


SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5602				
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 319.6		PROJECT NO:				
CAT 324DL		Coordinates: Z09V N6929129m E376200m		ELEVATION: m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)		★ Percent Fines★ ◆ Percent Sand◆ ■ Percent Gravel■		Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
				01			SILTY GRAVEL with SAND -brown, compact, damp -Some cobbles	1
				02	GM			2
				03				3
				04	GM			4
							END of HOLE -Target depth reached	




SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5603				
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 319.6		PROJECT NO:				
CAT 324DL		Coordinates: Z09V N6929164m E376223m		ELEVATION: m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PLASTIC M.C LIQUID 0 20 40 60 80 100 0 20 40 60 80 100							
●	◆ ★ ■		Hand	05	GM		SILTY GRAVEL with SAND -Brown, compact, damp -Trace cobbles, max size 150mm	1
				06				2
●	★ ◆ ■		Hand	07	GM			3
				08				4
END of HOLE -Refuasl, too hard for cleanup bucket								
 Highways and Public Works Transportation Engineering Branch		LOGGED BY: D.Lorenzi			Termination Depth: 3.5m			
		COMPILED BY: R.Kuiper			Complete: 6/28/2016 12:45:00 PM			
		REVIEWED BY: R.Stilwell			Pit #: Page 1 of 1			

SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5604					
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 319.6		PROJECT NO:					
CAT 324DL		Coordinates: Z09V N6929243m E376253m		ELEVATION: m					
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE		
ELEV. (m)		★ Percent Fines★		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
		◆ Percent Sand◆							
0	20 40 60 80 100	0	20 40 60 80 100						
				09	GM			SANDY GRAVEL with SAND brown, compact, damp -Trace cobbles, max size 150mm	1
				10					
				11	SM			SILTY SAND with GRAVEL dense, moist END of HOLE -Water infiltrating into test hole	2
									3
									4
		Highways and Public Works Transportation Engineering Branch			LOGGED BY: D.Lorenzi		Termination Depth: 2.1m		
					COMPILED BY: R.Kuiper		Complete: 6/28/2016 1:30:00 PM		
					REVIEWED BY: R.Stilwell		Pit #: Page 1 of 1		

SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5605				
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 277.2		PROJECT NO:				
CAT 324DL		Coordinates: Z09V N6897869m E353928m		ELEVATION: m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> <p>PLASTIC M.C LIQUID</p> <p>0 20 40 60 80 100</p> </div> <div style="text-align: center;"> <p>★ Percent Fines★</p> <p>◆ Percent Sand◆</p> <p>■ Percent Gravel■</p> <p>0 20 40 60 80 100</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 20px;">●</div> <div style="margin-bottom: 20px;">●</div> <div style="margin-bottom: 20px;">●</div> <div style="margin-bottom: 20px;">●</div> </div>			<div style="margin-bottom: 20px;">☞</div> <div style="margin-bottom: 20px;">☞</div> <div style="margin-bottom: 20px;">☞</div> <div style="margin-bottom: 20px;">☞</div>	12 13 14 15	GW-GM GW-GM GW-GM GW-GM		



SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5606					
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 277.2		PROJECT NO:					
CAT 324DL		Coordinates: Z09V N6897860m E353984m		ELEVATION: m					
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE							
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100	★ Percent Fines★ ◆ Percent Sand◆ ■ Percent Gravel■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
		0 20 40 60 80 100							
					16	GW		WELL-GRADED GRAVEL with SAND -Grey, moist, loose -Trace cobbles, >100mm	1
					17	GW		-Wet	2
								END of HOLE -Hit water table	2
									3
									4
 Highways and Public Works Transportation Engineering Branch		LOGGED BY: D.Lorenzi		Termination Depth: 2m					
		COMPILED BY: R.Kuiper		Complete: 6/28/2016 5:35:00 PM					
		REVIEWED BY: R.Stilwell		Pit #: Page 1 of 1					

SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5607			
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 265.2		PROJECT NO:			
CAT 324DL		Coordinates: Z09V N6888659m E347759m		ELEVATION: m			
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK		
		<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE				
ELEV. (m)		★ Percent Fines★	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
		◆ Percent Sand◆					
			18			Fractured rock -Grey, dry, hard -Trace boulders	
						END of HOLE -Refusal	1
							2
							3
							4
		Highways and Public Works Transportation Engineering Branch		LOGGED BY: D.Lorenzi		Termination Depth: 0.9m	
				COMPILED BY: R.Kuiper		Complete: 6/28/2016 7:00:00 PM	
				REVIEWED BY: R.Stilwell		Pit #: Page 1 of 1	

SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5608			
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 265.2		PROJECT NO:			
CAT 324DL		Coordinates: Z09V N6888678m E347799m		ELEVATION: m			
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED		<input type="checkbox"/> DCPT			
		<input type="checkbox"/> AUGER		<input type="checkbox"/> BULK			
		<input checked="" type="checkbox"/> SPT		<input type="checkbox"/> CORE			
ELEV. (m)		★ Percent Fines★		Sample #	SOIL SYMBOL	SOIL DESCRIPTION	Depth (m)
		◆ Percent Sand◆					
		■ Percent Gravel■					
				19		Fractured rock -Orange/brown, dry, compact -Angular	1
				20			2
						END of HOLE -Refusal	3
							4
		Highways and Public Works Transportation Engineering Branch		LOGGED BY: D.Lorenzi		Termination Depth: 2.3m	
				COMPILED BY: R.Kuiper		Complete: 6/28/2016 7:15:00 PM	
				REVIEWED BY: R.Stilwell		Pit #: Page 1 of 1	

SUBSURFACE EXPLORATION AND TEST REPORT		North Canol Road Highway #6		SOURCE/TP#: TP5617			
Boreal Engineering		North Canol Road - Bridge Test Pits, Km 256.0		PROJECT NO:			
CAT 324DL		Coordinates: Z08V N6883360m E654474m		ELEVATION: m			
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED		<input type="checkbox"/> DCPT			
		<input type="checkbox"/> AUGER		<input type="checkbox"/> BULK			
		<input checked="" type="checkbox"/> SPT		<input type="checkbox"/> CORE			
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	★ Percent Fines★ ◆ Percent Sand◆ ■ Percent Gravel■						
			21			SILT -Trace sand, trace gravel, trace organics -Light brown, dry, loose	1
			22			SANDY SILT with GRAVEL -Grey -Trace boulders	2
			23			SANDY GRAVEL with SILT -Orange, dry, loose	3
			24				4
						END OF HOLE -Target depth reached	



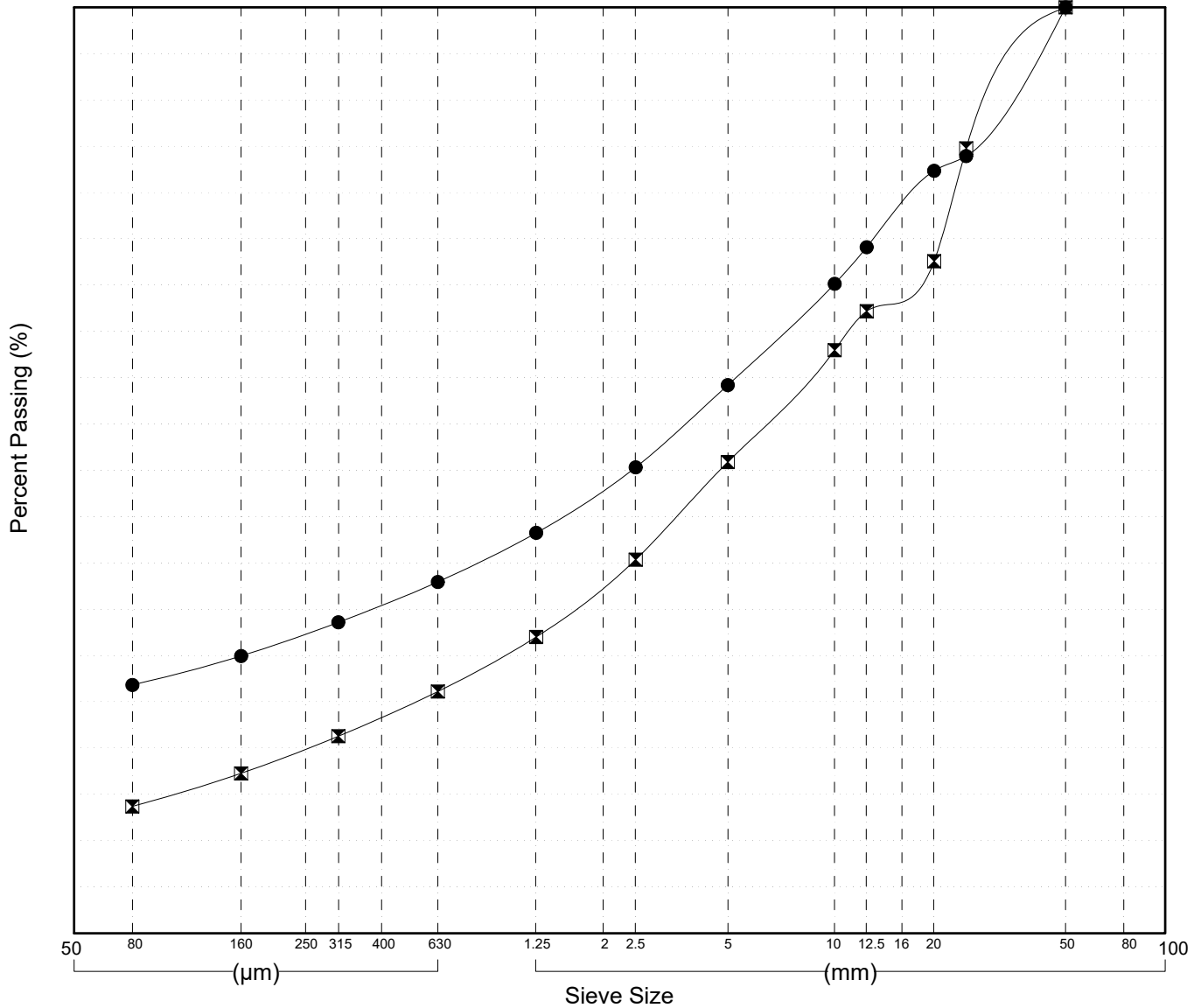
GRAIN SIZE ANALYSIS	North Canol Road - Bridge Test Pits	SOURCE/TP#: TP5602
Boreal Engineering	Km 319.6	PROJECT NO:
CAT 324DL	Coordinates:Z09V N6929129m E376200m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H ₂ O	LL	PL	PI	C _c	C _u
● 02	2016-182	1.0 to 2.0	SILTY GRAVEL with SAND(GM)	5.1	NP	NP	NP		
☒ 04	2016-183	3.0 to 4.0	SILTY GRAVEL with SAND(GM)	5.0	NP	NP	NP		

Field #	Lab #	% P A S S I N G														% Breakdown			
		100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 02	2016-182	100.0	100.0	100.0	83.9	82.3	74.1	70.1	59.2	50.3	43.2	37.9	33.6	29.9	26.8	40.8	32.4	26.8	
☒ 04	2016-183	100.0	100.0	100.0	84.8	72.6	67.2	63.0	50.9	40.4	32.0	26.1	21.3	17.3	13.7	49.1	37.2	13.7	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



Highways and Public Works
Transportation Engineering Branch

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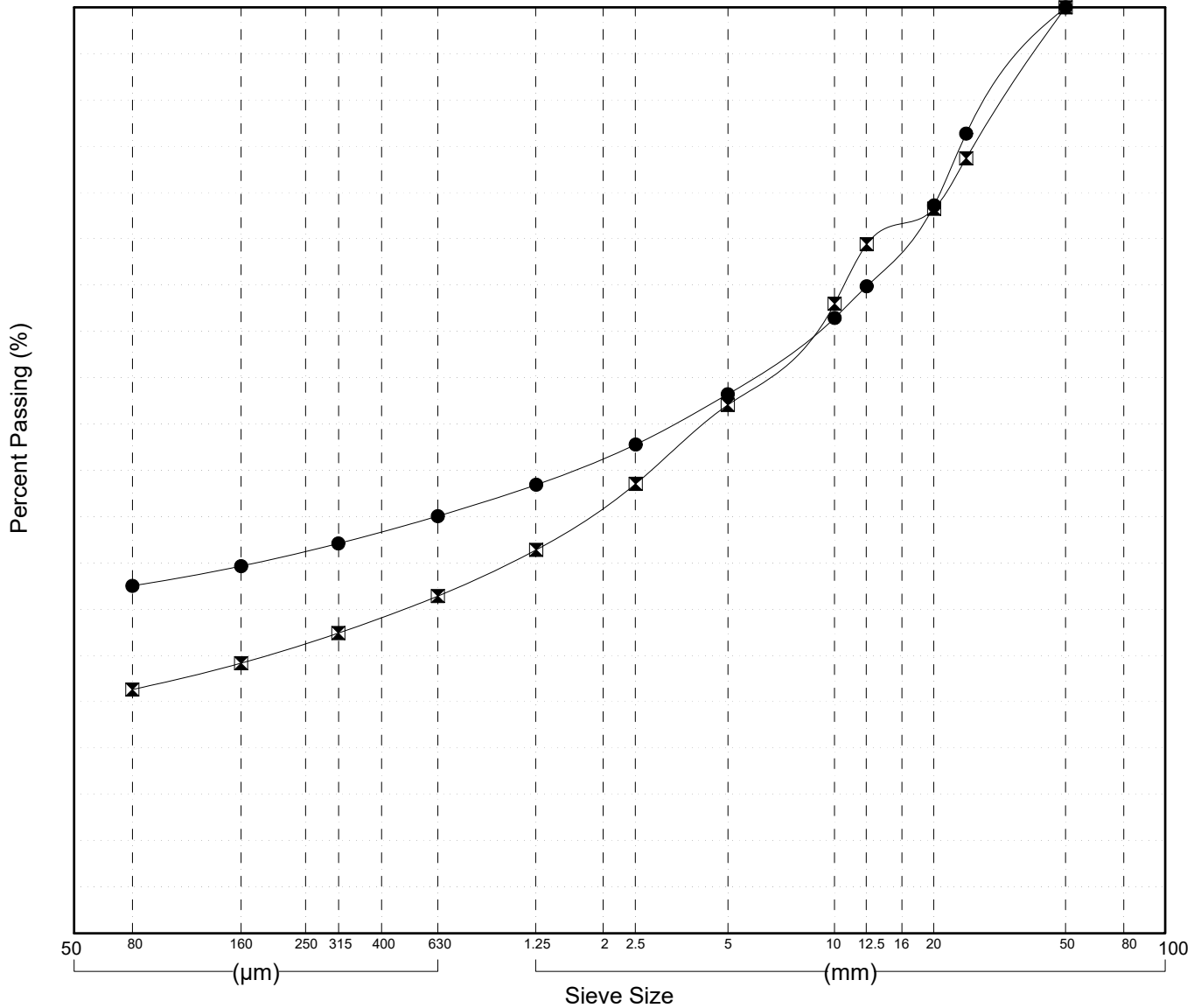
GRAIN SIZE ANALYSIS	North Canol Road - Bridge Test Pits	SOURCE/TP#: TP5603
Boreal Engineering	Km 319.6	PROJECT NO:
CAT 324DL	Coordinates:Z09V N6929164m E376223m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 05	2016-184	0.0 to 1.0	SILTY GRAVEL with SAND(GM)	5.1	NP	NP	NP		
☒ 07	2016-185	2.0 to 3.0	SILTY GRAVEL with SAND(GM)	4.7	NP	NP	NP		

Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
																Gravel	Sand	Silt	Clay
● 05	2016-184	100.0	100.0	100.0	86.4	78.6	69.9	66.4	58.2	52.8	48.4	45.0	42.1	39.6	37.5	41.8	20.7	37.5	
☒ 07	2016-185	100.0	100.0	100.0	83.7	78.2	74.4	68.0	57.1	48.5	41.4	36.4	32.4	29.2	26.3	42.9	30.7	26.3	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



Highways and Public Works
Transportation Engineering Branch

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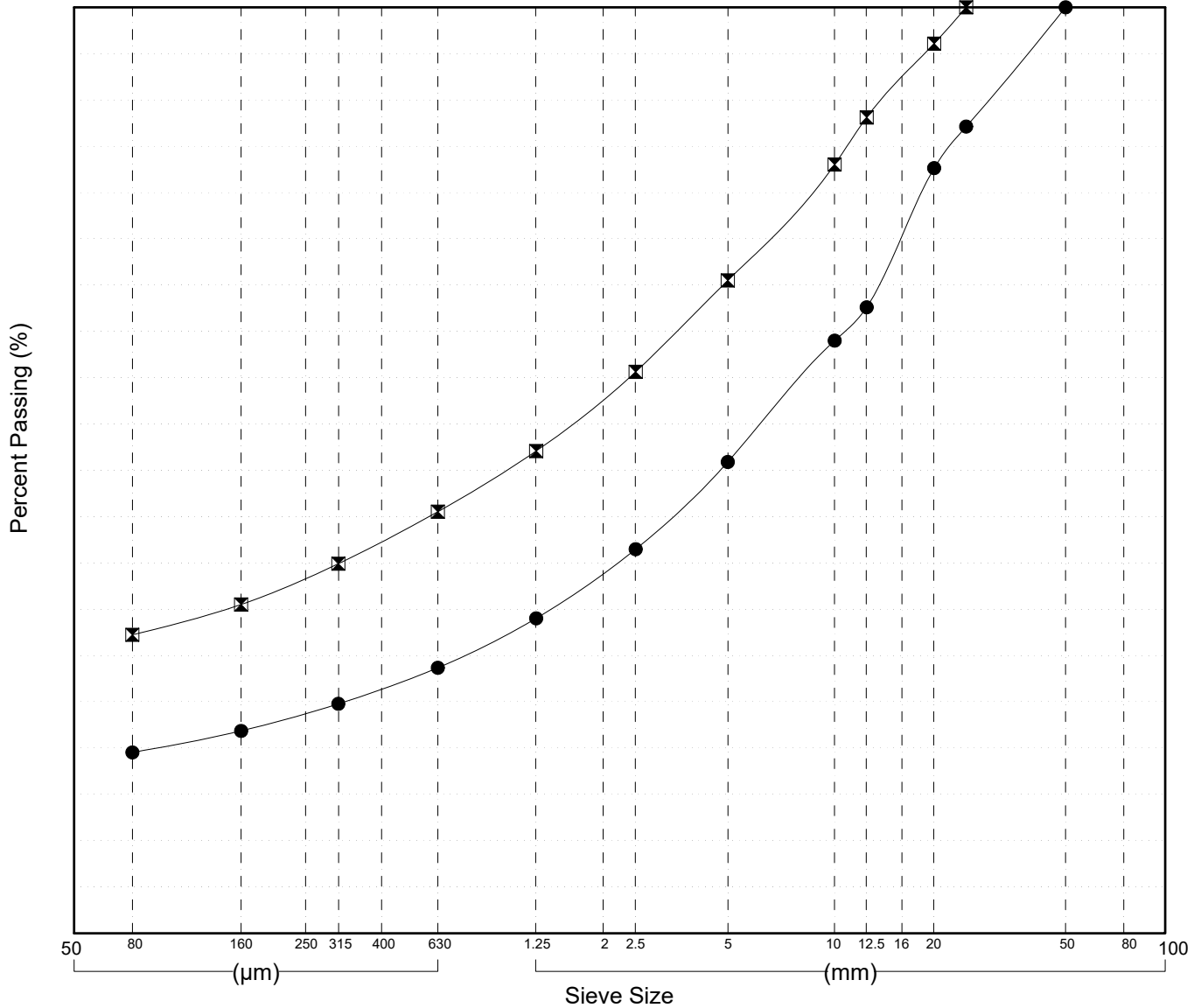
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GRAIN SIZE ANALYSIS	North Canol Road - Bridge Test Pits	SOURCE/TP#: TP5604
Boreal Engineering	Km 319.6	PROJECT NO:
CAT 324DL	Coordinates:Z09V N6929243m E376253m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H ₂ O	LL	PL	PI	C _c	C _u										
● 09	2016-186	0.0 to 1.0	SILTY GRAVEL with SAND(GM)	4.5	NP	NP	NP												
☒ 11	2016-187	2.0 to 2.5	SILTY SAND with GRAVEL(SM)	6.3	NP	NP	NP												
Field #	Lab #	100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	% Breakdown			
● 09	2016-186	100.0	100.0	100.0	87.1	82.6	67.6	64.0	50.9	41.5	34.0	28.7	24.8	21.9	19.5	Gravel	Sand	Silt	Clay
☒ 11	2016-187	100.0	100.0	100.0	96.1	88.1	83.0	70.5	60.6	52.1	45.5	39.9	35.5	32.2	29.5	38.3	32.2		

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



Highways and Public Works
Transportation Engineering Branch

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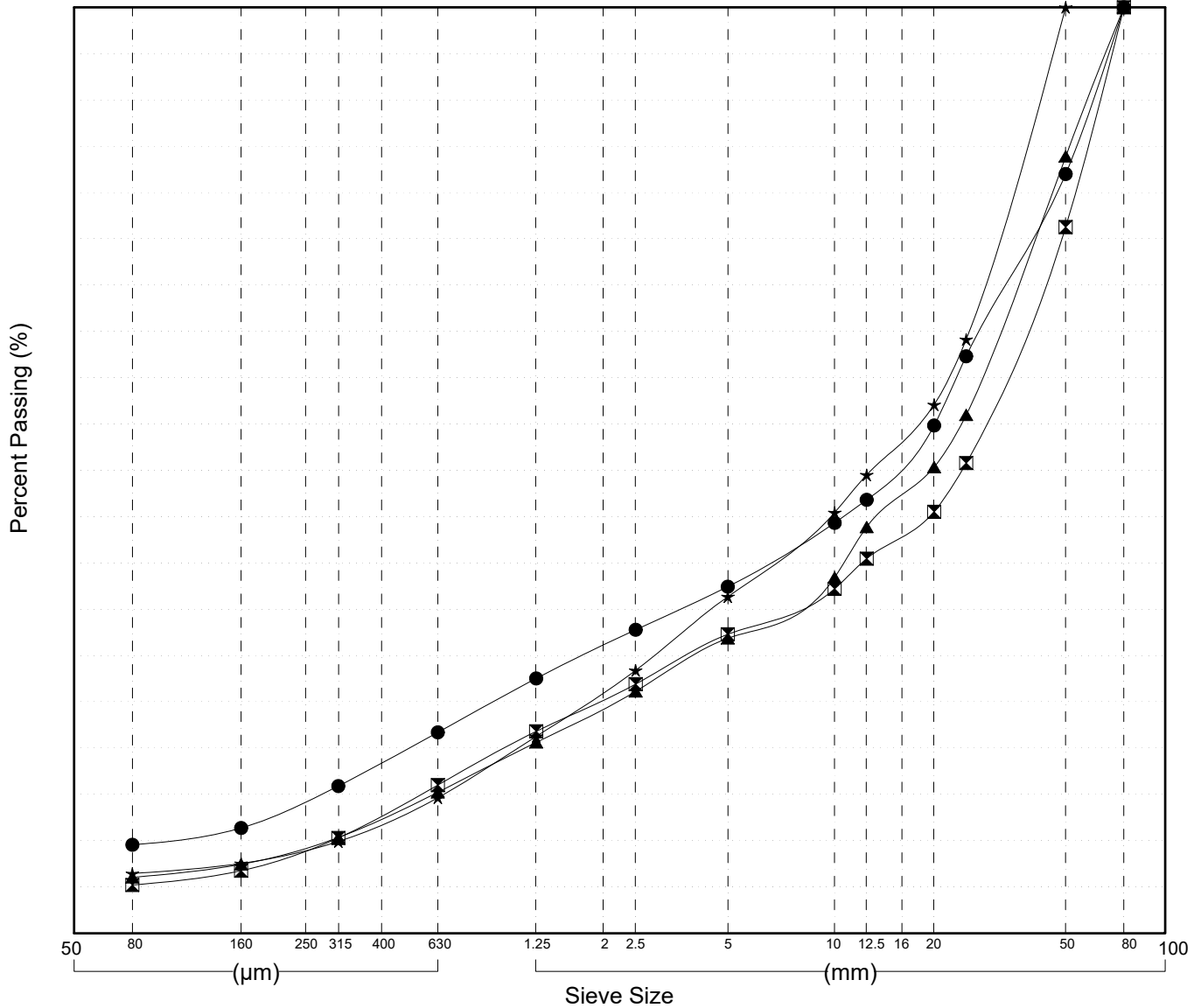
GRAIN SIZE ANALYSIS	North Canol Road - Bridge Test Pits	SOURCE/TP#: TP5605
Boreal Engineering	Km 277.2	PROJECT NO:
CAT 324DL	Coordinates:Z09V N6897869m E353928m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 12	2016-207	0.0 to 1.0	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	3.2	NP	NP	NP	1.4	258.6
☒ 13	2016-208	1.0 to 2.0	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	2.1	NP	NP	NP	1.4	107.9
▲ 14	2016-209	2.0 to 3.0	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	2.0	NP	NP	NP	1.9	95.0
★ 15	2016-210	3.0 to 4.5	WELL-GRADED GRAVEL with SILT and SAND(GW-GM)	2.6	NP	NP	NP	1.2	68.7

Field #	Lab #	% PASSING														% Breakdown			
		100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt	Clay
● 12	2016-207	100.0	100.0	82.0	62.3	54.8	46.8	44.3	37.4	32.8	27.5	21.7	15.9	11.4	9.6	62.6	27.9	9.6	
☒ 13	2016-208	100.0	100.0	76.3	50.8	45.5	40.5	37.2	32.3	26.9	21.8	16.0	10.3	6.8	5.2	67.7	27.1	5.2	
▲ 14	2016-209	100.0	100.0	83.9	56.0	50.3	43.9	38.4	31.9	26.1	20.6	15.2	10.3	7.4	6.0	68.1	25.8	6.0	
★ 15	2016-210	100.0	100.0	100.0	64.1	57.1	49.5	45.4	36.4	28.4	21.3	14.6	9.9	7.5	6.5	63.6	29.9	6.5	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



Highways and Public Works
Transportation Engineering Branch

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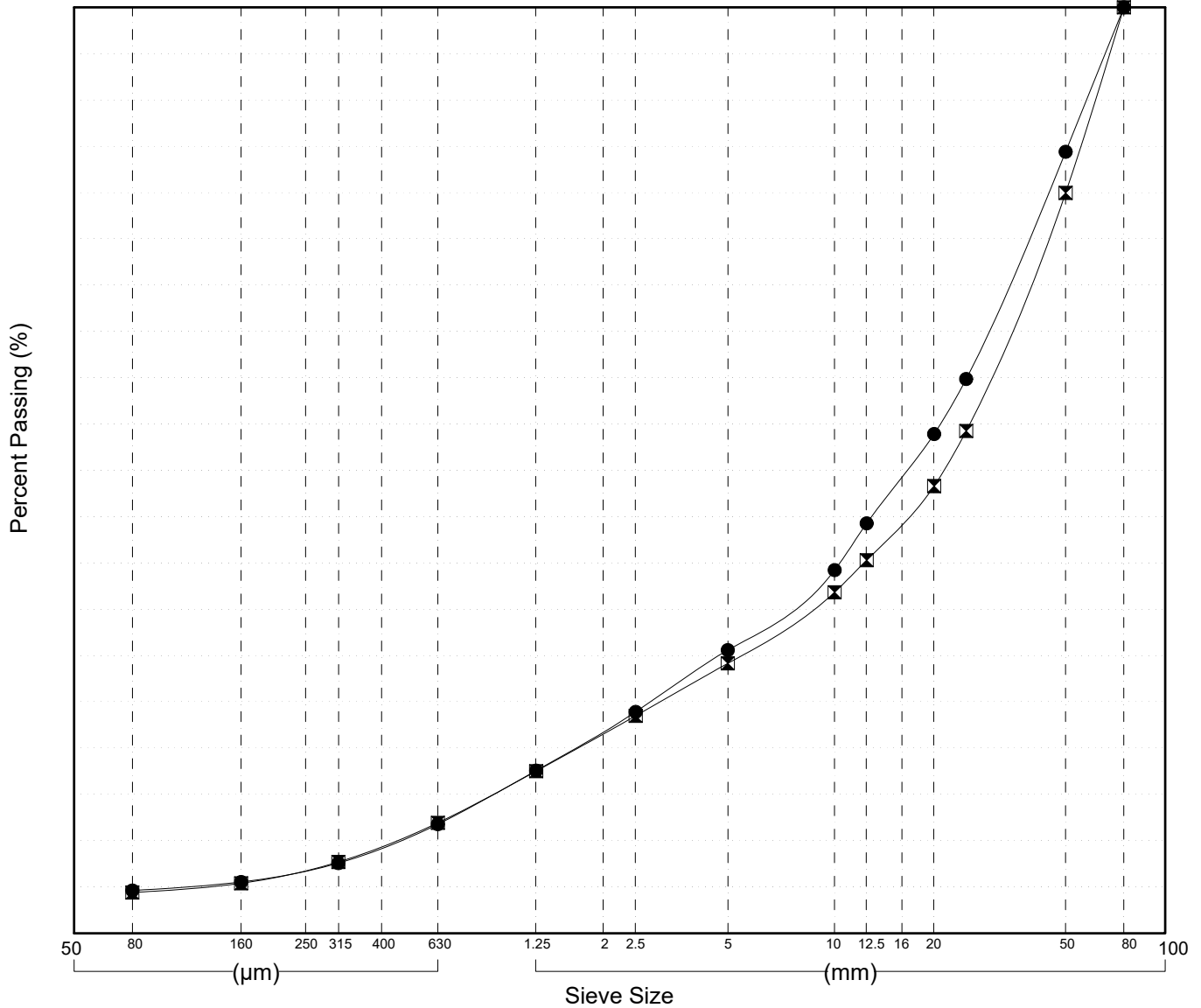
GRAIN SIZE ANALYSIS	North Canol Road - Bridge Test Pits	SOURCE/TP#: TP5606
Boreal Engineering	Km 277.2	PROJECT NO:
CAT 324DL	Coordinates:Z09V N6897860m E353984m	ELEVATION: m

Master Revised July 2013

Field #	Lab #	Depth	Classification	%H2O	LL	PL	PI	Cc	Cu
● 16	2016-211	0.0 to 1.0	WELL-GRADED GRAVEL with SAND(GW)	1.9	NP	NP	NP	1.7	53.4
☒ 17	2016-212	1.0 to 2.0	WELL-GRADED GRAVEL with SAND(GW)	2.1	NP	NP	NP	2.0	63.6
Field #	Lab #								
● 16	2016-211								
☒ 17	2016-212								

Field #	Lab #	% PASSING														% Breakdown			
			100.0	80.0	50.0	25.0	20.0	12.5	10.0	5.0	2.5	1.25	0.630	0.315	0.160	0.080	Gravel	Sand	Silt
● 16	2016-211	100.0	100.0	84.4	59.9	53.9	44.3	39.2	30.6	23.9	17.6	11.8	7.6	5.5	4.6	69.4	26.0	4.6	
☒ 17	2016-212	100.0	100.0	80.0	54.2	48.3	40.3	36.8	29.2	23.5	17.5	11.9	7.7	5.4	4.4	70.8	24.7	4.4	

Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse



Highways and Public Works
Transportation Engineering Branch

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