

OFR 91-05

SAND AND GRAVEL RESOURCES OF THE EAST HALF OF
THE MUNICIPAL DISTRICT OF PROVOST, NUMBER 52

W.A.D. Edwards
D.W. Scafe
1990

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ABSTRACT

A reconnaissance level sand and gravel map of the eastern half of the Municipal District of Provost No. 52 was completed by the Alberta Geological Survey in October 1989. The study was funded by Alberta Forestry, Lands and Wildlife. This report provides more detail on the areas delineated as having potential and on the research procedures.

Ninety-six areas with potential for sand or gravel are identified on the initial map and in this report. These areas belong to five different origins: meltwater channel deposits (32 areas), kame deposits (33), outwash deposits (16), esker deposits (10), fan deposits (4) and eolian dune deposits (1).

The meltwater channel and kame deposits have the highest potential for the discovery of gravel. Twenty-two of these type of deposits are reported or rumoured to contain gravel. It is recommended that the M.D. should first test the meltwater channel and kame deposits listed as having highest potential and, if sufficient supplies have not been discovered, then proceed to check areas with lower potential.

INTRODUCTION

This study is part of a program initiated in 1976 by the Alberta Research Council (ARC) and Alberta Forestry, Lands and Wildlife (AFLW) to provide information on the sand and gravel resources of the Province of Alberta. The area of study (figure 1), level of detail and roles of the participants were determined by representatives of the Public Lands Division (AFLW), the Municipal District of Provost No. 52, Alberta Transportation and Utilities (AT&U) and the Alberta Geological Survey (AGS) a department of ARC at a meeting on September 13, 1989.

A reconnaissance level study (level 5 on figure 2) of the eastern half of the Municipal District was completed by the AGS. The initial airphoto interpretation of the area (AGS) was funded by the Public Lands Division (AFLW). A map identifying potential sand and gravel deposits was provided to the Municipal District of Provost No. 52, in October of 1989. The testing and sampling of any or all deposits which the M.D. feels has potential, with the assistance of the AT&U, will follow when the M.D. equipment and personnel are available.

The eastern half of the M.D. of Provost No. 52 is located on the Alberta-Saskatchewan border, in NTS sheet 73E within Townships 36 and 37, Ranges 1 to 3, Townships 38 to 41, Ranges 1 to 5 and Township 42, Range 5, W4thM. Total area is approximately 2060 square kilometers. The major population centre in the study area is the town of Provost.

ACKNOWLEDGMENTS

Public Lands Division of Alberta Forestry, Lands and Wildlife provided the funds for the geological study.

Mrs. Linda MacDonald, Administrator for the Municipal District of Provost No. 52, provided information on sand and gravel operations in the eastern half of the M.D., furnished a base map for the area and

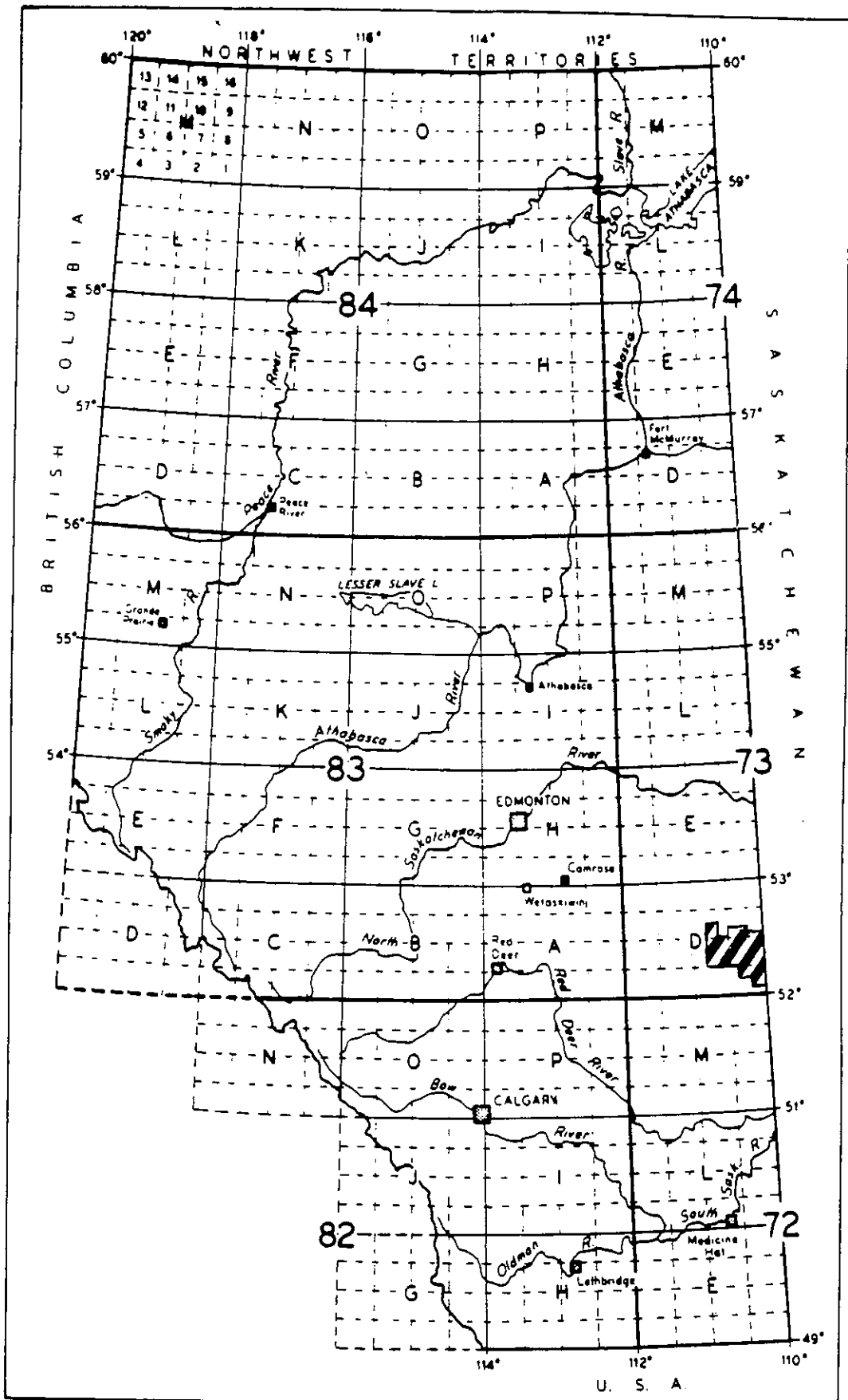


Figure 1. Study area.

AGGREGATE INVENTORY MAPPING LEVELS

Format	Reconnaissance Study 5	Enhanced Reconnaissance Study 4	Regional Mapping 3	Detailed Mapping 2	Deposit Evaluation 1
Scale (Common)	1:250,000 (approx. 11x14 townships)	1:250,000 (approx. 11x14 townships)	1:50,000 (approx. 3x3 townships)	1:10,000	1:10,000 or larger
Mapping Methodology	Derived from existing surficial geology information. Aerial photograph interpretation.	Derived from existing surficial geology information. Aerial photograph interpretation. Some field traverses and site examination.	Aerial photograph interpretation Field traverses. Site examinations. Selected deposit testing. Laboratory testing.	Sedimentological studies. Site examination. Deposit testing. Laboratory testing.	Test pitting on an established grid. Hole logging. Materials analysis.
Uses	Broad scale planning. Preliminary aggregate exploration.	Broad scale planning. Preliminary aggregate exploration. Preliminary resource assessment.	Land use planning. Resource management. Resource estimates.	Land management. Reserve estimates. Deposit management.	Deposit evaluation. Development plan preparation.
Comments	Only potential areas suitable for finding deposits shown. Fairly quick and in- expensive to produce.	Potential areas suitable for finding deposits are shown. Some deposits are examined. A map will take 6 months to a year to produce.	Estimates deposit boundaries and gives quality and quantity estimations. A map may take 8 months to a year to produce.	Establishes deposit boundaries. Refines quantity/quality information. Fairly expensive survey.	Precise quality and quantity estimates. Deposit variations identified. Very expensive survey.
Output	2 map sheets per prof-year.	1 map sheet per prof-year.	2 to 3 map sheets per prof-year.	Special projects only.	Special projects only.

Figure 2. Study levels.

called a meeting of the councillors for the M.D. when the initial map was presented and described.

Alberta Transportation and Utilities provided testing and sampling data to AGS through the M.D.

METHODS

The study began with the compilation of existing information. Information available for the area includes water well logs from Alberta Environment, a surficial geology report by the Alberta Research Council and information on sand and gravel pits provided by the M.D. of Provost No. 52.

An airphoto interpretation was completed using 1:30,000 scale photos. The interpretation concentrated on identifying deposits with some potential for gravel because large areas of very fine sand are known to exist in the area and the M.D. is most interested in gravel. Information was transferred to a photo mosaic at a scale of 1:80,000 so that trends could be recognized. Deposits were grouped into categories (high, medium and low potential) to make exploration more focused for the M.D. The outlines of potential deposits were transferred to the 1:100,000 base map and a legend listing the three categories was added (figure 3). All water wells were plotted onto the base map and those penetrating gravel are identified with a separate symbol.

No field work was conducted during this initial study. The geological interpretation and subsequent map is based solely on airphotos, limited subsurface information from water wells and gravel pit data. Field testing is to be done at a later date by the M.D. of Provost No. 52 in co-operation with Alberta Transportation and Utilities.

GEOLOGY

PHYSIOGRAPHY AND BEDROCK

The map area lies within the central Alberta plains, a relatively flat, glaciated region underlain by sandstones and some shales of Cretaceous age. Local relief is dominated by features of glacial origin. These include remnants of meltwater channels, which extend generally east-west and northwest-southeast in the northern and eastern parts of the study area, a large esker which cuts across the southwestern part of the study area and higher ground in the southeastern part of the study area formed of glacially contorted bedrock.

Most of the area is underlain by sandstone and shales of the Upper Cretaceous Judith River Formation. Shales of the overlying Bearpaw Formation are present in the extreme southern part of the study area, particularly in areas of glacially disturbed bedrock (Green, 1972).

SURFICIAL GEOLOGY

The bedrock in the area generally is overlain by till in the form of ground moraine. In many places the till is overlain by eolian sands or glaciolacustrine silts and clays. These glaciolacustrine sediments are especially prominent in the central part of the study area.

A large esker, about 30 km long and up to 60 m in height, is present in the southwestern part of the study area. Associated with this esker are many irregularly shaped hills (kames). Both the esker and most of the kames appear to be composed primarily of fine- to medium-grained sand, although pockets of gravel are present. Outwash deposits and terraces along remnants of glacial meltwater channels are present in the Bodo and Hayter areas and along the northern boundary of the study area. Some of these deposits contain gravel. Surficial geology information is derived primarily from the report by Bayrock (1967).

SAND AND GRAVEL RESOURCES

Sand, especially very fine sand, is common in the area. Commercial gravel deposits do occur but are much less common. Ninety-six areas (which may have potential for gravel or sand with some gravel) are identified in the eastern part of the M.D (figure 3). These deposits were identified from airphoto interpretation with supporting data, if available, from water well logs or pit data. The potential deposits fall into six types of surficial deposits: meltwater channel terraces and bars, kames, outwash deposits, eskers, eolian dunes and alluvial fans. The greatest potential for finding gravel in the area is in the meltwater channel terraces. Deposits with the least potential for finding gravel beds are in or beneath the eolian dune deposits and in the fans. Following is a short discussion of each of the six types of deposits.

MELTWATER CHANNEL DEPOSITS

Terraces and bars formed in meltwater channels at the end of the last glaciation. Sand and gravel derived from the glacier or eroded from the sides of the channels was carried and deposited as great volumes of meltwater issued from the failing ice mass. The remnant meltwater channels now are visible as misfit valleys or linear depressions without stream channels at the present time. Some of the channels are visible only as a series of small remnant or chain lakes. Thirty-two deposits of this origin are identified. They have the highest potential of all deposits in the area for containing gravel. In fact, ten meltwater channel deposits identified as having highest potential are documented or rumoured to contain gravel. Table 1 lists the origin of deposits and their ranking (potential) for containing gravel. Table 2 lists all deposits that are reported or rumoured to contain gravel or sand or have some unspecified potential.

KAME DEPOSITS

Deposits with the second highest likelihood of containing gravel are the kame deposits. Thirty-three deposits of probable kame origin are identified in the study area. These deposits formed at an ice margin when meltwater carrying sand and gravel cascaded from the ice surface to deposit material that now appears as irregularly shaped hills. These deposits may contain lenses of sand, gravel or till. Gravel beds are often irregular in shape, variable in dip and seemingly random in distribution. Tracing and mining the gravel is difficult. Kame deposits in the area reported or rumoured to carry gravel are listed in Table 2. Most of the kame deposits are present in the western and southwestern part of the study area near the large esker.

OUTWASH DEPOSITS

Outwash deposits are widespread in the study area and sixteen are identified. They have moderate to very low potential for the presence of gravel. Outwash deposits are formed when meltwater carrying sand and gravel flows from the melting ice surface and spreads out to deposit a thin layer of material unconfined by a channel. Eight of the deposits in the area are described in data supplied by the M.D., all are reported to contain only sand. Outwash deposits may be present in the same vicinity as meltwater channel deposits and care must be taken to distinguish the two types of deposits as the meltwater channel deposits have higher potential for gravel.

ESKER DEPOSITS

Esker ridges are common in the study area and ten segments were identified as possible sources of gravel. The eskers in this area are commonly sand, only one is reported to contain sandy gravel, and for this reason have a moderate to low potential as a source of gravel. Eskers are formed when meltwater drains through ice-walled channels and leaves beds of sand or sand and gravel. When the ice walls melt the beds are left as a ridge marking the course of the former channel.

FAN DEPOSITS

There are only four deposits in the area which are categorized as having alluvial fan origin. These deposits form when a temporary stream carries material from the side of the valley onto the valley side and floor and is deposited in a fan shape. These deposits are unlikely to contain gravel.

EOLIAN DUNE DEPOSITS

Eolian dunes were formed in the area immediately after melting of the continental ice when the land surface was bare and strong winds moved the exposed sand. Eolian dunes, by nature, do not contain gravel, but information on one deposit (#9) is reported in the records provided by the M.D., so this is included on the map (in pocket). Much of the study area is covered by fine-grained sand which is probably of eolian origin. Areas covered by eolian sand should not be excluded entirely from gravel exploration, as these areas may have only a thin blanket of sand over other types of deposits such as meltwater channel terrace bars or outwash. The sand moved by the wind originated in some other type of deposit and if the direction of sand movement can be determined the source deposit, which may contain coarser materials, may be determined.

Table 1. Sand and gravel deposits in the study area listed by potential for containing gravel, origin and deposit number (see figure 3 in pocket).

<u>Potential</u>	<u>Type of Deposit</u>	<u>Deposit Number</u>
Very High	Meltwater Channel	4,5,7,11,53,54,61,63, 80,88
High	Meltwater Channel Kame	56,57,67,68,69,75, 14,15,35
Moderately High	Meltwater Channel Esker	74 49
Moderate	Meltwater Channel Kame Outwash Fan Esker	2,3,8,65,66,70,71,81 22,28,30,31,33,34,36, 37,39,41,42,44 1 12,64 13,47,50,51,55
Moderately Low	Meltwater Channel Kame Outwash	58,59 60,87 52,82,85,86
Low	Meltwater Channel Kame Outwash Fan Esker	76,77 16,17,23,24,26,27,29,32, 40,90,91 6,10,19,45,46,48,84 83 25,38,78
Very Low	Meltwater Channel Kame Outwash Dune Fan Esker	21,43,73 18,20,72,93,95 62,89,94,96 9 79 92

Table 2. Summary of sand and gravel deposit information provided by the Municipal District of Provost No. 52. Deposits are listed by origin with some indication given as to the material present (reported or rumoured). The code for these descriptions is shown at the bottom of the page.

<u>Deposit Type</u>	<u>Deposit Number and Information</u>
Meltwater Channel	1(g),2(NI),3(g),4(sg),7(NI),8(NI)9(g), 12(g),13(g),14(g),16(NI),17(g),18(s), 19(fg),20(g),21(g),23(g?),24(NI),24(NI), 25(NI),26(NI),29(g),30(NI),33(g),35(g), 42(g),43(g),56(g),58(g),64(s),67(s)
Kame	10(g?),11(NI),15(g?),32(g)
Outwash	5(s),6(s),34(s),52(s),53(s),54(s),65(s), 66(s)
Esker	31(s),55(sg),57(s),60(s)
Fan	22(NI)

NI - No information on material; ? - speculative, g-gravel, sg-sandy gravel, fg-fine gravel, s-sand.

RECOMMENDATIONS

The investigation identifies 96 areas which could contain sand or gravel. The likelihood is that less than 10 percent of these areas will, in fact, contain gravel and many of these deposits already have been tested. Recommendations are that the deposits with the highest potential should be investigated first. Deposits containing known gravel should have an expanded program of testing to determine the extent of the gravel present. Deposits with moderate potential should be field checked before any testing is committed. Surface geophysics using equipment such as a Geonics EM-31 could be performed over deposits with any surface indication of gravel. Deposits with low or very low potential should be investigated only if other evidence indicates there may be gravel present, or if all other options have been exhausted.

Other deposits may exist in the area, especially if these deposits are buried. If long hauls of material are contemplated, interested parties in the region should consider the possibility of deep probing airborne or ground geophysics to examine the possibility of buried gravel deposits.

BIBLIOGRAPHY

Green, R., 1972, Geological map of Alberta; Edmonton: Alberta Research Council.

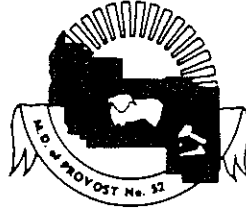
Bayrock, L.A., 1967, Surficial geology of the Wainwright area (east half), Alberta; Report 67-4; Edmonton: Alberta Research Council, 10 p.

APPENDIX I

Sand and gravel information provided by the Municipal District
of Provost No. 52 and Alberta Transportation and Utilities

Municipal District of Provost No. 52

OFFICE OF THE
SECRETARY - TREASURER



TELEPHONE 753-2434
P.O. BOX 300
PROVOST, ALBERTA T0B 3S0

October 17, 1989

W.A. Dixon Edwards
Alberta Geological Survey
7th Floor, Terrace Plaza
4445 Calgary Trail South
Edmonton, Alberta

VIA COURRIER

Dear Mr. Edwards

RE: GRAVEL SURVEY
M.D. OF PROVOST NO. 52

Enclosed please find the information you requested for the gravel survey within out Municipality. Enclosed also find 10 Municipal Maps as per your request.

Trusting this meets with your requirements.

Yours Truly,

Linda L. McDonald (Mrs.)
Administrator

LLM/cn
encl.

HISTORY OF GRAVEL INFORMATION
M.D. OF PROVOST RANGES 1 - 5
AND ADJACENT TOWNSHIPS

RANGE 1.

SPECIAL AREAS: Spoke to Gerald Bennedict of Special Areas 3. Youngstown 779-3733. The only pit they have in the area is the Vogel pit on Sec. 25-34-1-4. There is only 5000 - 6000 left. Saskatchewan have a pit on the other side of the border. Alberta Transportation have checked all around the area and haven't found anything. A study was done by Mollard and all the locations identified in the east side have not proved out.

R.M. OF EYEHILL, SASKATCHEWAN:

Range

28 N.E. 5, Township 38, West of the 3rd - Dept. of Highways large pit.
W1/2 30, Township 38, West of the 3rd - Operators R.M. of Eyehill and Dept. of Highways - large extensive pit used for Highway 14 and 17. Depleted to sand and fines. No good rock left.
S.W. 17, Township 39, West of the 3rd - Stanton Fair - next to St. Lawrence Lake.

The Secretary Treasurer advised good quality gravel is scarce. Mostly small pockets and sandy. There are also some small private pits.

M.D. OF PROVOST #52:

Range 1

Township

36 None
37 W1/2 14 - Alberta Transportation
S.E. 15 - Allen Heck - less than 5 acres
38 None
39 N1/2 12 - Gar Val Holdings (this was recently offered for sale \$80,000. - Engineers estimate 35,000 yards left. Gravel is baled out of water hole adjacent to St. Lawrence Lake. (same 13 acres sold for \$80,000 in 1986).

S.E. 12 - M.D. of Provost - Department of Highways Agreements January 13, 1958, December 31, 1959. 1958 Department of Highways 12946 cubic yards - December 3, 1959, December 31, 1964 no yardage available. At present there is a water hole which the M.D. has baled twice (appr. 70000 cubic yards). The M.D. plans to bale again and expects about 30,000 yards. Total yardage from 1978 - 89, 230,646 cubic yards.

S.W. 12 - M.D. of Provost No. 52, Dept. of Highways agreement (Oct. 20, 1959, Dec. 31, 1964) No record of quantities taken. Hal Caesar, Alberta Transportation Agregate specialist tested in 1987 for 899N. No written results other than he said it was too sandy.

N.W. 18 - Norbert Holzinger - some sand pit used for own purpose.

N.E. 20 - Phillip Hansen - native pasture farmer suspects there may be some gravel.

N.E. 30 - C.G. Paulgaard

S.W. 31 -

(S.E. 36, Township 39, Range 2)

There are three small gravel pits (under 5 acres) located on these quarters. One is sandy the other two are pretty good gravel. The M.D. tested with a backhoe, he said Andy said it was only three feet deep. He would be interested in further testing.

N.W. 11 - Phillip Hansen - farmer has pulled some gravel out - old private pit - suggests testing.

40 N.W. 35 - Old hager pit (Ernest Hager) extensive private pit. Rumour has it depleted.

Range 2

Township

37 E1/2 3 - Palmer Paulgaard Estate - Operator Dan Paulgaard - Large extensive pit used for 899S.

S.E. 10 - M.D. of Provost (Paulgaard Pit) Reclaimed 1988 Operated since 1966. Sand and gravel lease 2975. Obtained title July 1977. Approximately 150,000 cubic yards taken.

S.W. 11 - Bernard Pit Surface Materials Lease #820008 operated by the M.D. of Provost since 1965. Approximately 155,000 cubic yards removed. All areas at #4 reclaimed. Limited amount of gravel left.

S.W. 16-37-2-4 Netherlands Investment Co. Small pocket located on the northwest corner along the fence line approximately 30 rods from the corner. 10,000 yards taken 1956 - 1959. May be some on S.E. 17-37-2-4 and further testing could be done.

N.W. 25-40-2-4 Calvin Ferrier Private Pit.

S.W. 3-41-2-4 M.D. of Provost No. 52. Known as the Taylor pit this pit has been operated by the M.D. since 1977. The M.D. has used 215,000 cubic yards and the Town of Provost operated a 5 acre pit and used about 100,000 cubic yards. The gravel from this pit varies from good to poor and there is no good gravel left. It contains a lot of clay balls. Further development is limited. Map of pit is enclosed.

N.W. 3-41-2-4 Keith Read large pit depleted
N.E. 4-41-2-4 M. D. of Provost. This is a reclaimed pit.
However Council have opened a small area in the N.W. corner which has
large rock. 20,000 cubic yards crushed in 1989. Limited amount.
N.W. 4-41-2-4 Keith Read gravel pit now depleted.
S.E. 4-41-2-4 Keith Read gravel pit now depleted.
W1/2 6-41-2-4 Keith Read Private Pit. still active.
S.E. 10-41-2-4 Keith Read Pit. Owner thinks there is still
gravel on this quarter but fairly deep. Would approve further test-
ing.

Range 3

N.W. 31-38-3-4 Used for M.D. stockpiling
N.E. 34-40-3-4 Angeltvedt. Pasture, under 5 acres, small
pocket. High water table - still open could be tested further.
N1/2-2-41-3-4 Bill Wagner Private Pit - supplies cement
plant.
S1/2 7-41-3-4 Roy Symington

Range 4

N.E. 31-38-4-4 Shenk's Sand Pit
S.W. 25-39-4-4 Stockpile
S.W. 6-40-4-4 R.H. Trenerry
N.W. 17-41-4-4 J. Clair Scott. see attached Pit Operations
S.W. 17-41-4-4 Ralph Maull opened for paving project 1989.
30% sand elimination.

NOTE*** Former Public Works Foreman said he was told there was 90
feet of gravel from the Scott Pit West to the Divison boundaries. All
along the creek. He also said there would be quite a bit of overbur-
den.

Range 5

N.E. 24-38-5-4 Exploration, sand only.
-see attached Wainwright Prospect
N.W. 31-38-5-4 Finley Pit - Crown Land - See sand and gravel
application #3275. Operated by the M.D. from 1972. Only 22,000 cubic
yards removed. Reclaimed.

M.D. OF WAINWRIGHT NO. 61

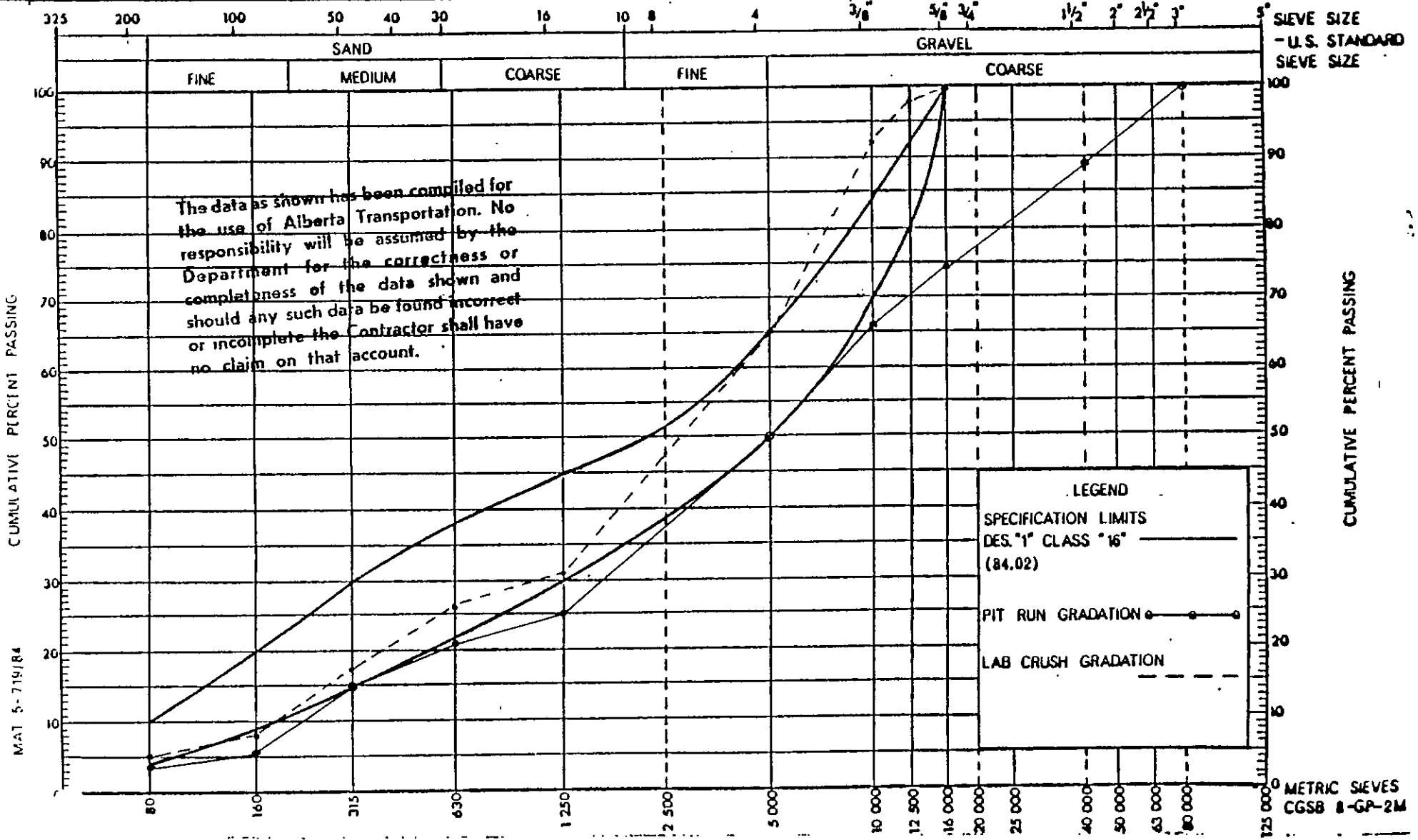
Greenwood Pit - S.E. 34-45-3-4

Hager Pit - S.W. 33-41-1-4 fairly new.

McNalley Pit 27-42-1-4

Alberta Transportation has done a study on the eastern side of the M.D. of Wainwright.

TO D. Barber PROJECT [REDACTED] PIT NAME BOD0
 C C _____ FROM _____ PIT LOCATION W $\frac{1}{2}$ 14-37-1-4
 TO _____ LAB SAMPLE NO. 405743-745



MAT 5-719/84

REMARKS _____

AGGREGATE ROOM SUPERVISOR _____

[Signature]

SE 1/4 SEC. 12 TP. 30RGE. 1 W. 4 M.


NAME OF PIT M. D. OF PROVEST

TESTED BY BARBER

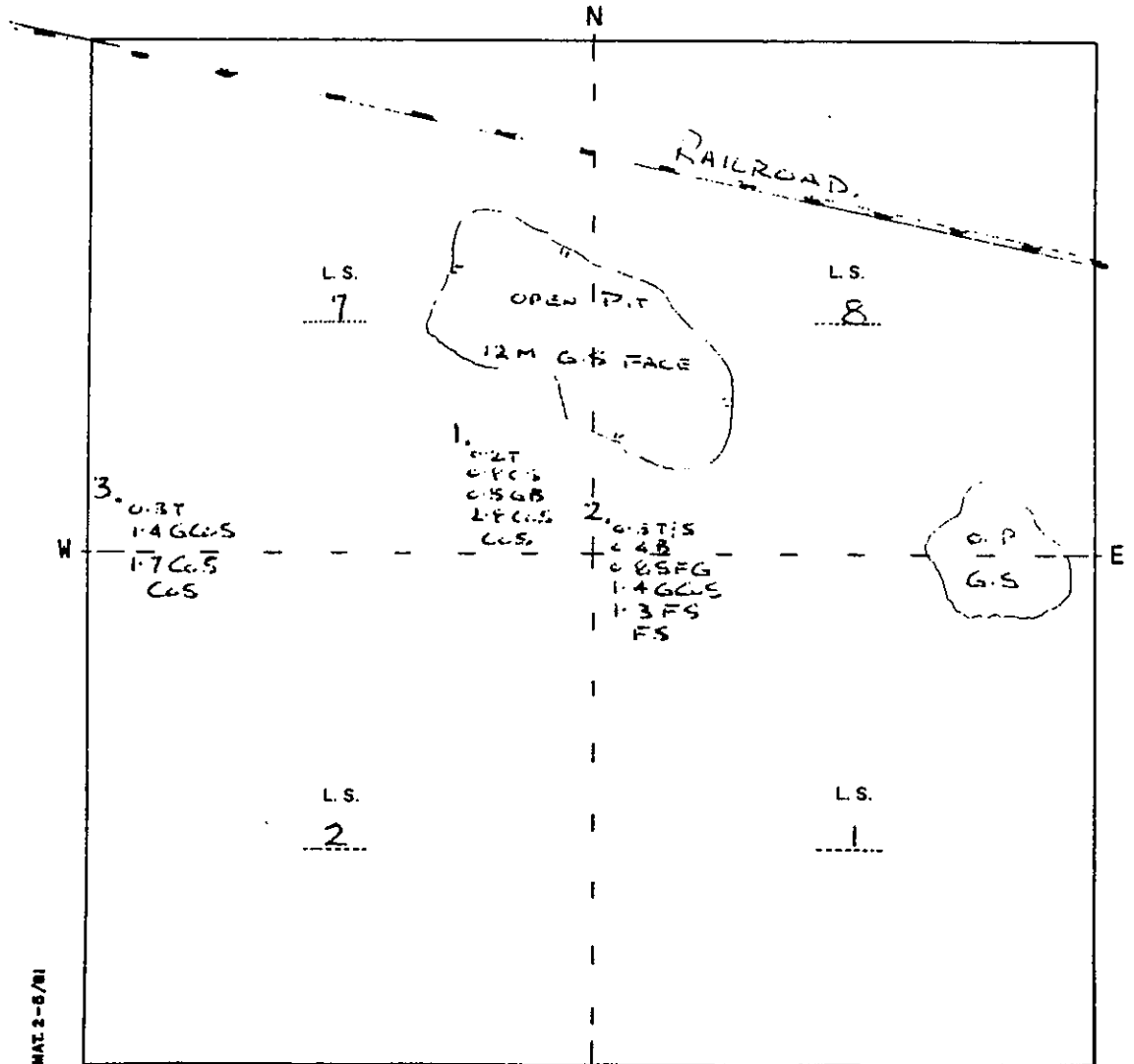
DATE JULY 1987

AGGREGATES TESTING

LEGEND

F	FINE	T	ORGANIC TOPSOIL	Ss	SANDSTONE	W	WATER LEVEL AT TIME OF TESTING
Co	COARSE	C	CLAY	Sh	SHALE	•	TEST HOLE
D	DIRTY	Si	SILT	B-R	BEDROCK	+	2 x 2
		S	SAND	B	BOULDERS	-x-	FENCE
		G	GRAVEL	L	LAYER		MUSKEG

TOPOGRAPHICAL FEATURES INDICATED IN WORDS



DATE: July 19 87
TESTER: BARBER

LOCATION: 53 1/2 SEC. 12. TP. 23 S. RGE. 1 W. 4 M.
PIT NAME: M.D. OF P. 130.1.1.1.1.

OWNERSHIP:

A.T. PIT
 PRIVATE: VENDOR _____ ROYALTY _____ EXPIRES _____
 CROWN PIT: RESERVATION: D.R.S. • _____ P.N.T. • _____ C.N.T. • _____
LESSEE: _____ LEASE TYPE & No. _____

AGGREGATE SUITABILITY: 1st. COURSE ASBC GBC A.C.P. C.S.B.C.
 BLEND SAND WINTER SAND SILT

QUANTITY: GRAVEL _____ m³ SAND _____ m³
DEPTH OF OVERBURDEN _____ m to _____ m AV. DEPTH OF DEPOSIT _____ m to _____ m AV.
 CLEARING REQUIRED
 TIMBER SALVAGE WINTER HAUL ONLY ACRES _____ HECTARES _____
FENCING: _____ TEMPORARY PERMANENT GATE CATTLE GUARD
PIPELINES: _____ PIT AREA HAUL ROAD
RAIL ROAD: _____ CROSSING TEMPORARY CROSSING REQUIRED
BEST AREA TO WORK PIT: _____

AGGREGATE DESCRIPTION

TOP SIZE mm + 300 mm..... %	
GRADING	
<input type="checkbox"/> WELL GRADED	<input type="checkbox"/> EXCESSIVE FINES
<input type="checkbox"/> EXCESSIVE GRAVEL	<input type="checkbox"/> SHORT GRAVEL
<input type="checkbox"/> EXCESSIVE PEA GRAVEL	<input type="checkbox"/> SHORT COARSE SAND
<input type="checkbox"/> EXCESSIVE COARSE SAND	<input type="checkbox"/> SHORT FINE SAND
<input type="checkbox"/> EXCESSIVE FINE SAND	<input type="checkbox"/> CLEAN
GRAINSHAPE	
ROCK	SAND
<input type="checkbox"/> ANGULAR	<input type="checkbox"/> SHARP
<input type="checkbox"/> SUBANGULAR	<input type="checkbox"/> ROUND
<input type="checkbox"/> SUBROUND	
<input type="checkbox"/> ROUND	
PLASTICITY	
<input type="checkbox"/> HIGH	
<input type="checkbox"/> MEDIUM	
<input type="checkbox"/> LOW	
<input type="checkbox"/> TRACE OR NIL	
DELETERIOUS MATERIAL	
<input type="checkbox"/> COAL	
<input type="checkbox"/> SOFT SHALE	
<input type="checkbox"/> SOFT IRON NODULES	
<input type="checkbox"/> SOFT SANDSTONE	
<input type="checkbox"/> LUMPS, CLAY, SILTY CLAY	
<input type="checkbox"/> ROCK COATED, CLAY	
SURFACE TEXTURE	
<input type="checkbox"/> ROUGH <input type="checkbox"/> SMOOTH	
<input type="checkbox"/> ENCRUSTED	
BULL CRUSHER	
<input type="checkbox"/> YES <input type="checkbox"/> NO	
TYPE OF DEPOSIT	
<input type="checkbox"/> STREAM TERRACE	<input type="checkbox"/> DUNES BARCHANE
<input type="checkbox"/> STREAM ISLAND	<input type="checkbox"/> DUNES FINGER
<input type="checkbox"/> GLACIAL TERRACE	<input type="checkbox"/> DUNES SHEET
<input type="checkbox"/> GLACIAL DELTA	<input type="checkbox"/> BEACH RIDGE
<input type="checkbox"/> GLACIAL KAME	<input type="checkbox"/> GRAVEL BAR
<input type="checkbox"/> GLACIAL ESKER	<input type="checkbox"/> OTHER
<input type="checkbox"/> SAND AVAILABLE _____ W. _____ M.	
<input type="checkbox"/> SILT AVAILABLE _____ W. _____ M.	

TESTED FOR: ACRE PURCHASE FUTURE R.O.W. PROJECT •
 DISTRICT • _____ I.D. • _____ M.D. • Project

SPECIAL PROVISIONS: _____

COMMENTS These holes are fine with Hanson of M.D.
- More Co. than gravel in this area
- M.D. is currently building gravel plant and
open pit from below water level

SIGNED _____

SW 1/4 SEC. 12 TP. 39 RGE. 1 W. 4 M.

FILE _____

OWNER M.D.

BOOK _____

ADDRESS HAYTER, ALTA.

PAGE _____

TESTED BY D.W. LOUGHEED

DATE OCT 17 1957

LOG OF PITS

PIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	PIT
	OVER BURDEN.																									
2'																										
4'	SAND	SAND	SAND																							
6'																										
8'																										
10'																										
12'																										
14'																										
PIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	PIT

DEPTH OF PIT 1 IN. - 2 FT.

DEPTH OF PIT 1 IN. - 2 FT.

AGGREGATES PROSPECT REPORT

(12)

DATE: JUNE 19 87 LOCATION: E 1/2 SEC. 3 TP. 37 RGE. 2 W. 4 M.

TESTER: PERRAS PIT NAME: FAULGAARD

CROWN PRIVATE UNKNOWN

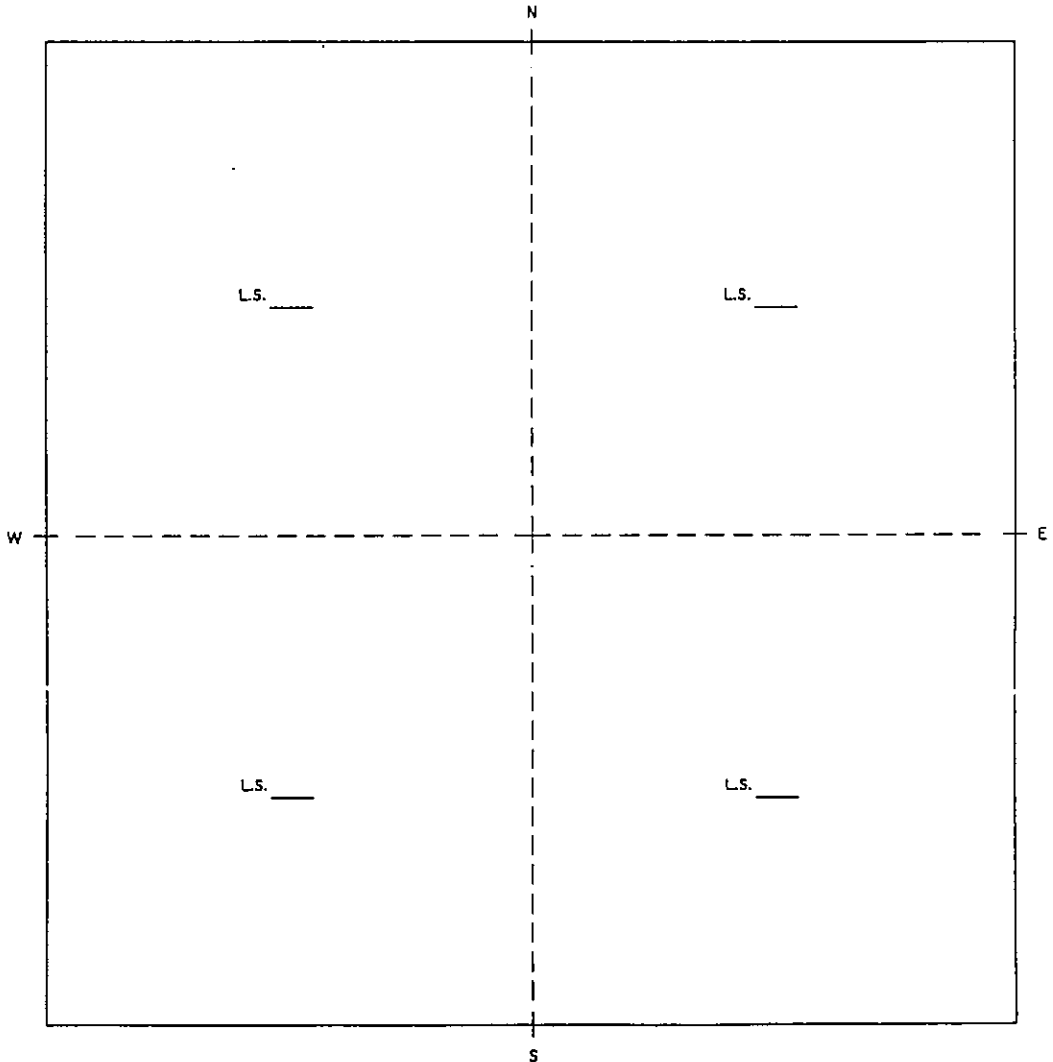
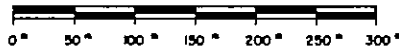
DEPOSIT POTENTIAL: EXISTING PIT, VERY NEAR DEPLETION

TYPE OF DEPOSIT: _____

DEPOSIT REPORTED BY: DISTRICT

FURTHER ACTION: TESTED WITH BACKHOE. RANDOM HOLES FOUND SOME GRAVEL, BUT WHEN TESTING WAS EXTENDED IT WAS APPARENT THAT THE PIT WAS VERY NEAR DEPLETION AND THAT THE ONLY GRAVEL LEFT WAS LOCATED IN VERY SMALL POCKETS, WITH THE MAJORITY OF IT BEING IN A SMALL RIDGE EAST OF THE OPEN PIT (AREA A). EVEN BY COMBINING AREA A (APPROX. 6700 m³) AND THE THREE STOCKPILES (APPROX. 8000 m³) WE WOULD STILL BE WELL SHORT OF THE REQ'D 20,000 m³. AT THE TIME OF TESTING MR. PAULGAARD WAS NOT INTERESTED IN SELLING GRAVEL FROM THE 3 CRUSHED STOCKPILES. SEE ATTACHED PLAN.

~~Map File~~
 - 1 file
 photos



13

(Please fill in appropriate boxes and information below)

<input checked="" type="checkbox"/> Renewal of Sand & Gravel Lease No. 2975			Application No. _____		
<input type="checkbox"/> Exploration Licence for: _____ Acres		<input type="checkbox"/> Clay	<input type="checkbox"/> Marl	<input checked="" type="checkbox"/> Sand & Gravel	
<input type="checkbox"/> Sand & Gravel Lease for:		<input type="checkbox"/> Clay	<input type="checkbox"/> Marl	<input checked="" type="checkbox"/> Sand & Gravel	
<input type="checkbox"/> Sand & Gravel Licence for:		<input type="checkbox"/> Clay	<input type="checkbox"/> Marl	<input checked="" type="checkbox"/> Sand & Gravel	
Fee removal of _____ Cu. Yds.			For Sand & Gravel Licence operations Proposed Dates of:		
			A) Commencement:		B) Completion:
Name of Applicant: MUNICIPAL DISTRICT OF PROVOST No. 52			Place of Incorporation:		
Address: PROVOST, ALTA., T0B 3S0			Principal Place of Business in Alta.: PROVOST		Monies Enclosed:
Authorizing Rep. (for inquiries): J. A. JOHNSON - SECRETARY TREASURER			Address: P.O. Box 300		Telephone: 953-2484
Are you an employee of the government or member of the Legislative Assembly of the Province of Alberta? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Dept. _____			Are you a Canadian citizen? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>		
Have you attained the age of 18 years? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>			Occupant's Consent: Attached <input type="checkbox"/> Not Required <input type="checkbox"/>		
Attached: Sketch <input checked="" type="checkbox"/> Linen or Polyester Plan <input type="checkbox"/>					

Land Description (Attach schedule if insufficient space)

Twp.	Rge.	Mer.	¼ Section	Twp.	Rge.	Mer.	¼ Section
37	2	W. 4TH	E 1/2 of L.S.D. 1 & 8				

IMPORTANT: Every application for a Sand and Gravel licence or lease must be accompanied with a sketch showing the lands required and the means of access. A Sand and Gravel operating plan questionnaire and plan is required with every Sand and Gravel licence application. No operations of any kind must take place on the lands applied for until such time as an operation plan has been approved in writing by the Director of Lands.

Date: **OCTOBER 25, 1976** SIGNATURE OF APPLICANT: _____

OFFICIAL USE ONLY

Authorization is hereby granted to enter upon and immediately occupy the public land as described by this form and as shown on the attached sketch subject to the following conditions:

DATE		FOR DEPUTY MINISTER OF RENEWABLE RESOURCES			
SRTC: Conflicts	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Records:	For land standing see attached 242:	File Records:	
Aerial Photo Blowup Required:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Legal Description:	Sketch:	LOA Entered:	SRTC <input type="checkbox"/> Records <input type="checkbox"/>
Operating Plan Approved:		Operating Acreage:	Yes <input type="checkbox"/> No <input type="checkbox"/>	Audit Cards Completed:	

Disposition

Date of Dec.:	Term:	From:	Area:	Lease For Sig.:	Executed:
	Amount	Receipts	Remarks - Special Clause:		
Fee:					
Advance Royalty or Rental:					
Security Deposit:					
Tbr. Damages:					
Other:					

ACCOUNTS USE ONLY

Total Con.	Acct. No.:	Index:
Annual Rent and/or Advance Royalty \$ _____	Diary:	Guide:
Amount Due \$ _____	Prepared By:	Checked By:
Refund \$ _____	Municipal Authority:	DSA:
Data Bank:	Environment:	F&W:
Transportation:	Insp.:	AFS:
		DSA:

OPERATING PLAN SKETCH

13

SECTIONS:

Outline Lease boundary in the color green.

Outline location and dimensions of operating area in relation to the Lease boundary in the colored. Show dimensions and distances in feet.

Indicate the location of initial gravel excavation and the direction operations will be carried out using an arrow. (→)

Show location of any watercourse in the color blue and illustrate nearest distance from operating area in feet.

Outline and shade in the known boundary of the gravel deposit in yellow.

Show location and width of access trail into Lease and operating area.

Show gravel tested areas using the symbol. (T)

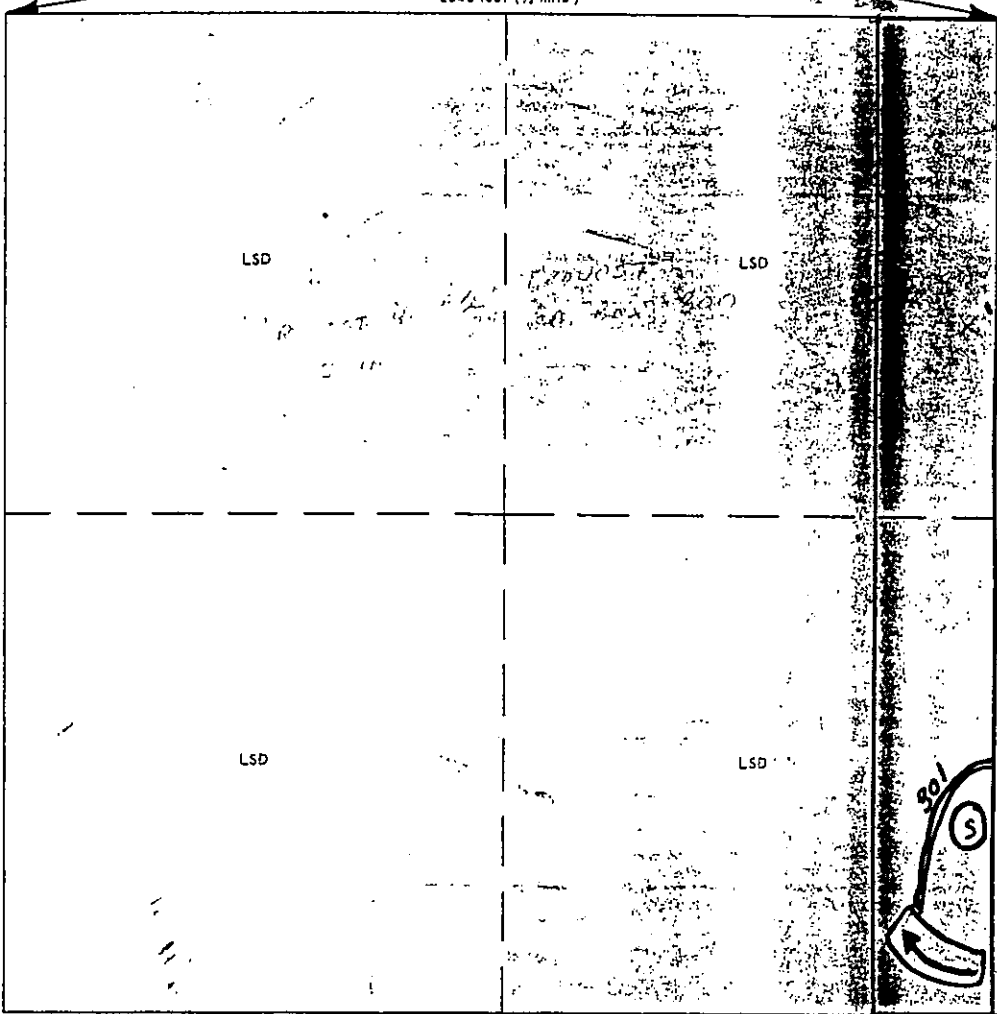
Show location where overburden will be stockpiled using the symbol. (P)

Show location where gravel stockpiles will be located using the symbol. (S)

Show location of settling ponds to be used in washing operation using the symbol. (W)

LOCATION: LSD 148 Section 10 Township 37 Range 2 W 24TH Mer.

SCALE: 1 inch = 400 feet
2640 feet (1/2 mile)



THIS IS A QUARTER SECTION

Date: _____

Signed: _____

Operations are authorized subject to the conditions attached.

Date: _____

Approved By: _____

For: Director of Lands
Alberta Energy and Natural Resources

To be completed when submitting application for Sand and Gravel
Lease or Licence and Reservation Application

	SAND AND GRAVEL LEASE APPLICATION NO. 2975
NAME MUNICIPAL DISTRICT OF PROVOST #52	SAND AND GRAVEL LEASE NO. 2975
ADDRESS PROVOST, ALBERTA	SAND AND GRAVEL LICENCE NO.
TOB 350	RESERVATION NO.

A. Method of Operation: (check & explain)

Front End Loader Dragline Shovel Scraper Other _____

Explain: _____

B. Location of Gravel Deposit: (check) Streambed Floodplain Highland

C. Thickness of Gravel Deposit, 7 Feet

D. Size of Gravel in Deposit: Estimate 0-1" 50 % 1"-2" 20 % 2"-3" 20 % 3" x 10 %

E. Type of Gravel Operation: Pit Run Screened Washed Crushed Size of gravel to be used 3/4 Inch

F. If crushed and washed, where will water be obtained from: Lake Stream River Other N.A.

G. If gravel washed, describe method of retaining fine material and sediment:

H. Thickness of gravel deposit to be excavated, 10 Feet

I. Depth of overburden to be removed, 3 Feet

J. Duff & Moss _____ Inches Loam _____ Feet Clay, Sand Silt 3 Feet

K. Describe how the operating area will be reclaimed:

L. If Watercourse Involved:

Name N.A. Width _____ Bank Height _____ Feet

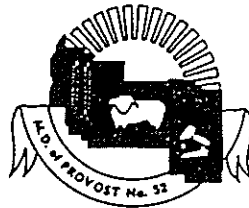
M. Forest Cover: Grassland Poplar Pine Spruce Brushland Other N.A.

14

Municipal District of Provost No. 52

OFFICE OF THE
SECRETARY—TREASURER

TELEPHONE 753-2434
P.O. BOX 300
PROVOST, ALBERTA T0B 3S0



May 11, 1988

Alberta Forestry, Lands and Wildlife
Petroleum Plaza - South Tower
9915 - 108 Street
Edmonton, Alberta
T5K 2C9

Attention: Rita Allen (Mrs.)
Surface Materials Unit

Dear Madam:

Re: Sec 11 37-2W4
Surface Materials Lease No. SML 820008
Return Period: Oct. 23/86 to Apr 23/87
and April 24/87 to April 23/88

We are sending a cheque in the amount of \$182.25 covering the royalties on the two lease periods. Also included are the two surface material returns required for these periods.

We wish to delete pits #1, #2, #3, #5 and #6 from our lease. This is the area highlighted in yellow on our sketch. We wish to keep the area marked #4. This is the area highlighted in green. This pit #4 has an area of approximately 2.5 acres.

Yours truly,

Linda McDonald
Secretary-Treasurer

LLM/iwm

enc.

14

PHOTO PLAN OF PROPOSED GRAVEL OPERATIONS

Please complete the following on the photo-sketch:

- | | |
|--|-----|
| (1) Area of proposed excavation | (E) |
| (2) Average depth of overburden | (O) |
| (3) Area of placement overburden | (P) |
| (4) Placement of any debris (prior to burning) | (D) |
| (5) Outline of access roadway | (A) |
| (6) Stock-pile size if on lease | (S) |
| (7) Building on lease | (B) |
| (8) Direction of movement of proposed operations | () |

PHOTO-SKETCH OF QUARTER SECTION SW 11

Twp. 37 Rge. 2 West of 4 M.



Date of Photography 13-5-77

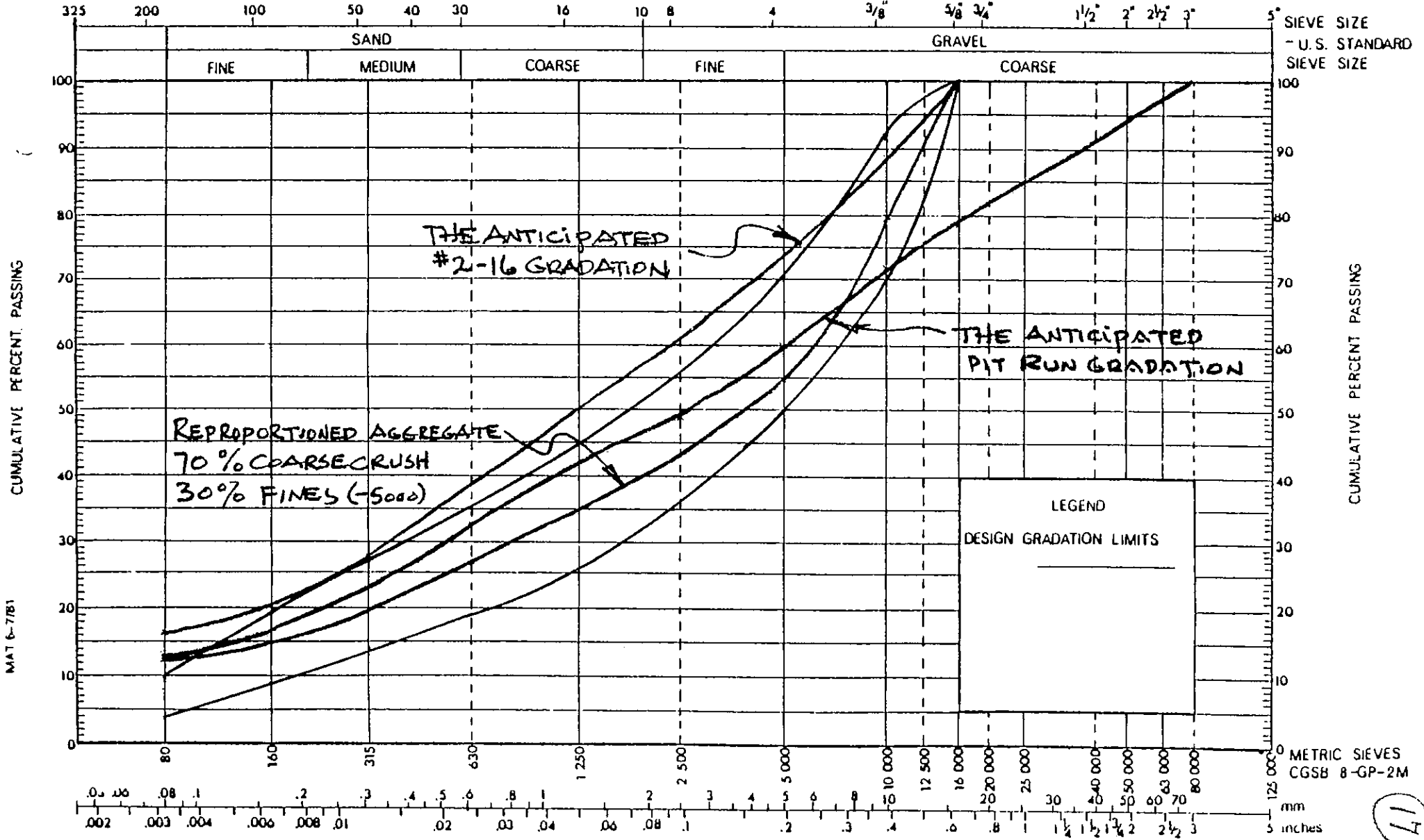
Photo number 1581 147

Scale 1: 5000

AGGREGATE GRADATION CHART - DL. "2" CL. "16"



PROJECT SR899=10 FROM Jct. Hwy. 13
 JOB NO. _____ TO M.D. BOUNDARY.
 PIT NAME TAYLOR WEEK ENDING _____
 PIT LOCATION SW3-41-2-4 TYPE OF WORK _____
 REGION _____ SAMPLE SOURCE _____
 DISTRICT _____ METRIC SERIES SPEC. # 2-16



MAT 6-781

11

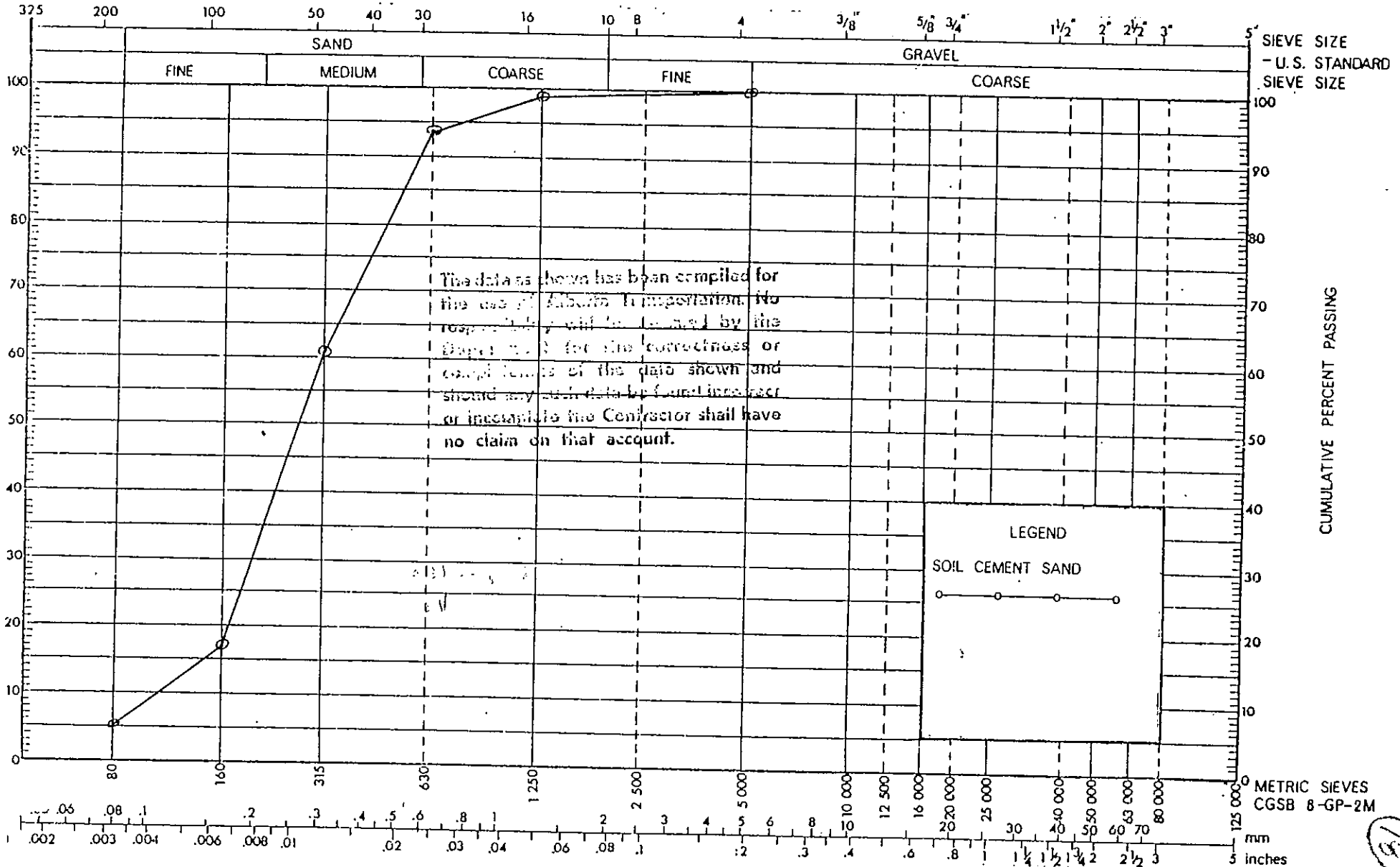
GRADATION CHART - SOIL CEMENT SAND



NAME OF SOURCE READ SAND

LOCATION OF SOURCE NW 3-41-2-4

LAB SAMPLE NO. 338993 - 339004



The data shown has been compiled for the use of Alberta Transportation. No responsibility will be assumed by the Department for the correctness or completeness of the data shown and should any such data be found incorrect or incomplete the Contractor shall have no claim on that account.

LEGEND

SOIL CEMENT SAND

MAT 5 720783

LABORATORY TECHNOLOGIST

181

AGGREGATES PROSPECT REPORT

*File present
 9/1/88*

DATE: JUNE 19 88 LOCATION: NE 1/4 SEC. 4 TP. 41 RGE. 2 W. 4 M.

TESTER: PERRAS PIT NAME: M.D. OF PROSPECT

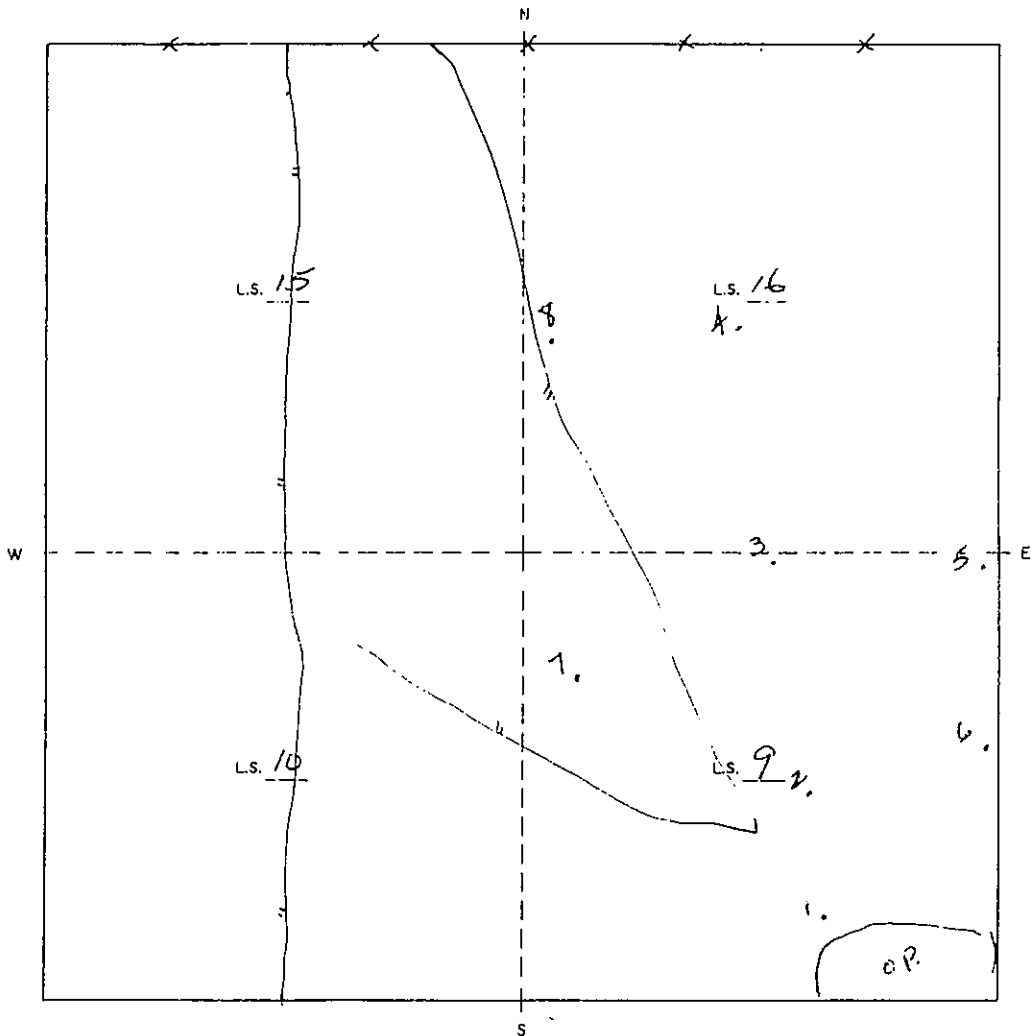
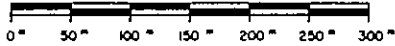
CROWN PRIVATE UNKNOWN

DEPOSIT POTENTIAL: _____

TYPE OF DEPOSIT: _____

DEPOSIT REPORTED BY: M.D. OF PROSPECT

FURTHER ACTION: DUG RANDOM HOLES TO TEST FOR GRAVEL. SOME VERY FINE GRAVEL PRESENT. NOT ENOUGH GRAVEL PRESENT THAT WAS LARGE ENOUGH TO CRUSH TO MAKE DEPOSIT SUITABLE FOR USE.

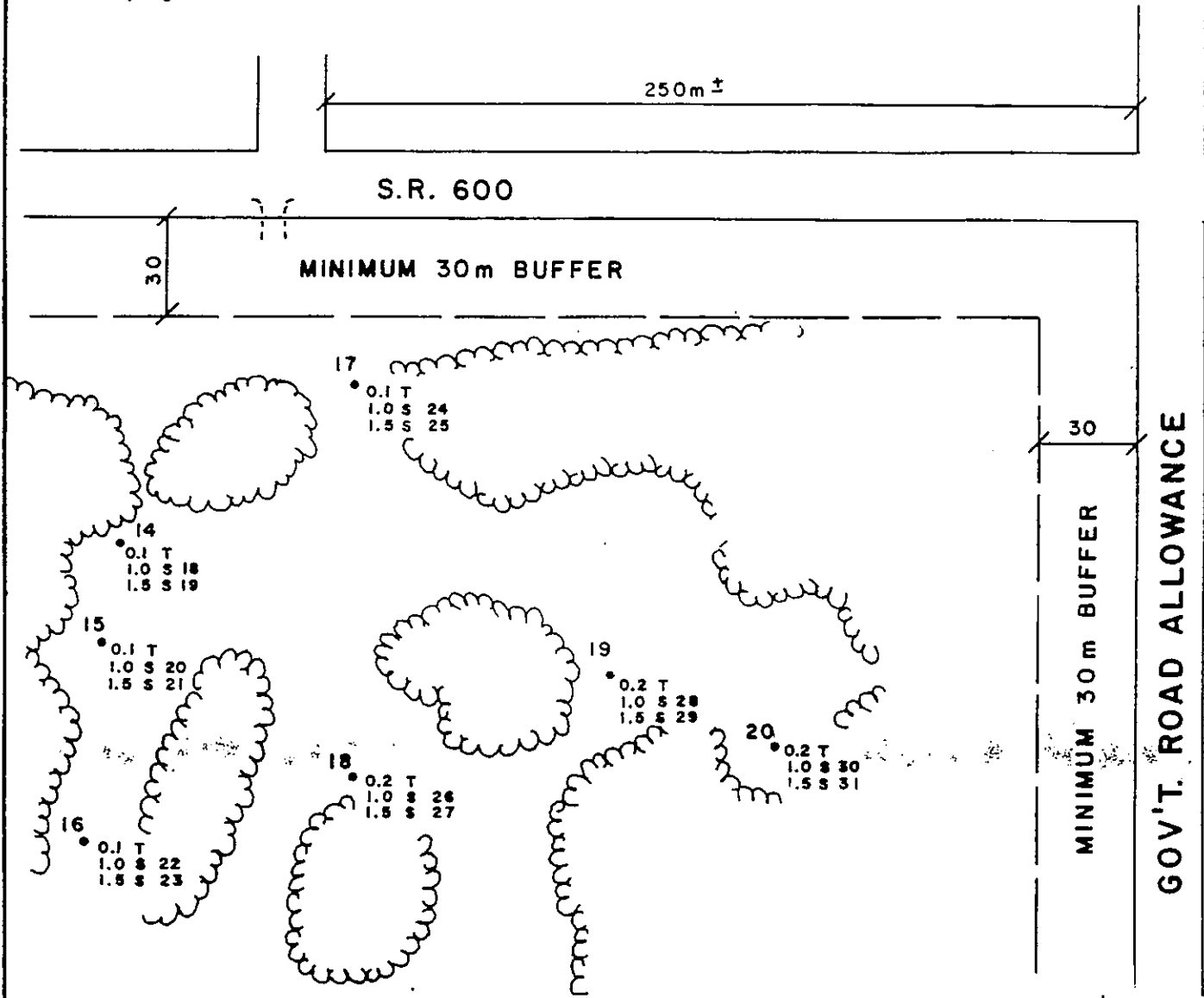


NOTE:

The Contractor will be responsible for clearing, grubbing, burning, removal of topsoil, redistribution of topsoil to the extent possible on side slopes and overall pit landscaping and cleanup.

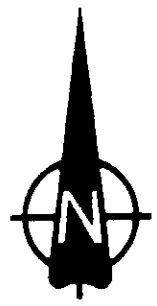
NOTE

The data as shown has been compiled for the use of the engineer. No responsibility will be assumed by the engineer or owner for the correctness or completeness of the data shown and should any such data be found incorrect or incomplete the Contractor shall have no claim on that account.



NE 31-38-4-W4M

SHENK'S SAND PIT



HRBF 260-500

PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

Owner ED MASSON Date FEB. 1962
Address METLSKOW File 3166-1274
Location SW 1/4 Sec. 6 Tp. 40 R 4 W 4 M
Agreement .05 1967
Suitable for SOIL CEMENT
Approx. Area _____ Approx. Yardage 52,400 C.Y.
Best Area to Work Pit AREA C
Dead Haul .04 MILES TO MILE 12.23 PROJ. 13-R

Condition of Dead Haul TO BE BUILT

Approx. % Crush _____ Estimated P.I. TRACE
Grading WELL GRADED Sand Available ✓

Overburden 6" - 1'

Description of ^{SAND}Gravel SAND VARIES FROM FINE TO MEDIUM. QUITE CLEAN

Type of Deposit WIND

Remarks SAND IS SLIGHTLY DAMP AT LOWER LEVELS.

Signed Hal Cassan

Municipal District of Provost No. 52

29

OFFICE OF THE
SECRETARY — TREASURER



TELEPHONE 753-2434
P.O. BOX 300
PROVOST, ALBERTA T0B 3S0

July 7, 1989

Alberta Environment
3rd Floor, Oxbridge Place
9820 - 106 Street
Edmonton, Alberta
T5K 2J6

Dear Sir;

RE: DEVELOPMENT & RECLAMATION
APPROVAL INFORMATION SHEET
FOR PIT OPERATIONS
LSD 11 & 12 17-41-4-W4M

Mining activities have been carried out within the 1/4 section by Alberta Transportation, Municipal District of Wainwright and the Municipal District of Provost.

A meeting was held on sight with representatives from both Municipalities and the crushing operator. This was to determine what area would be considered mined operations of the Provost Municipal District. The area of 1 & 2 of Drawing I was indicated by the crushing operator and will have to be confirmed by Wainwright M.D. A letter on June 29, 1989 including a sketch indicating Drawing I was sent requesting confirmation of this area. A copy of same was sent to your office.

PIT ACTIVITIES ARE AS FOLLOWS:

(i) Area 1 and 2 are presumed to be mined out with the exception of gravel stock piles and a small stripped area in area 2. There is some pit run areas but the majority had been mixed and crushed within the pit areas of Area 1 and 2.

Washing was not carried out in operations. The water table is estimated at approximately 2 feet below present base of excavation. Under wet conditions water will pond in lower pockets and disappear under drier conditions.

(ii) The depth of top soil may vary from 3 to 6 inches. Overburden may vary to a depth of 18". There is separation of top soil and overburden as indicated in Area 1 and 2 as to Drawing I and a stripped area in Area 2. The overburden in area 3 is from joint mining operations.

PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

Owner J.C. SCOTT Date MARCH 1962

Address EDGERTON File 3166-1012

Location NW 1/4 Sec. 17 Tp. 41 R 4 W 4 M

Agreement 10/ 1966

Suitable for BASE COURSE

Approx. Area _____ Approx. Yardage BACKHOE 25,400 C.Y. ✓
DRILL 139,200 C.Y. ✓

Best Area to Work Pit EXTEND PRESENT PIT.

Dead Haul _____

Condition of Dead Haul _____

Approx. % Crush 30% - 40% Estimated P.I. TRACE

Grading FINE Sand Available YES

Overburden 1' - 5'

Description of Gravel CLEAN MEDIUM GRAVEL. ROCK

TO 6" ENCRUSTED SUBROUND + SUBANGULAR

STONE. EXCESSIVE FINES.

Type of Deposit TERRACE

Remarks GRAVEL BECOMES MORE SANDY

TOWARDS BOTTOM OF TEST PITS.

Signed Hal Cesar

Municipal District of Provost No. 52

OFFICE OF THE
SECRETARY - TREASURER



TELEPHONE 753-2434
P.O. BOX 300
PROVOST, ALBERTA T0B 3S0

(iii) The overburden in area 3 will be used and distributed throughout Area 1 and 2. Overburden of area 3 will be removed to the level of top soil if this exists. This area will then be stripped and soil stockpiled on east end of Area 3. Additional overburden stocked piled on westerly edge of Area 3. Top soil and overburden will be retained for reclamation of Area 3.

All crushing will take place in the mined area.

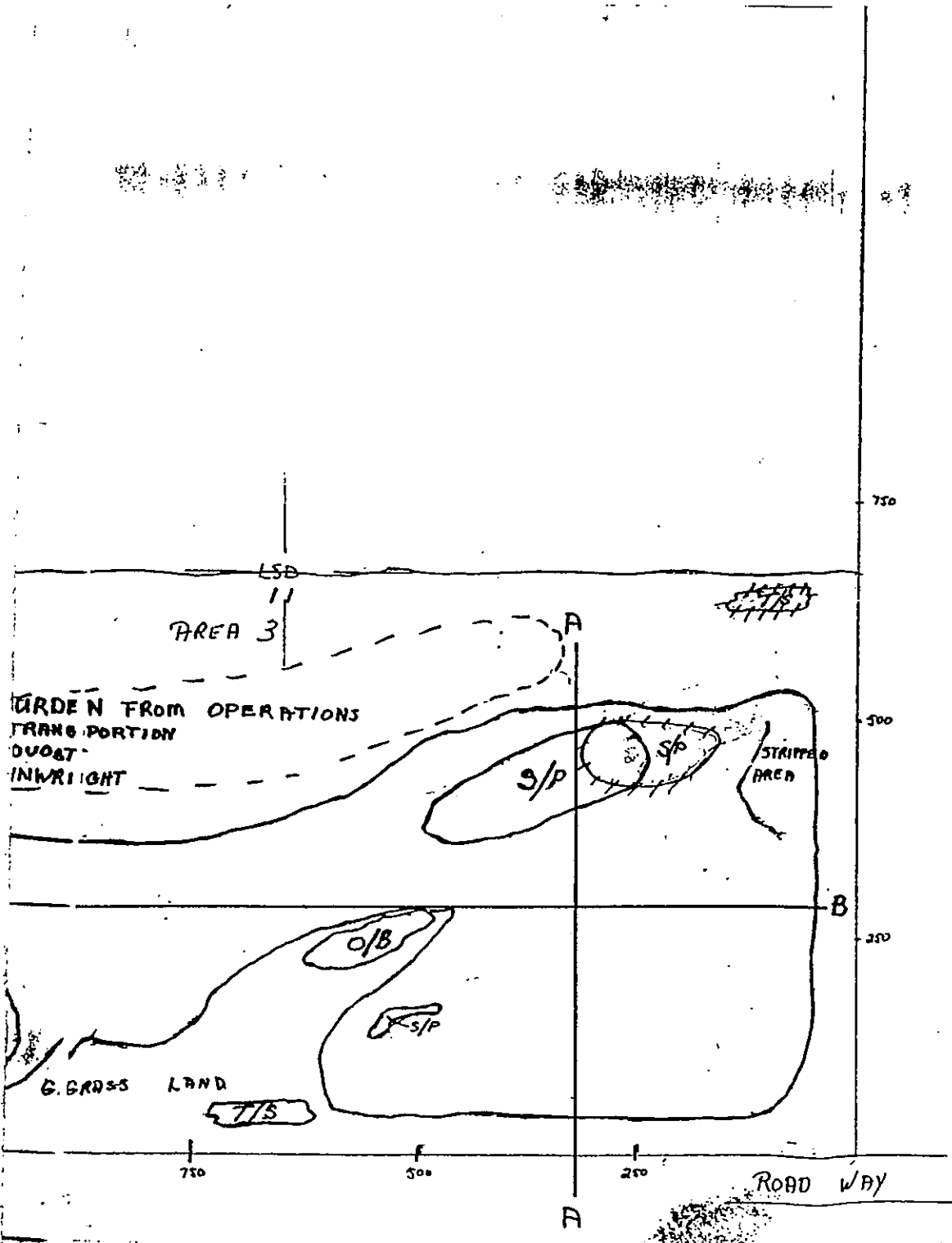
Reclamation of part of Areas 1 and 2 can be reclaimed and contoured and seeded with pasture grasses in conjunction with further mining operations. All slopes will be provided with a minimum of a 4 to 1 slope.

Area 3 excavation and contour will be extended equivalent to that of drawing A-A and portion of B-B within LSD 12.

(iv) The area to be reclaimed will have sufficient coverage above the water table so groundwater should not effect the pit area.

Changes that may occur will be addressed and submitted at the time of the annual reports or when reclaimed areas are carried out.

Linda M. Donald



DRAWING 1

Existing Site Conditions

Legal Land Location:

LSD 11 AND 12

TOWNSHIP 4// RANGE 4 W 4 M.

APPROX. 17.5 ACRE AREA OF 1-2

APPROX. 7. ACRE IN AREA 3

- T/S TOP SOIL ~~T/S~~ PROPOSED
- O/B OVER BURDEN ~~O/B~~ PROPOSED
- S/P STOCK PILE ~~S/P~~ PROPOSED

SCALE:

1:1500 OR 1 inch = 125 feet

APPROVED BY:

[Signature]
 Signature
[Signature]
 Name

Name

Date

(17)

LSD
1/2

DISTURBED
AREA

OVER BURDE
ALBERTA TRAM
MD of PRODUCT
O/B
MD of WHINRI

ROAD
WAY

PASTURE GRASS
LAND

C
LARGE ROCK
B
T/S
GRASS LAND

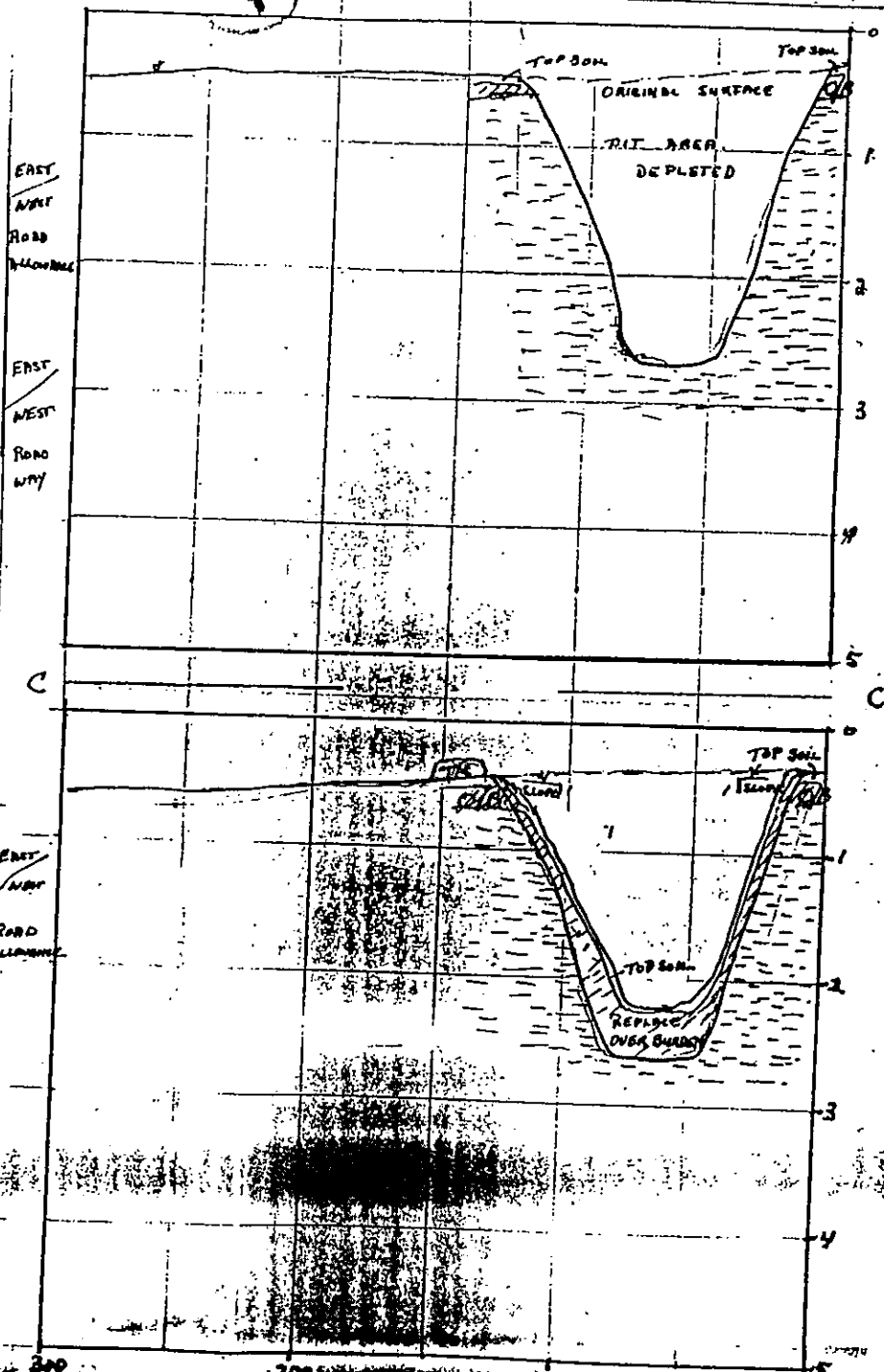
SP

2500 2250 2000 1750 1500 1250 1000

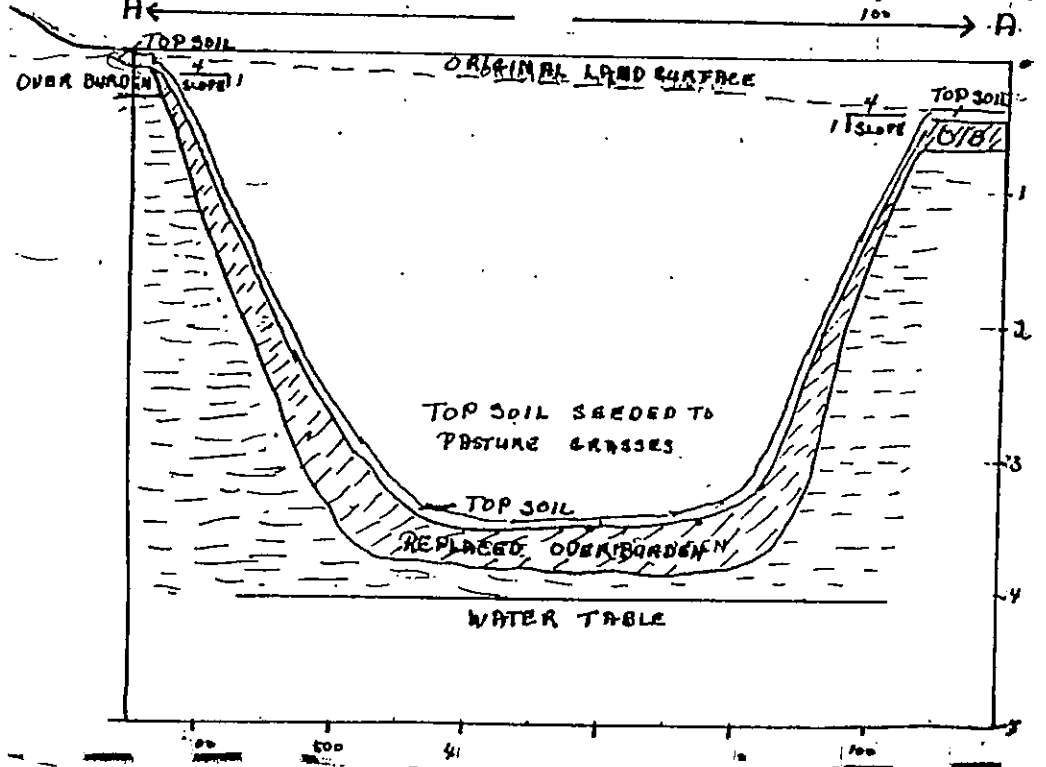
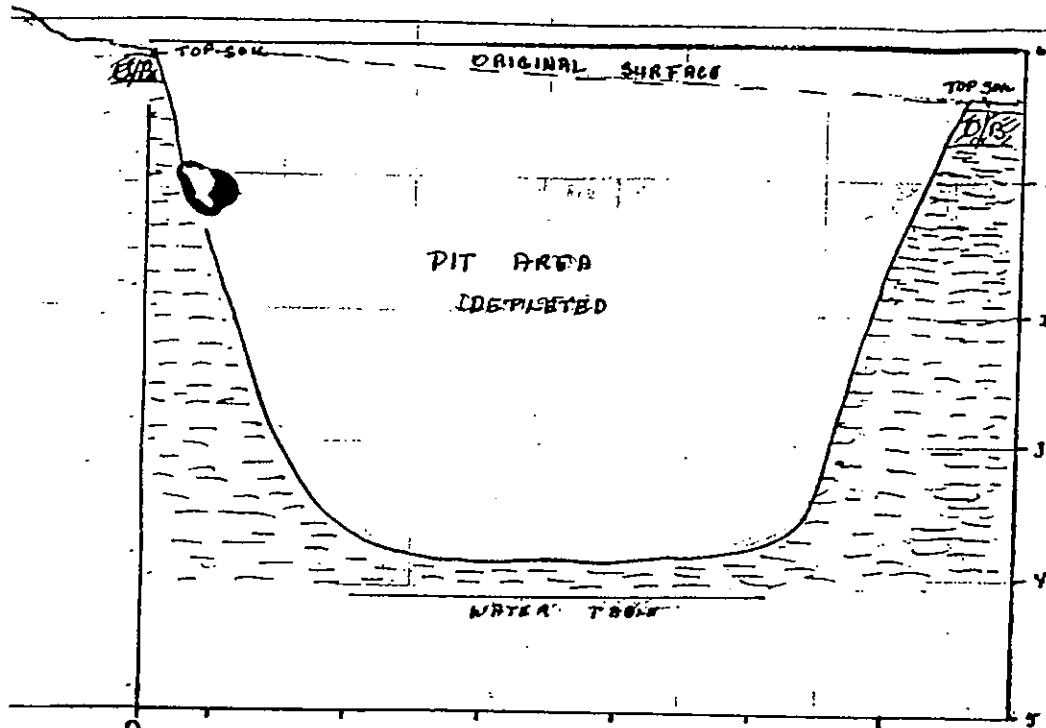
DISTANCE IN FEET

Section A-A'

27



300 100 FEET



DRAWING 2

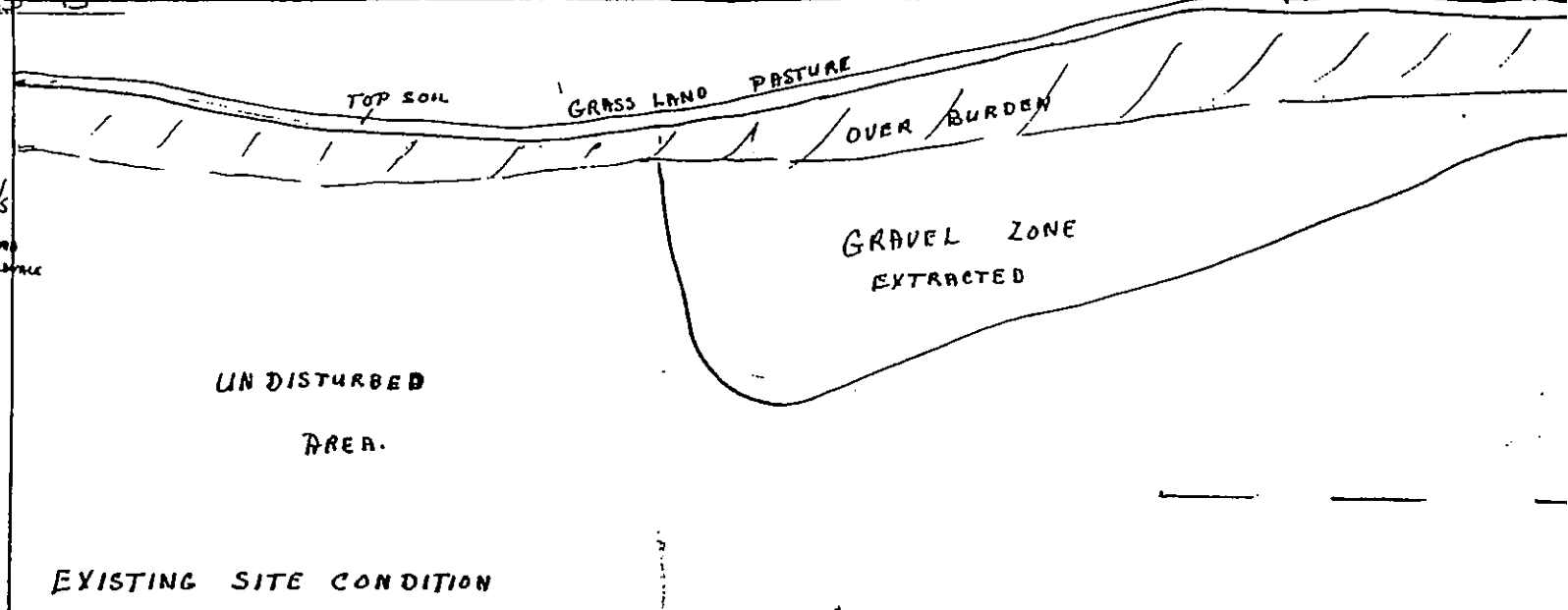
CROSS - SECTIONS

- A-A EAST PIT AREA APPROX. 500' NORTH/SOUTH
- C-C WEST PIT AREA APPROX 150FT NORTH/SOUTH
- B-B EAST TO WEST APPROX 2000 FT

Legal Land Location:
 LSD 11 & 12 SEC 17 - T₄ R₄ W₄ M

Section B-B'

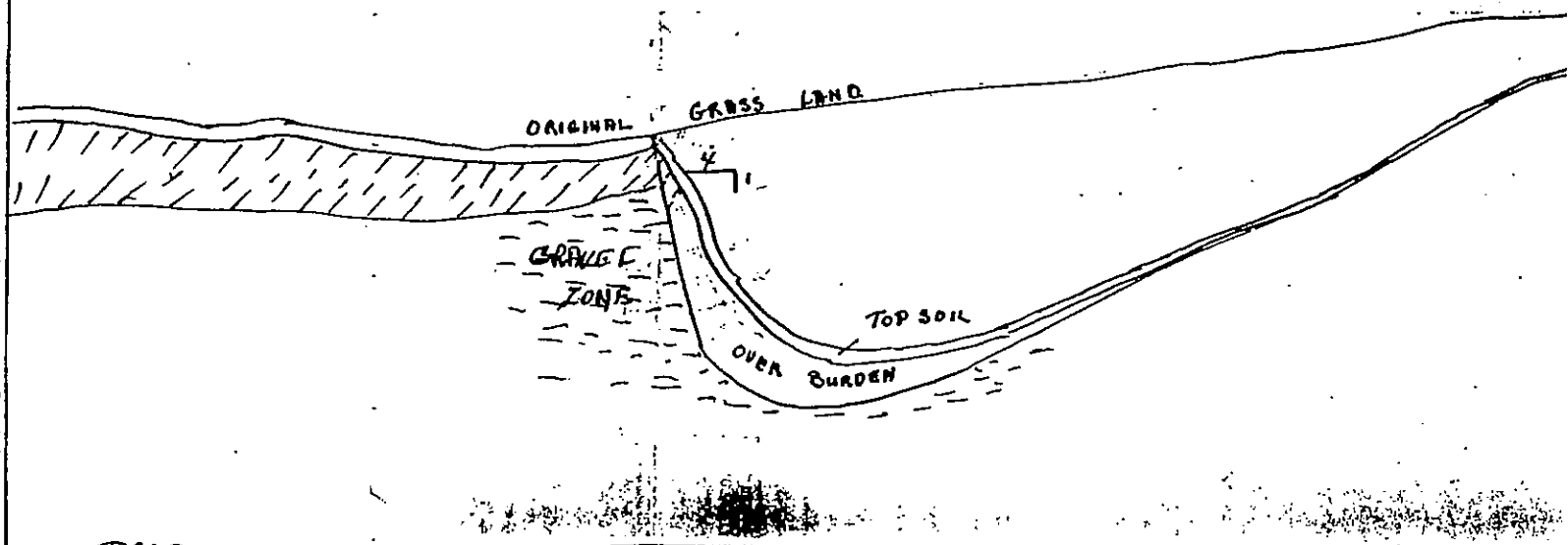
N/S
Ramp
Alignment



EXISTING SITE CONDITION

CROSS SECTION B-B

Ramp Alignment

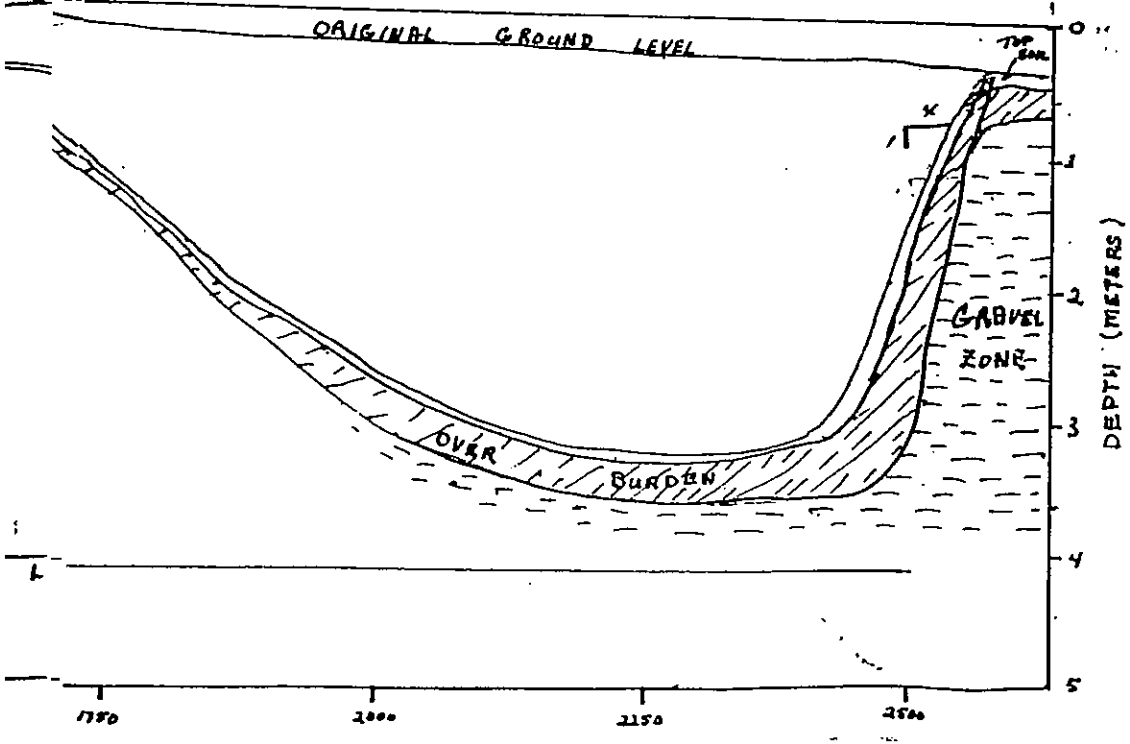
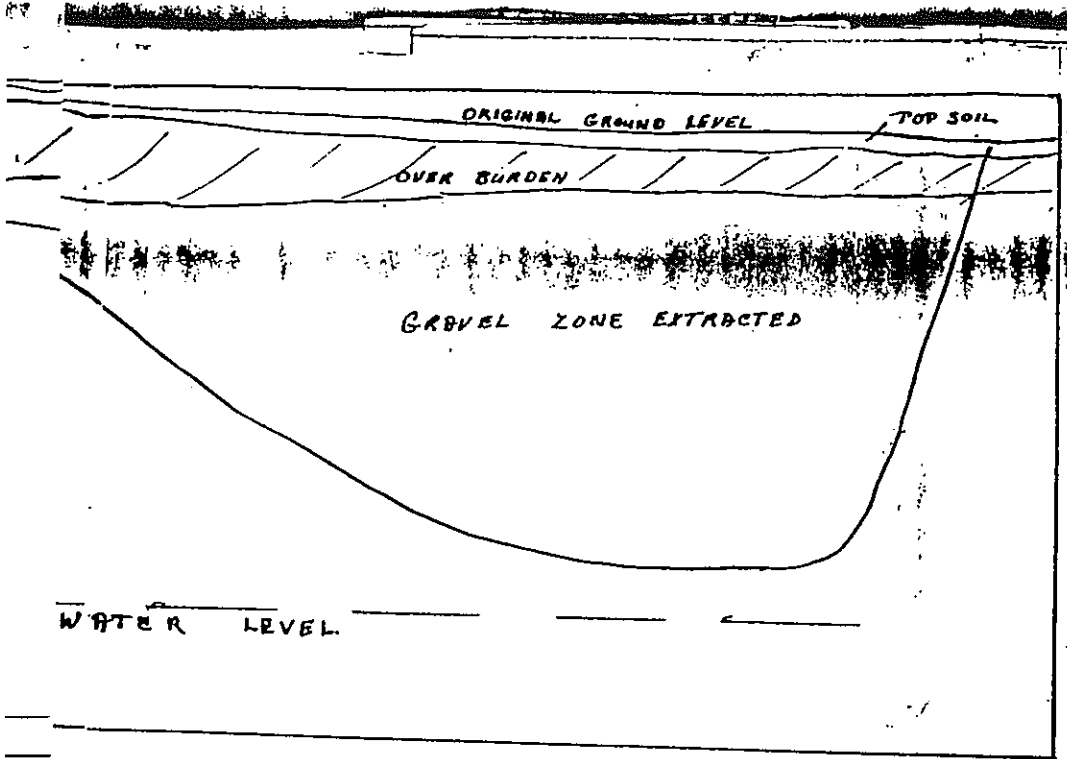


PROPOSED RECLAIMED SITE CONDITIONS

SLOPES TO A 4-1 RATIO

250 500 750 1000 1250

DISTANCE 1 foot



SCALES

Vertical : 1" = 3.2 FT. (1 METRE)

Horizontal : 1" = 125 FT

All Distances & Depths in Feet

APPROVED BY:

Handwritten signature
Handwritten signature

7-5
 (21)

All those parcels or tracts of land, situate, lying, and being in the 38th township, in the 5th range, west of the 4th meridian, in the Province of Alberta, Canada, and being composed of:

The south half of legal subdivision 9, and all that portion of the south half of legal subdivision 10 of section 24 of the said township, which lies to the west of the westerly limit of a power line right-of-way, as shown upon a plan of survey on file in the Department of Energy and Natural Resources at Edmonton as No. 1663 T (file No. 2904 EZ), and which lies to the south and west of the south-westerly limit of an access roadway, as shown upon a plan of survey on file in the said Department of Energy and Natural Resources as No. 12368 MS (file No. 11251 MS).

The lands herein described containing 26.80 acres, more or less.

ALBERTA		LEASE No.
ENERGY AND NATURAL RESOURCES		SML780015
NAME		
Town of Provost		
ADDRESS		
Box 449, Provost, Alberta		
TERM	FROM	
10 Years	February 20, 1978	

Handwritten mark

cc: MD #52
 cc: Field Service

Done - 13-24-38-5-44
Well =

1 chain = 66 ft.

1 3/8 " 1980 - ft.

1/2" wide = 660 ft wide.

DEC 1978

MINES AND FORESTS
SAND AND GRAVEL
OPERATING PLAN TO BE COMPLETED
WHEN SUBMITTING APPLICATION

FORM NO. 32

SAND AND GRAVEL APPL. # 3275

A. METHOD OF OPERATION: (CHECK AND EXPLAIN)

FRONT END LOADER DRAGLINE SHOVEL SCRAPER OTHER

EXPLAIN Used front end loader for Pit Run and for gravel from stockpile which was crushed by crusher (3/4" Screens).

B. LOCATION OF GRAVEL DEPOSIT: (CHECK)

STREAMBED FLOODPLAIN HIGHLAND

C. THICKNESS OF GRAVEL DEPOSIT, FIVE FEET.

D. SIZE OF GRAVEL IN DEPOSIT: ESTIMATE

0 - 1"	<u>90</u> %	1" - 2"	<u>10</u> %
2" - 3"	<u>NIL</u> %	3" +	<u>NIL</u> %

E. TYPE OF GRAVEL OPERATION

PIT RUN SCREENED WASHED CRUSHED SIZE OF GRAVEL TO BE USED 3/4 INCH

F. IF CRUSHED AND WASHED, WHERE WILL WATER BE OBTAINED FROM:

LAKE STREAM RIVER OTHER

G. IF GRAVEL WASHED, DESCRIBE METHOD OF RETAINING FINE MATERIAL AND SEDIMENT:

H. THICKNESS OF GRAVEL DEPOSIT TO BE EXCAVATED FIVE FEET

I. DEPTH OF OVERBURDEN TO BE REMOVED TWO FEET.

J. TYPE OF OVERBURDEN:

DUFF & MOSS _____ INCHES LOAM _____ FEET CLAY, SAND SILT TWO FEET

K. DESCRIBE HOW THE OPERATING AREA WILL BE RECLAIMED: REGRASSED FOR GRAZING

L. IF WATERCOURSE INVOLVED:

NAME _____ WIDTH _____ BANK HEIGHT _____ FEET

M. FOREST COVER:

GRASSLAND POPLAR PINE SPRUCE BIRCHLAND OTHER

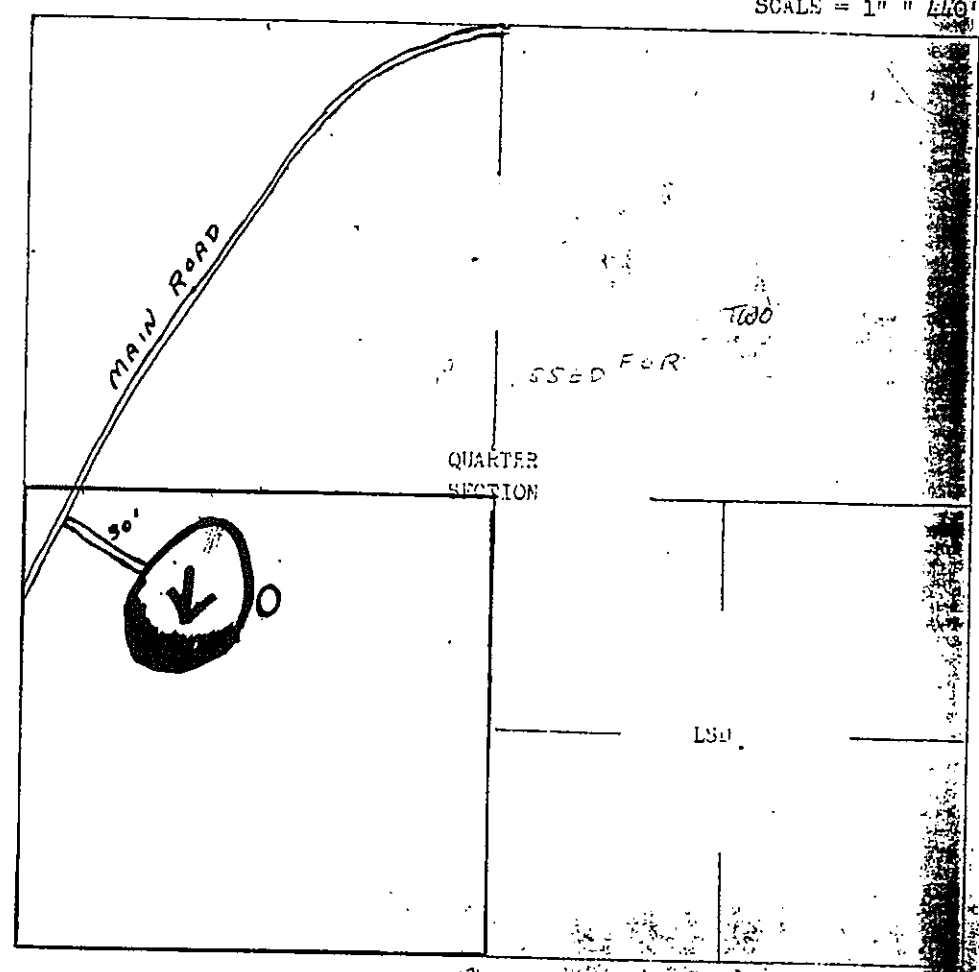
32

DIRECTIONS:

1. FILE IN LEGAL DESCRIPTION OF LEASE
2. OUTLINE LEASE BOUNDARY IN THE COLOR GREEN
3. OUTLINE LOCATION AND DIMENSIONS OF OPERATING AREA IN RELATION TO THE LEASE BOUNDARY IN THE COLOR RED. SHOW DIMENSIONS AND DISTANCES IN FEET.
4. INDICATE THE LOCATION OF INITIAL GRAVEL EXCAVATION AND THE DIRECTION OPERATIONS WILL BE CARRIED OUT USING AN ARROW
5. SHOW LOCATION OF ANY WATERCOURSE IN THE COLOR BLUE AND ILLUSTRATE NEAREST DISTANCE FROM OPERATING AREA IN FEET.
6. OUTLINE AND SHADE IN THE ROCK BOUNDARY OF THE GRAVEL DEPOSIT IN YELLOW.
7. SHOW LOCATION AND WIDTH OF ACCESS TRAIL INTO LEASE AND OPERATING AREA.
8. SHOW GRAVEL TESTED AREAS USING THE SYMBOL (T)
9. SHOW LOCATION WHERE OVERBURDEN WILL BE STOCKPILED USING SYMBOL (O)
10. SHOW LOCATION OF SETTLING PANS TO BE USED IN WASHING OPERATION USING SYMBOL (W)

LOCATION: LSD 12 SEC. 31 TWP. 38 RGE. 5 W 4.th MER.

SCALE = 1" = 1/4 MI



SIGNED _____ (LEASEE)

APPROVED BY: _____

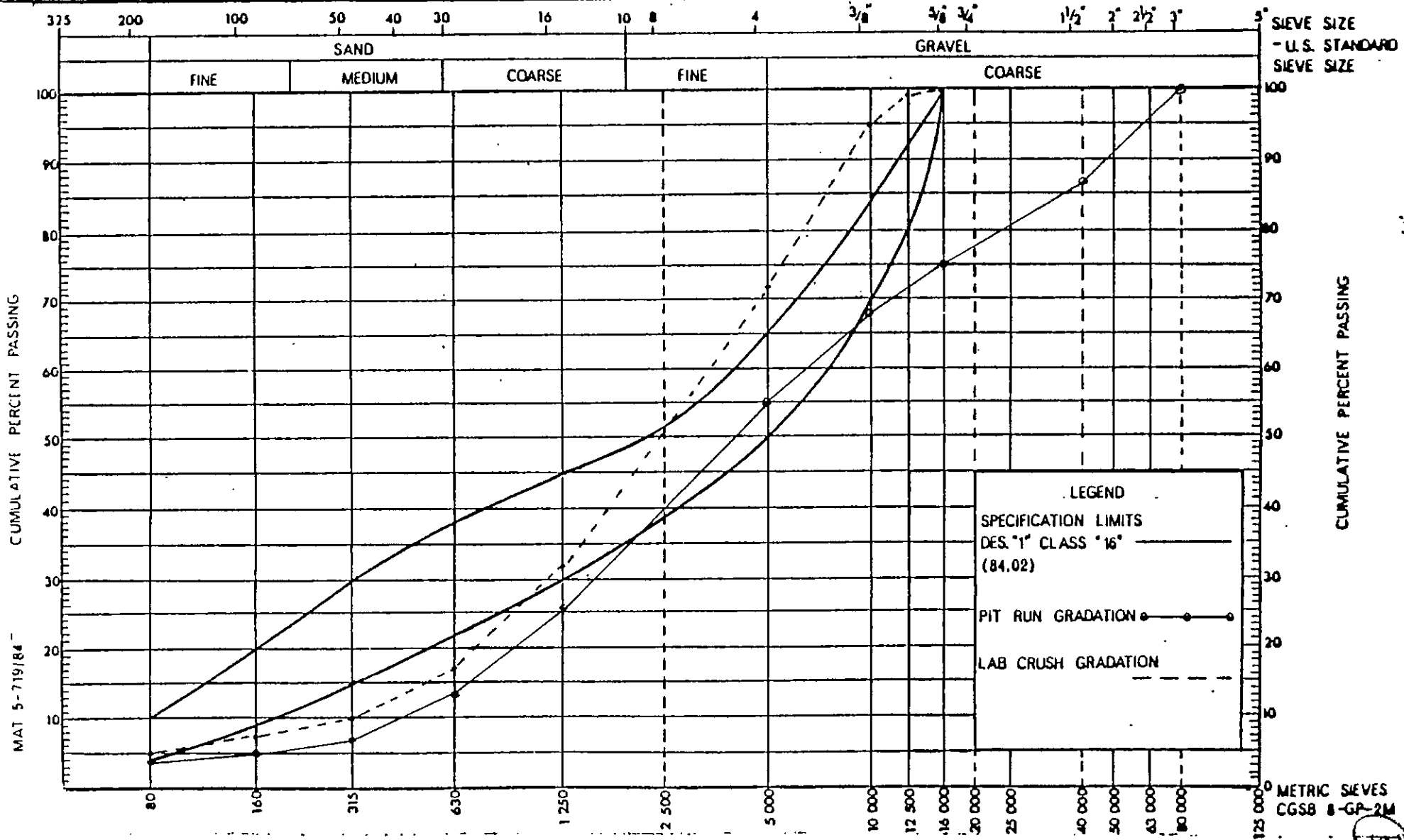


SUMMARY OF AGGREGATE PROSPECT AGGREGATE GRADATION CHART

DATE REPORTED _____

SHEET 3 OF 5

TO D. Barber PROJECT _____ PIT NAME AUSTIN (CROWN LAND)
 CC _____ FROM _____ PIT LOCATION SW 9-41-2-4
 TO _____ LAB SAMPLE NO. 405746 - 755



REMARKS _____

83

GRADATION CHART - SOIL CEMENT SAND

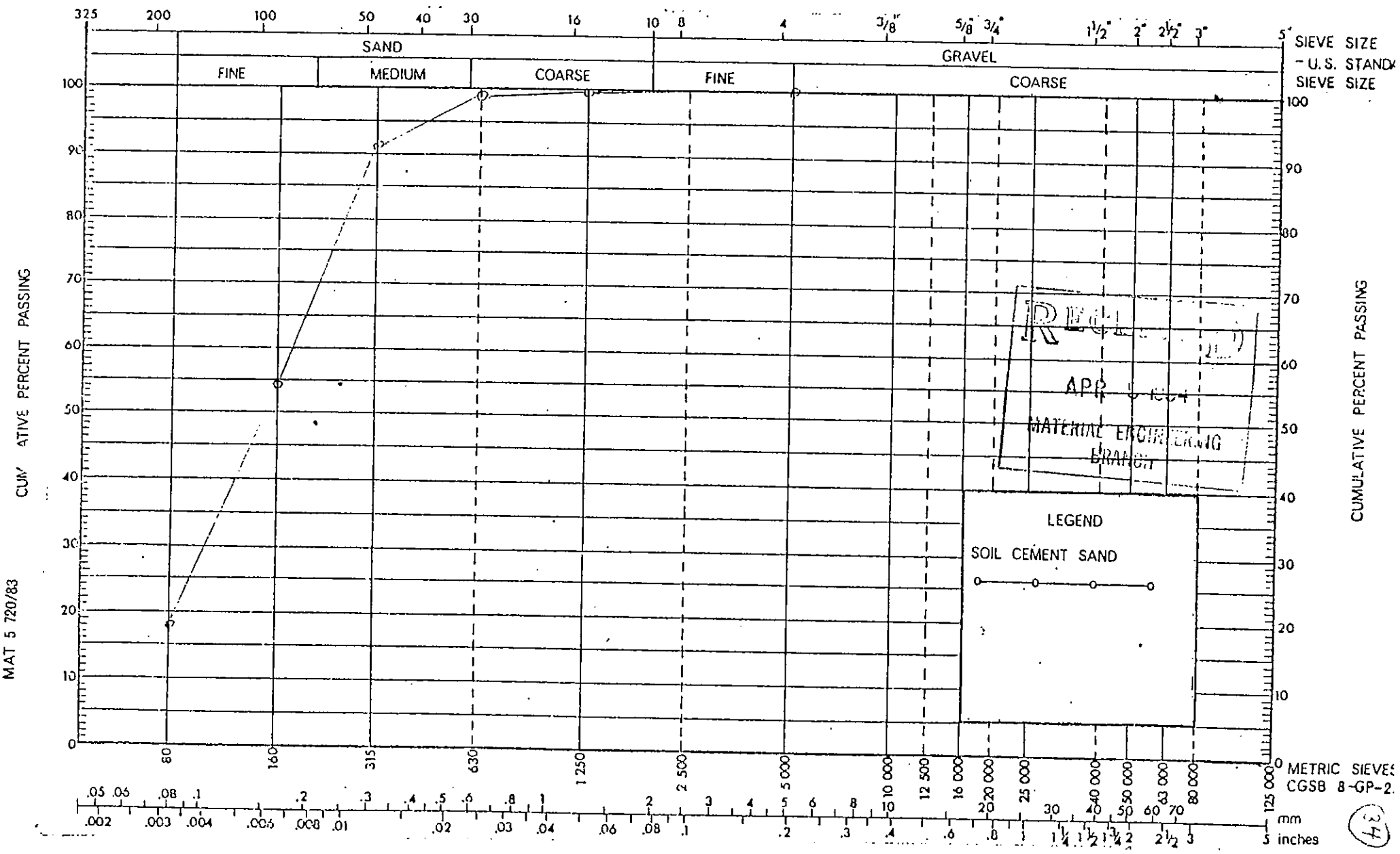
31



NAME OF SOURCE MAULL

LOCATION OF SOURCE SE 13-41-4-4

LAB SAMPLE NO. 330721 - 724



MAT 5 720/83

34

PROVINCE OF ALBERTA
DEPARTMENT OF PUBLIC WORKS
REPORT ON GRAVEL PROSPECTS

Owner MR. P. MAULL JR. Date JUNE 15, 1955

Address METISKOW, ALTA. File 3166-4-4

Location NE 1/4 Sec. 17 Tp. 41 R. 9 W. 9 M.

Agreement - No agreement taken -

Suitable for - Unsuitable -

Approx. Area Extensive Approx. Yardage Extensive

Best Area to Work Pit ---

Dead Haul ---

Condition of Dead Haul ---

Approx. % Crush 5% Estimated P.I. ---

Grading Very fine Sand Available Extensive

Overburden 1 ft to 3 ft.

Description of Gravel Odd rock, about 5% mainly
1/2" rock, pea gravel & coarse sand.

Type of Deposit Glacial

Remarks Two testholes dug over a wide
bench both showing the same type
of very fine material.

Signed J. H. Hedges

HRBF 260-500

36

PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

Owner T.C. CLARK Date OCT. 1960

Address CZAR File 3166-6-9

Location N.W. 1/4 Sec. 1 Tp. 41 R 6 W 4 M

Agreement 10 F 1965

Suitable for BASE COURSE

Approx. Area _____ Approx. Yardage 62,000 CU. YDS.

Best Area to Work Pit AREA A, B, C, D, E.

Dead Haul 0.80 MILES

Condition of Dead Haul GRADE TO BE CONSTRUCTED

Approx. % Crush 10% - 20% Estimated P.I. 0 - 6

Grading FINE Sand Available ✓

Overburden 1' - 5' AVERAGE 2'

Description of Gravel FINE CLEAN GRAVEL. SUBROUND
& SUBANGULAR ROCK.

Type of Deposit TERRACE.

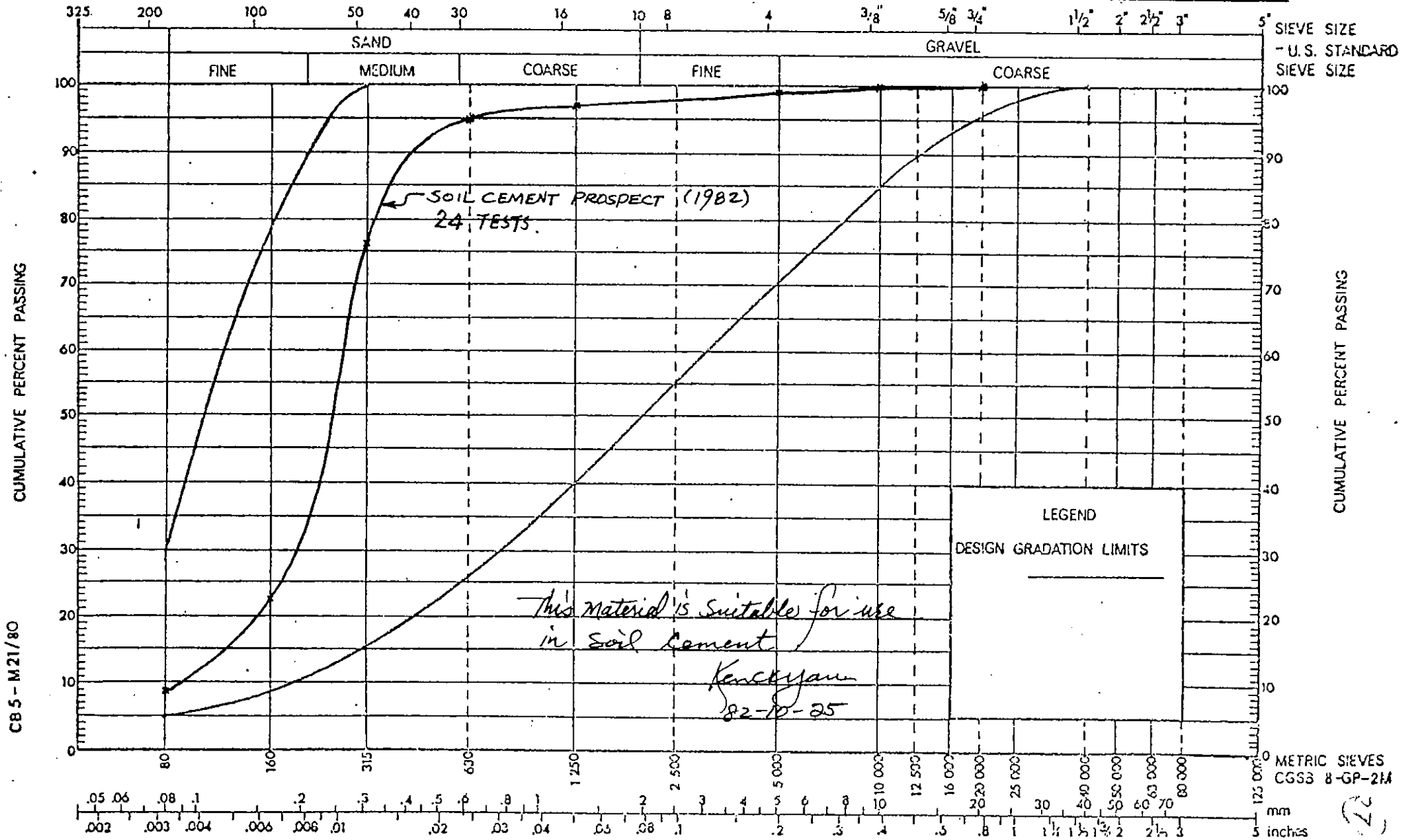
Remarks _____

Signed Hal Gean

AGGREGATE GRADATION CHART



PROJECT _____ FROM _____
 JOB NO. _____ TO _____
 PIT NAME BECK SAND WEEK ENDING _____
 PIT LOCATION NE 10-41-6-4 TYPE OF WORK _____
 REGION _____ SAMPLE SOURCE _____
 DISTRICT _____ METRIC SERIES SPEC. 7040



NW 1/4 SEC. 12 TR. 41 RGE. 6 W. 4 M.

0100-0-7

38

OWNER

H. H. BULLOCK

BOOK

ADDRESS

CZAR, ALTA.

PAGE

TESTED BY

D. W. LOUGHEED

DATE

AUGUST 7 1957

DEPTH OF PIT 1 IN. - 2 FT.

PIT	LOG OF PITS									
	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5	B402									
6	B401									
7	B403									
8	B404									
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										

DEPTH OF PIT 1 IN. - 2 FT.

LOG OF PITS

LOG OF PITS

OVER-BURDEN

O.B.

0.8

0.8

0.8

0.8

0.8

0.8

0.8

SAND

SAND

SAND

SAND

GRAVEL

GRAVEL

FINE GRAVEL

GRAVEL

SAND

CLAY

CLAY

SAND

CLAY

SAND

SAND

OVERBURDEN

OVERBURDEN

SAND

SAND

SAND

SAND

SAND

SAND

GRAVEL

SAND

GRAVEL

CLAY

12'

10'

8'

6'

4'

2'

14'

PIT

PIT

1

1

2

2

3

3

4

4

5

5

6

6

7

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8

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10

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22

22

23

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24

25

25

PIT

PIT

HRBF 260-500

SAND
PROVINCE OF ALBERTA

DEPARTMENT OF HIGHWAYS

REPORT ON GRAVEL PROSPECTS

Owner P.R. KVILL Date MARCH 1962

Address METISKOW File 3166-5-4

Location E 1/2 Sec. 10 Tp. 40 R 5 W 4 N

Agreement 5th 1967

Suitable for SOIL CEMENT

Approx. Area _____ Approx. Yardage 10,000 CU. YDS. ✓

Best Area to Work Pit AREA A.

Dead Haul 0.5 MILES FROM TEST HOLE #2 TO
MILE 145.6 PROJ. 13-4

Condition of Dead Haul FIELD. HAUL ROAD TO BE
BUILT.

Approx. \$ Crush — Estimated P.I. TR.

Grading WELL GRADED Sand Available ✓

Overburden 6" - 1'

Description of ^{SAND}Gravel MEDIUM TO COARSE SHARP
CLEAN SAND.

Type of Deposit WIND DEPOSIT

Remarks WATER AT 11' IN HOLE 4. OTHERWISE
DRY. MORE SAND CAN BE FOUND IN THIS
QUARTER.

Signed Hal. Cleaver

(42)

NE 1/4 SEC. 31 TP. 40 RGE. 5 W. 4 M.

FILE

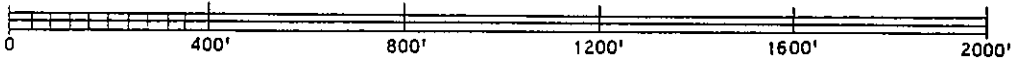
OWNER H.H. BULLOCK (LEASED SCHOOL LAND)

ADDRESS CZAR, ALTA

TESTED BY D.W. LOUGHEED DATE AUG 6 1957

GRAVEL PROSPECTING

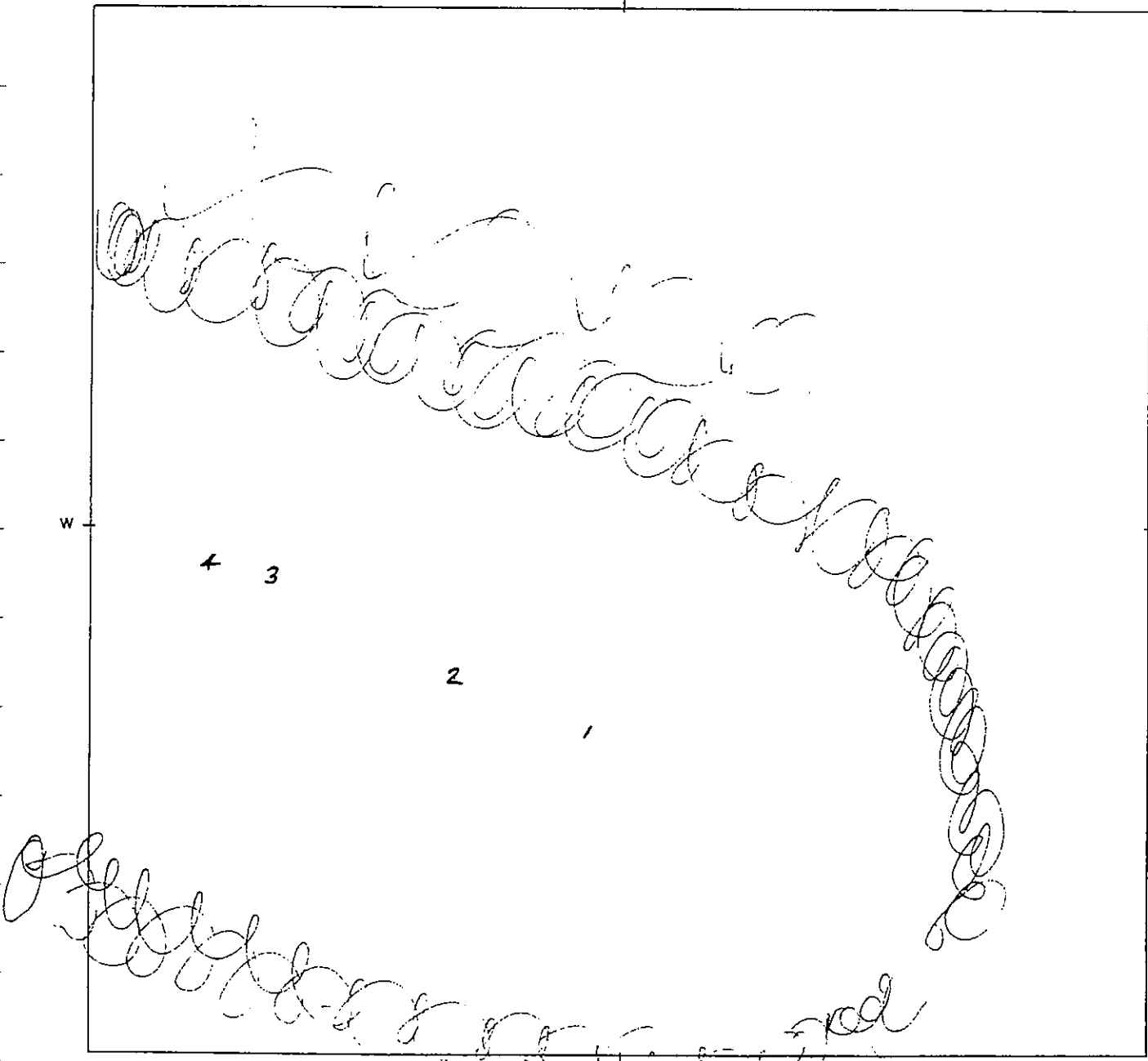
SCALE 1 IN. = 400 FT.



N

W

E



NW 1/4 SEC. 31 TP. 40 RGE. 5 W. 4 M.

FILE 70

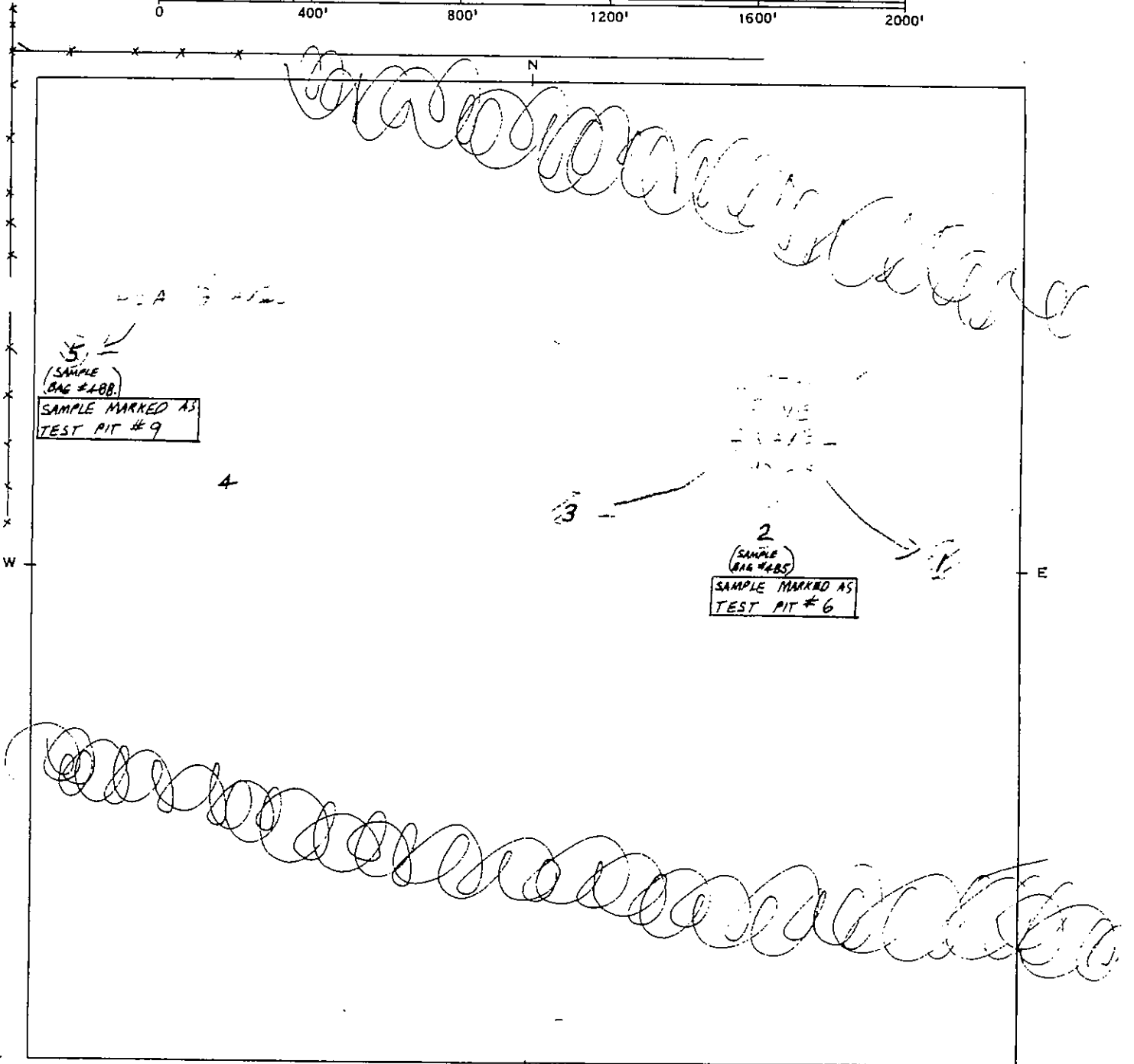
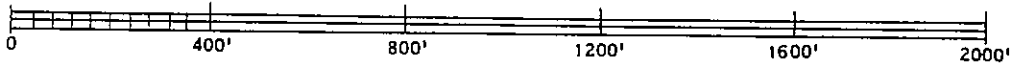
OWNER H. H. BULLOCK (LEASED SCHOOL LAND.)

ADDRESS CZAR, ALTA.

TESTED BY D.W. LOUGHEED DATE AUG. 6 1957

GRAVEL PROSPECTING

SCALE 1 IN. = 400 FT.



PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

Owner R. HARGREAVES Date JUNE 1959

Address CZRR File 3166-26-44

Location S.E. 1/4 Sec. 27 Tp. 40 R 6 W 4 M

Agreement YES (10%)

Suitable for _____

Approx. Area _____ Approx. Yardage _____

Best Area to Work Pit _____

Dead Haul _____

Condition of Dead Haul _____

Approx. % Crush _____ Estimated P.I. _____

Grading _____ Sand Available _____

Overburden _____

Description of Gravel MOSTLY FINE WITH SOME

PER GRAVEL

Type of Deposit /

Remarks GRAVEL WAS FOUND IN SMALL

SHALLOW POCKETS AND TOO SMALL A QUANTITY

WAS FOUND TO BE OF USE.

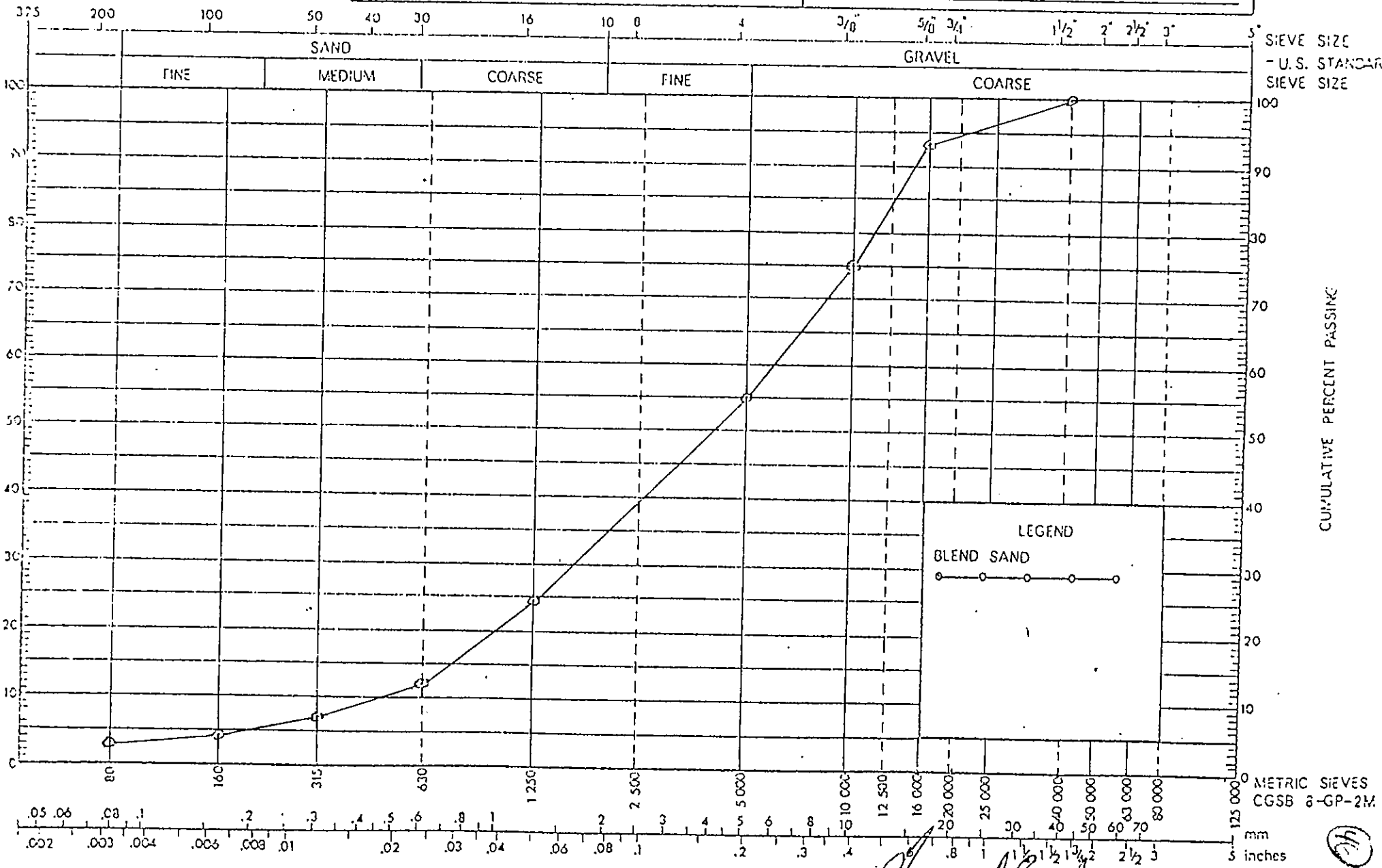
Signed W.C. Coates

GRADATION CHART — SAND ADDITION



AGGREGATE TO BE MODIFIED PIT NAME _____ PIT LOCATION _____ PROJECT <u>SR 600</u>	NAME OF SOURCE <u>DANIELSON</u> LOCATION OF SOURCE <u>SW. 28-40-6-4</u> LAB SAMPLE NO. (S) <u>318704</u>
---	--

(Handwritten initials)



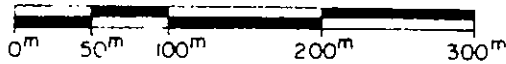
CUMULATIVE PERCENT PASSING

(Handwritten initials)

PIT PLAN

70

REQUIRED PROCEDURE FOR OPERATIONS IN THE DANIELSON PIT
SW 1/4 SEC. 28 TR. 40 RGE. 6 W. 4 M

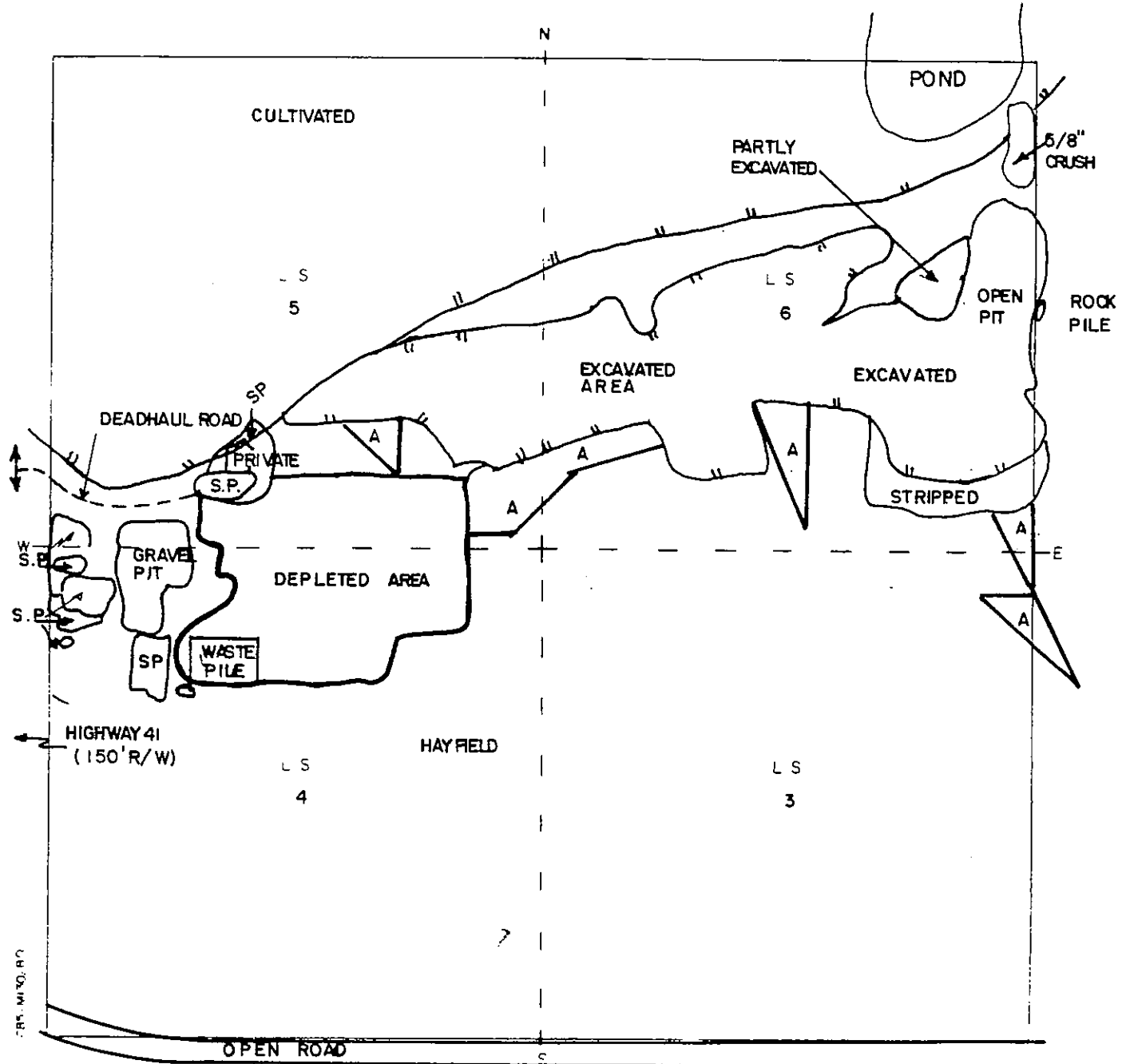


NOTE:

- BEGIN AGGREGATE EXCAVATION IN AREA "B" OUTLINED WITH A DASHED LINE
- BEGIN AGGREGATE EXCAVATION IN AREA DESIGNATED BY THE ENGINEER
- PLACE OVERBURDEN IN AREA "P" OUTLINED WITH A DASHED LINE
- PLACE OVERBURDEN IN AREA DESIGNATED BY THE ENGINEER

LEGEND:

- OP = OPEN PIT
- A = AGGREGATE AREA
- D = DEPLETED AREA
- O = OVERBURDEN AREA
- TS = TOPSOIL



CRS. MINS. B7

147: Feb 21 -84

HRBF 260-500

PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

Owner _____ Date JUNE 1950

Address _____ File FILE R 6-149

Location 4111 Sec. 36 Tp. 40 R 6 W 1 M

Agreement NO

Suitable for _____

Approx. Area _____ Approx. Yardage _____

Best Area to Work Pit _____

Dead Haul _____

Condition of Dead Haul _____

Approx. % Crush _____ Estimated P.I. _____

Grading _____ Sand Available _____

Overburden _____

Description of Gravel _____

Type of Deposit _____

Remarks THIS QUARTER CONSISTS ENTIRELY OF SAND AND SAND DUNES. NO TESTING WAS DONE FOR THIS REASON.

Signed Hal. Cass

PIT PLAN

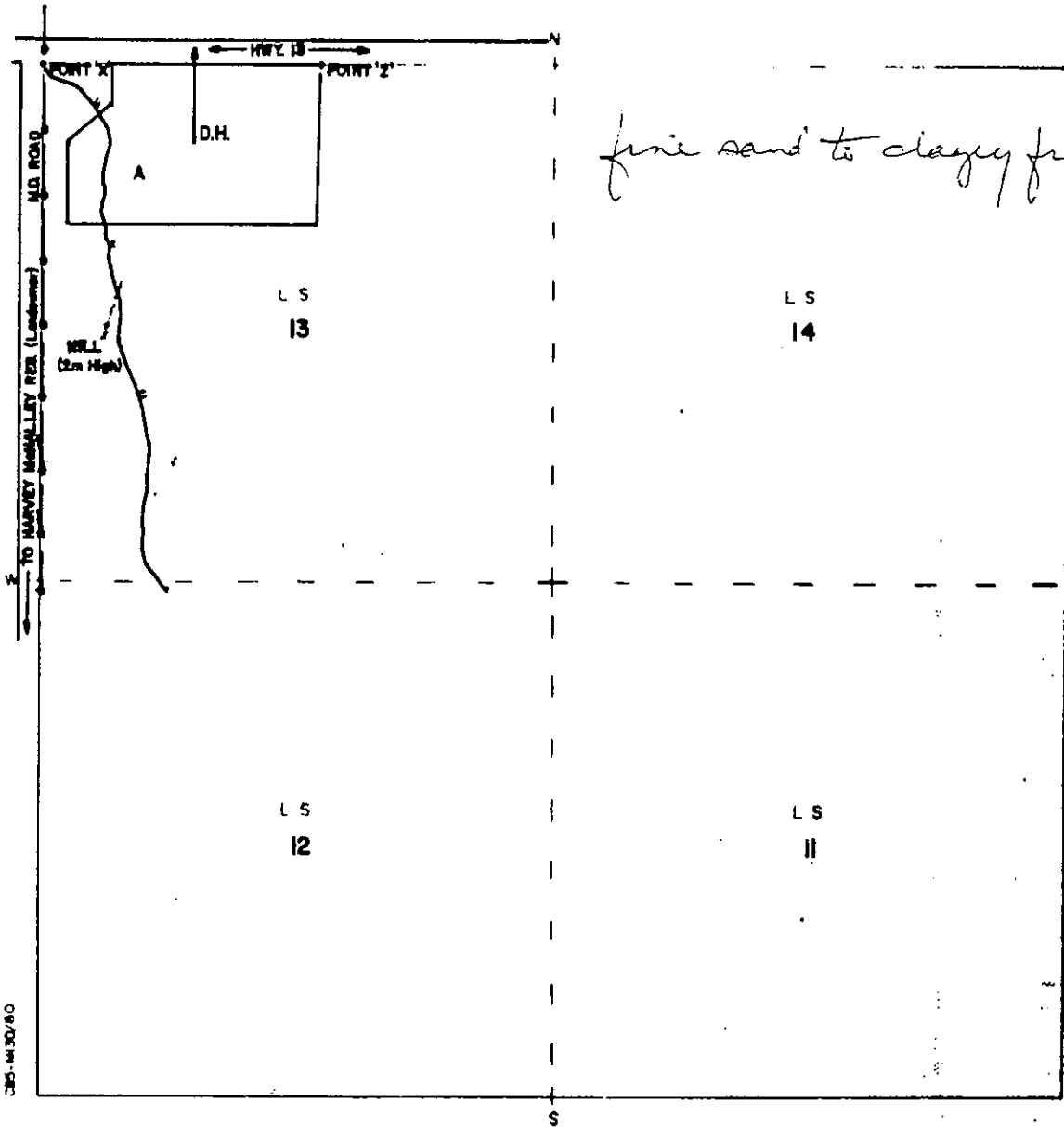
50

REQUIRED PROCEDURE FOR OPERATIONS IN THE **McNALLEY SAND** PIT
NW 1/4 SEC. 35, TP. 39, RGE. 4, W. 4, M.



- NOTE
- BEGIN AGGREGATE EXCAVATION IN AREA "B" OUTLINED WITH A DASHED LINE
 - ▨ BEGIN AGGREGATE EXCAVATION IN AREA DESIGNATED BY THE ENGINEER
 - PLACE OVERBURDEN IN AREA "B" OUTLINED WITH A DASHED LINE
 - ▨ PLACE OVERBURDEN IN AREA DESIGNATED BY THE ENGINEER

- LEGEND
- OP - OPEN PIT
 - A - AGGREGATE AREA
 - D - DEPLETED AREA
 - O - OVERBURDEN AREA
 - TS - TOPSOIL



CNS-4430/80

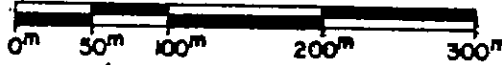
DATE JULY 19 19 82

P. DeLuca
A.P. DeLuca
AGGREGATES ENGINEER

PIT PLAN

51

REQUIRED PROCEDURE FOR OPERATIONS IN THE ... R. RICHARDS ... PIT
LSD 14 .NW. 1/4 SEC. 34. TP. 39. RGE. 6. W. 4. M

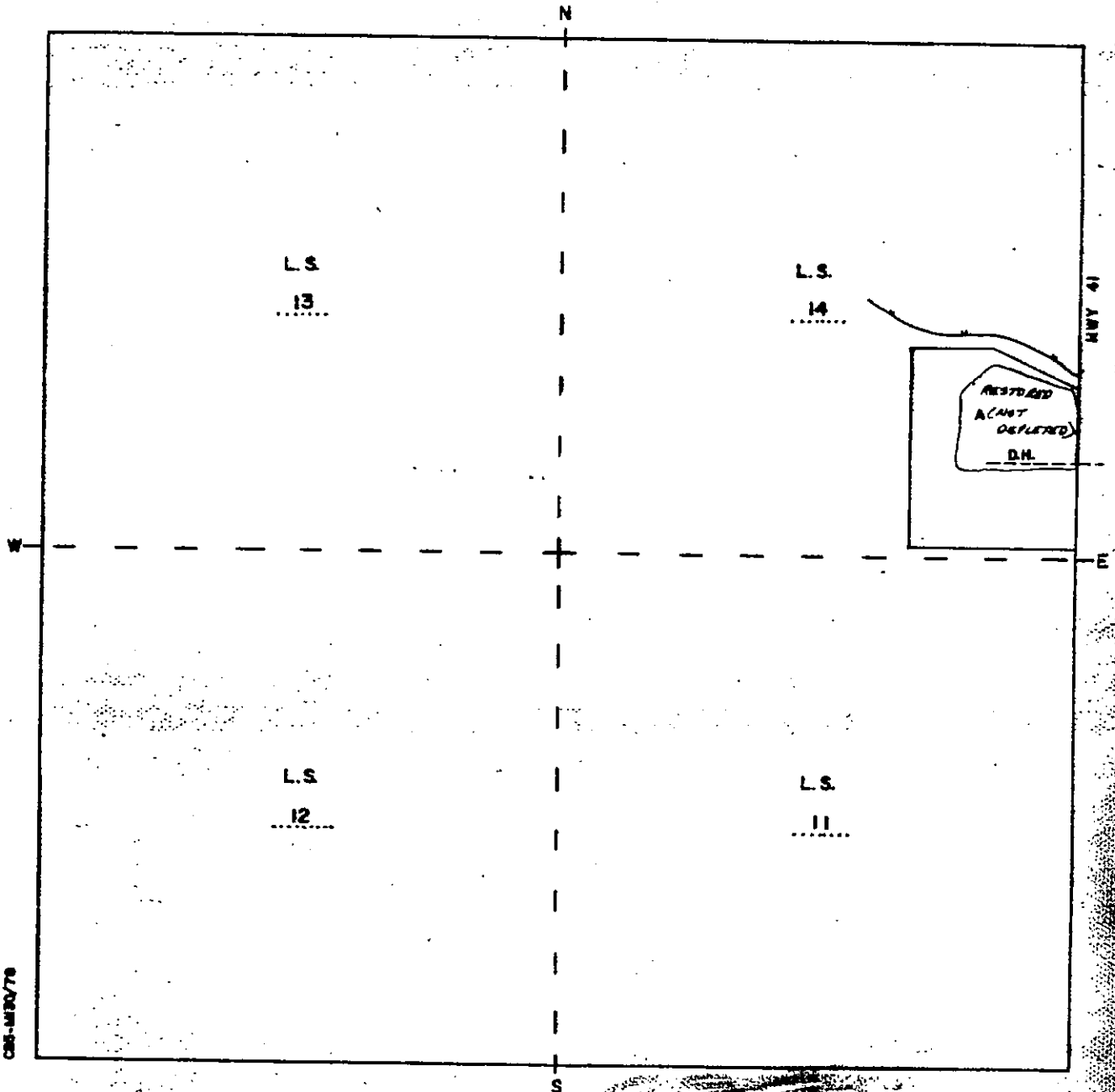


NOTE:

- BEGIN AGGREGATE EXCAVATION IN AREA "B" OUTLINED WITH A DASHED LINE
- ▨ BEGIN AGGREGATE EXCAVATION IN AREA DESIGNATED BY THE ENGINEER
- PLACE OVERBURDEN IN AREA "P" OUTLINED WITH A DASHED LINE
- ▨ PLACE OVERBURDEN IN AREA DESIGNATED BY THE ENGINEER

LEGEND:

- OP = OPEN PIT
- A = AGGREGATE AREA
- D = DEPLETED AREA
- O = OVERBURDEN AREA
- TS = TOPSOIL



CSB-MER/78

DATE Oct. 5 19 82

[Signature]
P. O. ORRILL
AGGREGATES ENGINEER

AGGREGATES PROSPECT REPORT

File 6-
 01/88
 (52)

DATE: JUNE 19 88 LOCATION: NW 1/4 SEC. 1 TP. 39 RGE. 1 W. 4 M.

TESTER: FERRAS PIT NAME: M.D. OF PROUST

CROWN PRIVATE UNKNOWN

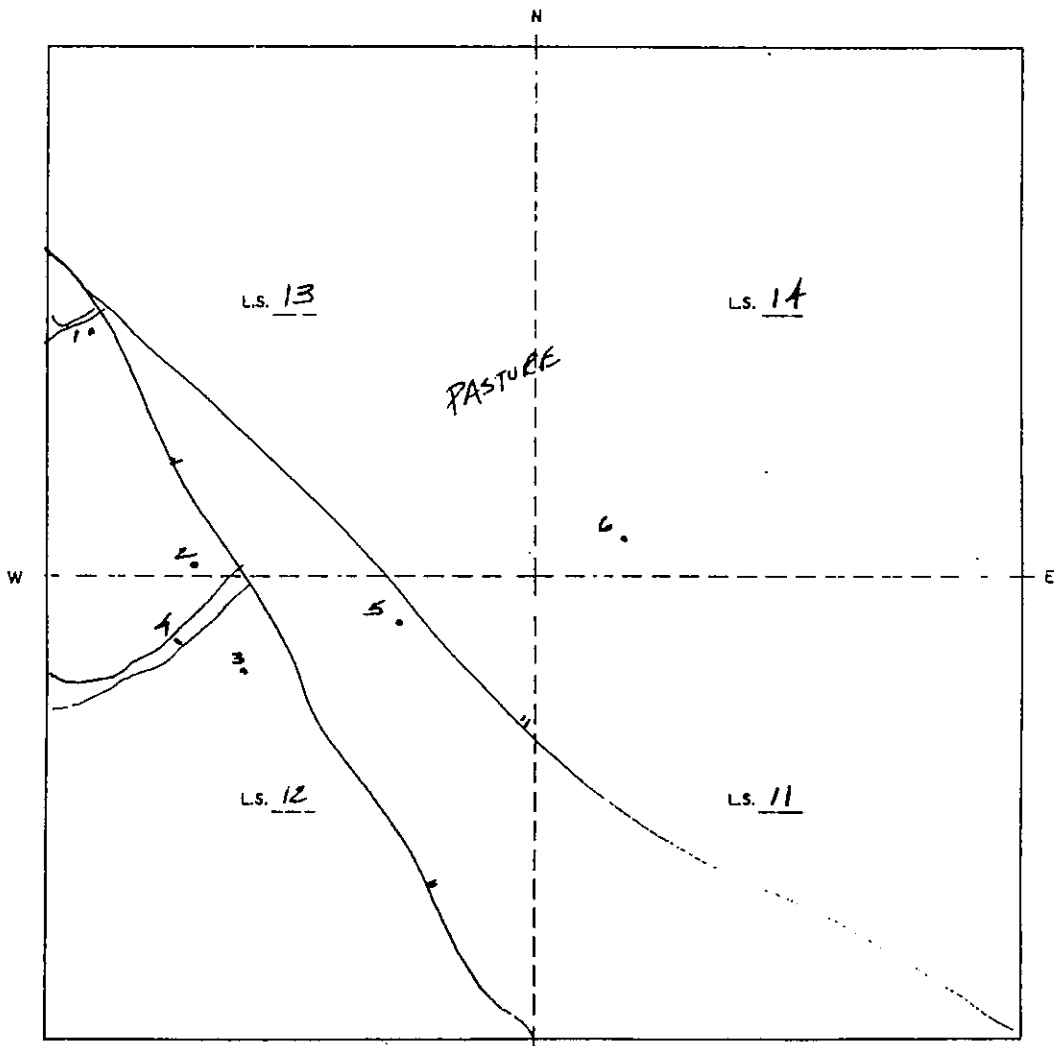
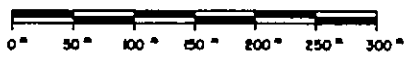
DEPOSIT POTENTIAL: POSSIBLE USE AS BLEND SAND OR SOIL CEMENT

TYPE OF DEPOSIT: GLACIAL OUTWASH

DEPOSIT REPORTED BY: M.D. OF PROUST

FURTHER ACTION: DUG RANDOM HOLES TO TEST FOR GRAVEL.
SOME FS IN HILLS ON WEST SIDE OF 14. HOLES
IN LOWER AREAS SEEMED TO BE MADE OF A
MEDIUM SAND.

PROSPECT	NO. 1
DATE	JUN 1988
REPORTED BY	M.D. OF PROUST
TESTER	FERRAS



NE 1/4 SEC. 11 TP. 39 RGE. 1 W. 4 M.

FILE 3166-1-4 ⁵²

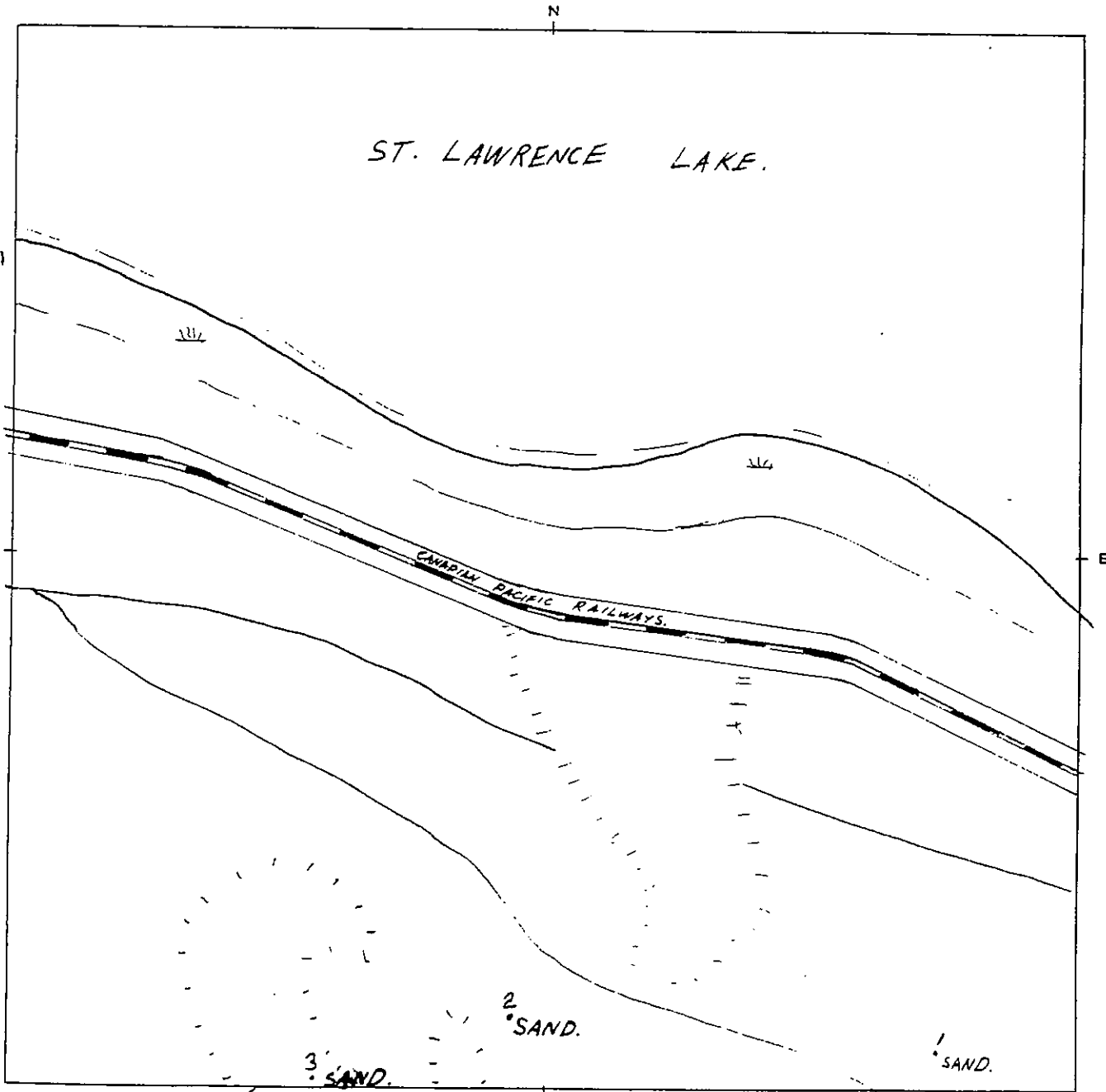
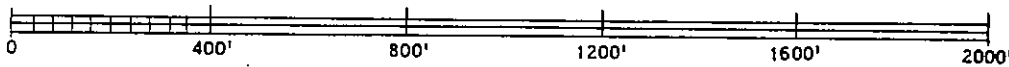
OWNER M.D.

ADDRESS HAYTER, ALTA.

TESTED BY D.W. LOUGHEED DATE OCT. 17 1957

GRAVEL PROSPECTING

SCALE 1 IN. = 400 FT.



NE 1/4 SEC. 11 TP. 39 RGE. 1 W. 4 M.

FILE _____

OWNER M. D.

BOOK _____

ADDRESS HAYTER, ALTA.

PAGE _____

TESTED BY D. W. LOUGHEED

DATE OCT. 17 195 7

LOG OF PITS

PIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	PIT
	OVER BURDEN																									
2'																										
4'	SAND	SAND	SAND																							
6'																										
8'																										
10'																										
12'																										
14'																										
PIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	PIT

DEPTH OF PIT 1 IN. = 2 FT.

DEPTH OF PIT 1 IN. = 2 FT.

PROVINCE OF ALBERTA
DEPARTMENT OF PUBLIC WORKS
REPORT ON GRAVEL PROSPECTS

Owner CANADIAN PACIFIC RAILWAY Date DECEMBER 1952

Address _____ File 3166-139

Location NW 1/4 Sec. 17 Tp. 39 R. 1 W. 4 M.

Agreement _____

Suitable for SOIL CEMENT

Approx. Area _____ Approx. Yardage 127,000

Best Area to Work Pit ANYWHERE IN TESTED AREA

Dead Haul 0.25

Condition of Dead Haul VERY GOOD - HIGH, WIDE, AND GRAVELED

Approx. % Crush _____ Estimated P.I. _____

Grading _____ Sand Available

Overburden 1-6'

Description of ~~Gravel~~ ^{SAND} MOSTLY FINE AND CLEAN.

Type of Deposit GLACIAL

Remarks THIS PIT WAS TESTED WITH A DRILL. NO SAMPLES TAKEN.

Signed Hal Casar

HP 260-500

PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

Owner N. IMESON Date MAY 1959

Address HAYTER File 3166 - R1 - 114

Location S.W. 1/4 Sec. 17 Tp. 39 R 1 W 4TH M

Agreement YES (10%) Expires 1961

Suitable for _____

Approx. Area _____ Approx. Yardage _____

Best Area to Work Pit _____

Dead Haul _____

Condition of Dead Haul _____

Approx. % Crush _____ Estimated P.I. _____

Grading _____ Sand Available _____

Overburden _____

Description of Gravel FINE SANDY GRAVEL WITH CLAY LUMPS.

Type of Deposit GLACIAL

Remarks GRAVEL WAS FOUND IN SMALL POCKET ONLY. GRAVEL IN ALL TEST HOLES WAS FINE AND VERY DIRTY.

Signed Hal Casan

26

SE 1/4 SEC. 30 TP. 39 RGE. 1 W. 4 M.

FILE 55-144

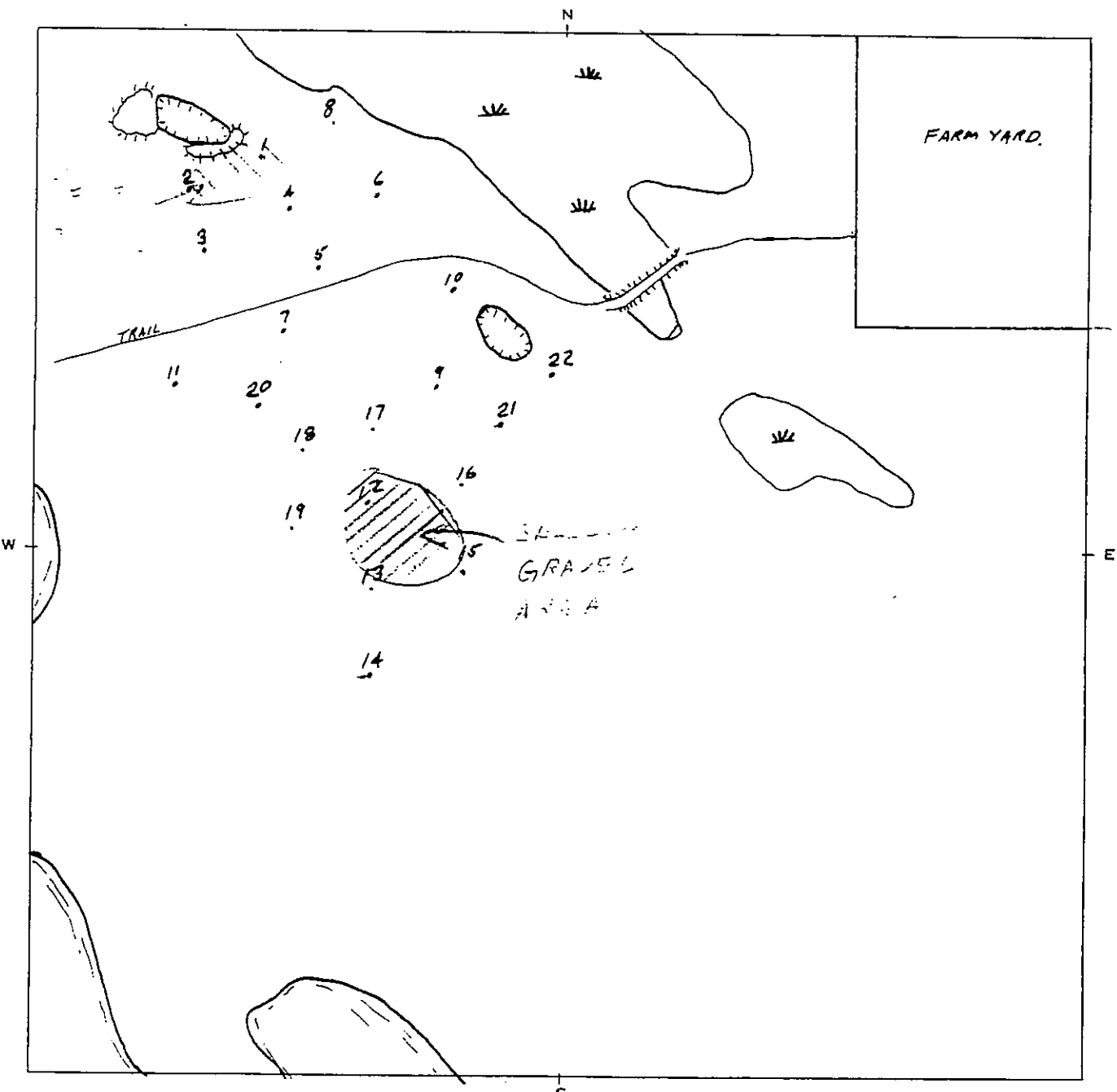
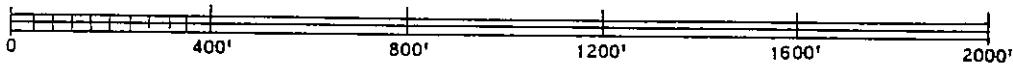
OWNER C.W. MCINTYRE

ADDRESS HAYTER, ALTA.

TESTED BY D.W. LOUGHEED DATE OCT 12 1957

GRAVEL PROSPECTING

SCALE 1 IN. = 400 FT.



PROVINCE OF ALBERTA
 DEPARTMENT OF HIGHWAYS
 REPORT ON GRAVEL PROSPECTS

Owner PHIL BOBORSKY Date JULY 1959
 Address PROVOST File 3166-1076
 Location NE 4 Sec. 12 Tp. 33 R 2 W 4 M
 Agreement YES AT 10¢ to 6¢.
 Suitable for SOIL CEMENT
 Approx. Area _____ Approx. Yardage 90,000
 Best Area to Work Pit CENTRE OF TESTED AREA
 Dead Haul END OF FIELD TRAIL
10 MILES OF GOOD M.D. ROAD
 Condition of Dead Haul GOOD

 Approx. % Crush _____ Estimated P.I. TRACE
 Grading _____ Sand Available _____
 Overburden 6" - 1'
 Description of ^{SAND} Gravel CLEAN FINE SAND

 Type of Deposit GLACIAL

 Remarks _____

Signed Hal Coan

DATE: Aug 4 1987

LOCATION: SE 1/4 SEC 1 TP. 3E. RGE. 1 W. 1 M.

TESTER: B. WAGAR

PIT NAME: WAGAR

OWNERSHIP:

- A.T. PT
 PRIVATE: VENDOR IAN WAGAR ROYALTY _____ EXPIRES _____
 CROWN PIT: RESERVATION: D.R.S. • _____ P.N.T. • _____ C.N.T. • _____

LESSEE: _____ LEASE TYPE & No. _____

- AGGREGATE SUITABILITY: 1st. COURSE ASBC GBC A.C.P. C.S.B.C.
 BLEND SAND WINTER SAND SILT

QUANTITY: GRAVEL _____ m³ SAND _____ m³

DEPTH OF OVERBURDEN _____ m to _____ m AV. DEPTH OF DEPOSIT _____ m to _____ m AV.

- CLEARING REQUIRED
 TIMBER SALVAGE WINTER HAUL ONLY ACRES _____ HECTARES _____
 FENCING: _____ TEMPORARY PERMANENT GATE CATTLE GUARD
 PIPELINES: _____ PIT AREA HAUL ROAD
 RAIL ROAD: _____ CROSSING TEMPORARY CROSSING REQUIRED

BEST AREA TO WORK PIT: _____

AGGREGATE DESCRIPTION			
TOP SIZE <u>3.50</u> mm + 300 mm %			
GRADING		DELETERIOUS MATERIAL	
<input checked="" type="checkbox"/> WELL GRADED	<input type="checkbox"/> EXCESSIVE FINES	<input type="checkbox"/> COAL	
<input type="checkbox"/> EXCESSIVE GRAVEL	<input type="checkbox"/> SHORT GRAVEL	<input type="checkbox"/> SOFT SHALE	
<input type="checkbox"/> EXCESSIVE PEA GRAVEL	<input type="checkbox"/> SHORT COARSE SAND	<input type="checkbox"/> SOFT IRON NODULES	
<input checked="" type="checkbox"/> EXCESSIVE COARSE SAND	<input checked="" type="checkbox"/> SHORT FINE SAND	<input type="checkbox"/> SOFT SANDSTONE	
<input type="checkbox"/> EXCESSIVE FINE SAND	<input checked="" type="checkbox"/> CLEAN	<input type="checkbox"/> LUMPS, CLAY, SILTY CLAY	
GRAIN SHAPE		PLASTICITY	
ROCK	SAND	<input type="checkbox"/> HIGH <input type="checkbox"/> MEDIUM <input type="checkbox"/> LOW <input checked="" type="checkbox"/> TRACE OR NIL	
<input type="checkbox"/> ANGULAR	<input type="checkbox"/> SHARP <input checked="" type="checkbox"/> ROUND		
<input type="checkbox"/> SUBANGULAR			
<input checked="" type="checkbox"/> SUBROUND			
<input checked="" type="checkbox"/> ROUND			
SURFACE TEXTURE		TYPE OF DEPOSIT	
<input type="checkbox"/> ROUGH	<input checked="" type="checkbox"/> SMOOTH	<input checked="" type="checkbox"/> STREAM TERRACE	<input type="checkbox"/> DUNES BARCHANE
<input type="checkbox"/> ENCRUSTED		<input type="checkbox"/> STREAM ISLAND	<input type="checkbox"/> DUNES FINGER
BULL CRUSHER		<input type="checkbox"/> GLACIAL TERRACE	<input type="checkbox"/> DUNES SHEET
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> GLACIAL DELTA	<input type="checkbox"/> BEACH RIDGE
<input type="checkbox"/> SAND AVAILABLE _____ W. _____ M.		<input type="checkbox"/> GLACIAL KAME	<input type="checkbox"/> GRAVEL BAR
<input type="checkbox"/> SILT AVAILABLE _____ W. _____ M.		<input type="checkbox"/> GLACIAL ESKER	<input type="checkbox"/> OTHER

- TESTED FOR: ACRE PURCHASE FUTURE R.O.W. PROJECT • _____
 DISTRICT • _____ I.D. • _____ M.D. • _____

SPECIAL PROVISIONS: _____

COMMENTS: NOT EXTENSIVELY TESTED BECAUSE MR WAGAR
WOULD NOT SIGN AN AGREEMENT FOR 60¢/YD.
- GOOD LOOKING GRAVEL, POSSIBLY 30000 MTS AVAILABLE
MR WAGAR LIVES IN MACKIN, SASK. PH. 753-2140

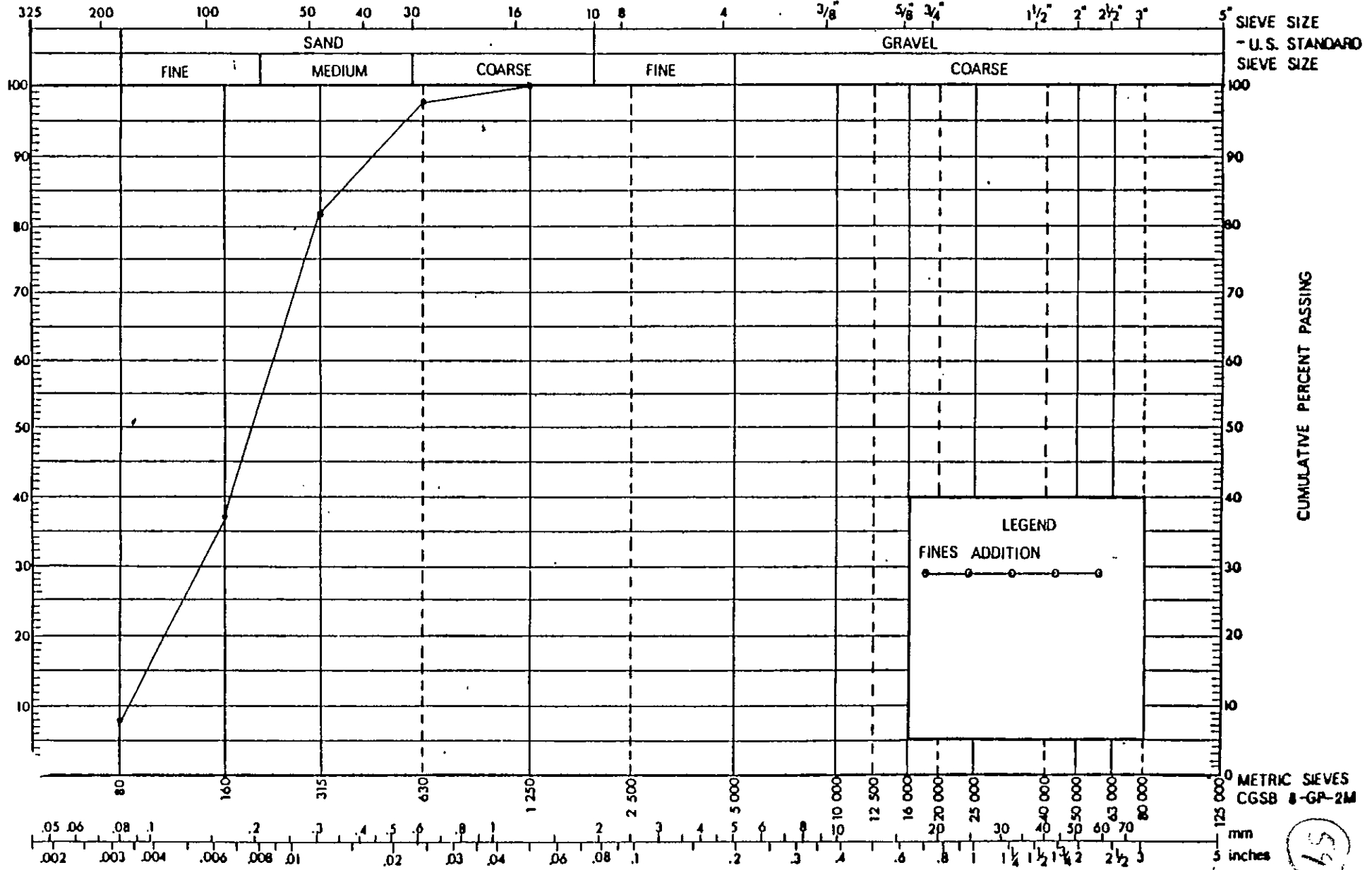
SIGNED: [Signature]

AGGREGATE GRADATION CHART - FINES ADDITION



AGGREGATE TO BE MODIFIED _____ PIT NAME _____ PIT LOCATION _____ PROJECT _____	NAME OF SOURCE <u>BOSCH</u> LOCATION OF SOURCE <u>SE 30-38-1-4</u> LAB SAMPLE NO. (S) <u>400032</u> DATE TESTED _____
---	--

MAT 5-718/83



LEGEND

FINES ADDITION

PL *THT*

65

PROVINCE OF ALBERTA
DEPARTMENT OF HIGHWAYS
REPORT ON GRAVEL PROSPECTS

60

Owner _____ Date _____

Address _____ File 3166-5-4

Location _____ Sec. 25 Tp. 30 R. 5 W. 4 M

Agreement _____

Suitable for _____

Approx. Area _____ Approx. Yardage _____

Best Area to Work Pit _____

Dead Haul _____

Condition of Dead Haul _____

Approx. % Crush _____ Estimated P.I. _____

Grading _____ Sand Available _____

Overburden _____

Description of Gravel _____

Type of Deposit _____

Remarks THE GRAVEL FOUND IN THIS AREA CON-

SISTS OF SAND GRAVEL THAT DETAILING

TESTS WERE DISCONTINUED FOR THIS

REASON

Signed Hal. Cross



ENERGY AND NATURAL RESOURCES

132069
RESERVATION/NOTATION AMENDMENT

APR 21 1988
6/1/88

Agency (Dept./Branch) **ALBERTA TRANSPORTATION UTILITIES (MATERIALS ENG. BRANCH)** E & NR Control No. **CNT 780067**

Client I.D. No. **85000 70-001** Telephone **427-3101** Date of Request **JAN. 29/88** Agency File No. **SE15-38-6-4** E & NR File No. **6138-6-4**

Purpose of the Amendment
 Add Land Delete Land Amend Expiry Date Amend Code Amend Other (see explanation)

Explanation for Amendment Change: **Amended Agency Comments: PLEASE AMEND FOR A 5 YEAR TERM IN FAVOR OF ALBERTA TRANSPORTATION UTILITIES**
Agency Contact Person: **P. DELOCA**
(Please Print & Initial)

ADD LANDS						DELETE LANDS						LANDS NOW REQUIRED						
Name of Subdivision						Name of Subdivision						Name of Subdivision						
Subdivision Plan No.		Block	Lot	Parcel		Subdivision Plan No.		Block	Lot	Parcel		Subdivision Plan No.		Block	Lot	Part		
Qtr./LS	Sec.	Twp.	Rge.	Mer.	Ac.	Qtr./LS	Sec.	Twp.	Rge.	Mer.	Ac.	Qtr./LS	Sec.	Twp.	Rge.	Mer.	Ac.	
												SE	15	38	6	4		123.
<i>plus land</i>																		
TOTAL 123.																		

SRPU Conflicts Yes No see attached

Energy & Natural Resources Use Only

Reservation/Notation	Current Code	Amended Code
Type	CNT	ENT
Purpose	0541	0541
Restriction	1	T
Exception(s)		

Comments:
Amendment Date: (Y M D) **88-03-16**
Expiry Date: (Y M D) **93-01-28**

Action by	(Date & Initial)	Referral Dates	(Sent/Received)
Doc/SRPU (App)		Land Mg't	
Admin. Support		AFS	
Land Mg't		F & W	
Doc/SRPU (Disp)		Envir.	
File Records		Transp.	
		Minerals	
		Other	

LSAS Note: **Copies for: DIARY, STATIONS, Field WAINWRIGHT**

RECEIVED

LSAS INPUT ID: LSAS 05

TX No. **188032** 2/25/88

DATE: 8/23/88

Special Problems encountered in using this source:

Recommendations for further use of this source:

Remarks:

Very excellent source for future Soil Cement Base Course job.

SW 5-38-6-W4

PROJECT AVERAGE TEST RESULTS

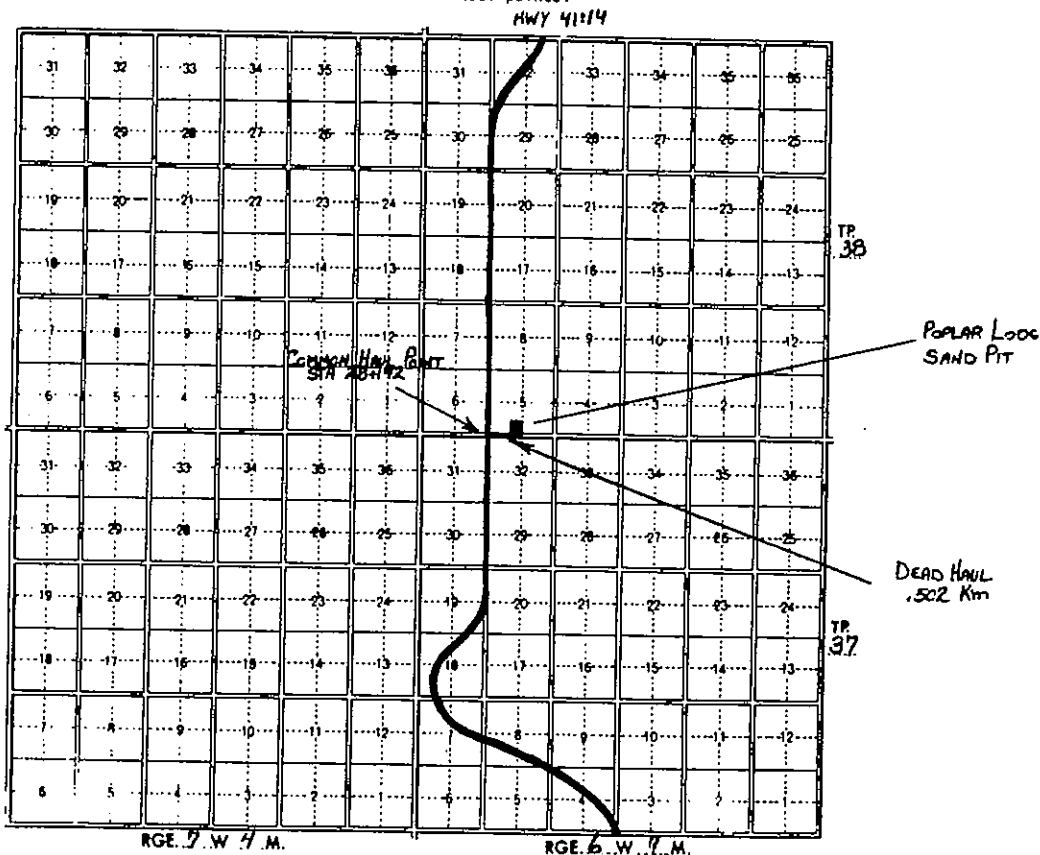
Please produce and enter below a weighted average of the test results obtained for each class of material used on your project.

TEST CLASS	NUMBER OF TESTS	METRIC IMPERIAL	124 000	80 000	63 000	50 000	40 000	25 000	20 000	16 000	12 500	10 000	5 000	1 250	315	160	63	FRACTURE COUNT
			5"	3"	2 1/2"	2"	1 1/2"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	1/4"	#10	#40	#100	
7 CLASS	40	metric							100	100		98	96	90	49	11		
TEST CLASS																		
TEST CLASS																		
TEST CLASS																		

DEADHAULS

Please plot on the diagram below:

1. The pit.
2. Your project.
3. The common haul points you used.
4. The deadhauls you used, with distances to the common haul points.

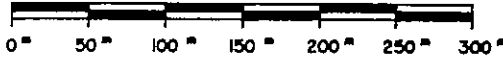


PIT PLAN

63

REQUIRED PROCEDURE FOR OPERATIONS IN THE THOMPSON PIT

NW 1/4 SEC. 21 TP. 37 RGE. 1 W. 4 M.



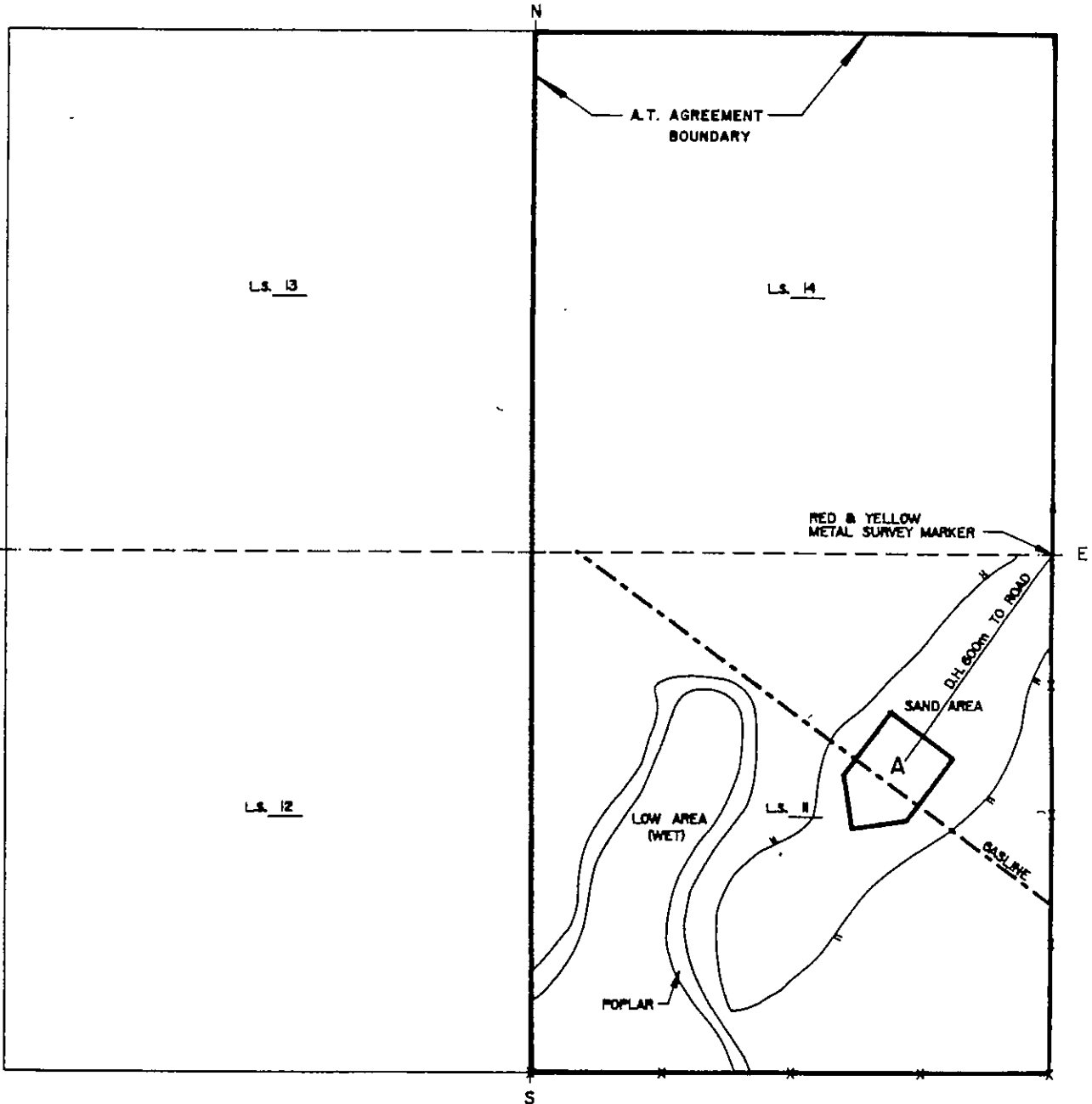
NOTE:

- SOON APPROPRIATE EXCAVATION IN AREA "B" OUTLINED WITH A DASHED LINE
- SOON APPROPRIATE EXCAVATION IN AREA DESIGNATED BY THE ENGINEER
- PLACE OVERBURDEN IN AREA "A" OUTLINED WITH A DASHED LINE
- PLACE OVERBURDEN IN AREA DESIGNATED BY THE ENGINEER

LEGEND:

- | | | | |
|------|----------------|-----------------|------------------------------|
| OP | OPEN PIT | SP. | STOCKPILE |
| A | AGGREGATE AREA | C.S.P. | CRUSH STOCKPILE |
| D | DEPLETED AREA | A.T. RESV. BDY. | BOUNDARY OF RESERVATION AREA |
| STR. | STRIPPING | A.T. AGR. BDY. | BOUNDARY OF AGREEMENT AREA |
| T | TOPSOIL | Hwy. R/W. | HIGHWAY RIGHT OF WAY |
| BF | BRANSEL FACE | - X - | FENCE LINE |
| SF | SAND FACE | ≡ | MUSKIE |

*Line done
for blending
with sand
from Base
set
14-37-1-4*



CB 5-1130/84

DATE May 5 1987

[Signature]
FOR MATERIALS ENGINEERING BRANCH

RESERVATION/NOTATION AMENDMENT

Agency (Dept./Branch) **ALBERTA TRANSPORTATION FACILITIES (MATERIALS ENG. BRANCH)** BRANCH E & NR Control No. **CNT 790067**

Client I.D. No. **8100070-001** Telephone **427-3101** Date of Request **MAY 25/89** Agency File No. **SW33-36-2-4** E & NR File No. **GT.36-02-**

Purpose of the Amendment
 Add Land Delete Land Amend Expiry Date Amend Code Amend Other (see explanation)

Explanation for Amendment Change: _____ Amended Agency Comments: **PLEASE AMEND FOR A 5 YEAR TERM** Agency Contact Person: **P. DELUCA**
 (Please Print & Initial)

ADD LANDS						DELETE LANDS						LANDS NOW REQUIRED						
Name of Subdivision						Name of Subdivision						Name of Subdivision						
Subdivision Plan No.		Block	Lot	Parcel		Subdivision Plan No.		Block	Lot	Parcel		Subdivision Plan No.		Block	Lot	Par		
Qtr./LS	Sec.	Twp.	Rge.	Mer.	Ac.	Qtr./LS	Sec.	Twp.	Rge.	Mer.	Ac.	Qtr./LS	Sec.	Twp.	Rge.	Mer.	Ac.	
												SW	33	36	2	4		
<i>median to fire, etc.</i>																		
TOTAL																		

SRPU Conflicts Yes No see attached

Reservation/Notation	Current Code	Amended Code
Type	CNT	
Purpose	0541	
Restriction	1	
Exception(s)		

Energy & Natural Resources Use Only

Comments: _____

Amendment Date: (Y.M.D.) **27/06/08**

Expiry Date: (Y.M.D.) **29/10/31**

[Signature]
for AGM, Public Lands

Action by	(Date & Initial)	Referral Dates	(Sent/Received)
Doc/SRPU (App)		Land Mg't	
Admin. Support	29/06/08 CW	AFS	
Land Mg't		F & W	
Doc/SRPU (Disp)		Envir.	
File Records		Transp.	
		Minerals	
		Other	

LSAS Note: _____

Copies for: **Wainwright Field**

LSAS

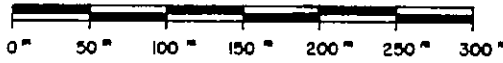
LSAS INPUT ID: LSASI 08
 TX No. 1890620 83
 VERIFIED *LR* DATE JUN 22 '89

PIT PLAN

65

REQUIRED PROCEDURE FOR OPERATIONS IN THE HECK SAND PIT

NE 1/4 SEC. 32 TP. 36 RGE. 1 W. 4 M.



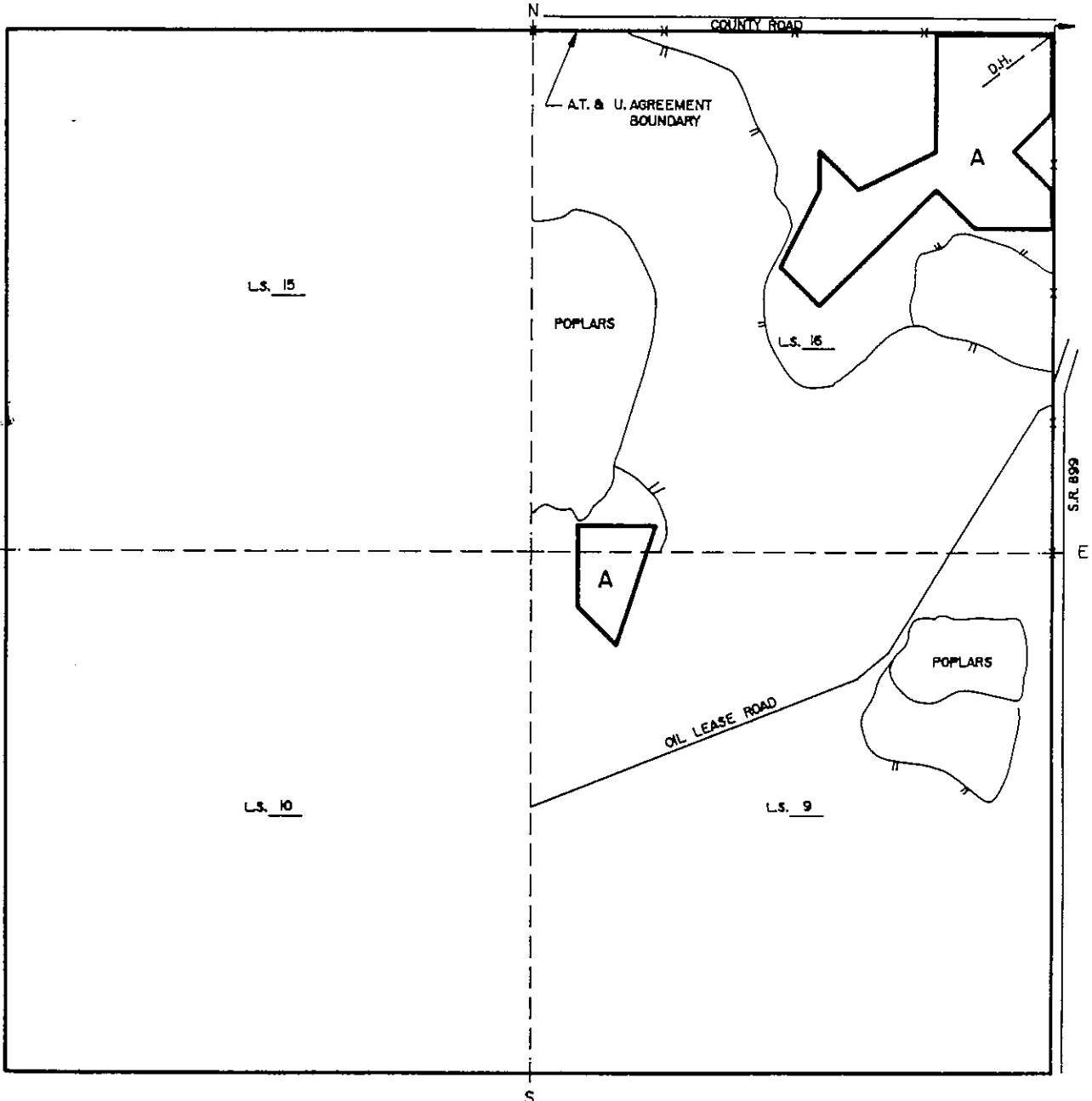
NOTE:

- BEGIN AGGREGATE EXCAVATION IN AREA "B" OUTLINED WITH A DASHED LINE
- BEGIN AGGREGATE EXCAVATION IN AREA DESIGNATED BY THE ENGINEER
- PLACE OVERBUNDEN IN AREA "P" OUTLINED WITH A DASHED LINE
- PLACE OVERBUNDEN IN AREA DESIGNATED BY THE ENGINEER

LEGEND:

- | | | | |
|------|----------------|------------------|------------------------------|
| OP | OPEN PIT | SP. | STOCKPILE |
| A | AGGREGATE AREA | C.S.P. | CRUSH STOCKPILE |
| D | DEPLETED AREA | A.T. RESV. B.OY. | BOUNDARY OF RESERVATION AREA |
| STR. | STRIPPINGS | A.T. AGR. B.OY. | BOUNDARY OF AGREEMENT AREA |
| T | TOPSOIL | H.W.Y. R./W. | HIGHWAY RIGHT OF WAY |
| OF | GRAVEL FACE | - X - | FENCE LINE |
| SF | SAND FACE | ≡≡ | MUSKEE |

*reference to
 site plan
 up to 5m etc*



CB 5-MISD/84

DATE August 21 19 87

R. P. Pook
 FOR MATERIALS ENGINEERING BRANCH

TRANSPORTATION

NE 3-37-2-4
SE-32-36-1-4

FROM John Penner, C.E.T.
Project Services Tech.
STETTLER

OUR FILE REFERENCE

YOUR FILE REFERENCE

(66)

TO Bruce Blue
Info Technologist
Materials Engineering Br.
EDMONTON

DATE May 1/87

TELEPHONE

SUBJECT PROPOSED S.C.B.C. - SR899:08
NORTH OF BODO TO SOUTH OF BODO

Regarding the gravel and sand information submitted concerning the above project I wish to clarify the pit locations as follows:

1) Gravel Pit (Paulgaard Pit) - location should read NE 3-37-2-4. This is an existing pit but needs testing for determining quantity remaining.

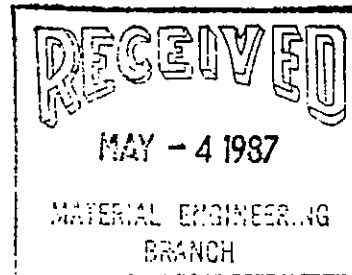
2) Sand Pit (SE 32-36-1-4) this location has not been previously used but is a passable source of sand for the S.C.B.C. We obtained a sample and the sieve results are attached. The sieve results show a clean uniform material lacking in silty filler and therefore a filler may be required. We are submitting this as an area that warrants testing due to its proximity to the project.

If further information is required please give me a call.

John Penner
John Penner, C.E.T.
Project Services Tech.

JP/yll

Att'd



*-C.
For you
multi-person, attn:
H. Cresser.*

*Ken: Please
provide sieve
results.*

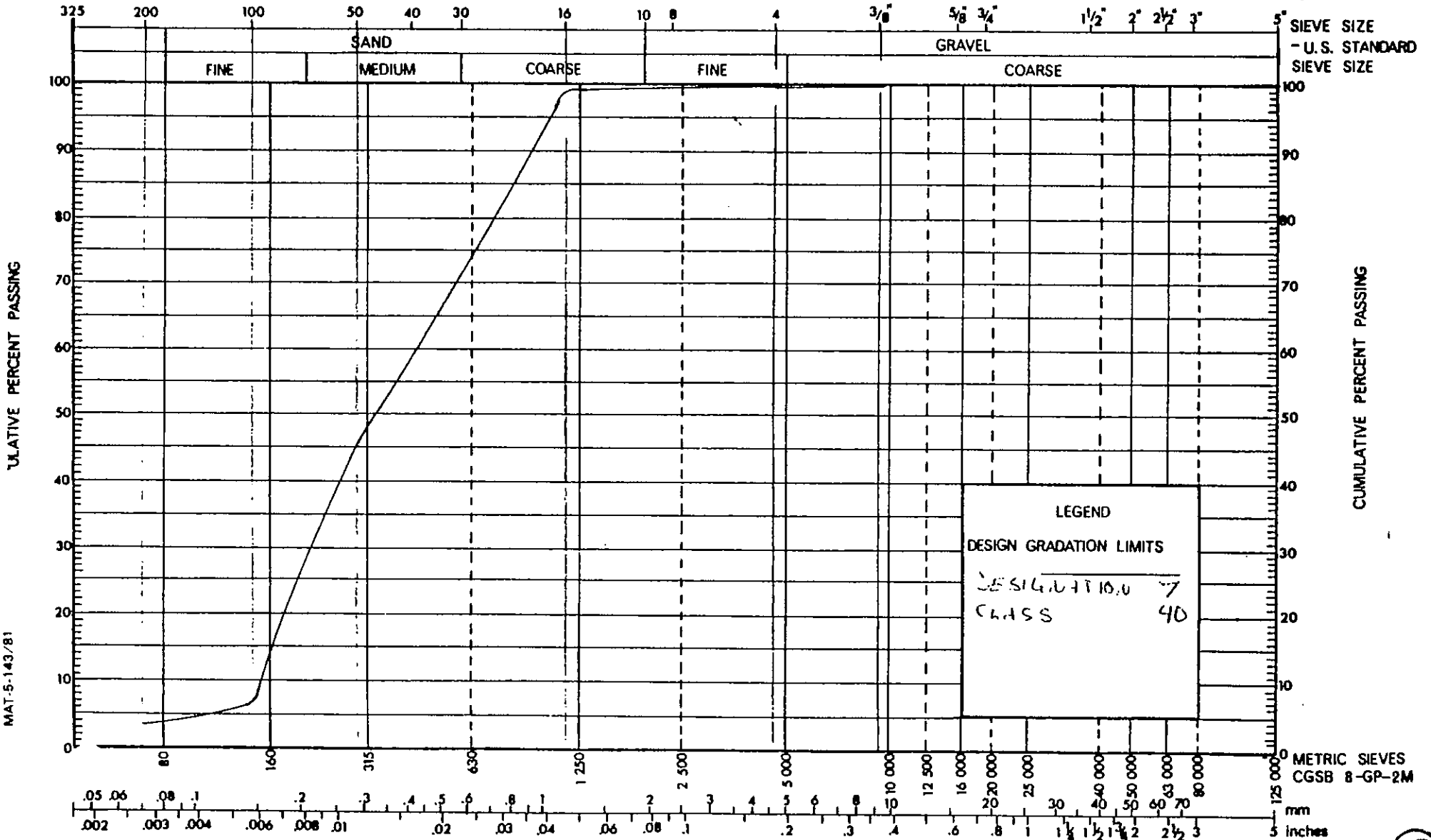
*Hal: Please
carry out the
work as
usual.*

*Kim
5/8/87/05/05
Done PJ*

AGGREGATE GRADATION CHART



PROJECT 72 B99 FROM S. A. PROVEST
 JOB NO. _____ TO JCT. HWY 13
 PIT NAME M. KISELLEGER WEEK ENDING 1980
 PIT LOCATION DE 32-36-2-4 TYPE OF WORK SC 30
 REGION _____ SAMPLE SOURCE SOIL FIELD
 DISTRICT _____ METRIC SERIES SPEC. _____



MAT-5-143/81

MATERIALS TECH. _____

PROJECT MANAGER _____

67

PIT PLAN

(67)

REQUIRED PROCEDURE FOR OPERATIONS IN THE KISSLINGER SAND PIT
.. SE 1/4 SEC. 32... TP. 36... RGE. 2... W. 4... M.

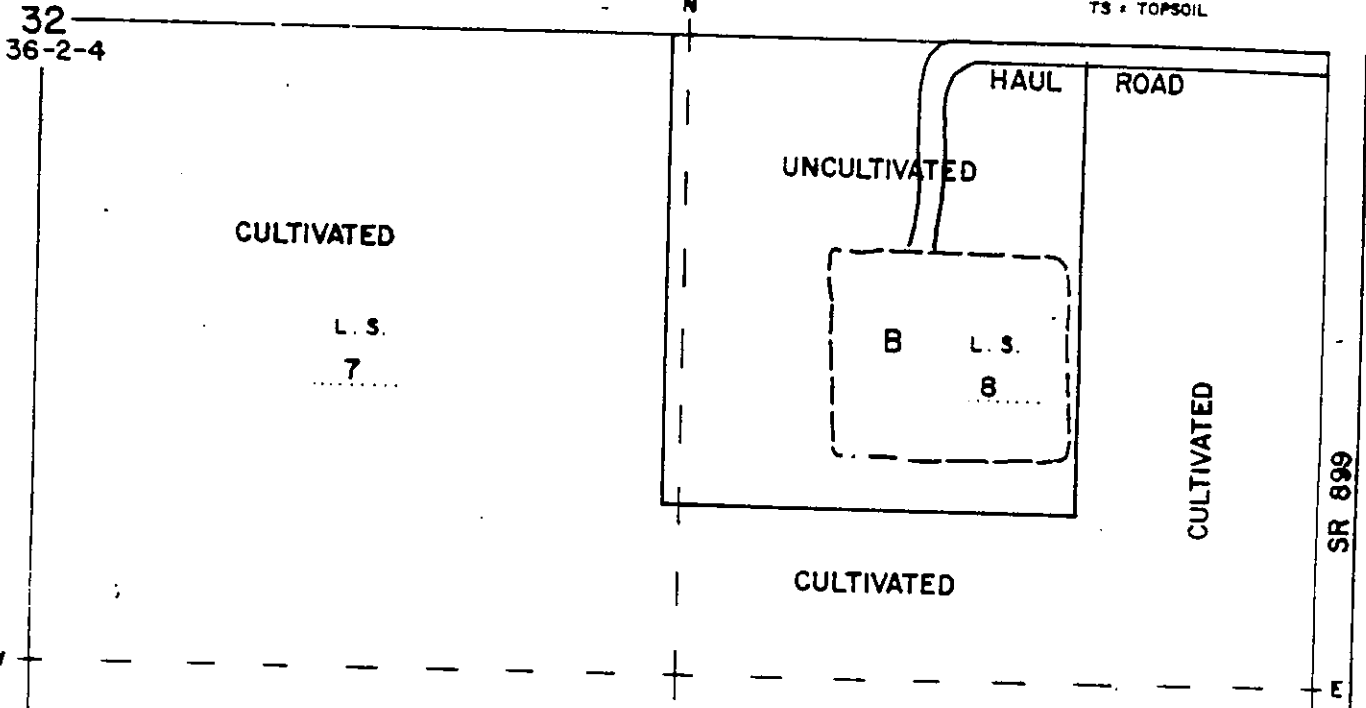


NOTE:

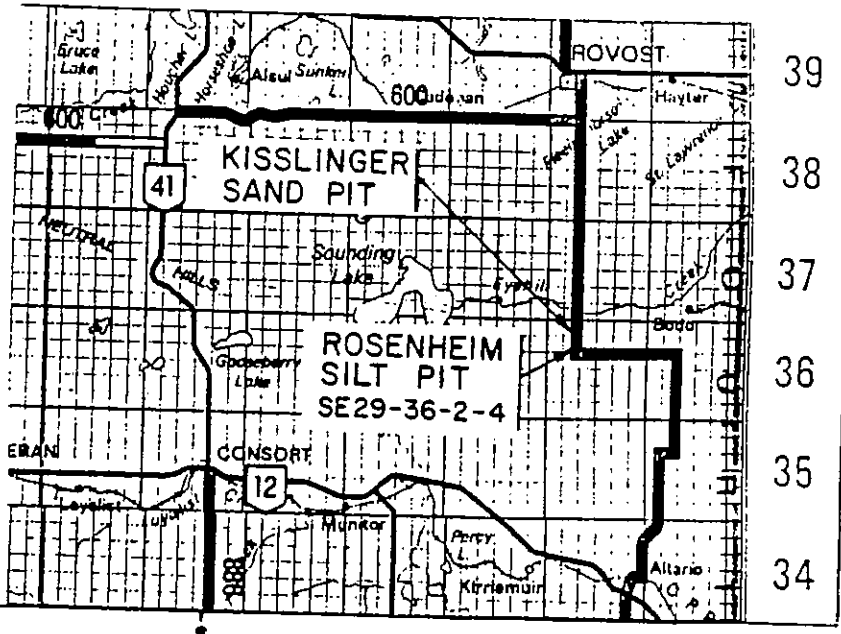
- ✓ BEGIN AGGREGATE EXCAVATION IN AREA "B" OUTLINED WITH A DASHED LINE
- BEGIN AGGREGATE EXCAVATION IN AREA DESIGNATED BY THE ENGINEER
- PLACE OVERBURDEN IN AREA "P" OUTLINED WITH A DASHED LINE
- ✓ PLACE OVERBURDEN IN AREA DESIGNATED BY THE ENGINEER

LEGEND:

- OP = OPEN PIT
- A = AGGREGATE AREA
- = DEPLETED AREA
- = OVERBURDEN AREA
- TS = TOPSOIL



LOCATION MAP
SCALE: 1 in. = 12 mi.

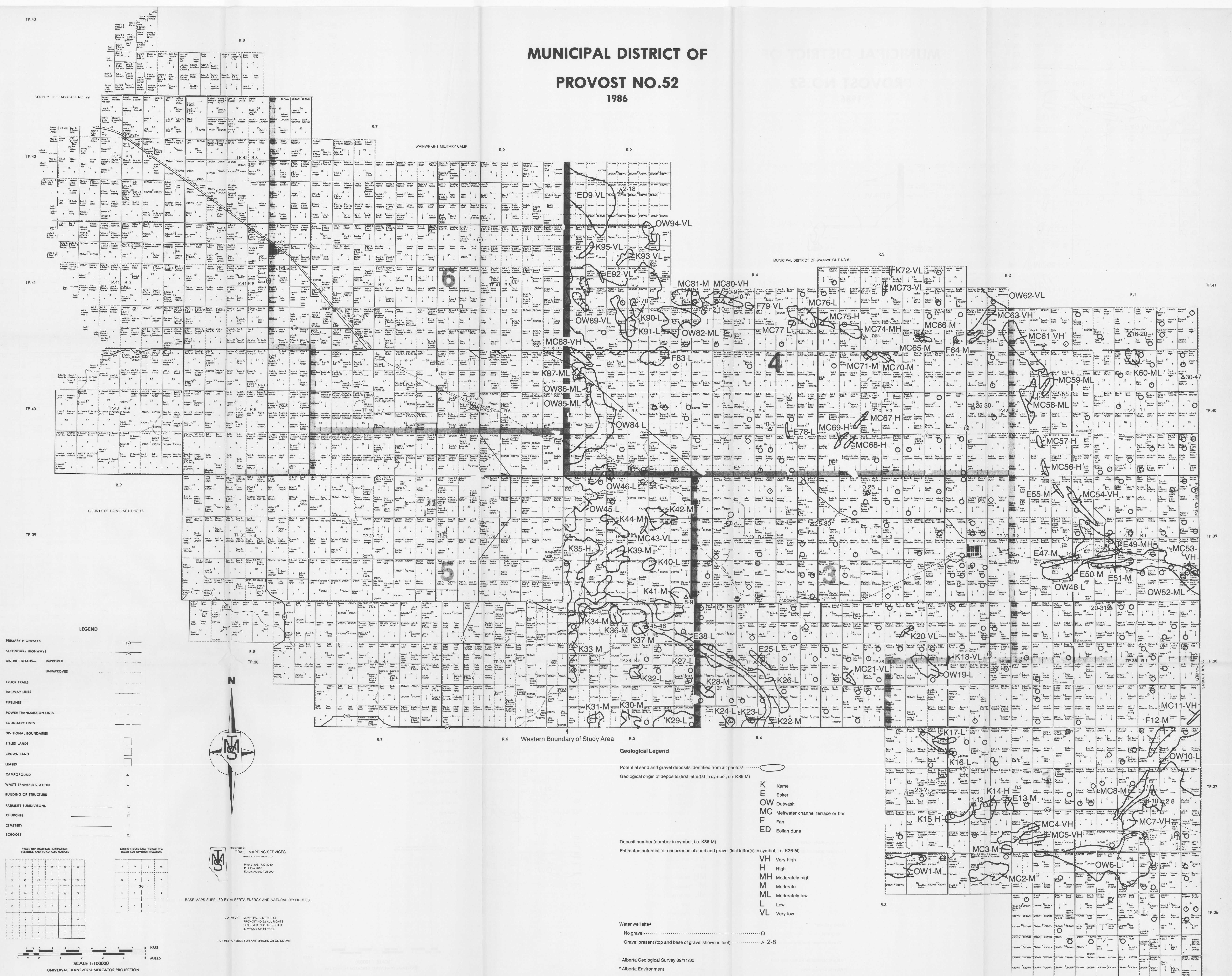


CBS F130 78

DATE Q.C.T., 1979..

[Signature]
SECONDARY ROADS ENGINEER

MUNICIPAL DISTRICT OF PROVOST NO.52 1986



Geological Legend

- Potential sand and gravel deposits identified from air photos:
- Geological origin of deposits (first letter(s) in symbol, i.e. K36-M)
- K Kame
 - E Esker
 - OW Outwash
 - MC Meltwater channel terrace or bar
 - F Fan
 - ED Eolian dune
- Deposit number (number in symbol, i.e. K36-M)
- Estimated potential for occurrence of sand and gravel (last letter(s) in symbol, i.e. K36-M)
- VH Very high
 - H High
 - MH Moderately high
 - M Moderate
 - ML Moderately low
 - L Low
 - VL Very low
- Water well site¹
- No gravel:
- Gravel present (top and base of gravel shown in feet): Δ 2-8

¹ Alberta Geological Survey 89/11/30
² Alberta Environment

Figure 3. Potential sand and gravel deposits in the eastern half of the Municipal District of Provost No. 52.