EBA Engineering Consultants Ltd.

Civil, Geotechnical and Materials Engineers

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YEARS OF EXCELLENCE
EBA ENGINEERING

FINAL REPORT
GRANULAR SOURCE INVESTIGATION
km 1693
NORTH ALASKA HIGHWAY, YUKON

0201-10922

April, 1992

eba

TRANSPORTATION GEOTECHNICAL
ORIGINAL REPORT
Yukon
PLEASE RETURN

FINAL REPORT
GRANULAR SOURCE INVESTIGATION
km 1693
NORTH ALASKA HIGHWAY, YUKON

0201-10922

April, 1992

eba

EBA Engineering Consultants Ltd.

Civil, Geotechnical and Materials Engineers

May 1, 1992

Government of Yukon
Department of Community and
Transportation Services
Box 2703
Whitehorse, Yukon
Y1A 2C6

EBA File: 0201-10922

Attention: Mr. Iain Blown, P.Eng.
Geotechnical Projects Manager
Transportation Engineering Branch

Dear Sir:

Subject: Final Report
Granular Source Evaluation
km 1693 RHS Pit - Silver City Area
North Alaska Highway

We are pleased to submit our final report for the above captioned site. Included herein are the following:

- A site plan utilizing an airphoto laser copy showing recent testhole locations (both EBA and PWC);
- EBA and PWC testpit logs of the subject site in ESEbase format;
- grain size distribution report forms for all sieves completed on samples collected during the EBA and PWC field investigations; and
- photographs of spoil piles and/or testpits as well as some general photos of the deposit.

1.0 FIELD INVESTIGATIONS

Two investigations were recently completed at the subject site. PWC completed an investigation in November, 1991. Eight testpits were excavated along the east side of the esker complex which comprises the source as well as a limited laboratory testing to verify aggregate quality.

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On April 21 and 22, 1992, EBA completed a subsequent geotechnical investigation consisting of 11 testpits excavated to a maximum depth of 5.0 m. Testpits were excavated utilizing a CAT 225 tracked backhoe contracted from Arctic Backhoe Services of Whitehorse, Yukon.

Since the east side of the esker complex was investigated by PWC, the EBA investigation included the existing crush pit on the west side of the Silver City access road as well as the central portion and northwest edge of the esker complex on the east side of the Silver City access road. All EBA testpits were logged by a Senior EBA Technician and photographs of all spoil piles and/or testpits were taken. Detailed testpit logs for both the EBA and PWC investigations are presented in Appendix A following the site plan and colour laser copies of all photographs are presented in Appendix B. It should be noted that the EBA and PWC plot formats and presentation of test results differ slightly, but basically the same information is presented. To be consistent, EBA has adopted the ASTM soil classification system for this project.

All testpit locations were recorded utilizing a Trimble Transpak global positioning system (GPS) locator. The latitude:longitude readout was converted into UTM locations with in-house software.

On Drawing 10922-A-01, in Appendix A, the locations of all testholes excavated by EBA and PWC are presented along with other pertinent information such as approximate reserve boundaries and existing pit limits.

2.0 SAMPLING AND LABORATORY TESTING PROGRAM

During the field investigation, disturbed grab samples were collected at regular intervals or at major interfaces of differing soils. Sample size was sufficient to facilitate moisture and grain size testing with additional sample for trial crushing or L.A. Abrasion testing if deemed necessary in the near future. All EBA test results are found on the testpit logs in Appendix A with report forms following the appropriate log. The PWC test results are included following the logs.

3.0 GRANULAR SOURCE DESCRIPTION

The following describes the km 1693 granular source:

Location:	Alaska Highway, km 1693 - Right Hand Side, approximately 800 m north of the Alaska Highway.
Surface Area:	Surveyed reserve encompasses 171.5 ha.
Access Road:	Area is accessed along Silver City access road.
Geologic Unit:	Extensive esker complex located southeast of Kluane Lake.
Land Status:	Crown Land - reserve established by PWC in 1991
-	While on site, evidence of ongoing research in the form of a communications tower and test plots were noted.
Existing Borrow Pit Exposures:	Pit Exposures of up to 10.0 m in height surround the larger existing pit located on the west side of the access road to Silver City. The previously mentioned tower is located at the top of the north face. At the south end of the east pit face overburden from previous clearing exists. Also, a small pit and access road is located on the opposite side of the Silver City access road from the larger pit. Exposures in the small pit vary from 3.0 to 6.0 m in height and are granular from top to bottom.

<u>Surficial Features:</u>

Vegetation:	Throughout the area it was observed that poplars with grass ground cover exist along south facing slopes while moderately dense white spruce (10 m in height with 250 mm maximum butt diameter) grow along north facing slopes.

Topography: The area is dissected by the parallel eskers extending from the southwest end of the reserve to the north end of the reserve.

Drainage: The area is well drained along the eskers comprising the source but low lying areas between the eskers may pond water during spring thaw.

Other: Permafrost was encountered at depth in the existing gravel pit but not along the esker complex. No groundwater was noted in either the EBA or PWC investigations.

Materials Description

Based on 8 testpits by PWC and 11 by EBA, a generalized description of the granular materials found at the km 1693 pit is as follows:

Depth from Surface	Elevations	Soil Description
OVERBURDEN THICKNESS	(0.2 m min.) (0.8 m max.)	ORGANICS AND SILT
GRANULAR MATERIALS	average of 4.5 m of proven depth thickness of gravel	WELL GRADED GRAVEL WITH SAND POORLY GRADED GRAVEL WITH SAND POORLY GRADED SAND

Overburden Materials: Thicknesses listed above are based on thicknesses of the surficial veneer of organics and silt.

Granular Materials: The gravels found throughout the site are variable (GW to GP) and occasional silt and/or sand lenses should be anticipated. The testpit excavated in the existing pit floor indicates that underlying the good quality gravels is SILTY GRAVEL to an undetermined depth.

Oversize Materials:	The gravels observed throughout the subject site were noted as being up to 300 mm maximum size with up to 10% larger than 100 mm.		
Estimated Volumes:	Area Investigated	-	approx. 45 ha was investigated (the southern half of the reserve)
	Volume of Overburden	-	88,000 m^3
	Volume of Gravel	-	1,000,000 m^3

Note: Gravel volumes based on area x 0.5 (to account for area lost between eskers) x 4.5 m average testpit depth.

Probable Volume of Total Reserve	-	1,500,000 m^3

4.0 SITE DEVELOPMENT RECOMMENDATIONS

It is understood that requirements for the 1992 Crushing Program are for 5,000 m^3 of granular A and 3,000 m^3 of BST aggregate from the km 1693 pit. It is anticipated that sufficient volumes for this years crushing program exist in the existing pit on the west side of the Silver City access road.

4.1 Recommendations for 1992 Production

- In the existing pit, the top of northern pit face is encroaching on the research tower. If the tower is relocated, approximately double the required volumes for this years production can be realized.

- Care should be taken that the previously stockpiled overburden located at the southern tip of the east pit face not be allowed to contaminate the gravel being extracted from the pit face.

- Grain size distribution curves for Testpit 92-014E indicate the presence of an abundance of medium to coarse grained sand. Past crushing control records (1988 and 1984) indicate that some coarse and medium sand may

have to be removed to meet aggregate specifications. (Production averages for the 1988 and 1984 crushing programs are presented following the PWC testpit and lab testing results in Appendix A.)

- Clearing and grubbing on the north face of the pit area will entail the removal of mature spruce trees (approximately 10 m in height with 200 mm maximum butt diameter) and surficial silts. Overburden should be retained for future reclamation.

- There is presently adequate area to situate stockpiles within the pit area. The yard portion to the south of the pit face is founded on gravel which will provide a good base for the movement of equipment during production.

4.2 Future Source Development

- Since there is evidence of ongoing scientific research within the reserve area, all user groups should be notified prior to development on the east side of the Silver City access road.

- To minimize visual impact, it is suggested that future pit development commence northeast of the small existing pit located on the east side of the road. This would utilize the section of the esker complex at the southeast corner of the reserve as a screen. A haul road exists into the pit area so it could be extended around the pit area to the subsequent development area. The present haul road would require upgrading to handle construction traffic.

- Anticipated overburden thicknesses throughout the esker complex are estimated as between 0.2 m on the south facing slopes and ridges with up to 0.8 m along the base of the north facing sides. Larger vegetation in the form of moderately dense stands of spruce exists throughout sheltered portions of the esker complex. Stripping and grubbing should proceed in a methodical fashion so that reclamation utilizing overburden (where present) can follow extraction of gravel in depleted sections of the reserve.

- The low lying area located southeast of the esker complex can be utilized as an initial yard area. Based on testpit 152-08 (PWC) excavated in the low lying area, gravel is present below 0.8 m of surficial silts. A constructed gravel pad would likely be necessary in the yard area prior to stockpiling aggregates.

- Development within the reserve should maintain proper surface drainage and prevent any ponding of water in both the pit and yard areas.

- Extraction methods will be straightforward. A rubber tired loader should suffice for feeding the crusher from the pit face.

5.0 CLOSURE

Information presented in this report is based on the results of the 1992 EBA and 1991 PWC geotechnical investigations of the subject site, results of previous crushing contracts and general observations of the area. Results presented in this report and recommendations made are considered to be representative and pertinent but, if discrepancies are noted during development, EBA requests that we be notified so that the area assessment can be modified.

If questions arise upon review, please contact this office at your convenience.

Respectfully submitted,
EBA Engineering Consultants Ltd.

M.C. Plaunt, C.E.T.
Engineering Technologist

for J.R. Trimble, P.Eng.
Project Director
Office Manager

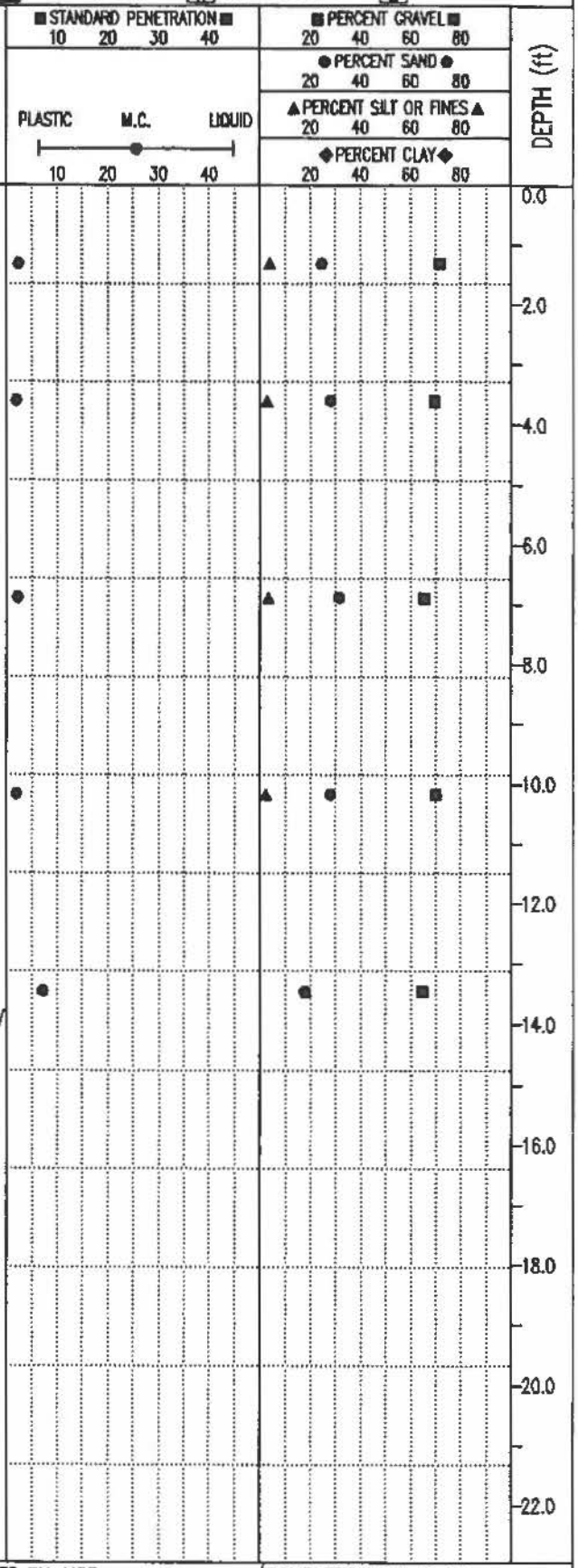
MCP/JRT/rsz

APPENDIX A

GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92–013E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201–10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768099.00 E644114.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						PIT FLOOR
						WELL GRADED GRAVEL WITH SILT AND SAND–
		1		GW		some cobbles, up to 300 mm maximum size, 10% over 100 mm, subangular sand is medium to coarse, seasonally frozen to 1.0 m, medium brown
1.0		2		GW		–lens of SILTY GRAVEL WITH SAND from 1.2 m – 1.5 m
						–permafrost (Vc, Vr<2%) below 1.8 m
2.0		3		GW		
3.0		4		GW		–interbedded coarse and fine layers throughout depth of testpit
4.0		5		GM		–lens of SILTY GRAVEL WITH SAND at 4.0 m, permafrost (Nbe)
						END OF TESTPIT 4.2 m
						NOTE: Pit face is approxmately 10 m high with 0.8 m surficial SILTS. Pitface also has SILTY SAND lenses throughout.
5.0						
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.2 m
	REVIEWED BY:	COMPLETE: 92/04/21
	Fig. No:	Page 1 of 1

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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-013E

Depth: 0.5 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 62

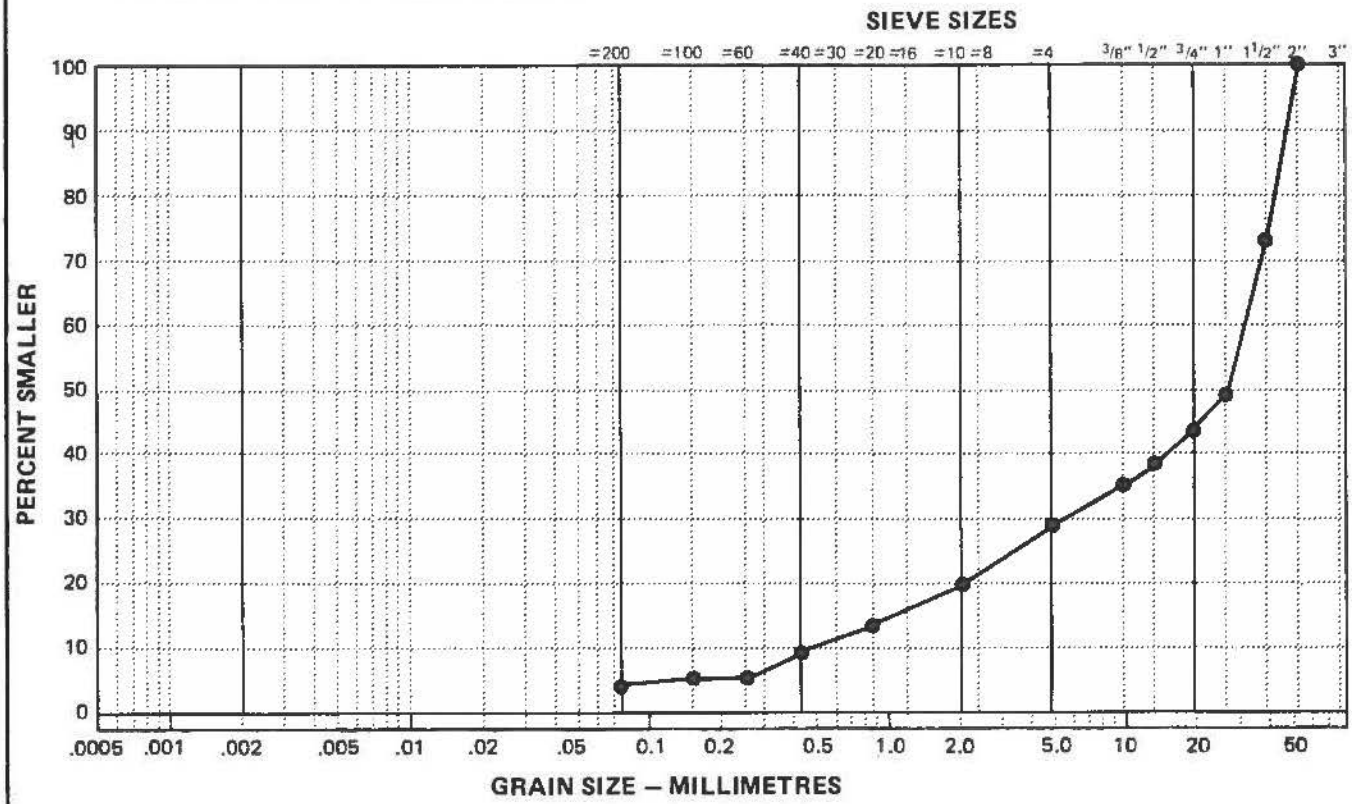
Cc: 1.7

Natural Moisture Content: 2.4 %

Remarks: Gravel 71.5%
Sand 24.5%
Silt 4.0%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	72.6
1"	49.0
3/4"	43.7
3/8"	35.5
No. 4	28.5
No. 10	19.9
No. 20	13.4
No. 40	8.8
No. 60	6.4
No. 100	5.0
No. 200	4.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-013E

Depth: 1.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 103.4

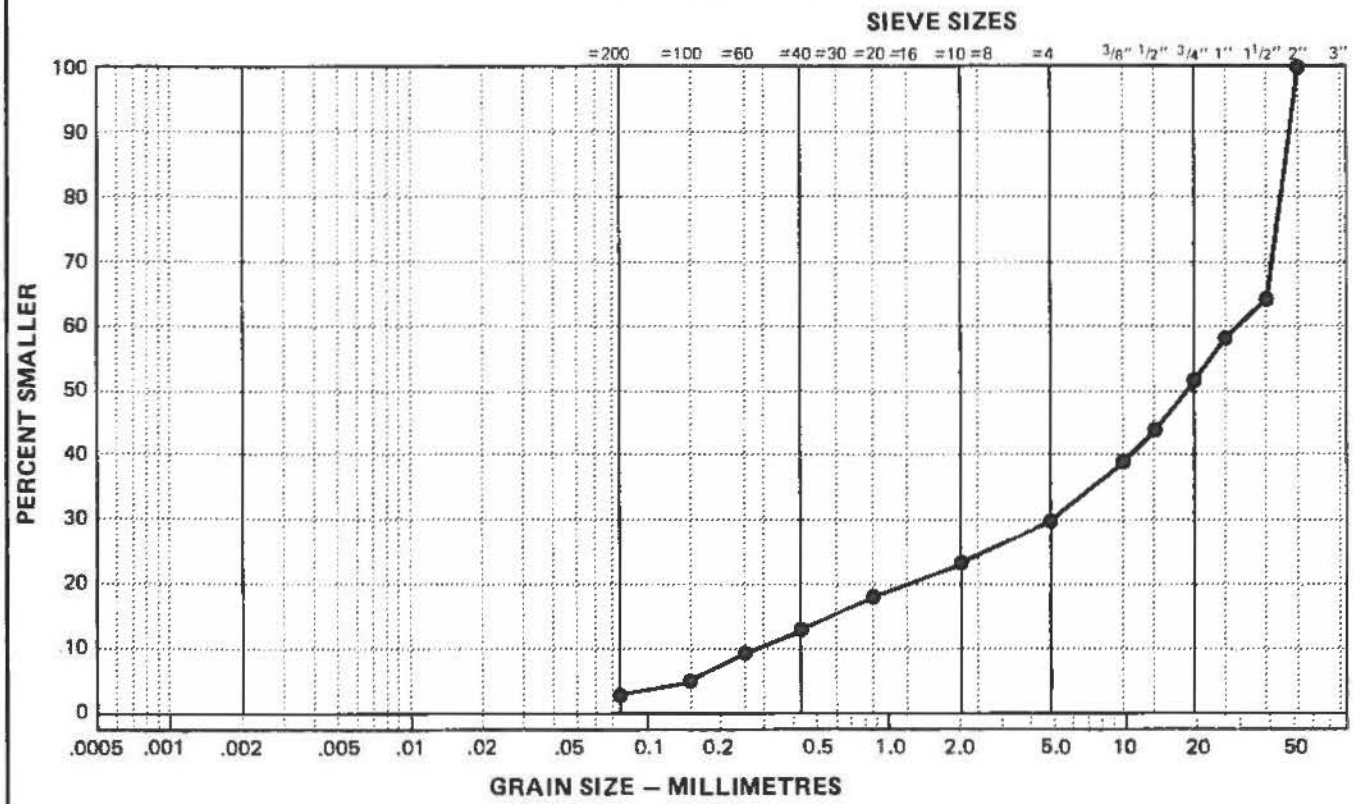
Cc: 2.9

Natural Moisture Content: 1.9 %

Remarks: Gravel 69.5%
Sand 27.9%
Silt 2.9%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	64.2
1"	58.3
3/4"	51.9
3/8"	38.6
No. 4	30.5
No. 10	22.9
No. 20	17.3
No. 40	12.6
No. 60	8.5
No. 100	4.7
No. 200	2.6

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-013E

Depth: 2.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 85

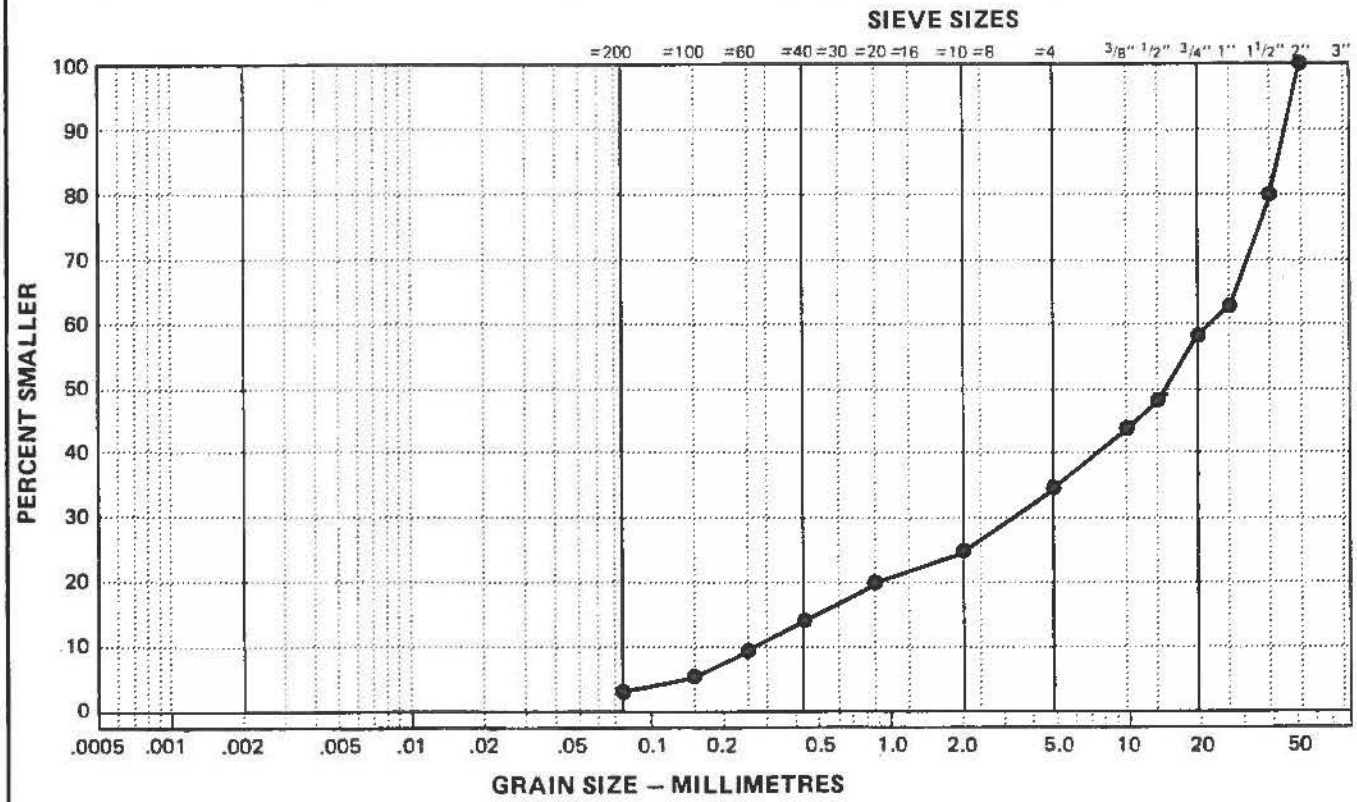
Cc: 2.0

Natural Moisture Content: 2.2 %

Remarks: Gravel 65.4%
Sand 31.2%
Silt 3.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	80.3
1"	62.6
3/4"	56.8
3/8"	43.8
No. 4	34.6
No. 10	26.3
No. 20	19.6
No. 40	14.2
No. 60	8.9
No. 100	5.2
No. 200	3.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-013E

Depth: 3.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 43

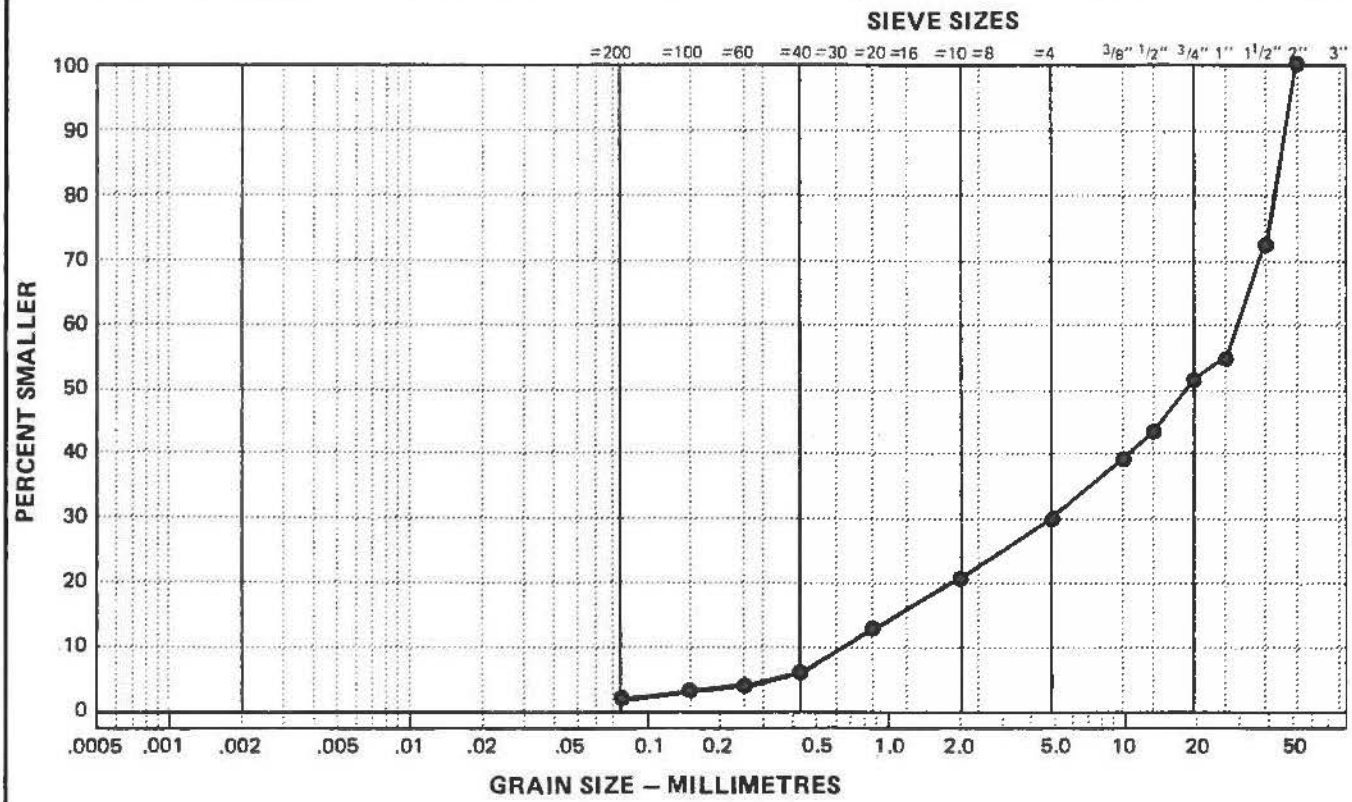
Cc: 1.1

Natural Moisture Content: 1.9 %

Remarks: Gravel 70.0%
Sand 27.7%
Silt 2.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	71.8
1"	55.2
3/4"	51.7
3/8"	38.7
No. 4	30.0
No. 10	20.7
No. 20	12.5
No. 40	6.6
No. 60	3.9
No. 100	2.8
No. 200	2.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-013E

Depth: 4.0 m

Soil Description: SILTY GRAVEL WITH SAND (GM)

Cu:

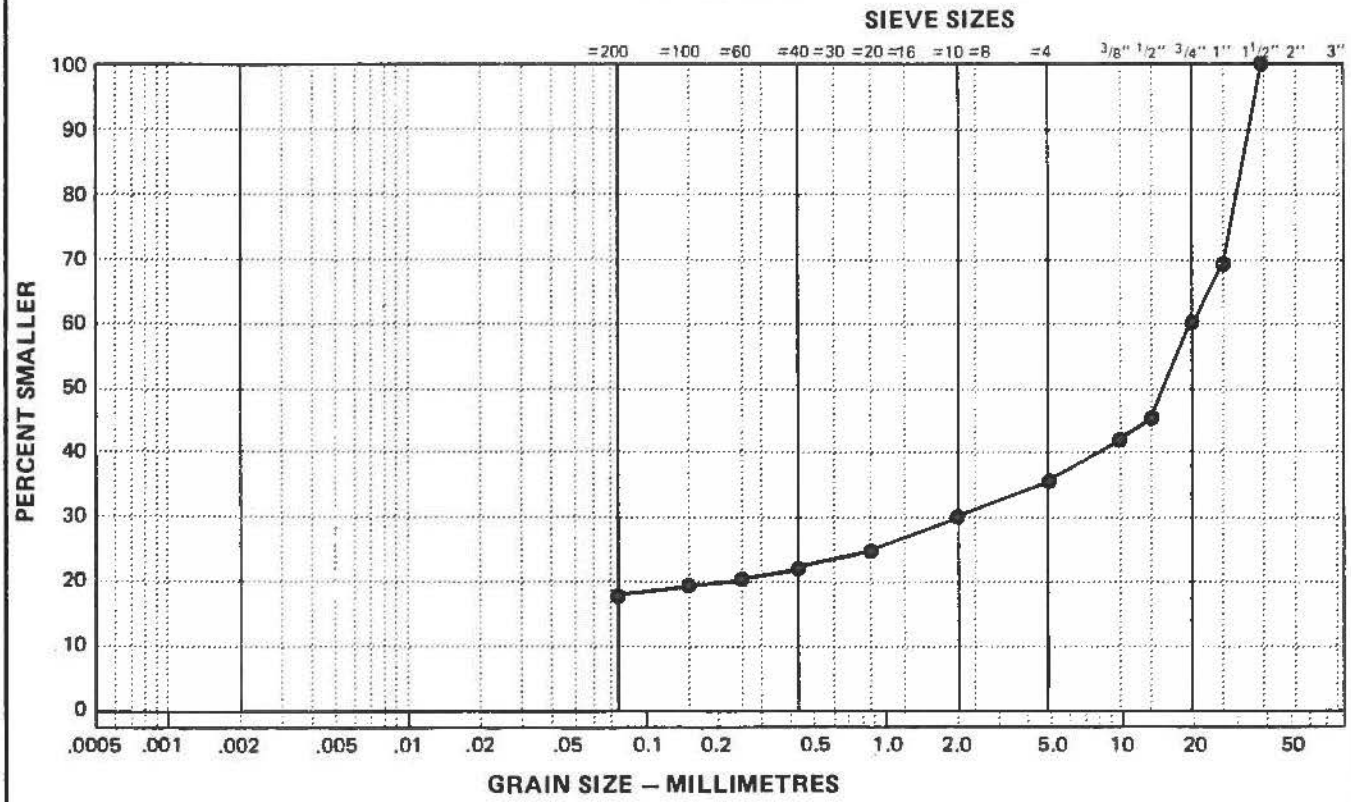
Cc:

Natural Moisture Content: 7.2 %

Remarks: Gravel 64.4%
Sand 17.5%
Silt 18.1%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	69.0
3/4"	60.4
3/8"	45.8
No. 4	42.0
No. 10	35.6
No. 20	25.3
No. 40	22.1
No. 60	20.3
No. 100	19.1
No. 200	18.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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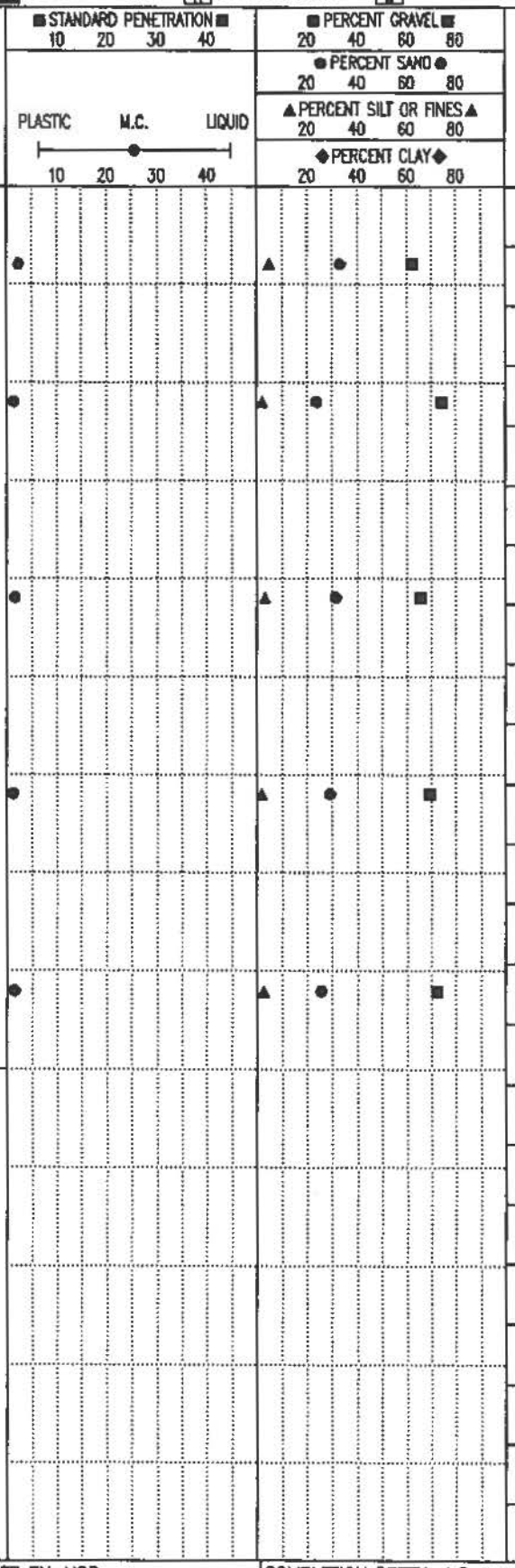
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92-014E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201-10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768022.00 E644061.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						AREA HAS BEEN CLEARED AND GRUBBED
	GRAB	1		GP		POORLY GRADED GRAVEL WITH SAND –trace of silt, rootlets to 0.3 m, occasional cobble, subangular, up to 200 mm maximum size, gravel is well graded, sand is medium to coarse to 3.2 m and well graded below, seasonally frozen to 1.0 m, medium greyish brown
1.0	GRAB	2		GW		
2.0	GRAB	3		GP		–interbedded WELL GRADED GRAVEL WITH SAND and POORLY GRADED GRAVEL WITH SAND throughout depth of testpit
3.0	GRAB	4		GP		–greyish brown to brown below 3.0 m
4.0	GRAB	5		GW		–very little sloughing along testpit sidewalls
5.0						END OF TESTPIT 4.5 m NOTE: Vegetation sparse. Poplar on south facing slopes, spruce on north facing slopes.
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.5 m
	REVIEWED BY:	COMPLETE: 92/04/21
	Fig. No:	Page 1 of 1

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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-014E

Depth: 0.5 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 51.1

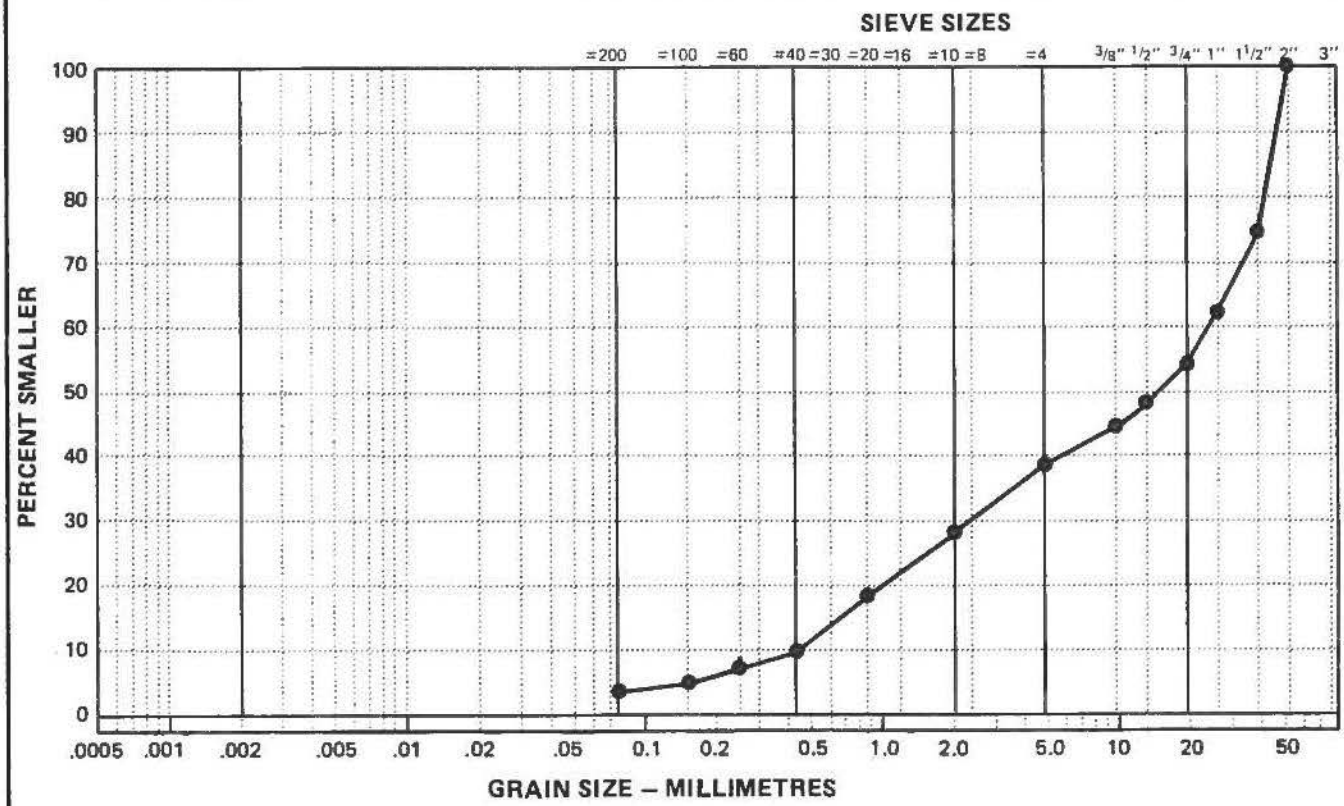
Cc: 0.56

Natural Moisture Content: 2.4 %

Remarks: Gravel 62.1%
Sand 33.1%
Silt 4.8%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	74.7
1"	61.6
3/4"	54.9
3/8"	45.4
No. 4	37.9
No. 10	28.3
No. 20	18.2
No. 40	10.1
No. 60	7.1
No. 100	5.8
No. 200	4.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-014E

Depth: 1.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 30.7

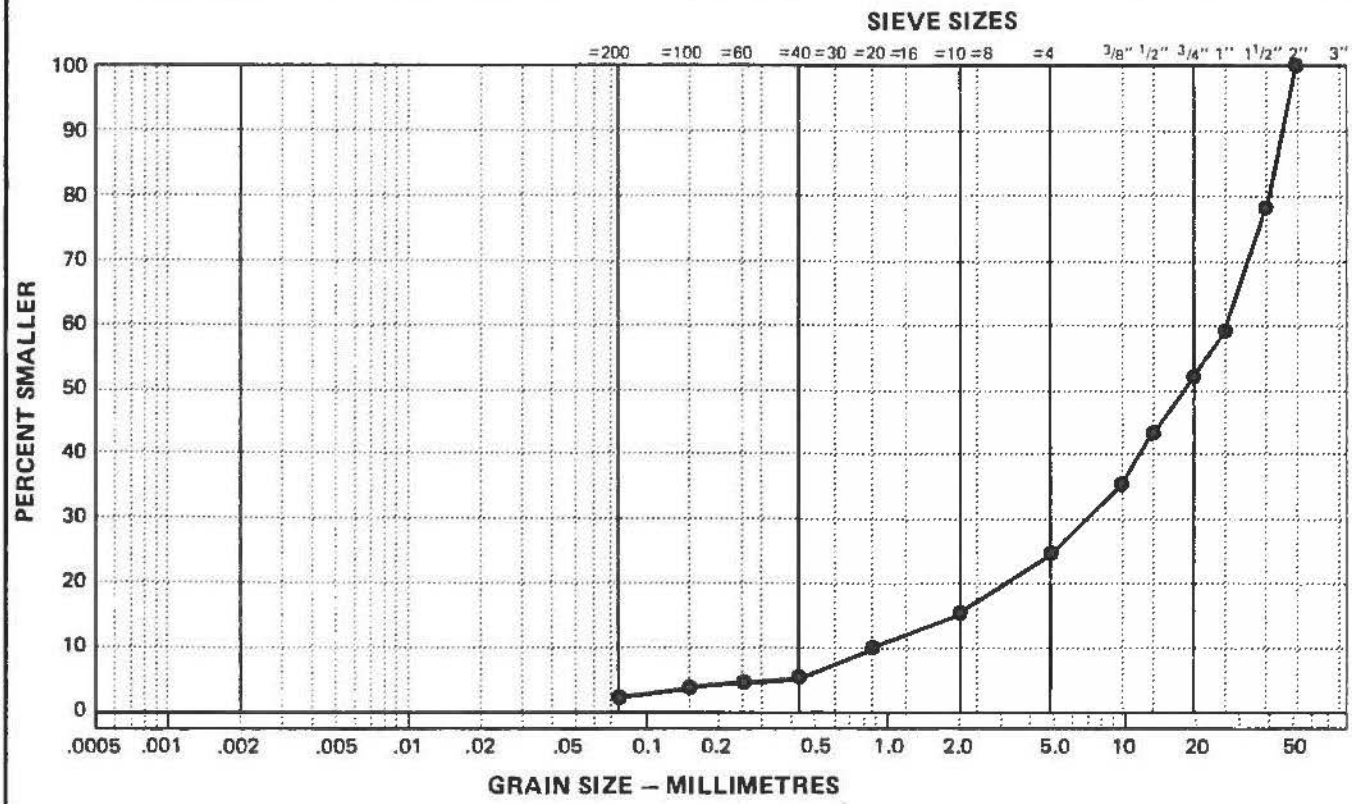
Cc: 2.1

Natural Moisture Content: 1.3 %

Remarks: Gravel 74.3%
Sand 23.7%
Silt 2.0%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	78.0
1"	58.6
3/4"	52.1
3/8"	35.7
No. 4	25.3
No. 10	16.1
No. 20	10.3
No. 40	5.7
No. 60	4.6
No. 100	2.7
No. 200	2.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-014E

Depth: 2.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 24.3

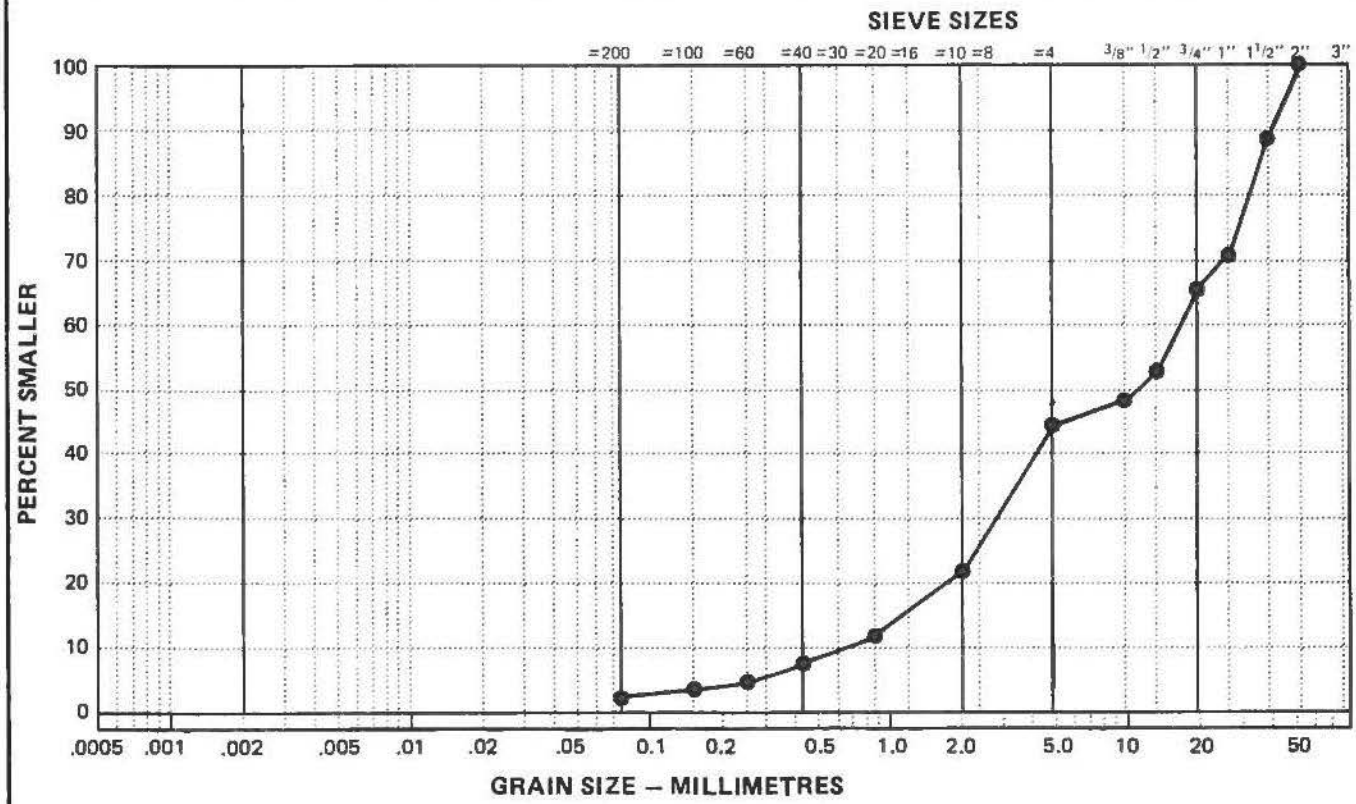
Cc: 0.8

Natural Moisture Content: 1.6 %

Remarks: Gravel 65.5%
Sand 31.3%
Silt 3.2%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	87.8
1"	70.7
3/4"	65.5
3/8"	47.5
No. 4	34.5
No. 10	21.9
No. 20	12.2
No. 40	6.9
No. 60	5.0
No. 100	4.0
No. 200	

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-014E

Depth: 3.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 37.5

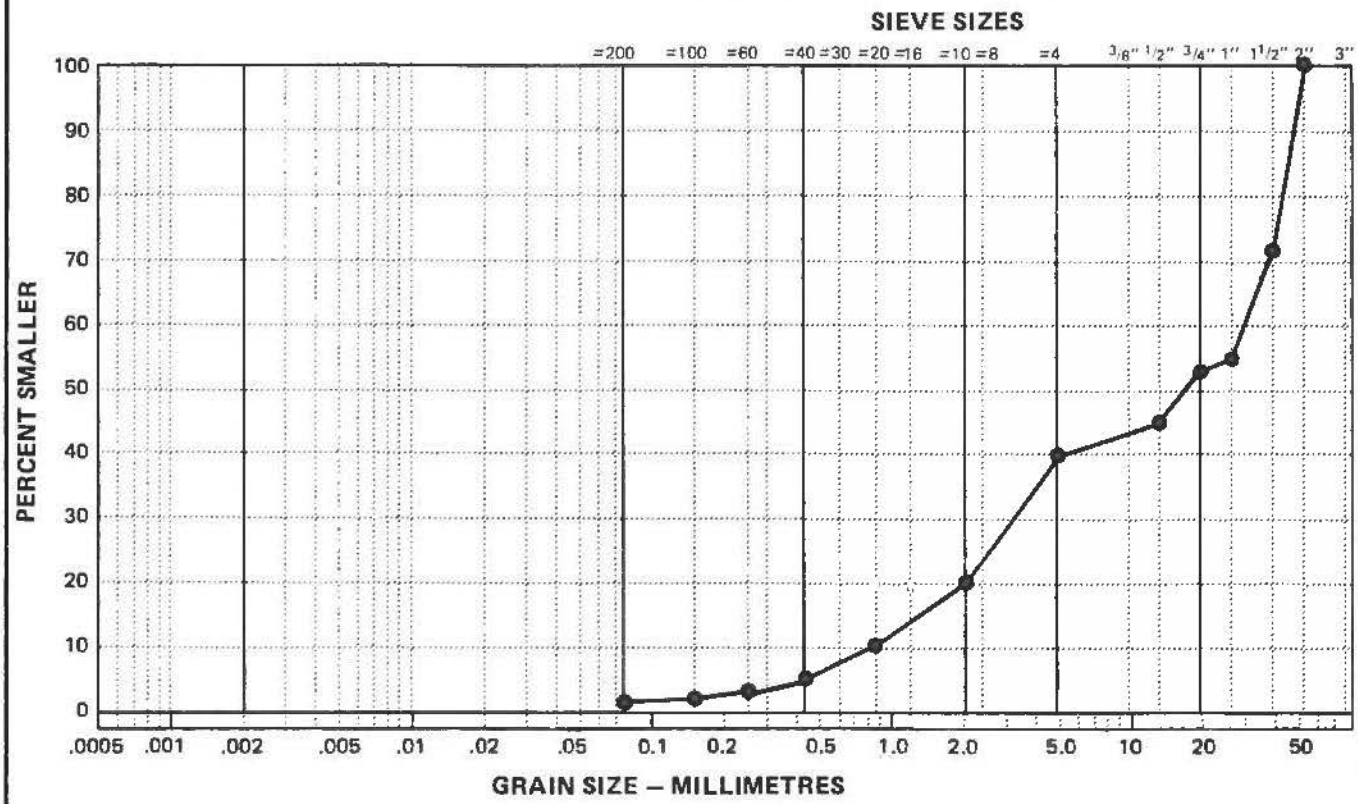
Cc: 0.4

Natural Moisture Content: 1.2 %

Remarks: Gravel 69.2%
Sand 29.0%
Silt 1.8%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	72.1
1"	54.9
3/4"	53.0
3/8"	40.2
No. 4	30.8
No. 10	19.7
No. 20	11.4
No. 40	5.6
No. 60	3.3
No. 100	2.4
No. 200	1.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-014E

Depth: 4.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

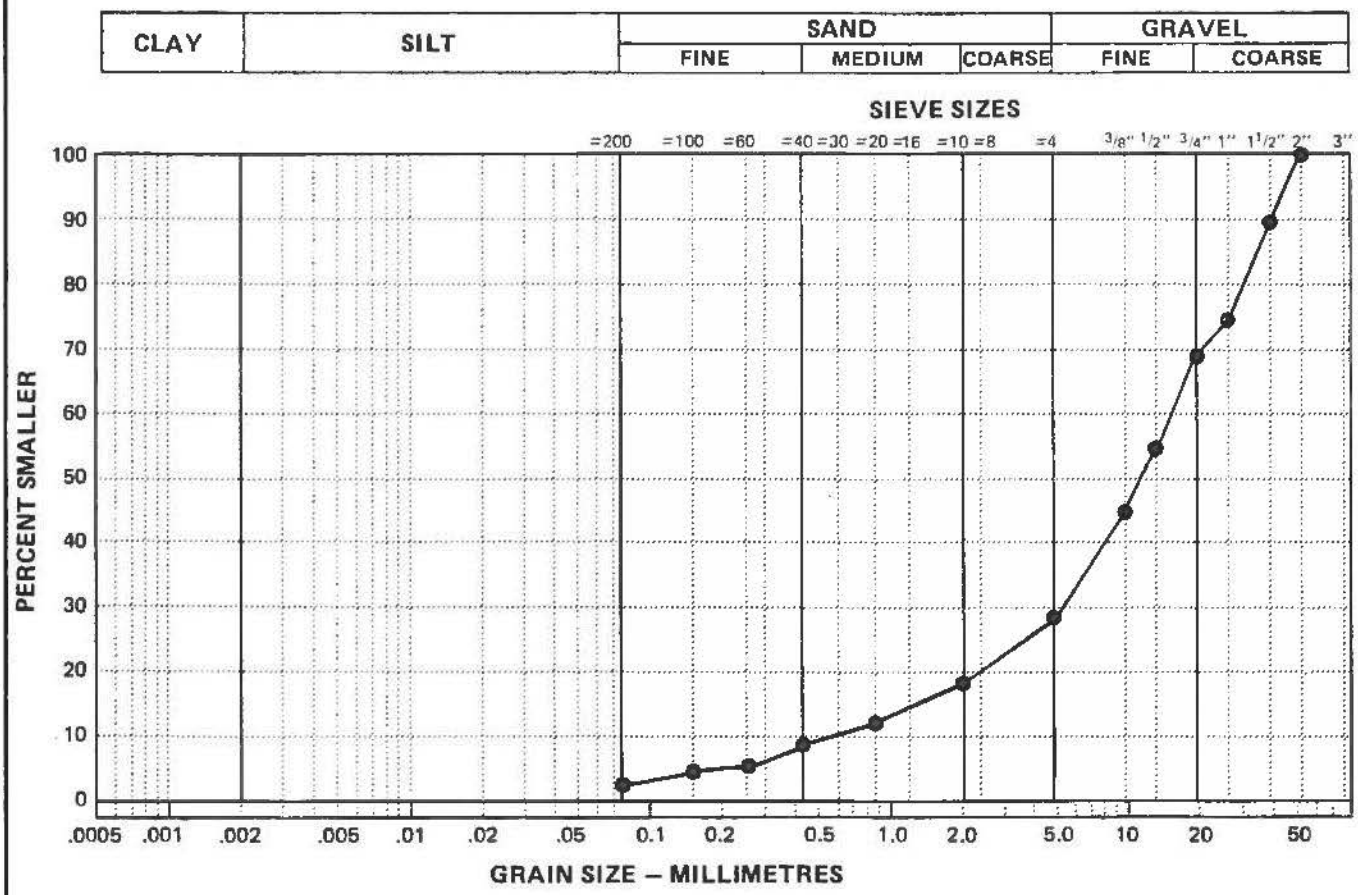
Cu: 28.6

Cc: 3.0

Natural Moisture Content: 1.4 %

Remarks: Gravel 72.1%
Sand 25.3%
Silt 2.6%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	89.3
1"	73.6
3/4"	68.6
3/8"	45.2
No. 4	27.9
No. 10	17.5
No. 20	12.3
No. 40	8.1
No. 60	5.4
No. 100	3.8
No. 200	2.6



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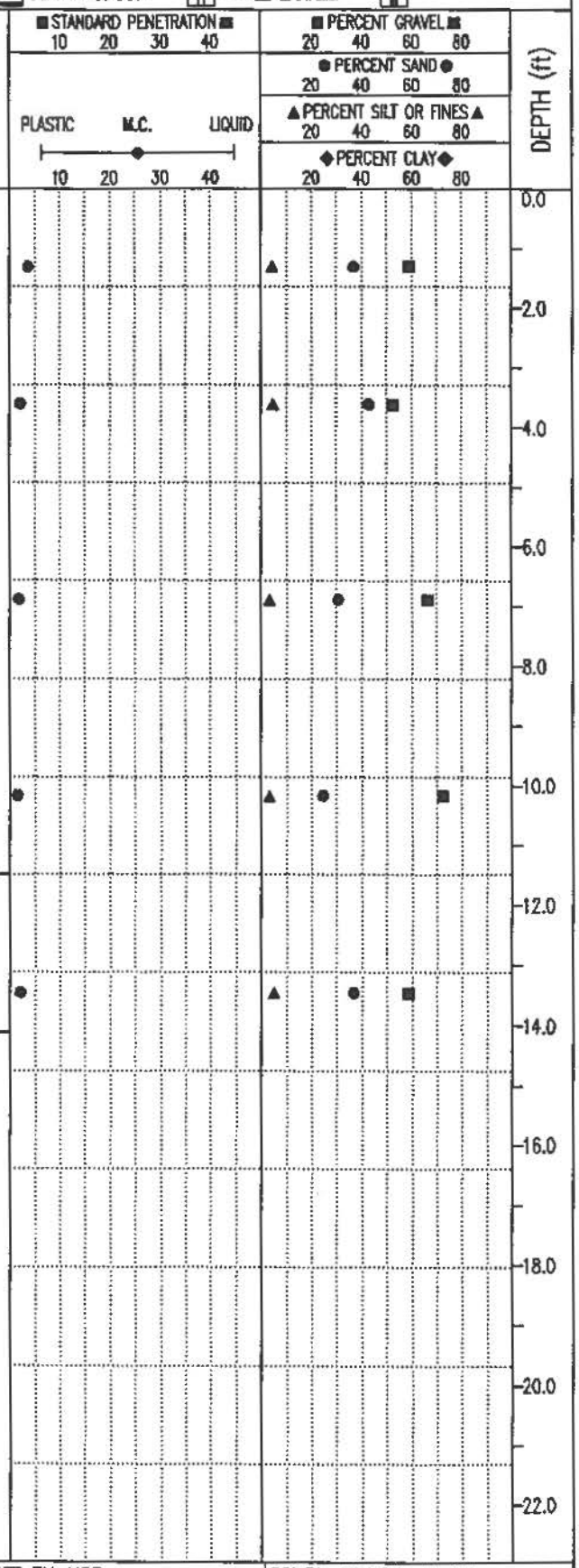
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG - TRANSPORTATION ENG.	BOREHOLE No: 92-015E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201-10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768151.00 E644327.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						WELL GRADED GRAVEL WITH SAND-trace of silt, gravel is medium to fine at surface with occasional cobbles to 200 mm below 0.3 m, estimate 15% over 100 mm, rootlets to 0.3 m, seasonally frozen to 2.2 m, dark brown
		1		GW		
-1.0		2		GW		
-2.0		3		GW		
						-finer below 2.5 m, with less than 5% over 100 mm, moist, loose(est.), dark olive brown
-3.0		4		GW		
						POORLY GRADED GRAVEL WITH SAND-slightly siltier than overlying gravel
-4.0		5		GP		
						END OF TESTPIT 4.3 m
						NOTE: Small pit on opposite side of road.
-5.0						
-6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.3 m
	REVIEWED BY:	COMPLETE: 92/04/21
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-015E

Depth: 0.5 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 28.6

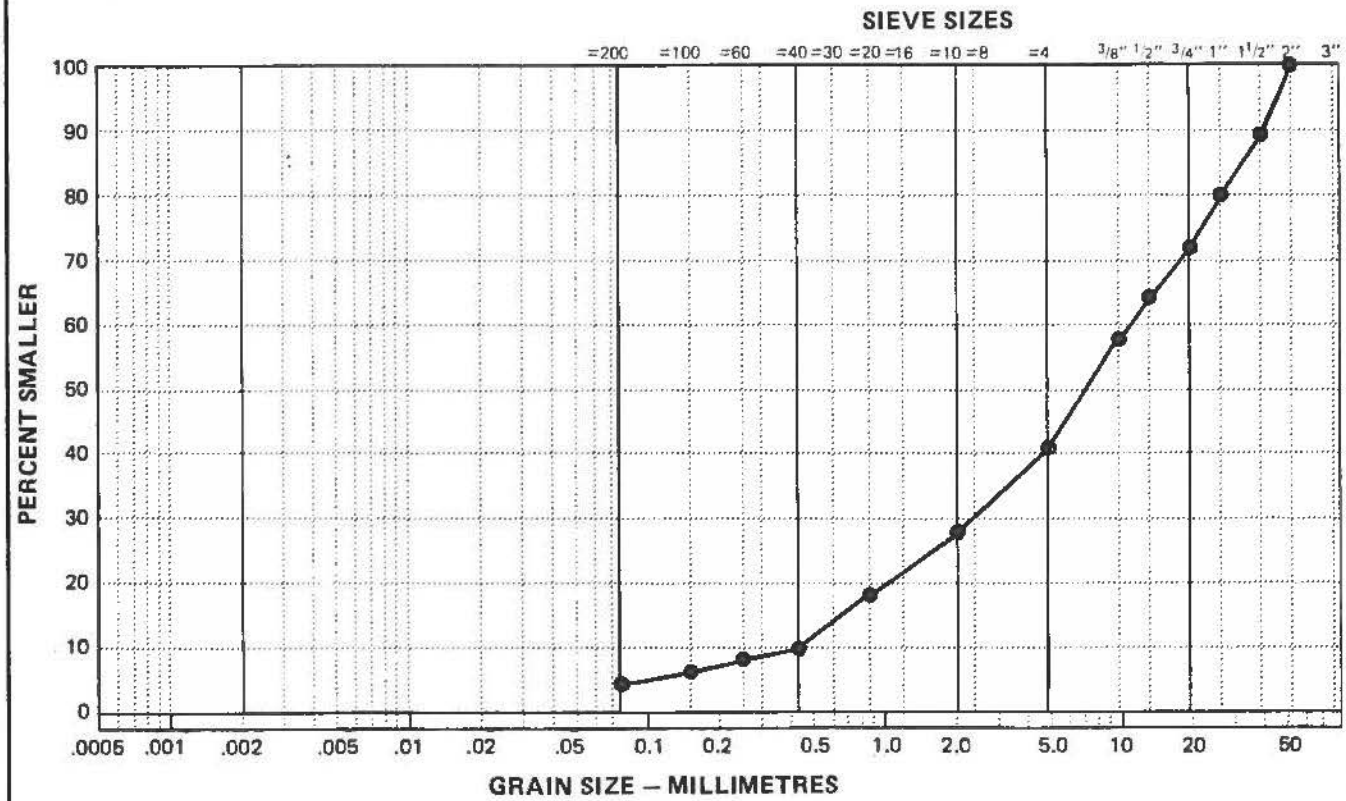
Cc: 1.2

Natural Moisture Content: 3.7 %

Remarks: Gravel 58.9%
Sand 36.7%
Silt 4.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	88.6
1"	80.2
3/4"	72.1
3/8"	56.8
No. 4	41.1
No. 10	26.7
No. 20	16.8
No. 40	10.3
No. 60	7.4
No. 100	5.8
No. 200	4.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-015E

Depth: 1.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

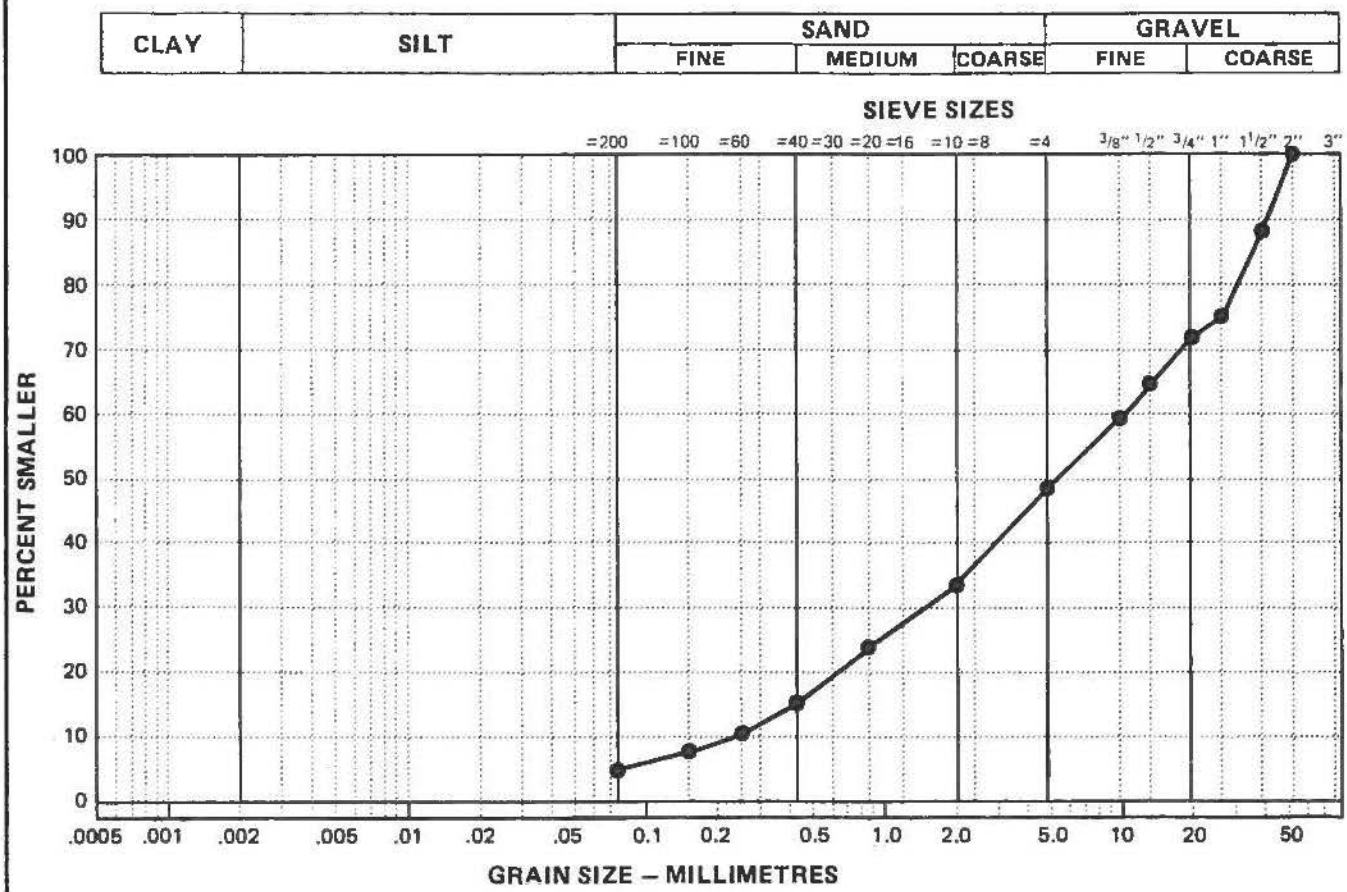
Cu: 42

Cc: 0.9

Natural Moisture Content: 2.1 %

Remarks: Gravel 52.5%
Sand 42.8%
Silt 4.7%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	87.6
1"	74.6
3/4"	72.2
3/8"	59.2
No. 4	47.5
No. 10	34.4
No. 20	24.4
No. 40	16.3
No. 60	10.5
No. 100	6.8
No. 200	4.7



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-015E

Depth: 2.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 50

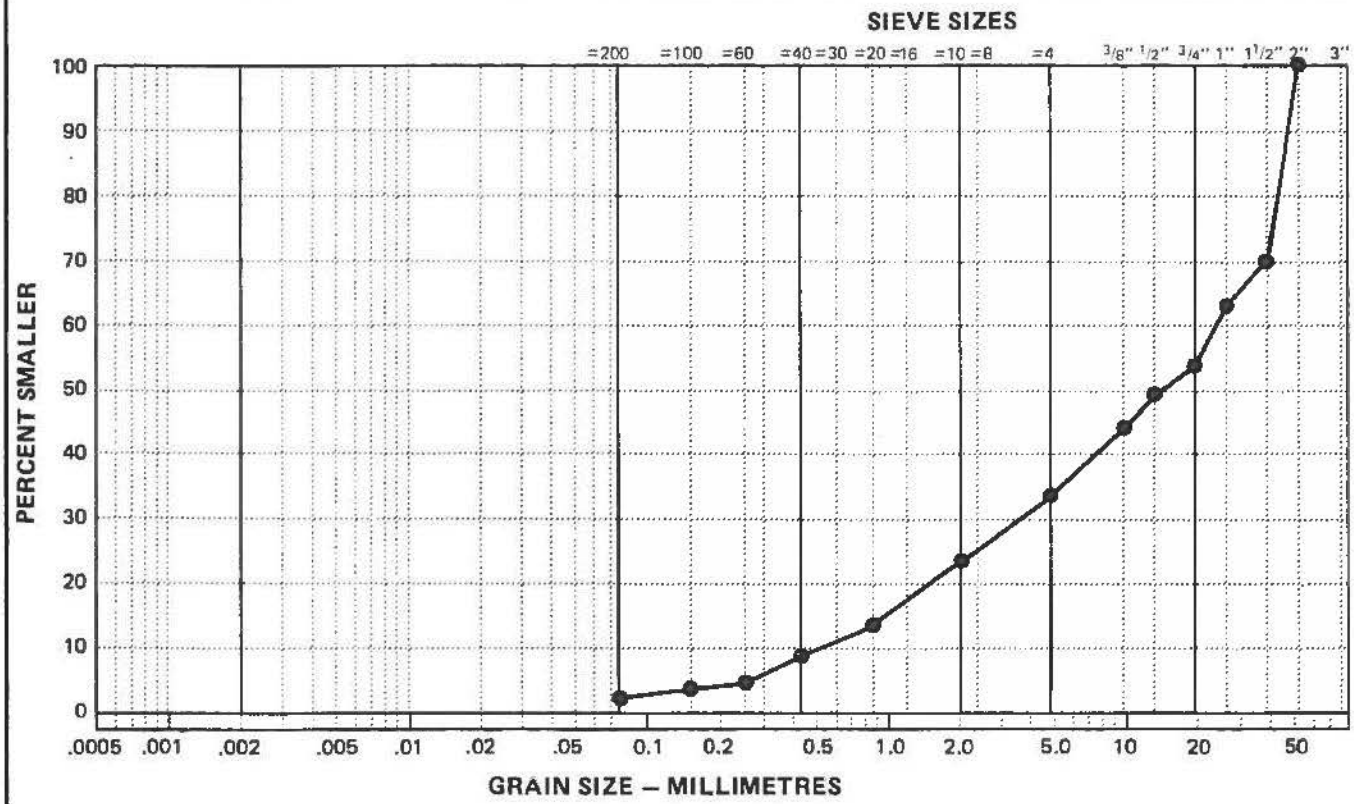
Cc: 1.2

Natural Moisture Content: 1.8 %

Remarks: Gravel 66.3%
Sand 30.4%
Silt 3.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	69.6
1"	63.2
3/4"	54.1
3/8"	44.3
No. 4	33.7
No. 10	22.9
No. 20	14.3
No. 40	7.9
No. 60	5.2
No. 100	4.1
No. 200	3.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-015E

Depth: 3.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 58

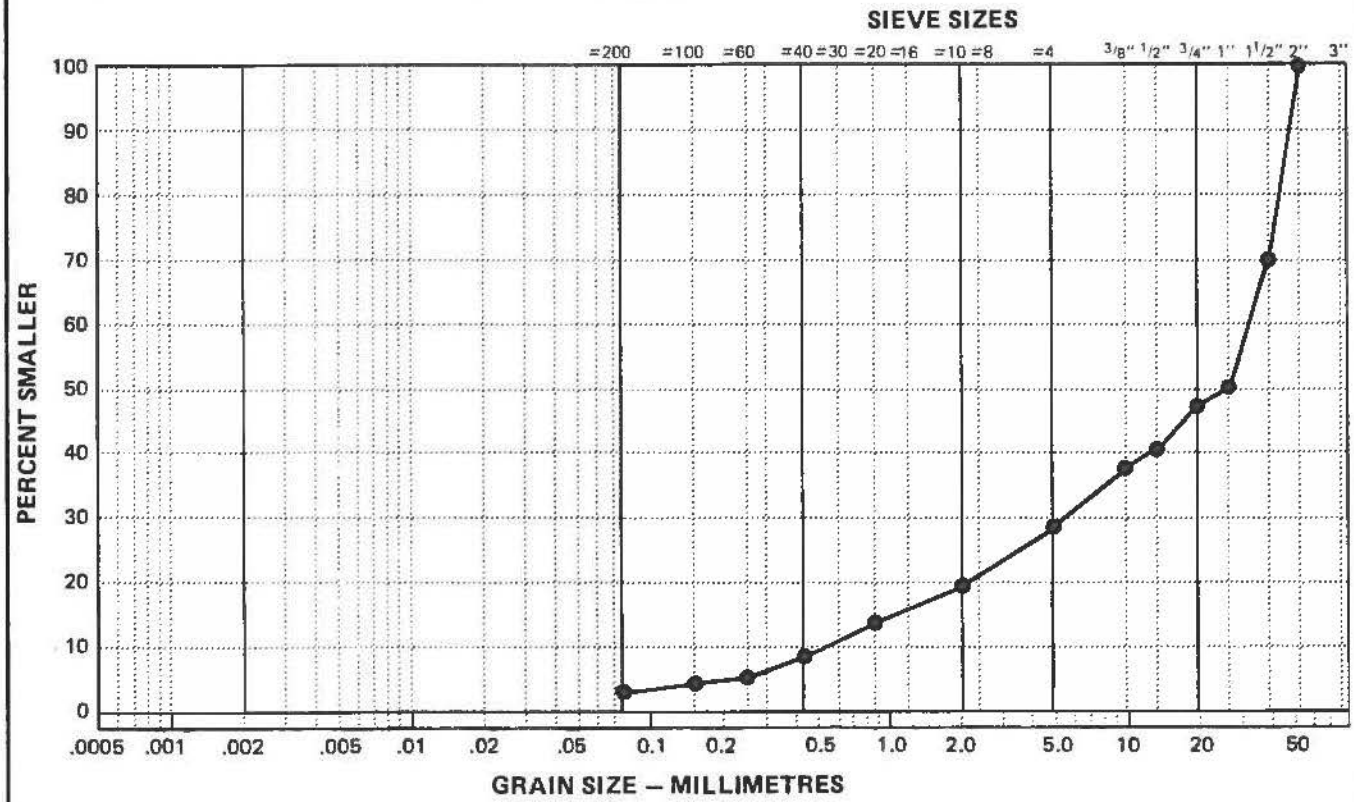
Cc: 1.8

Natural Moisture Content: 1.5 %

Remarks: Gravel 72.3%
Sand 24.5%
Silt 3.2%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	69.6
1"	50.6
3/4"	47.4
3/8"	36.5
No. 4	27.7
No. 10	19.0
No. 20	13.1
No. 40	8.3
No. 60	5.4
No. 100	4.0
No. 200	3.2

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-015E

Depth: 4.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 37.5

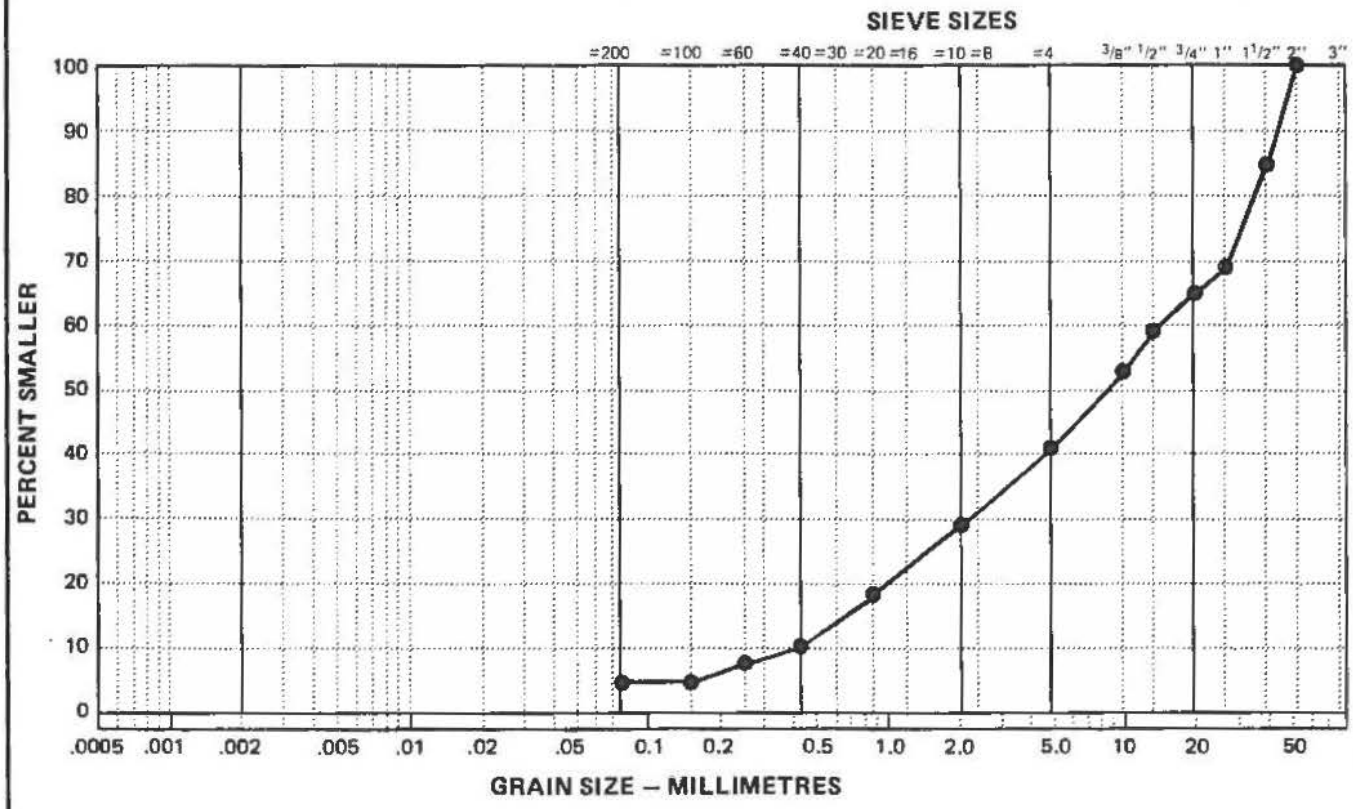
Cc: 0.9

Natural Moisture Content: 2.1 %

Remarks: Gravel 58.6%
Sand 36.5%
Silt 4.9%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	85.3
1"	68.7
3/4"	65.8
3/8"	53.3
No. 4	41.4
No. 10	29.2
No. 20	18.4
No. 40	10.5
No. 60	7.2
No. 100	5.8
No. 200	4.9

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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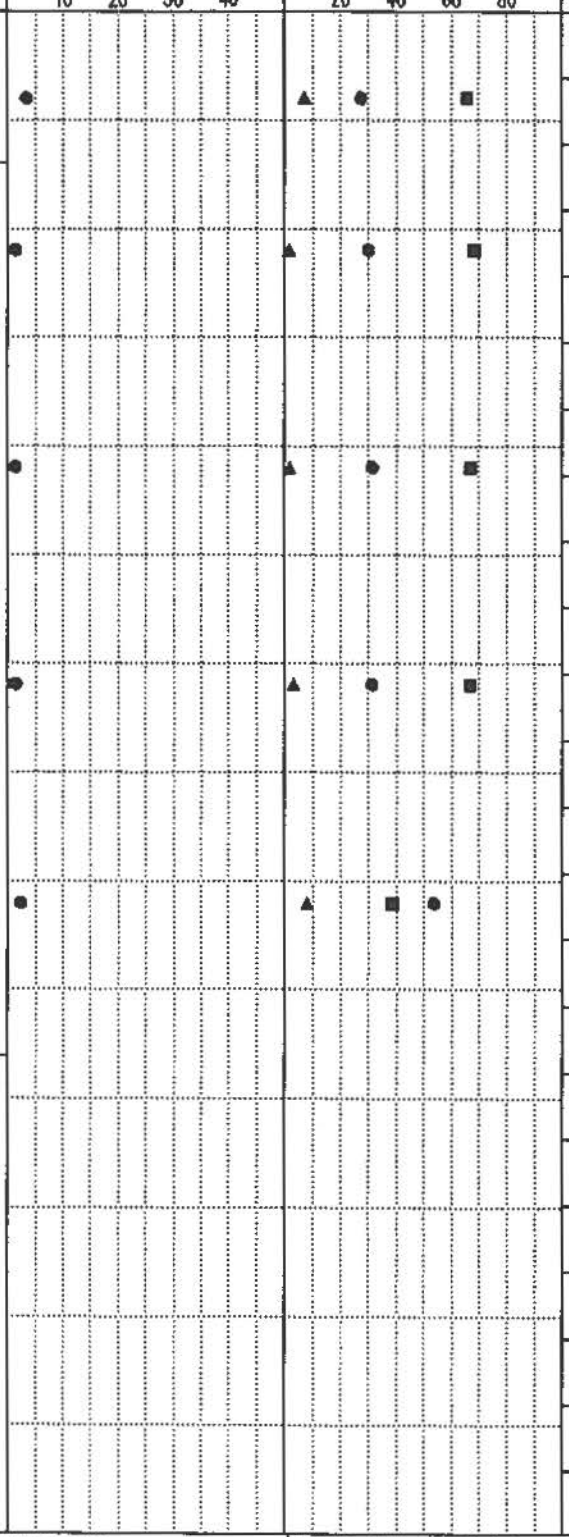
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG - TRANSPORTATION ENG.	BOREHOLE No: 92-016E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201-10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768220.00 E644199.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						SPARSE GRASS GROUND COVER
		1		GP/GM		POORLY GRADED GRAVEL WITH SILT AND SAND- fibrous organics to 0.5 m, occasional cobble to 200 mm maximum size
						WELL GRADED GRAVEL WITH SAND-trace of silt, cobbles throughout, subangular, up to 300 mm with 10% over 100 mm, seasonally frozen to 1.0 m, damp, medium brown
1.0		2		GW		
2.0		3		GP		-not much slaughing in testpit
3.0		4		GW		
4.0		5		SP/SM		-300 mm thick lens of POORLY GRADED SAND WITH SILT AND GRAVEL at 4.0 m, discontinuous in testpit
5.0						END OF TESTPIT 4.8 m
7.0						



DEPTH (ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.8 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-016E

Depth: 0.5 m

Soil Description: POORLY GRADED GRAVEL WITH SILT AND SAND

Cu: 85 (GP/GM)

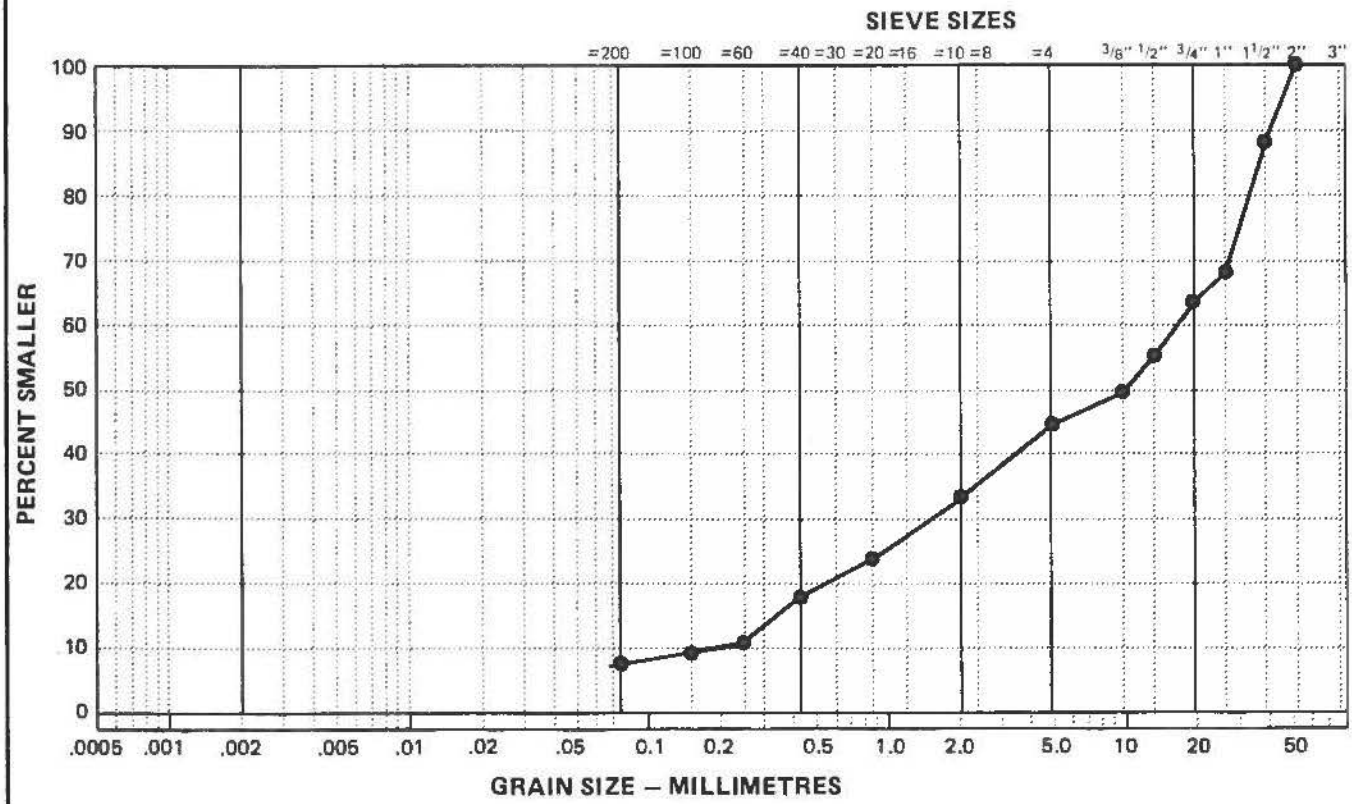
Cc: 0.29

Natural Moisture Content: 3.4 %

Remarks: Gravel 65.8%
Sand 27.2%
Silt 7.0%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	87.7
1"	68.1
3/4"	64.1
3/8"	50.2
No. 4	44.9
No. 10	34.2
No. 20	24.3
No. 40	16.8
No. 60	11.4
No. 100	8.6
No. 200	7.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-016E

Depth: 1.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 74

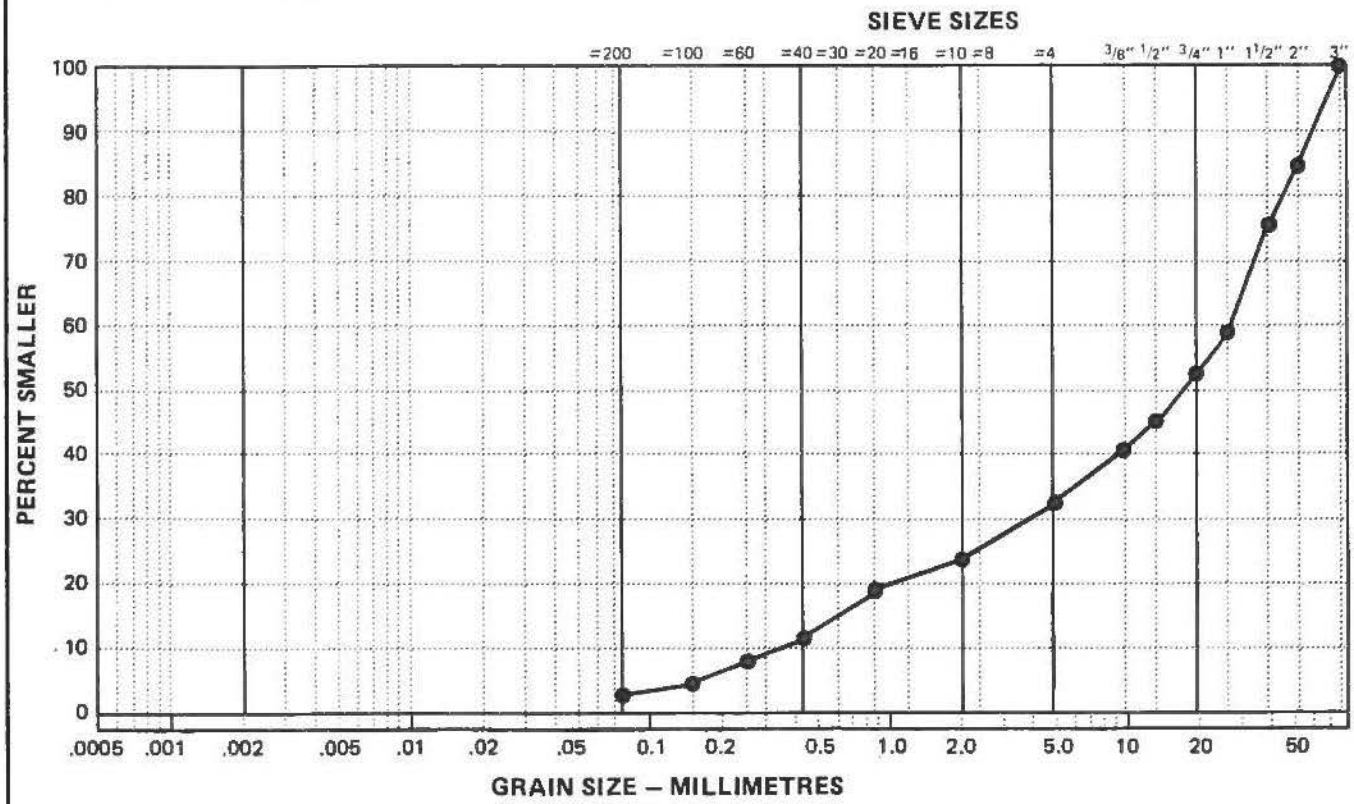
Cc: 1.8

Natural Moisture Content: 1.3 %

Remarks: Gravel 68.5%
Sand 29.8%
Silt 1.7%

SIEVE	PERCENTAGE PASSING
3"	100.0
2"	83.6
1 1/2"	75.8
1"	57.9
3/4"	53.3
3/8"	40.8
No. 4	31.5
No. 10	23.5
No. 20	17.5
No. 40	11.9
No. 60	7.1
No. 100	3.5
No. 200	1.7

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-016E

Depth: 2.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 37.5

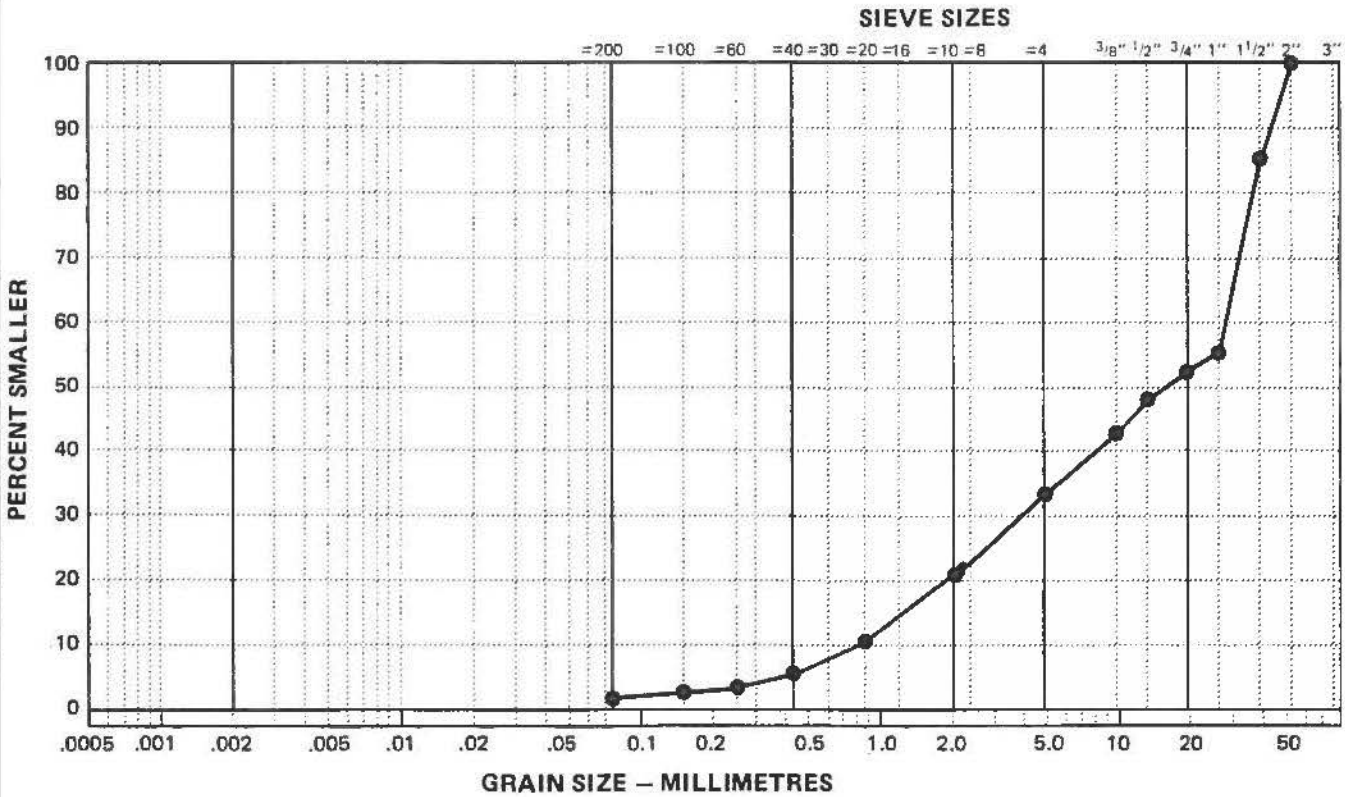
Cc: 0.7

Natural Moisture Content: 1.3 %

Remarks: Gravel 66.9%
Sand 31.3%
Silt 1.8%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	86.0
1"	56.3
3/4"	53.2
3/8"	42.8
No. 4	33.1
No. 10	20.9
No. 20	10.6
No. 40	5.3
No. 60	3.1
No. 100	2.2
No. 200	1.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693, North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-016E

Depth: 3.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 36.7

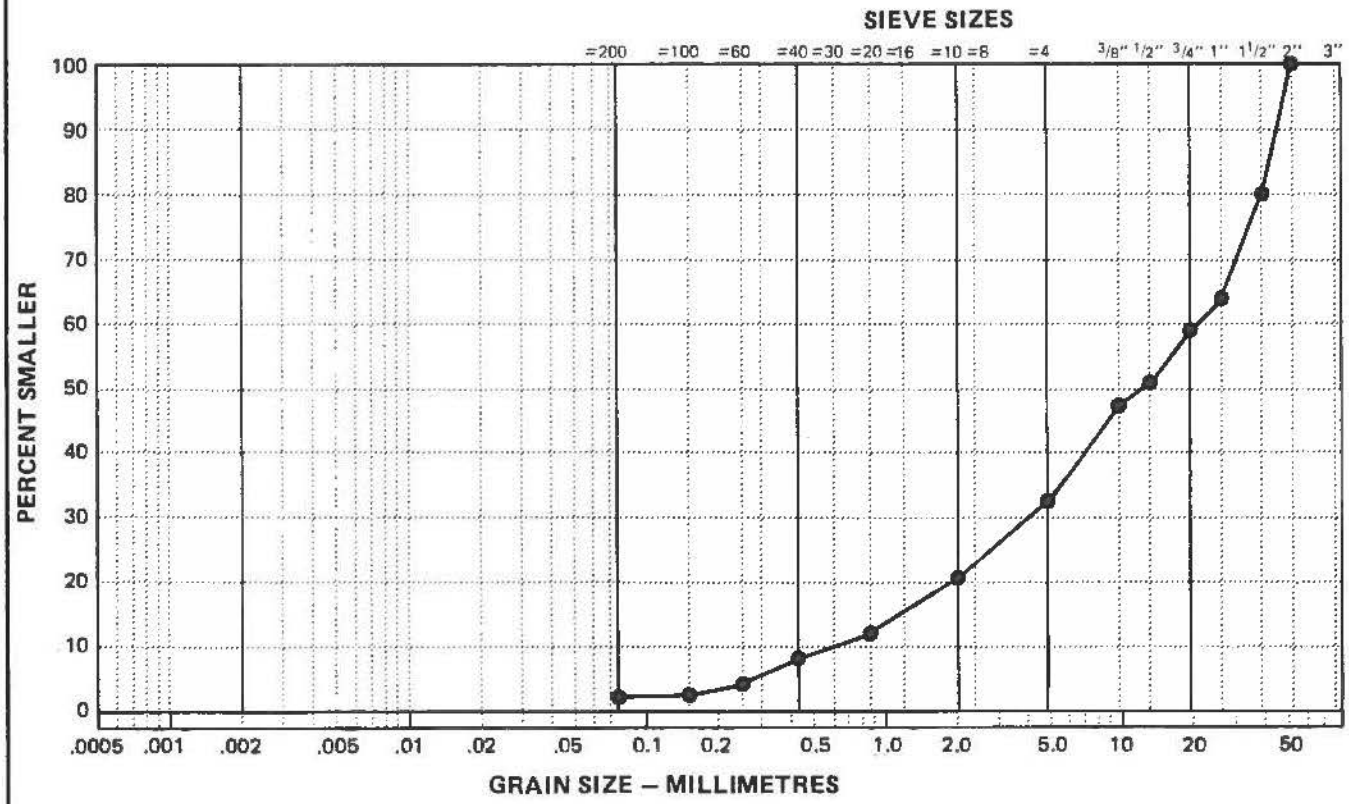
Cc: 1.2

Natural Moisture Content: 1.4 %

Remarks: Gravel 66.7%
Sand 31.1%
Silt 3.2%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	80.4
1"	63.6
3/4"	58.8
3/8"	46.7
No. 4	33.3
No. 10	20.7
No. 20	12.3
No. 40	6.5
No. 60	4.1
No. 100	3.0
No. 200	2.2

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-016E

Depth: 4.0 m

Soil Description: POORLY GRADED SAND WITH SILT AND GRAVEL

Cu: 47.0 (SP/SM)

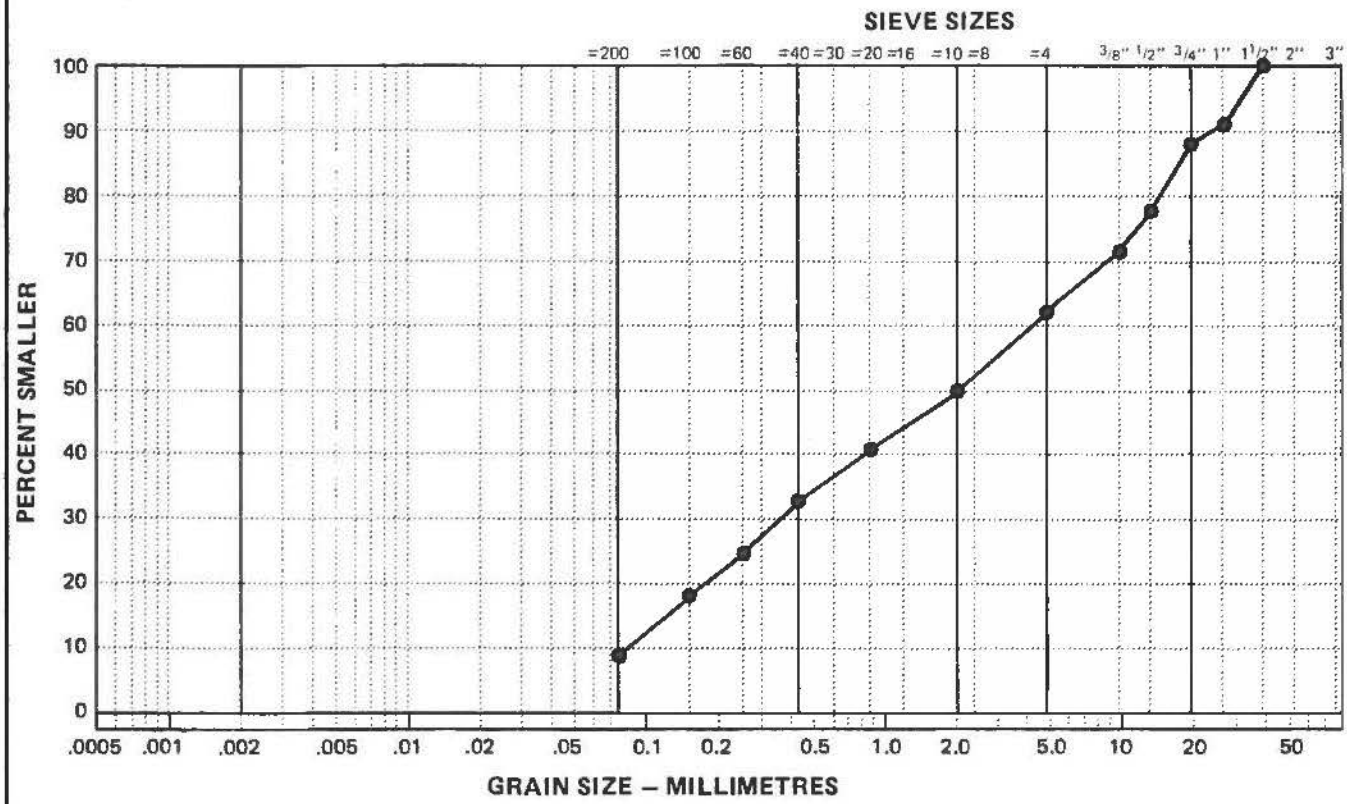
Cc: 0.3

Natural Moisture Content: 2.3 %

Remarks: Gravel 38.5%
Sand 53.6%
Silt 7.9%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	91.4
3/4"	86.5
3/8"	72.0
No. 4	61.5
No. 10	50.0
No. 20	41.1
No. 40	32.9
No. 60	25.4
No. 100	16.8
No. 200	7.9

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG - TRANSPORTATION ENG.	BOREHOLE No: 92-017E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201-10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768443.00 E643978.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						GRASS AND TEA GROUND COVER
						SILT WITH GRAVEL-seasonally frozen, brown
						WELL GRADED GRAVEL WITH SAND-trace of silt, rootlets to 1.3 m, gravel is subangular, up to 100 mm in size, some siltier pockets, seasonally frozen, olive brown
		1		GW		
-1.0		2		GW		
						POORLY GRADED GRAVEL WITH SAND-trace of silt, occasional cobble, maximum size 150 mm, 5% over 100 mm, damp, medium brown
-2.0		3		GP/GM		-occasional siltier pockets throughout
-3.0		4		GW		
						-200 m thick SAND WITH SILT lens at 3.6 m -gravel is cleaner and darker brown
-4.0		5		GP		-very little sloughing along testpit walls
						END OF TESTPIT 4.5 m
-5.0						
-6.0						
7.0						

STANDARD PENETRATION 10 20 30 40; PLASTIC M.C. LIQUID 10 20 30 40; PERCENT GRAVEL 20 40 60 80; PERCENT SAND 20 40 60 80; PERCENT SILT OR FINES 20 40 60 80; PERCENT CLAY 20 40 60 80

DEPTH (ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.5 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-017E

Depth: 0.6 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 30

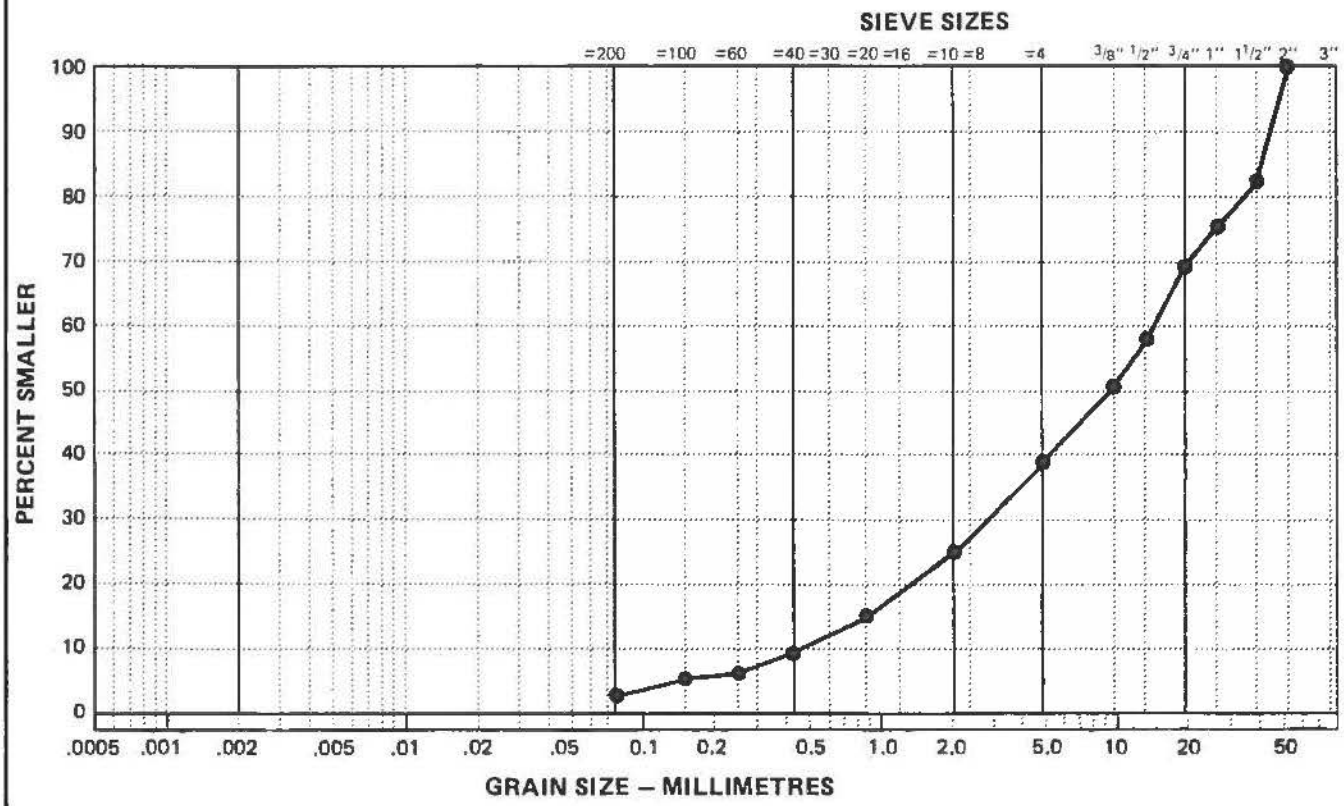
Cc: 1.2

Natural Moisture Content: 2.6 %

Remarks: Gravel 62.3%
Sand 34.3%
Silt 3.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	82.1
1"	75.5
3/4"	69.2
3/8"	50.8
No. 4	37.7
No. 10	24.7
No. 20	15.4
No. 40	9.1
No. 60	6.4
No. 100	4.8
No. 200	3.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-017E

Depth: 1.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

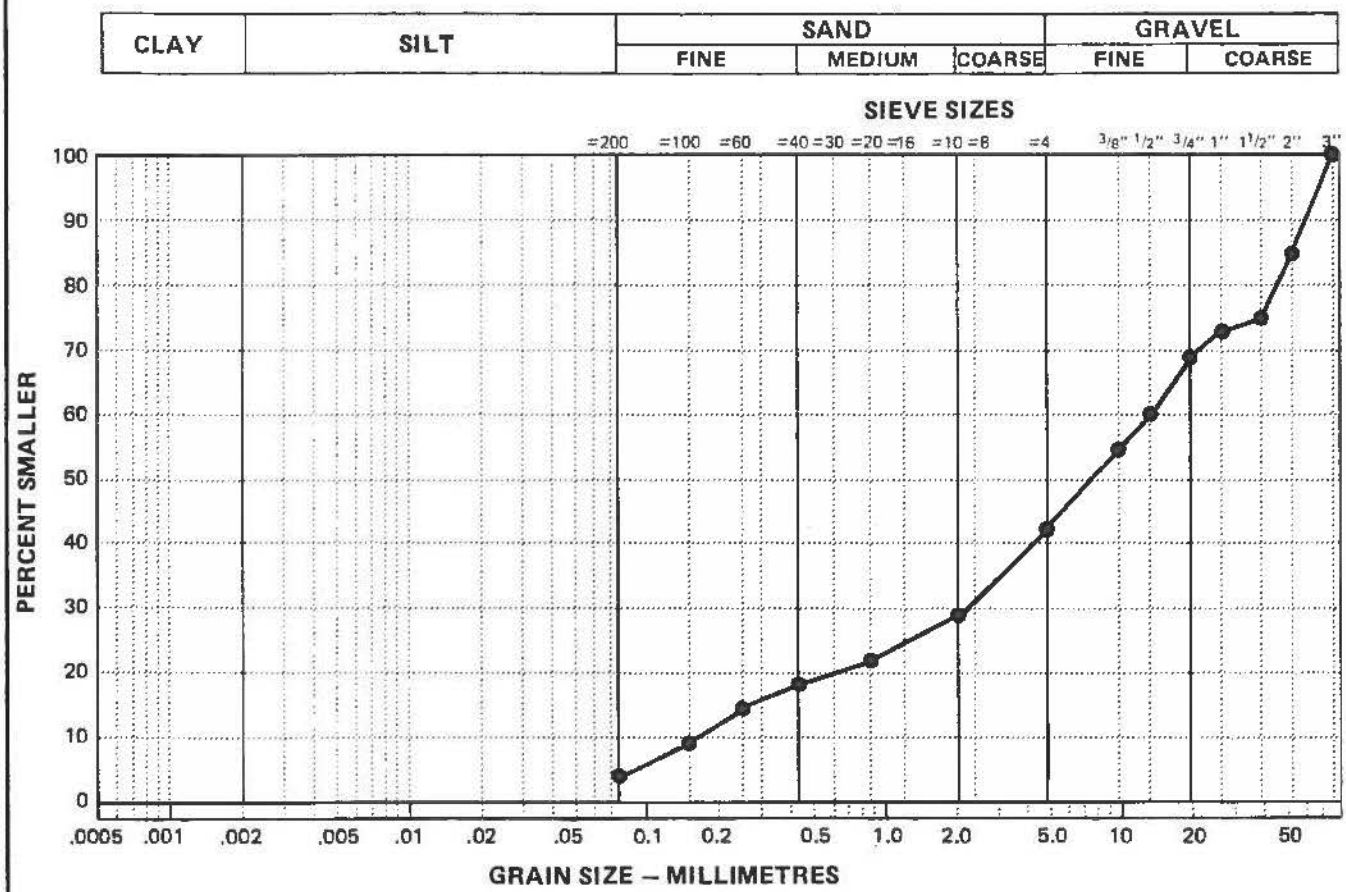
Cu: 78

Cc: 2.3

Natural Moisture Content: 1.4 %

Remarks: Gravel 38.5%
Sand 37.8%
Silt 3.7%

SIEVE	PERCENTAGE PASSING
3"	100.0
2"	84.4
1 1/2"	74.8
1"	72.9
3/4"	69.4
3/8"	35.0
No. 4	41.5
No. 10	29.3
No. 20	22.0
No. 40	17.2
No. 60	13.5
No. 100	8.8
No. 200	3.7



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-017E

Depth: 2.0 m

Soil Description: POORLY GRADED GRAVEL WITH SILT AND SAND

Cu: 43 (GP/GM)

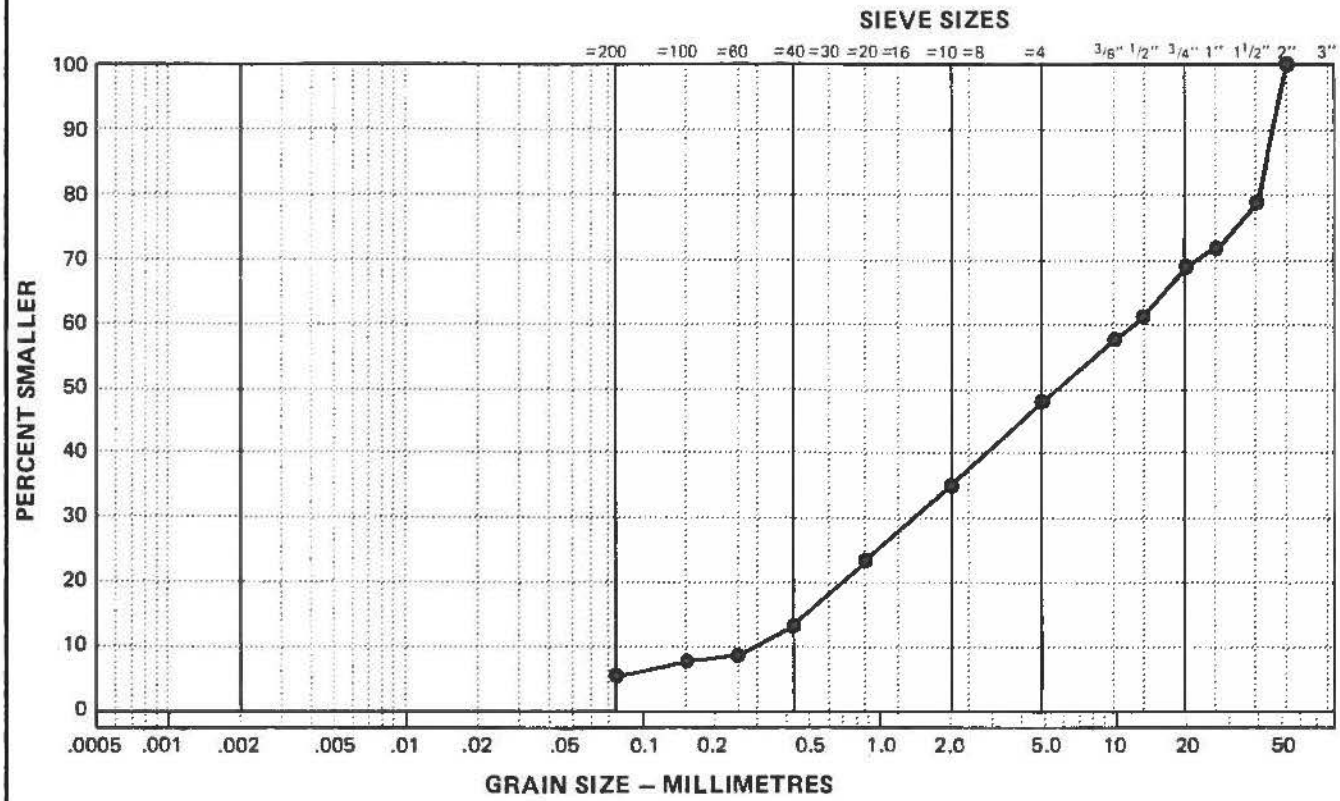
Cc: 0.6

Natural Moisture Content: 1.8 %

Remarks: Gravel 53.3%
Sand 41.4%
Silt 5.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	78.4
1"	72.3
3/4"	69.0
3/8"	56.7
No. 4	46.7
No. 10	34.7
No. 20	22.9
No. 40	12.8
No. 60	8.4
No. 100	6.6
No. 200	5.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-017E

Depth: 3.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 37

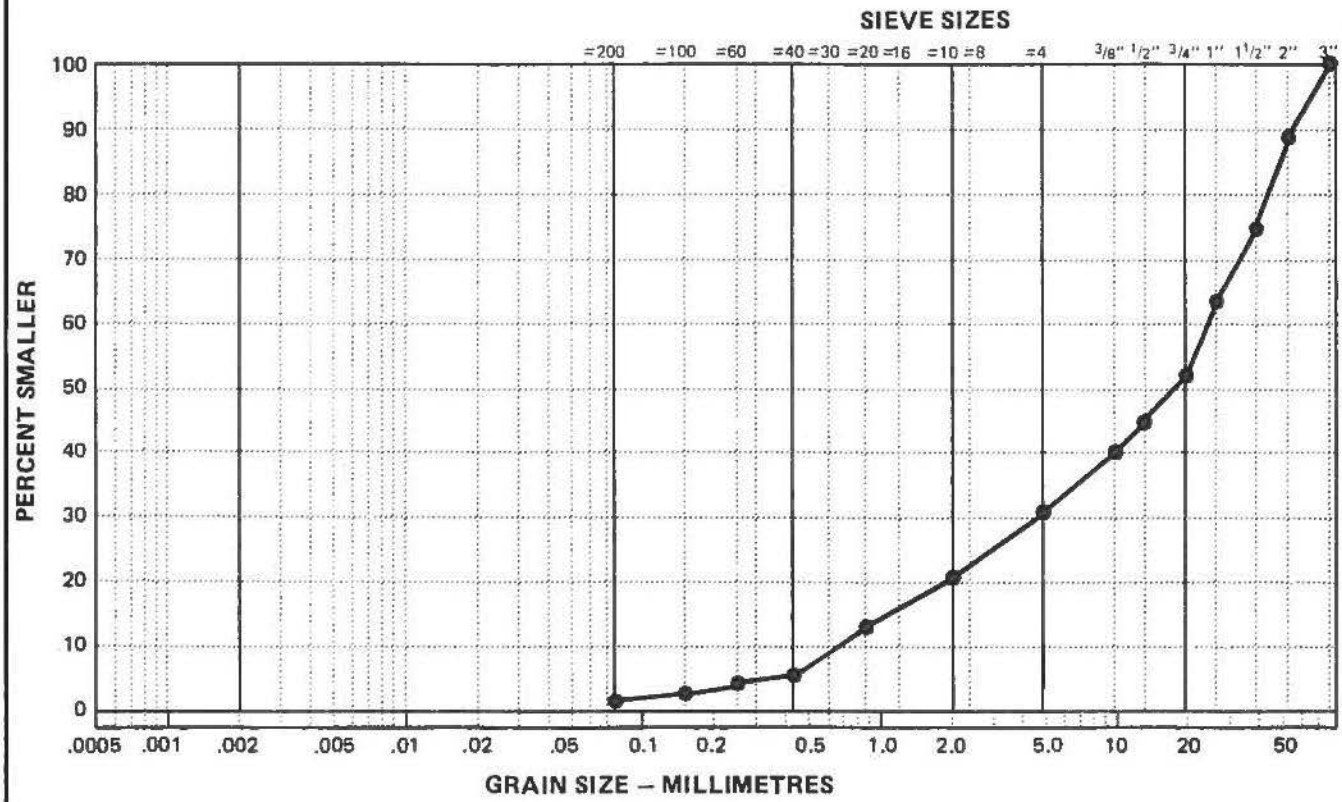
Cc: 1.2

Natural Moisture Content: 1.3 %

Remarks: Gravel 69.4%
Sand 28.9%
Silt 1.7%

SIEVE	PERCENTAGE PASSING
3"	100.0
2"	87.9
1 1/2"	75.2
1"	62.7
3/4"	52.2
3/8"	39.5
No. 4	30.6
No. 10	21.1
No. 20	12.7
No. 40	6.3
No. 60	3.6
No. 100	2.4
No. 200	1.7

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-017E

Depth: 4.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 32

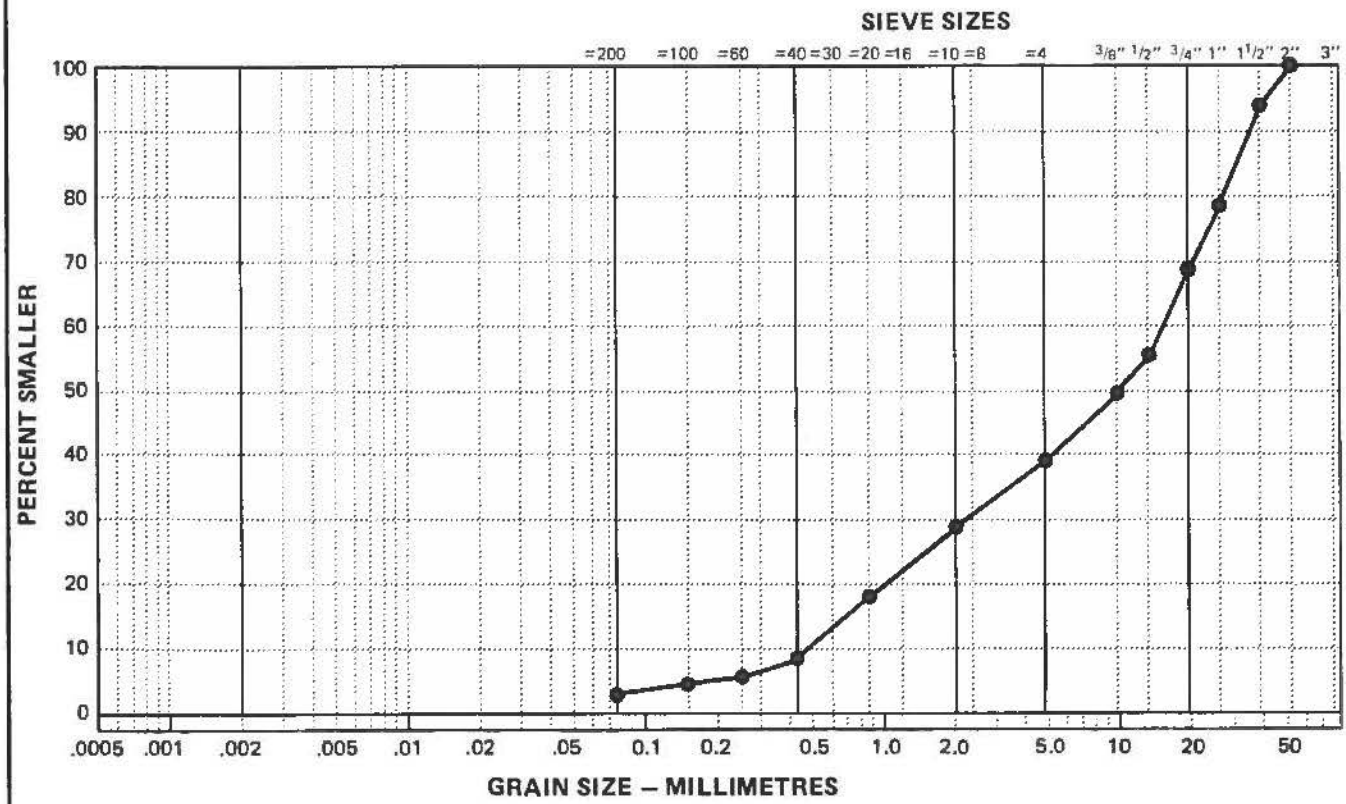
Cc: 0.7

Natural Moisture Content: 1.8 %

Remarks: Gravel 60.9%
Sand 35.7%
Silt 3.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	93.9
1"	76.8
3/4"	67.8
3/8"	49.6
No. 4	39.1
No. 10	29.0
No. 20	17.1
No. 40	7.7
No. 60	5.0
No. 100	4.0
No. 200	3.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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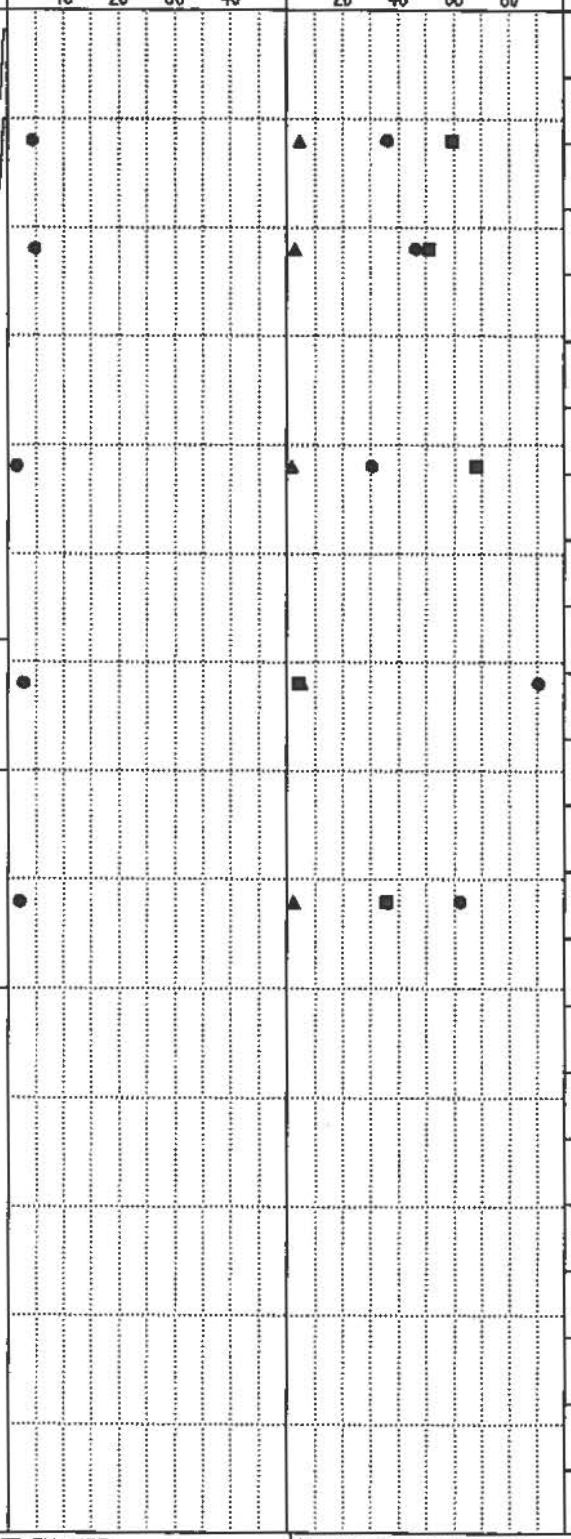
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92–018E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201–10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768517.00 E644046.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						SPARSE GRASS GROUND COVER ORGANICS AND SILT–seasonally frozen, dark brown
		1		GP		SILT WITH GRAVEL–some sand, rootlets to 0.7 m, seasonally frozen, greyish brown
1.0		2		GP		POORLY GRADED GRAVEL WITH SAND–trace of silt, occasional cobble to 150 mm maximum size, less than 5% over 100 mm, gravel is well graded, sand is medium to coarse, seasonally frozen to 2.0 m, discontinuous silty lenses of gravel at 1.3 m and 2.7 m
2.0		3		GW		
3.0		4		SP/SM		POORLY GRADED SAND WITH SILT–medium to fine grained, damp, brown
						POORLY GRADED SAND WITH GRAVEL–trace of silt, medium to coarse, damp, brown
4.0		5		SP		
						END OF TESTPIT 4.5 m
5.0						
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.5 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-018E

Depth: 0.5 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 71.4

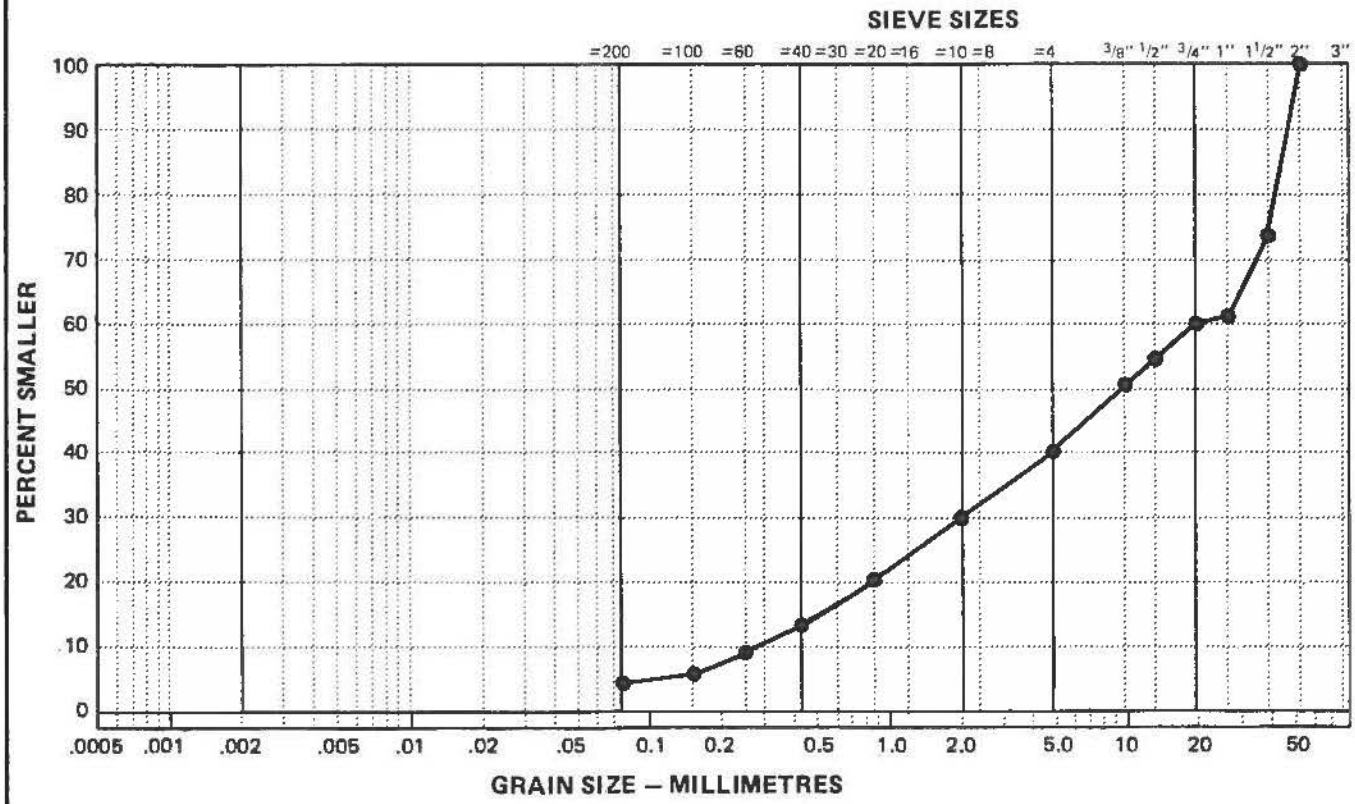
Cc: 0.7

Natural Moisture Content: 4.4 %

Remarks: Gravel 59.6%
Sand 35.8%
Silt 4.6%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	72.7
1"	60.8
3/4"	60.0
3/8"	50.7
No. 4	40.4
No. 10	29.7
No. 20	20.9
No. 40	13.1
No. 60	8.7
No. 100	6.4
No. 200	4.6

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-018E

Depth: 1.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

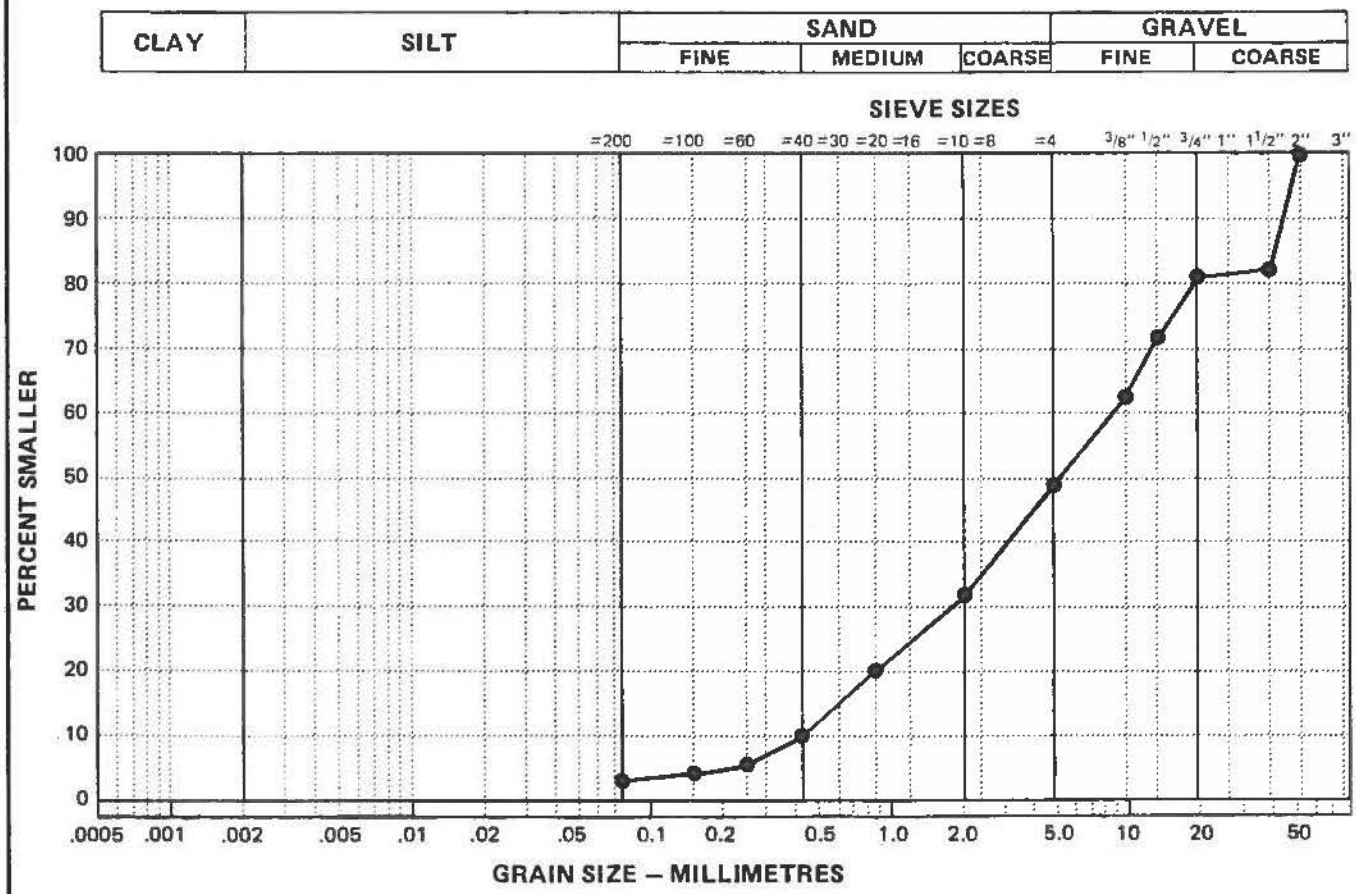
Cu: 20

Cc: 0.8

Natural Moisture Content: 4.8 %

Remarks: Gravel 51.2%
Sand 46.0%
Silt 2.8%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	82.4
1"	
3/4"	80.7
3/8"	63.2
No. 4	48.8
No. 10	32.1
No. 20	19.7
No. 40	10.2
No. 60	5.8
No. 100	3.9
No. 200	2.8



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-018E

Depth: 2.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 21.4

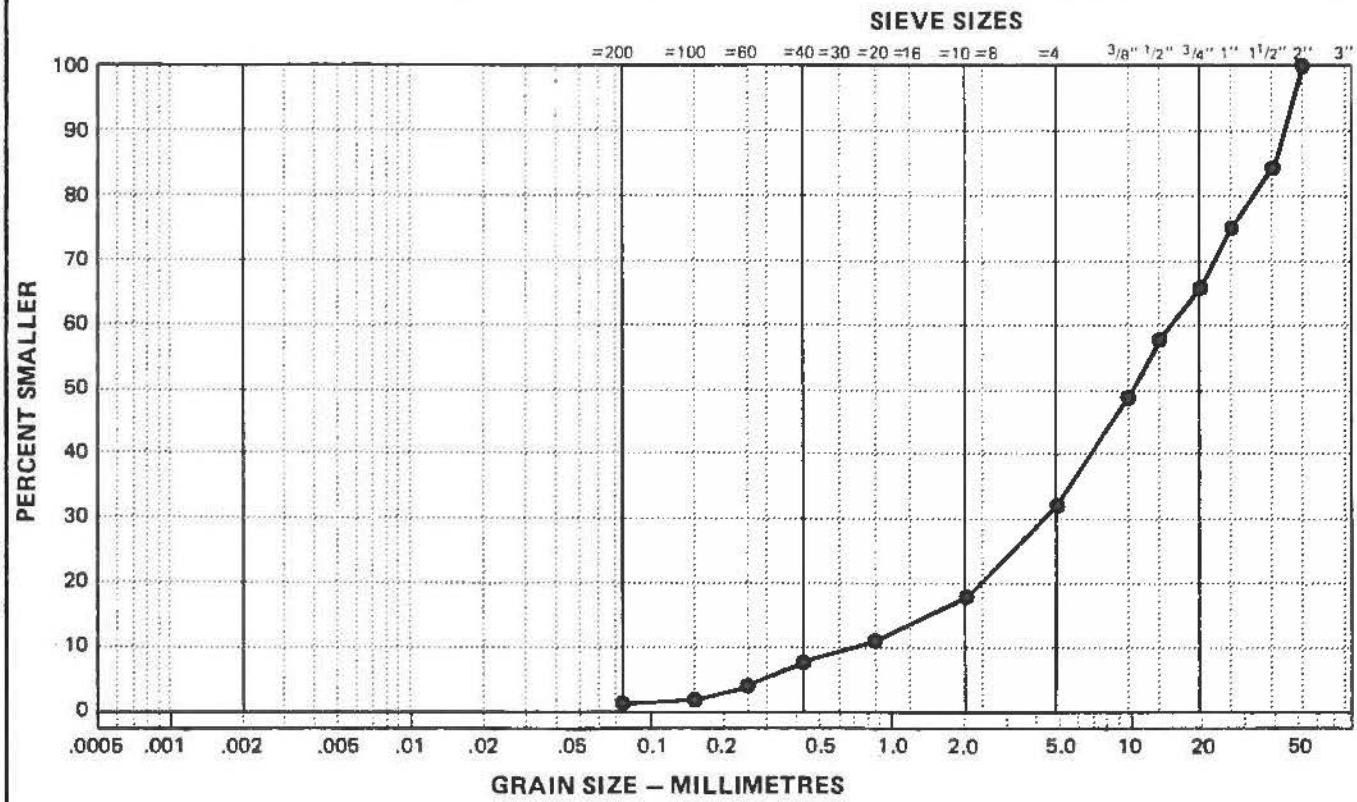
Cc: 1.9

Natural Moisture Content: 1.5 %

Remarks: Gravel 68.0%
Sand 30.3%
Silt 1.7%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	83.6
1"	75.5
3/4"	65.6
3/8"	48.8
No. 4	32.0
No. 10	17.7
No. 20	10.7
No. 40	6.7
No. 60	3.6
No. 100	2.3
No. 200	1.7

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-018E

Depth: 3.0 m

Soil Description: POORLY GRADED SAND WITH SILT (SP/SM)

Cu: 3.2

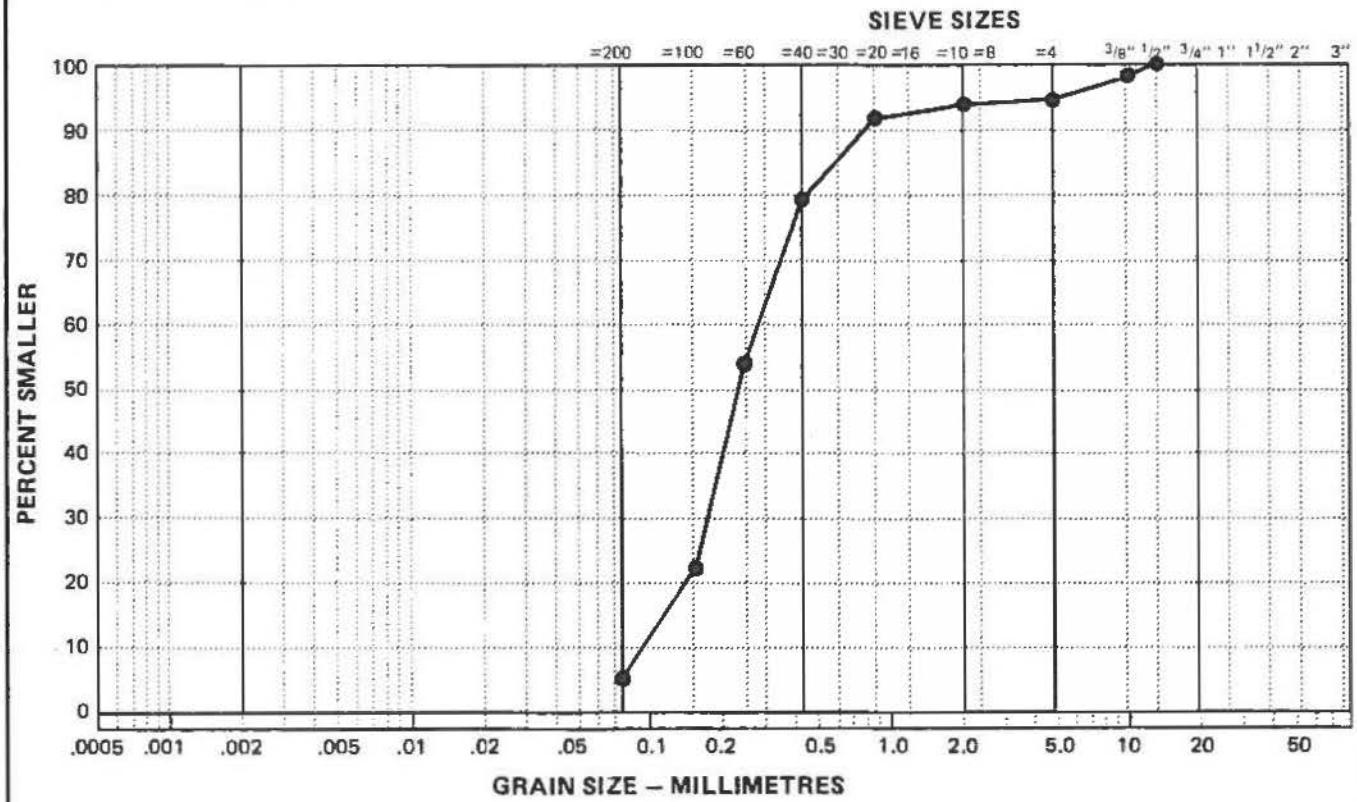
Cc: 1.4

Natural Moisture Content: 2.7 %

Remarks: Gravel 4.2%
Sand 90.4%
Silt 5.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	97.1
No. 4	95.8
No. 10	94.6
No. 20	92.3
No. 40	78.5
No. 60	54.0
No. 100	22.0
No. 200	5.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-018E

Depth: 4.0 m

Soil Description: POORLY GRADED SAND WITH GRAVEL (SP)

Cu: 8.9

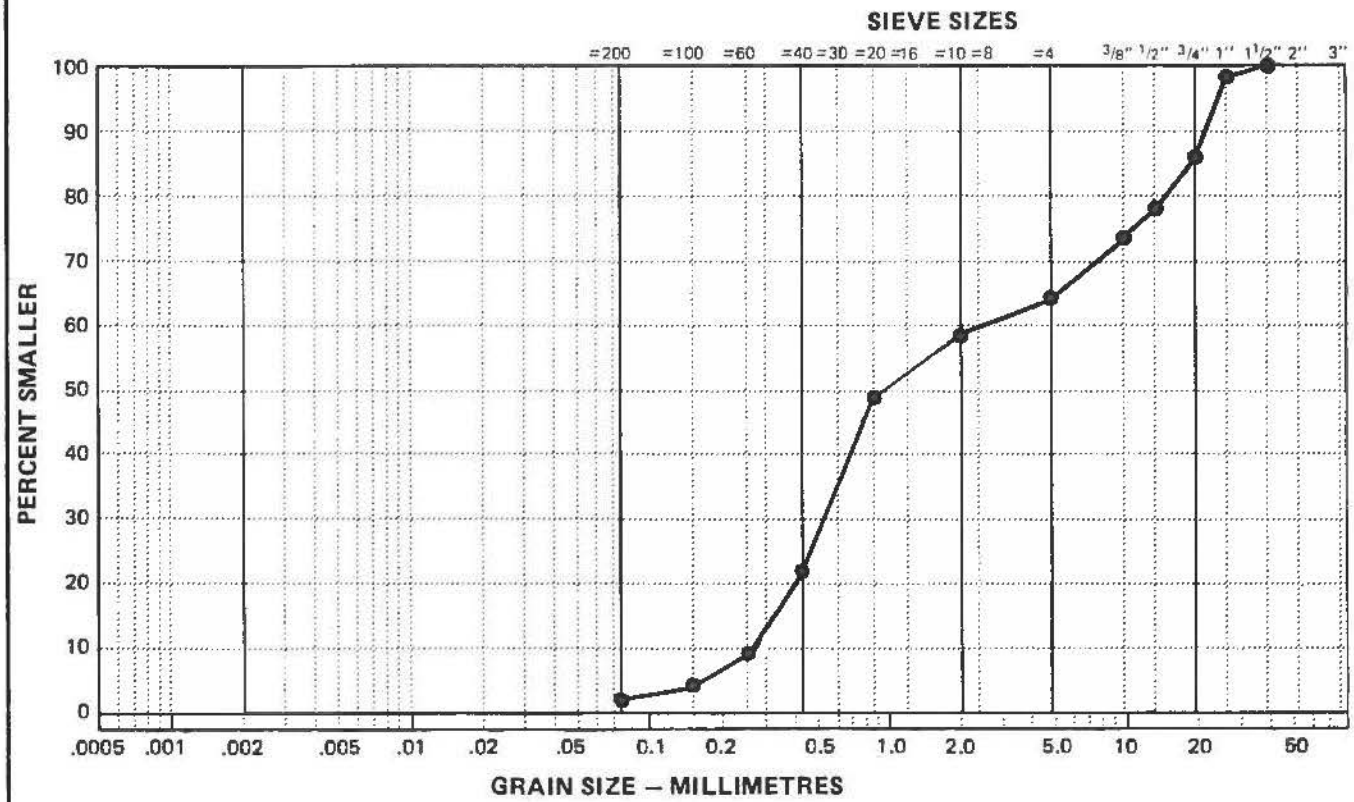
Cc: 0.4

Natural Moisture Content: 2.1 %

Remarks: Gravel 35.7%
Sand 62.0%
Silt 2.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	96.5
3/4"	86.1
3/8"	72.7
No. 4	64.3
No. 10	58.4
No. 20	48.8
No. 40	22.0
No. 60	9.0
No. 100	4.0
No. 200	2.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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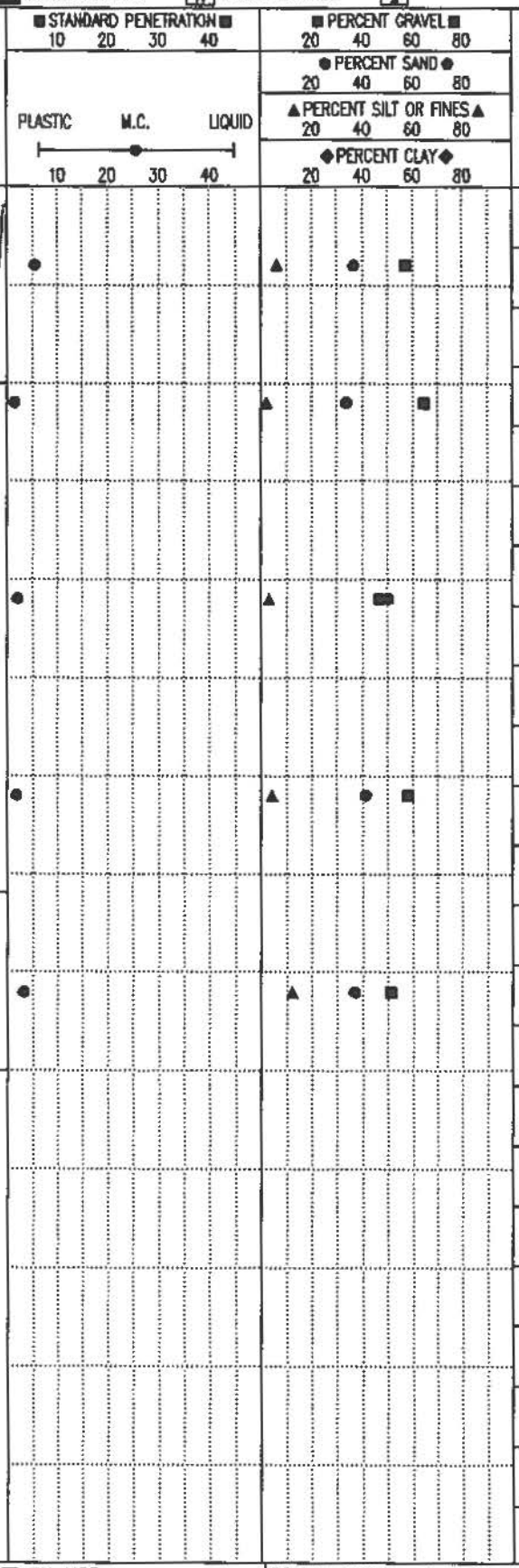
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG - TRANSPORTATION ENG.	BOREHOLE No: 92-019E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201-10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768572.00 E644108.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						SPARSE GRASS GROUND COVER
						ORGANIC SILT–rootlets throughout, seasonally frozen, olive brown
	■	1		GP/GM		POORLY GRADED GRAVEL WITH SILT AND SAND–rootlets to 1.3 m, subangular, up to 100 mm maximum size, seasonally frozen to 1.0 m, damp, medium brown
1.0	■	2		GP		POORLY GRADED GRAVEL WITH SAND–occasional cobble to 150 mm, gravel is well graded, sand is well graded, damp, medium greyish brown
2.0	■	3		SP		–finer from 2.0 – 2.5 m
3.0	■	4		GP		–siltier below 3.2 m
						SILTY GRAVEL WITH SAND–gravel is fine to 40 mm, moist, olive
4.0	■	5		GM		
						END OF TESTPIT 4.5 m
5.0						
6.0						
7.0						



DEPTH (ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.5 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-019E

Depth: 0.5 m

Soil Description: POORLY GRADED GRAVEL WITH SILT & SAND (GP/GM)

Cu: 115

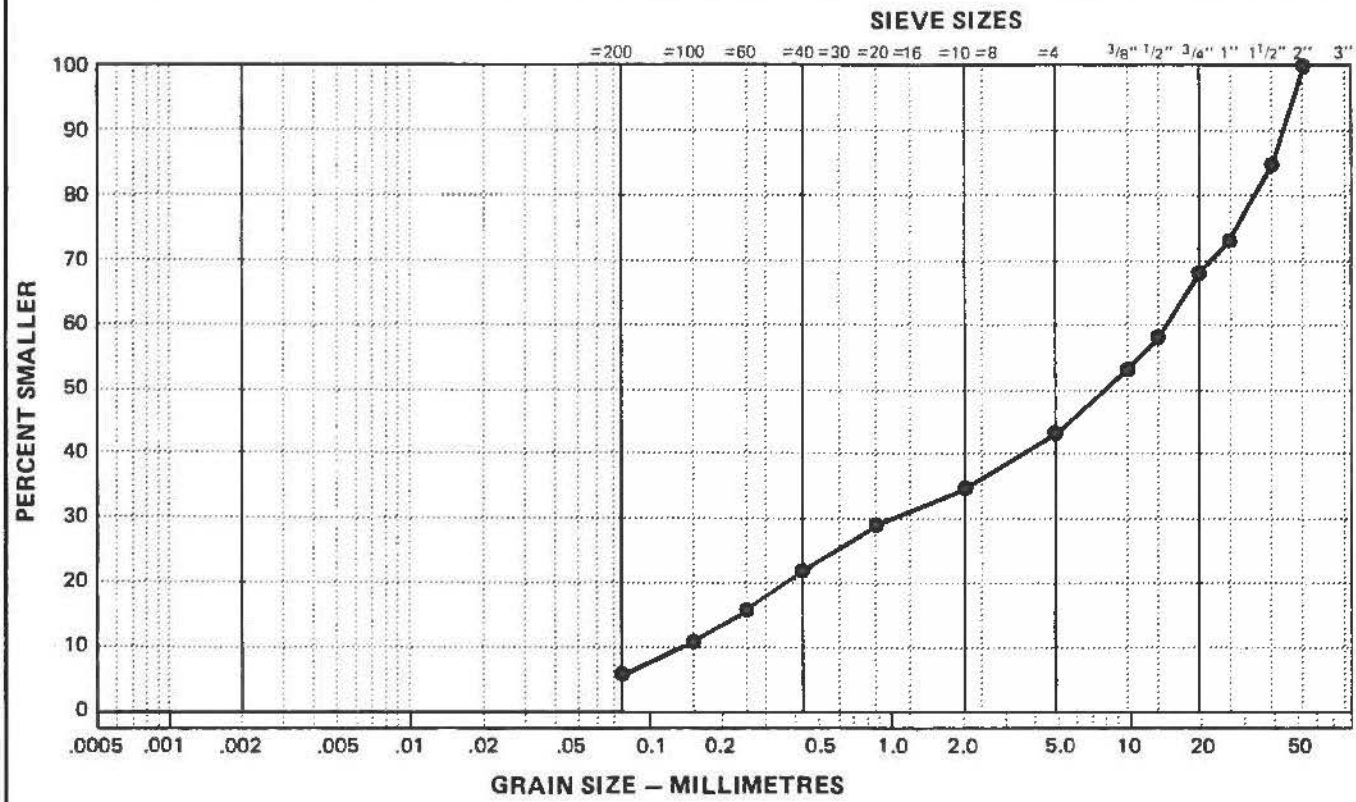
Cc: 0.5

Natural Moisture Content: 5.5 %

Remarks: Gravel 57.1%
Sand 36.6%
Silt 6.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	85.0
1"	73.2
3/4"	68.1
3/8"	53.4
No. 4	42.9
No. 10	35.3
No. 20	29.1
No. 40	22.2
No. 60	15.6
No. 100	10.5
No. 200	6.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-019E

Depth: 1.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 40

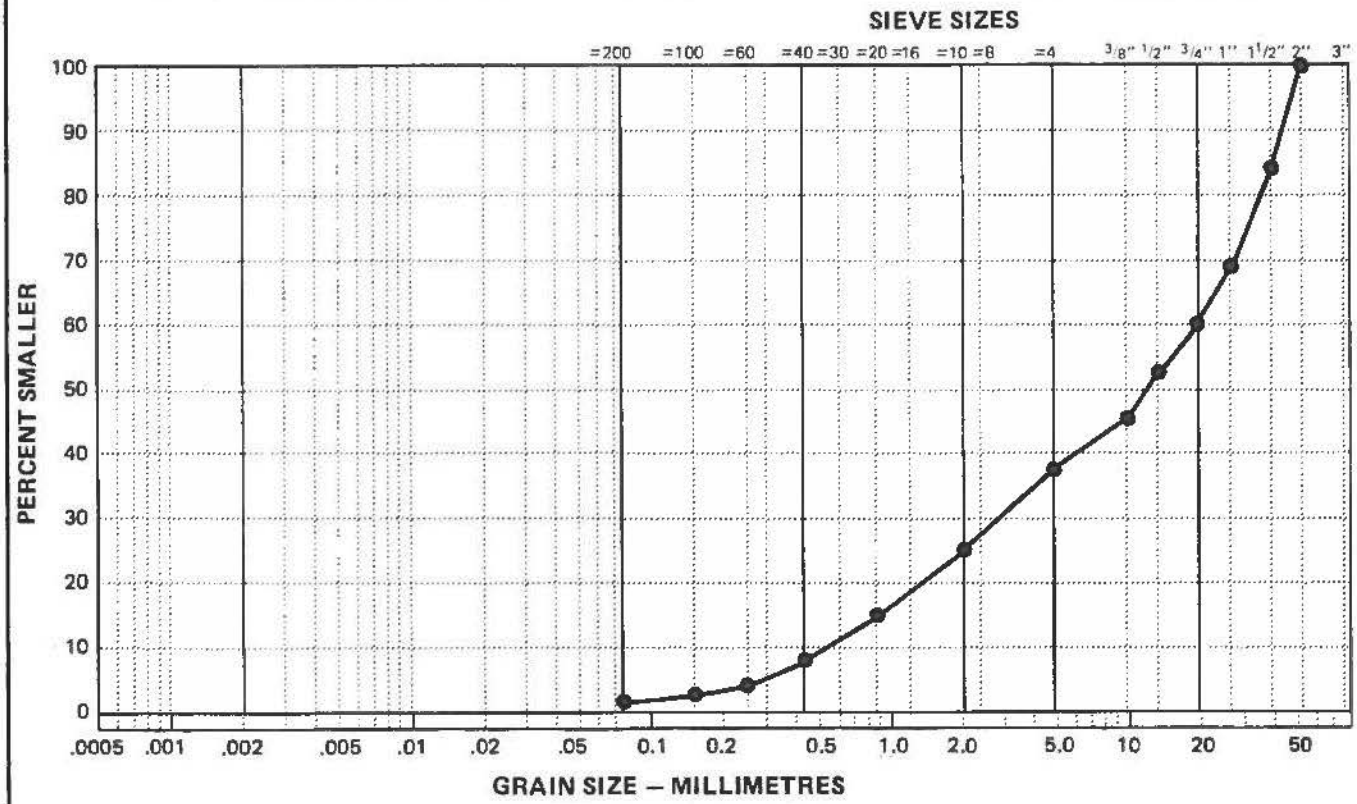
Cc: 0.9

Natural Moisture Content: 1.5 %

Remarks: Gravel 64.4%
Sand 33.6%
Silt 2.0%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	83.9
1"	69.4
3/4"	60.4
3/8"	45.8
No. 4	35.6
No. 10	24.9
No. 20	15.4
No. 40	7.9
No. 60	4.4
No. 100	2.7
No. 200	2.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-019E

Depth: 2.0 m

Soil Description: POORLY GRADED SAND WITH GRAVEL (SP)

Cu: 16.3

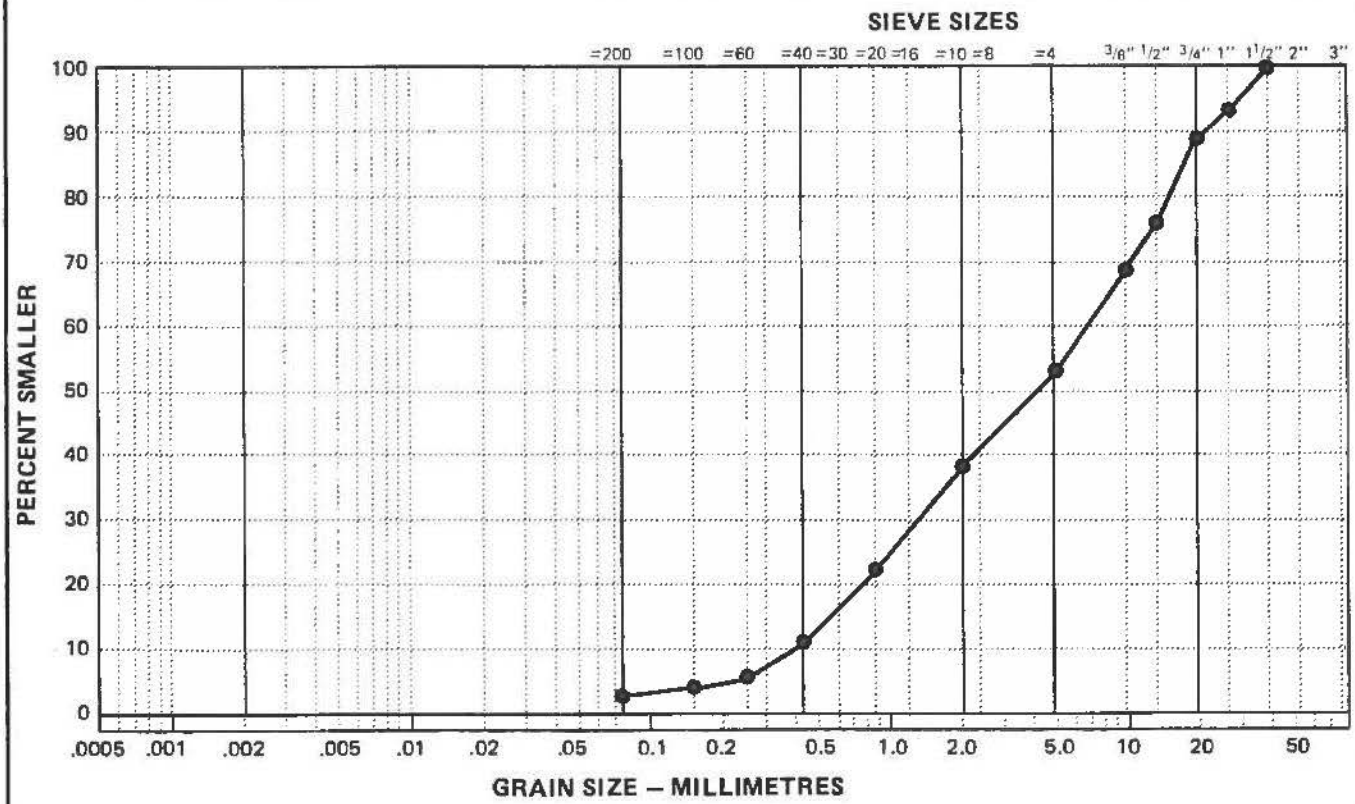
Cc: 0.9

Natural Moisture Content: 2.0 %

Remarks: Gravel 46.6%
Sand 50.2%
Silt 3.2%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	92.7
3/4"	88.6
3/8"	68.5
No. 4	53.4
No. 10	36.8
No. 20	22.2
No. 40	11.4
No. 60	6.4
No. 100	4.2
No. 200	3.2

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-019E

Depth: 3.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

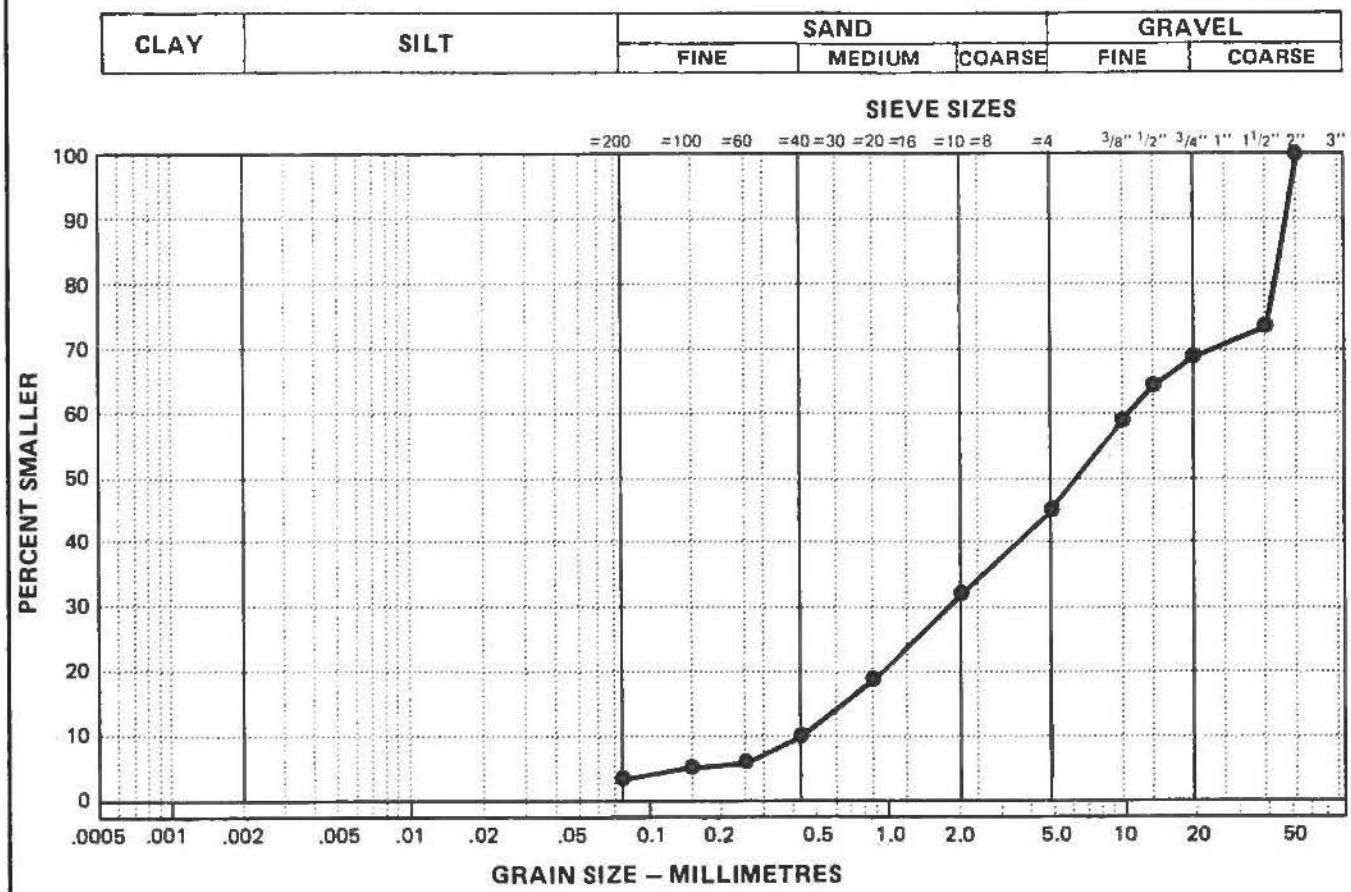
Cu: 22.2

Cc: 0.7

Natural Moisture Content: 1.8 %

Remarks: Gravel 58.1%
Sand 41.1%
Silt 4.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	72.7
1"	
3/4"	69.1
3/8"	58.9
No. 4	45.4
No. 10	31.7
No. 20	19.1
No. 40	9.9
No. 60	6.3
No. 100	4.8
No. 200	4.3



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-019E

Depth: 4.0 m

Soil Description: SILTY GRAVEL WITH SAND (GM)

Cu:

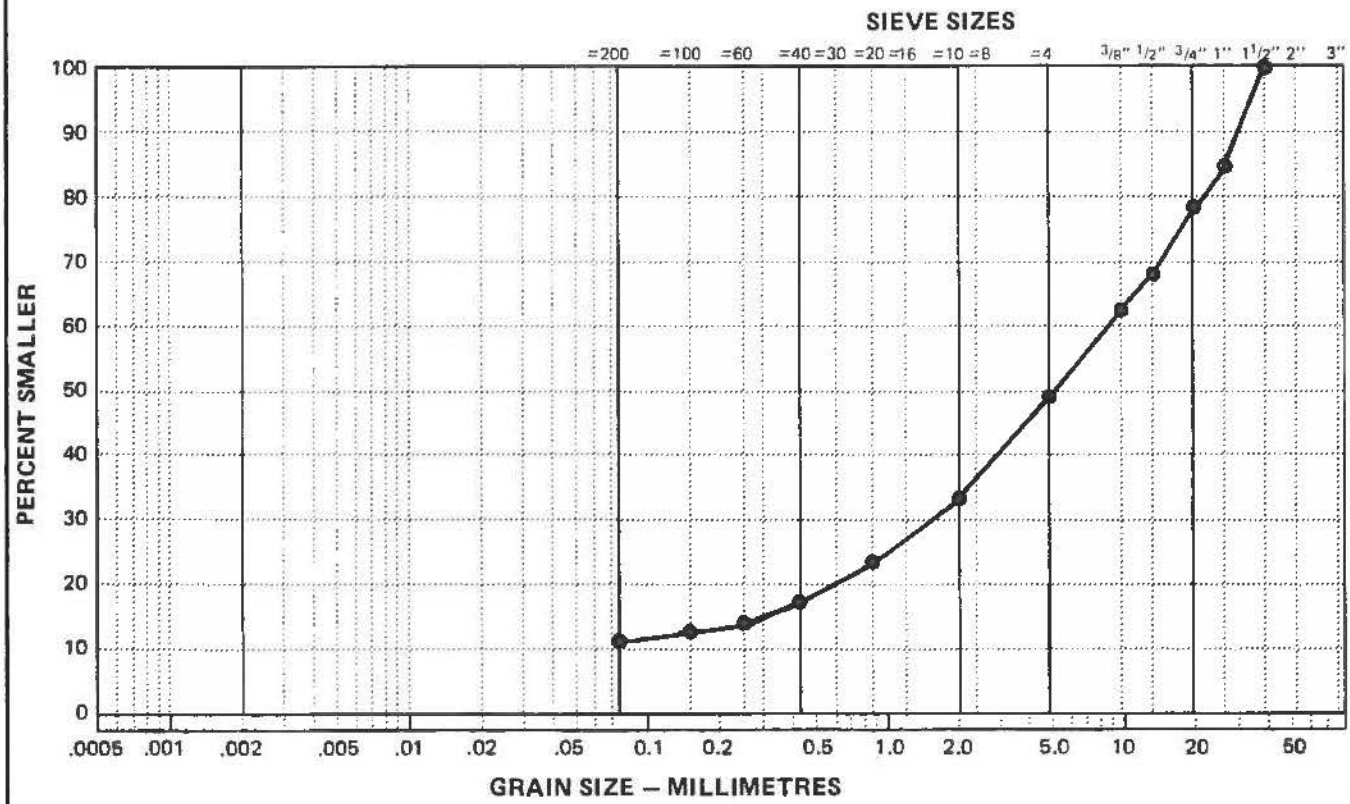
Cc:

Natural Moisture Content: 3.2 %

Remarks: Gravel 51.2%
Sand 36.7%
Silt 12.1%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	84.0
3/4"	78.3
3/8"	62.2
No. 4	48.8
No. 10	33.3
No. 20	23.1
No. 40	16.5
No. 60	13.8
No. 100	12.7
No. 200	12.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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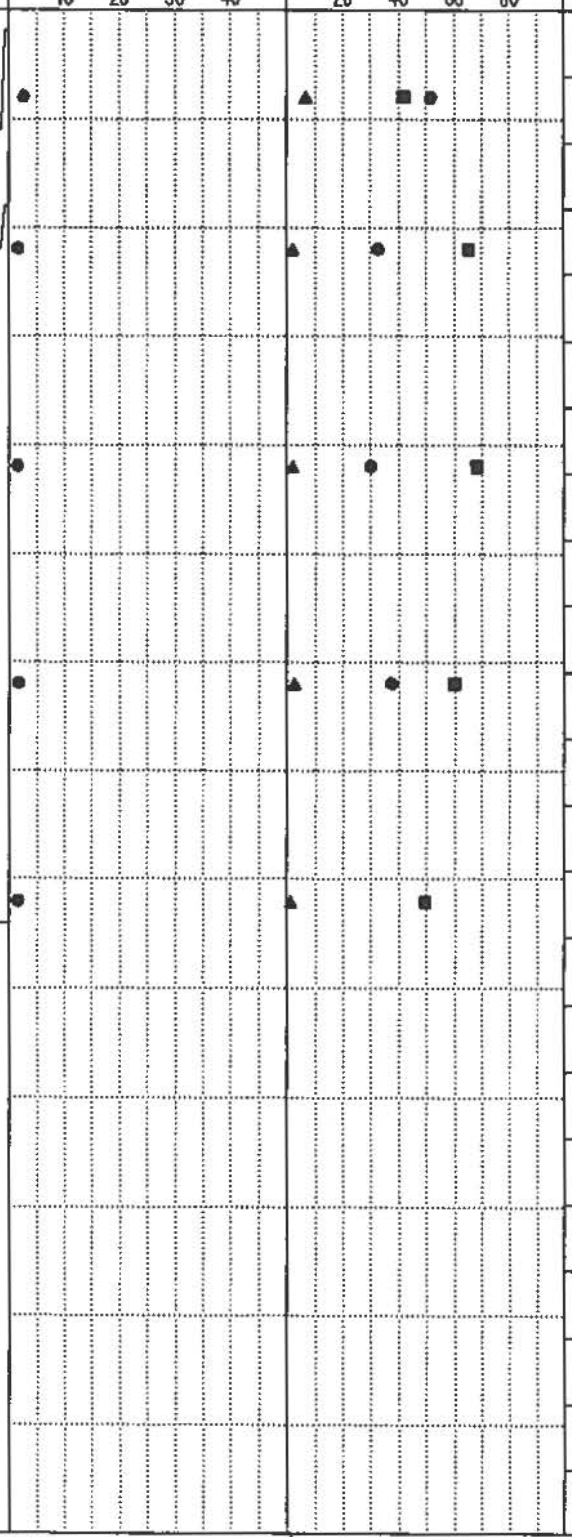
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92–020E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201–10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768724.00 E644176.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						SPARSE GRASS COVER
						SILT WITH SAND AND GRAVEL–rootlets throughout, trace of organics, dark brown
		1		SW/SM		
						WELL GRADED SAND WITH SILT AND GRAVEL–occasional cobble and boulder to 300 mm, rootlets to 0.9 m, olive brown
1.0		2		GW		WELL GRADED GRAVEL WITH SILT AND SAND becoming WELL GRADED GRAVEL WITH SAND below 1.0 m, trace of silt, occasional cobble, subangular up to 50 mm, sand and gravel both well graded, damp, medium brown
2.0		3		GW		
3.0		4		GW		–cleaner and greyish brown below 3.5 m
4.0		5		GW		
						END OF TESTPIT 4.2 m
5.0						
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.2 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-020E

Depth: 0.5 m

Soil Description: WELL GRADED SAND WITH SILT AND GRAVEL (SW/SM)

Cu: 29.4

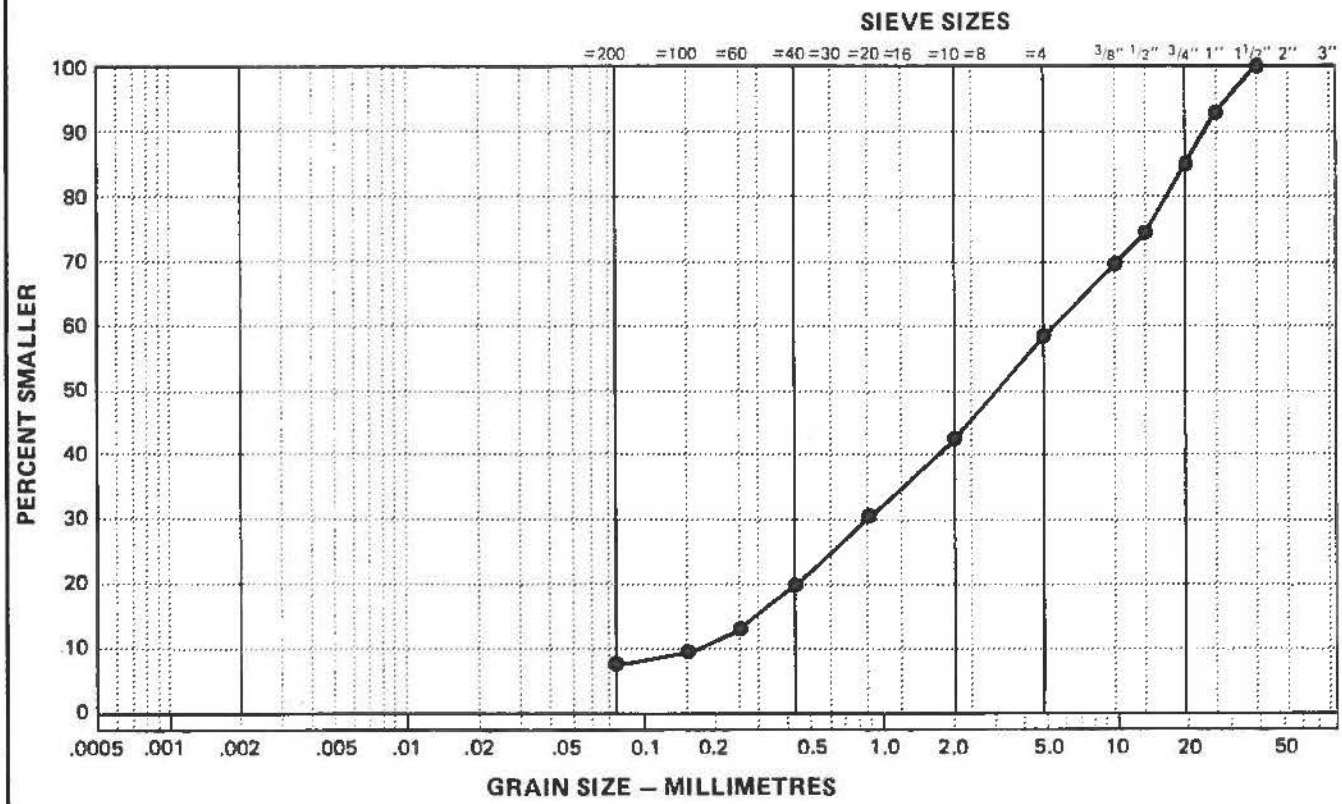
Cc: 1.0

Natural Moisture Content: 2.6 %

Remarks: Gravel 41.8%
Sand 51.5%
Silt 6.7%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	93.0
3/4"	84.7
3/8"	69.6
No. 4	58.2
No. 10	42.9
No. 20	30.5
No. 40	20.2
No. 60	13.4
No. 100	9.5
No. 200	6.7

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-020E

Depth: 1.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 20

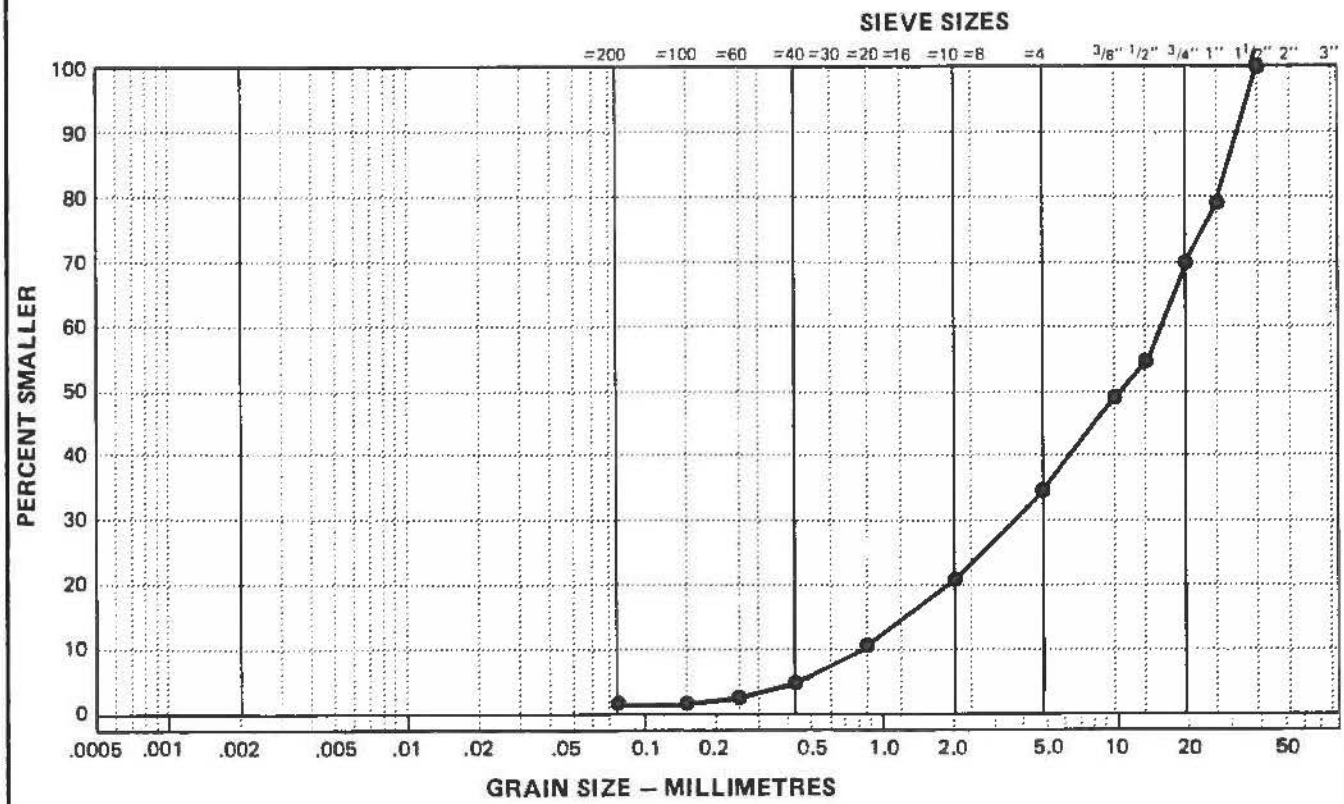
Cc: 1.0

Natural Moisture Content: 1.6 %

Remarks: Gravel 65.3%
Sand 32.6%
Silt 2.1%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	79.1
3/4"	70.3
3/8"	49.2
No. 4	34.7
No. 10	20.5
No. 20	10.6
No. 40	5.3
No. 60	3.4
No. 100	2.6
No. 200	2.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-020E

Depth: 2.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 26.7

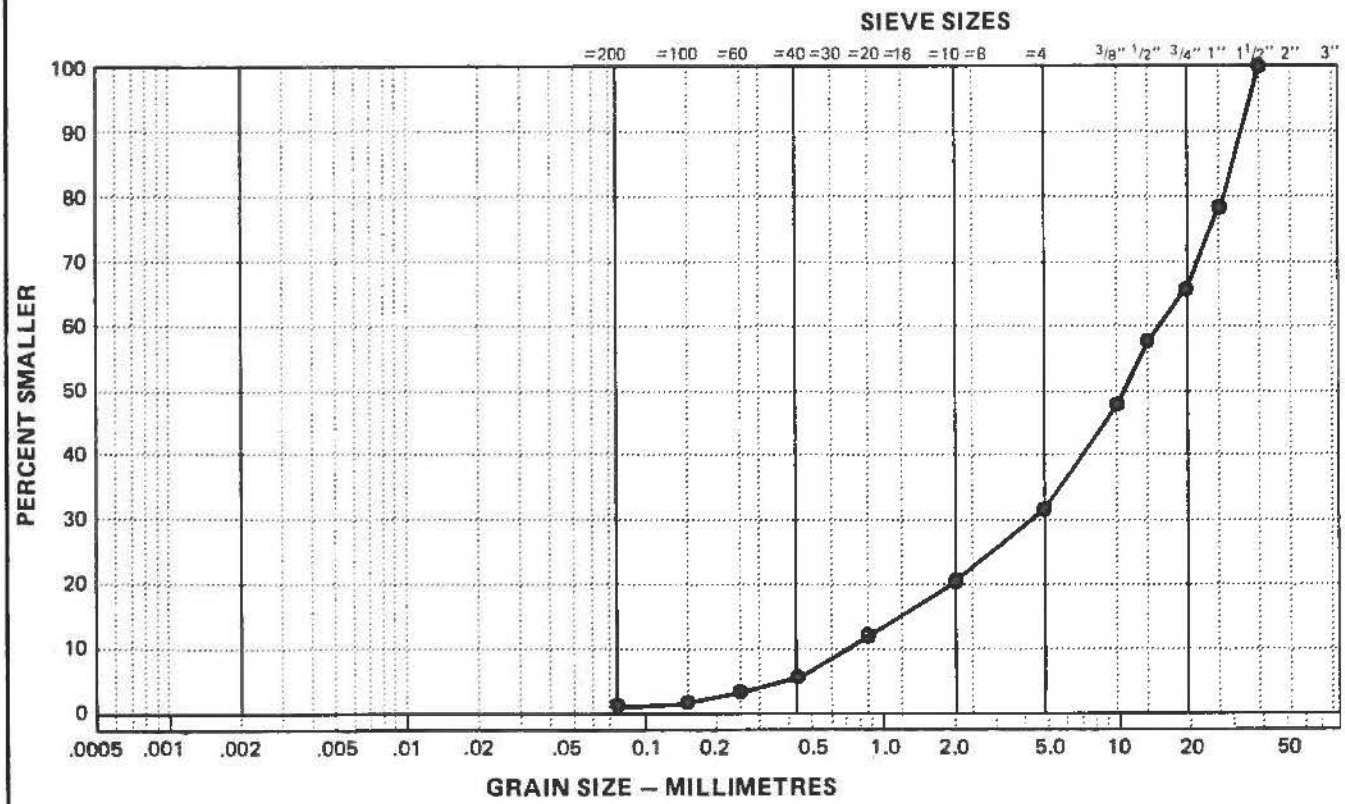
Cc: 1.7

Natural Moisture Content: 1.5 %

Remarks: Gravel 68.1%
Sand 29.8%
Silt 2.1%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	77.1
3/4"	65.6
3/8"	46.6
No. 4	31.9
No. 10	19.7
No. 20	12.0
No. 40	6.4
No. 60	4.0
No. 100	2.9
No. 200	2.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-020E

Depth: 3.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

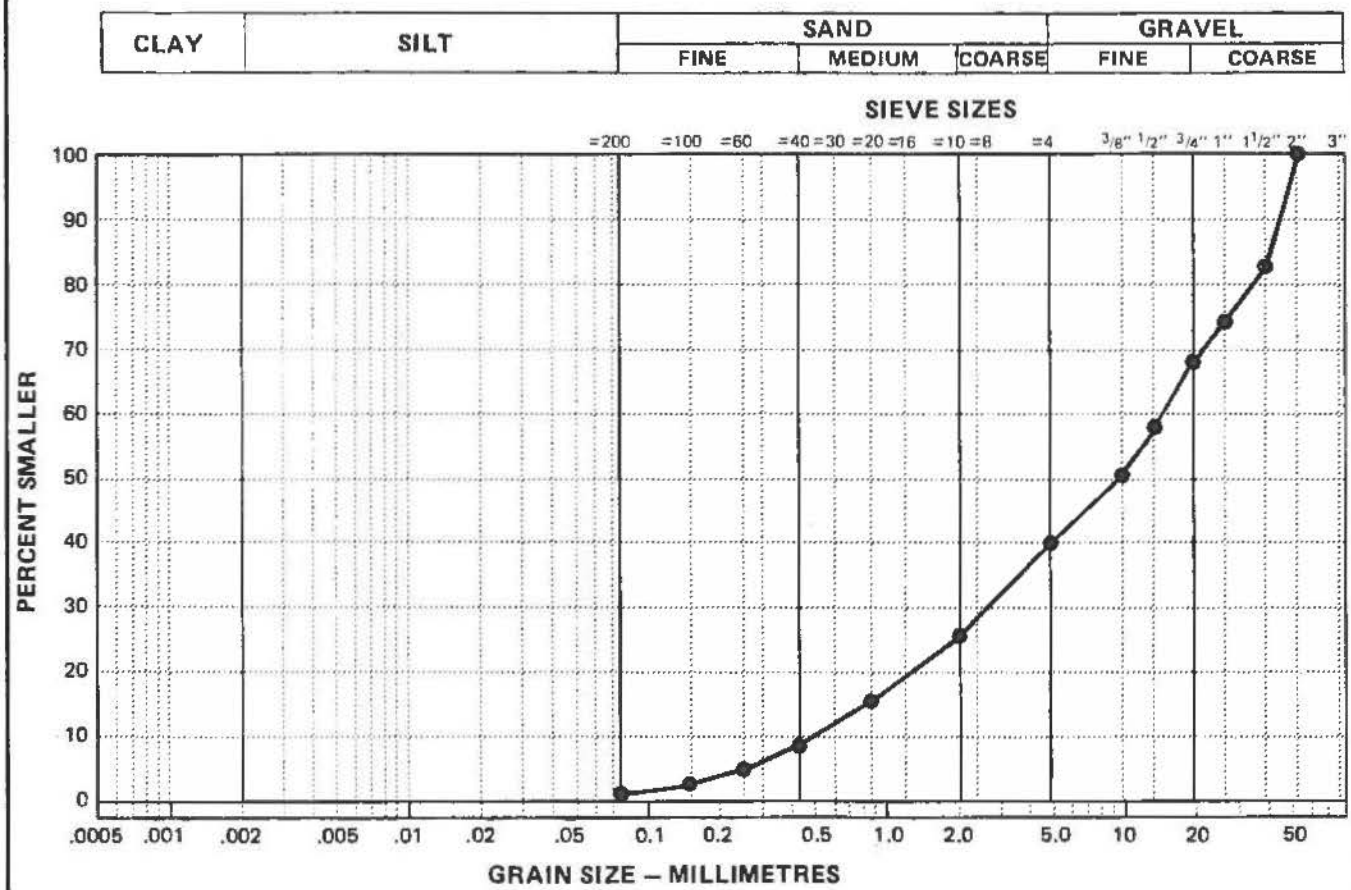
Cu: 30

Cc: 1.2

Natural Moisture Content: 1.6 %

Remarks: Gravel 60.0%
Sand 37.4%
Silt 2.6%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	82.6
1"	74.9
3/4"	67.3
3/8"	51.0
No. 4	40.0
No. 10	26.4
No. 20	15.7
No. 40	8.2
No. 60	4.9
No. 100	3.4
No. 200	2.6



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-020E

Depth: 4.0 m

Soil Description: WELL GRADED GRAVEL AND SAND (GW)

Cu: 8.9

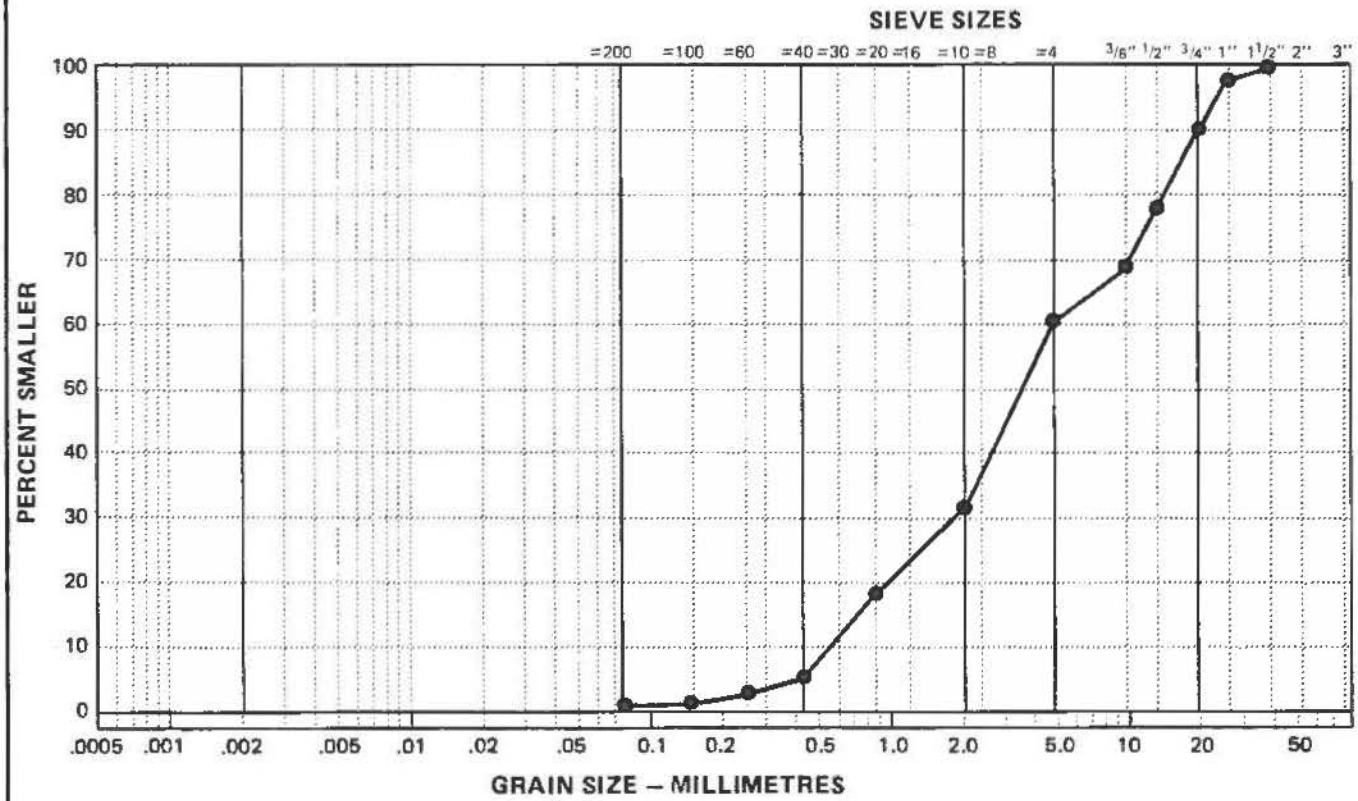
Cc: 1.2

Natural Moisture Content: 1.5 %

Remarks: Gravel 49.4%
Sand 49.3%
Silt 1.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	96.9
3/4"	90.2
3/8"	68.8
No. 4	50.6
No. 10	32.3
No. 20	16.8
No. 40	6.0
No. 60	2.8
No. 100	1.8
No. 200	1.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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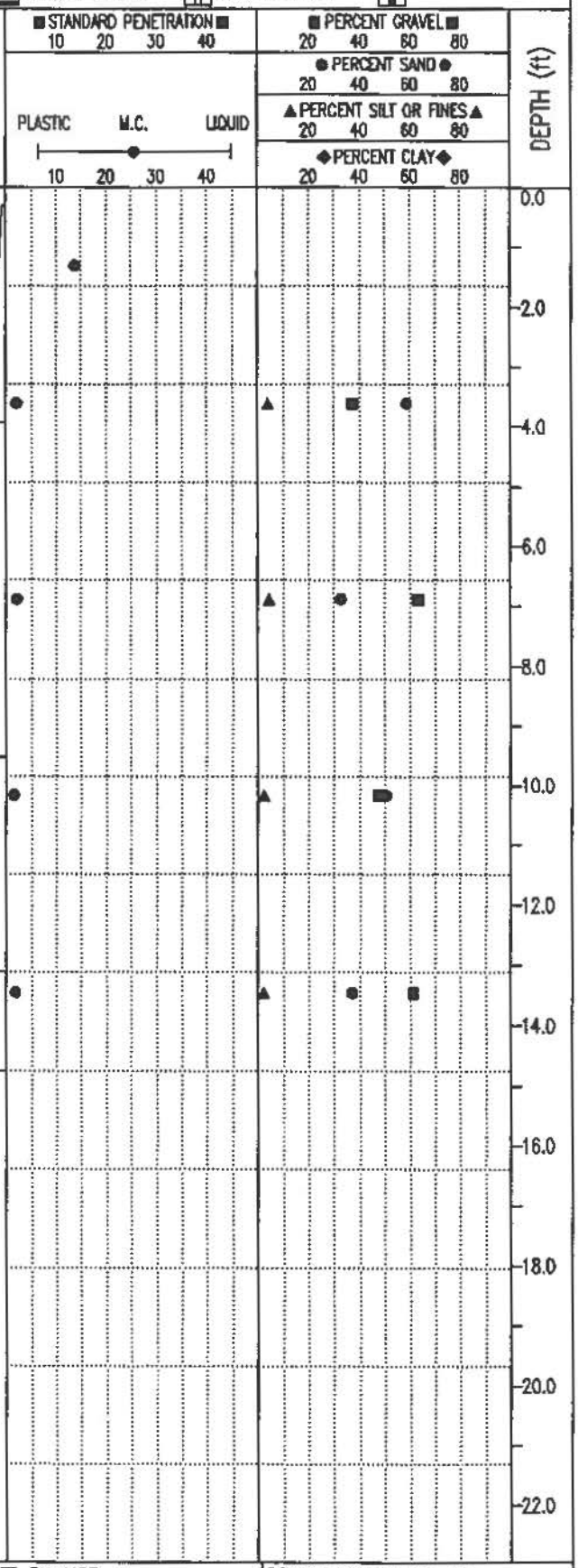
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92–021E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201–10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768968.00 E644160.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						SPARSE GRASS GROUND COVER
						ORGANIC SILT–rootlets throughout, dark brown
		1				POORLY GRADED SAND WITH GRAVEL–rootlets to 1.2 m, seasonally frozen to 0.5 m, damp, medium brown
1.0		2		SP		
						WELL GRADED GRAVEL WITH SAND–cobbles and occasional boulder up to 300 mm maximum size, estimated 5% over 100 mm, subangular, damp, medium brown
2.0		3		GW		
3.0		4		SP		POORLY GRADED SAND WITH GRAVEL–trace of silt, damp, greyish brown
4.0		5		GW		WELL GRADED GRAVEL WITH SAND–trace of silt, subangular, damp, medium brown
						END OF TESTPIT 4.5 m
5.0						
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.5 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-021E

Depth: 1.0 m

Soil Description: POORLY GRADED SAND WITH GRAVEL (SP)

Cu: 20

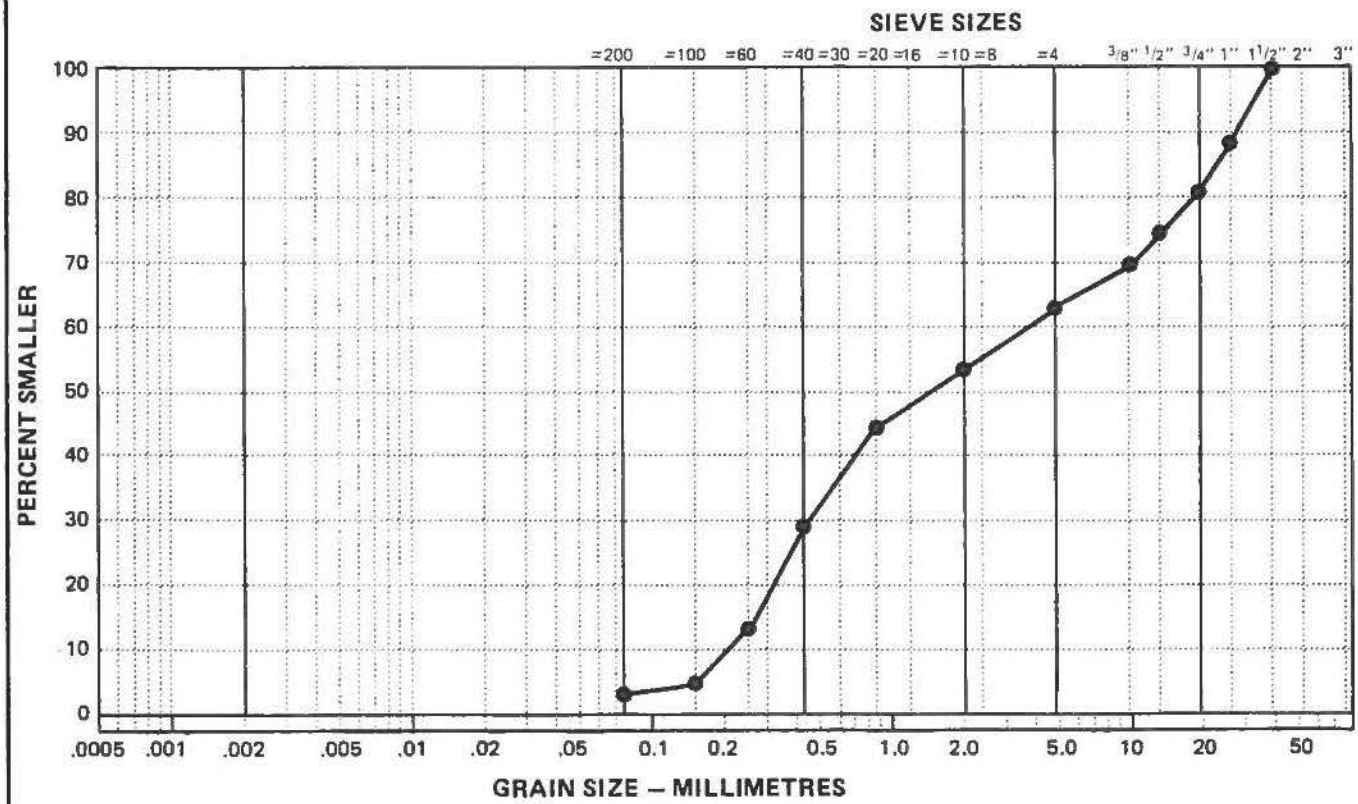
Cc: 0.3

Natural Moisture Content: 2.1 %

Remarks: Gravel 37.2%
Sand 58.7%
Silt 4.1%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	88.4
3/4"	80.5
3/8"	69.6
No. 4	62.8
No. 10	54.0
No. 20	45.4
No. 40	28.7
No. 60	12.5
No. 100	6.3
No. 200	4.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska HIghway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-021E

Depth: 2.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 34.0

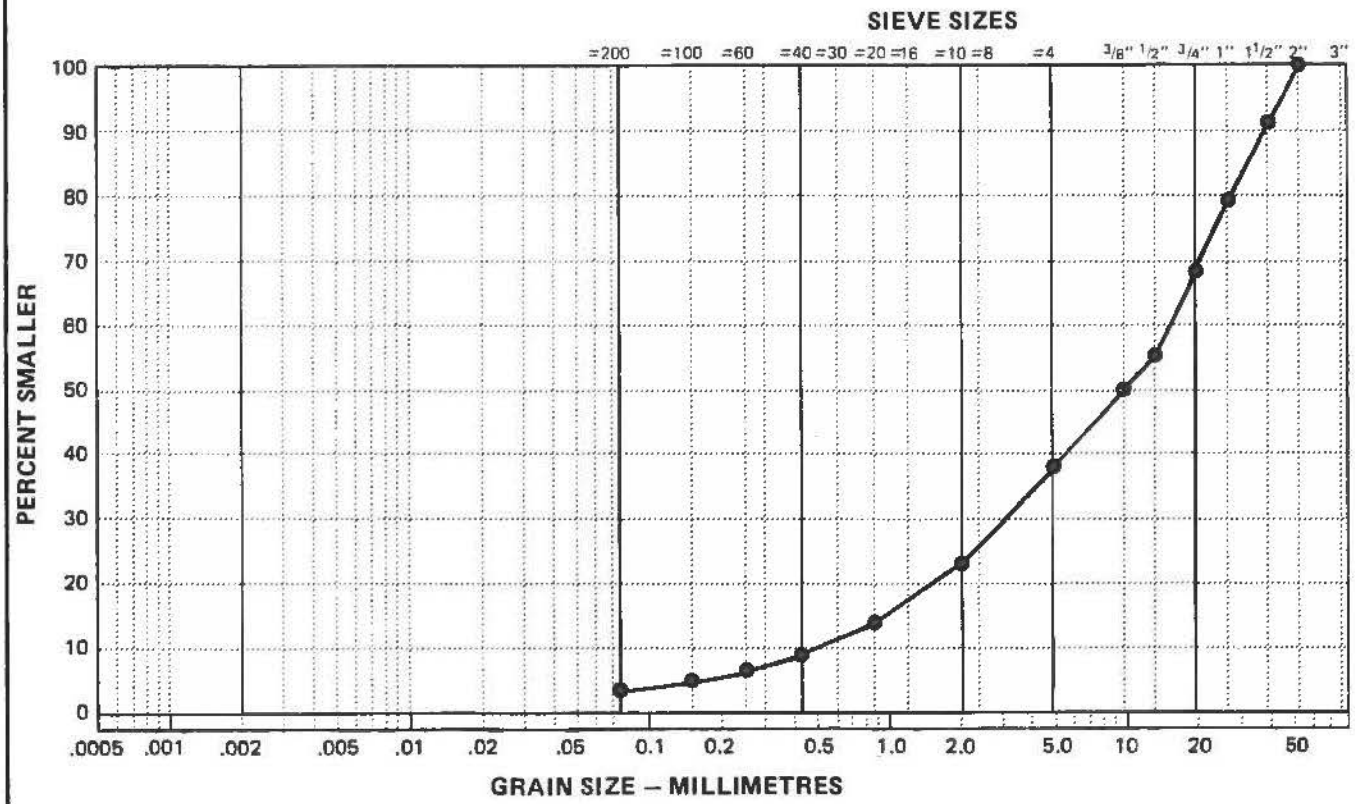
Cc: 1.1

Natural Moisture Content: 2.1 %

Remarks: Gravel 63.3%
Sand 32.3%
Silt 4.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	91.7
1"	79.3
3/4"	67.6
3/8"	49.9
No. 4	36.7
No. 10	23.1
No. 20	14.1
No. 40	8.8
No. 60	6.5
No. 100	5.3
No. 200	4.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-29

Borehole Number: 92-021E

Depth: 3.0 m

Soil Description: POORLY GRADED SAND WITH GRAVEL (SP)

Cu: 20.0

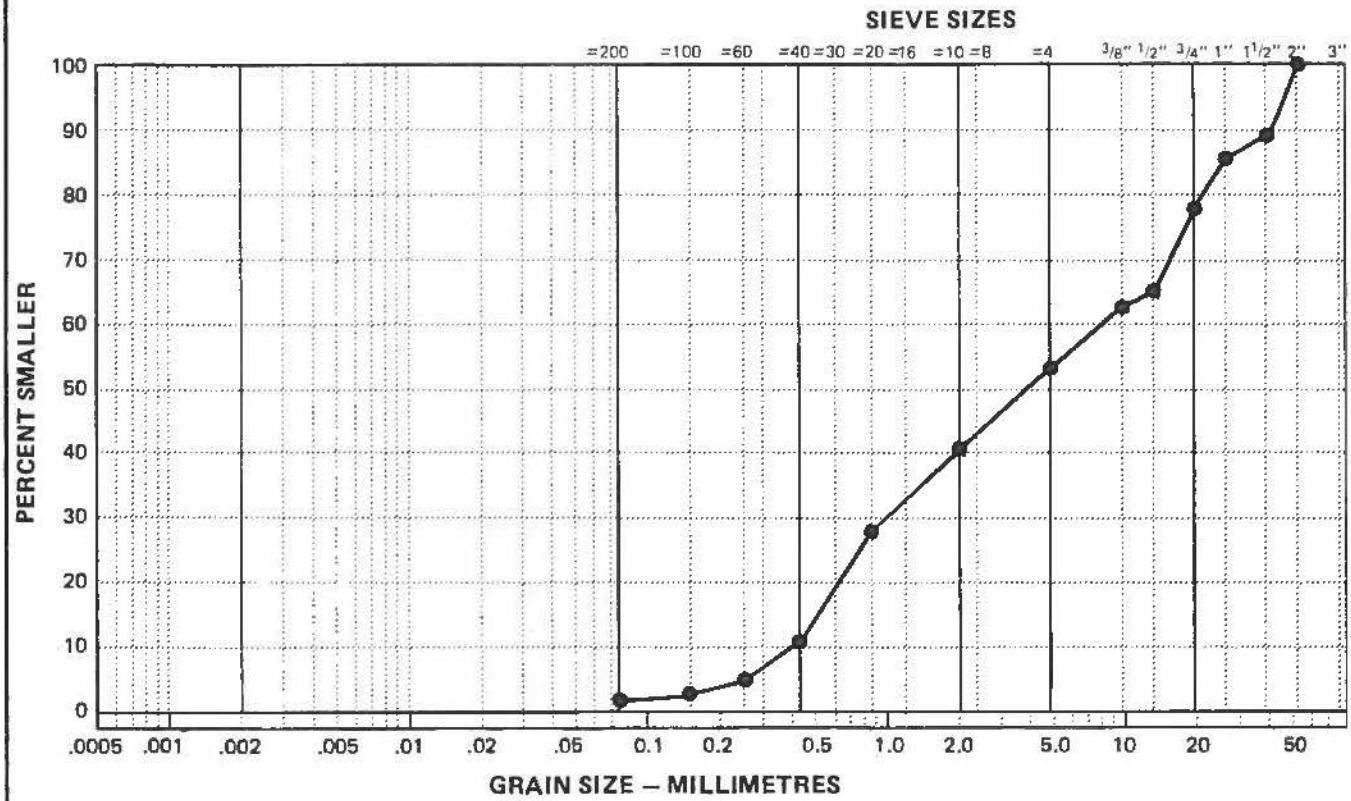
Cc: 0.3

Natural Moisture Content: 1.5 %

Remarks: Gravel 47.3%
Sand 50.3%
Silt 2.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	89.2
1"	86.4
3/4"	77.2
3/8"	62.1
No. 4	52.7
No. 10	40.7
No. 20	27.3
No. 40	10.8
No. 60	4.5
No. 100	3.0
No. 200	2.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-021E.

Depth: 4.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 40.0

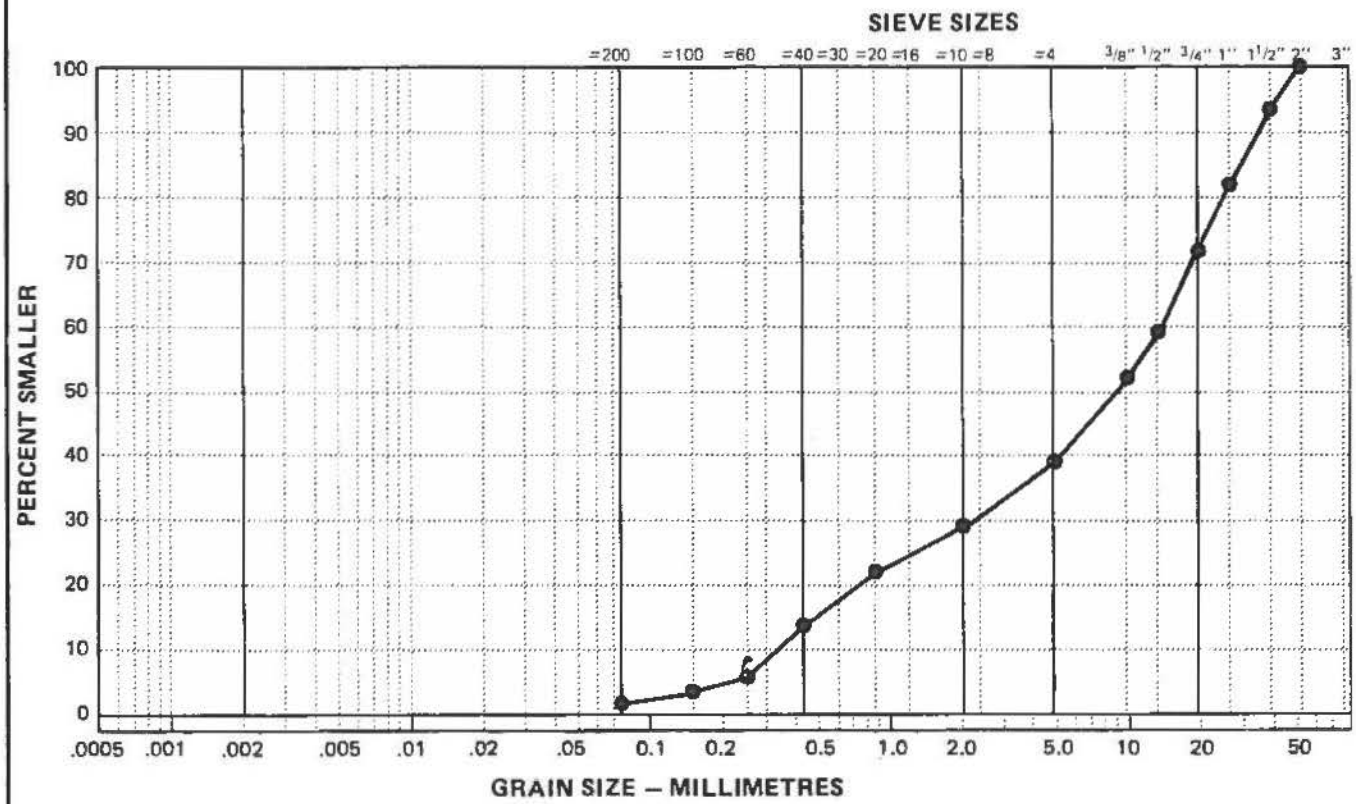
Cc: 1.2

Natural Moisture Content: 1.8 %

Remarks: Gravel 61.1%
Sand 36.8%
Silt 2.1%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	93.6
1"	81.6
3/4"	72.3
3/8"	52.3
No. 4	38.9
No. 10	29.1
No. 20	22.4
No. 40	12.9
No. 60	5.9
No. 100	3.2
No. 200	2.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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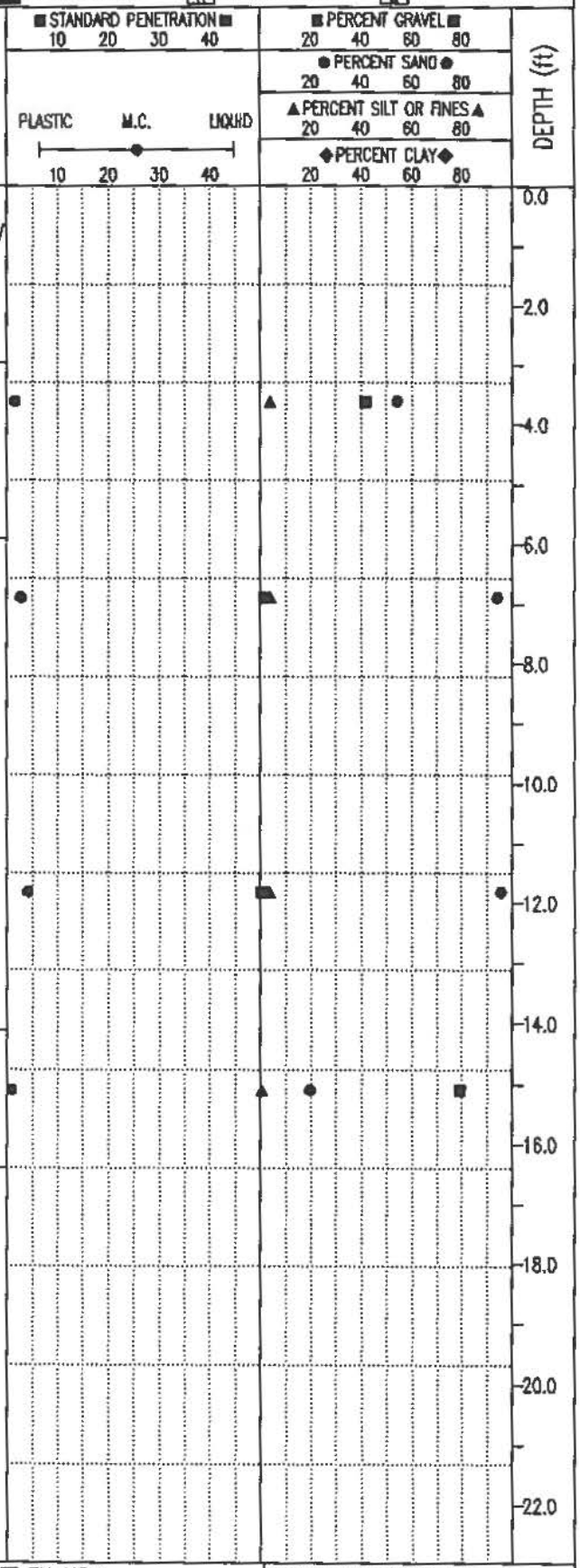
2033

GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92-022E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201-10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6768930.00 E644215.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						GRASS GROUND COVER–sparse silt with sand rootlets throughout, dark brown
						POORLY GRADED SAND WITH SILT AND GRAVEL–rootlets to 1.0 m, gravel is subangular to 100 mm, sand is medium to fine, damp, olive brown
1.0		2		SP		POORLY GRADED SAND WITH GRAVEL–trace of silt, occasional cobble to 150 mm, subangular gravel and sand are well graded, damp, medium brown
2.0		3		SP		POORLY GRADED SAND–trace of silt, sand is medium to fine grained, damp, medium brown –occasional lenses of fine to medium gravel
3.0						
		4		SP		
4.0						
		5		GP		POORLY GRADED GRAVEL WITH SAND–trace of silt, damp, medium greyish brown
5.0						END OF TESTPIT 5.0 m
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 5.0 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-022E

Depth: 1.0 m

Soil Description: POORLY GRADED SAND WITH GRAVEL (SP)

Cu: 30.0

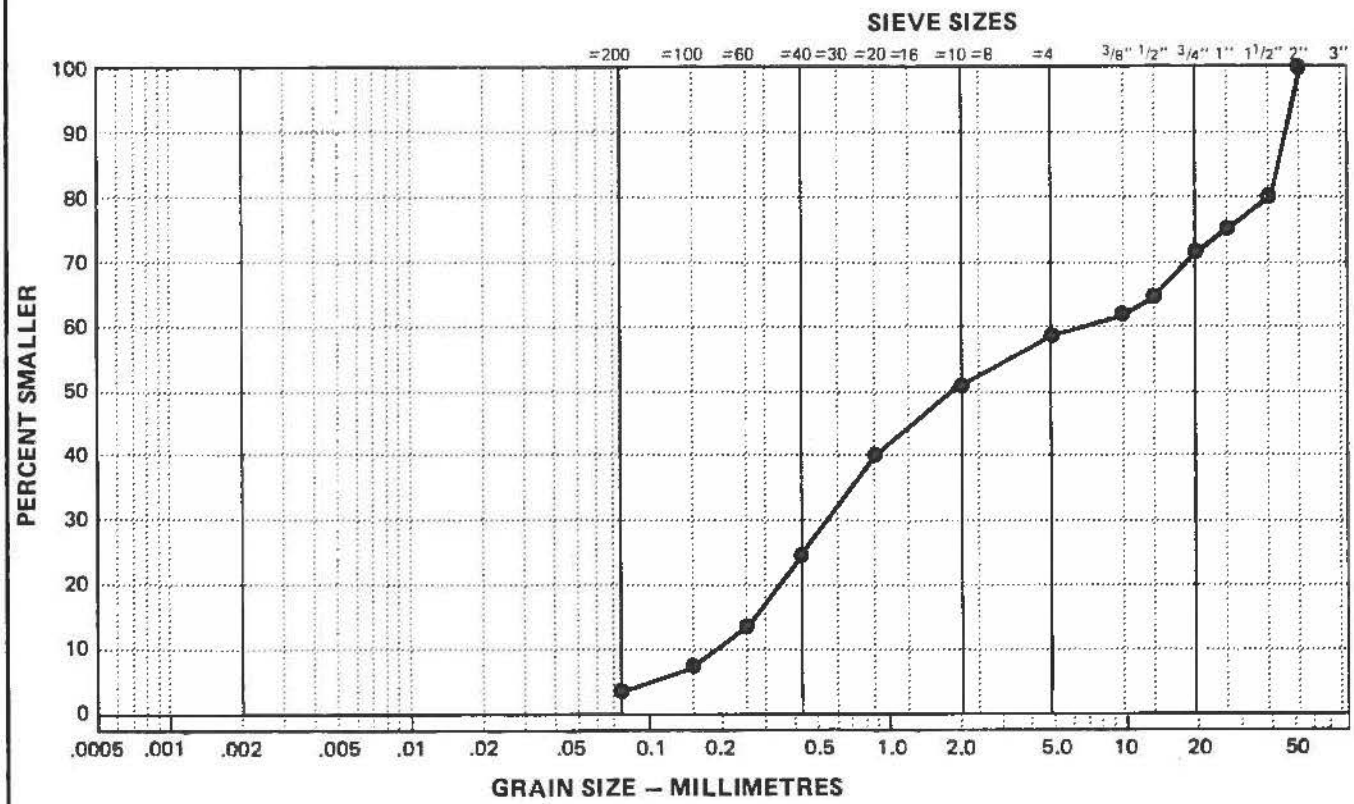
Cc: 0.3

Natural Moisture Content: 1.6 %

Remarks: Gravel 41.8%
Sand 54.3%
Silt 3.9%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	80.0
1"	75.6
3/4"	71.6
3/8"	62.4
No. 4	58.2
No. 10	50.8
No. 20	39.7
No. 40	24.5
No. 60	13.4
No. 100	7.3
No. 200	3.9

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-022E

Depth: 2.0 m

Soil Description: POORLY GRADED SAND (SP)

Cu: 2.9

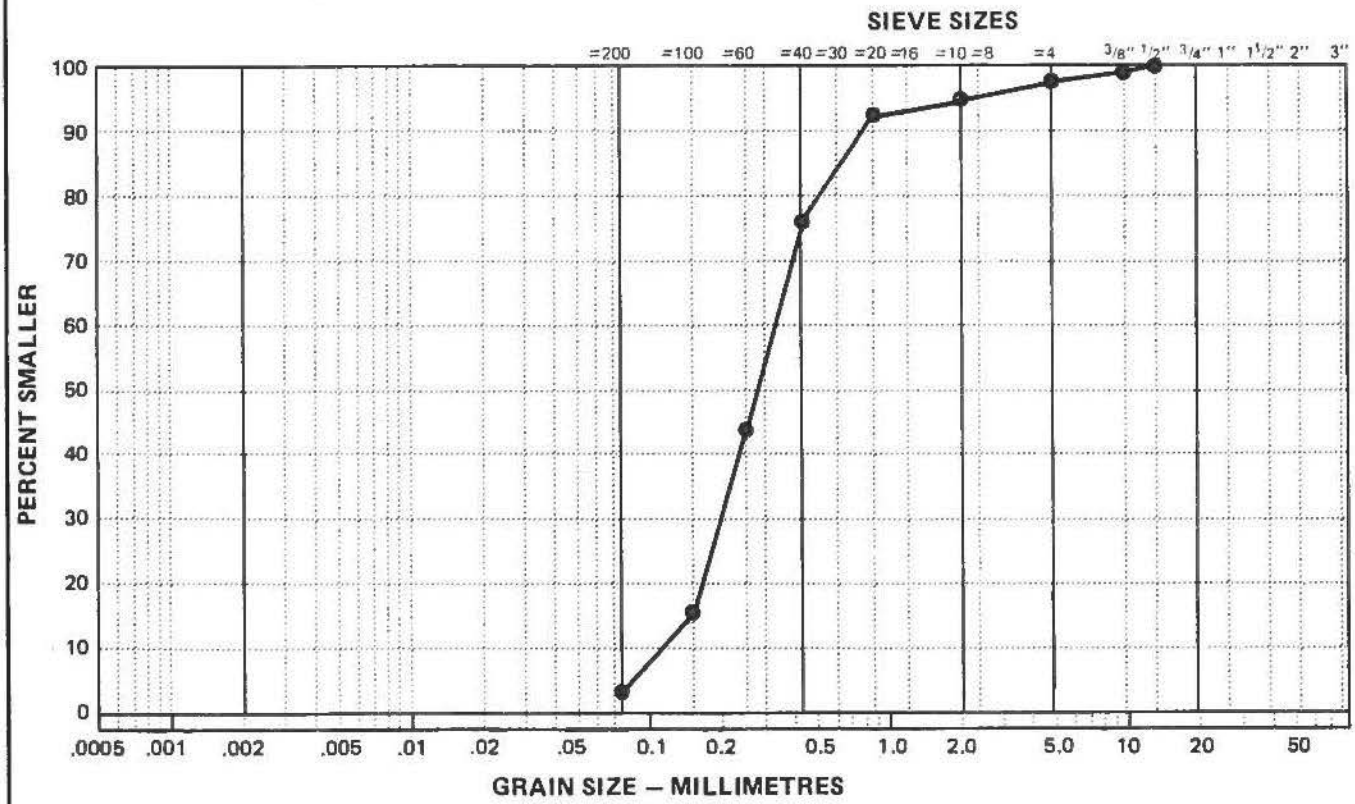
Cc: 1.0

Natural Moisture Content: 2.7 %

Remarks: Gravel 1.7%
Sand 94.0%
Silt 4.3%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	
1"	
3/4"	100.0
3/8"	99.2
No. 4	98.3
No. 10	96.1
No. 20	93.1
No. 40	76.2
No. 60	42.7
No. 100	15.6
No. 200	4.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-022E

Depth: 3.5 m

Soil Description: POORLY GRADED SAND (SP)

Cu: 2.4

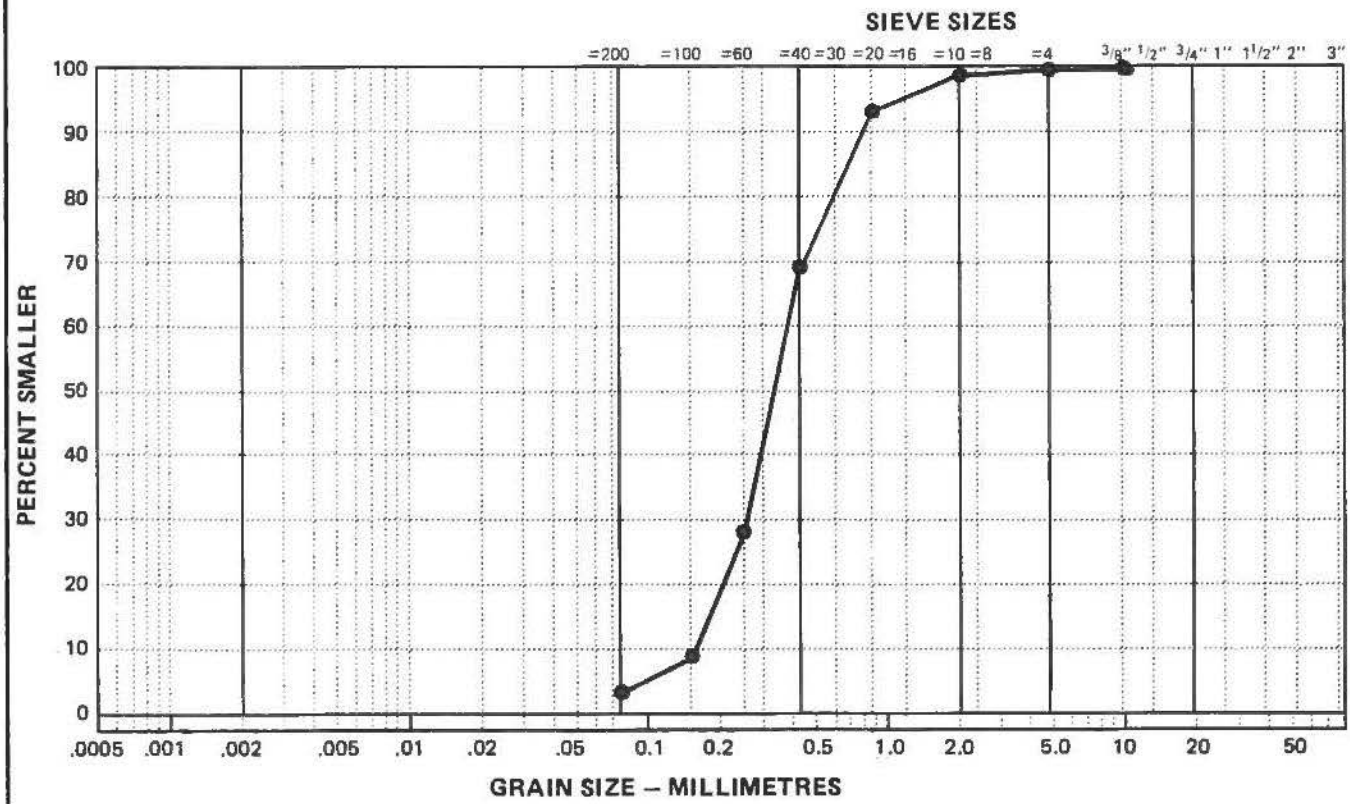
Cc: 1.0

Natural Moisture Content: 4.1 %

Remarks: Gravel 0.7%
Sand 95.5%
Silt 3.8%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	100.0
No. 4	99.3
No. 10	98.4
No. 20	93.5
No. 40	69.3
No. 60	28.1
No. 100	9.0
No. 200	3.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-022E

Depth: 4.5 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 50.0

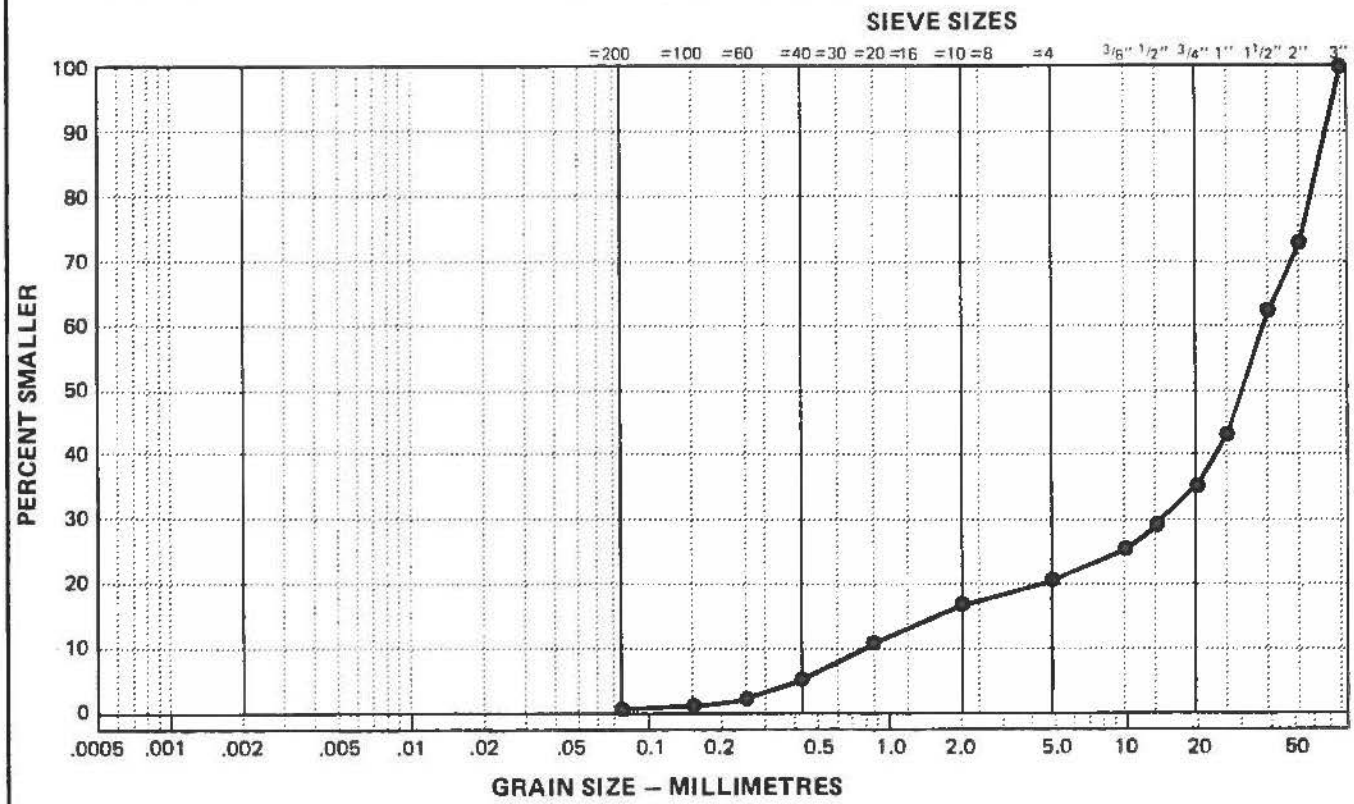
Cc: 5.3

Natural Moisture Content: 0.9 %

Remarks: Gravel 79.0%
Sand 19.5%
Silt 0.5%

SIEVE	PERCENTAGE PASSING
3"	100.0
2"	71.5
1 1/2"	61.5
1"	44.2
3/4"	35.7
3/8"	26.2
No. 4	21.0
No. 10	17.0
No. 20	11.3
No. 40	5.1
No. 60	2.4
No. 100	1.0
No. 200	0.5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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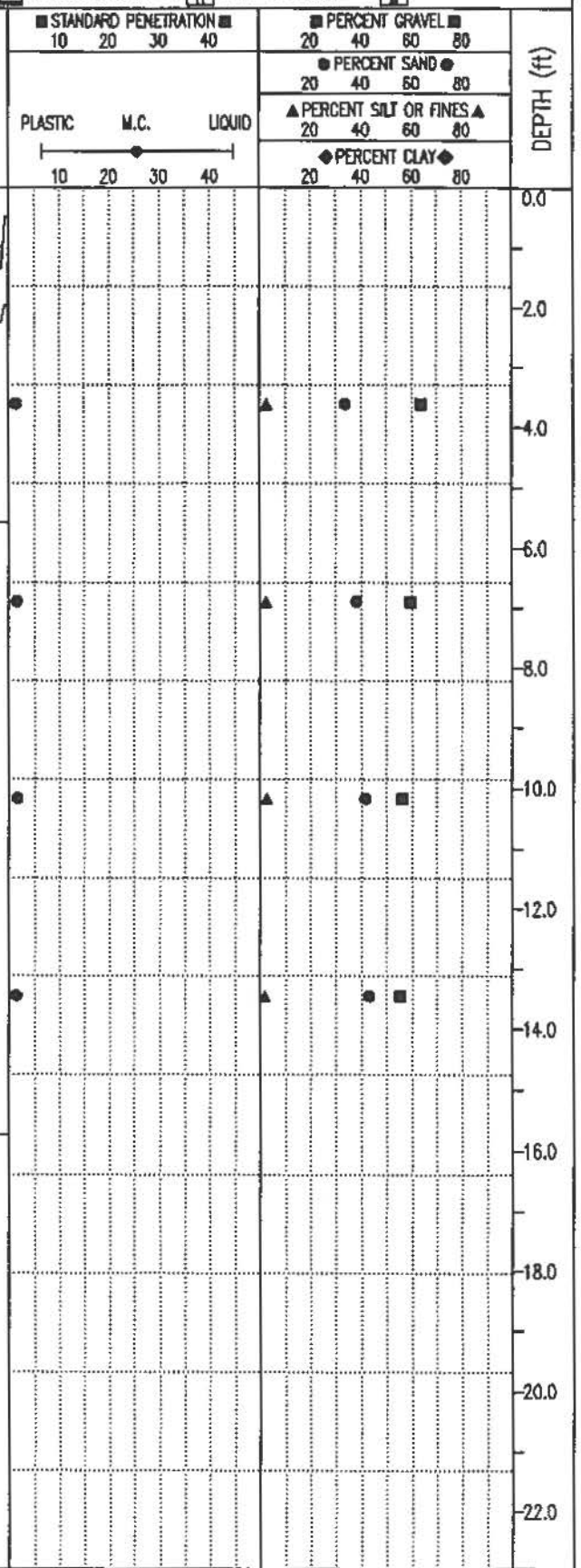
GRANULAR SOURCE EVALUATION km 1693	CLIENT: YTG – TRANSPORTATION ENG.	BOREHOLE No: 92–023E
SILVER CITY AREA	HOE: CAT 225 TRACKED BACKHOE	Project No: 0201–10922
NORTH ALASKA HIGHWAY	UTM ZONE: 7 N6769148.00 E644316.00	ELEVATION: 0.00 (m)

SAMPLE TYPE: GRAB SAMPLE; NO RECOVERY; STANDARD PEN.; 75 mm SPOON; CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION
0.0						SPARSE GRASS GROUND COVER
						SILT WITH SAND AND GRAVEL–rootlets throughout, dark brown
						SILT WITH SAND AND GRAVEL–rootlets throughout, damp, olive brown
1.0		1		GW		WELL GRADED GRAVEL WITH SAND–trace of silt, rootlets to 1.3 m, occasional cobble to 150 mm, less than 5% over 100 mm, interbedded with finer grained material, damp, medium brown
2.0		2		GP		POORLY GRADED GRAVEL WITH SAND–trace of silt, occasional cobble to 150 mm, damp, medium brown
3.0		3		GP		–sand lens from 3.2 to 3.4 m –GRAVEL is cleaner below 3.4 m, greyish brown
4.0		4		GP		
5.0						END OF TESTPIT 4.8 m NOTE: Hole sloughing badly
6.0						
7.0						



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: MCP	COMPLETION DEPTH: 4.8 m
	REVIEWED BY:	COMPLETE: 92/04/22
	Fig. No:	Page 1 of 1

EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-023E

Depth: 1.0 m

Soil Description: WELL GRADED GRAVEL WITH SAND (GW)

Cu: 40.0

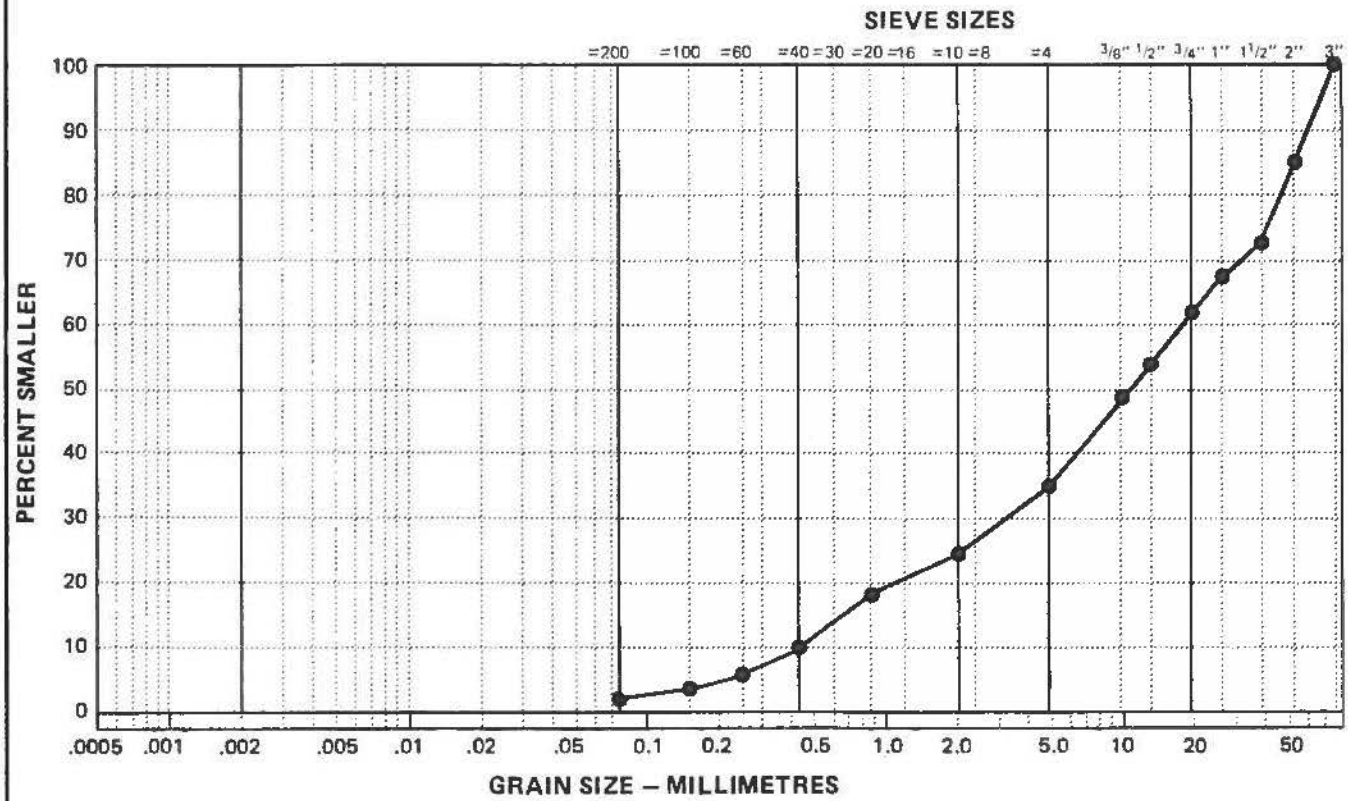
Cc: 1.1

Natural Moisture Content: 1.3 %

Remarks: Gravel 63.8%
Sand 33.5%
Silt 2.7%

SIEVE	PERCENTAGE PASSING
3"	100.0
2"	84.7
1 1/2"	72.3
1"	67.3
3/4"	62.0
3/8"	48.7
No. 4	36.2
No. 10	25.7
No. 20	17.9
No. 40	10.3
No. 60	6.1
No. 100	3.9
No. 200	2.7

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway, Yukon

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-023E

Depth: 2.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

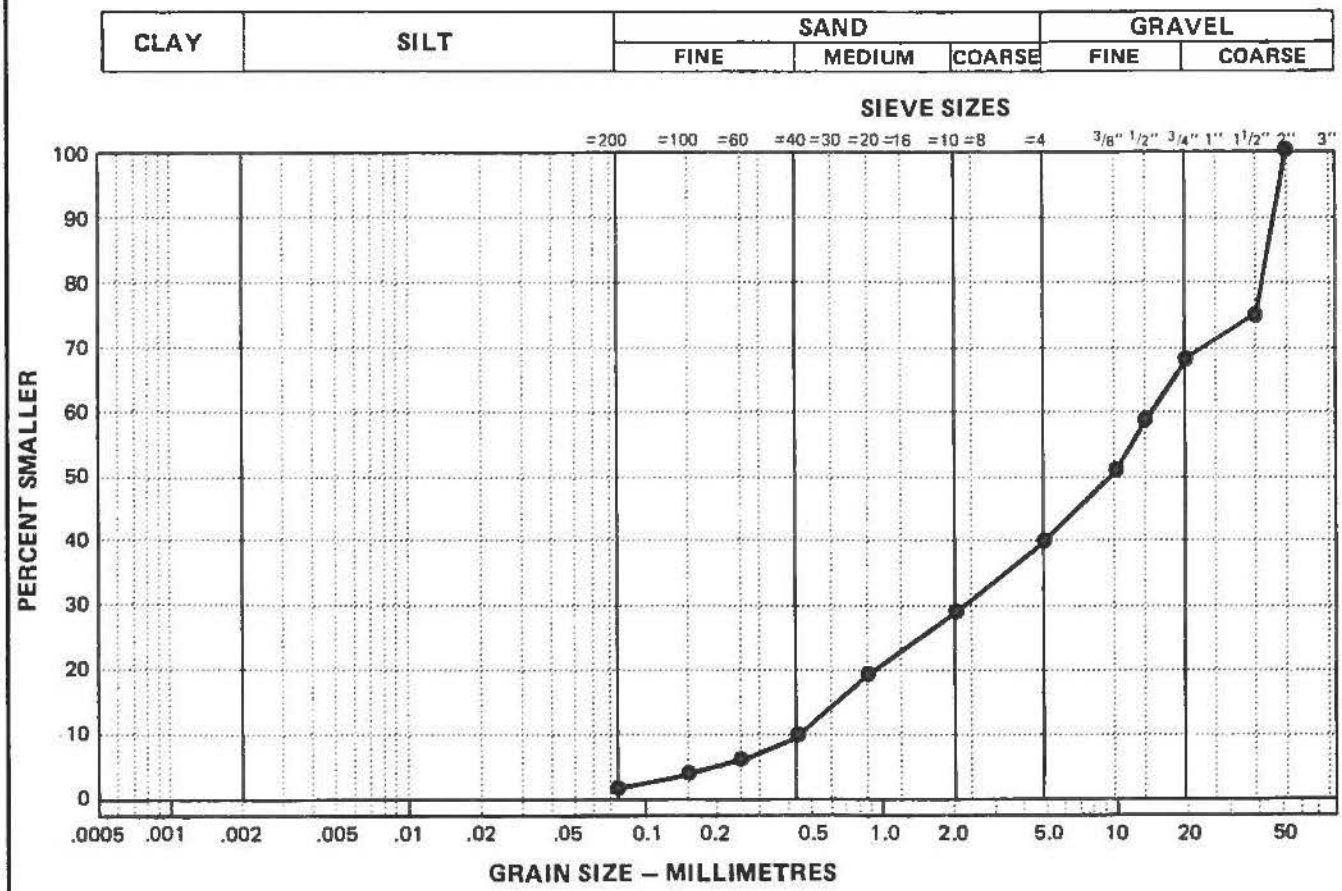
Cu: 33.3

Cc: 0.9

Natural Moisture Content: 1.5 %

Remarks: Gravel 59.6%
Sand 38.0%
Silt 2.4%

SIEVE	PERCENTAGE PASSING
3"	
2"	100.0
1 1/2"	74.6
1"	
3/4"	68.4
3/8"	51.3
No. 4	40.4
No. 10	29.1
No. 20	19.0
No. 40	10.1
No. 60	5.7
No. 100	3.6
No. 200	2.4



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-023E

Depth: 3.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 24.0

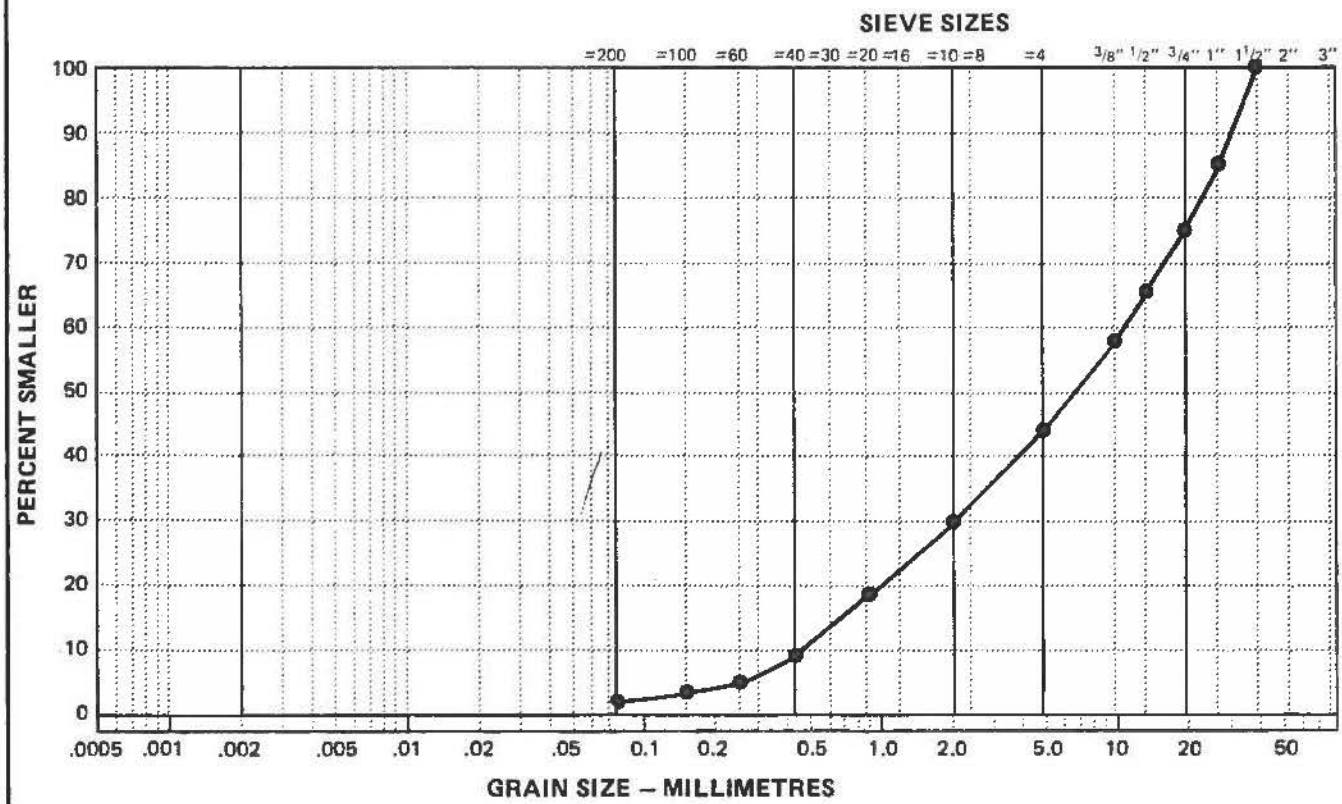
Cc: 0.7

Natural Moisture Content: 1.6 %

Remarks: Gravel 56.1%
Sand 41.4%
Silt 2.5%

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	100.0
1"	86.1
3/4"	74.7
3/8"	57.5
No. 4	43.9
No. 10	29.6
No. 20	17.9
No. 40	9.2
No. 60	5.2
No. 100	3.5
No. 200	2.5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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EBA Engineering Consultants Ltd.

PARTICLE - SIZE ANALYSIS OF SOILS

Project: Granular Source Evaluation
km 1693 North Alaska Highway

Project Number: 0201-10922

Date Tested: 92-04-30

Borehole Number: 92-023E

Depth: 4.0 m

Soil Description: POORLY GRADED GRAVEL WITH SAND (GP)

Cu: 40.0

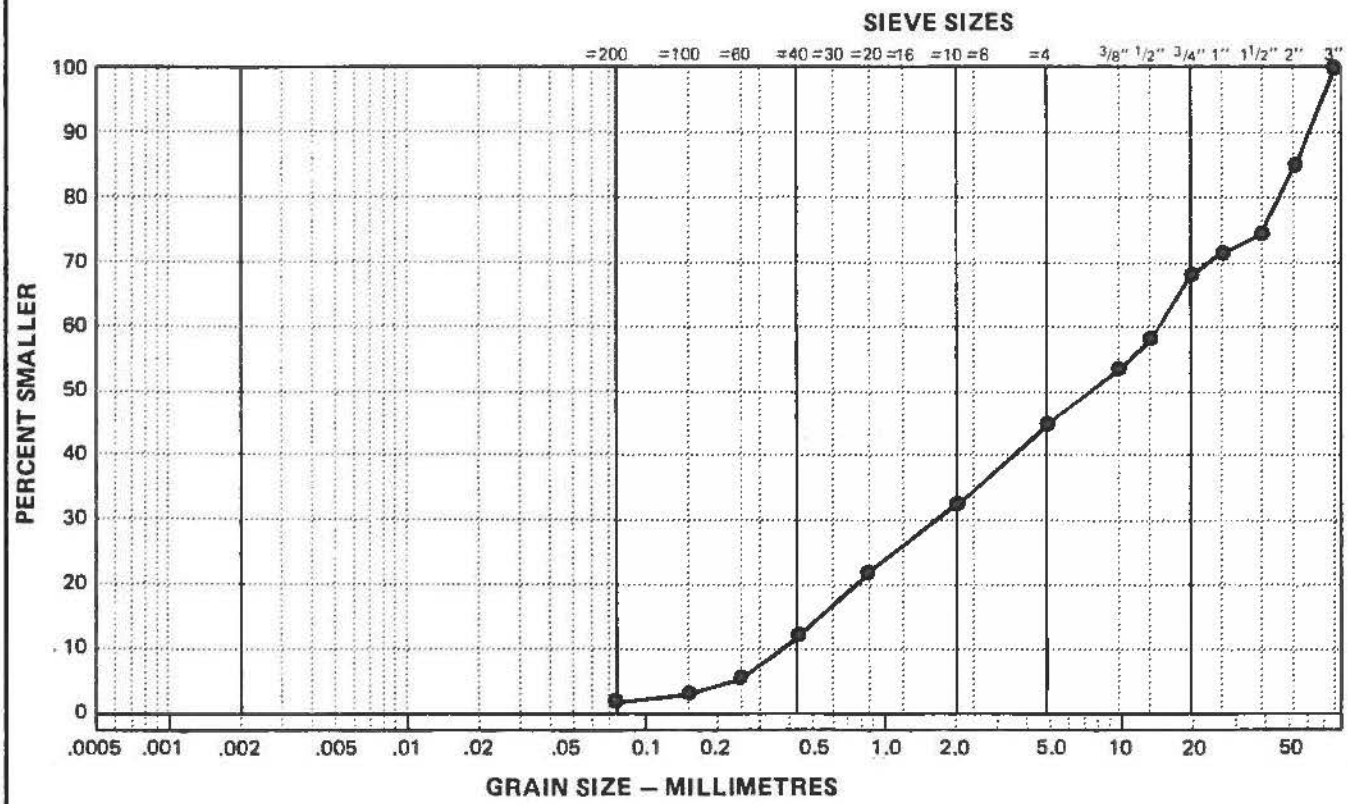
Cc: 0.3

Natural Moisture Content: 1.4 %

Remarks: Gravel 55.3%
Sand 42.9%
Silt 1.8%

SIEVE	PERCENTAGE PASSING
3"	100.0
2"	84.7
1 1/2"	74.6
1"	71.5
3/4"	67.4
3/8"	54.4
No. 4	44.7
No. 10	33.1
No. 20	22.2
No. 40	11.8
No. 60	5.6
No. 100	2.9
No. 200	1.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



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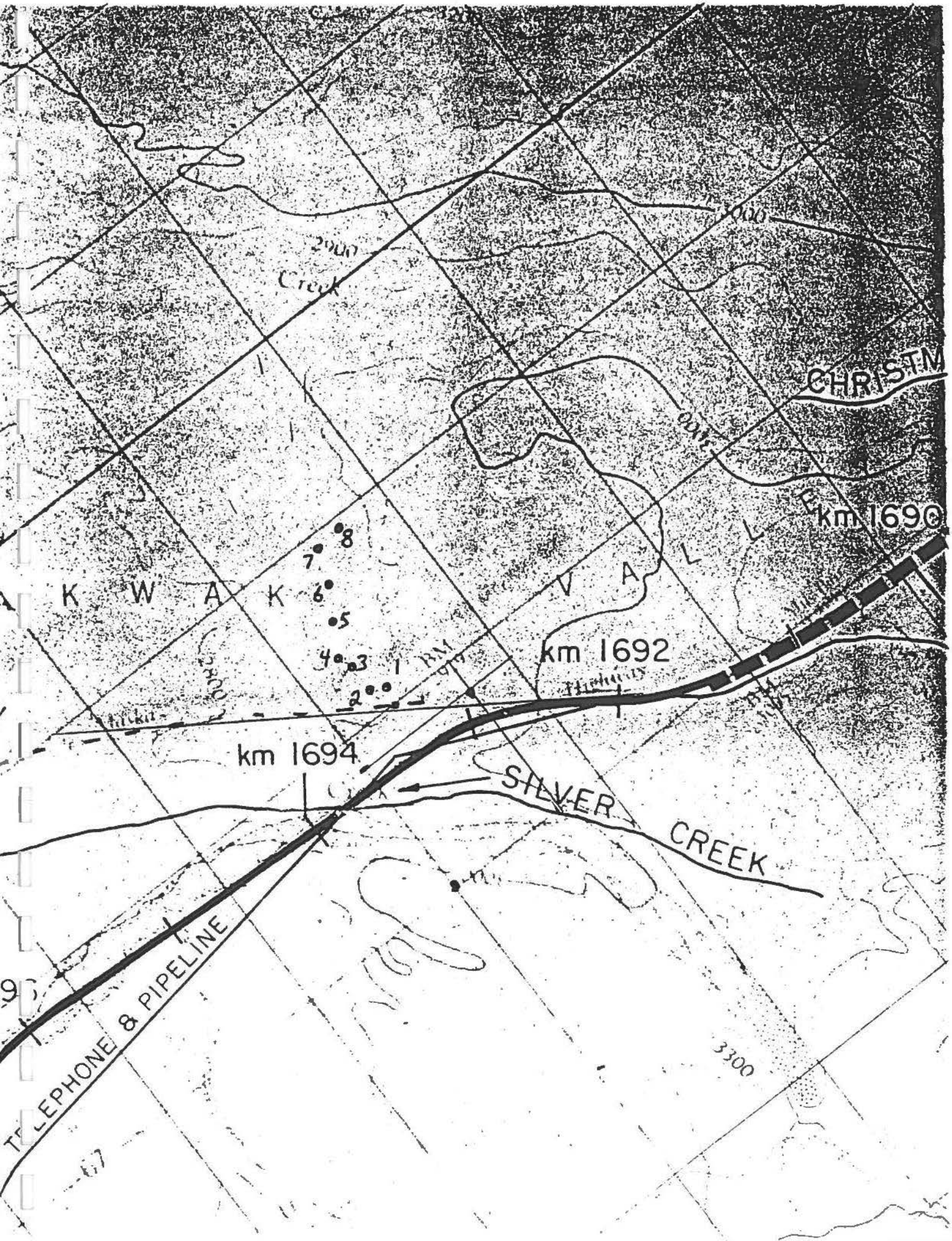
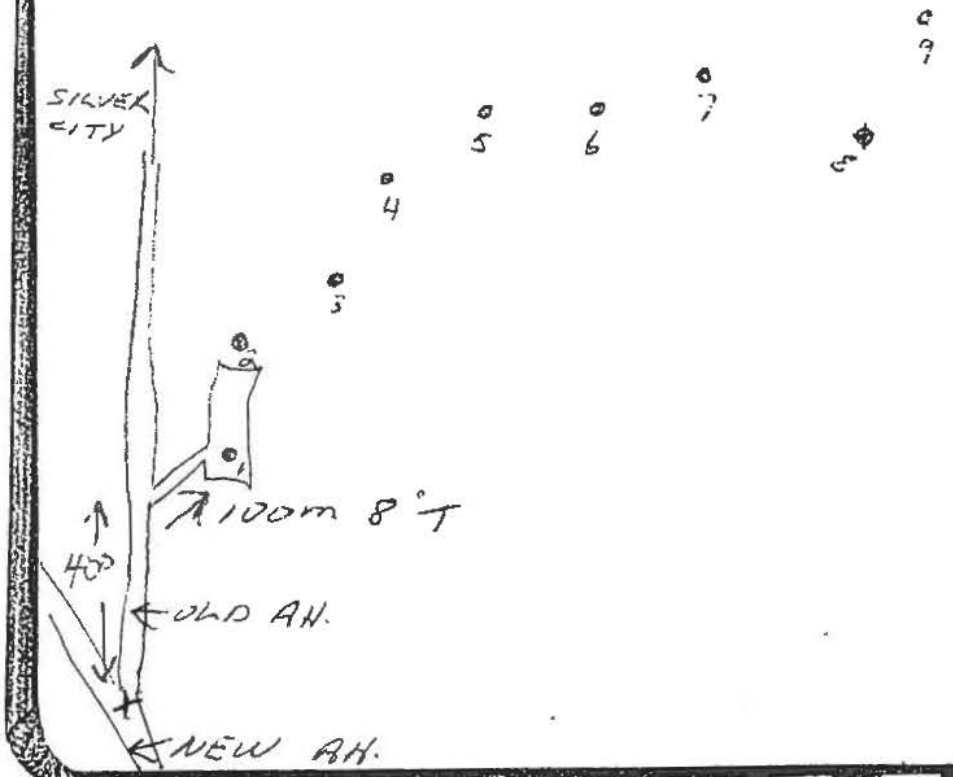
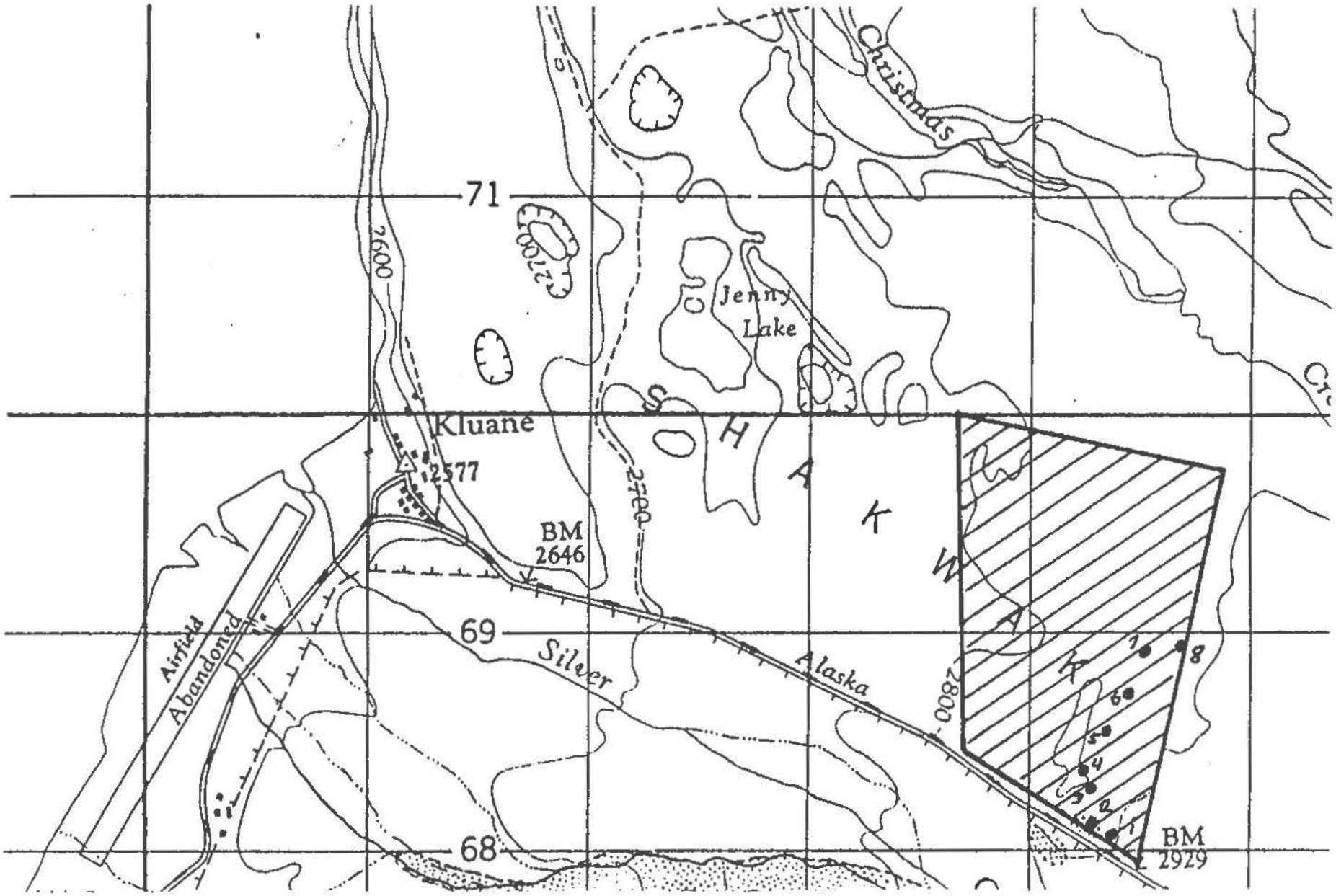

Creek
CHRISTM
km 1690
K W A K
V A L L
km 1692
km 1694
SILVER
CREEK
TELEPHONE & PIPELINE
3300



1→2 = 300°T, 90m
2→3 = 0°T, 150m
3→4 = 340°T, 100m
4→5 = 25°T, 200m
5→6 = 30°T, 200m
6→7 = ~~35~~ 20°T, 200M

7→8 = 80°T, 165m
~~8→9 = 6°T, 7m~~
6→9 = 340°T

Silver City


71
69
68
Christmas
Jenny Lake
Kluane
2577
BM 2646
Airfield Abandoned
Silver
Alaska
2600
2700
2800
BM 2929

GRANULAR INVESTIGATION
KM 1692, R.H.S.
ALASKA HIGHWAY, Y.T.

PIT IDENT: 115 G-07

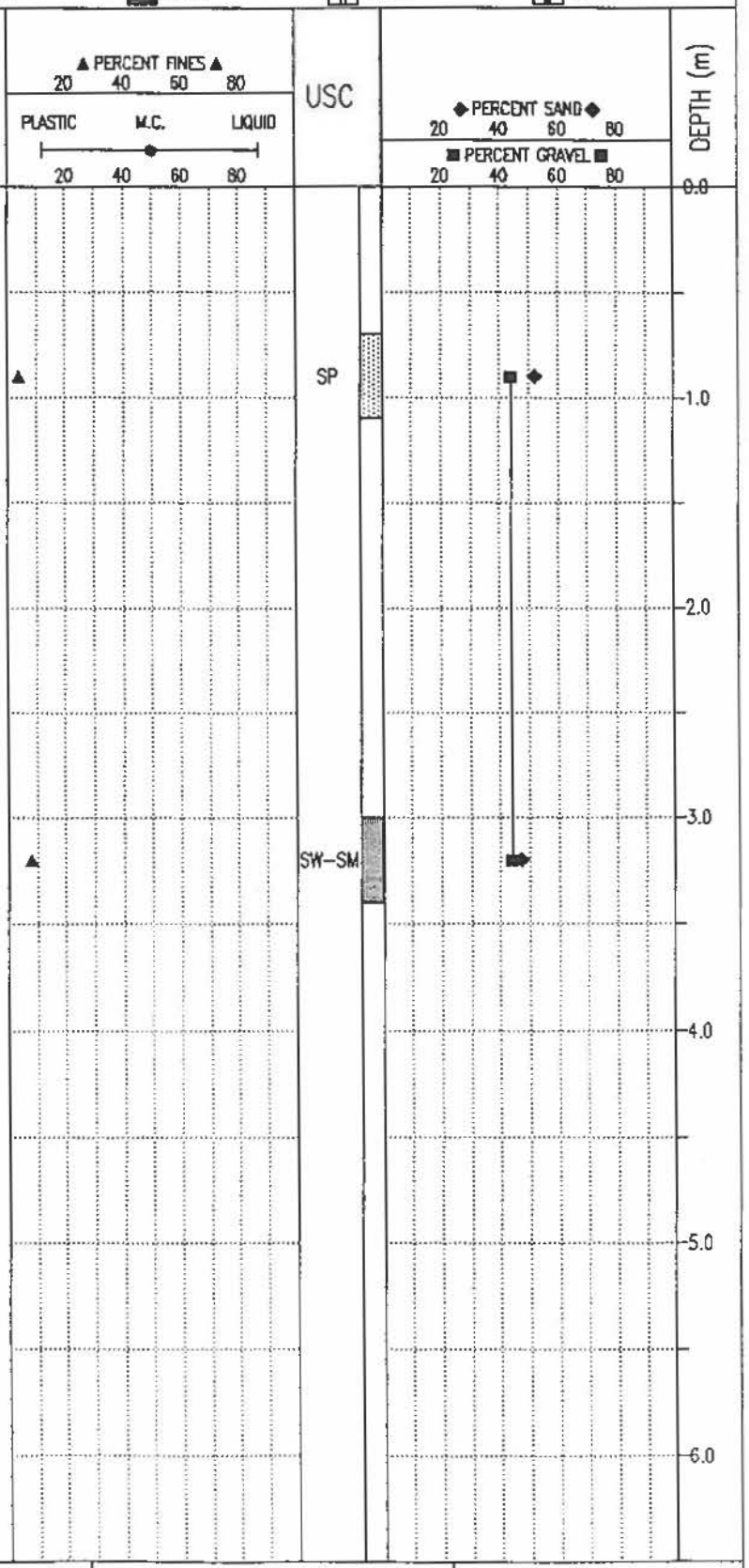
1991 BACKHOE TESTING
HOLES 01 - 08, LOG BOOK 152
SAMPLE # 1 - 14 (LAB # 5399 - 5412)

COMBINED LOS ANGELES ABRASION RESULT
(GRADATION B) - 17.8% LOSS

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-01
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN, S.P.T., AUGER, BULK, TUBE, CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	POORLY GRADED SAND WITH GRAVEL (SP) -brown -frozen to 0.6m (seasonal – Nb) -maximum 200mm material -estimate 1% +100mm -damp below 0.6m -minor caving in below 0.6m		1	SP
1.0				
2.0	WELL-GRADED SAND WITH SILT (SW-SM) -brown -damp -maximum 300mm material			
3.0			2	SW-SM
4.0				
5.0	END HOLE at 5.0m -in old pit			
6.0				

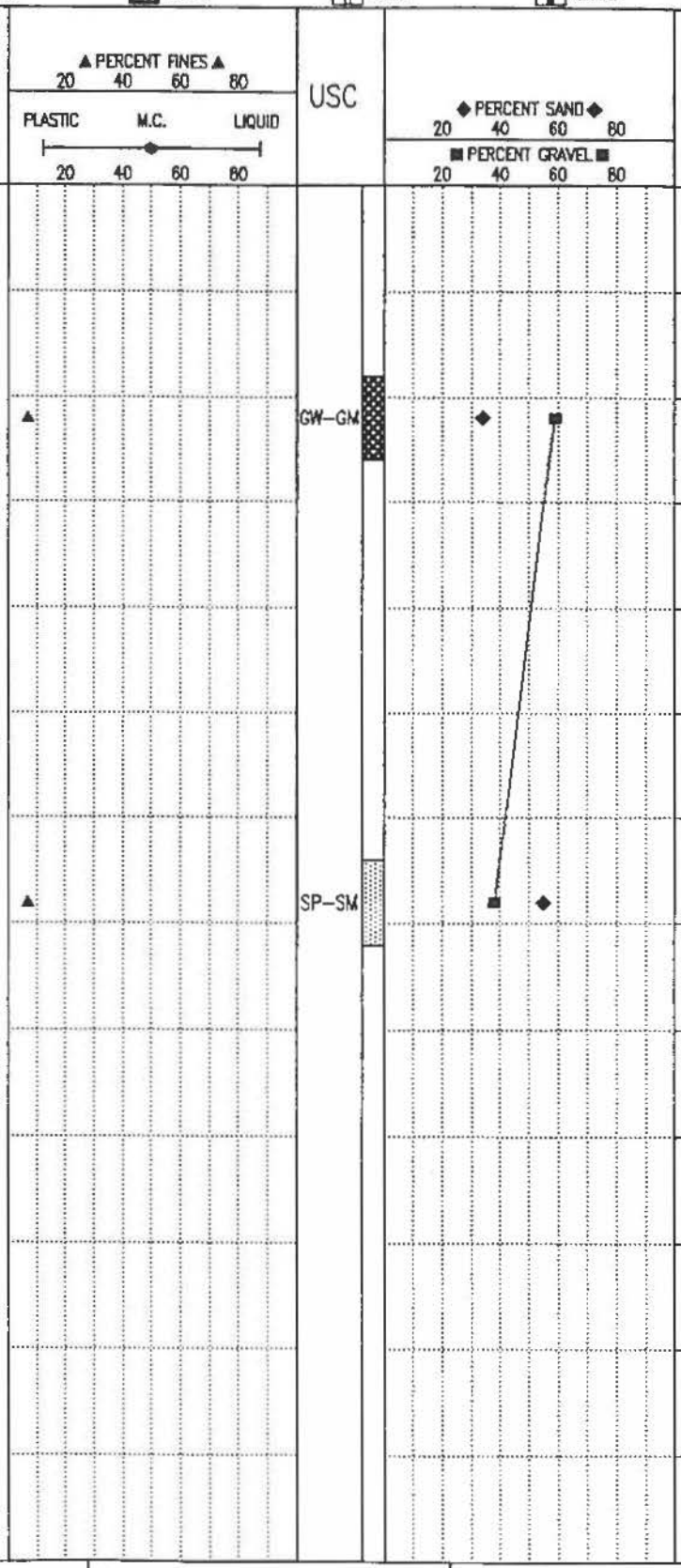


Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/05
	LOGGED BY DT	DWG NO.	Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-02
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN | S.P.T. | AUGER | BULK | TUBE | CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	WELL-GRADED GRAVEL WITH SILT AND SAND (GW-GM) -brown -frozen to 0.6m (seasonal - Nb) -maximum 100mm material -damp below 0.6m -minor caving in below 0.6m		3	GW-GM
1.0				
2.0				
	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) -brown -damp -minor caving in			
3.0				
			4	SP-SM
4.0				
5.0	END HOLE at 5.0m -on top of esker			
6.0				



Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/05
	LOGGED BY DT	DWG NO. / Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-03
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN, S.P.T., AUGER, BULK, TUBE, CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM) -brown -frozen to 0.4m (seasonal – Nb) -maximum 150mm material -estimate 1% +100mm -damp below 0.4m -minor caving in below 0.4m -trace of organics from 0.1m to 2.0m		5	GP-GM
4.0	END HOLE at 4.0m -on top of esker			

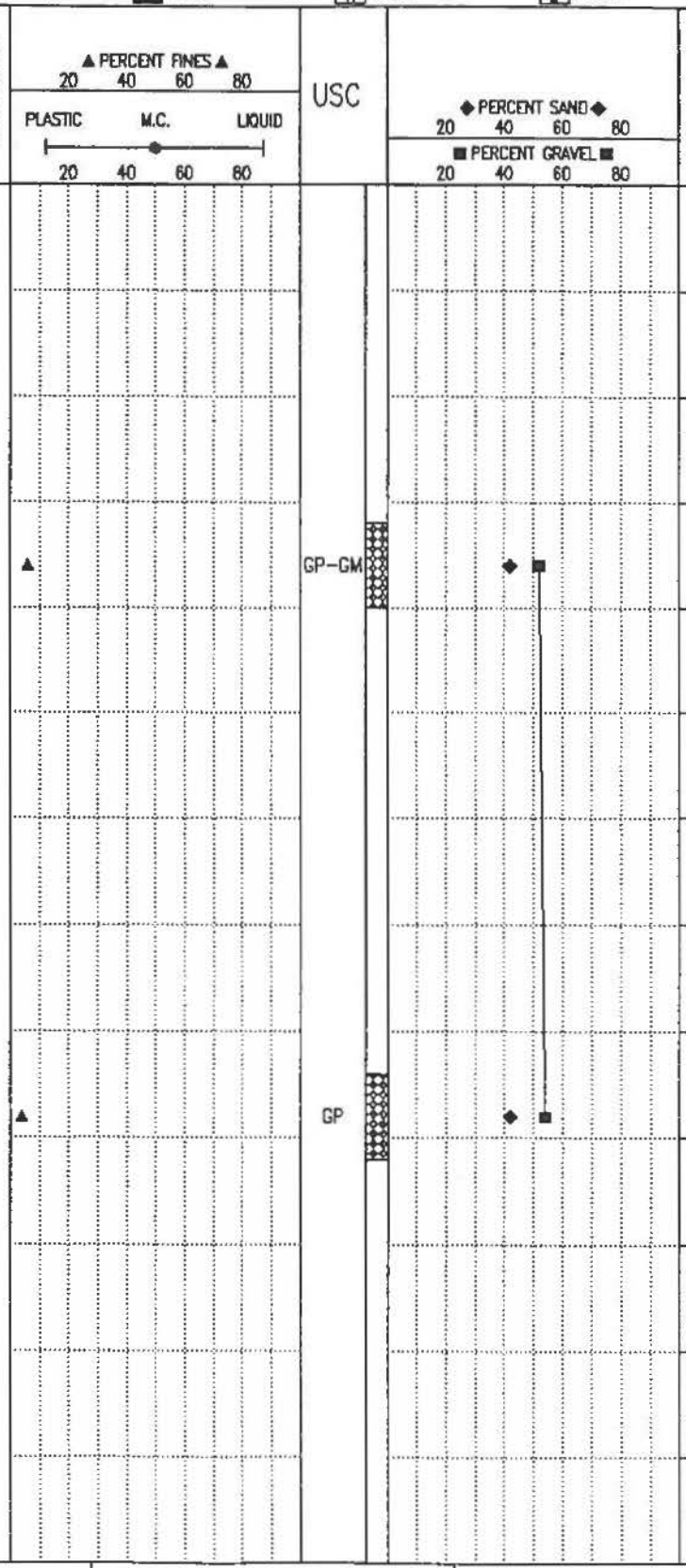
Plot: ▲ PERCENT FINES ▲ (20, 40, 60, 80); PLASTIC – M.C. – LIQUID (20, 40, 60, 80); ◆ PERCENT SAND ◆ (20, 40, 60, 80); ■ PERCENT GRAVEL ■ (20, 40, 60, 80); DEPTH (m) 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0

Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 4.0 m	COMPLETE 91/11/05
	LOGGED BY DT	DWG NO.	Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-04
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN | S.P.T. | AUGER | BULK | TUBE | CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM) -brown -frozen to 0.3m (seasonal - Nb) -damp below 0.3m -maximum 300mm material -estimate 2% +100mm -trace organics to 1.2m		6	GP-GM
1.0				
2.0				
3.0	POORLY GRADED GRAVEL WITH SAND (GP) -brown -moist -maximum 300mm material -estimate 2% +100mm			
4.0			7	GP
5.0	END HOLE at 5.0m -on top of esker			
6.0				

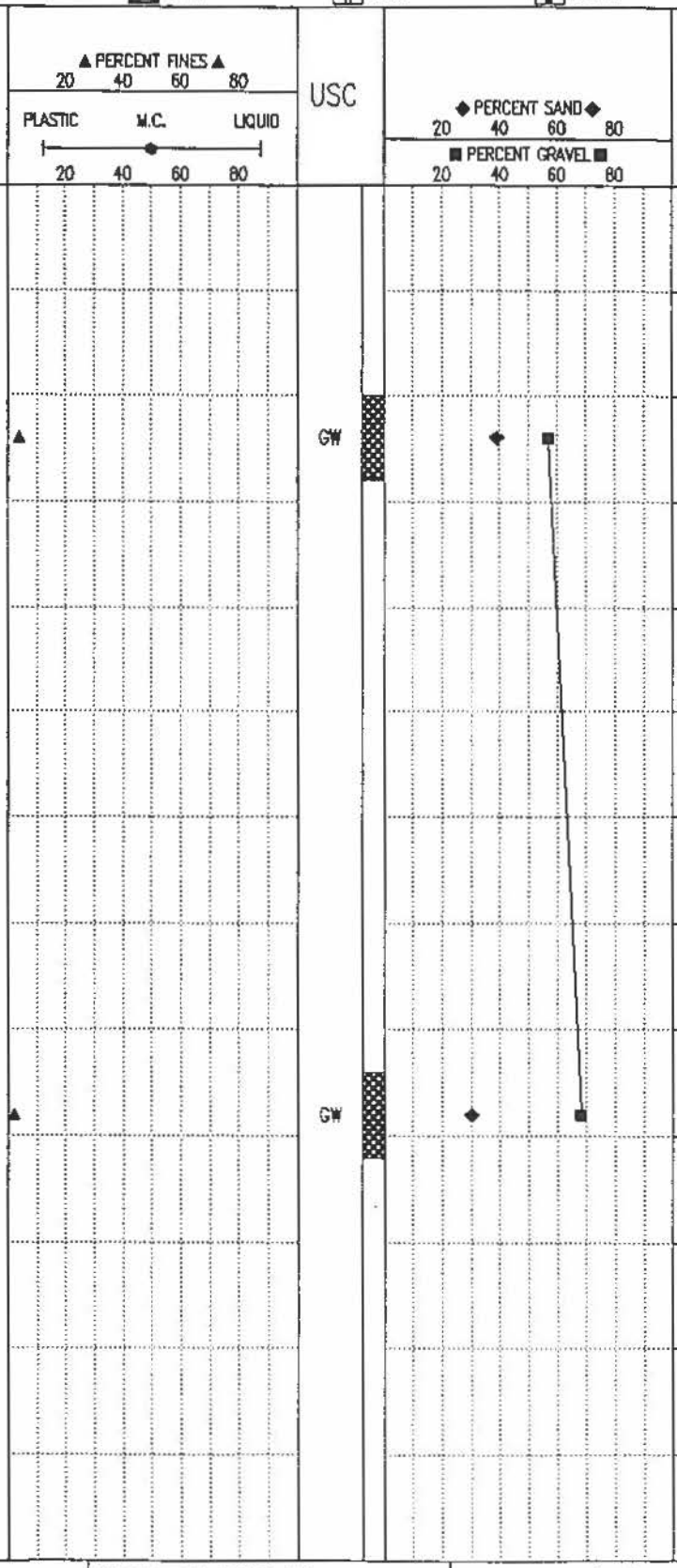


Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/05
	LOGGED BY DT	DWG NO. / Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-05
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN, S.P.T., AUGER, BULK, TUBE, CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	WELL-GRADED GRAVEL WITH SAND (GW) -brown -frozen to 0.3m (seasonal - Nb) -damp below 0.3m -maximum 200mm material -estimate 1% +100mm			
1.0			8	GW
2.0	-caving in below 2.1m			
3.0				
4.0	-estimate 2% +100mm below 4.0m			
			9	GW
5.0	END HOLE at 5.0m -on top of esker			
6.0				

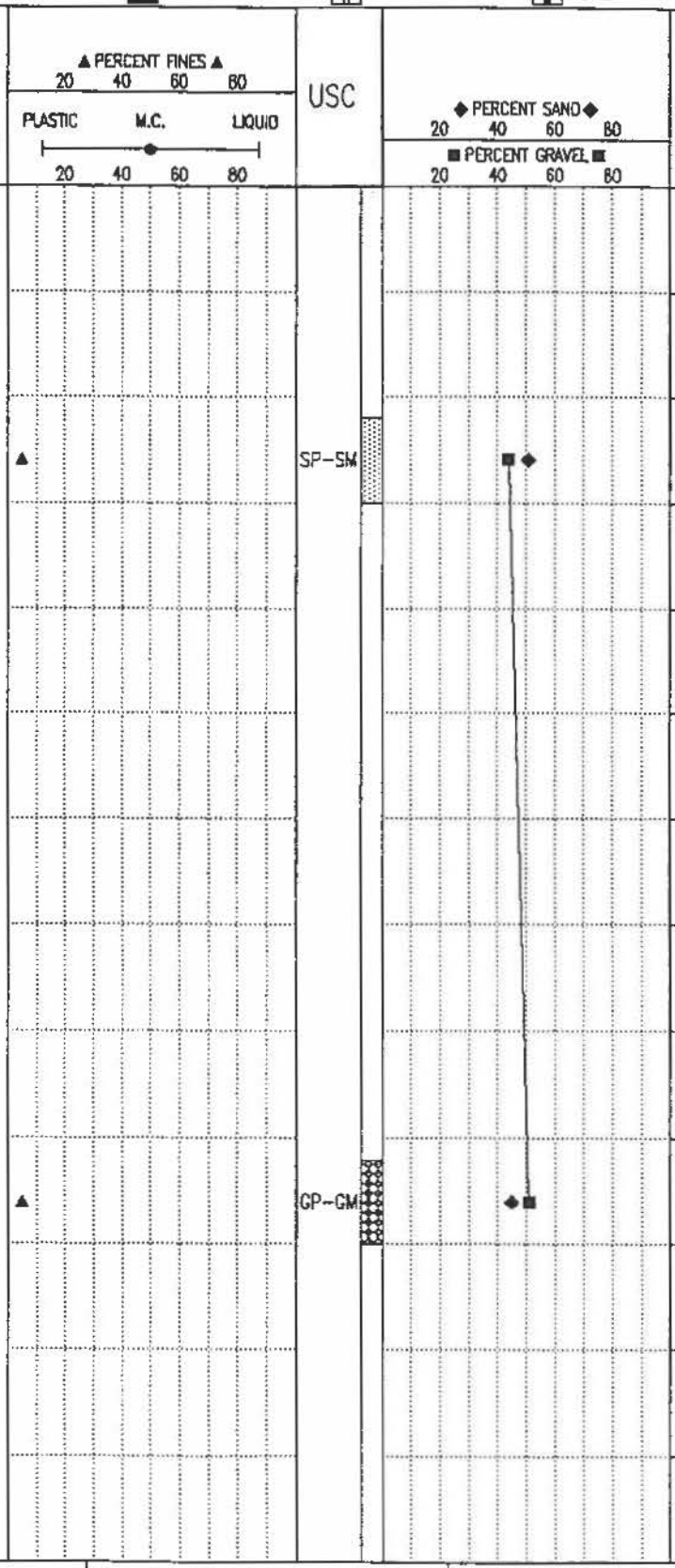


Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/05
	LOGGED BY DT	DWG NO.
		Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-06
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN, S.P.T., AUGER, BULK, TUBE, CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) -brown -frozen to 0.4m (seasonal – Nb) -damp below 0.4m -maximum 100mm material			
1.0			10	SP-SM
2.0				
3.0	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM) -brown -damp -maximum 100mm material			
4.0			11	GP-GM
5.0	END HOLE at 5.0m -on top of esker			
6.0				

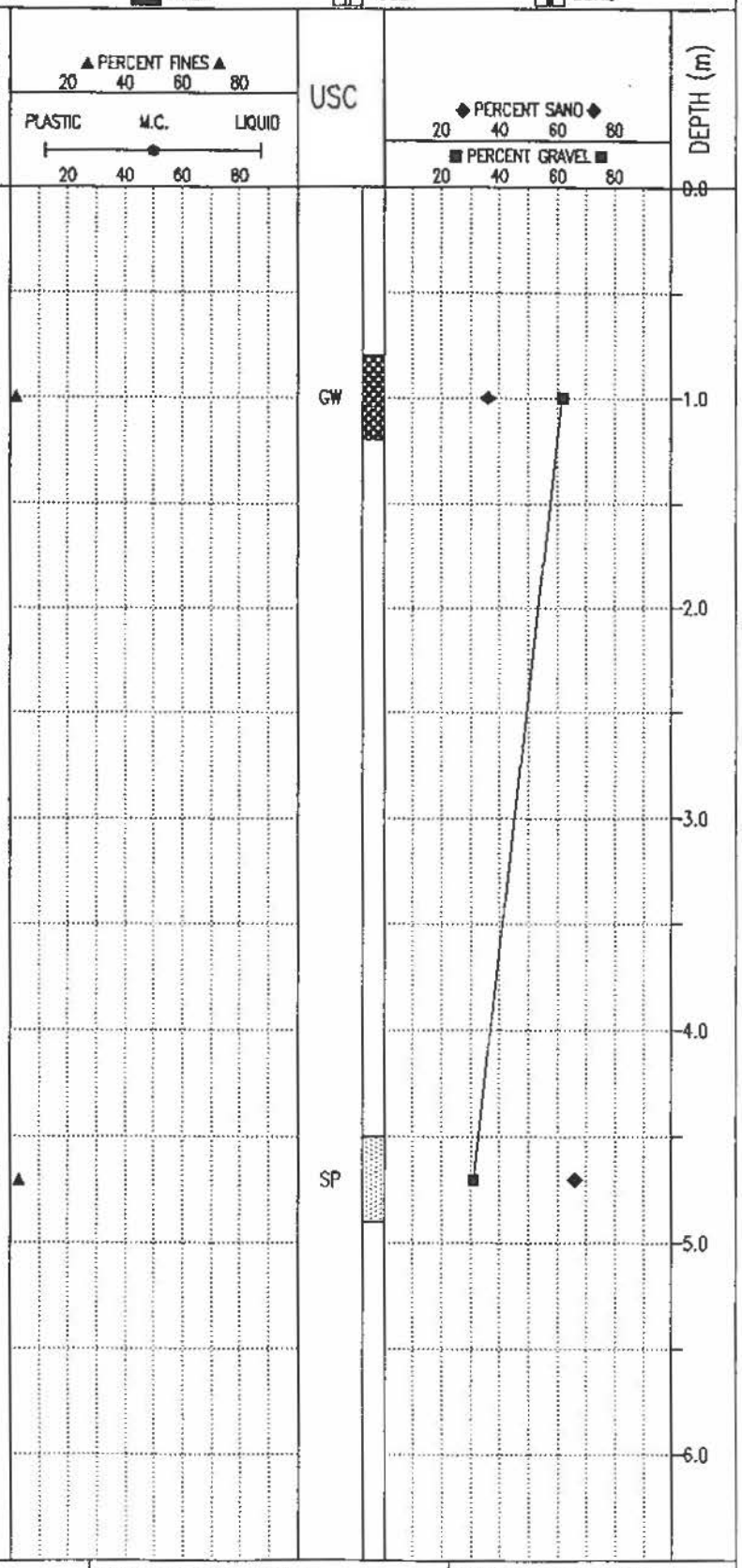


Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/05
	LOGGED BY DT	DWG NO. / Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-07
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE ■ RETURN ◪ S.P.T. ☒ AUGER ■ BULK ▥ TUBE ▥ CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	USC
0.0	ORGANIC MATERIAL			
	WELL-GRADED GRAVEL WITH SAND (GW) -brown -frozen to 0.4m (seasonal - Nb) -humid below 0.4m -maximum 100mm material		12	GW
4.0	POORLY GRADED SAND WITH GRAVEL (SP) -brown -damp		13	SP
5.0	END HOLE at 5.0m -on top of esker			
6.0				



Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/07
	LOGGED BY DT	DWG NO. / Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY GRANULAR INVESTIGATION	BOREHOLE No. 152-08
PWC/O&M YUKON	A/H KM 1692 RHS	Project No: 859167
BACKHOE: CASE 688	LOCATION: See Plan	ELEVATION 0.000 (m)

SAMPLE TYPE: RETURN, S.P.T., AUGER, BULK, TUBE, CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	▲ PERCENT FINES ▲ 20 40 60 80 / PLASTIC M.C. LIQUID 20 40 60 80	USC	◆ PERCENT SAND ◆ 20 40 60 80 / ■ PERCENT GRAVEL ■ 20 40 60 80	DEPTH (m)
0.0	ORGANIC MATERIAL						0.0
	SANDY SILT -brown -frozen to 0.4m (seasonal – Nb) -moist below 0.4m						
	POORLY GRADED GRAVEL WITH SAND (GP) -brown -moist -maximum 100mm material		14	▲	GP	◆■	
1.0							1.0
2.0							2.0
3.0							3.0
4.0	SANDY GRAVELLY SILT -brown -some boulders						4.0
5.0	END HOLE at 5.0m -at bottom of esker						5.0
6.0							6.0

Public Works Canada Whitehorse, Yukon Territory.	COMPLETION DEPTH 5.0 m	COMPLETE 91/11/07
	LOGGED BY DT	DWG NO. / Page 1 of 1

PROJECT NUMBER: 859167 HOLE NUMBER: 152-01
CLIENT: PWC/O&M YUKON
PROJECT NAME: ALASKA HIGHWAY GRANULAR INVESTIGATION
PROJECT LOCATION: 115-G-07
DRILL UNIT: BACKHOE: CASE 688
HOLE LOCATION: SEE PLAN
LOGGED BY: DT DATE COMPLETED: 91.11.05

FIELD NO: 1
LAB NO: 5399
DEPTH: 0.7-1.1
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	89
25.4	89
19.0	82
12.7	74
9.5	69
4.76	56
2.38	--
2.00	39
1.19	--
0.841	22
0.595	--
0.42	12
0.297	--
0.177	--
0.149	5
0.074	4

M.C.(%): --

LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 44
% SAND: 52
% FINES: 4

CLASSIFICATION:
POORLY GRADED SAND WITH GRAVEL (SP)

FIELD NO: 2
LAB NO: 5400
DEPTH: 3.0-3.4
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	96
25.4	96
19.0	91
12.7	80
9.5	72
4.76	56
2.38	--
2.00	37
1.19	--
0.841	25
0.595	--
0.42	18
0.297	--
0.177	--
0.149	10
0.074	8

M.C.(%): --

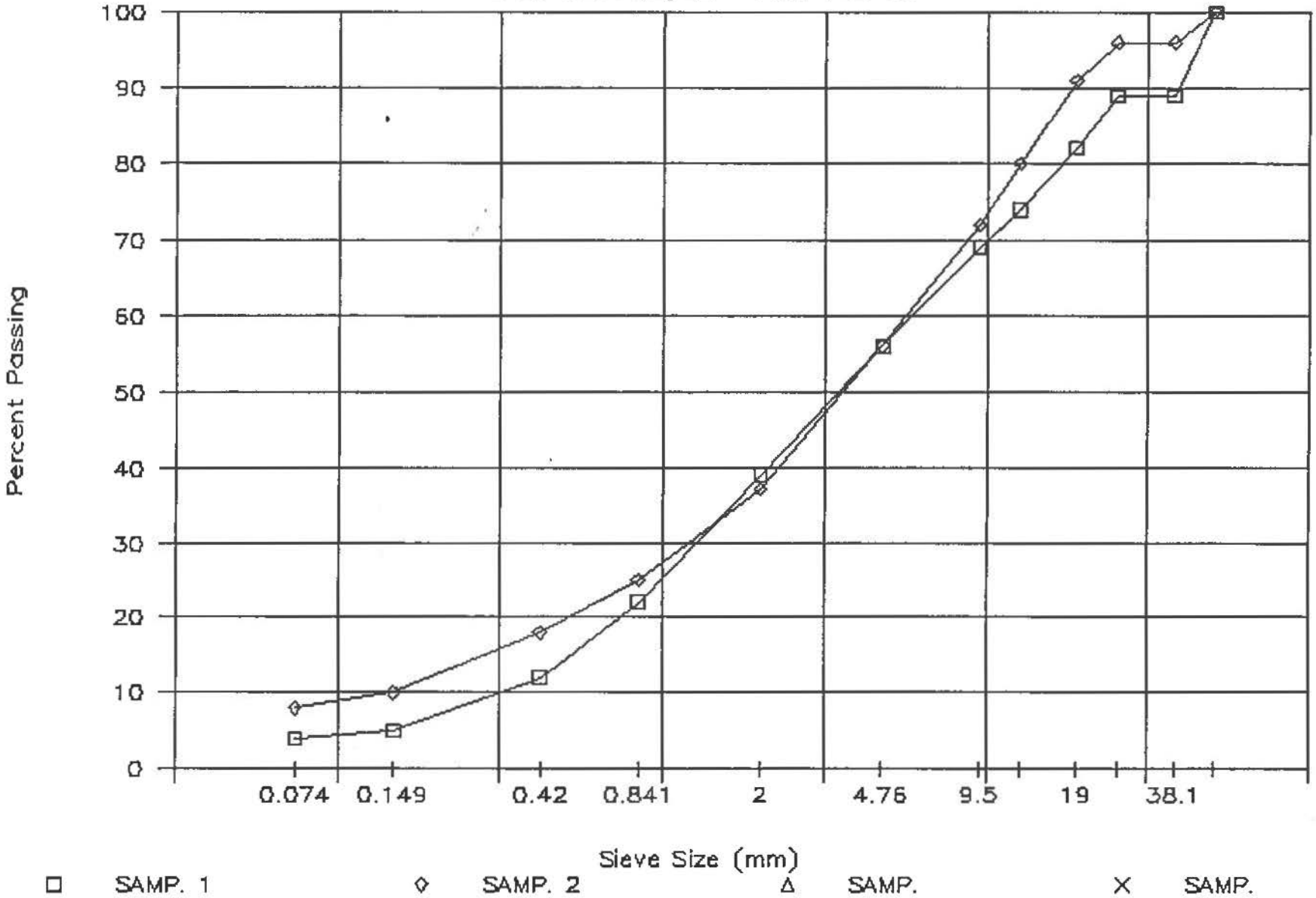
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 44
% SAND: 47
% FINES: 8

CLASSIFICATION:
WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152-01



PROJECT NUMBER:	859167	HOLE NUMBER:	152-02
CLIENT:	PWC/O&M YUKON		
PROJECT NAME:	ALASKA HIGHWAY GRANULAR INVESTIGATION		
PROJECT LOCATION:	115-G-07		
DRILL UNIT:	BACKHOE: CASE 688		
HOLE LOCATION:	SEE PLAN		
LOGGED BY:	DT	DATE COMPLETED:	91.11.05

FIELD NO: 3
LAB NO: 5401
DEPTH: 0.9-1.3
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	98
25.4	84
19.0	75
12.7	61
9.5	54
4.76	41
2.38	--
2.00	31
1.19	--
0.841	21
0.595	--
0.42	14
0.297	--
0.177	--
0.149	9
0.074	7

M.C.(%): --

LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 59
% SAND: 34
% FINES: 7

CLASSIFICATION:
WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)

FIELD NO: 4
LAB NO: 5402
DEPTH: 3.2-3.6
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	94
25.4	90
19.0	87
12.7	80
9.5	75
4.76	62
2.38	--
2.00	47
1.19	--
0.841	34
0.595	--
0.42	22
0.297	--
0.177	--
0.149	10
0.074	7

M.C.(%): --

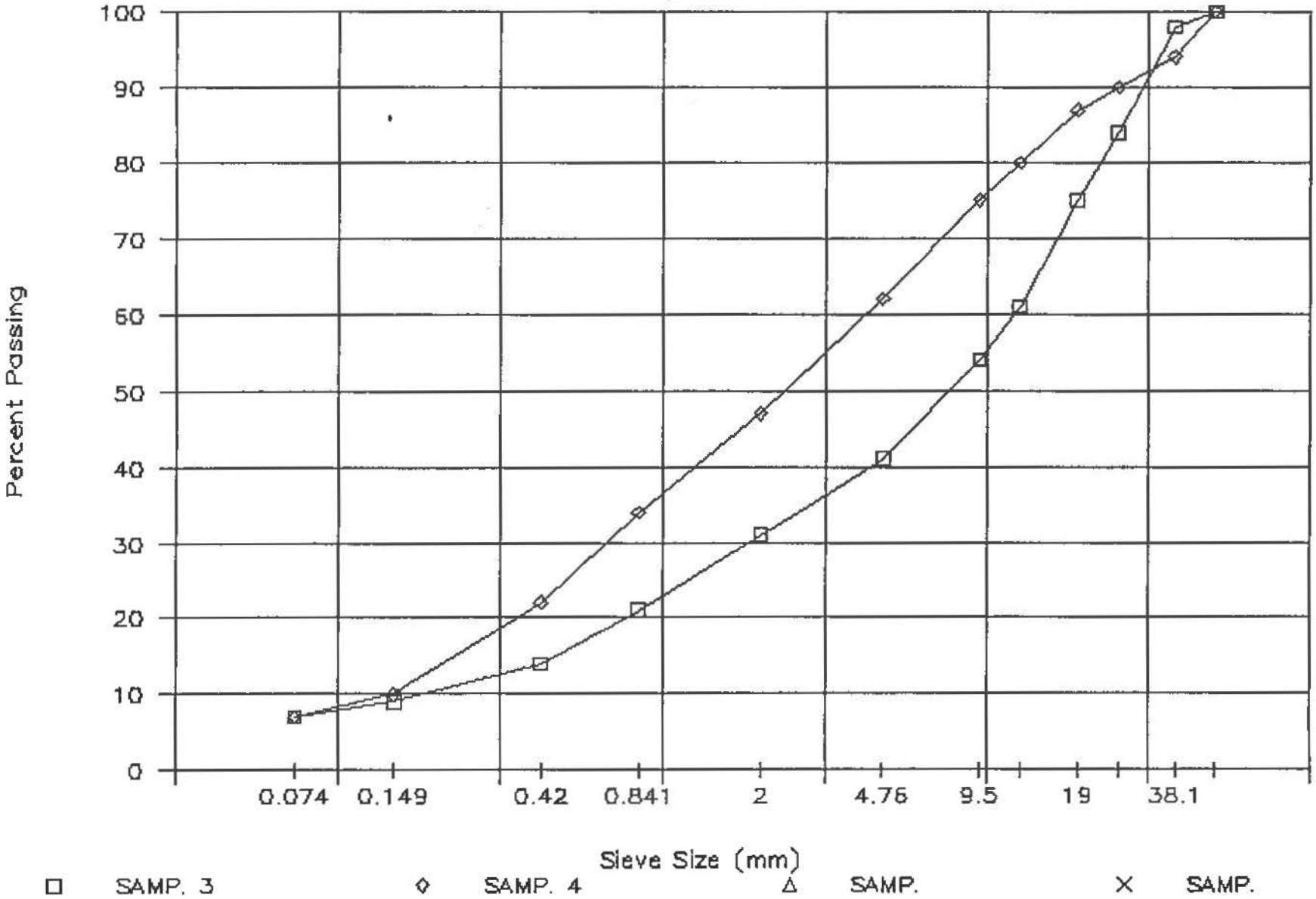
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 38
% SAND: 55
% FINES: 7

CLASSIFICATION:
POORLY GRADED SAND WITH SILT & GRAVEL (SP-SM)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152--02



PROJECT NUMBER:	859167	HOLE NUMBER:	152-03
CLIENT:	PWC/O&M YUKON		
PROJECT NAME:	ALASKA HIGHWAY GRANULAR INVESTIGATION		
PROJECT LOCATION:	115-G-07		
DRILL UNIT:	BACKHOE: CASE 688		
HOLE LOCATION:	SEE PLAN		
LOGGED BY:	DT	DATE COMPLETED:	91.11.05

FIELD NO: 5
LAB NO: 5403
DEPTH: 1.4-1.8
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	90
25.4	83
19.0	76
12.7	67
9.5	62
4.76	50
2.38	--
2.00	37
1.19	--
0.841	28
0.595	--
0.42	20
0.297	--
0.177	--
0.149	11
0.074	6

M.C.(%): --

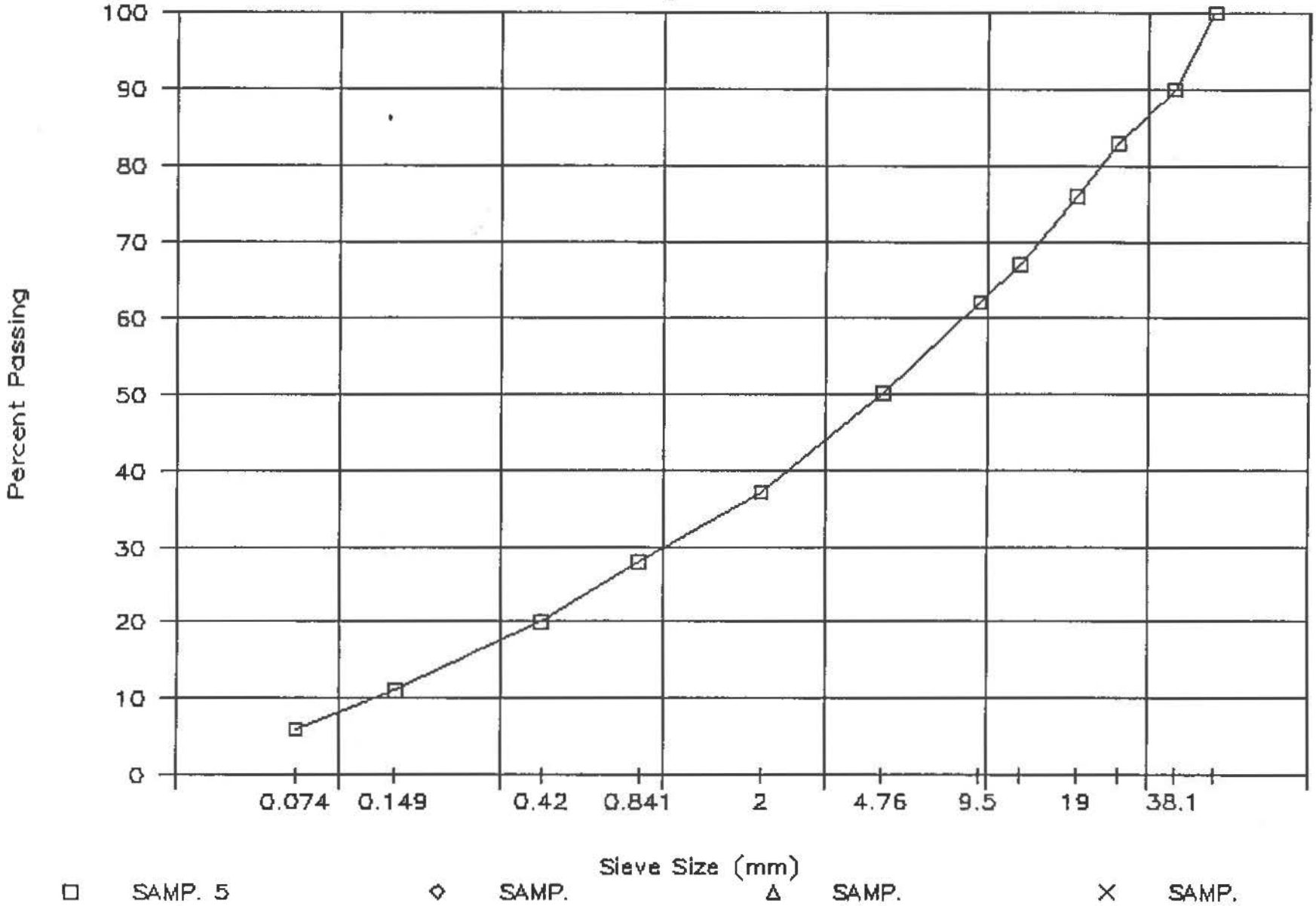
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 50
% SAND: 43
% FINES: 6

CLASSIFICATION:
POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152—03



PROJECT NUMBER: 859167 HOLE NUMBER: 152-04
CLIENT: PWC/O&M YUKON
PROJECT NAME: ALASKA HIGHWAY GRANULAR INVESTIGATION
PROJECT LOCATION: 115-G-07
DRILL UNIT: BACKHOE: CASE 688
HOLE LOCATION: SEE PLAN
LOGGED BY: DT DATE COMPLETED: 91.11.05

FIELD NO: 6
LAB NO: 5404
DEPTH: 1.6-2.0
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	100
50.8	85
38.1	82
25.4	77
19.0	72
12.7	64
9.5	59
4.76	48
2.38	--
2.00	34
1.19	--
0.841	22
0.595	--
0.42	14
0.297	--
0.177	--
0.149	7
0.074	6

M.C.(%): --

LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 52
% SAND: 42
% FINES: 6

CLASSIFICATION:
POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)

FIELD NO: 7
LAB NO: 5405
DEPTH: 4.2-4.6
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	93
25.4	79
19.0	74
12.7	65
9.5	58
4.76	46
2.38	--
2.00	32
1.19	--
0.841	21
0.595	--
0.42	12
0.297	--
0.177	--
0.149	5
0.074	4

M.C.(%): --

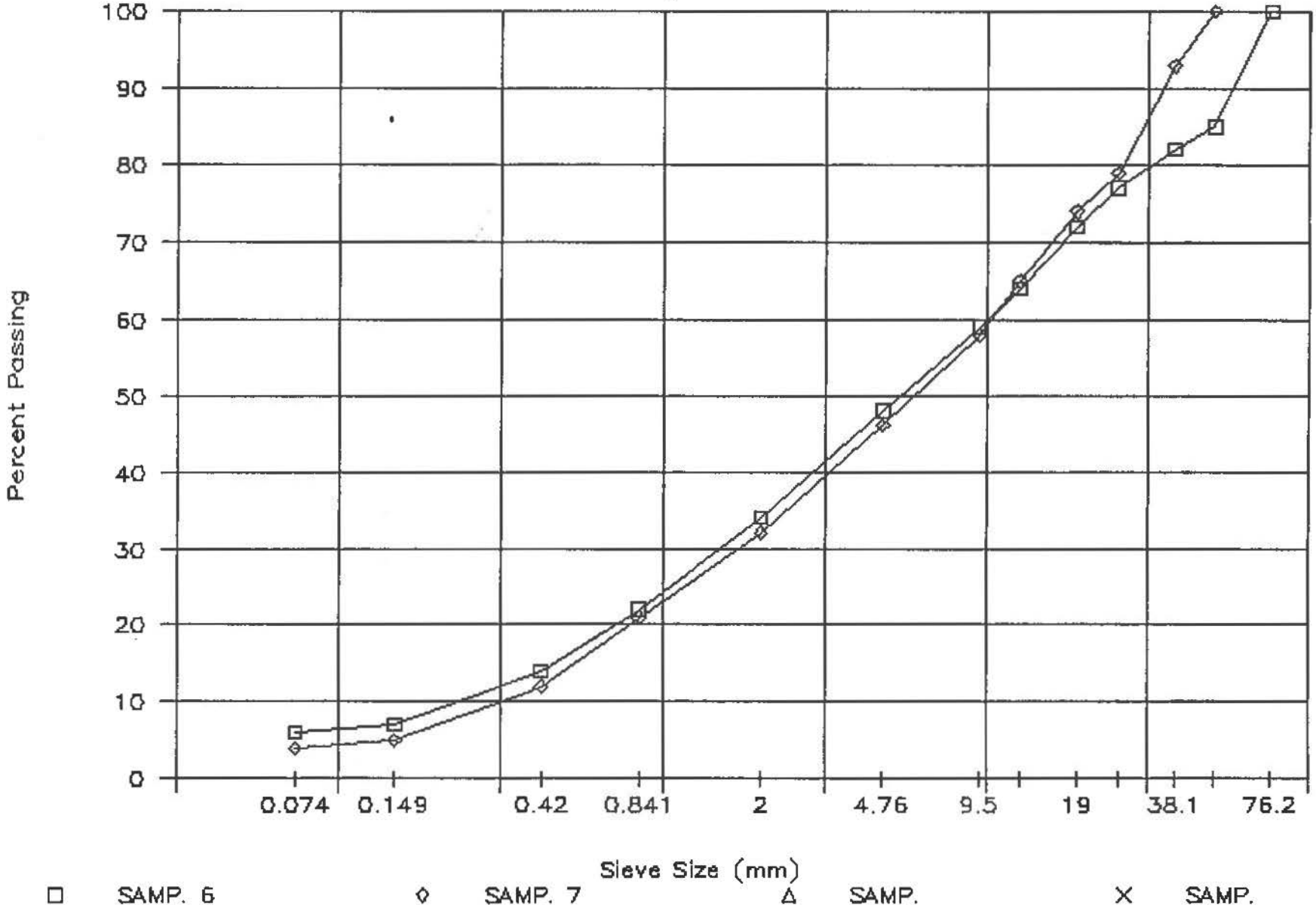
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 54
% SAND: 42
% FINES: 4

CLASSIFICATION:
POORLY GRADED GRAVEL WITH SAND (GP)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152—04



PROJECT NUMBER: 859167 HOLE NUMBER: 152-05
CLIENT: PWC/O&M YUKON
PROJECT NAME: ALASKA HIGHWAY GRANULAR INVESTIGATION
PROJECT LOCATION: 115-G-07
DRILL UNIT: BACKHOE: CASE 688
HOLE LOCATION: SEE PLAN
LOGGED BY: DT DATE COMPLETED: 91.11.05

FIELD NO: 8
LAB NO: 5406
DEPTH: 1.0-1.4
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	100
76.2	82
50.8	82
38.1	82
25.4	76
19.0	70
12.7	62
9.5	55
4.76	43
2.38	--
2.00	29
1.19	--
0.841	19
0.595	--
0.42	11
0.297	--
0.177	--
0.149	6
0.074	4

M.C.(%): --

LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 57
% SAND: 39
% FINES: 4

CLASSIFICATION:
WELL-GRADED GRAVEL WITH SAND (GW)

FIELD NO: 9
LAB NO: 5407
DEPTH: 4.2-4.6
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	100
50.8	95
38.1	77
25.4	65
19.0	58
12.7	49
9.5	43
4.76	32
2.38	--
2.00	22
1.19	--
0.841	14
0.595	--
0.42	9
0.297	--
0.177	--
0.149	3
0.074	2

M.C.(%): --

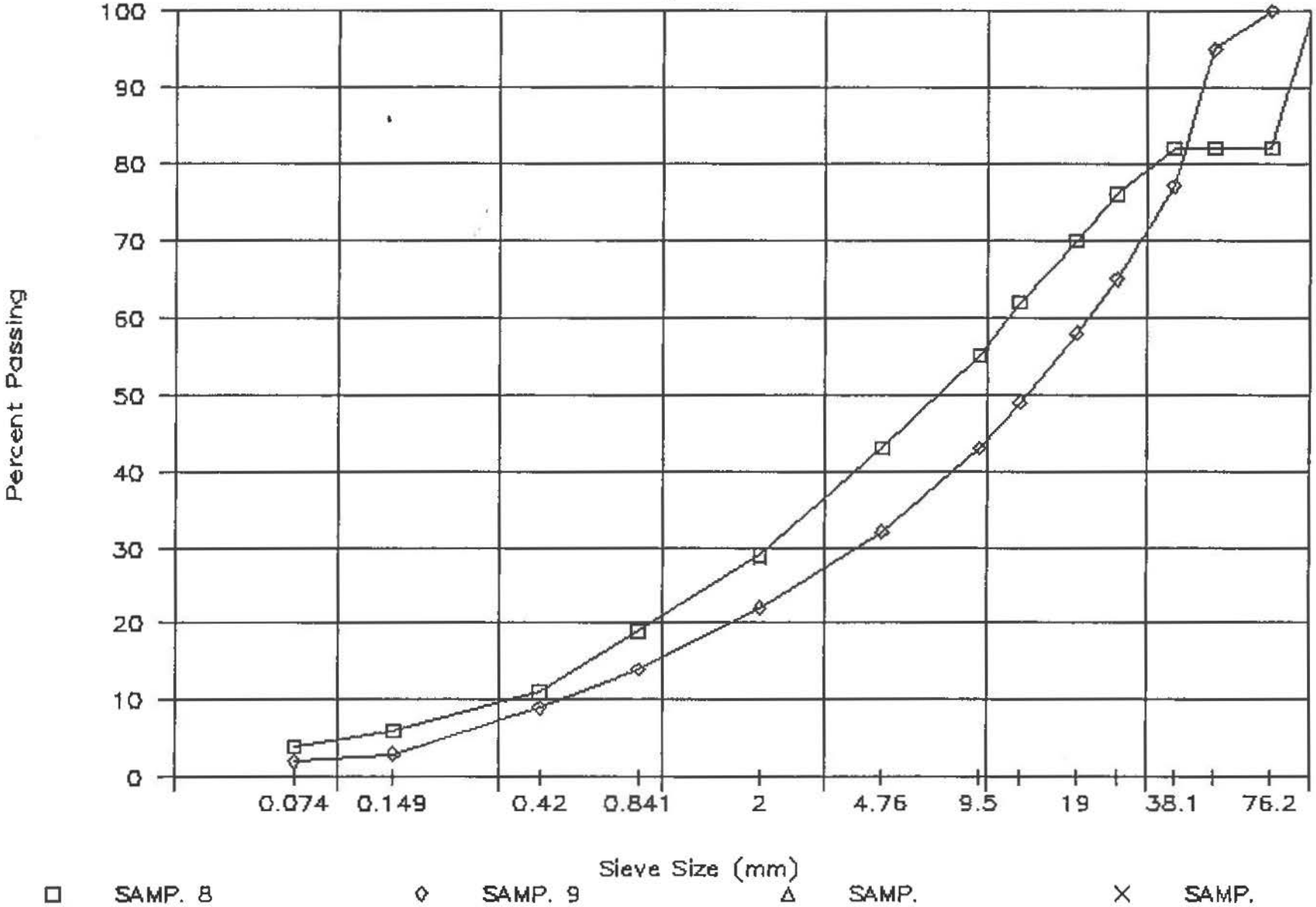
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 68
% SAND: 30
% FINES: 2

CLASSIFICATION:
WELL-GRADED GRAVEL WITH SAND (GW)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152—05



PROJECT NUMBER: 859167 HOLE NUMBER: 152-06
CLIENT: PWC/O&M YUKON
PROJECT NAME: ALASKA HIGHWAY GRANULAR INVESTIGATION
PROJECT LOCATION: 115-G-07
DRILL UNIT: BACKHOE: CASE 688
HOLE LOCATION: SEE PLAN
LOGGED BY: DT DATE COMPLETED: 91.11.05

FIELD NO: 10
LAB NO: 5408
DEPTH: 1.1-1.5
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	97
25.4	90
19.0	82
12.7	76
9.5	69
4.76	56
2.38	--
2.00	40
1.19	--
0.841	27
0.595	--
0.42	16
0.297	--
0.177	--
0.149	6
0.074	5

M.C.(%): --

LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 44
% SAND: 51
% FINES: 5

CLASSIFICATION:
POORLY GRADED SAND WITH SILT & GRAVEL (SP-SM)

FIELD NO: 11
LAB NO: 5409
DEPTH: 4.6-5.0
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	100
50.8	92
38.1	85
25.4	77
19.0	74
12.7	67
9.5	61
4.76	49
2.38	--
2.00	36
1.19	--
0.841	26
0.595	--
0.42	19
0.297	--
0.177	--
0.149	8
0.074	5

M.C.(%): --

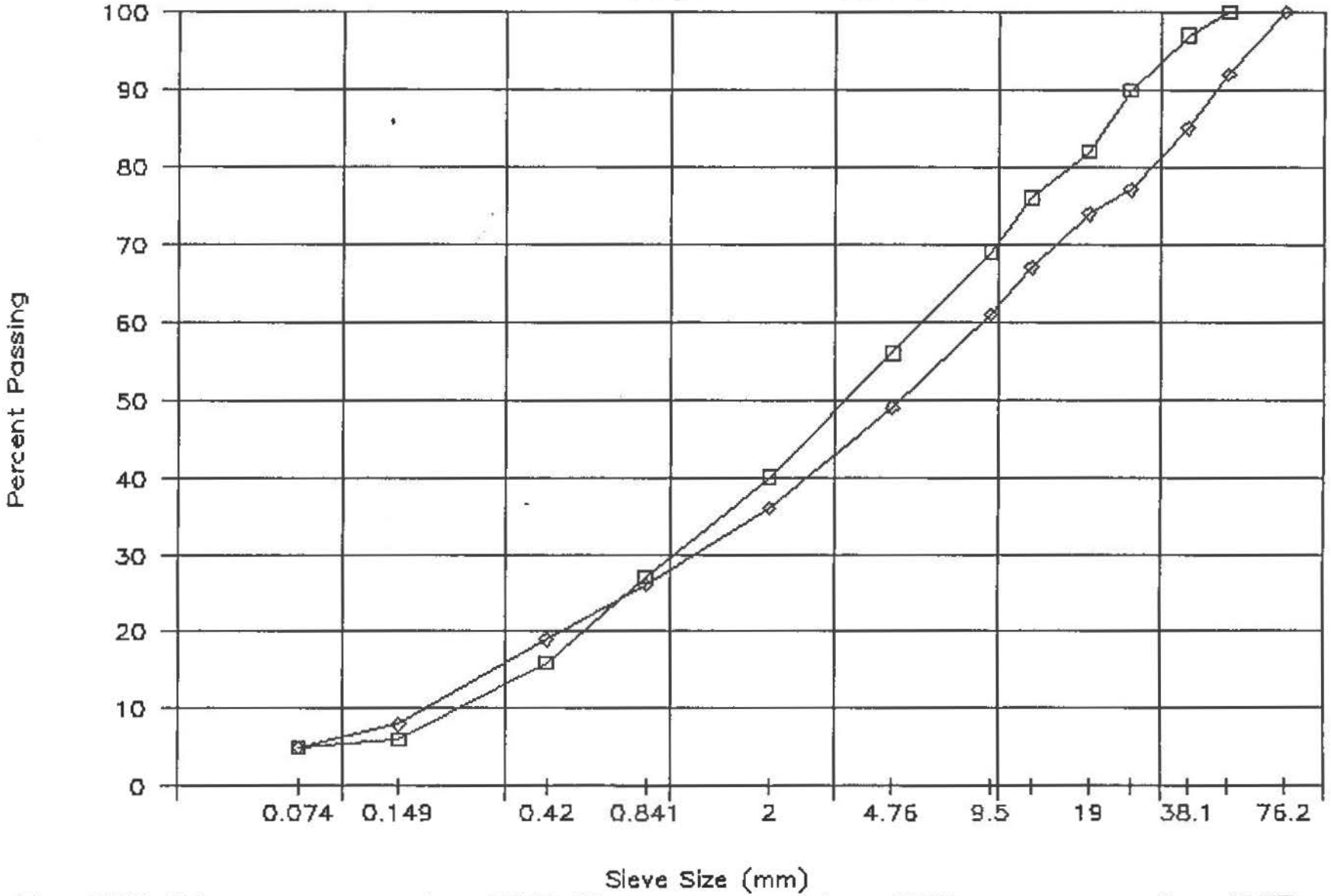
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 51
% SAND: 45
% FINES: 5

CLASSIFICATION:
POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152-06



□ SAMP. 10 ◇ SAMP. 11 △ SAMP. X SAMP.

PROJECT NUMBER: 859167 HOLE NUMBER: 152-07
CLIENT: PWC/O&M YUKON
PROJECT NAME: ALASKA HIGHWAY GRANULAR INVESTIGATION
PROJECT LOCATION: 115-G-07
DRILL UNIT: BACKHOE: CASE 688
HOLE LOCATION: SEE PLAN
LOGGED BY: DT DATE COMPLETED: 91.11.07

FIELD NO: 12
LAB NO: 5410
DEPTH: 0.8-1.2
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	100
50.8	94
38.1	90
25.4	79
19.0	74
12.7	60
9.5	52
4.76	38
2.38	--
2.00	25
1.19	--
0.841	13
0.595	--
0.42	7
0.297	--
0.177	--
0.149	3
0.074	2

M.C.(%): --

LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 62
% SAND: 36
% FINES: 2

CLASSIFICATION:
WELL-GRADED GRAVEL WITH SAND (GW)

FIELD NO: 13
LAB NO: 5411
DEPTH: 4.5-4.9
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	--
38.1	100
25.4	95
19.0	93
12.7	85
9.5	81
4.76	69
2.38	--
2.00	54
1.19	--
0.841	37
0.595	--
0.42	21
0.297	--
0.177	--
0.149	4
0.074	3

M.C.(%): --

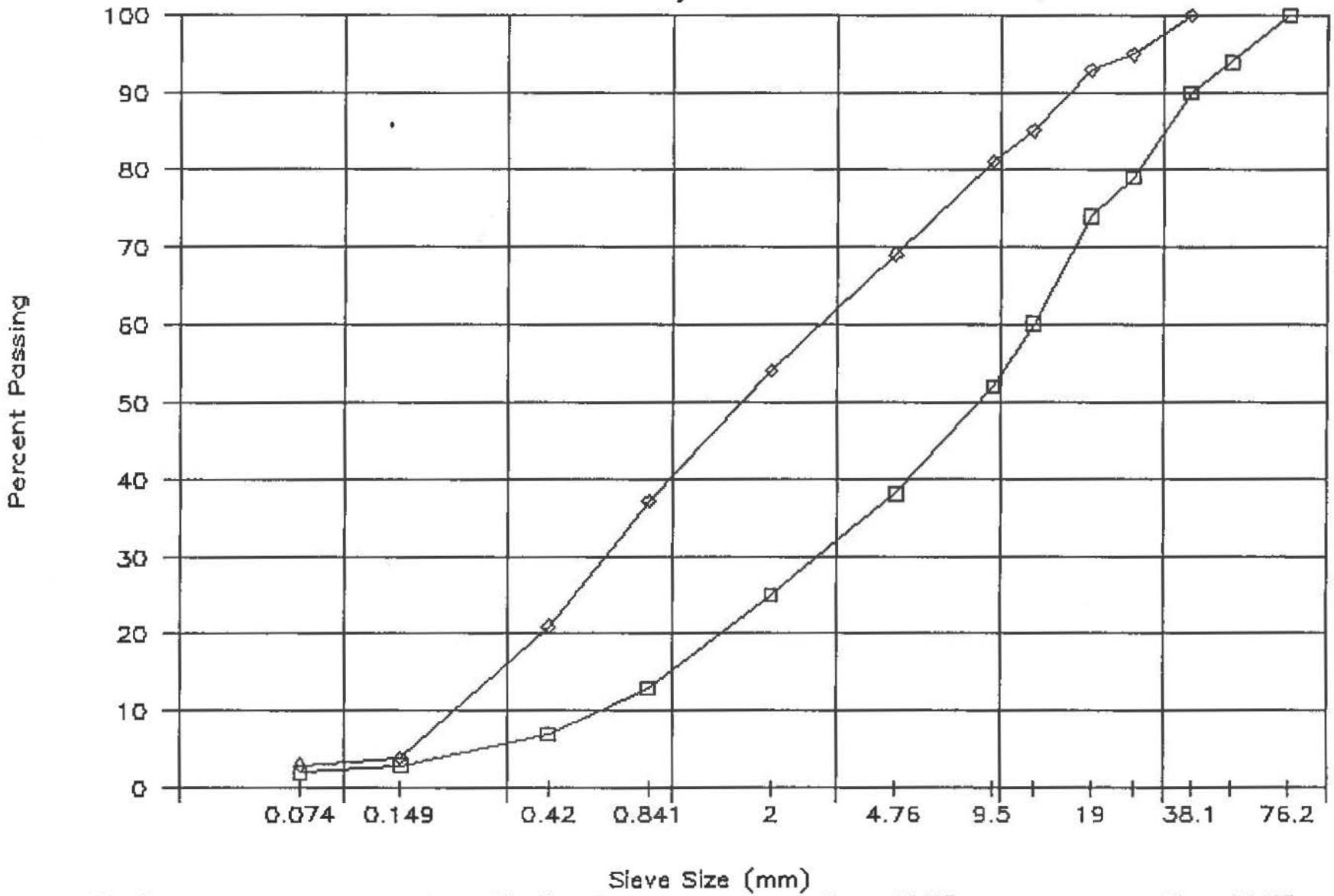
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 31
% SAND: 66
% FINES: 3

CLASSIFICATION:
POORLY GRADED SAND WITH GRAVEL (SP)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152–07



□ SAMP. 12 ◇ SAMP. 13 △ SAMP. X SAMP.

PROJECT NUMBER:	859167	HOLE NUMBER:	152-08
CLIENT:	PWC/O&M YUKON		
PROJECT NAME:	ALASKA HIGHWAY GRANULAR INVESTIGATION		
PROJECT LOCATION:	115-G-07		
DRILL UNIT:	BACKHOE: CASE 688		
HOLE LOCATION:	SEE PLAN		
LOGGED BY:	DT	DATE COMPLETED:	91.11.07

FIELD NO: 14
LAB NO: 5412
DEPTH: 1.2-1.6
TYPE: BULK

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	100
50.8	89
38.1	89
25.4	82
19.0	75
12.7	69
9.5	63
4.76	50
2.38	--
2.00	36
1.19	--
0.841	24
0.595	--
0.42	15
0.297	--
0.177	--
0.149	7
0.074	4

M.C.(%): --

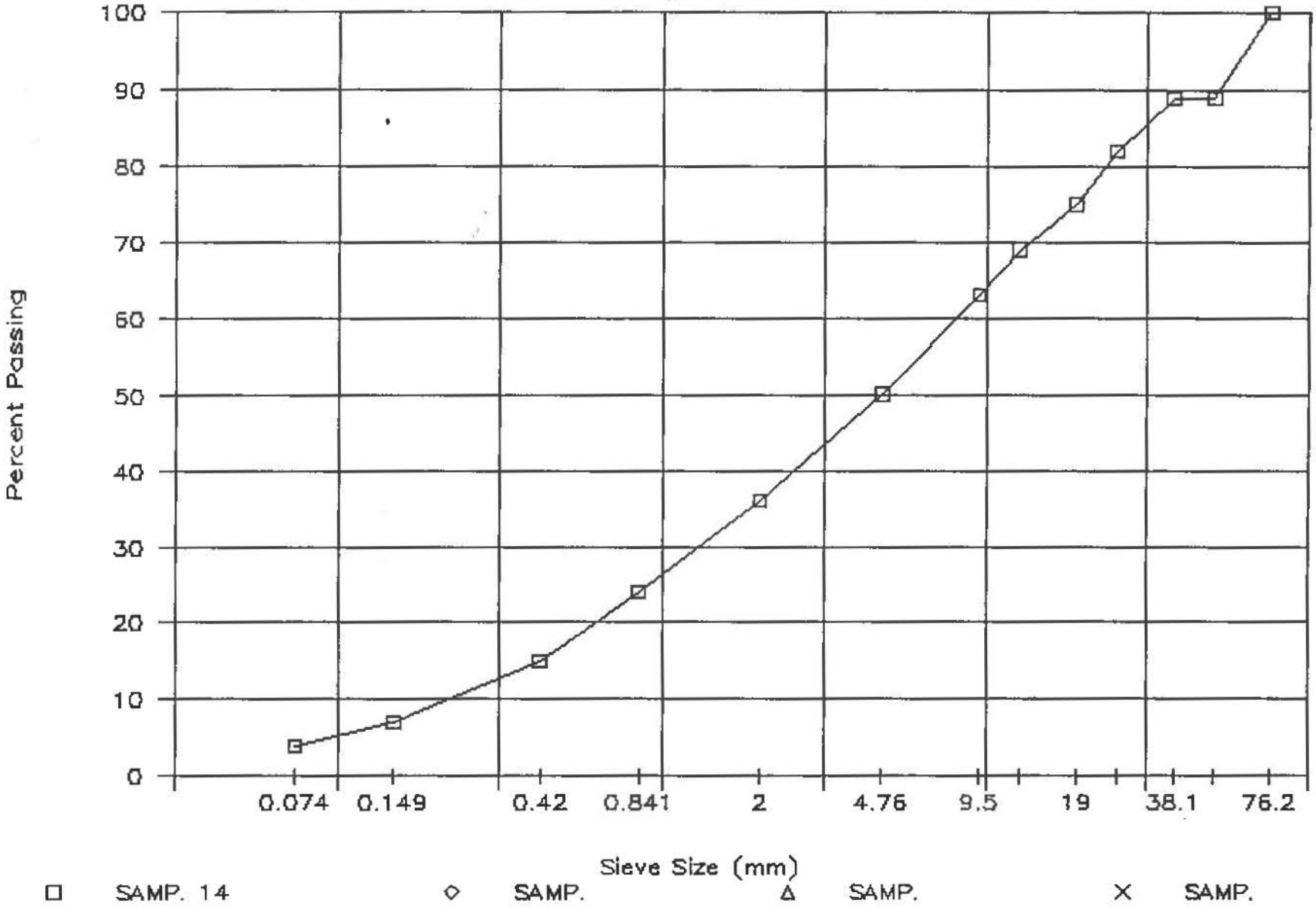
LIMITS
LIQUID: --
PLASTIC: --
P.I.: N.P.

% GRAVEL: 50
% SAND: 45
% FINES: 4

CLASSIFICATION:
POORLY GRADED GRAVEL WITH SAND (GP)

PUBLIC WORKS CANADA — WHITEHORSE, Y.T.

Grain Size Analysis — Hole 152—08



TL/TF 17

FILE NO. _____

SILVER CITY.

LAB. SAMPLE NO. _____

AHKM 1892

Los Angeles Abrasion Test

MATERIAL GRADING — 19 MM

Actual Sieve Sizes		Amount	
− 3/4	+ 1/2	2501.7	gms.
− 1/2	+ 3/8	2500.5	gms.
−	+		gms.
−	+		gms.
		Total sample	gms.

NO. of revolutions	500	
NO. of spheres	11	
Wt. of spheres	4580.3	gms.
Total samples	5002.2	gms.
+"12 material after	4113.6	gms.
−"12 material	888.6	gms.

Remarks: TEST SAMPLE TAKEN FROM A COMBINATION OF ALL SAMPLES FROM AHKM 1892

% Loss = $\frac{-"12}{\text{total sample}}$ x 100 _____ x100 _____ %

= 17.8%

YUKON SERVICES TRANSPORTATION

CONTRACT NO.	PROJECT LOCATION OR PIT NO.	SAMPLED FROM	DATE
Hwy 4	Kon 1693	BELT	17-20 10/88

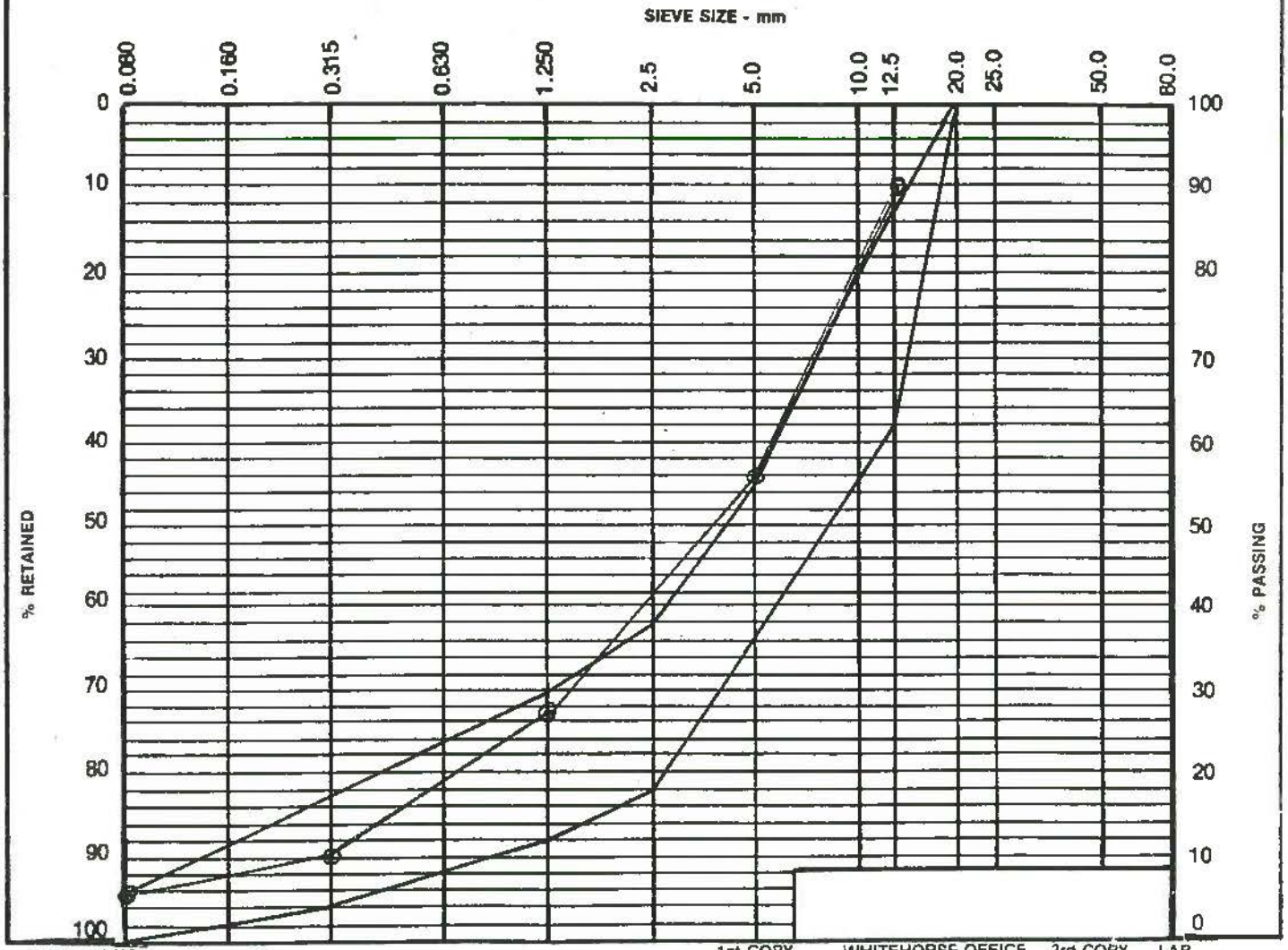
CONTRACTOR	AGGREGATE TYPE	TIME	LAB NO.
Nuway	Bituminous Surface Treatment		1-10

SIEVE	WT. RETAINED	% RETAINED	% PASSING
80.0 mm			
50.0 mm			
25.0 mm			
20.0 mm			
12.5 mm			
10.0 mm			
5.0 mm			
2.5 mm			
1.25 mm			
.630 mm			
.315 mm			
.160 mm			
.080 mm			

WT. WET AGGREGATE + TARE
WT. DRY AGGREGATE + TARE
TARE WT.
WT. DRY AGGREGATE
WT. MOISTURE
% MOISTURE

WT. FRACTURED PARTICLES
WT. RETAINED ON 5000
% FRACTURED FACES
LIQUID LIMIT
PLASTIC LIMIT
PLASTICITY INDEX

REMARKS Average of 1st 10 sieves



YG [2604] NC4

1st COPY 2nd COPY WHITEHORSE OFFICE RESIDENT 3rd COPY 4th COPY LAB CONTRACTOR

Yukon GEOTECHNICAL SERVICES

HIGHWAYS & TRANSPORTATION

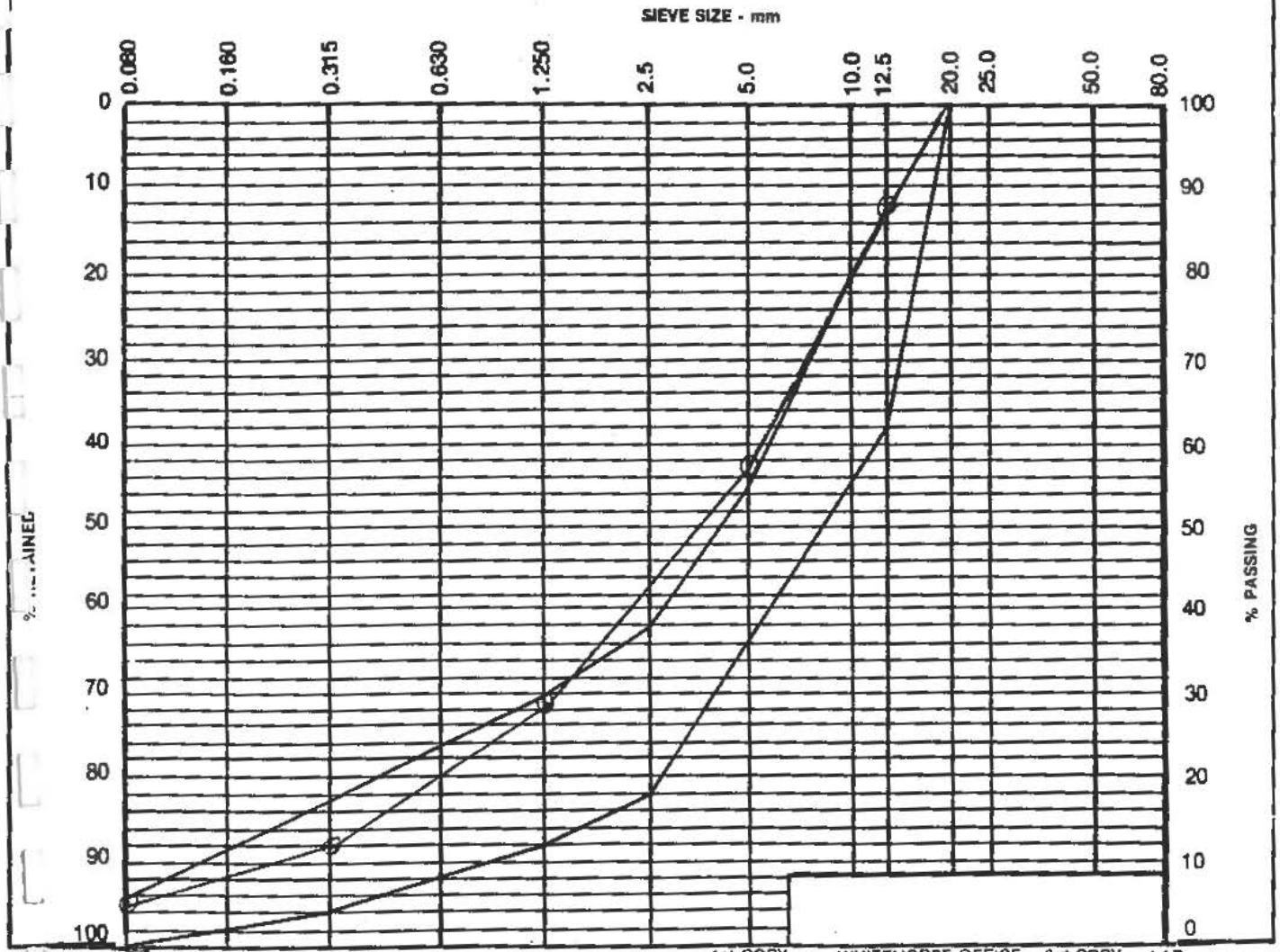
COI CT NO.	PROJECT LOCATION OR PIT NO.	SAMPLED FROM	DATE
Hwy #1	Km 1693	BELT	7-22
CONTRACTOR	**AGGREGATE TYPE**	**TIME**	**LAB NO.**
Nuway	Bituminous Surface Treatment		11-20

SIEVE	WT. RETAINED	% RETAINED	% PASSING
80.0 mm			
50.0 mm			
25.0 mm			
20.0 mm			
12.5 mm			
10.0 mm			
5.0 mm			
2.5 mm			
1.25 mm			
.630 mm			
.315 mm			
.160 mm			
.080 mm			

WT. WET AGGREGATE + TARE
WT. DRY AGGREGATE + TARE
TARE WT.
WT. DRY AGGREGATE
WT. MOISTURE
% MOISTURE

WT. FRACTURED PARTICLES
WT. RETAINED ON 5000
% FRACTURED FACES
LIQUID LIMIT
PLASTIC LIMIT
PLASTICITY INDEX

REMARKS Average of 7th - 10 blows



3 [2604] NC4

1st COPY 2nd COPY WHITEHORSE OFFICE RESIDENT 3rd COPY 4th COPY LAB CONTRACTOR

Yukon

GEOTECHNICAL SERVICES

HIGHWAYS & TRANSPORTATION

CONTRACT NO.	PROJECT LOCATION OR PIT NO.	SAMPLED FROM	DATE
	AVERAGE		84-3-22

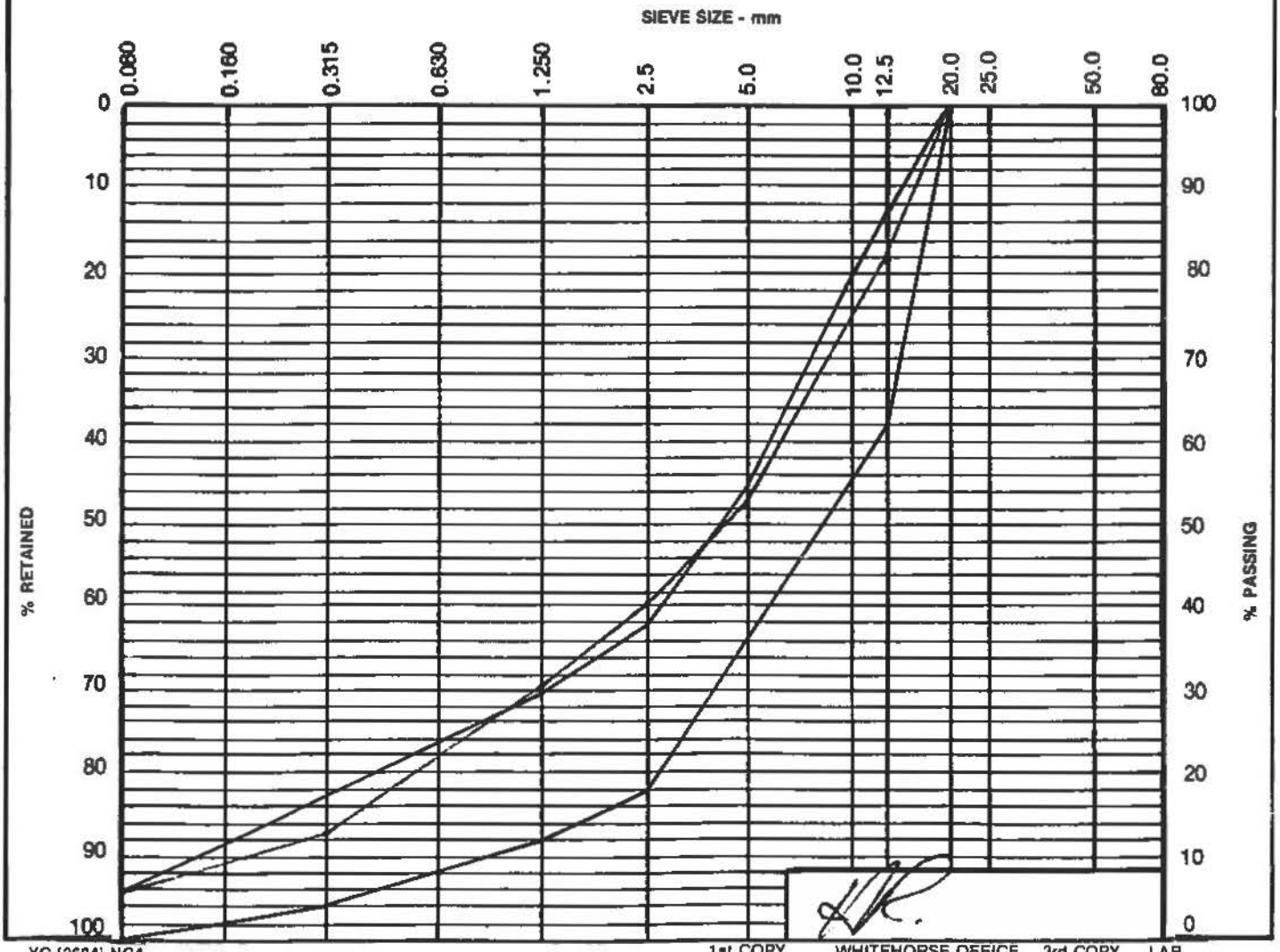
CONTRACTOR	AGGREGATE TYPE	TIME	LAB NO.
C.W. FRIDAY	Bituminous Surface Treatment		

SIEVE	WT. RETAINED	% RETAINED	% PASSING
80.0 mm			
50.0 mm			
25.0 mm			
20.0 mm	0	0	100
12.5 mm	18d	18.1	81.9
10.0 mm			
5.0 mm		47.3	52.7
2.5 mm		59.9	40.1
1.25 mm		69.8	30.2
.630 mm			
.315 mm		87.4	12.6
.160 mm			
.080 mm		94.6	5.4

WT. WET AGGREGATE + TARE
WT. DRY AGGREGATE + TARE
TARE WT.
WT. DRY AGGREGATE
WT. MOISTURE
% MOISTURE

WT. FRACTURED PARTICLES
WT. RETAINED ON 5000
% FRACTURED FACES
LIQUID LIMIT
PLASTIC LIMIT
PLASTICITY INDEX

REMARKS

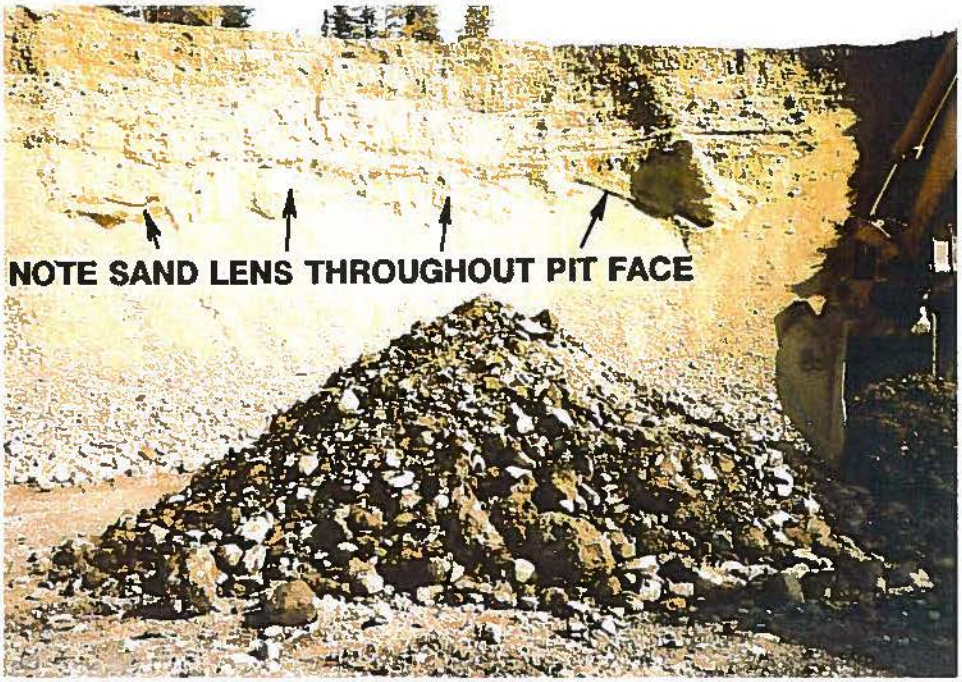


YG (2604) NC4

1st COPY WHITEHORSE OFFICE 3rd COPY LAB
2nd COPY RESIDENT 4th COPY CONTRACTOR

APPENDIX B

km 1693 R.H.S.



TP 92-013E

TP 92-014E

km 1693 R.H.S.

TP 92-015E

TP 92-016E

km 1693 R.H.S.

TP-92-017E

TP-92-018E

km 1693 R.H.S.

TP 92-019E

TP 92-020E

km 1693 R.H.S.

TP 92-021E

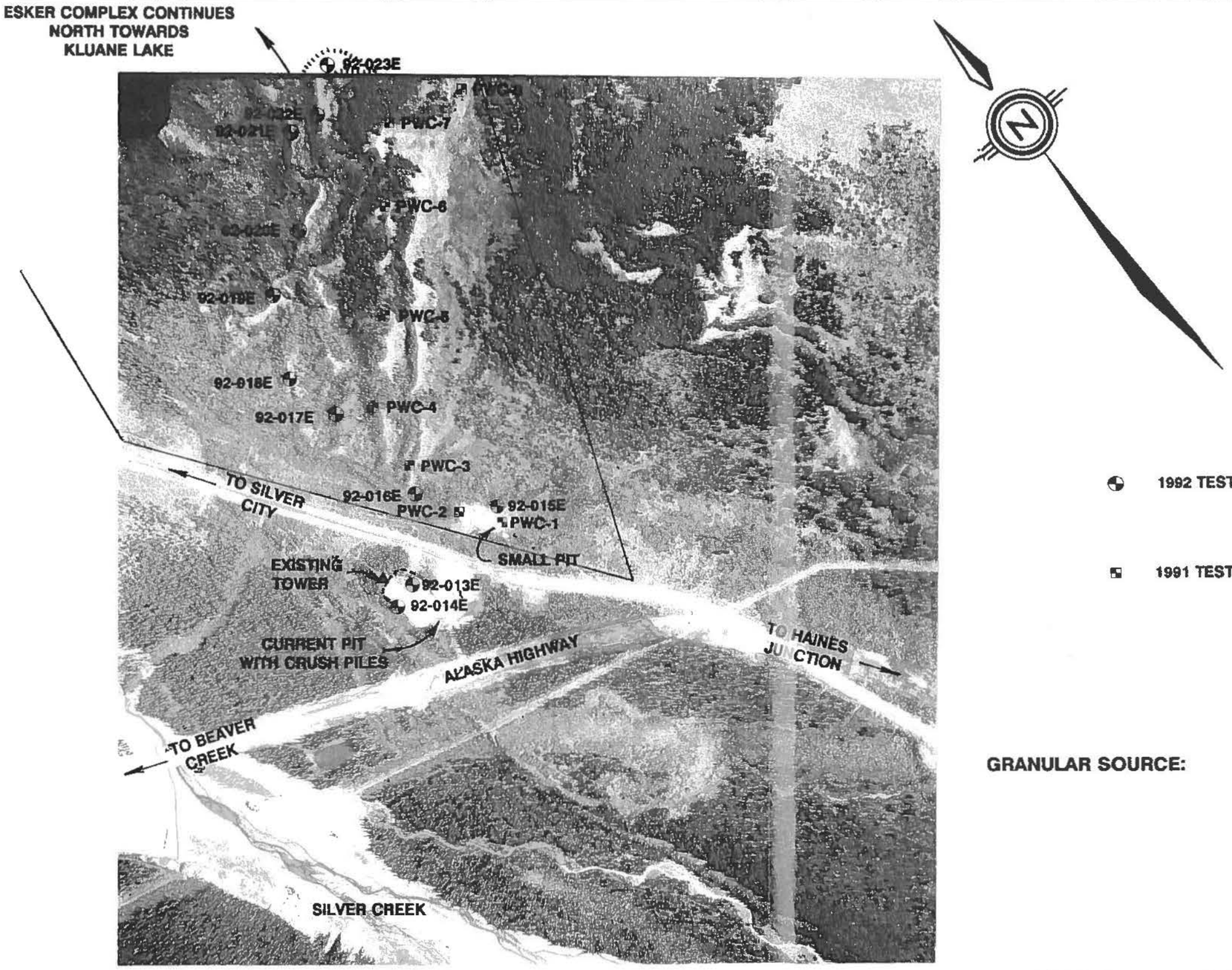
TP 92-022E

INTERBEDDED WITH GRAVEL OVER SAND
WITH GRAVEL AT BASE OF TEST PIT

km 1693 R.H.S.

TP 92-023E

ESKER COMPLEX CONTINUING NORTH TOWARDS KLUANE LAKE



1992 TESTPITS (EBA ENGINEERING)

1991 TESTPITS (PWC)

GRANULAR SOURCE: km 1693 R.H.S.
NORTH ALASKA HIGHWAY

APPROXIMATE SCALE OF AIR PHOTO
1:8,000

EBA Engineering Consultants Ltd.			PROJECT: GRANULAR SOURCE EVALUATION	
CLIENT: GOVERNMENT OF YUKON			TITLE: SITE PLAN SHOWING RECENT TESTHOLE LOCATIONS	
DATE: 92-04-29	DWN.: MCP	CHKD.:	FILE NO.: 0201-10922	10922-A-01

GR-01
013