

APPENDIX D

Geotechnical Results

Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))

ASTM D1557

Project No.:	1660199-3000	Sample No.:	2
Project:	Alaska Highway, Steamboat	Sample Depth (m):	4.3
Location:	Steamboat, BC	Sample Source:	TP17-01
Client:	Public Works and Government Services Canada	Sampled By:	AV
Lab ID No:	266	Date sampled:	Not Given

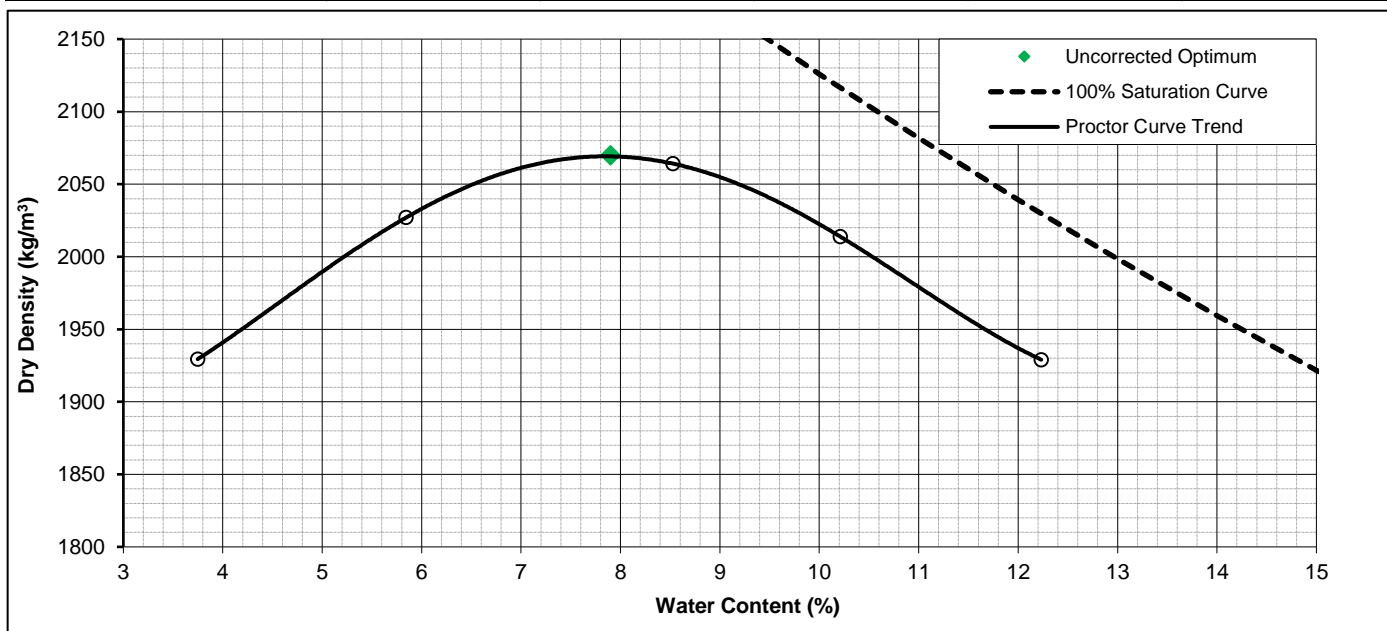
Effort Type:	Modified	Preparation Method:	Dry
Test Method:	C	As Received w (%):	13.0
Mold Volume (cm³):	2124	Visual Description:	
Type of Rammer:	Mechanical	Remarks:	

ASTM D 4718 - Correction for Oversize Particles

Oversized Fraction		Test Fraction	
Oversized Fraction (%):	43.8	Max Nominal Size of Test Fraction (mm):	19
G_{SC} (assumed):	2.70	G_{SF} (assumed):	2.70
Water Content, w (%):	1.5	Water Content, w (%):	7.9

Compaction Results

Trial No.:	1	2	3	4	5
Dry Density (kg/m³)	1929	2027	2064	2014	1929
Water Content (%):	3.7	5.8	8.5	10.2	12.2



Final Results

Uncorrected Optimum w (%):	7.9	Corrected Optimum w (%):	5.1
Uncorrected Max Dry Density (kg/m³)	2070	Corrected Max Dry Density (kg/m³)	2306
Uncorrected Max Unit Weight (kN/m³)	20.30	Corrected Max Unit Weight (kN/m³)	22.60

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

DT	August 8, 2017	LH	August 11, 2017
TESTED BY	DATE	CHECKED BY	DATE

Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))

ASTM D1557

Project No.:	1660199-3000	Sample No.:	2
Project:	Alaska Highway, Steamboat	Sample Depth (m):	4.3
Location:	Steamboat, BC	Sample Source:	TP17-03
Client:	Public Works and Government Services Canada	Sampled By:	AV
Lab ID No:	266	Date sampled:	Not Given

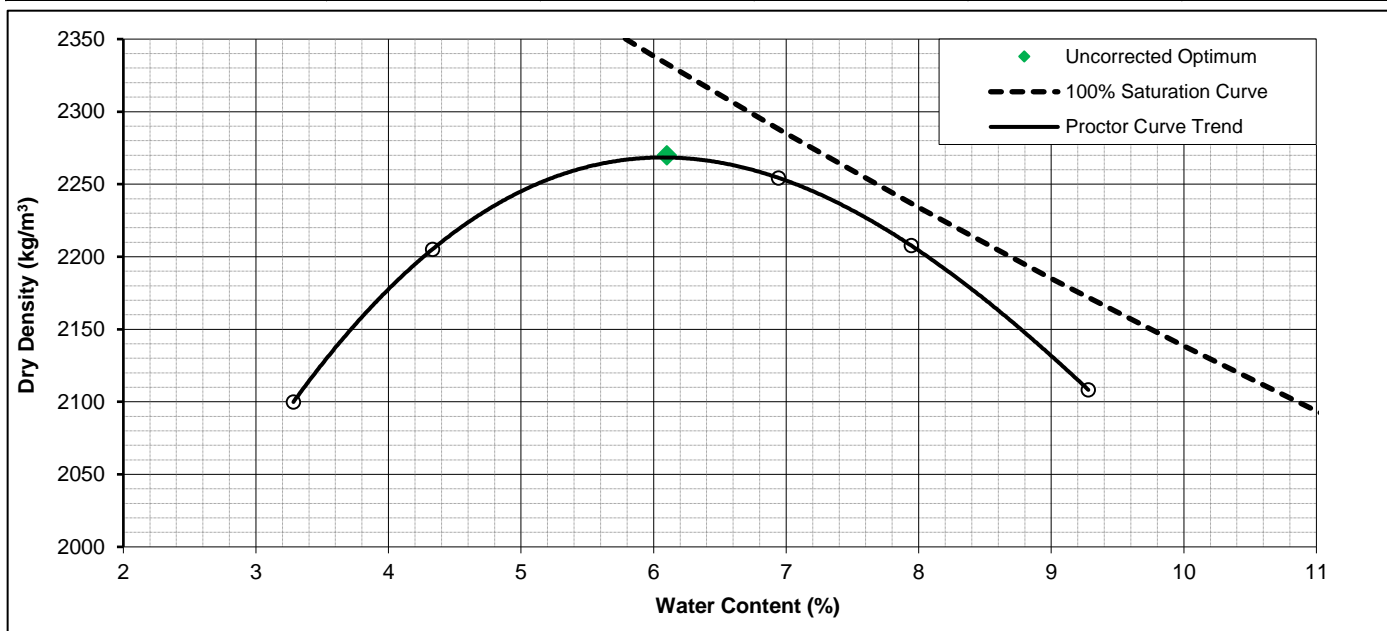
Effort Type:	Modified	Preparation Method:	Dry
Test Method:	C	As Received w (%):	5.7
Mold Volume (cm³):	2124	Visual Description:	
Type of Rammer:	Mechanical	Remarks:	

ASTM D 4718 - Correction for Oversize Particles

Oversized Fraction		Test Fraction	
Oversized Fraction (%):	45.8	Max Nominal Size of Test Fraction (mm):	19
G_{SC} (assumed):	2.72	G_{SF} (assumed):	2.72
Water Content, w (%):	1.5	Water Content, w (%):	6.1

Compaction Results

Trial No.:	1	2	3	4	5
Dry Density (kg/m³)	2100	2205	2254	2208	2108
Water Content (%):	3.3	4.3	6.9	7.9	9.3



Final Results

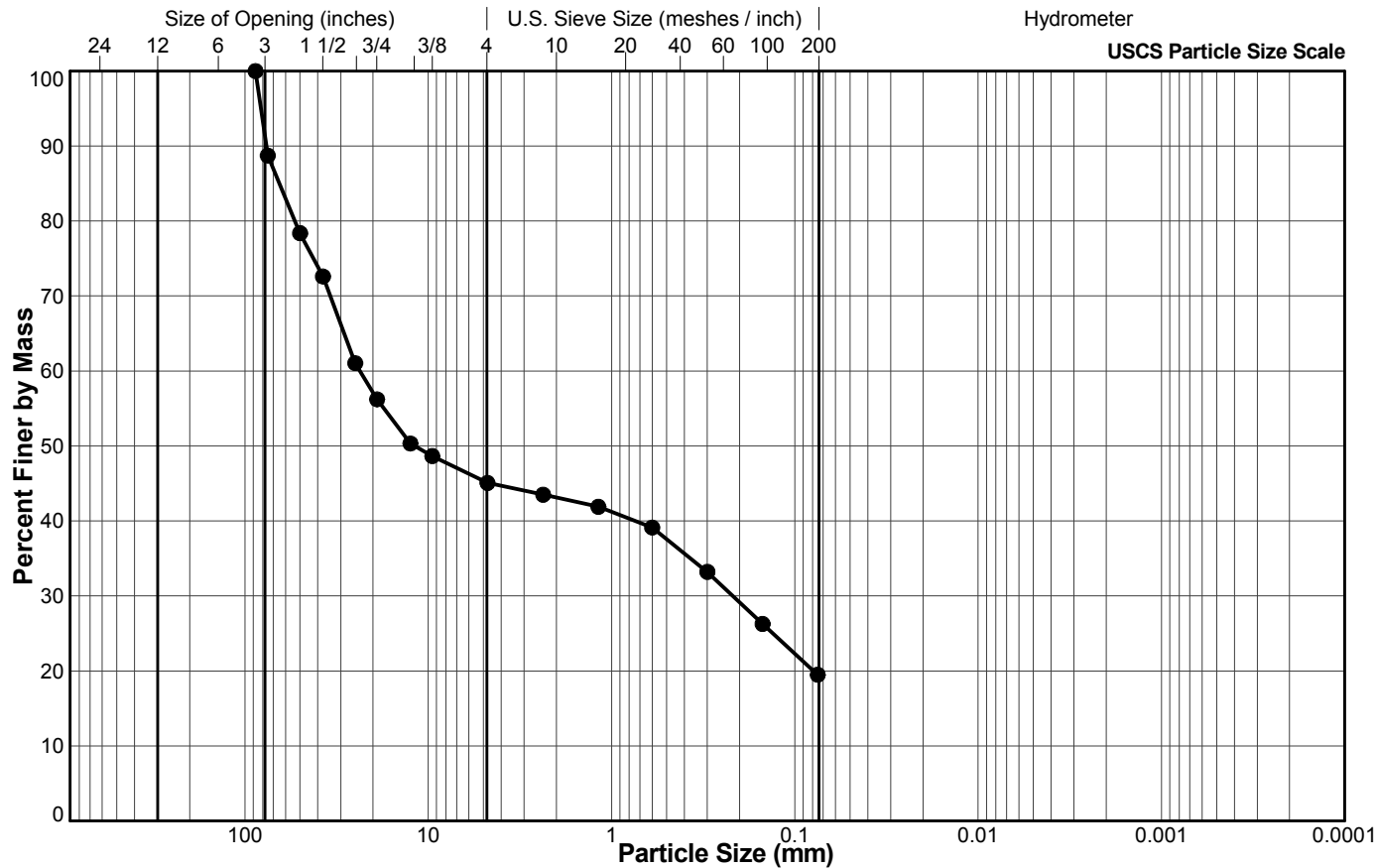
Uncorrected Optimum w (%):	6.1	Corrected Optimum w (%):	4.0
Uncorrected Max Dry Density (kg/m³)	2270	Corrected Max Dry Density (kg/m³)	2456
Uncorrected Max Unit Weight (kN/m³)	22.26	Corrected Max Unit Weight (kN/m³)	24.07

The test data given herein pertain to the sample provided only. This report constitutes a testing service only.

DT	August 8, 2017	LH	August 11, 2017
TESTED BY	DATE	CHECKED BY	DATE

Client: Public Works and Government Services Canada
Project: Alaska Highway
Location: Steamboat, BC
Project No.: 1660199 **Phase:** 3000

Sample Location: TP17-01
Sample No.: 2
Depth (m): 4.30
Lab Schedule No.:



Legend

Sieve Size (USS)	Particle Size (mm)	Percent Passing
3.5"	87.5	100.0
3"	75	88.7
2"	50	78.4
1 1/2"	37.5	72.6
1"	25	61.1
3/4"	19	56.2
1/2"	12.5	50.3
3/8"	9.5	48.7
#4 US MESH	4.75	45.1
#8 US MESH	2.36	43.5
#16 US MESH	1.18	41.9
#30 US MESH	0.6	39.1
#50 US MESH	0.3	33.2
#100 US MESH	0.15	26.3
#200 US MESH	0.075	19.5

BOULDER		COBBLE		GRAVEL		SAND			FINES (Silt, Clay)
				Coarse	Fine	Coarse	Medium	Fine	

DT
8/8/2017
LH
8/11/2017

Tech

Date

Checked

Date

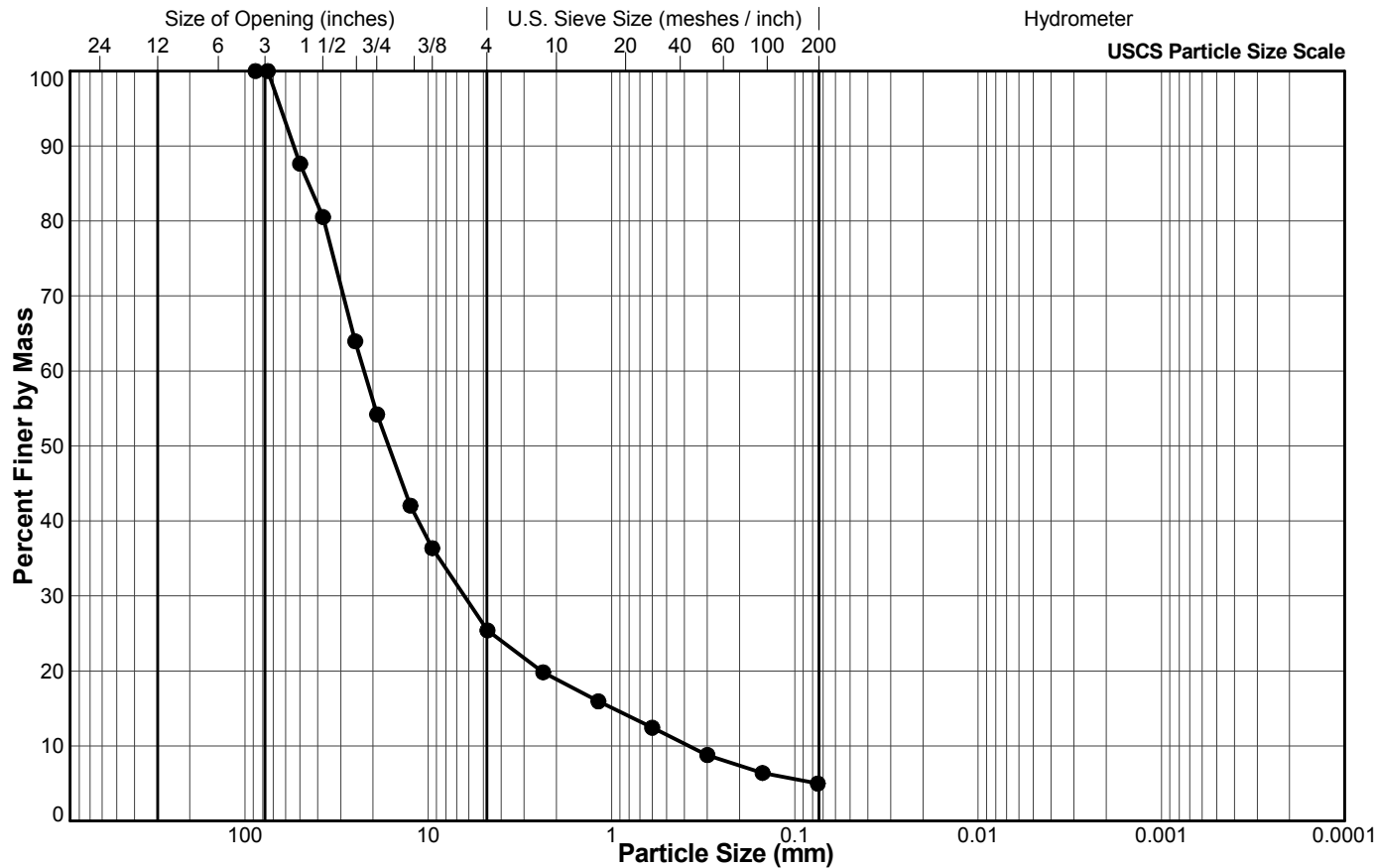


SUMMARY OF PARTICLE SIZE DISTRIBUTION

ASTM D6913

Client: Public Works and Government Services Canada
Project: Alaska Highway
Location: Steamboat, BC
Project No.: 1660199 **Phase:** 3000

Sample Location: TP17-03
Sample No.: 2
Depth (m): 4.30
Lab Schedule No.:



Legend

Sieve Size (USS)	Particle Size (mm)	Percent Passing
3.5"	87.5	100.0
3"	75	100.0
2"	50	87.6
1 1/2"	37.5	80.5
1"	25	64.0
3/4"	19	54.2
1/2"	12.5	42.0
3/8"	9.5	36.4
#4 US MESH	4.75	25.4
#8 US MESH	2.36	19.8
#16 US MESH	1.18	15.9
#30 US MESH	0.6	12.4
#50 US MESH	0.3	8.8
#100 US MESH	0.15	6.4
#200 US MESH	0.075	5.0

BOULDER	COBBLE	GRAVEL		SAND			FINES (Silt, Clay)
		Coarse	Fine	Coarse	Medium	Fine	

DT

8/8/2017

LH

8/11/2017

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Date

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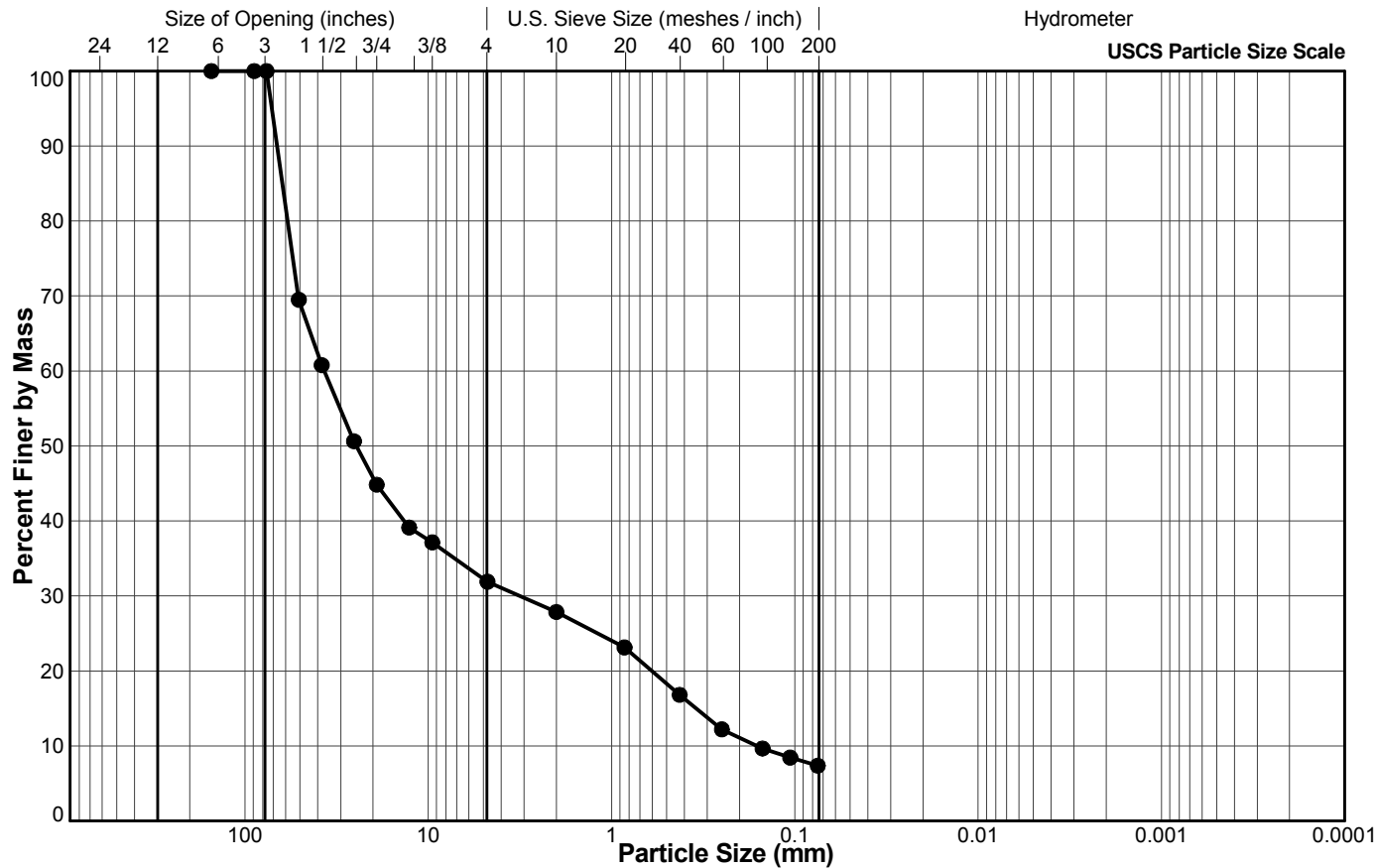
National IM Server: GINT GAL NATIONALIM Unique Project ID: 1705 Output Form: LAB PARTICLE SIZE (W/ GRADATIONS) 2015 lhu 11/8/17

Golder Associates Ltd.

#300 - 3811 North Fraser Way Burnaby, British Columbia, Canada V5J 5J2
 Tel: +1 (604) 412 6899 Fax: +1 (604) 412 6816 www.golder.com

Client: Public Works and Government Services Canada
Project: Alaska Highway
Location: Steamboat, BC
Project No.: 1660199 **Phase:** 3000

Sample Location: TP17-04
Sample No.: 1
Depth Interval (m): 1.83 to 2.13
Lab Schedule No.:

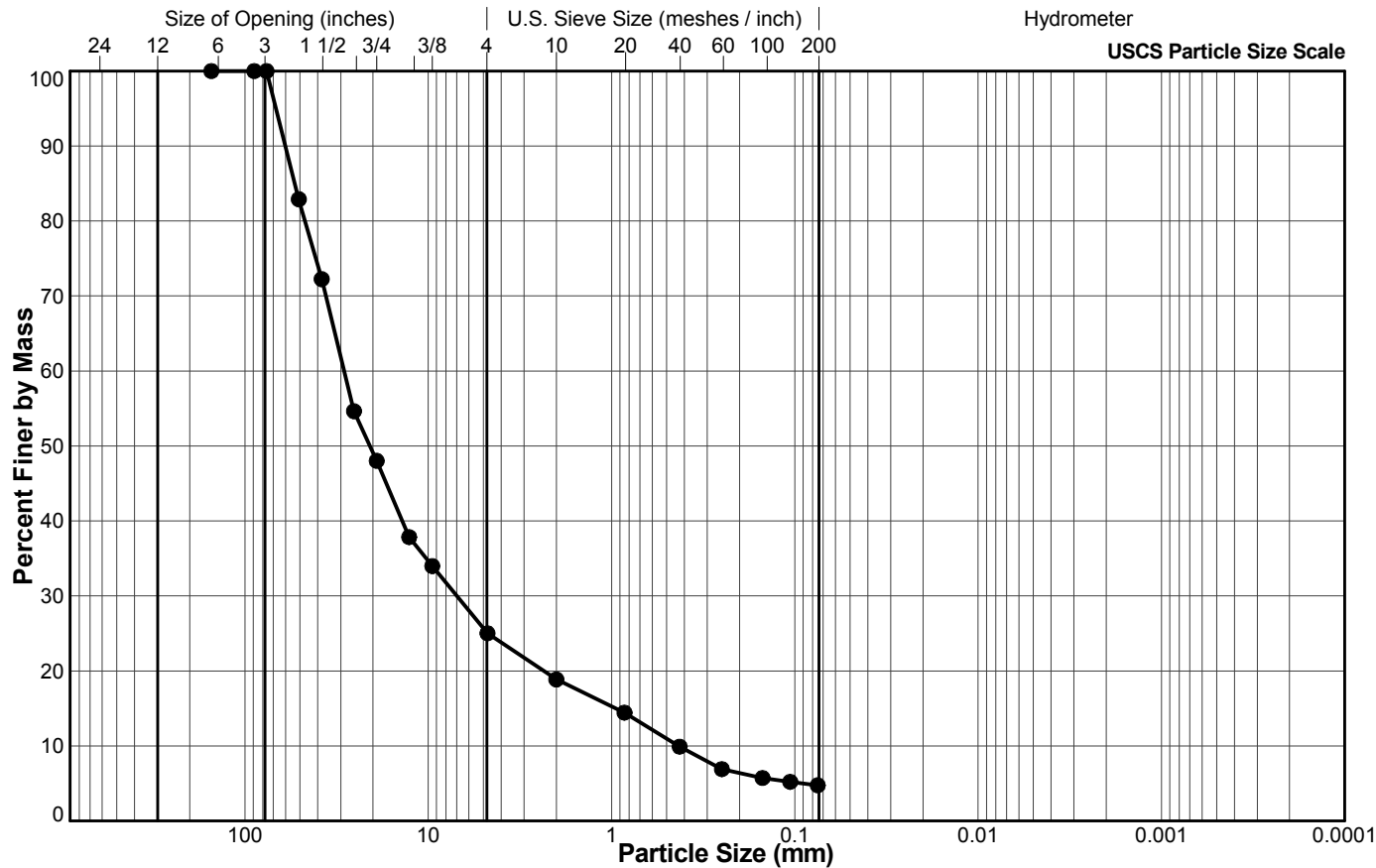


SUMMARY OF PARTICLE SIZE DISTRIBUTION

ASTM D6913

Client: Public Works and Government Services Canada
Project: Alaska Highway
Location: Steamboat, BC
Project No.: 1660199 **Phase:** 3000

Sample Location: TP17-05
Sample No.: 1
Depth Interval (m): 1.52 to 1.83
Lab Schedule No.:



Legend

Sieve Size (USS)	Particle Size (mm)	Percent Passing
6"	152.4	100.0
3.5"	88.9	100.0
3"	76.2	100.0
2"	50.8	82.9
1 1/2"	38.1	72.3
1"	25.4	54.6
3/4"	19.1	48.0
1/2"	12.7	37.8
3/8"	9.5	34.0
#4 US MESH	4.75	25.0
#10 US MESH	2	18.9
#20 US MESH	0.85	14.4
#40 US MESH	0.425	9.9
#60 US MESH	0.25	6.9
#100 US MESH	0.15	5.7
#140 US MESH	0.106	5.2
#200 US MESH	0.075	4.8

BOULDER		COBBLE		GRAVEL		SAND			FINES (Silt, Clay)
				Coarse	Fine	Coarse	Medium	Fine	

SJ/KS

8/9/2017

LH

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Tech

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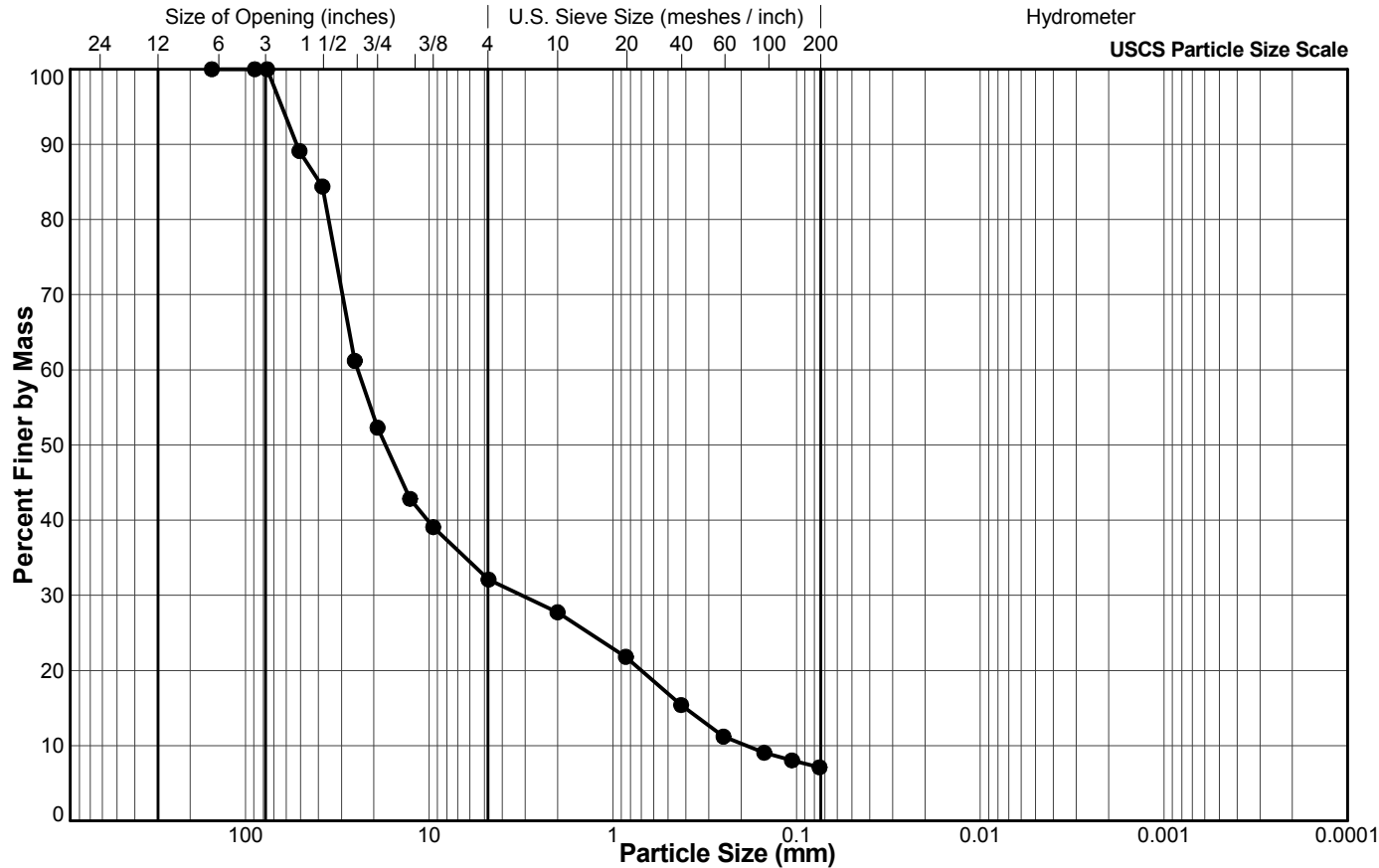
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SUMMARY OF PARTICLE SIZE DISTRIBUTION

ASTM D6913

Client: Public Works and Government Services Canada
Project: Alaska Highway
Location: Steamboat, BC
Project No.: 1660199 **Phase:** 3000

Sample Location: TP17-06
Sample No.: 2
Depth Interval (m): 3.05 to 3.35
Lab Schedule No.:



Legend

Sieve Size (USS)	Particle Size (mm)	Percent Passing
6"	152.4	100.0
3.5"	88.9	100.0
3"	76.2	100.0
2"	50.8	89.1
1 1/2"	38.1	84.4
1"	25.4	61.2
3/4"	19.1	52.3
1/2"	12.7	42.8
3/8"	9.5	39.1
#4 US MESH	4.75	32.1
#10 US MESH	2	27.7
#20 US MESH	0.85	21.8
#40 US MESH	0.425	15.4
#60 US MESH	0.25	11.2
#100 US MESH	0.15	9.1
#140 US MESH	0.106	8.0
#200 US MESH	0.075	7.1

BOULDER	COBBLE	GRAVEL		SAND			FINES (Silt, Clay)
		Coarse	Fine	Coarse	Medium	Fine	

SJ/KS

8/9/2017

LH

8/11/2017

Tech

Date

Checked

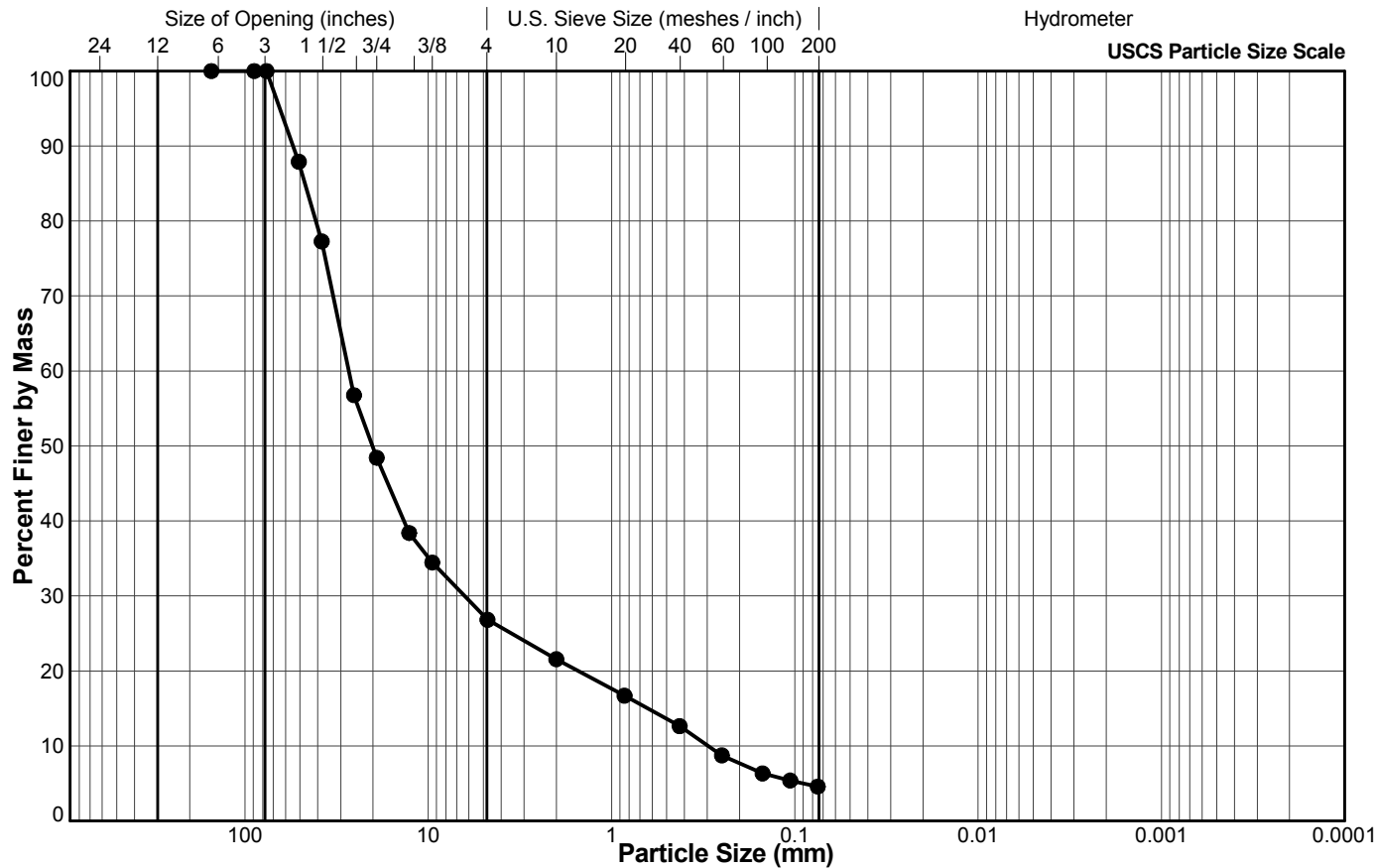
Date

SUMMARY OF PARTICLE SIZE DISTRIBUTION

ASTM D6913

Client: Public Works and Government Services Canada
Project: Alaska Highway
Location: Steamboat, BC
Project No.: 1660199 **Phase:** 3000

Sample Location: TP17-07
Sample No.: 1
Depth Interval (m): 1.83 to 2.13
Lab Schedule No.:



Legend

Sieve Size (USS)	Particle Size (mm)	Percent Passing
6"	152.4	100.0
3.5"	88.9	100.0
3"	76.2	100.0
2"	50.8	87.9
1 1/2"	38.1	77.3
1"	25.4	56.8
3/4"	19.1	48.4
1/2"	12.7	38.4
3/8"	9.5	34.5
#4 US MESH	4.75	26.8
#10 US MESH	2	21.6
#20 US MESH	0.85	16.7
#40 US MESH	0.425	12.6
#60 US MESH	0.25	8.7
#100 US MESH	0.15	6.3
#140 US MESH	0.106	5.4
#200 US MESH	0.075	4.6

BOULDER		COBBLE		GRAVEL		SAND			FINES (Silt, Clay)
				Coarse	Fine	Coarse	Medium	Fine	

SJ/KS

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