Assignment #6

MTO West Region Retainer 3014-E-0003
Part B (WP 3062-14-00)

Part B - Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), Sta (11+800 to 17+530), Twp of Townsend for approx. 5.8 km

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June 2016

Amec Foster Wheeler Reference Number: TB15300506 - Part B

Distributions

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1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure (formerly AMEC Environment & Infrastructure), a Division of Amec Foster Wheeler Americas Limited ("Amec Foster Wheeler"), was retained by the Ministry of Transportation of Ontario, West Region (MTO), to carry out a Pavement/Geotechnical investigation for Highway 3 – WP 3062-14-00 Part B: from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), Sta. (11+800 to 17+530) Twp of Townsend for approximately 5.8 km. Authorization to proceed was received from MTO by e-mail dated 23 February 2016.

The field investigation was carried out according to the requirements outlined in the Terms of Reference, and according to the requirements outlined in the "Provincial Pavement Engineering Investigation Guidelines, Version 1.1" June 2013 version and "Pavement Design and Rehabilitation Manual" 2nd edition 2013.

The 2010 traffic data and section lengths for the sections of Highway 3 are provided below:

Part B (WP 3062-14-00)

Location	Length	AADT	Commercial (%)
Simcoe East Limits to Renton (Norfolk CR 5/ Cockshutt Road)	5.80 km	10,300	8.0%

1.1 Terms of Reference

The scope of work was to prepare a Geotechnical Investigation Report (GIR) based on the results of the field investigation, and associated laboratory testing, carried out at locations specified in the scope of work of the assignment. The scope of work included the following tasks:

a) Geotechnical Investigations

The investigation for the Assignment consisted of drilling boreholes and/or obtaining asphalt cores as Listed in the Table 1.1 below. Boreholes were advanced to 1.5 m depth.

Table 1.1 Field investigation

Geotechnical Investigations	Cores	Boreholes (BHs) Core/boreholes (CBHs)	Depth (m)
Mainline (2-lanes)	6 +5 = **11 Cores**	**22 BHs** **6 CBHs** @ MDL **5 BHs** @ EP **6 BHs** @ MSH **5 BHs** @ SHR	1.5 m
Culverts	-	**15 borehole** for 5 Culverts @ Inlet/Outlet & 1.0 m from the CL of the Culvert.	1.5 m
Proposed Widening (Culver Road)	-	**48 BHs** for widening (Culver Rd) from Sta 12+780 to 13+230 **18 BHs** @ EP **5 BHs** @ MSH **5 BHs** @ SHR **10 BHs** @ Mid Slope **10 BHs** @ TOS	1.5 m
Paved Shoulders	**5 Cores****	- -	
Sideroads	**5 Cores** - Two (2) at Cockshutt Rd/Norfolk County Rd 5, - Two (2) at Blueline Road, - One (1) at Culver Road.		
Total	**21 Cores**	**79 BHs and 6 CBHs = 85**	**1.5 m**

Notes:

Mid Driving Lane= MDL EP= Edge of Pavement Mid Shoulder = MSH
Shoulder Rounding = SHR. TOS = Toe of the slope.

* 2 boreholes were cancelled during the field investigation by using the culvert BHs at EP .
** Number of cores increased from 4 to 5 for the shoulder during the field investigation.

The culverts to be replaced are as listed below:

Station	Township	ETR Plate No.	Culvert Type	Culvert Size
15+154.4	Townsend	125-3/10-0	CONC CULV OPEN	1.20 x 0.91 x 19.70
15+388.0	Townsend	125-3/11-0	CONC CULV OPEN	0.91 x 0.91 x 19.90
15+857.3	Townsend	125-3/11-0	CONC CULV OPEN	0.91 x 0.91 x 20.60
16+069.3	Townsend	125-3/12-0	CONC CULV RFO	2.80 x 1.50 x 37.90
16+707.4	Townsend	125-3/13-0	CONC CULV OPEN	0.91 x 0.91 x 20.30

b) Ground Penetration Radar (GPR)

GPR survey for Highway 3 for through Lanes – both directions. This data is to be correlated with the results of the core holes and boreholes and performs testing, analysis and mapping of asphalt and roadbed granular depth profiles.

c) Pavement Shoulder Survey

Pavement shoulder survey every 1.0 km; including Lane widths, shoulder width (including the partially paved shoulder), wheel rut depths, lane cross falls, shoulder cross falls, and presence and dimension of berm at the shoulder rounding any other shoulder irregularities.

d) Material Testing

LS-602 Sieve Analysis: 14 tests (7 tests for base, 7 tests for subbase)
LS-702 Particle Size: 7 tests of subgrade (Hydrometes)
LS-703/704 Atterberg Limits: 7 if required for possible cohesive subgrade soil locations.
LS 701, Moisture Content: 7 samples at random.

e) Preparation of Geotechnical Investigation Report (GIR)

Preparation of GIR, including logs of boreholes and pavement cores, granular and soils analyses, presented in MTO acceptable format.

2.0 GEOTECHNICAL/ PAVEMENT INVESTIGATIONS AND SOIL DATA

Prior to drilling, a pre-start safety meeting was held with all field personnel. One site visit was carried out to visualize the areas for investigation in order to prepare a work schedule and traffic control plan as per the Ontario Traffic Manual (OTM) - Book 7 (Temporary Conditions), January 2014 and the Occupational Health and Safety Act.

All boreholes were designated using MTO provided plan. Public utility companies were contacted to determine the locations of underground utilities within the limits of the project, and proper clearances were obtained. The field investigation was carried out according to the requirements outlined in the Terms of Reference, and according to the requirements outlined in the "Provincial Pavement Engineering Investigation Guidelines, Version 1.1" June 2013 version and "Pavement Design and Rehabilitation Manual" 2nd edition 2013.

2.1 Geotechnical and Pavement Investigation

The fieldwork was completed during the period of March 28th to April 1st 2016. The investigation comprised **21** cores, **79** boreholes and **6** core/boreholes as detailed in Table 1.1. The boreholes and coreholes were drilled to depths of 1.5 m below ground surface, or to auger refusal. Six (6) of the culvert borehole Nos. (63, 66,71,76, 82 and 83) drilled at EP were advanced from 2.0 to 3.0 m

All of the recovered soil samples were shipped in sealed containers to Amec Foster Wheeler's geotechnical laboratory for detailed visual examination and classification tests. The boreholes were advanced to the sampling depths using a trailer-mounted drilling rig CME 55 equipped with continuous flight augers and standard soil sampling equipment. The boreholes were advanced under the supervision of a member of Amec Foster Wheeler's engineering team, who directed the subsurface sampling and testing, and monitored the ground water conditions at each borehole. Also, a portable hand drilling equipment and/or a trailer mounted power auger, owned and operated by Amec Foster Wheeler and equipped with solid stem augers, were used. Samples were obtained via auger cuttings recovered from the borehole.

Upon completion of drilling, the boreholes were backfilled in accordance with the general requirements of Ministry of the Environment and Climate Change (MOECC) Regulation 903.
Borehole Logs, prepared using appropriate terminology as per OPSD 100.060, are presented in Appendix 'A'.

Soil profile has been prepared in accordance with the Provincial Pavement Engineering Investigation Guidelines, Version 1.1" June 2013 version as detailed in Appendix 'Figures'.

The soil and groundwater conditions and the results of in-situ and laboratory tests are presented on the corresponding Record of Boreholes Log Data, Appendix A. Results of the laboratory tests in soil samples, including water content, grain size distribution curves and plasticity chart, are included in Appendix C.

All coring and boring locations were marked as specified in the Terms of Reference. The conditions of the underlying granular materials were recorded. All holes were backfilled and properly compacted, and core holes were repaired with cold patch.

Tables 2.1, 2.2 and 2.3 summarize hot mix thickness encountered from the coring investigation sections on Hwy 3 WB and EB lanes. Selected core photos are presented in Appendix 'Photos'.

Table 2.1 Summary of Asphaltic Concrete Thickness for Hwy 3 Mainline

Core #		Location/Station		Northing & Easting	HMA Total (mm)
CBH	1	(12+000)	EBDL	17 T 558575 4744380	280
Core	2	(12+250)	EBDL	17 T 558813 4744435	290
CBH	3	(12+500)	WBDL	17 T 559065 4744491	250
Core	7	(16+750)	WBDL	17 T 563229 4745407	245
CBH	55	(14+000)	EBDL	17 T 560501 4744808	300
Core	8	(14+250)	EBDL	17 T 560761 4744864	275
CBH	57	(14+500)	WBDL	17 T 561023 4744926	270
Core	10	(15+250)	WBDL	17 T 561746 4745080	260
CBH	72	(16+000)	EBDL	17 T 562469 4745230	315
CBH	78	(16+500)	WBDL	17 T 562959 4745347	300
				Minimum **Maximum** **Average**	**245 mm** **315 mm** **280 mm**

Table 2.2 Summary of Asphaltic Concrete Thickness for Shoulders of Hwy 3

Core #		Location/Station		Northing & Easting	HMA Total (mm)
Core	1	(12+000)	EB	17 T 558563 4744388	255 (1)
Core	4	(13+500)	WB	17 T 560026 4744705	270 (1)
Core	9	(15+000)	EB	17 T 561548 4745029	75
Core	11	(16+500)	WB	17 T 563010 4745359	230
Core	14	(17+500)	WB	17 T 564473 4745678	250 (1)

Notes:

(1) Not paved shoulder. Core were taken at EP.

(2) Core 4 – shoulder not paved core taken @ E-N to Blue Lane Rd.

Table 2.3 Summary of Asphaltic Concrete Thickness for Sideroads

Core #		Location/Station		Northing & Easting	HMA Total (mm)
Core	3	Culver Rd 13+040	NB	17 T 559581 4744636	85
Core	5	Blue Ln Rd, 13+550	SB	17 T 560168 4744773	150
Core	6	Blue Ln Rd, 13+550	NB	17 T 560189 4744704	160
Core	12	Cockshutt Rd/Norfolk CR 5, 17+240	NB	17 T 563692 4745540	260
Core	13	Cockshutt Rd/Norfolk CR 5, 17+240	SB	17 T 563710 4745481	130

2.2 Pavement and Shoulder Survey

A cross-fall reading and wheel track rut measurements were taken every 1000 metres along Highway 3. A smart level was used to determine the cross-fall measurements on the roadway and shoulders. Tables 2.4. summarizes cross-fall survey on Hwy 3 WB and EB lanes.

Table 2.4 Smart Level Cross-fall Measurements and Wheel Track Rut Measurements

Station	Direction	Lane Width (m)	Shoulder Width (m)	Rut Measurements (mm)		Crossfall (%), Driving Lane		Crossfall (%), Shoulder		Remarks
				Inside	Outside	Inside	Outside	Inside	Outside	
12+000		3.4				-1.8	-1.6			Lane measured to the white line.
	EBL	3.8	0.2 (paved) + 2.2 (unpaved)	8	8	-1.8	-1.9	-2.2		
	WBL	3.8	0.6 (paved) + 3.0 (unpaved)	8	8	-1.4	-1.7	-0.8		Lane measured to the white line. 6 " Berm
13+000	EBL	3.5	0.7 (paved) + 3.0 (unpaved)	10	10	-1.7	-1.3	-2.7		
	WBL	3.55	0.7 (paved) + 3.0 (unpaved)	15	15	-1.3	-1.0	-0.4		
14+000	EBL	3.55	0.5 (paved) + 2.9 (unpaved)	10	10	-2.0	-1.4	-4.7		
	WBL	3.55	0.5 (paved) + 2.4 (unpaved)	15	25	-1.6	-1.8	-3.5		
15+000	EBL	3.6	0.7 (paved) + 2.6 (unpaved)	15	15	-1.3	-1.0	-2.0		
	WBL	3.6	0.7 (paved) + 2.5 (unpaved)	15	20	-1.7	-1.6	-2.6		
16+000	EBL	3.8	0.7 (paved) + 2.8 (unpaved)	15	15	-1.3	-0.9	-2.4		Beginning of Guardrail.
	WBL	3.7	0.7 (paved) + 2.7 (unpaved)	15	25	-1.2	-1.1	-1.5		
17+000	EBL	3.6	0.6 (paved) + 2.5 (unpaved)	20	15	-2.1	-1.5	-2.5		
	WBL	3.6	0.6 (paved) + 3.0 (unpaved)	20	10	-2.0	-1.2	-2.2		

2.3 Subsurface Conditions

The subsurface conditions encountered in the boreholes are detailed on the Record of Borehole Logs in Appendix 'A'. Typically, granular fill material was encountered in all boreholes under the asphalt pavement and was considered as the granular base and subbase. Buried concrete was encountered and was considered granular material.

Buried concrete and asphalt were encountered at the following borehole locations:

BH# /CBH#	Location	Buried Concrete
CBH 1	(12+000) EBDL	Between 700-890 mm
BH 77	(16+250) EBDL	Between 750-900 mm
BH 78	(16+500) WBDL	Between 850-980 mm

All boreholes were open and dry upon completion to their respective vertical limits of investigation except in boreholes Nos. (38, 42, 48, 52, 60, and 71) and water level ranged from 0.4 m to 2.0 m).

It should be noted that the groundwater table could fluctuate seasonally and in response of weather events. Typically, soils recovered from the boreholes were moist.

Tables 2.5 summarizes borehole and core/borehole locations and soil stratigraphy at the mid-driving (MDL), Edge of Pavement (EP), Mid-Shoulder (MSH), shoulder rounding (SHR), Mid of existing slope and toe of the slope (TOS).

Table 2.6 Summarizes boreholes locations and soil stratigraphy at inlet, outlet and at the existing edge of pavement, offset approximately 1 m from the centreline of the culvert.

Table 2.5 Summary of Borehole/Coreholes and Soil Stratigraphy for Hwy 3 (Mainline (EB & WB)

Number of Core/bores - Boreholes		Thickness (mm)			Predominant Subgrade Soils
		Tps	HMA	Base/Subbase	
6 CBH #s (#s 1 [(1)], 3, 55, 72, 78[(1)]) **1 BH# 77** [(1)]	MDL	-	250-315 mm Av.290 mm	250-680 mm Av. 510 mm	Si(y) Cl W Org Si(y) Sa Tr Gr & Cl Si(y) Sa Tr Gr & Cl W Org Si(y) Cl some Sa Tr Gr Occ Cob Si(y) Cl some Sa, Tr Gr Si(y) F Sa
10 BH #s (53, 59, 67, 83, 85) (63, 66, 71, 76, 82) [(2)]	EP	-	0-205 mm Av.130 mm	460-1,850 mm Av. 780 mm	Si(y) Sa W Org Si(y) Cl W Org Si(y) Cl Si(y) Cl some Sa Si(y) Cl W Org F to M Sa W Si some Cob Si(y) Cl some Org Si(y) Cl some Sa
6 BH #s (2, 4, 56, 58, 73, 79)	MSH	-	-	400-700 mm Av. 580 mm	Sa(y) Si(y) Cl Tr Gr Si(y) F Sa Sa W Si some Gr Tr Cl Si(y) Cl W Org Tr Cob Si(y) Cl Si(y) Cl some Org
5 BH #s (54, 60, 68, 84, 86)	SHR	100-200 mm Av.130 mm	-	0-780 mm Av. 480 mm	Si(y) Sa W Org Si(y) Sa Tr Gr some Cl W Org Si(y) Cl Tr Sa Si(y) Cl Tr Gr

Number of Core/bores - Boreholes		Thickness (mm)			Predominant Subgrade Soils
		Tps	HMA	Base/Subbase	
Proposed Widening (Culver Road) from Sta(12+780 to 13+230)					
18 BH #s (5, 9, 13, 14, 15, 19, 23, 24, 25, 29, 33 34, 35, 39, 43, 44, 45. 49)	EP	-	120-260 mm Av. 195 mm	150-800 mm Av. 545 mm	Si(y) F Sa Si(y) F Sa Tr Gr Si(y) F Sa & Gr Tr Cob Si(y) F Sa Tr Gr & Cob Si(y) Sa & Gr Si(y) Cl W Sa, Tr Gr Sa W Si Tr Gr & Cl & Cob Sa W Si Tr Gr & Cl Sa(y) Gr some Si Tr Cl Gr(y) Sa some Si Tr Cl
5 BH #s (6, 10, 30, 46, 50)	MSH	-	-	300-750 mm Av. 590 mm	Si(y) F Sa Tr Gr Si(y) F Sa Si(y) F Sa Tr Org
5 BH #s (16, 20, 26, 36, 40)	SHR				Si(y) F Sa some Gr Si(y) Sa Tr Gr & Cob Si(y) F Sa Tr Gr
10 BH #s (7, 11, 17, 21, 27, 31, 37, 41, 47, 51)	Mid of Slope	140-200 mm Av.160 mm	-	1,350 mm Only in BH 11	Si(y) F Sa Tr Gr F Sa Tr Gr Si(y) F Sa Tr Gr & Cob Sa W Si Tr Gr & Cl Si(y) F Sa Si(y) Sa & Gr Tr Org Si(y) Sa Tr Gr & Cob Si(y) Sa Tr Gr & Org

Number of Core/bores - Boreholes		Thickness (mm)			Predominant Subgrade Soils
		Tps	HMA	Base/Subbase	
10 BH #s (8, 12, 18, 22, 28, 32, 38, 42, 48, 52)	TOS	150-250 mm Av. 185 mm	-	0-1,350 mm Av. 280mm	Gr(y) Sa F Sa Tr Gr Si(y) Sa some Cob & Gr Si(y) Sa Tr Gr Occ Cob Si(y) Sa some Cl Tr Gr Si(y) F Sa Si(y) Sa & Gr Si(y) Sa Tr Gr Si(y) Sa & Gr Tr Cl

Notes:
CBHs description as per OPSD 100.060

(1) Concrete encountered in these BH locations.
(2) BHs at EP from the culvert investigation.

Table 2.6 Summary of Boreholes and Soil Stratigraphy for Culverts

Culvert #	Location	Number of Boreholes			Thickness (mm)			Predominant Subgrade Soils
					Tps	HMA	Base/Subbase	
1	Sta 15+154 Twp of Townsend	BH	61	Inlet	200	-	-	Si(y) Sa Tr Gr
		BH	62	Outlet	200	-	-	Si(y) Cl some Sa Tr Org
		BH	63	EP	-	180	720	Si(y) Cl
2	Sta 15+388 Twp of Townsend	BH	64	Inlet	210	-	-	Si(y) Cl Tr Gr
		BH	65	Outlet	200	-	-	Si(y) Cl
		BH	66	EP	-	-	710	Si(y) Cl some Sa
3	Sta 15+857 Twp of Townsend	BH	69	Inlet	300	-	-	Si(y) Cl Tr Gr & Rootlets
		BH	70	Outlet	200	-	-	Si(y) Cl Tr Org
		BH	71	EP	-	150	1,850	F to M Sa W Si some Cob
4	Sta 16+069 Twp of Townsend	BH	74	Inlet	300	-	-	Si(y) Cl Tr Sa Occ Gr
		BH	75	Outlet	300	-	-	Si(y) Cl Tr Sa & Gr
		BH	76	EP	-	-	700	Si(y) Cl some Org
5	Sta 16+707 Twp of Townsend	BH	80	Inlet	300	-	-	Si(y) Cl Tr Sa Occ Gr
		BH	81	Outlet	300	-	-	Si(y) Cl
		BH	82	EP	-	160	1,040	Si(y) Cl some Sa

BHs description as per OPSD 100.060

2.4 GPR Survey Analysis and Reporting

Amec Foster Wheeler retained Stantec as a sub-consultant to undertake Ground Penetrating Radar (GPR) Testing, Analysis and Reporting. The test locations adopted for GPR Survey and data collecting, analysis and conclusions are detailed in a separate report completed by Stantec, which is included in Appendix 'B' with the data analysis for every 1 m and 5 m EB and WB in an Excel file.

2.5 Laboratory Testing Results

All appropriate laboratory tests were performed as specified in the Terms of Reference and in the MTO Pavement Design and Rehabilitation Manual, 2nd edition 2013. Sufficient granular materials and soils were collected from each borehole. The following laboratory tests were performed:

16 tests for the Determination of Moisture Content of Soils (ASTM D2216)	LS-701
14 tests for the Analysis of Aggregates	LS-602
12 tests for the Determination of Particle Size Analysis of Soils (Hydrometers)	LS-702
12 tests for the Determination of Atterberg Limits (ASTM D4318) (34 tests)	LS-703/704

The laboratory test results are presented on borehole logs in Appendix 'A' and detailed in Appendix 'C'.

Table 2.7 summarizes laboratory results and subgrade soil conditions for Hwy 3 WB and EB lanes.

Table 2.7 Summary of Laboratory Results

BHs# / CBHs#		Stations, o/s of CL		% Passing				OPS.PROV 1010 & Frost Susceptibility (75-5µm)*	Atterberg Limits			Unified Soil Classification	M/C (%)
				Gravel >4.75mm	Sand 75µm to 4.75mm	Fines < 75µm			LL	PL	PI		
						Silt	Clay						
BH #2	AS3	(12+000), 8.4m Rt	MDL	6	33	49	12	MSFH	29	16	13	**CL:** Sa(y) Si(y) Cl Tr Gr	14.3
CBH #3	AS1	Sta (12+500), 2.1 m Lt of CL	MDL	34	49	17		Accep. SSM	-	-	-	Gr(y) Sa some Si	3.0
	AS2			27	51	22		Accep. SSM	-	-	-	Sa W Si & Gr	-
	AS3			1	65	30	4	LSFH	Non-plastic			Si(y) Sa Tr Gr & Cl	11.1
BH #13	AS1	Sta (12+850), 4.1 m Rt of CL	MDL	38	50	12		Accep. SSM	-	-	-	Gr(y) Sa some Si	-
	AS2			28	56	16		Accep. SSM	-	-	-	Sa W Gr some Si	-
	AS3			53	35	10	2	LSFH	Non-Plastic			Sa(y) Gr some Si Tr Cl	4.9
BH #24	AS1	Sta (12+950), 3.9 m Lt of CL	MDL	25	60	15		Accep. SSM	-	-	-	Sa W Gr some Si	4.6
	AS2			30	53	17		Accep. SSM	-	-	-	Gr(y) Sa some Si	-
	AS4			32	53	12	3	LSFH	Non-Plastic			Gr(y) Sa some Si Tr Cl	5.5

Table 2.7 Summary of Laboratory Results

BHs# / CBHs#		Stations, o/s of CL		% Passing				OPS.PROV 1010 & Frost Susceptibility (75-5µm)*	Atterberg Limits			Unified Soil Classification	M/C (%)
				Gravel >4.75mm	Sand 75µm to 4.75mm	Fines < 75µm			LL	PL	PI		
						Silt	Clay						
BH #27	AS3	(13+000), 9.2 m Rt	MDL	7	57	27	9	LSFH	19	15	4	**CL-ML:** Sa W Si Tr Gr & Cl	17.3
BH #33	AS4	(13+050), 4.1 m Rt	MDL	1	28	59	12	M-HSFH	22	14	8	**CL:** Si(y) Cl W Sa, Tr Gr	19
BH #35	AS1	(13+100), 4.0 m Rt	MDL	38	54	8		Accep. Gran B	-	-	-	Gr(y) Sa Tr Si	-
	AS2			40	48	12		Accep. SSM	-	-	-	Gr & Sa some Si	-
BH #35	AS3	(13+100), 4.0 m Rt	MDL	4	71	20	5	LSFH	Non-Plastic			Sa W Si Tr Gr & Cl & Cob	11.2
BH #49	AS1	Sta (13+200), 4.0 m Lt of CL	MDL	39	51	10		Accep. Gran B	-	-	-	Gr(y) Sa Tr Si	5.1
	AS2			19	62	19		Accep. SSM	-	-	-	Sa some Gr & Si Tr Cob	-
	AS3			2	66	26	6	LSFH	Non-Plastic			Br Sa W Si Tr Gr & Cl	11.6
CBH #55	AS1	Sta (14+000), 2.0 m	MDL	19	72	9		Accep. Gran B	-	-	-	Sa some Gr Tr Si	-

Table 2.7 Summary of Laboratory Results

BHs# / CBHs#		Stations, o/s of CL		% Passing				OPS.PROV 1010 & Frost Susceptibility (75-5µm)*	Atterberg Limits			Unified Soil Classification	M/C (%)
				Gravel >4.75mm	Sand 75µm to 4.75mm	Fines < 75µm			LL	PL	PI		
						Silt	Clay						
	AS2	Rt of CL		20	67	13		Accep. SSM	-	-	-	Sa W Gr some Si	-
	AS3			9	48	34	9	LSFH	21	18	3	**ML:** Si(y) Sa Tr Gr & Cl W Org	15
BH #56	AS4	(14+000), 5.25 m Rt	MDL	11	55	28	6	LSFH	17	14	3	Sa W Si some Gr Tr Cl	13.9
CBH #57	AS3	(14+500), 2.1 m Lt	MDL	1	13	45	41	LSFH	36	16	20	**CI:** Si(y) Cl some Sa Tr Gr Occ Cob	20.2
CBH #72	AS1	Sta (16+000), 2.1 m Lt of CL	MDL	23	63	14		Accep. SSM	-	-	-	Sa W Gr some Si	5.3
	AS2			19	68	13		Accep. SSM	-	-	-	F Sa some Si & Gr	-
	AS3			1	12	45	42	LSFH	42	17	25	**CI:** Si(y) Cl some Sa, Tr Gr	21.3

BHs an CBHs description as per OPSD 100.060

3.0 CLOSURE

The Limitations of Report as provided on the following page is an integral part of this report.

We trust that this Geotechnical Investigation Report is satisfactory for your purpose. Should there be any questions, or if we can be of further, please do not hesitate to contact us at your convenience.

Yours very truly

Amec Foster Wheeler Environment & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited

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REPORT LIMITATIONS

The conclusions and recommendations given in this report are based on information determined at the test hole locations. The information contained herein in no way reflects on the environmental aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the test holes may differ from those encountered at the test hole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. It is recommended practice that the Geotechnical Engineer be retained during the construction to confirm that the subsurface conditions across the site do not deviate materially from those encountered in the test holes.

The design recommendations given in this report are applicable only to the project described in the text, and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known, Amec Foster Wheeler Environment & Infrastructure recommends that we be retained during the final design stage to verify that the design is consistent with our recommendations, and that assumptions made in our analysis are valid.

The comments made in this report relating to potential construction problems and possible methods of construction are intended only for the guidance of the designer. The number of test holes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices. No other warranty is expressed or implied.

The benchmark and elevations mentioned in this report were obtained strictly for use by this office in the geotechnical design of the project. They should not be used by any other party for any other purpose.

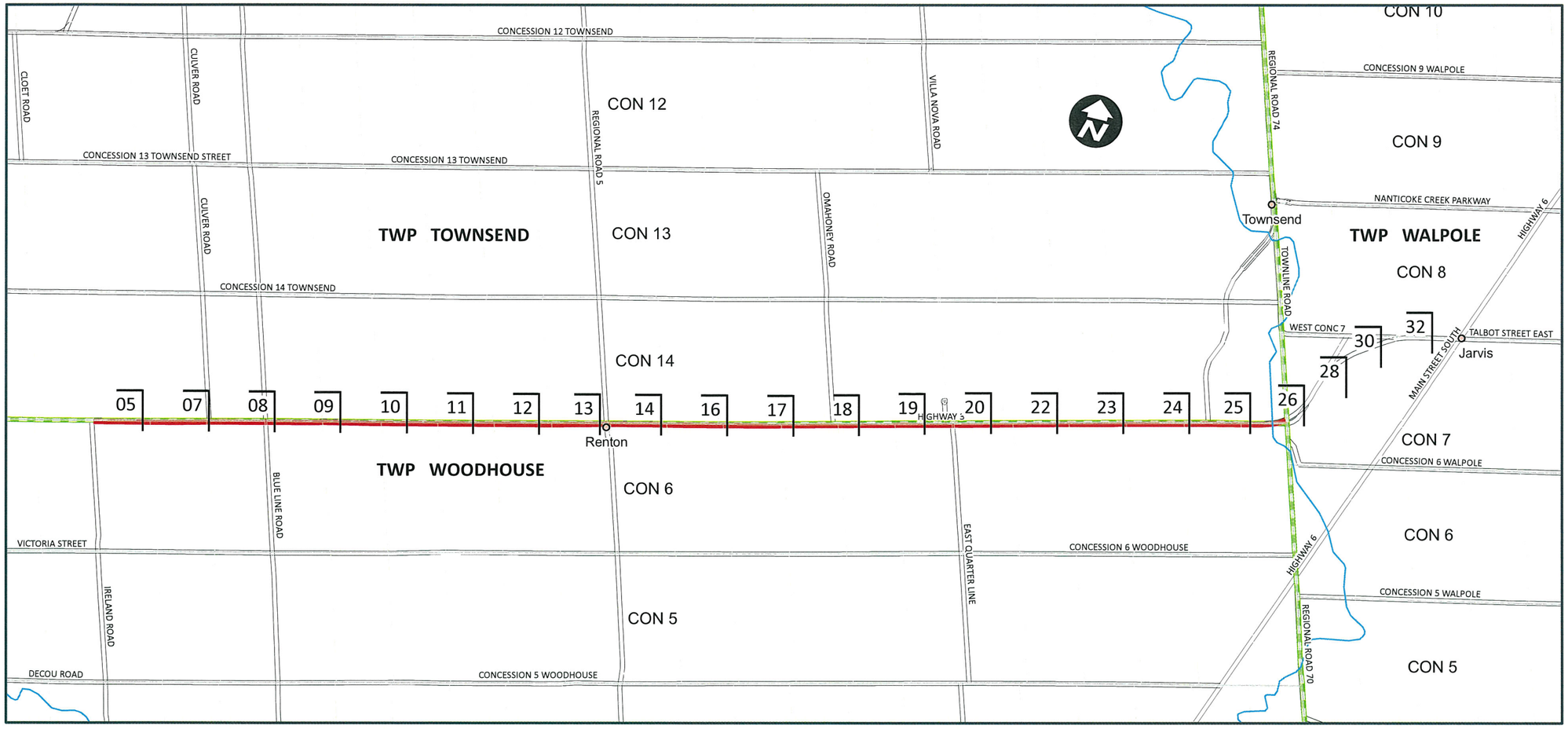
Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Amec Foster Wheeler Environment & Infrastructure accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

TM-GEO-03-02

Appendix ‘Figures’

ETRs with BH locations
Soil Profile

METRIC 125 - 3



ENGINEERING & TITLE RECORDS

KING'S HIGHWAY 3

GEOGRAPHIC TOWNSHIP

TOWNSEND & WOODHOUSE

COUNTY

NORFOLK

10 + 000.000 TO 26 + 400

Ontario

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-707 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/5-0

CONT No

WP No

STA 11+700 TO STA 12+400

Survey 84-10 Revised

SHEET

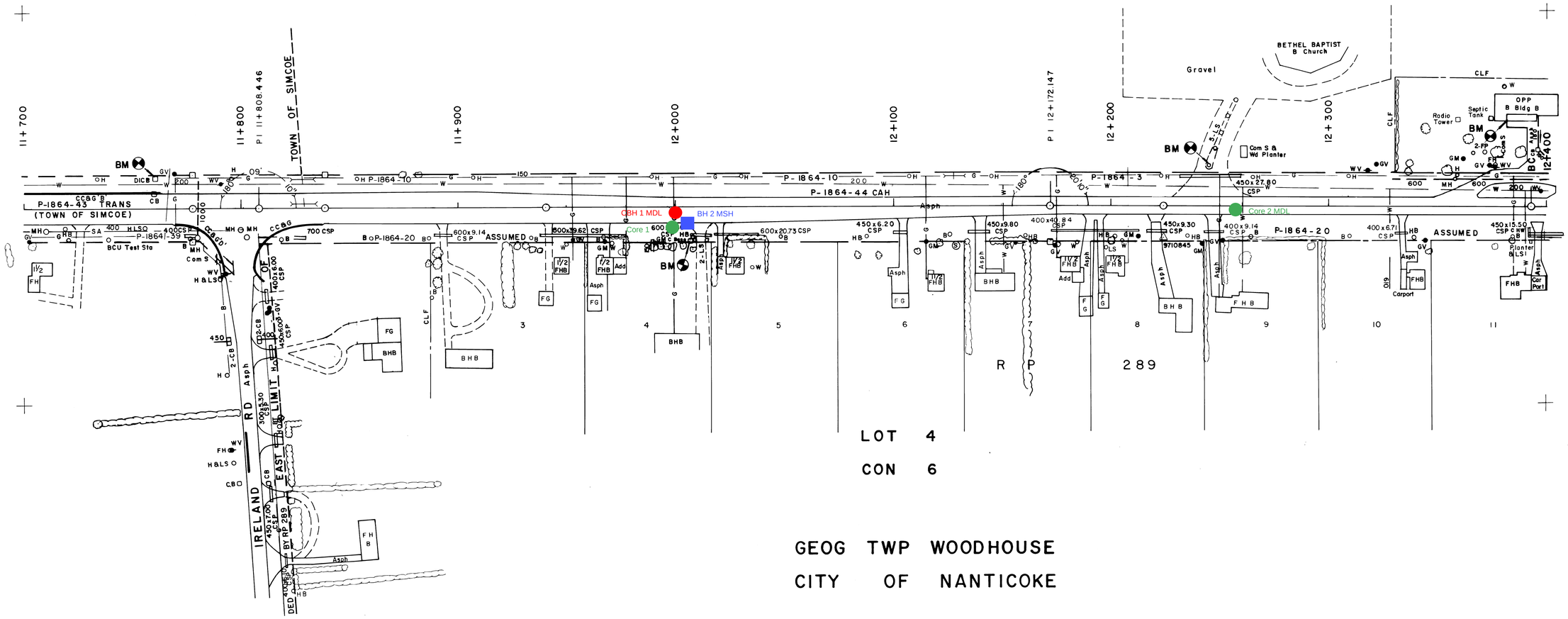
87-01 Permit Sta 121330
83-10 NET
PERMIT 90-01
Permits 111-02 Add's to homes
Survey Update 91-08
92-01
PERMIT 92-05
Permit 94-09

TOWN OF SIMCOE

CITY OF NANTICOKE
GEOG TWP TOWNSEND

CON 14
LOT 3

CON 14
LOT 4



LOT 4
CON 6

GEOG TWP WOODHOUSE
CITY OF NANTICOKE

SCALE
10m 0 20m

MR (2)

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/7-0

CONT No

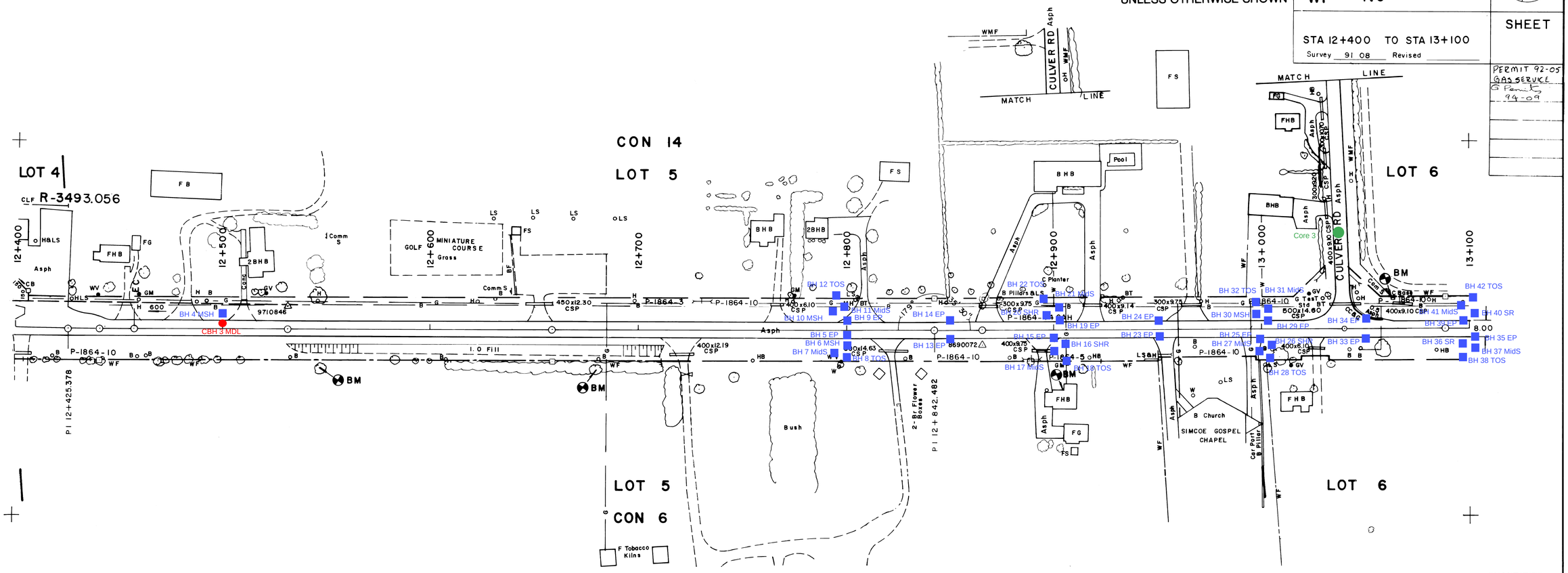
WP No

STA 12+400 TO STA 13+100

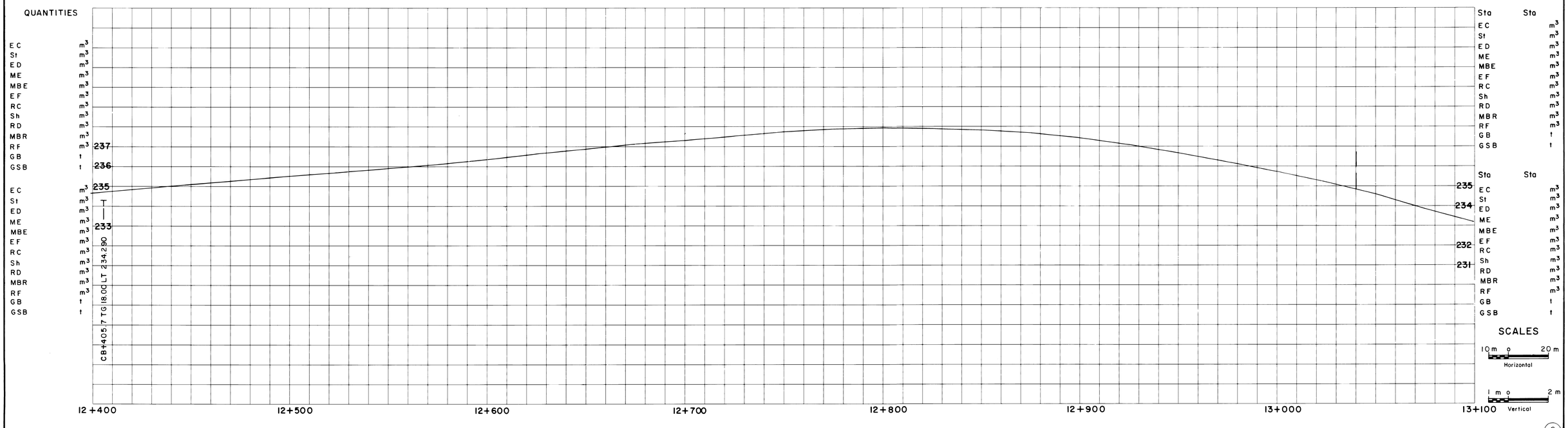
Survey 91 08 Revised

SHEET

PERMIT 92-05
GAS SERVICE
G Pennock
94-09



QUANTITIES



SCALES

10 m 0 20 m Horizontal

1 m 0 2 m Vertical

MR (2)

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/8-0

CONT No

WP No

STA 13+100 TO STA 13+800

Survey 91 08 Revised

SHEET

G Plan L 93-09
P-1864-49A 96-06

CON 14

LOT 6

LOT 7

CON 6

LOT 6

LOT 7

MATCH LINE

BLUE LINE RD N Asph

BLUE LINE RD S Asph

ALLCE RD Asph

P-1864-49A

P-1864-44 CAH

P-1864-10

P-1864-49A TRANS

P-1864-49A TRANS

600x9.20 CSP

500x9.30 CSP

400x9.14 CSP

600x28.60 CSP

450x15.30 CSP

300x7.20 CSP

900x20.40 CSP

R-3493.056

P I 13+149.545

P I 13+659.689

BC

EC

BM

DHO BM 9-68

Core 4

Core 5

Core 6

BH 43 EP

BH 44 EP

BH 45 EP

BH 46 MSH

BH 47 MidS

BH 48 TOS

BH 49 EP

BH 50 MSH

BH 51 MidS

BH 52 TOS

BH 53 EP

BH 54 SR

Bush

F BLDG

C B Bldg

F Bldg

FG

FS

FB

2½ BHB

13+100 13+200 13+300 13+400 13+500 13+600 13+700 13+800

8.00

QUANTITIES

EC	m³
St	m³
ED	m³
ME	m³
MBE	m³
EF	m³
RC	m³
Sh	m³
RD	m³
MBR	m³
RF	m³
GB	t
GSB	t

234
232
231
226
225
223
222

SCALES

10 m o 20m Horizontal

1 m o 2 m Vertical

MR

(2)

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/9-0

CONT No

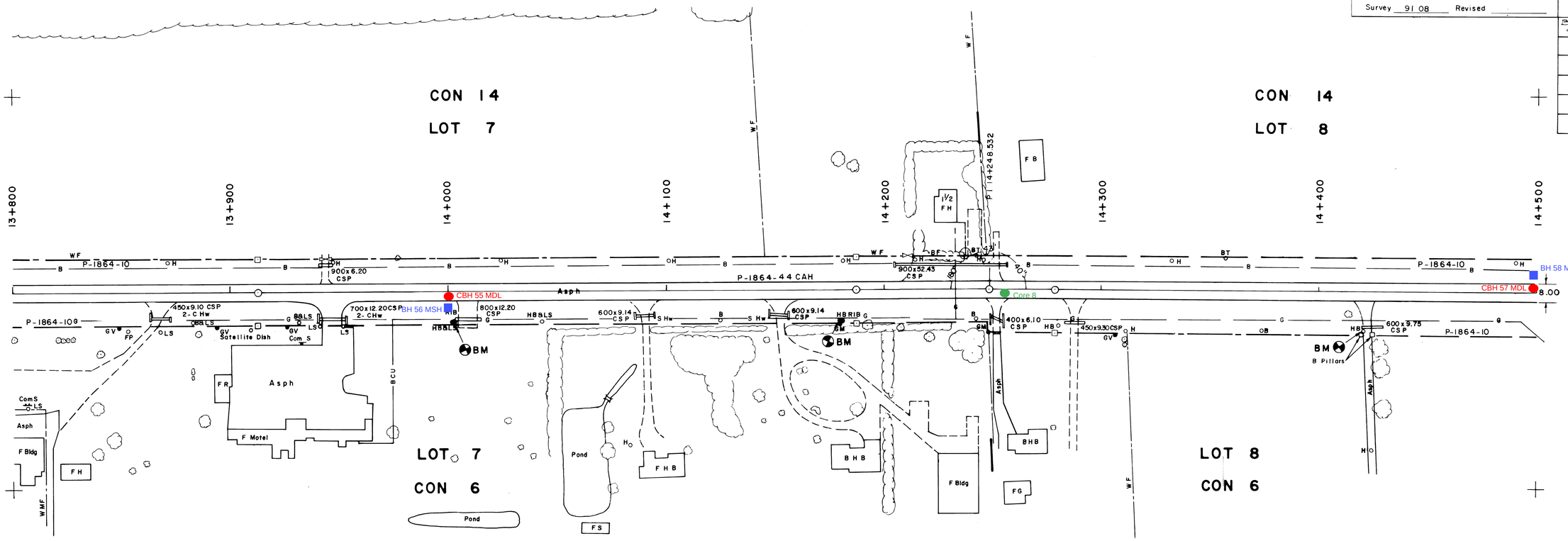
WP No

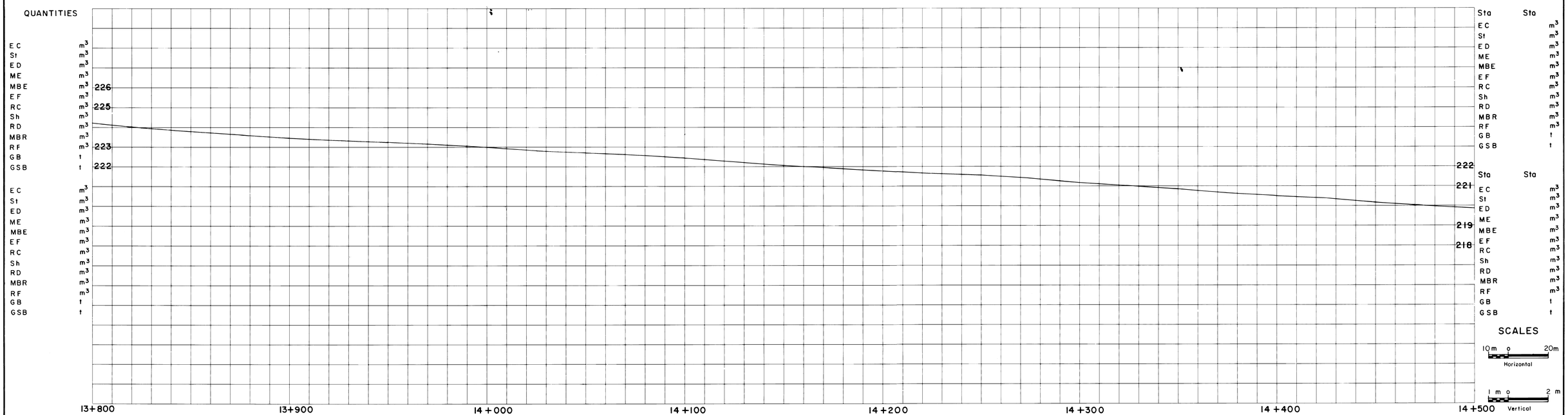
STA 13+800 TO STA 14+500

Survey 91 08 Revised

SHEET

BP amdt 93-07





MR (2)

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/10-0

CONT No

WP No

STA 14+500 TO STA 15+200

Survey 91 08 Revised

SHEET

S Pam E 99-09

CON 14
LOT 8

CON 14
LOT 9

14+500 14+600 14+700 14+800 14+900 15+000 15+100 15+200

LANE

Com St

WF

FB

Tank

G

1½ FH

Wo

BM

RIB

37'

9710852

P-1864-10

P-1864-44 CAH

Asph

8.00

900x6.10 CSP

450x914 CSP

600x9.75 CSP

P-1864-10 B Test Stn

P-1864-15 ABAND

BF

GM

BM

Conc

BHB

Core 9

BH 59 NP

BH 60 SR

BH 62

BH 63 EP

BH 61

P-1864-10

P1 15+017.572

LOT 8
CON 6

LOT 9
CON 6

FB

QUANTITIES

EC m³
St m³
ED m³
ME m³
MBE m³
EF m³
RC m³
Sh m³
RD m³
MBR m³
RF m³
GB t
GSB t

222
221
219
218

Sta Sta

217
216

I.20 x 0.91 x 19.70 CONC CULV OPEN
+154.4 TO 9.90 RT 216.690
TO 9.80 LT 216.540

SCALES

10 m o 20 m Horizontal

1 m o 2 m Vertical

14+500 14+600 14+700 14+800 14+900 15+000 15+100 15+200

2
MR

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/11-0

CONT No

WP No

STA 15+200 TO STA 15+900

Survey 9108 Revised

SHEET

PERMIT 92-05
GAS SERVICE
93-09

LOT 9

LOT 10

F Mink Pens

F Mink Pen

300x3.66 CSP

P I 15+601.364

F Add

F H

Pump H

F B

F G

1½ BH B

1½ F HB

F HB

F S

1½ F H

BHB

Asph

WMF

F P

G M

450x3.50 CSP

400x3.14 CSP

400x6.10 CSP

15+200

15+300

15+400

15+500

15+600

15+700

15+800

15+900

BH 65

BH 66 EP

BH 64

BH 68 SR

BH 67 EP

BH 69

BH 71 EP

BH 70

BM

Core 10

P-1864-4

P-1864-10

P-1864-44 CAH

1.5 Fill

8.00

8690070△

LOT 9

LOT 10

CON 6

QUANTITIES

EC m³
St m³
ED m³
ME m³
MBE m³
EF m³
RC m³
Sh m³
RD m³
MBR m³
RF m³
GB t
GSB t

220
219
217
216

0.91 x 0.91 x 19.90 CONC CULV OPEN
+387.5 TO 10.00 LT 217.175
+388.4 TO 9.80 RT 216.895

0.91 x 0.91 x 20.60 CONC CULV OPEN
+856.9 TO 10.10 LT 215.245
+857.7 TO 10.50 RT 215.250

Sta

218
217
216
215

SCALES

10 m o 20 m Horizontal

1 m o 2 m Vertical

15+200 15+300 15+400 15+500 15+600 15+700 15+800 15+900

2
MR

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/12-0

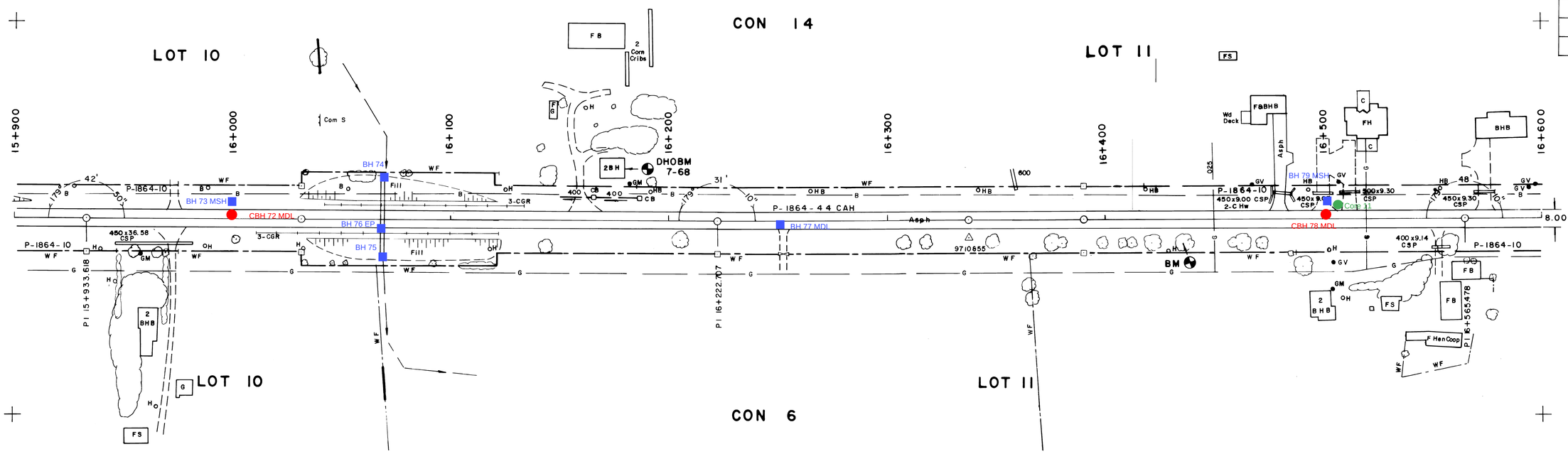
CONT No

WP No

STA 15+900 TO STA 16+600

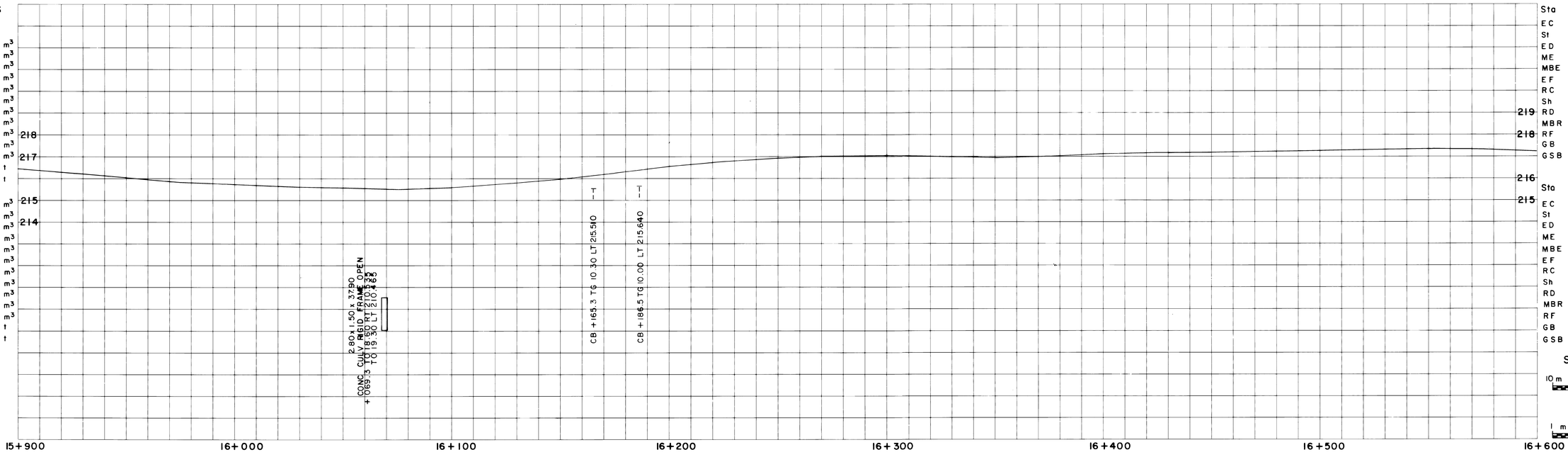
Survey 91 08 Revised

SHEET



QUANTITIES

EC m³
St m³
ED m³
ME m³
MBE m³
EF m³
RC m³
Sh m³
RD m³
MBR m³
RF m³
GB t
GSB t



QUANTITIES

Sta Sta
EC m³
St m³
ED m³
ME m³
MBE m³
EF m³
RC m³
Sh m³
RD m³
MBR m³
RF m³
GB t
GSB t

SCALES

10 m o 20 m Horizontal

1 m o 2 m Vertical

15+900 16+000 16+100 16+200 16+300 16+400 16+500 16+600

2 MR

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-708 79-06

METRIC

DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

PLATE No 125-3/13-0

CONT No

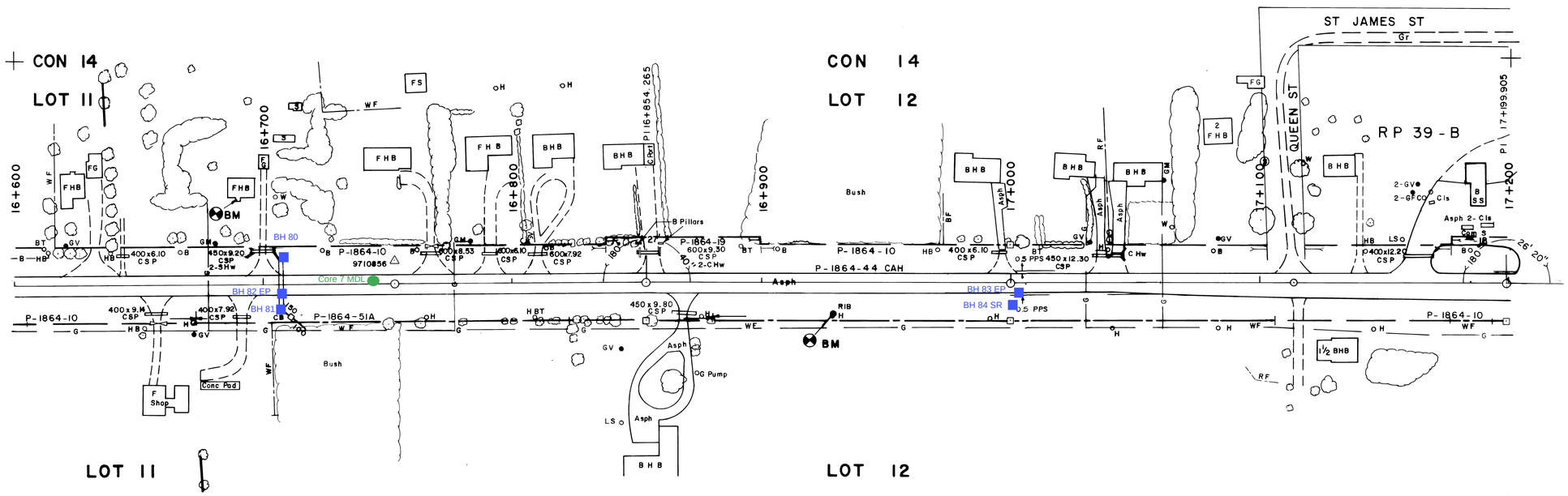
WP No

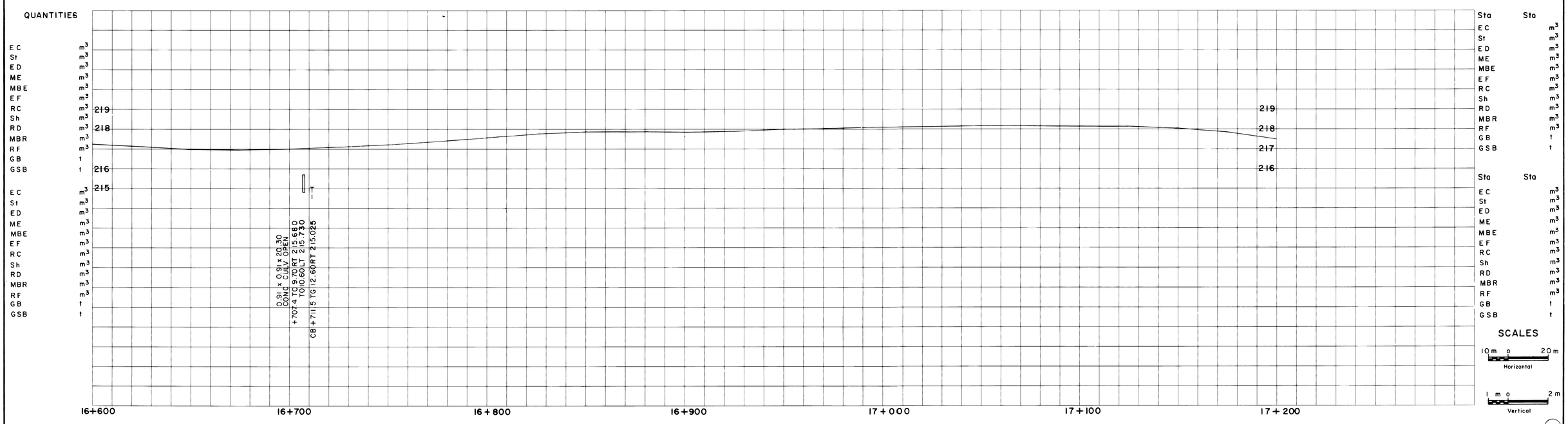
STA 16+600 TO STA 17+200

Survey 91 08 Revised

SHEET

As Constructed
81 08 92-05
G Permit
93-05
Bldg Permit
99-09





MINISTRY OF TRANSPORTATION AND COMMUNICATIONS ONTARIO PR-D-707 79-06

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

PLATE No 125-3/14-0

CONT No

WP No

STA 17+200 TO STA 17+900

Survey 9108 Revised

SHEET

As Constructed
87-08 92-05
Perm. G.
94-09

RENTON

ST JAMES ST

REG RD 5 (BOSTON RD)

RP 39B

HOT 17+250.800 HWY 3
=HOT 10+000.000 REG RD 5 (BOSTON RD)

CON 14
LOT 13

LOT 12
CON 6

LOT 13
CON 6

MATCH LINE

TRANS CITY NANTICOKE

REG RD 5 ALLCE

BH 86 SR
BH 85 EP
Core 12
Core 13
Core 14

DHO BM 6-68

SCALE
10 m 0 20 m

JPS

2

Sta 12+000 to Sta 16+500

METRIC

SOILS PROFILE

MTO West Region Retainer 3014-E-0003
Assignment #6: WP 3062-14-00
Part B - Hwy 3 the Town of Simcoe E Limits (Ireland Rd) to Renton (Norfolk CR 5/Cockshutt Rd), Approx. 5.8 km

Figure No.: 1

Prepared: JUNE/16

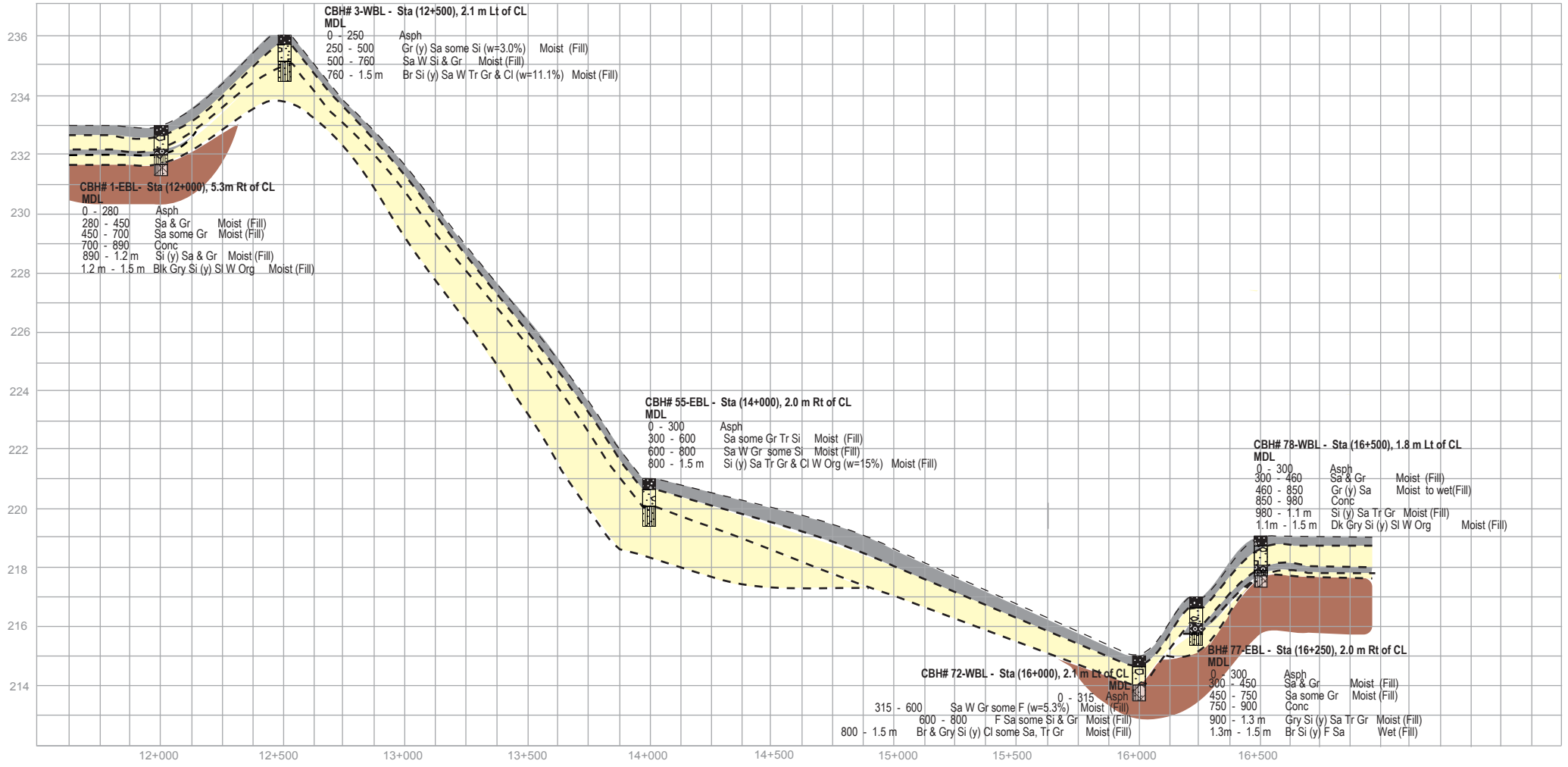
Revision: 0

Drawn by: JS
Checked by: HS

amec foster wheeler
505 Woodward Avenue, Unit 1, Hamilton, Ontario L8H 6N6
tel. (905) 312-0700 www.amecfw.com

LEGEND

- ASPHALT
- CONCRETE
- SILTY CLAY/SILTY SANDY CLAY (SOMETIMES WITH TRACE ORGANICS)
- APPROXIMATE ELEVATION (FROM GPS MEASUREMENTS SURVEY WAS NOT CONDUCTED)
- SAND AND GRAVEL / GRAVELLY SAND (SOMETIMES WITH TRACE GRAVEL AND COBBLES)
- SILTY SAND AND GRAVEL
- SILTY SAND / SANDY SILT (SOMETIMES WITH TRACE GRAVEL AND SEAMS OR TRACE ORGANICS)



SCALE

HORIZONTAL 0 2.5 5.0 m

VERTICAL 0 1.25 2.5 m

Appendix ‘A’

- Geotechnical Survey Data
- Terminology as per OPSD 100.060
- Borehole Logs with Laboratory Results

GEOTECHNICAL SURVEY DATA SHEET DISCLAIMER

GEOTECHNICAL SURVEY DATA	
DATE OF SURVEY	**TYPE OF SURVEY**
March 28th to April 1st 2016.	The investigation of Highway 3 comprised **21** cores, **85** boreholes and core/boreholes; GPR and Pavement and Shoulder Survey, every 1000 m EB and WB.

NOTE:

- CONDITIONS APPLY ONLY TO THE TIME OF THE SURVEY.
- THE BOUNDARIES BETWEEN STRATA HAVE BEEN ESTABLISHED ONLY AT BOREHOLE LOCATIONS. BETWEEN BOREHOLES THE BOUNDARIES ARE ASSUMED.
- SOILS ARE DESCRIBED ACCORDING TO THE MTO CLASSIFICATION SYSTEM.
- DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN.
- ABBREVIATIONS ARE PER OPSD 100.060

ABBREVIATIONS:

L/M/HSFH	Low /Medium/ High Susceptibility to Frost Heave
MWD	Maximum Wet Density
w	Water Content
w_L	Liquid Limit
I_P	Plasticity Index $= w_L - w_P$
w_{opt}	Optimum Water Content
w_p	Plastic Limit
c_U	Undrained Shear Strength
S_t	Sensitivity $= \frac{\text{Undrained shear strength}}{\text{remoulded shear strength}}$

Assignment #6 Part B	**Consultant Agreement #3014-E-0003**	**WP 3062-14-00 – Part B:** Hwy 3 from Town of Simcoe East Limits (Ireland Road) To Renton (Norfolk County Road 5/Cockshutt Road), Sta (11+800 to 17+530), Twp of Townsend - approx 5.8 km

BOREHOLE LOG DATA

The limits of investigation for Part B from Station 11+800 – Station 17+530, Twp of Townsend

CBH# 1- EBL **Sta (12+000), 5.3 m Rt of CL**
MDL NAD'83 Coordinates: 17 T 558575 4744380

0	-	280	Asph		
280	-	450	Sa & Gr	Moist	(Fill)
450	-	700	Sa some Gr	Moist	(Fill)
700	-	890	Conc		
890	-	1.2 m	Si(y) Sa & Gr	Moist	(Fill)
1.2 m	-	1.5 m	Blk Gry Si(y) Cl W Org	Moist	(Fill)

BH# 2- EBL **Sta (12+000), 8.4 m Rt of CL**
MSH NAD'83 Coordinates: 17 T 558577 4744377

0	-	400	Sa & Gr		
400	-	800	Si(y) F Sa	Moist	(Fill)
800	-	1.5	Sa(y) Si(y) Cl Tr Gr (w = 14.3%)	Moist	(Fill)

Sieve	% Pass
4.75 mm	94.3
2.00 mm	92.6
425 µm	84.2
75 µm	61.0
5 µm	18.0
2 µm	12.0
	MSFH
	Soil Classification: CL $W_L/W_P/I_P$= 29/16/13

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

CBH# 3- WBL **Sta (12+500), 2.1 m Lt of CL**
MDL NAD'83 Coordinates: 17 T 559065 4744491

0	-	250	Asph		
250	-	500	Gr(y) Sa some Si (w= 3.0%)	Moist	(Fill)

Sieve	% Pass
19 mm	94.2
13.2 mm	87.2
9.5 mm	80.8
4.75 mm	65.5
1.18 mm	49.1
300 µm	23.6
75 µm	17.1
	Accep. SSM

500	-	760	Sa W Si & Gr	Moist	(Fill)

Sieve	% Pass
19 mm	97.2
13.2 mm	90.6
9.5 mm	83.8
4.75 mm	72.9
1.18 mm	58.0
300 µm	30.3
75 µm	22.0
	Accep. SSM

760	-	1.5 m	Br Si(y) Sa Tr Gr & Cl (w= 11.1%)	Moist	(Fill)

Sieve	% Pass
4.75 mm	99.0
2.00 mm	98.1
425 µm	93.2
75 µm	34.0
5 µm	6.0
2 µm	4.0
	LSFH
	Soil Classification: Non-Plastic

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 4- WBL — **Sta (12+500), 6.0 m Lt of CL**
MSH — NAD'83 Coordinates: 17 T 559063 4744496

0	-	300	Sa & Gr		
300	-	600	F Sa Tr Gr	Moist	(Fill)
600	-	1.5 m	Br Si(y) F Sa	Moist	(Fill)

BH# 5- EBL — **Sta (12+800), 4.1 m Rt of CL**
EP — NAD'83 Coordinates: 17 T 559350 4744555

0	-	200	Asph		
200	-	460	Sa & Gr	Moist	(Fill)
460	-	750	Gr(y) Sa Tr Cob	Moist	(Fill)
750	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Native)

BH# 6- EBL — **Sta (12+800), 5.7m Rt of CL**
MSH — NAD'83 Coordinates: 17 T 559351 4744553

0	-	400	Sa & Gr		
400	-	600	Gr(y) Sa	Moist	(Fill)
600	-	1.5 m	Si(y) F Sa Tr Gr	Moist to wet	(Native)

BH# 7- EBL — **Sta (12+800), 9.2 m Rt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559353 4744550

0	-	200	Tps		
200	-	660	Si(y) F Sa	Moist	(Fill)
660	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Native)

BH# 8- EBL — **Sta (12+800), 13.2 m Rt of CL**
TOS — NAD'83 Coordinates: 17 T 559353 4744545

0	-	150	Tps Si(y) Sa W Rootlets		
150	-	500	F Sa Tr Gr	Moist	(Fill)
500	-	1.5 m	Gr(y) Sa	Moist	(Native)

BH# 9- WBL — **Sta (12+800), 4.1 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 559351 4744558

0	-	180	Asph		
180	-	460	Sa & Gr	Moist	(Fill)
460	-	800	Gr(y) Sa	Moist	(Fill)
800	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Native)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 10- WBL **Sta (12+800), 5.5m Lt of CL**
MSH NAD'83 Coordinates: 17 T 559351 4744558

0	-	350	Sa & Gr		
350	-	700	Gr(y) Sa	Moist	(Fill)
700	-	1.5 m	Si(y) Sa Tr Gr	Moist	(Native)

BH# 11- WBL **Sta (12+800), 9.1 m Lt of CL**
Mid Slope NAD'83 Coordinates: 17 T 559348 4744561

0	-	150	Tps		
150	-	500	Sa Tr Gr	Moist	(Fill)
500	-	1.5 m	F Sa Tr Gr	Moist	(Native)

BH# 12- EBL **Sta (12+800), 11.7 m Rt of CL**
TOS NAD'83 Coordinates: 17 T 559346 4744563

0	-	150	Tps		
150	-	560	Si(y) F Sa Tr Gr	Moist	(Fill)
560	-	1.5 m	F Sa Tr Gr	Moist	(Native)

BH# 13- EBL **Sta (12+850), 4.1 m Rt of CL**
EP NAD'83 Coordinates: 17 T 559399 4744562

0	-	210	Asph		
210	-	460	Gr(y) Sa some Si	Moist	(Fill)

Sieve	% Pass
19 mm	96.9
13.2 mm	87.9
9.5 mm	78.7
4.75 mm	61.6
1.18 mm	39.1
300 µm	20.3
75 µm	12.0
	Accep. SSM

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

460	-	800	Sa W Gr some Si	Moist	(Fill)

Sieve	% Pass
13.2 mm	92.4
9.5 mm	86.6
4.75 mm	72.3
1.18 mm	53.1
300 µm	26.4
75 µm	16.0
	Accep. SSM

800	-	1.5 m	Sa(y) Gr some Si Tr Cl (w = 4.9%)	Moist	(Native)

Sieve	% Pass
4.75 mm	46.8
2.00 mm	40.5
425 µm	31.0
75 µm	11.5
5 µm	4.0
2 µm	2.0
	LSFH
	Soil Classification: Non-Plastic

BH#14- WBL **Sta (12+850), 4.0 m Lt of CL**
EP NAD'83 Coordinates: 17 T 559397 4744570

0	-	200	Asph		
200	-	450	Sa & Gr	Moist	(Fill)
450	-	780	Gr(y) Sa	Moist	(Fill)
780	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Native)

BH# 15- EBL **Sta (12+900), 4.1 m Rt of CL**
EP NAD'83 Coordinates: 17 T 559432 4744570

0	-	250	Asph		
250	-	460	Sa & Gr	Moist	(Fill)
460	-	800	Gr(y) Sa	Moist	(Fill)
800	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Native)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 16- EBL — **Sta (12+900), 7.4 m Rt of CL**
SHR — NAD'83 Coordinates: 17 T 559433 4744567

0	-	200	Tps		
200	-	680	Sa & Gr	Moist	(Fill)
680	-	1.5 m	Si(y) F Sa some Gr	Moist	(Native)

BH# 17- EBL — **Sta (12+900), 9.1 m Rt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559434 4744566

0	-	180	Tps		
180	-	650	Si(y) Sa Tr Gr & Org	Moist	(Fill)
650	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Native)

BH# 18- EBL — **Sta (12+900), 10.4 m Rt of CL**
TOS — NAD'83 Coordinates: 17 T 559435 4744563

0	-	200	Tps, Dk Br Si(y) Sa W Org & Rootlets		
200	-	380	Si(y) Sa Tr Gr	Moist	(Fill)
380	-	800	Br Si(y) Sa Tr Cob some Gr	Moist	(Fill)
800	-	1.5 m	Br Si(y) Sa some Cob & Gr	Moist	(Fill)

BH# 19- WBL — **Sta (12+900), 4.2 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 559430 4744578

0	-	220	Asph		
220	-	460	Gr(y) Sa	Moist	(Fill)
460	-	700	Sa & Gr	Moist	(Fill)
700	-	1.5 m	Br Si(y) Sa & Gr	Moist	(Native)

BH# 20- WBL — **Sta (12+900), 7.4 m Lt of CL**
SHR — NAD'83 Coordinates: 17 T 559430 4744581

0	-	160	Tps		
160	-	700	Sa & Gr	Moist	(Fill)
700	-	1.5 m	Si(y) Sa Tr Gr & Cob	Moist	(Native)

BH# 21- WBL — **Sta (12+900), 8.6 m Lt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559431 4744582

0	-	150	Tps		
150	-	650	Si(y) Sa Tr Gr	Moist	(Fill)
650	-	1.5 m	Si(y) F Sa Tr Gr & Cob	Moist	(Native)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 22- WBL **Sta (12+900), 11.4 m Lt of CL**
TOS NAD'83 Coordinates: 17 T 559431 4744583

0	-	250	Tps, Dk Br Si(y) Sa W Rootlets & Org		
250	-	450	Gr(y) Sa Tr Cob	Moist	(Fill)
450	-	600	Si(y) Sa Tr Gr	Moist	(Fill)
600	-	890	Si(y) Sa Tr Gr Occ Cob	Moist	(Native)
890	-	1.5 m	Si(y) Sa Tr Gr Occ Cob	Moist	(Native)

BH# 23- EBL **Sta (12+950), 3.9 m Rt of CL**
EP NAD'83 Coordinates: 17 T 559481 4744580

0	-	260	Asph		
260	-	500	Sa & Gr	Moist	(Fill)
500	-	760	Gr(y) Sa	Moist	(Fill)
760	-	1.5 m	Si(y) F Sa & Gr Tr Cob	Moist	(Native)

BH# 24- WBL **Sta (12+950), 3.9 m Lt of CL**
EP NAD'83 Coordinates: 17 T 559479 4744587

0	-	200	Asph		
200	-	400	Sa W Gr some Si (w = 4.6%)	Moist	(Fill)

Sieve	% Pass
19 mm	96.9
13.2 mm	92.4
9.5 mm	87.5
4.75 mm	75.4
1.18 mm	57.3
300 µm	22.5
75 µm	15.0
	Accep. SSM

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

400	-	700	Gr(y) Sa some Si	Moist	(Fill)

Sieve	% Pass
19 mm	93
13.2 mm	85.9
9.5 mm	78.7
4.75 mm	69.8
1.18 mm	54.5
300 µm	24.8
75 µm	17.0
	Accep. SSM

700	-	1.0 m	Sa & Gr some Cr Stn	Moist	(Fill)
1.0 m	-	1.5 m	Gr(y) Sa some Si Tr Cl (w = 5.5%)	Moist	(Native)

Sieve	% Pass
4.75 mm	68.0
2.00 mm	58.5
425 µm	33.2
75 µm	15.2
5 µm	5.0
2 µm	3.0
	LSFH
	Soil Classification: Non-Plastic

BH# 25- EBL **Sta (13+000), 4.2 m Rt of CL**
EP NAD'83 Coordinates: 17 T 559528 4744591

0	-	200	Asph		
200	-	400	Sa & Gr	Moist	(Fill)
400	-	700	Gr(y) Sa	Moist	(Fill)
700	-	1.5 m	Si(y) F Sa Tr Gr & Cob	wet	(Native)

BH# 26- EBL **Sta (13+000), 7.2 m Rt of CL**
SHR NAD'83 Coordinates: 17 T 559529 4744588

0	-	150	Tps		
150	-	480	Gry Si(y) Sa Tr Gr	Moist	(Fill)
480	-	1.5 m	Br Si(y) F Sa Tr Gr	Moist	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 27- EBL — **Sta (13+000), 9.2 m Rt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559529 4744588

0	-	150	Tps, Br Si(y) Sa W Rootlets		
150	-	500	Br to Gry Si(y) Sa Tr Gr	Moist	(Fill)
500	-	1.5 m	Br Sa W Si Tr Gr & Cl (w = 17.3%)	wet	(Native)

Sieve	% Pass
4.75 mm	92.9
2.00 mm	89.5
425 µm	81.6
75 µm	35.7
5 µm	13.0
2 µm	10.0
	LSFH
	Soil Classification: CL-ML $W_L/W_P/I_P$ **= 19/15/4**

BH# 28- EBL — **Sta (13+000), 11.2 m Rt of CL**
TOS — NAD'83 Coordinates: 17 T 559530 4744586

0	-	150	Tps		
150	-	450	Sa some Gr	Moist	(Fill)
450	-	1.5 m	Si(y) Sa some Cl Tr Gr	Moist	(Native)

BH# 29- WBL — **Sta (13+000), 4.2 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 559525 4744599

0	-	200	Asph		
200	-	550	Sa some Gr	Moist	(Fill)
550	-	760	Gr(y) Sa	Moist	(Fill)
760	-	1.5 m	Si(y) F Sa Tr Gr	Moist	(Fill)
1.5 m	-	1.5 m	Si(y) F Sa	wet	(Native)

BH# 30- WBL — **Sta (13+000), 6.5m Lt of CL**
MSH — NAD'83 Coordinates: 17 T 559525 4744601

0	-	300	Sa & Gr		
300	-	600	Gr(y) Sa	Moist	(Fill)
600	-	860	Dk Gry Si(y) Sa W Org	Moist	(Fill)
860	-	1.5 m	Br Si(y) F Sa	wet	(Native)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 31- WBL — **Sta (13+000), 9.4 m Lt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559525 4744604

0	-	140	Tps		
140	-	680	Si(y) Sa Tr Gr	Moist	(Fill)
680	-	1.5 m	Br Si(y) F Sa	wet	(Native)

BH# 32- WBL — **Sta (13+000), 11.2 m Lt of CL**
TOS — NAD'83 Coordinates: 17 T 559524 4744606

0	-	150	Tps		
150	-	860	Si(y) Sa Tr Rootlets	Moist	(Fill)
860	-	1.5 m	Br Si(y) F Sa	wet	(Native)

BH# 33- EBL — **Sta (13+050), 4.1 m Rt of CL**
EP — NAD'83 Coordinates: 17 T 559577 4744603

0	-	180	Asph		
180	-	430	Sa & Gr	Moist	(Fill)
430	-	700	Gry Si(y) Sa some Org	Moist	(Fill)
700	-	1.5 m	Br Si(y) Cl W Sa, Tr Gr (w = 19%)	wet	(Native)

Sieve	% Pass
4.75 mm	99.2
2.00 mm	98.5
425 µm	96.0
75 µm	70.7
5 µm	16.0
2 µm	12.5
	M-HSFH
	Soil Classification: CL $W_L/W_P/I_P$ **= 22/14/8**

BH# 34- WBL — **Sta (13+050), 4.1 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 559575 4744611

0	-	150	Asph		
150	-	300	Gr(y) Sa	Moist	(Fill)
300	-	660	Si(y) Sa some Gr	Moist	(Fill)
660	-	1.2 m	Dk Gry Si(y) Sa Tr Gr Some Org	Moist	(Fill)
1.2 m	-	1.5 m	Gry Si(y) F Sa	Moist	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 35- EBL **Sta (13+100), 4.0 m Rt of CL**
EP NAD'83 Coordinates: 17 T 559626 4744614

0	-	250	Asph		
250	-	450	Gr(y) Sa Tr Si	Moist	(Fill)

Sieve	% Pass
19 mm	97.7
13.2 mm	87.9
9.5 mm	78.9
4.75 mm	61.8
1.18 mm	39.8
300 µm	16.7
75 µm	8.0
	Accep. Gran B

450	-	800	Gr & Sa some Si Tr Cob	Moist	(Fill)

Sieve	% Pass
19 mm	93.4
13.2 mm	78.2
9.5 mm	71.1
4.75 mm	60.0
1.18 mm	43.8
300 µm	18.2
75 µm	12.0
	Accep. SSM

800	-	1.5 m	Br Sa W Si Tr Gr & Cl & Cob (w = 11.2%)	Moist to wet	(Fill)

Sieve	% Pass
4.75 mm	95.9
2.00 mm	93.5
425 µm	86.0
75 µm	25.1
5 µm	6.0
2 µm	5.0
	LSFH
	Soil Classification: Non-Plastic

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 36- EBL — **Sta (13+100), 6.6 m Rt of CL**
SHR — NAD'83 Coordinates: 17 T 559626 4744611

0	-	200	Tps		
200	-	600	Si(y) Sa Tr Gr & Cob	Moist	(Fill)
600	-	1.5 m	Si(y) Sa Tr Gr & Cob	Moist	(Fill)

BH# 37- EBL — **Sta (13+100), 8.1 m Rt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559625 4744610

0	-	150	Tps		
150	-	680	Br Si(y) Sa Tr Gr some Org	Moist	(Fill)
680	-	1.5 m	Br Si(y) Sa & Gr Tr Org	wet	(Native)

BH# 38- EBL — **Sta (13+100), 10.3 m Rt of CL**
TOS — NAD'83 Coordinates: 17 T 559626 4744608

0	-	200	Tps		
200	-	600	Br Si(y) Sa Tr Gr some Org	Moist	(Fill)
600	-	1.5 m	Br Si(y) Sa & Gr	wet	(Native)
			Water level @ 0.7 m		

BH# 39- WBL — **Sta (13+100), 4.1 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 559623 4744621

0	-	200	Asph		
200	-	430	Sa & Gr	Moist	(Fill)
430	-	730	Gr(y) Sa some Si	Moist	(Fill)
730	-	1.5 m	Br Si(y) F Sa	wet	(Fill)

BH# 40- WBL — **Sta (13+100), 6.6 m Lt of CL**
SHR — NAD'83 Coordinates: 17 T 559624 4744623

0	-	150	Tps, Dk Br Si(y) Sa W Rootlets & Org		
150	-	450	Si(y) Sa Tr Gr	Moist	(Fill)
450	-	1.5 m	Br Si(y) Sa Tr Gr	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 41- WBL — **Sta (13+100), 8.5 m Lt of CL**
Mid Slope — NAD'83 Coordinates: 17 T 559624 4744626

0	-	180	Tps		
180	-	500	Br Si(y) Sa & Gr	wet	(Fill)
500	-	1.0 m	Br Si(y) Sa & Gr	wet	(Fill)
1.0 m	-	1.5 m	Br Si(y) Sa Tr Gr	wet	(Native)

BH# 42- WBL — **Sta (13+100), 10.10 m Lt of CL**
TOS — NAD'83 Coordinates: 17 T 559623 4744628

0	-	200	Tps, Br Si(y) Sa W Org & Rootlets		
200	-	650	Br Si(y) Sa & Gr Tr Cob	wet	(Fill)
650	-	1.5 m	Br Si(y) Sa Tr Gr	wet	(Fill)
			Water level @ 0.4 m		

BH# 43- EBL — **Sta (13+150), 4.0 m Rt of CL**
EP — NAD'83 Coordinates: 17 T 559675 4744627

0	-	180	Asph		
180	-	490	Sa & Gr	Moist	(Fill)
490	-	800	Gr(y) Sa Tr Cob	Moist	(Fill)
800	-	1.5 m	Br Si(y) Sa Tr Gr & Cob	Moist	(Fill)

BH# 44- WBL — **Sta (13+150), 4.1 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 559670 4744632

0	-	120	Asph		
120	-	660	Sa & Gr	Moist	(Fill)
660	-	880	Gr(y) Sa Tr Org	Moist	(Fill)
880	-	1.5 m	Br Si(y) F Sa Tr Gr & Cob	wet	(Fill)

BH# 45- EBL — **Sta (13+200), 4.0 m Rt of CL**
EP — NAD'83 Coordinates: 17 T 559718 4744634

0	-	150	Asph		
150	-	450	Sa some Gr	Moist	(Fill)
450	-	780	Sa & Gr Tr Cob	Moist	(Fill)
780	-	1.5 m	Br Si(y) Sa Tr Gr & Cob	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 46- EBL **Sta (13+200), 5.5 m Rt of CL**
MSH NAD'83 Coordinates: 17 T 559718 4744635

0	-	350	Sa & Gr		
350	-	750	Gr(y) Sa Tr Cob	Moist	(Fill)
750	-	1.5 m	Br Si(y) Sa Tr Gr	wet	(Fill)

BH# 47- EBL **Sta (13+200), 8.6 m Rt of CL**
Mid Slope NAD'83 Coordinates: 17 T 559718 4744633

0	-	150	Tps		
150	-	800	Br Si(y) Sa Tr Gr	Moist	(Fill)
800	-	1.5 m	Br Si(y) Sa Tr Gr & Cob	wet	(Fill)

BH# 48- EBL **Sta (13+200), 10.10 m Rt of CL**
TOS NAD'83 Coordinates: 17 T 559718 4744630

0	-	200	Tps, Dk Br Si(y) Sa W Org & Rootlets		
200	-	500	Br Si(y) Sa Tr Gr Occ Org	wet	(Fill)
500	-	1.5 m	Br Si(y) Sa Tr Gr	wet	(Native)
			Water level @ 1.0 m		

BH# 49- WBL **Sta (13+200), 4.0 m Lt of CL**
EP NAD'83 Coordinates: 17 T 559715 4744644

0	-	150	Asph		
150	-	450	Gr(y) Sa Tr Si (w = 5.1%)	Moist	(Fill)

Sieve	% Pass
19 mm	95.2
13.2 mm	85.8
9.5 mm	77.6
4.75 mm	61.1
1.18 mm	41.3
300 µm	17.8
75 µm	10.0
	Accep. Gran B

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

450	-	780	Sa some Gr & Si Tr Cob	Moist	(Fill)

Sieve	% Pass
19 mm	96.2
13.2 mm	92.8
9.5 mm	88.9
4.75 mm	80.8
1.18 mm	62.5
300 µm	27.1
75 µm	19.0
	Accep. SSM

780	-	1.5 m	Br Sa W Si Tr Gr & Cl (w = 11.6%)	Moist	(Fill)

Sieve	% Pass
4.75 mm	98.3
2.00 mm	96.4
425 µm	85.3
75 µm	31.8
5 µm	9.0
2 µm	6.0
	LSFH
	Soil Classification: Non-Plastic

BH# 50- WBL **Sta (13+200), 5.3 m Lt of CL**
MSH NAD'83 Coordinates: 17 T 559715 4744645

0	-	300	Sa & Gr		
300	-	680	Si(y) Sa Tr Gr	Moist	(Fill)
680	-	1.5 m	Si(y) F Sa Tr Org	wet	(Fill)

BH# 51- WBL **Sta (13+200), 10.0 m Lt of CL**
Mid Slope NAD'83 Coordinates: 17 T 559714 4744647

0	-	150	Tps		
150	-	550	Br Si(y) Sa Tr Gr some Org	wet	(Fill)
550	-	1.5 m	Br Si(y) Sa Tr Gr & Org	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 52- WBL **Sta (13+200), 10.10 m Lt of CL**
TOS NAD'83 Coordinates: 17 T 559714 4744650

0	-	220	Tps		
220	-	550	Br Si(y) Sa Tr Gr some Org	wet	(Fill)
550	-	1.5 m	Br Si(y) Sa & Gr Tr Cl	wet	(Native)
			Water level @ 1.0 m		

BH# 53- WBL **Sta (13+500), 4.0 m Lt of CL**
EP NAD'83 Coordinates: 17 T 560023 4744711

0	-	205	Asph		
205	-	410	Sa & Gr	Moist	(Fill)
410	-	750	Gr(y) Sa Tr Cob	Moist	(Fill)
750	-	1.5 m	Dk Gry Si(y) Sa W Org	Moist	(Fill)

BH# 54- WBL **Sta (13+500), 6.9 m Lt of CL**
SHR NAD'83 Coordinates: 17 T 560022 4744712

0	-	200	Tps		
200	-	500	Br Si(y) Sa Tr Gr	Moist	(Fill)
500	-	1.5 m	Br & Dk Gry Si(y) Sa W Org	wet	(Fill)

CBH# 55- EBL **Sta (14+000), 2.0 m Rt of CL**
MDL NAD'83 Coordinates: 17 T 560501 4744808

0	-	300	Asph		
300	-	600	Sa some Gr Tr Si	Moist	(Fill)

Sieve	% Pass
19 mm	100
13.2 mm	97.9
9.5 mm	92.7
4.75 mm	80.5
1.18 mm	52.6
300 µm	17.7
75 µm	9.0
	Accep. Gran B

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

600	-	800	Sa W Gr some Si	Moist	(Fill)

Sieve	% Pass
19 mm	95.3
13.2 mm	92.0
9.5 mm	87.8
4.75 mm	79.7
1.18 mm	64.6
300 µm	24.3
75 µm	13.0
	Accep. SSM

800	-	1.5 m	Si(y) Sa Tr Gr & Cl W Org (w = 15%)	Moist	(Fill)

Sieve	% Pass
4.75 mm	90.9
2.00 mm	87.4
425 µm	78.4
75 µm	42.7
5 µm	12.5
2 µm	9.0
	LSFH
	Soil Classification: ML $W_L/W_P/I_P$ = 21/18/3

BH# 56- EBL **Sta (14+000), 5.25 m Rt of CL**
MSH NAD'83 Coordinates: 17 T 560502 4744805

0	-	300	Sa & Gr		
300	-	500	Gr(y) Sa	Moist	(Fill)
500	-	780	Si(y) Sa Tr Gr	Moist to wet	(Fill)
780	-	1.5 m	Sa W Si some Gr Tr Cl (w = 13.9%)	wet to Moist	(Fill)

Sieve	% Pass
4.75 mm	88.8
2.00 mm	78.1
425 µm	64.1
75 µm	34.0
5 µm	6.3
2 µm	5.0
	LSFH
	Soil Classification: ML $W_L/W_P/I_P$ = 17/14/3

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

CBH# 57- WBL **Sta (14+500), 2.1 m Lt of CL**
MDL NAD'83 Coordinates: 17 T 561023 4744926

0	-	270	Asph		
270	-	500	Sa & Gr	Moist	(Fill)
500	-	700	Gr(y) Sa	Moist	(Fill)
700	-	1.5 m	Br Si(y) Cl some Sa Tr Gr Occ Cob (w = 20.2%)	Moist	(Fill)

Sieve	% Pass
4.75 mm	99.1
2.00 mm	98.4
425 µm	95.3
75 µm	86.3
5 µm	59.0
2 µm	41.0
	LSFH
	Soil Classification: CI $W_L/W_P/I_P$ = 36/16/20

BH# 58- WBL **Sta (14+500), 5.4 m Lt of CL**
MSH NAD'83 Coordinates: 17 T 561023 4744930

0	-	300	Sa & Gr		
300	-	700	Gr(y) Sa	Moist	(Fill)
700	-	1.5 m	Dk Gry Si(y) Cl W Org Tr Cob	wet	(Fill)

BH# 59- EBL **Sta (15+000), 4.3 m Rt of CL**
EP NAD'83 Coordinates: 17 T 561546 4745028

0	-	70	Asph		
70	-	350	Sa & Gr	Moist	(Fill)
350	-	800	Gr(y) Sa	Moist	(Fill)
800	-	1.5 m	Dk Gry Si(y) Cl W Org	wet	(Fill)

BH# 60- EBL **Sta (15+000), 6.9 m Rt of CL**
SHR NAD'83 Coordinates: 17 T 561546 4745025

0	-	150	Tps		
150	-	440	Sa & Gr	Moist	(Fill)
440	-	860	Sa Tr Gr	Moist	(Fill)
860	-	1.5 m	Dk Gry Si(y) Sa Tr Gr some Cl W Org	wet	(Fill)
			Water level @ 1.2 m		

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 61- Culvert — **Sta (15+154), 10.2 m of CL**
Inlet — NAD'83 Coordinates: 17 T 561661 4745047

0	-	200	Tps, Dk Br Si(y) Sa Tr Gr some Org & Rootlets		
200	-	680	Si(y) Sa Tr Gr	Moist to wet	(Fill)
680	-	1.5 m	Br Si(y) Sa Tr Gr	Moist	(Native)

BH# 62- Culvert — **Sta (15+154), 12.3 m of CL**
Outlet — NAD'83 Coordinates: 17 T 561656 4745069

0	-	200	Tps		
200	-	360	Br Si(y) Cl some Sa Tr Org	Moist	(Fill)
360	-	1.5 m	Br Si(y) Cl some Sa Tr Org	Moist	(Native)

BH# 63- Culvert — **Sta (15+154), 4.3 m of CL**
EP-WBL — NAD'83 Coordinates: 17 T 561654 4745062

0	-	180	Asph		
180	-	450	Sa & Gr	Moist	(Fill)
450	-	900	Gr(y) Sa Tr Cob	Moist	(Fill)
900	-	1.5 m	Br Si(y) Cl some Sa	Moist	(Fill)
1.5 m	-	2.6 m	Br Si(y) Cl some Org	Moist	(Fill)
2.6 m	-	3.0 m	Br Si(y) Cl	Moist	(Native)

BH# 64- Culvert — **Sta (15+388), 11.7 m of CL**
Inlet — NAD'83 Coordinates: 17 T 561881 4745118

0	-	210	Tps, Dk Br Si(y) Cl W Org & Rootlets		
210	-	450	Br Si(y) Cl Tr Rootlets	wet	(Fill)
450	-	1.5 m	Br Si(y) Cl Tr Gr	Moist	(Native)

BH# 65- Culvert — **Sta (15+388), 10.3 m of CL**
Outlet — NAD'83 Coordinates: 17 T 561888 4745096

0	-	200	Tps		
200	-	800	Br Si(y) Cl Tr Org	wet	(Fill)
800	-	1.5 m	Br Si(y) Cl	Moist to wet	(Native)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 66- Culvert — **Sta (15+388), 4.3 m of CL**
EP-EBL — NAD'83 Coordinates: 17 T 561888 4745099

0	-	300	Sa & Gr		
300	-	710	Gr(y) Sa	Moist	(Fill)
710	-	1.0 m	Br & Gry Si(y) Cl some Sa Tr Gr some Org	wet	(Fill)
1.0 m	-	2.0 m	Br & Gry Si(y) Cl some Sa	wet	(Fill)
2.0 m	-	3.0 m	Br Si(y) Cl some Sa	Moist	(Native)

BH# 67- WBL — **Sta (15+500), 4.0 m Lt of CL**
EP — NAD'83 Coordinates: 17 T 562067 4745151

0	-	160	Asph		
160	-	400	Sa & Gr	Moist	(Fill)
400	-	650	Sa some Gr	Moist	(Fill)
650	-	1.0 m	Br Si(y) Cl some Sa	Moist	(Fill)
1.0 m	-	1.5 m	Dk Gry Si(y) Cl W Org	wet	(Fill)

BH# 68- WBL — **Sta (15+500), 7.0 m Lt of CL**
SHR — NAD'83 Coordinates: 17 T 562066 4745152

0	-	100	Tps		
100	-	450	Sa & Gr	Moist	(Fill)
450	-	650	Gr(y) Sa	Moist	(Fill)
650	-	1.0 m	Br Si(y) Cl some Sa	Moist	(Fill)
1.0 m	-	1.5 m	Dk Gry Si(y) Cl W Org	Moist	(Fill)

BH# 69- Culvert — **Sta (15+857), 11.2 m of CL**
Inlet — NAD'83 Coordinates: 17 T 562348 4745194

0	-	300	Tps, Dk Br Si(y) Cl W Org		
300	-	1.0 m	Br Si(y) Cl Tr Org & Cob	wet	(Fill)
1.0 m	-	1.5 m	Br Si(y) Cl Tr Gr & Rootlets	wet to Moist	(Fill)

BH# 70- Culvert — **Sta (15+857), 11.3 m of CL**
Outlet — NAD'83 Coordinates: 17 T 562342 4745216

0	-	200	Tps, Br Si(y) Cl some Org & Rootlets		
200	-	650	Br Si(y) Cl some Org	wet	(Fill)
650	-	1.5 m	Br Si(y) Cl Tr Org	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 71- Culvert **Sta (15+857), 4.3 m of CL**
EP-EBL NAD'83 Coordinates: 17 T 562339 4745211

0	-	150	Asph		
150	-	350	Sa & Gr	Moist	(Fill)
350	-	740	Gr(y) Sa some Cob	Moist	(Fill)
740	-	1.5 m	F Sa Tr Gr	Moist	(Fill)
1.5 m	-	2.0 m	F to M Sa	wet	(Fill)
2.0 m	-	3.0 m	F to M Sa W Si some Cob	wet	(Fill)
			Water level @ 2.0 m		

CBH# 72- WBL **Sta (16+000), 2.1 m Lt of CL**
MDL NAD'83 Coordinates: 17 T 562469 4745230

0	-	315	Asph		
315	-	600	Sa W Gr some Si (w = 5.3%)	Moist	(Fill)

Sieve	% Pass
13.2 mm	94.3
9.5 mm	89.0
4.75 mm	77.1
1.18 mm	58.9
300 µm	20.9
75 µm	13.8
	Accep. SSM

600	-	800	F Sa some Si & Gr	Moist	(Fill)

Sieve	% Pass
13.2 mm	97.4
9.5 mm	93
4.75 mm	81.1
1.18 mm	56.4
300 µm	22.0
75 µm	13.4
	Accep. SSM

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

800	-	1.5 m	Br & Gry Si(y) Cl some Sa, Tr Gr (w = 21.3%)	Moist	(Fill)

Sieve	% Pass
4.75 mm	99.1
2.00 mm	98.3
425 µm	93.1
75 µm	86.8
5 µm	60.0
2 µm	42.0
	LSFH
	Soil Classification: CI $W_l/W_P/I_P$ = 42/17/25

BH# 73- WBL — **Sta (16+000), 6.0 m Lt of CL**
MSH — NAD'83 Coordinates: 17 T 562470 4745228

0	-	300	Sa & Gr		
300	-	600	Gr(y) Sa Tr Cob	Moist	(Fill)
600	-	1.2 m	Gry & Br Si(y) Cl some Org	Moist	(Fill)
1.2 m	-	1.5 m	Br Si(y) Cl	Moist	(Native)

BH# 74- Culvert — **Sta (16+069), 30 m of CL**
Inlet — NAD'83 Coordinates: 17 T 562551 4745269

0	-	300	Tps		
300	-	600	Br Si(y) Cl Tr Sa	wet	(Fill)
600	-	1.5 m	Gry Si(y) Cl Tr Sa Occ Gr	wet	(Native)

BH# 75- Culvert — **Sta (16+069), 22.2 m of CL**
Outlet — NAD'83 Coordinates: 17 T 562557 4745231

0	-	300	Tps, Dk Br Si(y) Cl some Org		
300	-	700	Dk Br Si(y) Cl some Org	wet	(Fill)
700	-	1.5 m	Lt Gry Si(y) Cl Tr Sa & Gr	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 76- Culvert — **Sta (16+069), 4.2 m of CL**
EP-EBL — NAD'83 Coordinates: 17 T 562553 4745245

0	-	300	Sa & Gr		
300	-	700	Sa some Gr	Moist	(Fill)
700	-	1.0 m	Br Si(y) Cl Tr Sa & Gr	Moist	(Fill)
1.0 m	-	2.5 m	Dk Gry Si(y) Cl some Org	Moist	(Fill)

BH# 77- EBL — **Sta (16+250), 2.0 m Rt of CL**
MDL — NAD'83 Coordinates: 17 T 562733 4745289

0	-	300	Asph		
300	-	450	Sa & Gr	Moist	(Fill)
450	-	750	Sa some Gr	Moist	(Fill)
750	-	900	Conc		
900	-	1.3 m	Gry Si(y) Sa Tr Gr	Moist	(Fill)
1.3 m	-	1.5 m	Br Si(y) F Sa	wet	(Fill)

CBH# 78- WBL — **Sta (16+500), 1.8 m Lt of CL**
MDL — NAD'83 Coordinates: 17 T 562959 4745347

0	-	300	Asph		
300	-	460	Sa & Gr	Moist	(Fill)
460	-	850	Gr(y) Sa	Moist to wet	(Fill)
850	-	980	Conc		
980	-	1.1 m	Si(y) Sa Tr Gr	Moist	(Fill)
1.1 m	-	1.5 m	Dk Gry Si(y) Cl W Org	Moist	(Fill)

BH# 79- WBL — **Sta (16+500), 5.5 m Lt of CL**
MSH — NAD'83 Coordinates: 17 T 562959 4745350

0	-	300	Sa & Gr		
300	-	680	Gr(y) Sa	Moist	(Fill)
680	-	1.5 m	Dk Gry Si(y) Cl some Org	Moist to wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 80- Culvert — **Sta (16+707), 11 m of CL**
Inlet — NAD'83 Coordinates: 17 T 563169 4745409

0	-	300	Tps		
300	-	600	Br Si(y) Cl some Sa Tr Rootlets	wet	(Fill)
600	-	1.5 m	Br Si(y) Cl Tr Sa Occ Gr	wet	(Native)

BH# 81- Culvert — **Sta (16+707), 22.2 m of CL**
Outlet — NAD'83 Coordinates: 17 T 563172 4745382

0	-	300	Tps, Dk Br Si(y) Cl W Org		
300	-	900	Br Si(y) Cl some Rootlets	wet	(Fill)
900	-	1.5 m	Br to Gry Si(y) Cl	wet	(Native)

BH# 82- Culvert — **Sta (16+707), 4.1 m of CL**
EP-EBL — NAD'83 Coordinates: 17 T 563170 4745386

0	-	160	Asph		
160	-	460	Sa & Gr		
460	-	1.2 m	Gr(y) Sa	Moist to wet	(Fill)
1.2 m	-	2.0 m	Si(y) Sa & Gr	wet	(Fill)
2.0 m	-	3.0 m	Gry Si(y) Cl some Sa	wet	(Native)

BH# 83- EBL — **Sta (17+000), 4.15 m Rt of CL**
EP — NAD'83 Coordinates: 17 T 563384 4745436

0	-	205	Asph		
205	-	410	Sa & Gr	Moist	(Fill)
410	-	750	Gr(y) Sa	wet	(Fill)
750	-	1.5 m	Dk Gry Si(y) Cl W Org	wet	(Fill)
1.5 m	-	2.0 m	Br Si(y) Cl some Sa	wet	(Fill)

BH# 84- EBL — **Sta (17+000), 6.6 m Rt of CL**
SHR — NAD'83 Coordinates: 17 T 563382 4745433

0	-	100	Tps		
100	-	400	Sa & Gr	Moist	(Fill)
400	-	880	Gr(y) Sa	Moist to wet	(Fill)
880	-	1.5 m	Br Si(y) Cl Tr Sa	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

BOREHOLE LOG DATA

BH# 85- WBL **Sta (17+500), 4.0 m Lt of CL**
EP NAD'83 Coordinates: 17 T 563952 4745567

0	-	190	Asph		
190	-	350	Sa & Gr	Moist	(Fill)
350	-	650	Gr(y) Sa Tr Cob	Moist	(Fill)
650	-	1.0 m	Dk Gry Si(y) Cl W Org	wet	(Fill)
1.0 m	-	1.5 m	Gry Si(y) Cl some Org	wet	(Fill)

BH# 86- WBL **Sta (17+500), 7.0 m Lt of CL**
SHR NAD'83 Coordinates: 17 T 563951 4745569

0	-	100	Tps		
100	-	450	Sa some Gr	Moist	(Fill)
450	-	600	Si(y) Sa some Gr Tr Cl	wet	(Fill)
600	-	1.0 m	Br Si(y) Cl Tr Gr	wet	(Fill)
1.0 m	-	1.5 m	Br Si(y) Cl Tr Gr	wet	(Fill)

And > 40%.
Adjective (Si(y), Sa(y) 30-40%
With 20-30%
Some 10-20%
Trace 1-10%

Accep	acceptable	Gry	grey	Quant	quantity
Agg	aggregate	H	heavy	Reinf	reinforced
Amor	amorphous	Hi	highly	RF	rock fill
Asph	asphalt	HM	hot mix	RSS	remoulded shear strength
BH	borehole	HP	high plasticity	Sa (y)	sand (y)
Bl	blue	Ip	plasticity index	Sat	saturated
Bld (y)	boulder (y)	L	loose	SH	shale
Blds	boulders	Liq	liquid	Sh Rk	shot rock
Blk	black	Lo	loam	Si (y)	silt (y)
Br	brown	Lt	light	Sl (y)	slight (ly)
BR	bedrock	Matl	material	SP	slight plasticity
BU	break up	Max	maximum	SSM	select subgrade material
CF	channel face	MDD	maximum dry density	St	sensitivity
Cl (y)	clay (ey)	Med	medium	Stn (y)	stone (y)
Co	coarse	Mod	moderate	Stks	streaks
Cob	cobbles	Mott	mottled	Surf	surface
Comp	compact	MP	medium plasticity	Temp	temperature
Conc	concrete	Mrl	marl	TH	test hole
Contam	contaminated	Mul	mulch	TP	test pit
Cord	corduroy	MWD	maximum wet density	Tps	topsoil
Cr	crushed	NFP	no further progress	Tr	trace
D	dense	NFP (blds)	no further progress (boulders)	Unreinf	unreinforced
Decomp	decomposed	Num	numerous	USS	undisturbed shear strength
Dk	dark	Ob	overburden	Varv	varved
D_R	relative density	Occ	occasional	VF	very fine
E	earth	Ora	orange	w	field moisture content
F	fine	Org	organic	W	with
FB	frost boil	Org M	organic matter	W_L	liquid limit
FH	frost heave	Pavt	pavement	Wd (y)	wood (y)
Fib	fibrous	Pedo	pedological	Weath	weathered
Fr Wat	free water	Pen Mac	penetration macadam	Wopt	optimum moisture content
Gr (y)	gravel (ly)	Poss	possible	Wp	plastic limit
Gran	granular	PST	prime and surface treated	WT	water table
Grn	green	Psty	polystyrene	Yel	yellow

SUSCEPTIBILITY TO FROST HEAVING

HSFH – High
MSFH – Medium
LSFH – Low

ONTARIO PROVINCIAL STANDARD DRAWING

ABBREVIATIONS

GEOTECHNICAL

Nov 2006 | Rev 1

OPSD 100.060

amec foster wheeler

Appendix ‘B’

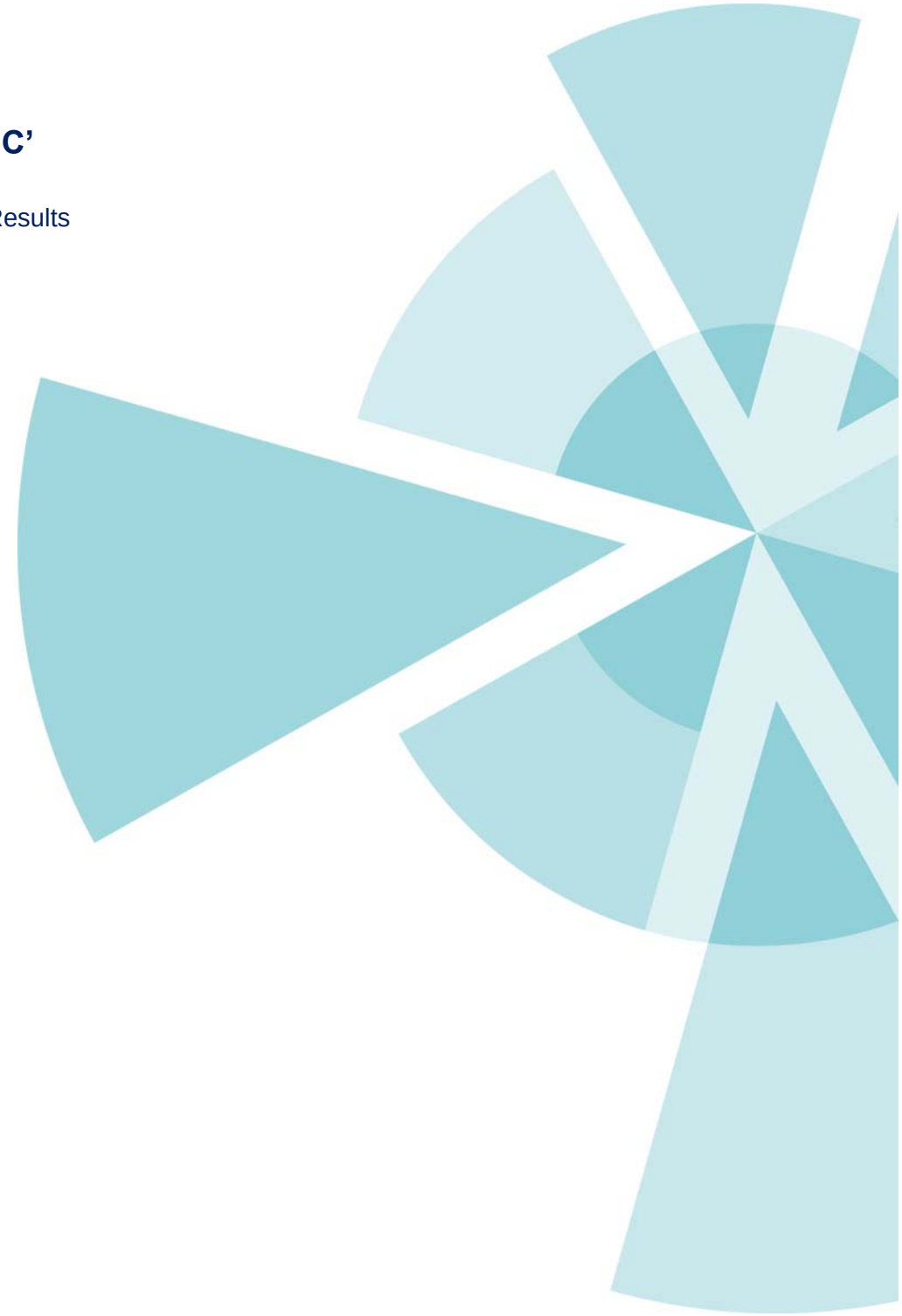
Ground Penetration Radar Testing,
Analysis and Reporting



June 2016
Reference Number: TB15300506 - B

Appendix ‘C’

Laboratory Test Results



June 2016
Reference Number: TB15300506 - B

NATURAL MOISTURE CONTENT

Client:- Ministry of Transportation Ontario **Date:-** 04-Apr-16

Job No. :- TB15300506 **Lab No.:** S0423_2016 **Tested By:-** RP/CZ

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004 - Part B

Test#	1	2	3	4	5	6
BH#	CBH3	CBH3	BH24	BH24	BH49	BH49
Sample #	AS1	AS3	AS1	AS4	AS1	AS3
Wet Soil + Tare (g)	809.46	158.00	728.32	161.85	762.35	153.02
Dry Soil + Tare (g)	789.46	145.27	700.80	155.06	730.28	140.30
Tare (g)	111.75	30.93	107.36	30.70	99.79	30.88
M.C %	3.0	11.1	4.6	5.5	5.1	11.6

Test#	7	8				
BH#	CBH72	CBH72				
Sample #	AS1	AS3				
Wet Soil + Tare (g)	723.21	133.90				
Dry Soil + Tare (g)	692.44	115.77				
Tare (g)	108.88	30.85				
M.C %	5.3	21.3				

Test#	9	10	11			
BH#	BH13	BH35	CBH55			
Sample #	AS3	AS3	AS3			
Wet Soil + Tare (g)	184.38	111.67	139.94			
Dry Soil + Tare (g)	177.28	103.48	125.67			
Tare (g)	31.93	30.17	30.49			
M.C %	4.9	11.2	15.0			

Test#	1	2	3	4	5	
BH#	BH2	BH27	BH33	CBH57	BH56	
Sample #	AS3	AS3	AS4	AS3	AS4	
Wet Soil + Tare (g)	115.49	151.86	141.92	157.40	150.06	
Dry Soil + Tare (g)	104.85	133.96	124.22	136.05	135.51	
Tare (g)	30.33	30.61	31.01	30.20	30.56	
M.C %	14.3	17.3	19.0	20.2	13.9	

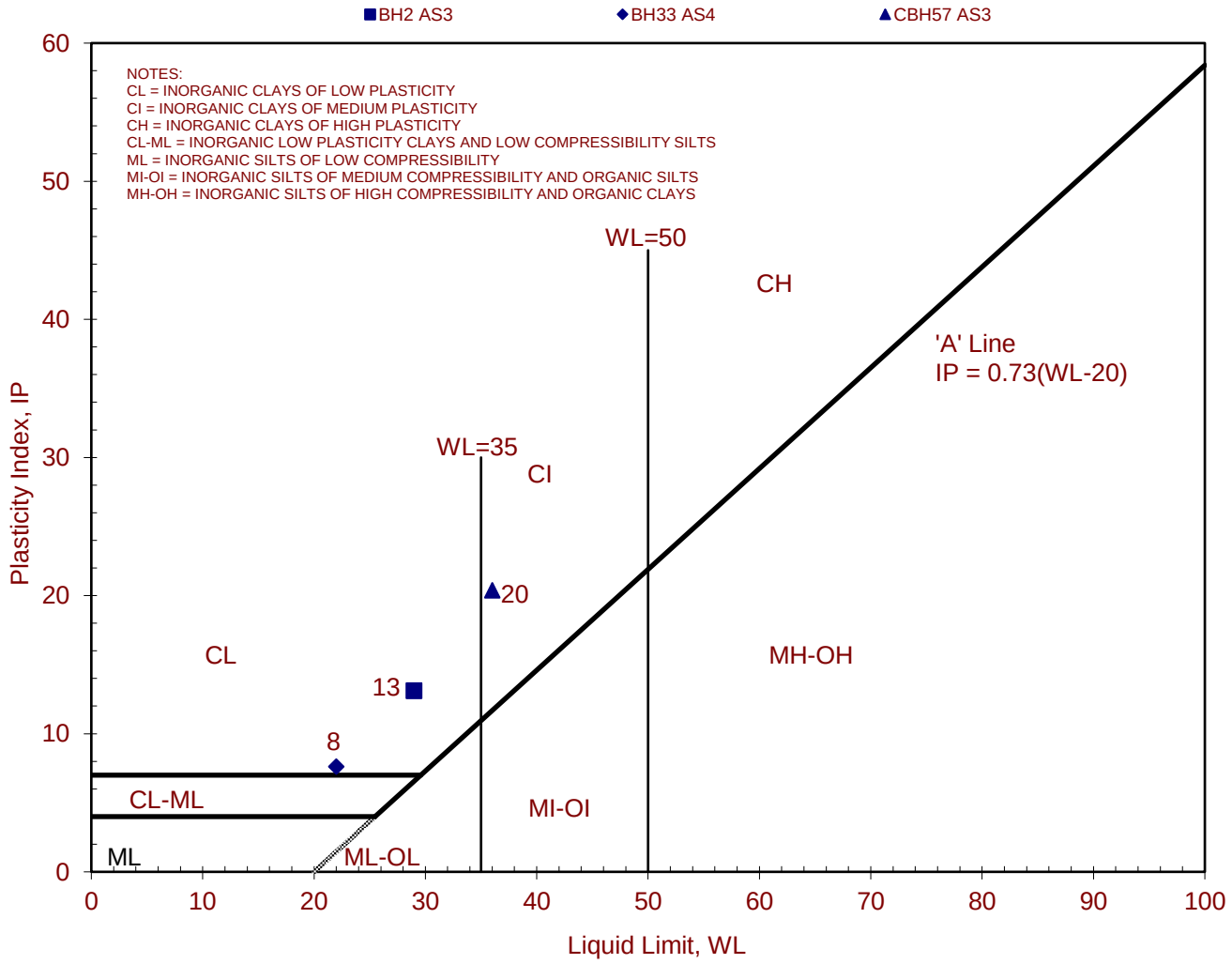
Amec Foster Wheeler Environment & Infrastructure
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel.: +1 (416) 751-6565
amecfw.com

ATTERBERG LIMITS
D 4318

Project Title: Assignment No. 6_MTO West Region Retainer 3014-E-0003 **Project No.:** TB15300506
Project Client: Ministry of Transportation Ontario **Date Tested:** 20-Apr-2016 **Sampled By:** -
Project Location: Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend, ON. **Tested By:** MS

TEST RESULTS

Borehole No.	BH2	BH33	CBH57	
Sample No.	AS3	AS4	AS3	
Liquid Limit	29	22	36	
Plastic Limit	16	14	16	
Plasticity Index	13	8	20	
Soil Classification	CL	CL	CI	
Natural Moiture Content %	14	19	20	



Laboratory Sheet No.: Att-01 Signed By: SB

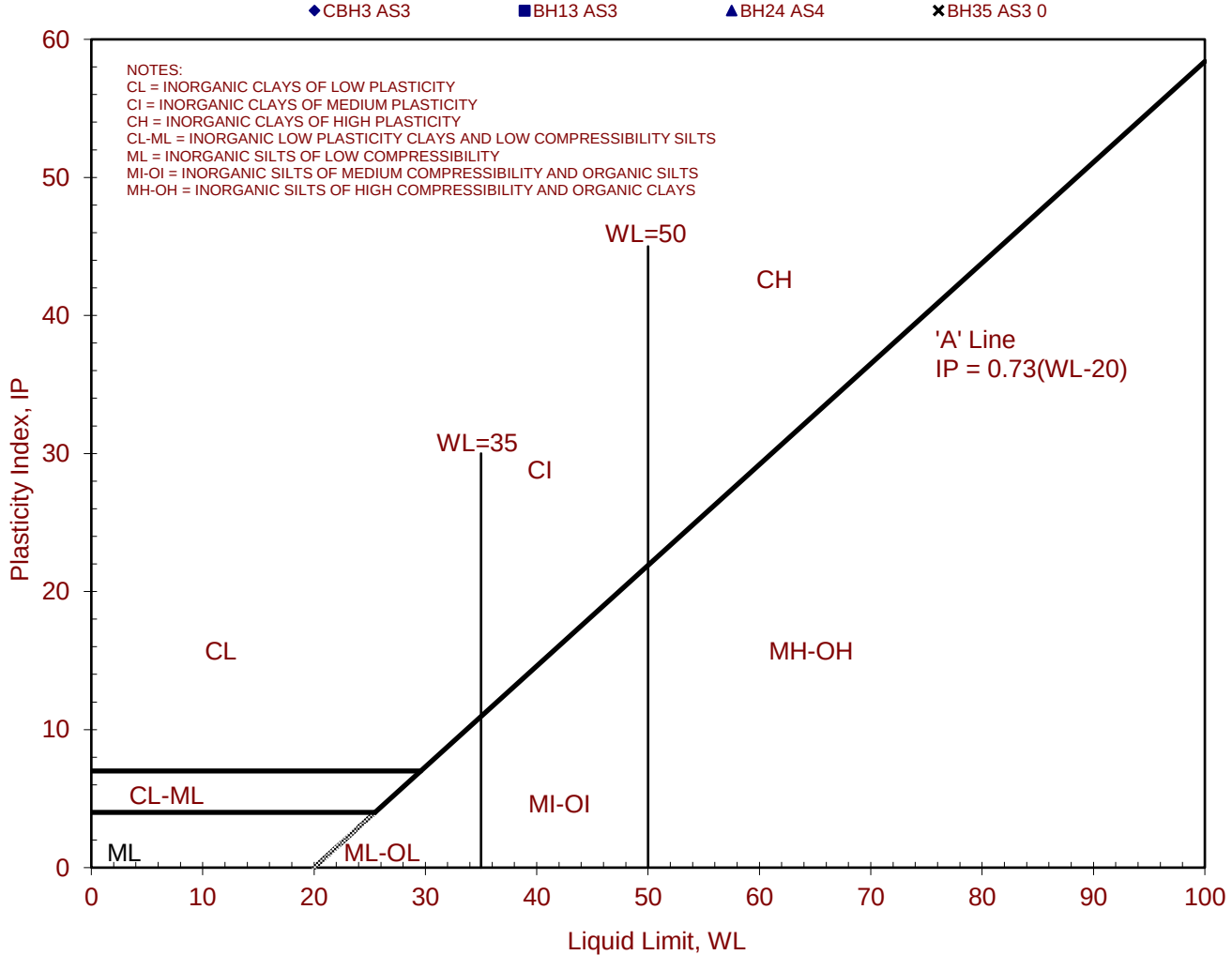
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Canada, M1R 3C3
Tel.: +1 (416) 751-6565
amecfw.com

ATTERBERG LIMITS
D 4318

Project Title: Assignment No. 6_MTO West Region Retainer 3014-E-0003 **Project No.:** TB15300506
Project Client: Ministry of Transportation Ontario **Date Tested:** 07-Apr-2016 **Sampled By:** -
Project Location: Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend, ON. **Tested By:** CZ

TEST RESULTS

	CBH3	BH13	BH24	BH35
Borehole No.	CBH3	BH13	BH24	BH35
Sample No.	AS3	AS3	AS4	AS3
Depth				
Liquid Limit	Couldn't roll to 3.2 mm; non-plastic	Couldn't roll to 3.2 mm; non-plastic	Couldn't roll to 3.2 mm; non-plastic	Couldn't roll to 3.2 mm; non-plastic
Plastic Limit				
Plasticity Index				
Soil Classification				
Natural Moiture Content %	11	5	6	11



Laboratory Sheet No.: Att-01 Signed By: SB

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Tel.: +1 (416) 751-6565
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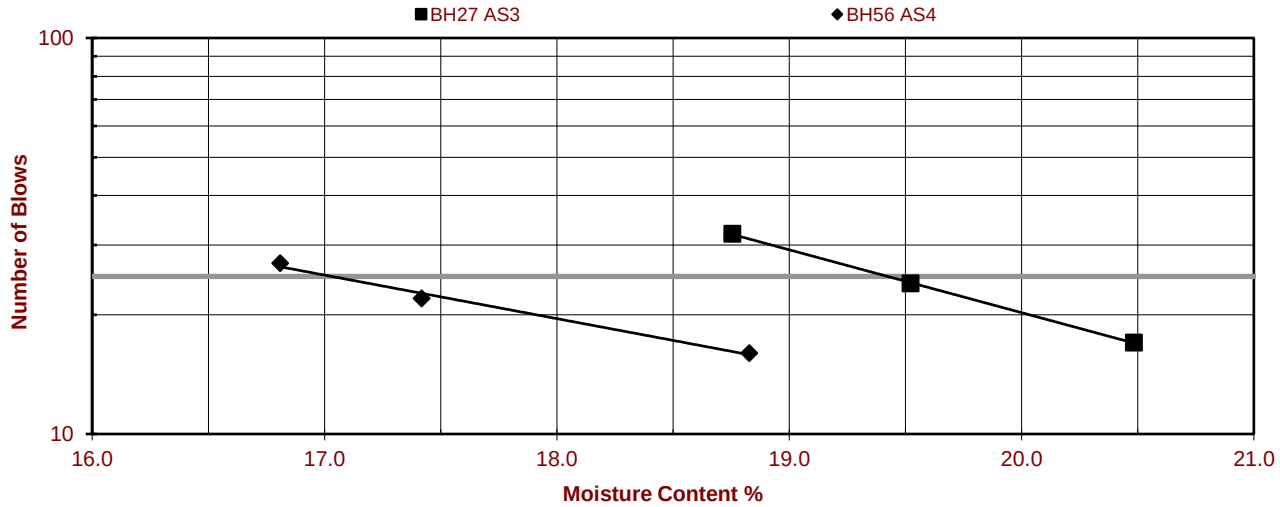
ATTERBERG LIMITS
D 4318

Project Name:	Assignment No. 6_MTO West Region Retainer 3014-E-0003	**Project No.:**	TB15300506
Project Client:	Ministry of Transportation Ontario	**Date Tested:**	21-Apr-2016
Project Location:	Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend, ON.	**Tested By:**	MS

TEST RESULTS

DESCRIPTION												
Borehole No.	BH27			BH56								
Sample No.	AS3			AS4								
Depth												
LIQUID LIMIT												
No. of Blows	32	24	17	16	22	27						
Wet SA + Tare (g)	59.9	51.9	55.1	50.2	51.7	55.3						
Dry SA + Tare (g)	55.4	48.4	50.9	47.1	48.6	51.8						
Wt of Tare (g)	31.3	30.4	30.2	30.3	31.1	30.7						
Wt of Moisture (g)	4.5	3.5	4.2	3.2	3.1	3.6						
Wt of Dry SA (g)	24.1	18.0	20.7	16.7	17.5	21.1						
Moisture (%)	18.8	19.5	20.5	18.8	17.4	16.8						
PLASTIC LIMIT												
Wet SA + Tare (g)	40.2	38.9		38.0	39.1							
Dry SA + Tare (g)	39.0	37.8		37.0	38.2							
Wt of Tare (g)	31.2	30.6		30.6	32.0							
Wt of Moisture (g)	1.2	1.1		0.9	0.9							
Wt of Dry SA (g)	7.8	7.3		6.4	6.2							
Moisture (%)	15.1	15.1		14.5	14.1							

Liquid Limit	19	17		
Plastic Limit	15	14		
Plasticity Index	4	3		
Natural Moiture Content %	17	14		



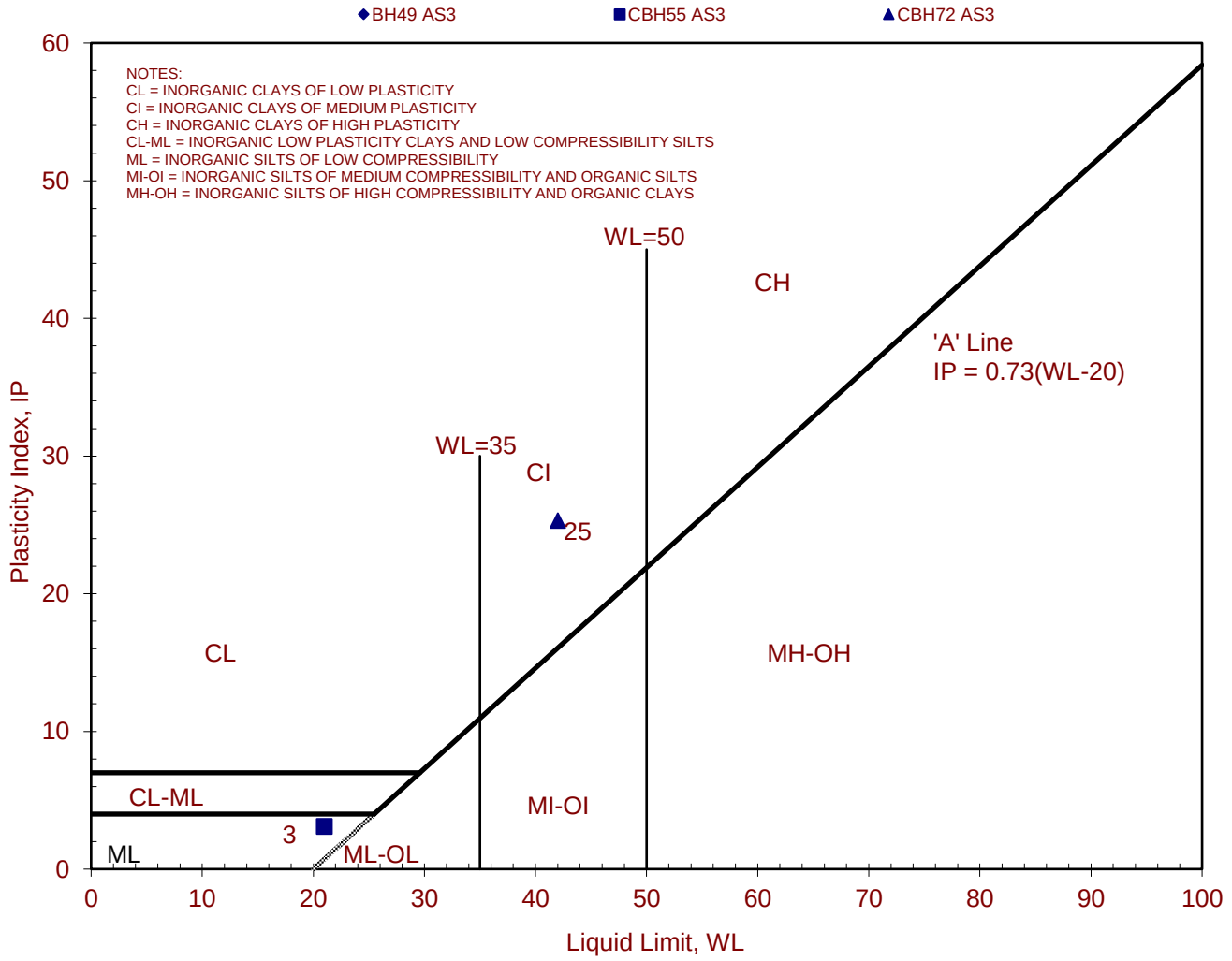
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ATTERBERG LIMITS
D 4318

Project Title: Assignment No. 6_MTO West Region Retainer 3014-E-0003 **Project No.:** TB15300506
Project Client: Ministry of Transportation Ontario **Date Tested:** 07-Apr-2016 **Sampled By:** -
Project Location: Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend, ON. **Tested By:** CZ

TEST RESULTS

Borehole No.	BH49	CBH55	CBH72	
Sample No.	AS3	AS3	AS3	
Liquid Limit	Couldn't roll to 3.2 mm; non-plastic	21	42	
Plastic Limit		18	17	
Plasticity Index		3	25	
Soil Classification		ML	CI	
Natural Moiture Content %	12	11	21	

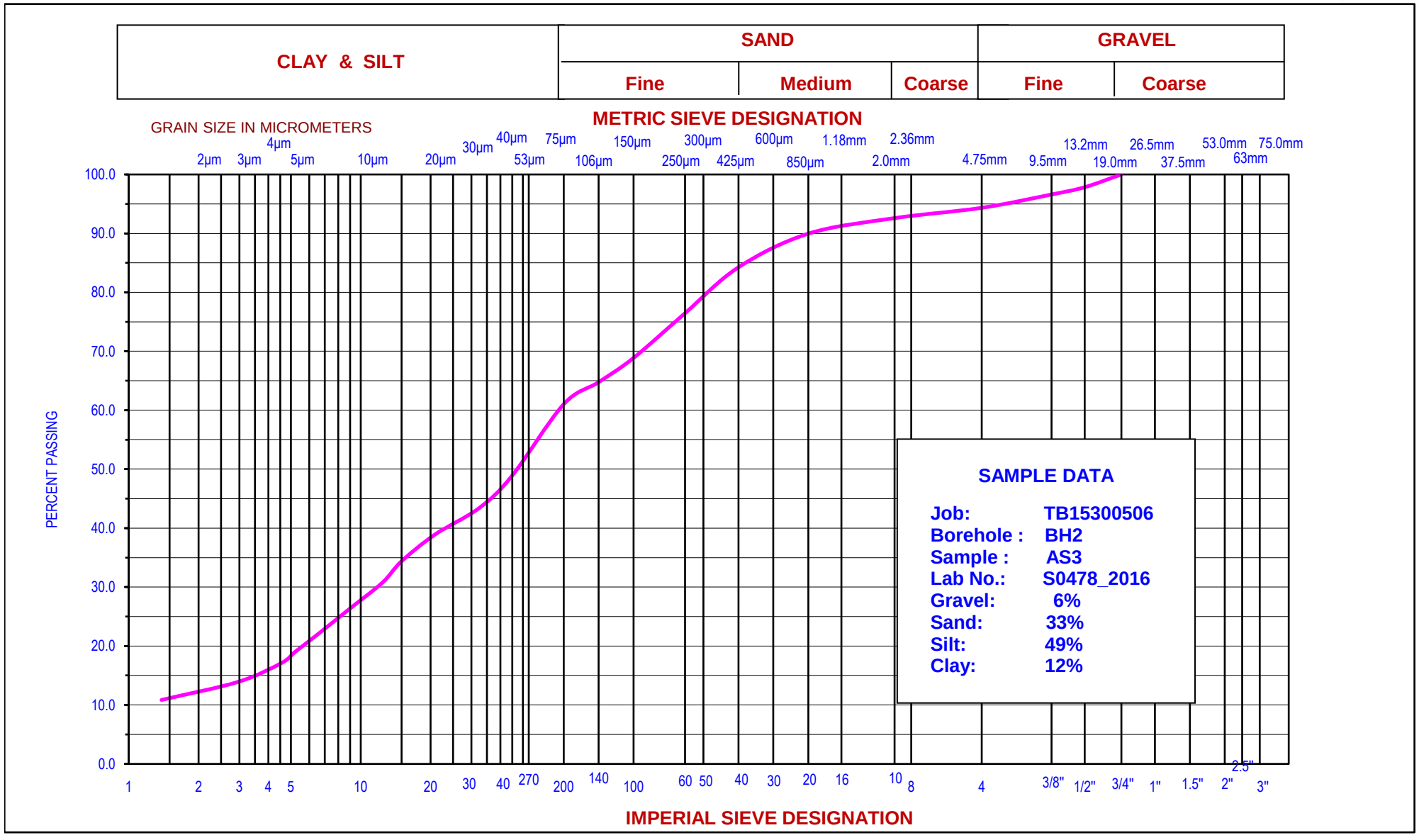


Laboratory Sheet No.: Att-01 Signed By: SB

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]

UNIFIED SOIL CLASSIFICATION SYSTEM



Amec Foster Wheeler Environment & Infrastructure 104 Crockford Blvd., Scarborough, Ontario, M1R 3C3 Tel +1 (416) 751 6565, amecfw.com	**GRAIN SIZE DISTRIBUTION**	**Client :-**	**Ministry of Transportation Ontario**
		Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
	SANDY SILTY CLAY **trace gravel**	**Location:-**	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
		Lab No. :- S0478_2016	**Date :- 19 Apr 2016**

Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.

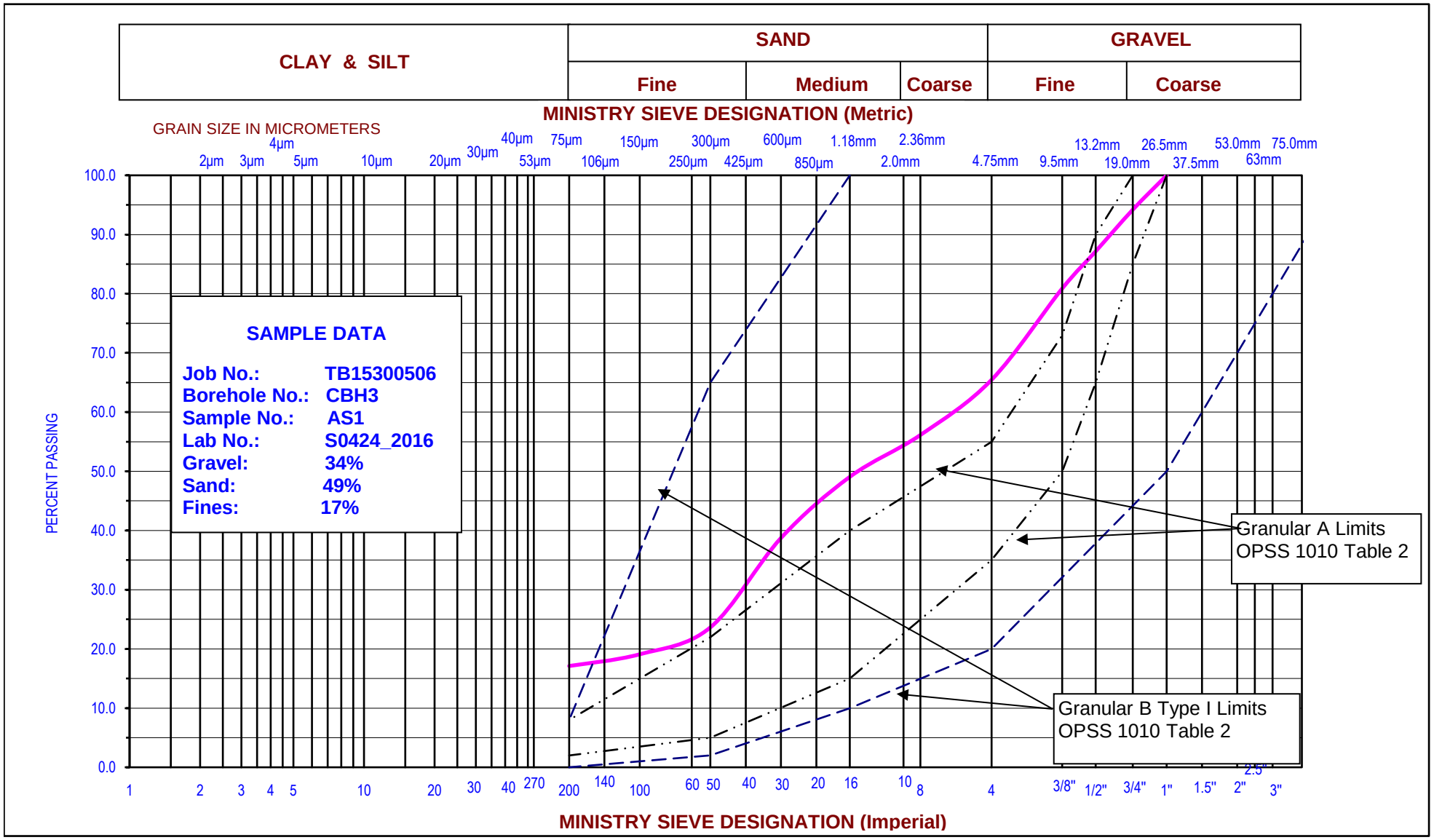
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH2
Lab No. :- S0478_2016

Date :- 19-Apr-16
Tested By :- MS/WA
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.2	4.85	97.8
9.5	7.62	96.6
4.75	12.69	94.3
2.00	16.60	92.6
0.85		90.0
0.425		84.2
0.25		76.5
0.150		68.9
0.106		64.8
0.0750		61.0
0.0448		48.8
0.0324		43.4
0.0208		38.9
0.0150		34.4
0.0124		30.7
0.0089		26.2
0.0064		21.7
0.0052		19.0
0.0046		17.2
0.0030		13.9
0.0014		10.8

Total Wt. (g)		224.84
Wt used for Hydrometer (g)		
50.63		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	1.44	97.2%
0.425	4.56	91.0%
0.250	8.82	82.6%
0.150	12.97	74.4%
0.106	15.22	69.9%
0.075	17.26	65.9%
Pan	17.37	

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		Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
	GRAVELLY SAND **some silt**	**Location:-** Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
		Lab No. :- S0424_2016 — **Date :-** 06 Apr 2016

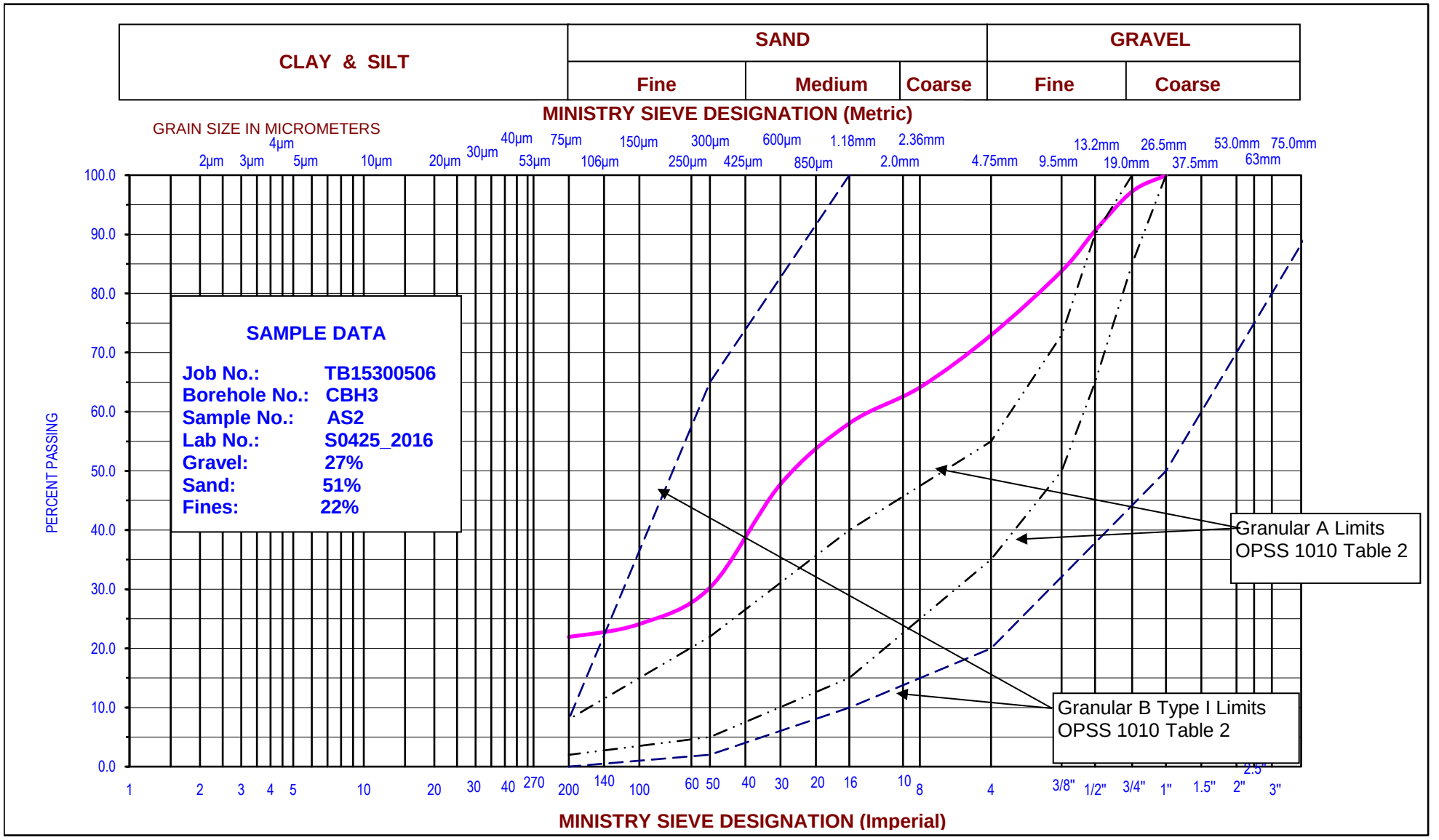
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- CBH1 **Lab No. :-** S0424_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	39.36	94.2
13.20	87.10	87.2
9.5	129.69	80.9
4.75	234.18	65.5
2.36		56.1
1.180		49.1
0.600		38.7
0.300		23.6
0.150		19.1
0.075		17.1

Total Wt (g)		677.98
FINES		
278.74 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	39.72	85.8%
1.18	69.83	74.9%
0.600	113.86	59.2%
0.300	178.13	36.1%
0.15	197.44	29.2%
0.075	205.87	26.1%
Pan	206.21	

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GRAIN SIZE DISTRIBUTION

SAND

with silt and gravel

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :-	**S0425_2016**
Date :-	**06 Apr 2016**

Grain Size Analysis

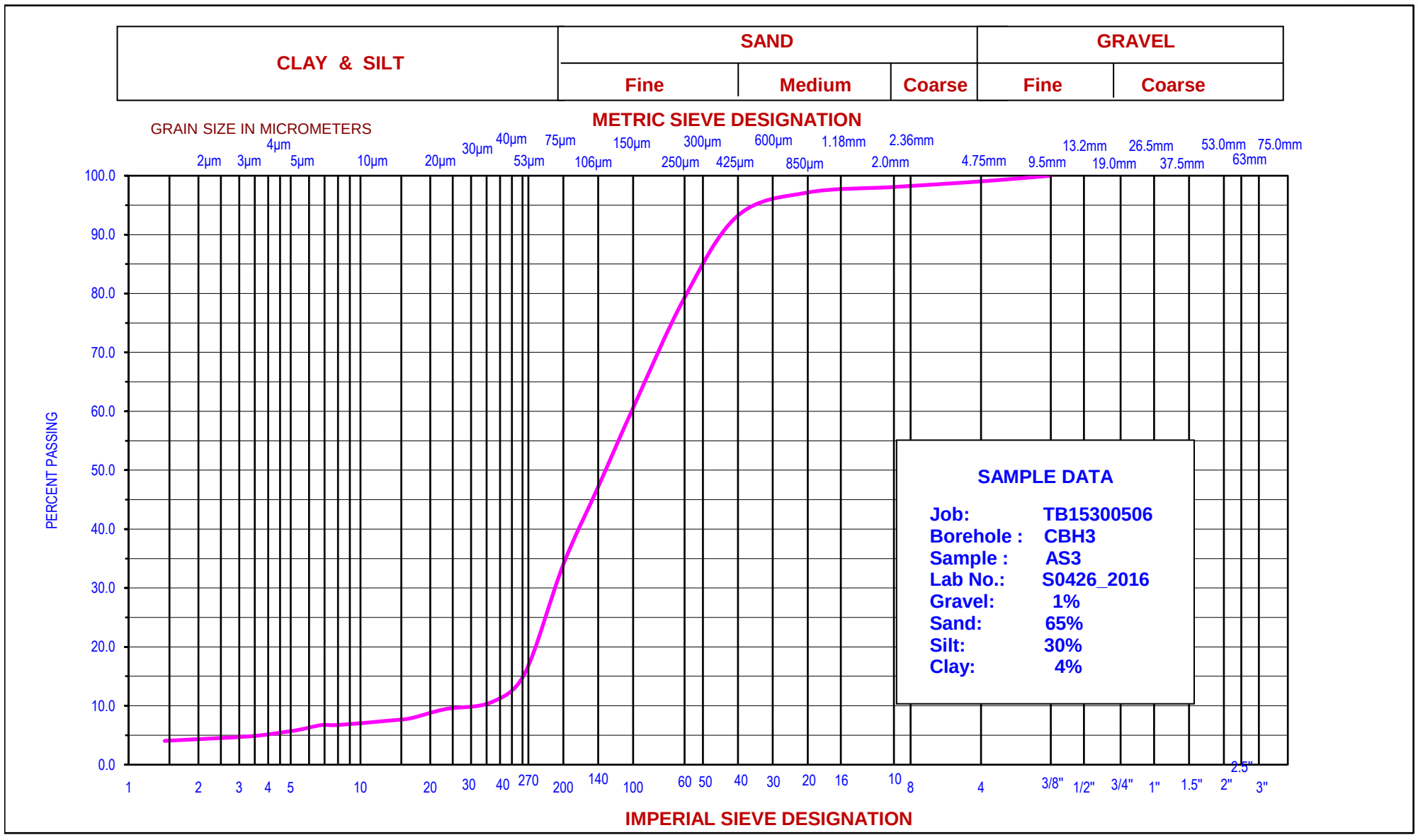
Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- CBH3 **Lab No. :-** S0425_2016
Sample ID # :- AS2 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	16.18	97.2
13.20	54.99	90.6
9.5	94.88	83.8
4.75	158.29	72.9
2.36		64.1
1.180		58.0
0.600		47.7
0.300		30.3
0.150		24.1
0.075		21.9

Total Wt (g)		585.15
FINES		
275.89 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	33.40	87.9%
1.18	56.39	79.6%
0.600	95.32	65.4%
0.300	161.46	41.5%
0.15	184.73	33.0%
0.075	192.99	30.0%
Pan	193.21	

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UNIFIED SOIL CLASSIFICATION SYSTEM



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		Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
	SILTY SAND **trace gravel and clay**	**Location:-** Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
		Lab No. :- S0426_2016 — **Date :-** 05 Apr 2016

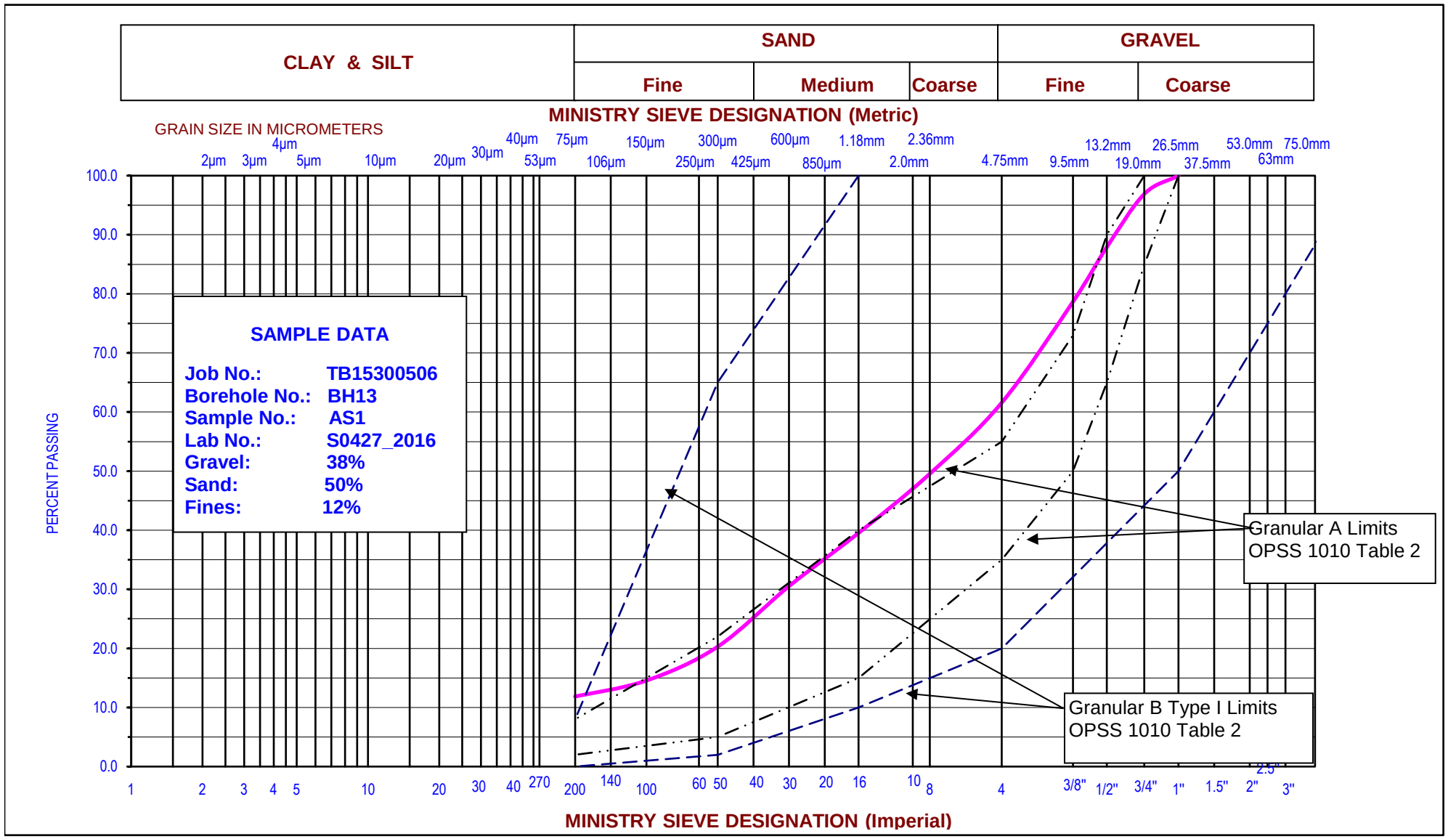
Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- CBH3
Lab No. :- S0426_2016
Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
9.5	0.00	100.0
4.75	2.93	99.0
2.00	5.80	98.1
0.85		97.1
0.425		93.2
0.25		79.3
0.150		60.6
0.106		47.2
0.0750		34.0
0.0510		15.4
0.0366		10.6
0.0232		9.4
0.0165		7.9
0.0135		7.5
0.0080		6.7
0.0068		6.7
0.0055		6.0
0.0048		5.6
0.0033		4.8
0.0014		4.0

Total Wt. (g)	303.18	
Wt used for Hydrometer (g)		
50.43		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	0.48	99.0%
0.425	2.49	95.1%
0.250	9.66	80.8%
0.150	19.28	61.8%
0.106	26.18	48.1%
0.075	32.95	34.7%
Pan	34.30	

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GRAIN SIZE DISTRIBUTION

GRAVELLY SAND

some silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0427_2016	**Date :- 06 Apr 2016**

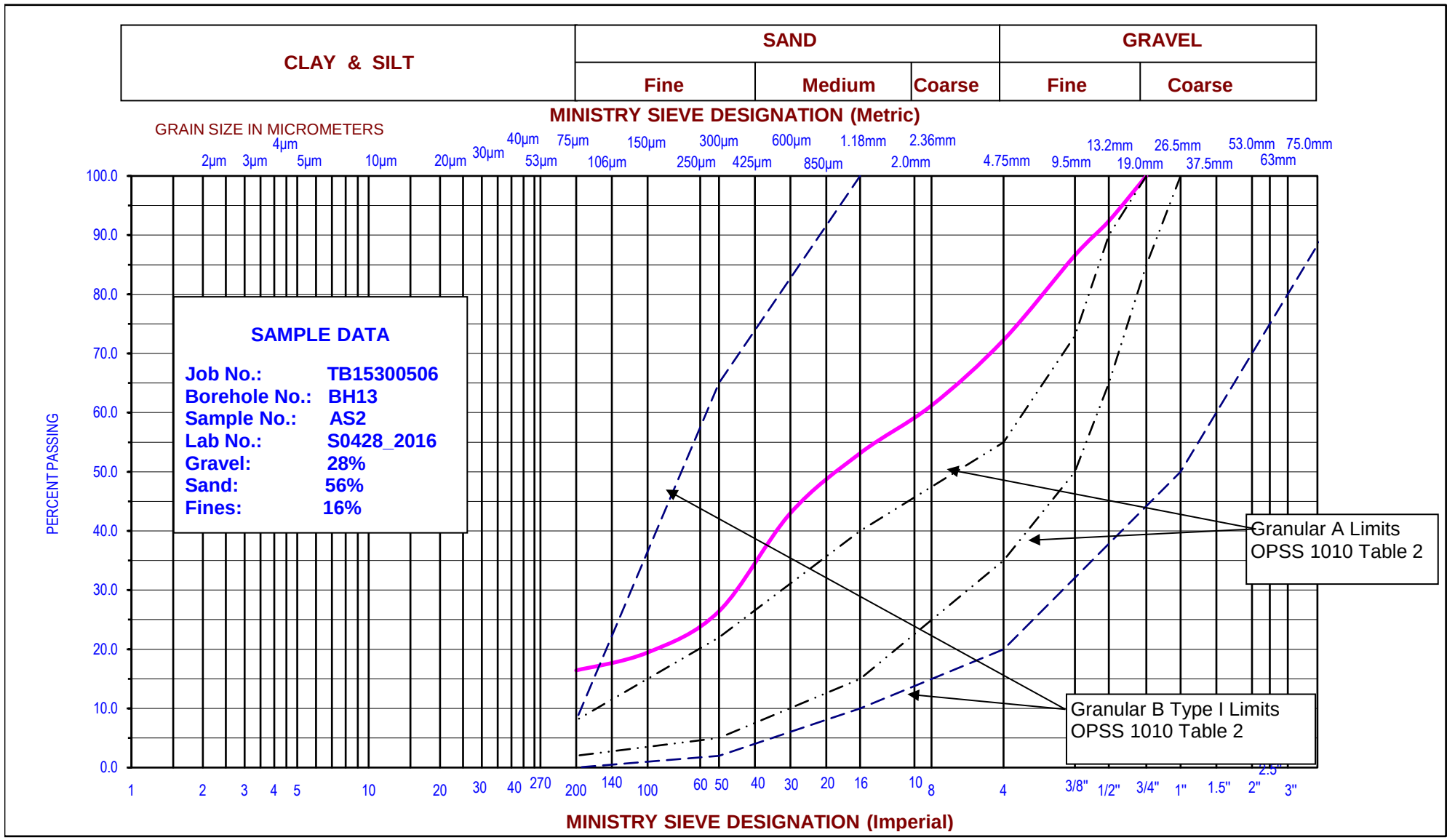
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH13 **Lab No. :-** S0427_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	15.72	96.9
13.20	61.23	87.9
9.5	107.96	78.7
4.75	194.48	61.6
2.36		49.6
1.180		39.5
0.600		30.5
0.300		20.3
0.150		14.6
0.075		11.9

Total Wt (g)		506.15
FINES		
273.16 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	53.34	80.5%
1.18	97.81	64.2%
0.600	137.78	49.6%
0.300	183.16	32.9%
0.15	208.59	23.6%
0.075	220.52	19.3%
Pan	220.84	

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GRAIN SIZE DISTRIBUTION

SAND

with gravel, some silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0428_2016	**Date :- 06 Apr 2016**

Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH13 **Lab No. :-** S0428_2016
Sample ID # :- AS2 **Checked By :-** SB

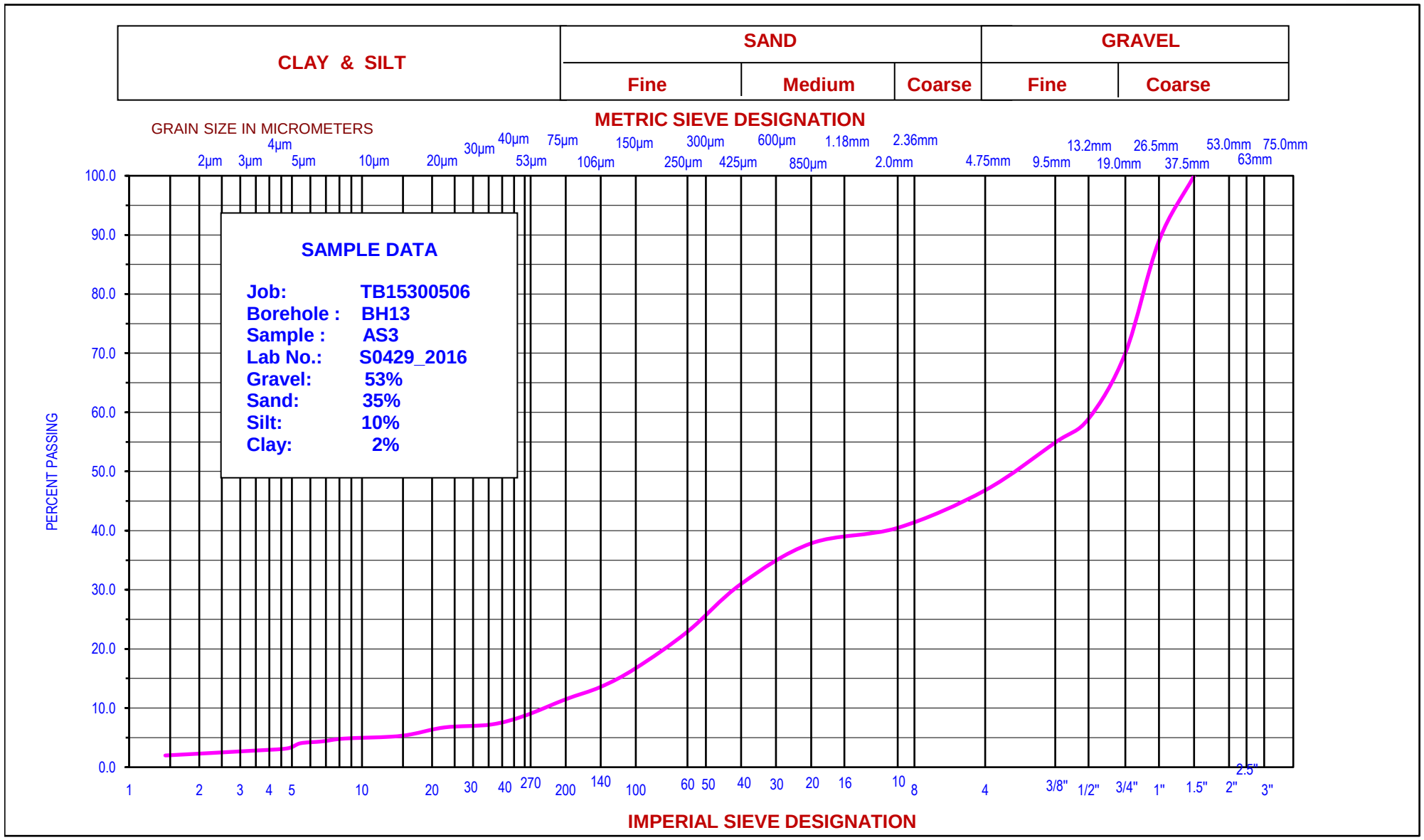
Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.20	48.79	92.4
9.5	85.88	86.6
4.75	177.49	72.3
2.36		61.2
1.180		53.1
0.600		43.0
0.300		26.4
0.150		19.4
0.075		16.4

Total Wt (g)		640.15
FINES		
277.15 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	42.49	84.7%
1.18	73.40	73.5%
0.600	112.23	59.5%
0.300	175.82	36.6%
0.15	202.57	26.9%
0.075	214.15	22.7%
Pan	214.68	

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UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY & SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



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GRAIN SIZE DISTRIBUTION

SANDY GRAVEL

some silt, trace clay

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :-	**S0429_2016**
Date :-	**05 Apr 2016**

Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.

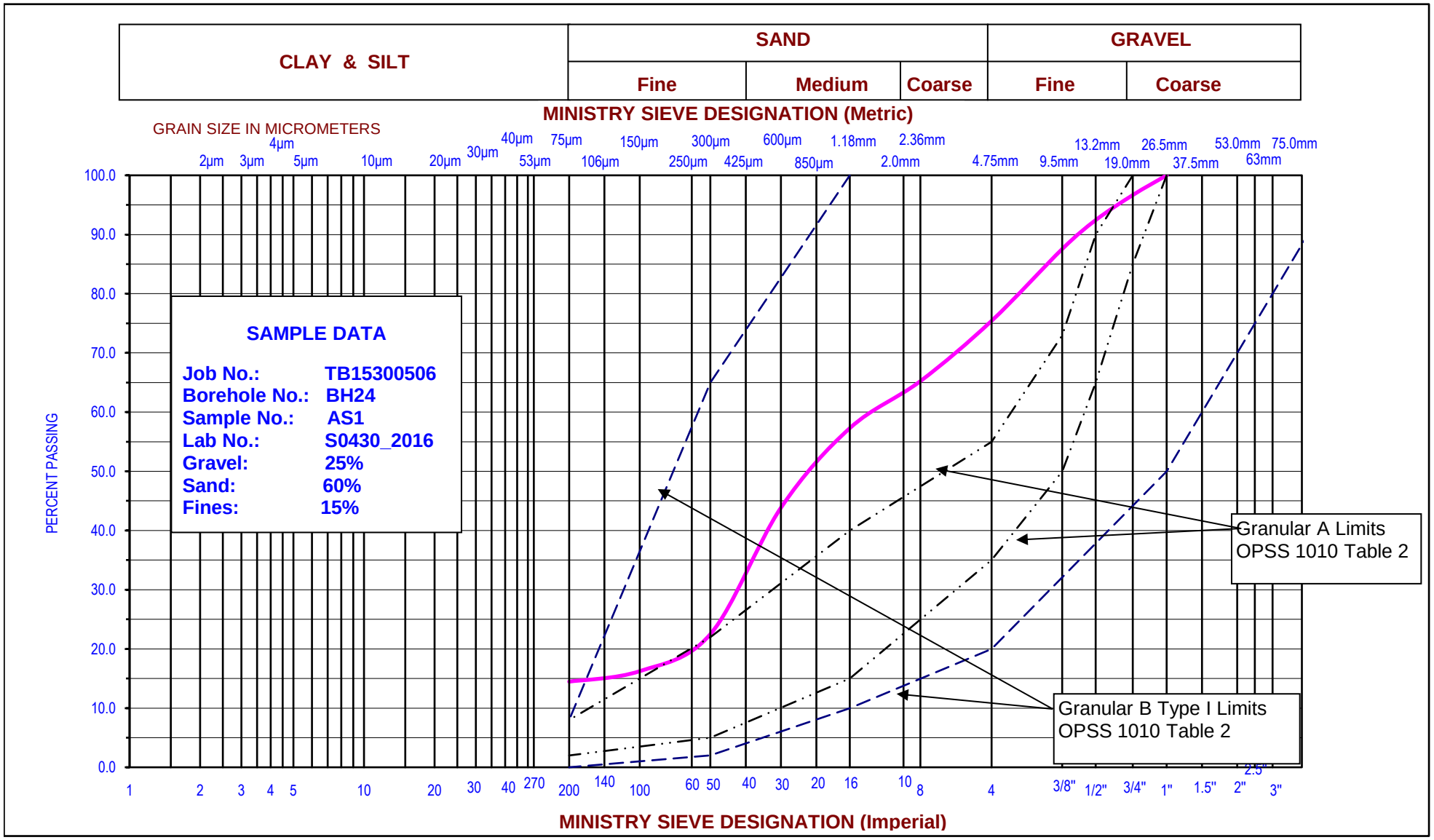
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH13
Lab No. :- S0429_2016

Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
37.5	0.00	100.0
26.5	57.37	89.0
19	156.33	70.0
13.2	214.16	58.9
9.5	235.02	54.9
4.75	277.13	46.8
2.00	310.24	40.5
0.85		37.8
0.425		31.0
0.25		22.9
0.150		16.7
0.106		13.6
0.0750		11.5
0.0501		8.7
0.0358		7.2
0.0227		6.7
0.0162		5.5
0.0133		5.2
0.0084		4.8
0.0067		4.4
0.0054		4.0
0.0048		3.2
0.0033		2.8
0.0014		2.0

Total Wt. (g)		521.62
Wt used for Hydrometer (g)		
50.49		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	3.27	93.5%
0.425	11.83	76.6%
0.250	21.91	56.6%
0.150	29.60	41.4%
0.106	33.55	33.6%
0.075	36.16	28.4%
Pan	36.25	

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GRAIN SIZE DISTRIBUTION

SAND

with gravel, some silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0430_2016	**Date :- 06 Apr 2016**

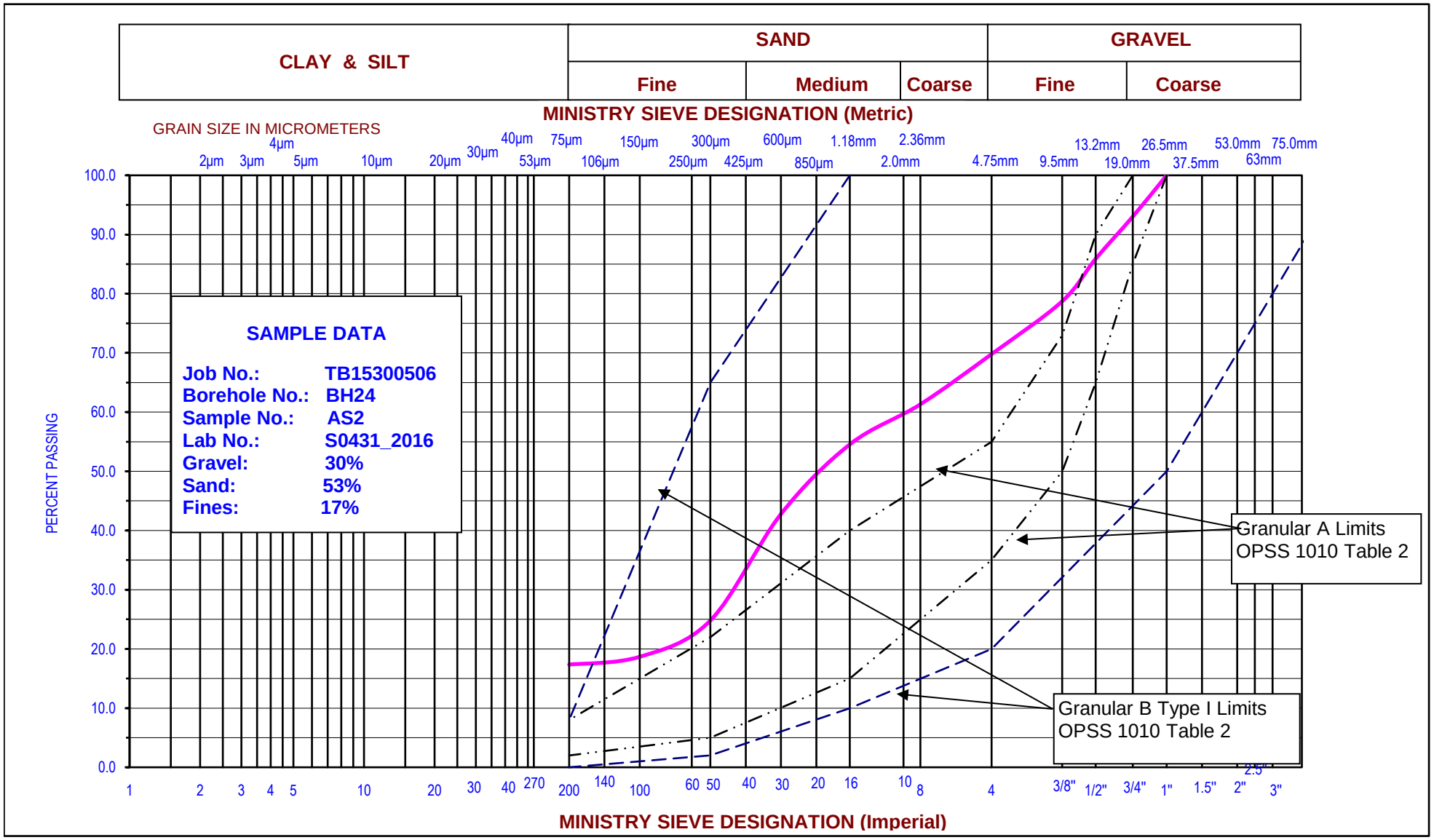
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH24 **Lab No. :-** S0430_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	19.80	96.7
13.20	44.91	92.4
9.5	73.91	87.5
4.75	145.95	75.4
2.36		65.2
1.180		57.3
0.600		43.8
0.300		22.5
0.150		16.2
0.075		14.5

Total Wt (g)		593.62
FINES		
280.53 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	37.88	86.5%
1.18	67.44	76.0%
0.600	117.44	58.1%
0.300	196.89	29.8%
0.15	220.13	21.5%
0.075	226.69	19.2%
Pan	226.90	

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GRAIN SIZE DISTRIBUTION

GRAVELLY SAND

some silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0431_2016	**Date :- 06 Apr 2016**

Grain Size Analysis

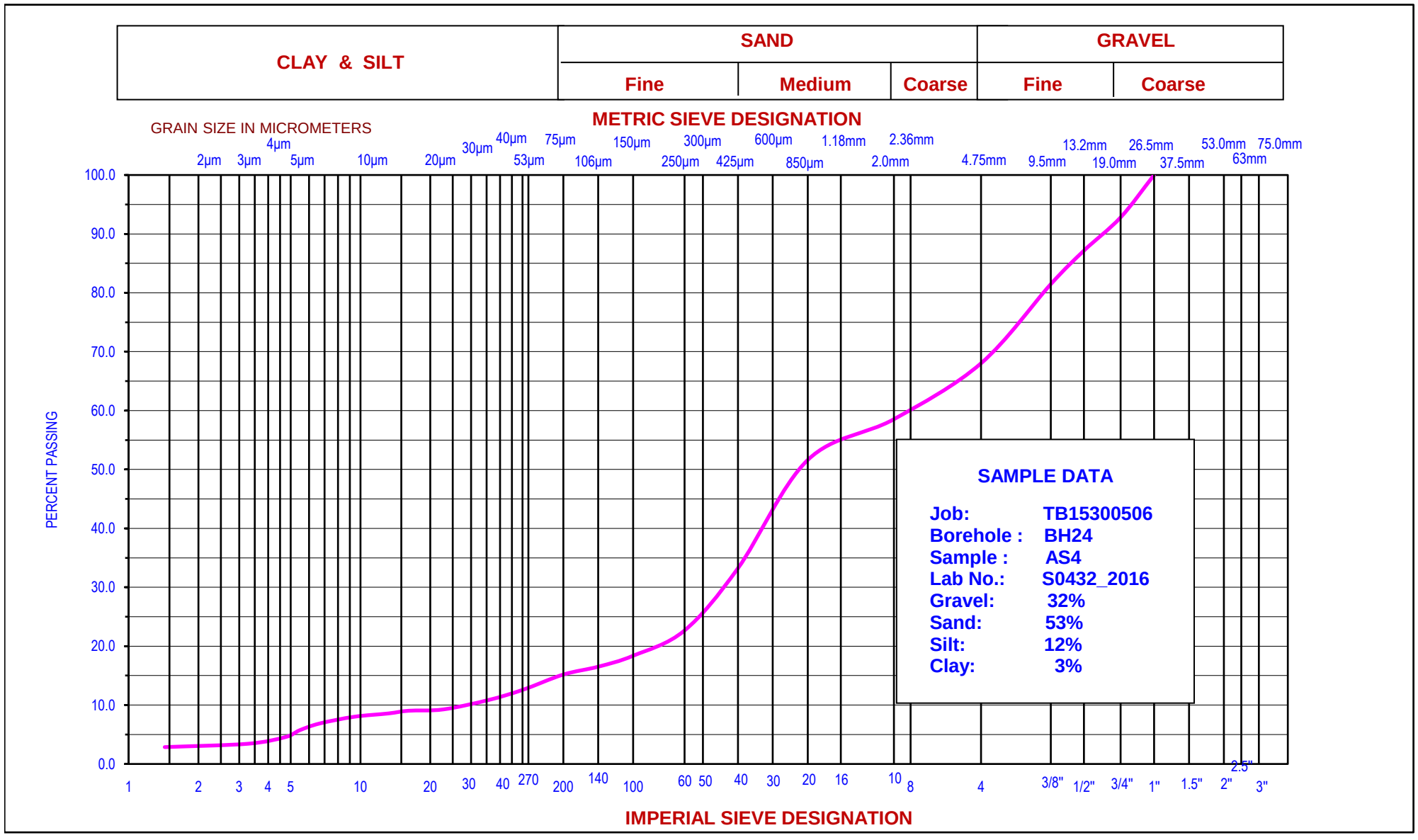
Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH24 **Lab No. :-** S0431_2016
Sample ID # :- AS2 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	52.55	93.0
13.20	106.20	85.9
9.5	160.20	78.7
4.75	227.42	69.8
2.36		61.3
1.180		54.5
0.600		42.8
0.300		24.8
0.150		18.7
0.075		17.4

Total Wt (g)		753.01
FINES		
277.46 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	33.72	87.8%
1.18	60.66	78.1%
0.600	107.43	61.3%
0.300	178.93	35.5%
0.15	203.26	26.7%
0.075	208.47	24.9%
Pan	208.58	

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UNIFIED SOIL CLASSIFICATION SYSTEM



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GRAIN SIZE DISTRIBUTION

GRAVELLY SAND

some silt, trace clay

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :-	**S0432_2016**
Date :-	**05 Apr 2016**

Grain Size Analysis

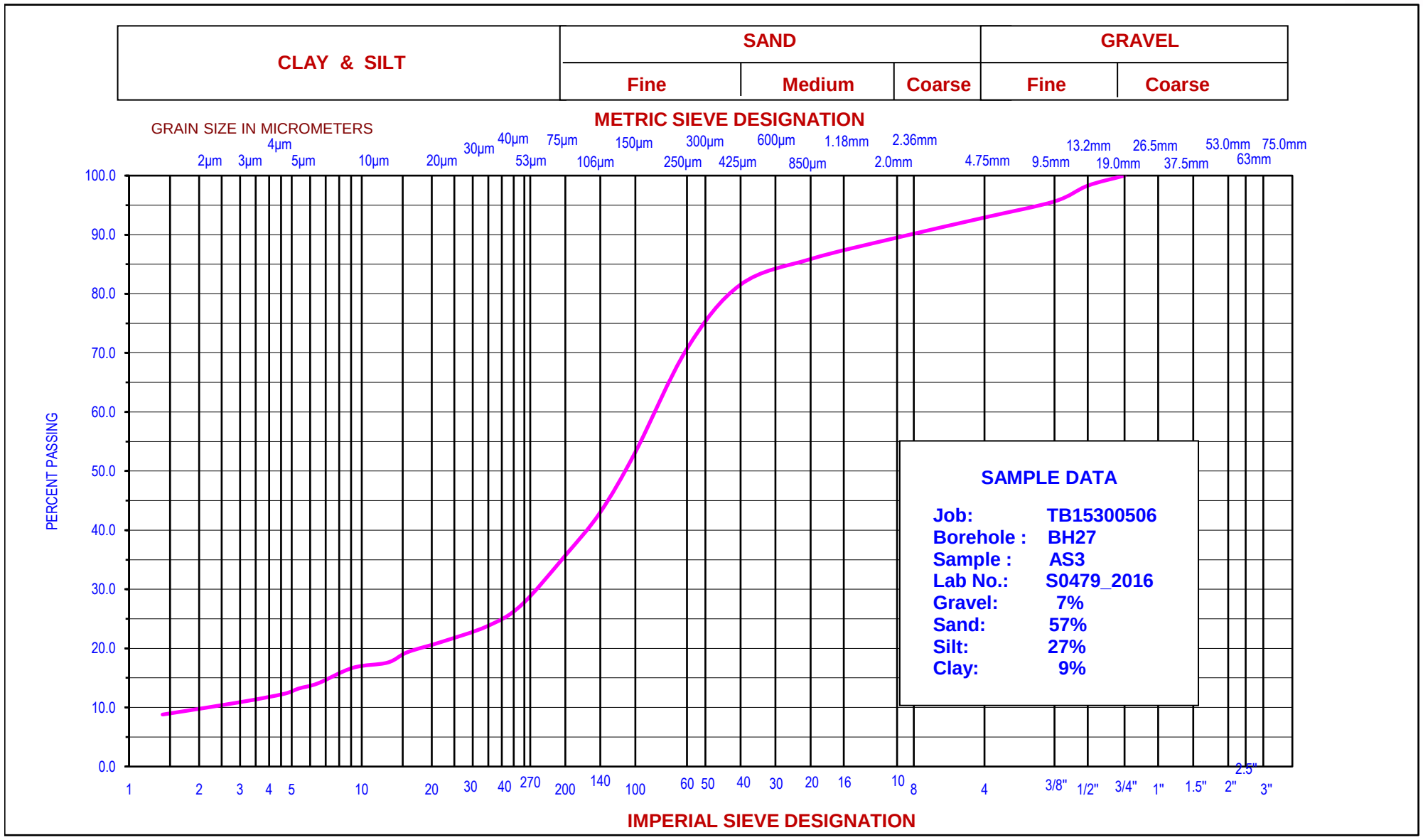
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH24
Lab No. :- S0432_2016
Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS4
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	24.41	92.8
13.2	43.55	87.2
9.5	62.84	81.5
4.75	108.44	68.0
2.00	140.61	58.5
0.85		51.6
0.425		33.2
0.25		22.7
0.150		18.4
0.106		16.5
0.0750		15.2
0.0500		12.6
0.0357		10.9
0.0228		9.3
0.0161		9.0
0.0132		8.6
0.0094		8.0
0.0067		6.9
0.0055		5.7
0.0048		4.6
0.0033		3.4
0.0014		2.9

Total Wt. (g)		339.72
Wt used for Hydrometer (g)		
50.62		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	5.98	88.2%
0.425	21.88	56.8%
0.250	31.02	38.7%
0.150	34.73	31.4%
0.106	36.34	28.2%
0.075	37.49	25.9%
Pan	37.55	

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GRAIN SIZE DISTRIBUTION

SAND

with silt, trace gravel and clay

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0479_2016	**Date :- 15 Apr 2016**

Grain Size Analysis

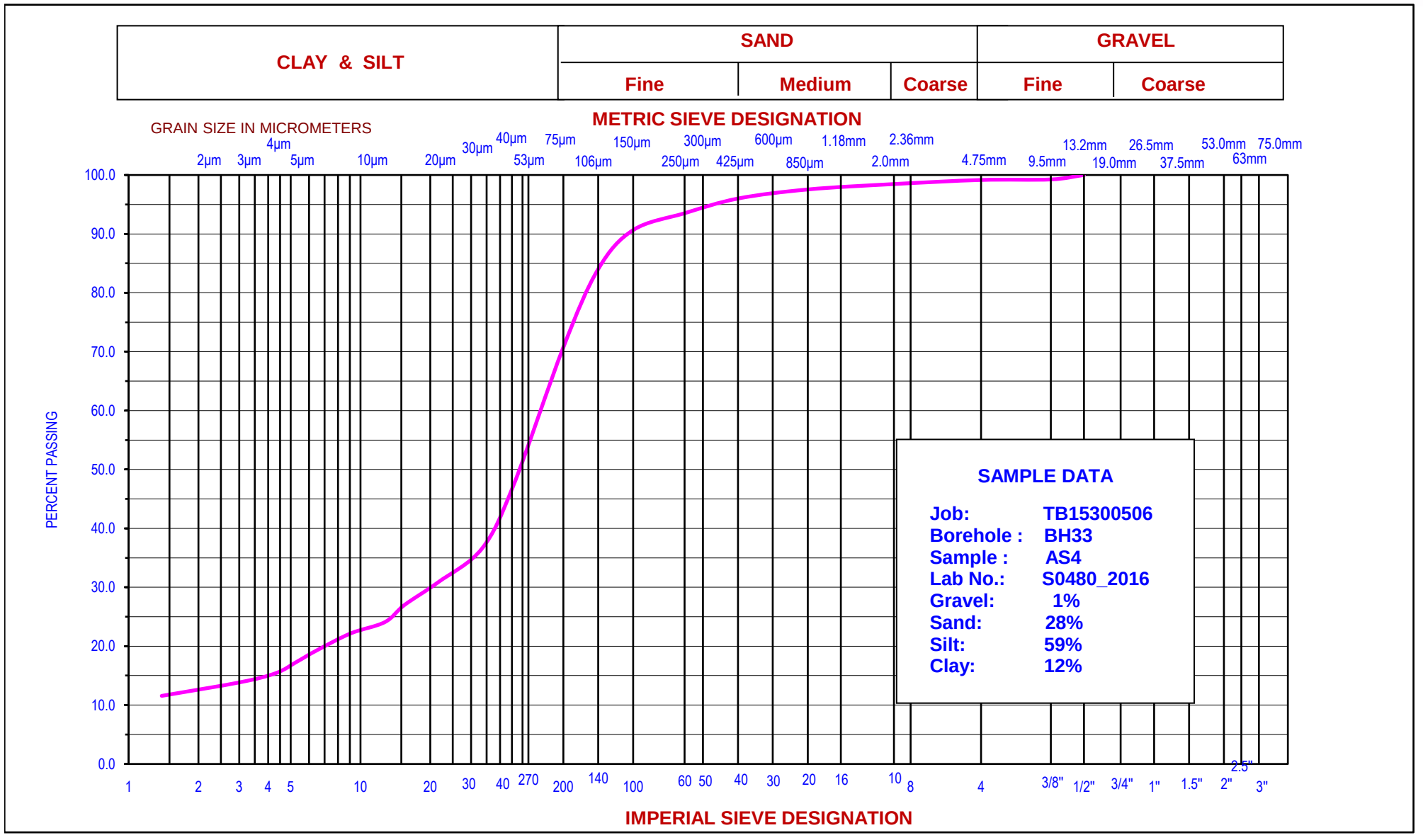
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH27
Lab No. :- S0479_2016
Date :- 15-Apr-16
Tested By :- DB/WA
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.2	5.40	98.3
9.5	13.80	95.6
4.75	22.45	92.9
2.00	33.20	89.5
0.85		85.9
0.425		81.6
0.25		70.7
0.150		53.2
0.106		43.0
0.0750		35.7
0.0484		27.3
0.0346		23.8
0.0221		21.1
0.0157		19.4
0.0129		17.6
0.0092		16.7
0.0065		14.1
0.0054		13.2
0.0046		12.3
0.0030		10.9
0.0014		8.8

Total Wt. (g)		317.02
Wt used for Hydrometer (g)		
50.31		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	2.04	95.9%
0.425	4.47	91.1%
0.250	10.57	79.0%
0.150	20.40	59.4%
0.106	26.12	48.1%
0.075	30.23	39.9%
Pan	31.23	

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Amec Foster Wheeler Environment & Infrastructure 104 Crockford Blvd., Scarborough, Ontario, M1R 3C3 Tel +1 (416) 751 6565, amecfw.com	**GRAIN SIZE DISTRIBUTION**	**Client :-**	**Ministry of Transportation Ontario**
		Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
	SILTY CLAY **with sand, trace gravel**	**Location:-**	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
		Lab No. :- S0480_2016	**Date :- 14 Apr 2016**

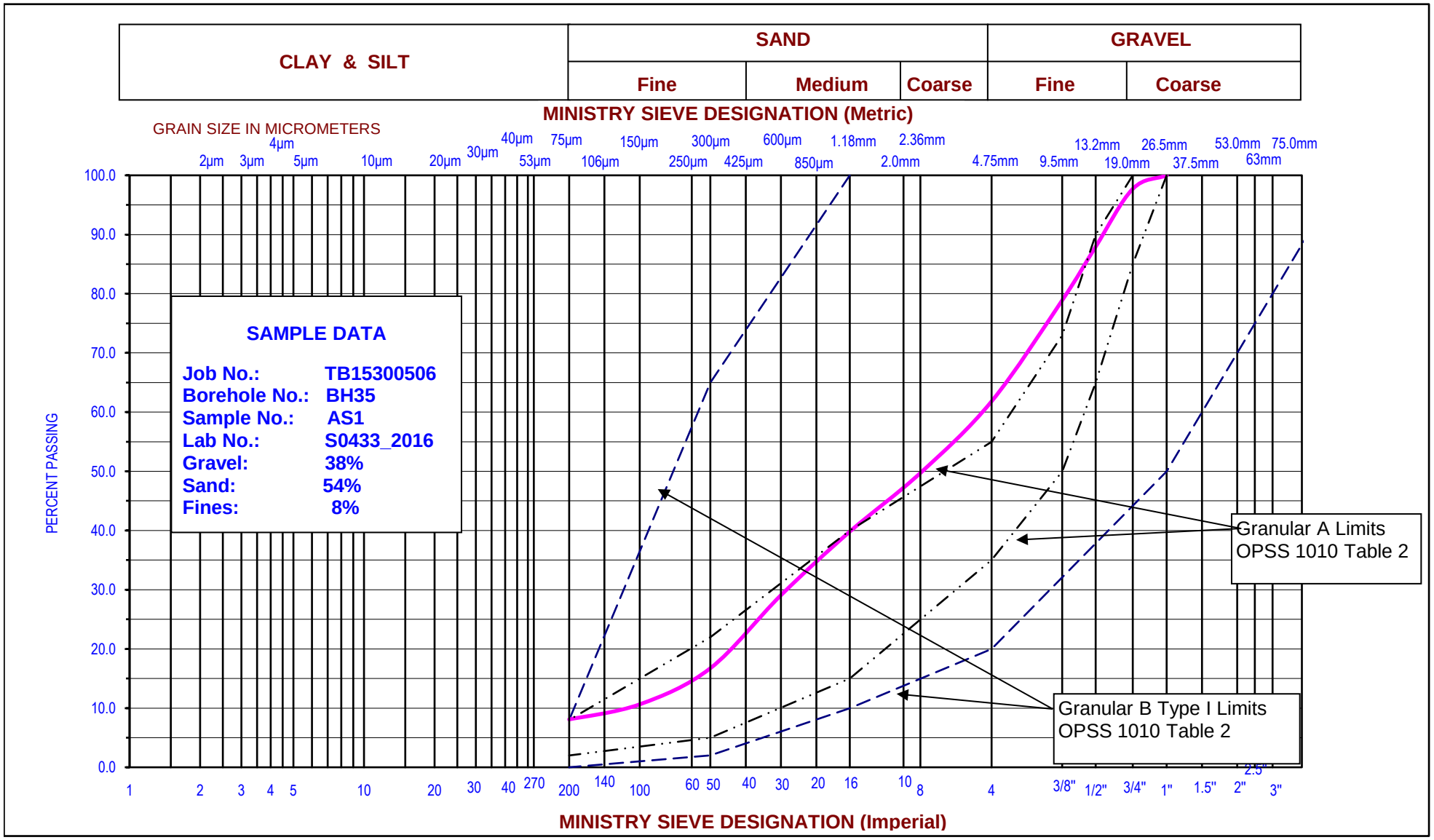
Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH33
Lab No. :- S0480_2016
Date :- 14-Apr-16
Tested By :- RP/WA
Sample # :- AS4
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
13.2	0.00	100.0
9.5	1.84	99.2
4.75	2.05	99.2
2.00	3.75	98.5
0.85		97.5
0.425		96.0
0.25		93.5
0.150		90.6
0.106		84.0
0.0750		70.7
0.0456		47.2
0.0335		36.6
0.0216		30.8
0.0155		27.0
0.0127		24.1
0.0091		22.2
0.0065		19.3
0.0053		17.3
0.0043		15.4
0.0030		13.9
0.0014		11.6

Total Wt. (g)		244.36
Wt used for Hydrometer (g)		
50.53		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	0.47	99.1%
0.425	1.26	97.5%
0.250	2.54	95.0%
0.150	4.01	92.1%
0.106	7.41	85.3%
0.075	14.22	71.9%
Pan	15.40	

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GRAIN SIZE DISTRIBUTION

GRAVELLY SAND

trace silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0433_2016	**Date :- 06 Apr 2016**

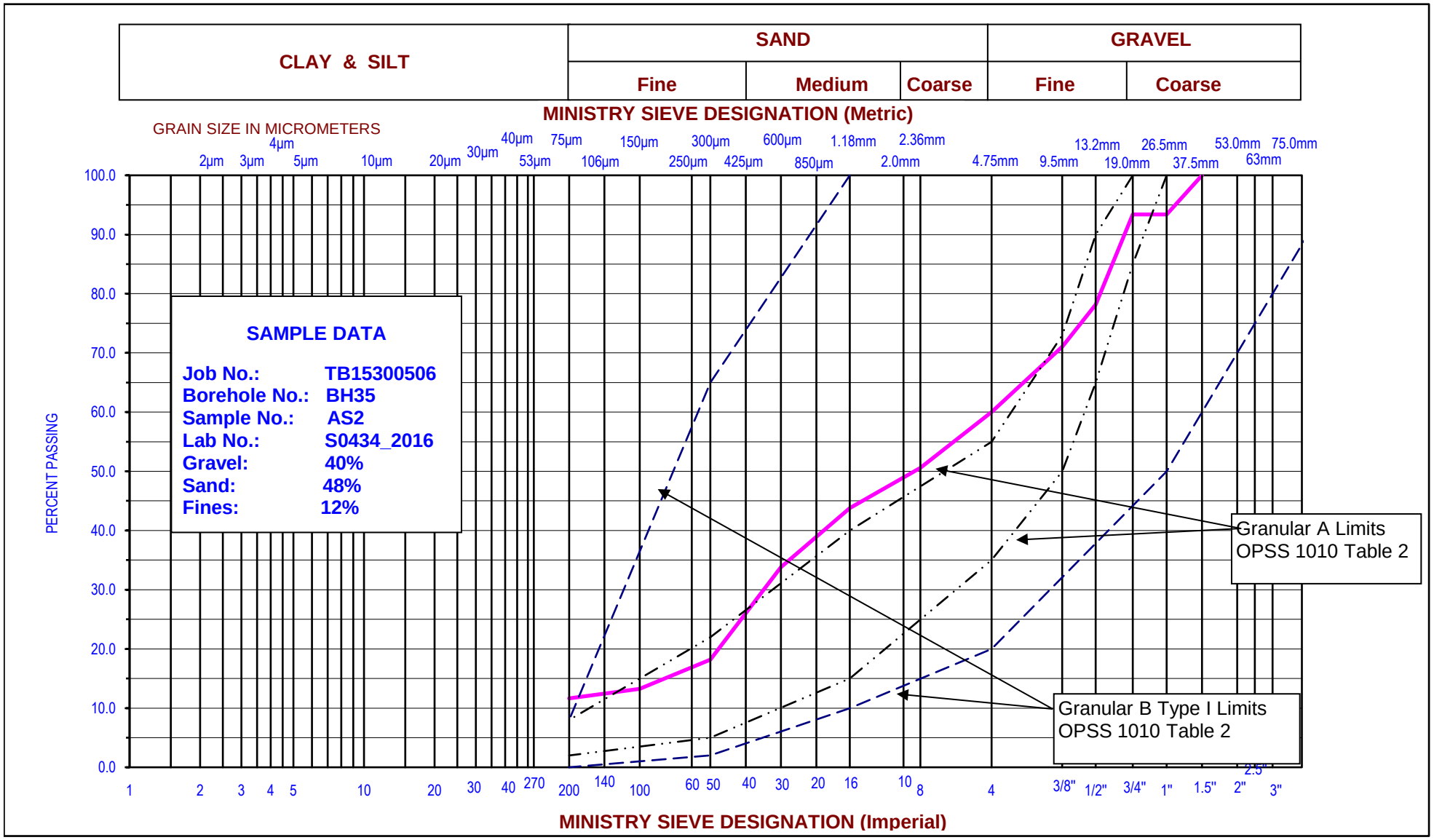
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH35 **Lab No. :-** S0433_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	20.82	97.7
13.20	109.55	87.9
9.5	191.81	78.9
4.75	346.90	61.8
2.36		49.7
1.180		39.8
0.600		29.1
0.300		16.7
0.150		10.6
0.075		8.1

Total Wt (g)		908.52
FINES		
278.38 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	54.50	80.4%
1.18	99.09	64.4%
0.600	147.48	47.0%
0.300	203.04	27.1%
0.15	230.49	17.2%
0.075	241.93	13.1%
Pan	242.71	

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Amec Foster Wheeler Environment & Infrastructure 104 Crockford Blvd., Scarborough, Ontario, M1R 3C3 Tel +1 (416) 751 6565 amecfw.com	**GRAIN SIZE DISTRIBUTION**	**Client :-** Ministry of Transportation Ontario
		Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
	GRAVEL AND SAND **some silt**	**Location:-** Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
		Lab No. :- S0434_2016 — **Date :-** 06 Apr 2016

Grain Size Analysis

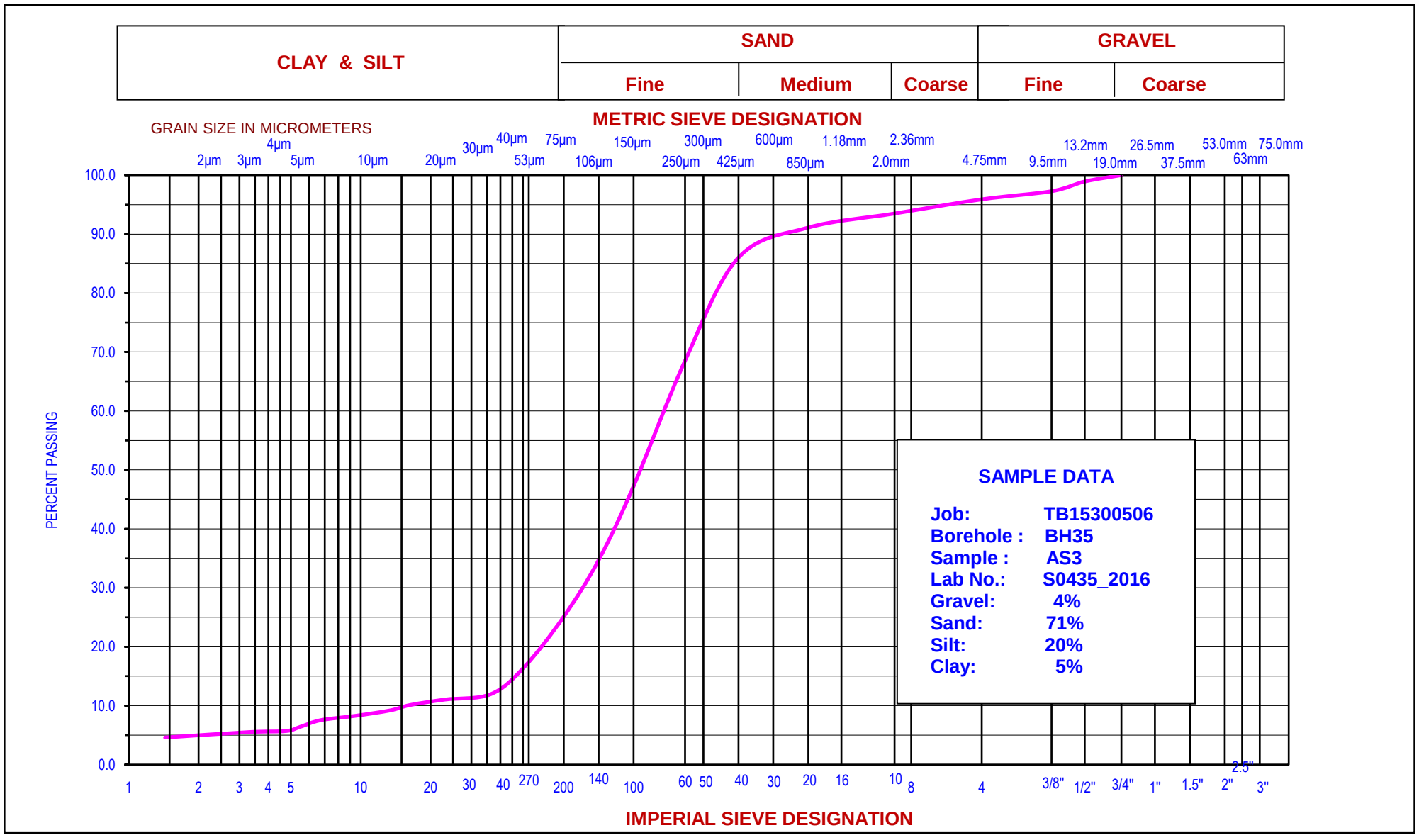
Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH35 **Lab No. :-** S0434_2016
Sample ID # :- AS2 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
37.5	0.00	100.0
26.5	48.35	93.4
19	48.35	93.4
13.20	159.69	78.2
9.5	211.54	71.1
4.75	292.32	60.0
2.36		50.6
1.180		43.8
0.600		33.8
0.300		18.2
0.150		13.2
0.075		11.6

Total Wt (g)		731.21
FINES		
281.09 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	44.15	84.3%
1.18	75.97	73.0%
0.600	122.89	56.3%
0.300	195.96	30.3%
0.15	219.10	22.1%
0.075	226.57	19.4%
Pan	226.65	

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		Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
	SAND **with silt, trace gravel and clay**	**Location:-** Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
		Lab No. :- S0435_2016 — **Date :-** 05 Apr 2016

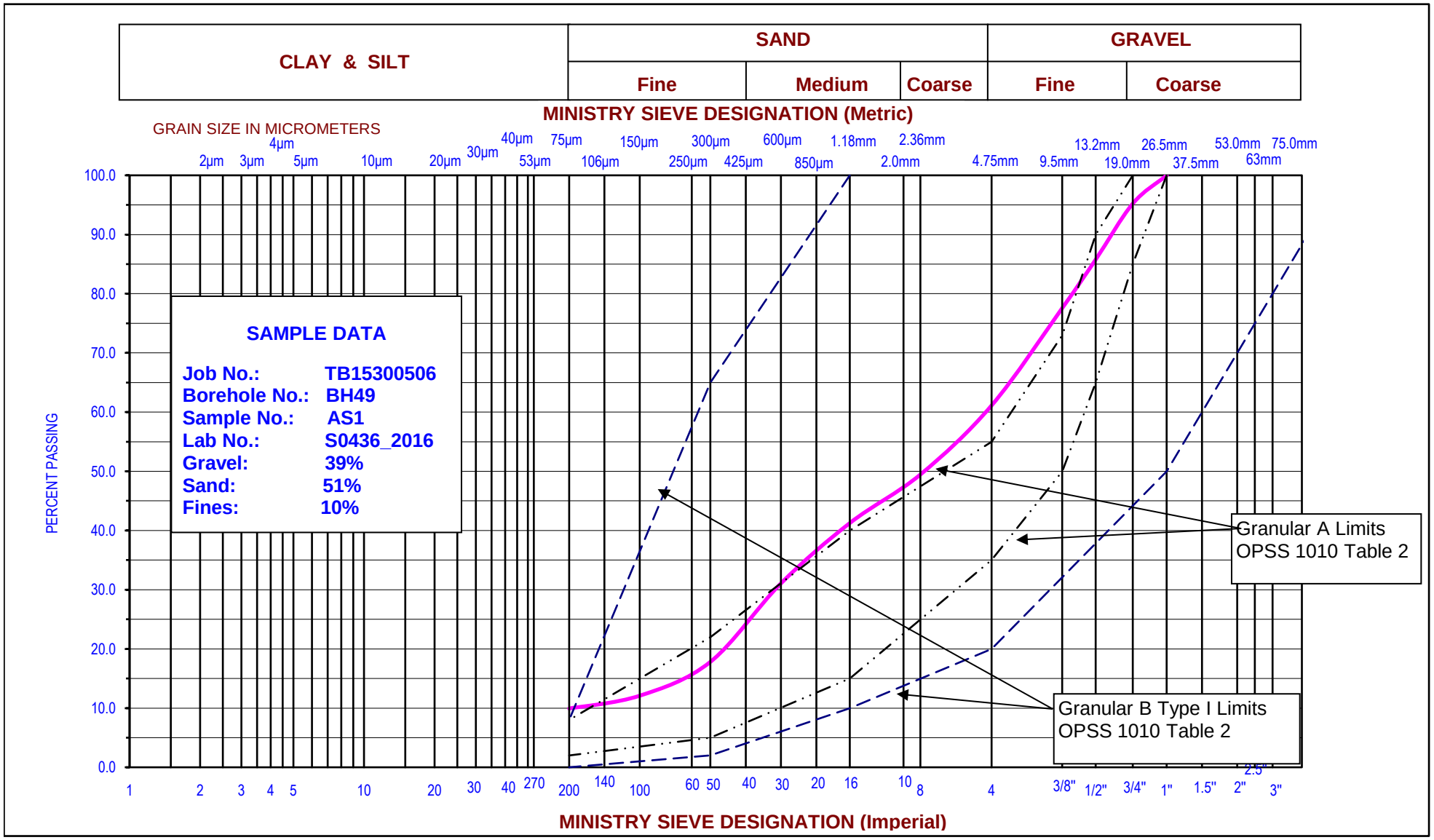
Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH35
Lab No. :- S0435_2016
Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.2	2.91	98.9
9.5	7.33	97.3
4.75	11.04	95.9
2.00	17.51	93.5
0.85		91.1
0.425		86.0
0.25		68.5
0.150		47.2
0.106		34.7
0.0750		25.1
0.0507		16.6
0.0364		12.0
0.0231		11.0
0.0164		10.1
0.0134		9.2
0.0095		8.3
0.0067		7.5
0.0055		6.4
0.0048		5.7
0.0033		5.5
0.0014		4.6

Total Wt. (g)		269.29
Wt used for Hydrometer (g)		
50.27		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	1.28	97.5%
0.425	4.02	92.0%
0.250	13.43	73.3%
0.150	24.87	50.5%
0.106	31.62	37.1%
0.075	36.77	26.9%
Pan	37.70	

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GRAIN SIZE DISTRIBUTION

GRAVELLY SAND

trace silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0436_2016	**Date :- 06 Apr 2016**

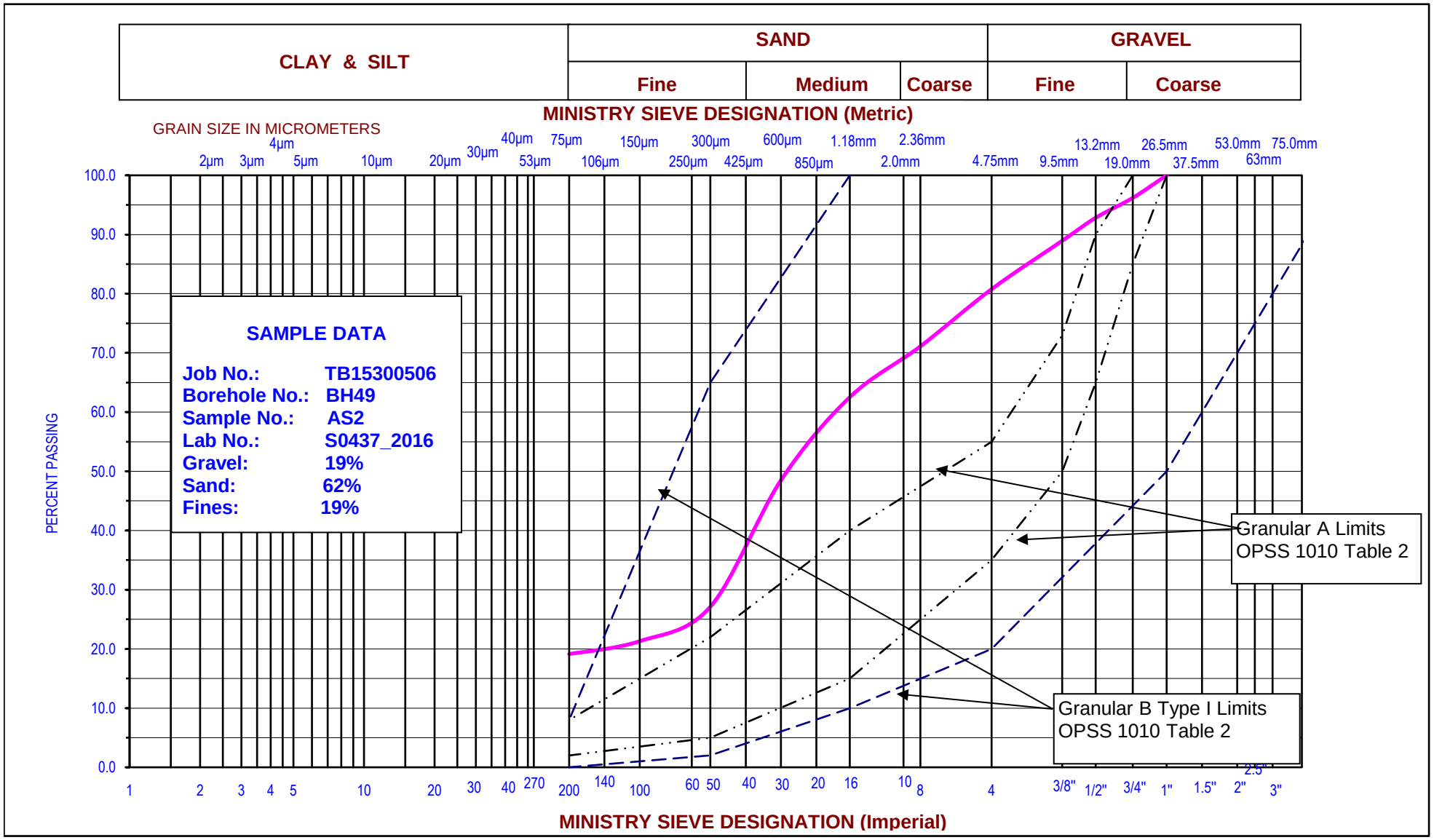
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH49 **Lab No. :-** S0436_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	30.15	95.2
13.20	89.77	85.8
9.5	141.49	77.6
4.75	245.16	61.1
2.36		49.5
1.180		41.3
0.600		31.1
0.300		17.8
0.150		12.1
0.075		9.9

Total Wt (g)		630.59
FINES		
279.55 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	53.36	80.9%
1.18	90.87	67.5%
0.600	137.47	50.8%
0.300	198.12	29.1%
0.15	224.25	19.8%
0.075	234.12	16.3%
Pan	234.22	

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GRAIN SIZE DISTRIBUTION

SAND

some gravel and silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0437_2016	**Date :- 06 Apr 2016**

Grain Size Analysis

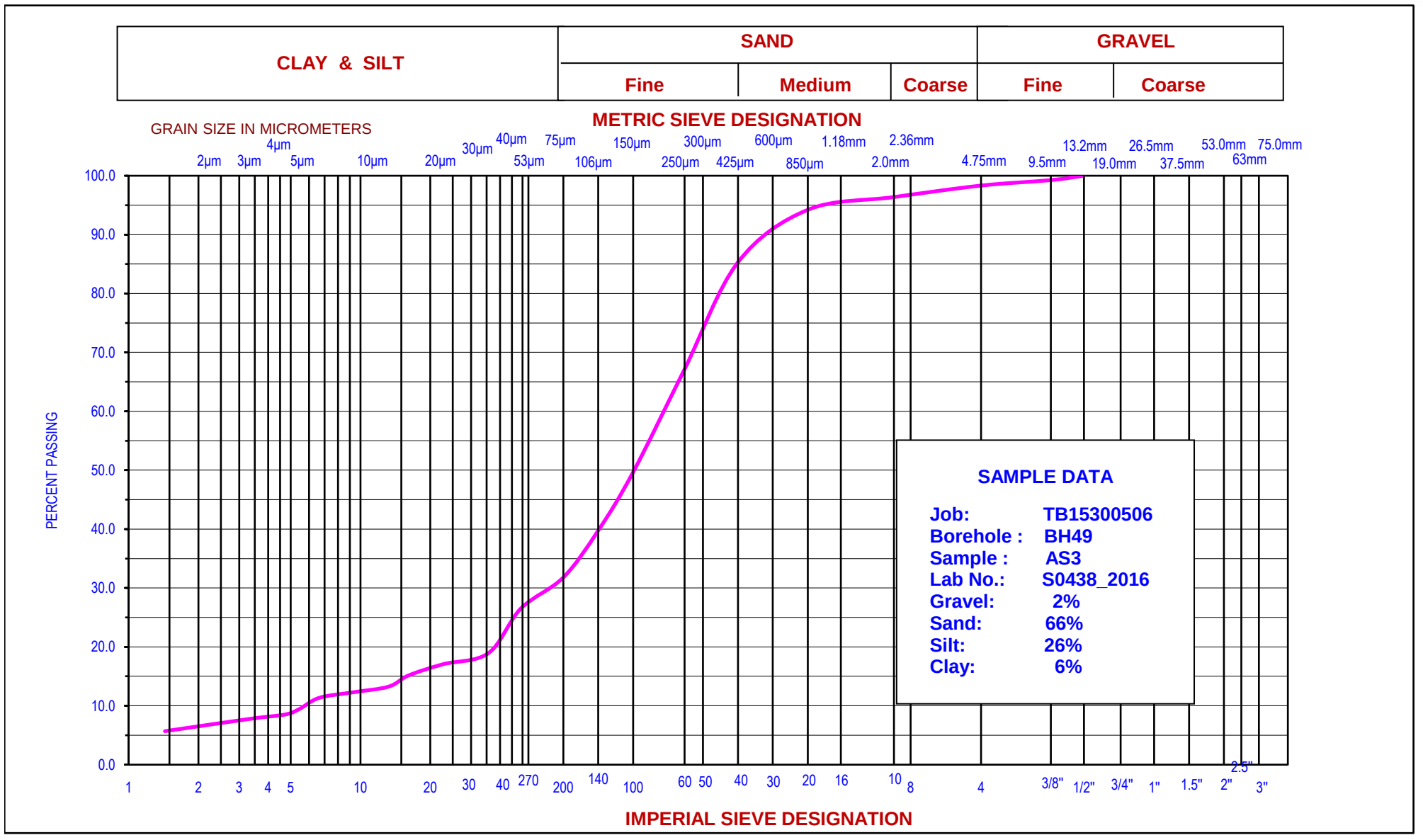
Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- BH49 **Lab No. :-** S0437_2016
Sample ID # :- AS2 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	24.35	96.2
13.20	45.85	92.8
9.5	70.68	88.9
4.75	122.83	80.8
2.36		71.1
1.180		62.5
0.600		48.5
0.300		27.1
0.150		21.3
0.075		19.1

Total Wt (g)		638.71
FINES		
274.20 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	32.81	88.0%
1.18	61.96	77.4%
0.600	109.63	60.0%
0.300	182.15	33.6%
0.15	201.88	26.4%
0.075	209.25	23.7%
Pan	209.59	

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		Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
	SAND **with silt, trace gravel and clay**	**Location:-**	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
		Lab No. :- S0438_2016	**Date :- 05 Apr 2016**

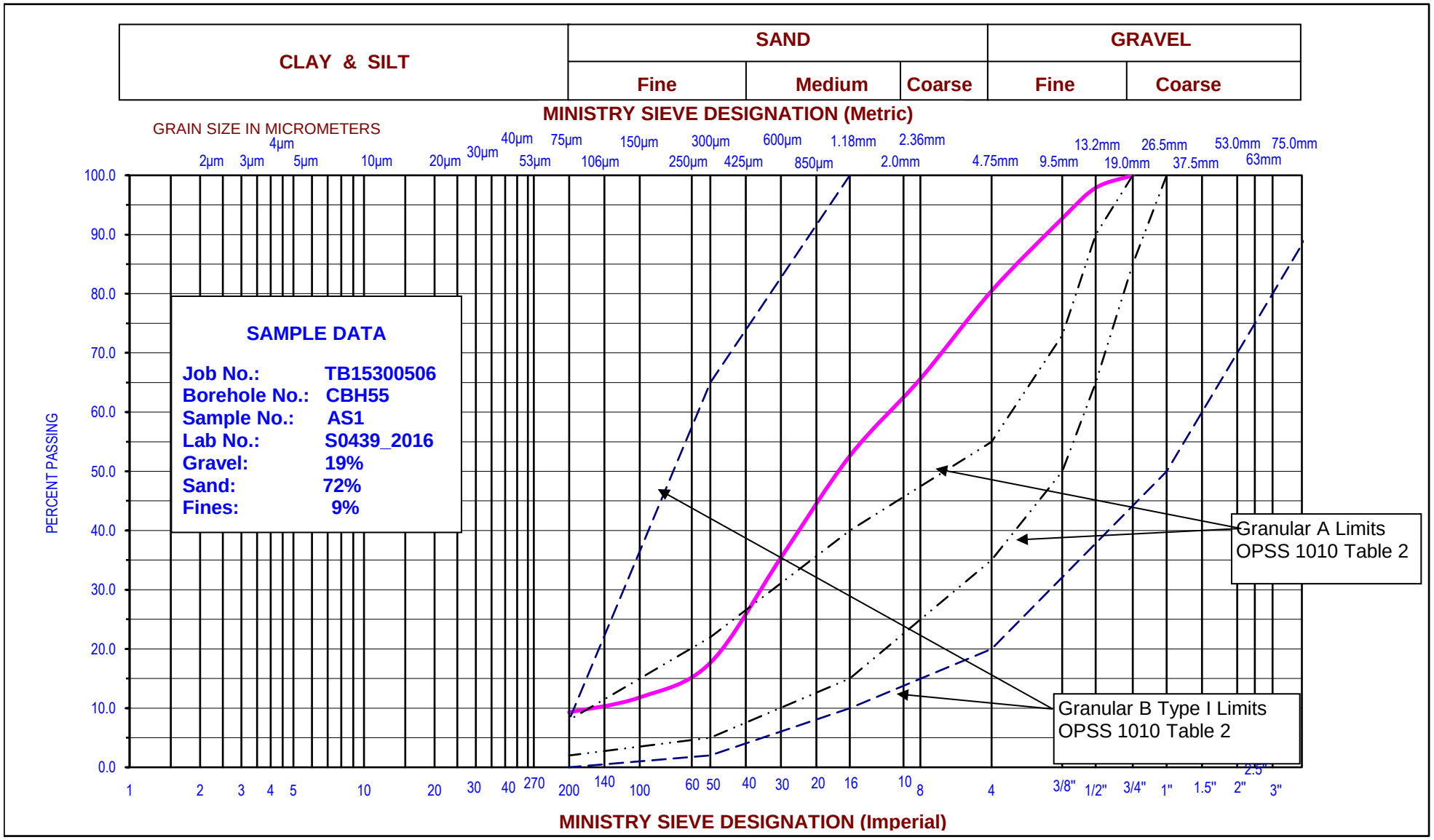
Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH49
Lab No. :- S0438_2016
Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
13.2	0.00	100.0
9.5	2.03	99.3
4.75	4.56	98.3
2.00	9.86	96.4
0.85		94.2
0.425		85.3
0.25		67.1
0.150		49.7
0.106		39.7
0.0750		31.8
0.0492		26.5
0.0356		18.9
0.0227		17.0
0.0161		15.2
0.0132		13.3
0.0094		12.3
0.0067		11.4
0.0055		9.5
0.0047		8.5
0.0033		7.8
0.0014		5.7

Total Wt. (g)		272.60
Wt used for Hydrometer (g)		
50.32		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	1.13	97.8%
0.425	5.78	88.5%
0.250	15.26	69.7%
0.150	24.39	51.5%
0.106	29.57	41.2%
0.075	33.72	33.0%
Pan	34.13	

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GRAIN SIZE DISTRIBUTION

SAND

some gravel, trace silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0439_2016	**Date :- 06 Apr 2016**

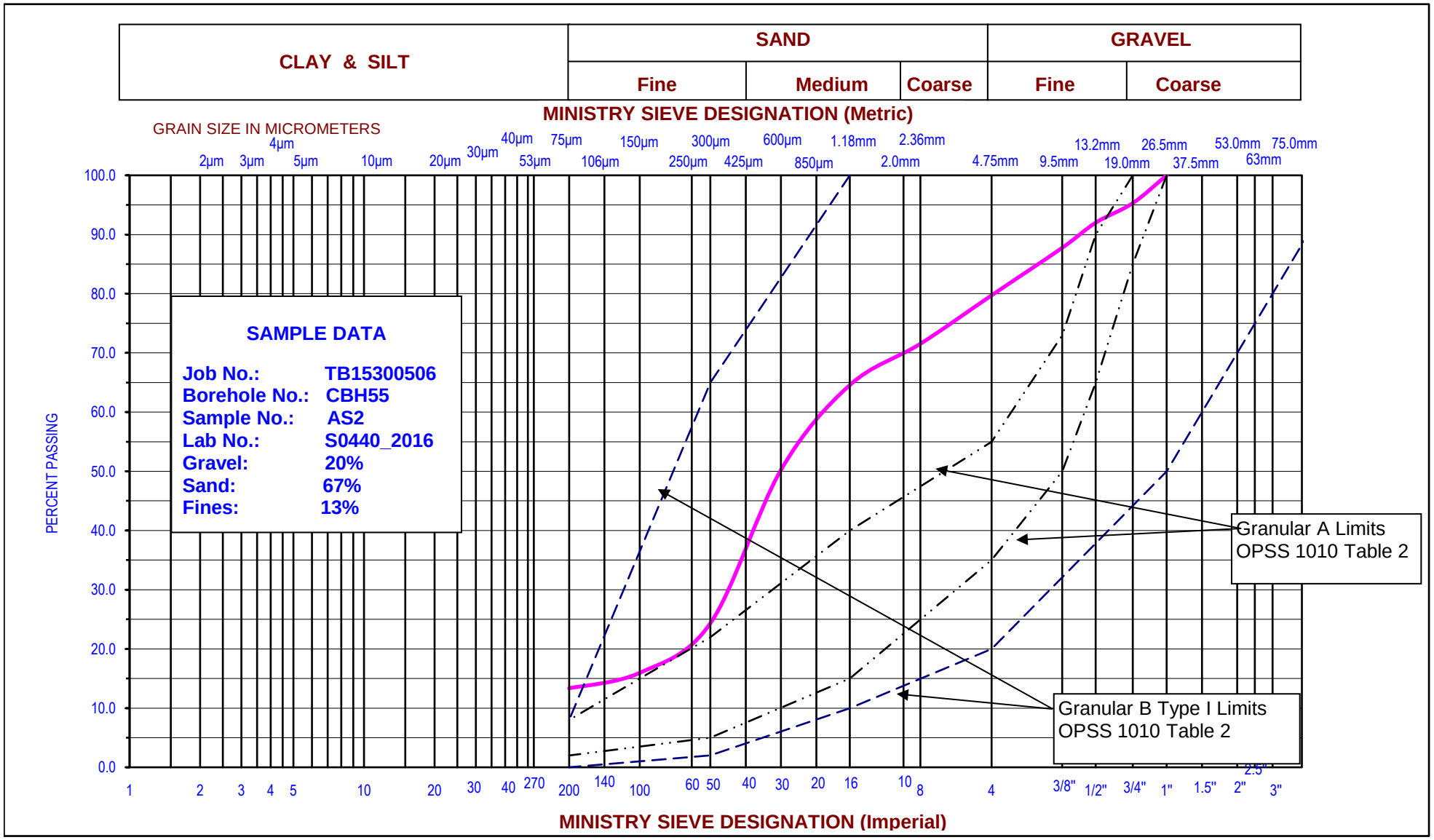
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- CBH55 **Lab No. :-** S0439_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.20	11.04	97.9
9.5	37.97	92.7
4.75	101.57	80.5
2.36		65.6
1.180		52.6
0.600		35.4
0.300		17.7
0.150		11.8
0.075		9.3

Total Wt (g)		520.01
FINES		
289.25 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	53.36	81.6%
1.18	100.25	65.3%
0.600	161.99	44.0%
0.300	225.79	21.9%
0.15	246.83	14.7%
0.075	255.85	11.5%
Pan	256.25	

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Amec Foster Wheeler Environment & Infrastructure 104 Crockford Blvd., Scarborough, Ontario, M1R 3C3 Tel +1 (416) 751 6565 amecfw.com	**GRAIN SIZE DISTRIBUTION**	**Client :-** Ministry of Transportation Ontario
		Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
	SAND **with gravel, some silt**	**Location:-** Part B (wp3062-14-00): Station 11+800 - 17+530, Twp of Townsent. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
		Lab No. :- S0440_2016 — **Date :-** 06 Apr 2016

Grain Size Analysis

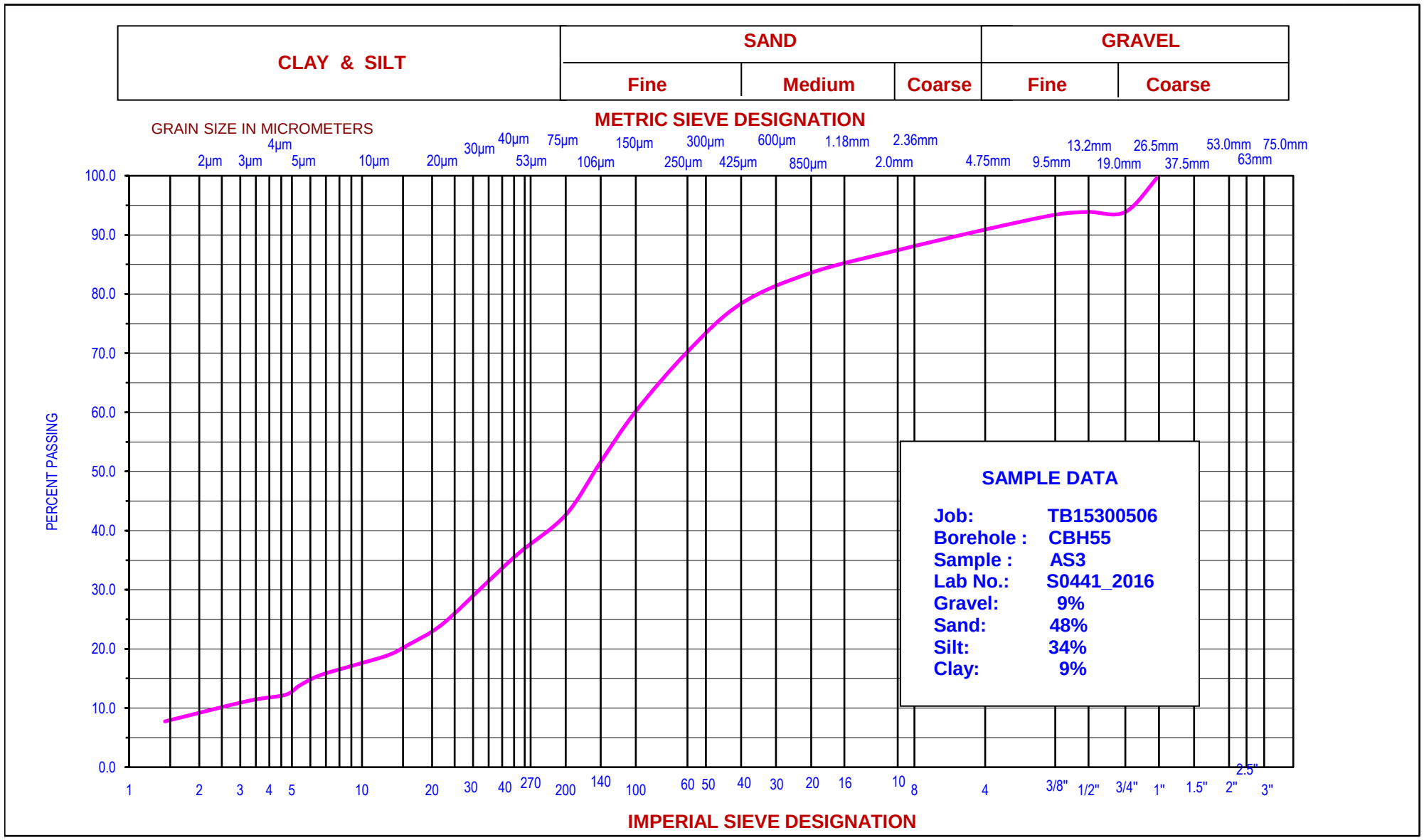
Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (wp3062-14-00): Station 11+800 - 17+530, Twp of Townsent. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- CBH55 **Lab No. :-** S0440_2016
Sample ID # :- AS2 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	29.85	95.3
13.20	50.82	92.0
9.5	77.76	87.8
4.75	128.74	79.7
2.36		71.5
1.180		64.6
0.600		50.2
0.300		24.3
0.150		16.0
0.075		13.3

Total Wt (g)		634.93
FINES		
281.04 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	28.85	89.7%
1.18	53.43	81.0%
0.600	104.00	63.0%
0.300	195.29	30.5%
0.15	224.79	20.0%
0.075	233.98	16.7%
Pan	233.99	

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GRAIN SIZE DISTRIBUTION

SILTY SAND

trace gravel and clay

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0441_2016	**Date :- 05 Apr 2016**

Grain Size Analysis

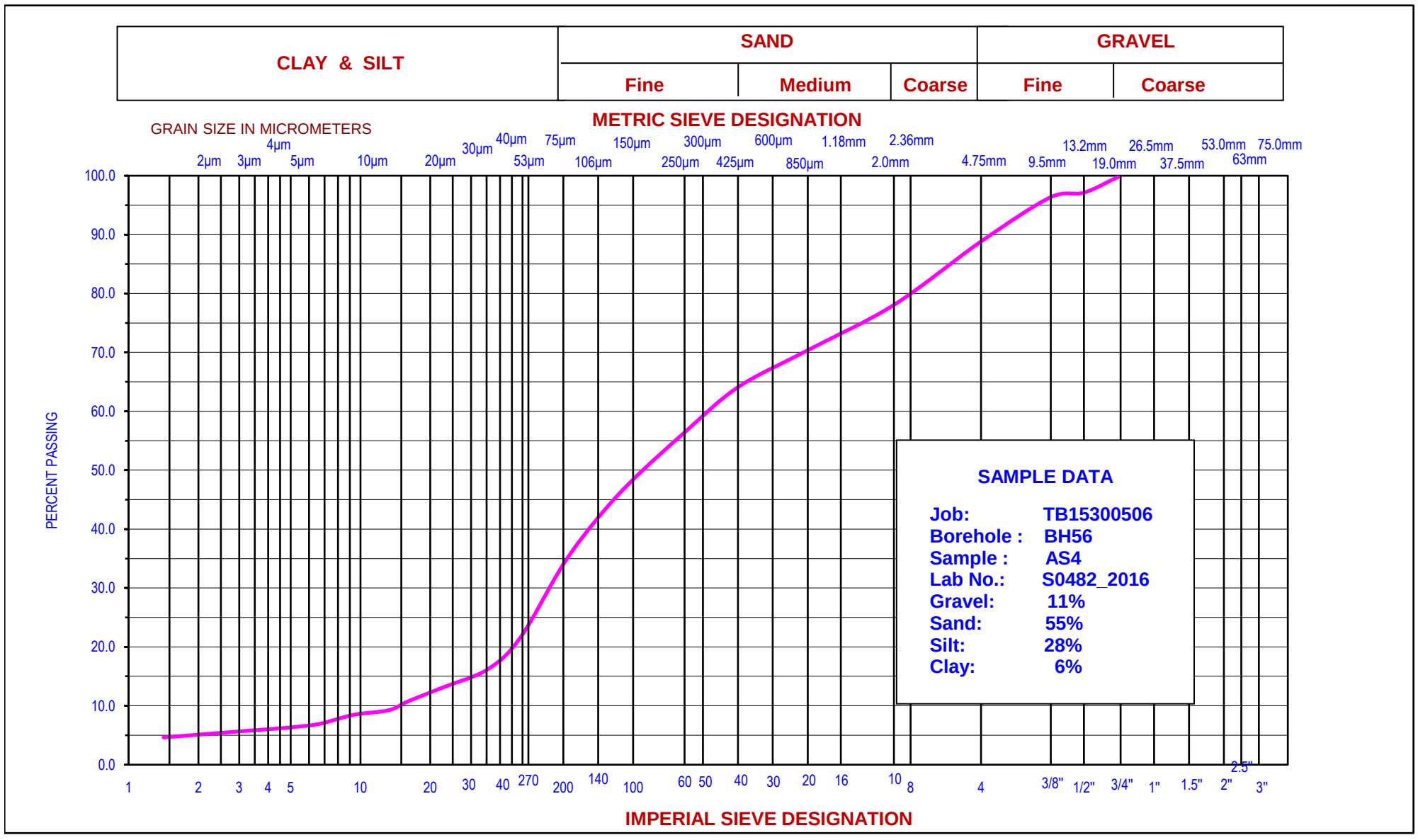
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- CBH55
Lab No. :- S0441_2016
Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19	18.65	93.9
13.2	18.65	93.9
9.5	20.09	93.4
4.75	27.71	90.9
2.00	38.32	87.4
0.85		83.6
0.425		78.4
0.25		70.2
0.150		60.2
0.106		51.6
0.0750		42.7
0.0470		36.1
0.0339		31.0
0.0220		24.1
0.0158		20.7
0.0129		18.9
0.0092		17.2
0.0065		15.5
0.0054		13.8
0.0047		12.2
0.0032		11.2
0.0014		7.7

Total Wt. (g)	305.80	
Wt used for Hydrometer (g)		
50.22		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	2.19	95.6%
0.425	5.19	89.7%
0.250	9.87	80.3%
0.150	15.65	68.8%
0.106	20.57	59.0%
0.075	25.71	48.8%
Pan	27.09	

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GRAIN SIZE DISTRIBUTION

SAND

with silt, some gravel, trace clay

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :-	**S0482_2016**
Date :-	**14 Apr 2016**

Grain Size Analysis

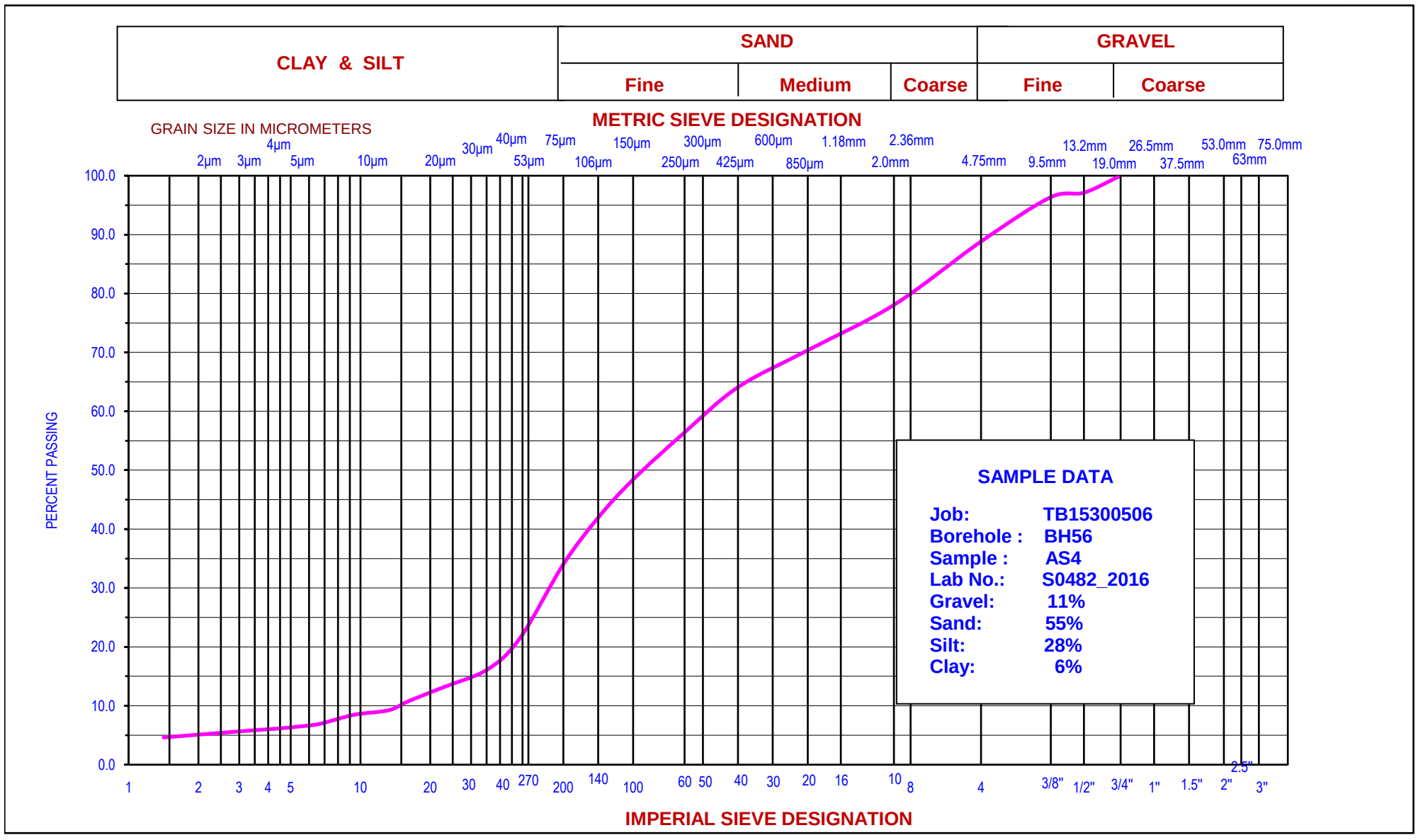
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH56
Lab No. :- S0482_2016
Date :- 14-Apr-16
Tested By :- MS/WA
Sample # :- AS4
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.2	8.47	97.1
9.5	10.69	96.4
4.75	32.79	88.8
2.00	64.38	78.1
0.85		70.4
0.425		64.1
0.25		56.4
0.150		48.4
0.106		41.9
0.0750		34.0
0.0489		21.6
0.0353		16.2
0.0226		13.1
0.0161		10.8
0.0132		9.2
0.0094		8.5
0.0067		6.9
0.0054		6.5
0.0045		6.2
0.0031		5.7
0.0014		4.6

Total Wt. (g)		293.98
Wt used for Hydrometer (g)		
50.11		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	4.94	90.1%
0.425	8.97	82.1%
0.250	13.90	72.3%
0.150	19.03	62.0%
0.106	23.19	53.7%
0.075	28.27	43.6%
Pan	29.25	

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GRAIN SIZE DISTRIBUTION

SAND

with silt, some gravel, trace clay

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :-	**S0482_2016**
Date :-	**14 Apr 2016**

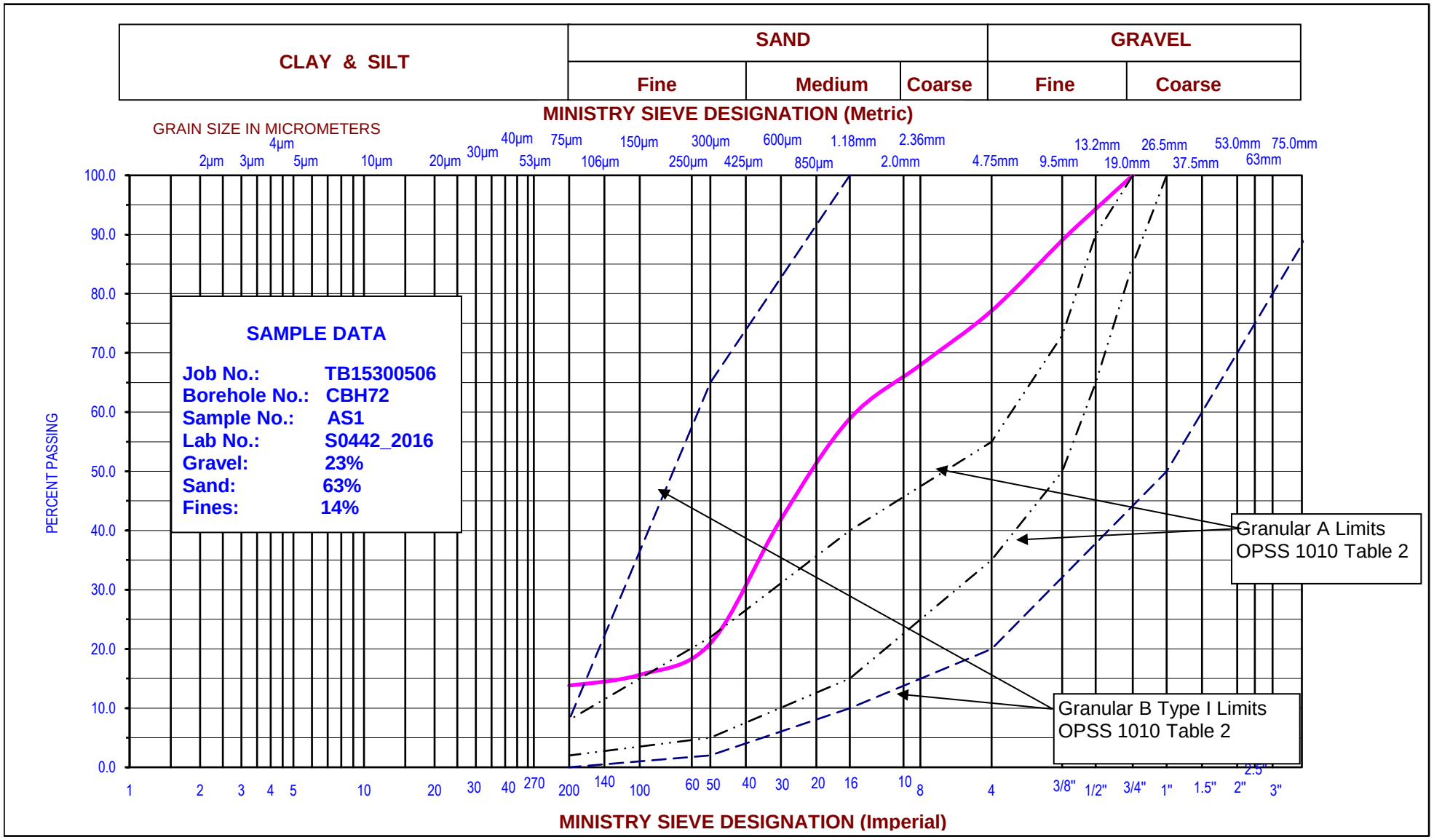
Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- BH56
Lab No. :- S0482_2016
Date :- 14-Apr-16
Tested By :- MS/WA
Sample # :- AS4
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.2	8.47	97.1
9.5	10.69	96.4
4.75	32.79	88.8
2.00	64.38	78.1
0.85		70.4
0.425		64.1
0.25		56.4
0.150		48.4
0.106		41.9
0.0750		34.0
0.0489		21.6
0.0353		16.2
0.0226		13.1
0.0161		10.8
0.0132		9.2
0.0094		8.5
0.0067		6.9
0.0054		6.5
0.0045		6.2
0.0031		5.7
0.0014		4.6

Total Wt. (g)		293.98
Wt used for Hydrometer (g)		
50.11		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	4.94	90.1%
0.425	8.97	82.1%
0.250	13.90	72.3%
0.150	19.03	62.0%
0.106	23.19	53.7%
0.075	28.27	43.6%
Pan	29.25	

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GRAIN SIZE DISTRIBUTION

SAND

with gravel, some silt

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0442_2016	**Date :- 06 Apr 2016**

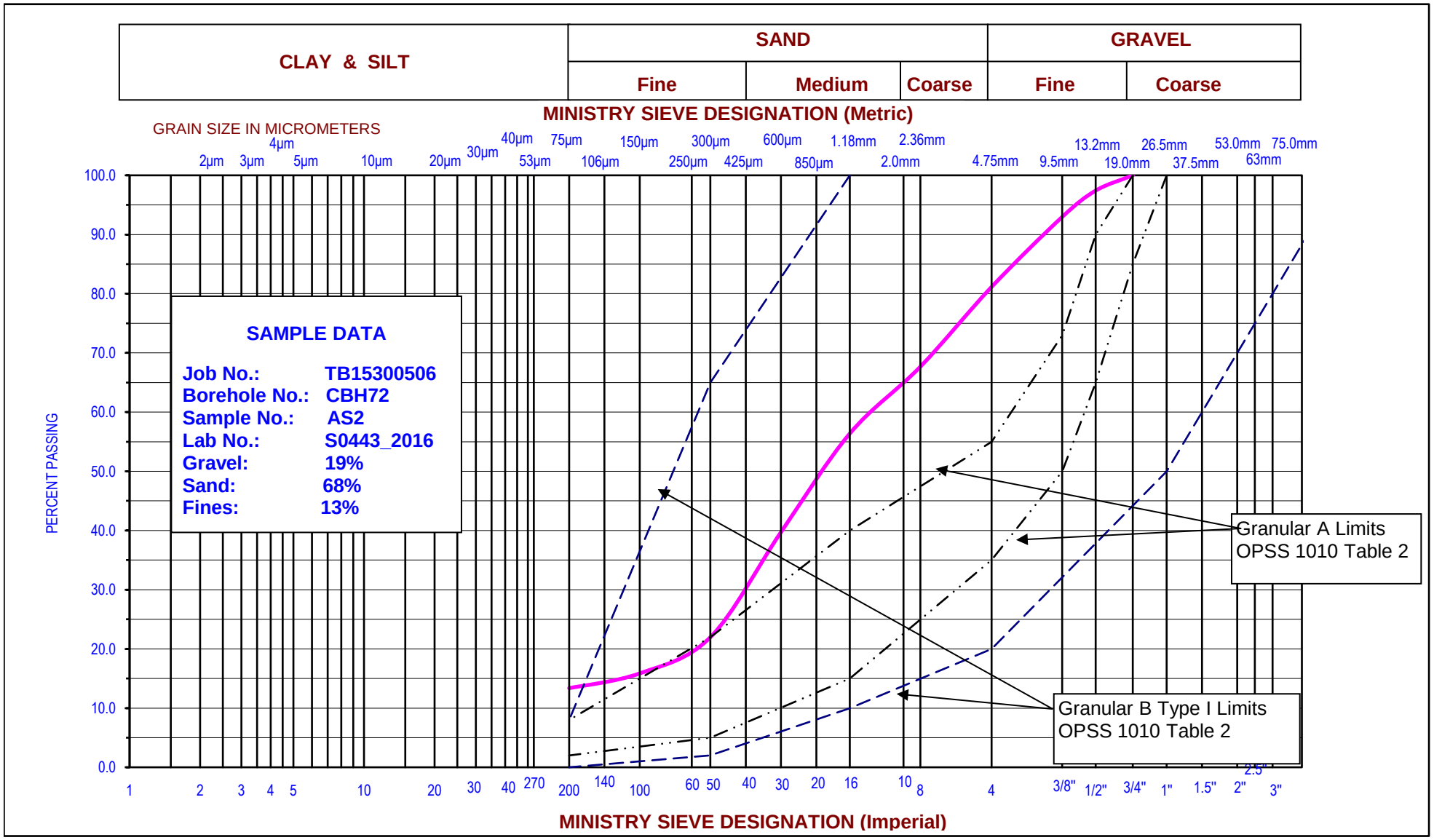
Grain Size Analysis

Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- CBH72 **Lab No. :-** S0442_2016
Sample ID # :- AS1 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.20	33.23	94.3
9.5	64.05	89.0
4.75	133.62	77.1
2.36		68.0
1.180		58.9
0.600		41.9
0.300		20.9
0.150		15.6
0.075		13.8

Total Wt (g)		583.99
FINES		
289.35 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	34.33	88.1%
1.18	68.36	76.4%
0.600	132.25	54.3%
0.300	210.83	27.1%
0.15	230.75	20.3%
0.075	237.56	17.9%
Pan	237.87	

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GRAIN SIZE DISTRIBUTION

SAND

some silt and gravel

Client :-	**Ministry of Transportation Ontario**
Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003**
Location:-	**Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
Lab No. :- S0443_2016	**Date :- 06 Apr 2016**

Grain Size Analysis

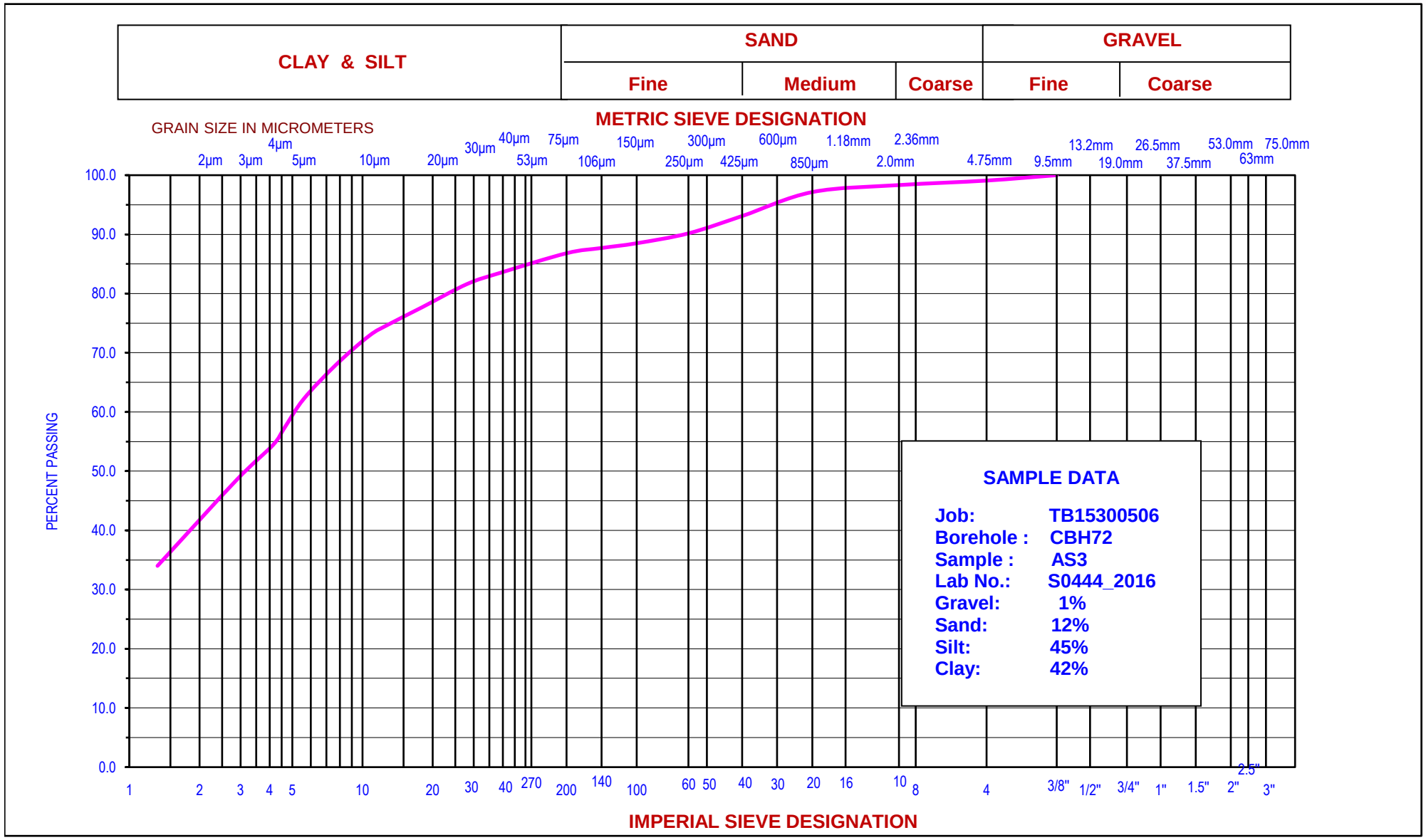
Job# :- TB15300506 **Date :-** 06-Apr-16
Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003
Location:- Part B (WP 3062-14-00): Station 11+800 - 17+530, Twp of Townsend. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.
Client :- Ministry of Transportation Ontario **Tested By :-** RP
Borehole # :- CBH72 **Lab No. :-** S0443_2016
Sample ID # :- AS2 **Checked By :-** SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
19	0.00	100.0
13.20	13.73	97.4
9.5	37.39	93.0
4.75	100.29	81.1
2.36		67.7
1.180		56.4
0.600		39.7
0.300		22.0
0.150		15.9
0.075		13.4

Total Wt (g)		531.99
FINES		
273.57 g		
Pass 4.75 mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
2.36	45.42	83.4%
1.18	83.51	69.5%
0.600	139.71	48.9%
0.300	199.52	27.1%
0.15	220.10	19.5%
0.075	228.50	16.5%
Pan	228.85	

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Amec Foster Wheeler Environment & Infrastructure 104 Crockford Blvd., Scarborough, Ontario, M1R 3C3 Tel +1 (416) 751 6565, amecfw.com	**GRAIN SIZE DISTRIBUTION**	**Client :-**	**Ministry of Transportation Ontario**
		Project:-	**Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004**
	SILTY CLAY **some sand, trace gravel**	**Location:-**	**Part B (wp3062-14-00): Station 11+800 - 17+530, Twp of Townsent. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.**
		Lab No. :- S0444_2016	**Date :- 05 Apr 2016**

Grain Size Analysis

Project:- Assignment No. 6_MTO West Region Retainer 3014-E-0003/0004
Location:- Part B (wp3062-14-00): Station 11+800 - 17+530, Twp of Townsent. Hwy 3 from the Town of Simcoe East Limits (Ireland Road) to Renton (Norfolk County Road 5/Cockshutt Road), for approx 5.8 km. ON.

Client :- Ministry of Transportation Ontario
Job# :- TB15300506
Borehole # :- CBH72
Lab No. :- S0444_2016

Date :- 05-Apr-16
Tested By :- RP/CZ
Sample # :- AS3
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
9.5	0.00	100.0
4.75	2.35	99.1
2.00	4.31	98.3
0.85		97.1
0.425		93.1
0.25		90.2
0.150		88.5
0.106		87.7
0.0750		86.8
0.0393		83.5
0.0281		81.6
0.0181		77.7
0.0130		74.8
0.0107		72.9
0.0077		68.0
0.0056		62.2
0.0046		57.3
0.0041		54.4
0.0029		48.6
0.0013		34.0

Total Wt. (g)	259.90	
Wt used for Hydrometer (g)		
50.04		
Pass 2mm Retained 0.075mm		
Sieve size (mm)	wt. retained (g)	%passing
0.850	0.60	98.8%
0.425	2.66	94.7%
0.250	4.15	91.7%
0.150	5.00	90.0%
0.106	5.41	89.2%
0.075	5.86	88.3%
Pan	5.88	

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Appendix ‘Photos’

Core Photos

APPENDIX - PHOTOS

PROJECT NO. TB15300506 - Assignment #6: MTO West Region Retainer 3014-E-0003

PROJECT LOCATION WP 3062-14-00 – Part B: Hwy 3 from Town of Simcoe East Limits (Ireland Road) To Renton (Norfolk CR 5/Cockshutt Rd), Sta (11+800 to 17+530), Twp of Townsend - approx 5.8 km.

ENCLOSURE 1



PHOTOGRAPH	1

CBH# 1 - EBDL

Sta (12+000)

Total Asphalt Thickness:
280 mm



PHOTOGRAPH	2

Core 2 - EBDL

Sta (12+250)

Total Asphalt Thickness:
290 mm

APPENDIX - PHOTOS

PROJECT NO. TB15300506 - Assignment #6: MTO West Region Retainer 3014-E-0003

PROJECT LOCATION WP 3062-14-00 – Part B: Hwy 3 from Town of Simcoe East Limits (Ireland Road) To Renton (Norfolk CR 5/Cockshutt Rd), Sta (11+800 to 17+530), Twp of Townsend - approx 5.8 km.

ENCLOSURE 2



PHOTOGRAPH	3

CBH 3 - WBL

Sta (12+500)

Total Asphalt Thickness: 250 mm



PHOTOGRAPH	4

Core# 7 - WBDL

Sta (16+750)

Total Asphalt Thickness: 245 mm

APPENDIX - PHOTOS

PROJECT NO. TB15300506 - Assignment #6: MTO West Region Retainer 3014-E-0003

PROJECT LOCATION WP 3062-14-00 – Part B: Hwy 3 from Town of Simcoe East Limits (Ireland Road) To Renton (Norfolk CR 5/Cockshutt Rd), Sta (11+800 to 17+530), Twp of Townsend - approx 5.8 km.

ENCLOSURE 3



PHOTOGRAPH	5

CBH #55 - EBDL

Sta (14+000)

Total Asphalt Thickness: 300 mm



PHOTOGRAPH	6

Core# 8

Sta (14+250)

Total Asphalt Thickness: 275 mm

APPENDIX - PHOTOS

PROJECT NO. TB15300506 - Assignment #6: MTO West Region Retainer 3014-E-0003

PROJECT LOCATION WP 3062-14-00 – Part B: Hwy 3 from Town of Simcoe East Limits (Ireland Road) To Renton (Norfolk CR 5/Cockshutt Rd), Sta (11+800 to 17+530), Twp of Townsend - approx 5.8 km.

ENCLOSURE 4



PHOTOGRAPH	7

CBH #57 - WBDL

Sta (14+500)

Total Asphalt Thickness: 270 mm



PHOTOGRAPH	8

Core# 10 - WBDL

Sta (15+250)

Total Asphalt Thickness: 260 mm

APPENDIX - PHOTOS

PROJECT NO. TB15300506 - Assignment #6: MTO West Region Retainer 3014-E-0003

PROJECT LOCATION WP 3062-14-00 – Part B: Hwy 3 from Town of Simcoe East Limits (Ireland Road) To Renton (Norfolk CR 5/Cockshutt Rd), Sta (11+800 to 17+530), Twp of Townsend - approx 5.8 km.

ENCLOSURE 5



PHOTOGRAPH	9

CBH #72 - EBDL

Sta (16+000)

Total Asphalt Thickness: 315 mm



PHOTOGRAPH	10

CBH #78 - WBDL

Sta (16+500)

Total Asphalt Thickness: 300 mm