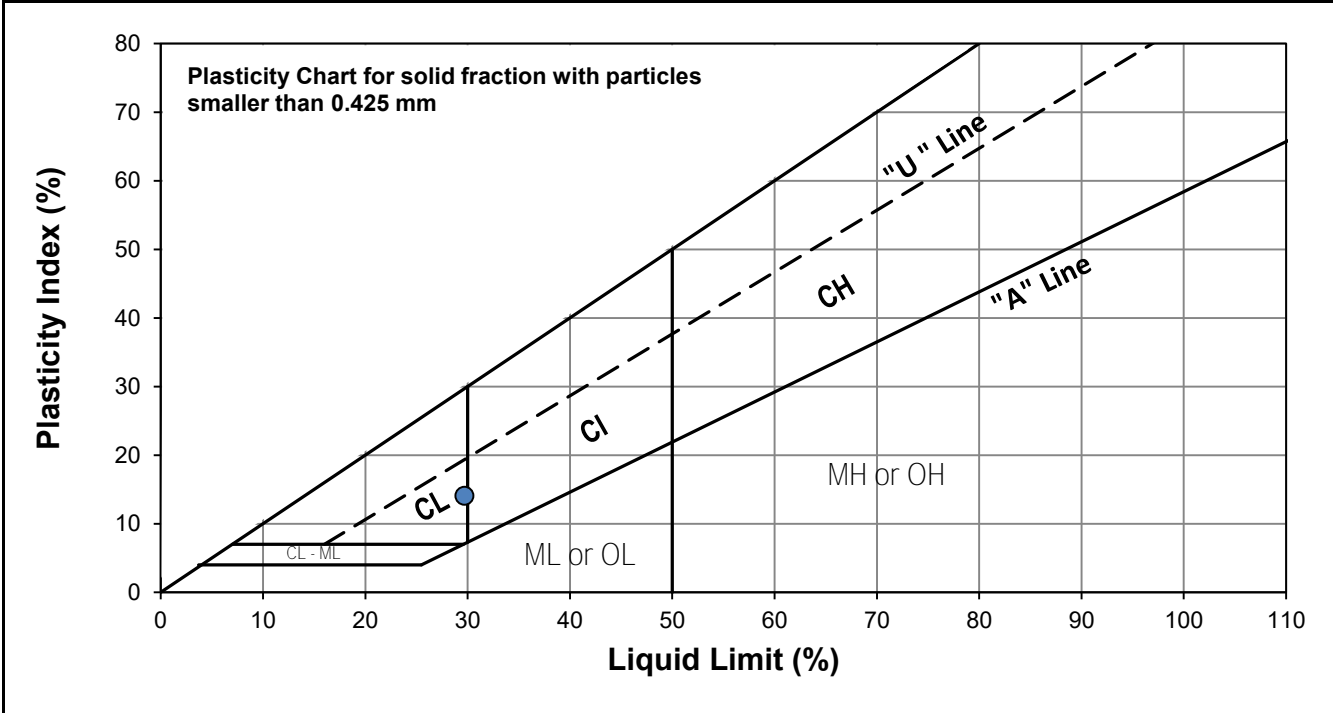


**Test Hole** TH23-04  
**Sample #** G32  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** KF

<b>Liquid Limit</b>	30
<b>Plastic Limit</b>	16
<b>Plasticity Index</b>	14

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	18	26	35
<b>Mass Tare (g)</b>	14.260	14.338	14.085
<b>Mass Wet Soil + Tare (g)</b>	23.255	23.776	24.616
<b>Mass Dry Soil + Tare (g)</b>	21.160	21.617	22.253
<b>Mass Water (g)</b>	2.095	2.159	2.363
<b>Mass Dry Soil (g)</b>	6.900	7.279	8.168
<b>Moisture Content (%)</b>	30.362	29.661	28.930



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.048	13.946			
<b>Mass Wet Soil + Tare (g)</b>	23.486	24.281			
<b>Mass Dry Soil + Tare (g)</b>	22.212	22.885			
<b>Mass Water (g)</b>	1.274	1.396			
<b>Mass Dry Soil (g)</b>	8.164	8.939			
<b>Moisture Content (%)</b>	15.605	15.617			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

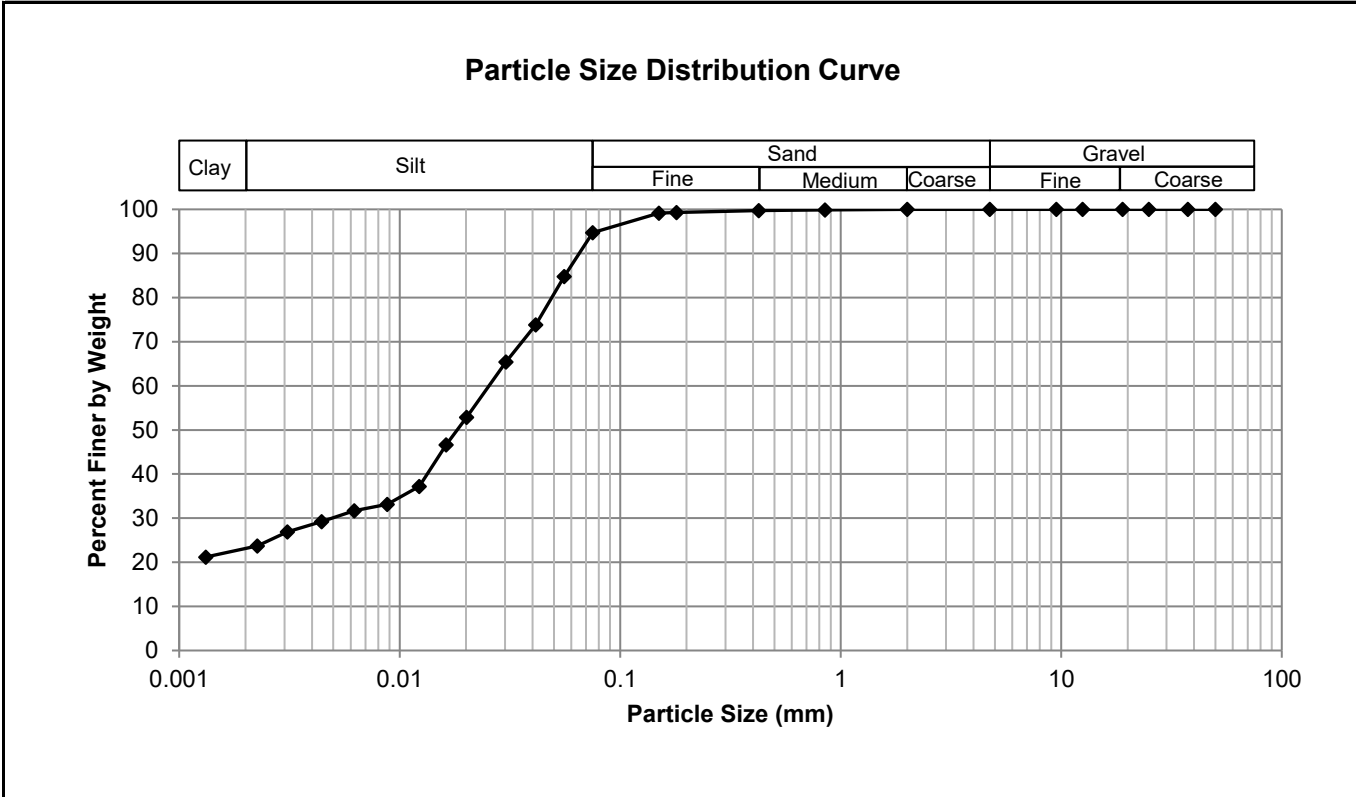
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-04  
**Sample #** G32  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 11-Jan-24  
**Technician** KF

<b>Gravel</b>	0.0%
<b>Sand</b>	5.3%
<b>Silt</b>	71.7%
<b>Clay</b>	23.0%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	94.73
37.5	100.00	2.00	100.00	0.0558	84.80
25.0	100.00	0.850	99.86	0.0414	73.85
19.0	100.00	0.425	99.71	0.0303	65.41
12.5	100.00	0.180	99.27	0.0201	52.90
9.50	100.00	0.150	99.13	0.0162	46.65
4.75	100.00	0.075	94.73	0.0122	37.20
				0.0088	33.13
				0.0062	31.72
				0.0044	29.22
				0.0031	26.88
				0.0023	23.68
				0.0013	21.19



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

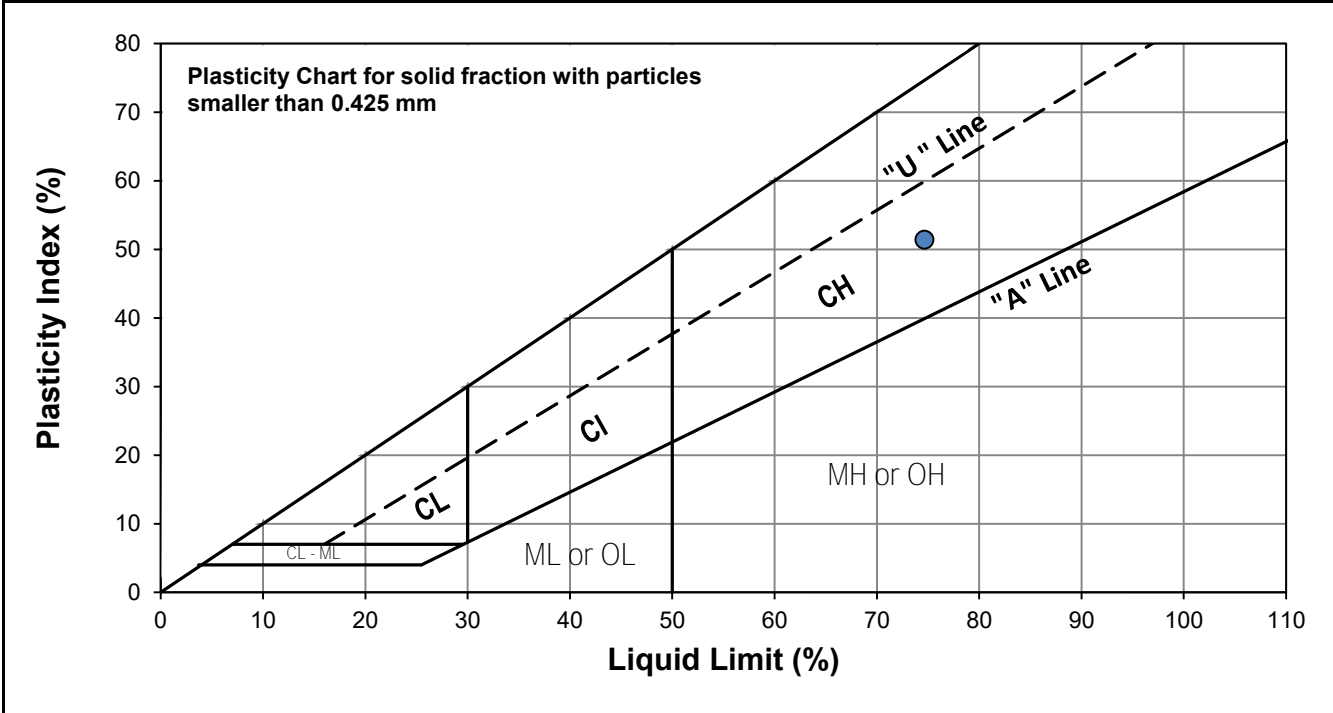


**Test Hole** TH23-07  
**Sample #** G60  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** JC

<b>Liquid Limit</b>	75
<b>Plastic Limit</b>	23
<b>Plasticity Index</b>	51

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	18	24	33
<b>Mass Tare (g)</b>	14.032	14.165	14.084
<b>Mass Wet Soil + Tare (g)</b>	32.179	32.427	31.468
<b>Mass Dry Soil + Tare (g)</b>	24.304	24.621	24.122
<b>Mass Water (g)</b>	7.875	7.806	7.346
<b>Mass Dry Soil (g)</b>	10.272	10.456	10.038
<b>Moisture Content (%)</b>	76.665	74.656	73.182



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.108	14.121			
<b>Mass Wet Soil + Tare (g)</b>	21.149	21.781			
<b>Mass Dry Soil + Tare (g)</b>	19.810	20.347			
<b>Mass Water (g)</b>	1.339	1.434			
<b>Mass Dry Soil (g)</b>	5.702	6.226			
<b>Moisture Content (%)</b>	23.483	23.032			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

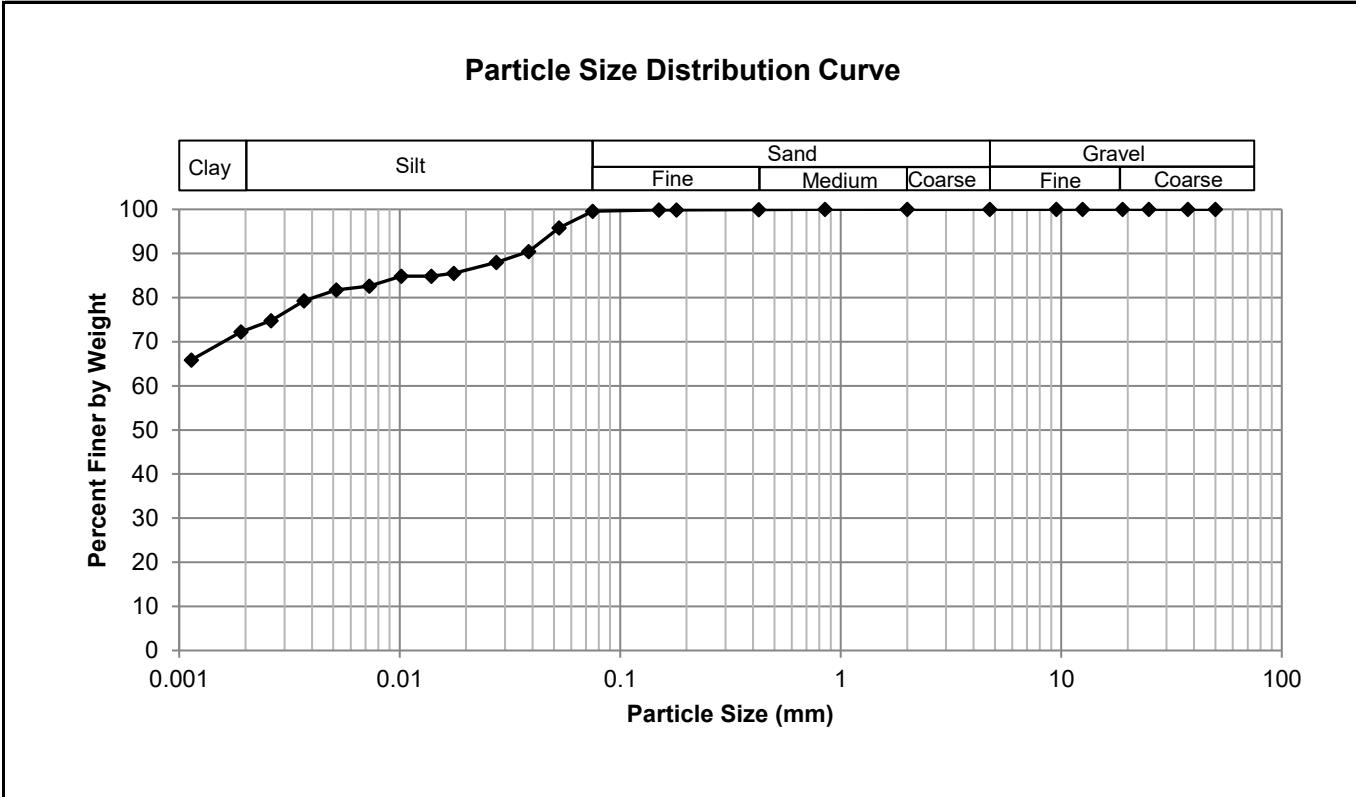
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-07  
**Sample #** G60  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 11-Jan-24  
**Technician** KF

<b>Gravel</b>	0.0%
<b>Sand</b>	0.4%
<b>Silt</b>	27.0%
<b>Clay</b>	72.6%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	99.58
37.5	100.00	2.00	100.00	0.0529	95.78
25.0	100.00	0.850	99.98	0.0384	90.47
19.0	100.00	0.425	99.96	0.0275	88.00
12.5	100.00	0.180	99.89	0.0176	85.50
9.50	100.00	0.150	99.86	0.0139	84.84
4.75	100.00	0.075	99.58	0.0102	84.84
				0.0073	82.62
				0.0052	81.71
				0.0037	79.25
				0.0026	74.80
				0.0019	72.26
				0.0011	65.88



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

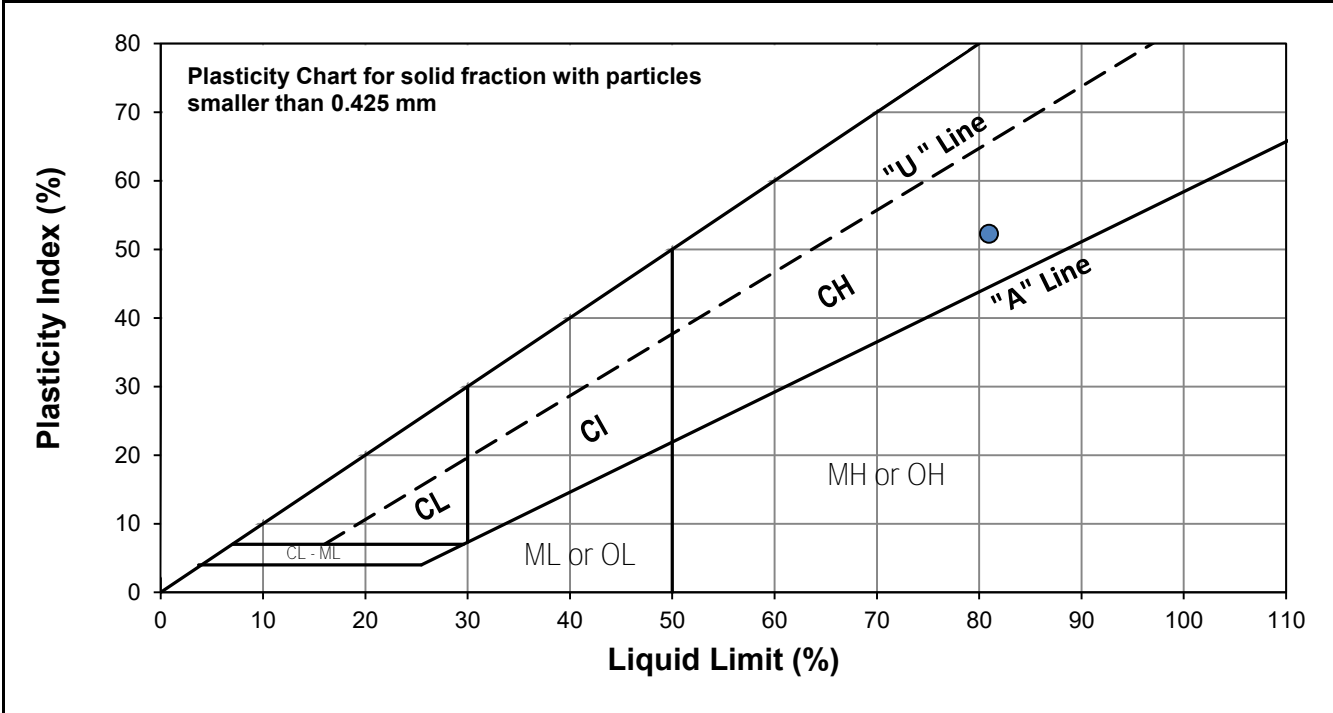


**Test Hole** TH23-09  
**Sample #** G79  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 13-Jan-24  
**Technician** AB

<b>Liquid Limit</b>	81
<b>Plastic Limit</b>	29
<b>Plasticity Index</b>	52

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	21	27	34
<b>Mass Tare (g)</b>	13.848	14.227	14.202
<b>Mass Wet Soil + Tare (g)</b>	28.133	26.499	29.818
<b>Mass Dry Soil + Tare (g)</b>	21.645	21.032	23.054
<b>Mass Water (g)</b>	6.488	5.467	6.764
<b>Mass Dry Soil (g)</b>	7.797	6.805	8.852
<b>Moisture Content (%)</b>	83.211	80.338	76.412



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.230	13.985			
<b>Mass Wet Soil + Tare (g)</b>	24.413	22.655			
<b>Mass Dry Soil + Tare (g)</b>	22.154	20.710			
<b>Mass Water (g)</b>	2.259	1.945			
<b>Mass Dry Soil (g)</b>	7.924	6.725			
<b>Moisture Content (%)</b>	28.508	28.922			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

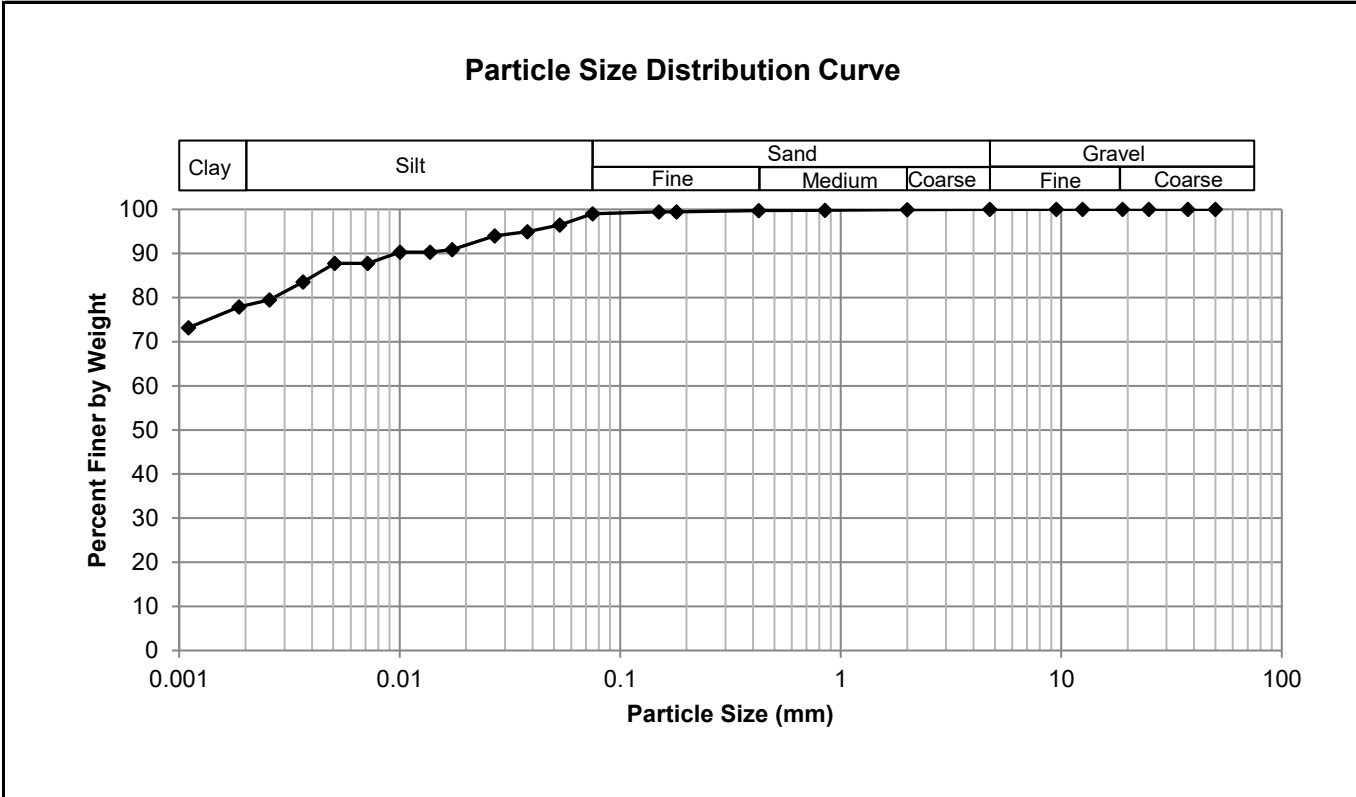
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-09  
**Sample #** G79  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	1.0%
<b>Silt</b>	20.8%
<b>Clay</b>	78.1%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	98.99
37.5	100.00	2.00	99.94	0.0533	96.49
25.0	100.00	0.850	99.82	0.0380	94.93
19.0	100.00	0.425	99.69	0.0270	93.99
12.5	100.00	0.180	99.47	0.0173	90.86
9.50	100.00	0.150	99.41	0.0137	90.28
4.75	100.00	0.075	98.99	0.0100	90.28
				0.0072	87.79
				0.0051	87.79
				0.0036	83.55
				0.0026	79.49
				0.0019	77.93
				0.0011	73.19



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

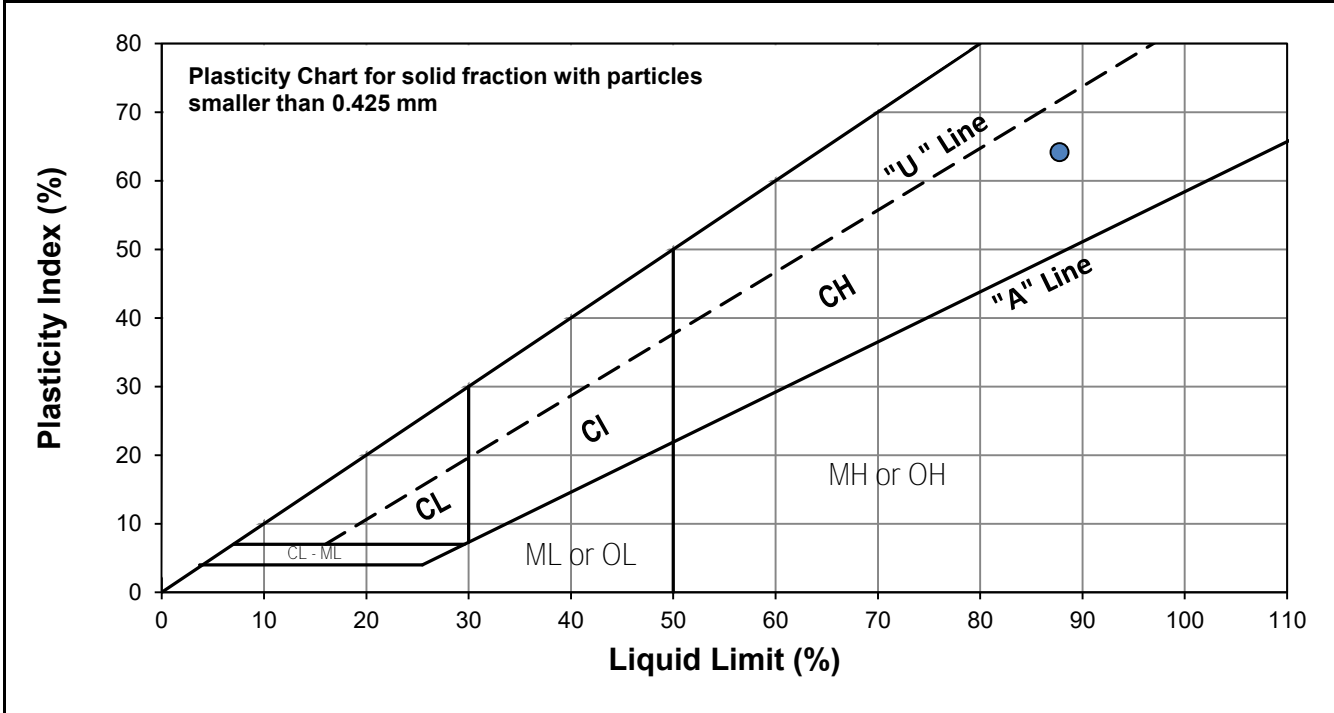


**Test Hole** TH23-10  
**Sample #** G89  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** JC

<b>Liquid Limit</b>	88
<b>Plastic Limit</b>	24
<b>Plasticity Index</b>	64

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	18	25	28
<b>Mass Tare (g)</b>	14.198	13.958	13.918
<b>Mass Wet Soil + Tare (g)</b>	29.992	27.762	27.093
<b>Mass Dry Soil + Tare (g)</b>	22.519	21.313	20.959
<b>Mass Water (g)</b>	7.473	6.449	6.134
<b>Mass Dry Soil (g)</b>	8.321	7.355	7.041
<b>Moisture Content (%)</b>	89.809	87.682	87.118



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.283	14.187			
<b>Mass Wet Soil + Tare (g)</b>	21.317	21.008			
<b>Mass Dry Soil + Tare (g)</b>	19.981	19.696			
<b>Mass Water (g)</b>	1.336	1.312			
<b>Mass Dry Soil (g)</b>	5.698	5.509			
<b>Moisture Content (%)</b>	23.447	23.816			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

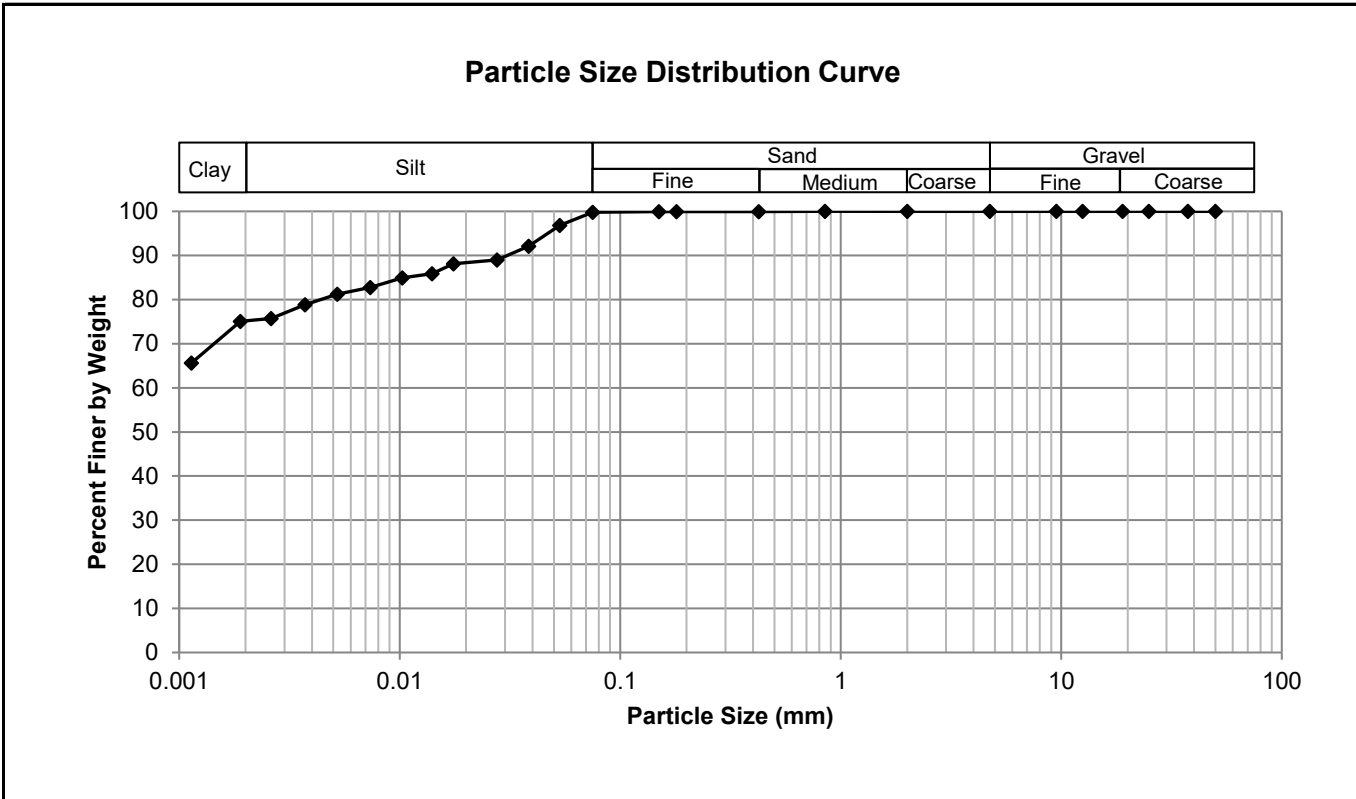
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-10  
**Sample #** G89  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	0.2%
<b>Silt</b>	24.6%
<b>Clay</b>	75.2%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	99.78
37.5	100.00	2.00	100.00	0.0531	96.80
25.0	100.00	0.850	99.99	0.0385	92.11
19.0	100.00	0.425	99.97	0.0276	88.98
12.5	100.00	0.180	99.94	0.0175	88.09
9.50	100.00	0.150	99.93	0.0140	85.85
4.75	100.00	0.075	99.78	0.0103	84.92
				0.0073	82.73
				0.0052	81.22
				0.0037	78.82
				0.0026	75.69
				0.0019	75.06
				0.0011	65.63





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Standard Proctor Compaction Test**  
**ASTM D698-12 (2021)**

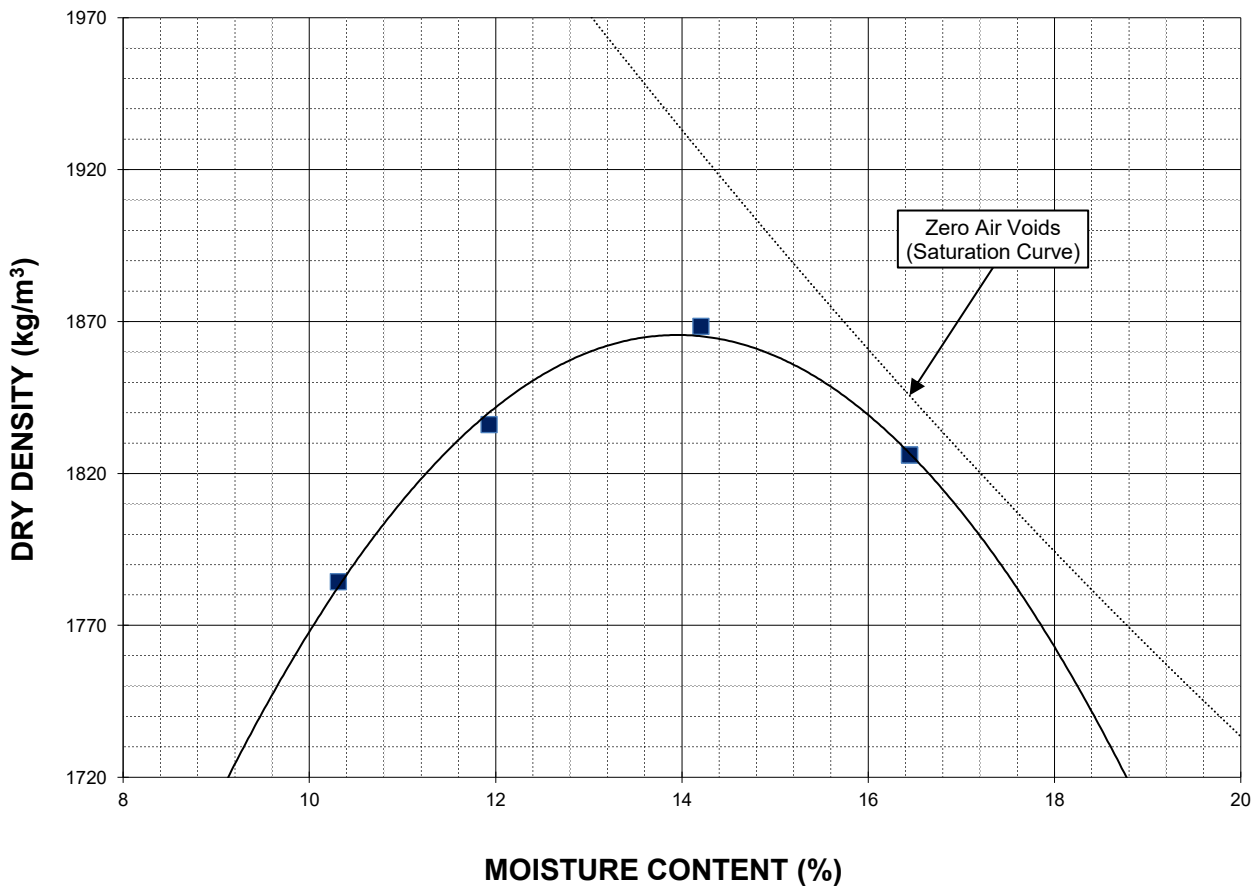


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-02 (0.9 m -1.8 m)  
**Material** Silt  
**Sample Date** 19-Dec-23  
**Test Date** 09-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1866
<b>Optimum Moisture (%)</b>	13.9

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1968	2055	2134	2126	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1784	1836	1868	1826	
<b>Moisture Content (%)</b>	10.3	11.9	14.2	16.4	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-02 (0.9 m -1.8 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Silt
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-19
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-11
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1866 kg/m <sup>3</sup>
Optimum Moisture Content	13.9 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1776 kg/m <sup>3</sup>
Initial Moisture Content	13.8 %
Relative Density	95.2 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	0.6 %
Moisture Content in top 25 mm	21.4 %
Immersion Period	95 h

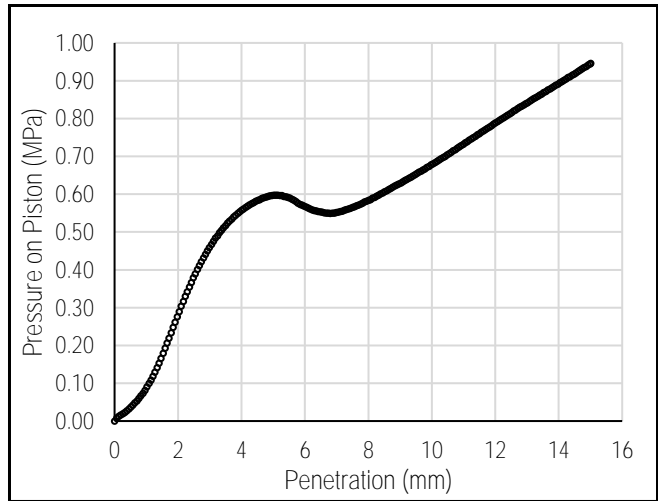
**CBR Results**

CBR at 2.54 mm	6.8 %
CBR at 5.08 mm	5.7 %
Zero Correction	0.5 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.05	0.11
1.27	0.13	0.23
1.91	0.26	0.37
2.54	0.39	0.47
3.18	0.48	0.53
3.81	0.54	0.57
4.45	0.58	0.60
5.08	0.60	0.59
7.62	0.57	0.59
10.16	0.69	0.71
12.70	0.83	0.85

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Standard Proctor Compaction Test**  
**ASTM D698-12e2**

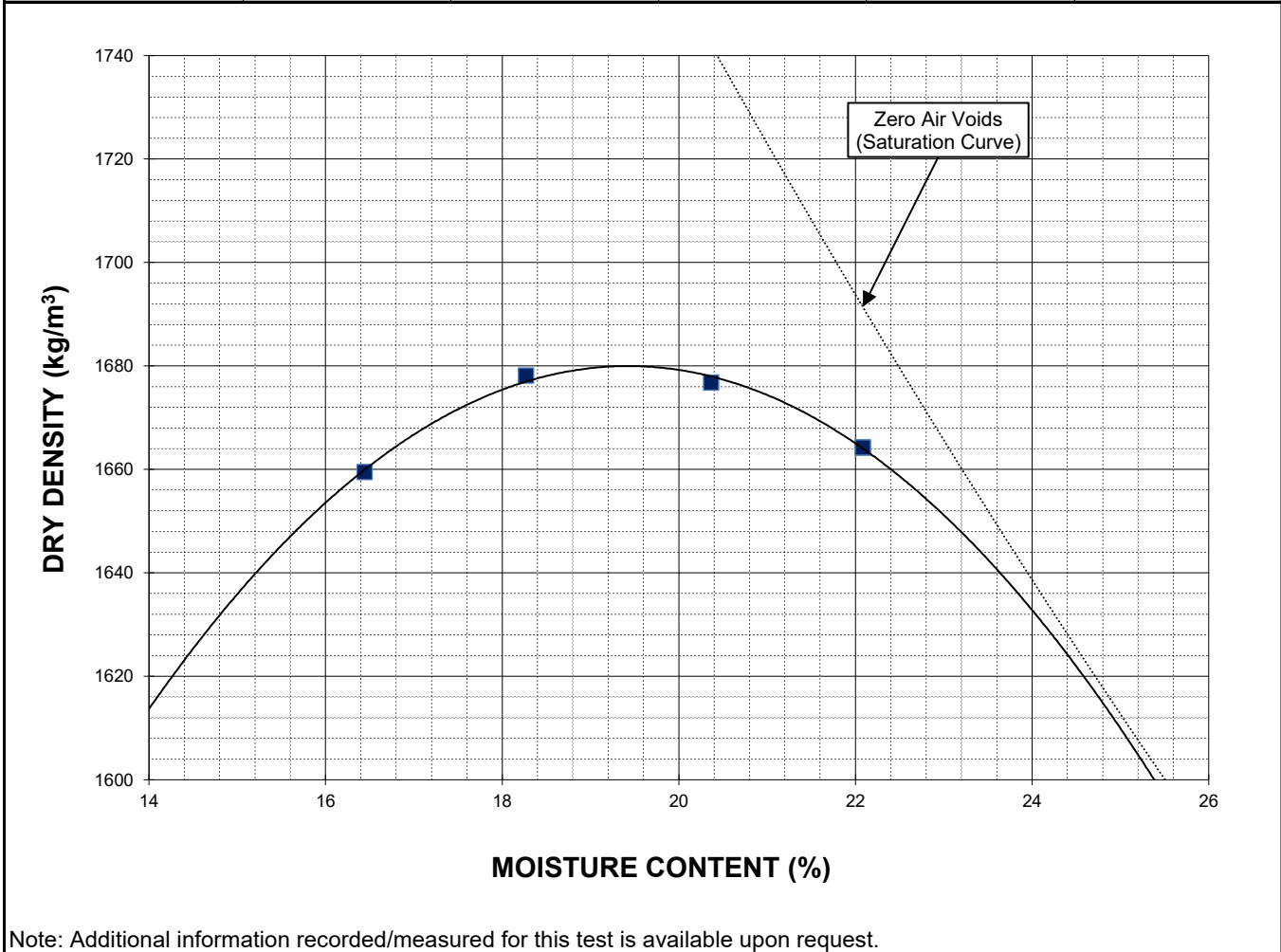
**Project No.** 1000-001-33  
**Client** Morison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-04 (0.9 m - 1.8 m)  
**Material** Silt  
**Sample Date** 19-Dec-23  
**Test Date** 04-Jan-23  
**Technician** AD



<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1680
<b>Optimum Moisture (%)</b>	19.4

Trial Number	1	2	3	4
<b>Wet Density (kg/m<sup>3</sup>)</b>	1932	1985	2018	2032
<b>Dry Density (kg/m<sup>3</sup>)</b>	1660	1678	1677	1664
<b>Moisture Content (%)</b>	16.4	18.3	20.4	22.1





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-04 (0.9 m - 1.8 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Silt
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-09
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1680 kg/m <sup>3</sup>
Optimum Moisture Content	19.4 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1599 kg/m <sup>3</sup>
Initial Moisture Content	19.3 %
Relative Density	95.2 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	1.5 %
Moisture Content in top 25 mm	31.7 %
Immersion Period	94 h

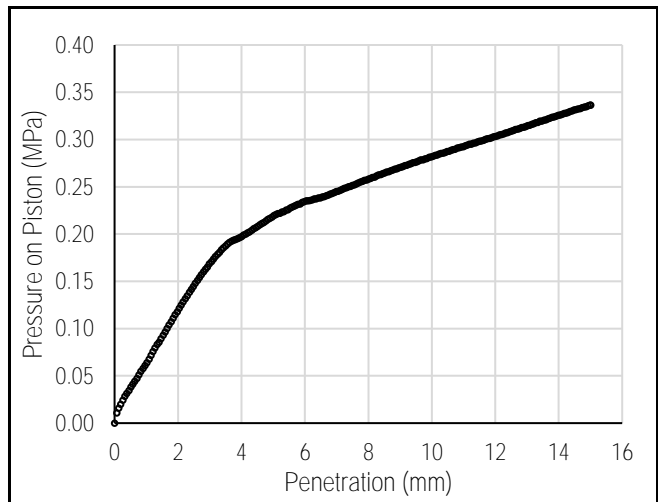
**CBR Results**

CBR at 2.54 mm	2.1 %
CBR at 5.08 mm	2.1 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.04	0.04
1.27	0.08	0.08
1.91	0.11	0.11
2.54	0.15	0.15
3.18	0.18	0.18
3.81	0.19	0.19
4.45	0.21	0.21
5.08	0.22	0.22
7.62	0.25	0.25
10.16	0.28	0.28
12.70	0.31	0.31

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
1712 St. James Street  
Winnipeg, MB R3H 0L3  
Tel: 204.975.9433 Fax: 204.975.9435

# Standard Proctor Compaction Test

## ASTM D698-12 (2021)

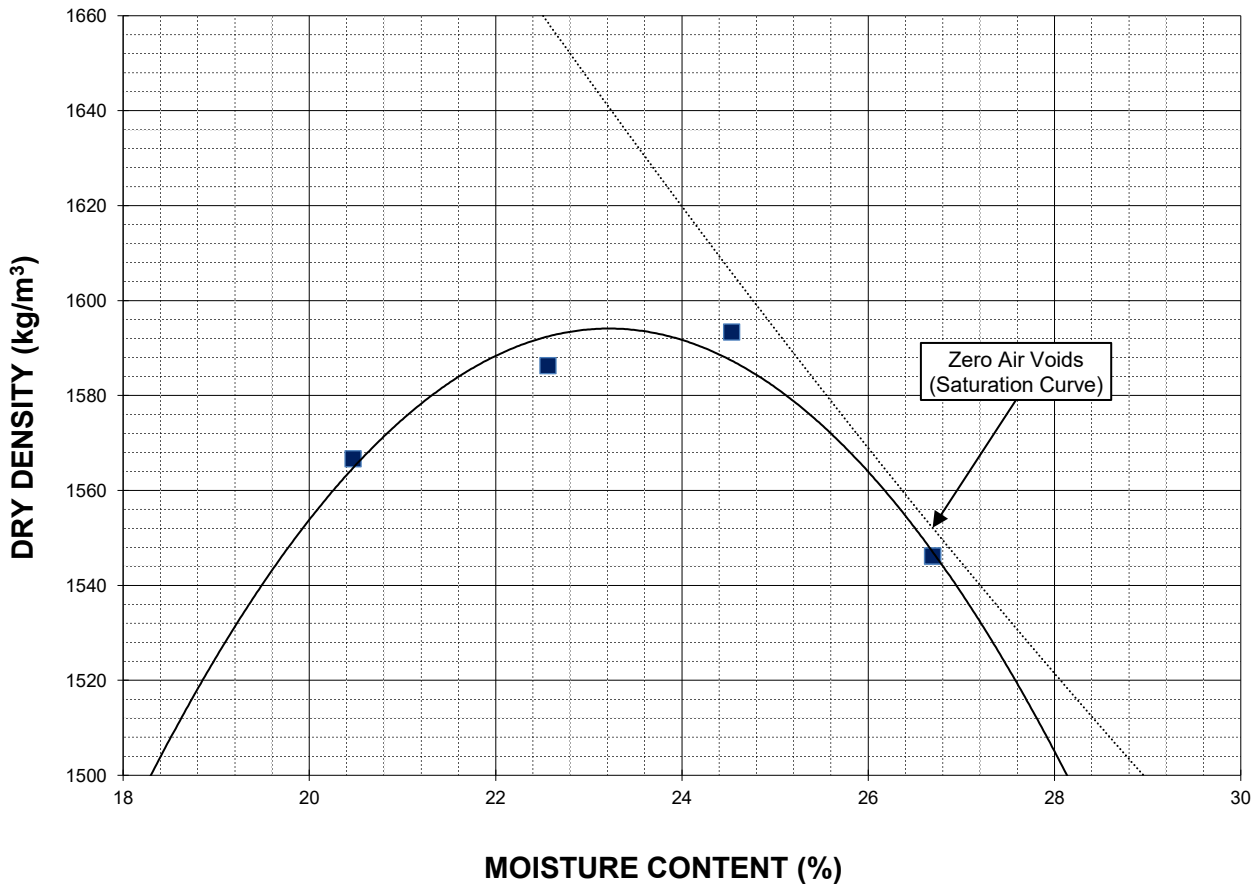


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-07 (0.9 m - 1.8 m)  
**Material** Clay  
**Sample Date** 19-Dec-23  
**Test Date** 04-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1594
<b>Optimum Moisture (%)</b>	23.2

Trial Number	1	2	3	4	
Wet Density (kg/m <sup>3</sup> )	1887	1944	1984	1959	
Dry Density (kg/m <sup>3</sup> )	1567	1586	1593	1546	
Moisture Content (%)	20.5	22.6	24.5	26.7	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-07 (0.9 m - 1.8 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-19
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-09
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1594 kg/m <sup>3</sup>
Optimum Moisture Content	23.2 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1514 kg/m <sup>3</sup>
Initial Moisture Content	23.5 %
Relative Density	95.0 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	1.6 %
Moisture Content in top 25 mm	36.9 %
Immersion Period	96 h

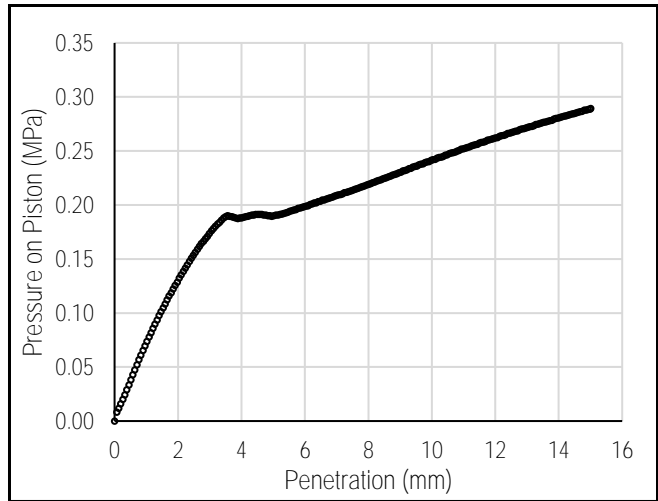
**CBR Results**

CBR at 2.54 mm	2.3 %
CBR at 5.08 mm	1.9 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.05	0.05
1.27	0.09	0.09
1.91	0.13	0.13
2.54	0.16	0.16
3.18	0.18	0.18
3.81	0.19	0.19
4.45	0.19	0.19
5.08	0.19	0.19
7.62	0.22	0.22
10.16	0.24	0.24
12.70	0.27	0.27

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
1712 St. James Street  
Winnipeg, MB R3H 0L3  
Tel: 204.975.9433 Fax: 204.975.9435

# Standard Proctor Compaction Test

ASTM D698-12 (2021)

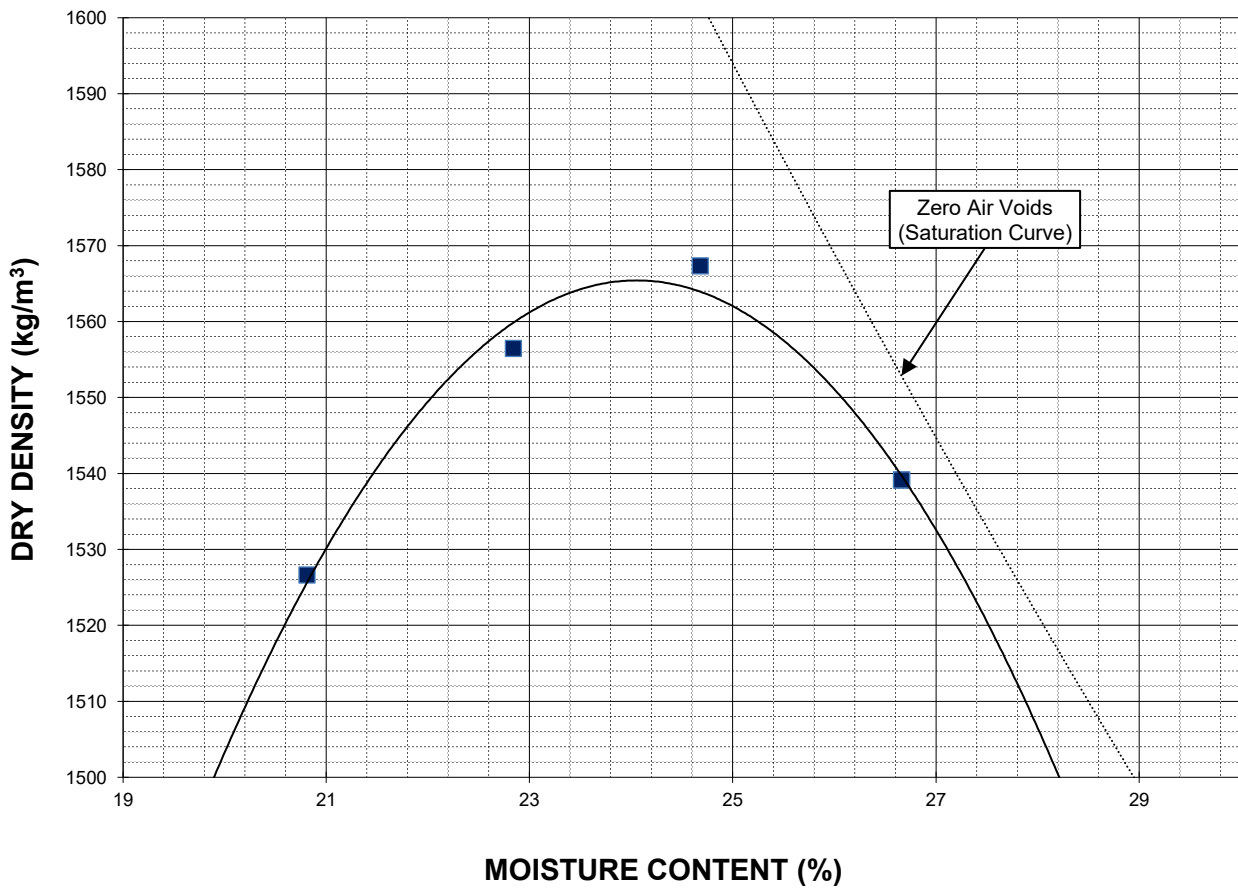


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-09 (1.5 m - 2.1 m)  
**Material** Clay  
**Sample Date** 20-Dec-23  
**Test Date** 04-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1565
<b>Optimum Moisture (%)</b>	24.1

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1844	1912	1954	1950	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1527	1556	1567	1539	
<b>Moisture Content (%)</b>	20.8	22.8	24.7	26.7	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-09 (1.5 m - 2.1 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-09
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1565 kg/m3
Optimum Moisture Content	24.1 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1488 kg/m3
Initial Moisture Content	24.1 %
Relative Density	95.1 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	1.4 %
Moisture Content in top 25 mm	34.5 %
Immersion Period	95 h

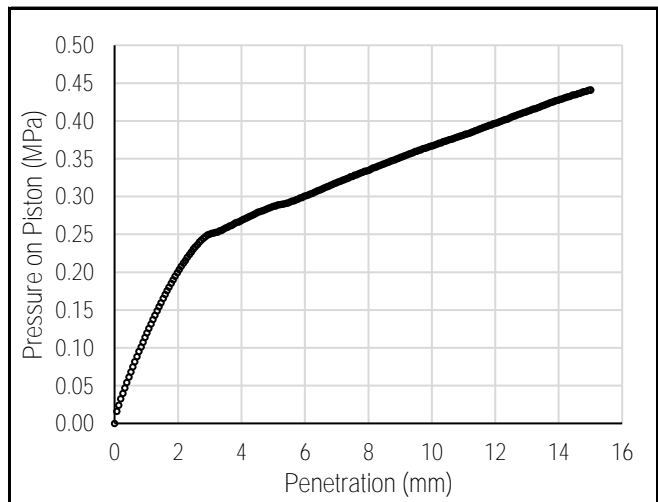
**CBR Results**

CBR at 2.54 mm	3.4 %
CBR at 5.08 mm	2.8 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.08	0.08
1.27	0.14	0.14
1.91	0.20	0.20
2.54	0.23	0.23
3.18	0.25	0.25
3.81	0.27	0.27
4.45	0.28	0.28
5.08	0.29	0.29
7.62	0.33	0.33
10.16	0.37	0.37
12.70	0.41	0.41

**Load/Penetration Curve**



**Comments:**





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Standard Proctor Compaction Test ASTM D698-12 (2021)

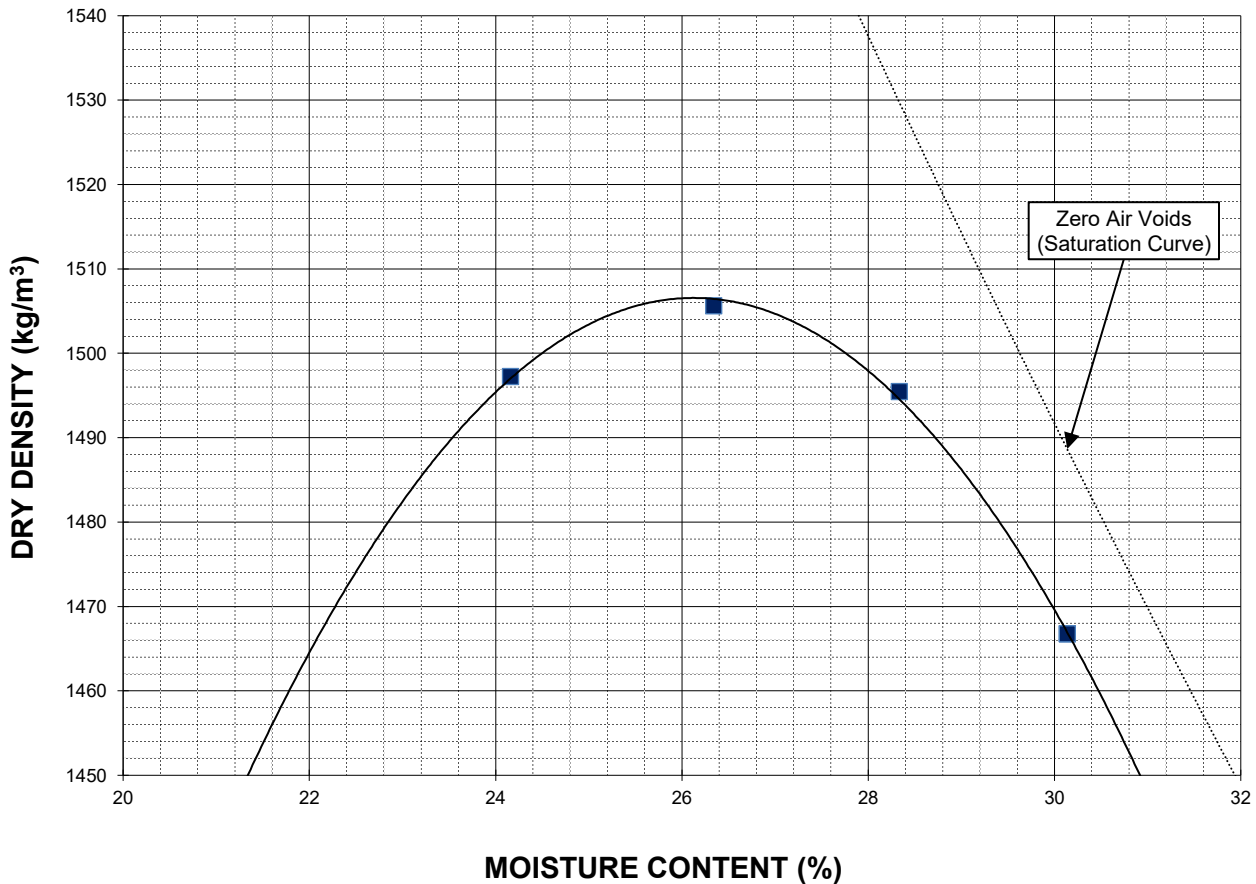
**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Sample #** L24-001  
**Source** TH23-09 (0.9 m - 1.5 m), TH23-10 (0.9 m - 1.5 m)  
**Material** Clay  
**Sample Date** 21-Dec-23  
**Test Date** 11-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1507
<b>Optimum Moisture (%)</b>	26.1

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1859	1902	1919	1909	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1497	1506	1495	1467	
<b>Moisture Content (%)</b>	24.2	26.3	28.3	30.1	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-09 (0.9 m - 1.5 m), TH23-10 (0.9 m - 1.5 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor-Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-13
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1507 kg/m <sup>3</sup>
Optimum Moisture Content	26.1 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1431 kg/m <sup>3</sup>
Initial Moisture Content	26.2 %
Relative Density	95.0 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	2.6 %
Moisture Content in top 25 mm	44.3 %
Immersion Period	96 h

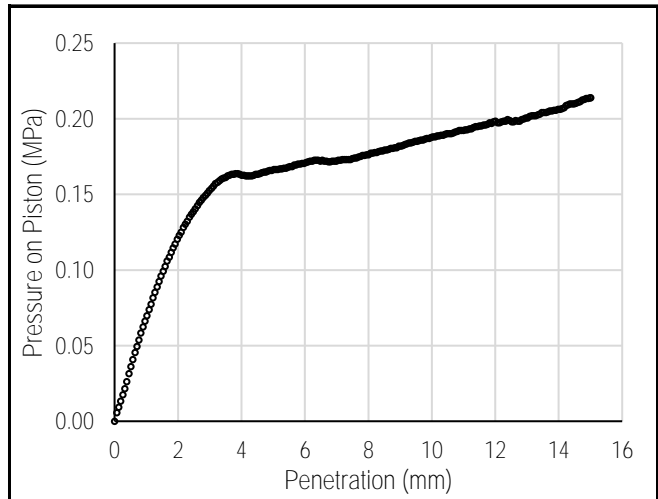
**CBR Results**

CBR at 2.54 mm	2.0 %
CBR at 5.08 mm	1.6 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.05	0.05
1.27	0.09	0.09
1.91	0.12	0.12
2.54	0.14	0.14
3.18	0.16	0.16
3.81	0.16	0.16
4.45	0.16	0.16
5.08	0.17	0.17
7.62	0.17	0.17
10.16	0.19	0.19
12.70	0.20	0.20

**Load/Penetration Curve**



**Comments:**



Photo 1: Pavement Core Sample at Test Hole TH23-01



Photo 2: Pavement Core Sample at Test Hole TH23-02



Photo 3: Pavement Core Sample at Test Hole TH23-03



Photo 4: Pavement Core Sample at Test Hole TH23-04



Photo 5: Pavement Core Sample at Test Hole TH23-05



Photo 6: Pavement Core Sample at Test Hole TH23-06



Photo 7: Pavement Core Sample at Test Hole TH23-07



Photo 8: Pavement Core Sample at Test Hole TH23-08



Photo 9: Pavement Core Sample at Test Hole TH23-09



Photo 10: Pavement Core Sample P at Test Hole TH23-10

**Appendix B**  
**Test Hole Logs, Summary Table, Lab Testing Results and**  
**Photographs of Pavement Core Samples**  
**Inkster Boulevard Eastbound– Sinclair Street to Main Street**

---



## GENERAL NOTES

- Classifications are based on the Unified Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.
- Descriptions on these test hole logs apply only at the specific test hole locations and at the time the test holes were drilled. Variability of soil and groundwater conditions may exist between test hole locations.
- When the following classification terms are used in this report or test hole logs, the primary and secondary soil fractions may be visually estimated.

Major Divisions	USCS Classification	Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material			
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than 4.75 mm)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve, depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:  Less than 5 percent..... GW, GP, SW, SP More than 12 percent..... GM, GC, SM, SC 6 to 12 percent..... Borderline cases requiring dual symbols*	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	ASTM Sieve sizes #10 to #4 #40 to #10 #200 to #40 < #200			
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines				Not meeting all gradation requirements for GW		
		Gravel with fines (Appreciable amount of fines)	GM		Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols		
			GC		Clayey gravels, gravel-sand-silt mixtures	Atterberg limits above "A" line or P.I. greater than 7			
	Sands (More than half of coarse fraction is smaller than 4.75 mm)	Clean sands (Little or no fines)	SW		Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	mm 2.00 to 4.75 0.425 to 2.00 0.075 to 0.425 < 0.075		
			SP		Poorly-graded sands, gravelly sands, little or no fines			Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM		Silty sands, sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols	
			SC		Clayey sands, sand-clay mixtures		Atterberg limits above "A" line or P.I. greater than 7		
					Material		Sand Coarse Medium Fine Silt or Clay		
					Particle Size				
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Sils and Clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	<b>Plasticity Chart</b> 	ASTM Sieve Sizes > 12 in. 3 in. to 12 in. 3/4 in. to 3 in. #4 to 3/4 in.				
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays						
	Sils and Clays (Liquid limit greater than 50)	OL	Organic silts and organic silty clays of low plasticity		Material	Boulders Cobbles Gravel Coarse Fine			
		MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts						
		CH	Inorganic clays of high plasticity, fat clays						
		OH	Organic clays of medium to high plasticity, organic silts						
	Highly Organic Soils	Pt	Peat and other highly organic soils		Von Post Classification Limit	Strong colour or odour, and often fibrous texture			

\* Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

## Other Symbol Types

	Asphalt		Bedrock (undifferentiated)		Cobbles
	Concrete		Limestone Bedrock		Boulders and Cobbles
	Fill		Cemented Shale		Silt Till
			Non-Cemented Shale		Clay Till

### LEGEND OF ABBREVIATIONS AND SYMBOLS

LL - Liquid Limit (%)	VW - Vibrating Wire Piezometer
PL - Plastic Limit (%)	SI - Slope Inclinator
PI - Plasticity Index (%)	∇ Water Level at Time of Drilling
MC - Moisture Content (%)	▼ Water Level at End of Drilling
SPT - Standard Penetration Test	▼ Water Level After Drilling as Indicated on Test Hole Logs
RQD - Rock Quality Designation	
Qu - Unconfined Compression	
Su - Undrained Shear Strength	

### FRACTION OF SECONDARY SOIL CONSTITUENTS ARE BASED ON THE FOLLOWING TERMINOLOGY

TERM	EXAMPLES	PERCENTAGE
and	and CLAY	35 to 50 percent
"y" or "ey"	clayey, silty	20 to 35 percent
some	some silt	10 to 20 percent
trace	trace gravel	1 to 10 percent
with *	with silt, with sand	> 35 percent

\* Used when the material is classified based on behaviour as a cohesive material

### TERMS DESCRIBING CONSISTENCY OR COMPACTION CONDITION

The Standard Penetration Test blow count (N) of a non-cohesive soil can be related to compactness condition as follows:

<u>Descriptive Terms</u>	<u>SPT (N) (Blows/300 mm)</u>
Very loose	< 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	> 50

The Standard Penetration Test blow count (N) of a cohesive soil can be related to its consistency as follows:

<u>Descriptive Terms</u>	<u>SPT (N) (Blows/300 mm)</u>
Very soft	< 2
Soft	2 to 4
Firm	4 to 8
Stiff	8 to 15
Very stiff	15 to 30
Hard	> 30

The undrained shear strength (Su) of a cohesive soil can be related to its consistency as follows:

<u>Descriptive Terms</u>	<u>Undrained Shear Strength (kPa)</u>
Very soft	< 12
Soft	12 to 25
Firm	25 to 50
Stiff	50 to 100
Very stiff	100 to 200
Hard	> 200



# Sub-Surface Log

Test Hole TH23-11

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532686, E-633689  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 200mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 145 mm thick														
0.1 - 0.2		CONCRETE - 210 mm thick		PC23-22												
0.2 - 0.5		CLAY - silty, trace gravel (<20 mm diam.) to 0.8 m - dark grey, moist, stiff to very stiff - high plasticity, AASHTO: A-7-6 (I)		G97												
0.5 - 1.5		SILT - trace to some clay, trace sand - light brown - moist, soft - low plasticity - AASHTO: A-4 (1)		G98												
0.9 - 1.5		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G99												
1.5 - 2.0		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G100												
2.0 - 2.5		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G101												
2.5 - 3.0		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G102												
3.0 - 3.5		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G103												
3.5 - 4.0		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G104												
4.0 - 4.5		CLAY - silty - brown - moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G105												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.5 m depth (B106A), and 1.5 and 2.1 m depth (B106B).
- Test Hole located in front of #514 Inkster Blvd, Eastbound lane, 1.0 m South of North curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-12

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532600, E-633861  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 125 mm thick														
0.1 - 0.2		CONCRETE - 175 mm thick		PC23-23												
0.2 - 1.8		CLAY - silty, trace gravel (<20 mm diam.) to 0.8 m, trace sand to 0.8 m - dark grey - moist, stiff to very stiff - high plasticity - AASHTO: A-7-6 (I) - grey below 0.6 m														
0.4				G107												
0.6				G108												
0.8				G109												
1.2				G110												
1.4				G111												
1.8				G112												
2.2				G113												
2.4				G114												
2.8				G115												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Test Hole located in front of #466 Inkster Blvd, Eastbound lane, 0.7 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-13

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532513, E-634060  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 200mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 160 mm thick		PC23-24												
0.1 - 0.2		CONCRETE - 150 mm thick														
0.2 - 0.8		CLAY - silty, trace gravel (<20 mm diam.) to 0.8 m - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (59) - grey below 0.6 m		G116										△	+	
				G117										△	+	
				G118										△	+	
0.9 - 1.5		SILT - clayey - brown - moist, firm - low to intermediate plasticity - AASHTO: A-6 (I)		G119										△	+	
				G120										△	+	
1.6 - 2.1		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G121										△	+	
				G122										△	+	
2.2 - 3.0		SILT - clayey, trace sand, trace gravel (<20 mm diam.) - brown - moist, firm to stiff - low to intermediate plasticity - AASHTO: A-6 (I)		G123											+	
				G124											+	

END TEST HOLE AT 3.0 m IN SILT AND CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.5 m depth (B125A), and 1.5 and 2.1 m depth (B125B).
- Test Hole located in front of #404 Inkster Blvd, Eastbound lane, 4.5 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0\_B\_KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-14

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532417, E-634255  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 105 mm thick														
		CONCRETE - 185 mm thick		PC23-25												
		SAND - and GRAVEL (<30 mm diam.), light brown, moist, angular														
		CLAY - silty, trace sand														
-0.5		- dark grey		G126												
		- moist														
		- stiff to very stiff														
		- high plasticity														
		- AASHTO: A-7-6 (61)		G127												
		- transition grey to brown between 0.6 - 1.5 m														
-1.0				G128												
-1.5				G129												
		- brown below 1.5 m		G130												
-2.0				G131												
				G132												
-2.5		SILT - some clay														
		- brown														
		- moist														
		- soft to very soft														
		- low to intermediate plasticity														
		- AASHTO: A-4 (I)		G133												
-3.0				G134												

END TEST HOLE AT 3.0 m IN SILT.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B135).
- Test Hole located in front of #320 Inkster Blvd, Eastbound lane, 1.1 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0\_B\_KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-15

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532285, E-634548  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 20, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 190 mm thick														
0.1 - 0.2		CONCRETE - 140 mm thick		PC23-26												
0.2 - 0.9		CLAY - silty, trace gravel (<20 mm diam.) - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G136												
0.9 - 1.5		SILT - clayey - brown - moist, firm - low to intermediate plasticity - AASHTO: A-6 (I)		G137												
1.5 - 2.2		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G138												
2.2 - 2.5		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G139												
2.5 - 2.8		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G140												
2.8 - 3.0		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G141												
3.0 - 3.3		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G142												
3.3 - 3.6		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G143												
3.6 - 3.9		CLAY - silty - brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G144												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

1. Seepage or sloughing not observed.
2. Test Hole open to 3.0 m depth immediately after drilling.
3. Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
4. Bulk samples were collected between 0.9 m and 1.5 m depth (B145A), and 1.5 and 2.1 m depth (B145B).
5. Test Hole located in front of #234 Inkster Blvd, Eastbound lane, 1.2 m South of North curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-16

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5533026, E-632955  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL _____ MC _____ LL _____ 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 65 mm thick														
		CONCRETE - 215 mm thick		PC23-27												
		CLAY - silty, trace sand, trace gravel (<20 mm diam.) to 0.6 m - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (62)		G146												
				G147												
				G148												
		- grey below 0.6 m		G149												
				G150												
				G151												
		SILT - some clay - brown - moist, soft to very soft - low to intermediate plasticity - AASHTO: A-4 (I)		G152												
				G153												
				G154												

END TEST HOLE AT 3.0 m IN SILT.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B155).
- Test Hole located in front of #806 Inkster Blvd, Eastbound lane, 0.9 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0\_B\_KF 1000-001-33.GPJ TREK.GDT 1/22/24





# Sub-Surface Log

Test Hole TH23-17

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532976, E-633074  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 200mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 90 mm thick														
		CONCRETE - 140 mm thick		PC23-28												
		CLAY - silty, trace sand - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G156												
				G157												
				G158												
				G159												
		SILT - clayey - brown - moist, firm - low to intermediate plasticity - AASHTO: A-6 (I)		G160												
		- trace to some clay, trace sand, soft below 2.1 m		G161												
				G162												
		- very soft below 2.5 m		G163												
		CLAY - silty - grey and brown mottled, moist, firm to stiff - high plasticity - AASHTO: A-7-6 (I)		G164												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.7 m depth (B165A), and 1.7 and 2.1 m depth (B165B).
- Test Hole located in front of #784 Inkster Blvd, Eastbound lane, 1.3 m South of North curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-18

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532911, E-633200  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 215 mm thick														
		CONCRETE - 200 mm thick		PC23-29												
0.5		CLAY - silty, trace gravel (<20 mm diam.) - dark grey - moist, stiff to very stiff - high plasticity - AASHTO: A-7-6 (I)		G166			●						△	+		
				G167			●						△		+	
1.0		- grey below 0.6 m		G168			●						△	+		
1.5		- silt pocket (<40mm diam.) at 1.5 m		G169			●						△	+		
				G170			●						△		+	
2.0				G171			●						△		+	
2.5		SILT - clayey - brown, moist, firm to stiff - low to intermediate plasticity - AASHTO: A-6 (I)		G172			●						△	+		
		CLAY - silty - grey and brown mottled - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G173			●						△		+	
3.0				G174			●								+	

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B175).
- Test Hole located in front of #750 Inkster Blvd, Eastbound lane, 1.2 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0\_B\_KF 1000-001-33.GPJ TREK.GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-19

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532836, E-633368  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 180 mm thick		PC23-30												
0.1 - 0.2		CONCRETE - 120 mm thick														
0.2 - 0.4		CLAY - silty, trace gravel (<20 mm diam.) - dark grey, moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G176												
0.4 - 1.0		SILT - clayey, trace sand - brown - moist, soft - low to intermediate plasticity - AASHTO: A-6 (15)		G177												
0.9 - 1.1				G178												
1.1 - 1.5				G179												
1.5 - 2.1		CLAY - silty - grey - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G180												
2.1 - 2.4		- trace silt inclusions (<20mm diam.) between 2.1 and 2.4 m		G181												
2.4 - 2.6				G182												
2.6 - 2.8				G183												
2.8 - 3.0				G184												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

1. Seepage or sloughing not observed.
2. Test Hole open to 3.0 m depth immediately after drilling.
3. Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
4. Bulk samples were collected between 0.9 m and 1.5 m depth (B185A), and 1.5 and 2.1 m depth (B185B).
5. Test Hole located in front of #636 Inkster Blvd, Eastbound lane, 1.0 m South of North curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-20

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5532766, E-633508  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)
					16	17	18	19	20	21	
0.0 - 0.1		ASPHALT - 130 mm thick									
0.1 - 0.2		CONCRETE - 310 mm thick		PC23-3							
0.2 - 0.5		CLAY - silty, trace gravel (<20 mm diam.) to 0.5 m - dark grey - moist, stiff - high plasticity - AASHTO: A-7-6 (68)		G186							△
0.5 - 1.0		- grey below 0.5 m		G187							△ ⊕
1.0 - 1.5				G188							△ ⊕
1.5 - 2.0				G189							△ ⊕
2.0 - 2.5				G190							⊕
2.5 - 3.0				G191							△ ⊕
3.0 - 3.5				G192							⊕
3.5 - 4.0				G193							⊕
4.0 - 4.5		SILT - some clay - brown, moist, soft - low to intermediate plasticity - AASHTO: A-4 (I)		G194							⊕ △

END TEST HOLE AT 3.0 m IN SILT.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B195).
- Test Hole located in front of #576 Inkster Blvd, Eastbound lane, 1.2 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24





RFP 547-2023 McGregor - Inkster Geotech. Investigation  
Sub-Surface Investigation

Test Hole No.	Test Hole Location	Pavement Surface		Pavement Structure Material		Subgrade Description	Sample Depth (m)		Moisture Content (%)	Grain Size Analysis				Atterberg Limits					
		Type	Thickness (mm)	Type	Thickness (mm)		Top (m)	Bottom (m)		Clay (%)	Silt (%)	Sand (%)	Gravel (%)	Plastic	Liquid	Plasticity Index			
TH23-14	UTM : 5532417 N, 634255 E Located in front of #320 Inkster Blvd, Eastbound lane, 1.1 m North of South curb	Asphalt	105	Concrete	185	Clay, AASHTO: A-7-6 (61)	0.5	0.6	33										
						Clay, AASHTO: A-7-6 (61)	0.8	0.9	35										
						Clay, AASHTO: A-7-6 (61)	1.1	1.2	30	69	28	3	0	20	77	56			
						Clay, AASHTO: A-7-6 (61)	1.4	1.5	31										
						Clay, AASHTO: A-7-6 (61)	1.7	1.8	30										
						Clay, AASHTO: A-7-6 (61)	2.0	2.1	34										
						Clay, AASHTO: A-7-6 (61)	2.3	2.4	25										
TH23-15 (PC23-26)	UTM : 5532285 N, 634548 E Located in front of #234 Inkster Blvd, Eastbound lane, 1.2 m South of North curb					Silt, AASHTO: A-4 (I)	2.6	2.7	24										
						Silt, AASHTO: A-4 (I)	2.9	3.0	23										
		Asphalt	190	Concrete	140	Clay, AASHTO: A-7-6 (I)	0.5	0.6	34										
						Silt, AASHTO: A-6 (I)	0.8	0.9	23										
						Silt, AASHTO: A-6 (I)	1.1	1.2	25										
						Silt, AASHTO: A-6 (I)	1.4	1.5	23										
						Clay, AASHTO: A-7-6 (I)	1.7	1.8	31										
TH23-16	UTM : 5533026 N, 632955 E Located in front of #806 Inkster Blvd, Eastbound lane, 0.9 m North of South curb					Clay, AASHTO: A-7-6 (I)	2.0	2.1	35										
						Clay, AASHTO: A-7-6 (I)	2.3	2.4	45										
						Clay, AASHTO: A-7-6 (I)	2.6	2.7	44										
						Clay, AASHTO: A-7-6 (I)	2.9	3.0	52										
		Asphalt	65	Concrete	150	Clay, AASHTO: A-7-6 (62)	0.5	0.6	33										
						Clay, AASHTO: A-7-6 (62)	0.8	0.9	29										
						Clay, AASHTO: A-7-6 (62)	1.1	1.2	35	75	23	2	0	28	83	54			









www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-11	TH23-11	TH23-11	TH23-11	TH23-11	TH23-11
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G97	G98	G99	G100	G101	G102
Tare ID	D31	W72	Z134	H31	H15	AB68
Mass of tare	8.5	8.5	8.6	8.3	8.7	6.9
Mass wet + tare	235.6	224.5	484.4	252.1	230.5	234.1
Mass dry + tare	178.0	189.9	404.0	207.5	166.8	163.7
Mass water	57.6	34.6	80.4	44.6	63.7	70.4
Mass dry soil	169.5	181.4	395.4	199.2	158.1	156.8
Moisture %	34.0%	19.1%	20.3%	22.4%	40.3%	44.9%

Test Hole	TH23-11	TH23-11	TH23-11	TH23-12	TH23-12	TH23-12
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G103	G104	G105	G107	G108	G109
Tare ID	A8	W95	D9	K26	AB58	AB71
Mass of tare	8.1	8.6	8.7	8.6	6.9	6.6
Mass wet + tare	233.7	206.8	222.7	225.7	150.4	213.3
Mass dry + tare	156.9	140.4	150.0	167.1	113.7	163.7
Mass water	76.8	66.4	72.7	58.6	36.7	49.6
Mass dry soil	148.8	131.8	141.3	158.5	106.8	157.1
Moisture %	51.6%	50.4%	51.5%	37.0%	34.4%	31.6%

Test Hole	TH23-12	TH23-12	TH23-12	TH23-12	TH23-12	TH23-12
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G110	G111	G112	G113	G114	G115
Tare ID	W14	D17	H50	A28	F86	W44
Mass of tare	8.7	8.7	8.5	8.2	8.3	8.6
Mass wet + tare	241.8	241.6	250.9	225.1	230.6	242.3
Mass dry + tare	198.3	200.0	191.2	164.8	157.7	163.5
Mass water	43.5	41.6	59.7	60.3	72.9	78.8
Mass dry soil	189.6	191.3	182.7	156.6	149.4	154.9
Moisture %	22.9%	21.7%	32.7%	38.5%	48.8%	50.9%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-13	TH23-13	TH23-13	TH23-13	TH23-13	TH23-13
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G116	G117	G118	G119	G120	G121
Tare ID	A1	L14	I85	E14	W88	N48
Mass of tare	6.8	6.8	6.8	6.9	8.5	8.5
Mass wet + tare	241.5	219.9	429.7	238.4	245.6	276.1
Mass dry + tare	179.8	168.6	335.7	194.2	185.6	211.0
Mass water	61.7	51.3	94.0	44.2	60.0	65.1
Mass dry soil	173.0	161.8	328.9	187.3	177.1	202.5
Moisture %	35.7%	31.7%	28.6%	23.6%	33.9%	32.1%

Test Hole	TH23-13	TH23-13	TH23-13	TH23-14	TH23-14	TH23-14
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G122	G123	G124	G126	G127	G128
Tare ID	Z39	N110	W59	K23	F18	M90
Mass of tare	8.6	8.6	8.7	8.6	8.6	6.8
Mass wet + tare	237.5	266.3	256.9	204.8	210.6	424.6
Mass dry + tare	178.6	215.5	209.8	155.7	158.5	327.3
Mass water	58.9	50.8	47.1	49.1	52.1	97.3
Mass dry soil	170.0	206.9	201.1	147.1	149.9	320.5
Moisture %	34.6%	24.6%	23.4%	33.4%	34.8%	30.4%

Test Hole	TH23-14	TH23-14	TH23-14	TH23-14	TH23-14	TH23-14
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G129	G130	G131	G132	G133	G134
Tare ID	E07	N93	F66	AC34	N21	W47
Mass of tare	6.8	8.5	8.7	6.7	8.9	8.5
Mass wet + tare	200.9	225.5	201.1	217.5	257.4	263.9
Mass dry + tare	155.5	175.5	152.3	175.0	208.8	216.4
Mass water	45.4	50.0	48.8	42.5	48.6	47.5
Mass dry soil	148.7	167.0	143.6	168.3	199.9	207.9
Moisture %	30.5%	29.9%	34.0%	25.3%	24.3%	22.8%



**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-15	TH23-15	TH23-15	TH23-15	TH23-15	TH23-15
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G136	G137	G138	G139	G140	G141
Tare ID	W92	E119	M93	Z02	E06	H73
Mass of tare	8.6	8.6	6.9	6.9	6.9	8.6
Mass wet + tare	234.2	203.2	237.5	226.8	223.0	232.6
Mass dry + tare	177.5	167.3	192.0	185.6	172.3	174.1
Mass water	56.7	35.9	45.5	41.2	50.7	58.5
Mass dry soil	168.9	158.7	185.1	178.7	165.4	165.5
Moisture %	33.6%	22.6%	24.6%	23.1%	30.7%	35.3%

Test Hole	TH23-15	TH23-15	TH23-15	TH23-16	TH23-16	TH23-16
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G142	G143	G144	G146	G147	G148
Tare ID	M77	M94	E08	H41	Z123	I68
Mass of tare	6.7	6.9	6.8	8.6	8.4	6.9
Mass wet + tare	242.5	220.0	216.0	222.8	219.6	438.4
Mass dry + tare	169.5	154.4	144.5	169.6	172.6	327.3
Mass water	73.0	65.6	71.5	53.2	47.0	111.1
Mass dry soil	162.8	147.5	137.7	161.0	164.2	320.4
Moisture %	44.8%	44.5%	51.9%	33.0%	28.6%	34.7%

Test Hole	TH23-16	TH23-16	TH23-16	TH23-16	TH23-16	TH23-16
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G149	G150	G151	G152	G153	G154
Tare ID	E42	M92	W103	E84	E89	P36
Mass of tare	8.5	6.9	8.6	6.7	6.9	8.8
Mass wet + tare	198.6	228.1	217.4	269.5	258.6	282.5
Mass dry + tare	154.8	175.9	167.5	216.6	211.4	234.7
Mass water	43.8	52.2	49.9	52.9	47.2	47.8
Mass dry soil	146.3	169.0	158.9	209.9	204.5	225.9
Moisture %	29.9%	30.9%	31.4%	25.2%	23.1%	21.2%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Moisture Content Report ASTM D2216-98

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-17	TH23-17	TH23-17	TH23-17	TH23-17	TH23-17
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G156	G157	G158	G159	G160	G161
Tare ID	N24	E62	W53.	E17	H35	N04
Mass of tare	8.5	6.8	8.5	6.9	8.5	8.7
Mass wet + tare	216.7	256.0	229.0	238.2	242.1	250.7
Mass dry + tare	162.8	196.7	175.9	187.7	198.2	205.2
Mass water	53.9	59.3	53.1	50.5	43.9	45.5
Mass dry soil	154.3	189.9	167.4	180.8	189.7	196.5
Moisture %	34.9%	31.2%	31.7%	27.9%	23.1%	23.2%

Test Hole	TH23-17	TH23-17	TH23-17	TH23-18	TH23-18	TH23-18
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G162	G163	G164	G166	G167	G168
Tare ID	H65	E13	F135	M10	P21	F153
Mass of tare	8.8	6.8	8.6	6.6	8.4	8.5
Mass wet + tare	281.5	249.5	247.1	231.9	234.9	224.8
Mass dry + tare	227.9	204.1	170.4	173.6	183.6	174.8
Mass water	53.6	45.4	76.7	58.3	51.3	50.0
Mass dry soil	219.1	197.3	161.8	167.0	175.2	166.3
Moisture %	24.5%	23.0%	47.4%	34.9%	29.3%	30.1%

Test Hole	TH23-18	TH23-18	TH23-18	TH23-18	TH23-18	TH23-18
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G169	G170	G171	G172	G173	G174
Tare ID	E87	P31	E37	N80	E19	E54
Mass of tare	6.7	8.4	7.1	8.5	8.5	6.7
Mass wet + tare	224.9	239.1	270.7	283.2	244.9	248.4
Mass dry + tare	175.0	179.8	203.9	232.6	170.1	172.1
Mass water	49.9	59.3	66.8	50.6	74.8	76.3
Mass dry soil	168.3	171.4	196.8	224.1	161.6	165.4
Moisture %	29.6%	34.6%	33.9%	22.6%	46.3%	46.1%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-19	TH23-19	TH23-19	TH23-19	TH23-19	TH23-19
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G176	G177	G178	G179	G180	G181
Tare ID	F127	Z91	E56	N113	AB73	AC15
Mass of tare	8.4	8.6	6.8	8.6	7.1	7.0
Mass wet + tare	234.9	258.4	476.8	203.6	245.5	212.4
Mass dry + tare	182.9	212.6	385.5	167.1	183.4	154.7
Mass water	52.0	45.8	91.3	36.5	62.1	57.7
Mass dry soil	174.5	204.0	378.7	158.5	176.3	147.7
Moisture %	29.8%	22.5%	24.1%	23.0%	35.2%	39.1%

Test Hole	TH23-19	TH23-19	TH23-19	TH23-20	TH23-20	TH23-20
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G182	G183	G184	G186	G187	G188
Tare ID	N61	A39	N85	F71	N83	M39
Mass of tare	8.6	8.5	8.5	8.5	8.7	6.8
Mass wet + tare	231.3	237.8	231.7	246.4	214.9	411.7
Mass dry + tare	164.2	161.1	152.6	179.4	164.5	316.9
Mass water	67.1	76.7	79.1	67.0	50.4	94.8
Mass dry soil	155.6	152.6	144.1	170.9	155.8	310.1
Moisture %	43.1%	50.3%	54.9%	39.2%	32.3%	30.6%

Test Hole	TH23-20	TH23-20	TH23-20	TH23-20	TH23-20	TH23-20
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G189	G190	G191	G192	G193	G194
Tare ID	Z114	N112	D3	P85	E470	AC24
Mass of tare	8.4	8.7	8.4	8.6	8.7	6.8
Mass wet + tare	215.0	236.2	231.5	225.1	235.7	239.2
Mass dry + tare	167.6	179.6	172.6	166.1	190.2	194.0
Mass water	47.4	56.6	58.9	59.0	45.5	45.2
Mass dry soil	159.2	170.9	164.2	157.5	181.5	187.2
Moisture %	29.8%	33.1%	35.9%	37.5%	25.1%	24.1%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Moisture Content Report ASTM D2216-98

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-11	TH23-11	TH23-11	TH23-11	TH23-11	TH23-11
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G97	G98	G99	G100	G101	G102
Tare ID	D31	W72	Z134	H31	H15	AB68
Mass of tare	8.5	8.5	8.6	8.3	8.7	6.9
Mass wet + tare	235.6	224.5	484.4	252.1	230.5	234.1
Mass dry + tare	178.0	189.9	404.0	207.5	166.8	163.7
Mass water	57.6	34.6	80.4	44.6	63.7	70.4
Mass dry soil	169.5	181.4	395.4	199.2	158.1	156.8
Moisture %	34.0%	19.1%	20.3%	22.4%	40.3%	44.9%

Test Hole	TH23-11	TH23-11	TH23-11	TH23-12	TH23-12	TH23-12
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G103	G104	G105	G107	G108	G109
Tare ID	A8	W95	D9	K26	AB58	AB71
Mass of tare	8.1	8.6	8.7	8.6	6.9	6.6
Mass wet + tare	233.7	206.8	222.7	225.7	150.4	213.3
Mass dry + tare	156.9	140.4	150.0	167.1	113.7	163.7
Mass water	76.8	66.4	72.7	58.6	36.7	49.6
Mass dry soil	148.8	131.8	141.3	158.5	106.8	157.1
Moisture %	51.6%	50.4%	51.5%	37.0%	34.4%	31.6%

Test Hole	TH23-12	TH23-12	TH23-12	TH23-12	TH23-12	TH23-12
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G110	G111	G112	G113	G114	G115
Tare ID	W14	D17	H50	A28	F86	W44
Mass of tare	8.7	8.7	8.5	8.2	8.3	8.6
Mass wet + tare	241.8	241.6	250.9	225.1	230.6	242.3
Mass dry + tare	198.3	200.0	191.2	164.8	157.7	163.5
Mass water	43.5	41.6	59.7	60.3	72.9	78.8
Mass dry soil	189.6	191.3	182.7	156.6	149.4	154.9
Moisture %	22.9%	21.7%	32.7%	38.5%	48.8%	50.9%



**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-13	TH23-13	TH23-13	TH23-13	TH23-13	TH23-13
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G116	G117	G118	G119	G120	G121
Tare ID	A1	L14	I85	E14	W88	N48
Mass of tare	6.8	6.8	6.8	6.9	8.5	8.5
Mass wet + tare	241.5	219.9	429.7	238.4	245.6	276.1
Mass dry + tare	179.8	168.6	335.7	194.2	185.6	211.0
Mass water	61.7	51.3	94.0	44.2	60.0	65.1
Mass dry soil	173.0	161.8	328.9	187.3	177.1	202.5
Moisture %	35.7%	31.7%	28.6%	23.6%	33.9%	32.1%

Test Hole	TH23-13	TH23-13	TH23-13	TH23-14	TH23-14	TH23-14
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G122	G123	G124	G126	G127	G128
Tare ID	Z39	N110	W59	K23	F18	M90
Mass of tare	8.6	8.6	8.7	8.6	8.6	6.8
Mass wet + tare	237.5	266.3	256.9	204.8	210.6	424.6
Mass dry + tare	178.6	215.5	209.8	155.7	158.5	327.3
Mass water	58.9	50.8	47.1	49.1	52.1	97.3
Mass dry soil	170.0	206.9	201.1	147.1	149.9	320.5
Moisture %	34.6%	24.6%	23.4%	33.4%	34.8%	30.4%

Test Hole	TH23-14	TH23-14	TH23-14	TH23-14	TH23-14	TH23-14
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G129	G130	G131	G132	G133	G134
Tare ID	E07	N93	F66	AC34	N21	W47
Mass of tare	6.8	8.5	8.7	6.7	8.9	8.5
Mass wet + tare	200.9	225.5	201.1	217.5	257.4	263.9
Mass dry + tare	155.5	175.5	152.3	175.0	208.8	216.4
Mass water	45.4	50.0	48.8	42.5	48.6	47.5
Mass dry soil	148.7	167.0	143.6	168.3	199.9	207.9
Moisture %	30.5%	29.9%	34.0%	25.3%	24.3%	22.8%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Moisture Content Report ASTM D2216-98

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-15	TH23-15	TH23-15	TH23-15	TH23-15	TH23-15
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G136	G137	G138	G139	G140	G141
Tare ID	W92	E119	M93	Z02	E06	H73
Mass of tare	8.6	8.6	6.9	6.9	6.9	8.6
Mass wet + tare	234.2	203.2	237.5	226.8	223.0	232.6
Mass dry + tare	177.5	167.3	192.0	185.6	172.3	174.1
Mass water	56.7	35.9	45.5	41.2	50.7	58.5
Mass dry soil	168.9	158.7	185.1	178.7	165.4	165.5
Moisture %	33.6%	22.6%	24.6%	23.1%	30.7%	35.3%

Test Hole	TH23-15	TH23-15	TH23-15	TH23-16	TH23-16	TH23-16
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G142	G143	G144	G146	G147	G148
Tare ID	M77	M94	E08	H41	Z123	I68
Mass of tare	6.7	6.9	6.8	8.6	8.4	6.9
Mass wet + tare	242.5	220.0	216.0	222.8	219.6	438.4
Mass dry + tare	169.5	154.4	144.5	169.6	172.6	327.3
Mass water	73.0	65.6	71.5	53.2	47.0	111.1
Mass dry soil	162.8	147.5	137.7	161.0	164.2	320.4
Moisture %	44.8%	44.5%	51.9%	33.0%	28.6%	34.7%

Test Hole	TH23-16	TH23-16	TH23-16	TH23-16	TH23-16	TH23-16
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G149	G150	G151	G152	G153	G154
Tare ID	E42	M92	W103	E84	E89	P36
Mass of tare	8.5	6.9	8.6	6.7	6.9	8.8
Mass wet + tare	198.6	228.1	217.4	269.5	258.6	282.5
Mass dry + tare	154.8	175.9	167.5	216.6	211.4	234.7
Mass water	43.8	52.2	49.9	52.9	47.2	47.8
Mass dry soil	146.3	169.0	158.9	209.9	204.5	225.9
Moisture %	29.9%	30.9%	31.4%	25.2%	23.1%	21.2%





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-17	TH23-17	TH23-17	TH23-17	TH23-17	TH23-17
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G156	G157	G158	G159	G160	G161
Tare ID	N24	E62	W53.	E17	H35	N04
Mass of tare	8.5	6.8	8.5	6.9	8.5	8.7
Mass wet + tare	216.7	256.0	229.0	238.2	242.1	250.7
Mass dry + tare	162.8	196.7	175.9	187.7	198.2	205.2
Mass water	53.9	59.3	53.1	50.5	43.9	45.5
Mass dry soil	154.3	189.9	167.4	180.8	189.7	196.5
Moisture %	34.9%	31.2%	31.7%	27.9%	23.1%	23.2%

Test Hole	TH23-17	TH23-17	TH23-17	TH23-18	TH23-18	TH23-18
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G162	G163	G164	G166	G167	G168
Tare ID	H65	E13	F135	M10	P21	F153
Mass of tare	8.8	6.8	8.6	6.6	8.4	8.5
Mass wet + tare	281.5	249.5	247.1	231.9	234.9	224.8
Mass dry + tare	227.9	204.1	170.4	173.6	183.6	174.8
Mass water	53.6	45.4	76.7	58.3	51.3	50.0
Mass dry soil	219.1	197.3	161.8	167.0	175.2	166.3
Moisture %	24.5%	23.0%	47.4%	34.9%	29.3%	30.1%

Test Hole	TH23-18	TH23-18	TH23-18	TH23-18	TH23-18	TH23-18
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G169	G170	G171	G172	G173	G174
Tare ID	E87	P31	E37	N80	E19	E54
Mass of tare	6.7	8.4	7.1	8.5	8.5	6.7
Mass wet + tare	224.9	239.1	270.7	283.2	244.9	248.4
Mass dry + tare	175.0	179.8	203.9	232.6	170.1	172.1
Mass water	49.9	59.3	66.8	50.6	74.8	76.3
Mass dry soil	168.3	171.4	196.8	224.1	161.6	165.4
Moisture %	29.6%	34.6%	33.9%	22.6%	46.3%	46.1%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-19	TH23-19	TH23-19	TH23-19	TH23-19	TH23-19
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G176	G177	G178	G179	G180	G181
Tare ID	F127	Z91	E56	N113	AB73	AC15
Mass of tare	8.4	8.6	6.8	8.6	7.1	7.0
Mass wet + tare	234.9	258.4	476.8	203.6	245.5	212.4
Mass dry + tare	182.9	212.6	385.5	167.1	183.4	154.7
Mass water	52.0	45.8	91.3	36.5	62.1	57.7
Mass dry soil	174.5	204.0	378.7	158.5	176.3	147.7
Moisture %	29.8%	22.5%	24.1%	23.0%	35.2%	39.1%

Test Hole	TH23-19	TH23-19	TH23-19	TH23-20	TH23-20	TH23-20
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G182	G183	G184	G186	G187	G188
Tare ID	N61	A39	N85	F71	N83	M39
Mass of tare	8.6	8.5	8.5	8.5	8.7	6.8
Mass wet + tare	231.3	237.8	231.7	246.4	214.9	411.7
Mass dry + tare	164.2	161.1	152.6	179.4	164.5	316.9
Mass water	67.1	76.7	79.1	67.0	50.4	94.8
Mass dry soil	155.6	152.6	144.1	170.9	155.8	310.1
Moisture %	43.1%	50.3%	54.9%	39.2%	32.3%	30.6%

Test Hole	TH23-20	TH23-20	TH23-20	TH23-20	TH23-20	TH23-20
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G189	G190	G191	G192	G193	G194
Tare ID	Z114	N112	D3	P85	E470	AC24
Mass of tare	8.4	8.7	8.4	8.6	8.7	6.8
Mass wet + tare	215.0	236.2	231.5	225.1	235.7	239.2
Mass dry + tare	167.6	179.6	172.6	166.1	190.2	194.0
Mass water	47.4	56.6	58.9	59.0	45.5	45.2
Mass dry soil	159.2	170.9	164.2	157.5	181.5	187.2
Moisture %	29.8%	33.1%	35.9%	37.5%	25.1%	24.1%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

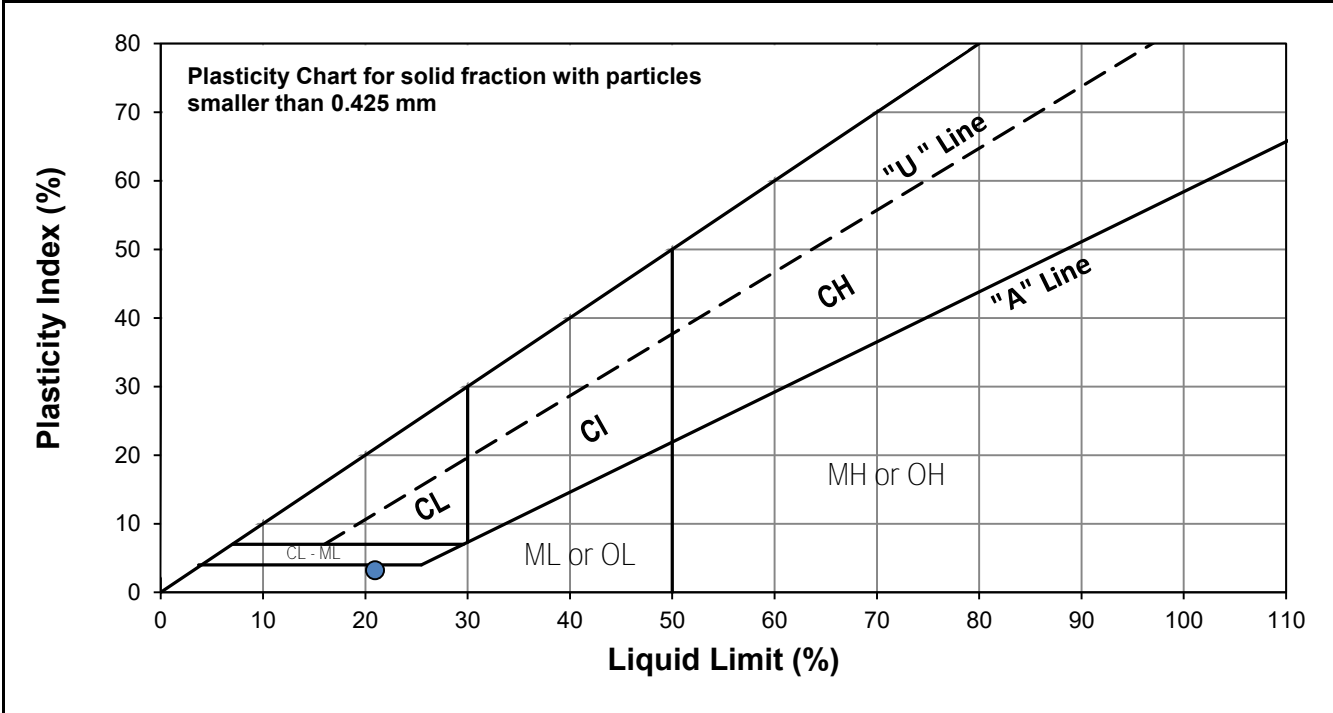
**Test Hole** TH23-11  
**Sample #** G99  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** KF



<b>Liquid Limit</b>	21
<b>Plastic Limit</b>	18
<b>Plasticity Index</b>	3

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	19	26	33
<b>Mass Tare (g)</b>	13.924	14.276	13.981
<b>Mass Wet Soil + Tare (g)</b>	27.782	28.257	29.194
<b>Mass Dry Soil + Tare (g)</b>	25.293	25.838	26.668
<b>Mass Water (g)</b>	2.489	2.419	2.526
<b>Mass Dry Soil (g)</b>	11.369	11.562	12.687
<b>Moisture Content (%)</b>	21.893	20.922	19.910



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.103	13.893			
<b>Mass Wet Soil + Tare (g)</b>	27.179	23.323			
<b>Mass Dry Soil + Tare (g)</b>	25.202	21.907			
<b>Mass Water (g)</b>	1.977	1.416			
<b>Mass Dry Soil (g)</b>	11.099	8.014			
<b>Moisture Content (%)</b>	17.812	17.669			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

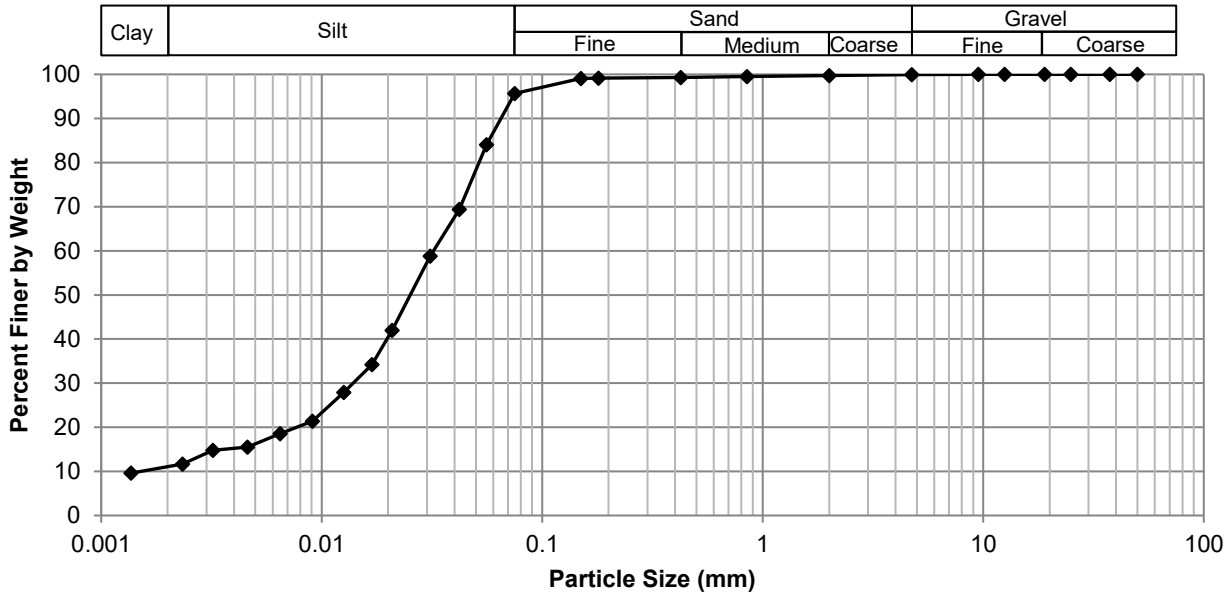
**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-11  
**Sample #** G99  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 11-Jan-24  
**Technician** CK/KF

<b>Gravel</b>	0.1%
<b>Sand</b>	4.2%
<b>Silt</b>	84.8%
<b>Clay</b>	10.9%

**Particle Size Distribution Curve**



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	99.92	0.0750	95.69
37.5	100.00	2.00	99.71	0.0559	84.06
25.0	100.00	0.850	99.53	0.0421	69.41
19.0	100.00	0.425	99.33	0.0311	58.81
12.5	100.00	0.180	99.12	0.0209	41.97
9.50	100.00	0.150	99.07	0.0169	34.22
4.75	99.92	0.075	95.69	0.0126	27.94
				0.0091	21.35
				0.0065	18.59
				0.0046	15.52
				0.0032	14.81
				0.0023	11.65
				0.0014	9.60



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

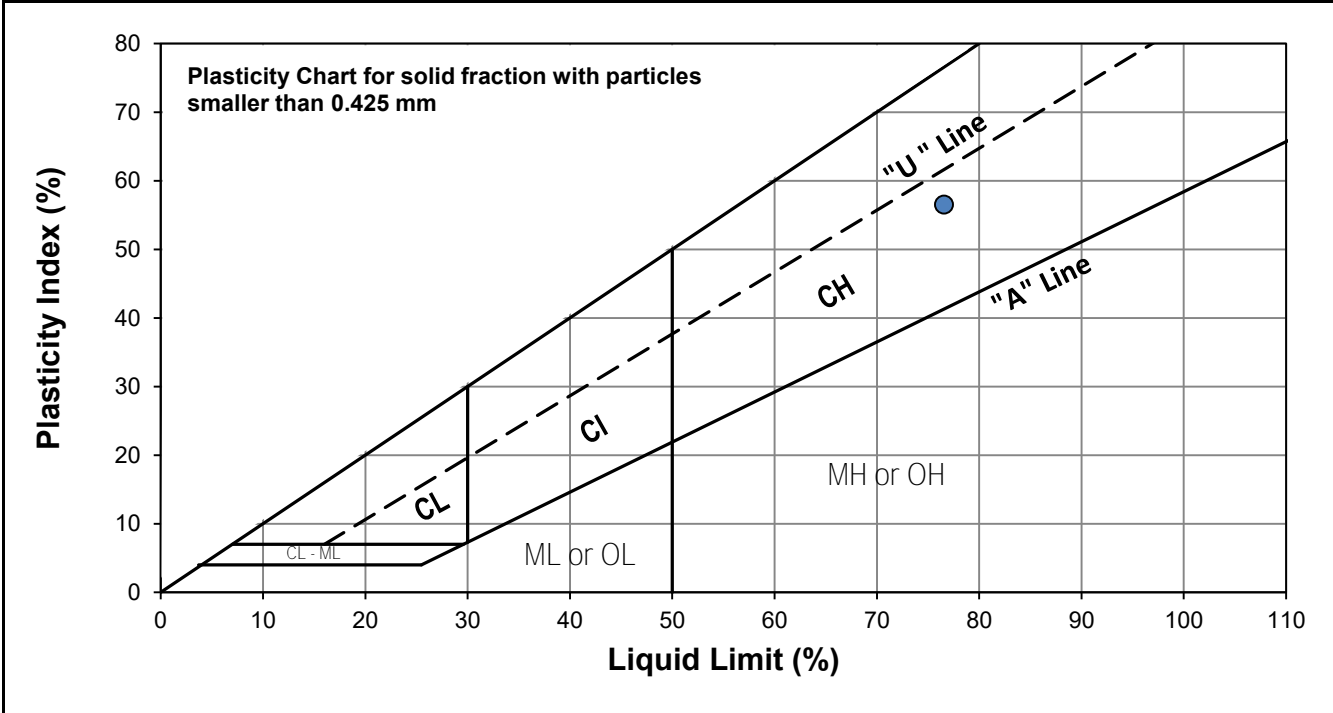


**Test Hole** TH23-14  
**Sample #** G128  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 13-Jan-24  
**Technician** KF/AD

**Liquid Limit** 77  
**Plastic Limit** 20  
**Plasticity Index** 56

**Liquid Limit**

Trial #	1	2	3
Number of Blows (N)	17	21	33
Mass Tare (g)	13.949	13.970	14.205
Mass Wet Soil + Tare (g)	23.174	21.631	23.179
Mass Dry Soil + Tare (g)	19.075	18.271	19.359
Mass Water (g)	4.099	3.360	3.820
Mass Dry Soil (g)	5.126	4.301	5.154
Moisture Content (%)	79.965	78.121	74.117



**Plastic Limit**

Trial #	1	2	3	4	5
Mass Tare (g)	14.264	14.060			
Mass Wet Soil + Tare (g)	21.521	20.924			
Mass Dry Soil + Tare (g)	20.307	19.776			
Mass Water (g)	1.214	1.148			
Mass Dry Soil (g)	6.043	5.716			
Moisture Content (%)	20.089	20.084			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

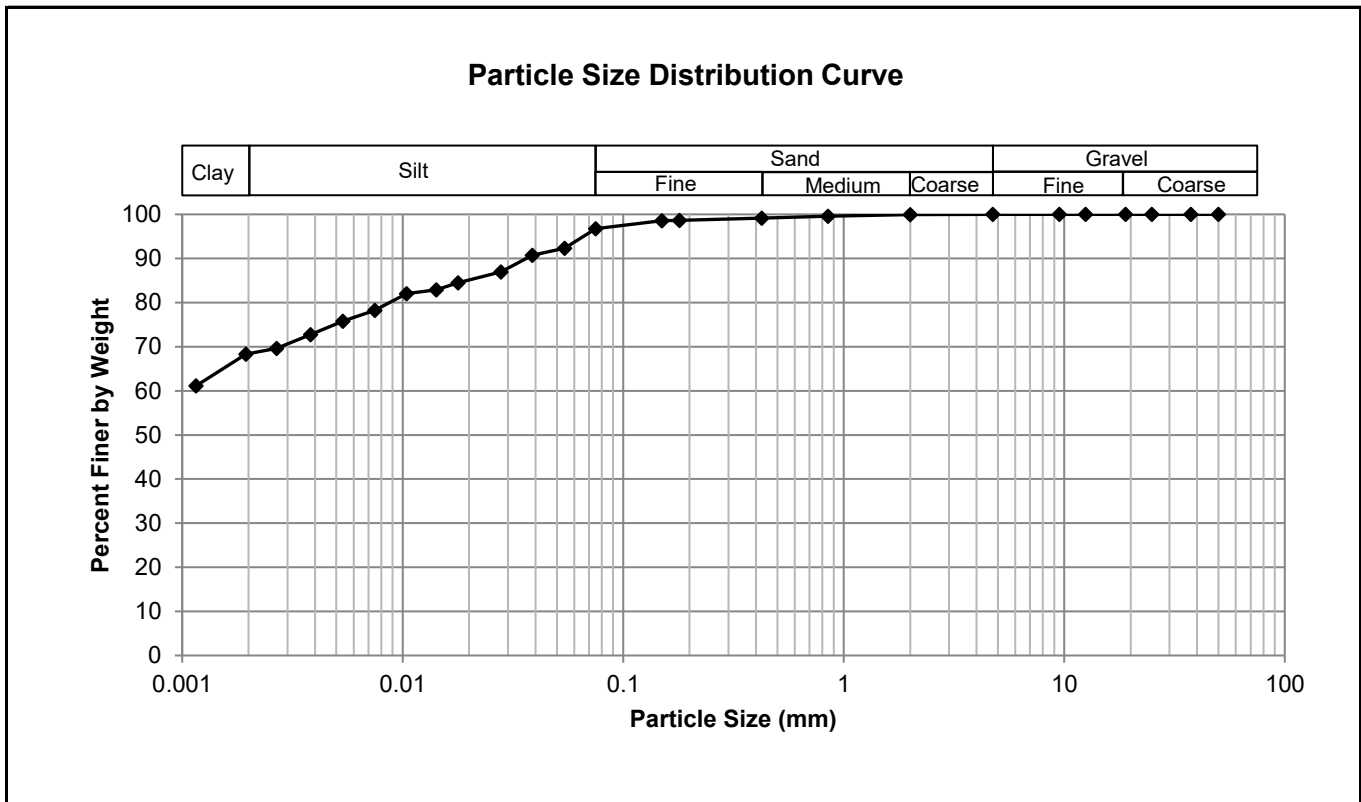
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-14  
**Sample #** G128  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	3.3%
<b>Silt</b>	28.2%
<b>Clay</b>	68.5%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	96.75
37.5	100.00	2.00	99.91	0.0543	92.30
25.0	100.00	0.850	99.57	0.0387	90.74
19.0	100.00	0.425	99.17	0.0279	86.99
12.5	100.00	0.180	98.65	0.0178	84.53
9.50	100.00	0.150	98.57	0.0142	82.93
4.75	100.00	0.075	96.75	0.0104	82.00
				0.0075	78.25
				0.0053	75.78
				0.0038	72.73
				0.0027	69.60
				0.0019	68.35
				0.0012	61.13



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

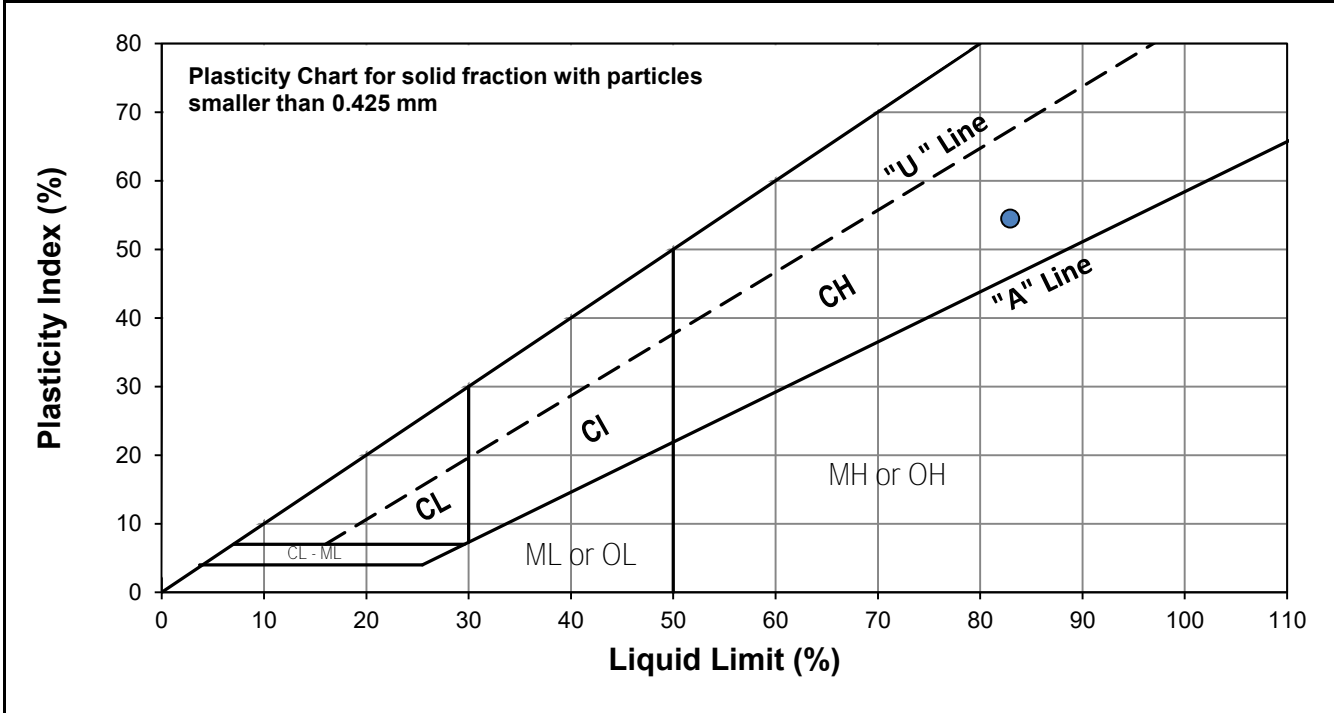


**Test Hole** TH23-16  
**Sample #** G148  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** KM

<b>Liquid Limit</b>	83
<b>Plastic Limit</b>	28
<b>Plasticity Index</b>	54

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	19	25	31
<b>Mass Tare (g)</b>	14.094	14.047	14.024
<b>Mass Wet Soil + Tare (g)</b>	26.441	26.067	26.405
<b>Mass Dry Soil + Tare (g)</b>	20.684	20.607	20.932
<b>Mass Water (g)</b>	5.757	5.460	5.473
<b>Mass Dry Soil (g)</b>	6.590	6.560	6.908
<b>Moisture Content (%)</b>	87.360	83.232	79.227



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.200	14.107			
<b>Mass Wet Soil + Tare (g)</b>	20.427	20.457			
<b>Mass Dry Soil + Tare (g)</b>	19.048	19.048			
<b>Mass Water (g)</b>	1.379	1.409			
<b>Mass Dry Soil (g)</b>	4.848	4.941			
<b>Moisture Content (%)</b>	28.445	28.516			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

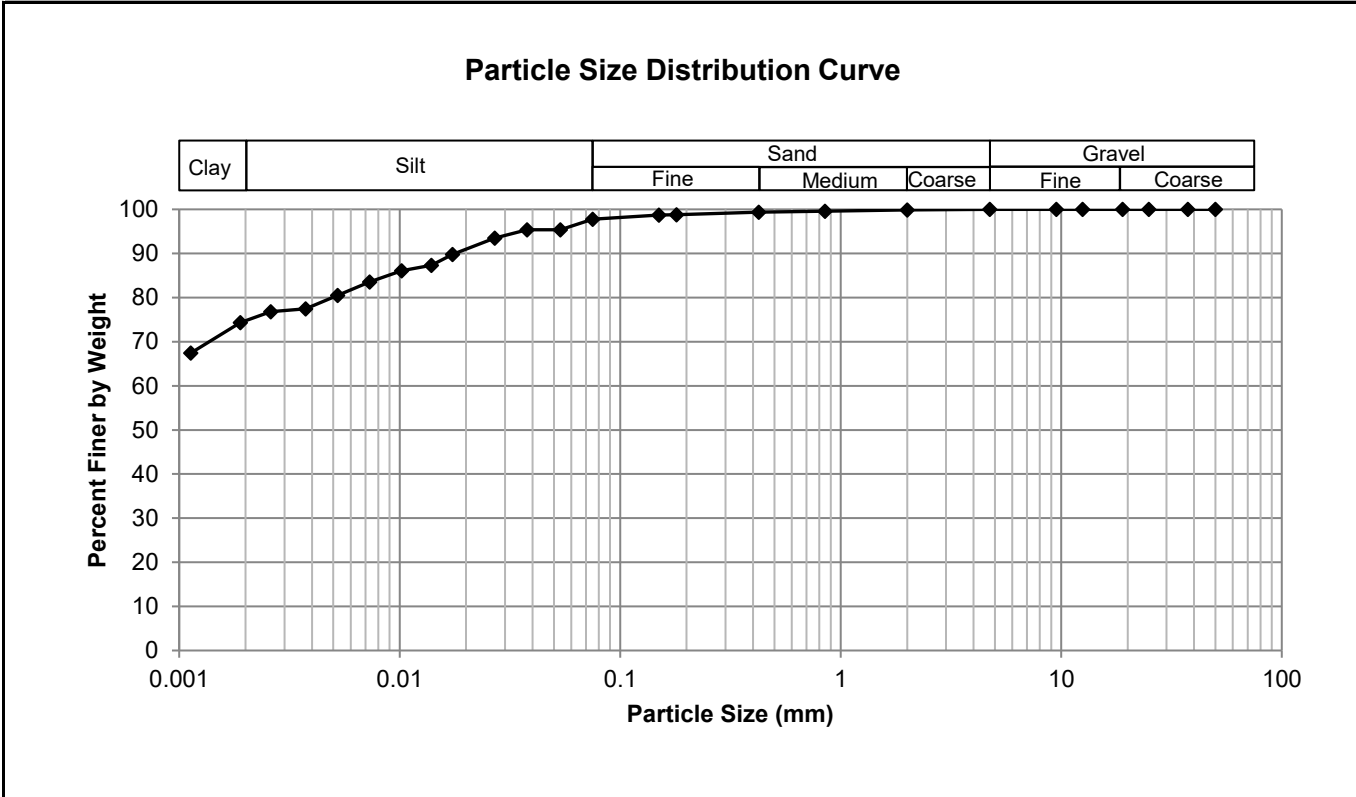
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-16  
**Sample #** G148  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	2.2%
<b>Silt</b>	23.0%
<b>Clay</b>	74.8%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	97.78
37.5	100.00	2.00	99.84	0.0535	95.39
25.0	100.00	0.850	99.61	0.0379	95.39
19.0	100.00	0.425	99.33	0.0270	93.52
12.5	100.00	0.180	98.82	0.0174	89.81
9.50	100.00	0.150	98.68	0.0139	87.32
4.75	100.00	0.075	97.78	0.0102	86.07
				0.0073	83.57
				0.0052	80.49
				0.0037	77.45
				0.0026	76.83
				0.0019	74.33
				0.0011	67.42





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

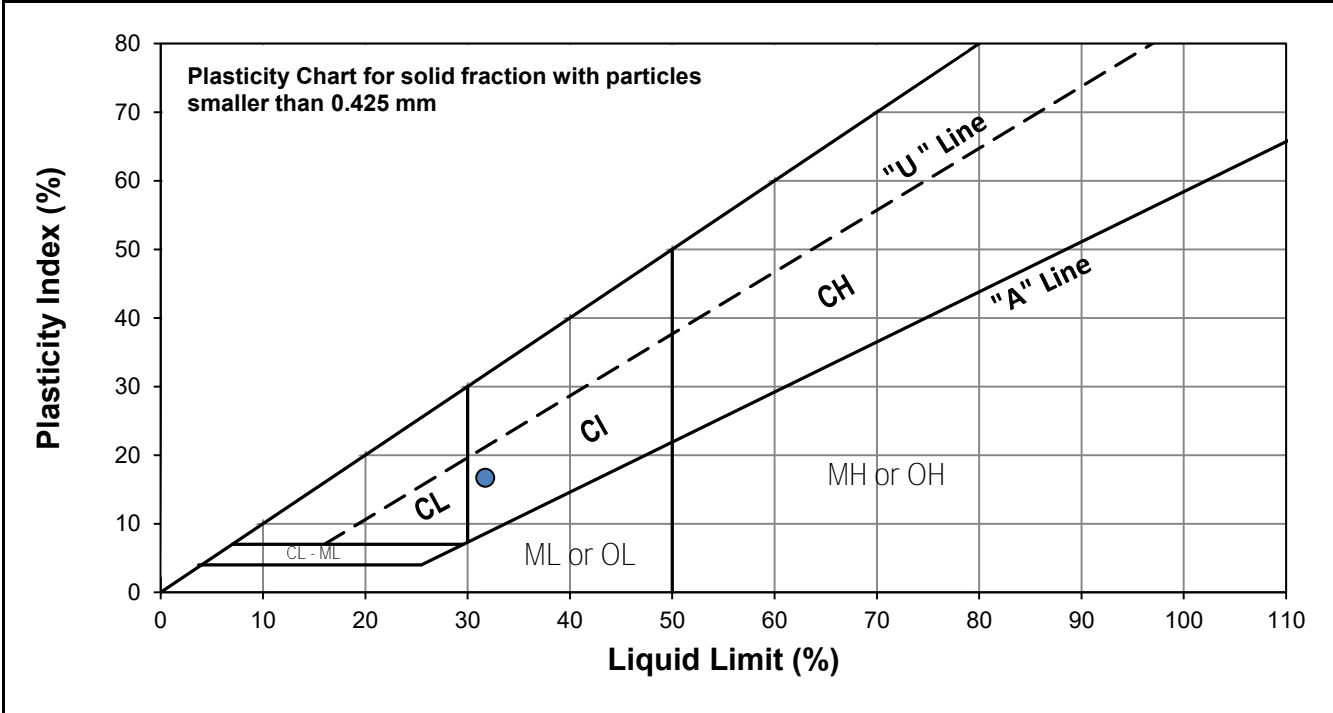


**Test Hole** TH23-19  
**Sample #** G178  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** DS

<b>Liquid Limit</b>	32
<b>Plastic Limit</b>	15
<b>Plasticity Index</b>	17

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	18	22	34
<b>Mass Tare (g)</b>	14.096	14.047	14.116
<b>Mass Wet Soil + Tare (g)</b>	23.598	21.491	24.846
<b>Mass Dry Soil + Tare (g)</b>	21.216	19.667	22.368
<b>Mass Water (g)</b>	2.382	1.824	2.478
<b>Mass Dry Soil (g)</b>	7.120	5.620	8.252
<b>Moisture Content (%)</b>	33.455	32.456	30.029



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.229	14.120			
<b>Mass Wet Soil + Tare (g)</b>	22.686	22.690			
<b>Mass Dry Soil + Tare (g)</b>	21.572	21.582			
<b>Mass Water (g)</b>	1.114	1.108			
<b>Mass Dry Soil (g)</b>	7.343	7.462			
<b>Moisture Content (%)</b>	15.171	14.849			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

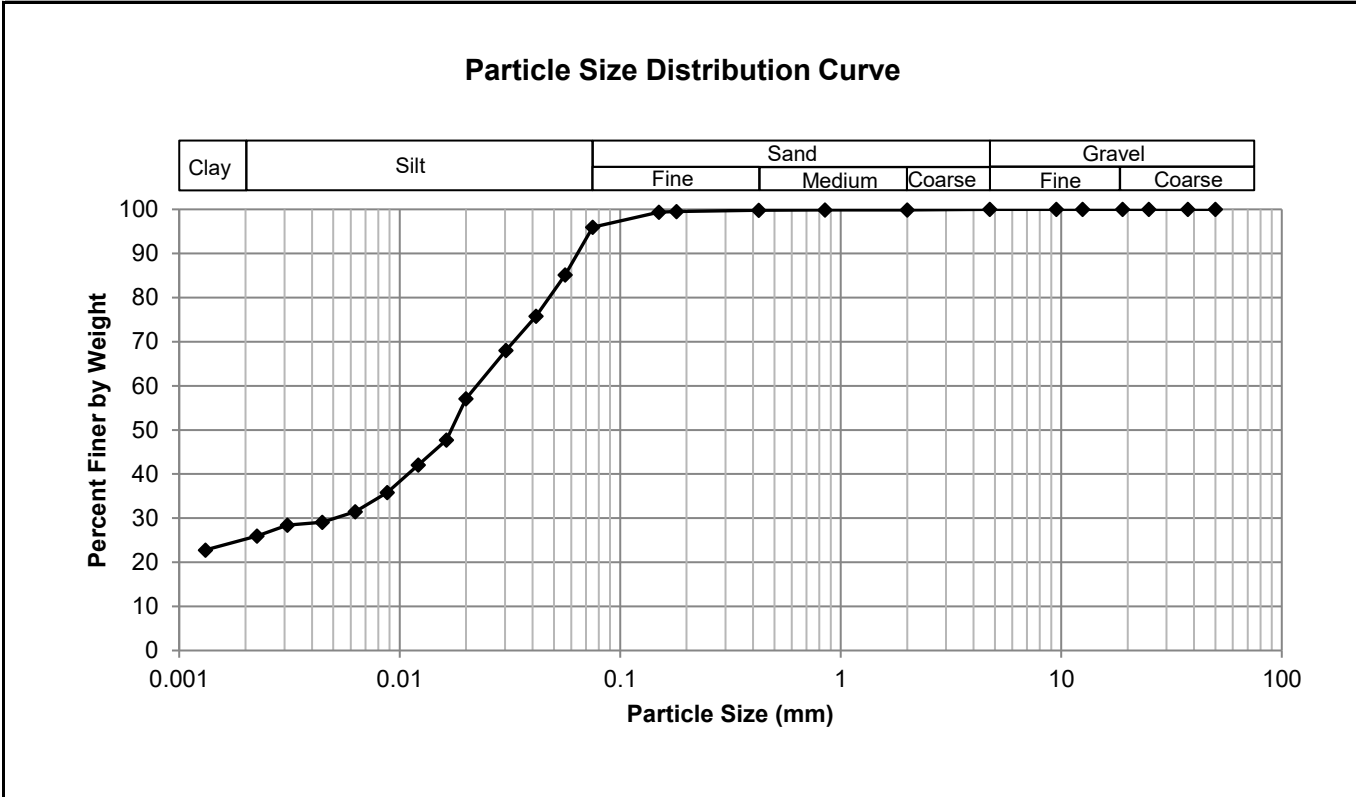
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-19  
**Sample #** G178  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	4.0%
<b>Silt</b>	70.9%
<b>Clay</b>	25.1%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	95.98
37.5	100.00	2.00	99.90	0.0562	85.18
25.0	100.00	0.850	99.88	0.0415	75.81
19.0	100.00	0.425	99.80	0.0303	68.00
12.5	100.00	0.180	99.48	0.0200	57.06
9.50	100.00	0.150	99.40	0.0163	47.74
4.75	100.00	0.075	95.98	0.0122	42.07
				0.0088	35.82
				0.0063	31.49
				0.0045	29.08
				0.0031	28.46
				0.0023	25.96
				0.0013	22.79



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

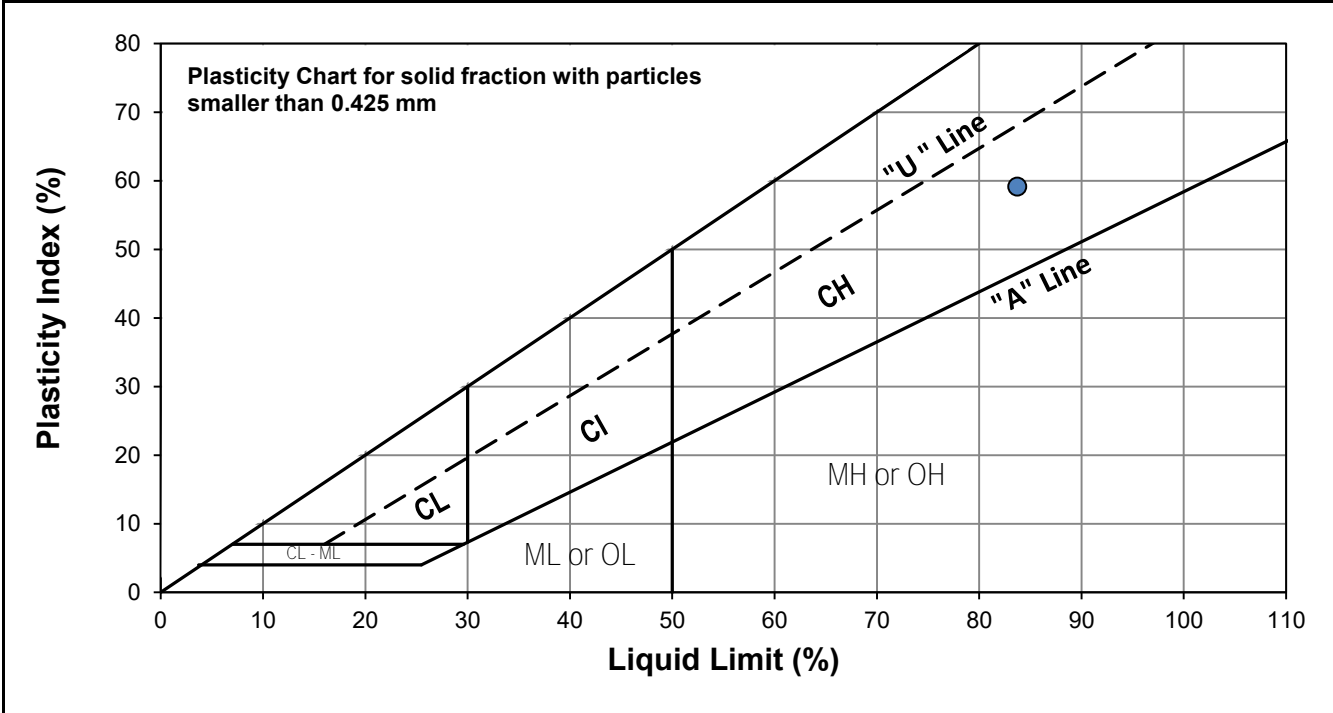


**Test Hole** TH23-20  
**Sample #** G188  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 12-Jan-24  
**Technician** KF

<b>Liquid Limit</b>	84
<b>Plastic Limit</b>	25
<b>Plasticity Index</b>	59

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	17	29	34
<b>Mass Tare (g)</b>	13.783	14.123	14.228
<b>Mass Wet Soil + Tare (g)</b>	23.598	22.286	22.302
<b>Mass Dry Soil + Tare (g)</b>	19.066	18.579	18.668
<b>Mass Water (g)</b>	4.532	3.707	3.634
<b>Mass Dry Soil (g)</b>	5.283	4.456	4.440
<b>Moisture Content (%)</b>	85.785	83.191	81.847



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	14.141	13.874			
<b>Mass Wet Soil + Tare (g)</b>	22.775	21.886			
<b>Mass Dry Soil + Tare (g)</b>	21.093	20.282			
<b>Mass Water (g)</b>	1.682	1.604			
<b>Mass Dry Soil (g)</b>	6.952	6.408			
<b>Moisture Content (%)</b>	24.194	25.031			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

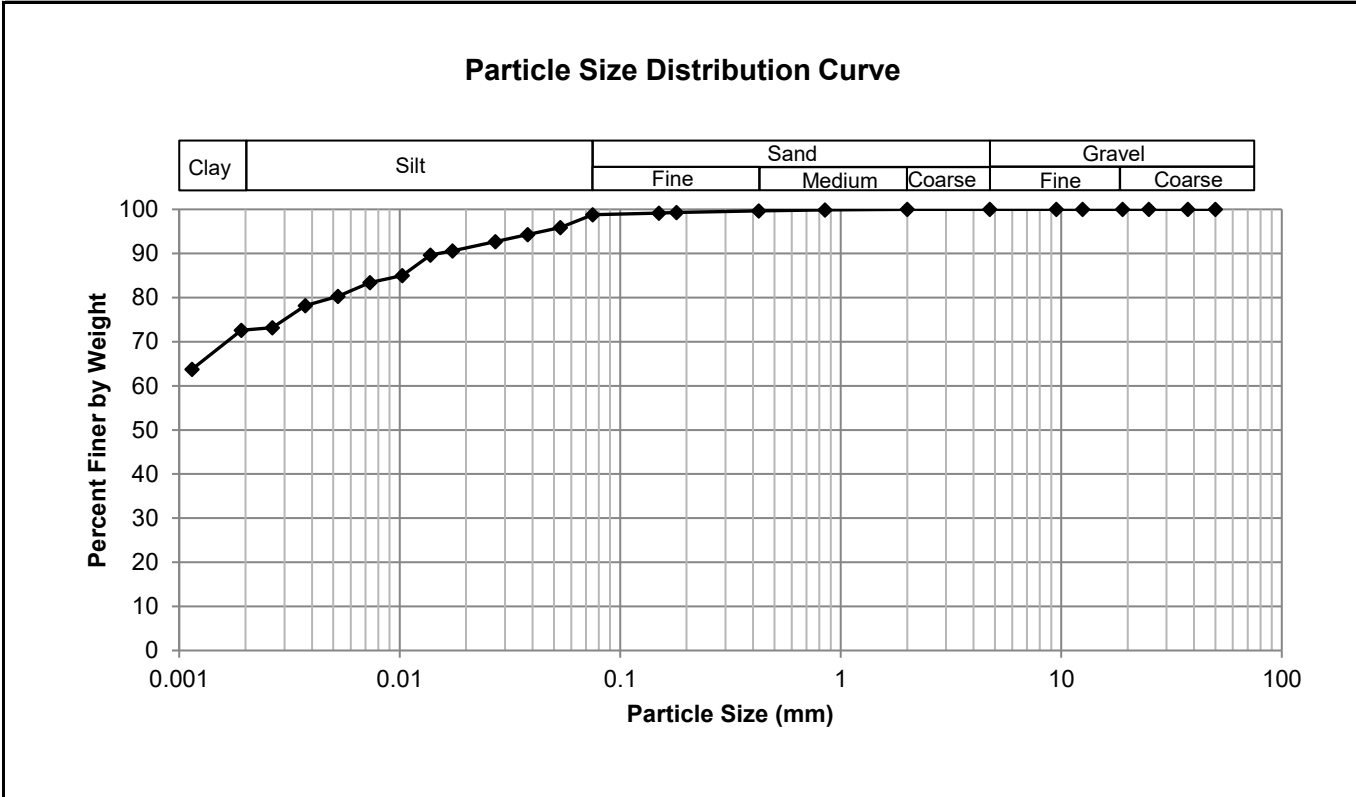
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-20  
**Sample #** G188  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	1.2%
<b>Silt</b>	26.1%
<b>Clay</b>	72.7%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	98.78
37.5	100.00	2.00	100.00	0.0535	95.85
25.0	100.00	0.850	99.86	0.0381	94.29
19.0	100.00	0.425	99.67	0.0272	92.72
12.5	100.00	0.180	99.28	0.0173	90.58
9.50	100.00	0.150	99.18	0.0138	89.64
4.75	100.00	0.075	98.78	0.0103	85.00
				0.0073	83.39
				0.0052	80.31
				0.0037	78.21
				0.0026	73.21
				0.0019	72.58
				0.0011	63.78



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Standard Proctor Compaction Test ASTM D698-12 (2021)

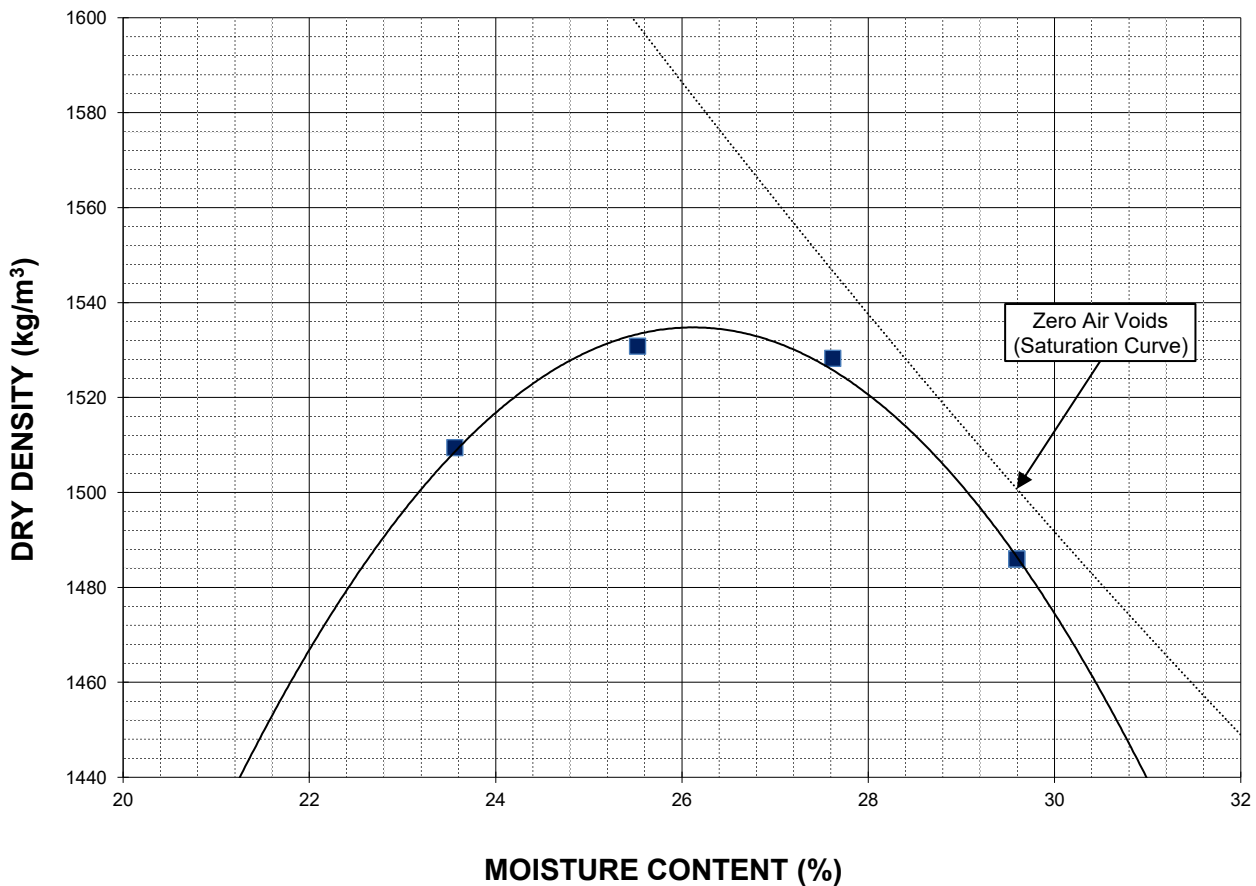
**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Sample #** L24-001  
**Source** TH23-11 (1.5 m - 2.1 m)  
**Material** Clay  
**Sample Date** 20-Dec-23  
**Test Date** 04-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1535
<b>Optimum Moisture (%)</b>	26.1

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1865	1922	1950	1926	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1509	1531	1528	1486	
<b>Moisture Content (%)</b>	23.6	25.5	27.6	29.6	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-11 (1.5 m - 2.1 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-09
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1535 kg/m <sup>3</sup>
Optimum Moisture Content	26.1 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1465 kg/m <sup>3</sup>
Initial Moisture Content	26.5 %
Relative Density	95.5 % SPMD

**Soaking Results**

Surcharge	4.54 kg
Swell	1.7 %
Moisture Content in top 25 mm	39.2 %
Immersion Period	96 h

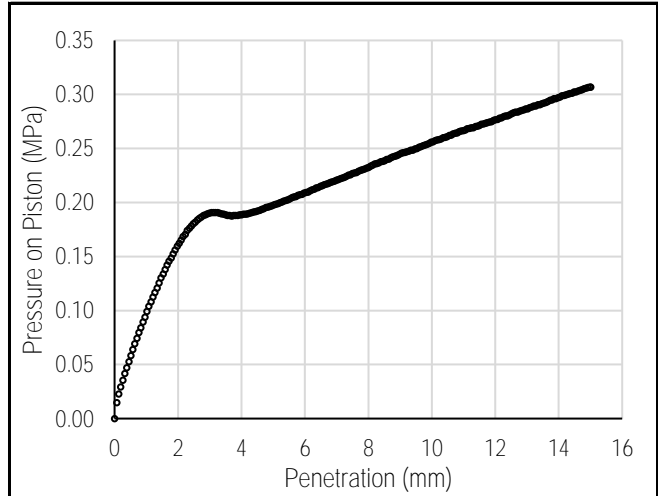
**CBR Results**

CBR at 2.54 mm	2.6 %
CBR at 5.08 mm	1.9 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.07	0.07
1.27	0.12	0.12
1.91	0.16	0.16
2.54	0.18	0.18
3.18	0.19	0.19
3.81	0.19	0.19
4.45	0.19	0.19
5.08	0.20	0.20
7.62	0.23	0.23
10.16	0.26	0.26
12.70	0.28	0.28

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Standard Proctor Compaction Test ASTM D698-12 (2021)

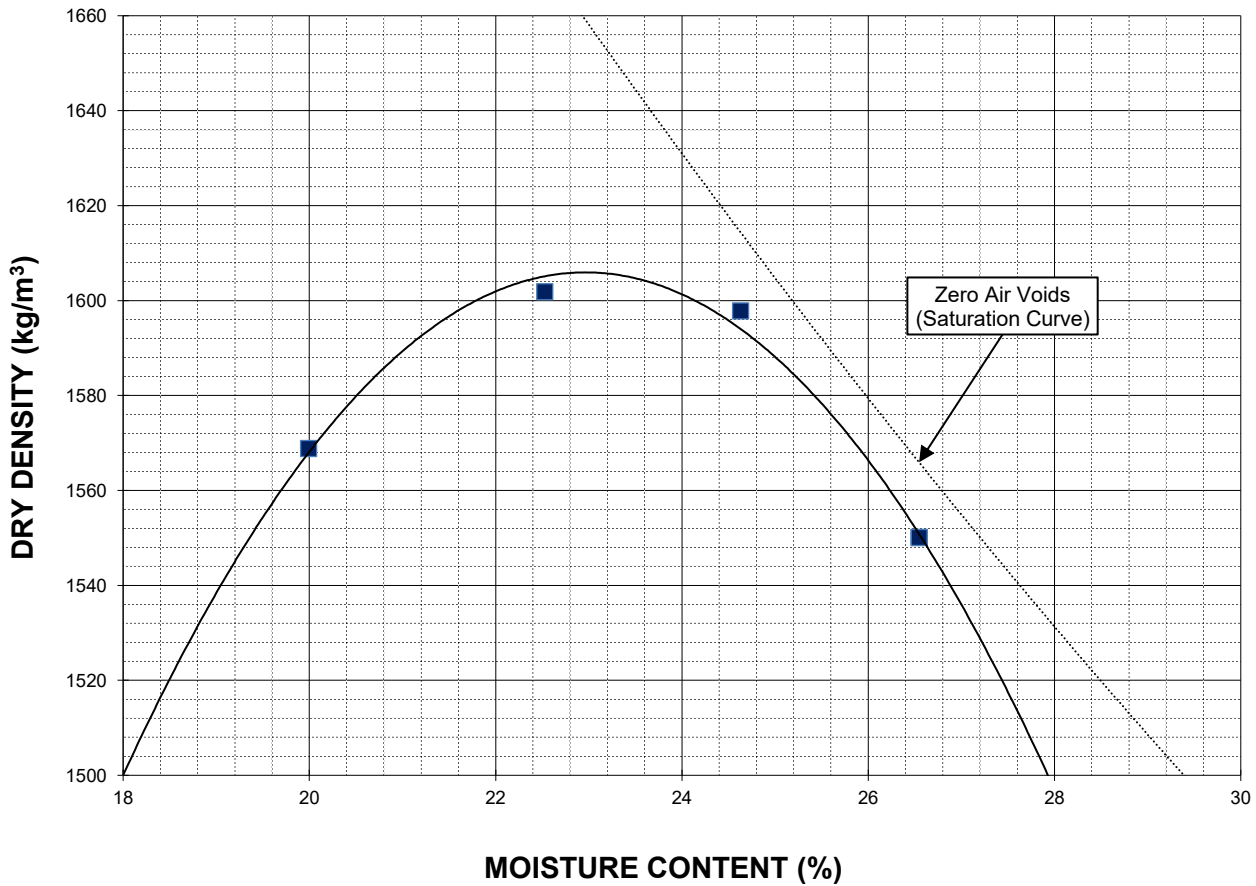


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-13 (1.5 m - 2.1 m)  
**Material** Clay  
**Sample Date** 20-Dec-23  
**Test Date** 04-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1606
<b>Optimum Moisture (%)</b>	23.0

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1883	1963	1991	1962	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1569	1602	1598	1550	
<b>Moisture Content (%)</b>	20.0	22.5	24.6	26.5	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-13 (1.5 m - 2.1 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-09
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1606 kg/m <sup>3</sup>
Optimum Moisture Content	23.0 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1525 kg/m <sup>3</sup>
Initial Moisture Content	23.2 %
Relative Density	95.0 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	2.2 %
Moisture Content in top 25 mm	35.1 %
Immersion Period	96 h

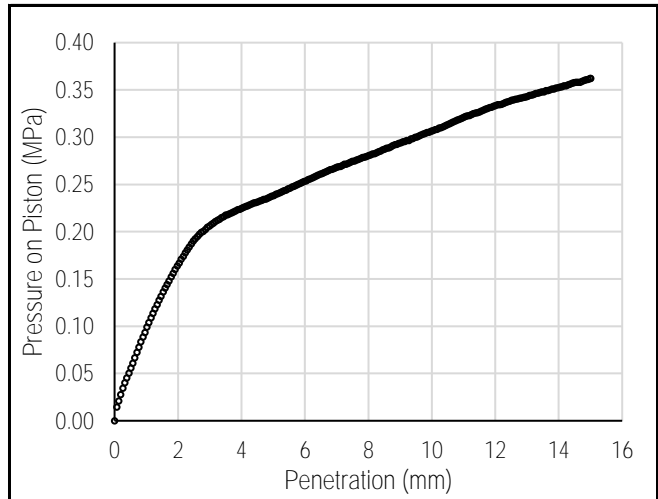
**CBR Results**

CBR at 2.54 mm	2.8 %
CBR at 5.08 mm	2.3 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.07	0.07
1.27	0.12	0.12
1.91	0.16	0.16
2.54	0.19	0.19
3.18	0.21	0.21
3.81	0.22	0.22
4.45	0.23	0.23
5.08	0.24	0.24
7.62	0.28	0.28
10.16	0.31	0.31
12.70	0.34	0.34

**Load/Penetration Curve**



**Comments:**





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Standard Proctor Compaction Test ASTM D698-12 (2021)

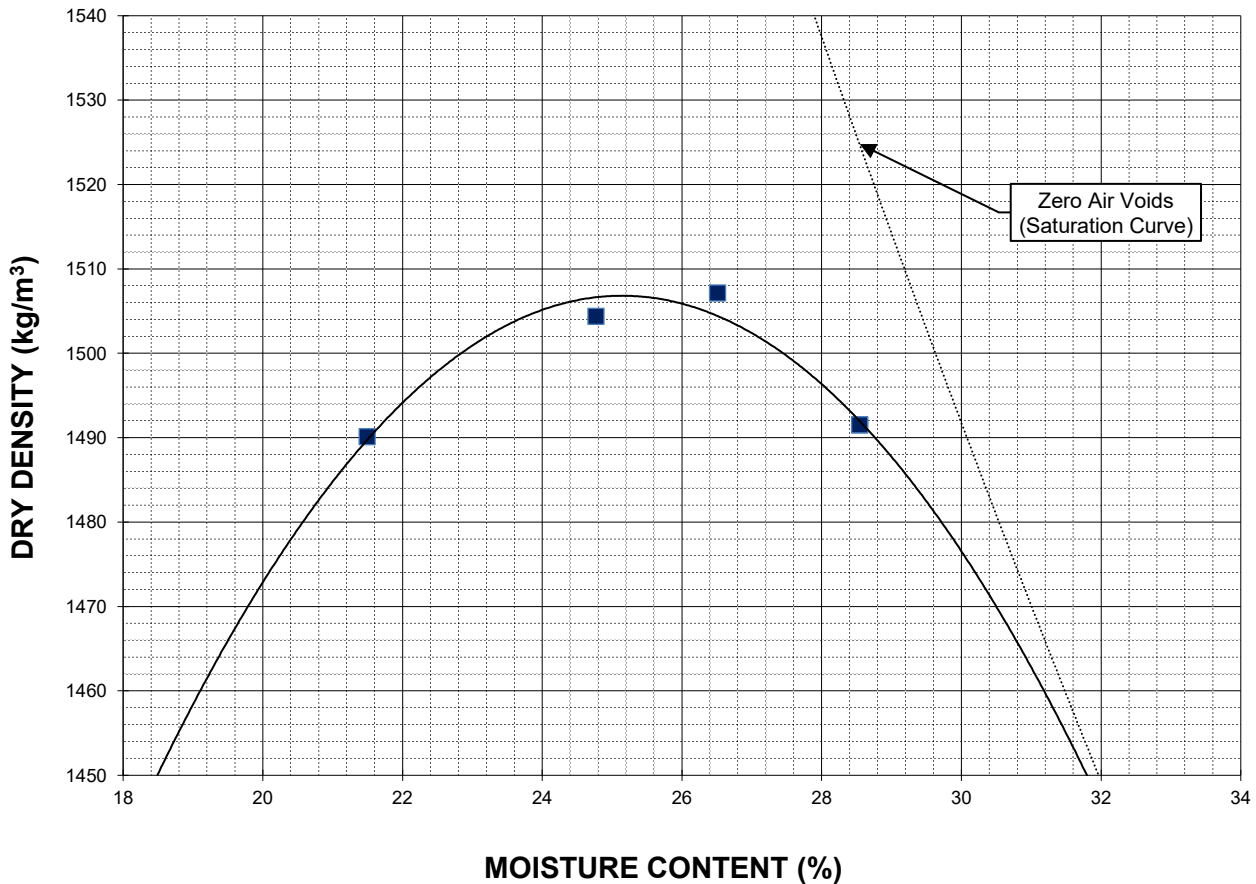


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-13 (0.9 m - 1.5 m), TH23-14 (0.9 m - 2.1 m), TH23-15 (0.9 m - 2.1 m)  
**Material** Clay  
**Sample Date** 20-Dec-23  
**Test Date** 11-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1507
<b>Optimum Moisture (%)</b>	25.1

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1810	1877	1907	1917	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1490	1504	1507	1492	
<b>Moisture Content (%)</b>	21.5	24.8	26.5	28.5	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-13 (0.9 m - 1.5 m), TH23-14 (0.9 m - 2.1 m), TH23-15 (0.9 m - 2.1 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor-Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-13
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1507 kg/m <sup>3</sup>
Optimum Moisture Content	25.1 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1432 kg/m <sup>3</sup>
Initial Moisture Content	25.4 %
Relative Density	95.0 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	2.4 %
Moisture Content in top 25 mm	43.6 %
Immersion Period	96 h

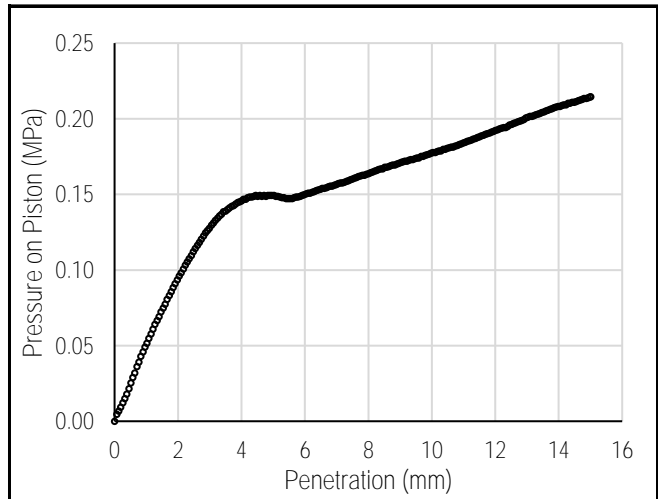
**CBR Results**

CBR at 2.54 mm	1.7 %
CBR at 5.08 mm	1.4 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.03	0.03
1.27	0.06	0.06
1.91	0.09	0.09
2.54	0.11	0.11
3.18	0.13	0.13
3.81	0.14	0.14
4.45	0.15	0.15
5.08	0.15	0.15
7.62	0.16	0.16
10.16	0.18	0.18
12.70	0.20	0.20

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Standard Proctor Compaction Test**  
**ASTM D698-12 (2021)**

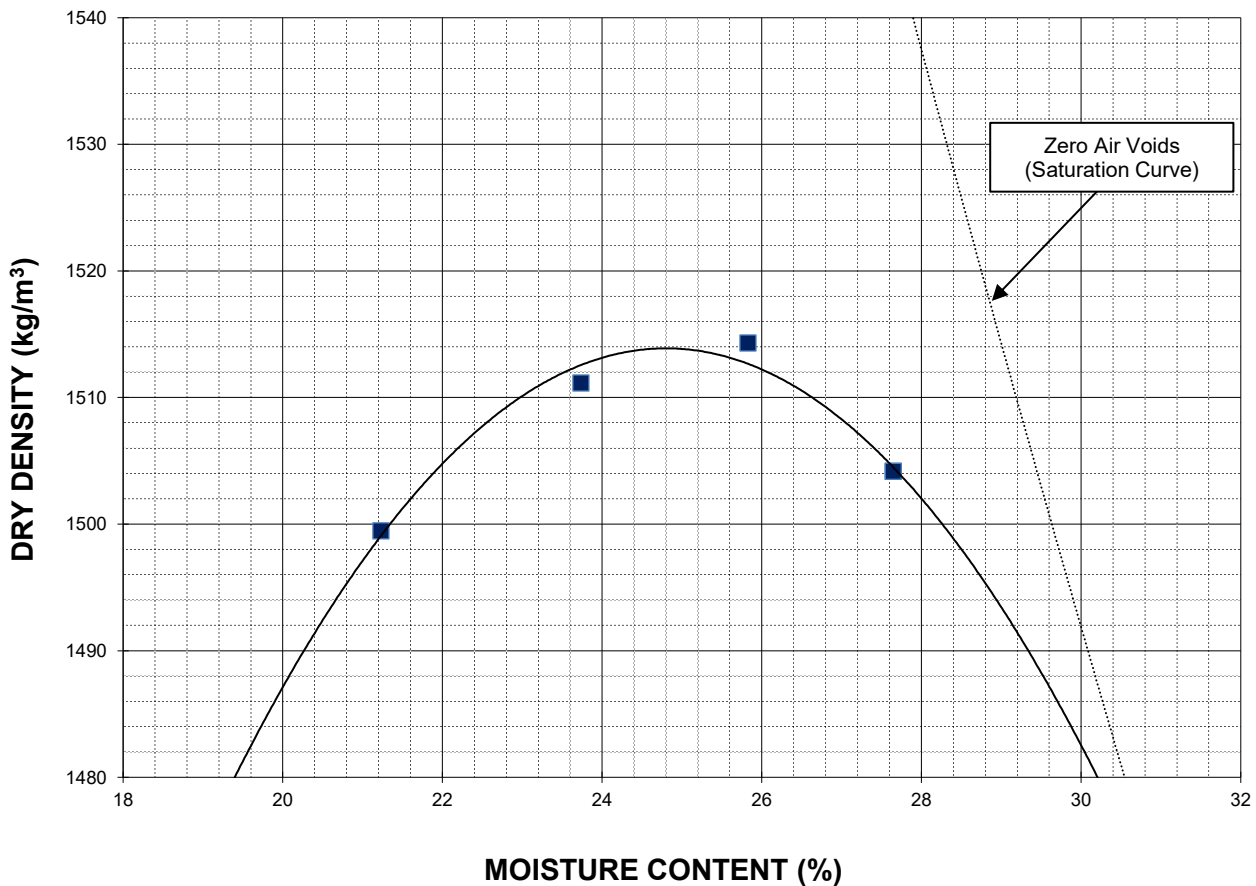


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-17 (0.9 m - 1.5 m, TH23-16 (1.5 m - 2.1 m)  
**Material** Clay

<b>Sample Date</b>	21-Dec-23	<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1514
<b>Test Date</b>	11-Jan-24	<b>Optimum Moisture (%)</b>	24.8
<b>Technician</b>	AD		

Trial Number	1	2	3	4
<b>Wet Density (kg/m<sup>3</sup>)</b>	1818	1870	1905	1920
<b>Dry Density (kg/m<sup>3</sup>)</b>	1499	1511	1514	1504
<b>Moisture Content (%)</b>	21.2	23.7	25.8	27.6



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-17 (0.9 m - 1.5 m, TH23-16 (1.5 m - 2.1 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor-Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-21
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-13
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1514 kg/m <sup>3</sup>
Optimum Moisture Content	24.8 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1442 kg/m <sup>3</sup>
Initial Moisture Content	24.8 %
Relative Density	95.2 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	2.5 %
Moisture Content in top 25 mm	43.1 %
Immersion Period	96 h

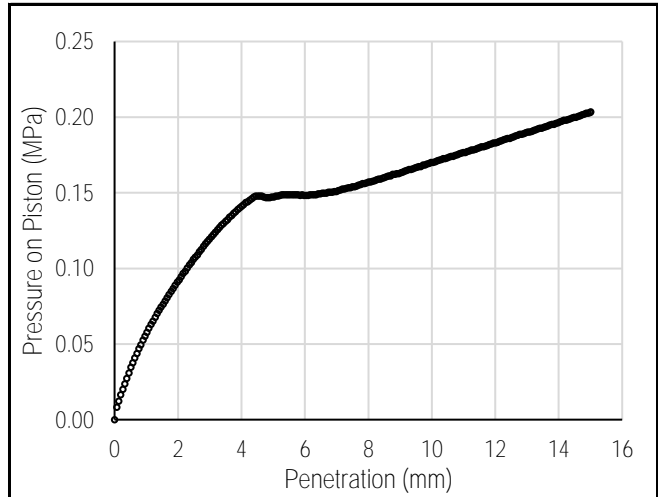
**CBR Results**

CBR at 2.54 mm	1.6 %
CBR at 5.08 mm	1.4 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.04	0.04
1.27	0.07	0.07
1.91	0.09	0.09
2.54	0.11	0.11
3.18	0.12	0.12
3.81	0.14	0.14
4.45	0.15	0.15
5.08	0.15	0.15
7.62	0.15	0.15
10.16	0.17	0.17
12.70	0.19	0.19

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Standard Proctor Compaction Test ASTM D698-12 (2021)

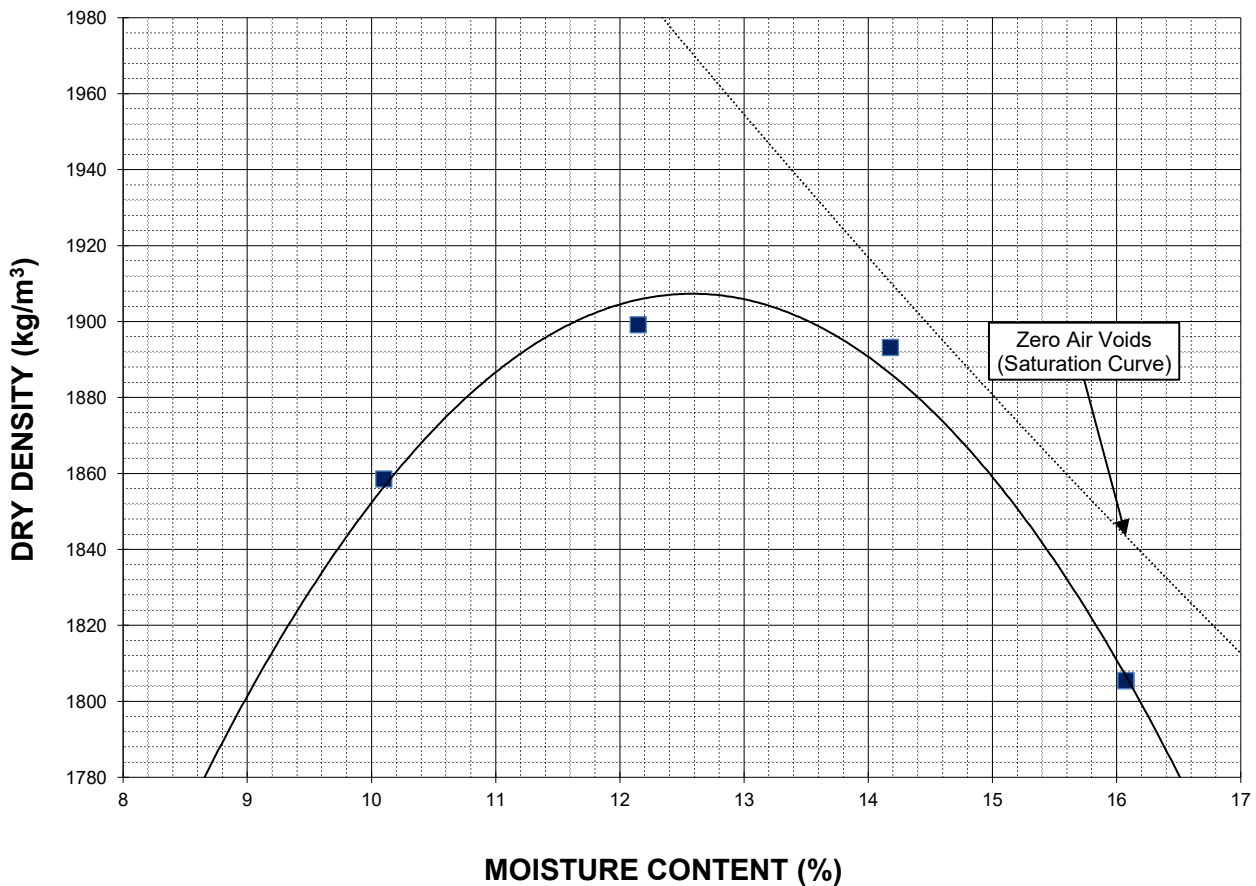
**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Sample #** L24-001  
**Source** TH23-19 (0.9 m - 1.5 m), TH23-11 (0.9 m - 1.5 m)  
**Material** Silt  
**Sample Date** 20-Dec-23  
**Test Date** 09-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1907
<b>Optimum Moisture (%)</b>	12.6

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	2046	2130	2162	2096	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1859	1899	1893	1805	
<b>Moisture Content (%)</b>	10.1	12.1	14.2	16.1	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-19 (0.9 m - 1.5 m), TH23-11 (0.9 m - 1.5 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Silt
<b>Project</b>	RFP 547-2023 McGregor-Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-20
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-11
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density            1907 kg/m<sup>3</sup>  
 Optimum Moisture Content      12.6 %  
 Material Retained on 19 mm Sieve    0.0 %

**CBR Sample Compaction**

Dry Density                            1817 kg/m<sup>3</sup>  
 Initial Moisture Content            12.6 %  
 Relative Density                      95.3 % SPMD

**Soaking Results**

Surcharge                            4.54 kg  
 Swell                                    0.5 %  
 Moisture Content in top 25 mm    20.5 %  
 Immersion Period                    95 h

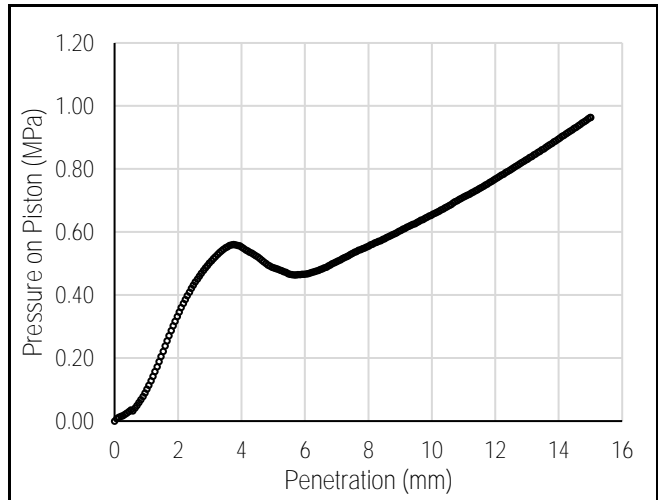
**CBR Results**

CBR at 2.54 mm                      7.4 %  
 CBR at 5.08 mm                      4.5 %  
 Zero Correction                      0.55 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.04	0.14
1.27	0.16	0.30
1.91	0.32	0.43
2.54	0.44	0.51
3.18	0.52	0.56
3.81	0.56	0.53
4.45	0.52	0.49
5.08	0.48	0.46
7.62	0.54	0.56
10.16	0.66	0.70
12.70	0.81	0.85

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
1712 St. James Street  
Winnipeg, MB R3H 0L3  
Tel: 204.975.9433 Fax: 204.975.9435

# Standard Proctor Compaction Test

## ASTM D698-12 (2021)

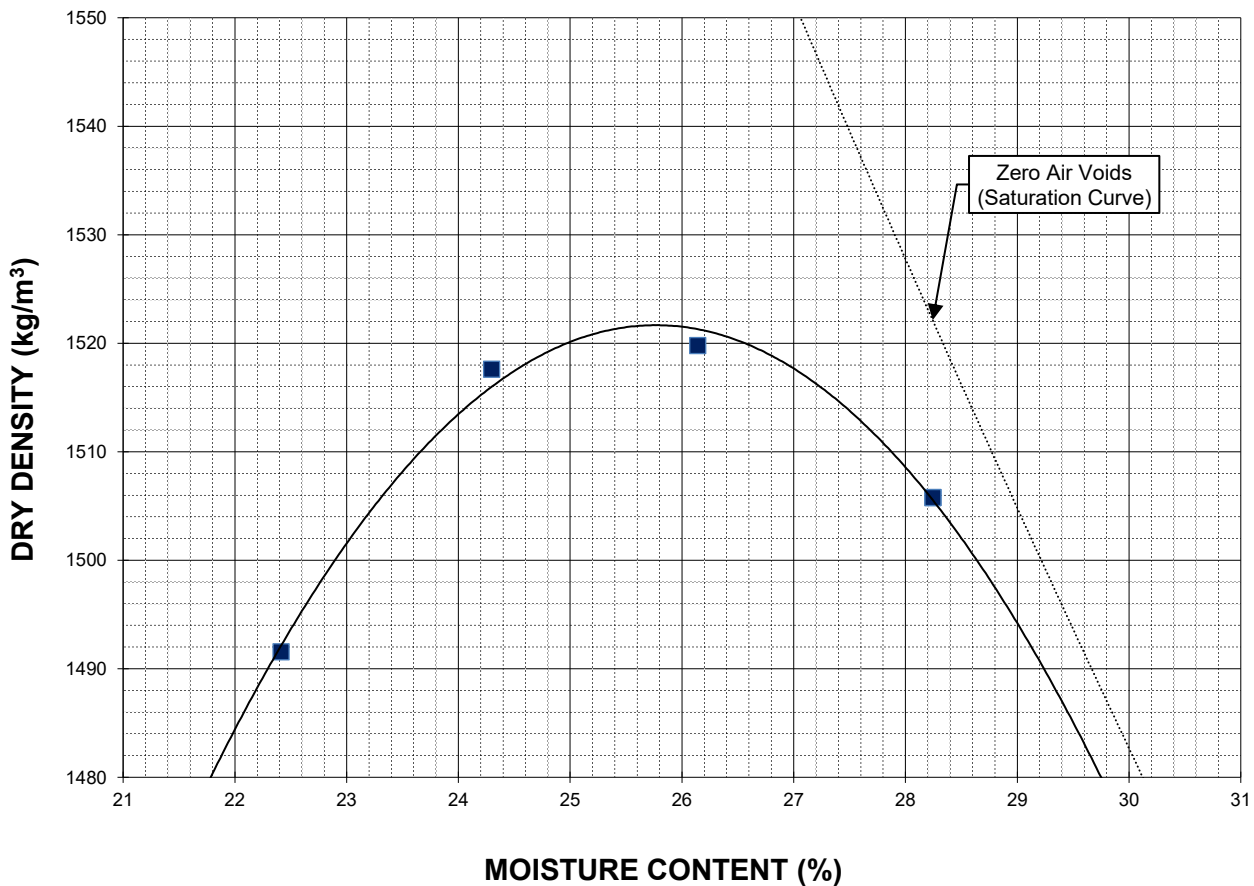


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-20 (0.9 m - 2.1 m), TH23-19 (1.5 m - 2.1 m)  
**Material** Clay  
**Sample Date** 21-Dec-23

<b>Test Date</b> 09-Jan-24	<b>Maximum Dry Density (kg/m<sup>3</sup>)</b> 1522
<b>Technician</b> AD	<b>Optimum Moisture (%)</b> 25.8

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1826	1886	1917	1931	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1492	1518	1520	1506	
<b>Moisture Content (%)</b>	22.4	24.3	26.1	28.2	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-20 (0.9 m - 2.1 m), TH23-19 (1.5 m - 2.1 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor-Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-21
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-11
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1522 kg/m <sup>3</sup>
Optimum Moisture Content	25.8 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1450 kg/m <sup>3</sup>
Initial Moisture Content	25.7 %
Relative Density	95.3 % SPMD

**Soaking Results**

Surcharge	4.54 kg
Swell	2.6 %
Moisture Content in top 25 mm	45.2 %
Immersion Period	94 h

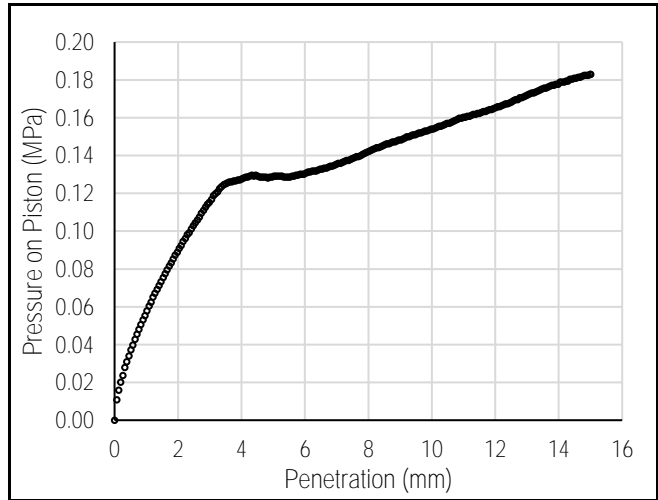
**CBR Results**

CBR at 2.54 mm	1.5 %
CBR at 5.08 mm	1.3 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.04	0.04
1.27	0.07	0.07
1.91	0.09	0.09
2.54	0.10	0.10
3.18	0.12	0.12
3.81	0.13	0.13
4.45	0.13	0.13
5.08	0.13	0.13
7.62	0.14	0.14
10.16	0.16	0.16
12.70	0.17	0.17

**Load/Penetration Curve**



**Comments:**





Photo 1: Pavement Core Sample at Test Hole TH23-11



Photo 2: Pavement Core Sample at Test Hole TH23-12



Photo 3: Pavement Core Sample at Test Hole TH23-13



Photo 4: Pavement Core Sample at Test Hole TH23-14



Photo 5: Pavement Core Sample at Test Hole TH23-15



Photo 6: Pavement Core Sample at Test Hole TH23-16



Photo 7: Pavement Core Sample at Test Hole TH23-17



Photo 8: Pavement Core Sample at Test Hole TH23-18



Photo 9: Pavement Core Sample at Test Hole TH23-19



Photo 10: Pavement Core Sample at Test Hole TH23-20

**Appendix C**  
**Test Hole Logs, Summary Table, Lab Testing Results and**  
**Photographs of Pavement Core Samples**  
**Inkster Boulevard Westbound– McPhillips Street to Winginton**  
**Street**

---

## GENERAL NOTES

- Classifications are based on the Unified Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.
- Descriptions on these test hole logs apply only at the specific test hole locations and at the time the test holes were drilled. Variability of soil and groundwater conditions may exist between test hole locations.
- When the following classification terms are used in this report or test hole logs, the primary and secondary soil fractions may be visually estimated.

Major Divisions	USCS Classification	Symbols	Typical Names	Laboratory Classification Criteria	Particle Size	Material				
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than 4.75 mm)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve, depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:  Less than 5 percent..... GW, GP, SW, SP More than 12 percent..... GM, GC, SM, SC 6 to 12 percent..... Borderline cases requiring dual symbols*	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	ASTM Sieve sizes #10 to #4 #40 to #10 #200 to #40 < #200				
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines				Not meeting all gradation requirements for GW			
		GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols				
		GC	Clayey gravels, gravel-sand-silt mixtures		Atterberg limits above "A" line or P.I. greater than 7					
	Sands (More than half of coarse fraction is smaller than 4.75 mm)	Clean sands (Little or no fines)	SW		Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	mm 2.00 to 4.75 0.425 to 2.00 0.075 to 0.425 < 0.075			
			SP		Poorly-graded sands, gravelly sands, little or no fines			Not meeting all gradation requirements for SW		
		Sands with fines (Appreciable amount of fines)	SM		Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols			
			SC		Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7				
			Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)		Sils and Clays (Liquid limit less than 50)	ML		Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	<b>Plasticity Chart</b> 	mm > 300
						CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		
OL	Organic silts and organic silty clays of low plasticity	3/4 in. to 3 in. #4 to 3/4 in.								
Sils and Clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or distomaceous fine sandy or silty soils, organic silts		Material Boulders Cobbles Gravel Coarse Fine						
	CH	Inorganic clays of high plasticity, fat clays								
	OH	Organic clays of medium to high plasticity, organic silts								
	Pt	Peat and other highly organic soils								
Highly Organic Soils				Von Post Classification Limit	Strong colour or odour, and often fibrous texture					

\* Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

## Other Symbol Types

	Asphalt		Bedrock (undifferentiated)		Cobbles
	Concrete		Limestone Bedrock		Boulders and Cobbles
	Fill		Cemented Shale		Silt Till
			Non-Cemented Shale		Clay Till

### LEGEND OF ABBREVIATIONS AND SYMBOLS

LL - Liquid Limit (%)	VW - Vibrating Wire Piezometer
PL - Plastic Limit (%)	SI - Slope Inclinator
PI - Plasticity Index (%)	∇ Water Level at Time of Drilling
MC - Moisture Content (%)	▼ Water Level at End of Drilling
SPT - Standard Penetration Test	▼ Water Level After Drilling as Indicated on Test Hole Logs
RQD - Rock Quality Designation	
Qu - Unconfined Compression	
Su - Undrained Shear Strength	

### FRACTION OF SECONDARY SOIL CONSTITUENTS ARE BASED ON THE FOLLOWING TERMINOLOGY

TERM	EXAMPLES	PERCENTAGE
and	and CLAY	35 to 50 percent
"y" or "ey"	clayey, silty	20 to 35 percent
some	some silt	10 to 20 percent
trace	trace gravel	1 to 10 percent
with *	with silt, with sand	> 35 percent

\* Used when the material is classified based on behaviour as a cohesive material

### TERMS DESCRIBING CONSISTENCY OR COMPACTION CONDITION

The Standard Penetration Test blow count (N) of a non-cohesive soil can be related to compactness condition as follows:

<u>Descriptive Terms</u>	<u>SPT (N) (Blows/300 mm)</u>
Very loose	< 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	> 50

The Standard Penetration Test blow count (N) of a cohesive soil can be related to its consistency as follows:

<u>Descriptive Terms</u>	<u>SPT (N) (Blows/300 mm)</u>
Very soft	< 2
Soft	2 to 4
Firm	4 to 8
Stiff	8 to 15
Very stiff	15 to 30
Hard	> 30

The undrained shear strength (Su) of a cohesive soil can be related to its consistency as follows:

<u>Descriptive Terms</u>	<u>Undrained Shear Strength (kPa)</u>
Very soft	< 12
Soft	12 to 25
Firm	25 to 50
Stiff	50 to 100
Very stiff	100 to 200
Hard	> 200





# Sub-Surface Log

Test Hole TH23-21

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5533410, E-632193  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)				
					16	17	18	19	20	21	Test Type				
					Particle Size (%)										
					0 20 40 60 80 100 PL MC LL 0 20 40 60 80 100						+ Torvane Δ + Pocket Pen. + ⊠ Qu ⊠ ○ Field Vane ○				
		ASPHALT - 80 mm thick													
		CONCRETE - 215 mm thick		PC23-32											
0.5		CLAY - silty, trace gravel (<20 mm diam.) - dark grey, moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G196											
1.0		SILT - clayey - brown - moist, soft - low to intermediate plasticity - AASHTO: A-6 (I)		G197											
1.5		CLAY - silty - grey - moist, stiff - high plasticity - AASHTO: A-7-6 (50)		G198											
2.0		- trace silt inclusions (<20 mm diam.) between 1.8 and 2.1 m		G199											
2.5		- firm below 2.3 m		G200											
				G201											
				G202											
				G203											
				G204											

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B205).
- Test Hole located in front of #1049 Inkster Blvd, Westbound lane, 0.7 m South of North curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK.GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-22

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5533437, E-632125  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)				
					16	17	18	19	20	21	Test Type				
					Particle Size (%)										
					0	20	40	60	80	100					
					PL   MC   LL 0 20 40 60 80 100										
					0 50 100 150 200250										
		ASPHALT - 95 mm thick													
		CONCRETE - 230 mm thick		PC23-33											
0.5		CLAY - silty, trace gravel (<20 mm diam.) - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G206											
				G207											
1.0		SILT - clayey - brown - moist, soft - low to intermediate plasticity - AASHTO: A-6 (I)		G208											
				G209											
1.5		CLAY - silty - grey and brown mottled - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G210											
2.0		- trace silt inclusions (<20 mm diam.), stiff between 1.8 and 2.1 m		G211											
		- firm below 2.2 m		G212											
2.5		- trace silt inclusions (<5 mm diam.) below 2.4 m		G213											
				G214											

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.5 m depth (B215A), and 1.5 and 2.1 m depth (B215B).
- Test Hole located in front of #1069 Inkster Blvd, Westbound lane, 1.2 m North of South curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-23

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5533472, E-632059  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
		ASPHALT - 50 mm thick														
		CONCRETE - 190 mm thick		PC23-34												
		CLAY - silty, trace gravel (<20 mm diam.) - black - moist, very stiff - intermediate plasticity - AASHTO: A-7-6 (I)		G216												
		SILT - some clay - brown - moist, soft - low plasticity - AASHTO: A-4 (I)		G217												
				G218												
				G219												
		CLAY - silty - brown - moist, stiff - high plasticity - AASHTO: A-7-6 (I)		G220												
				G221												
		- trace silt inclusions (<20 mm diam.) between 1.9 and 2.4 m		G222												
				G223												
		- grey, firm below 2.4m		G224												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 1.5 m depth (B225A), and 1.5 and 2.1 m depth (B225B).
- Test Hole located South side of #943 McPhillips St, Westbound land, 1.2 m South of North curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24



# Sub-Surface Log

Test Hole TH23-24

1 of 1

Client: Morrison Hershfield Project Number: 1000-001-33  
 Project Name: RFP 547-2023 McGregor-Inkster Geotech. Investigation Location: UTM N-5533472, E-632043  
 Contractor: Maple Leaf Drilling Ground Elevation: Top of Pavement m  
 Method: 125mm Solid Stem Auger, B40 Mobile Truck Mount Date Drilled: December 21, 2023

Sample Type:  Grab (G)  Shelby Tube (T)  Split Spoon (SS) / SPT  Split Barrel (SB) / LPT  Core (C)

Particle Size Legend:  Fines  Clay  Silt  Sand  Gravel  Cobbles  Boulders

Depth (m)	Soil Symbol	MATERIAL DESCRIPTION	Sample Type	Sample Number	Bulk Unit Wt (kN/m <sup>3</sup> )						Undrained Shear Strength (kPa)					
					16	17	18	19	20	21	Test Type					
					Particle Size (%)											
					0	20	40	60	80	100						
					PL   MC   LL 0 20 40 60 80 100											
					0	20	40	60	80	100	0	50	100	150	200	250
0.0 - 0.1		ASPHALT - 100 mm thick														
0.1 - 0.2		CONCRETE - 200 mm thick		PC23-35												
0.2 - 0.3		SAND - and GRAVEL (< 30 mm diam.), light brown, moist, rounded														
0.3 - 0.9		CLAY - silty, trace sand - dark grey - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G226												
0.9 - 1.3		CLAY - and SILT, trace sand - brown - moist, firm to stiff - intermediate to high plasticity - AASHTO: A-7-6 (36)		G227												
1.3 - 1.7		CLAY - silty - grey/brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G228												
1.7 - 2.0		CLAY - silty - grey/brown - moist, very stiff - high plasticity - AASHTO: A-7-6 (I)		G229												
2.0 - 2.4		- stiff below 1.7 m		G230												
2.4 - 2.9		- trace silt inclusions (<20 mm diam.) between 1.9 and 2.4 m		G231												
2.9 - 3.0		- grey, firm below 2.4 m		G232												
				G233												
				G234												

END TEST HOLE AT 3.0 m IN CLAY.

Notes:

- Seepage or sloughing not observed.
- Test Hole open to 3.0 m depth immediately after drilling.
- Test Hole backfilled with cuttings, granular fill and cold patch asphalt.
- Bulk samples were collected between 0.9 m and 2.1 m depth (B235).
- Test Hole located South side of #943 McPhillips St, Westbound lane, 1.3 m North of median curb.

Logged By: Kate Franklin Reviewed By: N.J Ferreira Project Engineer: Nelson Ferreira

SUB-SURFACE LOG LOGS 2024-01-22, MCGREGOR INKSTER 0. B. KF 1000-001-33.GPJ TREK GDT 1/22/24







www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Moisture Content Report ASTM D2216-98

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-21	TH23-21	TH23-21	TH23-21	TH23-21	TH23-21
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G196	G197	G198	G199	G200	G201
Tare ID	N54	N22	M17	Z99	AB75	W105
Mass of tare	8.6	8.6	6.9	8.5	6.8	8.5
Mass wet + tare	230.7	241.2	438.3	214.2	233.2	231.5
Mass dry + tare	187.4	197.6	338.7	164.4	163.0	159.2
Mass water	43.3	43.6	99.6	49.8	70.2	72.3
Mass dry soil	178.8	189.0	331.8	155.9	156.2	150.7
Moisture %	24.2%	23.1%	30.0%	31.9%	44.9%	48.0%

Test Hole	TH23-21	TH23-21	TH23-21	TH23-22	TH23-22	TH23-22
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G202	G203	G204	G206	G207	G208
Tare ID	Z08	F87	F50	Z74	F89	W87
Mass of tare	8.4	8.5	8.9	8.5	8.5	8.6
Mass wet + tare	213.8	226.5	255.9	241.2	239.6	232.9
Mass dry + tare	143.8	149.8	166.2	184.6	185.4	194.7
Mass water	70.0	76.7	89.7	56.6	54.2	38.2
Mass dry soil	135.4	141.3	157.3	176.1	176.9	186.1
Moisture %	51.7%	54.3%	57.0%	32.1%	30.6%	20.5%

Test Hole	TH23-22	TH23-22	TH23-22	TH23-22	TH23-22	TH23-22
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G209	G210	G211	G212	G213	G214
Tare ID	M59	M97	AB64	E29	E10	M12
Mass of tare	6.9	6.9	6.9	8.7	6.9	6.8
Mass wet + tare	258.5	235.5	252.9	231.9	220.6	225.7
Mass dry + tare	212.6	172.8	178.2	159.8	147.4	149.4
Mass water	45.9	62.7	74.7	72.1	73.2	76.3
Mass dry soil	205.7	165.9	171.3	151.1	140.5	142.6
Moisture %	22.3%	37.8%	43.6%	47.7%	52.1%	53.5%



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Moisture Content Report  
 ASTM D2216-98**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation  
  
**Sample Date** 19-Dec-23  
**Test Date** 08-Jan-24  
**Technician** KF

Test Hole	TH23-23	TH23-23	TH23-23	TH23-23	TH23-23	TH23-23
Depth (m)	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1
Sample #	G216	G217	G218	G219	G220	G221
Tare ID	E64	E85	M15	M38	C3	AC08
Mass of tare	6.9	8.6	6.9	6.8	8.7	6.8
Mass wet + tare	249.5	219.5	257.2	223.7	224.9	249.7
Mass dry + tare	202.4	192.8	212.0	182.0	162.2	179.6
Mass water	47.1	26.7	45.2	41.7	62.7	70.1
Mass dry soil	195.5	184.2	205.1	175.2	153.5	172.8
Moisture %	24.1%	14.5%	22.0%	23.8%	40.8%	40.6%

Test Hole	TH23-23	TH23-23	TH23-23	TH23-24	TH23-24	TH23-24
Depth (m)	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2
Sample #	G222	G223	G224	G226	G227	G228
Tare ID	W111	W06	K39	Z105	AC38	M02
Mass of tare	8.5	8.8	8.5	8.5	6.8	6.9
Mass wet + tare	226.4	238.3	228.3	221.0	252.3	442.4
Mass dry + tare	154.2	158.8	150.8	172.5	217.7	359.3
Mass water	72.2	79.5	77.5	48.5	34.6	83.1
Mass dry soil	145.7	150.0	142.3	164.0	210.9	352.4
Moisture %	49.6%	53.0%	54.5%	29.6%	16.4%	23.6%

Test Hole	TH23-24	TH23-24	TH23-24	TH23-24	TH23-24	TH23-24
Depth (m)	1.4 - 1.5	1.7 - 1.8	2.0 - 2.1	2.3 - 2.4	2.6 - 2.7	2.9 - 3.0
Sample #	G229	G230	G231	G232	G233	G234
Tare ID	E41	P33	N16	E36	W79	I67
Mass of tare	8.5	8.6	8.7	6.8	8.7	6.8
Mass wet + tare	223.9	235.9	230.6	259.6	248.1	244.6
Mass dry + tare	175.5	167.8	167.0	177.1	166.7	164.1
Mass water	48.4	68.1	63.6	82.5	81.4	80.5
Mass dry soil	167.0	159.2	158.3	170.3	158.0	157.3
Moisture %	29.0%	42.8%	40.2%	48.4%	51.5%	51.2%





www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

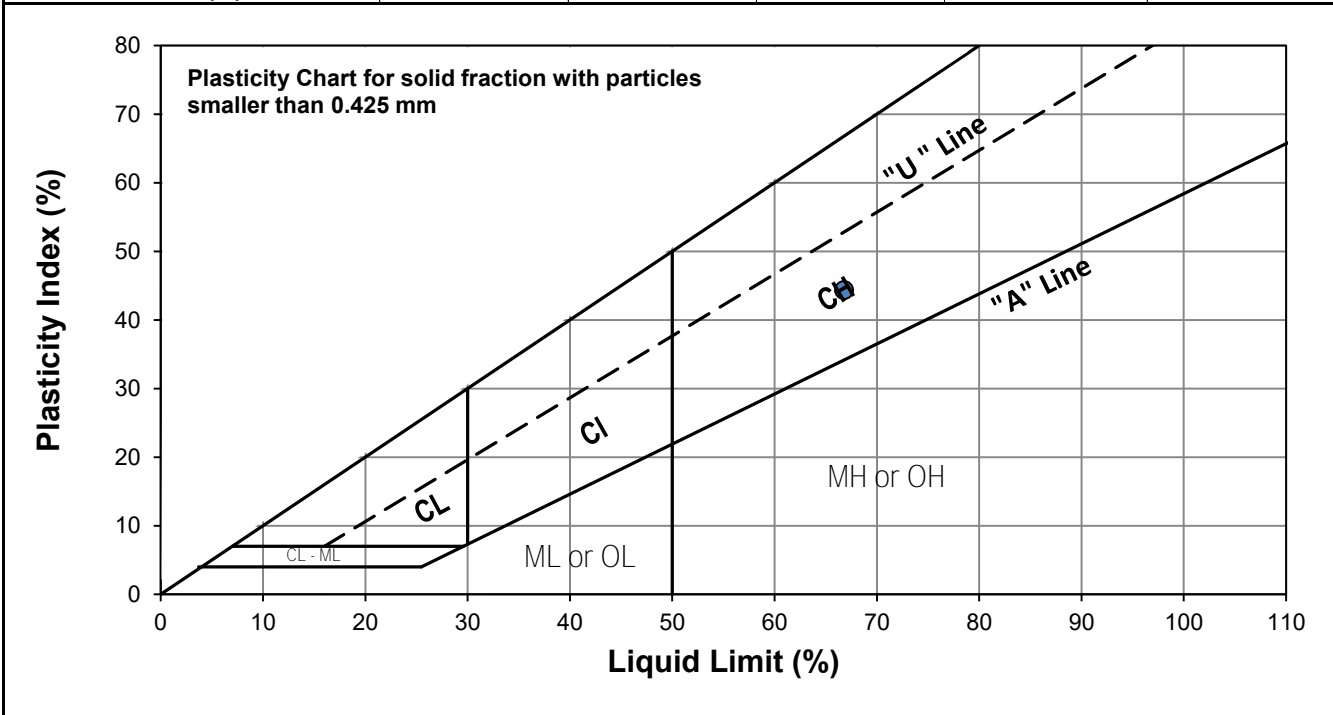


**Test Hole** TH23-21  
**Sample #** G198  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** DS

<b>Liquid Limit</b>	67
<b>Plastic Limit</b>	22
<b>Plasticity Index</b>	44

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	16	22	27
<b>Mass Tare (g)</b>	14.166	14.088	14.185
<b>Mass Wet Soil + Tare (g)</b>	22.143	20.708	20.499
<b>Mass Dry Soil + Tare (g)</b>	18.839	18.029	17.987
<b>Mass Water (g)</b>	3.304	2.679	2.512
<b>Mass Dry Soil (g)</b>	4.673	3.941	3.802
<b>Moisture Content (%)</b>	70.704	67.978	66.070



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	13.804	14.181			
<b>Mass Wet Soil + Tare (g)</b>	22.317	21.690			
<b>Mass Dry Soil + Tare (g)</b>	20.746	20.320			
<b>Mass Water (g)</b>	1.571	1.370			
<b>Mass Dry Soil (g)</b>	6.942	6.139			
<b>Moisture Content (%)</b>	22.630	22.316			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

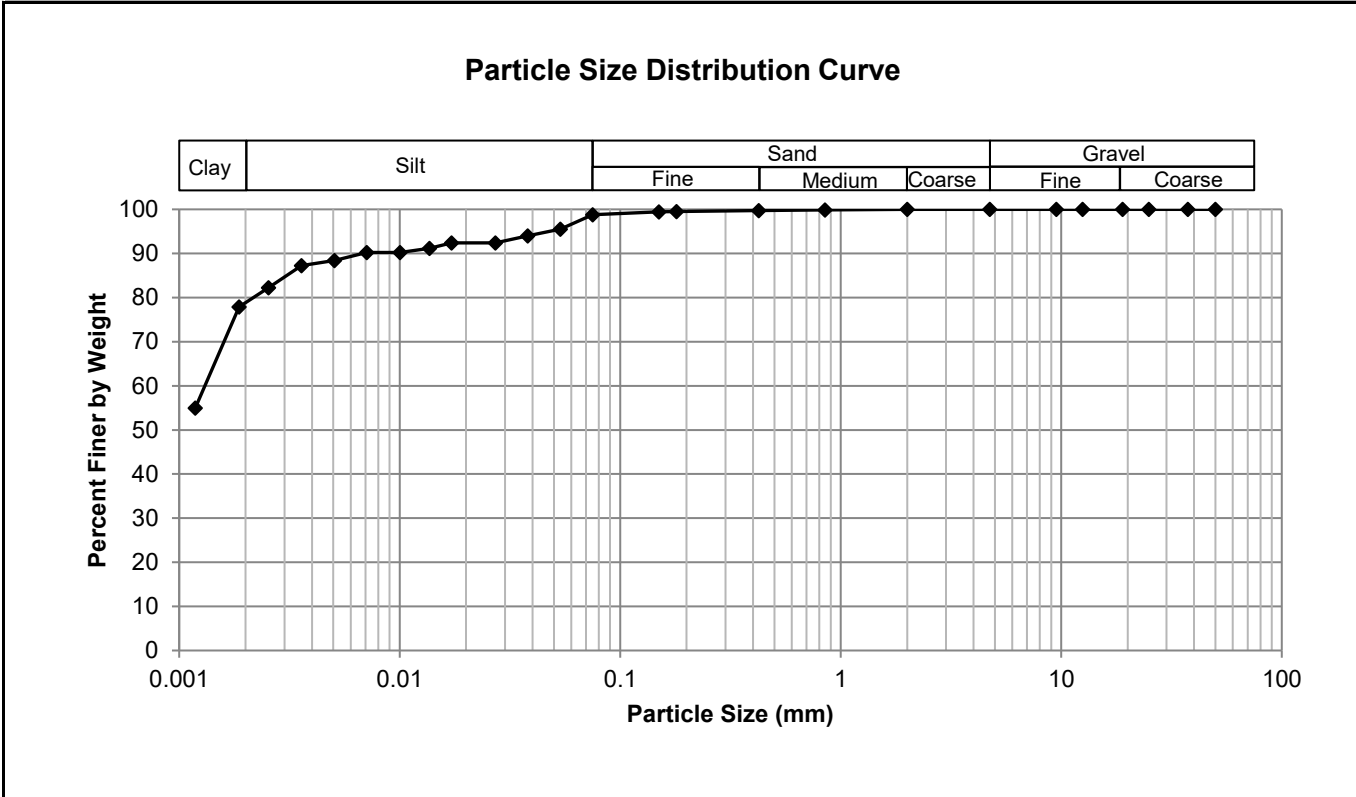
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-21  
**Sample #** G198  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	1.2%
<b>Silt</b>	20.1%
<b>Clay</b>	78.7%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	98.82
37.5	100.00	2.00	100.00	0.0535	95.55
25.0	100.00	0.850	99.87	0.0381	93.99
19.0	100.00	0.425	99.76	0.0272	92.42
12.5	100.00	0.180	99.51	0.0172	92.42
9.50	100.00	0.150	99.42	0.0137	91.17
4.75	100.00	0.075	98.82	0.0100	90.24
				0.0071	90.24
				0.0051	88.41
				0.0036	87.25
				0.0025	82.24
				0.0019	77.87
				0.0012	55.00



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Atterberg Limits**  
**ASTM D4318-10e1**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

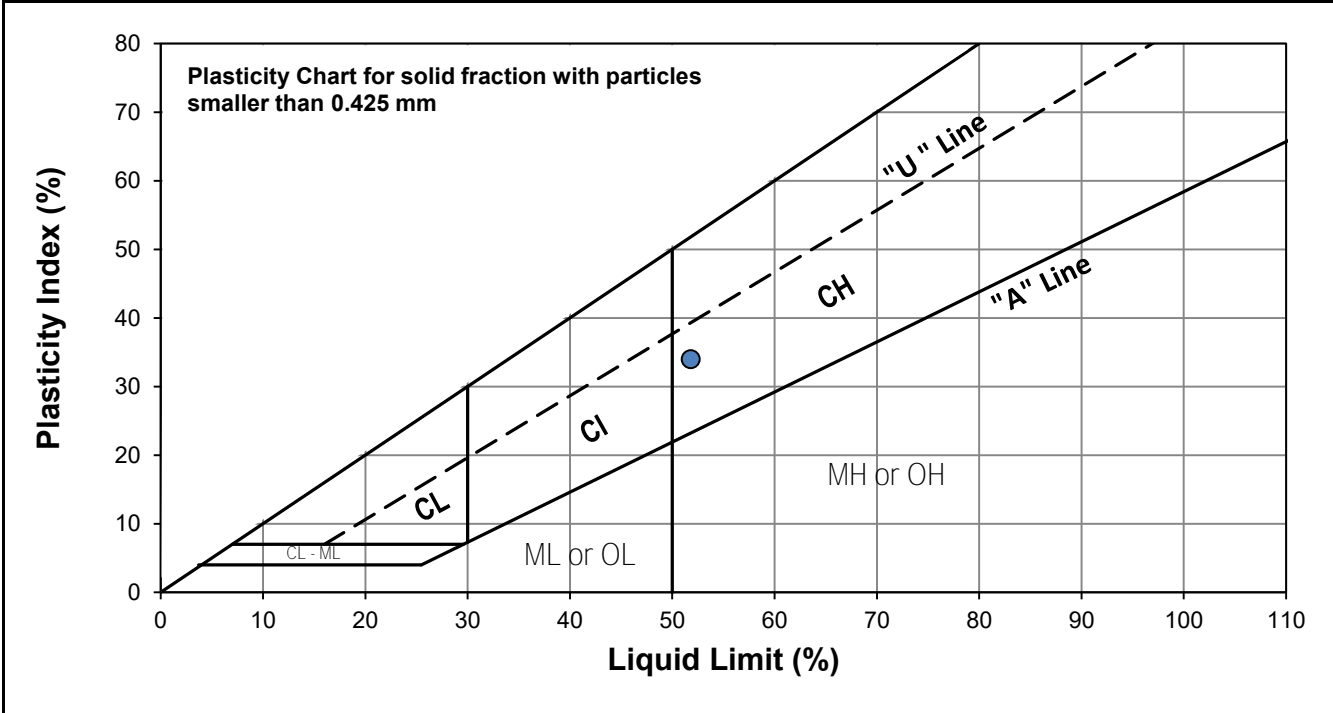


**Test Hole** TH23-24  
**Sample #** G228  
**Depth (m)** 1.1 - 1.2  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** CK

<b>Liquid Limit</b>	52
<b>Plastic Limit</b>	18
<b>Plasticity Index</b>	34

**Liquid Limit**

Trial #	1	2	3
<b>Number of Blows (N)</b>	18	24	35
<b>Mass Tare (g)</b>	14.048	14.059	14.107
<b>Mass Wet Soil + Tare (g)</b>	23.211	25.374	26.334
<b>Mass Dry Soil + Tare (g)</b>	20.029	21.494	22.249
<b>Mass Water (g)</b>	3.182	3.880	4.085
<b>Mass Dry Soil (g)</b>	5.981	7.435	8.142
<b>Moisture Content (%)</b>	53.202	52.186	50.172



**Plastic Limit**

Trial #	1	2	3	4	5
<b>Mass Tare (g)</b>	13.719	13.899			
<b>Mass Wet Soil + Tare (g)</b>	20.756	20.503			
<b>Mass Dry Soil + Tare (g)</b>	19.695	19.499			
<b>Mass Water (g)</b>	1.061	1.004			
<b>Mass Dry Soil (g)</b>	5.976	5.600			
<b>Moisture Content (%)</b>	17.754	17.929			

Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

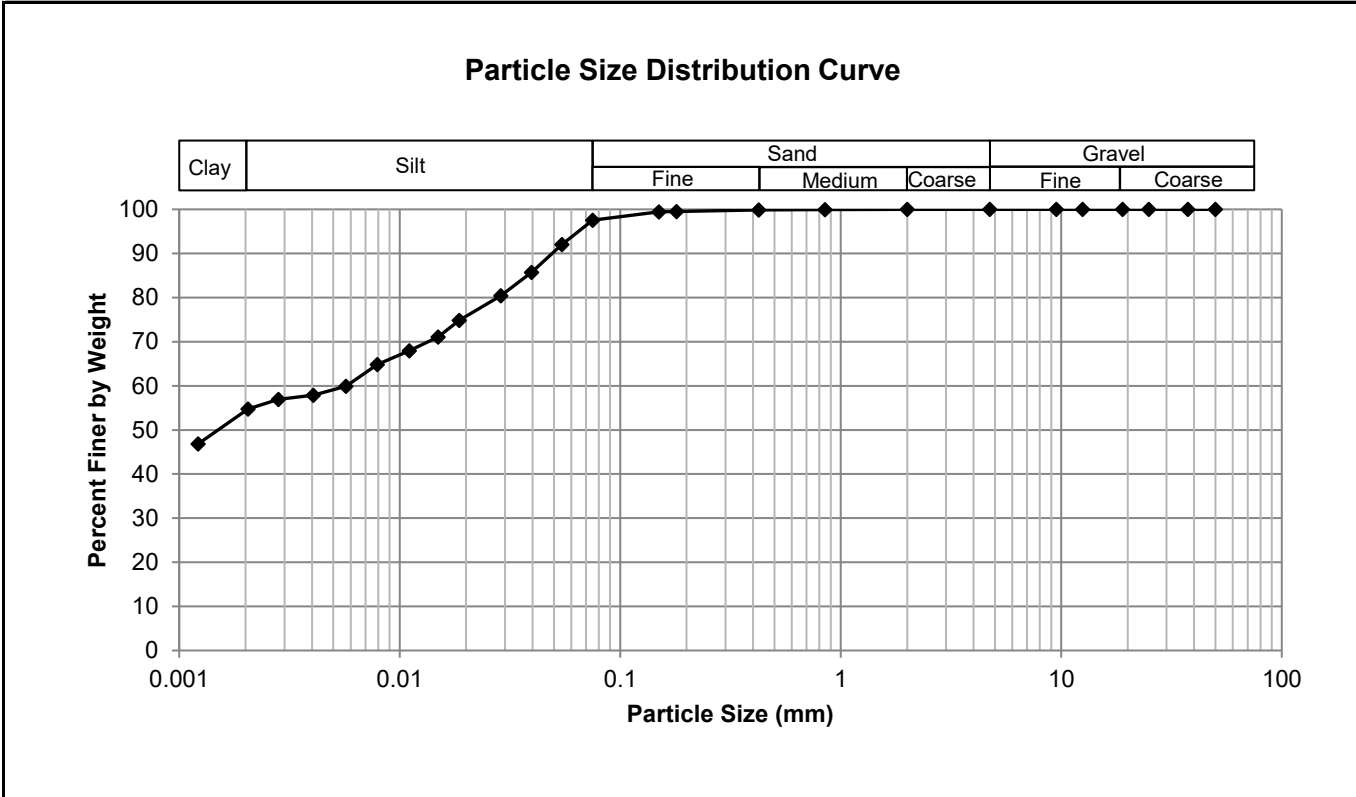
**Grain Size Analysis (Hydrometer Method)**  
**AASHTO T 88**

**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Test Hole** TH23-24  
**Sample #** G228  
**Depth (m)** 0.3 - 0.4  
**Sample Date** 19-Dec-23  
**Test Date** 15-Jan-24  
**Technician** AD/KF

<b>Gravel</b>	0.0%
<b>Sand</b>	2.4%
<b>Silt</b>	43.4%
<b>Clay</b>	54.2%



Gravel		Sand		Silt and Clay	
Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing	Particle Size (mm)	Percent Passing
50.0	100.00	4.75	100.00	0.0750	97.57
37.5	100.00	2.00	100.00	0.0544	92.02
25.0	100.00	0.850	99.95	0.0397	85.76
19.0	100.00	0.425	99.85	0.0287	80.45
12.5	100.00	0.180	99.55	0.0186	74.82
9.50	100.00	0.150	99.43	0.0150	71.07
4.75	100.00	0.075	97.57	0.0111	67.94
				0.0079	64.82
				0.0057	59.89
				0.0041	57.85
				0.0028	56.91
				0.0020	54.72
				0.0012	46.83



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

## Standard Proctor Compaction Test ASTM D698-12 (2021)

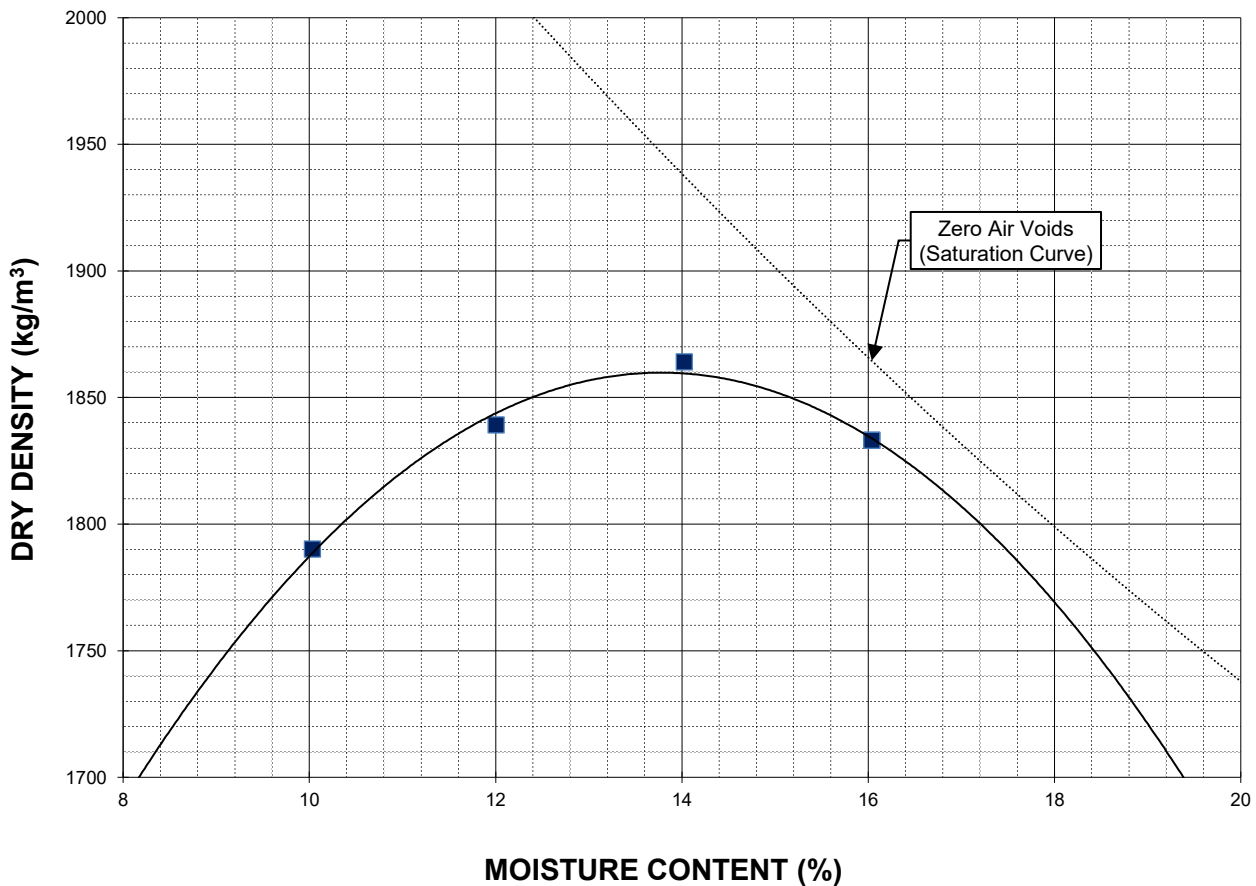
**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation



**Sample #** L24-001  
**Source** TH23-21 (0.9 m - 1.2 m), TH23-22 (0.9 m - 1.5 m), TH23-23 (0.9 m - 1.5 m)  
**Material** Silt  
**Sample Date** 21-Dec-23  
**Test Date** 11-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1860
<b>Optimum Moisture (%)</b>	13.8

Trial Number	1	2	3	4	
<b>Wet Density (kg/m<sup>3</sup>)</b>	1970	2060	2126	2127	
<b>Dry Density (kg/m<sup>3</sup>)</b>	1790	1839	1864	1833	
<b>Moisture Content (%)</b>	10.0	12.0	14.0	16.0	



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-21 (0.9 m - 1.2 m), TH23-22 (0.9 m - 1.5 m), TH23-23 (0.9 m - 1.5 m)
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Silt
<b>Project</b>	RFP 547-2023 McGregor-Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-21
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-13
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1860 kg/m <sup>3</sup>
Optimum Moisture Content	13.8 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1766 kg/m <sup>3</sup>
Initial Moisture Content	14.0 %
Relative Density	94.9 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	0.3 %
Moisture Content in top 25 mm	19.8 %
Immersion Period	96 h

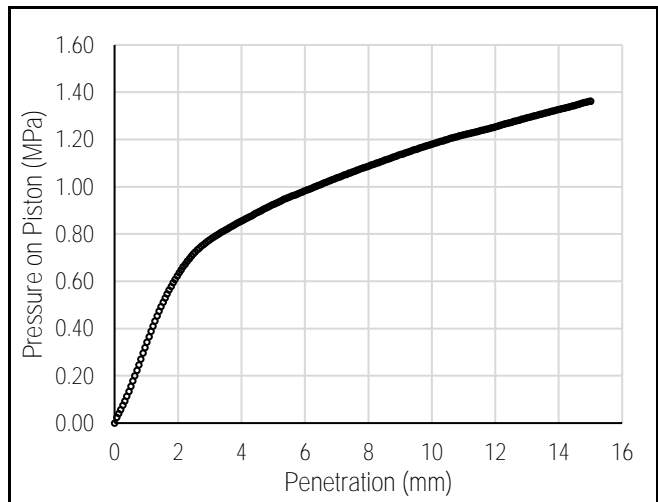
**CBR Results**

CBR at 2.54 mm	10.5 %
CBR at 5.08 mm	9.0 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.20	0.20
1.27	0.43	0.43
1.91	0.61	0.61
2.54	0.72	0.72
3.18	0.79	0.79
3.81	0.84	0.84
4.45	0.89	0.89
5.08	0.93	0.93
7.62	1.07	1.07
10.16	1.19	1.19
12.70	1.28	1.28

**Load/Penetration Curve**



**Comments:**



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**Standard Proctor Compaction Test**  
**ASTM D698-12 (2021)**

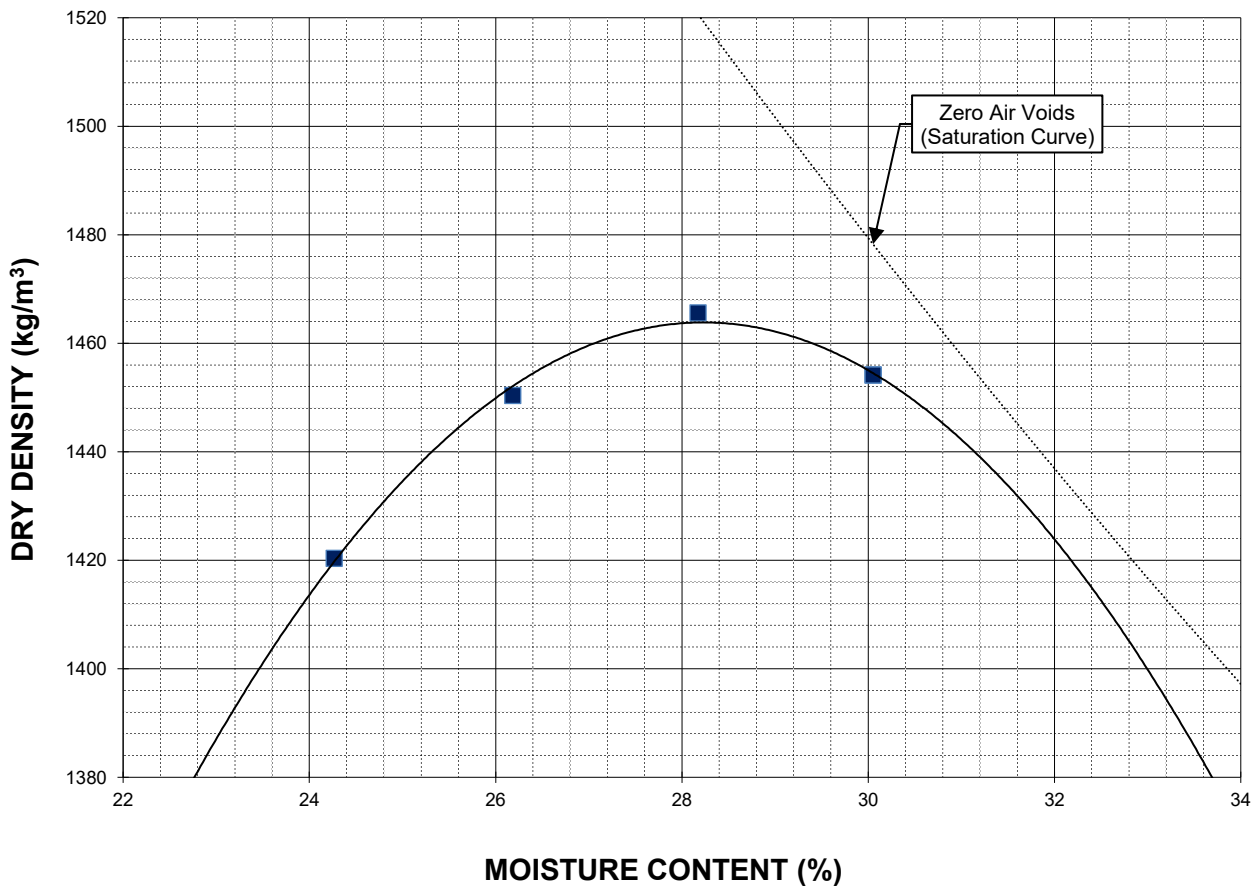


**Project No.** 1000-001-33  
**Client** Morrison Hershfield  
**Project** RFP 547-2023 McGregor-Inkster Geotech. Investigation

**Sample #** L24-001  
**Source** TH23-23 (1.5 m - 2.1 m), TH23-24 (0.9 m - 2.1 m)  
**Material** Clay  
**Sample Date** 21-Dec-23  
**Test Date** 11-Jan-24  
**Technician** AD

<b>Maximum Dry Density (kg/m<sup>3</sup>)</b>	1464
<b>Optimum Moisture (%)</b>	28.2

Trial Number	1	2	3	4
<b>Wet Density (kg/m<sup>3</sup>)</b>	1765	1830	1878	1891
<b>Dry Density (kg/m<sup>3</sup>)</b>	1420	1450	1466	1454
<b>Moisture Content (%)</b>	24.3	26.2	28.2	30.1



Note: Additional information recorded/measured for this test is available upon request.



www.trekgeotechnical.ca  
 1712 St. James Street  
 Winnipeg, MB R3H 0L3  
 Tel: 204.975.9433 Fax: 204.975.9435

**California Bearing Ratio Test Data Sheet**  
**ASTM D1883-16**

<b>Project No.</b>	1000-001-33	<b>Source</b>	TH23-23 (1.5 m - 2.1 m), TH23-24 (0.9 m -
<b>Client</b>	Morrison Hershfield	<b>Material</b>	Clay
<b>Project</b>	RFP 547-2023 McGregor- Inkster Geotech. Investigation	<b>Sample Date</b>	2023-12-21
<b>Sample #</b>	L24-001	<b>Test Date</b>	2024-01-13
		<b>Technician</b>	AD

**Proctor Results (ASTM D698)**

Maximum Dry Density	1464 kg/m3
Optimum Moisture Content	28.2 %
Material Retained on 19 mm Sieve	0.0 %

**CBR Sample Compaction**

Dry Density	1393 kg/m3
Initial Moisture Content	28.5 %
Relative Density	95.1 % SPMDD

**Soaking Results**

Surcharge	4.54 kg
Swell	2.5 %
Moisture Content in top 25 mm	45.9 %
Immersion Period	96 h

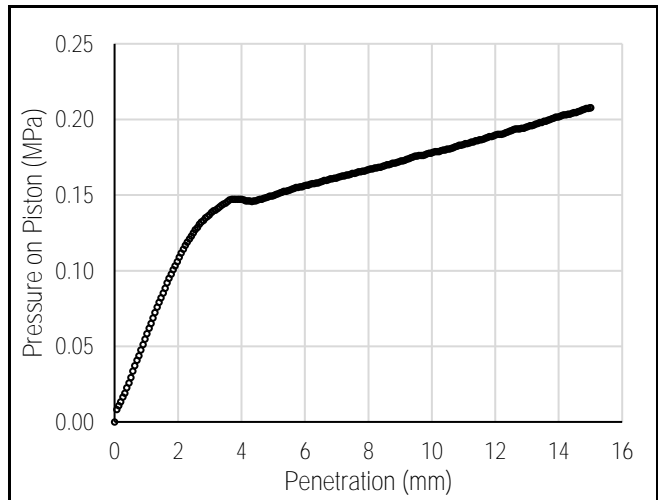
**CBR Results**

CBR at 2.54 mm	1.8 %
CBR at 5.08 mm	1.5 %
Zero Correction	0 mm

**Test Data**

Penetration (mm)	Measured Pressure (MPa)	Corrected Pressure (MPa)
0.64	0.04	0.04
1.27	0.07	0.07
1.91	0.10	0.10
2.54	0.13	0.13
3.18	0.14	0.14
3.81	0.15	0.15
4.45	0.15	0.15
5.08	0.15	0.15
7.62	0.16	0.16
10.16	0.18	0.18
12.70	0.19	0.19

**Load/Penetration Curve**



**Comments:**





Photo 1: Pavement Core Sample at Test Hole TH23-21



Photo 2: Pavement Core Sample at Test Hole TH23-22



Photo 3: Pavement Core Sample at Test Hole TH23-23



Photo 4: Pavement Core Sample at Test Hole TH23-24

**Appendix D**  
**Summary Table and Photographs of Pavement Core Samples**  
**Inkster Boulevard**

---



**RFP 547-2023 McGregor-Inkster Geotech. Investigation**  
**Inkster Boulevard**

Pavement Core No.	Pavement Core Location	Pavement Surface		Pavement Structure Material	
		Type	Thickness (mm)	Type	Thickness (mm)
PC23-01	UTM : 55339786 m N, 630913 m E; Located 15 m East of Sheppard St, Eastbound curb lane, 1.2 m North of South curb.	Asphalt	110	Concrete	200
PC23-02	UTM : 5533935 m N, 631017 m E; Inline with West driveway for 1450 Inkster Blvd, Eastbound median lane, 1.2 m South of North curb.	Asphalt	70	Concrete	200
PC23-03	UTM : 5533894 m N, 631095 m E; Located 10 m West of Milner St, Eastbound curb lane, 1.4 m North of South curb.	Asphalt	90	Concrete	210
PC23-04	UTM : 5533666 m N, 631580 m E; 14 m East of Fife St, Eastbound curb lane, 1.0 m North of South curb.	Asphalt	80	Concrete	175
PC23-05	UTM : 5533637 m N, 631655 m E; Located East side of 1221 Inkster Blvd, Eastbound curb lane, 1.1 m South of North curb.	Asphalt	120	Concrete	180
PC23-06	UTM : 5533589 m N, 631751 m E; 1190 Inkster Blvd, Eastbound curb lane, 1.2 m North of South curb.	Asphalt	75	Concrete	215
PC23-07	UTM : 5533569 m N, 631801 m E; Located 1170 Inkster Blvd, Eastbound curb lane, 1.0 m South of North curb.	Asphalt	95	Concrete	230
PC23-08	UTM : 5533534 m N, 631872 m E; Located 1144 Inkster Blvd, Eastbound curb lane, 1.0 m North of South curb.	Asphalt	130	Concrete	230
PC23-09	UTM : 5533518 m N, 631915 m E; Located 1132 Inkster Blvd, Eastbound median travel lane, 5.5 m North of South curb.	Asphalt	90	Concrete	190
PC23-10	UTM : 5533505 m N, 631952 m E; Located 1124 Inkster Blvd, Eastbound median turn lane, 5.5 m South of North curb.	Asphalt	150	Concrete	230
PC23-11	UTM : 5533487 m N, 631975 m E; Located center of Esso, Eastbound curb lane, 1.2 m North of South curb.	Asphalt	150	Concrete	210
PC23-36	UTM : 5532386 m N, 634380 m E; Located 289 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	90	Concrete	210
PC23-37	UTM : 5532419 m N, 634309 m E; Located 303 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	110	Concrete	150
PC23-38	UTM : 5532449 m N, 634245 m E; Located 327 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	90	Concrete	190



**RFP 547-2023 McGregor-Inkster Geotech. Investigation**  
**Inkster Boulevard**

Pavement Core No.	Pavement Core Location	Pavement Surface		Pavement Structure Material	
		Type	Thickness (mm)	Type	Thickness (mm)
PC23-39	UTM : 5532641 m N, 633834 m E; Located 475 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	175	Concrete	55
PC23-40	UTM : 5532677 m N, 633757 m E; Located 495 Inkster Blvd, Westbound curb lane, 1.1 m South of North curb.	Asphalt	220	Concrete	200
PC23-41	UTM : 5532722 m N, 633649 m E; Located 549 Inkster Blvd, Westbound median lane, 1.3 m North of South curb.	Asphalt	150	Concrete	80
PC23-42	UTM : 5532761 m N, 633577 m E; Located 571 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	130	Concrete	-
PC23-43	UTM : 5532795 m N, 633497 m E; Located 599 Inkster Blvd, Westbound median lane, 1.2 m North of South curb.	Asphalt	150	Concrete	165
PC23-44	UTM : 5532817 m N, 633455 m E; Located 608 Inkster Blvd, Westbound curb lane, 1.3 m South of North curb.	Asphalt	170	Concrete	190
PC23-45	UTM : 5532849 m N, 633377 m E; Located 636 Inkster Blvd, Westbound median lane, 1.1 m North of South curb.	Asphalt	155	Concrete	220
PC23-46	UTM : 5532881 m N, 633319 m E; Located 658 Inkster Blvd, Westbound curb lane, 1.3 m South of North curb.	Asphalt	140	Concrete	-
PC23-47	UTM : 5532896 m N, 633290 m E; Located 723 Inkster Blvd, Westbound curb lane, 1.2 m South of North curb.	Asphalt	70	Concrete	220
PC23-48	UTM : 5532927 m N, 633212 m E; Located 747 Inkster Blvd, Westbound median lane, 1.0 m North of South curb.	Asphalt	200	Concrete	190
PC23-49	UTM : 5532968 m N, 633133 m E; Located 771 Inkster Blvd, Westbound curb lane, 1.2 m South of North curb.	Asphalt	200	Concrete	100
PC23-50	UTM : 5533041 m N, 632969 m E; Located 815 Inkster Blvd, Westbound median lane, 1.0 m North of South curb.	Asphalt	75	Concrete	195
PC23-51	UTM : 5533085 m N, 632884 m E; Located 839 Inkster Blvd, Westbound curb lane, 1.3 m South of North curb.	Asphalt	110	Concrete	160
PC23-52	UTM : 5533134 m N, 632769 m E; Located 865 Inkster Blvd, Westbound median lane, 1.1 m North of South curb.	Asphalt	90	Concrete	170
PC23-53	UTM : 5533160 m N, 632722 m E; Located 885 Inkster Blvd, Westbound curb lane, 1.2 m South of North curb.	Asphalt	60	Concrete	200



**RFP 547-2023 McGregor-Inkster Geotech. Investigation**  
**Inkster Boulevard**

Pavement Core No.	Pavement Core Location	Pavement Surface		Pavement Structure Material	
		Type	Thickness (mm)	Type	Thickness (mm)
PC23-54	UTM : 5533190 m N, 632651 m E; Located 905 Inkster Blvd, Westbound median lane, 1.3 m North of South curb.	Asphalt	65	Concrete	195
PC23-55	UTM : 5533220 m N, 632594 m E; Located 929 Inkster Blvd, Westbound curb lane, 1.2 m South of North curb.	Asphalt	105	Concrete	145
PC23-56	UTM : 5533498 m N, 631991 m E; Located at KFC entryway, Westbound median lane, 1.3 m North of South curb.	Asphalt	75	Concrete	200
PC23-57	UTM : 5533519 m N, 631955 m E; Located 1127 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	120	Concrete	165
PC23-58	UTM : 5533539 m N, 631904 m E; Located 1141 Inkster Blvd, Westbound median lane, 1.0 m North of South curb.	Asphalt	80	Concrete	220
PC23-59	UTM : 5533586 m N, 631815 m E; Located 1169 Inkster Blvd, Westbound curb lane, 1.0 m South of North curb.	Asphalt	95	Concrete	185
PC23-60	UTM : 5533604 m N, 631769 m E; Located 1179 Inkster Blvd, Westbound median lane, 1.0 m North of South curb.	Asphalt	50	Concrete	240
PC23-61	UTM : 5533489 m N, 631994 m E; Located at Esso Inkster Blvd, Eastbound curb turn lane, 1.1 m South of North curb.	Asphalt	100	Concrete	200



Photo 1: Pavement Core Sample PC23-01



Photo 2: Pavement Core Sample PC23-02



Photo 3: Pavement Core Sample PC23-03



Photo 4: Pavement Core Sample PC23-04





Photo 5: Pavement Core Sample PC23-05



Photo 6: Pavement Core Sample PC23-06



Photo 7: Pavement Core Sample PC23-07



Photo 8: Pavement Core Sample PC23-08



Photo 9: Pavement Core Sample PC23-09



Photo 10: Pavement Core Sample PC23-10



Photo 11: Pavement Core Sample PC23-11



Photo 12: Pavement Core Sample PC23-12



Photo 13: Pavement Core Sample PC23-13



Photo 14: Pavement Core Sample PC23-14



Photo 15: Pavement Core Sample PC23-15



Photo 16: Pavement Core Sample PC23-16



Photo 17: Pavement Core Sample PC23-17



Photo 18: Pavement Core Sample PC23-18



Photo 19: Pavement Core Sample PC23-19



Photo 20: Pavement Core Sample PC23-20





Photo 21: Pavement Core Sample PC23-21



Photo 22: Pavement Core Sample PC23-22



Photo 23: Pavement Core Sample PC23-23



Photo 24: Pavement Core Sample PC23-24



Photo 25: Pavement Core Sample PC23-25



Photo 26: Pavement Core Sample PC23-26



Photo 27: Pavement Core Sample PC23-27



Photo 28: Pavement Core Sample PC23-28



Photo 29: Pavement Core Sample PC23-29



Photo 30: Pavement Core Sample PC23-30



Photo 31: Pavement Core Sample PC23-31



Photo 32: Pavement Core Sample PC23-32



Photo 33: Pavement Core Sample PC23-33



Photo 34: Pavement Core Sample PC23-34



Photo 35: Pavement Core Sample PC23-35



Photo 36: Pavement Core Sample PC23-36





Photo 37: Pavement Core Sample PC23-37



Photo 38: Pavement Core Sample PC23-38



Photo 39: Pavement Core Sample PC23-39



Photo 40: Pavement Core Sample PC23-40



Photo 41: Pavement Core Sample PC23-41



Photo 42: Pavement Core Sample PC23-42



Photo 43: Pavement Core Sample PC23-43



Photo 44: Pavement Core Sample PC23-44



Photo 45: Pavement Core Sample PC23-45



Photo 46: Pavement Core Sample PC23-46



Photo 47: Pavement Core Sample PC23-47



Photo 48: Pavement Core Sample PC23-48



Photo 49: Pavement Core Sample PC23-49



Photo 50: Pavement Core Sample PC23-50



Photo 51: Pavement Core Sample PC23-51

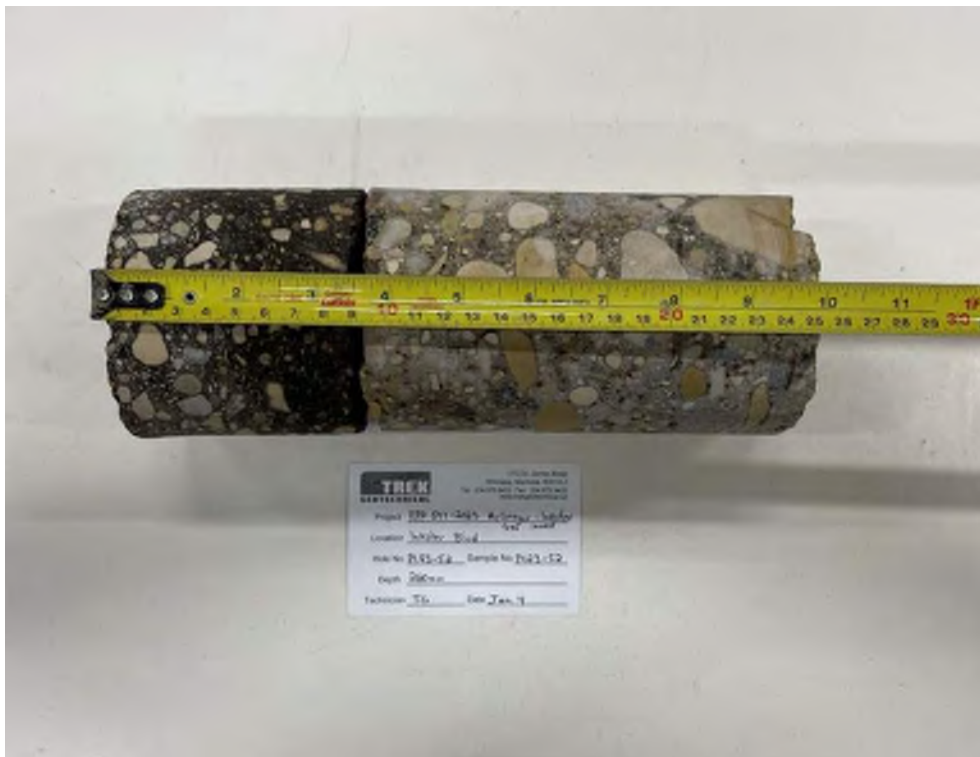


Photo 52: Pavement Core Sample PC23-52





Photo 53: Pavement Core Sample PC23-53



Photo 54: Pavement Core Sample PC23-54



Photo 55: Pavement Core Sample PC23-55



Photo 56: Pavement Core Sample PC23-56



Photo 57: Pavement Core Sample PC23-57



Photo 58: Pavement Core Sample PC23-58



Photo 59: Pavement Core Sample PC23-59



Photo 60: Pavement Core Sample PC23-60



Photo 61: Pavement Core Sample PC23-61