

GR-05-021

LIBRARY

DEMPSTER HIGHWAY
MILE 254.5 TO 268.5
TEST HOLE LABORATORY RESULTS
1972 GEOTECH SURVEY

CAN-1972-34

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
75"	100						
4	99.1						
10	88.4						
20	71.5						
40	63.3						
60	56.1						
80	53.1						

TEST NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		15.7	35.1	19.4	17.2	
	CL - INORGANIC MEDIUM PLASTICITY	SILTY SANDY CLAY				
	CRUSH COUNT	%				

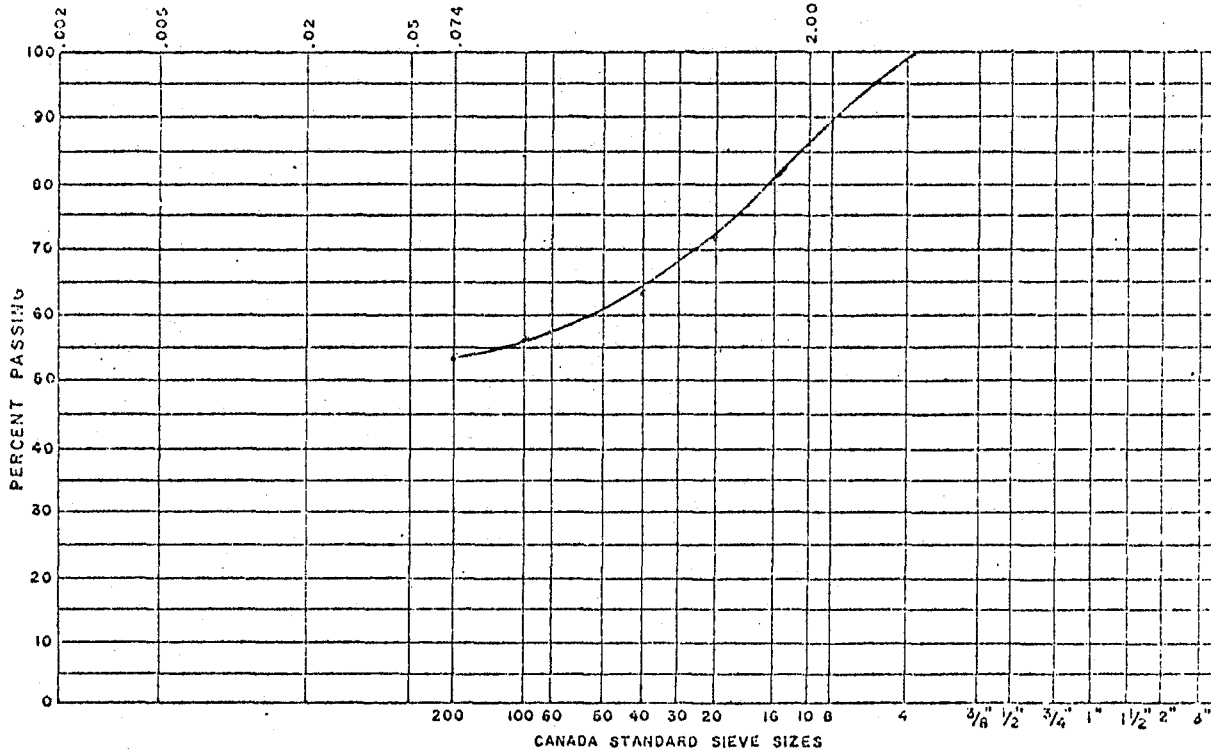
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GNEISS	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY
 LOCATION STA. 1912 + 90 E
 HOLE NO. NW 48
 DEPTH 5' FIELD NO. 54
 SAMPLE TYPE BAG

LAB. NO. 7960

LIBRARY

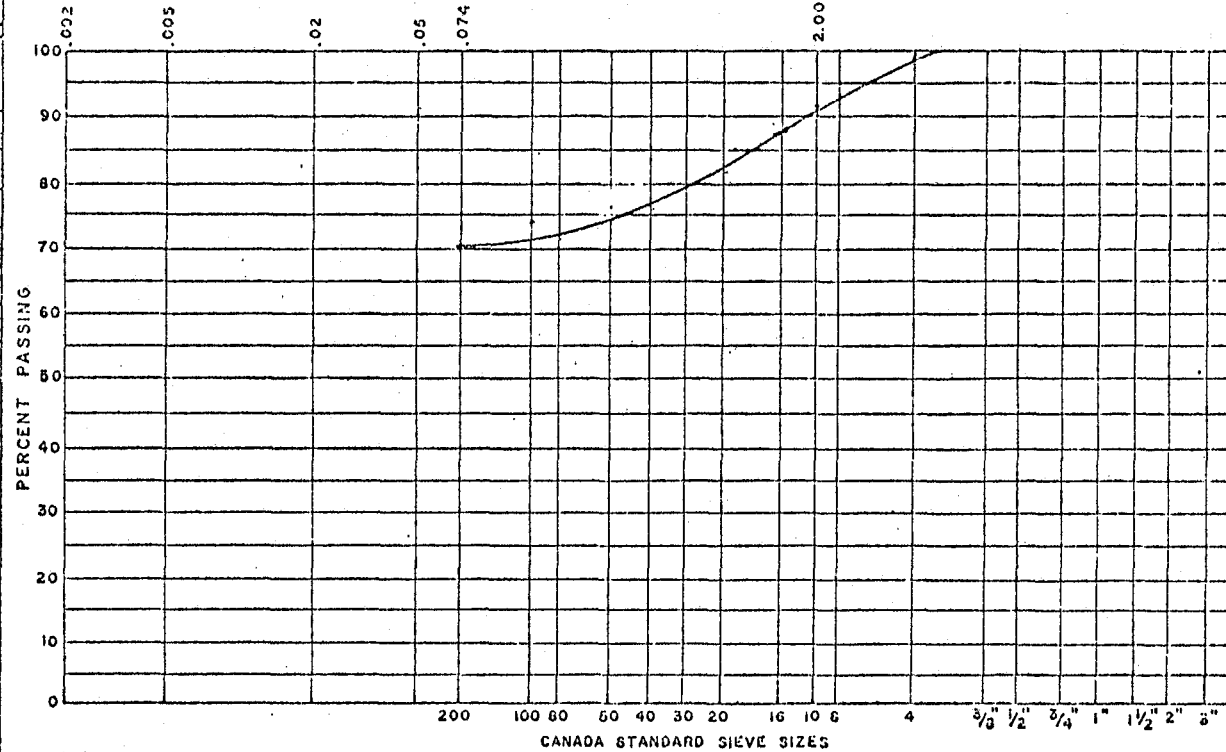
LABORATORY'S REMARKS
 SANDY CLAY (MP)

DATE SAMPLED 30-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

GRAIN SIZE IN MILLIMETERS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100		
#7	98.9		
#10	92.4		
#20	82.2		
#40	76.9		
#60	73.9		
#200	70.4		



CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
CL - INORGANIC SILTY SANDY CLAY MEDIUM PLASTICITY	40.9	28.4	12.5	16.2	
CRUSH COUNT	%				

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

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
IMESTONE	
ITIC	
ANDSTONE	
HALE	
CHIST	
UARTZITE	
OTHERS	

PROJECT DEMETER HWY

LOCATION ST. 1929+00 ~~X~~ 500' R. of A.

HOLE NO. NW 47

DEPTH 3 1/2' FIELD NO. 53

SAMPLE TYPE BAG

LAB. NO.
4956

PARTICLE SHAPE ANALYSIS

OUND	
UB-ROUND	
NGULAR	
UB-ANGULAR	
LATS	
EEPLES	

LABORATORY'S REMARKS	DATE SAMPLED
	<u>30-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>2-10-72</u>
	TESTED BY

BORE HOLE NO.

NW-47

BORE HOLE POSITION

Stn 1929, 500 ft of E

approx

DPW TECHNICIAN

DATE AND TIME

START
TIME

June 30/72

FINISHED:

CONTRACTOR

DRILLER

METHOD OF BORING

SURFACE ELEVATION
TAPING SIZEGAUGE
READING

SOIL: /

ROCK:

TAPING HAMMER WT. LBS.

DROP..... INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN. TAP	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM BOL	TYPE			
brkn sandy shale, organic	0								scrubs, small plants,
	1								
	2								
	3			53	III	A			
	4								
	5								
	6								
	7								
	8								1 bag Amex
	9								- hole to 3 1/2'
	10								- frozen silt with shale: fragments to 1" max - med. brown - little moisture - sample 53 at 3 1/2'
									- dry when warmed for an hour

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3"	100	#10	31.4
2"	53.4	20	30.0
1 1/2"	36.0	40	29.9
1"	33.2	100	27.5
3/4"	33.2	200	26.6
1/2"	33.7		
3/8"	33.7		
#4	32.0		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	27.9	19.1	8.8	9.3	
GM-GC	CLAYEY SILTY GRAVEL				
	MEDIUM PLASTICITY POORLY GRADED				

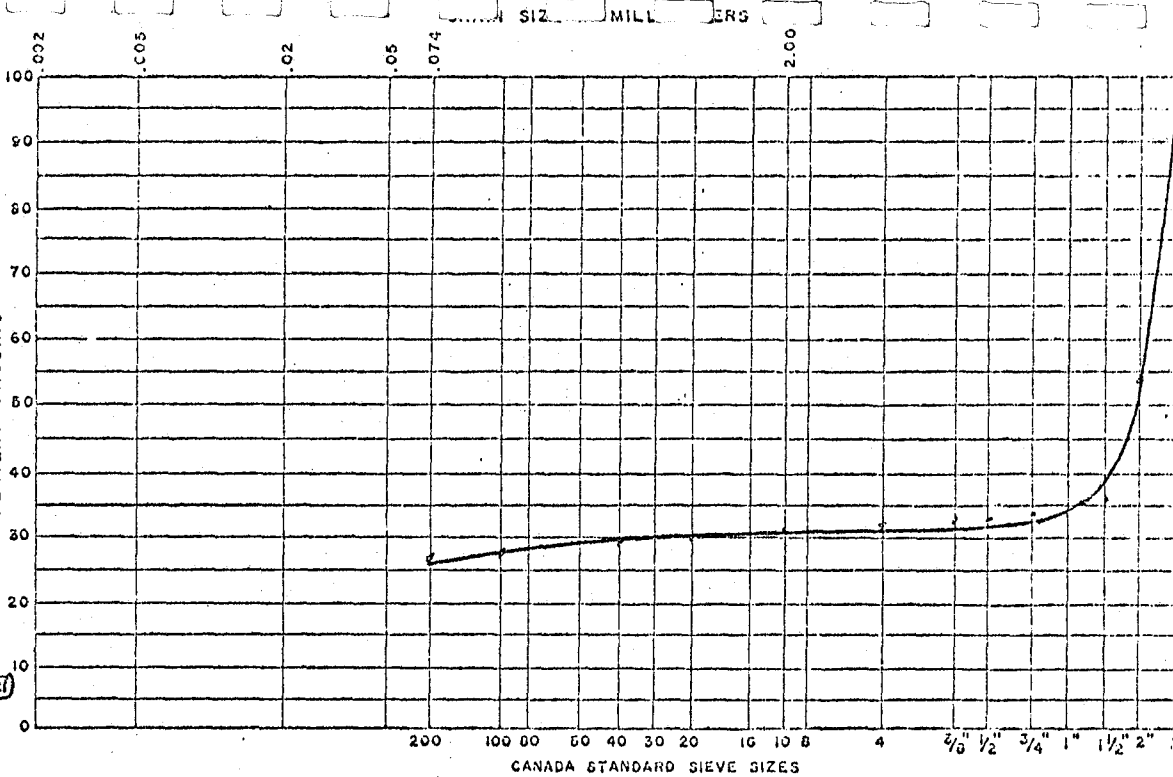
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
CLAY	
SANDSTONE SILICIFIED, HARD	100
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	100
SUB-ANGULAR	
FLATS	
NEEDLES	



PROJECT DEMETER HWY.

LOCATION STA. 1925+15 E 200'L.

HOLE NO. NW-46

DEPTH 3' FIELD NO. 52

SAMPLE TYPE

LAB. NO.
4959

LABORATORY'S REMARKS
CLAYEY GRAVELS (GAP)

DATE SAMPLED 30-6-77

DATE RECEIVED 5-7-77

DATE RECORDED 12-10-77

TESTED BY

BORE HOLE NO.

NW-46

BORE HOLE POSITION

Sta 1925+15, 200'

left of E

DPW TECHNICIAN

DATE AND TIME

1972

CONTRACTOR

DRILLER

STARTED:

June 30/72

FINISHED:

METHOD OF BORING

GROUND SURFACE ELEVATION
GAUGE READING

SOIL:

ROCK:

TESTING HAMMER WT. LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE			
broken shale, organic	0								habrador tree, small plants, broken shale to 4" max.
	1								
	2			52	1111	B			
	3								
	4								
	5								
	6								
	7								
	8								1 bag Anax
	9								- halve to 3 1/2'
	10								- frozen to surface
									- silty clay with small fragments to 6-8"
									- sample 52 at 3'

Government of Yukon
 Community & Transportation Services
 Transportation Engineering, S-3
 P.O. Box 4703 (201 rd 66 Road)
 Whitehorse, Yukon Y1A 2C6

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	100	100	34.4
3/4"	91.7	100	30.5
1/2"	74.8		
3/8"	74.6		
#4	66.3		
10	55.4		
20	46.7		
40	41.1		

NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		24.0	18.9	5.7	10.9	
	GM-GC	CLAYEY	SANDY	GRAVEL		
		LOW	PLASTICITY			

CRUSH COUNT %

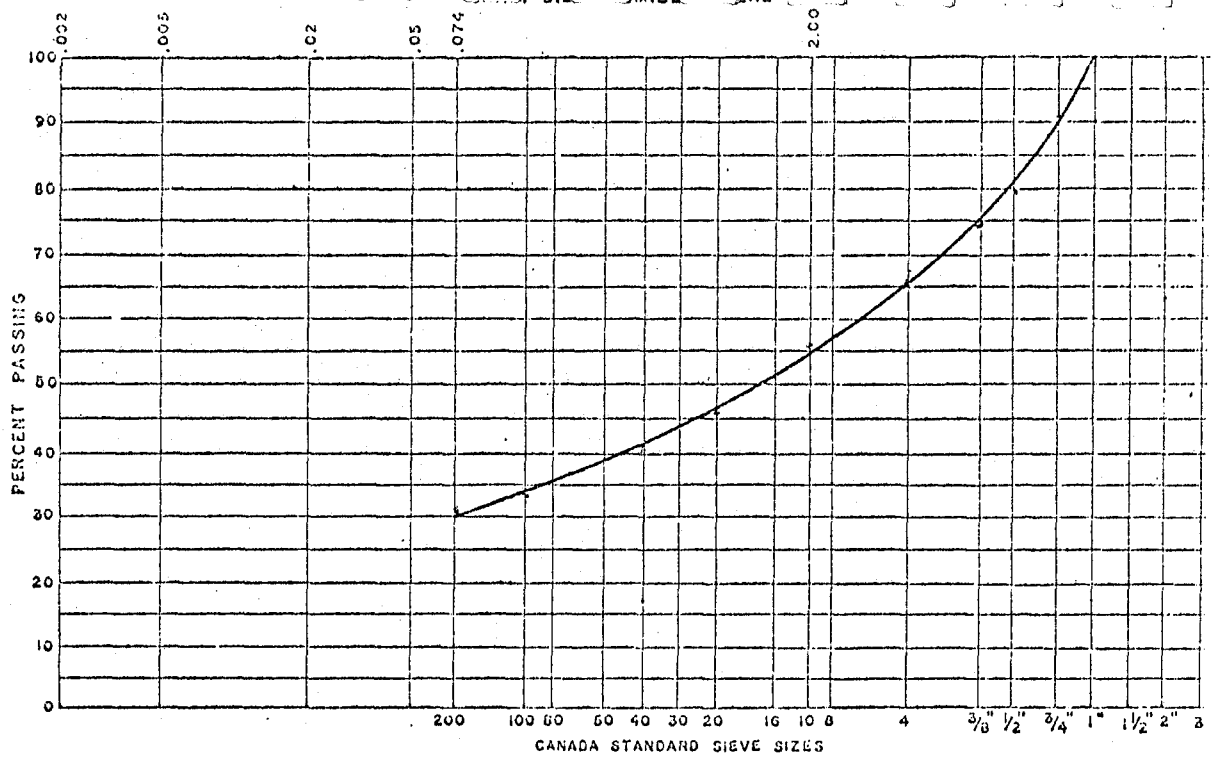
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
METAC. TIC.	
SANDSTONE	
SHALE	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

SIZ MILL METERS



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

PROJECT... DEMETER HWY.
 LOCATION... STA. 1926+00 E
 HOLE NO... NU-45
 DEPTH... 3 1/2' FIELD NO. 51
 SAMPLE TYPE... BAG

LAB. NO.
4955

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAYEY SANDS (LP)</u>	<u>30-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>11-10-72</u>
	TESTED BY <u>JR</u>

BORE HOLE NO. **NW-45** BORE HOLE POSITION **Stn 1926+00 ♀**

DPW TECHNICIAN _____ DATE AND TIME _____

CONTRACTOR _____ DRILLER _____ STARTED: **June 30/72** FINISHED: _____

METHOD OF BORING _____ SURFACE ELEVATION _____ GAUGE READING _____

SOIL: _____ ROCK: _____ DRIVING HAMMER WT. _____ LBS. DROP _____ INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER MIN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYMBOL	TYPE			
broken shale, small plants	0								
gravel with some finer material	1								
"	2							gravel to 3/4", dry	
"	3			51	11111	A			
"	4								
sandy gravelly silt	5								
"	6							dry, med. brown	
"	7								
"	8								
"	9							pull out - hard going	
"	10							1 bag Amex	
								- hole to 4'	
								- frozen but little moisture	
								- silt with shale fragments from sand size to 5"	
								- sample moist 3 1/2'	
								- dry when worked for an hour	

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
	100			056	65.7	0040	42.2
	96.4			040	64.4		
	92.7			028	63.3		
10	87.7			020	61.6		
20	83.4			014	60.2		
40	81.2			011	56.0		
100	77.3			008	51.9		
200	72.4			0075	46.3		

UNIFORMITY NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		16.3	28.7	17.6	70.2	
	CL - INORGANIC HIGH PLASTICITY		SANDY SILTY CLAY			
CRUSH COUNT					%	

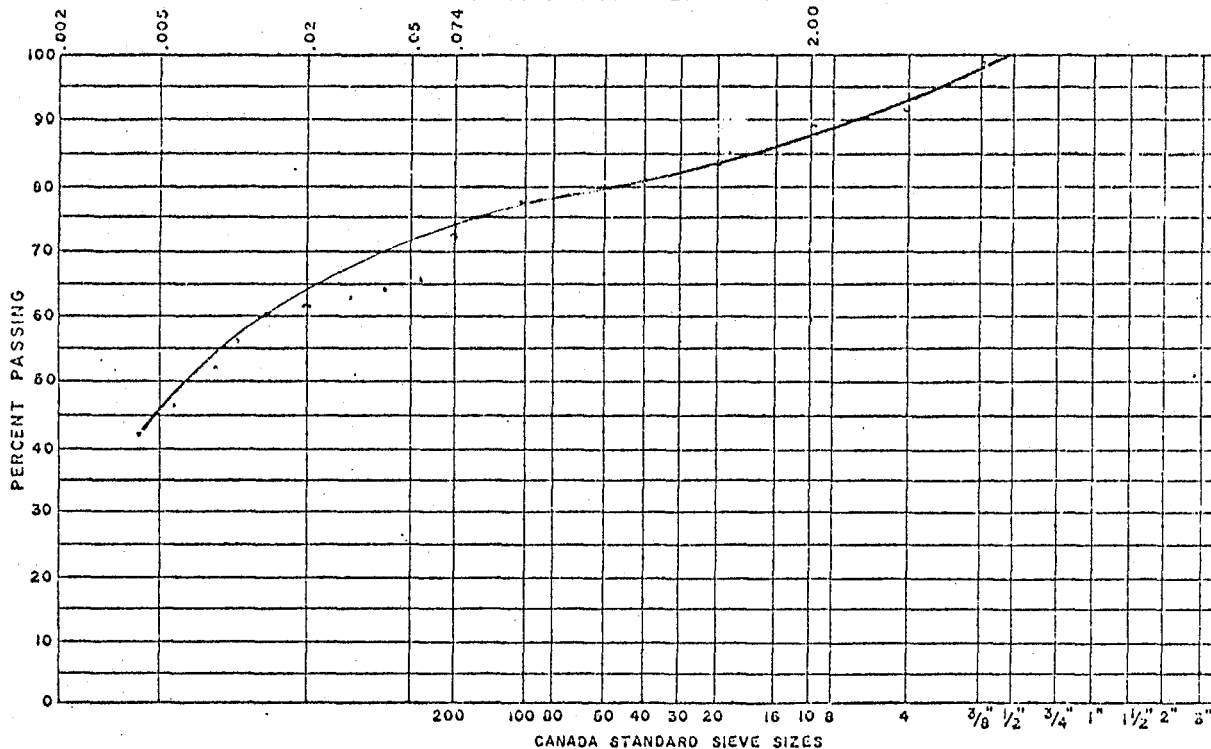
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
QUARTZITE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEWISER HWY

LOCATION STA 1939 + 90 E

HOLE NO. NW 47

DEPTH 1' FIELD NO. 49

SAMPLE TYPE BAG

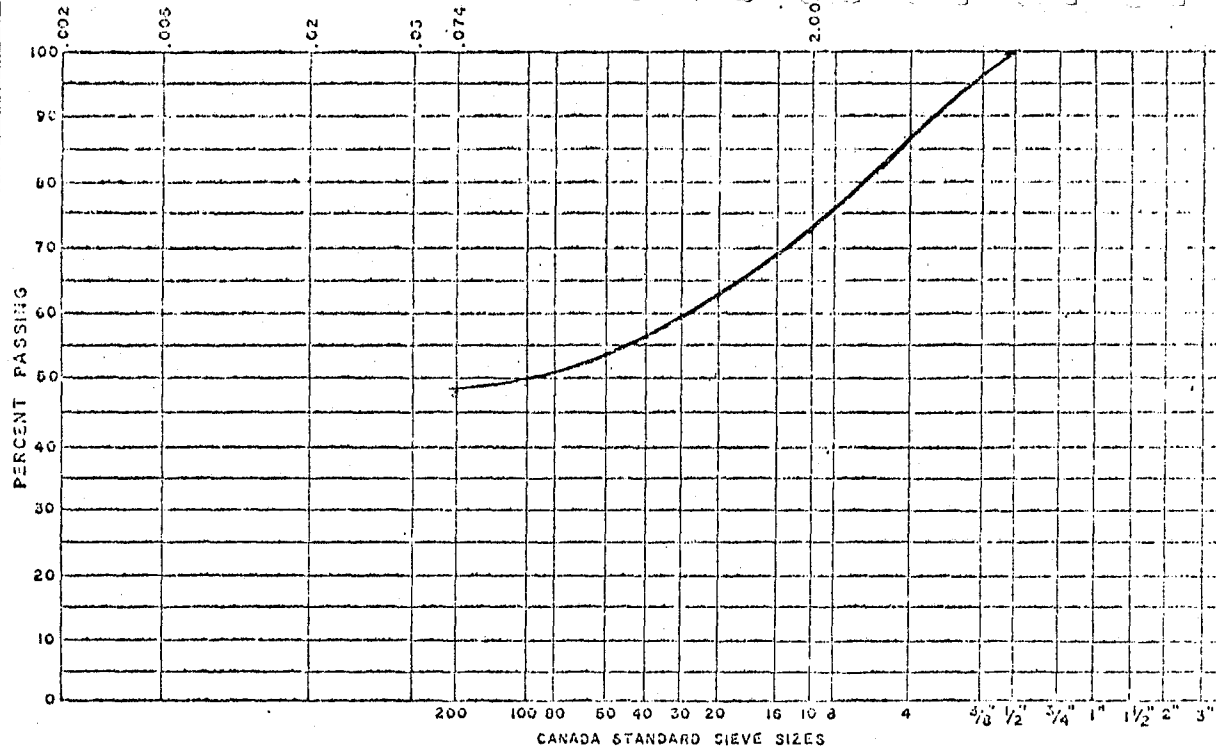
LAB. NO.
7453

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAY (HP)</u>	<u>30-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>2-10-72</u>
	TESTED BY

GRAIN SIZE ANALYSIS

SIZE MILLI METERS

SIEVE NO.	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
4	100	200	97.4				
10	97.6						
20	95.9						
40	92.0						
60	75.2						
80	62.4						
100	56.2						
200	49.9						



TEST NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SC - GRAVELLY SANDY CLAY	35.4	23.3	10.1	14.0	
	MEDIUM PLASTICITY					
	CRUSH COUNT					%

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

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
CONGLOMERATE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PROJECT DENVER HWY
 LOCATION STA. 1939 + 90 L
 HOLE NO. NW 44
 DEPTH 8 1/2' FIELD NO. 50
 SAMPLE TYPE

LAB. NO.
4954

PARTICLE SHAPE ANALYSIS

PARTICLE SHAPE	%
ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

LABORATORY'S REMARKS
FINE CLAY (MP)

DATE SAMPLED 5-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

HOLE NUMBER POSITION
 NW - 44
 1939 + 90

DATE AND TIME

RECEIVED: June 30/72

FINISHED:

DRILLER

CONTRACTOR

GAUGE READING

METHOD OF BORING

DEPTH (FT.)	DESCRIPTION OF STRATA	ROCK:		SOIL:		SAMPLE NO.	SYMBOL	TYPE	SAMPLE TAG (IN)	BLOWS PER FOOT	SAMPLE NO.	WEIGHT (LBS.)	DIP (INCHES)
		DEPTH (FT.)	ELEV. (FT.)	DEPTH (FT.)	ELEV. (FT.)								
0	dry sand												
1	silty clay												
2	"												
3	"					49	III	A					
4	"												
5	"												
6	sandy clay, gravelly silt												
7	"												
8	"					50	III	A					
9	"												
10	"												

med. gray - brown, fair m.c.
 ice crystals throughout

med. gray - brown, fair m.c.
 ice crystals throughout

med. gray - brown

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100.0			.061	54.0		
#4	99.6			.043	54.0		
#10	96.5			.031	50.8		
#20	84.1			.022	47.7		
#40	71.6			.016	47.7		
#100	57.4			.008	41.4		
#200	52.3			.0059	36.7		
				.0043	30.4		

SAM. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		32.89	23.95	8.94	18.3	
CL - INORGANIC SILTY CLAYEY SAND MEDIUM PLASTICITY						
CRUSH COUNT %						

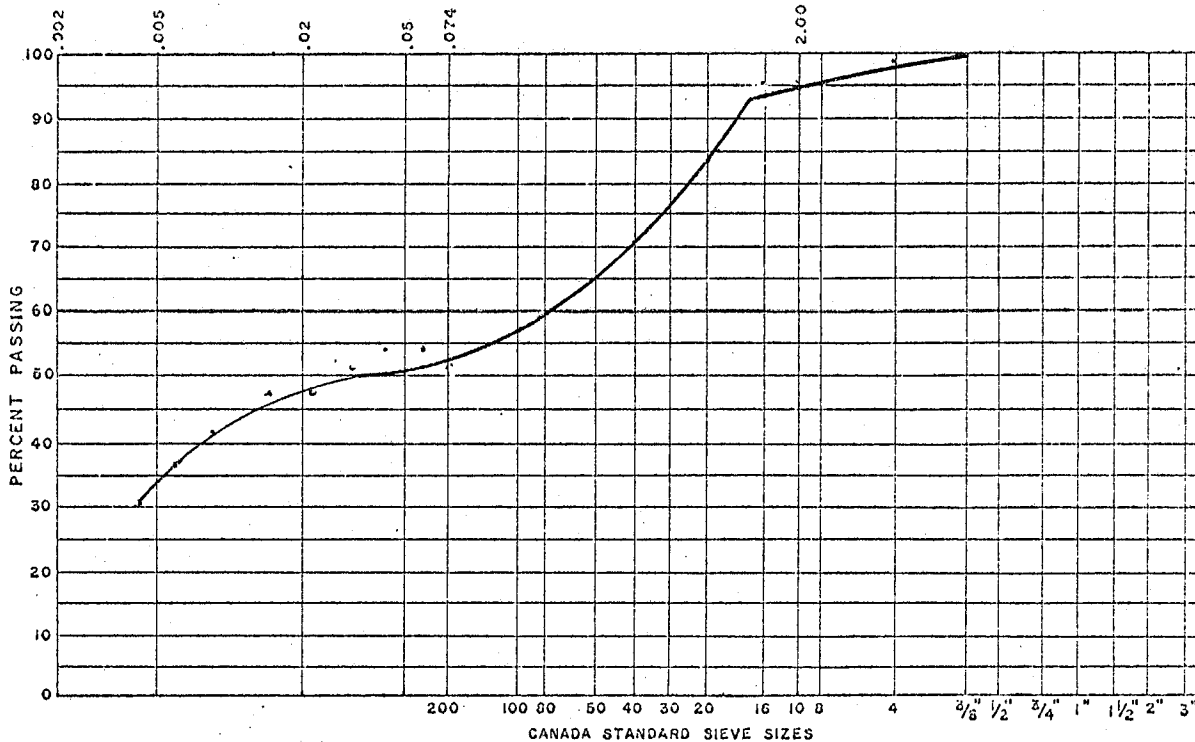
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
G. TIC	
SANDSTONE	
SHALE	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	100
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DENBSTER HIGHWAY
 LOCATION 19.55 + 90 k
 HOLE NO. N.W. 43
 DEPTH 7 1/2' FIELD NO. 98
 SAMPLE TYPE BAG

LAB. NO.
4952

LABORATORY'S REMARKS
CLAYEY SAND (MP)

DATE SAMPLED 30-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100						
3/8	99.7						
#4	94.0						
10	84.0						
20	71.3						
40	64.4						
100	57.1						
200	52.1						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		31.9	22.1	9.8	14.2	
	CL - INORGANIC SILTY CLAYEY SAND MEDIUM PLASTICITY					

CRUSH COUNT %

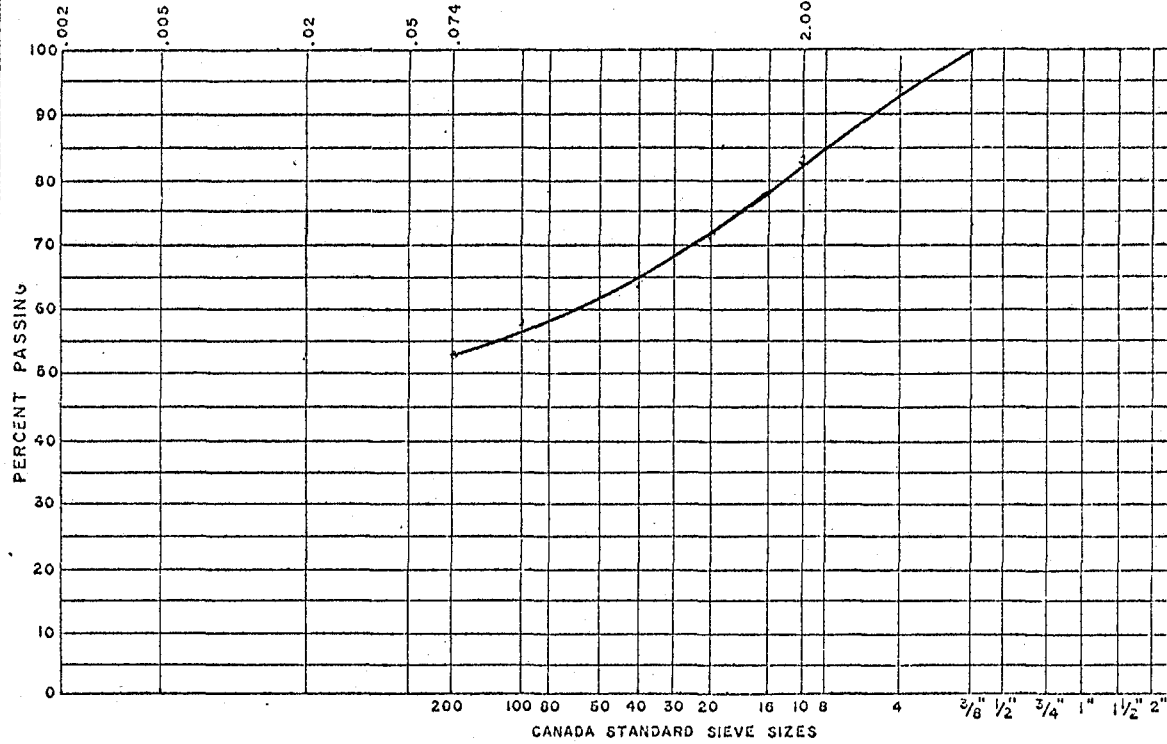
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
MARBLE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

SHAPE	PERCENTAGE
ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY
 LOCATION STA. 1979+00 &
 HOLE NO. NW 42
 DEPTH 3 1/2' FIELD NO. 46
 SAMPLE TYPE BAG

LAB. NO.
4950

LABORATORY'S REMARKS CLAYEY SAND (MP)	DATE SAMPLED 30-6-72
	DATE RECEIVED 5-7-72
	DATE RECORDED 2-10-72
	TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100.0						
#4	99.1						
#10	94.2						
#20	83.2						
#40	77.7						
#100	72.5						
#200	70.2						

SAM. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		30.75	23.38	7.37	86.8	
	ML-CL SILTY CLAYEY SAND MEDIUM PLASTICITY					

CRUSH COUNT %

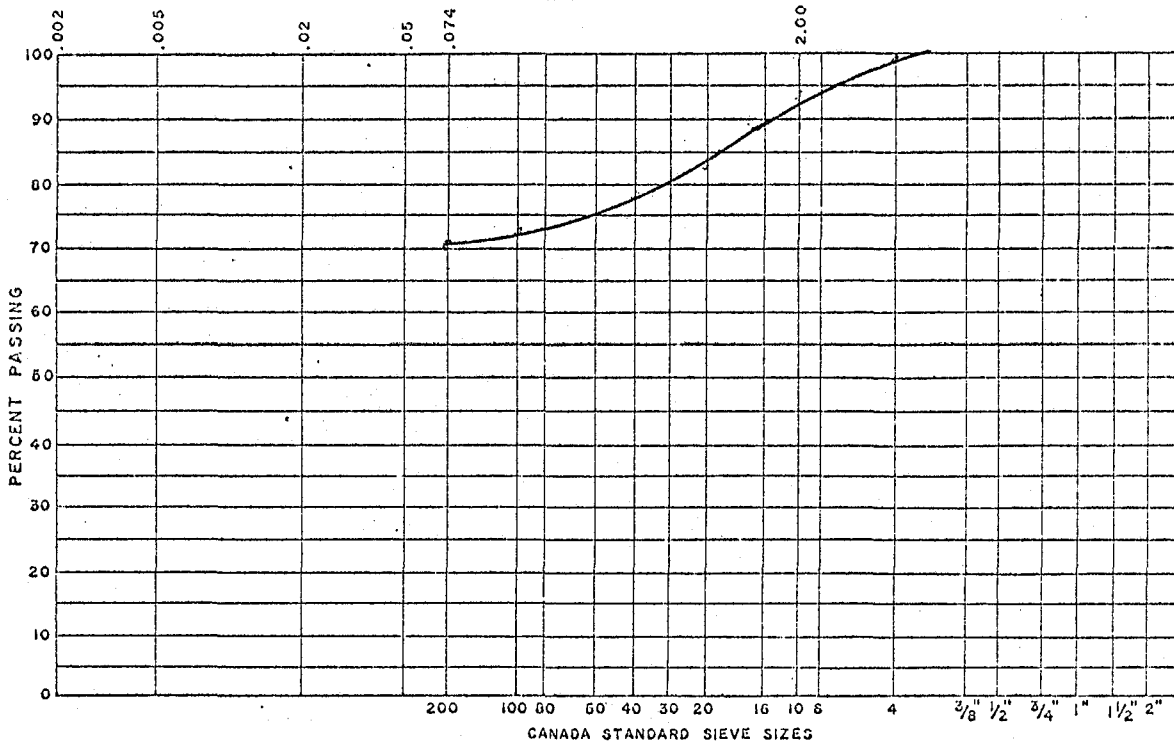
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DUMFRIES HIGHWAY
 LOCATION 1979+00 E
 HOLE NO. N.W. 42
 DEPTH 7 1/2' FIELD NO. 47
 SAMPLE TYPE 4" AUGER

LAB. NO.
4951

LABORATORY'S REMARKS
CLAYEY SAND (MID)

DATE SAMPLED 20-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
36"	100			.061	50.7
#4	99.2			.043	49.3
10	91.1			.031	47.9
20	72.9			.022	47.9
40	62.5			.015	46.4
100	53.1			.008	40.7
200	49.3			.0058	35.0
				.0042	30.7

SAM. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		3/16	22.1	9.5	36.9	
	SC - CLAYEY SAND MEDIUM PLASTICITY					
	CRUSH COUNT				%	

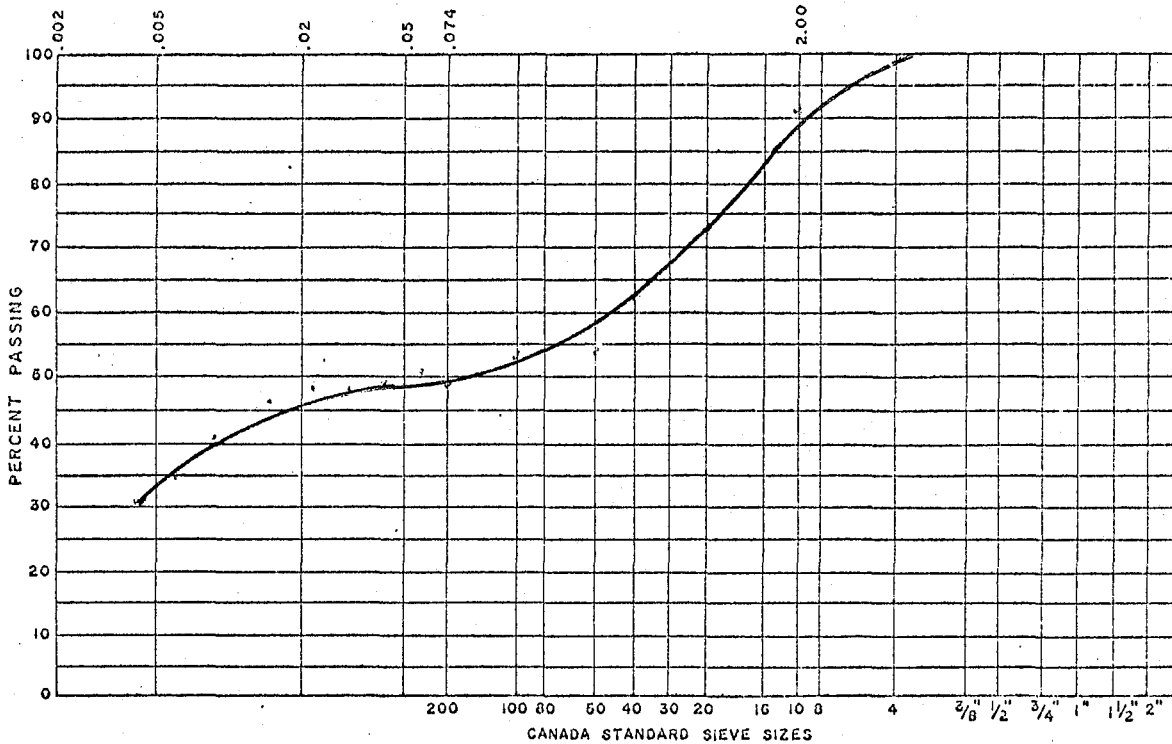
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GNEISS	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER HWY
 LOCATION STA. 1993+00 &
 HOLE NO. NW A1
 DEPTH 3' FIELD NO. 45
 SAMPLE TYPE BAG

LAB. NO.
4949

LABORATORY'S REMARKS
CLAYEY SANDS (MP)

DATE SAMPLED 30-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	99.3						
10	93.0						
20	78.3						
40	68.1						
100	59.4						
200	55.5						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
CL - INORGANIC SILTY CLAYEY SAND MEDIUM PLASTICITY	37.3	23.6	13.7	24.4	

CRUSH COUNT

%

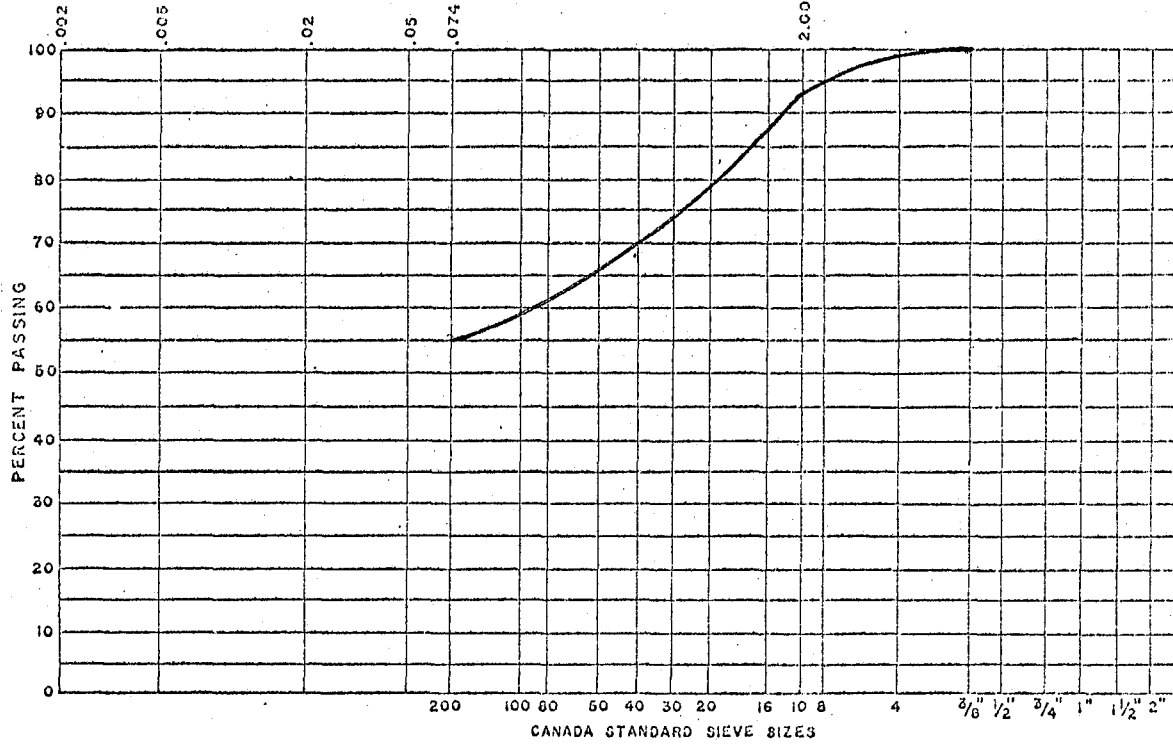
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
TIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY
 LOCATION STA 2010 +00 &
 HOLE NO. NW 39
 DEPTH 6' FIELD NO. 43
 SAMPLE TYPE BAG

LAB. NO.
4948

LABORATORY'S REMARKS
CLAYEY SANDS (M.P.)

DATE SAMPLED 30-6-7
 DATE RECEIVED 5-7-7
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

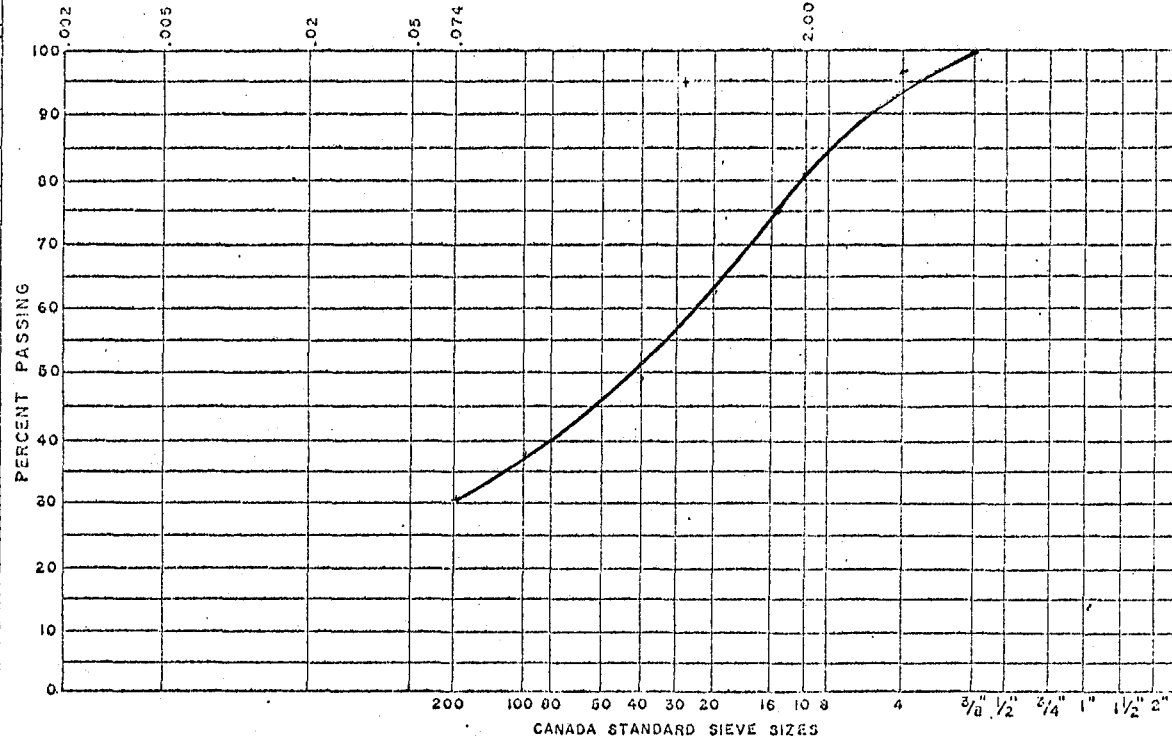
SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	97.2						
10	82.4						
20	62.9						
40	49.5						
100	31.8						
200	31.7						

SF NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		17.2	39.6	8.6	131.3	
	SC - SANDY CLAY MEDIUM PLASTICITY					
	CRUSH COUNT				%	

PETROGRAPHIC ANALYSIS	
MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
CALCIC SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS	
SHAPE	%
ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER HWY

LOCATION STA 2029 +00 L

HOLE NO. NW 38

DEPTH 3-3 1/2' FIELD NO. 42

SAMPLE TYPE BAG

LAB. NO.
4946

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAYEY SAND (MD)</u>	<u>30-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>2-10-72</u>
	TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D SIEVE SIZE	% FINER BY WEIGHT	D SIEVE SIZE	% FINER BY WEIGHT
3/8"	100			.062	45.1	.0043	25.5
#4	98.9			.044	43.7		
10	88.7			.031	42.3		
20	69.4			.022	42.3		
40	59.0			.016	42.3		
100	49.6			.012	39.5		
200	45.7			.008	32.5		
				.0059	31.1		

SAM. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		36.2	27.3	8.9	33.4	
	SC - SANDY CLAY MEDIUM PLASTICITY					
	CRUSH COUNT				%	

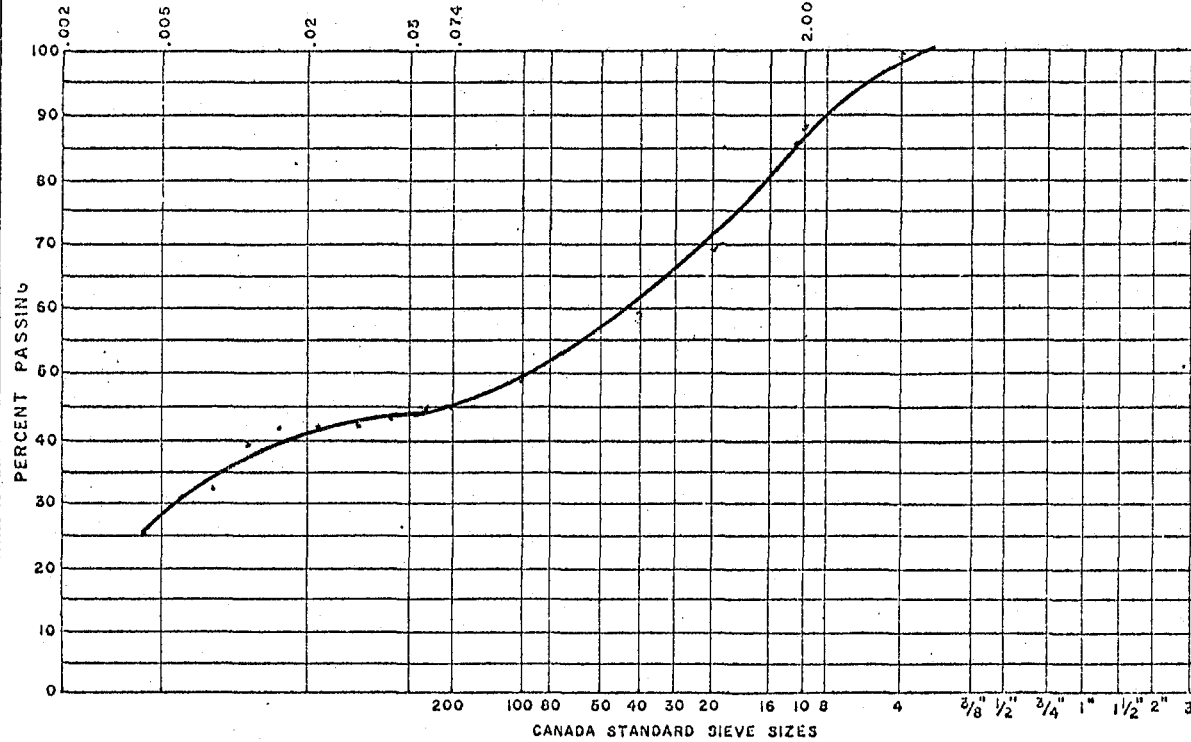
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GNEISS	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY
 LOCATION STA 2049 + 00 &
 HOLE NO. NW 34
 DEPTH 3' FIELD NO. 38
 SAMPLE TYPE BAG

LAB. NO.
 .4942

LABORATORY'S REMARKS
 (CLAY SAND LAD)

DATE SAMPLED 30-6-72
 DATE RECEIVED 6-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
# 4	99.6						
10	86.3						
20	63.7						
40	52.6						
100	41.7						
200	37.7						

SAM. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SC - SANDY CLAY	31.0	20.7	11.3	21.0	
	MEDIUM PLASTICITY					
	CRUSH COUNT				%	

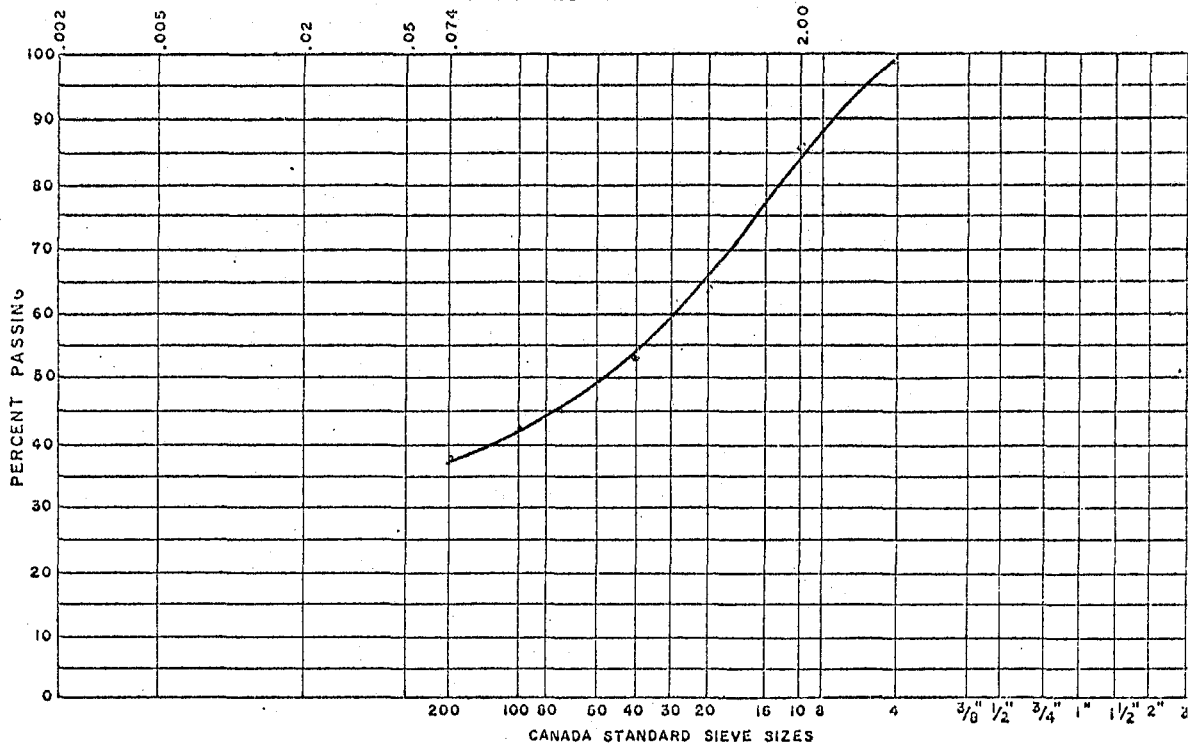
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GNEISS	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMASTER HWY
 LOCATION STA. 2049.100 E
 HOLE NO. NW 34
 DEPTH 6 FIELD NO. 89
 SAMPLE TYPE BAG
 LAB. NO. 4943

LABORATORY'S REMARKS
 CLAYEY SAND (MD)
 DATE SAMPLED 30-6-72
 DATE RECEIVED 6-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8	100						
#4	97.5						
10	88.5						
20	73.7						
40	64.1						
100	53.4						
200	47.6						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		32.9	26.0	6.9	11.6	
	SM-SC CLAYEY SILTY SAND					
	LOW PLASTICITY					
	CRUSH COUNT					%

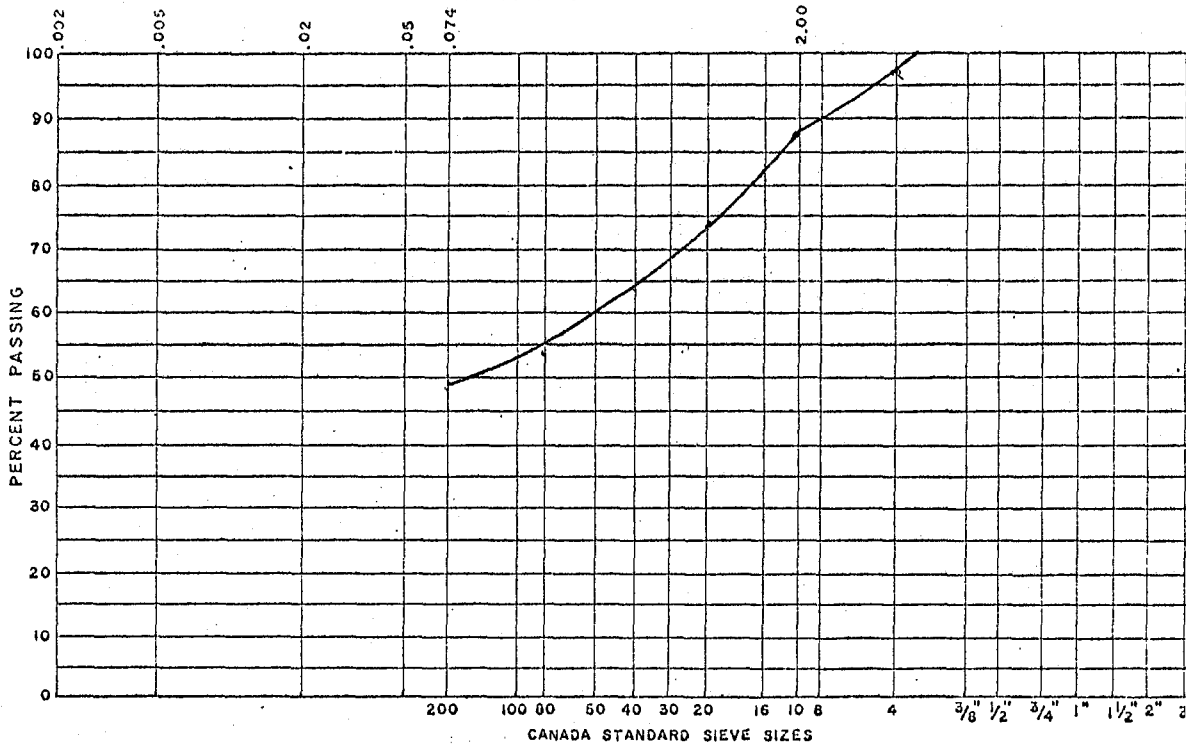
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMETER HWY
 LOCATION STA 2049 + 004
 HOLE NO. NW 34
 DEPTH 8 1/2' FIELD NO. 10
 SAMPLE TYPE

LAB. NO.
4944

LABORATORY'S REMARKS
CLAYEY SAND (LD)

DATE SAMPLED 30-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D -SIEVE -SIZE	% FINER BY WEIGHT	D -SIEVE -SIZE	% FINER BY WEIGHT
1/2"	100			.059	51.3		
3/8"	98.3			.042	48.8		
#4	95.3			.030	48.8		
10	81.7			.021	48.8		
20	72.0			.015	43.7		
40	67.8			.008	36.3		
100	62.3			.0059	29.9		
200	59.1			.0042	27.1		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		31.3	22.6	8.7	79.8	
CL - INORGANIC SANDY CLAY						
MEDIUM PLASTICITY						
CRUSH COUNT		%				

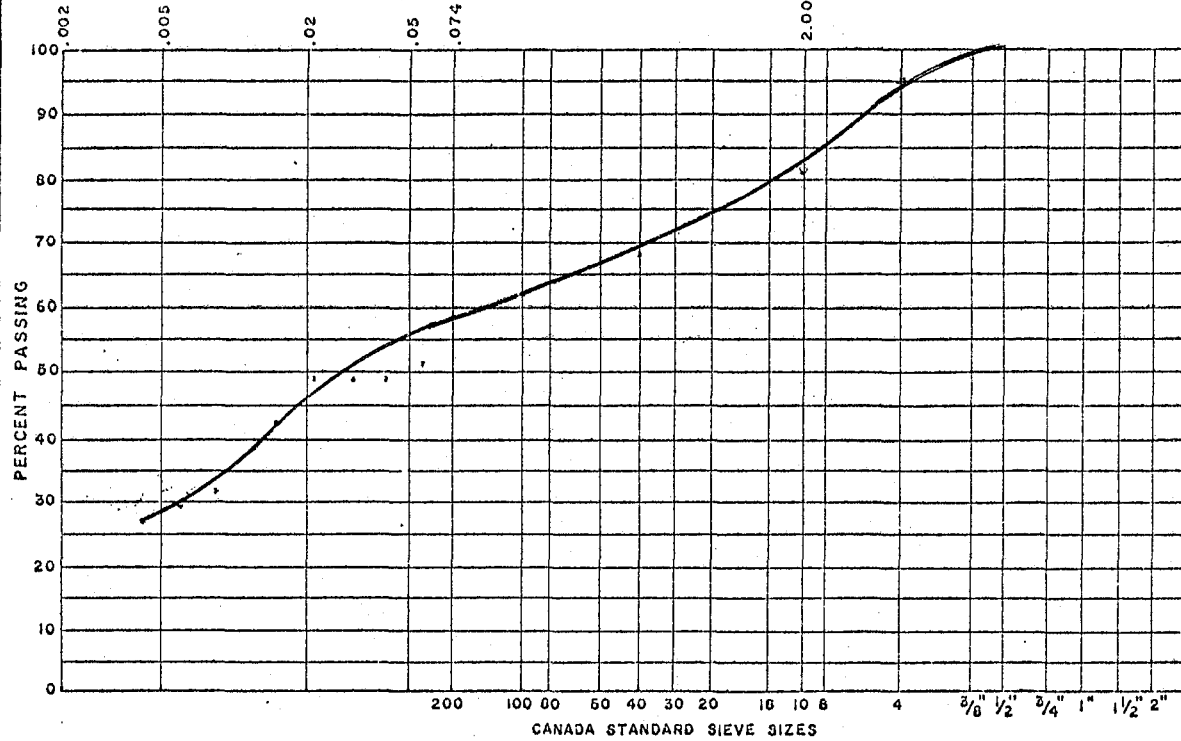
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

SHAPE	PERCENTAGE
ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER Hwy

LOCATION STA. 206.7 +00 &

HOLE NO. NW 33

DEPTH 4 1/2' FIELD NO. 36

SAMPLE TYPE BAG

LAB. NO.
4940

LABORATORY'S REMARKS
SANDY CLAY (MD)

DATE SAMPLED 30-6-72

DATE RECEIVED 5-7-72

DATE RECORDED 2-10-72

TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	94.6						
10	76.3						
20	59.6						
40	49.8						
100	39.4						
200	34.2						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		24.3	18.7	5.6	23.3	
	SMA-SC CLAYEY SILTY CLAY LOW PLASTICITY					
CRUSH COUNT		%				

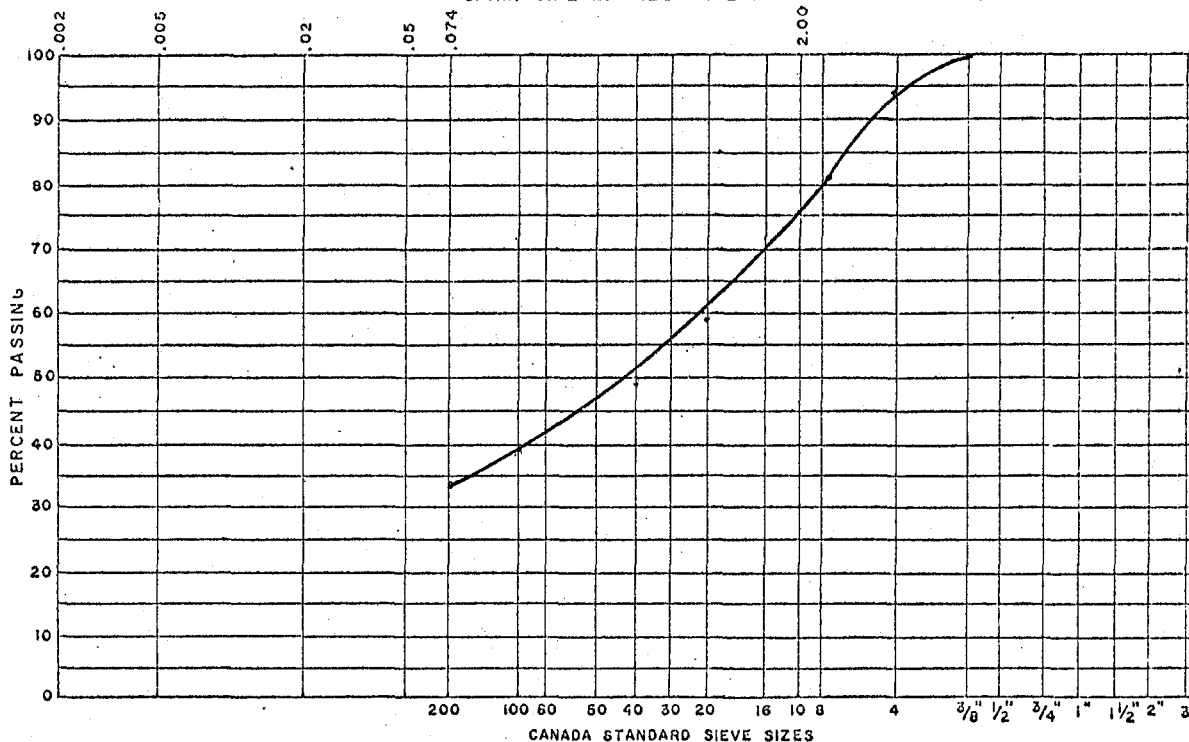
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
METACRATIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY
 LOCATION STA. 20.67 +000
 HOLE NO. NW 33
 DEPTH 9' FIELD NO. 37
 SAMPLE TYPE BAG

LAB. NO.
4941

LABORATORY'S REMARKS
CLAYEY SANDS (LD)

DATE SAMPLED 30-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100			.060	51.6	.0042	25.8
3/8	98.0			.043	49.0		
#4	92.2			.030	46.4		
10	80.8			.022	42.5		
20	67.9			.016	38.9		
40	61.6			.011	38.9		
100	54.8			.008	33.5		
200	50.8			.0059	30.9		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		30.6	24.6	6.0	14.6	
	CL-ML - INORGANIC SILTY CLAYEY SAND					
	LOW PLASTICITY					

CRUSH COUNT %

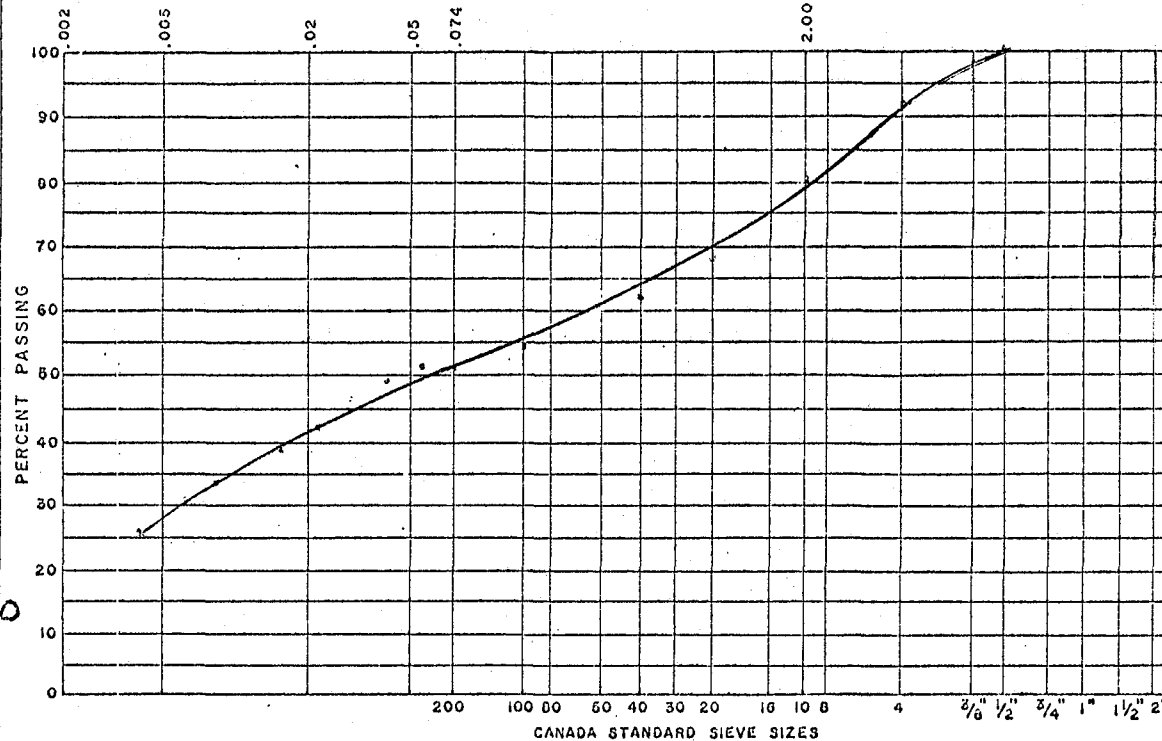
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
METIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.

LOCATION STA. 2084 + 0.54

HOLE NO. NW 32

DEPTH 4' FIELD NO. 33

SAMPLE TYPE BAG

LAB. NO.
4937

LABORATORY'S REMARKS
CLAYEY SAND (LP)

DATE SAMPLED 30-6-72

DATE RECEIVED 5-7-72

DATE RECORDED 2-10-72

TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	98.9						
10	87.6						
20	69.1						
40	58.8						
100	48.5						
200	44.5						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		32.7	24.7	7.7	11.6	
	SM-SC CLAYEY SILTY SAND LOW PLASTICITY					
	CRUSH COUNT				%	

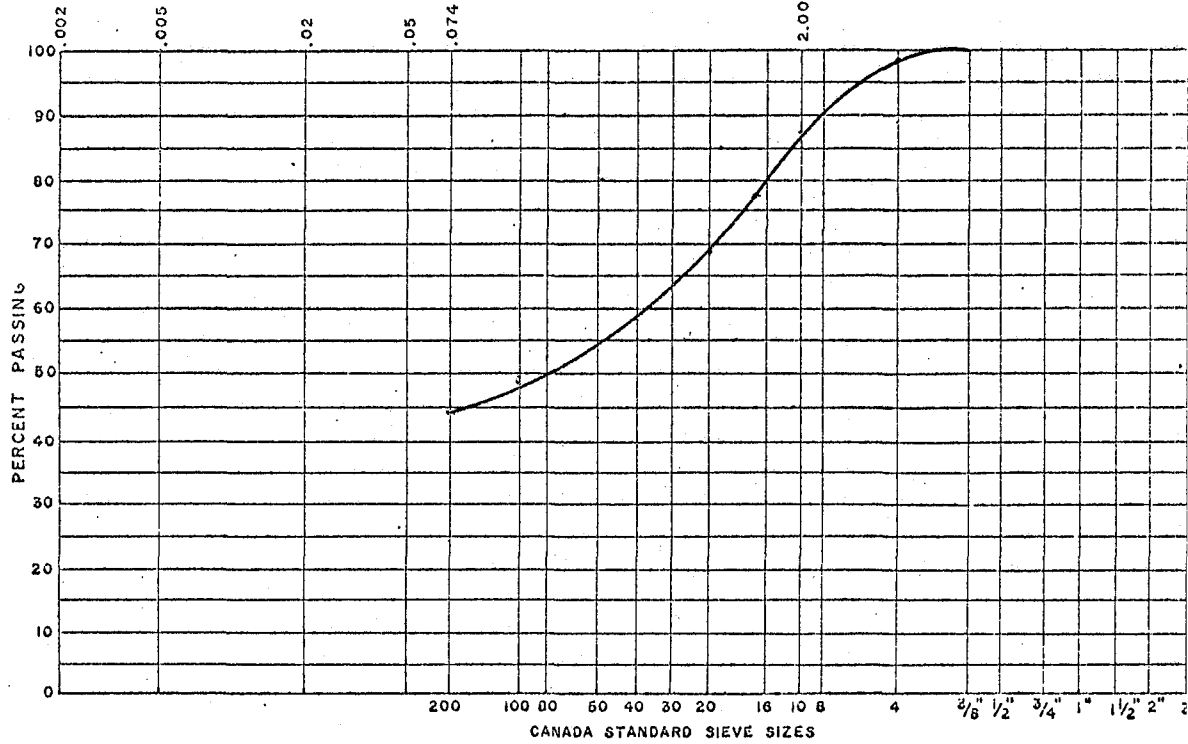
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
IM. STONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEWATER HWY
 LOCATION STA. 2084+05 E
 HOLE NO. NW 32
 DEPTH 6 1/2' FIELD NO. 34
 SAMPLE TYPE BAG

LAB. NO.
4938

LABORATORY'S REMARKS
CLAYEY SAND (LP)

DATE SAMPLED 30-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	99.7						
10	87.4						
20	64.2						
40	50.5						
100	37.6						
200	32.1						

SAM. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		25.5	20.0	7.5	10.3	
	SM-SC CLAYEY SILTY SAND LOW PLASTICITY					

CRUSH COUNT %

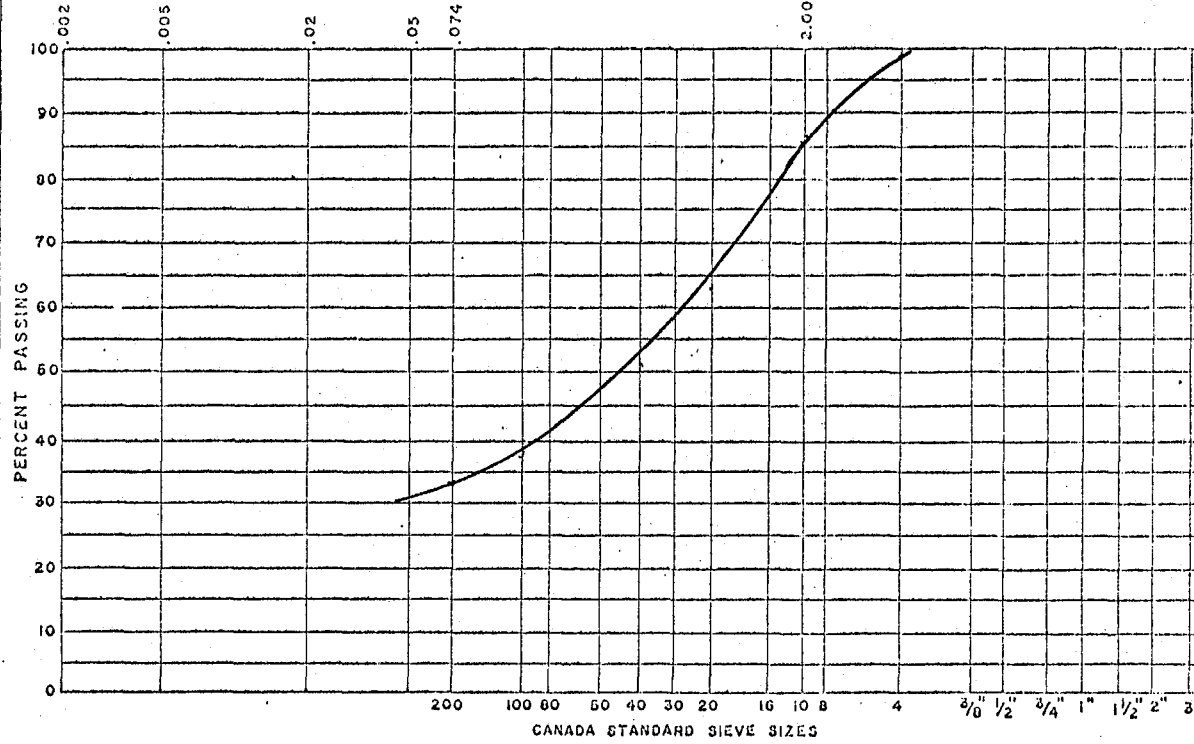
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
CLAY	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMETER HWY

LOCATION STA 2084 +0.5 E

HOLE NO. NW 32

DEPTH 9' FIELD NO. 35

SAMPLE TYPE BAG

LAB. NO.
4939

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAYEY SAND (LP)</u>	<u>30-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>2-10-72</u>
	TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	94.3						
10	92.6						
20	77.2						
40	68.3						
100	60.2						
200	57.4						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SC - SANDY CLAY MEDIUM PLASTICITY	34.9	24.3	10.6	49.8	
CRUSH COUNT	%				

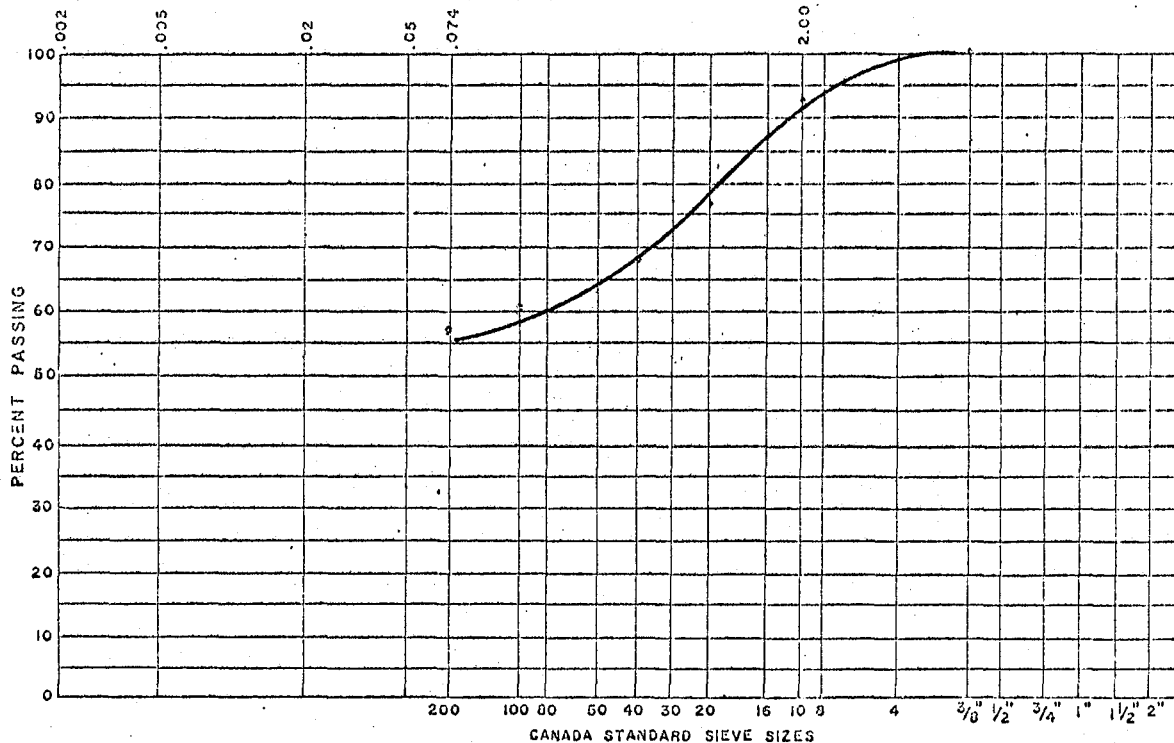
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
QUARTZITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMMPSTER HWY.
 LOCATION STA. 2106+00 ♀
 HOLE NO. NW 30
 DEPTH 4 1/2' FIELD NO. 30
 SAMPLE TYPE

LAB. NO.
4876

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY CLAY (MP)</u>	<u>24-6-72</u>
	<u>4-7-72</u>
	<u>11-10-72</u>
	TESTED BY <u>JP</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100						
#4	98.7						
10	87.5						
20	71.0						
40	61.7						
100	54.3						
200	48.7						

S. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		36.9	23.1	13.8	29.6	
	SC - SANDY CLAY MEDIUM PLASTICITY					

CRUSH COUNT	%
-------------	---

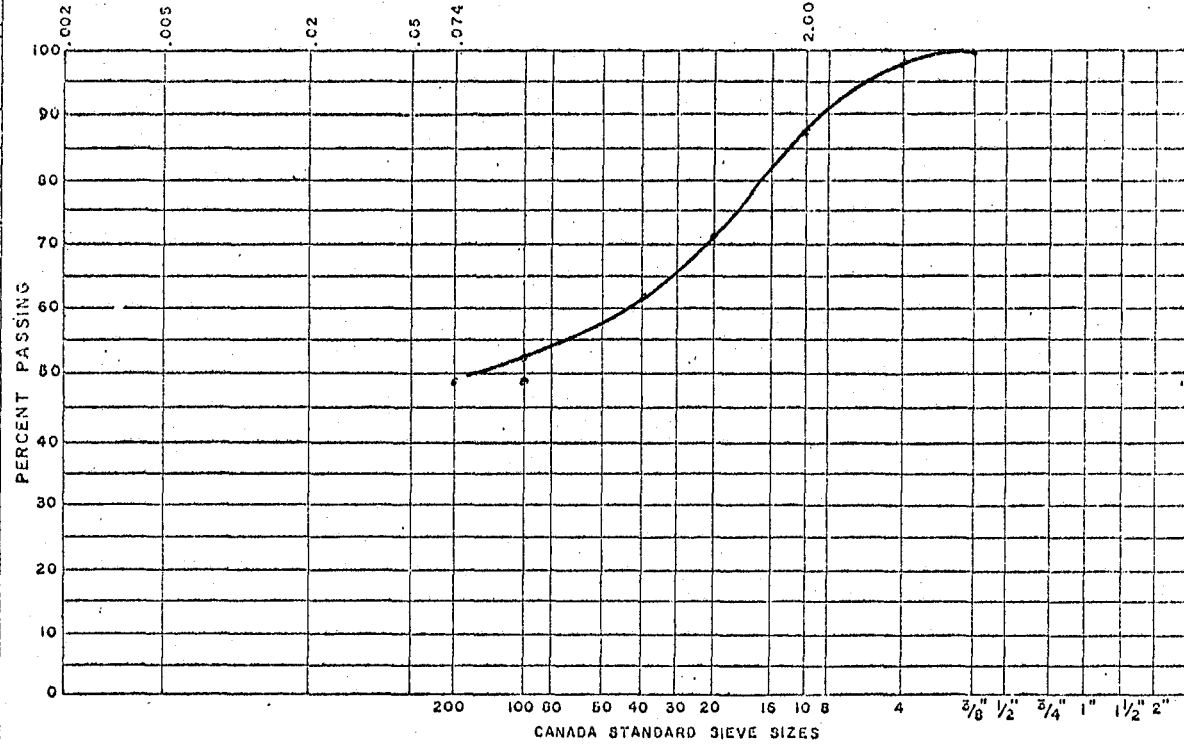
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
MIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT... DEMPSTER HWY
 LOCATION... STA: 2106+00 E
 HOLE NO... NW 30
 DEPTH... 9 1/2' FIELD NO. 31
 SAMPLE TYPE... BAA

LAB. NO.
4877

LABORATORY'S REMARKS
SANDY CLAY (MP)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY SP

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100	#200	40.2
1/2"	95.4		
3/8"	93.4		
#4	83.2		
10	69.6		
20	58.4		
40	52.5		
100	44.9		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	22.2	21.1	1.1	14.2	
SM-GM- GRAVELLY SILTY SAND LOW PLASTICITY					

CRUSH COUNT

%

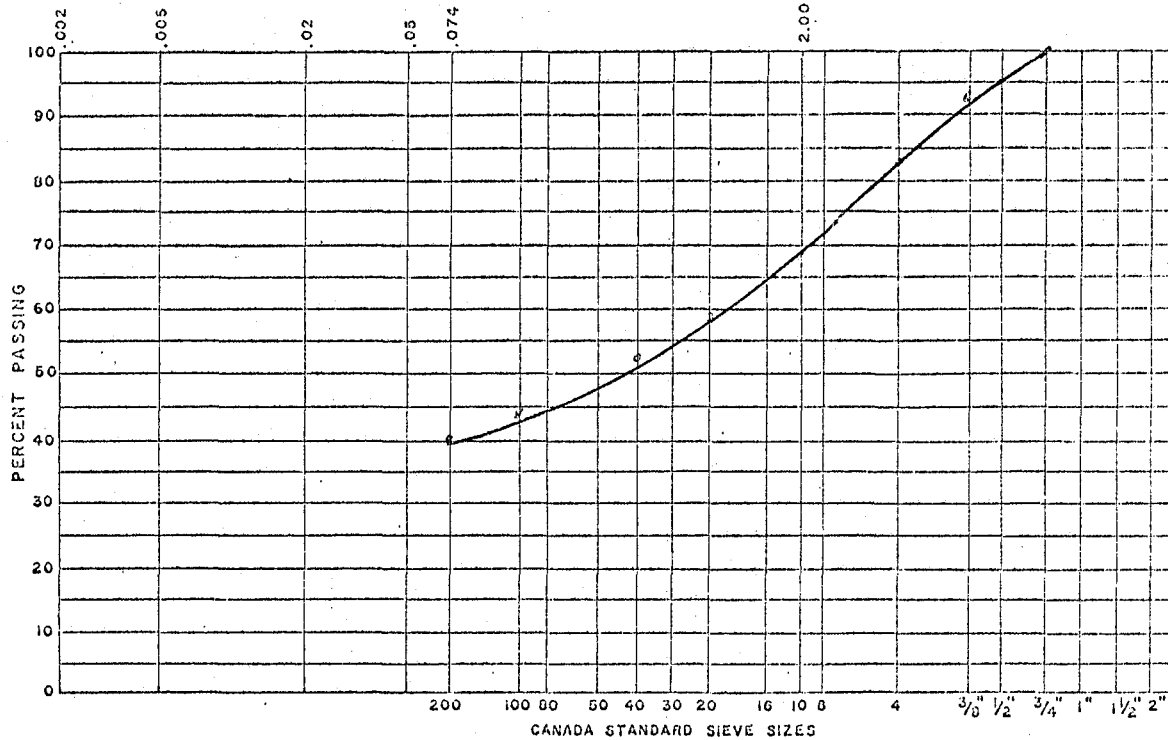
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
MITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.
 LOCATION STA. 2129+00
 HOLE NO. N.W. 26
 DEPTH 2' FIELD NO. 26
 SAMPLE TYPE.....

LAB. NO.
4872

LADORATORY'S REMARKS
(10)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY J.P.

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100	#200	40.2				
1/2	98.0						
3/8	96.3						
#4	85.5						
10	71.4						
20	59.3						
40	53.0						
100	44.6						

S. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		20.7	19.6	2.1	30.8	
	SM-GM LOW PLASTICITY					
	GRAVELLY SILTY SAND					

CRUSH COUNT

%

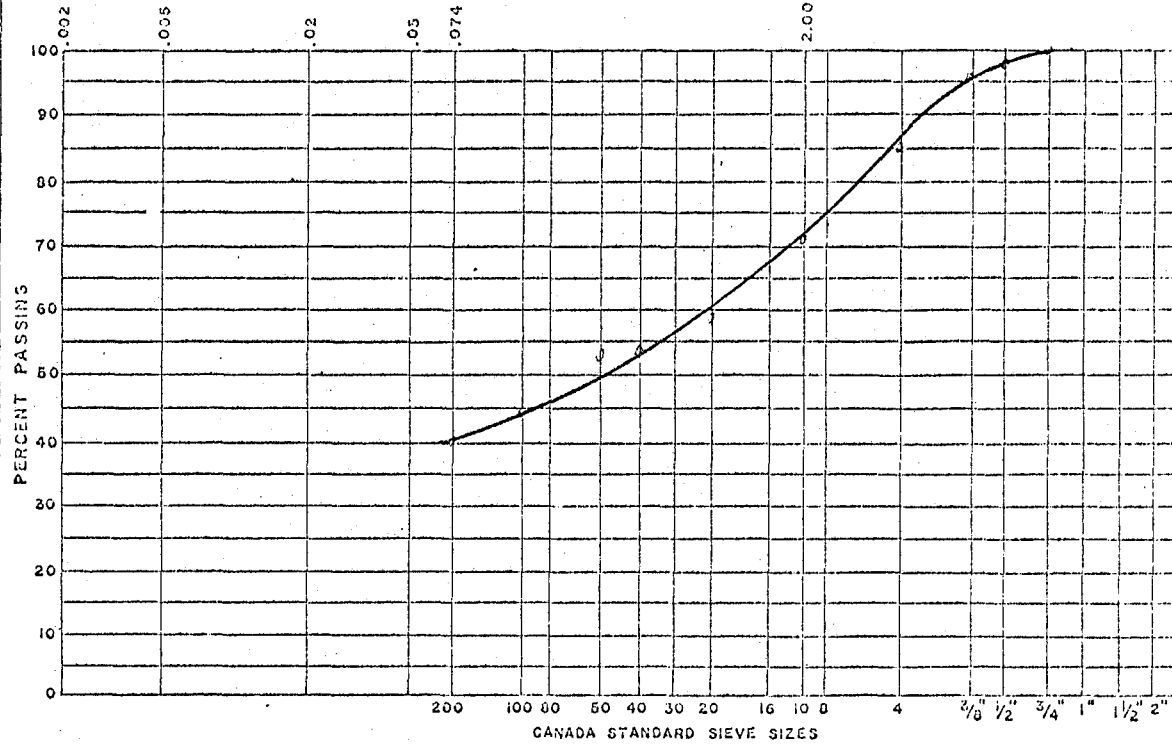
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
METACRINITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.
 LOCATION STA. 2129+00 E
 HOLE NO. NW 26
 DEPTH 7' FIELD NO. 27
 SAMPLE TYPE.....

LAB. NO.
4873

LABORATORY'S REMARKS
SILTY SAND (LP)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY JP

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100	#200	60.5				
1/2"	97.7						
3/8"	97.7						
#4	93.5						
10	84.9						
20	75.7						
40	71.0						
100	64.9						

SAIL NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		76.6	11.9	3.7	52.7	
	ML = INORGANIC SANDY SILT LOW PLASTICITY					

CRUSH COUNT %

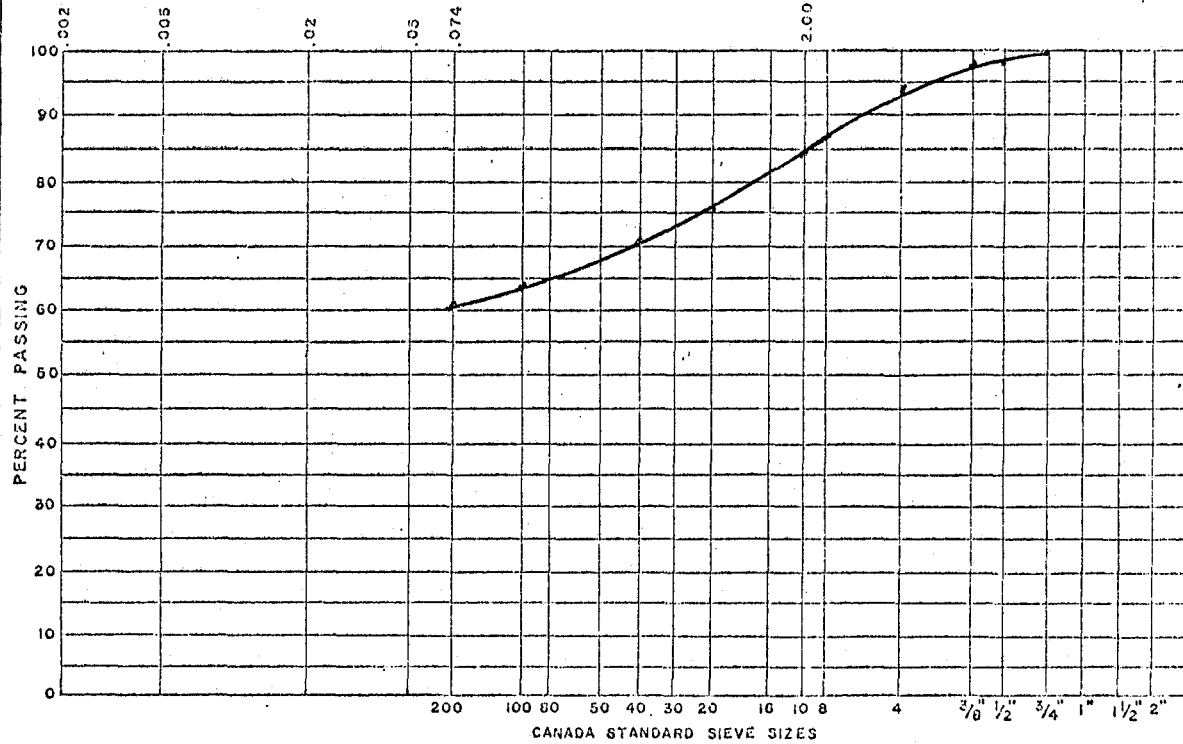
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
CLAY TIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMETER HWY.
 LOCATION STA. 2149+00 E
 HOLE NO. NW 25
 DEPTH 5' FIELD NO. 25
 SAMPLE TYPE 4" AUGER

LAB. NO.
4871

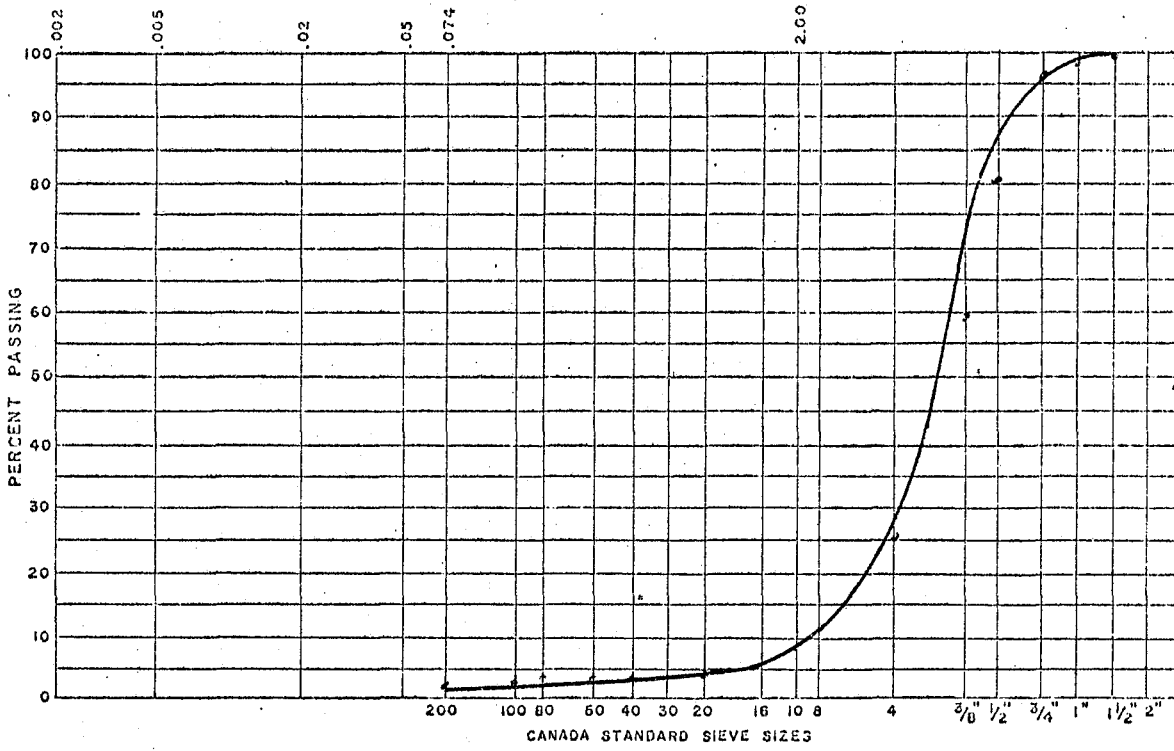
LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY SILT (L)</u>	<u>29-6-72</u>
	DATE RECEIVED <u>4-7-72</u>
	DATE RECORDED <u>11-10-72</u>
	TESTED BY <u>JF</u>

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1 1/2"	100	#10	3.5
1	99.1	100	2.5
3/4	96.7	200	2.0
1/2	80.3		
3/8	59.5		
#4	25.1		
10	9.2		
20	4.7		

S. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					NP 5.7	
	GP - POORLY GRADED GRAVELLY SAND WITH NO FINES					
	CRUSH COUNT				%	

PETROGRAPHIC ANALYSIS	
MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
METAMORPHIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	SLATE 100

PARTICLE SHAPE ANALYSIS	
ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	



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

PROJECT ... DEMETER HWY.
 LOCATION ... REFER AIR PHOTO 2110 ...
 HOLE NO. ... NW 24 ...
 DEPTH ... 2 1/2' ... FIELD NO. 24 ...
 SAMPLE TYPE ... BAG ...

LAB. NO.
4870

LABORATORY'S REMARKS
GENUINELY SAND (NP)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY JP

BORE HOLE NO.

NW-24

BORE HOLE POSITION

see air photo

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 29/72

FINISHED:

CONTRACTOR

DRILLER

DATUM

GND SURFACE ELEVATION

GAUGE

CASING SIZE

READING

METHOD OF BORING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			RE-TAINED (FT.)	BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE				
brkn shale, few plants	0									
	1									
	2			24	1101	B				
	3									
	4									
	5									
	6									
	7									
	8									
	9									
	10									1 bag Amex
										- hole to 3'
										- unfrozen, moist
										- coarse shale gravel
										most prevalent, with some
										finer gravel; little sand or
										fine
										- sample 29 at 3'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1 1/2"	100	40	17.3
1"	92.5	100	10.2
3/4"	92.4	200	7.4
1/2"	76.4		
3/8"	68.4		
# 4	55.2		
10	38.2		
20	24.4		

S. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SW-SM GRAVELLY SILTY SAND			NP.	3.8	

CRUSH COUNT %

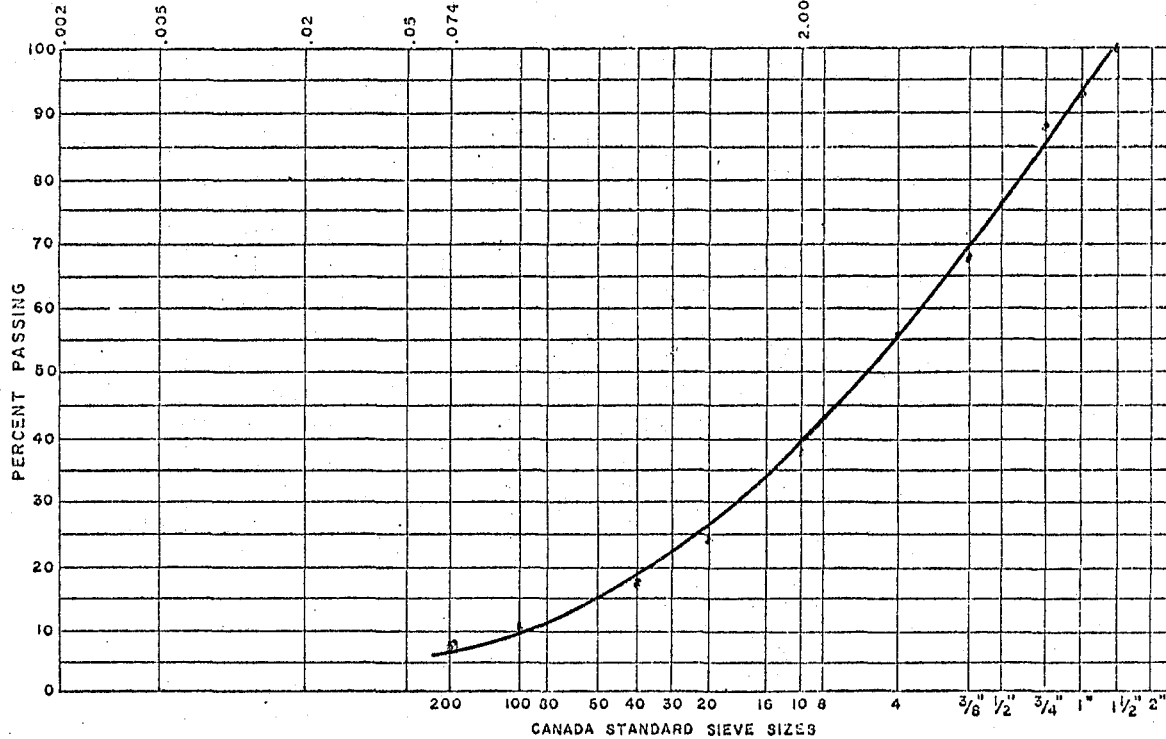
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
MITIC	
SANDSTONE	
SHALE	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HYW.
 LOCATION (STA) REFER AIR PHOTO 2146±
 HOLE NO. NW 23
 DEPTH 2' FIELD NO. 73
 SAMPLE TYPE.....

LAB. NO.
4869

LABORATORY'S REMARKS	DATE SAMPLED
GRAVELLY SAND (NP)	29-6-72
	DATE RECEIVED 4-7-72
	DATE RECORDED 11-10-72
	TESTED BY JP

BORE HOLE NO.

NW-23

BORE HOLE POSITION

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED: June 29/72 FINISHED:
DATUM

CONTRACTOR

DRILLER

GND SURFACE ELEVATION
CASING SIZEGAUGE
READING

METHOD OF BORING

SOIL:

ROCK:

CASING HAMMER WT. LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM- BOL	TYPE			
brkn shale	0								3" max
	1								
	2			23	111	B			
	3								
	4								
	5								
	6								
	7								
	8								1 bag Amex
	9								- hole to 2 1/2'
	10								- UNFROZEN - shale gravel to 2" max with sand and silt. - sample #23 at 2 1/2'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100			.054	77.9	.004	47.0
3/8	99.4			.039	74.5		
#4	99.0			.028	74.5		
10	96.3			.020	71.7		
20	91.0			.014	68.7		
40	88.4			.010	65.6		
100	85.9			.008	59.3		
200	84.0			.006	53.2		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		39.1	25.4	13.7	2.5	
	CL - INORGANIC SANDY CLAY MEDIUM PLASTICITY					

CRUSH COUNT %

PETROGRAPHIC ANALYSIS

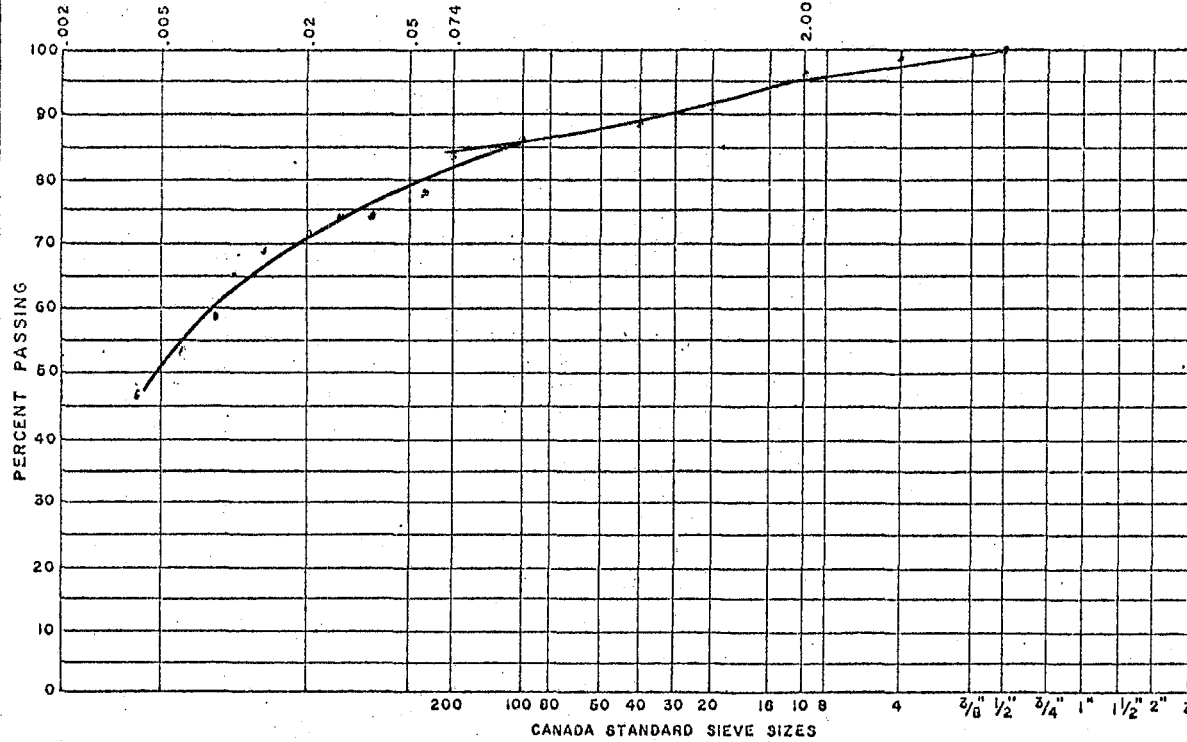
MATERIAL TYPE % OF TOTAL SAMPLE

BASALT	
LIMESTONE	
MARL	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY

LOCATION REFER AIR PHOTO 2150 ±

HOLE NO. NW 22

DEPTH 3 1/2' FIELD NO. 22

SAMPLE TYPE BAG

LAB. NO.
4868

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY CLAY (MP)</u>	<u>29-6-72</u>
	<u>4-7-72</u>
	<u>11-10-72</u>
	TESTED BY <u>JP</u>

NW-22

see airphoto

DPW TECHNICIAN _____

DATE AND TIME _____

CONTRACTOR _____

DRILLER _____

STARTED: June 29/72

FINISHED: _____

DATUM _____

GND SURFACE ELEVATION _____

GAUGE _____

READING _____

METHOD OF BORING _____

CASING SIZE _____

SOIL: _____

ROCK: _____

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE			
broken shale	0								3" max
	1								
	2								
	3			22	1000	B			
	4								
	5								
	6								increased silt content in cuttings
	7								
	8								
	9								
	10								1 bag Amex
									- hole to 3 1/2'
									- unfrozen
									- well graded shale gravel
									to 2" max with sand & few fines
									- sample # 22 at 3 1/2'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100	#200	24.6				
1/2"	94.7						
3/8"	86.5						
#4	55.4						
10	40.4						
20	33.8						
40	30.6						
100	26.4						

SOIL NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SM-SWL - GRAVELLY SILTY SAND			N.P.	27.6	

CRUSH COUNT

%

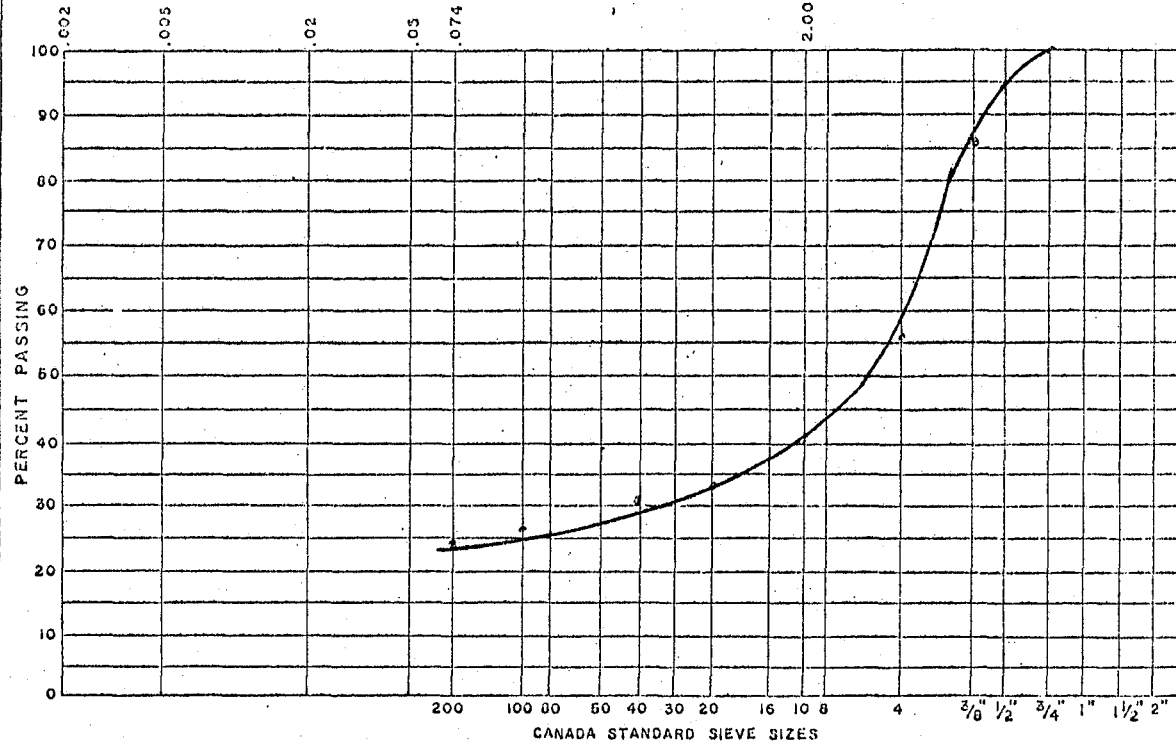
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
MARL	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.
 LOCATION STA. 2193+03 E
 HOLE NO. NW 15
 DEPTH 6 1/2' FIELD NO. 15
 SAMPLE TYPE

LAB. NO.
4861

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SAND (NP)</u>	<u>29-6-72</u>
	DATE RECEIVED <u>4-7-72</u>
	DATE RECORDED <u>11-10-72</u>
	TESTED BY <u>JP.</u>

BORE HOLE NO.

NW-14

BORE HOLE LOCATION

approx STM 2205

DPW TECHNICIAN

DATE AND TIME

STARTED: June 28
DATUM

FINISHED:

CONTRACTOR

DRILLER

GND SURFACE ELEVATION

GAUGE
READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (Y/N)			
s. obble stones, gravel & sand	0									6" max size
"	1									
"	2									
"	3									
"	4									
"	5									
"	6									
"	7									
"	8									
"	9									
"	10									- in creek
										- equiv. to 15' wide 8" deep - approx 4 yds

pull out

- in creek

- equiv. to 15' wide 8" deep - approx 4 yds

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100			#200	48.3		
1/2"	98.0						
3/8"	93.1						
#4	83.5						
10	73.7						
20	65.9						
40	61.5						
100	54.8						

NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		32.0	24.9	7.1	73.1	
ML - INORGANIC CLAYEY FINE SAND						
LOW PLASTICITY						
CRUSH COUNT						%

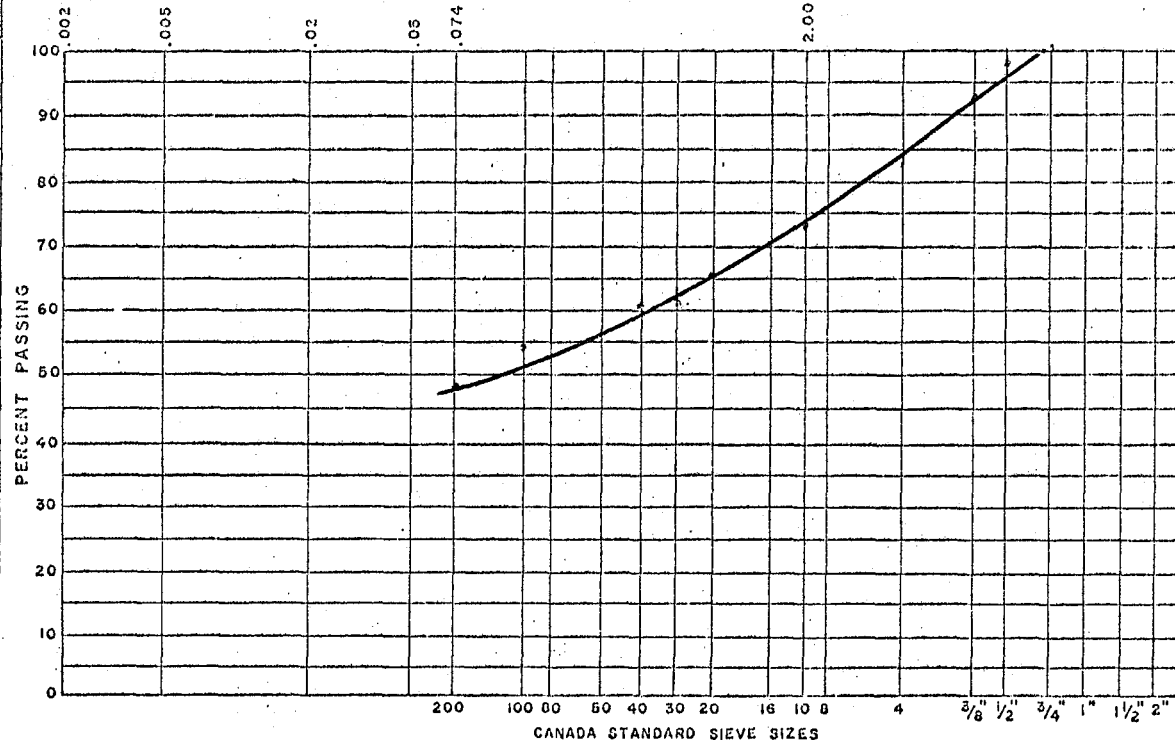
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
ITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMSTER HWY
 LOCATION STA. 2207+30 E
 HOLE NO. NW 13
 DEPTH 3 1/2' FIELD NO. 13
 SAMPLE TYPE

LAB. NO.
4859

LABORATORY'S REMARKS
CLAYEY SAND (LP)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY JP

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4	100	200	34.8
1/2	98.5		
3/8	93.0		
#4	75.0		
10	57.9		
20	46.7		
40	41.9		
100	37.0		

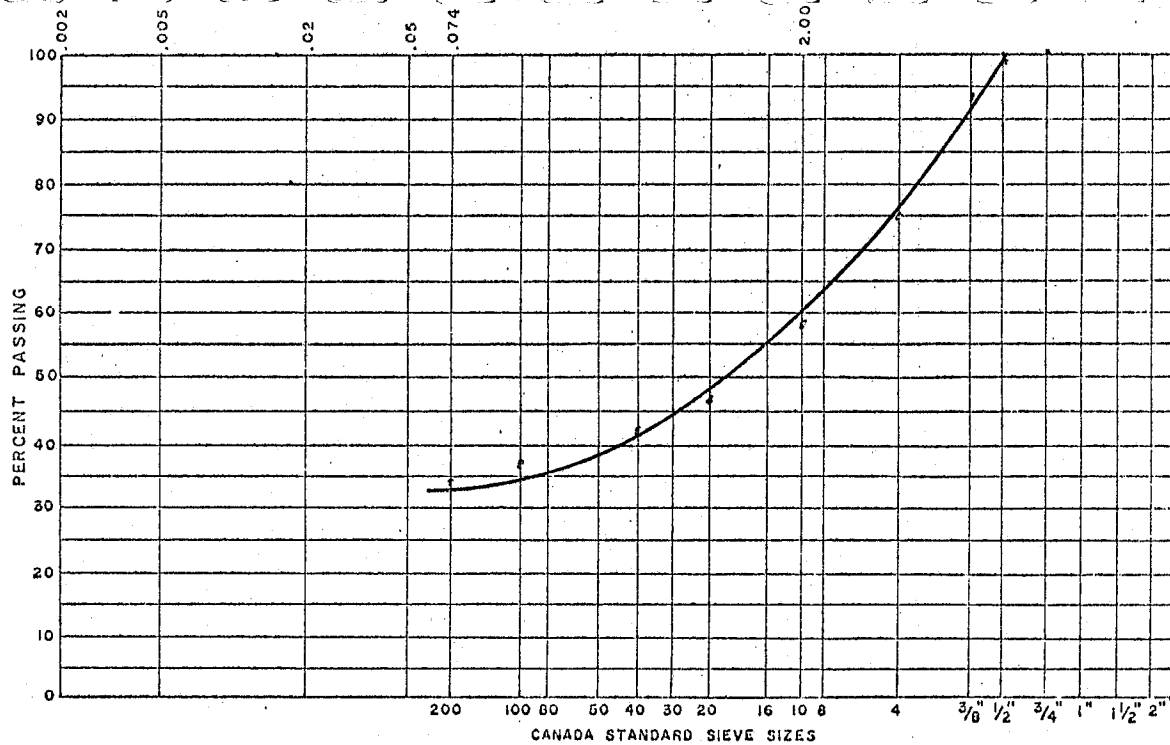
S.E. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		25.5	20.2	5.3	34.6	
	ML - INORGANIC CLAYEY FINE SAND					
	LOW PLASTICITY					
	CRUSH COUNT					%

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
CHERTIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	SLATE 100

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	



CLAY	SILT	SAND	GRAVEL

PROJECT ... DEARSTER HWY ...
 LOCATION ... STA. 2207 + 30 E ...
 HOLE NO. ... N.W. 13 ...
 DEPTH ... 9 1/2' ... FIELD NO. 14 ...
 SAMPLE TYPE ... BAG ...

LAB. NO.
4860

LABORATORY'S REMARKS
CLAYEY SAND (LP)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY JP
 CHECKED BY _____

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100		
3/8"	96.3		
4	90.4		
10	78.2		
20	65.2		
40	56.6		
100	48.1		
200	44.1		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					TRACE	16.8
	GW- <u>GS</u> M GRAVELLY SILTY SAND					

CRUSH COUNT %

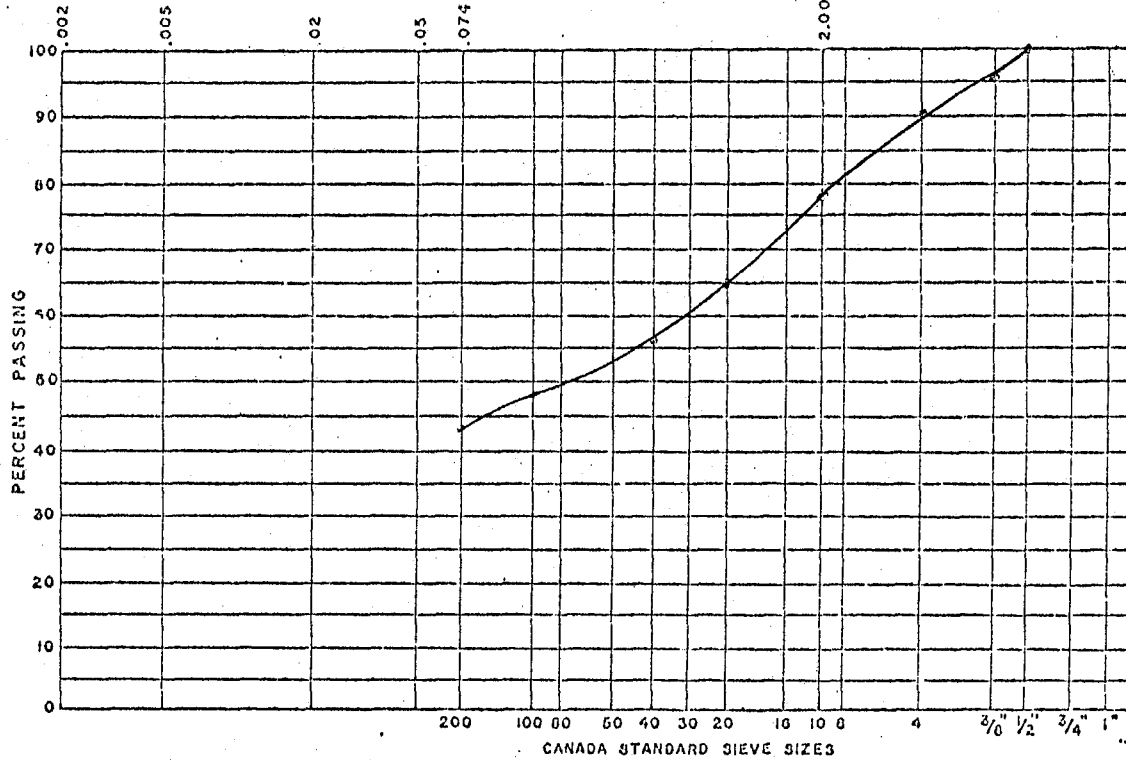
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
STONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY

LOCATION STATION 2216+00 ±

HOLE NO. NW 9

DEPTH 9' FIELD NO. 8

SAMPLE TYPE 4" AUGER

LAB. NO
4859

LABORATORY'S REMARKS	DATE SAMPLED
<u>SILTY SAND (NP)</u>	<u>29-6-</u>
	DATE RECEIVED <u>4-7-</u>
	DATE RECORDED <u>16-8-</u>

70

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/6"	99.3						
4	93.9						
10	83.0						
20	69.7						
40	61.1						
100	52.5						
200	48.5						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		20.2	17.0	3.2	13.3	
	SM - SILTY SAND SAND-SILT MIXTURE					

CRUSH COUNT %

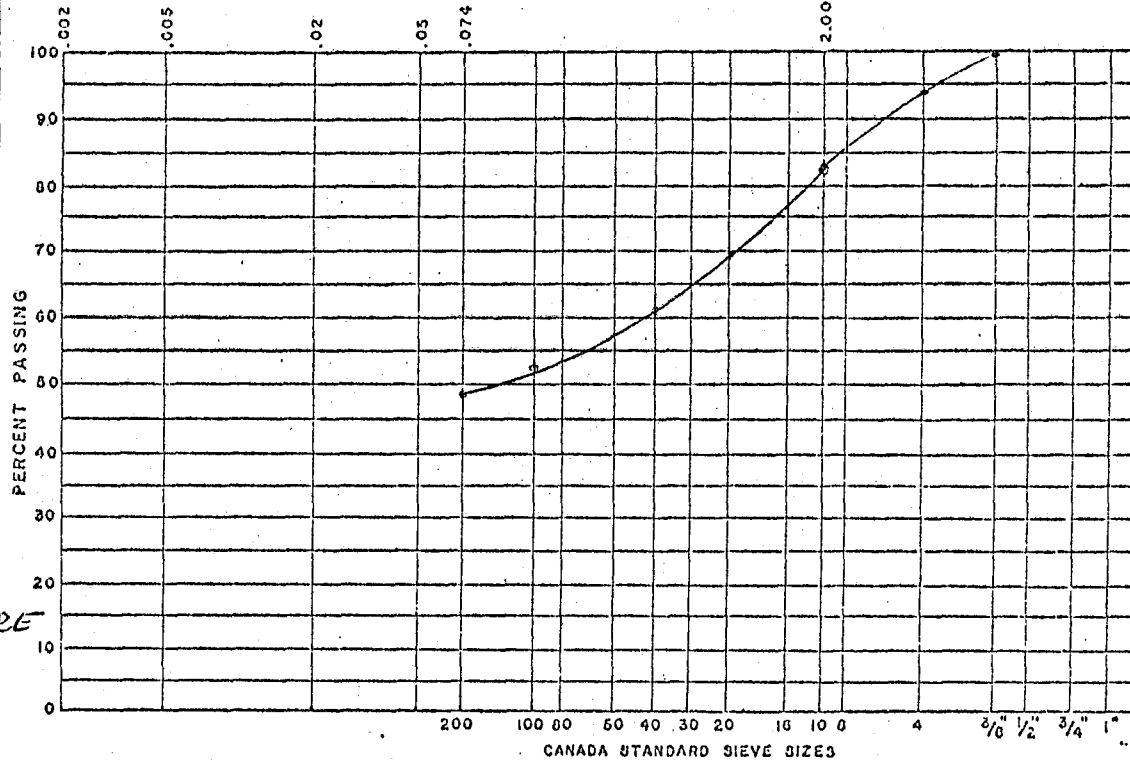
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
STONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT D. EMERSON HAVEN

LOCATION 2216 + 00 E

HOLE NO. NW 9

DEPTH 13 1/2' FIELD NO. 9

SAMPLE TYPE BAG

LAB. NO
4855

LABORATORY'S REMARKS	DATE SAMPLED
<u>SILTY SANDS (NR)</u>	<u>29-</u>
	DATE RECEIVED <u>4-</u>
	DATE RECORDED <u>18-</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100		
1/2	99.6		
#4	95.6		
10	86.6		
20	75.2		
40	68.3		
100	58.6		
200	65.1		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
ML-CL GRAVELLY CLAYEY SAND LOW PLASTICITY	21.4	17.5	4.4	18.6	

CRUSH COUNT	%

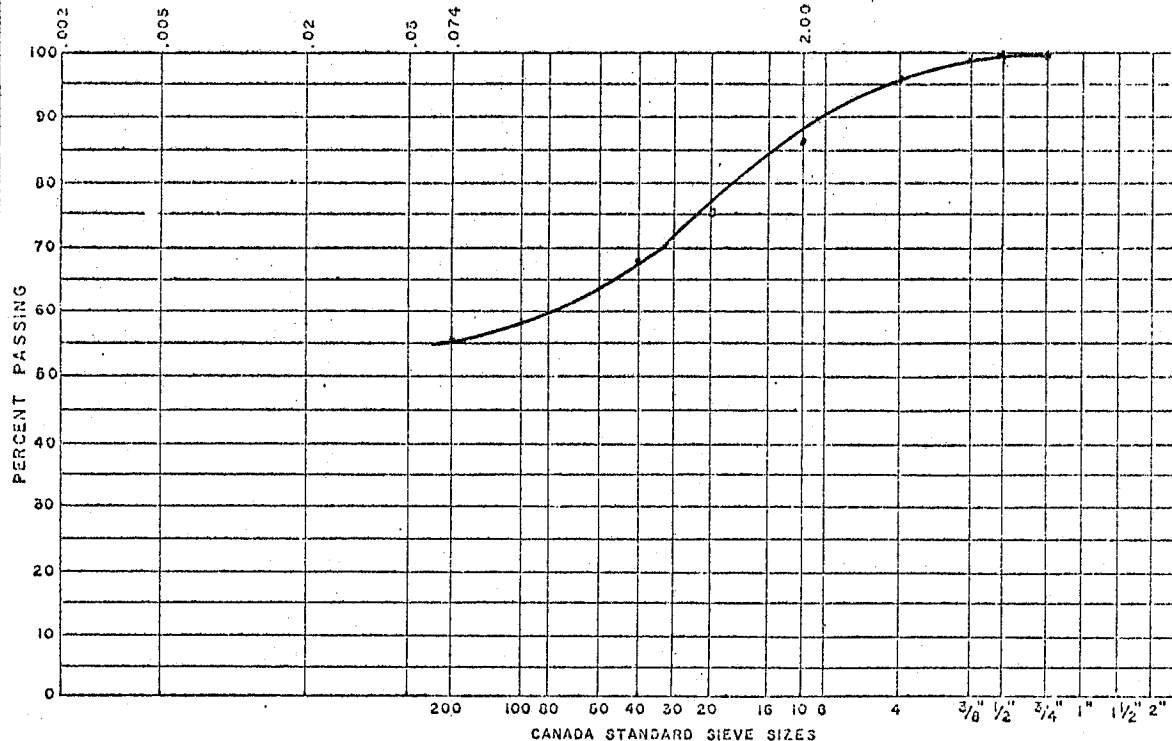
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER HWY.....
 LOCATION STA. 2216+00 £.....
 HOLE NO. NW 9.....
 DEPTH 18 1/2' - 19'..... FIELD NO. 10.....
 SAMPLE TYPE 4" AUGER.....

LAB. NO.
4856

LABORATORY'S REMARKS

CLAYEY SAND (LD)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY [Signature]

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1 1/2"	100	#40	58.2
1"	94.5	100	52.2
3/4"	91.9	200	49.4
1/2"	88.0		
3/8"	84.8		
#4	77.6		
10	69.9		
20	62.5		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	24.6	19.6	5.0	22.8	
ML-CL - GRAVELLY CLAYEY SAND LOW PLASTICITY					

CRUSH COUNT %

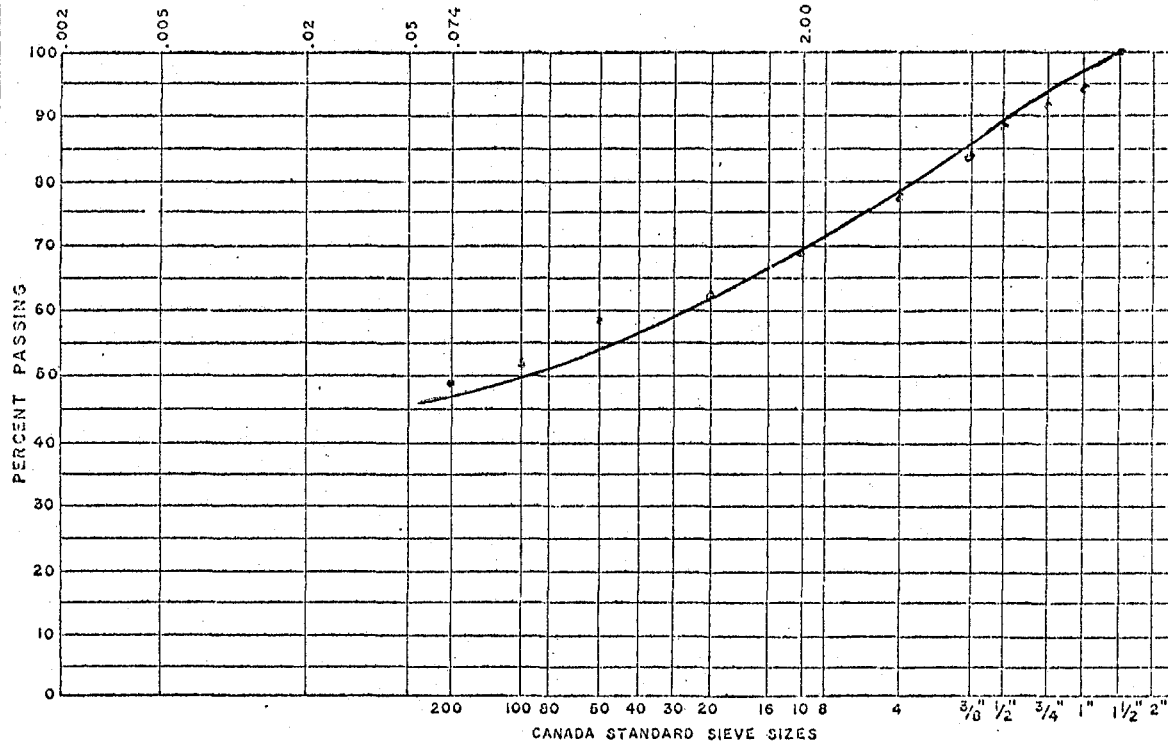
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	SLATE 100

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE ANALYSIS



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

PROJECT DEMASTER HWY
 LOCATION STA. 2216+00
 HOLE NO. NW 9
 DEPTH 28 1/2' FIELD NO. 11
 SAMPLE TYPE 4" AUGER

LAB. NO.
4857

LABORATORY'S REMARKS
CLAYEY SAND (LD)

DATE SAMPLED 29-6-72
 DATE RECEIVED 4-7-72
 DATE RECORDED 11-10-72
 TESTED BY [Signature]

BORE HOLE NO. **NW-9**
 BORE HOLE POSITION **Sta 2216+00 E**

DPW TECHNICIAN _____
 CONTRACTOR _____ DRILLER _____

DATE AND TIME
 STARTED: **June 29/72** FINISHED: _____

METHOD OF BORING _____
 SOIL: _____ ROCK: _____

DATUM _____ GAUGE READING _____
 GND SURFACE ELEVATION _____ CASING SIZE _____

CASING HAMMER WT.LBS. _____ DROP.....INCHES _____

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6-IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
sandy clay	16									frozen, med. brown-gray
rock "	17									
rock (?) "	18			10	11cc	A				[LAB. CLAS. CLAYEY SAND WITH GRAVEL]
	19									
	20									
	21									
sandy clay some gravel	22									frozen, med. brown-grey
	23									
	24									occasional gravel-size fragment
	25									to 1/4"
	26									
	27									
	28									
	29			11	11cc	A				

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	—			200	32.7		
1/2	98.8						
3/8	95.5						
#4	72.8						
10	61.3						
20	49.2						
40	43.1						
100	36.1						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		19.1	16.4	2.7	16.1	
	GW-SM GRAVELLY SILTY SAND					

CRUSH COUNT %

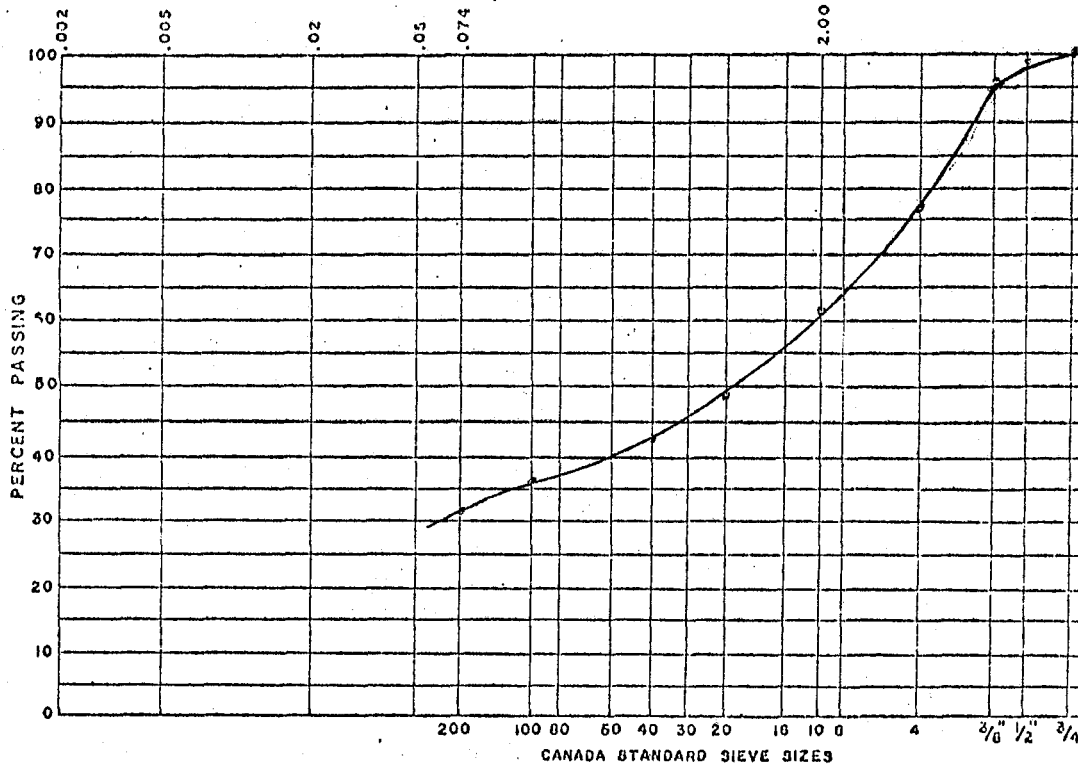
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
STONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



CLAY SILT SAND GRA

PROJECT DENVER H.W.
 LOCATION 2236 + 00 E
 HOLE NO. N.W. 8
 DEPTH 5' FIELD NO. 7
 SAMPLE TYPE 4" AUGER

LAB. 48

LABORATORY'S REMARKS SILTY SAND (L.P.)

DATE SAMPLED 29
 DATE RECEIVED 4
 DATE RECORDED 18-

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2	77.1	40	26.3
1	65.9	100	11.1
3/4	64.0	200	8.6
1/2	55.5		
3/8	53.0		
4	44.5		
10	38.6		
20	34.6		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP	12.6	
	GW-GM - SILTY GRAVELLY SAND					

CRUSH COUNT %

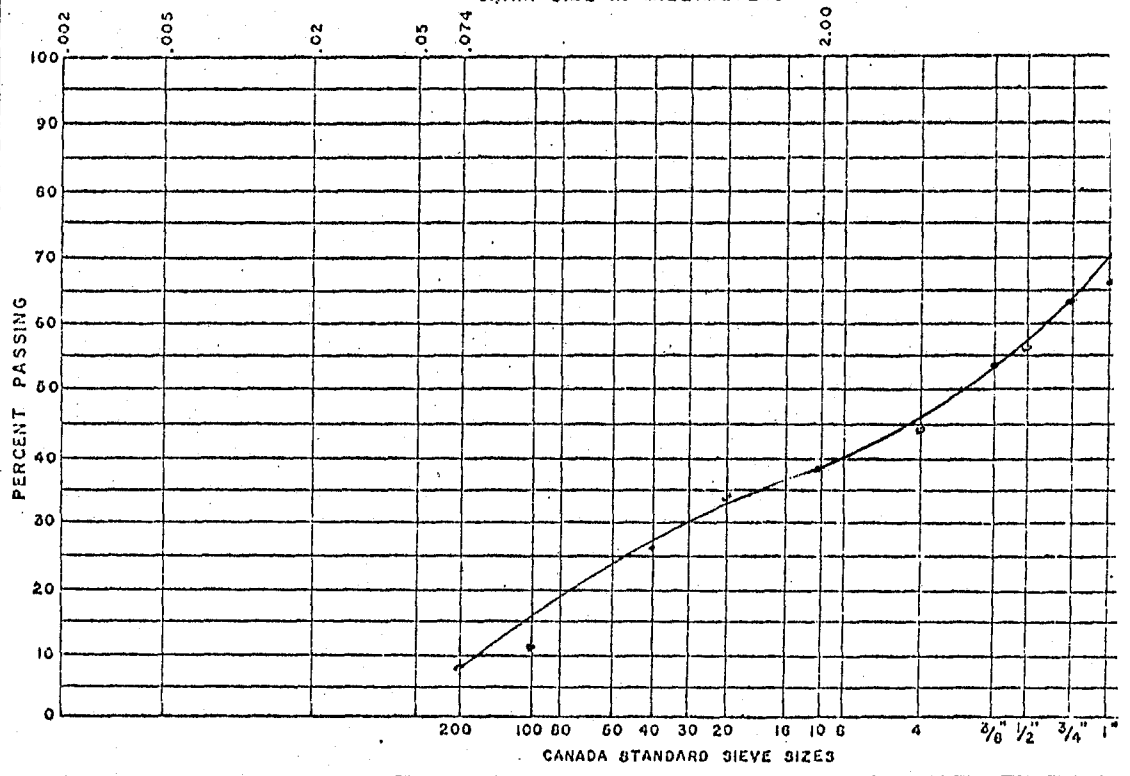
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIP ORE	60
GRANITIC	
SANDSTONE	25
SHALE	15
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	75
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	25
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT ... DEMAREST H.W. ...
 LOCATION ... SEE AIRPHOTO 2213 ...
 HOLE NO. ... NW 7 ...
 DEPTH ... 2 1/2' ... FIELD NO. ... 6 ...
 SAMPLE TYPE ... BLAST HOLE ...

LAB. N
4852

LABORATORY'S REMARKS
SANDSTONE & SHALE ARE BOTH LIMY
GRAVELLY SAND (NP)

DATE SAMPLED 29-
 DATE RECEIVED 4-7
 DATE RECORDED 18-
10

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		80.6	7.5	3.1	215.0	
	MH - ORGANIC FINE SANDY SILT LOW PLASTICITY					

CRUSH COUNT %

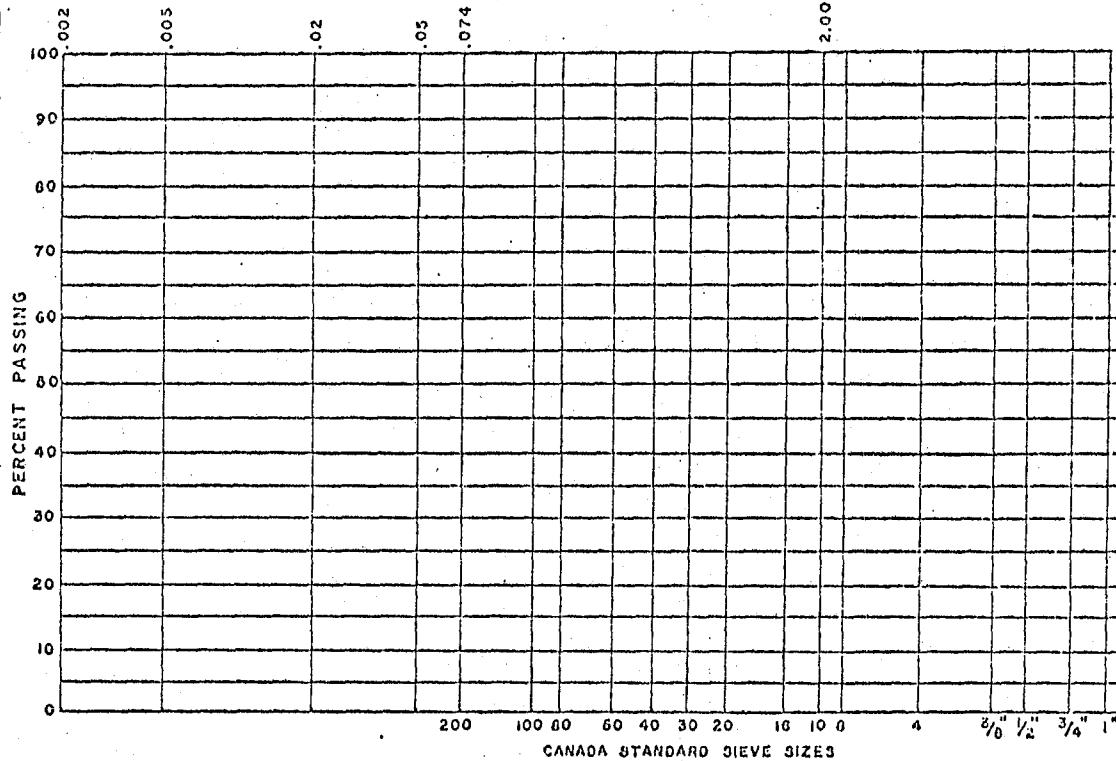
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER H.W.

LOCATION 2266+90 E

HOLE NO. NW 5

DEPTH 4 1/2' FIELD NO. 5

SAMPLE TYPE BAG

LAB. NO.
4851

LABORATORY'S REMARKS	DATE SAMPLED
ORGANIC	29-6
INSUFFICIENT SAMPLE TO DO SIEVE ANALYSIS & HYDROMETER	4-7
SANDY SILT (LP)	16-8

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D. MM SIEVE SIZE	% FINER BY WEIGHT	D. MM SIEVE SIZE	% FINER BY WEIGHT
3/4"	—	200	67.3	.075	56.4	1004	6.9
1/2"	99.6			.042	44.8		
3/8"	99.2			.032	33.2		
4"	94.9			.023	26.1		
10	88.2			.016	21.4		
20	83.6			.012	14.1		
40	80.6			.009	15.6		
100	77.4			.006	11.6		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP	22.9	
	SM - SILTY SAND					SAND - SILTY MIXTURE

CRUSH COUNT

%

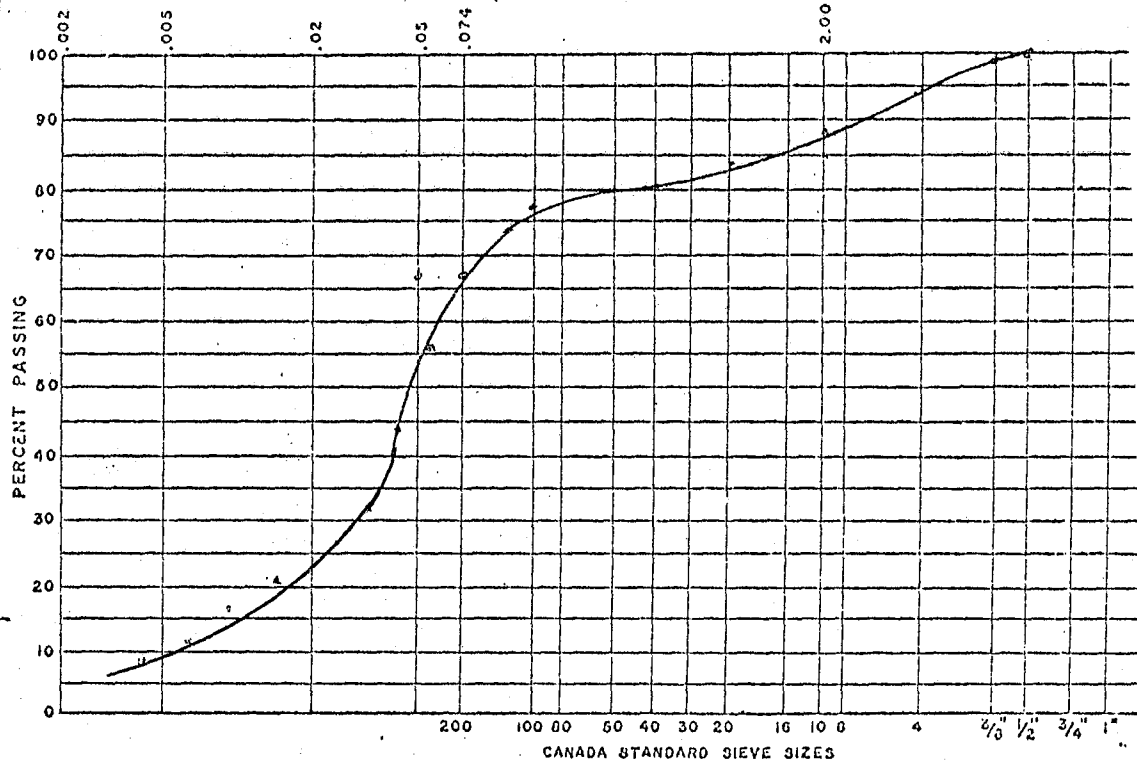
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
STONE	
GRANITE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMETER HWY

LOCATION SEE AIR PHOTO

HOLE NO. NW 4

DEPTH 3' FIELD NO. 4

SAMPLE TYPE BLAST HOLE

LAB. NO.
4850

LABORATORY'S REMARKS
SILTY SAND (NP)

DATE SAMPLED 29-6-

DATE RECEIVED 4-7-

DATE RECORDED 16-8

BORE HOLE NO.

NW-4

BORE HOLE POSITION

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 28/72

FINISHED:

CONTRACTOR

DRILLER

MATERIAL

GROUND SURFACE ELEVATION

GAUGE

READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE			
brkn shale, plants	0								
	1								
	2			4	101	B			
	3								
	4								
	5								
	6								
	7								
	8								1 bag Amex
	9								- hole to 3 1/2'
	10								- fr. s. con. silt. with some
									sand. y. gravel
									- sample 1' at 3'

pul out

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	—	100	11.0				
3/4"	83.7	250	9.1				
1/2"	67.0						
3/8"	53.3						
#4	35.8						
10	25.0						
20	18.4						
40	14.9						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					NP 8.8	
	GW-GM SILT-SAND-GRAVEL MIXTURE					

CRUSH COUNT %

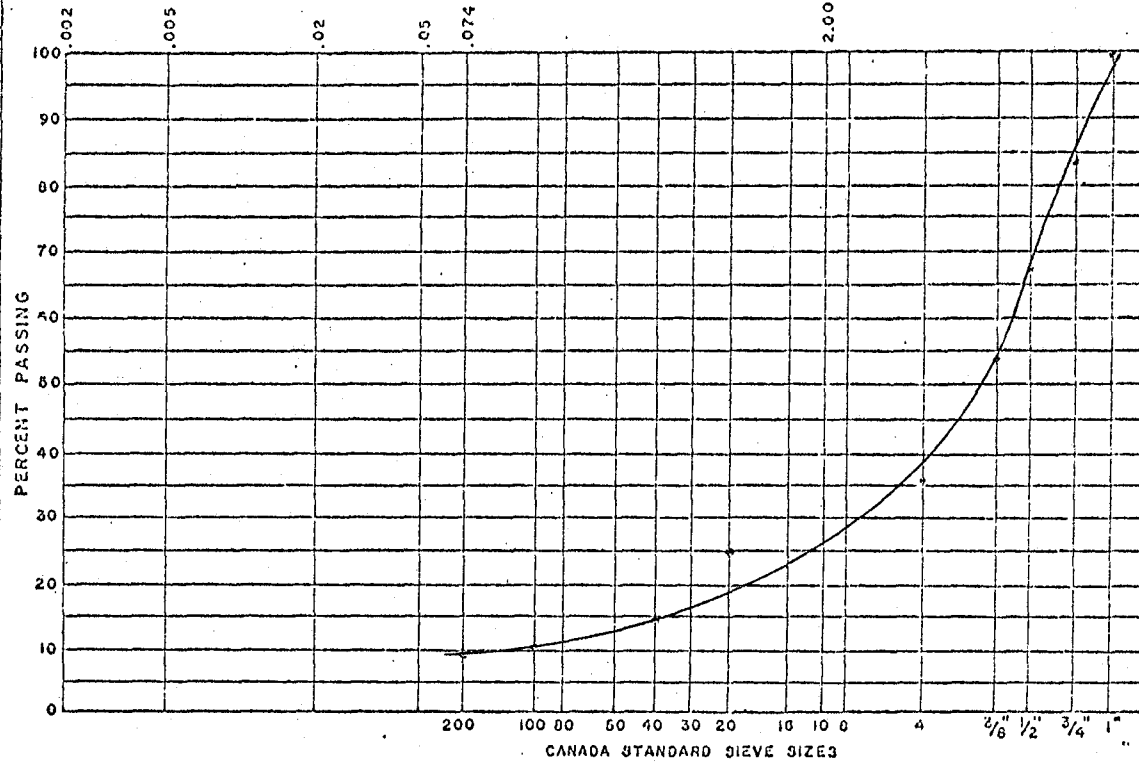
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMONE	
GRANITIC	
SANDSTONE	
SHALE (LIMY)	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT Dempster Hwy.
 LOCATION SEE AIR PHOTO 2274
 HOLE NO. NW 3
 DEPTH 3' FIELD NO. 3
 SAMPLE TYPE BLAST HOLE

LAB. NO.
4849

LABORATORY'S REMARKS
GENERAL SAND (NP)

DATE SAMPLED 28-6-
 DATE RECEIVED 4-7-
 DATE RECORDED 16-8-

BORE HOLE NO. NW-3		BORE HOLE POSITION <i>see airphoto</i>	
DPW TECHNICIAN		DATE AND TIME	
CONTRACTOR		STARTED: June 28/72 FINISHED:	
DRILLER		MATERIAL	
METHOD OF BORING		GROUND SURFACE ELEVATION	
SOIL:		CASING SIZE	
ROCK:		CASING HAMMER WT.LBS.	
		DROP.....INCHES	

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE			
<i>brkn shale</i>	<i>0</i>								
	<i>1</i>								
	<i>2</i>								
	<i>3</i>			<i>3</i>	<i>III</i>	<i>B</i>			
	<i>4</i>								
	<i>5</i>								
	<i>6</i>								
	<i>7</i>								
	<i>8</i>								
	<i>9</i>								
	<i>10</i>								

1 bag Amer
Shale to 3'
- sample # 3 at 3'
- well graded shale gravel
to 1/2" with sand + silt
- un frozen

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2	-	40	18.4				
1	95.7	100	17.8				
3/4	95.7	200	13.0				
1/2	94.0						
3/8	86.5						
#4	73.9						
10	53.4						
20	38.5						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					NP. 7.3	
	GW-SM					SILTY GRAVELLY SAND

CRUSH COUNT %

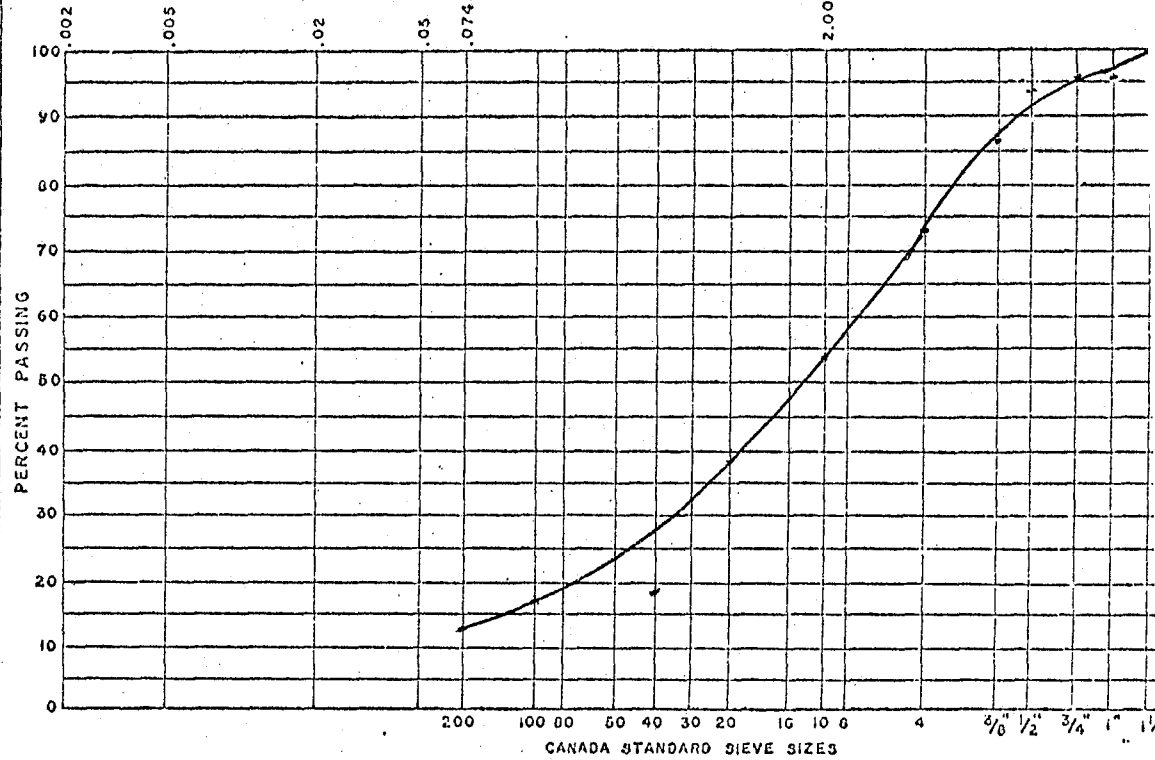
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
L. TONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER H.Y.W.

LOCATION SEE ALPHAS 74

HOLE NO. HW12

DEPTH 6' FIELD NO. 2

SAMPLE TYPE BLAST HOLE

LAB. NO.
4831

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-6-7

DATE RECEIVED 30-6-

DATE RECORDED 16-8-

AD

BORE HOLE NO.

NW-2

BORE HOLE POSITION

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 28/72

FINISHED:

CONTRACTOR

DRILLER

MATERIAL

GAUGE

MID SURFACE ELEVATION

READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAIN (FT)			
brkn shale	0									
	1									
	2									
	3									brkn shale to 3/4" with large fine fraction
	4									
	5			2	1111	B				
	6									
	7									
	8									appears frozen (soupy)
	9									
	10									1 bag Amey - hole to 3 1/2', dug to 6' - unfrozen, moist - shale gravel to 1 1/2" (well graded) with sandy matrix - sample #2 at 5'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	—			100	7.5		
3/4"	95.6			200	5.3		
1/2"	86.2						
3/8"	79.6						
4	60.1						
10	38.2						
20	21.5						
40	13.4						

AMPL. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP	4.7	
	SW-SM SILT-SAND-GRAVEL MIXTURE					

CRUSH COUNT %

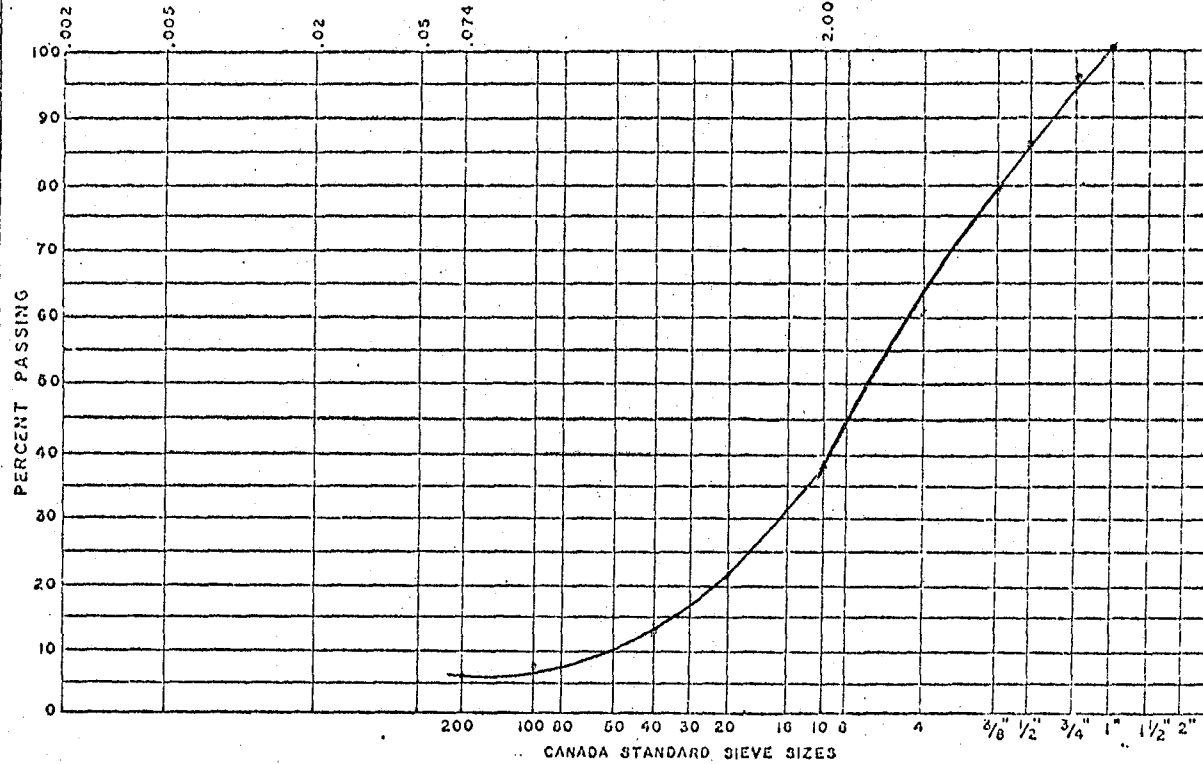
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
ONE	
ANITIC	
NDSTONE	
IALE	
IIIST	
IARTZITE	
HERS	Silicified shale 100

PARTICLE SHAPE ANALYSIS

UND	
G-ROUND	
GULAR	
D-ANGULAR	
ATS	
EDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT Dempster Hwy.
 LOCATION SEE AIRPHOTO (2774)
 HOLE NO. NW1
 DEPTH 3' FIELD NO. 1
 SAMPLE TYPE B.A.G.

LAB. NO.
4830

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SAND (NP)</u>	<u>28-6-72</u>
	<u>30-6-72</u>
	<u>16-8-72</u>

DPW TECHNICIAN
NW-1

see airphoto

DATE AND TIME

STARTED: June 28 / 72 FINISHED:

CONTRACTOR

DRILLER

METHOD OF BORING

GROUND SURFACE ELEVATION
CASING SIZE

GAUGE
READING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAIN (FT)			
brkn shale	0									4" max size
	1									
	2			1	111	B				
	3									
	4									
	5									
	6									
	7									
	8									
	9									
	10									1 bag A.mex
										- hole to 3'
										- unfrozen
										- well graded shale gravel
										to 1/2" max with sand & some
										silt
										- sample "1" at 3'
										- upper layers contain
										larger shale frags.

Sample Type

A symbolic representation of the diameter, type and shipping container of the sample using the following symbols:

Sample Type

- S. Split Barrel
- T. Thin Wall Tube
- P. Piston Sampler
- C. Core Barrel
- A. Auger
- W. Wash
- Y. Any other type of sample with description

Shipping Container

- T. Tube
- G. Glass Jar
- C. Cloth Bag
- P. Plastic Bag
- R. Core Box
- Z. Any other type of shipping container with description

An example of a typical entry in this column is $\frac{2''}{SP}$ meaning a standard penetration resistance sample from a 2 inch split barrel sampler shipped in a plastic bag.

Sample retained (Ft.)

The length of sample retained in the sampler.

Blows per 6 in.

The number of blows (penetration resistance) per 6 inch increment for the sample number marked in the adjacent column. If refusal is reached in less than 6 inches this must be indicated beside the blow count.

Sample No.

This second indication of sample number is related to the sample being described in the adjacent column.

Sample Description and Boring Notes

Present a sample description for each sample outlining the characteristics in the same way as "Description of Strata". Boring notes should include: overnight water level; water loss and gain; boring, testing and sampling procedure; drilling and testing equipment; information on soil and rock encountered between samples; seams or drops in bedrock; weather; etc.

DATE AND TIME

STARTED:
HOUR

FINISHED:

GROUND SURFACE ELEVATION
TESTING SIZE

GAUGE
READING

TESTING HAMMER WT.LBS.

DROP.....INCHES

BLOWS
PER
6 IN.

SAMPLE
NO.

SAMPLE DESCRIPTION
AND
BORING NOTES

This is the second
book in the RR (Rock
River) series which
started on the south
bank of the Rock River.

Note: the ground appears
to have thinned to a depth
of 6" in most areas.

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4	-	200	38.1
1/2	98.4		
3/8	94.0		
4	80.4		
10	69.2		
20	62.8		
40	59.1		
100	49.1		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					NP 27.7	
	GW-SM - SILTY GRAVELLY SAND					

CRUSH COUNT %

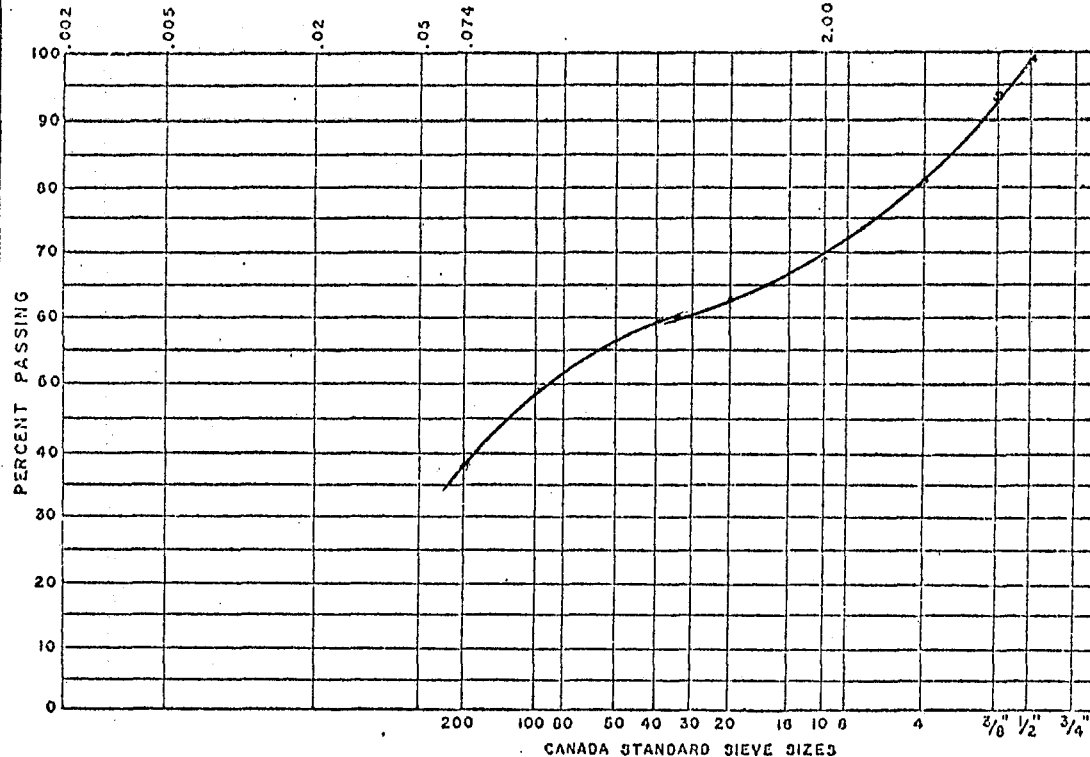
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
TOPE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMASTER HYW.
 LOCATION 22.74 + 90
 HOLE NO. RR 05
 DEPTH 7 1/2 FIELD NO. 104
 SAMPLE TYPE BAG

LAB.
484

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-
DATE RECEIVED 4-
16-
10

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4	—	200	34.9				
1/2	99.5						
3/8	96.2						
#4	86.7						
10	72.6						
20	63.3						
40	56.8						
100	43.8						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				0	22.8	
	GM-SM	SILTY GRAVELLY SAND				

CRUSH COUNT %

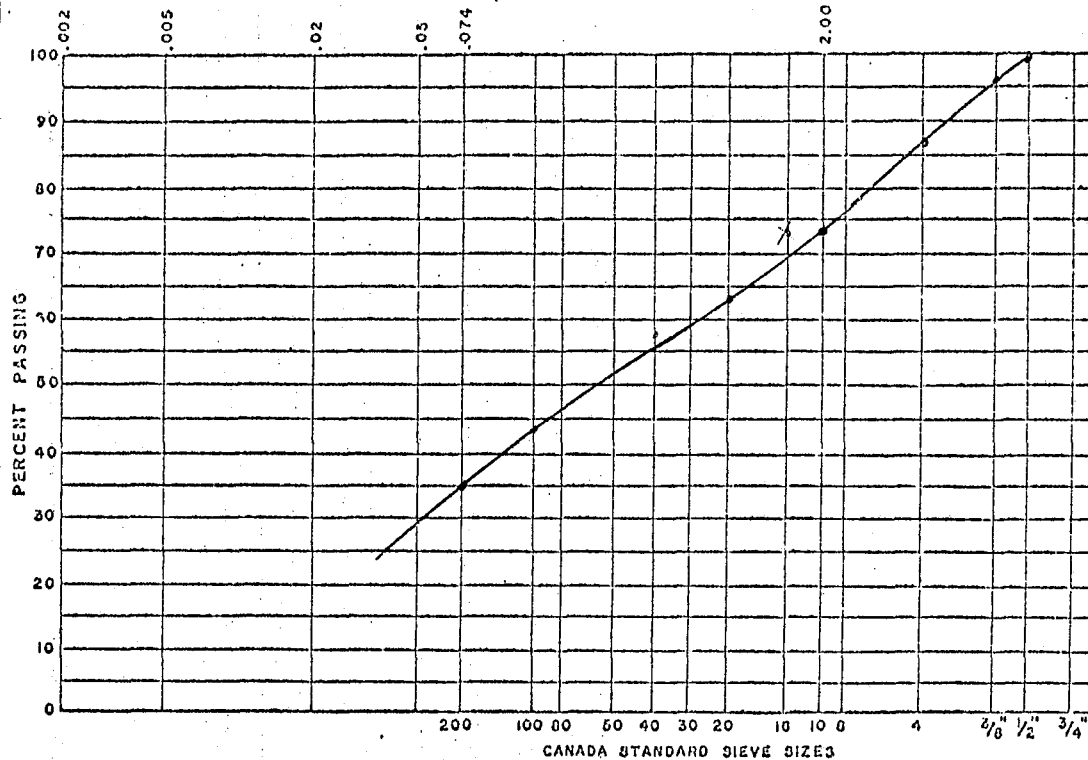
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
ITONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUANTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



CLAY SILT SAND GRAVEL

PROJECT DEMETER HWY

LOCATION 22.74 + 90

HOLE NO. RR 05

DEPTH 6 1/2' FIELD NO. 103

SAMPLE TYPE B.A.G.

LAB. 48

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-

DATE RECEIVED 4-

DATE RECORDED 16-

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	—	200	36.0
1/2	95.8		
3/8	89.2		
#4	74.8		
10	59.8		
20	50.5		
40	45.9		
100	39.8		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				TRACE	31.2	
	GWI-SM - SILTY GRAVELLY SAND					

CRUSH COUNT %

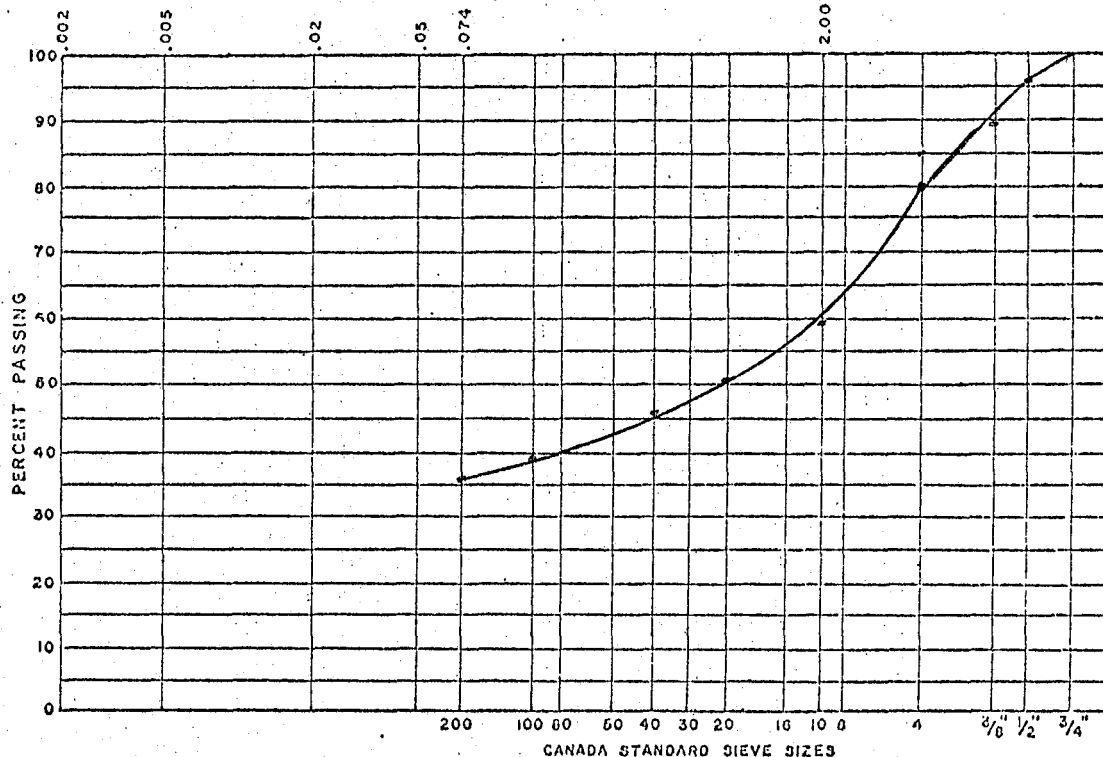
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
L. TONE	
GRANITIC	
SANDSTONE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVE
------	------	------	-------

PROJECT DEMASTER H.W.
 LOCATION 2284 + 90 E
 HOLE NO. RR 84
 DEPTH 9' FIELD NO. 102
 SAMPLE TYPE B.A.G.

LAB. NO.
484

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28 -
 DATE RECEIVED 4 -
 DATE RECORDED 16 -

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SM - SANDY SILT SILT SAND MIXTURE			NP	295.0	
CRUSH COUNT		%				

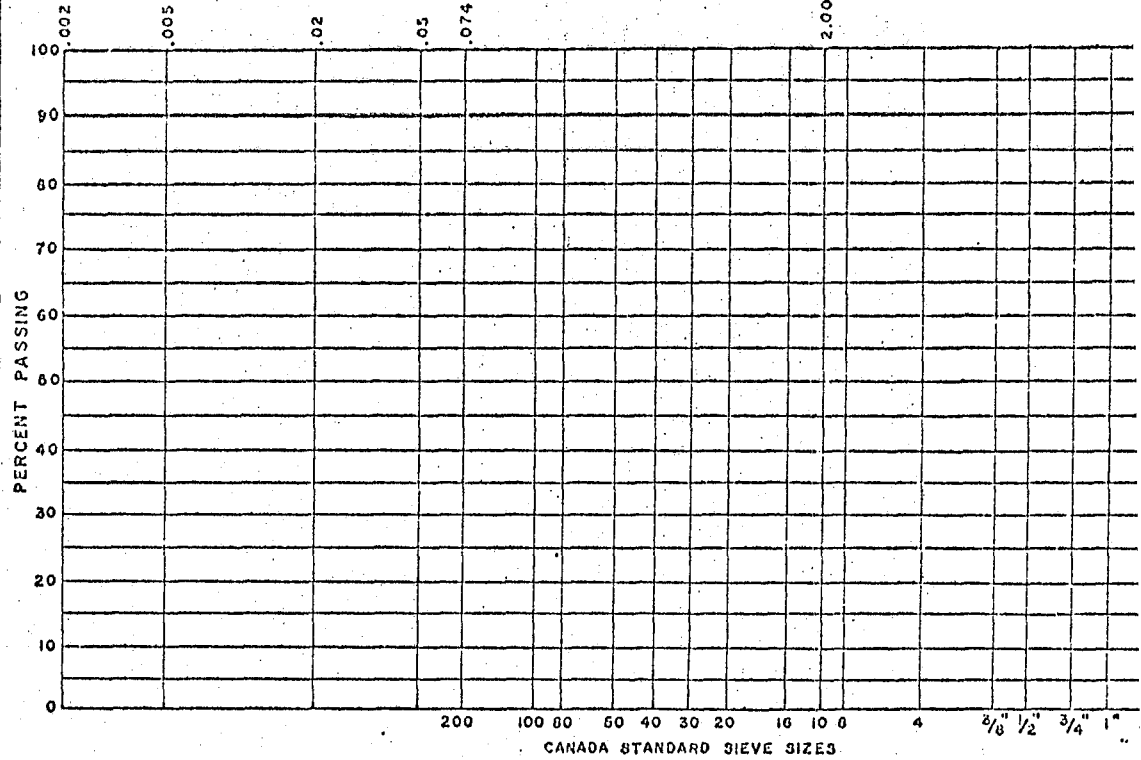
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
L. TONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEPARTMENT HYW.

LOCATION 2284+90 C.

HOLE NO. RR 84

DEPTH 4' FIELD NO. 101

SAMPLE TYPE BAG

LAB. NO.
4845

LABORATORY'S REMARKS

INSUFFICIENT SAMPLE TO DO
SIEVE ANALYSIS & HYDROMETER

SILT SAND (NP)

DATE SAMPLED 28-6

DATE RECEIVED 4-7

DATE RECORDED 16-8

ND

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SM - SILTY SAND				N.P. 409.6	SAND-SILT MIXTURE

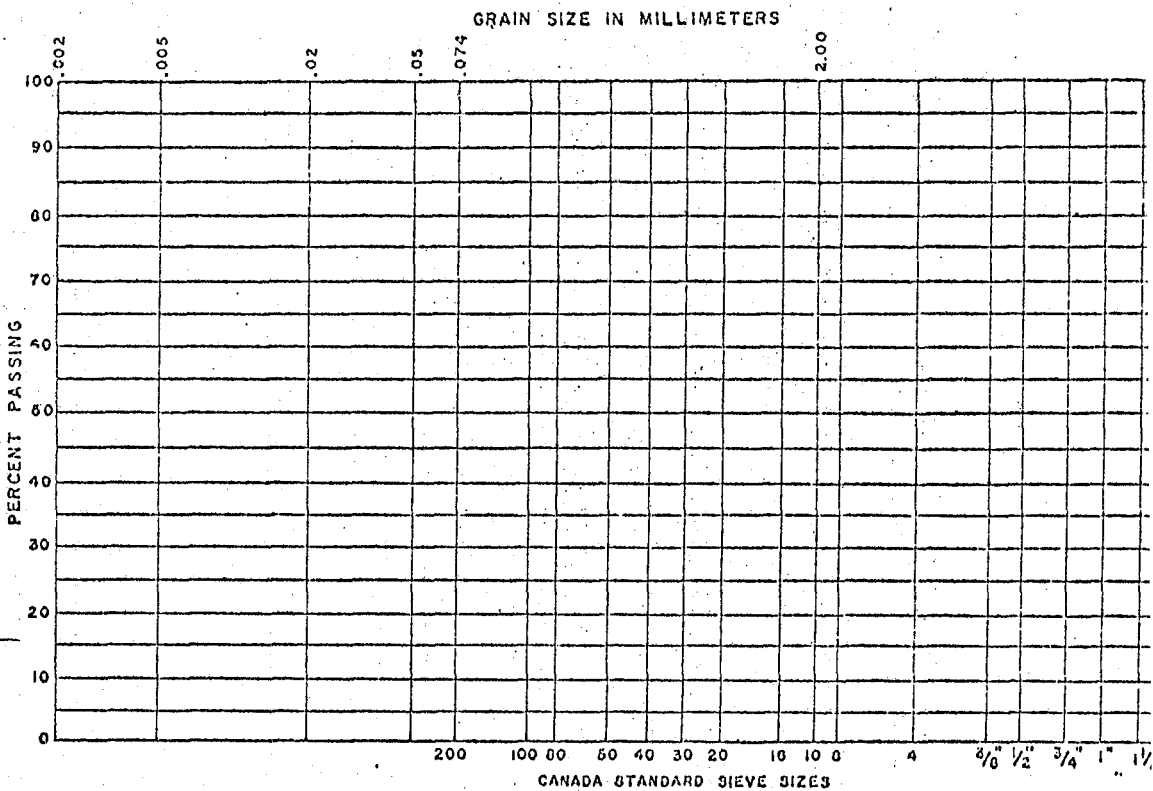
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
L. TONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER H
 LOCATION 2291 + 94 E
 HOLE NO. RR 83
 DEPTH 3 1/2 - 4 1/2 FIELD NO. 100
 SAMPLE TYPE

LAB. NO.
4844

LABORATORY'S REMARKS
 INSUFFICIENT SAMPLE TO DO
 SIEVE ANALYSIS & HYDROMETER
 SILTY SAND (NP)

DATE SAMPLED 28 - 6
 DATE RECEIVED 4 - 7
 DATE RECORDED 16 - 8

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	—	100	91
3/4	93.4	200	6.6
1/2	81.9		
3/8	74.2		
#14	56.2		
10	37.4		
20	23.3		
40	15.5		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP	4.2	
	GW - WELL GRADED GRAVELLY SAND					

CRUSH COUNT %

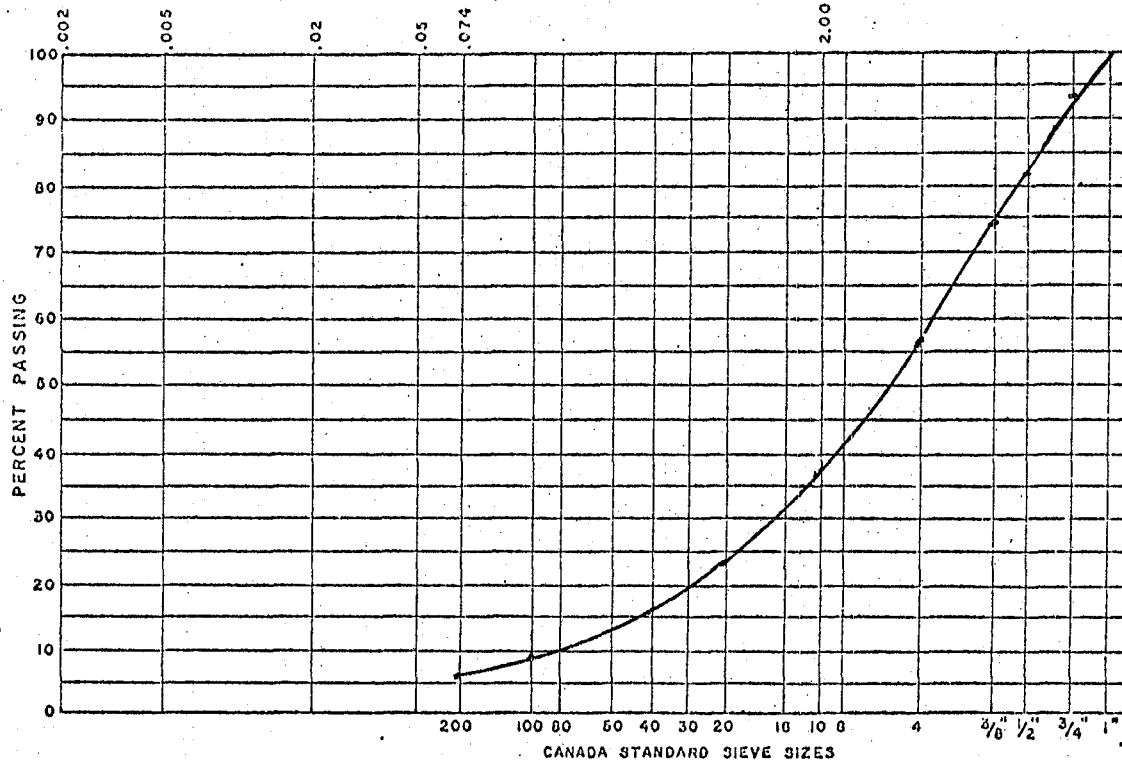
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	SILICIFIED SHALE 100

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER H.Y.W.
 LOCATION AIR PHOTO
 HOLE NO. RR 78
 DEPTH 3' FIELD NO. 95
 SAMPLE TYPE B.H.

LAB. NO.
48.3

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-6
 DATE RECEIVED 4-7
 DATE RECORDED 16-
 TESTED BY JD

DPW TECHNICIAN

DATE AND TIME

CONTRACTOR

DRILLER

STARTED:

June 28/72

FINISHED:

DATUM

GND SURFACE ELEVATION

GAUGE
READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAIN (FT.)			
brkn shale	0									3" max
	1									
	2			95		B				
	3									
	4									
	5									
	6									
	7									
	8									1 bag Amex
										- hole to 3'
										- untr. P. Rim
										- shale gravel to 1 1/2" with
										sand, some silt.
										- sample 95 at 3'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4	-	200	55
1/2	96.2		
3/8	88.9		
#4	65.2		
10	38.1		
20	20.9		
40	13.4		
100	6.6		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP. 41		
SW - WELL GRADED GRAVELLY SAND						

CRUSH COUNT %

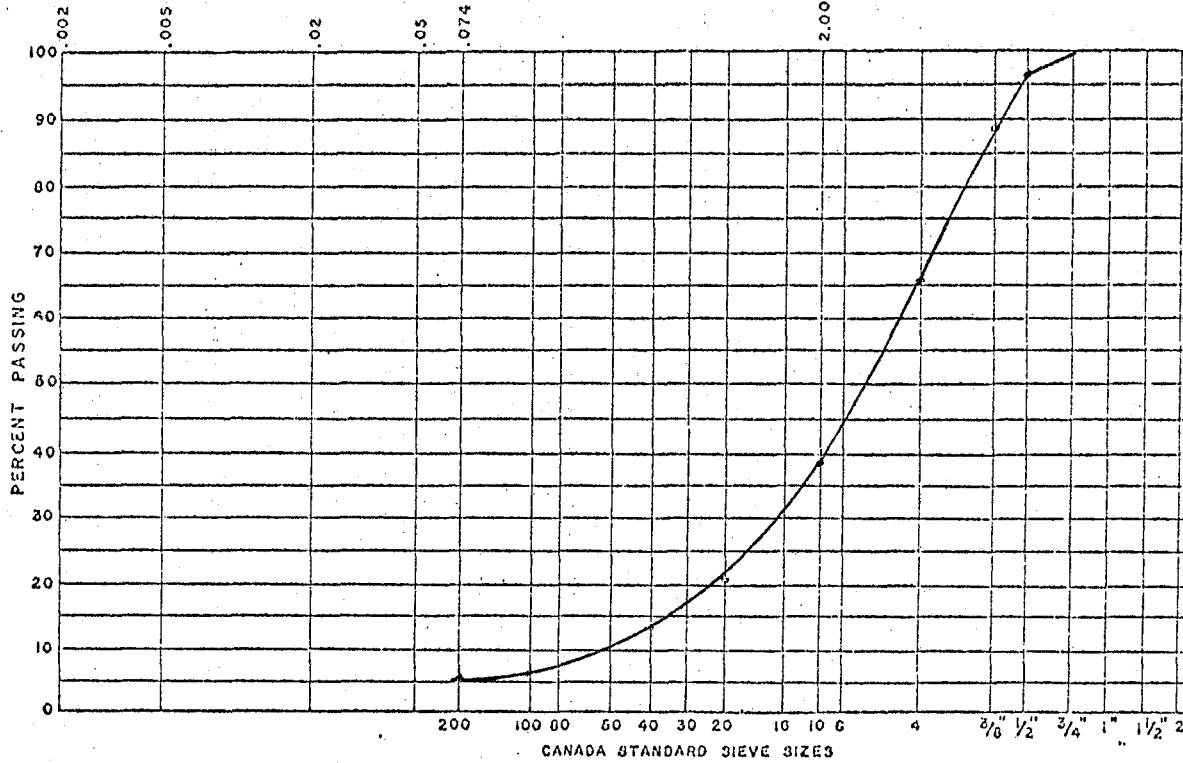
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMSTONE	
GRANITIC	
SANDSTONE	
SHALE	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT *Dumpster* *H.Y.W.*
 LOCATION *See Air photo*
 HOLE NO. *RR 77*
 DEPTH *3'* FIELD NO. *94*
 SAMPLE TYPE *BAG*

LAB. NO.
4829

LABORATORY'S REMARKS	DATE SAMPLED
<i>SLIGHTLY LIMY (PETRO)</i>	<i>28-6--</i>
<i>GRAVELLY SAND (NP)</i>	<i>30-6--</i>
	<i>16-8--</i>

BORING HOLE NO. **RK-77**

BORING HOLE POSITION **see airphoto**

DPW TECHNICIAN

DATE AND TIME

June 28/72

CONTRACTOR

DRILLER

STARTED:

FINISHED:

DATUM

METHOD OF BORING

GND SURFACE ELEVATION

GAUGE READING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP:.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINE (FT.)			
brkn shale	0									
	1									
	2			94	111	B				
	3									
	4									
	5									
	6									1 bag Amex
										- hole to 3'
										- unfrozen
										- well graded shale gravel to 2" max with sand + little silt
										- sample 94 at 3'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	—	60	11.2				
3/4"	88.3	200	9.7				
1/2"	77.0						
3/8"	67.2						
#4	45.9						
10	29.4						
20	19.4						
40	14.8						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
GW-GM SILT-GRAVEL-SAND MIXTURE			NP	11.6	

CRUSH COUNT %

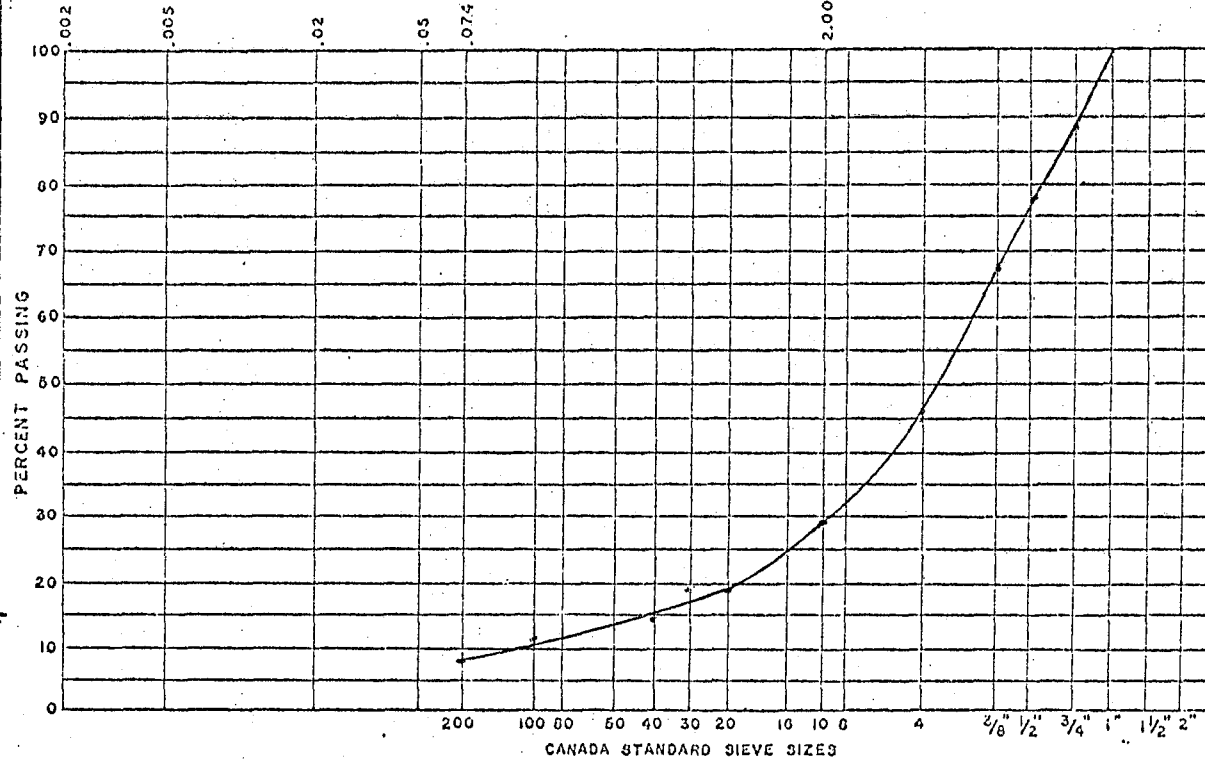
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
ONE	
ANITIC	
INDSTONE	
IALE	
IIIST	
IARTZITE	
HERS	

PARTICLE SHAPE ANALYSIS

OUND	
IB-ROUND	
IGULAR	
ID-ANGULAR	
ATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HYW.
 LOCATION See AIR PHOTO
 HOLE NO. RR 76
 DEPTH 3' FIELD NO. 9.3
 SAMPLE TYPE BLAST HOLE

LAB. NO.
4828

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-6-72
 DATE RECEIVED 30-6-72
 DATE RECORDED 16-8-72

10

BO [] LEN []

RR-76

D [] IOLE [] TION []

see airphoto

DPW TECHNICIAN

DATE AND TIME

CONTRACTOR

DRILLER

STARTED:

June 28/72

FINISHED:

DATUM

GND SURFACE ELEVATION

GAUGE

READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE			
brkn shale, a few plants	0								3" max. size of shale
	1								
	2								
	3			D3		B			
	4								
	5								
	6								1 bag Amiox,
	7								- hole to 3'
									- infra 2cm
									- shale gravel (well graded)
									to 2" max size with sand
									and silt
									- sample D3 at 3'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4	—			#200	16.6		
1/2	81.3						
3/8	73.4						
#4	65.0						
10	39.6						
20	30.4						
40	25.1						
100	19.8						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	GM-SM	SILTY	GRAVELLY	SAND	NP 14.7	

CRUSH COUNT %

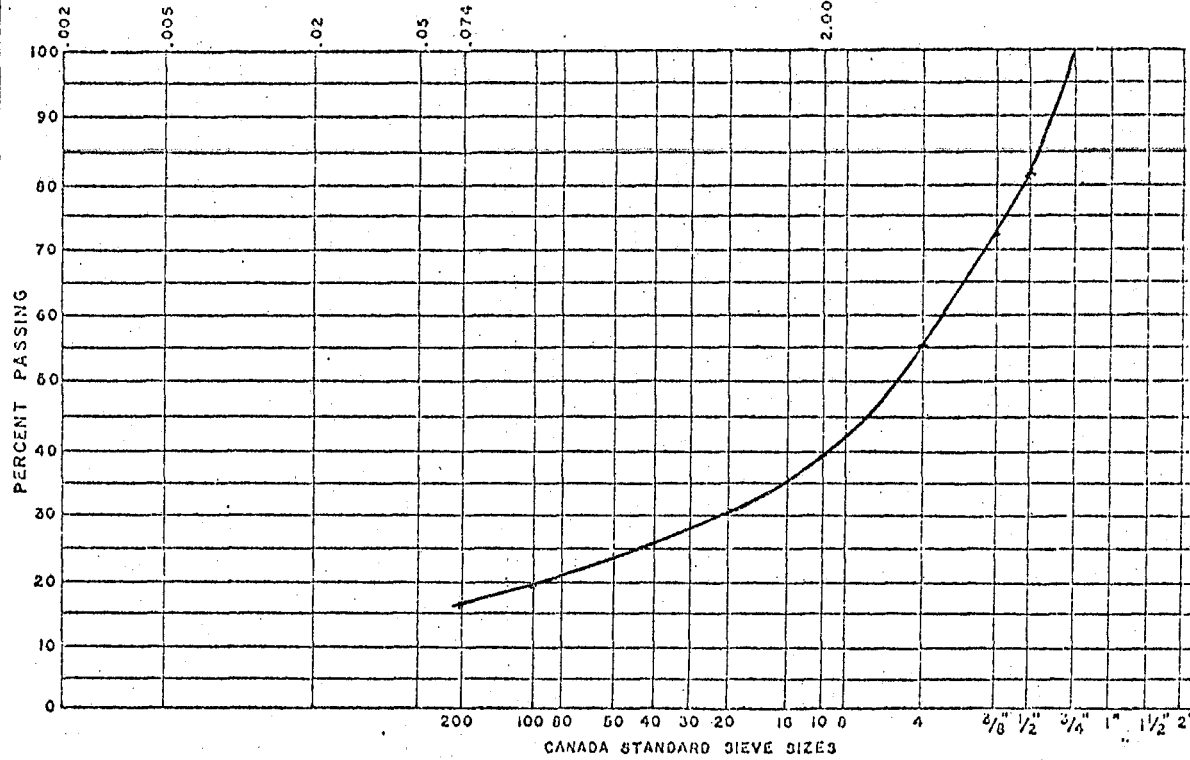
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIF. CONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	SILICIFIED SHALE 100

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DUMFRIES H.Y.W.
 LOCATION AIR PHOTO
 HOLE NO. RR 75
 DEPTH 2 1/2' FIELD NO. 92
 SAMPLE TYPE Blast Hole

LAB. NO.
4827

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-6-
 DATE RECEIVED 30-6-
 DATE RECORDED 16-8-

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4	—	200	57
1/2	90.9		
3/8	81.2		
#4	58.0		
#10	35.9		
#20	20.3		
#40	13.3		
#60	7.7		

MILL NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					NP 3.4	
GM - WELL GRADED GRAVELLY SAND						

CRUSH COUNT %

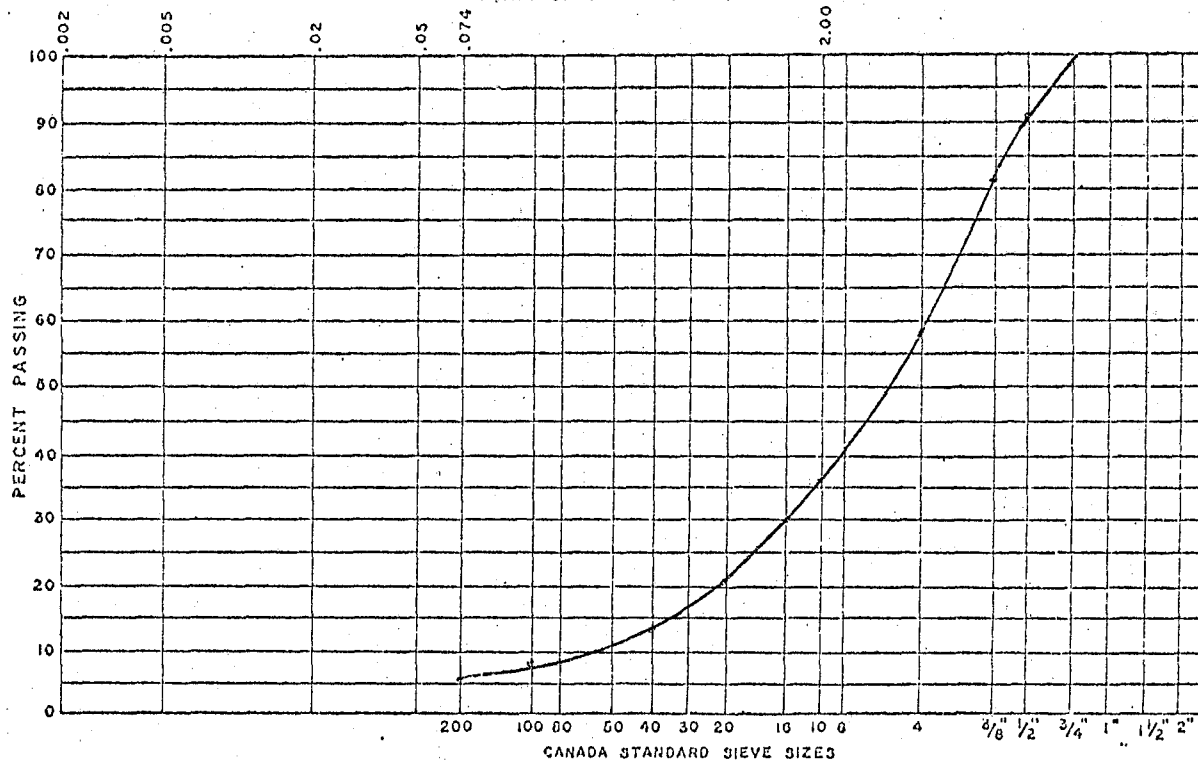
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
STONE	
RAMTIC	
ANDSTONE	
HALE	
GHIST	
UARTZITE	
THERS	

PARTICLE SHAPE ANALYSIS

OUND	
OB-ROUND	
EGULAR	
OB-ANGULAR	
ATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMONSTRATOR HYAL
 LOCATION AIR PITOTO
 HOLE NO. R274
 DEPTH 2 FIELD NO. 91
 SAMPLE TYPE BLAST HOLE

LAB. NO.
4838

LABORATORY'S REMARKS
GRAVELLY SAND (NP)

DATE SAMPLED 28-6-7
 DATE RECEIVED 4-7-
 DATE RECORDED 16-8-
 AD

BORE HOLE NO.

RR-74

BORE HOLE POSITION

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 28/72

FINISHED:

CONTRACTOR

DRILLER

DATUM

GND SURFACE ELEVATION

GAUGE

CASING SIZE

READING

METHOD OF BORING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
brkn shale, lichen	0									3-4" max
	1			9)		B				
	2									
	3									
	4									
	5									1 bag Amex
	6									-hole to 2'
	7									-unfrozen
										-shale gravel to 1/2" max
										with sand and little silt-size particles
										-sample: 91 at 2'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	100.0	#100	7.3
3/4"	99.1	200	5.8
1/2"	96.2		
3/8"	77.4		
#4	56.2		
10	34.5		
20	19.5		
40	13.3		

TEST NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SW-SM SILTY GRAVELLY SAND				N.P. 3.3	

CRUSH. COUNT %

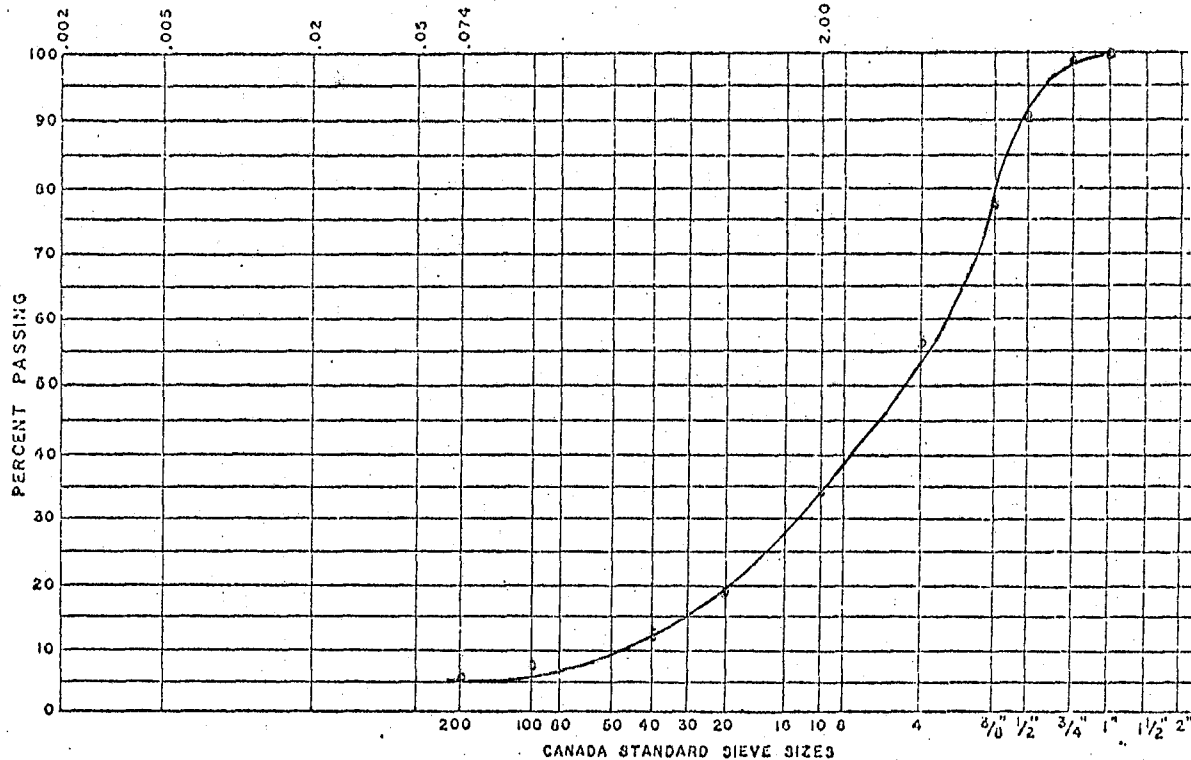
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITIC	
SANDSTONE	
SHALE	100%
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
COBBLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMISTER HIGHWAY

LOCATION SEE AIRPHOTO 2500'

HOLE NO. RR 73

DEPTH 3' FIELD NO. 90

SAMPLE TYPE BLAST HOLE - BAC

LAB. NO.
4826

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SAND (N.P.)</u>	<u>28-6-70</u>
	DATE RECEIVED <u>30-6-</u>
	DATE RECORDED <u>14-8-70</u>

JD

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D.M.M. SIEVE SIZE	% FINER BY WEIGHT	D.M.M. SIEVE SIZE	% FINER BY WEIGHT
				.065	68.5	.065	17.8
				.044	62.8		
				.032	60.1		
				.022	54.9		
				.016	49.7		
				.012	44.4		
				.009	32.9		
				.006	27.9		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
OH - ORGANIC MEDIUM PLASTICITY SILTY CLAY	79.9	72.9	7.1	16.90	

CRUSH COUNT %

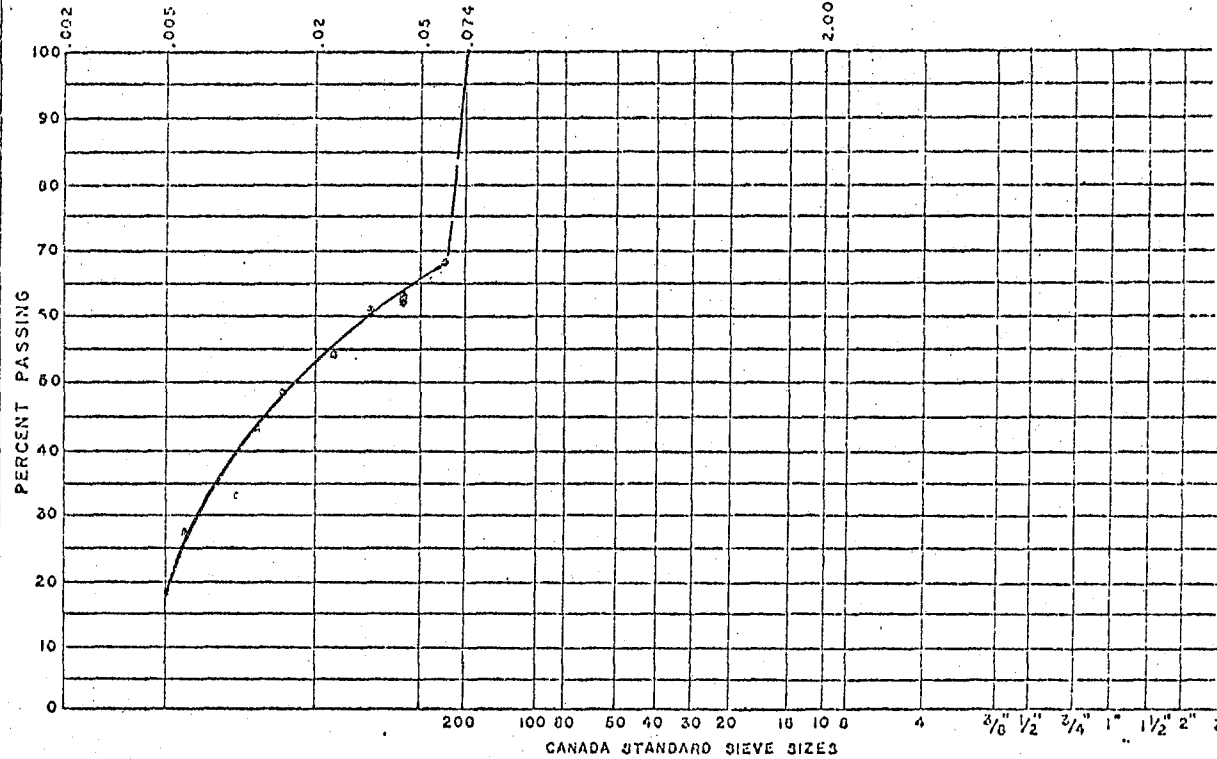
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
STONE	
AMTIC	
NDSTONE	
ALE	
HIST	
ARTZITE	
HERS	

PARTICLE SHAPE ANALYSIS

UND	
B-ROUND	
GULAR	
3-ANGULAR	
ATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DAMPSTER HY
 LOCATION 2295 + 00 &
 HOLE NO. RR 72
 DEPTH 6' FIELD NO. 89
 SAMPLE TYPE BAG

LAB. NO.
4837

LABORATORY'S REMARKS	DATE SAMPLED
<u>SILTY CLAY (MP)</u>	<u>28-6-72</u>
	<u>4-7-72</u>
	<u>16-8-72</u>

GRAIN SIZE ANALYSIS

NO	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	NO	% FINER BY WEIGHT
		0.075	64.4	0.075	16.9
		0.15	59.0		
		0.3	54.0		
		0.6	47.9		
		1.18	39.9		
		2.5	33.2		
		5.0	28.1		
		10.0	23.6		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SM - SILTY SAND SAND-SILT MIXTURE			N.P.	46.4	

CRUSH COUNT %

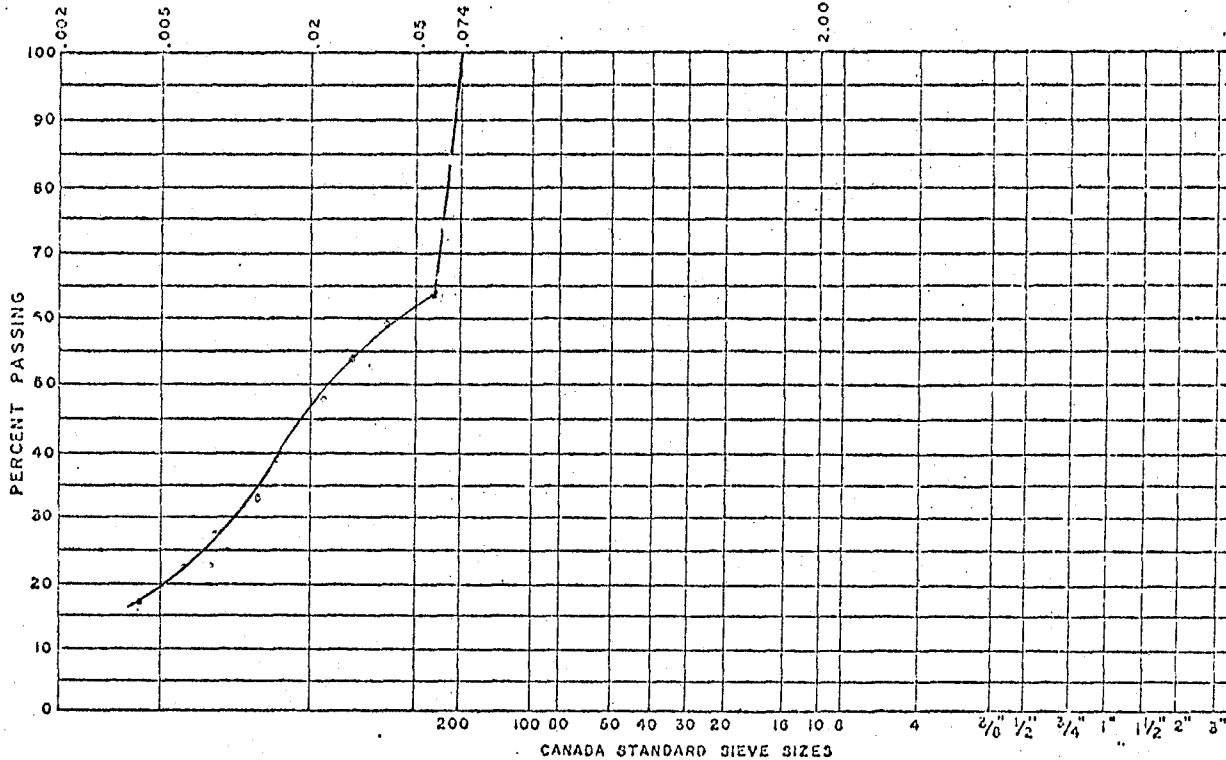
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
CLAY	
SILT	
SAND	
GRAVEL	
OTHER	

PARTICLE SHAPE ANALYSIS

SHAPE	PERCENT
ROUND	
FLAT	
ANGULAR	
OTHER	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER H.V.
 LOCATION 2298 + 90
 HOLE NO. RR 70
 DEPTH 3 1/2' FIELD NO. 88
 SAMPLE TYPE BAG

LAB. NO.
4825

LABORATORY'S REMARKS
SANDY SILT (NP)

DATE SAMPLED 28-6-72
 DATE RECEIVED 30-6-72
 DATE RECORDED 16-8-72

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D.M.M. SIEVE SIZE	% FINER BY WEIGHT	D.M.M. SIEVE SIZE	% FINER BY WEIGHT
3/4"	—	200	69.3	.057	55.9	.004	18.0
1/2"	98.7			.041	52.2		
3/8"	98.2			.029	50.6		
1/4"	93.9			.022	42.3		
10	87.7			.016	35.4		
20	82.1			.012	32.4		
40	78.0			.008	27.5		
60	73.5			.006	23.6		

GROUP NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP	23.5	
	ML - INORGANIC FINE SANDY SILT					

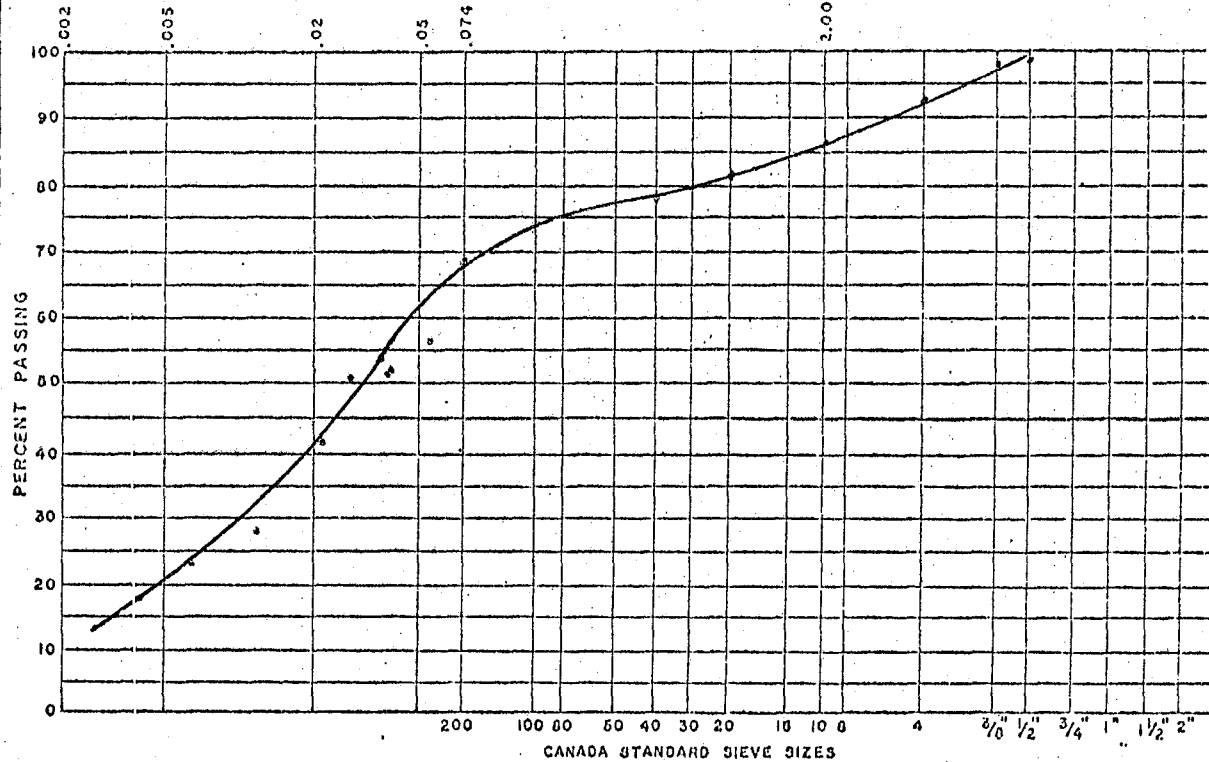
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
GLASS	
STONE	
CRISTIC	
WINDSTONE	
IALE	
CHIST	

ANGULAR	
ATS	
ES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DENPSTER HWY

LOCATION ST 238 + 804

HOLE NO. RR 69

DEPTH 1 1/2' FIELD NO. 85

SAMPLE TYPE BAG

LAB. NO.
4822

SANDY SILT (NP)

28-6-7
30-6-7
16-8-72 ✓

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8	—						
#4	98.6						
#10	93.3						
#20	85.6						
#40	80.1						
#60	71.8						
#100	60.8						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP	22.4	
	ML - INORGANIC SANDY SILT					

GRUSH COUNT %

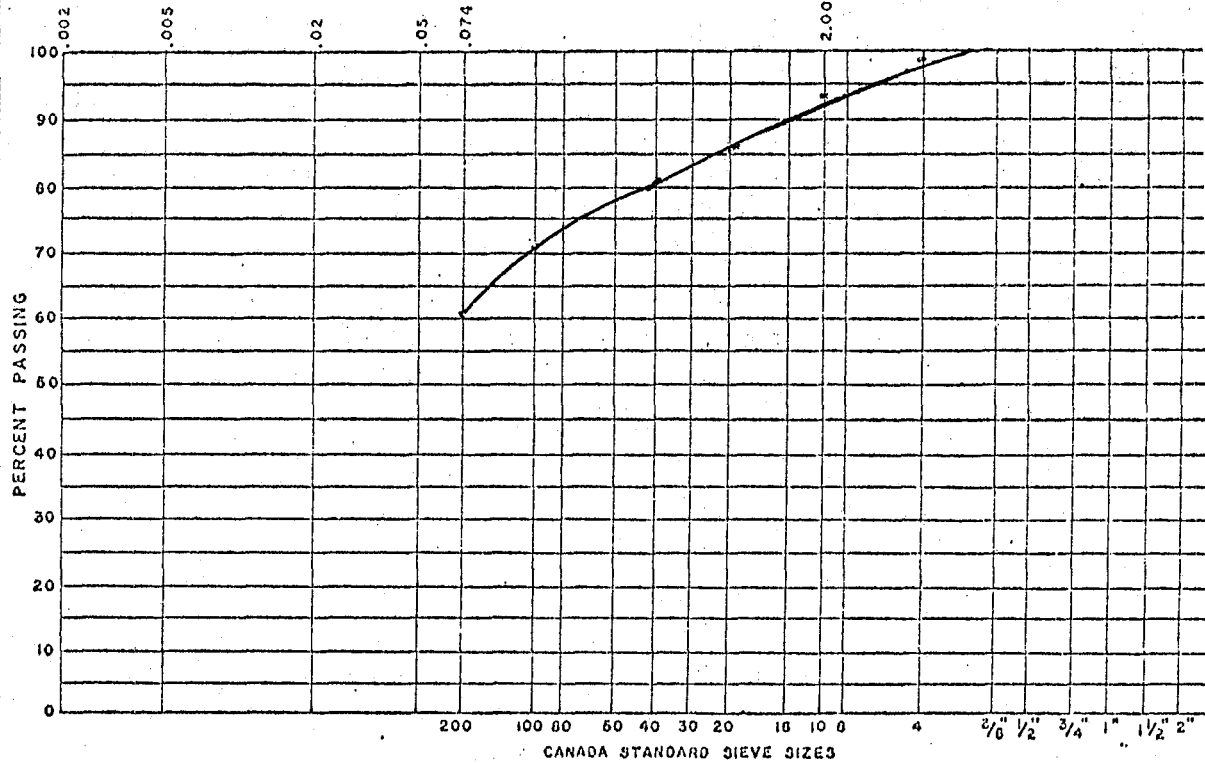
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
STONE	
CRANITIC	
SANDSTONE	
SHALE	
CHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
UB-ROUND	
REGULAR	
UB-ANGULAR	
FLATS	
FINER	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMAREST, NY.

LOCATION 2326 + 80 E

HOLE NO. RR 69

DEPTH 9 1/2' FIELD NO. 86

SAMPLE TYPE BAG

LAB. NO.
4823

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY SILT (NP)</u>	<u>28-6-76</u>
	DATE RECEIVED <u>30-6-</u>
	DATE RECORDED <u>16-8-</u>
	TESTED BY <u>TD</u>

GRAIN SIZE ANALYSIS

SEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	U.S.M. SIEVE SIZE	% FINER BY WEIGHT	D.M.M. SIEVE SIZE	% FINER BY WEIGHT
				.056	75.2	.0075	24.6
				.040	70.5		
				.029	64.3		
				.021	56.5		
				.015	47.7		
				.011	40.2		
				.008	37.1		
				.006	30.3		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	ML - ORGANIC FINE SANDY SILT			N.P.	96.2	

CRUSH COUNT %

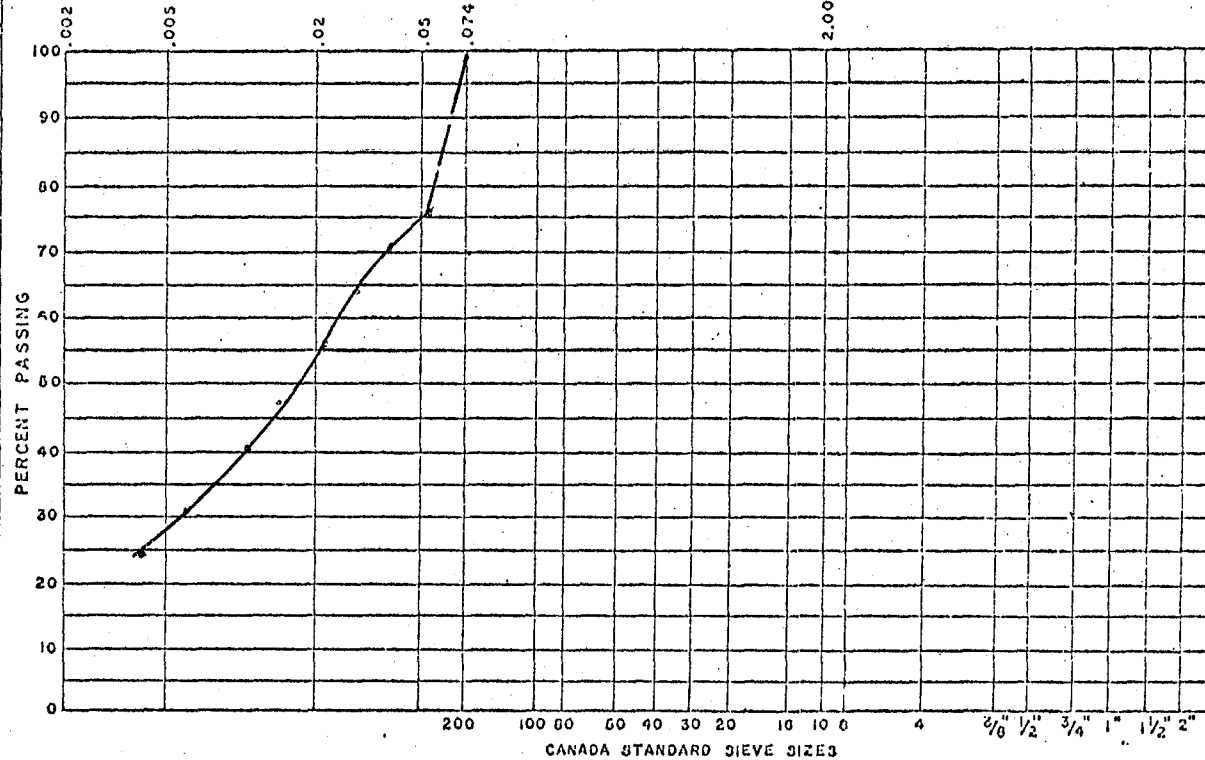
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
ONE	
RANITIC	
INDSTONE	
IALE	
INIST	
JARTZITE	
HERS	

PARTICLE SHAPE ANALYSIS

OUND	
B-ROUND	
IGULAR	
B-ANGULAR	
ATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DENBSTER HYW.
 LOCATION 2340 + 00 d
 HOLE NO. RR 68
 DEPTH 8' FIELD NO. 84
 SAMPLE TYPE BAG

LAB. NO.
4821

LABORATORY'S REMARKS	DATE SAMPLED
<u>ORGANIC SANDY SILT (NP)</u>	<u>28-6-72</u>
	DATE RECEIVED <u>30-6-72</u>
	DATE RECORDED <u>16-8-72</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	-	200	16.8
1/2	93.3		
3/8	82.8		
#4	58.6		
#10	40.3		
#20	32.4		
#40	25.4		
#100	19.7		

AMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		14.6	17.8	2.0	26.0	
	GW-5M	SILTY GRAVELLY SAND				

CRUSH COUNT %

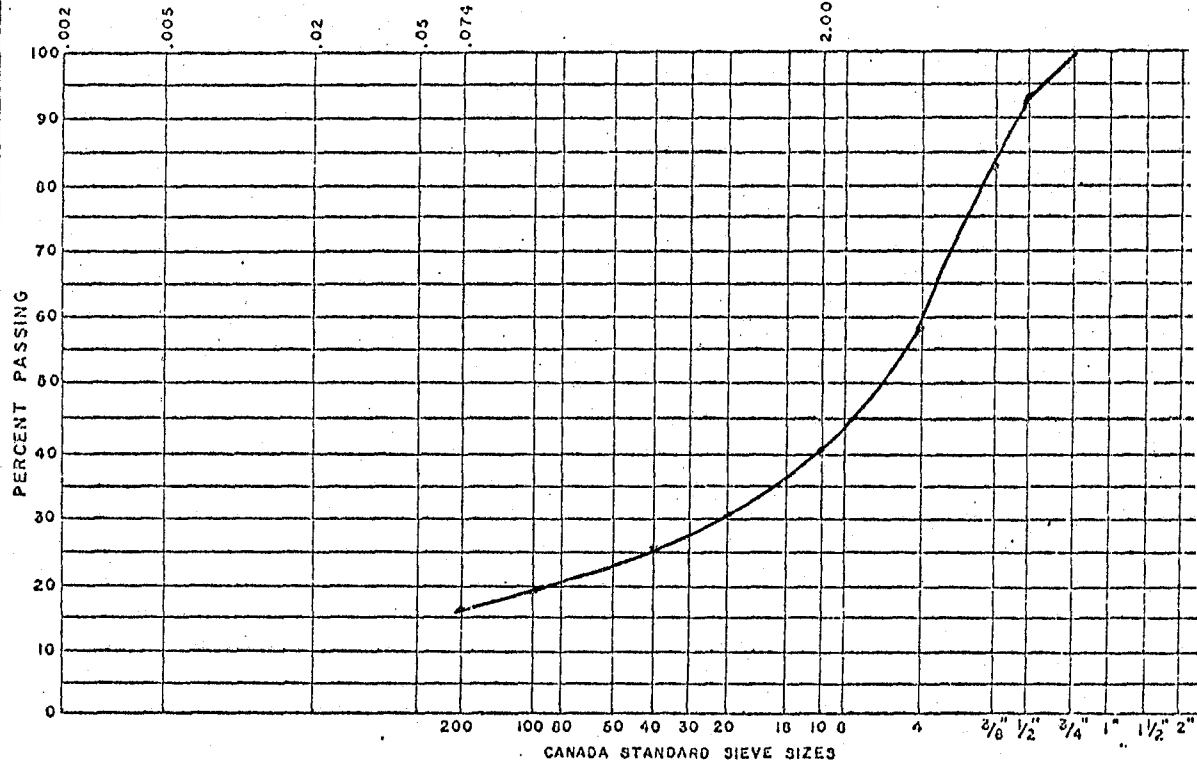
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
DIORITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
UB-ROUND	
ANGULAR	
UB-ANGULAR	
FLATS	
CRIBLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT Dempster H.V.M.

LOCATION 2359+00 d

HOLE NO. RR 67

DEPTH 4 1/2' FIELD NO. 82

SAMPLE TYPE 809

LAB. NO.
4820

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SAND (LP)</u>	<u>28-6-7</u>
	DATE RECEIVED <u>30-6-7</u>
	DATE RECORDED <u>16-8-7</u>
	TESTED BY <u>MD</u> ✓

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	-	40	14.0
1"	92.9	100	11.1
3/4"	80.2	200	9.7
1/2"	54.9		
3/8"	42.2		
#4	29.8		
10	22.0		
20	16.7		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	GW-GM			TRK	3.4	
	SILTY GRAVELLY SAND				9.9	

CRUSH COUNT %

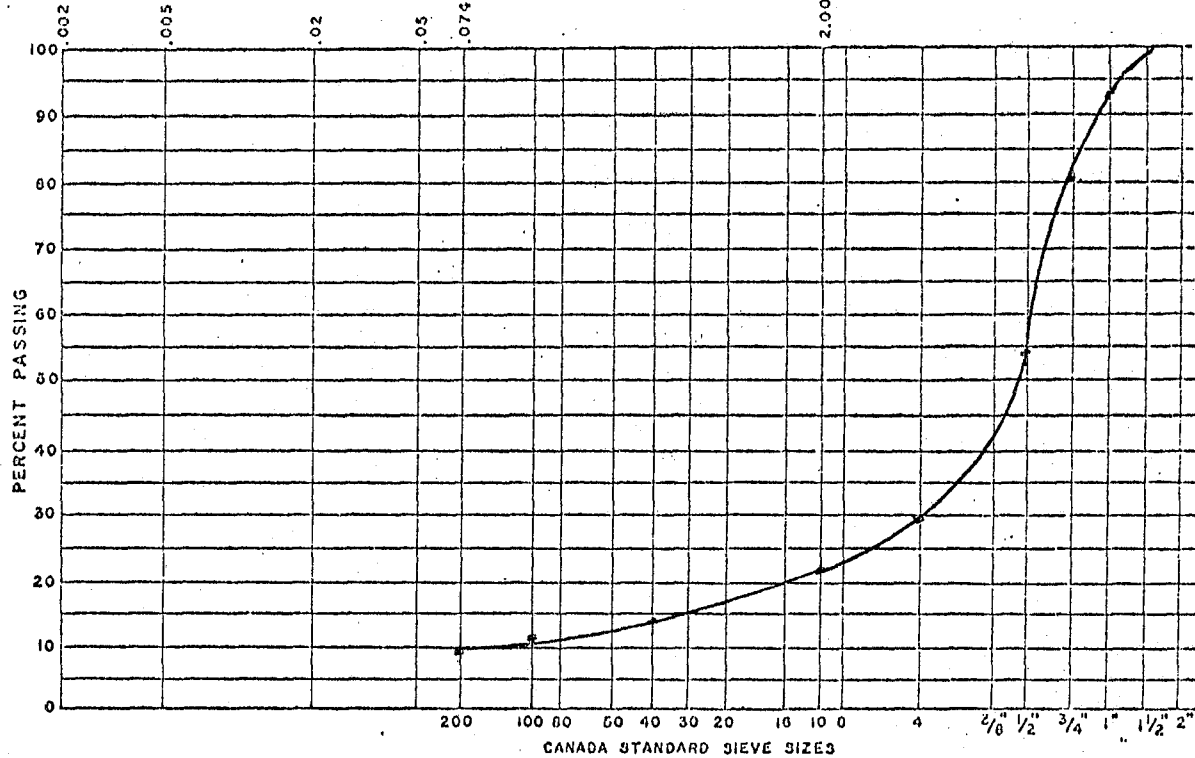
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
STONE	20
GRANITIC	
SANDSTONE (LIMY)	5
SHALE	70
SCHIST	
QUARTZITE	
OTHERS QUARTZ	5

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
FEATHERS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT ... DUNPSTER H.Y.W. ...
 LOCATION ... 2359+00 & ...
 HOLE NO. ... RR67 ...
 DEPTH ... 7 1/2' ... FIELD NO. ... 83 ...
 SAMPLE TYPE ... B.G. ...

LAB. NO.
4836

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SAND (NP)</u>	<u>28-6-</u>
	DATE RECEIVED <u>4-7-7</u>
	DATE RECORDED <u>16-8-7</u>

GRAIN SIZE ANALYSIS

VE ZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
				.041	63.7		
				.029	61.5		
				.020	57.4		
				.015	49.5		
				.012	40.1		
				.008	36.9		
				.006	27.7		
				.004	15.5		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
ML - ORGANIC FINE SANDY SILT			NP	498.6	

CRUSH COUNT %

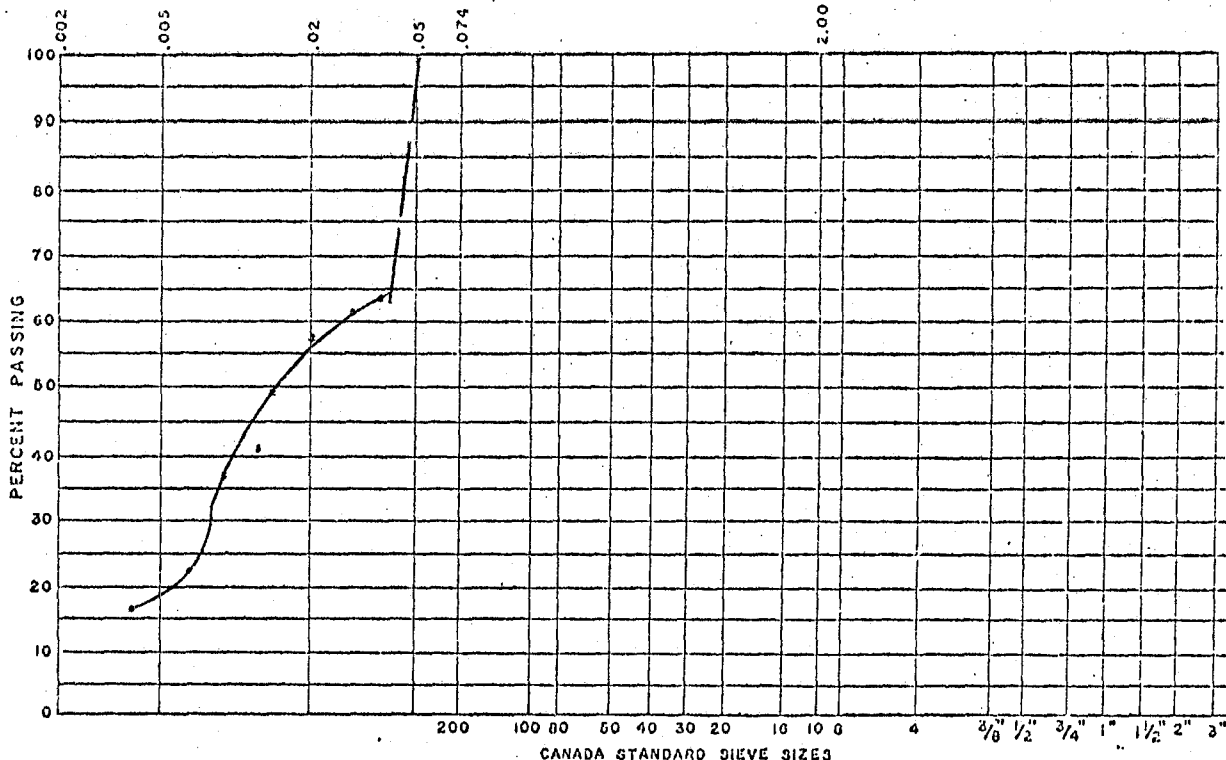
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ALT	
ONE	
NITIC	
DSTONE	
LE	
IST	
RTZITE	
ERS	

PARTICLE SHAPE ANALYSIS

ID	
-ROUND	
PLAR	
-ANGULAR	
'S	
LES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DAMPSTAR HYW

LOCATION 2361+00 &

HOLE NO. RR66

DEPTH 2 1/2' FIELD NO. 80

SAMPLE TYPE BAG

LAB. NO.
4818

LABORATORY'S REMARKS
ORGANIC SANDY SILT (N.P.)

DATE SAMPLED 28-6-72

DATE RECEIVED 30-6-72

DATE RECORDED 16-8-72

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	100.0						
3/8"	97.3						
4	91.4						
10	80.5						
20	70.8						
40	63.7						
100	54.2						
200	48.0						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SM - GRAVELLY SILTY SAND			N.P.	76.4	

CRUSH COUNT %

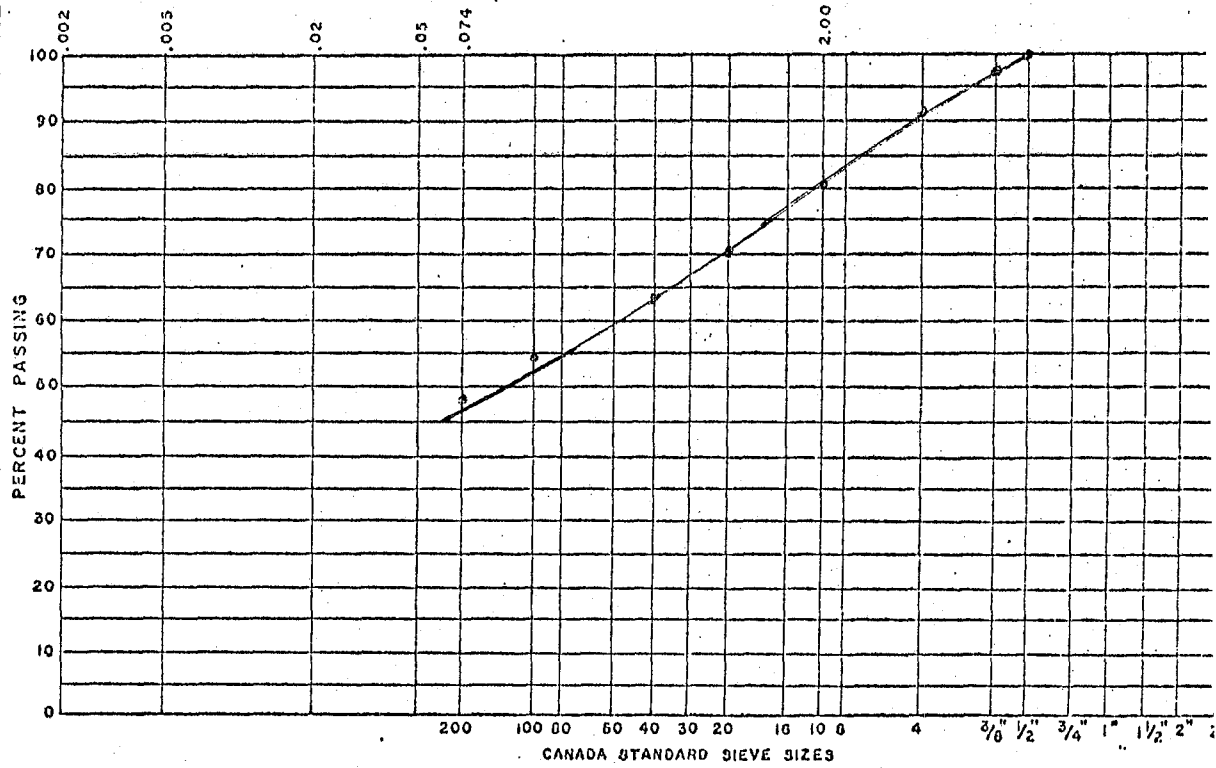
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
STONE	
MAFIC	
QUARTZITE	
SLATE	
SLIST	
SLARTZITE	
SLERS	

PARTICLE SHAPE ANALYSIS

UND	
B-ROUND	
GULAR	
B-ANGULAR	
ATS	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 2361+00

HOLE NO. PR66

DEPTH 7 1/2' FIELD NO. 81

SAMPLE TYPE BAG

LAB. NO.
4819

LABORATORY'S REMARKS	DATE SAMPLED
<u>SILTY SAND (NP)</u>	<u>28-6-72</u>
	<u>30-6-72</u>
	<u>10-8-72</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100	200	5.6
1/2"	90.0		
3/8"	83.7		
#4	61.3		
10	39.4		
20	21.7		
40	14.1		
100	7.6		

MATERIAL NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SW - GRAVELLY SAND		00	0	4.5	

CRUSH COUNT %

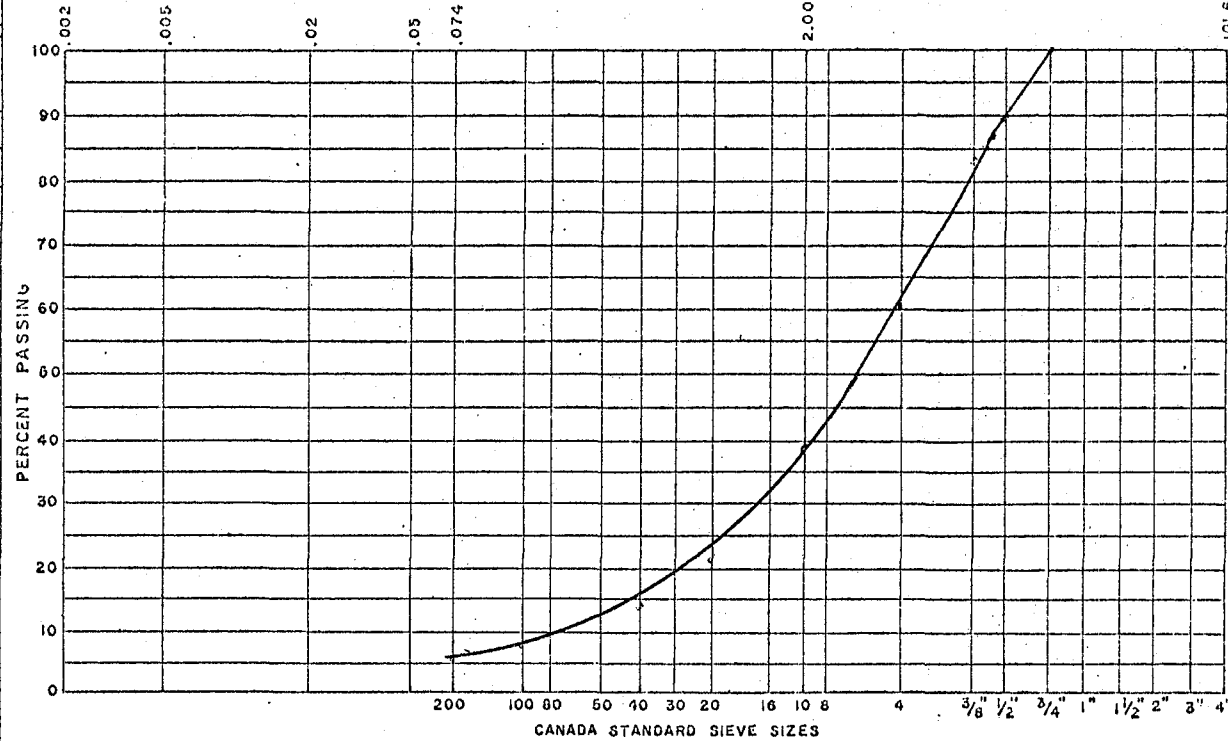
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
SLATE	
SANDSTONE	
SHALE	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	95
SUB-ANGULAR	
FLATS	5
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DUMFRIES HWY
 LOCATION SEE AIR PHOTO
 HOLE NO. RR 65
 DEPTH 2' FIELD NO. 79
 SAMPLE TYPE BAG

LAB. NO.
4915

LABORATORY'S REMARKS
GRAVELLY SAND (N.P.)

DATE SAMPLED 27-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

EVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	100.0			# 100	18.0		
3/4"	96.2			# 200	14.8		
1/2"	90.5						
1/8"	83.8						
4	66.5						
10	48.0						
20	33.2						
40	25.7						

NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					14.3	
	SW-SM - GRAVELLY SILTY SAND		N.P.			

CRUSH COUNT %

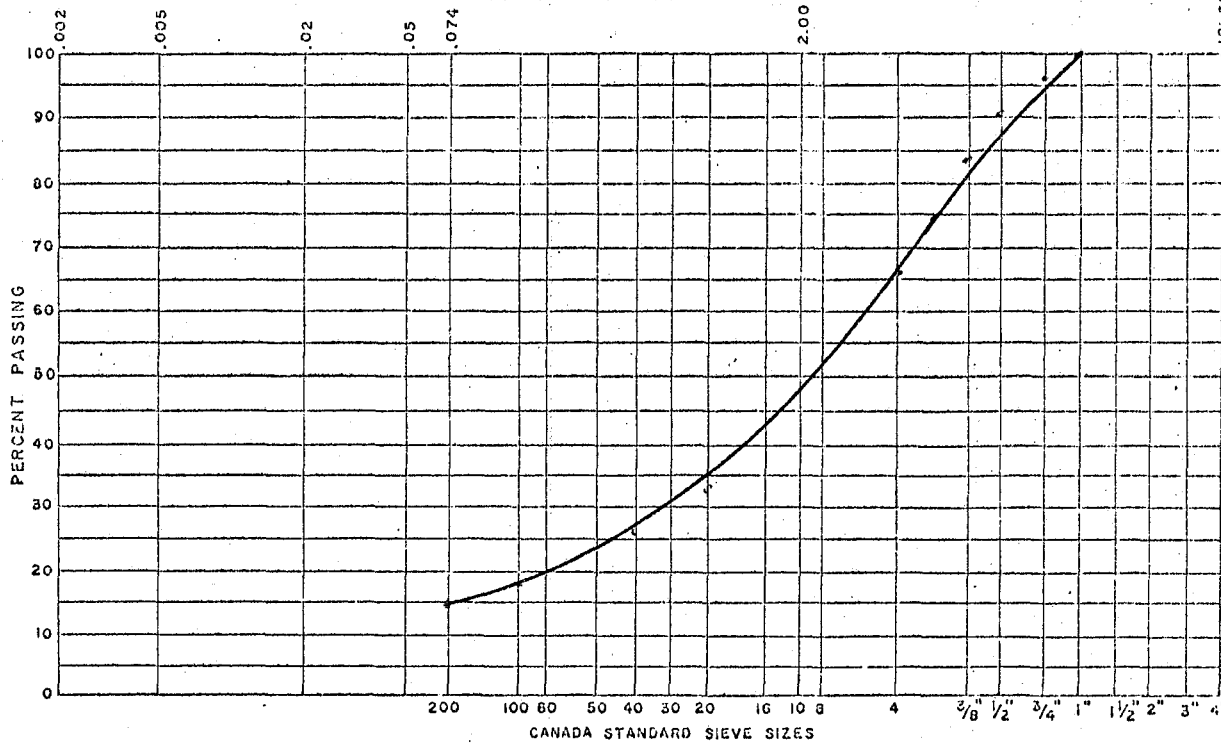
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
SIC	
SANDSTONE	
SHALE	100
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	90
SUB-ANGULAR	10
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION SEE AIR PHOTO

HOLE NO. B.R. 69

DEPTH 3 1/2' FIELD NO. 78

SAMPLE TYPE BAG

LAB. NO.
4976

LABORATORY'S REMARKS
SANDY SILTY SAND (N.P.)

DATE SAMPLED 27-6-72

DATE RECEIVED 5-7-72

DATE RECORDED 2-10-72

TESTED BY

BORE HOLE NO.

RR-64

BORE HOLE NO.

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 27/72

FINISHED:

CONTRACTOR

DRILLER

DATUM

GAUGE

READING

METHOD OF BORING

GND SURFACE ELEVATION

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINEL (FT.)			
brkn shale, few plants	0									shale, 2" max. size
	1									
	2									
	3			78		B				
	4									
	5									
	6									
	7									
	8									1 bag Amex
	9									- hole to 3'
	10									- 1/2 in. A.P.M. - well graded shale gravel and sand. - sample 78 at 3'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100.		
3/8"	98.7		
#4	89.7		
10	73.1		
20	58.0		
40	41.2		
100	35.8		
200	34.3		

TEST NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		35.1	16.7	9.4	29.2	
SC - CLAYEY SAND MEDIUM PLASTICITY						
CRUSH COUNT					%	

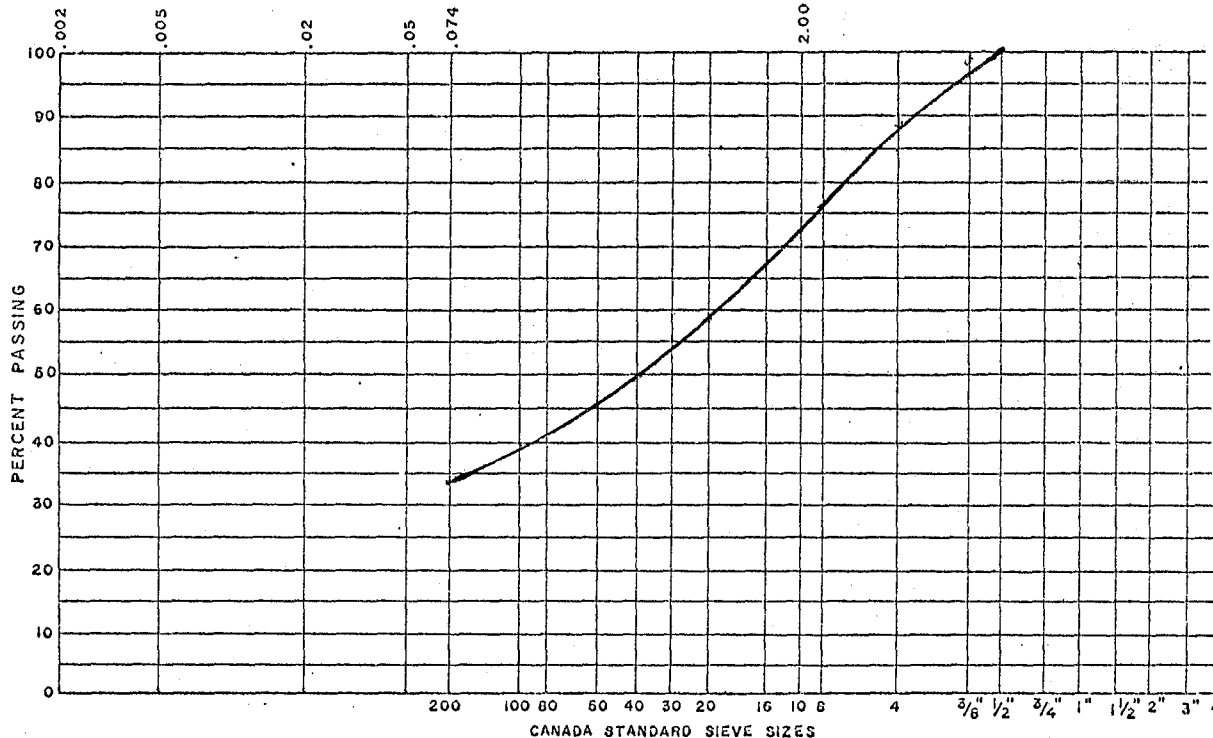
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
MITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER HWY

LOCATION STA 325 + 0.3 ±

HOLE NO. RR 54

DEPTH 7' FIELD NO. 65

SAMPLE TYPE B.A.G.

LAB. NO.
4973

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAYEY SAND (M.P.)</u>	<u>27-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>2-10-72</u>
	TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100.0						
3/8"	96.4						
4	80.5						
10	62.7						
20	50.5						
40	44.0						
100	35.8						
200	32.3						

TEST NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		22.9	19.6	3.8	19.6	
	SM - SILTY SAND LOW PLASTICITY					
CRUSH COUNT		%				

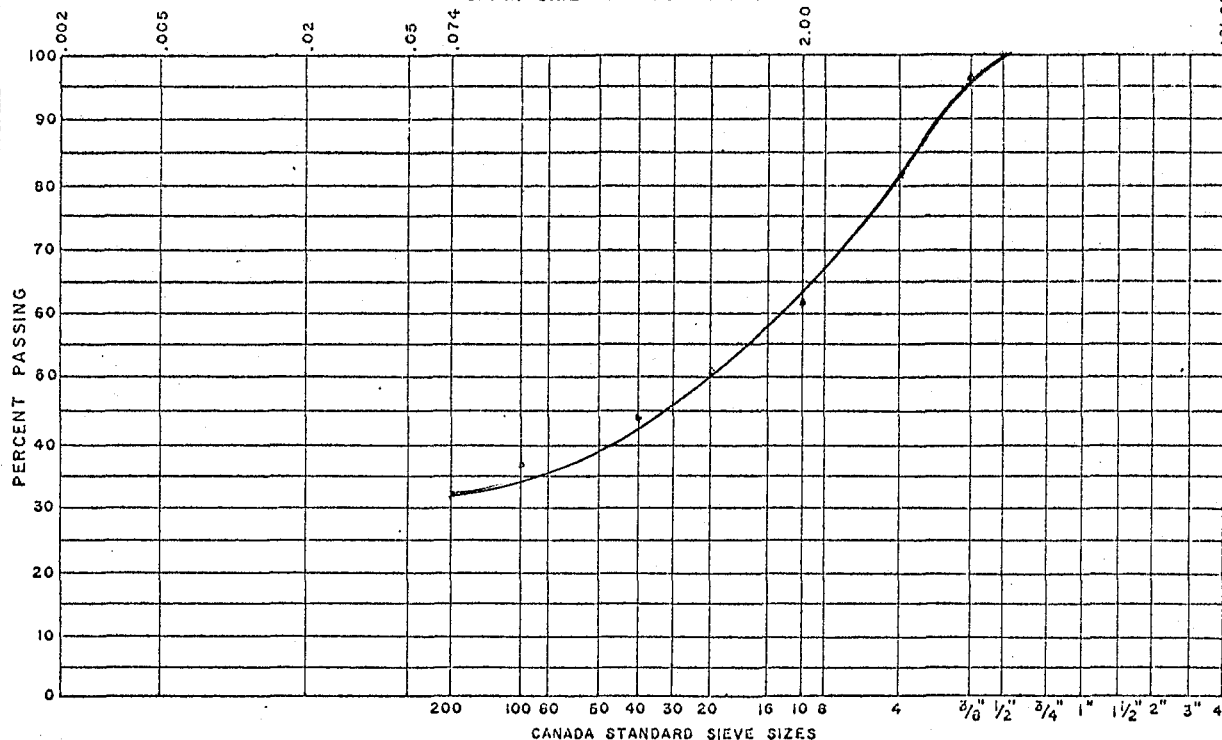
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
INVESTONE	80
MITIC	
SANDSTONE	
SHALE	20
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	50
ANGULAR	
SUB-ANGULAR	50
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMETER HIGHWAY
 LOCATION 3125+03 R
 HOLE NO. H.R. 54
 DEPTH 13 1/2' FIELD NO. 66
 SAMPLE TYPE BAG

LAB. NO.
5193

LABORATORY'S REMARKS SILTY SAND (L.P.)

DATE SAMPLED 27-6-72
 DATE RECEIVED 20-7-72
 DATE RECORDED 2-10-72
 TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
.057	71.6	.005	12.4
.042	62.7		
.040	55.1		
.022	49.3		
.016	39.2		
.012	31.8		
.009	24.2		
.006	19.7		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
ML - INORGANIC FINE SANDY SILT			10	75.9	

CRUSH COUNT %

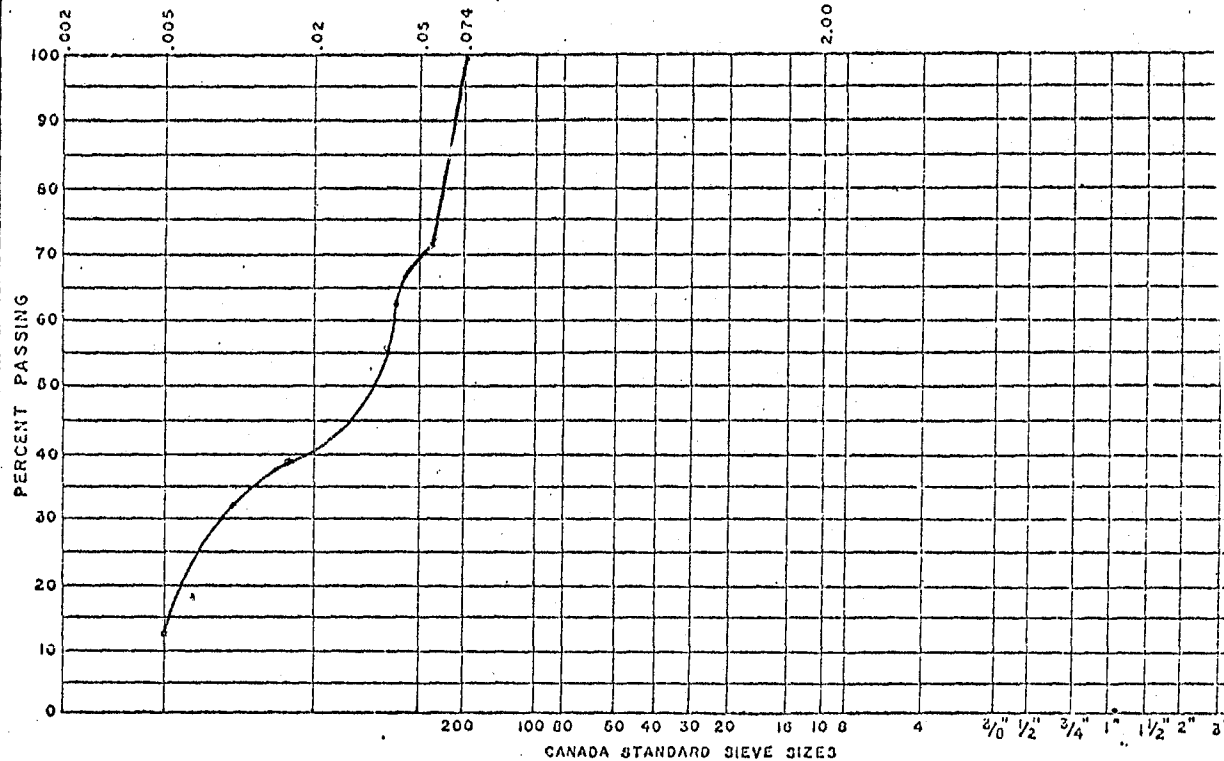
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
STONE	
TRIFIC	
ROSTONE	
ILE	
IST	
RTZITE	
ERS	

PARTICLE SHAPE ANALYSIS

ND	
-ROUND	
ULAR	
-ANGULAR	
FS	
LES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DENPSTER H.Y.H.

LOCATION 3129+00 &

HOLE NO. RR 53

DEPTH 3 1/2' FIELD NO. 63

SAMPLE TYPE.....

LAB. NO.
4816

LABORATORY'S REMARKS
FINE SANDY SILT (N.P.)

DATE SAMPLED 27-6-72

DATE RECEIVED 30-6-72

DATE RECORDED 16-8-72

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2	100	40	45.9
	61.0	100	44.6
3/4	58.3	200	39.7
1/2	51.3		
3/8	47.4		
4	46.5		
0	46.3		
0	46.1		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				NP 16.1	
GM - SILTY GRAVELLY SAND					

CRUSH COUNT

%

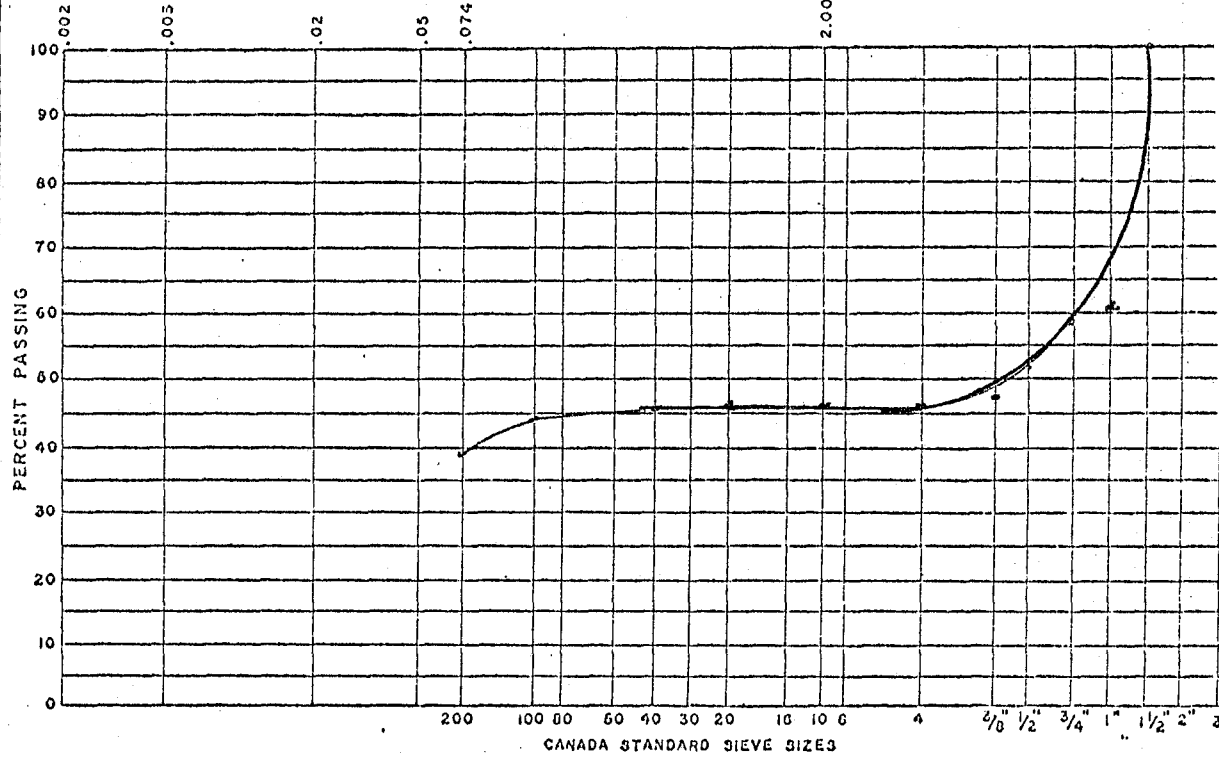
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
ONE	
ANITIC	
NDSTONE	
ALE	
HIST	
ARTZITE	
HERS	

PARTICLE SHAPE ANALYSIS

JND	
1-ROUND	
SULAR	
1-ANGULAR	
ITS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT Dempster Hwy.

LOCATION RR 53 31.29 + 60 E

HOLE NO. RR 53

DEPTH 9 1/2' FIELD NO. 64

SAMPLE TYPE BAG

LAB. NO.
4817

LABORATORY'S REMARKS

ORGANIC MATERIAL WASHED AWAY

GRAVELLY SAND (N.P.)

DATE SAMPLED 27-6-7

DATE RECEIVED 30-6-7

DATE RECORDED 16-8-7

BORING NO.

BORING POSITION

RR-03

Sta 3/29

DPW TECHNICIAN

DATE AND TIME

CONTRACTOR

DRILLER

STARTED:
DATUM

June 27/72

FINISHED:

METHOD OF BORING

GROUND SURFACE ELEVATION
CASING SIZE

GAUGE
READING

SOIL:

ROCK:

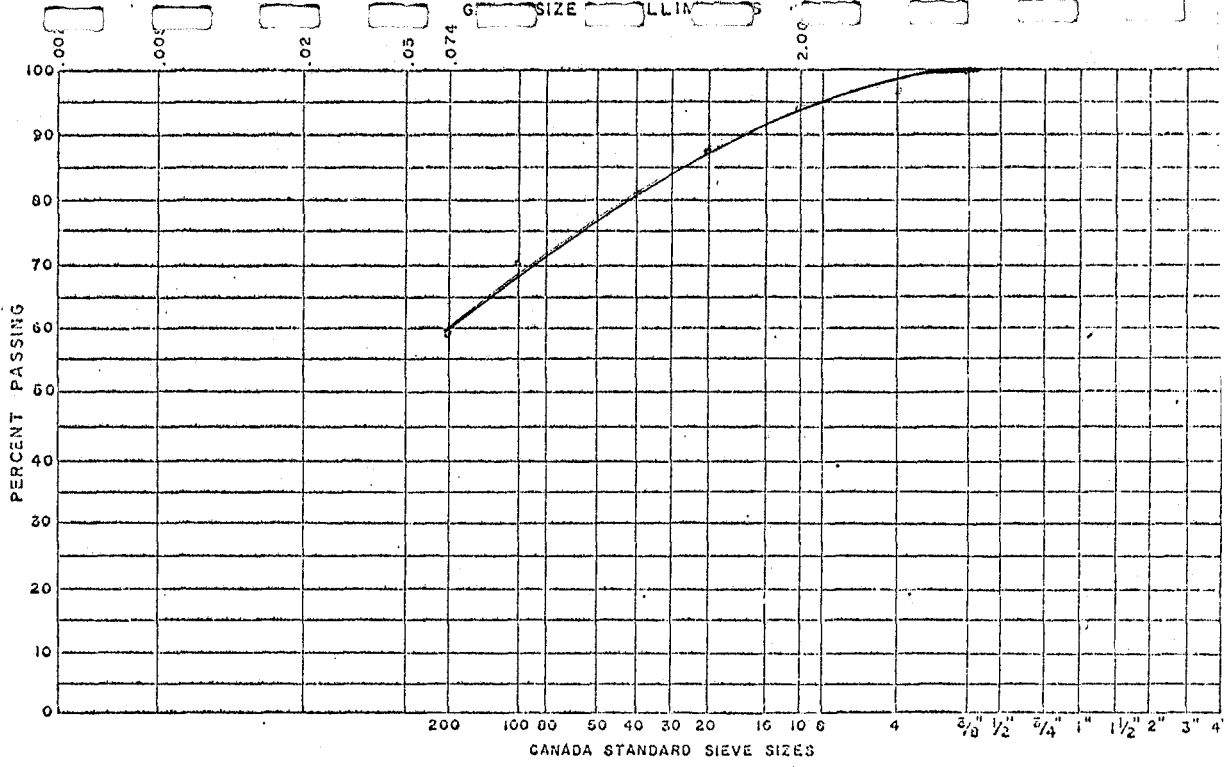
CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
.....	0									bushes, grass, dirt
.....	1									
.....	2									
.....	3			3		A				frozen, high m.c.
.....	4									
.....	5									
.....	6									easy drilling
.....	7									v. high m.c., no cuttings returned
.....	8									
.....	9			6+		A				
.....	10									red uniform clay - 1/2" thick frozen, high m.c.

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/8"	100		
#4	96.7		
10	94.7		
20	88.2		
40	80.9		
100	70.1		
200	59.5		

NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		90.1	77.6	12.5	327.8	
	CL - MORGAN SANDY CLAY MEDIUM PLASTICITY					
	CRUSH COUNT				%	



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

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
ITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PROJECT DENPSTER HWY
 LOCATION STA 3153 + 00
 HOLE NO. RR 52
 DEPTH 5' FIELD NO. 61
 SAMPLE TYPE BAG
 LAB. NO. 4972

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

LABORATORY'S REMARKS
 SANDY CLAY (M.P.)
 DATE SAMPLED 27-6-72
 DATE RECEIVED 5-7-72
 DATE RECORDED 2-10-72
 TESTED BY
 CHECKED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100.0	# 200	47.6
1/2"	94.6		
3/8"	95.9		
# 4	89.0		
10	73.7		
20	64.3		
40	58.2		
100	51.1		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SM - GRAVELLY SILTY SAND			0	45.9	

CRUSH COUNT %

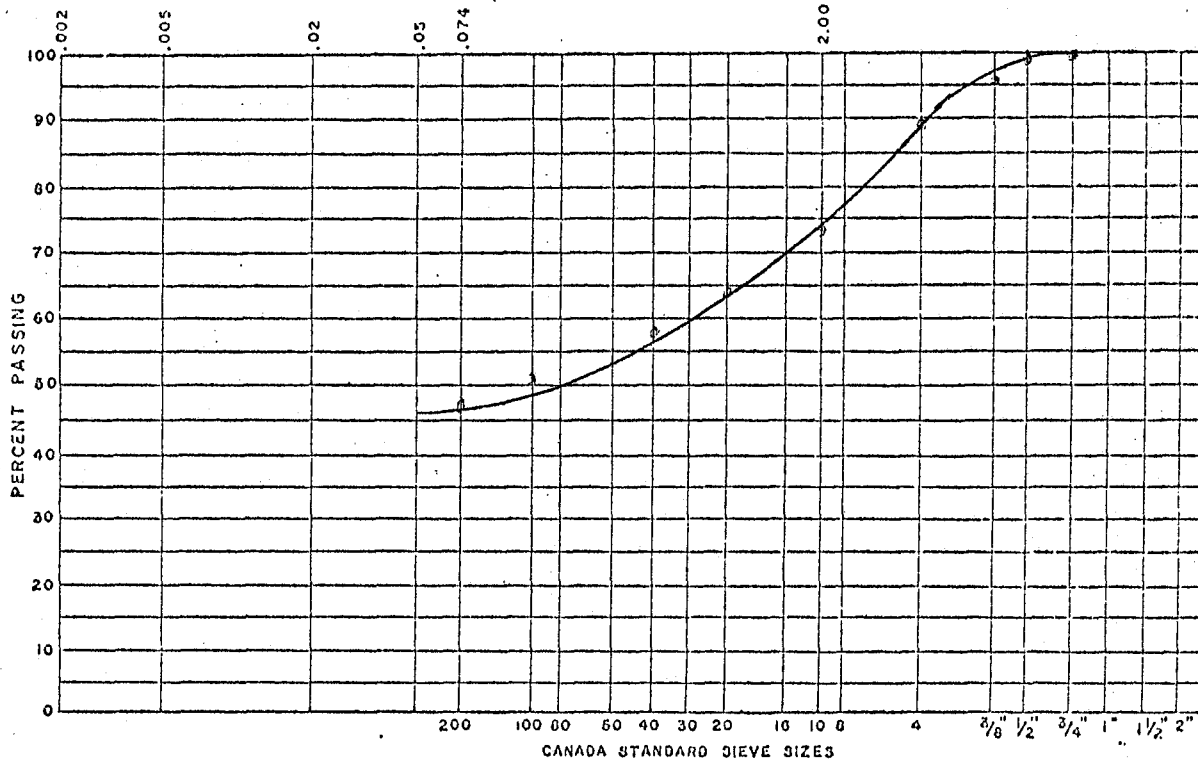
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
ONE	25%
CRATIC	
ANDSTONE	25%
HALE	50%
CHIST	
UARTZITE	
TERS	

PARTICLE SHAPE ANALYSIS

OUND	
OB-ROUND	
EGULAR	
OB-ANGULAR	
ATS	
EDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 3153+00 E

HOLE NO. RR52

DEPTH 10' FIELD NO. 62

SAMPLE TYPE BAG

LAB. NO.
4815

LABORATORY'S REMARKS	DATE SAMPLED
<u>SILTY SAND (N.P.)</u>	<u>24-6-72</u>
	<u>30-6-72</u>
	<u>10-8-72</u>
	TESTED BY <u>[Signature]</u> ✓

GRAIN SIZE ANALYSIS

MM SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	MM SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
No. 5/M				.075	83.2		
				.150	80.1		
				.300	78.5		
				.600	69.8		
				1.18	63.5		
				2.50	54.4		
				5.00	49.1		
053	83.2			10.00	37.5		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		33.7	30.3	3.4	75.9	
	ML - INORGANIC FINE SANDY SILT LOW PLASTICITY					

CRUSH COUNT %

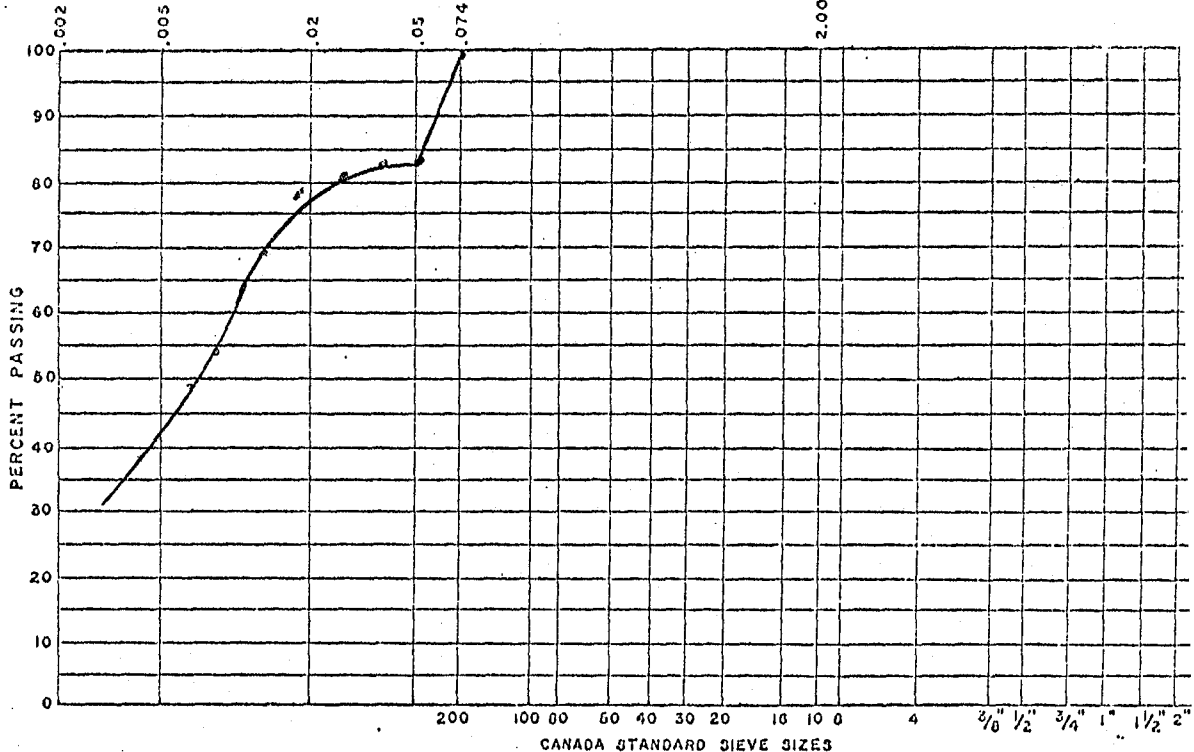
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
STONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
SPINDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.

LOCATION 3181 + 00 E

HOLE NO. RR 45

DEPTH 5 1/2' FIELD NO. 57

SAMPLE TYPE 4" AUGER

LAB. NO.
4813

LABORATORY'S REMARKS
FINE SANDY SILT (L.P.)

DATE SAMPLED 24-6-7

DATE COMPLETED 16-8-

DATE RECEIVED 30-6-

JD

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100	40	52.8
1	92.6	100	49.2
3/4	92.6	200	46.3
1/2	88.4		
3/8	82.9		
4	71.6		
10	62.1		
20	56.0		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
GM-SM	24.3	23.0	1.3	19.0	
LOW PLASTICITY SILTY GRAVELLY SAND					
CRUSH COUNT %					

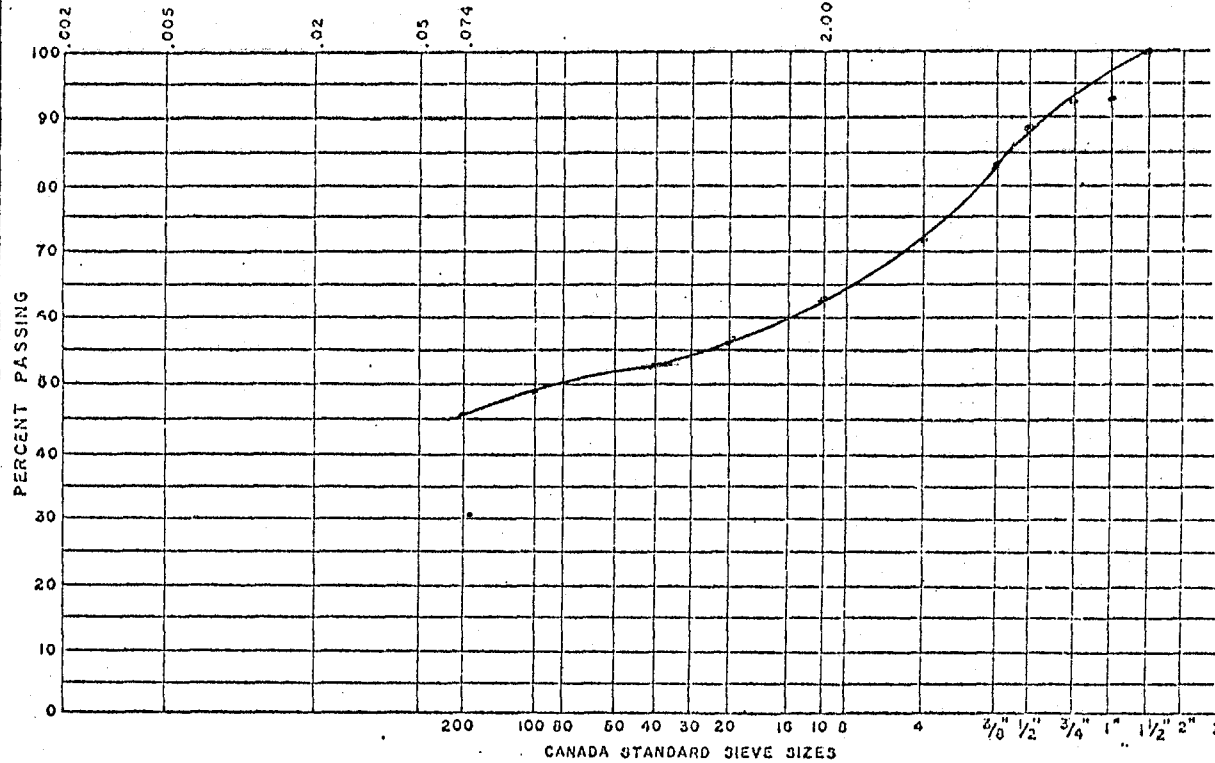
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
GALTS	
ONE	
ANITIC	
INDSTONE	
IALE	
HIIST	
HARTZITE	
HERS	5% SILICIFIED SHALE 100

PARTICLE SHAPE ANALYSIS

UND	
D-ROUND	
GULAR	
D-ANGULAR	
ATS	
OLERS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY

LOCATION 3181+00 L

HOLE NO. RR 45

DEPTH 9 1/2' FIELD NO. 58

SAMPLE TYPE BAG

LAB. NO.
4814

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SILT (L.P.)</u>	<u>24 - 6 - 72</u>
	DATE RECEIVED <u>30 - 6 - 72</u>
	DATE RECORDED <u>16 - 8 - 72</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100			200	44.1		
1/2"	96.7						
3/8"	94.2						
#4	81.1						
10	67.0						
20	53.8						
40	48.9						
100	44.1						

UNPL. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		24.5	2.5	3.0	30.9	
	OM-SM - SILTY GRAVELLY SAND					
	LOW PLASTICITY					

CRUSH COUNT %

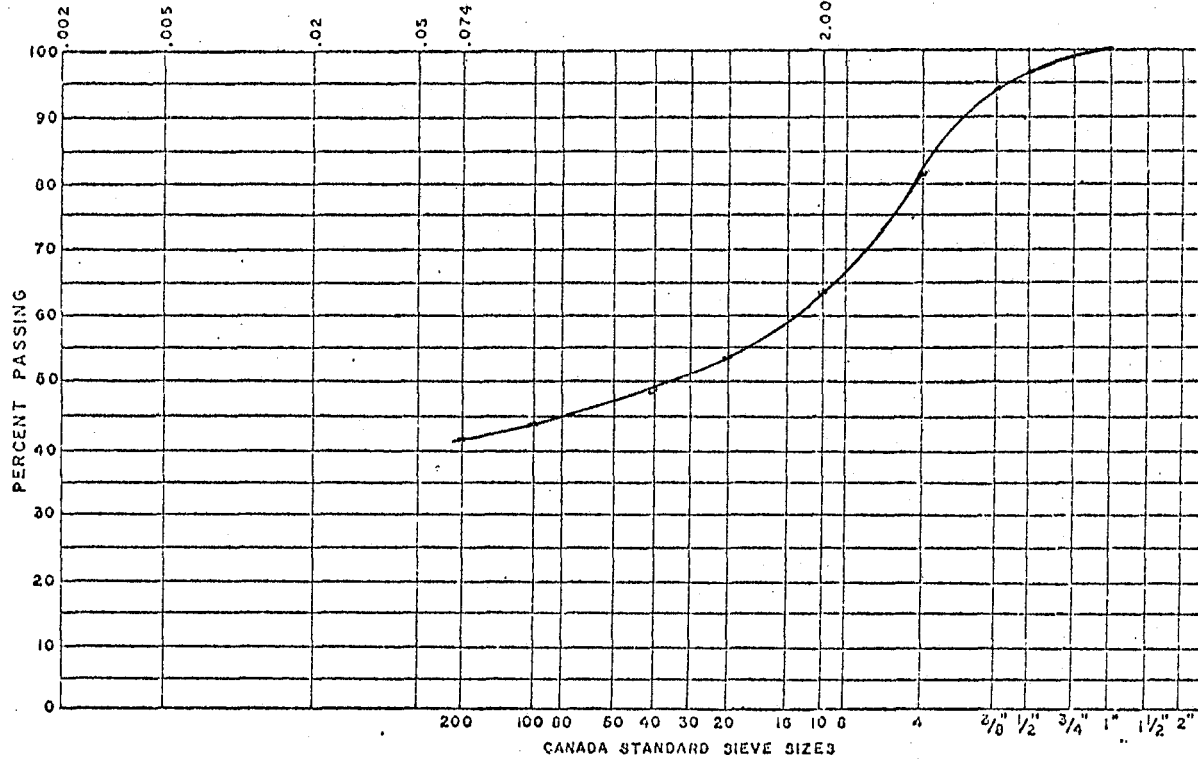
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
CLAYSTONE	
GRAMMITE	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



CLAY	SILT	SAND	GRAVEL

PROJECT DAMPETER Hwy.

LOCATION 3196+00 E

HOLE NO. RR 44

DEPTH 9' FIELD NO. 56

SAMPLE TYPE BAG

LAB. NO.
4812

LABORATORY'S REMARKS	DATE SAMPLED
<u>SAWY SILT (L.P.)</u>	<u>24-6-</u>
	<u>30-6-</u>
	<u>16-8-7</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"	100.0	#100	11.3				
3/4"	94.0	200	9.5				
1/2"	87.8						
3/8"	76.7						
#40	54.7						
#10	34.2						
#20	22.2						
#40	16.7						

UNIF. NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
1	SW-SM SILTY GRAVELLY SAND				NP 3.6	

CRUSH COUNT %

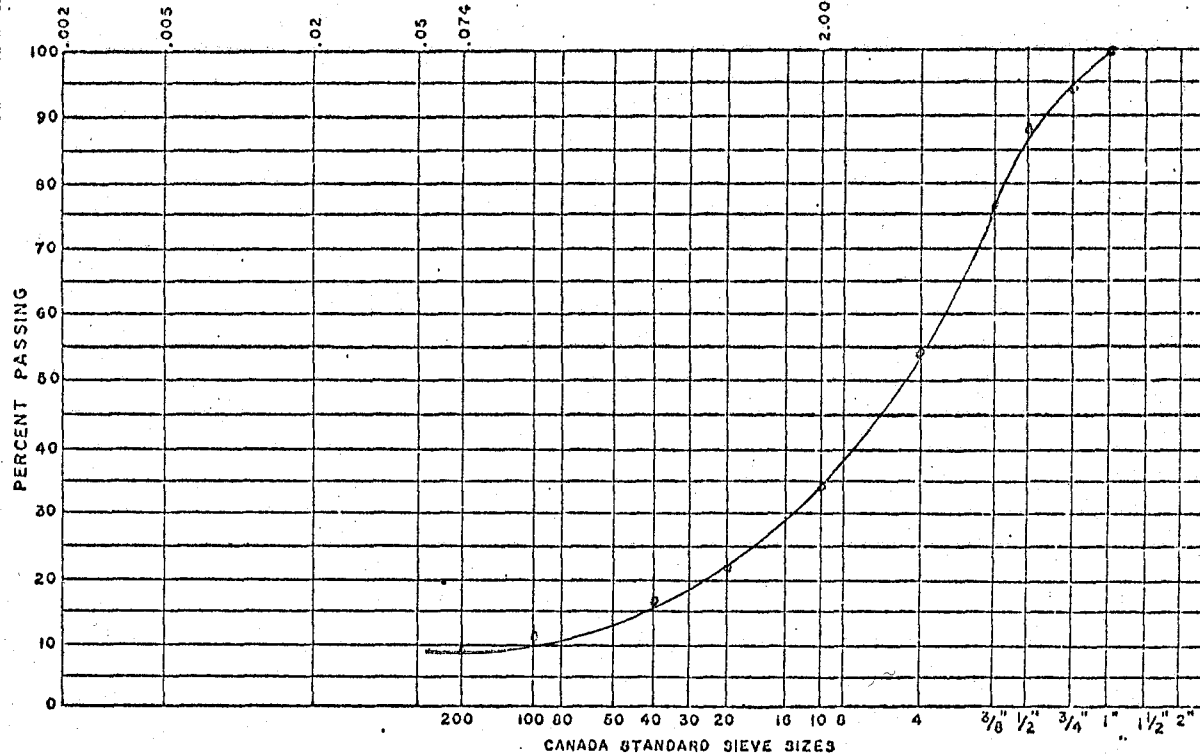
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
DIORITE	
GRANITIC	
SANDSTONE	
SHALE	100%
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
FEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION SEE AIRPHOTO 32.07

HOLE NO. RR43

DEPTH 3 1/2' FIELD NO. 54

SAMPLE TYPE BLAST HOLE - BAC

LAB. NO.
4810

LABORATORY'S REMARKS
SILTY SAND (N.P.)

DATE SAMPLED 24-6-72

DATE RECEIVED 30-6-72

DATE RECORDED 9-8-72

TESTED BY JD

BORE HOLE NO. RR-43 BORE HOLE POSITION see airphoto
 DPW TECHNICIAN _____
 CONTRACTOR _____ DRILLER _____
 METHOD OF BORING _____
 SOIL: _____ ROCK: _____

DATE AND TIME _____
 STARTED: June 24/72 FINISHED: _____
 GAUGE READING _____
 SURFACE ELEVATION _____
 PILING SIZE _____
 PILING HAMMER WT.LBS. _____ DROP.....INCHES _____

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
<u>broken shale</u>	<u>0</u>								<u>4" max</u>	
	<u>1</u>									
	<u>2</u>									
	<u>3</u>				<u>ST 100</u>	<u>B</u>				
	<u>4</u>									
	<u>5</u>									
	<u>6</u>									
	<u>7</u>									
	<u>8</u>									
	<u>9</u>									
	<u>10</u>								<u>1 bag Amex</u>	
									<u>- hole to 3 1/2'</u>	
									<u>- unfrozen, shale material -</u>	
									<u>with graded gravel to 2", with some</u>	
									<u>sand; little if any silt</u>	
									<u>- sample ST 100 at 3 1/2'</u>	
									<u>John also took sample</u>	
									<u>from the hole</u>	

DPW TECHNICIAN _____

CONTRACTOR _____

DRILLER _____

METHOD OF BORING _____

SOIL: _____

ROCK: _____

DATE AND TIME

STARTED: _____

June 24/72

FINISHED: _____

DEPTH SURFACE ELEVATION _____
 CASING SIZE _____

GAUGE READING _____

TESTING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			RE-TAIN (FT.)	BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE				
Small scrub grass	0									
	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									
	10									

1 bag Amey
 - note to 3
 - ice layers in silty material
 - frozen throughout
 - no sample

BORE HOLE NO. **RR-41** BORE HOLE POSITION **see airphoto**

DPW TECHNICIAN _____ DATE AND TIME **June 24/72**

CONTRACTOR _____ DRILLER _____ FINISHED: _____

METHOD OF BORING _____ SURFACE ELEVATION _____ GAUGE READING _____

SOIL: _____ CASING SIZE _____ CASING HAMMER WT. LBS. DROP..... INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM. BOL	TYPE	RE. TAIN (FT.)			
organic	0'								silt, bits, grass, moss & some brush	
gravelly silt	1								frozen	
"	2						1		black, sl. moist, gravel to 1/2"	
"	3							1		
"	4									
"	5									
"	6									
"	7								prob. frozen	
"	8									
"	9								1 bag Amex	
"	10								- hole to 2 1/2' - 3" ice layer at 1-3' below the surf. face - no sample	

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2	100	40	11.5
1"	79.8	100	8.2
3/4"	74.3	200	6.3
1/2"	64.1		
3/8"	54.9		
1/4"	36.7		
20	22.5		
40	14.9		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
G.W-GM SILTY GRAVELLY SAND			NP	5.2	

CRUSH COUNT %

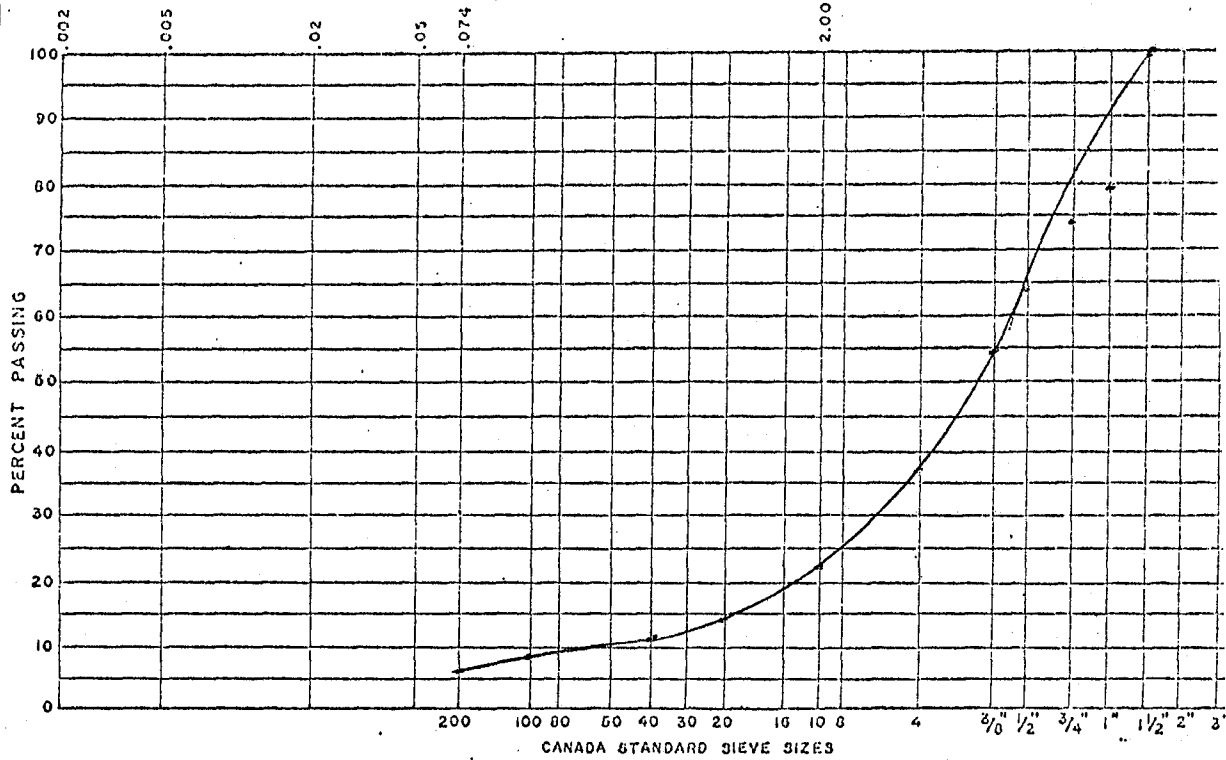
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
ONE	
QUITIC	
IDSTONE	
BLE	
LIST	
ARTZITE	
ERS SILICIFIED SHALE	100%

PARTICLE SHAPE ANALYSIS

ND	
- ROUND	
ULAR	
- ANGULAR	
TS	
DLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY
 LOCATION S.W. AIRPHOTO 2214
 HOLE NO. RR40
 DEPTH 2 1/2' FIELD NO. 53
 SAMPLE TYPE BLAST HOLE

LAB. NO.
4809

LABORATORY'S REMARKS
GRAVELLY SAND (N.T.)

DATE SAMPLED 24-6-72
 DATE RECEIVED 30-6-72
 DATE RECORDED 16-8-72
 TESTED BY JR ✓

BOHOLE
RR-40

see airphoto

OPW TECHNICIAN

CONTRACTOR

DRILLER

METHOD OF BORING

SOIL:

ROCK:

DATE AND TIME

STARTED: June 24/72

FINISHED:

GROUND SURFACE ELEVATION

GAUGE

BOREHOLE SIZE

READING

TESTING HAMMER WT. LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAIN (FT.)			
brkn shale few plants	0								brkn shale to 5" max	
	1									
	2			53	1111	B				
	3									
	4									
	5									
	6									
	7									
	8									
	9								1 bag Amex	
	10								- hole to 3' - frozen solid at 3' - sample 53 at 2 1/2' - shale material, moist - well graded gravel to 2" max and sand	

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
100	21.4		
200	19.2		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SW-SM GRAVELLY SILTY SAND		N.P.		11.5	

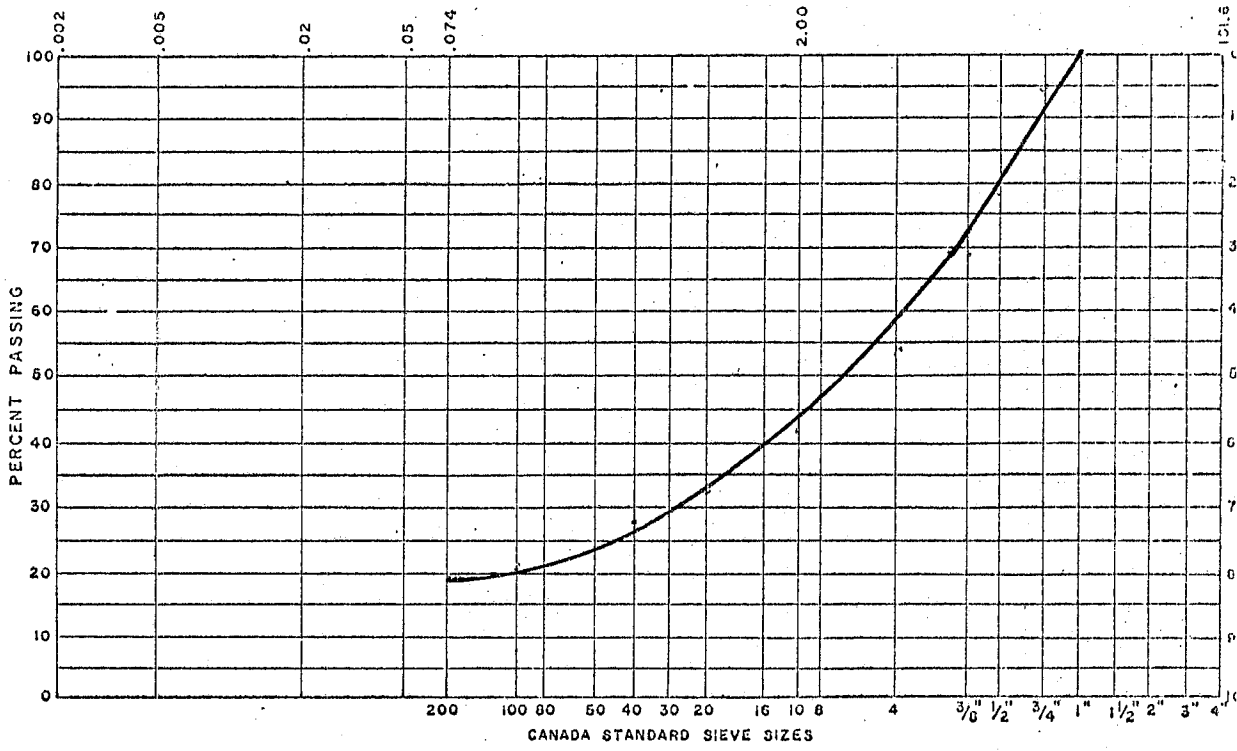
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
IMESTONE	
TIC	
ANDSTONE	
HALE	100 %
CHIST	
UARTZITE	
THEERS	

PARTICLE SHAPE ANALYSIS

OUND	
UB-ROUND	
NGULAR	30
UB-ANGULAR	
LATS	70
EEDLES	



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

PROJECT DEMPSTER HWY
 LOCATION SEE AIR PHOTO
 HOLE NO. PR 63
 DEPTH 3 1/2' FIELD NO. 77
 SAMPLE TYPE

LAB. NO.
5145

LABORATORY'S REMARKS
PETRO - HARD SHALE
SILTY GRAVELLY SAND (N.P.)

DATE SAMPLED 27-6-72
 DATE RECEIVED 20-7-72
 DATE RECORDED 2-10-72
 TESTED BY 2-10-72
 CHECKED BY

BORE HOLE NO.

RR-63

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 27/72

FINISHED:

CONTRACTOR

DRILLER

DATUM

GND SURFACE ELEVATION

GAUGE

READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
brkn shale, a few plants	0									2" max size
	1									
	2									
	3			77	111	B				
	4									
	5									
	6									
	7									1 bag Amex
	8									- hole to 3 1/2'
	9									- unbroken
	10									- well graded shale, graded to 2" max with sand and a fair amt. silt.
										- sample 77 at 3 1/2'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
100	100	0.075	21.9
40	99.9	0.075	25.7
60	90.5	0.075	32.0
100	80.5	0.075	42.9
200	72.0	0.075	47.8
400	65.8	0.075	51.9
600	62.0	0.075	55.0
		0.075	57.8

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		24.2	1.3	1.9	82.9	
	MH - INORGANIC SANDY SILT LOW PLASTICITY					

CRUSH COUNT %

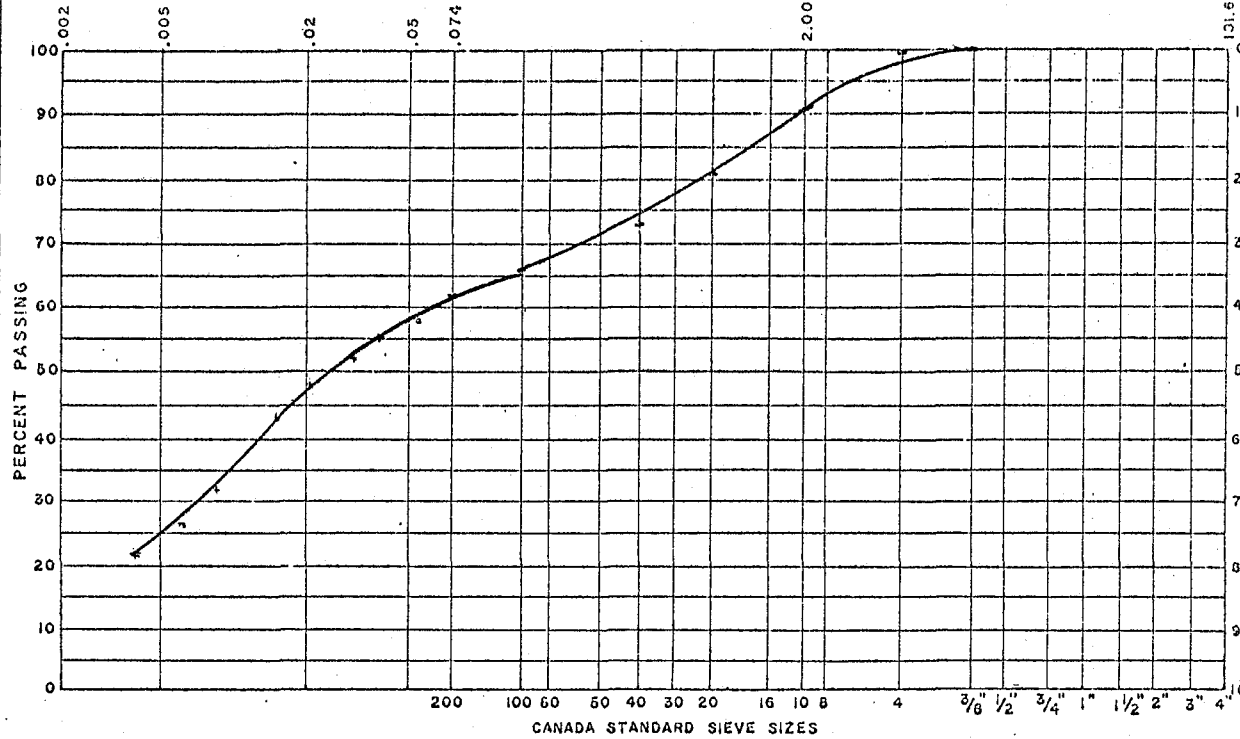
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
STONE	
ANITIC	
ANDSTONE	
ALE	
HIST	
UARTZITE	
THERS	

PARTICLE SHAPE ANALYSIS

OUND	
JB-ROUND	
VGULAR	
JB-ANGULAR	
JATS	
IEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DENVER HWY

LOCATION STA. 2369+90

HOLE NO. RR 61

DEPTH 3 1/2' FIELD NO. 74

SAMPLE TYPE 4" AUGER

LAB. NO.
5009

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY SILT (L.P.)</u>	<u>27-6-72</u>
	<u>13-7-72</u>
	<u>2-10-72</u>
	TESTED BY

GRAIN SIZE ANALYSIS

SEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE MM	% FINER BY WEIGHT	SIEVE SIZE MM	% FINER BY WEIGHT
4	100			200	34.1	.006	16.2
12	96.5			.060	38.9	.005	12.1
20	94.2			.043	37.8		
40	83.1			.031	34.4		
60	71.0			.022	30.9		
80	59.4			.016	28.3		
100	51.0			.012	26.2		
200	34.9			.008	18.2		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SM - SILTY SAND				0 53.6	

CRUSH COUNT %

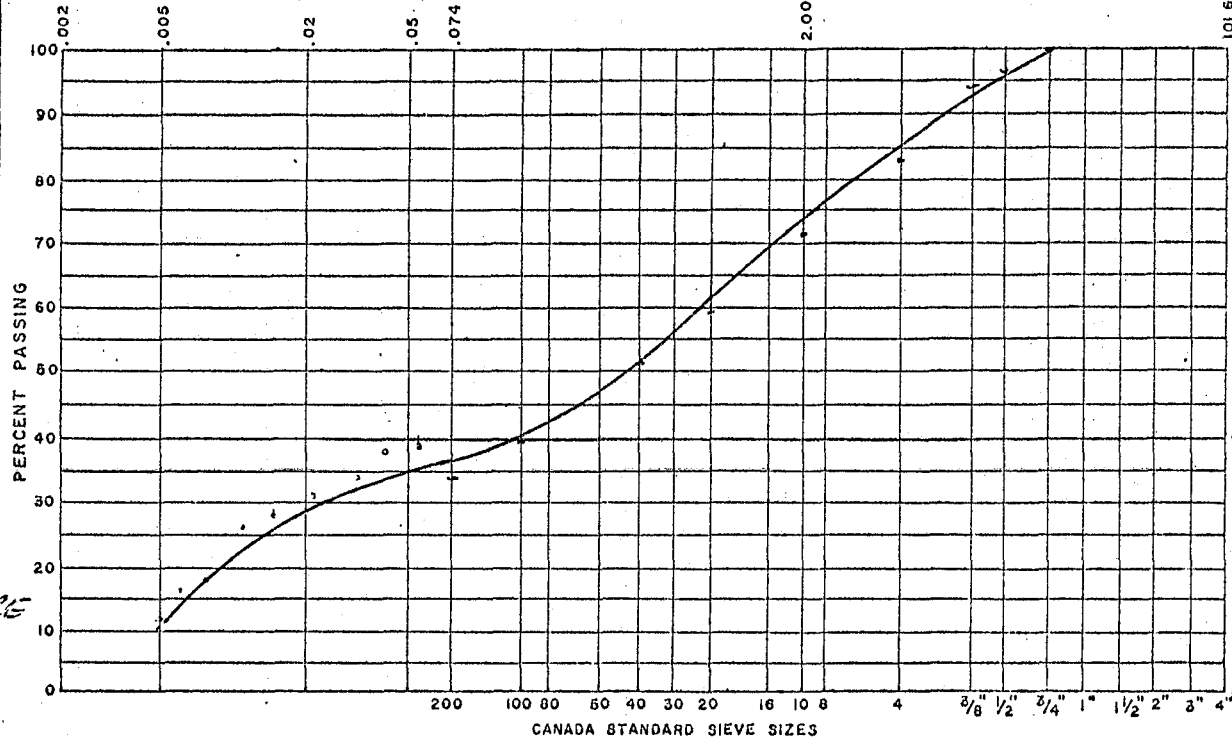
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
STONE	
MITIC	
ANDSTONE	
HALE	
CHIST	
UARTZITE	
THERS	

PARTICLE SHAPE ANALYSIS

OUND	
UB - ROUND	
NGULAR	
UB - ANGULAR	
LATS	
EEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DENVER ST. HWY
 LOCATION ST. 2396 + 95
 HOLE NO. RR 60
 DEPTH 5' FIELD NO. 73
 SAMPLE TYPE 4" AUGER

LAB. NO.
5008

LABORATORY'S REMARKS	DATE SAMPLED
SILTY SAND (A.P.)	27-6-72
	DATE RECEIVED 13-7-72
	DATE RECORDED 2-10-72
	TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100	40	14.2				
	91.8	100	9.1				
3/4	84.5	200	7.1				
1/2	71.1						
3/8	61.4						
4	44.0						
10	28.8						
20	19.1						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
GH-GW	-	SILTY	SANDY GRAVEL	N.P.	2.8

CRUSH COUNT %

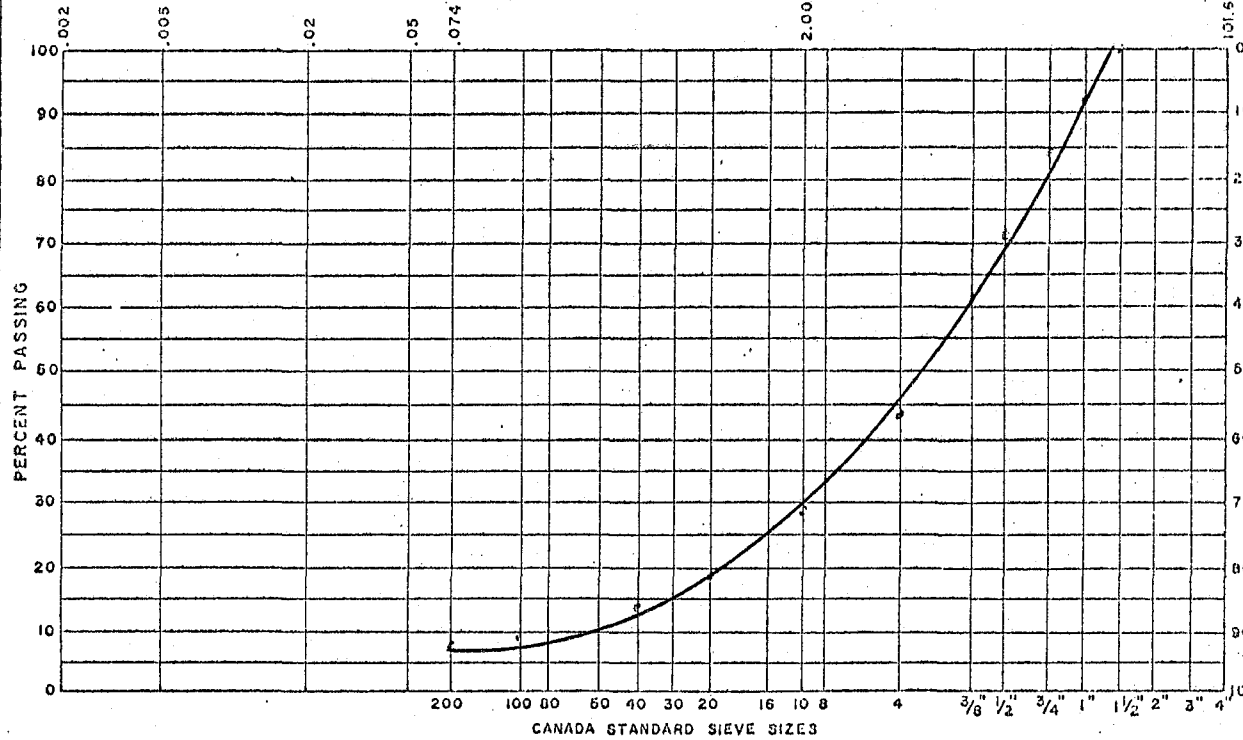
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
GNESS	
SLIC	
SANDSTONE	
SHALE	100
SLIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.....

LOCATION REFER AIR PHOTO.....

HOLE NO. RR-59.....

DEPTH 3 1/2'..... FIELD NO. 72.....

SAMPLE TYPE... BLAST HOLE.....

LAB. NO.
4978

LABORATORY'S REMARKS
SANDY GRAVEL (N.P.)

DATE SAMPLED 2-6-72

DATE RECEIVED 5-7-72

DATE RECORDED 12-10-72

TESTED BY

BORE HOLE NO. **RR-59** BORE HOLE POSITION **see air photo STA. 3110 ±**
 DPW TECHNICIAN _____ DATE AND TIME _____
 CONTRACTOR _____ DRILLER _____ STARTED: **June 27/72** FINISHED: _____
 DATUM _____ GAUGE READING _____
 METHOD OF BORING _____ GND SURFACE ELEVATION _____ CASING SIZE _____
 SOIL: _____ ROCK: _____ CASING HAMMER WT.LBS. DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE			
broken shale	0								3" max
	1								
	2								
	3			72		B			
	4								
	5								
	6								
	7								
	8								1 bag Amax
	9								- hole to 4'
	10								- unfrozen
									- solid rock at 3 1/2' to 4'
									- shale frags to 4" with
									gravel, sand, and fair silt
									content
									- sample # 72 at 3 1/2'

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2	100	#40	17.3
1	90.7	100	11.5
1/4	87.0	200	8.5
1/2	76.0		
3/8	64.1		
4	47.3		
10	33.4		
20	23.1		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SM-GW			N.P.	10.0	
					SILTY SANDY GRAVEL

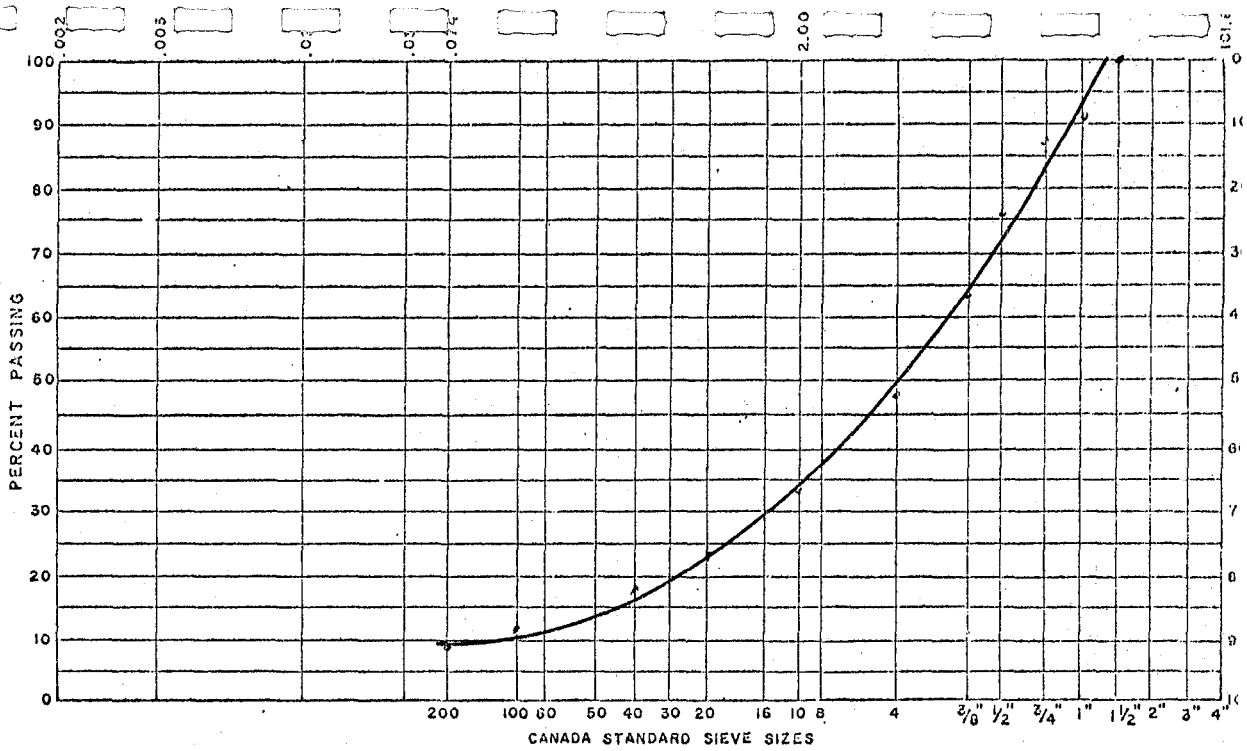
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
IMESTONE	
IC	
ANDSTONE	
HALE HARD	100
CHIST	
UARTZITE	
THERS	

PARTICLE SHAPE ANALYSIS

OUND	
UB-ROUND	
NGULAR	
UB-ANGULAR	
LATS	
EEPLES	



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

PROJECT ... DEMETER HWY
 LOCATION ... REFER AIR PHOTO
 HOLE NO. ... NR-58
 DEPTH ... 2 1/2' ... FIELD NO. ... F1
 SAMPLE TYPE ... BLAST HOLE

LAB. NO.
4979

LABORATORY'S REMARKS	DATE SAMPLED
SANDY GRAVEL (N.P.)	2-6-72
	DATE RECEIVED 5-7-72
	DATE RECORDED 12-10-72
	TESTED BY
	CHECKED BY

BORE HOLE NO.

RR-58

BORE HOLE POSITION

see airphoto

Sta. 2353±

DPW TECHNICIAN

DATE AND TIME

STARTED:

June 27/72

FINISHED:

CONTRACTOR

DRILLER

DATUM

GND SURFACE ELEVATION

GAUGE

READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			RE-TAINED (FT.)	BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE				
brkn. shale	0									3" max.
	1									
	2			71		B				
	3									
	4									
	5									
	6									
	7									
	8									
	9									1 bag Amex
	10									- hole to 2 1/2'
										- unfrozen
										- well graded shale gravel
										with 2" max. and sand
										- sample # 71 at 2 1/2'

GRAIN SIZE ANALYSIS

GRAIN SIZE LIMITS

101.60

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
100	100	100	12.2
200	90.6	200	10.0
400	86.7		
600	77.0		
800	51.3		
1000	32.1		
2000	20.5		
4000	16.1		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		NP	0	9.8	
SW-SM - GRAVELLY SILTY SAND					

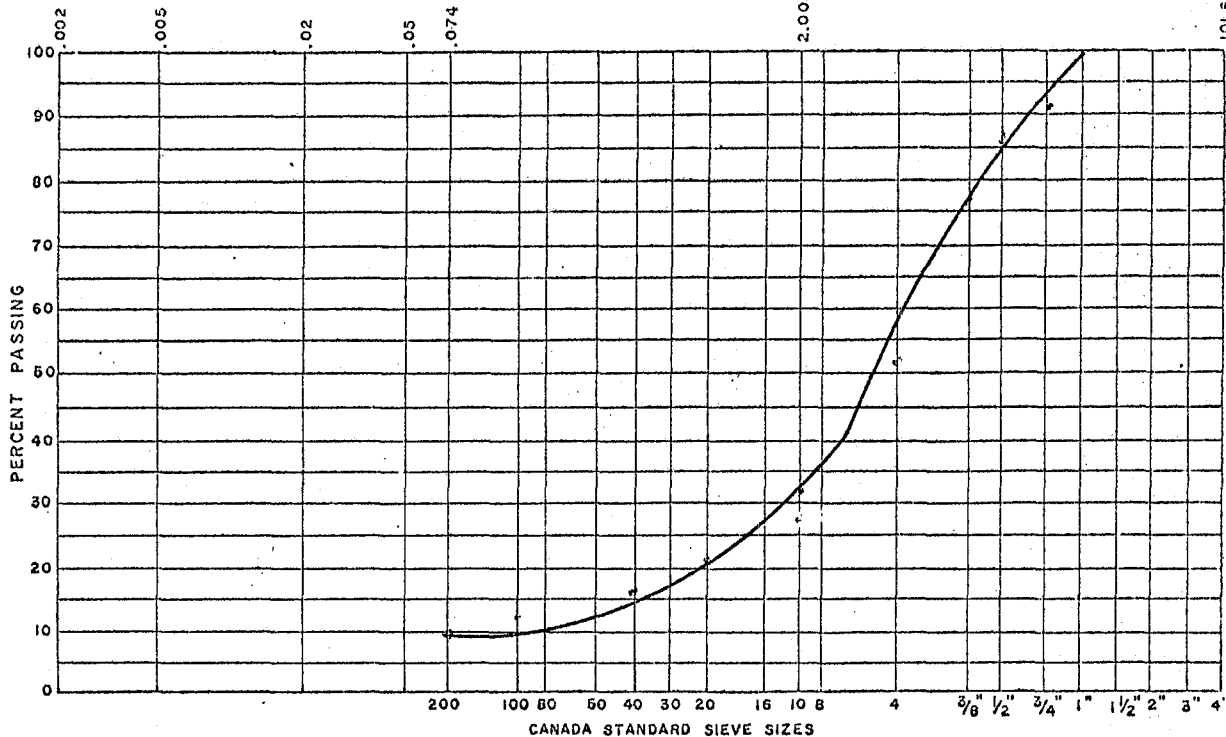
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASELALT	
TOPE	
DIABASIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	



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

PROJECT DEMP. STAR. HWY.

LOCATION SEE AER. PHOTO

HOLE NO. RR 57

DEPTH 3 1/2' FIELD NO. 70

SAMPLE TYPE BAG

LAB. NO.
4980

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY-SAND (N.P.)</u>	<u>27-6-72</u>
	DATE RECEIVED <u>5-7-72</u>
	DATE RECORDED <u>2-10-72</u>
	TESTED BY
	CHECKED BY

RR-57

DPW TECHNICIAN

see airphoto

STA. 23534

DATE AND TIME

STARTED:

June 27/72

FINISHED:

CONTRACTOR

DRILLER

DATUM

GND SURFACE ELEVATION

GAUGE

CASING SIZE

READING

METHOD OF BORING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYMBOL	TYPE	RE-TAINED (FT.)			
brkn shale	0									3" max
	1									
	2			70	111	B				small (3/4") brkn shale
	3									
	4									
	5									
	6									
										1 bag Amex
										- hole to 3 1/2'
										- well graded shale gravel to 2" with sand
										- unfrozen block
										- sample # 70 at 3'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2	100			.056	58.7	.0043	22.0
3/8	99.2			.039	58.7		
4	93.1			.028	56.3		
10	78.9			.021	47.5		
20	69.1			.015	40.7		
40	63.7			.011	37.7		
100	57.0			.008	34.5		
200	53.2			.0059	27.6		

MPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		34.7	26.5	8.2	87.4	
CL - INORGANIC CLAYEY SAND MEDIUM PLASTICITY						
CRUSH COUNT %						

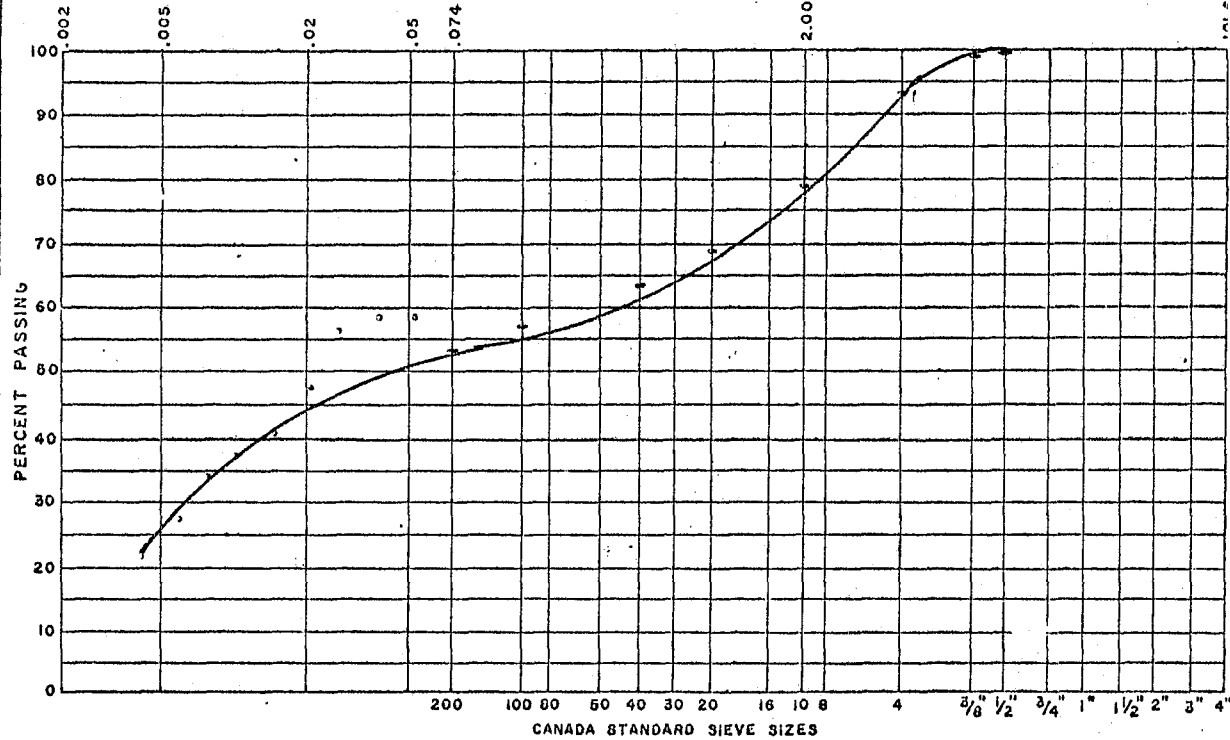
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
TONE	
RANITIC	
ANDSTONE	
HALE	
CHIST	
UARTZITE	
TERS	

PARTICLE SHAPE ANALYSIS

OUND	
UB-ROUND	
NGULAR	
UB-ANGULAR	
LATS	
EEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT JEMPSTER HWY
 LOCATION STA. 3112 +00 &
 HOLE NO. RR 56
 DEPTH 9' FIELD NO. 69
 SAMPLE TYPE 1" AUGER

LAB. NO.
5007

LABORATORY'S REMARKS	DATE SAMPLED
CLAYEY SAND (M.P.)	27-6-72
	DATE RECEIVED 13-7-72
	DATE RECORDED 2-10-72
	TESTED BY

SEIVE SIZE	% FINER BY WEIGHT	SEIVE SIZE	% FINER BY WEIGHT	SEIVE SIZE	% FINER BY WEIGHT	SEIVE SIZE	% FINER BY WEIGHT
18"	100.0						
4	98.6						
0	89.7						
20	77.7						
40	71.4						
100	63.0						
200	56.5						

TEST NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
					NP 152.4	
	ML - INORGANIC SILTY SAND					

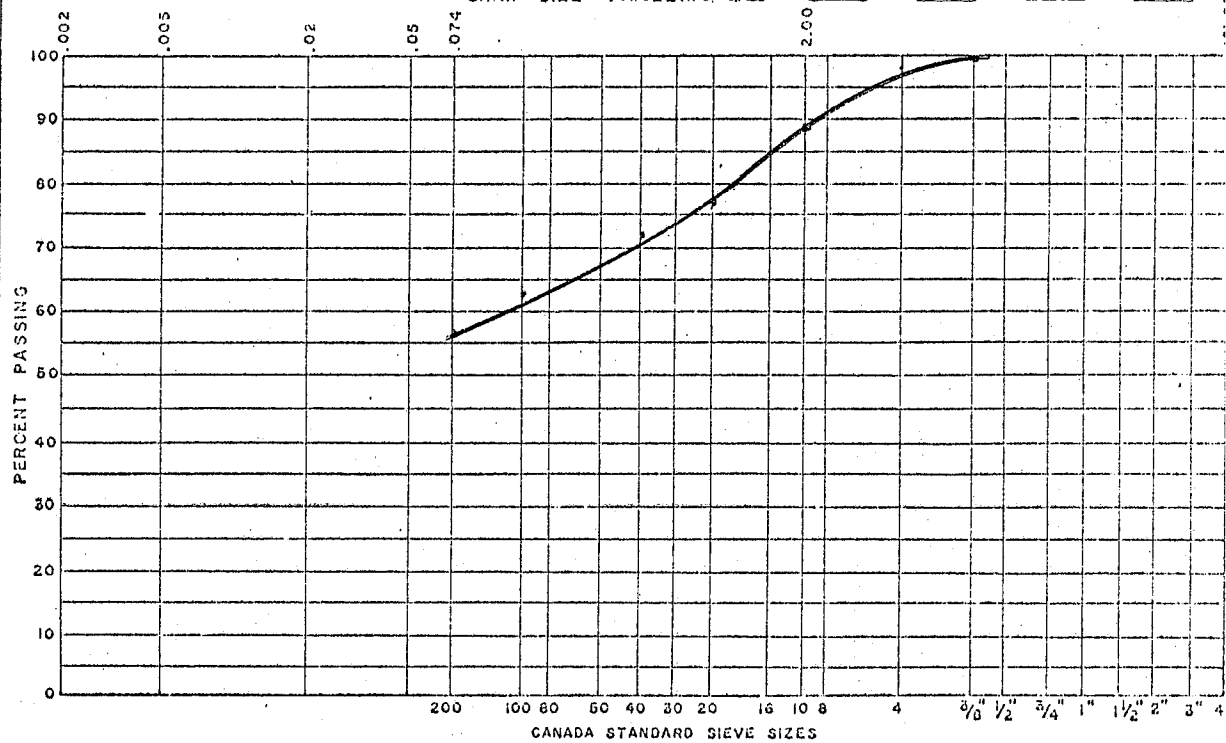
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
METAC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	



CLAY	SILT	SAND	GRAVEL

PROJECT DEMPSTER HWY
 LOCATION 3121 + 97 E
 HOLE NO. RR 55
 DEPTH 4' FIELD NO. 67
 SAMPLE TYPE BAG

LAB. NO.
5144

LABORATORY'S REMARKS
SANDY SILT (W.P.)

DATE SAMPLED JUNE 27/72
 DATE RECEIVED JULY 20/72
 DATE RECORDED 2-10-72
 TESTED BY
 CHECKED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D SIEVE SIZE	% FINER BY WEIGHT	D SIEVE SIZE	% FINER BY WEIGHT
3/8	100			.056	64.4	.0043	24.2
# 4	96.1			.039	64.4		
10	86.6			.028	61.7		
20	78.7			.021	52.1		
40	73.3			.015	44.7		
100	65.1			.011	41.4		
200	59.5			.008	37.8		
				.0059	30.1		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		40	29.5	10.5	100.7	
CL - INORGANIC CLAYEY SAND MEDIUM PLASTICITY						
CRUSH COUNT						%

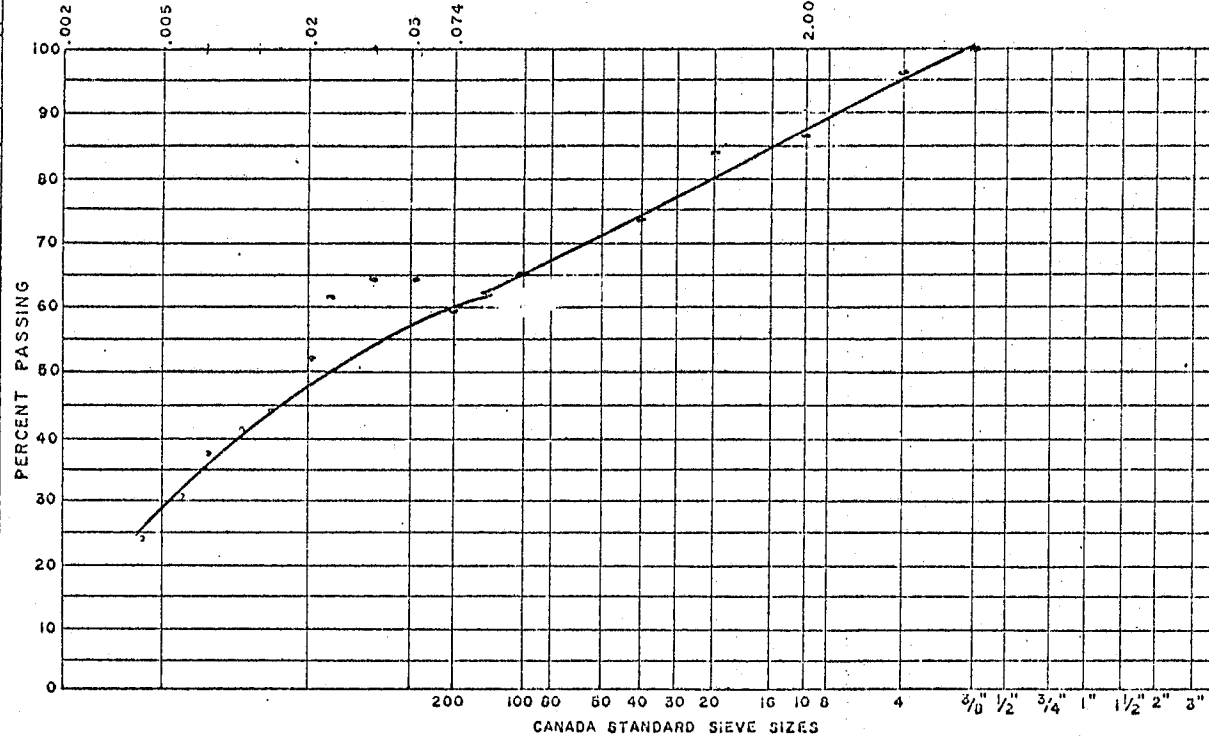
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
L. STONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	
NEEDLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMASTER HWY
 LOCATION STA. 3121 + 97 &
 HOLE NO. RR 55
 DEPTH 8 1/2' FIELD NO. 68
 SAMPLE TYPE 4" AUGER

LAB. NO.
5006A

LABORATORY'S REMARKS	DATE SAMPLED
CLAYEY SAND (M.P.)	27-6-72
	DATE RECEIVED 13-7-72
	DATE RECORDED 2-10-72
	TESTED BY

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
#200	53.5		
	49.8		
	49.2		
	42.8		
	39.7		
	27.9		
	22.0		
	56.1		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
ML-CL INORGANIC SANDY CLAYEY SILT LOW PLASTICITY	26.0	21.4	4.6	13.7	

CRUSH COUNT %

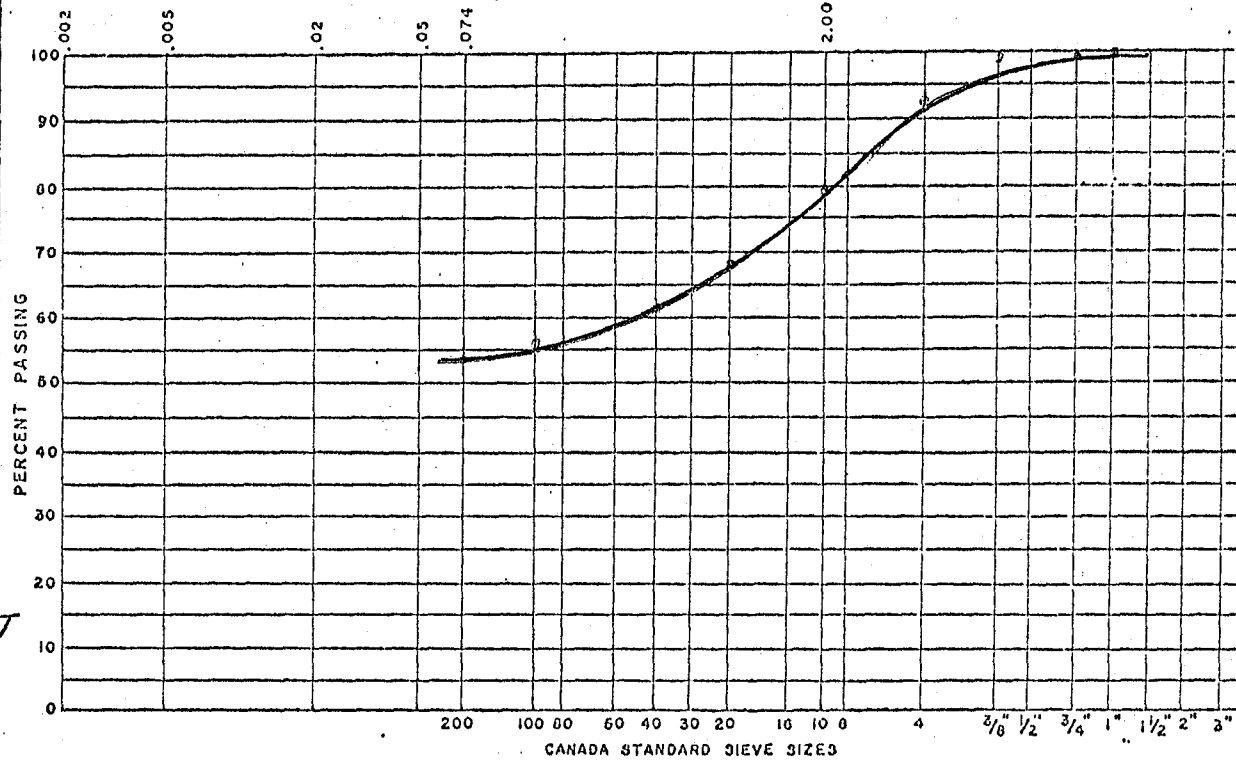
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
LT	
ONE	
ITIC	
STONE	
E	
ST	
TZITE	
RS	

PARTICLE SHAPE ANALYSIS

OUND	
AR	
ANGULAR	
ES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 3212 + 45.96

HOLE NO. RR 39

DEPTH 5' FIELD NO. 52

SAMPLE TYPE BAG

LAB. NO.
4808

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY SILT (L.P.)</u>	<u>24-6-72</u>
	DATE RECEIVED <u>30-6-72</u>
	DATE RECORDED <u>10-8-72</u>

GRAIN SIZE ANALYSIS

NO	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D, MM SIEVE SIZE	% FINER BY WEIGHT	D, MM SIEVE SIZE	% FINER BY WEIGHT
				1056	71.7		
				.040	70.1		
				.028	68.6		
				.021	62.2		
				.015	55.9		
				.011	46.3		
				.008	38.1		
				.004	20.6		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
				N.P.	379.1
ML - ORGANIC FINE SANDY SILT					

CRUSH COUNT %

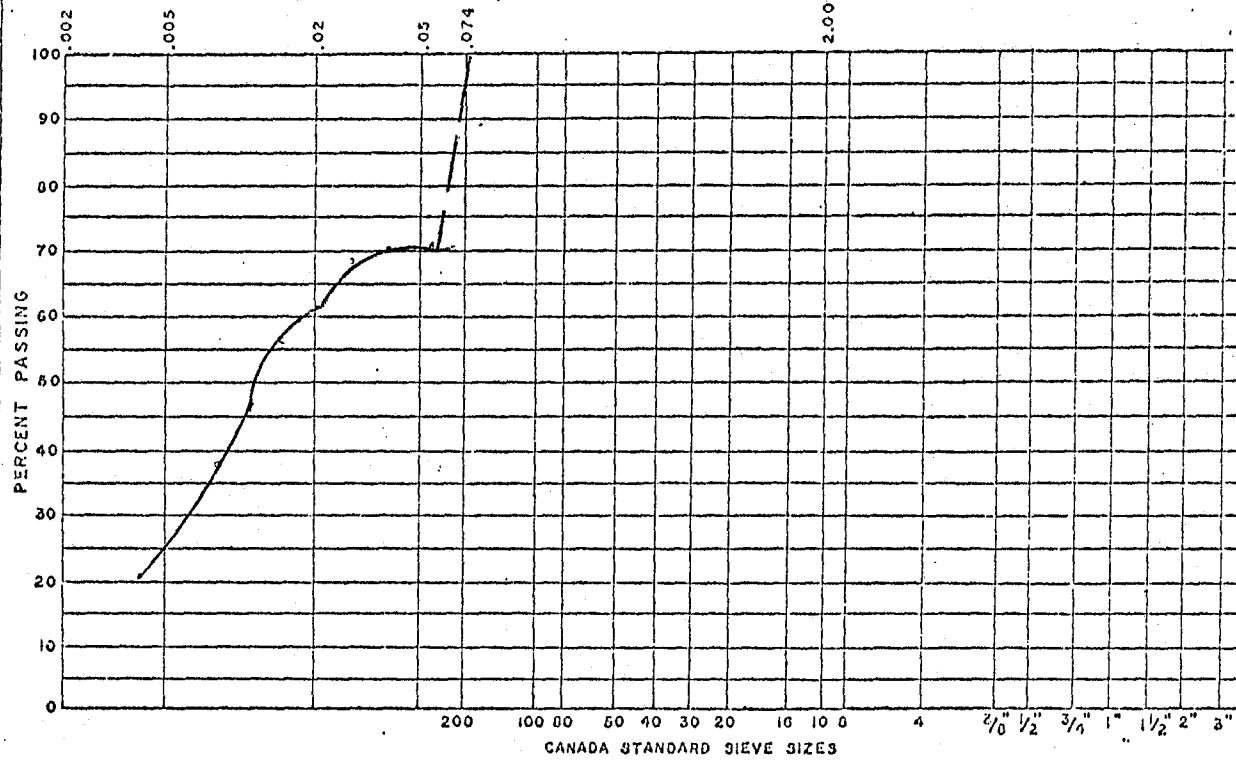
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
LT	
ONE	
ITIC	
STONE	
E	
IT	
TZITE	
RS	

PARTICLE SHAPE ANALYSIS

ROUND	
FLAT	
ANGULAR	
ES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DAMPSTER H.W.

LOCATION 3232 + CO. 4

HOLE NO. RR 38

DEPTH 5' FIELD NO. 51

SAMPLE TYPE BAG.

LAB. NO.
4807

LABORATORY'S REMARKS	DATE SAMPLED
ORGANIC	24-6-72
FINE SANDY SILT (N.P.)	30-6-72
	16-8-72
	TESTED BY TD ✓

BORE HOLE NO.

RR-38

BORE HOLE POSITION

stn 3232 +00

DPW TECHNICIAN

DATE AND TIME

STARTED:
TIME

June 24/72

FINISHED:

CONTRACTOR

DRILLER

GROUND SURFACE ELEVATION

GAUGE

PIPE SIZE

READING

METHOD OF BORING

SOIL:

ROCK:

ANVIL HAMMER WT. LBS.

DROP..... INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
organic	0									MOSS, GRASS + SOME SCRUB
	1									FROZEN INACHMENT
	2									WEATHERED LATE CRETACEOUS CLAY
	3									
	4									
	5			51	1111	A				

GRAIN SIZE ANALYSIS

NO.	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1	100.0						
2	99.3						
4	93.7						
10	73.9						
20	56.6						
40	48.3						
60	41.3						
80	38.7						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SC - CLAYEY SAND - SAND-CLAY MIXTURE MEDIUM PLASTICITY	28.3	20.4	7.9	21.2	

CRUSH COUNT %

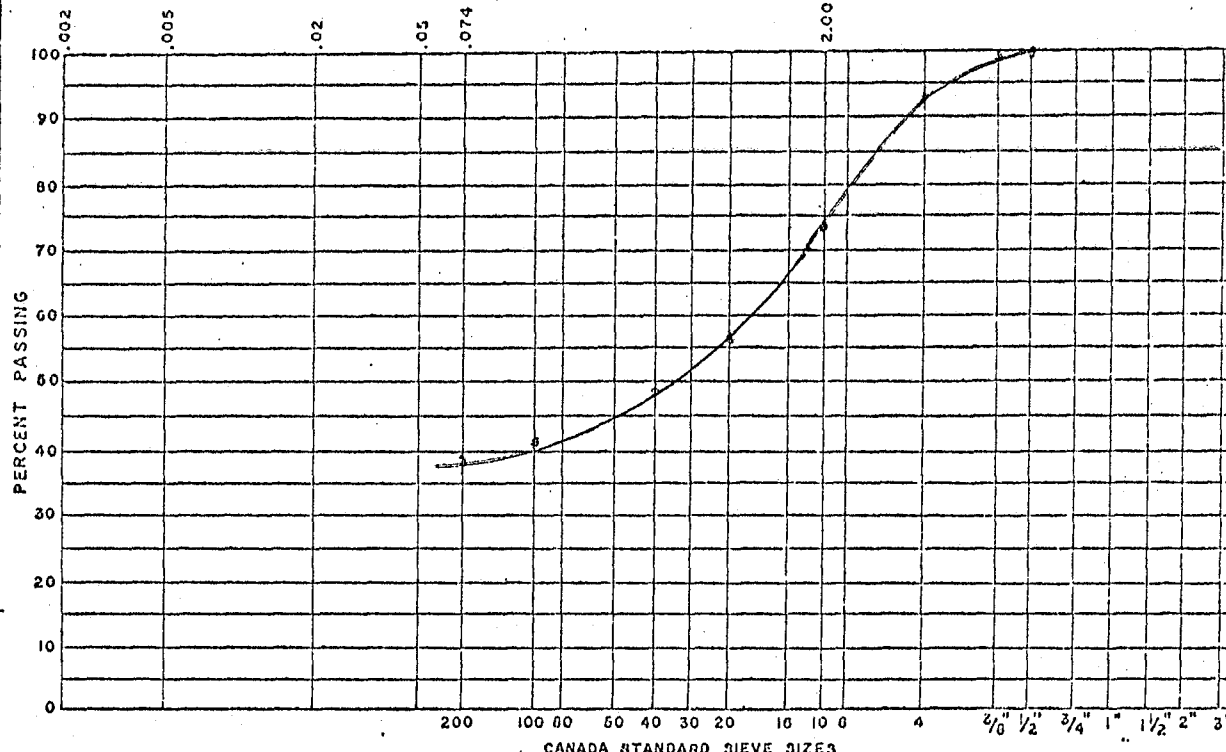
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ALT	
ONE	
VITIC	
OSTONE	
LE	
IST	
RTZITE	
ERS	

PARTICLE SHAPE ANALYSIS

ID	
ROUND	
FLAT	
ANGULAR	
SHARP	
OTHER	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 3247+00.6

HOLE NO. RR 34

DEPTH 1 1/2' FIELD NO. 47

SAMPLE TYPE BAG

LAB. NO.
4803

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAYEY SAND (M.P.)</u>	<u>24-6-72</u>
	<u>30-6-72</u>
	<u>10-8-72</u>
	TESTED BY <u>AR</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100.0	#200	36.2
1/2"	96.3		
3/8"	91.2		
4#	77.6		
10	62.4		
20	51.6		
40	45.5		
100	39.6		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		37.8	34.4	2.6	37.3	
GW-SM - GRAVELLY SILTY SAND LOW PLASTICITY						

CRUSH COUNT %

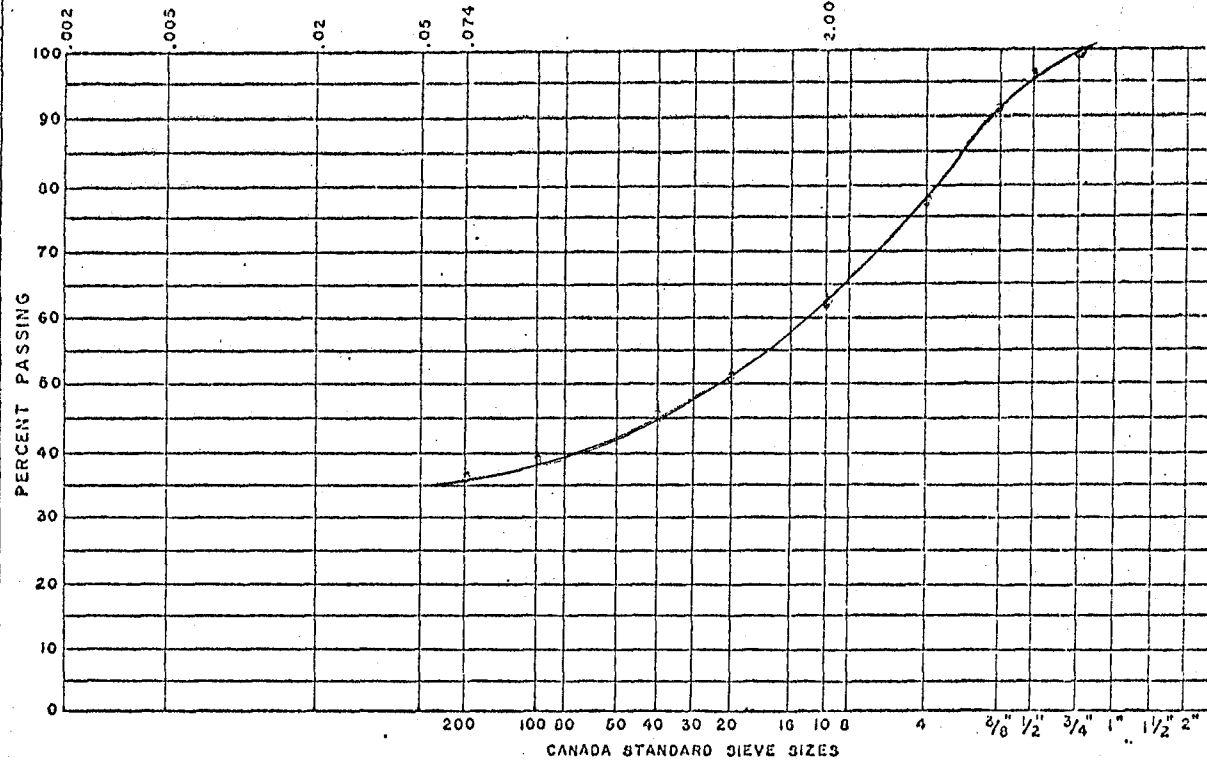
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
IMONE	
RANITIC	
ANDSTONE	
IALE	100%
GHIST	
UARTZITE	
PHERS	

PARTICLE SHAPE ANALYSIS

OUND	
UB-ROUND	
IGULAR	
UB-ANGULAR	
ATS	
EDIES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 3258+00.0

HOLE NO. RR 33

DEPTH 5' FIELD NO. 45

SAMPLE TYPE BAC

LAB. NO.
4801

LABORATORY'S REMARKS
GRAVELLY SANDY SILT (L.P.)

DATE SAMPLED 24-6-72

DATE RECEIVED 30-6-72

DATE RECORDED 10-8-72

TESTED BY 10

GRAIN SIZE ANALYSIS

SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	(mm) SIEVE SIZE	% FINER BY WEIGHT	(mm) SIEVE SIZE	% FINER BY WEIGHT
1/2"	100.0			.056	77.3	.004	17.4
4	97.5			.040	64.3		
10	93.3			.030	60.4		
20	89.2			.022	51.4		
40	86.5			.016	40.6		
60	83.5			.012	33.1		
80	80.2			.009	27.4		
				.006	22.4		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
ML - INORGANIC SANDY SILT SILT - SAND MIXTURE			11.7	42.7	

CRUSH COUNT %

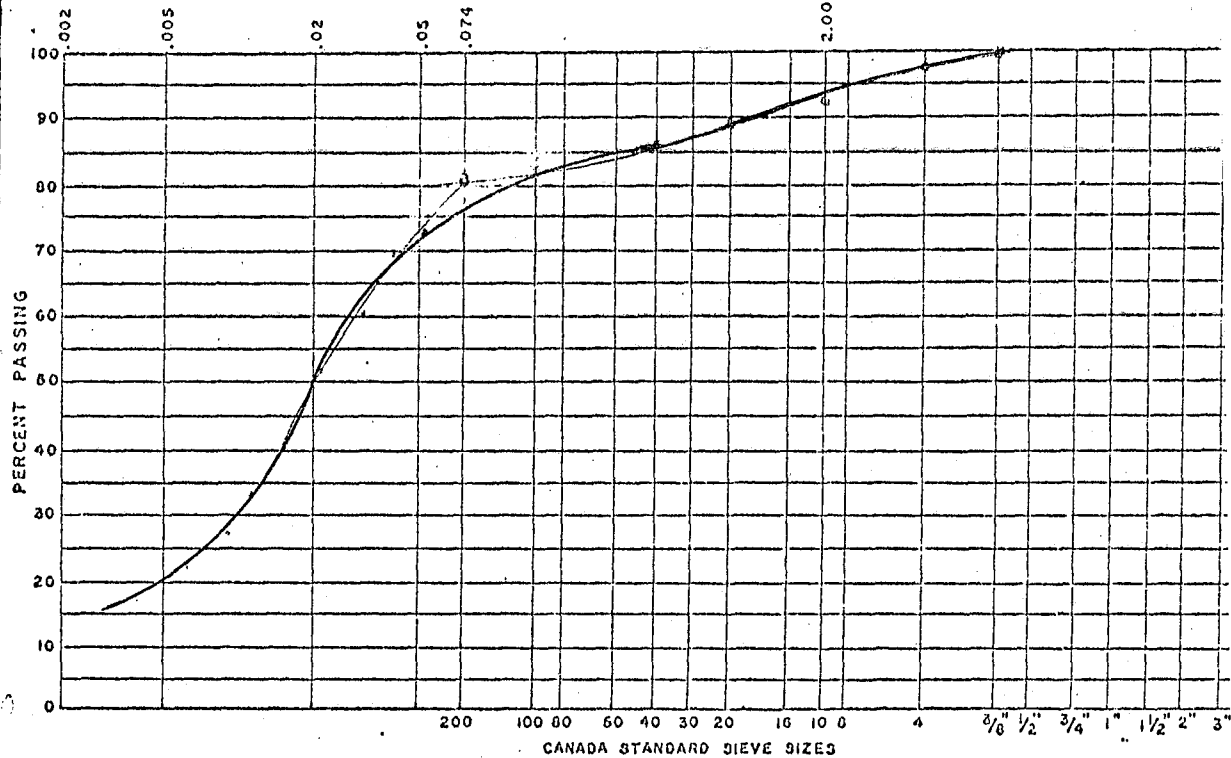
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
GRAVEL	
SAND	
SILT	
CLAY	
ORGANIC	
OTHER	

PARTICLE SHAPE ANALYSIS

PERCENTAGE
ROUND
ANGULAR
FLAT
OTHER

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY
 LOCATION STATION 3258+00
 HOLE NO. RR33
 DEPTH 9' FIELD NO. 46
 SAMPLE TYPE BAG

LAB. NO.
4802

LABORATORY'S REMARKS
SANDY SILT (N.P.)

DATE SAMPLED 24-6-72
 DATE RECEIVED 30-6-72
 DATE RECORDED 14-8-72
 TESTED BY JD ✓

RR-33

STN 325/700 E

DPW TECHNICIAN

DATE AND TIME

STARTED:
ATUM

June 24/72

FINISHED:

CONTRACTOR

DRILLER

NO. SURFACE ELEVATION
CASING SIZE

GAUGE
READING

METHOD OF BORING

CASING HAMMER WT.LBS.

DROP.....INCHES

SOIL:

ROCK:

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
organic organic silt	0								med. brown	
sandy silty gravel	1								gravel to 1/2", moist	
	2								gravel to 3/4"	
	3									
sandy gravel with silt	4			45	11111	A			tan, med. grey, gravel to 1/2"	
	5									
	6									
	7									
gravelly silt	8			46	11111	A			black, gravel to 1/4", high MC	
	9									
	10									

11111

NO.	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	D ₈₅ SIEVE SIZE	% FINER BY WEIGHT	D ₁₀ SIEVE SIZE	% FINER BY WEIGHT
				.075	68.1		
				.15	65.0		
				.3	61.8		
				.6	54.0		
				1.18	49.3		
				2.5	41.1		
				5.0	34.5		
				10.0	26.1		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
ML - ORGANIC FINE SANDY SILT	74.0	71.0	3.0	233.5	

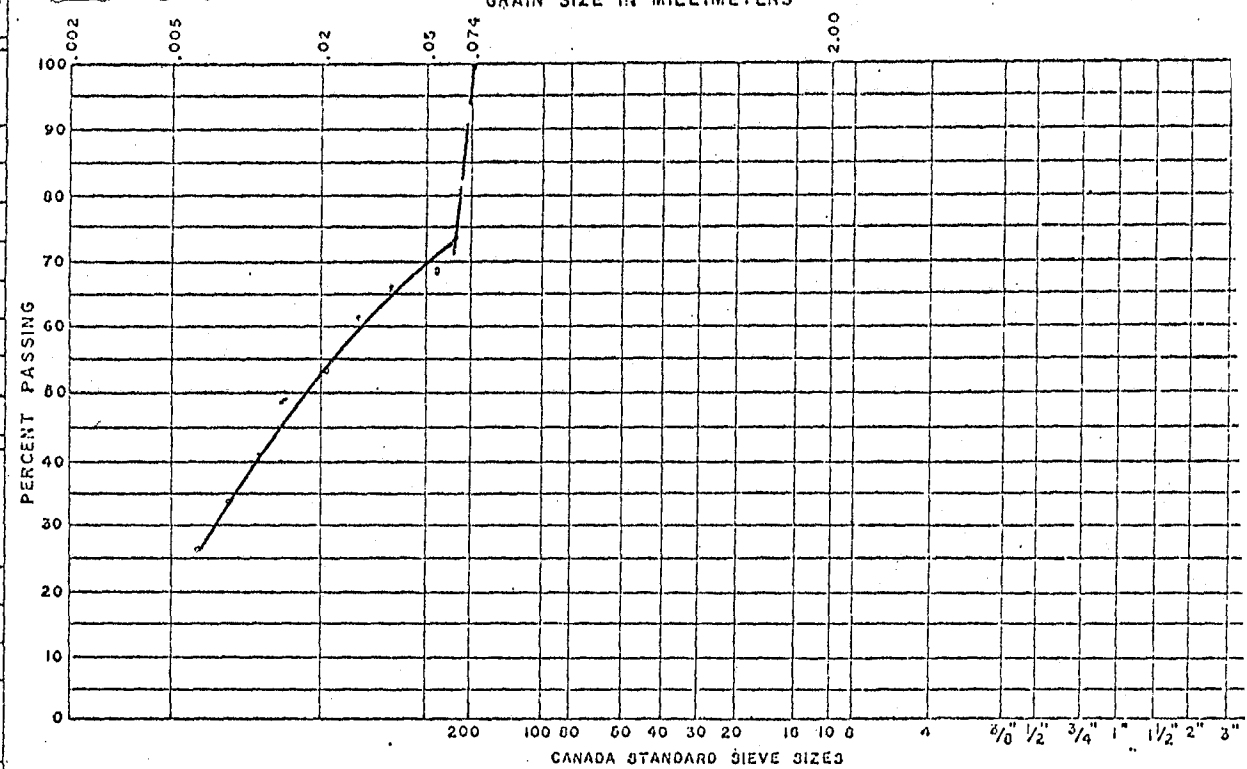
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
CLAY	
SILT	
SAND	
GRAVEL	

PARTICLE SHAPE ANALYSIS

ROUND	
ANGULAR	
FLAT	
ELONGATED	



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

PROJECT DENPSTER HXW
 LOCATION 3277+85 &
 HOLE NO. RR32
 DEPTH 9' FIELD NO. 44
 SAMPLE TYPE B.P.G.

LAB. NO.
4800

LABORATORY'S REMARKS	DATE SAMPLED
<u>ORGANIC</u>	<u>24-6-72</u>
<u>FINE SANDY SILT (L.P.)</u>	<u>30-6-72</u>
	<u>16-8-72</u>
	TESTED BY <u>JR</u>

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
053	74.1	0.075	16.7
040	69.4		
029	60.8		
021	55.2		
015	49.3		
011	40.3		
008	32.2		
006	23.6		

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	ML - INORGANIC FINE SANDY SILT				N.P. 221.7	

CRUSH COUNT %

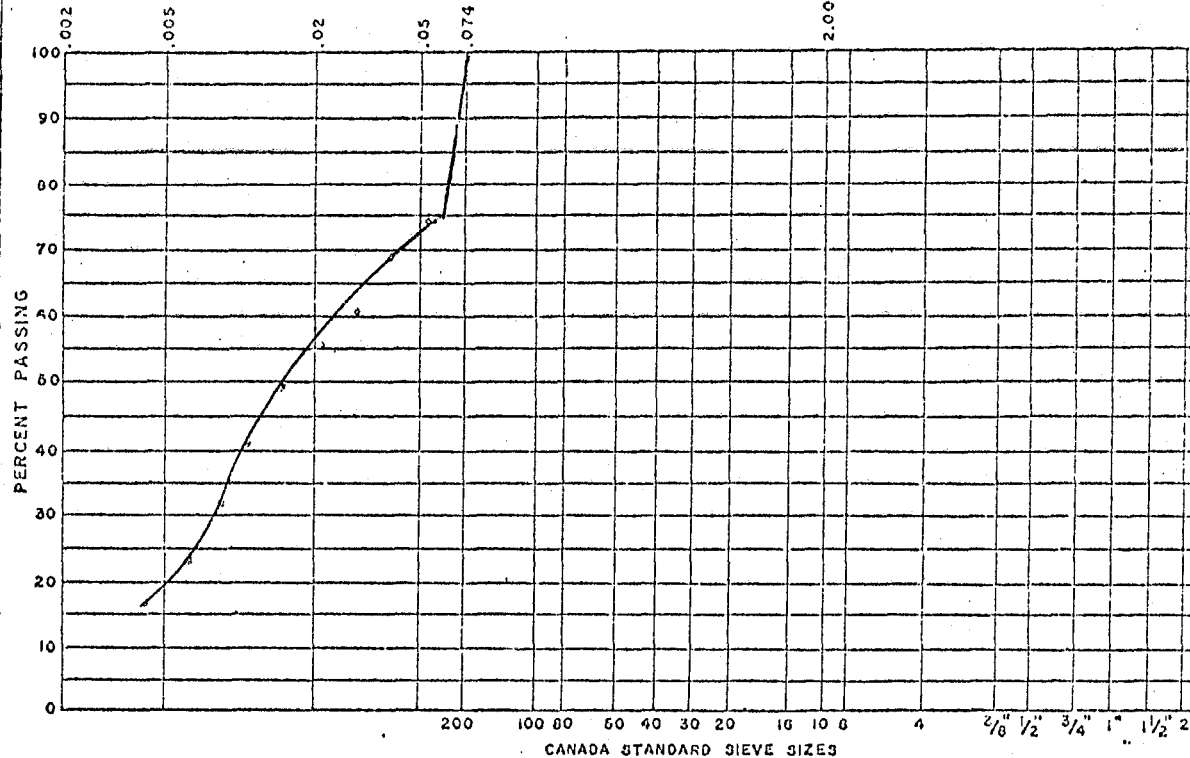
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
BASALT	
LIMESTONE	
GRANITIC	
SANDSTONE	
SHALE	
SCHIST	
QUARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
SUB-ROUND	
ANGULAR	
SUB-ANGULAR	
FLATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HWY.
 LOCATION 3277 + BS E
 HOLE NO. RR32
 DEPTH 5' FIELD NO. 43
 SAMPLE TYPE BAG

LAB. NO.
4799

LABORATORY'S REMARKS	DATE SAMPLED
FINE SANDY SILT (N.P.)	24-6-72
	DATE RECEIVED 30-6-72
	DATE RECORDED 16-8-72

RE-31

see airport

DPW TECHNICIAN

DATE AND TIME

CONTRACTOR

DRILLER

STARTED:
HOUR

June 24/72

FINISHED:

METHOD OF BORING

GROUND SURFACE ELEVATION
CASING SIZE

GAUGE
READING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
brkn. shale, little scrub	0									
	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									
	9									
	10									1 bag. Am. ex.
										- hole to 4 1/2'
										- 1/2' black silt with
										some fine gravel
										- no sample
										- 1/2' to 3/4' to 5'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100.0	#40	26.0
3/8"	93.7	100	16.5
3/4"	84.5	200	13.0
1 1/2"	80.5		
3"	74.9		
4"	64.7		
10"	49.9		
20"	35.6		

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
GM-SM SILTY GRAVELLY SAND				0 6.8	

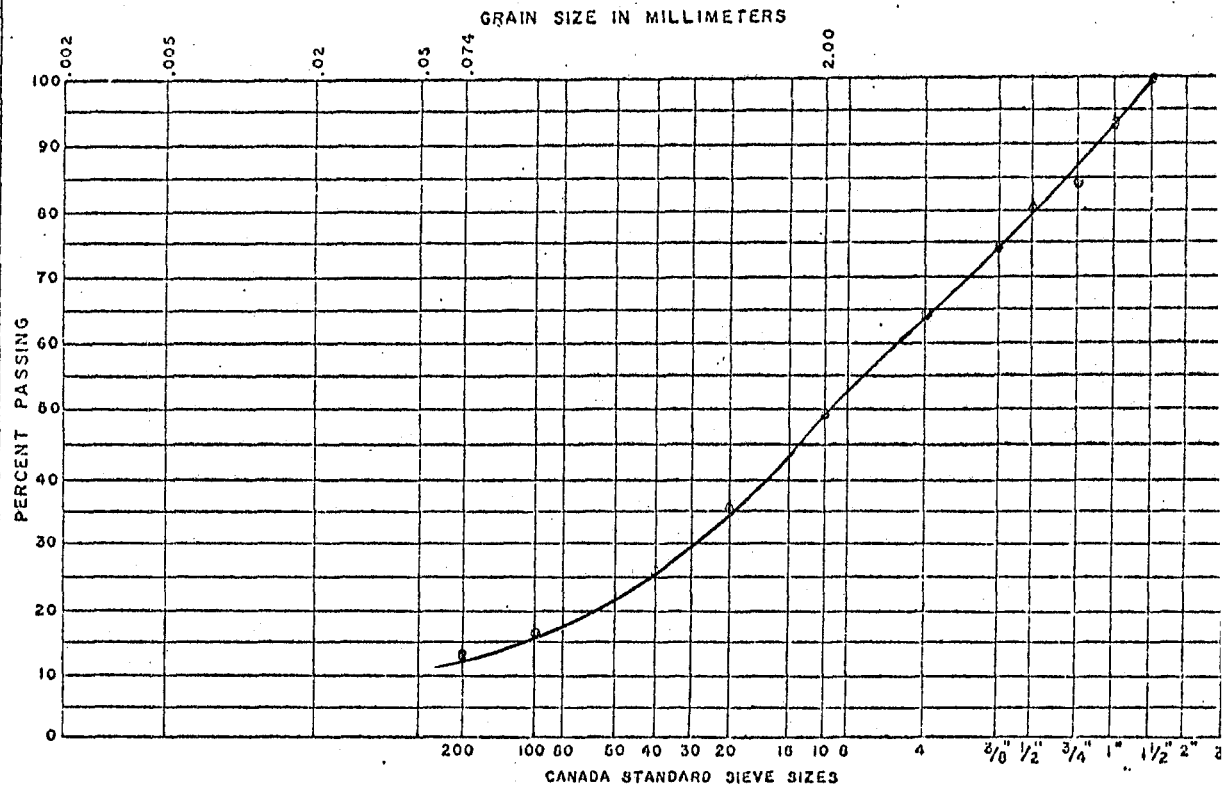
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
GALTS	
CLAY	
AMPHIBOLE	
QUARTZ	
ROCK	
GRAVEL	100%
SAND	
SILT	
CLAY	

PARTICLE SHAPE ANALYSIS

UNDULATING	
FLAT	
ANGULAR	
Sub-ANGULAR	
Sub-ROUNDED	
Sub-ROUND	
Sub-ANGULAR	
Sub-FLAT	
Sub-UNDULATING	



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

PROJECT DEMPSTER HIGHWAY

LOCATION SEE AIRPHOTO

HOLE NO. RR 30

DEPTH 3' FIELD NO. 42

SAMPLE TYPE BLAST HOLE - BOC

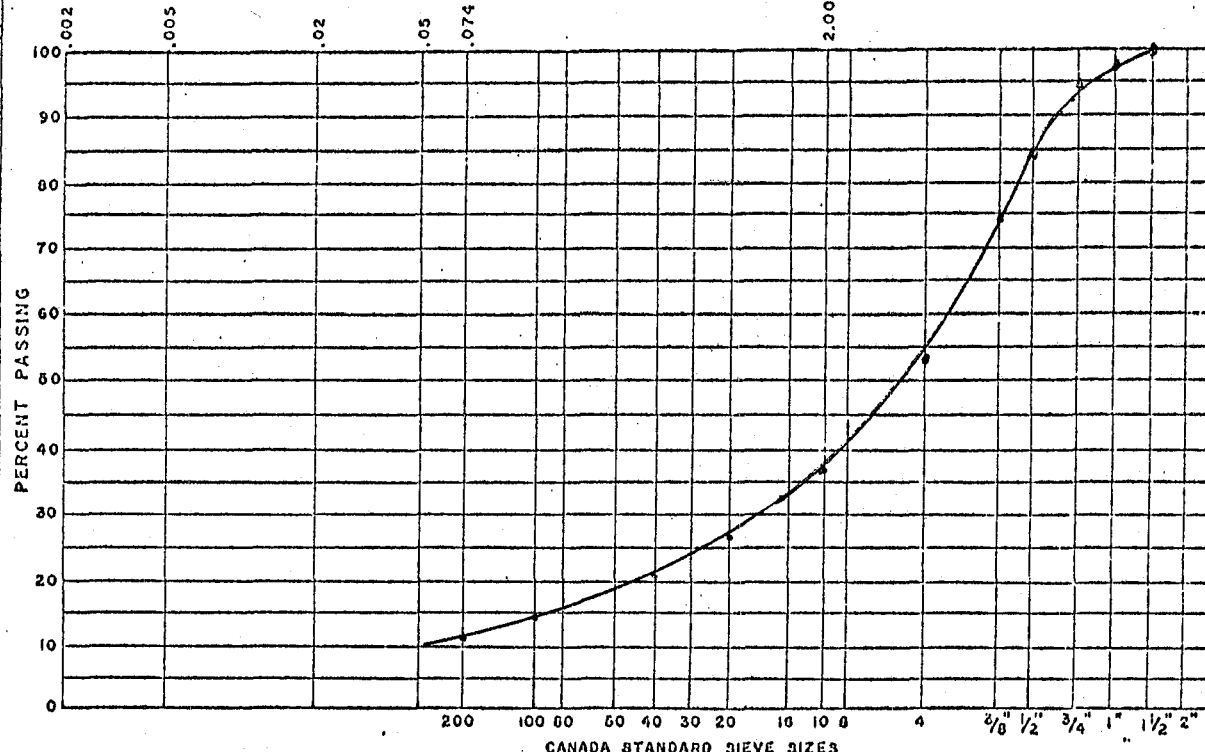
LAB. NO.
4798

LABORATORY'S REMARKS	DATE SAMPLED
<u>GRAVELLY SAND (W.P.)</u>	<u>24-6-72</u>
	DATE RECEIVED <u>30-6-72</u>
	DATE RECORDED <u>14-8-72</u>

GRAIN SIZE ANALYSIS

GRAIN SIZE IN MILLIMETERS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1/2"	100.0	# 40	20.7				
1"	97.3	100	14.7				
3/4"	94.3	200	12.2				
1/2"	84.8						
3/8"	74.3						
# 4	52.8						
10	37.2						
20	26.6						



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

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	SW-SM SILTY GRAVELLY SAND			0	10.5	

CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL, TYPE	% OF TOTAL SAMPLE
ASALT	
STONE	
GRANITIC	
ANDSTONE	
HALE	10.0%
CHIST	
UARTZITE	
OTHERS	

PARTICLE SHAPE ANALYSIS

ROUND	
UB-ROUND	
NGULAR	
UB-ANGULAR	
PLATS	
EDGES	

PROJECT *DEMPSTER HIGHWAY*

LOCATION *SEE AERPHOTO 23071*

HOLE NO. *RR 29*

DEPTH *3 1/2'* FIELD NO. *41*

SAMPLE TYPE *BAC*

LAB. NO.
4797

LABORATORY'S REMARKS	DATE SAMPLED
<i>GRAVELLY SAND (N.P.)</i>	<i>24-6-72</i>
	<i>30-6-72</i>
	<i>10-8-72</i>
	TESTED BY <i>JR</i>

BORE HOLE NO.

BORE HOLE NO.

RR-39

see airphoto

DPW TECHNICIAN

DATE AND TIME

STARTED:
ATUM

June 29/72

FINISHED:

CONTRACTOR

DRILLER

GROUND SURFACE ELEVATION

GAUGE

READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

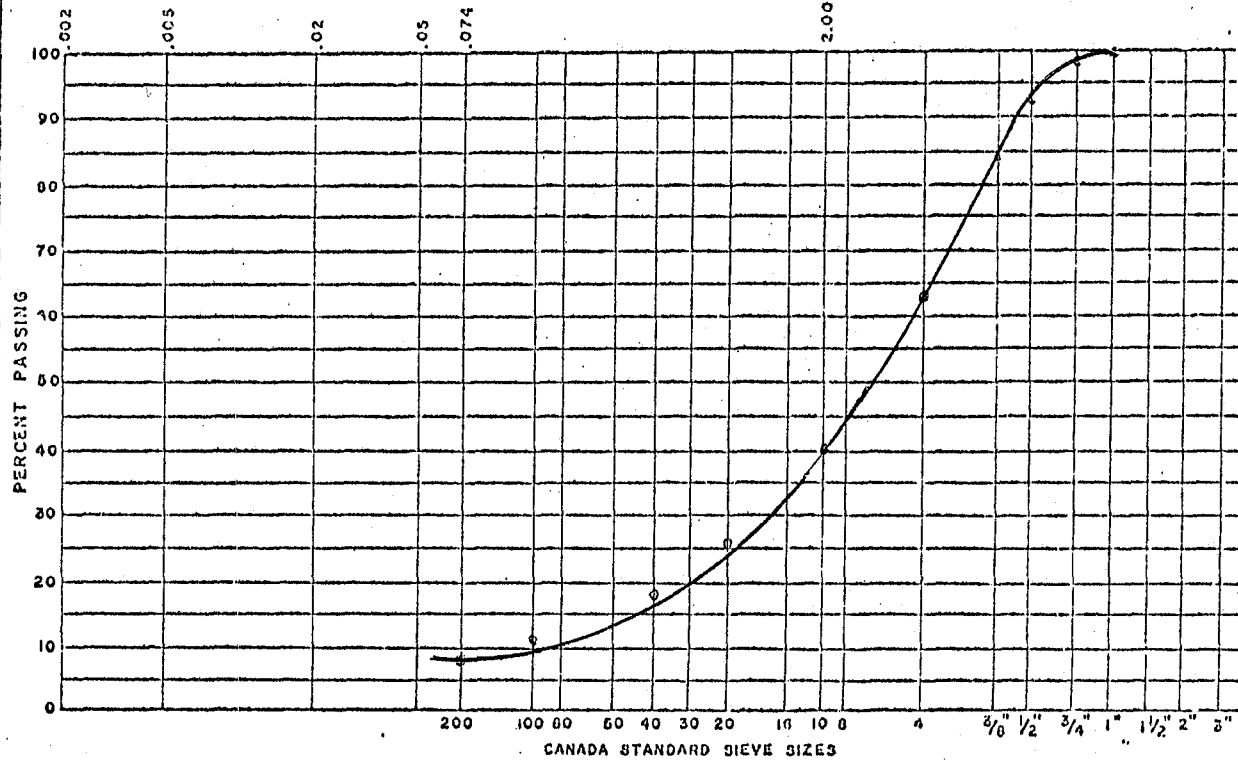
DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYMBOL	TYPE			
shale	0								
	1								
	2								
	3			41	ACC	B			
	4								
	5								
	6								
	7								
	8								
	9								
	10								
									- bag Amex
									- hole to 3 1/2'
									- sample # 41 at 3 1/2'
									- unbroken shale material
									- sh. most broken shale (3" max) with
									gravel and some sand & silt

GRAIN SIZE ANALYSIS

GRAIN SIZE IN MILLIMETERS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
#100	100.0	#100	11.3
200	98.6	200	8.7
	92.5		
	84.2		
	62.9		
	40.4		
	25.6		
	18.1		



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

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SW-SM			NP	3.3	
SILTY GRAVELLY SAND					

CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SILT	
CLAY	
STONE	
CEMENT	100%
OTHER	

PROJECT DEMPSTER HIGHWAY
 LOCATION SEE AIRPHOTO 3816
 HOLE NO. RR 28
 DEPTH 2 1/2' FIELD NO. 40
 SAMPLE TYPE BLAST HOLE - BAC

LAB. NO.
4796

PARTICLE SHAPE ANALYSIS

LABORATORY'S REMARKS GRAVELLY SAND (N.P.)	DATE SAMPLED 24-6-72
	DATE RECEIVED 30-6-72
	DATE RECORDED 14-8-72
	TESTED BY ZP

SHAPE	PERCENT
ROUND	
ANGULAR	
FLAT	
ELONGATED	

RR-28

see air photo

DPW TECHNICIAN

DATE AND TIME

CONTRACTOR

DRILLER

STARTED:

June 24/72

FINISHED:

METHOD OF BORING

GROUND SURFACE ELEVATION
CASING SIZE

GAUGE
READING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
brkn shale	0									
	1									
	2		40	1111	B					
	3									
	4									
	5									
	6									
	7									
	8									
										1 bag Amex
										- brkn shale to 3" with gravel, sand & silt
										- sl. moist, mfr. az. em.
										- sample 1' to 2'

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
2	95.7						
7.5	91.9						
15	78.8						
30	65.3						
60	54.9						
120	45.9						
250	29.1						
500	18.7						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
GM-SM			N.P.	11.1	
GRAVELLY SILTY SAND					

CRUSH COUNT %

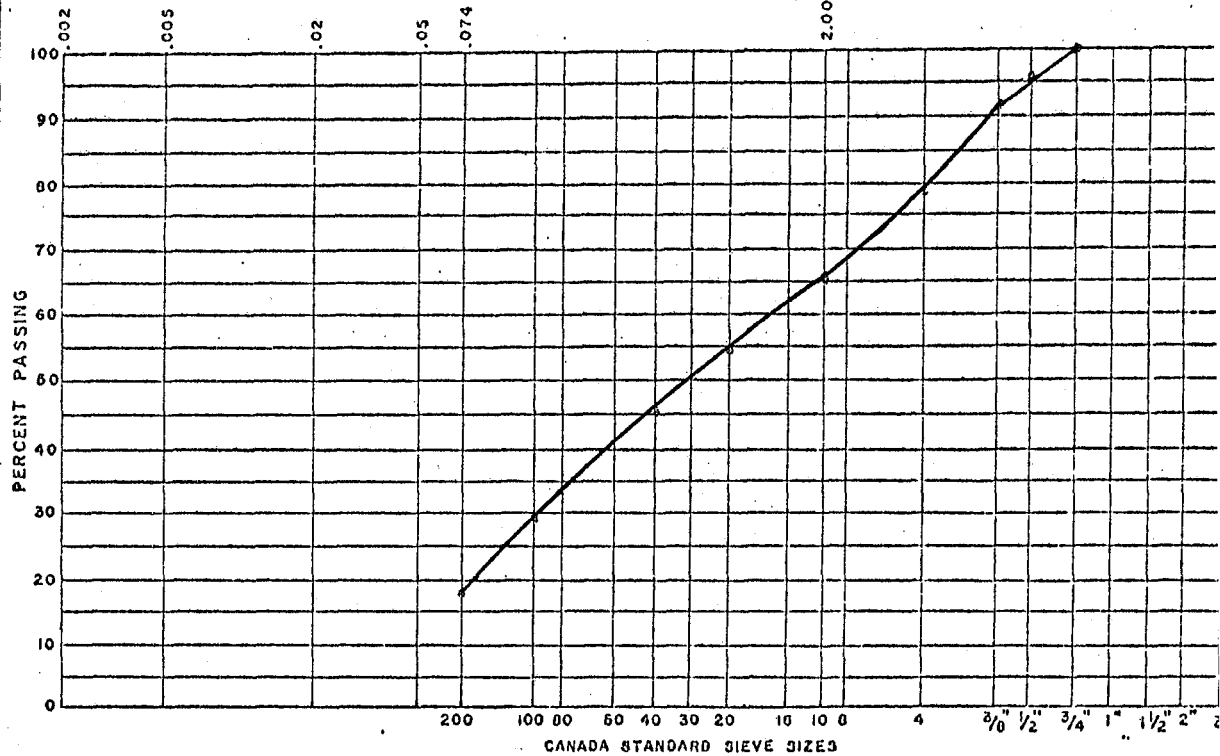
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
ONE	
AMTIC	
INDSTONE	
IALE	100%
IHST	
IARTZITE	
HERS	

PARTICLE SHAPE ANALYSIS

UND	
B-ROUND	
GULAR	
B-ANGULAR	
ATS	
COLES	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION SEE AIR PHOTO 33081

HOLE NO. RR 27

DEPTH 5' FIELD NO. 39

SAMPLE TYPE BLAST HOLE - - - BAG

LAB. NO.
4795

LABORATORY'S REMARKS
GRAVELLY SILTY SAND (N.P.)

DATE SAMPLED 24-6-72

DATE RECEIVED 30-6-72

DATE RECORDED 9-8-72

TESTED BY JP ✓

STARTED: June 24/72

FINISHED:

CONTRACTOR

DRILLER

STATION

GROUND SURFACE ELEVATION

GAUGE READING

METHOD OF BORING

CASING SIZE

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE			BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYMBOL	TYPE			
brkn shale	0								
	1								
	2								
	3								
	4								↓ silty
	5			39		B			
	6								↓ frozen
	7								
	8								1 bag Amux
	9								- hole to 5'
	10								- block, sl. mat - shale gravel to 2" max with sand + substantial silt content - sample at 5' - #39

BORE HOLE NO.

RR-24

BORE HOLE POSITION

Sta 3333+00 E

DPW TECHNICIAN

CONTRACTOR

DRILLER

METHOD OF BORING

SOIL:

ROCK:

DATE AND TIME

STARTED:
ATUM

June 24/58

FINISHED:

GROUND SURFACE ELEVATION
CASING SIZE

GAUGE
READING

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINER (FT.)			
MISS. CLAY SILT & ORGANIC	0									MISS. - NOT FROZEN FOR 6"
	1									
CLAY. SILT	2									
"	3									MATERIAL NOT PRESENT
"	4									MATERIAL FOR 2' AT THIS DEPTH
"	5									
SANDY SILT	6									FROZEN THROUGHOUT TO 10'
"	7									
"	8									SAMPLE TAKEN - SILT SANDY SILT
"	9									MOISTURE CONTENT 11%
"	10									

sample # 26

GRAIN SIZE ANALYSIS

SEIVE SIZE	% FINER BY WEIGHT	SEIVE SIZE	% FINER BY WEIGHT	SEIVE SIZE	% FINER BY WEIGHT	SEIVE SIZE	% FINER BY WEIGHT
4	97.8						
10	89.2						
20	77.4						
40	68.7						
100	60.4						
200	54.3						

SAMPLE NO.	CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
		24.1	23.3	.8	29.4	
	ML - INORGANIC SANDY SILT				SILT-SAND MIXTURE	

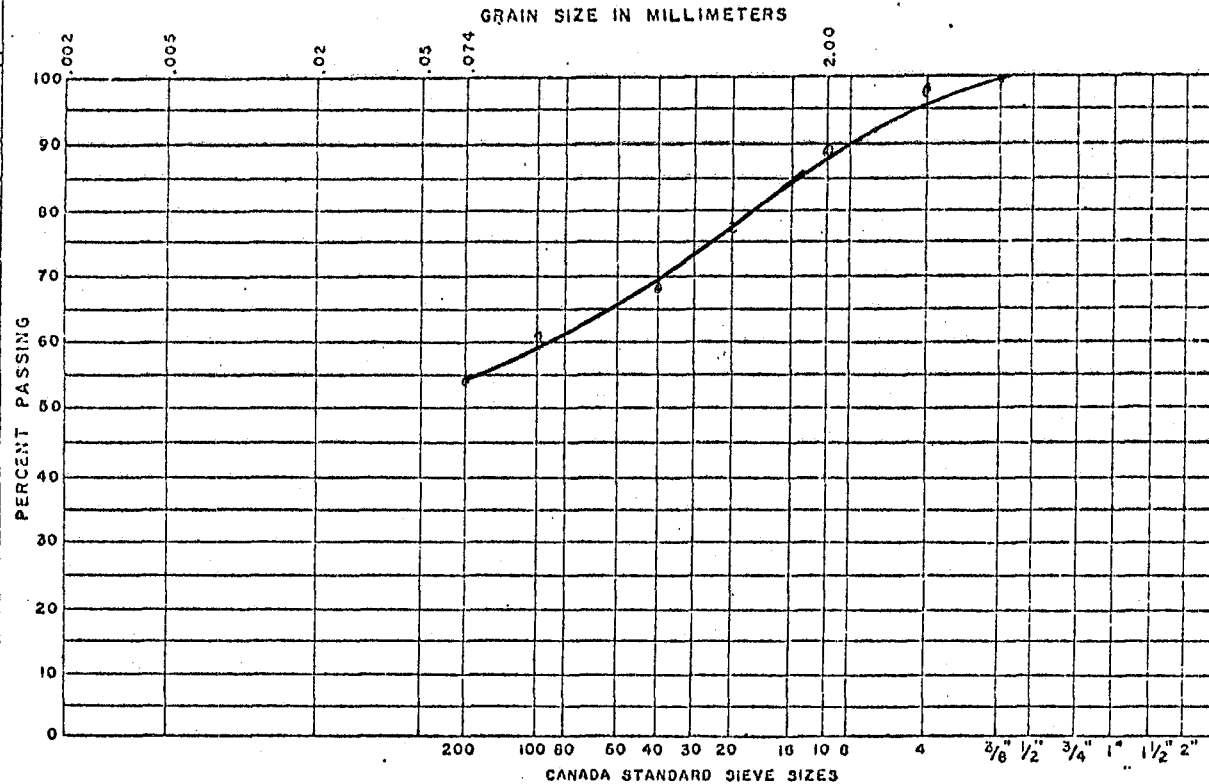
CRUSH COUNT %

PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
ASALT	
ONE	
RANITIC	
ANDSTONE	
HALE	
CHIST	
UARTZITE	
THERS	

PARTICLE SHAPE ANALYSIS

OUND	
UB-ROUND	
IGULAR	
UB-ANGULAR	
ATS	



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

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 3356+00

HOLE NO. RR21

DEPTH 9' - 10' FIELD NO. 33

SAMPLE TYPE BAG

LAB. NO.
4790

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY SILT (L.P.)</u>	<u>24-6-72</u>
	<u>30-6-72</u>
	<u>10-8-72</u>

BORE HOLE NO.

RR-21

3356400

DPW TECHNICIAN

DATE AND TIME

June 24/72

CONTRACTOR

DRILLER

STARTED:
ATUM

FINISHED:

METHOD OF BORING

GROUND SURFACE ELEVATION
LARING SIZE

GAUGE
READING

SOIL:

ROCK:

CASING HAMMER WT.LBS.

DROP.....INCHES

DESCRIPTION OF STRATA	DEPTH (FT.)	ELEV. (FT.)	BLOWS PER FOOT	SAMPLE				BLOWS PER 6 IN.	SAMPLE NO.	SAMPLE DESCRIPTION AND BORING NOTES
				NO.	SYM-BOL	TYPE	RE-TAINED (FT.)			
.....	0									blue & white silty sand, silty clay
.....	1									Water content
.....	2									
.....	3									
.....	4								
.....	5								
.....	6								
.....	7								
.....	8								
.....	9			33	1111	A			
.....	10			32					

GRAIN SIZE ANALYSIS

SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
3/4"	100	200	44.9				
1/2"	96.4						
3/8"	93.5						
4"	83.1						
10"	69.0						
20"	58.6						
40"	52.9						
20"	47.5						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
SC - CLAYEY SAND MEDIUM PLASTICITY	27.3	17.9	9.4	15.2	

CRUSH COUNT %

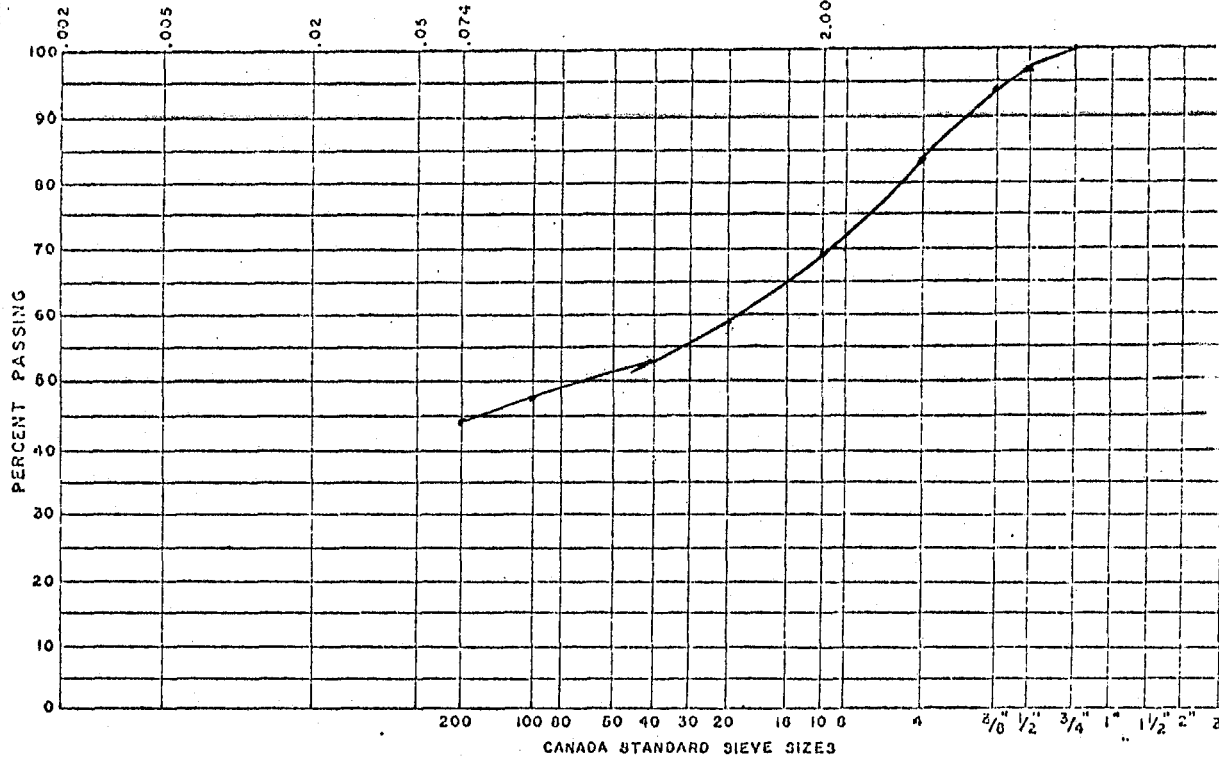
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
ONE	
AMITIC	
NDSTONE	
ALE	
HIST	
ARTZITE	
HERS	

PARTICLE SHAPE ANALYSIS

UND	
B-ROUND	
GULAR	
D-ANGULAR	
ATS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT ... DEMAREST H.W. ...
 LOCATION ... 3371 + 60 E ...
 HOLE NO. ... RR 15 ...
 DEPTH ... 5' ... FIELD NO. ... 27 ...
 SAMPLE TYPE ... S.P.S. ...

LAB. NO.
4784

LABORATORY'S REMARKS	DATE SAMPLED
<u>CLAYEY SAND (M.P.)</u>	<u>23-6-72</u>
	DATE RECEIVED <u>30-6-</u>
	DATE RECORDED <u>16-8-</u>

GRAIN SIZE ANALYSIS

VE ZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% FINER BY WEIGHT
1"							
2"	100.0						
3"	99.4						
4"	95.6						
6"	87.0						
8"	78.9						
10"	73.9						
20"	68.2						
40"	65.5						

CLASSIFICATION	L.L.	P.L.	P.I.	NAT. %W	F.M.
	32.4	19.5	12.9	5.6	
CL - INORGANIC SILTY SANDY CLAY MEDIUM PLASTICITY					

CRUSH COUNT %

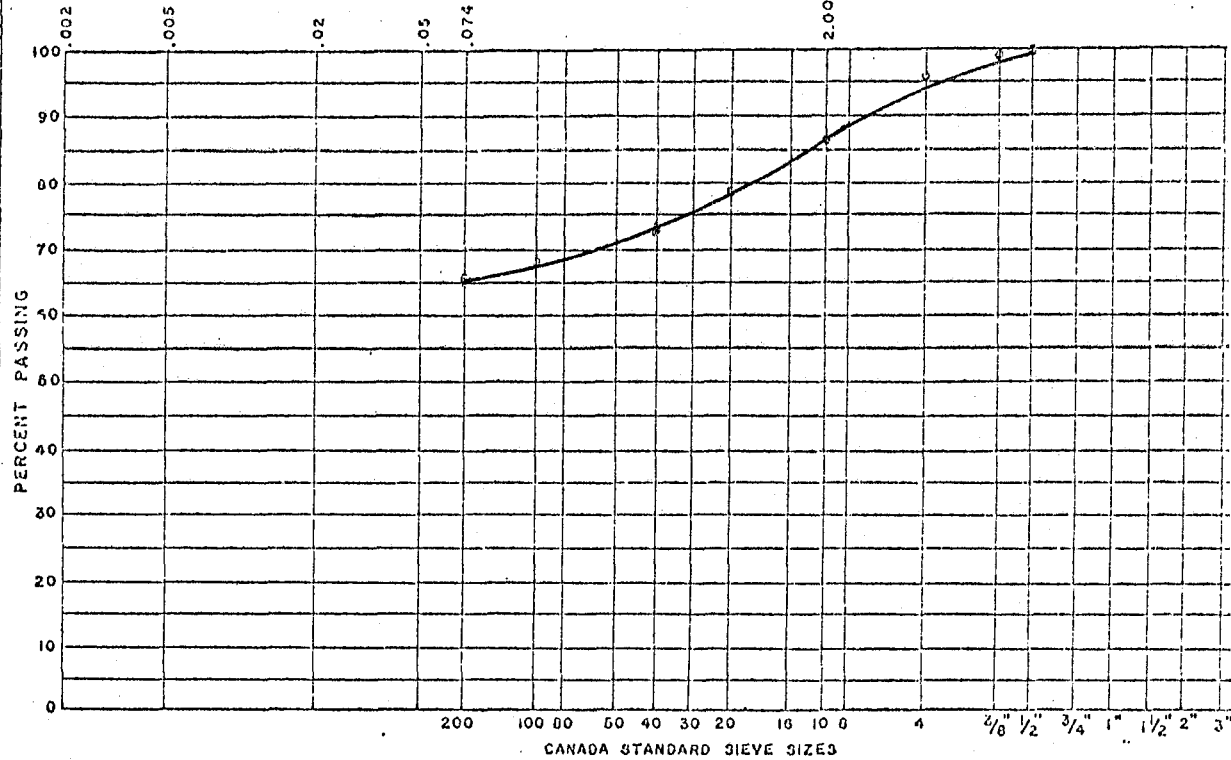
PETROGRAPHIC ANALYSIS

MATERIAL TYPE	% OF TOTAL SAMPLE
SALT	
STONE	
TRITE	
ROSTONE	
GLE	
LIST	
RTZITE	
TERS	

PARTICLE SHAPE ANALYSIS

IND	
ROUND	
ULAR	
ANGULAR	
ITS	

GRAIN SIZE IN MILLIMETERS



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

PROJECT DEMPSTER HIGHWAY

LOCATION STATION 3371+00

HOLE NO. RR 15

DEPTH 10' FIELD NO. 28

SAMPLE TYPE B.C.

LAB. NO.
4785

LABORATORY'S REMARKS	DATE SAMPLED
<u>SANDY CLAY (M.P.)</u>	<u>23-6-72</u>
	DATE RECEIVED <u>30-6-72</u>
	DATE RECORDED <u>14-8-72</u>
	<u>TD</u>

