



A TETRA TECH COMPANY

December 11, 2012

ISSUED FOR USE  
EBA FILE: W14103095-01

Government of Yukon  
Land Development Unit, Community Services  
Box 2703  
Whitehorse, YT Y1A 2C6

**Attention:** Ms. Laura Prentice, Senior Program Manager

**Subject:** Geotechnical Evaluation - Water and Sewer Upgrades – Mayo, Yukon

## 1.0 INTRODUCTION

EBA, A Tetra Tech Company (EBA), has completed a geotechnical evaluation of conditions throughout the Mayo Town site and the NND Subdivision located east of the main town site.

Presented in this report is a summary of the previously completed geotechnical evaluation work along with the current work completed; the historic and recent conditions encountered throughout the two study areas; and recommendations for deep utilities/roadway design and construction.

## 2.0 HISTORICAL GEOTECHNICAL REPORTS

EBA has completed geotechnical evaluations throughout the Mayo area since 1975. Testhole information from 9 previously completed projects was reviewed and used for evaluation purposes. Individual site plans, testhole logs and laboratory test result report forms are included in this report so that YTG – Community Services has an easy to reference source for future review purposes. Previously completed reports reviewed and used for this evaluation include:

- 1975 – Administration Building, Sports Complex and Water and Sewer – EBA file no. E-1021. Seven boreholes drilled at various locations.
- 1974 – Mayo School – EBA file no. E-1114. Two sites were evaluated and six boreholes were drilled.
- 1980 – Yukon Housing 4-Plex – EBA file no. 101-2870. Two sites were evaluated and four boreholes were drilled.
- 1988 – Mayo Subdivision Expansion for Stanley Associates – EBA file no. 0201-4929. Ten boreholes were drilled throughout what is now the NND Subdivision located east of the town site.
- 1991 – Sewer Lift Station and Forcemain for Stanley Associates – EBA file no. 0201-10506. Two boreholes and a testpit were advanced at the Lift Station location and along the forcemain route.
- 1991 – Binet House Restoration – EBA file no. 0201-10625. Two boreholes were advanced at the 2<sup>nd</sup> Avenue location.

EBA Engineering Consultants Ltd. operating as EBA, A Tetra Tech Company  
Calcite Business Centre, Unit 6, 151 Industrial Road  
Whitehorse, YT Y1A 2V3 CANADA  
p. 867.668.3068 f. 867.668.4349

- 1999 – New School – EBA file no. 0201-99-13993. Six boreholes and 8 testpits were advanced throughout the New School site. Logs for the five original boreholes are included in this summary.
- 2004 – Evaluation of Various NND Sites For The Proposed Administration Site – EBA file no. 1200073. Two testpits were excavated in the 1<sup>st</sup> and 2<sup>nd</sup> Avenue area of the town site.
- 2010 – Proposed Urban Infill – EBA file no. W14101489. Four testpits were excavated northeast of the school site.

During the completion of the projects listed above, 52 testhole logs were prepared describing soil, groundwater and permafrost conditions. Laboratory testing was performed, including natural moisture content determination and particle size distribution testing (by sieve analysis and/or hydrometer) of select representative samples. On some projects, Atterberg Limit testing to assess soil plasticity was performed as well. Site specific testhole locations, logs and test result report forms for existing data is presented in Appendix C of this report.

### **3.0 2012 TESTPITTING PROGRAM**

Subsequent to the project start-up meeting on October 22, 2012, Mr. James Buyck of EBA mobilized to Mayo, made arrangements with the Village of Mayo (VOM) to subcontract their rubber tired backhoe for testpit excavation purposes, met with all interested parties to discuss project objectives and challenges as well as determining testpit locations that would provide good coverage of the NND Subdivision and the Mayo town site.

On October 24 and 25, 2012, a total of 13 testpits were excavated throughout the study area. Six testpits were excavated within the NND Subdivision; two additional testpits were excavated along Duncan Street east of the Laurier Street/Duncan Street intersection and the remaining five testpits were excavated throughout the town site west of Laurier Street between 1<sup>st</sup> Avenue and 7<sup>th</sup> Avenue.

During excavation, detailed testpit logs were prepared describing soil, groundwater, seasonal frost, and permafrost conditions. Select samples were collected for basic index testing (natural moisture content determination and particle size distribution testing). Upon completion, all testpits were backfilled to grade to ensure safe conditions for vehicular and pedestrian traffic and the UTM coordinate location was recorded for future reference.

The locations of the 13 testpits are presented on Figure 1 of this report. The testhole logs and associated laboratory test result report forms are presented in Appendix B.

## **4.0 SITE CONDITIONS**

### **4.1 Surficial Geology**

The surficial geology of the Mayo area is considered to be quite complex. The area has been affected by a combination of valley glaciation and fluvial action related to the Mayo and Stewart River channels. Glacial sediments have been found to extend to depths in excess of two hundred metres during water well drilling.

Nearer the surface, glacial melt water deposited glaciolacustrine silt and clay in temporary pro-glacial lakes. Fluvial deposition of coarse granular outwash deposits is also common. Adjacent to the Mayo and Stewart River channels, soil deposition is further complicated by erosion of glacial sediments and deposition of river gravels throughout post-glacial river floodplains.

For additional information that details the depositional history and surficial geology of the Mayo area, refer to the “*Northern Climate Exchange, March 2011. Mayo Landscape Hazards: Geological Mapping for Climate Change Adaptation Planning*” which is available from Northern Climate Exchange c/o Yukon Research Centre, Yukon College, Whitehorse.

## **4.2 Soil Conditions**

The soil stratigraphy is relatively consistent throughout the Mayo town site and the NND Subdivision with silty surficial soils overlying granular sediments which are underlain by fine grained glaciolacustrine soils. However, the thickness of each of the soils units is extremely variable.

## **4.3 Bedrock**

As anticipated, no bedrock has been encountered during the completion of any of the current and historic geotechnical evaluations completed within the Mayo town site. As mentioned above, the community water well was developed just above the bedrock surface at approximately 240 m (800’).

## **4.4 Groundwater**

The presence and depth to groundwater was quite random during the evaluations completed throughout Mayo. Of the 65 testhole logs reviewed during this evaluation, groundwater was noted at 19 locations.

The presence of groundwater may be related to seasonal water level fluctuations in areas close to the Mayo and Stewart Rivers; the depth to the underlying permafrost where ice rich soils have melted out, leaving groundwater perched on frozen glaciolacustrine soils; or it may be encountered at shallow depths in channels within the floodplain deposits.

Based on the recently completed “Sanitary Inspection Survey”, much of the accessible portions of the sewer lines and manholes were noted as being under water. Based on this observation, it is assumed that much of the inaccessible areas would be under water as well. Therefore, during reconstruction, groundwater could be encountered throughout major portions of all phases.

## **4.5 Permafrost**

Also documented in the *Mayo Landscape Hazards* document is a good overview of the permafrost conditions within the Mayo town site and throughout the Mayo area. The current and historical testhole logs presented in Appendix B and C of this report detail the permafrost conditions at specific locations spanning the last 40 years.

In general, if the root mat and tree cover are undisturbed, permafrost can be expected at shallow depths in the coarse grained sediments that define the floodplains deposits and extend into the fine grained glaciolacustrine soils that continue to significant depth. The permafrost encountered in the coarse grained

sediments are typically not ice rich while significant visible ice contents (stratified ice contents of more than 70%) have been noted in the underlying fine grained soils.

Throughout the Mayo town site where development has included deep utilities and roadway construction, much of the permafrost that existed within the coarse grained soils has melted but it is generally accepted that there is still potential for ice rich permafrost to exist in the underlying fine grained soils.

Determining the rate of permafrost degradation beneath roadways in Mayo has not been addressed as it would entail the drilling of numerous deep boreholes, the recovery of permafrost core to assess ice content, and the installation of thermistors to monitor ground temperatures. This program would be quite expensive and to be successful, on-going data collection and interpretation would be necessary.

## 5.0 RECOMMENDATIONS

### 5.1 Challenges Related To Infrastructure Construction and Maintenance

The degradation of warm permafrost at depth will remain the biggest challenge for deep utility reconstruction and the development of realistic maintenance schedules. There have been numerous papers written discussing the problems with maintaining water and sewer line systems in northern communities and the consensus seems to be that additional research is required. However, the additional cost of the research may not yield significant financial benefits in Mayo since the majority of the deep utility system has been in place for a number years and even with additional temperature data, there are other potential causes that could accelerate permafrost degradation in localized areas (such as water line leaks or failure of sewer mains at manholes).

Historically, even as recent as the 80's, typical recommendations would have focused on preserving the underlying permafrost and would have likely included:

- Shallow installation (within the active layer);
- The use of pipe insulation to minimize heat loss into the underlying soils;
- Placing moisture resistant, high density insulation across the base of the trench to further minimize heat loss;
- In extreme cases where trenches are excavated in ice rich permafrost and deep utility lines are placed below 3.0 m, recommendations may have also included the insulation of the base and sidewalls of the trench to minimize the potential for accelerated permafrost degradation due to the placement of warm backfill; and
- It was usually suggested that work be completed in the fall so that the trench sidewalls didn't "melt out" and the backfill temperatures were lowered to more appropriate temperatures.

*Engineers and scientists are now of the opinion that the degradation of permafrost, especially in the "discontinuous permafrost portion of northern regions", is inevitable. Therefore, specific to the Mayo town site and the existing NND Subdivision, this office is of the opinion that in areas where deep utilities and foundations have been in place for numerous years, the potential for settlement from permafrost degradation will become minimal but in areas that have been recently cleared; the potential for settlement is much greater.*

The challenge for the deep utilities design team working on this project will be to specify types and schedules of pipe (sewer and water) that can withstand full overburden pressures in areas where lateral support may be lost due to permafrost thaw and settlement. Insulation will not only help mitigate the potential for heat loss into the underlying soils but will also add to the rigidity of the pipe as well.

Some innovative approaches such as placing the utility lines in half shell culvert pipe to increase rigidity have been used in other communities but his office feels that a cost benefit analysis should be completed for any unconventional solution proposed.

## **5.2 Underground Utilities Reconstruction**

Along with the design challenges revolving around permafrost thaw and settlement, deep utilities reconstruction will also be complicated by the presence of groundwater at specific areas throughout the study area. Since the excavation of utility line trenches must conform to Yukon Occupational Health & Safety Regulations guidelines, trench sideslopes must be addressed. The granular soils throughout the Mayo town site and the NND Subdivision are generally prone to sloughing in a dry state and presence of groundwater in trenches will cause excess sloughing and possibly unsafe working conditions. Trench side slopes may have to be cut shallower than 1.5:1 (horizontal:vertical) to ensure safe working conditions.

All material excavated from the utility line trenches can be considered for backfill. If the soil excavated is particularly frost susceptible, it should be used as backfill at depth. Higher quality granular soils should be considered for backfill within the top meter to ensure a stable roadway with less potential for frost heave. All utility line backfill should be placed in 200 mm thick lifts and compacted to 95% of Standard Proctor maximum dry density for material placed below 1.0 m from grade and 98% of Standard Proctor maximum dry density for backfill placed in the final 1.0 m from grade.

It is recommended that a Class "B" pipe bedding configuration (commonly used on YTG and City of Whitehorse projects with 150 mm of bedding under the pipe, beside the pipe and 300 mm above the pipe) be specified for this project. When compacted to at least 95% of standard proctor maximum dry density, this bedding configuration will ensure proper support and protection of the utility lines during backfill.

Bedding may be imported bedding sand (for use in dry areas), but the use of bedding stone will likely be fairly extensive (as mentioned above, groundwater may be encountered throughout most of the areas being reconstructed and contractors should have a water management plan in place and be prepared to pump water).

Imported bedding sand and stone should conform to the gradation specifications presented in Table 1, below.

**Table 1: Recommended Pipe Bedding Materials Specifications**

Bedding Sand		25 mm Bedding stone	
Particle Size (mm)	% Passing by Mass	Particle Size (mm)	% Passing by Mass
10.000	100	25.000	100
5.000	80 – 100	20.000	70 - 100
2.000	55 – 100	12.500	55 – 100
0.630	25 – 65	10.00	30 – 80
0.250	10 – 40	5.000	0 – 40
0.080	2 – 15	2.000	0 – 10

### 5.3 Roadway Structure

To ensure that no underground utility lines were damaged during the current testpitting program, testpits were excavated at the edge of or slightly off the surface of the existing roadways. As a result, the amount of granular structure present along existing roadways could not be definitely determined.

From anecdotal information, it is understood that there is minimal granular structure (approximately 0.3 m) over a silty sand subgrade beneath the majority of the BST surfaced roadways throughout the town site. Although unconfirmed, there are likely problems with subgrade softening and instability throughout the spring and early summer, as well as during periods of heavy rain. If sections of roadways are going to be disturbed during deep utility reconstruction, it is recommended that the roadway structure be upgraded as well. A minimum of 500 mm of granular structure (400 mm of sub-base and 100 mm of basecourse gravel) should increase the life of the BST surface to acceptable levels.

#### 5.3.1 Roadway Reconstruction

All imported granular materials (crushed basecourse and pit run sub-base) must meet the gradation limits presented in Table 2, below. If non-compliant materials are proposed, a sample can be submitted to EBA for testing and an opinion regarding use can be supplied.

**Table 2: Imported Gravel Gradation Specifications**

20 mm CRUSHED BASECOURSE AGGREGATE		80 mm PIT RUN SUB-BASE AGGREGATE	
Particle Size (mm)	% Passing by Mass	Particle Size (mm)	% Passing by Mass
20.000	100	100.000	100
12.500	64 – 100	25.000	55 - 100
5.000	36 – 72	12.500	42 – 84
2.500	18 – 54	5.000	26 – 65
1.250	12 – 42	1.250	11 – 47
0.315	2 – 22	0.315	3 – 30
0.080	3 - 6	0.080	0 - 8

All sub-base materials must be placed in lifts not exceeding 200 mm in thickness and the contractor should be prepared to moisture condition each lift to facilitate compaction. Basecourse materials can be placed in a single lift and final tight-blading should be performed immediately prior to BST construction.

If soft areas are encountered during roadway reconstruction, additional sub-cut may be required (down to a stable surface). When the sub-cut areas are being backfilled, all materials placed with-in the final meter must be compacted to at least 98% of standard proctor maximum dry density. Below 1.0 m from finished grades, 95% of standard proctor maximum dry density is considered acceptable.

## **6.0 LIMITATIONS OF REPORT**

This report and its contents are intended for the sole use of Government of Yukon and other consultants working on this project. EBA, A Tetra Tech Company, does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than those listed above, or for any Project other than the proposed development throughout the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in the General Conditions presented in Appendix A of this report.

The information and recommendations presented herein are based on current and historical geotechnical information from investigations conducted throughout the Mayo Townsite and NND Subdivision. The conditions presented herein are believed to be representative for the site. However, if conditions differing from those presented in this report are encountered during subsequent phases of deep utilities reconstruction work, we request that EBA be notified so that the geotechnical recommendations can be re-evaluated in light of new findings.

## 7.0 CLOSURE

We trust this report meets your present requirements. Should you have any questions or comments, or clarification of any of the recommendations presented is required, please contact the undersigned at your convenience.

Sincerely,  
EBA, A Tetra Tech Company

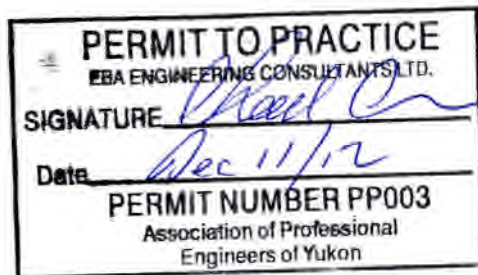


Myles Plaunt, CET  
Engineering Technologist, Arctic Region  
Direct Line: 867.668.2071 x227  
mplaunt@eba.ca



Chad Cowan, P.Eng.  
Project Director – Yukon, Arctic Region  
Direct Line: 867.668.2071 x229  
ccowan@eba.ca

Attachments: Figures – Figure 1 – Site Plan Showing 2012 Testpit Locations  
Appendix A – General Conditions and Soil Classification  
Appendix B – 2012 Testpit Logs and Laboratory Test Result Report Forms  
Appendix C – Historical Testhole Logs and Laboratory Test Result Report Forms



# FIGURES

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Figure 1      Site Plan Showing 2012 Testpit Locations

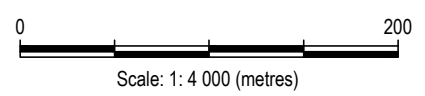




Q:\Whitehorse\Drawings\Mayo\W14103095-01 Water and Sewer Services Upgrades\W14103095 Fig.1\_R0.dwg [FIGURE 1] December 12, 2012 - 10:20:17 am (BY: BUCHAN, CAMERON)

©2010 Google  
Image © 2011 IMTCAN  
Image Date: 9/9/2012

LEGEND:  
 EBA TESTPIT LOCATIONS



STATUS  
ISSUED FOR USE

CLIENT  
**Yukon**  
 Government  
 Department of Community Services

**WATER AND SEWER SERVICES UPGRADE  
MAYO, YUKON**

**SITE PLAN SHOWING TESTPIT LOCATIONS**

PROJECT NO. W14103095-01	DWN JSB	CKD MCP	REV 0
OFFICE EBA-WHSE	DATE November 15, 2012		

Figure 1



# APPENDIX A

## EBA'S GENERAL CONDITIONS AND SOIL CLASSIFICATION

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# GENERAL CONDITIONS

## GEOTECHNICAL REPORT

This report incorporates and is subject to these "General Conditions".

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### 1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

### 2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

### 3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

### 4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

### 5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

### 6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

## 7.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

## 8.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

## 9.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

## 10.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

## 11.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

## 12.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

## 13.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

## 14.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

# MODIFIED UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION		GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA			
<b>COARSE - GRAINED SOILS</b> More than 50% retained on No. 75 µm sieve*	<b>GRAVELS</b> 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	<b>Classification on basis of percentage of fines</b> GW, GP, SW, SP, GM, GC, SM, SC Borderline classification requiring use of dual symbols	$C_u = D_{60} / D_{10}$ Greater than 4 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW	
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits plot below 'A' line or plasticity index less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits plot above 'A' line and plasticity index greater than 7	
	<b>SANDS</b> More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines	<b>Classification on basis of percentage of fines</b> Less than 5% pass 75 µm sieve More than 12% pass 75 µm sieve 5% to 12% pass 75 µm sieve	$C_u = D_{60} / D_{10}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			SP	Poorly-graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW	
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures		Atterberg limits plot above 'A' line and plasticity index less than 4	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures		Atterberg limits plot above 'A' line and plasticity index greater than 7	
		<b>FINE-GRAINED SOILS (by behavior)</b> 50% or more passes 75 µm sieve*	<b>SILTS</b> Liquid limit	ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands of slight plasticity	
				MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts	
<b>CLAYS</b> Above 'A' line on plasticity chart negligible organic content Liquid limit	CL		Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays				
	CI		Inorganic clay of medium plasticity, silty clays				
	CH		Inorganic clay of high plasticity, fat clays				
<b>ORGANIC SILTS AND CLAYS</b> Liquid limit	OL		Organic silts and organic silty clays of low plasticity				
	OH		Organic clays of medium to high plasticity				
<b>HIGHLY ORGANIC SOILS</b>				PT	Peat, muck and other highly organic soils		

\* Based on the material passing the 75 mm sieve

† ASTM Designation D 2487, for identification procedure see D 2488 USC as modified by PFRA

## GROUND ICE DESCRIPTION

### ICE NOT VISIBLE

GROUP SYMBOL	SYMBOL	SUBGROUP DESCRIPTION	
N	Nf	Poorly-bonded or friable	
	Nbn	No excess ice, well-bonded	
	Nbe	Excess ice, well-bonded	

**NOTES:**

- Dual symbols are used to indicate borderline or mixed ice classifications.
- Visual estimates of ice contents indicated on borehole logs ± 5%
- This system of ground ice description has been modified from NRC Technical Memo 79, Guide to the Field Description of Permafrost for Engineering Purposes.

**LEGEND:** Soil  Ice

### VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOL	SYMBOL	SUBGROUP DESCRIPTION	
V	Vx	Individual ice crystals or inclusions	
	Vc	Ice coatings on particles	
	Vr	Random or irregularly oriented ice formations	
	Vs	Stratified or distinctly oriented ice formations	

### VISIBLE ICE GREATER THAN 50% BY VOLUME

ICE	ICE + Soil Type	SUBGROUP DESCRIPTION	
		Ice with soil inclusions	
		Ice without soil inclusions (greater than 25 mm thick)	



# APPENDIX B

## 2012 TESTPIT LOGS AND LABORATORY TEST RESULT REPORT FORMS

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Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP01
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051653N; 456106E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	SAND and GRAVEL - trace silt, well graded, sub-rounded, loose, dry to damp, brown																	0
1																		5
2																		10
3	END OF TESTPIT @ 2.5 m																	15
4	NOTES: - major sloughing throughout depth of testpit - dry upon completion																	
4.5																		




LOGGED BY: JSB	COMPLETION DEPTH: 2.5m
REVIEWED BY: MCP	COMPLETE: 10/25/2012
DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP02
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051566N; 456237E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	SILT and SAND - fine grained, firm, damp, light grey																	0
1	SAND and GRAVEL - trace silt, well graded, sub-rounded, loose, dry to damp, greyish brown																	5
2	END OF TESTPIT @ 2.0 m  NOTES: - major sloughing below 1.0 m																	10
3																		15
4																		
4.5																		

 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 2m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

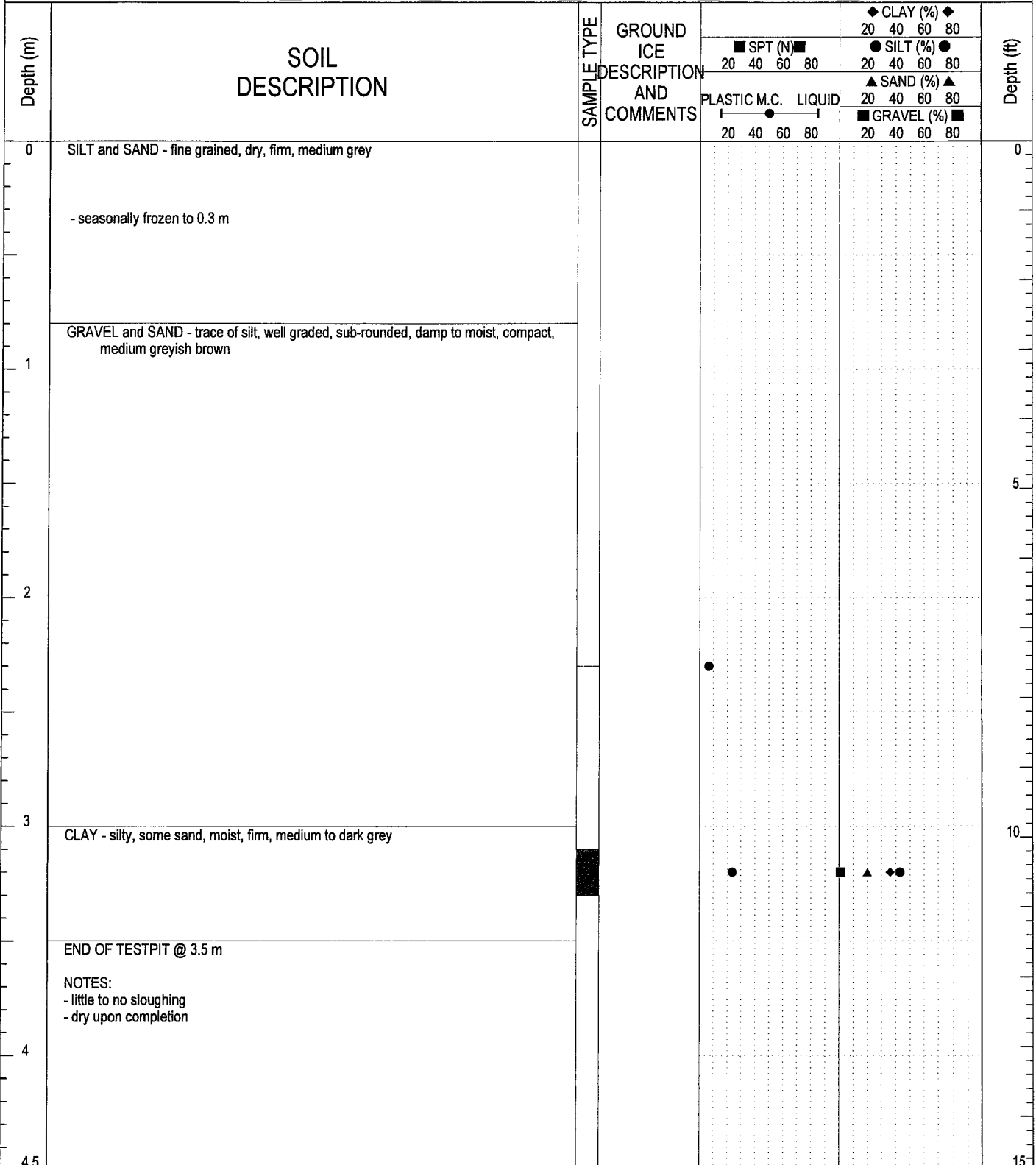
Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP03
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051729N; 456365E; Zone 8	


SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)	SILT (%)	SAND (%)	GRAVEL (%)	Depth (ft)
				20	40	60	80	20	40	60	80	20	40	
0	SILT - some sand, fine grained, damp, firm, light grey													0
1	SAND and GRAVEL - trace silt, well graded, sub-rounded, dry to damp, loose, light greyish brown													5
2	END OF TESTPIT @ 1.8 m													10
3	NOTES: - major sloughing below 1.0 m - dry upon completion													15
4														
4.5														

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP04
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051725N; 456287E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

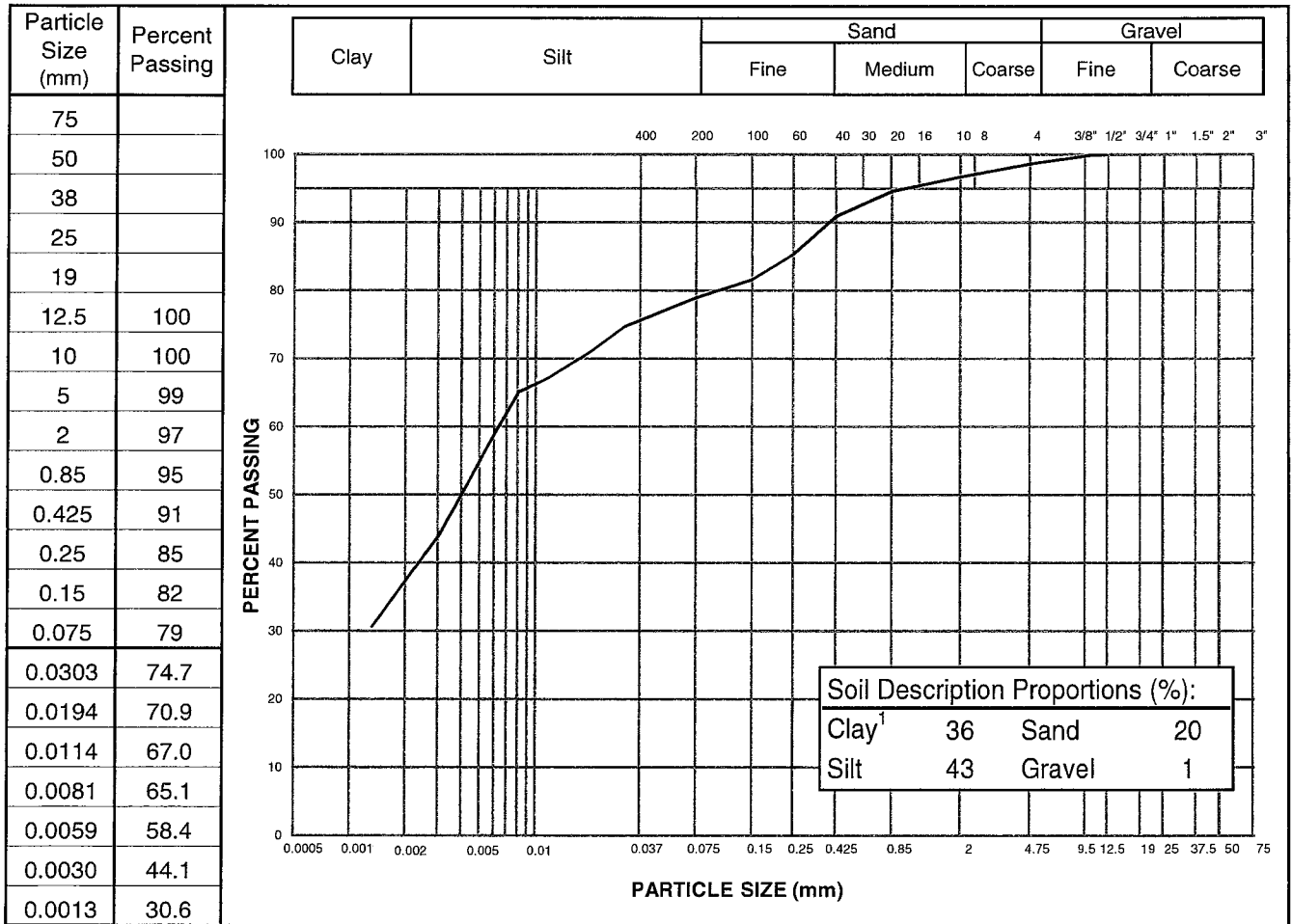


 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 3.5m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

# PARTICLE SIZE ANALYSIS REPORT

ASTM D422, C136 & C117

Project:	Mayo Water & Sewer System Upgrades	Sample No.:	
Project No.:	W14103095-01	Material Type:	
Site:	Mayo, YT	Sample Loc.:	TP04
Client:	YG - Community Services	Sample Depth:	3.1 - 3.3 m
Client Rep.:	Laura Prentice	Sampling Method:	Grab
Date Tested:	November 15, 2012	By:	SMS/AMT
		Date sampled:	October 24, 2012
Soil Description <sup>2</sup> :	CLAY - silty, some sand, trace gravel	Sampled By:	JSB
		USC Classification:	Cu:
Moisture Content:	23.7%		Cc:



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual  
<sup>2</sup> The description is visually based & subject to EBA description protocols

Specification: \_\_\_\_\_


Remarks: \_\_\_\_\_

Reviewed By:

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP05
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051780N; 456160E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND


Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C. LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	
0	GRAVEL (FILL) - sandy, trace silt, well graded, damp, loose, brown															0
	SILT - sandy, fine grained, damp, firm, medium grey															
1	SAND - gravelly, trace silt, well graded, sub-rounded, dry to damp, loose, medium brownish grey															5
2	END OF TESTPIT @ 1.8 m															10
	NOTES: - major sloughing below 1.2 m															15
3																
4																
4.5																

 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 1.8m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP06
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051754N; 456039E; Zone 8	


SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	ORGANIC ROOT MAT SILT and SAND - fine grained, damp, firm, medium grey																	0
1	GRAVEL and SAND - trace silt, well graded, damp, compact, medium greyish brown																	5
2																		10
3	- water encountered at 3.0 m SAND - gravelly, trace silt, poorly graded, medium to coarse sand, fine to medium sub-rounded to sub-angular gravel, wet, loose, mottled grey and black particles																	15
4	END OF TESTPIT @ 3.3 m																	
4.5	NOTES: - sloughing in gravel layer - water encountered at 3.0 m																	

 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 3.3m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP07
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051659N; 455878E; Zone 8	
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT <input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)				PLASTIC M.C. LIQUID				Depth (ft)
				20	40	60	80	20	40	60	80	
0	GRAVEL (FILL) - sandy, trace silt, well graded, sub-rounded, damp, compact, medium greyish brown											0
	SILT - sandy, fine fine grained, moist, firm, medium brown											
1												
2												
3	GRAVEL and SAND - trace silt, well graded, sub-rounded, damp, compact, mottled reddish brown  - becomes grey around 3.3 m											10
4	END OF TESTPIT @ 3.8 m  NOTES: - sloughing below 0.3 m - dry upon completion											15
4.5												

 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 3.8m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP08
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051660N; 455709E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	ORGANIC ROOT MAT SILT and SAND - fine grained, moist, firm, medium to dark grey																	0
1																		5
2																		10
3	- becomes dark grey around 3.0 m																	15
4	END OF TESTPIT @ 3.5 m  NOTES: - no sloughing - dry upon completion																	
4.5																		



LOGGED BY: JSB	COMPLETION DEPTH: 3.5m
REVIEWED BY: MCP	COMPLETE: 10/25/2012
DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP09
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051660N; 455709E; Zone 8	


SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		Depth (ft)
				20	40	60	80	20	40	
0	ORGANIC ROOT MAT									0
	SAND and GRAVEL (FILL) - trace silt, well graded, sub-rounded, dry to damp, compact, greyish brown									
	SAND and SILT - fine grained, moist, soft, greyish brown									
1										5
	- trace silt below 2.0 m									
2										
	SAND and GRAVEL - trace silt, well graded, sub-rounded, damp, compact									
3										10
	END OF TESTPIT @ 3.0 m									
	NOTES: - sloughing below 2.0 m - dry upon completion									
4										
4.5										15

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP10
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7051777N; 455186E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

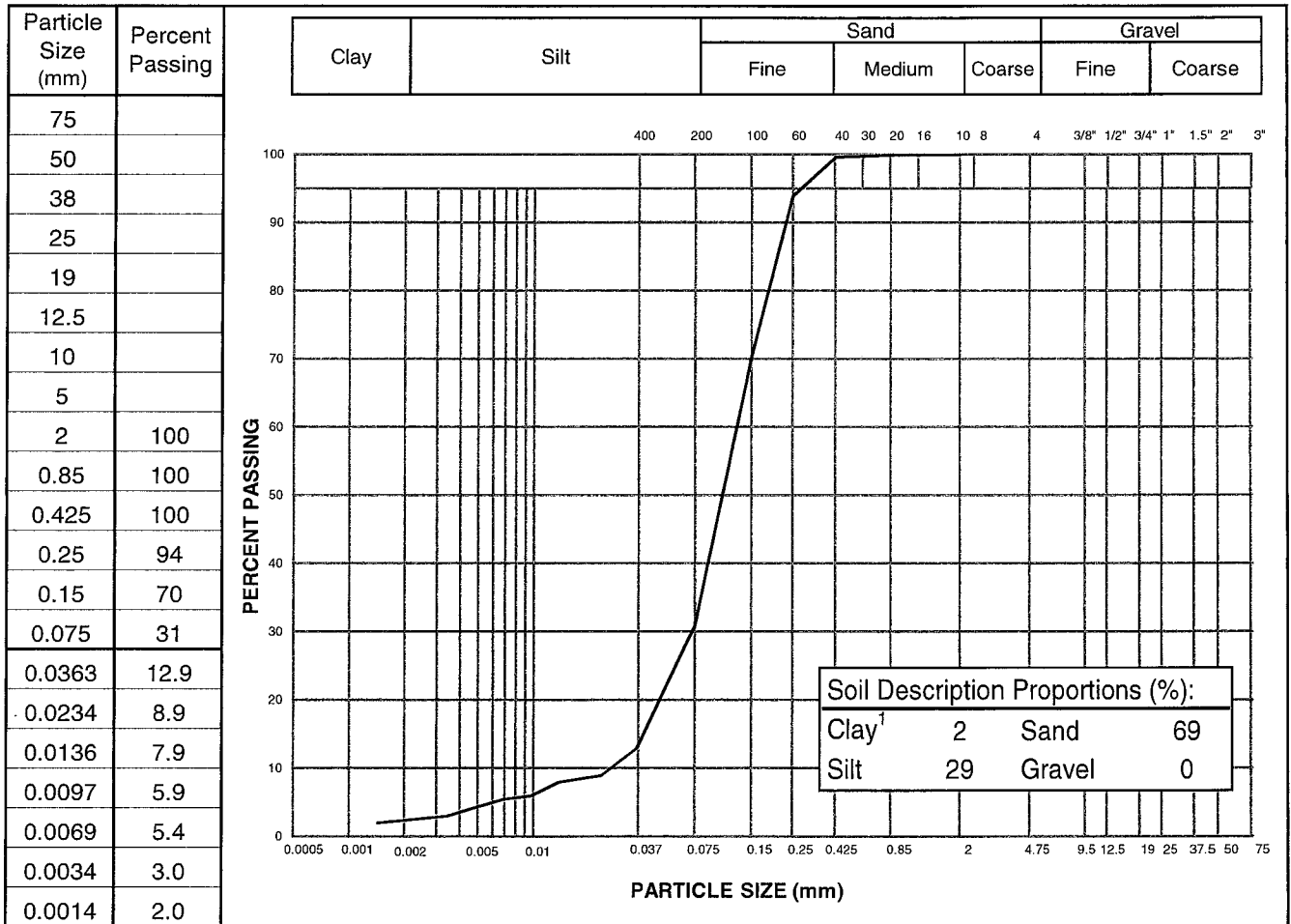
Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	ORGANIC ROOT MAT SAND - silty, fine grained, moist, soft, light to medium grey																	0
1																		5
2																		10
3	GRAVEL and SAND - trace silt, well graded gravel, sub-rounded, damp, loose, mottled black/grey																	15
4	END OF TESTPIT @ 3.3 m																	
4.5	NOTES: - sloughing in gravel layer - dry upon completion																	

 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 3.3m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

# PARTICLE SIZE ANALYSIS REPORT

ASTM D422, C136 & C117

Project: Mayo Water & Sewer System Upgrades	Sample No.:	
Project No.: W14103095-01	Material Type:	
Site: Mayo, YT	Sample Loc.:	TP10
Client: YG - Community Services	Sample Depth:	1.5 - 1.7 m
Client Rep.: Laura Prentice	Sampling Method:	Grab
Date Tested: November 15, 2012	By: SMS/AMT	Date sampled: October 24, 2012
Soil Description <sup>2</sup> : SAND - silty, trace clay	Sampled By: JSB	
	USC Classification:	Cu: 4.8 Cc: 1.5
Moisture Content: 15.7%		



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual  
<sup>2</sup> The description is visually based & subject to EBA description protocols

Specification: \_\_\_\_\_


Remarks: \_\_\_\_\_

Reviewed By:

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP11
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7052052N; 455454E; Zone 8	

SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND


Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	ORGANIC ROOT MAT SAND and GRAVEL (FILL) - trace silt, well graded, sub-rounded, damp, compact, medium greyish brown																	0
1																		5
2	GRAVEL and SAND - trace silt, well graded, sub-rounded, damp, loose, mottled grey and black particles																	10
3	END OF TESTPIT @ 2.5 m  NOTES: - major sloughing below 1.5 m - dry upon completion																	15
4																		
4.5																		

 A TETRA TECH COMPANY	LOGGED BY: JSB	COMPLETION DEPTH: 2.5m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP12
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7052348N; 454467E; Zone 8	


SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		PLASTIC M.C.		LIQUID		CLAY (%)		SILT (%)		SAND (%)		GRAVEL (%)		Depth (ft)
				20	40	60	80	20	40	60	80	20	40	60	80	20	40	
0	ORGANIC ROOT MAT																	0
	SAND and GRAVEL (FILL) - trace silt, well graded, sub-rounded, damp, compact, mottled greyish brown																	
	SAND and SILT - fine grained, moist, soft, mottled light brown and grey																	
1																		
2	- water encountered around 2.0 m																	
	END OF TESTPIT @ 2.5 m																	
3	NOTES: - major sloughing below 1.5 m - water table around 2.0 m																	
4																		
4.5																		

 <small>A TETRA TECH COMPANY</small>	LOGGED BY: JSB	COMPLETION DEPTH: 2.5m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

Mayo Water & Sewer Upgrades	CLIENT: YG - Community Services	TESTPIT NO: W14103095-TP13
Geotechnical Evaluation	EXCAVATOR: Cat Rubber Tire Backhoe	PROJECT NO: W14103095
Mayo, Yukon	7052091N; 454667E; Zone 8	
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> SPT <input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	GROUND ICE DESCRIPTION AND COMMENTS	SPT (N)		CLAY (%)		SILT (%)		SAND (%)		Depth (ft)
				20	40	60	80	20	40	60	80	
0	ORGANIC ROOT MAT											0
	SAND - silty, fine grained, moist, firm, dark brown											
	- medium brown											
1	SAND and GRAVEL - trace silt, well graded, sub-rounded, medium to coarse grained sand, damp, loose, brown											
	- water encountered around 1.5 m											5
	END OF TESTPIT @ 1.8 m											
2	NOTES: - sloughing below 1.0 m - water table encountered around 1.5 m											
3												10
4												
4.5												15

 <small>A TETRA TECH COMPANY</small>	LOGGED BY: JSB	COMPLETION DEPTH: 1.8m
	REVIEWED BY: MCP	COMPLETE: 10/25/2012
	DRAWING NO:	Page 1 of 1

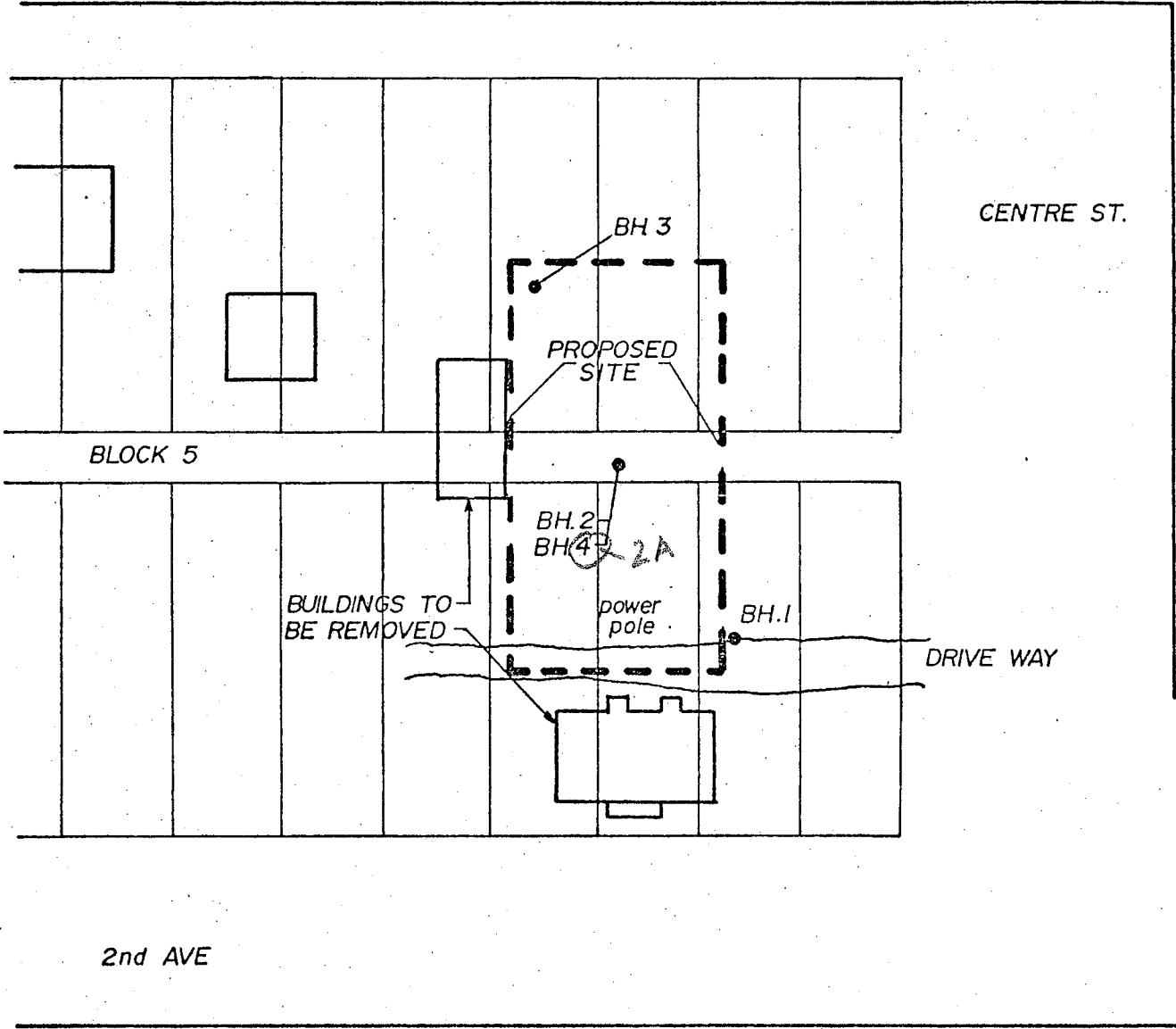


# APPENDIX C

## HISTORICAL LOGS AND LABORATORY TEST RESULT REPORT FORMS

---





SCALE IN FEET

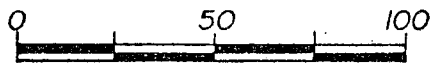


FIGURE 2 SITE PLAN FOR MAYO ADMINISTRATION BUILDING

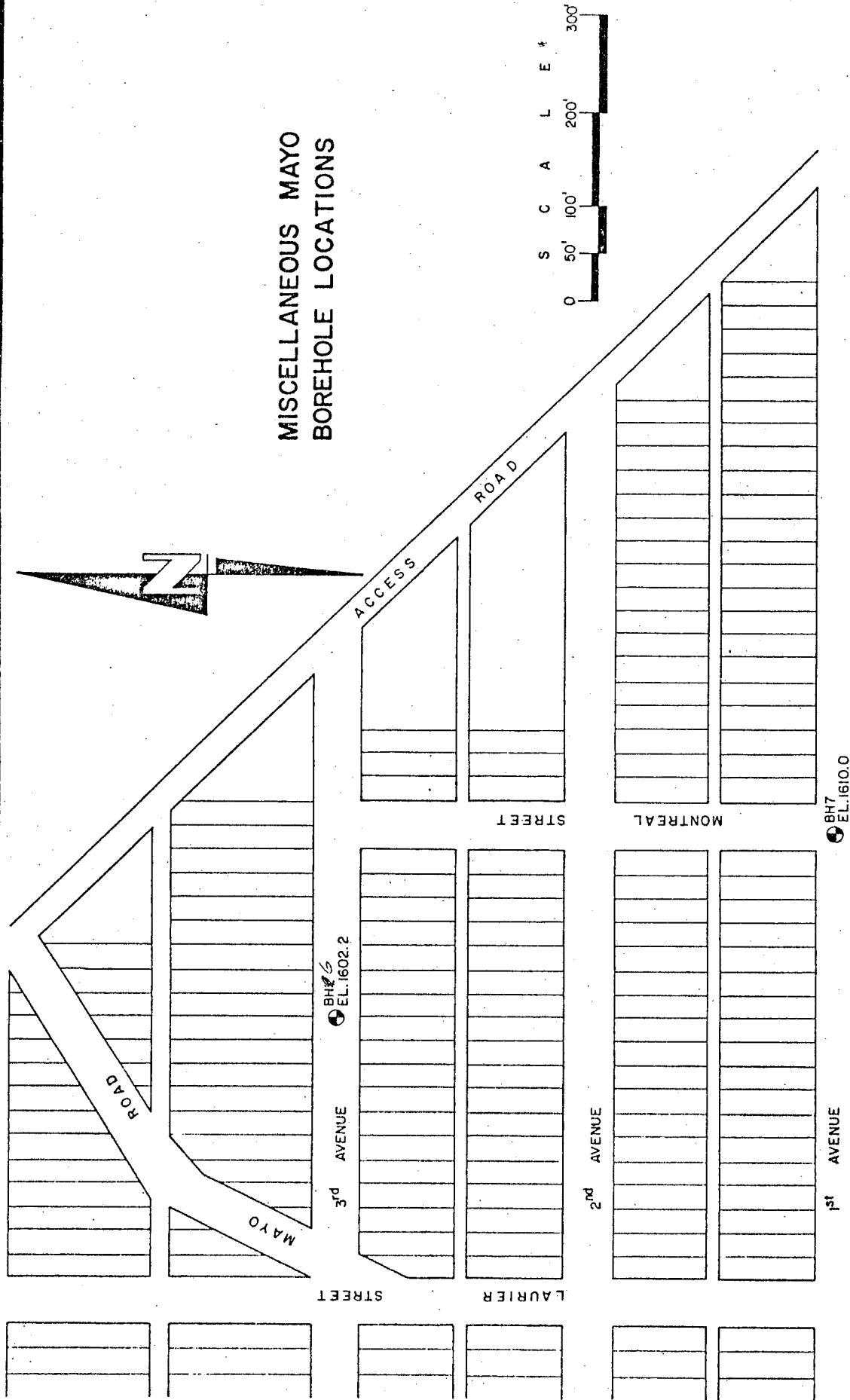


FIGURE 4 SITE PLAN AND BOREHOLE LOCATIONS  
(Development Shown is Proposed Only)

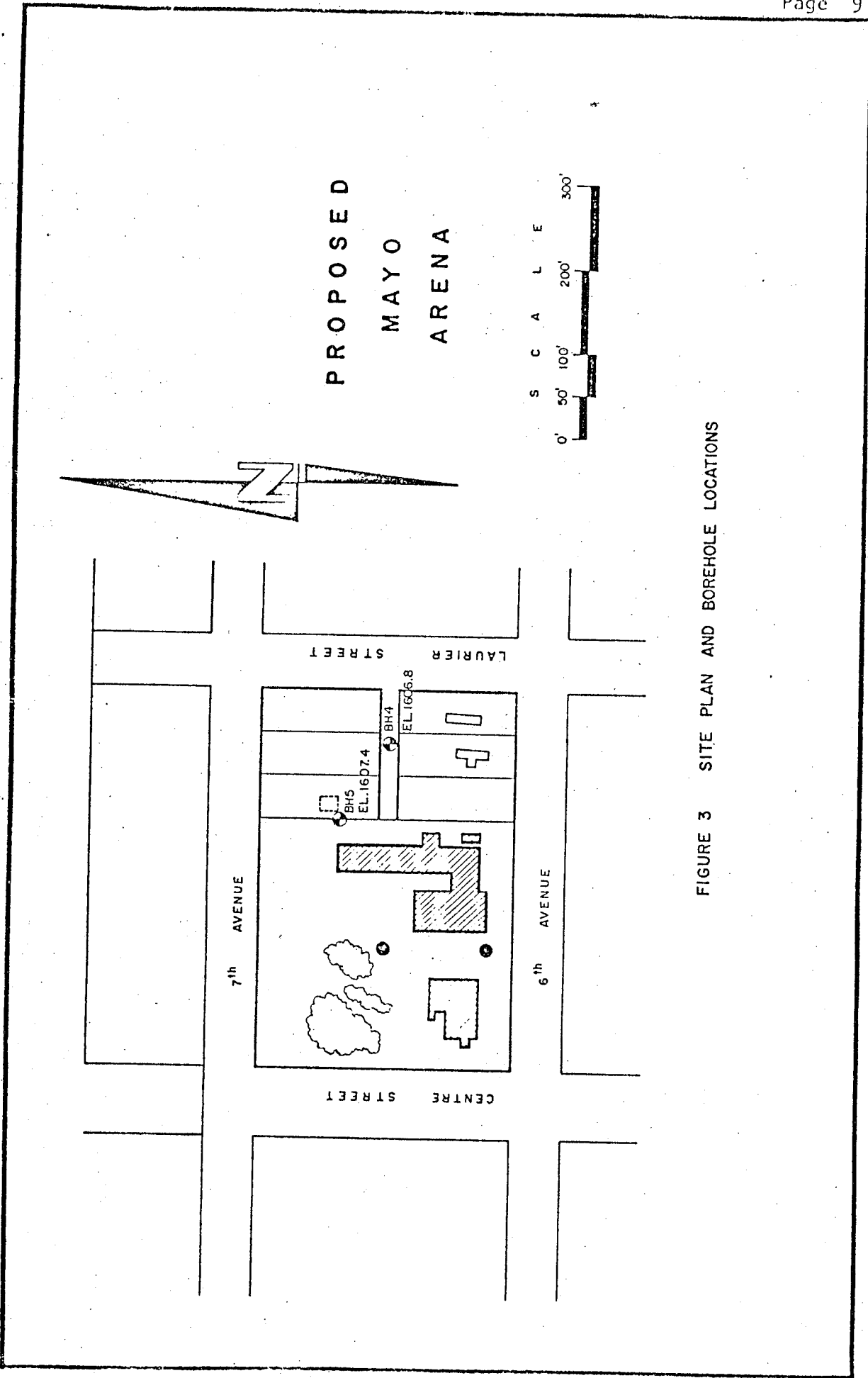



FIGURE 3 SITE PLAN AND BOREHOLE LOCATIONS

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
2	GRAVEL - fill SILT - medium brown - sandy - tr. to some fine gravel - tr. of organics & oxides		Seasonal Frost Nbn							
4										
6		X	Frozen							
8			Unfrozen							
10	GRAVEL - medium brown - sandy - fine to medium grained - gapgraded	X								
12		X								
14		X								
16		X								
18	- dark grey	X								
20	- sand lense - med. grained uniform - tr. of gravel & silt	X								
22		X								
24		X								
26	- tr. of silt	X								
28		X								
30		X								
32	END OF HOLE	X								

	PROJECT E-1021 <hr/> Administration Building <hr/>	DATE <u>22/02/75</u> LOGGED BY <u>JK</u> ELEVATION <u>1603.8</u> DEPTH <u>31½</u>	HOLE NO. 1 <hr/> SHEET 1 of 1
-------------------------------------------------------------------------------------	-------------------------------------------------------------	--------------------------------------------------------------------------------------------	----------------------------------------

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●							
				SPT RESISTANCE ▲							
				10	20	30	40	50	60	70	
2	SILT - organic, dark brown SILT - till - medium brown - sandy, some clay		Seasonal Frost Nbn								
4											
6	GRAVEL - medium brown - sandy - fine to medium grained - gapgraded - clean  - some silt - reddish oxides - temp @ 10' 34°  - very few fines	X	NF Frozen	●							
8			Unfrozen								
10											
12			X		●						
14											
16			X		●						
18											
20		X									
22											
24											
26		X									
	END OF HOLE										



PROJECT  
E-1021  
Administration  
Building

DATE 22/02/75  
LOGGED BY JK  
ELEVATION 1602.2  
DEPTH 26½

HOLE NO.  
2  
SHEET  
1 of 1

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
2	PEAT - silty Organics silt - dark brown, sandy		Seasonal frost							
	SILT - till - medium brown		Nbn							
4	- sandy, trace of fine gravel, some oxides		Frozen							
6	SAND - medium brown - trace of gravel & silt - fine to medium grained - loose	X	Unfrozen	▲	●					
8	GRAVEL - medium brown - sandy - fine to medium grained - gap graded - some silt	X								
10		X								
12		X								
14		X								
16	- very loose	X								
18		X								
20	- fine to medium grained - well graded - trace of silt & oxides	X								
22		X								
24		X								
26		X								
28	SAND - dark grey to black - trace of silt - very fine grained - uniform - silty	X								
30		X								
32		X								



PROJECT  
E-1021  
Administration  
Building

DATE 23/02/75  
 LOGGED BY JK  
 ELEVATION 1602.8  
 DEPTH 41½

HOLE NO.  
3  
SHEET  
1 of 2



# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % $\circledast$								
				SPT RESISTANCE $\blacktriangle$								
				10	20	30	40	50	60	70		
2	<b>SILT</b> - med. to dk. brown - sandy, some clay - tr. to some fine gravel		Frozen									
4												
6				<b>GRAVEL</b>	Unfrozen							
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												
30	<b>SAND</b> - dark grey to black - very silty - fine, uniform											
32												




**PROJECT**  
Mayo Administration  
Building  
E-1021

DATE 25/4/75  
 LOGGED BY JK  
 ELEVATION \_\_\_\_\_  
 DEPTH 92'

**HOLE NO.**  
 TH2a  
  
**SHEET**  
 1 of 3

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
32	SAND (cont'd)  - dk. grey to black - fine grained, uniform - silty									
34			Frozen							
36			Nbn							
38										
40			Nbn							
42			Nbe Nbn							
44										
46										
48										
50		- med. grey - silty - laminated with silt and black organics								
52										
54										
56										
58										
60										
62										

	PROJECT Mayo Administration E-1021	DATE <u>25/4/75</u> LOGGED BY <u>JK</u> ELEVATION _____ DEPTH <u>92'</u>	HOLE NO. TH2a SHEET 2 of 3
	_____ _____	_____ _____	_____ _____

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●								
				SPT RESISTANCE ▲								
				10	20	30	40	50	60	70		
62	<ul style="list-style-type: none"> <li>- med. grey</li> <li>- silty</li> <li>- fine to med. grained</li> <li>- some coarse</li> <li>- trace fine gravel</li> <li>- trace of thin silt laminations</li> <li>- black organic laminations</li> </ul>	X	Nbn									
64												
66												
68												
70	<ul style="list-style-type: none"> <li>- dark grey</li> <li>- very silty</li> <li>- very fine,</li> <li>- uniform</li> </ul>	X	Nbn									
72												
74												
76												
78												
80	<ul style="list-style-type: none"> <li>- dark grey to black</li> <li>- very silty</li> <li>- tr. fine gravel</li> </ul>	X	Unfrozen									
82												
84												
86												
88	<ul style="list-style-type: none"> <li>SILT - med. grey</li> <li>- very dense</li> </ul>											
90												
92												
		END OF HOLE										



PROJECT  
Mayo Administration

Building  
E1021

DATE 25/4/75  
 LOGGED BY JK  
 ELEVATION 1602.2  
 DEPTH 92

HOLE NO.  
TH2a

SHEET  
3 of 3

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT %						
				SPT RESISTANCE						
				10	20	30	40	50	60	70
2	PEAT - dark brown, fibrous, roots silty		Seasonal frost							
	CLAY - medium brown - low plastic, trace of sand		Nbn							
4	GRAVEL - medium brown		Nf							
6	- sandy	X	Frozen							
8	- fine to medium grained		Unfrozen							
10	- some coarse - trace of silt - some oxides - cobbly & coarse from 7' down	X								
12			Unfrozen							
14	SAND - medium to dark grey - very silty		Frozen							
16	- very fine, uniform SILT - dark grey	X								
18										
20		X	31.8°F							
22			Nbn							
24										
26		X	32°F							
28										
30										
32	- thinly laminated with black organics	X								



PROJECT  
E-1021  
Sporting Complex


DATE 24/02/75  
LOGGED BY JK  
ELEVATION 1606.8  
DEPTH 61½

HOLE NO.  
4  
SHEET  
1 of 2

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
32	Silt - continued									
34										
36										
38										
40			Nbn							
42										
44										
46	- no organics	X							●	
48										
50										
52										
54										
56										
58										
60	- thinly laminated with black organics	X							●	
62	END OF HOLE									

	PROJECT E-1021	DATE <u>24/02/75</u>	HOLE NO. 4
	Sporting Complex	LOGGED BY <u>JK</u>	SHEET
		ELEVATION <u>1606.8</u>	DEPTH <u>61½</u>

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
2	CLAY - med. brown - silty - low plastic		Nbn							
4										
6	GRAVEL - medium brown - fine to med. grained - gap graded - dry	X	NF Frozen	●						
8	- tr. of silt		Unfrozen							
10	- refusal SPT	/								
12	- coarser									
14			Unfrozen							
16	- refusal SPT	/	Frozen							
18	SAND - med. brown, some fine gravel, grey @ 17'		Nbe-Nbn							
20	SILT - sandy dark grey - trace of fine gravel & clay		Nbe-Vs 0-5%							
22	- pieces of wood							●		
	END OF HOLE									



PROJECT  
E-1021  
Sporting Complex

DATE 24/02/75  
 LOGGED BY JK  
 ELEVATION 1607.4  
 DEPTH 22'

HOLE NO.  
5  
SHEET  
1 of 1

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	GROUND ICE	SAMPLE	MOISTURE CONTENT % ●					
				10	30	50	70	90	110
				BULK DENSITY P.C.F. △					
				40	60	80	100	120	140
2	PEAT - fibrous	Nbe, Vr 0-5%							
4	SILT - med. brown - clayey - some organics - laminated	Vr 50-60% 20-35% Vs 10-15% 40-45%							
6	- sand lens 6-7' fine uniform	50-55% Nbe, Vs 10-20							
8	- pieces of wood	Nbn, Vs 0-5%							
10		Nf							
12	GRAVEL - med. grey - fine to med. - sandy - gap graded								
14									
16									
18									
20	NOTE: Continuously cored with CRREL core barrel								
22									
24									
26									
28									
30									



Sewer and Water E-1021	DATE DRILLED 25/2/75 TECHNICIAN JK	HOLE N <sup>o</sup> 6
COMPLETION DEPTH (ft.) 12'	ELEVATION 1606.1 ft	Page 1 of 1

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT %						
				SPT RESISTANCE						
				10	20	30	40	50	60	70
2	Hard packed Snow GRAVEL (FILL) - med. brown, sandy - fine to med. grained		Seasonal Frost							
4	SAND - med. brown, fine, uniform, some thin silt laminations	X	NF							
6	GRAVEL - med. brown, fine to med. sandy - gap graded	X	Frozen							
8	Sand - med. brown, fine uniform - silty to 11' - medium grained - trace of silt	X	Unfrozen							
10	GRAVEL - med. grey brown - sandy - fine grained	X	Unfrozen							
12	- fine to medium - very little fines	X	Frozen Nbn-Nbe							
14	SILT - dark grey - some organics	X	Nbn-Nbe							
16	END OF HOLE	X	Nbe-Nbn							
18										
20										
22										



PROJECT  
E-1021  
Sewer & Water

DATE 24/02/75  
LOGGED BY JK  
ELEVATION 1610.0  
DEPTH 21½

HOLE NO.  
7  
SHEET  
1 of 1

#### 4.2 Subsurface Conditions

The borehole locations are shown in Figure 2 and the borehole logs presented in Appendix A. The subsurface conditions consist of from four to eight feet of medium brown silt overlying loose to compact, sandy, fine to medium grained gravel which extends to a depth of at least 28 feet. From 28 to 88 feet a dark grey silty fine sand was encountered over a dense dark grey silt. Grain size curves of these materials are presented in Appendix B.

Permafrost was encountered from 32 to 79 feet. The upper permafrost table appears to have been depressed across the site. The depression is probably a result of the previous site development as the permafrost table encountered in undisturbed areas such as borehole 6 is immediately beneath the peat. No visible segregated ice was observed in the permafrost and the moisture content of the permafrost was found to be only slightly greater than that of the unfrozen material.

#### 4.3 Foundation Recommendations

##### 4.3.1 General

Since the 47 feet of permafrost encountered did not contain visible segregated ground ice and it had a depressed upper boundary, it is expected that any thaw settlement associated with a new structure would be minimal. It is believed that the risk of differential settlement and resulting structural damage is sufficiently low to justify a conventional strip footing and slab-on-grade foundation system. This is especially true when the high cost associated with any alternative pile foundation and structural slab is considered. Major structural members, however should be "overdesigned" in order to minimize cracking should slight differential settlements occur.

SUMMARY OF TEST RESULTS

JOB No. 1-1021

TEST HOLE	DEPTH feet	NATURAL WATER CONTENT %	Atterberg Limits			MECHANICAL ANALYSIS UNIFIED CLASSIFICATION				SPECIFIC GRAVITY	ORGANIC CONTENT %	BULK DENSITY PCF	STRATA CLASSIFICATION
			W <sub>L</sub> %	W <sub>p</sub> %	PI %	% CLAY	% SILT	% SAND	% GRAVEL				
1	4½-5	36.3	Non Plastic			7	51	30	12				
	20-21½	16.1				--	12	78	10				
	25-26½	5.3											
	30-31½	7.5											
2	5-6½	6.4				--	12	54	34				
	10-11½	5.8											
	15-16½	5.3											
	25-26½	10.0				--	11	59	30				
3	5-6½	24.2				--	18	82	0				
	20-21½	7.2				--	14	41	45				
	25-26½	8.8											
	30-31½	20.4				4	31	48	17				
2a	40-41½	23.0											
	41-42½												
	50-51½					6	39	55	0				
	60-61½												

SUMMARY OF TEST RESULTS

JOB No. \_\_\_\_\_

1-1021

TEST HOLE	DEPTH feet	NATURAL WATER CONTENT %	Atterberg Limits			MECHANICAL ANALYSIS				SPECIFIC GRAVITY	ORGANIC CONTENT %	DRY DENSITY PCF	STRATA CLASSIFICATION
			WL %	WP %	PI %	% CLAY	% SILT	% SAND	% GRAVEL				
2a	60-62												
	70-72												
	80-82												
	90-92												
4	5-6½	8.1											
	15-16	26.7				2	80	18	0				
	20-21	26.5											
	25-26	24.1											
	30-31	24.1											
	45-46	28.3											
	60-61½	27.2											
5	5-6½	7.7				--	12	42	46				
	20-22	25.4	Non Plastic			8	74	18	0				

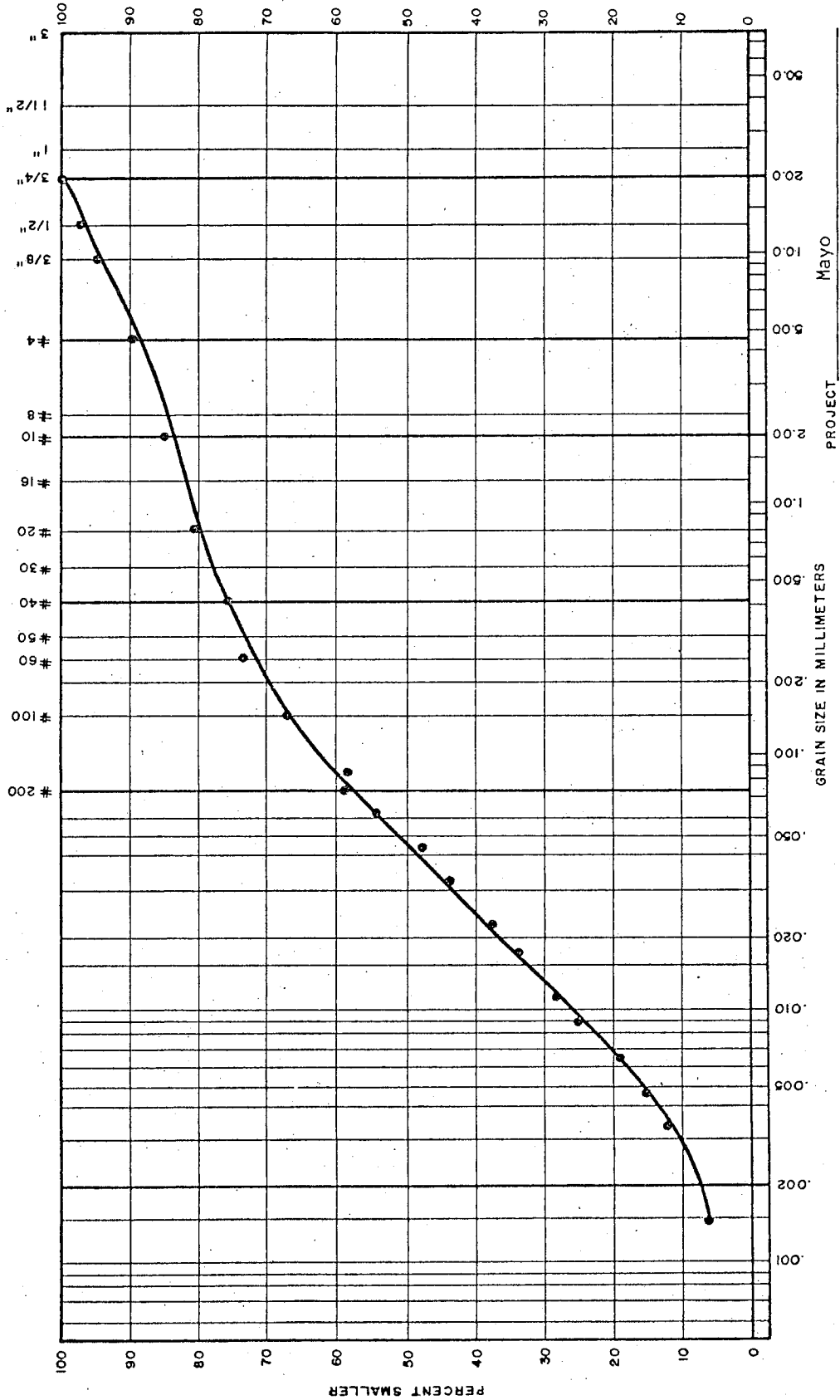
SUMMARY OF TEST RESULTS

JOB No. 1-1021

TEST HOLE	DEPTH feet	NATURAL WATER CONTENT %	Atterberg Limits			MECHANICAL ANALYSIS UNIFIED CLASSIFICATION				SPECIFIC GRAVITY	ORGANIC CONTENT %	BULK DENSITY PCF	STRATA CLASSIFICATION
			WL %	WP %	PI %	% CLAY	% SILT	% SAND	% GRAVEL				
6	0-1												
	1-2	26.9									115.9		
	2-2½	99.8											
	2½-3	36.3											
	3-5	41.9	Non Plastic								105.0		
	5-7	65.6									93.2		
7	7-9½	57.6				7	83	10	0				
	9½-12	37.8				--	22	22	56		105.7		
	5-6½	25.4				--	66	28	6				
	10-11½	31.2				1	21	78	0				
	15-16	8.0											
	20-21½	19.0											

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT		SAND		GRAVEL	
	FINE	COARSE	FINE	COARSE	FINE	COARSE



FIGURE

PROJECT Mayo  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. TH1 SAMPLE No. \_\_\_\_\_  
 DEPTH 5-63'

SAMPLE DESCRIPTION Silt  
Sandy, non plastic

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT		SAND		GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE	COARSE

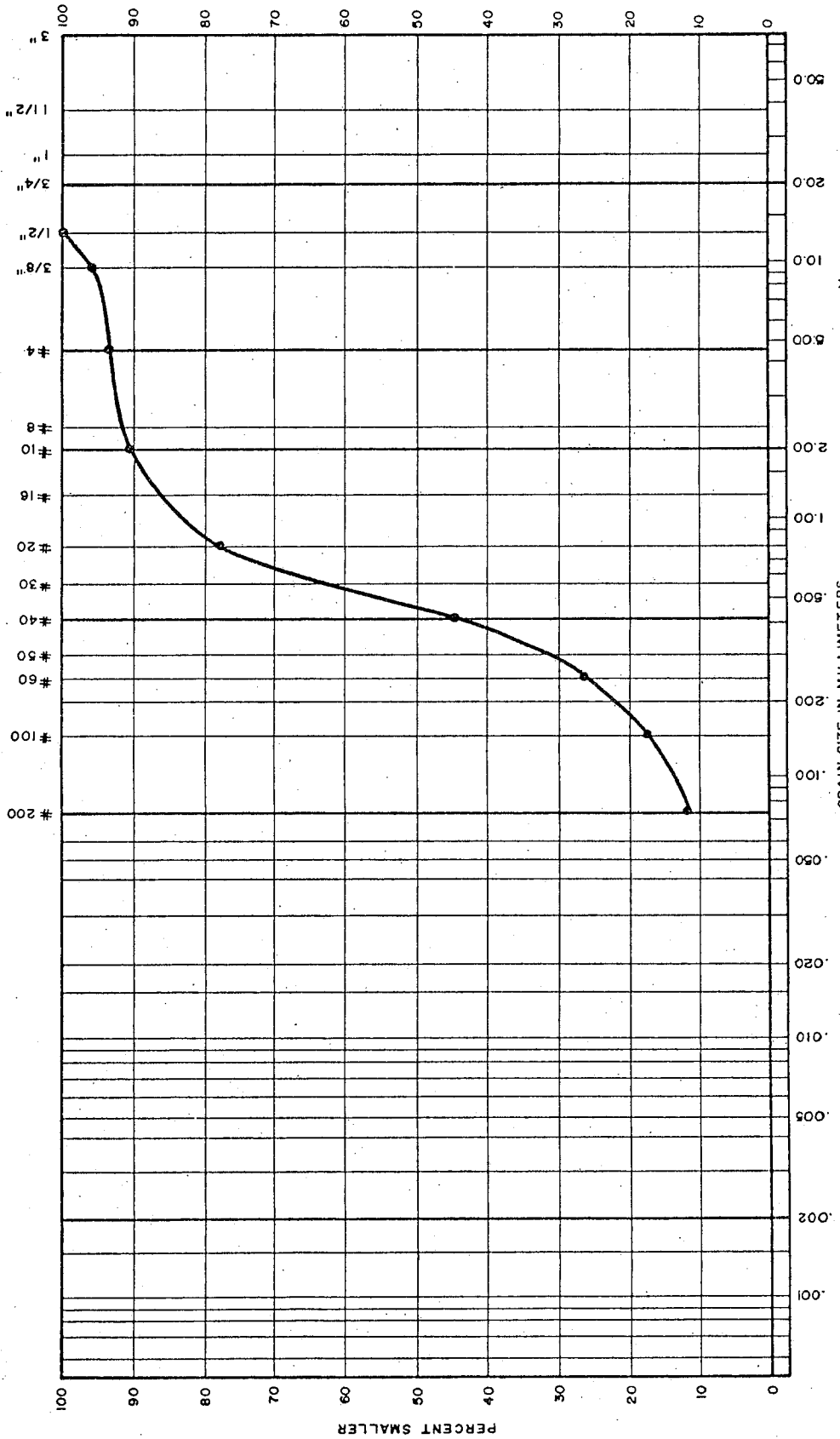


FIGURE \_\_\_\_\_

PROJECT Mayo  
 JOB No. E-1021 DATE March 12/75  
 HOLE No. IH1 SAMPLE No. \_\_\_\_\_  
 DEPTH 20-21 1/2

SAMPLE DESCRIPTION Sand - Silty

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE

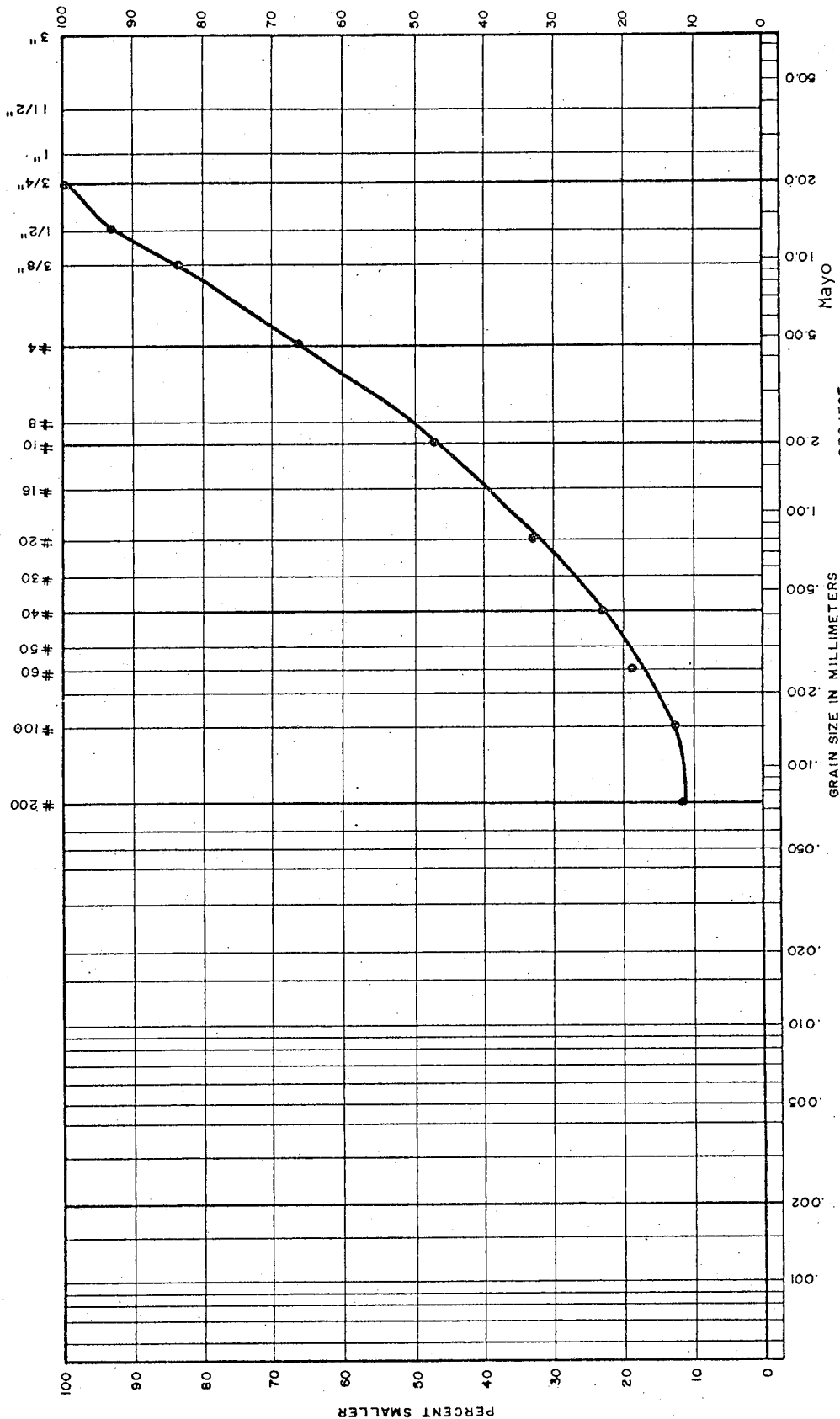


FIGURE \_\_\_\_\_

PROJECT E-1021 DATE \_\_\_\_\_  
 JOB No. TH2 SAMPLE No. \_\_\_\_\_  
 HOLE No. 5-631 DEPTH \_\_\_\_\_

SAMPLE DESCRIPTION Gravel, sandy, clean

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT				SAND		GRAVEL	
	FINE		MEDIUM		COARSE	FINE	COARSE	

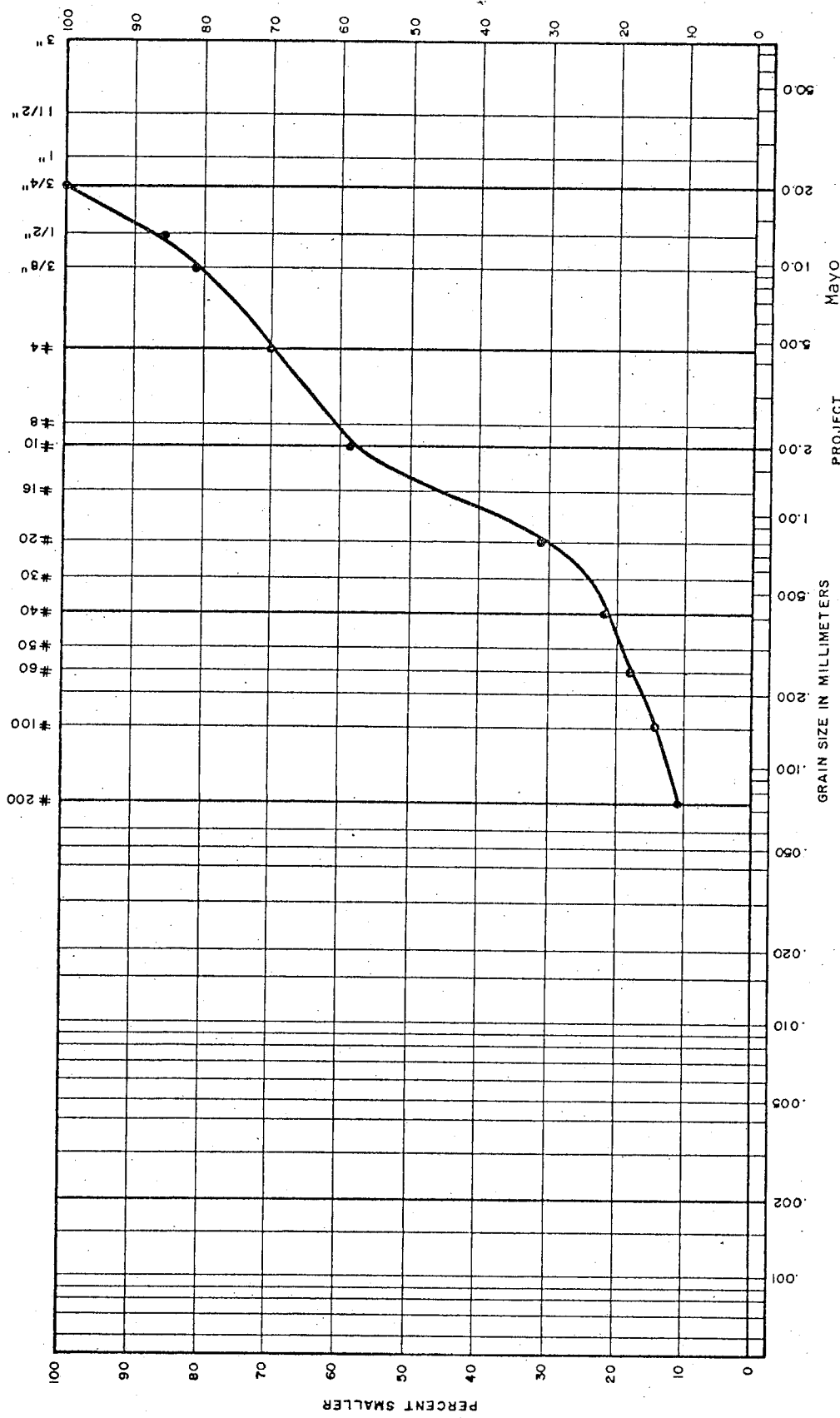


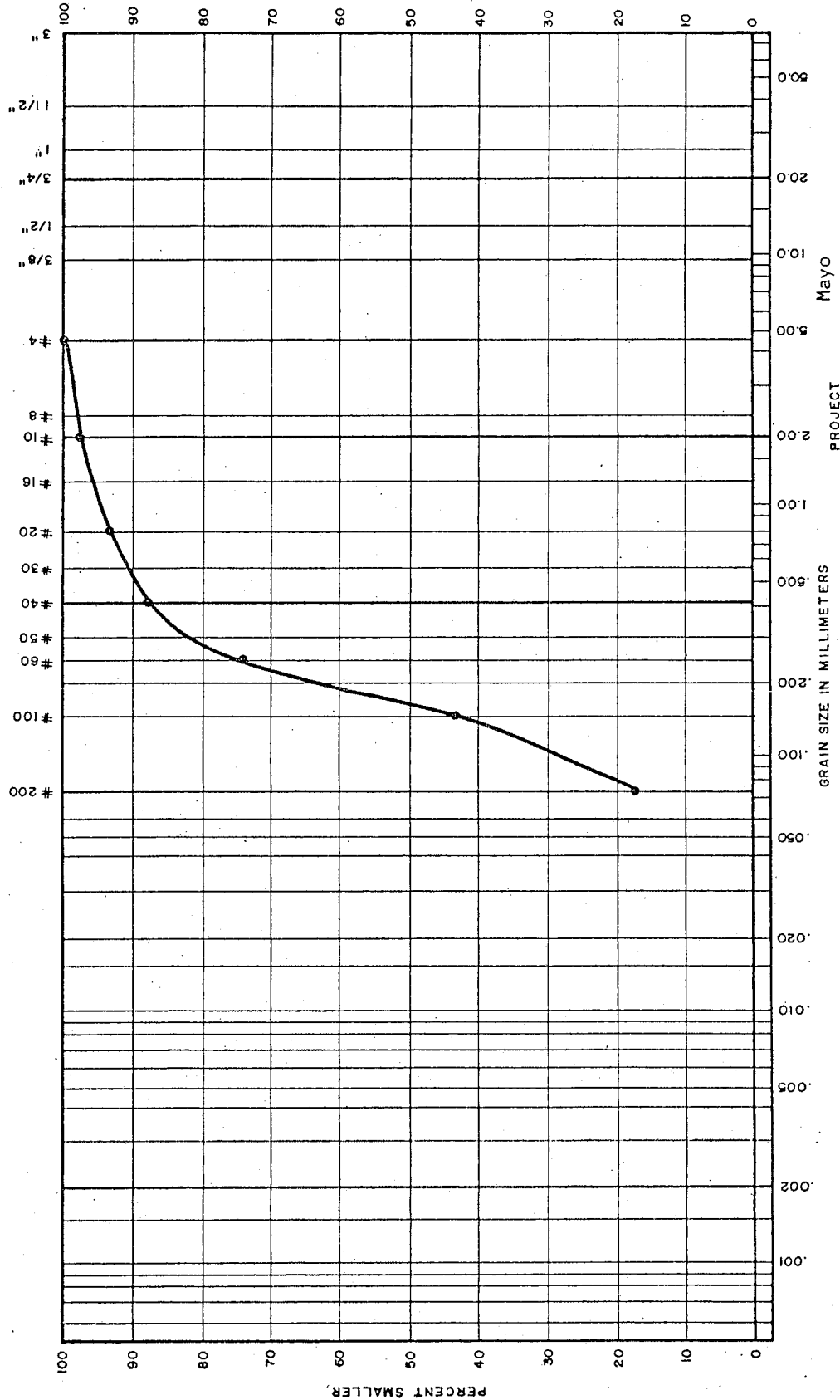
FIGURE \_\_\_\_\_

PROJECT Mayo  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. IH2 SAMPLE No. \_\_\_\_\_  
 DEPTH 25-26

SAMPLE DESCRIPTION Gravel  
Sandy, gapgraded

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



FIGURE

PROJECT: Mayo  
 JOB No. E-1021 DATE: \_\_\_\_\_  
 HOLE No. TH3 SAMPLE No. \_\_\_\_\_  
 DEPTH 5-6 1/2

SAMPLE DESCRIPTION Sand, Uniform

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND		GRAVEL	
		FINE	MEDIUM	COARSE	COARSE

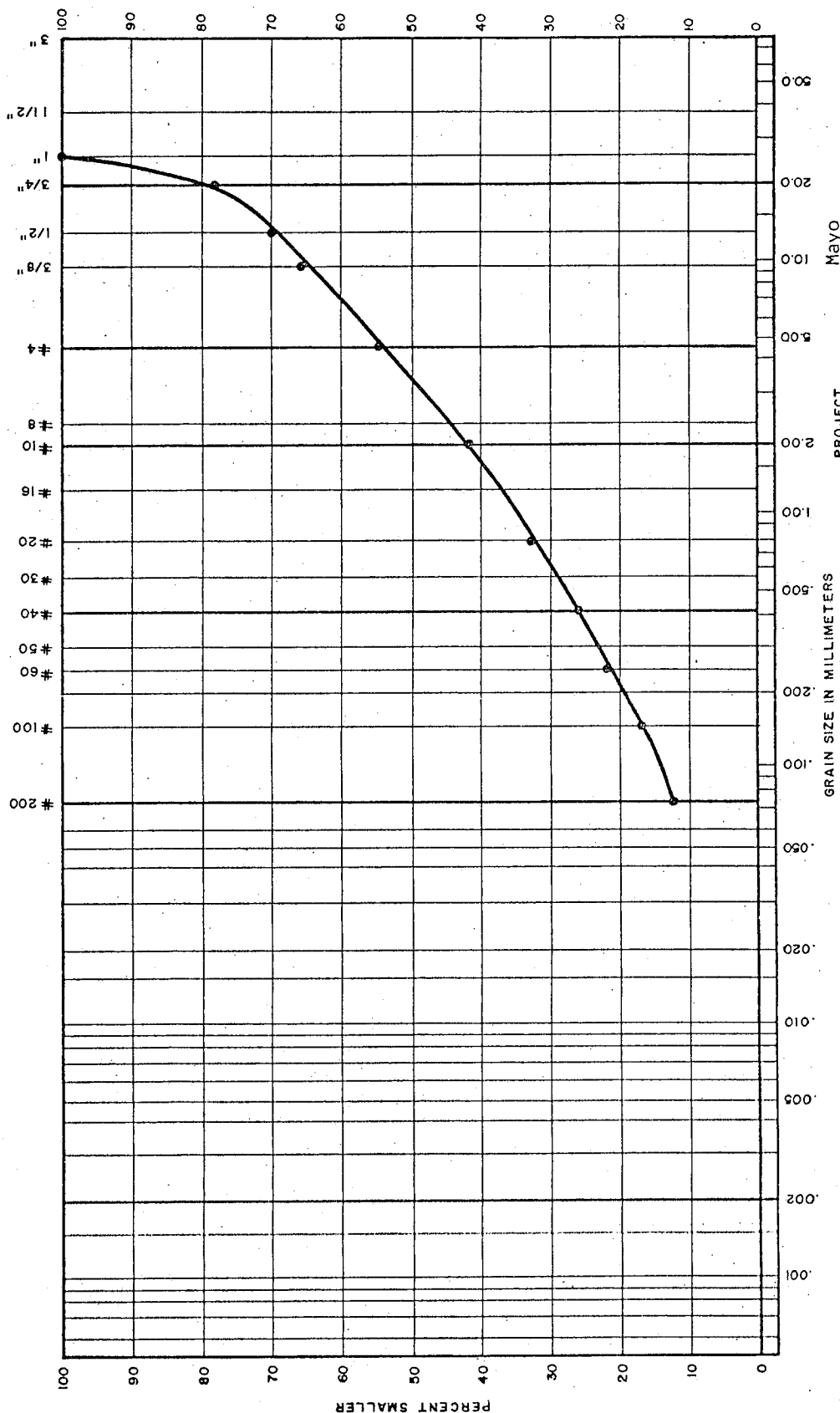


FIGURE \_\_\_\_\_

PROJECT Mayo  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. IH3 SAMPLE No. \_\_\_\_\_  
 DEPTH 20-20 1/2

GRAIN SIZE IN MILLIMETERS  
 SAMPLE DESCRIPTION Gravel sandy

### GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE

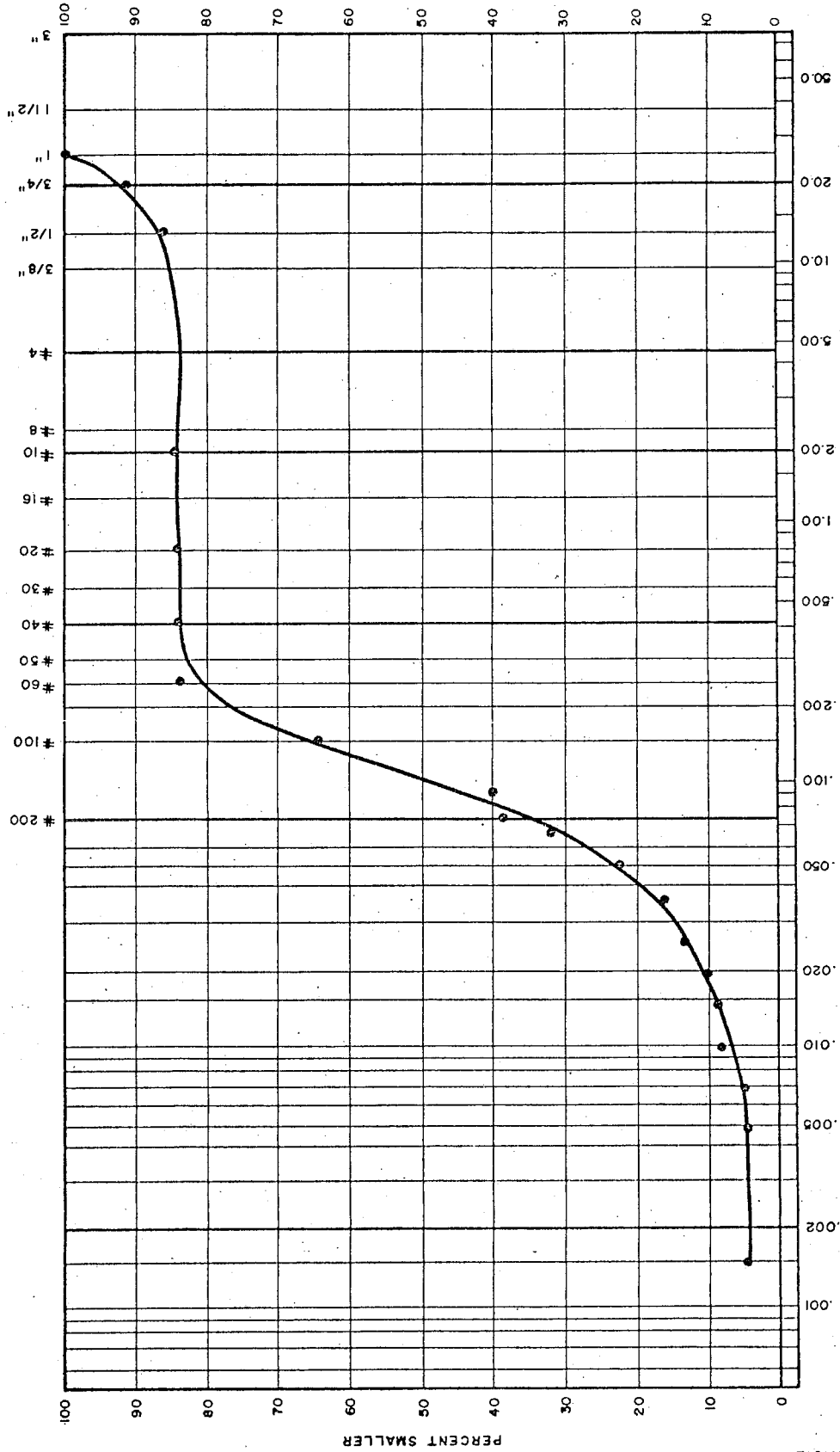


FIGURE \_\_\_\_\_

PROJECT E-1021 DATE Mayo  
 JOB No. TH3  
 HOLE No. 30-31 1/2 SAMPLE No. \_\_\_\_\_  
 DEPTH \_\_\_\_\_

SAMPLE DESCRIPTION Sand, gravelly, gapgraded

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE

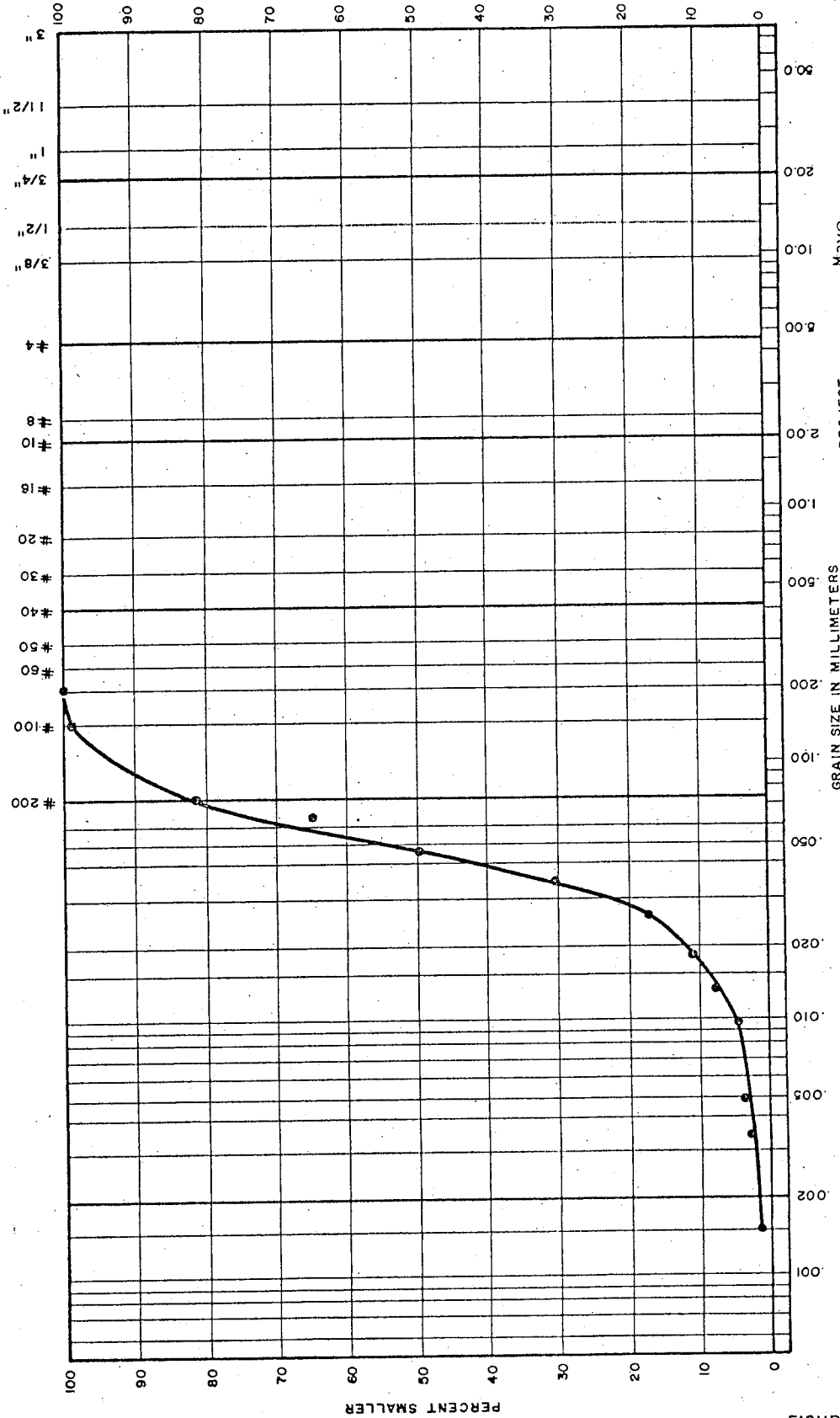


FIGURE \_\_\_\_\_

PROJECT Mayo  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. TH4 SAMPLE No. \_\_\_\_\_  
 DEPTH 15-16'

SAMPLE DESCRIPTION Silt

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT			SAND			GRAVEL		
	FINE			MEDIUM			COARSE		

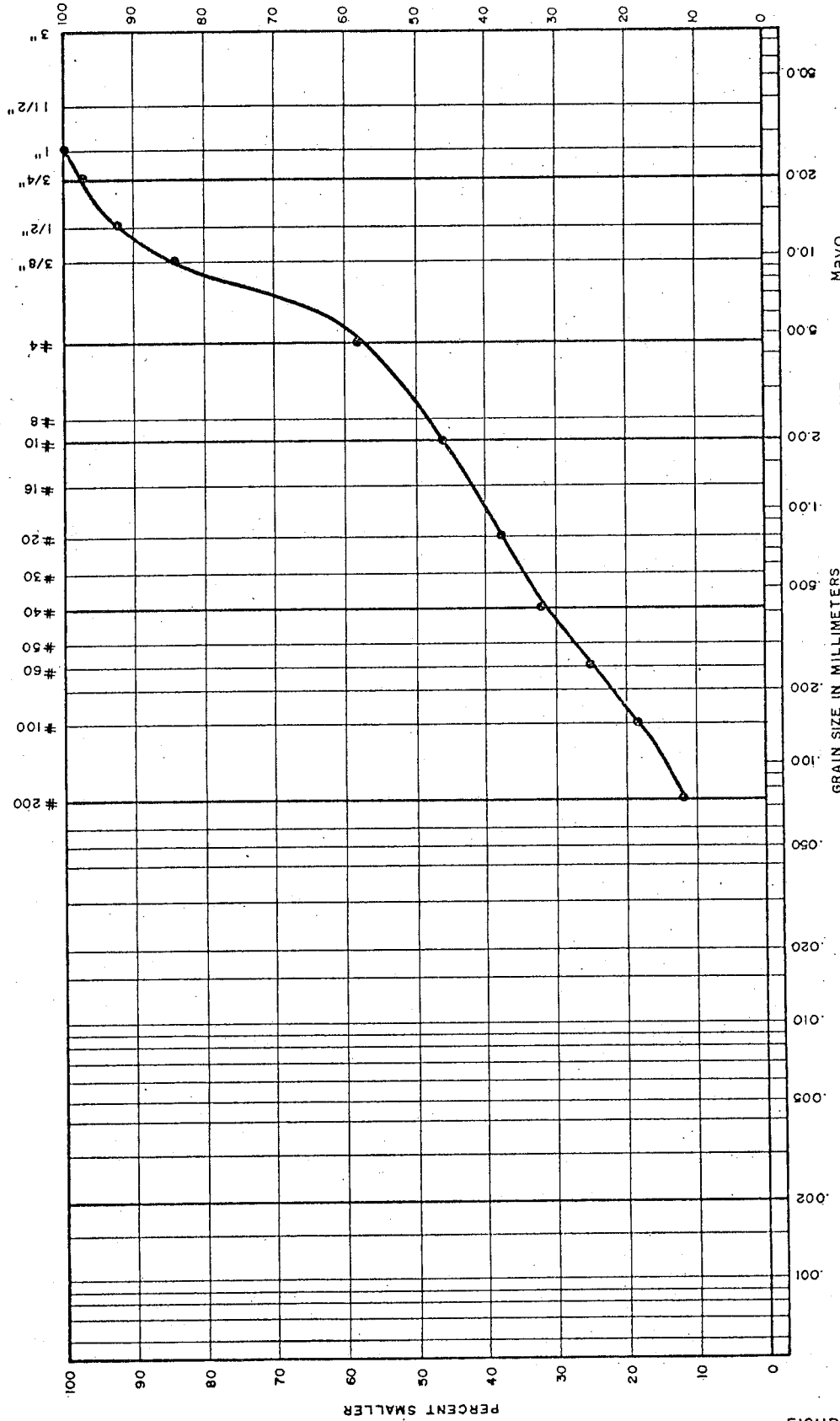


FIGURE \_\_\_\_\_

PROJECT E-1021 DATE Mayo  
 JOB No. TH5 DATE \_\_\_\_\_  
 HOLE No. \_\_\_\_\_ SAMPLE No. \_\_\_\_\_  
 DEPTH 5-6 1/2

GRAIN SIZE IN MILLIMETERS  
 SAMPLE DESCRIPTION Gravel very  
sandy

### GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">SAND</td> <td style="width: 20%;">MEDIUM</td> <td style="width: 20%;">COARSE</td> <td style="width: 20%;">FINE</td> <td style="width: 20%;">GRAVEL</td> <td style="width: 20%;">COARSE</td> </tr> </table>	SAND	MEDIUM	COARSE	FINE	GRAVEL	COARSE
SAND	MEDIUM	COARSE	FINE	GRAVEL	COARSE			

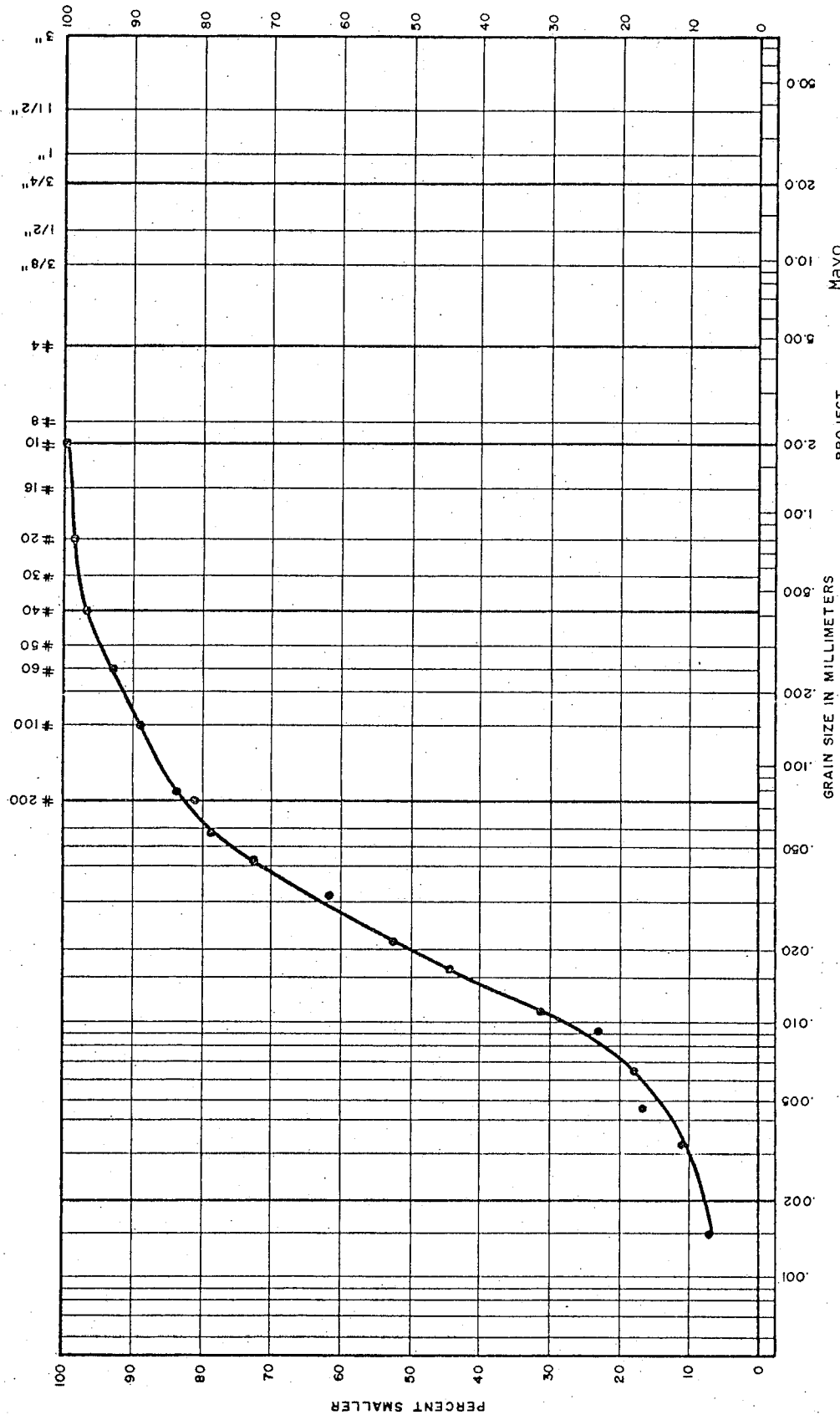


FIGURE \_\_\_\_\_

PROJECT: Mayo  
 JOB No. E-1021 DATE: March 18/75  
 HOLE No. TH5 SAMPLE No. \_\_\_\_\_  
 DEPTH 20-22

SAMPLE DESCRIPTION: Silt, Sandy  
 Non-Plastic

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	COARSE GRAVEL
------	------	-----------	-------------	-------------	-------------	---------------

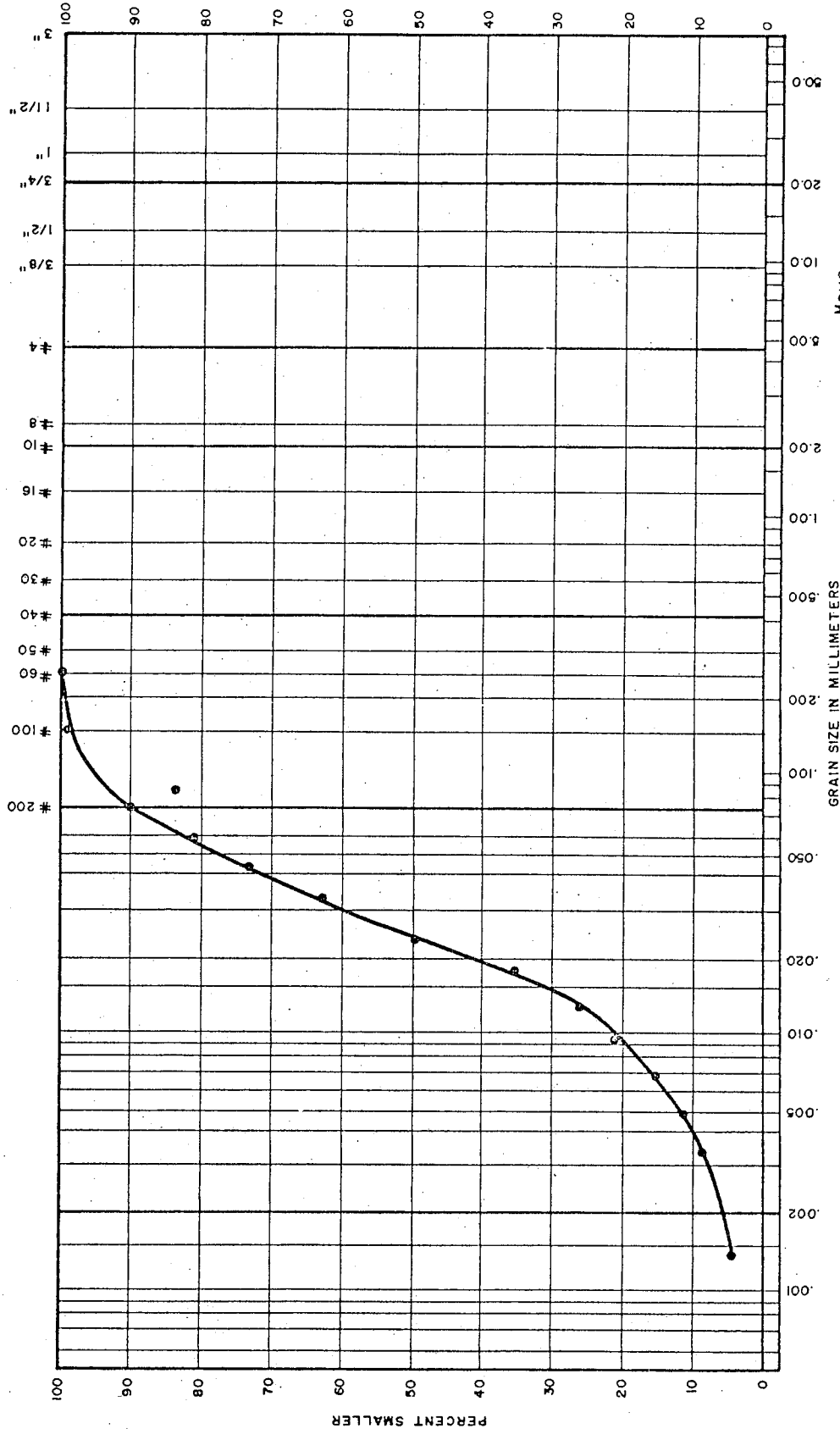


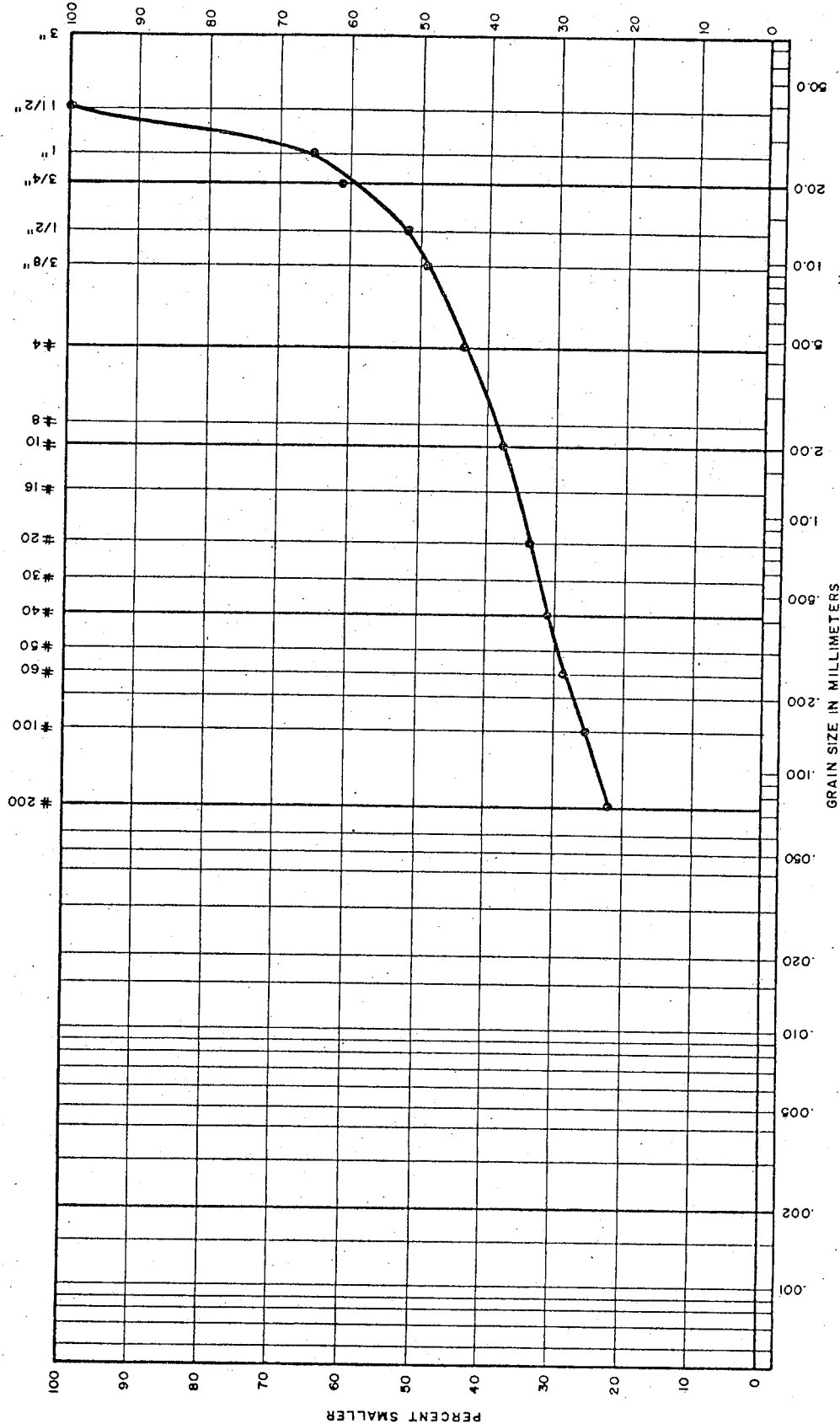
FIGURE \_\_\_\_\_

PROJECT Mayo  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. TH6 SAMPLE No. \_\_\_\_\_  
 DEPTH 7-9 1/2

SAMPLE DESCRIPTION Silt

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



PROJECT: TH6 DATE: 11-12  
 JOB No. TH6 HOLE No. 11-12 SAMPLE No.           
 MAYO  
 DEPTH

SAMPLE DESCRIPTION Gravel  
sandy, silty

FIGURE \_\_\_\_\_

### GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT			SAND			GRAVEL	
				FINE	MEDIUM	COARSE	FINE	COARSE

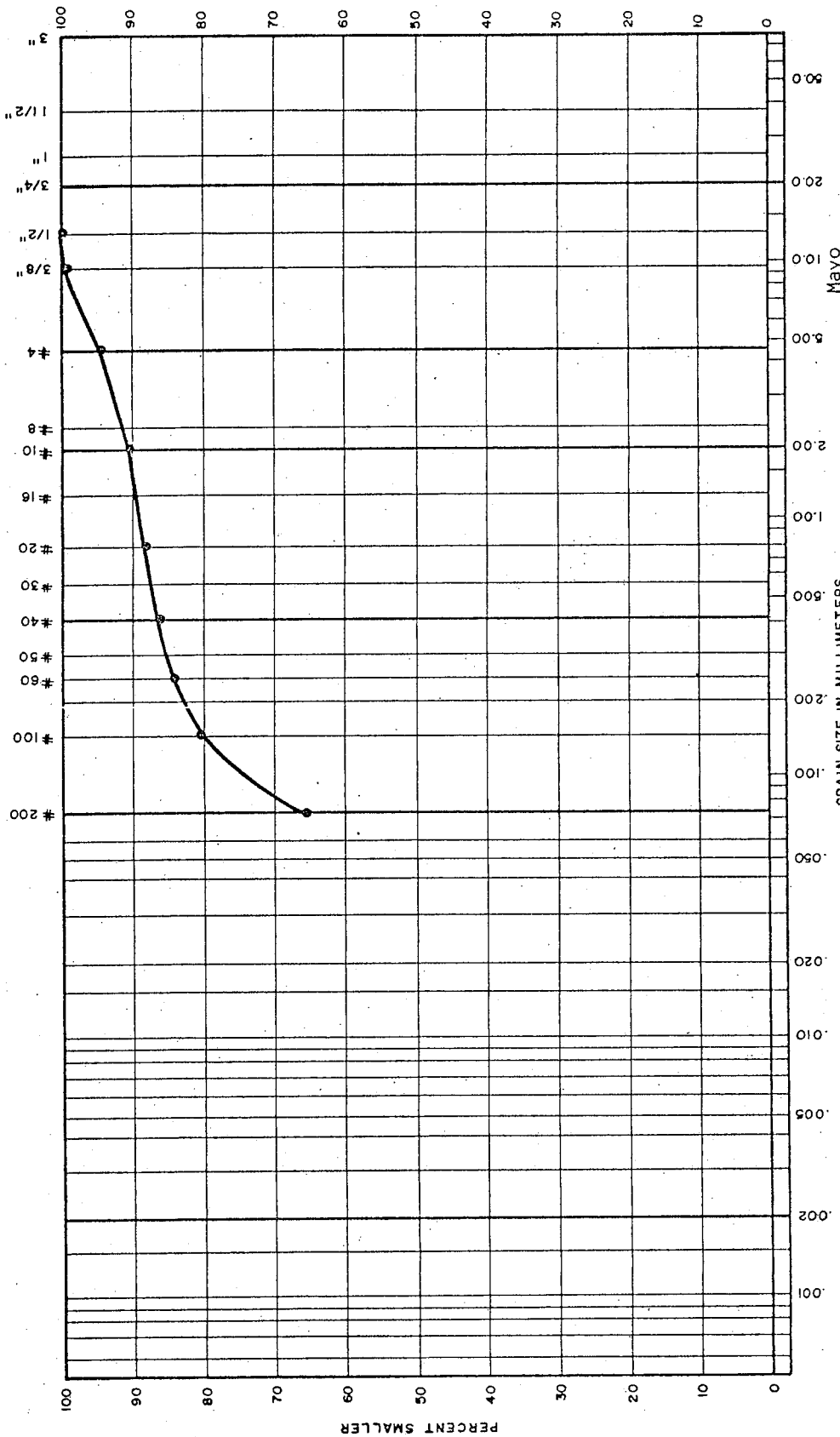


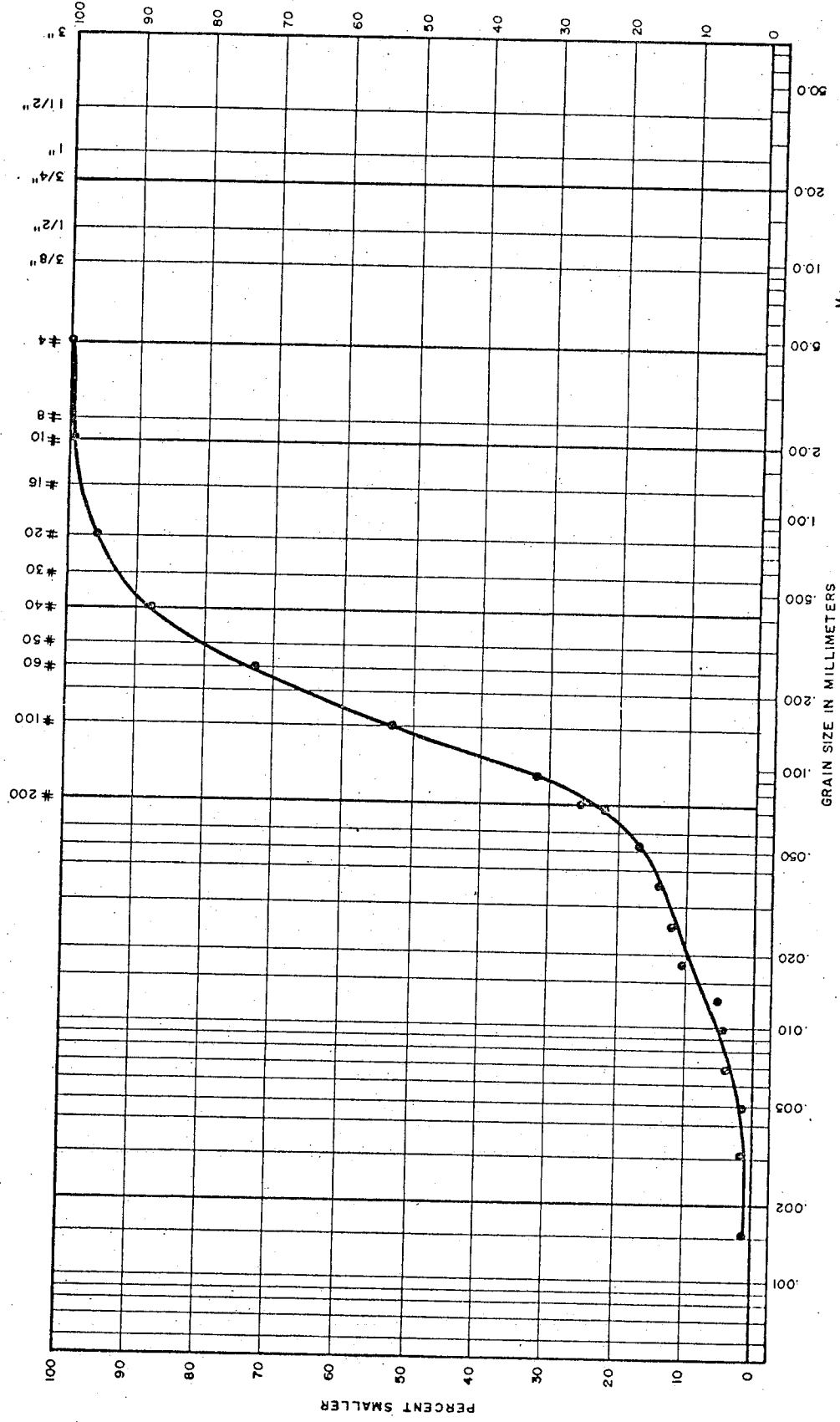
FIGURE \_\_\_\_\_

PROJECT E-1021 DATE \_\_\_\_\_  
 JOB No. TH7 SAMPLE No. \_\_\_\_\_  
 HOLE No. 5-6 DEPTH \_\_\_\_\_

SAMPLE DESCRIPTION Silt-Sandy

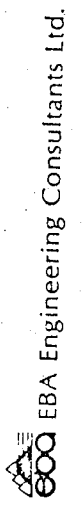
GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



PROJECT: Mayo  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. 1H7 SAMPLE No. \_\_\_\_\_  
 DEPTH 10-11 1/2

SAMPLE DESCRIPTION: Sand - Silty



EBA Engineering Consultants Ltd.

FIGURE \_\_\_\_\_

GRAIN SIZE DISTRIBUTION  
(UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	FINE		SAND		GRAVEL	
			#200	#40	#10	#4	
				MEDIUM	COARSE	FINE	COARSE
					#8	#3/8"	1/2"
							1"
							3/4"
							1 1/2"

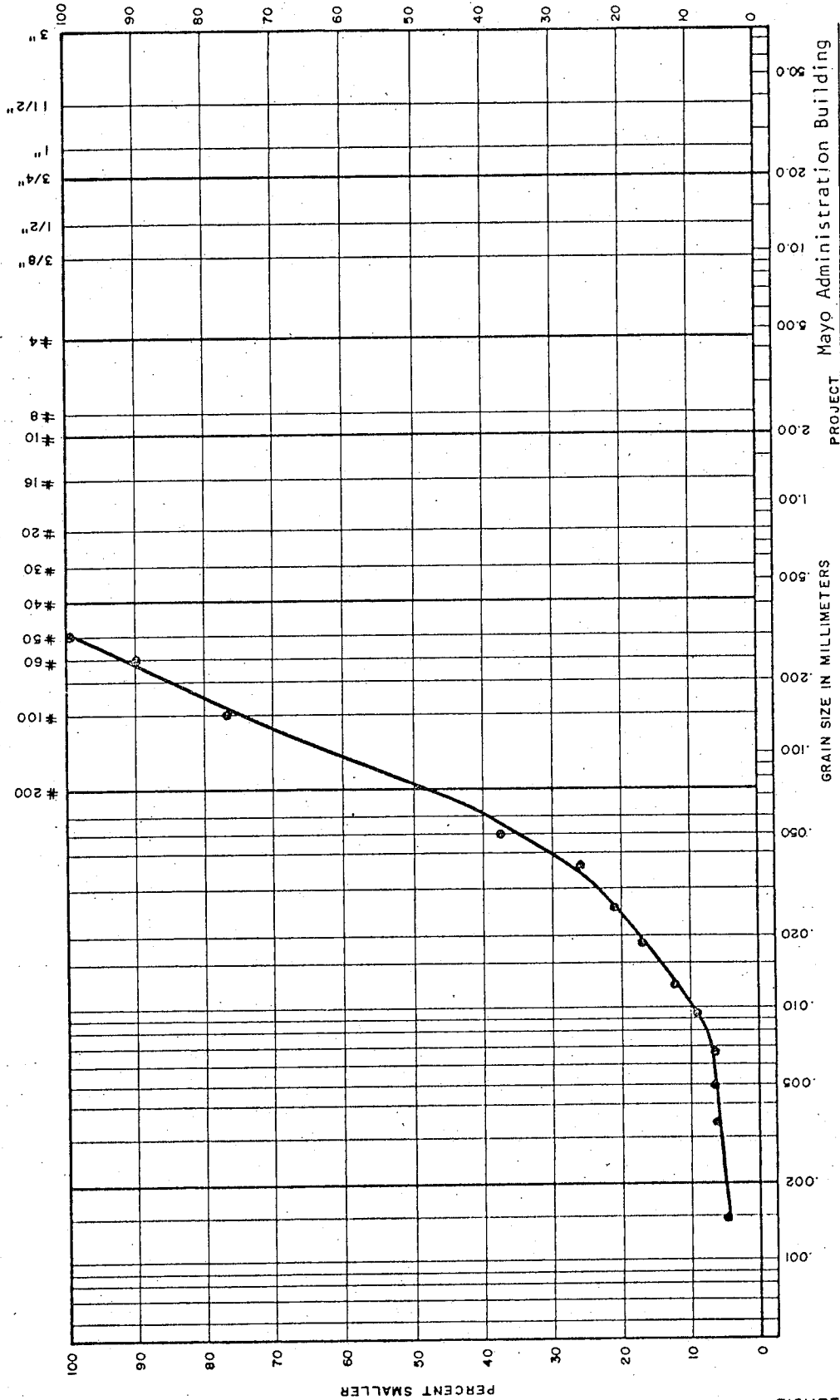
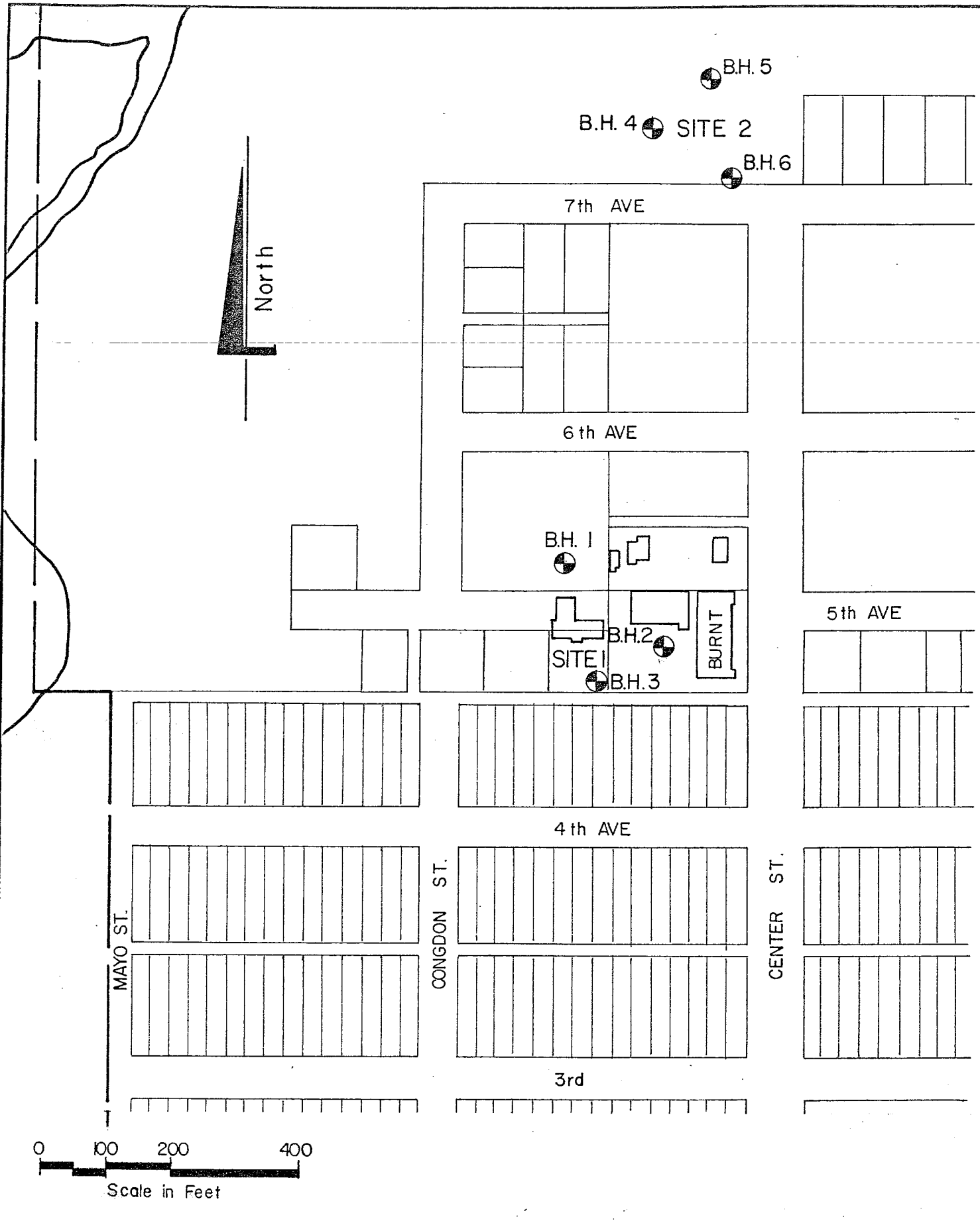


FIGURE \_\_\_\_\_

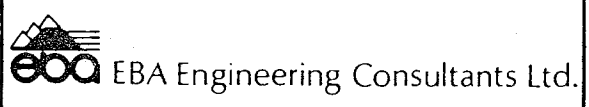
PROJECT: Mayo Administration Building  
 JOB No. E-1021 DATE \_\_\_\_\_  
 HOLE No. TH2a SAMPLE No. \_\_\_\_\_  
 DEPTH 50-51 1/2 Feet

SAMPLE DESCRIPTION: Sand, Very Silty  
 Trace of Clay





DWN BY DGL  
 DATE DWN. JUNE 75  
 SCALE SHOWN  
 JOB No. E 1114



MAYO SCHOOL  
 MAYO, Y. T.

DWG  
 1114-A-1  
 SHT. No. 1 of 1

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●							
				SPT RESISTANCE ▲							
				10	20	30	40	50	60	70	
2	Silt - medium to dark brown - some clay to clayey - low plastic		Unfrozen								
4		Frozen									
6	GRAVEL - medium brown - sandy, trace of silt - moist - fine to medium grained - trace of oxides  - 65% Gravel - 27% Sand - 8% Silt  - sloughing  - very sandy - trace of silt  - fine grained - medium to coarse sand - clean	X	Frozen								
8			Unfrozen								
12		/									
16		X									
18		X									
20		X									
22											
24	SILT - medium grey - clayey - low plastic - wet - firm to stiff  - trace of clay - non to low plastic										
26		/									
28											
30			/								
32											




PROJECT  
Mayo School  
\_\_\_\_\_  
Site #1  
\_\_\_\_\_

DATE 5/24/74  
 LOGGED BY JK  
 ELEVATION \_\_\_\_\_  
 DEPTH 51 1/2

HOLE NO.  
1  
SHEET  
1 of 2

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●							
				SPT RESISTANCE ▲							
				10	20	30	40	50	60	70	
34	Silt - cont'd										
36	- non plastic	X									
38		X				▲					
40		X					▲				
42											
44											
46		X	Unfrozen Frozen								
48			Nbn								
50	- laminated	X									
52	END OF HOLE										

	PROJECT Mayo School	DATE <u>5/24/75</u>	HOLE NO. 1
	Site #1	LOGGED BY <u>JK</u>	ELEVATION _____ DEPTH <u>51 1/2</u>



# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND		GRAVEL	
		FINE	MEDIUM	FINE	COARSE
		#20	#40	#10	#4
		#100	#60	#40	#20
		#200	#100	#8	#10
				#16	#4
				#30	#8
				#60	#16
				#100	#30
				#200	#60
					#100
					#200
					#400
					#600
					#840
					#1060
					#1480
					#2000
					#2800
					#3750
					#4750
					#6000
					#7500
					#9500
					#12000
					#15000
					#19000
					#24000
					#30000
					#37500
					#47500
					#60000
					#75000
					#95000
					#120000
					#150000
					#190000
					#240000
					#300000
					#375000
					#475000
					#600000
					#750000
					#950000
					#1200000
					#1500000
					#1900000
					#2400000
					#3000000
					#3750000
					#4750000
					#6000000
					#7500000
					#9500000
					#12000000
					#15000000
					#19000000
					#24000000
					#30000000
					#37500000
					#47500000
					#60000000
					#75000000
					#95000000
					#120000000
					#150000000
					#190000000
					#240000000
					#300000000
					#375000000
					#475000000
					#600000000
					#750000000
					#950000000
					#1200000000
					#1500000000
					#1900000000
					#2400000000
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					#3750000000
					#4750000000
					#6000000000
					#7500000000
					#9500000000
					#12000000000
					#15000000000
					#19000000000
					#24000000000
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					#47500000000
					#60000000000
					#75000000000
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					#2400000000000000000000000
					#3000000000000000000000000
					#3750000000000000000000000
					#4750000000000000000000000
					#6000000000000000000000000
					#7500000000000000000000000
					#9500000000000000000000000
					#12000000000000000000000000
				</	

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
2	GRAVEL FILL - 4"-6" Sandy		Unfrozen							
4	SILT - dark brown - trace to some clay - some organics		Frozen							
6	GRAVEL - medium brown - sandy - trace of silt - fine to medium grained	X	Frozen	●						
10	- trace of oxides - moist	X	Unfrozen	●		▲				
16	- very sandy - trace to some silt	X		●			▲			
20		X		●			▲			
24	- black - some organics	X		●			▲			
26	SILT - medium grey - damp to moist - trace of clay - stiff - non plastic	X		●			▲			
30		X		●			▲			



PROJECT  
Mayo School  
 \_\_\_\_\_  
 Site #1

DATE 5/25/75  
 LOGGED BY JK  
 ELEVATION \_\_\_\_\_  
 DEPTH 50

HOLE NO.  
 2  
 SHEET  
 1 of 2

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●							
				SPT RESISTANCE ▲							
				10	20	30	40	50	60	70	
34	SILT - cont'd  - drilled to find permafrost depth no sampling										
36											
38											
40											
42											
44											
46				Unfrozen							
48				Frozen							
50											
		END OF HOLE									



PROJECT  
Mayo School

Site #1

DATE 5/25/75

LOGGED BY JK

ELEVATION \_\_\_\_\_

DEPTH 50'

HOLE NO.

2

SHEET

2 of 2

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ● SPT RESISTANCE ▲ 10 20 30 40 50 60 70
2	SILT - dark brown - trace of clay - some organics		Unfrozen	
			Frozen	
4	GRAVEL - medium brown - sandy - fine to medium grained - dense		Frozen	
6			Unfrozen	
8				
10				
12	- trace of silt - some iron oxides	X		
14	- 63% Gravel - 24% Sand - 10% Silt			
16		X		
18				
20	- medium grey - fine grained	X		
22	- trace to some silt - moist, dense			
24	SILT - medium grey - trace of clay - non plastic			
26		X		
28				
30				
32	END OF HOLE	X		



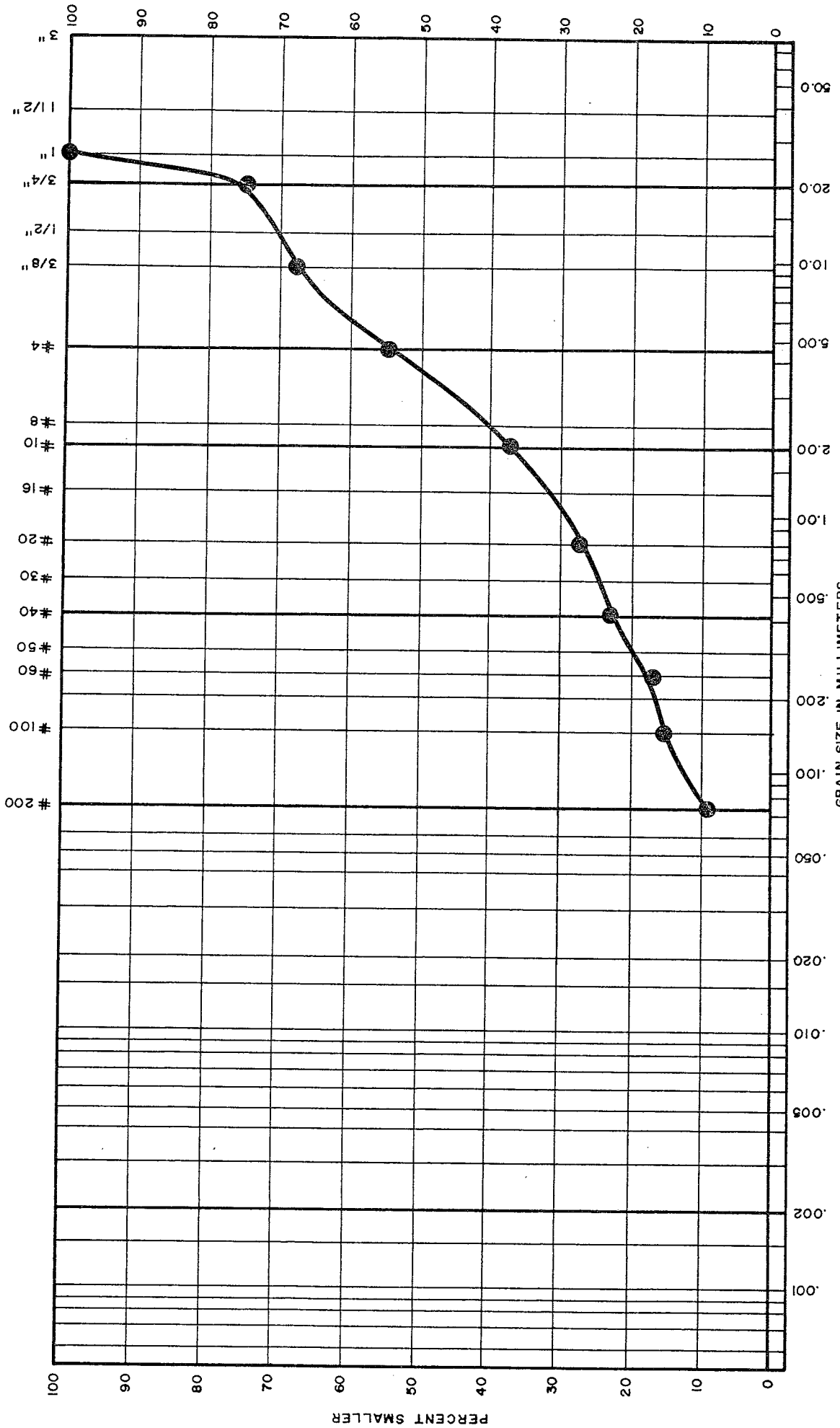
PROJECT  
Mayo School  
Site #1

DATE 5/25/75  
 LOGGED BY JK  
 ELEVATION \_\_\_\_\_  
 DEPTH 33½

HOLE NO.  
3  
 SHEET  
1 of 1

# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND		GRAVEL	
		FINE	MEDIUM	FINE	COARSE
		# 200	# 100	# 4	# 10
		# 60	# 30	# 8	# 20
		# 50	# 40	# 16	# 40
		# 100	# 60	# 30	# 60
		# 200	# 100	# 100	# 100



PROJECT Mayo School  
 JOB No. E1114 DATE 2/6/75  
 HOLE No. TH3 SAMPLE No. \_\_\_\_\_  
 DEPTH 10-11 1/2 Feet

SAMPLE DESCRIPTION Gravel, Sandy  
Some Silt

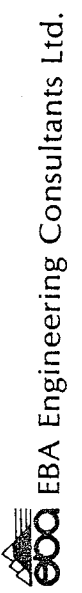
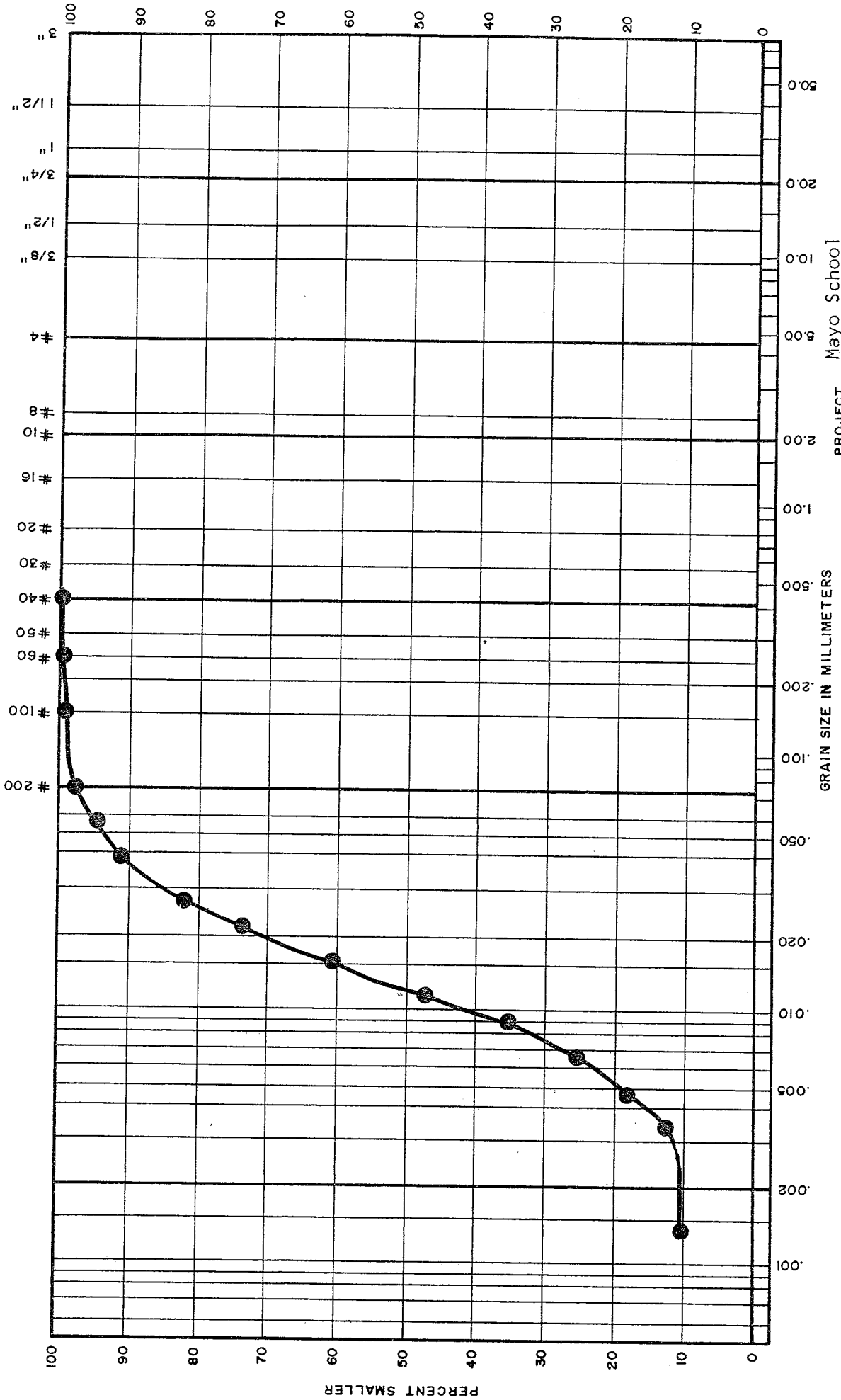


FIGURE 6-A-4111

# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



PROJECT Mayo School

JOB No. E1114 DATE 3/6/75

HOLE No. T.H.3 SAMPLE No. \_\_\_\_\_

DEPTH 26-27.5

SAMPLE DESCRIPTION Silt, with some Clay

EBA Engineering Consultants Ltd.

FIGURE 1114-A-15

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
2	GRAVEL - sandy (FILL) - placed for drill									
4			Unfrozen							
6	SAND - medium brown, very silty, fine grained	X	Frozen Ice Lenses							
8	GRAVEL - medium brown - sandy - fine grained - loose, moist	X	Unfrozen							
10		X								
12	- fine to medium grained - trace of silt - trace of oxides	X								
14	- 63% Gravel - 23% Sand - 14% Silt	X								
16	- layers of fine silty sand (6"-1')	X								
18		X								
20		X								
22	- medium grey	X								
24	- sand layer 1'	X								
26		X								
28		X								
30	SAND - medium grey - silty - fine grained, uniform - some black organics	X								
32	- saturated	X								



PROJECT  
Mayo School  
\_\_\_\_\_  
Site #2  
\_\_\_\_\_

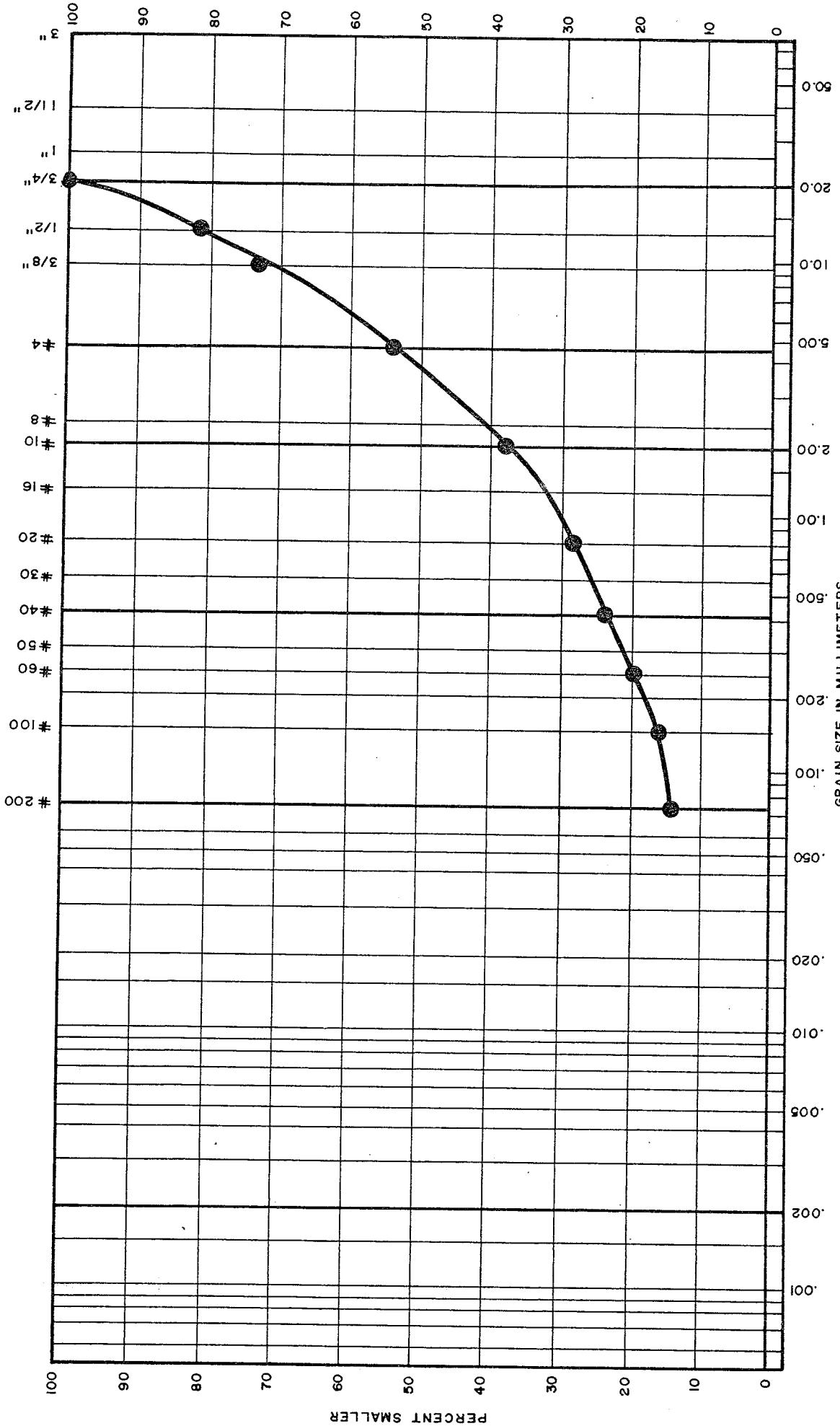
DATE 5/25 & 26/75  
 LOGGED BY JK  
 ELEVATION \_\_\_\_\_  
 DEPTH 55'

HOLE NO.  
4  
SHEET  
1 of 2



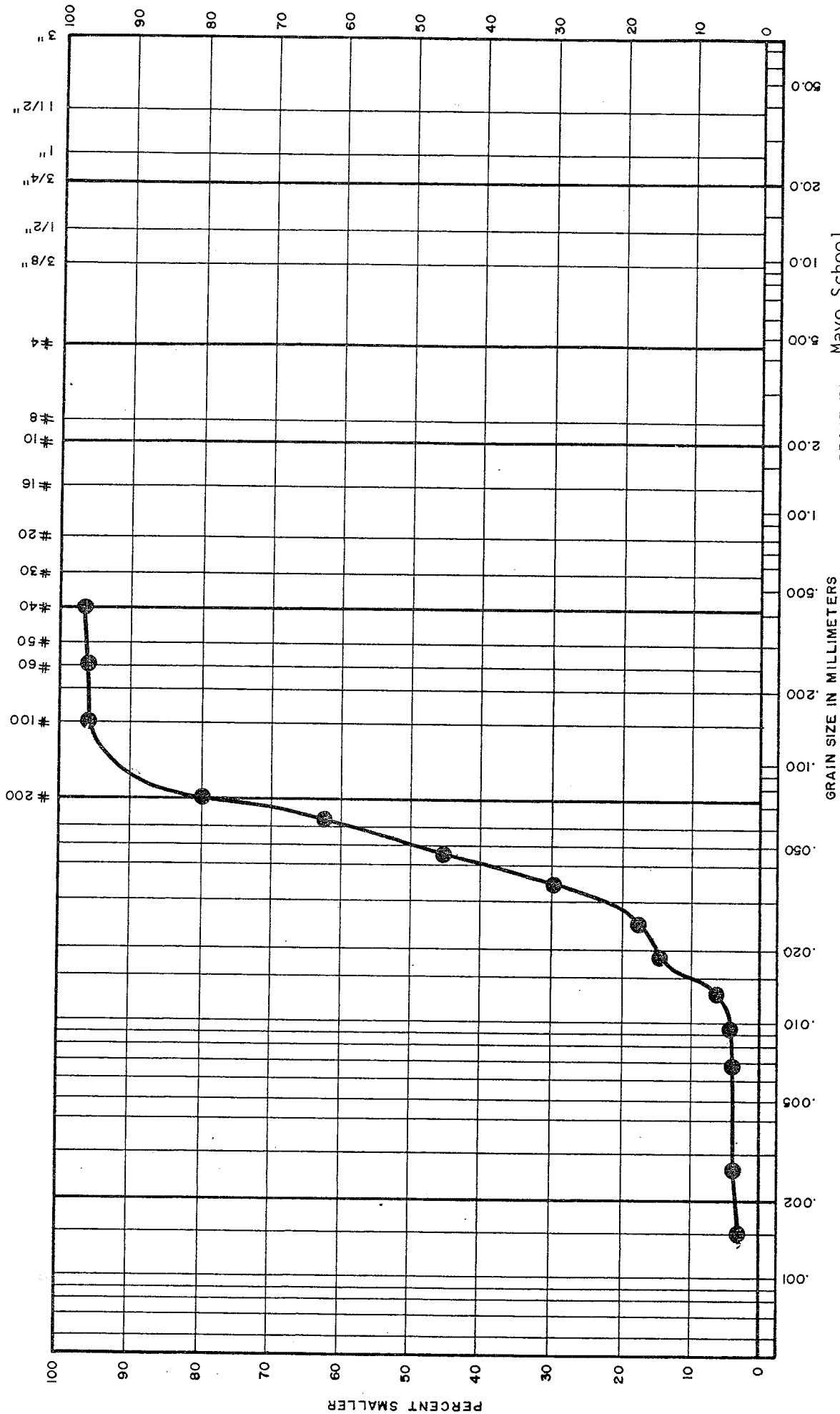
# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND		GRAVEL
		FINE	MEDIUM COARSE	FINE COARSE



# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND		GRAVEL	
		FINE	MEDIUM	FINE	COARSE



PROJECT Mayo School  
 JOB No. F1114 DATE 7/6/75  
 HOLE No. TH4 SAMPLE No. \_\_\_\_\_  
 DEPTH 31-32.5 Feet

SAMPLE DESCRIPTION Silt, With Some Sand

EBA Engineering Consultants Ltd.

FIGURE 1114-A-16

# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
2	GRAVEL - sandy FILL - for drilling									
	ORGANIC SILT - dark brown									
4	SAND - medium brown - silty, roots & rootlets		Unfrozen							
6	GRAVEL - medium brown - very sandy - fine grained		Frozen							
8	- layers of silty sand (6"-1")		Unfrozen							
10										
12	- 60% gravel - 28% sand - 12% silt	X								
14	- some coarse gravel from 13'-16'									
16		X								
18										
20		X								
22	SAND - medium grey - silty - fine grained, uniform - wet	X								
24										
26	- small pieces of wood - some fine gravel	X								
28										
30										
32	- trace of fine gravel	X								
	END OF HOLE									



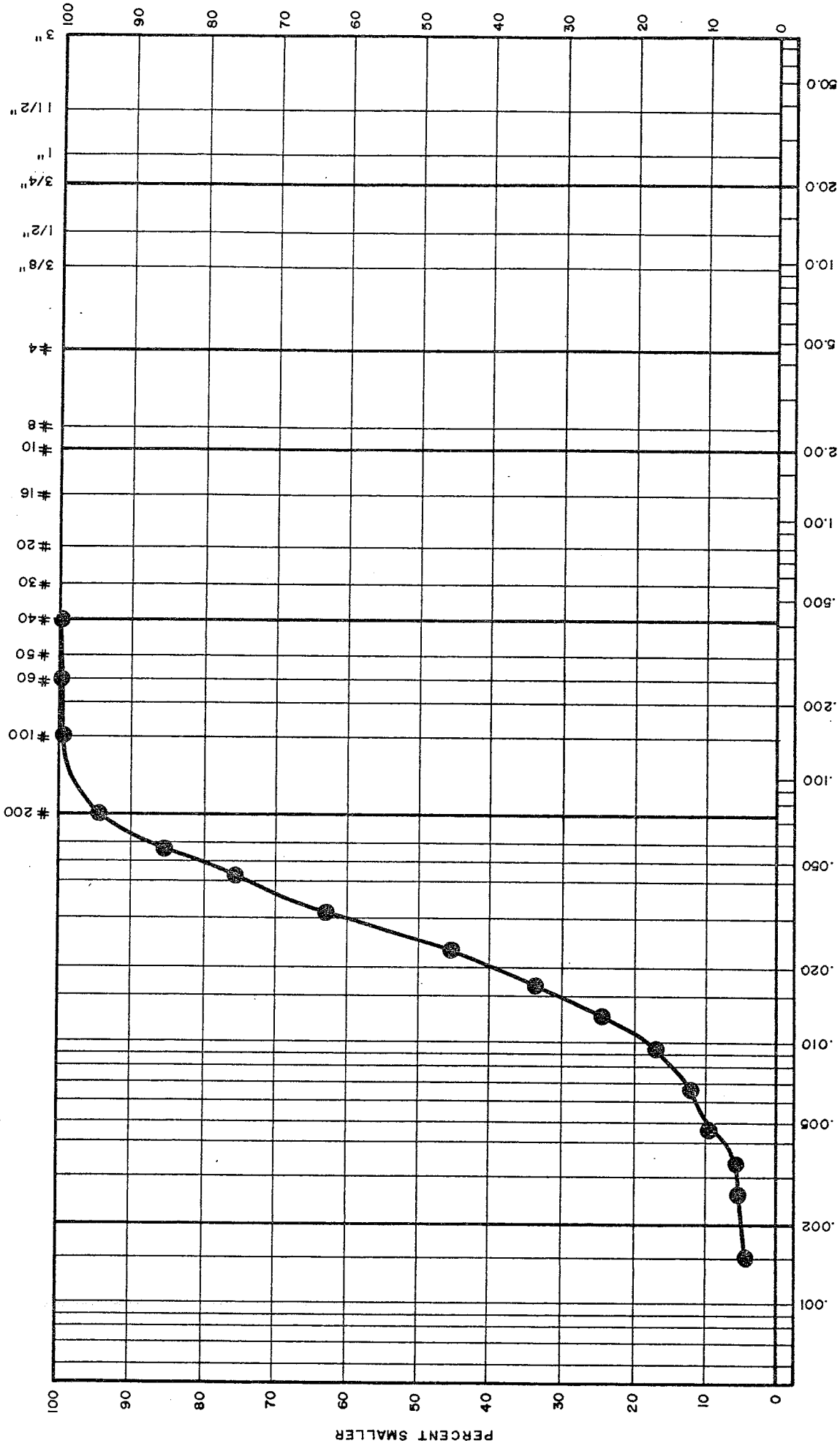
PROJECT  
Mayo School  
 \_\_\_\_\_  
Site #2  
 \_\_\_\_\_

DATE 5/26/75  
 LOGGED BY JK  
 ELEVATION \_\_\_\_\_  
 DEPTH 32½

HOLE NO.  
5  
 SHEET  
1 of 1

# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT	SAND		GRAVEL	
		FINE	MEDIUM	FINE	COARSE



PROJECT Mayo School  
 JOB No. E1114 DATE 3/6/75  
 HOLE No. I.H. 4 SAMPLE No. \_\_\_\_\_  
 DEPTH 48-49.5 Feet

GRAIN SIZE IN MILLIMETERS

SAMPLE DESCRIPTION Silt with a Trace of  
Clay

FIGURE 1114-A-17



# BOREHOLE LOG PERMAFROST REGION

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE	GROUND ICE CONDITION	MOISTURE CONTENT % ●						
				SPT RESISTANCE ▲						
				10	20	30	40	50	60	70
	PEAT - 8"-1'		Frozen							
2	SAND - medium brown - very silty - trace of clay		Ice Lenses							
4	- roots & rootlets at top									
6	GRAVEL - medium brown - very sandy - fine grained - wet	X	Unfrozen							
10	- 46% Gravel - 42% Sand - 12% Silt	X								
14	- sand layers (6"-1½') fine grained uniform	X								
18	- fine grained uniform sand - silty - trace of fine gravel - wet	X								
22	- gravel	X								
26	SILT - medium grey - non plastic - wet	X								
32	END OF HOLE	X								



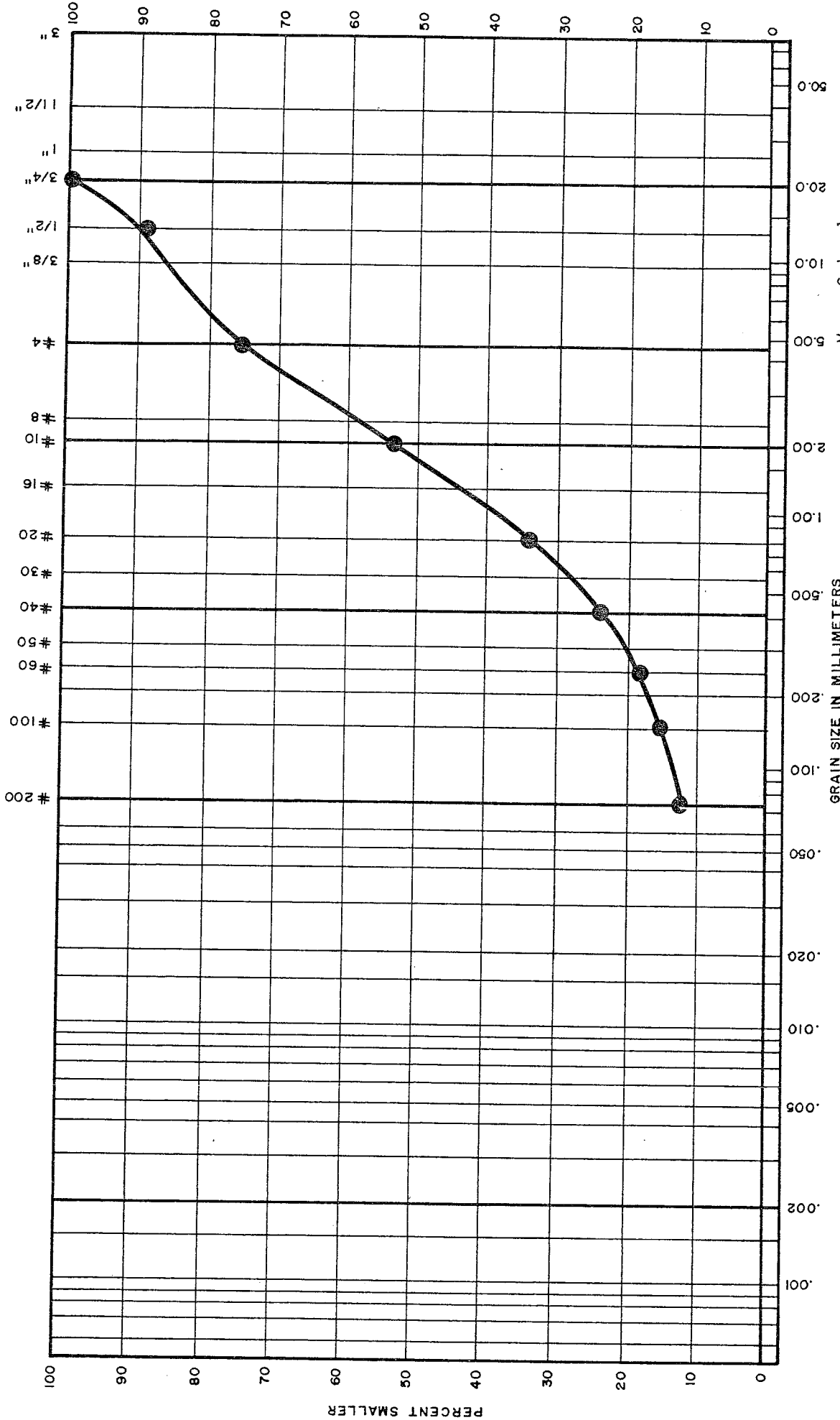
PROJECT  
Mayo School  
Site #2

DATE 5/26/75  
LOGGED BY JK  
ELEVATION \_\_\_\_\_  
DEPTH 32½

HOLE NO.  
6  
SHEET  
1 of 1

# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT			GRAVEL			COARSE
	FINE	MEDIUM	COARSE	FINE	COARSE	FINE	COARSE



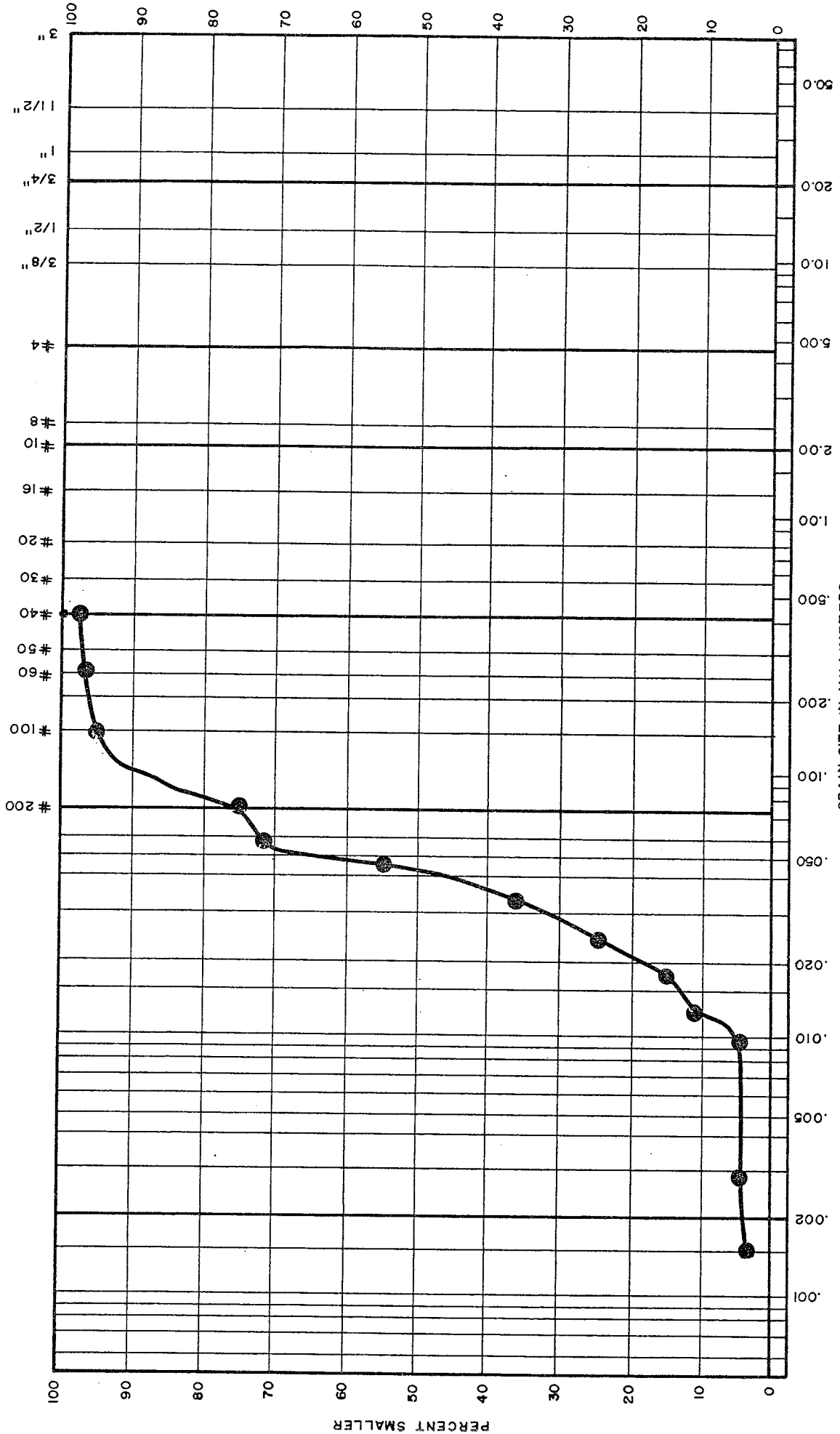
PROJECT Mayo School  
 JOB No. E-1114 DATE 2/6/75  
 HOLE No. IH6 SAMPLE No. \_\_\_\_\_  
 DEPTH 9 1/2 Feet

SAMPLE DESCRIPTION Sand & Gravel  
Some Silt

FIGURE 1114-A-12

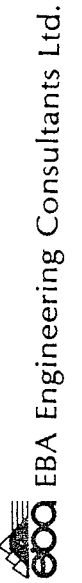
# GRAIN SIZE DISTRIBUTION (UNIFIED SOIL CLASSIFICATION)

CLAY	SILT			SAND			GRAVEL	
				FINE	MEDIUM	COARSE	FINE	COARSE



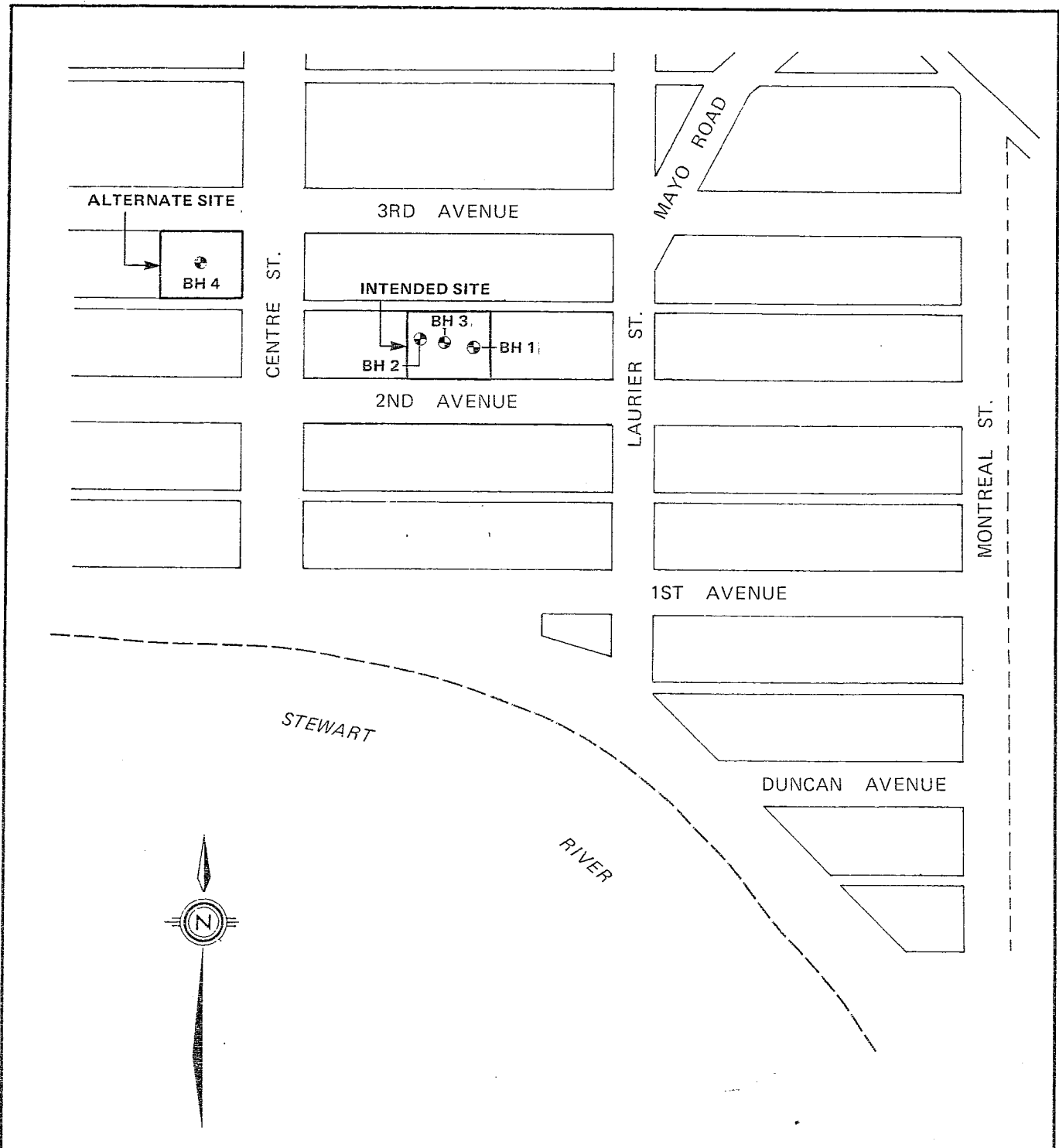
PROJECT Mayo School  
 JOB No. E1114 DATE 3/6/75  
 HOLE No. I.H.6 SAMPLE No. \_\_\_\_\_  
 DEPTH 31-32.5 Feet

SAMPLE DESCRIPTION Silt with Some Sand




EBA Engineering Consultants Ltd.

FIGURE 1114-A-13



NOTE: For detailed plan of intended site, see Drawing No. 2870 - A - 2

**GENERAL SITE PLAN AND BOREHOLE LOCATIONS  
PROPOSED YUKON HOUSING FOURPLEX  
MAYO, YUKON.**

<b>EBA Engineering Consultants Ltd.</b> 	
JOB NO.: 101 - 2870	DATE: 06/05/80
DRAWN BY: A. G. V.	DRAWING NO.:
REVIEWED BY: J.R.T.	2870 - A - 1



**LEGAL DESCRIPTION**  
LOTS 7, 8, 9, AND 10  
BLOCK 8'  
MAYO, Y. T.

SURVEY PIN  
ELEVATION = 488.65 m

⊕ BH 2  
El. = 488.59 m

⊕ BH 3  
El. = 488.68 m

⊕ BH 1  
El. = 488.96 m

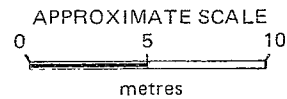
ABANDONDED  
HOUSE  
(APPROX.  
LOCATION)

EXISTING  
HOUSE  
(APPROX.  
LOCATION)

PROPERTY LINE

PROPERTY LINE

2ND AVENUE



**DETAILED SITE PLAN AND BOREHOLE LOCATIONS  
PROPOSED YUKON HOUSING FOURPLEX  
MAYO, YUKON.**

**EBA Engineering Consultants Ltd.**

JOB NO.: 101 - 2870

DATE: 06/05/80

DRAWN BY: A. G. V.

DRAWING NO.:

REVIEWED BY: J. R. T.

2870 - A - 2

## BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
	FILL - silty, black, organic		UNFROZEN					
	SILT - some sand to sandy, trace of organics, non plastic	X	SEASONAL FROST					
1	- sand lens		Nbn			●		
	SAND AND GRAVEL - some silty layers and cobbles, grey and brown		UNFROZEN					
2	- more gravelly with depth							
	GRAVEL - occasional cobbles, sub-rounded to rounded							
3	- coarser grained							
	- sand lens 4.0 to 4.3 metres depth.							
4	- greyer in colour							
5								
	SAND - some gravel							
6								
	SILT - sandy, trace of clay, dark grey		FROZEN some ice chips visible in cuttings					
7	- laminated silt and sand, trace of gravel sites							



SFC. ELEVATION (m) 488.96	DATE DRILLED May 1, 1980
COMPLETION DEPTH (m) 9.3	LOGGED BY J.R.T./M.A.V.
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No.	1
PAGE 1 OF 2	

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.

## BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
8	SILT - sandy, trace of clay, dark grey	X	FROZEN  Vs trace One 0.5mm ice lens			●		▲
9	SILT (TILL) - sandy, some fine-gravel, dark grey, gravel up to 20 mm in diameter.	X	Vs 30-40%			●		▲
10	END OF HOLE							
11								
12								
13								
14								



SFC. ELEVATION (m) 488.96	DATE DRILLED May 1, 1980
COMPLETION DEPTH (m) 9.3	LOGGED BY J.R.T./M.A.V
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No. 1
PAGE 2 OF 2

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.

# EBA Engineering Consultants Ltd.

14535 - 118th AVENUE  
EDMONTON, ALBERTA  
Phone (403) 451-2121



5664 BURLEIGH CRES. S.E.  
CALGARY, ALBERTA  
Phone (403) 253-7121

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: YUKON HOUSING FOURPLEX  
MAYO, YUKON

Project Number: 101-2870

Date Tested: 000528

Borehole Number: 1

Depth: 2.00-3.50 FT.

Soil Description: \_\_\_\_\_

Cu: \_\_\_\_\_

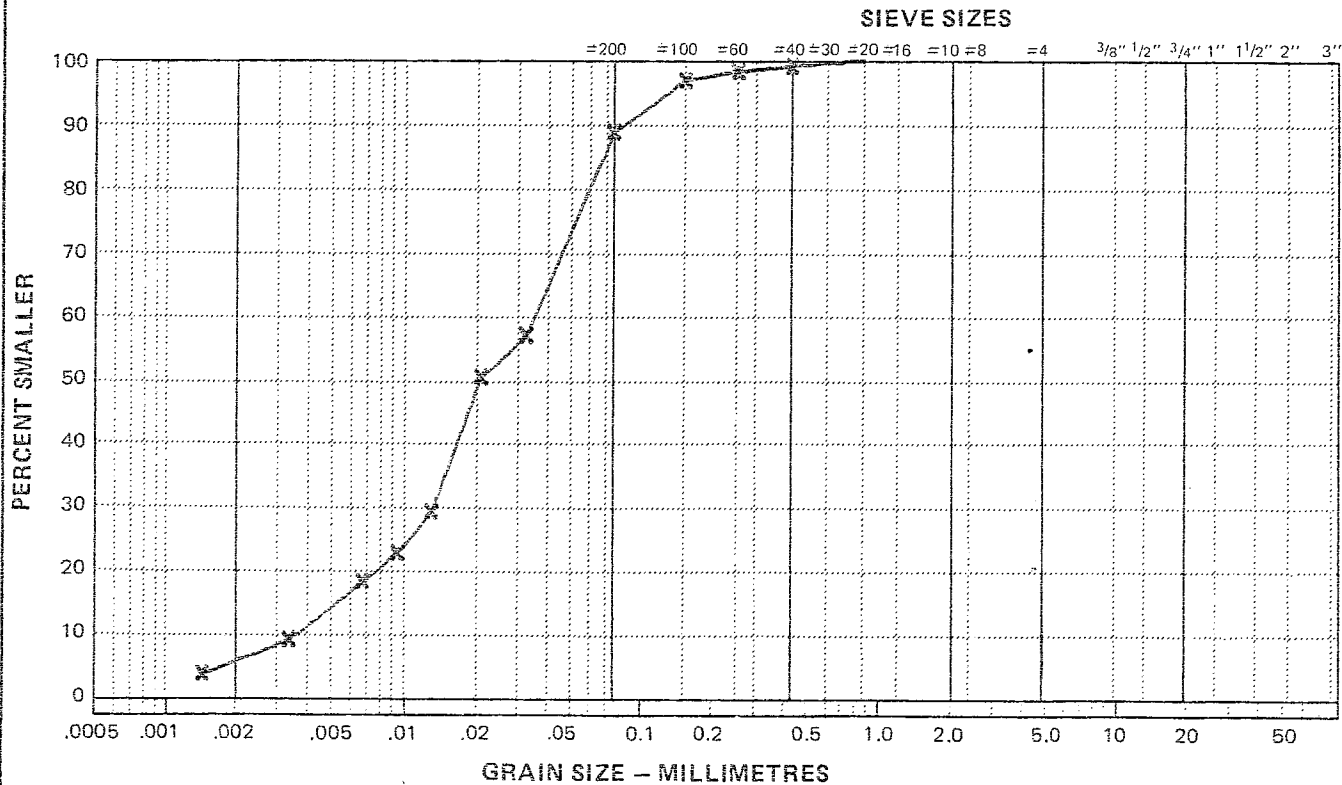
Cc: \_\_\_\_\_

Natural Moisture Content: \_\_\_\_\_ %

Remarks: W-Z

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	
1"	
3/4"	
3/8"	
No. 4	
No. 10	
No. 20	100.0
No. 40	99.2
No. 60	98.4
No. 100	97.0
No. 200	88.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



Tested in accordance with ASTM D422 unless otherwise noted.

## BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
	FILL - silty, black, organic		UNFROZEN					
1	SILT - some clay, medium brown							
2	SAND - medium to fine-grained, dry, loose, medium brown							
3	GRAVEL AND SAND - dry, loose, rounded, grey brown							
4	- sloughing, dry							
5								
6								
7	- moister							



SFC. ELEVATION (m) 488.59	DATE DRILLED May 1, 1980
COMPLETION DEPTH (m) 7.6	LOGGED BY M.A.V.
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No. 2
PAGE 1 OF 2

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practices. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.

### BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
	GRAVEL AND SAND - moist, loose, grey brown - sloughing		UNFROZEN					
8	END OF HOLE  NOTE: Hole abandoned due to sloughing gravel.							
9								
10								
11								
12								
13								
14								



SFC. ELEVATION (m) 488.59	DATE DRILLED May 1, 1980
COMPLETION DEPTH (m) 7.6	LOGGED BY M.A.V.
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No. 2
PAGE 2 OF 2

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.

### BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
	FILL - silty, black, organic		SEASONAL FROST					
1	SILT - some fine sand, trace of gravel, non plastic, moist, loose, dark brown	X	UNFROZEN					
2	GRAVEL AND SAND - loose, damp, grey brown - trace of silt, subrounded, dark brown	X						
3	GRAVEL - sandy, some silt lenses and oxide stains, well graded, dark grey brown	X	FROZEN					
4			Nf					
5	- some sand and silt, rounded to subrounded, greyish brown  - cobbles	X	Nf					
6	- sandy, rounded, well graded, dark grey  - sloughing	X	Vc 5%					
7	- siltier, dark grey							



SFC. ELEVATION (m) 488.68	DATE DRILLED May 2, 1980
COMPLETION DEPTH (m) 8.1	LOGGED BY M.A.V.
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No.
3
PAGE 1 OF 2

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.

### BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
	GRAVEL - silty, dark grey		FROZEN					
8	SILT AND SAND - thinly bedded, trace of gravel, occasional till lenses	X	Vs 20-25% 3 to 25 mm thick lenses			●	▲	
	END OF HOLE		regularly spaced.					
9								
10								
11								
12								
13								
14								



SFC. ELEVATION (m) 488.68	DATE DRILLED May 2, 1980
COMPLETION DEPTH (m) 8.1	LOGGED BY M.A.V.
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No. 3
PAGE 2 OF 2

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.

# EBA Engineering Consultants Ltd.

14535 - 118th AVENUE  
EDMONTON, ALBERTA  
Phone (403) 451-2121



5664 BURLEIGH CRES. S.E.  
CALGARY, ALBERTA  
Phone (403) 253-7121

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: YUKON HOUSING FOURPLEX  
MAYO, YUKON

Project Number: 101-2870

Date Tested: 02/05/28

Borehole Number: E

Depth: 10.0-10.3'

Soil Description: GRAVEL SANDY TRACIE SILT

Cu: \_\_\_\_\_

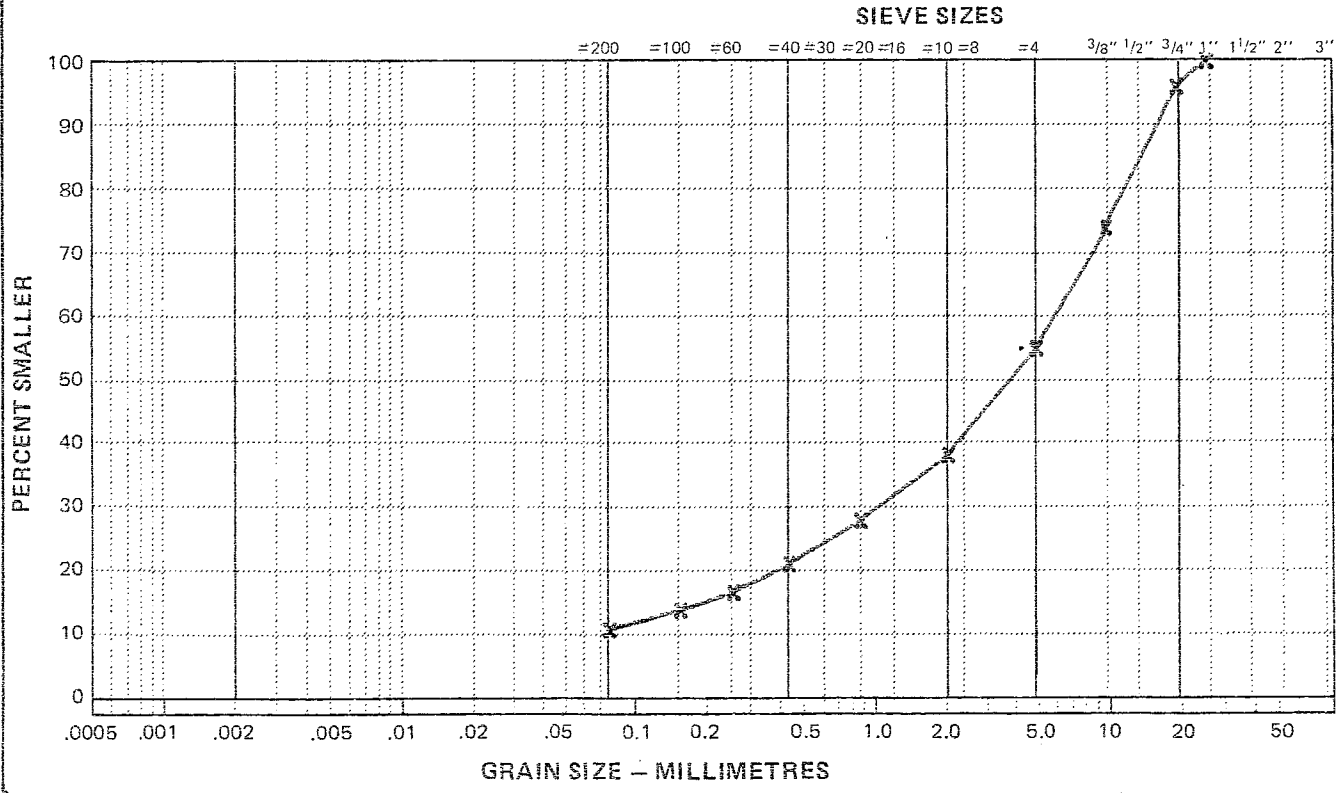
Cc: \_\_\_\_\_

Natural Moisture Content: \_\_\_\_\_ %

Remarks: W-2

SIEVE	PERCENTAGE PASSING
3"	
2"	
1 1/2"	
1"	100.0
3/4"	96.0
3/8"	73.8
No. 4	54.8
No. 10	38.0
No. 20	27.7
No. 40	20.9
No. 60	16.4
No. 100	13.6
No. 200	10.6

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



Tested in accordance with ASTM D422 unless otherwise noted.

## BOREHOLE LOG – PERMAFROST

DEPTH (metres)	SOIL DESCRIPTION	SAMPLE	GROUND ICE DESCRIPTION	BULK DENSITY (Mg/m <sup>3</sup> ) ▲				
				1.4	1.6	1.8	2.0	2.2
				MOISTURE CONTENT				
				10	20	30	40	50
1	FILL ( GRAVEL) - sandy, sub-rounded, dry, loose, grey brown		UNFROZEN					
2	SAND - coarse to fine-grained, well graded, loose, moist, dark brown, wood fragments at 1.22m - medium to fine-grained, moist, medium brown							
3	GRAVEL - some sand, occasional cobbles throughout, loose							
4	- moister  - loose, sloughing							
5	END OF HOLE  NOTE: Hole abandoned due to sloughing gravel							
6								
7								

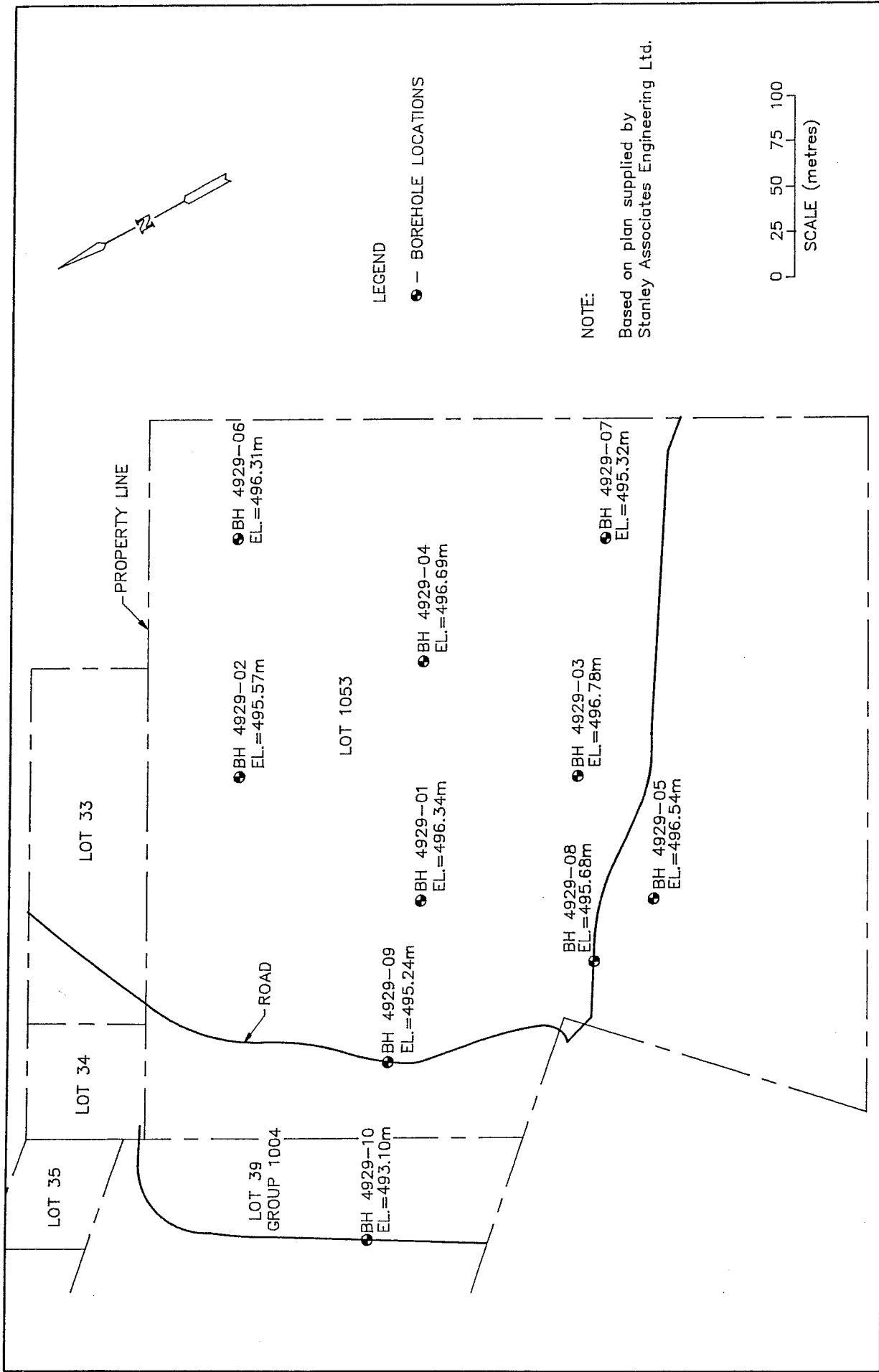


SFC. ELEVATION (m) 488.31	DATE DRILLED May 1, 1980
COMPLETION DEPTH (m) 4.6	LOGGED BY M.A.V.
DRILLING RIG FA 1000	LOCATION MAYO, Y.T.

BOREHOLE No. 4
PAGE 1 OF 1

This log is a compilation of subsurface conditions and soil or rock classification obtained from the field as well as from laboratory testing of samples from the boreholes. Soil zones have been interpreted according to commonly accepted practice. The change from one zone to another, as indicated on the log, may be transitional and approximate in nature. Groundwater conditions refer only to those observed at the times and places indicated and that may vary with time, geologic conditions, and construction activity.



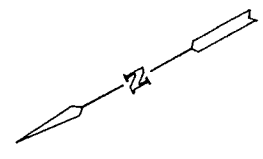
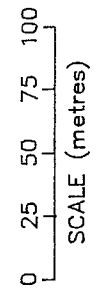


**LEGEND**

- — BOREHOLE LOCATIONS

**NOTE:**

Based on plan supplied by Stanley Associates Engineering Ltd.



<b>CLIENT</b>		<b>EBA Engineering Consultants Ltd.</b>		<b>PROJECT</b>		<b>SUBDIVISION EXPANSION MAYO, YUKON</b>	
<b>TITLE</b>		<b>SITE PLAN AND BOREHOLE LOCATIONS</b>					
<b>DATE</b>	88-11-16	<b>DWN.</b>	FMM	<b>CHKD.</b>	SMK	<b>FILE NO.</b>	4929-100
							<b>DWG. NO.</b> 4929-01

SUBDIVISION EXPANSION		CLIENT: STANLEY ASSOC. ENGINEERING LTD.		BOREHOLE No. 4929-01	
NA-CHO NYAK DUN BAND		DRILL: CME 750, SOLID AND HOLLOW AUGERS		Project No: 0201-4929	
MAYO, YUKON		UTM ZONE: 8 N7051500.00 E456000.00		ELEVATION 496.340 (m)	
SAMPLE TYPE		<input checked="" type="checkbox"/> AUGER SAMPLE	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> STANDARD PEN	<input type="checkbox"/> HEAVY WALL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C)			STANDARD PENETRATION			
						-1.0	0.0	1.0	2.0	10	20	30
						PLASTIC		M.C.		LIQUID		DEPTH (m)
						20 40 60 80		20 40 60 80		20 40 60 80		
0.0				ORGANICS - roots, rootlets, damp, black SILT (ML) - trace of fine sand, dry to damp, medium brown	NOT FROZEN							0
1.0		1		SAND AND GRAVEL (SP/SM) - trace to some silt, occasional cobble, damp								1
2.0				- without cobbles, sand content increasing with depth								2
3.0		2										3
4.0					FROZEN							4
5.0		3		- with visible ice crystals and coatings on soil particles	V <sub>x</sub> , V <sub>c</sub> 10%							5
6.0		4			V <sub>x</sub> , V <sub>c</sub> 5%							6
6.2				END OF BOREHOLE AT 6.2 m								6.2
7.0												7

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Whitehorse, Yukon

COMPLETION DEPTH 6.2 m

COMPLETE 88/10/31

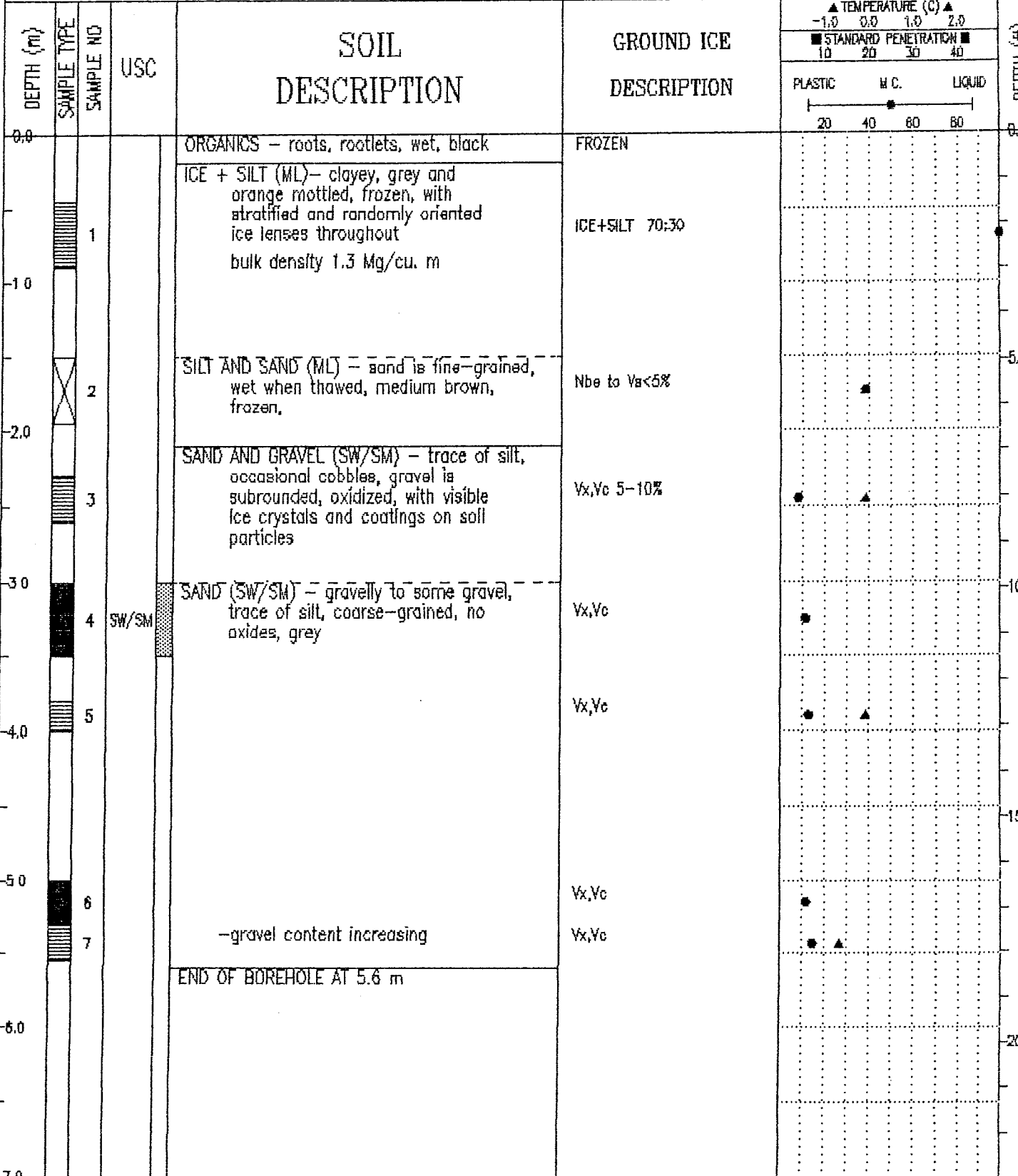
LOGGED BY SMK

DWG NO. 4929-02

Page 1 of 1

SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-02
NA-CHO NYAK DUN BAND	DRILL: CME 750, SOLID STEM AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 495.570 (m)

SAMPLE TYPE  ALIGER SAMPLE  NO RECOVERY  STANDARD PEN.  HEAVY WALL



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Whitehorse, Yukon

COMPLETION DEPTH 5.6 m      COMPLETE 88/11/01  
 LOGGED BY SMK      DWG NO.4929-03      Page 1 of 1

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Mayo Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-4929

Date Tested: 1988-11-15

Borehole Number: BH #2

Depth: 3.0 - 3.5 m and 3.8 - 4.0 m COMBINED

Soil Description: SAND(SW/SM)-gravelly, trace of silt

Cu: 30

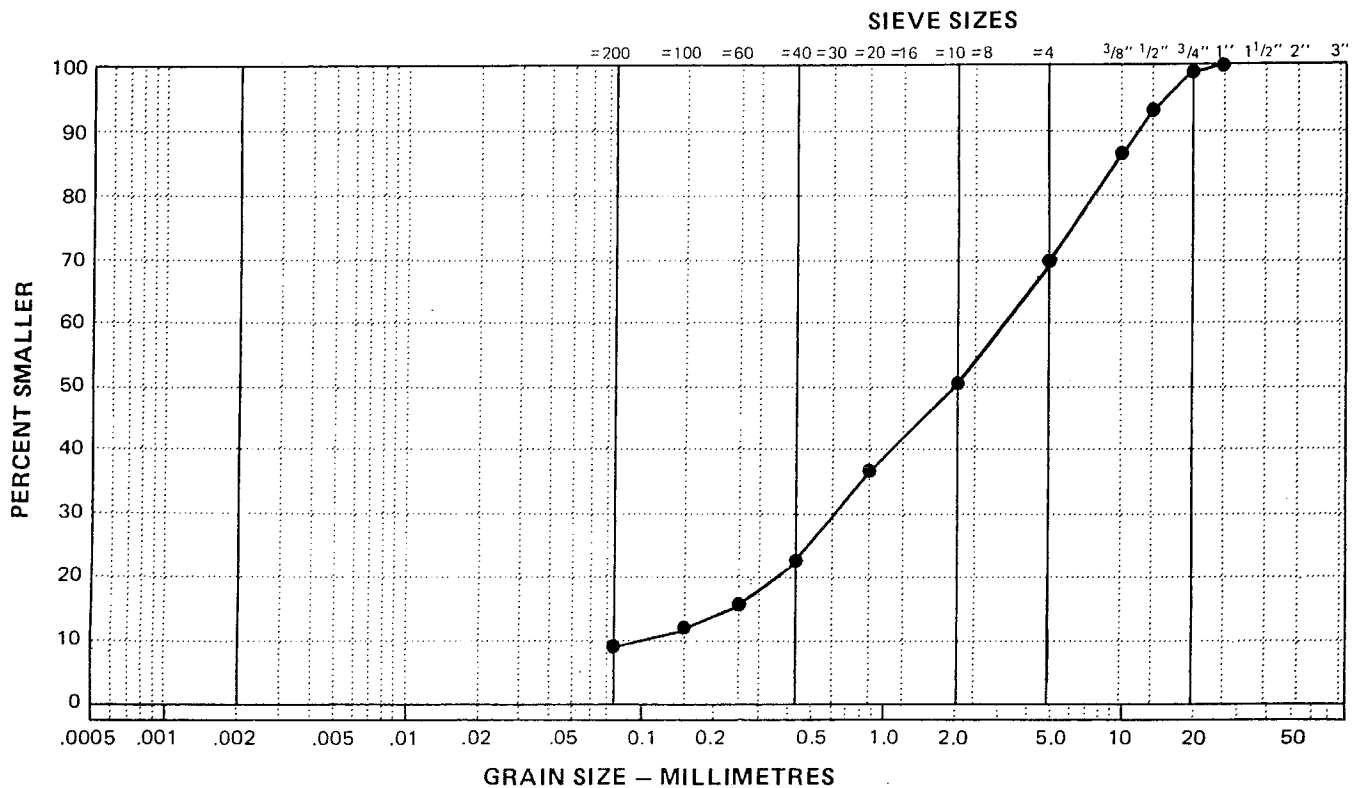
Cc: 1.4

Natural Moisture Content: 12.0 %

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	100
3/4"	99
1/2"	94
3/8"	86
No. 4	70
No. 10	51
No. 20	36
No. 40	23
No. 60	16
No. 100	12
No. 200	9

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-03
NA-CHO NYAK DUN BAND	DRILL: CME 750, SOLID AND HOLLOW AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 496.780 (m)

SAMPLE TYPE  AUGER SAMPLE  NO RECOVERY  STANDARD PEN.  HEAVY WALL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C) ▲			DEPTH (ft)	
						-1.0	0.0	1.0		2.0
						STANDARD PENETRATION ■				
						PLASTIC	W.C.	LIQUID		
						20	40	60	80	
0.0				ORGANICS - roots, rootlets, damp, black SILT (ML) - some fine sand, damp, medium brown	NOT FROZEN				0.0	
1.0	1			SAND AND GRAVEL (SW) - trace of silt, gravel is subrounded to 35 mm, dry to damp						
2.0	2			SAND (SW) - some gravel, trace of silt,  - damp, medium brown						
3.0	3									
4.0	4			CLAY (CL) - silty, organic odor, damp, firm, dark grey to black						
5.0	5			- two (50 mm thick) horizontal ice lenses spaced 200 mm apart, with randomly oriented ice lenses throughout	FROZEN  Vs, Vr 40%				15.0	
6.0	6			ICE + CLAY (CL)	ICE+CLAY, 80:20				20.0	
7.0				END OF BOREHOLE AT 6.3 m						

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Whitehorse, Yukon

COMPLETION DEPTH 6.3 m      COMPLETE 88/11/01  
LOGGED BY SMK      DWG NO.4929-04      Page 1 of 1

SUBDIVISION EXPANSION		CLIENT: STANLEY ASSOC. ENGINEERING LTD.		BOREHOLE No. 4929-04	
NA-CHO NYAK DUN BAND		DRILL: CME 750, HOLLOW STEM AUGERS		Project No: 0201-4929	
MAYO, YUKON		UTM ZONE: 8 N7051500.00 E456000.00		ELEVATION 496.690 (m)	
SAMPLE TYPE		<input checked="" type="checkbox"/> AUGER SAMPLE	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> STANDARD PEN.	<input type="checkbox"/> HEAVY WALL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C) ▲			
						-1.0	0.0	1.0	2.0
						STANDARD PENETRATION ■			
						10	20	30	40
						PLASTIC	H.C.	LIQUID	
						----- ----- ----- -----			
						20	40	60	80
0.0				ORGANICS - roots, rootlets, damp, black SILT (ML) - trace of very fine sand, dry to damp, oxidized orange in colour	NOT FROZEN				
-1.0	X	1		SAND (SW/SM) - gravelly, trace to some silt, gravel is subrounded, damp, oxidized orange in colour		■	■		
-2.0	X	2		- grey		■	■		
-3.0	X	3		- frozen, no visible ice, no excess moisture	FROZEN Nbn				
-4.0	X			SILT (ML) - clayey, some organics, dark grey to black, with randomly oriented ice lenses - trace organics	Vr 5%			▲	
-4.9		4		ICE & SILT (ML) - 75 mm thick horizontal ice lens  -with randomly oriented ice lenses throughout	ICE+SILT 70:30  Vr			▲	■
-5.0				END OF BOREHOLE AT 4.9 m					

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Whitehorse, Yukon

COMPLETION DEPTH 4.9 m

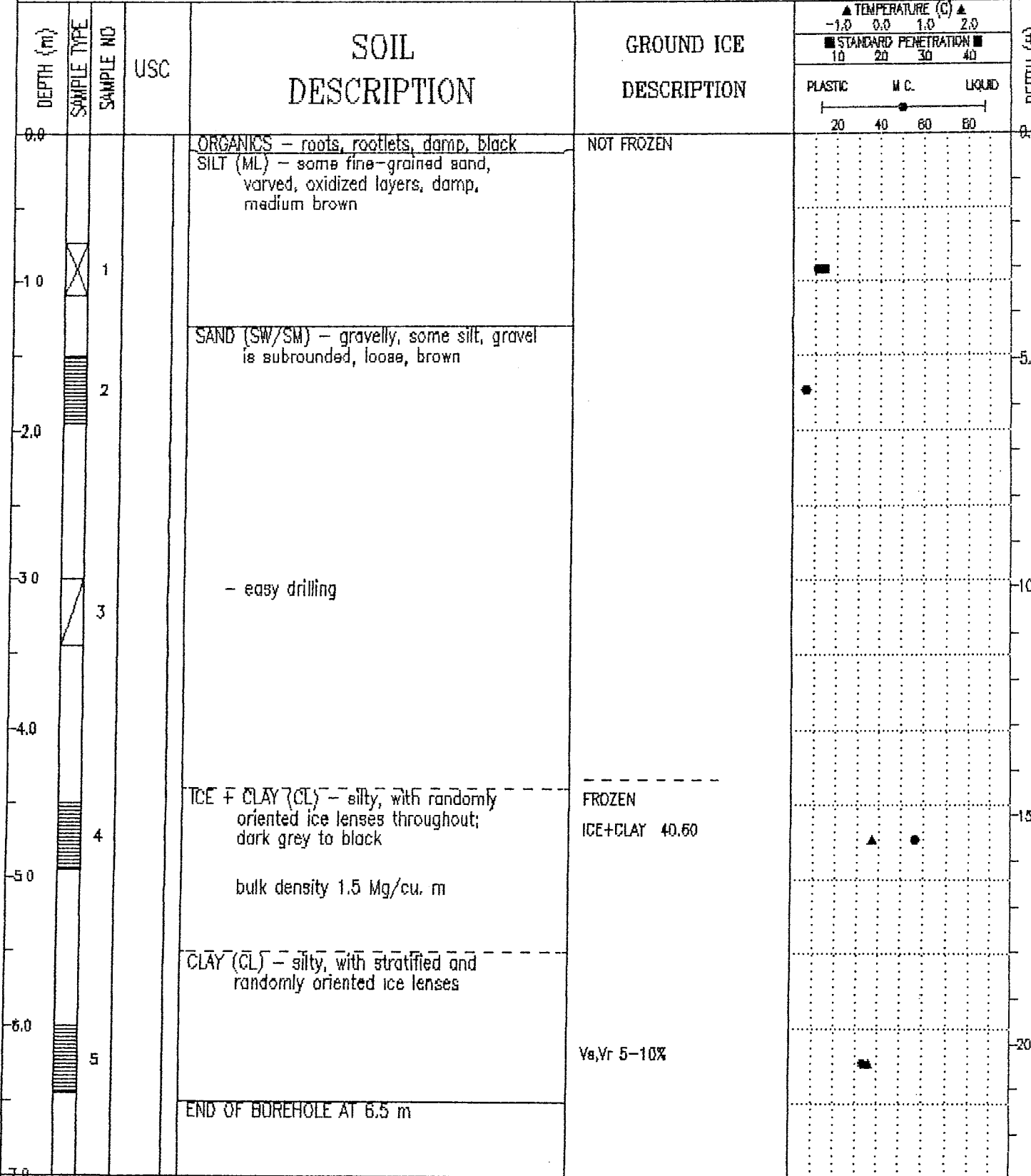
COMPLETE 88/11/01

LOGGED BY SMK

DWG NO. 4929-05

Page 1 of

SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-05
NA-CHO NYAK DUN BAND	DRILL: CME 750, HOLLOW STEM AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 496.540 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> AUGER SAMPLE <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> STANDARD PEN. <input checked="" type="checkbox"/> HEAVY WALL <input type="checkbox"/>		



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 6.5 m

COMPLETE 88/11/01

LOGGED BY SMK

DWG NO.4929-06

Page 1 of 1

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Mayo Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-4929

Date Tested: 1988-11-15

Borehole Number: BH #5

Depth: 4.5 - 4.95 m

Soil Description: SILT(ML)-clayey

Cu: \_\_\_\_\_

Cc: \_\_\_\_\_

Natural Moisture Content: 56 %

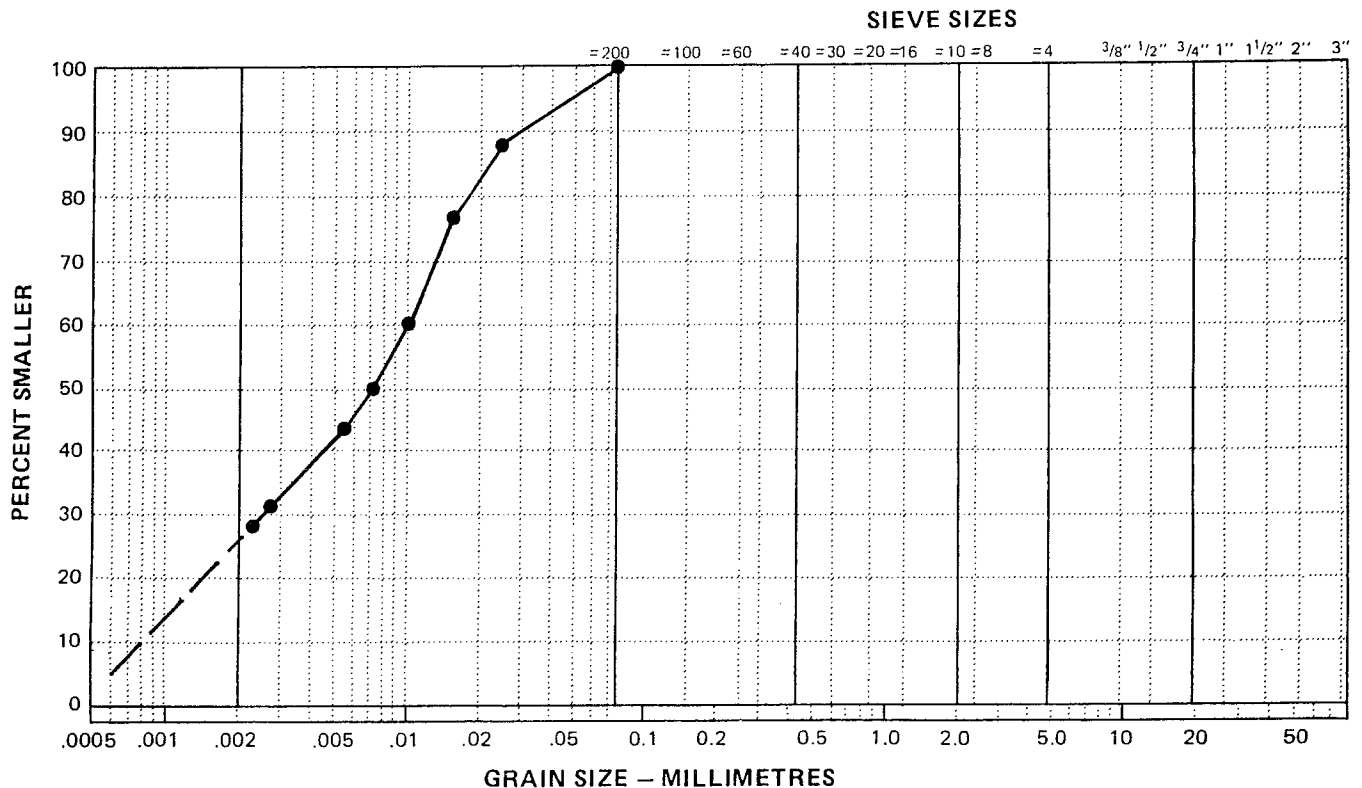
Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	
No. 20	
No. 40	
No. 60	
No. 100	
No. 200	

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-06
NA-CHO NYAK DUN BAND	DRILL: CME 750, HOLLOW STEM AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 496.310 (m)

SAMPLE TYPE  AUGER SAMPLE  NO RECOVERY  STANDARD PEN.  HEAVY WALL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C) ▲			DEPTH (#)	
						-1.0	0.0	1.0		2.0
						STANDARD PENETRATION ■				
						10	20	30	40	
						PLASTIC	M.C.		LIQUID	
						20 40 60 80				
0.0				ORGANICS - roots, rootlets, damp, black SILT (ML) - trace of fine sand, trace of rootlets at top of unit, dry, medium brown	NOT FROZEN					0.0
		1								
				- trace of gravel						
1.0		2		SAND AND GRAVEL (SW/SM) - trace to some silt, gravel is subangular to subrounded, damp						1.0
		3								
2.0										
		4		- with visible ice crystals and coatings on soil particles	FROZEN Vx, Yc 5%					3.0
3.0										
				SAND (SP/SM) - trace gravel, trace of silt, fine-grained, grey, no visible ice, no excess moisture	Nbn					
4.0										
				CLAY (CL) - silty, dark grey, with randomly oriented ice lenses throughout	Vr 40%					4.5
5.0		5								
				ICE + CLAY (CL)	ICE+CLAY, 50:50 Vr					5.5
6.0		6		END OF BOREHOLE AT 5.8 m						
				Standpipe installed to 5.8 m Water level at 3.0 m after 20 hrs.						

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Whitehorse, Yukon

COMPLETION DEPTH 5.8 m	COMPLETE 88/11/02
LOGGED BY SMK	DWG NO.4929-07 Page 1 of 1

SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-07
NA-CHO NYAK DUN BAND	DRILL: CME 750, HOLLOW STEM AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 495.320 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> AUGER SAMPLE <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> STANDARD PEN. <input type="checkbox"/> HEAVY WALL <input type="checkbox"/>		

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C)			
						-1.0	0.0	1.0	2.0
						STANDARD PENETRATION			
						10	20	30	40
						PLASTIC	M.C.	LIQUID	
						20	40	60	80
0.0				ORGANICS - roots, rootlets, moist, black SILT (ML) - some fine sand, damp, oxidized orange in colour	NOT FROZEN				
-1.0		1		SAND (SM) - some silt, some gravel, damp  - gravelly, trace to some silt, gravel is subrounded to 75 mm diameter, damp, brown		●	■		
-2.0		2				●	■		
-3.0		3							
-4.0		4		GRAVEL AND SAND (GW) - trace of silt, wet, brown		●			
-5.0		5			FROZEN Vx, Vc 5%				
-5.0				SAND (SP/SM) - trace to some silt, fine-grained, no visible ice, no excess moisture	Nbn		★	▲	
-6.0		6		GRAVEL AND SAND (GW) - trace of silt, subrounded, frozen with visible ice crystals and coatings	Vx, Vc 5%	●		▲	
-6.3				END OF BOREHOLE AT 6.3 m					

**EBA Engineering Consultants Ltd.**  
Whitehorse, Yukon

COMPLETION DEPTH 6.3 m	COMPLETE 88/11/02
LOGGED BY SMK	DWG NO. 4929-08
	Page 1 of 1

SUBDIVISION EXPANSION		CLIENT: STANLEY ASSOC. ENGINEERING LTD.		BOREHOLE No. 4929-08	
NA-CHO NYAK DUN BAND		DRILL: CME 750, SOLID AND HOLLOW AUGERS		Project No: 0201-4929	
MAYO, YUKON		UTM ZONE: 8 N7051500.00 E456000.00		ELEVATION 495.680 (m)	
SAMPLE TYPE		<input checked="" type="checkbox"/> ALGER SAMPLE	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> STANDARD PEN.	<input type="checkbox"/> HEAVY WALL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C) ▲		STANDARD PENETRATION ■		PLASTIC	M.C.	LIQUID	DEPTH (ft)
						-1.0	0.0	1.0	2.0				
0.0				SILT (ML) - some fine sand, damp when thawed, medium brown, seasonal frost to 0.5 m	SEASONAL FROST								0
1.0		1		GRAVEL (GW/GM) - sandy, trace of silt, gravel is subrounded to 35 mm diameter, damp, brown	NOT FROZEN								3
2.0		2	GW/GM										6
3.0		3											10
4.0		4		CLAY (CL) - silty, dark grey to black, with randomly oriented ice lenses throughout	FROZEN								13
4.6				END OF BOREHOLE AT 4.6 m	Vr 50%								14

EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 4.6 m

COMPLETE 88/11/02

LOGGED BY SMK

DWG NO.4929-09

Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Mayo Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-4929

Date Tested: 1988-11-15

Borehole Number: BH #8

Depth: 1.5 - 3.0 m

Soil Description: GRAVEL(GW/GM)-sandy, trace of silt

Cu: 35

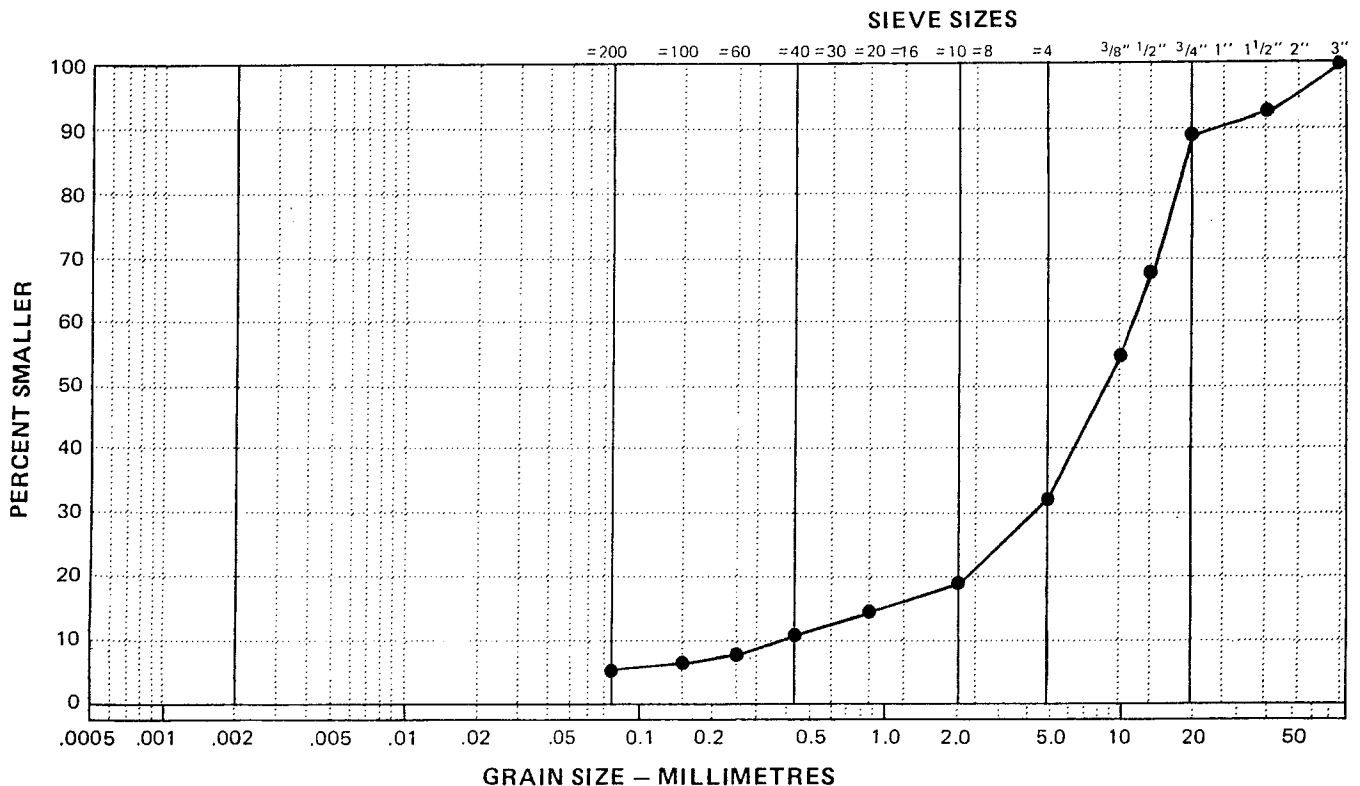
Cc: 2.8

Natural Moisture Content: 2.0 %

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	100
1 1/2"	93
1"	
3/4"	89
1/2"	68
3/8"	55
No. 4	32
No. 10	19
No. 20	15
No. 40	11
No. 60	8
No. 100	6
No. 200	5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-09
NA-CHO NYAK DUN BAND	DRILL: CME 750, HOLLOW STEM AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 495.240 (m)

SAMPLE TYPE  AUGER SAMPLE  NO RECOVERY  STANDARD PEN.  HEAVY WALL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C)				DEPTH (#)
						-1.0	0.0	1.0	2.0	
						STANDARD PENETRATION				
						10	20	30	40	
						PLASTIC	M.C.	LIQUID		
						20	40	60	80	
0.0				SILT (ML) - trace of fine sand, damp when thawed, medium to orange brown, seasonal frost to 0.6 m	SEASONAL FROST					
		1			NOT FROZEN					
1.0				- becoming sandy, some gravel						
2.0										
3.0				SAND AND GRAVEL (SW/SM) - trace to some silt, gravel subrounded to 40 mm diameter, damp, brown						
4.0				- driller suspects frozen at 4.2 m	FROZEN					
		2		- with visible ice crystals and coatings on soil particles	V <sub>x</sub> , V <sub>e</sub> 5%					
5.0				SILT (ML) - clayey, trace of organics, dark grey to black, with randomly oriented ice lenses throughout	V <sub>r</sub> 30%					
				END OF BOREHOLE AT 5.0 m						
6.0										
7.0										

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Mayo Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-4929

Date Tested: 1988-11-15

Borehole Number: BH #9

Depth: 0.3 - 0.5 m

Soil Description: SILT(ML)-sandy, trace of clay

Cu: \_\_\_\_\_

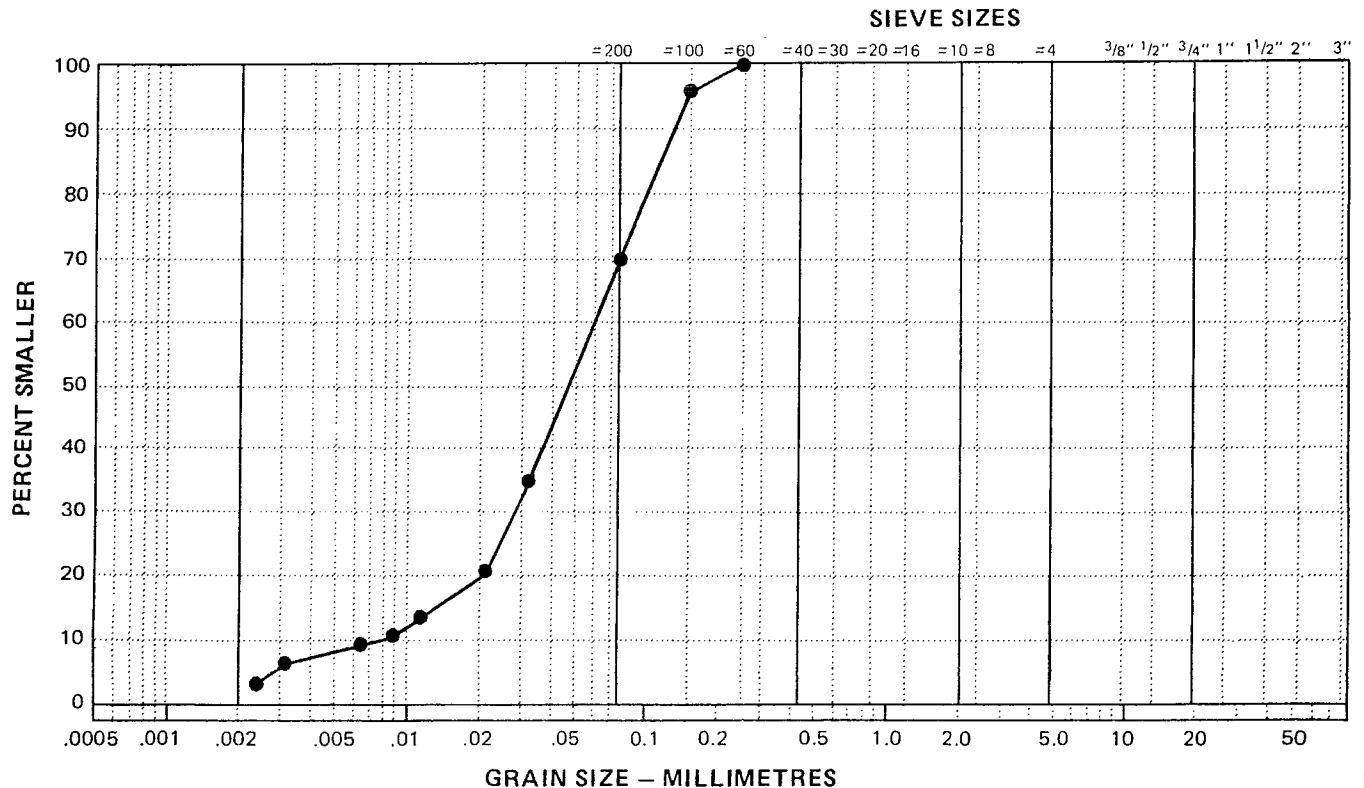
Cc: \_\_\_\_\_

Natural Moisture Content: 6 %

Remarks: \_\_\_\_\_

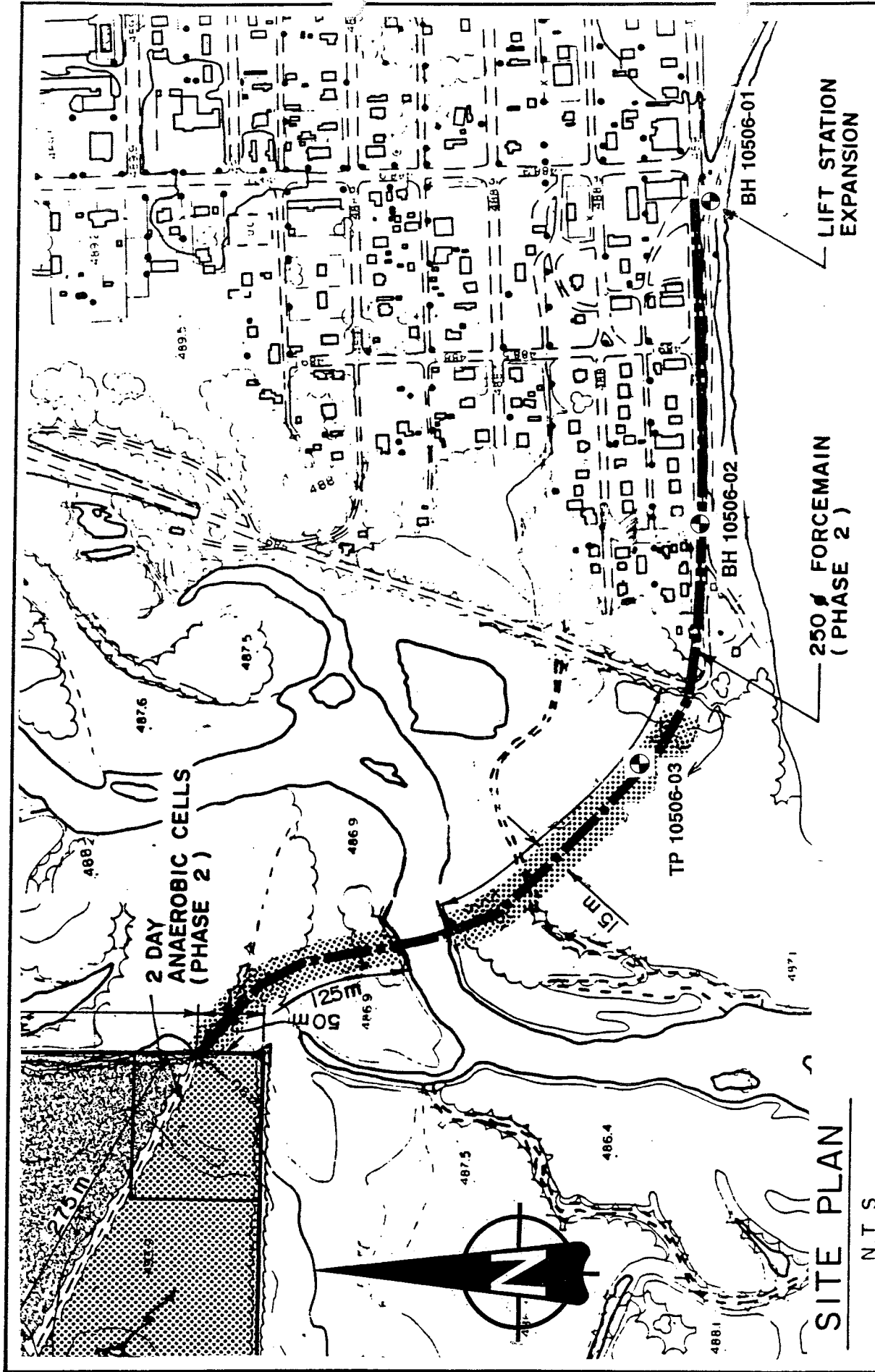
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	
No. 20	
No. 40	
No. 60	100
No. 100	96
No. 200	70

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SUBDIVISION EXPANSION	CLIENT: STANLEY ASSOC. ENGINEERING LTD.	BOREHOLE No. 4929-10
NA-CHO NYAK DUN BAND	DRILL: CME 750, SOLID STEM AUGERS	Project No: 0201-4929
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456000.00	ELEVATION 493.100 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> AUGER SAMPLE <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> STANDARD PEN. <input checked="" type="checkbox"/> HEAVY WALL <input type="checkbox"/>		

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	TEMPERATURE (C)			DEPTH (ft)
						-1.0	0.0	1.0	
						STANDARD PENETRATION			
						PLASTIC	M.C.	LIQUID	
0.0				SILT AND CLAY (ML) - moist when thawed, dark brown to grey, seasonal frost to 0.6 m	SEASONAL FROST				0.6
1.0				SILT (ML) - trace of fine sand, damp, medium brown	NOT FROZEN				
2.0				SAND AND GRAVEL (SM) - some silt, gravel is subrounded to 50 mm, damp, brown					5.1
3.0				- becoming trace of silt, wet					10
4.0					POSSIBLY FROZEN				
5.0				CLAY (CL) - silty, firm, wet, dark grey to black					15
5.3				END OF BOREHOLE AT 5.3 m No samples taken					
6.0									20
7.0									

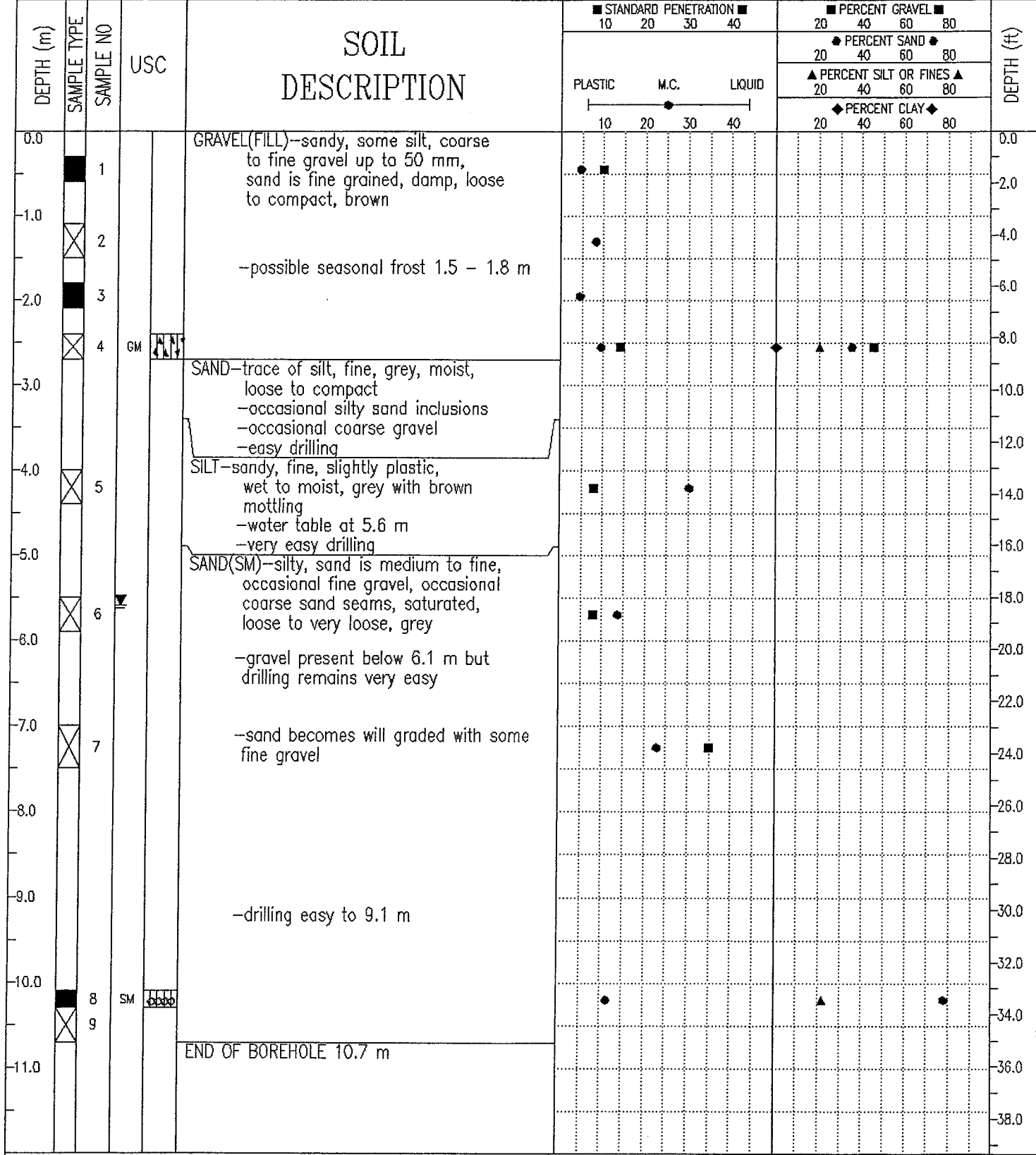


**SITE PLAN**  
N T S

<p>PROJECT <b>SEWAGE LIFT STATION AND FORCEMAIN MAYO, YUKON</b></p>	<p>CLIENT <b>EBA Engineering Consultants Ltd.</b></p>
<p>TITLE <b>SITE PLAN AND APPROXIMATE BOREHOLE/TESTPIT LOCATIONS</b></p>	<p>CLIENT <b>STANLEY ASSOCIATES ENGINEERING LTD.</b></p>
<p>DWG NO. 10506-01</p>	<p>DATE 1991-05-30    DWN    QWAWW    CHKD    QWAWW</p>

SEWAGE FORCEMAIN/WET WELL CONSTRUCTION	CLIENT: STANLEY ASSOCIATES ENGINEERING	TESTHOLE No. 10506-01
LIFT STATION ON DYKE	DRILL: CME 75 C/W HOLLOW STEM AUGERS	Project No: 0201-10506
MAYO, YUKON	UTM ZONE: 8 N7051550.00 E455450.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  SPLIT SPOON  CORREL BARREL



# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Access Road/Forecmain Evaluation  
Mayo, Yukon

Project Number: 0201-10506

Date Tested: 91-05-14

Borehole Number: 10506-01

Depth: 1.8 - 2.1 m

Soil Description: GRAVEL (GM)-sandy, some silt

Cu: \_\_\_\_\_

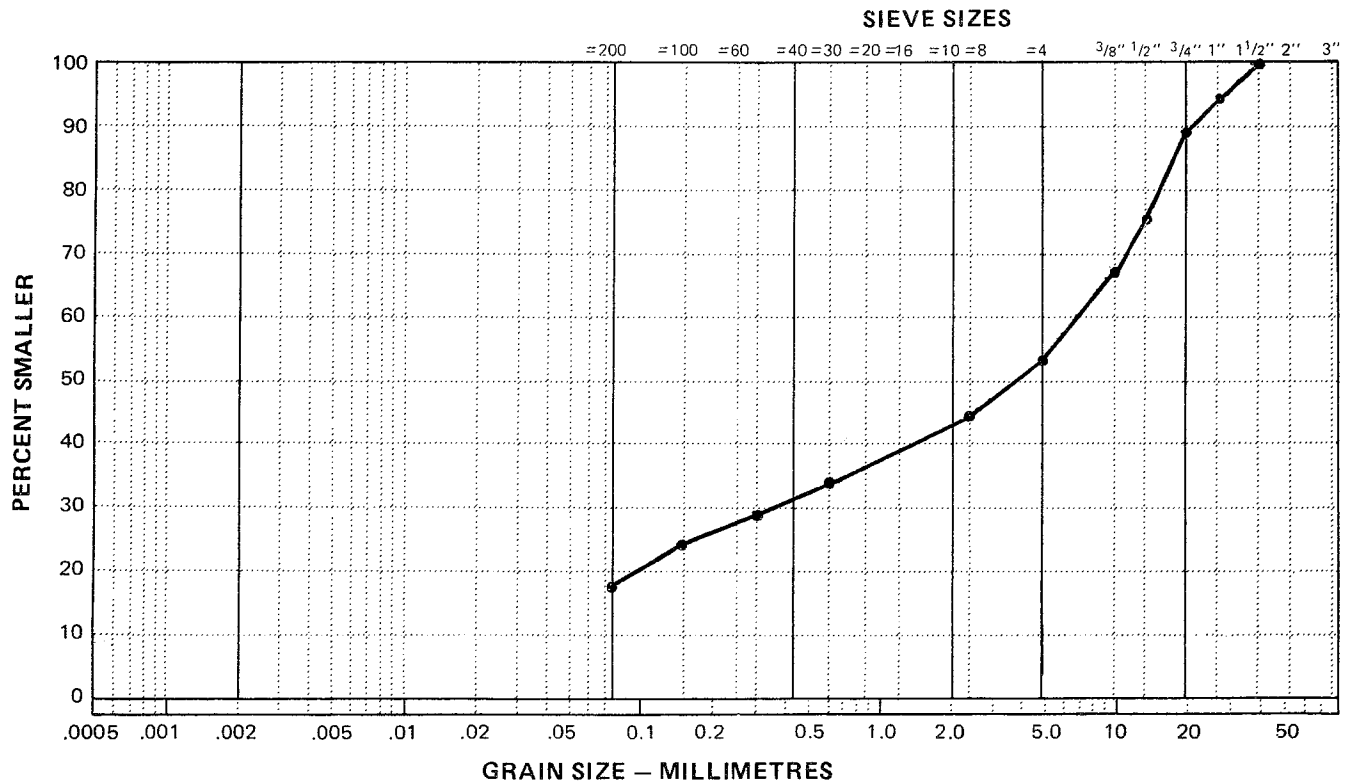
Cc: \_\_\_\_\_

Natural Moisture Content: 4.5 %

Remarks: \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	95.9
3/4"	89.8
1/2"	76.7
3/8"	67.8
No. 4	53.3
No. 10	45.3
No. 20	39.5
No. 40	34.3
No. 60	29.6
No. 100	24.6
No. 200	18.8

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Access Road/Forcemain Evaluation  
Mayo, Yukon

Project Number: 0201-10506

Date Tested: 91-05-14

Borehole Number: 10506-01

Depth: 10.1 - 10.4 m

Soil Description: SAND (SM)-silty

Cu: \_\_\_\_\_

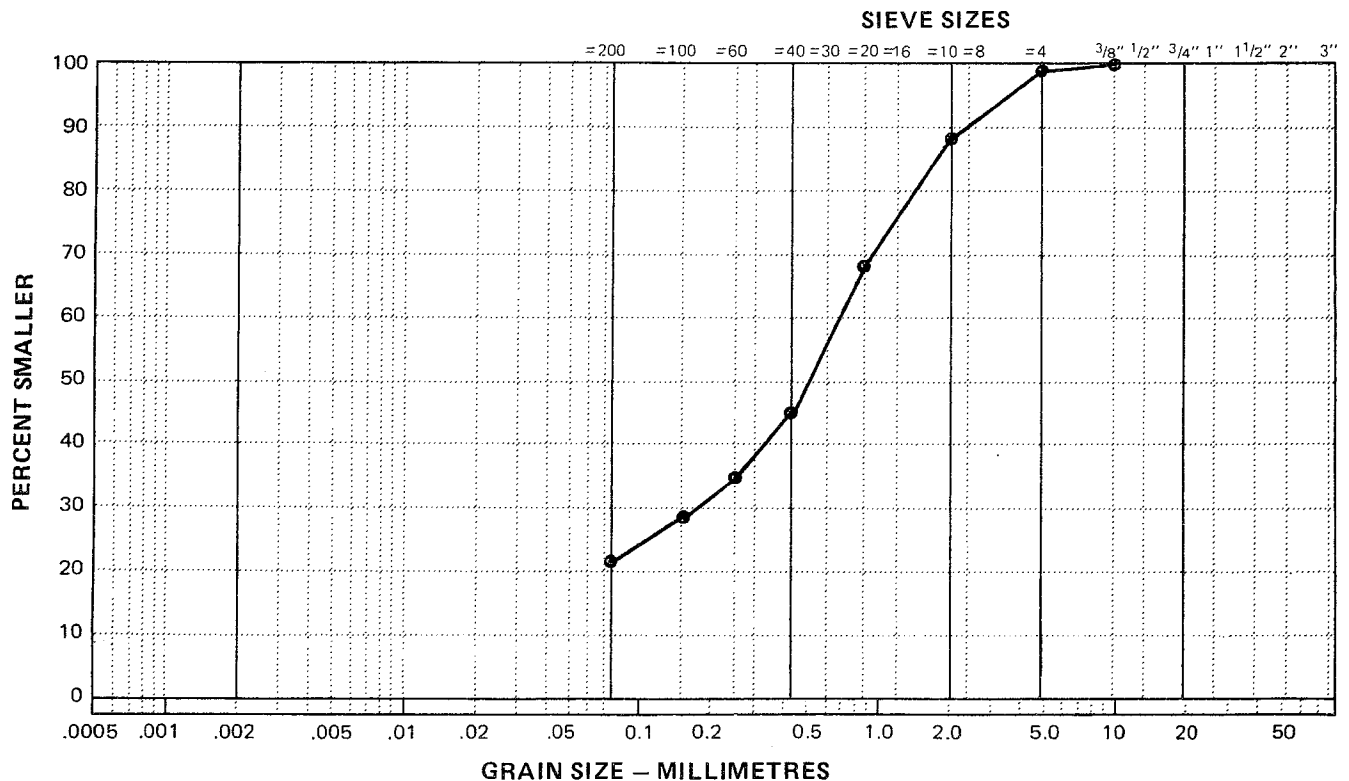
Cc: \_\_\_\_\_

Natural Moisture Content: 11.5 %

Remarks: \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	99.6
No. 10	88.5
No. 20	68.8
No. 40	46.2
No. 60	35.1
No. 100	28.9
No. 200	21.5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SEWAGE FORCEMAIN/WET WELL CONSTRUCTION		CLIENT: STANLEY ASSOCIATES ENGINEERING		TESTHOLE No. 10506-02	
BETWEEN DYKE AND ROADWAY		DRILL: CME 75 C/W HOLLOW STEM AUGERS		Project No: 0201-10506	
MAYO, YUKON		UTM ZONE: 8 N7051575.00 E455300.00		ELEVATION 0.00 (m)	
SAMPLE TYPE		<input checked="" type="checkbox"/> GRAB SAMPLE	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> STANDARD PEN.	<input type="checkbox"/> CRREL BARREL

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	STANDARD PENETRATION				PERCENT GRAVEL				PERCENT SAND				PERCENT SILT OR FINES				PERCENT CLAY				DEPTH (ft)
					10	20	30	40	20	40	60	80	20	40	60	80	20	40	60	80	20	40	60	80	
0.0				SILT—some fine sand, frequent root fibres, dark brown, wet, soft																					0.0
		1		SILT(ML)—sandy, trace of clay, wet, soft(est.), grey																					2.0
-1.0																									4.0
-2.0		2	ML																						8.0
-3.0				SAND—gravelly, some to trace silt, subrounded to angular gravel, coarse to medium sand, light brown, saturated, compact —water table at 3.3 m																					10.0
-4.0		3																							12.0
				END OF BOREHOLE 4.1 m																					14.0
5.0																									16.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon		COMPLETION DEPTH 4.1 m	COMPLETE 91/05/08
LOGGED BY CRH	DWG NO.	Page 1 of 1	

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Access Road/Forcemain Evaluation  
Mayo, Yukon

Project Number: 0201-10506

Date Tested: 91-05-21

Borehole Number: 10506-02

Depth: 2.1 - 2.4 m

Soil Description: SILT (ML) - sandy, trace of clay

Cu: \_\_\_\_\_

Cc: \_\_\_\_\_

Natural Moisture Content: 23.1 %

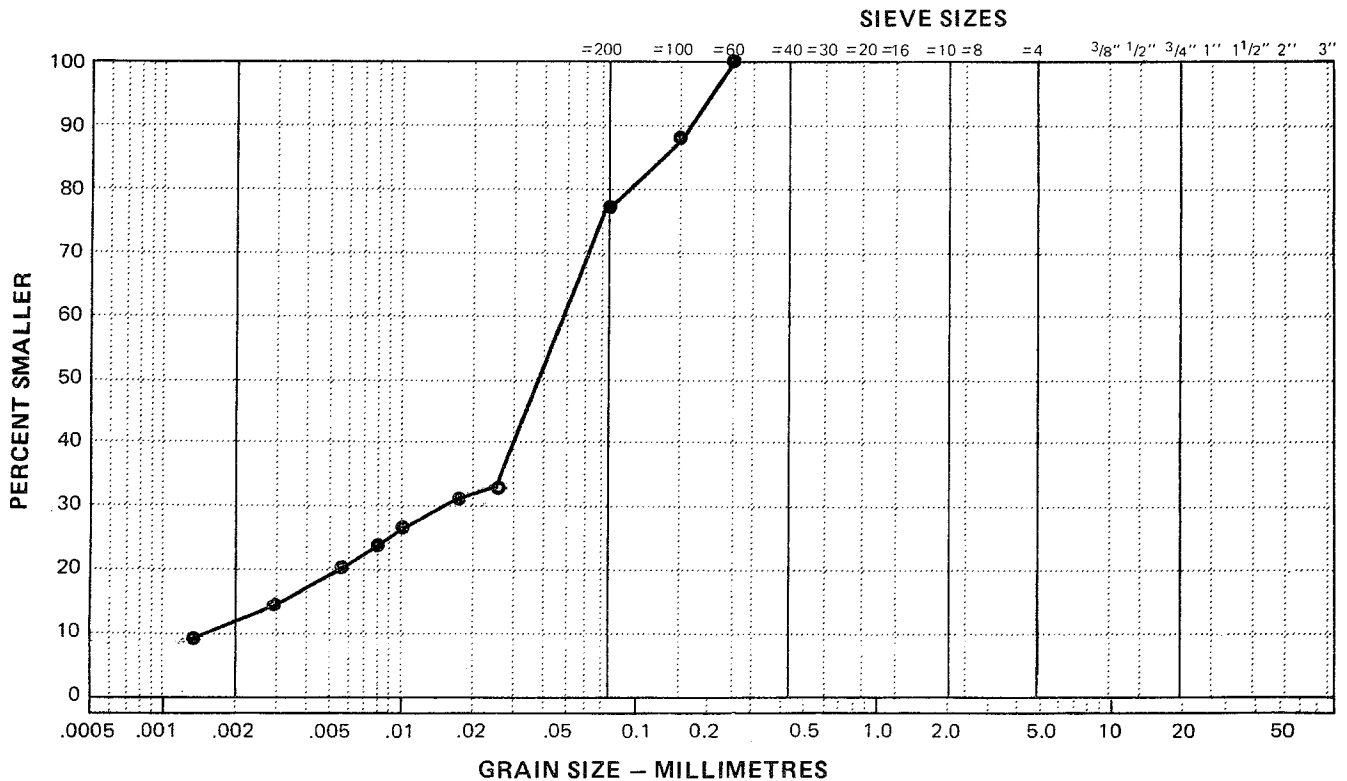
Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

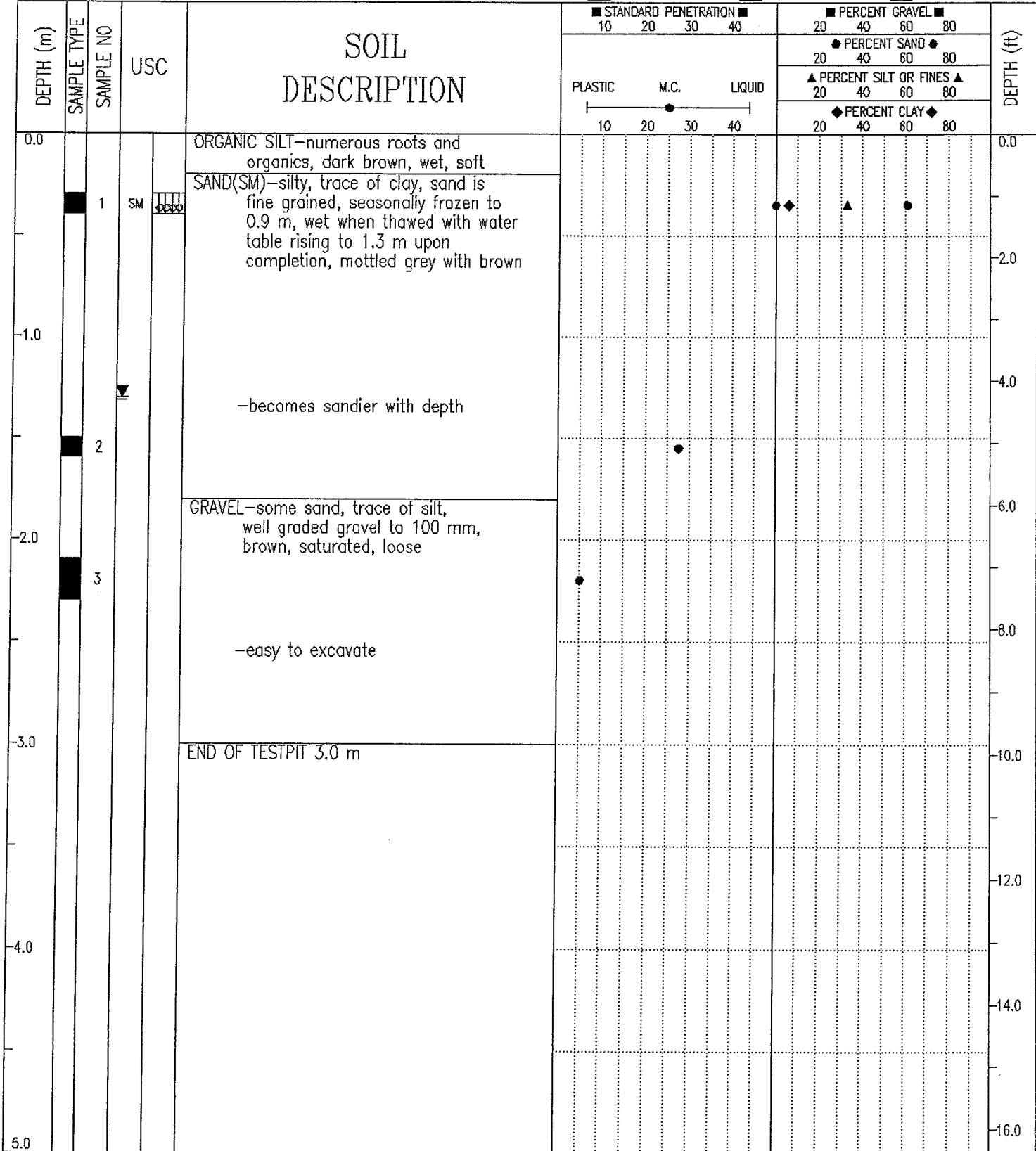
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	
No. 20	
No. 40	
No. 60	100.0
No. 100	88.2
No. 200	77.1

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SEWAGE FORCEMAIN/WET WELL CONSTRUCTION	CLIENT: STANLEY ASSOCIATES ENGINEERING	TESTHOLE No. 10506-03
BETWEEN DYKE AND MAYO RIVER	BACKHOE: CAT 426 4x4 EXTEND-A-HOE	Project No: 0201-10506
MAYO, YUKON	UTM ZONE: 8 N7051600.00 E455100.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  CORREL BARREL



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 3.0 m

COMPLETE 91/05/09

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DWG NO.

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# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Access Road/Forcemain Evaluation  
Mayo, Yukon

Project Number: 0201-10506

Date Tested: 91-05-21

Borehole Number: 10506-03

Depth: 1.5 - 1.6 m

Soil Description: SAND (SM) - silty, trace of clay

Cu: \_\_\_\_\_

Cc: \_\_\_\_\_

Natural Moisture Content: 27.5 %

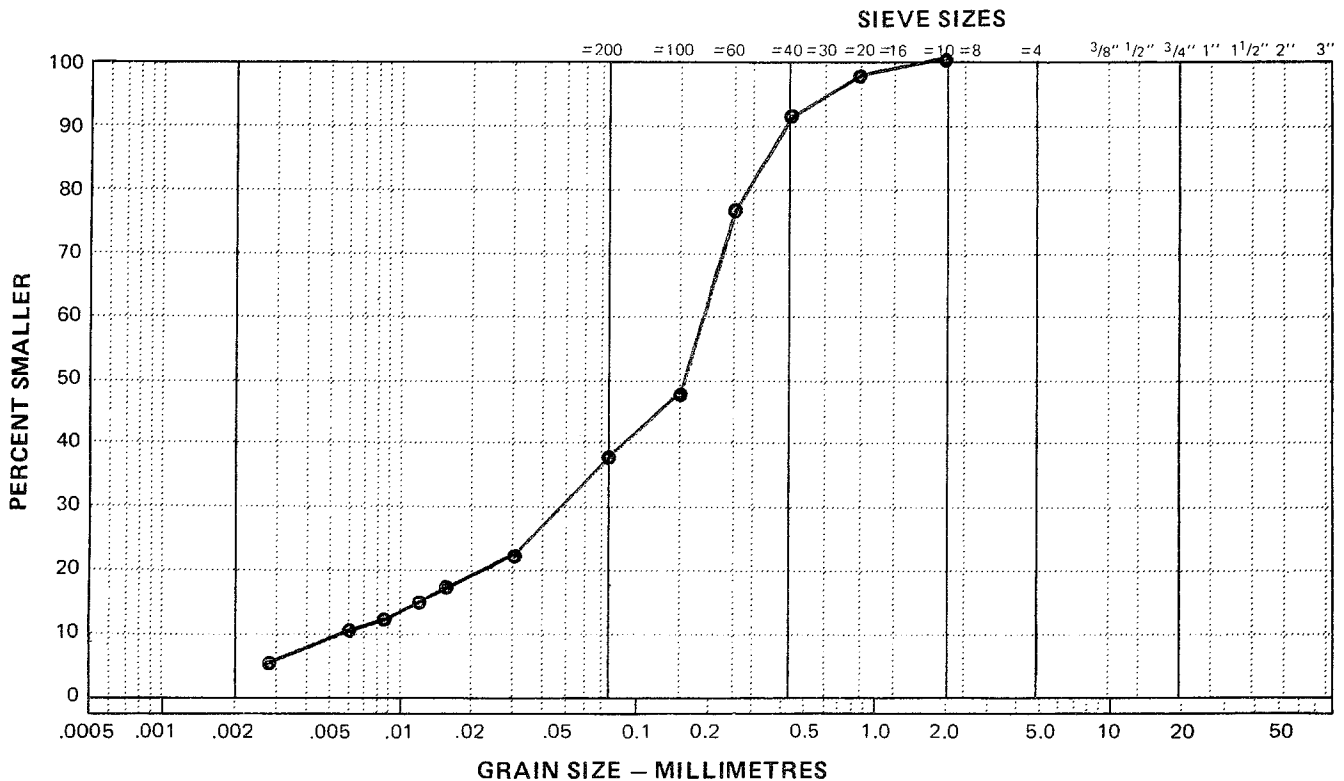
Remarks: \_\_\_\_\_

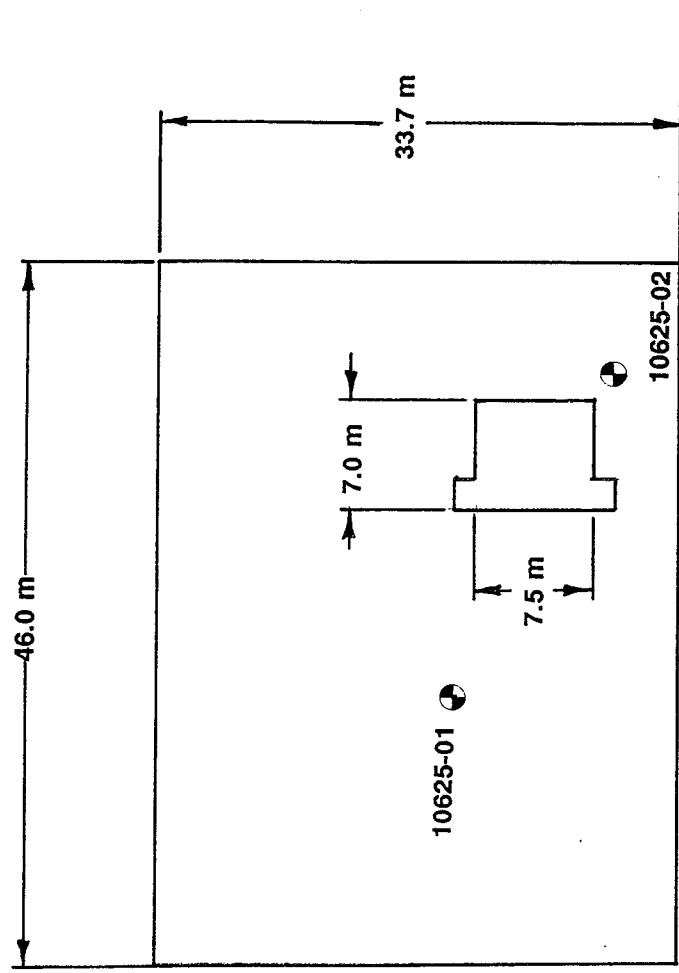
\_\_\_\_\_

\_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	100.0
No. 20	96.6
No. 40	91.3
No. 60	77.0
No. 100	48.6
No. 200	38.6

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE





CENTER STREET

SECOND AVENUE

**EBA Engineering Consultants Ltd.**

**N. A. JACOBSEN  
CIVIL ENGINEERING CONSULTANT**

**PROJECT BINET HOUSE RESTORATION MAYO YUKON**

**TITLE SITE LAYOUT AND APPROXIMATE  
BOREHOLE LOCATIONS**

DATE 91-06-06

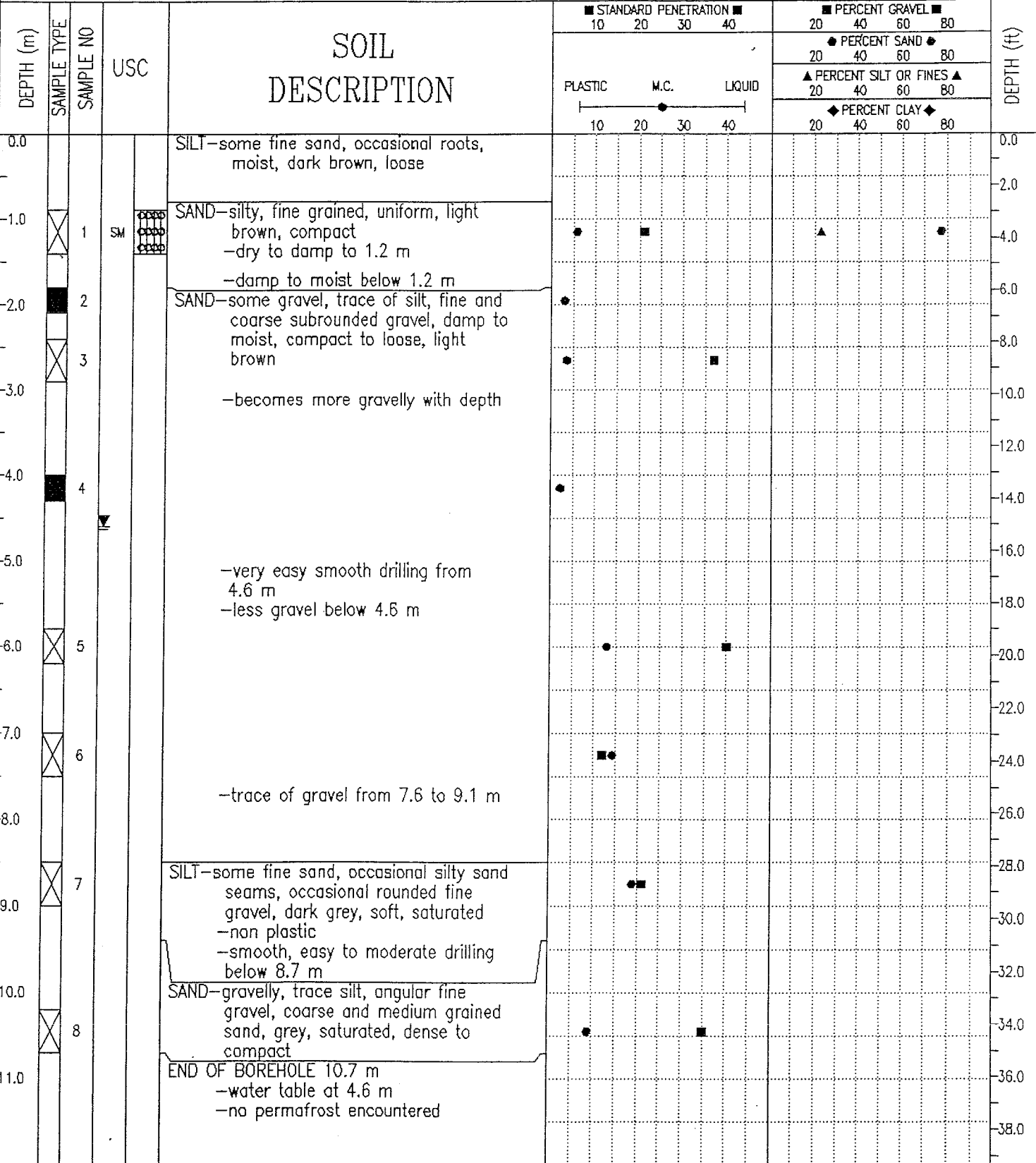
DWN JSB

CHKD

DWG NO. 10625-01

0201-10625

BINET HOUSE RESTORATION	CLIENT: N.A. JACOBSEN	TESTHOLE No. 10625-01
SECOND AVE. AND CENTRE ST.	DRILL: CME 75 C/W HOLLOW STEM AUGERS	Project No: Q201-10625
MAYO, YUKON	UTM ZONE: 8 N7051725.00 E455650.00	ELEVATION 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB SAMPLE <input type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> STANDARD PEN. <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> CRREL BARREL		



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 10.7 m	COMPLETE 91/05/08
LOGGED BY CRH	DWG NO.
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# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Binet House  
Mayo, Yukon

Project Number: 0201-10625

Date Tested: 91-05-21

Borehole Number: 10625-01

Depth: 0.9 - 1.5 m

Soil Description: SAND(SM) -silty

Cu: \_\_\_\_\_

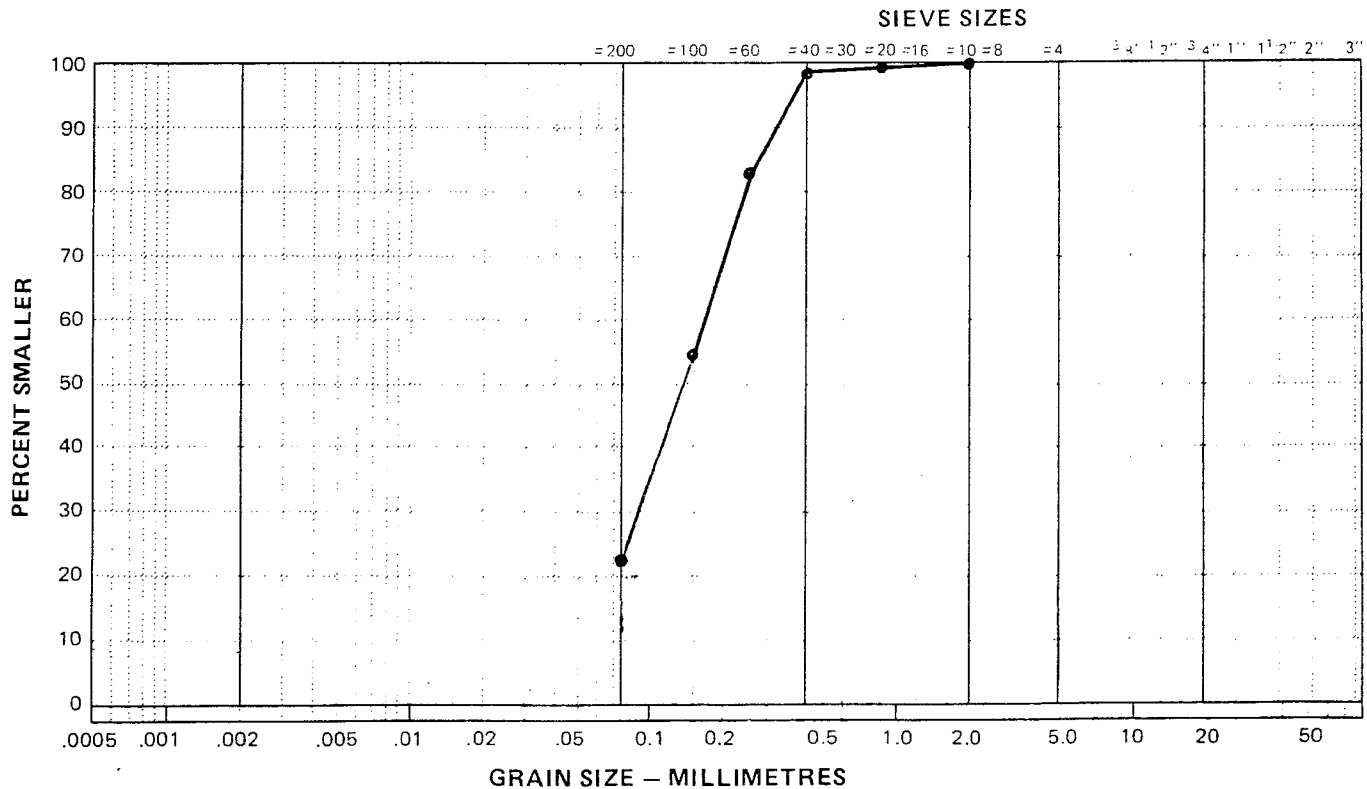
Cc: \_\_\_\_\_

Natural Moisture Content: 5.8 %

Remarks: \_\_\_\_\_

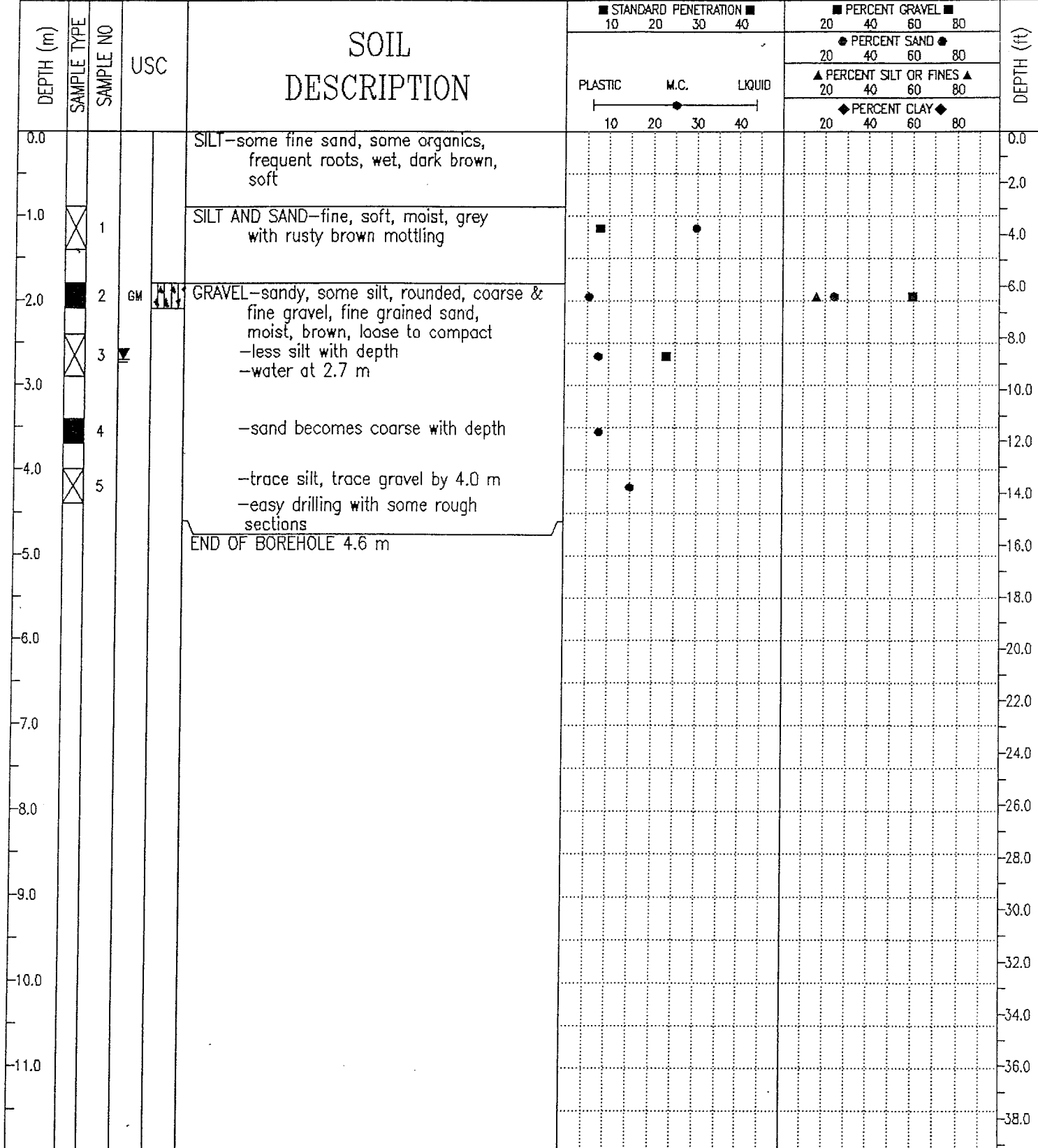
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	100.0
No. 20	99.9
No. 40	98.3
No. 60	83.4
No. 100	54.2
No. 200	22.7

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



BINET HOUSE RESTORATION	CLIENT: N.A. JACOBSEN	TESTHOLE No. 10625-02
SECOND AVENUE AND CENTRE STREET	DRILL: CME 75 C/W HOLLOW STEM AUGERS	Project No: 0201-10625
MAYO, YUKON	UTM ZONE: 8 N7051700.00 E455700.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  SPLIT SPOON  CRREL BARREL



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 4.6 m COMPLETE 91/05/08  
 LOGGED BY CRH DWG NO. Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Binet House  
Mayo, Yukon

Project Number: 0201-10625

Date Tested: 91-05-21

Borehole Number: 10625-02

Depth: 1.8 - 2.1 m

Soil Description: GRAVEL (GM)-sandy, some silt

Cu: \_\_\_\_\_

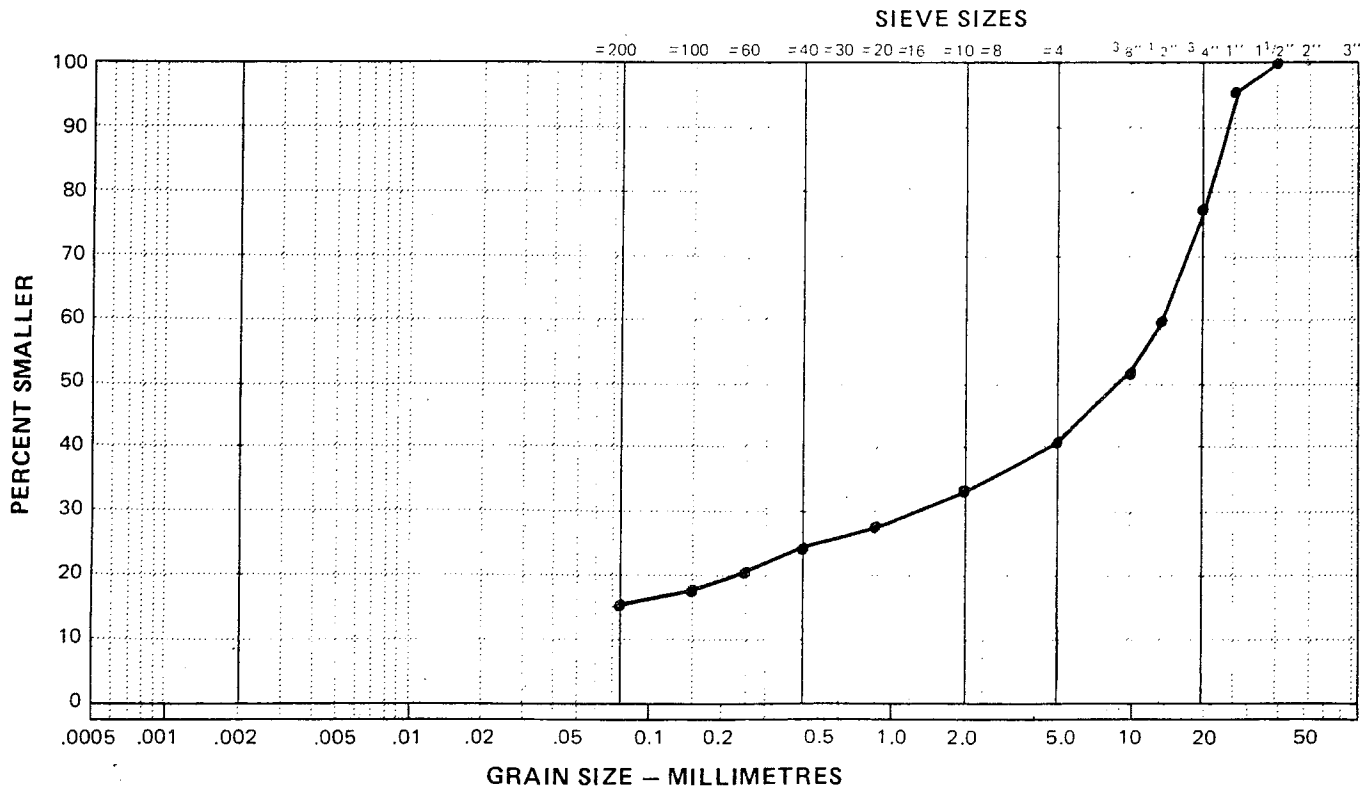
Cc: \_\_\_\_\_

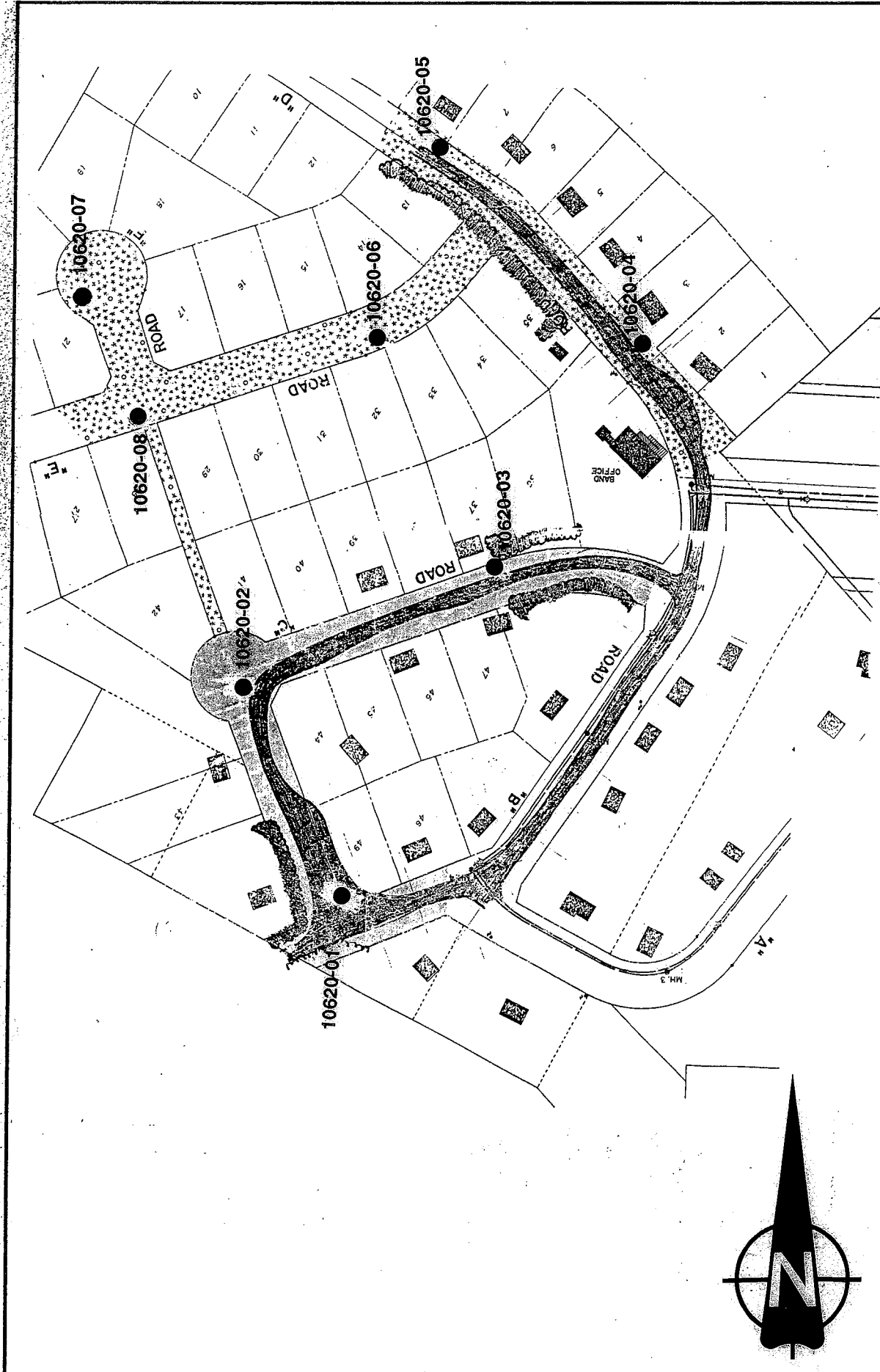
Natural Moisture Content: 5.4 %

Remarks: \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	100.0
1"	95.5
3/4"	77.8
1/2"	59.3
3/8"	51.5
No. 4	40.1
No. 10	32.8
No. 20	28.2
No. 40	24.0
No. 60	20.3
No. 100	18.1
No. 200	16.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE





PROJECT: **NA CHO NYAK DUN SUBDIVISION EXPANSION  
PHASES II & III, MAYO, YUKON**

TITLE: **SITE LAYOUT AND APPROXIMATE  
BOREHOLE LOCATIONS**

CLIENT: **EBA Engineering Consultants Ltd.**

CLIENT: **GOVERNMENT OF YUKON,  
MUNICIPAL ENGINEERING BRANCH**

DATE: **1991 06 18**

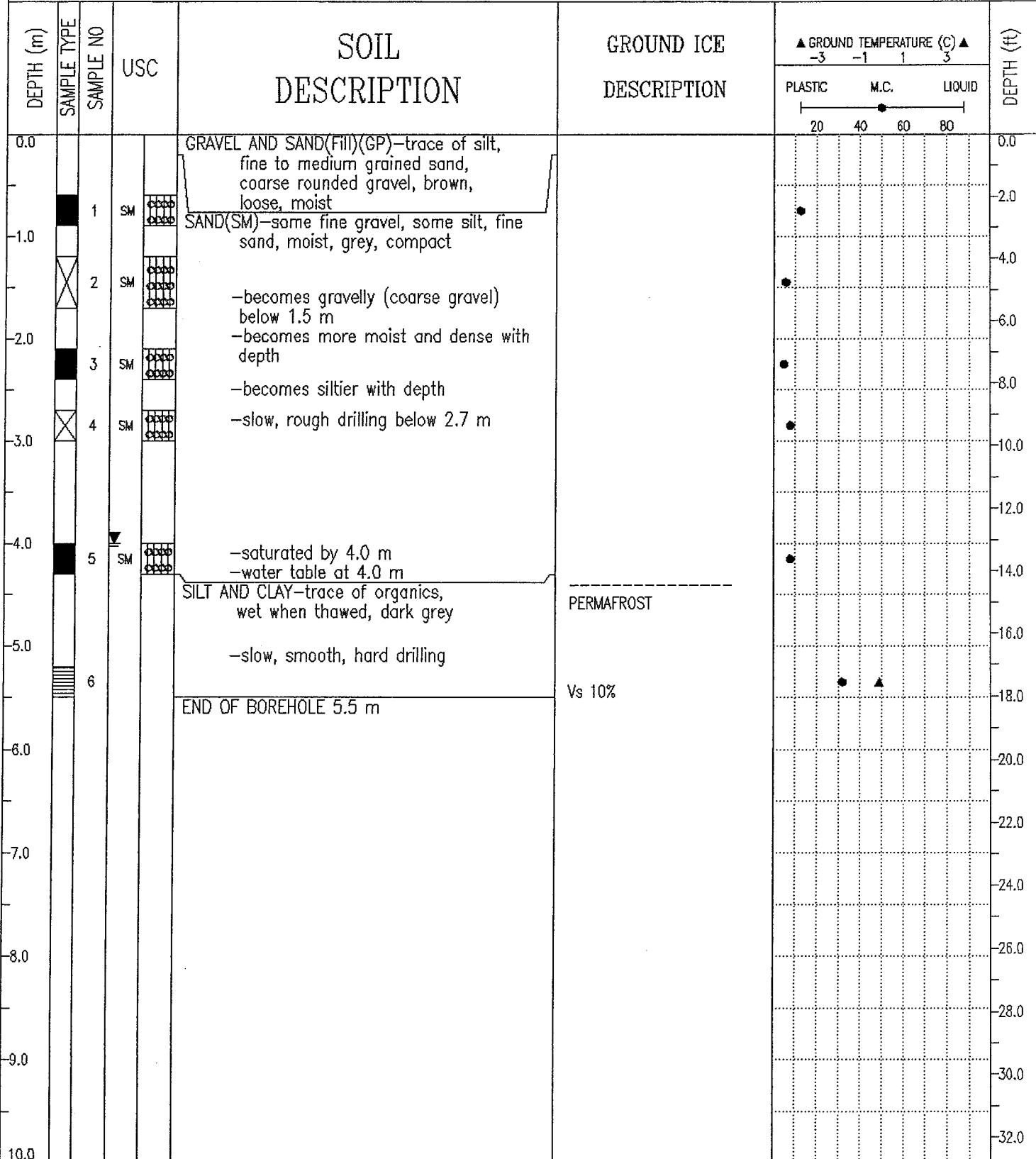
DWN

CHKD

DWG NO. **10620-01**

**0201-10620**

NA CHO NYAK DUN SUBDMISION EXPANSION	CLIENT: YTG MINICIPAL ENGINEERING	TESTHOLE No. 10620-01
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051700.00 E456450.00	ELEVATION 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB SAMPLE <input type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> STANDARD PEN. <input type="checkbox"/> 75 mm SPOON <input type="checkbox"/>		



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.5 m

COMPLETE 91/05/07

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DWG NO.

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# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na-cho Nyak Dun Subdivision  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 1991 05 22

Borehole Number: 10620-01

Depth: 5.2 - 5.5

Soil Description: SILT AND CLAY

Cu: \_\_\_\_\_

Cc: \_\_\_\_\_

Natural Moisture Content: \_\_\_\_\_ %

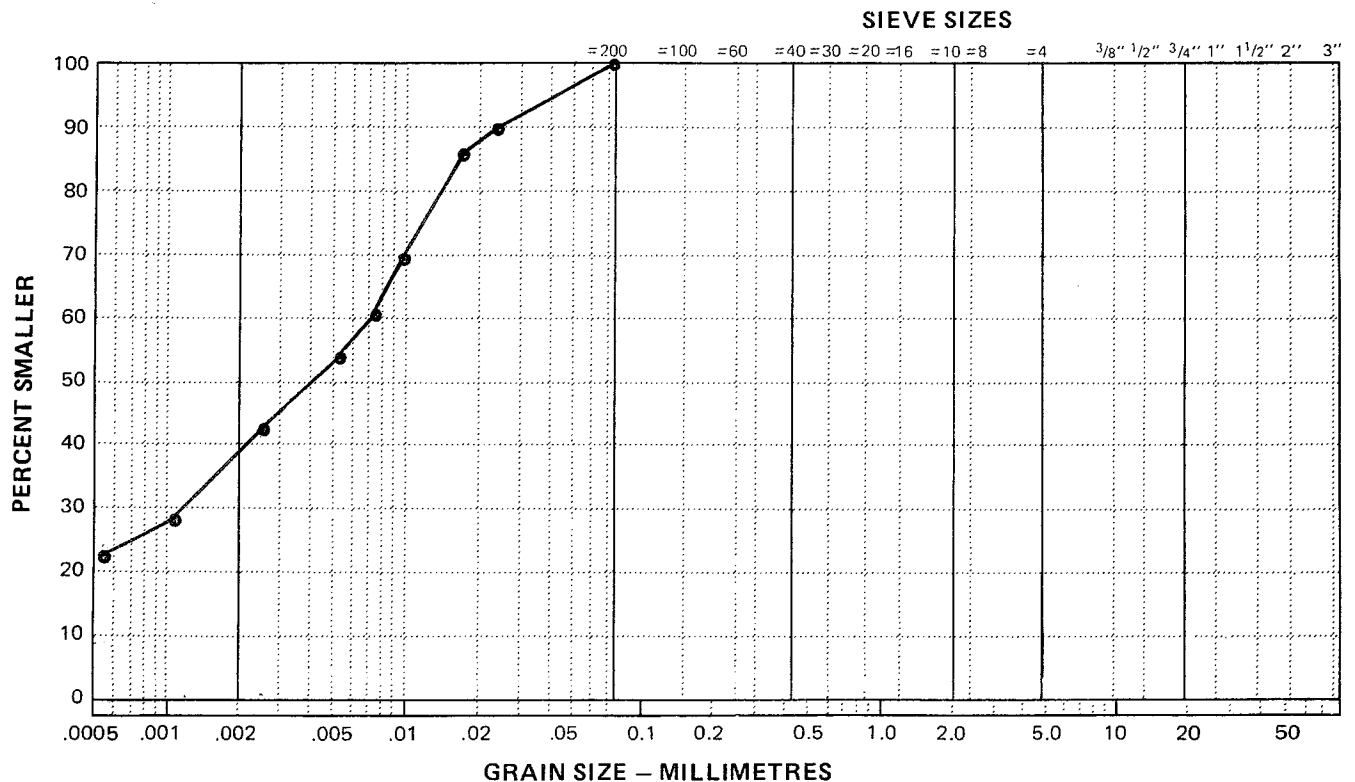
Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

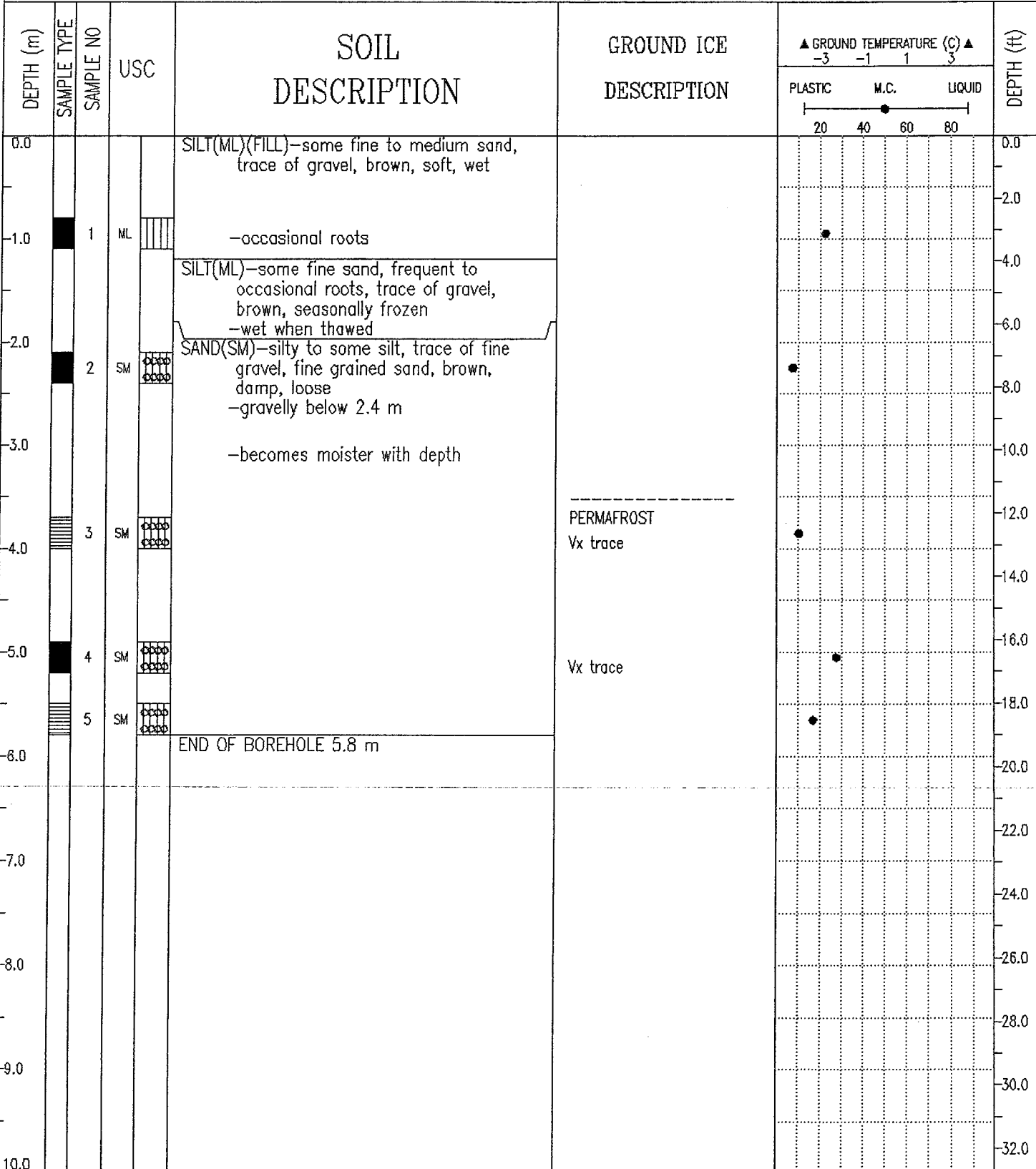
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	
No. 20	
No. 40	
No. 60	
No. 100	
No. 200	100.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



NA CHO NYAK DUN SUBDIVISION EXPANSION	CLIENT: YTG MUNICIPAL ENGINEERING	TESTHOLE No. 10620-02
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051600.00 E456500.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.8 m	COMPLETE 91/05/07
LOGGED BY CRH	DWG NO.
	Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na Cho Nyak Dun Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 91-05-15

Borehole Number: 10620-02

Depth: 2.1 - 2.4 m

Soil Description: SAND(SM)-silty and gravelly

Cu: \_\_\_\_\_

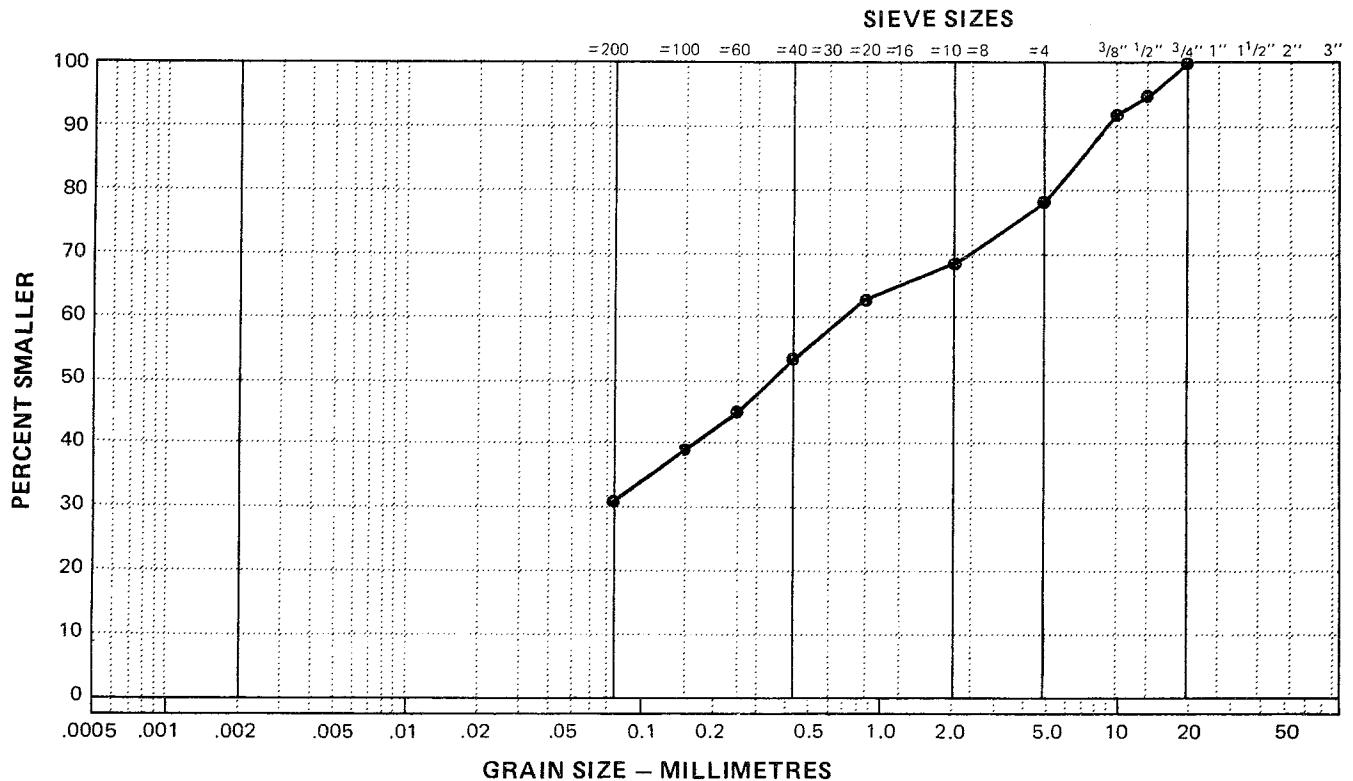
Cc: \_\_\_\_\_

Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

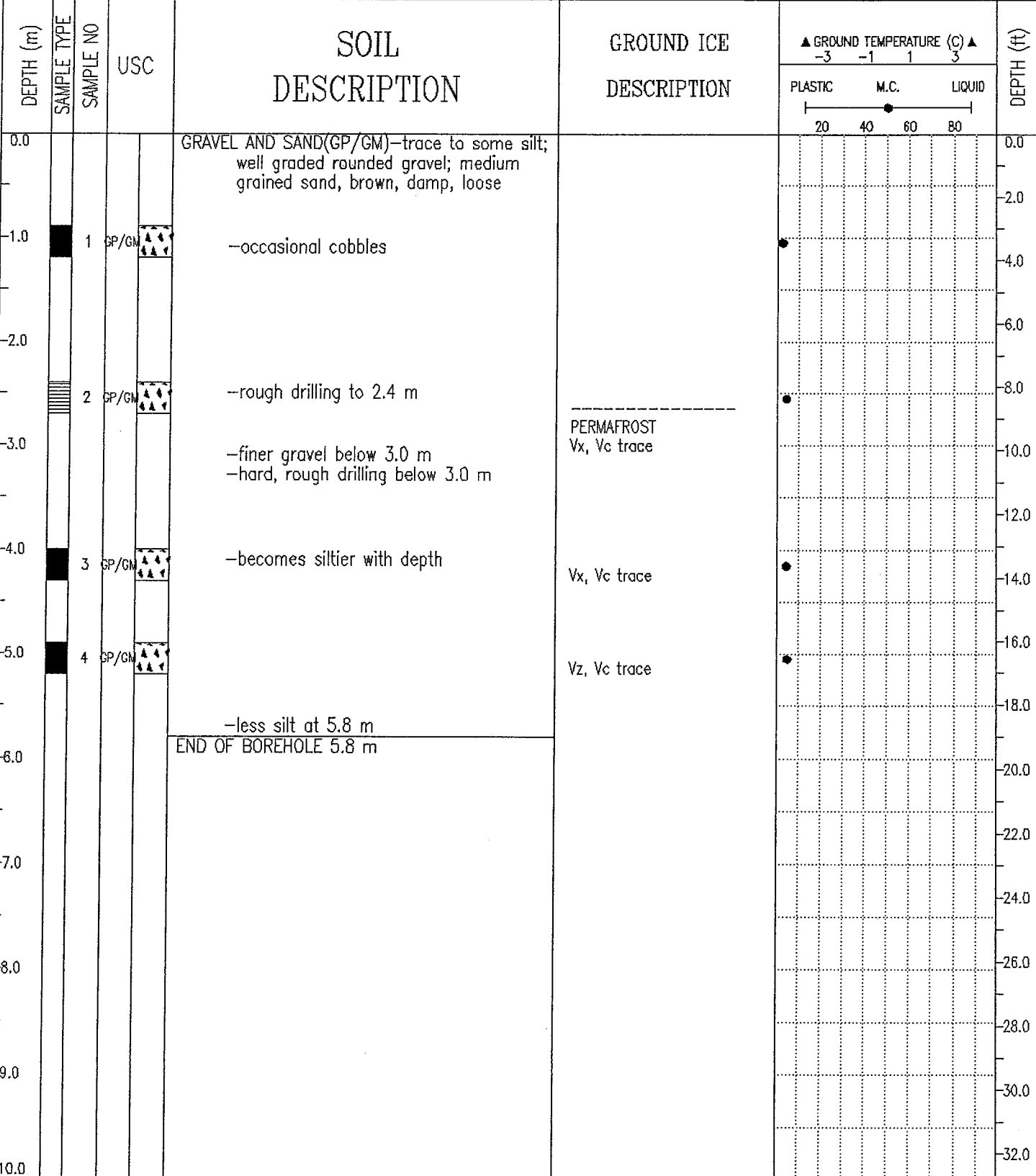
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	100.0
1/2"	96.4
3/8"	91.7
No. 4	78.5
No. 10	68.5
No. 20	62.1
No. 40	53.3
No. 60	45.9
No. 100	39.4
No. 200	30.9

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



NA CHO NYAK DUN SUBDIVISION EXPANSION	CLIENT: YTG MUNICIPAL ENGINEERING	TESTHOLE No. 10620-03
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051550.00 E456400.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.8 m      COMPLETE 91/05/07  
 LOGGED BY CRH      DWG NO.      Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na Cho Nyak Dun Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 91-05-15

Borehole Number: 10620-03

Depth: 4.0 - 4.3 m

Soil Description: GRAVEL (GW)-sandy, trace of silt

Cu: 53.6

Cc: 2.92

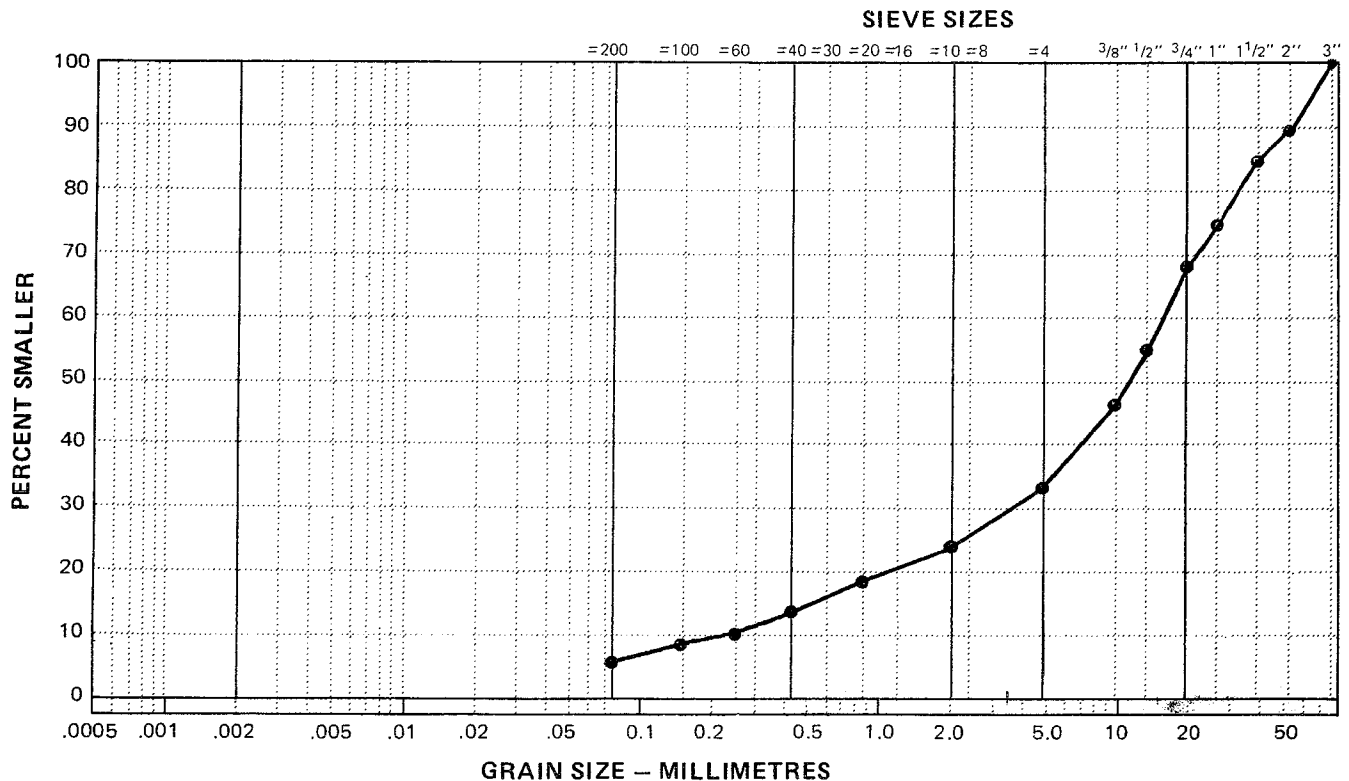
Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

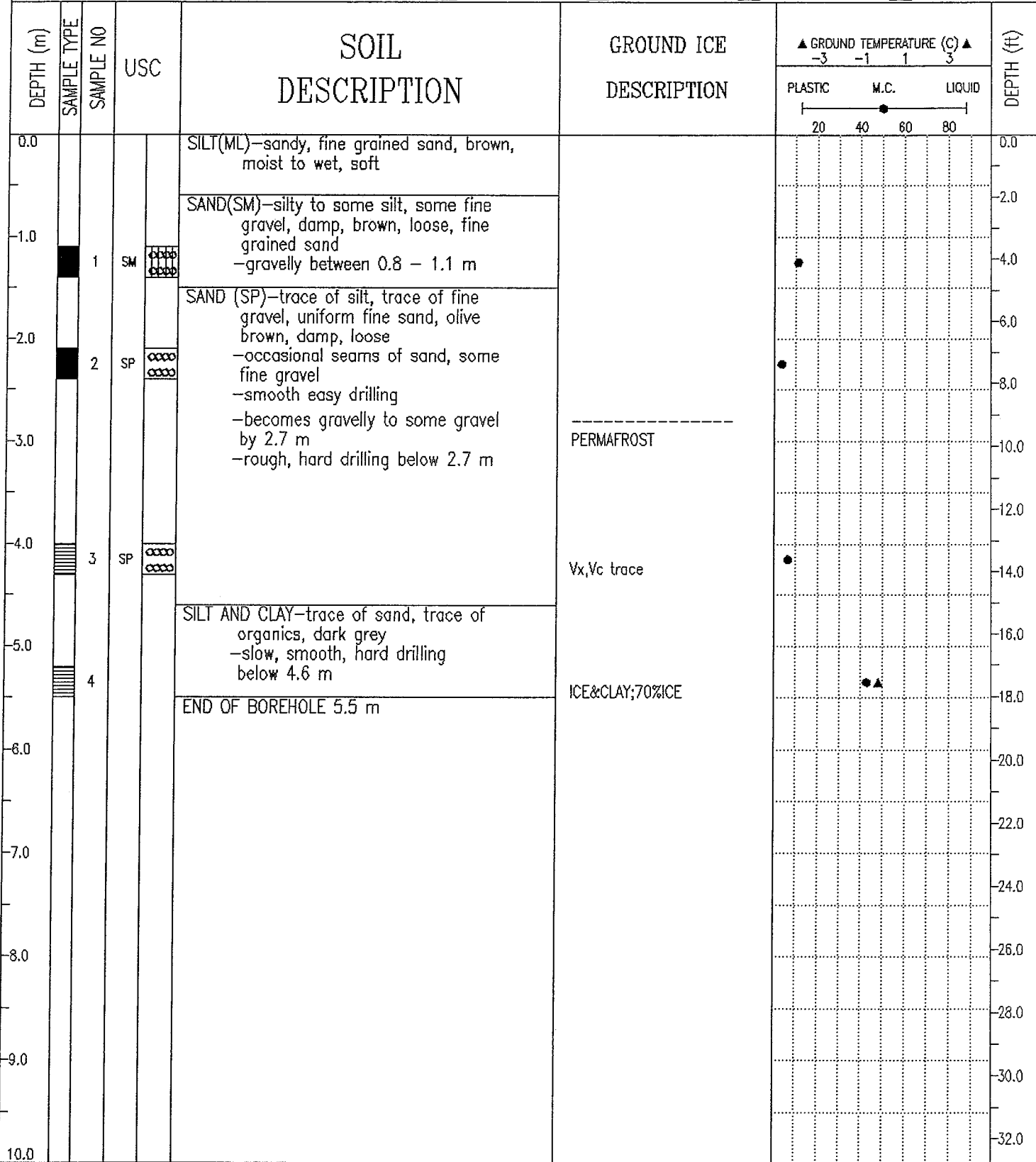
SIEVE	PERCENTAGE PASSING
2"	89.7
1 1/2"	84.3
1"	75.1
3/4"	68.6
1/2"	55.9
3/8"	47.2
No. 4	32.5
No. 10	23.5
No. 20	18.5
No. 40	13.7
No. 60	10.4
No. 100	8.5
No. 200	6.6

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



NA CHO NYAK DUN SUBDIVISION EXPANSION	CLIENT: YTG MUNICIPAL ENGINEERING	TESTHOLE No. 10620-04
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051450.00 E456300.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.5 m      COMPLETE 91/05/07  
 LOGGED BY CRH      DWG NO.      Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na-cho Nyak Dun Subdivision  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 1991 05 22

Borehole Number: 10620-04

Depth: 5.2 - 5.5 m

Soil Description: SILT AND CLAY = trace of sand.

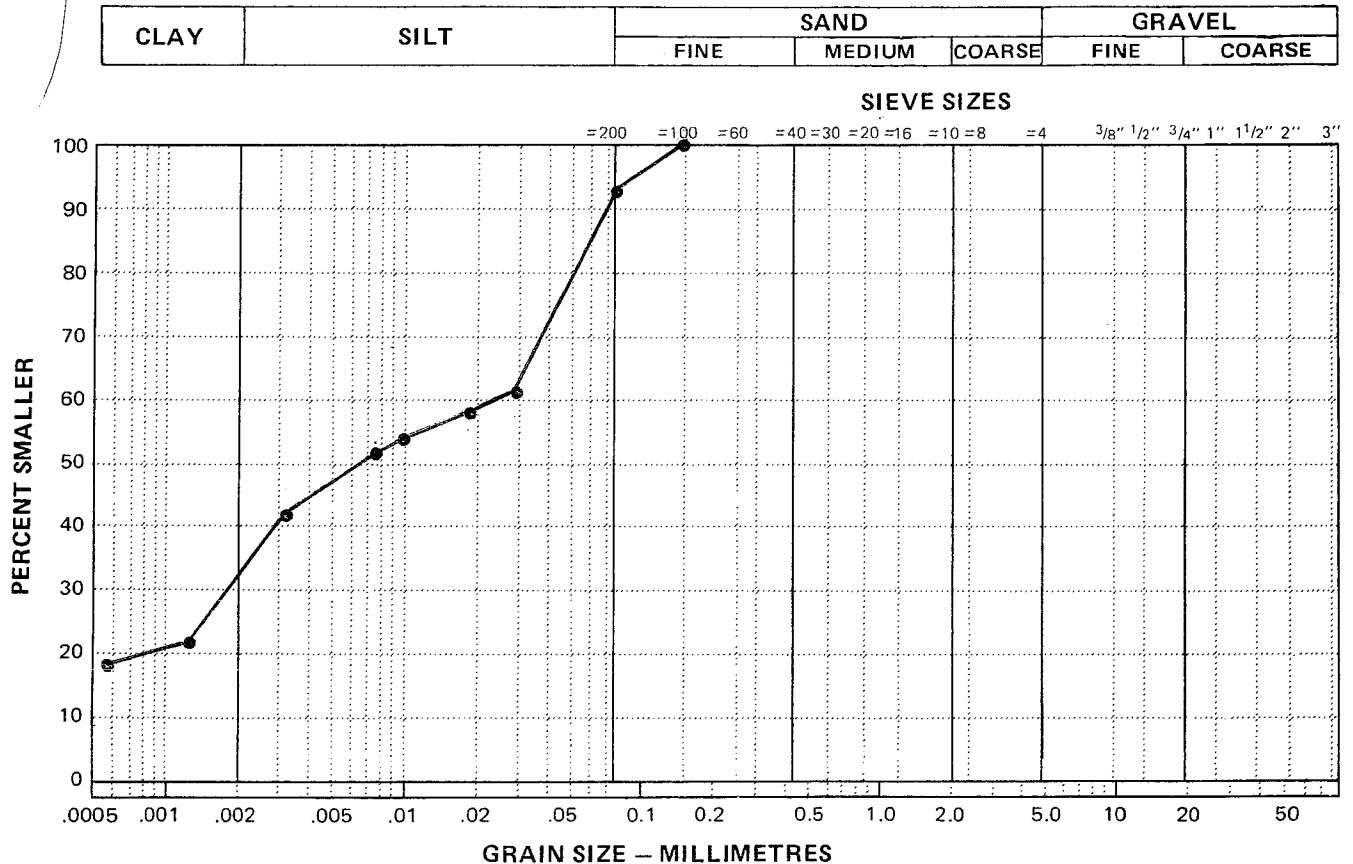
Cu: \_\_\_\_\_

Cc: \_\_\_\_\_

Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	
No. 20	
No. 40	
No. 60	
No. 100	100.0
No. 200	93.0



NA CHO NYAK DUN SUBDIVISION EXPANSION	CLIENT: YTG MUNICIPAL ENGINEERING	TESTHOLE No. 10620-05
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051350.00 E456400.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON

DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ GROUND TEMPERATURE (C) ▲			DEPTH (ft)
						PLASTIC	M.C.	LIQUID	
0.0				SILT AND SAND(ML)-trace of fine gravel, fine grained sand, brown, damp, loose					0.0
1.0	1	SM		SAND(SM)-silty, some gravel to gravelly gravel, fine grained, olive brown, damp, loose					2.0
2.0	2	SM		-becomes gravelly by 1.5 m (coarse gravel) -rough drilling below 1.5 m					4.0
4.0	3	SM							8.0
5.0				SILT AND CLAY-trace of organics, dark grey, wet when thawed -smooth, hard drilling below 4.9 m -drilling becomes rougher by 5.2 m					12.0
6.0	4			END OF BOREHOLE 5.8 m					14.0
					PERMAFROST				16.0
					NBe				18.0
					ICE&CLAY;50%ICE				20.0
									22.0
									24.0
									26.0
									28.0
									30.0
									32.0

EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.8 m

COMPLETE 91/05/07

LOGGED BY CRH

DWG NO.

Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na Cho Nyak Dun Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 91-05-16

Borehole Number: 10620-05

Depth: 0.6 - 0.9 m

Soil Description: SAND AND SILT (SM) - gravelly

Cu: \_\_\_\_\_

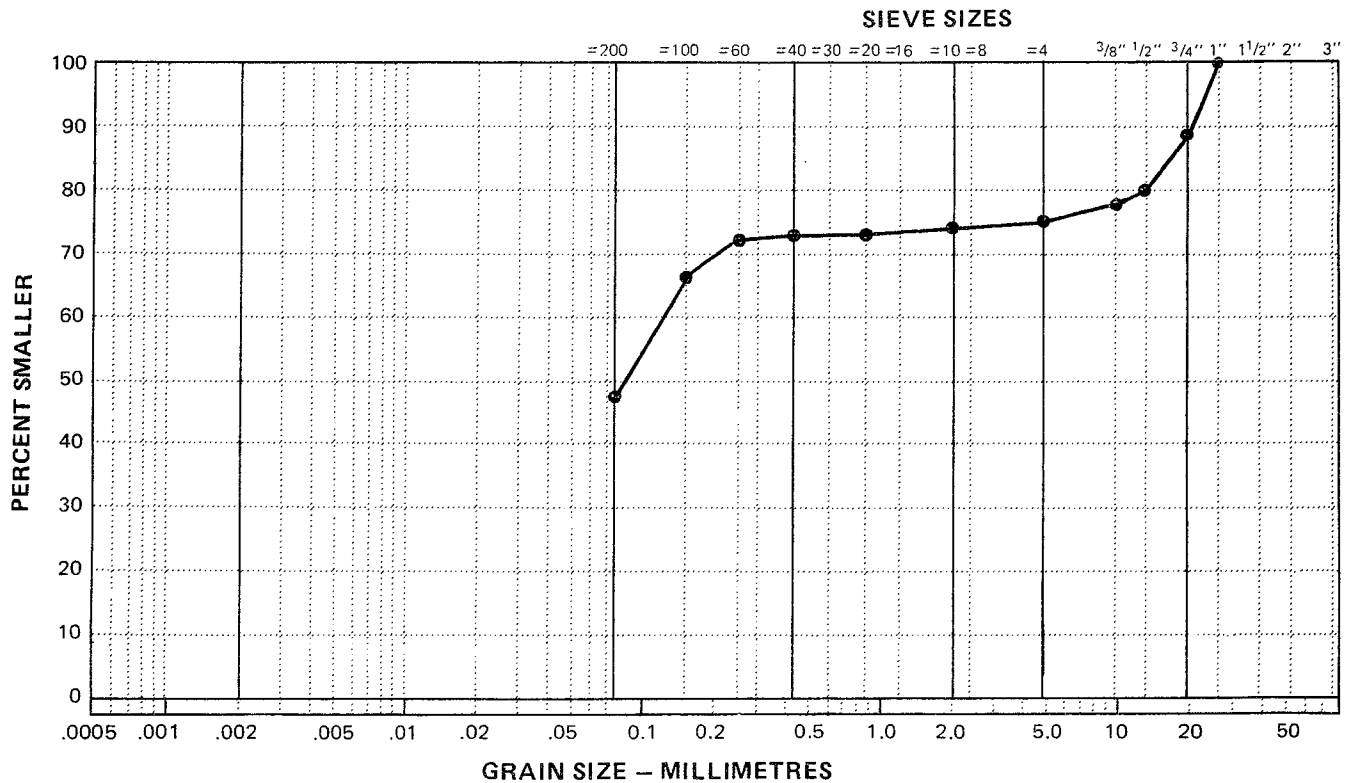
Cc: \_\_\_\_\_

Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

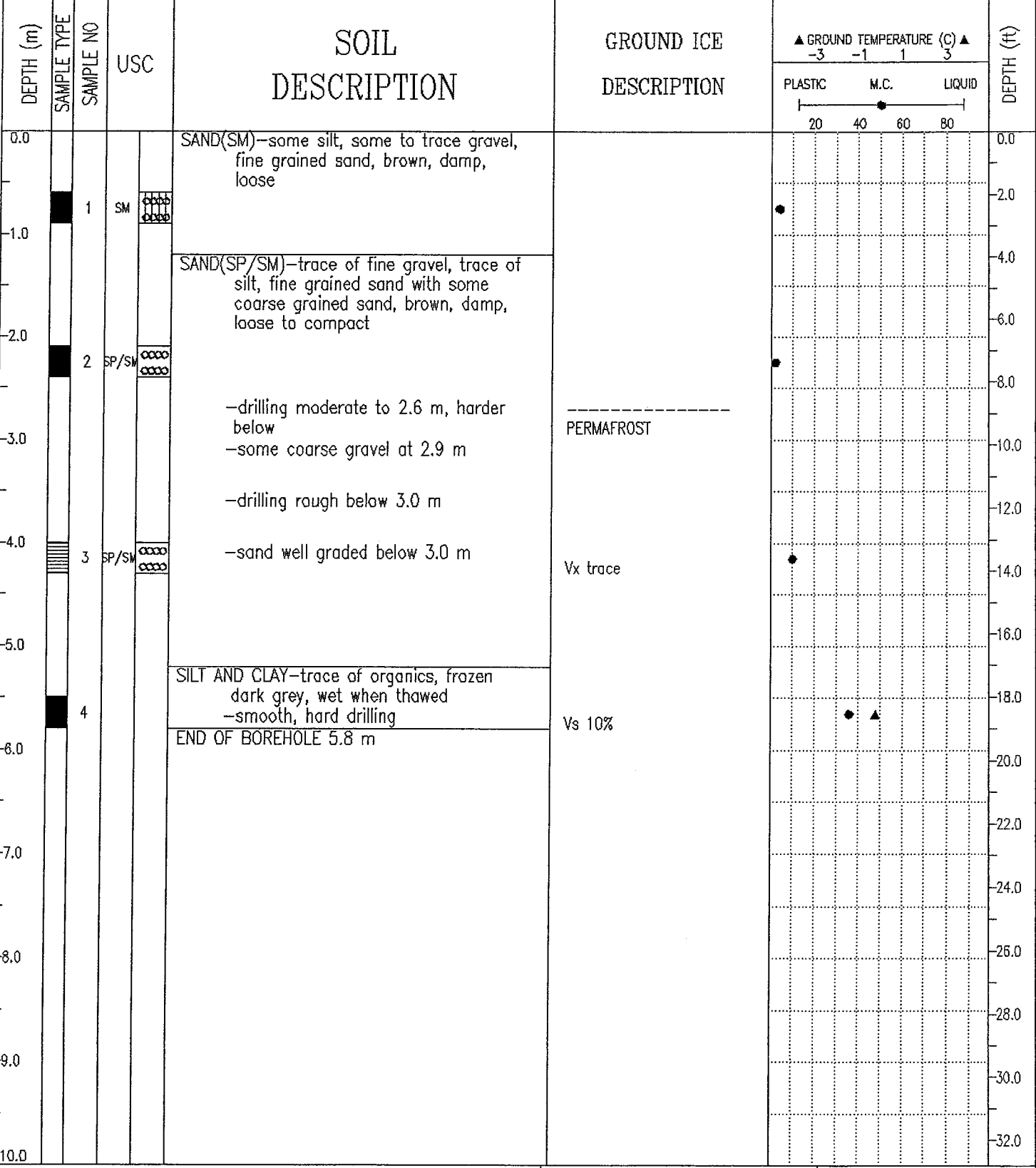
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	100.0
3/4"	88.9
1/2"	80.6
3/8"	77.9
No. 4	75.4
No. 10	74.5
No. 20	73.9
No. 40	73.4
No. 60	72.2
No. 100	67.9
No. 200	48.0

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



NA CHO NYAK DUN SUBDIVISION EXPANSION	CLIENT: YTG MUNICIPAL ENGINEERING	TESTHOLE No. 10620-06
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051500.00 E456450.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.8 m	COMPLETE 91/05/08
LOGGED BY CRH	DWG NO.
	Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na Cho Nyak Dun Subdivision Expansion  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 91-05-16

Borehole Number: 10620-06

Depth: 2.1 - 2.4 m

Soil Description: SAND(SP/SM)-some gravel, trace of silt

Cu: 11.3

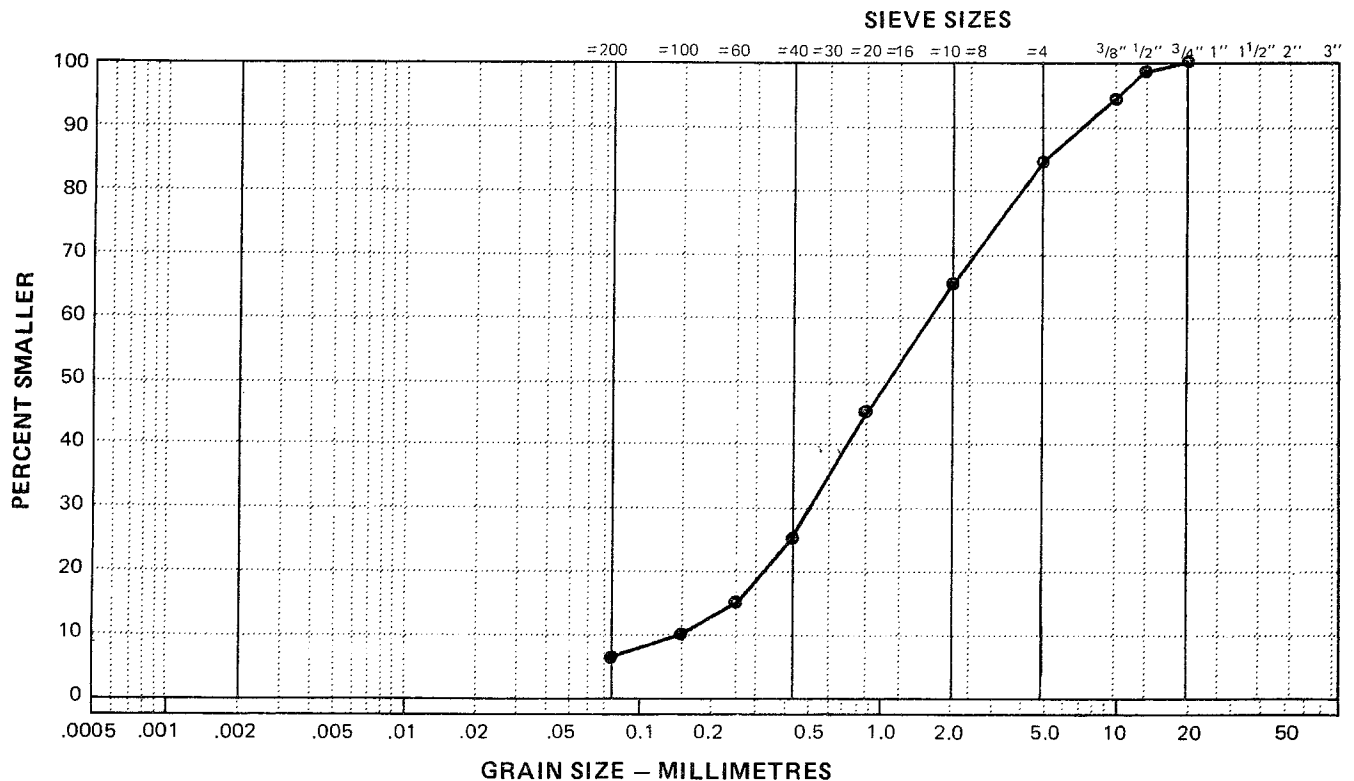
Cc: 0.98

Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	100.0
1/2"	98.6
3/8"	95.4
No. 4	84.1
No. 10	66.5
No. 20	46.4
No. 40	25.3
No. 60	15.4
No. 100	10.9
No. 200	7.3

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



NA CHO NYAK DUN SUBDIVISION EXPANSION		CLIENT: YTG MUNICIPAL ENGINEERING		TESTHOLE No. 10620-07			
PHASE II & III-WATER/SEWER/ROADS		DRILL: CME-75 C/W HOLLOW STEM AUGERS		Project No: 0201-10620			
MAYO, YUKON		UTM ZONE: 8 N7051500.00 E456650.00		ELEVATION 0.00 (m)			
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB SAMPLE <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> STANDARD PEN. <input checked="" type="checkbox"/> 75 mm SPOON <input type="checkbox"/>							
DEPTH (m)	SAMPLE TYPE	SAMPLE NO	USC	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ GROUND TEMPERATURE (C) ▲	DEPTH (ft)
						-3    -1    1    3 PLASTIC    M.C.    LIQUID  ----- ----- -----  20    40    60    80	
0.0				SAND(SM)-silty, occasional fine roots, fine grained sand, brown, damp to moist, loose			0.0
-1.0		1	SM				2.0
		2	SP	SAND(SP)-some fine gravel, trace of silt, occasional coarse gravel, fine grained sand, brown, damp, loose to compact -more coarse gravel by 1.5 m -rough easy drilling			4.0
-2.0		3	GP/SM	GRAVEL(FP/GM)-sandy, trace of silt, brown damp to moist, loose to compact			8.0
-3.0					PERMAFROST		10.0
-4.0		4	GP/SM		Vx trace		14.0
-5.0		5		SILT AND CLAY-trace of organics, dark grey, wet when thawed -smooth, hard, slow drilling with occasional rough, hard sections			16.0
-6.0				END OF BOREHOLE 5.5 m	Vs 25%, lenses to 15 mm thick		18.0
-7.0							20.0
-8.0							22.0
-9.0							24.0
-10.0							26.0
							28.0
							30.0
							32.0

EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.5 m

COMPLETE 91/05/08

LOGGED BY CRH

DWG NO.

Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na Cho Nyak Dun Subdivision Expansion

Mayo, Yukon

Project Number: 0201-10620

Date Tested: 91-05-16

Borehole Number: 10620-07

Depth: 2.1 - 2.4 m

Soil Description: GRAVEL (GP/GM)-sandy, trace of silt

Cu: 68.8

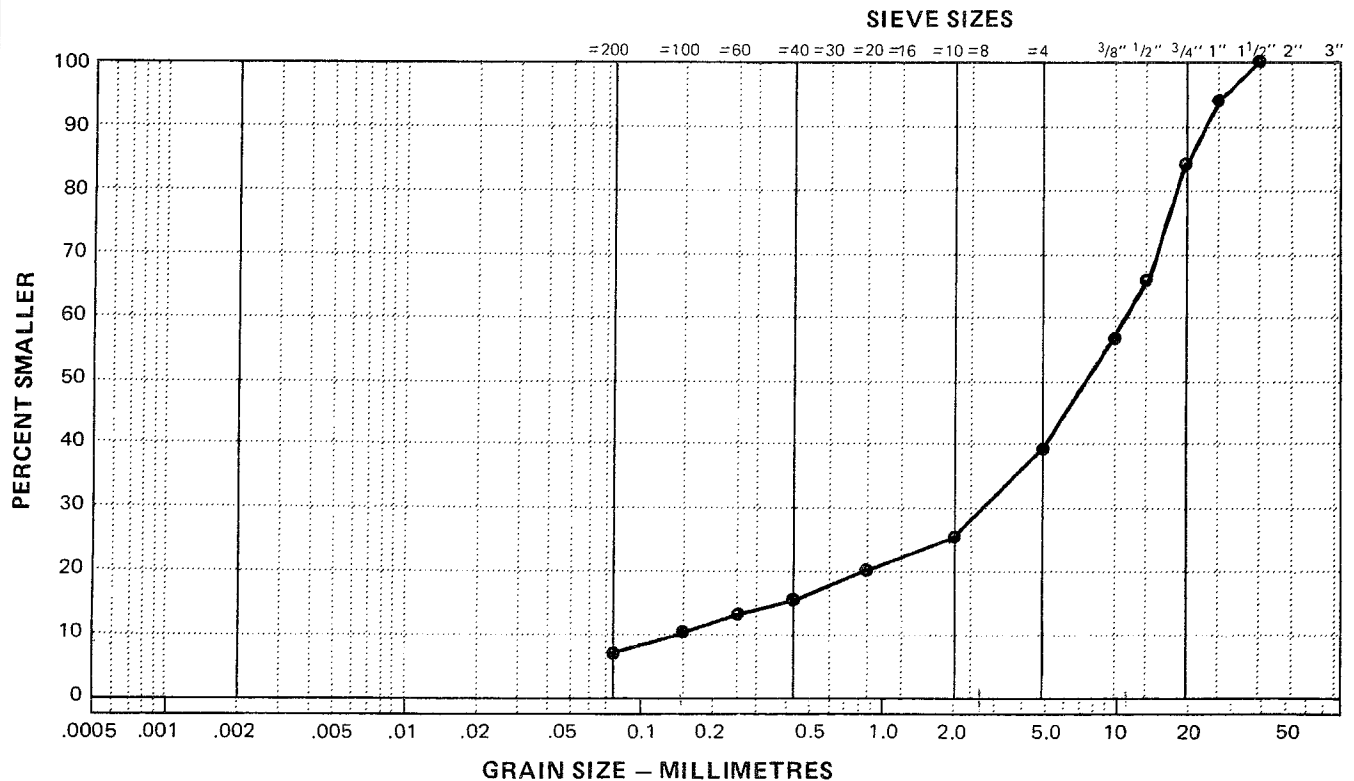
Cc: 4.5

Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

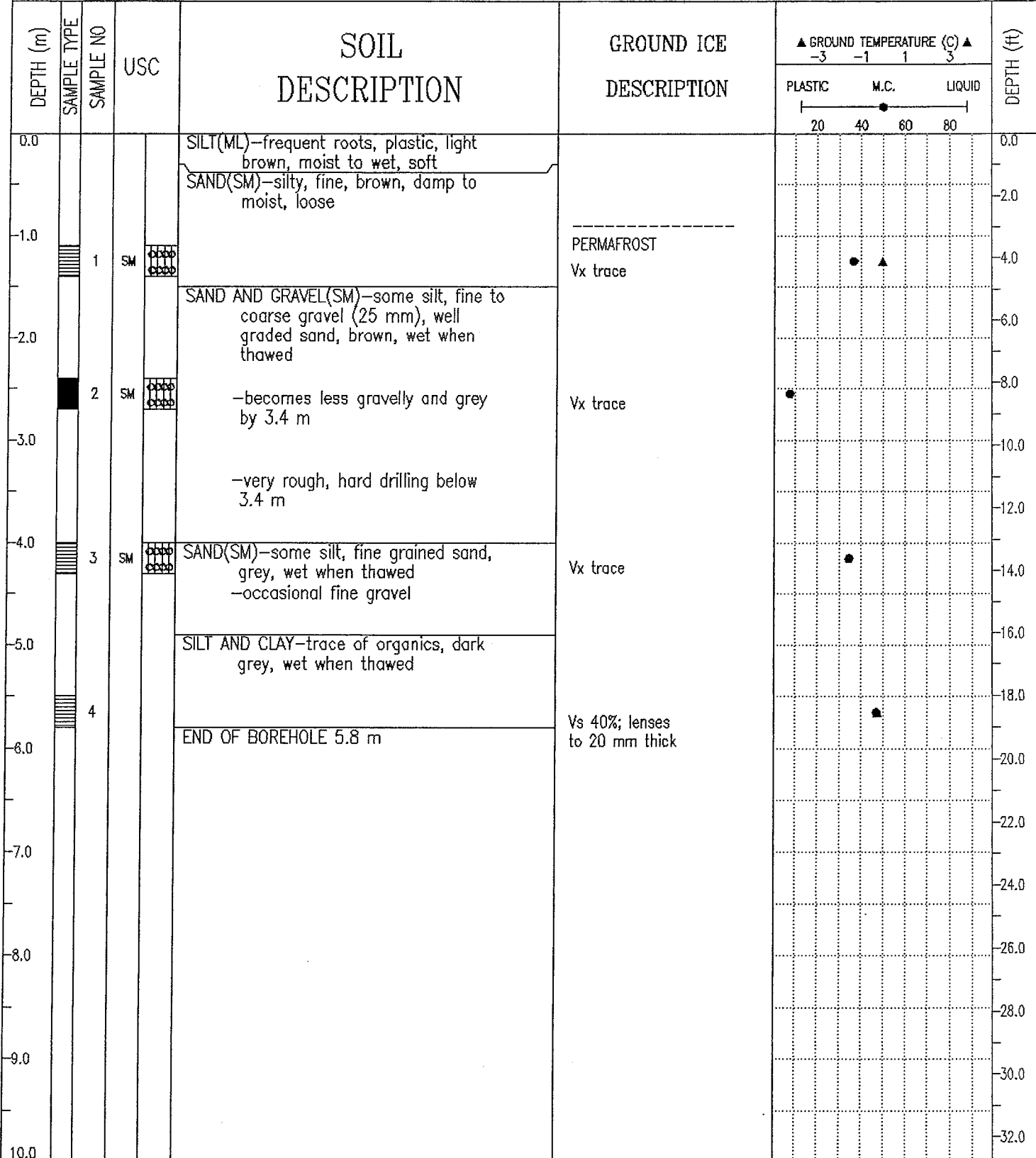
SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	100.0
1"	94.9
3/4"	83.9
1/2"	66.3
3/8"	57.3
No. 4	39.1
No. 10	26.5
No. 20	20.6
No. 40	16.4
No. 60	13.3
No. 100	10.6
No. 200	7.5

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



NA CHO NYAK DUN SUBDIVISION EXPANSION	CLIENT: YTG MUNICIPAL ENGINEERING	TESTHOLE No. 10620-08
PHASE II & III-WATER/SEWER/ROADS	DRILL: CME-75 C/W HOLLOW STEM AUGERS	Project No: 0201-10620
MAYO, YUKON	UTM ZONE: 8 N7051550.00 E456600.00	ELEVATION 0.00 (m)

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

COMPLETION DEPTH 5.5 m

COMPLETE 91/05/08

LOGGED BY CRH

DWG NO.

Page 1 of 1

# EBA Engineering Consultants Ltd.

## PARTICLE - SIZE ANALYSIS OF SOILS

Project: Na-cho Nyak Dun Subdivision  
Mayo, Yukon

Project Number: 0201-10620

Date Tested: 1991 05 28

Borehole Number: 10620-08

Depth: 4.0 - 4.3 m

Soil Description: SAND (SM) - some silt, trace of clay

Cu: \_\_\_\_\_

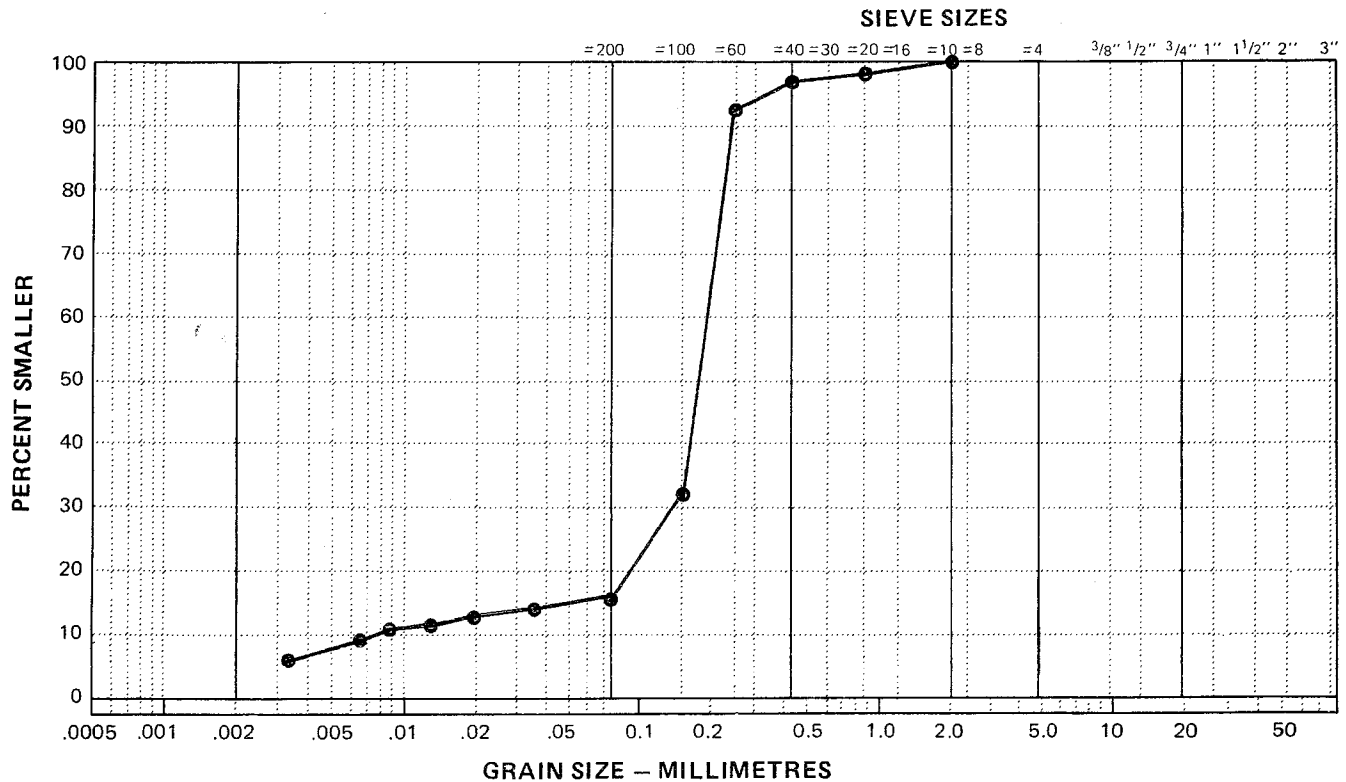
Cc: \_\_\_\_\_

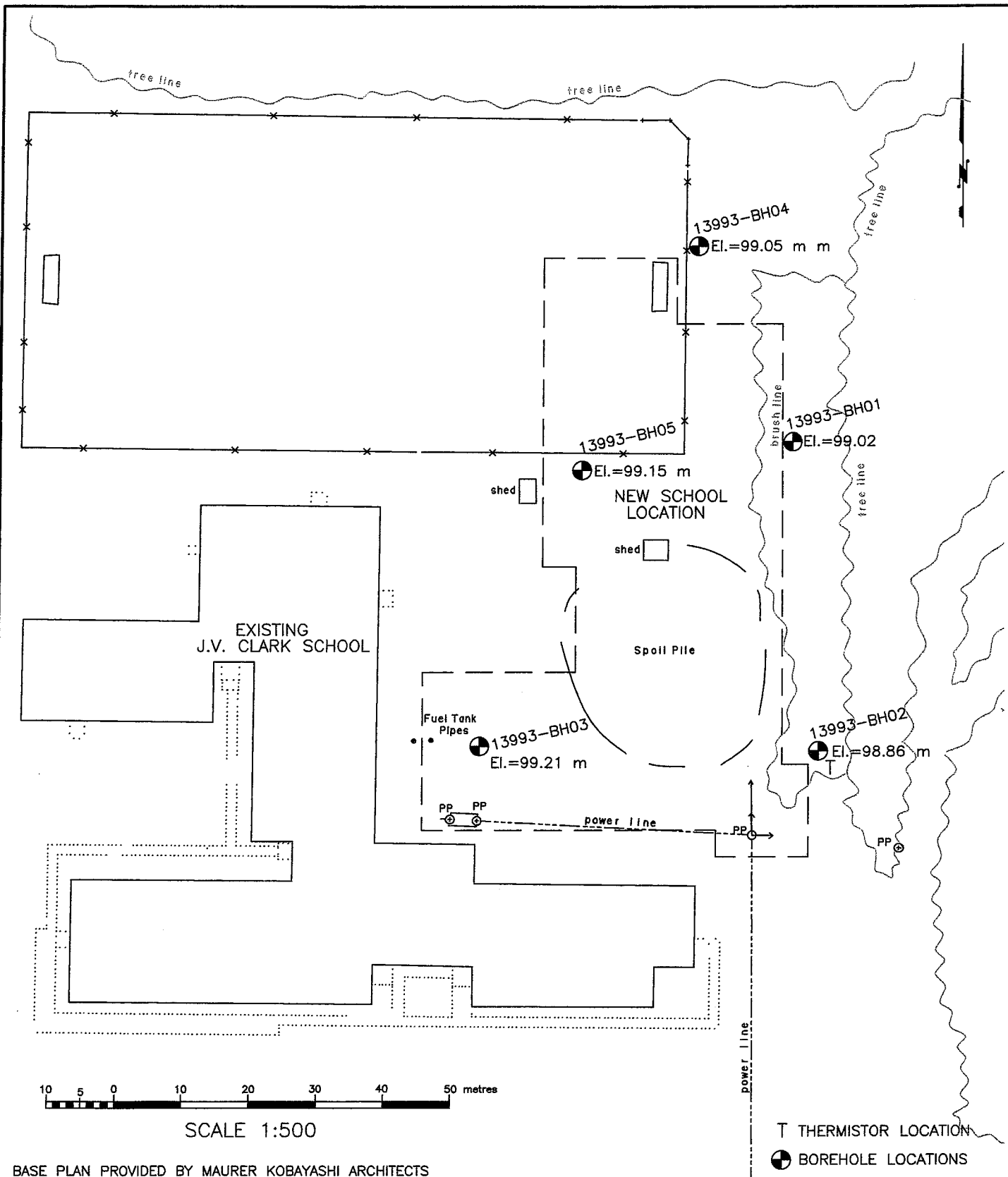
Natural Moisture Content: \_\_\_\_\_ %

Remarks: \_\_\_\_\_

SIEVE	PERCENTAGE PASSING
3"	
1 1/2"	
1"	
3/4"	
1/2"	
3/8"	
No. 4	
No. 10	100.0
No. 20	98.4
No. 40	97.2
No. 60	92.6
No. 100	32.0
No. 200	15.4

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE





BASE PLAN PROVIDED BY MAURER KOBAYASHI ARCHITECTS



**EBA Engineering Consultants Ltd.**

PROJECT  
GEOTECHNICAL SITE INVESTIGATION  
NEW SCHOOL, MAYO, Y.T.

CLIENT  
GOVERNMENT OF YUKON  
PROPERTY MANAGEMENT AGENCY

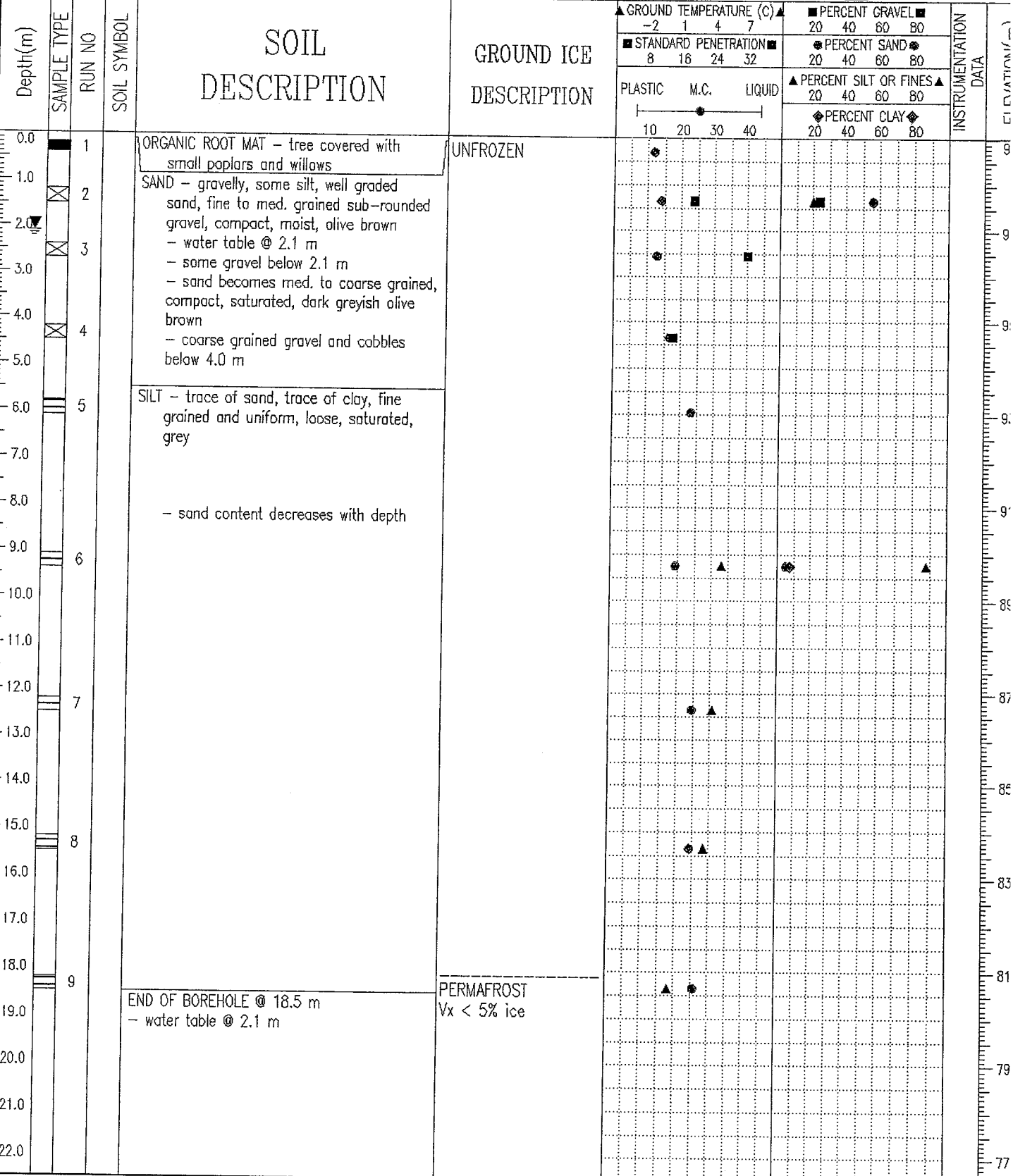
TITLE  
SITE PLAN SHOWING  
BOREHOLE LOCATIONS

DATE	99/07/19	DWN.	JSB	CHKD.	JRT	FILE NO.	0201-99-13993	DRWG.	FIGURE 1
------	----------	------	-----	-------	-----	----------	---------------	-------	----------

GEOTECHNICAL EVALUATION	CLIENT: YTG - DEPT OF GOV'T SERVICES	BOREHOLE NO: 13993-BH01
NEW SCHOOL	DRILL: CME 75 c/w HOLLOW STEM AUGERS	PROJECT NO: 0201-99-13993
MAYO, YT	UTM ZONE: 8 N7052250 E455635	ELEVATION: 99.02 m

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

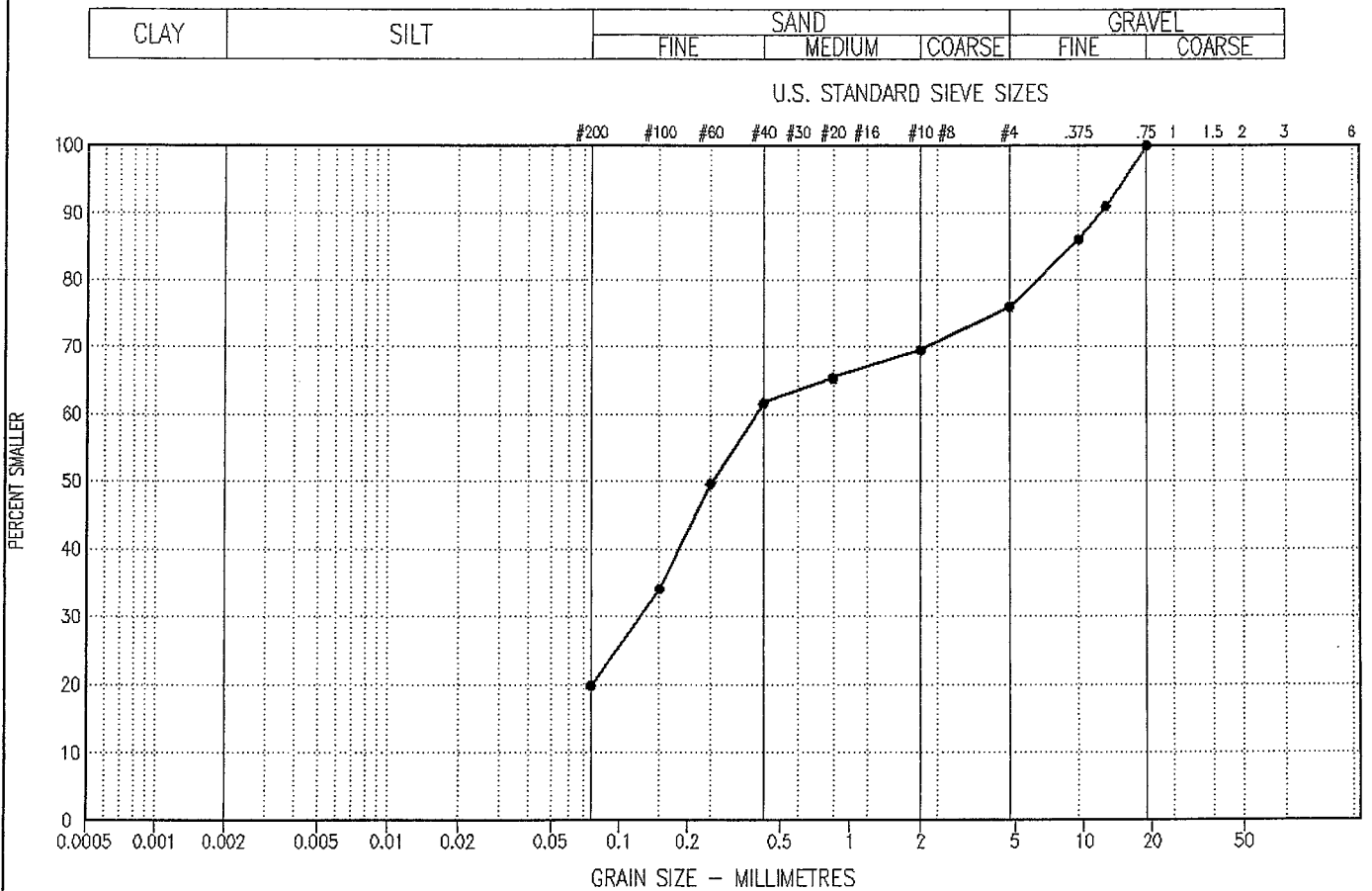
BACKFILL TYPE  BENTONITE  PEA GRAVEL  SLOUGH  GROUT  DRILL CUTTINGS  SAND



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

LOGGED BY: JSB	COMPLETION DEPTH: 18.5 m
REVIEWED BY: JRT	COMPLETE: 99/07/13

## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	13993-BH01	1.20 - 1.50	20	56	24	17.4	1.8	SM

Project: 0201-99-13993

Date Tested: 99/07/22

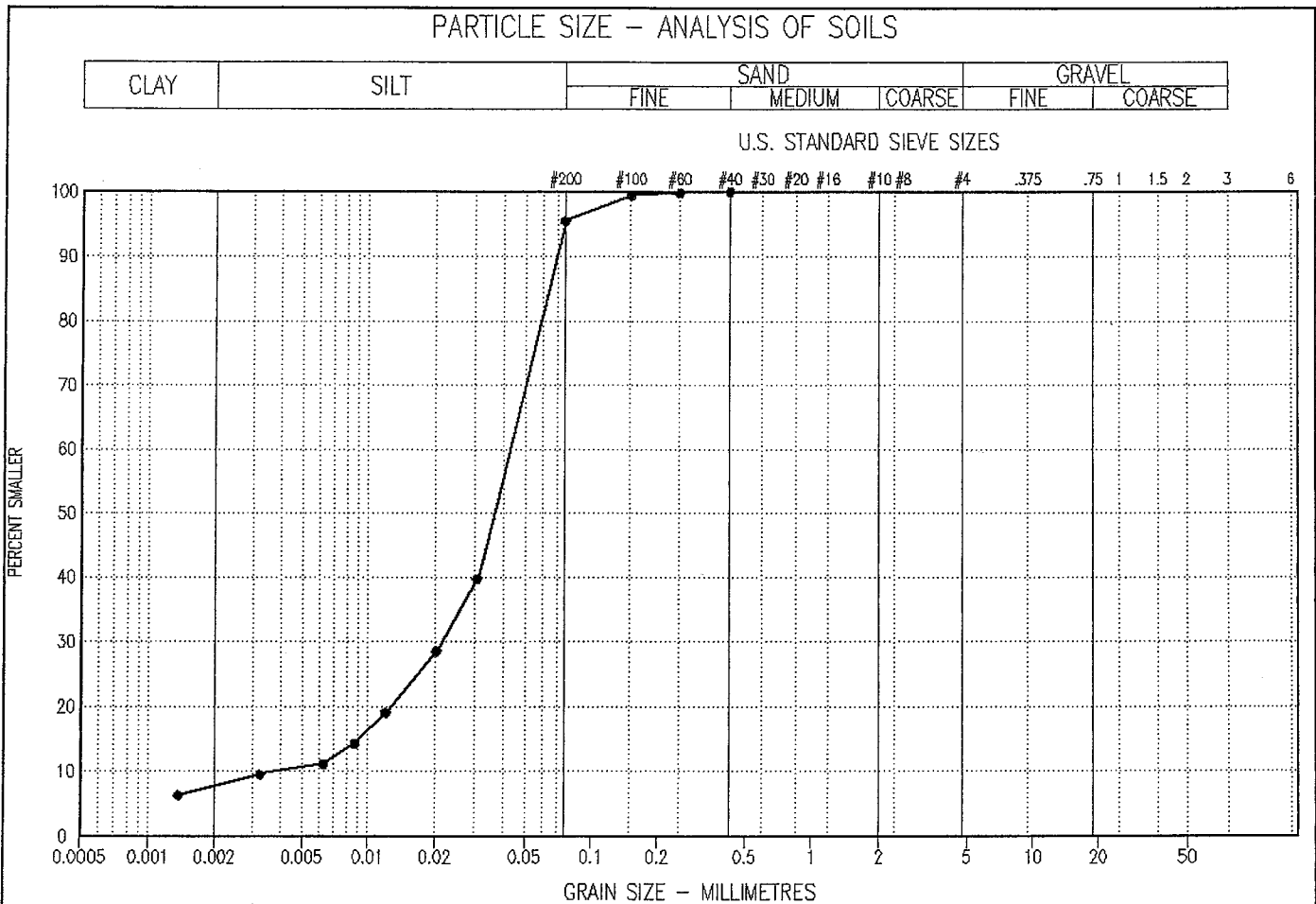
BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

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SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	13993-BH01	9.10 - 9.40	7.4	88	5	0	11.4	2.4	

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

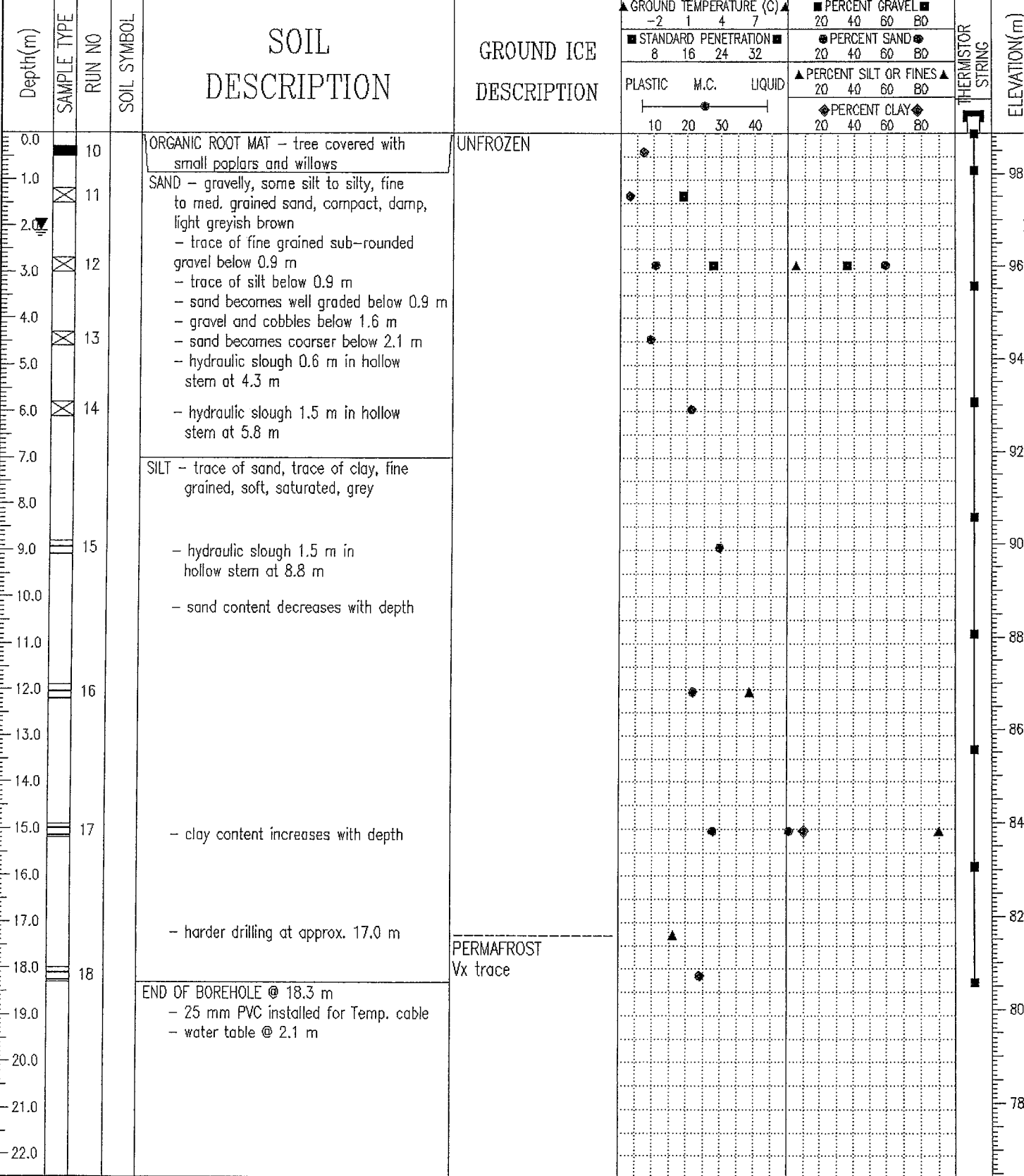
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GEOTECHNICAL EVALUATION	CLIENT: YTG - DEPT OF GOV'T SERVICES	BOREHOLE NO: 13993-BH02
NEW SCHOOL	DRILL: CME 75 c/w HOLLOW STEM AUGERS	PROJECT NO: 0201-99-13993
MAYO, YT	UTM ZONE: 8 N7052210 E455635	ELEVATION: 98.86 m

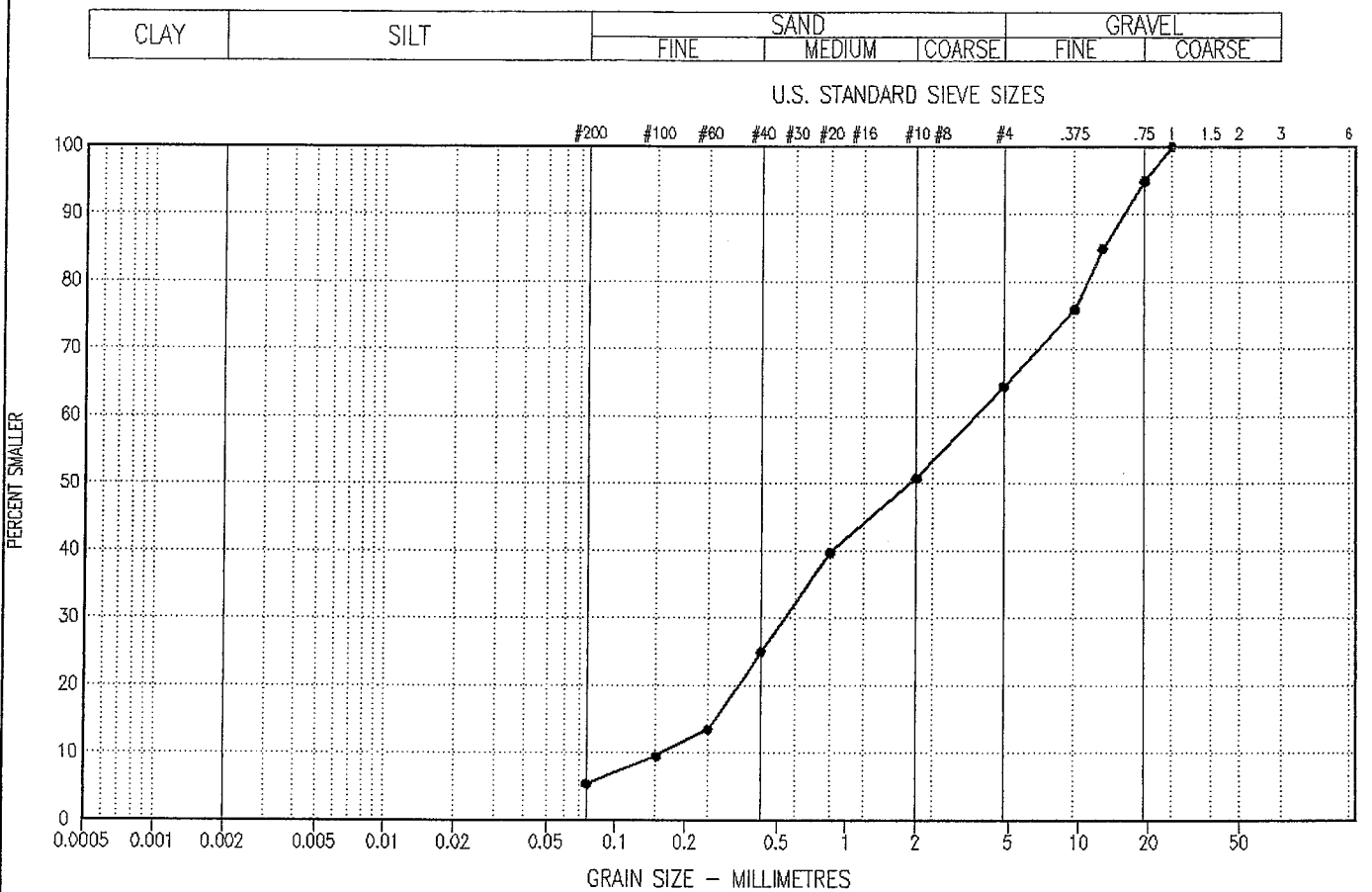
SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON  CRREL BARREL  
 BACKFILL TYPE  BENTONITE  PEA GRAVEL  SLOUGH  GROUT  DRILL CUTTINGS  SAND



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

LOGGED BY: JSB  
REVIEWED BY: JRT  
COMPLETION DEPTH: 18.3 m  
COMPLETE: 99/07/14  
Page 1 of

## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	13993-BH02	2.70 - 3.00	5	59	36	23.7	0.5	SP-SM

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

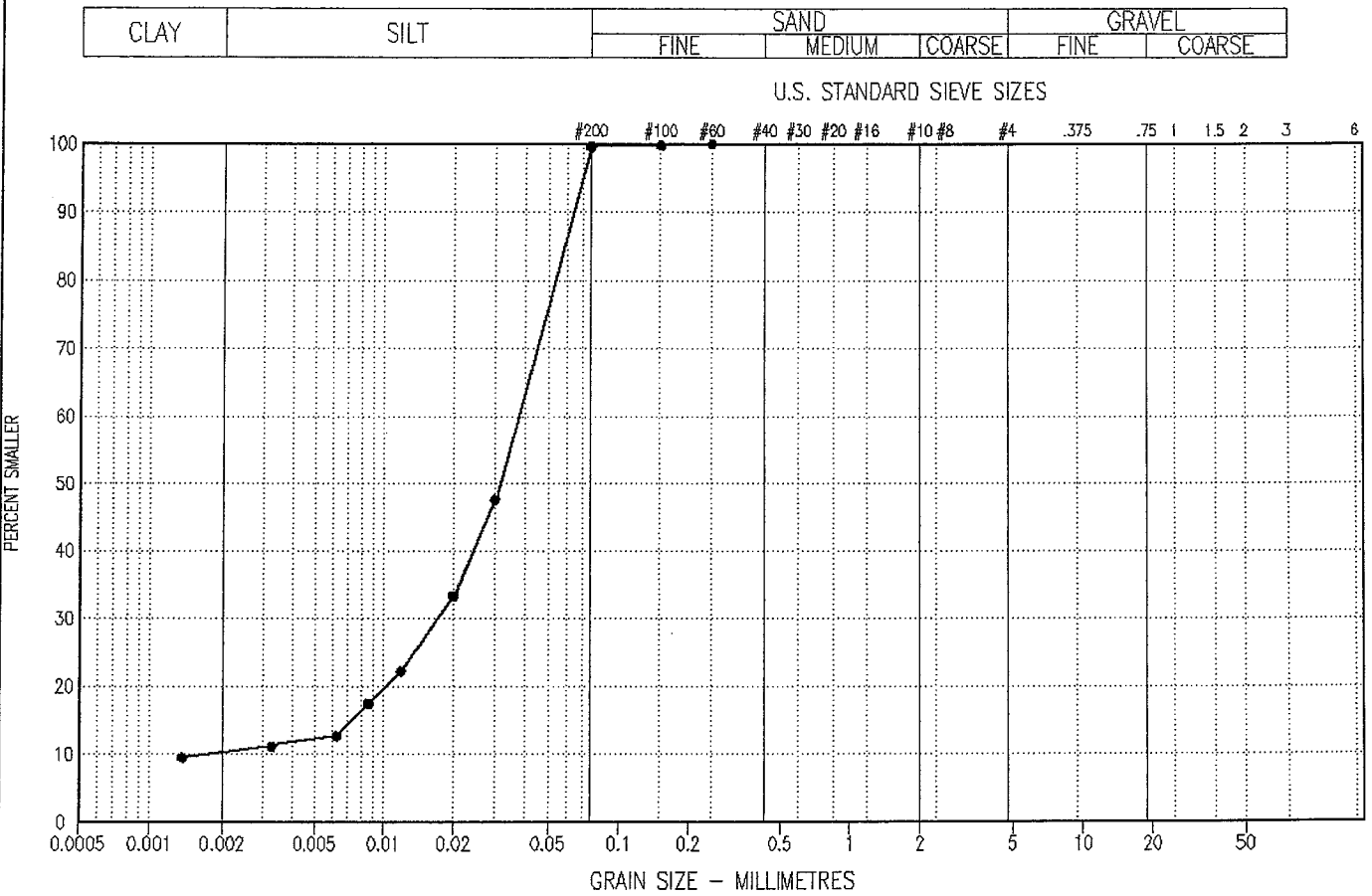
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## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	13993-BH02	14.90 - 15.20	10.0	90	1	0	21.1	3.9	

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

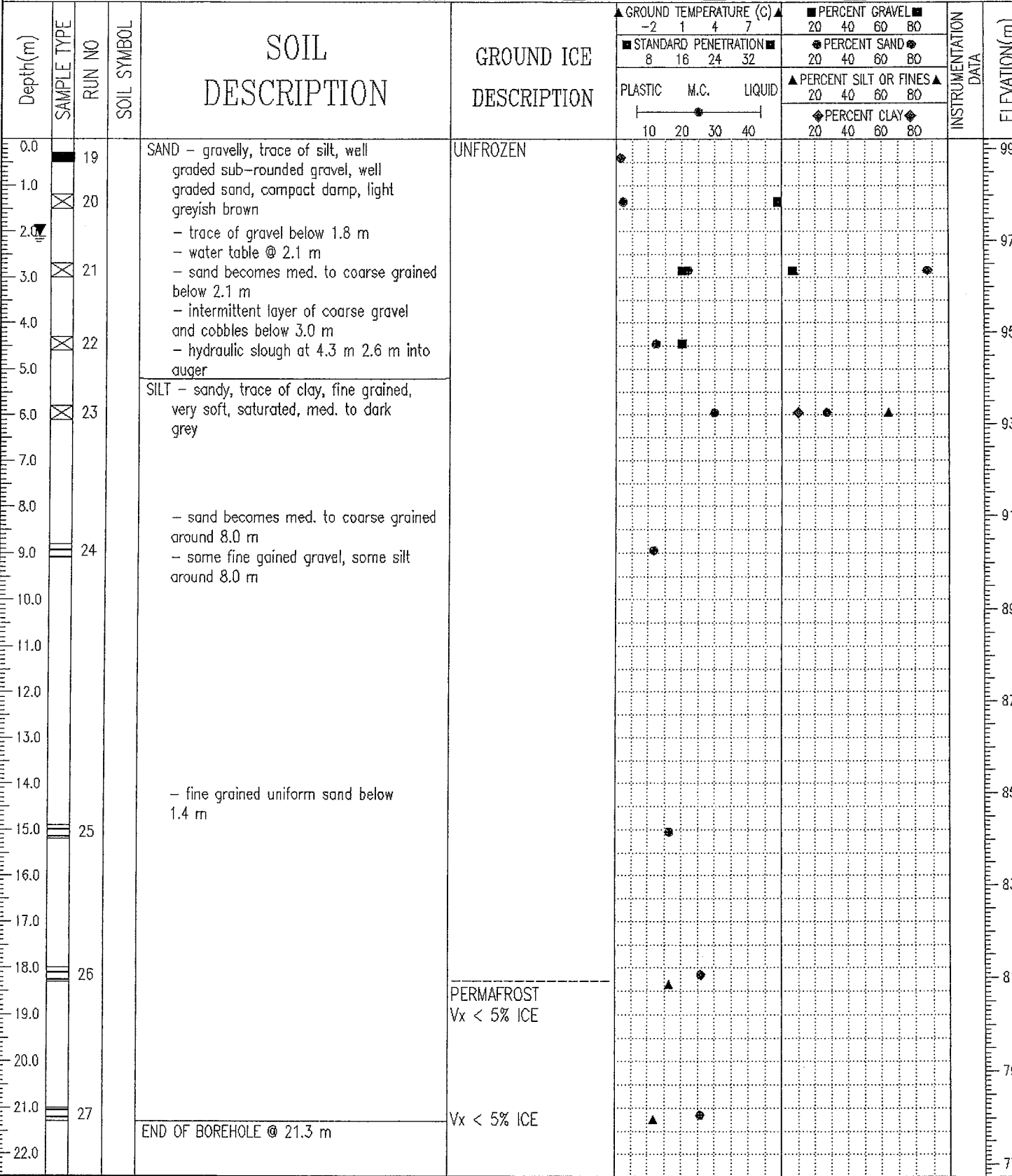
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GEOTECHNICAL EVALUATION	CLIENT: YTG - DEP'T OF GOV'T SERVICES	BOREHOLE NO: 13993-BH03
NEW SCHOOL	DRILL: CME 75 c/w HOLLOW STEM AUGERS	PROJECT NO: 0201-99-13993
MAYO, YT	UTM ZONE: 8 N7052215 E466670	ELEVATION: 99.21 m

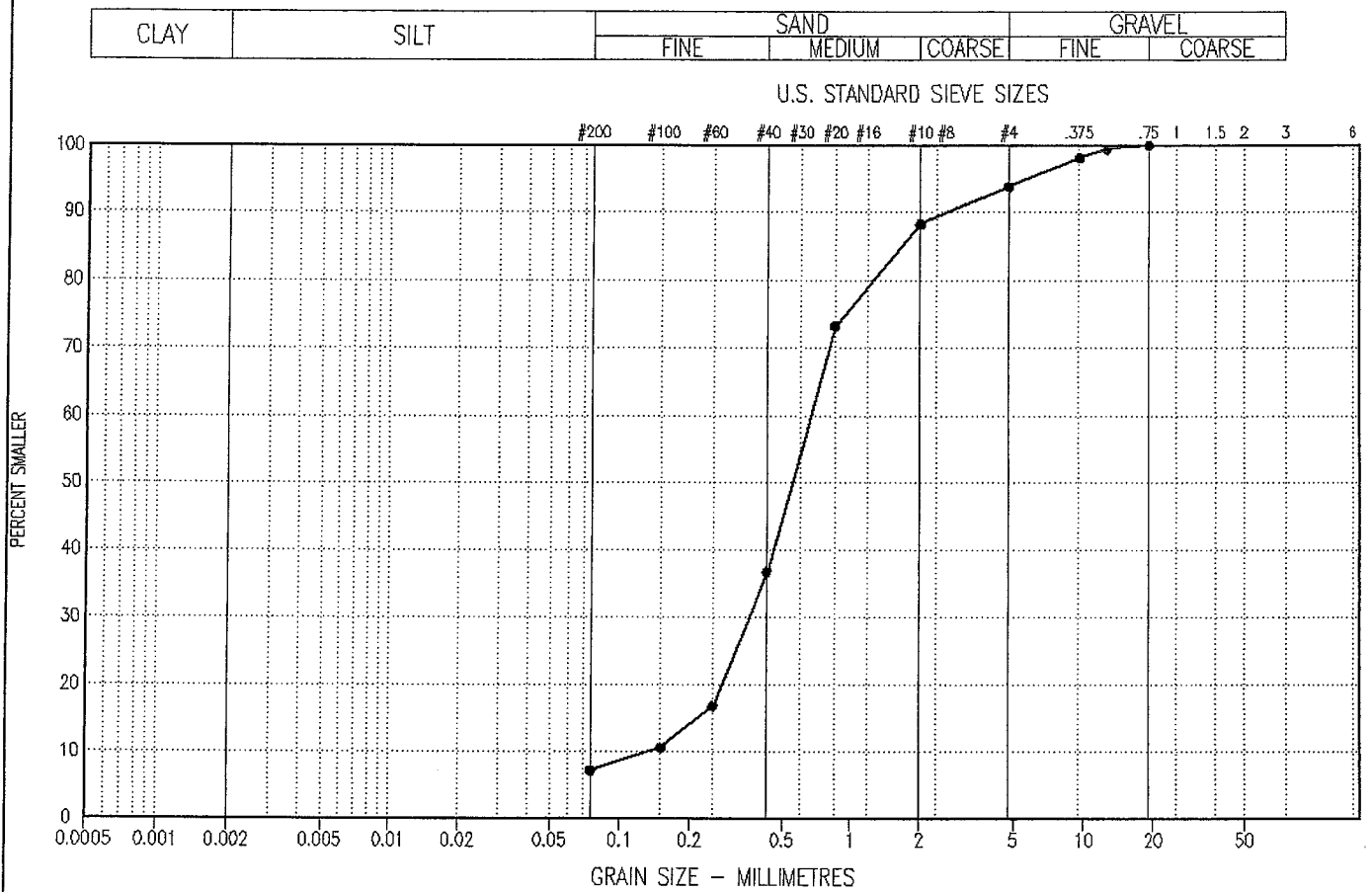
SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON  CRREL BARREL  
 BACKFILL TYPE  BENTONITE  PEA GRAVEL  SLOUGH  GROUT  DRILL CUTTINGS  SAND



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

LOGGED BY: JSB  
REVIEWED BY: JRT  
COMPLETION DEPTH: 21.3 m  
COMPLETE: 99/07/14  
Page 1 of

## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	13993-BH03	2.70 - 3.00	7	87	6	5.1	1.4	SP-SM

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

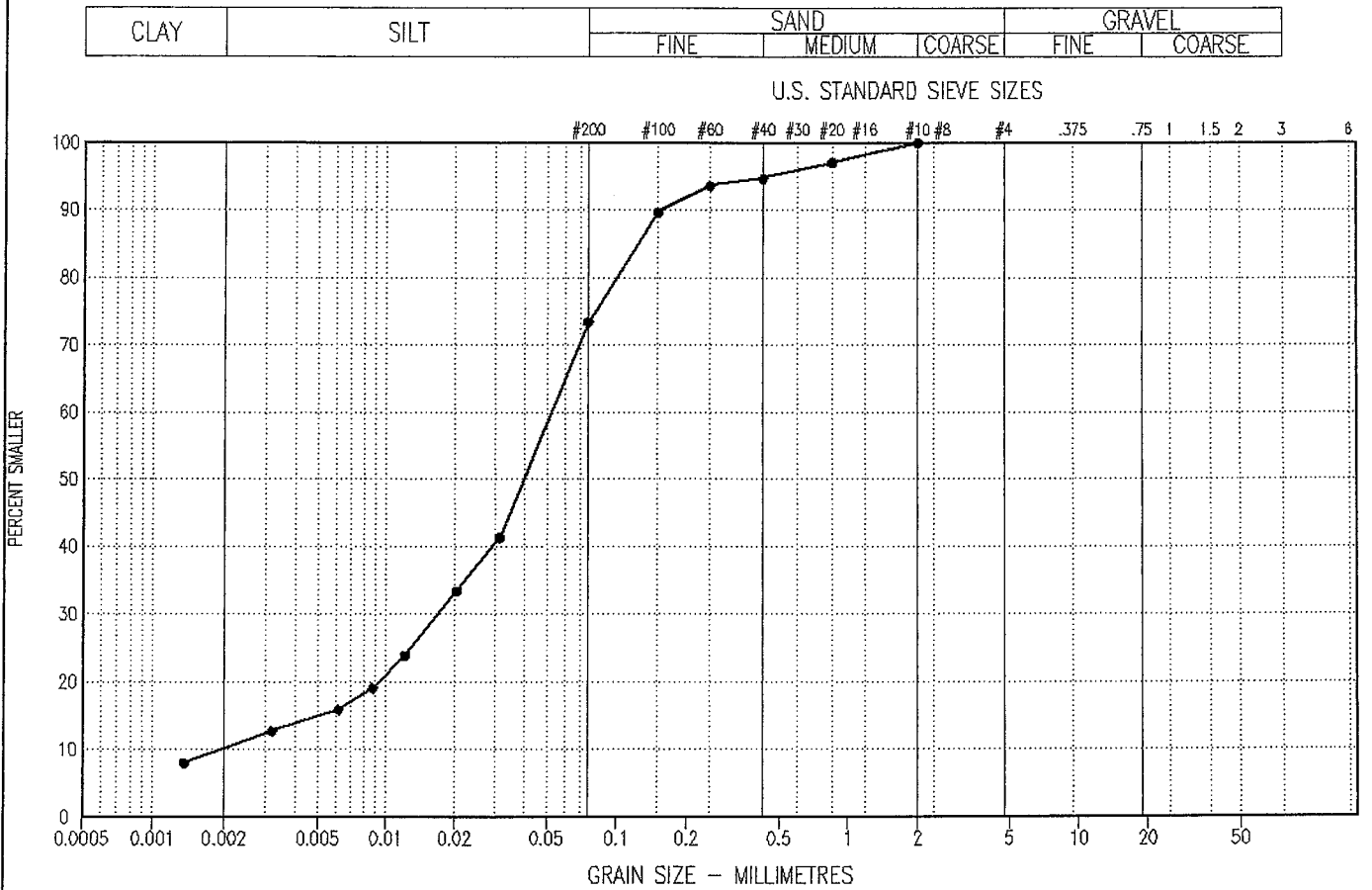
Tested in accordance with ASTM D422 unless otherwise noted.

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## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	13993-BH03	5.80 - 6.10	9.6	64	27	0	26.4	2.5	

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

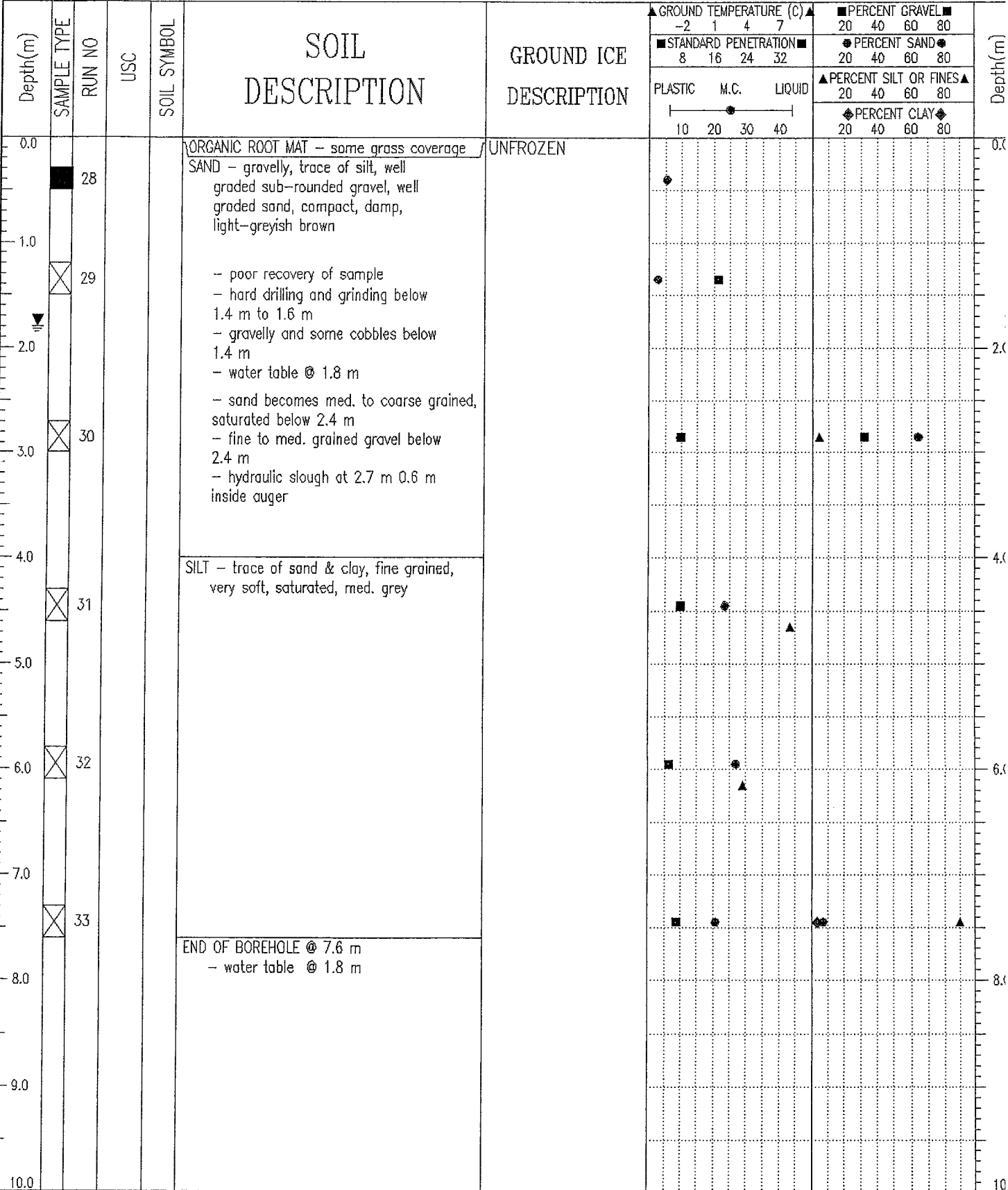
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The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.



GEOTECHNICAL EVALUATION	CLIENT: YTG - DEPT OF GOV'T SERVICES	BOREHOLE NO: 13993-BH04
NEW SCHOOL	DRILL: CME 75 c/w HOLLOW STEM AUGER	PROJECT NO: 0201-99-13993
MAYO, YT	UTM ZONE: 8 N7052280 E455625	ELEVATION: 99.05 m

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

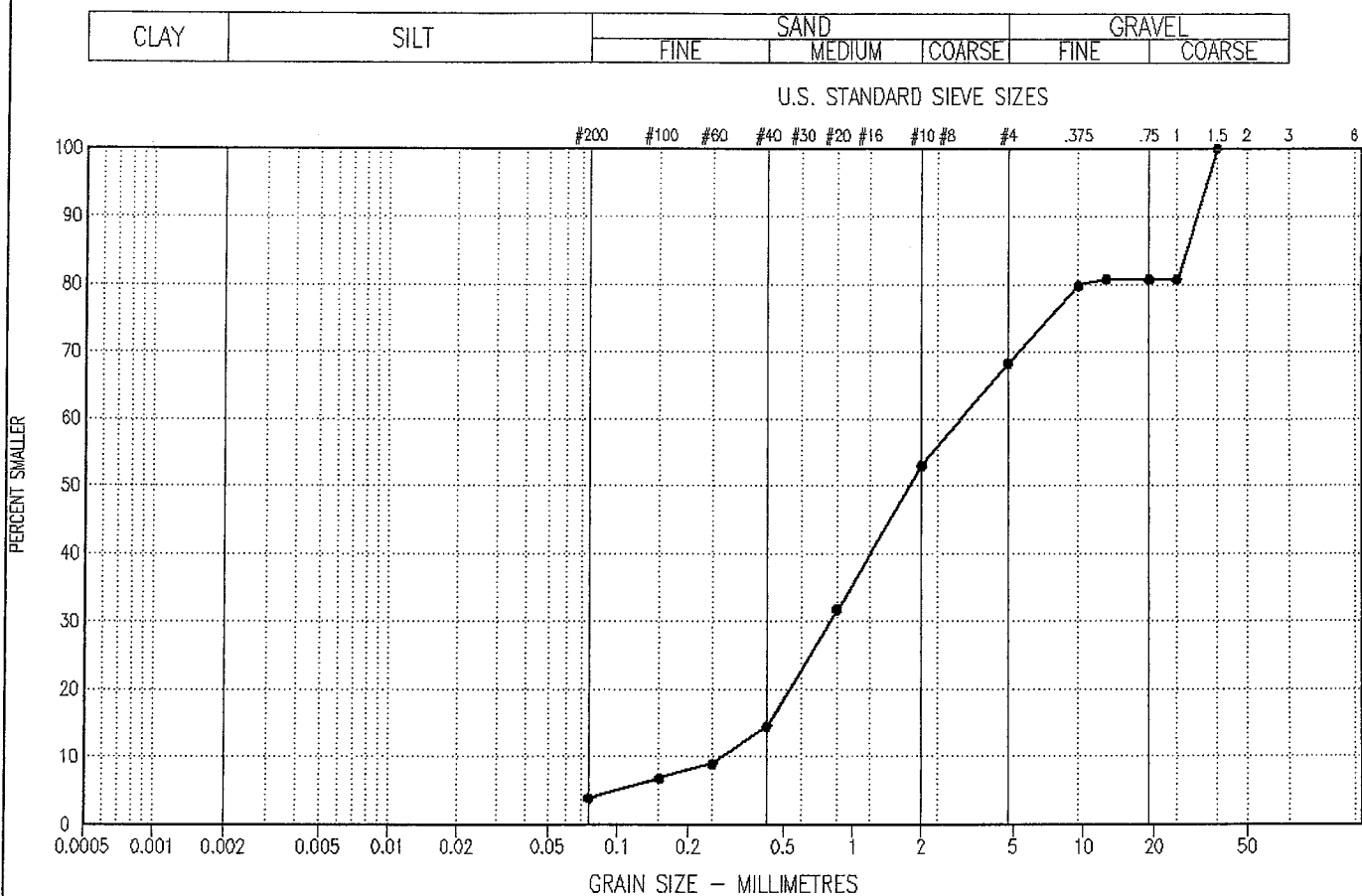


EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

LOGGED BY: JSB  
REVIEWED BY: JRT

COMPLETION DEPTH: 7.6 m  
COMPLETE: 99/07/15

## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	13993-BH04	2.70 - 3.00	4	64	32	11.4	0.7	SP

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

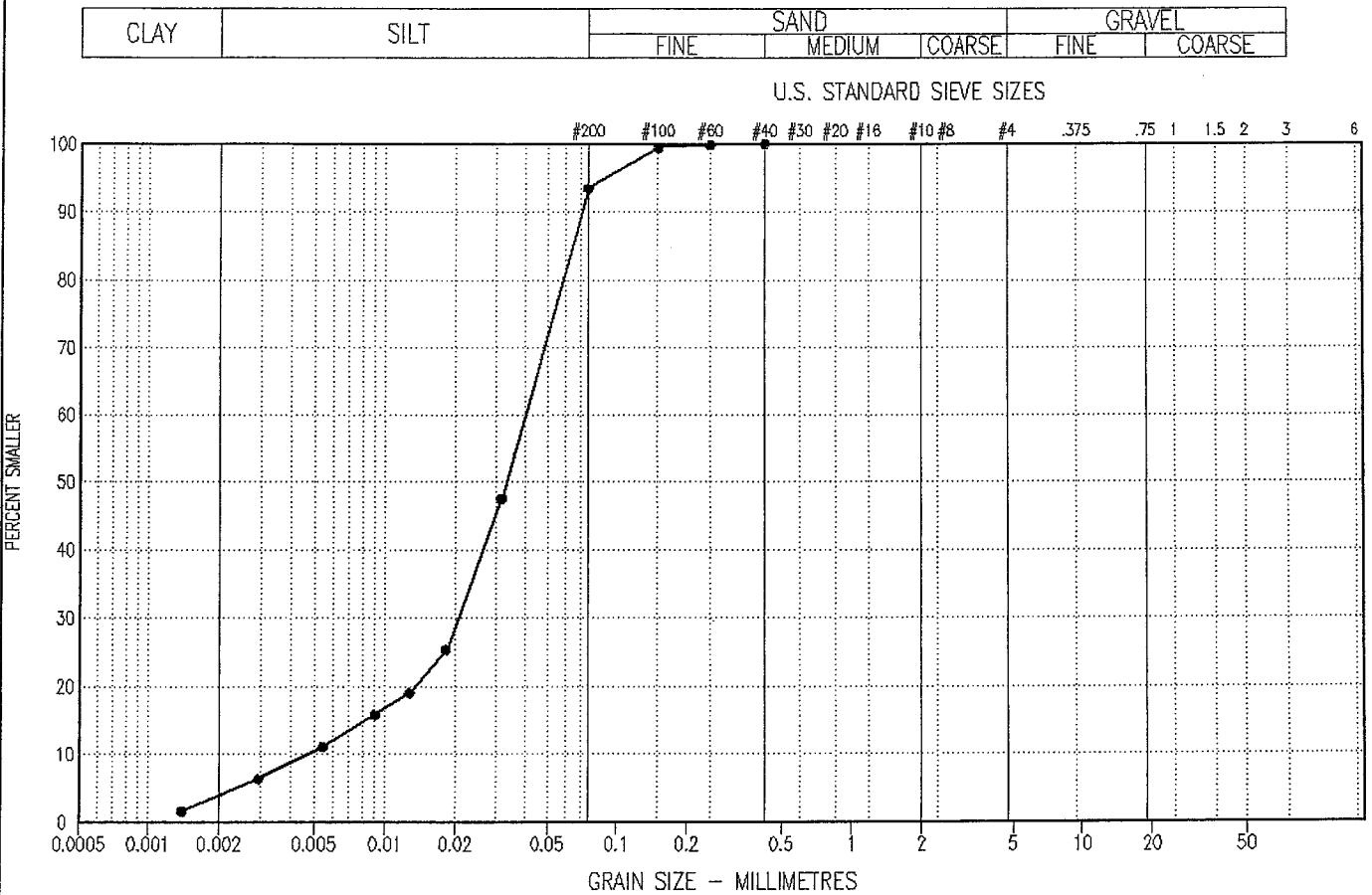
Tested in accordance with ASTM D422 unless otherwise noted.

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## PARTICLE SIZE - ANALYSIS OF SOILS



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	13993-BH04	7.30 - 7.60	3.4	90	7	0	8.9	2.1	

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

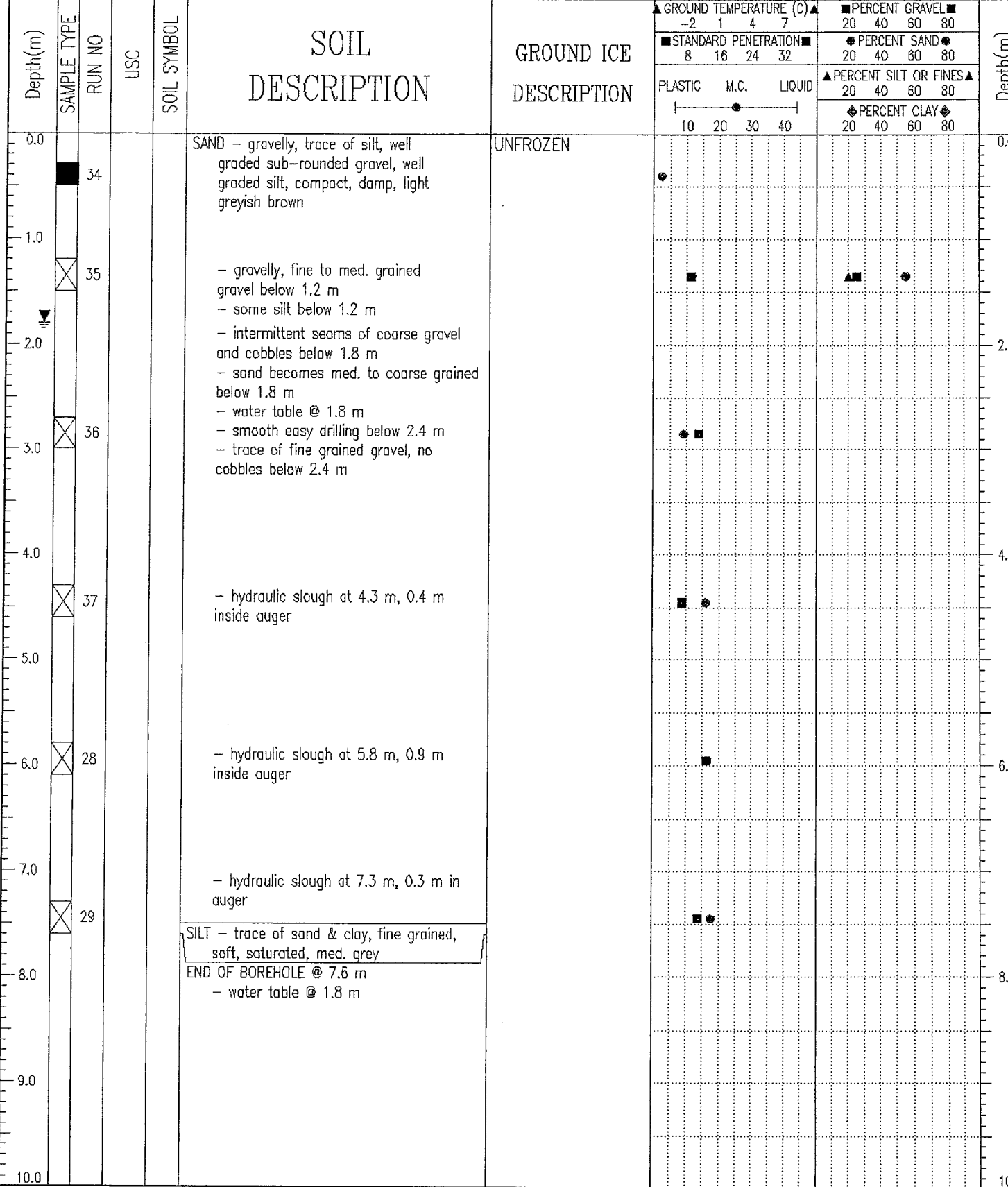
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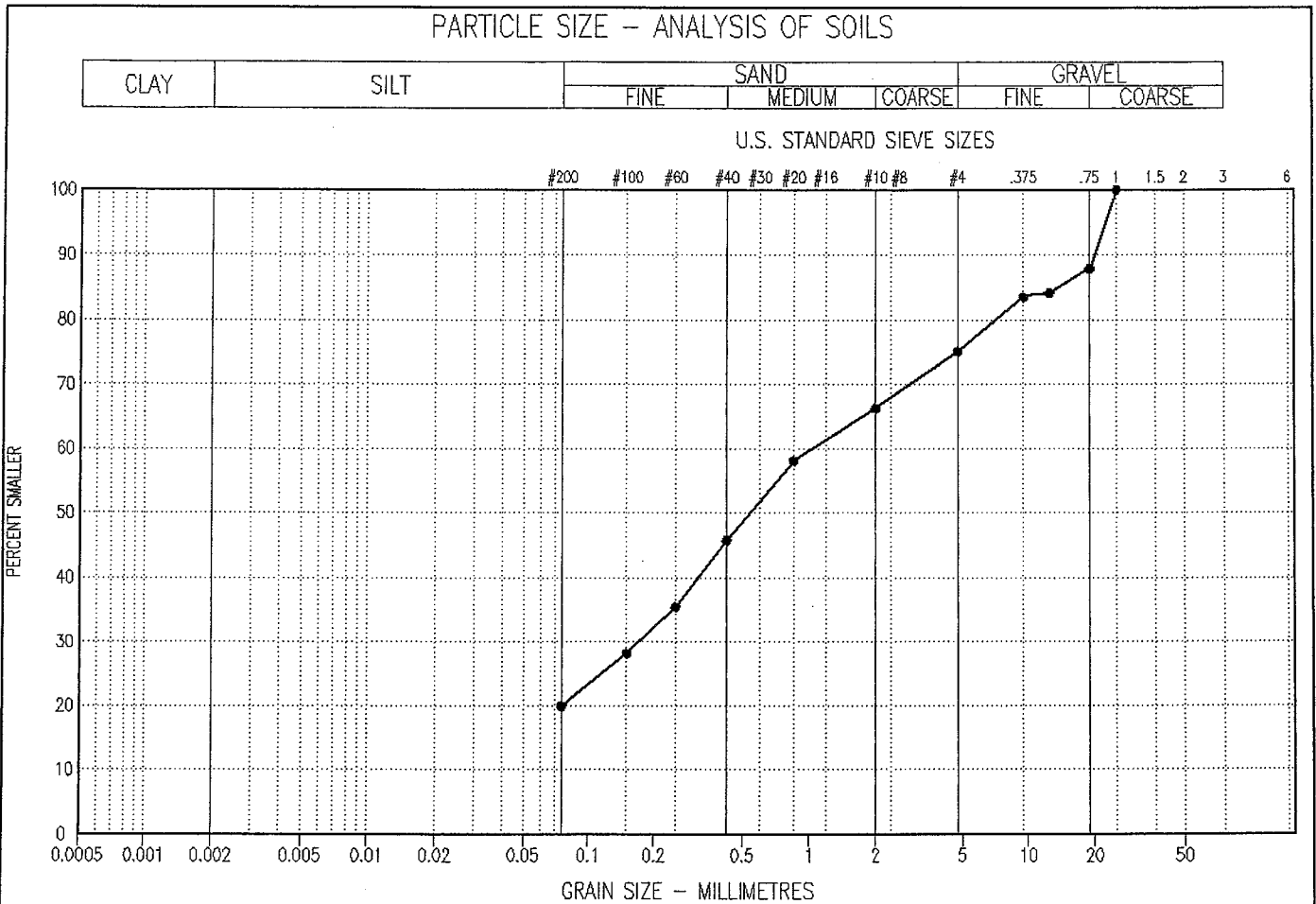
GEOTECHNICAL EVALUATION	CLIENT: YTG - DEP'T OF GOV'T SERVICES	BOREHOLE NO: 13993-BH05
NEW SCHOOL	DRILL: CME 75 c/w HOLLOW STEM AUGER	PROJECT NO: 0201-99-13993
MAYO, YT	UTM ZONE: 8 N7052205 E455600	ELEVATION: 99.15 m

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



EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

LOGGED BY: JSB	COMPLETION DEPTH: 7.6 m
REVIEWED BY: JRT	COMPLETE: 99/07/15



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION			Cu	Cc	U.S.C
			CLAY & SILT %	SAND %	GRAVEL %			
●—●	13993-BH05	1.20 - 1.50	20	55	25	-	-	

Project: 0201-99-13993

Date Tested: 99/07/22

BY: MS

Tested in accordance with ASTM D422 unless otherwise noted.

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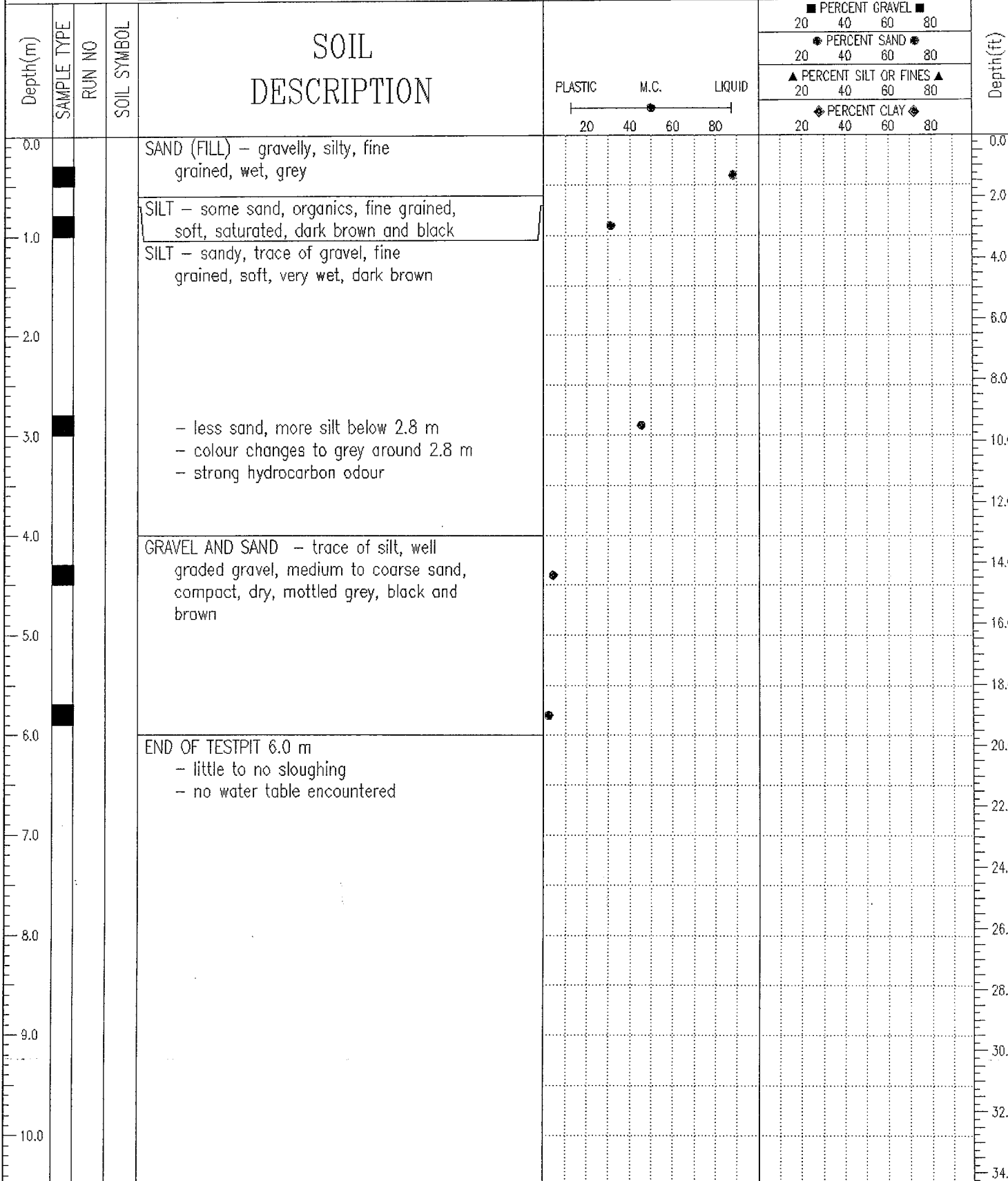




			<b>PROJECT</b> GEOTECHNICAL EVALUATION VARIOUS LOCATIONS, PROPOSED ADMINISTRATION BUILDING - MAYO YURKON							
<b>CLIENT</b> NA-CHO NYAK DUN FIRST NATION			<b>TITLE</b> SITE PLAN SHOWING TESTPIT LOCATIONS							
DATE	FEB. 2004	DWN.	JSB	CHKD.	JRT	FILE NO.	1200073	DRWG.	FIGURE 1	REVISION

Geotechnical Site Evaluations	CLIENT: Na-Cho Nyak Dun First Nation	BOREHOLE NO: 1200073-TP04
Proposed Admin. Building NND C-13FS/D	Excavator: CAT 325 L	PROJECT NO: 1200073
Mayo, YT	UTM ZONE: 8 N7051785 E455640	ELEVATION:

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



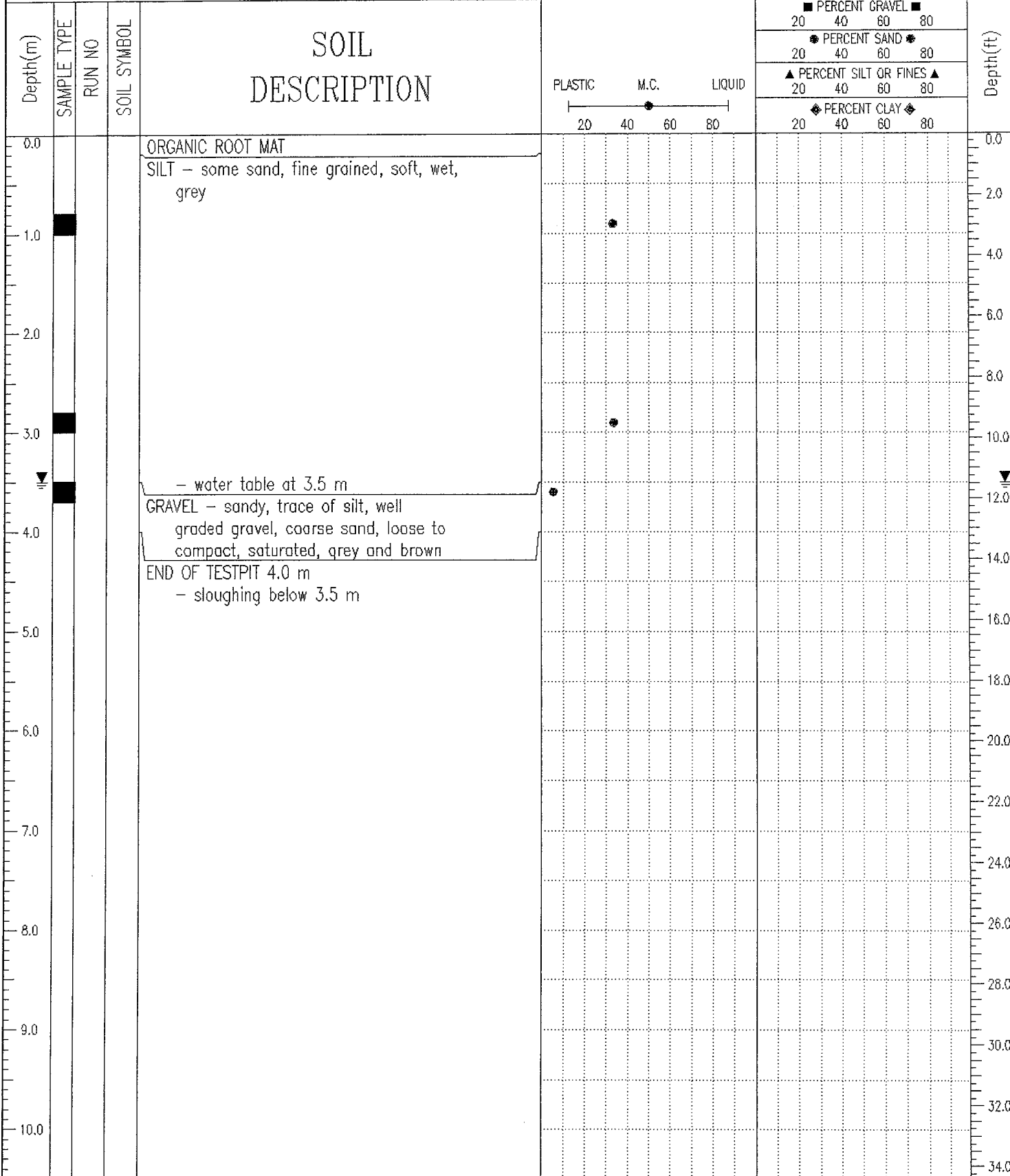
EBA Engineering Consultants Ltd.  
Whitehorse, Yukon

LOGGED BY: JSB  
REVIEWED BY: JRT

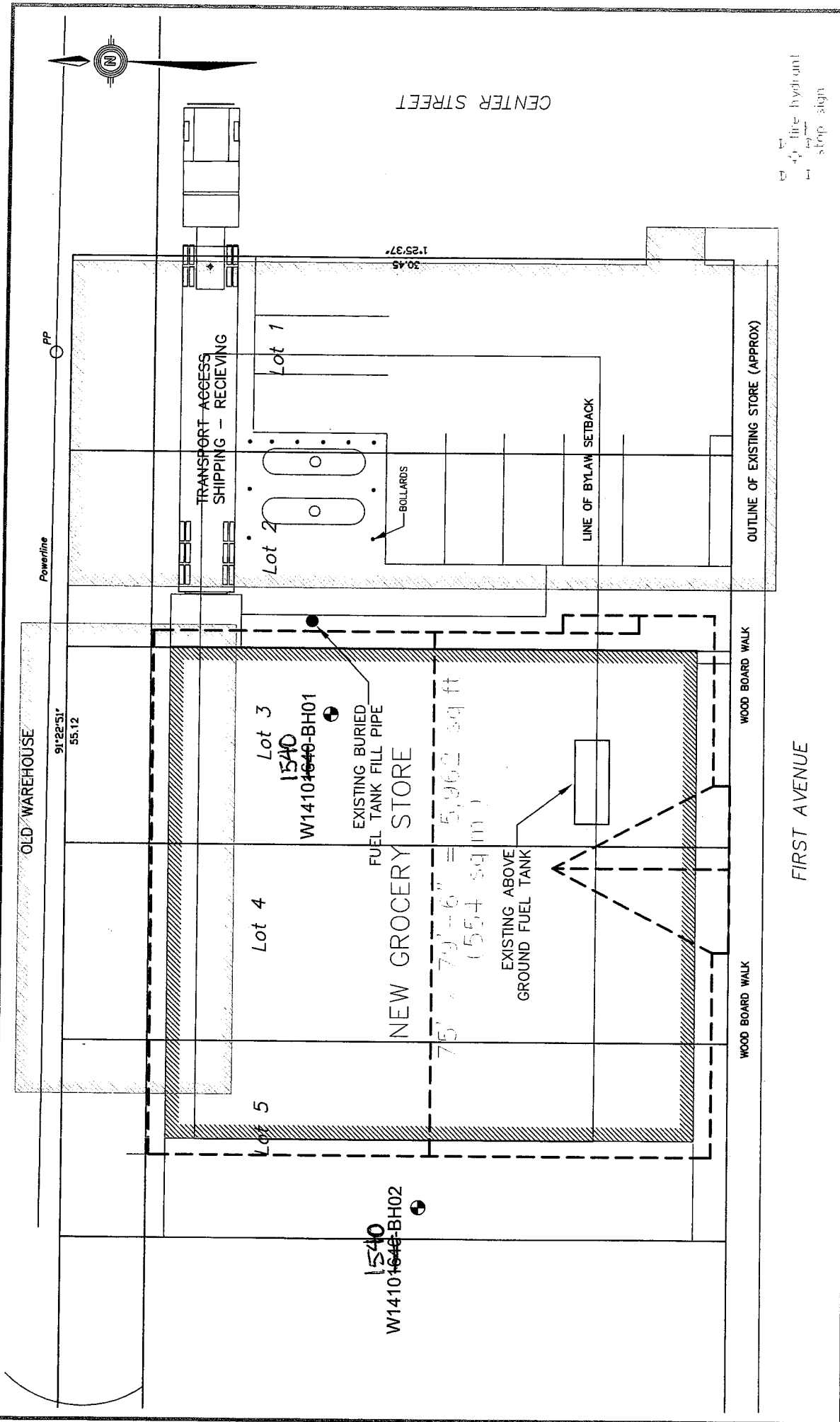
COMPLETION DEPTH: 6 m  
COMPLETE: 04/01/14

Geotechnical Site Evaluations	CLIENT: Na-Cho Nyak Dun First Nation	BOREHOLE NO: 1200073-TP05
Proposed Admin. Building NND C-22B	Excavator: CAT 325 L	PROJECT NO: 1200073
Mayo, YT	UTM ZONE: 8 N7051830 E455135	ELEVATION:

SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN.  75 mm SPOON  COREL BARREL



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 4 m
	REVIEWED BY: JRT	COMPLETE: 04/01/14



**LEGEND:**  
 ● - BOREHOLE LOCATION

**NOTES:**  
 BASED ON DRAWING PROVIDED BY CLIENT, AS PRODUCED BY SINCLAIR & ASSOCIATES

Scale: 1:250 (metres)

0 10

STATUS: ISSUED FOR REVIEW

CLIENT: KGS Group

PROJECT NO.: W14101540

DATE: [ ]

OFFICE: [ ]

CKD: JRT

REV: 0

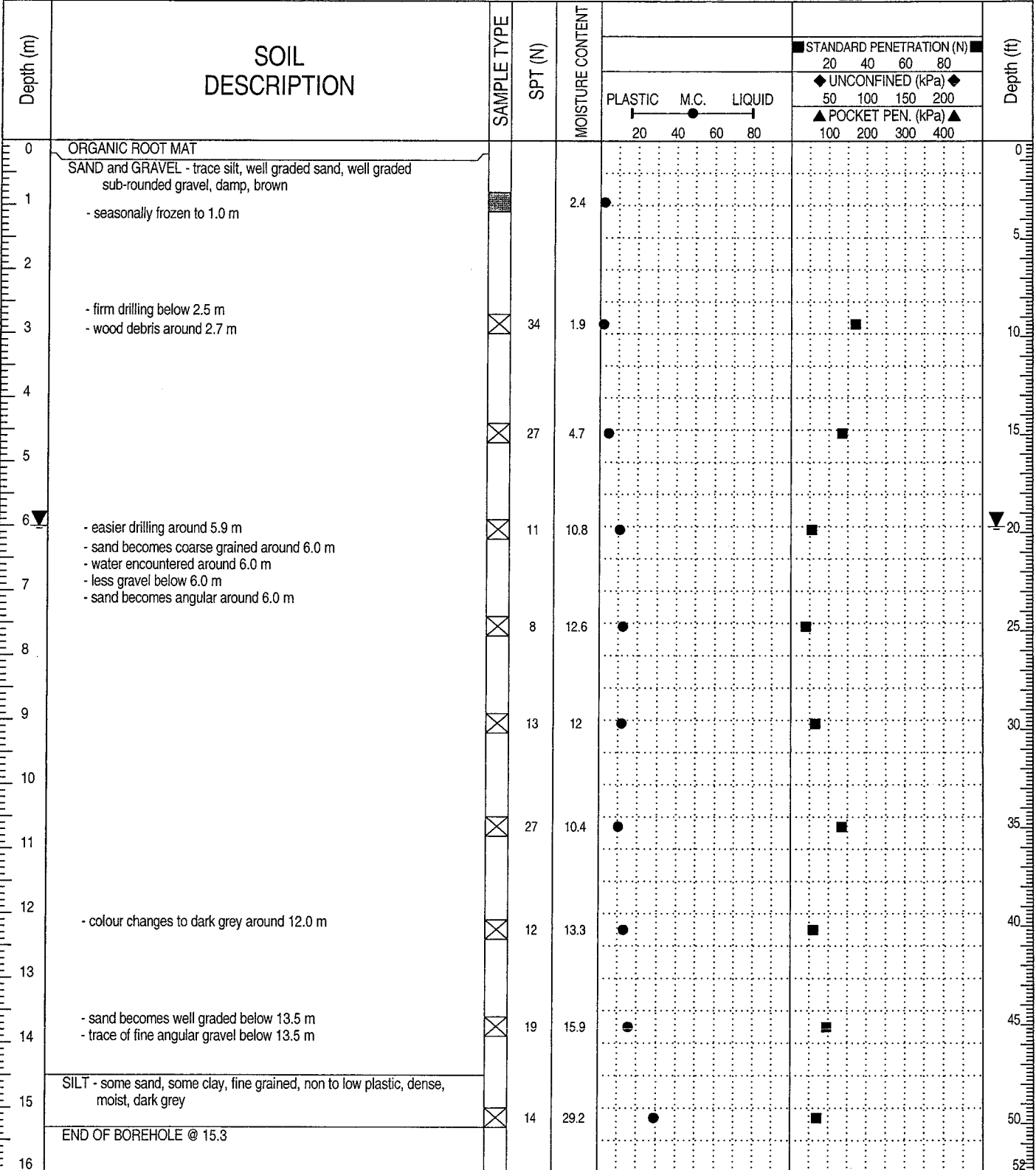
DWN: JSB

**Proposed New NNDFN Store Geotechnical Evaluation**  
 Lots 3, 4 & 5, Block 4 - Mayo, YT

**SITE PLAN SHOWING BOREHOLE LOCATIONS**

**Figure 1**

New NDNFN Store		CLIENT: KGS Group		PROJECT NO. - BOREHOLE NO.		
Geotechnical Evaluation		DRILL: Nodwell CME 75 w/hollow stem augers		W14101540-BH01		
Lots 3, 4, & 5, Block 4, Mayo, YT		7051779N; 455473E; Zone 8				
SAMPLE TYPE	DISTURBED	NO RECOVERY	SPT	A-CASING	SHELBY TUBE	CORE
BACKFILL TYPE	BENTONITE	PEA GRAVEL	SLOUGH	GROUT	DRILL CUTTINGS	SAND

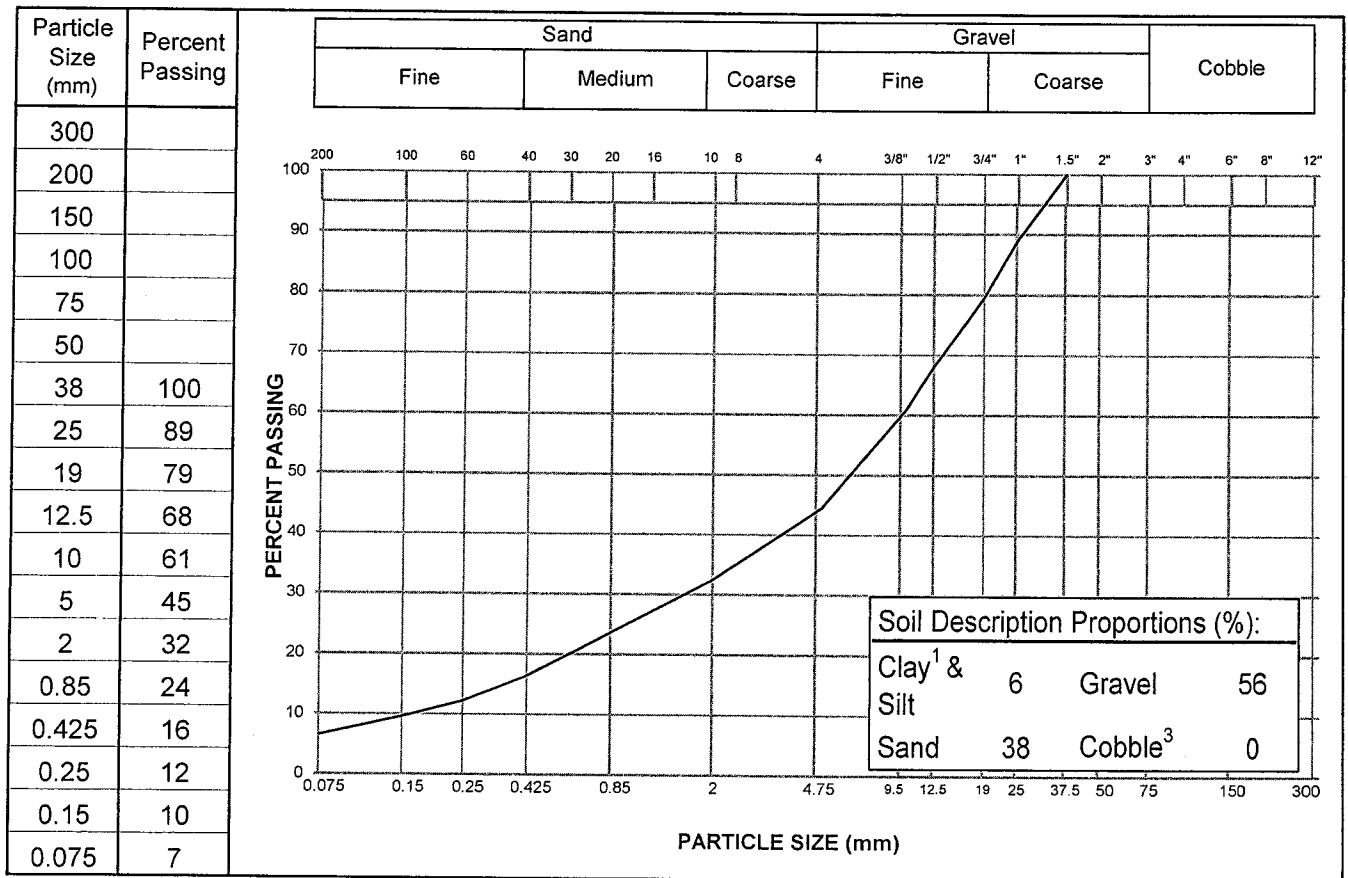


<b>EBA Engineering Consultants Ltd.</b>	LOGGED BY: JSB	COMPLETION DEPTH: 15.3m
	REVIEWED BY: CPC	COMPLETE:
	DRAWING NO:	Page 1 of 1

# PARTICLE SIZE ANALYSIS TEST REPORT

ASTM D422, C136 & C117

Project:	New NNDFN Store Geotechnical Evaluation	Sample No.:	
Project No.:	W14101540	Material Type:	
Site:	Mayo, YT	Sample Loc.:	BH01
Client:	KGS Group	Sample Depth:	4.4 - 4.7 m
Client Rep.:	Jason Mann	Sampling Method:	SPT
Date Tested:	April 8, 2011	By:	SMS/PME
		Date sampled:	April 4, 2011
Soil Description <sup>2</sup> :	GRAVEL and SAND - trace silt	Sampled By:	JSB
		USC Classification:	Cu: 59.0 Cc: 1.8
Moisture Content:	4.7%		



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual  
<sup>2</sup> The description is visually based & subject to EBA description protocols  
<sup>3</sup> If cobbles are present, sampling procedure may not meet ASTM C702 & D75

Specification: \_\_\_\_\_

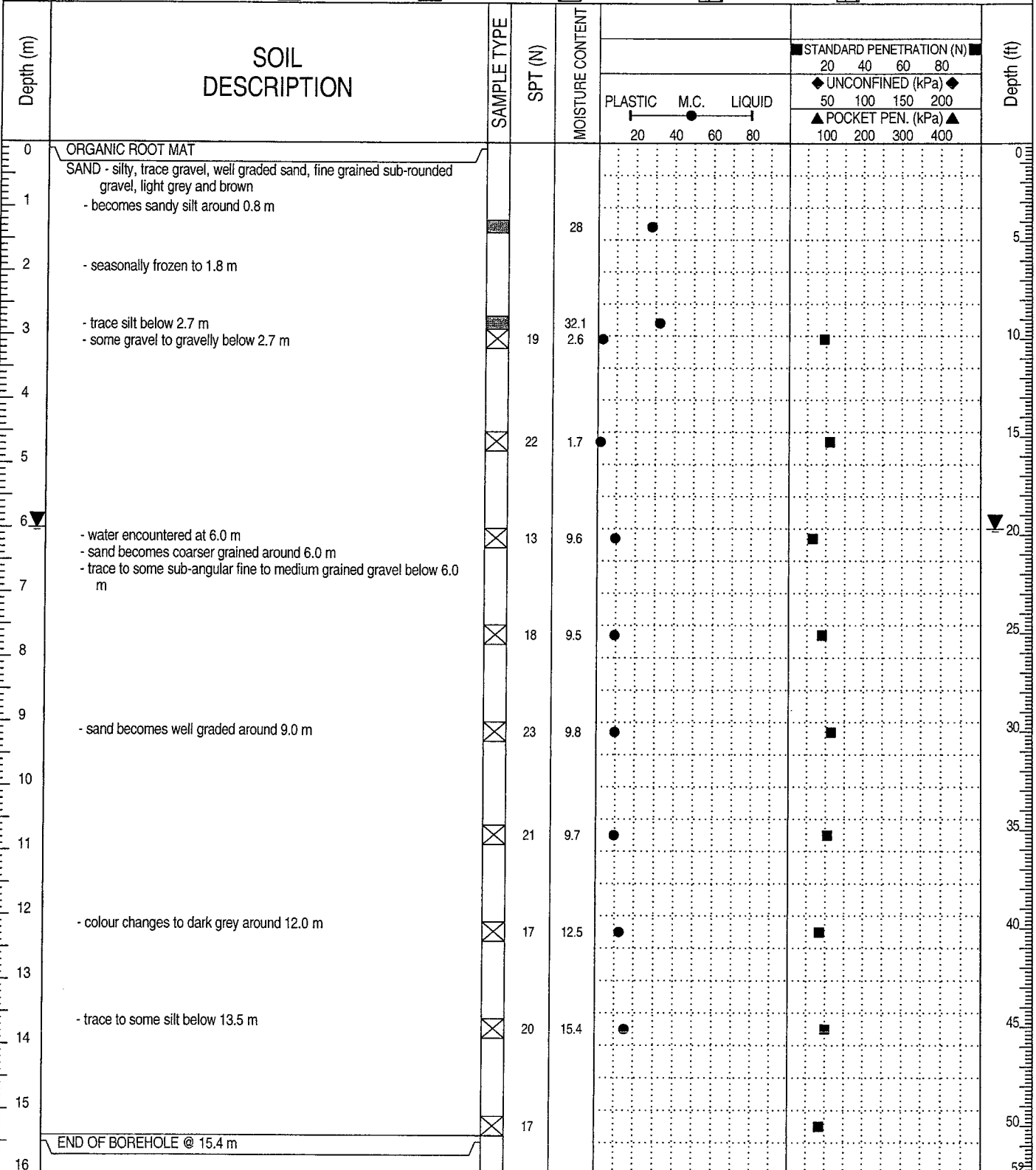
Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By:

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New NDNFN Store		CLIENT: KGS Group		PROJECT NO. - BOREHOLE NO.		
Geotechnical Evaluation		DRILL: Nodwell CME 75 w/hollow stem augers		W14101540-BH02		
Lots 3, 4, & 5, Block 4, Mayo, YT		7051779N; 455444E; Zone 8				
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE	<input type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND

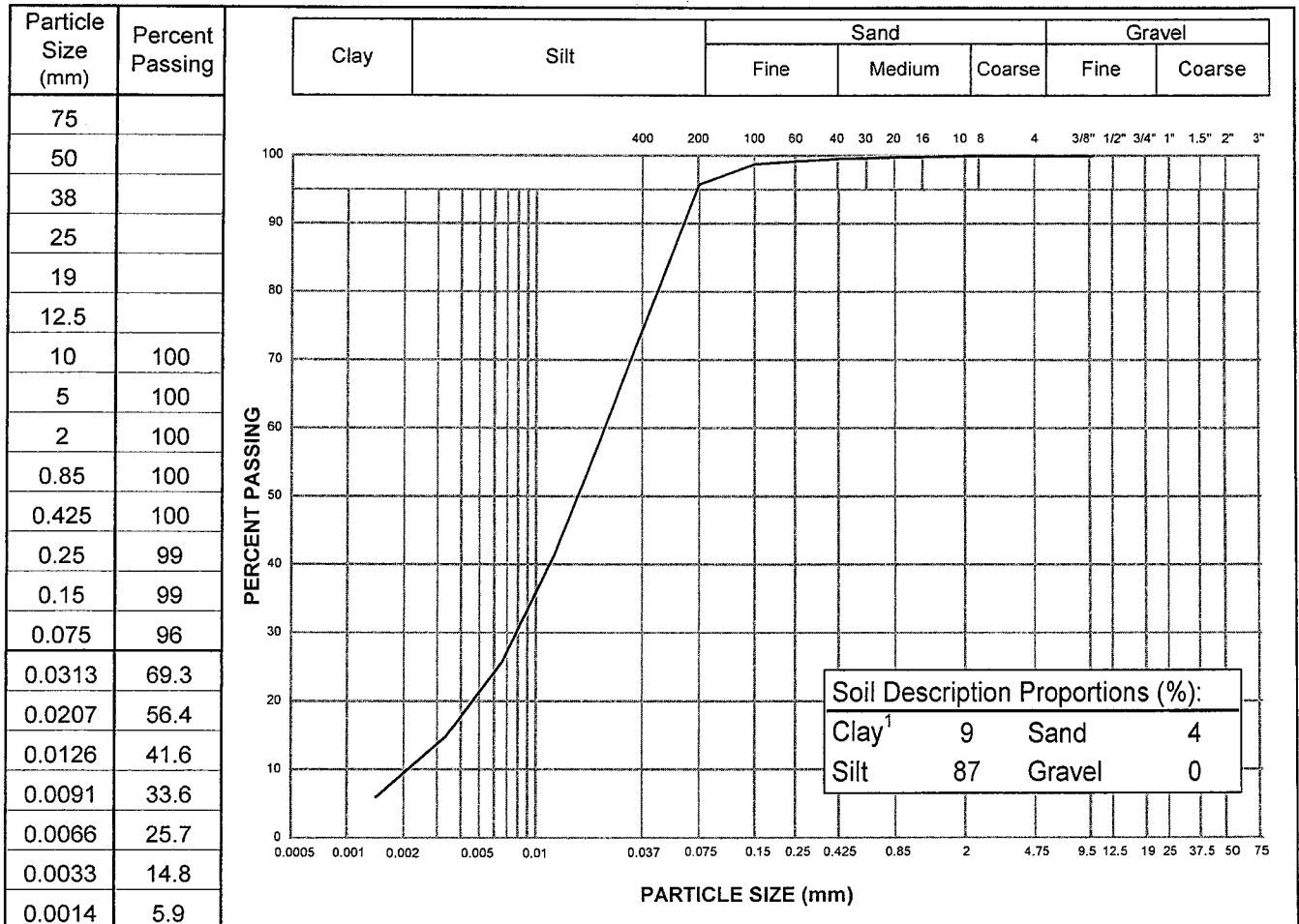


	LOGGED BY: JSB	COMPLETION DEPTH: 15.5m
	REVIEWED BY: CPC	COMPLETE:
	DRAWING NO:	Page 1 of 1

# PARTICLE SIZE ANALYSIS TEST REPORT

ASTM D422, C136 & C117

Project:	New NDNFN Store Geotechnical Evaluation	Sample No.:	
Project No.:	W14101540	Material Type:	
Site:	Mayo, YT	Sample Loc.:	BH02
Client:	KGS Group	Sample Depth:	2.7 - 2.9 m
Client Rep.:	Jason Mann	Sampling Method:	Grab
Date Tested:	April 11, 2011	By:	SMS/PE
		Date sampled:	April 4, 2011
Soil Description <sup>2</sup> :	SILT - trace clay, trace sand	Sampled By:	JSB
		USC Classification:	Cu: 10.3 Cc: 1.2
Moisture Content:	32.1%		



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual

<sup>2</sup> The description is visually based & subject to EBA description protocols

Specification: \_\_\_\_\_

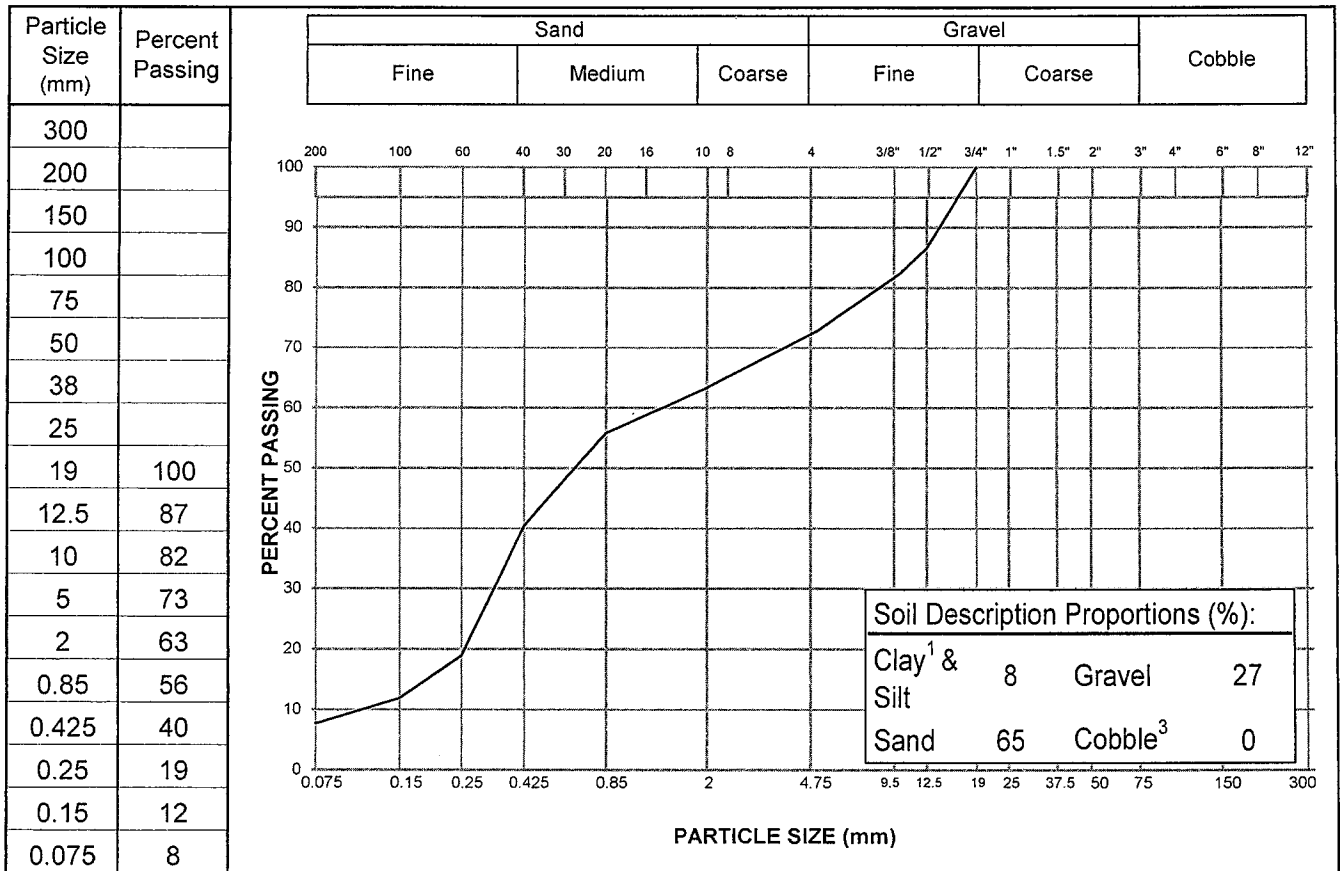
Remarks: \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By: \_\_\_\_\_

# PARTICLE SIZE ANALYSIS TEST REPORT

ASTM D422, C136 & C117

Project:	New NNDFN Store Geotechnical Evaluation	Sample No.:	
Project No.:	W14101540	Material Type:	
Site:	Mayo, YT	Sample Loc.:	BH02
Client:	KGS Group	Sample Depth:	2.9 - 3.2 m
Client Rep.:	Jason Mann	Sampling Method:	SPT
Date Tested:	April 8, 2011	By:	SMS/PME
		Date sampled:	April 4, 2011
Soil Description <sup>2</sup> :	SAND - gravelly, trace silt	Sampled By:	JSB
		USC Classification:	Cu: 12.8 Cc: 0.7
Moisture Content:	2.6%		



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual  
<sup>2</sup> The description is visually based & subject to EBA description protocols  
<sup>3</sup> If cobbles are present, sampling procedure may not meet ASTM C702 & D75

Specification: \_\_\_\_\_

Remarks: \_\_\_\_\_

Reviewed By:

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Mayo

River

DYKE

W14101489-TP01

W14101489-TP02

W14101489-TP03

W14101489-TP04

13993-BH03

OLD SCHOOL

SEVENTH AVENUE

SIXTH AVENUE

FIFTH AVENUE

CENTRE STREET

5th Street

Google

ISSUED FOR USE

LEGEND:

⊕ - TESTPIT LOCATION

0 100

Scale: 1: 3 000 (metres)

CLIENT

**Yukon**  
Community Services

EBA Engineering  
Consultants Ltd.



Proposed Urban Infill Area "B"  
7th Avenue - Mayo, YT

SITE PLAN SHOWING  
TESTPIT LOCATIONS

PROJECT NO.  
W14101489

DWN  
JSB

CKD  
JRT

REV  
0

OFFICE  
EBA-WHSE


DATE  
November 29, 2010

Figure 1

C:\Whitehorse\Drawings\Mayo\W14101489 Fig\_1\_RT\_140c2010.dwg [FIGURE 1] November 29, 2010 - 11:55:10 am (BY: BUYCK, JAMES)


Urban Infill Phase 2 - Geotechnical Evaluation	CLIENT: YG - Department of Community Services	PROJECT NO. - TESTPIT NO.
Area "B"	EXCAVATOR: Cat 325	W14101489-TP01
Mayo, YT	7052679N; 455781E; Zone 8	
SAMPLE TYPE	<input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> NO RECOVERY <input checked="" type="checkbox"/> SPT <input type="checkbox"/> A-CASING <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> PEA GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> DRILL CUTTINGS <input type="checkbox"/> SAND	


Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	STANDARD PENETRATION (N)		TEMPERATURE (°C)		GROUND ICE DESCRIPTION	Depth (ft)
			20	40	60	80		
0	ORGANIC ROOT MAT						UNFROZEN	0
	SILT and SAND - trace clay, fine grained, soft, very moist, medium grey	<input checked="" type="checkbox"/>						
	GRAVEL - sandy, trace silt, well graded gravel, medium to coarse grained sand, loose to compact, very moist to wet, grey and brown							
1	- water table @ 1.2 m							5
2								
3	END OF TESTPIT @ 3.0 m NOTE: Sloughing throughout testpit (due to watertable and sloughing sidewalls)							10
4								
5								15
								16

 <b>EBA Engineering Consultants Ltd.</b>	LOGGED BY: JSB	COMPLETION DEPTH: 3m
	REVIEWED BY: JRT	COMPLETE: 10/9/2010
	DRAWING NO:	Page 1 of 1

Urban Infill Phase 2 - Geotechnical Evaluation		CLIENT: YG - Department of Community Services		PROJECT NO. - TESTPIT NO.			
Area "B"		EXCAVATOR: Cat 325		W14101489-TP02			
Mayo, YT		7052547N; 455691E; Zone 8					
SAMPLE TYPE		<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE		<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND
Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	STANDARD PENETRATION (N)		GROUND ICE DESCRIPTION	Depth (ft)	
			20 40 60 80	▲ TEMPERATURE (°C) ▲ -7 -4 -1 2			
			PLASTIC M.C. LIQUID 20 40 60 80				
0	ORGANIC ROOT MAT SAND and SILT - trace clay, fine grained, soft, very moist, medium grey				UNFROZEN	0	
1	GRAVEL - sandy, trace silt, well graded gravel, medium to coarse grained sand, loose to compact, damp, grey and brown - cobbles throughout gravel layer					5	
2	END OF TESTPIT @ 1.8 m (Refusal on Permafrost)				FROZEN, visible ice inclusions 5-10%	10	
3						15	
4						20	
5						25	
						30	
						35	
						40	
						45	
						50	
						55	
						60	
						65	
						70	
						75	
						80	
						85	
						90	
						95	
						100	
						105	
						110	
						115	
						120	
						125	
						130	
						135	
						140	
						145	
						150	
						155	
						160	
EBA Engineering Consultants Ltd.		LOGGED BY: JSB		COMPLETION DEPTH: 1.8m			
		REVIEWED BY: JRT		COMPLETE: 10/9/2010			
		DRAWING NO:		Page 1 of 1			

Urban Infill Phase 2 - Geotechnical Evaluation		CLIENT: YG - Department of Community Services		PROJECT NO. - TESTPIT NO.			
Area "B"		EXCAVATOR: Cat 325		W14101489-TP03			
Mayo, YT		7052478N; 455684E; Zone 8					
SAMPLE TYPE		<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
BACKFILL TYPE		<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND
Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	STANDARD PENETRATION (N)		GROUND ICE DESCRIPTION	Depth (ft)	
			20 40 60 80	▲ TEMPERATURE (°C) ▲ -7 -4 -1 2			
			PLASTIC M.C. LIQUID 20 40 60 80				
0	ORGANIC ROOT MAT SAND and SILT - trace clay, fine grained, soft, very moist, medium grey				UNFROZEN	0	
1	GRAVEL - sandy, trace silt, well graded gravel, medium to coarse grained sand, loose to compact, damp, grey and brown - cobbles throughout gravel layer					5	
2	END OF TESTPIT @ 1.8 m (Refusal on Permafrost) NOTE: Sloughing throughout gravel layer				FROZEN, V <sub>v</sub> , visible ice inclusions 5-10%	10	
3						15	
4						15	
5						16	

 <b>EBA Engineering Consultants Ltd.</b>	LOGGED BY: JSB	COMPLETION DEPTH: 1.8m
	REVIEWED BY: JRT	COMPLETE: 10/9/2010
	DRAWING NO:	Page 1 of 1

Urban Infill Phase 2 - Geotechnical Evaluation		CLIENT: YG - Department of Community Services		PROJECT NO. - TESTPIT NO.	
Area "B"		EXCAVATOR: Cat 325		W14101489-TP04	
Mayo, YT		7052393N; 455701E; Zone 8			
SAMPLE TYPE		<input checked="" type="checkbox"/> DISTURBED	<input checked="" type="checkbox"/> NO RECOVERY	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> A-CASING
BACKFILL TYPE		<input checked="" type="checkbox"/> BENTONITE	<input checked="" type="checkbox"/> PEA GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT
				<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> CORE
				<input type="checkbox"/> DRILL CUTTINGS	<input type="checkbox"/> SAND
Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	<input checked="" type="checkbox"/> STANDARD PENETRATION (N) <input checked="" type="checkbox"/> 20 40 60 80 <input checked="" type="checkbox"/> TEMPERATURE (°C) <input checked="" type="checkbox"/> -7 -4 -1 2 PLASTIC M.C. LIQUID 20 40 60 80		GROUND ICE DESCRIPTION
			Depth (ft)		
0	ORGANIC ROOT MAT SAND and SILT - trace clay, fine grained, soft, very moist, medium grey				
1	GRAVEL - sandy, trace silt, well graded gravel, medium to coarse grained sand, loose to compact, damp, grey and brown - cobbles throughout gravel layer				5
2	- becomes moist around 2.0 m  - permafrost, unable to sample due to slough				10
3	END OF TESTPIT @ 2.5 m (Refusal on Permafrost)  NOTE: Sloughing throughout gravel				15
4					20
5					25
					30
					35
					40
					45
					50
					55
					60
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					160
 <b>EBA Engineering Consultants Ltd.</b>		LOGGED BY: JSB		COMPLETION DEPTH: 2.5m	
		REVIEWED BY: JRT		COMPLETE: 10/9/2010	
		DRAWING NO:		Page 1 of 1	