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**Geotechnical Services  
Km 1691.7 to 1717.3, Alaska Highway #1  
Yukon, 2004**

**Volume 1  
AUGER DRILLING PROGRAM & GPS DATA**



**HOGGAN ENGINEERING & TESTING  
(1980) LTD.**



An Affiliate of J. R. Paine & Associates Ltd.

EDMONTON ● GRANDE PRAIRIE ● PEACE RIVER ● WHITEHORSE

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

**Geotechnical Services  
Km 1691.7 to 1717.3, Alaska Highway #1  
Yukon, 2004**

**Volume 1  
AUGER DRILLING PROGRAM & GPS DATA**

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

**Volume 1**

**AUGER DRILLING PROGRAM & GPS DATA**

**SECTION 1 – AUGER DRILLING PROGRAM**

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SECTION 1 AUGER DRILLING PROGRAM

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

**SECTION 1**  
**AUGER DRILLING PROGRAM**

*HOGGAN ENGINEERING & TESTING (1980) LTD.*

**TEST HOLE SOILS LOGS**







**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6768001

Easting: 643667

Project No: 8002-318

Test Hole No: # 30002

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 16

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

**GRAVEL**

**SAND**

**SI | LT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel trace silt - dry, medium dense, brown					
0.5	so	Silty Sand to Sand, some silt - damp, medium dense, brown	352	0.4-0.7			
2.0	so	SANDY GRAVEL - damp, dense, brown	357	2.1-2.7			
		E.O.T. @ 3.0m					





# TEST HOLE LOG

Northing: 6768053  
Easting: 643429

Project No: 8002-318 Test Hole No: # 3000+ Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 16 2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel - damp, dense, brown/grey	361 ✓	0.6-1.2			
1.2	dg	Sandy Gravel, trace silt - damp, dense brown/grey	362 ✓	1.8-2.4			
			363 -	3.4-4.0			
		E.O.4 e44					
		Refusal @ 1.5m - max depth 2m					







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# TEST HOLE LOG

Northing: 676 8025

Easting: 642866

Project No: 8002-318 Test Hole No: # 3006 Elev.

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:

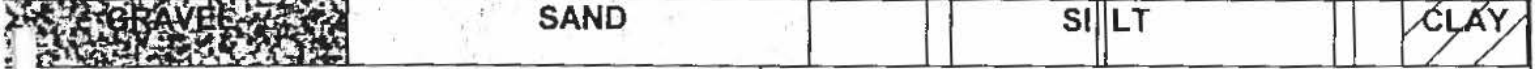
Log By: R.W. Date: Aug 18 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.075mm



MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

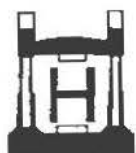
BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SANDY GRAVEL - trace silt - dry to damp, medium dense, brown	369	0.3-0.9			
			370	1.8-2.4			
		END @ 3.0m					









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# TEST HOLE LOG

Northing: 6768040  
Easting: 642066

Project No: 8002-318      Test Hole No: #: 30010      Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W.      Date: Aug. 18 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm      0.74mm      .002mm

GRAVEL	SAND	SI	LT	CLAY
--------	------	----	----	------

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel/Gravelly Sand, trace silt - dry to damp, medium dense, brown	378	0.3-0.9			
			379	2.1-2.7			
		E.O.4. @ 3.0m					
		NOTE: LESS GRAVEL RECOVERY W/ DEPTH					



# TEST HOLE LOG

Northing: 6768044

Easting: 641864

Project No: 8002-318      Test Hole No: # 30011      Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 18      2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm		0.74mm		.002mm	
GRAVEL	SAND	SI	LT	CLAY	
MOISTURE CONTENT - dry, damp, moist, wet					
DENSITY - loose, medium dense, dense					
GRADATION - poorly or well graded					
SIZE RANGE - coarse, medium, fine					
COLOR -					
INTRUSIONS - oxides, coal lumps, etc.					
MOISTURE CONTENT - dry, damp, moist, wet					
CONSISTENCY - soft, firm, stiff, hard					
PLASTICITY - low, medium, high					
COLOR -					
INTRUSIONS - oxides, coal lumps, etc.					

TILL - heterogeneous mixture of gravel, sand, silt, and clay      COBBLE - 3" - 8"      BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel, trace silt - comp to moist, medium dense, brown/dark grey	379 ✓	0.3-0.9			
			380 ✓	2.1-2.7			

E.O.M. @ 3.0m









# TEST HOLE LOG

Northing: 6767935  
 Easting: 641051

Project No: 8002-318 Test Hole No: # 30015 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 18 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		GRAVELLY SAND - damp to moist, medium dense, brown					
50		Silt, some sand to silty - moist, soft, grey - organics noted	387 ✓	1.3 - 1.8			
ds	1.2	Sandy Gravel - damp to moist, medium dense, brown	388 ✓	1.8 - 2.4			
	2.7	Silty Silt some gravel - damp to moist, soft, grey/brown					
		E.O. 4. @ 3.0m					
		NOTE: Plan for hole and Plan 3 GPS locations. Note the same. Positioned hole @ South Inverte, LHS					



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# TEST HOLE LOG

Northing: 6767966

Easting: 641011

Project No: 8002-318

Test Hole No: # 30016

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 18

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel, trace silt - moist, medium dense, brown	389	0.0-0.4			
0.4	so	Silty Sand / Silty Silt - moist to wet, soft, brown					
1.1	so	Sandy Gravel, trace silt - moist, medium dense, brown	390	2.1-2.4			
2.8	dc	Silty Sand, some gravel to Gravelly - moist, medium dense, brown					
		F 0.4 @ 3.0m					



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# TEST HOLE LOG

Northing: 6767834  
Easting: 640871

Project No: 8002-318 Test Hole No: # 30017 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug. 18 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.75mm	0.075mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>	
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
6		SANDY GRAVEL - dry to damp, medium dense, brown	391 ✓	0.3-0.9			
			392 ✓	1.8-2.4			
		E.O.A. @ 30m					
		NOTE: WITH SHALLOWER OF EXISTING ROAD					



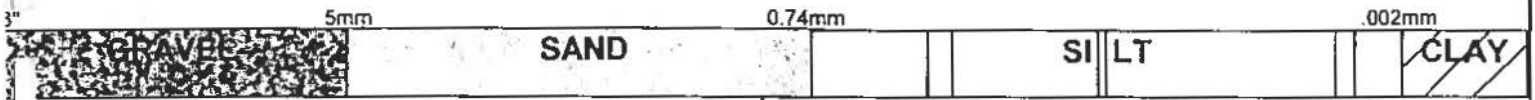
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# TEST HOLE LOG

Northing: 6267698  
Easting: 640691

Project No: 8002-318     Test Hole No: #: 30018     Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W.     Date: Aug 18 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION



MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay     COBBLE - 3" - 8"     BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SANDY GRAVEL - dry to damp, medium dense, brown	393	0.3-0.9			
2	de	GRAVELLY SAND / SANDY GRAVEL - damp, medium dense, brown	394	2.1-2.7			
		END @ 3.0m					





# TEST HOLE LOG

Northing: 6767457  
 Easting: 640350

Project No: 8002-318 Test Hole No: # 30020 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 18 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" GRAVEL	5mm SAND	0.74mm SILT	.002mm CLAY
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MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy GRAVEL / GRAVELLY SAND - damp to moist, medium dense, brown	397 ✓	0.3-0.9			
9	ca	Sandy GRAVEL - wet to sat. red - pea gravels					
15	ct	Silt, silty sand - moist to wet, firm, grey - significant organics throughout (decomposed roots/organic)	398 ✓	1.8-2.4			
		2.0M & 3.0M					





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# TEST HOLE LOG

Northing: 6767232

Easting: 640041

Project No: 8002-318

Test Hole No: # 30022

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: August

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silt, some sand to sandy - moist to wet, soft to firm, brown - most sand present in seams to 75mm thick - organics noted throughout	401 ✓	0.5-1.0			
1	dc	Sandy, trace to some silt, trace gravel - wet, medium dense, brown	402 ✓	1.5-2.1			
2	sa	Silt, some clay - moist, firm, grey w/ blue hue - low plastic	403 ✓	2.6-2.9			
		End @ 3.0m					



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# TEST HOLE LOG

Northing: 676785  
Easting: 639890

Project No: 8002-318 Test Hole No: # 30023 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug. 18 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silty Sand / Silty Silt - damp to moist, medium dense, brown - organics noted throughout	404	0.3-0.9			
2	sn	Silt, trace to some sand - damp to moist, firm, brown w/ some grey seams	405	1.2-1.8			
4	cl	Silt, trace to some silt - saturated, medium dense, brown					
6	cl	Silt, some clay - damp to moist, firm, grey w/ blue mix - low plastic					
		E. 0.4 @ 3.0m					



# TEST HOLE LOG

Northing: 676983  
 Easting: 639687

Project No: 8002-318      Test Hole No: # 30024      Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.      Date: Aug 18      2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.74mm		.002mm
<b>GRAVEL</b>	<b>SAND</b>		<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silt, some sand - moist, soft to firm, brown	406	0.3-0.9			
0.8	so	Gravelly Sand - wet, medium dense, brown					
1.1	so	Silt, some sand - moist, soft to firm, brown					
1.5	su	Gravelly Sand - saturated, medium dense, brown	407	1.5-2.1			
2.1	so	Sandy Silt - wet, soft to firm, grey/brown	408	2.1-2.7			
		E.O.L. @ 3.0m					



# TEST HOLE LOG

Northing: 6766885

Easting: 639558

Project No: 8002-318

Test Hole No: # 30025

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: AUG. 18

2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silty Silt / Silty Sand - clay, medium dense, light brown					
5	so	Gravelly Sand - damp, medium dense, brown	409	0.3-0.9			
	so	Silt, some sand - damp to moist, soft to firm, brown w/ grey & black seams - significant organic silts (black)	410	1.8-2.4			
	so	Silt, some sand, trace gravel - damp to moist, firm to stiff, brown - non to low plastic					
		E.O.D. @ 3.0m					





# TEST HOLE LOG

Northing: 6766735  
 Easting: 639213

Project No: 8002-318 Test Hole No: #: 30027 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 19 2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
 CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		SANDY GRAVEL / GRAVELLY SAND - saturated, medium dense, broken	413	0.1 - 0.6			
	so	Silty Sand / Silty Silt - saturated, soft, grey					
	sc	Silt - moist, firm, brown w/ some black organic seams - some organic silts	414	1.0 - 2.4			
	so	Silty Gravelly Sand - saturated, medium dense, brown					
		E. 0.4 e 3.0m					





**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 676653  
Easting: 639106

Project No: 8002-318 Test Hole No: # 30029 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: AUG. 19 2004

### MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	0.075mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0.0-0.5		Sandy GRAVEL - dry to damp, medium dense, brown	417 ✓	0.3-0.9			
0.5-1.0	50	GRAVELLY SAND, some silt - dry, dense, light brown	418 ✓	2.4-2.9		SLIGHTLY HARD 2.1m	DRAINING 2
1.0-2.0							
2.0-3.0		E.O.H. 2.0m - REFUSAL					
3.0-4.0		REFUSAL 2.9m - MORE NORTH 2m					
4.0-5.0		REFUSAL 3.0m					
5.0-6.0							
6.0-7.0							
7.0-8.0							
8.0-9.0							
9.0-10.0							
10.0-11.0							
11.0-12.0							
12.0-13.0							









**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6766235  
Easting: 638653

Project No: 8002-318 Test Hole No: # 30033 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 19 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm 002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel - damp, medium dense, brown	426 ✓	0.3-0.9			
5	50	Silty Sand - damp, medium dense, brown w/ some black organic stains - some organic silt	427 ✓	1.5-2.1			
1	40	Gravelly Sand, trace silt - damp, medium dense, brown	428 ✓	2.1-2.7			
		± 0.4 @ 3.0m					



# TEST HOLE LOG

Northing: 6766172  
 Easting: 638452

Project No: 8002-318 Test Hole No: # 30034 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 19 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
5mm	0.75mm		.002mm
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Sandy Gravel / Gravelly Sand - damp, medium dense, brown	429 ✓	0.3-0.9			
3	so	Organic Silt - damp to moist, soft, dark brown					
4	dc	Sandy Gravel, trace silt - saturated, medium dense, brown	430 ✓	1.8-2.4			
		E.O.D. @ 3.0m					







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# TEST HOLE LOG

Northing: 4765969

Easting: 637902

Project No: 8002-318

Test Hole No: # 30037

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 19

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
1		Silt, some sand to sandy, trace gravel - wet, soft, dark brown - some organic silt to 0.1m depth	435	0.3-0.9			
1.5	da	Gravelly Silty Sand - wet, soft to firm, grey	436 X	2.1-2.7		Sandy Gravelly Silty	
			437 X	3.4-4.0			
		E.O.4 @ 4.0m - REFUSAL					
		REFUSAL @ 4.0m - MOVE 2m NORTH					
		REFUSAL @ 4.0m - E.O.4					



# TEST HOLE LOG

Northing: 6765920  
 Easting: 637704

Project No: 8002-318 Test Hole No: # 30036 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 19 2004

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### MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SAND, some silt, trace gravel - damp, medium dense, brown	438 ✓	0.3-0.9			
2	ch	Gravelly SAND / SANDY GRAVEL, trace silt - damp, medium dense, brown	439 ✓	1.8-2.4		Grindy Penetration 8.2m	
2	sa	SANDY GRAVEL / GRAVELLY SAND - saturated, medium dense, brown - pea gravels	440 ✓	3.2-3.6			
		F.O.D. @ 40m					

16. 02/18/04



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# TEST HOLE LOG

Northing: 6765818

Easting: 637562

Project No: 8002-318

Test Hole No: # 30039

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 19

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.075mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>	

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		Silty Gravelly Sand - damp, medium dense, well sorted	441 ✓	0.3-0.9			
			442 ✓	1.8-2.4			
		E.O.H. @ 2.4m - Refusal					
		Refusal @ 2.4m - more north 2m					
		Refusal @ 2.4m - E.O.H.					



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# TEST HOLE LOG

Northing: 6765598

Easting: 637443

Project No: 8002-318

Test Hole No: # 30040

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 19

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.075mm	0.002mm
GRAVEL	SAND	SILT	CLAY	
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel - saturated, loose, brown	443 ✓	0-0.6			
0.6	so	Sand, trace to some silt - saturated, loose, brown	444 ✓	0.6-1.2			
1.5	cl	Sand - saturated, medium dense, dark grey	445 ✓	1.2-2.4			
3.0	so	ORGANIC (peat) - saturated, dark brown - some intermixed sand seams	446 ✓	3.0-3.6			
		E.O.V. @ 4.3m					



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# TEST HOLE LOG

Northing: 6765452  
Easting: 637428

Project No: 8002-318 Test Hole No: # 30041 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug. 20 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" GRAVEL	5mm SAND	0.74mm SILT	.002mm CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SANDY GRAVEL / GRAVELLY SAND - dry to damp, medium dense, brown - 15, 26 - REFUSAL @ 10"	447	1.4m	SPT		PHOTO #1
		#0.4 @ 2.4m - REFUSAL					
		AUGER REFUSAL @ 2.4m - MORE 2m ADDED					
		" " @ 1.5m - " " "					
		" " @ 1.8m - @ 0.4					



# TEST HOLE LOG

Northing: 6765198  
Easting: 637411

Project No: 8002-318 Test Hole No: # 30042 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: AUG 20 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" 5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>
		<b>CLAY</b>

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
2.0		Sand, - saturated, med. dense, brown - 6, 9, 9 - Recovered in end of barrel 7" recovery	448	1.4m			1 photo
2.9		Silty Sand / Silty Silt - saturated, medium dense, grey/brown - 3, 3, 4 - 15" recovery (-3" slough)	449	2.9m			1 photo
		Silty Sand - saturated, medium dense, grey/brown - 1, 5, 2, 3 - RECOVERY UNKNOWN] DUE TO DIFFICULTY Remains Spool From Rod	450	4.4m			2 photos
		Silty Sand - saturated, medium dense, brown - 11, 8, 7 - Recovery 15" - (-6" slough) SEE PHOTO	451	5.9			2 photos
		Silty Sand / Silty Silt - saturated, medium dense, brown - 2, 3, 4 - Recovery 8" - (REST OF SAMPLE LIQUID)	452	7.5			1 photo
		Silty Sand / Silty Silt, some gravel - drop to moist, dense, brown - some oxides - 14, 23, 27 - Recovery	453	9.0			2 photos



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# TEST HOLE LOG

Northing: 6764763

Easting: 636326

Project No: 8002-318 Test Hole No: # 30043 PG#1 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 24

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" <b>GRAVEL</b>	5mm <b>SAND</b>	0.74mm	<b>SI</b>	<b>LT</b>	.002mm <b>CLAY</b>
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MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
1		Silty SANDY CLAY TO Silty GRAVELLY SAND - saturated, medium dense, brown - 10, 24, 45 - 7" RECOVERY - Lots of GRAVELS in SAND	454	1.4m			1 photo
2		Silty SAND - saturated, medium dense, brown/gray - 2, 7, 9 - 7" RECOVERY	455	2.9m			1 photo WHEELER BASKET
3		Silt, trace to some clay - saturated, soft, gray - low to non plastic - 1, 2, 1 - 18" RECOVERY (-3' SWELL)	456	4.4			1 photo
4		Clayey Silt, some sand - saturated, soft, gray - 1, 2, 2 - 10" RECOVERY (penetration is liquid) - Lots of GRAVELS in SAND 5" - non to low plastic - Bottom 4" was SANDY SILT	457	5.9			No photo
5		Sandy Silt - sat. state, soft, gray 5, 7, 7 - 24" RECOVERY (-3' SWELL) Full RECOVERY	458	7.5			1 photo



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# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318 Test Hole No: # 300A3 Pg. 2 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 21

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
3"	5mm	0.74mm	.002mm
MOISTURE CONTENT - dry, damp, moist, wet		MOISTURE CONTENT - dry, damp, moist, wet	
DENSITY - loose, medium dense, dense		CONSISTENCY - soft, firm, stiff, hard	
GRADATION - poorly or well graded		PLASTICITY - low, medium, high	
SIZE RANGE - coarse, medium, fine		COLOR -	
COLOR -		INTRUSIONS - oxides, coal lumps, etc.	
INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		CLAYEY SILT - saturated, soft, grey - low plastic - WEIGHT OF HAMMER PERIOD Full Speed (No Bumps) - 15" RECOVER 1	459	9.0			1400
		CLAYEY SILT / SILTY CLAY - saturated, soft, grey - low plastic - WEIGHT OF HAMMER PERIOD Full Speed (No Bumps) - Full RECOVER 24" - 100mm thick decomposed organic layer (black/cedr grey)	460	10.5			1400
		E.O.D. @ 11.0m					



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# TEST HOLE LOG

Northing: 6764727  
Easting: 636668

Project No: 8002-318 Test Hole No: # 30011 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 21

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		Sandy, trace silt - saturated, medium dense, grey	461 ✓	0.3-0.9			
	da	Silty Gravelly Sand to Silty Sandy Gravel - saturated, medium dense, brown	462 ✓	1.5-2.1			
2.4	sa	Silt, trace to some clay - wet, soft to firm, grey - no to low plastic	463 ✓	2.4-2.9			
	dc	Silty Sand, trace to some gravel - saturated, medium dense, grey	464 ✓	4.1-4.4			
		EO 4. - 4.6m					



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# TEST HOLE LOG

Northing: 6764640

Easting: 636398

Project No: 8002-318

Test Hole No: # 30045

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 21

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sand - saturated, medium dense, grey					
	so	Gravelly Sand, some silt to Silt - saturated, medium dense, brown grey	465	0.3-0.9			
	dc	Sand, trace silt - saturated, medium dense, grey	466	2.1-2.7			
			467	4.0-4.4			
		E.O.D. @ 4.6					



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# TEST HOLE LOG

Northing: 6764571

Easting: 71624229

Project No: 8002-318

Test Hole No: # 3004G

Elev. 124.4

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:

Log By: R.W.

Date: Aug. 21

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet	MOISTURE CONTENT - dry, damp, moist, wet		
DENSITY - loose, medium dense, dense	CONSISTENCY - soft, firm, stiff, hard		
GRADATION - poorly or well graded	PLASTICITY - low, medium, high		
SIZE RANGE - coarse, medium, fine	COLOR -		
COLOR -	INTRUSIONS - oxides, coal lumps, etc.		
INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Sandy Gravel, some silt to silty - saturated, medium dense, gray/brown - 21, 21, 21 - 6" recovery	468	1.4			1940
		Silt, dense to some sand - wet, soft to firm, grey 6, 8, 11 - 15" recovery (-3" slough)	469	2.9			1940
		Sand, some silt to silty - wet, medium dense, brown/grey 2, 3, 4 - 6" recovery (Remainder of Spoon is liquid)	470	4.4			1940
		Sand, some silt to silty - wet, medium dense, grey - 3, 7, 5 - 16" recovery (Remainder of Spoon is liquid)	471	5.9			1940
		E.O.M 266m					





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# TEST HOLE LOG

Northing: 6764453  
Easting: 635652

Project No: 8002-318 Test Hole No: # 30049 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 21 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.74mm		0.075mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>		<b>SI</b>	<b>LT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.				

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silt - moist to wet, soft to firm, brown - decomposed organic to 0.3					
0.6	so	Clayey Silt - moist to wet, soft to firm, grey - low plastic	475	0.6-1.2			
	dc	Silt, some sand to sandy - wet, soft to firm, grey - fine grained sands	476	1.8-2.4			
	so	Clayey Silt - wet, firm, grey - low plastic	477	2.4-2.9			
7	dc	Silt, some sand to sandy - moist to wet, firm, grey	478	4.0-4.4			
		E 0.4 & 4.6					



# TEST HOLE LOG

Northing: 6704514  
 Easting: 635461

Project No: 8002-318 Test Hole No: # 36050 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 21, 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silty Sand / Sandy Silt - damp, medium dense, brown - organics noted to 0.3m (rootlets / grasses)					
2.0	so	Silt, trace to some clay - moist to wet, soft to firm, grey	479	0.6-1.2			
			480	2.1-2.9			
3.0	dc	Silt, some sand to SANDS - moist, soft to firm, grey - fine grained sands	481	3.2-3.6			
4.0	dc	Silt, some clay to CLAYey - wet, soft, grey	482	4.0-4.4			
		E.O. 4. e 4.6m					



# TEST HOLE LOG

Northing: 6764643  
 Easting: 635300

Project No: 8002-318 Test Hole No: # 30051 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 23 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
5mm	0.74mm		.002mm
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silty Silt - saturated, grey - 4.5, 4 - 14" recovery	483	1.4			1 photo
		Silty Sand - saturated grey - 1.2, 4 - 10" recovery (REST OF SAMPLE IS LIQUIDIFIED)	484	2.9			2 photos 1 with 45% bag in photo
		Silty Sand - saturated grey - Reported in 4' total weight of hammer - weight + 1.2, 3 - 8" recovery (REMAINING LIQUIDIFIED)	485	4.4			1 photo
		Silty Sand - saturated grey 1.1, 1 - 8" recovery (REMAINING LIQUIDIFIED)	486	5.9			1 photo
		E.O.V. @ 6.9m					



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# TEST HOLE LOG

Northing: 6764793

Easting: 635196

Project No: 8002-318

Test Hole No: # 30062

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: June 25

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm			.002mm	
GRAVEL		SAND		SI	LT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

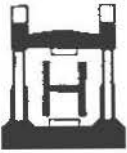
COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silty Sand	487	1.4m			1 R400
		- saturated - grey					
		3.4.10 - Full Recovery					
		No Sample from 2.9m - Hole Friction = 1.0m					
		No Sample from 4.4m - Hole Friction = 1.0m					
		E.O.4. @ 4.4m					
		Attempt #1 - E.O.4. @ 2.9m - 1.0m of Sigs up down					
		- max 4m depth					
		Attempt #2 - E.O.4 @ 4.4m - 1.0m of Sigs up down					
		@ 2.9m @ 4.4m - E.O.4.					







# TEST HOLE LOG

Northing: 6765115

Easting: 6324941

Project No: 8002-318

Test Hole No: # 30054 <sup>500</sup>

Elev.

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:

Log By: R.W.

Date: Dec. 26

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>
<b>CLAY</b>		

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Silt, some sand - moist to wet, soft to firm, brown - organic noted to 0.6m	491	0.2-0.8			
2.9	da	Sand, fine silt - saturated, medium dense, brown / grey	492	1.8-2.4			
			493	3.7-4.3			
			494	4.8-5.5			
4.7	da	Silty Sand - saturated, medium dense, brown grey	495	6.7-7.1			
5.1	da	Silty Sand w/ 2 Silt Strips to 0.3m thickness - saturated, soft, grey/brown	496	7.9-8.5			
	da	Silty Sand to Sand, some silt - saturated, medium dense, grey/brown	497	9.5-10.0			
		e. 0.4. c 10.5m					



# TEST HOLE LOG

Northing: 6765279  
Easting: 634837

Project No: 8002-318 Test Hole No: # 30055 PG#1 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug. 26 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

GRAVEL	SAND	SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay      COBBLE - 3" - 8"      BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silt, some sand - moist to wet, soft to firm, brown w/ some grey seams - organics noted to 0.9m	498	0.3-0.9			
1.2	dc	Silt - wet to saturated, soft, grey	499	2.1-2.7			
1	so	Silty Sand / Silty Silt - saturated, soft, grey/brown - very soupy	500	3.7-4.3			
1.9	dc	Silty Sand / Silty Silt - saturated, soft, grey/brown - 0.2m thick silt seam @ 5.2m - firm, low plastic	501	4.9-5.5			
2.7	dc	Silty Sand - saturated, medium dense, brown/grey	502	6.7-7.3			
			503	7.9-8.5			
0.0	dc	Silty Sand to Sand, some silt - saturated, medium dense, brown/grey - silt seam noted @ 11.0m = 0.2m thick - soft, low plastic	504	10.0-10.5			
			505	11.3-11.7			





# TEST HOLE LOG

Northing: 6765296

Easting: 634756

Project No: 8002-318

Test Hole No: # 30056

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: June 27 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Sandy Gravelly Silt - saturated, medium dense, brown	528	0.3-0.9			
3	so	Sand, trace to some silt - saturated, medium dense, brown	529	2.1-2.7			
			530	3.7-4.3			
			531	4.9-5.5			
4	ds	Sandy Silt / Silty Sand - saturated, soft, brown - some streaks of silt to 200mm thick - soft, grey	532	6.7-7.3			
			533	7.9-8.5			
9.1	ds	Sand, some silt - saturated, medium dense, brown	534	9.8-10.4			
			535	11.0-11.6			
5	ds	Silty Sand - saturated, medium dense, brown - some silt streak to 200mm thick - soft, grey	536	12.8-13.4			
			537	14.0-14.6			
13.9	ds	Sand, trace to some silt - saturated, medium dense, brown					



# TEST HOLE LOG

Northing: 6765406

Easting: 634728

Project No: 8002-318 Test Hole No: #: 30057 Pg. 1 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 26 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silt, some sand - saturated, soft, brown/grey - organic to 0.2m	S08	0.3-0.9			
1.2	da	Sand, some silt to Silt - saturated, medium dense, brown/grey	S09	2.1-2.7			
			S10	3.7-4.3			
5.2	de	Silt - saturated, soft, grey	S11	5.2-5.8			
			S12	6.7-7.3			
			S13	7.7-8.5			
3.8	da	Sand, some silt - saturated, medium dense, brown/grey - silt zone @ 10.7m = 0.2m thick - soft, grey, low plastic	S14	9.7-10.4			
1:0	da	Sandy Silt - saturated, soft, brown/grey - very fine grained sands	S15	11.0-11.6			



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# TEST HOLE LOG

Northing: 6765406

Easting: 634728

Project No: 8002-318 Test Hole No: # 30057 PE.2 Elev.

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:

Log By: R.W. Date: Aug 26 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
5mm	0.74mm		.002mm
MOISTURE CONTENT - dry, damp, moist, wet			
DENSITY - loose, medium dense, dense			
GRADATION - poorly or well graded			
SIZE RANGE - coarse, medium, fine			
COLOR -			
INTRUSIONS - oxides, coal lumps, etc.			
		MOISTURE CONTENT - dry, damp, moist, wet	
		CONSISTENCY - soft, firm, stiff, hard	
		PLASTICITY - low, medium, high	
		COLOR -	
		INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
12.8	da	Sand, some silt to Surf. (poor sample) - saturated, medium dense, brn. grey	S16	12.8-12.4			
			S17	14.0-14.6			
			S18	15.9-16.5			
					END OF 26 (16.8m)		
					BEGIN 08/27		
			S19	17.1-17.7			
			S20	18.9-19.5			
			S21	20.0-20.7			
	so	Silt - saturated, soft, grey - med to low plastic	S22	21.9-22.6			
			S23	23.2-23.8			
	da	Silt - saturated, soft to firm, grey - low plastic	S24	25-25.6			
			S25	26.2-26.8			
			S26	28.0-28.7			
			S27	29.3-29.9			
		E.O.G. 30.3m					



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# TEST HOLE LOG

Northing: 6765412

Easting: 634679

Project No: 8002-318 Test Hole No: # 30050 Pe.1 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 27/28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
3" 5mm MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		0.74mm MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	.002mm

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silt, some sand - wet, soft to firm, grey/brown - originates to 0.6m depth	538	0.3-0.9			
1.2	sa	Silty coarse sand - saturated, soft, grey/brown - grainy drilling	539	1.6-2.1			
1	da	Sand, trace silt - saturated, medium dense, brown	540	3.7-4.3			
4.9	da	Silt, some clay - saturated, soft to firm, grey - low plastic to non plastic	541	5.2-5.8			
7.7	da	Sand, trace silt - saturated, medium dense, brown	542	6.7-7.3	END	08/27 (5.7m)	
			543	7.9-8.5	DEGIT	08/28	
			544	9.8-10.4			
			545	11.0-11.6			



# TEST HOLE LOG

Northing: 6765412

Easting: 634679

Project No: 8002-318

Test Hole No: # 30058 PG 2

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 27, 2004

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
1.4	dc	Silty Sand/Sandy Silt - saturated, soft, brown/gray	546	12.8-13.4			
2.7	dc	Silt, trace to some sand, trace to some clay - saturated, soft, brown/gray - med to low plastic	547	14.0-14.4			
5.4	dc	Sand, some silt to silt - saturated, medium dense, brown - some silt seams 200mm thick between 15.4 & 16.3m	548	15.9-16.5			
7.4	dc	Sand, trace to some silt - saturated, medium dense, brown	549	17.4-18.0			
			550	18.9-19.5			
			551	20.0-20.7			
2.9	dc	Silt - saturated, soft, gray - med to low plastic	552	23.8-24.1			
4		Silt, trace to some clay - saturated, soft to firm, gray - low plastic	552	25.0-25.6			





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# TEST HOLE LOG

Northing: 6765507

Easting: 634609

Project No: 8002-318 Test Hole No: # 30059 PG 2.1 Elev.

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:

Log By: R.W. Date: April 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" 5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>	<b>SI</b> <b>LT</b>	.002mm <b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Silt - dry to damp, medium dense, light brown - boulders in fill - organic throughout - very grainy due to boulder fill	557	0.2-0.9			✓
1	da	Silt, some sand - wet to saturated, soft, brown/grey	558	1.5-2.1			
2	da	Sand, trace to some silt - saturated, medium dense, brown/grey	559	3.4-4.0			
3	da	Silt - saturated, soft, grey	560	4.9-5.5			
4	da	Sand - saturated, medium dense, reddish - auger flights washed clean, minimal sample	561	7.6-8.8			
5			562	9.8-10.4			
6	7	Silt, trace to some clay - saturated, soft, grey - non to low plastic	563	11.0-11.6			



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# TEST HOLE LOG

Northing: 6765507

Easting: 634609

Project No: 8002-318 Test Hole No: # 30059 PG. 12 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.02mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
12.2	dc	SAND, trace to some silt - saturated, medium dense, brown/grey - sample slot minimal due to washed fragments	564	12.8-13.4			
			565	14.0-14.6			
			566	15.9-16.5			
			567	17.1-17.7			
			568	18.9-19.5			
14	dc	Silty SAND / Sandy SILT - saturated, medium dense, brown/grey - more silt w/ depth	569	20.1-20.7			
			570	21.9-22.6			
2.9	dc	Silt - saturated, soft, grey	571	23.2-23.9			
4	dc	Silt - saturated, soft to firm, grey	572	25.0-25.6			
			573	26.2-26.8			
			574	28.0-28.7			
			575	29.3-29.9			
E.O.D @ 30.3							



# TEST HOLE LOG

Northing: 6765862

Easting: 634610

Project No: 8002-318

Test Hole No: #: 300601 Pg. 11

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 27

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel / Gravelly Sand, trace to some silt - damp to moist, medium dense, brown	576	0.3-0.6			
6	so	Silt, some sand to sandy - moist to wet, soft, brown/grey	577	0.6-1.2			
	so	Sand, trace to some silt - saturated, medium dense, brown	578	2A-2.9			
			579	3.7-4.3			
			580	4.9-5.5			
6.1	dc	Sand, some silt - saturated, medium dense, brown - fine grained sand	581	6.7-7.3			
			582	7.9-8.5			
			583	9.5-10.1			
1	dc	Silt - saturated, soft, grey - non to low plastic	584	11.0-11.6			
2	sa	Sand, some silt - saturated, medium dense, brown - fine grained sand	585	12.8-13.4			
			586	14.0-14.6			



# TEST HOLE LOG

Northing: 6765562

Easting: 634610

Project No: 8002-318 Test Hole No: #: 30061 PC-22 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 25 2004

HOGGAN ENGINEERING &  
TESTING (1980) LTD.  
CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.02mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
			587	15.6-16.5			
			588	17.1-17.7			
			589	18.9-19.5			
11.8	da	Silt trace to some clay - wet to saturated, soft, grey	590	20.1-20.7			
			591	21.9-22.6			
23.3	da	Sandy silt / Silty sand - saturated, soft, brown/grey - various silt / sand seams interspersed	592	23.2-23.8			
25.0	da	Silt, trace to some clay - wet to saturated, soft to firm, grey	593	25.0-25.6			
			594	26.2-26.8			
28.0	da	Sandy silt - saturated, soft, grey/brown	595	28.0-28.7			
29.7	da	Silt, trace to some clay - wet to saturated, soft to firm, grey	596	29.3-29.9			

E.O.4 e 30.3



# TEST HOLE LOG

Northing: 6765721

Easting: 634494

Project No: 8002-318

Test Hole No: # 30062 (PG #1) Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 29 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	5mm	SAND	0.75mm	SILT	0.075mm	CLAY	0.002mm
MOISTURE CONTENT - dry, damp, moist, wet	MOISTURE CONTENT - dry, damp, moist, wet		CONSISTENCY - soft, firm, stiff, hard		PLASTICITY - low, medium, high		COLOR -
DENSITY - loose, medium dense, dense	DENSITY - loose, medium dense, dense		PLASTICITY - low, medium, high		COLOR -		INTRUSIONS - oxides, coal lumps, etc.
GRADATION - poorly or well graded	GRADATION - poorly or well graded		COLOR -		INTRUSIONS - oxides, coal lumps, etc.		
SIZE RANGE - coarse, medium, fine	SIZE RANGE - coarse, medium, fine		INTRUSIONS - oxides, coal lumps, etc.				
COLOR -	COLOR -						
INTRUSIONS - oxides, coal lumps, etc.	INTRUSIONS - oxides, coal lumps, etc.						

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		Sand, some silt to Silty - damp to moist, medium dense, brown	597	0.3-0.6			
	so	Silt, some sand to Silty - damp, soft to firm, light brown					
	do	As Above - wet to saturated - sand seam = 200mm thick, extend ~ 2.1m	598	1.6-2.1			
	ds	Silt - saturated, soft, grey					
	og	Sand, trace silt - saturated, medium dense, brown - silt seam > 300mm thick & 5.3 - soft, grey	599	3.7-4.3			
			600	4.9-5.3			
	ds	Silt - saturated, soft grey	601	6.7-7.3			
	og	Sand, trace silt - saturated, medium dense, brown	602	7.6-8.2			



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# TEST HOLE LOG

Northing: 6765721  
Easting: 634494

Project No: 8002-318 Test Hole No: # 30062 R6.42 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 27 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL 5mm	SAND 0.74mm	SILT	CLAY 0.002mm
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0.2	de	Silty Sand/Sandy Silt - saturated, soft, brown/grey - variable silt: SAND SEAMS	603	9.8-10.4			
1.0	de	SAND, trace to some silt - saturated, medium dense, brown	604	11.0-11.6			
1.2	de	SAND, some silt to SILT - saturated, medium dense, brown	605	12.8-13.4			
			606	14.0-14.6			
		E.04. @ 15.1m					



# TEST HOLE LOG

Northing: 6765883

Easting: 634375

Project No: 8002-318 Test Hole No: # 30063 P.G.W. Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 29 2004

**HOGGAN ENGINEERING &  
TESTING (1980) LTD.  
CONSULTING & TESTING ENGINEERS**

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sand, some silt to silty - damp, medium dense, brown					
5	sa	Silt, some sand - wet to saturated, soft to firm, brown	607	0.6-1.2			
1.8	da	Sand, trace silt - saturated, medium dense, brown	608	1.0-2.4			
			609	3.7-4.3			
			610	4.9-5.5			
	da	Silt - saturated, soft, grey	611	6.7-7.3			
	da	Silty Sand - saturated, medium dense, brown/grey	612	7.9-8.5			
3.8	da	Silt - saturated, soft, grey	613	9.8-10.4			
	da	Silty Sand - saturated, medium dense, brown/grey	614	11.0-11.6			
			615	12.8-13.4			





# TEST HOLE LOG

Northing: 6766041  
 Easting: 634253

Project No: 8002-318 Test Hole No: # 30064 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 29 2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
 CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
5mm MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		0.74mm MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	.002mm

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sand, some silt - damp, medium dense, brown					
5	so	Silt, some sand - moist to wet, soft to firm, brown	617	0.5-1.2			
2.1	os	Sand, trace silt - saturated, medium dense, brown - decomposing organic seam @ 3.6m (~200mm-thick) dark grey - fine sands @ 6.5m	618	2.1-2.7			
			619	4.0-4.4			
			620	4.9-5.5			
			621	6.7-7.3			
			622	7.9-8.5			
			623	9.9-10.4			
		Eo4. @ 10.5m					



# TEST HOLE LOG

Northing: 6766211

Easting: 634121

Project No: 8002-318

Test Hole No: # 30065

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 30

2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm		0.74mm		0.075mm		0.002mm	
GRAVEL	SAND	SI	LT	CLAY			
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.				MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sands, some gravel, some silt to silty - damp, medium dense, broken					
3	so	Silt trace to some sand - moist to wet, soft to firm, broken	624	0.6-1.2			
4	da	Sands, trace silt - moist, medium dense, broken	625	1.0-2.4			
			626	3.7-4.3			
6	da	Sands, trace to some silt - saturated, medium dense, broken	627	4.9-5.5			
			628	6.7-7.3			
	da	Silty Sands, silty silt - saturated, medium dense, broken (grey) - variable, some of sand & silt	629	7.9-8.5			
	da	Silt - saturated, soft, grey	630	9.8-10.3			
		E.O. 4 @ 10.5 ft					



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# TEST HOLE LOG

Northing: 6766381

Easting: 633992

Project No: 8002-318

Test Hole No: # 30066

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 30

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sand, some gravel, some silt - den. med. dense, brown					
3	so	Silt, trace to some sand - deep to mass, soft to firm, brown	631	0.6-1.2			
1.2	dc	Silt - moist to wet, soft to firm, grey	632	1.5-2.1			
2.4	dc	Sand, trace silt - sat. red, medium dense, brown/grey	633	3.7-4.3			
	sw	Silt, some sand - saturated, soft, grey	634	4.6-5.2			
	dc	Sand, trace silt - saturated, medium dense, brown/grey	635	6.2-7.2			
3.6	dc	Silt, trace to some sand - saturated, soft, grey	636	7.9-8.5			
			637	9.8-10.4			
		E. 0.4 @ 10.5 ft					



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6766554

Easting: 633082

Project No: 8002-318

Test Hole No: # 30067

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 20

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SI</b>	<b>LT</b>
<b>CLAY</b>			
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silt, trace to some sand - moist, firm, brown	638	0.6-1.2			
2	so	Silty sand - damp, medium dense, brown					
1-10	so	Silt, trace clay - moist to wet, soft to firm, grey					
2-11	sa	Sand, trace silt - moist to wet, medium dense, brown	639	2.4-2.9			
2	cl	Sand, some silt to silt - saturated, medium dense, brown, grey - fine, green sand	640	3.0-4.3			
			641	4.9-5.6			
		Fill at 6.5m					



# TEST HOLE LOG

Northing: 6766749

Easting: 633841

Project No: 8002-318

Test Hole No: # 30008

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 30

2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silt, trace to some sand - damp to moist, soft to firm, brown	642	0.6-1.2			
	so	Sandy Silt - damp to moist, medium dense, brown - fine grained sands					
	sc	Sand, trace silt - moist to wet, medium dense, brown	643	2.4-3.0			
	dc	Sand, some silt - silty, medium to coarse, brown/grey - fine grained sands	644	3.4-4.0			
	cl	Silt - silty, soft, grey	645	5.0-5.5			
		E.O.D. @ 5.9m					



# TEST HOLE LOG

Northing: 6766937  
 Easting: 633865

Project No: 8002-318 Test Hole No: # 30069 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 20 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.075mm	0.002mm
GRAVEL	SAND	SILT	CLAY	
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SILT - damp to moist, firm, grey					
1	so	Sand, trace silt - damp to moist, medium dense, brown	G46	0.4-1.2			
2	so	SILT - moist, soft to firm, grey					
3	so	Sand, trace to some silt - saturated, medium dense, brown	G47	1.8-2.4			
			G48	3.7-4.3			
			G49	4.9-5.5			
		E.O.D. @ 5.9m					



# TEST HOLE LOG

Northing: 676 7128

Easting: 633921

Project No: 8002-318

Test Hole No: # 30070

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 30

2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
GRAVEL	SAND	SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Silt some sand - damp to moist, soft to firm, brown - organic matter to 0.2m	650	0.6-1.2			
1.2	-0	GRAVEL some sand, trace to some silt - saturated, medium dense, brown - grindy drilling - silt contamination from side walls in sample #651 - broken rock, regular pieces to 40mm dia	651	2.1-2.7			
0		Sandy Silty Gravel - saturated, medium dense, brown/grey	652	3.7-4.3			
			653	4.9-5.5			
		E.O.H. @ 5.9m					



# TEST HOLE LOG

Northing: 6768923

Easting: 635759

Project No: 8002-318

Test Hole No: # 30082

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 15

2004

**HOGGAN ENGINEERING &  
TESTING (1980) LTD.**  
CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

GRAVEL

SAND

SI LT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		Silty Sand, - damp, medium dense, brown w/ orange hue - organics to 0.2m					
2.3	so	Sandy Gravel, trace silt - dry to damp, coarse, brown/grey	348 ✓	0.6-1.2		Very Gravelly 0.3m	Drainable e
4.9	gc	Gravelly Sand, some silt to silt - damp to moist, dense, brown	349 ✓	1.8-2.4		Sand Gravelly 1.8m	Drainable e
			350 ✓	3.4-4.0			
			351 ✓	4.5-5.5			
		E.O.4 @ 5.9m					
		Refusal @ 8.6m - note 2m EAST					



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# TEST HOLE LOG

Northing: 6769180

Easting: 635169

Project No: 8002-318 Test Hole No: # 30083 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 15 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		ORGANIC SILTS					
0.3	36	SILTY SANDY GRAVEL - damp, medium dense, brown w/ some black organic s. - organic silts intermixed	344 ✓	0.6-1.2		Grainy Drained a 0.3cm - 3.2	
	dc	SANDY GRAVEL, some silt - moist, dense, brown	345 ✓	1.8-2.4			
3.2	dc	Silt, some sand to sandy - wet, soft, brown	346 ✓	3.1-4.0			
	dc	SILTY GRAVELLY SANDS to SILTY SANDY GRAVEL - saturated, dense, brown - possible silt contamination in sample from above	347 ✓	4.9-5.5			
		E.O. 4 & 7.0 - REFUSAL					
		REFUSAL @ 7.0 - E.O. 4 (NO INDICATION)					

NO SECOND ATTEMPT



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
CONSULTING & TESTING ENGINEERS

# TEST HOLE LOG

Northing: 6769233  
Easting: 635162

Project No: 8002-318 Test Hole No: # 30084 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 15 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silty Sand, - damp, medium dense, brown w/ orange hue - organic to 0.2m					
0.6	so	Sandy Gravel/Gravelly Sand some silt to silty - damp, medium dense, brown	338 ✓	0.6-1.2			
			339 ✓	1.8-2.4			
3.0	so	Sandy Silt/Silty Sand, some gravel to Gravelly - damp, dense, brown	340 ✗	3.4-4.0		Sand, some silt, trace gravel	
			341 ✗	4.9-5.5			
	dc	Gravelly Silty Sand - damp, dense, brown	342 ✗	6.4-7.0		Gravelly Sand, some silt	
			343 ✗	7.6-8.1			
		P.A. & B.2 - REFUSAL					
		REFUSAL @ 8.2 - E.O.H. - no 2nd attempt.					



# TEST HOLE LOG

Northing: 6769371  
Easting: 635155

Project No: 8002-318 Test Hole No: # 30085 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 15 2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

<b>GRAVEL</b>	<b>SAND</b>		<b>SILT</b>		<b>CLAY</b>
---------------	-------------	--	-------------	--	-------------

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		Sandy Silt / Silty Sand - damp, medium dense, brown w/ orange hue - organics noted throughout					
6	so	SANDY GRAVEL / GRAVELLY SAND, some silt to silty - damp, medium dense, brown	334 ✓	0.6-1.2			
			335 ✓	1.0-2.4			
			336 ✓	3.4-4.0			
	ca	Silty Sand, trace gravel - dry, dense, light grey w/ green hue - significant rock powder in sample.	337 ✓	4.9-5.5		VERY GRINDY R.A.P.	Small Debris
		E.O.N. & SS - REFUSAL					
		No - 2nd ATTEMPT					



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6769425  
Easting: 635131

Project No: 8002-318 Test Hole No: # 30086 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 15 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm



**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		ORGANIC SILTS					
2.3	so	Silty Sand, some gravel to Gravelly - damp, medium dense, brown	329 ✓	0.6-1.2			
	da	Coarsely Sand, some silt to Silty - frozen, no visible ice - brown	330 ✓	1.8-2.4		Slow Entry Drilling @ 1.8m	
3.0	da	Sandy Gravel / Gravelly Sand, some silt to Silty - frozen, no visible ice	331 ✓	3.4-4.0			
	da	As ABOVE - force closed - Almost refusal 2 hrs between 4.6-7.6 * Poor sample - minimal mat' on flights.	332 ✓	4.9-5.5		Very Slow Entry Drilling @ 4.5m	
			333 ✓	6.7-7.3			
		E.O.H. C11.0 - REFUSAL (NO INDICATION)					
		REFUSAL e 11.0 - E.O.H. * NO 2ND ATTEMPT - TO DENSE					



HOGGAN ENGINEERING &  
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# TEST HOLE LOG

Northing: 6769468

Easting: 635121

Project No: 8002-318

Test Hole No: # 30087

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1


Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 15

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
 GRAVEL	SAND	SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		Sandy Silt / Silty Sand - damp to moist, medium dense, brown/grey					
6	50	Sand, some silt to silty trace to some gravel - damp, medium dense, brown	325 ✓	0.6-1.2			
			326 ✓	1.8-2.4			
3.0	60	Gravelly Sand, some silt to silty damp, dense, brown	327 ✓	3.4-4.0		Very slow @ 3.0m	Gravelly Dense
			328 ✓	4.9-5.5			
		EQ. 4. & 6.4 - REFUSAL					
		REFUSAL @ 6.2 - - more 2m sound					
		REFUSAL @ 6.4 - EQ. 4					



# TEST HOLE LOG

Northing: 6709516

Easting: 635104

Project No: 8002-318

Test Hole No: # 30088

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: AUG. 15 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silty Sand / Sandy Silt - damp, loose, brown w/ orange hue - organics to 0.2m					
29	so	Gravelly Sand, trace to some silt - damp, medium dense, brown	322 ✓	0.9-1.2		Grind Diameter @ 0.9m	
			323 ✓	1.8-2.4			
			324 ✓	3.4-4.0		Slow Grind Diameter @ 4.0	
		E.O.H. B.2 - Refusal					
		Refusal @ 5.0 - more 2m Sand					
		Refusal @ B.2 - E.O.H.					
		(No info record)					



# TEST HOLE LOG

Northing: 6769606  
 Easting: 635078

Project No: 8002-318 Test Hole No: # 30089 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug. 15 2004

**HOGGAN ENGINEERING &  
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### MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.75mm	0.075mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

Depth	Line Code	Classification	COBBLE - 3" - 8"		BOULDER - 8" and larger	
			Sample No.	Sample Depth	Sample Type	Standard Penetration
		Silty SILT / Silty SAND - dry to damp, loose, brown w/ organic hue. - organics noted to 0.2m	321 ✓	0.1 - 0.6		
		E.O.H. @ 0.6m - REFUSAL				
		REFUSAL @ 0.6m - move Sound 3m				
		REFUSAL @ 0.6m - E.O.H.				
		Probed twice at each location = 0.3m Apert (No indication)				



# TEST HOLE LOG

Northing: 6767660

Easting: 635060

Project No: 8002-318

Test Hole No: # 30090

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug-15

2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILTS					
0.2	SU	SILTY SAND - damp, medium dense, brown					
1	so	GRAVELLY SAND, some silt to silty - damp, medium dense, brown	319	0.5-1.0		Gravelly Drilling @ 0.4m	
2	so	GRAVELLY SAND, trace to some silt (Rock) - dry, dense, brown/grey - some rock powder in sample	320	1.2-1.5		Very Gravelly Sand Drilling @ 1.2m	
		E.O.T. @ 1.5m - REFUSAL					
		REFUSAL @ 1.5m - MOVE 2m SOUTH					
		REFUSAL @ 0.9m - E.O.T.					



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6769701  
Easting: 635044

Project No: 8002-318 Test Hole No: # 30091 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 15 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

GRAVEL	SAND	SILT	CLAY
--------	------	------	------

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		ORGANIC SILT					
2.3	so	GRAVELLY SILTY SAND - deep penetration	318	0.5-0.9		CRANES to some silt	Sand, trace
		E.O.U. @ 14' - PETSAL					
		PETSAL @ 1.4m - max sand 2m					
		PETSAL @ 1.2m - E.O.U.					



# TEST HOLE LOG

Northing: 6769764

Easting: 635000

Project No: 8002-318

Test Hole No: # 80092

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 15

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

GRAVEL	SAND	SILT	CLAY
--------	------	------	------

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		ORGANIC SILTS					
2.4	so	Gravelly Silty Sand - damp, medium dense, dark brown	315	0.4-1.0			Silty Sand
	sa	Sandy Silt, trace gravel - frozen, no visible ice - brown/gray	316	1.8-2.4		Gravelly Drilling @ 1.5m	Silty Sand, some gravel
7	sa	Sandy Silt, some gravel - frozen, no visible ice - brown	317	3.2-4.3		Slow Gravelly Drilling @ 3.7	Sandy, some gravel, some silt to silty
		e.o.t. @ 5.0 - REFUSAL					
		REFUSAL @ 4.7 - more sand 2m					
		REFUSAL @ 5.0 - end					
		(No Significant Indications)					



# TEST HOLE LOG

Northing: 6769809

Easting: 634906

Project No: 8002-318

Test Hole No: # 30093

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: AUG 15

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL	SAND	SILT	CLAY
--------	------	------	------

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		GRAVELLY SANDY SILT to GRAVELLY SILTY SAND - moist, medium dense, brown w/ black organic seams - organic silt seams throughout to 15m thickness	310 ✓	0.3-0.9			
1.8	da	Silty Sand, some gravel to GRAVELLY - frozen, no visible ice - brown/grey	311 ✓	1.8-2.4		Quality Drilling @ 1.8m	
			312 ✓	3.4-4.0			
			313 ✓	4.9-5.5			
			314 ✓	6.7-7.0			
		F.O.U. @ 7.0 - REFUSAL					
		REFUSAL @ 7.0 - more sand 2m					
		REFUSAL @ 2.1m more sand 2m					
		REFUSAL @ 2.1m more sand					

No significant indication



# TEST HOLE LOG

Northing: 6769845  
 Easting: 634942

Project No: 8002-318 Test Hole No: #: 30094 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: AUG 15 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

GRAVEL	SAND	SILT	CLAY
--------	------	------	------

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0-1		Pad Fill					
1-2.4	so	ORGANIC SILT					
2.4-2.8	so	SANDY GRAVEL / GRAVELLY SAND, trace silt - damp, medium dense, brown	306 ✓	0.8-1.3			
2.8-3.0	so	Silty Sandy Gravel - damp, medium dense, brown w/ black organic streaks - some organic silt throughout (streaks to 75mm)	307 ✓	1.8-2.4			
3.0-5.0	ca	Silty Sandy Gravel to Silty Gravelly Sand - damp to moist, dense, brown	308 ✓	3.4-4.0			
5.0-5.3	ca	As above - increase moisture / increase silt	309 ✓	5.3-5.8			
		E.O.P. @ 5.8					



# TEST HOLE LOG

Northing: 6769885  
 Easting: 634904

Project No: 8002-318      Test Hole No: # 30095      Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.      Date: Aug. 15      2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm      0.74mm      .002mm

GRAVEL	SAND	SILT	CLAY
--------	------	------	------

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		Organic Silt					
3.3	so	Sandy Silt, some gravel - damp to moist, firm, brown	302 ✓	0.3-0.9			
	sc	Gravelly Sand/Sandy Gravel, trace to some silt - damp, medium dense, brown	303 ✓	2.1-2.4			
	cl	Gravelly Sand/Sandy Gravel, trace silt - moist to wet, dense, brown	304 ✓	3.4-4.0			
			305 ✓	4.9-5.5			
		E.O.4.e.5.9					



# TEST HOLE LOG

Northing: 6769974

Easting: 634848

Project No: 8002-318 Test Hole No: # 30096 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug-14

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm



MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Organic Silts					
	so	Coarsely Silty Sand - moist to wet, medium dense, brown					
10	ds	As Above - Frozen - brown	295 ✓	1.0-1.3			
	ds	Coarsely Sand, some silt to silty - Frozen - brown	296 ✓	1.0-2.4			
			297 ✓	3.7-4.3			
			298 ✓	4.9-5.5			
			299 ✓	7.0-7.6			
			300 ✓	9.1-9.6			
		E.O.4 @ 11.3m - Refusal	301 ✓	10.4-11.0			
		Refusal @ 8.7 - Move Sound 2m					



# TEST HOLE LOG

Northing: 6770135

Easting: 634800

Project No: 8002-318

Test Hole No: # 30097

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 14

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
1		ORGANIC SILTS					
2	2a	SANDY GRAVEL some silt - moist to wet, medium dense, brown	293 ✓	0.6-1.2			
1	2a	Silty SANDY GRAVEL / Silty GRAVELLY SAND - frozen, no visible ice - brown	294 ✓	1.8-2.4		DIFFICULT PENETRATION @ 1.8m	
		E.O.4.e 3.4					
		REFUSAL @ 3.4 - more 2m SPLIT					
		REFUSAL @ 3.2 - @ 0.4					





# TEST HOLE LOG

Northing: 6770392

Easting: 63466

Project No: 8002-318

Test Hole No: # 3009A

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 13

2004

HOGGAN ENGINEERING &  
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CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SI LT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel, some silt - damp, medium dense, brown - organics noted to 0.3	286 ✓	0.3-0.9			
0.9	dc	As Above moist to wet					
3	dc	Gravelly Sand, trace silt - saturated, medium dense, brown	287 ✓	1.8-2.4			
3	sa	Organic Silts - saturated, soft, black/brown	288 ✓	3.0-3.7			
3.7	dc	Silty Sandy Gravel * per sample - saturated, medium dense, brown	289 ✓	4.1-4.4			
		E.O.D. @ 4.4m					



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# TEST HOLE LOG

Northing: 6770537

Easting: 634635

Project No: 8002-318 Test Hole No: # 30100 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 14 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		Sandy Gravel, trace to some silt - damp, dense, brown - boulders to 0.5m dia noted on surface nearby	279 ✓	0.6-1.2			
1.0	dc	Sandy Gravel, some silt - damp to moist, dense, brown	280 ✓	1.6-2.4			
2.0	so	ORGANIC SILTS - damp, firm, dark brown					
3.0	so	Sandy Gravel, trace to some silt - damp, dense, brown	281 ✓	3.4-4.3			
4.0	dc	Silty Sandy Gravel to Silty Gravelly Sand - wet, dense, brown	282 ✓	4.9-5.5			
5.0		* poor sample	283 ✓	6.4-7.3			
6.0	dc	Sandy Silt, some gravel - moist to wet, dense grey w/ blueish hue	284 ✓	8.2-8.8			
7.0	dc	Silty Sand, trace gravel - moist, dense, purple	285 ✓	9.4-10.1			

E.O.U. E10.1- REFUSAL



# TEST HOLE LOG

Northing: 6770650  
 Easting: 634650

Project No: 8002-318 Test Hole No: #: 3010 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 12 2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
GRAVEL	SAND	SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Silty Sand - damp, med. dense, brown - organic to 0.3m					
0.4	dc	GRAVELLY Silty Sand - damp, medium dense, brown	277*	0.4-1.0		GRAVELLY SAND, trace to some silt	
1.8	dc	GRAVELLY Silty Sand - damp, med. dense	278*	1.8-2.4		GRAVELLY DENSING & LBM GRAVELLY SAND, some silt to silt	
		E.O.4. < 3.2 - REFUSAL					
		REFUSAL @ 3.0m - MORE 2m EAST (No indication)					
		REFUSAL @ 3.2 - E.O.4					



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# TEST HOLE LOG

Northing: 6770855  
Easting: 634651

Project No: 8002-318 Test Hole No: # 30103 Elev. \_\_\_\_\_


Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 14 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.075mm	0.002mm
 GRAVEL	SAND		SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

bth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silty Sand/Sandy Silt - damp, medium dense, brown - organics noted to 0.2m depth					
0.6	dc	Coarsely Sandy, some silt to Silty - damp, medium dense, brown	272 ✓	0.6-1.2			
3.1	dc	Coarsely Sandy, some silt to Silty - dry to damp, dense, light brown	273 ✓	2.1-2.9		Very Granular Denial @ 2.0m	
4.2	dc	Silty Sand, trace to some gravel - dry, dense, light grey - significant rock powder in sample	274 ✓	3.7-4.3			
		E.O.4. @ 4.3 - REFUSAL					
		REFUSAL @ 4.3 - MOVE SLOTTED 2 METERS					
		REFUSAL @ 2.4m - E.O.4					



# TEST HOLE LOG

Northing: 6771005  
 Easting: 604671

Project No: 8002-318 Test Hole No: # 30105 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 13 2004

**HOGGAN ENGINEERING &  
 TESTING (1980) LTD.**  
 CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Silty Sand / Silty Silt - damp, medium dense, brown					
2	da	Gravelly Silty Sand - damp, medium dense, brown	262 ✓	0.9-1.2		Gravelly Sand, trace to some silt	
2.5	da	Silty Silt, trace to some gravel - damp to moist, medium dense, brown	263 ✓	1.8-2.4			
3.0	da	Sandy Gravel / Gravelly Sand, some silt - damp, dense, brown	264 ✓	3.4-4.0			
		E.O.A. @ 4.6m REFUSAL					
		REFUSAL - 4.6m more Sand 2m					
		REFUSAL @ 4.3m E.O.A.					



# TEST HOLE LOG

Northing: 6771078

Easting: 634574

Project No: 8002-318

Test Hole No: # 30106

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 13

2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.75mm

0.075mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Slurry Gravelly Sand - dry to damp, loose, brown w/ orange hue - organic to 0.2m	266 ✓	0-0.6			
0.6	So	Slurry Sand - dry to damp, dense, light grey - significant rock powder in sample	267 *	0.9-1.2		Very Difficult Penetration < 0.9m	Gravelly Sand, some silt
		E.O.H. @ 0.9m - Refusal					
		Refusal @ 0.9m - DUNE 2m SOUTH					
		Refusal @ 0.9m - E.O.H.					



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# TEST HOLE LOG

Northing: 67711+9

Easting: 634528

Project No: 8002-318

Test Hole No: # 30107

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 12

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Quartzic Silts					
0.3	so	Silty Sand / Sandy Silt - damp, medium dense, brown					
1	so	Sandy Gravel, some silt to silty - dry to damp, dense, light brown / grey - rock pebbles in sample	265 ✓	0.9-1.2			Difficult Drilling @ 0.9m
		End @ 1.5m					
		Refusal @ 1.5m - max. SPT 2m					
		Refusal @ 1.5m - End					



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# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318

Test Hole No: # 30108

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 13

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	0.075mm	0.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>	
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Silt / Silty Sand, trace gravel - damp to moist, medium dense, brown	258 ✓	0.6 - 1.2			
1	4a	Gravelly Sand, some silt to silty - damp, medium dense, brown	259 ✓	1.5 - 2.1			
2	3a	Silty Sand, some gravel (possible Boss) - dry, dense, light brown / grey - significant rock powder in sample	260 ✓	3.0 - 3.7		Difficult	Penetration 2.4
			261 ✓	4.9 - 5.5			
		E.O.T. @ 5.5' - Very Silty Dense					



# TEST HOLE LOG

Northing: 6771427

Easting: 634465

Project No: 8002-318

Test Hole No: # 30109

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 13

2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	SAND	0.74mm	SILT	CLAY	.002mm
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Silt / Silty Sand - damp, medium dense, brown	255 ✓	0.6-1.2			
	da	GRAVELLY SAND, some silt to silty - damp, dense, brown	256 ✓	1.8-2.4			
3.0	ca	Silty SAND, some gravel - dry to damp, dense, light brown/gray - rock powder in sample	257 ✓	3.4-4.0		Very Difficult Drivule @ 3.0m	
		E.O.T. @ 4.0					
		REFUSAL @ 3.0m - max 2m Sound					
		REFUSAL @ 4.0 - E.O.T.					



# TEST HOLE LOG

Northing: 6771567  
 Easting: 63448

Project No: 8002-318 Test Hole No: # 30110 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 13 2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.

pth	Line Code	Classification	TILL - heterogeneous mixture of gravel, sand, silt, and clay		COBBLE - 3" - 8"		BOULDER - 8" and larger	
			Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF	
0		ORGANIC SILTS						
3.3	so	GRAVELLY SANDY SILT TO GRAVELLY SILTY SAND - FROZEN - brown	251	0.4-1.0				
			252	1.8-2.4				
			253	3.4-4.0				
5	so	SAND, some silt, trace gravel (Decomposed Granite?) - dry to damp, orange brown w/ orange hue - more rock particles w/ debris (more intact w/ debris)  E04 e 5.6: Very Slow	254	4.9-5.5			Very Difficult to Penetrate Slow	
		REFUSAL @ 2.1m - MORE W/ 3m (No Indication/Powder)						



# TEST HOLE LOG

Northing: 6776127  
 Easting: 634474

Project No: 8002-318 Test Hole No: # 30111 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 13 2004

**HOGGAN ENGINEERING &  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm		0.74mm		.002mm	
GRAVEL	SAND	SI	LT	CLAY	
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sand, some silt to silt, trace to some gravel - damp, medium dense, brown - light regions to 0.3m	249	0.2-0.6			
	SD	Coarsely Sand, some silt to silt - dry, none, light brown/grey - rock powder in sample	250	1.5-1.8		VERY DIFFICULT DRILLING @ 1.2m	
		E.O.4 @ 1.8m - REFUSAL					
		REFUSAL @ 1.8m - MOVE EAST 1.5m					
		REFUSAL @ 1.8m - E.O.4					



# TEST HOLE LOG

Northing: CT1772  
 Easting: 634467

Project No: 8002-318 Test Hole No: # 30112 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 13 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	SAND	SILT	CLAY
5mm	0.74mm		.002mm
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

Depth	Line Code	Classification	COBBLE - 3" - 8"		BOULDER - 8" and larger	
			Sample No.	Sample Depth	Sample Type	Standard Penetration
0		ORGANIC SILTS				
0.3	so	Sandy Silty/Silty Sand, trace to some gravel - damp, medium dense, brown	246 ✓	0.5-0.8		
1	ca	Gravelly Sand, some silt to Silty - damp, medium dense, brown	247 ✓	1.8-2.4		
		Silty Sand, trace gravel - dry to damp, dense, light brown/grey - rock powder in sample	248 ✓	3.0-3.4		DIFFICULT DOWNING @ 2.7m
		E.O.4 @ 3.4m - Refusal				
		Refusal @ 3.4m - more 1.5m down				
		Refusal @ 3.4m - E.O.4				



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6771879

Easting: 634435

Project No: 8002-318 Test Hole No: # 30113 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 12 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm GRAVEL	0.74mm SAND		SILT	.002mm CLAY
MOISTURE CONTENT - dry, damp, moist, wet	MOISTURE CONTENT - dry, damp, moist, wet				
DENSITY - loose, medium dense, dense	CONSISTENCY - soft, firm, stiff, hard				
GRADATION - poorly or well graded	PLASTICITY - low, medium, high				
SIZE RANGE - coarse, medium, fine	COLOR -				
COLOR -	INTRUSIONS - oxides, coal lumps, etc.				
INTRUSIONS - oxides, coal lumps, etc.					

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		ORGANIC SILTS					
2.6	so	GRAVELLY SANDY SILT - FROZEN - brown	244 ✓	1.6-1.2			
4	so	SANDS, some gravel to GRAVELLY, trace to some silt - shy to damp, dense, brown	245 ✓	1.5-2.1		DIFFICULT DRILLING @ 1.5m	
		E.0.4 @ 2.4m - REFUSAL					
		REFUSAL @ 2.1m - MAKE 2.1m 2.1m					
		REFUSAL @ 2.4m - E.0.4					
		Refr. Penetration at 8" (Both Attempts)					



# TEST HOLE LOG

Northing: 6772019

Easting: 634385

Project No: 8002-318 Test Hole No: # 30114 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 12 2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Organic Silts					
0.3	30	Gravelly Sand, trace to some silt - dry to damp, medium dense, brown	242 ✓	0.6-1.2			
			243 ✓	1.8-2.4			
		E.O.H. @ 2.9m - REFUSAL					
		REFUSAL @ 1.8m max @ 2m depth					
		REFUSAL @ 2.9m - E.O.H.					



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# TEST HOLE LOG

Northing: 6772105

Easting: 634338

Project No: 8002-318 Test Hole No: # 30115 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 12 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Gravel / Gravelly Sand, trace silt - damp to moist, medium dense, light brown - increase moisture w/ depth to wet @ 1.2m	238 ✓	0.3 - 0.9			
B	SO	Silty Sand, trace gravel - dry to damp, dense, light brown - some Rock Boulder in sample	239 ✓	1.6 - 2.4		Difficult Drive to 1.8m	
			240 ✓	3.7 - 4.3			
		E.O. @ 4.3					
		REFUSAL @ 3.7 - more 2m Spurt					
		REFUSAL @ 4.3 - E.O.4					



**HOGGAN ENGINEERING &  
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CONSULTING & TESTING ENGINEERS

# TEST HOLE LOG

Northing: 6772111  
Easting: 674312

Project No: 8002-318 Test Hole No: # 30116 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug. 12 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm 0.002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		ORGANIC SILTS					
0.3	30	SANDY GRASSY SOFT SILT - damp, medium dense, brown	234 ✓	0.6-1.2			
1.7	50	GRAVELLY SAND, some silt - clay to damp, dense, light brown - Some Rock Powder in Sample	235 ✓	2.1-2.7		Difficult to penetrate c 1.8m	
			236 ✓	3.4-4.0			
		Rock Powder Sample	237 ✓	4.6-5.2			
		E.O.H. @ 5.2 REFUSAL					



**HOGGAN ENGINEERING &  
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# TEST HOLE LOG

Northing: 677225  
Easting: 634222

Project No: 8002-318 Test Hole No: # 3017 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 12 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL <small>5mm</small>	SAND <small>0.74mm</small>	SILT	CLAY <small>.002mm</small>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
0		Sandy Silty trace gravel - damp to moist, medium dense, brown	232 ✓	0-0.6			
	so	Organic Silts - damp to moist, firm, dark brown/black					
	so	Silty Sandy Gravel - damp to moist, medium dense, brown	233 ✓	1.8-2.4			
	ch	As Above - wet	No Sample				
		E.0.4 & 3.7					
		REFUSAL 3.7 MORE SOUTH 2m					
		REFUSAL E2.1 - E.0.4.					



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# TEST HOLE LOG

Northing: 6772272

Easting: 634185

Project No: 8002-318

Test Hole No: # 30118

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 12

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		ORGANIC SILT					
2.3	50	Silty Sand / Silty Silt - damp, medium dense, light brown					
2.2	50	Silty Sand / Silty Silt, trace to some gravel - damp, medium dense, brown	229 ✓	0.6-1.2			
	90	Sandy Gravel, some silt to Silty - damp, dense, brown	230	1.8-2.4			
		Silty Sand - very dense, light brown - Pass Powder at Sample	231 ✓	3.0-3.4		Very Difficult to Drive @ 2.7m	
		E.O.H @ 3.7m					
		Refusal @ 3.7 m + 5m					
		Refusal @ 3.7 - @ 0.4					



# TEST HOLE LOG

Northing: 6772380

Easting: 634108

Project No: 8002-318

Test Hole No: # 30119

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 12

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.075mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Sandy Silty Gravel - saturated, medium dense, brown	226 ✓	0.1-0.6			
5	50	Organic Silt - wet, soft to firm, black/dark brown					
		Gravelly Sand/Sandy Gravel, trace to some silt - damp, medium dense, light brown	227 ✓	2.1-2.7			
10'	90	Sand, trace to some silt, trace gravel (Possibly Rock) - moist to wet, dense, light brown - increase moisture from seepage	228 ✓	3.7-4.3		Difficult to penetrate e 2.0	
		E.O.4. e 4.6					
		REFUGAL E 37 MAKE 2M NORTH					
		REFUGAL P 46 - E.O.4.					



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# TEST HOLE LOG

Northing: 6772396

Easting: 634076

Project No: 8002-318

Test Hole No: # 3028

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

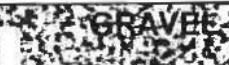
Location: \_\_\_\_\_

Log By: R.W.

Date: Aug. 12

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.75mm	0.075mm	0.002mm
 GRAVEL	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>	
MOISTURE CONTENT - dry, damp, moist, wet	MOISTURE CONTENT - dry, damp, moist, wet		MOISTURE CONTENT - dry, damp, moist, wet	
DENSITY - loose, medium dense, dense	CONSISTENCY - soft, firm, stiff, hard		CONSISTENCY - soft, firm, stiff, hard	
GRADATION - poorly or well graded	PLASTICITY - low, medium, high		PLASTICITY - low, medium, high	
SIZE RANGE - coarse, medium, fine	COLOR -		COLOR -	
COLOR -	INTRUSIONS - oxides, coal lumps, etc.		INTRUSIONS - oxides, coal lumps, etc.	
INTRUSIONS - oxides, coal lumps, etc.				

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		ORGANIC SILTS					
2.3	so	Silty Sand, some gravel to Gravelly - damp, medium dense, brown	222 ✓	1.3-1.9			
2.4	so	Sand, trace to some silt (Porous Rock) - damp, very dense, brown	223 ✓	2.1-2.4		Very Difficult Drilled @ 2.1m	
2.5	do	As Above - light brown (lighter w/ depth)	224 ✓	3.7-4.3			
		Some Rock Particles in Sample	225 ✓	4.8-5.3			
		E.O.T. @ 5.3					
		Revised @ 2.40 - move NORTH 2m					
		E.O.T. @ 5.3m - Very Silty Drilling					



# TEST HOLE LOG

Northing: 6772578

Easting: 633974

Project No: 8002-318

Test Hole No: # 30121

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: AUG 12

2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

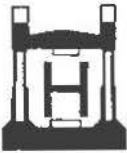
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		ORGANIC SILTS					
0.3	so	GRAVELLY SAND / SANDY GRAVEL / SOME SILT TO SILTY - damp, medium dense, brown	219 ✓	0.6-1.2			
	do	As Above - dense	220 ✓	1.5-2.1			
	so	POSSIBLE ROCK (ROCK POWDER SAMPLE) - dry, very dense, light brown	221 ✓	2.7-3.0		Very Thru-cut Penetration 2.7m	
		C.O.H. @ 3.2 - REFUSAL					
		REFUSAL @ 3.0, MORE 2M EAST					
		REFUSAL @ 3.2 - E.O.H					



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# TEST HOLE LOG

Northing: 6772688  
Easting: 633916

Project No: 8002-318 Test Hole No: # 3012 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug. 12 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	<b>CLAY</b>

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILTS					
0.6	so	Slimy GRAVEL some sand to sandy - Wet, medium dense, dark brown	215 ✓	0.6-1.2			
	dg	Slimy sandy GRAVEL to sandy silty GRAVEL - saturated, medium dense, dark brown	216 ✓	1.6-2.4			
		As Above - Poor sample recovery due to H <sub>2</sub> O	217 ✓	3.4-4.0			
			218 ✓	4.4-5.2			
		E.O.H. @ 5.2 REFUSAL					



# TEST HOLE LOG

Northing: 6772714  
 Easting: 633862

Project No: 8002-318 Test Hole No: # 30123 Rev 1 Elev.         

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:         

Log By: R.W. Date: AUG-11 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SUBSIAL ORGANICS					
2,3	su	SAND, some silt to SILT, some gravel - damp, medium dense, brown	205 ✓	0.6-1.2			
	da	GRAVELLY SAND, trace to some silt - frozen on visible ice - brown	206 ✓	1.8-2.4			
5.0	da	SAND, some gravel to GRAVELLY, trace silt - frozen on visible ice - brown	207 ✓	3.4-4.0			DIFFICULT DOWN TO 3.0m
			208 ✓	5.2-5.8			
			209 ✓	6.4-7.0			
			210 ✓	7.9-8.5			
4	da	GRAVELLY SAND, some silt wet / saturated, some brown	211 ✓	9.4-10.1			
			212 ✓	11.0-11.6			



# TEST HOLE LOG

Northing: 6772714  
Easting: 633962

Project No: 8002-318 Test Hole No: # 30123 Pen 2 Elev.         

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:   

Log By: R.W. Date: Aug 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

**GRAVEL**

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

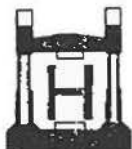
MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
			213 ✓	13.1-13.7			
			214 ✓	14.3-14.6			
		E.O.L. @ 15.1m					
		Specimen 49 - move next 1.7m					
		E.O.L. @ 15.1m - Abort 2.7					



# TEST HOLE LOG

Northing: 6772908  
 Easting: 633827

Project No: 8002-318 Test Hole No: # 30124 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug. 11 2004

**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

<b>GRAVEL</b>	<b>SAND</b>		<b>SI</b>	<b>LT</b>		<b>CLAY</b>
---------------	-------------	--	-----------	-----------	--	-------------

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILTS					
0.6	so	Silty Sandy Gravel - moist, medium dense, brown	200 ✓	0.6-1.2			
	dc	Sandy Silt, some gravel - frozen - brown	201 ✓	1.0-2.4		GRAVELLY	Silty SAND
3.0	dc	Silty Sand (decomposed basalt & granite) - frozen - brown w/ orange hue	202 ✓	3.4-4.0			DIFFICULT PENETRATION @ 7.0m
4.9	dc	Silty Sand (Rock matrix intact) - dry to damp, dense, light brown w/ orange hue	203 ✓	5.2-5.8			
	dc	Silty Sand (Rock matrix intact) - light brown, very dense	204 ✓	6.7-7.3			
		E.O.H. @ 7.5m - Refusal					



# TEST HOLE LOG

Northing: 6773058

Easting: 630772

Project No: 8002-318

Test Hole No: # 30125

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug-11

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	5mm	SAND	0.74mm	SILT	0.075mm	CLAY	0.002mm
MOISTURE CONTENT - dry, damp, moist, wet							
DENSITY - loose, medium dense, dense							
GRADATION - poorly or well graded							
SIZE RANGE - coarse, medium, fine							
COLOR -							
INTRUSIONS - oxides, coal lumps, etc.							
MOISTURE CONTENT - dry, damp, moist, wet							
CONSISTENCY - soft, firm, stiff, hard							
PLASTICITY - low, medium, high							
COLOR -							
INTRUSIONS - oxides, coal lumps, etc.							

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Subsided Organics					
0-1	so	Sandy Gravel, trace silt -dry to damp, medium dense, light brown	193 ✓	0.3-0.9			
1-2	ds	Sandy Gravel/Gravelly Sand, trace silt to silty -damp, medium dense, brown	194 ✓	1.0-2.4			
3-4	ds	Sandy Gravel/Gravelly Sand, some silt -moist, medium dense, brown	195 ✓	3.4-4.0			
4-3	ds	Silty Sandy Gravel -moist to wet, medium dense, brown	196 ✓	4.9-5.5			
6-7	ds	Gravelly Silty Sand -saturated, medium dense, brown	197 ✓	6.4-7.0			
8-9	ds	Silty Sand (possible decomposition products) -moist, medium dense, grey	198 ✓	7.9-8.5			
			199 ✓	10.4-10.7		Very Difficult Drilling @ 9.4m	
		E.0.4 e 10.7					



# TEST HOLE LOG

Northing: 6773199  
 Easting: 633699

Project No: 8002-318 Test Hole No: # 30126 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 10 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>	<b>SILT</b>	.002mm <b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay      COBBLE - 3" - 8"      BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Organic Silt					
0.4	30	Sandy Silt, trace to some gravel - damp to moist, medium dense, brown	191 ✓	0.5-0.8			
		Silty Sand, trace to some gravel - dry to damp, dense, light brown - rock particles in sample	192 ✓	1.5-1.8			
		Refusal @ 1.0m - Refusal					
		Refusal @ 1.0m - more South 2m					
		Refusal @ 1.0m - 2.04					



# TEST HOLE LOG

Northing: 6773331

Easting: 633618

Project No: 8002-318

Test Hole No: # 30127

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 10

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SI

LT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Organic Silt					
0.3	so	Gravelly Sand, some silt to Silty - Frozen, no visible ice - brown	188 ✓	0.6-1.2			
			189 ✓	2.1-2.9			
4.0	sa	Silty Sandy fine gravel - dry to damp, dense, light brown - powder in sample	190 ✓	4.0-4.6			Difficult to sample 4.0m
		E.O.4. @ 4.6m REFUSAL					
		Refusal @ 4.6 - Drive East 2m					
		Refusal @ 4.4 - E.O.4.					
		Rock Pouch on Bit (last 1.5m)					



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# TEST HOLE LOG

Northing: 6773445  
Easting: 6335550

Project No: 8002-318      Test Hole No: #: 30128      Elev: \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W.      Date: Aug 10      2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" GRAVEL	5mm SAND	0.74mm	SILT	.002mm CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Organic Silt					
0.3	so	Sand, some gravel to coarse, some silt - dry to damp, medium dense, light brown	184 ✓	0.4-0.9			
1.0	so	Sand, some silt to silty - moist, dense, light brown w/ occ. yellow/green ore - 4-10 spherules at 1.5m (approx.)	185 ✓	2.1-2.9		DIFFICULT	DRILLING @ 1.5m
			186 ✓	3.7-4.3			
4.6	sa	Sandy Silty / Silty Sand - moist, dense, light brown w/ occ. yellow/green ore	187 ✓	5.2-5.8			

NOTE: Standing Water at TH = 100m Below Surface  
 Dynamic Drilling at 4.4 to 4.7



# TEST HOLE LOG

Northing: 6773473  
 Easting: 633531

Project No: 8002-318 Test Hole No: # 30129 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 10 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" GRAVEL	5mm SAND	0.74mm SILT	.002mm CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Organic Silts					
2'	SO	Sandy Silt - most soft to firm, brown w/ some black organic silts	181 ✓	0.6-1.2			
	SO	Silty Gravelly Sand to Silty Sandy Gravel - moist to wet, medium coarse, brown	182 ✓	1.5-2.4			
3.0		Gravelly Sand, some silt - damp, coarse, brown	183 ✓	3.4-3.7		Difficult to penetrate @ 3.0m	
		E.O.4. @ 4.0m - Refusal					
		Refusal @ 3.7 - move South 1.5m					
		Refusal @ 4.0 - E.O.4					



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# TEST HOLE LOG

Northing: 6773537  
Easting: 633472

Project No: 8002-318 Test Hole No: # 30130 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug. 10 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILT					
0.6	30	SANDY GRAVELLY SILT TO GENERALLY SANDY SILT - FROZEN - brown - possible scrapage zone 9-13'	176 ✓	1.6-1.2			
			177 ✓	1.8-2.4			
1	da	GENERALLY SILTY SANDS - damp to moist, dense, brown	178 *	3.7-4.3		DIFFICULT DRILLING @ 3.7	SANDY SILTY GRAVEL
1.9	da	Silty Sands, trace gravel - dense, dense, brown	179 ✓	4.9-5.5			
		Silty Sands - dry to damp, dense, light brown - powdery sample	180 ✓	7.0-7.6		VERY DIFFICULT DRILLING @ 5.8m	
		E.O.4 @ B.2 - REFUSAL					
		REFUSAL @ 4.9 - MORE NORTH 2m					
		REFUSAL @ B.2 - E.O.4					
		NOTE: VISUAL H <sub>2</sub> O IN HOLE W/OUT NEED WATER/SLURRY					
		NO H <sub>2</sub> O NEEDED IN PRESENT #2					



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# TEST HOLE LOG

Northing: 6773651  
Easting: 633422

Project No: 8002-318 Test Hole No: # 30131 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug. 10 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>	<b>SILT</b>	0.02mm <b>CLAY</b>
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MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILTS					
3m	sa	SANDY SILT trace gravel - FROZEN - brown	173 X	1.3 - 1.9		Silty Sand trace gravel	
1.5	da	Silty Sand, some gravel to gravelly - FROZEN - brown	174 ✓	1.8 - 2.4		DIFFICULT Drains @ 2.4m	
1m	da	Silty SAND trace gravel - dry to damp, dense, light brown - rock powder in sample	175 ✓	3.4 - 3.7			
		E.O.4 @ 4.0m - REFUSAL					
		REFUSAL @ 4.0m - more about 2.5m					
		REFUSAL @ 4.0m - E.O.4					
		- Rock Powder and BIT @ REFUSAL - (BEST ATTEMPTS)					
		VISIBLE ROCK OUTCROPPING APPROX. 10m WEST OF TH					



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# TEST HOLE LOG

Northing: 6773786  
Easting: 633337

Project No: 8002-318 Test Hole No: # 3037 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 9 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>	<b>SILT</b>	.002mm <b>CLAY</b>
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MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Organic Silts					
9	so	Sand, some silt to silty, trace to some gravel - brown - brown	170 ✓	9-1.2			
			171 ✓	2.1-2.7			
2	sp	As Above - unfractured - dark, medium dense, brown	172 ✓	3.4-4.0			
		Refusa @ 4.0 - Refusa					
		Refusa @ 0.9m - max. 50% sand					
		Refusa @ 4.0 - Refusa					
		- Rock Powder at Bit (Silty Arches)					



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# TEST HOLE LOG

Northing: 6773901  
Easting: 633261

Project No: 8002-318 Test Hole No: # 30133 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 9 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" GRAVEL	5mm SAND	0.74mm SILT	.002mm CLAY
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MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

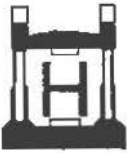
MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILTS					
1.6	so	Sandy Gravel, some silt to silty - Frost - brown	168 ✓	0.9-1.2			Gravelly Drilling @ 0.9m
1.8	so	Sand, some silt to silty, trace gravel - damp, brown stain	169 ✓	1.8-2.4			Difficult Drilling @ 1.8m
		END @ 2.7m					
		Recess @ 2.7m - more silt 3m (Rock powder on 2.7m)					
		Recess @ 2.6 - END. (Rock powder on 2.7)					



# TEST HOLE LOG

Northing: 6774008  
 Easting: 633158

Project No: 8002-318 Test Hole No: # 30134 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 9 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		<i>Subsiding Organics/Silt</i>					
9	da	<i>Sandy Gravel, some silt to Silty - damp, medium dense, brown</i>	<i>166 ✓</i>	<i>9-1.2</i>		<i>Geotech Drawing 20.9m</i>	
2.8	da	<i>Silty Sand, trace gravel - clay to damp, dense, light brown - powder noted</i>	<i>167 ✓</i>	<i>1.8-2.4</i>		<i>Drillers Penetration 41.8m</i>	
		<i>E.O.4 @ 2.7m</i>					
		<i>Refusal @ 2.7m - drive 1.5m 2m</i>					
		<i>Refusal @ 1.5m - E.O.4</i>					
		<i>NOTE: See BLOWER ON BIT (BUBBLES ATTACHED)</i>					



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# TEST HOLE LOG

Northing: 6774137

Easting: 633067

Project No: 8002-318 Test Hole No: # 30135 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 9 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>	<b>SILT</b>	.002mm <b>CLAY</b>
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MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
2		Surface Organics/Silt - Frozen					
9	so	Silty Sand, some gravel to gravelly - Frozen - brown	164 ✓	0.9-1.5		Very Difficult Drilling @ 0.9m	
10	so	Silty Sand - damp - light brown	165 ✓	2.1-3.0		Slow Steady Drilling	
		E.O.N. @ 3.0m - Some Rock Around on Bit					
		Refusal @ 1.5m - move 2m South					
		Refusal @ 3.0m - E.O.N.					



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# TEST HOLE LOG

Northing: 6714206  
Easting: 633003

Project No: 8002-318 Test Hole No: # 30136 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug 9 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>		<b>SI</b>	<b>LT</b>	.002mm <b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay      COBBLE - 3" - 8"      BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		<i>Surface Organics</i>					
0.6	so	<i>Sandy, some gravel, some silt - Frozen - brown</i>	<i>162 *</i>	<i>0.6-1.2</i>		<i>Difficult to penetrate @ 1.5m</i>	<i>Gradually sandy, some silt</i>
1.5	cl	<i>Silty Sand, trace gravel - Frozen - brown</i>	<i>163 ✓</i>	<i>1.5-2.1</i>		<i>Poor sample @ 1.63</i>	
		<i>E.O.4 @ 2.1m</i>					
		<i>Revised @ 2.1m - make Sand 2m</i>					
		<i>Revised @ 2.1m - E.O.4</i>					
		<i>- No intercalated</i>					



# TEST HOLE LOG

Northing: 6775613  
 Easting: 632037

Project No: 8002-318 Test Hole No: # 30148 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 3 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Organic Silts					
09	30	Slurry Sand/Sandy Silt - Firm - dark brown - some organic silt	158 ✓	0.9-1.5			
	50	Slurry Sand, trace to some gravel - Firm - brown	159 ✓	2.1-2.7			
			160 ✓	3.7-4.3			
		Rock Powder Sample C Refusal	161	4.9-5.2			
		E.O.H. @ 5.2m - Refusal					
		Refusal @ 5.2m five NORTH 2m					
		Refusal @ 5.2m - E.O.H.					



# TEST HOLE LOG

Northing: 6775666  
 Easting: 631983

Project No: 8002-318 Test Hole No: # 30149 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: Aug 3 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL	SAND	SILT	CLAY
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MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

th	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		ORGANIC SILTS (CLEARED AREAS)					
2.9	so	Sandy Gravel, some silt to silty - frozen - brown	154 ✓	0.9-1.4			
3.8	dc	SANDY GRAVEL / GRAVELLY SAND, some silt to silty - frozen - brown	155 ✓	2.1-2.7		Difficult Drilling @ 6'	
	dc	Silty Sand, trace gravel - frozen - brown	156 ✓	4.0-4.6		Very Difficult Drilling @ 12'	
		Rock Boulder Sample & Refusal	157	5.3-5.5			
		E.0+e.5.5m Try #2					
		REFUSAL @ 4.7m - MOVE HOLE 2m					
		REFUSAL @ 5.5m - E.0.4					



# TEST HOLE LOG

Northing: 6775739  
 Easting: 631923

Project No: 8002-318 Test Hole No: # 30150 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: Aug 3 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm <b>GRAVEL</b>	0.74mm <b>SAND</b>	<b>SILT</b>	.002mm <b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

Depth	Line Code	Classification	TILL - heterogeneous mixture of gravel, sand, silt, and clay		COBBLE - 3" - 8"		BOULDER - 8" and larger	
			Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF	
		ORGANIC SILTS (ACCESS TRAIL)						
6	so	Silty Sand, trace to some gravel - Frozen - brown/grey	147 ✓	0.9-1.2				
6.8	so	Silty Sand, trace gravel - Frozen - brown	148 x	1.8-2.4			DIFFICULT DRIVING @ 1.8m Silty Gravelly Sand	
7	so	Silty Sand - Frozen - brown	149 x	3.7-4.3			Very Slow Drilling @ 3.7m Sand, some - some gravel	
		Rock Paved Surface & Pavement - dry to damp, light brown	150	5.3-5.5				
		Silty Sand - damp, brown/grey - lot of fractured gravels < 5mm	151 ✓	6.4-7.3	} Hole # 2 Attempt			
			152 ✓	7.9-8.5				
		2.04. @ 10.7m	153 ✓	9.4-10.1				
		1 Photo over Looking Core & Drive						



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# TEST HOLE LOG

Northing: 6775939

Easting: 63188

Project No: 8002-318

Test Hole No: # 30.51

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: Aug 3

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRAOATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		ORGANIC SILTS (on access trail)					
		-frozen					
1	so	Silty Sand, possible trace gravels	144 ✓	0.9-1.2			
		-frozen					
		-brown					
			145 ✓	1.5-2.1		Difficult Driveter @ 2.1m	
		Rock Powder Sample @ 2.0m	146	3.0-3.2			
		-damp, light brown					
		E.0.4 @ 4.0					
		REFUSAL @ 3.2m - MOVE SAMPLE 2m -					
		REFUSAL @ 4.0 - E.0.4					
		1 PHOTO OVERLOOKING LAKE : Drive					





**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6776010  
Easting: 631728

Project No: 8002-318 Test Hole No: # 301S3 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: Aug 3 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" GRAVEL	5mm SAND	0.74mm SILT	.002mm CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
		Superficial ORGANICS (Previously S1000)					
30	so	Silty Silt / Silty Sand, some gravel - moist, loose, brown - organics to 0.6	135 ✓	0.6-1.2			
1.2	su	Silty Sand, some gravel to Gravelly - flocced - brown	136 ✓	1.5-2.4			
3.0	su	Silty Sand, some gravel - damp, dense, brown	137	3.4-4.0		Difficult Penetration 3.0	
5.0	su	Silty Sand, possible trace gravel - damp, medium dense, brown / dark grey - possible drainage channels?	138 ✓	5.2-5.8			
		Base Penetration Same as Refusal - very fine, light grey	139	7.3-7.6			
		End of 7.6m					
		Refusal at 7.6m - Max 1m east					



# TEST HOLE LOG

Northing: 6776060  
 Easting: 631698

Project No: 8002-318 Test Hole No: # 30154 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 31 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Surface Organic					
0.2	so	Crumbly Silty Sand - Fossil - brown/grey	132 ✓	0.3-0.9			
1.5	so	Sandy Silty Sand - Fossil - brown	133 ✓	1.5-2.4			
3.0	sg	Crumbly Silty Sand - Fossil - brown	134 ✓	3.4-4.0			
		0.04 @ 5.3m - Refusal					
		Refusal @ 5.3m - move 1 m east					
		Refusal @ 2.4m - 2.04					



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# TEST HOLE LOG

Northing: 6776117  
Easting: 621693

Project No: 8002-318 Test Hole No: # 30155 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: July 31 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

PG 11

3" GRAVEL 5mm	SAND 0.74mm		SI   LT		.002mm CLAY
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MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

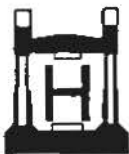
MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0.5		Superficial Organics (Possibly Carbon)					
1	so	Organic Silt - damp, firm, dark brown					
1.8	so	Silty Sandy Gravel - damp to moist, medium dense, brown	127 ✓	0.8-1.2m			
1.5	dc	Sand some silt to silty, some gravel to gravelly - F2ozal - brown	128 ✓	1.5-2.0		Very Grumbly 7 blows @ 1.5m	
			129 ✓	2.4-2.9			
			130 ✓	3.4-4.0			
4.6	dc	Silty Gravelly Sand - F2ozal - brown	131 ✓	5.2-5.8		less Grumbly Silty Gravelly some silt.	
		E.O.H.C 7.0m - Refusal					
		Refusal @ 3.0m - move 1 m EAST					
		Refusal @ 7.0m - move 2 m EAST					



# TEST HOLE LOG

Northing: 6776185  
 Easting: 631600

Project No: 8002-318 - Test Hole No: # 30156 R.G.L. Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: July 31 2004

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 TESTING (1980) LTD.  
 CONSULTING & TESTING ENGINEERS

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>
<b>CLAY</b>		
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.

Depth	Line Code	Classification	COBBLE - 3" - 8"		BOULDER - 8" and larger	
			Sample No.	Sample Depth	Sample Type	Standard Penetration
		Fill - Access Paved Pad				
26	so	Surface Organics				
3	so	Silty Gravelly Sand - damp, loose, brown w/ dark brown organics - some organic silt	116 ✓	0.9-1.5		Sandy Silty, some gravel
3	gc	Sandy Gravel / Gravelly Sand / some silt to silty - damp, moist, medium dense, brown - minimal mat in flight 5-10'	117 ✓	1.5-2.4		Very Gravelly, Dense Below 1.5m
			118 ✓	3.0-4.0		
		Silty Gravelly Sand / Silty Sandy Gravel - damp, medium dense, brown	119 ✓	4.9-5.5		
4	sc	Silty Sand, trace to some gravel - damp, medium dense, brown/gray	120 ✓	6.4-7.0		
			121 ✓	7.9-8.5		



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6776185  
Easting: 63600

Project No: 8002-318 Test Hole No: # 30156 PG.2 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: July 31 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm



**SAND**

**SI LT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
1	da	Silty Sand, trace gravel - damp, medium dense, grey - some gravels noted between 10.4-11.0m	122 ✓	9.4-10.1			
			123 ✓	10.4-11.0			
			124 ✓	11.3-11.9			
			125 ✓	12.5-13.4			
			126 ✓	13.7-14.6			
		204. @ 15.1m					
		REFUSAL @ 5.2m - MOVE 2m NORTH					



**HOGGAN ENGINEERING &  
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# TEST HOLE LOG

Northing: 6776190  
Easting: 631655

Project No: 8002-318 Test Hole No: # 30157 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 31 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm			.002mm
GRAVEL	SAND		SILT		CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SURFICIAL ORGANICS (PREVIOUSLY SAMPLED ACCESS ROAD)					
0.1	SO	SANDY GRAVEL, SOME SILT to SILTY - dense, medium dense, brown	111 ✓	0.3-0.9			
			112 ✓	1.5-2.1		VERY FINELY DENSE Boulders 1.5m	
			113 ✓	2.1-2.7			
		POOR SAMPLE # 114 - MINIMAL MAT' & NO FINESTONES	114 ✓	3.0-4.3			
		POOR SAMPLE # 115 - MINIMAL MAT' & NO FINESTONES	115 ✓	4.9-5.5			
		E.O.L. @ 5.8m					
		NOTE: TEST HOLE NOT DONE IN CASE AS FILLING WORK TOO SIGNIFICANT DRAINAGE CLEARING					



**HOGGAN ENGINEERING & TESTING (1980) LTD.**  
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# TEST HOLE LOG

Northing: 6776372  
Easting: 631563

Project No: 8002-318 Test Hole No: # 30158 Elev. \_\_\_\_\_



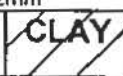
Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 30 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm			.002mm
			<b>SI</b>	<b>LT</b>
				

<p>MOISTURE CONTENT - dry, damp, moist, wet</p> <p>DENSITY - loose, medium dense, dense</p> <p>GRADATION - poorly or well graded</p> <p>SIZE RANGE - coarse, medium, fine</p> <p>COLOR -</p> <p>INTRUSIONS - oxides, coal lumps, etc.</p>	<p>MOISTURE CONTENT - dry, damp, moist, wet</p> <p>CONSISTENCY - soft, firm, stiff, hard</p> <p>PLASTICITY - low, medium, high</p> <p>COLOR -</p> <p>INTRUSIONS - oxides, coal lumps, etc.</p>
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TILL - heterogeneous mixture of gravel, sand, silt, and clay		COBBLE - 3" - 8"		BOULDER - 8" and larger			
Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Fill materials (Per Construction)					
0.8	so	ORGANIC SILTS - Frozen, variable ice - black / dark brown	106 ✓	0.9-1.2			
1.5	so	Silty Gravelly Silt - Frozen - brown	107 ✓	1.5-2.4		VERY DIFFICULT DRILLING 1.5 TO 2.1	Sandy Gravel, some silt
2	ca	Gravelly Sand, some silt - Frozen - brown	108 ✓	2.7-3.4			
			109 ✓	3.7-4.3			
			110 ✓	4.6-5.2			
		Refer to 6.2 - more about 2m					
		Refer to 6.8 - more about 1m					
		Refer to 6.15 - more about 6m					
		Refer to 6.40 - E.O.H.					



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# TEST HOLE LOG

Northing: 6776361  
Easting: 631517

Project No: 8002-318 Test Hole No: # 30159 PG#1 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 30 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

<b>GRAVEL</b>	<b>SAND</b>		<b>SI</b>	<b>LT</b>		<b>CLAY</b>
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MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sandy Gravel trace to some silt - dry to damp, loose, light brown - organic content to 0.6 - some white con. inclusions	93 ✓	0.3-0.9			
	dia	Sandy Gravel / Gravely Sand, trace silt - damp, medium dense, brown	94 ✓	1.5-2.1			
			95 ✓	3.0-3.7			
		some gravel loss on samples 95+ due to auger action	96 ✓	4.6-5.2			
			97 ✓	5.2-5.8			
			98 ✓	6.7-7.3			
			99 ✓	7.9-8.5			
			100 ✓	9.4-10.1			
			101 ✓	10.4-11.0			
			102 ✓	11.3-11.9			



# TEST HOLE LOG

Northing: 6776361

Easting: 631517

Project No: 8002-318 Test Hole No: # 30159 PG# 2 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: July 30 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>
<b>CLAY</b>		

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
18	da	Silty Sand, Some gravel - moist, medium dense, brown	103	12.8-13.4			
						Not Accurate	
7	da	Sandy Gravel / Gravely Sand, trace to some silt. - damp, medium dense, brown	104	12.7-14.0			
			105	14.3-14.9			
		E.O.T. @ 14.9m					
						- Drawing Action changed at 14.0 to A FATER ADVANCE SILT GRINDY POSSIBLY DUE TO SUBMERSE MAT'L 13.7+ MAY NOT BE REPRESENTATIVE DUE TO REVERSE ACTION ON WITHDRAWAL. LAST 3.0m WERE REVERSED AS REQUIRED. CAUSING SAND LOSS.	



# TEST HOLE LOG

Northing: 6776506  
 Easting: 631499

Project No: 8002-318 Test Hole No: #: 30160 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: July 29 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.74mm		.002mm
	<b>SAND</b>		<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
1		Sandy Gravel / Gravelly Sand, trace silt - damp, loose, brown/grey	88 ✓	0.3-0.9			
2	ca	Silty Sand, some gravel - wet, medium dense, brown/grey	89 ✓	1.8-2.1			
2.4	ca	Organic Silts - moist, soft to firm, dark brown w/ black inclusions - increase moisture to wet/saturated @ 10'	90 ✓	2.4-2.9			
3	ca	Gravelly Sand, trace to some silt - saturated, medium dense, brown/grey	91 ✓	3.4-4.0			
			92 ✓	4.9-5.5			
		E.O.L @ 6.1m					



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# TEST HOLE LOG

Northing: 6776711  
Easting: 631517

Project No: 8002-318 Test Hole No: # 30161 Elev. \_\_\_\_\_  
Client: YTG - Highways & Public Works  
Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
Location: \_\_\_\_\_  
Log By: R.W. Date: July 29 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3" 5mm	0.74mm	.002mm
<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Surface Organics					
0.2	20	Sandy Gravel, trace to some silt - damp to moist, brown, brown	83 ✓	0.3-0.9			
0.2	20	As Above - medium dense	84 ✓	1.5-2.1			
			85 ✓	3.0-3.7			
0.2	20	Very Sandy Gravel - moist, medium dense, brown	86 ✓	4.0-4.3			
4.4	20	Sandy Gravel, some silt - moist, medium dense, brown	87 ✓	4.9-5.5			
		END OF LOG					



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# TEST HOLE LOG

Northing: 16776914  
Easting: 631538

Project No: 8002-318 Test Hole No: # 30162 Elev.

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location:

Log By: R.W. Date: July 29 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SI LT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sandy Gravel, trace to some silt - damp to moist, loose, brown	77 ✓	0.3-0.6			
	dc	Generally Silty Sand - moist to wet, medium dense, brown	78 ✓	1.5-2.1			
24	so	Sandy Gravel, trace to some silt - moist, medium dense, brown	79 ✓	2.4-2.7			
			80 ✓	3.0-4.6			
46	dg	Silty Sandy Gravel - moist, medium dense, brown	81 ✓	4.6-5.2			
2	so	Sandy Gravel, trace to some silt - moist, medium dense, brown - possible some gravel loss on sample n 82  = 0.4 @ 5.8m	82 ✓	5.2-5.8			



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# TEST HOLE LOG

Northing: 6776900  
Easting: 631563

Project No: 8002-318 Test Hole No: # 30163 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 29 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION



MOISTURE CONTENT - dry, damp, moist, wet  
DENSITY - loose, medium dense, dense  
GRADATION - poorly or well graded  
SIZE RANGE - coarse, medium, fine  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
CONSISTENCY - soft, firm, stiff, hard  
PLASTICITY - low, medium, high  
COLOR -  
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Sandy Gravel, some silt to silty - damp to moist, base, brown - silt from between 0.6 - 0.8m	72 ✓	0.3-0.9			
1.5	50	Coarsely Silty Sand - moist, soft, brown - some organics noted (rootlets)	73 ✓	1.5-2.1			
2.0	50	Sandy Gravel, trace silt - moist, medium dense, brown - some oxidation on gravels	74 ✓	2.1-2.7			
			75 ✓	3.4-4.3			
2	50	Sandy Gravel, trace to some silt - saturated, medium dense, brown	76 ✓	5.2-5.6			
		E.O.V. & S.A.					



# TEST HOLE LOG

Northing: 6777631  
 Easting: 631579

Project No: 8002-318 Test Hole No: # 30164 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 29 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

GRAVEL	5mm	SAND	0.74mm	SILT	.002mm	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.						MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0-7		Sandy Gravel - damp to moist, loose, brown	66 ✓	0.2-0.6			
5-1	so	Organic Silt - moist, soft, brown	67 ✓	0.8-1.2			
1-4	so	Sandy Gravel, trace to some silt - damp to moist, medium dense, brown	68 ✓	1.5-2.1			
2-4	oa	Sandy Silt, trace gravel - damp to moist, soft to firm, brown w/ some black organic inclusions	69 ✓	2.4-2.7			
3-0	da	Sandy Gravel, trace to some silt - damp, medium dense, brown	70 ✓	3.4-4.0			
2-2	os	Silty Sandy Gravel - moist, medium dense, brown w/ black organics - some organic silt - some organic intrusions (rootlets etc.)	71 ✓	4.6-5.5			
		E.O.4 @ 5.9m					



# TEST HOLE LOG

Northing: 6777126  
 Easting: 631607

Project No: 8002-318 Test Hole No: # 30165 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: July 29 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm			.002mm
GRAVEL	SAND		SILT		CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
2		Sandy Gravel, trace silt (Previously Classified Drunk-Process 820)	61 ✓	0.3-0.9			
		- damp, base, brown					
1	da	Sandy Gravel / Gravelly Sand, trace silt	62 ✓	1.5-2.1			
		- dry to damp, medium dense, light brown					
		- possibly some gravel loss on sample 62					
1	da	Silty Silt	63 ×	2.4-4.0		Silty Sand	
		- damp, medium dense, brown					
1	da	Gravelly Silty Sand to Silty Sandy Gravel	64 ✓	4.1-4.4			
		- damp, medium dense, brown					
16'	da	Sandy Silt, trace gravel	65 ×	4.9-5.5		Silty Sandy Gravel	
		- moist to wet, medium dense, brown					
		- increase moisture to wet & SSM					
		EQ.4 & 5.8m					



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# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318

Test Hole No: #: 30166

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: July 28

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
<b>SAND</b> MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		<b>SILT</b> <b>CLAY</b> MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Surface Gravels					
0.1	so	Sandy Gravel, trace silt - damp, medium dense, brown	56 ✓	0.3-0.9			
1	ds	Sandy Silt, trace gravel - damp, medium dense, brown	57 *	1.5-1.8		Silty Sand	
3	dg	Sandy Gravel, some silt to Silty - damp to moist, medium dense, brown	58 ✓	2.1-2.7			
3.0	da	Silty Sandy Gravel - moist, medium dense, brown - Silty Steeply Thick-bedded	59 ✓	3.4-4.0			
2	dg	Sandy Gravel, some silt to Silty - moist, medium dense, brown	60 ✓	4.9-5.5			
		E.O.4 e.s.s					



# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318 Test Hole No: # 30167 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

	5mm	0.74mm		.002mm
GRAVEL	SAND		SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.			

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Surgical Organics					
05	so	Silty Sand, some gravel - damp, brown brown - some organics noted					
2.5	so	Sandy Gravel, trace silt - damp, medium dense, brown	51 ✓	0.6-1.2			
5	cs	Sandy Silty Gravel - moist, medium dense, brown	52 *	1.5-2.1		Silty Gravelly Sand	
	cs	Sandy Gravel, trace to some silt - damp, medium dense, brown	53 ✓	2.3-2.7			
	cs	Sandy Gravel, some silt to Silty - damp to moist, medium dense, brown - some oxidation noted	54 ✓	3.4-4.3			
			55 ✓	4.9-5.5			
		E.O.T. C.S.B					



# TEST HOLE LOG

Northing: 6771587  
 Easting: 631509

Project No: 8002-318      Test Hole No: # 30168      Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W.      Date: July 28      2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm	0.74mm	.002mm
GRAVEL	SAND	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.	MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

Depth	Line Code	Classification	COBBLE - 3" - 8"		BOULDER - 8" and larger	
			Sample No.	Sample Depth	Sample Type	Standard Penetration
0		SURFACE ORGANICS (BIOLOGICAL MATTER)				
02	so	Silty GRAVELLY SAND - damp, loose, brown	45 *	0.2-0.6		Silty Sand some gravel to 0.25m
02	so	Sandy GRAVEL, trace silt - damp, medium dense, brown	46 ✓	0.6-1.2		
1	dc	Silty GRAVELLY SAND - moist, medium dense, brown	47 ✓	1.8-2.1		
27	dc	Sandy GRAVEL, some silt to silty - damp, medium dense, brown	48 ✓	3.4-4.3		
			49 ✓	4.6-5.2		
35	so	Silty GRAVELLY SILT - moist, firm, light brown w/ some black organics - some gravel in sample from above e.0.4 & 5.8	50 *	5.5-5.8		Sandy Silt some gravel



# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318

Test Hole No: # 30169

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: July 28

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

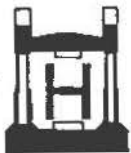
INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Superficial Organics (Superficial Drilling Access Point)					
0:2	so	Sandy Gravel, trace to some silt - Fines - brown	39 ✓	0.3-0.9			
			40 ✓	1.5-2.1			
			41 ✓	2.1-2.7			
			42 ✓	3.4-4.0			
1:0	os	Sandy Silt, some gravel (Mixture of materials) - Fines - brown / light brown, some black organics	43 ✓	4.3-4.9			
	oa	Silty Sand, some gravel - Fines - brown	44 ✓	4.9-5.5			Sandy Gravel, some silt
		E.O.D. @ 5.8m					



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# TEST HOLE LOG

Northing: 6777845  
Easting: 631413

Project No: 8002-318 Test Hole No: # 30170 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

0.02mm

**SAND**

**SILT**

**CLAY**

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Surficial Organic					
2.2	30	Gravelly Sand, fine silt to silty - frozen - brown - some oxidation on gravels noted	34	0.3-0.9	Sandy Gravel		trace silt
			35	1.5-2.1			
			36	2.9-3.4			
			37	3.7-4.3			
			38	4.9-5.5			
		E.O. 4. & 5.0					



# TEST HOLE LOG

Northing: 677798  
 Easting: 631413

Project No: 8002-318 Test Hole No: # 30171 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 28 2004

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## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm 0.74mm .002mm



MOISTURE CONTENT - dry, damp, moist, wet  
 DENSITY - loose, medium dense, dense  
 GRADATION - poorly or well graded  
 SIZE RANGE - coarse, medium, fine  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet  
 CONSISTENCY - soft, firm, stiff, hard  
 PLASTICITY - low, medium, high  
 COLOR -  
 INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		<i>SUPERIOR ORGANICS</i>					
		-					
2.2	30	<i>Silty GRAVELLY SAND TO GRAVELLY Silty SAND</i> - FROZEN - medium dense brown	29 ✓	0.2-0.5			
			30 ✓	0.6-1.2			
1.7	da	<i>Silty SAND</i> - FROZEN - medium dense brown - some organic silts noted	31 x	1.8-2.4			<i>GRAVELLY Silty SAND</i>
2.4	da	<i>SANDY SILT, some gravel</i> - FROZEN visible ice crystals to 1cm in clusters (ice rich)	32 ✓	3.0-3.7			
1.3	da	<i>SANDY SILT, trace gravel</i> - FROZEN no visible ice - brown to grey - some wood pieces noted	33 ✓	4.6-5.2			
		E. of e 58m					
		* REAL MIXTURE OF VARIOUS SOILS (POSSIBLE OLD SLIDE AREA)					



# TEST HOLE LOG

Northing: 6778136  
Easting: 631432

Project No: 8002-318 Test Hole No: # 30172 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

Depth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		Surficial Organic					
0.2	so	Silty Gravelly Sand - moist to wet, loose, brown - organics noted throughout	23 ✓	0.3-0.9			
1.5	sc	Sandy Silt - saturated, medium dense, brown	24 *	1.5-1.8		Silty Sand	
			25 *	2.1-2.7			
3.0	dc	Silty Sand to Sand, some silt - saturated, medium dense, brown	26 ✓	3.4-4.3			
4.7	dc	Gravelly Silty Sand - saturated, dense, grey w/ blue hue	27 ✓	4.9-5.2			
5	dc	Sandy Silt to Silt, some sand - moist, firm to stiff, grey w/ blue hue	28 ✓	5.5-5.9			
		E.O.4 @ 5.9m					



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# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318 Test Hole No: # 30173 Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W. Date: July 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm		
<b>GRAVEL</b>	<b>SAND</b>	<b>SILT</b>	<b>CLAY</b>		
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.			MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.		

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Surface Organic					
0.2	so	Silt - saturated, soft, grey/brown - moderate organics	18 ✓	0.2-0.6			
0.8	so	Silt, some sand - Frozen, visible ice crystals to 3mm in clusters - soft, grey/brown w/ some black organic silt	19 ✓	0.8-1.2			
2	so	Sandy Silt - Frozen, no visible ice - medium dense, grey/brown	20 *	1.8-2.4		Sandy Gravely Silt	
2	cl	Sandy Silt - Frozen - medium dense light brown	21 ✓	3.7-4.3			
4.6	do	As Above - grey/brown	22 ✓	4.9-5.5			
		E.O.4 @ 5.9m					



# TEST HOLE LOG

Northing: \_\_\_\_\_

Easting: \_\_\_\_\_

Project No: 8002-318

Test Hole No: #: 30174

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1

Location: \_\_\_\_\_

Log By: R.W.

Date: July 20 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

5mm

0.74mm

.002mm

GRAVEL

SAND

SILT

CLAY

MOISTURE CONTENT - dry, damp, moist, wet

DENSITY - loose, medium dense, dense

GRADATION - poorly or well graded

SIZE RANGE - coarse, medium, fine

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

MOISTURE CONTENT - dry, damp, moist, wet

CONSISTENCY - soft, firm, stiff, hard

PLASTICITY - low, medium, high

COLOR -

INTRUSIONS - oxides, coal lumps, etc.

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSP
2		Silt, some sand - damp, firm, non plastic, grey - some oxidation - some organics throughout	12 ✓	0-0.6			
6a	so	Organic Silts - saturated, soft, black/dark brown	13 ✓	0.6-1.2			
5	ca	Silty Gravely Sands to Gravely Silty Sands - saturated, medium dense, brown - some silt in sample it could be from top of hole	14 ✓	1.8-2.7	Horiz. mult. sample on augers		
7	ca	Silty Sand - saturated, medium dense, grey	15 ✓	3.7-4.0			
4a	so	Silt, trace to some sand - wet, firm, dark brown	16 ✓	4.0-4.4			
4-b	ca	Sst, some sand to Silty Sst - wet, firm, grey - old interbedded gravels to 20mm - some organics noted - E.O.4. @ 5.9m	17 ✓	4.5-6.5			
		Test hole 12m From Direct Interception (Standing Water)					



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# TEST HOLE LOG

Northing: 6778568  
Easting: 631597

Project No: 8002-318 Test Hole No: # 30175 Elev. \_\_\_\_\_  
 Client: YTG - Highways & Public Works  
 Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1  
 Location: \_\_\_\_\_  
 Log By: R.W. Date: July 28 2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
GRAVEL	SAND	SILT	CLAY
MOISTURE CONTENT - dry, damp, moist, wet DENSITY - loose, medium dense, dense GRADATION - poorly or well graded SIZE RANGE - coarse, medium, fine COLOR - INTRUSIONS - oxides, coal lumps, etc.		MOISTURE CONTENT - dry, damp, moist, wet CONSISTENCY - soft, firm, stiff, hard PLASTICITY - low, medium, high COLOR - INTRUSIONS - oxides, coal lumps, etc.	

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
		Sandy Gravelly trace silt (Existing Road Shoulder) - some loose brown	7 ✓	1.3-1.9			
0	ca	Sandy Gravelly trace to some silt - sat. retent. medium dense, brown	8 ✓	2.0-2.9			
3.0	ca	Gravelly Sand, trace to some silt. - FROZEN - some decomposed organics noted between 3.0-4.6 (wood pieces)	9 ✓	3.0-3.7			
			10 ✓	3.7-4.3			
			11 ✓	4.9-5.5			
		E.O. 4.e 5.9m					



# TEST HOLE LOG

Northing: 6778670

Easting: 631642

Project No: 8002-318

Test Hole No: # 30176

Elev. \_\_\_\_\_

Client: YTG - Highways & Public Works

Project: Geotechnical Services Km 1691.7 to 1717.3 Alaska Highway #1





Location: \_\_\_\_\_

Log By: R.W.

Date: July 28

2004

## MINIMUM REQUIREMENTS FOR A TEST HOLE LOG CLASSIFICATION

3"	5mm	0.74mm	.002mm
			
<b>GRAVEL</b>	<b>SAND</b>	<b>SI</b>	<b>LT</b>
<b>CLAY</b>			

<p>MOISTURE CONTENT - dry, damp, moist, wet</p> <p>DENSITY - loose, medium dense, dense</p> <p>GRADATION - poorly or well graded</p> <p>SIZE RANGE - coarse, medium, fine</p> <p>COLOR -</p> <p>INTRUSIONS - oxides, coal lumps, etc.</p>	<p>MOISTURE CONTENT - dry, damp, moist, wet</p> <p>CONSISTENCY - soft, firm, stiff, hard</p> <p>PLASTICITY - low, medium, high</p> <p>COLOR -</p> <p>INTRUSIONS - oxides, coal lumps, etc.</p>
---	--

TILL - heterogeneous mixture of gravel, sand, silt, and clay

COBBLE - 3" - 8"

BOULDER - 8" and larger

pth	Line Code	Classification	Sample No.	Sample Depth	Sample Type	Standard Penetration	Pocket Penetration, TSF
0		SANDY GRAVEL, trace silt (EXISTING ROAD SHOULDER) - damp to moist, loose, brown	1 ✓	.2 - .5'			
6	so	ORGANIC SILTS (ORIGINAL GRADE) - damp, soft, dark brown	2 ✓	.6 - 1.2'			
1.5	so	GRAVELLY SAND, trace silt - moist to wet, medium dense, brown	3 ✓	1.5 - 2.1'			
2.4	dc	SILTY SAND, some gravel - wet, medium dense, brown - some sample contamination from above	4 ✓	2.4 - 2.9'			
3.4	dc	SILT GRAVELLY SAND TO GRAVELLY SILTY SAND - FROZEN - medium dense, brown	5 ✓	3.7 - 4.3'			
			6 ✓	4.9 - 5.5'			
		E.O.4 @ 5.8m					

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

**MOISTURE CONTENT RESULTS**



# J.R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

MOISTURE ANALYSIS

Project: Geotechnical Services-Shakwak

Client: YTG - Highways & Public Works, Transportation & Engineering

Made By: MD

Job No: 8002-318

Location: KM 1691-7-1717.3

Ck'd By: \_\_\_\_\_

Date: August 4, 2004

SAMPLE #	1	2	3	4	5	6
TEST HOLE #	30176	30176	30176	30176	30176	30176
DEPTH (metres)	0.2-0.5	0.6-1.2	1.5-2.1	2.4-2.9	3.7-4.3	4.9-5.5
MOISTURE CONTENT %	8.4	27.2	8.2	15.8	14.4	14.8
SAMPLE #	7	8	9	10	11	12
TEST HOLE #	30175	30175	30175	30175	30175	30174
DEPTH (metres)	0.3-0.9	2.0-2.9	3.0-3.7	3.7-4.3	4.9-5.5	0.0-0.6
MOISTURE CONTENT %	5.7	7.0	16.3	10.7	9.0	31.4
SAMPLE #	13	14	15	16	17	18
TEST HOLE #	30174	30174	30174	30174	30174	30173
DEPTH (metres)	0.6-1.2	1.8-2.7	3.7-4.0	4.0-4.4	4.9-5.5	0.2-0.6
MOISTURE CONTENT %	50.0	11.8	16.8	44.5	20.1	27.5
SAMPLE #	19	20	21	22	23	24
TEST HOLE #	30173	30173	30173	30173	30172	30172
DEPTH (metres)	0.8-1.2	1.8-2.4	3.7-4.3	4.9-5.5	0.3-0.9	1.5-1.8
MOISTURE CONTENT %	39.6	15.5	17.8	19.2	15.3	16.9
SAMPLE #	25	26	27	28	29	30
TEST HOLE #	30172	30172	30172	30172	30171	30171
DEPTH (metres)	2.1-2.7	3.4-4.3	4.9-5.2	5.5-5.9	0.2-0.5	0.6-1.2
MOISTURE CONTENT %	16.3	10.7	8.2	19.2	18.1	27.6
SAMPLE #	31	32	33	34	35	36
TEST HOLE #	30171	30171	30171	30170	30170	30170
DEPTH (metres)	1.8-2.4	3.0-3.7	4.6-5.2	0.3-0.9	1.5-2.1	2.9-3.4
MOISTURE CONTENT %	34.7	30.8	27.5	8.6	10.1	11.1
SAMPLE #	37	38	39	40	41	42
TEST HOLE #	30170	30170	30169	30169	30169	30169
DEPTH (metres)	3.7-4.3	4.9-5.5	0.3-0.9	1.5-2.1	2.1-2.7	3.4-4.0
MOISTURE CONTENT %	10.2	7.8	7.8	6.4	9.0	6.2
SAMPLE #	43	44	45	46	47	48
TEST HOLE #	30169	30169	30168	30168	30168	30168
DEPTH (metres)	4.3-4.9	4.9-5.5	0.2-0.6	0.6-1.2	1.8-2.1	3.4-4.3
MOISTURE CONTENT %	21.2	13.3	6.4	3.7	7.7	4.9
SAMPLE #	49	50	51	52	53	54
TEST HOLE #	30168	30168	30167	30167	30167	30167
DEPTH (metres)	4.6-5.2	5.5-5.8	0.6-1.2	1.5-2.1	2.3-2.7	3.4-4.3
MOISTURE CONTENT %	3.2	23.3	2.9	14.5	3.9	5.7
SAMPLE #	55	56	57	58	59	60
TEST HOLE #	30167	30166	30166	30166	30166	30166
DEPTH (metres)	4.9-5.5	0.3-0.9	1.5-1.8	2.1-2.7	3.4-4.0	4.9-5.5
MOISTURE CONTENT %	4.6	2.7	23.5	5.3	9.7	6.5



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Made By: MD

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Ck'd By: \_\_\_\_\_

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SAMPLE #	61	62	63	64	65	66
TEST HOLE #	30165	30165	30165	30165	30165	30164
DEPTH (metres)	0.3-0.9	1.5-2.1	3.4-4.0	4.1-4.4	4.9-5.5	0.2-0.6
MOISTURE CONTENT %	2.5	2.0	13.3	4.9	19.9	2.7
SAMPLE #	67	68	69	70	71	72
TEST HOLE #	30164	30164	30164	30164	30164	30163
DEPTH (metres)	0.8-1.2	1.5-2.1	2.4-2.7	3.4-4.0	4.6-5.5	0.3-0.9
MOISTURE CONTENT %	42.9	3.2	19.4	3.3	9.4	5.5
SAMPLE #	73	74	75	76	77	78
TEST HOLE #	30163	30163	30163	30163	30162	30162
DEPTH (metres)	1.5-2.1	2.1-2.7	3.4-4.3	5.2-5.6	0.3-0.6	1.5-2.1
MOISTURE CONTENT %	24.0	3.7	3.9	6.8	2.5	17.5
SAMPLE #	79	80	81	82	83	84
TEST HOLE #	30162	30162	30162	30162	30161	30161
DEPTH (metres)	2.4-2.7	3.0-4.0	4.6-5.2	5.2-5.8	0.3-0.9	1.5-2.1
MOISTURE CONTENT %	4.9	3.7	10.3	3.8	4.5	4.9
SAMPLE #	85	86	87	88	89	90
TEST HOLE #	30161	30161	30161	30160	30160	30160
DEPTH (metres)	3.0-3.7	4.0-4.3	4.9-5.5	0.3-0.9	1.8-2.1	2.4-2.9
MOISTURE CONTENT %	3.7	12.1	6.1	2.8	17.1	60.7
SAMPLE #	91	92	93	94	95	96
TEST HOLE #	30160	30160	30159	30159	30159	30159
DEPTH (metres)	3.4-4.0	4.9-5.5	0.3-0.9	1.5-2.1	3.0-3.7	4.6-5.2
MOISTURE CONTENT %	10.7	10.7	1.0	1.4	1.6	4.2
SAMPLE #	97	98	99	100	101	102
TEST HOLE #	30159	30159	30159	30159	30159	30159
DEPTH (metres)	5.2-5.8	6.7-7.3	7.9-8.5	9.4-10.1	10.4	11.0
MOISTURE CONTENT %	1.5	1.6	2.0	1.7	1.7	2.0
SAMPLE #	103	104	105	106	107	108
TEST HOLE #	30159	30159	30159	30158	30158	30158
DEPTH (metres)	12.8-13.4	13.7-14.0	14.3-14.9	0.9-1.2	1.5-2.4	2.7-3.4
MOISTURE CONTENT %	6.9	2.8	2.8	92.7	11.3	8.6
SAMPLE #	109	110	111	112	113	114
TEST HOLE #	30158	30158	30157	30157	30157	30157
DEPTH (metres)	3.7-4.3	4.6-5.2	0.3-0.9	1.5-2.1	2.1-2.7	3.0-4.3
MOISTURE CONTENT %	8.2	8.2	4.1	6.0	4.8	3.8
SAMPLE #	115	116	117	118	119	120
TEST HOLE #	30157	30156	30156	30156	30156	30156
DEPTH (metres)	4.9-5.5	0.9-1.5	1.5-2.4	3.0-4.0	4.9-5.5	6.4-7.0
MOISTURE CONTENT %	5.5	23.8	7.1	6.6	6.9	6.2



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SAMPLE #	121	122	123	124	125	126
TEST HOLE #	30156	30156	30156	30156	30156	30156
DEPTH (metres)	7.9-8.5	9.4-10.1	10.4-11.0	11.3-11.9	12.5-13.4	13.7-14.6
MOISTURE CONTENT %	5.8	5.1	4.1	4.9	6.0	5.1
SAMPLE #	127	128	129	130	131	132
TEST HOLE #	30155	30155	30155	30155	30155	30154
DEPTH (metres)	0.8-1.2	1.5-2.0	2.4-2.9	3.4-4.0	5.2-5.8	0.3-0.9
MOISTURE CONTENT %	8.5	8.3	8.2	9.0	10.0	29.9
SAMPLE #	133	134	135	136	137	138
TEST HOLE #	30154	30154	30153	30153	30153	30153
DEPTH (metres)	1.5-2.4	3.4-4.0	0.6-1.2	1.5-2.4	3.4-4.0	5.2-5.8
MOISTURE CONTENT %	19.4	13.4	11.4	12.0	6.9	10.0
SAMPLE #	139	140	141	142	143	144
TEST HOLE #	30153	30152	30152	30152	30152	30151
DEPTH (metres)	7.3-7.6	0.3-0.9	2.1-2.7	3.4-4.0	4.9-5.2	0.9-1.2
MOISTURE CONTENT %	4.7	3.1	8.7	9.0	6.0	22.2
SAMPLE #	145	146	147	148	149	150
TEST HOLE #	30151	30151	30150	30150	30150	30150
DEPTH (metres)	1.5-2.1	3.0-3.2	0.9-1.2	1.8-2.4	3.7-4.3	5.3-5.5
MOISTURE CONTENT %	10.6	6.6	15.1	2.9	13.5	6.6
SAMPLE #	151	152	153	154	155	156
TEST HOLE #	30150	30150	30150	30149	30149	30149
DEPTH (metres)	6.4-7.3	7.9-8.5	9.4-10.1	0.9-1.4	2.1-2.7	4.0-4.6
MOISTURE CONTENT %	4.5	7.1	5.3	10.2	11.6	14.7
SAMPLE #	157	158	159	160	161	162
TEST HOLE #	30149	30148	30148	30148	30148	30136
DEPTH (metres)	5.3-5.5	0.9-1.5	2.1-2.7	3.7-4.3	4.9-5.2	0.6-1.2
MOISTURE CONTENT %	5.4	24.8	10.7	16.2	5.0	11.0
SAMPLE #	163	164	165	166	167	168
TEST HOLE #	30136	30135	30135	30134	30134	30133
DEPTH (metres)	1.5-2.1	0.9-1.5	2.1-3.0	0.9-1.2	1.8-2.4	0.9-1.2
MOISTURE CONTENT %	14.2	10.0	8.6	8.0	0.9	7.3
SAMPLE #	169	170	171	172	173	174
TEST HOLE #	30133	30132	30132	30132	30131	30131
DEPTH (metres)	1.8-2.4	0.9-1.2	2.1-2.7	3.4-4.0	0.3-0.9	1.8-2.4
MOISTURE CONTENT %	7.8	9.6	9.3	6.0	30.8	7.3
SAMPLE #	175	176	177	178	179	180
TEST HOLE #	30131	30130	30130	30130	30130	30130
DEPTH (metres)	3.4-3.7	0.6-1.2	1.8-2.4	3.7-4.3	4.9-5.5	7.0-7.6
MOISTURE CONTENT %	3.1	13.3	10.3	9.1	5.0	4.3



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SAMPLE #	181	182	183	184	185	186
TEST HOLE #	30129	30129	30129	30128	30128	30128
DEPTH (metres)	0.6-1.2	1.8-2.4	3.4-3.7	0.4-0.9	2.1-2.9	3.7-4.3
MOISTURE CONTENT %	34.0	9.2	4.9	2.3	9.3	8.6
SAMPLE #	187	188	189	190	191	192
TEST HOLE #	30128	30127	30127	30127	30126	30126
DEPTH (metres)	5.2-5.8	0.6-1.2	2.1-2.9	4.0-4.6	0.5-0.8	1.5-1.8
MOISTURE CONTENT %	10.4	15.9	12.1	3.4	12.9	4.1
SAMPLE #	193	194	195	196	197	198
TEST HOLE #	30125	30125	30125	30125	30125	30125
DEPTH (metres)	0.3-0.9	1.8-2.4	3.4-4.0	4.9-5.5	6.4-7.0	7.9-8.5
MOISTURE CONTENT %	1.5	8.0	9.8	8.3	11.0	11.2
SAMPLE #	199	200	201	202	203	204
TEST HOLE #	30125	30124	30124	30124	30124	30124
DEPTH (metres)	10.4-10.7	0.6-1.2	1.8-2.4	3.4-4.0	5.2-5.8	6.7-7.3
MOISTURE CONTENT %	12.3	9.2	16.8	14.2	4.0	2.0
SAMPLE #	205	206	207	208	209	210
TEST HOLE #	30123	30123	30123	30123	30123	30123
DEPTH (metres)	0.6-1.2	1.8-2.4	3.4-4.0	5.2-5.8	6.4-7.0	7.9-8.5
MOISTURE CONTENT %	5.8	6.1	4.5	5.2	6.8	6.9
SAMPLE #	211	212	213	214	215	216
TEST HOLE #	30123	30123	30123	30123	30122	30122
DEPTH (metres)	9.4-10.1	11.0-11.6	13.1-13.7	14.3-14.6	0.6-1.2	1.6-2.4
MOISTURE CONTENT %	9.7	9.1	9.5	9.9	15.0	8.7
SAMPLE #	217	218	219	220	221	222
TEST HOLE #	30122	30122	30121	30121	30121	30120
DEPTH (metres)	3.4-4.0	4.6-5.2	0.6-1.2	1.5-2.1	2.7-3.0	0.3-0.9
MOISTURE CONTENT %	9.3	8.0	6.6	3.6	1.6	9.6
SAMPLE #	223	224	225	226	227	228
TEST HOLE #	30120	30120	30120	30119	30119	30119
DEPTH (metres)	2.1-2.4	3.7-4.3	4.9-5.3	0.1-0.6	2.1-2.7	3.7-4.3
MOISTURE CONTENT %	6.8	5.1	2.9	16.1	3.1	11.6
SAMPLE #	229	230	231	232	233	234
TEST HOLE #	30118	30118	30118	30117	30117	30116
DEPTH (metres)	0.6-1.2	1.8-2.4	3.0-3.4	0.0-0.6	1.8-2.4	0.6-1.2
MOISTURE CONTENT %	15.5	4.8	3.2	13.8	8.7	4.3
SAMPLE #	235	236	237	238	239	240
TEST HOLE #	30116	30116	30116	30115	30115	30115
DEPTH (metres)	2.1-2.7	3.4-4.0	4.6-5.2	0.3-0.9	1.8-2.4	3.7-4.3
MOISTURE CONTENT %	2.5	2.2	1.6	3.8	3.2	6.0



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SAMPLE #	241	242	243	244	245	246
TEST HOLE #		30114	30114	30113	30113	30112
DEPTH (metres)		0.6-1.2	1.8-2.4	0.6-1.2	1.5-2.1	0.5-0.8
MOISTURE CONTENT %		3.1	1.9	16.9	4.8	13.2
SAMPLE #	247	248	249	250	251	252
TEST HOLE #	30112	30112	30111	30111	30110	30110
DEPTH (metres)	1.8-2.4	3.0-3.4	0.2-0.6	1.5-1.8	0.4-1.0	1.8-2.4
MOISTURE CONTENT %	6.7	2.6	4.7	1.6	21.8	11.6
SAMPLE #	253	254	255	256	257	258
TEST HOLE #	30110	30110	30109	30109	30109	30108
DEPTH (metres)	3.4-4.0	4.8-5.5	0.6-1.2	1.8-2.4	3.4-4.0	0.6-1.2
MOISTURE CONTENT %	10.5	4.9	13.3	5.2	2.7	11.6
SAMPLE #	259	260	261	262	263	264
TEST HOLE #	30108	30108	30108	30105	30105	30105
DEPTH (metres)	1.5-2.1	3.0-3.7	4.9-5.5	0.9-1.2	1.8-2.4	3.4-4.0
MOISTURE CONTENT %	6.4	1.3	2.3	7.3	10.7	3.6
SAMPLE #	265	266	267	268	269	270
TEST HOLE #	30107	30106	30106	30104	30104	30104
DEPTH (metres)	0.9-1.2	0.0-0.6	0.9-1.2	0.3-0.9	1.8-2.4	3.4-3.7
MOISTURE CONTENT %	1.7	4.9	3.1	3.4	8.0	1.9
SAMPLE #	271	272	273	274	275	276
TEST HOLE #	30104	30103	30103	30103	30102	30102
DEPTH (metres)	3.7-4.3	0.6-1.2	2.1-2.9	3.7-4.3	0.6-1.2	2.4-3.0
MOISTURE CONTENT %	3.1	4.1	5.2	1.6	11.7	0.8
SAMPLE #	277	278	279	280	281	282
TEST HOLE #	30101	30101	30100	30100	30100	30100
DEPTH (metres)	0.4-1.0	1.8-2.4	0.6-1.2	1.8-2.4	3.4-4.3	4.9-5.5
MOISTURE CONTENT %	4.4	6.2	6.5	6.9	5.7	10.4
SAMPLE #	283	284	285	286	287	288
TEST HOLE #	30100	30100	30100	30099	30099	30099
DEPTH (metres)	6.4-7.3	8.2-8.8	9.4-10.1	0.3-0.9	1.8-2.4	3.0-3.7
MOISTURE CONTENT %	11.8	12.6	9.6	7.4	10.9	60.0
SAMPLE #	289	290	291	292	293	294
TEST HOLE #	30099	30098	30098	30098	30097	30097
DEPTH (metres)	4.1-4.4	0.3-0.9	1.8-2.4	3.4-4.0	0.6-1.2	1.8-2.4
MOISTURE CONTENT %	12.9	3.3	4.7	6.4	7.2	14.4
SAMPLE #	295	296	297	298	299	300
TEST HOLE #	30096	30096	30096	30096	30096	30096
DEPTH (metres)	1.0-1.3	1.8-2.4	3.7-4.3	4.9-5.5	7.0-7.6	9.1-9.8
MOISTURE CONTENT %	19.5	10.7	7.7	9.7	35.1	17.4



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SAMPLE #	301	302	303	304	305	306
TEST HOLE #	30096	30095	30095	30095	30095	30094
DEPTH (metres)	10.4-11.0	0.3-0.9	2.1-2.4	3.4-4.0	4.9-5.5	0.8-1.3
MOISTURE CONTENT %	18.2	17.9	5.0	6.9	6.4	4.8
SAMPLE #	307	308	309	310	311	312
TEST HOLE #	30094	30094	30094	30093	30093	30093
DEPTH (metres)	1.8-2.4	3.4-4.0	5.3-5.8	0.3-0.9	1.8-2.4	3.4-4.0
MOISTURE CONTENT %	7.9	10.7	12.8	20.0	14.8	15.6
SAMPLE #	313	314	315	316	317	318
TEST HOLE #	30093	30093	30092	30092	30092	30091
DEPTH (metres)	4.9-5.5	6.7-7.0	0.4-1.0	1.8-2.4	3.7-4.3	0.5-0.9
MOISTURE CONTENT %	13.1	8.6	12.6	18.1	11.2	5.4
SAMPLE #	319	320	321	322	323	324
TEST HOLE #	30090	30090	30089	30088	30088	30088
DEPTH (metres)	0.5-1.0	1.2-1.5	0.0-0.6	0.9-1.2	1.8-2.4	3.4-4.0
MOISTURE CONTENT %	6.4	2.8	12.7	3.9	2.6	2.4
SAMPLE #	325	326	327	328	329	330
TEST HOLE #	30087	30087	30087	30087	30086	30086
DEPTH (metres)	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	0.6-1.2	1.8-2.4
MOISTURE CONTENT %	6.2	5.5	4.1	4.5	15.0	9.7
SAMPLE #	331	332	333	334	335	336
TEST HOLE #	30086	30086	30086	30085	30085	30085
DEPTH (metres)	3.4-4.0	4.9-5.5	6.7-7.3	0.6-1.2	1.8-2.4	3.4-4.0
MOISTURE CONTENT %	10.3	8.5	8.5	5.1	3.9	2.5
SAMPLE #	337	338	339	340	341	342
TEST HOLE #	30085	30084	30084	30084	30084	30084
DEPTH (metres)	4.9-5.5	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.0
MOISTURE CONTENT %	3.2	3.2	2.5	5.8	6.3	5.2
SAMPLE #	343	344	345	346	347	348
TEST HOLE #	30084	30083	30083	30083	30083	30082
DEPTH (metres)	7.6-8.1	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	0.6-1.2
MOISTURE CONTENT %	5.6	7.2	6.9	21.0	9.6	2.8
SAMPLE #	349	350	351	352	353	354
TEST HOLE #	30082	30082	30082	30000	30000	30001
DEPTH (metres)	1.8-2.4	3.4-4.0	4.9-5.5	0.3-0.9	1.8-2.4	0.6-1.2
MOISTURE CONTENT %	8.3	3.8	7.1	1.9	2.3	27.7
SAMPLE #	355	356	357	358	359	360
TEST HOLE #	30001	30002	30002	30003	30003	30003
DEPTH (metres)	1.8-2.4	0.4-0.7	2.1-2.7	0.3-0.9	1.8-2.4	3.4-4.0
MOISTURE CONTENT %	2.5	10.5	3.2	1.8	2.7	3.4



# J.R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

MOISTURE ANALYSIS

Project: Geotechnical Services-Shakwak

Client: YTG - Highways & Public Works, Transportation & Engineering

Made By: MD

Job No: 8002-318

Location: KM 1691-7-1717.3

Ck'd By: \_\_\_\_\_

Date: August 4, 2004

SAMPLE #	361	362	363	364	365	366
TEST HOLE #	30004	30004	30004	30005	30005	30005
DEPTH (metres)	0.6-1.2	1.8-2.4	3.4-4.0	0.3-0.9	1.8-2.4	3.4-4.0
MOISTURE CONTENT %	2.6	3.5	3.0	0.6	2.4	2.6
SAMPLE #	367	368	369	370	371	372
TEST HOLE #	30005B	30005B	30006	30006	30007	30007
DEPTH (metres)	0.3-0.9	1.8-2.4	0.3-0.9	1.8-2.4	0.3-0.9	1.8-2.4
MOISTURE CONTENT %	2.1	2.3	2.5	3.3	2.2	2.5
SAMPLE #	373	374	375	376	377	378
TEST HOLE #	30008	30008	30009	30009	30010	30010
DEPTH (metres)	0.3-0.9	1.8-2.4	0.3-0.9	1.8-2.4	0.3-0.9	2.1-2.7
MOISTURE CONTENT %	1.8	2.2	2.7	3.8	2.8	2.1
SAMPLE #	379	380	381	382	383	384
TEST HOLE #	30011	30011	30012	30012	30013	30013
DEPTH (metres)	0.3-0.9	2.1-2.7	0.3-0.9	1.8-2.4	0.5-1.0	2.1-2.7
MOISTURE CONTENT %	3.2	2.5	1.6	2.8	2.4	2.5
SAMPLE #	385	386	387	388	389	390
TEST HOLE #	30014	30014	30015	30015	30016	30016
DEPTH (metres)	0.3-0.9	1.8-2.4	0.3-0.8	1.8-2.4	0.0-0.4	2.1-2.4
MOISTURE CONTENT %	2.3	3.1	42.9	2.7	3.3	4.6
SAMPLE #	391	392	393	394	395	396
TEST HOLE #	30017	30017	30018	30018	30019	30019
DEPTH (metres)	0.3-0.9	1.8-2.4	0.3-0.9	2.1-2.7	0.3-0.9	2.1-2.7
MOISTURE CONTENT %	1.9	2.6	1.2	3.2	4.7	8.1
SAMPLE #	397	398	399	400	401	402
TEST HOLE #	30020	30020	30021	30021	30022	30022
DEPTH (metres)	0.3-0.9	1.8-2.4	0.3-0.9	2.1-2.7	0.5-1.0	1.5-2.1
MOISTURE CONTENT %	6.5	38.4	35.4	37.9	29.5	14.1
SAMPLE #	403	404	405	406	407	408
TEST HOLE #	30022	30023	30023	30024	30024	30024
DEPTH (metres)	2.6-2.9	0.3-0.9	1.2-1.8	0.3-0.9	1.5-2.1	2.1-2.7
MOISTURE CONTENT %	40.3	28.6	34.7	37.1	13.3	28.3
SAMPLE #	409	410	411	412	413	414
TEST HOLE #	30025	30025	30026	30026	30027	30027
DEPTH (metres)	0.3-0.9	1.8-2.4	0.3-0.9	2.1-2.7	0.1-0.6	1.8-2.4
MOISTURE CONTENT %	2.4	26.2	2.3	4.0	9.3	39.1
SAMPLE #	415	416	417	418	419	420
TEST HOLE #	30028	30028	30029	30029	30030	30030
DEPTH (metres)	0.3-0.9	2.4-3.0	0.3-0.9	2.4-2.9	0.3-0.9	1.8-2.4
MOISTURE CONTENT %	9.4	17.9	3.7	3.4	3.8	7.8



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MOISTURE ANALYSIS

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Job No: 8002-318

Location: KM 1691-7-1717.3

Ck'd By: \_\_\_\_\_

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SAMPLE #	421	422	423	424	425	426
TEST HOLE #	30031	30031	30031	30032	30032	30033
DEPTH (metres)	0.3-0.9	1.2-1.5	2.4-2.9	0.3-0.9	2.4-3.0	0.3-0.9
MOISTURE CONTENT %	4.0	25.1	5.2	1.6	23.0	2.5
SAMPLE #	427	428	429	430	431	432
TEST HOLE #	30033	30033	30034	30034	30035	30035
DEPTH (metres)	1.5-2.1	2.1-2.7	0.3-0.9	1.8-2.4	0.3-0.9	2.1-2.7
MOISTURE CONTENT %	22.5	9.2	2.3	8.1	2.2	2.8
SAMPLE #	433	434	435	436	437	438
TEST HOLE #	30036	30036	30037	30037	30037	30038
DEPTH (metres)	0.3-0.9	2.1-2.7	0.3-0.9	2.1-2.7	3.4-4.0	0.3-0.9
MOISTURE CONTENT %	1.6	6.6	26.1	8.8	8.9	6.3
SAMPLE #	439	440	441	442	443	444
TEST HOLE #	30038	30038	30039	30039	30040	30040
DEPTH (metres)	1.8-2.4	3.2-3.6	0.3-0.9	1.8-2.4	0.0-0.6	0.6-1.2
MOISTURE CONTENT %	4.8	8.4	9.0	6.9	8.4	22.8
SAMPLE #	445	446	447	448	449	450
TEST HOLE #	30040	30040	30041	30042	30042	30042
DEPTH (metres)	1.8-2.4	3.0-3.6	1.4	1.4	2.9	4.4
MOISTURE CONTENT %	25.5	90.9	7.5	7.1	22.1	21.3
SAMPLE #	451	452	453	454	455	456
TEST HOLE #	30042	30042	30042	30043	30043	30043
DEPTH (metres)	5.9	7.5	9	1.4	2.9	4.4
MOISTURE CONTENT %	12.5	12.1	9.4	6.1	19.0	23.1
SAMPLE #	457	458	459	460	461	462
TEST HOLE #	30043	30043	30043	30043	30044	30044
DEPTH (metres)	5.9	7.5	9	10.5	0.3-0.9	1.5-2.1
MOISTURE CONTENT %	25.0	21.0	31.6	36.1	17.9	10.0
SAMPLE #	463	464	465	466	467	468
TEST HOLE #	30044	30044	30045	30045	30045	30046
DEPTH (metres)	2.4-2.9	4.1-4.4	0.3-0.9	2.1-2.7	4.0-4.4	1.4
MOISTURE CONTENT %	20.2	13.9	10.1	14.4	15.4	8.5
SAMPLE #	469	470	471	472	473	474
TEST HOLE #	30046	30046	30046	30047	30047	30047
DEPTH (metres)	2.9	4.4	5.9	0.3-0.9	2.1-2.7	3.7-4.3
MOISTURE CONTENT %	17.0	16.6	17.0	7.1	9.7	18.3
SAMPLE #	475	476	477	478	479	480
TEST HOLE #	30049	30049	30049	30049	30050	30050
DEPTH (metres)	0.6-1.2	1.8-2.4	2.6-2.9	4.0-4.4	0.6-1.2	2.1-2.9
MOISTURE CONTENT %	28.1	20.6	30.8	18.8	29.1	23.3



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Ck'd By: \_\_\_\_\_

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SAMPLE #	481	482	483	484	485	486
TEST HOLE #	30050	30050	30051	30051	30051	30051
DEPTH (metres)	3.2-3.6	4.0-4.4	1.4	2.9	4.4	5.9
MOISTURE CONTENT %	20.2	28.8	22.5	19.3	23.4	27.5
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TEST HOLE #						
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SAMPLE #	487	488	489	490	491	492
TEST HOLE #	30052	30053	30053	30054	30054	30054
DEPTH (metres)	1.4	1.4	2.9	1.4	0.2-0.8	1.8-2.4
MOISTURE CONTENT %	24.5	21.6	19.2	20.6	24.8	22.4
SAMPLE #	493	494	495	496	497	498
TEST HOLE #	30054	30054	30054	30054	30054	30055
DEPTH (metres)	3.7-4.3	4.8-5.5	6.7-7.1	7.9-8.5	9.5-10.0	0.3-0.9
MOISTURE CONTENT %	21.4	23.9	18.1	20.8	19.5	23.9
SAMPLE #	499	500	501	502	503	504
TEST HOLE #	30055	30055	30055	30055	30055	30055
DEPTH (metres)	2.1-2.7	3.7-4.3	4.9-5.5	6.7-7.3	7.9-8.5	10.0-10.5
MOISTURE CONTENT %	30.4	22	23.3	19.2	22.6	19.6
SAMPLE #	505					
TEST HOLE #	30055					
DEPTH (metres)	11.3-11.7					
MOISTURE CONTENT %	20.2					
SAMPLE #						
TEST HOLE #						
DEPTH (metres)						
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SAMPLE #						
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MOISTURE CONTENT %						



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SAMPLE #	506	507	508	509	510	511
TEST HOLE #	30055	30055	30057	30057	30057	30057
DEPTH (metres)	12.8-13.4	14.0-14.6	0.3-0.9	2.1-2.7	3.7-4.3	5.2-5.8
MOISTURE CONTENT %	18.9	19.2	24.2	21.8	23.5	25.2
SAMPLE #	512	513	514	515	516	517
TEST HOLE #	30057	30057	30057	30057	30057	30057
DEPTH (metres)	6.7-7.3	7.9-8.5	9.7-10.4	11.0-11.6	12.8-13.4	14.0-14.6
MOISTURE CONTENT %	27.4	24.9	22.7	19.4	19.6	20.9
SAMPLE #	518	519	520	521	522	523
TEST HOLE #	30057	30057	30057	30057	30057	30057
DEPTH (metres)	15.9-16.5	17.1-17.7	18.9-19.5	20.0-20.7	21.9-22.6	23.2-23.8
MOISTURE CONTENT %	20.7	15.9	16.8	18.7	24.3	25.1
SAMPLE #	524	525	526	527	528	529
TEST HOLE #	30057	30057	30057	30057	30056	30056
DEPTH (metres)	25.0-25.6	26.2-26.8	28.0-28.7	29.3-29.9	0.3-0.9	2.1-2.7
MOISTURE CONTENT %	25.7	24	24.1	21.9	13.2	21.6
SAMPLE #	530	531	532	533	534	535
TEST HOLE #	30056	30056	30056	30056	30056	30056
DEPTH (metres)	3.7-4.3	4.9-5.5	6.7-7.3	7.9-8.5	9.8-10.4	11.0-11.6
MOISTURE CONTENT %	23.6	20.4	23.0	17.1	20.2	25.8
SAMPLE #	536	537	538	539	540	541
TEST HOLE #	30056	30056	30058	30058	30058	30058
DEPTH (metres)	12.8-13.4	14.0-14.6	0.3-0.9	1.6-2.1	3.7-4.3	5.2-5.8
MOISTURE CONTENT %	18.1	21.5	29.7	19.4	25	28.7
SAMPLE #	542	543	544	545	546	547
TEST HOLE #	30058	30058	30058	30058	30058	30058
DEPTH (metres)	6.7-7.3	7.9-8.5	9.8-10.4	11.0-11.6	12.8-13.4	14.0-14.6
MOISTURE CONTENT %	21.8	19.7	23.3	20.9	19.9	25
SAMPLE #	548	549	550	551	552	553
TEST HOLE #	30058	30058	30058	30058	30058	30058
DEPTH (metres)	15.9-16.5	17.4-18.0	18.9-19.5	20.0-20.7	23.8-24.1	25.0-25.6
MOISTURE CONTENT %	17.1	18.2	18.8	20.1	27.2	26.9
SAMPLE #	554	555	556	557	558	559
TEST HOLE #	30058	30058	30058	30059	30059	30059
DEPTH (metres)	26.2-26.8	28.0-28.7	29.3-29.9	0.3-0.9	1.5-2.1	3.4-4.0
MOISTURE CONTENT %	26.8	26.8	25.1	11.5	21.1	18.9
SAMPLE #	560	561	562	563	564	565
TEST HOLE #	30059	30059	30059	30059	30059	30059
DEPTH (metres)	4.9-5.5	7.6-8.8	9.8-10.4	11.0-11.6	12.8-13.4	14.0-14.6
MOISTURE CONTENT %	24.2	24.8	21.8	28	17.9	19.5



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Job No: 8002-318

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Ck'd By: \_\_\_\_\_

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SAMPLE #	566	567	568	569	570	571
TEST HOLE #	30059	30059	30059	30059	30059	30059
DEPTH (metres)	15.9-16.5	17.1-17.7	18.9-19.5	20.1-20.7	21.9-22.6	23.2-23.9
MOISTURE CONTENT %	21.5	21.6	25.5	19.9	20.2	29.8
SAMPLE #	572	573	574	575	576	577
TEST HOLE #	30059	30059	30059	30059	30061	30061
DEPTH (metres)	25.0-25.6	26.2-26.9	28.0-28.7	29.3-29.9	0.3-0.6	0.6-1.2
MOISTURE CONTENT %	24.9	25.5	25.3	27.7	6.2	20.2
SAMPLE #	578	579	580	581	582	583
TEST HOLE #	30061	30061	30061	30061	30061	30061
DEPTH (metres)	2.4-2.9	3.7-4.3	4.9-5.5	6.7-7.3	7.9-8.5	9.5-10.1
MOISTURE CONTENT %	18.6	20.2	23.1	18	19.4	18.6
SAMPLE #	584	585	586	587	588	589
TEST HOLE #	30061	30061	30061	30061	30061	30061
DEPTH (metres)	11.0-11.6	12.8-13.4	14.0-14.6	15.6-16.5	17.1-17.7	18.9-19.5
MOISTURE CONTENT %	27	19.8	17.4	18.4	19.3	18.7
SAMPLE #	590	591	592	593	594	595
TEST HOLE #	30061	30061	30061	30061	30061	30061
DEPTH (metres)	20.1-20.7	21.9-22.6	23.2-23.8	25.0-25.6	26.2-26.8	28.0-28.7
MOISTURE CONTENT %	26.3	22.2	19.4	26.8	24.6	20
SAMPLE #	596	597	598	599	600	601
TEST HOLE #	30061	30062	30062	30062	30062	30062
DEPTH (metres)	29.3-29.9	0.3-0.6	1.6-2.1	3.7-4.3	4.9-5.3	6.7-7.3
MOISTURE CONTENT %	24.6	18	22.4	20.8	21.4	28
SAMPLE #	602	603	604	605	606	607
TEST HOLE #	30062	30062	30062	30062	30062	30063
DEPTH (metres)	7.6-8.2	9.8-10.4	11.0-11.6	12.8-13.4	14.0-14.6	0.6-1.2
MOISTURE CONTENT %	20.9	19.9	25	20.9	17.3	22.3
SAMPLE #	608	609	610	611	612	613
TEST HOLE #	30063	30063	30063	30063	30063	30063
DEPTH (metres)	1.8-2.4	3.7-4.3	4.9-5.5	6.7-7.3	7.9-8.5	9.8-10.4
MOISTURE CONTENT %	21.6	23.8	26.1	22.7	19.6	26.3
SAMPLE #	614	615	616	617	618	619
TEST HOLE #	30063	30063	30063	30064	30064	30064
DEPTH (metres)	11.0-11.6	12.8-13.4	14.0-14.6	0.6-1.2	2.1-2.7	4.0-4.4
MOISTURE CONTENT %	19.5	19.4	25.9	26.4	23.3	21.6
SAMPLE #	620	621	622	623	624	625
TEST HOLE #	30064	30064	30064	30064	30065	30065
DEPTH (metres)	4.9-5.5	6.7-7.3	7.9-8.5	9.8-10.4	0.6-1.2	1.8-2.4
MOISTURE CONTENT %	22.7	20.9	20.3	20.9	26.7	12



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SAMPLE #	626	627	628	629	630	631
TEST HOLE #	30065	30065	30065	30065	30065	30066
DEPTH (metres)	3.7-4.3	4.9-5.5	6.7-7.3	7.9-8.5	9.8-10.4	0.6-1.2
MOISTURE CONTENT %	22.5	22	25.4	19.2	24.4	25.9
SAMPLE #	632	633	634	635	636	637
TEST HOLE #	30066	30066	30066	30066	30066	30066
DEPTH (metres)	1.5-2.1	3.7-4.3	4.6-5.2	6.7-7.3	7.9-8.5	9.8-10.4
MOISTURE CONTENT %	28.4	23.8	26.2	19.7	29.3	23.9
SAMPLE #	638	639	640	641	642	643
TEST HOLE #	30067	30067	30067	30067	30068	30068
DEPTH (metres)	0.6-1.2	2.4-2.9	3.7-4.3	4.9-5.5	0.6-1.2	2.4-3.0
MOISTURE CONTENT %	23.1	20.4	19.1	20.8	28.4	21.4
SAMPLE #	644	645	646	647	648	649
TEST HOLE #	30068	30068	30069	30069	30069	30069
DEPTH (metres)	3.4-4.0	5.0-5.5	0.4-1.2	1.8-2.4	3.7-4.3	4.9-5.5
MOISTURE CONTENT %	20.5	21.5	19.9	27.6	23.1	22.9
SAMPLE #	650	651	652	653		
TEST HOLE #	30070	30070	30070	30070		
DEPTH (metres)	0.6-1.2	2.1-2.7	3.7-4.3	4.9-5.5		
MOISTURE CONTENT %	22.8	9.2	11.7	10.4		
SAMPLE #						
TEST HOLE #						
DEPTH (metres)						
MOISTURE CONTENT %						
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TEST HOLE #						
DEPTH (metres)						
MOISTURE CONTENT %						

*HOGGAN ENGINEERING & TESTING (1980) LTD.*

**LABORATORY SAMPLE PHOTOS**



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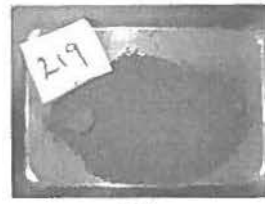
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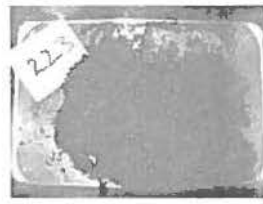
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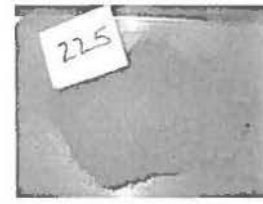
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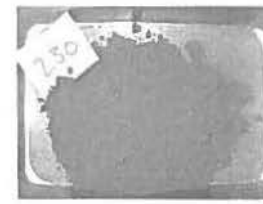
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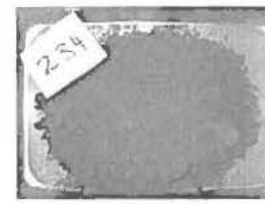
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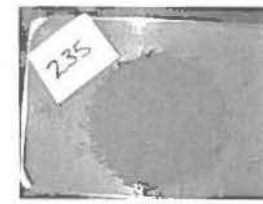
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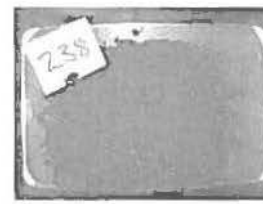
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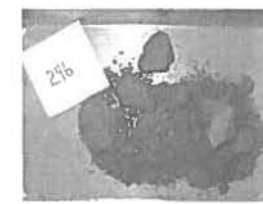
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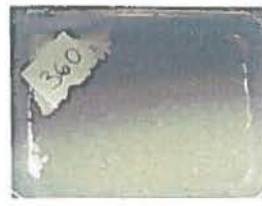
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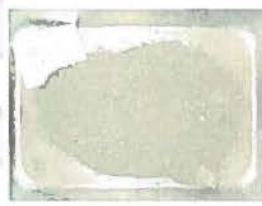
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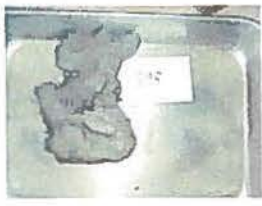
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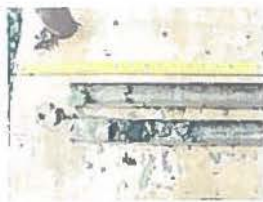
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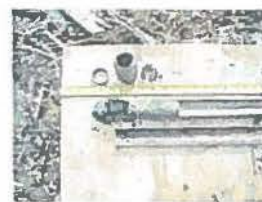
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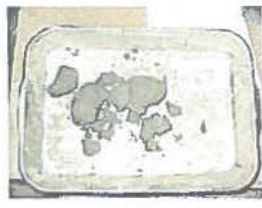
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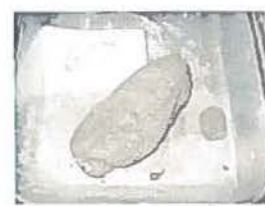
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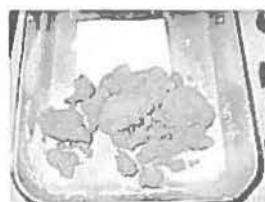
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*HOGGAN ENGINEERING & TESTING (1980) LTD.*

**GRAIN SIZE ANALYSES RESULTS**



# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Faine & Associates Ltd.



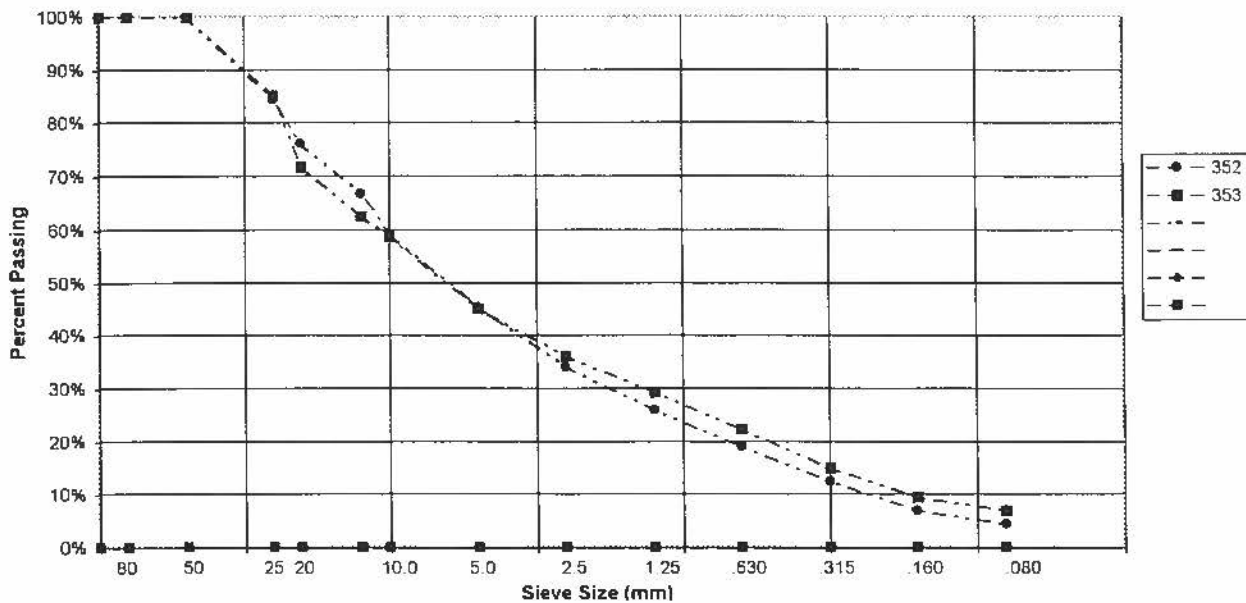
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 644064-6767988  
 LOGGED BY: RW

HOLE No.: 30000

DATE COMP: 08/16/2004

FIELD NO:	352	353			
LAB NO:	352	353			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	84%	85%			
20.0	76%	72%			
12.5	67%	63%			
10.0	59%	59%			
5.0	45%	45%			
2.5	34%	36%			
1.25	25%	29%			
0.630	19%	22%			
0.315	12%	15%			
0.160	7%	10%			
0.080	4%	7%			
M.C.(%)	2%	2%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	55	55			
% SAND:	41	38			
% FINES:	4	7			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SAND (GW)	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





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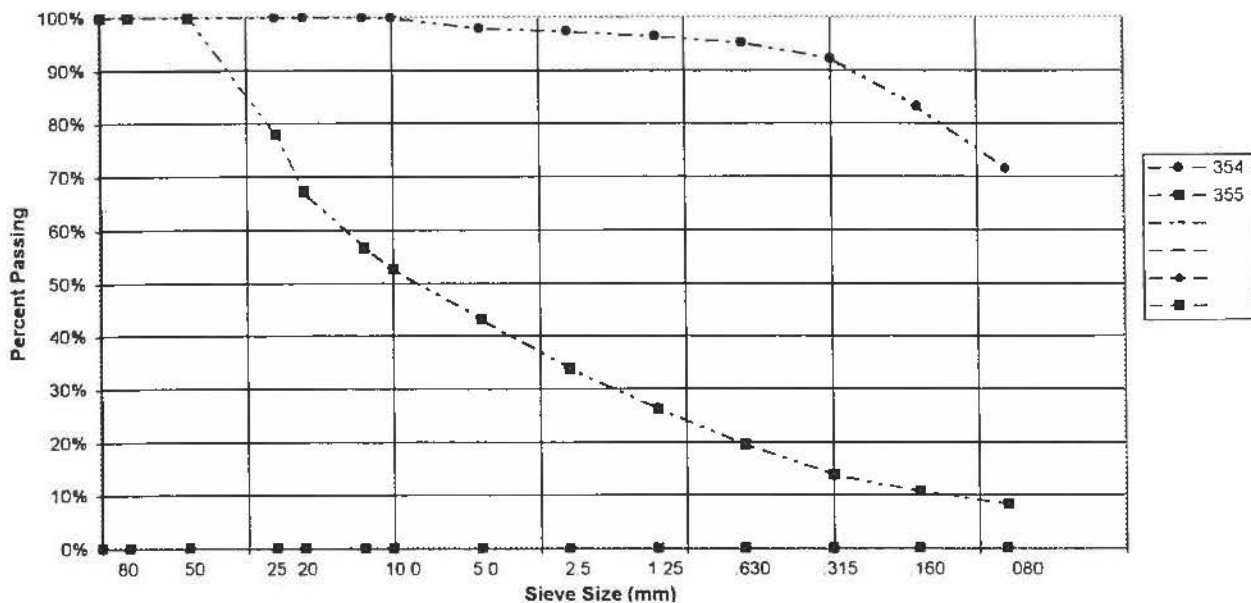
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 643863-6768004  
 LOGGED BY: RW

HOLE No.: 30001

DATE COMP: 08/16/2004

FIELD NO:	354	355			
LAB NO:	354	355			
DEPTH:	0.6-1.2	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	78%			
20.0	100%	67%			
12.5	100%	57%			
10.0	100%	53%			
5.0	98%	43%			
2.5	97%	34%			
1.25	97%	26%			
0.630	95%	20%			
0.315	92%	14%			
0.160	83%	11%			
0.080	72%	8%			
M.C.(%)	28%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	2	57			
% SAND:	26	35			
% FINES:	72	8			
CLASSIFICATION	SILT WITH SAND (ML)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			

Grain Size Analysis (Percent Passing vs Grain Size)





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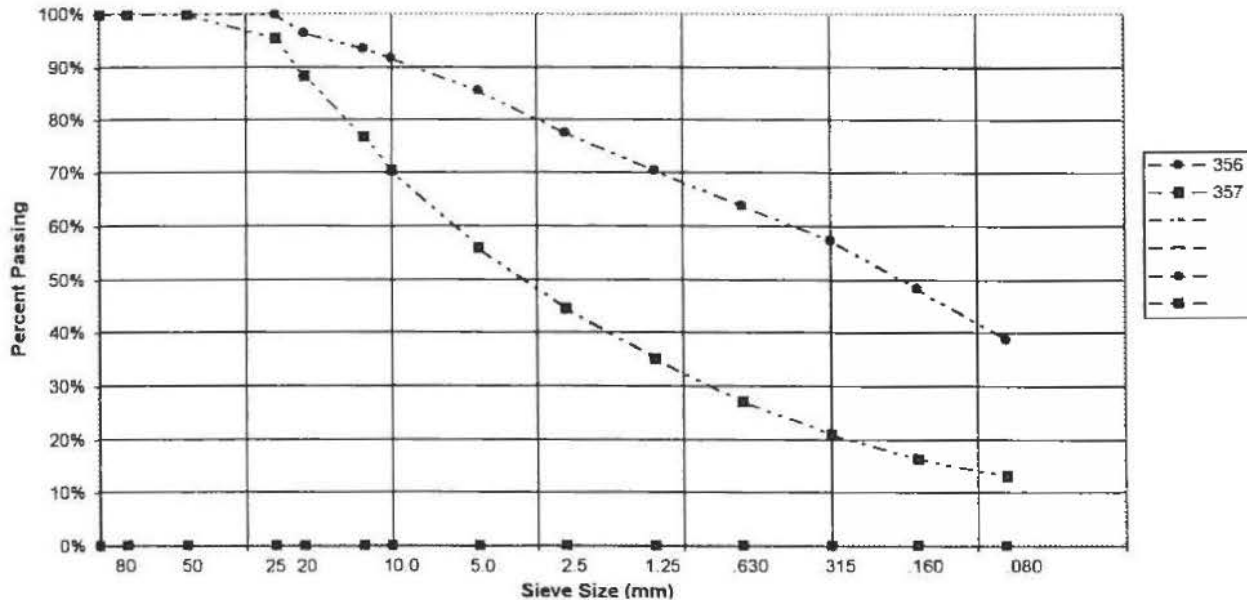
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 643667-6768001  
 LOGGED BY: RW

HOLE No.: 30002

DATE COMP: 08/16/2004

FIELD NO:	356	357			
LAB NO:	356	357			
DEPTH:	0.4-0.7	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	96%			
20.0	97%	88%			
12.5	94%	77%			
10.0	92%	70%			
5.0	86%	56%			
2.5	78%	45%			
1.25	71%	35%			
0.630	64%	27%			
0.315	57%	21%			
0.160	49%	16%			
0.080	39%	13%			
M.C.(%)	11%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	14	44			
% SAND:	47	43			
% FINES:	39	13			
CLASSIFICATION	SILTY SAND (SM)	SILTY GRAVEL WITH SAND (GM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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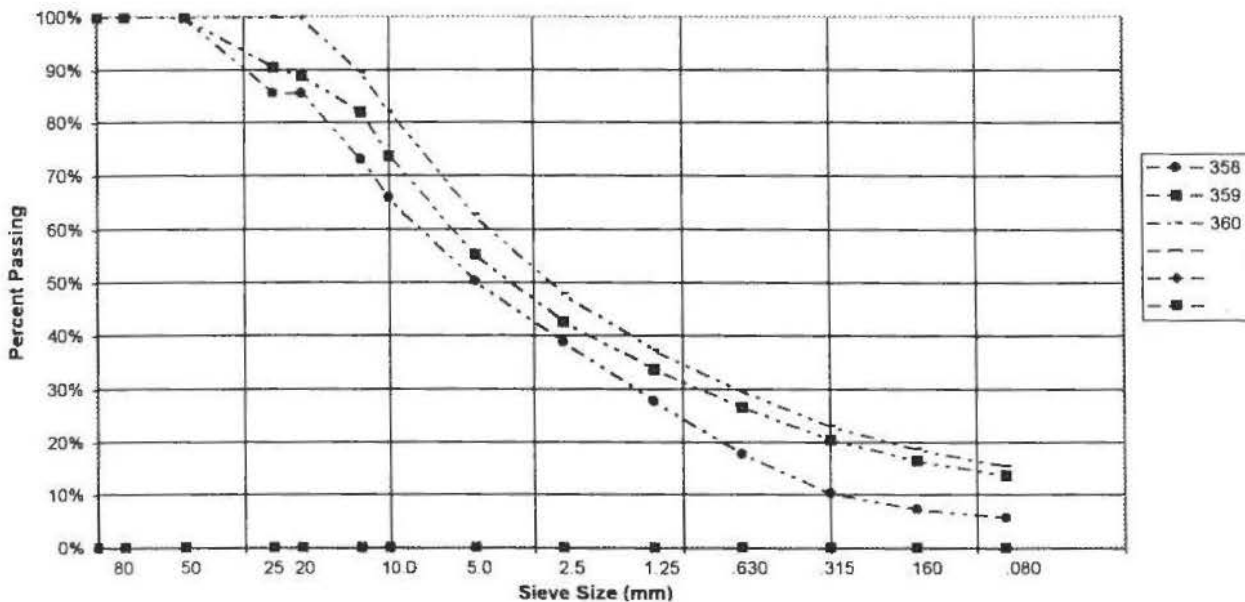
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 643448-6767987  
 LOGGED BY: RW

HOLE No.: 30003

DATE COMP: 08/16/2004

FIELD NO:	358	359	360		
LAB NO:	358	359	360		
DEPTH:	0.3-0.9	1.8-2.4	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	86%	91%	100%		
20.0	86%	89%	100%		
12.5	73%	82%	89%		
10.0	66%	74%	82%		
5.0	50%	55%	63%		
2.5	39%	43%	48%		
1.25	28%	34%	37%		
0.630	18%	27%	30%		
0.315	10%	21%	23%		
0.160	7%	17%	19%		
0.080	6%	14%	15%		
M.C.(%):	2%	3%	3%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	50	45	37		
% SAND:	44	42	47		
% FINES:	6	14	15		
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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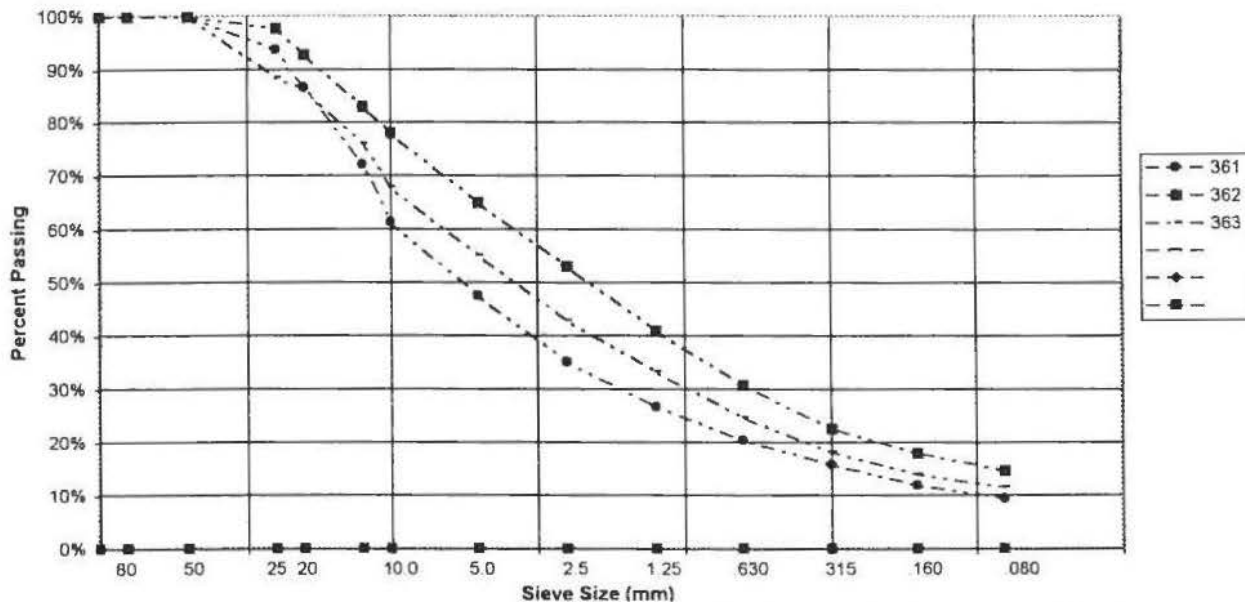
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 643430-6768053  
 LOGGED BY: RW

HOLE No.: 30004

DATE COMP: 08/16/2004

FIELD NO:	361	362	363		
LAB NO:	361	362	363		
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	94%	98%	88%		
20.0	87%	93%	86%		
12.5	72%	83%	76%		
10.0	61%	78%	68%		
5.0	47%	65%	55%		
2.5	35%	53%	43%		
1.25	27%	41%	33%		
0.630	20%	31%	25%		
0.315	16%	23%	18%		
0.160	12%	18%	14%		
0.080	10%	15%	12%		
M.C.(%):	3%	4%	3%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	53	35	45		
% SAND:	38	50	44		
% FINES:	10	15	12		
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY SAND WITH GRAVEL (SM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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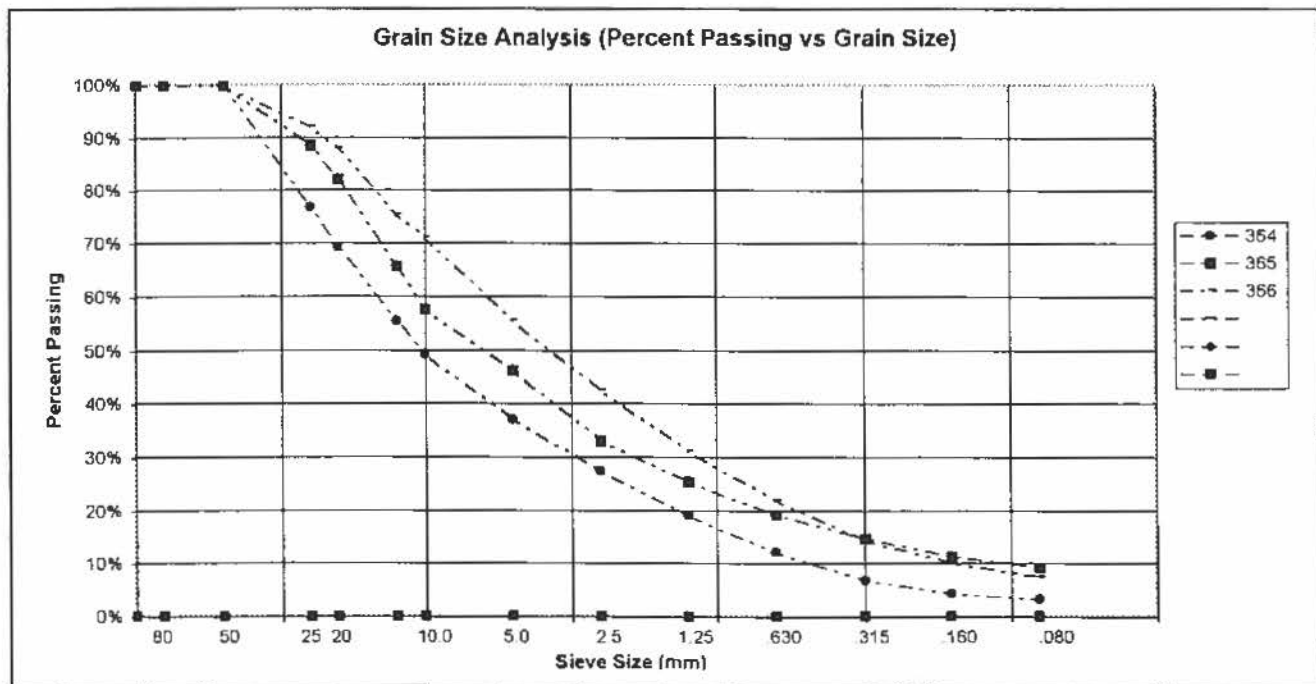


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 643267-6768019  
 LOGGED BY: RW

HOLE No.: 30005

DATE COMP: 08/18/2004

FIELD NO:	364	365	366
LAB NO:	364	365	366
DEPTH:	0.3-0.9	1.8-2.4	3.4-4.0
TYPE:	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%
80.0	100%	100%	100%
50.0	100%	100%	100%
25.0	77%	89%	92%
20.0	69%	82%	88%
12.5	55%	66%	76%
10.0	49%	58%	71%
5.0	37%	46%	56%
2.5	27%	33%	43%
1.25	19%	26%	31%
0.630	12%	19%	22%
0.315	7%	15%	15%
0.160	4%	11%	10%
0.080	3%	9%	8%
M.C.(%):	1%	2%	3%
LIQUID LIMIT:	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0
% GRAVEL:	63	54	44
% SAND:	34	37	48
% FINES:	3	9	8
CLASSIFICATION	WELL-GRADED GRAVEL WITH SAND (GW)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)





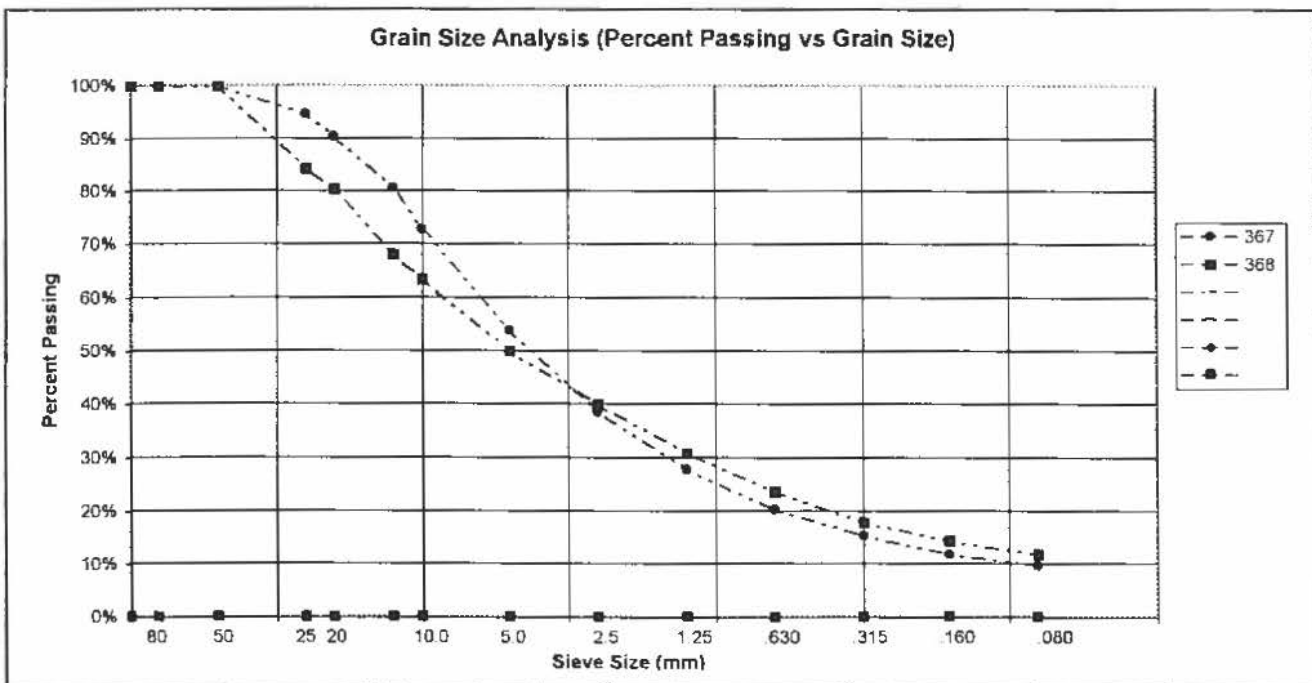
# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. FINE & ASSOCIATES LTD.



PROJECT NUMBER: 8002-318 HOLE No.: 30005B  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 643035-6768022  
 LOGGED BY: RW DATE COMP: 08/18/2004

FIELD NO:	367	368			
LAB NO:	367	368			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	95%	84%			
20.0	90%	80%			
12.5	81%	68%			
10.0	73%	63%			
5.0	54%	50%			
2.5	39%	40%			
1.25	28%	31%			
0.630	20%	24%			
0.315	15%	18%			
0.160	12%	14%			
0.080	10%	12%			
M.C.(%)	2%	2%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	46	50			
% SAND:	44	38			
% FINES:	10	12			
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			





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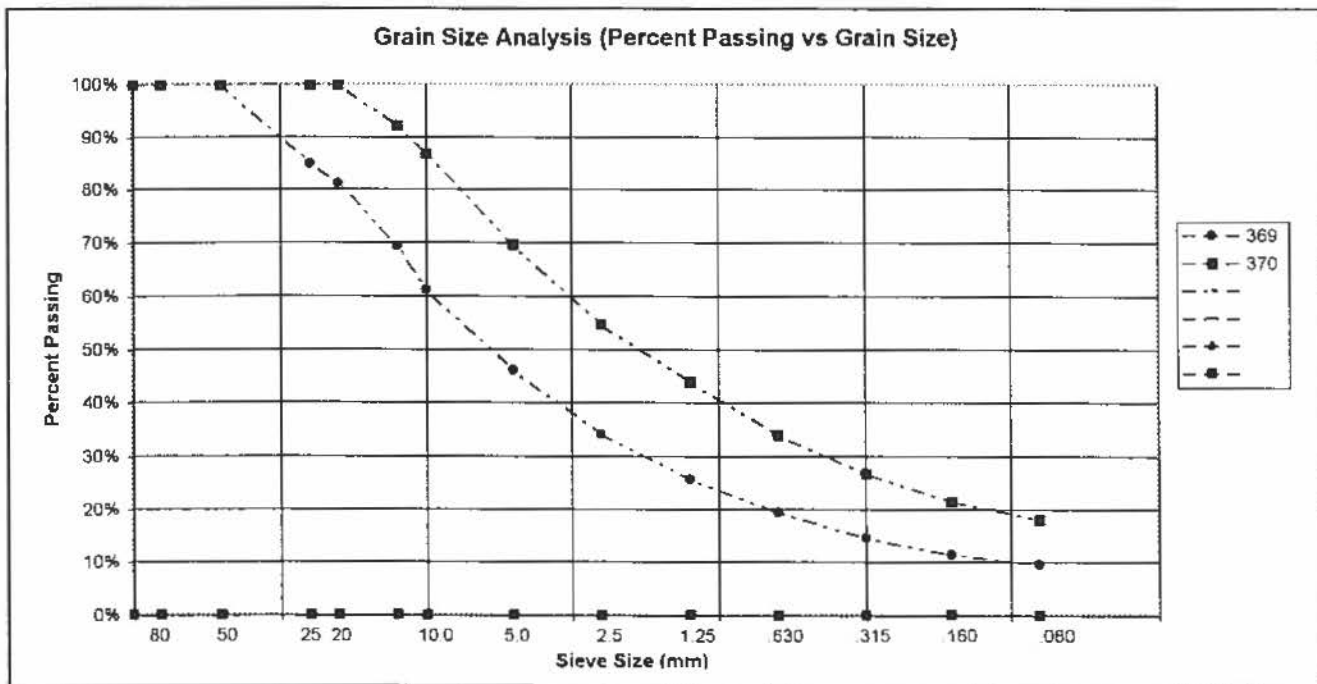


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 642866-6768025  
 LOGGED BY: RW

HOLE No.: 30006

DATE COMP: 08/18/2004

FIELD NO:	369	370			
LAB NO:	369	370			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	85%	100%			
20.0	81%	100%			
12.5	69%	92%			
10.0	61%	87%			
5.0	46%	70%			
2.5	34%	55%			
1.25	26%	44%			
0.630	20%	34%			
0.315	15%	27%			
0.160	11%	22%			
0.080	10%	18%			
M.C.(%):	3%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	54	30			
% SAND:	37	52			
% FINES:	10	18			
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY SAND WITH GRAVEL (SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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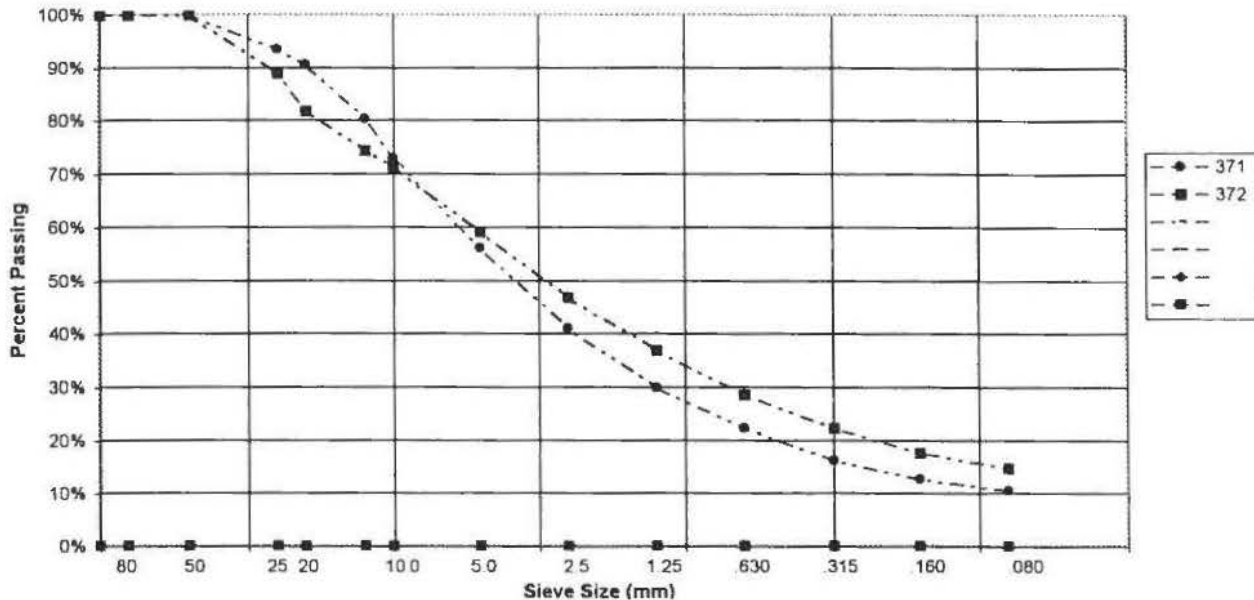
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 642664-6768030  
 LOGGED BY: RW

HOLE No.: 30007

DATE COMP: 08/18/2004

FIELD NO:	371	372			
LAB NO:	371	372			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	94%	89%			
20.0	91%	82%			
12.5	80%	74%			
10.0	73%	71%			
5.0	56%	59%			
2.5	41%	47%			
1.25	30%	37%			
0.630	22%	29%			
0.315	16%	22%			
0.160	13%	18%			
0.080	11%	15%			
M.C.(%):	2%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	44	41			
% SAND:	46	44			
% FINES:	11	15			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





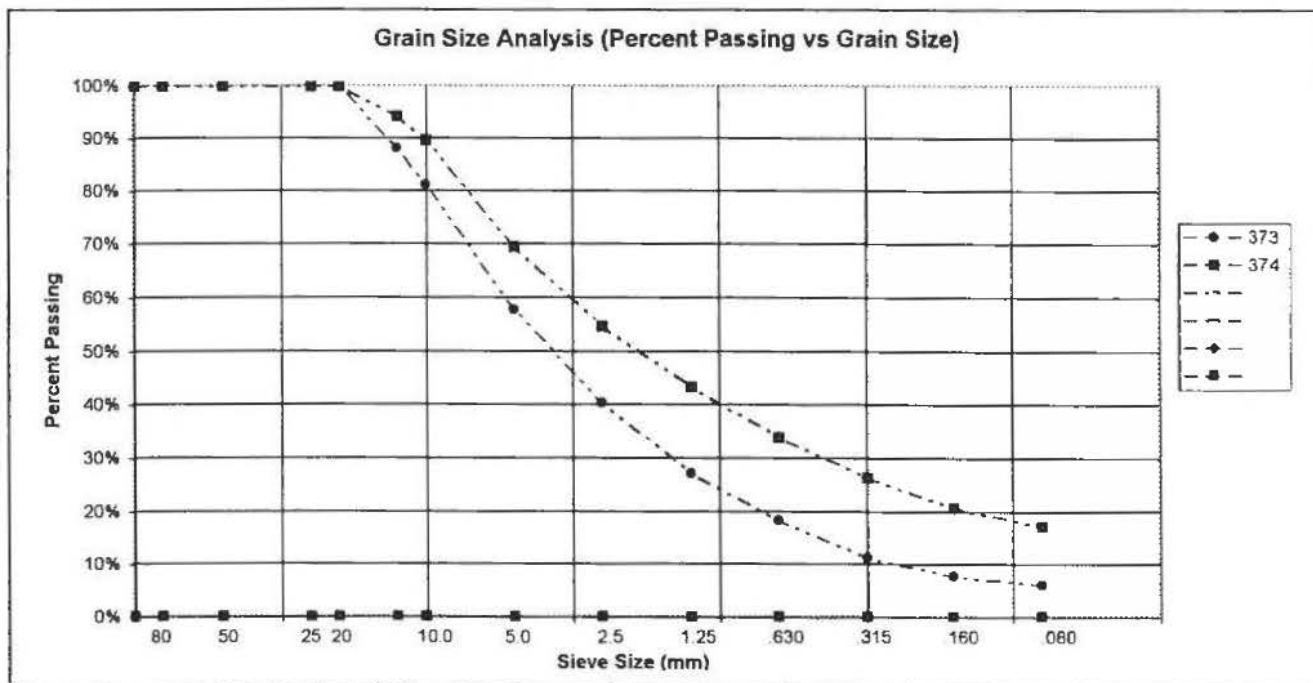
# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Associate of J. R. Payne & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30008  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 642463-6768033  
 LOGGED BY: RW DATE COMP: 08/18/2004

FIELD NO:	373	374			
LAB NO:	373	374			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	88%	94%			
10.0	81%	90%			
5.0	58%	70%			
2.5	40%	55%			
1.25	27%	43%			
0.630	18%	34%			
0.315	11%	26%			
0.160	8%	21%			
0.080	6%	17%			
M.C.(%):	2%	2%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	42	30			
% SAND:	52	52			
% FINES:	6	17			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)			





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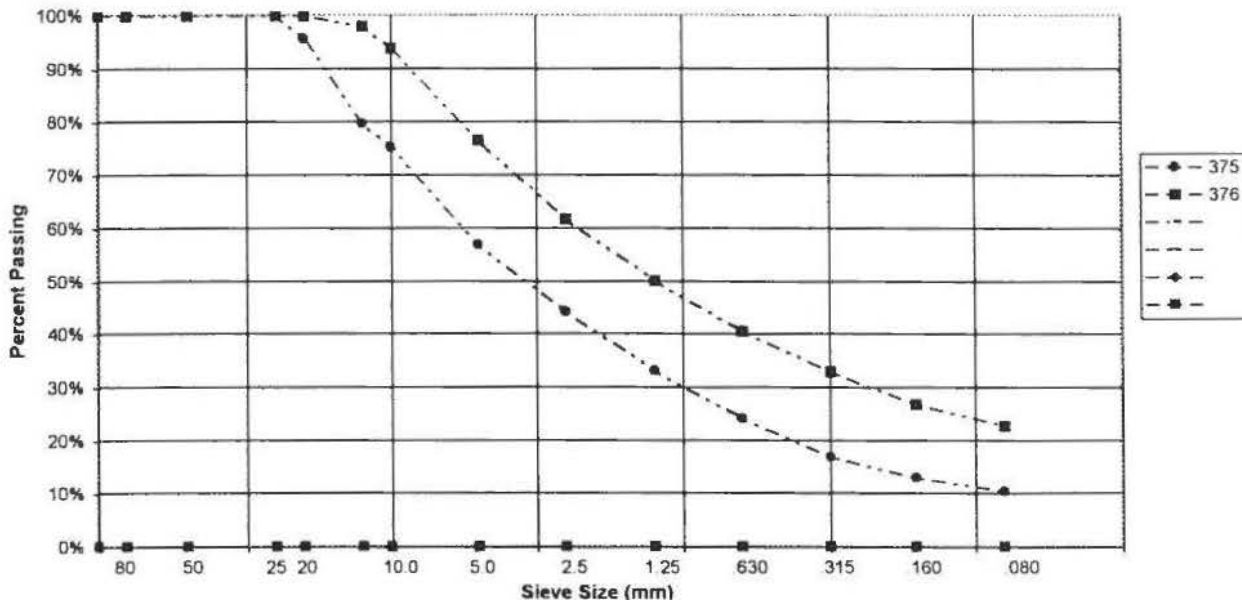
PROJECT NUMBER: 8002-318  
CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 642265-6768038  
LOGGED BY: RW

HOLE No.: 30009

DATE COMP: 08/18/2004

FIELD NO:	375	376			
LAB NO:	375	376			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	96%	100%			
12.5	80%	98%			
10.0	75%	94%			
5.0	57%	77%			
2.5	44%	62%			
1.25	33%	50%			
0.630	24%	41%			
0.315	17%	33%			
0.160	13%	27%			
0.080	11%	23%			
M.C.(%):	3%	4%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	43	23			
% SAND:	46	54			
% FINES:	11	23			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. P. Payne & Associates Ltd.



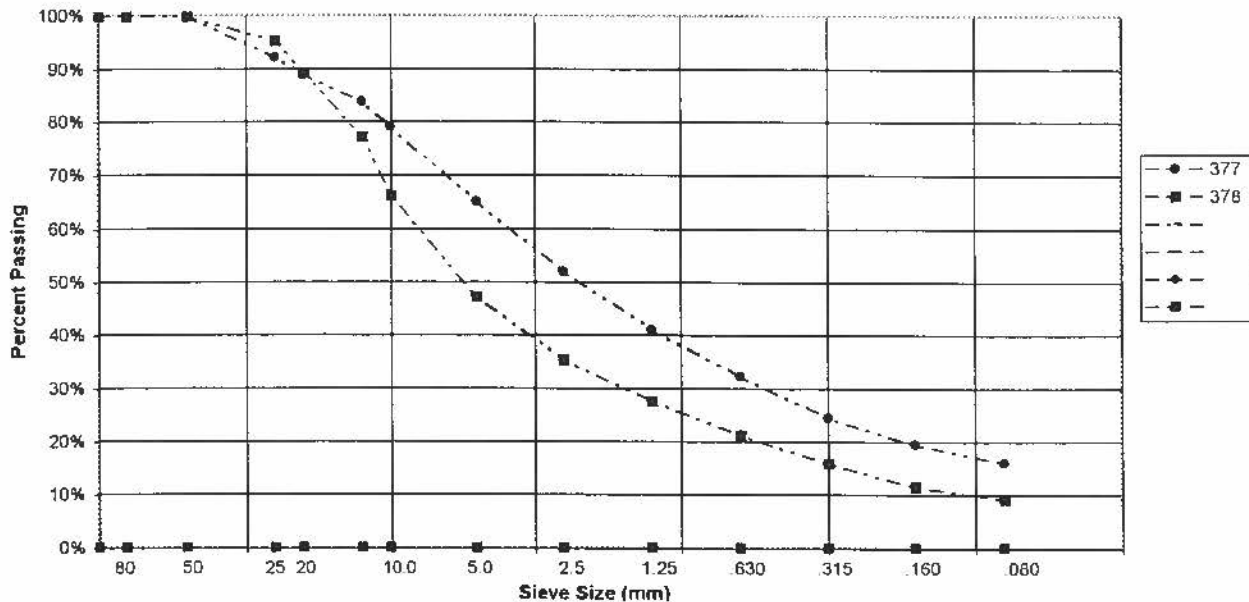
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 642066-6768040  
 LOGGED BY: RW

HOLE No.: 30010

DATE COMP: 08/18/2004

FIELD NO:	377	378			
LAB NO:	377	378			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	92%	95%			
20.0	89%	89%			
12.5	84%	77%			
10.0	79%	66%			
5.0	65%	47%			
2.5	52%	35%			
1.25	41%	28%			
0.630	32%	21%			
0.315	25%	16%			
0.160	20%	12%			
0.080	16%	9%			
M.C.(%):	3%	2%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	35	53			
% SAND:	49	38			
% FINES:	16	9			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Paine & Associates Ltd.



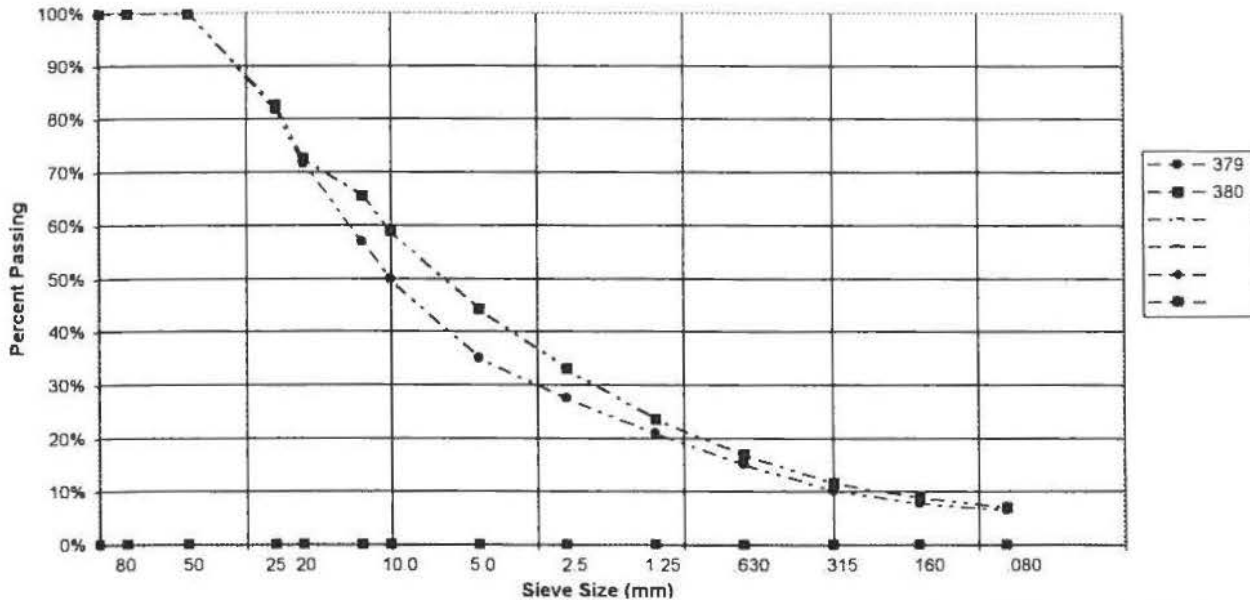
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 641865-6768044  
 LOGGED BY: RW

HOLE No.: 30011

DATE COMP: 08/18/2004

FIELD NO:	379	380			
LAB NO:	379	380			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	82%	83%			
20.0	72%	73%			
12.5	57%	66%			
10.0	50%	59%			
5.0	35%	44%			
2.5	28%	33%			
1.25	21%	24%			
0.630	15%	17%			
0.315	10%	12%			
0.160	8%	9%			
0.080	7%	7%			
M.C.(%):	3%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	65	56			
% SAND:	28	37			
% FINES:	7	7			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



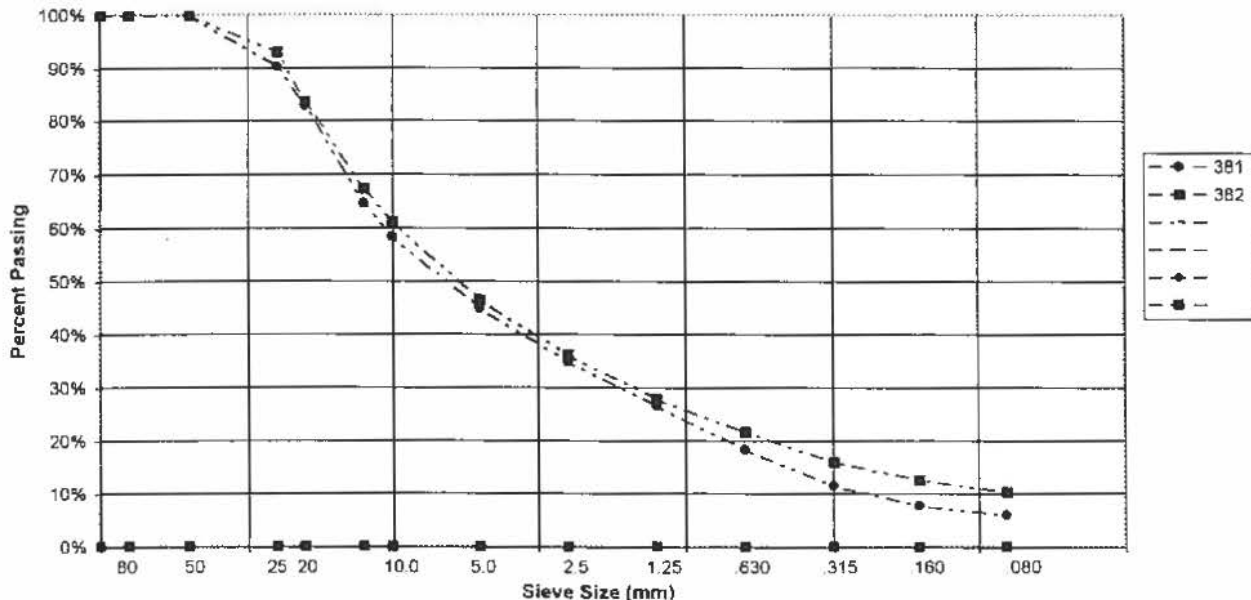
PROJECT NUMBER: 8002-318  
CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 641666-6768049  
LOGGED BY: RW

HOLE No.: 30012

DATE COMP. 08/18/2004

FIELD NO:	381	382			
LAB NO:	381	382			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	90%	93%			
20.0	83%	84%			
12.5	65%	67%			
10.0	58%	61%			
5.0	45%	47%			
2.5	35%	36%			
1.25	27%	28%			
0.630	18%	22%			
0.315	12%	16%			
0.160	8%	13%			
0.080	6%	10%			
M.C.(%):	2%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	55	53			
% SAND:	39	36			
% FINES:	6	10			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



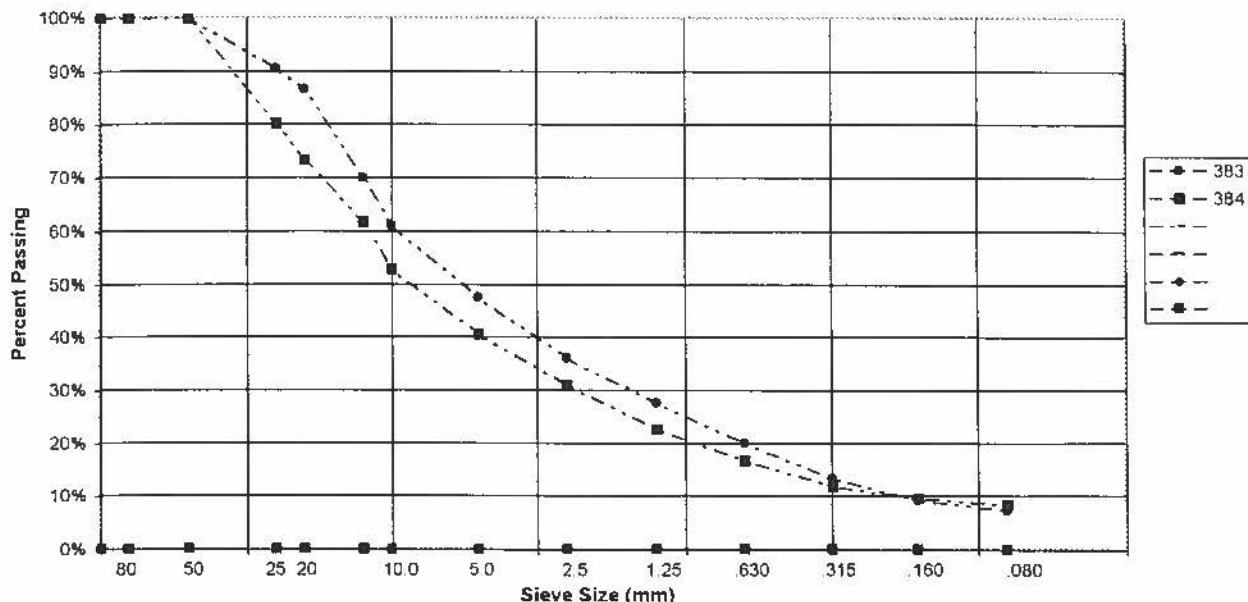
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 641469-6768054  
 LOGGED BY: RW

HOLE No.: 30013

DATE COMP: 08/18/2004

FIELD NO:	383	384			
LAB NO:	383	384			
DEPTH:	0.5-1.0	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	91%	80%			
20.0	87%	73%			
12.5	70%	62%			
10.0	61%	53%			
5.0	48%	41%			
2.5	36%	31%			
1.25	28%	23%			
0.630	20%	17%			
0.315	13%	12%			
0.160	9%	10%			
0.080	7%	8%			
M.C.(%):	2%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	52	59			
% SAND:	40	32			
% FINES:	7	8			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. B. Payne & Associates Ltd.

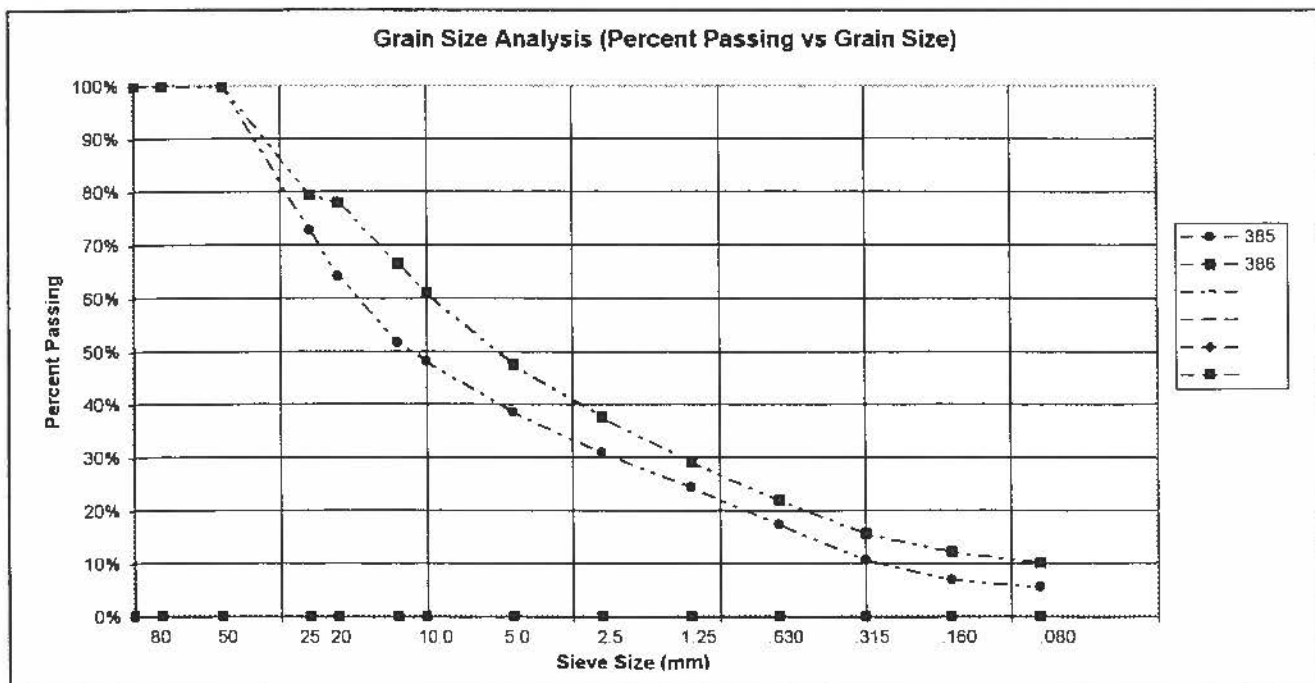


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1891.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 641287-6768036  
 LOGGED BY: RW

HOLE No.: 30014

DATE COMP: 08/18/2004

FIELD NO:	385	386			
LAB NO:	385	386			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	73%	80%			
20.0	64%	78%			
12.5	52%	67%			
10.0	48%	61%			
5.0	39%	48%			
2.5	31%	38%			
1.25	24%	29%			
0.630	17%	22%			
0.315	11%	16%			
0.160	7%	12%			
0.080	6%	10%			
M.C.(%):	2%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	61	52			
% SAND:	33	37			
% FINES:	6	10			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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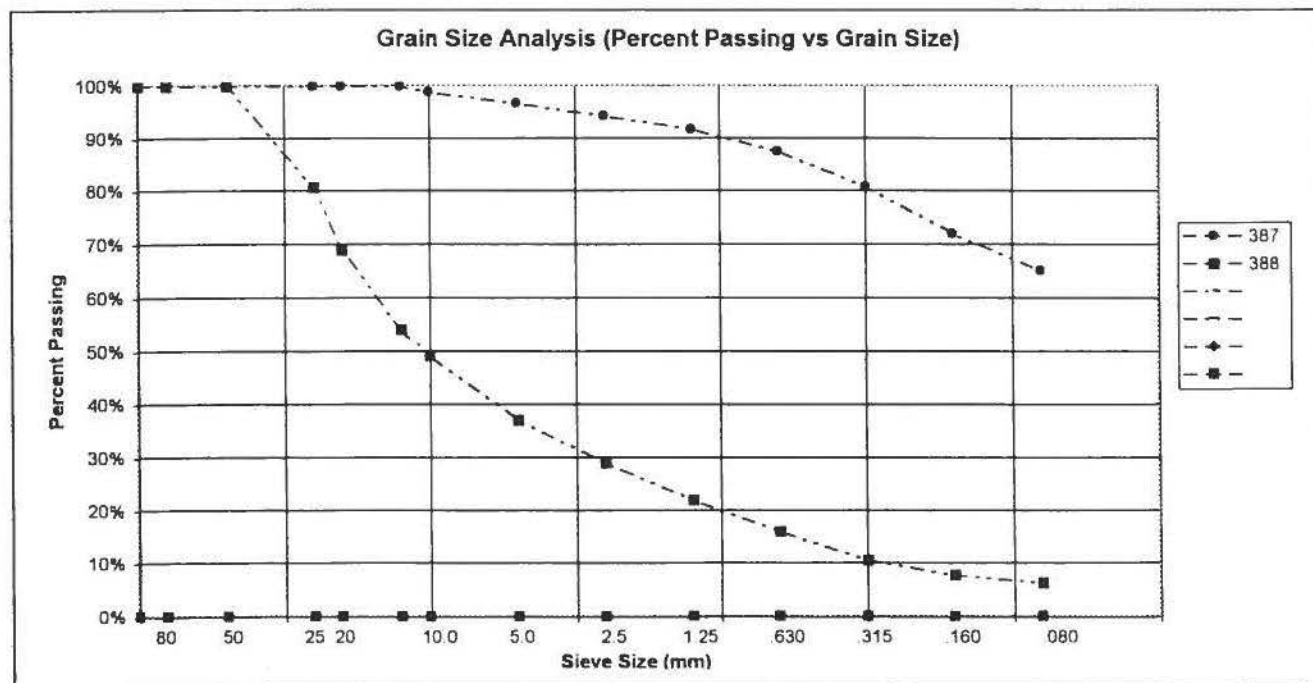


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 641051-6767939  
 LOGGED BY: RW

HOLE No.: 30015

DATE COMP: 08/18/2004

FIELD NO:	387	388			
LAB NO:	387	388			
DEPTH:	0.3-0.8	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	81%			
20.0	100%	69%			
12.5	100%	54%			
10.0	99%	49%			
5.0	97%	37%			
2.5	94%	29%			
1.25	92%	22%			
0.630	88%	16%			
0.315	81%	11%			
0.160	72%	8%			
0.080	65%	6%			
M.C.(%)	43%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	3	63			
% SAND:	32	31			
% FINES:	65	6			
CLASSIFICATION	SANDY SILT (ML)	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)			





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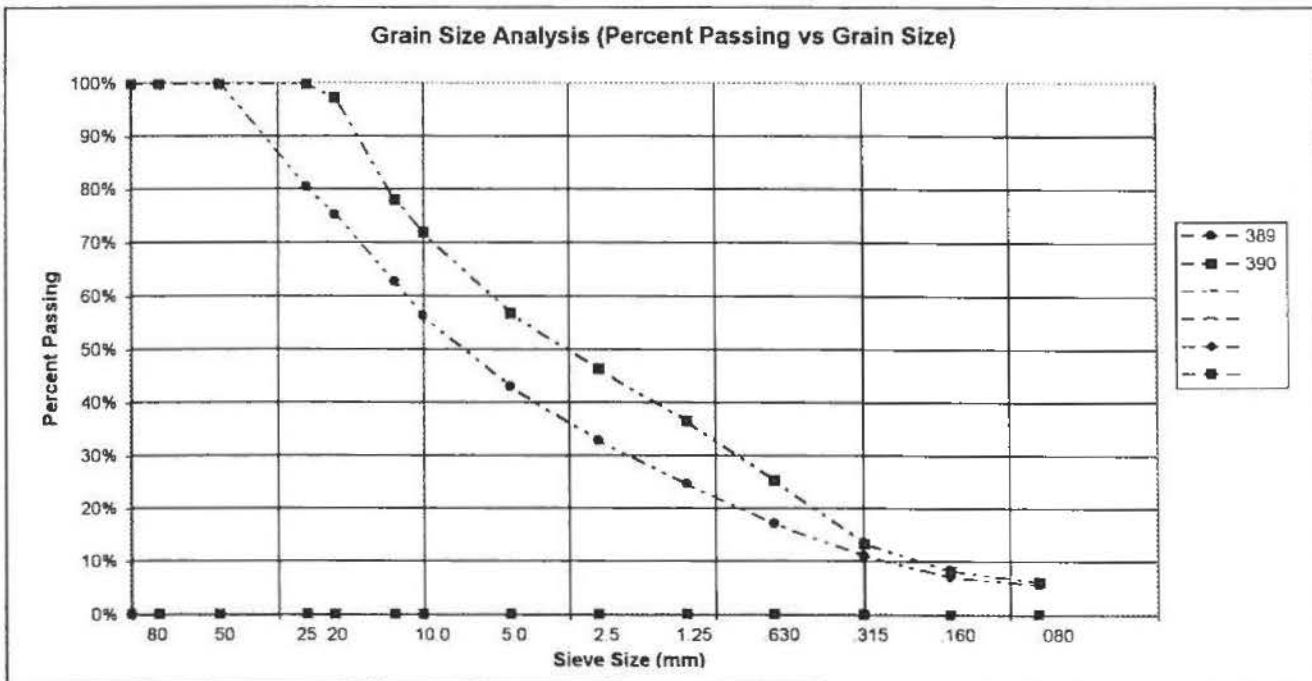


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 641012-6767966  
 LOGGED BY: RW

HOLE No.: 30016

DATE COMP: 08/18/2004

FIELD NO:	389	390			
LAB NO:	389	390			
DEPTH:	0.0-0.4	2.1-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	80%	100%			
20.0	75%	97%			
12.5	63%	78%			
10.0	56%	72%			
5.0	43%	57%			
2.5	33%	46%			
1.25	25%	37%			
0.630	17%	25%			
0.315	11%	13%			
0.160	7%	8%			
0.080	6%	6%			
M.C.(%):	3%	5%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	57	43			
% SAND:	37	50			
% FINES:	6	6			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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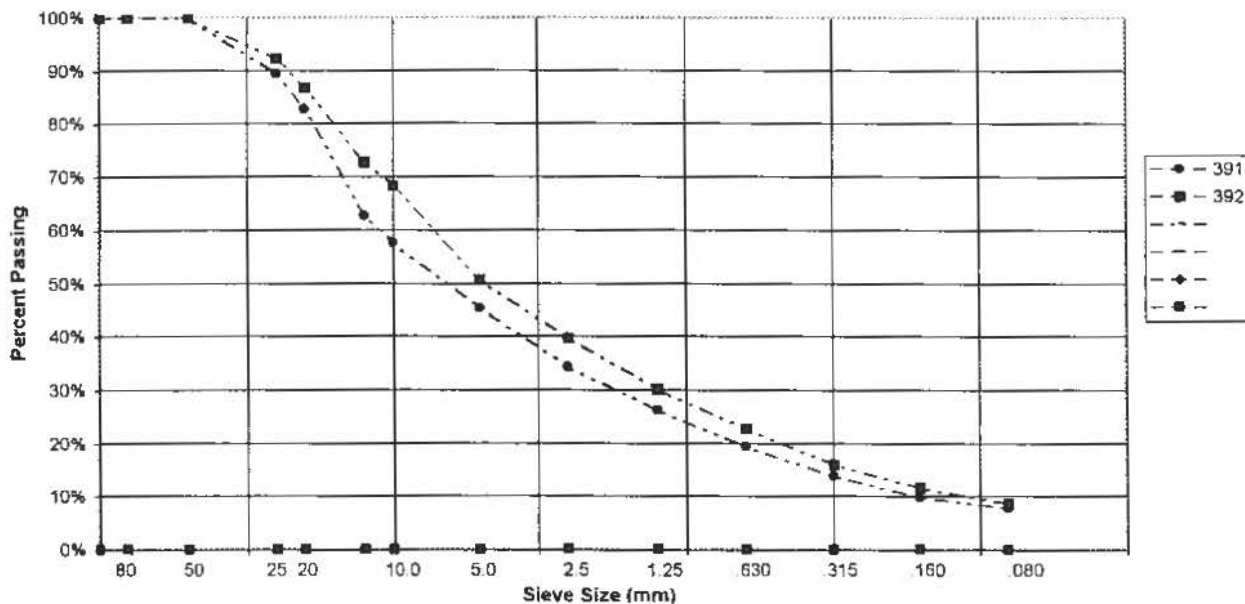
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 640871-6767834  
 LOGGED BY: RW

HOLE No.: 30017

DATE COMP: 08/18/2004

FIELD NO:	391	392			
LAB NO:	391	392			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	89%	92%			
20.0	83%	87%			
12.5	63%	73%			
10.0	58%	69%			
5.0	45%	51%			
2.5	34%	40%			
1.25	26%	30%			
0.630	19%	23%			
0.315	14%	16%			
0.160	10%	12%			
0.080	8%	9%			
M.C.(%):	2%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	55	49			
% SAND:	38	42			
% FINES:	8	9			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Falme & Associates Ltd.

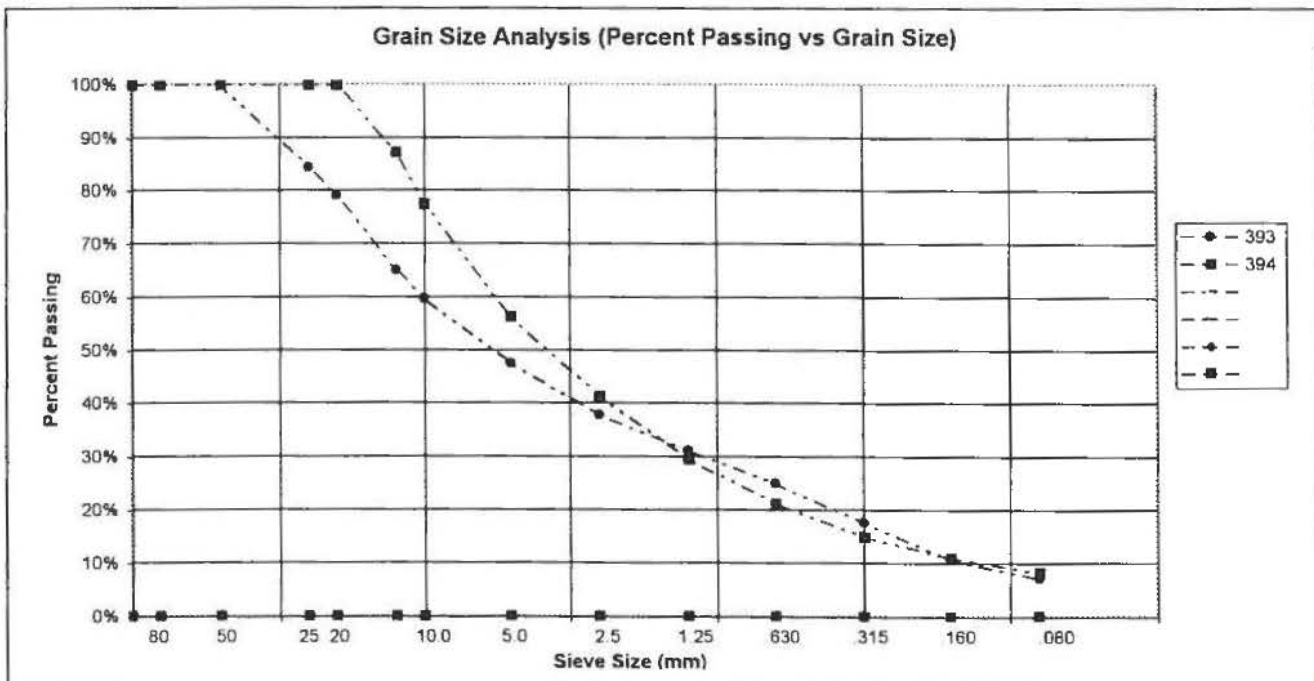


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 640691-6767697  
 LOGGED BY: RW

HOLE No.: 30018

DATE COMP: 08/18/2004

FIELD NO:	393	394			
LAB NO:	393	394			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	84%	100%			
20.0	79%	100%			
12.5	65%	87%			
10.0	60%	78%			
5.0	48%	56%			
2.5	38%	41%			
1.25	31%	30%			
0.630	25%	21%			
0.315	18%	15%			
0.160	11%	11%			
0.080	7%	8%			
M.C.(%)	1%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	52	44			
% SAND:	40	48			
% FINES:	7	8			
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



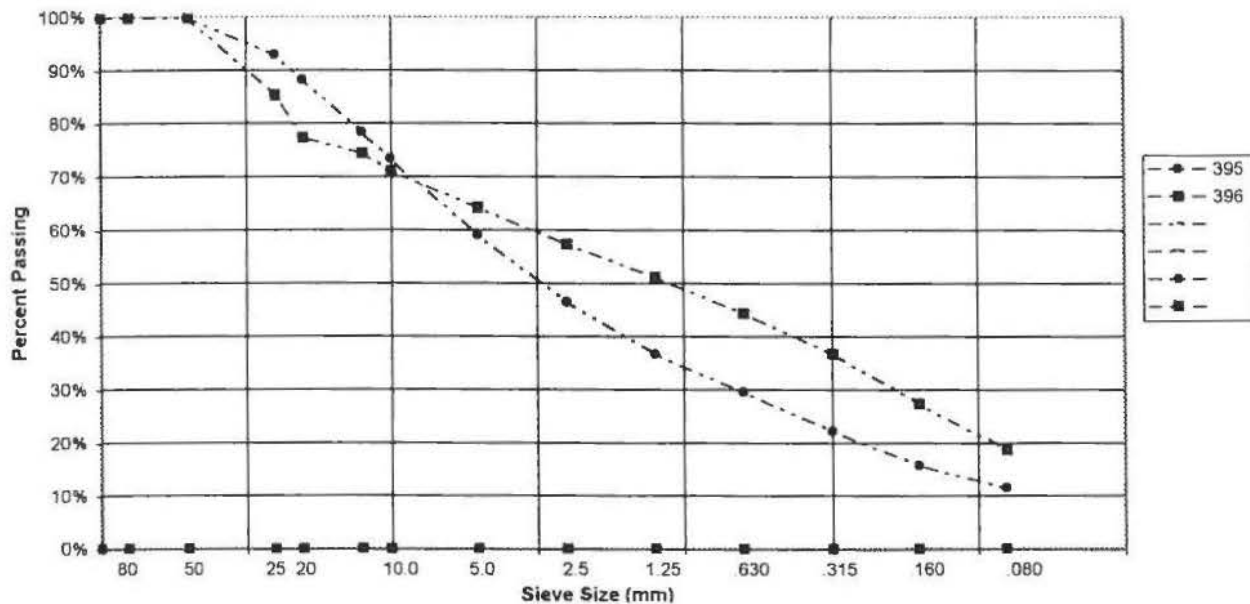
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 640524-6767579  
 LOGGED BY: RW

HOLE No.: 30019

DATE COMP: 08/18/2004

FIELD NO:	395	396			
LAB NO:	395	396			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	93%	85%			
20.0	88%	77%			
12.5	78%	75%			
10.0	74%	71%			
5.0	59%	64%			
2.5	47%	57%			
1.25	37%	51%			
0.630	30%	44%			
0.315	22%	37%			
0.160	16%	27%			
0.080	12%	19%			
M.C.(%)	5%	8%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	41	36			
% SAND:	48	45			
% FINES:	12	19			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)			

Grain Size Analysis (Percent Passing vs Grain Size)





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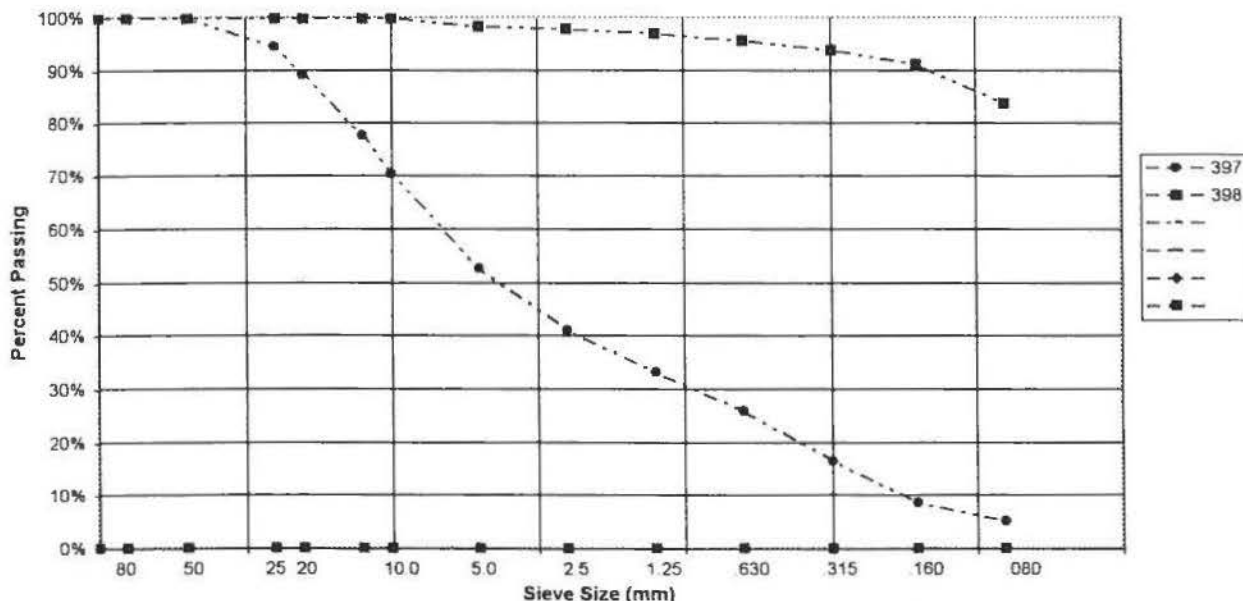
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 640351-6767452  
 LOGGED BY: RW

HOLE No.: 30020

DATE COMP: 08/18/2004

FIELD NO:	397	398			
LAB NO:	397	398			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	95%	100%			
20.0	89%	100%			
12.5	78%	100%			
10.0	70%	100%			
5.0	53%	98%			
2.5	41%	98%			
1.25	33%	97%			
0.630	26%	96%			
0.315	17%	94%			
0.160	9%	91%			
0.080	5%	84%			
M.C.(%)	7%	38%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	47	2			
% SAND:	48	14			
% FINES:	5	84			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILT WITH SAND (ML)			

### Grain Size Analysis (Percent Passing vs Grain Size)





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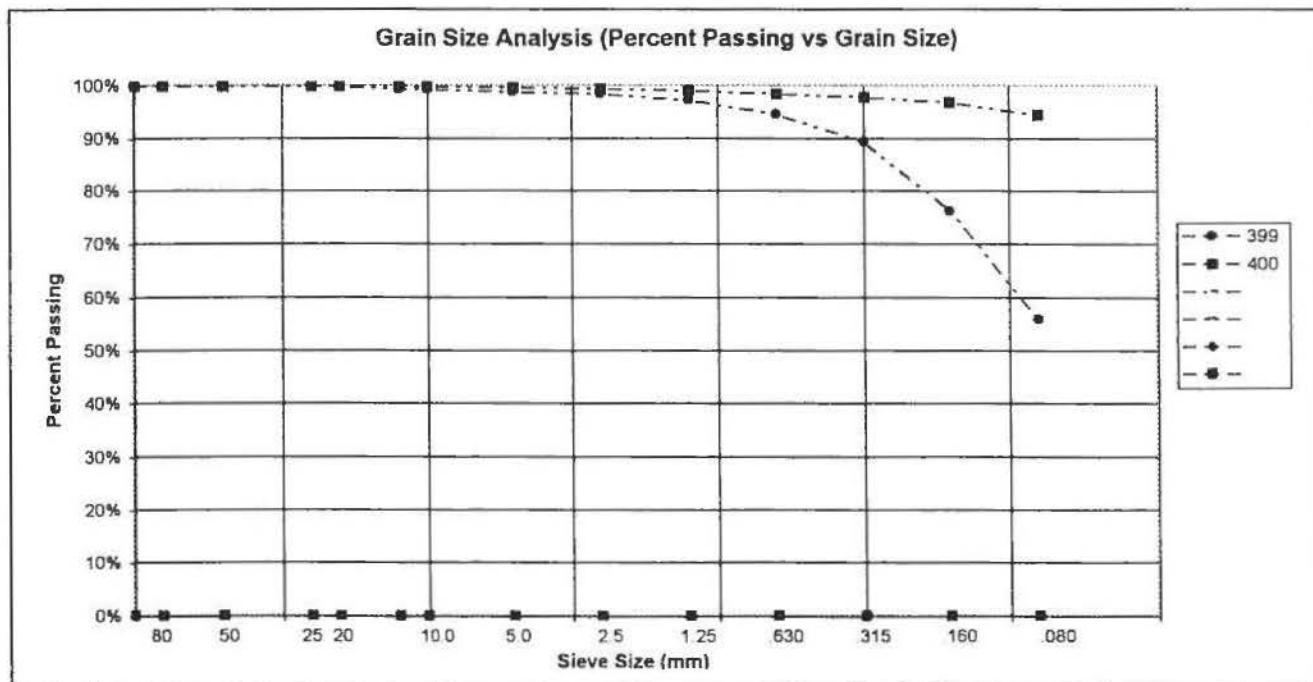


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 640194-6767340  
 LOGGED BY: RW

HOLE No.: 30021

DATE COMP: 08/18/2004

FIELD NO:	399	400			
LAB NO:	399	400			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	99%	100%			
10.0	99%	100%			
5.0	99%	100%			
2.5	99%	100%			
1.25	97%	99%			
0.630	95%	99%			
0.315	89%	98%			
0.160	76%	97%			
0.080	56%	95%			
M.C.(%):	35%	38%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	1	0			
% SAND:	43	5			
% FINES:	56	95			
CLASSIFICATION	SANDY SILT (ML)	SILT (ML)			





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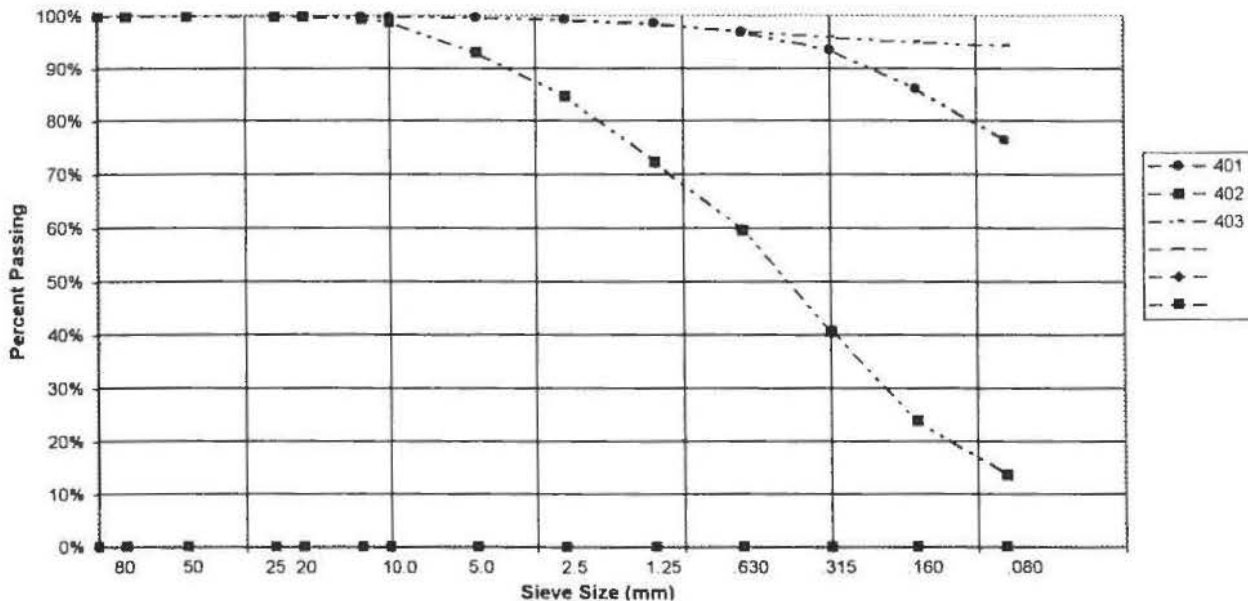
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 640041-6767232  
 LOGGED BY: RW

HOLE No.: 30022

DATE COMP: 08/18/2004

FIELD NO:	401	402	403		
LAB NO:	401	402	403		
DEPTH:	0.5-1.0	1.5-2.1	2.6-2.9		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	100%	100%	100%		
12.5	100%	100%	100%		
10.0	100%	99%	100%		
5.0	100%	93%	100%		
2.5	99%	85%	99%		
1.25	99%	72%	98%		
0.630	97%	60%	97%		
0.315	94%	41%	96%		
0.160	86%	24%	95%		
0.080	76%	14%	94%		
M.C.(%)	30%	14%	40%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	0	7	0		
% SAND:	23	79	5		
% FINES:	76	14	94		
CLASSIFICATION	SILT WITH SAND (ML)	SILTY SAND (SM)	SILT (ML)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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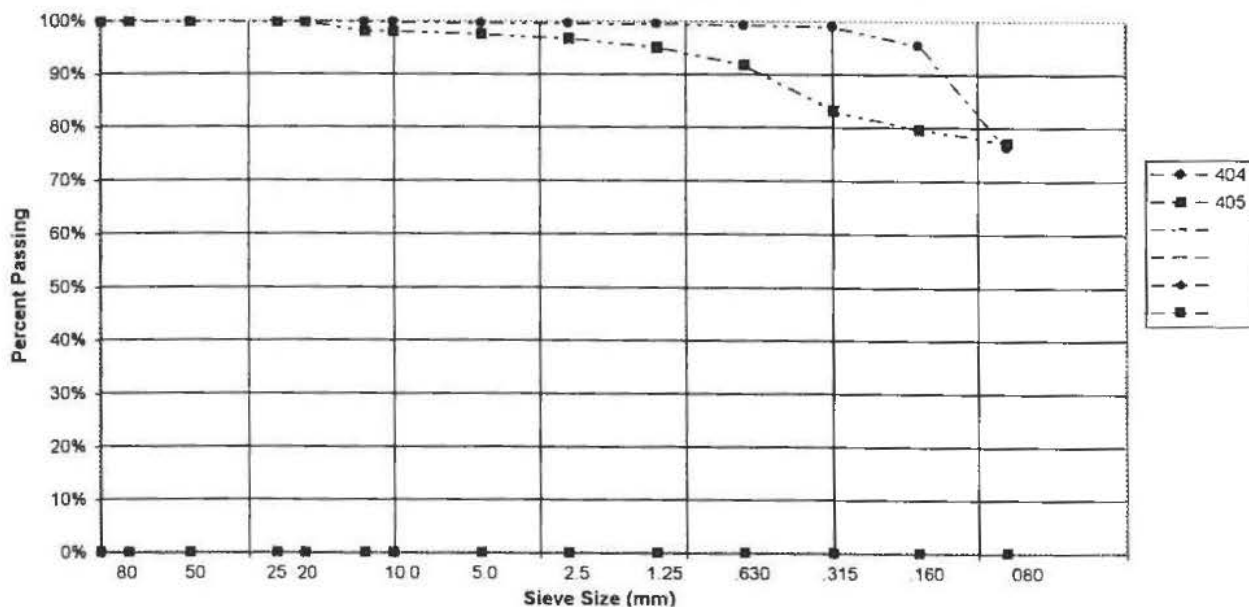
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 639890-6767125  
 LOGGED BY: RW

HOLE No.: 30023

DATE COMP: 08/18/2004

FIELD NO:	404	405			
LAB NO:	404	405			
DEPTH:	0.3-0.9	1.2-1.8			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	100%	98%			
10.0	100%	98%			
5.0	100%	98%			
2.5	100%	97%			
1.25	100%	95%			
0.630	99%	92%			
0.315	99%	83%			
0.160	95%	80%			
0.080	76%	77%			
M.C.(%)	29%	35%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	0	2			
% SAND:	23	20			
% FINES:	76	77			
CLASSIFICATION	SILT WITH SAND (ML)	SILT WITH SAND (ML)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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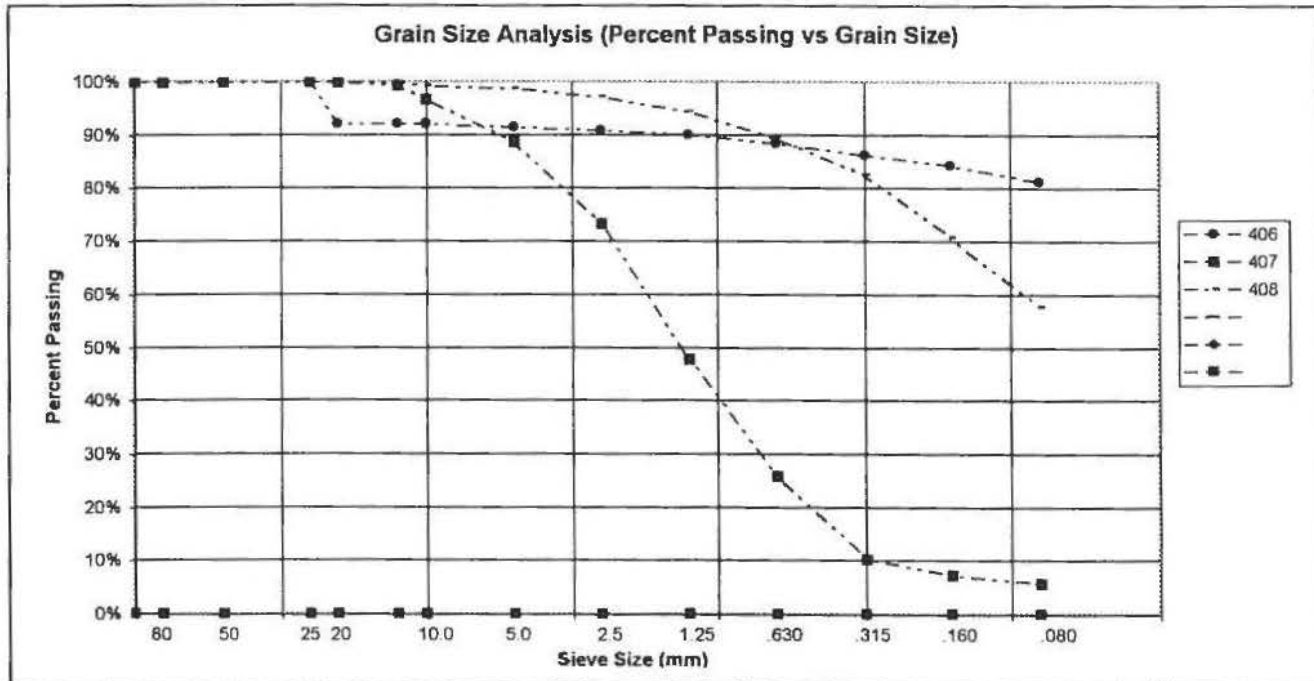


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 639688-6766983  
 LOGGED BY: RW

HOLE No.: 30024

DATE COMP: 08/18/2004

FIELD NO:	406	407	408		
LAB NO:	406	407	408		
DEPTH:	0.3-0.9	1.5-2.1	2.1-2.7		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	92%	100%	100%		
12.5	92%	99%	100%		
10.0	92%	97%	99%		
5.0	92%	89%	99%		
2.5	91%	73%	97%		
1.25	90%	48%	94%		
0.630	88%	26%	89%		
0.315	86%	10%	83%		
0.160	84%	7%	71%		
0.080	81%	6%	58%		
M.C.(%):	37%	13%	28%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	8	11	1		
% SAND:	10	83	41		
% FINES:	81	6	58		
CLASSIFICATION	SILT WITH SAND (ML)	WELL-GRADED SAND WITH SILT (SW-SM)	SANDY SILT (ML)		





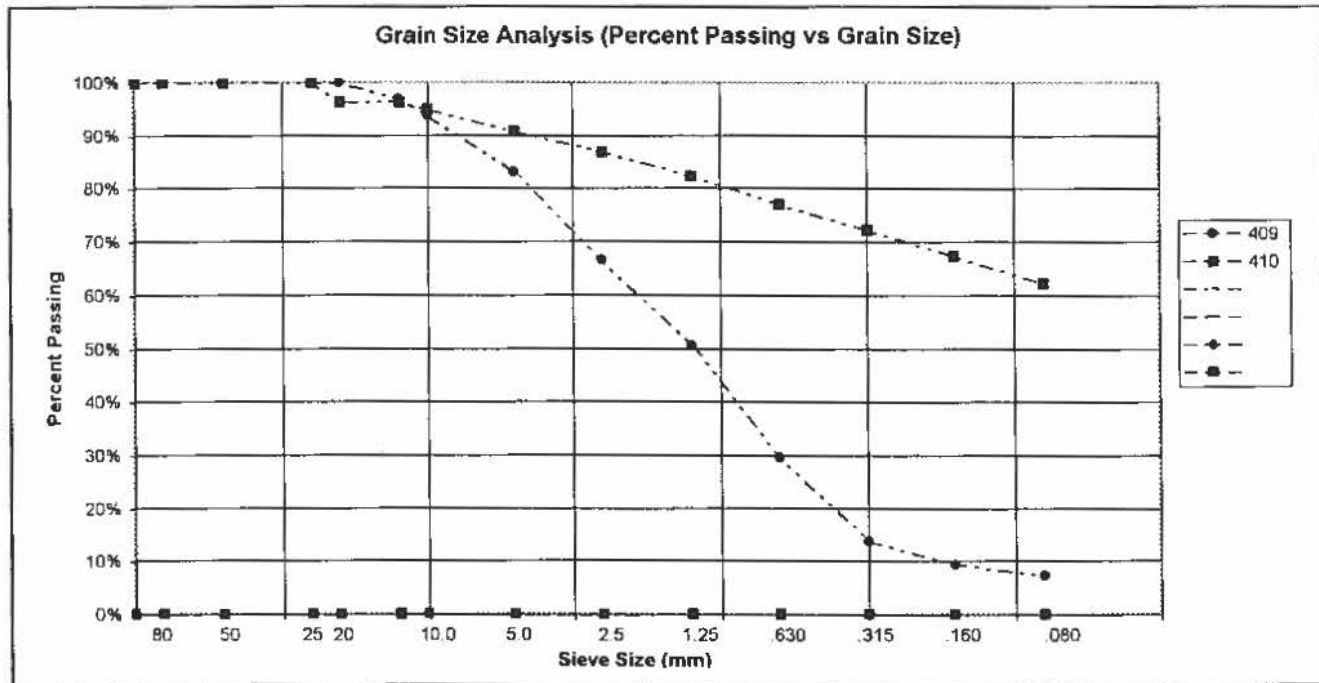
# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30025  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 639558-6766885  
 LOGGED BY: RW DATE COMP: 08/18/2004

FIELD NO:	409	410			
LAB NO:	409	410			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	96%			
12.5	97%	96%			
10.0	94%	95%			
5.0	83%	91%			
2.5	67%	87%			
1.25	51%	82%			
0.630	30%	77%			
0.315	14%	72%			
0.160	9%	68%			
0.080	7%	62%			
M.C.(%)	2%	26%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	17	9			
% SAND:	76	28			
% FINES:	7	62			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SANDY SILT (ML)			





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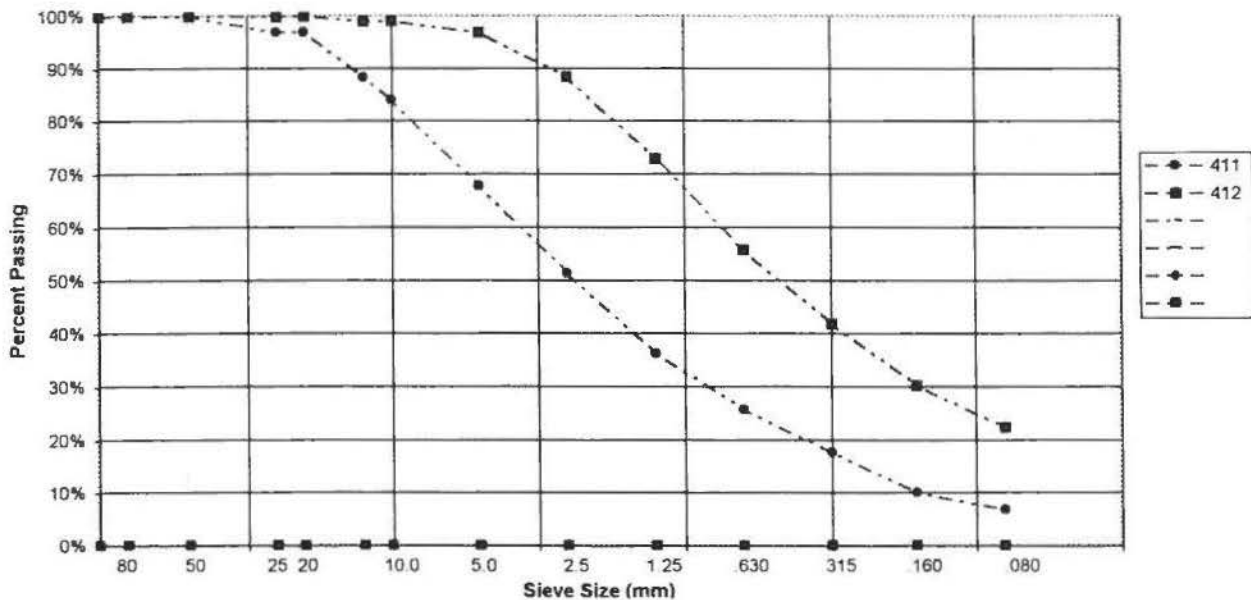
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 639356-6766769  
 LOGGED BY: RW

HOLE No.: 30026

DATE COMP: 08/18/2004

FIELD NO:	411	412			
LAB NO:	411	412			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	97%	100%			
20.0	97%	100%			
12.5	88%	99%			
10.0	84%	99%			
5.0	68%	97%			
2.5	51%	89%			
1.25	36%	73%			
0.630	26%	56%			
0.315	18%	42%			
0.160	10%	30%			
0.080	7%	23%			
M.C.(%)	2%	4%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	32	3			
% SAND:	61	74			
% FINES:	7	23			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



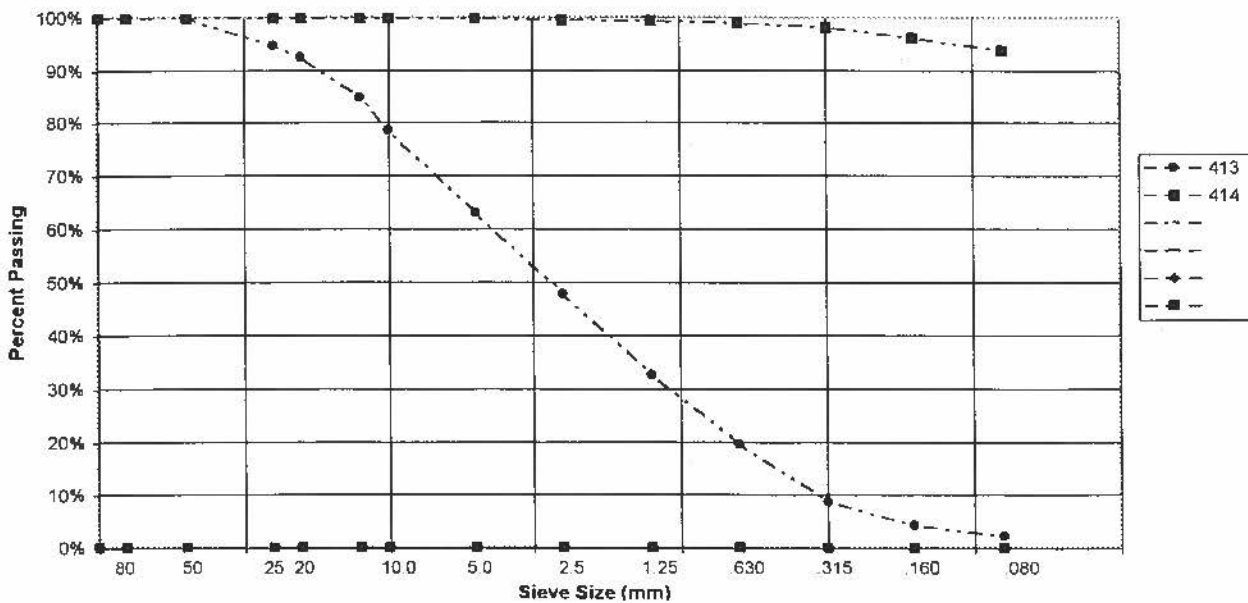
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 639213-6766735  
 LOGGED BY: RW

HOLE No.: 30027

DATE COMP: 08/19/2004

FIELD NO:	413	414			
LAB NO:	413	414			
DEPTH:	0.1-0.6	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	95%	100%			
20.0	93%	100%			
12.5	85%	100%			
10.0	79%	100%			
5.0	63%	100%			
2.5	48%	100%			
1.25	33%	99%			
0.630	20%	99%			
0.315	9%	98%			
0.160	4%	96%			
0.080	2%	94%			
M.C.(%)	9%	39%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	37	0			
% SAND:	61	6			
% FINES:	2	94			
CLASSIFICATION	WELL-GRADED SAND WITH GRAVEL (SW)	SILT (ML)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



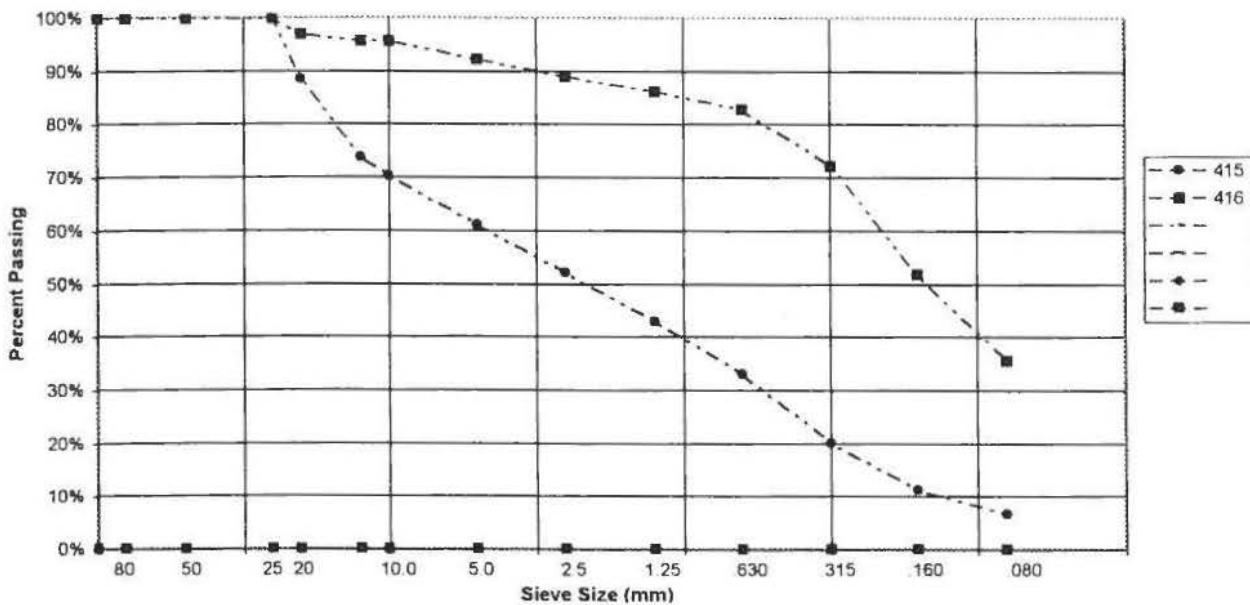
PROJECT NUMBER: 8002-318  
CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 639229-6766708  
LOGGED BY: RW

HOLE No.: 30028

DATE COMP: 08/19/2004

FIELD NO:	415	416			
LAB NO:	415	416			
DEPTH:	0.3-0.9	2.4-3.0			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	89%	97%			
12.5	74%	96%			
10.0	70%	96%			
5.0	61%	92%			
2.5	52%	89%			
1.25	43%	86%			
0.630	33%	83%			
0.315	20%	72%			
0.160	11%	52%			
0.080	7%	36%			
M.C.(%):	9%	18%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	39	8			
% SAND:	54	57			
% FINES:	7	36			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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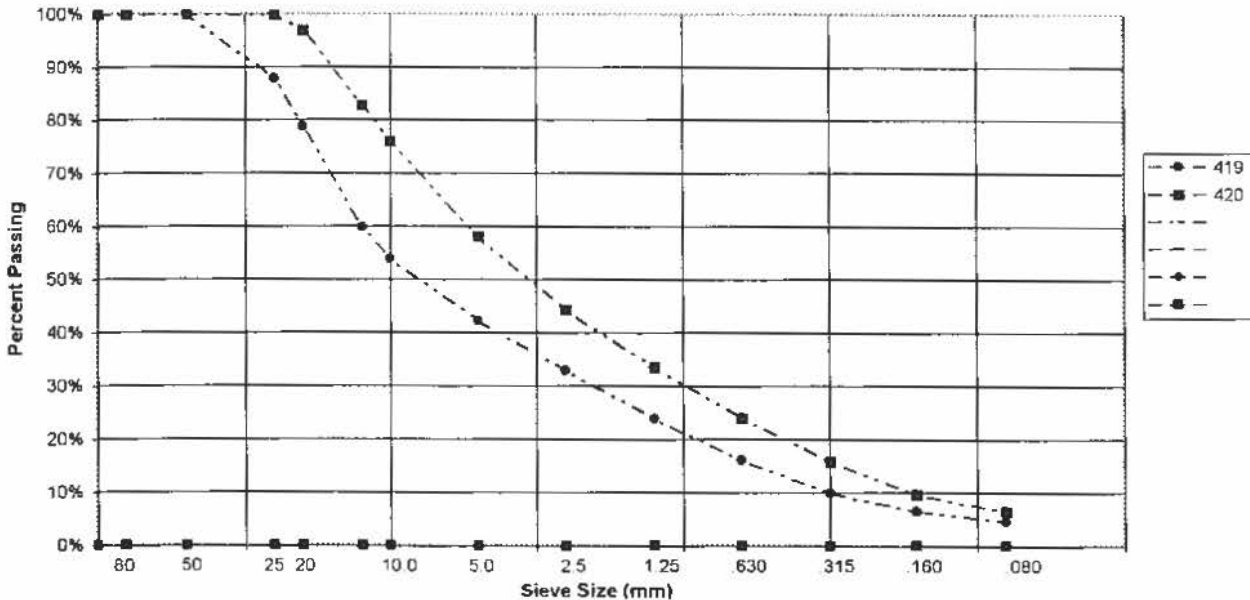
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638909-6766547  
 LOGGED BY: RW

HOLE No.: 30030

DATE COMP: 08/19/2004

FIELD NO:	419	420			
LAB NO:	419	420			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	88%	100%			
20.0	79%	97%			
12.5	60%	83%			
10.0	54%	76%			
5.0	42%	58%			
2.5	33%	44%			
1.25	24%	34%			
0.630	16%	24%			
0.315	10%	16%			
0.160	7%	10%			
0.080	5%	7%			
M.C.(%):	4%	8%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	58	42			
% SAND:	38	52			
% FINES:	5	7			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SAND (GW)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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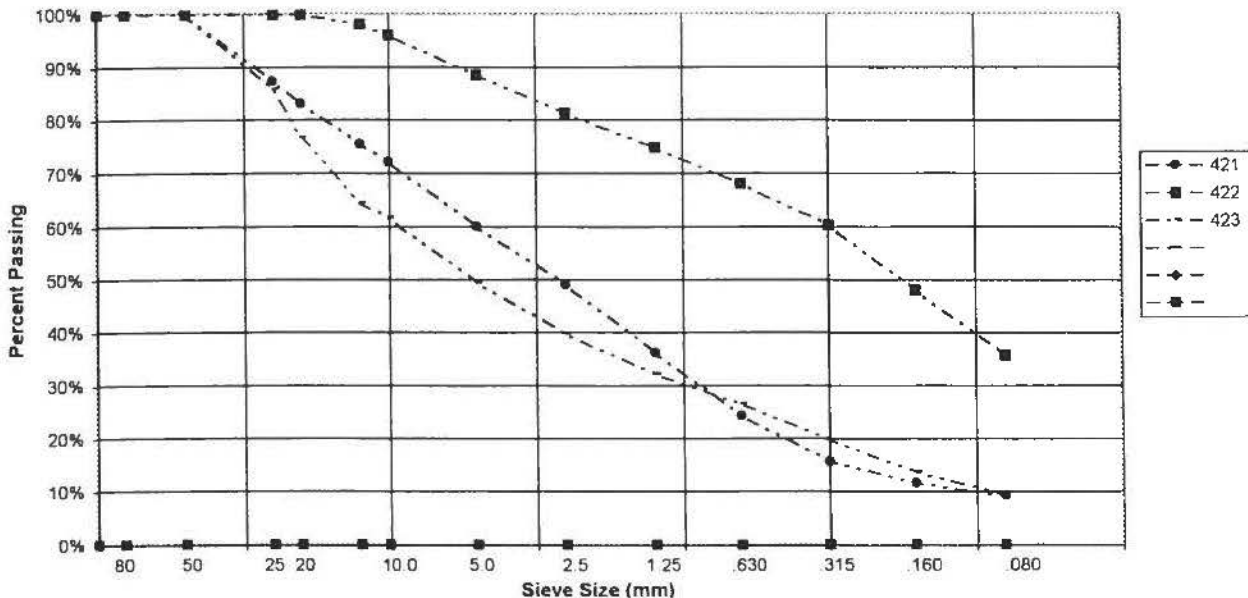
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638926-6766525  
 LOGGED BY: RWV

HOLE No.: 30031

DATE COMP: 08/19/2004

FIELD NO:	421	422	423		
LAB NO:	421	422	423		
DEPTH:	0.3-0.9	1.2-1.5	2.4-2.9		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	87%	100%	86%		
20.0	83%	100%	77%		
12.5	76%	98%	64%		
10.0	72%	96%	62%		
5.0	60%	89%	49%		
2.5	49%	81%	40%		
1.25	36%	75%	32%		
0.630	24%	68%	27%		
0.315	16%	60%	20%		
0.160	12%	48%	14%		
0.080	9%	36%	10%		
M.C.(%):	4%	25%	5%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	40	11	51		
% SAND:	51	53	40		
% FINES:	9	36	10		
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Faine & Associates Ltd.

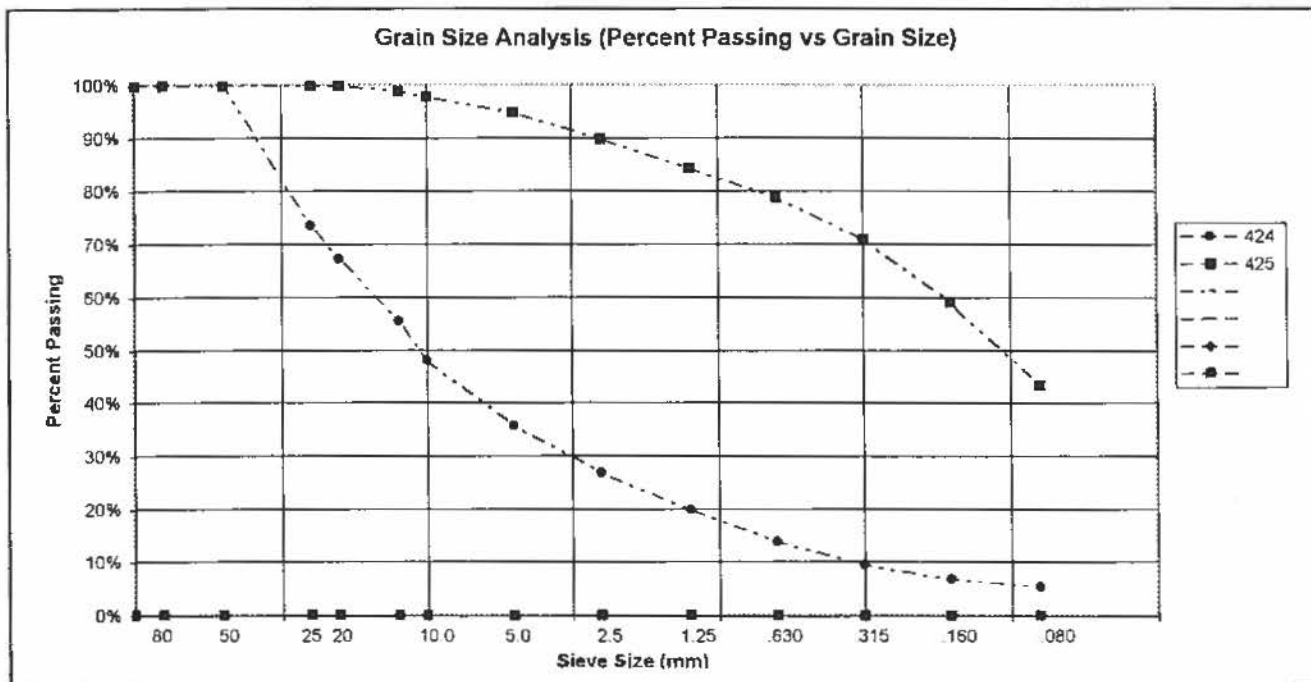


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638808-6766403  
 LOGGED BY: RW

HOLE No.: 30032

DATE COMP: 08/19/2004

FIELD NO:	424	425			
LAB NO:	424	425			
DEPTH:	0.3-0.9	2.4-3.0			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	74%	100%			
20.0	67%	100%			
12.5	56%	99%			
10.0	48%	98%			
5.0	36%	95%			
2.5	27%	90%			
1.25	20%	84%			
0.630	14%	79%			
0.315	10%	71%			
0.160	7%	59%			
0.080	5%	44%			
M.C.(%)	2%	23%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	64	5			
% SAND:	30	51			
% FINES:	5	44			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	SILTY SAND (SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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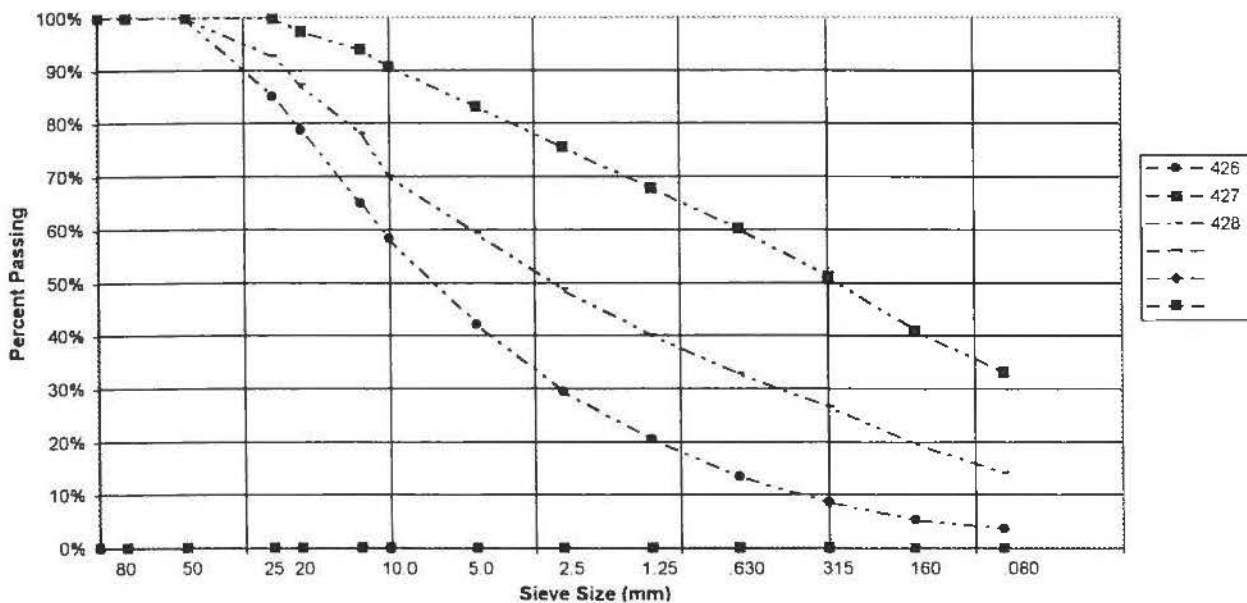
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638653-6766235  
 LOGGED BY: RW

HOLE No.: 30033

DATE COMP: 08/19/2004

FIELD NO:	426	427	428			
LAB NO:	426	427	428			
DEPTH:	0.3-0.9	1.5-2.1	2.1-2.7			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	85%	100%	93%			
20.0	79%	97%	87%			
12.5	65%	94%	78%			
10.0	58%	91%	70%			
5.0	42%	83%	59%			
2.5	29%	76%	49%			
1.25	21%	68%	40%			
0.630	14%	60%	33%			
0.315	9%	51%	27%			
0.160	5%	41%	20%			
0.080	4%	33%	14%			
M.C.(%)	3%	23%	9%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0	0.0			
% GRAVEL:	58	17	41			
% SAND:	39	50	45			
% FINES:	4	33	14			
CLASSIFICATION	WELL-GRADED GRAVEL WITH SAND (GW)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





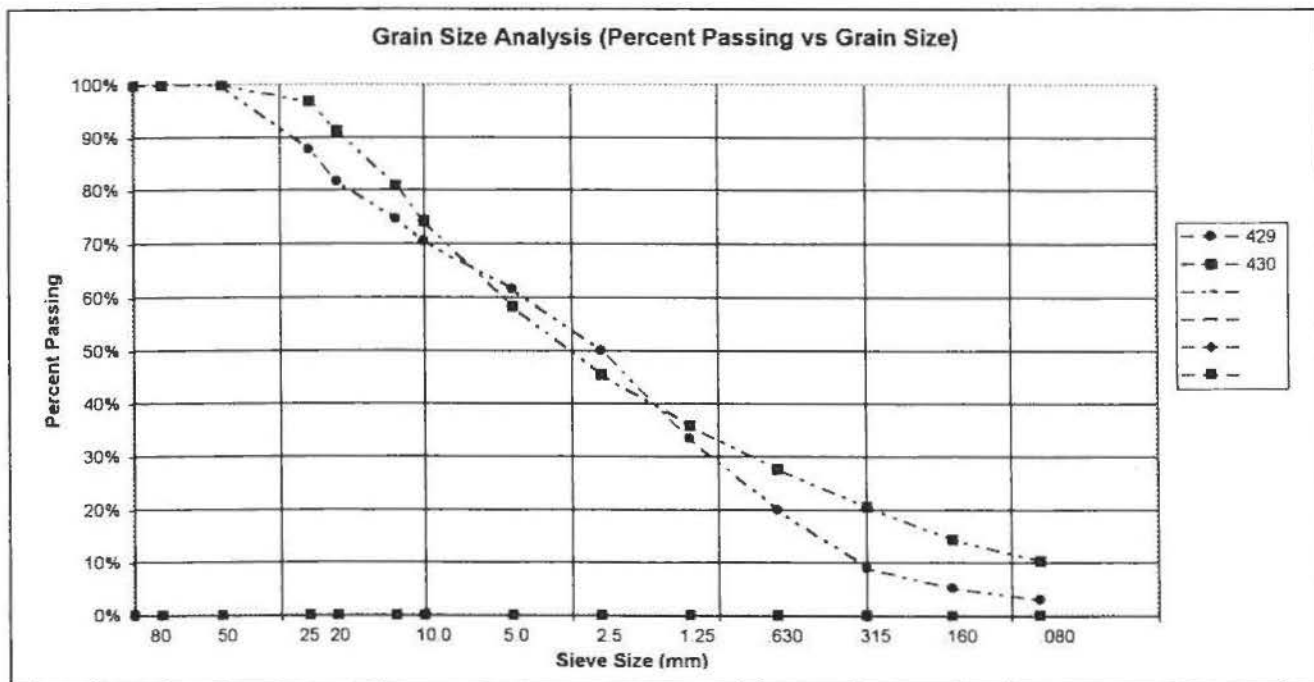
# HOGGAN ENGINEERING & TESTING (1980) LTD.

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PROJECT NUMBER: 8002-318 HOLE No.: 30034  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638452-6766172  
 LOGGED BY: RW DATE COMP: 08/19/2004

FIELD NO:	429	430			
LAB NO:	429	430			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	88%	97%			
20.0	82%	91%			
12.5	75%	81%			
10.0	71%	74%			
5.0	62%	58%			
2.5	50%	46%			
1.25	33%	36%			
0.630	20%	28%			
0.315	9%	21%			
0.160	5%	15%			
0.080	3%	11%			
M.C.(%):	2%	8%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	38	42			
% SAND:	59	48			
% FINES:	3	11			
CLASSIFICATION	WELL-GRADED SAND WITH GRAVEL (SW)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)			





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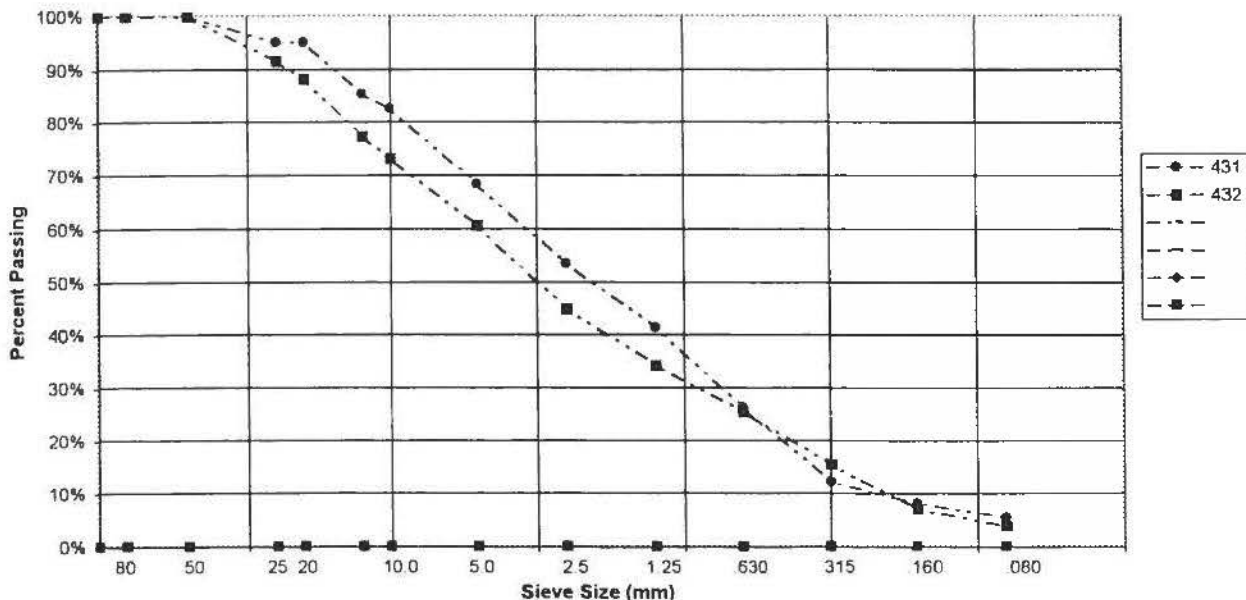
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638287-6766094  
 LOGGED BY: RW

HOLE No.: 30035

DATE COMP: 08/19/2004

FIELD NO:	431	432			
LAB NO:	431	432			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	95%	92%			
20.0	95%	88%			
12.5	85%	77%			
10.0	83%	73%			
5.0	68%	61%			
2.5	54%	45%			
1.25	41%	34%			
0.630	26%	25%			
0.315	12%	16%			
0.160	8%	7%			
0.080	6%	4%			
M.C.(%)	2%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	32	39			
% SAND:	63	57			
% FINES:	6	4			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH GRAVEL (SW)			

### Grain Size Analysis (Percent Passing vs Grain Size)





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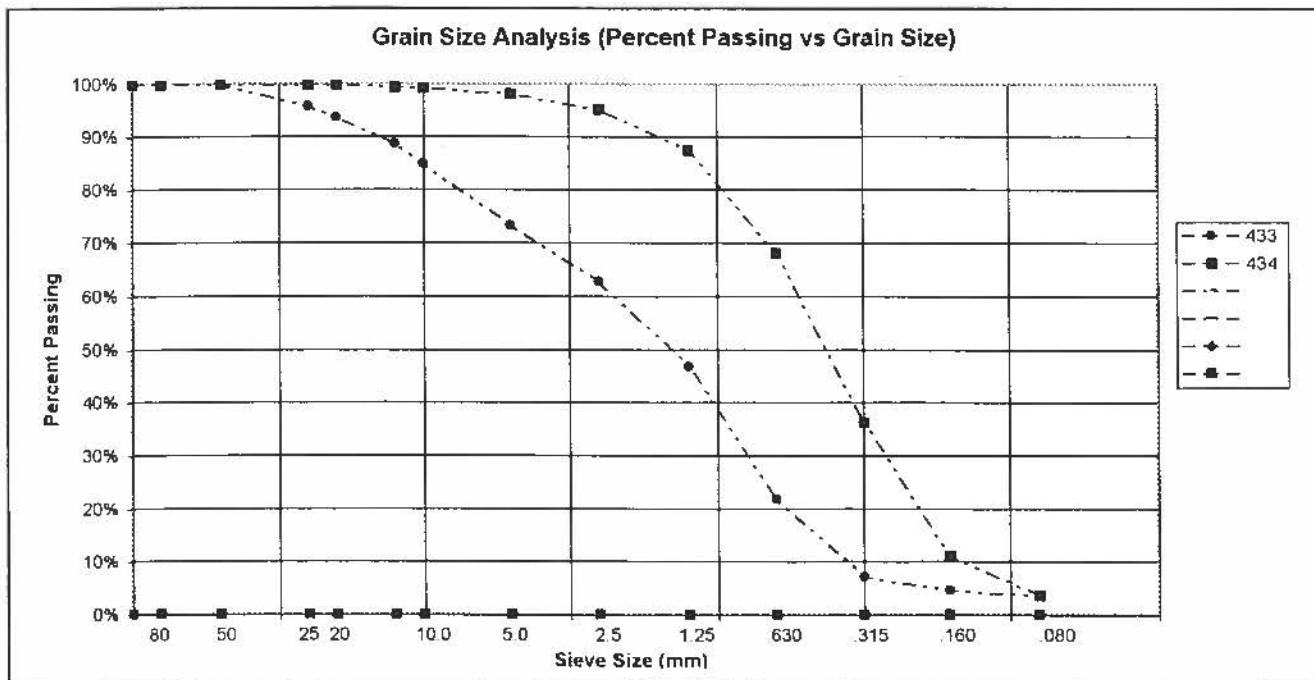


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 638094-6766043  
 LOGGED BY: RW

HOLE No.: 30036

DATE COMP: 08/19/2004

FIELD NO:	433	434			
LAB NO:	433	434			
DEPTH:	0.3-0.9	2.1-2.7			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	96%	100%			
20.0	84%	100%			
12.5	89%	100%			
10.0	85%	99%			
5.0	73%	98%			
2.5	63%	95%			
1.25	47%	88%			
0.630	22%	68%			
0.315	7%	36%			
0.160	5%	11%			
0.080	4%	4%			
M.C.(%):	2%	7%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	27	2			
% SAND:	70	95			
% FINES:	4	4			
CLASSIFICATION	POORLY GRADED SAND WITH GRAVEL (SP)	WELL-GRADED SAND (SW)			





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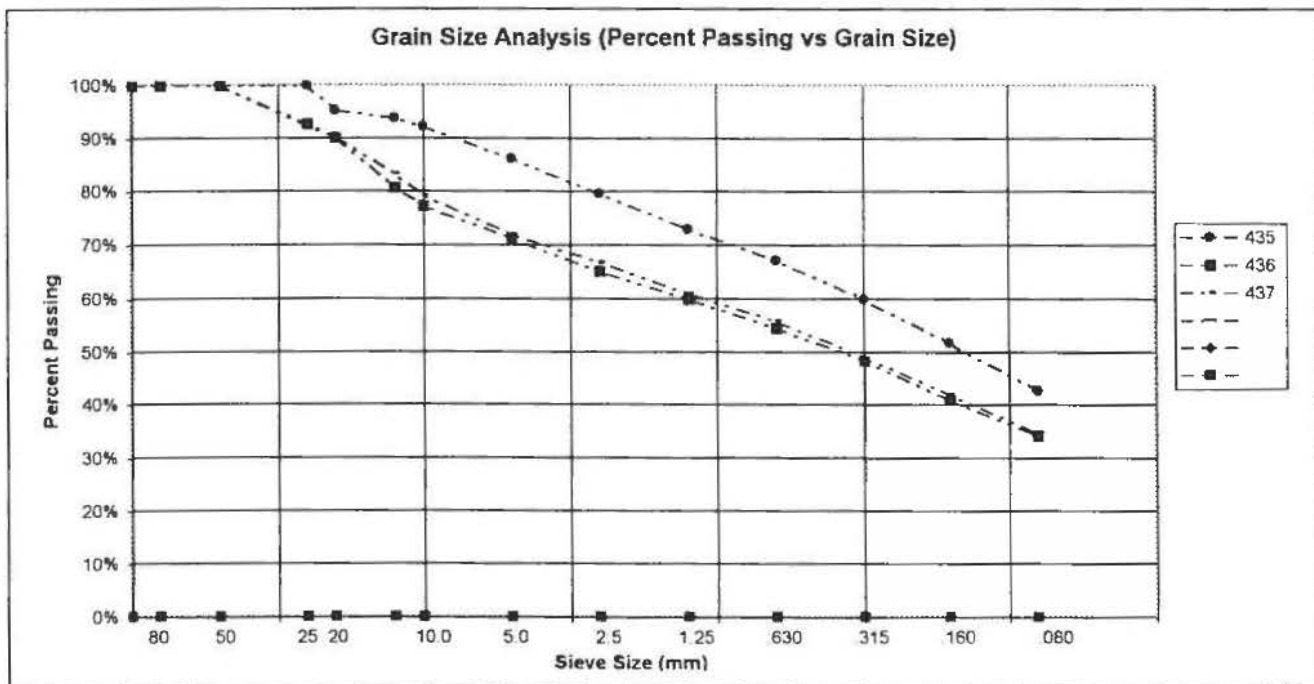


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 637902-6765969  
 LOGGED BY: RW

HOLE No.: 30037

DATE COMP: 08/19/2004

FIELD NO:	435	436	437		
LAB NO:	435	436	437		
DEPTH:	0.3-0.9	2.1-2.7	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	93%	92%		
20.0	95%	90%	90%		
12.5	94%	81%	83%		
10.0	92%	77%	79%		
5.0	86%	71%	72%		
2.5	80%	65%	67%		
1.25	73%	60%	61%		
0.630	67%	55%	56%		
0.315	60%	49%	49%		
0.160	52%	41%	42%		
0.080	43%	34%	35%		
M.C.(%)	26%	9%	9%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	14	29	28		
% SAND:	43	37	37		
% FINES:	43	34	35		
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)		





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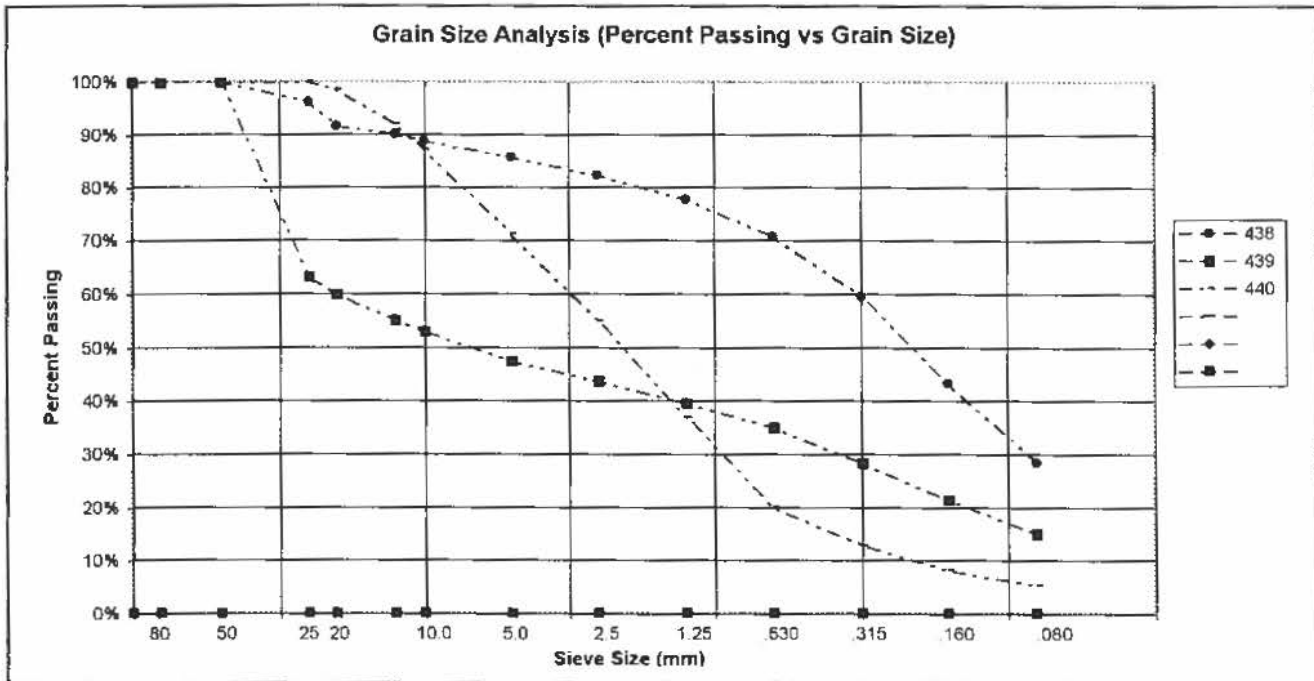


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 637704-6765920  
 LOGGED BY: RW

HOLE No.: 30038

DATE COMP: 08/19/2004

FIELD NO:	438	439	440		
LAB NO:	438	439	440		
DEPTH:	0.3-0.9	1.8-2.4	3.2-3.6		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	96%	63%	100%		
20.0	92%	60%	99%		
12.5	90%	55%	92%		
10.0	89%	53%	87%		
5.0	86%	47%	71%		
2.5	82%	44%	55%		
1.25	78%	40%	37%		
0.630	71%	35%	20%		
0.315	60%	28%	13%		
0.160	43%	21%	8%		
0.080	29%	15%	5%		
M.C.(%):	6%	5%	8%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0		
% GRAVEL:	14	53	29		
% SAND:	57	32	66		
% FINES:	29	15	5		
CLASSIFICATION	SILTY SAND (SM)	SILTY GRAVEL WITH SAND (GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)		





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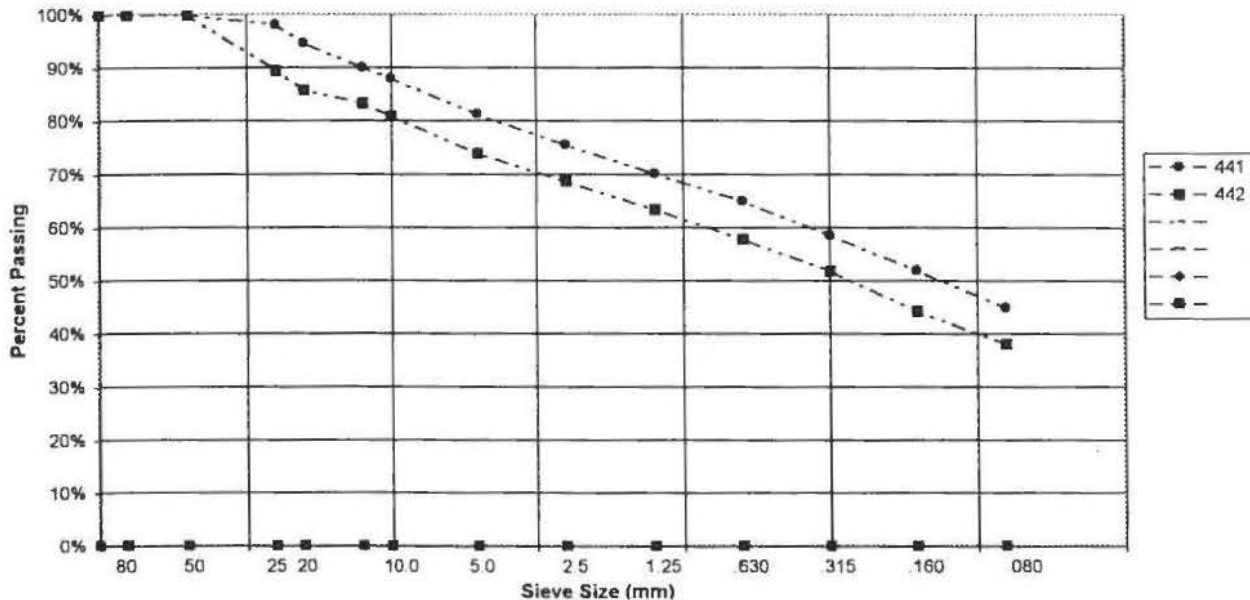
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 637563-6765818  
 LOGGED BY: RW

HOLE No.: 30039

DATE COMP: 08/19/2004

FIELD NO:	441	442			
LAB NO:	441	442			
DEPTH:	0.3-0.9	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	98%	89%			
20.0	95%	86%			
12.5	90%	83%			
10.0	88%	81%			
5.0	81%	74%			
2.5	76%	69%			
1.25	70%	64%			
0.630	65%	58%			
0.315	59%	52%			
0.160	52%	44%			
0.080	45%	38%			
M.C.(%):	9%	7%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	19	26			
% SAND:	36	36			
% FINES:	45	38			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. P. Faline & Associates Ltd.



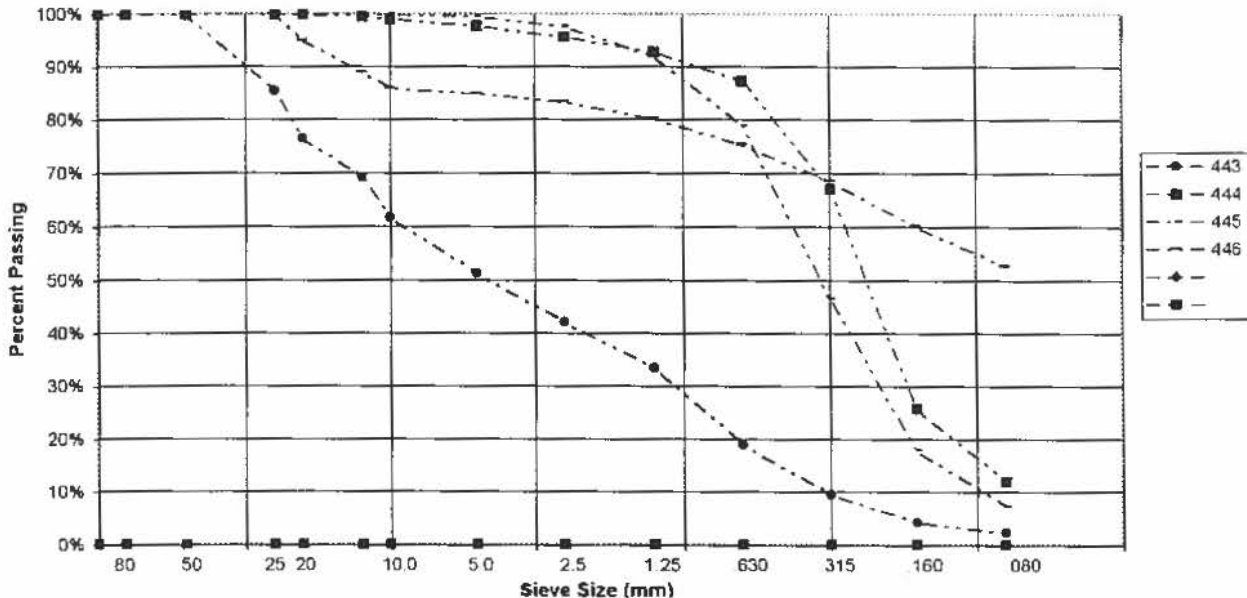
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 637444-6765598  
 LOGGED BY: RW

HOLE No.: 30040

DATE COMP: 08/19/2004

FIELD NO:	443	444	445	446		
LAB NO:	443	444	445	446		
DEPTH:	0.0-0.6	0.6-1.2	1.8-2.4	3.0-3.6		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	85%	100%	100%	100%		
20.0	76%	100%	100%	95%		
12.5	69%	100%	100%	89%		
10.0	62%	99%	100%	86%		
5.0	51%	98%	100%	85%		
2.5	42%	96%	98%	83%		
1.25	33%	93%	92%	80%		
0.830	19%	87%	79%	75%		
0.315	10%	67%	47%	69%		
0.160	4%	26%	18%	60%		
0.080	2%	12%	7%	53%		
M.C.(%):	8%	23%	26%	91%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	49	2	0	15		
% SAND:	49	86	92	32		
% FINES:	2	12	7	53		
CLASSIFICATION	WELL-GRADED SAND WITH GRAVEL (SW)	SILTY SAND (SM)	WELL-GRADED SAND WITH SILT (SW-SM)	SANDY SILT (ML)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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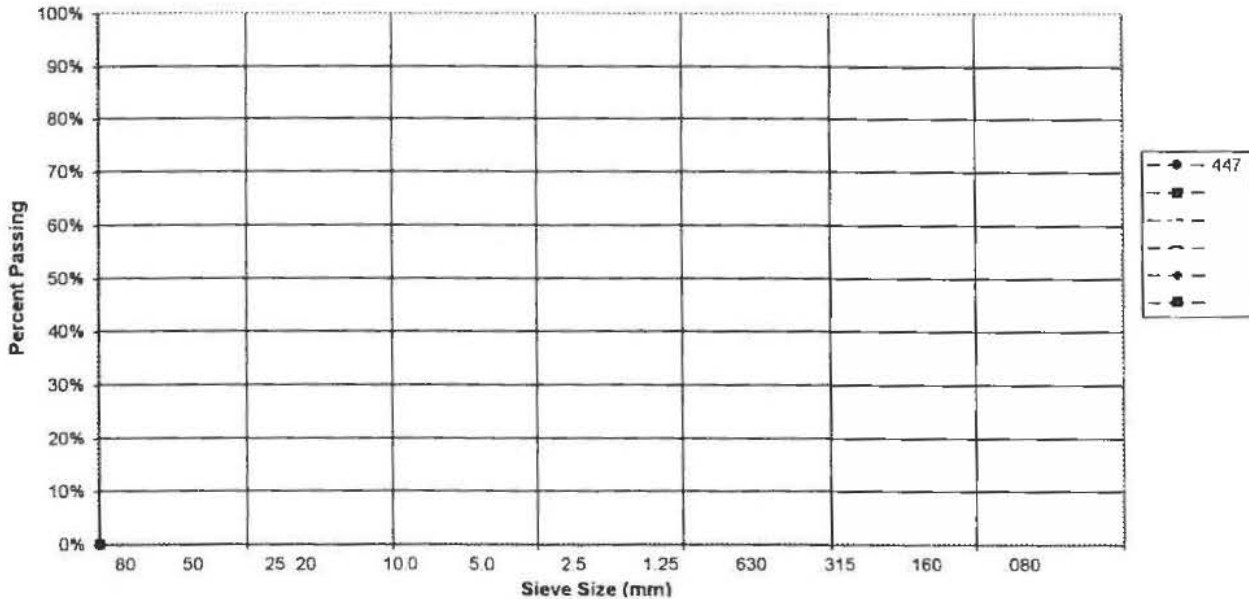
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 637429-6765452  
 LOGGED BY: RW

HOLE No.: 30041

DATE COMP: 08/20/2004

FIELD NO:	447				
LAB NO:	447				
DEPTH:	1.4				
TYPE:	S.P.T.				
SIEVE SIZE	PERCENT PASSING				
100.0					
80.0					
50.0					
25.0					
20.0					
12.5					
10.0					
5.0					
2.5					
1.25					
0.630					
0.315					
0.160					
0.080					
M.C.(%):	8%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	#VALUE!				
% SAND:	#VALUE!				
% FINES:	#VALUE!				
CLASSIFICATION	#VALUE!				

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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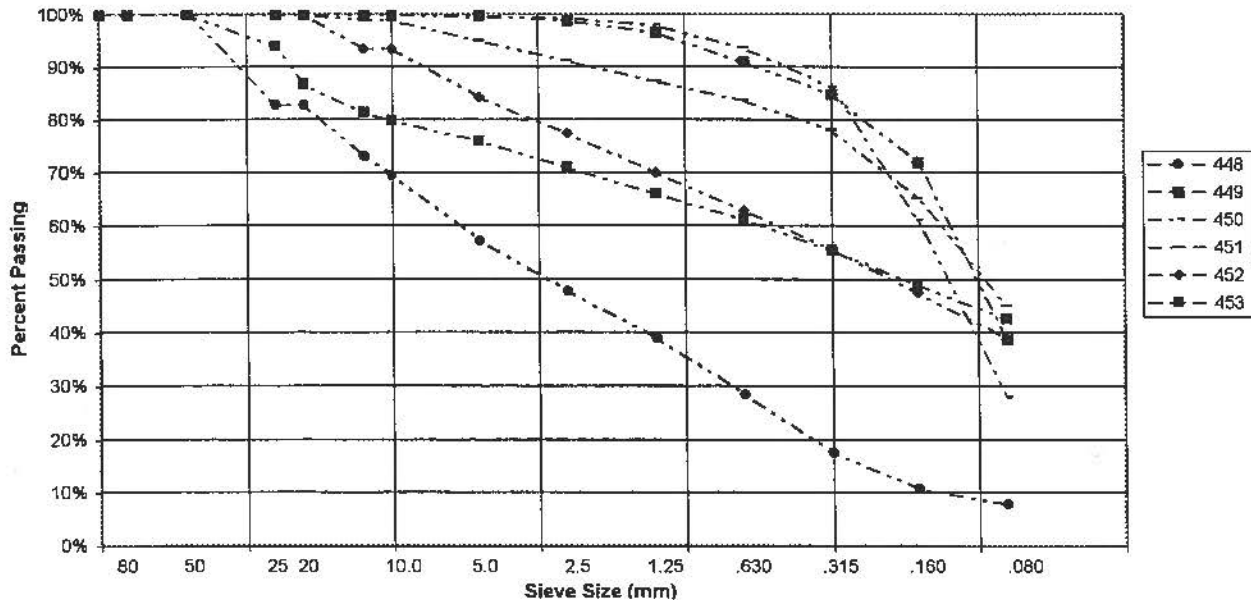
PROJECT NUMBER: 6002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 637411-6765198  
 LOGGED BY: RW

HOLE No.: 30042

DATE COMP: 08/20/2004

FIELD NO:	448	449	450	451	452	453
LAB NO:	448	449	450	451	452	453
DEPTH:	1.4	2.9	4.4	5.9	7.5	9
TYPE:	S.P.T.	S.P.T.	S.P.T.	S.P.T.	S.P.T.	S.P.T.
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	83%	100%	100%	100%	100%	94%
20.0	83%	100%	100%	100%	100%	87%
12.5	73%	100%	100%	99%	93%	81%
10.0	70%	100%	100%	99%	93%	80%
5.0	57%	100%	100%	95%	84%	76%
2.5	48%	99%	99%	91%	77%	71%
1.25	39%	97%	98%	87%	70%	66%
0.630	28%	91%	94%	84%	63%	61%
0.315	18%	85%	86%	78%	56%	55%
0.160	11%	72%	81%	65%	48%	49%
0.080	8%	39%	26%	45%	39%	43%
M.C.(%)	7%	22%	21%	13%	12%	9%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	43	0	0	5	16	24
% SAND:	49	61	72	50	45	34
% FINES:	8	39	28	45	39	43
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

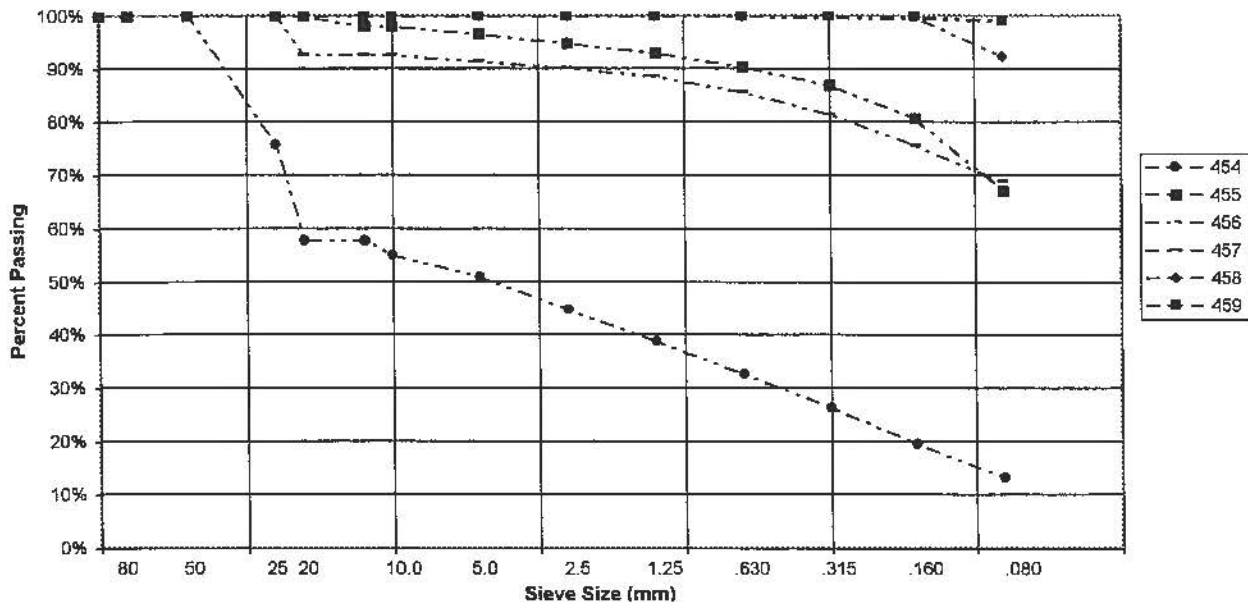
An Affiliate of J. R. Payne & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30043  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636827-6764763  
 LOGGED BY: RW DATE COMP: 08/20/2004

FIELD NO:	454	455	456	457	458	459
LAB NO:	454	455	456	457	458	459
DEPTH:	1.4	2.9	4.4	5.9	7.5	9
TYPE:	S.P.T.	S.P.T.	S.P.T.	S.P.T.	S.P.T.	S.P.T.
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	76%	100%	100%	100%	100%	100%
20.0	58%	100%	100%	93%	100%	100%
12.5	58%	98%	100%	93%	100%	100%
10.0	55%	98%	100%	93%	100%	100%
5.0	51%	97%	100%	91%	100%	100%
2.5	45%	95%	100%	90%	100%	100%
1.25	39%	93%	100%	89%	100%	100%
0.630	33%	90%	100%	86%	100%	100%
0.315	26%	87%	100%	81%	100%	100%
0.160	20%	81%	99%	76%	100%	100%
0.080	13%	67%	99%	69%	92%	99%
M.C.(%)	6%	19%	23%	25%	21%	32%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	49	3	0	9	0	0
% SAND:	38	29	1	23	8	1
% FINES:	13	67	99	69	92	99
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SANDY SILT (ML)	SILT (ML)	SANDY SILT (ML)	SILT (ML)	SILT (ML)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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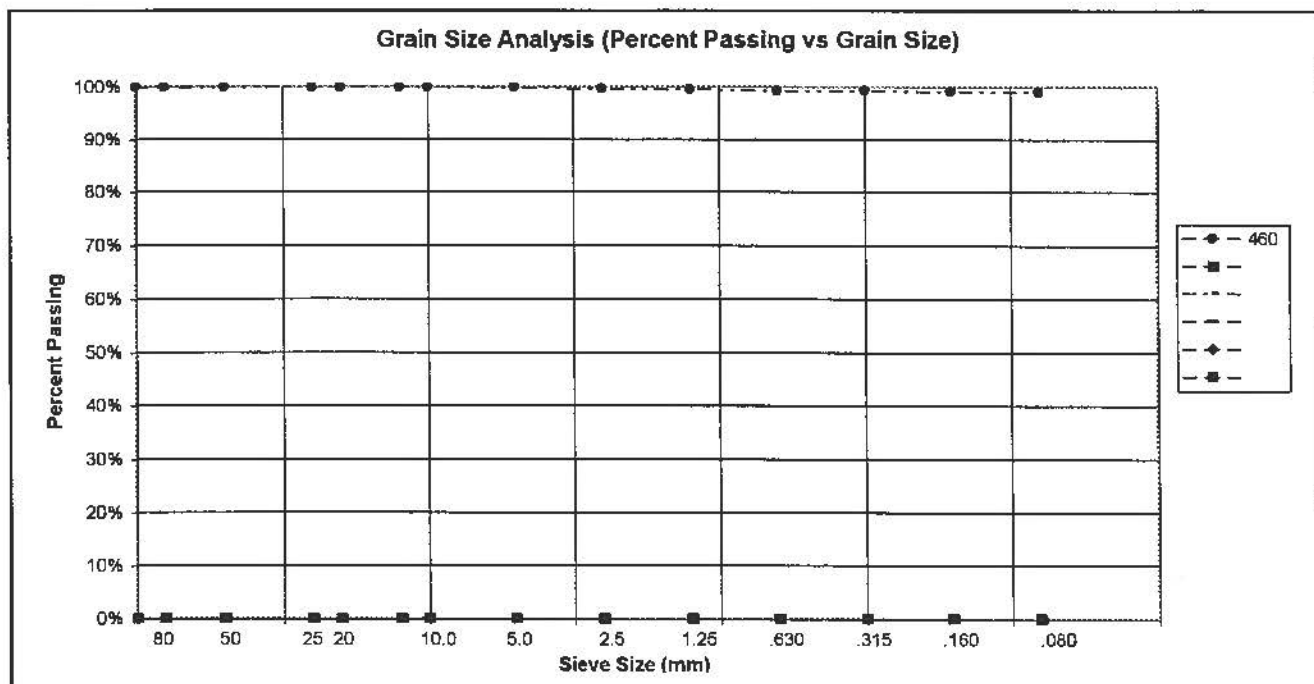


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636827-6764763  
 LOGGED BY: RW

HOLE No.: 30043B

DATE COMP: 08/20/2004

FIELD NO:	460				
LAB NO:	460				
DEPTH:	10.5				
TYPE:	S.P.T.				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	100%				
10.0	100%				
5.0	100%				
2.5	100%				
1.25	100%				
0.630	99%				
0.315	99%				
0.160	99%				
0.080	99%				
M.C.(%):	36%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	0				
% SAND:	1				
% FINES:	99				
CLASSIFICATION	SILT (ML)				





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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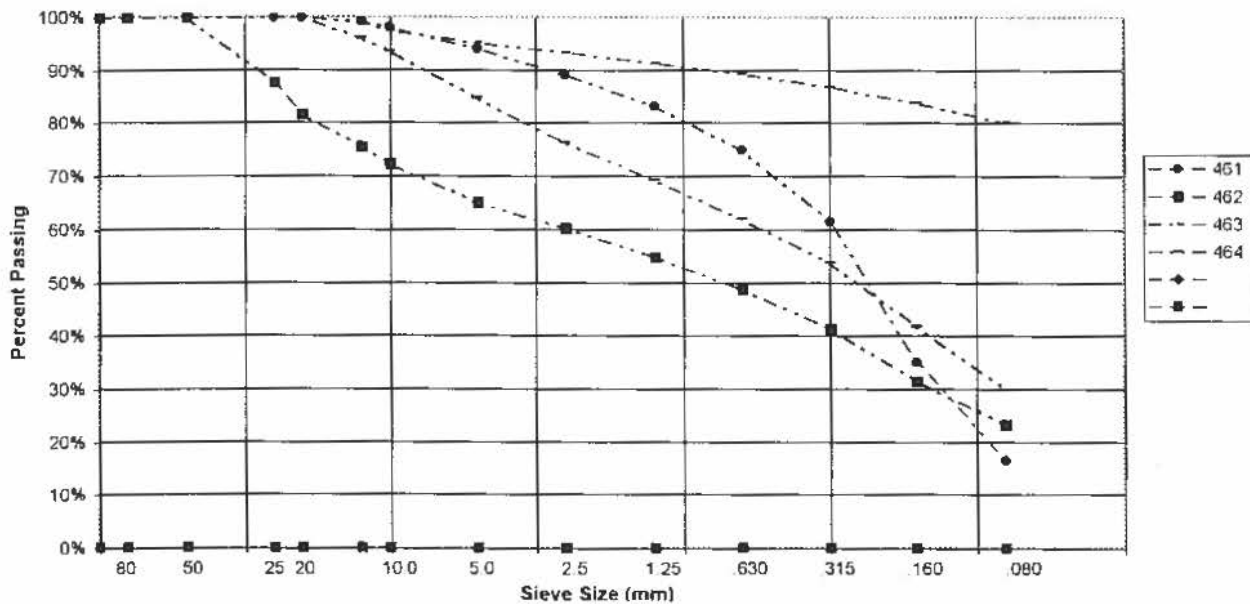
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636668-6764727  
 LOGGED BY: RW

HOLE No.: 30044

DATE COMP: 06/21/2004

FIELD NO:	461	462	463	464	
LAB NO:	461	462	463	464	
DEPTH:	0.3-0.9	1.5-2.1	2.4-2.9	4.1-4.4	
TYPE:	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	
25.0	100%	88%	100%	100%	
20.0	100%	82%	100%	100%	
12.5	99%	78%	99%	96%	
10.0	98%	72%	98%	94%	
5.0	94%	65%	95%	85%	
2.5	89%	60%	83%	76%	
1.25	83%	55%	91%	69%	
0.630	75%	49%	89%	62%	
0.315	62%	41%	87%	54%	
0.160	35%	32%	84%	42%	
0.080	17%	23%	80%	30%	
M.C.(%)	18%	10%	20%	14%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	
% GRAVEL:	6	35	5	15	
% SAND:	78	42	15	55	
% FINES:	17	23	80	30	
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)	SILT WITH SAND (ML)	SILTY SAND WITH GRAVEL (SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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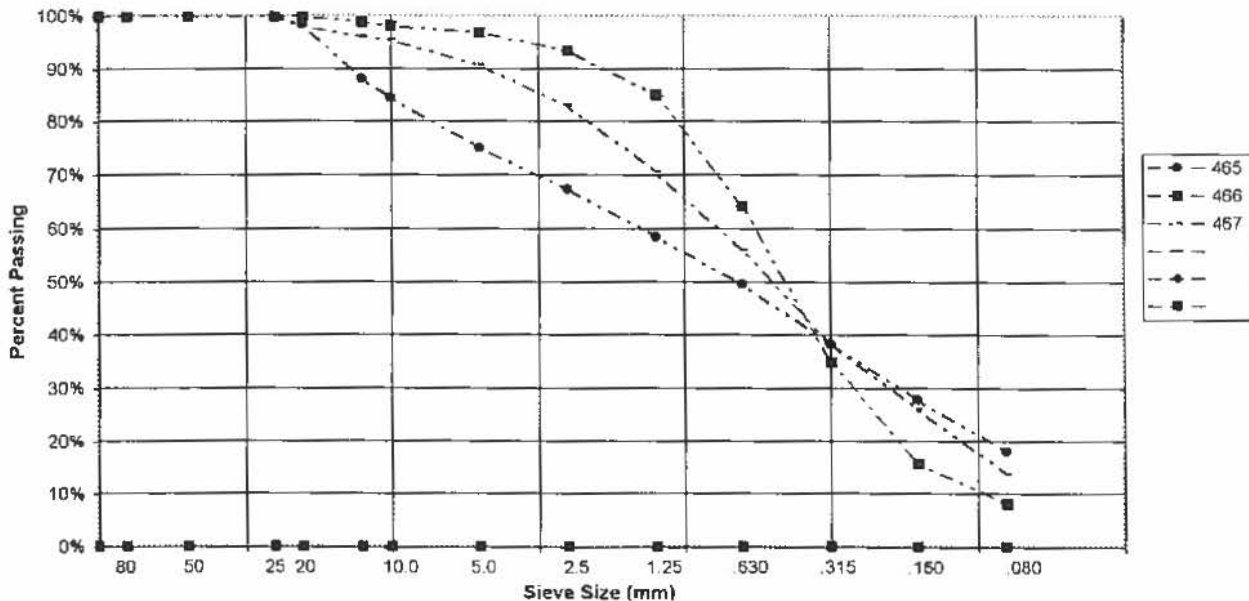
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636398-6764640  
 LOGGED BY: RW

HOLE No.: 30045

DATE COMP: 08/21/2004

FIELD NO:	465	466	467		
LAB NO:	465	466	467		
DEPTH:	0.3-0.9	2.1-2.7	4.0-4.4		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	98%	100%	98%		
12.5	88%	99%	96%		
10.0	85%	98%	96%		
5.0	75%	97%	91%		
2.5	68%	94%	83%		
1.25	59%	85%	71%		
0.630	50%	64%	56%		
0.315	39%	35%	38%		
0.160	28%	16%	26%		
0.080	18%	8%	14%		
M.C.(%)	10%	14%	15%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	25	3	9		
% SAND:	57	89	77		
% FINES:	18	8	14		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT (SW-SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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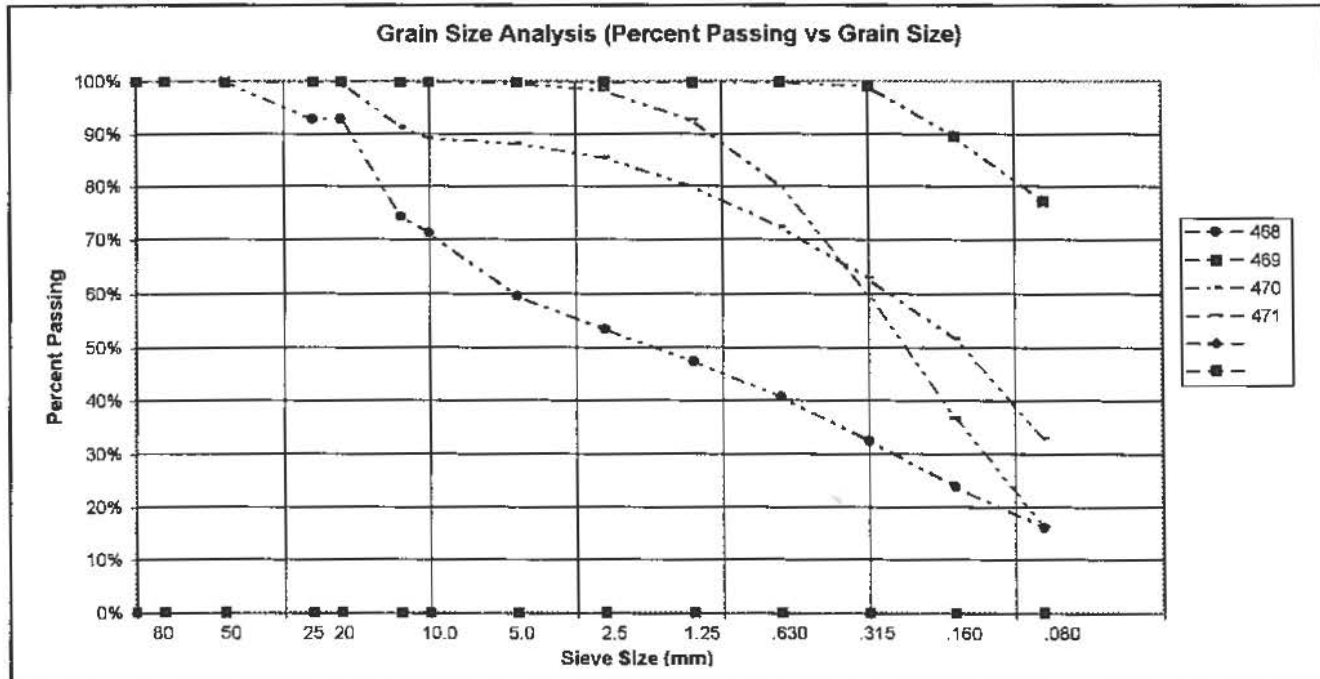


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636230-6784571  
 LOGGED BY: RW

HOLE No.: 30046

DATE COMP: 08/21/2004

FIELD NO:	468	469	470	471		
LAB NO:	468	469	470	471		
DEPTH:	1.4	2.9	4.4	5.9		
TYPE:	S.P.T.	S.P.T.	S.P.T.	S.P.T.		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	93%	100%	100%	100%		
20.0	93%	100%	100%	100%		
12.5	74%	100%	91%	100%		
10.0	71%	100%	89%	100%		
5.0	60%	100%	88%	100%		
2.5	53%	100%	86%	98%		
1.25	47%	100%	80%	93%		
0.630	41%	100%	72%	80%		
0.315	33%	99%	63%	60%		
0.160	24%	90%	52%	37%		
0.080	16%	77%	33%	16%		
M.C.(%)	9%	17%	17%	17%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	40	0	12	0		
% SAND:	43	23	55	83		
% FINES:	16	77	33	16		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILT WITH SAND (ML)	SILTY SAND (SM)	SILTY SAND (SM)		





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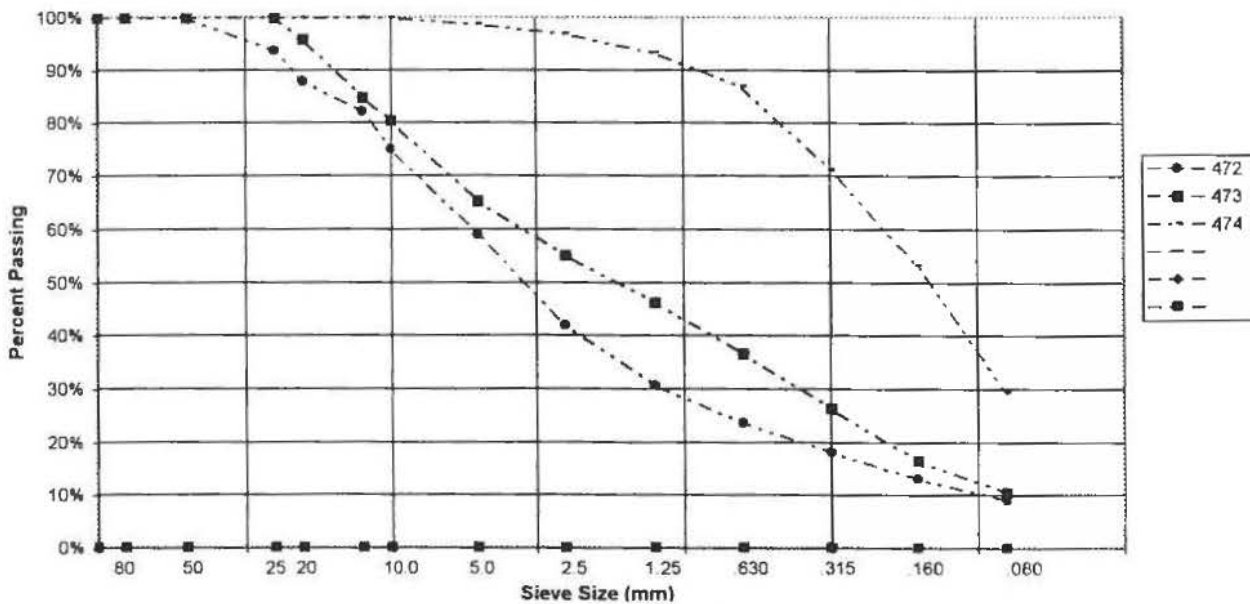
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636077-6764452  
 LOGGED BY: RW

HOLE No.: 30047

DATE COMP: 08/21/2004

FIELD NO:	472	473	474		
LAB NO:	472	473	474		
DEPTH:	0.3-0.9	2.1-2.7	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	94%	100%	100%		
20.0	88%	96%	100%		
12.5	82%	85%	100%		
10.0	75%	80%	100%		
5.0	59%	65%	99%		
2.5	42%	55%	97%		
1.25	31%	46%	93%		
0.630	24%	37%	87%		
0.315	18%	27%	71%		
0.160	13%	17%	53%		
0.080	9%	11%	29%		
M.C.(%)	7%	10%	18%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	41	35	1		
% SAND:	50	55	69		
% FINES:	9	11	29		
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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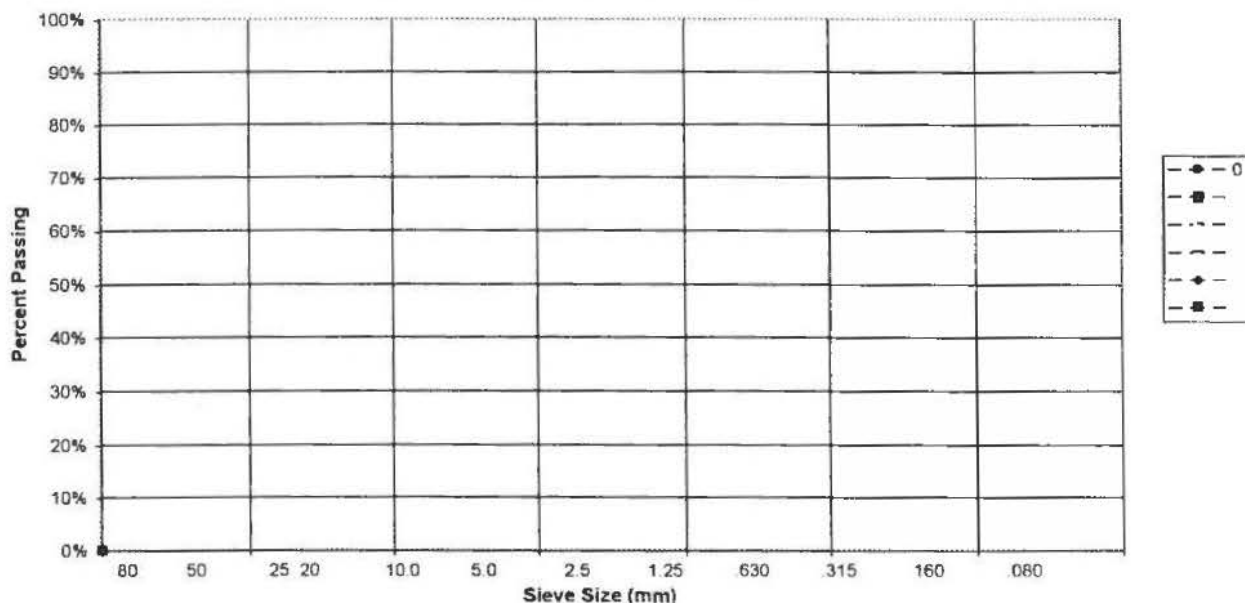
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: Not Accessible  
 LOGGED BY: RW

HOLE No.: 30048

DATE COMP: 08/21/2004

FIELD NO:	0				
LAB NO:	0				
DEPTH:	0				
TYPE:					
<b>SIEVE SIZE</b>	<b>PERCENT PASSING</b>				
100.0					
80.0					
50.0					
25.0					
20.0					
12.5					
10.0					
5.0					
2.5					
1.25					
0.630					
0.315					
0.160					
0.080					
M.C.(%):					
LIQUID LIMIT:					
PLASTIC LIMIT:					
PLASTIC INDEX:					
% GRAVEL:	#VALUE!				
% SAND:	#VALUE!				
% FINES:	#VALUE!				
CLASSIFICATION	#VALUE!				

### Grain Size Analysis (Percent Passing vs Grain Size)





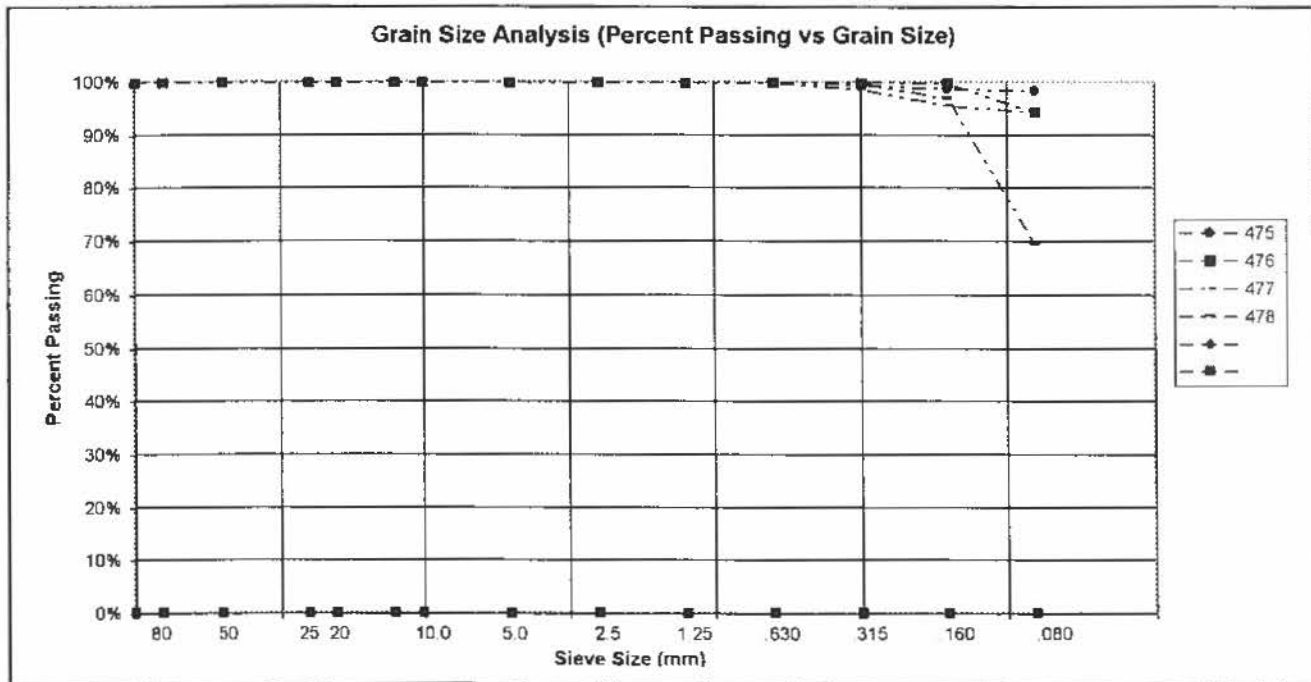
# HOGGAN ENGINEERING & TESTING (1980) LTD.

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PROJECT NUMBER: 8002-318 HOLE No.: 30049  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635653-6764453  
 LOGGED BY: RW DATE COMP: 08/21/2004

FIELD NO:	475	476	477	478	
LAB NO:	475	476	477	478	
DEPTH:	0.6-1.2	1.8-2.4	2.6-2.9	4.0-4.4	
TYPE:	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	
12.5	100%	100%	100%	100%	
10.0	100%	100%	100%	100%	
5.0	100%	100%	100%	100%	
2.5	100%	100%	100%	100%	
1.25	100%	100%	100%	100%	
0.630	100%	100%	100%	100%	
0.315	99%	100%	99%	100%	
0.160	99%	100%	96%	97%	
0.080	98%	94%	94%	70%	
M.C.(%):	28%	21%	31%	19%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	
% GRAVEL:	0	0	0	0	
% SAND:	2	6	6	30	
% FINES:	98	94	94	70	
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT (ML)	SANDY SILT (ML)	





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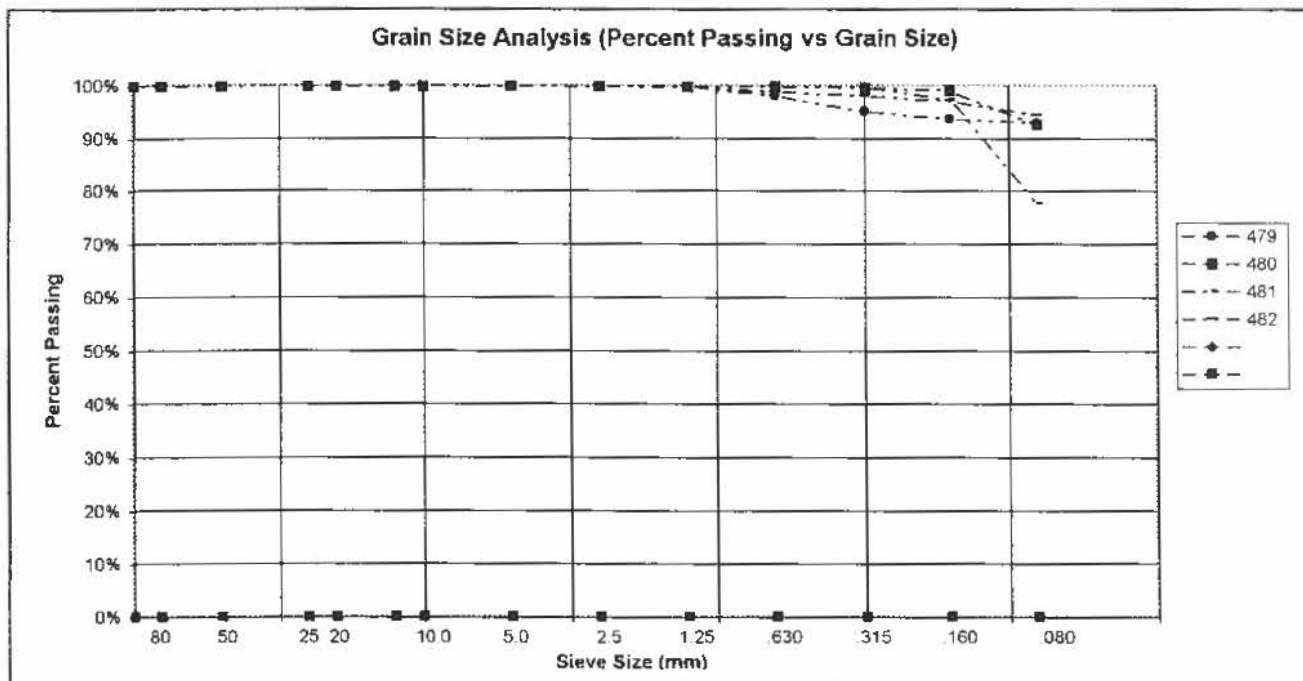


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 169:7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635452-6764514  
 LOGGED BY: RW

HOLE No.: 30050

DATE COMP: 08/21/2004

FIELD NO:	479	480	481	482	
LAB NO:	479	480	481	482	
DEPTH:	0.6-1.2	2.1-2.9	3.2-3.6	4.0-4.4	
TYPE:	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	
12.5	100%	100%	100%	100%	
10.0	100%	100%	100%	100%	
5.0	100%	100%	100%	100%	
2.5	100%	100%	100%	100%	
1.25	100%	100%	100%	100%	
0.630	98%	100%	100%	99%	
0.315	95%	100%	100%	98%	
0.160	94%	99%	97%	97%	
0.080	93%	93%	78%	95%	
M.C.(%)	29%	23%	20%	29%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	
% GRAVEL:	0	0	0	0	
% SAND:	7	7	22	5	
% FINES:	93	93	78	95	
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT WITH SAND (ML)	SILT (ML)	





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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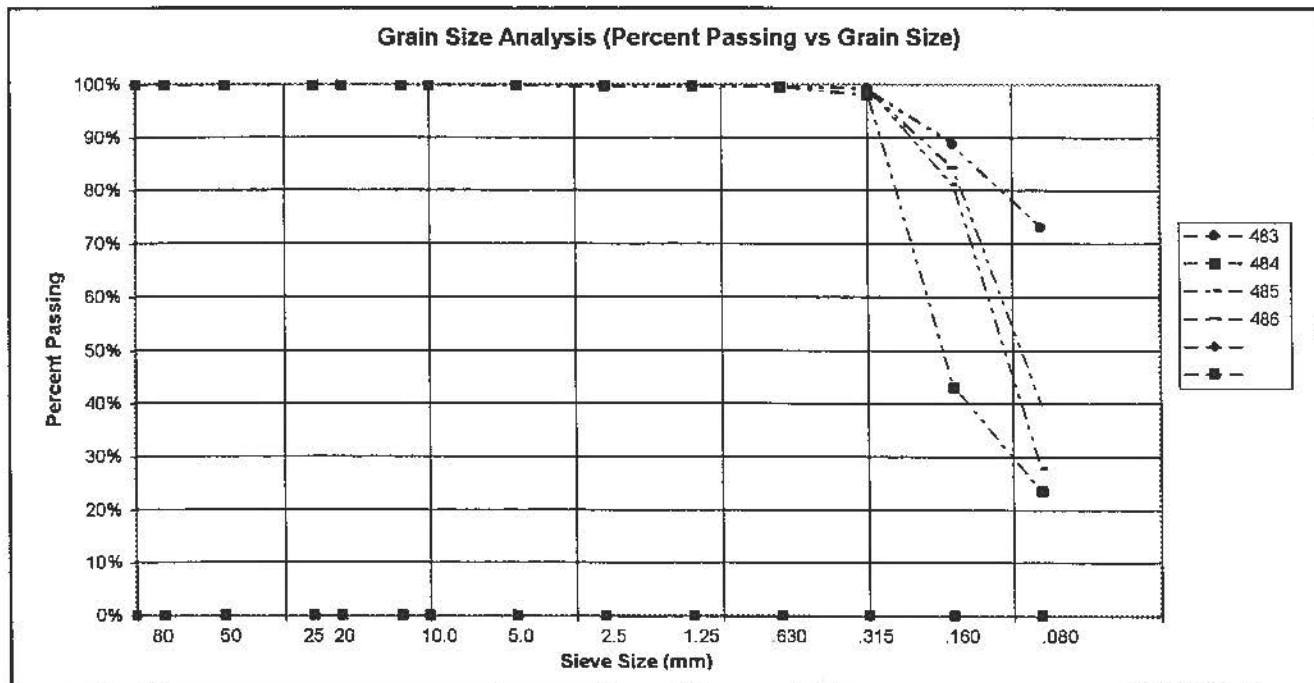


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635301-6764843  
 LOGGED BY: RW

HOLE No.: 30051

DATE COMP: 08/22/2004

FIELD NO:	483	484	485	486		
LAB NO:	483	484	485	486		
DEPTH:	1.4	2.9	4.4	5.9		
TYPE:	S.P.T.	S.P.T.	S.P.T.	S.P.T.		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	100%	100%	100%	100%		
10.0	100%	100%	100%	100%		
5.0	100%	100%	100%	100%		
2.5	100%	100%	100%	100%		
1.25	100%	100%	100%	100%		
0.630	100%	100%	100%	100%		
0.315	99%	98%	100%	99%		
0.160	89%	43%	81%	84%		
0.080	73%	24%	28%	40%		
M.C.(%):	23%	19%	23%	28%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	0	0	0	0		
% SAND:	27	76	72	60		
% FINES:	73	24	28	40		
CLASSIFICATION	SILT WITH SAND (ML)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)		





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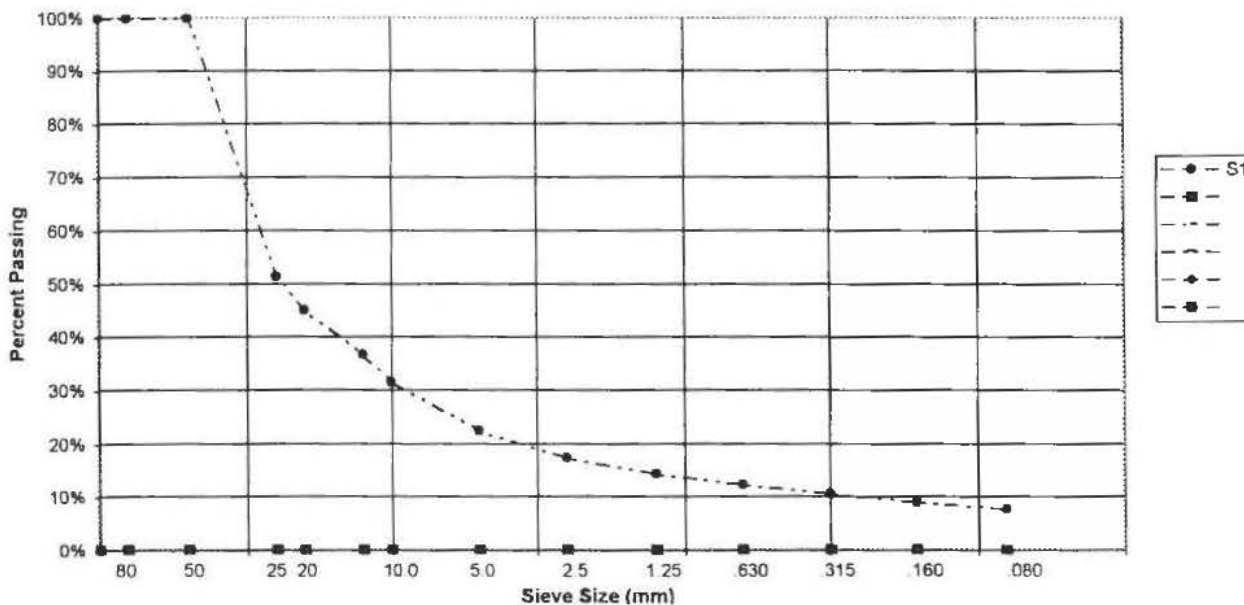
PROJECT NUMBER: 8002-318  
CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 635054-6768523  
LOGGED BY: RW

HOLE No.: 30076

DATE COMP: 07/29/2004

FIELD NO:	S1				
LAB NO:	S1				
DEPTH:	3.6-4.2				
TYPE:	BULK				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	51%				
20.0	45%				
12.5	37%				
10.0	32%				
5.0	23%				
2.5	17%				
1.25	14%				
0.630	12%				
0.315	11%				
0.160	9%				
0.080	8%				
M.C.(%)	4%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	77				
% SAND:	15				
% FINES:	8				
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT (GP-GM)				

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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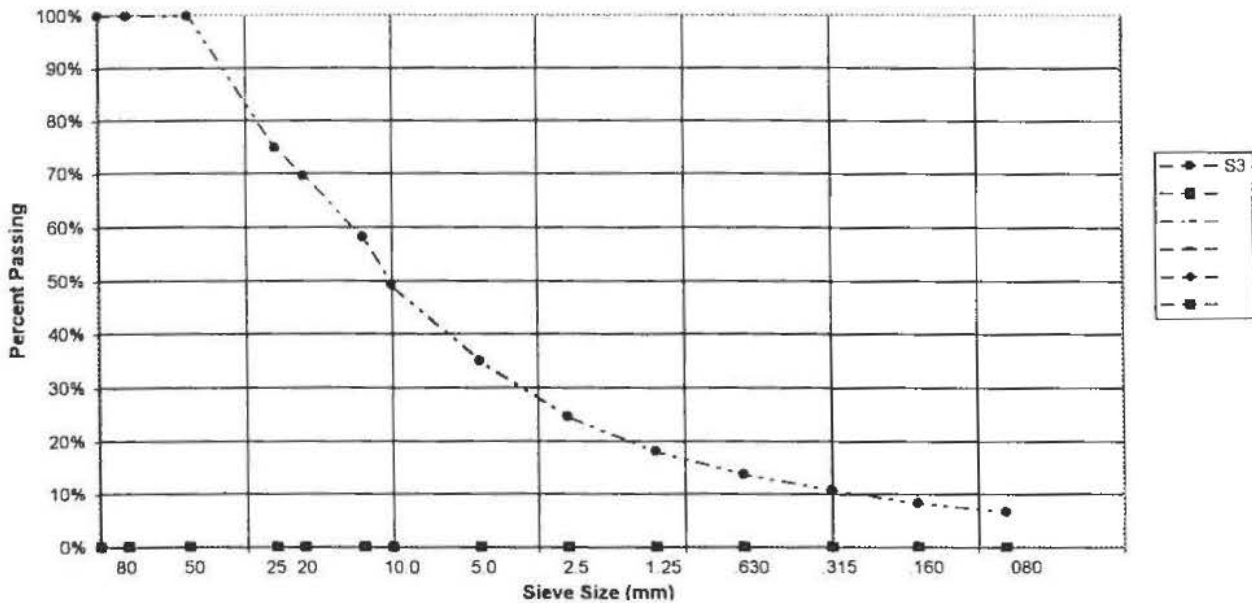
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635160-6768752  
 LOGGED BY: RW

HOLE No.: 30081

DATE COMP: 07/31/2004

FIELD NO:	S3			
LAB NO:	S3			
DEPTH:	4.5-5.0			
TYPE:	BULK			
SIEVE SIZE	PERCENT PASSING			
100.0	100%			
80.0	100%			
50.0	100%			
25.0	75%			
20.0	70%			
12.5	58%			
10.0	49%			
5.0	35%			
2.5	25%			
1.25	18%			
0.630	14%			
0.315	11%			
0.160	9%			
0.080	7%			
M.C.(%):	2%			
LIQUID LIMIT:	0.0			
PLASTIC LIMIT:	0.0			
PLASTIC INDEX:	0.0			
% GRAVEL:	65			
% SAND:	28			
% FINES:	7			
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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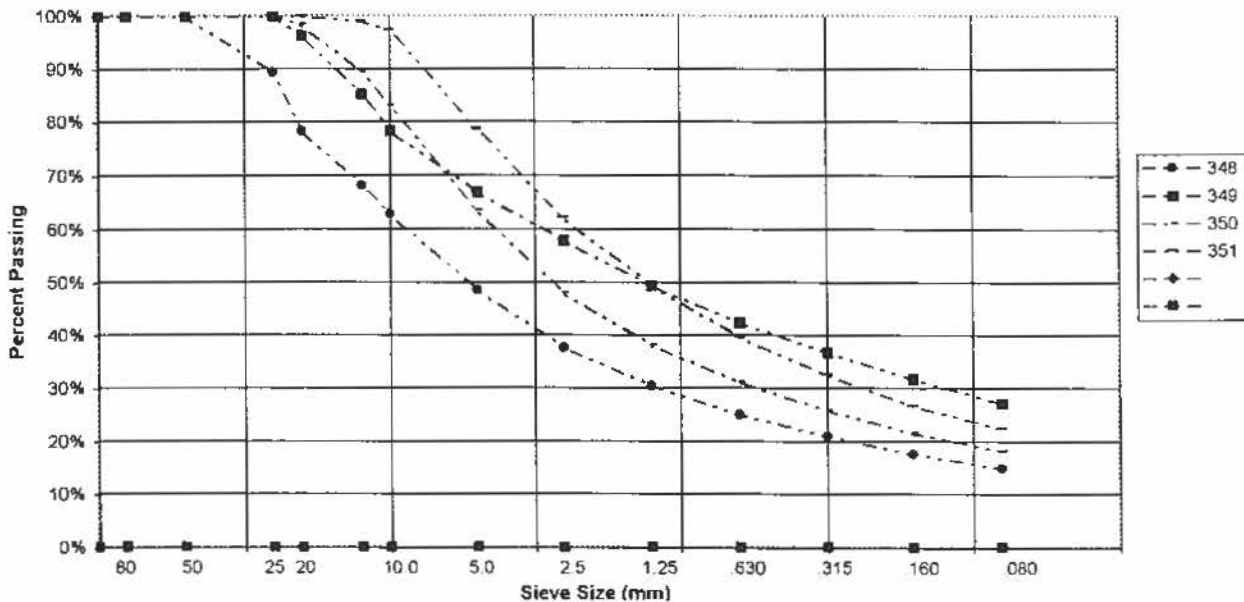
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633550-6773445  
 LOGGED BY: RW

HOLE No.: 30082

DATE COMP: 08/15/2004

FIELD NO:	348	349	350	351
LAB NO:	348	349	350	351
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	89%	100%	100%	100%
20.0	78%	96%	98%	100%
12.5	68%	85%	89%	99%
10.0	63%	78%	83%	97%
5.0	49%	67%	64%	79%
2.5	38%	58%	48%	62%
1.25	31%	49%	38%	49%
0.630	25%	42%	31%	40%
0.315	21%	37%	26%	33%
0.160	18%	32%	22%	27%
0.080	15%	27%	18%	22%
M.C.(%)	3%	8%	4%	7%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	51	33	36	21
% SAND:	34	40	45	56
% FINES:	15	27	18	22
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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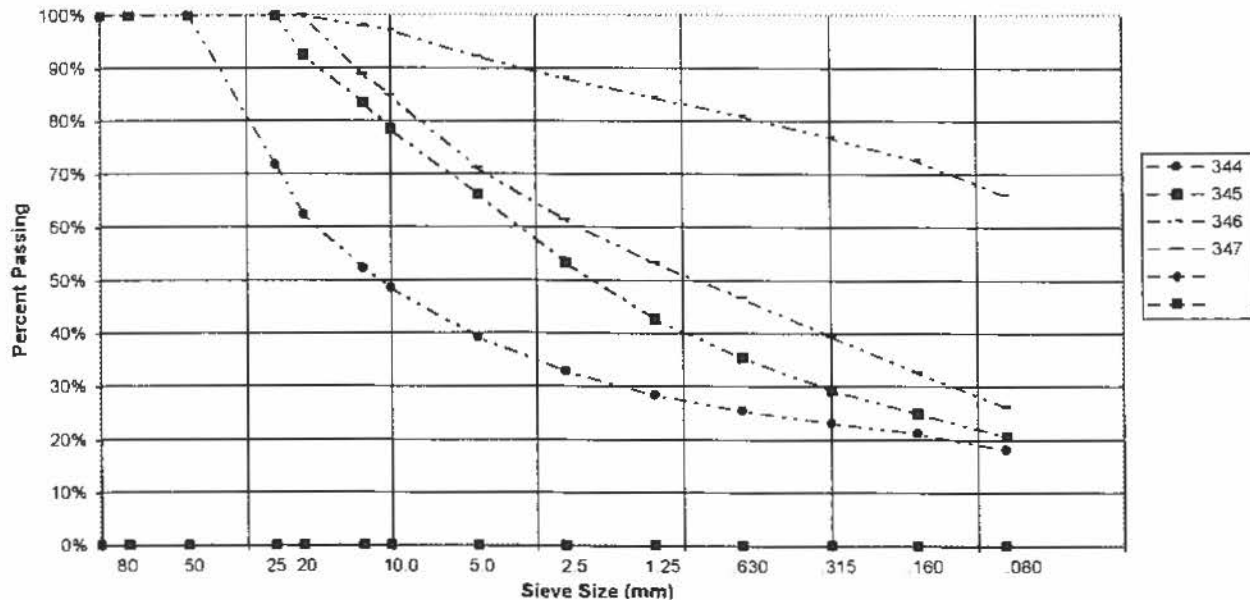
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633530-6773484  
 LOGGED BY: RW

HOLE No.: 30083

DATE COMP: 08/15/2004

FIELD NO:	344	345	346	347
LAB NO:	344	345	346	347
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	72%	100%	100%	100%
20.0	62%	93%	100%	100%
12.5	52%	84%	98%	89%
10.0	49%	79%	97%	85%
5.0	39%	66%	92%	71%
2.5	33%	53%	88%	61%
1.25	28%	43%	84%	53%
0.630	26%	35%	81%	47%
0.315	23%	29%	77%	40%
0.160	21%	25%	73%	33%
0.080	18%	21%	66%	26%
M.C.(%):	7%	7%	21%	10%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	61	34	8	29
% SAND:	21	45	26	45
% FINES:	18	21	66	26
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

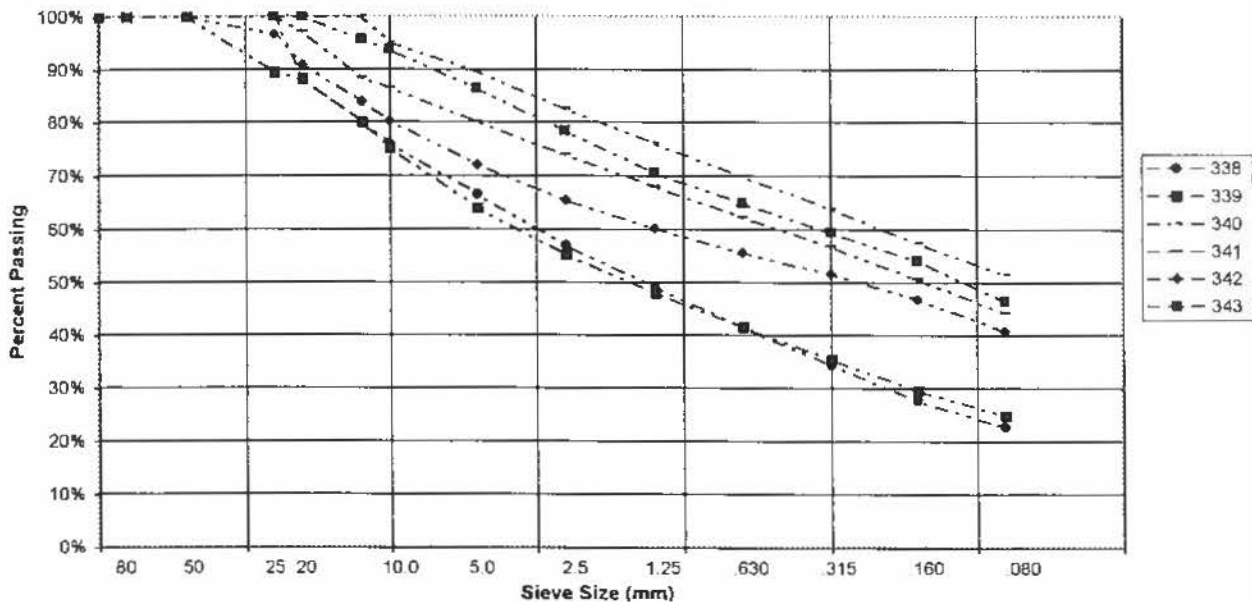
An Affiliate of J. R. Payne & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30084  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633531-6773473  
 LOGGED BY: RW DATE COMP: 08/15/2004

FIELD NO:	338	339	340	341	342	343
LAB NO:	338	339	340	341	342	343
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.0	7.6-8.1
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	89%	100%	100%	97%	100%
20.0	88%	88%	100%	97%	91%	100%
12.5	80%	80%	100%	88%	84%	96%
10.0	76%	75%	95%	87%	80%	94%
5.0	67%	64%	90%	80%	72%	86%
2.5	57%	55%	83%	74%	66%	78%
1.25	49%	48%	76%	68%	60%	71%
0.630	42%	42%	70%	62%	56%	65%
0.315	34%	36%	64%	57%	52%	59%
0.160	28%	30%	58%	51%	47%	54%
0.080	23%	25%	52%	44%	41%	46%
M.C.(%):	3%	3%	6%	6%	5%	6%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	33	36	10	20	28	14
% SAND:	44	39	38	36	31	40
% FINES:	23	25	52	44	41	46
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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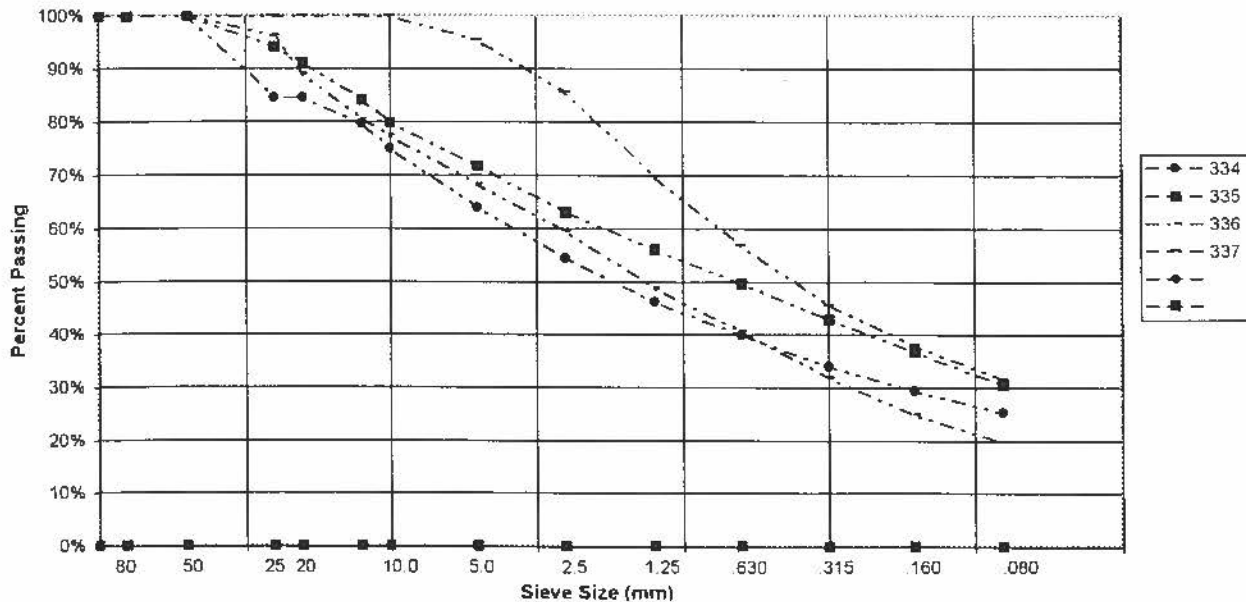
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633471-6773546  
 LOGGED BY: RW

HOLE No.: 30085

DATE COMP: 08/15/2004

FIELD NO:	334	335	336	337	
LAB NO:	334	335	336	337	
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	
25.0	85%	94%	96%	100%	
20.0	85%	91%	89%	100%	
12.5	80%	84%	81%	100%	
10.0	75%	80%	78%	100%	
5.0	64%	72%	68%	95%	
2.5	55%	63%	60%	86%	
1.25	46%	56%	49%	70%	
0.630	40%	50%	41%	57%	
0.315	34%	43%	32%	46%	
0.160	30%	37%	25%	38%	
0.080	25%	31%	20%	32%	
M.C.(%)	5%	4%	3%	3%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	
% GRAVEL:	36	28	32	5	
% SAND:	39	41	49	64	
% FINES:	25	31	20	32	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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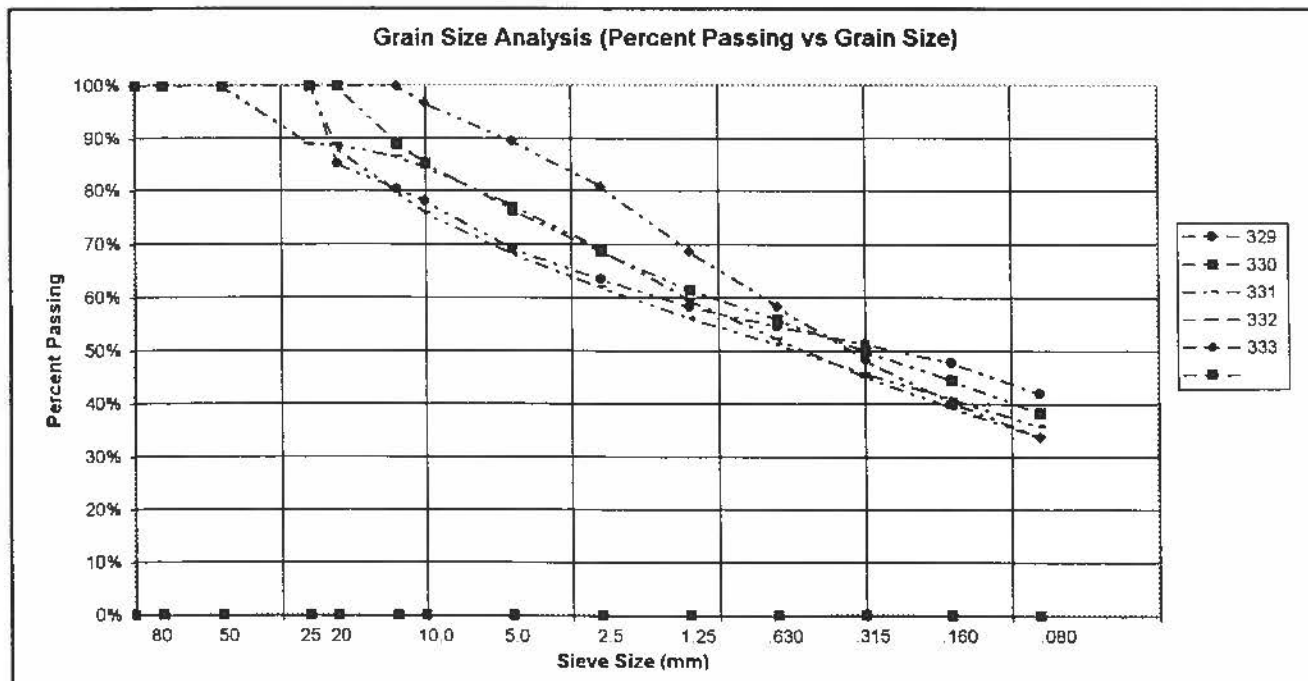


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633472-6773537  
 LOGGED BY: RW

HOLE No.: 30086

DATE COMP: 08/15/2004

FIELD NO:	329	330	331	332	333	
LAB NO:	329	330	331	332	333	
DEPTH:	0.8-1.2	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.3	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	89%	100%	
20.0	85%	100%	88%	89%	100%	
12.5	80%	89%	80%	87%	100%	
10.0	78%	85%	76%	85%	97%	
5.0	69%	77%	68%	78%	90%	
2.5	64%	69%	62%	69%	81%	
1.25	58%	62%	56%	60%	69%	
0.630	55%	56%	51%	52%	58%	
0.315	51%	50%	46%	45%	48%	
0.160	48%	45%	41%	39%	40%	
0.080	42%	38%	36%	34%	34%	
M.C.(%):	15%	10%	10%	9%	9%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	31	23	32	22	10	
% SAND:	27	38	32	44	56	
% FINES:	42	38	36	34	34	
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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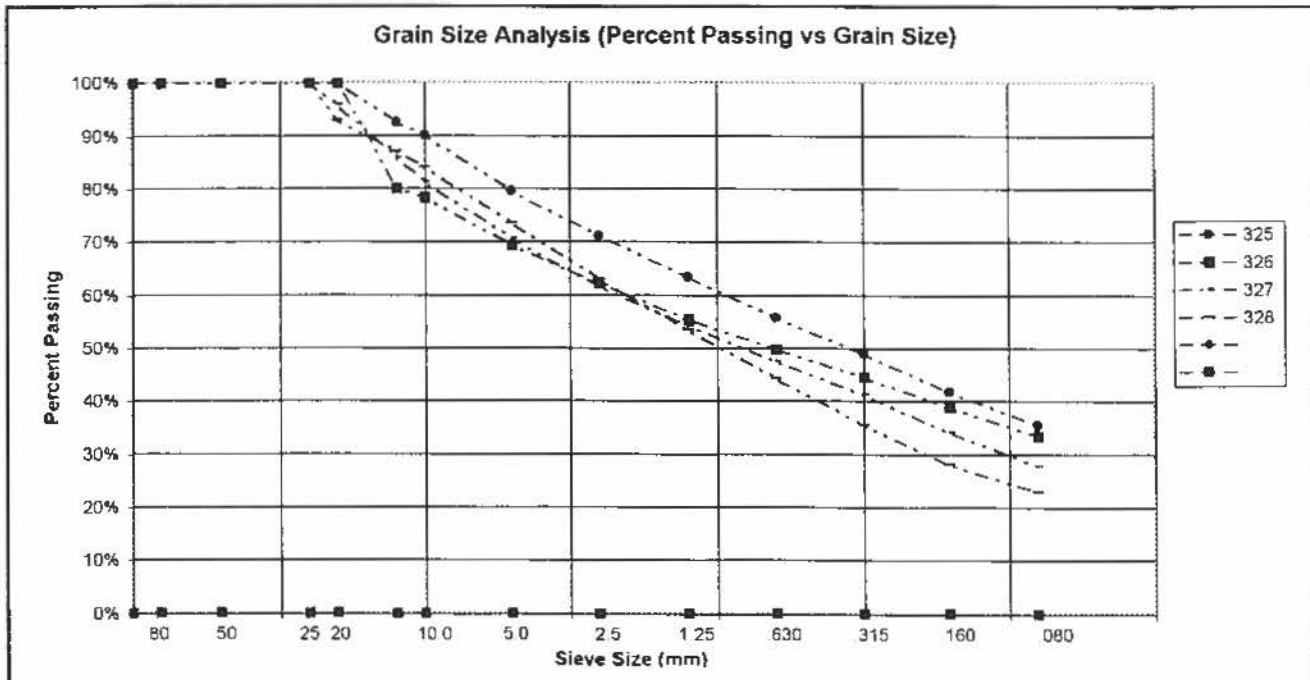


PROJECT NUMBER: B002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633417-6773660  
 LOGGED BY: RW

HOLE No.: 30087

DATE COMP: 08/15/2004

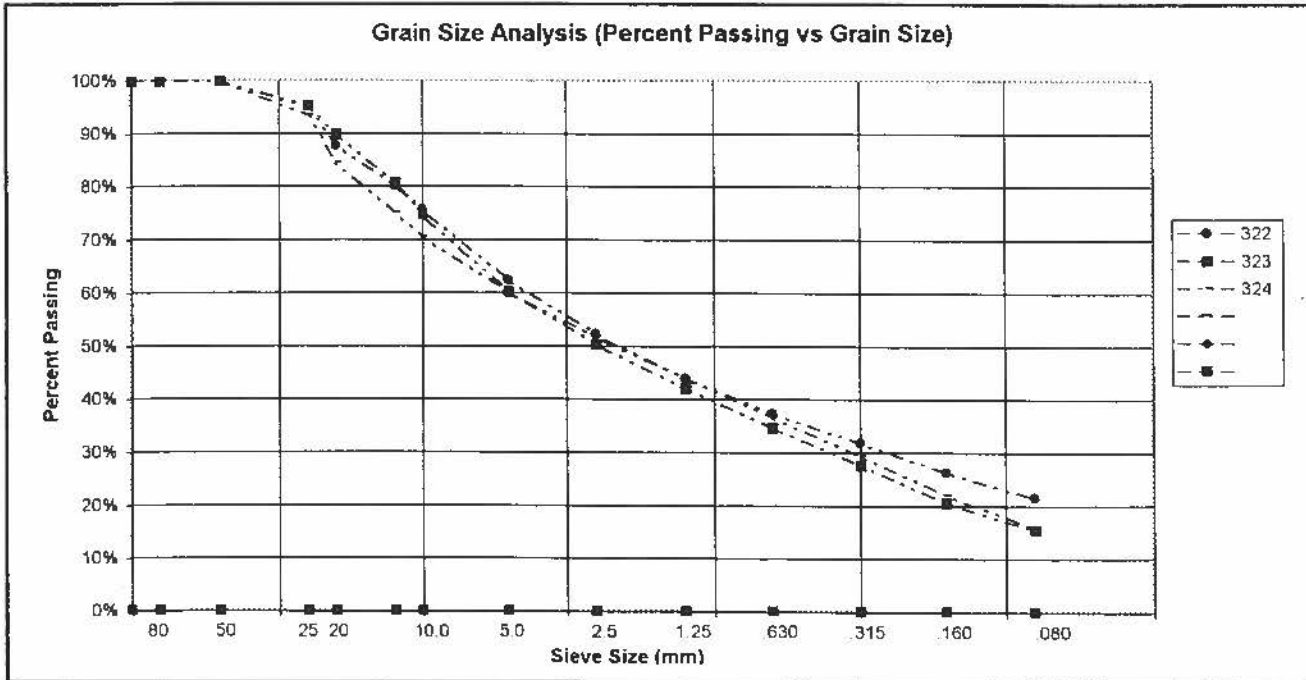
FIELD NO:	325	326	327	328		
LAB NO:	325	326	327	328		
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	96%	93%		
12.5	93%	80%	86%	87%		
10.0	90%	78%	81%	84%		
5.0	80%	69%	71%	74%		
2.5	71%	62%	62%	63%		
1.25	64%	56%	54%	53%		
0.630	56%	50%	47%	44%		
0.315	49%	45%	41%	36%		
0.160	42%	39%	34%	28%		
0.080	36%	34%	28%	23%		
M.C.(%)	6%	6%	4%	5%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	20	31	29	26		
% SAND:	44	36	43	51		
% FINES:	36	34	28	23		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)		





PROJECT NUMBER: 8002-318 HOLE No.: 30088  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633423-6773651  
 LOGGED BY: RW DATE COMP: 08/15/2004

FIELD NO:	322	323	324			
LAB NO:	322	323	324			
DEPTH:	0.9-1.2	1.8-2.4	3.4-4.0			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	95%	95%	94%			
20.0	88%	90%	84%			
12.5	80%	81%	75%			
10.0	76%	75%	71%			
5.0	62%	60%	60%			
2.5	52%	50%	52%			
1.25	44%	42%	44%			
0.630	37%	35%	37%			
0.315	32%	28%	30%			
0.160	26%	21%	22%			
0.080	22%	16%	16%			
M.C.(%):	4%	3%	2%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX:	0.0	0.0	0.0			
% GRAVEL:	38	40	40			
% SAND:	41	45	44			
% FINES:	22	16	16			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			





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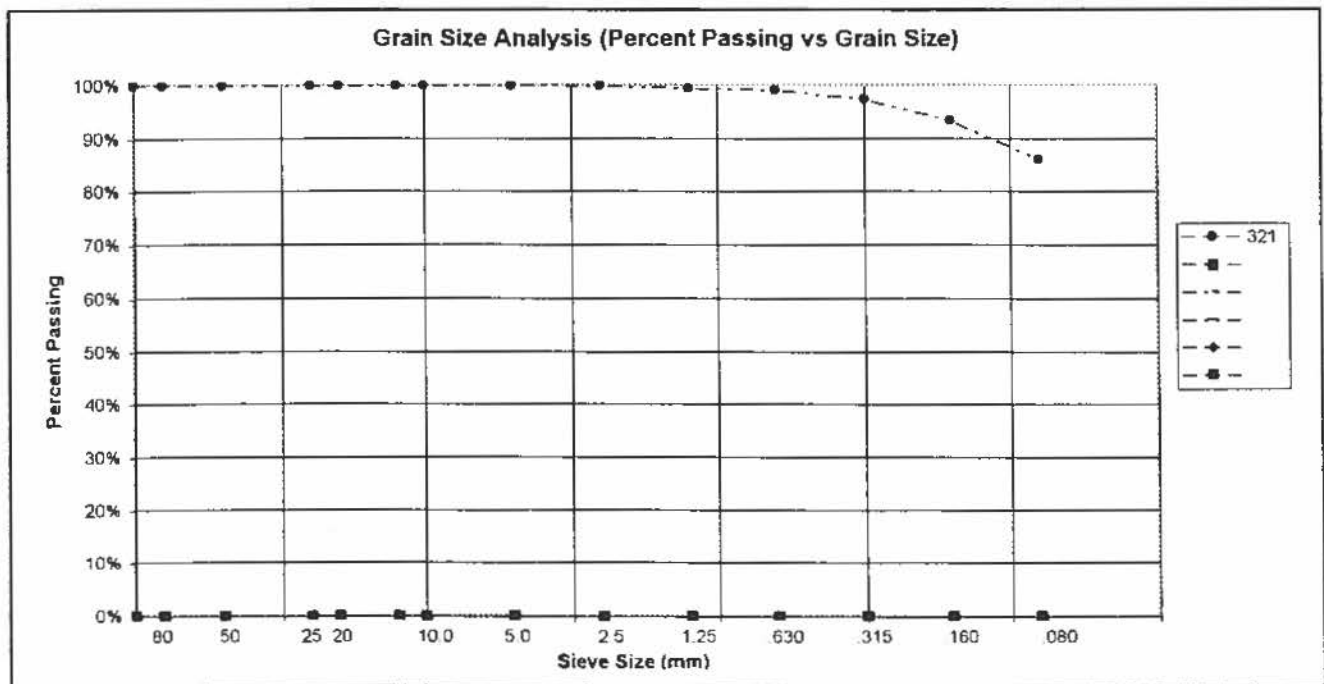


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633338-6773776  
 LOGGED BY: RW

HOLE No.: 30089

DATE COMP: 08/15/2004

FIELD NO:	321				
LAB NO:	321				
DEPTH:	0.0-0.6				
TYPE:	AUGER				
<b>SIEVE SIZE</b>	<b>PERCENT PASSING</b>				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	100%				
10.0	100%				
5.0	100%				
2.5	100%				
1.25	100%				
0.630	99%				
0.315	97%				
0.160	93%				
0.080	86%				
M.C.(%):	13%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX.:	0.0				
% GRAVEL:	0				
% SAND:	14				
% FINES:	86				
<b>CLASSIFICATION</b>	<b>SILT (ML)</b>				





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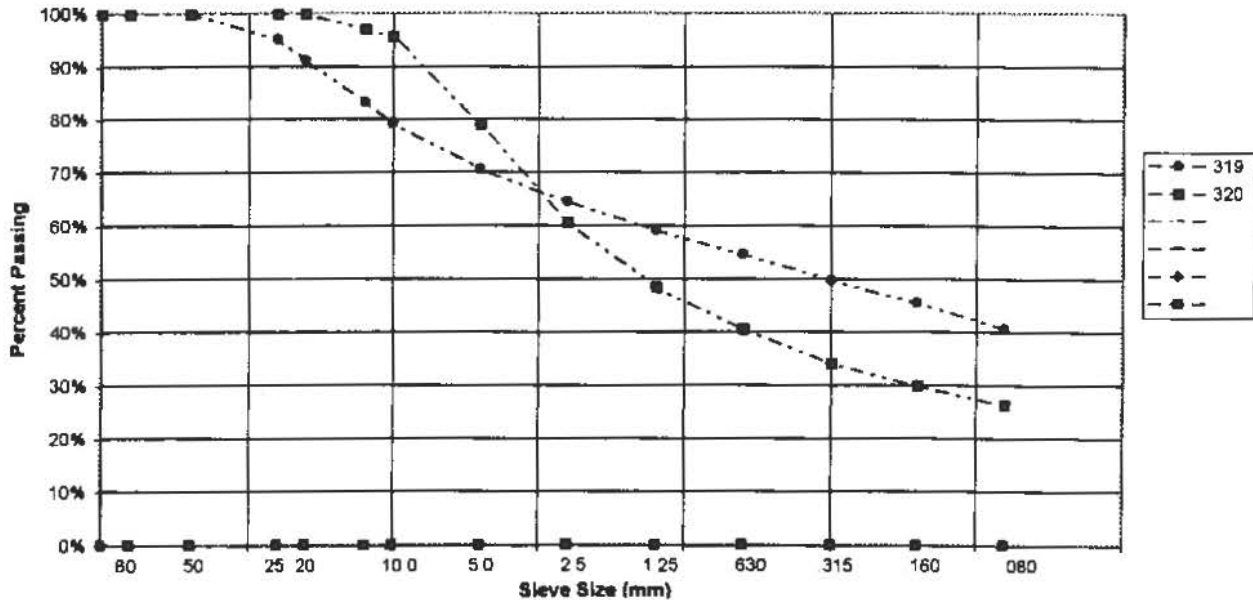
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635061-6769660  
 LOGGED BY: RW

HOLE No.: 30080

DATE COMP: 08/15/2004

FIELD NO:	319	320			
LAB NO:	319	320			
DEPTH:	0.5-1.0	1.2-1.5			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	95%	100%			
20.0	91%	100%			
12.5	83%	97%			
10.0	79%	95%			
5.0	71%	79%			
2.5	65%	61%			
1.25	59%	48%			
0.630	55%	41%			
0.315	50%	34%			
0.160	46%	30%			
0.080	41%	26%			
M.C.(%):	6%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	29	21			
% SAND:	30	53			
% FINES:	41	26			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Peine & Associates Ltd.



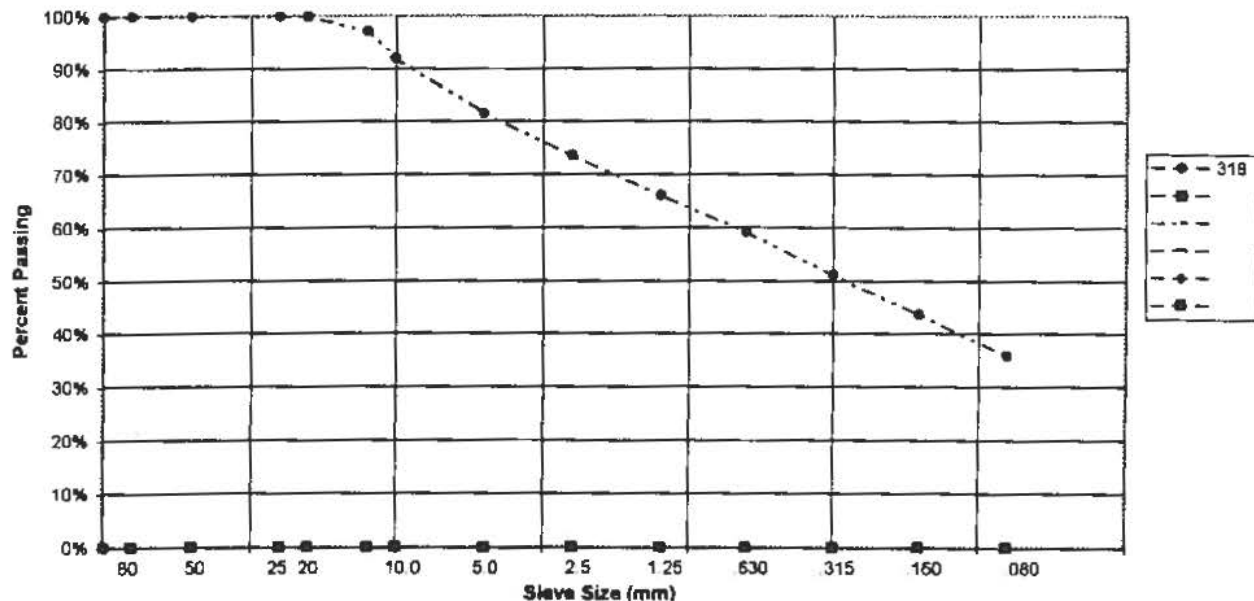
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CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1891.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 635044-6769701  
LOGGED BY: RW

HOLE No.: 30091

DATE COMP: 08/15/2004

FIELD NO:	318				
LAB NO:	318				
DEPTH:	0.5-0.9				
TYPE:	AUGER				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
60.0	100%				
25.0	100%				
20.0	100%				
12.5	97%				
10.0	92%				
5.0	82%				
2.5	74%				
1.25	66%				
0.630	59%				
0.315	51%				
0.160	44%				
0.080	36%				
M.C.(%):	5%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	18				
% SAND:	46				
% FINES:	36				
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)				

Grain Size Analysis (Percent Passing vs Grain Size)





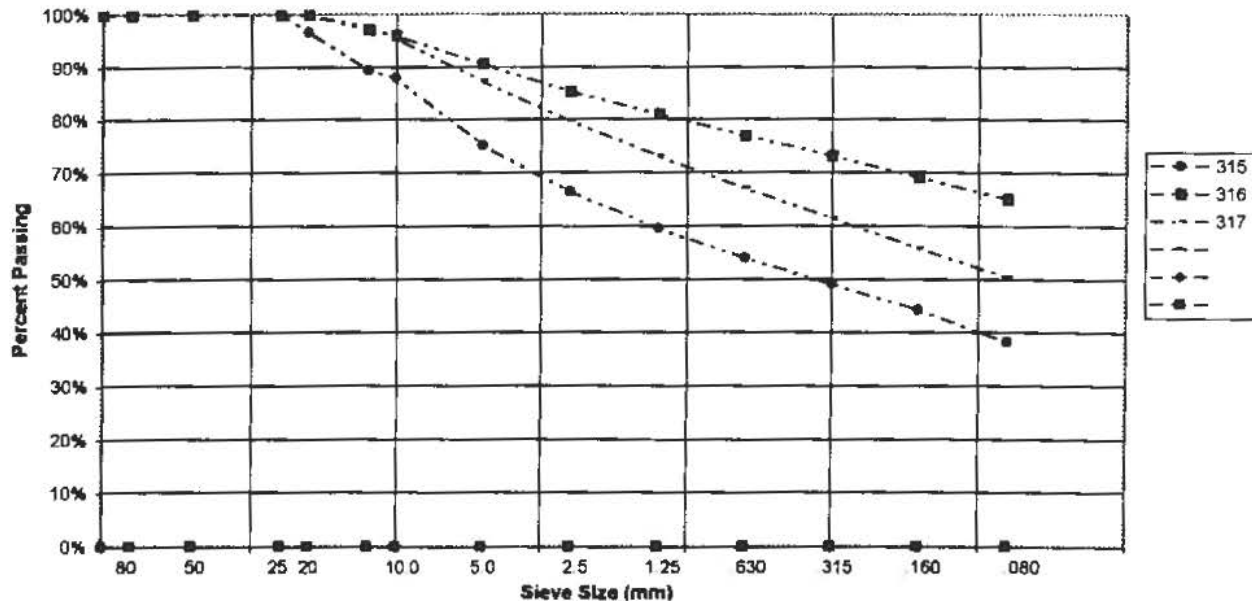
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635000-6769764  
 LOGGED BY: RW

HOLE No.: 30092

DATE COMP: 08/15/2004

FIELD NO:	315	316	317		
LAB NO:	315	316	317		
DEPTH:	0.4-1.0	1.8-2.4	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
60.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	97%	100%	100%		
12.5	89%	97%	98%		
10.0	88%	96%	96%		
5.0	75%	91%	87%		
2.5	67%	85%	80%		
1.25	80%	81%	73%		
0.630	54%	77%	67%		
0.315	49%	73%	62%		
0.160	44%	69%	56%		
0.080	38%	65%	50%		
M.C.(%)	13%	18%	11%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	25	9	13		
% SAND:	37	25	37		
% FINES:	38	65	50		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SANDY SILT (ML)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Peine & Associates Ltd.



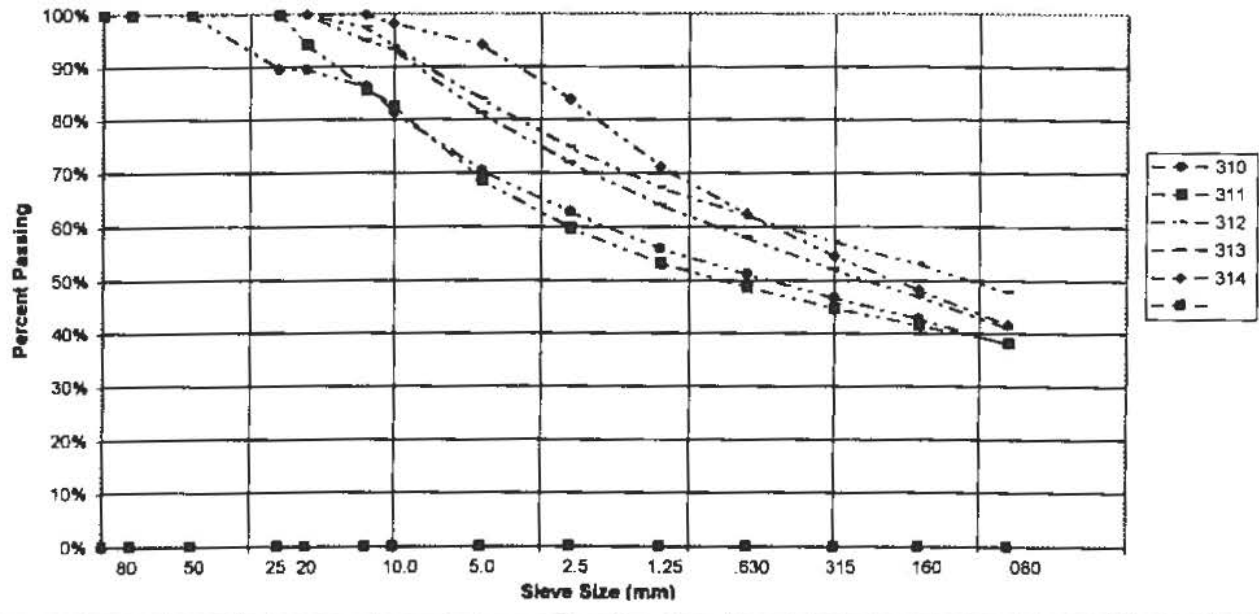
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634966-6769809  
 LOGGED BY: RW

HOLE No.: 30093

DATE COMP: 08/15/2004

FIELD NO:	310	311	312	313	314	
LAB NO:	310	311	312	313	314	
DEPTH:	0.3-0.9	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.0	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
60.0	100%	100%	100%	100%	100%	
25.0	90%	100%	100%	100%	100%	
20.0	90%	94%	100%	100%	100%	
12.5	86%	86%	98%	95%	100%	
10.0	81%	83%	94%	93%	98%	
5.0	71%	69%	84%	81%	94%	
2.5	63%	60%	75%	72%	84%	
1.25	56%	53%	67%	64%	71%	
0.630	51%	49%	62%	58%	62%	
0.315	47%	45%	57%	52%	55%	
0.160	43%	42%	53%	47%	46%	
0.080	38%	38%	48%	41%	42%	
M.C.(%)	20%	15%	16%	13%	9%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	29	31	18	19	6	
% SAND:	32	30	36	40	52	
% FINES:	38	38	48	41	42	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. P. Palma & Associates Ltd.



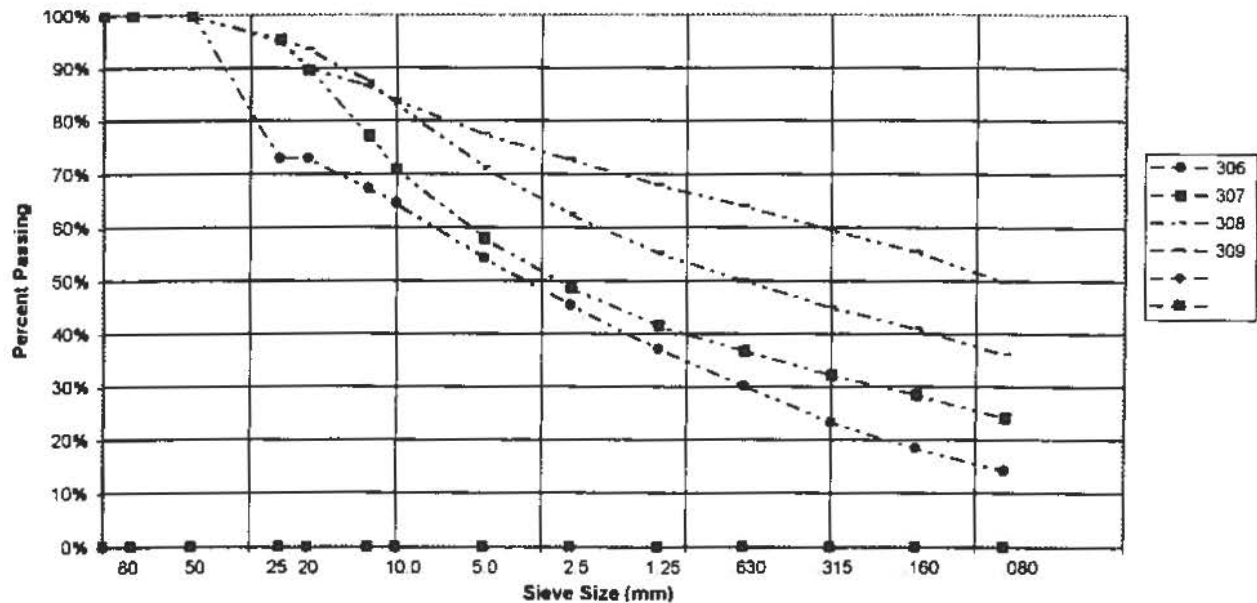
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634943-6769845  
 LOGGED BY: RW

HOLE No.: 30094

DATE COMP: 08/15/2004

FIELD NO:	306	307	308	309	
LAB NO:	306	307	308	309	
DEPTH:	0.8-1.3	1.8-2.4	3.4-4.0	5.3-5.8	
TYPE:	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	
25.0	73%	95%	96%	95%	
20.0	73%	90%	94%	90%	
12.5	67%	77%	87%	87%	
10.0	65%	71%	83%	84%	
5.0	54%	58%	71%	78%	
2.5	45%	49%	63%	73%	
1.25	37%	42%	55%	68%	
0.830	30%	37%	50%	64%	
0.315	23%	32%	45%	60%	
0.160	19%	29%	41%	56%	
0.080	14%	24%	36%	50%	
M.C.(%)	5%	8%	11%	13%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	
% GRAVEL:	46	42	29	22	
% SAND:	40	34	35	28	
% FINES:	14	24	36	50	
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)





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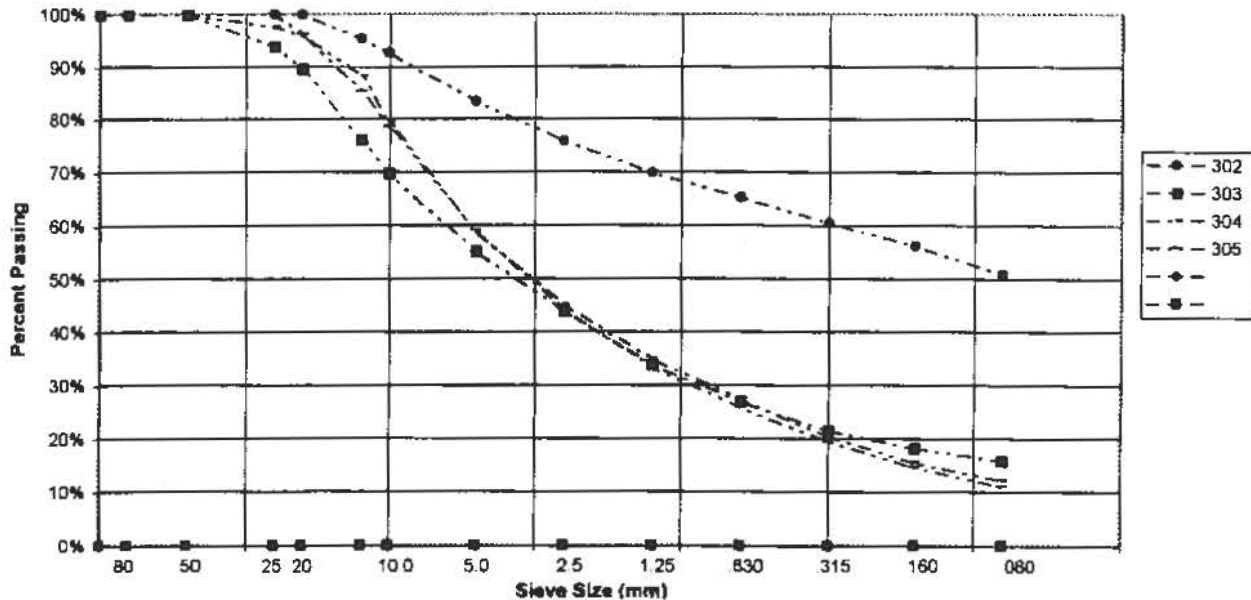
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1891.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634905-6769885  
 LOGGED BY: RW

HOLE No.: 30095

DATE COMP: 08/15/2004

FIELD NO:	302	303	304	305
LAB NO:	302	303	304	305
DEPTH:	0.3-0.9	2.1-2.4	3.4-4.0	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
60.0	100%	100%	100%	100%
25.0	100%	94%	98%	100%
20.0	100%	90%	96%	96%
12.5	95%	76%	88%	85%
10.0	93%	70%	80%	79%
5.0	83%	55%	59%	59%
2.5	78%	44%	45%	44%
1.25	70%	34%	35%	33%
0.630	65%	27%	27%	26%
0.315	61%	22%	20%	19%
0.160	56%	18%	16%	15%
0.080	51%	16%	12%	11%
M.C.(%)	18%	5%	7%	6%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	17	45	41	41
% SAND:	32	39	47	48
% FINES:	51	16	12	11
CLASSIFICATION	SANDY SILT WITH GRAVEL (ML)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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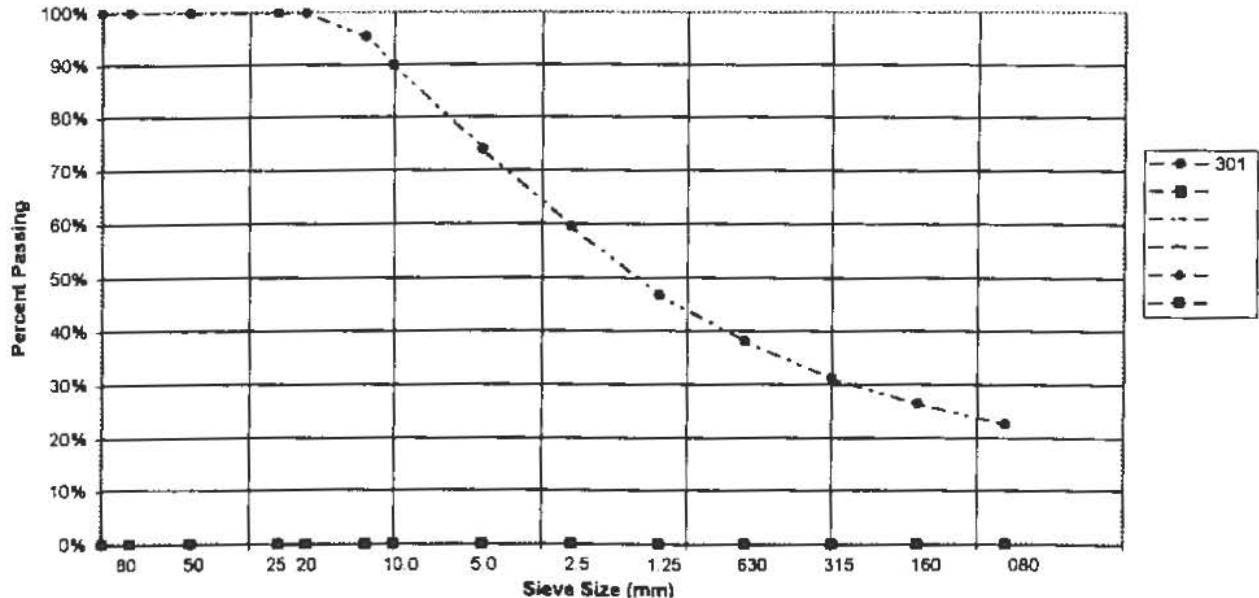
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CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 634847-6769994  
LOGGED BY: RW

HOLE No.: 30096B

DATE COMP: 06/14/2004

FIELD NO:	301				
LAB NO:	301				
DEPTH:	10.4-11.0				
TYPE:	AUGER				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	95%				
10.0	90%				
5.0	74%				
2.5	59%				
1.25	47%				
0.630	38%				
0.315	31%				
0.160	26%				
0.080	23%				
M.C.(%):	18%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	26				
% SAND:	51				
% FINES:	23				
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)				

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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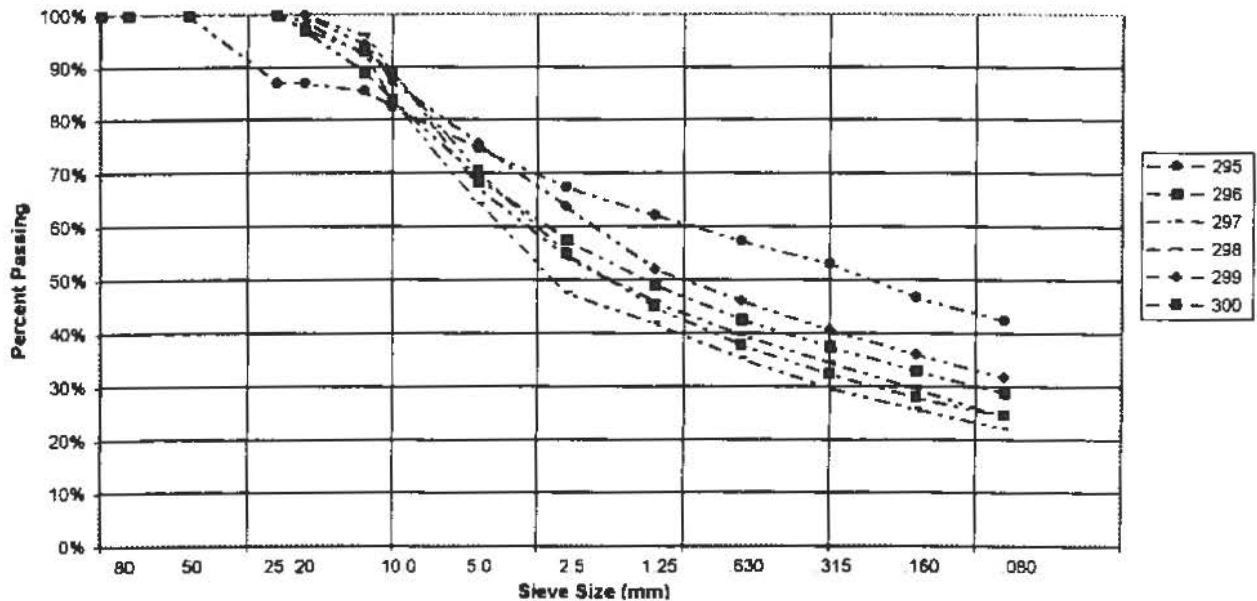
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634847-6769994  
 LOGGED BY: RW

HOLE No.: 30096

DATE COMP: 08/14/2004

FIELD NO:	295	296	297	298	299	300
LAB NO:	295	296	297	298	299	300
DEPTH:	1.0-1.3	1.8-2.4	3.7-4.3	4.9-5.5	7.0-7.6	9.1-9.8
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
60.0	100%	100%	100%	100%	100%	100%
25.0	87%	100%	100%	100%	100%	100%
20.0	87%	87%	99%	100%	100%	97%
12.5	85%	89%	92%	98%	94%	93%
10.0	83%	84%	83%	89%	87%	89%
5.0	75%	69%	64%	67%	76%	70%
2.5	67%	58%	48%	54%	64%	55%
1.25	62%	49%	42%	46%	52%	45%
0.630	57%	43%	35%	40%	46%	38%
0.315	53%	38%	30%	35%	41%	32%
0.180	47%	33%	26%	30%	36%	28%
0.080	43%	29%	22%	24%	32%	25%
M.C.(%)	20%	11%	8%	10%	35%	17%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	25	31	36	33	24	30
% SAND:	32	40	42	43	44	48
% FINES:	43	29	22	24	32	25
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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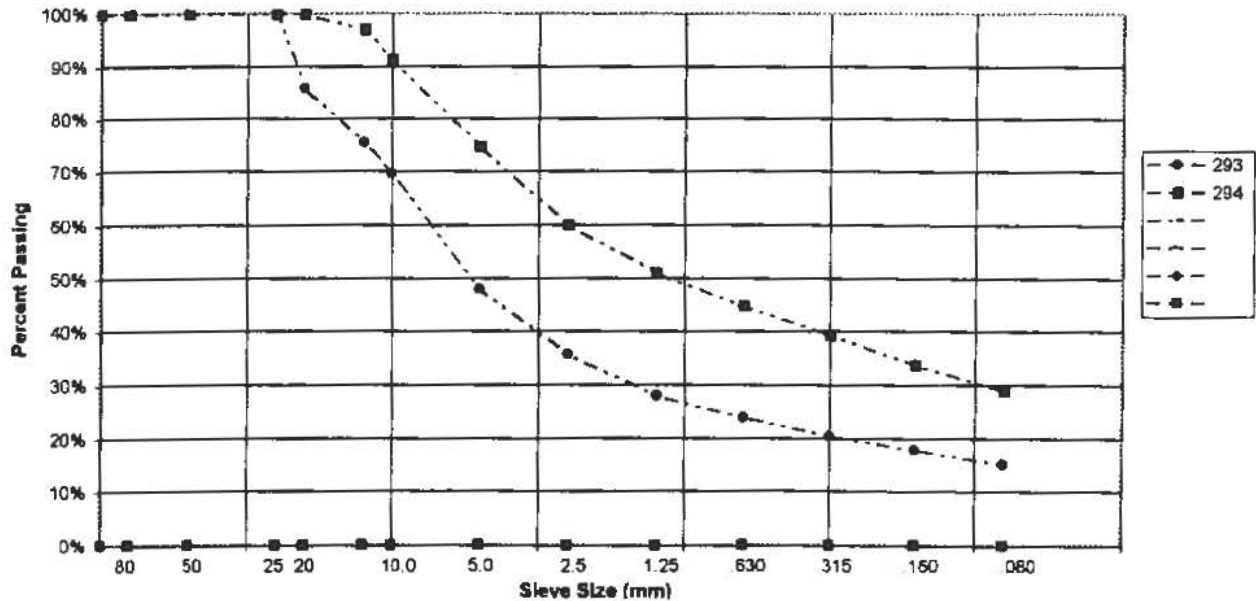
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634800-6770135  
 LOGGED BY: RW

HOLE No.: 30097

DATE COMP: 08/14/2004

FIELD NO:	293	294			
LAB NO:	293	294			
DEPTH:	0.6-1.2	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	88%	100%			
12.5	78%	97%			
10.0	70%	91%			
5.0	48%	75%			
2.5	36%	60%			
1.25	28%	51%			
0.630	24%	45%			
0.315	21%	39%			
0.160	18%	34%			
0.080	15%	29%			
M.C.(%):	7%	14%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	52	25			
% SAND:	33	46			
% FINES:	15	29			
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





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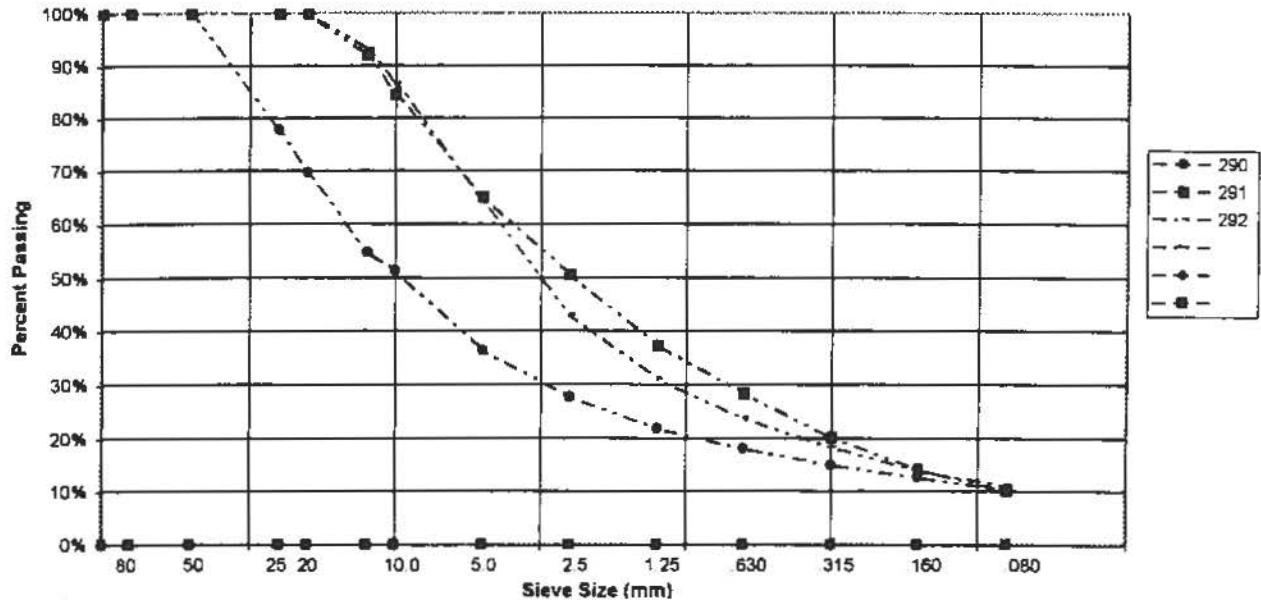
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634696-8770279  
 LOGGED BY: RW

HOLE No.: 30098

DATE COMP: 08/14/2004

FIELD NO:	290	291	292		
LAB NO:	290	291	292		
DEPTH:	0.3-0.9	1.8-2.4	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	78%	100%	100%		
20.0	70%	100%	100%		
12.5	55%	92%	83%		
10.0	51%	85%	87%		
6.0	36%	65%	64%		
2.5	28%	51%	43%		
1.25	22%	37%	31%		
0.630	18%	28%	24%		
0.315	15%	20%	18%		
0.160	13%	14%	14%		
0.080	10%	10%	11%		
M.C.(%)	3%	5%	6%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	64	35	36		
% SAND:	26	55	53		
% FINES:	10	10	11		
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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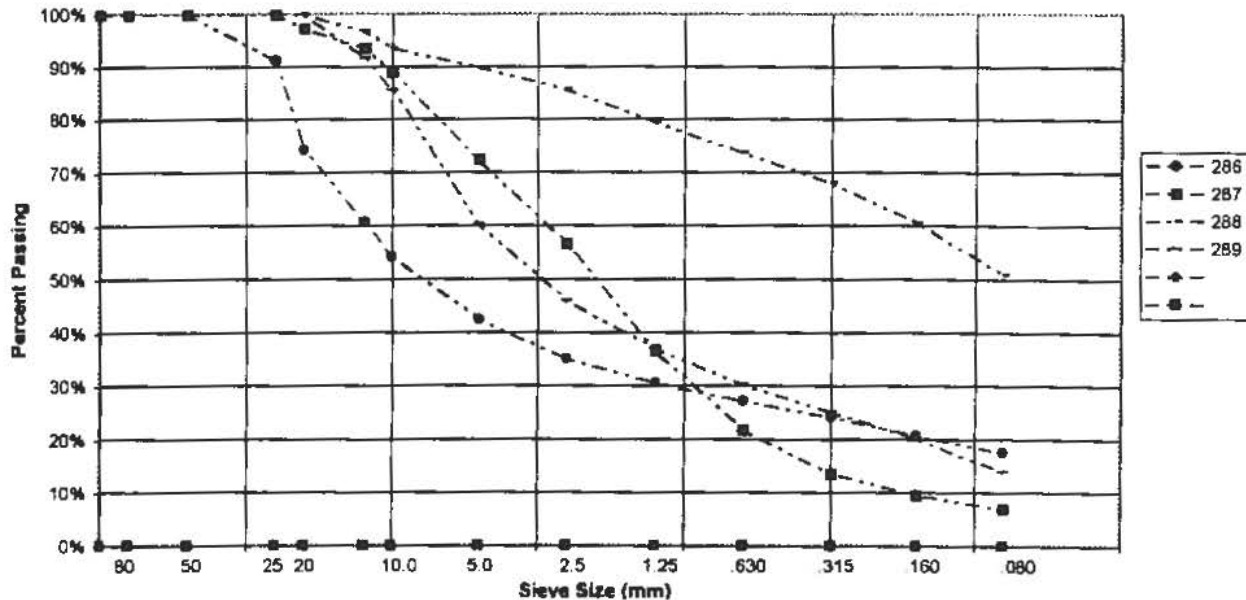
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634666-6770392  
 LOGGED BY: RW

HOLE No.: 30069

DATE COMP: 08/14/2004

FIELD NO:	286	287	288	289
LAB NO:	286	287	288	289
DEPTH:	0.3-0.9	1.8-2.4	3.0-3.7	4.1-4.4
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
60.0	100%	100%	100%	100%
25.0	91%	100%	100%	100%
20.0	74%	97%	100%	100%
12.5	61%	94%	97%	92%
10.0	54%	88%	94%	86%
5.0	43%	72%	90%	80%
2.5	35%	57%	86%	48%
1.25	31%	37%	80%	37%
0.630	27%	22%	74%	30%
0.315	24%	14%	68%	25%
0.160	21%	10%	61%	20%
0.080	18%	7%	51%	14%
M.C.(%)	7%	11%	60%	13%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX.:	0.0	0.0	0.0	0.0
% GRAVEL:	57	28	10	40
% SAND:	25	65	39	46
% FINES:	18	7	51	14
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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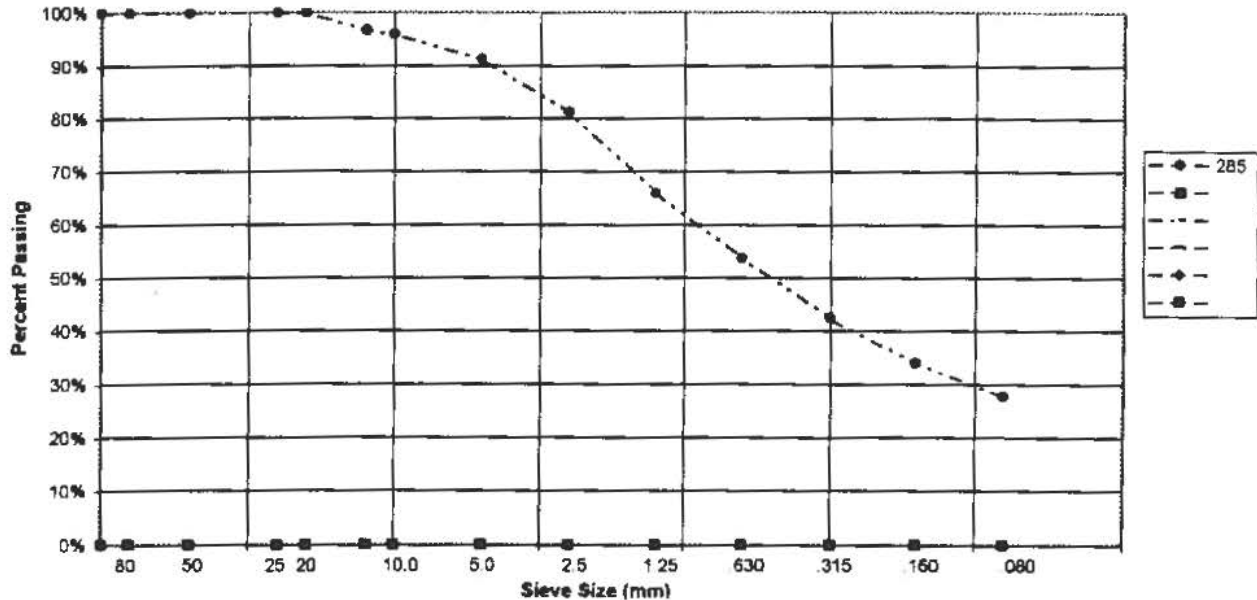
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CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 634636-6770537  
LOGGED BY: RW

HOLE No.: 30100B

DATE COMP: 08/14/2004

FIELD NO:	285				
LAB NO:	285				
DEPTH:	9.4-10.1				
TYPE:	AUGER				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	97%				
10.0	96%				
5.0	91%				
2.5	81%				
1.25	66%				
0.830	54%				
0.315	42%				
0.160	34%				
0.080	28%				
M.C.(%):	10%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	9				
% SAND:	63				
% FINES:	28				
CLASSIFICATION	SILTY SAND (SM)				

Grain Size Analysis (Percent Passing vs Grain Size)





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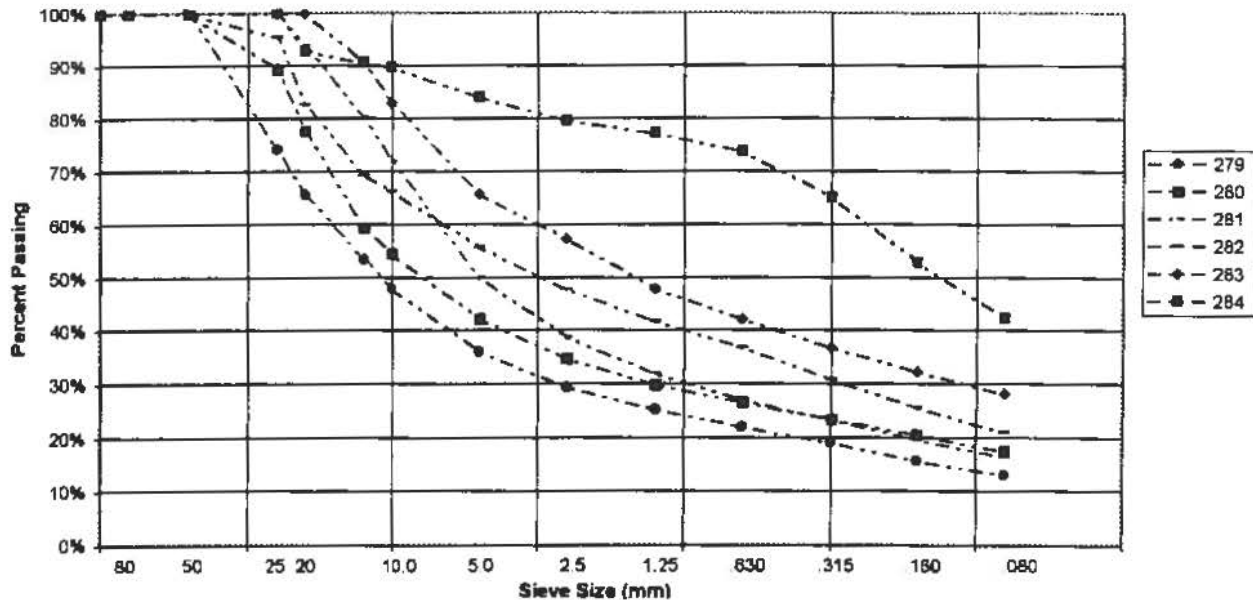
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634636-6770537  
 LOGGED BY: RW

HOLE No.: 30100

DATE COMP: 08/14/2004

FIELD NO:	279	280	281	282	283	284
LAB NO:	279	280	281	282	283	284
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.3	4.9-5.5	6.4-7.3	8.2-8.8
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	74%	89%	100%	95%	100%	100%
20.0	66%	78%	94%	83%	100%	93%
12.5	53%	58%	80%	68%	91%	91%
10.0	48%	55%	72%	66%	83%	90%
5.0	36%	42%	50%	56%	66%	84%
2.5	29%	35%	39%	48%	57%	80%
1.25	25%	30%	32%	42%	48%	77%
0.630	22%	27%	27%	37%	42%	74%
0.315	19%	23%	23%	31%	37%	65%
0.160	16%	21%	20%	26%	32%	53%
0.080	13%	18%	18%	21%	28%	42%
M.C.(%):	7%	7%	6%	10%	12%	13%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	64	58	50	44	34	16
% SAND:	23	25	34	35	38	42
% FINES:	13	18	16	21	28	42
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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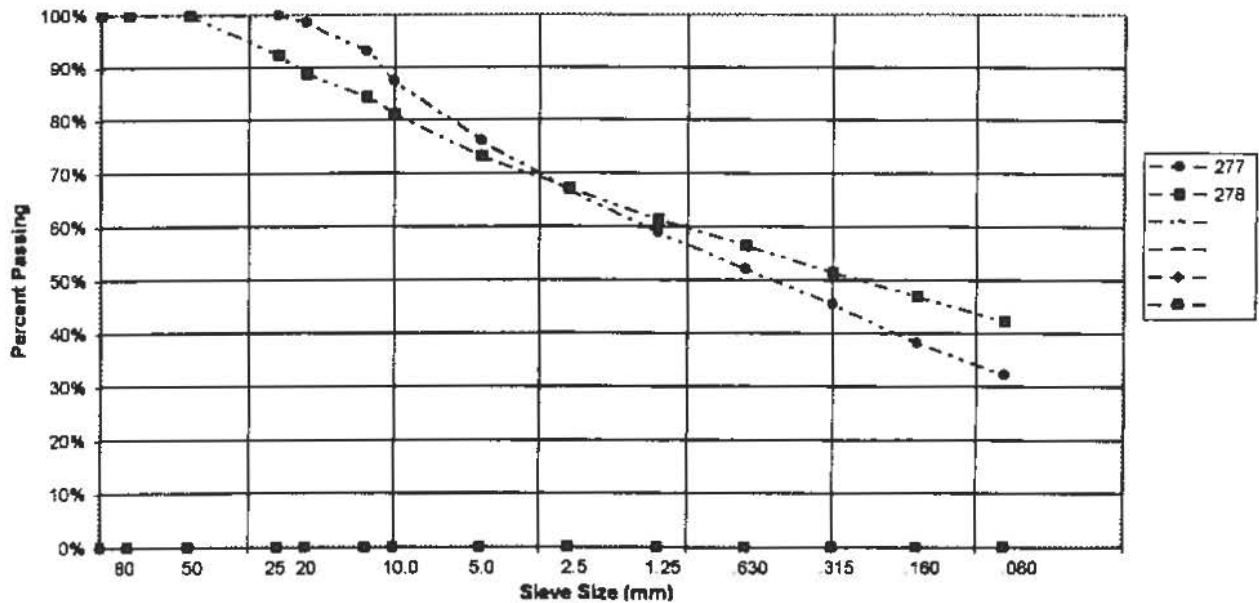
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CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 634850-6770850  
LOGGED BY: RW

HOLE No.: 30101

DATE COMP: 08/14/2004

FIELD NO:	277	278			
LAB NO:	277	278			
DEPTH:	0.4-1.0	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
60.0	100%	100%			
25.0	100%	93%			
20.0	99%	89%			
12.5	93%	85%			
10.0	87%	81%			
5.0	76%	73%			
2.5	67%	67%			
1.25	59%	51%			
0.630	52%	57%			
0.315	46%	51%			
0.160	38%	47%			
0.080	32%	42%			
M.C.(%):	4%	6%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	24	27			
% SAND:	44	31			
% FINES:	32	42			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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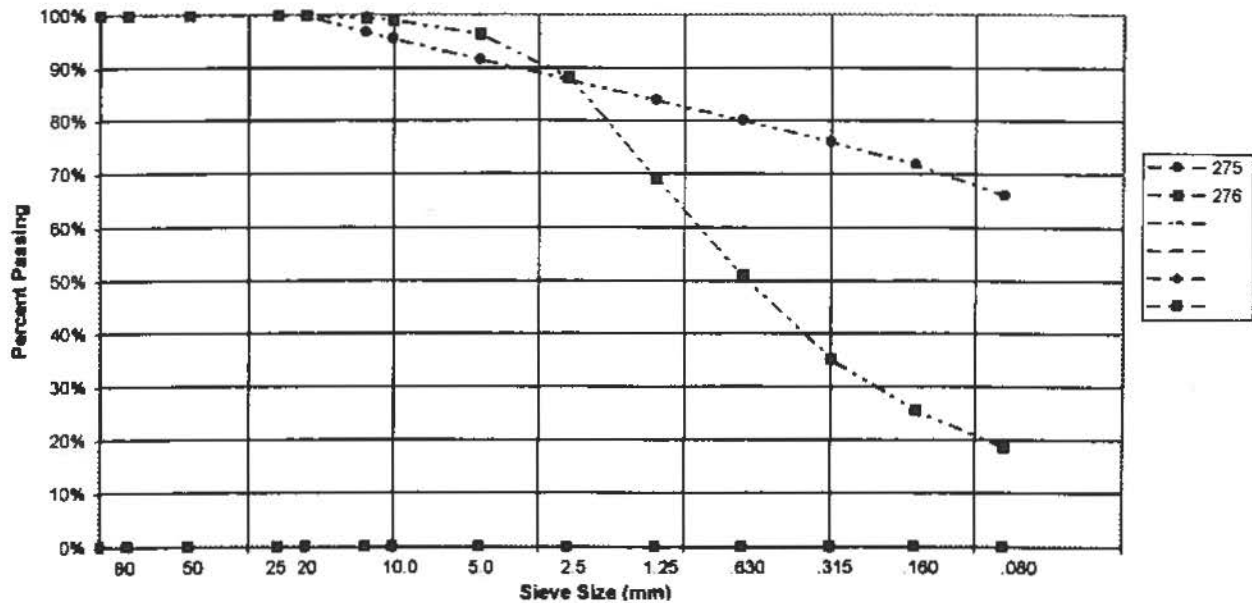
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634670-6770753  
 LOGGED BY: RW

HOLE No.: 30102

DATE COMP: 08/14/2004

FIELD NO:	275	276			
LAB NO:	275	276			
DEPTH:	0.6-1.2	2.4-3.0			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	97%	100%			
10.0	96%	99%			
5.0	92%	97%			
2.5	88%	88%			
1.25	84%	69%			
0.830	80%	51%			
0.315	76%	35%			
0.160	72%	26%			
0.080	66%	19%			
M.C.(%)	12%	1%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	8	3			
% SAND:	26	78			
% FINES:	66	19			
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Pines & Associates Ltd.



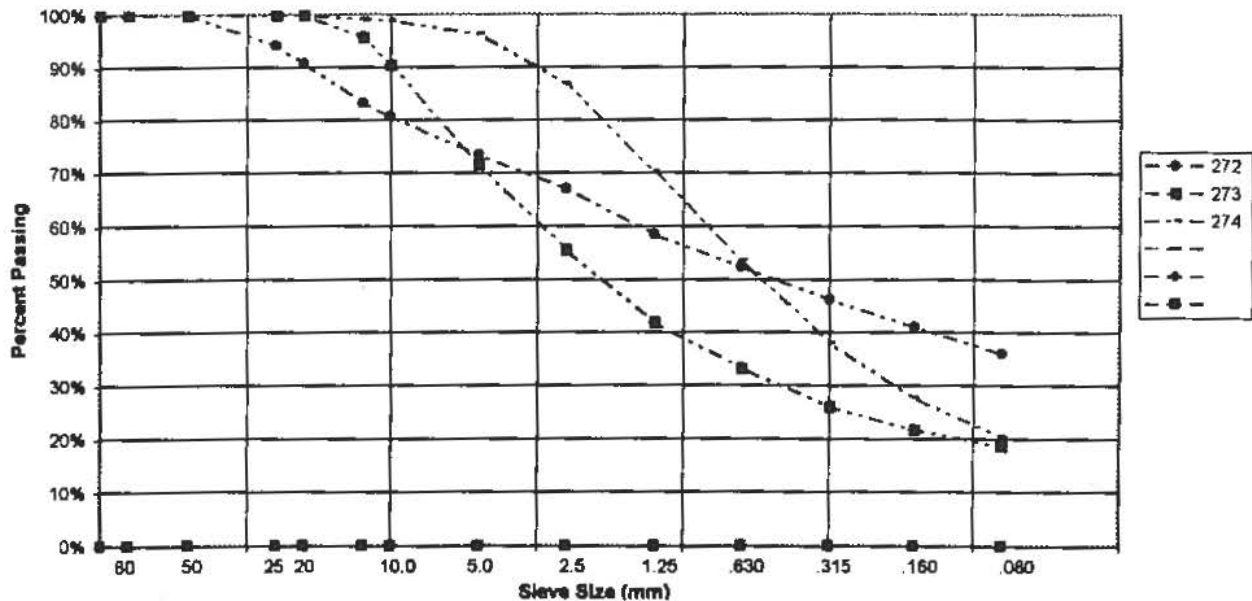
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634651-6770855  
 LOGGED BY: RW

HOLE No.: 30103

DATE COMP: 08/14/2004

FIELD NO:	272	273	274		
LAB NO:	272	273	274		
DEPTH:	0.6-1.2	2.1-2.9	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
60.0	100%	100%	100%		
25.0	94%	100%	100%		
20.0	91%	100%	100%		
12.5	83%	96%	99%		
10.0	81%	90%	99%		
5.0	73%	72%	96%		
2.5	67%	56%	87%		
1.25	59%	42%	70%		
0.630	52%	33%	54%		
0.315	46%	26%	38%		
0.160	41%	22%	28%		
0.080	36%	19%	20%		
M.C.(%)	4%	5%	2%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0		
% GRAVEL:	27	28	4		
% SAND:	37	53	76		
% FINES:	36	19	20		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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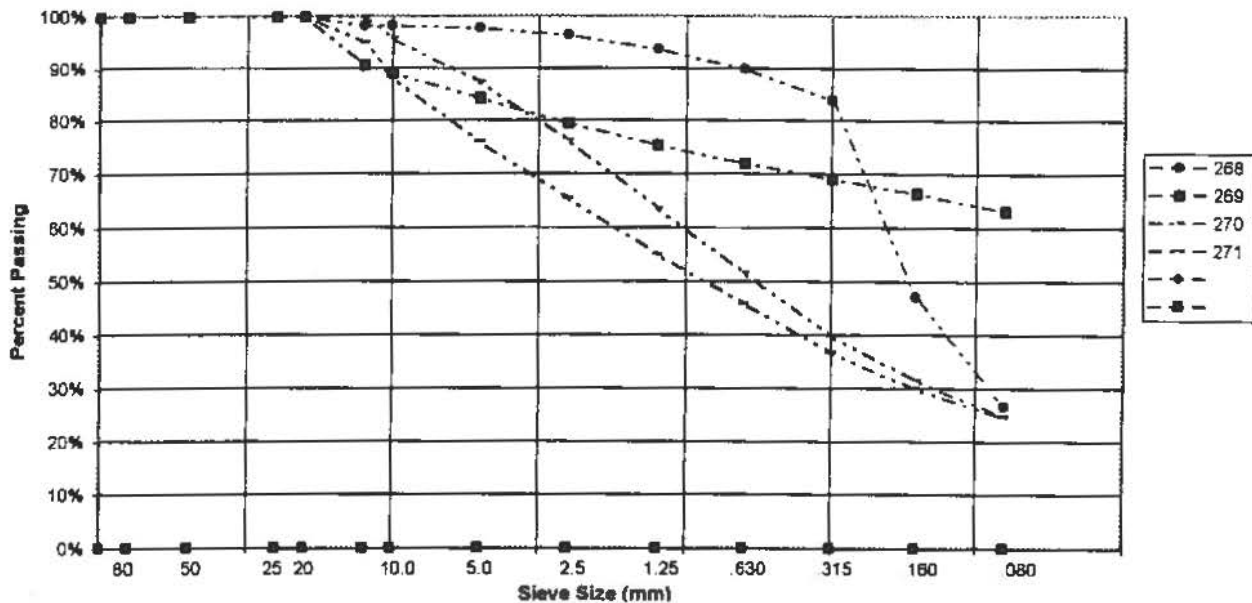
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634614-6770965  
 LOGGED BY: RW

HOLE No.: 30104

DATE COMP: 08/13/2004

FIELD NO:	268	269	270	271
LAB NO:	268	269	270	271
DEPTH:	0.3-0.9	1.8-2.4	3.4-3.7	3.7-4.3
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
60.0	100%	100%	100%	100%
25.0	100%	100%	100%	100%
20.0	100%	100%	100%	100%
12.5	98%	91%	100%	95%
10.0	98%	88%	98%	88%
5.0	98%	84%	87%	76%
2.5	96%	80%	76%	66%
1.25	94%	75%	64%	55%
0.630	90%	72%	52%	46%
0.315	84%	68%	40%	37%
0.180	47%	68%	32%	30%
0.080	27%	63%	25%	25%
M.C.(%):	3%	8%	2%	3%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX.:	0.0	0.0	0.0	0.0
% GRAVEL:	2	16	13	24
% SAND:	71	21	63	51
% FINES:	27	63	25	25
CLASSIFICATION	SILTY SAND (SM)	SANDY SILT WITH GRAVEL (ML)	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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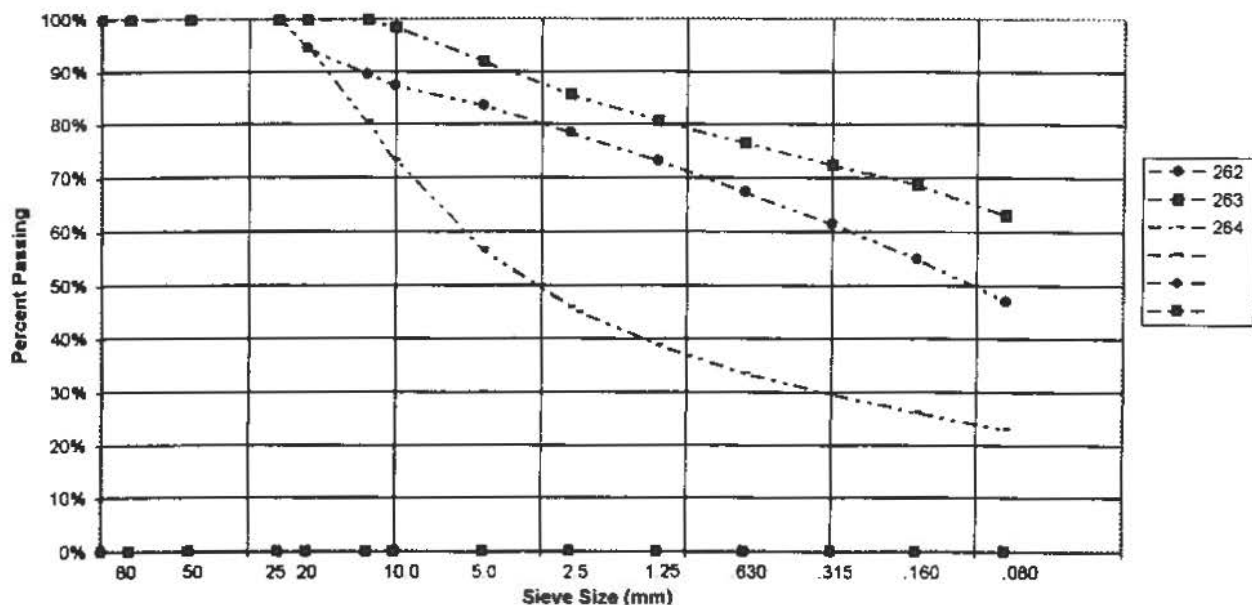
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634672-6771005  
 LOGGED BY: RW

HOLE No.: 30105

DATE COMP: 08/13/2004

FIELD NO:	262	263	264		
LAB NO:	262	263	264		
DEPTH:	0.9-1.2	1.8-2.4	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	95%	100%	95%		
12.5	90%	100%	80%		
10.0	87%	99%	73%		
5.0	84%	92%	57%		
2.5	78%	86%	46%		
1.25	73%	81%	39%		
0.630	67%	77%	34%		
0.315	62%	73%	30%		
0.160	55%	69%	26%		
0.080	47%	63%	23%		
M.C.(%):	7%	11%	4%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	16	8	43		
% SAND:	37	29	34		
% FINES:	47	63	23		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SILTY GRAVEL WITH SAND (GM)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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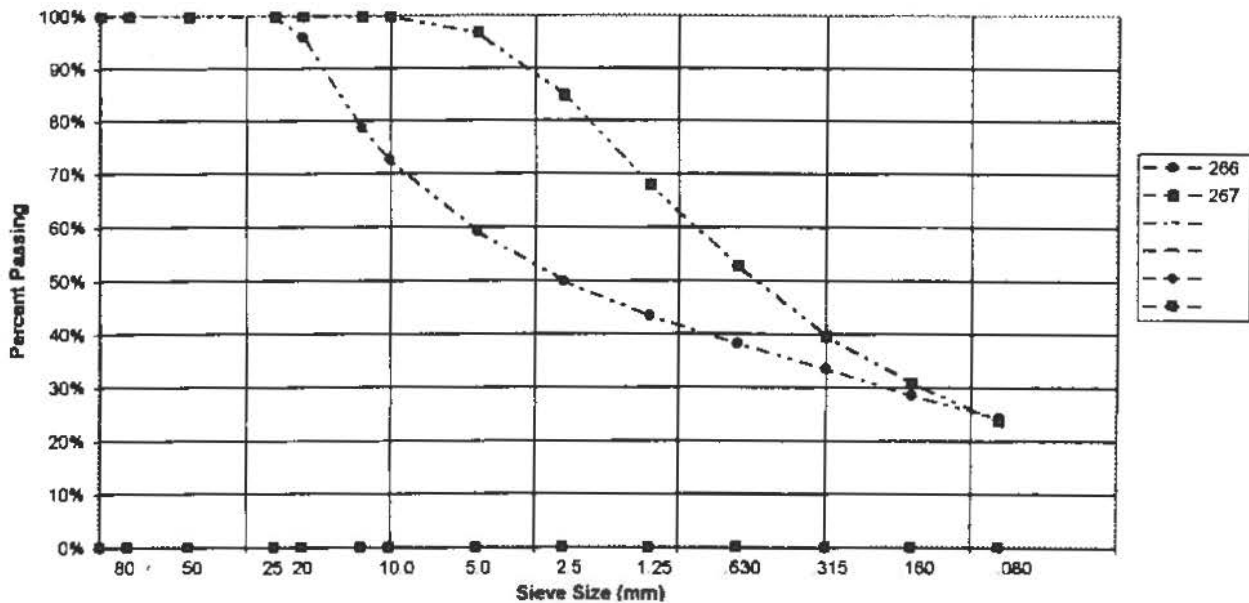
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634574-6771078  
 LOGGED BY: RW

HOLE No.: 30106

DATE COMP: 08/13/2004

FIELD NO:	266	267			
LAB NO:	266	267			
DEPTH:	0.0-0.6	0.9-1.2			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
60.0	100%	100%			
25.0	100%	100%			
20.0	96%	100%			
12.5	79%	100%			
10.0	73%	100%			
6.0	59%	97%			
2.5	50%	85%			
1.25	44%	88%			
0.630	38%	53%			
0.315	34%	40%			
0.160	29%	31%			
0.080	24%	24%			
M.C.(%)	5%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	41	3			
% SAND:	35	73			
% FINES:	24	24			
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





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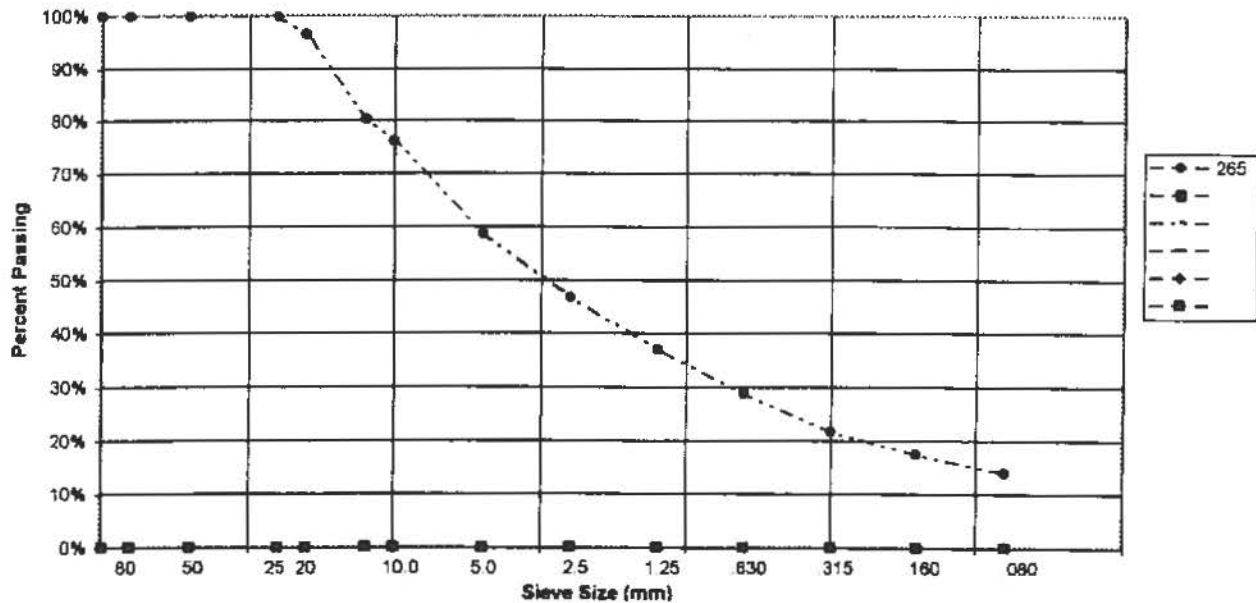
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634529-6771149  
 LOGGED BY: RW

HOLE No.: 30107

DATE COMP: 08/13/2004

FIELD NO:	265				
LAB NO:	265				
DEPTH:	0.9-1.2				
TYPE:	AUGER				
<b>SIEVE SIZE</b>	<b>PERCENT PASSING</b>				
100.0	100%				
80.0	100%				
60.0	100%				
25.0	100%				
20.0	97%				
12.5	80%				
10.0	76%				
5.0	59%				
2.5	47%				
1.25	37%				
0.630	29%				
0.315	22%				
0.160	17%				
0.080	14%				
M.C.(%):	2%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	41				
% SAND:	45				
% FINES:	14				
<b>CLASSIFICATION</b>	<b>SILTY SAND WITH GRAVEL (SM)</b>				

### Grain Size Analysis (Percent Passing vs Grain Size)





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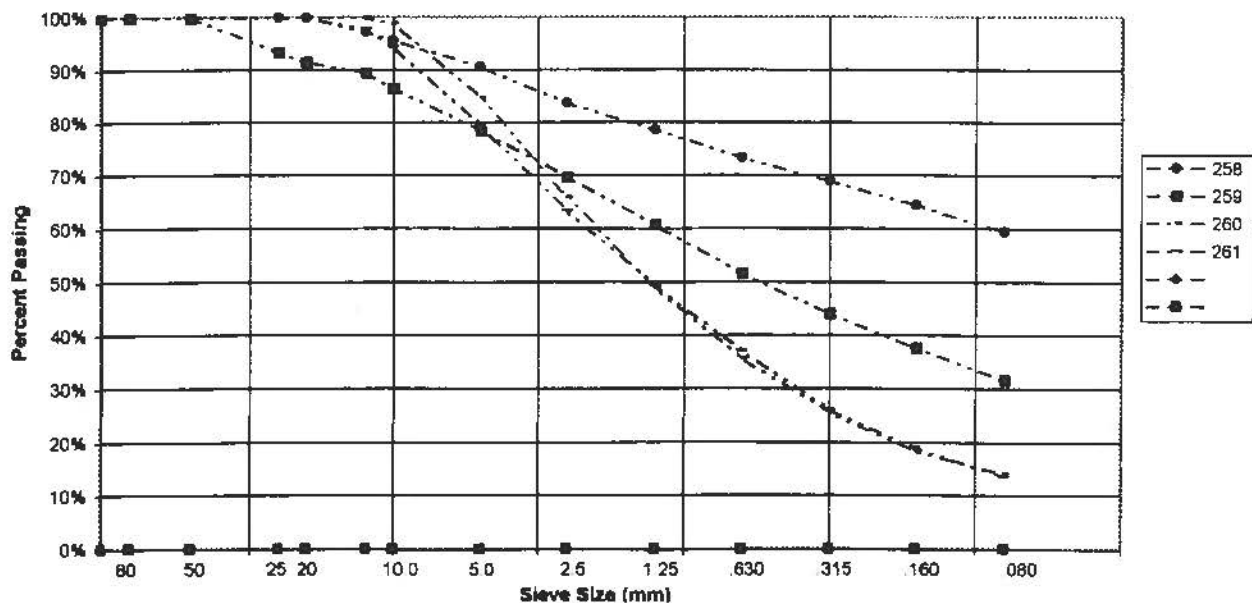
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634528-6771278  
 LOGGED BY: RW

HOLE No.: 30108

DATE COMP: 08/13/2004

FIELD NO:	258	259	260	261		
LAB NO:	258	259	260	261		
DEPTH:	0.6-1.2	1.5-2.1	3.0-3.7	4.9-5.5		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
60.0	100%	100%	100%	100%		
25.0	100%	93%	100%	100%		
20.0	100%	92%	100%	100%		
12.5	97%	89%	100%	98%		
10.0	96%	87%	99%	94%		
5.0	91%	79%	85%	80%		
2.6	84%	70%	68%	63%		
1.25	79%	61%	49%	49%		
0.630	73%	52%	36%	37%		
0.315	69%	44%	26%	26%		
0.160	64%	38%	19%	19%		
0.080	60%	32%	14%	14%		
M.C.(%)	12%	6%	1%	2%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	9	21	15	20		
% SAND:	31	47	71	66		
% FINES:	60	32	14	14		
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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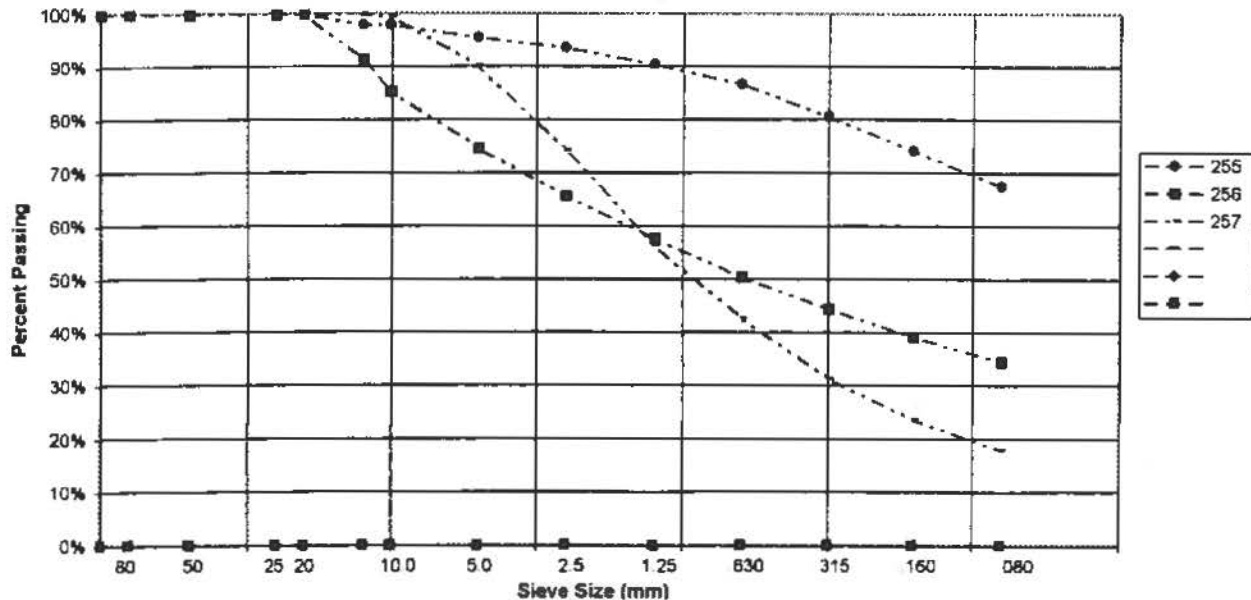
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634466-6771427  
 LOGGED BY: RW

HOLE No.: 30109

DATE COMP: 08/13/2004

FIELD NO:	255	256	257		
LAB NO:	255	256	257		
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
60.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	100%	100%	100%		
12.6	98%	91%	100%		
10.0	98%	85%	100%		
5.0	96%	75%	90%		
2.5	94%	66%	74%		
1.25	90%	58%	56%		
0.630	87%	50%	43%		
0.315	81%	44%	31%		
0.160	74%	39%	24%		
0.080	68%	35%	18%		
M.C.(%):	13%	5%	3%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0		
% GRAVEL:	4	25	10		
% SAND:	28	40	72		
% FINES:	68	35	18		
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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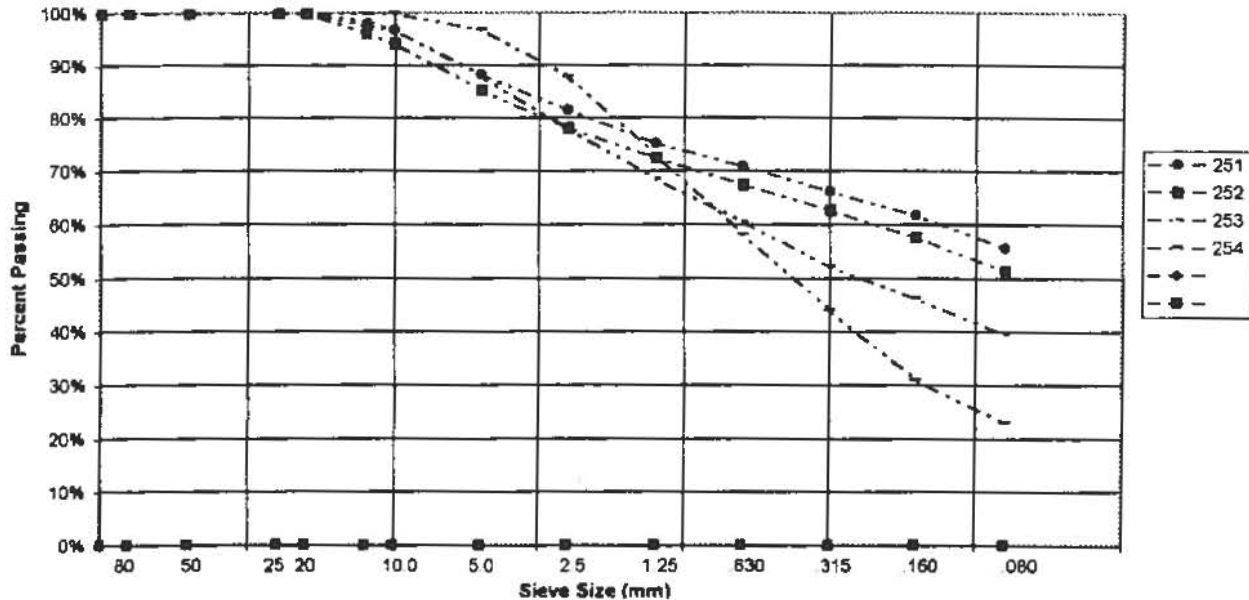
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634457-6771567  
 LOGGED BY: RW

HOLE No.: 30110

DATE COMP: 08/13/2004

FIELD NO:	251	252	253	254
LAB NO:	251	252	253	254
DEPTH:	0.4-1.0	1.8-2.4	3.4-4.0	4.8-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
60.0	100%	100%	100%	100%
25.0	100%	100%	100%	100%
20.0	100%	100%	100%	100%
12.5	98%	96%	99%	100%
10.0	97%	94%	97%	100%
5.0	88%	85%	88%	97%
2.5	82%	78%	78%	88%
1.25	75%	73%	69%	73%
0.630	71%	67%	60%	58%
0.315	66%	63%	52%	44%
0.160	62%	58%	46%	31%
0.080	56%	51%	40%	23%
M.C.(%)	22%	12%	11%	5%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	12	15	12	3
% SAND:	32	34	48	74
% FINES:	56	51	40	23
CLASSIFICATION	SANDY SILT (ML)	SANDY SILT (ML)	SILTY SAND (SM)	SILTY SAND (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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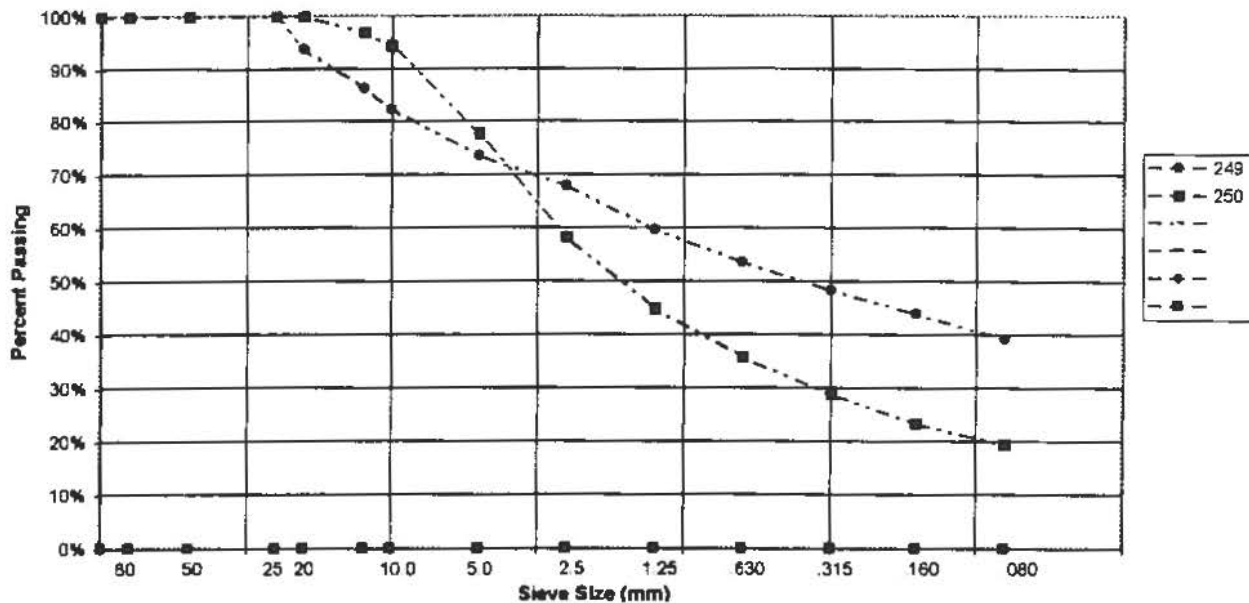
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1091.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634475-6771627  
 LOGGED BY: RW

HOLE No.: 30111

DATE COMP: 08/13/2004

FIELD NO:	249	250			
LAB NO:	249	250			
DEPTH:	0.2-0.6	1.5-1.8			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
60.0	100%	100%			
25.0	100%	100%			
20.0	94%	100%			
12.5	86%	97%			
10.0	82%	94%			
5.0	74%	78%			
2.5	68%	58%			
1.25	60%	45%			
0.630	54%	38%			
0.315	48%	29%			
0.180	44%	23%			
0.080	39%	19%			
M.C.(%)	5%	2%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	26	22			
% SAND:	34	58			
% FINES:	39	19			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





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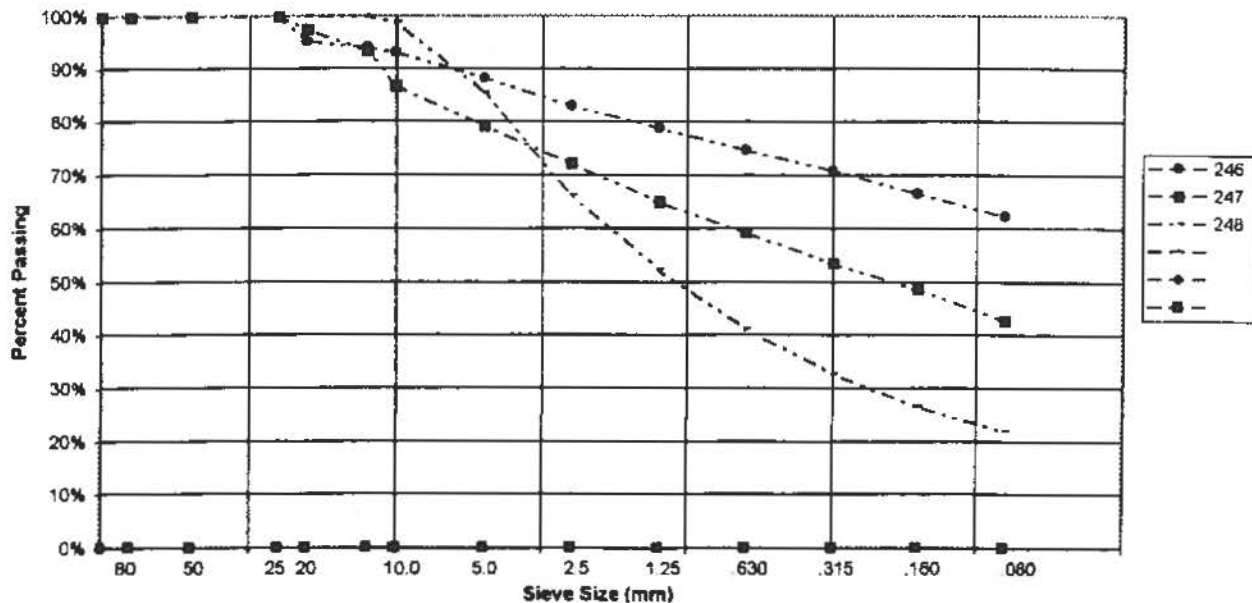
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634468-6771772  
 LOGGED BY: RW

HOLE No.: 30112

DATE COMP: 08/13/2004

FIELD NO:	246	247	248
LAB NO:	246	247	248
DEPTH:	0.5-0.8	1.8-2.4	3.0-3.4
TYPE:	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%
80.0	100%	100%	100%
50.0	100%	100%	100%
25.0	100%	100%	100%
20.0	95%	97%	100%
12.5	94%	93%	100%
10.0	83%	87%	99%
5.0	88%	79%	85%
2.5	83%	72%	66%
1.25	79%	65%	52%
0.630	75%	59%	41%
0.315	71%	54%	33%
0.160	67%	49%	27%
0.080	62%	43%	22%
M.C.(%)	13%	7%	3%
LIQUID LIMIT:	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0
% GRAVEL:	12	21	15
% SAND:	26	37	63
% FINES:	62	43	22
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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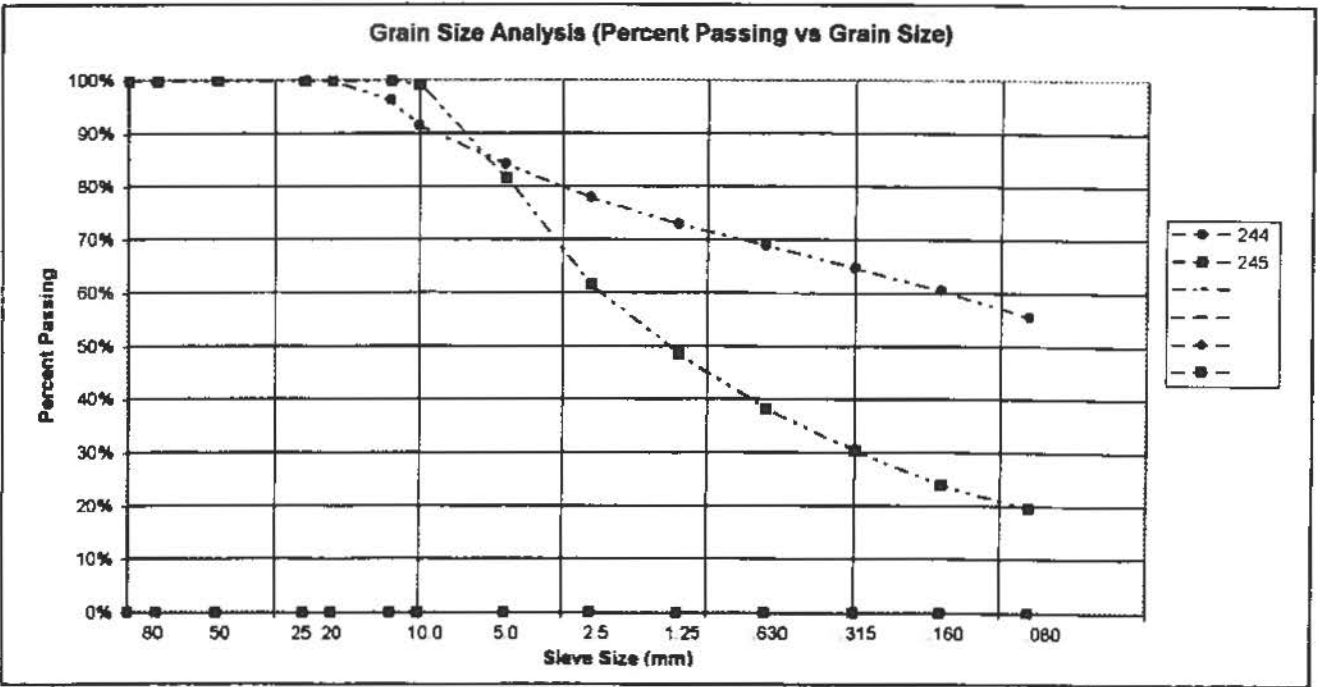


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634435-6771879  
 LOGGED BY: RW

HOLE No.: 30113

DATE COMP: 12/8/2004

FIELD NO:	244	245			
LAB NO:	244	245			
DEPTH:	0.8-1.2	1.5-2.1			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	96%	100%			
10.0	92%	99%			
5.0	84%	82%			
2.5	78%	62%			
1.25	73%	49%			
0.630	69%	38%			
0.315	65%	30%			
0.160	61%	24%			
0.080	56%	20%			
M.C.(%)	17%	5%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	16	18			
% SAND:	29	62			
% FINES:	56	20			
CLASSIFICATION	SANDY SILT WITH GRAVEL (ML)	SILTY SAND WITH GRAVEL (SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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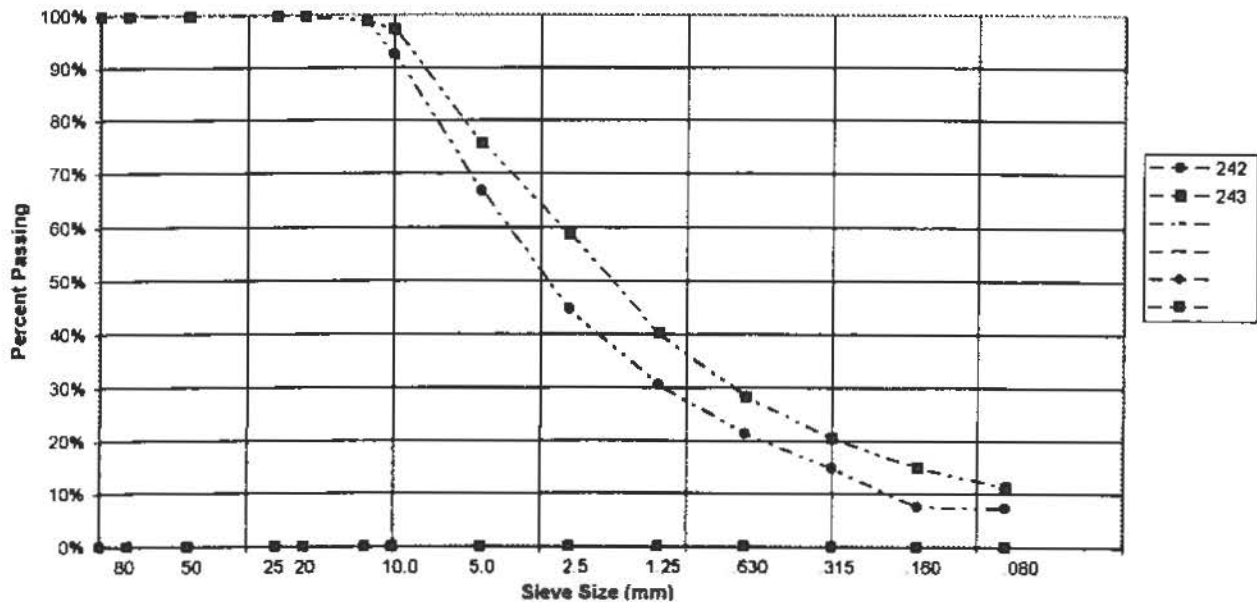
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634386-6772019  
 LOGGED BY: RW

HOLE No.: 30114

DATE COMP: 12/8/2004

FIELD NO:	242	243			
LAB NO:	242	243			
DEPTH:	0.6-1.2	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	99%	99%			
10.0	93%	87%			
5.0	67%	76%			
2.5	45%	59%			
1.25	31%	40%			
0.630	21%	28%			
0.315	15%	21%			
0.160	8%	15%			
0.080	7%	11%			
M.C.(%):	3%	2%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	33	24			
% SAND:	60	65			
% FINES:	7	11			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. P. Payne & Associates Ltd.



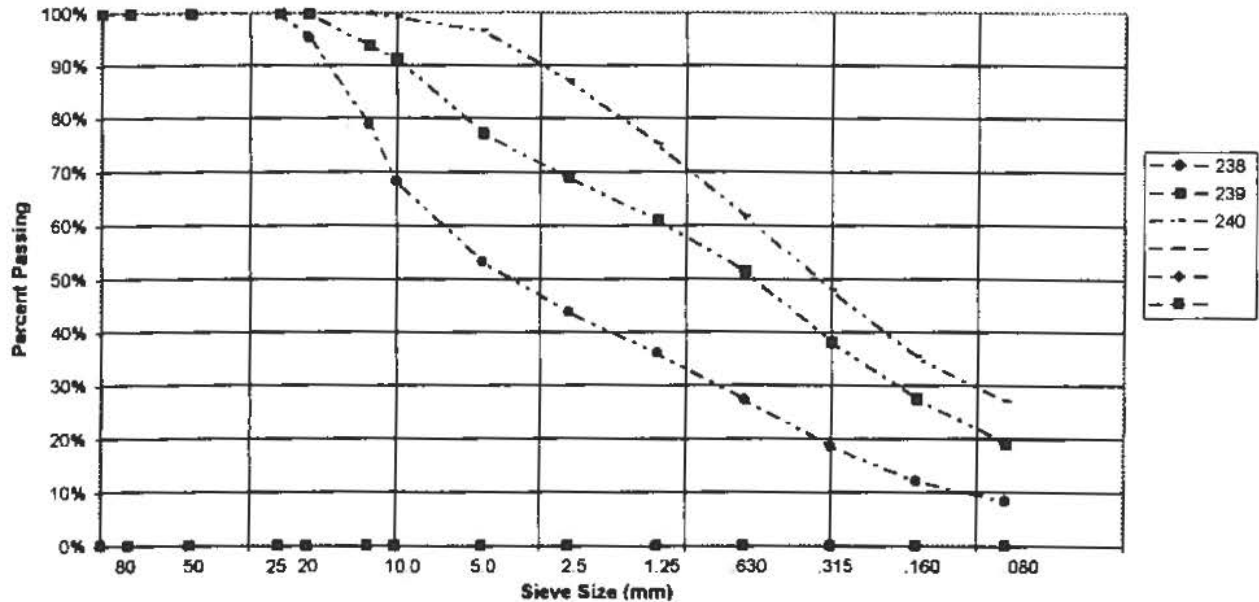
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634339-6772105  
 LOGGED BY: RW

HOLE No.: 30115

DATE COMP: 12/8/2004

FIELD NO:	238	239	240		
LAB NO:	238	239	240		
DEPTH:	0.3-0.9	1.6-2.4	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	95%	100%	100%		
12.5	79%	94%	100%		
10.0	68%	91%	99%		
5.0	53%	77%	97%		
2.5	44%	69%	87%		
1.25	36%	61%	75%		
0.630	27%	51%	62%		
0.315	19%	38%	48%		
0.160	12%	28%	35%		
0.080	9%	19%	27%		
M.C.(%):	4%	3%	6%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	47	23	3		
% SAND:	45	58	70		
% FINES:	9	19	27		
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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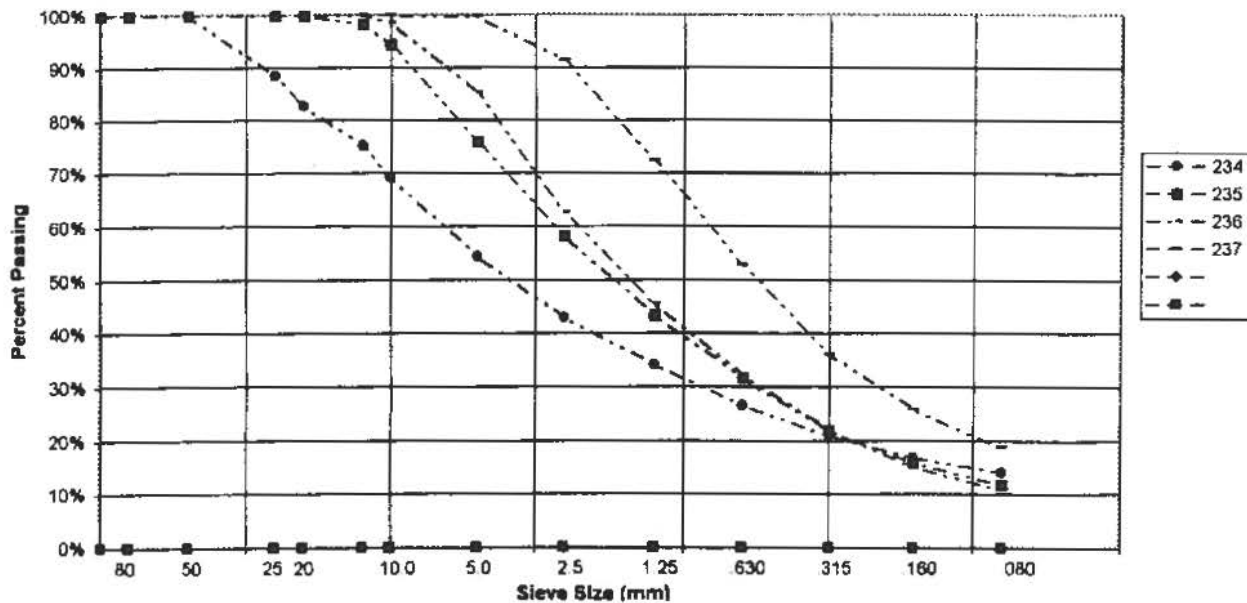
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 834312-6772111  
 LOGGED BY: RW

HOLE No.: 30116

DATE COMP: 12/8/2004

FIELD NO:	234	235	236	237
LAB NO:	234	235	236	237
DEPTH:	0.6-1.2	2.1-2.7	3.4-4.0	4.6-5.2
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	89%	100%	100%	100%
20.0	83%	100%	100%	100%
12.5	75%	98%	100%	100%
10.0	69%	94%	99%	100%
5.0	54%	76%	85%	100%
2.5	43%	58%	63%	91%
1.25	34%	43%	46%	72%
0.630	27%	32%	32%	53%
0.315	21%	22%	22%	36%
0.160	17%	16%	15%	26%
0.080	14%	12%	11%	19%
M.C.(%)	4%	3%	2%	2%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	48	24	15	0
% SAND:	40	64	74	81
% FINES:	14	12	11	19
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT (SW-SM)	SILTY SAND (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Peine & Associates Ltd.



PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634222-6772256  
 LOGGED BY: RW

HOLE No.: 30117

DATE COMP: 12/8/2004

FIELD NO:	232	233			
LAB NO:	232	233			
DEPTH:	0.0-0.6	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
60.0	100%	100%			
42.5	100%	77%			
30.0	100%	73%			
25.0	97%	64%			
20.0	95%	61%			
15.0	87%	56%			
12.5	81%	49%			
10.0	75%	43%			
7.5	70%	38%			
6.0	64%	32%			
4.75	59%	27%			
3.75	51%	23%			
3.0					
2.5					
2.0					
1.5					
1.25					
1.0					
0.85					
0.75					
0.63					
0.5					
0.425					
0.375					
0.3					
0.25					
0.2					
0.15					
0.125					
0.1					
0.075					
0.063					
0.05					
0.0425					
0.0375					
0.03					
0.025					
0.02					
0.015					
0.0125					
0.01					
0.0075					
0.0063					
0.005					
0.00425					
0.00375					
0.003					
0.0025					
0.002					
0.0015					
0.00125					
0.001					
0.00075					
0.00063					
0.0005					
0.000425					
0.000375					
0.0003					
0.00025					
0.0002					
0.00015					
0.000125					
0.0001					
0.000075					
0.000063					
0.00005					
0.0000425					
0.0000375					
0.00003					
0.000025					
0.00002					
0.000015					
0.0000125					
0.00001					
0.0000075					
0.0000063					
0.000005					
0.00000425					
0.00000375					
0.000003					
0.0000025					
0.000002					
0.0000015					
0.00000125					
0.000001					
0.00000075					
0.00000063					
0.0000005					
0.000000425					
0.000000375					
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0.00000000005					
0.0000000000425					
0.0000000000375					
0.00000000003					
0.000000000025					
0.00000000002					
0.000000000015					
0.0000000000125					
0.00000000001					
0.0000000000075					
0.0000000000063					
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0.000000000000063					
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0.000000000000003					
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0.00000000000000125					
0.000000000000001					
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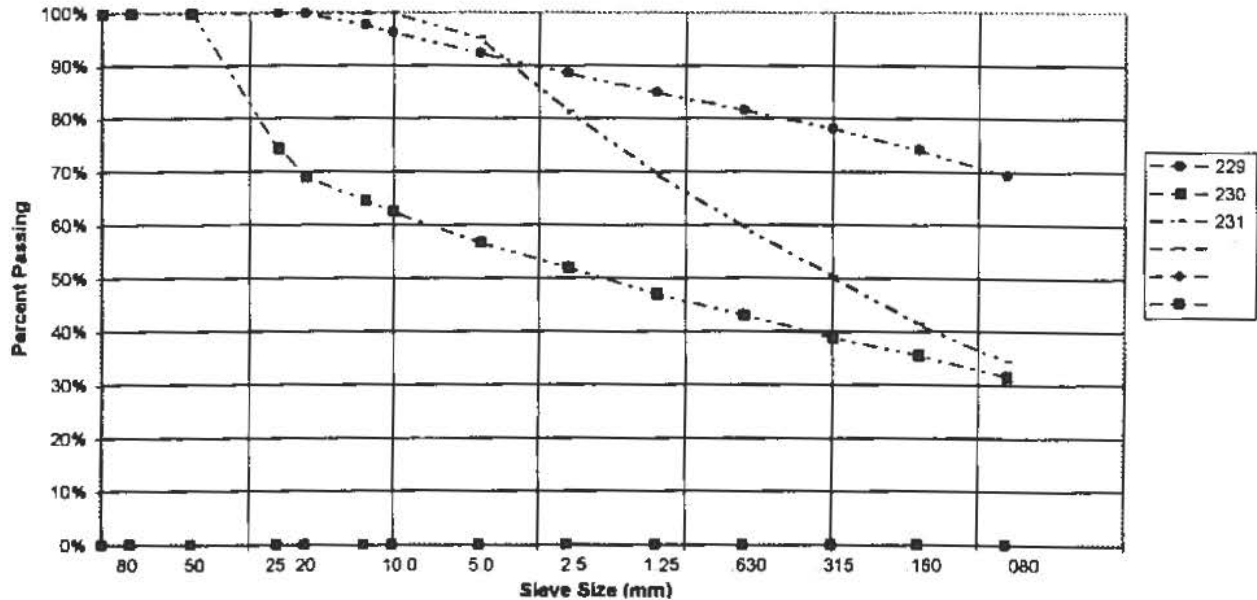
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634185-6772272  
 LOGGED BY: RW

HOLE No.: 30118

DATE COMP: 12/8/2004

FIELD NO:	229	230	231		
LAB NO:	229	230	231		
DEPTH:	0.8-1.2	1.8-2.4	3.0-3.4		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	74%	100%		
20.0	100%	69%	100%		
12.5	98%	65%	100%		
10.0	96%	63%	100%		
6.0	92%	57%	95%		
2.5	89%	52%	81%		
1.25	85%	47%	70%		
0.630	82%	43%	60%		
0.315	78%	39%	50%		
0.180	74%	36%	42%		
0.080	69%	32%	34%		
M.C.(%):	16%	5%	3%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0		
% GRAVEL:	8	43	5		
% SAND:	23	25	61		
% FINES:	69	32	34		
CLASSIFICATION	SANDY SILT (ML)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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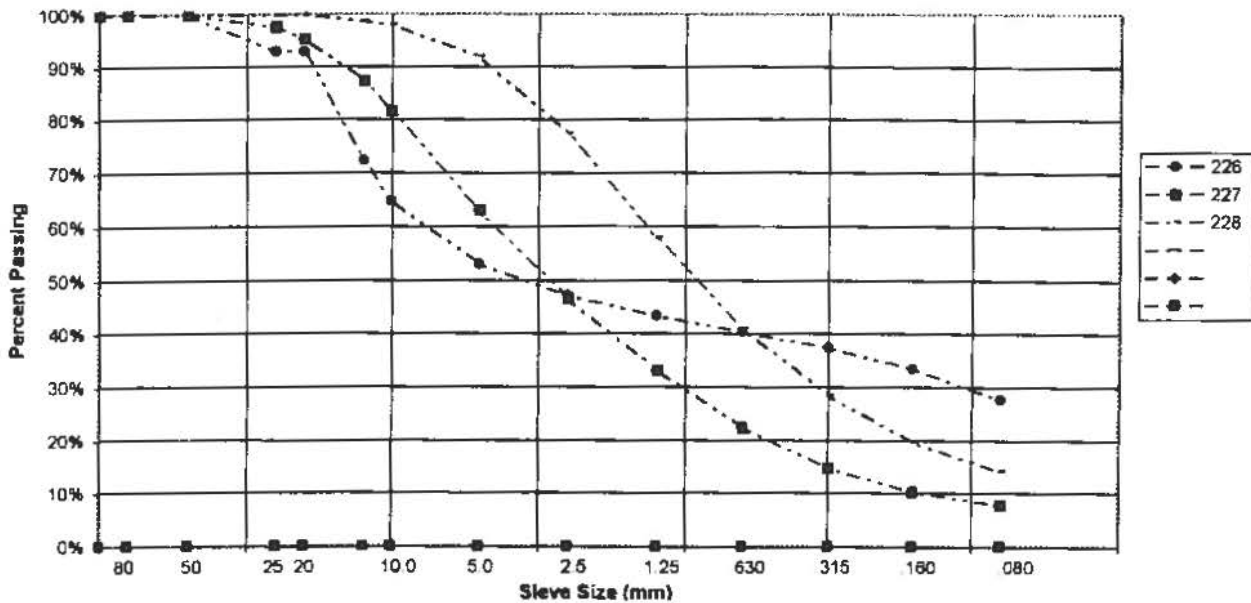
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1891.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634109-6772380  
 LOGGED BY: RW

HOLE No.: 30119

DATE COMP: 12/8/2004

FIELD NO:	226	227	228		
LAB NO:	226	227	228		
DEPTH:	0.1-0.6	2.1-2.7	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	93%	98%	100%		
20.0	93%	95%	100%		
12.5	72%	87%	99%		
10.0	65%	82%	98%		
5.0	53%	63%	92%		
2.5	47%	47%	78%		
1.25	43%	33%	58%		
0.630	41%	23%	41%		
0.315	38%	15%	29%		
0.160	33%	10%	20%		
0.080	28%	8%	14%		
M.C.(%)	16%	3%	12%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	47	37	8		
% SAND:	25	55	78		
% FINES:	28	8	14		
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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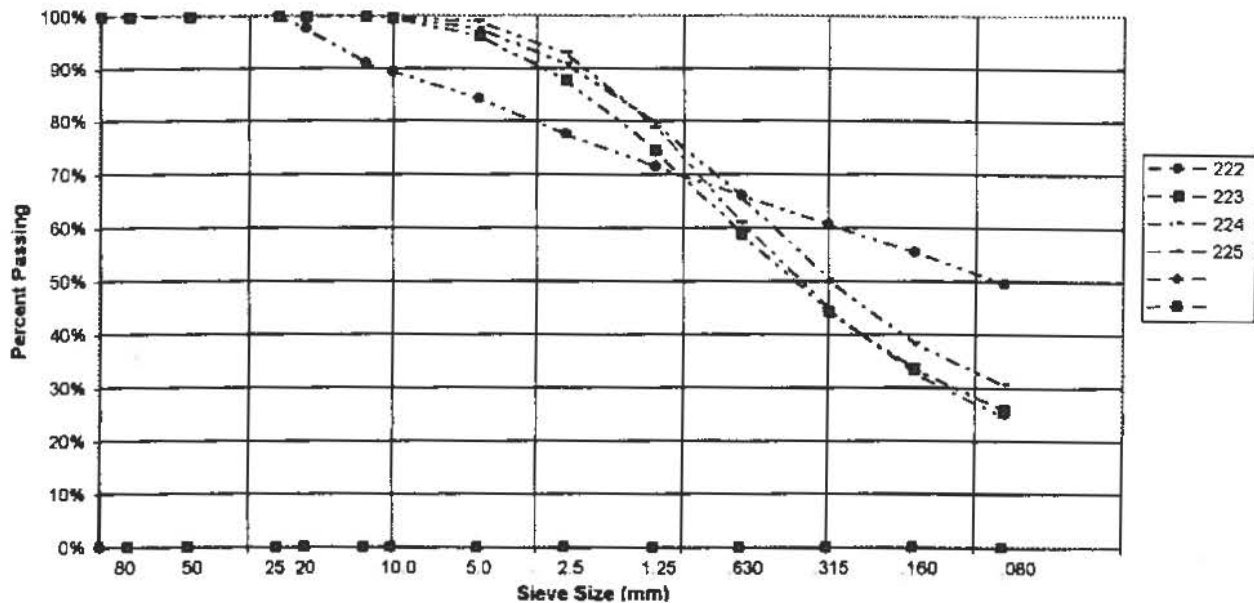
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634076-6772396  
 LOGGED BY: RW

HOLE No.: 30120

DATE COMP: 12/8/2004

FIELD NO:	222	223	224	225		
LAB NO:	222	223	224	225		
DEPTH:	0.3-0.9	2.1-2.4	3.7-4.3	4.9-5.3		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	98%	100%	100%	100%		
12.5	81%	100%	100%	100%		
10.0	90%	100%	100%	100%		
6.0	84%	96%	98%	99%		
2.6	78%	88%	81%	93%		
1.25	72%	75%	80%	79%		
0.630	66%	59%	68%	61%		
0.315	61%	44%	50%	45%		
0.160	56%	34%	38%	33%		
0.080	50%	28%	31%	25%		
M.C.(%)	10%	7%	5%	3%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	16	4	2	1		
% SAND:	35	70	67	75		
% FINES:	50	26	31	25		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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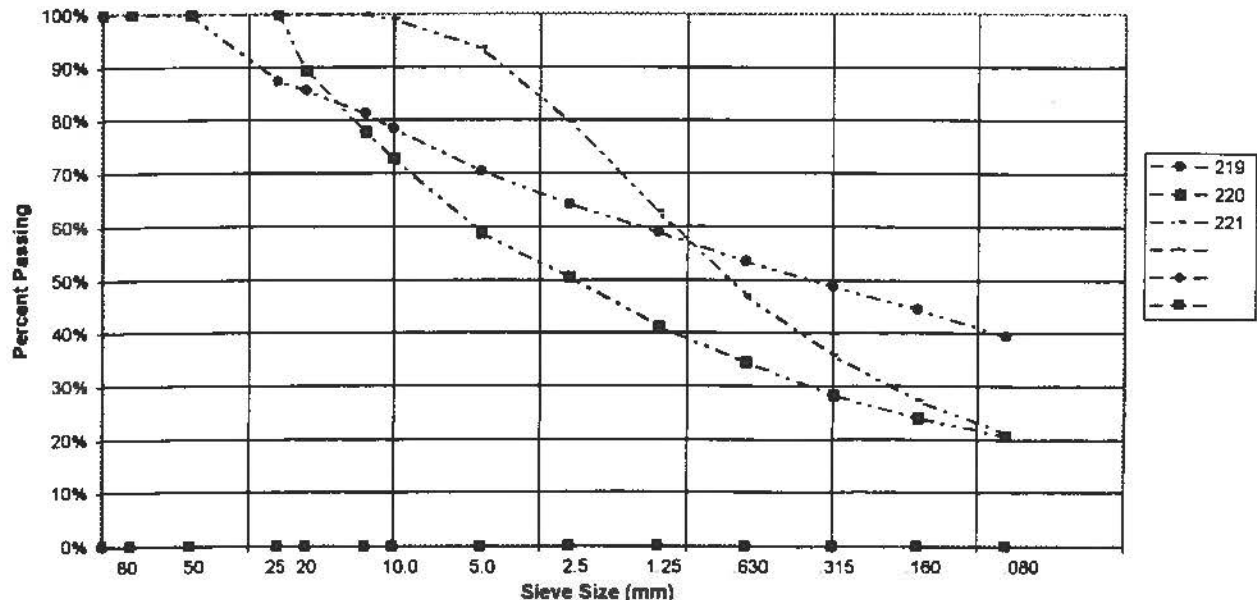
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633974-6772578  
 LOGGED BY: RW

HOLE No.: 30121

DATE COMP: 12/8/2004

FIELD NO:	219	220	221			
LAB NO:	219	220	221			
DEPTH:	0.6-1.2	1.5-2.1	2.7-3.0			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	87%	100%	100%			
20.0	86%	89%	100%			
12.5	81%	78%	100%			
10.0	79%	73%	99%			
5.0	71%	59%	94%			
2.5	64%	51%	80%			
1.25	59%	41%	63%			
0.630	54%	35%	47%			
0.315	49%	28%	36%			
0.150	45%	24%	27%			
0.080	40%	21%	21%			
M.C.(%):	7%	4%	2%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0	0.0			
% GRAVEL:	29	41	6			
% SAND:	31	38	72			
% FINES:	40	21	21			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND (SM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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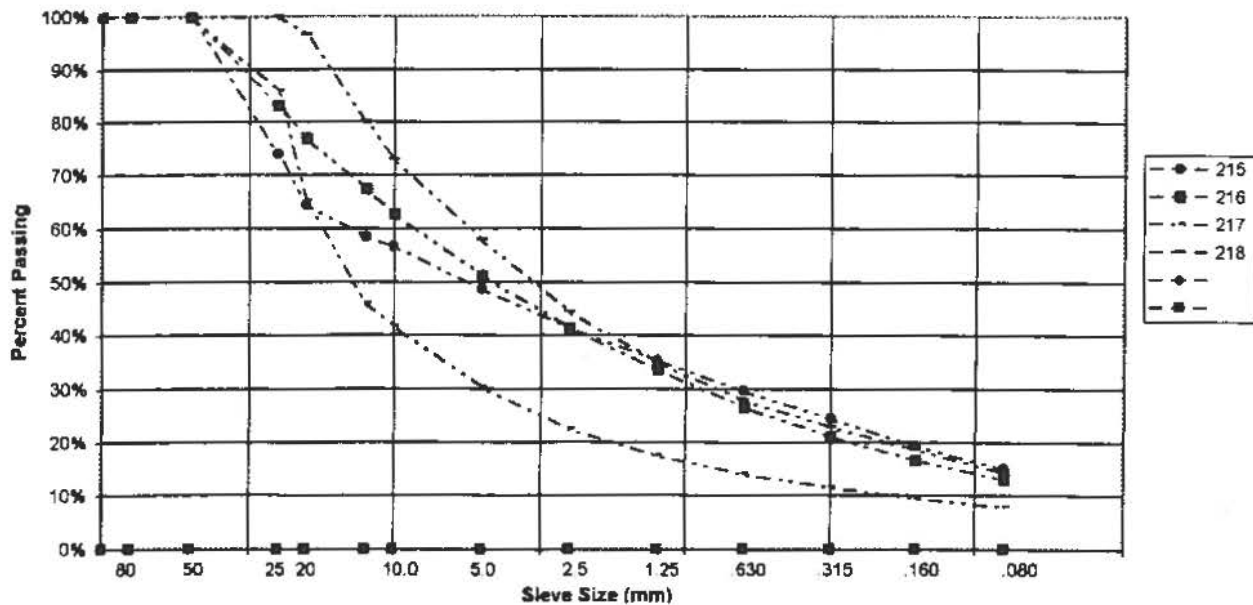
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633916-6772688  
 LOGGED BY: RW

HOLE No.: 30122

DATE COMP: 12/8/2004

FIELD NO:	215	216	217	218		
LAB NO:	215	216	217	218		
DEPTH:	0.8-1.2	1.6-2.4	3.4-4.0	4.6-5.2		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	74%	83%	86%	100%		
20.0	64%	77%	85%	97%		
12.5	59%	68%	46%	80%		
10.0	57%	63%	42%	73%		
5.0	49%	51%	30%	58%		
2.5	41%	41%	23%	44%		
1.25	35%	34%	18%	35%		
0.630	30%	27%	14%	28%		
0.315	25%	21%	12%	23%		
0.160	19%	17%	10%	19%		
0.080	15%	13%	8%	14%		
M.C.(%)	15%	9%	9%	8%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	51	49	70	42		
% SAND:	34	38	22	44		
% FINES:	15	13	8	14		
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY SAND WITH GRAVEL (SM)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



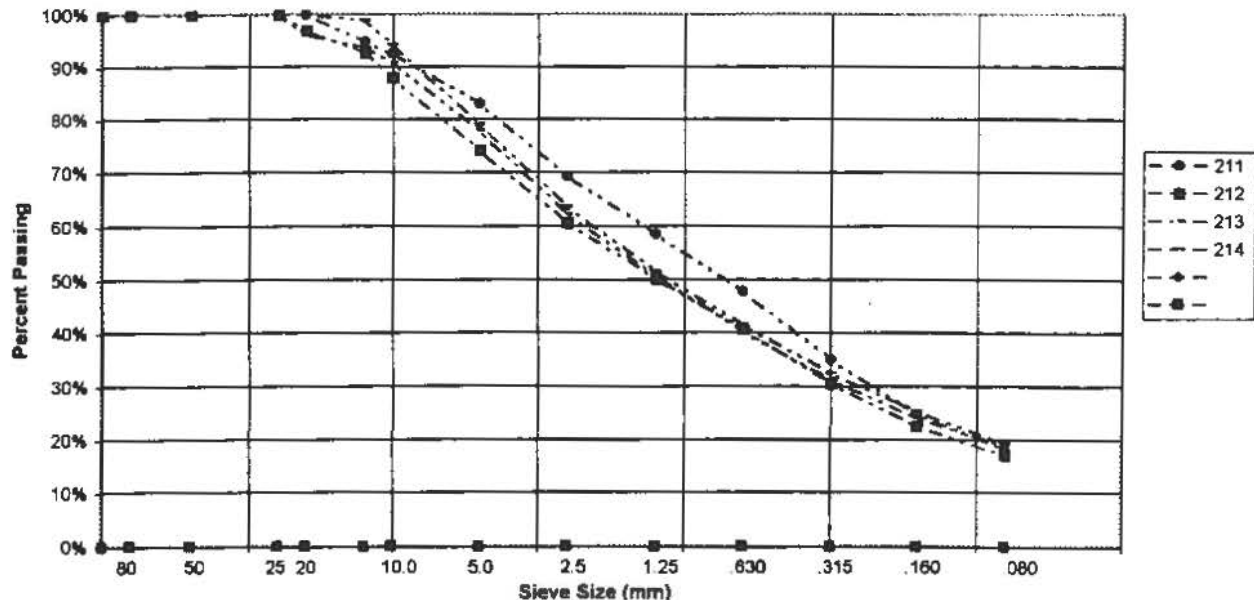
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633863-6772714  
 LOGGED BY: RW

HOLE No.: 30123B

DATE COMP: 11/8/2004

FIELD NO:	211	212	213	214
LAB NO:	211	212	213	214
DEPTH:	9.4-10.1	11.0-11.6	13.1-13.7	14.3-14.6
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	100%	100%	100%	100%
20.0	100%	97%	96%	100%
12.5	95%	83%	94%	99%
10.0	93%	88%	91%	94%
5.0	83%	74%	78%	79%
2.5	69%	61%	62%	64%
1.25	59%	50%	51%	52%
0.630	48%	41%	40%	42%
0.315	35%	31%	31%	33%
0.160	25%	23%	24%	25%
0.080	18%	17%	19%	19%
M.C.(%):	10%	9%	10%	10%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	17	26	22	21
% SAND:	65	57	59	60
% FINES:	18	17	19	19
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Fales & Associates Ltd.



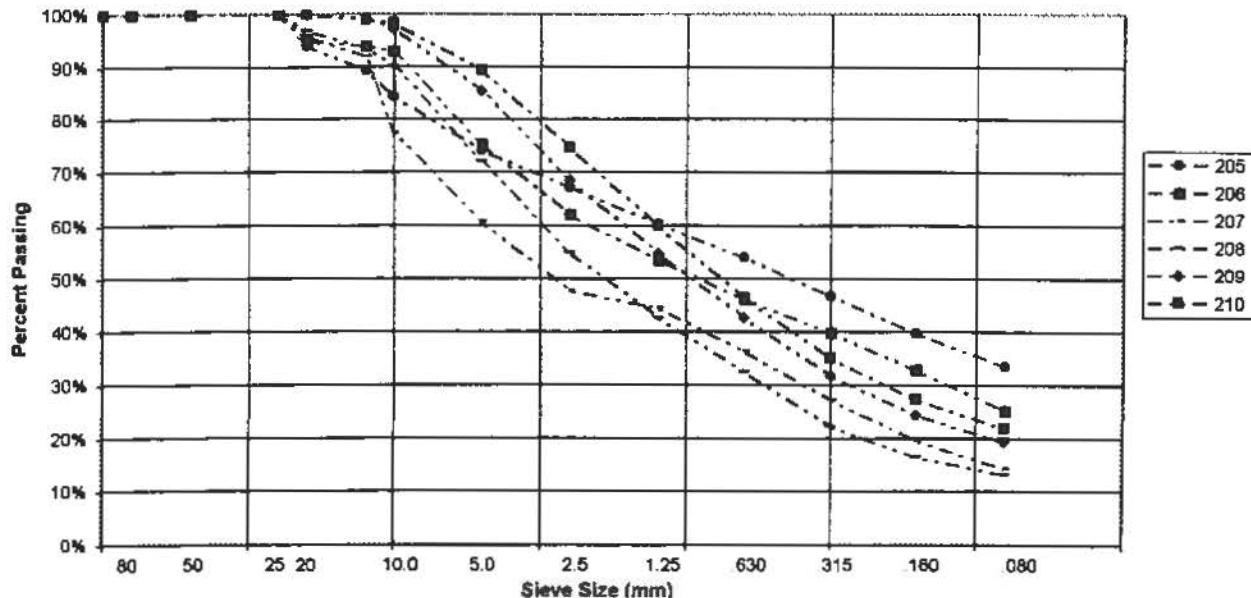
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1891.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633863-6772714  
 LOGGED BY: RW

HOLE No.: 30123

DATE COMP: 11/8/2004

FIELD NO:	205	206	207	208	209	210
LAB NO:	205	206	207	208	209	210
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	5.2-5.8	6.4-7.0	7.9-8.5
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	100%	100%	100%	100%	100%
20.0	94%	96%	96%	97%	100%	100%
12.5	89%	94%	92%	94%	99%	99%
10.0	84%	83%	77%	90%	97%	98%
5.0	74%	75%	61%	72%	85%	89%
2.5	67%	62%	48%	55%	69%	75%
1.25	60%	53%	44%	43%	55%	60%
0.630	54%	46%	36%	32%	43%	46%
0.315	47%	40%	27%	22%	32%	35%
0.160	40%	33%	20%	17%	24%	27%
0.080	34%	25%	14%	13%	19%	22%
M.C. (%):	6%	6%	5%	5%	7%	7%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	26	25	39	28	15	11
% SAND:	40	50	48	59	66	68
% FINES:	34	25	14	13	19	22
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	SILTY SAND (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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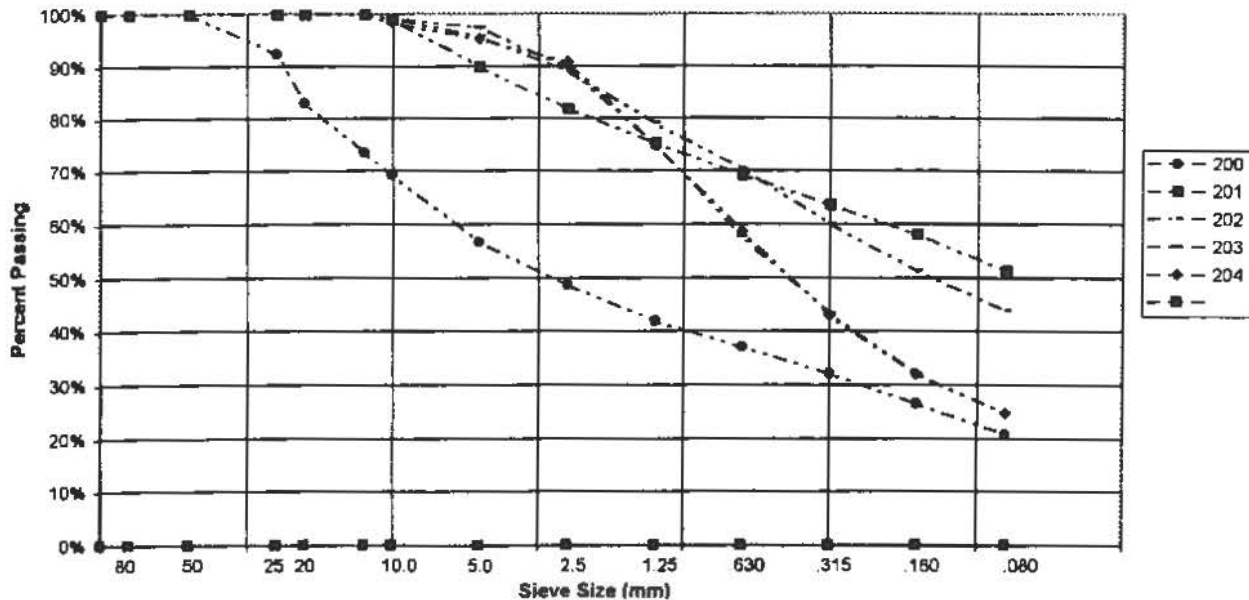
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1891.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633827-6772909  
 LOGGED BY: RW

HOLE No.: 30124

DATE COMP: 11/8/2004

FIELD NO:	200	201	202	203	204	
LAB NO:	200	201	202	203	204	
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	5.2-5.8	6.7-7.3	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
60.0	100%	100%	100%	100%	100%	
25.0	92%	100%	100%	100%	100%	
20.0	83%	100%	100%	100%	100%	
12.5	74%	100%	100%	100%	100%	
10.0	69%	99%	99%	98%	98%	
5.0	57%	90%	96%	97%	95%	
2.5	49%	82%	89%	90%	91%	
1.25	42%	75%	79%	75%	75%	
0.630	37%	69%	70%	58%	59%	
0.315	32%	64%	60%	43%	43%	
0.160	27%	58%	51%	32%	32%	
0.080	21%	51%	44%	25%	25%	
M.C.(%):	9%	17%	14%	4%	2%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	43	10	4	3	5	
% SAND:	36	39	52	73	70	
% FINES:	21	51	44	25	25	
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SANDY SILT (ML)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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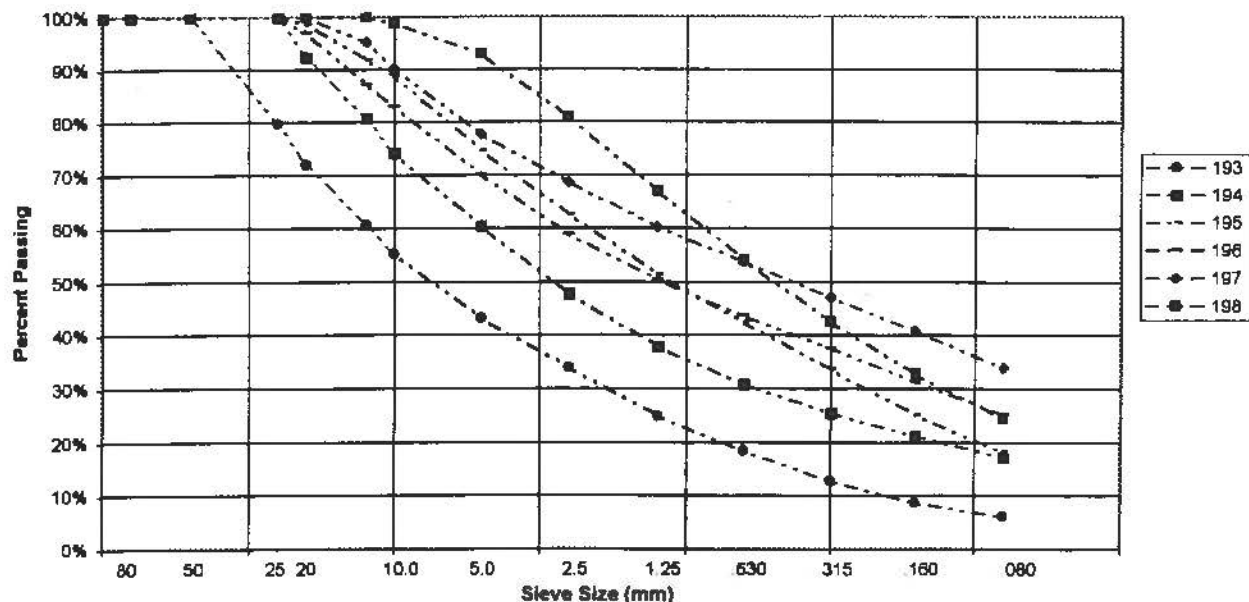
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633773-6773058  
 LOGGED BY: RW

HOLE No.: 30125

DATE COMP: 11/8/2004

FIELD NO:	193	194	195	196	197	198
LAB NO:	193	194	195	196	197	198
DEPTH:	0.3-0.8	1.8-2.4	3.4-4.0	4.9-5.5	6.4-7.0	7.9-8.5
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	80%	100%	100%	100%	100%	100%
20.0	72%	92%	99%	97%	100%	100%
12.5	61%	81%	92%	87%	95%	100%
10.0	55%	74%	89%	83%	90%	99%
5.0	43%	60%	75%	70%	78%	93%
2.5	34%	48%	63%	59%	69%	81%
1.25	25%	38%	51%	50%	60%	67%
0.630	19%	31%	42%	44%	54%	54%
0.315	13%	26%	34%	38%	47%	43%
0.160	9%	21%	25%	31%	41%	33%
0.080	6%	17%	18%	25%	34%	25%
M.C. (%):	2%	8%	10%	8%	11%	11%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	57	40	25	30	22	7
% SAND:	37	43	56	45	44	68
% FINES:	6	17	18	25	34	25
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. B. Paine & Associates Ltd.



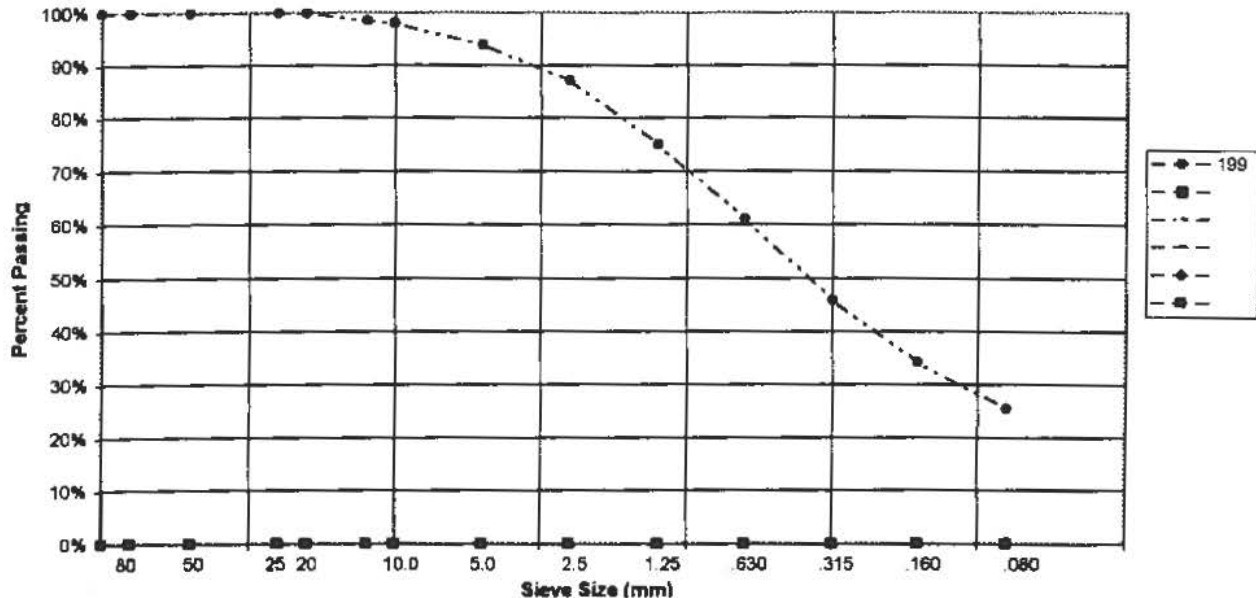
PROJECT NUMBER: 8002-318  
CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 633773-6773058  
LOGGED BY: RW

HOLE No.: 30125B

DATE COMP: 11/8/2004

FIELD NO:	199				
LAB NO:	199				
DEPTH:	10.4-10.7				
TYPE:	AUGER				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	99%				
10.0	98%				
5.0	94%				
2.6	87%				
1.25	75%				
0.630	61%				
0.315	46%				
0.160	34%				
0.080	25%				
M.C.(%)	12%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	8				
% SAND:	69				
% FINES:	25				
CLASSIFICATION	SILTY SAND (SM)				

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



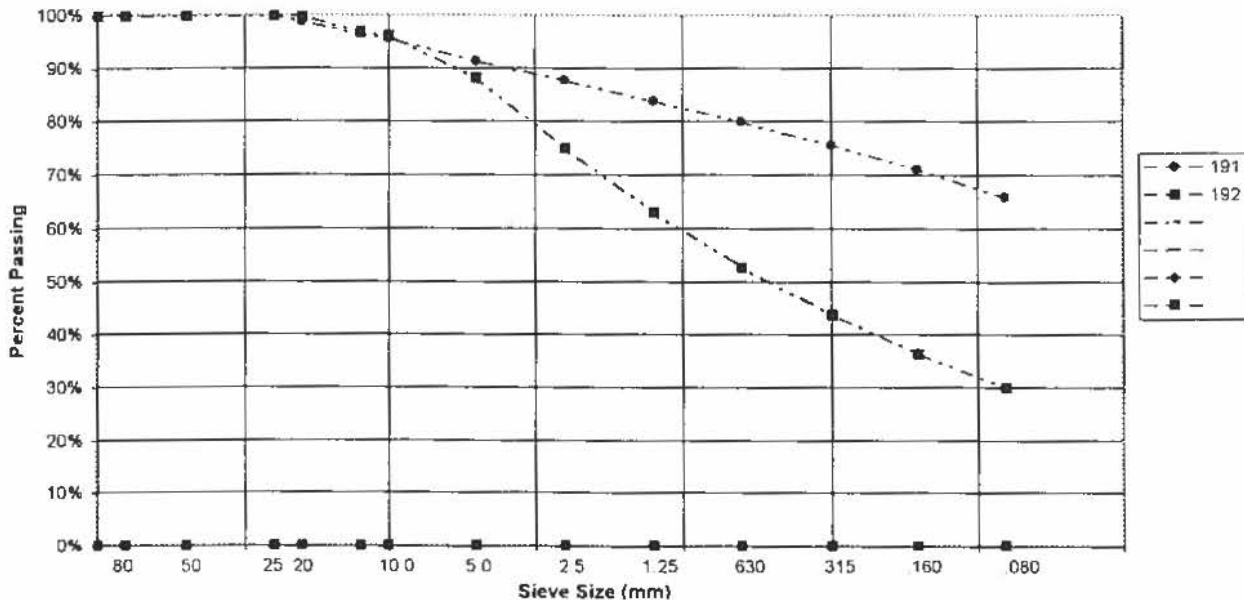
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633699-6773199  
 LOGGED BY: RW

HOLE No.: 30126

DATE COMP: 08/10/2004

FIELD NO:	191	192			
LAB NO:	191	192			
DEPTH:	0.5-0.8	1.5-1.8			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	99%	100%			
12.5	97%	97%			
10.0	96%	96%			
5.0	91%	88%			
2.5	88%	75%			
1.25	84%	63%			
0.630	80%	53%			
0.315	76%	44%			
0.160	71%	37%			
0.080	66%	30%			
M.C.(%):	13%	4%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	9	12			
% SAND:	25	58			
% FINES:	66	30			
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Faine & Associates Ltd.



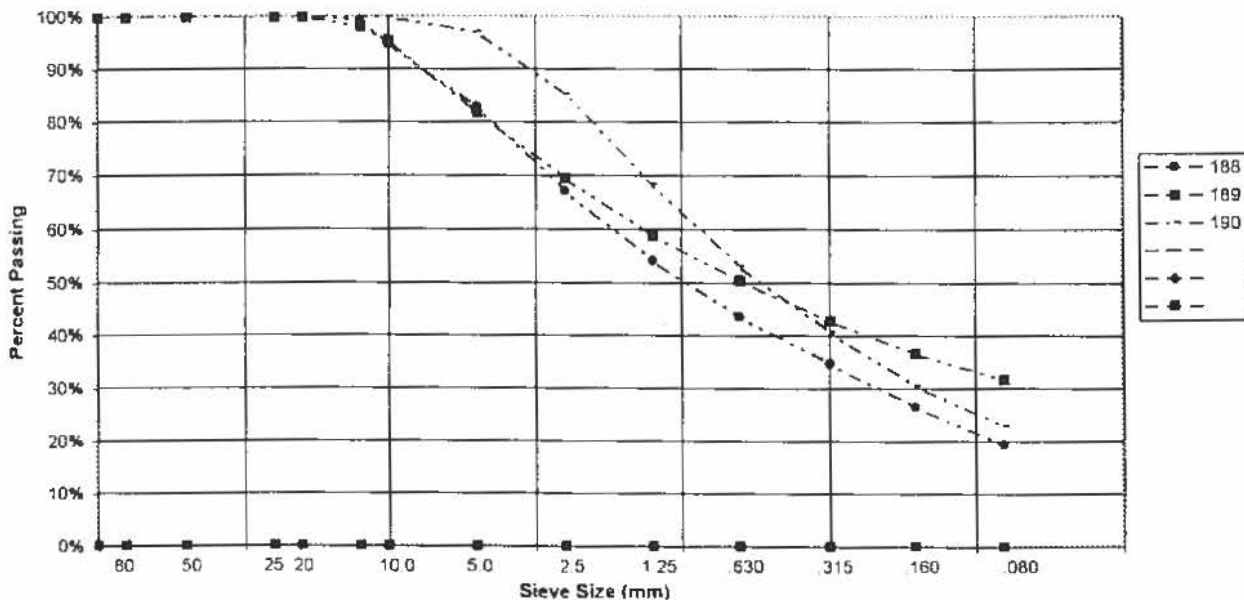
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633619-6773331  
 LOGGED BY: RW

HOLE No.: 30127

DATE COMP: 08/10/2004

FIELD NO:	188	189	190		
LAB NO:	188	189	190		
DEPTH:	0.6-1.2	2.1-2.9	4.0-4.6		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	100%	100%	100%		
12.5	99%	98%	100%		
10.0	95%	95%	100%		
5.0	83%	82%	97%		
2.5	67%	70%	85%		
1.25	54%	59%	68%		
0.630	44%	51%	53%		
0.315	35%	43%	41%		
0.160	27%	37%	31%		
0.080	20%	32%	23%		
M.C.(%):	16%	12%	3%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	17	18	3		
% SAND:	64	50	74		
% FINES:	20	32	23		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Price & Associates Ltd.



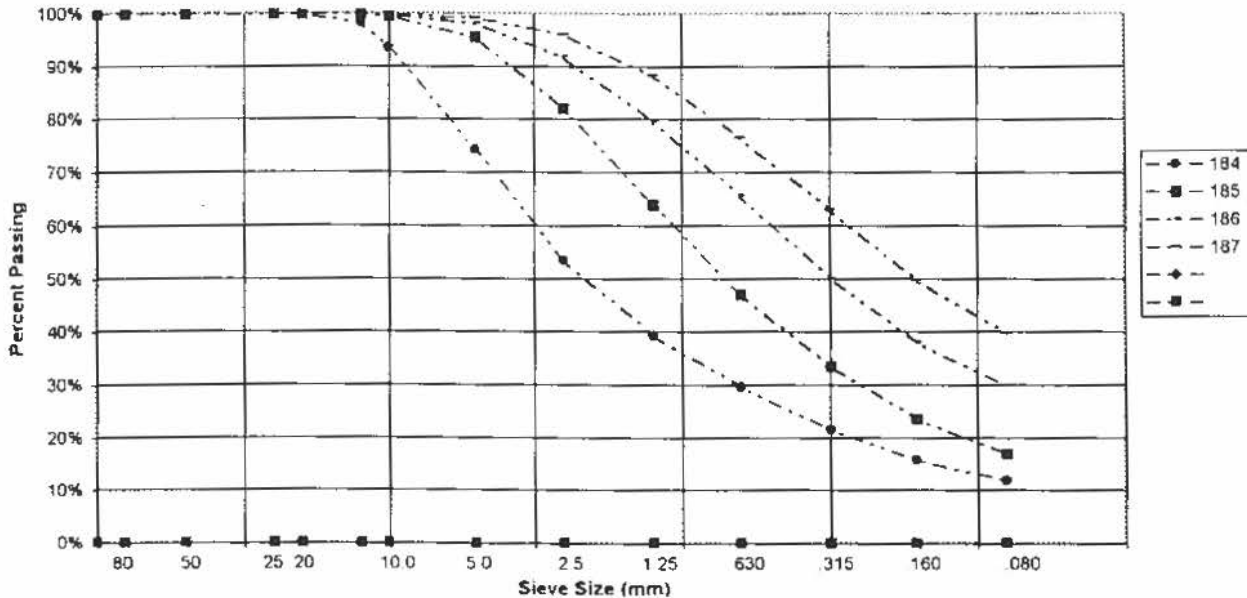
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633550-6773445  
 LOGGED BY: RW

HOLE No.: 30128

DATE COMP: 06/10/2004

FIELD NO:	184	185	186	187		
LAB NO:	184	185	186	187		
DEPTH:	0.4-0.9	2.1-2.9	3.7-4.3	5.2-5.8		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	98%	100%	100%	100%		
10.0	94%	100%	100%	100%		
5.0	74%	96%	98%	99%		
2.5	54%	82%	92%	96%		
1.25	39%	64%	80%	88%		
0.630	30%	47%	66%	77%		
0.315	22%	34%	50%	63%		
0.160	16%	24%	38%	50%		
0.080	12%	17%	30%	40%		
M.C.(%)	2%	9%	9%	10%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	26	4	2	1		
% SAND:	62	79	68	60		
% FINES:	12	17	30	40		
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.

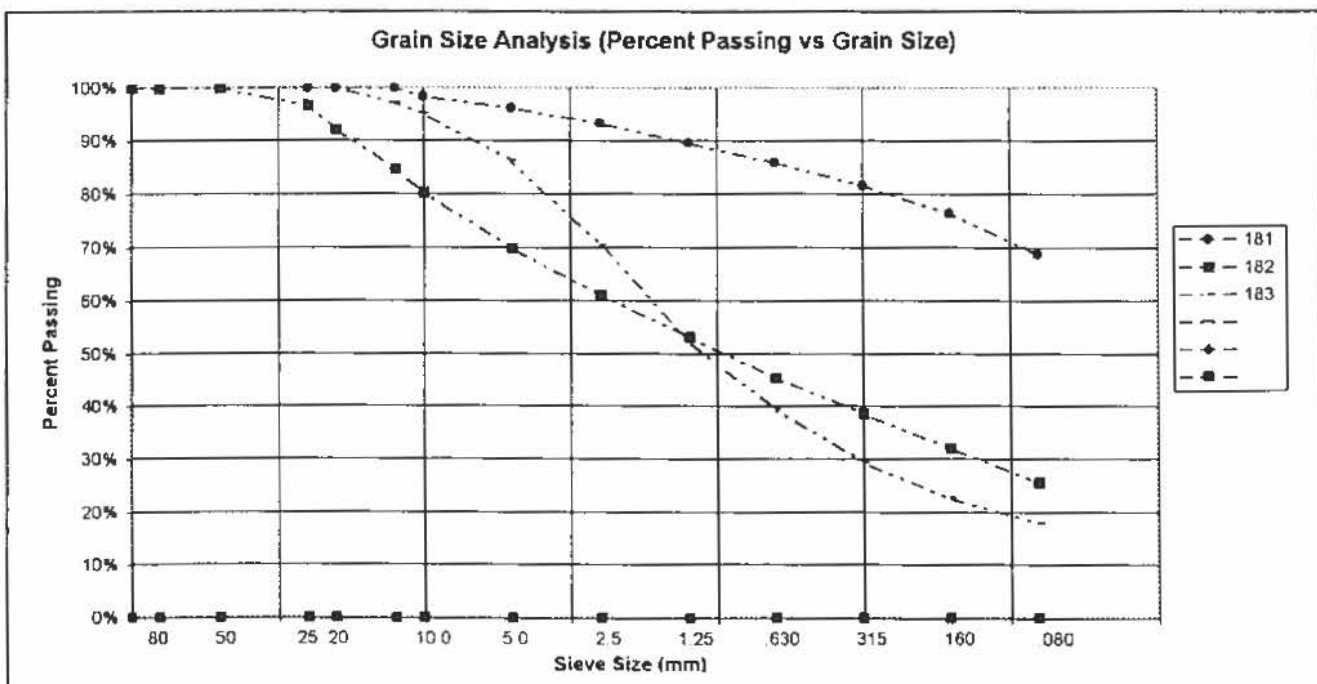


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633531-6773473  
 LOGGED BY: RW

HOLE No.: 30129

DATE COMP: 08/10/2004

FIELD NO:	181	182	183		
LAB NO:	181	182	183		
DEPTH:	0.6-1.2	1.8-2.4	3.4-3.7		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	97%	100%		
20.0	100%	92%	100%		
12.5	100%	85%	97%		
10.0	98%	80%	95%		
5.0	96%	70%	86%		
2.5	93%	61%	70%		
1.25	90%	53%	52%		
0.630	86%	46%	39%		
0.315	82%	39%	29%		
0.160	76%	32%	23%		
0.080	69%	26%	18%		
M.C.(%)	34%	9%	5%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	4	30	14		
% SAND:	27	44	68		
% FINES:	69	26	18		
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)		





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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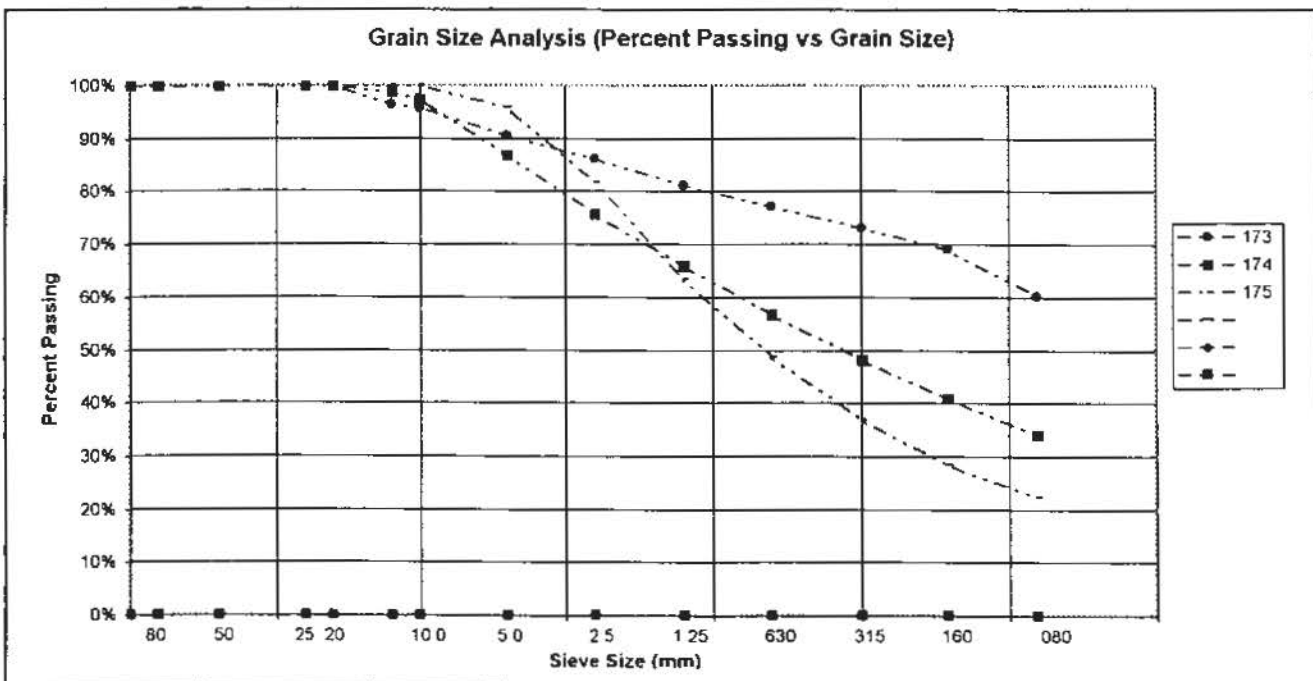


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633423-6773651  
 LOGGED BY: RW

HOLE No.: 30131

DATE COMP: 08/10/2004

FIELD NO:	173	174	175			
LAB NO:	173	174	175			
DEPTH:	0.3-0.9	1.8-2.4	3.4-3.7			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	100%	100%	100%			
20.0	100%	100%	100%			
12.5	96%	99%	100%			
10.0	96%	98%	100%			
5.0	91%	87%	96%			
2.5	86%	76%	82%			
1.25	81%	66%	63%			
0.630	77%	57%	49%			
0.315	73%	48%	37%			
0.160	69%	41%	29%			
0.080	60%	34%	22%			
M.C.(%)	31%	7%	3%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0	0.0			
% GRAVEL:	9	13	4			
% SAND:	30	53	74			
% FINES:	60	34	22			
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND (SM)	SILTY SAND (SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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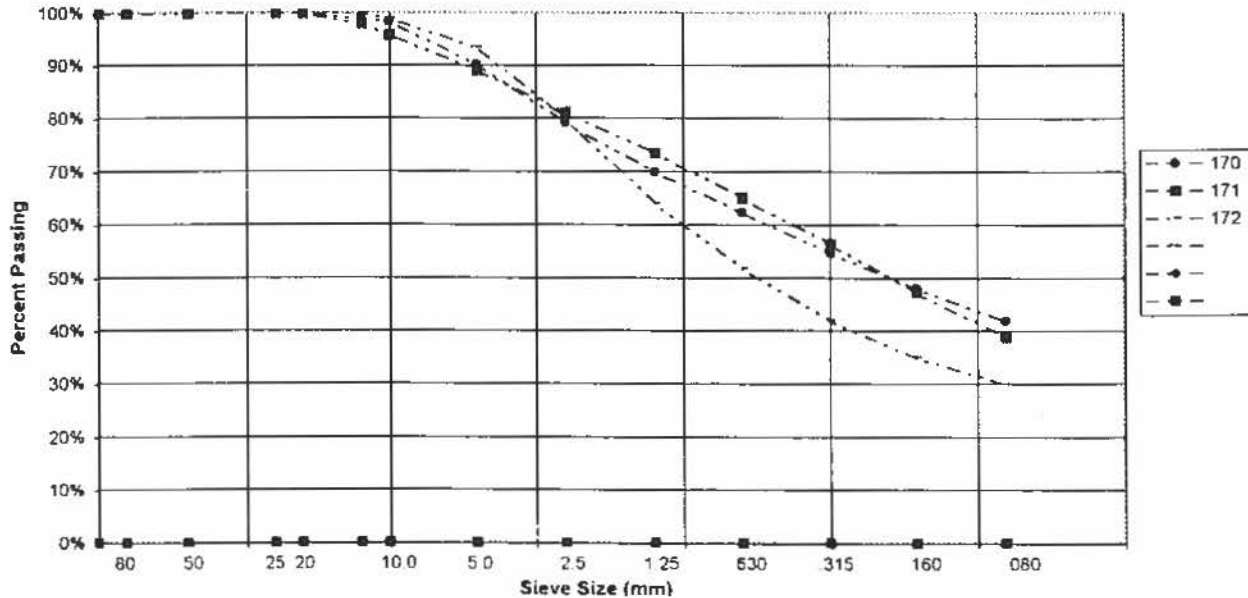
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633337-6773786  
 LOGGED BY: RW

HOLE No.: 30132

DATE COMP: 08/09/2004

FIELD NO:	170	171	172		
LAB NO:	170	171	172		
DEPTH:	0.9-1.2	2.1-2.7	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	100%	100%	100%		
12.5	99%	98%	100%		
10.0	98%	96%	99%		
5.0	90%	89%	93%		
2.5	79%	81%	80%		
1.25	70%	74%	64%		
0.630	62%	65%	52%		
0.315	55%	56%	42%		
0.160	48%	47%	35%		
0.080	42%	39%	30%		
M.C.(%)	10%	9%	6%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	10	11	7		
% SAND:	48	50	63		
% FINES:	42	39	30		
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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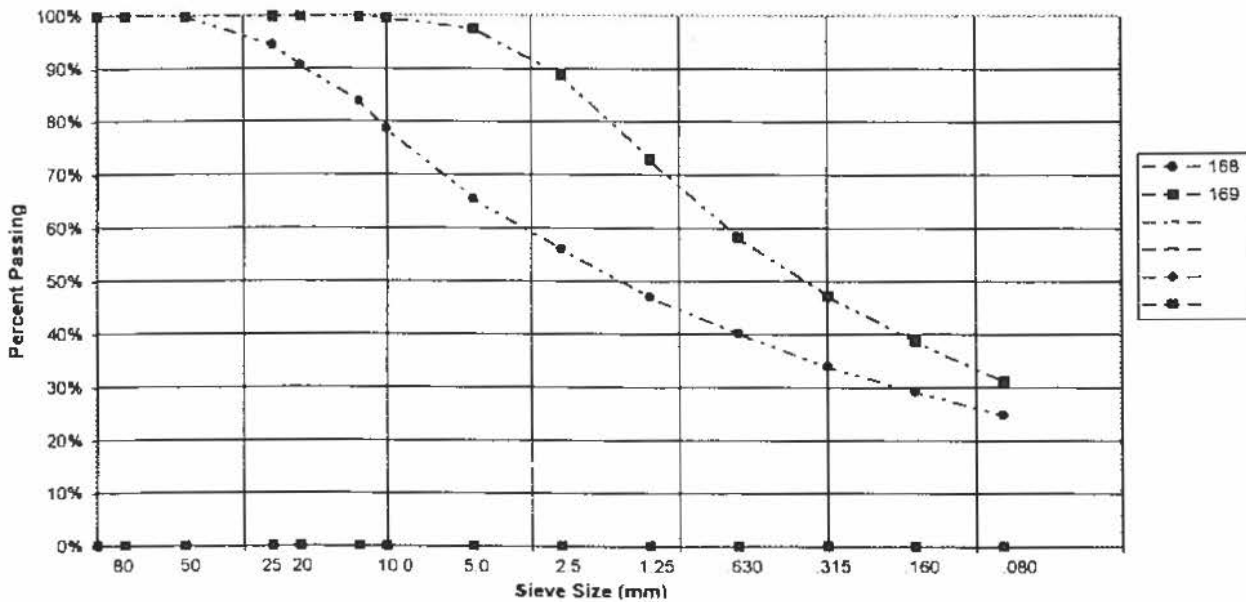
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633261-6773901  
 LOGGED BY: RW

HOLE No.: 30133

DATE COMP: 08/09/2004

FIELD NO:	168	169			
LAB NO:	168	169			
DEPTH:	0.9-1.2	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
60.0	100%	100%			
25.0	95%	100%			
20.0	91%	100%			
12.5	84%	100%			
10.0	79%	100%			
5.0	65%	98%			
2.5	56%	89%			
1.25	47%	73%			
0.630	40%	58%			
0.315	34%	47%			
0.160	29%	39%			
0.080	25%	31%			
M.C.(%)	7%	8%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	35	2			
% SAND:	41	66			
% FINES:	25	31			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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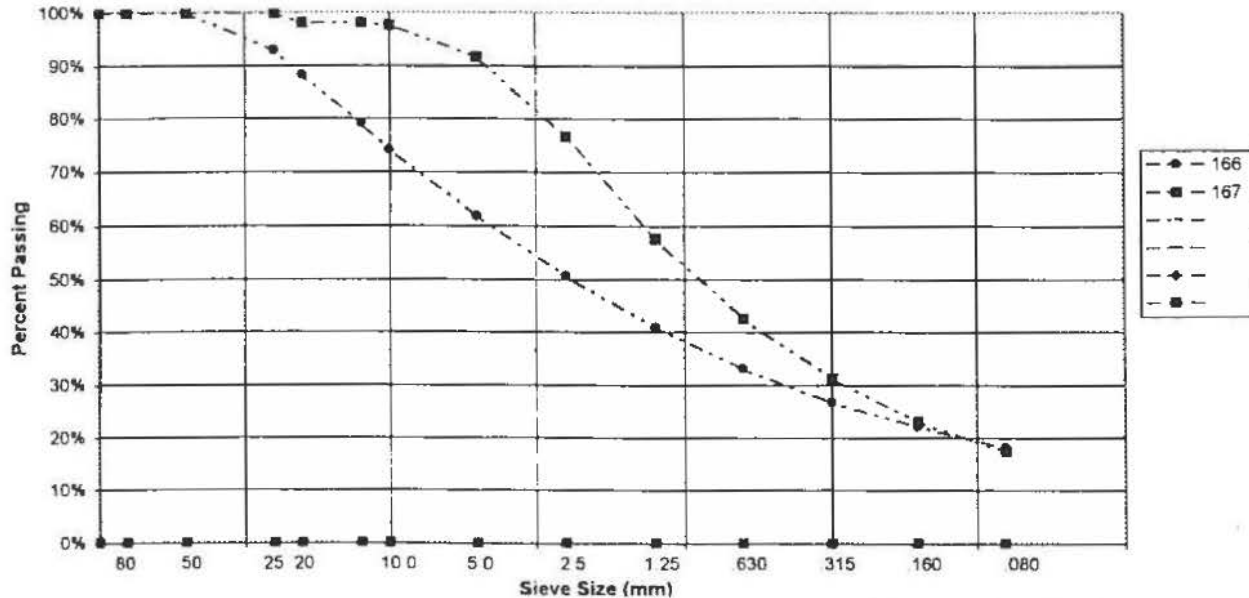
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633158-6774008  
 LOGGED BY: RW

HOLE No.: 30134

DATE COMP: 08/09/2004

FIELD NO:	166	167			
LAB NO:	166	167			
DEPTH:	0.9-1.2	1.8-2.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	93%	100%			
20.0	88%	98%			
12.5	79%	98%			
10.0	74%	98%			
5.0	62%	92%			
2.5	51%	77%			
1.25	41%	58%			
0.630	33%	43%			
0.315	27%	31%			
0.160	22%	23%			
0.080	18%	18%			
M.C.(%)	8%	1%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	38	8			
% SAND:	44	74			
% FINES:	18	18			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)			

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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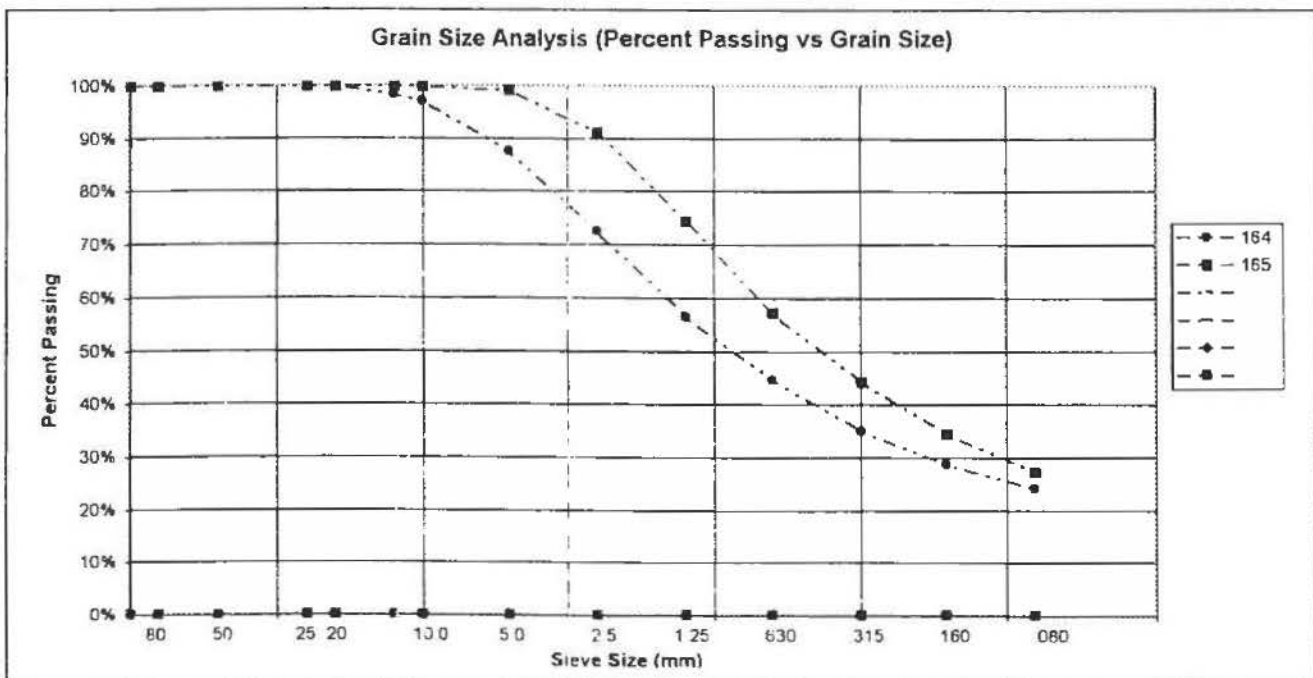


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633067-6774137  
 LOGGED BY: RW

HOLE No.: 30135

DATE COMP: 08/09/2004

FIELD NO:	164	165			
LAB NO:	164	165			
DEPTH:	0.9-1.5	2.1-3.0			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	98%	100%			
10.0	97%	100%			
5.0	88%	99%			
2.5	73%	91%			
1.25	57%	74%			
0.630	45%	57%			
0.315	35%	44%			
0.160	29%	35%			
0.080	24%	27%			
M.C.(%)	10%	9%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	12	1			
% SAND:	63	72			
% FINES:	24	27			
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND (SM)			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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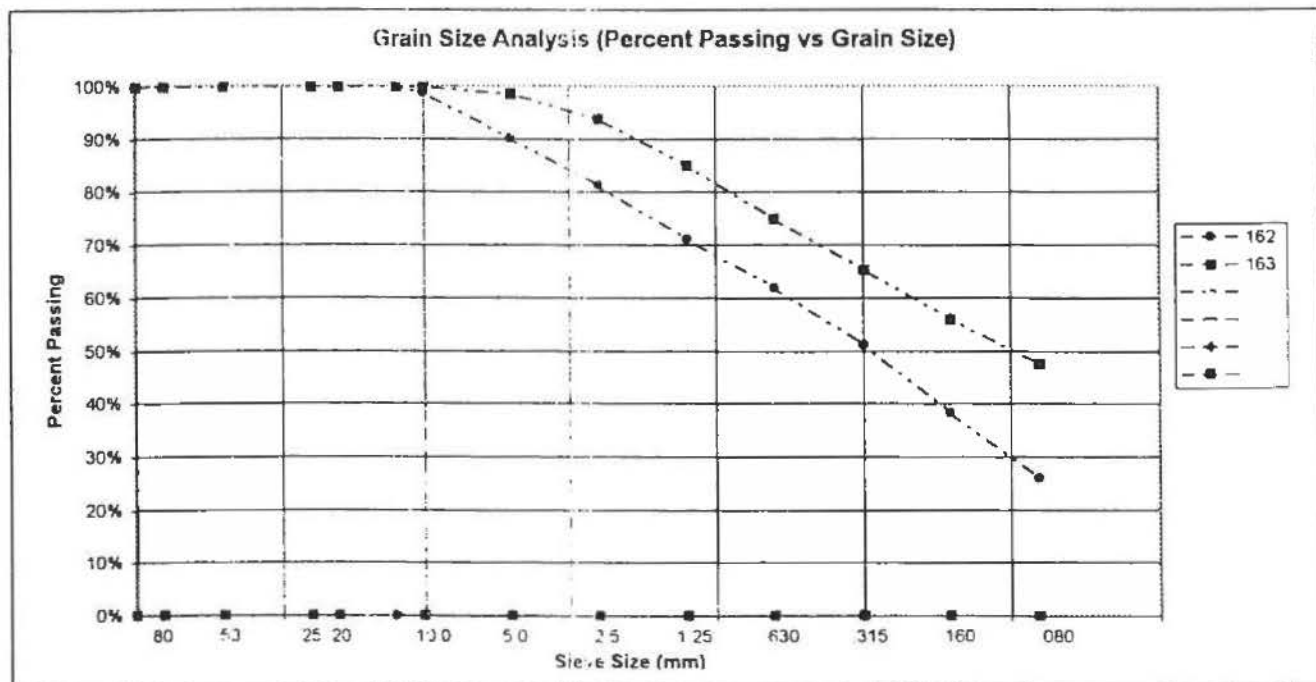


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 633003-6774206  
 LOGGED BY: RW

HOLE No.: 30136

DATE COMP: 08/09/2004

FIELD NO:	162	163			
LAB NO:	162	163			
DEPTH:	0.6-1.2	1.5-2.1			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	100%	100%			
20.0	100%	100%			
12.5	100%	100%			
10.0	99%	100%			
5.0	90%	99%			
2.5	81%	94%			
1.25	71%	85%			
0.630	62%	75%			
0.315	51%	65%			
0.160	38%	56%			
0.080	26%	48%			
M.C.(%)	11%	14%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX:	0.0	0.0			
% GRAVEL:	10	1			
% SAND:	64	51			
% FINES:	26	48			
CLASSIFICATION	SILTY SAND (S <sub>2</sub> )	SILTY SAND (SM)			





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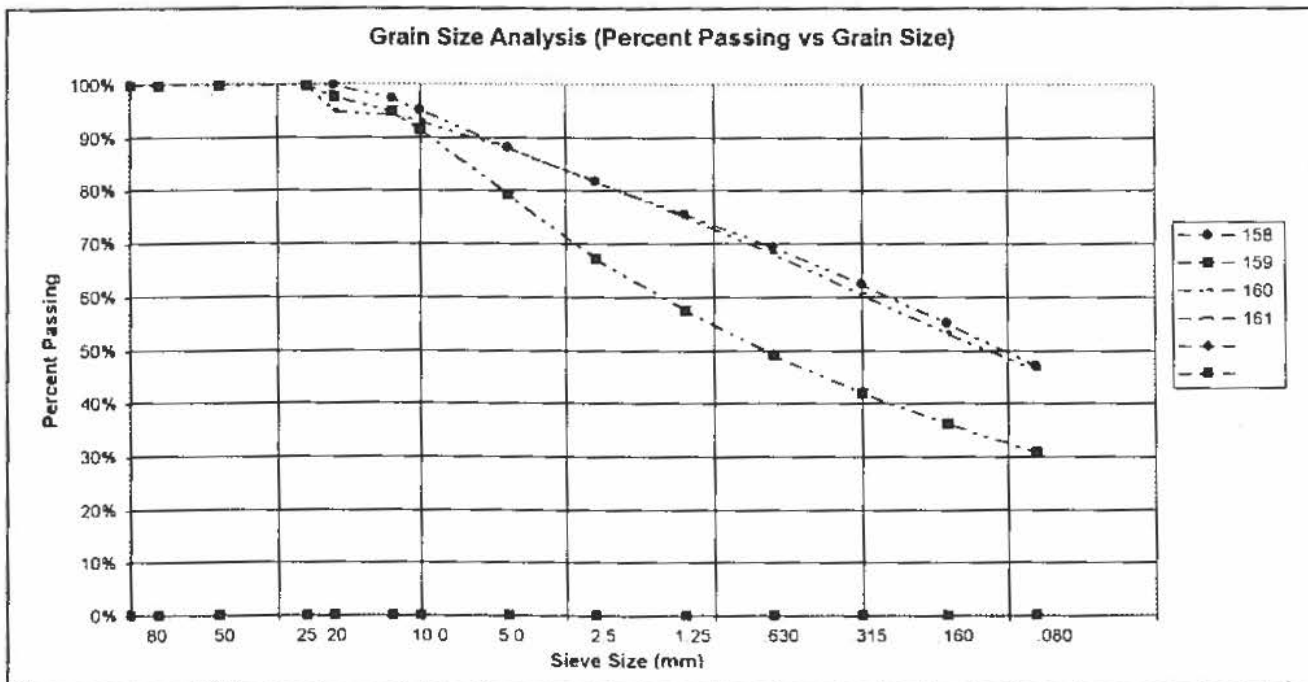


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 632037-6775613  
 LOGGED BY: RW

HOLE No.: 30148

DATE COMP: 08/03/2004

FIELD NO:	158	159	160	161
LAB NO:	158	159	160	161
DEPTH:	0.9-1.5	2.1-2.7	3.7-4.3	4.9-5.2
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	
80.0	100%	100%	100%	
50.0	100%	100%	100%	
25.0	100%	100%	100%	
20.0	100%	98%	95%	
12.5	98%	95%	94%	
10.0	95%	92%	93%	
5.0	88%	79%	88%	
2.5	82%	67%	82%	
1.25	76%	58%	75%	
0.630	70%	49%	68%	
0.315	63%	42%	61%	
0.160	55%	36%	53%	
0.080	47%	31%	46%	
M.C.(%)	25%	11%	16%	5%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	12	21	12	#VALUE!
% SAND:	41	49	42	#VALUE!
% FINES:	47	31	46	#VALUE!
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	#VALUE!





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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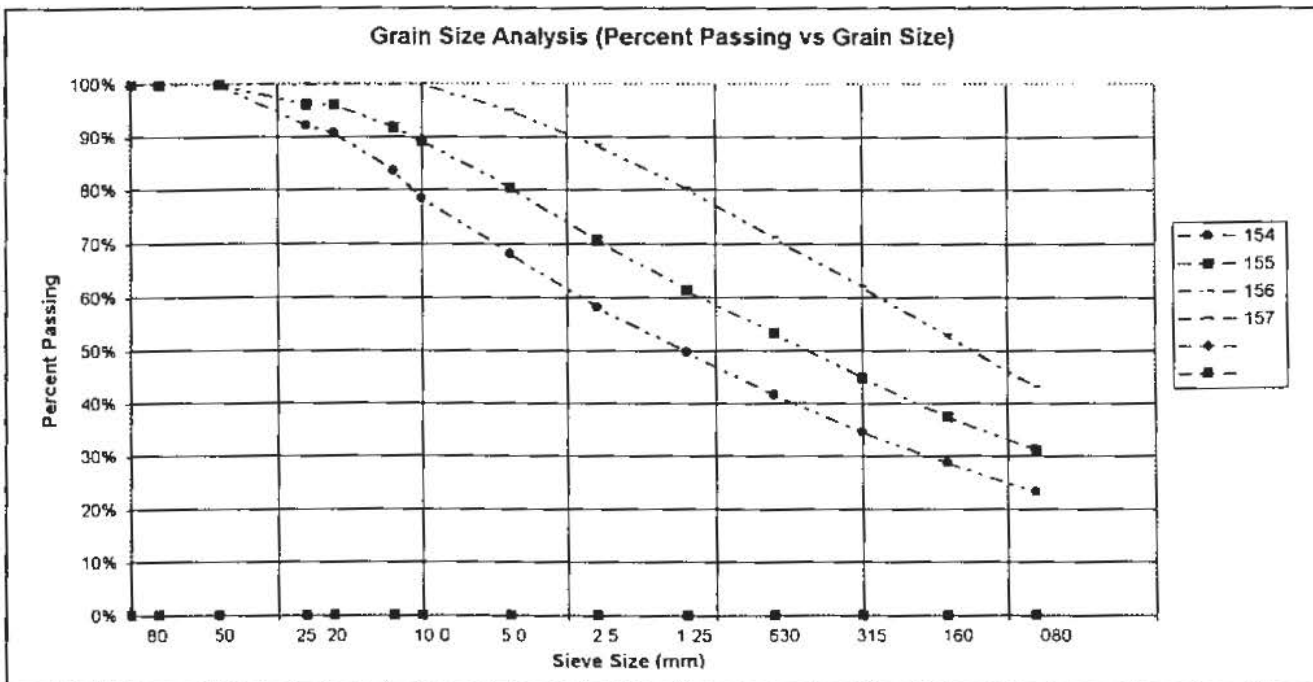


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631983-6775666  
 LOGGED BY: RW

HOLE No.: 30149

DATE COMP: 08/03/2004

FIELD NO:	154	155	156	157	
LAB NO:	154	155	156	157	
DEPTH:	0.9-1.4	2.1-2.7	4.0-4.6	5.3-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	92%	96%	100%		
20.0	91%	96%	100%		
12.5	84%	92%	100%		
10.0	79%	89%	100%		
5.0	68%	81%	95%		
2.5	58%	71%	88%		
1.25	50%	62%	80%		
0.630	42%	53%	71%		
0.315	35%	45%	62%		
0.160	29%	38%	53%		
0.080	23%	31%	43%		
M.C.(%)	10%	12%	15%	5%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	
% GRAVEL:	32	19	5	#VALUE!	
% SAND:	45	49	52	#VALUE!	
% FINES:	23	31	43	#VALUE!	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	#VALUE!	





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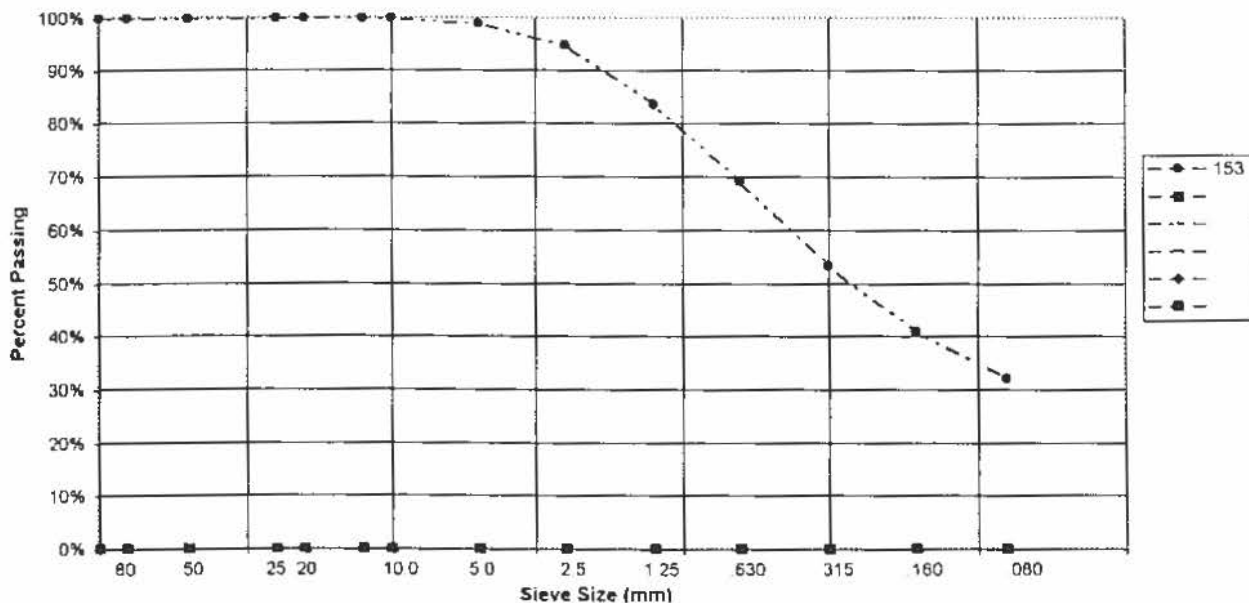
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631923-6775739  
 LOGGED BY: RW

HOLE No.: 30150

DATE COMP: 08/03/2004

FIELD NO:	153			
LAB NO:	153			
DEPTH:	9.4-10.1			
TYPE:	AUGER			
SIEVE SIZE	PERCENT PASSING			
100.0	100%			
80.0	100%			
50.0	100%			
25.0	100%			
20.0	100%			
12.5	100%			
10.0	100%			
5.0	99%			
2.5	95%			
1.25	84%			
0.630	69%			
0.315	53%			
0.160	41%			
0.080	32%			
M.C.(%):	5%			
LIQUID LIMIT:	0.0			
PLASTIC LIMIT:	0.0			
PLASTIC INDEX:	0.0			
% GRAVEL:	1			
% SAND:	67			
% FINES:	32			
CLASSIFICATION	SILTY SAND (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





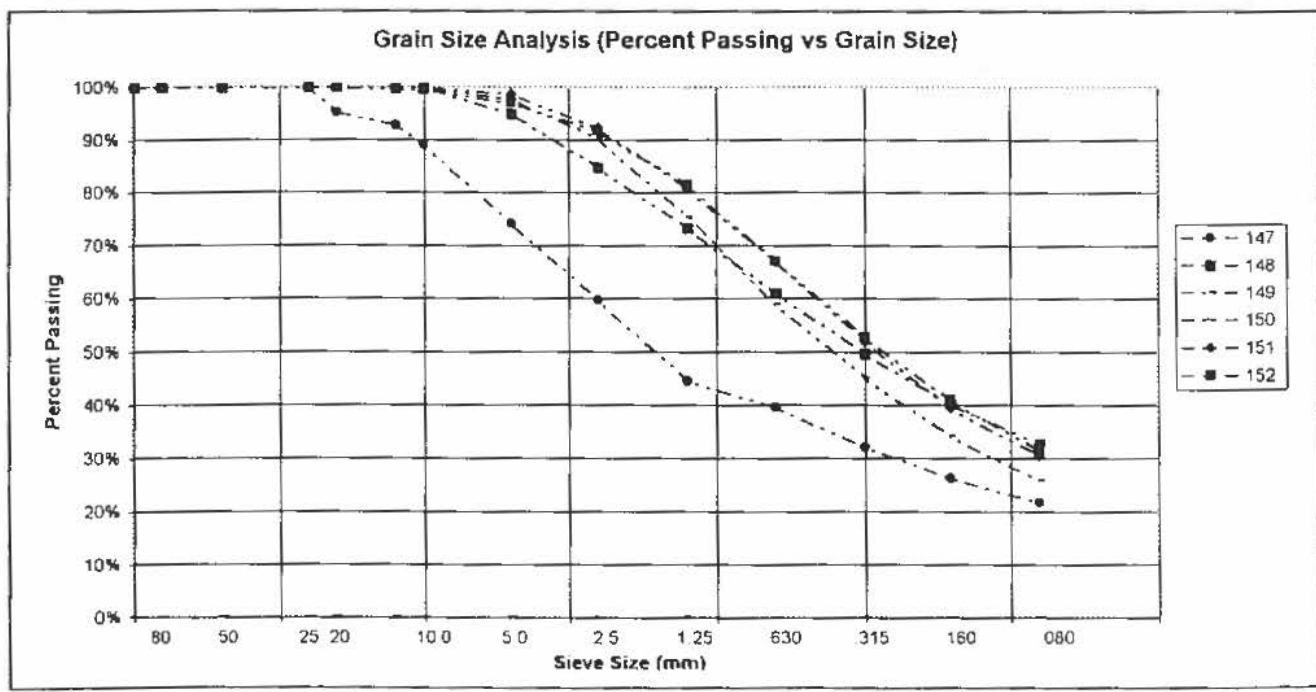
# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30150  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631923-6775739  
 LOGGED BY: RW DATE COMP: 08/03/2004

FIELD NO:	147	148	149	150	151	152
LAB NO:	147	148	149	150	151	152
DEPTH:	0.9-1.2	1.8-2.4	3.7-4.3	5.3-5.5	6.4-7.3	7.9-8.5
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	100%	100%	100%	100%	100%
20.0	95%	100%	100%	100%	100%	100%
12.5	93%	100%	100%	100%	100%	100%
10.0	89%	100%	100%	100%	100%	100%
5.0	74%	95%	98%	99%	97%	92%
2.5	60%	85%	90%	92%	81%	81%
1.25	45%	73%	75%	67%	67%	67%
0.630	40%	61%	59%	52%	53%	53%
0.315	32%	50%	45%	40%	41%	41%
0.160	26%	40%	34%	30%	32%	32%
0.080	22%	33%	26%			
M.C.(%)	15%	3%	14%	7%	5%	7%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	26	5	2	#VALUE!	1	3
% SAND:	52	62	72	#VALUE!	68	66
% FINES:	22	33	26	#VALUE!	30	32
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	SILTY SAND (SM)	#VALUE!	SILTY SAND (SM)	SILTY SAND (SM)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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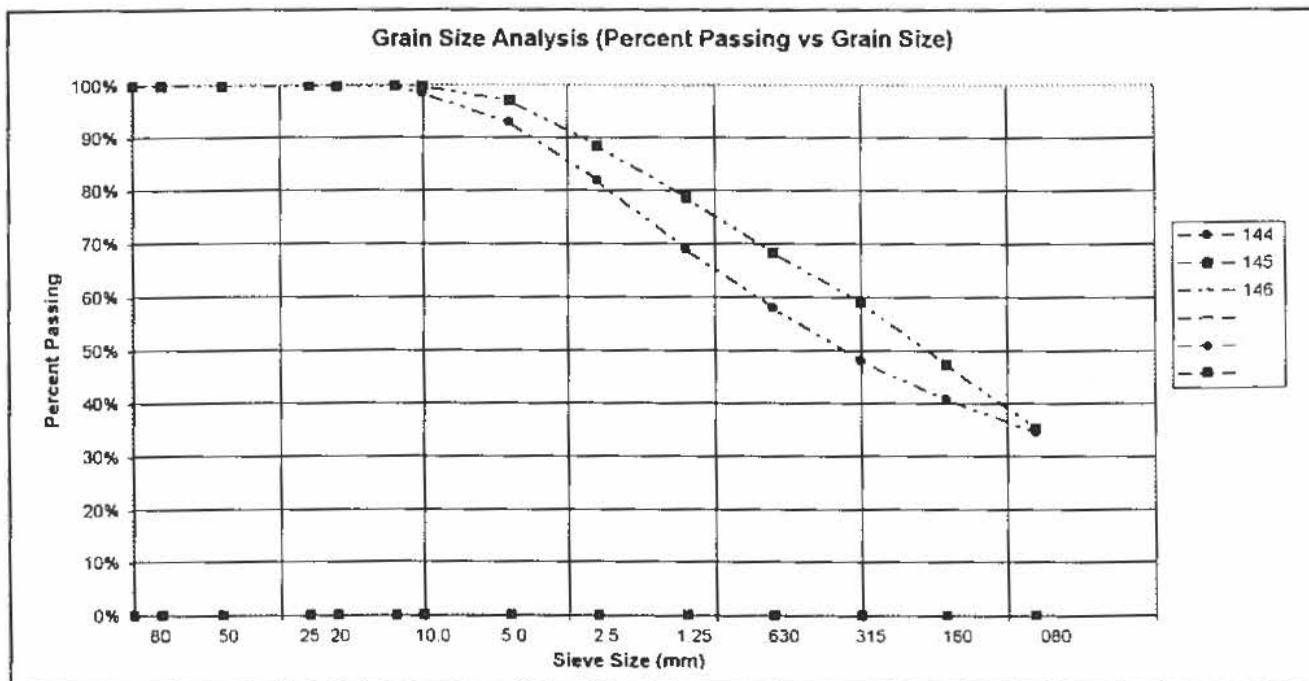


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631868-6775813  
 LOGGED BY: RW

HOLE No.: 30151

DATE COMP: 08/03/2004

FIELD NO:	144	145	146			
LAB NO:	144	145	146			
DEPTH:	0.9-1.2	1.5-2.1	3.0-3.2			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%				
50.0	100%	100%				
25.0	100%	100%				
20.0	100%	100%				
12.5	100%	100%				
10.0	99%	100%				
5.0	93%	97%				
2.5	82%	89%				
1.25	69%	79%				
0.630	58%	68%				
0.315	48%	59%				
0.160	41%	48%				
0.080	35%	35%				
M.C.(%)	22%	11%	7%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX:	0.0	0.0	0.0			
% GRAVEL:	7	3	#VALUE!			
% SAND:	58	62	#VALUE!			
% FINES:	35	35	#VALUE!			
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND (SM)	#VALUE!			





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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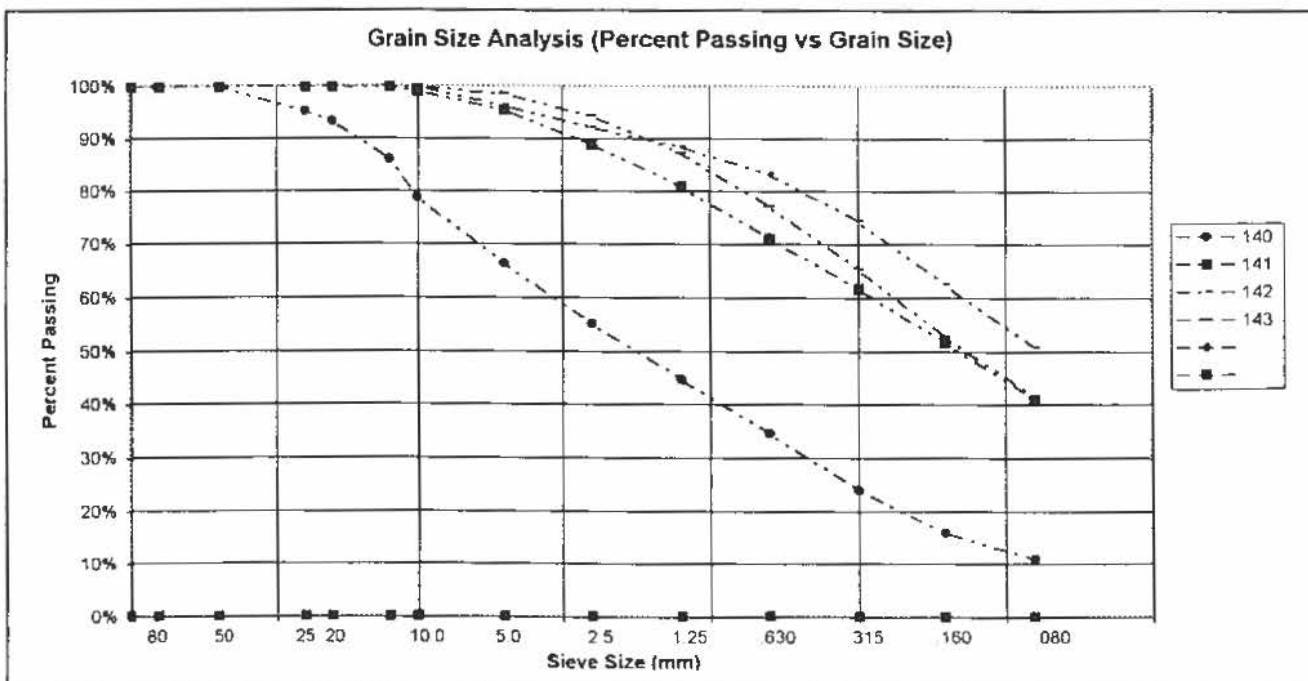


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631805-6775939  
 LOGGED BY: RW

HOLE No.: 30152

DATE COMP: 08/03/2004

FIELD NO:	140	141	142	143
LAB NO:	140	141	142	143
DEPTH:	0.3-0.9	2.1-2.7	3.4-4.0	4.9-5.2
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	95%	100%	100%	100%
20.0	93%	100%	100%	100%
12.5	86%	100%	100%	100%
10.0	79%	99%	100%	100%
5.0	66%	96%	96%	99%
2.5	55%	89%	92%	94%
1.25	45%	81%	88%	87%
0.630	35%	71%	83%	77%
0.315	24%	52%	74%	65%
0.160	16%	52%	63%	53%
0.080	11%	41%	51%	41%
M.C.(%)	3%	9%	9%	6%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	34	4	4	1
% SAND:	55	54	45	57
% FINES:	11	41	51	41
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)	SANDY SILT (ML)	SILTY SAND (SM)





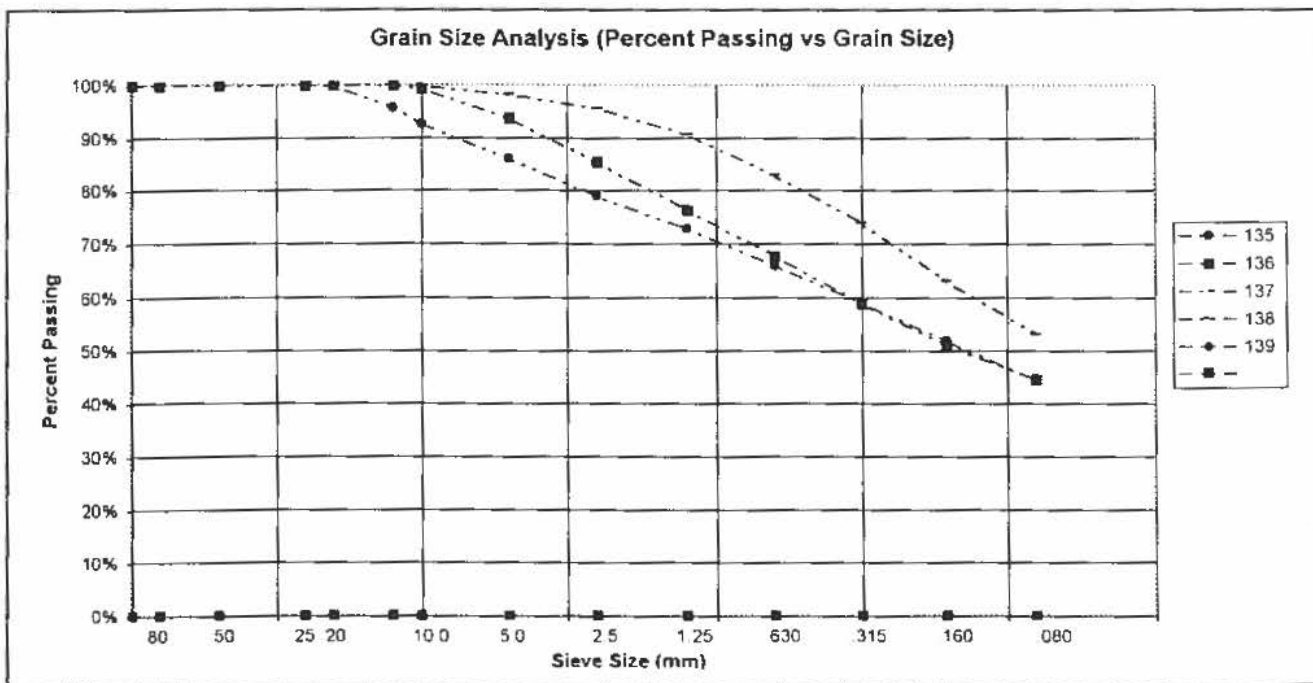
# HOGGAN ENGINEERING & TESTING (1980) LTD.

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PROJECT NUMBER: 8002-318 HOLE No.: 30153  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631728-6776010  
 LOGGED BY: RW DATE COMP: 08/03/2004

FIELD NO:	135	136	137	138	139	
LAB NO:	135	136	137	138	139	
DEPTH:	0.6-1.2	1.5-2.4	3.4-4.0	5.2-5.8	7.3-7.6	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%		100%		
80.0	100%	100%		100%		
50.0	100%	100%		100%		
25.0	100%	100%		100%		
20.0	100%	100%		100%		
12.5	96%	100%		100%		
10.0	93%	99%		100%		
5.0	86%	94%		98%		
2.5	79%	86%		96%		
1.25	73%	76%		91%		
0.630	66%	68%		83%		
0.315	59%	59%		74%		
0.160	52%	51%		63%		
0.080	44%	45%		53%		
M.C.(%)	11%	12%	7%	10%	5%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	14	6	#VALUE!	2	#VALUE!	
% SAND:	42	49	#VALUE!	45	#VALUE!	
% FINES:	44	45	#VALUE!	53	#VALUE!	
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND (SM)	#VALUE!	SANDY SILT (ML)	#VALUE!	





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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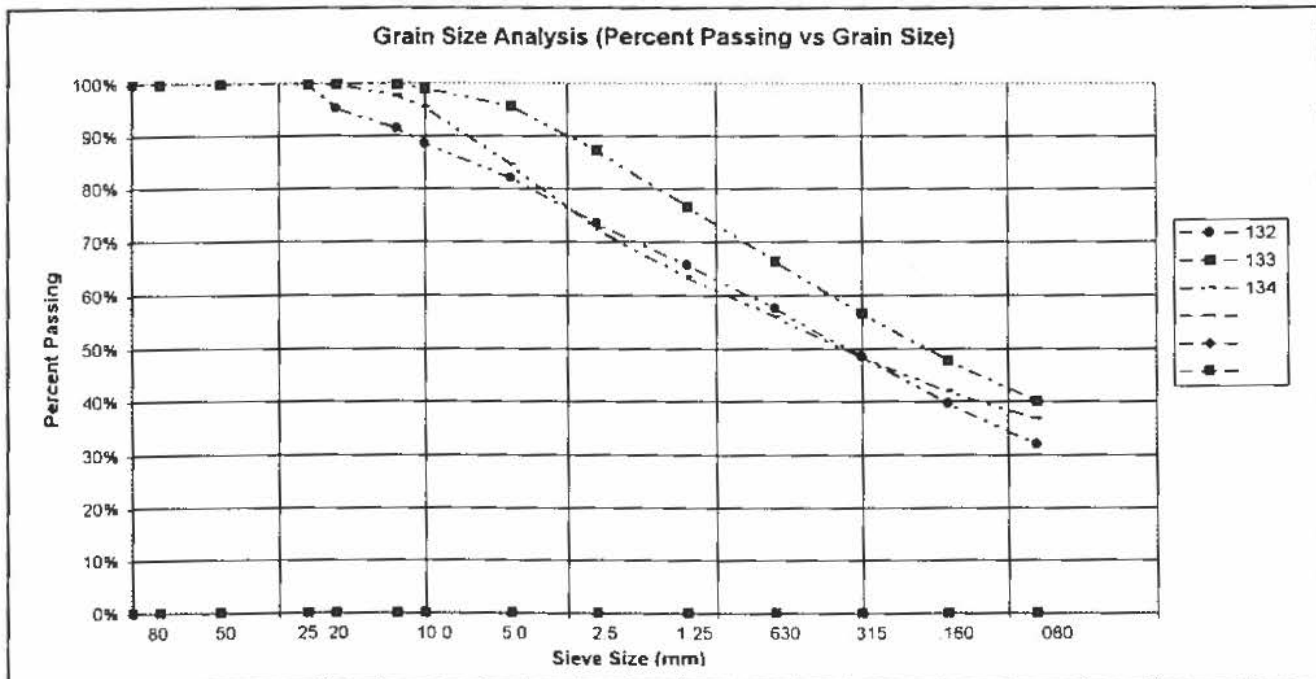


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631698-6776060  
 LOGGED BY: RW

HOLE No.: 30154

DATE COMP: 07/31/2004

FIELD NO:	132	133	134		
LAB NO:	132	133	134		
DEPTH:	0.3-0.9	1.5-2.4	3.4-4.0		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	95%	100%	100%		
12.5	92%	100%	98%		
10.0	89%	99%	96%		
5.0	82%	96%	85%		
2.5	74%	87%	73%		
1.25	66%	77%	64%		
0.630	58%	67%	56%		
0.315	49%	57%	48%		
0.160	40%	48%	42%		
0.080	32%	40%	37%		
M.C.(%):	30%	19%	13%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	18	4	15		
% SAND:	50	55	48		
% FINES:	32	40	37		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)		





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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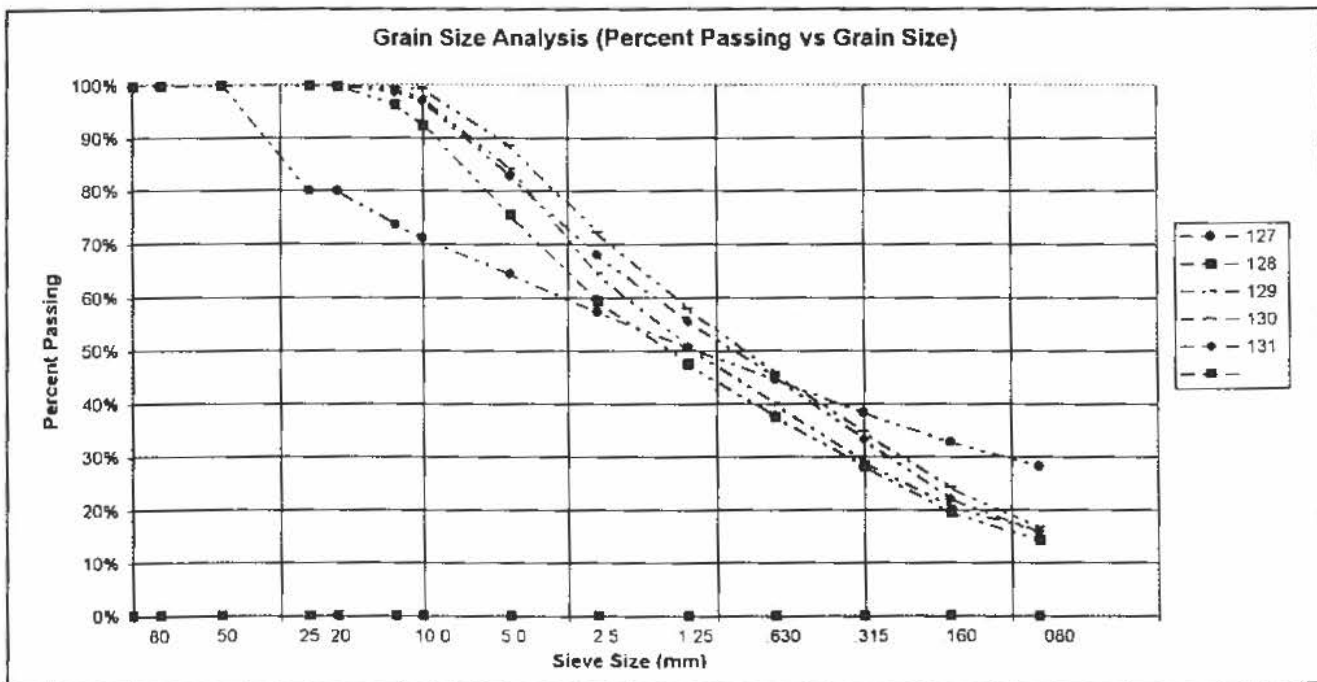


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631643-6776117  
 LOGGED BY: RW

HOLE No.: 30155

DATE COMP: 07/31/2004

FIELD NO:	127	128	129	130	131	
LAB NO:	127	128	129	130	131	
DEPTH:	0.8-1.2	1.5-2.0	2.4-2.9	3.4-4.0	5.2-5.8	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	80%	100%	100%	100%	100%	
20.0	80%	100%	100%	100%	100%	
12.5	74%	96%	99%	100%	99%	
10.0	71%	93%	98%	99%	97%	
5.0	65%	76%	84%	88%	83%	
2.5	57%	60%	65%	72%	68%	
1.25	51%	48%	51%	58%	56%	
0.630	45%	38%	40%	46%	45%	
0.315	38%	28%	29%	35%	33%	
0.160	33%	20%	21%	24%	22%	
0.080	28%	14%	16%	17%	16%	
M.C.(%)	9%	8%	8%	9%	10%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	35	24	16	12	17	
% SAND:	36	61	68	72	67	
% FINES:	28	14	16	17	16	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)	





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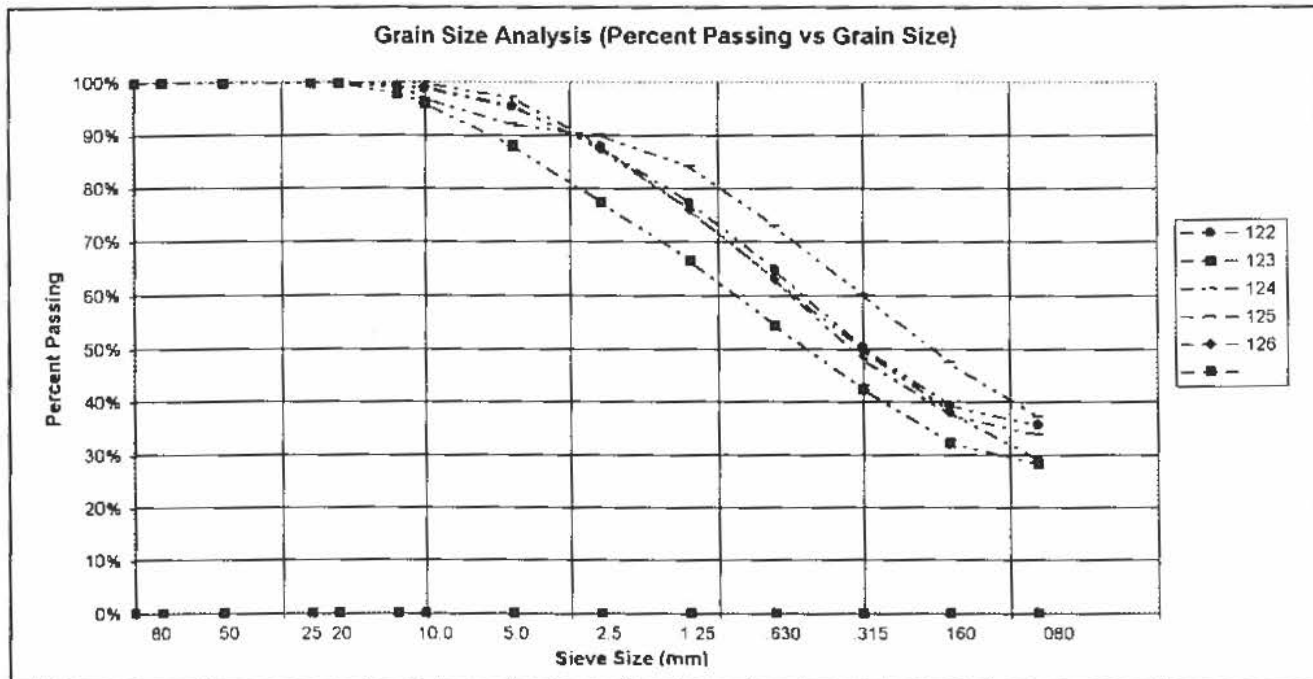


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631600-6776185  
 LOGGED BY: RW

HOLE No.: 30156

DATE COMP: 07/31/2004

FIELD NO:	122	123	124	125	126	
LAB NO:	122	123	124	125	126	
DEPTH:	9.4-10.1	10.4-11.0	11.3-11.9	12.5-13.4	13.7-14.6	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	100%	
12.5	99%	98%	100%	100%	99%	
10.0	99%	96%	100%	97%	99%	
5.0	96%	88%	97%	92%	96%	
2.5	88%	78%	88%	90%	88%	
1.25	77%	67%	76%	84%	76%	
0.630	65%	55%	63%	73%	63%	
0.315	50%	43%	48%	60%	50%	
0.160	39%	32%	38%	48%	38%	
0.080	36%	29%	34%	37%	29%	
M.C.(%)	5%	4%	5%	6%	5%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	4	12	3	8	4	
% SAND:	60	60	63	55	67	
% FINES:	36	29	34	37	29	
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	





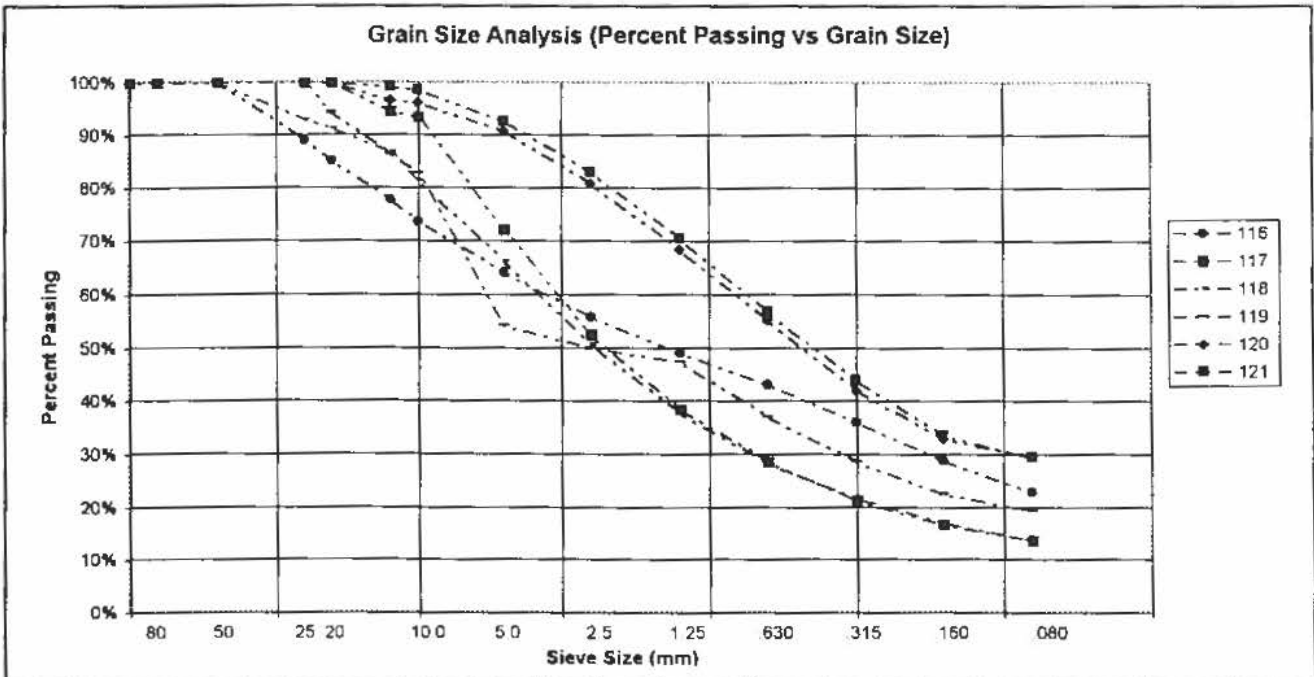
# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Faine & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30156  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631600-6776185  
 LOGGED BY: RW DATE COMP: 07/31/2004

FIELD NO:	116	117	118	119	120	121
LAB NO:	116	117	118	119	120	121
DEPTH:	0.9-1.5	1.5-2.4	3.0-4.0	4.9-5.5	6.4-7.0	7.9-8.5
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	89%	100%	93%	100%	100%	100%
20.0	85%	100%	91%	94%	100%	100%
12.5	78%	95%	87%	87%	97%	99%
10.0	74%	93%	82%	83%	96%	99%
5.0	64%	72%	66%	54%	91%	93%
2.5	56%	53%	51%	50%	81%	83%
1.25	49%	38%	38%	47%	68%	71%
0.630	43%	29%	28%	37%	55%	57%
0.315	36%	21%	22%	29%	42%	44%
0.160	29%	17%	17%	23%	33%	34%
0.080	23%	14%	14%	19%	30%	29%
M.C.(%)	24%	7%	7%	7%	6%	6%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	36	28	34	46	9	7
% SAND:	41	58	53	35	61	63
% FINES:	23	14	14	19	30	29
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND (SM)	SILTY SAND (SM)





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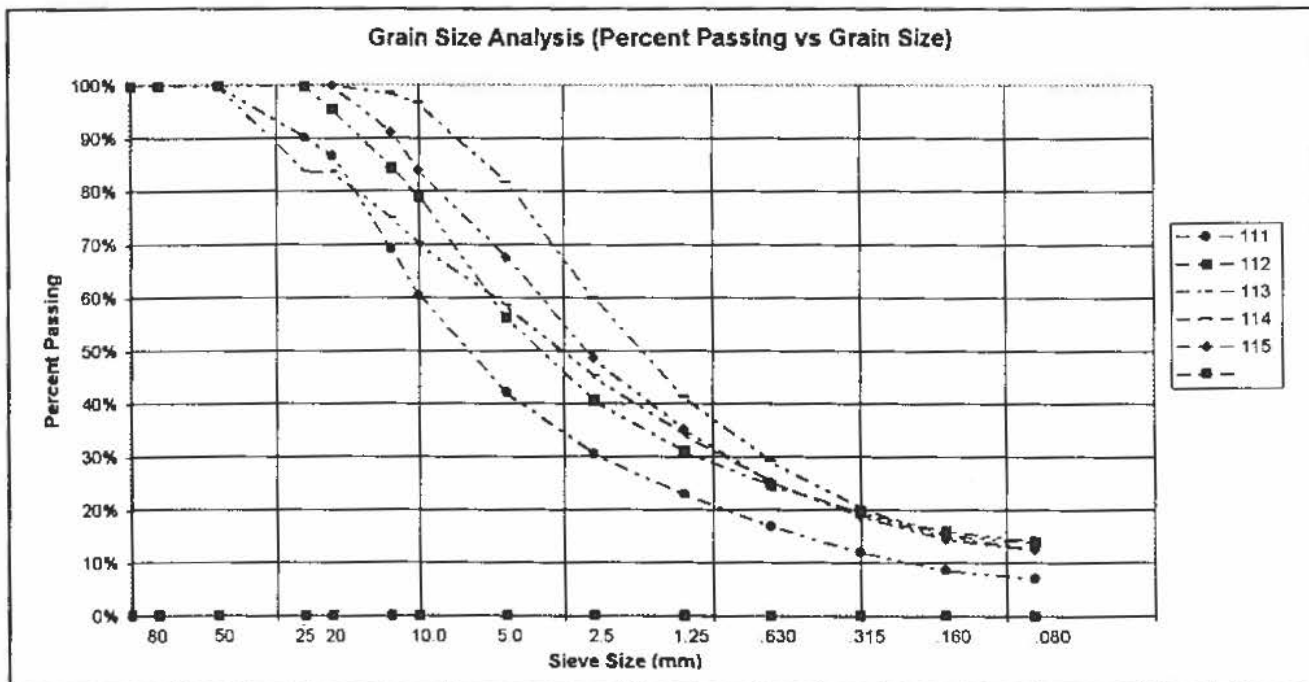


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631655-6776190  
 LOGGED BY: RW

HOLE No.: 30157

DATE COMP: 07/31/2004

FIELD NO:	111	112	113	114	115	
LAB NO:	111	112	113	114	115	
DEPTH:	0.3-0.9	1.5-2.1	2.1-2.7	3.0-4.3	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	90%	100%	84%	100%	100%	
20.0	87%	95%	84%	100%	100%	
12.5	69%	85%	75%	99%	91%	
10.0	60%	79%	70%	97%	84%	
5.0	42%	56%	59%	82%	68%	
2.5	31%	41%	45%	60%	49%	
1.25	23%	31%	34%	41%	35%	
0.630	17%	25%	25%	29%	25%	
0.315	12%	20%	19%	20%	19%	
0.160	9%	16%	15%	15%	14%	
0.080	7%	14%	13%	14%	13%	
M.C.(%):	4%	6%	5%	4%	6%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	58	44	41	18	32	
% SAND:	35	42	46	68	55	
% FINES:	7	14	13	14	13	
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	





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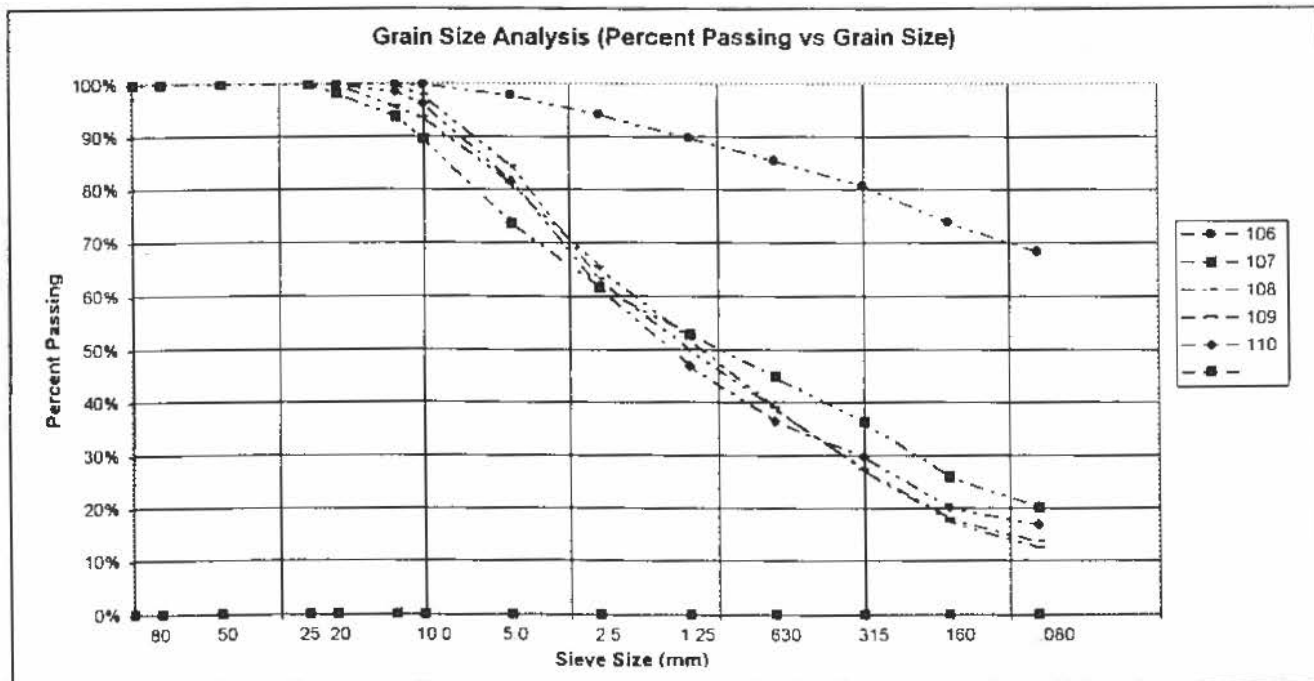


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631563-6776272  
 LOGGED BY: RW

HOLE No.: 30158

DATE COMP: 07/30/2004

FIELD NO:	106	107	108	109	110	
LAB NO:	106	107	108	109	110	
DEPTH:	0.9-1.2	1.5-2.4	2.7-3.4	3.7-4.3	4.6-5.2	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	100%	
20.0	100%	98%	100%	100%	100%	
12.5	100%	94%	100%	96%	99%	
10.0	100%	90%	98%	94%	96%	
5.0	98%	74%	84%	81%	82%	
2.5	94%	62%	63%	66%	62%	
1.25	90%	53%	50%	52%	47%	
0.630	86%	45%	39%	39%	37%	
0.315	81%	36%	27%	27%	30%	
0.160	74%	26%	18%	18%	20%	
0.080	68%	20%	14%	13%	17%	
M.C.(%)	93%	11%	9%	8%	8%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	2	26	16	19	18	
% SAND:	30	54	71	69	65	
% FINES:	68	20	14	13	17	
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	





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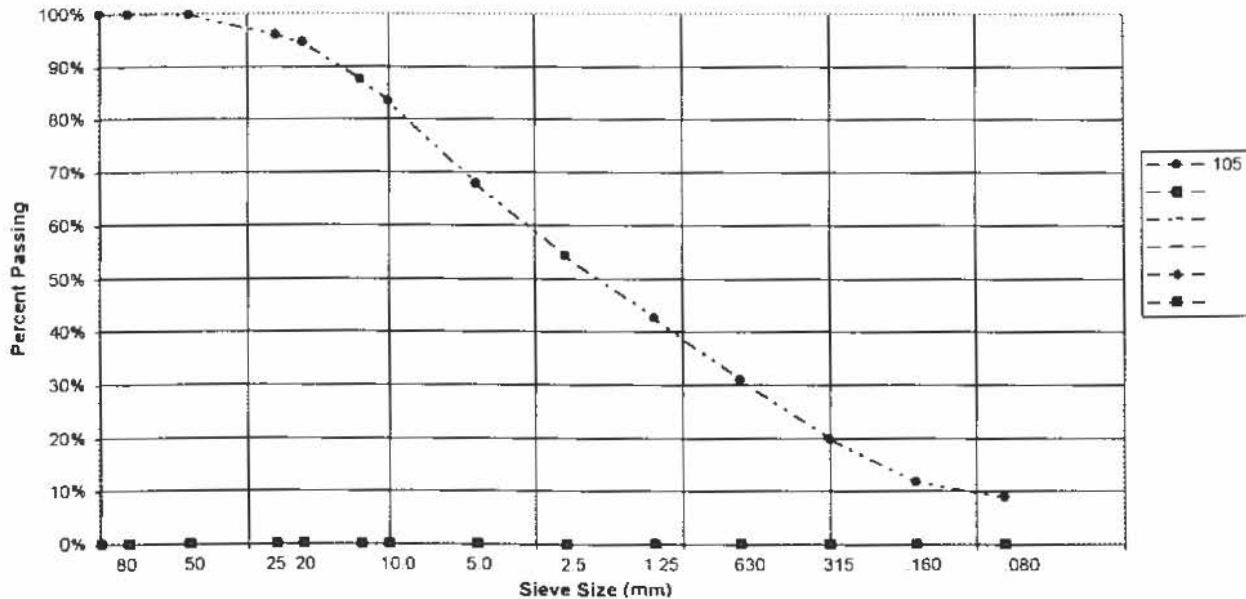
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631517-6776361  
 LOGGED BY: RW

HOLE No.: 30159

DATE COMP: 07/30/2004

FIELD NO:	105				
LAB NO:	105				
DEPTH:	14.3-14.9				
TYPE:	AUGER				
<b>SIEVE SIZE</b>	<b>PERCENT PASSING</b>				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	96%				
20.0	95%				
12.5	88%				
10.0	83%				
5.0	68%				
2.5	54%				
1.25	43%				
0.630	31%				
0.315	20%				
0.160	12%				
0.080	9%				
M.C.(%):	3%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX.:	0.0				
% GRAVEL:	32				
% SAND:	59				
% FINES:	9				
<b>CLASSIFICATION</b>	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)				

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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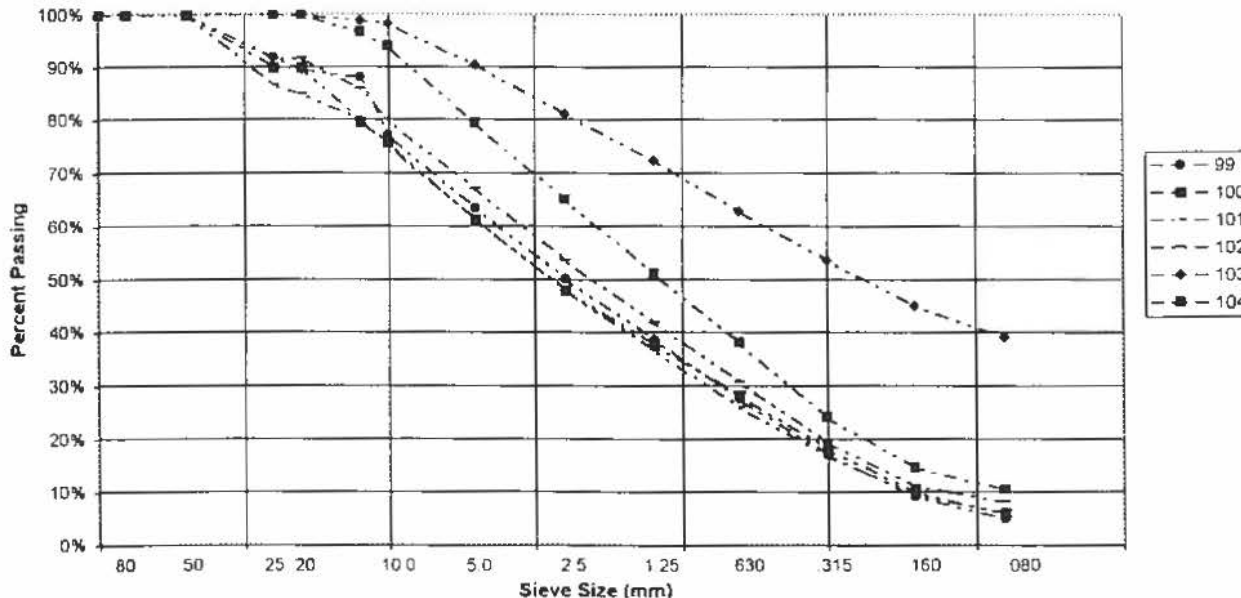
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631517-6776361  
 LOGGED BY: RW

HOLE No.: 30159

DATE COMP: 07/30/2004

FIELD NO:	99	100	101	102	103	104
LAB NO:	99	100	101	102	103	104
DEPTH:	7.9-8.5	9.4-10.1	10.4-11.0	11.3-11.9	12.8-13.4	13.7-14.0
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	92%	90%	87%	92%	100%	100%
20.0	90%	90%	85%	92%	100%	100%
12.5	88%	80%	80%	86%	99%	97%
10.0	77%	76%	75%	80%	98%	94%
5.0	64%	61%	61%	67%	90%	79%
2.5	50%	48%	48%	54%	81%	65%
1.25	39%	38%	37%	42%	72%	51%
0.630	28%	28%	26%	31%	63%	38%
0.315	17%	18%	17%	19%	54%	24%
0.160	9%	10%	10%	11%	45%	15%
0.080	5%	6%	6%	8%	39%	11%
M.C.(%)	2%	2%	2%	2%	7%	3%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	36	39	39	33	10	21
% SAND:	59	55	55	59	51	69
% FINES:	5	6	6	8	39	11
CLASSIFICATION	WELL-GRADED SAND WITH GRAVEL (SW)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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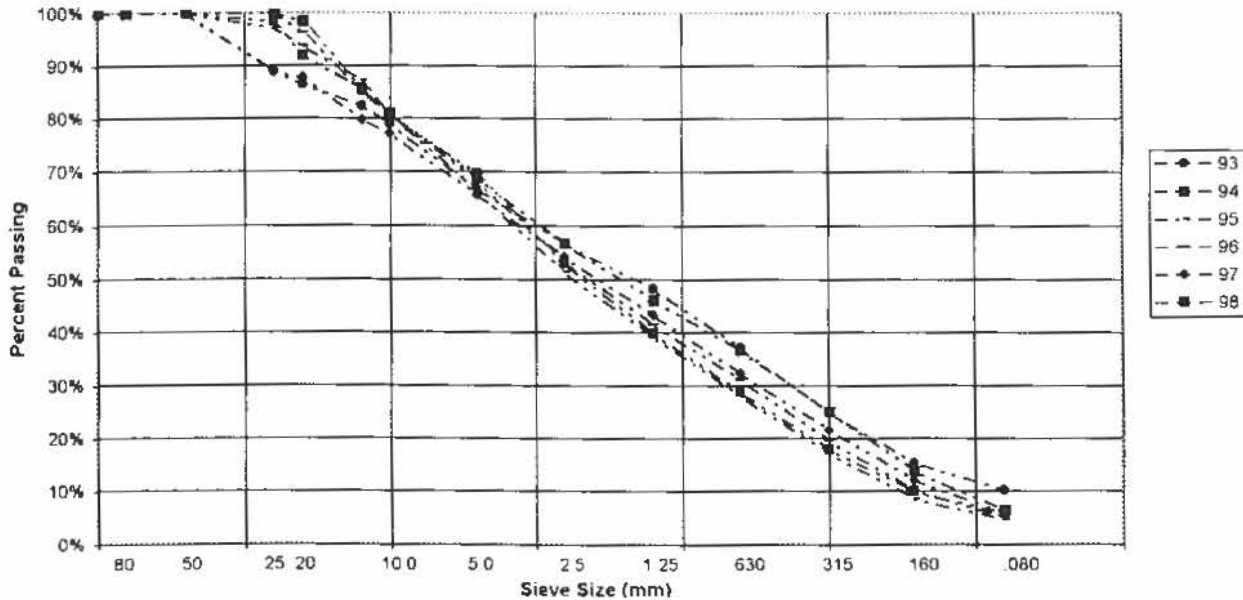
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631517-6776361  
 LOGGED BY: RW

HOLE No.: 30159

DATE COMP: 07/30/2004

FIELD NO:	93	94	95	96	97	98
LAB NO:	93	94	95	96	97	98
DEPTH:	0.3-0.9	1.5-2.1	3.0-3.7	4.6-5.2	5.2-5.8	6.7-7.3
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	89%	100%	97%	100%	89%	99%
20.0	87%	99%	94%	96%	88%	92%
12.5	83%	86%	87%	85%	80%	86%
10.0	79%	81%	81%	81%	77%	81%
5.0	67%	69%	86%	68%	66%	70%
2.5	57%	57%	51%	53%	54%	53%
1.25	48%	46%	39%	42%	43%	40%
0.630	37%	37%	28%	31%	32%	29%
0.315	25%	25%	17%	20%	22%	18%
0.160	15%	14%	9%	10%	12%	10%
0.080	10%	6%	5%	5%	6%	6%
M.C.(%)	1%	1%	2%	4%	2%	2%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	33	31	34	32	34	30
% SAND:	57	62	62	63	60	64
% FINES:	10	6	5	5	6	6
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH GRAVEL (SW)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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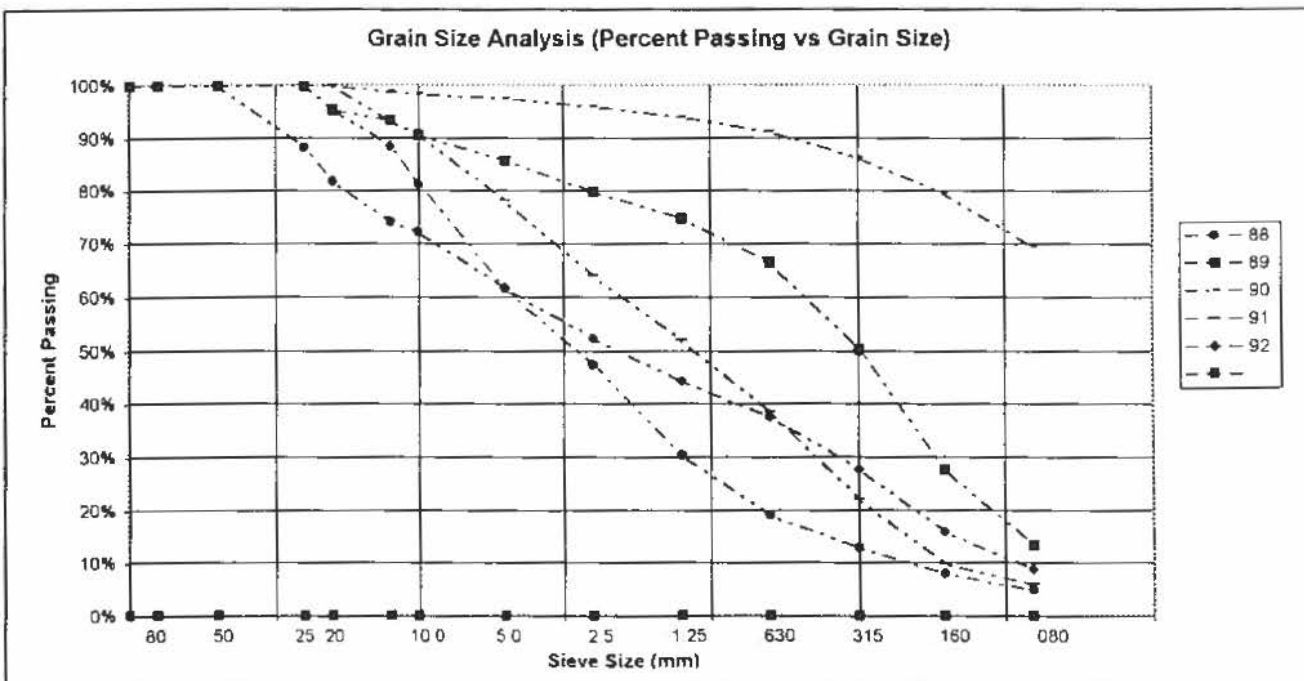


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631499-6776506  
 LOGGED BY: RW

HOLE No.: 30160

DATE COMP. 07/29/2004

FIELD NO:	88	89	90	91	92	
LAB NO:	88	89	90	91	92	
DEPTH:	0.3-0.9	1.8-2.1	2.4-2.9	3.4-4.0	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	88%	100%	100%	100%	100%	
20.0	82%	95%	100%	100%	96%	
12.5	74%	94%	99%	93%	88%	
10.0	72%	91%	98%	91%	81%	
5.0	62%	86%	98%	78%	62%	
2.5	47%	80%	96%	64%	53%	
1.25	30%	75%	94%	52%	44%	
0.630	19%	67%	91%	38%	38%	
0.315	13%	50%	86%	22%	28%	
0.160	8%	28%	80%	10%	16%	
0.080	5%	14%	70%	6%	9%	
M.C.(%)	3%	17%	61%	11%	11%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX.:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	38	14	2	22	38	
% SAND:	57	72	28	72	53	
% FINES:	5	14	70	6	9	
CLASSIFICATION	WELL-GRADED SAND WITH GRAVEL (SW)	SILTY SAND (SM)	SANDY SILT (ML)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	





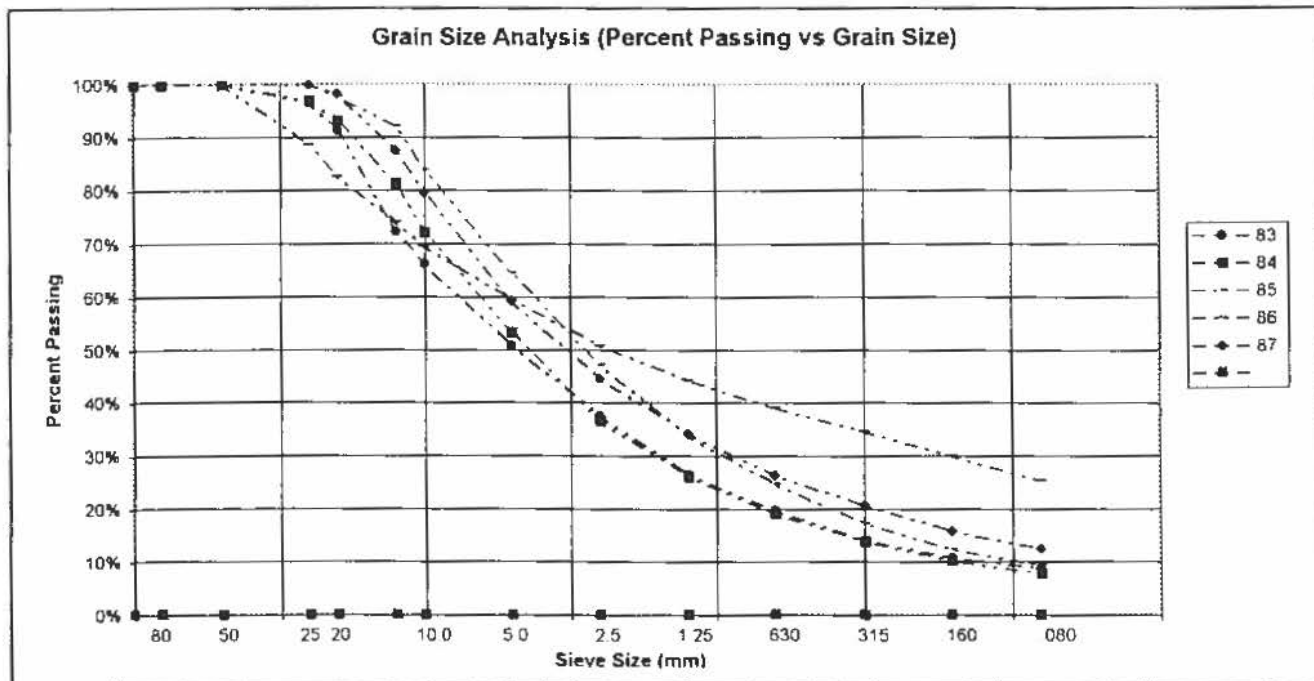
# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Paine & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30161  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631513-6776711  
 LOGGED BY: RW DATE COMP: 07/29/2004

FIELD NO:	83	84	85	86	87	
LAB NO:	83	84	85	86	87	
DEPTH:	0.3-0.9	1.5-2.1	3.0-3.7	4.0-4.3	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	97%	97%	100%	89%	100%	
20.0	91%	93%	98%	83%	98%	
12.5	72%	81%	92%	74%	88%	
10.0	66%	72%	84%	70%	80%	
5.0	51%	53%	65%	60%	59%	
2.5	38%	37%	47%	51%	45%	
1.25	27%	26%	34%	44%	34%	
0.630	20%	19%	25%	39%	26%	
0.315	14%	14%	17%	35%	21%	
0.160	11%	10%	12%	30%	16%	
0.080	9%	8%	9%	25%	13%	
M.C.(%)	5%	5%	4%	12%	6%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	49	47	35	40	41	
% SAND:	42	45	55	34	47	
% FINES:	9	8	9	25	13	
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	





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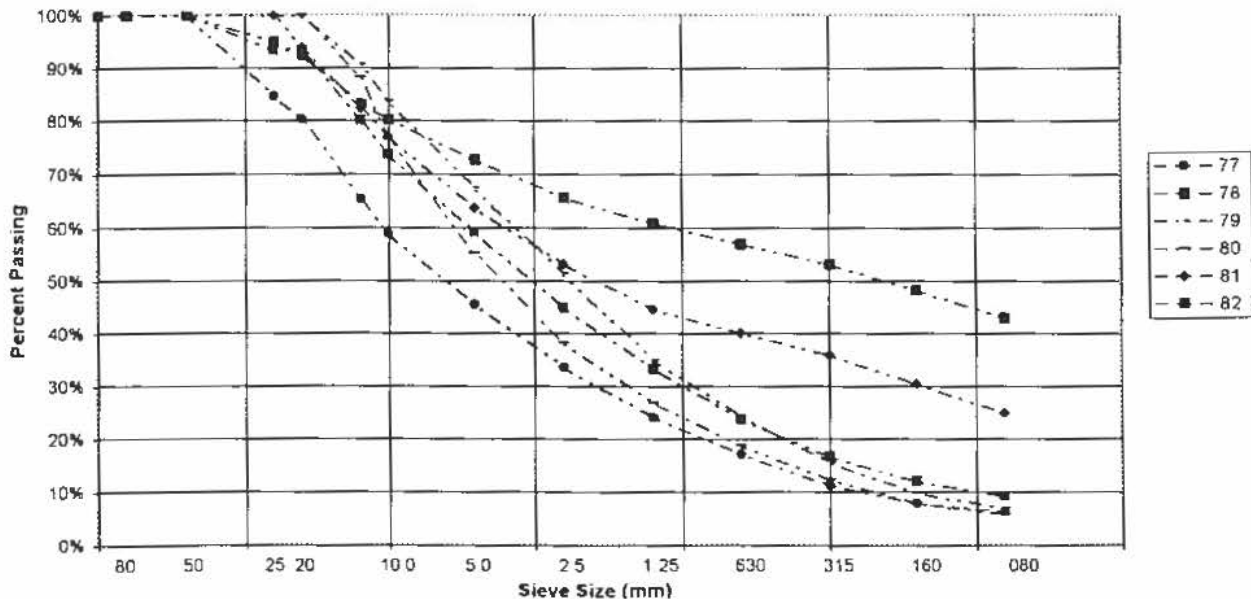
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631538-6776914  
 LOGGED BY: RW

HOLE No.: 30162

DATE COMP. 07/29/2004

FIELD NO:	77	78	79	80	81	82
LAB NO:	77	78	79	80	81	82
DEPTH:	0.3-0.6	1.5-2.1	2.4-2.7	3.0-4.0	4.6-5.2	5.2-5.8
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	85%	95%	100%	100%	100%	93%
20.0	80%	93%	100%	100%	94%	93%
12.5	65%	83%	91%	88%	82%	80%
10.0	59%	80%	84%	77%	77%	74%
5.0	46%	73%	68%	55%	64%	59%
2.5	34%	66%	51%	38%	53%	45%
1.25	24%	61%	35%	27%	45%	33%
0.630	17%	57%	24%	19%	40%	24%
0.315	11%	53%	16%	12%	36%	17%
0.150	8%	48%	10%	8%	31%	12%
0.080	6%	43%	7%	6%	25%	9%
M.C.(%)	3%	18%	5%	4%	10%	4%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	54	27	32	45	36	41
% SAND:	39	30	60	49	39	50
% FINES:	6	43	7	6	25	9
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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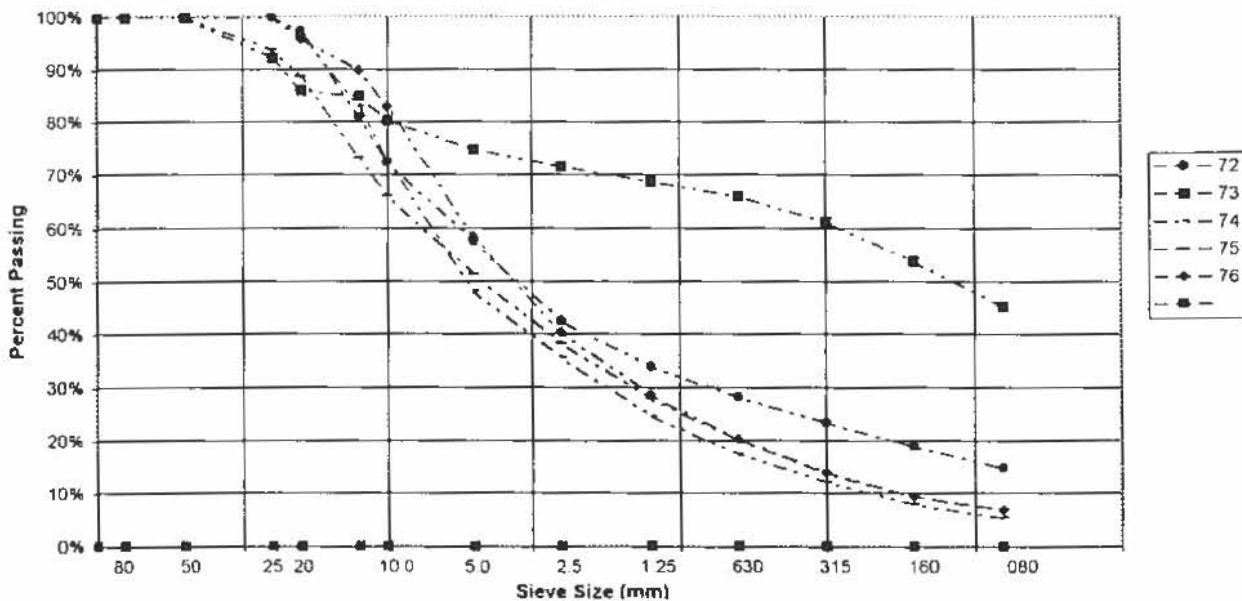
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631563-6776900  
 LOGGED BY: RW

HOLE No.: 30163

DATE COMP: 07/29/2004

FIELD NO:	72	73	74	75	76	
LAB NO:	72	73	74	75	76	
DEPTH:	0.3-0.9	1.5-2.1	2.1-2.7	3.4-4.3	5.2-5.6	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	92%	100%	94%	100%	
20.0	97%	86%	97%	89%	96%	
12.5	81%	85%	83%	73%	90%	
10.0	72%	80%	73%	66%	83%	
5.0	58%	75%	48%	51%	58%	
2.5	43%	72%	36%	38%	40%	
1.25	34%	69%	25%	28%	29%	
0.630	28%	66%	17%	20%	20%	
0.315	24%	61%	12%	14%	14%	
0.160	19%	54%	8%	9%	9%	
0.080	15%	45%	5%	7%	7%	
M.C.(%)	6%	24%	4%	4%	7%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	42	25	52	49	42	
% SAND:	43	29	43	44	52	
% FINES:	15	45	5	7	7	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)







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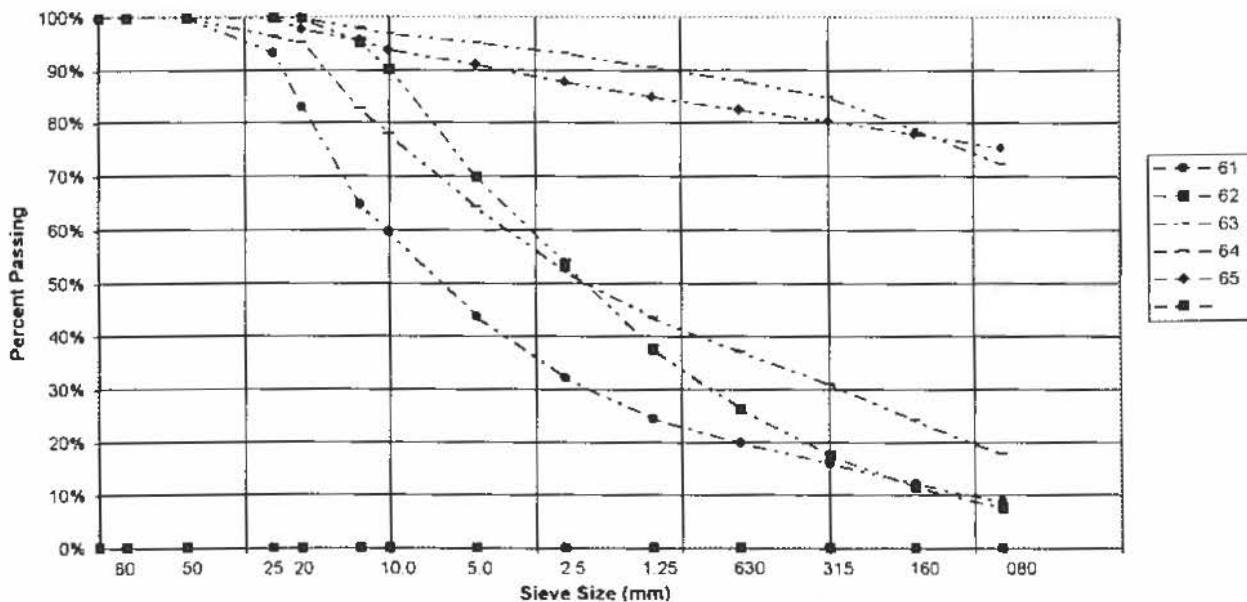
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631607-6777126  
 LOGGED BY: RW

HOLE No.: 30165

DATE COMP: 07/29/2004

FIELD NO:	61	62	63	64	65	
LAB NO:	61	62	63	64	65	
DEPTH:	0.3-0.9	1.5-2.1	3.4-4.0	4.1-4.4	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	93%	100%	100%	97%	100%	
20.0	83%	100%	100%	95%	98%	
12.5	65%	95%	98%	83%	96%	
10.0	60%	90%	97%	78%	94%	
5.0	44%	70%	95%	64%	91%	
2.5	32%	54%	93%	52%	88%	
1.25	25%	38%	91%	43%	85%	
0.630	20%	26%	88%	37%	83%	
0.315	16%	18%	85%	31%	80%	
0.160	12%	12%	79%	24%	78%	
0.080	9%	8%	72%	18%	75%	
M.C.(%)	3%	2%	13%	5%	20%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	56	30	5	36	9	
% SAND:	35	62	23	47	16	
% FINES:	9	8	72	18	75	
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILT WITH SAND (ML)	SILTY SAND WITH GRAVEL (SM)	SILT WITH SAND (ML)	

### Grain Size Analysis (Percent Passing vs Grain Size)





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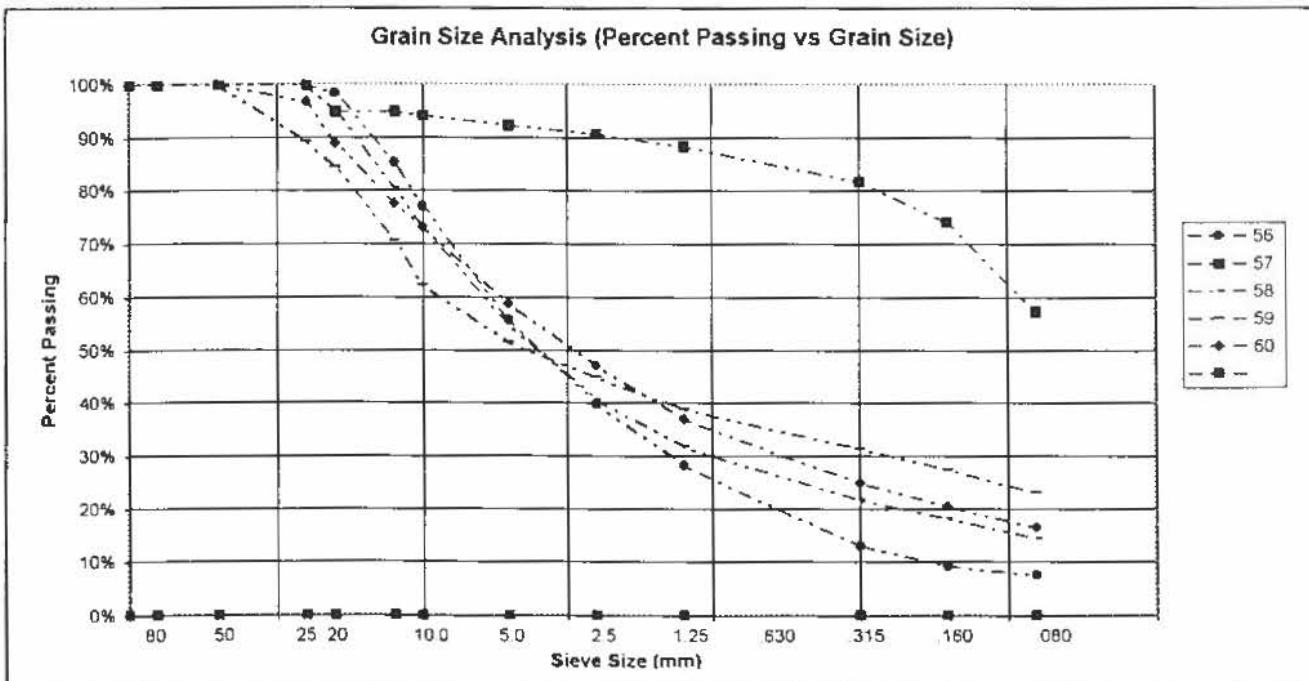


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631583-6777139  
 LOGGED BY: RW

HOLE No.: 30166

DATE COMP: 07/28/2004

FIELD NO:	56	57	58	59	60	
LAB NO:	56	57	58	59	60	
DEPTH:	0.3-0.9	1.5-1.8	2.1-2.7	3.4-4.0	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	89%	97%	
20.0	98%	95%	95%	84%	89%	
12.5	85%	95%	81%	71%	78%	
10.0	77%	94%	73%	62%	73%	
5.0	56%	92%	55%	51%	59%	
2.5	40%	91%	41%	45%	47%	
1.25	28%	89%	32%	39%	37%	
0.630				35%	30%	
0.315	13%	82%	22%	31%	25%	
0.160	9%	74%	18%	28%	21%	
0.080	8%	57%	15%	23%	17%	
M.C.(%)	3%	24%	5%	10%	7%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	44	8	45	49	41	
% SAND:	48	35	40	28	42	
% FINES:	8	57	15	23	17	
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SANDY SILT (ML)	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	





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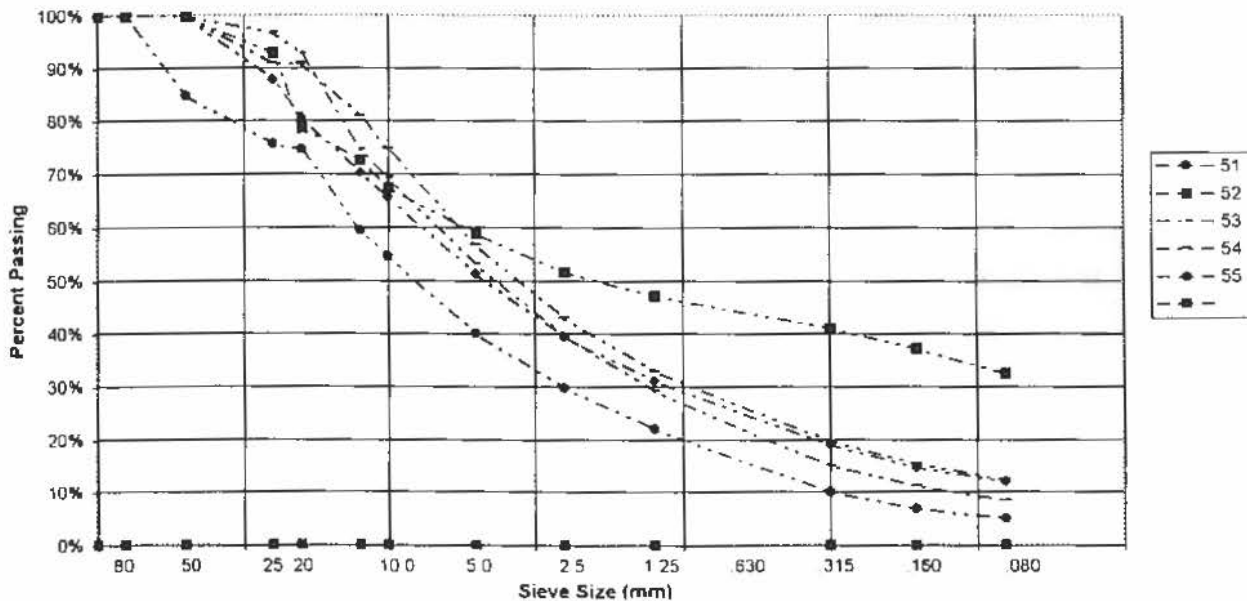
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631589-6777298  
 LOGGED BY: RW

HOLE No.: 30167

DATE COMP: 07/28/2004

FIELD NO:	51	52	53	54	55	
LAB NO:	51	52	53	54	55	
DEPTH:	0.6-1.2	1.5-2.1	2.3-2.7	3.4-4.3	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	85%	100%	100%	100%	100%	
25.0	76%	93%	97%	91%	88%	
20.0	75%	79%	93%	91%	81%	
12.5	60%	73%	75%	81%	70%	
10.0	55%	68%	69%	75%	66%	
5.0	40%	59%	53%	57%	51%	
2.5	30%	52%	40%	43%	40%	
1.25	22%	47%	29%	33%	31%	
0.630						
0.315	10%	41%	15%	20%	19%	
0.160	7%	37%	11%	15%	15%	
0.080	5%	33%	8%	12%	12%	
M.C.(%)	3%	15%	4%	6%	5%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	60	41	47	43	49	
% SAND:	35	26	45	44	39	
% FINES:	5	33	8	12	12	
CLASSIFICATION	WELL-GRADED GRAVEL WITH SILT & SAND (GW-GM)	SILTY GRAVEL WITH SAND (GM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)	

### Grain Size Analysis (Percent Passing vs Grain Size)





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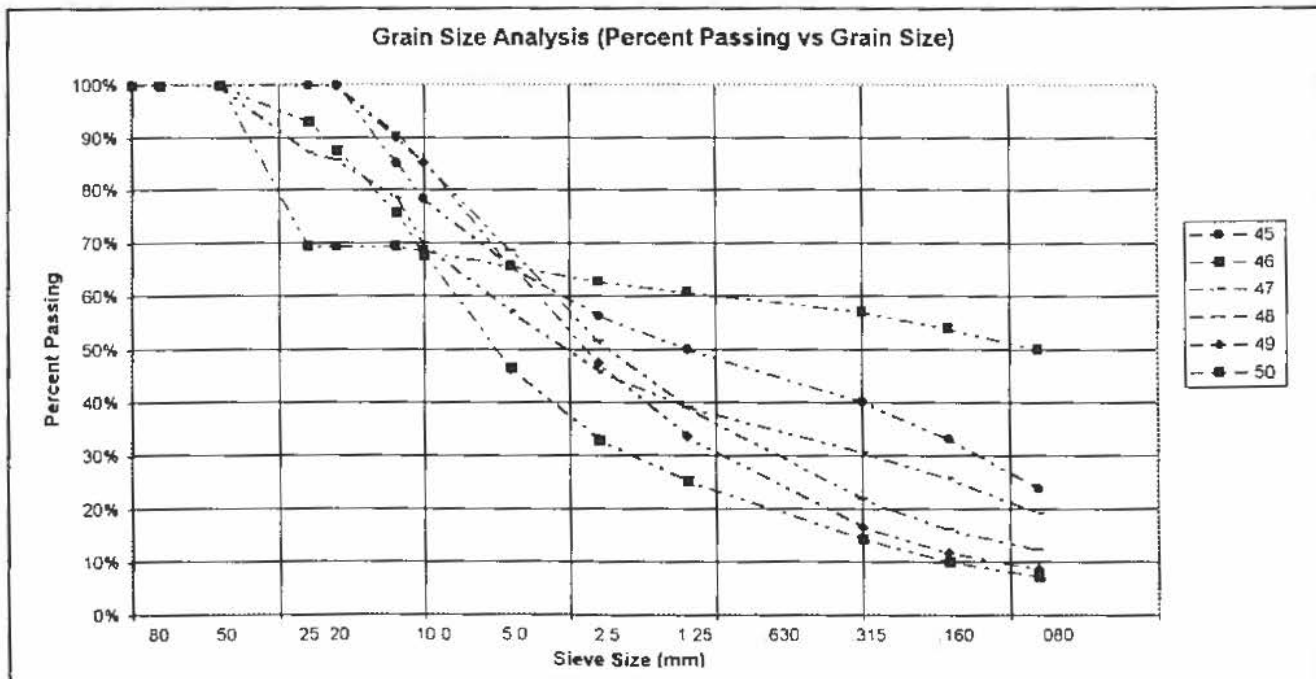


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631509-6777587  
 LOGGED BY: RW

HOLE No.: 30168

DATE COMP: 07/28/2004

FIELD NO:	45	46	47	48	49	50
LAB NO:	45	46	47	48	49	50
DEPTH:	0.2-0.6	0.6-1.2	1.8-2.1	3.4-4.3	4.6-5.2	5.5-5.8
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	93%	87%	100%	100%	69%
20.0	100%	88%	86%	100%	100%	69%
12.5	85%	76%	79%	91%	90%	69%
10.0	79%	68%	70%	85%	85%	69%
5.0	66%	46%	57%	69%	66%	66%
2.5	56%	33%	46%	52%	48%	63%
1.25	50%	25%	39%	39%	34%	61%
0.630						
0.315	40%	14%	31%	22%	17%	57%
0.160	33%	10%	26%	16%	12%	54%
0.080	24%	7%	19%	12%	9%	50%
M.C.(%):	6%	4%	8%	5%	3%	23%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	34	54	43	31	34	34
% SAND:	42	39	38	56	57	16
% FINES:	24	7	19	12	9	50
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	GRAVELLY SILT WITH SAND (ML)





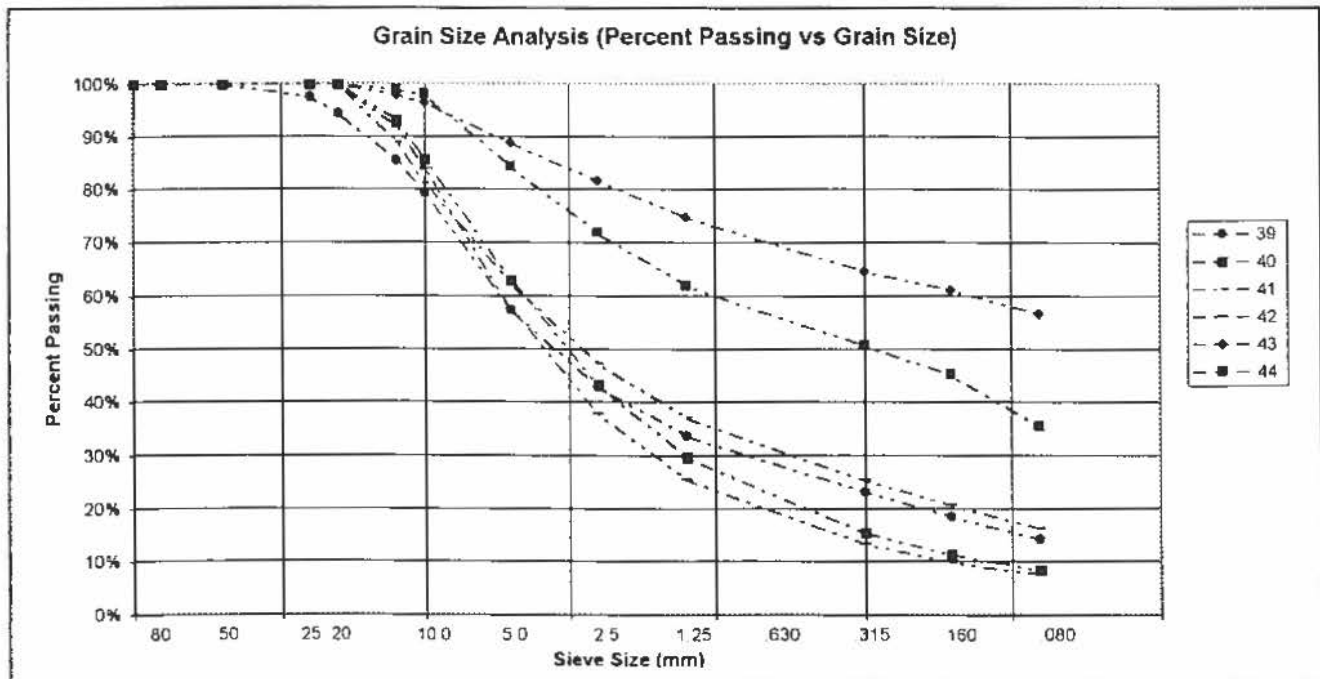
# HOGGAN ENGINEERING & TESTING (1980) LTD.

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PROJECT NUMBER: 8002-318 HOLE No.: 30169  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631458-6777708  
 LOGGED BY: RW DATE COMP: 07/28/2004

FIELD NO:	39	40	41	42	43	44
LAB NO:	39	40	41	42	43	44
DEPTH:	0.3-0.9	1.5-2.1	2.1-2.7	3.4-4.0	4.3-4.9	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	98%	100%	100%	100%	100%	100%
20.0	94%	100%	100%	100%	100%	100%
12.5	85%	93%	89%	92%	96%	99%
10.0	79%	86%	81%	84%	96%	98%
5.0	57%	63%	63%	58%	89%	84%
2.5	43%	43%	47%	38%	82%	72%
1.25	34%	30%	37%	26%	75%	62%
0.630						
0.315	23%	15%	25%	13%	65%	51%
0.160	19%	11%	21%	10%	61%	45%
0.080	14%	9%	16%	8%	57%	35%
M.C.(%)	8%	6%	9%	6%	21%	13%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	43	37	37	42	11	16
% SAND:	43	54	46	50	32	49
% FINES:	14	9	16	8	57	35
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)





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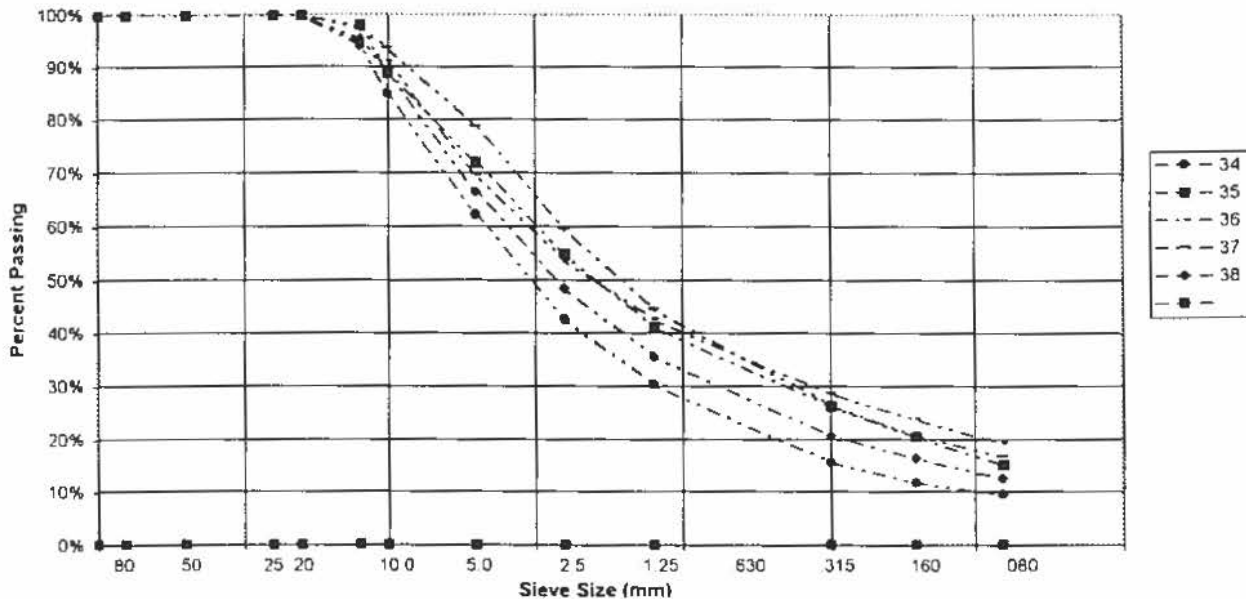
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631414-6777845  
 LOGGED BY: RW

HOLE No.: 30170

DATE COMP: 07/28/2004

FIELD NO:	34	35	36	37	38	
LAB NO:	34	35	36	37	38	
DEPTH:	0.3-0.9	1.5-2.1	2.9-3.4	3.7-4.3	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	100%	
12.5	94%	98%	95%	98%	95%	
10.0	85%	89%	91%	94%	89%	
5.0	62%	72%	70%	79%	66%	
2.5	43%	55%	54%	60%	48%	
1.25	30%	41%	43%	45%	36%	
0.630						
0.315	16%	26%	29%	28%	21%	
0.160	12%	21%	24%	21%	16%	
0.080	10%	15%	19%	17%	13%	
M.C.(%)	9%	10%	11%	10%	8%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	38	28	30	21	34	
% SAND:	53	57	50	62	54	
% FINES:	10	15	19	17	13	
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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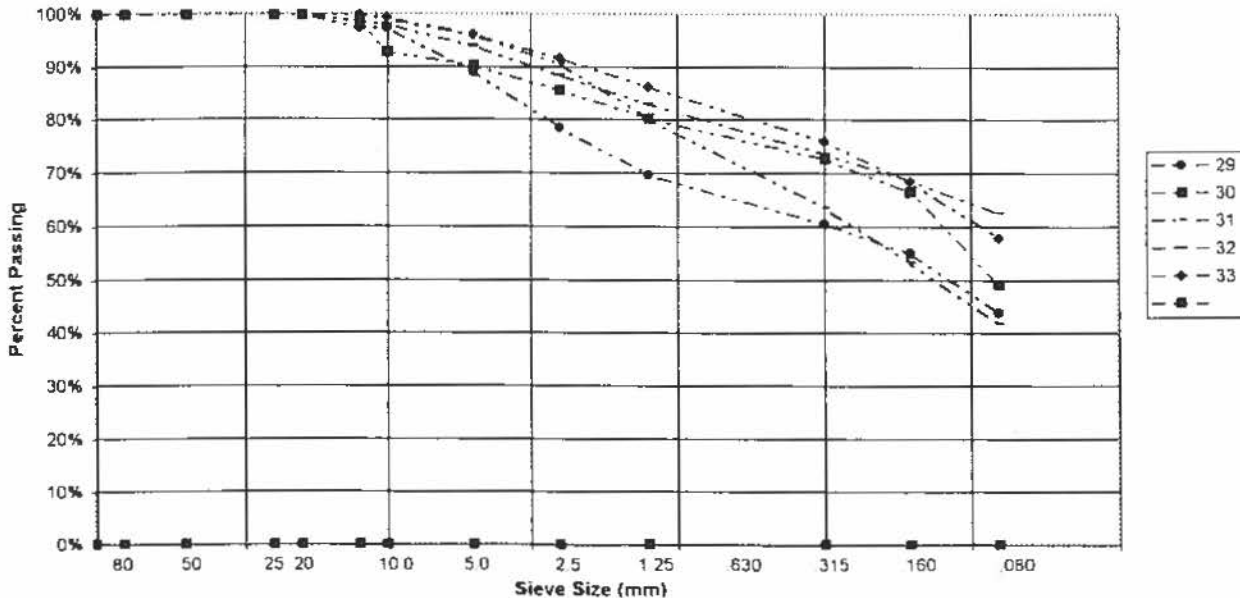
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631414-6777998  
 LOGGED BY: RW

HOLE No.: 30171

DATE COMP: 07/28/2004

FIELD NO:	29	30	31	32	33	
LAB NO:	29	30	31	32	33	
DEPTH:	0.2-0.5	0.6-1.2	1.8-2.4	3.0-3.7	4.6	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	100%	
12.5	97%	99%	100%	99%	100%	
10.0	97%	93%	99%	98%	99%	
5.0	89%	90%	96%	94%	96%	
2.5	79%	86%	91%	88%	92%	
1.25	70%	80%	80%	83%	86%	
0.630						
0.315	61%	73%	64%	74%	76%	
0.160	55%	67%	53%	69%	69%	
0.080	44%	49%	42%	63%	58%	
M.C.(%)	18%	28%	35%	31%	28%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	11	10	4	6	4	
% SAND:	45	41	54	31	38	
% FINES:	44	49	42	63	58	
CLASSIFICATION	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	SANDY SILT (ML)	SANDY SILT (ML)	

### Grain Size Analysis (Percent Passing vs Grain Size)





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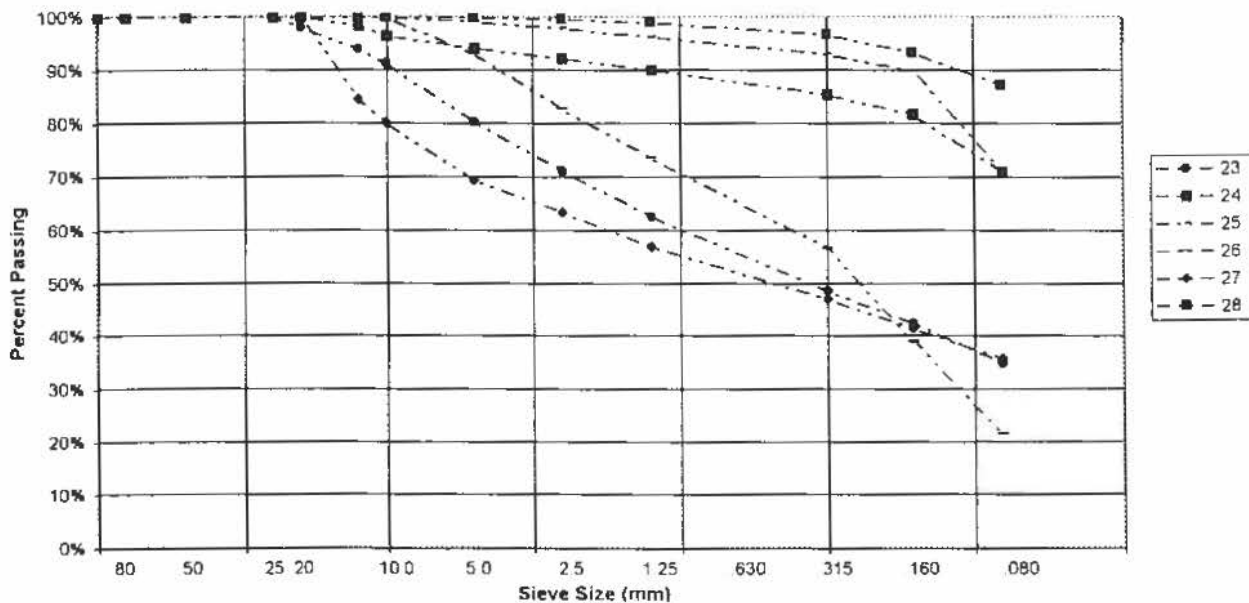
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631432-6778136  
 LOGGED BY: RW

HOLE No.: 30172

DATE COMP: 07/28/2004

FIELD NO:	23	24	25	26	27	28
LAB NO:	23	24	25	26	27	28
DEPTH:	0.3-0.9	1.5-1.8	2.1-2.7	3.4-4.3	4.9-5.2	5.5-5.9
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	100%	100%	100%	100%	100%
20.0	98%	100%	100%	100%	100%	100%
12.5	94%	98%	100%	100%	85%	100%
10.0	91%	96%	100%	100%	80%	100%
5.0	80%	94%	99%	93%	69%	100%
2.5	71%	92%	98%	83%	63%	100%
1.25	63%	90%	96%	74%	57%	99%
0.630						
0.315	49%	85%	93%	57%	47%	97%
0.160	42%	82%	90%	39%	41%	93%
0.080	35%	71%	71%	22%	36%	87%
M.C.(%)	15%	17%	16%	11%	8%	19%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	20	6	1	7	31	0
% SAND:	45	23	28	72	34	13
% FINES:	35	71	71	22	36	87
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILT WITH SAND (ML)	SILT WITH SAND (ML)	SILTY SAND (SM)	SILTY SAND WITH GRAVEL (SM)	SILT (ML)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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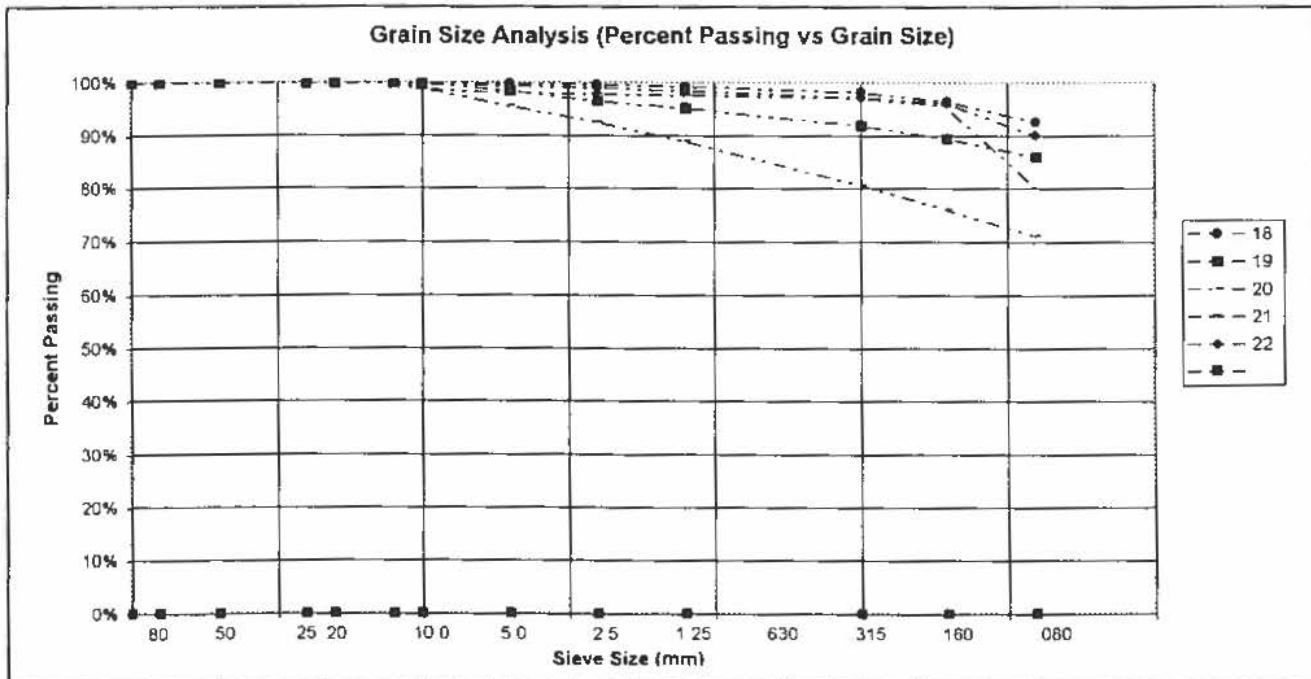


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631425-6778189  
 LOGGED BY: RW

HOLE No.: 30173

DATE COMP: 07/28/2004

FIELD NO:	18	19	20	21	22	
LAB NO:	18	19	20	21	22	
DEPTH:	0.2-0.6	0.8-1.2	1.8-2.4	3.7-4.3	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	100%	
12.5	100%	100%	100%	100%	100%	
10.0	100%	100%	99%	99%	100%	
5.0	100%	99%	96%	98%	100%	
2.5	100%	97%	93%	98%	99%	
1.25	99%	95%	89%	98%	99%	
0.630						
0.315	98%	92%	81%	97%	97%	
0.160	97%	90%	76%	96%	96%	
0.080	93%	86%	71%	80%	90%	
M.C.(%)	28%	40%	16%	18%	19%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	0	1	4	2	0	
% SAND:	7	12	24	18	9	
% FINES:	93	86	71	80	90	
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT WITH SAND (ML)	SILT WITH SAND (ML)	SILT (ML)	





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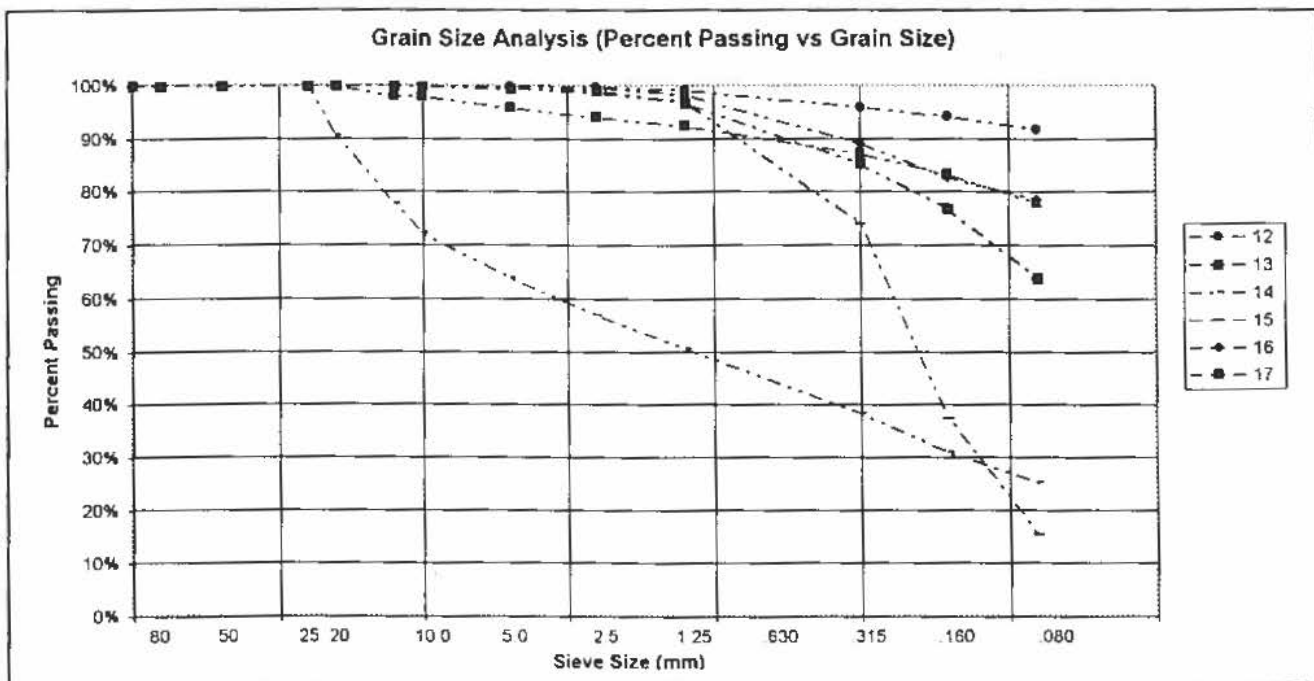


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1891.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631499-6778370  
 LOGGED BY: RW

HOLE No.: 30174

DATE COMP: 07/28/2004

FIELD NO:	12	13	14	15	16	17
LAB NO:	12	13	14	15	16	17
DEPTH:	0.0-0.6	0.6-1.2	1.8-2.7	3.7-4.0	4.0-4.4	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	100%	100%	100%	100%	100%
20.0	100%	100%	91%	100%	100%	100%
12.5	100%	100%	78%	100%	100%	98%
10.0	100%	100%	72%	100%	100%	98%
5.0	100%	100%	64%	100%	100%	96%
2.5	100%	99%	57%	99%	100%	94%
1.25	99%	97%	51%	97%	98%	93%
0.630						
0.315	96%	85%	38%	74%	89%	87%
0.160	94%	77%	31%	37%	83%	83%
0.080	92%	64%	25%	16%	79%	78%
M.C.(%):	31%	50%	12%	17%	45%	20%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	0	0	36	0	0	4
% SAND:	8	36	39	84	21	18
% FINES:	92	64	25	16	79	78
CLASSIFICATION	SILT (ML)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	SILT WITH SAND (ML)	SILT WITH SAND (ML)





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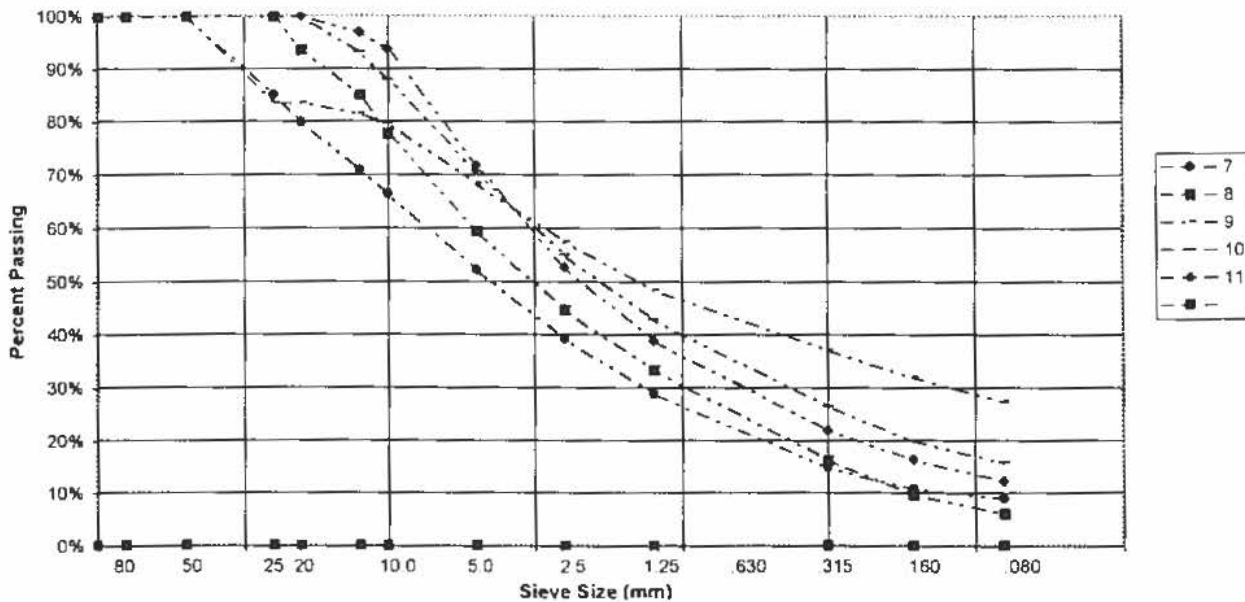
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 631598-6778568  
 LOGGED BY: RW

HOLE No.: 30175

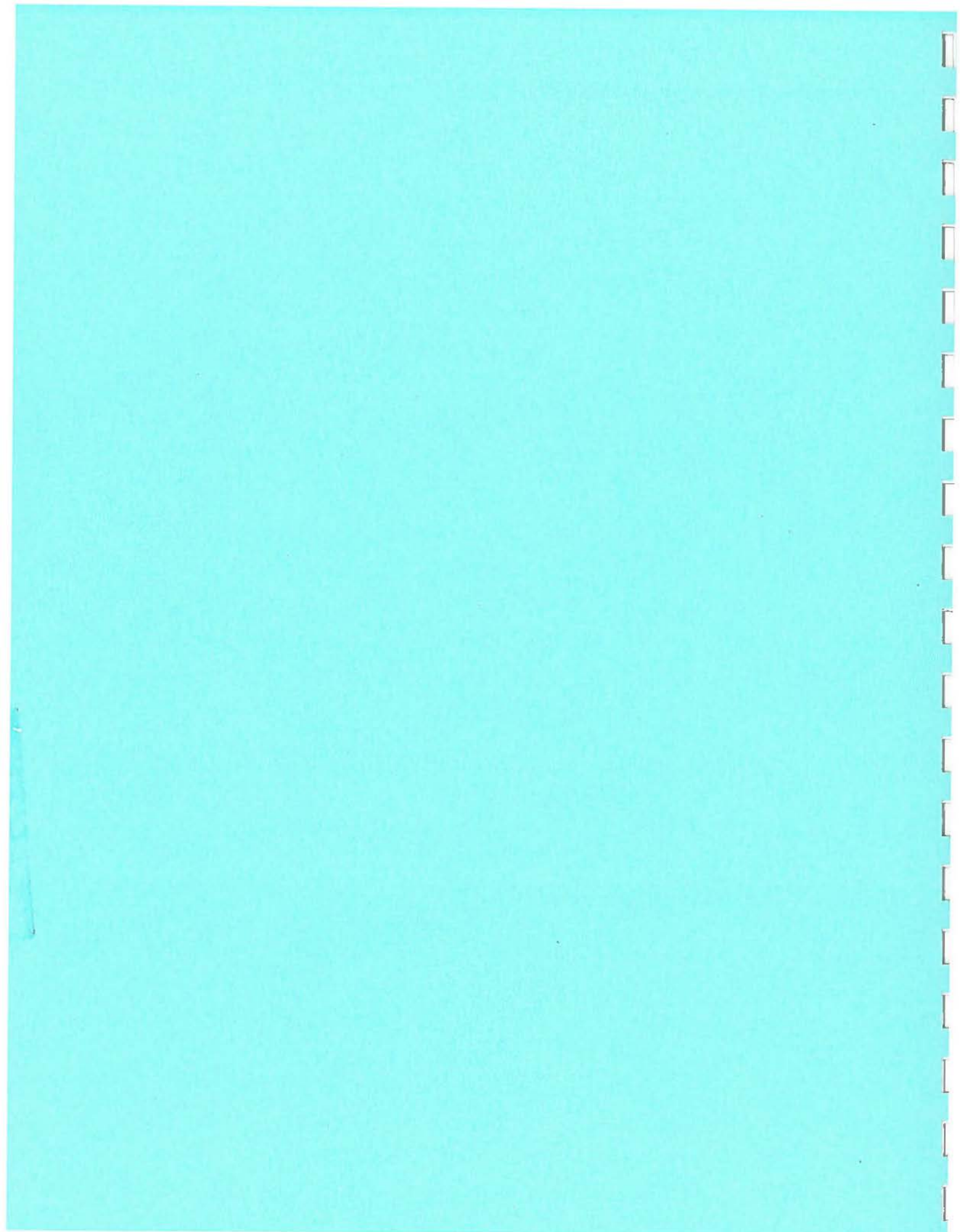
DATE COMP: 07/28/2004

FIELD NO:	7	8	9	10	11	
LAB NO:	7	8	9	10	11	
DEPTH:	0.3-0.9	2.0-2.9	3.0-3.7	3.7-4.3	4.9-5.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	85%	100%	84%	100%	100%	
20.0	80%	94%	84%	100%	100%	
12.5	71%	85%	82%	93%	97%	
10.0	66%	78%	80%	88%	94%	
5.0	52%	60%	68%	71%	72%	
2.5	39%	45%	58%	55%	53%	
1.25	29%	33%	49%	43%	39%	
0.630						
0.315	15%	16%	37%	27%	22%	
0.160	11%	10%	32%	20%	16%	
0.080	9%	6%	27%	16%	12%	
M.C.(%):	6%	7%	16%	11%	9%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	48	40	32	29	28	
% SAND:	43	53	41	55	60	
% FINES:	9	6	27	16	12	
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)







**HOGGAN ENGINEERING & TESTING (1980) LTD.**

**SECTION 2**

**GPS DATA**

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

**GPS DATA**

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
	30000	644064	6767987	
30000A		644064	6767988	1.1
	30001	643863	6768005	
30001A		643863	6768004	0.9
	30002	643668	6768001	
30002A		643667	6768001	0.4
	30003	643445	6767988	
30003A		643448	6767987	3.9
	30004	643437	6768055	
30004A		643430	6768053	7.0
	30005	643267	6768021	
30005A		643267	6768019	1.7
30005B		643035	6768022	As Per Site Plan
	30006	642867	6768028	
30006A		642866	6768025	2.6
	30007	642667	6768033	
30007A		642664	6768030	4.4
	30008	642466	6768037	
30008A		642463	6768033	5.1
	30009	642266	6768042	
30009A		642265	6768038	4.1
	30010	642068	6768044	
30010A		642066	6768040	3.7
	30011	641866	6768049	
30011A		641865	6768044	5.2
	30012	641668	6768051	
30012A		641666	6768049	2.3
	30013	641469	6768055	
30013A		641469	6768054	1.6
	30014	641288	6768037	
30014A		641287	6768036	0.8
	30015	641032	6767934	
30015A		641051	6767939	20.1 Relocated as per Site Plan
	30016	641014	6767959	
30016A		641012	6767966	7.3
	30017	640863	6767837	
30017A		640871	6767834	9.0
	30018	640689	6767693	
30018A		640691	6767697	5.0
	30019	640527	6767576	
30019A		640524	6767579	4.5
	30020	640351	6767453	
30020A		640351	6767452	1.3
	30021	640194	6767341	
30021A		640194	6767340	1.0
	30022	640042	6767228	
30022A		640041	6767232	4.1
	30023	639889	6767124	
30023A		639890	6767125	1.4
	30024	639690	6766975	

## HOGGAN ENGINEERING & TESTING (1980) LTD.

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
30024A		639688	6766983	8.4
	30025	639558	6766883	
30025A		639558	6766885	2.1
	30026	639359	6766765	
30026A		639356	6766769	5.5
	30027	639214	6766736	
30027A		639213	6766735	1.7
	30028	639224	6766703	
30028A		639229	6766708	6.2
	30029	639106	6766654	
30029A		639106	6766653	1.5
	30030	638905	6766550	
30030A		638909	6766547	4.4
	30031	638931	6766523	
30031A		638926	6766525	5.6
	30032	638814	6766401	
30032A		638808	6766403	6.8
	30033	638656	6766228	
30033A		638653	6766235	8.1
	30034	638450	6766177	
30034A		638452	6766172	5.5
	30035	638289	6766099	
30035A		638287	6766094	5.3
	30036	638095	6766044	
30036A		638094	6766043	2.4
	30037	637905	6765966	
30037A		637902	6765969	4.5
	30038	637702	6765924	
30038A		637704	6765920	4.2
	30039	637561	6765821	
30039A		637563	6765818	3.3
	30040	637423	6765603	
30040A		637444	6765598	21.0
	30041	637425	6765450	
30041A		637429	6765452	3.7
	30042	637402	6765203	
30042A		637411	6765198	10.1
	30043	636822	6764756	
30043A		636827	6764763	8.0
	30044	636670	6764729	
30044A		636668	6764727	2.8
	30045	636401	6764644	
30045A		636398	6764640	5.1
	30046	636233	6764567	
30046A		636230	6764571	5.5
	30047	636074	6764454	
30047A		636077	6764452	3.8
	30048	635857	6764424	
	30049	635663	6764438	
30049A		635653	6764453	18.2

Lake Water Restriction

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
	30050	635460	6764514	
30050A		635462	6764514	1.4
	30051	635300	6764642	
30051A		635301	6764643	0.8
	30052	635197	6764794	
30052A		635196	6764793	1.4
	30053	635056	6764973	
30053A		635055	6764972	2.2
	30054	634948	6765118	
30054A		634942	6765115	7.4
	30055	634832	6765281	
30055A		634837	6765279	5.3
	30056	634746	6765294	
30056A		634757	6765296	10.6
	30057	634729	6765408	
30057A		634728	6765406	2.5
	30058	634679	6765402	
30058A		634679	6765412	10.5
	30059	634612	6765508	
30059A		634609	6765507	3.6
	30060	634586	6765513	
	30061	634617	6765566	
30061A		634611	6765562	7.9
	30062	634495	6765721	
30062A		634495	6765721	0.9
	30063	634374	6765861	
30063A		634376	6765883	2.3
	30064	634254	6766041	
30064A		634253	6766041	1.3
	30065	634121	6766210	
30065A		634121	6766211	0.9
	30066	633991	6766379	
30066A		633993	6766361	2.1
	30067	633887	6766554	
30067A		633887	6766554	0.1
	30068	633842	6766748	
30068A		633842	6766749	1.0
	30069	633865	6766937	
30069A		633866	6766937	0.4
	30070	633919	6767127	
30070A		633921	6767126	2.0
	30071	634019	6767208	
	30072	634882	6768365	
30072A		634882	6768366	1.0
	30073	635006	6768364	
30073A		635014	6768367	8.2
	30074	634937	6768448	
30074A		634943	6768449	5.6
	30075	634960	6768521	
30075A		634961	6768519	2.6

# HOGGAN ENGINEERING & TESTING (1980) LTD.

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
	30076	635048	6768519	
30076A		635054	6768523	7.0
	30077	634971	6768592	
30077A		634972	6768591	1.4
	30078	634997	6768667	
30078A		634997	6768663	4.1
	30079	635025	6768735	
30079A		635028	6768745	10.1
	30080	635049	6768801	
30080A		635046	6768798	4.4
	30081	635160	6768762	
30081A		635160	6768752	10.0
	30082	635162	6768919	
30082A		635159	6768928	9.4
	30083	635160	6769181	
30083A		635170	6769180	9.5
	30084	635160	6769283	
30084A		635163	6769283	2.6
30084R		635167	6769273	10.9
	30085	635150	6769368	
30085A		635155	6769371	5.3
30085R		635154	6769366	4.7
	30086	635137	6769427	
30086A		635131	6769424	6.8
30086R		635135	6769428	5.1
	30087	635129	6769474	
30087A		635121	6769468	9.8
30087R		635128	6769474	9.2
	30088	635108	6769528	
30088A		635104	6769516	12.9
30088R		635110	6769513	6.6
	30089	635083	6769607	
30089A		635076	6769606	5.4
30089R		635080	6769602	4.2
	30090	635063	6769660	
30090A		635061	6769660	2.9
30090R		635065	6769661	4.5
	30091	635046	6769704	
30091A		635044	6769701	3.7
30091R		635045	6769700	2.2
	30092	635005	6769770	
30092A		635000	6769764	7.7
30092R		634998	6769762	3.2
	30093	634974	6769813	
30093A		634966	6769809	9.0
30093R		634965	6769812	2.8
	30094	634950	6769851	
30094A		634943	6769845	9.4
	30095	634912	6769886	
30095A		634905	6769885	7.8

Access Trail/Slope Limitations

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
	30096	634857	6769993	
30096A	634847	6769994	10.3	
30096R	634847	8769986	7.7	
	30097	634800	6770135	
30097A	834800	6770135	0.6	
30097R	634803	6770133	3.4	
	30098	634698	6770285	
30098A	634696	6770279	6.0	
	30099	634665	6770392	
30099A	634666	6770392	0.8	
	30100	634634	6770537	
30100A	634636	6770537	1.4	
30100R	634627	6770540	8.6	
	30101	634649	6770653	
30101A	634650	6770650	3.2	
30101R	634653	6770659	9.1	
	30102	634670	6770755	
30102A	834670	6770753	2.2	
30102R	634667	6770744	9.3	
	30103	634658	6770859	
30103A	634651	6770855	8.2	
30103R	834648	6770854	3.6	
	30104	634619	6770965	
30104A	634614	6770965	5.8	
30104R	634604	6770987	9.4	
	30105	634670	6771006	
30105A	634672	6771005	1.4	
30105R	634672	8771014	8.5	
	30106	634580	6771077	
30106A	634574	6771078	6.1	
30106R	634575	6771070	7.9	
	30107	634538	6771150	
30107A	634529	6771149	9.4	
30107R	634529	6771151	1.4	
	30108	634520	6771276	
30108A	634528	8771278	8.0	
	30109	634466	6771431	
30109A	634466	6771427	3.6	
	30110	634452	6771559	
30110A	634457	6771567	9.4	
	30111	634475	6771631	
30111A	634475	6771627	3.8	
30111R	634480	6771629	5.8	
	30112	634472	6771768	
30112A	634468	6771772	6.3	
30112R	634470	6771772	2.9	
	30113	634437	6771889	
30113A	634435	6771879	10.6	
30113R	634441	6771880	5.3	
	30114	634382	6772025	

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
30114A	634386	6772019	6.7	
30114R	634386	6772023	3.8	
30115	634342	6772100		
30115A	634339	6772105	6.0	
30115R	634337	6772108	3.8	
30116	634314	6772108		
30116A	634312	6772111	3.7	
30116R	634309	6772107	4.9	
30117	634217	6772251		
30117A	634222	6772256	7.0	
30117R	634224	6772253	3.6	
30118	634186	6772266		
30118A	634185	6772272	5.7	
30118R	634188	6772274	3.7	
30119	634107	6772375		
30119A	634109	6772380	4.8	
30120	634075	6772389		
30120A	634076	6772396	7.3	
30121	633974	6772577		
30121A	633974	6772578	1.0	
30122	633915	6772685		
30122A	633916	6772688	2.9	
30122R	633923	6772688	6.8	
30123	633860	6772725		
30123A	633863	6772714	11.3	
30124	633817	6772924		
30124A	633827	6772909	18.5	Access Trail Limitations
30125	633766	6773061		
30125A	633773	6773058	7.3	
30126	633696	6773199		
30126A	633699	6773199	3.0	
30126R	633699	6773197	1.9	
30127	633622	6773332		
30127A	633619	6773331	3.8	
30127R	633614	6773336	7.4	
30128	633548	6773440		
30128A	633550	6773445	5.2	
30129	633530	6773484		
30129A	633531	6773473	10.9	
30129R	633527	6773477	5.4	
30130	633471	6773546		
30130A	633472	6773537	9.5	
30131	633417	6773660		
30131A	633423	6773651	10.0	
30131R	633418	6773655	6.1	
30132	633338	6773776		
30132A	633337	6773786	9.9	
30132R	633333	6773786	3.7	
30133	633259	6773906		
30133A	633261	6773901	5.2	

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
30133R	633264	6773908	7.4	
30134	633168	6774005		
30134A	633158	6774008	11.2	
30134R	833155	6774009	2.8	
30135	633072	6774135		
30135A	633067	6774137	6.0	
30135R	633064	6774140	4.0	
30136	633007	6774212		
30136A	633003	6774206	7.8	
30136R	833004	8774199	6.9	
30137	632521	6775027		
30137A	632523	6775028	1.6	
30138	632580	6775069		
30138A	632578	6775066	4.2	
30139	632657	6775120		
30139A	632665	6775122	8.0	
30140	632436	6775099		
30140A	832440	6775097	4.2	
30141	632487	6775136		
30141A	632495	6775140	8.4	
30142	632545	6775189		
30142A	632545	6775194	5.1	
30142D	632558	6775193	12.6	
30143	632610	6775244		
30143A	632619	6775245	8.8	
30144	632295	6775252		
30144A	632303	6775254	7.7	
30145	632345	6775288		
30145A	832345	6775287	0.8	
30146	632398	6775330		
30146A	632400	6775326	4.5	
30146D	632406	6775322	7.0	
30147	632440	6775367		
30147A	632444	6775365	3.7	
30148	632049	6775597		
30148A	832037	6775613	20.0	TH Relocated (Cut Info Required)
30149	631989	6775669		
30149A	631983	6775666	6.9	
30149R	631981	6775671	5.8	
30150	631933	6775743		
30150A	631923	6775739	11.4	
30150R	831923	6775744	5.0	
30151	631864	6775834		
30151A	631868	6775813	21.0	TH Relocated (Cut Info Required)
30151R	631865	6775818	5.7	
30152	631809	6775934		
30152A	631805	6775939	6.4	
30153	631727	6776003		
30153A	631728	6776010	6.7	
30153R	631723	6776014	8.9	
30154	631703	6776064		
30154A	631698	6776060	6.9	

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Easting</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>	
	30155	631650	6776118		
30155A		631643	6776117	7.0	
30155R		631647	6776114	5.1	
	30156	631614	6776184		
30156A		831600	6776185	14.3	Access Trail Limitations
30156R		631591	6776190	10.7	
	30157	631664	6776183		
30157A		631655	6776190	11.5	
30157R		631651	6776191	4.3	
	30158	631569	6776278		
30158A		631583	6776272	8.9	
30158R		631560	6776286	6.1	
	30159	631540	6776367		
30159A		631517	6776361	23.6	Access Trail Limitations
30159R		631515	6776361	2.1	
	30160	631505	6776513		
30160A		631499	6776508	9.8	
	30161	631506	6776701		
30161A		631513	6776711	11.6	
	30162	631542	6776922		
30162A		831538	6776914	9.1	
	30163	631575	6776903		
30163A		631563	6776900	12.9	Access Trail Limitations
	30164	631575	6777035		
30164A		631580	6777031	5.8	
	30165	631605	6777119		
30165A		831607	6777126	7.6	
	30166	631580	6777136		
30166A		631583	6777139	3.6	
	30167	631589	6777293		
30167A		631589	6777298	5.2	
	30168	631516	6777594		
30168A		631509	6777587	10.4	
	30169	631460	6777712		
30169A		831458	6777708	4.7	
	30170	631410	6777849		
30170A		631414	6777845	5.1	
	30171	631398	6778008		
30171A		631414	6777998	18.4	Access Trail Limitations
	30172	631425	6778140		
30172A		631432	6778136	7.8	
	30173	631424	6778186		
30173A		631425	6778189	3.0	
	30174	631500	6778365		
30174A		631499	6778370	4.8	
	30175	631610	6778575		
30175A		631598	6778568	14.3	Proposed within New Roadway
	30176	631655	6778670		
30176A		631642	6778670	13.0	Proposed within New Roadway

**HOGGAN ENGINEERING & TESTING (1980) LTD.**

<u>Hole #</u>	<u>Eastings</u>	<u>Northing</u>	<u>Discrepancy</u>	<u>Notes:</u>
30177A	636646	6764614		As Per Site Plan
30178A	636697	6764616		As Per Site Plan
30179A	636749	6764619		As Per Site Plan
654-2763D	632672	6774951		As Per 654-2763 Location

<u>Control #</u>	<u>Eastings</u>	<u>Northing</u>	<u>Discrepancy</u>	
CP192	642738	6768077		
C192	642394	6768079	344.5	CP192 located tying in CP193
CP3243	633816	6766665		
C3243	633816	6766663	1.7	
CP3254	635059	6768359		
C3254	635062	6768359	2.6	
CP3258	635246	6769238		
C3258	635238	6769243	9.2	
CP3264	634759	6770522		
C3264	634759	6770521	0.6	
CP3272	634404	6772040		
C3272	634403	6772037	3.1	
CP3277	633867	6772901		
C3277	633865	6772897	4.5	
CP3281	633331	6773849		
C3281	633317	6773879	32.7	
CP3289	631930	6775786		
C3289	631927	6775786	2.2	
CP3294	631568	6776652		
C3294	631559	6776666	16.3	
CP3300	631464	6778076		
C3300	631458	6778081	8.2	
CP3314	638458	6766175		
C3314	638458	6766174	1.2	
CP3318	637433	6765315		
C3318	637432	6765316	1.5	
CP3326	635237	6764649		
C3326	635243	6764678	29.9	
CP3536	632914	6774876		
C3536	632914	6774877	1.6	
CP755	641034	6767923		
C755	640828	6767787	246.9	CP755 located tying in CP756
CP761	639787	6767041		
C761	639563	6766935	247.1	CP761 located tying in CP762

Original Report

Do Not Remove from Building  
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