

**AECOM**



**PARKS**

**CANADA**

# Mistaya Canyon Parking Area



# Mistaya Canyon Parking Area Expansion

Preliminary Design Brief

**Prepared by:**

AECOM

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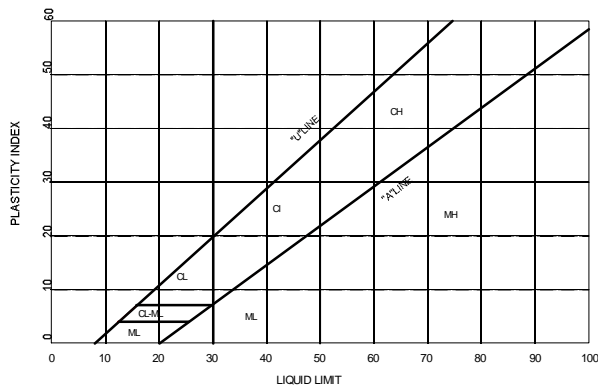
**Project Number:**

60440295

# D

## TEST HOLE LOGS/ LABORATORY TEST RESULTS

MAJOR DIVISION			LOG SYMBOLS	USC	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE GRAINED SOILS	GRAVELS (MORE THAN HALF COARSE GRAINS LARGER THAN 4.75 mm)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 4$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW 'A' LINE $W_p$ LESS THAN 4
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE 'A' LINE $W_p$ MORE THAN 7
	SANDS (MORE THAN HALF COARSE GRAINS SMALLER THAN 4.75 mm)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 6$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$	
				SP	POORLY GRADED SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW 'A' LINE $W_p$ LESS THAN 4
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE 'A' LINE $W_p$ MORE THAN 7
FINE GRAINED SOILS	SILTS (BELOW 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	$W_L < 50$		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)  WHENEVER THE NATURE OF THE FINE CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER 'F'. E.G. SF IS A MIXTURE OF SAND WITH SILT OR CLAY	
		$W_L > 50$		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
	CLAYS (ABOVE 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	$W_L < 30$		CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS		
		$30 < W_L < 50$		CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS		
		$W_L > 50$		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS (BELOW 'A' LINE)	$W_L < 50$		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
		$W_L > 50$		OH	ORGANIC CLAYS OF HIGH PLASTICITY		
	HIGHLY ORGANIC SOILS				Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR, AND OFTEN FIBROUS TEXTURE
BEDROCK				BR	SEE REPORT DESCRIPTION		



NOTE:  
1. BOUNDARY CLASSIFICATION POSSESSING CHARACTERISTICS OF TWO GROUPS ARE GIVEN GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL MIXTURE WITH CLAY BINDER BETWEEN 5% AND 12%

SOIL COMPONENTS					
FRACTION		SIEVE SIZE (mm)		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
		PASSING	RETAINED	PERCENT	IDENTIFIER
GRAVEL	COARSE	75	19	50 - 35	AND
	FINE	19	4.75		
SAND	COARSE	4.75	2.00	35 – 20	____Y
	MEDIUM	2.00	0.425		
		FINE	0.425	0.080	20 – 10
SILT (non-plastic) or CLAY (plastic)		0.080		10 - 1	TRACE
OVERSIZE MATERIALS					
ROUNDED OR SUB-ROUNDED COBBLES 75 mm TO 200 mm BOULDERS >200 mm			ANGULAR ROCK FRAGMENTS ROCKS > 0.75 m3 IN VOLUME		

## MODIFIED UNIFIED SOIL CLASSIFICATION SYSTEM

APRIL 2012

# 1. Explanation of Field and Laboratory Test Data

The field and laboratory test results, as shown on the logs, are briefly described below.

## 1.1 Natural Moisture Content and Atterberg Limits

The relationship between the natural moisture content and depth is significant in determining the subsurface moisture conditions. The Atterberg Limits for a sample should be compared to the natural moisture content and should be on the Plasticity Chart in order to determine their classification.

## 1.2 Soil Profile and Description

Each soil stratum is classified and described noting any special conditions. The Modified Unified Soils Classification System (MUSCS) is used. The soil profile refers to the existing ground level. When available, the existing ground elevation is shown. The soil symbols used are shown in detail on the soil classification chart.

## 1.3 Tests on Soil Samples

Laboratory and field tests on the logs are identified by the following:

- N** (Standard Penetration Test (SPT) Blow Count) - The SPT is conducted in the field to assess the in situ consistency of cohesive soils and the relative density of non-cohesive soils. The N value recorded is the number of blows from a 63.5 kg hammer dropped 760 mm which is required to drive a 51 mm split spoon sampler 300 mm into the soil.
- SO<sub>4</sub>** (Water Soluble Sulphate Content) - Conducted primarily to determine requirements for the use of sulphate resistant cement. Further details on the water soluble sulphate content are given in Section 1.6.
- $\gamma_D$**  (Dry Unit Weight)  $\text{kN/m}^3$  and  **$\gamma_T$**  (Total Unit Weight)  $\text{kN/m}^3$ .
- Q<sub>U</sub>** (Unconfined Compressive Strength) kPa - May be used in determining allowable bearing capacity of the soil.
- C<sub>U</sub>** (Undrained Shear Strength) kPa - This value is determined by an unconfined compression test and may also be used in determining the allowable bearing capacity of the soil.
- C<sub>PEN</sub>** (Pocket Penetrometer Reading) kPa - Estimate of the undrained shear strength as determined by a pocket penetrometer.

The following tests may also be performed on selected soil samples and the results are given on the borehole logs: Grain Size Analysis; Standard or Modified Proctor Compaction Test; California Bearing Ratio; Unconfined Compression Test; Permeability Test; Consolidation Test; Triaxial Test



## 1.4 Soil Density and Consistency

Table 1.1 Cohesive Soils		
N	Consistency	C <sub>u</sub> (kPa) (approx.)
0 - 1	Very Soft	<10
1 - 4	Soft	10 - 25
4 - 8	Firm	25 - 50
8 - 15	Stiff	50 - 100
15 - 30	Very Stiff	100 - 200
30 - 60	Hard	200 - 300
>60	Very Hard	>300

The SPT test described above may be used to estimate the consistency of cohesive soils and the density of cohesionless soils. These approximate relationships are summarized in the following tables:

Table 1.2 Cohesionless Soils	
N	Density
0 - 5	Very Loose
5 - 10	Loose
10 - 30	Compact
30 - 50	Dense
>50	Very Dense

## 1.5 Sample Condition and Type

The depth, type, and condition of samples are indicated on the borehole logs by the following symbols:

	Grab Sample		A-Casing
	Shelby Tube		No Recovery
	SPT Sample		Core Sample

## 1.6 Water Soluble Sulphate Concentration

The following table from CSA Standard A23.1-94 indicates the requirements for concrete subjected to sulphate attack based upon the percentage of water soluble sulphate as presented on the borehole logs. CSA Standard A23.1-94 should be read in conjunction with the table.

<b>Table 1.3</b> <b>Requirements for Concrete Subjected to Sulphate Attack</b>						
<b>Class of Exposure</b>	<b>Degree of Exposure</b>	<b>Water-Soluble Sulphate (SO<sub>4</sub>) in Soil Sample %</b>	<b>Sulphate (SO<sub>4</sub>) in Groundwater Samples mg/L</b>	<b>Minimum Specified 28 d Compressive Strength MPa†</b>	<b>Maximum Water/Cementing Materials Ratio†</b>	<b>Portland Cement to be Used‡</b>
S-1	Very severe	over 2.0	over 10,000	35	0.40	50
S-2	Severe	0.20 - 2.0	1,500 - 10,000	32	0.45	50
S-3	Moderate	0.10 - 0.20	150 - 1,500	30	0.50	20§, 40, or 50

\* For sea water exposure see Clause 15.4

† See Clause 15.1.4

‡ See Clause 15.1.5

§ Type 20 cement with moderate sulphate resistance (see Clause 3.1.2)

## 1.7 Groundwater Table

The groundwater table is indicated by the equilibrium level of standing water in a standpipe installed in a borehole. This level is generally taken at least 24 hours after installation of the standpipe. The groundwater level is subject to seasonal variations and its highest level usually occurs in spring. The symbol on the borehole logs indicating the groundwater level is an inverted solid triangle (▼).

**AECOM Canada Ltd.**

**General Statement; Normal Variability Of Subsurface Conditions**

The scope of the investigation presented herein is limited to an investigation of the subsurface conditions as to suitability of the site for the proposed project. This report has been prepared to aid in the general evaluation of the site and to assist the design engineer in the conceptual design for the area. The description of the project presented in this report represents the understanding by the geotechnical engineer of the significant aspects of the project relevant to the design and construction of the subdivision, infrastructure and similar. In the event of any changes in the basic design or location of the structures, as outlined in this report or plan, AECOM should be given the opportunity to review the changes and to modify or reaffirm in writing the conclusions and recommendations of this report.

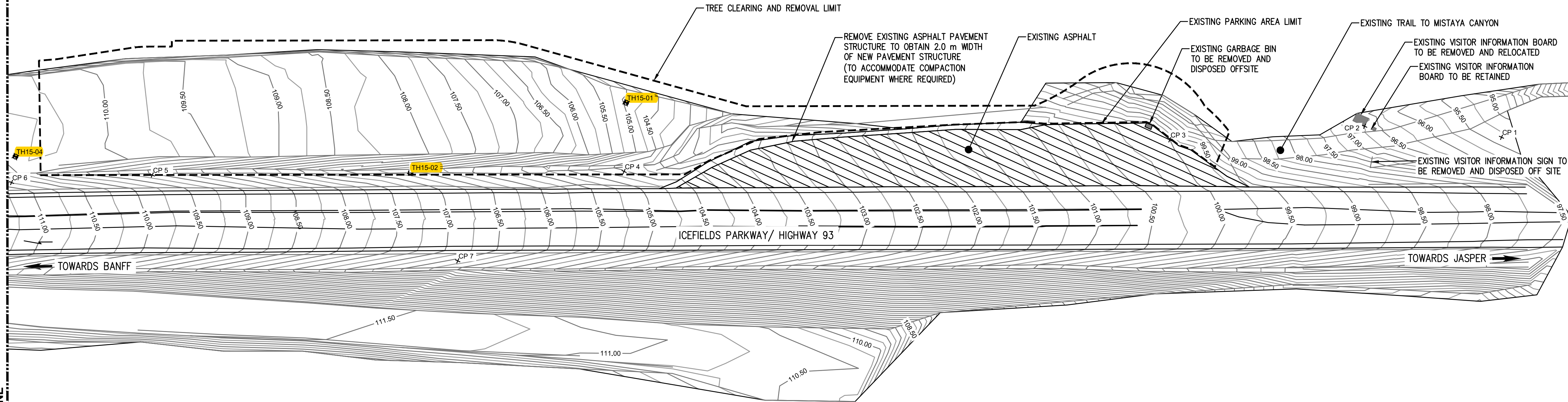
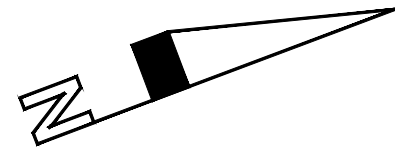
The analysis and recommendations represented in this report are based on the data obtained from the test holes drilled at the locations indicated on the site plans and from other information discussed herein. This report is based on the assumption that the subsurface conditions everywhere on the site are not significantly different from those encountered at the test locations. However, variations in soil conditions may exist between the test holes and, also, general groundwater levels and condition may fluctuate from time to time. The nature and extent of the variations may not become evident until construction. If subsurface conditions, different from those encountered in the test holes are observed or encountered during construction or appear to be present beneath or beyond the excavation, AECOM should be advised at once so that the conditions can be observed and reviewed and the recommendations reconsidered where necessary.

Since it is possible for conditions to vary from those identified at the test locations and from those assumed in the analysis and preparation of recommendations, a contingency fund should be included in the construction budget to allow for the possibility of variations which may result in modifications of the design and construction procedures.



REFER TO THIS DRAWING

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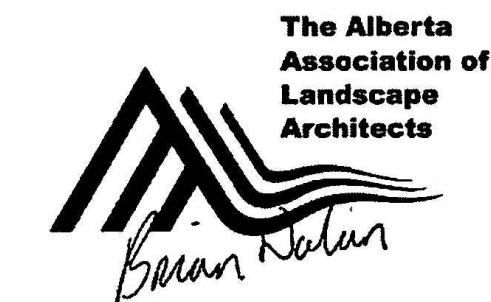
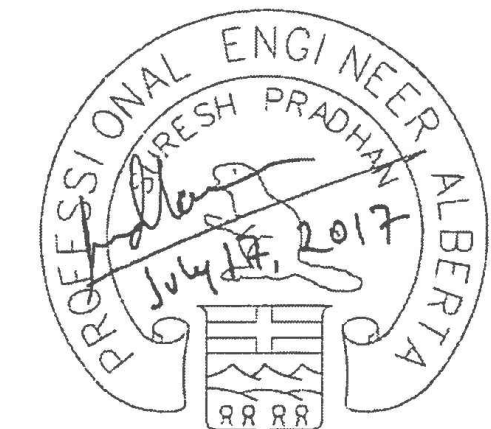


CONTROL POINT	NORTHING	EASTING	ELEVATION
CP1	1000	1000	100
CP2	1038.75	1011.563	96.719
CP3	1064.477	1023.662	95.329
CP4	891.922	966.402	104.537
CP5	749.593	916.145	111.879
CP6	721.43	906.2	113.222
CP7	772.385	923.936	110.722

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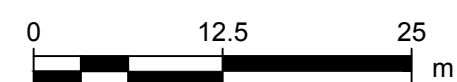
Signature: *[Signature]*  
Date: *24.07.17*

PERMIT NUMBER: P10450  
The Association of Professional  
Engineers and Geoscientists of Alberta

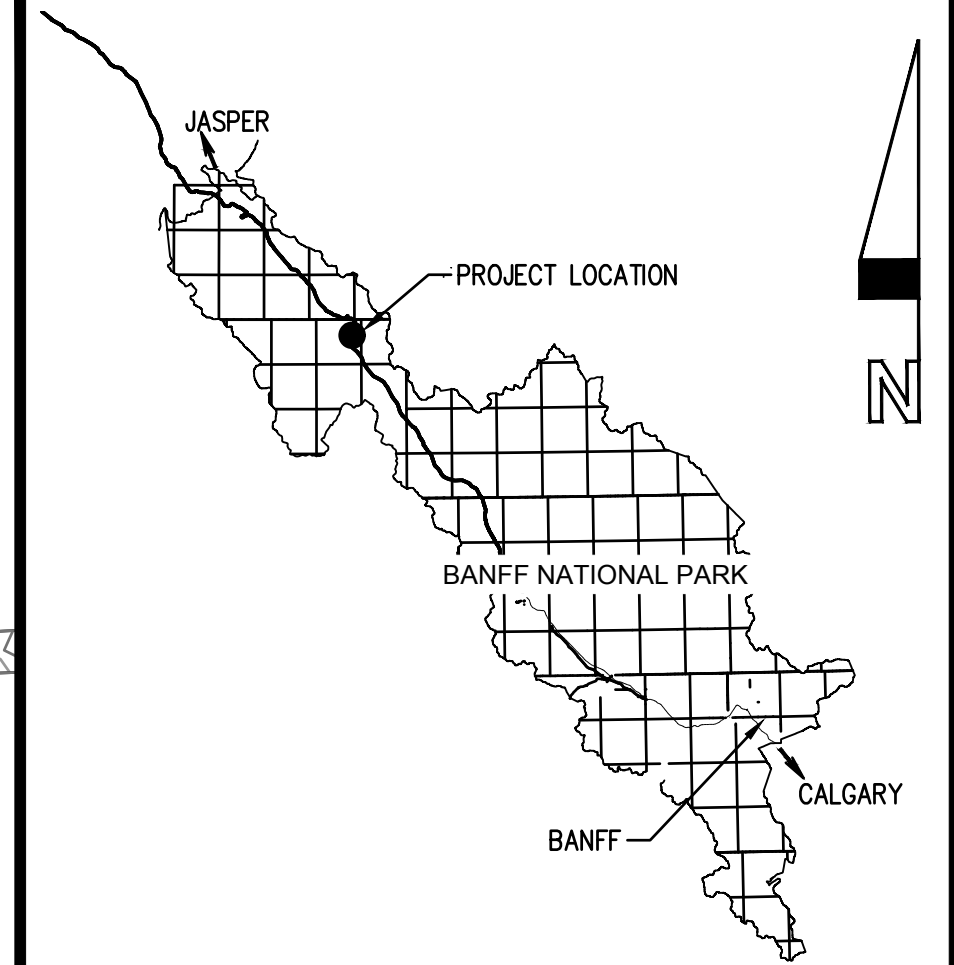


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D	16.09.06	95% DESIGN SUBMISSION	DW	
C	16.02.17	90% DESIGN SUBMISSION	SK/SH	
B	16.01.25	65% DESIGN SUBMISSION	SK/SH	
No.	Date	Description	Drawn by Dessiné par	Approved Approuvé

Revision / Revision

A	Detail number	A Numéro de détail
B	Sheet number	B Numéro de la feuille

Linear dimensions  
in millimetres

Dimensions linéaires  
en millimètres

Consultant's Name  
Nom de l'expert-conseil

Eng. Stamp  
Sceau de l'ingénieur

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Parks Canada  
Asset Management  
Western and  
Northern  
Region

Parcs Canada  
Gestion des biens  
Région de l'Ouest et  
du Nord

**Canada**

Project title/Titre du projet

MISTAYA CANYON  
PARKING AREA  
EXPANSION

Drawing title/Titre du dessin

REMOVAL PLAN

Surveyed by/Arpenté par UN/SK	Drawn by/Dessiné par SK/SH/DW/CD	Date 17/07/13
Designed by/Concept par GSF/SP/BN	Reviewed by/Revisé par SP/DH	Scale/Echelle 1:500

Client Acceptance/Acceptation du client

Approved by/Approuvé par

Date

Date

Project No./N° du projet  
60440295

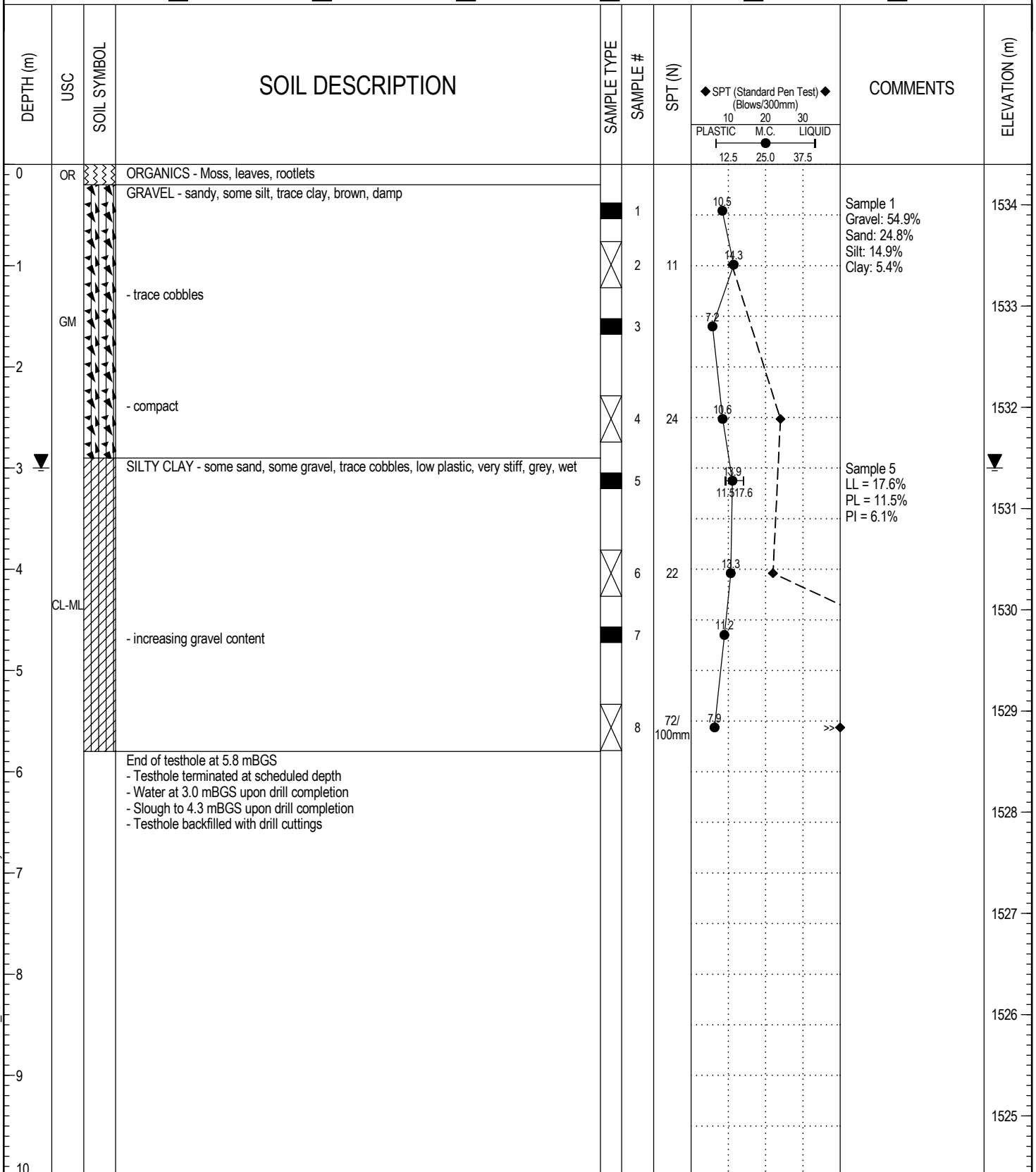
Asset No./N° du bien  
-

Sheet No./  
N° de la feuille

Drawing Set No./N° de série du dessin

C-100

PROJECT: Mistaya Canyon Parking Lot	CLIENT: Parks Canada	TESTHOLE NO.: TH15-01
LOCATION: See Location Plan	COORDINATES: UTM N 5754457 E 519377	PROJECT NO.: 60440295
CONTRACTOR: Mobile Augers	METHOD: Solid Stem	ELEVATION (m): 1534.4
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

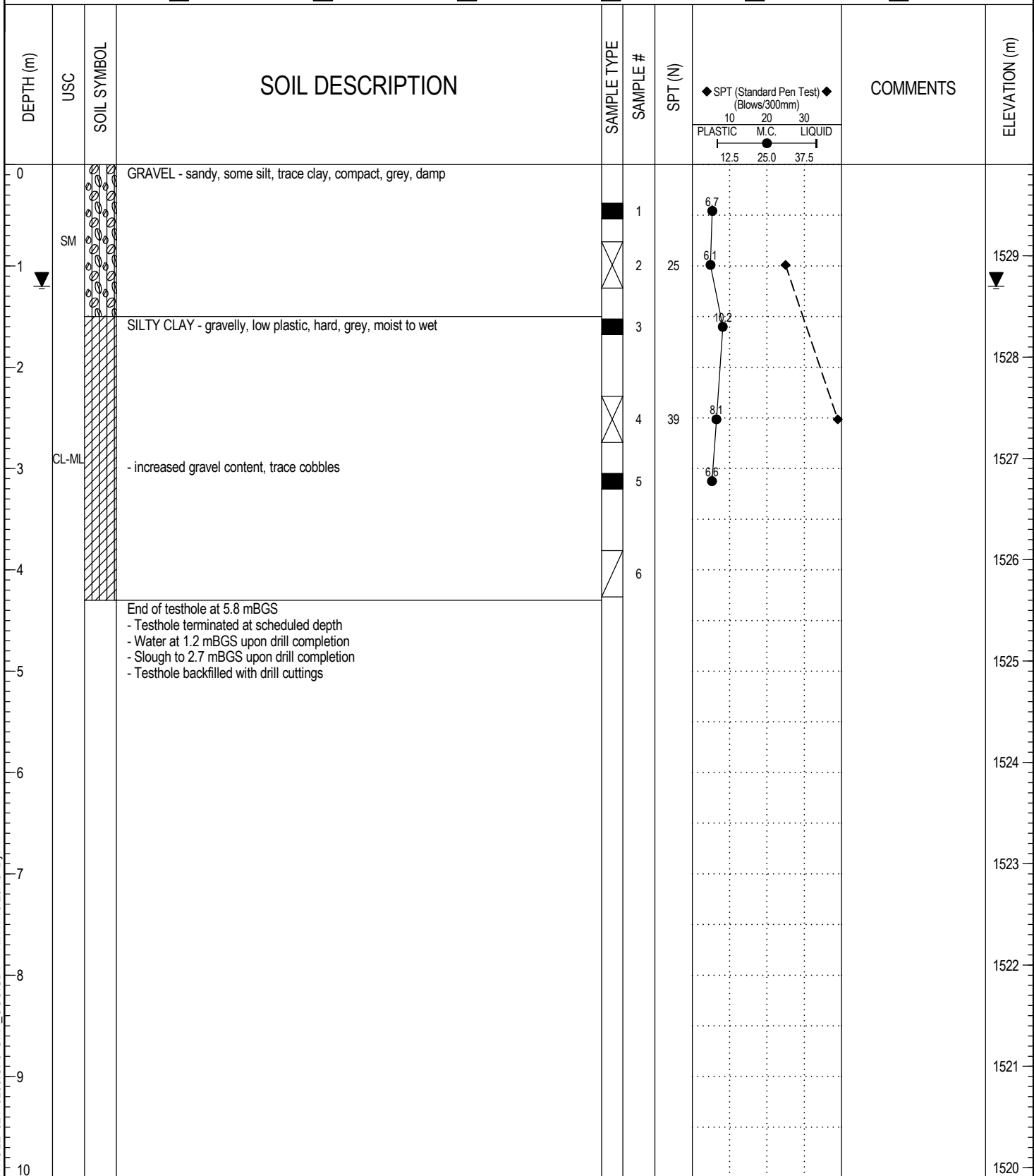


LOG OF TESTHOLE 62440295.GPJ UMA\_COC.GDT PRINT: 10/26/15 By:

**AECOM**

LOGGED BY: BW	COMPLETION DEPTH: 5.8 m
REVIEWED BY: SM	COMPLETION DATE: 9/18/2015
PROJECT ENGINEER: Brian Nolan	Page 1 of 1

PROJECT: Mistaya Canyon Parking Lot	CLIENT: Parks Canada	TESTHOLE NO.: TH15-02
LOCATION: See Location Plan	COORDINATES: UTM N 5754415 E 519379	PROJECT NO.: 60440295
CONTRACTOR: Mobile Augers	METHOD: Solid Stem	ELEVATION (m): 1529.9
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LOG OF TESTHOLE 62440295.GPJ UMA\_COC.GDT PRINT: 10/26/15 By:



LOGGED BY: BW	COMPLETION DEPTH: 4.3 m
REVIEWED BY: SM	COMPLETION DATE: 9/18/2015
PROJECT ENGINEER: Brian Nolan	Page 1 of 1

PROJECT: Mistaya Canyon Parking Lot	CLIENT: Parks Canada	TESTHOLE NO.: TH15-04
LOCATION: See Location Plan	COORDINATES: UTM N 5754347 E 519349	PROJECT NO.: 60440295
CONTRACTOR: Mobile Augers	METHOD: Solid Stem	ELEVATION (m): 1530.4
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	USC	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	COMMENTS	ELEVATION (m)
0			GRAVEL - sandy, trace silt, trace clay, stiff, brown, damp		1	12.4		1530
1					2	13		1529
2	GM		- trace cobbles		3	3.8	Sample 3 Gravel: 64.6% Sand: 23.0% Silt: 8.9% Clay: 3.5% - No SPT due to sloughing	1528
3			- testhole sloughing		4			1528
4					5	9		1527
5			SILTY CLAY - some sand, gravelly, trace cobbles, low plastic, very stiff, grey, moist		6		- No SPT due to sloughing	1526
6	CL-ML				7	8.9 10.2 16.4	Sample 7 LL = 16.4% PL = 10.2% PI = 6.1%	1525
7			- hard		8	32		1524
8								1523
9								1522
10			End of testhole at 5.8 mBGS - Testhole terminated at scheduled depth - No water observed upon drill completion - Slough to 4.5 mBGS upon drill completion - Testhole backfilled with drill cuttings					1521

LOG OF TESTHOLE 62440295.GPJ UMA\_COC.GDT PRINT: 10/26/15 By:

**AECOM**

LOGGED BY: BW	COMPLETION DEPTH: 5.8 m
REVIEWED BY: SM	COMPLETION DATE: 9/18/2015
PROJECT ENGINEER: Brian Nolan	Page 1 of 1

# WATER CONTENT



CLIENT:	Parks Canada							
PROJECT:	Mistaya Canyon Car Park							
JOB No.:	60440295.1006							
DATE :	October 5, 2015					TECHNICIAN : GU/CK		
HOLE No.	15-01							
DEPTH								
SAMPLE No.	1	2	3	4	5	6	7	8
TARE No.								
WT. SAMPLE WET + TARE	571.1	400.9	839.7	202.0	756.2	771.6	682.5	612.5
WT. SAMPLE DRY + TARE	518.3	352.5	784.4	184.0	665.4	682.7	615.0	568.5
WT. TARE	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
WATER CONTENT W%	<b>10.5%</b>	<b>14.3%</b>	<b>7.2%</b>	<b>10.6%</b>	<b>13.9%</b>	<b>13.3%</b>	<b>11.2%</b>	<b>7.9%</b>
HOLE No.	15-02					15-04		
DEPTH								
SAMPLE No.	1	2	3	4	5	1	2	3
TARE No.								
WT. SAMPLE WET + TARE	569.6	594.7	774.8	605.7	744.2	628.6	300.9	717.4
WT. SAMPLE DRY + TARE	534.7	561.4	704.6	561.1	699.0	560.9	274.4	691.0
WT. TARE	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
WATER CONTENT W%	<b>6.7%</b>	<b>6.1%</b>	<b>10.2%</b>	<b>8.1%</b>	<b>6.6%</b>	<b>12.4%</b>	<b>10.2%</b>	<b>3.9%</b>
HOLE No.	15-04							
DEPTH								
SAMPLE No.	5	7	8					
TARE No.								
WT. SAMPLE WET + TARE	666.0	813.5	317.6					
WT. SAMPLE DRY + TARE	612.2	748.4	292.9					
WT. TARE	13.5	13.5	13.5					
WATER CONTENT W%	<b>9.0%</b>	<b>8.9%</b>	<b>8.8%</b>					
HOLE No.								
DEPTH								
SAMPLE No.								
TARE No.								
WT. SAMPLE WET + TARE								
WT. SAMPLE DRY + TARE								
WT. TARE								
WATER CONTENT W%								

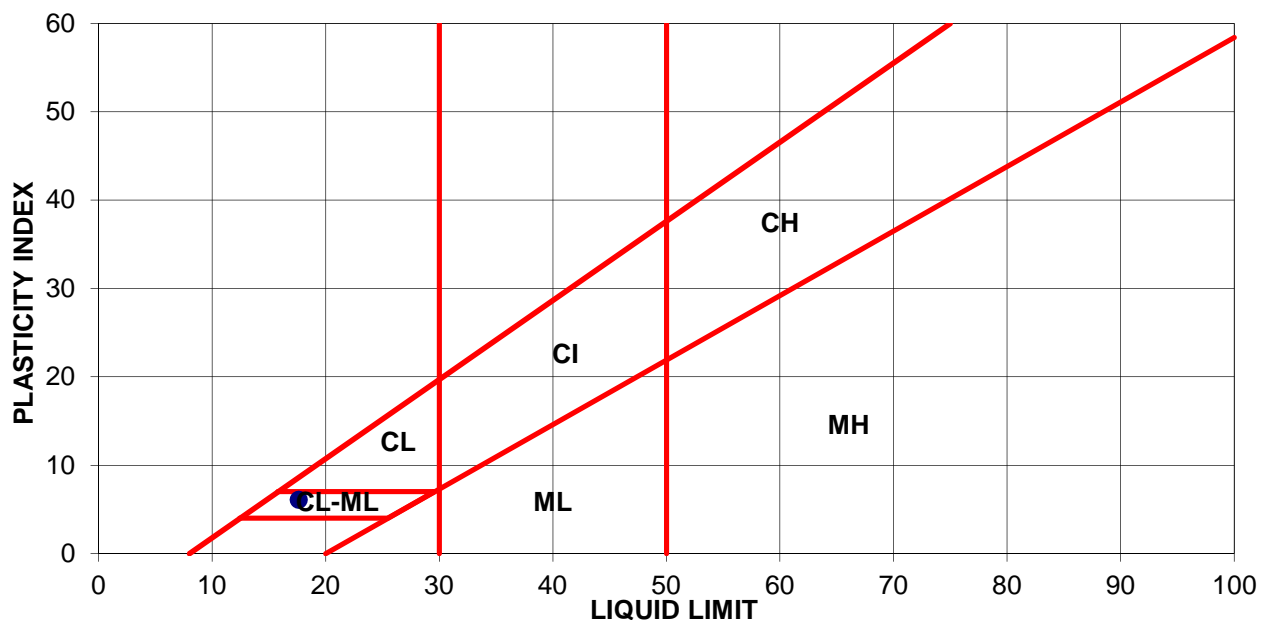
# ATTERBERG LIMITS

**AECOM**

CLIENT : Parks Canada  
 PROJECT : Mistaya Canyon Car Park  
 JOB No. : 60440295.1006  
 LOCATION :  
 TESTHOLE: 15-01  
 DATE : October 5, 2015

SAMPLE: 5  
 DEPTH :  
 TECHNICIAN : GU

LIQUID LIMIT						
Trial No.	1					
Number of Blows	25					
Container Number						
Wt. Sample (wet+tare)(g)	67.29					
Wt. Sample (dry+tare)(g)	59.35					
Wt. Tare (g)	14.29					
Wt. Dry Soil (g)	45.1					
Wt. Water (g)	7.9					
Water Content (%)	17.6%					
AVERAGE VALUES			PLASTIC LIMIT			
Liquid Limit	17.6		Trial No.	1		
Plastic Limit	11.5		Container Number			
Plasticity Index	6.1		Wt. Sample (wet+tare)(g)	33.46		
SAMPLE DESCRIPTION			Wt. Sample (dry+tare)(g)	31.26		
Classification: <b>CL-ML</b>			Wt. Tare (g)	12.17		
			Wt. Dry Soil (g)	19.1		
			Wt. Water (g)	2.2		
			Water Content (%)	11.5%		





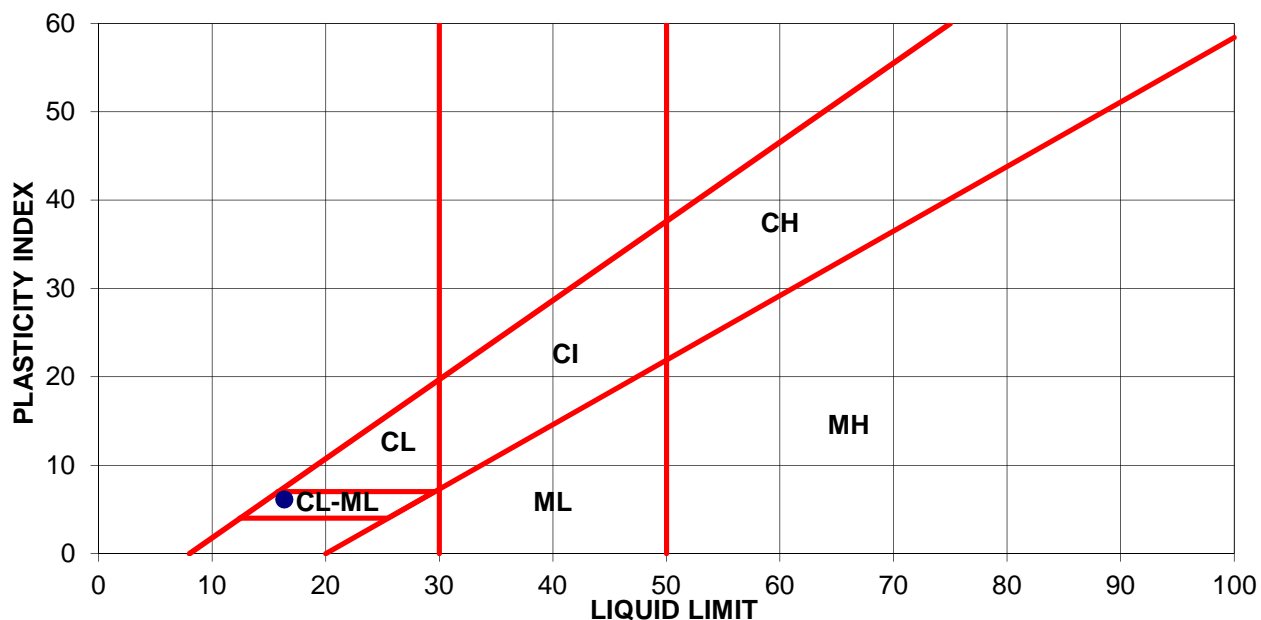
# ATTERBERG LIMITS

**AECOM**

CLIENT : Parks Canada  
 PROJECT : Mistaya Canyon Car Park  
 JOB No. : 60440295.1006  
 LOCATION :  
 TESTHOLE: 15-04  
 DATE : October 5, 2015

SAMPLE: 7  
 DEPTH :  
 TECHNICIAN : GU

LIQUID LIMIT						
Trial No.	1					
Number of Blows	20					
Container Number						
Wt. Sample (wet+tare)(g)	60.26					
Wt. Sample (dry+tare)(g)	53.68					
Wt. Tare (g)	14.54					
Wt. Dry Soil (g)	39.1					
Wt. Water (g)	6.6					
Water Content (%)	16.8%					
AVERAGE VALUES			PLASTIC LIMIT			
Liquid Limit	16.4		Trial No.	1		
Plastic Limit	10.2		Container Number			
Plasticity Index	6.1		Wt. Sample (wet+tare)(g)	34.81		
SAMPLE DESCRIPTION			Wt. Sample (dry+tare)(g)	32.72		
Classification: <b>CL-ML</b>			Wt. Tare (g)	12.30		
			Wt. Dry Soil (g)	20.4		
			Wt. Water (g)	2.1		
			Water Content (%)	10.2%		



# GRAIN SIZE ANALYSIS

**AECOM**

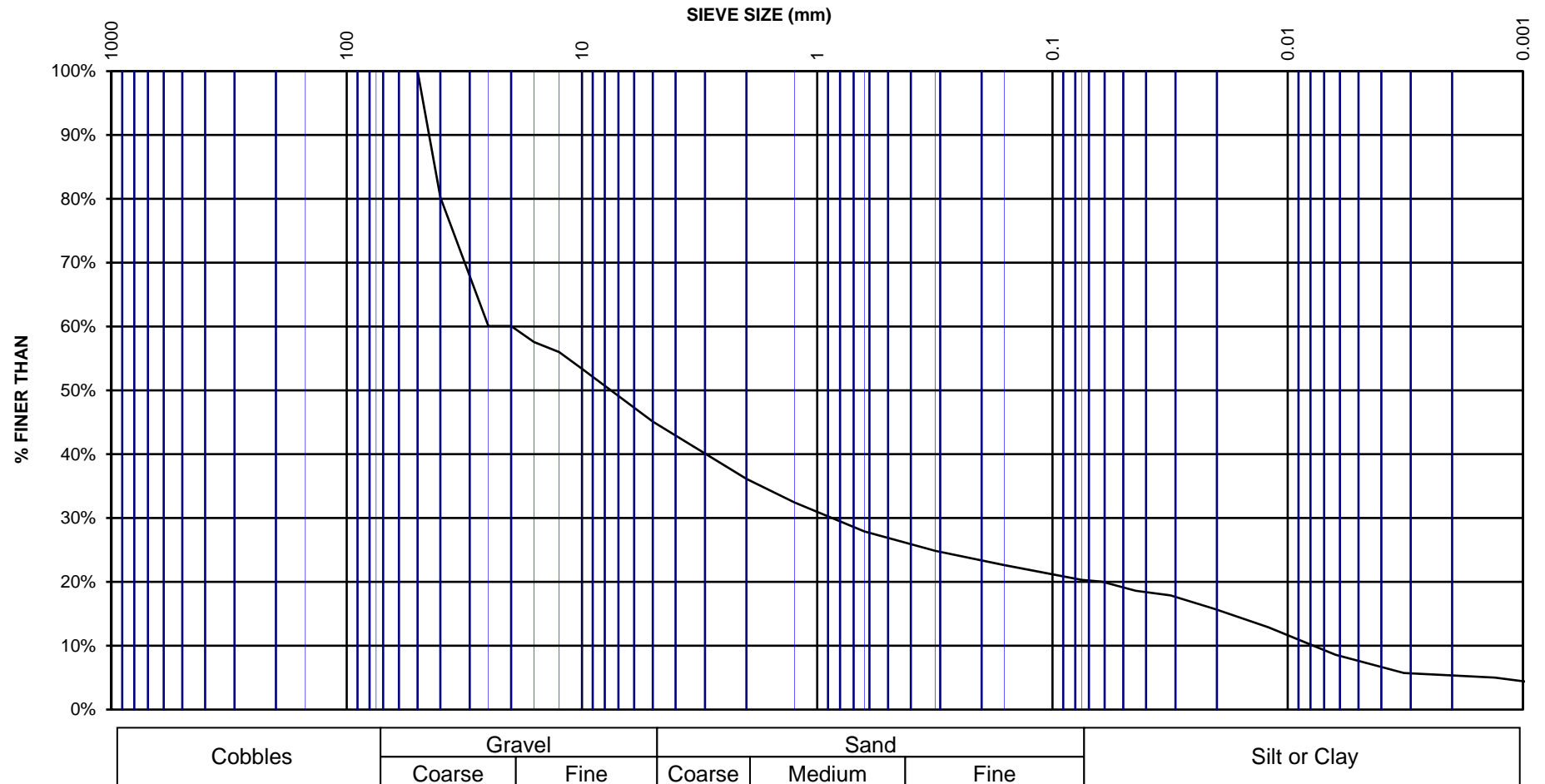
CLIENT : Parks Canada PROJECT : Mistaya Canyon Car Park JOB No. : 60440295.1006 LOCATION : TESTHOLE: 15-01 DATE : October 4, 2015							
				SAMPLE: 1 DEPTH : TECHNICIAN : GU			
TOTAL DRY WEIGHT OF SAMPLE	SIEVE NO. (µm)	SIZE OF OPENING		WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT FINER THAN	REMARKS
		APPROX. INCHES	mm				
<u>Before Washing</u>	150,000	6	150.0		0%	100%	
Wet + Tare	75,000	3	75.0		0%	100%	
Dry+Tare 605.1	50,000	2	50.0		0%	100%	
Tare 100.0	40,000	1 1/2	40.0	99.8	20%	80.2%	
Wt. Dry 505.1	25,000	1	25.0	201.7	40%	60.1%	
<u>Moisture Content</u>	20,000	3/4	20.0	201.7	40%	60.1%	
Wet + Tare	16,000	5/8	16.0	214.3	42%	57.6%	
Dry+Tare	12,500	1/2	12.5	222.3	44%	56.0%	
Tare	10,000	3/8	10.0	235.5	47%	53.4%	
MC (%)	5,000	0.185	5.0	277.3	55%	45.1%	
Passing							
<u>After Washing</u>	2,000	0.0937	2.0	322.6	64%	36.1%	
Wt. Dry+Tare	1,250	0.0469	1.25	341.2	68%	32.4%	
Tare	630	0.0234	0.63	364.2	72%	27.9%	
Wt. Dry	315	0.0116	0.315	379.5	75%	24.9%	
Tare No.	160	0.0059	0.160	390.9	77%	22.6%	
	75	0.00295	0.075	402.5	80%	20.3%	
	PAN						
HYDROMETER DATA	READING	TIME (min)	DIAMETER (mm)	TEMP. (°C)	CORR. READING	PERCENT FINER THAN	REMARKS
Wt Dry+Tare 605.1	32	0.5	0.062	22	28	20.0%	
Wt Tare 100.0	30	1	0.044	22	26	18.6%	
Wt Dry 505.1	29	2	0.032	22	25	17.9%	
Sample Size : 50	26	5	0.020	22	22	15.7%	
Wt Retained 2 mm: 322.6	22	15	0.012	22	18	12.9%	
% Passing 2 mm: 36.1%	19	30	0.009	22	15	10.7%	
Specific Gravity : 2.70	16	60	0.006	22	12	8.6%	
Hydrometer No.: 43-9856	14	120	0.004	22	10	7.2%	
Solution (g/L) : 40	12	240	0.003	22	8	5.7%	
	11	1440	0.001	22	7	5.0%	
	10	2880	0.001	22	6	4.3%	

# GRAIN SIZE ANALYSIS

**AECOM**

CLIENT : Parks Canada  
 PROJECT : Mistaya Canyon Car Park  
 JOB No. : 60440295.1006  
 LOCATION :  
 TESTHOLE : 15-01  
 DATE : October 4, 2015

SAMPLE: 1  
 DEPTH :  
 TECHNICIAN : GU



# GRAIN SIZE ANALYSIS

**AECOM**

CLIENT :		Parks Canada					
PROJECT :		Mistaya Canyon Car Park					
JOB No. :		60440295.1006					
LOCATION :						SAMPLE: 3	
TESTHOLE: 15-04						DEPTH :	
DATE : October 4, 2015						TECHNICIAN : GU	

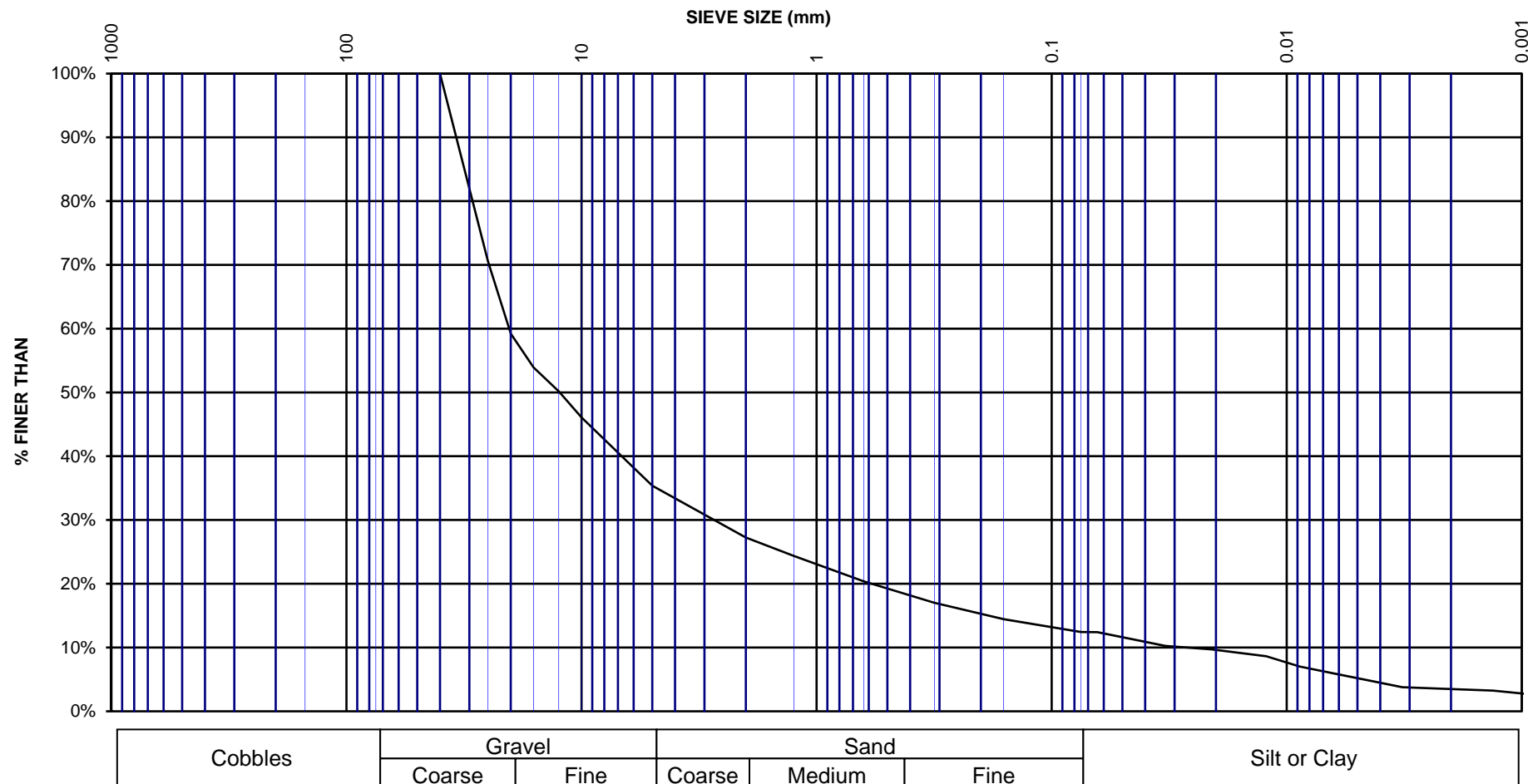
TOTAL DRY WEIGHT OF SAMPLE	SIEVE NO. (µm)	SIZE OF OPENING		WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT FINER THAN	REMARKS
		APPROX. INCHES	mm				
<u>Before Washing</u>	150,000	6	150.0		0%	100%	
Wet + Tare	75,000	3	75.0		0%	100%	
Dry+Tare 777.1	50,000	2	50.0		0%	100%	
Tare 100.0	40,000	1 1/2	40.0		0%	100.0%	
Wt. Dry 677.1	25,000	1	25.0	199.3	29%	70.6%	
<u>Moisture Content</u>	20,000	3/4	20.0	276.1	41%	59.2%	
Wet + Tare	16,000	5/8	16.0	312.0	46%	53.9%	
Dry+Tare	12,500	1/2	12.5	337.4	50%	50.2%	
Tare	10,000	3/8	10.0	365.1	54%	46.1%	
MC (%)	5,000	0.185	5.0	437.6	65%	35.4%	
Passing							
<u>After Washing</u>	2,000	0.0937	2.0	492.6	73%	27.2%	
Wt. Dry+Tare	1,250	0.0469	1.25	512.2	76%	24.4%	
Tare	630	0.0234	0.63	539.1	80%	20.4%	
Wt. Dry	315	0.0116	0.315	562.0	83%	17.0%	
Tare No.	160	0.0059	0.160	579.3	86%	14.4%	
	75	0.00295	0.075	593.0	88%	12.4%	
	PAN						

HYDROMETER DATA	READING	TIME (min)	DIAMETER (mm)	TEMP. (°C)	CORR. READING	PERCENT FINER THAN	REMARKS
Wt Dry+Tare 777.1	27	0.5	0.064	22	23	12.4%	
Wt Tare 100.0	25	1	0.046	22	21	11.3%	
Wt Dry 677.1	23	2	0.033	22	19	10.3%	
Sample Size : 50	22	5	0.021	22	18	9.7%	
Wt Retained 2 mm: 492.6	20	15	0.012	22	16	8.6%	
% Passing 2 mm: 27.2%	17	30	0.009	22	13	7.0%	
Specific Gravity : 2.70	15	60	0.006	22	11	5.9%	
Hydrometer No.: 43-9856	13	120	0.005	22	9	4.9%	
Solution (g/L) : 40	11	240	0.003	22	7	3.8%	
	10	1440	0.001	22	6	3.2%	
	9	2880	0.001	22	5	2.7%	

**AECOM**

SAMPLE: 3  
DEPTH :  
TECHNICIAN : GU





A photograph of a forest path, likely a hiking trail, winding through a dense forest of tall evergreen trees. The path is light-colored, possibly due to sunlight or a layer of snow/dust. In the distance, two small figures of people can be seen walking on the path. The entire image is overlaid with a semi-transparent teal color. In the bottom left corner, the text "Create. Enhance. Sustain." is written in white, stacked vertically.

Create.  
Enhance.  
Sustain.



# AECOM

