

Annexe A

Extraits ou fragments tirés d'une Enquête géotechnique de réfection de chaussée, telle que préparée par la société Houle Chevrier Engineering Ltd.

Voici une liste de ces extraits ou fragments :-

Feuilles d'enregistrement des trous de sondage

PROJECT: 15-149

RECORD OF BOREHOLE 15-1

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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								SHEAR STRENGTH Cu, kPa		nat. V - rem. V -		+ ⊕		Q U				● ○		WATER CONTENT, PERCENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG, BOREHOLE LOGS, JUNE 11-12 2015, GPJ, HOULE CHEVRIER 2015, GDT, 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-2

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 12, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U - ●	Wp	W	WI			
								20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²		
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		96.11													Asphaltic coldpatch
		Asphaltic concrete		0.05													
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		0.15	1	C.S.											
		Brown sand, some gravel, trace cobbles and silt (ROADWAY SUBBASE MATERIAL)															
1		Compact, brown silty sand, some gravel (GLACIAL TILL)		95.25 0.86	2	50 D.O.	13										Backfilled with auger cuttings
		End of borehole		94.59 1.52													
2																	
3																	
4																	Borehole dry on completion of drilling.
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG - BOREHOLE LOGS JUNE 11-12 2015.GPJ HOULE CHEVRIER 2015.GDT 6-29-15

BORING DATE: June 12, 2015

Houle Chevrier Engineering

SPT HAMMER: 63.5 kg; drop 0.76 metres

1 to 30

CHECKED:

BOREHOLE LOG BOREHOLE LOGS JUNE 11-12 2015.GPJ HOULE CHEVRIER 2015.GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-4

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 12, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U - ●	Wp	W	WI			
								20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²		
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		95.14													
		Asphaltic concrete		95.01 0.13													Asphaltic coldpatch
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		94.69 0.45	1	C.S.						○					Backfilled with auger cuttings
		Compact, grey brown silty sand, some gravel, trace clay (GLACIAL TILL)															
1					2	50 D.O.	18										
		End of borehole		93.62 1.52													
2																	
3																	
4																	
5																	
6																	

GROUNDWATER
OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
15-06-12	0.50	94.64

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG - BOREHOLE LOGS JUNE 11-12 2015 GPJ HOULE CHEVRIER 2015.GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-5

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 12, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U -	Wp	W	WI			
							20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²			
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		95.25												Asphaltic coldpatch	
		Asphaltic concrete		95.14													
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		0.11	1	C.S.											
		Brown sand, some silt, trace gravel (ROADWAY SUBBASE MATERIAL)		94.84													
				0.41	2	C.S.											
		Loose, dark grey silty sand, some gravel, trace clay (GLACIAL TILL)		94.59												Backfilled with auger cuttings	
				0.66													
1																	
					3	50 D.O.	6										
				93.73													
		End of borehole		1.52												Borehole dry on completion of drilling.	
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG - BOREHOLE LOGS JUNE 11-12 2015 GPJ HOULE CHEVRIER 2015 GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-6

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 12, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m										
				DEPTH (m)				SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	20	40	60	80	nat. V - rem. V -	+ ⊕	Q U -		
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		95.66													
		Asphaltic concrete		0.04	1	C.S.											
		Grey crushed sand and gravel, some silt (ROADWAY BASE MATERIAL)		0.14	2	C.S.											
		Brown gravelly sand, trace silt (ROADWAY SUBBASE MATERIAL)															
1		Very loose, brown silty sand, trace gravel (GLACIAL TILL)		94.75 0.91	3	50 D.O.	4										
		End of borehole		94.14 1.52													
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG, BOREHOLE LOGS, JUNE 11-12 2015 GPJ, HOULE CHEVRIER 2015 GDT, 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-7

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U -	Wp	W	WI			
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		95.77											Asphaltic coldpatch		
		Asphaltic concrete		0.04												Backfilled with auger cuttings	
		Grey crushed sand and gravel, trace to some silt (ROADWAY BASE MATERIAL)		95.60 0.17	1	C.S.											
		Brown sand and gravel, some silt (ROADWAY SUBBASE MATERIAL)															
		Brown clayey silt, some sand and trace organic material (Former TOPSOIL)		95.16 0.61	2	C.S.											
1		Compact, grey gravel, some sand, trace silt (GLACIAL TILL)		94.86 0.91													
		End of borehole		94.25 1.52	3	50 D.O.	29										
2																	
3																	
4																	
5																	
6																	

GROUNDWATER OBSERVATIONS		
DATE	DEPTH (m)	ELEV. (m)
15-06-11	0.90	94.87

GROUNDWATER
OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
15-06-11	0.90	94.87

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

PROJECT: 15-149

RECORD OF BOREHOLE 15-8

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 12, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION				
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT, PERCENT									
								Cu, kPa		nat. V - rem. V -		+ ⊕		Q - U -							
								20	40	60	80	20	40	60	80						
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		95.68																	
		Asphaltic concrete		95.60	1	C.S.															
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		95.53 0.15	2	C.S.															
		Brown sand, trace gravel (ROADWAY SUBBASE MATERIAL)		95.38 0.30																	
		Compact, grey brown silty sand, some gravel, trace clay (GLACIAL TILL)																			
1							3	50 D.O.	29												
2		End of borehole		94.16 1.52																	
3																					
4																					
5																					
6																					

DEPTH SCALE

1 to 30

Houle Chevrier Engineering


LOGGED: M.L.

CHECKED:

BOREHOLE LOG, BOREHOLE LOGS, JUNE 11-12 2015, GPJ, HOULE CHEVRIER 2015, GDT, 6-29-15

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

GROUNDWATER OBSERVATIONS		
DATE	DEPTH (m)	ELEV. (m)
15-06-29	4.45 	92.92

CHECKED:

BOREHOLE LOG BOREHOLE LOGS JUNE 11-12 2015.GPJ HOULE CHEVRIER 2015.GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-10


SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH Cu, kPa		nat. V - + rem. V - ⊕ Q ● U - ○		WATER CONTENT, PERCENT					
								20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²		
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		97.03											Asphaltic coldpatch		
Asphaltic concrete			97.01														
Grey crushed sand and gravel, trace silt (BASE MATERIAL)			96.95	1	C.S.									Backfilled with auger cuttings			
Dark brown silty sand, trace rootlets (Former TOPSOIL)			96.73														
			0.30	2	C.S.												
		Very dense, brown silty sand, some gravel (GLACIAL TILL)													Borehole dry on completion of drilling.		
1																	
					3	50 D.O.	5 for 130mm										
		Practical auger refusal on possible boulders or bedrock		95.73													
				1.30													
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

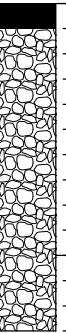
1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG - BOREHOLE LOGS JUNE 11-12 2015 GPJ HOULE CHEVRIER 2015 GDT 6-29-15



PROJECT: 15-149

RECORD OF BOREHOLE 15-11

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m										
				DEPTH (m)				SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U -	Wp	W	WI			
							20	40	60	80							
							20	40	60	80							
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		96.98													
		Asphaltic concrete		0.05													
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		96.75 0.23													
		Brown sand, trace to some silt, trace gravel and cobbles (ROADWAY SUBBASE MATERIAL)			1	C.S.											
1		Compact, brown sand, trace to some gravel (GLACIAL TILL)		96.07 0.91		2	50 D.O.	11									
		End of borehole		95.46 1.52													
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

PROJECT: 15-149

RECORD OF BOREHOLE 15-12

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U -	Wp	W	WI			
								20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²		
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		100.85													
		Asphaltic concrete		100.76													
		Grey crushed sandy gravel, trace silt (ROADWAY BASE MATERIAL)		0.09	1	C.S.											Asphaltic coldpatch
				100.52													
		Brown sand and silt, trace gravel and cobbles (FILL MATERIAL)		0.33	2	C.S.											Backfilled with auger cuttings
1				99.78													
		Dense, brown silty sand, trace clay and gravel (GLACIAL TILL)		1.07	3	50 D.O.	31										
		End of borehole		99.33													Borehole dry on completion of drilling.
				1.52													
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG, BOREHOLE LOGS, JUNE 11-12 2015, GPJ, HOULE CHEVRIER 2015, GDT, 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-13

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION				
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT, PERCENT									
								Cu, kPa		nat. V - rem. V -		+ ⊕		Q U				-		● ○	
								20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²			Wp	W	WI	20
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		97.25																	
		Asphaltic concrete		97.17																	
		Grey crushed sandy gravel, trace silt (ROADWAY BASE MATERIAL)		0.08	1	C.S.											Asphaltic coldpatch				
		Grey brown silty sand, trace gravel (ROADWAY SUBBASE MATERIAL)		96.79 0.46	2	C.S.											Backfilled with auger cuttings				
		Very dense, grey silty sand, trace to some gravel, trace clay (GLACIAL TILL)		96.18 1.07	3	C.S.															
1				95.73 1.52	4	50 D.O.	>50 for 50 mm														
		End of borehole															Borehole dry on completion of drilling.				
2																					
3																					
4																					
5																					
6																					

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG, BOREHOLE LOGS, JUNE 11-12 2015 GPJ, HOULE CHEVRIER 2015 GDT, 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-14

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m										
				DEPTH (m)				SHEAR STRENGTH				WATER CONTENT, PERCENT					
								20	40	60	80	nat. V - Cu, kPa	+ rem. V - ⊕	Q U -	● ○		
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		95.80													
		Asphaltic concrete		0.05												Asphaltic coldpatch	
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		0.15													
		Very dense, brown sand, some gravel, trace cobbles (ROADWAY SUBBASE MATERIAL)			1	C.S.										Backfilled with auger cuttings	
1																	
					2	50 D.O.	64										
		End of borehole		94.28 1.52												Borehole dry on completion of drilling.	
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

CHECKED:

BOREHOLE LOG BOREHOLE LOGS JUNE 11-12 2015.GPJ HOULE CHEVRIER 2015.GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-16

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m										
								SHEAR STRENGTH Cu, kPa		nat. V - + rem. V - ⊕ Q ● U - ○		WATER CONTENT, PERCENT					
								20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³			10 ⁻²
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		96.11													
		Asphaltic concrete		0.04	1	C.S.									Asphaltic coldpatch		
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		95.83													
				0.28													
		Brown sand, some gravel, trace silt and cobbles (ROADWAY SUBBASE MATERIAL)		95.50	2	C.S.									Backfilled with auger cuttings		
				0.61													
1		Very dense, brown silty sand, some gravel (GLACIAL TILL)															
					3	50 D.O.	61										
		Practical auger refusal on possible boulders or bedrock		94.64											Borehole dry on completion of drilling.		
				1.47													
2																	
3																	
4																	
5																	
6																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG, BOREHOLE LOGS, JUNE 11-12 2015, GPJ, HOULE CHEVRIER 2015, GDT, 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-17







SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT, PERCENT					
				DEPTH (m)				Cu, kPa		nat. V - + Q ● rem. V - ⊕ U - ○							
									20	40	60	80	10 ⁻⁵ 10 ⁻⁴ 10 ⁻³ 10 ⁻²				
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		98.18											Asphaltic coldpatch		
Asphaltic concrete			98.10														
Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)			98.03 0.15	1	C.S.												
Brown sand, some gravel, trace silt and cobbles (ROADWAY SUBBASE MATERAIL)			97.67 0.51														
Practical auger refusal on possible boulders or bedrock																	Backfilled with soil cuttings Borehole dry on completion of drilling.
1																	

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG - BOREHOLE LOGS JUNE 11-12 2015 GPJ HOULE CHEVRIER 2015 GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-18

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT, PERCENT							
								Cu, kPa		nat. V - + rem. V - ⊕		Q - ● U - ○							
								20	40	60	80	20	40	60	80			Wp	W
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		100.24															
		Asphaltic concrete		0.04															
		Grey crushed sandy gravel, trace silt (ROADWAY BASE MATERIAL)		100.04 0.20	1	C.S.										Asphaltic coldpatch			
		Brown sand, some silt and gravel (ROADWAY SUBBASE MATERIAL)		99.63 0.61	2	C.S.										Backfilled with soil cuttings			
		Very loose, brown silty sand, some clay, trace gravel (GLACIAL TILL)																	
1																			
					3	50 D.O.	3												
		End of borehole		98.72 1.52												Borehole dry on completion of drilling.			
		Note: Refusal to split barrel sampler at about 1.4 metres below surface grade.																	
2																			
3																			
4																			
5																			
6																			

DEPTH SCALE

1 to 30

Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

BOREHOLE LOG - BOREHOLE LOGS JUNE 11-12 2015 GPJ HOULE CHEVRIER 2015 GDT 6-29-15

PROJECT: 15-149

RECORD OF BOREHOLE 15-19

SHEET 1 OF 1

LOCATION: See Borehole Location Plan, Figure 2

DATUM: Geodetic

BORING DATE: June 11, 2015

SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m					HYDRAULIC CONDUCTIVITY, k, cm/s					ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m													
								SHEAR STRENGTH					WATER CONTENT, PERCENT							
								Cu, kPa	nat. V - rem. V -	+ ⊕	Q U	● ○	Wp	W	WI					
				20	40	60	80	20	40	60	80	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²					
0	Power Auger 200 mm Diameter Hollow Stem	Ground Surface		98.04																
		Asphaltic concrete		0.06													Asphaltic coldpatch			
		Grey crushed sand and gravel, trace silt (ROADWAY BASE MATERIAL)		97.84 0.20																
		Brown silty sand, some gravel (ROADWAY SUBBASE MATERIAL)		97.43 0.61	1	C.S.											Backfilled with soil cuttings			
		Compact, brown silty sand, some gravel, trace clay (GLACIAL TILL)		96.52 1.52																
1					2	50 D.O.	14													
2		Practical auger refusal on possible boulders or bedrock															Borehole dry on completion of drilling.			
3																				
4																				
5																				
6																				

DEPTH SCALE

1 to 30

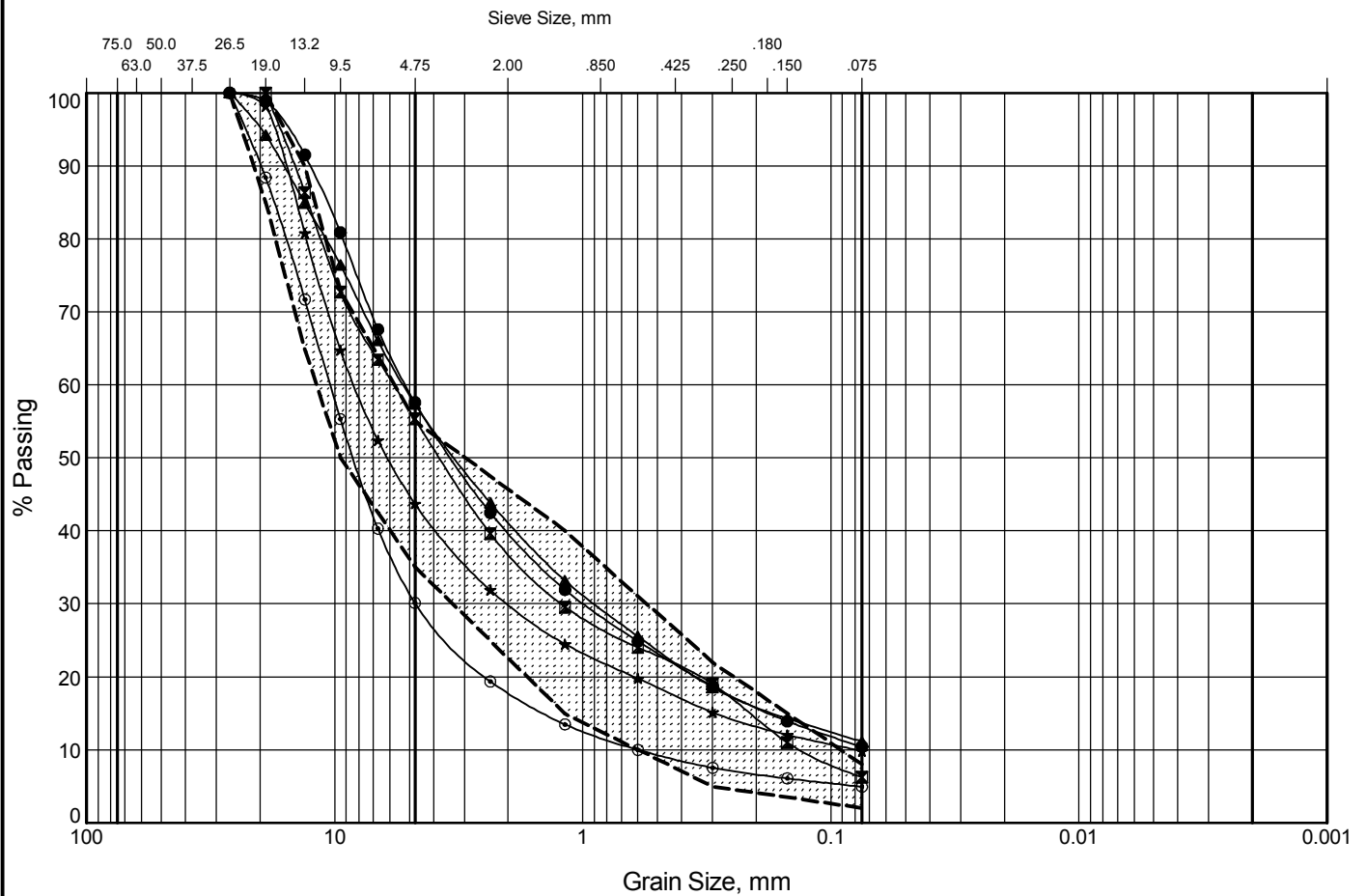
Houle Chevrier Engineering

LOGGED: M.L.

CHECKED:

GRAIN SIZE DISTRIBUTION

FIGURE A1



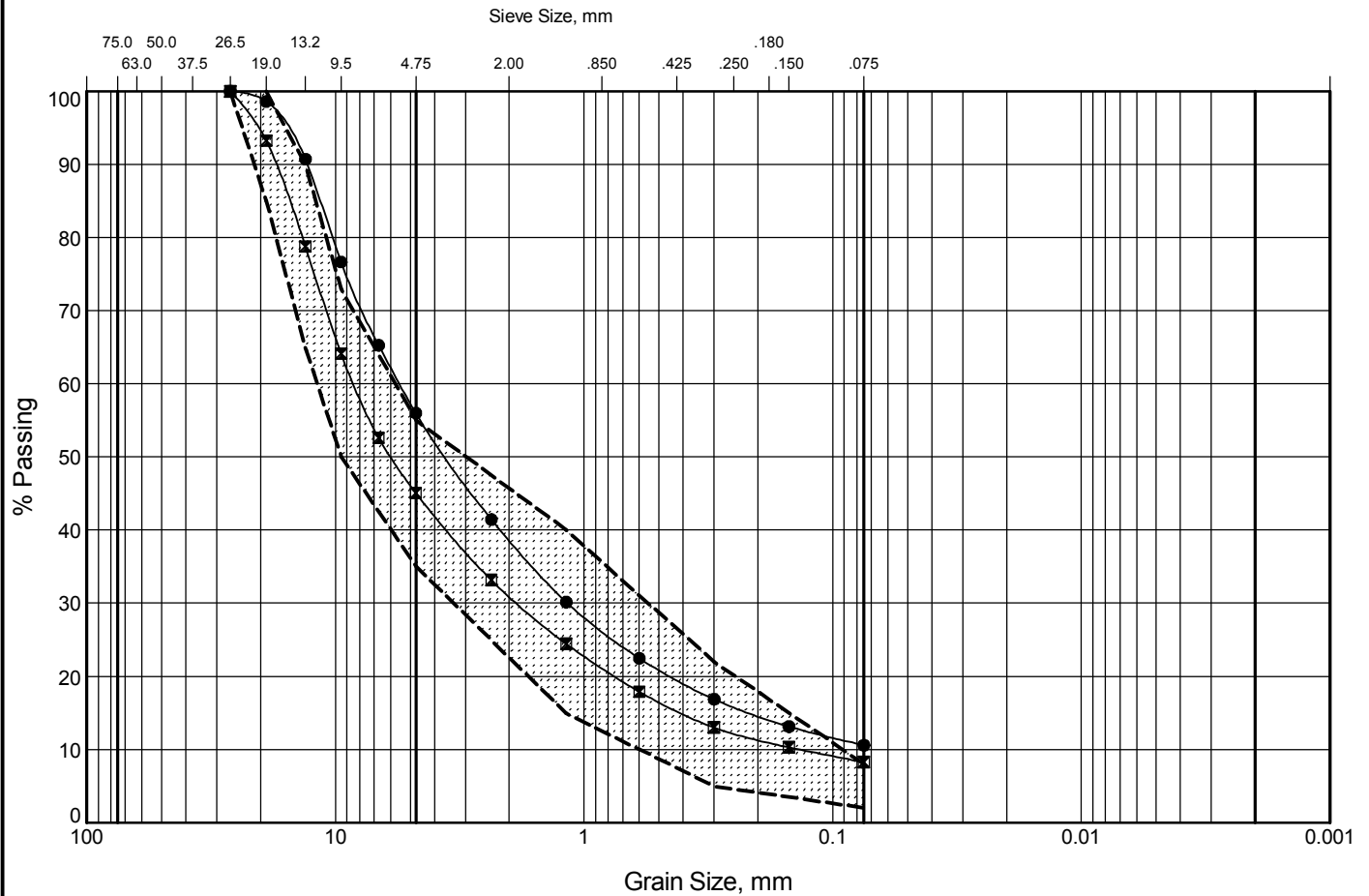
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL		SAND			

Legend	Borehole	Sample	Depth (m)	% Gravel	% Sand	% Silt & Clay
●	15-1	1	0.1 - 0.3	42	47	10
⊠	15-4	1	0.2 - 0.3	45	49	6
▲	15-6	1	0.1 - 0.1	43	46	11
★	15-12	1	0.1 - 0.3	56	34	10
⊙	15-13	1	0.1 - 0.3	70	25	5

----- Gradation Envelope: OPSS 1010 - GRANULAR A

GRAIN SIZE DISTRIBUTION

FIGURE A2



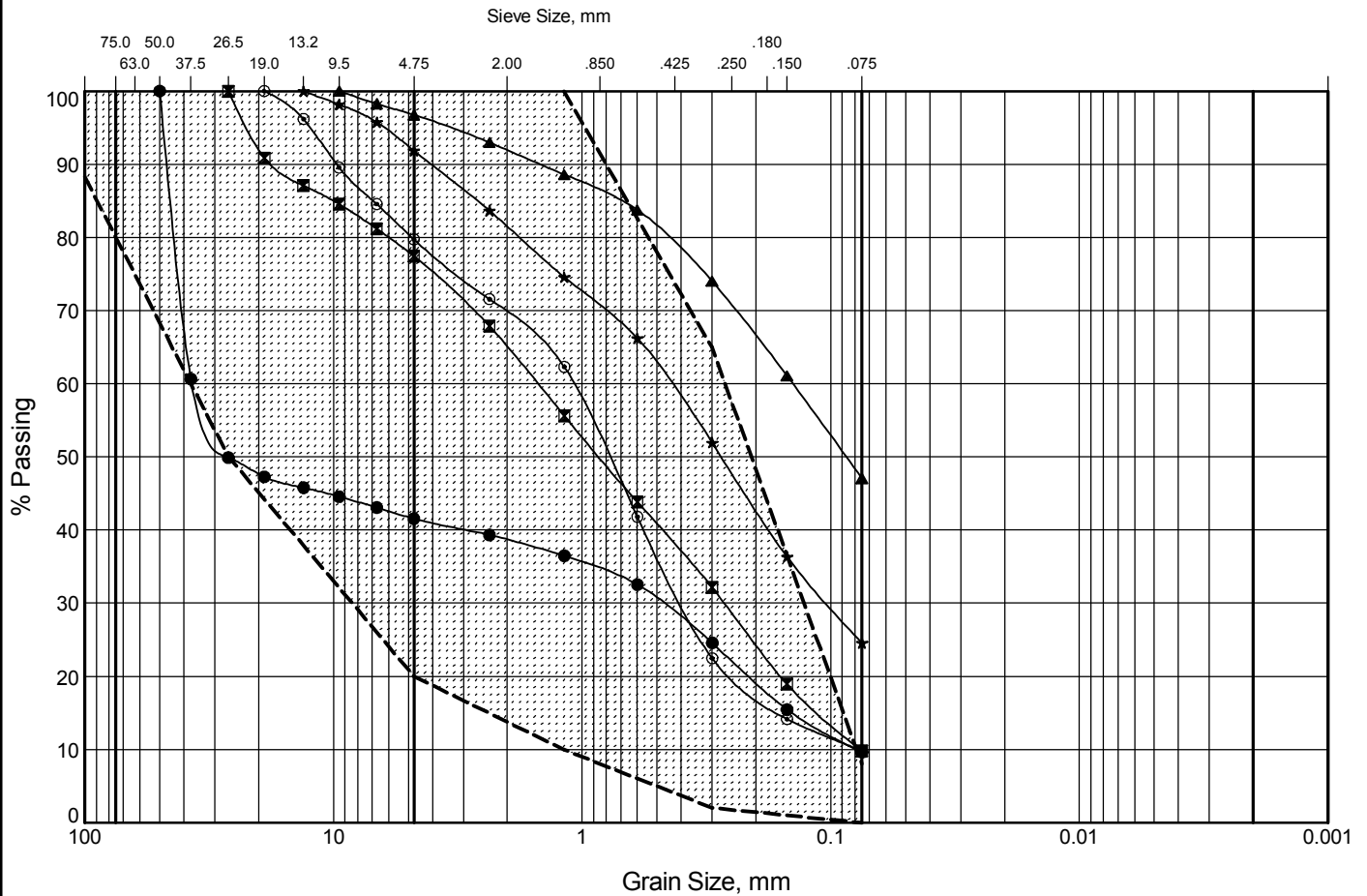
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL		SAND			

Legend	Borehole	Sample	Depth (m)	% Gravel	% Sand	% Silt & Clay
●	15-15	1	0.1 - 0.2	44	45	11
■	15-18	1	0.1 - 0.2	55	37	8

----- Gradation Envelope: OPSS 1010 - GRANULAR A

GRAIN SIZE DISTRIBUTION

FIGURE A3



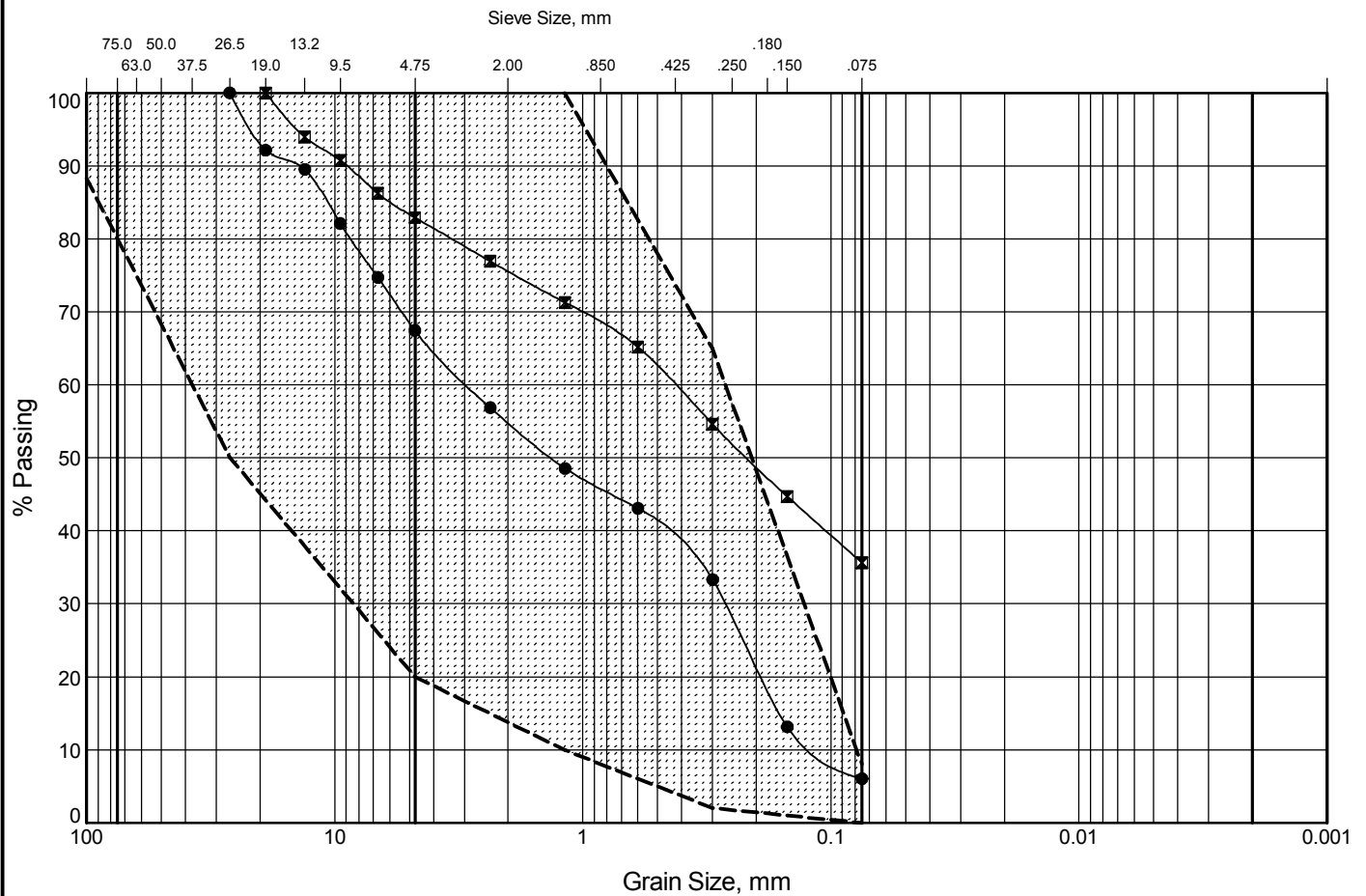
COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL		SAND			

Legend	Borehole	Sample	Depth (m)	% Gravel	% Sand	% Silt & Clay
●	15-1	2	0.5 - 0.8	58	32	10
⊠	15-6	2	0.3 - 0.4	23	68	10
▲	15-12	2	0.4 - 0.5	3	50	47
★	15-13	2	0.5 - 0.7	8	67	25
⊙	15-14	1	0.3 - 0.6	20	70	10

----- Gradation Envelope: OPSS 1010 - GRANULAR B TYPE I

GRAIN SIZE DISTRIBUTION

FIGURE A4



COBBLES	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL		SAND			

Legend	Borehole	Sample	Depth (m)	% Gravel	% Sand	% Silt & Clay
●	15-15	2	0.5 - 0.8	33	61	6
☒	15-19	1	0.3 - 0.5	17	47	36

----- Gradation Envelope: OPSS 1010 - GRANULAR B TYPE I