

HIGHWAY CONSTRUCTION

**km 1931.9 to km 1937.0
ALASKA HIGHWAY #1
YUKON, 1994**

CENTRELINE TESTING

This Data Package prepared for project viewing:

April, 1994

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Whitehorse, Yukon
Y1A 3A4

GR-01-198

GEOTECHNICAL INVESTIGATION
HIGHWAY CONSTRUCTION
km 1931.9 to km 1937.0, ALASKA HIGHWAY, Y.T.
CENTRELINE TESTING

CONTENTS

INTRODUCTION

Investigation notes, classification methods and legends.

CENTRELINE TESTING

Subsurface exploration and testing report sheets are provided. The reports for the centreline holes are arranged according to project location, starting at km 1932+000 and increasing to km 1936+800.

Auger Testing

1990

TEST HOLE 01 to 33

shown with prefix 107-

GEOTECHNICAL INVESTIGATION
HIGHWAY CONSTRUCTION
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INTRODUCTION

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GEOTECHNICAL INVESTIGATION DATA

This geotechnical investigation data is provided to assist in the interpretation of soil conditions encountered within this project area. The data presented was prepared solely for Departmental designing and estimating purposes.

The description of material/soil description shown on the subsurface exploration and test reports is a textural description based on identification of retrieved material by the field drilling technician at the time of investigation. This description may be modified following laboratory testing and classification of selected samples. The system used is based on the ASTM standards for identification and classification of soils. Permafrost classifications and groundwater levels are indicated as detected at time of drilling, unless otherwise noted. Changes in moisture or frost conditions should be anticipated depending on the season, time lapse or amount of development work done since the date of investigation.

The sample identification and laboratory testing data is provided to give detailed physical properties of selected retrieved samples within the subsurface profile. **These tests may be conducted on disturbed samples and may exhibit properties different from the native materials.** The sample classification may also vary from the soil description due to variations within the sampled strata or because of changes resulting from the sampling method or excavation equipment used.

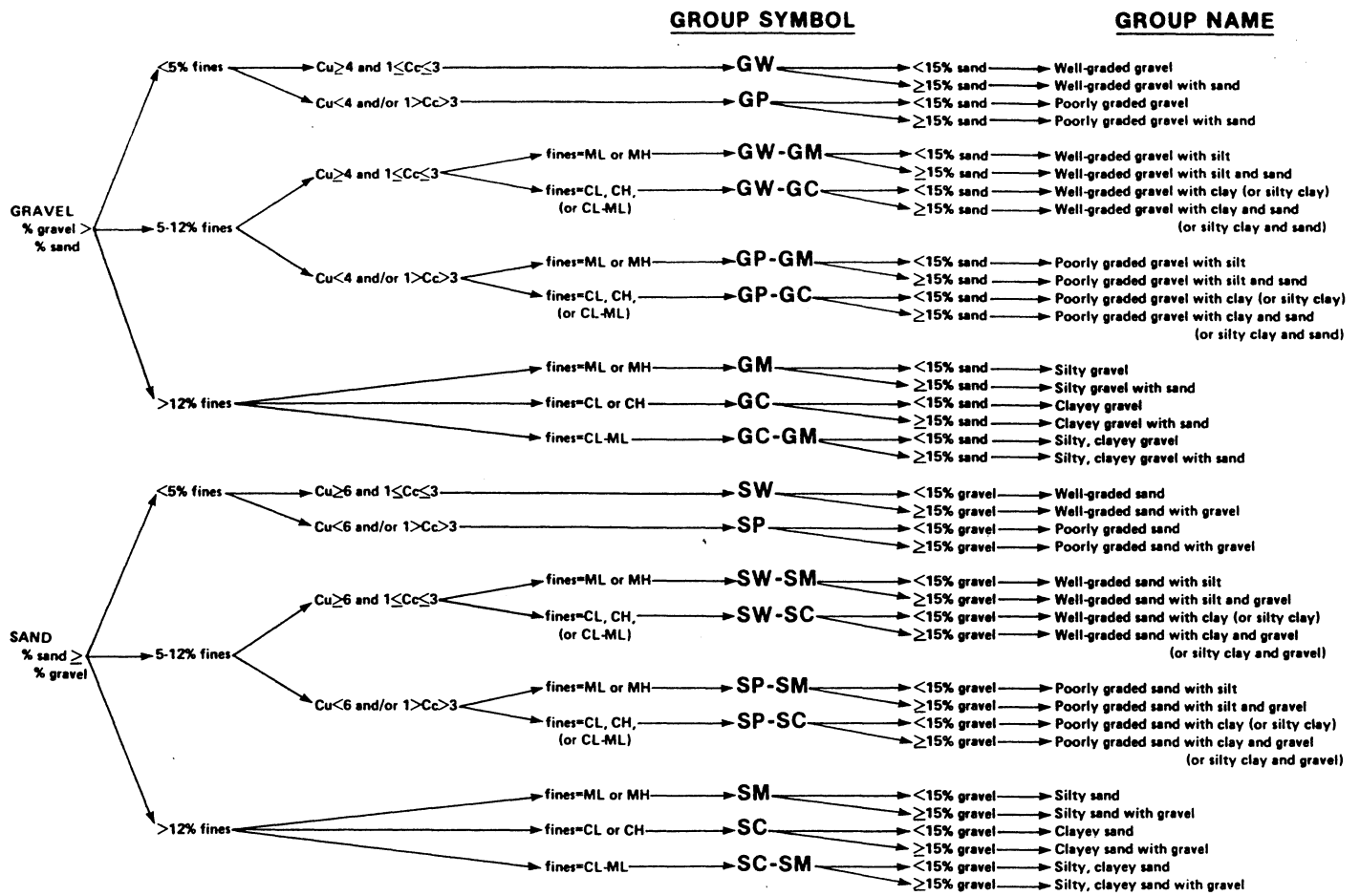
These descriptions are not intended to be conclusive as to the nature of any material encountered, or to conditions between or around the test borings/pits.

It is recommended that a site inspection, combined with consideration of the regional geology and climatic conditions be conducted. An evaluation of the investigation methods and development work done since the time of investigation should be done prior to interpreting the subsurface conditions for construction purposes.

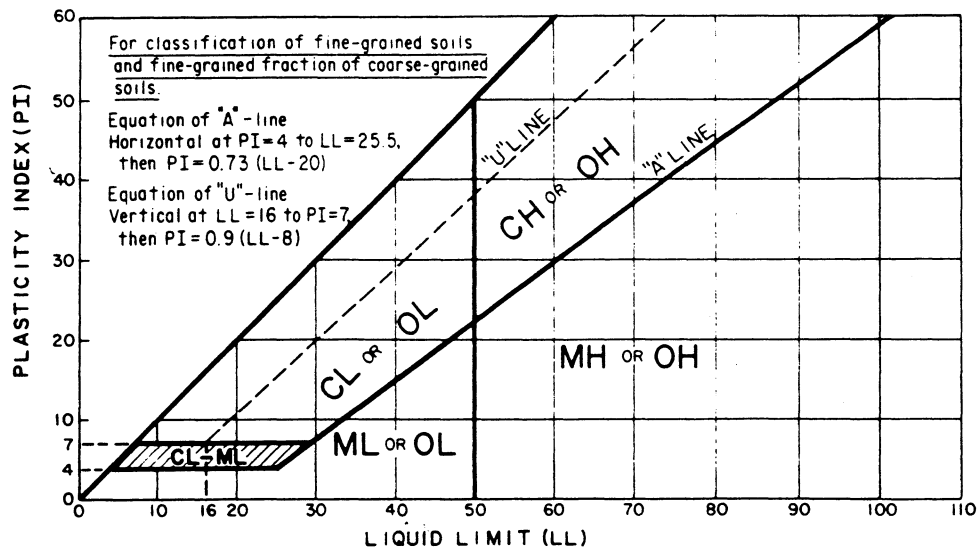
CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TESTS ^a				SOIL CLASSIFICATION	
				GROUP SYMBOL	GROUP NAME ^b
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines ^c	$C_u \geq 4$ and $1 \leq C_c \leq 3$ ^e	GW	Well-graded gravel ^f
			$C_u < 4$ and/or $1 > C_c > 3$ ^e	GP	Poorly graded gravel ^f
		GRAVELS WITH FINES More than 12% fines ^c	Fines classify as ML or MH	GM	Silty gravel ^{f,g,h}
			Fines classify as CL or CH	GC	Clayey gravel ^{f,g,h}
	SANDS 50% or more of coarse fraction passes No. 4 sieve	CLEAN SANDS Less than 5% fines ^d	$C_u \geq 6$ and $1 \leq C_c \leq 3$ ^e	SW	Well-graded sand ⁱ
			$C_u < 6$ and/or $1 > C_c > 3$ ^e	SP	Poorly graded sand ⁱ
		SANDS WITH FINES More than 12% fines ^d	Fines classify as ML or MH	SM	Silty sand ^{g,h,i}
			Fines classify as CL or CH	SC	Clayey sand ^{g,h,i}
FINE-GRAINED SOILS 50% or more passed the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50%	inorganic	PI > 7 and plots on or above "A" line ^j	CL	Lean clay ^{k,l,m}
			PI < 4 or plots below "A" line ^j	ML	Silt ^{k,l,m}
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay ^{k, l, m, n} Organic silt ^{k, l, m, o}
	SILTS AND CLAYS Liquid limit 50% or more	inorganic	PI plots on or above "A" line	CH	Fat clay ^{k,l,m}
			PI plots below "A" line	MH	Elastic silt ^{k,l,m}
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay ^{k, l, m, p} Organic silt ^{k, l, m, q}
Highly organic soils	Primarily organic matter, dark in color, and organic odor		PT	Peat	

- Based on the material passing the 3-in (75-mm) sieve.
- If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name.
- Gravels with 5 to 12% fines require dual symbols
 GW-GM well graded gravel with silt
 GW-GC well graded gravel with clay
 GP-GM poorly graded gravel with silt
 GP-GC poorly graded gravel with clay
- Sands with 5 to 12% fines require dual symbols
 SW-SM well graded sand with silt
 SW-SC well graded sand with clay
 SP-SM poorly graded sand with silt
 SP-SC poorly graded sand with clay
- $C_u = D_{60}/D_{10}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
- If soil contains > 15% sand, add "with sand" to group name.
- If fines classify as CL-ML, use dual symbol GC-GM, SC-SM.
- If fines are organic, add "with organic fines" to group name.
- If soil contains > 15% gravel, add "with gravel" to group name.
- If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
- If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel" whichever is predominant.
- If soil contains > 30% plus No. 200, predominantly sand, add "sandy" to group name.
- If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.
- PI > 4 and plots on or above "A" line.
- PI < 4 or plots below "A" line.
- PI plots on or above "A" line.
- PI plots below "A" line.

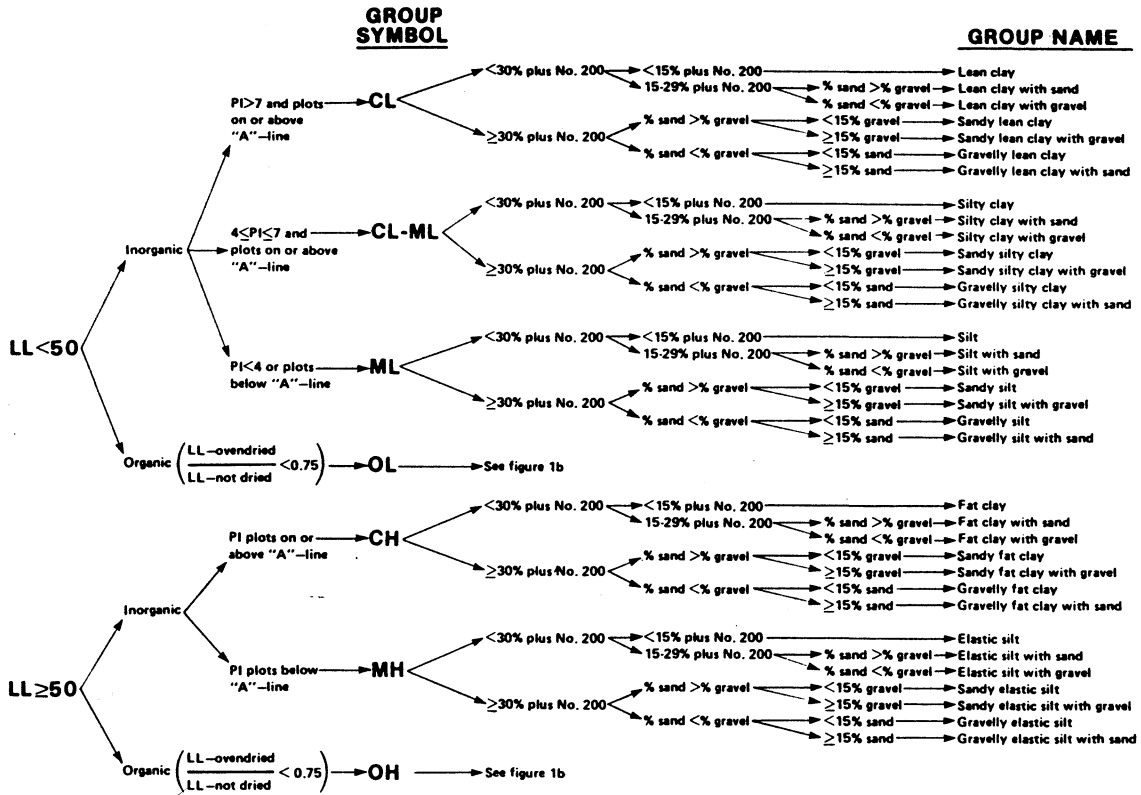
Soil classification chart



Flow chart for classifying coarse-grained soil.



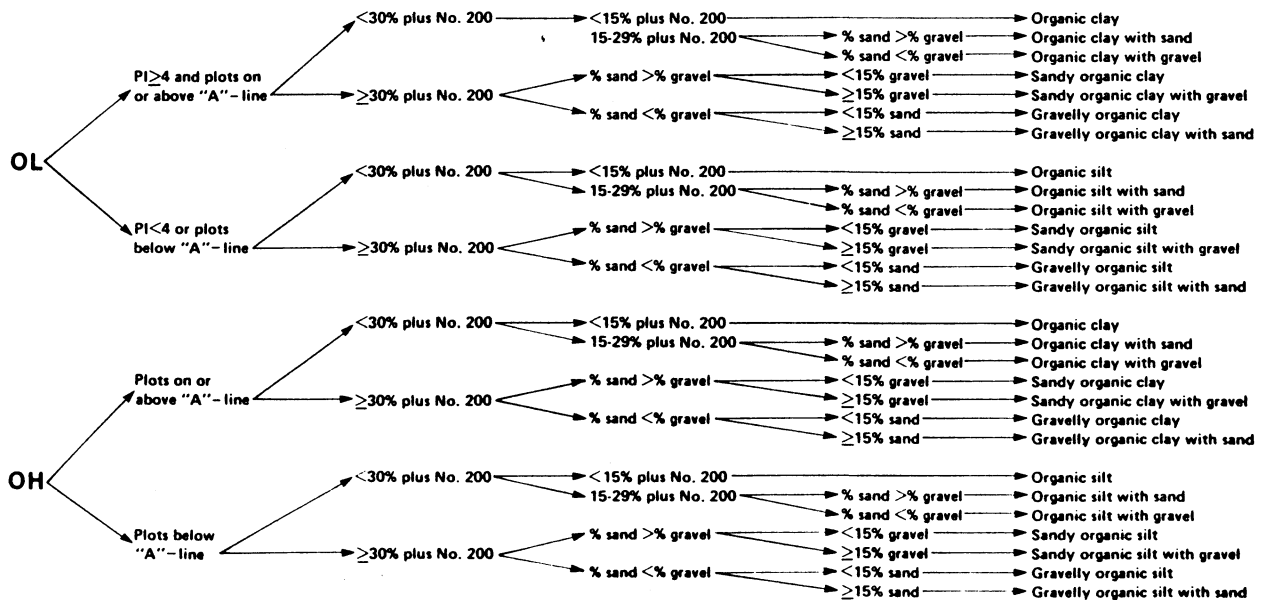
Plasticity chart.



Flow chart for classifying fine-grained soil.

GROUP SYMBOL

GROUP NAME



Flow chart for classifying organic soil.

UNIFIED SOIL CLASSIFICATION†

MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES	CLASSIFICATION CRITERIA				
COARSE-GRAINED SOILS	More than 50% retained on No. 200 sieve*	GRAVELS 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	Classification on basis of percentage of fines Less than 5% pass No. 200 sieve More than 12% pass No. 200 sieve 5% to 12% pass No. 200 sieve 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 Not meeting both criteria for GW Atterberg limits plot below 'A' line or plasticity index less than 4 Atterberg limits plot above 'A' line and plasticity index greater than 7	
			GRAVELS WITH FINES	GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines			
			CLEAN SANDS	GM	Silty gravels, gravel-sand-silt mixtures			
		SANDS WITH FINES	GC	Clayey gravels, gravel-sand clay mixtures				
		More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines			$C_u = D_{60}/D_{10}$ Greater than 6 $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 Not meeting both criteria for SW Atterberg limits plot below 'A' line or plasticity index less than 4 Atterberg limits plot above 'A' line and plasticity index greater than 7
			SANDS WITH FINES	SP	Poorly-graded sands and gravelly sands, little or no fines			
	SANDS WITH FINES		SM	Silty sands, sand-silt mixtures				
	SANDS WITH FINES		SC	Clayey sands, sand-clay mixtures				
	FINE-GRAINED SOILS	SILTS AND CLAYS	Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands			
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
OL				Organic silts and organic silty clays of low plasticity				
SILTS AND CLAYS		Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts				
			CH	Inorganic clay of high plasticity, fat clays				
			OH	Organic clays of medium to high plasticity				
			MH & OH	Borderline classification requiring use of dual symbols				
			ML & OL	Borderline classification requiring use of dual symbols				
HIGHLY ORGANIC SOILS			PT	Peat, muck and other highly organic soils	*Based on the material passing the 3 in. (75 mm) sieve †ASTM Designation D 2487, for identification procedure see D 2488			

GROUND ICE DESCRIPTION

ICE NOT VISIBLE

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

VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION	IMAGE
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

GROUP SYMBOLS	SYMBOLS	SUBGROUP DESCRIPTION	IMAGE
ICE	ICE + Soil Type	Ice with soil inclusions	
	ICE	Ice without soil inclusions (greater than 25 mm (1 in.) thick)	

NOTE:

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

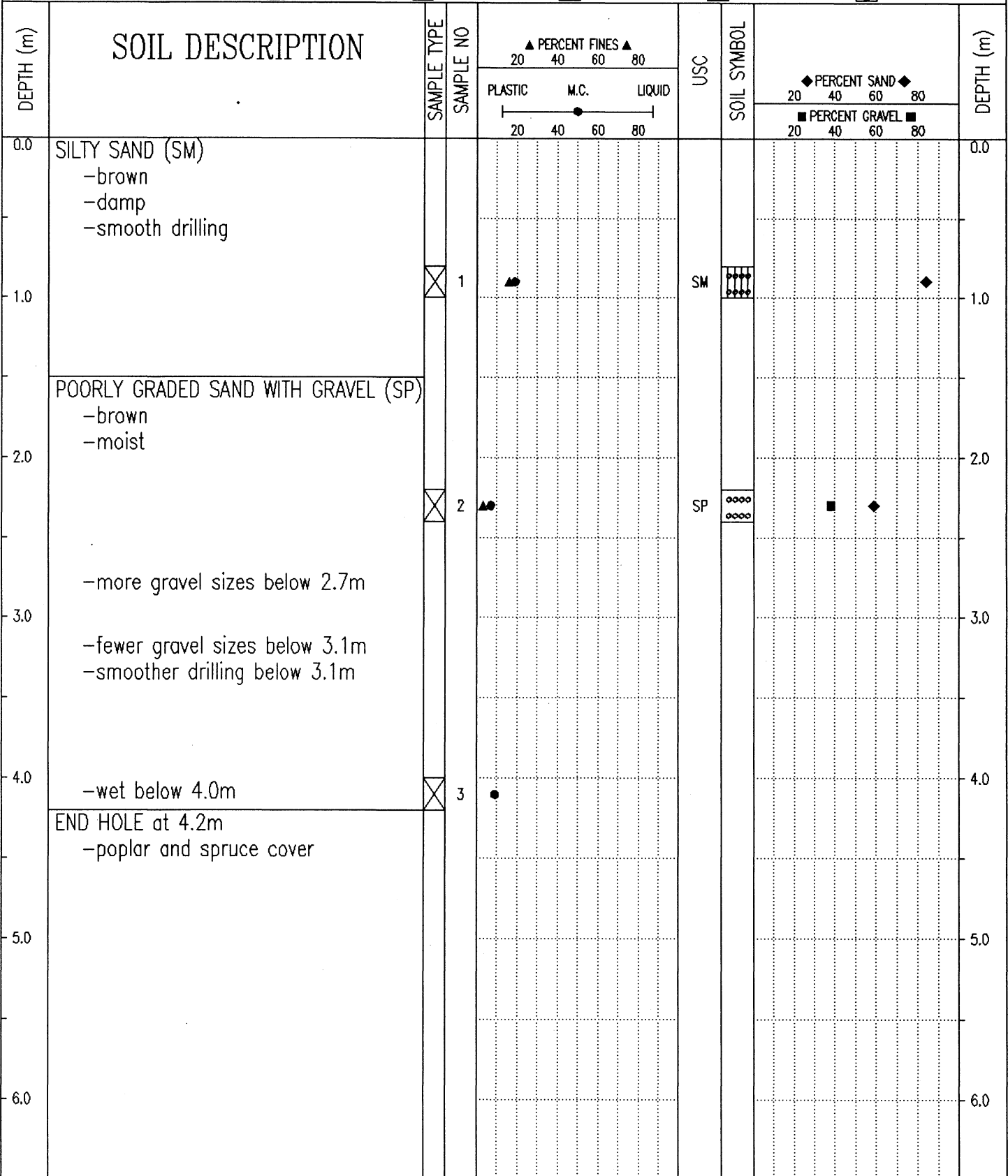
LEGEND

Soil Ice

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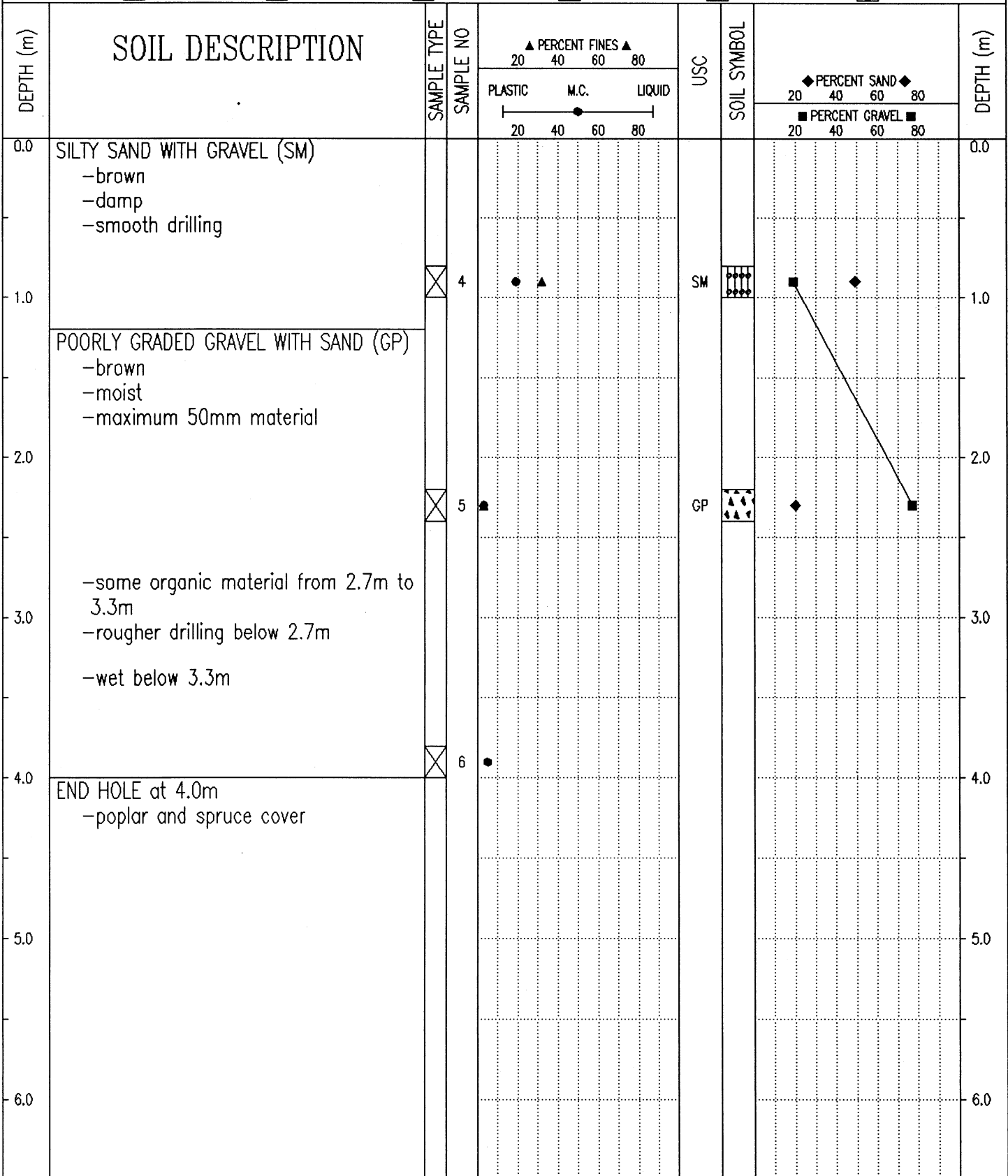
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SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1932+000 o/s 12m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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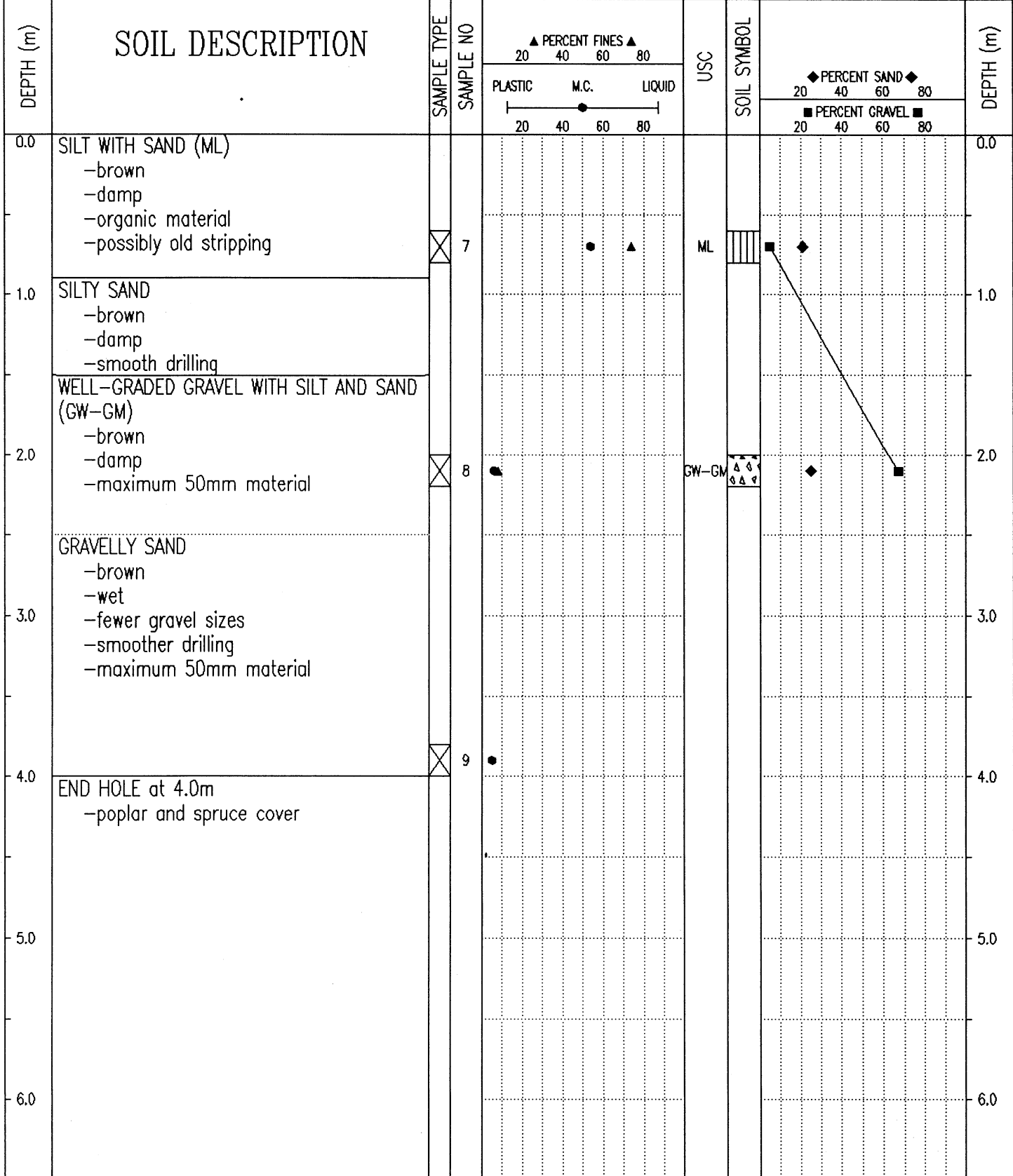
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REVIEWED BY:	COMPLETE: 90/10/02
Fig. No:	Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-02
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1932+150 o/s 10m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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	REVIEWED BY:	COMPLETE: 90/10/02
	Fig. No:	Page 1 of 1

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



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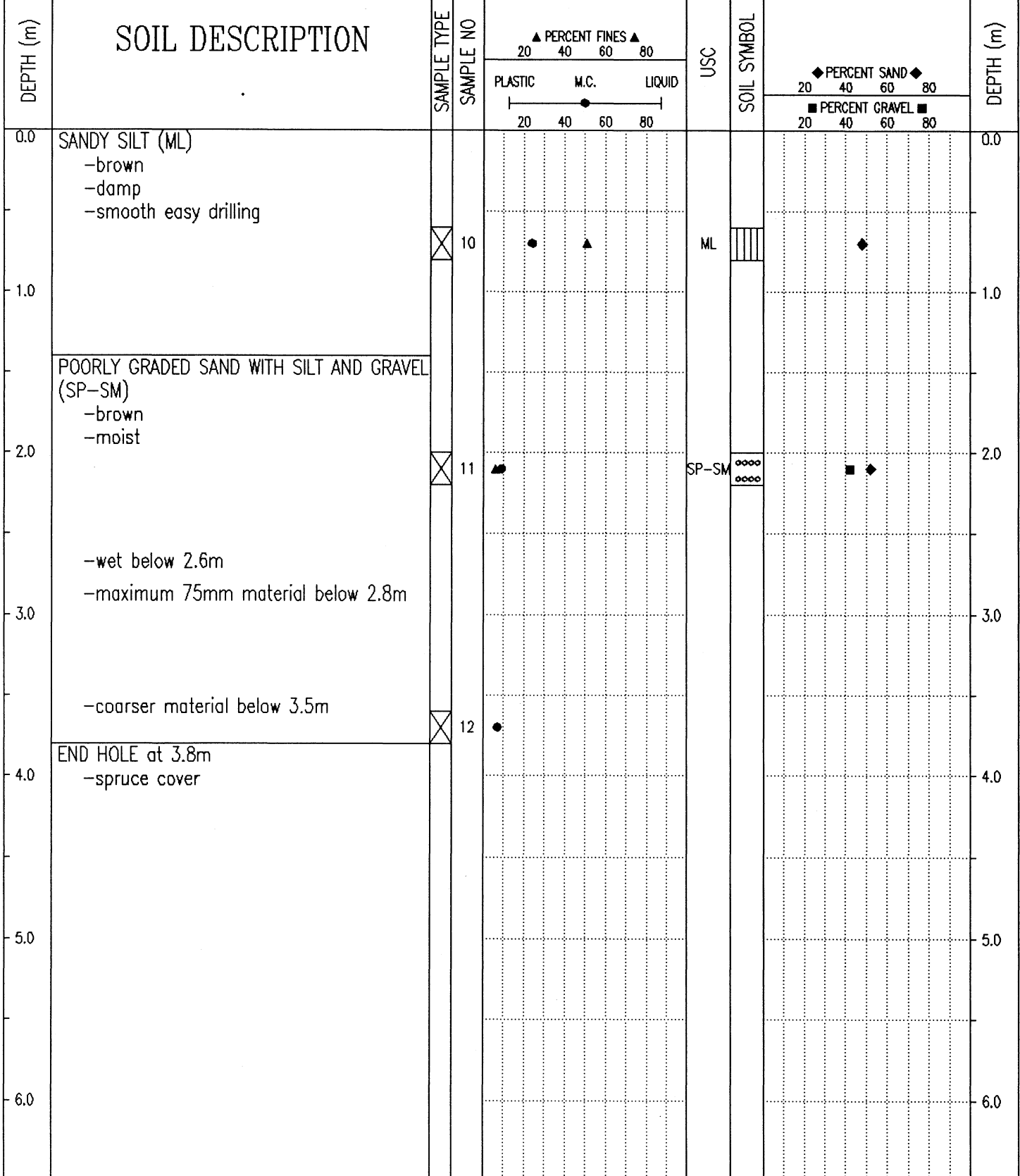
Fig. No:

COMPLETION DEPTH: 4.0 m

COMPLETE: 90/10/02

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SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1932+450 o/s 8m Rt.	ELEVATION: 0.00 (m)

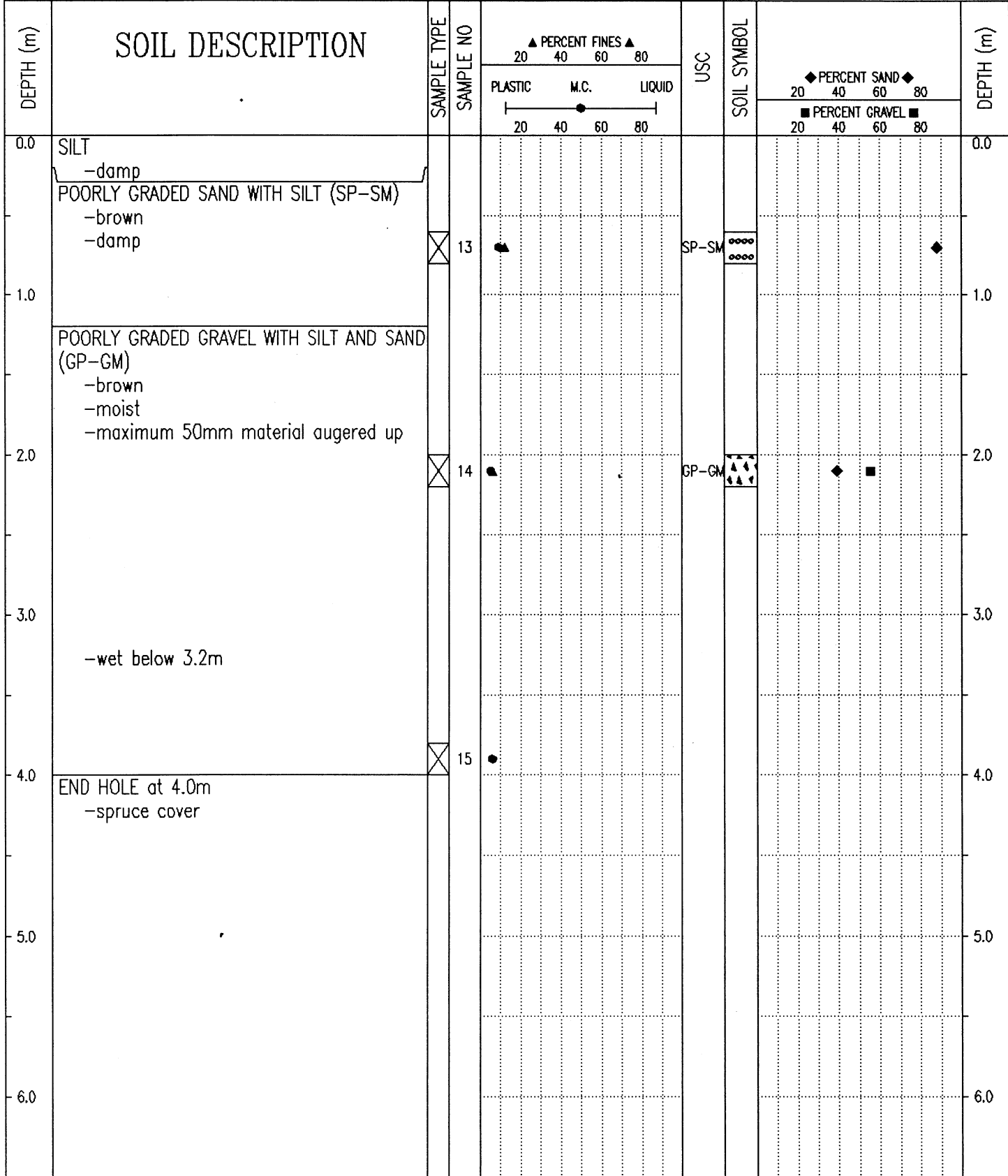
SAMPLE TYPE RETURN S.P.T. AUGER BULK TUBE CORE



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	REVIEWED BY:	COMPLETE: 90/10/02
	Fig. No:	Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-05
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1932+600 o/s 8m Rt.	ELEVATION: 0.00 (m)

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

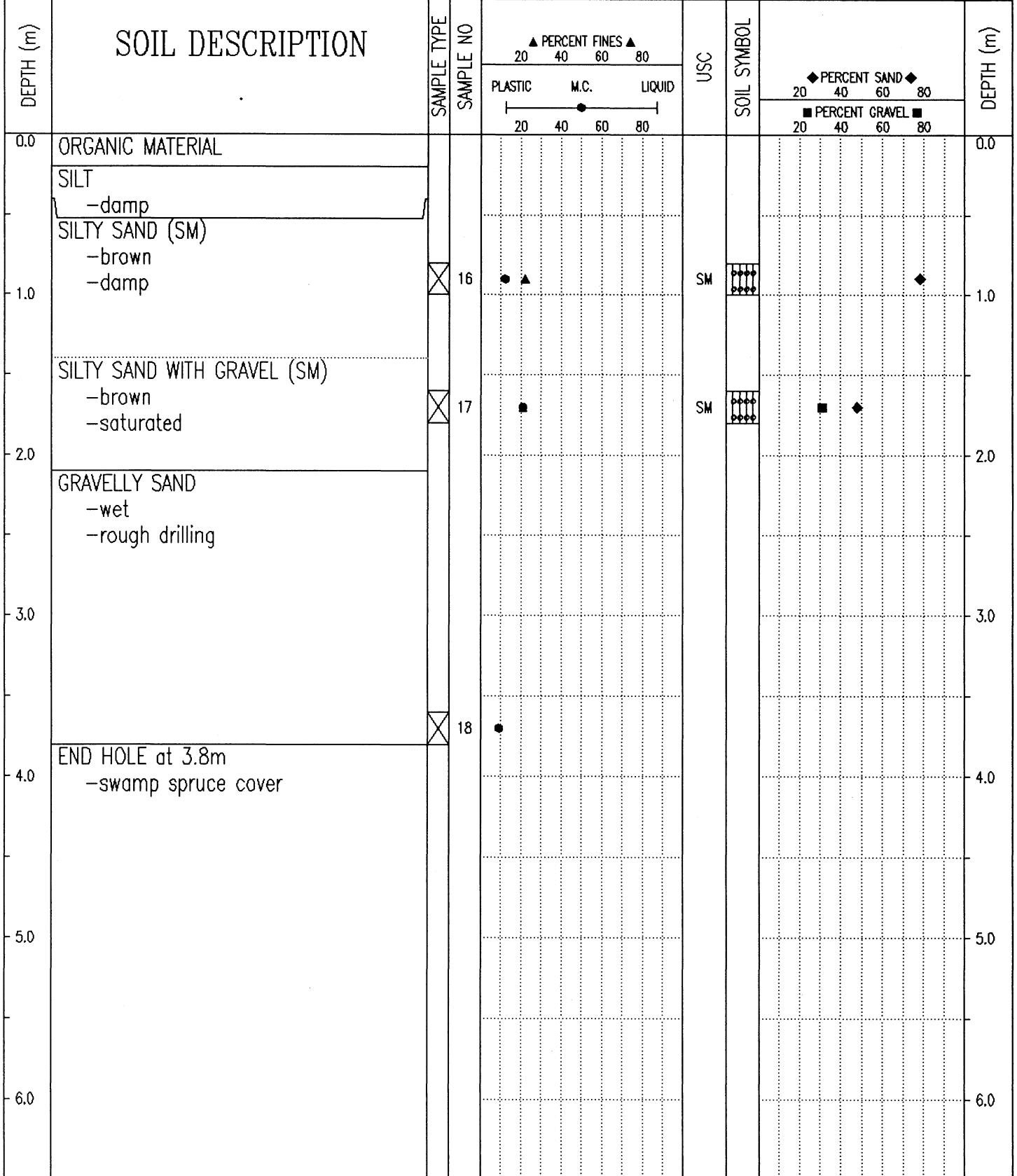


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LOGGED BY: JM	COMPLETION DEPTH: 4.0 m
REVIEWED BY:	COMPLETE: 90/10/02
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-06
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1932+750 o/s 9m Rt.	ELEVATION: 0.00 (m)

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



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Fig. No:

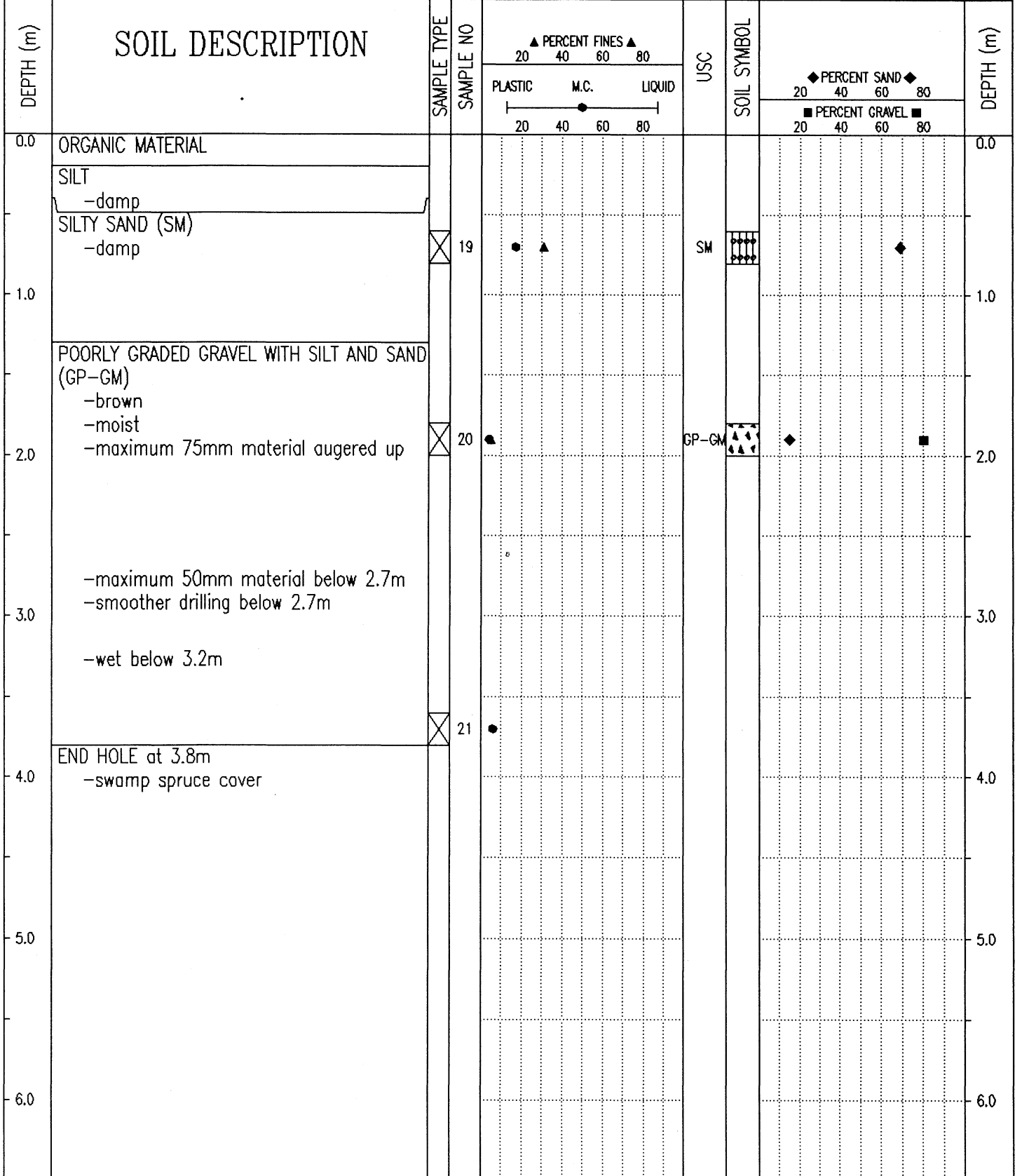
COMPLETION DEPTH: 3.8 m

COMPLETE: 90/10/02

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-07
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1932+900 o/s 9m Rt.	ELEVATION: 0.00 (m)

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



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Fig. No:

COMPLETION DEPTH: 3.8 m

COMPLETE: 90/10/02

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-08
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1933+050 o/s 13m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		

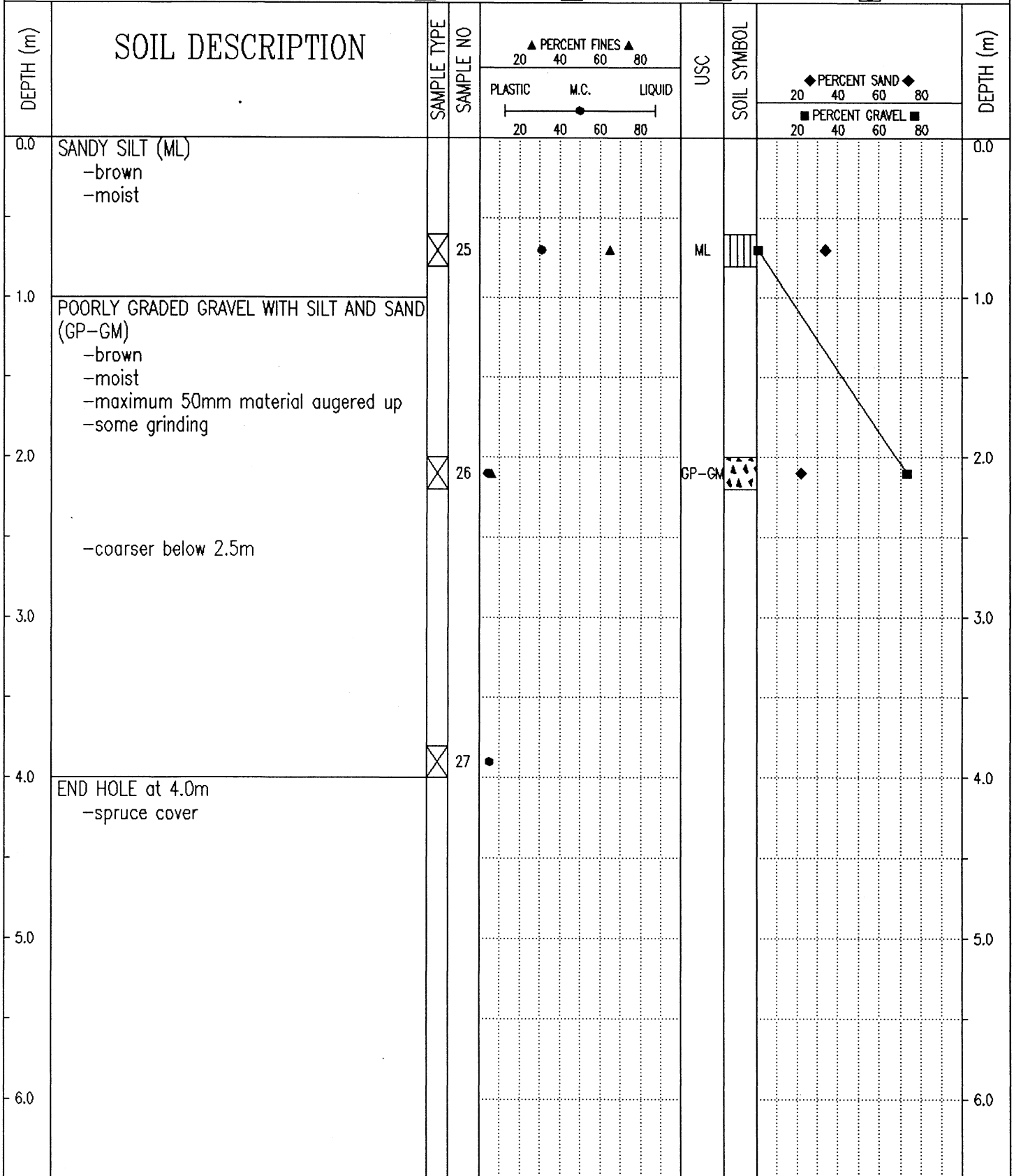
DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆			DEPTH (m)
				PLASTIC	M.C.	LIQUID			20	40	60	
0.0	GRAVEL -road fill											0.0
0.0 - 1.0	SILTY SAND (SM) -brown -damp	<input checked="" type="checkbox"/>	22	●▲			SM	◆◆◆◆			◆	1.0
1.0 - 2.0	WELL-GRADED GRAVEL WITH SILT AND SAND (GW-GM) -brown -moist -grindy drilling -maximum 40mm material augered up	<input checked="" type="checkbox"/>	23	●			GW-GM	▲▲▲▲			◆	2.0
2.0 - 4.0	-hard grindy drilling below 2.4m -maximum 75mm material below 2.4m	<input checked="" type="checkbox"/>	24	●								4.0
4.0	END HOLE at 4.0m											4.0

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Fig. No:

COMPLETION DEPTH: 4.0 m
COMPLETE: 90/10/02

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-09
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1933+200 o/s 8m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN	<input checked="" type="checkbox"/> S.P.T.	<input checked="" type="checkbox"/> AUGER
	<input type="checkbox"/> BULK	<input type="checkbox"/> TUBE
		<input type="checkbox"/> CORE



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COMPLETION DEPTH: 4.0 m

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

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		DEPTH (m)
				PLASTIC	M.C.	LIQUID			20	40	
0.0	SANDY SILT (ML) -brown -damp -smooth drilling										0.0
0.8		<input checked="" type="checkbox"/>	28				ML				0.8
1.8	SILTY GRAVEL WITH SAND (GM) -brown -moist -maximum 50mm material augered up -grindy drilling										1.8
2.0		<input checked="" type="checkbox"/>	29				GM				2.0
3.8		<input checked="" type="checkbox"/>	30								3.8
4.0	END HOLE at 3.8m -swamp spruce cover										4.0
5.0											5.0
6.0											6.0

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-11
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1933+500 o/s 9m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		DEPTH (m)
				PLASTIC	M.C.	LIQUID			20	40	
0.0	SILT -damp									0.0	
0.5	SANDY SILT (ML) -brown -damp -smooth drilling	<input checked="" type="checkbox"/>	31	45	55	65	ML	◆		0.5	
2.0	GRAVELLY SILTY SAND -brown -moist -hard grindy drilling -maximum 50mm material augered up	<input checked="" type="checkbox"/>	32	45						2.0	
2.6	-first refusal at 2.6m										
3.0	-very rough hard drilling below 3.0m										
4.0	END HOLE at 4.0m -swamp spruce cover									4.0	
5.0										5.0	
6.0										6.0	

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-12
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1933+635 o/s 9m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN	<input checked="" type="checkbox"/> S.P.T.	<input checked="" type="checkbox"/> AUGER
	<input type="checkbox"/> BULK	<input type="checkbox"/> TUBE
		<input type="checkbox"/> CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		DEPTH (m)
				PLASTIC	M.C.	LIQUID			PERCENT GRAVEL ■		
0.0	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM) -brown -damp -road fill	<input checked="" type="checkbox"/>	33	▲	●	▲	GP-GM	◆	■	0.0	
1.0	-grindy drilling below 1.0m									1.0	
2.0	-moist below 1.6m	<input checked="" type="checkbox"/>	34	●						2.0	
3.0	SILTY GRAVELLY SAND -moist -coarser -harder grindy drilling									3.0	
4.0	END HOLE at 4.0m -poplar and spruce cover	<input checked="" type="checkbox"/>	35	●						4.0	
5.0										5.0	
6.0										6.0	

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LOGGED BY: JM

COMPLETION DEPTH: 4.0 m

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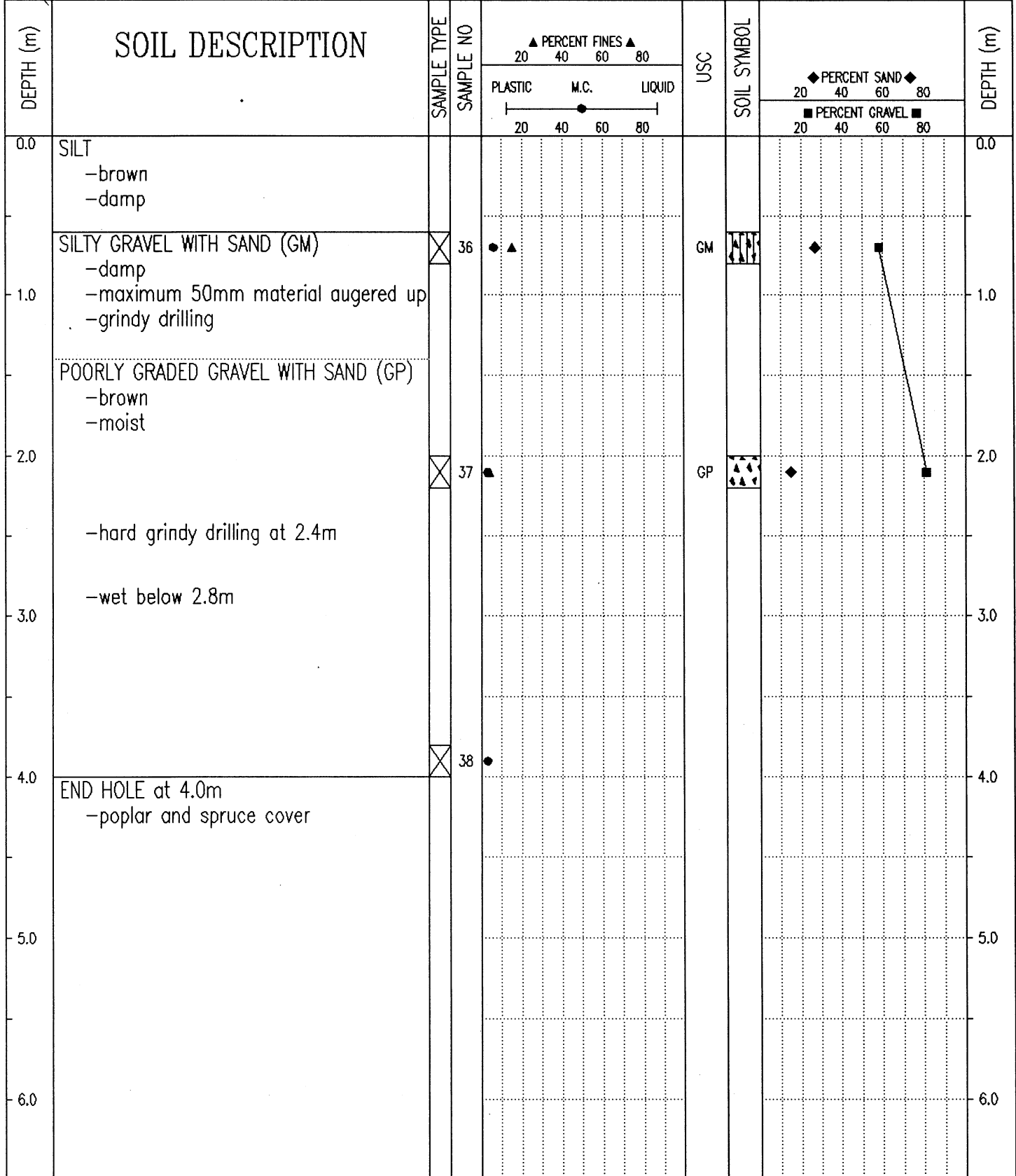
COMPLETE: 90/10/02

Fig. No:

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-13
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1933+850 o/s 10m Lt.	ELEVATION: 0.00 (m)

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



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Fig. No:

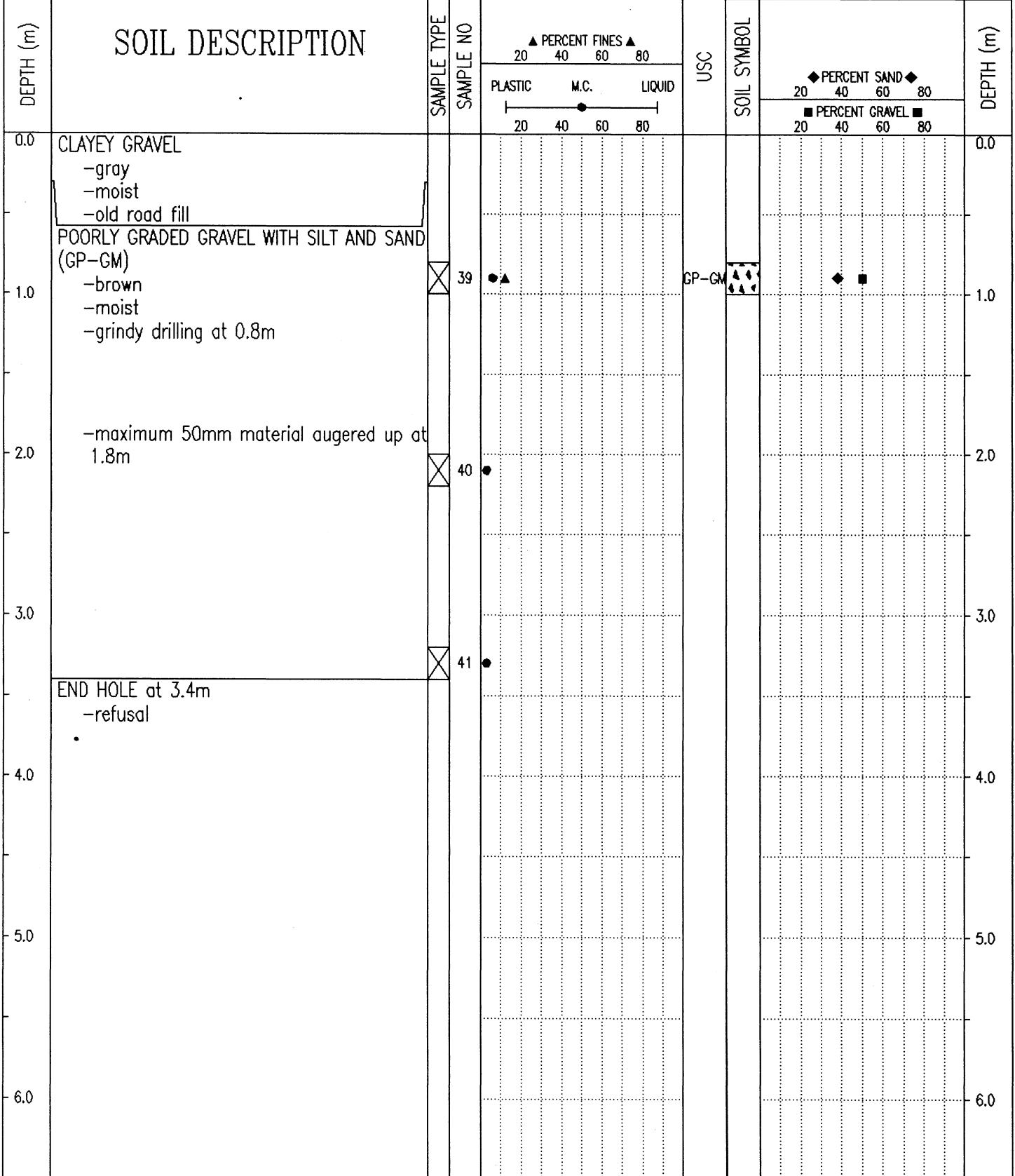
COMPLETION DEPTH: 4.0 m

COMPLETE: 90/10/02

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-14
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1933+945 o/s 5m Rt.	ELEVATION: 0.00 (m)

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

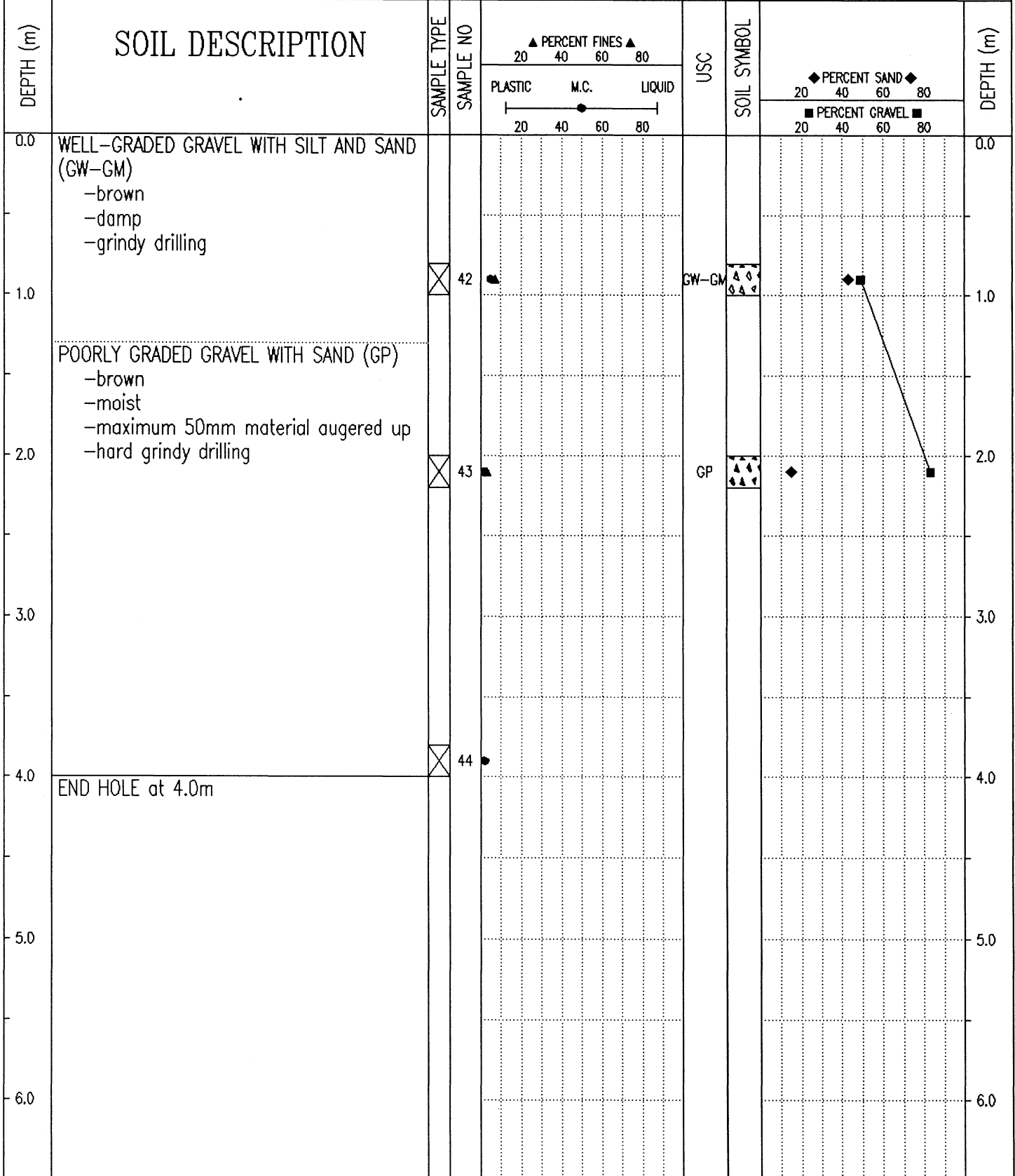


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Transportation Engineering

LOGGED BY: JM	COMPLETION DEPTH: 3.4 m
REVIEWED BY:	COMPLETE: 90/10/02
Fig. No:	Page 1 of 1

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-15
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1934+100 o/s 6m Lt.	ELEVATION: 0.00 (m)

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



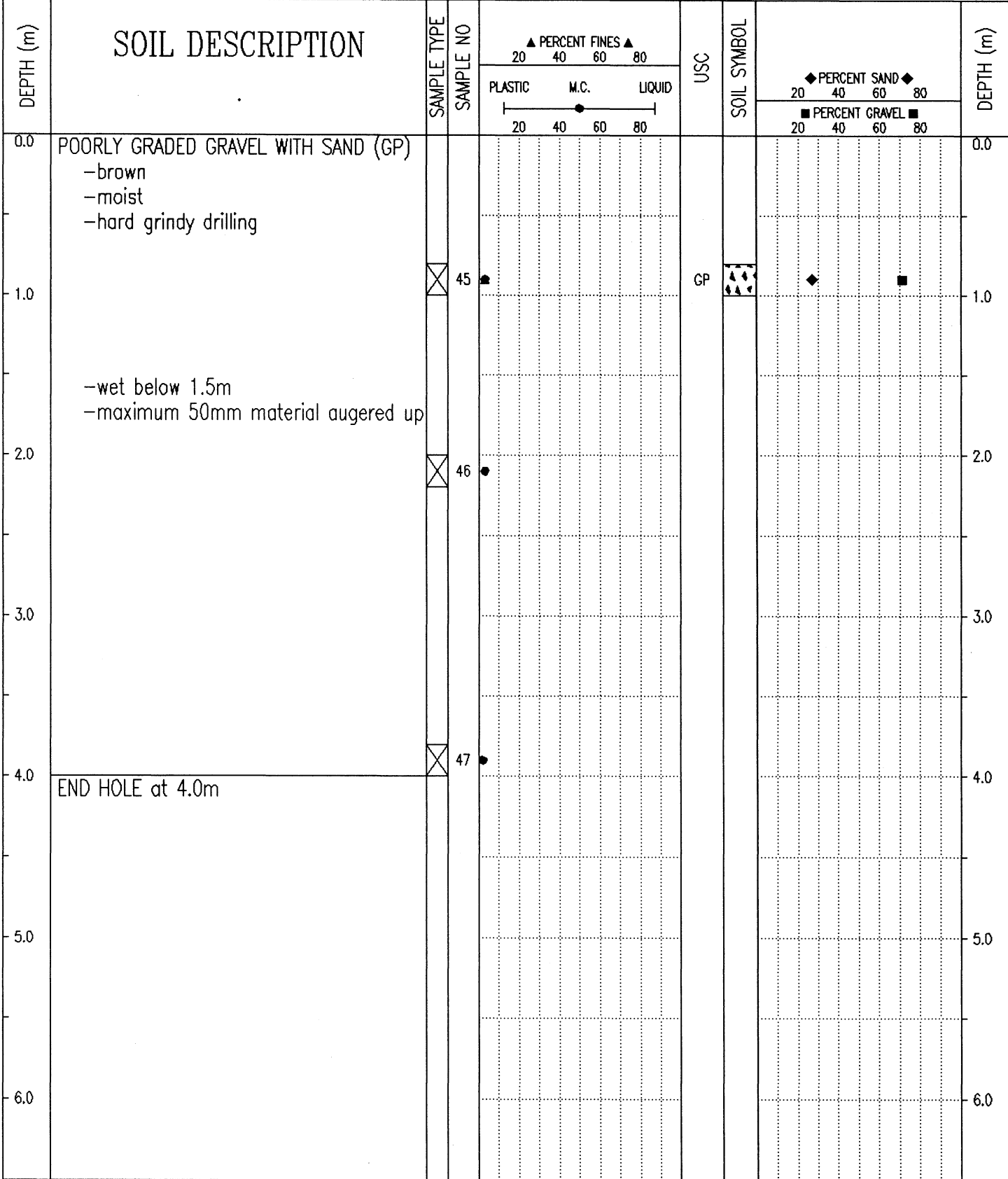
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Fig. No:

COMPLETION DEPTH: 4.0 m
COMPLETE: 90/10/02

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-16
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1934+250 o/s 6m Rt.	ELEVATION: 0.00 (m)

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



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LOGGED BY: JM	COMPLETION DEPTH: 4.0 m
REVIEWED BY:	COMPLETE: 90/10/02
Fig. No:	Page 1 of 1

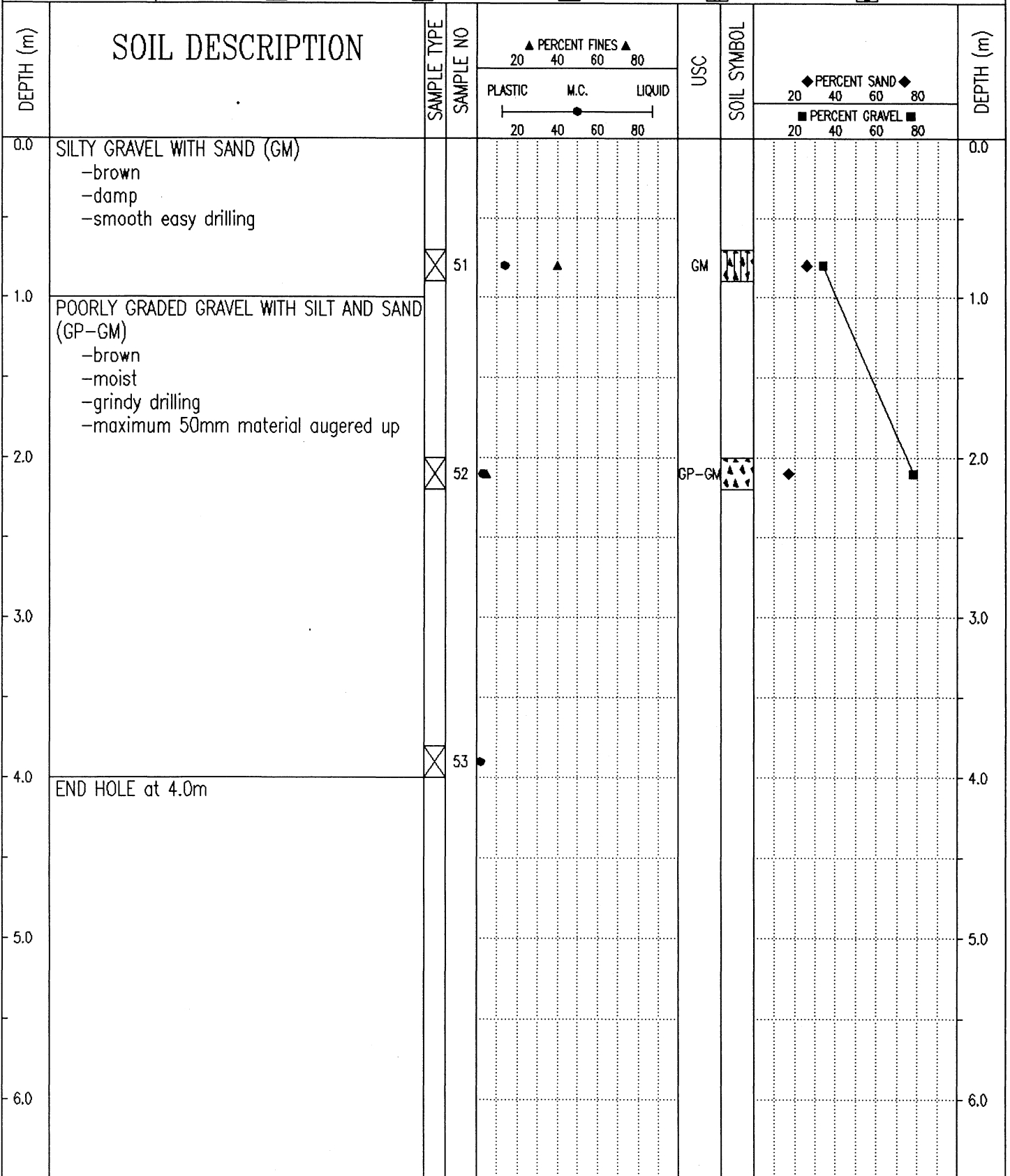
SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-17
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1934+400 o/s 6m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆			DEPTH (m)
				PLASTIC	M.C.	LIQUID			PERCENT GRAVEL ■			
0.0	CLAYEY GRAVEL -old road fill										0.0	
	WELL-GRADED GRAVEL WITH SAND (GW) -brown -damp -grindy drilling		48				GW	▲ ▲ ▲	◆	■		
1.0											1.0	
	-moist below 1.4m											
2.0	-first refusal at 1.8m		49								2.0	
	-hard grindy drilling below 2.2m -maximum 40mm material augered up -wet below 2.5m											
3.0											3.0	
4.0	END HOLE at 3.8m		50								4.0	
5.0											5.0	
6.0											6.0	

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LOGGED BY: JM	COMPLETION DEPTH: 3.8 m
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-18
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1934+550 o/s 6m Rt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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LOGGED BY: JM

REVIEWED BY:

Fig. No:

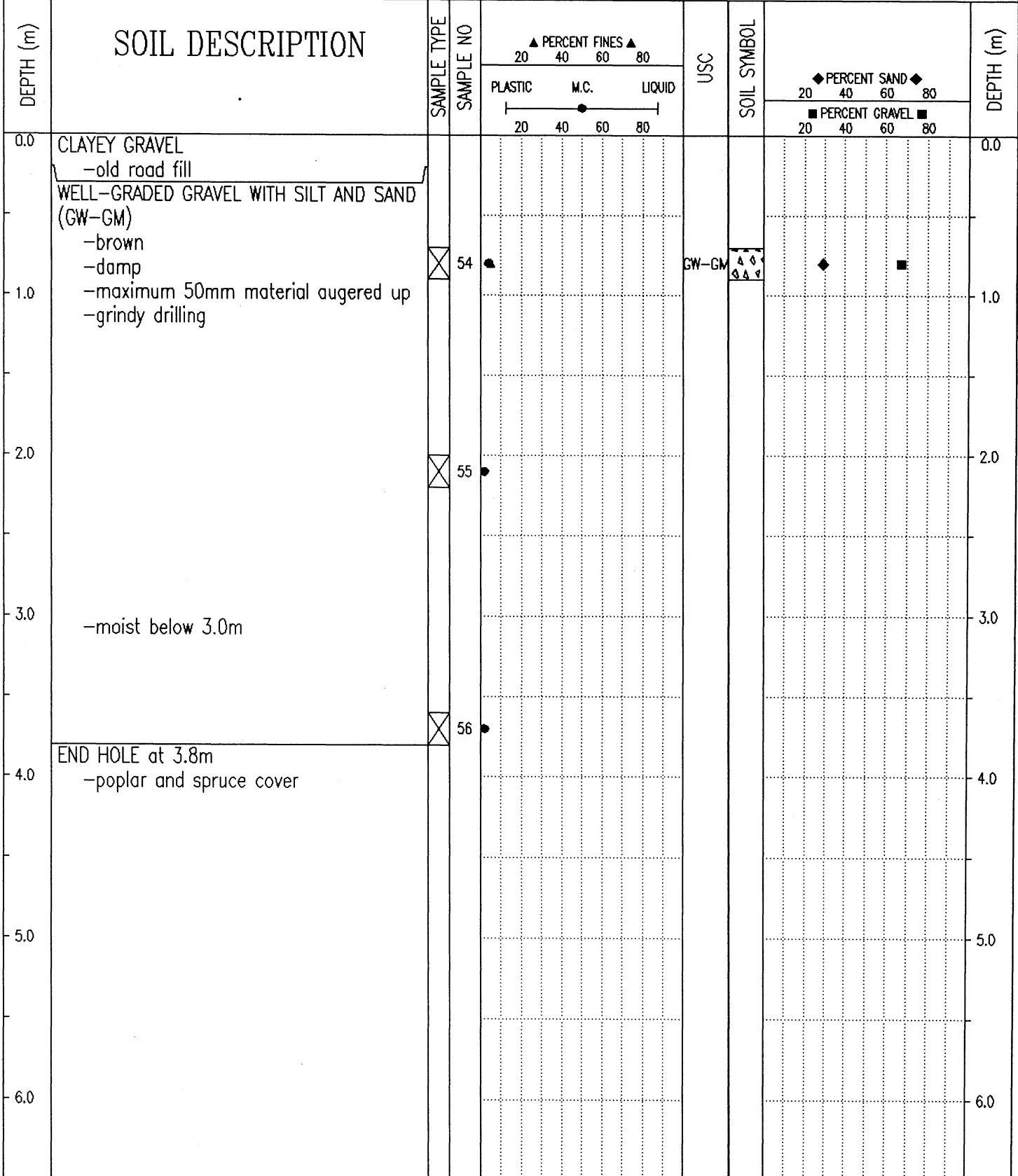
COMPLETION DEPTH: 4.0 m

COMPLETE: 90/10/02

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-19
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1934+700 o/s 6m Lt.	ELEVATION: 0.00 (m)

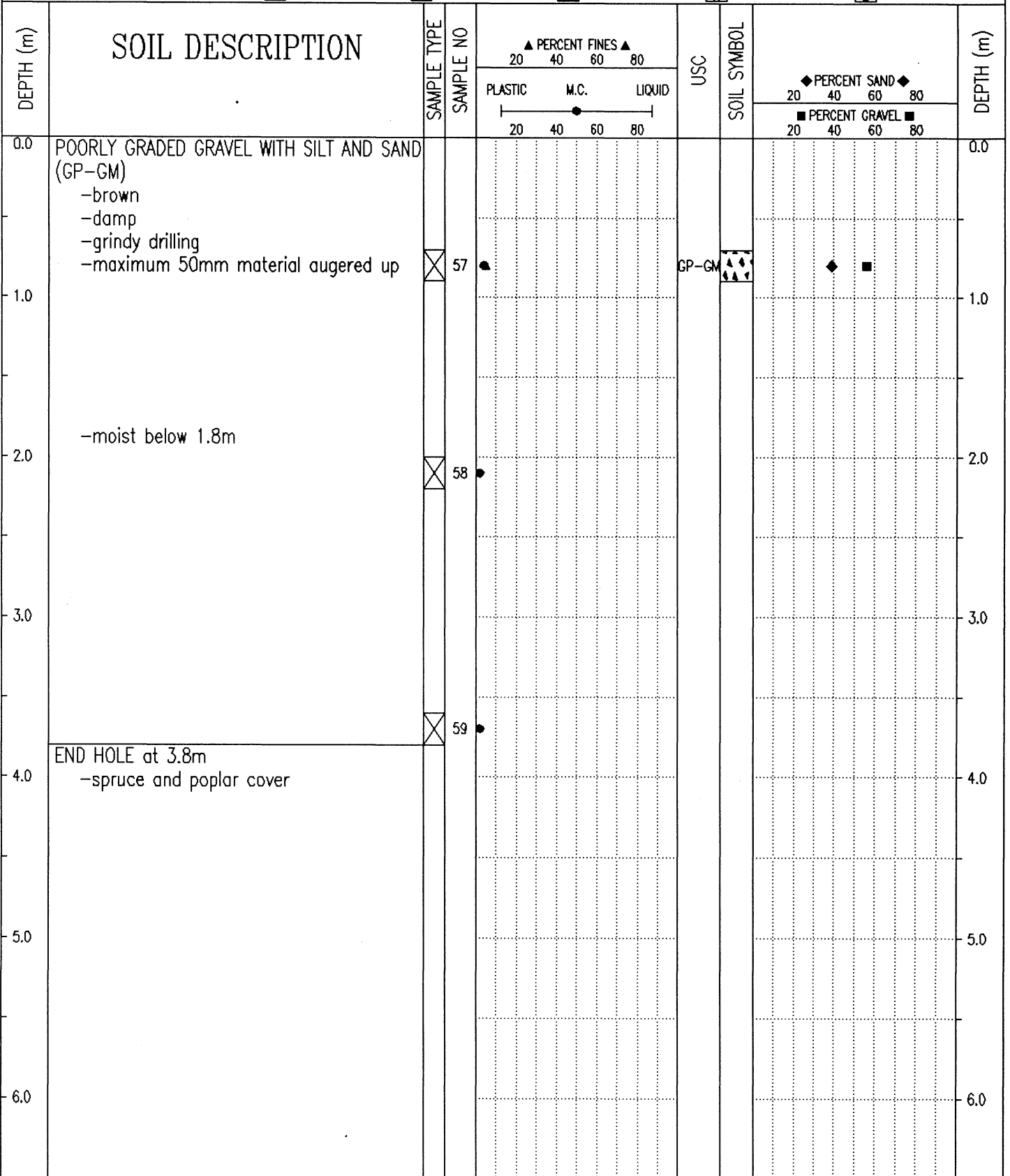
SAMPLE TYPE RETURN S.P.T. AUGER BULK TUBE CORE



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LOGGED BY: JM	COMPLETION DEPTH: 3.8 m
REVIEWED BY:	COMPLETE: 90/10/02
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-20
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1934+850 o/s 7m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN	<input checked="" type="checkbox"/> S.P.T.	<input checked="" type="checkbox"/> AUGER
	<input type="checkbox"/> BULK	<input type="checkbox"/> TUBE
		<input type="checkbox"/> CORE



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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-21
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+000 o/s 7m Lt.	ELEVATION: 0.00 (m)

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

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		DEPTH (m)
				PLASTIC	M.C.	LIQUID			PERCENT GRAVEL ■		
0.0	SANDY SILT -brown -damp									0.0	
1.0	WELL-GRADED GRAVEL WITH SILT AND SAND (GW-GM) -brown -damp -grindy drilling -maximum 50mm material augered up	<input checked="" type="checkbox"/>	60	●			GW-GM	◆	■	1.0	
2.0		<input checked="" type="checkbox"/>	61	●						2.0	
3.0										3.0	
4.0	END HOLE at 3.8m -spruce and poplar cover	<input checked="" type="checkbox"/>	62	●						4.0	
5.0										5.0	
6.0										6.0	

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Transportation Engineering

LOGGED BY: JM

REVIEWED BY:

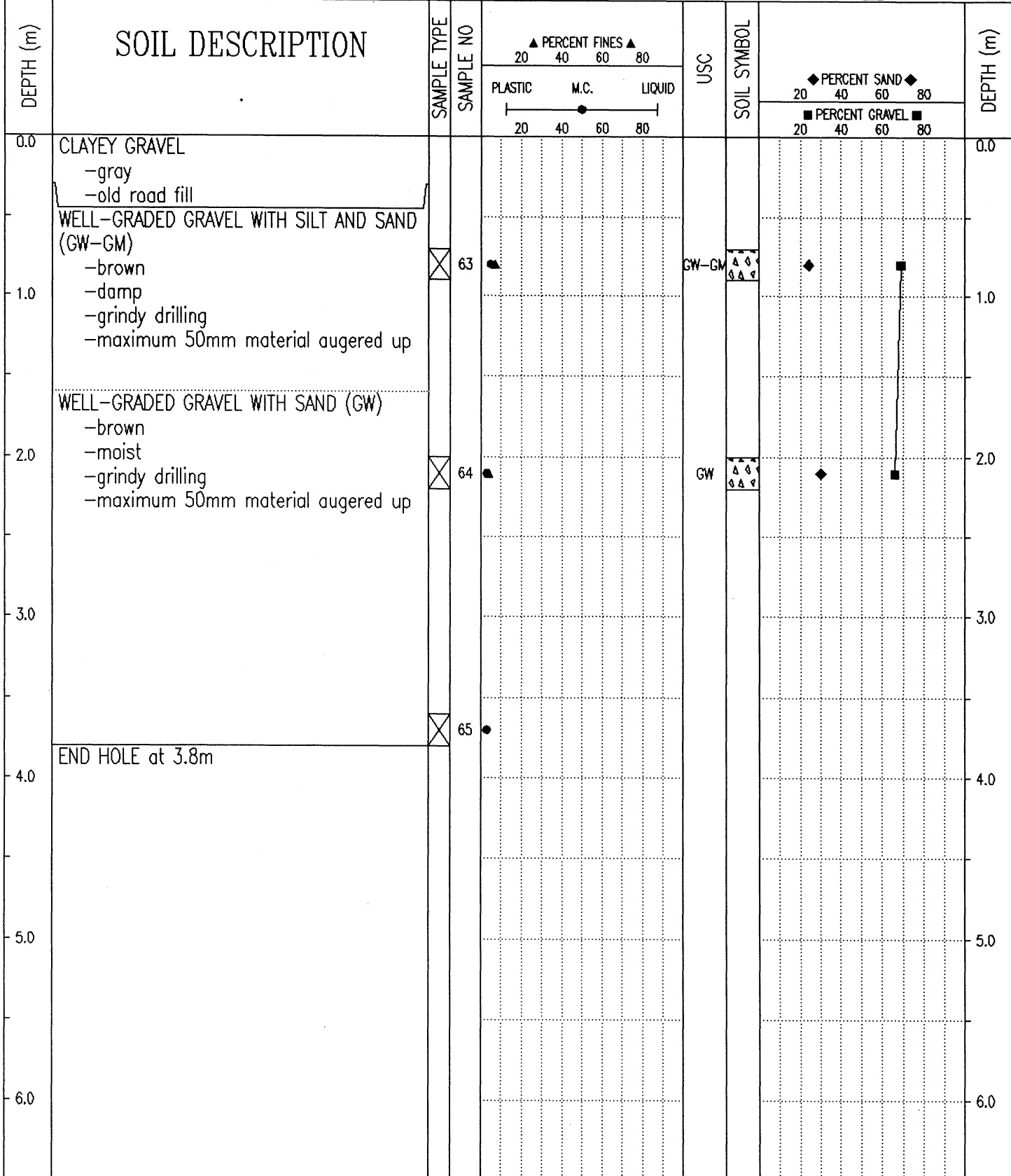
Fig. No:

COMPLETION DEPTH: 3.8 m

COMPLETE: 90/10/02

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-22
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+150 o/s 8m Lt.	ELEVATION: 0.00 (m)

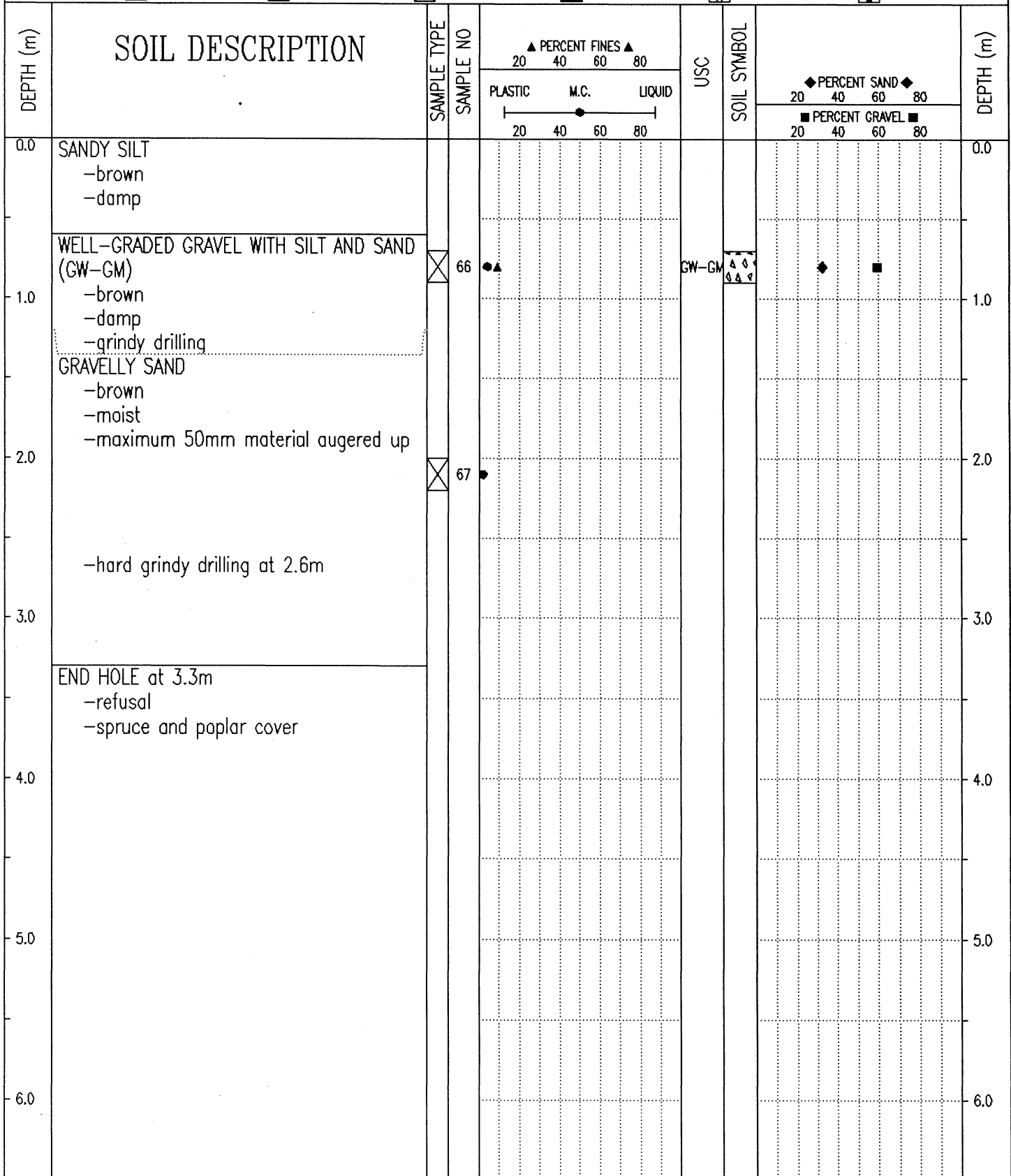
SAMPLE TYPE RETURN S.P.T. AUGER BULK TUBE CORE



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LOGGED BY: JM	COMPLETION DEPTH: 3.8 m
REVIEWED BY:	COMPLETE: 90/10/02
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-23
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+300 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN	<input checked="" type="checkbox"/> S.P.T.	<input checked="" type="checkbox"/> AUGER
	<input type="checkbox"/> BULK	<input type="checkbox"/> TUBE
		<input type="checkbox"/> CORE



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LOGGED BY: JM

REVIEWED BY:

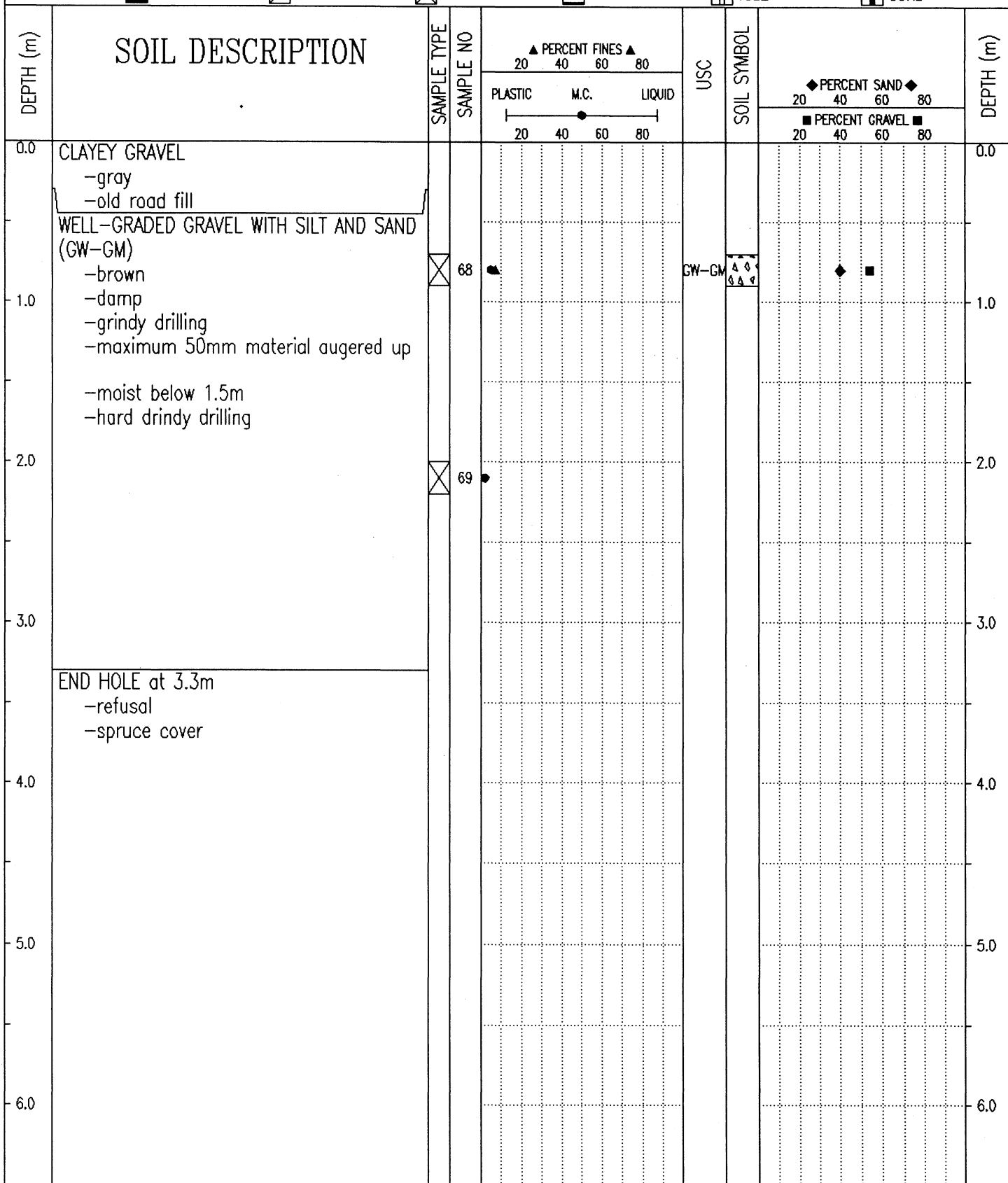
Fig. No:

COMPLETION DEPTH: 3.3 m

COMPLETE: 90/10/03

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-24
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+450 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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	REVIEWED BY:	COMPLETE: 90/10/03
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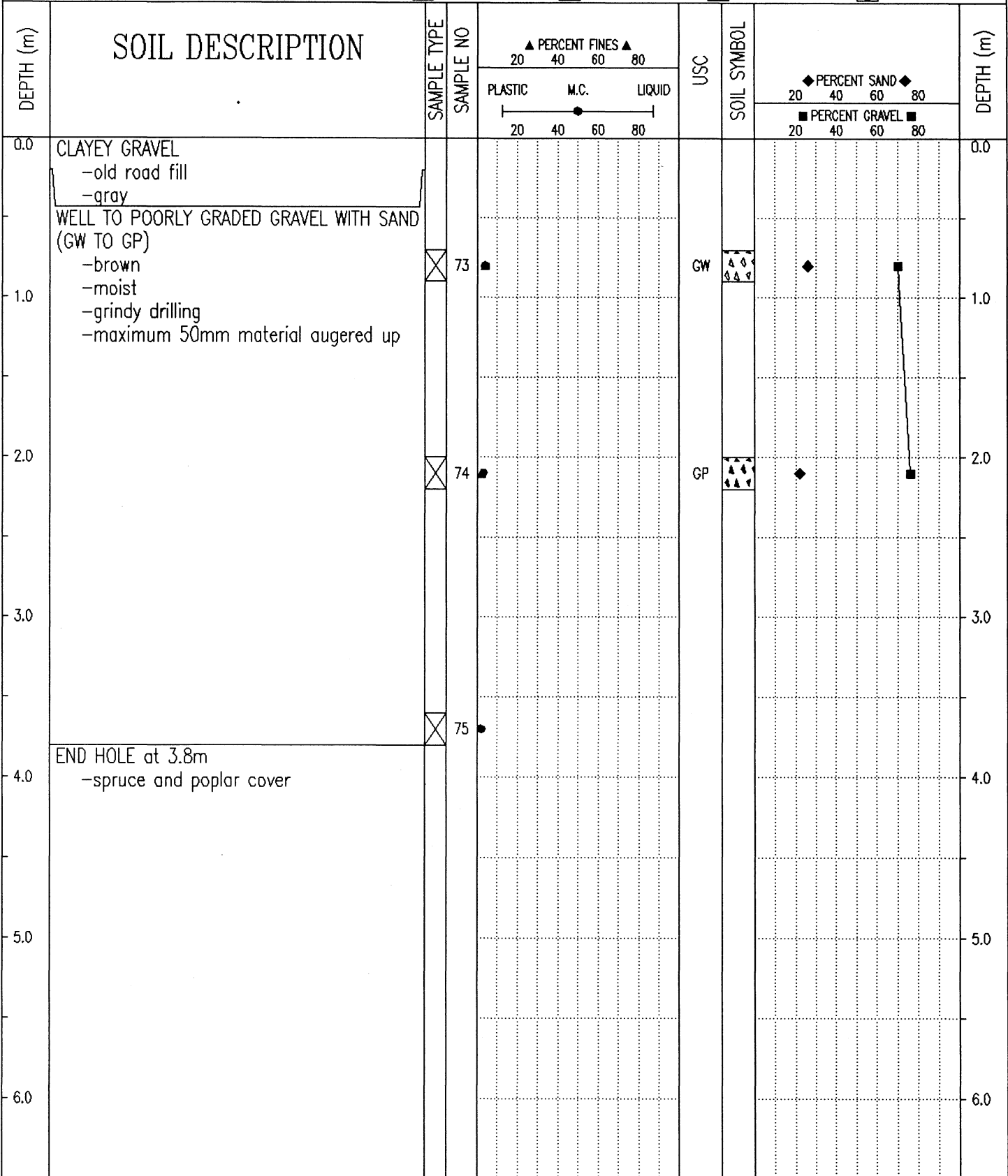
SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-25
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+600 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN	<input checked="" type="checkbox"/> S.P.T.	<input checked="" type="checkbox"/> AUGER
	<input type="checkbox"/> BULK	<input type="checkbox"/> TUBE
		<input type="checkbox"/> CORE

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		DEPTH (m)
				PLASTIC	M.C.	LIQUID			20	80	
0.0	SILT -damp									0.0	
0.0 - 1.0	POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM) -brown -damp -grindy drilling	<input checked="" type="checkbox"/>	70	■			GP-GM	◆	■	1.0	
1.0 - 2.0	GRAVELLY SAND -brown -moist -maximum 50mm material augered up	<input checked="" type="checkbox"/>	71	●						2.0	
2.0 - 3.8		<input checked="" type="checkbox"/>	72	●						3.8	
3.8 - 4.0	END HOLE at 3.8m									4.0	
4.0 - 5.0										5.0	
5.0 - 6.0										6.0	

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LOGGED BY: JM	COMPLETION DEPTH: 3.8 m
REVIEWED BY:	COMPLETE: 90/10/03
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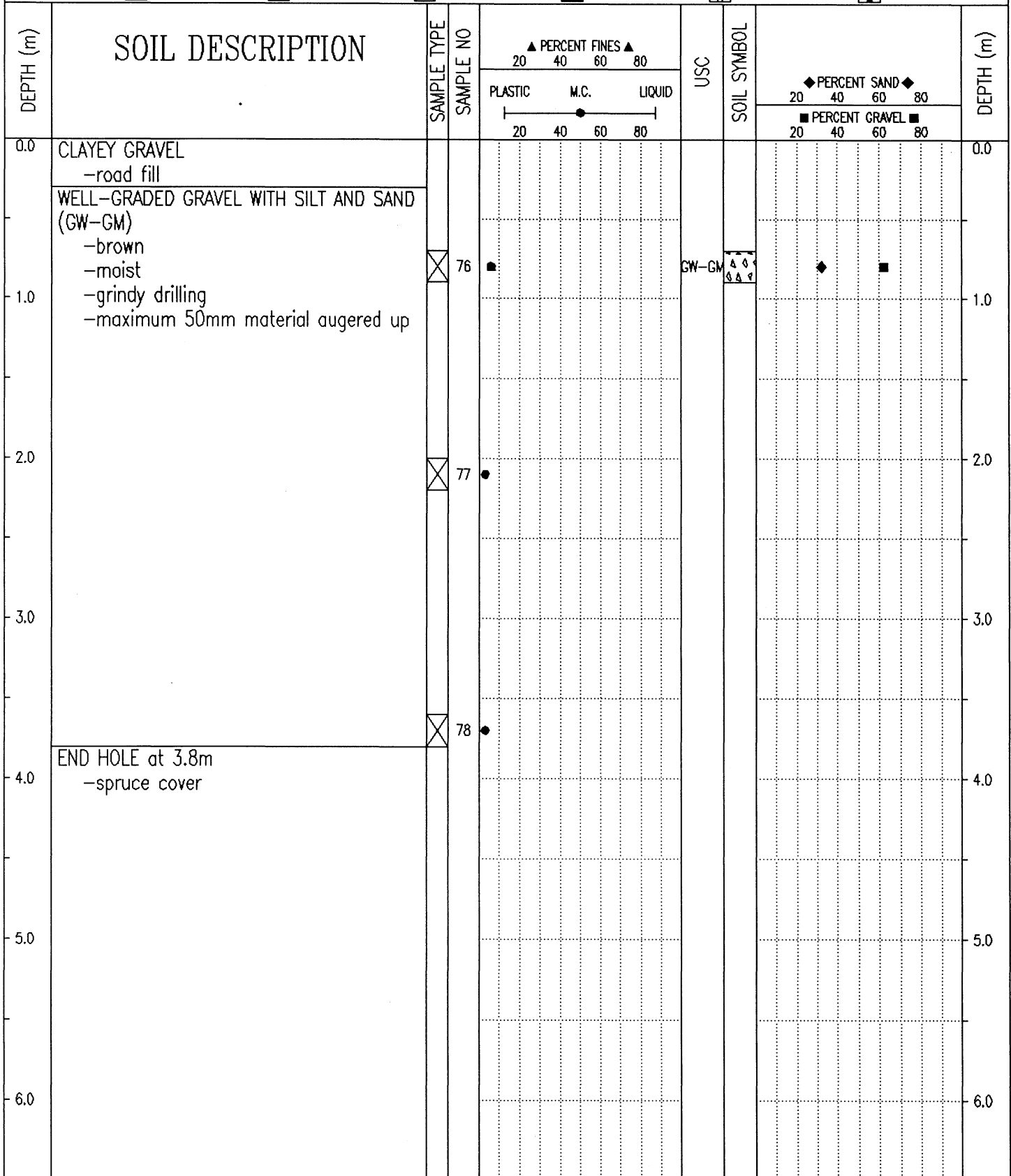
SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-26
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+750 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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LOGGED BY: JM	COMPLETION DEPTH: 3.8 m
REVIEWED BY:	COMPLETE: 90/10/03
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-27
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1935+900 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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LOGGED BY: JM

REVIEWED BY:

Fig. No:

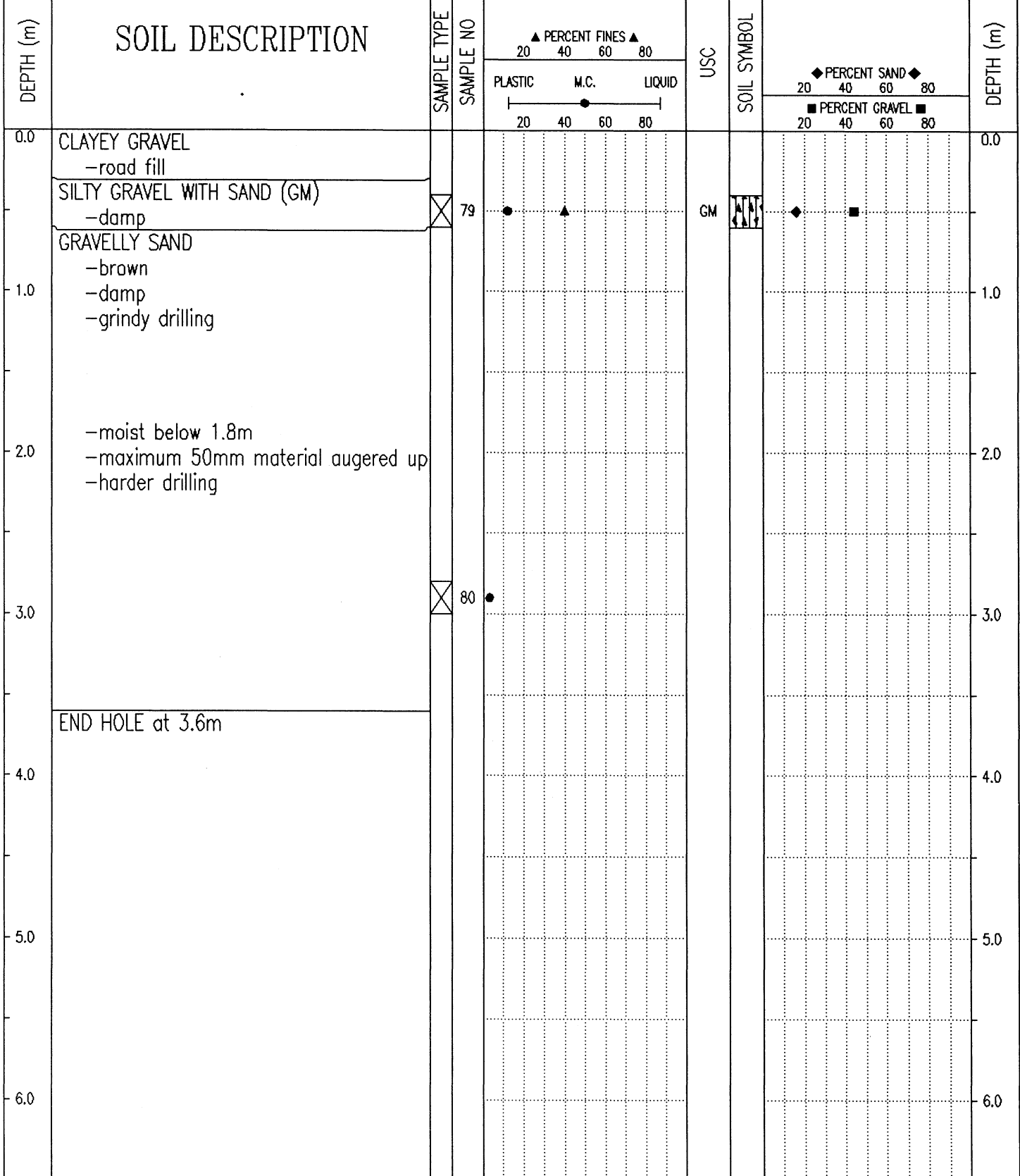
COMPLETION DEPTH: 3.8 m

COMPLETE: 90/10/03

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-28
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1936+050 o/s 6m Lt.	ELEVATION: 0.00 (m)

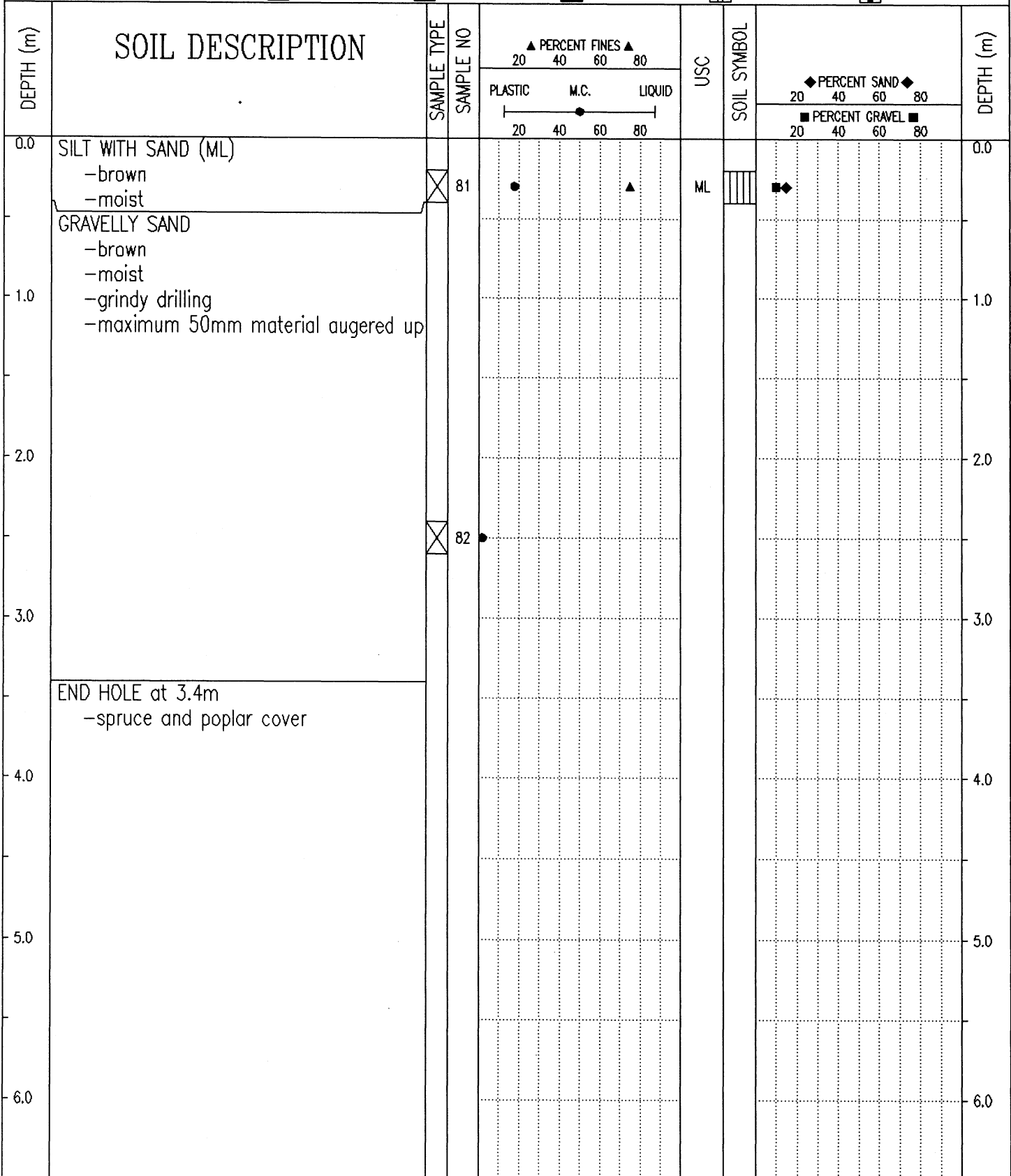
SAMPLE TYPE RETURN S.P.T. AUGER BULK TUBE CORE



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LOGGED BY: JM	COMPLETION DEPTH: 3.6 m
REVIEWED BY:	COMPLETE: 90/10/03
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-29
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1936+200 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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REVIEWED BY:	COMPLETE: 90/10/03
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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-30
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1936+350 o/s 6m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input checked="" type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		DEPTH (m)	
				PLASTIC	M.C.	LIQUID			PERCENT GRAVEL ■			
0.0	SANDY SILT -brown -moist -smooth drilling	<input checked="" type="checkbox"/>	83	20	40	60			20	40	60	80
1.0	SANDY GRAVEL -brown -moist -rough drilling -maximum 50mm material augered up	<input checked="" type="checkbox"/>	84									
2.0												
3.0												
4.0	END HOLE at 3.8m -spruce cover											
5.0												
6.0												

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LOGGED BY: JM	COMPLETION DEPTH: 3.8 m
REVIEWED BY:	COMPLETE: 90/10/03
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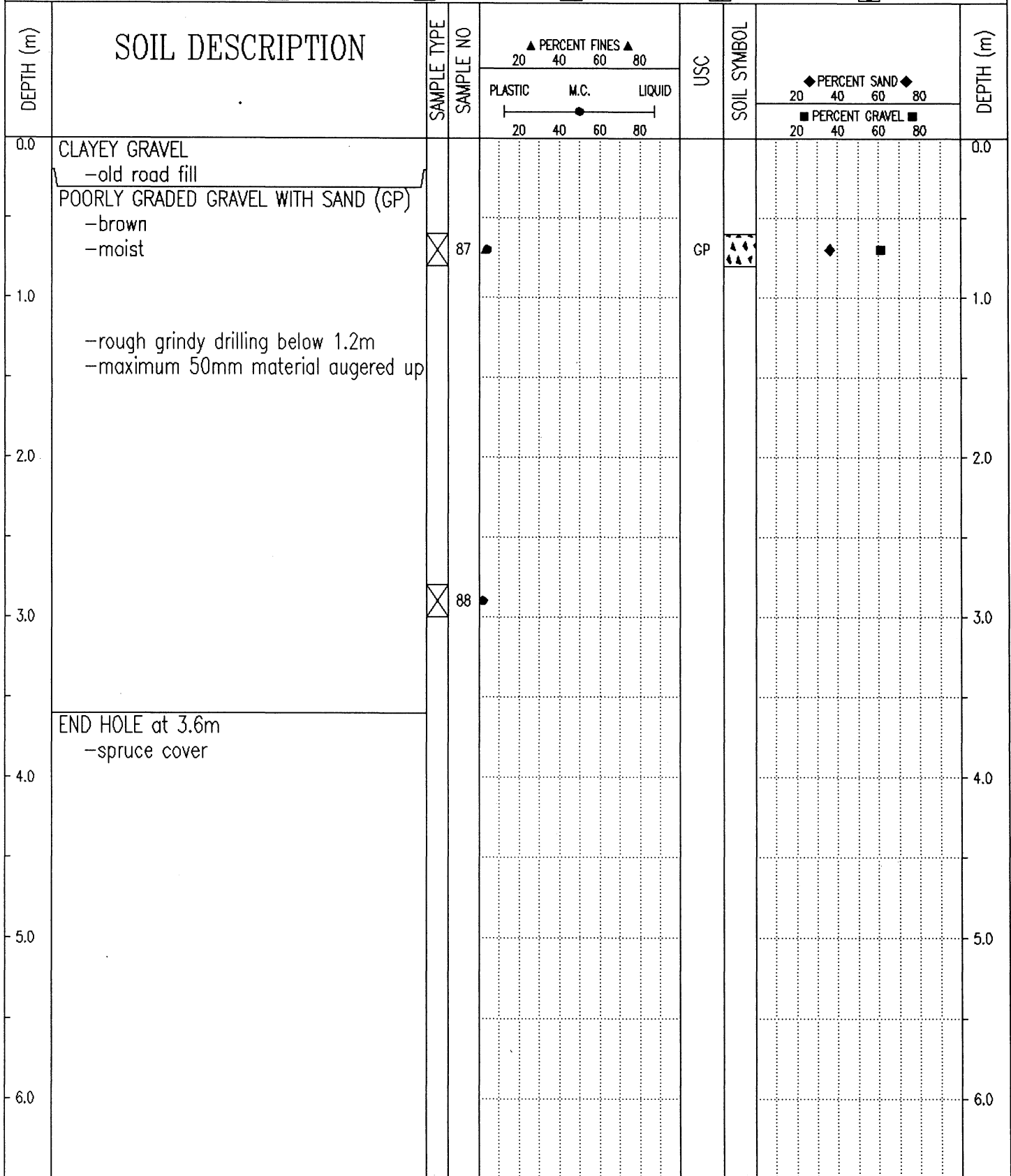
SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-31
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1936+500 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆			DEPTH (m)
				PLASTIC	M.C.	LIQUID			PERCENT GRAVEL ■			
0.0	SILTY GRAVEL WITH SAND (GM) -brown -moist -smooth drilling	<input checked="" type="checkbox"/>	85	●			GM				0.0	
1.0	SANDY GRAVEL -brown -moist -grindy drilling -maximum 50mm material augered up										1.0	
2.0											2.0	
3.0		<input checked="" type="checkbox"/>	86	●							3.0	
4.0	END HOLE at 3.6m -spruce and poplar cover										4.0	
5.0											5.0	
6.0											6.0	

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SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-32
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1936+650 o/s 5m Lt.	ELEVATION: 0.00 (m)
SAMPLE TYPE <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> S.P.T. <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> TUBE <input type="checkbox"/> CORE		



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LOGGED BY: JM

REVIEWED BY:

Fig. No:

COMPLETION DEPTH: 3.6 m

COMPLETE: 90/10/03

SUBSURFACE EXPLORATION AND TEST REPORT	ALASKA HIGHWAY PRE-ENGINEERING	TEST HOLE NO: 107-33
SHAKWAK PROJECT	A/H KM 1931.9-1965.5	Project No: SEGMENT 18
DRILL: B61 150mm Dia. SOLID STEM AUGER	LOCATION: STA 1936+800 o/s 6m Lt.	ELEVATION: 0.00 (m)

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

DEPTH (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	PERCENT FINES ▲			USC	SOIL SYMBOL	PERCENT SAND ◆		PERCENT GRAVEL ■		DEPTH (m)
				20	40	60			80	20	40	60	
0.0	SILTY GRAVEL WITH SAND (GM) -brown -damp	<input checked="" type="checkbox"/>	89	20	40	60	80	GM	◆	■		0.0	
1.0	SANDY GRAVEL -brown -moist -rough grindy drilling -maximum 50mm material augered up											1.0	
2.0												2.0	
3.0		<input checked="" type="checkbox"/>	90									3.0	
4.0	END HOLE at 3.6m											4.0	
5.0												5.0	
6.0												6.0	

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REVIEWED BY:	COMPLETE: 90/10/03
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PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-01
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1932+000 O/S 12M RT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 1
 LAB NO: 1972
 DEPTH: 0.8-1.0
 TYPE: AUGER
 ORGANIC

FIELD NO: 2.00
 LAB NO: 1973
 DEPTH: 2.2-2.4
 TYPE: AUGER

FIELD NO: 3.00
 LAB NO: 1974
 DEPTH: 4.0-4.2
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	100
4.76	100
2.38	--
2.00	100
1.19	--
0.841	99
0.595	--
0.42	97
0.297	--
0.177	--
0.149	37
0.074	16

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	100
38.1	90
25.4	87
19.0	78
12.7	73
9.5	70
4.76	62
2.38	--
2.00	55
1.19	--
0.841	40
0.595	--
0.42	21
0.297	--
0.177	--
0.149	5
0.074	3

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C. (%): 19

M.C. (%): 7.00

M.C. (%): 9.00

LIMITS

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

LIMITS

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

LIMITS

LIQUID: --
 PLASTIC: --
 P.I.: --

% GRAVEL: 0
 % SAND: 84
 % FINES: 16

% GRAVEL: 38.00
 % SAND: 59.00
 % FINES: 3.00

% GRAVEL: --
 % SAND: --
 % FINES: --

CLASSIFICATION:
 SILTY SAND (SM)

CLASSIFICATION:
 POORLY GRADED
 SAND WITH GRAVEL
 (SP)

CLASSIFICATION:

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-02
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1932+150 O/S 10M RT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO:	LAB NO:	DEPTH:	TYPE:
4	1975	0.8-1.0	AUGER
5	1976	2.2-2.4	AUGER
6	1977	3.8-4.0	AUGER

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	100	50.8	--
38.1	--	38.1	92	38.1	--
25.4	100	25.4	71	25.4	--
19.0	96	19.0	62	19.0	--
12.7	91	12.7	42	12.7	--
9.5	89	9.5	34	9.5	--
4.76	81	4.76	23	4.76	--
2.38	--	2.38	--	2.38	--
2.00	73	2.00	17	2.00	--
1.19	--	1.19	--	1.19	--
0.841	68	0.841	13	0.841	--
0.595	--	0.595	--	0.595	--
0.42	64	0.42	10	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	49	0.149	5	0.149	--
0.074	32	0.074	3	0.074	--

M.C.(%): 19 M.C.(%): 3 M.C.(%): 5

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

% GRAVEL:	19	% GRAVEL:	77	% GRAVEL:	--
% SAND:	49	% SAND:	20	% SAND:	--
% FINES:	32	% FINES:	3	% FINES:	--

CLASSIFICATION:	CLASSIFICATION:	CLASSIFICATION:
SILTY SAND WITH GRAVEL (SM)	POORLY GRADED GRAVEL WITH SAND (GP)	

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-03
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1932+300 O/S 8M LT.
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO:	LAB NO:	DEPTH:	TYPE:
7	1978	0.6-0.8	AUGER
8	1979	2.0-2.2	AUGER
9	1980	3.8-4.0	AUGER

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	100	50.8	--
38.1	--	38.1	76	38.1	--
25.4	--	25.4	56	25.4	--
19.0	100	19.0	50	19.0	--
12.7	99	12.7	42	12.7	--
9.5	98	9.5	38	9.5	--
4.76	95	4.76	33	4.76	--
2.38	--	2.38	--	2.38	--
2.00	92	2.00	29	2.00	--
1.19	--	1.19	--	1.19	--
0.841	88	0.841	27	0.841	--
0.595	--	0.595	--	0.595	--
0.42	85	0.42	24	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	78	0.149	16	0.149	--
0.074	74	0.074	8	0.074	--

M.C. (%): 54 M.C. (%): 6 M.C. (%): 5

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

% GRAVEL:	5	% GRAVEL:	67	% GRAVEL:	--
% SAND:	21	% SAND:	25	% SAND:	--
% FINES:	74	% FINES:	8	% FINES:	--

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

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:   107-04
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1932+450 O/S 8M RT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.02
=====

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```

=====
FIELD NO:        10      FIELD NO:        11      FIELD NO:        12
LAB NO:          1981    LAB NO:          1982    LAB NO:          1983
DEPTH:           0.6-0.8  DEPTH:           2.0-2.2  DEPTH:           3.6-3.8
TYPE:            AUGER   TYPE:            AUGER   TYPE:            AUGER
=====

```

```

=====
SIEVE   | PERCENT   SIEVE   | PERCENT   SIEVE   | PERCENT
SIZE    | PASSING   SIZE    | PASSING   SIZE    | PASSING
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	100	50.8	--
38.1	--	38.1	81	38.1	--
25.4	--	25.4	81	25.4	--
19.0	--	19.0	78	19.0	--
12.7	--	12.7	70	12.7	--
9.5	100	9.5	66	9.5	--
4.76	100	4.76	58	4.76	--
2.38	--	2.38	--	2.38	--
2.00	99	2.00	49	2.00	--
1.19	--	1.19	--	1.19	--
0.841	99	0.841	35	0.841	--
0.595	--	0.595	--	0.595	--
0.42	99	0.42	22	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	89	0.149	10	0.149	--
0.074	51	0.074	6	0.074	--

```

M.C. (%):      24      M.C. (%):      9      M.C. (%):      7
=====

```

```

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

```

```

% GRAVEL:       0      % GRAVEL:       42     % GRAVEL:       --
% SAND:         48     % SAND:         52     % SAND:         --
% FINES:        51     % FINES:        6      % FINES:        --
=====

```

```

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

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-05
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1932+600 O/S 8M RT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 13
 LAB NO: 1984
 DEPTH: 0.6-0.8
 TYPE: AUGER

FIELD NO: 14
 LAB NO: 1985
 DEPTH: 2.0-2.2
 TYPE: AUGER

FIELD NO: 15
 LAB NO: 1986
 DEPTH: 3.8-4.0
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	100
4.76	100
2.38	--
2.00	100
1.19	--
0.841	99
0.595	--
0.42	93
0.297	--
0.177	--
0.149	30
0.074	12

101.6	--
76.2	--
50.8	100
38.1	90
25.4	73
19.0	67
12.7	58
9.5	54
4.76	45
2.38	--
2.00	39
1.19	--
0.841	33
0.595	--
0.42	26
0.297	--
0.177	--
0.149	10
0.074	6

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C. (%): 9

M.C. (%): 5

M.C. (%): 6

LIMITS

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

LIMITS

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

LIMITS

LIQUID: --
 PLASTIC: --
 P.I.: --

% GRAVEL: 0
 % SAND: 88
 % FINES: 12

% GRAVEL: 55
 % SAND: 39
 % FINES: 6

% GRAVEL: --
 % SAND: --
 % FINES: --

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

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

CLASSIFICATION:

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-06
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1932+750 O/S 9M RT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 16
 LAB NO: 1987
 DEPTH: 0.8-1.0
 TYPE: AUGER

FIELD NO: 17
 LAB NO: 1988
 DEPTH: 1.6-1.8
 TYPE: AUGER

FIELD NO: 18
 LAB NO: 1989
 DEPTH: 3.6-3.8
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	100
2.38	--
2.00	100
1.19	--
0.841	100
0.595	--
0.42	99
0.297	--
0.177	--
0.149	56
0.074	22

101.6	--
76.2	--
50.8	100
38.1	88
25.4	82
19.0	82
12.7	77
9.5	74
4.76	69
2.38	--
2.00	67
1.19	--
0.841	65
0.595	--
0.42	61
0.297	--
0.177	--
0.149	32
0.074	21

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C. (%): 12

M.C. (%): 21

M.C. (%): 9

LIMITS

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

LIMITS

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

LIMITS

LIQUID: --
 PLASTIC: --
 P.I.: --

% GRAVEL: 0
 % SAND: 78
 % FINES: 22

% GRAVEL: 31
 % SAND: 48
 % FINES: 21

% GRAVEL: --
 % SAND: --
 % FINES: --

CLASSIFICATION:
 SILTY SAND (SM)

CLASSIFICATION:
 SILTY SAND WITH
 GRAVEL (SM)

CLASSIFICATION:

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-07
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1932+900 O/S 9M RT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.02
=====

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=====
FIELD NO:   19   FIELD NO:   20   FIELD NO:   21
LAB NO:    1990  LAB NO:    1991  LAB NO:    1992
DEPTH:     0.6-0.8 DEPTH:     1.8-2.0 DEPTH:     3.6-3.8
TYPE:      AUGER TYPE:      AUGER TYPE:      AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	100	76.2	--
50.8	--	50.8	50	50.8	--
38.1	--	38.1	43	38.1	--
25.4	--	25.4	33	25.4	--
19.0	--	19.0	28	19.0	--
12.7	--	12.7	24	12.7	--
9.5	--	9.5	22	9.5	--
4.76	100	4.76	20	4.76	--
2.38	--	2.38	--	2.38	--
2.00	100	2.00	18	2.00	--
1.19	--	1.19	--	1.19	--
0.841	100	0.841	17	0.841	--
0.595	--	0.595	--	0.595	--
0.42	97	0.42	15	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	35	0.149	8	0.149	--
0.074	31	0.074	5	0.074	--

```

M.C.(%):      17   M.C.(%):      4   M.C.(%):      6
=====

```

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

% GRAVEL:	0	% GRAVEL:	80	% GRAVEL:	--
% SAND:	69	% SAND:	15	% SAND:	--
% FINES:	31	% FINES:	5	% FINES:	--

```

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

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-08
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1933+050 O/S 13M RT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 22
 LAB NO: 1993
 DEPTH: 0.6-0.8
 TYPE: AUGER

FIELD NO: 23
 LAB NO: 1994
 DEPTH: 2.0-2.2
 TYPE: AUGER

FIELD NO: 24
 LAB NO: 1995
 DEPTH: 3.8-4.0
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	100
4.76	100
2.38	--
2.00	100
1.19	--
0.841	99
0.595	--
0.42	96
0.297	--
0.177	--
0.149	37
0.074	17

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	88
25.4	61
19.0	51
12.7	45
9.5	41
4.76	34
2.38	--
2.00	29
1.19	--
0.841	24
0.595	--
0.42	19
0.297	--
0.177	--
0.149	10
0.074	7

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C. (%): 12

M.C. (%): 5

M.C. (%): 5

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

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

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

% GRAVEL: 0
 % SAND: 83
 % FINES: 17

% GRAVEL: 66
 % SAND: 27
 % FINES: 7

% GRAVEL: --
 % SAND: --
 % FINES: --

CLASSIFICATION:
 SILTY SAND (SM)

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

CLASSIFICATION:

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-09
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1933+200 O/S 3M RT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.02
=====

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```

=====
FIELD NO:        25      FIELD NO:        26      FIELD NO:        27
LAB NO: 1996      LAB NO: 1997      LAB NO: 1998
DEPTH:  0.6-0.8   DEPTH:  2.0-2.2   DEPTH:  3.8-4.0
TYPE:   AUGER     TYPE:   AUGER     TYPE:   AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	--	38.1	100	38.1	--
25.4	--	25.4	69	25.4	--
19.0	--	19.0	63	19.0	--
12.7	100	12.7	41	12.7	--
9.5	100	9.5	35	9.5	--
4.76	99	4.76	27	4.76	--
2.38	--	2.38	--	2.38	--
2.00	99	2.00	22	2.00	--
1.19	--	1.19	--	1.19	--
0.841	99	0.841	18	0.841	--
0.595	--	0.595	--	0.595	--
0.42	99	0.42	14	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	93	0.149	8	0.149	--
0.074	65	0.074	6	0.074	--

```

M.C.(%):        31      M.C.(%):        4      M.C.(%):        5
=====

```

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

```

% GRAVEL:       1      % GRAVEL:       73      % GRAVEL:       --
% SAND:         34      % SAND:         22      % SAND:         --
% FINES:        65      % FINES:         6      % FINES:         --
=====

```

```

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

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-10
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1933+350 O/S 8M RT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO:      28   FIELD NO:      29   FIELD NO:      30
LAB NO:       1999  LAB NO:       2000  LAB NO:       2001
DEPTH:        0.6-0.8  DEPTH:        1.8-2.0  DEPTH:        3.6-3.8
TYPE:         AUGER  TYPE:         AUGER  TYPE:         AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	--	38.1	100	38.1	--
25.4	--	25.4	75	25.4	--
19.0	--	19.0	64	19.0	--
12.7	--	12.7	51	12.7	--
9.5	--	9.5	46	9.5	--
4.76	100	4.76	37	4.76	--
2.38	--	2.38	--	2.38	--
2.00	100	2.00	33	2.00	--
1.19	--	1.19	--	1.19	--
0.841	99	0.841	29	0.841	--
0.595	--	0.595	--	0.595	--
0.42	97	0.42	26	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	88	0.149	18	0.149	--
0.074	67	0.074	14	0.074	--

```

M.C.(%):      36   M.C.(%):      7   M.C.(%):      4
=====

```

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

```

% GRAVEL:      0   % GRAVEL:      63   % GRAVEL:      --
% SAND:        33  % SAND:        24   % SAND:        --
% FINES:       67  % FINES:       14   % FINES:       --
=====

```

```

CLASSIFICATION:  CLASSIFICATION:  CLASSIFICATION:
SANDY SILT (ML)  SILTY GRAVEL  WITH SAND (GM)
=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:     107-11
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1933+500 O/S 9M RT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO:        31      FIELD NO:        32
LAB NO:          2002    LAB NO:          2003
DEPTH:           0.6-0.8 DEPTH:           2.0-2.2
TYPE:            AUGER   TYPE:            AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	--	38.1	--
25.4	--	25.4	--
19.0	--	19.0	--
12.7	--	12.7	--
9.5	--	9.5	--
4.76	100	4.76	--
2.38	--	2.38	--
2.00	100	2.00	--
1.19	--	1.19	--
0.841	100	0.841	--
0.595	--	0.595	--
0.42	97	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	82	0.149	--
0.074	63	0.074	--

```

M.C.(%):        39      M.C.(%):        7
=====

```

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

```

% GRAVEL:        0      % GRAVEL:        --
% SAND:          37     % SAND:          --
% FINES:         63     % FINES:         --
=====

```

```

CLASSIFICATION:   CLASSIFICATION:
SANDY SILT (ML)
=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-12
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1933+635 O/S 9M RT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO: 33      FIELD NO: 34      FIELD NO: 35
LAB NO: 2004     LAB NO: 2005     LAB NO: 2006
DEPTH: 0.6-0.8  DEPTH: 2.0-2.2  DEPTH: 3.8-4.0
TYPE:  AUGER     TYPE:  AUGER     TYPE:  AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	100	38.1	--	38.1	--
25.4	83	25.4	--	25.4	--
19.0	74	19.0	--	19.0	--
12.7	56	12.7	--	12.7	--
9.5	51	9.5	--	9.5	--
4.76	39	4.76	--	4.76	--
2.38	--	2.38	--	2.38	--
2.00	28	2.00	--	2.00	--
1.19	--	1.19	--	1.19	--
0.841	21	0.841	--	0.841	--
0.595	--	0.595	--	0.595	--
0.42	16	0.42	--	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	11	0.149	--	0.149	--
0.074	9	0.074	--	0.074	--

```

M.C. (%): 4      M.C. (%): 3      M.C. (%): 8
=====

```

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

```

% GRAVEL: 61      % GRAVEL: --      % GRAVEL: --
% SAND: 30        % SAND: --        % SAND: --
% FINES: 9        % FINES: --       % FINES: --
=====

```

```

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

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-13
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1933+850 O/S 10M LT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO:   36   FIELD NO:   37   FIELD NO:   38
LAB NO:    2007  LAB NO:    2008  LAB NO:    2009
DEPTH:    0.6-0.8 DEPTH:    2.0-2.2 DEPTH:    3.8-4.0
TYPE:     AUGER  TYPE:     AUGER  TYPE:     AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	100	50.8	100	50.8	--
38.1	87	38.1	81	38.1	--
25.4	69	25.4	67	25.4	--
19.0	69	19.0	44	19.0	--
12.7	54	12.7	33	12.7	--
9.5	49	9.5	27	9.5	--
4.76	42	4.76	19	4.76	--
2.38	--	2.38	--	2.38	--
2.00	36	2.00	15	2.00	--
1.19	--	1.19	--	1.19	--
0.841	29	0.841	10	0.841	--
0.595	--	0.595	--	0.595	--
0.42	21	0.42	8	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	17	0.149	5	0.149	--
0.074	15	0.074	4	0.074	--

```

M.C.(%):      6   M.C.(%):      3   M.C.(%):      3
=====

```

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

```

% GRAVEL:     58   % GRAVEL:     81   % GRAVEL:     --
% SAND:       27   % SAND:       15   % SAND:       --
% FINES:      15   % FINES:       4   % FINES:      --
=====

```

```

CLASSIFICATION:  CLASSIFICATION:  CLASSIFICATION:
SILTY GRAVEL     POORLY GRADED   GRAVEL WITH SAND
WITH SAND (GM)   (GP)
=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:     107-14
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:  1933+945 O/S 5M RT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO:        39   FIELD NO:        40   FIELD NO:        41
LAB NO:  2010     LAB NO:  2011     LAB NO:  2012
DEPTH:   0.8-1.0  DEPTH:   2.0-2.2  DEPTH:   3.2-3.4
TYPE:    AUGER    TYPE:    AUGER    TYPE:    AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	100	38.1	--	38.1	--
25.4	84	25.4	--	25.4	--
19.0	77	19.0	--	19.0	--
12.7	65	12.7	--	12.7	--
9.5	61	9.5	--	9.5	--
4.76	50	4.76	--	4.76	--
2.38	--	2.38	--	2.38	--
2.00	38	2.00	--	2.00	--
1.19	--	1.19	--	1.19	--
0.841	28	0.841	--	0.841	--
0.595	--	0.595	--	0.595	--
0.42	21	0.42	--	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	14	0.149	--	0.149	--
0.074	12	0.074	--	0.074	--

```

M.C.(%):        6   M.C.(%):        3   M.C.(%):        3
=====

```

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

```

% GRAVEL:       50   % GRAVEL:       --   % GRAVEL:       --
% SAND:         38   % SAND:         --   % SAND:         --
% FINES:        12   % FINES:        --   % FINES:        --
=====

```

```

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

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-15
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1934+100 O/S 6M LT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 42
 LAB NO: 2013
 DEPTH: 0.8-1.0
 TYPE: AUGER

FIELD NO: 43
 LAB NO: 2014
 DEPTH: 2.0-2.2
 TYPE: AUGER

FIELD NO: 44
 LAB NO: 2015
 DEPTH: 3.8-4.0
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	--
38.1	100
25.4	90
19.0	88
12.7	74
9.5	68
4.76	51
2.38	--
2.00	34
1.19	--
0.841	24
0.595	--
0.42	15
0.297	--
0.177	--
0.149	10
0.074	7

101.6	--
76.2	--
50.8	100
38.1	90
25.4	72
19.0	56
12.7	36
9.5	25
4.76	17
2.38	--
2.00	13
1.19	--
0.841	9
0.595	--
0.42	6
0.297	--
0.177	--
0.149	3
0.074	3

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C.(%): 5

M.C.(%): 2

M.C.(%): 2

LIMITS

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

LIMITS

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

LIMITS

LIQUID: --
 PLASTIC: --
 P.I.: --

% GRAVEL: 49
 % SAND: 43
 % FINES: 7

% GRAVEL: 83
 % SAND: 15
 % FINES: 3

% GRAVEL: --
 % SAND: --
 % FINES: --

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

CLASSIFICATION:
 POORLY GRADED
 GRAVEL WITH SAND
 (GP)

CLASSIFICATION:

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-16
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1934+250 O/S 6M RT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO: 45   FIELD NO: 46   FIELD NO: 47
LAB NO: 2016   LAB NO: 2017   LAB NO: 2018
DEPTH: 0.8-1.0 DEPTH: 2.0-2.2 DEPTH: 3.8-4.0
TYPE:  AUGER   TYPE:  AUGER   TYPE:  AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	100	38.1	--	38.1	--
25.4	71	25.4	--	25.4	--
19.0	61	19.0	--	19.0	--
12.7	47	12.7	--	12.7	--
9.5	41	9.5	--	9.5	--
4.76	29	4.76	--	4.76	--
2.38	--	2.38	--	2.38	--
2.00	23	2.00	--	2.00	--
1.19	--	1.19	--	1.19	--
0.841	19	0.841	--	0.841	--
0.595	--	0.595	--	0.595	--
0.42	12	0.42	--	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	4	0.149	--	0.149	--
0.074	3	0.074	--	0.074	--

```

M.C.(%): 3   M.C.(%): 3   M.C.(%): 2
=====

```

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

% GRAVEL:	71	% GRAVEL:	--	% GRAVEL:	--
% SAND:	27	% SAND:	--	% SAND:	--
% FINES:	3	% FINES:	--	% FINES:	--

```

CLASSIFICATION:   CLASSIFICATION:   CLASSIFICATION:
POORLY GRADED
GRAVEL WITH SAND
(GP)
=====

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-17
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1934+400 O/S 6M RT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 48
 LAB NO: 2019
 DEPTH: 0.6-0.8
 TYPE: AUGER

FIELD NO: 49
 LAB NO: 2020
 DEPTH: 2.0-2.2
 TYPE: AUGER

FIELD NO: 50
 LAB NO: 2021
 DEPTH: 3.6-3.8
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

SIEVE SIZE	PERCENT PASSING
------------	-----------------

101.6	--
76.2	--
50.8	100
38.1	85
25.4	73
19.0	63
12.7	48
9.5	40
4.76	31
2.38	--
2.00	24
1.19	--
0.841	18
0.595	--
0.42	9
0.297	--
0.177	--
0.149	4
0.074	3

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C.(%): 3

M.C.(%): 3

M.C.(%): 2

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

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

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

% GRAVEL: 69
 % SAND: 28
 % FINES: 3

% GRAVEL: --
 % SAND: --
 % FINES: --

% GRAVEL: --
 % SAND: --
 % FINES: --

CLASSIFICATION:
 WELL-GRADED
 GRAVEL WITH SAND
 (GW)

CLASSIFICATION:

CLASSIFICATION:

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-18
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1934+550 O/S 6M RT
LOGGED BY:       JM                   DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO: 51   FIELD NO: 52   FIELD NO: 53
LAB NO: 2022   LAB NO: 2023   LAB NO: 2024
DEPTH: 0.7-0.9 DEPTH: 2.0-2.2 DEPTH: 3.8-4.0
TYPE:  AUGER   TYPE:  AUGER   TYPE:  AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	100	50.8	100	50.8	--
38.1	80	38.1	92	38.1	--
25.4	78	25.4	80	25.4	--
19.0	78	19.0	63	19.0	--
12.7	73	12.7	45	12.7	--
9.5	71	9.5	34	9.5	--
4.76	66	4.76	22	4.76	--
2.38	--	2.38	--	2.38	--
2.00	63	2.00	16	2.00	--
1.19	--	1.19	--	1.19	--
0.841	59	0.841	13	0.841	--
0.595	--	0.595	--	0.595	--
0.42	55	0.42	9	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	48	0.149	6	0.149	--
0.074	40	0.074	5	0.074	--

```

M.C. (%): 14   M.C. (%): 3   M.C. (%): 2
=====

```

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

```

% GRAVEL: 34   % GRAVEL: 78   % GRAVEL: --
% SAND: 26    % SAND: 17    % SAND: --
% FINES: 40   % FINES: 5    % FINES: --
=====

```

```

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

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-19
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1934+700 O/S 6M LT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 54
 LAB NO: 2025
 DEPTH: 0.7-0.9
 TYPE: AUGER

FIELD NO: 55
 LAB NO: 2026
 DEPTH: 2.0-2.2
 TYPE: AUGER

FIELD NO: 56
 LAB NO: 2027
 DEPTH: 3.6-3.8
 TYPE: AUGER

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	100
38.1	83
25.4	69
19.0	54
12.7	50
9.5	43
4.76	33
2.38	--
2.00	25
1.19	--
0.841	19
0.595	--
0.42	11
0.297	--
0.177	--
0.149	6
0.074	5

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

SIEVE SIZE	PERCENT PASSING
101.6	--
76.2	--
50.8	--
38.1	--
25.4	--
19.0	--
12.7	--
9.5	--
4.76	--
2.38	--
2.00	--
1.19	--
0.841	--
0.595	--
0.42	--
0.297	--
0.177	--
0.149	--
0.074	--

M.C.(%): 4

M.C.(%): 2

M.C.(%): 2

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

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

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

% GRAVEL: 67
 % SAND: 29
 % FINES: 5

% GRAVEL: --
 % SAND: --
 % FINES: --

% GRAVEL: --
 % SAND: --
 % FINES: --

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

CLASSIFICATION:

CLASSIFICATION:

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-20
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1934+~~850~~ 0/S ~~7~~M LT
 LOGGED BY: JM DATE COMPLETED: 90.10.02

FIELD NO: 57	FIELD NO: 58	FIELD NO: 59
LAB NO: 2028	LAB NO: 2029	LAB NO: 2030
DEPTH: 0.7-0.9	DEPTH: 2.0-2.2	DEPTH: 3.6-3.8
TYPE: AUGER	TYPE: AUGER	TYPE: AUGER

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	100	38.1	--	38.1	--
25.4	89	25.4	--	25.4	--
19.0	81	19.0	--	19.0	--
12.7	66	12.7	--	12.7	--
9.5	57	9.5	--	9.5	--
4.76	44	4.76	--	4.76	--
2.38	--	2.38	--	2.38	--
2.00	32	2.00	--	2.00	--
1.19	--	1.19	--	1.19	--
0.841	22	0.841	--	0.841	--
0.595	--	0.595	--	0.595	--
0.42	12	0.42	--	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	6	0.149	--	0.149	--
0.074	5	0.074	--	0.074	--

M.C.(%): 4 M.C.(%): 2 M.C.(%): 2

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

% GRAVEL:	56	% GRAVEL:	--	% GRAVEL:	--
% SAND:	39	% SAND:	--	% SAND:	--
% FINES:	5	% FINES:	--	% FINES:	--

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

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:   107-21
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1935+000 O/S 7M LT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.02
=====

```

```

FIELD NO:      60
LAB NO:        2031
DEPTH:         0.6-0.8
TYPE:          AUGER

```

```

FIELD NO:      61
LAB NO:        2032
DEPTH:         2.0-2.2
TYPE:          AUGER

```

```

FIELD NO:      62
LAB NO:        2033
DEPTH:         3.6-3.8
TYPE:          AUGER

```

```

SIEVE | PERCENT
SIZE  | PASSING
-----|-----

```

```

SIEVE | PERCENT
SIZE  | PASSING
-----|-----

```

```

SIEVE | PERCENT
SIZE  | PASSING
-----|-----

```

```

101.6 | --
76.2  | --
50.8  | 100
38.1  | 88
25.4  | 73
19.0  | 61
12.7  | 53
9.5   | 47
4.76  | 37
2.38  | --
2.00  | 28
1.19  | --
0.841 | 19
0.595 | --
0.42  | 12
0.297 | --
0.177 | --
0.149 | 9
0.074 | 7

```

```

101.6 | --
76.2  | --
50.8  | --
38.1  | --
25.4  | --
19.0  | --
12.7  | --
9.5   | --
4.76  | --
2.38  | --
2.00  | --
1.19  | --
0.841 | --
0.595 | --
0.42  | --
0.297 | --
0.177 | --
0.149 | --
0.074 | --

```

```

101.6 | --
76.2  | --
50.8  | --
38.1  | --
25.4  | --
19.0  | --
12.7  | --
9.5   | --
4.76  | --
2.38  | --
2.00  | --
1.19  | --
0.841 | --
0.595 | --
0.42  | --
0.297 | --
0.177 | --
0.149 | --
0.074 | --

```

```

M.C.(%):      5

```

```

M.C.(%):      2

```

```

M.C.(%):      2

```

LIMITS

```

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

```

LIMITS

```

LIQUID:      --
PLASTIC:     --
P.I.:       --

```

LIMITS

```

LIQUID:      --
PLASTIC:     --
P.I.:       --

```

```

% GRAVEL:    63
% SAND:      30
% FINES:     7

```

```

% GRAVEL:    --
% SAND:      --
% FINES:     --

```

```

% GRAVEL:    --
% SAND:      --
% FINES:     --

```

```

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

```

```

CLASSIFICATION:

```

```

CLASSIFICATION:

```



```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-22
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1935+150 O/S 8M LT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.02
=====

```

```

=====
FIELD NO:        63   FIELD NO:        64   FIELD NO:        65
LAB NO:          2034  LAB NO:          2035  LAB NO:          2036
DEPTH:           0.7-0.9 DEPTH:           2.0-2.2 DEPTH:           3.6-3.8
TYPE:            AUGER  TYPE:            AUGER  TYPE:            AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	100	76.2	--	76.2	--
50.8	81	50.8	100	50.8	--
38.1	61	38.1	92	38.1	--
25.4	56	25.4	82	25.4	--
19.0	48	19.0	72	19.0	--
12.7	44	12.7	57	12.7	--
9.5	39	9.5	49	9.5	--
4.76	31	4.76	34	4.76	--
2.38	--	2.38	--	2.38	--
2.00	25	2.00	24	2.00	--
1.19	--	1.19	--	1.19	--
0.841	19	0.841	16	0.841	--
0.595	--	0.595	--	0.595	--
0.42	13	0.42	8	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	9	0.149	5	0.149	--
0.074	7	0.074	4	0.074	--

```

M.C.(%):        5   M.C.(%):        3   M.C.(%):        3
=====

```

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

```

% GRAVEL:        69   % GRAVEL:        66   % GRAVEL:        --
% SAND:          24   % SAND:          30   % SAND:          --
% FINES:         7    % FINES:         4    % FINES:         --
=====

```

```

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

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-23
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1935+300 O/S 5M LT
 LOGGED BY: JM DATE COMPLETED: 90.10.03

FIELD NO: 66	FIELD NO: 67
LAB NO: 2037	LAB NO: 2038
DEPTH: 0.7-0.9	DEPTH: 2.0-2.2
TYPE: AUGER	TYPE: AUGER

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	100	50.8	--
38.1	80	38.1	--
25.4	65	25.4	--
19.0	61	19.0	--
12.7	54	12.7	--
9.5	50	9.5	--
4.76	41	4.76	--
2.38	--	2.38	--
2.00	33	2.00	--
1.19	--	1.19	--
0.841	25	0.841	--
0.595	--	0.595	--
0.42	17	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	12	0.149	--
0.074	9	0.074	--

M.C.(%): 4 M.C.(%): 2

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

% GRAVEL:	59	% GRAVEL:	--
% SAND:	32	% SAND:	--
% FINES:	9	% FINES:	--

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

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-24
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1935+450 O/S 5M LT
 LOGGED BY: JM DATE COMPLETED: 90.10.03

FIELD NO: 68	FIELD NO: 69
LAB NO: 2039	LAB NO: 2040
DEPTH: 0.7-0.9	DEPTH: 2.0-2.2
TYPE: AUGER	TYPE: AUGER

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	100	38.1	--
25.4	84	25.4	--
19.0	80	19.0	--
12.7	69	12.7	--
9.5	58	9.5	--
4.76	46	4.76	--
2.38	--	2.38	--
2.00	34	2.00	--
1.19	--	1.19	--
0.841	25	0.841	--
0.595	--	0.595	--
0.42	16	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	9	0.149	--
0.074	7	0.074	--

M.C.(%): 5 M.C.(%): 2

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

% GRAVEL:	54	% GRAVEL:	--
% SAND:	40	% SAND:	--
% FINES:	7	% FINES:	--

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

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-25
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1935+600 O/S 5M LT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.03
=====

```

```

FIELD NO:       70
LAB NO:         2041
DEPTH:          0.7-0.9
TYPE:           AUGER

```

```

FIELD NO:       71
LAB NO:         2042
DEPTH:          2.0-2.2
TYPE:           AUGER

```

```

FIELD NO:       72
LAB NO:         2043
DEPTH:          3.6-3.8
TYPE:           AUGER

```

```

SIEVE | PERCENT
SIZE   | PASSING
-----|-----

```

```

101.6 | --
76.2  | --
50.8  | 100
38.1  | 88
25.4  | 73
19.0  | 65
12.7  | 54
9.5   | 45
4.76  | 38
2.38  | --
2.00  | 32
1.19  | --
0.841 | 28
0.595 | --
0.42  | 24
0.297 | --
0.177 | --
0.149 | 9
0.074 | 6

```

```

SIEVE | PERCENT
SIZE   | PASSING
-----|-----

```

```

101.6 | --
76.2  | --
50.8  | --
38.1  | --
25.4  | --
19.0  | --
12.7  | --
9.5   | --
4.76  | --
2.38  | --
2.00  | --
1.19  | --
0.841 | --
0.595 | --
0.42  | --
0.297 | --
0.177 | --
0.149 | --
0.074 | --

```

```

SIEVE | PERCENT
SIZE   | PASSING
-----|-----

```

```

101.6 | --
76.2  | --
50.8  | --
38.1  | --
25.4  | --
19.0  | --
12.7  | --
9.5   | --
4.76  | --
2.38  | --
2.00  | --
1.19  | --
0.841 | --
0.595 | --
0.42  | --
0.297 | --
0.177 | --
0.149 | --
0.074 | --

```

```

M.C.(%):        6

```

```

M.C.(%):        3

```

```

M.C.(%):        2

```

LIMITS

```

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

```

LIMITS

```

LIQUID:         --
PLASTIC:        --
P.I.:           --

```

LIMITS

```

LIQUID:         --
PLASTIC:        --
P.I.:           --

```

```

% GRAVEL:       62
% SAND:         31
% FINES:        6

```

```

% GRAVEL:       --
% SAND:         --
% FINES:        --

```

```

% GRAVEL:       --
% SAND:         --
% FINES:        --

```

```

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

```

```

CLASSIFICATION:

```

```

CLASSIFICATION:

```

```

=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-26
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1935+750 O/S 5M LT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.03
=====

```

```

=====
FIELD NO:       73   FIELD NO:       74   FIELD NO:       75
LAB NO:        2044  LAB NO:        2045  LAB NO:        2046
DEPTH:         0.7-0.9 DEPTH:         2.0-2.2 DEPTH:         3.6-3.8
TYPE:          AUGER TYPE:          AUGER TYPE:          AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	--	50.8	--	50.8	--
38.1	100	38.1	100	38.1	--
25.4	62	25.4	74	25.4	--
19.0	56	19.0	63	19.0	--
12.7	47	12.7	44	12.7	--
9.5	40	9.5	35	9.5	--
4.76	30	4.76	24	4.76	--
2.38	--	2.38	--	2.38	--
2.00	21	2.00	19	2.00	--
1.19	--	1.19	--	1.19	--
0.841	15	0.841	13	0.841	--
0.595	--	0.595	--	0.595	--
0.42	11	0.42	6	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	6	0.149	3	0.149	--
0.074	4	0.074	2	0.074	--

```

M.C.(%):       4   M.C.(%):       3   M.C.(%):       2
=====

```

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

```

% GRAVEL:      70   % GRAVEL:      76   % GRAVEL:      --
% SAND:        26   % SAND:        22   % SAND:        --
% FINES:       4    % FINES:       2    % FINES:       --
=====

```

```

CLASSIFICATION:  CLASSIFICATION:  CLASSIFICATION:
WELL-GRADED      POORLY GRADED
GRAVEL WITH SAND GRAVEL WITH SAND
(GW)              (GP)
=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:     107-27
CLIENT:           SHAKWAK PROJECT
PROJECT NAME:     ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:       17-225
HOLE LOCATION:    1935+900 O/S 5M LT
LOGGED BY:        JM                   DATE COMPLETED: 90.10.03
=====

```

```

=====
FIELD NO:        76   FIELD NO:        77   FIELD NO:        78
LAB NO:          2047  LAB NO:          2048  LAB NO:          2049
DEPTH:           0.7-0.9  DEPTH:           2.0-2.2  DEPTH:           3.6-3.8
TYPE:            AUGER  TYPE:            AUGER  TYPE:            AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--	101.6	--
76.2	--	76.2	--	76.2	--
50.8	100	50.8	--	50.8	--
38.1	83	38.1	--	38.1	--
25.4	77	25.4	--	25.4	--
19.0	64	19.0	--	19.0	--
12.7	57	12.7	--	12.7	--
9.5	50	9.5	--	9.5	--
4.76	38	4.76	--	4.76	--
2.38	--	2.38	--	2.38	--
2.00	27	2.00	--	2.00	--
1.19	--	1.19	--	1.19	--
0.841	21	0.841	--	0.841	--
0.595	--	0.595	--	0.595	--
0.42	16	0.42	--	0.42	--
0.297	--	0.297	--	0.297	--
0.177	--	0.177	--	0.177	--
0.149	8	0.149	--	0.149	--
0.074	6	0.074	--	0.074	--

```

M.C.(%):        6   M.C.(%):        3   M.C.(%):        3
=====

```

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

```

% GRAVEL:        62   % GRAVEL:        --   % GRAVEL:        --
% SAND:           32   % SAND:           --   % SAND:           --
% FINES:          6   % FINES:          --   % FINES:          --
=====

```

```

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

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-28
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1936+050 O/S 6M LT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.03
=====

```

```

=====
FIELD NO:       79   FIELD NO:       80
LAB NO:        2050  LAB NO:        2051
DEPTH:         0.4-0.6 DEPTH:         2.8-3.0
TYPE:          AUGER TYPE:          AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	100	38.1	--
25.4	77	25.4	--
19.0	70	19.0	--
12.7	64	12.7	--
9.5	60	9.5	--
4.76	56	4.76	--
2.38	--	2.38	--
2.00	51	2.00	--
1.19	--	1.19	--
0.841	48	0.841	--
0.595	--	0.595	--
0.42	46	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	42	0.149	--
0.074	40	0.074	--

```

M.C. (%):      12   M.C. (%):      3
=====

```

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

```

% GRAVEL:      44   % GRAVEL:      --
% SAND:        16   % SAND:        --
% FINES:       40   % FINES:       --
=====

```

```

CLASSIFICATION:  CLASSIFICATION:
SILTY GRAVEL
WITH SAND (GM)
=====

```

PROJECT NUMBER: SEGMENT 18 HOLE NUMBER: 107-29
 CLIENT: SHAKWAK PROJECT
 PROJECT NAME: ALASKA HIGHWAY RECONSTRUCTION
 PROJECT LOCATION: BEAVER CREEK
 DRILL UNIT: 17-225
 HOLE LOCATION: 1936+200 O/S 5M LT
 LOGGED BY: JM DATE COMPLETED: 90.10.03

FIELD NO: 81	FIELD NO: 82
LAB NO: 2052	LAB NO: 2053
DEPTH: 0.2-0.4	DEPTH: 2.4-2.6
TYPE: AUGER	TYPE: AUGER

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	--	38.1	--
25.4	100	25.4	--
19.0	95	19.0	--
12.7	94	12.7	--
9.5	92	9.5	--
4.76	90	4.76	--
2.38	--	2.38	--
2.00	88	2.00	--
1.19	--	1.19	--
0.841	86	0.841	--
0.595	--	0.595	--
0.42	84	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	80	0.149	--
0.074	75	0.074	--

M.C.(%): 18 M.C.(%): 2

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

% GRAVEL:	10	% GRAVEL:	--
% SAND:	15	% SAND:	--
% FINES:	75	% FINES:	--

CLASSIFICATION: SILT WITH SAND (ML)
 CLASSIFICATION:

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:     107-30
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:   1936+350 O/S 6M LT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.03
=====

```

```

=====
FIELD NO:      83      FIELD NO:      84
LAB NO:       2054    LAB NO:       2055
DEPTH:       0.6-0.8  DEPTH:       2.8-3.0
TYPE:        AUGER    TYPE:        AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	--	38.1	--
25.4	--	25.4	--
19.0	--	19.0	--
12.7	--	12.7	--
9.5	--	9.5	--
4.76	--	4.76	--
2.38	--	2.38	--
2.00	--	2.00	--
1.19	--	1.19	--
0.841	--	0.841	--
0.595	--	0.595	--
0.42	--	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	--	0.149	--
0.074	--	0.074	--

```

M.C.(%):      19      M.C.(%):      3
=====

```

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

```

% GRAVEL:     --      % GRAVEL:     --
% SAND:       --      % SAND:       --
% FINES:      --      % FINES:      --
=====

```

```

CLASSIFICATION: CLASSIFICATION:
=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-31
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1936+500 O/S 5M LT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.03
=====

```

```

=====
FIELD NO:        85           FIELD NO:        86
LAB NO:          2056        LAB NO:          2057
DEPTH:           0.6-0.8     DEPTH:           2.8-3.0
TYPE:            AUGER       TYPE:            AUGER
=====

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	---
76.2	--	76.2	---
50.8	--	50.8	---
38.1	--	38.1	---
25.4	100	25.4	---
19.0	77	19.0	---
12.7	72	12.7	---
9.5	67	9.5	---
4.76	58	4.76	---
2.38	--	2.38	---
2.00	51	2.00	---
1.19	--	1.19	---
0.841	43	0.841	---
0.595	--	0.595	---
0.42	35	0.42	---
0.297	--	0.297	---
0.177	--	0.177	---
0.149	29	0.149	---
0.074	26	0.074	---

```

M.C.(%):        10           M.C.(%):        4
=====

```

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

% GRAVEL:	42	% GRAVEL:	---
% SAND:	32	% SAND:	---
% FINES:	26	% FINES:	---

```

CLASSIFICATION:   CLASSIFICATION:
SILTY GRAVEL
WITH SAND (GM)
=====

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-32
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:     17-225
HOLE LOCATION:  1936+650 O/S 5M LT
LOGGED BY:      JM                     DATE COMPLETED: 90.10.03
=====

```

```

FIELD NO:      87      FIELD NO:      88
LAB NO:        2058    LAB NO:        2058
DEPTH:         0.6-0.8 DEPTH:         2.8-3.0
TYPE:          AUGER   TYPE:          AUGER

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	100	38.1	--
25.4	71	25.4	--
19.0	62	19.0	--
12.7	52	12.7	--
9.5	48	9.5	--
4.76	39	4.76	--
2.38	--	2.38	--
2.00	31	2.00	--
1.19	--	1.19	--
0.841	18	0.841	--
0.595	--	0.595	--
0.42	8	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	4	0.149	--
0.074	3	0.074	--

```

M.C. (%):      4      M.C. (%):      2

```

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

```

% GRAVEL:      61      % GRAVEL:      --
% SAND:        36      % SAND:        --
% FINES:       3       % FINES:       --

```

```

CLASSIFICATION:  CLASSIFICATION:
POORLY GRADED
GRAVEL WITH SAND
(GP)

```

```

=====
PROJECT NUMBER:   SEGMENT 18           HOLE NUMBER:    107-33
CLIENT:          SHAKWAK PROJECT
PROJECT NAME:    ALASKA HIGHWAY RECONSTRUCTION
PROJECT LOCATION: BEAVER CREEK
DRILL UNIT:      17-225
HOLE LOCATION:   1936+800 O/S 6M LT
LOGGED BY:       JM                     DATE COMPLETED: 90.10.03
=====

```

```

FIELD NO:      89      FIELD NO:      90
LAB NO:        2060    LAB NO:        2061
DEPTH:         0.4-0.6 DEPTH:         2.6-2.8
TYPE:          AUGER   TYPE:          AUGER

```

SIEVE SIZE	PERCENT PASSING	SIEVE SIZE	PERCENT PASSING
101.6	--	101.6	--
76.2	--	76.2	--
50.8	--	50.8	--
38.1	100	38.1	--
25.4	86	25.4	--
19.0	84	19.0	--
12.7	82	12.7	--
9.5	79	9.5	--
4.76	73	4.76	--
2.38	--	2.38	--
2.00	67	2.00	--
1.19	--	1.19	--
0.841	61	0.841	--
0.595	--	0.595	--
0.42	56	0.42	--
0.297	--	0.297	--
0.177	--	0.177	--
0.149	52	0.149	--
0.074	48	0.074	--

```

M.C.(%):      14      M.C.(%):      2

```

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

```

% GRAVEL:      27      % GRAVEL:      --
% SAND:         26      % SAND:         --
% FINES:        48      % FINES:        --

```

```

CLASSIFICATION:   CLASSIFICATION:
SILTY GRAVEL
WITH SAND (GM)

```