

Gravel Quarry Investigation (1988)
McLean Lake, Whitehorse, Yukon Territory



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

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J. R. Paine & Associates Ltd.

Gravel Quarry Investigation (1988)
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REPORT NO. 8002-301

GRAVEL QUARRY INVESTIGATION (1988)
MCLEAN LAKE, WHITEHORSE, YUKON TERRITORY

MARCH, 1988

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REPORT NO. 8002-301

GRAVEL QUARRY INVESTIGATION (1988)
MCLEAN LAKE, WHITEHORSE, YUKON TERRITORY

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ATTACHED:

APPENDIX I

-Test hole (pit) logs 201-264

-Test summary sheets

-from J.R. Paine & Associates'

Gravel Quarry Investigation (1988)

APPENDIX II

-Test hole logs

-Test summary sheets

-from previous Gravel Quarry Investigations

by J.R. Paine & Associates, and others.

GRAVEL QUARRY INVESTIGATION (1988)

PROJECT: McLean Lake Gravel Quarry

LOCATION: Whitehorse, Yukon Territory

CLIENT: GOVERNMENT OF YUKON
Community & Transportation Services
Lands Branch
Box 2703
Whitehorse, Yukon Territory
Y1A 2C6

Attention: Mr. Bruce Gilroy

INTRODUCTION

This report presents the results of the gravel quarry investigation made for the McLean Lake Gravel Quarry area. The sites of the investigation include various lots within the existing McLean Lake Quarry leases as well as an area west of Lot W and an area south of Lots T, U and W.

The objective of the investigation was to assess the gravel reserves with regards to potential for development.

Authorization to proceed was received from Mr. Bruce Gilroy of the Yukon Territorial Government, Community and Transportation Services, Lands Branch. Field work was completed in March, 1988.

FIELD AND LABORATORY INVESTIGATION

The field investigation consisted of excavating 64 test pits to a maximum depth of 5.0 meters. Lesser test pit depths were attained in many test pits for a number of reasons including the following:

- sloughage of test pit side walls
- refusal due to bedrock or layer of cobbles and boulders
- unsuitable material

During excavation, field samples were obtained to allow for visual inspection and classification of soils. This information was utilized to detail field test pit logs.

The laboratory investigation consisted of performing grain size analyses and trial laboratory crushing (to 20 millimeter maximum size) on selected samples. This information is utilized to assess the potential for the granular material suitability for various construction materials.

The results of the laboratory testing have been enclosed in the Appendix of this report on the individual test summary sheets. Also enclosed are the subsurface soil profiles which are given in detail on the individual test hole (pit) logs.

The location of the test pits are shown on the attached topographical map of the McLean Lake Gravel Quarry area.

DISCUSSION AND CONCLUSIONS

The following are our findings regarding material quality and quantity for the McLean Lake Gravel Quarry area. A major assumption made to facilitate estimating quantities of suitable granular material is that the material types found at the test pit locations are consistent in the vicinity of the test pit. However, we cannot be responsible for any inconveniences or inaccuracies caused by variations and discontinuities in material types and strata.

The test pit locations have been located in various areas with varying material types. To simplify the assessment of materials, we have subdivided the quarry area into small parcels. These parcels include the various leases or groups of leases within the previously subdivided gravel lease area. Also, the areas investigated outside of the existing gravel lease limits have been subdivided into two parcels. The following are the subdivisions used:

- lease Lots A and B
- lease Lot I
- lease Lot J
- lease Lot K
- lease Lot P
- lease Lot Q
- lease Lot S
- east of lease Lot W
- south of lease Lots U, T and W
(south of existing gravel quarry leases)

In the following discussions with regards to material suitability or potential for usage as construction materials such as surface base course, asphalt or concrete aggregates, it is assumed that some deletions or additions of certain grain sizes may be required. Two examples of altering a natural product to service a specific use may be:

- 1/ Reducing the silt or fines content of a concrete aggregate by mechanical washing.
- 2/ Altering the proportions of asphalt aggregate by splitting the crushed aggregates and recombining the aggregate stockpiles to obtain an appropriate blend.

An evaluation of the above noted designated subdivisions is as follows:

Lease Lots A and B

A total of five test pits were excavated on Lots A and B. The test pits include test pits 201 to 204 and 264. Test pits 201 to 204 were excavated to an average depth of 1.5 meters with bedrock attained in all four test pits. Test pit number 264 was excavated to 4.50 meters with no bedrock attained.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the soil profiles consist of predominately gravelly sand and sandy gravel with cobbles and boulders up to 1.0 meter in diameter, in test pits 201, 202 and 264 located on Lot A. In test pits 203 and 204 located on Lot B, the predominate material type is silty sandy gravel and silty gravel with cobbles and boulders. The materials noted were overlain by a surface stratum of, on average, 0.15 meters of organic silty sandy gravel.

The materials located on lease Lot A appear to be suitable for construction materials such as surface base coarse, asphalt or concrete aggregates. However, the quantity of gravel is limited by the depth to bedrock and the presence of cobbles and boulders. An estimate of the quantity of gravels on Lot A would be up to 15,000 M³.

The materials located on lease Lot B appear to be unsuitable for construction materials because of silt contents greater than 15 percent by total weight. Also, the shallow depth to bedrock of 1.0 meter (as noted in test pits 203 and 204) would limit the feasibility of lot development.

The potential for development on lease Lots A and B varies between poor and fair. Lease Lot B has a poor rating because of poor quality material found and the shallow depth to bedrock. Lease Lot A has a fair rating because the material appears to be of suitable quality, however, quantity may be limited by the presence of bedrock and cobbles and large boulders.

Lease Lot I

A total of 6 test pits were excavated on Lot I including test pits 205, 206, 208, 210, 211 and 217. The test pits were excavated to an average depth of 3.0 meters with test pit 205 limited in depth to 3.25 meters due to the presence of bedrock or a layer of large boulders.

The subsurface soil profiles have been given on the individual test hole logs enclosed. However, in general, the soil profile consists of a surface stratum of organic silts, sands and gravels with an average depth of 0.25 meters. Underlying the surface stratum are predominately silty sandy gravels, silty gravelly sands, and sands (with varying amounts of silt). Also, cobbles and boulders up to 0.8 meters noted in 4 of 6 test pits.

The materials noted on Lot I appear to be unsuitable for construction material such as surface base coarse, asphalt or concrete aggregates. The reason for this materials limited potential for construction material production is because of the high silt content which are, in general, above 15 percent by total weight.

Lease Lot K

A total of five test pits were excavated on Lot K. The test pits include test pits 212 to 216. The test pits were excavated to an average depth of 4.25 meters.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the soil profiles consist of a surface stratum of organic silts, sands and gravels which extend to depths of, on average, 0.27 meters below the ground surface. Below the surface stratum in test pits 212, 213 and 215 are predominately sandy gravels and gravelly sands which extended to the average maximum depth of excavation of 4.67 meters. Below the surface organic stratum in test pits 214 and 216 were found predominately silty sandy gravels and silty gravelly sands which extended to the maximum depth of excavation of 3.55 meters. In the five test pits cobbles and boulders, up to 0.8 meters in diameter, were found at varying depths and concentrations.

The materials found on Lease Lot K are considered poor to good with regards to there suitability for potential construction material production.

The materials considered poor or unsuitable for construction material production, as indicated in test pits 214 and 216, are located in the centre and north west portions of the site. The materials poor rating is due to the relatively high silt content.

The materials considered fair to good for construction material production, as indicated in test pits 212, 213 and 215, are located on the south and east portions of the site. An estimated quantity of suitable material on Lot K would be in excess of 20,000 M³. This quantity is based on the assumption that suitable material extends to the maximum average depth of the test pit excavation of 4.67 meters. However, it is likely that the depth of the granular material extends to much greater depths. Bore hole 26, drilled adjacent to the south west corner of Lease Lot K (adjacent to test pit 213), extended to refusal at 8.8 meters below the ground surface.

Lease Lot J

Two test pits were excavated on the north portion of Lot J. The two test pits include test pits 207 and 209. The test pits were excavated to an average depth of 4.63 meters.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the soil profiles consist of a surface stratum of, on average, 0.38 meter of organic gravelly silt and organic silty sandy gravel. Underlying the surface stratum in test pit 207 are sandy gravels with some silt and cobbles to 0.2 meter in diameter which extend to 3.60 meters below the ground surface. Underlying this stratum are silty sands with some gravel which extend to the maximum depth of excavation of 4.75 meters. In test pit 209, the surface stratum is underlain by silty sandy gravel with cobbles and boulders to 0.4 meter in diameter which extend to the maximum depth of drilling of 4.5 meters.

In addition to the two test pits excavated, two test holes have previously been drilled on Lease Lot J. The test holes included test holes 27 and 37. The test holes were located on the north (test hole 37) and south (test hole 27) portions of the site.

The subsurface soil profiles for the test holes drilled are given on the individual test hole logs enclosed. However, in general, the profiles consisted of predominately sandy gravels with traces to some silt and some cobbles. This material was found to extend to a depth of approximately 7.0 meters. Below 7.0 meters was found granular material. However, no representative samples were retained on the augers.

This site is presently being utilized by the City of Whitehorse as a source of pitrun gravels. The portion of the site being utilized is the hill on the south east corner of the site. The exposed bank is approximately 15 meters high with the predominate material type being sandy gravel with some silt.

Lot J has good potential for construction material production such as for surface base course and asphalt aggregate production. With regards to concrete aggregate production, the materials found have a poor to fair potential for development because of the relatively high silt content.

An estimate of the quantity of suitable construction material reserves would be in excess of 115,000 M³. The location of these reserves is on the south parimeter and east portions of the site. The north portion of Lot J has not been included in this quantity estimate because the four test pits on, or adjacent to, the north portion of the site show generally silty materials (greater than 15 percent silt). If the material below the depth of the test pit excavations becomes cleaner (less silt) the actual gravel reserve quantity may be increased by as much as 40,000 M³.

The potential for development on Lease Lot J regarding construction material production appears good.

Lease Lot S

Two test pits were excavated in Lot S. The test pits include test pits 226 and 256. The test pits were excavated to a maximum depth of, on average, 4.63 meters.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the soil profile consists of a surface stratum of organic sandy silts and organic silty sandy gravel which extend to 0.25 meters below the ground surface. Underlying the surface stratum in test pit 226 are silty sandy gravels which extend to 1.0 meter below the ground surface. Underlying the surface stratum of silty materials and organics in test pits 226 and 256, and extending to the maximum depth of excavation are sandy gravels with cobbles and traces of silt.

In addition to the two test pits excavated, three test holes have previously been drilled, on or adjacent to, Lot S. These test holes include test holes 26, 28 and 36. The test holes were drilled to 2.6 (refusal), 8.8 (refusal) and 14.6 meters respectively.

The subsurface soil profiles for the test holes are given on the individual test hole logs enclosed. However, in general, the soil profiles consist predominately of sandy gravels with traces of silt and some cobbles throughout.

An estimate of the quantity of suitable construction material reserves would be 50,000 M³. This estimate was arrived at assuming that all material above an elevation of 820 meters would be suitable material. This elevation corresponds to 2.0 meters above refusal depth in test hole 26 (located at the north west corner of Lot S), and at the maximum depth attained in test hole 36 (located at the south west corner of Lot S).

The potential for development on Lease Lot S regarding construction material production appears good.

Lease Lot P

A total of seven test pits were excavated on Lot P. The test pits include test pits 218 to 222, 227 and 228. The test pits were excavated to a depth of, on average, 4.33 meters. This depth does not include test pit number 221 which was discontinued at 1.75 meters in frozen glacial till formation.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the profile consists of a surface stratum of organics, organic silty sandy gravels and organic gravelly silty sand which extend to 0.25 meters below the ground surface. Underlying the surface organic stratum in test pits 218, 219, 220, 222 and 228 is a sandy gravel and cobble stratum with a very high rock content which extends to, on average, 2.8 meters below the ground surface. Underlying the coarse gravel and cobble stratum are sandier materials with the odd cobble which varies between sandy gravels and sands with some gravel. This stratum extends to the maximum depth of excavation. In test pit 221 the organic surface stratum is underlain by silty sandy gravel which extends to 1.0 meter below the ground surface. Underlying this stratum is frozen glacial till which extended to the maximum depth of excavation of 1.75 meters. In test pit 227 the organic surface stratum was underlain by a stratum of sandy gravel which was sandier with depth and extended to 4.3 meters below the ground surface. Below the sandy gravel stratum to the maximum depth of excavation of 5.00 meters was a sand stratum with a trace of gravel.

In addition to the seven test pits excavated on Lot P, test hole 13 was previously drilled adjacent to the east centre of the lot. Test hole 13 was drilled to a depth of 6.5 meters.

The subsurface soil profile for test hole 13 is given on the individual test hole log enclosed. However, in general, the soil profile consists of a surface stratum of gravel with some sand and some silt which extends to 1.0 meter below the ground surface. Underlying the surface stratum are stratum of silty sandy gravel, sandy gravel with some silt, sandy fine gravel and sandy gravel which extend to the maximum depth of drilling.

Lot P has fair potential for construction material production such as for surface base course, asphalt, and concrete aggregates. The reason for the fair potential is the high rock content and depth of the surface stratum in five of the seven test pits excavated in this site. In consideration of the high rock content the gravel lease development would have to include some mode of operation to obtain appropriate sand-gravel proportions. This could involve a high bank feed or selective crushing (ie. split sand and gravel stockpiles).

An estimate of the quantity of construction material reserves would be 45,000 M³. This is assuming that the material above an elevation of 825 meters would be suitable. This elevation corresponds to 4.0 meters above the maximum depth attained in test hole 13.

The potential for development on Lease Lot P regarding construction material production appears fair. However, consideration must be given to the method of reserve production to accommodate the stratifications of the materials encountered on this site.

Lease Lot Q

A total of five test pits were excavated on Lot Q. The test pits include test pits 219, 223, 224, 225 and 229. The test pits were excavated to a depth of, on average, 4.15 meters.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the soil profile consists of a surface stratum of 0.25 meters of organic silty sandy gravels. In test pits 219 and 223, the surface stratum is underlain by a sandy gravel and cobble stratum with a high rock content which extends to, on average, 2.38 meters below the ground surface. Underlying the coarse gravel and cobble stratum are gravelly sands which extend to the maximum depth of excavation in test pit 219 of 4.00 meters and to 3.50 meters below the ground surface in test pit 223. In test pit 223, the gravelly sand stratum is underlain by fine to medium sand which extends to the maximum depth of excavation. In test pits 224, 225 and 229, the surface stratum is underlain by sandy gravels and gravelly sands which vary between clean and traces of silt. In test pit 229 the sandy gravels and gravelly sands contained cobbles.

In addition to the five test pits excavated on Lot Q, test hole 31 was previously drilled adjacent to the south east corner of the lot. Test hole 31 was drilled to refusal at a depth of 9.5 meters.

The subsurface profile for test hole 31, is given on the individual test hole logs enclosed. However, in general, the soil profile consists of a surface stratum of gravel and cobbles with some sand. The surface stratum is underlain by stratum of sandy gravels and gravelly sands with some cobbles which extend to the maximum depth of drilling of 9.5 meters (refusal).

Lot Q has a fair to good potential for construction material production. The reason for the fair potential is presence of a coarse gravel and cobble stratum which must be integrated with other materials on site to produce adequate sand-gravel proportions to be suitable for construction materials such as surface base coarse, asphalt or concrete aggregates.

An estimate of the suitable material reserves on Lot Q would be 60,000 M³. This is assuming that the material above an elevation of 830 meters would be suitable material. This elevation corresponds to 3.0 meters above the refusal depth attained in test hole 31.

The potential for development on Lease Lot Q, regarding construction material production, appears fair to good. The fair rating is given to those portions of the site (ie. adjacent to test pits 219 and 223) where the surface stratum is a sandy gravel and cobble stratum with a very high rock content. In these areas consideration must be given to the method of gravel reserve production to accommodate the stratifications of the materials.

East of Lease Lot W

A total of five test pits were excavated in this area, including test pits 241 to 245. The test pits were excavated to an average depth of 3.35 meters. Test pits 241 and 242 were excavated to depths of 1.50 meters and 3.50 meters respectively at which depth refusal was attained, due to the presence of bedrock or a layer of large boulders. Test pit 243 was excavated to a depth of 3.75 meters then abandoned due to the presence of bouldery frozen material.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. However, in general, the soil profiles consist of a 0.25 meter surface stratum of organic silty sandy gravel. In test pits 241 and 242 the organic surface stratum was underlain by sandy gravels which contained a trace to some silt and cobbles and boulders to 0.5 meter in diameter, which extend to the maximum depth of excavation. In test pits 243, 244 and 245, the surface organic stratum was underlain by silty sandy gravels and silty gravelly sands with cobbles and boulders to 1.1 meters in diameter. The silty gravels and sands extended to depths of 1.50 meters and 2.75 meters in test pits 243 and 245 respectively, and

extended to the maximum depth of excavation of 3.50 meters in test pit 244. In test pits 243 and 245, the silty gravel and sand stratum was underlain by sandy gravels with a trace to some silt and cobbles and boulders, which extend to the maximum depth of excavation of 3.75 meters in test pit 243 and 4.50 meters in test pit 245.

The area west of Lot W is considered to have a limited potential for production of construction materials. Several reasons exist for the limited potential. These include the following:

- 1/ The depth of the gravel reserves may be limited by the depth of bedrock or large boulders below the ground surface as noted in test pits 241, 242, 243 and 244.
- 2/ The presence of granular materials with unsuitably high silt contents in the surface stratum in test pits 243 and 245 and throughout the full depth of test pit 244.
- 3/ The depth of the gravel reserves adjacent to test pit 245 may be limited by the elevation of the natural drainage path which is a maximum of 5.0 meters (at test pit 245 location) lower than the surrounding area.

South of Lease Lots U, T and W

A total of twenty-eight test pits were excavated between the south lease lot lines of Lots U, T and W, and 375 meters south. The area investigated was bounded on the west by an existing trail and on the east by a line approximated by the extension of the east lot line of Lot W. The total area investigated was approximately 16.5 hectares. The test pits include test pits 230 to 240, 246 to 255 and 257 to 263. The test pits were located to best define the material types within the apparent gravel bearing topographical features.

The subsurface soil profiles have been given on the individual test hole (pit) logs enclosed. Due to the number of test pits within the area, it would be difficult to make general comments regarding the soil profiles found. Thus, no attempt has been made.

From the total of twenty-eight test pits within this area, twenty-two test pits contained materials which would be suitable for construction material production such as surface base course, asphalt and concrete aggregates. The twenty-two test pits contained materials which range between sandy gravels (clean to some silt) to gravelly sand (clean to some silt). Within these gravel and sand strata cobbles and boulders were found which ranged in size, up to 0.7 meter. The concentration of cobbles and boulders ranged between the odd cobble and cobbles and boulders throughout. The sands and gravels were overlain by, on average, 0.25 meters of organic silts, sands and gravels.

The remaining six test pits where the materials may have a limited potential for construction material production include test pits 234, 236, 238, 239, 250 and 252. A more detailed discussion of these test pits, is as follows:

- 1/ Test pits 234 and 239 are located approximately 100 meters south of Lease Lot T in a depression. These pits may be represent an area of limited potential for development because of the, on average, 2.4 meters of silty sands and gravels which overlay the suitable sandy gravels. However, these pits are located in a lower area which has been designated as a proposed access right of way.
- 2/ Test pits 236 and 238 are located approximately 60 meters south of the south west corner of Lease Lot W. These test pits have surface strata of suitable sandy gravels and gravelly sands which extend to, on average, 2.6 meters below the ground surface, however, underlying this stratum are sands with only small amounts of gravel. Depending on the depth of the sand stratum the area may have limited potential for the production of construction materials. In regards to the continuity on the sand stratum, test holes 39 and 40 previously drilled approximately 40 meters north of the test pit locations indicate sandy gravels and gravelly sands extending through the full depths of drilling, (test hole 39, 12.8 meters to refusal, test hole 40, 14.6 meters).


- 3/ Test pit 250 is located approximately 220 meters south of the south east corner of Lot W. Test pit 250 was excavated to a depth of 1.25 meters at which depth refusal was reached due to the presence of bedrock or a layer of large boulders. Test pit 250 is located in an area with known bedrock outcroppings.
- 4/ Test pit 252 is located approximately 130 meters south and 130 meters west of the south east corner of Lot W. Test pit 252 has a soil profile consisting of a silty sand stratum extending to 1.0 meter below the ground surface overlaying a fine sand stratum which extends to the maximum depth of excavation of 3.25 meters.

The reserves of granular material suitable for construction material aggregates such as surface base course, asphalt or concrete aggregates, has been estimated at 600,000 M³. This value was arrived at by utilizing a topographical map with the interpreted bedrock surface contours overlain.

The potential for development of the granular reserves south of the existing gravel lease Lots U, T and W, appear to be good to excellent. The good to excellent rating is based on our findings which showed suitable granular materials in twenty-two of the twenty-eight test pits excavated. The sporadic nature with regards to the location of the silty and sandy deposits is characteristic of glacial deposits. The deposits of silty and sandy material may not be altogether a negative aspect when production of various types of construction materials is concerned.

We trust the above is satisfactory for your purpose. If you should have any questions or comments, please feel free to contact the undersigned.

Yours truly,

A circular red seal with the text "PROFESSIONAL ENGINEER" around the perimeter and "YUKON TERRITORY" in the center. The name "WILBUR C. KOFOED" is stamped across the seal, with a handwritten signature over it.

WILBUR C. KOFOED

Wilbur C. Kofoed, P. Eng.
J.R. Paine & Associates Ltd.

A P P E N D I X

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A P P E N D I X I

J. R. Paine & Associates Ltd.

PROJECT: McLean Lake Gravel Quarry Investigation (1988)

*CLIENT: GOVERNMENT OF YUKON
Community & Transportation Services
Lands Branch
Box 2703
Whitehorse, Yukon Territory
Y1A 2C6*

Attention: Mr. Bruce Gilroy

Enclosed in Appendix I are the test hole (pit) logs for test pits 201 to 264. The test hole (pit) logs are followed by the grain size analysis test summary sheets completed on pitrun, and laboratory crushed samples obtained during the field investigation.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK CKD. WCK JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 201 PLATE NO. 1

MOISTURE CONTENT ●—●
LIQUID LIMIT (W.L.) ■—■
PLASTIC LIMIT (W.P.) ▲—▲
STANDARD PENETRATION TEST X—X
MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80












SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ELEV. M. DATUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-1.75M
SANDY GRAVEL
SOME SILT
COBBLES AND BOULDERS TO 1.0M
1.75M

REFUSAL-BEDROCK

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
 TOPSOIL  PEAT  FILL  CLAY  SILT  SAND  TILL  BEDROCK	 -UNDISTURBED  -DISTURBED  LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP STR kPa γ _d - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" Ø D RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

DWN. WCK CKD. WCK JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 202 PLATE NO. 2

MOISTURE CONTENT (W) & STANDARD PENETRATION (N)
LIQUID LIMIT (W L)
PLASTIC LIMIT (W P)
STANDARD PENETRATION TEST

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

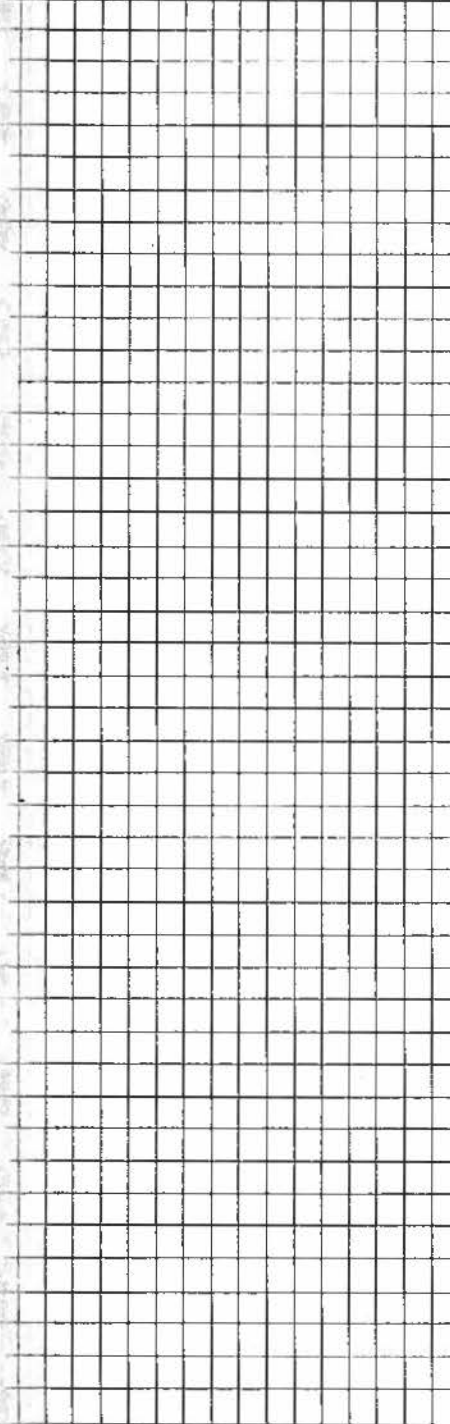
SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL

ELEV. M. DATUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-2.25M SANDY GRAVEL TRACE OF SILT ODD COBBLE OR BOULDER TO 1.0M

REFUSAL-BEDROCK



Legend table with columns: SOIL TYPES, CONDITION, SAMPLE TYPE, LABORATORY TEST SYMBOLS, PENETRATION RESISTANCE. Includes symbols for topsoil, peat, fill, clay, sand, silt, till, bedrock, undisturbed, disturbed, lost sample, etc.



J. B. Paine & Associates Ltd

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

DWN. WCK CKD. WCK-16 JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 203 PLATE NO. 3

MOISTURE CONTENT LIQUID LIMIT (W.L.) PLASTIC LIMIT (W.P.) STANDARD PENETRATION TEST MOISTURE CONTENT (%) & STAND. PENETRATION (N) SOIL PROFILE CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

Main data table with columns for depth, classification, and various test results. Includes entries for '0.00-1.00M BOULDERY SILTY GRAVEL' and 'REFUSAL-BEDROCK'.

Legend section containing SOIL TYPES (TOPSOIL, PEAT, FILL, CLAY, SILT, SAND, TILL, BEDROCK), CONDITION (UNDISTURBED, DISTURBED, LOST SAMPLE), SAMPLE TYPE (U, D, M, R), LABORATORY TEST SYMBOLS (Qu, D, C, MA), and PENETRATION RESISTANCE (N).



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. *wck*

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 204

PLATE NO. 4

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

0.00-1.00M
SILTY SANDY GRAVEL
COBBLES

1.00M

1.0

REFUSAL-BEDROCK

2.0

10 20 30 40 50 60 70 80

SOIL TYPES

TOPSOIL PEAT FILL CLAY
SILT SAND TILL BEDROCK

CONDITION

UNDISTURBED
DISTURBED
LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
Pd - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

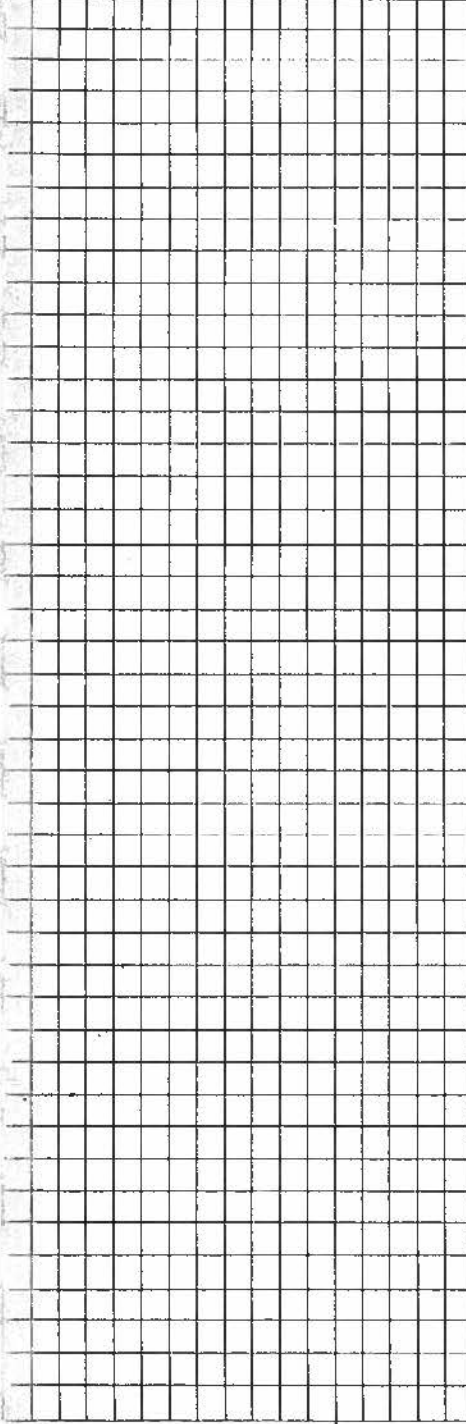
TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 205 PLATE NO. 5

N. WCK CKD. *W.C.R.*
MOISTURE CONTENT ● ●
LIQUID LIMIT (W L) ■ ■
PLASTIC LIMIT (W P) ▲ ▲
STANDARD PENETRATION TEST X—X
MOISTURE CONTENT (%) & STAND PENETRATION (N)

SOIL PROFILE SAMPLES



DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
ELEV. M	DATUM GROUND SURFACE ELEVATION						
	ORGANIC SILTY SANDY GRAVEL 0.25M						1.0
	0.00-3.25M SILTY SANDY GRAVEL						2.0
							3.0
							4.0
	REFUSAL-BEDROCK OR LAYER OF LARGE BOULDERS						

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PEN TRATION RESISTANCE
[---] TOPSOIL [---] PEAT [---] FILL [---] CLAY [] SILT [---] SAND [---] TILL [---] OF BROCK	[---] -UNDISTURBED [---] -DISTURBED [---] LOST SAMPLE	U - 76mm SHELBY TUBE D S - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CUTIE	Qu - UNCONFINED COMP STR kPa W - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 14 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12 INTO THE SOIL



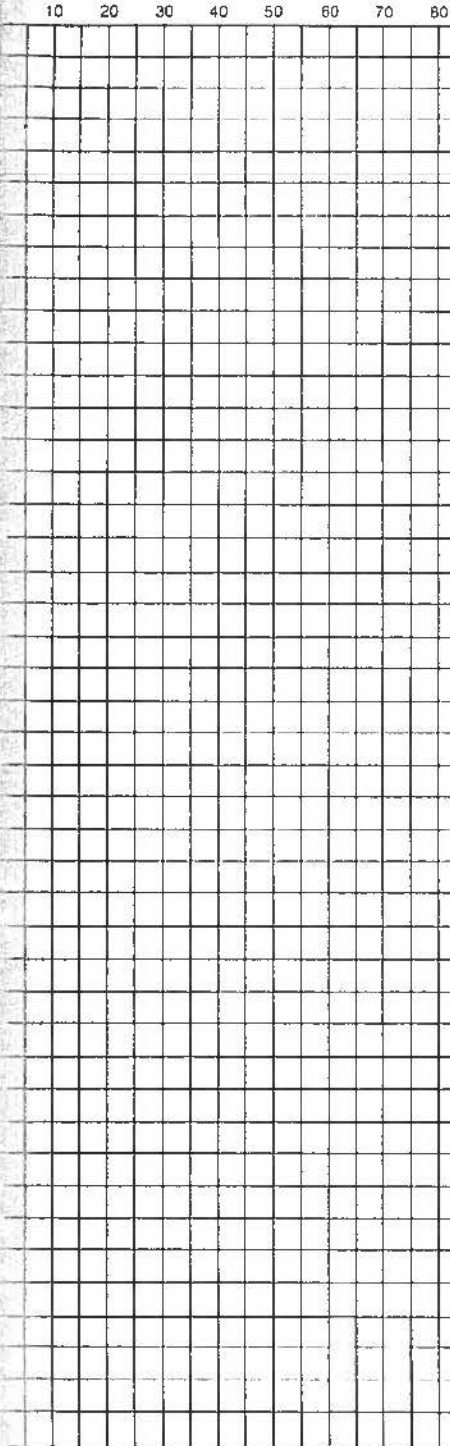
J. R. Paine & Associates Ltd.
INCORPORATED IN THE STATE OF NEW YORK

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT **McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)**
WHITEHORSE, YT

DWN. **WCK** CKD. *WCK* JOB NO. **8002-301** DATE **1988.03.25** HOLE NO. **207** PLATE NO. **7**

MOISTURE CONTENT
 LIQUID LIMIT (W.L.)
 PLASTIC LIMIT (W.P.)
 STANDARD PENETRATION TEST
 MOISTURE CONTENT (%) & STANDARD PENETRATION (N)



SOIL PROFILE

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
ELEV. M.	DATUM GROUND SURFACE ELEVATION						
	ORGANIC GRAVELLY SILT	0.50M					1.0
	0.50-3.60M SANDY GRAVEL SOME SILT HIGH ROCK CONTENT COBBLES TO 0.2M						2.0 3.0
		3.60M					4.0
	3.60-4.75M SILTY SAND SOME GRAVEL						5.0
		4.75M					

END OF HOLE
 -EXCAVATION INTO SIDE OF KNOLL

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK	-UNDISTURBED -DISTURBED -LQST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. STR. kPa W - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK-

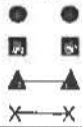
JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 208

PLATE NO. 8

MOISTURE CONTENT
LIQUID LIMIT (W.L.)
PLASTIC LIMIT (W.P.)
STANDARD PENETRATION TEST



SOIL PROFILE

SAMPLES

DEPTH CLASSIFICATION

ELEV. M. DATUM GROUND SURFACE ELEVATION

SOIL SYMBOL OTHER TESTS unconfined Compressive Strength, kPa SAMPLE COND. TYPE DEPTH SCALE

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

Grid for moisture content and standard penetration test results.

ORGANIC SILTY SANDY GRAVEL 0.25M
0.00-4.00M
SILTY SANDY GRAVEL
SOME BOULDERS TO 0.2M
4.00M

END OF HOLE

SOIL TYPES legend: TOPSOIL, PEAT, FILL, CLAY, SILT, SAND, TILL, BEDROCK

CONDITION legend: UNDISTURBED, DISTURBED, LOST SAMPLE

SAMPLE TYPE legend: U - 76mm SHELLY TUBE, D.S. - DRIVE SAMPLE, M - MOISTURE CONTENT, R.C. - ROCK CORE

LABORATORY TEST SYMBOLS legend: Qu - UNCONFINED COMP STRENGTH kPa, rd - DRY WEIGHT kg/m³, C - CONSOLIDATION TEST, MA - GRAIN SIZE ANALYSIS

PENETRATION DISTANCE legend: (N) NUMBER OF BLOWS OF A 140 lb HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCL

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 209

PLATE NO. 9

MOISTURE CONTENT
LIQUID LIMIT (W.L.)
PLASTIC LIMIT (W.P.)
STANDARD PENETRATION TEST

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.50M
SILTY SANDY GRAVEL
COBBLES AND BOULDERS TO 0.4M

4.50M

END OF HOLE

-TEST PIT LOCATED ON TOP OF RIDGE.

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

TOPSOIL SILT
 PEAT SAND
 FILL TILL
 CLAY BEDROCK

CONDITION

-UNDISTURBED
 -DISTURBED
 -LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP STR kPa
w_d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
INCORPORATED IN CANADA

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. *WCK*

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 210

PLATE NO. 10

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
LASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ELEV
M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.00-2.00M
SILTY SANDY GRAVEL
COBBLES TO 0.3M

2.00-3.25M
SAND
FINE TO MEDIUM

3.25-4.50M
SAND
FINE TO MEDIUM
SOME GRAVEL
ODD BOULDER TO 0.8M

END OF HOLE

SOIL TYPES

TOPSOIL
PEAT
FILL
CLAY
SILT
SAND
TILL
BEDROCK

CONDITION

UNDISTURBED
DISTURBED
LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
γ_d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140
lb. HAMMER DROPPED 30 ms (FREE
FALL) REQUIRED TO DRIVE A 2" O.D.
RAYMOND TYPE SAMPLER A
DISTANCE OF 12 INTO THE SOIL



J. R. Paino & Associates Ltd.
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT **McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)**
WHITEHORSE, YT

DWN. **WCK** CKD. *wck* JOB NO. **8002-301** DATE **1988.03.25** HOLE NO. **211** PLATE NO. **11**

MOISTURE CONTENT
 LIQUID LIMIT (W.L.)
 PLASTIC LIMIT (W.P.)
 STANDARD PENETRATION TEST
 MOISTURE CONTENT (%) & STAND. PENETRATION (N)
 10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ELEV. M. DATUM GROUND SURFACE ELEVATION

0.25
 1.50
 2.0

ORGANIC GRAVELLY SILT
 SILTY SAND
 SOME GRAVEL AND COBBLES
 FROZEN

END OF HOLE

SOIL TYPES

TOPSOIL PEAT FILL CLAY
 SILT SAND TILL BEDROCK

CONDITION

UNDISTURBED
 DISTURBED
 LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELLY TUBE
 D.S. - DRIVE SAMPLE
 M - MOISTURE CONTENT
 R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
 Wd - DRY WEIGHT kg m³
 C - CONSOLIDATION TEST
 MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
INCORPORATED IN THE STATE OF NEW YORK

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 212

PLATE NO. 12

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-5.00M
SANDY GRAVEL
SOME SILT
HIGH ROCK CONTENT
COBBLES AND BOULDERS TO 0.3M

5.00M

END OF HOLE

-TEST LOCATED ON SIDE OF RIDGE
(ESKER)

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- γd - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 213

PLATE NO. 13

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELL. V. M.

DATUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-3.75M
SANDY GRAVEL
SOME SILT
SOME BOULDERS TO 0.8M

3.75M

3.75-5.00M
GRAVELLY SAND
TRACE OF SILT

5.00M

END OF HOLE

1.0

2.0

3.0

4.0

5.0

6.0

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

DWN. WCK CKD. WCK JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 215 PLATE NO. 15

MOISTURE CONTENT LIQUID LIMIT (W.L.) PLASTIC LIMIT (W.P.) STANDARD PENETRATION TEST MOISTURE CONTENT (%) & STAND. PENETRATION (N)

SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength (kPa) SAMPLE COND. TYPE DEPTH SCALE

Table with 6 columns: Depth (m), Classification, Soil Symbol, Other Tests, Sample Cond., Type, Depth Scale. Rows include: 0.25-1.00M Organic Silty Sandy Gravel; 1.00-2.75M Silty Sandy Gravel; 2.75-4.00M Sandy Gravel; 4.00M Coarse Sand.

END OF HOLE

Legend table with 5 columns: Soil Types (Topsoil, Peat, Fill, Clay, Silt, Sand, Till, Bedrock), Condition (Undisturbed, Disturbed, Lost Sample), Sample Type (U - 76mm Shelby Tube, D.S. - Drive Sample, M - Moisture Content, R.C. - Rock Core), Laboratory Test Symbols (Qu - Unconfined Comp. Str., rd - Dry Weight, C - Consolidation Test, MA - Grain Size Analysis), Penetration Resistance (N - Number of blows).



J. R. Paine & Associates Ltd.
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 216

PLATE NO. 16

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

ELEV. M

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ORGANIC GRAVELLY SILT 0.25M

0.25-1.50M
SANDY SILTY GRAVEL
HIGH ROCK CONTENT
COBBLE TO 0.2M

1.50M

1.50-3.50M
SILTY GRAVELLY SAND
FINE SAND
COBBLES TO 0.3M

3.50M

END OF HOLE

1.0
2.0
3.0
4.0



SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Pano & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

OWN. WCK

CKD. *wck*

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 217

PLATE NO. 17

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

10 20 30 40 50 60 70 80

ORGANIC SILTY SANDY GRAVEL 0.25

0.25-1.00M
SILTY SANDY GRAVEL
FROZEN

1.00

END OF HOLE

1.0

2.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOPSOIL
PEAT
FILL
CLAY
SILT
SAND
TILL
BEDROCK

UNDISTURBED
DISTURBED
LOST SAMPLE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

Qu - UNCONFINED COMP. STR. kPa
Fd - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140
lb. HAMMER DROPPED 30 ins (FREE
FALL) REQUIRED TO DRIVE A 2" O.D.
RAYMOND TYPE SAMPLER A
DISTANCE OF 12" INTO THE SOIL



J. R. Paino & Associates Ltd.
INCORPORATED IN CANADA

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT **McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)**
WHITEHORSE, YT

DWN. **WCK** CKD. **WCK** JOB NO. **8002-301** DATE **1988.03.25** HOLE NO. **219** PLATE NO. **19**

MOISTURE CONTENT SOIL PROFILE SAMPLES
 LIQUID LIMIT (W.L.)
 PLASTIC LIMIT (W.P.)
 STANDARD PENETRATION TEST

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH	CLASSIFICATION	CL SYMBOL	OTHER TESTS	Unconfined Compressive Strength, kPa	SAMPLE COND.	TYPE	DEPTH SCALE
	DATUM GROUND SURFACE ELEVATION						
0.25-3.00M	ORGANIC GRAVELLY SILTY SAND SANDY GRAVEL TRACE OF SILT HIGH ROCK CONTENT COBBLES						1.0 2.0 3.0 4.0 5.0
3.00-4.00M	GRAVELLY SAND FINE TO MEDIUM SAND						
4.00M	END OF HOLE						

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
<input type="checkbox"/> TOPSOIL <input type="checkbox"/> PEAT <input checked="" type="checkbox"/> FILL <input checked="" type="checkbox"/> CLAY <input type="checkbox"/> SILT <input type="checkbox"/> SAND <input type="checkbox"/> TILL <input checked="" type="checkbox"/> BEDROCK	<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DISTURBED <input checked="" type="checkbox"/> LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. STR. kPa W - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 220

PLATE NO. 20

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM GROUND SURFACE ELEVATION

ORGANIC GRAVELLY SILTY SAND 0.25M

0.25-2.50M
SANDY GRAVEL
HIGH ROCK CONTENT

2.50M

2.50-3.75M
SAND
FINE TO MEDIUM
SOME GRAVEL

3.75M

END OF HOLE

1.0
2.0
3.0
4.0

SOIL TYPES

TOPSOIL SILT
PEAT SAND
FILL TILL
CLAY BEDROCK

CONDITION

-UNDISTURBED
-DISTURBED
-LOST SAMPLE

SAMPL TYPE

U - 75mm SHELBY TUBE
O.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
γ_d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



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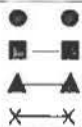
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

DWN. WCK CKD. WCK JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 221 PLATE NO. 21

MOISTURE CONTENT LIQUID LIMIT (W.L.) PLASTIC LIMIT (W.P.) STANDARD PENETRATION TEST



MOISTURE CONTENT (%) & STAND. PENETRATION (N) 10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M 0.25-1.00M SILTY SANDY GRAVEL 1.00M GLACIAL TILL FROZEN 1.75M

ELEV. M. DATUM GROUND SURFACE ELEVATION

Grid area for soil profile data with columns for depth, classification, soil symbol, other tests, sample condition, type, and depth scale.

END OF HOLE

Legend table for SOIL TYPES, CONDITION, SAMPLE TYPE, LABORATORY TEST SYMBOLS, and PENETRATION RESISTANCE.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK-

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 222

PLATE NO. 22

MOISTURE CONTENT



LIQUID LIMIT (W.L.)



PLASTIC LIMIT (W.P.)



STANDARD PENETRATION TEST



MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ORGANIC 0.25M
0.25-4.00M
SANDY SILTY GRAVEL
COBBLES TO 0.3M
HIGH ROCK CONTENT
MATERIAL SANDIER WITH DEPTH

4.00M

END OF HOLE

-TEST PIT LOCATED NEAR TOP OF
KNOLL

1.0

2.0

3.0

4.0

5.0

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

WN. WCK

CKD. WCK

JOB NO.

8002-301

DATE

1988.03.25

HOLE NO.

223

PLATE NO.

23

MOISTURE CONTENT ● ●
 LIQUID LIMIT (W_L) ■ ■
 PLASTIC LIMIT (W_P) ▲ ▲
 STANDARD PENETRATION TEST X X

MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

OIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

SOIL SYMBOL

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ELEV.
M.

10M
ROUND SURFA

ORGANIC S
 0.25-1.75
 SANDY GRA
 HIGH ROCK

M

PARTIALLY
 SILT AND GRAVEL
 2.00-3.50M
 GRAVELLY SAND

M

3.50-4.25M
 SAND, FINE TO MEDI
 DD PEBBLES

END OF HOLE

1.0

2.0

3.0

4.0

5.0

SOIL TYPES

TOPSOIL ■■■■ SILT
 PEAT ■■■■ SAND
 FILL ■■■■ TILL
 CLAY ■■■■ BEDROCK ■■■■

CONDITION

■ UNDISTURBED
 ■ DISTURBED
 ■ LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
 D.S. - DRIVE SAMPLE
 M - MOISTURE CONTENT
 R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
 W_d - DRY WEIGHT kg/m³
 C - CONSOLIDATION TEST
 MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140
 lb. HAMMER DROPPED 30 ins. (FREE
 FALL) REQUIRED TO DRIVE A 2" O.D.
 RAYMOND TYPE SAMPLER A
 DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 224

PLATE NO. 24

MOISTURE CONTENT
LIQUID LIMIT (W.L.)
PLASTIC LIMIT (W.P.)
STANDARD PENETRATION TEST



SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

Grid for moisture content and standard penetration test data.

DEPTH

CLASSIFICATION

ELEV. M.

DAIUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-4.00M
SANDY GRAVEL,
TRACE OF SILT

4.00M

END OF HOLE

-TEST PIT LOCATED ON TOP OF RIDGE

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

MA
-pitrun
-crushed

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

- TOPSOIL, PEAT, FILL, CLAY, SILT, SAND, TILL, BEDROCK

- UNDISTURBED, DISTURBED, LOST SAMPLE

- U - 76mm SHELBY TUBE, D.S. - DRIVE SAMPLE, M - MOISTURE CONTENT, R.C. - ROCK CORE

- Qu - UNCONFINED COMP. STR. kPa, Wd - DRY WEIGHT kg/m^3, C - CONSOLIDATION TEST, MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Pano & Associates Ltd.
ENGINEERS AND GEOTECHNICAL CONSULTANTS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT
 McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
 WHITEHORSE, YT

JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 226 PLATE NO. 26

DWN. WCK CKD. *W.L.L.*

WATER CONTENT ● ●
 LIQUID LIMIT (W.L.) ■ ■
 PLASTIC LIMIT (W.P.) ▲ ▲
 STANDARD PENETRATION TEST X X

WATER CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
	DATUM GROUND SURFACE ELEVATION						
0.25M	ORGANIC SANDY SILT	<i>[Symbol]</i>					0.25
0.25-1.00M	SILTY SANDY GRAVEL	<i>[Symbol]</i>					1.00
1.00M	SANDY GRAVEL SANDIER WITH DEPTH COBBLES TO 0.28M	<i>[Symbol]</i>					2.00
5.00M	END OF HOLE						5.00

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL <i>[Symbol]</i> PEAT <i>[Symbol]</i> FILL <i>[Symbol]</i> CLAY <i>[Symbol]</i> SILT <i>[Symbol]</i> SAND <i>[Symbol]</i> TILL <i>[Symbol]</i> BEDROCK <i>[Symbol]</i>	<input type="checkbox"/> -UNDISTURBED <input checked="" type="checkbox"/> -DISTURBED <input checked="" type="checkbox"/> -LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. STR. kPa W - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT
McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

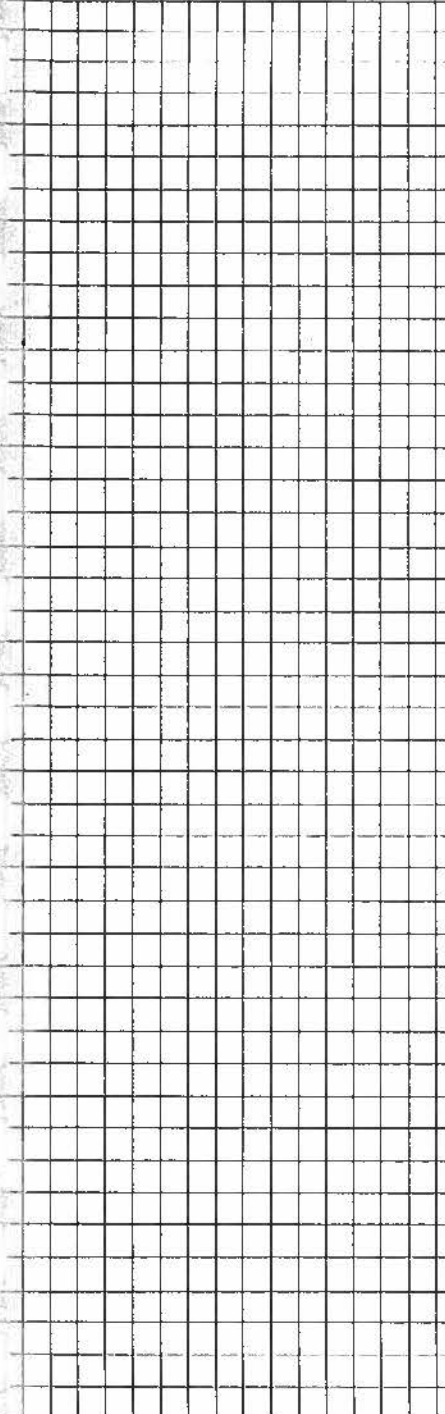
DWN. WCK CKD. *wc il* JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 227 PLATE NO. 27

MOISTURE CONTENT ●—●
LIQUID LIMIT (W.L.) ■—■
PLASTIC LIMIT (W.P.) ▲—▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength (kPa) SAMPLE COND. TYPE DEPTH SCALE



DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength (kPa)	SAMPLE COND.	TYPE	DEPTH SCALE
0.25M	ORGANIC SILTY SANDY GRAVEL						0.25
1.0M	SANDY GRAVEL COARSE SAND SANDIER WITH DEPTH						1.0
4.30M	SANDY TRACE OF GRAVEL						4.30
5.00M	END OF HOLE						5.00
6.0M							6.0

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
<ul style="list-style-type: none"> TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK 	<ul style="list-style-type: none"> UNDISTURBED DISTURBED LOST SAMPLE 	<ul style="list-style-type: none"> U - 76mm SHELBY TUBE O.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE 	<ul style="list-style-type: none"> Ou - UNCONFINED COMP. STR. kPa w - DRY WEIGHT kg/m³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS 	<ul style="list-style-type: none"> (N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paino & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) .
WHITEHORSE, YT

DWN. WCK

CKD.

JOB NO.

8002-301

DATE

1988.03.25

HOLE NO.

228

PLATE NO.

28

MOISTURE CONTENT

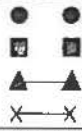
LIQUID LIMIT (W.L.)

PLASTIC LIMIT (W.P.)

STANDARD PENETRATION TEST

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80



SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-2.10M
SANDY GRAVEL
HIGH ROCK CONTENT

PARTIALLY CEMENTED 2.25M

CLAYEY SILTY SANDY GRAVEL 2.50M

2.50-3.00M
GRAVELLY SAND 3.00M

3.00-5.00M
GRAVELLY SAND
SOME SILT
ODD COBBLES TO 0.3M

END OF HOLE



1.0
2.0
3.0
4.0
5.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

- U_u - UNCONFINED COMP. STR. kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

N. WCK

CKD. WCK

JOB NO.

8002-301

DATE

1988.03.25

HOLE NO.

229

PLATE NO.

29

MOISTURE CONTENT



LIQUID LIMIT (WL)



PLASTIC LIMIT (WP)



STANDARD PENETRATION TEST



MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-3.50M
SANDY GRAVEL
COBBLES TO 0.2M

3.50-4.50M
GRAVELLY SAND
COBBLES TO 0.3M

END OF HOLE

1.0

2.0

3.0

4.0

5.0

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

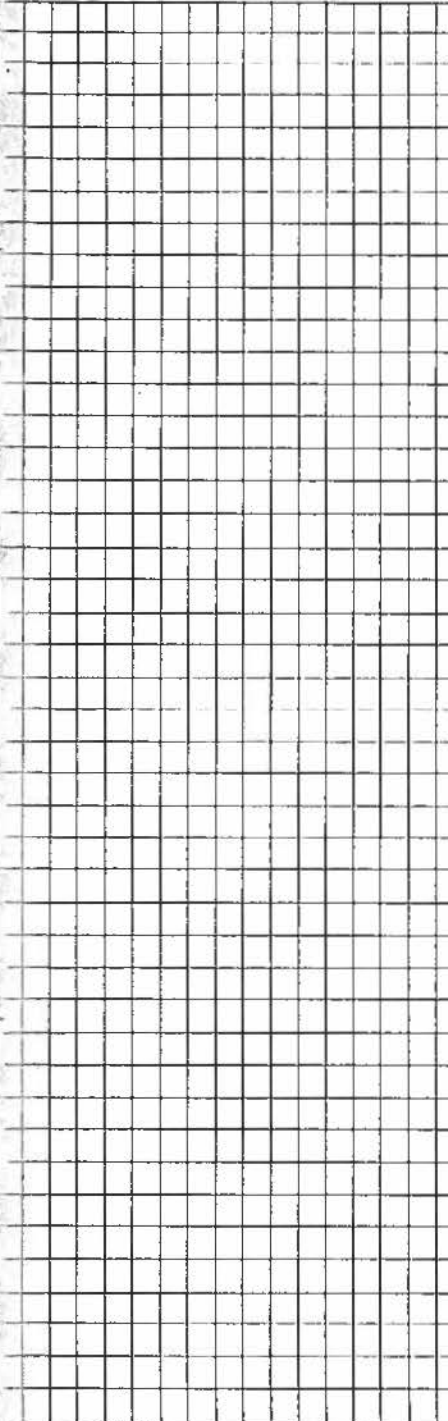
HOLE NO. 230

PLATE NO. 30

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X
MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES



DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-4.50M
SANDY GRAVEL
TRACE OF SILT
SANDIER WITH DEPTH
ODD BOULDER TO 0.7M

MA
-pitrun

4.50M

END OF HOLE

-TEST PIT LOCATED ON TOP OF RIDGE.

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOPSOIL
PEAT
FILL
CLAY
SILT
SAND
TILL
BEDROCK

UNDISTURBED
DISTURBED
LOST SAMPLE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

Qu - UNCONFINED COMP. STR. kPa
w - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
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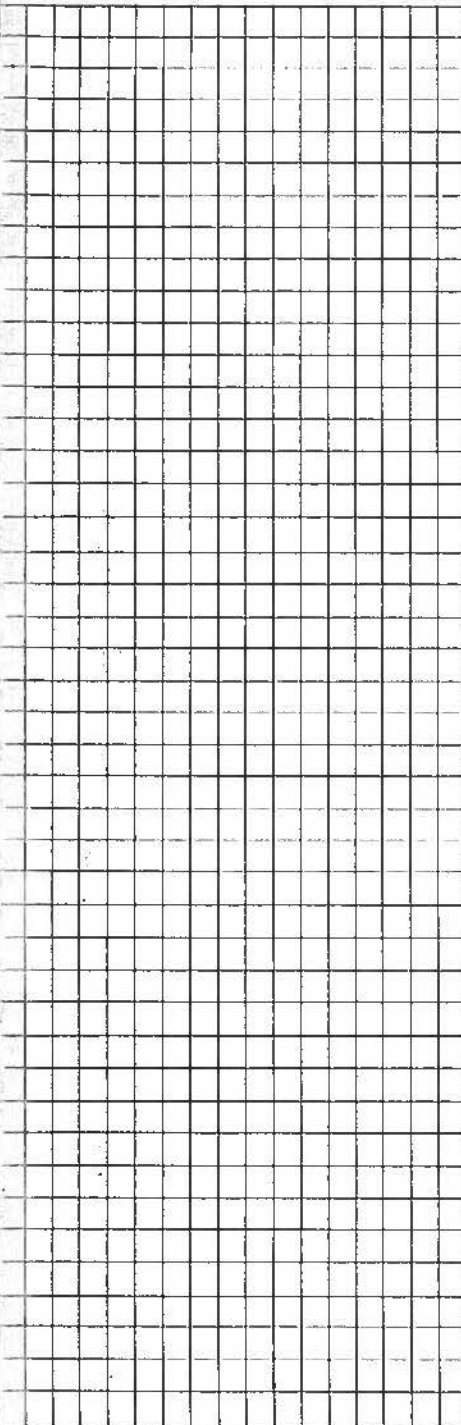
TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK CKD. *WCK* JOB NO. 8002-301 DATE 1988.03.25 HOLE NO. 231 PLATE NO. 31

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X
MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

SOIL PROFILE CLASSIFICATION SAMPLES



DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
ELEV. M.	DATUM GROUND SURFACE ELEVATION						
	ORGANIC SILTY SANDY GRAVEL 0.25M						1.0
	0.25-4.00M SANDY GRAVEL, COARSE SAND ODD COBBLE TO 0.3M SANDIER WITH DEPTH						2.0 3.0 4.0
	4.00M						5.0
	END OF HOLE						
	-TEST PIT LOCATED ON TOP OF RIDGE.						

SOIL TYPES		CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL	SILT	— UNDISTURBED	U - 76mm SHELBY TUBE	Qu - UNCONFINED COMP. STR. kPa	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.
PEAT	SAND	⊗ - DISTURBED	D.S. - DRIVE SAMPLE	w _d - DRY WEIGHT kg/m ³	
FILL	TILL	☒ - LOST SAMPLE	M - MOISTURE CONTENT	C - CONSOLIDATION TEST	
CLAY	BEDROCK		R.C. - ROCK CORE	MA - GRAIN SIZE ANALYSIS	



J. R. Paine & Associates Ltd.

INC. 1961 AND 1975 INCORPORATED

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 232

PLATE NO. 32

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

Grid for moisture content and penetration test results.

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.50M
SANDY GRAVEL
ODD COBBLE TO 0.3M
SANDIER WITH DEPTH

4.50M

END OF HOLE

-BEST PIT LOCATED AT BASE OF RIDGE.

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

- TOPSOIL, PEAT, FILL, CLAY, SILT, SAND, TILL, BEDROCK

- UNDISTURBED, -DISTURBED, -LOST SAMPLE

- U - 75mm SHELBY TUBE, D.S. - DRIVE SAMPLE, M - MOISTURE CONTENT, R.C. - ROCK CORE

- Qu - UNCONFINED COMP. STR. kPa, w - DRY WEIGHT kg/m³, C - CONSOLIDATION TEST, MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. *WCK*

JOB NO.

8002-301

DATE

1988.03.25

HOLE NO.

233

PLATE NO.

33

MOISTURE CONTENT

● ●

LIQUID LIMIT (W.L.)

■ ■

PLASTIC LIMIT (W.P.)

▲ ▲

STANDARD PENETRATION TEST

X X

MOISTURE CONTENT (%) & STAND PENETHATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.50M
SANDY GRAVEL
ODD COBBLE TO 0.3M
SANDIER WITH DEPTH

4.50M

END OF HOLE

-TEST PIT LOCATED AT BASE OF RIDGE.

MA
-pitrun
-crushed



1.0
2.0
3.0
4.0
5.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOP SOIL
PEAT
FILL
CLAY

SILT
SAND
TILL
BEDROCK

UNDISTURBED
-DISTURBED
-LOST SAMPLE

U - ZEPHYRUS SHIELD TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

UC - UNCONFINED COMP. STRENGTH KPa
D - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

(1) NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 IN. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCL

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 234

PLATE NO. 34

MOISTURE CONTENT ● ●

LIQUID LIMIT (W_L) ■ ■

PLASTIC LIMIT (W_P) ▲ ▲

STANDARD PENETRATION TEST X X

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

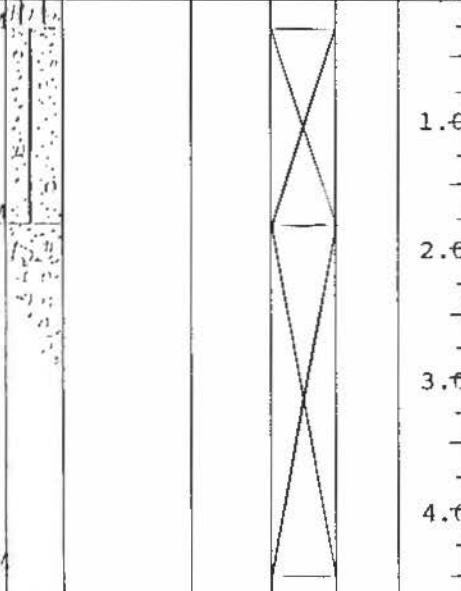
ELEV. DATUM
M GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-1.75M
SILTY SAND
SOME GRAVEL

1.75M

1.75-4.50M
SANDY GRAVEL
TRACE OF SILT
ODD COBBLE AND BOULDER TO 0.4M



END OF HOLE

-TEST PIT LOCATED IN DRAW AT BASE OF TWO KNOLLS.

SOIL TYPES

	TOPSOIL		SILT
	PEAT		SAND
	FILL		TILL
	CLAY		BEDROCK

CONDITION

	UNDISTURBED
	DISTURBED
	LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
INC. IN ARCHITECTURE 1974

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. well

JOB NO.

8002-301

DATE

1988.03.25

HOLE NO.

235

PLATE NO.

35

MOISTURE CONTENT



LIQUID LIMIT (W.L.)



PLASTIC LIMIT (W.P.)



STANDARD PENETRATION TEST



SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.50M
SANDY GRAVEL
TRACE OF SILT
ODD BOULDER TO 0.35M

4.50M

END OF HOLE

-TEST PIT LOCATED ON SIDE OF RIDGE, IN DRAW BETWEEN TWO KNOLLS.

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
 ONE CHURCH STREET, NEW BRITAIN, CT 06052

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
 WHITEHORSE, YT

AVN. WCK

CKD. WCK

JOB NO.

8002-301

DATE

1988.03.25

HOLE NO.

236

PLATE NO.

36

MOISTURE CONTENT

● ●

LIQUID LIMIT (W.L.)

■ ■

PLASTIC LIMIT (W.P.)

▲ ▲

STANDARD PENETRATION TEST

X X

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

SAMPLES

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM
 GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-2.75M
 SANDY GRAVEL
 ODD COBBLE TO 0.3M

1.75M

1.75-4.50M
 SAND
 FINE TO MEDIUM
 SANDY GRAVEL LENSES

END OF HOLE

-TEST PIT LOCATED ON TOP OF
 KNOLL

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

SOILS, ROCKS, AND TESTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.25

HOLE NO. 237

PLATE NO. 37

MOISTURE CONTENT —
LIQUID LIMIT (W.L.) —
PLASTIC LIMIT (W.P.) —
STANDARD PENETRATION TEST —
MOISTURE CONTENT (%) & STAND. PENETRATION (N)

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

FLEV. M

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

10 20 30 40 50 60 70 80

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-2.75M
SANDY GRAVEL,
ODD COBBLE TO 0.3M

2.75M

2.75-4.00M
GRAVELLY SAND
COARSE SAND
COBBLES TO 0.3M

END OF HOLE

-TEST PIT LOCATED ON TOP OF
RIDGE.

1.0

2.0

3.0

4.0

5.0

SOIL TYPES

TOPSOIL SILT
 PEAT SAND
 FILL TILL
 CLAY BEDROCK

CONDITION

-UNDISTURBED
 -DISTURBED
 -LOST SAMPLE

SAMPLE TYPE

D - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
w_d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

W.N. WCK CKD. WLR JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 238 PLATE NO. 38

MOISTURE CONTENT LIQUID LIMIT (W.L.) PLASTIC LIMIT (W.P.) STANDARD PENETRATION TEST

MOISTURE CONTENT (% & STAND. PENETRATION (N)) 10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ELEV. M. DATUM GROUND SURFACE ELEVATION

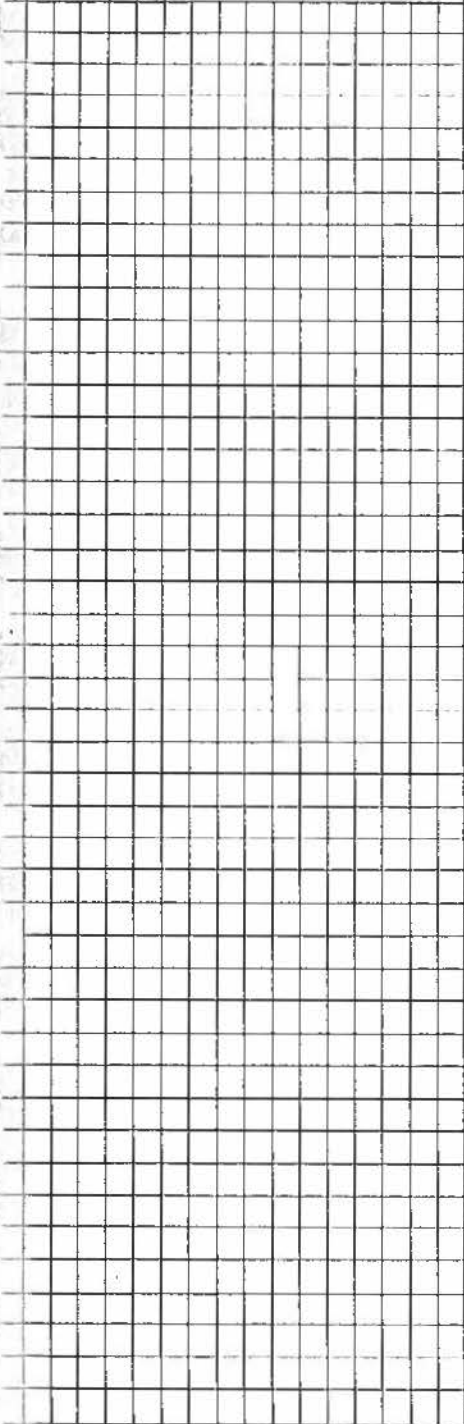


Table with columns for Depth, Classification, Soil Symbol, Other Tests, Unconfined Compressive Strength, Sample Cond., Type, and Depth Scale. Rows include: ORGANIC SILTY SANDY GRAVEL 0.25M, 0.25-3.50M GRAVELLY SAND, 3.50-4.50M SAND, FINE TO COARSE SOME GRAVEL, and END OF HOLE.

Legend table for SOIL TYPES, CONDITION, SAMPLE TYPE, LABORATORY TEST SYMBOLS, and PENETRATION RESISTANCE.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 239

PLATE NO. 39

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

ELEV. M.

DA M
GR UND SURFAC LL ATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-1.00M
SILTY SAND
BOULDERS

1.00-3.00M
SILTY SANDY GRAVEL
FINE SAND

3.00-4.50M
SANDY GRAVEL
TRACE OF SILT

END OF HOLE

MA
-pitrun
-crushed

1.0

2.0

3.0

4.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOPSOIL SAND
PEAT SAND
FILL TILL
CLAY BEDROCK

UNDISTURBED
DISTURBED
LOST SAMPLE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

Qu - UNCONFINED COMP. STR. kPa
d_s - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

OWN. WCK

CKD. WLC

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 241

PLATE NO. 41

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL, 0.25M

0.25-1.50M
SANDY GRAVEL
SOME SILT

1.50M

USUAL-BEDROCK OR LAYER OF BOULDERS

1.0

2.0

SOIL TYPES

TOPSOIL PEAT FILL CLAY
SILT SAND TILL BEDROCK

CONDITION

UNDISTURBED
DISTURBED
LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
d_s - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
INCORPORATED IN CANADA

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
 WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO.

8002-301

DATE

1988.03.26

HOLE NO.

242

PLATE NO.

42

SOIL PROFILE

SAMPLES

MOISTURE CONTENT



LIQUID LIMIT (W_L)



PLASTIC LIMIT (W_P)



STANDARD PENETRATION TEST



MOISTURE CONTENT (w) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength, kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-3.50M
 SANDY GRAVEL
 TRACE OF SILT
 BOULDERS TO 0.5M
 -MATERIAL SANDIER WITH DEPTH

MA
 -pitrun
 -crushed

REFUSAL-LAYER OF BOULDERS

1.0
2.0
3.0
4.0

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- γ_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

N. WCK

CKD. WCL

JOB NO.

8002-301

DATE

1988.03.26

HOLE NO.

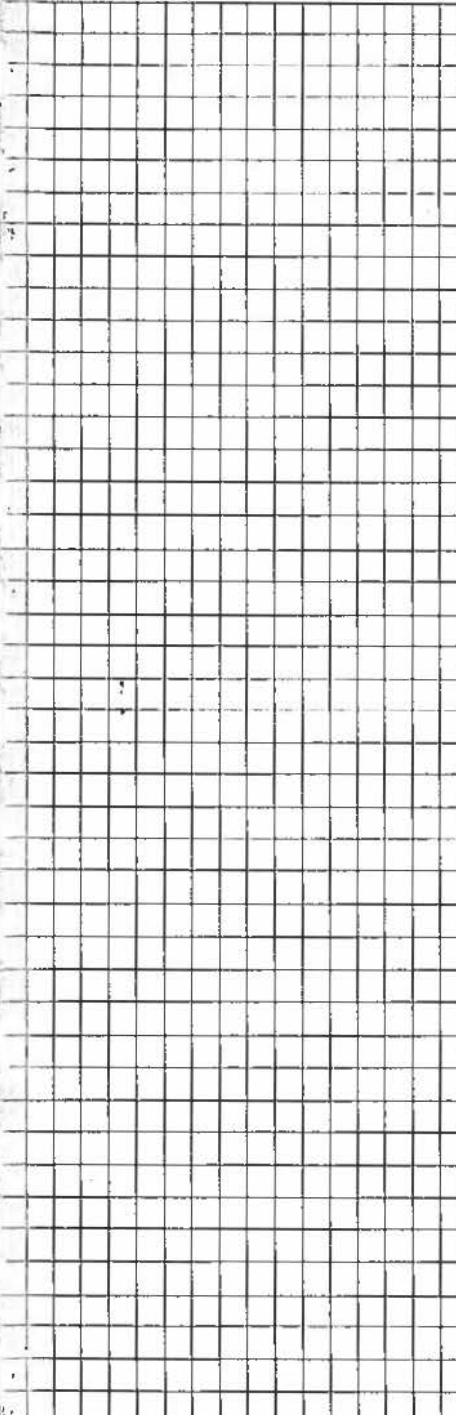
243

PLATE NO.

43

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ □
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80



SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M.

DAIUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25

0.25-1.50M
SILTY SANDY GRAVEL,
FROZEN
BOULDERS TO 0.7M

1.50

1.50-3.75M
SANDY GRAVEL
SOME SILT
ODD COBBLE TO 0.3M

3.75M

END OF HOLE

-BOULDERS AND FROZEN

MA
-pitrun



1.0
2.0
3.0
4.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK

UNDISTURBED DISTURBED LOST SAMPLE

76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE

QU UNCONFINED COMP. STR kPa P DRY WEIGHT kg/m³ C CONSOLIDATION TEST MA GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
INCORPORATED IN CANADA

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
 WHITEHORSE, YT

DWN. WCK

CKD. W.L.K.

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 246

PLATE NO. 46

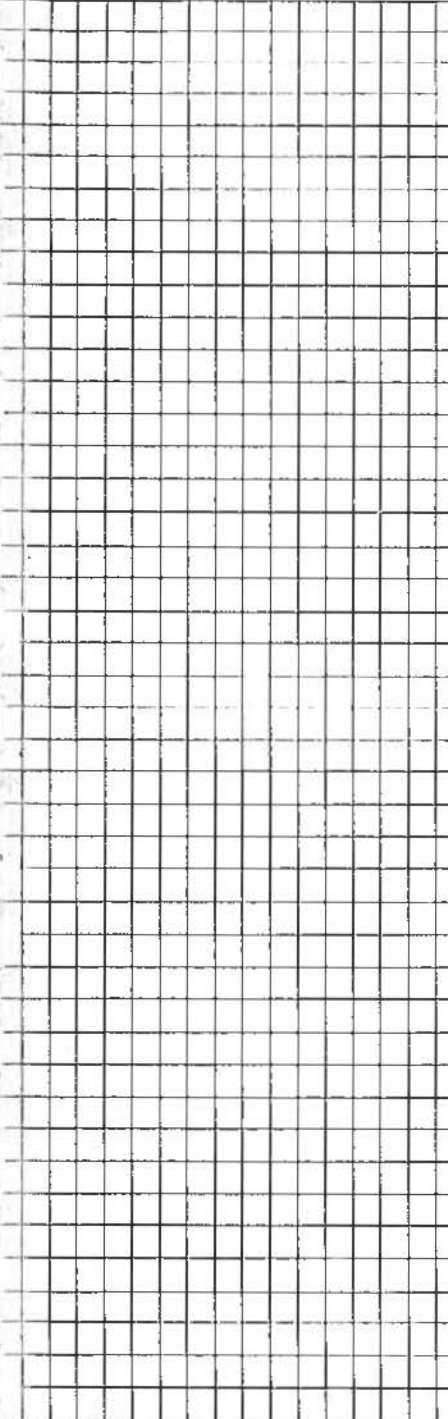
MOISTURE CONTENT ●—●
 LIQUID LIMIT (W.L.) ■—■
 PLASTIC LIMIT (W.P.) ▲—▲
 STANDARD PENETRATION TEST X—X

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
 10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
-------	----------------	-------------	-------------	-------------------------------------	--------------	------	-------------



ELEV. M.

DAIUM
 GROUND SURFACE ELLVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.50M
 SANDY GRAVEL
 TRACE OF SILT
 COBBLE TO 0.2M

(frozen to 2.6M)

4.50M

END OF HOLE

-TEST PIT LOCATED AT BASE OF HOLE.



SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 14 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2 in O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12 in INTO THE SOIL



J. R. Paine & Associates Ltd.
INCORPORATED IN CANADA

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
 WHITEHORSE, YT

DWN. WCK CKD. 2214 JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 247 PLATE NO. 47

MOISTURE CONTENT ● ●
 LIQUID LIMIT (W.L.) ■ ■
 PLASTIC LIMIT (W.P.) ▲ ▲
 STANDARD PENETRATION TEST X X
 MOISTURE CONTENT (%) & STAND. PENETRATION (N)
 10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ELEV. DATUM
 M. GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-3.80M
 SANDY GRAVEL
 SOME COBBLES AND BOULDERS TO 0.7M
 -MATERIAL FINER WITH DEPTH

3.80M

MA
 -pitrun
 -crushed

1.0
 2.0
 3.0
 4.0

END OF HOLE

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK	-UNDISTURBED -DISTURBED -LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	C_u - UNCONFINED COMP. STR. kPa w_d - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

MCLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

WN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.26

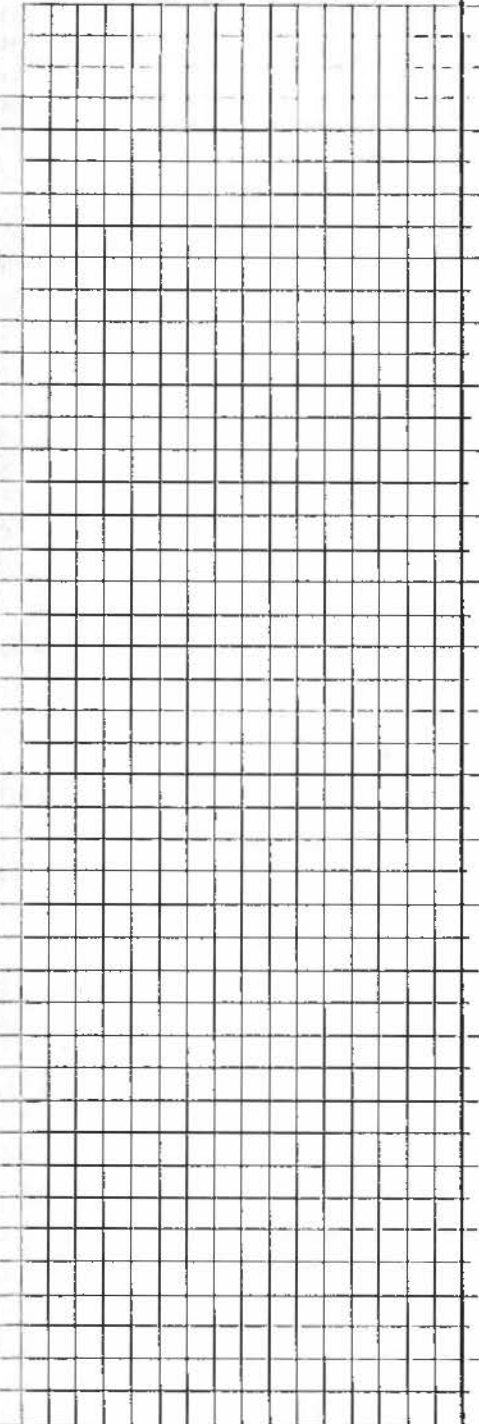
HOLE NO. 248

PLATE NO. 48

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X—X

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80



SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.25M
SANDY GRAVEL
COBBLES AND BOULDERS TO 1.0M
SANDIER WITH DEPTH

4.2

END OF HOLE

-TEST PIT LOCATED ON TOP OF
KNOLL

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION TEST SYMBOLS

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

- U - 76mm SHELBY TUBE
- D.S - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

- Qu - UNCONFINED COMP STR kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

- (N) NUMBER OF BLOWS OF A 140 lb HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
ENGINEERS, GEOLOGISTS AND SOIL MECHANICS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
 WHITEHORSE, YT

DWN. WCK CKD. *WCK* JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 249 PLATE NO. 49

MOISTURE CONTENT SOIL PROFILE SAMPLES

LIQUID LIMIT (W.L.)
 PLASTIC LIMIT (W.P.)
 STANDARD PENETRATION TEST

MOISTURE CONTENT (%) & STAND. PENETRATION (N)

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
ELEV. M.	DATUM GROUND SURFACE ELEVATION						
10 20 30 40 50 60 70 80	ORGANIC SILTY SANDY GRAVEL 0.25M						1.0
	0.25-4.25M SANDY GRAVEL HIGH ROCK CONTENT COBBLES AND BOULDERS TO 0.4M SANDIER WITH DEPTH						2.0
							3.0
							4.0
							5.0
	END OF HOLE						
	-TEST PIT LOCATED ON BENCH						

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
[Symbol] TOPSOIL [Symbol] PEAT [Symbol] FILL [Symbol] CLAY [Symbol] SILT [Symbol] SAND [Symbol] TILL [Symbol] BEDROCK	[Symbol] -UNDISTURBED [Symbol] -DISTURBED [Symbol] -LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. STR kPa γ _d - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" Ø O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
GEOTECHNICAL ENGINEERING

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

VN. WCK

CKD. *wck*

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 250

PLATE NO. 50

DISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (WP) ▲ ▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE

SAMPLES

DEPTH CLASSIFICATION

ELEV. M. DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

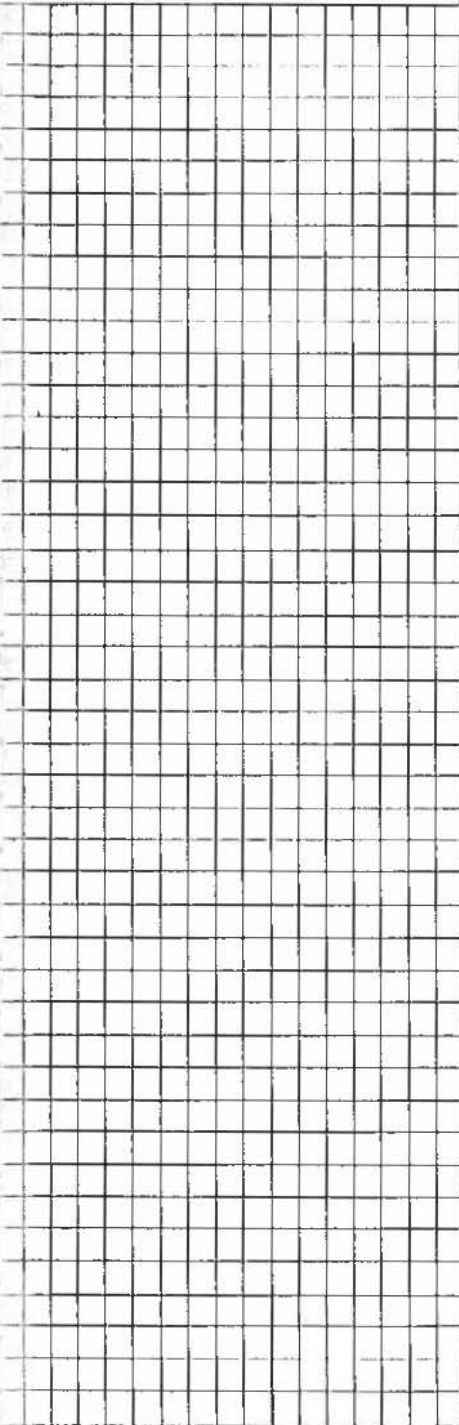
ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-1.25M
SILTY SANDY GRAVEL

1.25M

REFUSAL-BEDROCK OR LAYER OF BOULDERS.

NOTE: BEDROCK OUTCROPPING 50.0M
SOUTH OF TEST PIT 250 LOCATION.

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80



SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK

UNDISTURBED DISTURBED LOST SAMPLE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

Qu - UNCONFINED COMP. STR. kPa
r_d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 252

PLATE NO. 52

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM GROUND SURFACE ELEVATION

0.00-1.00M
SILTY SAND
FINE

1.00M

1.00-3.25M
SAND
FINE
TRACE OF SILT

3.25M

END OF HOLE

-TEST PIT LOCATED ON SCOPE OF
KNOLL

1.0
2.0
3.0
4.0

SOIL TYPES

CONDITION

SAMPLE TYPE

LABORATORY TEST SYMBOLS

PENETRATION RESISTANCE

TOPSOIL
PEAT
FILL
CLAY
SILT
SAND
TILL
BEDROCK

UNDISTURBED
DISTURBED
LOST SAMPLE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

Qu - UNCONFINED COMP. STR. kPa
d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
CONSULTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT: McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 253 PLATE NO. 53

WN. WCK CKD. WCK

MOISTURE CONTENT ● — ●
LIQUID LIMIT (W.L.) □ — □
PLASTIC LIMIT (W.P.) ▲ — ▲
STANDARD PENETRATION TEST X — X

MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
ELEV. M	DATUM GROUND SURFACE ELEVATION						
	ORGANIC SILTY SANDY GRAVEL	0.25M					
	0.25-4.25M						1.0
	SANDY GRAVEL						2.0
	TRACE OF SILT						3.0
	COARSE SAND						4.0
	-COBBLES AND BOULDERS TO 0.35M						5.0
	-FINER AND LESS SILT WITH DEPTH						
		4.25M					

END OF HOLE

-TEST PIT LOCATED ON TOP OF KNOLL.

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
<ul style="list-style-type: none"> TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK 	<ul style="list-style-type: none"> -UNDISTURBED -DISTURBED -LOST SAMPLE 	<ul style="list-style-type: none"> U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE 	<ul style="list-style-type: none"> Qu - UNCONFINED COMP. STR. kPa w - DRY WEIGHT kg/m³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS 	<ul style="list-style-type: none"> (N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
INCORPORATED

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

N. WCK

CKD. *W-10*

JOB NO.

8002-301

DATE

1988.03.26

HOLE NO.

254

PLATE NO.

54

MOISTURE CONTENT



LIQUID LIMIT (W_L)



PLASTIC LIMIT (W_P)



STANDARD PENETRATION TEST



MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ELEV.
M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.00M
SANDY GRAVEL
TRACE OF SILT
COBBLES AND BOULDERS TO 0.5M

MA
-pitrun
-crushed

END OF HOLE

-TEST PIT LOCATED ON TOP OF
KNOLL.

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.
INCORPORATED

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

WN. WCK

CKD. WCK

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 255

PLATE NO. 55

MOISTURE CONTENT

LIQUID LIMIT (W.L.)

PLASTIC LIMIT (W.P.)

STANDARD PENETRATION TEST

SOIL PROFILE

SAMPLES

WATER CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M
0.25-4.25M
SANDY GRAVEL
TRACE OF SILT
COARSE SAND
COBBLES AND BOULDERS TO 0.5M
-FINER AND LESS SILT WITH DEPTH

4.25M

END OF HOLE

-TEST PIT LOCATED ON TOP OF KNOLL

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

TOPSOIL SILT
 PEAT SAND
 FILL TILL
 CLAY BEDROCK

CONDITION

-UNDISTURBED
 -DISTURBED
 -LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR kPa
d - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

WN. WCK

CKD. W/L

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 256

PLATE NO. 56

MOISTURE CONTENT ● ●
 LIQUID LIMIT (W L) ■ ■
 PLASTIC LIMIT (W P) ▲ ▲
 STANDARD PENETRATION TEST X X

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.25M
SANDY GRAVEL
TRACE OF SILT
-COBBLES TO 0.2M

MA
-pitrun
-crushed

END OF HOLE

-TEST PIT LOCATED ON TOP OF RIDGE.

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR kPa
- w - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

DEFINITIONAL DISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" Q.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
ENGINEERS AND TESTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

MCLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK CKD. WCK

JOB NO.

8002-301

DATE

1988.03.26

HOLE NO.

258

PLATE NO.

58

MOISTURE CONTENT ● ●
LIQUID LIMIT (W.L.) ■ ■
PLASTIC LIMIT (W.P.) ▲ ▲
STANDARD PENETRATION TEST X X

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)

10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

SOIL SYMBOL

OTHER TESTS

Unconfined
Compressive
Strength kPa

SAMPLE
COND.

TYPE

DEPTH SCALE

ORGANIC SILTY SANDY GRAVEL 0.25M

SANDY GRAVEL
TRACE OF SILT
COARSE SAND
COBBLES AND BOULDERS TO 0.5M

3.75M

3.75-4.75M
SANDY GRAVEL
COBBLES TO 0.3M

4.75M

END OF HOLE

1.0
2.0
3.0
4.0
5.0

SOIL TYPES

TOPSOIL
PEAT
FILL
CLAY
SILT
SAND
TILL
BEDROCK

CONDITION

UNDISTURBED
DISTURBED
LOST SAMPLE

SAMPLE TYPE

U - 76mm SHELBY TUBE
D.S. - DRIVE SAMPLE
M - MOISTURE CONTENT
R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

Qu - UNCONFINED COMP. STR. kPa
w - DRY WEIGHT kg/m³
C - CONSOLIDATION TEST
MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

MCLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. *WCK*

JOB NO. 8002-301

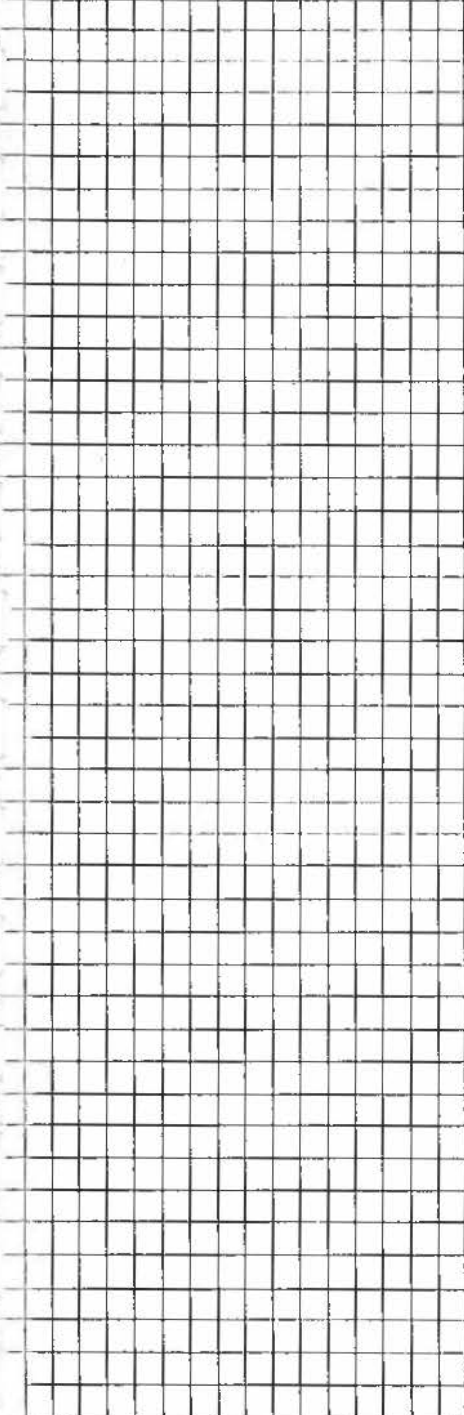
DATE 1988.03.26

HOLE NO. 259

PLATE NO. 59

MOISTURE CONTENT ● ●
 LIQUID LIMIT (W L) ■ ■
 PLASTIC LIMIT (W P) ▲ ▲
 STANDARD PENETRATION TEST X—X
 MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80



SOIL PROFILE

SAMPLES

DEPTH CLASSIFICATION

ELEV. M. DATUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.25M
SANDY GRAVEL
TRACE OF SILT
COBBLES AND BOULDERS TO 0.5M

4.25M

END OF HOLE

-TEST PIT LOCATED ON TOP OF
KNOLL

SOIL SYMBOL
 OTHER TESTS
 Unconfined Compressive Strength kPa
 SAMPLE COND.
 TYPE
 DEPTH SCALE

1.0
2.0
3.0
4.0
5.0

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY	SILT SAND TILL BEDROCK	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. SIR. kPa w - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

N. WCK

CKD. *wck*

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 260

PLATE NO. 60

MOISTURE CONTENT
LIQUID LIMIT (W.L.)
PLASTIC LIMIT (W.P.)
STANDARD PENETRATION TEST

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

SOIL PROFILE SAMPLES

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ELEV. M DATUM GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-4.25M
SANDY GRAVEL
SOME COBBLES TO 0.3M

MA
-pitrun

END OF HOLE

-TEST PIT LOCATED ON TOP OF RIDGE.

SOIL TYPES

- TOPSOIL, PEAT, FILL, CLAY, SILT, SAND, TILL, BEDROCK

CONDITION

- UNDISTURBED, DISTURBED, LOST SAMPLE

SAMPLE TYPE

- 76mm SHELBY TUBE, DRIVE SAMPLE, MOISTURE CONTENT, ROCK CORE

LABORATORY TEST SYMBOLS

- UNCONFINED COMP. STR. kPa, DRY WEIGHT kg/m³, CONSOLIDATION TEST, GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
CONSULTING AND TESTING ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK CKD. *WCK* JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 261 PLATE NO. 61

MOISTURE CONTENT SOIL PROFILE SAMPLES
LIQUID LIMIT (W.L.)
PLASTIC LIMIT (W.P.)
STANDARD PENETRATION TEST

MOISTURE CONTENT (%a) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
ELEV. M.	DATUM GROUND SURFACE ELEVATION						
	ORGANIC SILTY SAND	0.25M					
	0.25-4.50M SILTY SAND SOME GRAVEL ODD COBBLE TO 0.3M						1.0 2.0 3.0 4.0 5.0
	END OF HOLE	4.50M					
	TEST PIT LOCATED ON LOW POINT OF RIDGE.						

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
[] TOPSOIL [] PEAT [] FILL [] CLAY [] SILT [] SAND [] TILL [] BEDROCK	[] -UNDISTURBED [] -DISTURBED [] -LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP STR kPa w - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.

(SOILS, FOUNDATION AND TESTING ENGINEERS)

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK

CKD. *wck*

JOB NO. 8002-301

DATE 1988.03.26

HOLE NO. 262

PLATE NO. 62

MOISTURE CONTENT
LIQUID LIMIT (W.L.)
PLASTIC LIMIT (W.P.)
STANDARD PENETRATION TEST

SOIL PROFILE

SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH

CLASSIFICATION

SOIL SYMBOL

OTHER TESTS

Unconfined Compressive Strength kPa

SAMPLE COND.

TYPE

DEPTH SCALE

ELEV. M.

DATUM
GROUND SURFACE ELEVATION

ORGANIC SILTY SANDY GRAVEL 0.25M

0.25-5.25M
SANDY GRAVEL
SOME SILT
COBBLES AND BOULDERS TO 0.7M

5.25M

END OF HOLE

-TEST PIT LOCATED ON RIDGE, DUG INTO HIGHER PORTION OF RIDGE.

SOIL TYPES

- TOPSOIL
- PEAT
- FILL
- CLAY
- SILT
- SAND
- TILL
- BEDROCK

CONDITION

- UNDISTURBED
- DISTURBED
- LOST SAMPLE

SAMPLE TYPE

- U - 76mm SHELBY TUBE
- D.S. - DRIVE SAMPLE
- M - MOISTURE CONTENT
- R.C. - ROCK CORE

LABORATORY TEST SYMBOLS

- Qu - UNCONFINED COMP. STR. kPa
- w_d - DRY WEIGHT kg/m³
- C - CONSOLIDATION TEST
- MA - GRAIN SIZE ANALYSIS

PENETRATION RESISTANCE

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



J. R. Paine & Associates Ltd.
ENGINEERS AND GEOTECHNICAL CONSULTANTS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988)
WHITEHORSE, YT

DWN. WCK CKD. *W.C.K.* JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 263 PLATE NO. 63

MOISTURE CONTENT ●—●
LIQUID LIMIT (W.L.) ■—■
PLASTIC LIMIT (W.P.) ▲—▲
STANDARD PENETRATION TEST X—X

SOIL PROFILE SAMPLES

MOISTURE CONTENT (%) & STANDARD PENETRATION (N)
10 20 30 40 50 60 70 80

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

Grid for moisture content and standard penetration test data.

ORGANIC SILTY SANDY GRAVEL 0-0.25M
0.25-4.50M
SANDY GRAVEL
TRACE OF SILT
SOME COBBLES AND BOULDERS TO 0.7M
4.50M

END OF HOLE
-TEST PIT LOCATED NEAR TOP OF KNOLL.

Legend for soil types, conditions, sample types, laboratory test symbols, and penetration resistance.



J. R. Paine & Associates Ltd.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLEAN LAKE GRAVEL QUARRY INVESTIGATION (1988) WHITEHORSE, YT

JOB NO. 8002-301 DATE 1988.03.26 HOLE NO. 264 PLATE NO. 64

WN. WCK CKD. 6312
MOISTURE CONTENT
LIQUID LIMIT (WL)
PLASTIC LIMIT (WP)
STANDARD PENETRATION TEST
MOISTURE CONTENT (%) & STAND. PENETRATION (N)

SOIL PROFILE SAMPLES

Table with columns: DEPTH, CLASSIFICATION, SOIL SYMBOL, Unconfined Compressive Strength (kPa), SAMPLE COND., TYPE, DEPTH SCALE. Includes soil descriptions like 'ORGANIC SILTY SANDY GRAVEL' and 'SANDY GRAVEL'.

Legend for SOIL TYPES, CONDITION, SAMPLE TYPE, LABORATORY TEST SYMBOLS, and PENETRATION RESISTANCE.



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

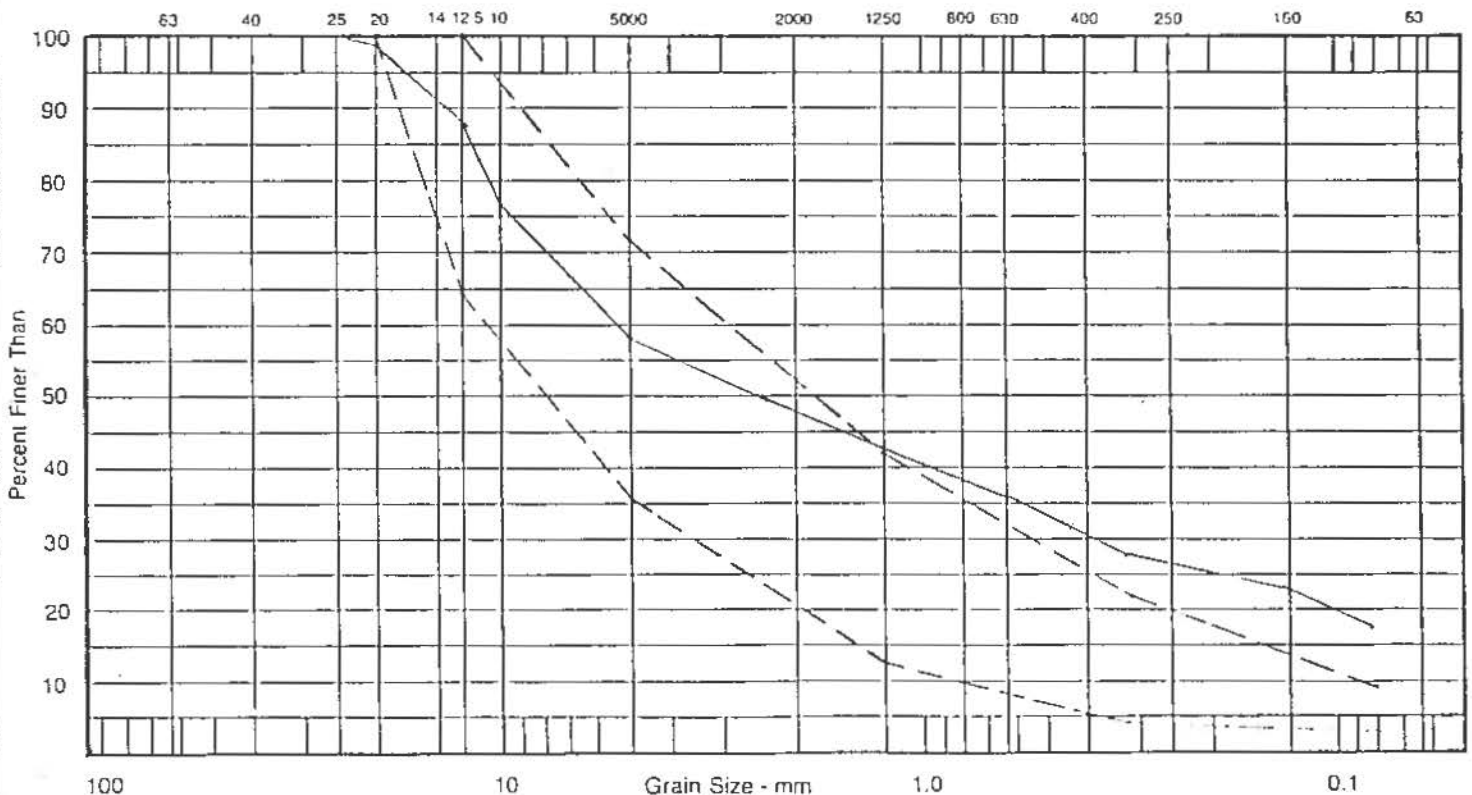
SCREEN ANALYSIS

Client: YTG. C&T. SERVICES. LANDS BRANCH
 Sample: Depth: 35-2.60M Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: LOT K, TP 214 Made by: J.K Job. No: 8002-301
 Ck'd by: W.C.L Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				99.1
15000	16.0				----
12500	12.5				88.8
10000	10.0				76.2
5000	5.0				58.4
2500	2.5				49.5
1250	1.250				42.5
800	0.800				----
630	0.630				35.6
315	0.315				----
250	0.250				27.8
160	0.160				22.3
80	0.080				17.7

Description of Sample
20MM CRUSH
 Time of Sieving Min. 15

Method of Preparation Dry Washed X
 Remarks GRAVEL SURFACE BASE COURSE SPEC. BAND
CRUSHED-1 FACE 75.2%
CRUSHED-2 FACE 70.0%





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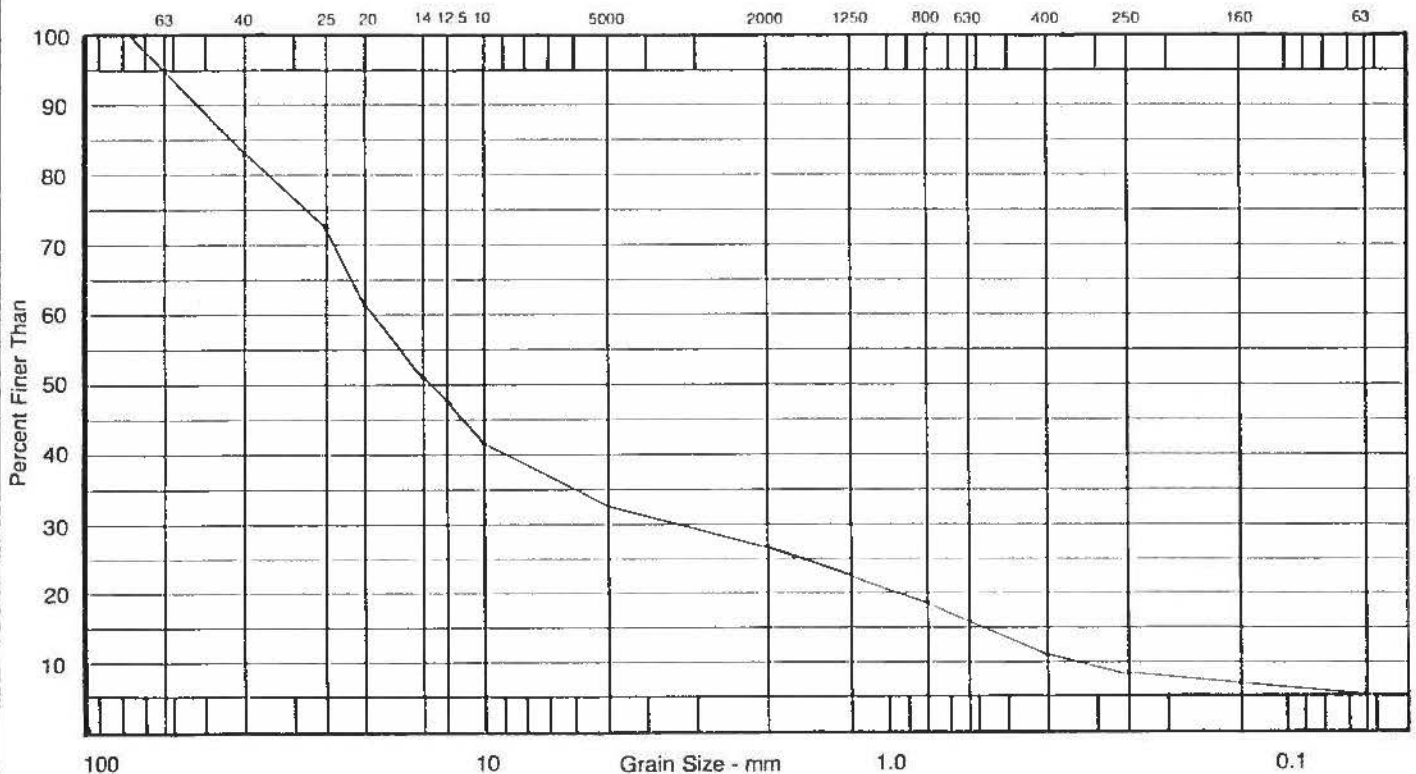
SCREEN ANALYSIS

Client: YTG. C&T SERVICES, LANDS BRANCH
 Sample: Depth: .25-4.00M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: LOT Q, TP 224 Made by: LK Job. No. 8002-301
 Ck'd by: W.C.C. Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				100.0
40000	40.0				83.6
25000	25.0				72.1
20000	20.0				61.9
14000	14.0				50.9
12500	12.5				47.8
10000	10.0				41.8
5000	5.0				33.2
2000	2.0				26.5
1250	1.250				22.9
800	0.800				18.9
630	0.630				15.9
400	0.400				10.5
250	0.250				8.0
160	0.160				6.7
63	0.063				5.0

Description of Sample Method of Preparation Dry Washed X
SANDY GRAVEL
TRACE OF SILT
 Remarks PITRUN

 Time of Sieving Min. 15





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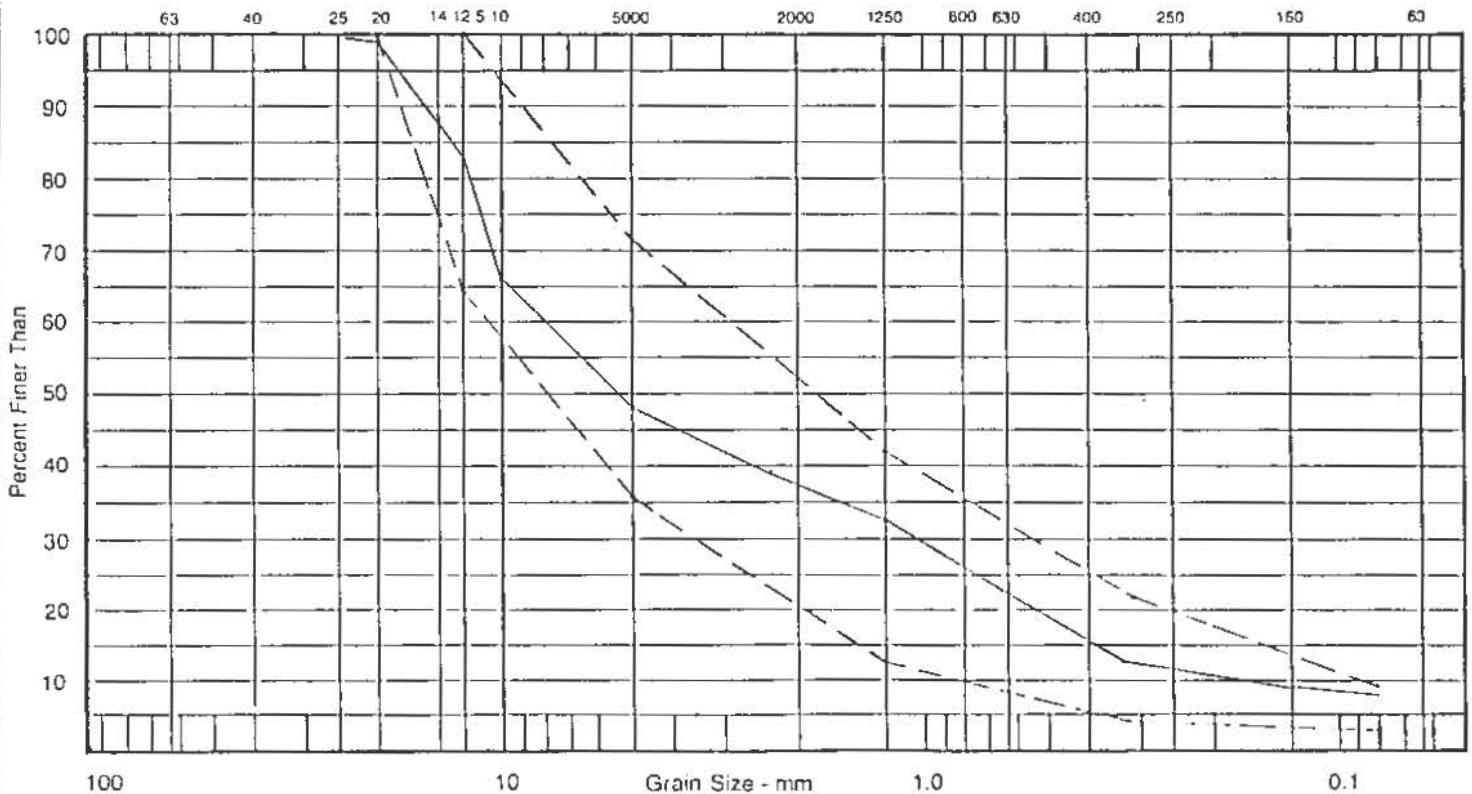
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T SERVICES. LANDS BRANCH
 Sample: Depth: 0.25-4.00M Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: LOT Q, TP224 Made by: LK Job No: 8002-301
 Ck'd by: W.G.K. Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				99.2
16000	16.0				-----
12500	12.5				82.0
10000	10.0				65.6
5000	5.0				48.3
2500	2.5				39.4
1250	1.250				32.2
800	0.800				-----
630	0.630				22.4
315	0.315				-----
250	0.250				12.9
160	0.160				9.5
80	0.080				7.5

Description of Sample Method of Preparation Dry Washed X
20MM CRUSH
 Remarks GRAVEL SURFACE BASE COURSE SPEC. BAND
 CRUSHED-1FACE 70.4%
 CRUSHED-2FACE 63.4%
 Time of Sieving Min. 1.5





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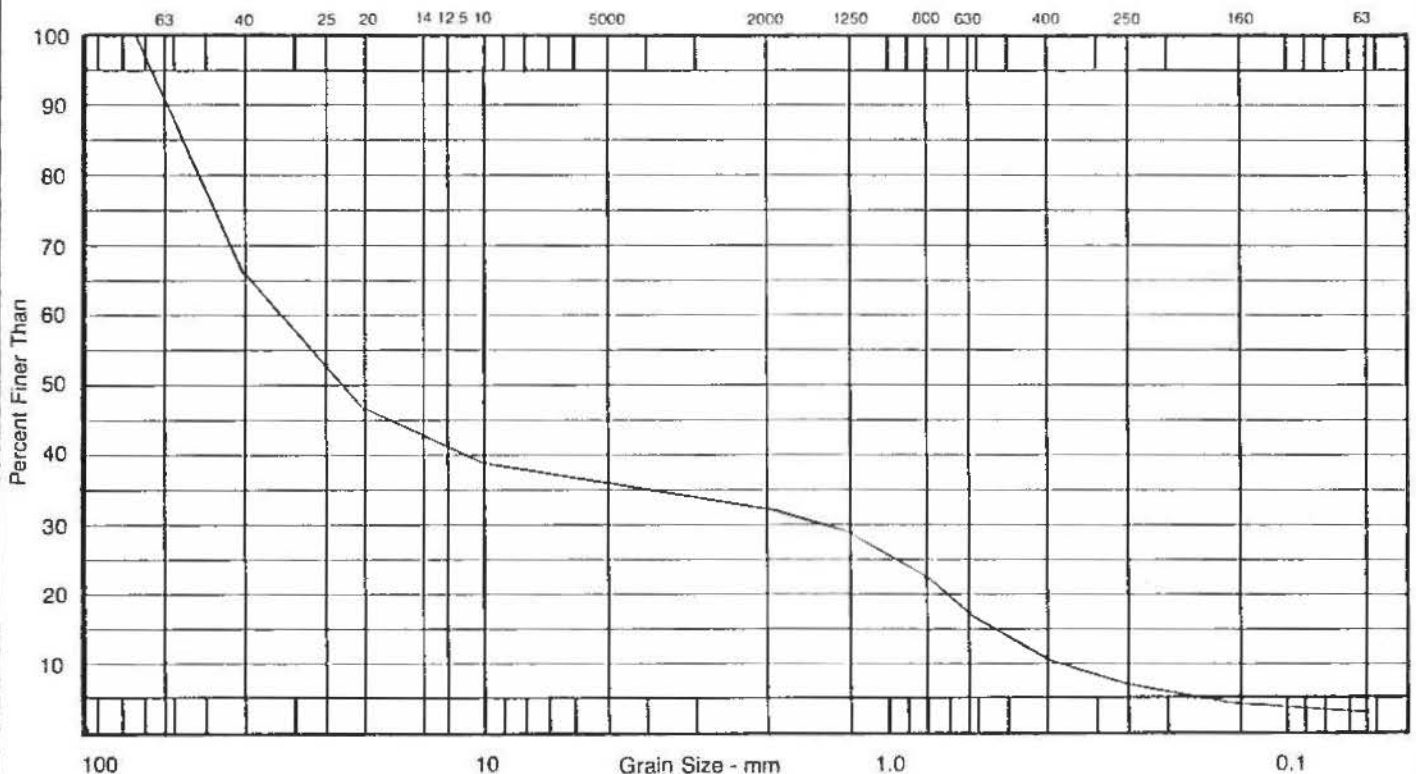
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG C&T SERVICES, LANDS BRANCH
 Sample: Depth: 25-4.30M Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: LOT P, TP 227 Made by: LK Job. No. 8002-301
 Ck'd by: WCL Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				100.0
40000	40.0				65.5
25000	25.0				53.0
20000	20.0				46.4
14000	14.0				42.9
12500	12.5				41.9
10000	10.0				39.2
5000	5.0				35.4
2000	2.0				32.1
1250	1.250				29.1
800	0.800				22.4
630	0.630				17.1
400	0.400				10.2
250	0.250				6.7
160	0.160				4.8
63	0.063				3.0

Description of Sample 2+100MM ROCK SANDY GRAVEL
 Method of Preparation Dry Washed X
 Remarks PITRUN
 Time of Sieving 15 Min.





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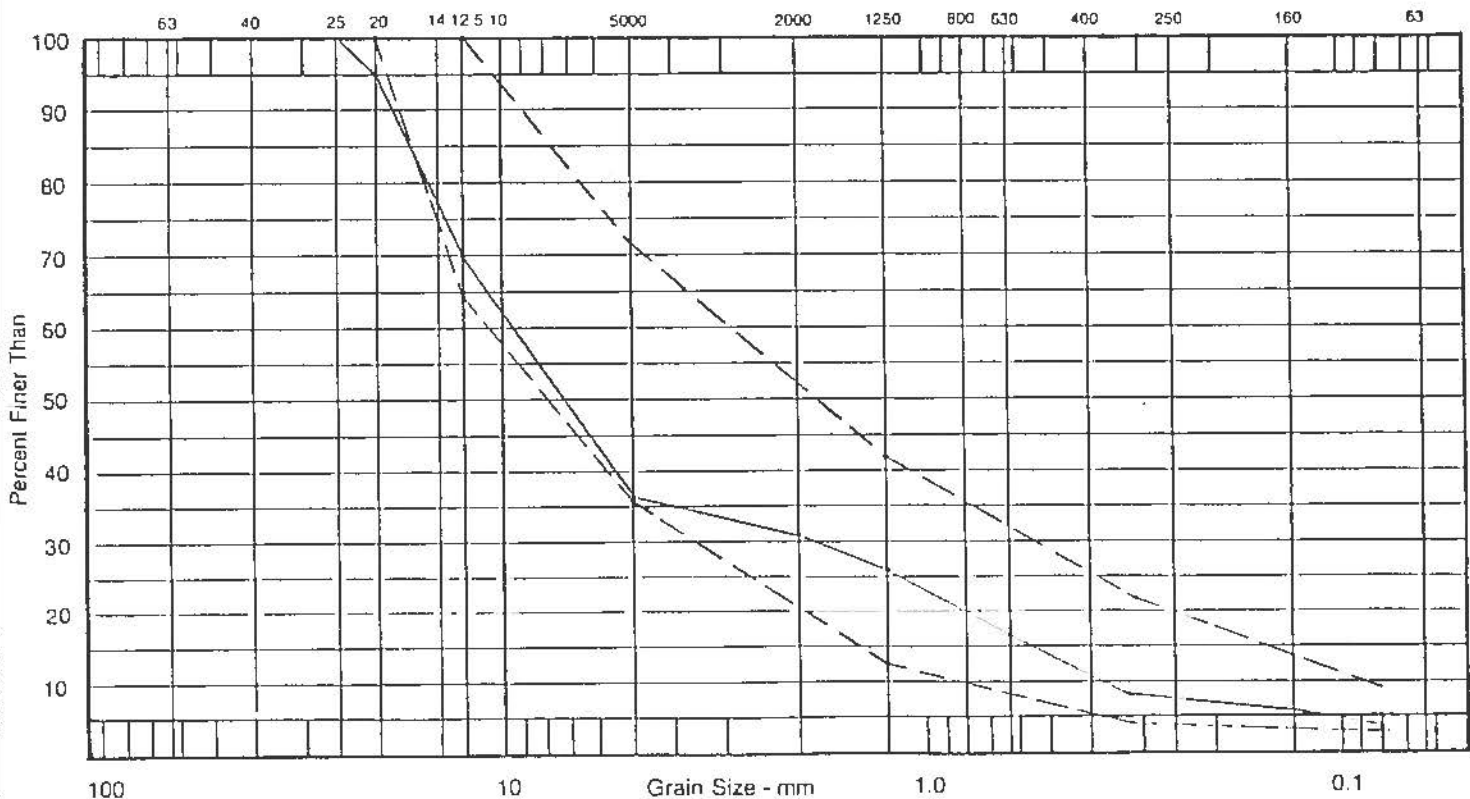
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T. SERVICES. LANDS. BRANCH
 Sample: Depth: 0.25-4.30M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: LOT P, TP227 Made by: LK Job. No. 8002-301
 Ck'd by: W.C.R. Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained grs	Total Wt. Finer Than grs	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				95.0
16000	16.0				-----
12500	12.5				69.4
10000	10.0				54.1
5000	5.0				36.7
2500	2.5				30.6
1250	1.250				25.7
800	0.800				-----
630	0.630				16.1
315	0.315				-----
250	0.250				8.5
160	0.160				5.3
80	0.080				3.7

Description of Sample Method of Preparation Dry Washed X
20MM CRUSH Remarks GRAVEL SURFACE BASE COURSE SPEC. BAND
 CRUSHED-1FACE 94.3%
 CRUSHED-2FACE 90.0%
 Time of Sieving Min. 15





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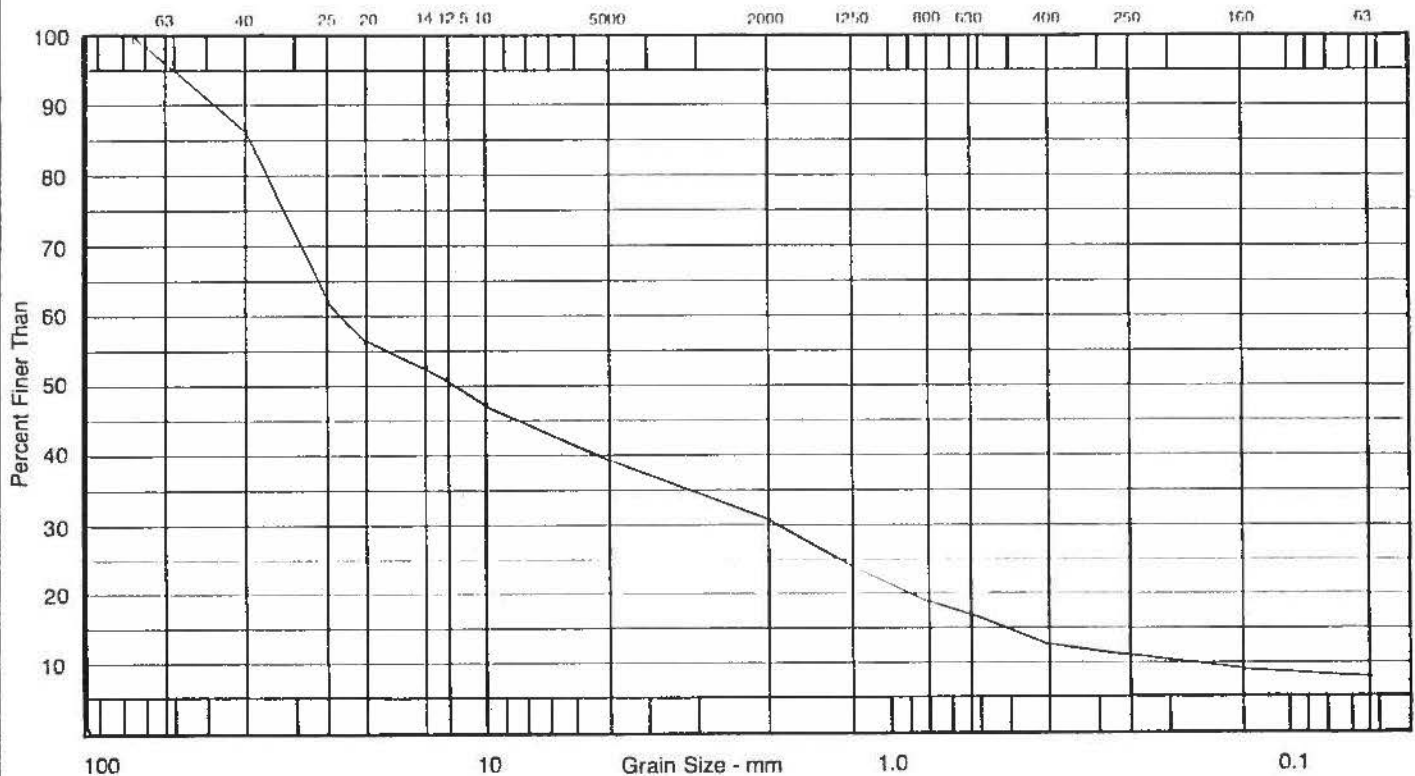
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T SERVICES. LANDS BRANCH
 Sample: PF Depth: .25-4.50M Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: SOUTH LOT U, TP 230 Made by: LK Job. No. 8002-301
 CK'd by: W.S./C Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				100.0
40000	40.0				86.8
25000	25.0				61.6
20000	20.0				56.0
14000	14.0				52.8
12500	12.5				51.0
10000	10.0				47.6
5000	5.0				39.4
2000	2.0				30.5
1250	1.250				24.3
800	0.800				19.0
630	0.630				16.3
400	0.400				12.6
250	0.250				10.7
160	0.160				9.5
63	0.063				7.6

Description of Sample: SANDY GRAVEL
TRACE OF SILT
 Method of Preparation: Dry Washed: X
 Remarks: PITRUN ONLY
 Time of Sieving: 15 Min.





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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T SERVICES. LANDS BRANCH

Sample: Depth: 25-4.50M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)

Location: SOUTH OF LOT U, TP. 233 Made by: LK Job No. 8002-301

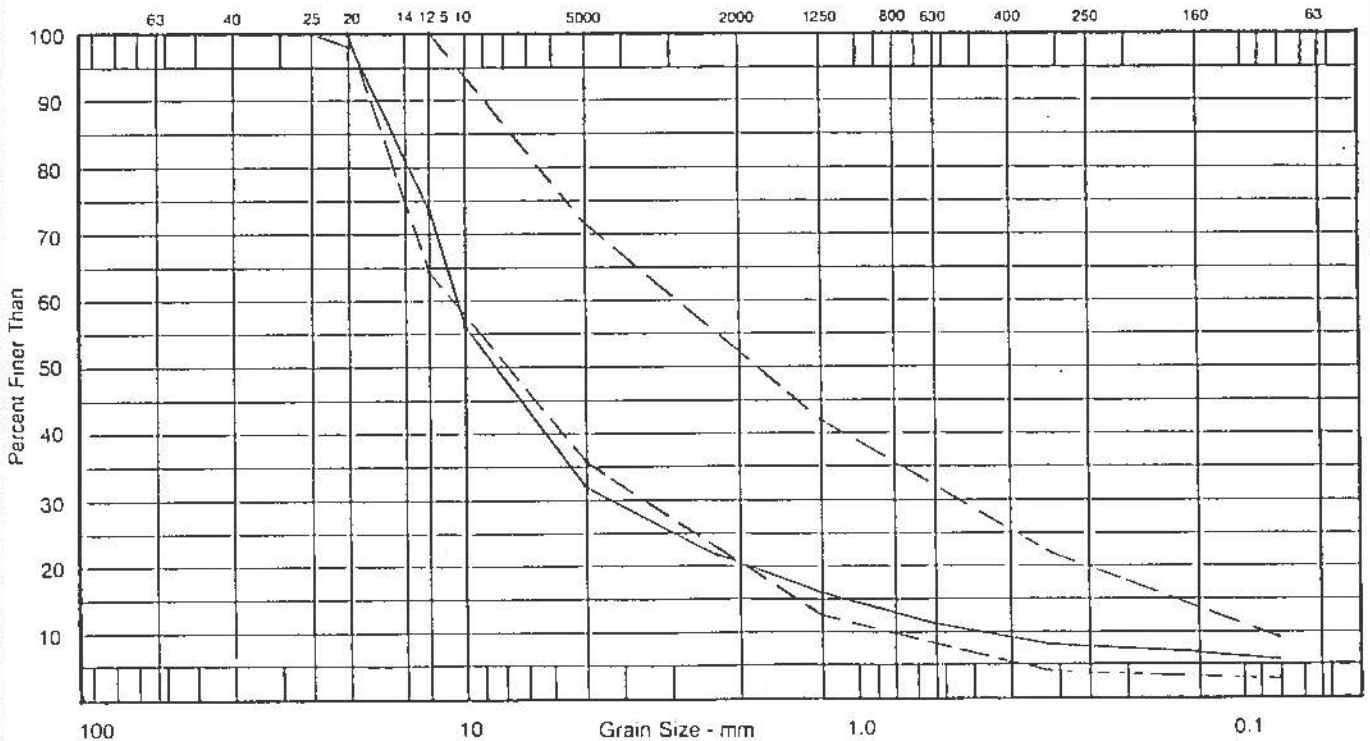
..... Ck'd by: Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				
40000	40.0				
25000	25.0				100.0
20000	20.0				98.7
16000	16.0				-----
12500	12.5				73.8
10000	10.0				55.3
5000	5.0				32.0
2500	2.5				21.7
1250	1.250				15.4
800	0.800				-----
630	0.630				11.4
315	0.315				-----
250	0.250				8.5
160	0.160				6.7
80	0.080				5.4

Description of Sample
20MM CRUSH

Method of Preparation Dry Washed X
Remarks GRAVEL SURFACE BASE COURSE SPEC. BAND

Time of Sieving Min. 15





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T SERVICES LANDS BRANCH

Sample: Depth: 3.00-4.50M

Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)

Location: SOUTH OF LOT T. T.P. 239

Made by: LK Job No. 8002-301

Ch'd by: Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				98.9
16000	16.0				-----
12500	12.5				84.2
10000	10.0				69.0
5000	5.0				44.9
2500	2.5				34.3
1250	1.250				26.1
800	0.800				-----
630	0.630				18.5
315	0.315				-----
250	0.250				12.1
160	0.160				9.0
80	0.080				7.0

Description of Sample
20MM CRUSH

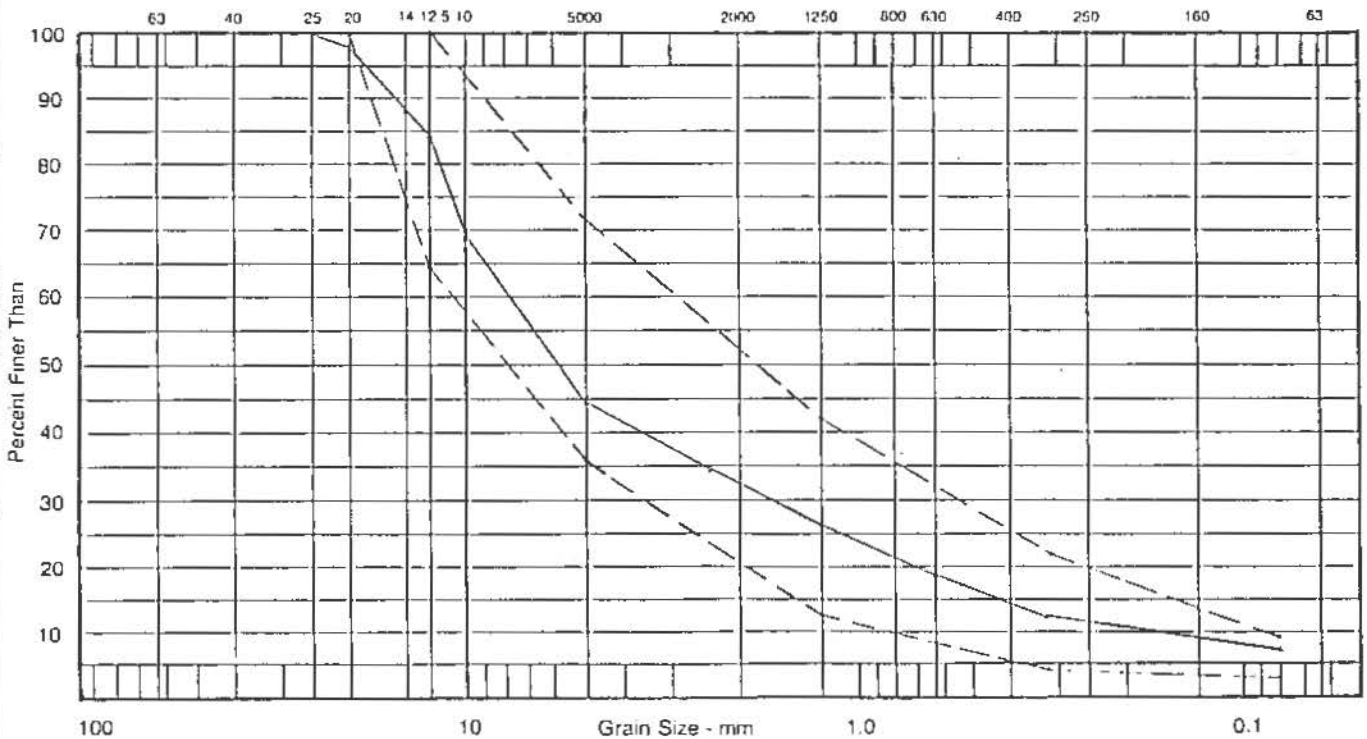
Method of Preparation Dry Washed X

Remarks GRAVEL SURFACE BASE COURSE SPEC. BAND

CRUSHED-1FACE 70.0%

CRUSHED-2FACE 66.0%

Time of Sieving Min. 1.5





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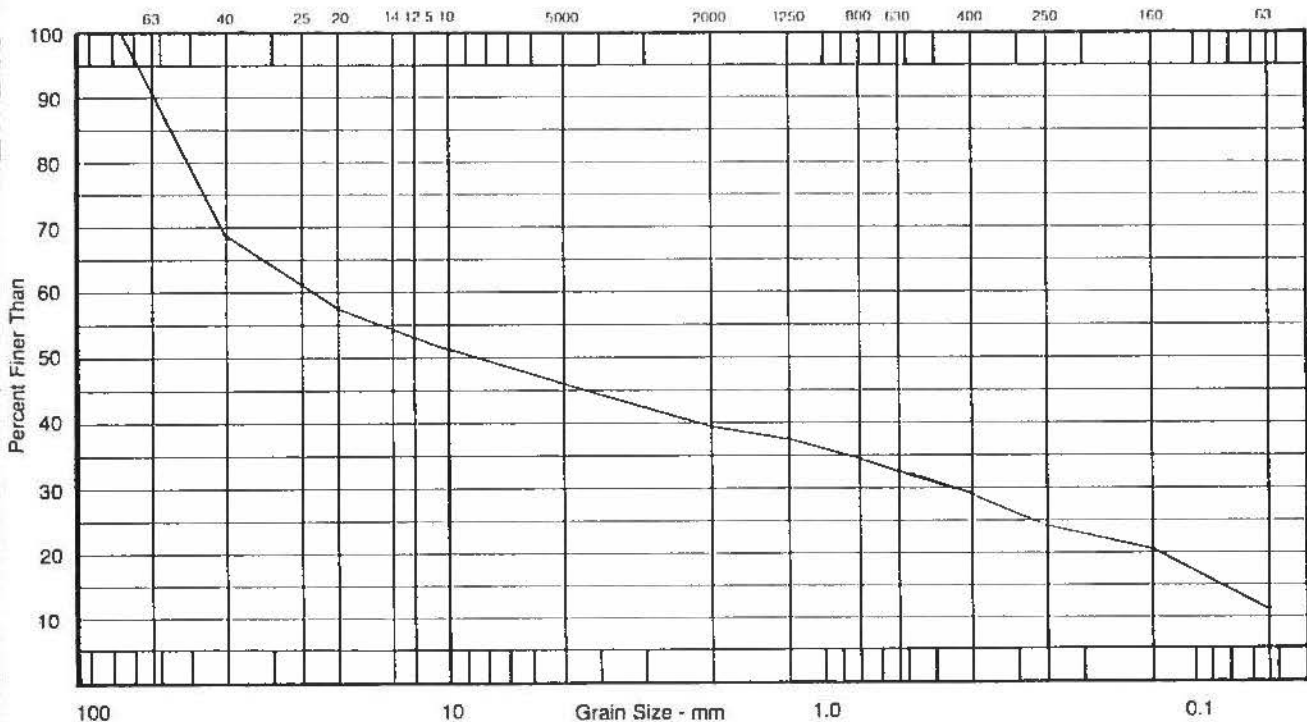
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG.C&T SERVICES.LANDS BRANCH
 Sample: Depth: 1.5-3.75M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: EAST OF LOT W, TP 243 Made by: LK Job No. 8002-301
 Ck'd by: W.C.K. Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				100.0
40000	40.0				68.5
25000	25.0				61.4
20000	20.0				57.2
14000	14.0				54.3
12500	12.5				53.4
10000	10.0				51.4
5000	5.0				45.4
2000	2.0				39.9
1250	1.250				37.0
800	0.800				34.5
630	0.630				32.8
400	0.400				29.1
250	0.250				24.8
160	0.160				20.2
63	0.063				11.4

Description of Sample Method of Preparation Dry Washed X
 SANDY GRAVEL
 SOME SILT
 Remarks PITRUN ONLY
 Time of Sieving Min. 15





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

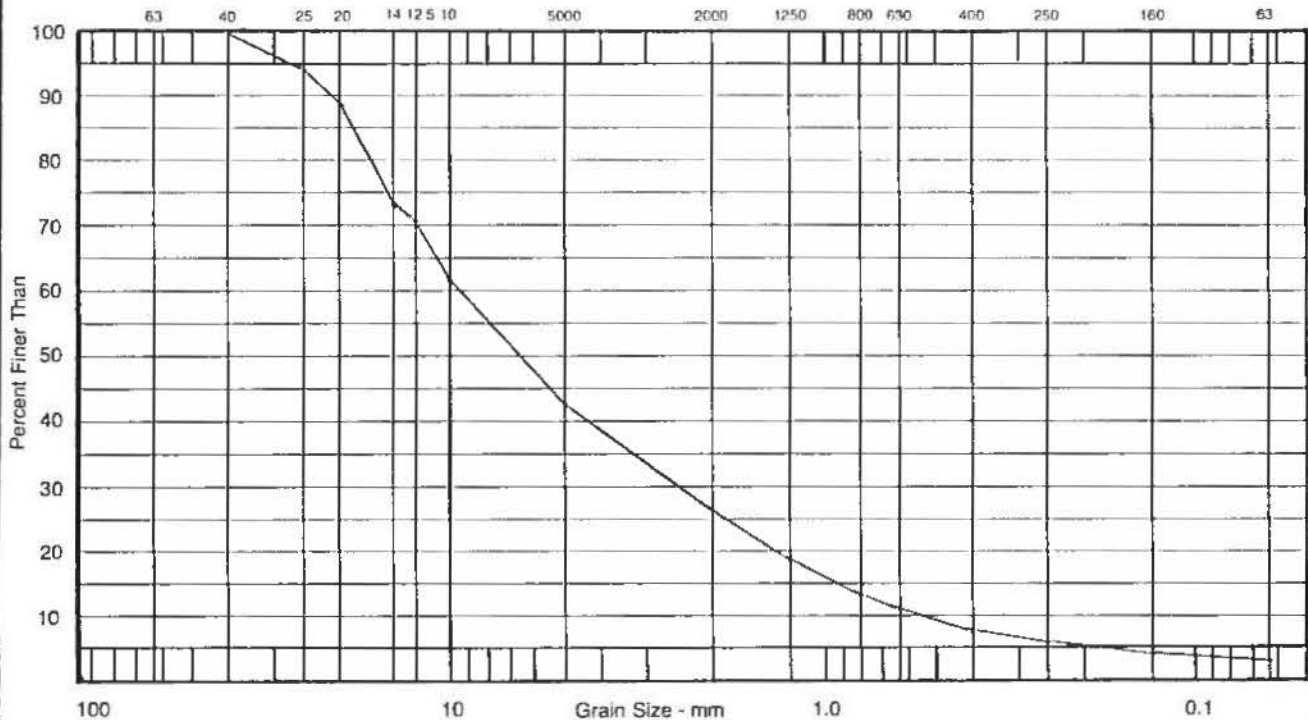
Client: YTG.C&T SERVICES.LANDS BRANCH
 Sample: Depth: .25-3.80M Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: SOUTH OF LOT W, TP 247 Made by: LK Job No. 8002-301
 CK'd by: W.C.L. Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100.0
25000	25.0				94.0
20000	20.0				88.7
14000	14.0				73.3
12500	12.5				70.6
10000	10.0				61.9
5000	5.0				42.6
2000	2.0				26.4
1250	1.250				18.8
800	0.800				13.4
630	0.630				10.7
400	0.400				7.0
250	0.250				5.3
160	0.160				4.3
63	0.063				3.0

Description of Sample
SANDY GRAVEL

 Time of Sieving Min. 15

Method of Preparation Dry Washed X
 Remarks PITRUN





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CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

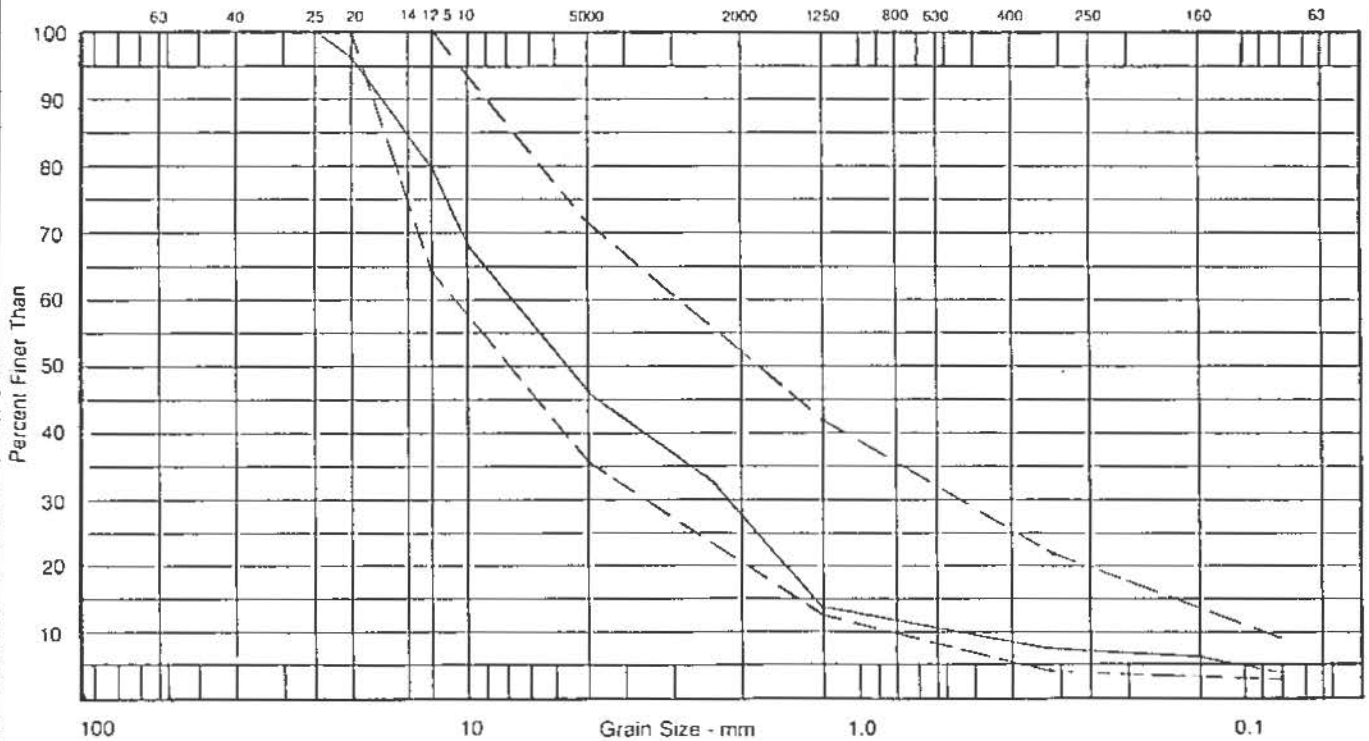
Client: YTG. C&T SERVICES. LANDS BRANCH
 Sample: Depth: 0.25-3.80M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: SOUTH OF LOT W, TP 247 Made by: LK Job No. 8002-301
 Ck'd by: W.K. Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				96.7
16000	16.0				---
12500	12.5				79.4
10000	10.0				67.7
5000	5.0				46.6
2500	2.5				32.8
1250	1.250				21.6
800	0.800				---
630	0.630				12.8
315	0.315				---
250	0.250				7.7
160	0.160				5.6
80	0.080				4.3

Description of Sample
20MM. CRUSH

 Time of Sieving Min. 15

Method of Preparation Dry Washed X
 Remarks GRAVEL SURFACE BASE COURSE SPEC. BAND





J. R. Paine & Associates Ltd.

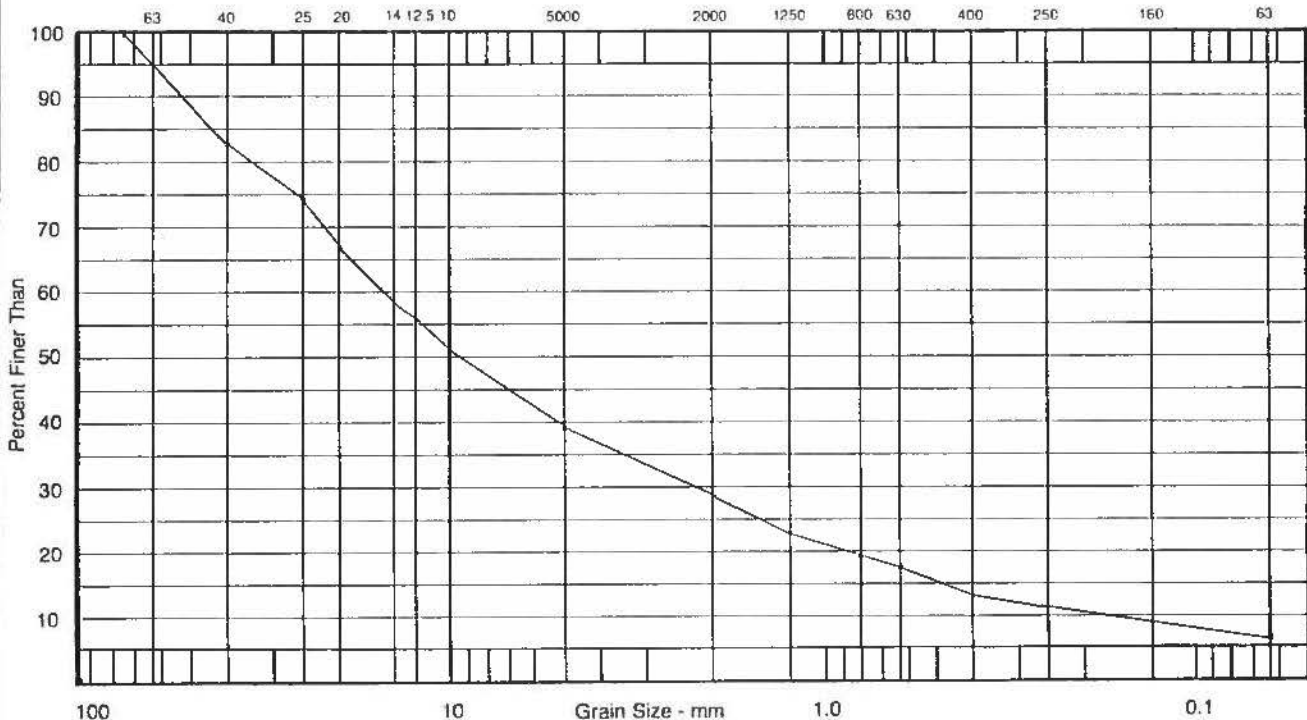
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T SERVICES. LANDS BRANCH
 Sample: Depth: .25-4.00M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: SOUTH OF LOT W, TP 254 Made by: LK Job. No. 8002-301
 Ck'd by: W.C.R. Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				100.0
40000	40.0				83.5
25000	25.0				74.8
20000	20.0				66.8
14000	14.0				58.2
12500	12.5				55.6
10000	10.0				50.4
5000	5.0				39.4
2000	2.0				28.4
1250	1.250				23.2
800	0.800				19.5
630	0.630				17.5
400	0.400				13.8
250	0.250				11.1
160	0.160				9.2
63	0.063				6.4

Description of Sample Method of Preparation Dry Washed X
SANDY GRAVEL Remarks PITRUN
TRACE OF SILT
 Time of Sieving Min. 15





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CONSULTING AND TESTING ENGINEERS

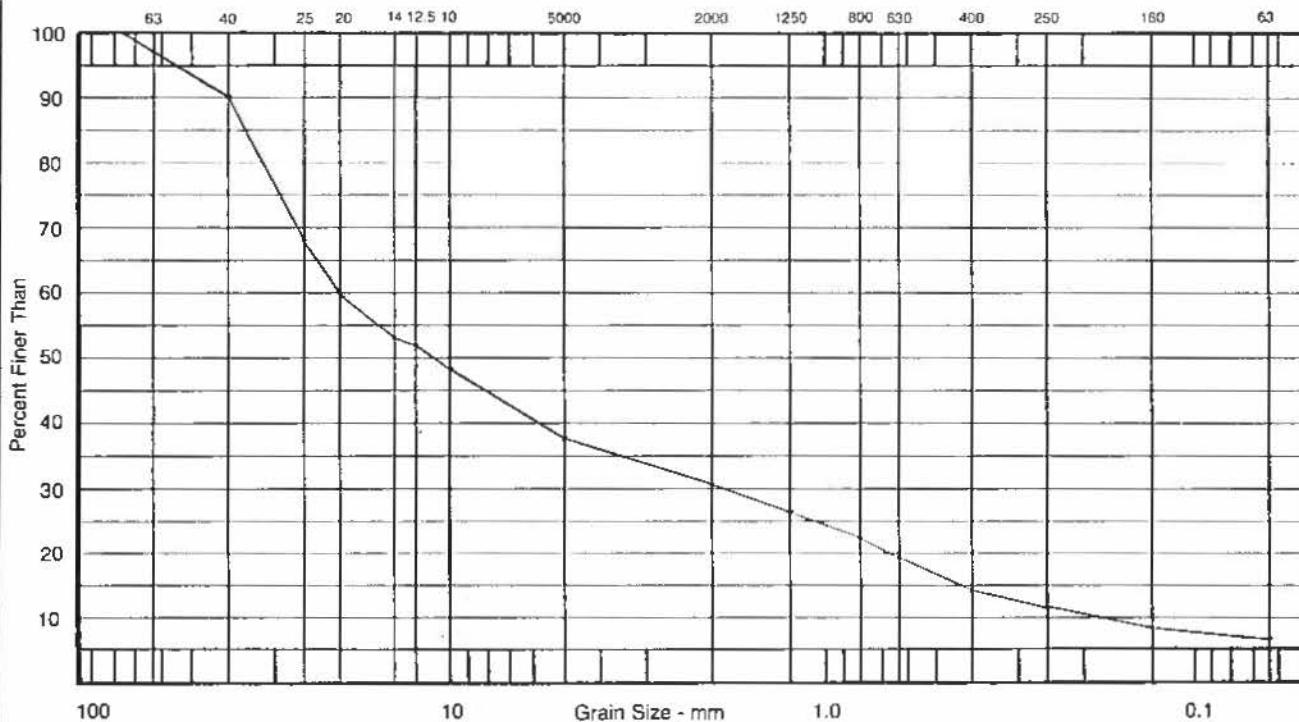
SCREEN ANALYSIS

Client: YTG. C&T. SERVICES. LANDS. BRANCO
 Sample: Depth: .25-4.25M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: LOT 5, TP. 256 Made by: L.K. Job. No. 8002-301
 Ck'd by: U.P.R. Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
75000	75.0				100.0
40000	40.0				90.0
25000	25.0				68.6
20000	20.0				59.4
14000	14.0				53.6
12500	12.5				52.4
10000	10.0				48.0
5000	5.0				37.9
2000	2.0				30.4
1250	1.250				26.2
800	0.800				22.2
630	0.630				19.6
400	0.400				14.6
250	0.250				11.1
180	0.180				8.8
63	0.063				6.0

Description of Sample Method of Preparation Dry Washed X
SANDY GRAVEL
 Remarks PITRUN
TRACE OF SILT

 Time of Sieving Min. 15





J. R. Paine & Associates Ltd.

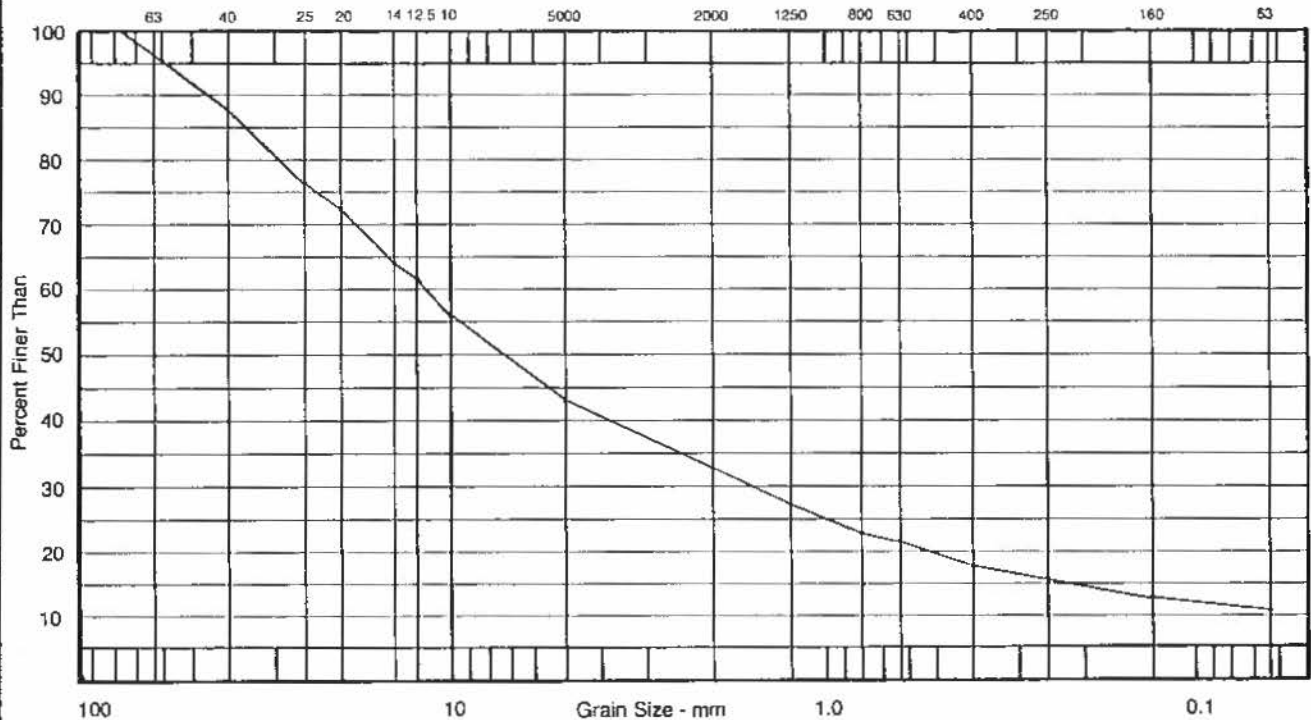
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T. SERVICES. LANDS. BRANCH
 Sample: Depth: .25-4.50M Project: MCLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: SOUTH OF LOT U, TP 263 Made by: LK Job. No. 8002-301
 CK'd by: W.C.L. Date: 1988.03.24

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
75000	75.0				100.0
40000	40.0				88.1
25000	25.0				76.3
20000	20.0				72.2
14000	14.0				64.2
12500	12.5				61.4
10000	10.0				55.4
5000	5.0				43.8
2000	2.0				33.2
1250	1.250				27.8
800	0.800				23.6
630	0.630				21.4
400	0.400				17.7
250	0.250				15.3
160	0.160				13.5
63	0.063				10.5

Description of Sample: SANDY GRAVEL
TRACE OF SILT
 Method of Preparation: Dry Washed
 Remarks: PITRUN
 Time of Sieving: 15 Min.





J. R. Paine & Associates Ltd.

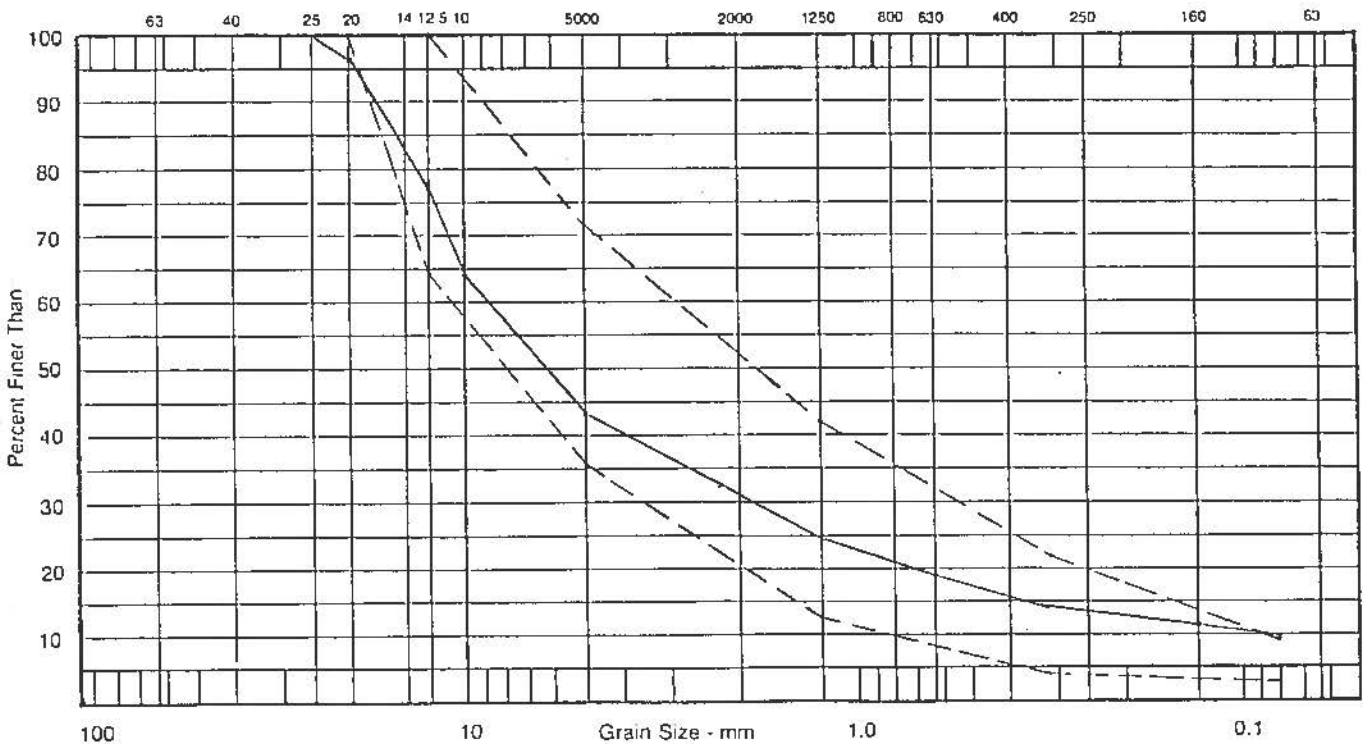
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: YTG. C&T SERVICES. LANDS BRANCH
 Sample: Depth: 0.25-4.30M Project: McLEAN LAKE GRAVEL QUARRY INV. (1988)
 Location: SOUTH OF LOT U, TP 263 Made by: LK Job No. 8002-301
 Ck'd by: W.C.H. Date: 1988.03.25

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				96.9
16000	16.0				----
12500	12.5				77.2
10000	10.0				64.1
5000	5.0				43.3
2500	2.5				32.6
1250	1.250				24.9
800	0.800				----
630	0.630				19.0
315	0.315				----
250	0.250				14.5
160	0.160				11.7
80	0.080				9.6

Description of Sample Method of Preparation Dry Washed X
20MM CRUSH Remarks GRAVEL SURFACE BASE COURSE SPEC BAND
 CRUSHED-1FACE 77.3%
 CRUSHED-2FACE 73.1%
 ROUND
 Time of Sieving Min. 15



J. R. Paine & Associates Ltd.

A P P E N D I X I I

J. R. Paine & Associates Ltd.

PROJECT: McLean Lake Gravel Quarry Investigation (1988)

*CLIENT: GOVERNMENT OF YUKON
Community & Transportation Services
Lands Branch
Box 2703
Whitehorse, Yukon Territory
Y1A 2C6*

Attention: Mr. Bruce Gilroy

*Enclosed in **Appendix II** are the test hole logs for the test holes which are located within or adjacent to, the areas investigated in the 1988 Gravel Quarry Investigation completed by J.R. Paine & Associates Ltd. Also enclosed, are the grain size analysis and test summary sheets completed on pitrun samples obtained at the time of the investigation.*

Enclosed test hole logs include: 13, 20, 21, 23, 27, 31, 37, 39 and 40.



J. R. Paine & Associates Ltd.
CONSULTING ENGINEERS & GEOTECHNICAL ENGINEERS

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLean Lake Road Gravel Search

DWN. bg

CKD. *gcl*

JOB NO. 8002-25

DATE 82 11 03

HOLE NO. BH 13

PLATE NO.

MOISTURE CONTENT

LIQUID LIMIT (W.L.)

PLASTIC LIMIT (W.P.)

STANDARD PENETRATION TEST

MOISTURE CONTENT (%) & STAND. PENETRATION (N)

10 20 30 40 50 60 70 80

SOIL PROFILE

SAMPLES

DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
1.0	Gravel Some Sand Some Silt		m=3.3			GS	1.0
2.0	Silty Sandy Gravel		m=5.8			GS	2.0
2.0	Sandy Gravel Some Silt		m=2.8 MA			GS	2.0
3.0	Sandy Fine Gravel		m=2.6			GS	3.0
4.0							4.0
5.0	Sandy Fine Gravel						5.0
6.0	Sandy Gravel		m=2.6			GS	6.0
7.0	Sandy Gravel						7.0

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY	SILT SAND TILL BEDROCK	-UNDISTURBED -DISTURBED -LOST SAMPLE	U - 76mm SHIELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. STR. kPa γ_d - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS

(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 Ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL

PLATE NO.

RECORD OF BOREHOLE B.H. 21

LOCATION (See Figure. .)
 BOREHOLE TYPE Solid Stem Flight Auger
 SAMPLE HAMMER WEIGHT N/A DROP

BORING DATE 20 March 1984
 BOREHOLE DIAMETER 150 mm
 DATUM Project

SOIL PROFILE							PIEZOMETER OR STANDPIPE INSTALLATION	ADDITIONAL LAB. TESTING
ELEV. DEPTH. (m)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS / (Estimated) ELEVATION SCALE (m)	WATER CONTENT PERCENT $\overbrace{\text{---} \text{---} \text{---}}^{\text{W}_p}$ $\overbrace{\text{---} \text{---} \text{---}}^{\text{W}}$ $\overbrace{\text{---} \text{---} \text{---}}^{\text{W}_L}$		
84.4	Ground Surface				84.4			
0.0	Topsoil (Stripping) < 100mm	A	1	GS			Sieve Analysis	
	Sand & Gravel, sm cobbles to 100 mm, trace silt. Subrdd to subanglr.	A						
	Sand & Gravel, as above, loose.	A	2	GS	84.2			
	No auger cuttings return 2.5 to 4 m - Drilling action similar to 1.5 to 2.5 m - Sand & gravel w/sm cobbles - not hard drilling.	A			84.0			
	No auger return 4.0 to 5.5 m - drilling action similar to 1.5 to 2.5 m.	A						
	Harder drilling 6.0 to 7.0 m - more cobbles. No auger return.	A			83.8			
	Harder drilling cont'd to 8.5 m - drilling action indicates gravel w/sm cobbles. No auger return	A	3	GS	83.6		Sieve Analysis	
835.5								
8.5	Cont'd on Sheet 2							

Project No. *11111* Date *March '84* Drawn *[Signature]*

VERTICAL SCALE 1:50

BOREHOLE No. 11121
SHEET 1 OF 2

RECORD OF BOREHOLE B.H. 21 (continued)

LOCATION (See Figure. .)
 BOREHOLE TYPE Solid Stem Flight Auger
 SAMPLE HAMMER WEIGHT N/A DROP

BORING DATE 20 March 1984
 BOREHOLE DIAMETER 150 mm
 DATUM Project

SOIL PROFILE		STATIONARY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS /	(Estimated) ELEVATION SCALE (m)	WATER CONTENT PERCENT			PIEZOMETER OR STANDPIPE INSTALLATION	ADDITIONAL LAB. TESTING
ELEV. DEPTH. (m)	DESCRIPTION						W _p	W	W _L		
835.5	(Continued from Sheet 1)										
0.5	Hard drilling cont'd to 10.0 m - drilling action as above. (No auger return) Sa. 3 - <u>Gravel</u> w/sm sand and trace silt. No auger return 10 m to 11.5 m. Drilling action similar to above and indicates loose, clean gravel w/sm cobbles	3	GS		834					Sieve Analysis Sa. 3 taken from flight auger when B.H. completed	
	No auger return 11.5 m to 13 m - similar drilling action to above. Sa. 4 - <u>Gravel</u> w/sm sand and trace silt. Subrdd to subanglr.	4	GS		832					Sa. 4 taken from flight auger when B.H. completed	
	No auger return 13 m to 15 m - Similar drilling action to above.				830						
	No auger return 15 m to 16.5 m - drilling action similar to above.				828						
827.5											
16.5	End of Borehole (Not Refusal)									GS - Grab Sample from Flight Auger Return	

March '84
 Date
 Drawn
 Project No.

VERTICAL SCALE 1:50

RECORD OF BOREHOLE B.H. 23

LOCATION (See Figure. .)

BORING DATE

19 March 1984

BOREHOLE TYPE Solid Stem Flight Auger

BOREHOLE DIAMETER

150 mm

SAMPLE HAMMER WEIGHT

DROP

DATUM

Project

SOIL PROFILE						PIEZOMETER OR STANDPIPE INSTALLATION	ADDITIONAL LAB. TESTING					
ELEV. DEPTH. (m)	DESCRIPTION	LITHOGRAPHIC PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS / (Estimated) ELEVATION SCALE (m)			WATER CONTENT PERCENT				
								W _p	W	W _L		
822	Ground Surface											
0.0	Topsoil (Stripping) < 100 mm				822							
	Sand & Fine Gravel. Silt.		1	GS								
	Gravel w/sm sand, sm cobble to 150 mm. Cleaner & coarser than above.		2	GS	820							
	(Becomes coarser at 3 m)											
	Coarse gravel w/sm cobbles. Subrdd to subanglr		3	GS								
	Gravel, sm cobbles, sm sand, clean.		4	GS	818							
	(Hard drilling below 5.5m)											
	Gravel continues as above sm cobbles, subrdd to subanglr		5	GS	816							
	(Hard drilling continued)											
	Gravel w/sm cobbles, sm sand, clean and coarse.		6	GS	814							
813.5												
8.5	Continued on Sheet 2											

Sieve Analysis

Drawn by *[Signature]* on March '84
 Project No. *[Blank]*

VERTICAL SCALE 1:50

BORE HOLE No. BH23
SHEET 1 OF 2

RECORD OF BOREHOLE B.H. 27

LOCATION (See Figure. .)
 BOREHOLE TYPE Solid Stem Flight Auger
 SAMPLE HAMMER WEIGHT N/A DROP

BORING DATE 19 March 1984
 BOREHOLE DIAMETER 150 mm
 DATUM Project

SOIL PROFILE		STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS /	(Estimated) ELEVATION SCALE (m)	WATER CONTENT PERCENT			PIEZOMETER OR STANDPIPE INSTALLATION ADDITIONAL LAB. TESTING
ELEV. DEPTH. (m)	DESCRIPTION						W _p	W	W _L	
							-----	-----	-----	
822	Ground Surface									
0.0	Topsoil (Stripping) < 100 mm Gravel w/sm cobbles, sm sand, trace silt. Subrdd to subanglr. (Harder drilling below 1 m) Fine to coarse gravel, sm fine to med.sand, trace silt (easier drilling 2.5 to 3.7 m) Gravel w/sm sand, sm silt (finer than above).	1	GS		822					
	(Harder drilling below 4m) Fine to coarse gravel w/sm sand and sm silt. Subrdd to subanglr (like Sa. 3)	2	GS		820					
	(Hard drilling continued) Fine to coarse gravel, sm sand, trace silt. Subrdd to subanglr (less fines than Sa. 4).	3	GS		818				Sieve Analysis	
	(Hard drilling continued) Fine to coarse gravel. No sand or silt returned on flight auger.	4	GS		816					
	(Hard drilling continued)	5	GS		814					
6	Cont'd on Sheet 2									

Project No. _____ Date March '84

VERTICAL SCALE 1:50

BORE HOLE No. B127
 SHEET 1 OF 2

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT
 McLean Lake Gravel Leases / Gravel Lease

WN. bk CKD. JOB NO. 8006-2 DATE 85.05.27 HOLE NO. 37 PLATE NO. 16

MOISTURE CONTENT		SOIL PROFILE		SAMPLES					
LIQUID LIMIT (W.L.)	●—●	DEPTH	CLASSIFICATION	SOIL SYMBOL	OTHER TESTS	Unconfined Compressive Strength kPa	SAMPLE COND.	TYPE	DEPTH SCALE
PLASTIC LIMIT (W.P.)	■—■	ELEV. M.	DATUM GROUND SURFACE ELEVATION						
STANDARD PENETRATION TEST	▲—▲								
MOISTURE CONTENT (%) & STAND. PENETRATION (N)	X—X								
10 20 30 40 50 60 70 80		0.60	Gravelly Sand		M=4.9%				2.0
		0.90m	Brown 1.20m		MA				
		2.45	Sandy Gravel		M=2.6%				4.0
		2.75m	Coarse		MA				
		3.65	Brown		M=2.5%				
		3.95m							6.0
		6.70			M=1.7%				8.0
		7.00m							10.0
									12.0
									14.0
			Refusal						

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK	-UNDISTURBED -DISTURBED -LOST SAMPLE	U - 75mm SHALLOW TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	CU - UNCONFINED COMP. STR. kPa D _w - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL



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TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT

McLean Lake Gravel Leases, Gravel Lease

WN. bk

CKD.

JOB NO. 8006-2

DATE 85.05.28

HOLE NO. 39

PLATE NO. 18

MOISTURE CONTENT ●—●
 LIQUID LIMIT (W.L.) ■—■
 PLASTIC LIMIT (W.P) ▲—▲
 STANDARD PENETRATION TEST X—X
 MOISTURE CONTENT (%) & STAND. PENETRATION (N)

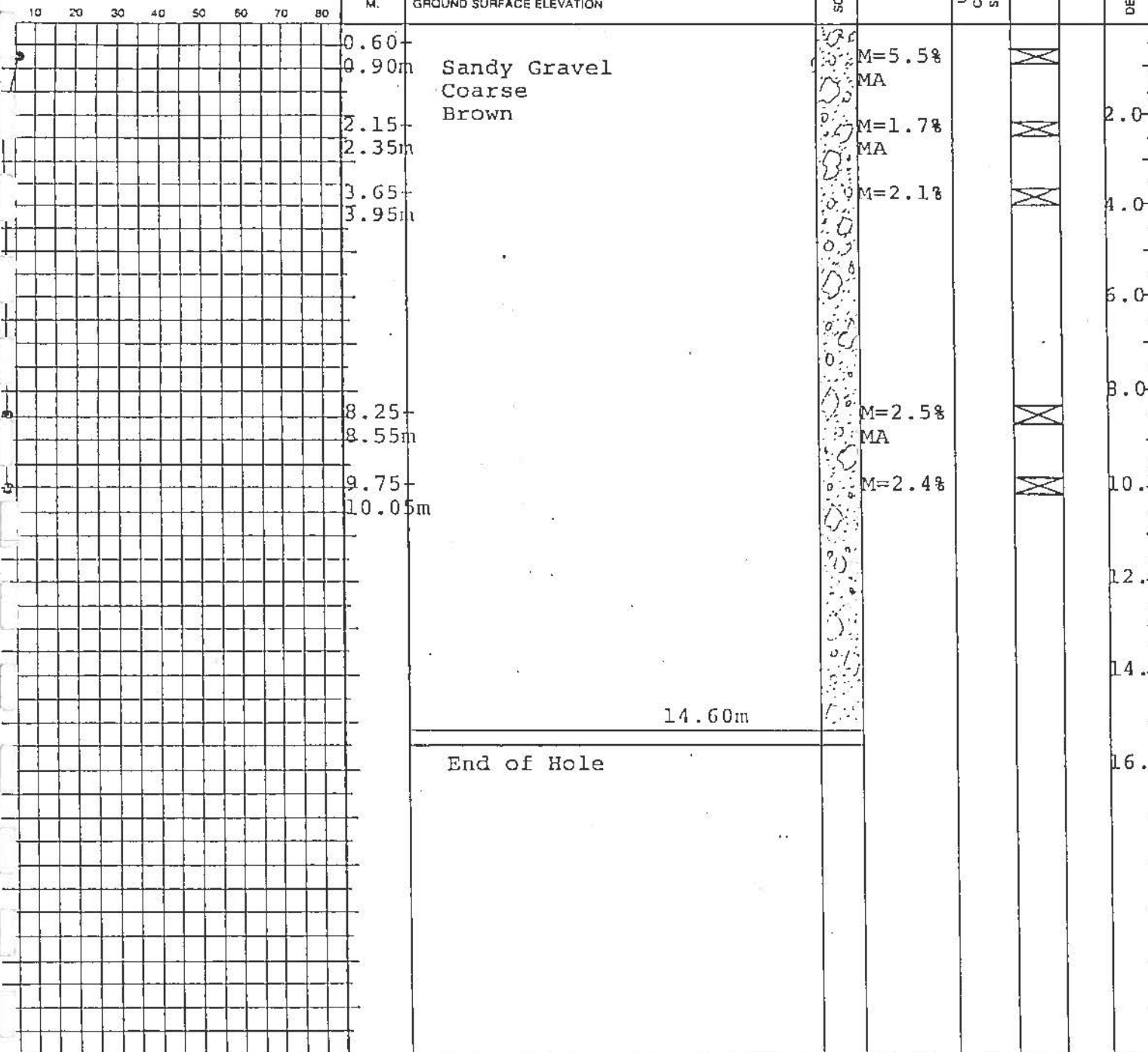
SOIL PROFILE

SAMPLES

DEPTH CLASSIFICATION

ELEV. M. DATUM GROUND SURFACE ELEVATION

SOIL SYMBOL OTHER TESTS
 Unconfined Compressive Strength kPa
 SAMPLE COND. TYPE DEPTH SCALE



SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY	UNDISTURBED DISTURBED LOST SAMPLE	U - 75mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	Qu - UNCONFINED COMP. STR. kPa Wd - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL

PLATE NO.

TEST HOLE LOG AND LABORATORY TEST DATA

PROJECT McLean Lake Gravel Leases, Gravel Lease

WN. bk CKD. JOB NO. 8006-2 DATE 85.05.28 HOLE NO. 40 PLATE NO. 19

MOISTURE CONTENT
 LIQUID LIMIT (W.L.)
 PLASTIC LIMIT (W.P.)
 STANDARD PENETRATION TEST

SOIL PROFILE SAMPLES

MOISTURE CONTENT (%) & STAND. PENETRATION (N)
 10 20 30 40 50 60 70 80

DEPTH CLASSIFICATION SOIL SYMBOL OTHER TESTS Unconfined Compressive Strength kPa SAMPLE COND. TYPE DEPTH SCALE

ELEV. M. DATUM GROUND SURFACE ELEVATION
 0.60-0.90m Gravelly Silty Sand, Brown 200mm Maximum 1.20m M=1.8%

2.45-3.95m Sandy Gravel at Top to Gravelly Sand at Bottom Coarse 75mm Maximum Light Brown M=1.2% MA M=2.2% MA

6.70-7.00m M=1.5%

12.20-12.80m 12.80m M=2.4% MA

12.80m Refusal (Bedrock)

SOIL TYPES	CONDITION	SAMPLE TYPE	LABORATORY TEST SYMBOLS	PENETRATION RESISTANCE
TOPSOIL PEAT FILL CLAY SILT SAND TILL BEDROCK	-UNDISTURBED -DISTURBED -LOST SAMPLE	U - 76mm SHELBY TUBE D.S. - DRIVE SAMPLE M - MOISTURE CONTENT R.C. - ROCK CORE	QU - UNCONFINED COMP. STR. kPa W - DRY WEIGHT kg/m ³ C - CONSOLIDATION TEST MA - GRAIN SIZE ANALYSIS	(N) - NUMBER OF BLOWS OF A 140 lb. HAMMER DROPPED 30 ins. (FREE FALL) REQUIRED TO DRIVE A 2" O.D. RAYMOND TYPE SAMPLER A DISTANCE OF 12" INTO THE SOIL.



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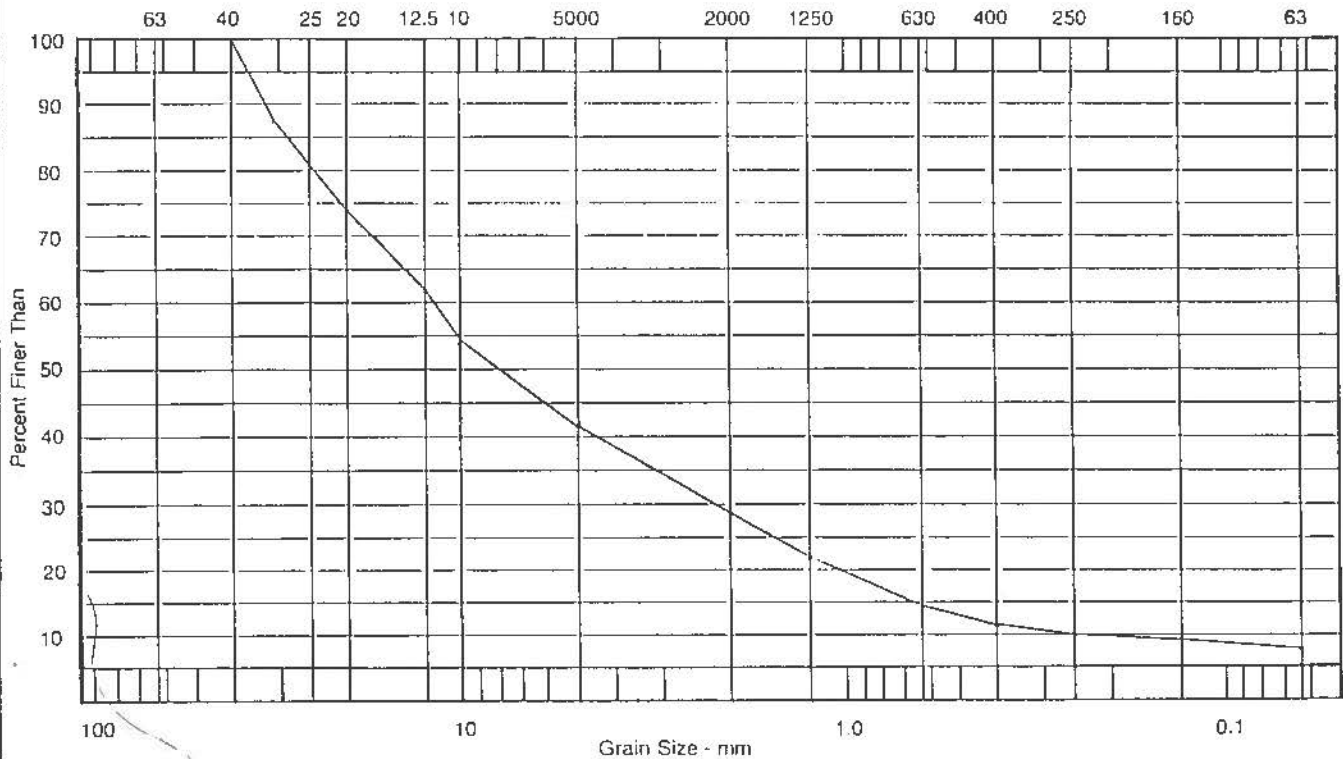
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Y.T.G. Municipal & Community Affairs
 Sample: BH #13 Depth: 5' - 7' Project: McLean Lake Road Gravel Search
 Location: _____ Made by: bg Job. No. 8002-25
 Ck'd by: [Signature] Date: 82 11 03

	Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
Initial dry Weight						
	63000	63.0				
	40000	40.0				100
	28000	28.0				87.9
	20000	20.0				74.2
	12500	12.5				61.6
	10000	10.0				54.3
	5000	5.0				41.8
	2000	2.0				29.3
	1250	1.250				22.1
	630	0.630				14.5
	400	0.400				11.6
	250	0.250				10.0
	160	0.160				9.1
	63	0.063				7.6
	PAN					

Description of Sample: Sandy Gravel Some Silt
 Method of Preparation: Dry _____ Washed X
 Remarks: _____
 Time of Sieving: 10 Min.





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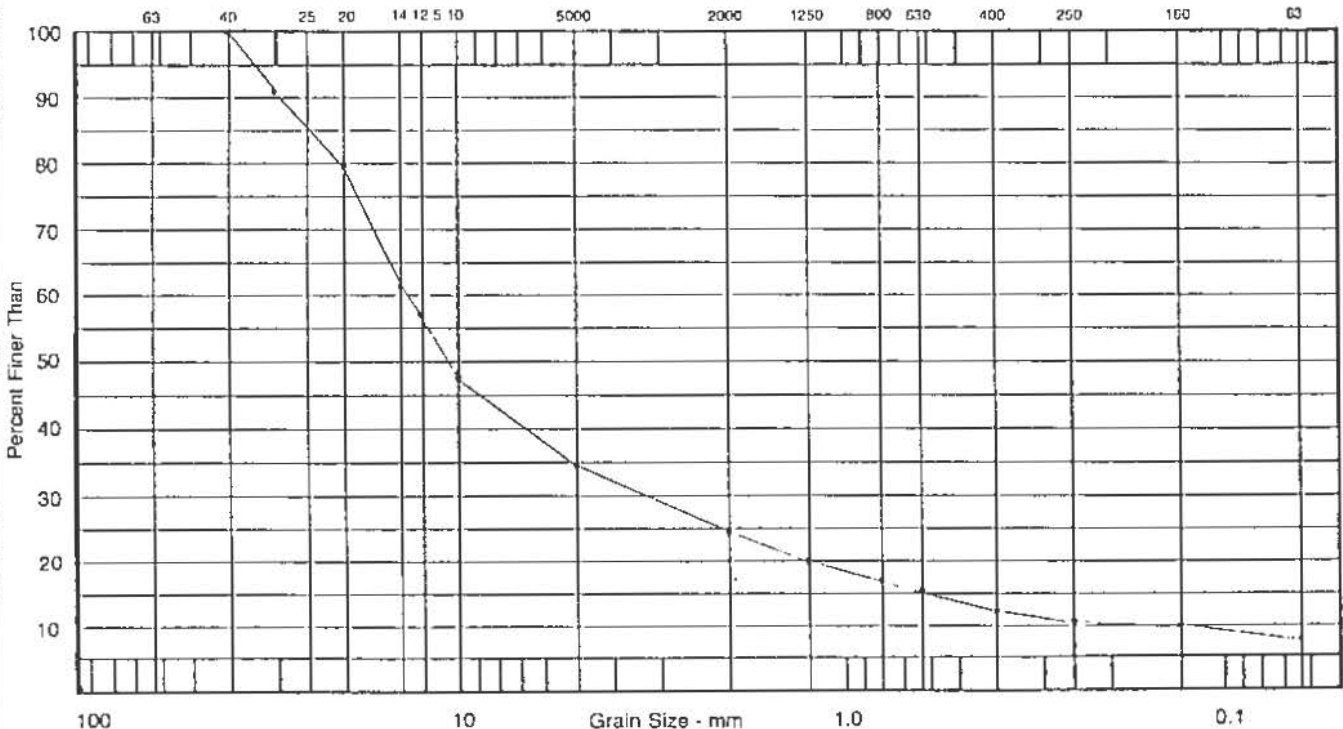
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 2 Depth: 1.5 - 2.5m Project: Job. #49 - 028-01-01
 Location: BH 20 Made by: 1k Job. No. 8006
 Ck'd by: [Signature] Date: 84 03 26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100
25000	28.0				91.3
20000	20.0				79.5
14000	14.0				61.7
12500	12.5				57.1
10000	10.0				47.9
5000	5.0				33.9
2000	2.0				24.4
1250	1.250				20.4
800	0.800				17.4
630	0.630				16.0
400	0.400				13.4
250	0.250				11.5
160	0.160				10.2
63	0.063				8.4

Description of Sample: Sandy Gravel - Trace Silt
 Method of Preparation: Dry Washed
 Remarks:
 Time of Sieving: 10 Min.





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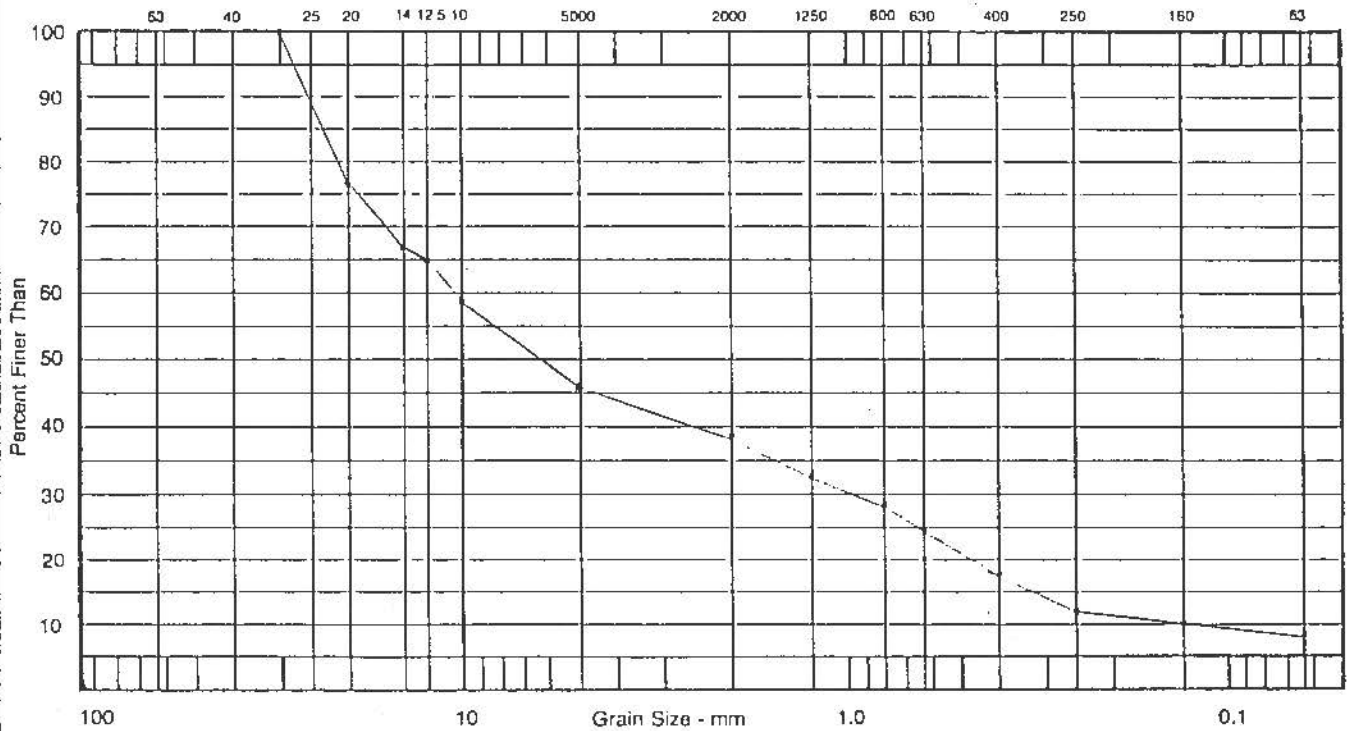
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 2 Depth: 1.0 - 2.5m Project: Job. #49-028-10-01
 Location: BH 21 Made by: lk Job. No. 8006
 CK'd by: HO Date: 84 03 26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0				
25000	28.0				100
20000	20.0				77.7
14000	14.0				67.7
12500	12.5				65.2
10000	10.0				58.6
5000	5.0				46.4
2000	2.0				38.0
1250	1.250				33.7
800	0.800				28.4
630	0.630				24.6
400	0.400				17.0
250	0.250				13.0
160	0.160				10.6
63	0.063				7.9

Description of Sample Method of Preparation Dry Washed X
 Sandy Gravel - Trace Organics
 Trace Silt
 Remarks
 Time of Sieving 10 Min.





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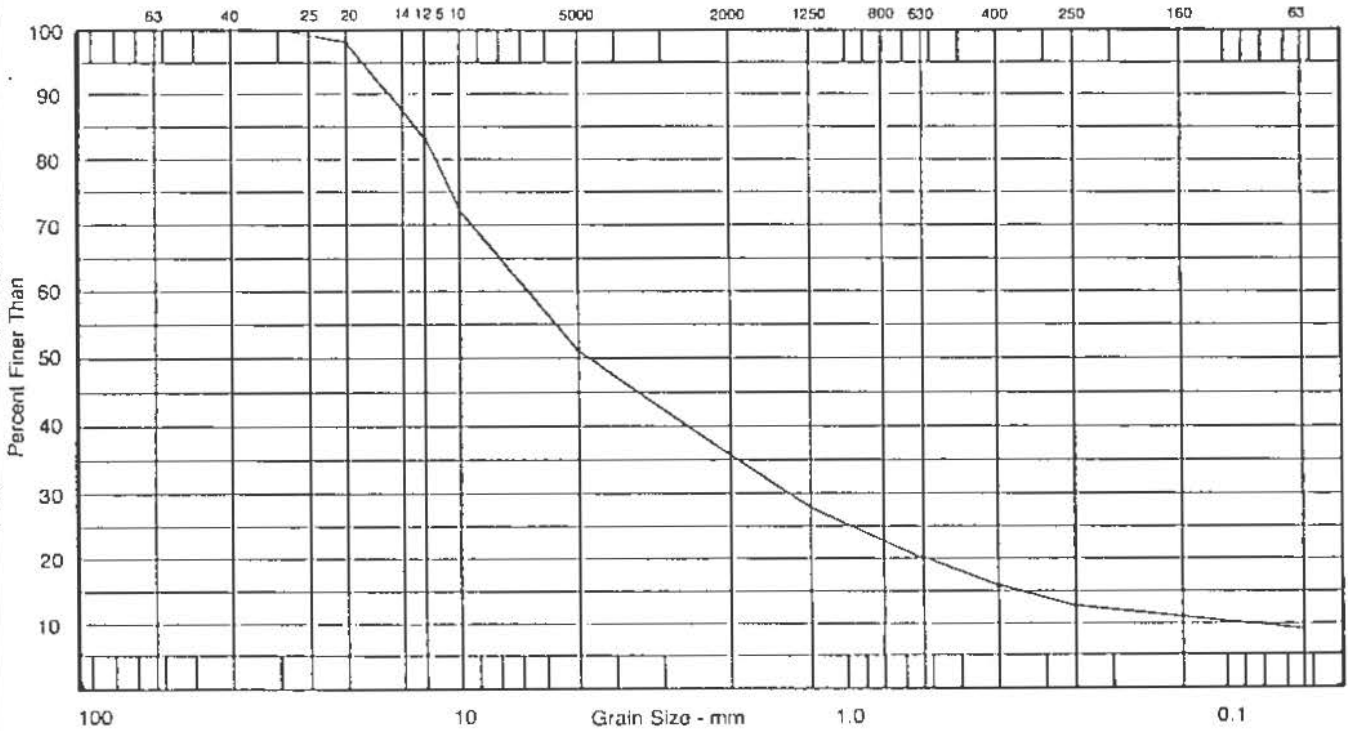
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 3 Depth: 7 - 10m Project: Job #49-028-01-01
 Location: BH 21 Made by: lk Job No. 8006
 Ck'd by: JRP Date: 84.03.26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100
20000	20.0				98.3
14000	14.0				87.4
12500	12.5				83.0
10000	10.0				72.3
5000	5.0				50.6
2000	2.0				35.3
1250	1.250				28.4
800	0.800				22.9
630	0.630				20.0
400	0.400				15.3
250	0.250				12.6
160	0.160				10.9
63	0.063				9.1

Description of Sample: Sandy Gravel - Trace Silt
 Method of Preparation: Dry Washed: X
 Remarks: _____
 Time of Sieving: 10 Min.





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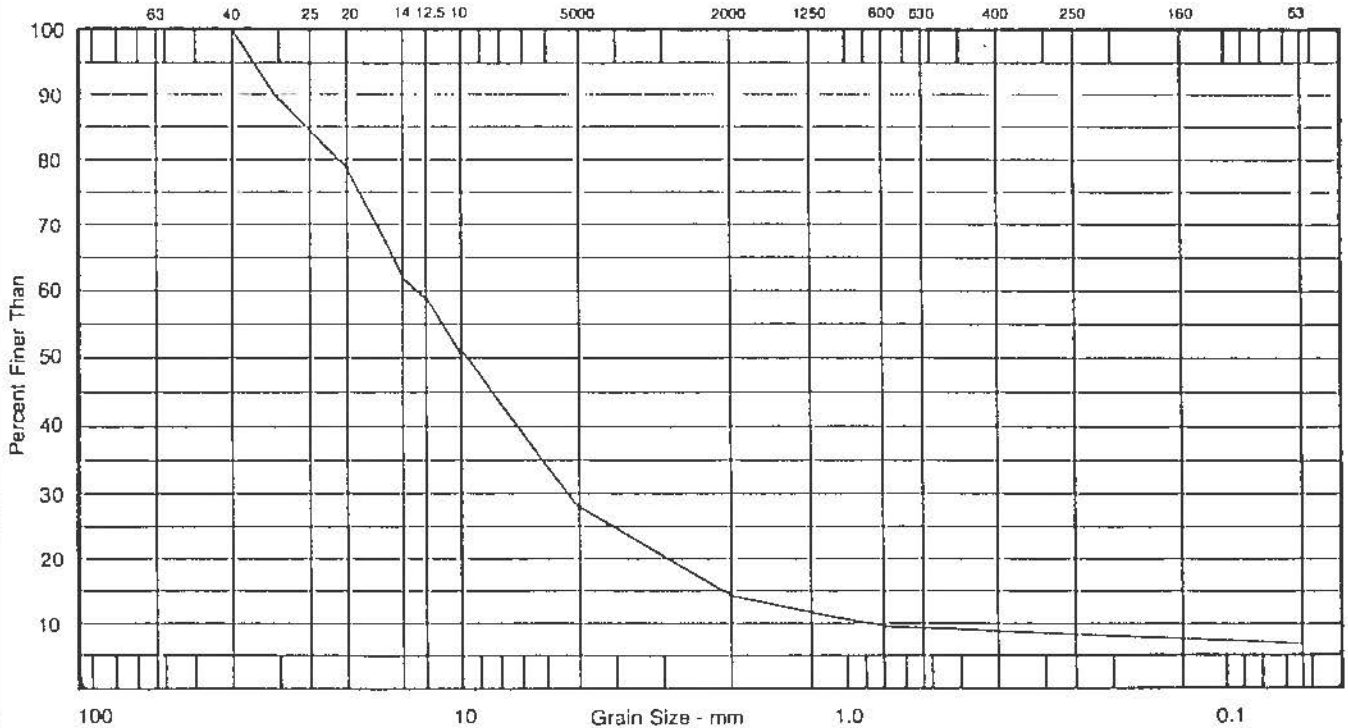
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 4 Depth: 4.0 - 5.5m Project: Job. # 49 - 028-01-01
 Location: B. H. 23 Made by: [Signature] Job. No. 8006
 Ck'd by: [Signature] Date: 84.03.26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100
25000	25.0				89.5
20000	20.0				78.9
14000	14.0				62.0
12500	12.5				58.1
10000	10.0				50.2
5000	5.0				27.9
2000	2.0				14.8
1250	1.250				11.4
800	0.800				9.9
630	0.630				9.4
400	0.400				8.6
250	0.250				8.0
160	0.160				7.5
63	0.063				6.5

Description of Sample: Sandy Gravel - Trace of Silt
 Method of Preparation: Dry Washed
 Remarks:
 Time of Sieving: 10 Min.





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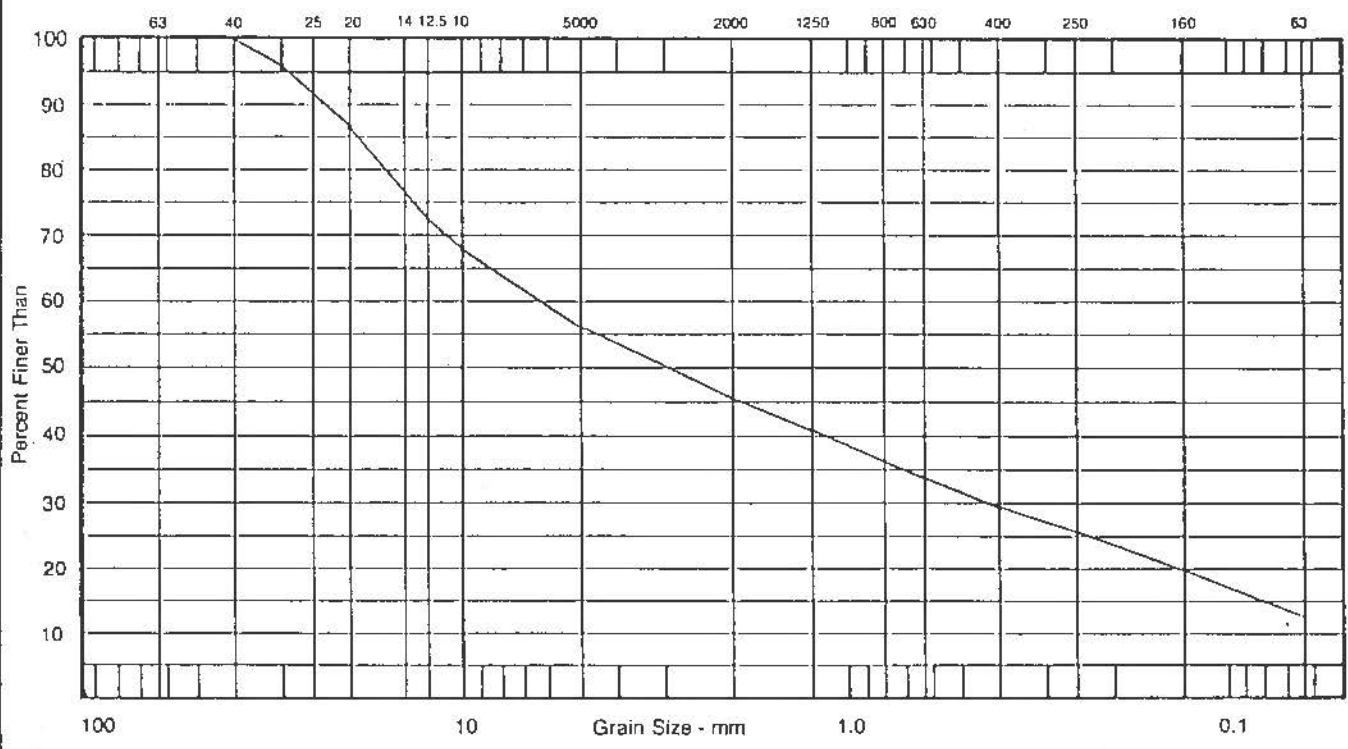
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 4 Depth: 4.0 - 5.5m Project: Job #49-028-01-01
 Location: B.H. 27 Made by: JK Job. No. 8006
 CK'd by: JDI Date: 84 03 26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100
25000	25.0				95.2
20000	20.0				86.3
14000	14.0				74.5
12500	12.5				72.4
10000	10.0				68.3
5000	5.0				55.5
2000	2.0				45.1
1250	1.250				40.3
800	0.800				36.2
630	0.630				34.0
400	0.400				29.7
250	0.250				25.1
160	0.160				19.9
63	0.063				12.7

Description of Sample
Silty Sandy Gravel
 Method of Preparation Dry Washed x
 Remarks
 Time of Sieving 10 Min.





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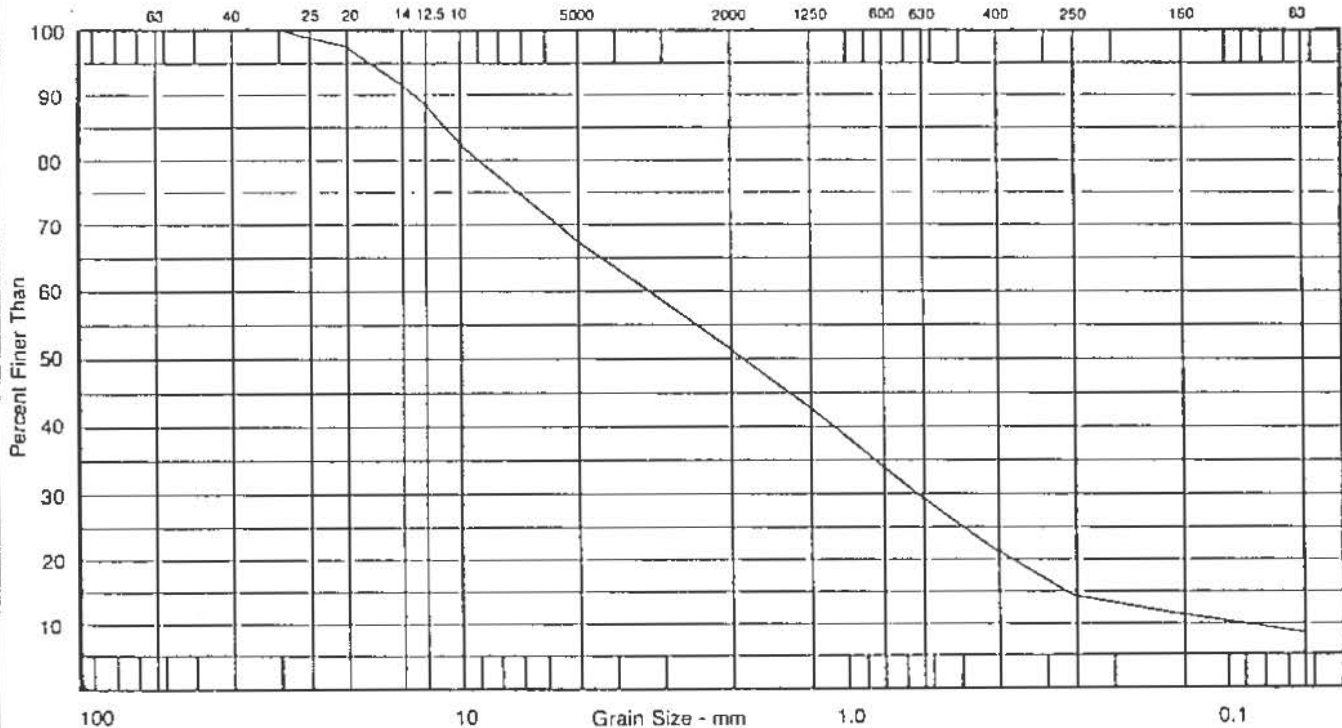
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 3 Depth: 2.5 - 4.0 m Project: Job. #49 - 028-01-01
 Location: B.H. 31 Made by: Jk Job. No. 8006
 Ck'd by: S/P Date: 84.03.26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100
20000	20.0				97.6
14000	14.0				91.3
12500	12.5				88.7
10000	10.0				82.5
5000	5.0				67.5
2000	2.0				51.7
1250	1.250				42.9
800	0.800				34.0
630	0.630				29.4
400	0.400				21.1
250	0.250				14.6
160	0.160				11.1
63	0.063				8.3

Description of Sample
 Gravelly Sand - Trace Silt
 Method of Preparation Dry Washed x
 Remarks
 Time of Sieving Min.





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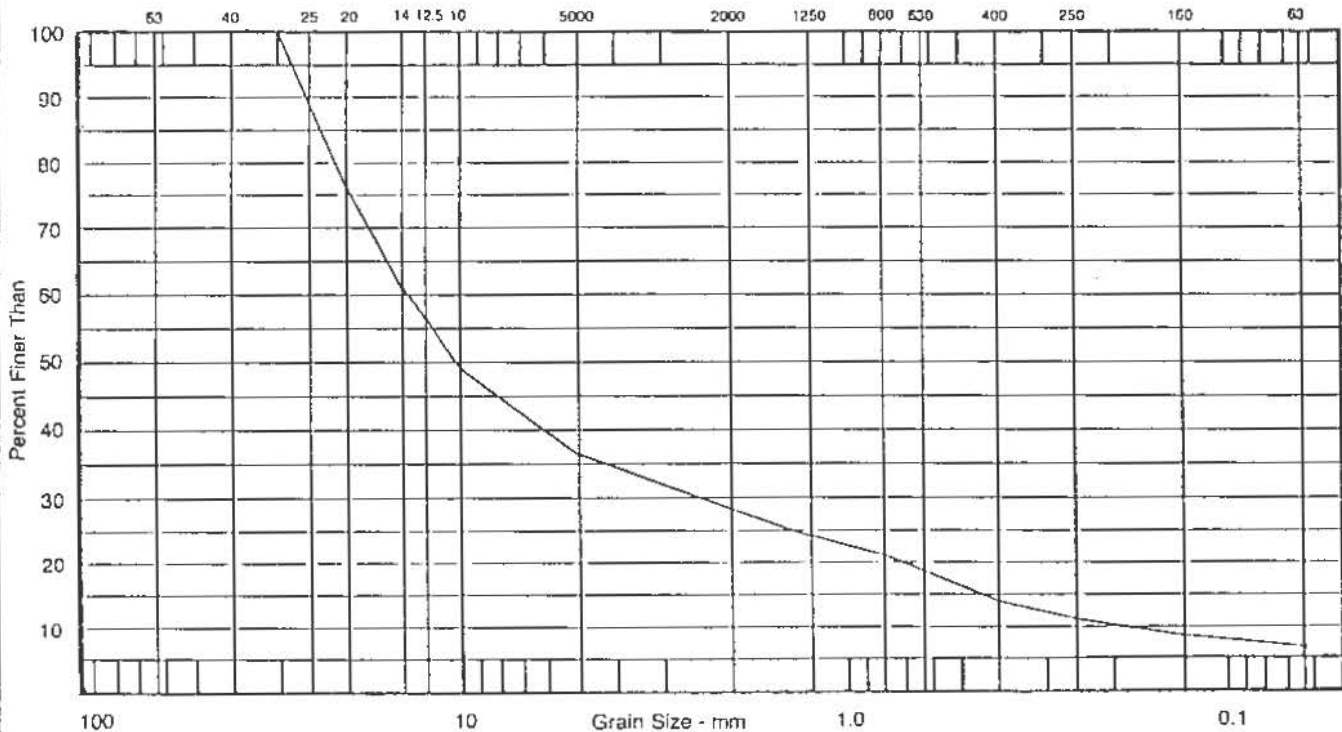
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Associates Engineering Ltd.
 Sample: 6 Depth: 7.0 - 8.5m Project: Job #49-028-01-01
 Location: BH 31 Made by: Ik Job. No. 8006
 Ck'd by: [Signature] Date: 84.03.26

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0				
25000	28.0				100
20000	20.0				75.4
14000	14.0				60.3
12500	12.5				55.8
10000	10.0				48.7
5000	5.0				36.3
2000	2.0				28.3
1250	1.250				24.4
800	0.800				20.6
630	0.630				18.3
400	0.400				14.0
250	0.250				10.7
160	0.160				8.5
63	0.063				6.6

Description of Sample: Sandy Gravel - Trace of Silt
 Method of Preparation: Dry Washed: X
 Remarks: _____
 Time of Sieving: 10 Min.





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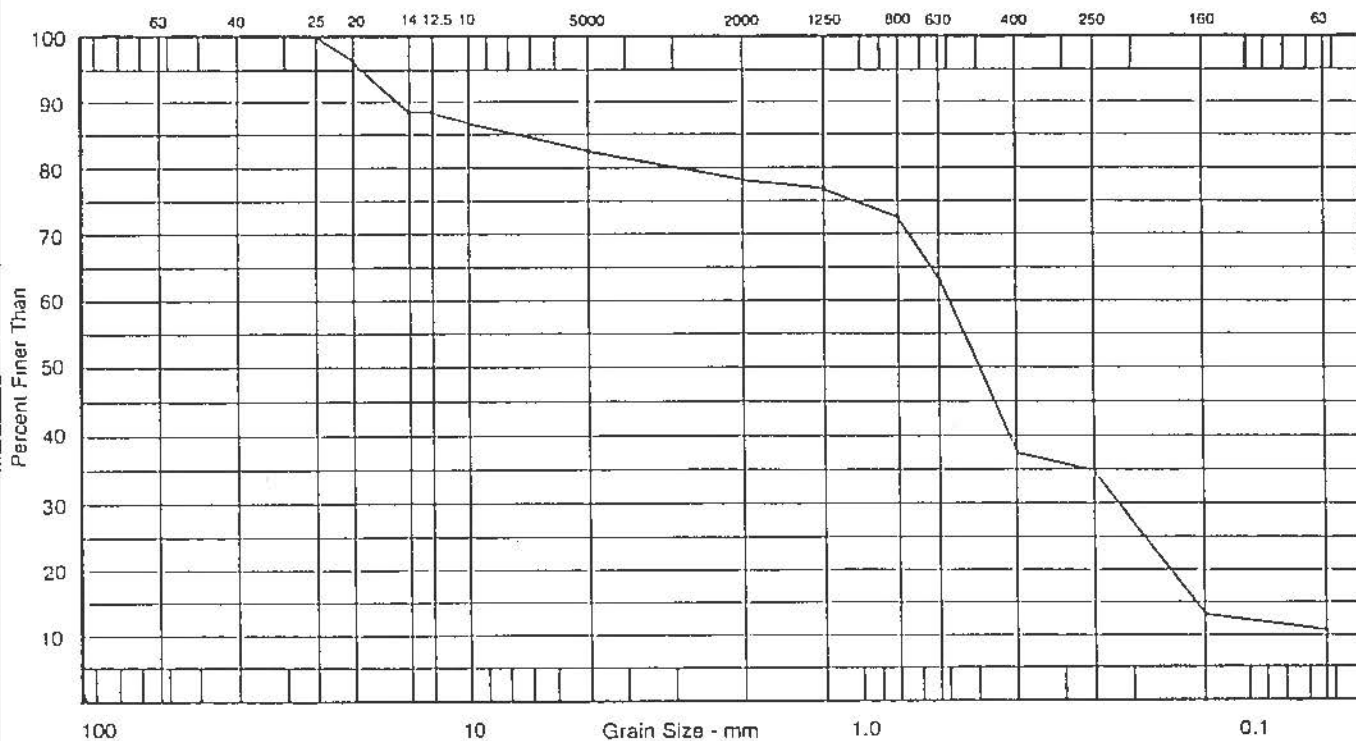
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd
 Sample: BH# 37 Depth: 0.60-0.90m Project: McLean Lake Gravel Leases
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 Ck'd by: Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				95.9
14000	14.0				88.8
12500	12.5				88.8
10000	10.0				86.1
5000	5.0				82.3
2000	2.0				78.6
1250	1.250				76.6
800	0.800				72.3
630	0.630				63.5
400	0.400				37.4
250	0.250				19.9
160	0.160				13.7
63	0.063				10.2

Description of Sample
 Gravelly Sand
 Brown
 Method of Preparation Dry Washed X
 Remarks
 Time of Sieving 1.2 Min.





J. R. Paine & Associates Ltd.

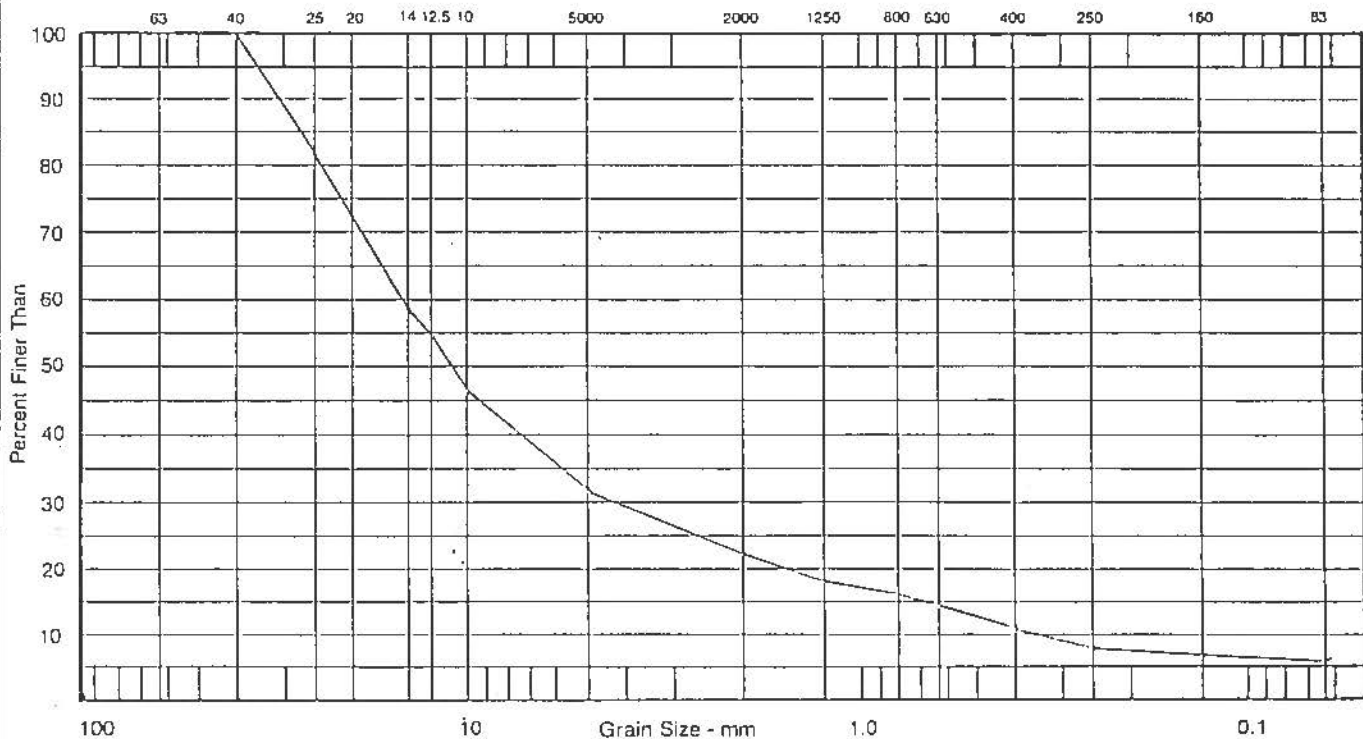
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd
 Sample: BH# 37 Depth: 6.70-7.00m Project: McLean Lake Gravel Leases
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 Ckd by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig Sample
40000	40.0				100.0
25000	25.0				81.2
20000	20.0				71.9
14000	14.0				58.4
12500	12.5				54.5
10000	10.0				45.6
5000	5.0				30.7
2000	2.0				21.8
1250	1.250				18.4
800	0.800				15.8
630	0.630				14.2
400	0.400				10.5
250	0.250				7.7
160	0.160				6.3
63	0.063				5.4

Description of Sample
Coarse Sandy Gravel
Brown
 Time of Sieving 1.2 Min.
 Method of Preparation Dry Washed X
 Remarks





J. R. Paine & Associates Ltd.

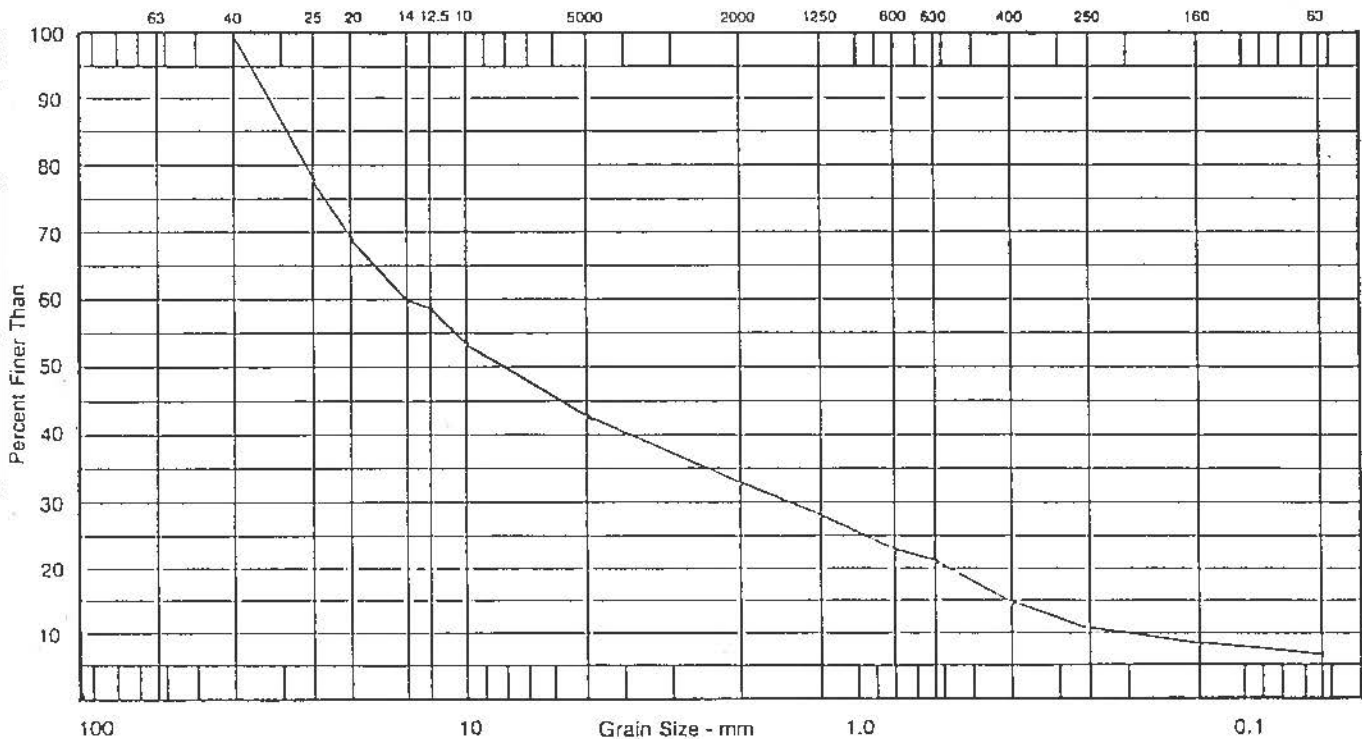
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd
 Project: McLean Lake Gravel Leases
 Sample: BH #.37 Depth: 2.45-2.75m
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 CK'd by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100.0
25000	25.0				77.7
20000	20.0				69.1
14000	14.0				59.8
12500	12.5				59.2
10000	10.0				53.6
5000	5.0				42.9
2000	2.0				32.6
1250	1.250				27.9
800	0.800				23.7
630	0.630				21.1
400	0.400				14.7
250	0.250				10.3
160	0.160				8.2
63	0.063				6.5

Description of Sample
Sandy Gravel
Brown
 Time of Sieving 12 Min.
 Method of Preparation Dry Washed X
 Remarks





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd

Sample: BH# 39 Depth 0.60-0.90m Project: McLean Lake Gravel Leases

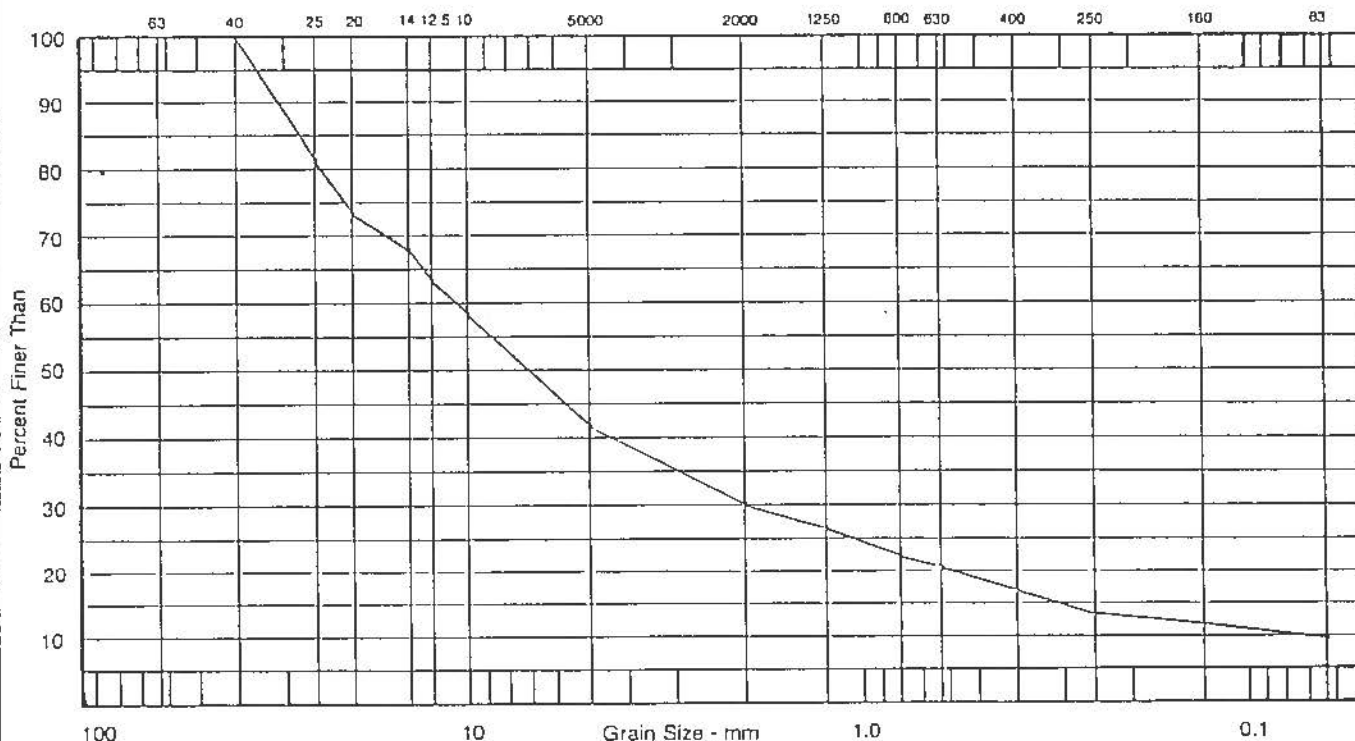
Location: Gravel Lease Made by: bk Job. No. 8006-2

Checked by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100.0
25000	25.0				81.2
20000	20.0				73.3
14000	14.0				66.7
12500	12.5				63.3
10000	10.0				58.3
5000	5.0				41.4
2000	2.0				30.0
1250	1.250				25.7
800	0.800				22.2
630	0.630				20.2
400	0.400				16.8
250	0.250				13.9
160	0.160				11.9
63	0.063				9.7

Description of Sample Method of Preparation Dry Washed

Sandy Gravel
Light Brown
Remarks
Time of Sieving 12 Min.





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

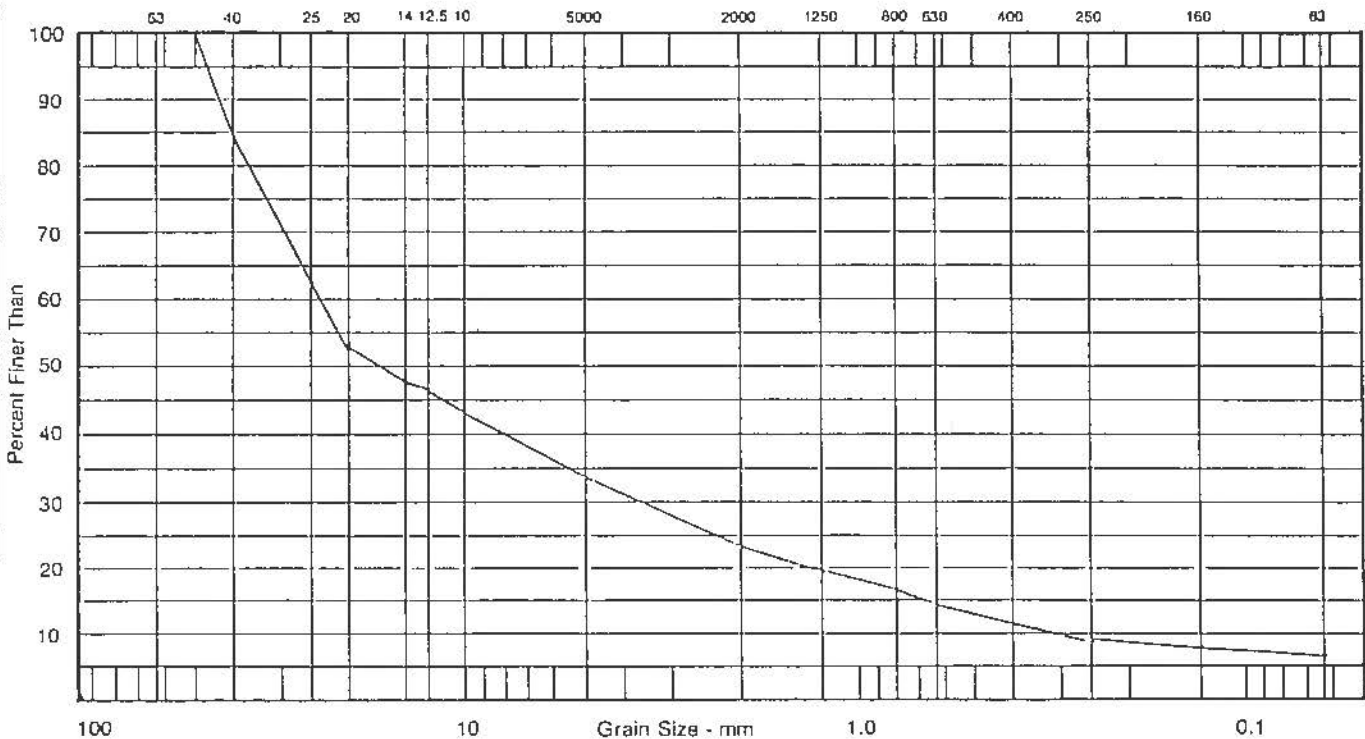
SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd.
 Sample: BH # 39 Depth: 2.15-2.45m Project: McLean Lake Gravel Leases
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 CK'd by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
	50.0				100.0
40000	40.0				84.4
25000	25.0				62.1
20000	20.0				53.8
14000	14.0				47.5
12500	12.5				46.0
10000	10.0				43.1
5000	5.0				34.0
2000	2.0				23.3
1250	1.250				19.2
800	0.800				15.9
630	0.630				14.2
400	0.400				11.1
250	0.250				8.9
160	0.160				7.5
83	0.083				6.1

Description of Sample
Coarse Sandy Gravel
Light Brown
 Time of Sieving 12 Min.

Method of Preparation Dry Washed X
 Remarks





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

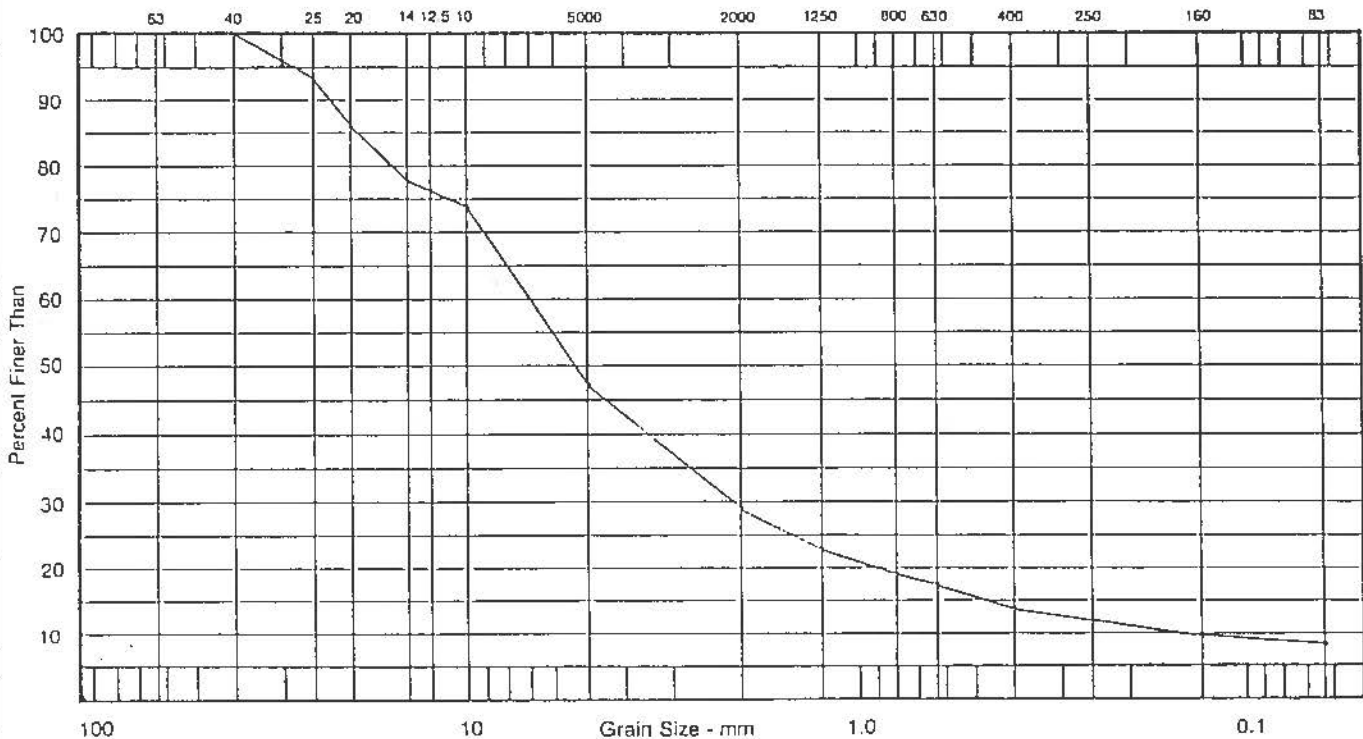
SCREEN ANALYSIS

Client: Stanley Assoc., Engineering Ltd
 Sample: BH# 39 Depth: 8.25-8.55m Project: McLean Lake Gravel Leases
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 Ck'd by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100.0
25000	25.0				93.5
20000	20.0				85.8
14000	14.0				77.8
12500	12.5				76.2
10000	10.0				68.9
5000	5.0				47.2
2000	2.0				29.3
1250	1.250				23.1
800	0.800				19.0
630	0.630				17.1
400	0.400				13.8
250	0.250				11.5
160	0.160				9.9
63	0.063				8.3

Description of Sample
Coarse Sandy Gravel
Light Brown
 Time of Sieving 12 Min.

Method of Preparation Dry Washed
 Remarks





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

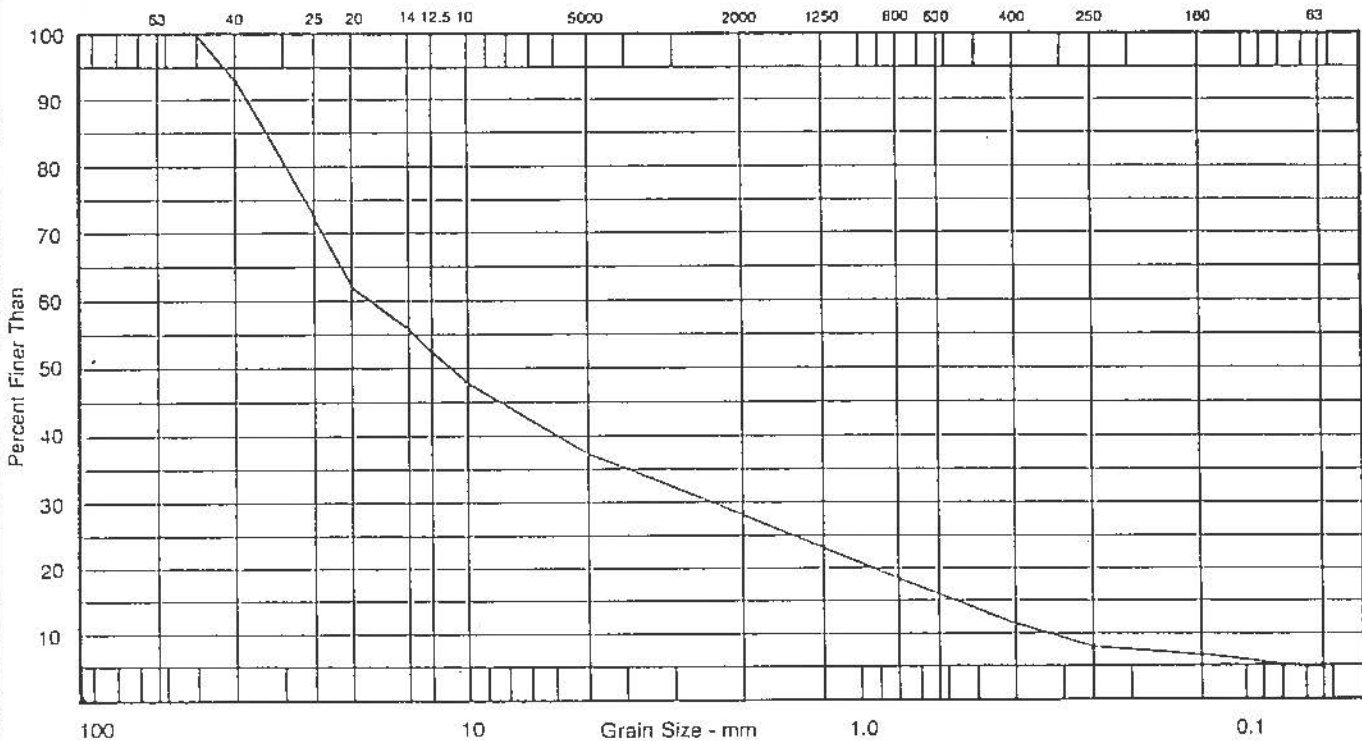
SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd.
 Sample: BH# 40 Depth: 2.45-2.75m Project: McLean Lake Gravel Leases
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 CK'd by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
	50.0				100.0
40000	40.0				93.1
25000	25.0				72.2
20000	20.0				61.9
14000	14.0				55.2
12500	12.5				52.3
10000	10.0				47.6
5000	5.0				37.2
2000	2.0				28.9
1250	1.250				23.8
800	0.800				18.6
630	0.630				15.6
400	0.400				10.8
250	0.250				7.9
160	0.160				6.3
63	0.063				4.6

Description of Sample: Coarse Sandy Gravel
Light Brown
 Method of Preparation: Dry Washed X
 Remarks: _____

 Time of Sieving: 12 Min.





J. R. Paine & Associates Ltd.

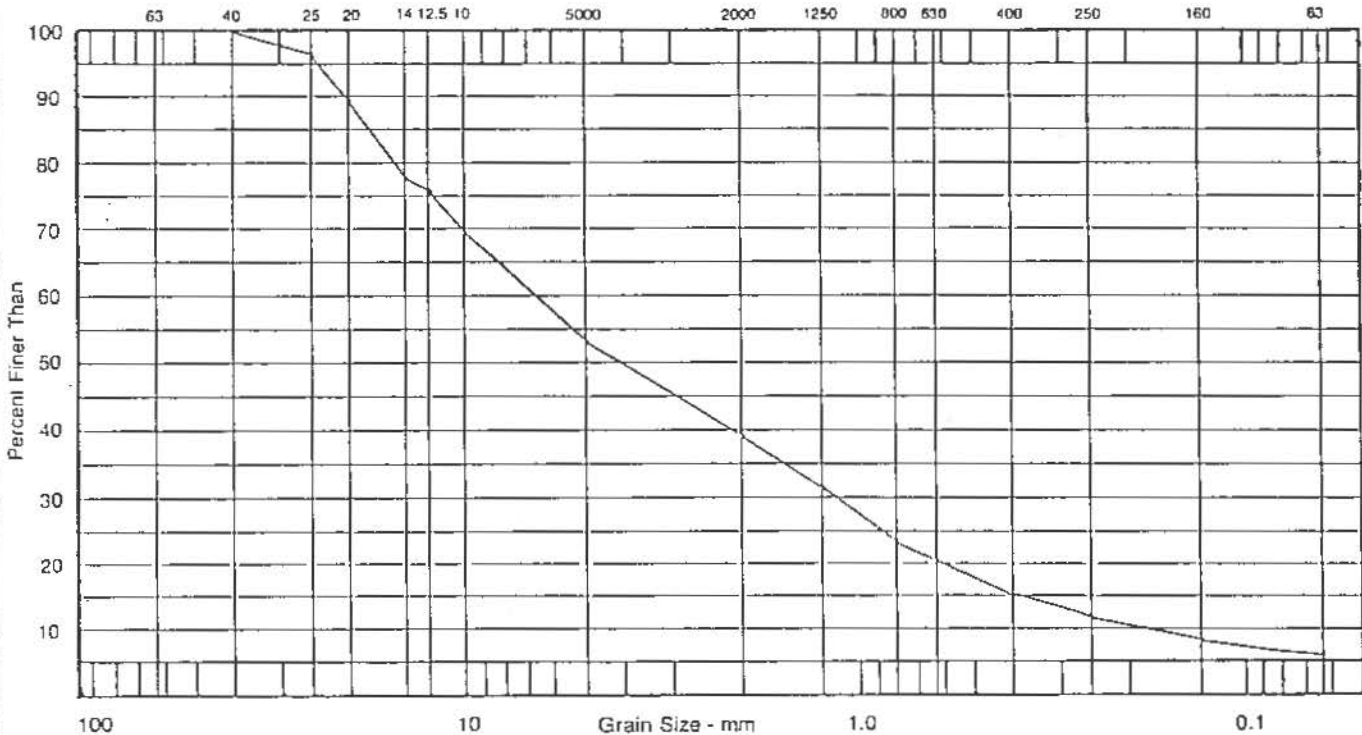
CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

Client: Stanley Assoc. Engineering Ltd.
 Project: McLean Lake Gravel Leases
 Sample: BH# 40 Depth: 3.65-3.95m
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 CK'd by: _____ Date: 85.05.22

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				100.0
25000	25.0				96.1
20000	20.0				89.3
14000	14.0				77.5
12500	12.5				75.5
10000	10.0				69.2
5000	5.0				53.7
2000	2.0				39.1
1250	1.250				30.9
800	0.800				23.7
630	0.630				20.1
400	0.400				15.0
250	0.250				11.1
160	0.160				8.5
63	0.063				5.5

Description of Sample
Coarse Gravelly Sand
Brown
 Time of Sieving 12 Min.
 Method of Preparation Dry Washed X
 Remarks





J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

SCREEN ANALYSIS

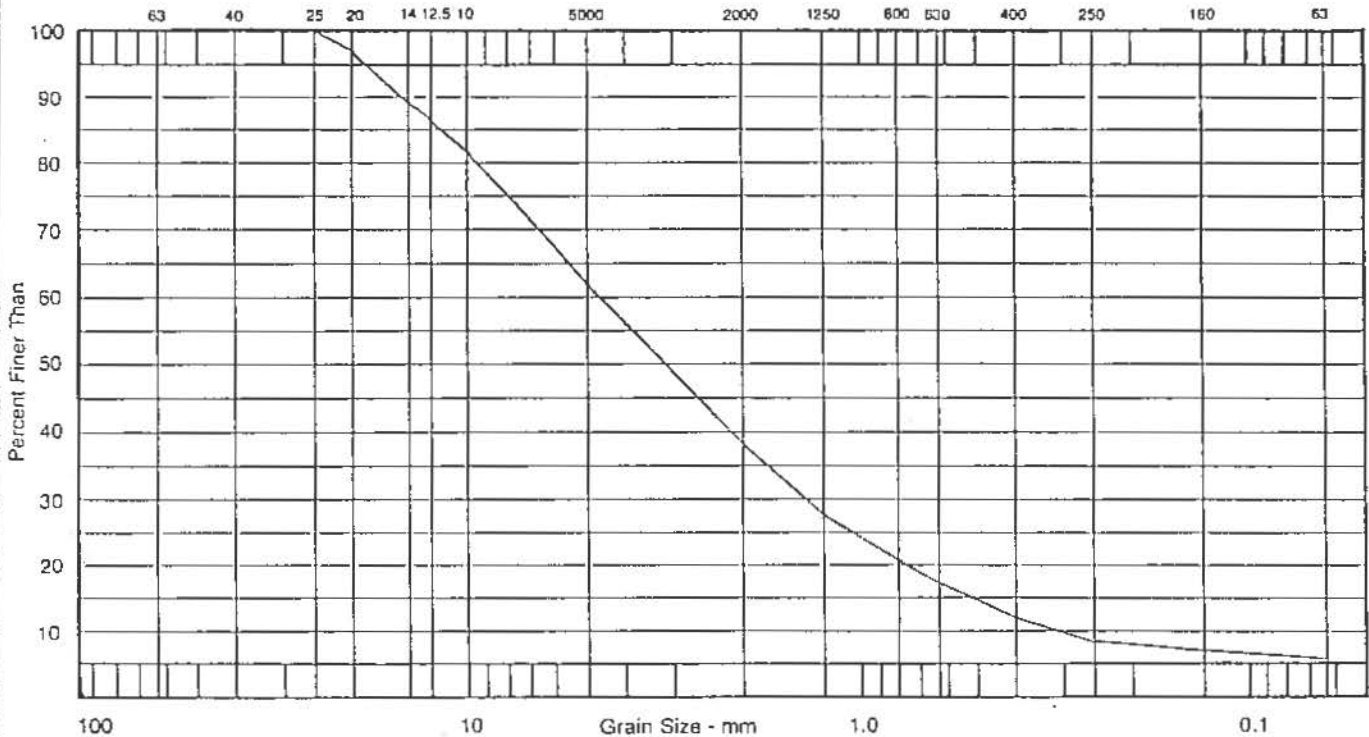
Client: Stanley Assoc. Engineering Ltd
 Sample: BU #.40 Depth: 12.20-12.80m Project: McLean Lake Gravel Leases
 Location: Gravel Lease Made by: bk Job. No. 8006-2
 Ck'd by: _____ Date: 85.05.23

Sieve No.	Size of Opening MM	Weight Retained gms	Total Wt. Finer Than gms	Percent Finer Than	% Finer Than Basis Orig. Sample
40000	40.0				
25000	25.0				100.0
20000	20.0				96.7
14000	14.0				89.6
12500	12.5				86.4
10000	10.0				81.1
5000	5.0				61.9
2000	2.0				38.4
1250	1.250				27.5
800	0.800				20.1
630	0.630				16.6
400	0.400				11.5
250	0.250				8.5
160	0.160				6.8
63	0.063				5.1

Description of Sample

 Coarse Gravelly Sand
 Brown

 Time of Sieving 12 Min.
 Method of Preparation Dry Washed
 Remarks



GR-01
004



Community and Transportation
Services
Box 2703, Whitehorse, Yukon Y1A 2C6
(403) 667-5811 Telex 036-8-260

Our File:
Your File:

28 November 1988

E. Gibson, P. Eng.
Technical Services Manager
Transportation Engineering

Granular Resources - Whitehorse Area

I have reviewed the information provided by Doug Andrews with regard to this matter. In order to formulate a plan of action, I think it would be advisable to estimate our projected gravel requirements in the Whitehorse area over say the next 50 years. In carrying out this estimate, the following should be considered:

- Pavement overlays on the Alaska Highway at 15 year intervals.
- Construction of Auxiliary lanes and frontage roads.
- Four laning of the Alaska Highway from the Carcross cutoff to the North Klondike cutoff.
- Reconstruction of the South Access Road with pavement overlays at 15 year intervals.
- Widening and pavement overlay on the Klondike Highway to the Hot Springs Road intersection.
- Maintenance requirements.
- Other identifiable requirements.

Also identify which of the four pits (1490, 1461, 196, McLean Lake) is best located to meet each of the above requirements.

On receipt of this information, please provide me with a proposal to meet these projected needs together with a work plan and budget requirements for survey, geotechnical evaluations, and preparation of pit development plans. I will then make a request for the funding required.

I would like to have your proposal by mid January 1989.

R. Walsh, P. Eng.
Director
Transportation Engineering

/ps

cc: Greg Belisle

Status of McLean Lake Pit Area

At this point, McLean Lake has had quite an indepth geotechnical study done by J.R. Paine & Associates Ltd. Tests show that the developed area at this time has little to offer; also the majority of developed sites have been leased by private firms.

Additional testing has been done south of the developed area and it would appear that this area could provide us with adequate materials required in the future. This area has yet to be developed but is on the agenda for the near future. We need only to submit our interest in this location to be included in the development of this area. Geotechnical and plan information has been enclosed for review.

Existing gravel sources, km 1490 & km 1461 Alaska Highway and km 196 Klondike Highway

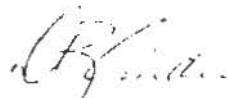
Development Plan

Detailed site surveys will be required at both km 1490 Alaska Highway and km 196 Klondike Highway. Cost estimated for this work would be 5,000.00 per site. This would include surveying and site drawings completed. Both sites should be investigated via backhoe to give complete geotechnical evaluations, at a cost of \$5,000.00 per site this would include backhoe work and geotechnical analysis. A total cost of \$20,000.00 should cover the preparation of development plans for these two gravel sources.

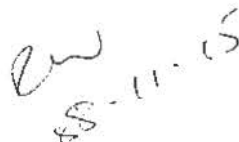
The site at km 1461 Alaska Highway has been tested by Public Works Canada and a reserve has been placed on this site. It would be advisable to have some geotechnical testing done some time in the near future to re-affirm the accuracy of past testing. Also a survey of reserve lines should be conducted along with appropriate flagging to assert our reserve. Costs would run around \$3,000.00.

A cost of \$25,000.00 should cover all requirements of these three sites to provide detailed development plans.

Page 5 of the current Lands Act outlines requirements for an operation and rehabilitation plan, see attached.



Doug Andrews
Sr. Soils Technician
Transportation Engineering



/ps

Attachment



J. R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS
EDMONTON - GRANDE PRAIRIE - WHITEHORSE

ADDRESS ALL CORRESPONDENCE TO:

14 Burns Road
Whitehorse, YT
Y1A 4Y9

GOVERNMENT OF YUKON
Community & Transportation Services
Lands Branch
Box 2703
Whitehorse, Yukon Territory
Y1A 2C6

Our File No: 8002-301

1988.03.31

Attention: Mr. Bruce Gilroy

Dear Sir:

Re: Gravel Quarry Investigation (1988)
McLean Lake, Whitehorse, Yukon Territory

Please find enclosed our report with respect to the above noted investigation.

In brief, this report presents our findings with regards to gravel reserves quantity and quality, within portions of the McLean Lake Gravel Quarry area in Whitehorse, Yukon Territory.

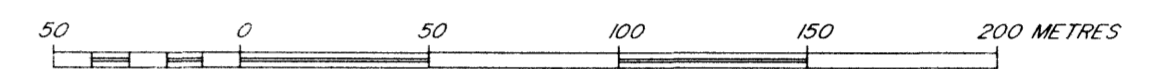
Thank you for the privilege of providing this service to your organization. We will be pleased to meet with you to review the contents of this report at your convenience.

Yours truly,

Wilbur C. Kofoed, P. Eng.
J.R. Paine & Associates Ltd.

MCLEAN LAKE QUARRY LEASES

SCALE 1:2000



LEGEND:

Bearings are astronomic derived from Plan 69790 CLSR, 76681 LTO
Distances are in metres and decimals thereof

Legal Survey Posts shown thus

12 mm # iron bars shown thus (marked with 0.5m high red posts)

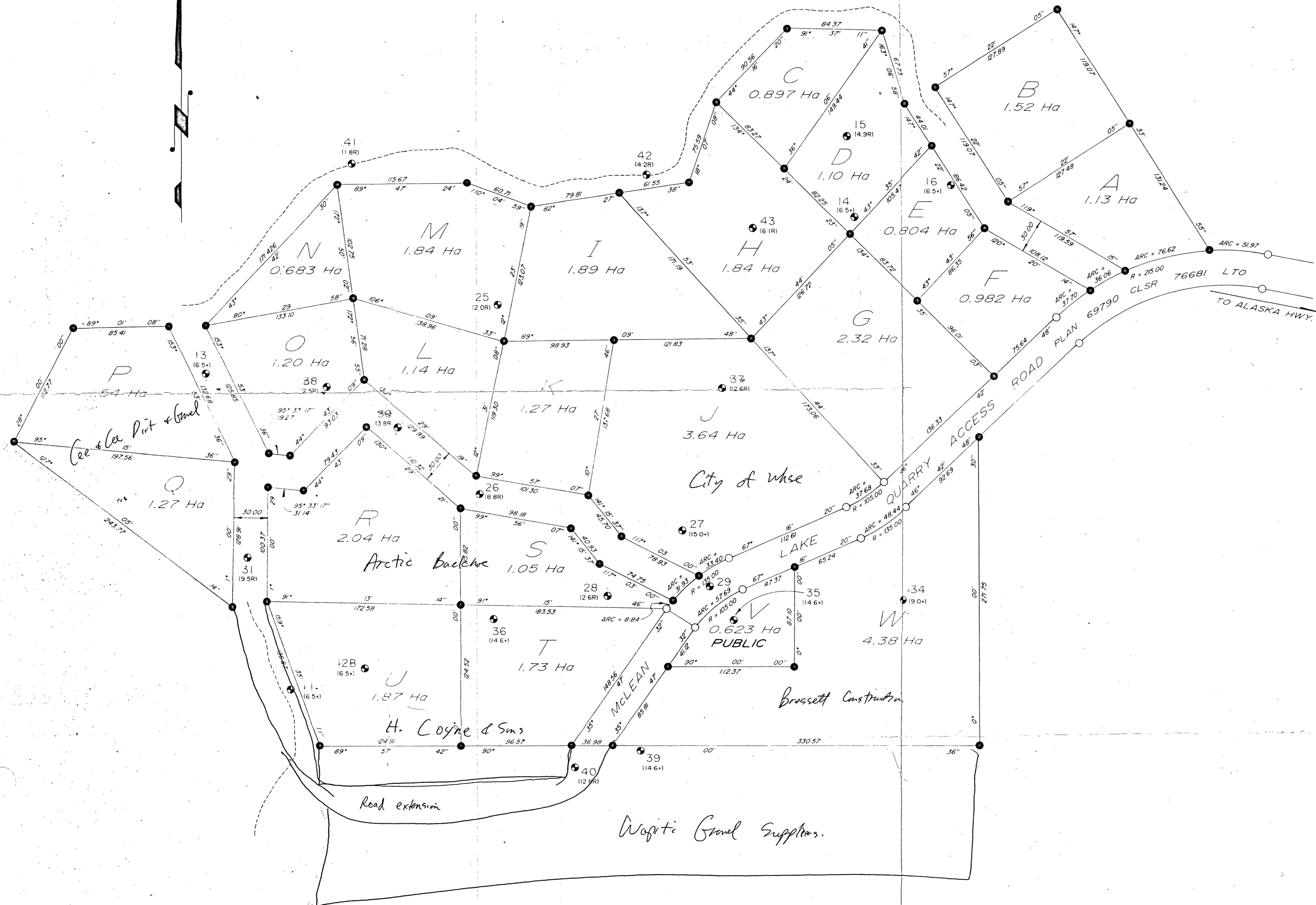
Boreholes shown thus

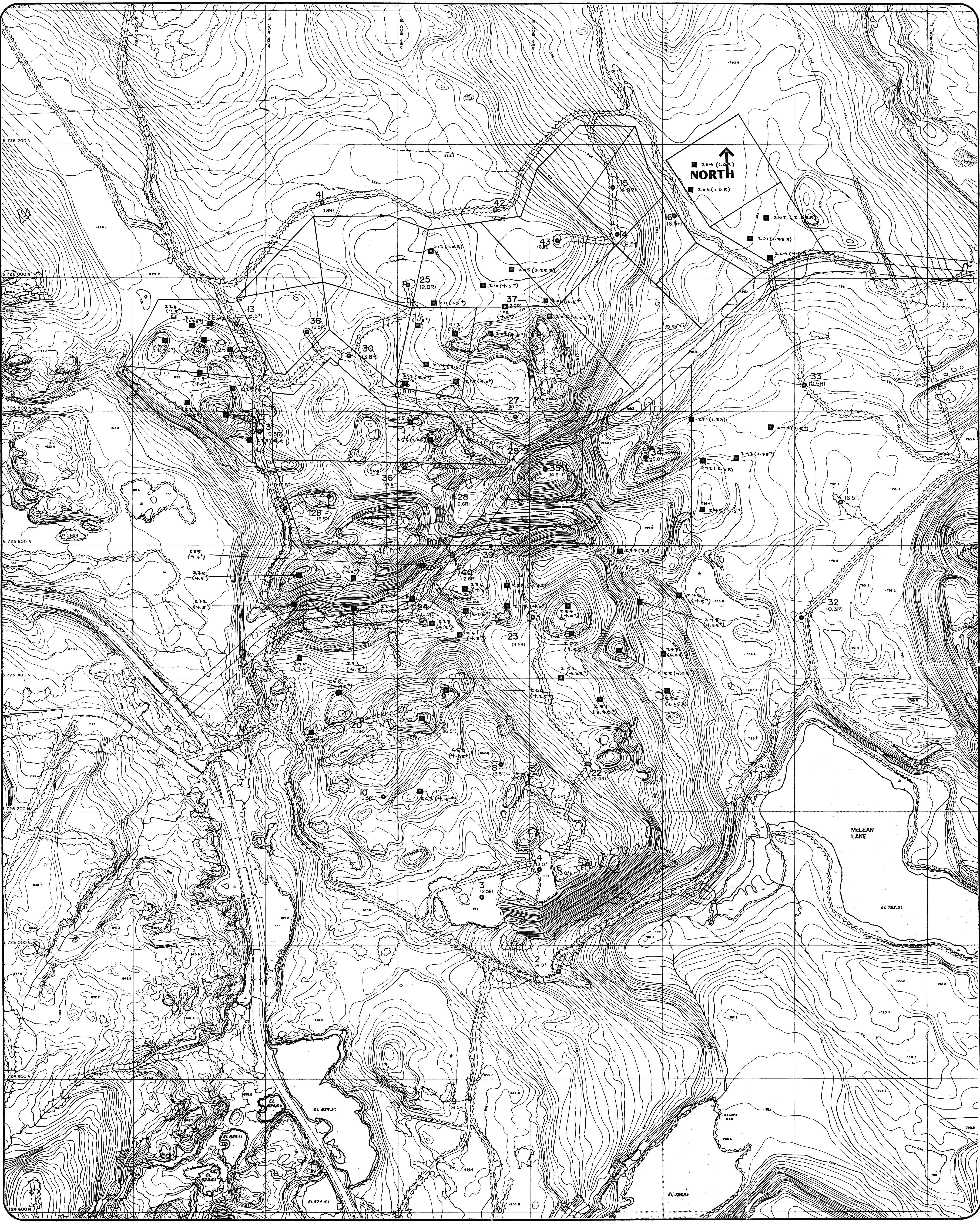
Trails shown thus

CERTIFIED CORRECT

July 22, 1986
Canada Lands Surveyor Date

NOTE This is not a legal survey as per the Canada Lands Surveys Act
Borehole information obtained from Stanley Associates Engineering Ltd.





LEGEND

- BOREHOLE LOCATION
- 8 BOREHOLE NUMBER
- (6.5+) DRILLED TO 6.5m NO REFUSAL
- (3.1R) DRILLED TO 3.1m HIT ROCK
- ACCESS ROAD R.O.W. (ROAD TO BE CONSTRUCTED 1985)
- POSSIBLE FUTURE EXTENSION OF ROADWAY
- TEST PIT LOCATION (1988)

J. R. Paine & Associates Ltd.
 McLEAN LAKE GRAVEL QUARRY INVESTIGATION
 WHITEHORSE, YUKON
 Drawn By WCK Date 88/03/31
 Scale Plate No. 1

GOVERNMENT OF YUKON
 COMMUNITY AND TRANSPORTATION SERVICES

McLEAN LAKE GRAVEL QUARRY
 BOREHOLE LOCATION PLAN

