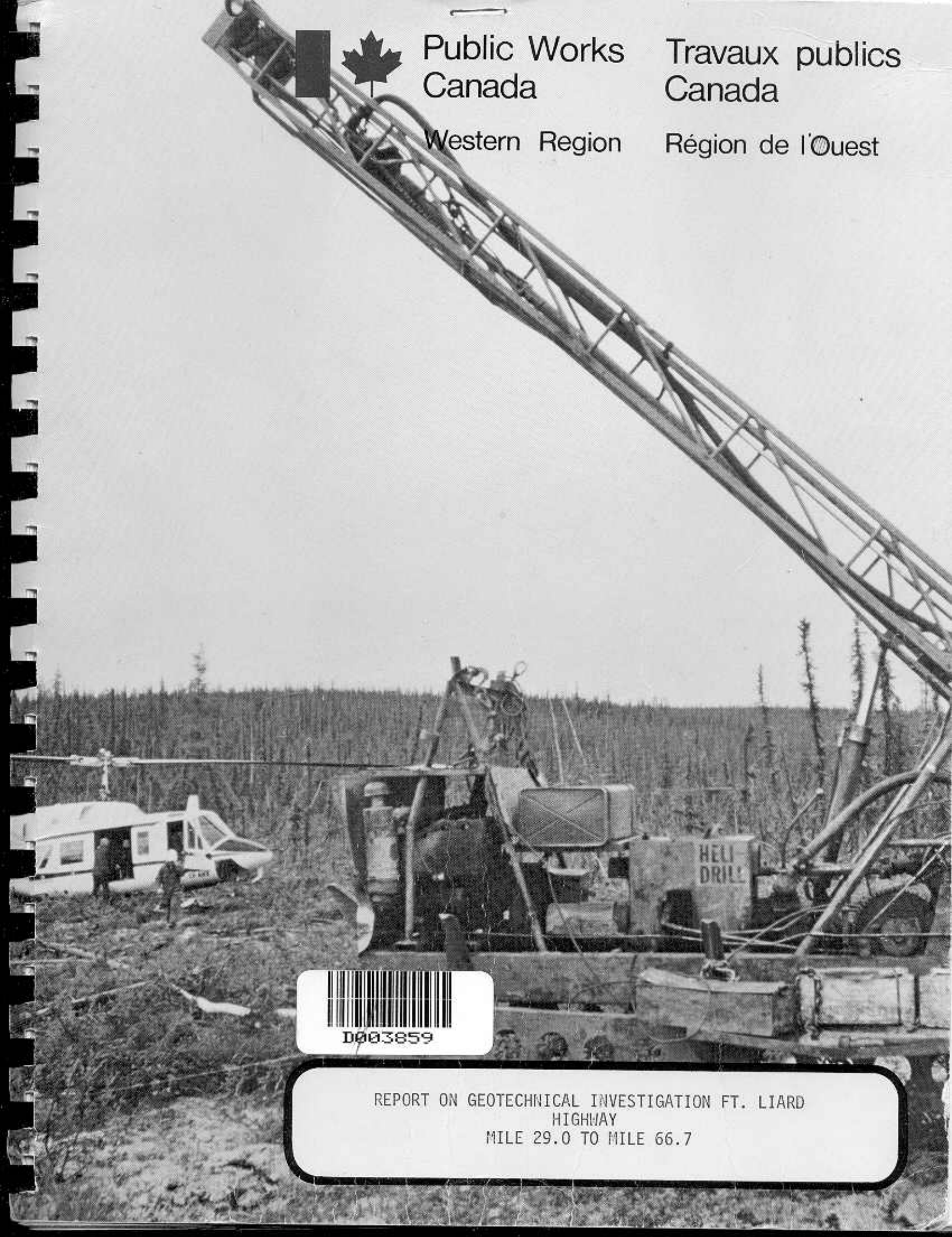
Public Works Canada
Travaux publics Canada

Western Region
Région de l'Ouest



D003859

REPORT ON GEOTECHNICAL INVESTIGATION FT. LIARD HIGHWAY MILE 29.0 TO MILE 66.7

R.D. Cook.

000013

REPORT ON
GEOTECHNICAL INVESTIGATION
FT. LIARD HIGHWAY
MILE 29.0 TO MILE 66.7

Submitted by

R.D. Cook, P. Eng.

TABLE OF CONTENTS

	ITEM	PAGE
1.0	Introduction	1.
2.0	Scope of Programme	1.
3.0	General Description and Geologic History of Route	1.-2.
4.0	Mile by Mile Comments	3.-7.
5.0	Summary and General Overview	7.
6.0	Evaluation of Borrow Pits	9.-11.
7.0	Drilling Requirements for 1973 Programme	13.

APPENDIX I - Borehole log sheets - 165 pages

A - Borrow Pit Areas

B - Centreline Drill Holes

1.0 INTRODUCTION

This report summarizes the results of a geotechnical investigation between miles 29.0 and 66.7 on the proposed route of the Fort Liard Highway, N.W.T. Field work was carried out in early spring of 1972 and in late winter of 1972-3

The portion of the route under investigation was initially part of a construction contract let in 1969 from mile 0 to mile 66.7. This contract was terminated in 1970 with final grading completed to only approximately mile 29 and with some rough grading to mile 35.5. Changes in soil conditions were a major factor contributing to contract termination.

2.0 SCOPE OF PROGRAMME

This field programme was not intended to provide complete terrain classification or coverage of all geotechnical conditions along the route, as location and design of the highway was completed prior to inception of the field drilling. The programme was, however, directed toward checking borrow areas that were pre-selected by the highway designers, and confirming the suitability of the subsoil in proposed highway cut sections. Mile sheets complete with design gradeline and airphoto mosaics were available to the end of the contract.

Borrow areas were selected by the designers largely on the basis of economic design requirements; and partially on preliminary subsoil information from shallow hand auger borings carried out during the highway location work.

A track-mounted auger drilling rig was used throughout the field work. The rig performed well with the exception of a few areas where a heavy granular strata prevented auger penetration.

Borehole logs and laboratory test results for all test holes are included in Appendix I of this report. Locations of boreholes and borrow pits have been added to the mosaic mile sheets which are available in the Regional Highway office. A total of 165 holes were drilled.

Some excerpts from a report on the Surficial Geology of the area, prepared by Thurber Consultants Ltd., are included in the following.

3.0 GENERAL DESCRIPTION AND GEOLOGIC HISTORY OF ROUTE

The highway route is located to the east of, and roughly parallel to, the Liard River from Ft. Simpson to Ft. Liard, and the terrain and subsoil conditions are largely influenced by the geologic history of the river. From mile 29 to approximately mile 100 the Liard Valley is relatively wide

with the Eastern Hills receding away from the river, leaving the eastern bank a gently sloping, poorly drained plain. The width of the river deposits and its many old abandoned higher channels is as much as 10 miles in this section.

Following glaciation the river probably flowed near its present location on top of extensive silt, sand and gravel deposits, initially in a braided-stream channel pattern. Then, during the latter part of the deglaciation period, the river began to consolidate into only a few channels and meandered over these wide valley bottom deposits and also to cut down. The river and its channels occupied many positions during this time. Finally it cut down and consolidated to the present channel which has near vertical banks up to 100 feet in height.

This great area of former river bottom remains as a large area of low relief, with many abandoned sweeping channels, terraces and ridges.

The ridges and terraces consist of fine granular deposits mostly in the sand and silt sizes. The abandoned channels now have very poor drainage, lakes have formed and most of these lakes have long since filled with organic growth and silt.

Downhill tributary streams have eroded these old river deposits to some extent and added inflow to the lakes and ponds mentioned above.

At all locations where the terrain is flat or gently sloping and not drained by incised stream gullies, muskeg has developed. There are large areas of such organic terrain, much of which has deep deposits of peat and has groundwater at or near the ground surface. However, near the edges of steep banks, i.e. river or creek gullies, the deposits are well drained, are usually slightly higher in elevation and their soils are generally suitable for borrow.

Above the level of old stream deposits there are large areas of bedrock heavily mantled with dense glacial till. Often this till contains drumlins and fluting.

Very few granular glacial deposits are evident within this section and landslides or unstable ground occur only infrequently. The plateau and gently sloping areas mantled with silt and fine sand contain sporadic pockets of permafrost - normally these pockets are confined to muskeg areas, north-facing slopes, or poorly drained flat zones. The following describes the route in specific detail.

4.0 MILE BY MILE COMMENTS

Mile 29 to 32

The route follows along a series of low sandy ridges with poorly drained alluvial sands and silts on both sides. These poorly drained areas contain muskeg and permafrost lies close to the surface, particularly in the flat areas. Drainage is also inhibited by beaver damming which is prevalent. Design gradeline through this portion calls for approximately 4' of fill to mile 31.3 thereafter reducing to 1-2' of fill in better drained terrain from mile 31.3 to 32.0.

Three borrow pits were investigated in this section. Borrow pit #35 is adjacent to an existing pit at mile 29.2 which can be expanded - the subsoil is sandy silt over glacial till. Borrow Pit #34 (mile 30.6) is located on a small treed ridge surrounded by muskeg - permafrost was encountered here and this pit is not recommended. No alternate area for a pit was immediately obvious here. Borrow Pit #33 was also adjacent to an existing pit which can be expanded. The subsoil is likely glacial till - drill advance was stopped at 2' on cobbles over the entire pit area however, drill penetration in similar areas indicated a layer of cobbles above the till surface.

Mile 32 to 33

This section encompasses the crossing of Birch River. At the time of drilling, cut and partial fill were completed on the NE approach - a 1000' cut section is proposed on the SW side of the valley with maximum cut reaching approximately 15'. One test hole on Ł near the valley wall in the cut area encountered sand-silt to 12', then refusal on boulders - assumed to be the start of glacial till. Permafrost existed below 9' and the subsoil was very wet on thawing. Some sloughing may be expected in the frozen sand-silts following excavation and thawing - the subsoil below 12' is not expected to slough on thawing. Further drilling is recommended here with a rotary rig during the 1974 drilling programme before any decision is made on a possible change of gradeline. Previous drilling at the Birch River crossing site for bridge foundations in 1968 encountered sands and gravels over glacial till, over shale at depths of 20' - hence good bearing is available here for a bridge structure.

Mile 33 to 35

Immediately beyond the Birch River approach cut, the gradeline returns to fill section and remains in fill until approximately mile 34.8 where a 15-20' cut is proposed. At present, the fill is roughed in and the cut at 34.8 is approximately 50% complete.

In this portion the route passes through two abandoned higher river channels, now carrying only local drainage or ponded water and muskeg. Between mile 33 and 34 the alignment crosses a 1000' + muskeg - the fill here is 7 to 8' high and some settlement can be expected across this muskeg.

Three drill holes in the partially completed cut at mile 34.8 were stopped on boulders at a maximum penetration of only 6', however no problem is anticipated in extending the cut to completion. Permafrost was reported here in 1970 during excavation but the permafrost has retreated below the present cut level and should be below the final gradeline which is roughly 8' below present elevation.

This may be a seeping cut due to the proximity of a muskeg immediately above. Beaver damming is evident. A seeping cut would probably accumulate ice during the winter months.

No borrow pits were investigated along this section as rough grading has largely been completed.

Mile 35 to 38

The route follows a series of well drained sand-silt ridges with poorly drained low areas on either side. The latter are remnants of old, now abandoned river channels. Several drill holes through this section failed to encounter permafrost. The subsoil is dry sands or sand-silts to the water table, which is at roughly 8-10' below the surface, except near water courses.

The gradeline is primarily in shallow fill (± 2') throughout, with a few very short cut sections on ridges and higher fills across water courses. No problem will be encountered in the proposed cut sections and some economic benefit may be realized by lowering the gradeline near mile 37, and approx. mile 37.6.

At mile 36.3 there is a break in the ridges and a creek bottom roughly 300' in width with a fill of 14' in height. Compressible organic soils and high ground water levels can be expected here.

Four borrow pits were investigated. Borrow Pit #32 at mile 35.7 could not be penetrated with the auger rig and further drilling is recommended here in 1974. Pit #31 @ mile 37.1 and Pit #29 at mile 38.7 encountered sand-silts over clay-silt till and are good borrow sources. Pit #30 at mile 38.0 could not be drilled deeper than 8' but will probably be a good borrow source - further drilling is recommended here also.

Mile 38.7 to 39.2

Route follows across a low area of poor drainage and high water table. Fill is 4 to 5' minimum and interception ditches are planned. Subsoil will be compressible here if permafrost has abandoned the area.

Mile 39.2 to 45

Through this portion the route generally follows treed ridges intersected by small water courses and small muskegs. The gradeline alternates between extensive stretches of very shallow fill (± 2'), to short cuts through ridges, to 4 or 5'+ fills across small muskeg and water courses. Subsoil along the route is largely sand-silt and is well-drained with the exception of the muskegs. No problems with any proposed cuts are anticipated

through this section and some economic benefit may be realized by lowering the gradeline into a deeper cut near mile 42.8. Some permafrost remnants may exist below muskegs, or in the bottom of small stream valleys.

Four pit areas were designated here. Pit #28 at mile 40.2 is in a well-treed area which normally indicates good borrow. Auger refusal on boulders at shallow depths will necessitate confirmation drilling in 1974. Pit #27 @ mile 41.6 and Pit #25 @ mile 44.8 are in heavily treed areas and are good borrow sources - sand-silt over clay-silt till. Pit #26 near mile 42.2 is located on a narrow treed ridge sourrounded by muskeg. This area is at least partially frozen and borderline as a borrow source. A more suitable source for borrow is evident near mile 42.7 and confirmation drilling is recommended here in 1974.

Mile 45 to Mile 48

The route passes from an area of old river channels to the edge of an upland area. The terrain is well-treed throughout with the exception of a few small muskegs, and the route generally follows well drained alluvial ridges. Gradeline through this portion coincides closely with the present groundline and both fills and cuts are shallow. Several ℄ boreholes reveal dry sand-silts throughout, and water, and possibly, wind erosion may be a problem in approach cuts to stream crossings. Some permafrost may exist below muskegs or in the bottom of small stream valleys.

Three pit areas were checked in this section. Pit #24 @ mile 46.0 is a good borrow source - sandy silt over till, and was investigated as an alternate to the designated Pit (#23) at mile 46.4. Pit #23 is in an area of stunted spruce and muskeg terrain and is too wet. Good borrow near mile 46.3 would likely be available in a poplar stand, however the right-of-way passes through the poplar area and there would appear to be insufficient space to develop a pit. Pit #22 at mile 47.7 is in heavily treed area and is a suitable borrow source (sand-silt) however a wet zone near 10-12' may prevent developing a deep pit.

Mile 48 to 55

The route follows along a well drained edge of a poorly drained upland. This area is well treed with no significant muskeg areas but with numerous small water-courses crossing the right-of-way. The surficial subsoil is primarily sand-silt to at least 8-10', with some silty clay areas. No permafrost was encountered, however isolated remnants may exist in creek gullys or the occasional low lying areas such as near mile 52.6. The gradeline coincides closely to the original groundline with the majority of this section being either very shallow cut or fill. Deeper cuts (10 to 15') are planned at major creek crossings, and fills to 20 or 25' are proposed in some of these gullys - mile 48.2, 49.1, 50.1, 50.8 and 52.2. The gullys are relatively narrow and little compressible organic soil is expected. Cuts in this section will present no problems with the possible exception of the

approach on the NE side of the mile 50.8 gully where the subsoil is wet at shallow depths. Erosion in the sand-silt subsoil in all approach cuts to stream crossings may also be a post-construction problem.

A total of 8 borrow pits were investigated at mile 48.1, 49.0, 50.0, 50.7, 52.0, 52.9, 53.8, and 54.6. All pits are good borrow sources - the subsoil is sand-silt over silty clay at 10 to 15', with till at depth.

Mile 55 to 59

The route approaches and crosses over a long low hill which is well treed, and well drained. Numerous water courses are crossed between mile 55 and 56 and the gradeline alternates between cuts and fills of 10 to 15'. Between mile 56 and 59 the gradeline is in shallow fill.

No problems with cuts are anticipated although wet zones were encountered at depth in some proposed cut areas. The surficial subsoil is sand-silt and post-construction erosion in cut areas can be expected. This section is free of permafrost, muskeg or organic subsoil.

Three borrow pits were investigated at mile 55.8, 56.3 and 57.4. The subsoil is sand-silt to various depths, over silty clay, over glacial till. Maximum auger penetration of only 10' was possible in pits at 56.3 and 57.4 due to cobbles and additional holes are recommended here in 1974. It is anticipated that borrow pits could be developed at almost any location between mile 55 and 59.

Mile 59 to 60

The route approaches and crosses a deep erosional gully on a fill projected to be approximately 35 feet in height. Approach cuts on either side of the gully to 10' will be in sand-silt or clay-silt with some cobbles. Little or no compressible organic material is expected in the creek bottom and foundation for the fill will be glacial till.

Two borrow pits at mile 59.1 and 59.5 encountered good borrow - sand-silt over low plastic clay-silt till.

Mile 60 to 65

Through this section the route follows along a heavily treed edge of the upland. Further back this upland has some extensive deep muskeg but near the top of the slope to the Liard River the soil is relatively well-drained. The gradeline over this entire 5 mile section is in shallow fill - 2' to 5' - with only occasional shallow cuts at stream gullys. There is cross-slope drainage over much of the route and interceptor ditches are proposed over lengthy sections. Surficial subsoil is sand-silt to 5-6' over silty clay, over glacial till at depth. Occasional wet areas are crossed however the area is free of perma-frost and extensive muskegs.

Borrow pits at mile 60.1, 60.7, 61.3, 62.7, 63.8 and 64.6 are all good sources of material - sand-silt, silty clay or clay-

silt till.

Mile 65 to 66.7

The route descends from the upland to the valley of the Blackstone River. Shallow fills are proposed over the majority of this section except near mile 66. where 3 stream gullys are crossed and fills reach 15-20' in height. Cuts adjacent to the gullys vary from 5 to 15' in depth.

This area is heavily treed throughout and well drained. Subsoil to mile 66.4 is typical of the upland areas - sand-silt over silt-clay over glacial till. Proposed cuts will encounter no problems and provide good embankment material. Little or no compressible material will exist in gullys. From mile 66.4 to 66.7 the route is on granular alluvial deposits of the Blackstone River. Permafrost or muskeg are not encountered.

Two borrow areas were investigated. Borrow Pit #2 at mile 65.5 will provide adequate borrow - sand-silt over silt-clay over silt-sand. Borrow Pit #1 is in the Blackstone River valley and encountered sands and gravels to 16-18' then glacial till. This pit may be a source of surfacing material but should be test pitted, to fully assess the material.

5.0 SUMMARY AND GENERAL OVERVIEW

Much of the area over which the alignment passes, between mile 29 and mile 48 is poorly drained and has the ground water level within a few feet of the ground surface. The route here has been chosen to take advantage of those few zones which are better drain by virtue of the ground level being raised above the surrounding areas. The raised ground is typically either a glacial till drumlin or simply a narrow strip between two eroded abandoned river channel depressions. Permafrost is not present over long stretches of the right-of-way to mile 48, but does occur in the muskegs and poorly drained 'flats' adjacent to the route, and is anticipated in many of the wide watercourses and short muskegs that the route traverses. Proposed fills across these problem areas are normally 4' to 8' in height and it is expected that some post-construction settlement will occur, either as a result of permafrost thawing, or due to compression of organic subsoils. Interceptor ditches and offtake trenches are proposed, where the embankment crosses high groundwater areas, and these should be effective in lowering and controlling groundwater adjacent to the embankment. However it is expected that fills in these potential settlement areas will require some regrading or unusual maintenance repair for possibly 4-5 years after construction.

From mile 48 to 66.7 the route follows higher, better drained terrian - primarily well treed uplands or along the edge of uplands where good drainage is available. Stream crossings are more steeply incised in this zone and muskegs, organic subsoils and permafrost pockets are much less prevalent. Construction through this portion of the route should be relatively routine.

The surficial subsoil conditions do not vary markedly from mile 29 to 66.7, despite the changes in terrain. The entire area is mantled by a thin layer of sandy silt or silty sand which varies in thickness from roughly 5 feet to as much as 20 feet. Underlying soils are somewhat variable but normally consist of a thin silty clay layer, or glacial till. The glacial till underlies the entire section and varies from probably 10' to 25 or 30' below the surface. In composition the till is a low plastic clay-silt-sand mix with pebbles and cobbles. This till has been extensively for borrow from mile 0 to mile 29.0.

The surficial sand-silt material is non-plastic or very low plastic, is very fine grained, and is classified as frost-susceptible material. Almost all the cut sections proposed along the route, either through short ridges or at approaches to gully crossings, bottom in the sand-silt material. Very few cuts are deep enough to extend through this surface mantle into the plastic clays or dense till below. Consequently ditch erosion may be a potential problem in many cuts, although the ditch gradients are relatively flat throughout, and the cut sections relatively short. This surface sand-silt mantle was also encountered from mile 0 to 29, although not as thick, and it may be possible to check the resistance of the surface soil to erosion in cuts on the completed construction. In addition the sand-silt from the cut sections and from the upper part of borrow pits, is not the most ideal embankment material, especially for the high ground water areas from mile 29 to 48.

Borrow is readily available beyond mile 48. From roughly mile 35 to mile 48, good borrow areas are less obvious and pit locations are determined more by geologic availability rather than economic design haul requirements.

A summary of borrow pit evaluations and a line diagram of pits is included in the following pages.

6.0 Evaluation of Borrow Pits

FT. LIARD HIGHWAY - MILE 29 - 67

Borrow Pit No.	Location	Comments
35	Sta 1534 to 1538 1600' RT ℄	Adjacent to existing pit which can be expanded - material sandy silt over clay till.
34	Sta 1606 to 1610 300' RT ℄	Encountered permafrost to 12' in 1 hole - relative small treed area surrounded by muskeg - not recommended for borrow pit - no obvious alternate pit areas here.
33	Sta 1636 to 1641 400' + LT ℄	Area investigated adjacent to existing pit which c be expanded. Augers stopped on cobbles at 2' penetration over entire area - anticipate glacial till at shallow depth - recommend 1 test hole to 2 here during 1974 drilling programme.
32	Sta 1869 to 1875 500' + RT ℄	Augers stopped on cobbles @ 5-6' this area. Subso frozen to this depth. Terrain consists of treed ridge with adjacent muskeg. Suggest 2 test holes 25' during 1974 drilling programme, to assess suit ability of area for borrow.
31	Sta 1951 to 1957 400' + LT ℄	O.K. for borrow. Subsoil consists of silt-sand mi over glacial till at 15 to 20' - subsoil becomes slightly wet near 15'.
30	Sta 1989 to 1995 400' + LT ℄	Pit area investigated is adjacent to burnt area. Augers stopped on cobbles at maximum penetration o 8' - anticipate glacial till below cobbles - recom mend 2 test holes in 1974 programme to verify borr
29	Sta 2083 to 2088 300' + RT ℄	O.K. for borrow. Subsoil consists of sand-silt mi over silty clay or clay till near 8 - 10'. May encounter wet zone immediately above till.
28	Sta 2118 to 2124 400' + RT ℄	Deepest penetration to 6' this area due to contact with cobbles. Terrain is heavily treed-anticipate clay till below cobble layer. Recommend 2 test holes during 1974 programme to verify borrow.

27	Sta 2182 to 2187 400' + LT ℄	Good borrow - subsoil consists of 12 - 15' sand-silt mix over clayey, silty till.
26	Sta 2221 to 2226 500' + RT ℄	Area consists of narrow treed ridge bordered by muskeg. This area borderline at best for borrow. Recommend test pitting with cat before use - subsoi sand-silt over till - partially frozen. Suggest borrow pit be developed in treed area left of ℄ sta 2240 to 2250 as alternate. ℄ boreholes indicat dry sand-silt mix in this area. Recommend 2 - 3 te holes here during 1974 drilling programme.
25	Sta 2350 to 2357 400' LT ℄	O.K. for borrow. Subsoil consists of sand-silt mi over silty till near 9 - 10'. May encounter wet zone above till.
24	Sta 2415 to 2419 400' LT ℄	This area investigated as alternate to borrow pit #23. Subsoil consists of sand-silt mix over silty till near 15'. May encounter wet zone near 10 - 12 Suggest develop this area in poplar stand.
23	Sta 2435 to 2441 400' + LT ℄	This area in stunted spruce and muskeg terrain and too wet. Good borrow likely available here in popl stand nearer the ℄ but poplar area probably too clo to right-of-way. Suggest use B.P. #24 as alternate
22	Sta 2507 to 2512 200' LT ℄	O.K. for borrow. Subsoil sand-silt mix over plasti material at 10-14' - Wet zone near 10-12'. May not be able to develop deep pit here.
21	Sta 2529 to 2536 500' + LT ℄	O.K. For borrow. Subsoil silt-sand to at least 20' dry to damp.
20	Sta 2572 to 2578 400' + LT ℄	O.K. for borrow. Subsoil consists of sand-silt mi over silty clay at 11-12'. Wet zone above silty cl
19	Sta 2630 to 2635 400' + LT ℄	O.K. for borrow. Area consists of two sand dunes. Subsoil silt-sand mix - becoming wet at approx 12 - 15' adjacent to dunes.
18	Sta 2668 to 2672 400' + RT ℄	O.K. for borrow. Subsoil silt-sand to 17-18'. Possible wet zone near 12-14'.
17	Sta 2735 to 2739 600' + LT ℄	Good borrow. Subsoil silt-sand mix over silty clay @ 12-14'.
16	Sta 2783 to 2786 700' + LT ℄	Good borrow - subsoil sand- silt mix over silty clay @ 5-6' over till at 20'.
15	Sta 2830 to 2836 500'+ LT ℄	Good borrow. Subsoil sand-silt over silty clay near 14 - 15'.
14	Sta 2869 to 2877 800' + RT ℄	Good borrow. Subsoil sand-silt mix over silty clay at 8-10'.

13	Sta 2934 to 2940 600' + RT ℄	O.K. for borrow-subsoil sand-silt mix to 25'+.
12	Sta 2962 to 2969 800' + LT ℄	Maximum auger penetration here to 11' - stopped o cobbles. Subsoil sand-silt mix to 5 - 6' over plastic mtl. Anticipate glacial till below cobbl Recommend 1 test hole here during 1974 programme to verify subsoil below 10'.
11	Sta 3119 to 3128 600' + RT ℄	Maximum penetration to 10' here - augers stopped cobbles. Subsoil silt-sand mix to 4-8' over plas mtl. Anticipate glacial till below cobbles. Rec mend 1 hole to 28' during 1974 programme to verif subsoil.
10	Sta 3113 to 3117 500' + LT ℄	Good borrow - subsoil sand-silt over silty clay @ 4' - either glacial till or very soft shale with depth.
9	Sta 3134 to 3142 500' + LT ℄	Good borrow - augers stopped @ 5' on cobbles. An ticipate subsoil similar to B.P. #10 with depth - Recommend 1 test hole to 25' during 1974 programm
8	Sta 3164 to 3169 600' + RT ℄	Good borrow. Augers stopped @ 10' this area on c bles. Anticipate subsoil similar to B.P. #10 - recommend 1 test hole to 25' here during 1974 programme.
7	Sta 3193 to 3199 600' + RT ℄	Good borrow - subsoil sand-silt to 5', over silty clay to 15' over glacial till.
6	Sta 3224 to 3231 1000' + LT ℄	Good borrow - subsoil sand-silt to 3'-4' over clay-silt.
5	Sta 3297 to 3303 500' LT ℄	Good borrow - subsoil sand-silt over silty clay @ 4-5'.
4	Sta 3553 to 3557 600' LT ℄	Good borrow - subsoil sand-silt to 5' over silty clay over clay till near 15'.
3	Sta. 3410 300' + Rt ℄	Good borrow - subsoil sand-silt to 5-7' over silt clay - wet zone from 12 -14'.
2	Sta 3444 to 3450 500' + LT ℄	Good borrow - subsoil sand silt mix to 6-7' over silty clay to 15-16', over silty sand.
1	Sta 3508 to 3517 500' + Rt ℄	Good borrow, also possible source of surfacing. Subsoil sand & gravel to 16 to 18' then glacial till. Suggest test pitting to assess suitability as surfacing material.

7.0 DRILLING REQUIREMENTS FOR 1974 PROGRAMME

The following test borings are recommended for inclusion in the proposed 1974 drilling programme beyond mile 66.7.

B.P. #33 - Sta. 1636 to 1641 - 400' + Lt Ł - 1 hole to 25'

B.P. #32 - Sta. 1869 to 1875 - 500' + Rt Ł - 2 holes to 25'

B.P. #30 - Sta. 1989 to 1995 0 400' + Lt Ł - 2 holes to 25'

B.P. #28 - Sta. 2118 to 2124 - 400' + Rt Ł - 2 holes to 25'

B.P. #26A - Sta. 2240 to 2250 - 400' + Lt Ł - 2 - 3 holes to 25' to check for borrow

B.P. #12 - Sta. 2962 to 2969 - 800' + Lt Ł - 1 hole to 25'

B.P. #11 - Sta. 3119 to 3128 - 600' + Rt Ł - 1 hole to 25'

B.P. #9 - Sta. 3134 to 3142 - 500' + Lt Ł - 1 hole to 25'

B.P. #8 - Sta. 3164 to 3169 - 600' + Rt Ł - 1 hole to 25'

Ł cut-Sta. 1705 to 1715 - 2 holes to 25'

Total ≃ 17 holes

R.D. Cook
Quality Control Engineer
Western Region

BOREHOLE LOGS

A - BORROW PIT AREAS

BORROW PIT #1

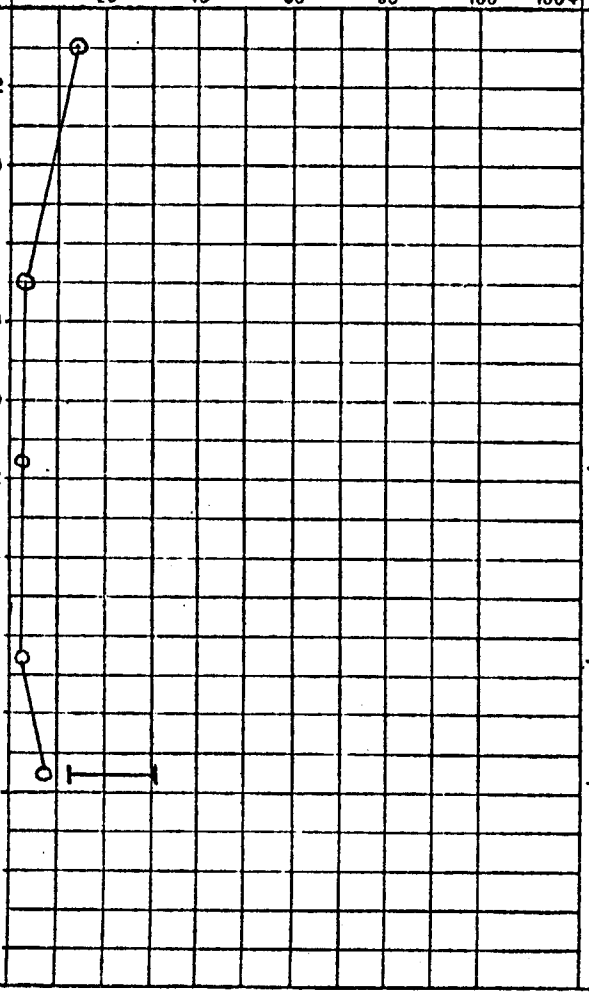
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE 3508 TO 3517	OFFSET 500 Rt ℄
CKD	TECH BRIUCK.	RIG AUGER	SURFACE DRAINAGE:	VEGETATION POPLAR SPRUCE PINE	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
66	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2	1				SM	3" ORGANIC MTL OVER BROWN SILTY SAND - NON-PLASTIC		NO PERMAFROST	17		81	2			GOOD BORROW SOURCE
						3'									
4					SP	GRAVELLY SAND - NON-PLASTIC - DRY.									- BOTH SANDS & GRAVELS TO 20' AND GLACIAL TILL CAN BE USED AS BORROW.
6	2								3		84	13			
8						8'									
10					GW SW	SAND AND GRAVEL MIX - DRY - NON-PLASTIC - MAX. SIZE - 1½"									- VERY LARGE VOLUME AVAILABLE HERE.
12	3								1		44	55			
14															
16	4								1		56	43			- THIS AREA MAY BE SOURCE OF SURFACING MTL ALTHOUGH DRILLING INDICATES MTL. TO BE TOO SANDY.
18															
						19'									
20	5				GC CI	GLACIAL TILL - SANDY SILTY CLAY WITH PEBBLES - MEDIUM PLASTIC			19		34	47			- SUGGEST TEST PITTING.
22															
24						BOTTOM OF HOLE - 26'									



Borrow Pit #1

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO.	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION: Poplar & Small Spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
66	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					S/M	3" ORGANIC MTL OVER BROWN SANDY SILT AND SILTY SAND -DRY		No PERMAFROST
4						4' SAND-GRAVEL MIX -NON-PLASTIC		
6								
8	1				GW	-MAX. SIZE 1½"		
10					SW	-BECOMING GRAVELLY SAND BELOW 13' -DRY.		
12								
14	2							
16								
18								
20					CI	19.5' GLACIAL TILL -SANDY SILTY CLAY 21'		
22						BOTTOM OF HOLE - 21'		
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
8	-5-		36	59			Good Borrow Source.
14	-2-		71	27			

Borrow Pit #1

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Poplar & small spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
66	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					SM	4" ORGANIC MTL OVER		No Permafrost							Good Borrow.
2					ML	Brown sandy silt — 2'									- May be source of surfacing mtl.
4						Sand and gravel mix									- Suggest test pitting.
6						- Dry									
						- Non-plastic									
8	1				GW	- Max. size - 1"			-1-		47	52			
10															
12															
14															
16	2								-2-		34	64			
18						18'									
					CI	Till - Sandy silty clay with pebbles — 20'									
20						Bottom of hole - 21'									
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟵⟶ LIQUID LIMIT

20 40 60 80 100 100+

Borrow Pit #1

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
66	B	4

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					SM	4" ORGANIC MTL OVER SANDY SILT. 1.5'		No Permafrost							Good Borrow May be source of surfacing mtl. Suggest test pitting.
2						SAND AND GRAVEL MIX.									
4	1				GW	- MAX. SIZE -2"			-1-		26	73			
6						- NON-PLASTIC									
						- DRY									
8															
10					SW										
12															
14															
16	2				GC CL	AS ABOVE BUT WITH SOME CLAY. 16'			-18-		32	50			
18					CI	TILL. - SANDY SILTY CLAY WITH PEBBLES. 18'									
20						Bottom of Hole 20'									
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⊢——⊣ LIQUID LIMIT

20 40 60 80 100 100+

BORROW PIT #2

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

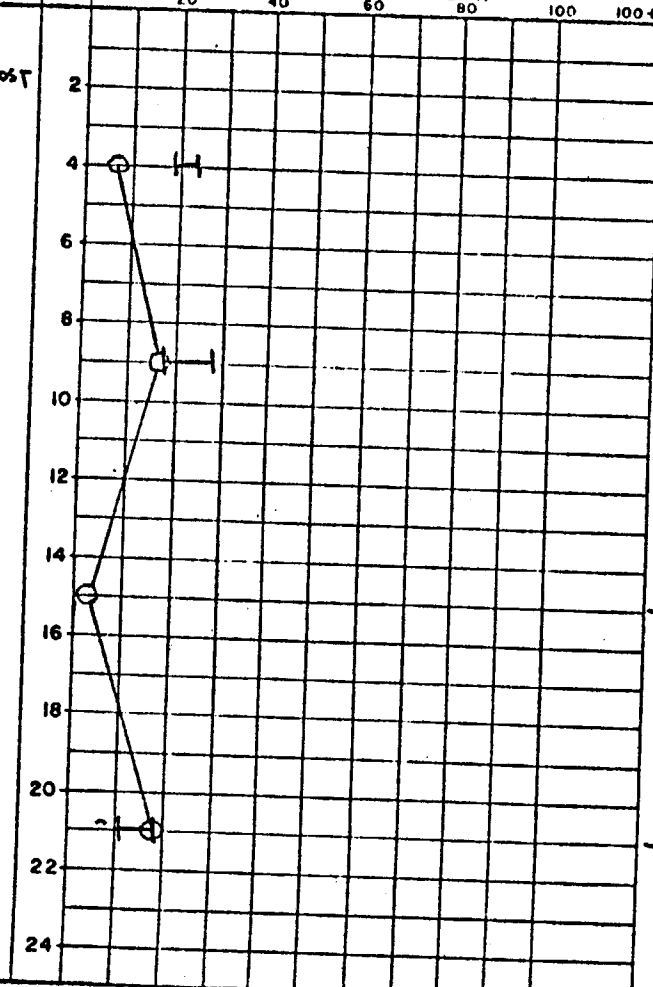
MACKENZIE HIGHWAY

DWN:	FIELD ENG:	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE:
CKD	TECH G. BRINCK	RIG AUGER	SURFACE DRAINAGE:	VEGETATION DENSE POPLAR

OFFSET: ELEV:

TEST HOLE		
MILE	B,C,S	NUMBE
65	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	4" ORGANIC MTL OVER BROWN SILT -LOW PLASTIC -DRY		NO PERMAFROST							DRY MATERIAL TO APPROX. 20'. O.K. FOR BORROW.
4	1					5'			-99-	1	0				
6						SILT AND SILTY CLAY -LAYERED									
8	2				CL	-LOW PLASTIC									
10					ML	-DRY			-97-	3	0				
12															
14						14'									
16	3				SP	SAND -FINE -NON-PLASTIC -DRY			-10-	89	1				
18															
20															
22	4					22'			-59-	41	0				
24					CL	SANDY SILTY CLAY -LOW PLASTIC BOTTOM OF HOLE -26'									



Borrow Pit #2

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED:	AIRPHOTO NO:	CHAINAGE:	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION Dense Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
65	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					S/A	4" ORGANIC MTL OVER									O.K. FOR BORROW.
2					ML	BROWN SANDY SILT — 2.5'									
4					ML	SANDY SILT WITH SOME CLAY -LOW PLASTIC -DRY.									
6															
8						— 8'									
10	1				CI	SILTY CLAY -MEDIUM PLASTIC -DRY			-97-	3	0				
12															
14															
16						— 16'									
18					SC CL	SILTY SAND WITH CLAY LAYERS -LOW PLASTIC									
20						— 20'									
22						BOTTOM OF HOLE -20'									
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

BORROW PIT #3

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE 3410	OFFSET 300 Rt. ℄
CKD	TECH G. BRIDGE	RIG AUGER	SURFACE DRAINAGE:	VEGETATION DENSE POPLAR	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
64	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						4" ORGANIC MTL. OVER		No PERMAFROST							WET ZONE FROM 12' TO 15' OTHERWISE O.K. FOR BORROW.
2					SM	BROWN SANDY SILT									
4					ML	-LOW PLASTIC -DRY									
						5'									
6						SILTY CLAY									
8	1				CH	-HIGHLY PLASTIC									
10					CI	-DRY			-99-	1	0				
12						12'									
14					SC	CLAY-SILT-SAND -DAMP TO WET									
						14'									
16	2					SILTY CLAY -MEDIUM PLASTIC			-99-	1	0				
18					CI	-DAMP									
20															
22						22'									
24	3				CI	TILL. SANDY SILTY CLAY WITH PEBBLES BOTTOM OF HOLE-25'			-71-	24	5				

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

MACKENZIE HIGHWAY

Borrow Pit #3

DWN	FIELD ENG.	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION: Dense Poplar.	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
64	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						4" ORGANIC MTL OVER		No Permafrost							Wet zone from 12' to 15' otherwise O.K. for borrow.
2					SM	Sand silt mix.									
4					ML	-Low plastic -Dry									
						5.5'									
6						Silty clay									
8					CI	-Medium to highly plastic									
10					CH	-Dry.									
12						12'									
	1				SC	Clay-sand-silt -Soft & wet			-98-	2	0				
14						14'									
16						Silty clay -Medium plastic									
18					CI	-Some pebbles									
20															
22															
24						Bottom of hole -26'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⊢——⊣ LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

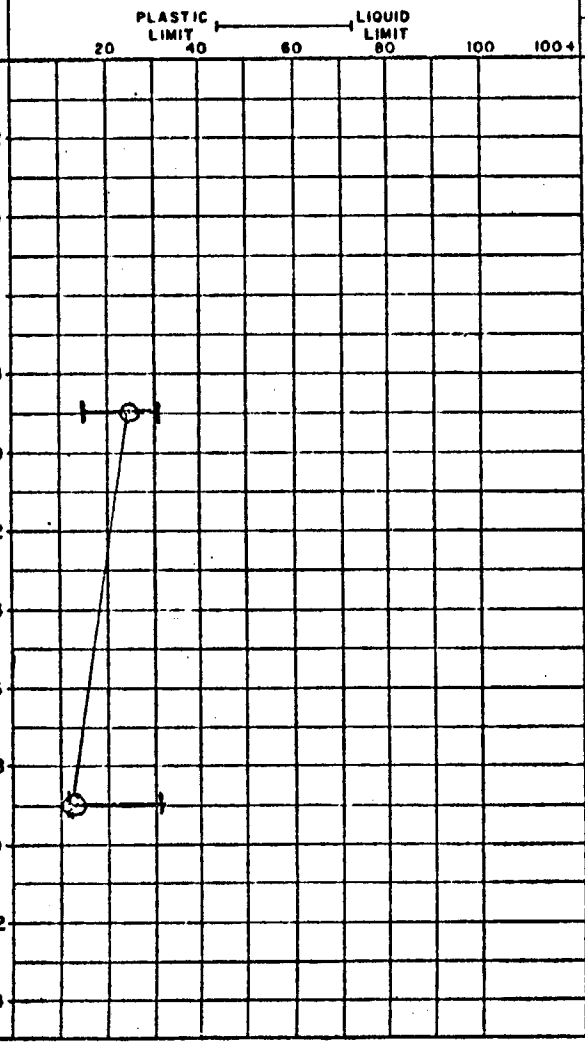
BORROW PIT #3

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE:	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
64	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
						5" ORGANIC MTL OVER		No P.F.						
2					SC	SANDY CLAY-SILT								
4					ML	-LOW PLASTIC								
6						-DRY								
8						8'								
	1					SILTY CLAY			-97-	3	0			
10						-MEDIUM PLASTIC								
12					CI	-DRY TO 16'								
14														
16														
18						18'								
	2				CI	TILL SAND-SILT-CLAY-PEBBLES			-66-	27	7			
20						20'								
						BOTTOM OF HOLE-20'								
22						WET BELOW 16'								
24														

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



REMARKS

O.K. FOR BORROW TO 16'
WET BELOW THIS LEVEL TO TILL SURFACE.

Borrow Pit #4

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE 3553 TO 3557	OFFSET 600' Lt. ℄
CKD	TECH G. Brinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION Poplar & spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
63	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						4" ORGANIC MTL OVER		No D.F.							O.K. For Borrow.
2					ML	SANDY SILT									
4					SM	-SOME CLAY -LOW PLASTIC									
						5'									
6						SILTY CLAY & CLAY SILT									
8					CL	-LOW PLASTIC									
10	1				ML	-MOIST			-99-	1	0				
12															
14															
						15'									
16	2				CL	TILL? SILTY CLAY -ROCKS 16'			-74-	5	21				
						BOTTOM OF HOLE-16' UNABLE TO PENETRATE DUE TO ROCKS									
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⊢——⊣ LIQUID LIMIT

20 40 60 80 100 100+

Borrow Pit #4

DRILL HOLE REPORT

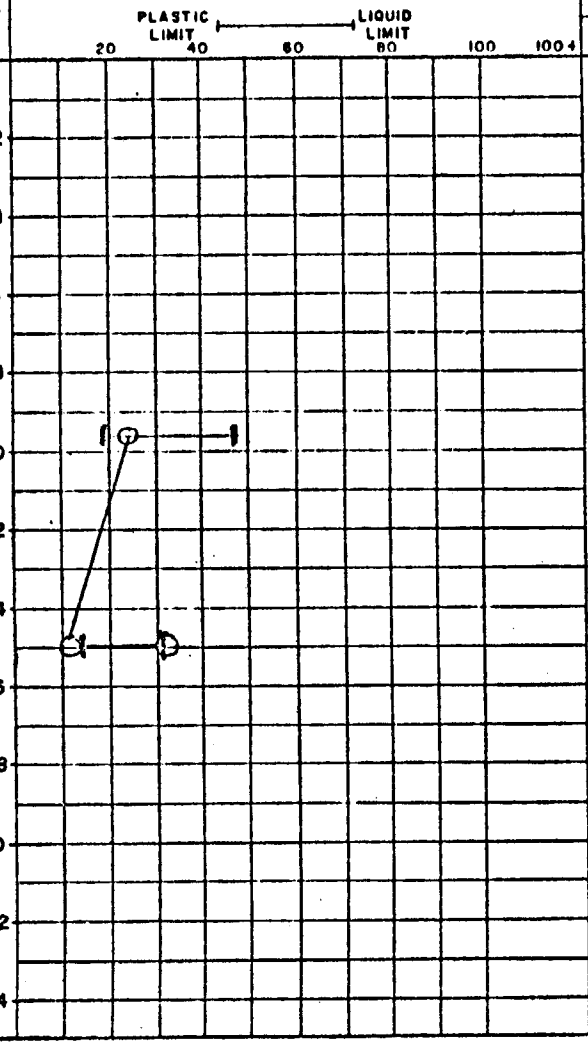
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Dense Poplar - Spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
63	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2, 4					SM SC ML	4" organic mtl over Clay-sand-silt -low plastic -dry to moist — 5'		No P.F.
6, 8					ML CL	Silty clay or clay silt -low plastic — 8'		
10, 12	1				CI	Silty clay -medium plastic -dry to moist — 13'		
14, 16, 18	2				CI	Silty clay with sand and pebbles -Till? -medium plastic -dry — 19'		
20, 22, 24					CI	Till - some cobbles -sand-silt-clay — 21'		
						Bottom of hole-21' Auger stopped on rocks.		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
-92-		7	1			Good Borrow.
-33-		50	17			

Borrow Pit #4

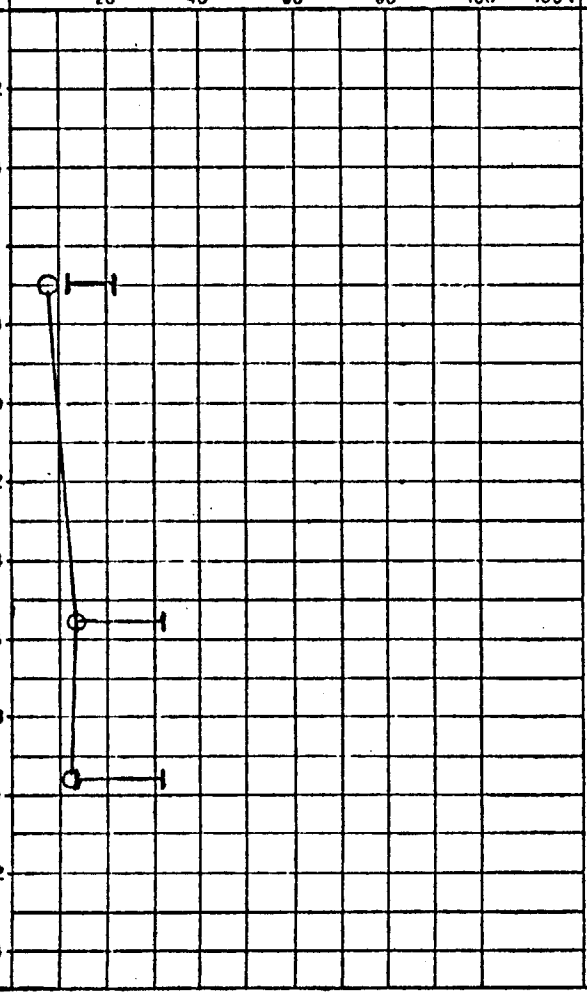
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Willows & Spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
63	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2, 4					SC CL SM ML	4" ORGANIC MTL. OVER CLAY-SILT AND SAND-SILT MIX. — 5'		No P.F.							Good Borrow.
6, 8	1				SM CL	SILTY SAND WITH CLAY LAYERS -PEBBLES — 8'			39	56	5				
10, 12, 14, 16	2				CI	SANDY SILTY CLAY -PEBBLES -MEDIUM PLASTIC -DRY — 18'			69	24	7				
20, 22	3				CI	TILL -SANDY SILTY CLAY WITH PEBBLES -MEDIUM PLASTIC — 23'			56	25	19				
24						BOTTOM OF HOLE - 23'									



Borrow Pit #5

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

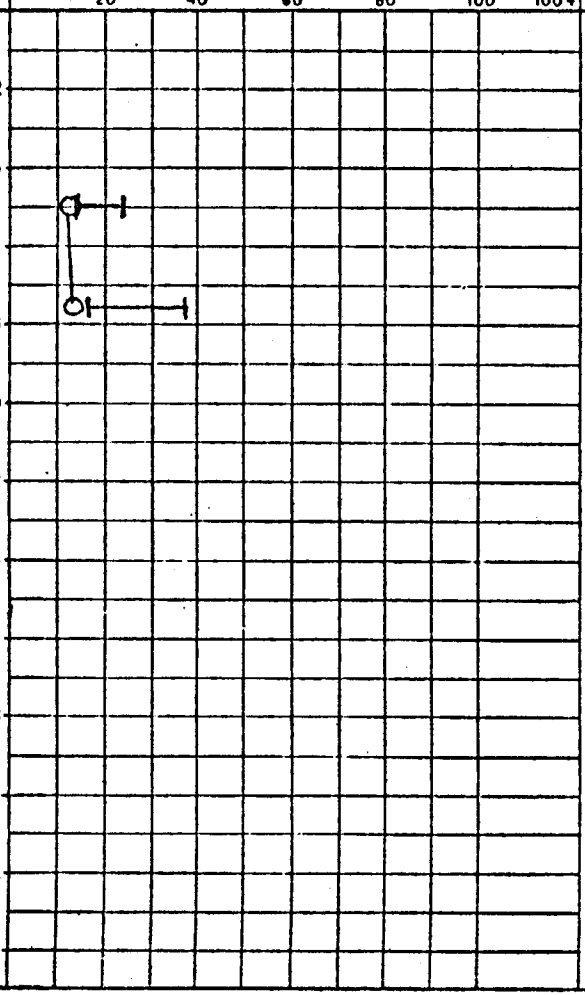
DWN	FIELD ENG.	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE 3297 TO 3303	OFFSET 500' LT ℄
CKD	TECH G. Brinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION: Birch - few spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
62	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SM/ML	4" ORGANIC MTL OVER SILT-SAND MIX - LOW PLASTIC - DRY		No P.F.
4						4.5'		
6	1				CI	SILTY CLAY - CHANGING TO SANDY SILTY CLAY & PEBBLES AT 7'		
8	2					8'		
10						BOTTOM OF HOLE - 8'		
12						HOLE STOPPED AT 8' DUE TO COBBLES - START OF TILL.?		
14								
16								
18								
20								
22								
24								

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟷ LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
4	97	3	0			
8	63	19	18			

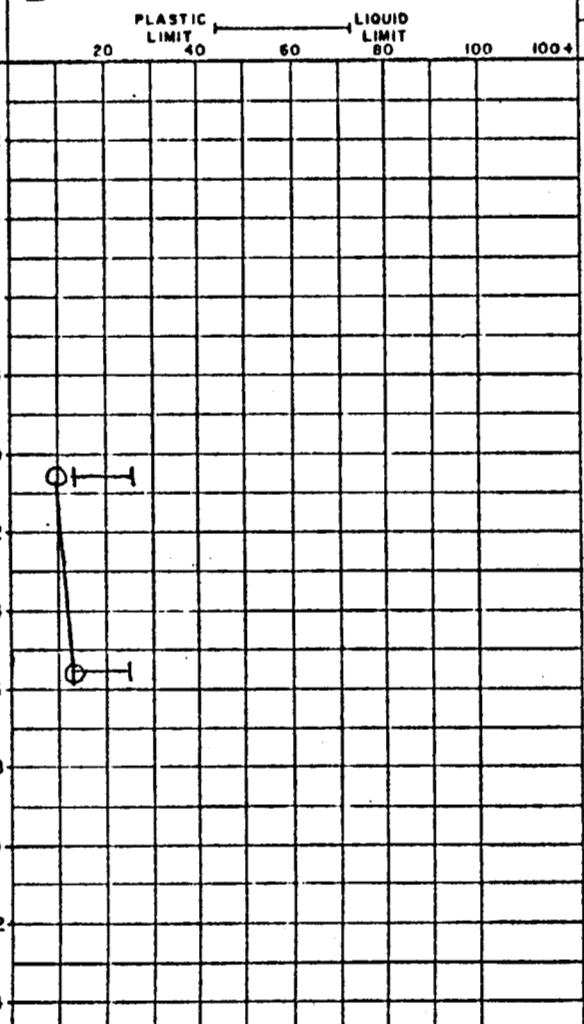
REMARKS: Good Borrow.

Borrow Pit #5	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET	TEST HOLE
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Birch & small spruce	ELEV	MILE 62 / B,C,S B / NUMBER 2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
					ML	4" organic mtl over clay silt and		No. P.F.							Good Borrow.
2					SM	sandy silt -dry									
4						5'									
6						Sandy silty clay -low plastic									
8					CL	-pebbles -dry									
10	1								-50-	32	18				
12															
14						-cobbles at 16'									
16	2					16'			-54-	42	4				
18						Bottom of hole -16' Auger stopped on cobbles									
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit #5

DRILL HOLE REPORT

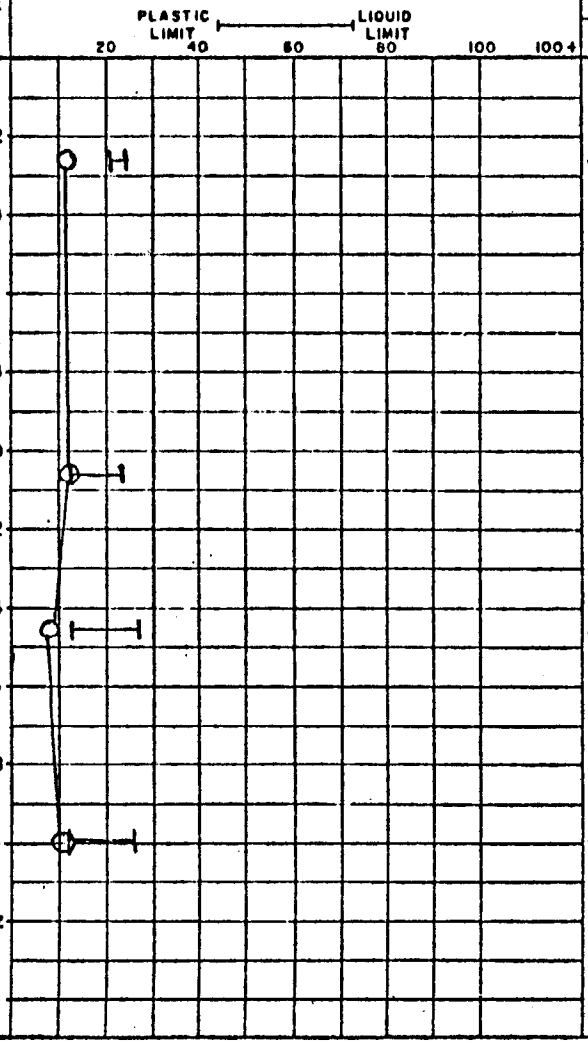
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Birch & small spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
62	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2	1				ML / SM	4" organic mtl over silt and sand-silt - some clay - dry			-99-		1	0			Good Borrow
5'															
6					CL	Sandy silty clay - pebbles - low plastic - dry									
10	2								-65-		21	14			
14	3								-40-		24	36			
18'															
20	4				CL	Till - sandy silty clay with pebbles - dry			-57-		32	11			
22'						Bottom of Hole - 22'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit #6	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED 7/5/72	AIRPHOTO NO:	CHAINAGE: 3224 To 3231	OFFSET 1000' Lt. ℄
CKD	TECH G. Briuck.	RIG: Auger	SURFACE DRAINAGE:	VEGETATION: Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
61	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	O = WATER CONTENT (% OF DRY WEIGHT) Δ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20 40 60 80 100 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					S/A	4" ORGANIC MTL OVER		No. P.F.									Good Borrow
2					M/L	SAND - SILT 3'			2								
4	1				M/L CL	SILT-SAND-CLAY -PEBBLES -COBBLES AT 5' 5'			4	O H	-51-	21	28				
6						BOTTOM OF HOLE - 5'			6								
8						AUGER STOPPED ON COBBLES AT 5'			8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

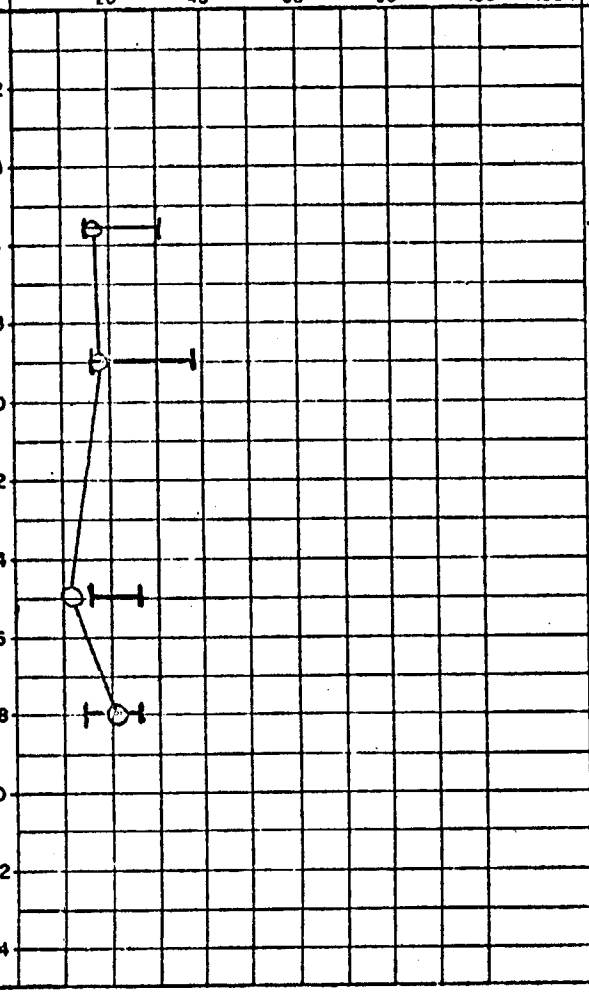
Borrow Pit #6

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET	TEST HOLE
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION: Spruce	ELEV	MILE: 61 / B,C,S: B / NUMBER: 2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						4" ORGANIC COVER OVER SANDY SILT -DRY		No P.F.							Good Borrow To 17'
2					S/A ML										
4						4.5'									
6	1					SILTY CLAY -SAND AND SHALE PEBBLES BELOW 8'			-94-	6	0				
8															
10	2				CI CL	-LOW TO MEDIUM PLASTIC MTL. -DRY			-68-	25	7				
12															
14	3								-43-	24	33				
16						17'									
18	4					SAND-SILT-CLAY WITH SHALE PEBBLES -WET -LOW PLASTIC			-37-	42	21				
20					CL										
22															
24						BOTTOM OF HOLE - 26'									



Borrow Pit #6

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Poplar & Spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
61	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					S/A	4" ORGANIC MTL. OVER									GOOD BORROW
2					ML	SAND-SILT 2.5'									
4					CL	CLAY-SILT-SAND MIX WITH SHALE PEBBLES AND HARD GRAVEL SIZES									
6	1					-COBBLES @ 7.5' 7.5'			-32-		44	24			
8						BOTTOM OF HOLE - 7.5'									
10						AUGER STOPPED ON COBBLES AT 7.5'									
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⊢——⊣ LIQUID LIMIT

20 40 60 80 100 100+

Borrow Pit #7

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 7/5/72	AIRPHOTO NO:	CHAINAGE: 3193 to 3199
CKD	TECH G. Brinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION Spruce & Poplar

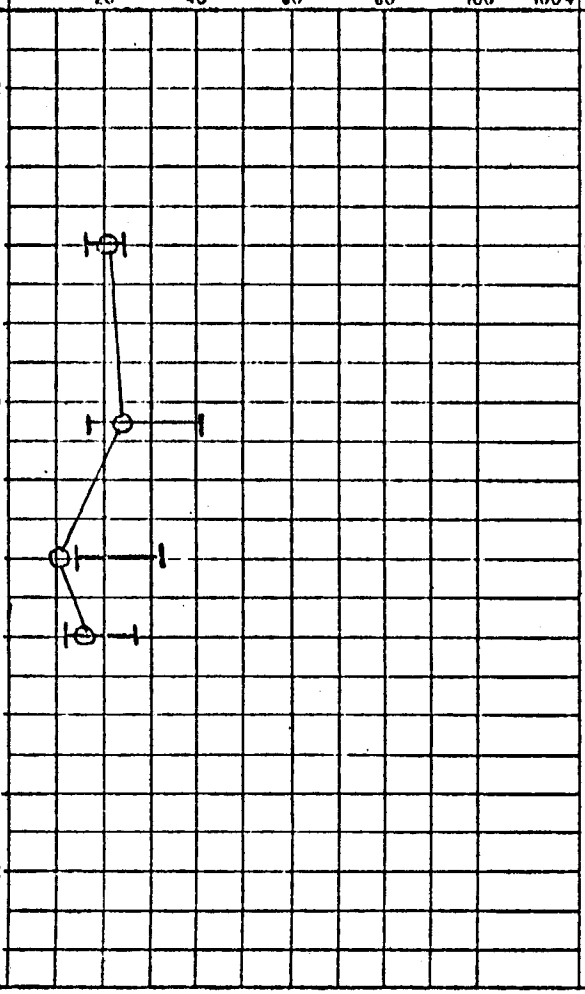
OFFSET 600' Rt. CL.

ELEV

TEST HOLE

MILE	B,C,S	NUMBER
60	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						3-4" ORGANIC COVER OVER		No P.F.
2					SM	CLAY-SILT AND		
					ML	SAND-SILT		
4						- LOW PLASTIC		
						- DRY — 5.5'		
6	1					CLAY-SILT AND		
						SILTY CLAY		
8					CL	- LOW TO MEDIUM		
						PLASTIC		
10	2				CI	- DRY TO DAMP		
12						- PEBBLES BELOW 11'		
						- COBBLES AT 13'		
14	3							
						— 15		
16	4				CJ	TILL - SAND-SILT-CLAY		
						- PEBBLES - WET — 16.5'		
18						BOTTOM OF HOLE 16.5'		
20								
22								
24								



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
-97-		3	0		
-97-		3	0		
-52-		19	29		
-56-		40	4		

REMARKS

Good Borrow

- Wet zone near 15-16'

Borrow Pit #7

DRILL HOLE REPORT

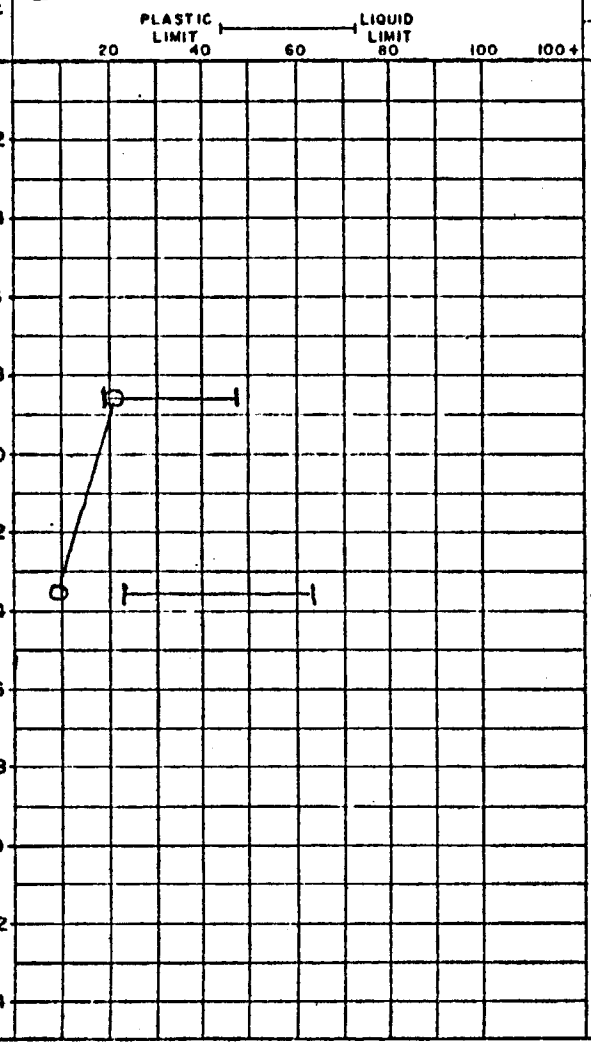
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION: Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
60	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						3-4" ORGANIC MTL OVER		No P.F.
2					SM	SAND-SILT		
					ML	-LOW PLASTIC		
4						-DRY		
						5'		
6						SILTY CLAY		
						-MEDIUM TO HIGHLY PLASTIC		
8	1							
					CL	-DRY TO MOIST		
10					CH			
12						-PEBBLES AND COBBLES @ 15'		
14	2							
						15'		
16						Bottom of Hole -15'		
18						Auger stopped on Cobbles.		
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
8	-98-		2	0		
14	-98-		2	0		

REMARKS: Good Borrow.

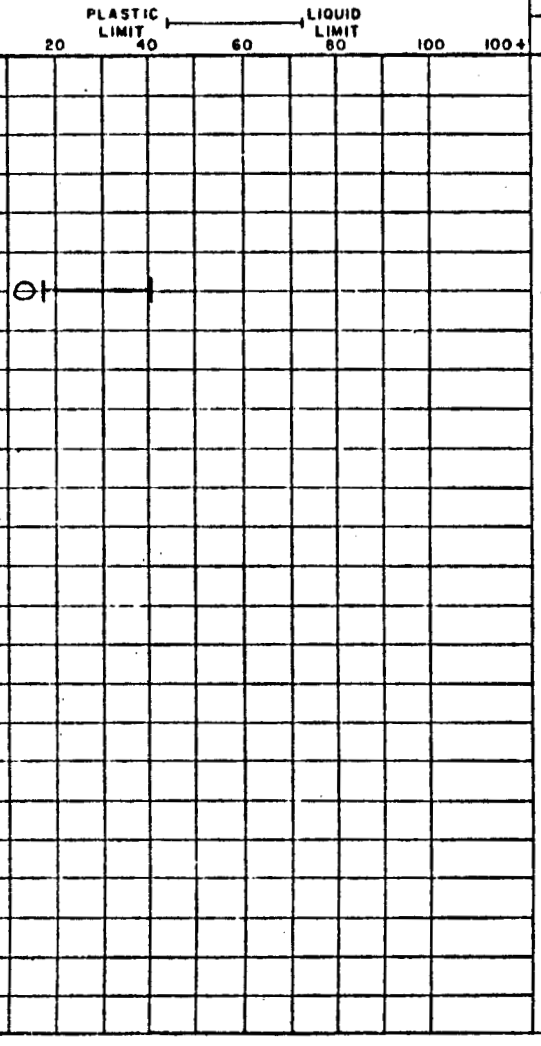
Borrow Pit #8	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED: 7/5/72	AIRPHOTO NO:	CHAINAGE: 3164 TO 3169	OFFSET: 600' Rt. ℄
CKD	TECH: G. Brincik	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
60	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SM/ML	3-4" ORGANIC COVER OVER SANDY SILT OR SILT-SAND -DRY 4.5'		No P.F.
4								
6	1				CI	SILTY CLAY -MEDIUM PLASTIC -DRY -PEBBLES & COBBLES @ 10' 10'		
8								
10						BOTTOM OF HOLE-10' AUGER STOPPED ON COBBLES. START OF TILL?		
12								
14								
16								
18								
20								
22								
24								

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
99	1	0			

REMARKS

Good Borrow

-Drilling in other pits suggests similiar mtl extends below initial contact with cobbles -ie can expect silty clay with pebbles below 10' level.

Borrow Pit #8

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA
MACKENZIE HIGHWAY

DWN	FIELD ENG.	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B.C.S	NUMBER
60	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						3-4" ORGANIC COVER OVER		No P.F.
2					SM	SAND-SILT		
					ML	-LOW PLASTIC		
4						-DRY — 4.5'		
6					CI	SILTY CLAY -MEDIUM TO HIGHLY PLASTIC		
8	1				CH	-DRY -COBBLES AT 8.5' — 9.0'		
10						BOTTOM OF HOLE 9.0'		
12						AUGER STOPPED ON COBBLES		
14						-START OF TILL?		
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
8	-99-	1	0				Good Borrow.

Borrow Pit #9	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 7/5/72	AIRPHOTO NO:	CHAINAGE 3134 TO 3142	OFFSET 500' LT ℄
CKD	TECH G. Brinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
59	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
						4-5" ORGANIC COVER OVER		No P.F.						
2					SM/ML	SAND-SILT - SOME CLAY - DRY								
4	1					AS ABOVE WITH PEBBLES 4'			-85-		10	1		
6						Bottom of Hole - 5' 5'								
8						Cobbles @ 5' - Auger unable to penetrate								
10														
12														
14														
16														
18														
20														
22														
24														

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⊢——⊣ LIQUID LIMIT
20 40 60 80 100 100+

O H

REMARKS

O.K. FOR BORROW

- DRILLING IN THIS TYPE TERRAIN WHERE COBBLE LAYER WAS PENETRATED ENCOUNTERED SILTY CLAY WITH SHALE PEBBLES
- TILL-LIKE MTL
- ANTICIPATE SAME SUBSOIL HERE BELOW 5'

Borrow Pit #9

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
99	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					SM	6-7" ORGANIC COVER OVER SAND-SILT -DRY		No P.F.							O.K. FOR BORROW -SEE HOLE 59-B-1
4'					CL	CLAY-SILT-SAND WITH GRAVEL & COBBLES									
5.5'	1					BOTTOM OF HOLE-5.5' AUGER UNABLE TO PENETRATE COBBLES			-33-	31	36				

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

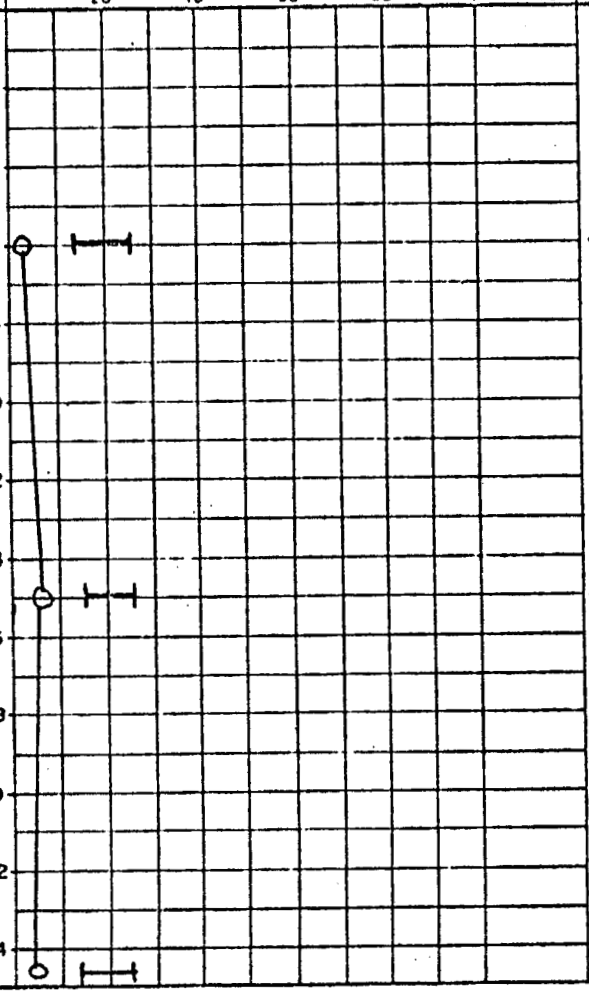
Borrow Pit #10

DWN	FIELD ENG	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 3113 TO 3117	OFFSET 500' + Lt ℄
CKD	TECH G. Brinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
59	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
					S/A	3-4" ORGANIC MTL OVER		No. P.F.							Good Borrow
2					ML	SAND-SILT-SOME CLAY -DRY									
4						4'									
6	1					SILTY CLAY WITH SHALE -LOW PLASTIC -DRY			14		48	38			
8															
10					CL	-COULD BE VERY SOFT SHALE OR TILL WITH SHALE PEBBLES									
12															
14	2								31		40	29			
16															
18						-HARDER DRILLING BELOW 23'									
20															
22															
24	3					-BOTTOM OF HOLE -26'			18		57	25			

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit #10

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION: Poplar & Willow	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
59	B	2.

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	O = WATER CONTENT (% OF DRY WEIGHT) Δ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20, 40, 60, 80, 100, 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3-4" ORGANIC MATL OVER											Good Borrow
2					SM	SAND-SILT			2								
					ML	-SOME CLAY											
4						-DRY. 4'			4								
	1					SILTY CLAY WITH				O	-34-	33	33				
6					CL	SAND AND PEBBLES			6								
						-COBBLES FROM 6'-8'											
8						8'			8								
10						BOTTOM OF HOLE - 8'			10								
12						AUGER UNABLE TO PENETRATE COBBLES AT 8'			12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

Borrow Pit #11

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

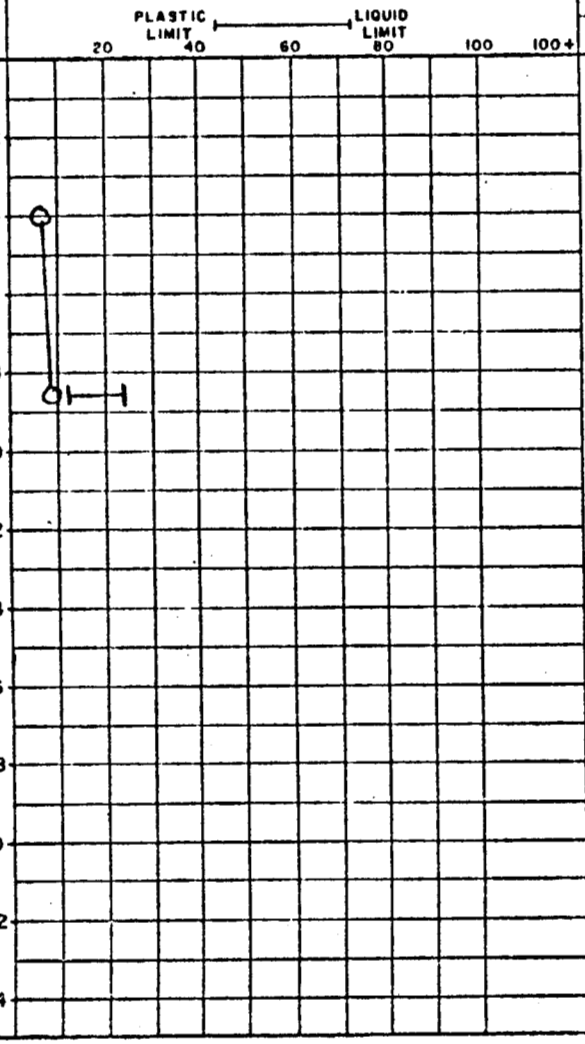
DWN:	FIELD ENG:	DATE DRILLED 6/5/72	AIRPHOTO NO:	CHAINAGE: 3119 TO 3128	OFFSET 600' Rt ℄
CKD	TECH G. Brinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION: Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
57	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						3-4" ORGANIC MTL OVER		No R.F.
2					SM	SAND-SILT OR SILT-SAND		
					ML	-LOW PLASTIC		
4	1					-DRY — 5'		
6					SM	SILTY SAND -FINE -DRY — 8'		
8	2				CL	SAND-SILT-CLAY -PEBBLES & COBBLES — 10'		
10						Bottom of Hole - 10'		
12						Auger unable to		
14						Penetrate cobbles.		
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟷ LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
4	86	14	0			
8	62	29	9			

REMARKS

Good Borrow

- Anticipate silty clay with pebbles and some shale partings below 10' or possibly very soft shale

Borrow Pit #11

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION Poplar	ELEV

TEST HOLE

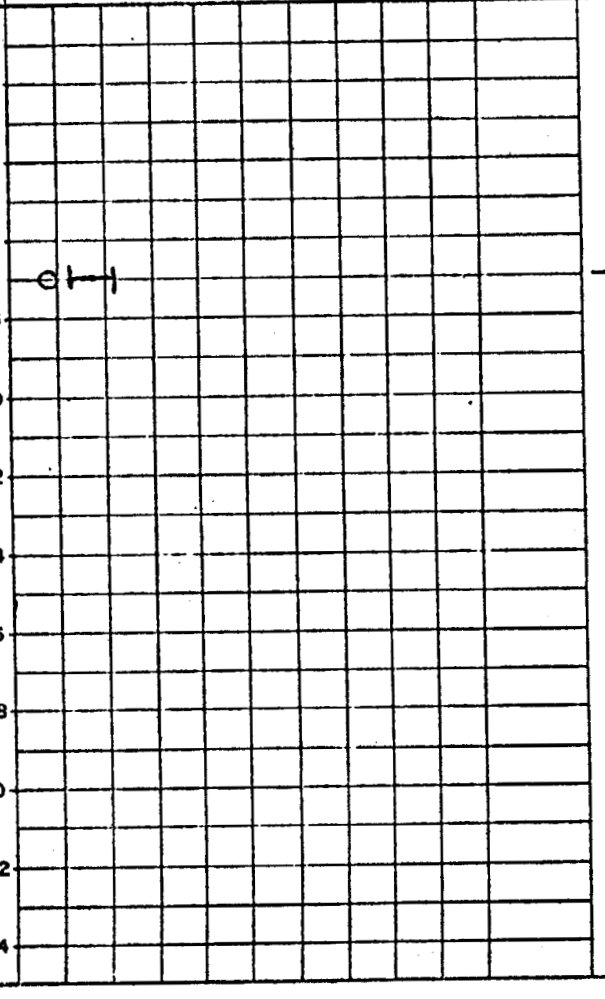
MILE	B,C,S	NUMBER
57	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
0–6.5'					SM/ML	6-7" organic mtl over silt-sand or sandy silt - low plastic - dry		No P.F.							Good Borrow See Hole 57-B-1
6.5–9.5'	1				CL	Sand-silt-clay with pebbles - cobbles @ 9'			-51-	23	26				
9.5'						Bottom of Hole - 9.5' Augers stopped on cobbles									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+



Borrow Pit #11	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET	TEST HOLE
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Poplar	ELEV	MILE 57 / B,C,S B / NUMBER 3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						4.5' ORGANIC MTL OVER										O.K. FOR BORROW.
2					SM ML	SILT-SAND MIX			2							
					SC	-SOME CLAY										
4						4'			4							
						BOTTOM OF HOLE-4'										
6						-COBBLES @ 4'			6							
8						UNABLE TO PENETRATE WITH AUGER.			8							
10									10							
12									12							
14									14							
16									16							
18									18							
20									20							
22									22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)
PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

Borrow Pit #12

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 2962 TO 2969	OFFSET 800' Lt &
CKD	TECH G. Bizinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION Spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
56	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2, 4, 6					SM / ML	3-4" ORGANIC MTL OVER SANDY-SILT OR SILTY-SAND -VERY LOW PLASTIC -DRY TO MOIST		No DF.
8, 10					CL / CL	7' SILTY CLAY -SOME SAND - PEBBLES - COBBLES @ 11'		
12, 14, 16, 18, 20, 22, 24						11' Bottom of Hole-11' Augers stopped on Cobbles @ 11'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟷ LIQUID LIMIT

20 40 60 80 100 100+

GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
34	60	6			

REMARKS

O.K. For Borrow

-Anticipate silty clay & pebbles to extend below @ 11'.

Borrow Pit # 12

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION: SPRUCE	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
56	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SM	3-4" ORGANIC MTL OVER		
4					SC	SANDY SILT OR CLAY-SILT		
6					ML	-SILTY SAND WITH PEBBLES & COBBLES @ 6'		
8						Bottom of Hole-6'		
10						UNABLE TO PENETRATE COBBLES @ 6'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟷ LIQUID LIMIT

20 40 60 80 100 100+

DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

REMARKS

O.K. FOR BORROW
- ANTICIPATE CHANGE TO PLASTIC MTL WITH PEBBLES BELOW 6'

Borrow Pit #12

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
56	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						3-4" ORGANIC MTL OVER										OK FOR BORROW
2					S/A	SANDY SILT OR			2							-ANTICIPATE
					ML	SILTY SAND										PLASTIC MTLS
4						-DRY			4							BELOW 8'
						5'										WITH SOME
6					CL	SANDY SILTY CLAY WITH PEBBLES AND COBBLES @ 8'			6							GRAVEL
8						8'			8							CONTENT.
						Bottom of Hole - 8'										
10									10							
12									12							
14									14							
16									16							
18									18							
20									20							
22									22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT

20 40 60 80 100 100+

Borrow Pit #13

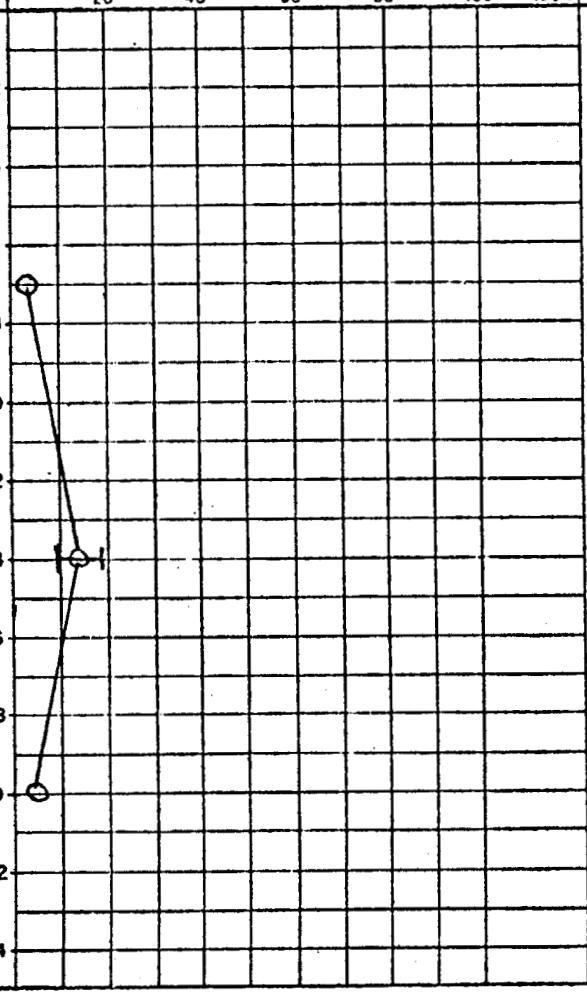
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 2934 TO 2940	OFFSET 600' Rt ℄
CKD	TECH G. Brinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION Poplar & small spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
55	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					S/A	3-4" ORGANIC MTL OVER SANDY SILT AND		No P.F.							O.K. For Borrow
4					/AL	SILTY SAND - DRY									
6	1								-26-		72	2			
8						9'									
10						SILTY SAND WITH SILTY CLAY LAYERS									
12					S/A										
14	2				SC	- LOW PLASTIC - MOIST TO DRY			-69-		31	0			
16					CL										
18															
20	3								-18-		82	0			
22															
24						Bottom of Hole - 26'									



Borrow Pit #13

DRILL HOLE REPORT

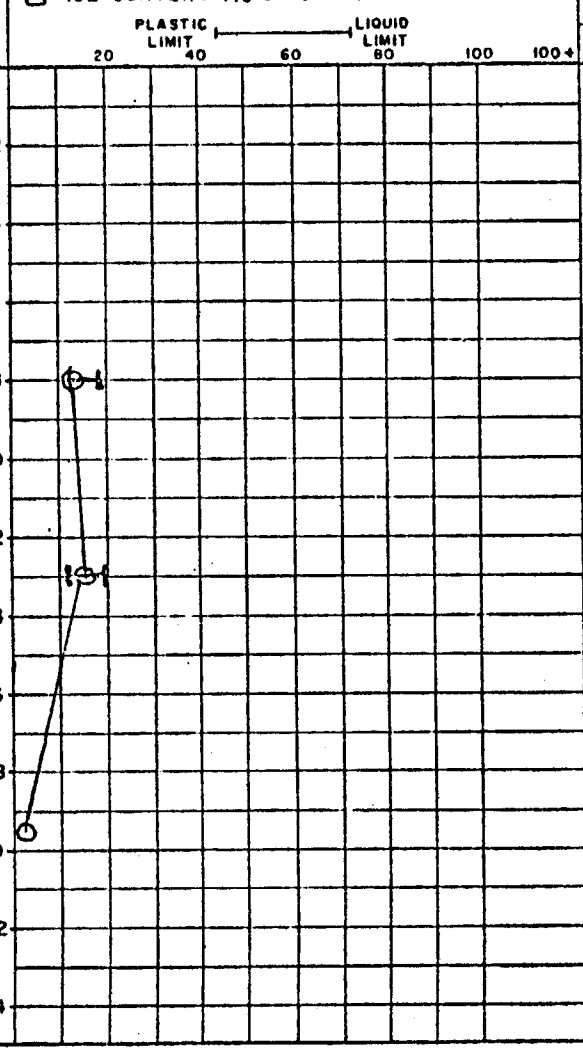
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION: Spruce & Poplar	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
55	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						3-4" ORGANIC MTL OVER SANDY-SILT									O.K. FOR BORROW.
2															
4						- SILTY CLAY LAYERS									
					S/M	- SILTY SAND SEAMS									
6					M/L	- MOIST TO DRY.									
8	1								-75-		25	0			
10															
12	2								-81-		19	0			
14															
16						16									
						SILTY SAND									
18					S/M	- NON-PLASTIC									
20	3				SP SC	- DRY - MEDIUM GRAINED			-10-		90	0			
22															
24						Bottom of Hole - 26'									

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit #13	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA MACKENZIE HIGHWAY

OWN:	FIELD ENG:	DATE DRILLED:	AIRPHOTO NO:	CHAINAGE:	OFFSET:
CKD:	TECH:	RIG:	SURFACE DRAINAGE:	VEGETATION: Spruce & Poplar	ELEV:

TEST HOLE		
MILE	B,C,S	NUMBER
55	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	REMARKS
						3-4" ORGANIC COVER OVER SANDY SILT WITH SILTY CLAY LAYERS AND SILTY SAND SEAMS - MOIST TO DRY			O.K. FOR BORROW.
					SM ML				
						17'			
					SP SM SC	SILTY SAND - NON-PLASTIC - DRY - PEBBLES			

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

GRAIN-SIZE ANALYSIS	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)

Borrow Pit #14

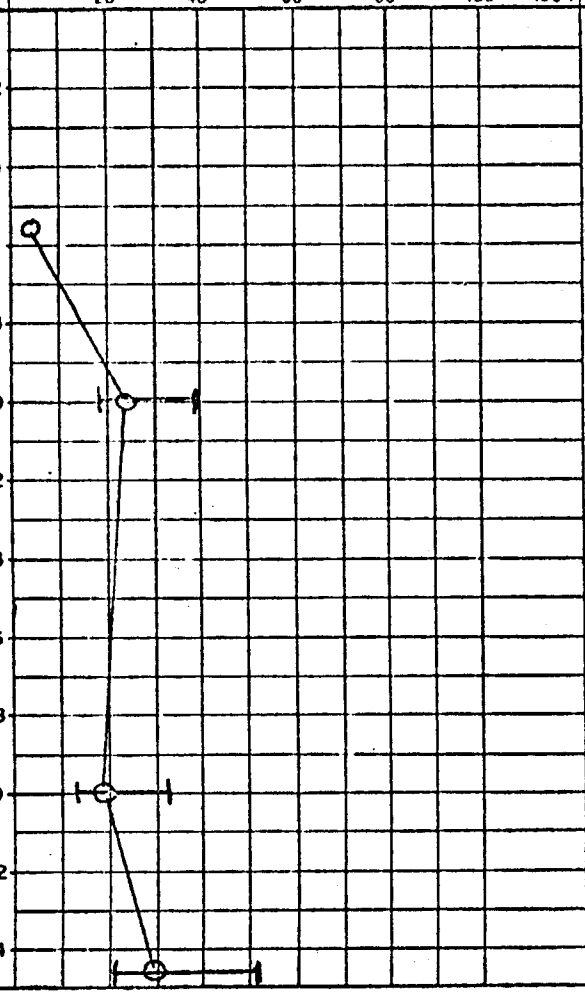
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 2869 TO 2877	OFFSET 800' Rt &
CKD	TECH G. Brinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION Poplar & willow	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
54	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2					SM	3-4" organic mat over silty sand or sandy silt									Good Borrow
4					ML	-dry									
6	1					-low plastic			-94-		6	0			
8						8'									
10	2				CI to CH	Silty clay -medium to highly plastic -dry to moist			-98-		2	0			
12															
14															
16															
18															
20	3								-65-		27	8			
22															
24	4					Bottom of Hole - 26'			-100-		0	0			



Borrow Pit #14

DRILL HOLE REPORT

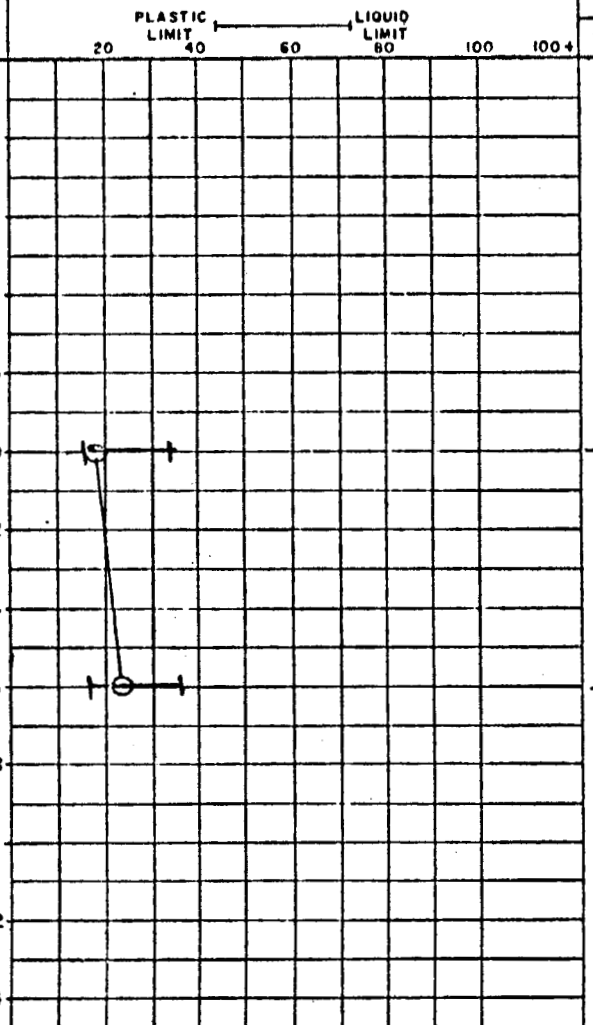
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION Poplar & spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
54	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3-4" ORGANIC MTL OVER									GOOD BORROW
2					SM	SANDY SILT OR									
4					ML	SILTY SAND									
6						-DRY TO MOIST									
8															
						9.5'									
10	1					SILTY CLAY			88	12	0				
12						-MEDIUM PLASTIC									
14					CI	-DRY TO MOIST									
16	2								95	5	0				
18															
20															
22															
						23'									
24						BOTTOM OF HOLE-23'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit #14

DRILL HOLE REPORT

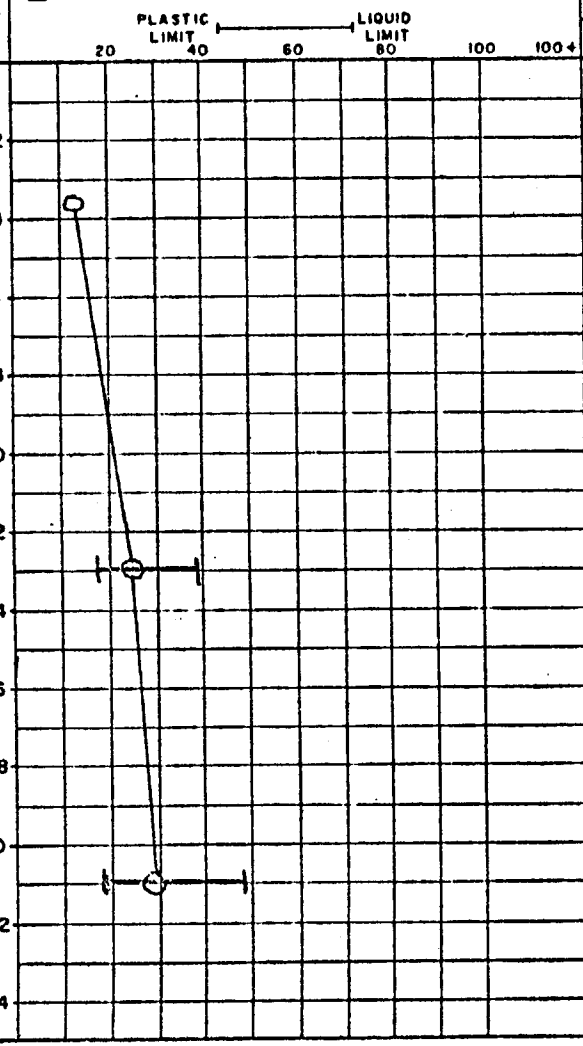
DEPARTMENT OF PUBLIC WORKS, CANADA
MACKENZIE HIGHWAY

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Spruce, Poplar-willows	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
54	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2–4	1				SM/ML	3-4" organic matl over sandy silt or silty sand – very low plastic – dry to moist			96		4	0			Good Borrow
9.5															
12–14	2				CI	Silty clay – medium plastic – dry to moist			96		4	0			
20–22	3								97		3	0			
21.5						Bottom of hole – 21.5'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



BORROW PIT #15

DRILL HOLE REPORT

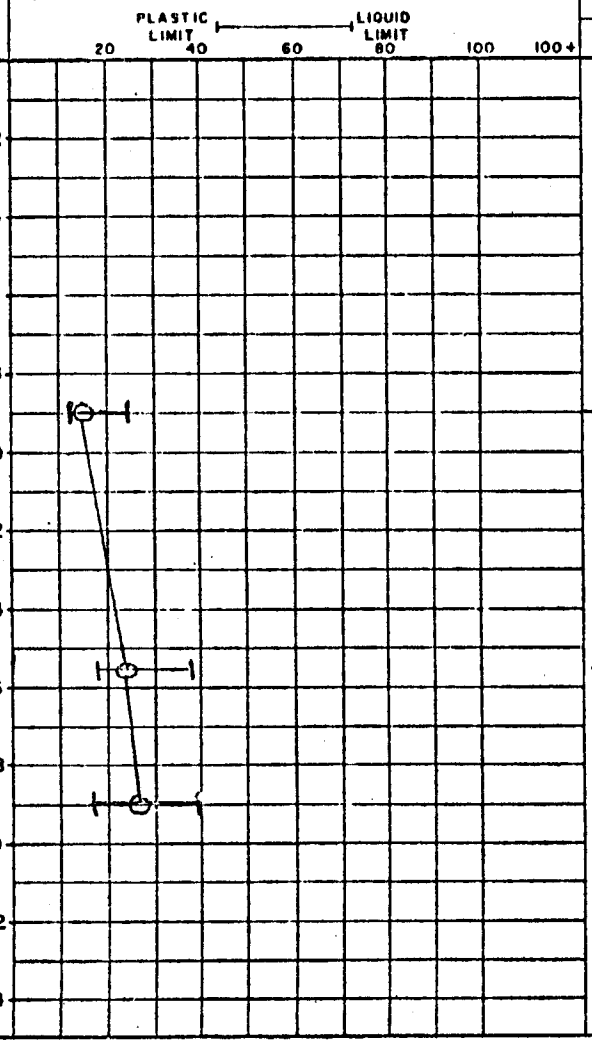
DEPARTMENT OF PUBLIC WORKS, CANADA
~~TRANSCONTINENTAL HIGHWAY~~

DWN	FIELD ENG	DATE DRILLED 10/5/72	AIRPHOTO NO:	CHAINAGE: 2830 TO 2836	OFFSET 500' LT ℄
CKD	TECH G. BRINCK	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION POPLAR, BIRCH, SM. SPRUCE	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
53	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3-4" ORGANIC INTL OVER									O.K. FOR BORROW.
2					SM	SANDY SILT									
4					ML	-SOME SILT-SAND									
						-DRY TO MOIST									
6															
						7.5'									
8	1					SAND-SILT WITH									
					SM	SILTY CLAY LAYERS			81		19	0			
10					ML	-LOW PLASTIC									
12					CL	-DRY TO MOIST									
14															
						15'									
16	2					SILTY CLAY			93		7	0			
						-MEDIUM PLASTIC									
18															
	3				CI	-DRY TO MOIST			97		3	0			
20						AT TOP OF									
22						LAYER - BECOMING									
						WETTER WITH									
24						DEPTH.									
						BOTTOM OF HOLE - 26'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit #15

DRILL HOLE REPORT

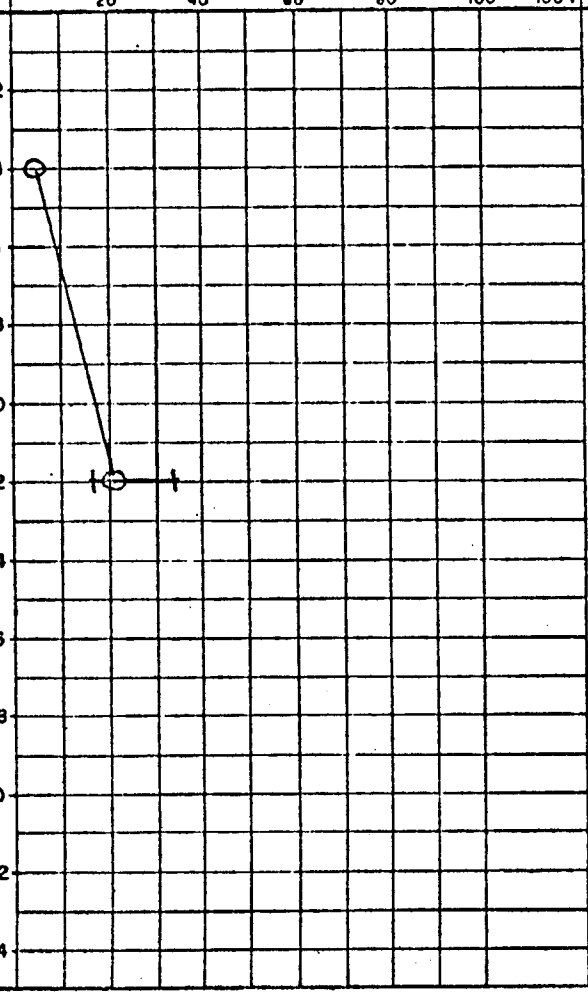
DEPARTMENT OF PUBLIC WORKS, CANADA
[illegible] HIGHWAY

DWN:	FIELD ENG:	DATE DRILLED:	AIRPHOTO NO:	CHAINAGE:	OFFSET:
CKD:	TECH:	RIG:	SURFACE DRAINAGE:	VEGETATION: Poplar - Birch - Sm. Spruce	ELEV:

TEST HOLE

MILE	B,C,S	NUMBER
53	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2						3-4" ORGANIC MTL OVER SANDY SILT									Good Borrow
4	1				ML	-DRY TO MOIST -NON-PLASTIC			-93-	7	0				
6															
8						7.5' SAND-SILT AND SILTY CLAY IN LAYERS									
10					SC ML										
12	2				CL	-DRY TO MOIST			-94-	6	0				
14						14.5' SILTY CLAY									
16					CI	-MEDIUM PLASTIC									
18															
20															
22						22'									
24															



Borrow Pit #15

DRILL HOLE REPORT

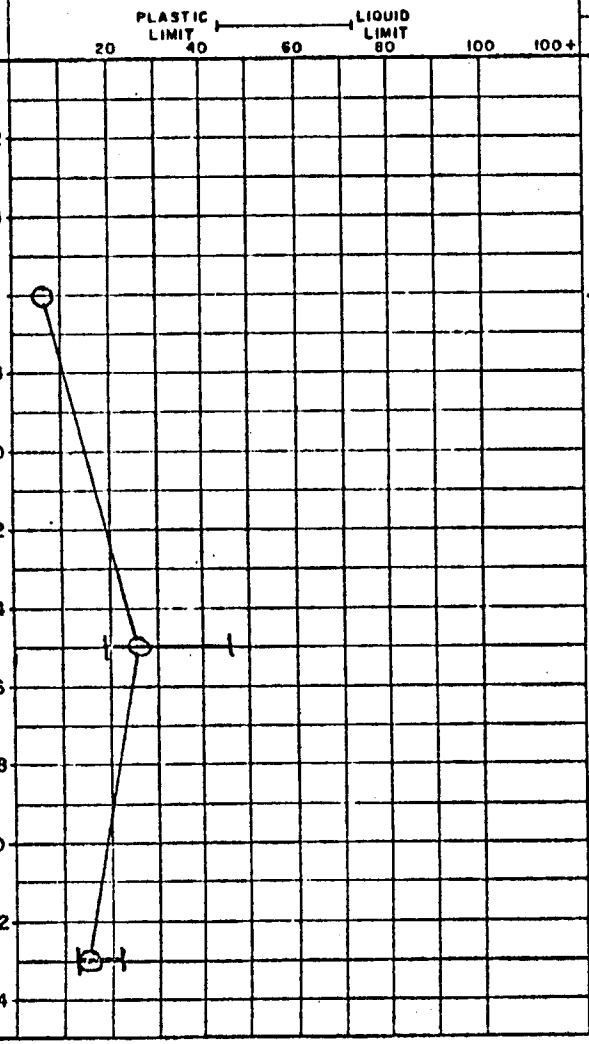
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Poplar, spruce, willows	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
53	B	3

REMARKS: O.K. for Borrow

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
0–8'					SM, ML	3-4" organic mtl over sandy-silt; non-plastic; dry to moist			59	41	0			
6	1													
8–15'					ML, CL, SC	Sand-silt and silty clay in layers; low plastic; dry to moist			94	6	0			
15	2													
15–20'					CI	Silty clay; medium plastic								
20–22'					SM, ML	Silt-sand								
22–26'	3				CL, SM, ML	Sand-silt and silty clay; Bottom of hole 26'			94	6	0			



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

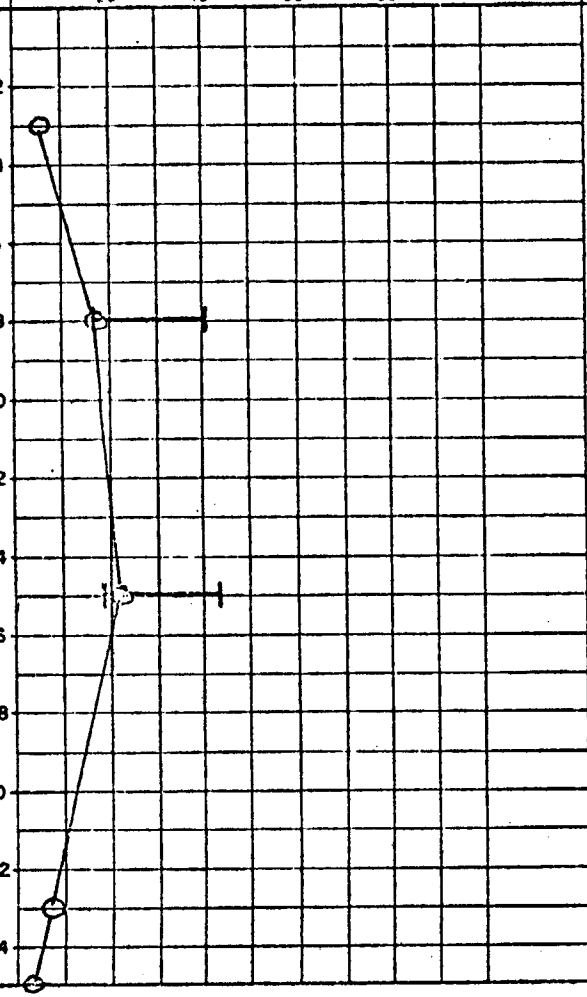
Borrow Pit #16

DWN	FIELD ENG	DATE DRILLED 10/5/72	AIRPHOTO NO:	CHAINAGE 2783 to 2786	OFFSET 700' Lt ℄
CKD	TECH G. Brinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION Poplar - small spruce	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
52	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2	1				ML SM	3-4" organic mtl over sand-silt - non-plastic - dry		
						5'		
6					ML CL	As above with silty clay layers		
						7'		
8	2				CI	Silty clay - medium plastic - dry to moist		
10								
12								
14	3							
16								
18						18'		
20					CI	As above with pebbles		
						20'		
22	4				SP GP	Silty sand with gravel - gravel content increasing with depth		
24						Bottom of hole 31'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
CLAY %	SILT %	SAND %	GRAVEL %		
-9-	5	5	0		
-9-	4	6	0		
-9-	2	8	0		
-3-	0	64	6		
-8-		54	38		

REMARKS: Good Borrow

5 Note - sample #5 from 28-30'

Borrow Pit #16	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED	AIRPHOTO NO:	CHAINAGE:	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
52	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
					ML	3-4" ORGANIC MTL OVER										GOOD BORROW.
2					CI	SAND-SILT			2							
4						-CLAY LAYERS BELOW 5'			4							
6						-DRY TO MOIST			6							
						7.5'										
8						SILTY CLAY			8							
10						-MEDIUM PLASTIC			10							
12	1				CI	-DRY			12							
14									14							
16									16							
18						18'			18							
20					SM ML CL	SAND-SILT AND SILTY CLAY LAYERS -PEBBLES			20							
						21'										
22						BOTTOM OF HOLE-21			22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

Borrow Pit #17

DRILL HOLE REPORT

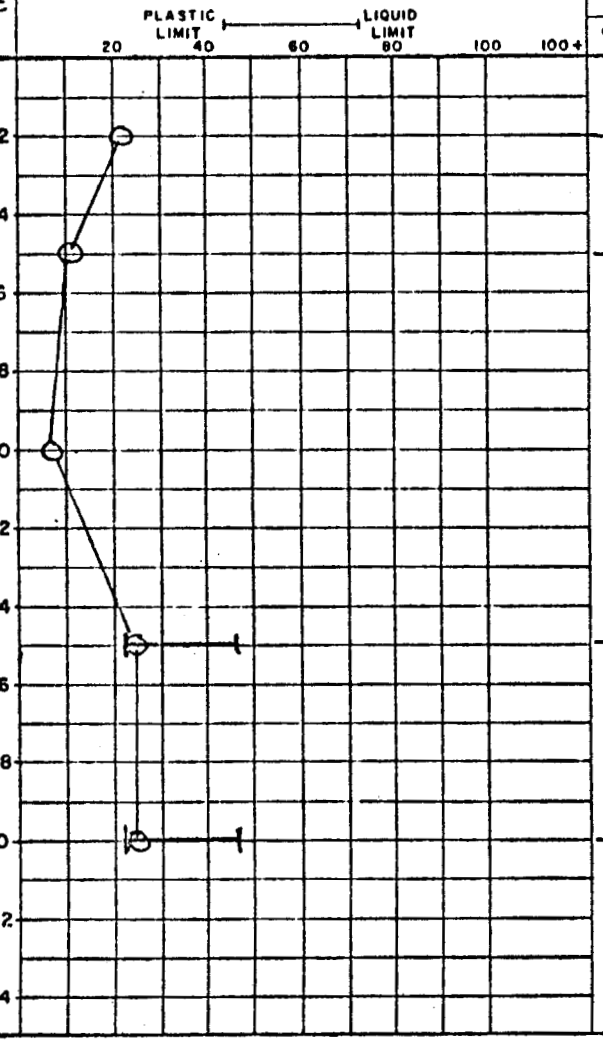
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/72	AIRPHOTO NO:	CHAINAGE 2735 TO 2739	OFFSET 600' + 4.4
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
52	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	4" ORGANIC COVER OVER CLAY-SILT -LOW PLASTIC		FROST TO 3½'
4					SM	SILTY SAND -NON-PLASTIC -DAMP		
14'					CI	SILTY CLAY -MEDIUM PLASTIC -DAMP		
20'						BOTTOM OF HOLE-20'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
98	2	0			
42	58	0			
99	1	0			
99	1	0			

REMARKS: Good Borrow

Borrow Pit #17

DRILL HOLE REPORT

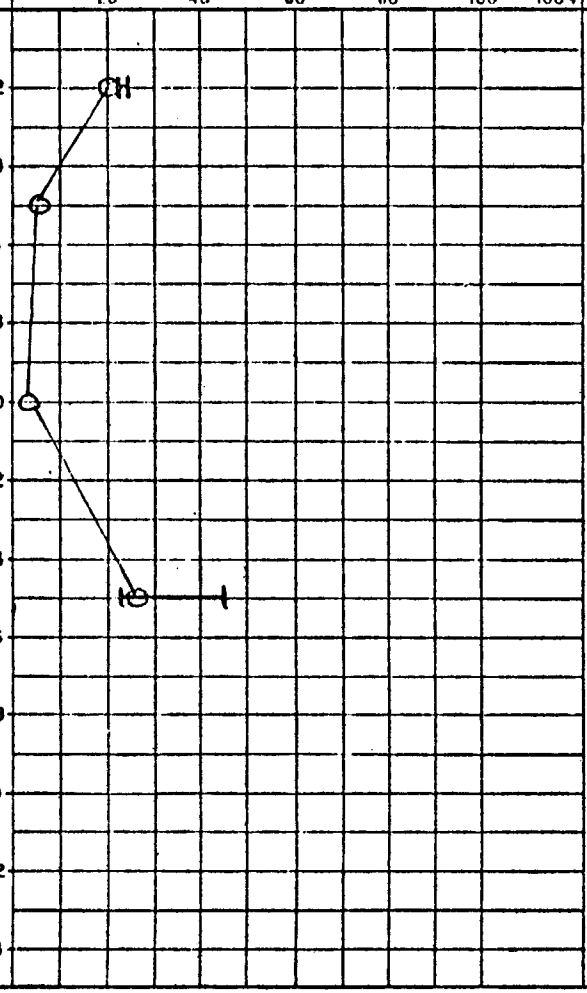
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
52	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER - CLAY-SILT - LOW-PLASTIC		
3.5'								
					ML	SILTY-SAND OR SANDY-SILT - NON-PLASTIC		
					SM	- DAMP.		
13'								
					CL	SILTY CLAY - MEDIUM PLASTIC		
15'								
						BOTTOM OF HOLE - 15'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-99-		1	0		
-73-		27	0		
-82-		18	0		
-98-		2	0		

REMARKS

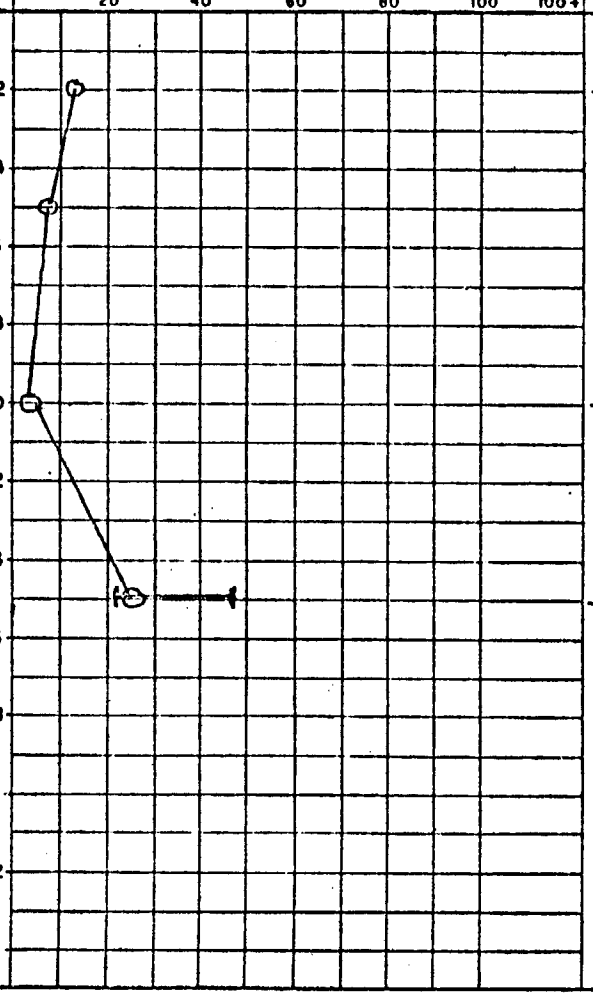
Good Borrow

Borrow Pit #17	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
52	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2, 4					ML	3" ORGANIC MTL OVER CLAY-SILT -LOW PLASTIC -DAMP.		FROST TO 2'	-98-	2	0				GOOD BORROW.
6						6'			-99-	1	0				
8, 10					SM ML	SANDY SILT OR SILTY SAND -NON-PLASTIC -DAMP.			-77-	23	0				
12						12'									
14					CL	SILTY CLAY -MEDIUM PLASTIC			-95-	5	0				
16						15'									
18, 20, 22, 24						BOTTOM OF HOLE -15'									



Borrow Pit #18

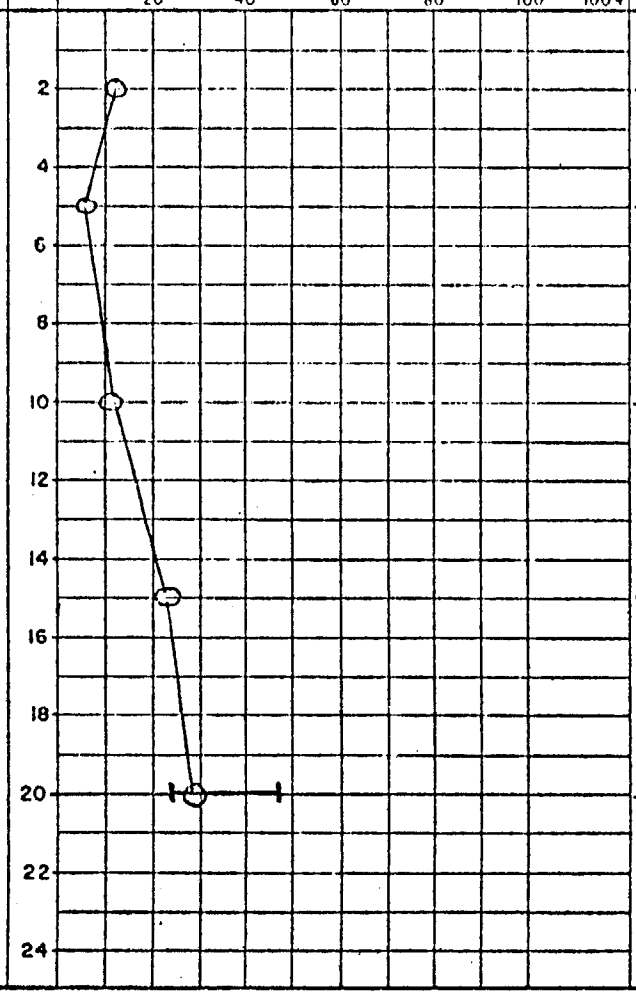
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2668 to 2672	OFFSET 400' + Rt. of
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B.C.S	NUMBER
50	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER SANDY SILT -LOW PLASTIC OR NON-PLASTIC -WET BELOW 12'		
					CL	18' SILTY CLAY -MEDIUM PLASTIC 20'		
						BOTTOM OF HOLE - 20'		



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
85	15	0			
65	35	0			
79	21	0			
71	29	0			
98	2	0			

REMARKS

O.K. FOR BORROW TO APPROX. 12'
-WET BELOW 12'

Borrow Pit #18

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

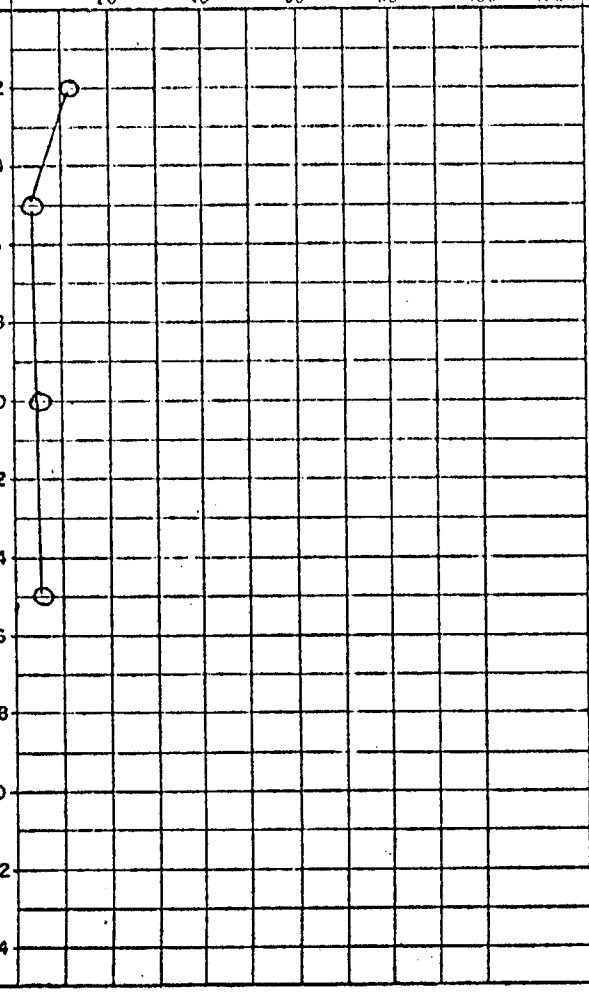
DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE:	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
50	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	3" ORGANIC MTL OVER SANDY-SILT			-77-	23	0				OK FOR BORROW
						3.5'									
4						SILTY SAND -NON-PLASTIC			-21-	79	0				
6					S/M	-DAMP.									
8															
10									-25-	75	0				
12															
14									-37-	63	0				
						15'									
16						BOTTOM OF HOLE-15'									
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT



Borrow Pit #19

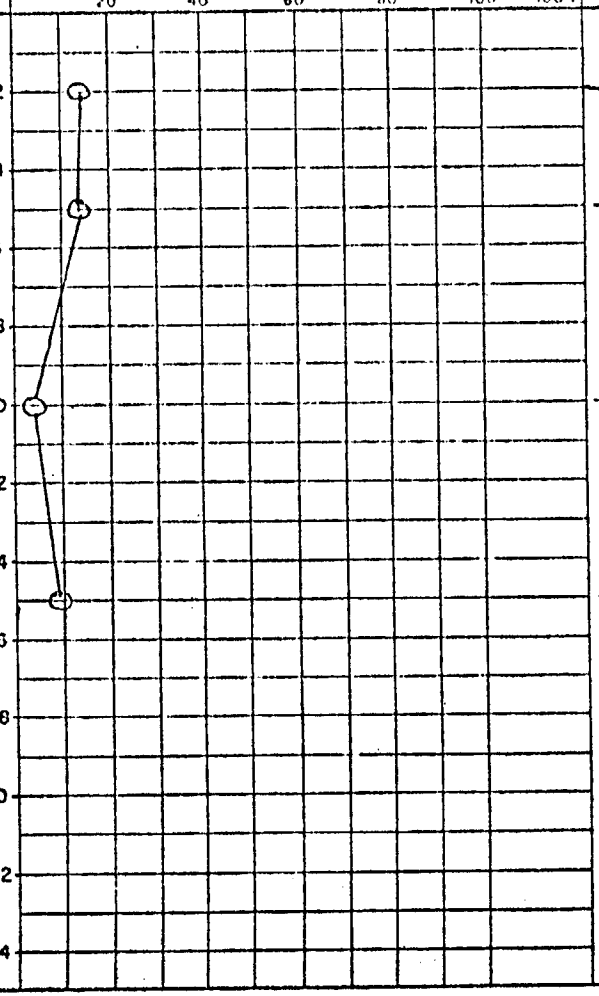
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/13	AIRPHOTO NO:	CHAINAGE 2630 TO 2635	OFFSET 100' + [illegible]
CKD	TECH D Pronych	RIG AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
50	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					ML	3" ORGANIC MTL OVER SANDY-CLAY SILT -VERY LOW PLASTIC -DAMP			-9	4-	6	0			O.K. FOR BORROW.
						7'									
					SM	SILTY SAND -NON-PLASTIC -DAMP -WET ZONE @ 12'			-4	5-	55	0			
						13'									
					ML	SANDY-SILT DAMP			-7	1-	29	0			
						15'									
						BOTTOM OF HOLE-15'									



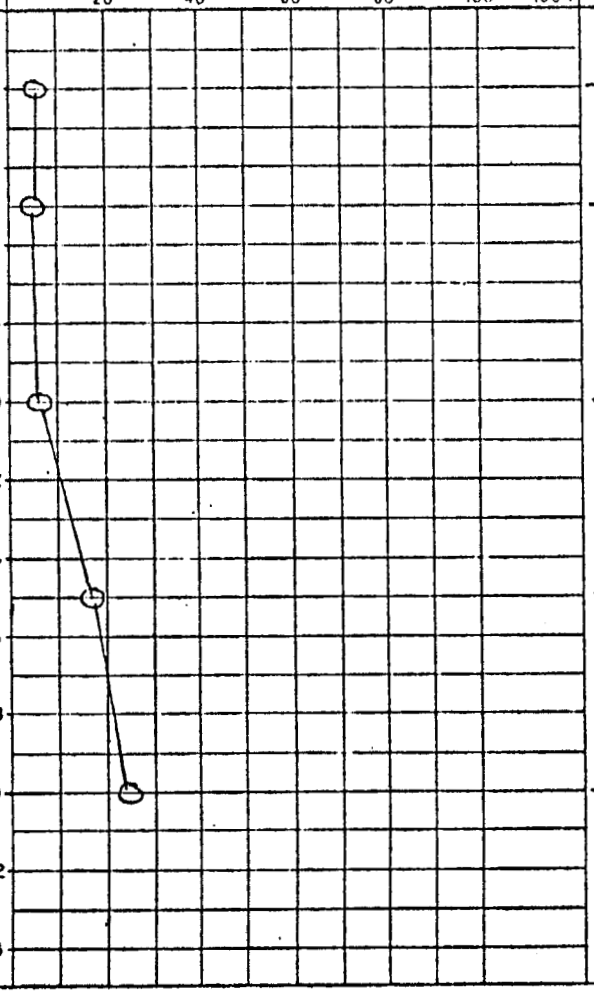
Borrow Pit #19

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO.	CHAINAGE	OFFSET	TEST HOLE
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV	MILE: 50 / B,C,S: B / NUMBER: 2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2						3" ORGANIC MTL OVER SILTY SAND OR			-33-	67		0			O.K. FOR BORROW TO APPROX. 16-17'
4					SM	SANDY SILT			-26-	74		0			
6					ML	-VERY LOW PLASTIC									
8						-BECOMING WET BELOW 15-16'									
10									-31-	69		0			
12															
14									-69-	31		0			
16															
18															
20						20'			-77-	23		0			
22						BOTTOM OF HOLE. 20'									
24															



Borrow Pit #20

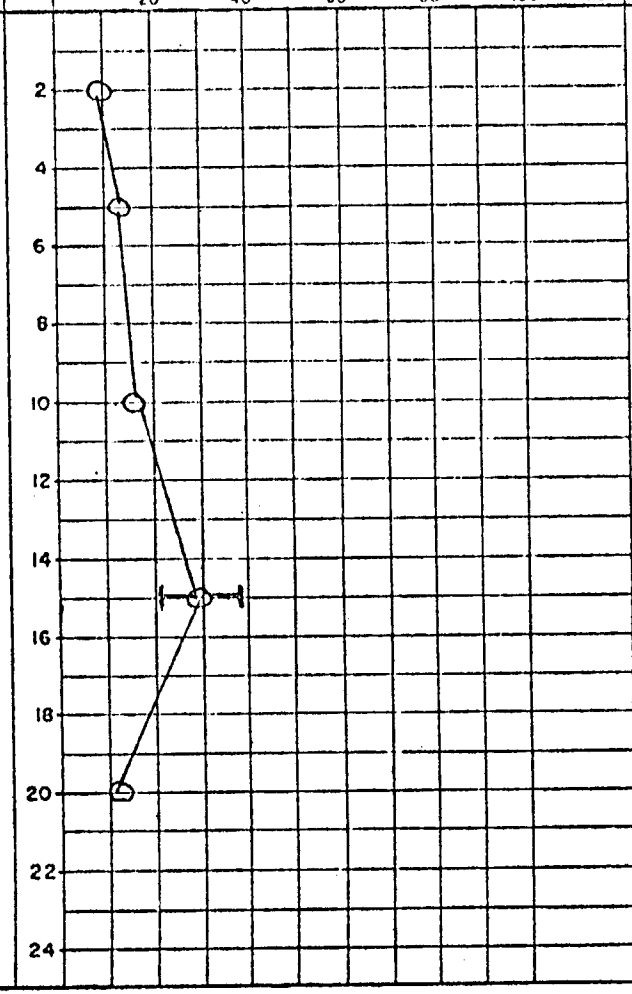
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/13	AIRPHOTO NO:	CHAINAGE 2572 to 2578	OFFSET Acc + Lt 12
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B.C.S	NUMBER
48	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MAT OVER SANDY CLAY SILT — 2		FROST TO 2'
					SM ML	SANDY SILT - NON-PLASTIC - DAMP TO 11' - WET 11'-12' — 12'		
					CL	SILTY CLAY - MEDIUM PLASTIC - DAMP. — 19'		
					SM ML	SILTY SAND — 20'		
						BOTTOM OF HOLE - 20'		



GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
77	23	0				OIL FOR BORROW
86	14	0				- WET ZONE AT 11'-12'
58	42	0				
95	5	0				
58	42	0				

Borrow Pit #20

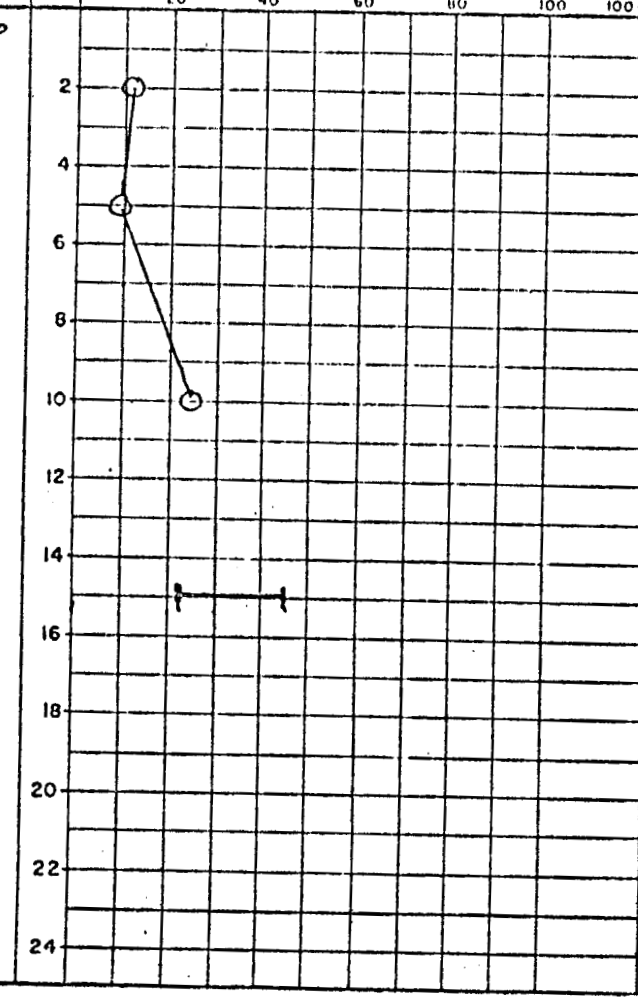
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
48	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER SANDY SILT OR SILTY SAND		FROST TO 3'
					ML	-NON-PLASTIC MTLS		
					SM	-WET FROM 10'-12'		
						12'		
					CI	SILTY CLAY -MEDIUM PLASTIC		
						15'		
						BOTTOM OF HOLE-15'		



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
-78-	22	0				OIL FOR BORROW TO 10'
-85-	15	0				-WET ZONE @ 10'
-37-	63	0				
-97-	3	0				

Borrow Pit #20

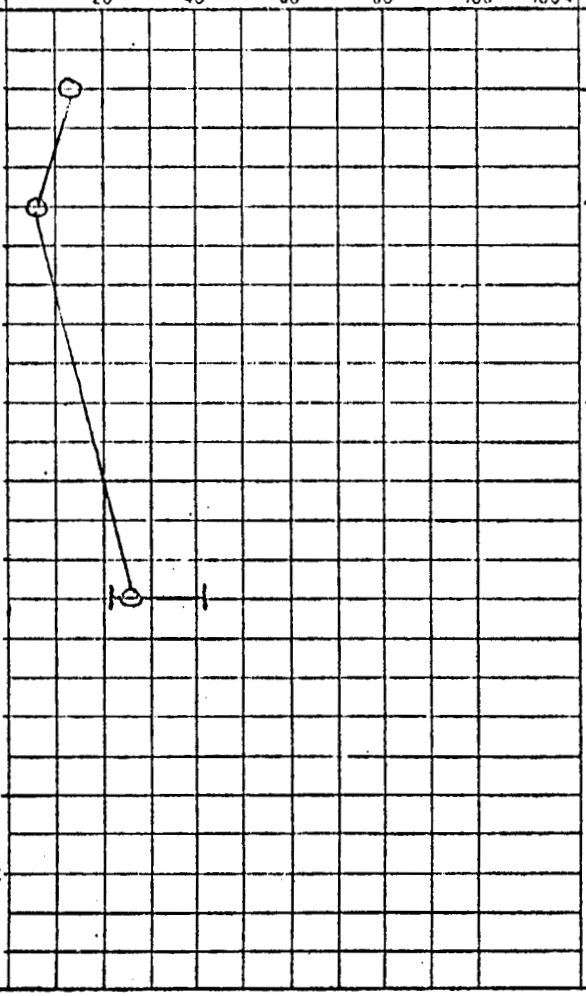
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
48	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER SANDY SILT OR SILTY SAND -VERY LOW PLASTIC		FROST TO 5'
					SM/ML			
						13'		
					CI	SILTY CLAY -MEDIUM PLASTIC		
						15'		
						BOTTOM OF HOLE -15'		



GRAIN-SIZE ANALYSIS	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
	89	11	0				O.K. FOR BORROW.
	96	4	0				
	40	60	0				
	97	3	0				

Borrow Pit #21

DRILL HOLE REPORT

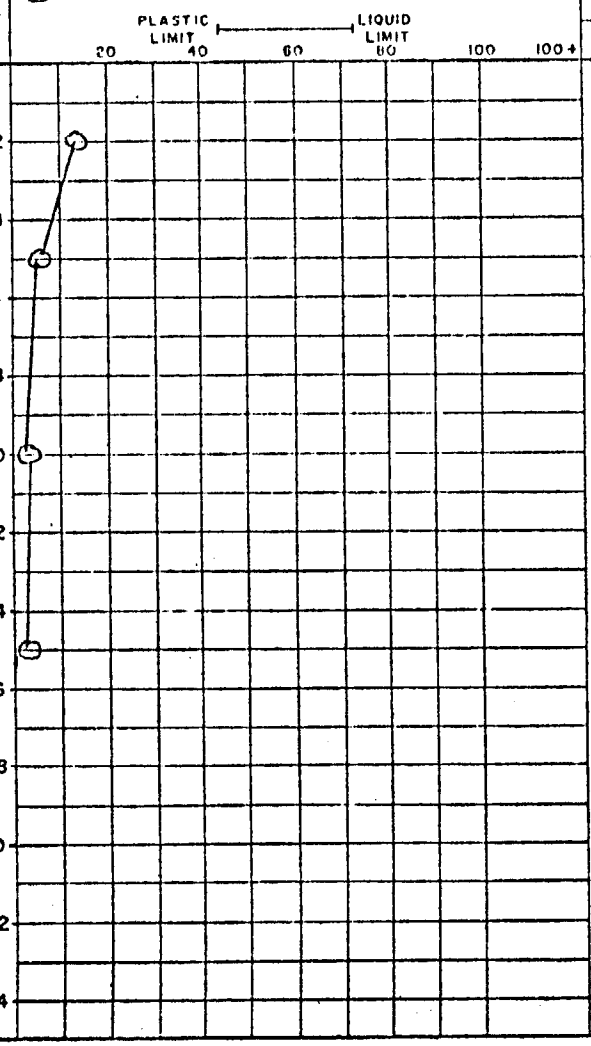
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar./10	AIRPHOTO NO:	CHAINAGE 2529 TO 2536	OFFSET 200' + 4 ℄
CKD	TECH D Prouych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
48	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2					ML	3" ORGANIC MTL OVER SANDY SILT -DAMP		FROST TO 2'	90	10		0			O.K. FOR BORROW
4															
5									56	44		0			
6					SM	SILTY SAND -NON-PLASTIC -DRY. -FINE TO MEDIUM									
8															
10									32	68		0			
12															
14															
15'									37	63		0			
16						BOTTOM OF HOLE-15'									
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



Borrow Pit * 21

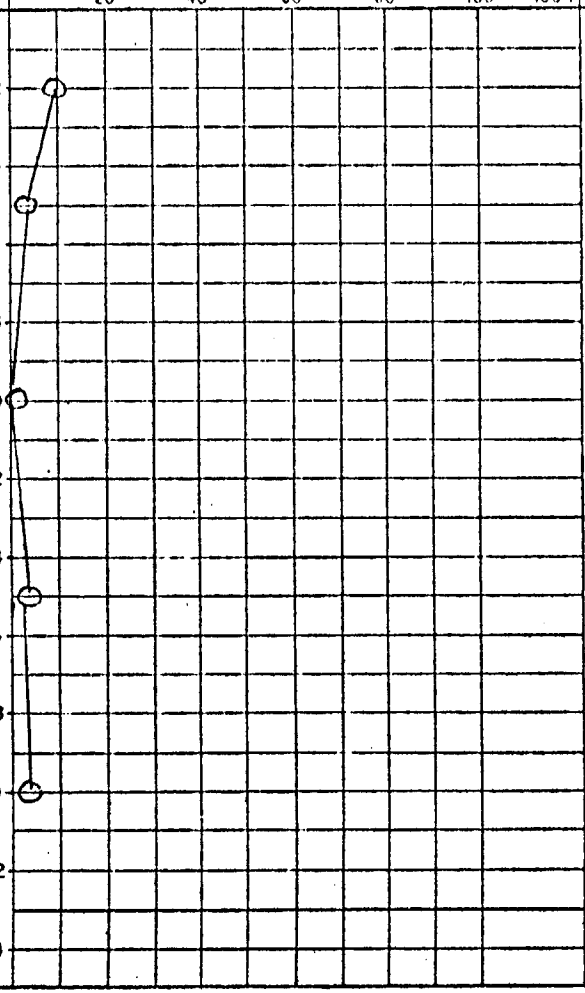
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH:	RIG:	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
48	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						3" ORGANIC MTL OVER SANDY SILT AND SILTY SAND		FROST TO 2'							O.K. FOR BORROW
2									-76-		24	0			
4					SM				-52-		48	0			
6					ML	-NON-PLASTIC									
						-DRY									
8						-FINE TO MEDIUM GRAINED									
10									-63-		37	0			
12															
14									-39-		61	0			
16															
18															
20						20'			-35-		65	0			
						BOTTOM OF HOLE-20'									
22															
24															



Borrow Pit #21

DRILL HOLE REPORT

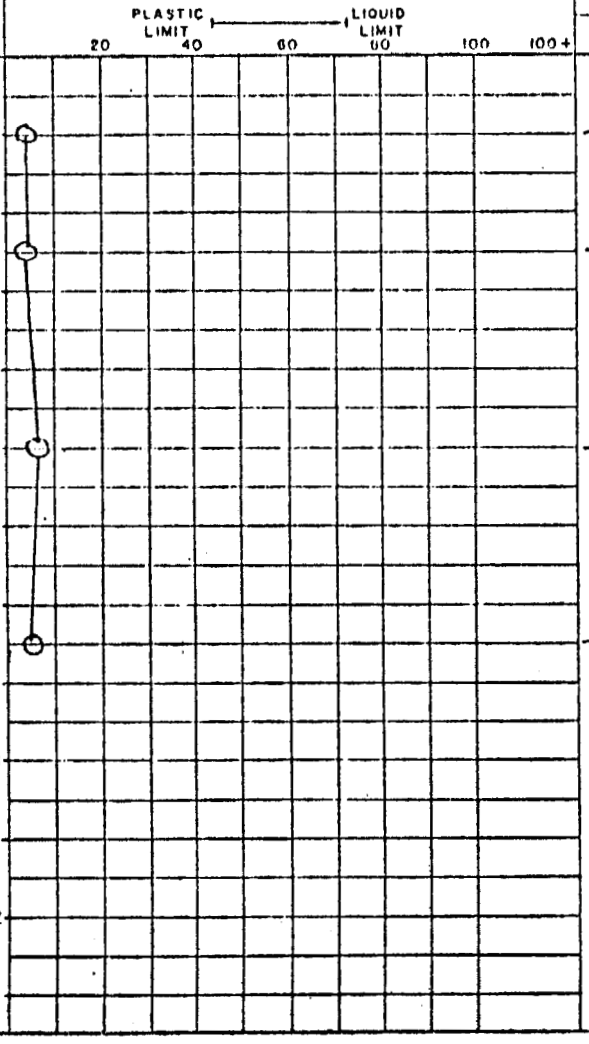
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
4.8	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						2" ORGANIC MTL OVER SILTY SAND -NON-PLASTIC		
4					SM	-FINE TO MEDIUM GRAINED		
6						-DRY		
8								
10								
12								
14						15'		
16						BOTTOM OF HOLE-15'		
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DEPTH (FEET)	GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	-26-	74	0			
4	-27-	73	0			
10	-28-	72	0			
14	-34-	66	0			

REMARKS

O.K. FOR BORROW.

Borrow Pit #22

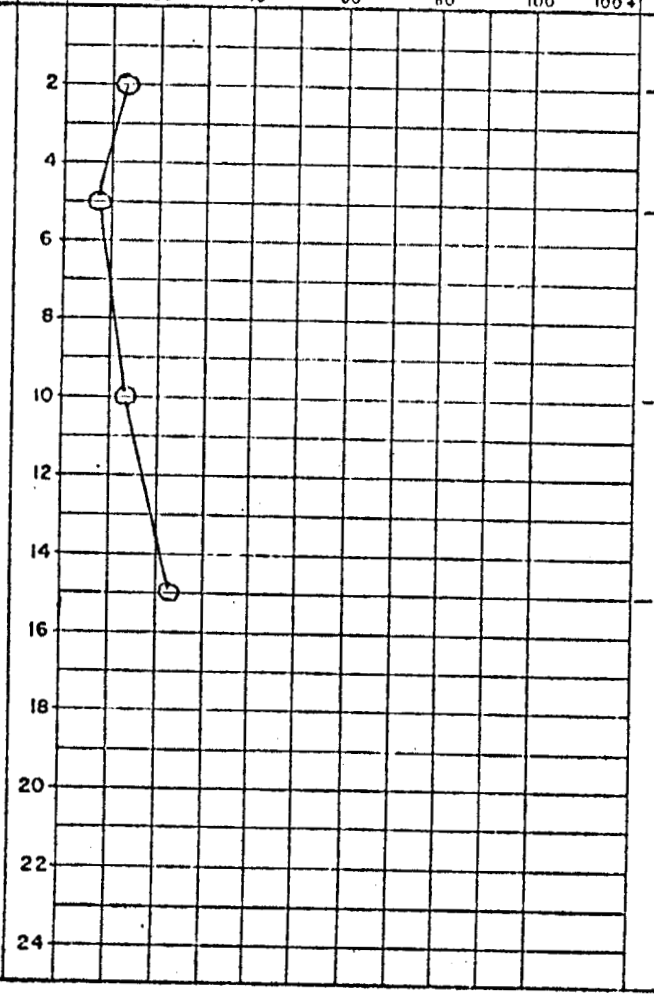
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2507 TO 2512	OFFSET 200' LT ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
47	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	2" ORGANIC MTL OVER SILT AND SANDY SILT -LOW PLASTIC -WET AT 10'		FROST TO 5'	-90-	10	0				O.K. FOR BORROW TO APPROX. 10' -WET AT 10'
4															
6					SM				-67-	33	0				
8															
10						10'									
12					CI CL	SANDY-SILTY-CLAY -LOW TO MEDIUM PLASTIC -MOIST			-78-	22	0				
14						15'									
16						BOTTOM OF HOLE - 15'			-62-	38	0				
18															
20															
22															
24															



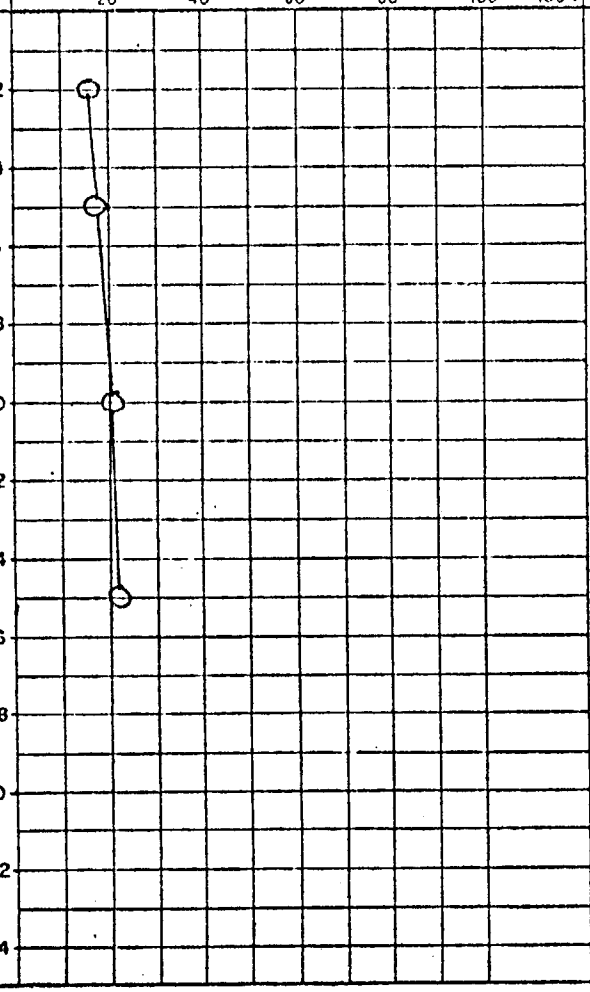
Borrow Pit #22

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA
~~MACKENZIE HIGHWAY~~

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET	TEST HOLE
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV	MILE 47 · B,C,S B · NUMBER 2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3" ORGANIC MAT OVER		FROST TO 2"							O.K. FOR BORROW TO APPROX. 10'
2						SILT AND			-94-	6	0				
4					SM	SANDY SILT									
					ML	- VERY LOW PLASTIC			-63-	37	0				
6						- WET BELOW 10'-11'									- WET BELOW 10'
8															
10									-98-	2	0				
12															
14						14'									
					ML	SANDY SILT WITH CLAY 15'			-72-	28	0				
16						BOTTOM OF HOLE - 15'									
18															
20															
22															
24															



Borrow Pit #23

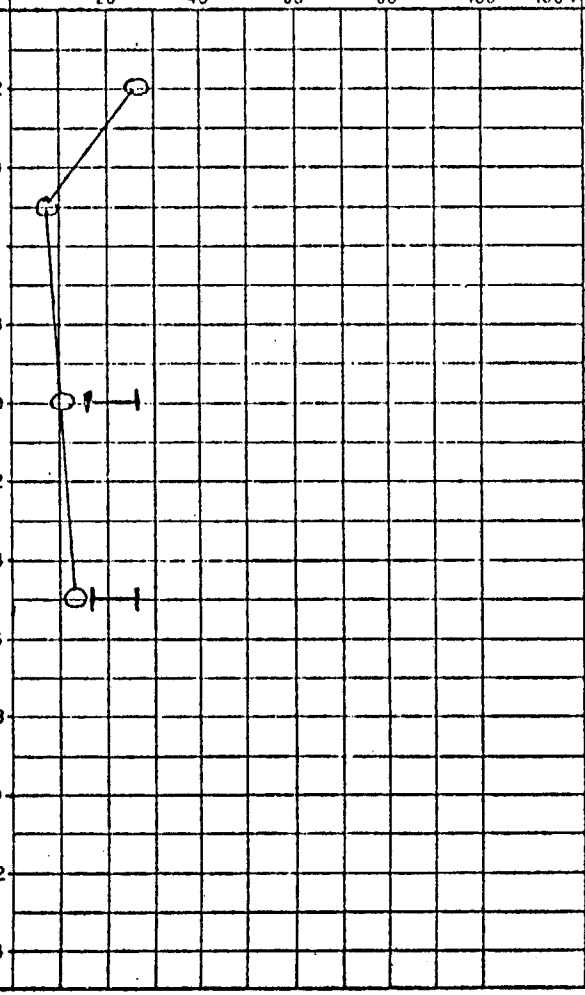
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2435 TO 2441	OFFSET 400' + 4.9%
CKD	TECH D PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION STUNTED SPRUCE	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
46	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	4" ORGANIC MTL OVER CLAY-SILT		FROST TO 3'
2'					SM	SILTY SAND -LOW PLASTIC -DAMP		
6'					CL	SILTY CLAY -LOW PLASTIC -DRY TO DAMP -GLACIAL TILL.		
15'						BOTTOM OF HOLE -15'		



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
CLAY %	SILT %	SAND %	GRAVEL %			
94	6	0				GOOD BORROW
36	64	0				-WET NEAR SURFACE.
37	57	6				-AREA CLOSE TO MUSKEG
41	57	2				-LIMITED BORROW AREA

Borrow Pit #23

DRILL HOLE REPORT

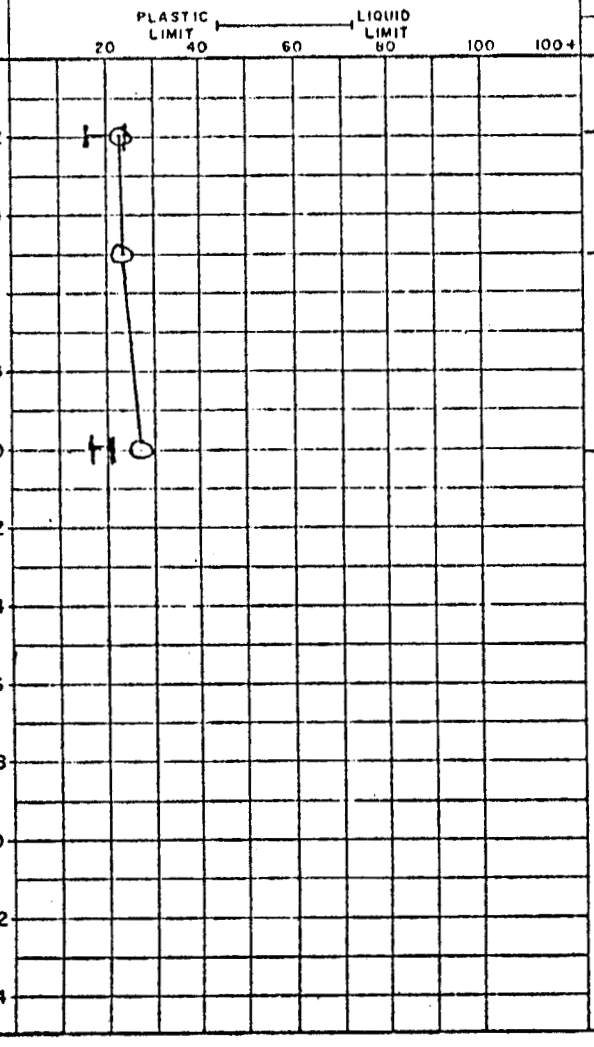
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION MUSKEG.	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
46	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2						ORGANIC MTL OVER SILT AND SANDY SILT			95	5	0				Too wet for Borrow.
4					ML				92	8	0				
6						-WET									
8															
10						10'			82	18	0				
12						Bottom of Hole 10'									
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



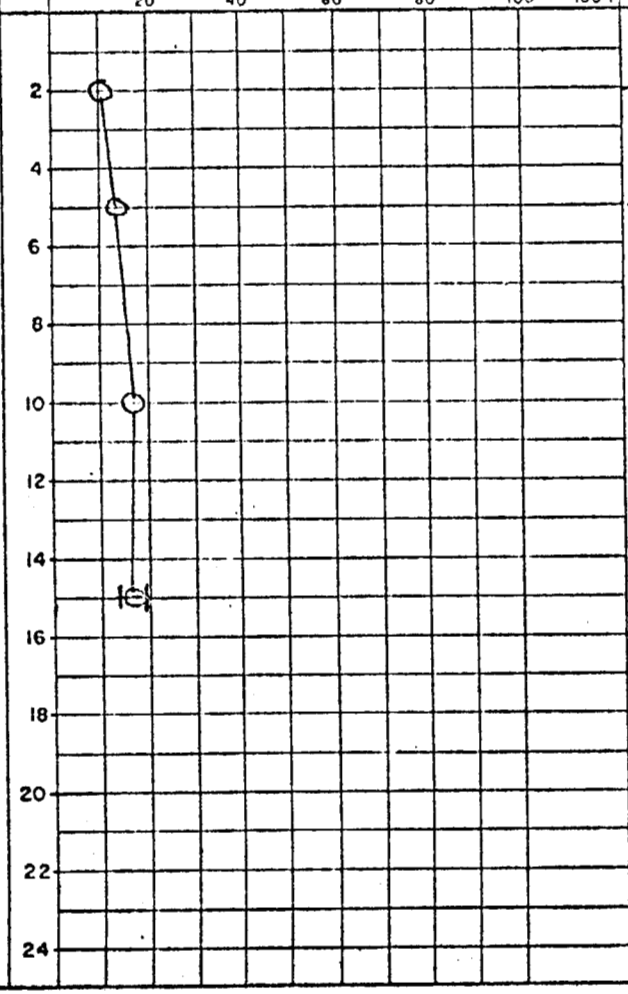
Borrow Pit #24

DRILL HOLE REPORT — **DEPARTMENT OF PUBLIC WORKS, CANADA**

DWN	FIELD ENG.	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2415 TO 2419	OFFSET 400' Lt &
CKD	TECH Q. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION: POPLAR	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
45	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3" ORGANIC MTL OVER		FROZEN TO 6'							O.K. FOR BORROW TO APPROX. 11'
2					ML	SILT WITH SOME CLAY -LOW PLASTIC -DAMP			-92-	8	0				
4						5			-70-	30	0				-BORROW AREA IN POPLAR STAND.
6						SANDY SILT -VERY LOW PLASTIC									
8					SM	-MOIST TO WET									
10					ML	BELOW 11'			-71-	29	0				
12															
14						-SILTY TILL AT 15'									
						15'			-56-	37	7				
16						BOTTOM OF HOLE 15'									
18															
20															
22															
24															



Borrow Pit # 24

DRILL HOLE REPORT

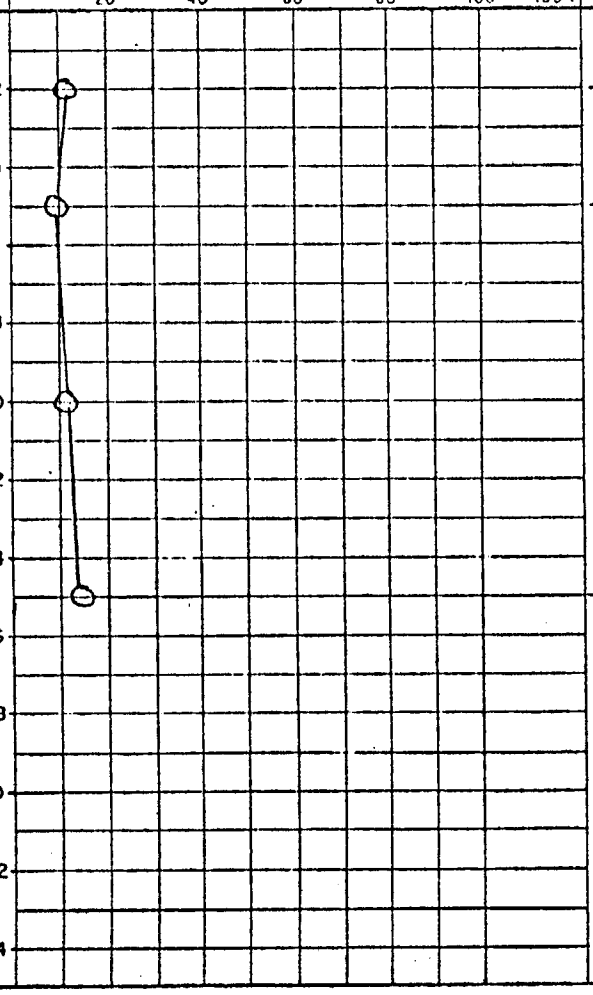
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED	AIRPHOTO NO.	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION Poplar - edge muskeg	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
4.5	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER SILT WITH SOME CLAY -LOW PLASTIC		FROZEN TO 3½'
						5'		
					ML	SANDY SILT -VERY LOW PLASTIC -DAMP		
						14'		
					SM ML	SILT WITH PEBBLES-TILL 15'		
						BOTTOM OF HOLE-15'		



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
-92-	8	0				O.K. FOR BORROW
-81-	19	0				
-71-	29	0				
-47-	25	28				

BORROW PIT #25

DRILL HOLE REPORT

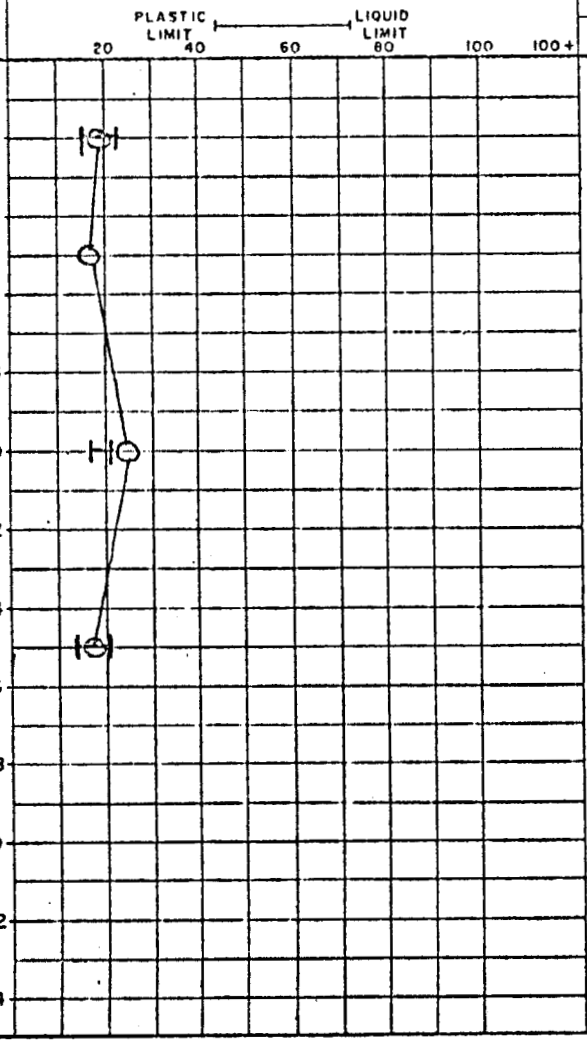
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 2350 TO 2357	OFFSET 400' + 4 ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
44	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER SILT WITH SOME CLAY -LOW PLASTIC		FROST TO 3'
					ML	SANDY SILT -VERY LOW PLASTIC -WET BELOW 10' (5')		
					CL ML	TILL- SANDY CLAY-SILT -LOW PLASTIC -WET (11')		
						BOTTOM OF HOLE -15' (15')		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
CLAY %	SILT %	SAND %	GRAVEL %		
-92-	8	0			
-93-	7	0			
-85-	15	0			
-71-	26	3			

REMARKS

GOOD BORROW TO APPROX 10'

-WET BELOW 10'

Borrow Pit #25

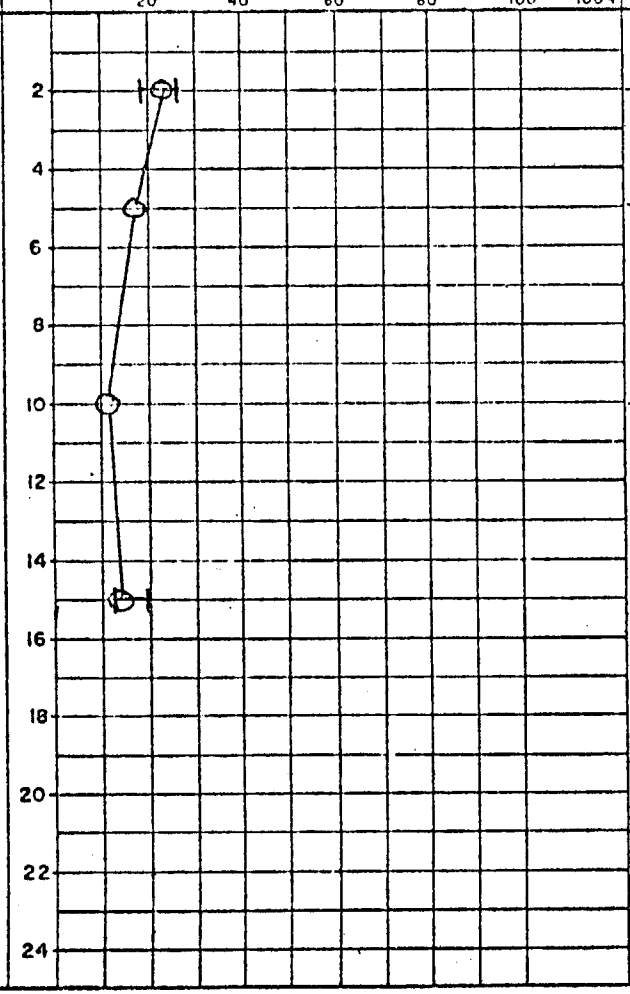
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
44	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						3" ORGANIC MTL OVER SILT WITH SOME CLAY		FROZEN TO 2'
4					ML	- LOW PLASTIC		
6						- WET NEAR SURFACE.		
8						9'		
10						TILL - CLAYEY-SANDY SILT		
12					ML	- LOW PLASTIC		
14						15'		
16								
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
CLAY %	SILT %	SAND %	GRAVEL %			
-97-	3	0				O.K. FOR BORROW
-91-	9	0				-WET ZONE AT SURFACE.
-40-	32	28				
-53-	41	6				

Borrow Pit #25

DRILL HOLE REPORT

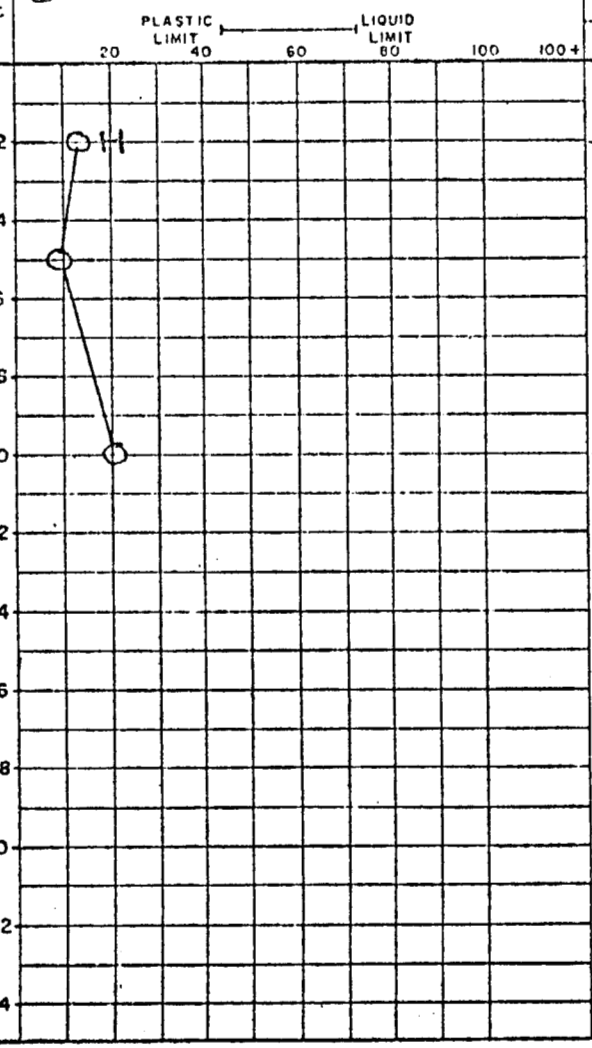
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
44	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MAT OVER SILT WITH SOME CLAY -LOW PLASTIC -DAMP		FROST TO 2'
					ML	SANDY SILT -VERY LOW PLASTIC -DAMP (5')		
					ML	SANDY-SILT-TILL. (9')		
						BOTTOM OF HOLE-10' (10') COBBLES FROM 9'-10' START OF TILL.		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-96-	4	0			
-76-	24	0			
-83-	17	0			

REMARKS

O.K. FOR BORROW.

Borrow Pit #26

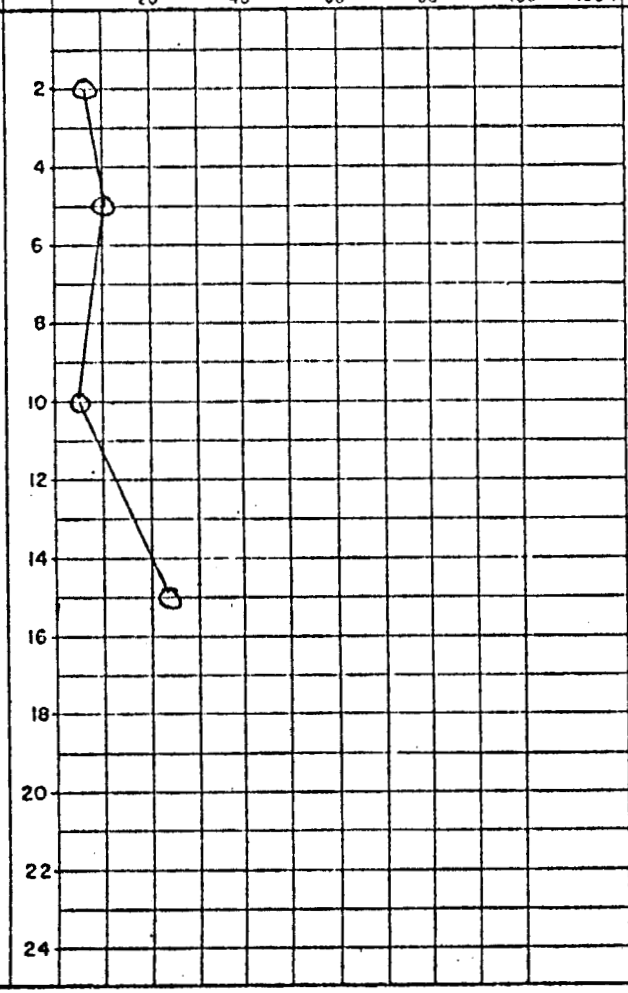
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG:	DATE DRILLED: MAR/73	AIRPHOTO NO:	CHAINAGE: 2221 to 2226	OFFSET: 500' + Rt ℄
CKD	TECH: D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
42	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						3" ORGANIC OVER SANDY SILT OR SILTY SAND		
4					SM	-LOW PLASTIC		
6					ML	-DAMP		
8						-FINE TO MEDIUM GRAINED.		
10								
12						12'		PARTIALLY FROZEN FROM 12' ON.
14					ML	SAND-SILT -LOW PLASTIC -WET.		
						15'		
16						BOTTOM OF HOLE		
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-45-	55	0			
-51-	49	0			
-50-	50	0			
-77-	23	0			

REMARKS

OIL. FOR BORROW TO 11'-12'.

-FROZEN AND WET ON THAWING BELOW 12'

-LIMITED AREA FOR BORROW AVAILABLE

-NARROW RIDGE BORDERED BY MUSKEG.

Borrow Pit #26

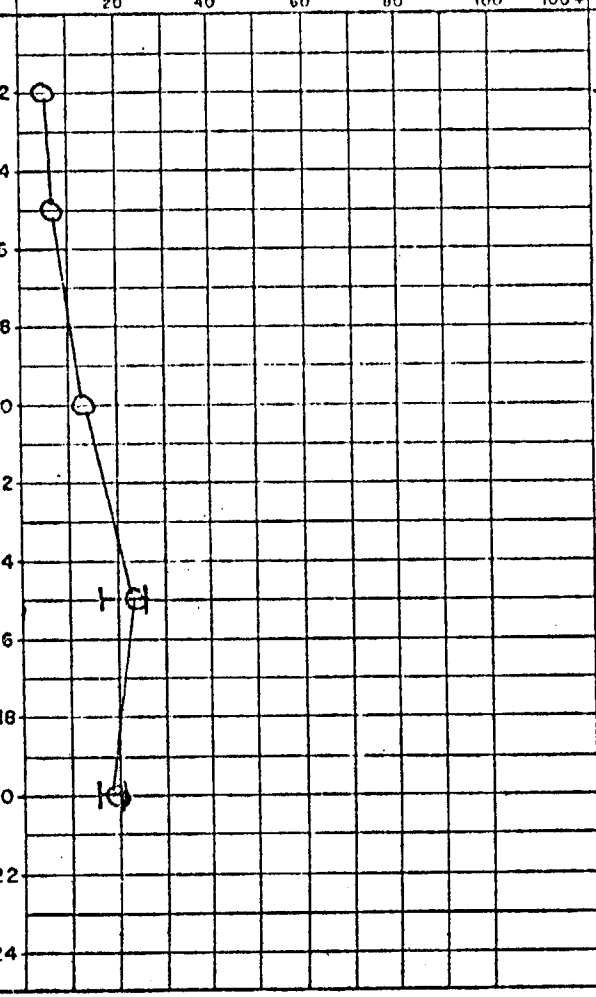
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED	AIRPHOTO NO:	CHAINAGE:	OFFSET
CKD	TECH.	RIG:	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
42	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3" ORGANIC MTL OVER SILTY SAND OR SANDY SILT		FROZEN TO 10'							NOT GOOD BORROW AREA.
2									-36-		64	0			
4					SM										
					ML	- LOW PLASTIC			-35-		65	0			
6						- FROZEN									
8						- DAMP ON THAWING.									
10						10'			-60-		40	0			
12						TILL SANDY CLAY-SILT WITH PEBBLES									
14					CL										
					ML	- LOW PLASTIC			-63-		13	24			
16						- WET									
18															
20						20'			-56-		33	11			
						BOTTOM OF HOLE - 20'									
22															
24															



Borrow Pit #27

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

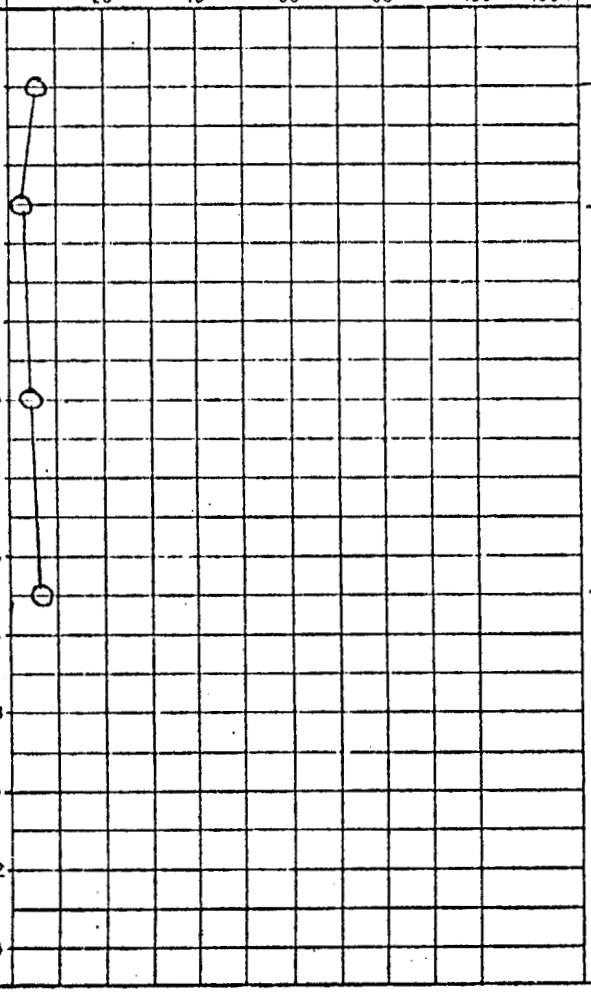
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2182 TO 2187	OFFSET 400' + 4' to
CKD	TECH D. Prouych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
41	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER SAND-SILT MIXTURE		FROZEN TO 3'
2								
4					SM	-NON-PLASTIC		
6					ML	-DAMP		
8						• PEBBLES & SOME CLAY NEAR 15' INDICATING START OF TILL.		
10								
12								
14								
						15'		
16						BOTTOM OF HOLE -15'		
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⊢——⊣ LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	68	32		0		
5	53	47		0		
15	60	40		0		

REMARKS: Good Borrow

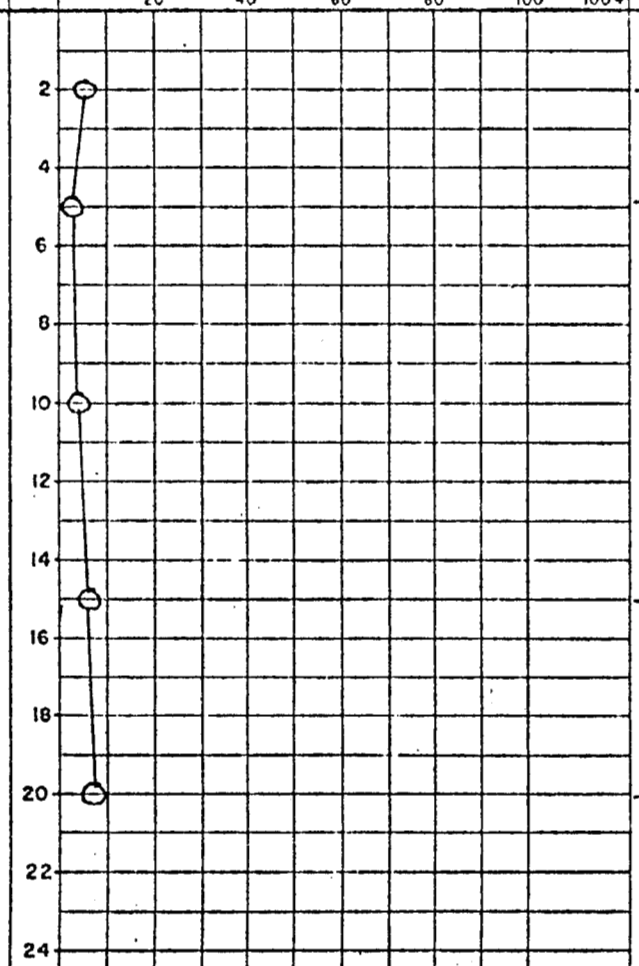
Borrow Pit #27	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
41	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	REMARKS
						2" ORGANIC MTL OVER		FROZEN TO 3'	GOOD BORROW
2						SANDY SILT AND			
4					SM	SILTY SAND			
6					ML	- NON-PLASTIC			
						- DAMP			
8									
10									
12						12'			
						SANDY-CLAY-SILT WITH PEBBLES			
14					ML	- TILL			
16					CL	- LOW PLASTIC			
						- DAMP			
18									
20						20'			
						BOTTOM OF HOLE-20'			
22									
24									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	72		28	0		
6	38		62	0		
16	41		39	20		
20	60		36	4		

Borrow Pit #27

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

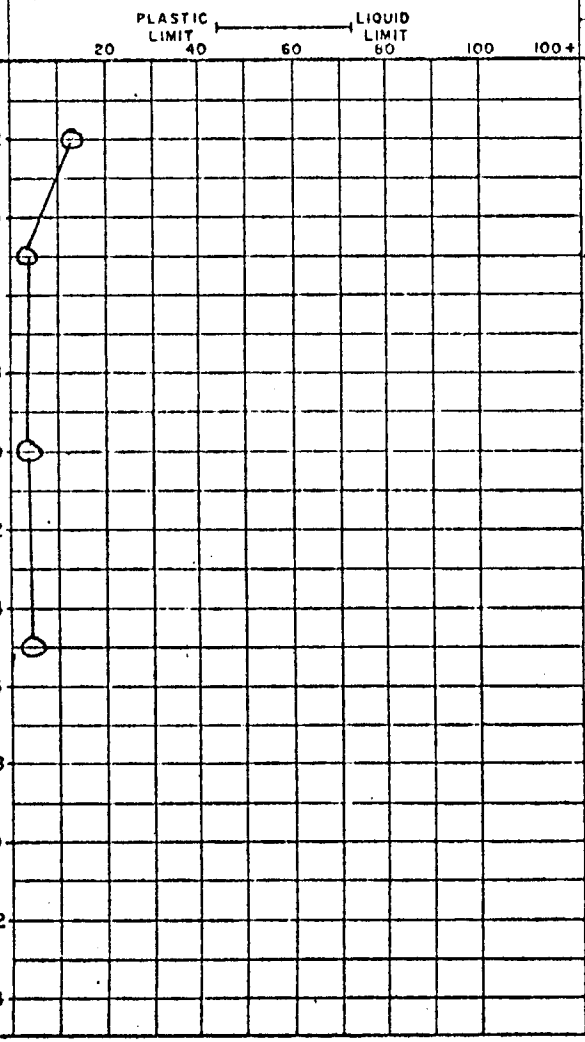
DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
41	B	3

REMARKS: Good Borrow.

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" organic mtl. over		Frozen to 3'
2						Sandy silt or		
4					SM	silty sand.		
					ML	-non-plastic		
6						-damp.		
8								
10								
						11'		
12						Sandy silt with		
					ML	pebbles		
					CL	-some clay		
14						-till.		
						15'		
16						Bottom of hole - 15'		
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-8	0-	20	0		
-6	2-	38	0		
-6	0-	40	0		
-5	7-	35	8		

Borrow Pit #28

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE: 2118 to 2124	OFFSET 400' + Rt. ℄
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
40	B	1,2,3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	O = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) PLASTIC LIMIT — LIQUID LIMIT 20 40 60 80 100 100+	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						Drilled 3 holes this area - Holes #2 & #3 were stopped on cobbles at 2'. - Hole #1 stopped at 6'. - Anticipate cobble layer indicates start of glacial till.		Frozen to 2½'									O.K. for Borrow.
2									2								
4									4								
6									6								
8									8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

Borrow Pit #29

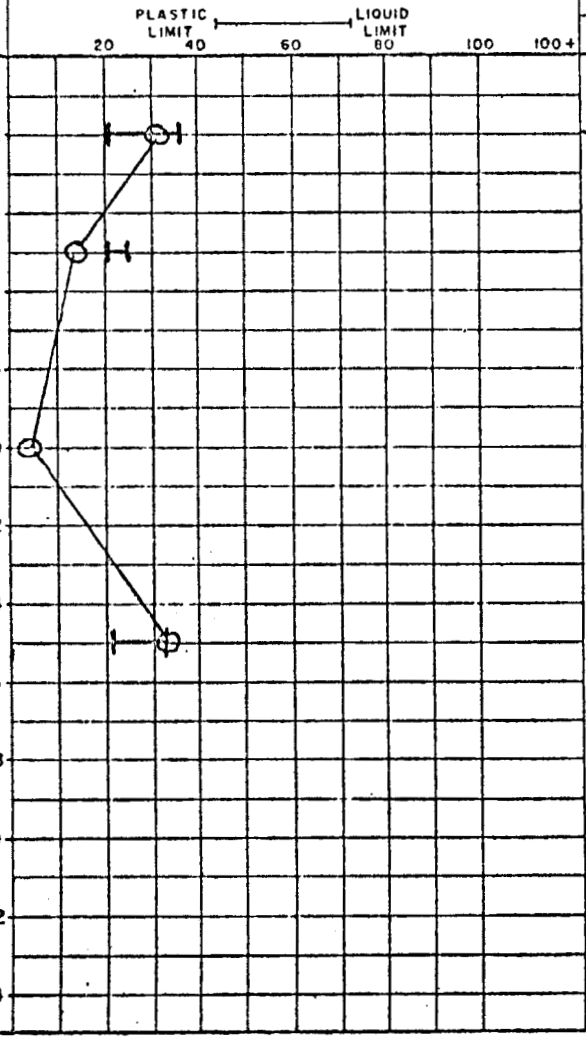
DRILL HOLE REPORT — DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2083 to 2088	OFFSET 300' + Rt. dk
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
39	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					CI	2" ORGANIC MTL OVER SILTY CLAY - WET — 3'		FROST TO 2'
					SM / ML	SANDY SILT OR SILTY SAND - LOW PLASTIC - DAMP — 11'		
					CL	SILT-CLAY - LOW PLASTIC - WET — 15'		
						BOTTOM OF HOLE - 15'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
98	2	0				O.K. FOR BORROW TO 10-11'
88	12	0				- WET BELOW 11'
45	55	0				- SLIGHTLY WET ZONE TO 2'
99	1	0				

Borrow Pit #29

DRILL HOLE REPORT

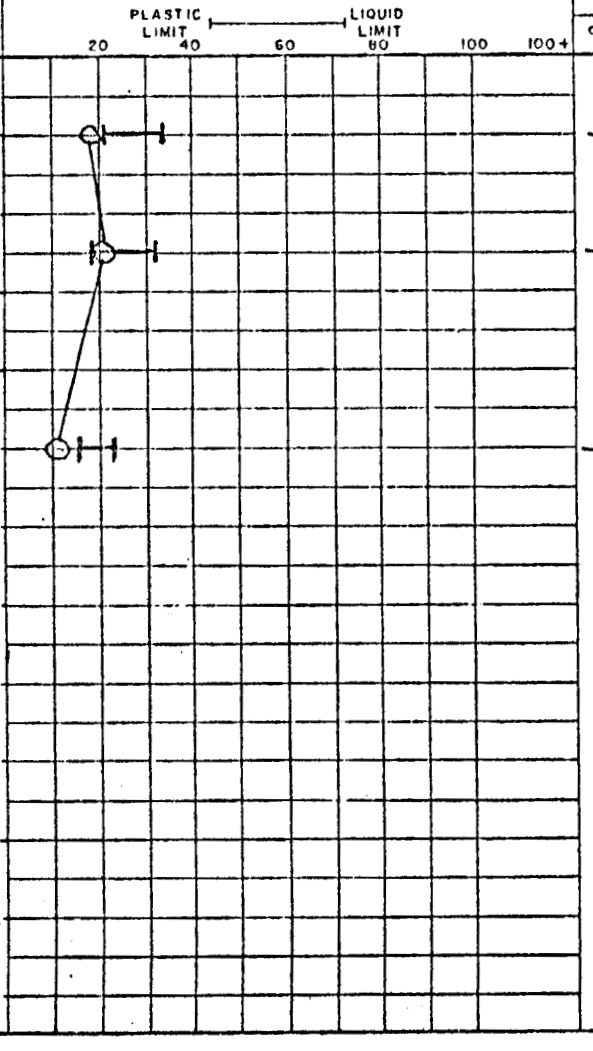
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
39	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					CI CL ML	2" ORGANIC MTL OVER SILT WITH SOME CLAY - LOW TO MEDIUM PLASTIC — 5'		FROZEN TO 2'
					CI	SILTY CLAY - MEDIUM PLASTIC - DAMP — 8'		
					ML CL	SANDY SILTY CLAY WITH PEBBLES - TILL — 10'		
						BOTTOM OF HOLE - 10'		
						AUGER STOPPED ON COBBLES AT 10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
99	1	0				O.K. FOR BORROW
98	2	0				
54	33	13				

Borrow Pit #29

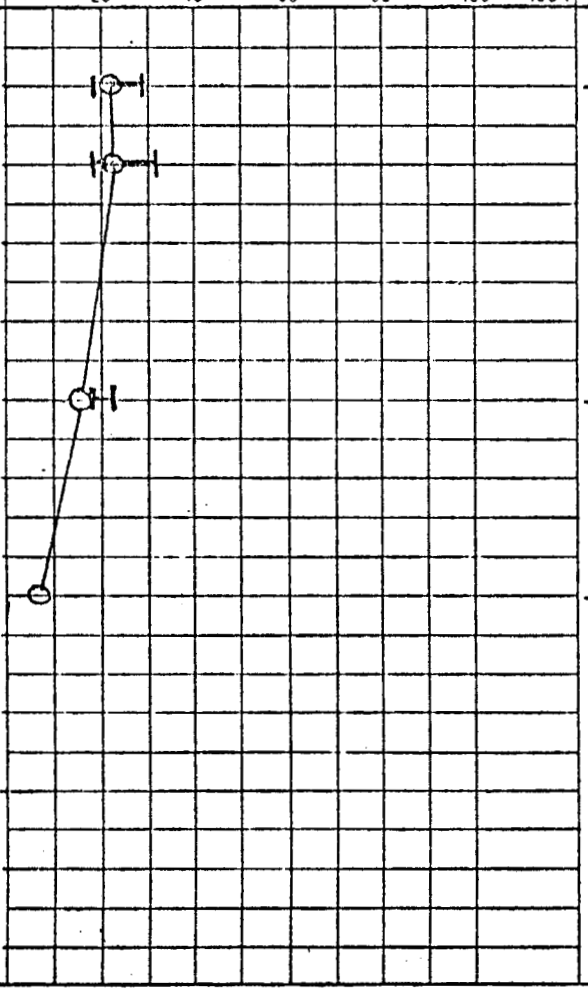
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
39	B	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 2'
2					CL	SILTY CLAY OR		
4					ML	CLAYEY SILT		
6					CI	-LOW TO MEDIUM PLASTIC		
8								
10						10'		
12					CL	TILL		
14					ML	-SAND-SILT-CLAY-PEBBLES MIX.		
16					SM	-LOW PLASTIC		
						15'		
18						BOTTOM OF HOLE - 15'		
20								
22								
24								



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
CLAY %	SILT %	SAND %	GRAVEL %			
97	3	0				GOOD BORROW
95	5	0				
78	20	2				
39	32	29				

Borrow Pit # 30

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1989 to 1995	OFFSET 400' Lt +
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
37	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						2" ORGANIC MTL OVER		FROST TO 2'								O.K. FOR BORROW.
2					SM	SANDY SILT OR			2	44	56	0				
4					ML	SILTY SAND			4							
6						-NON-PLASTIC -DAMP			6	63	37	0				
8						8'			8	48	52	0				
10						BOTTOM OF HOLE-8' AUGER STOPPED ON			10							
12						COBBLES			12							
14						HOLE #1 THIS PIT			14							
16						STOPPED ON COBBLES AT 2'			16							
18						ANTICPATE TILL			18							
20						BELOW COBBLE LAYER.			20							
22									22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

GRAIN-SIZE ANALYSIS

Borrow Pit #31

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 1951 to 1957
CKD	TECH D. Prohych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:

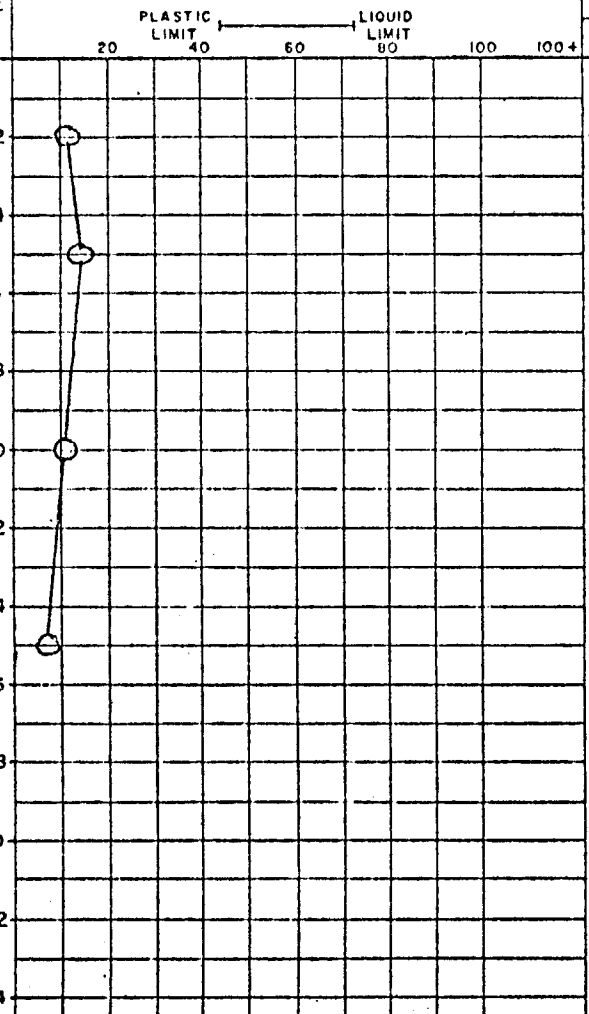
OFFSET 400 + Lt. ℄

ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
37	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER SANDY SILT OR SILTY SAND		FROZEN TO 2'
					ML	-SOME CLAY CONTENT TO 5'		
					SM	-NON-PLASTIC TO LOW PLASTIC		
						- DAMP		
						15'		
						BOTTOM OF HOLE - 15'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-68-	32	0			
-64-	36	0			
-50-	50	0			
-50-	50	0			

REMARKS

O.K. FOR BORROW.

Borrow Pit #31

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

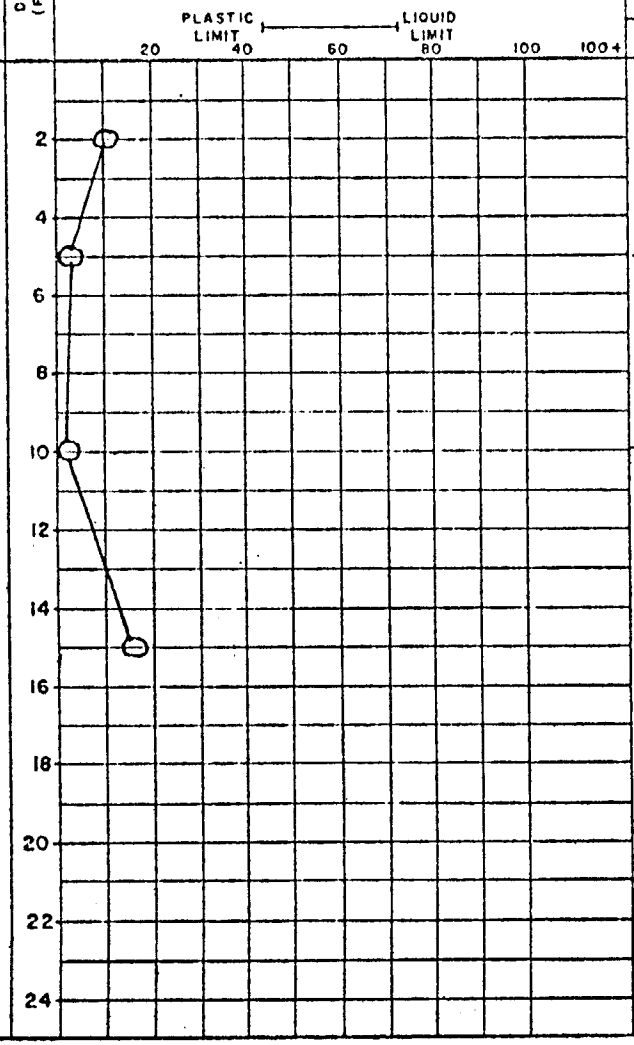
DWN	FIELD ENG.	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
37	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 2'
2						SANDY SILT OR		
						SILTY SAND		
4					SM	-NON-PLASTIC OR		
						VERY LOW PLASTIC		
6					ML	-DAMP		
8						-BECOMING		
						SLIGHTLY WET		
10						AT 15'		
12								
14						15'		
16						BOTTOM OF HOLE - 15'		
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



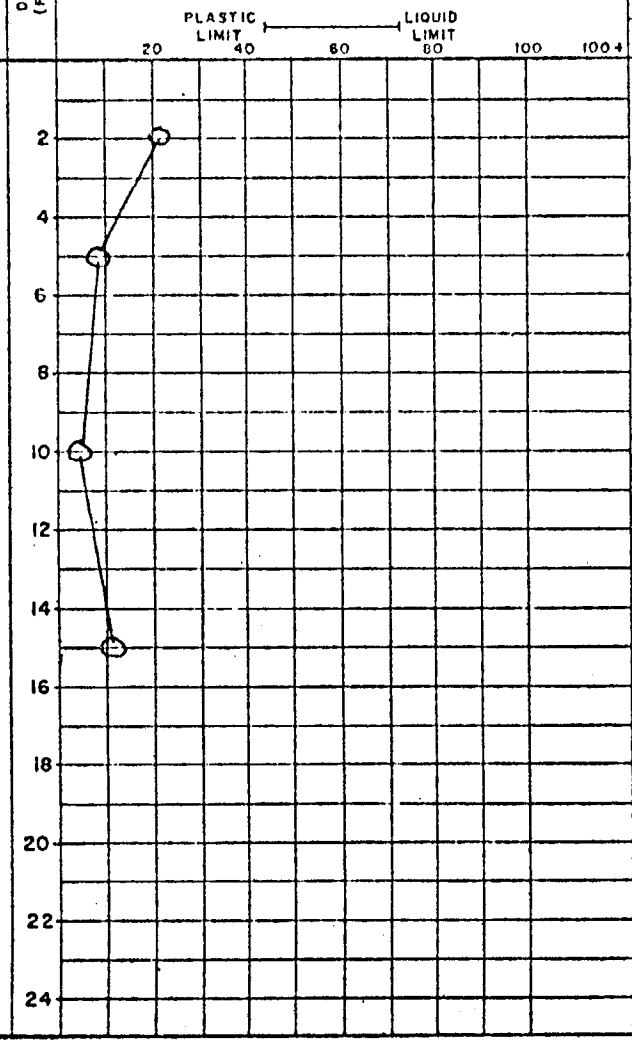
GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
7	7	23	0			O.K. FOR BORROW.
6	4	36	0			
4	9	51	0			
6	5	35	0			

Borrow Pit #31	DRILL HOLE REPORT	DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET	TEST HOLE
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV	MILE: 37 B.C.S: B NUMBER: 3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER SILTY SAND OR SANDY SILT - LOW PLASTIC OR NON-PLASTIC - WET AT SURFACE		FROST TO 2'								O.K. FOR BORROW - WET ZONE AT SURFACE.
					SM/ML	START OF GLACIAL TILL NEAR 15'										
						15' BOTTOM OF HOLE - 15'										

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



Depth (feet)	Clay %	Silt %	Sand %	Gravel %
2	72	28	0	
4	56	44	0	
10	39	61	0	
14	42	45	13	

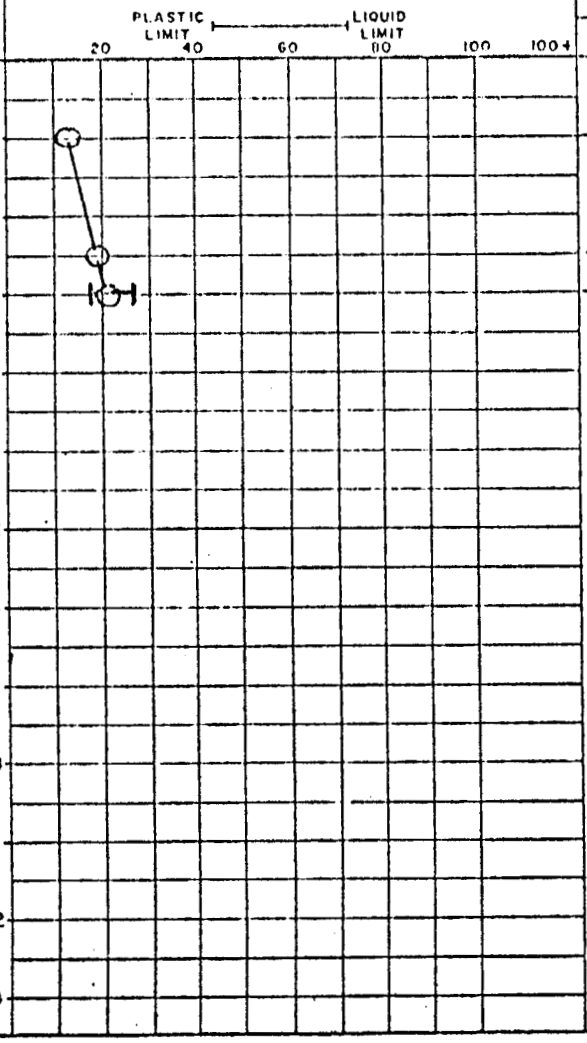
Borrow Pit #32

DRILL HOLE REPORT — **DEPARTMENT OF PUBLIC WORKS, CANADA**

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1869 to 1875	OFFSET 500' + Rt. ℄
CKD	TECH D PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
35	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2					ML	2" ORGANIC MTL OVER CLAY-SILT -LOW PLASTIC		FROZEN TO 6'.	100	0	0				SUBSOIL FROZEN TO DEPTH OF DRILLING, ANTICIPATE TILL BELOW COBBLE LAYER SUGGEST TEST PIT TO DETERMINE DEPTH OF FROST AND SUITABILITY FOR BORROW
4									99	1	0				
6						COBBLES AT 6' — 6'			93	7	0				
8						BOTTOM OF HOLE -6'									
10						HOLE #2 DRILLED THIS PIT AREA ALSO STOPPED AT 5' ON COBBLES.									
12															
14						ALSO FROZEN TO 5'									
16															
18															
20															
22															
24															



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

Borrow Pit #33

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1636 TO 1641
CKD	TECH D Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION:

OFFSET 400' + Lt &

ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
31	B	1,2,3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						Attempted 3 holes this area. All holes stopped at 2'. Area adjacent to existing pit anticipate similar material		
2								
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

REMARKS

Existing Pit 160'+ off right-of-way and hidden from view
- Suggest expanding existing pit.

Borrow Pit # 34

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA
CROWFOOT HIGHWAY

DWN	FIELD ENG.	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1606 TO 1610	OFFSET 300' + Rt. ℄
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
30	B	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) PLASTIC LIMIT — LIQUID LIMIT (20 40 60 80 100 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						HOLE STOPPED AT 2' ON COBBLES.											NOT RECOMMENDED FOR BORROW
2									2	○	-9	2-	8	0			
4									4								
6									6								
8									8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

Borrow Pit #34

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE	OFFSET
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

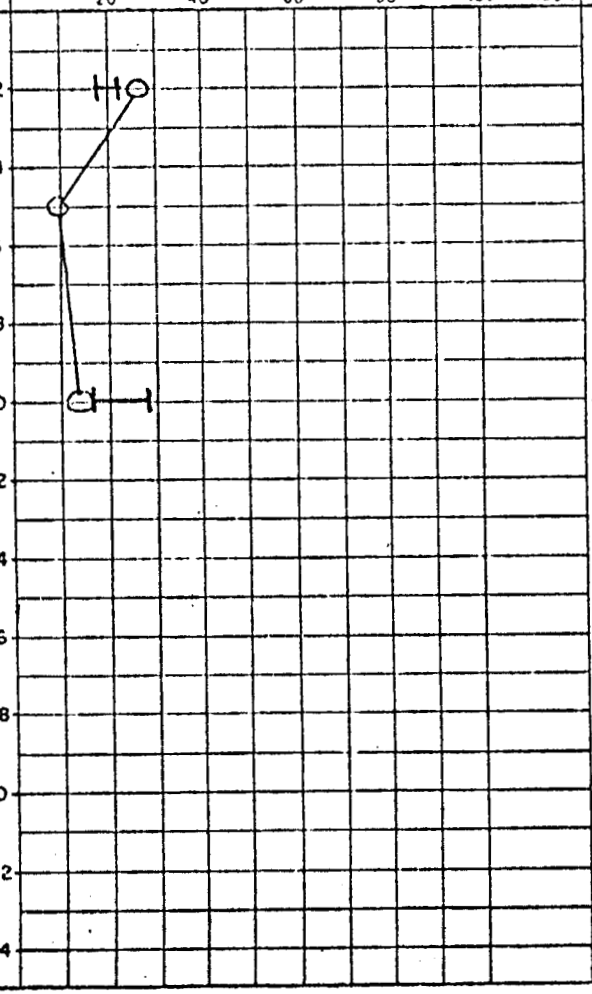
TEST HOLE

MILE	B,C,S	NUMBER
30	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	5" ORGANIC MTL OVER SILT - WET		FROZEN TO DEPTH OF HOLE
						3'		
4						TILL SAND-SILT-CLAY WITH PEBBLES		
6					CL	- LOW PLASTIC		
8					CI	- FROZEN		
10								
12						12'		
						BOTTOM OF HOLE - 12'		
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT



DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	93	7	0			
4	54	26	20			
10	63	35	2			

REMARKS

NOT RECOMMENDED FOR BORROW.

- FROZEN TO DEPTH OF HOLE

Borrow Pit #35

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1534 to 1538
CKD	TECH D. Pronyen	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:

OFFSET 1600+ R+ &.. ELEV

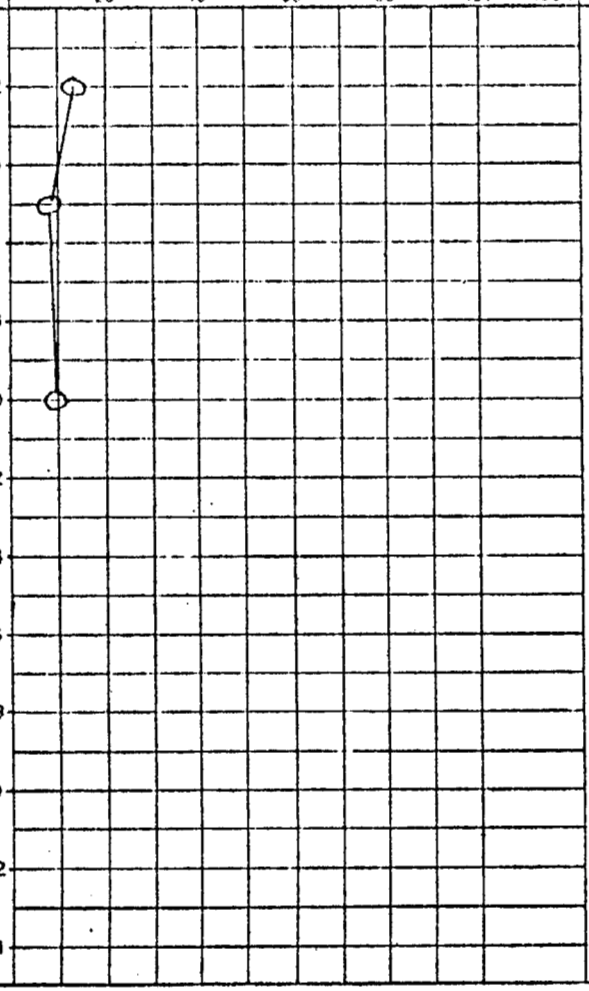
TEST HOLE		
MILE	D.C.S	NUMBER
29	B	2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
						2" ORGANIC MTL OVER								
2					SM	SANDY SILT			-58-		42	0		
4					ML	-NON-PLASTIC								
						-DAMP			-61-		39	0		
6														
8														
						COBBLES AT 10'								
						START OF TILL? 10'								
10									-57-		43	0		
						BOTTOM OF HOLE - 10'								
12						HOLE #1 THIS AREA								
14						STOPPED ON COBBLES								
						AT 2'								
16														
18														
20														
22														
24														

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+



REMARKS

Adjacent to existing pit which can be expanded.

B - CENTRELINE DRILL HOLES

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED 4/5/72	AIRPHOTO NO:	CHAINAGE 1707+50	OFFSET 4
CKD	TECH G. Beinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

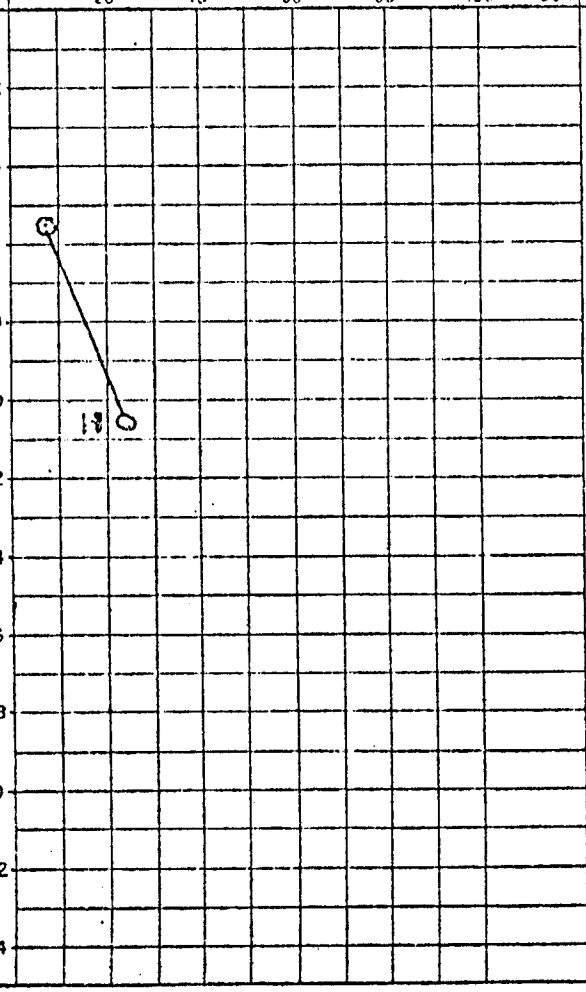
TEST HOLE

MILE	B,C,S	NUMBER
32	C	1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						SANDY SILT OR SILTY SAND		
4					SM	<LOW PLASTIC		
6	1				AL	-FROZEN 9'-12'		
						-WET ON THAWING		
8						-COBBLES AT 12'		FROZEN 9' TO 12'+
10	2					UNABLE TO PENETRATE FURTHUR		
12						12'		
						BOTTOM OF HOLE -12'		
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
6	52		48	0		
10	63		37	0		

REMARKS

HOLE IN CUT SECTION
-FROZEN BELOW 9'
-VERY WET ON THAWING
-COBBLES AT 12' SUGGEST START OF TILL
-SOME SLOUGHI WILL OCCUR IN THAWED MAT FROM 9'-12' AFTER CONSTR -ION/EXCAVATION
-TILL SHOULD NOT SLOUGH FOLLOWIN THAWING (IE. BELO 12')

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1824100 AND 1820100	OFFSET
CKD	TECH D. Pronych	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
34	C	L59 L60

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) PLASTIC LIMIT — LIQUID LIMIT 20 40 60 80 100 100+	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						THESE HOLES IN CUT AREA WHICH HAS BEEN PARTIALLY COMPLETED. -SUBSOIL IS GLACIAL TILL -MAXIMUM PENETRATION WITH AUGERS TO 6' DUE TO COBBLES.											NO PROBLEM ANTICIPATED WITH CUT.
2									2								
4									4								
6									6								
8									8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 4/5/72	AIRPHOTO NO:	CHAINAGE 1820 +00	OFFSET 4
CKD	TECH G. BRINCK	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	D,C,S	NUMBER
34	C	3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					SC	CLAY-SILT-SAND-PEBBLES									NO PROBLEMS WITH CUT ANTICIPATED
4					CL	-LOW-PLASTIC -DAMP.									
6					ML	-COBBLES AT 6'									
8						BOTTOM OF HOLE-6' AUGER STOPPED ON COBBLES AT 6' ANTICIPATE TILL BELOW 6'									
10															
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT

20 40 60 80 100 100+

DEPTH (FEET)	○	△	CLAY %	SILT %	SAND %	GRAVEL %
2	OH		31	44	25	
6	OH		39	54	7	

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 4/5/72	AIRPHOTO NO:	CHAINAGE: 1824+00	OFFSET ℄
CKD	TECH G. BRINCK.	RIG: AUGER.	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D.C.S	NUMBER
34	C	4

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) PLASTIC LIMIT — LIQUID LIMIT 20 40 60 80 100 100+	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						DRILLED TO 2-3' AUGER STOPPED ON COBBLES ANTICIPATE GLACIAL TILL BELOW 3'											NO PROBLEMS WITH CUT ANTICIPATED
2									2								
4									4								
6									6								
8									8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

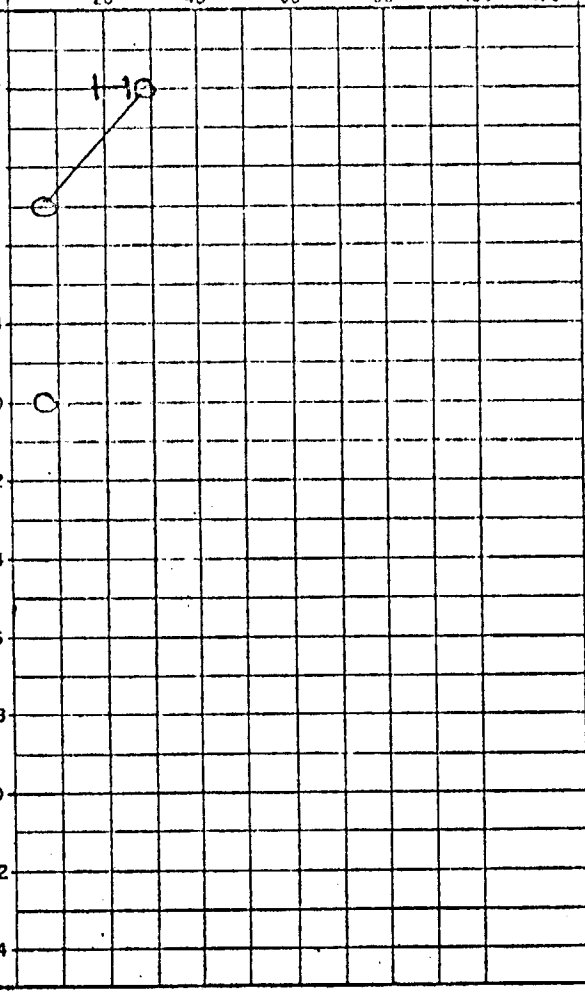
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 1841+00	OFFSET: ℄
CKD	TECH D Prowych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
35	C	L57

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					CL ML	CLAY-SILT -LOW PLASTIC -WET AT SURFACE		FROST TO 4'
4					SC CL	4' CLAY-SILT-SAND -TILL		
6						6' BOTTOM OF HOLE-6' COBBLES @ 6'		
8								
10								
12								
14								
16								
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
80	20	0			
38	26	36			

REMARKS

ROUGH GRADE IN HERE.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

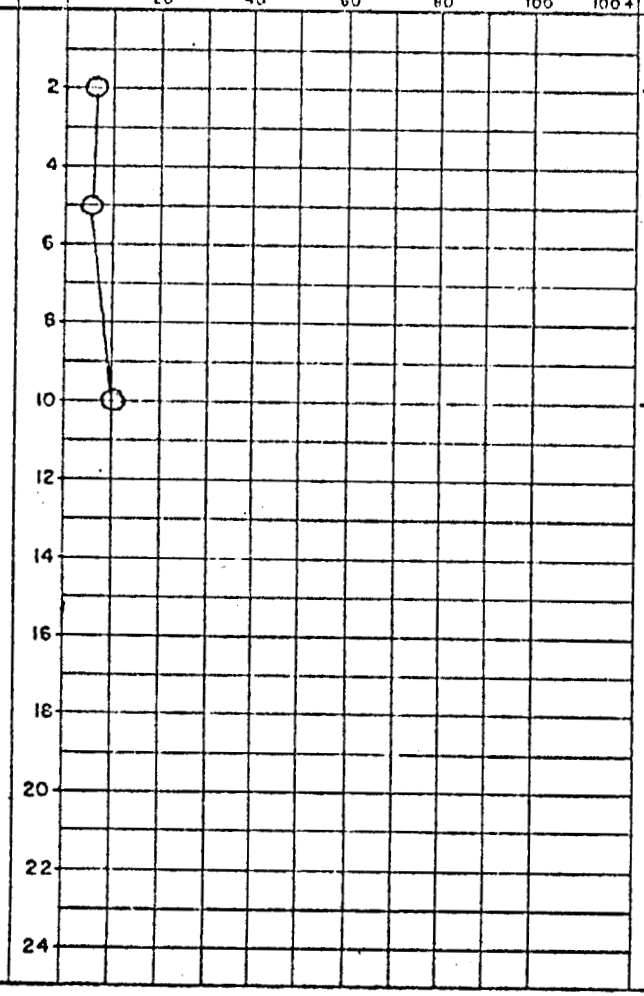
DWN	FIELD ENG.	DATE DRILLED MAR/73	AIRPHOTO NO.	CHAINAGE 1856+00	OFFSET 4'
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
35	C	L56

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SC	CLAY-SILT-SAND -LOW PLASTIC -DAMP		FROST TO 4'
4						4'		
6					SM AL	SILTY SAND OR SANDY SILT -NON-PLASTIC -DAMP.		
8								
10						10'		
12						BOTTOM OF HOLE 10'		
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
2	40		60	0		
4	46		54	0		
10	52		48	0		

REMARKS

ROUGH GRADE IN HERE.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

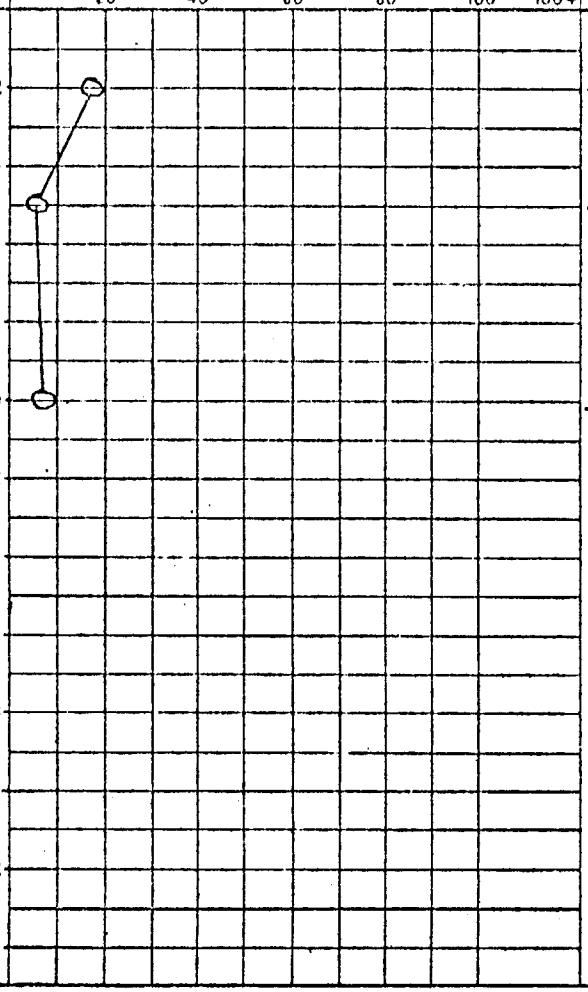
DWN	FIELD ENG	DATE DRILLED Aug/73	AIRPHOTO NO:	CHAINAGE 1868+000	OFFSET 2
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
35	C	155

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	2" ORGANIC MAT OVER SANDY SILT		FROST TO 5'
						3'		
4						SILTY SAND -DRY TO DAMP		
6					SM	-NON-PLASTIC		
8								
10						10'		
						BOTTOM OF HOLE-10'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟷ LIQUID LIMIT



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-65-	35	0			
-25-	75	0			
-39-	61	0			

REMARKS

Rough grade in here. No cut proposed

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

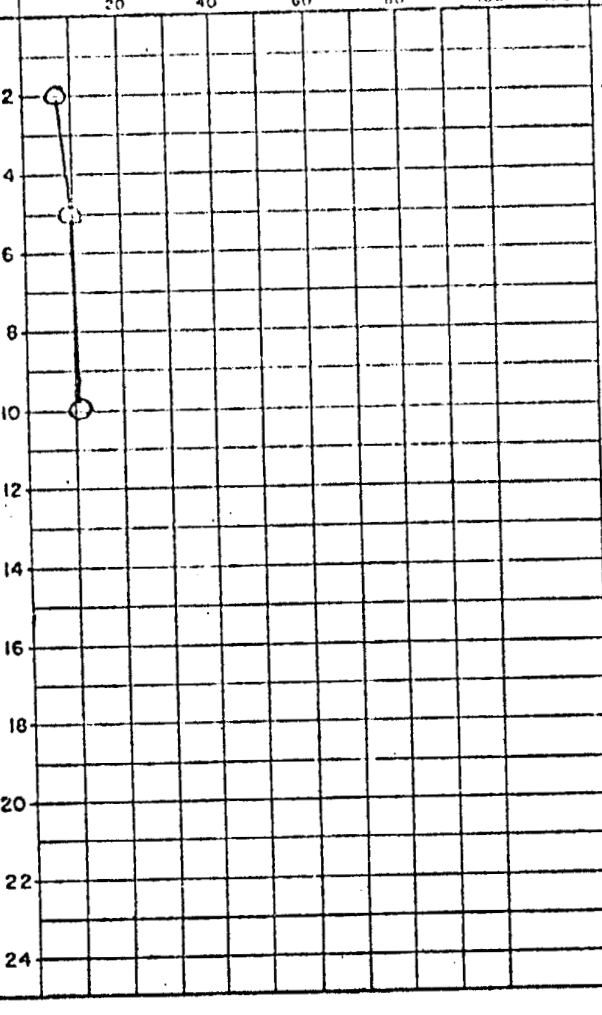
DWN	FIELD ENG	DATE DRILLED	AIRPHOTO NO:	CHAINAGE 1879+00	OFFSET 4.
CKD	TECH	RIG	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	L.C.S	NUMBER
36	C	L54

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	2" ORGANIC MTL OVER SANDY SILT - VERY LOW PLASTIC - DAMP.		FROST TO 2'
						10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
-62-	38	0				No cut Proposed Here.
-58-	42	0				
-85-	15	0				

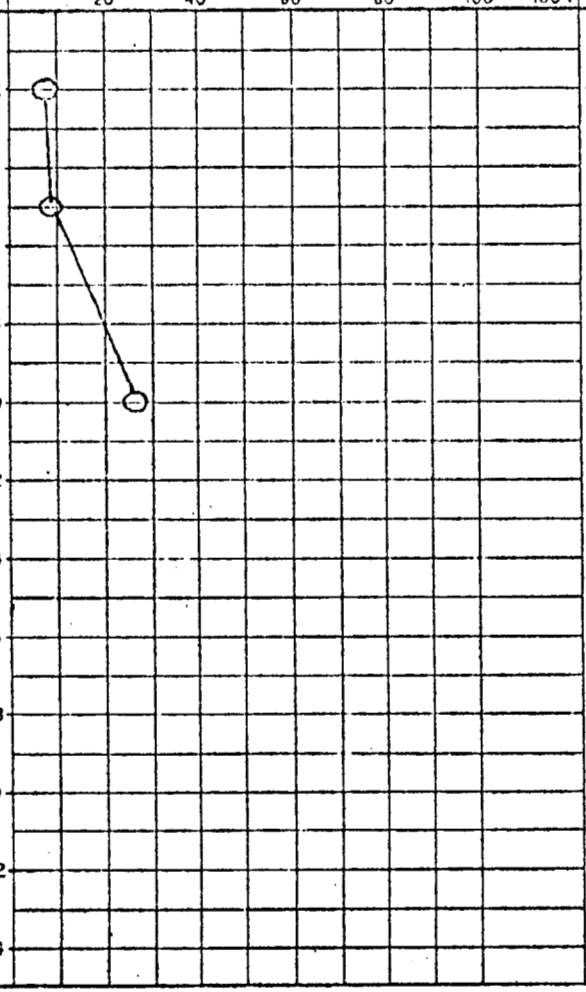
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED/Mar/73	AIRPHOTO NO:	CHAINAGE 1993+00	OFFSET ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
36	C	L53

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 2'
2					SM	SILTY SAND OR		
4					ML	SANDY SILT		
						-VERY LOW PLASTIC		
6						-DAMP TO 8'		
						-WET BELOW 8'		
8								
10						10'		
						BOTTOM OF HOLE - 10'		
12								
14								
16								
18								
20								
22								
24								



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	52		48	0		
4	64		36	0		
10	90		10	0		

REMARKS

NO CUT PROPOSED HERE.
-GRADELINE COULD BE LOWERED.

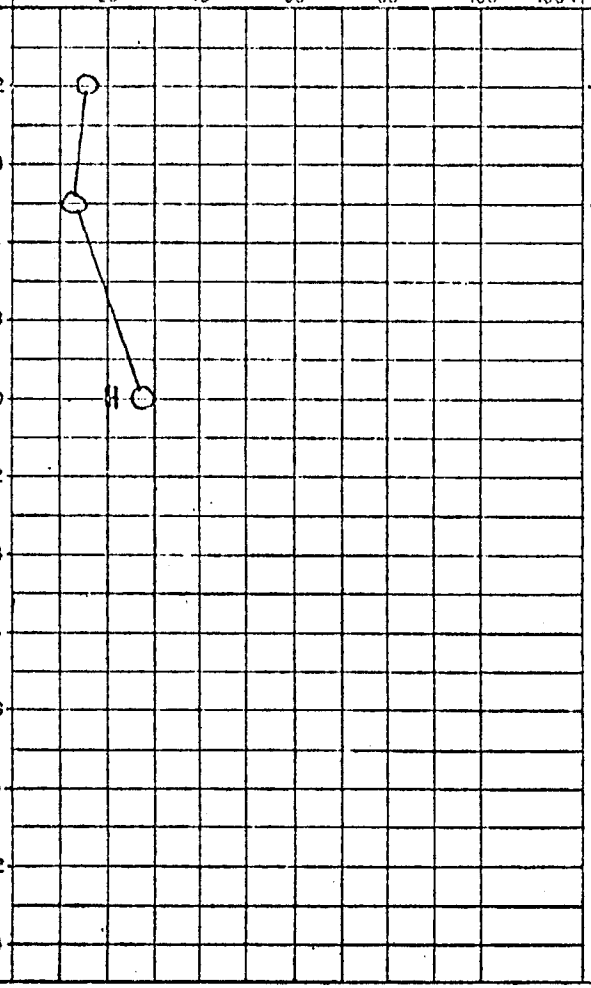
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 1902+50	OFFSET 4L
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
36	C	LS2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER SILTY SAND AND SANDY SILT - LOW PLASTIC - DAMP - WET BELOW 8'		FROST TO 2'								3-4' CUT TO GRADELINE - O.K.
2									2	49	51	0				
4					SM				4							
6					AL				6	49	51	0				
8									8							
10						10'			10	89	11	0				
						BOTTOM OF HOLE - 10'										
12									12							
14									14							
16									16							
18									16							
20									20							
22									22							
24									24							



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

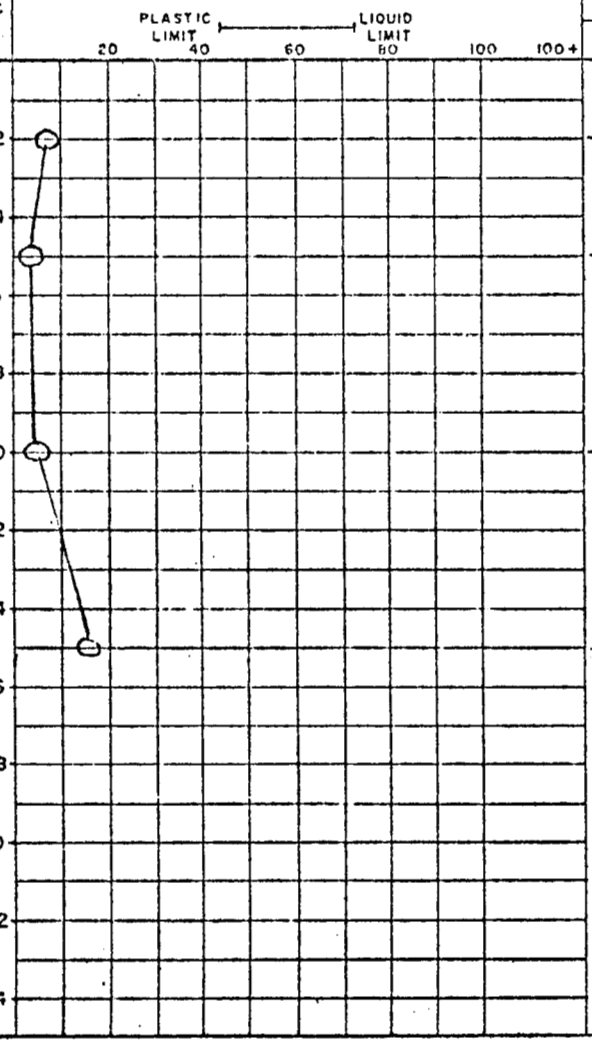
DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 1911+50
CKD	TECH D. PROMYCH	RIG Auger	SURFACE DRAINAGE:	VEGETATION

OFFSET ℄ ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
36	C	L51

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SM	2" ORGANIC MTL OVER SILTY SAND -NON-PLASTIC -DRY		FROST TO 2'
4								
6								
8								
10								
12					ML	-SANDY SILT NEAR 15' -DAMP.		
14								
16						15' BOTTOM OF HOLE.		
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
43	57	0			
26	74	0			
46	54	0			
69	31	0			

REMARKS

8-9' CUT TO GRADELINE HERE - O.K.
-EROSION MAY BE PROBLEM.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE (9)23400	OFFSET 1
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
36	C	L50

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER SILTY SAND -NON-PLASTIC -DRY TO DAMP		FROST TO 2'								NO CUT PROPOSED HERE -GRADELINE COULD BE LOWERED -EROSION MAY BE PROBLEM (WIND AND WATER)
2					SM				2	-34-	66	0				
4									4	-33-	67	0				
6									6							
8									8							
10						10' BOTTOM OF HOLE -10'			10	-36-	64	0				
12									12							
14									14							
16									16							
18									18							
20									20							
22									22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT

20 40 60 80 100 100+

GRAIN-SIZE ANALYSIS

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1541+00	OFFSET	TEST HOLE
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV	MILE 36 / B,C,S C / NUMBER L49

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER		FROST TO 2'							No cut Proposed Here.
2					SM	SILTY SAND			-45-		55	0			-Gradeline could be lowered.
4						- NON-PLASTIC			-30-		64	0			-Wind and water erosion could be a problem.
6						- DRY TO DAMP									
8															
10						10'			-30-		70	0			
12						Bottom of Hole - 10'									
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

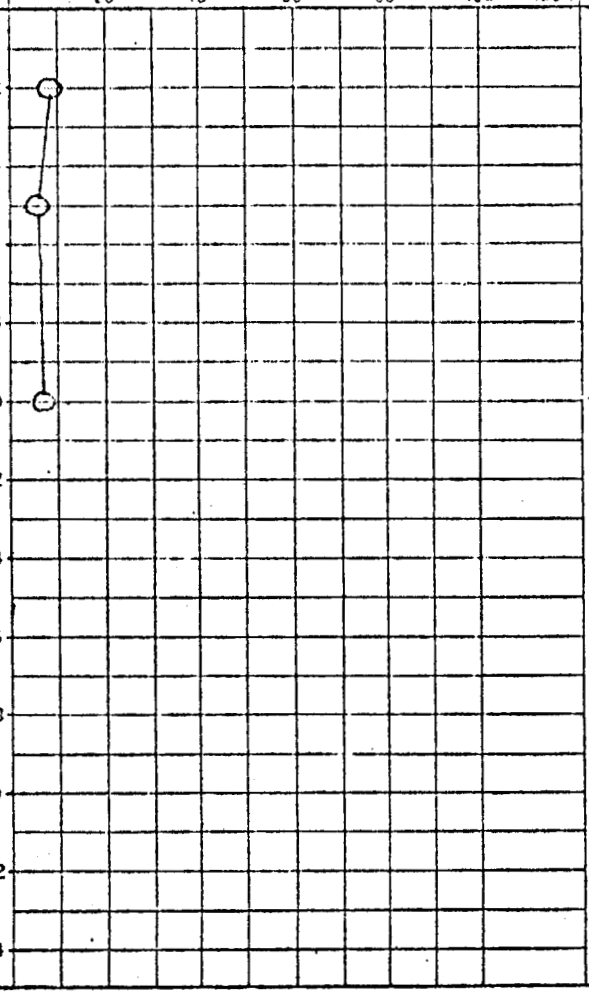
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1544+50	OFFSET 4L
CKD	TECH D. Pronych	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
37	C	L48

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SM	2" ORGANIC MTL OVER SILTY SAND -NON-PLASTIC -DAMP.		FROST TO 2'
4								
6								
8								
10						10'		
12						BOTTOM OF HOLE-10'		
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	46		54	0		
4	43		57	0		
10	34		66	0		

REMARKS

No cut proposed here.
-Gradeline could be lowered.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

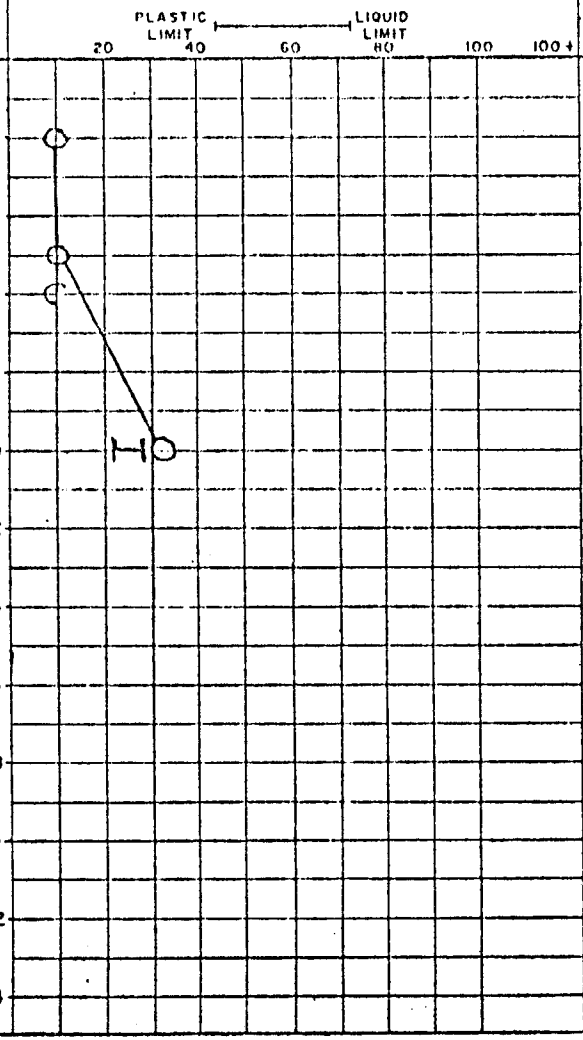
DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 1969+00	OFFSET ℄
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	D,C,S	NUMBER
37	C	L47

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 2'
2					ML	SANDY SILT - VERY LOW PLASTIC - DAMP		
4								
6						- WET SILTY CLAY AT 10'		
8								
10					CL ML	10'		
						Bottom of Hole - 10'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
83	17	0			
66	34	0			
97	3	0			

REMARKS

Very shallow cut here. - Grade line could be lowered.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 1982+00	OFFSET ℄
CKD	TECH D.PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
37	C	L46

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT 20, 40, 60, LIQUID LIMIT 80, 100, 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER		FROST TO 2'									NO CUT PROPOSED HERE -GRADELINE COULD BE LOWERED.
2					IAL	SILT AND SANDY SILT -DAMP			2	○	-76-	24	0				
4									4	○	-96-	4	0				
6									6								
8									8								
10						10'			10	○	-93-	7	0				
12						BOTTOM OF HOLE - 10'			12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE: 1994+00	OFFSET: ℄
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
37	C	L45

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					CL/AL	2" ORGANIC MTL OVER CLAY SILT AND SILTY CLAY -DAMP.		FROST TO 2.5'	-97-	3	0				NO CUT PROPOSED HERE -GRADELINE COULD BE LOWERED.
4															
5'						BOTTOM OF HOLE-5' HOLE STOPPED ON COBBLES @ 5'									
6															
8															
10															
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ⟷ LIQUID LIMIT

20 40 60 80 100 100+

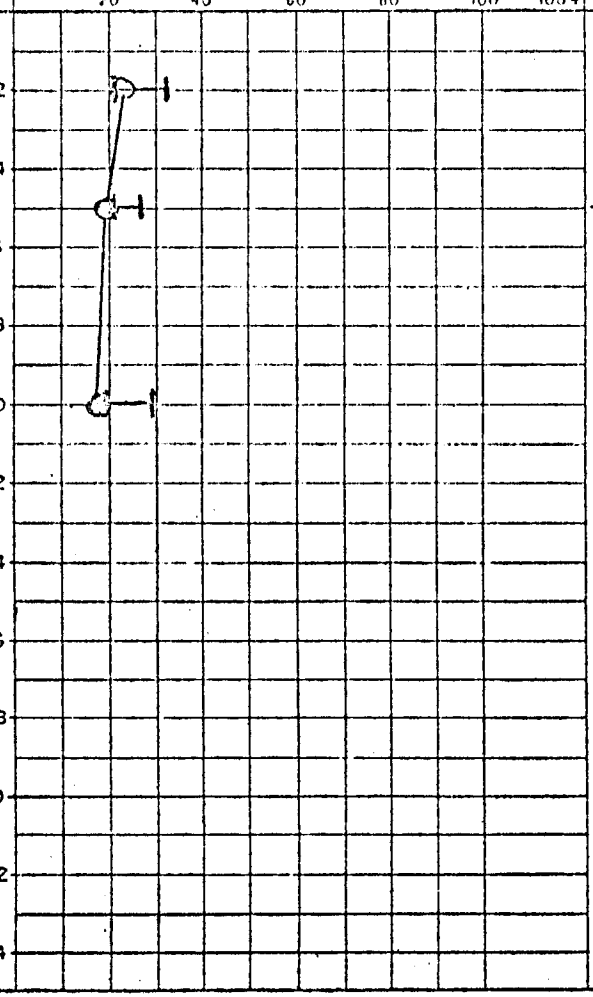
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 1 MAR/73	AIRPHOTO NO:	CHAINAGE 2023+00	OFFSET ±
CKD	TECH D. Prodnich	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
38	C.	L43

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER		FROST TO 2'							No cut Proposed Here -Grade line could be lowered.
2					CL	SILTY CLAY OR CLAY-SILT			100	0	0				
4					IAL	- LOW PLASTIC			99	1	0				
6						- DAMP.									
8															
10						10'			99	1	0				
						BOTTOM OF HOLE - 10'									
12															
14															
16															
18															
20															
22															
24															



DRILL HOLE REPORT

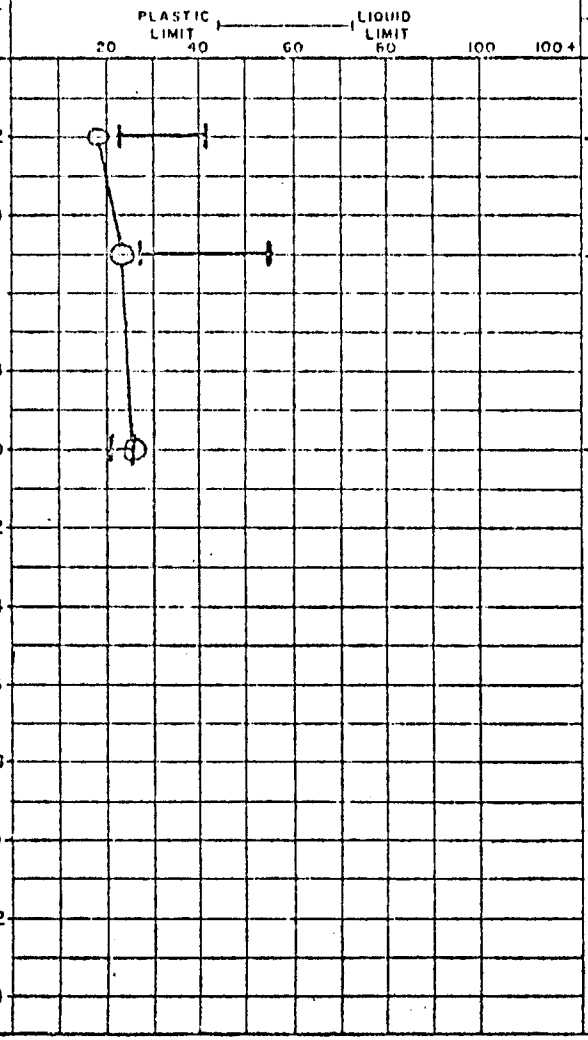
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED:	AIRPHOTO NO:	CHAINAGE 2028+00	OFFSET ℄
CKD:	TECH:	RIG:	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
38	C	L42

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						2" ORGANIC MTL OVER SILTY CLAY		FROST TO 2'
4					CI CH	- MEDIUM TO HIGHLY PLASTIC		
6						- BECOMING CLAY-SILT AT-10'		
8						- WET AT 10'		
10					ML CL	10'		
						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
100	0	0			
100	0	0			
99	1	0			

REMARKS

No cut proposed here - Gradeline could be lowered.

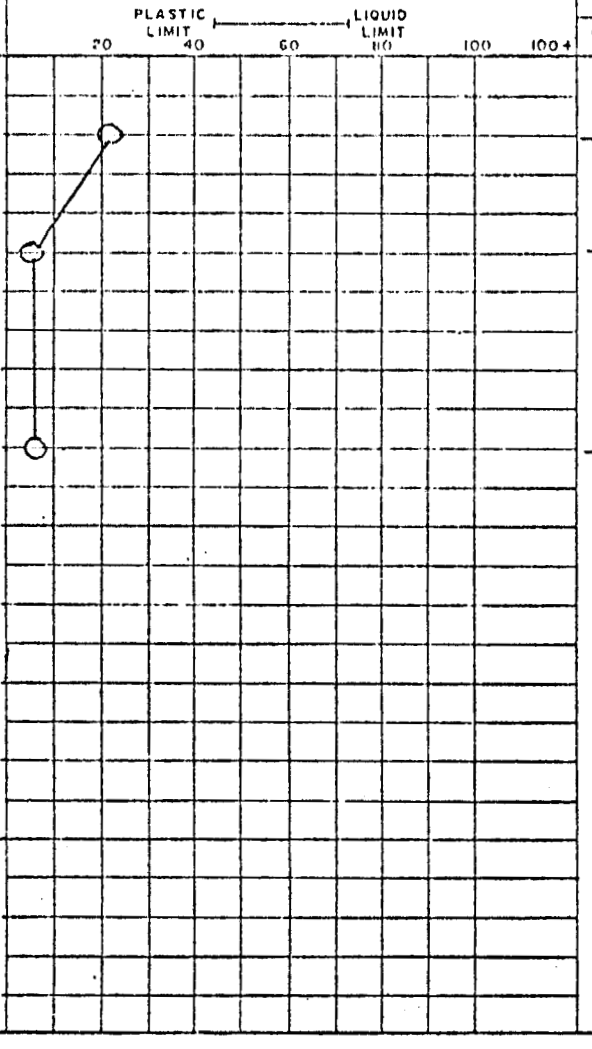
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED AUG/73	AIRPHOTO NO:	CHAINAGE 2070+50	OFFSET ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
39	C	L41

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	2" ORGANIC MTL. OVER SILT AND SANDY SILT - LOW PLASTIC - MOIST AT SURFACE - DAMP WITH DEPTH TO APPROX. 8' - 10'		FROST TO 3'
4								
6								
8								
10						BOTTOM OF HOLE - 10'		
12								
14								
16								
18								
20								
22								
24								



GRAIN SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
CLAY %	SILT %	SAND %	GRAVEL %			
-98-	2	0				VERY SHALLOW CUT PROPOSED HERE. GRADELINE COULD BE LOWERED.
-59-	41	0				
-66-	34	0				

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO.	CHAINAGE 2051400	OFFSET ℄
CKD	TECH D. PRONYCH	RIG AUGER	SURFACE DRAINAGE	VEGETATION	ELEV

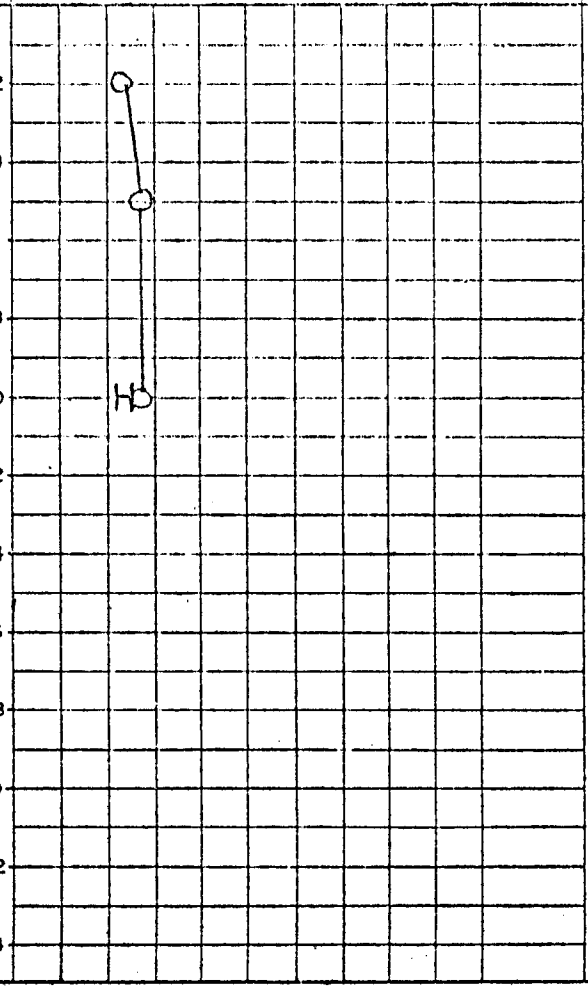
TEST HOLE		
MILE	D,C,S	NUMBER
39	C	140

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	2" ORGANIC MTL OVER CLAY-SILT -LOW PLASTIC -WET BELOW 5'		FROST TO 2'	-98-	2	0				VERY SHALLOW CUT HERE -O.K. BUT SHOULD NOT LOWER GRADELINE.
4															
6									-100-	0	0				
8															
10						10' Bottom of hole-10'			-97-	3	0				
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2103+00	OFFSET ℄
CKD	TECH D PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
40	C	L39

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20, 40, 60, 80, 100, 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						3" ORGANIC MTL OVER		FROST TO 2'									VERY SHALLOW CUT HERE - O.K.
2					CL	SILTY CLAY - CLAY SILT			2								
					ML	- LOW PLASTIC											
4						- DAMP			4								
						5'				○ ++	-92-	8	0				
6						SANDY SILT			6								
					ML	- LOW PLASTIC											
8						- DAMP			8								
10						10'			10	○	-85-	15	0				
						BOTTOM OF HOLE 10'											
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

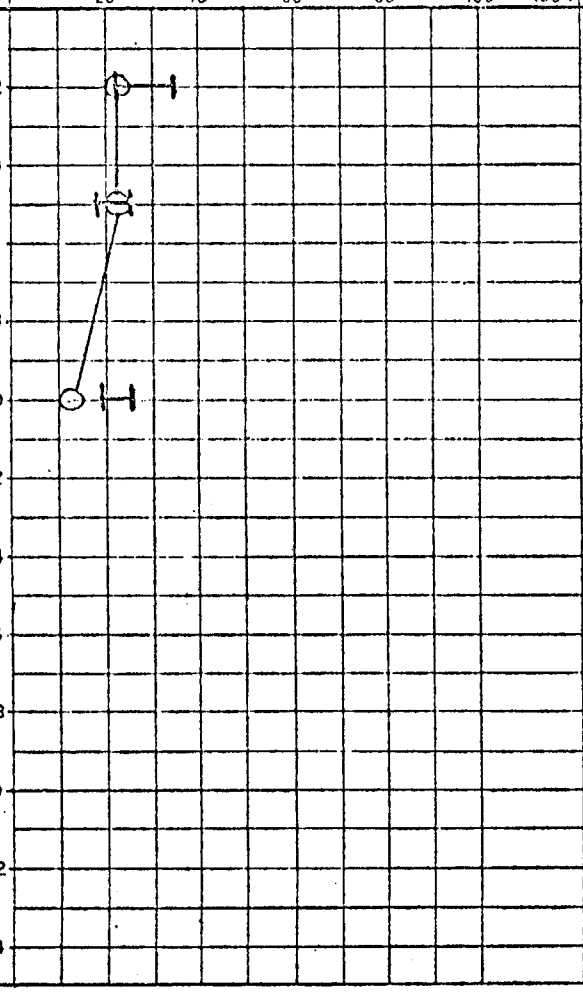
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2110+50	OFFSET 4
CKD	TECH D. PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
40	C	L38

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					CI	2" ORGANIC MTL OVER SILTY CLAY -MEDIUM PLASTIC		FROST TO 2'
4					ML	4' SANDY SILT -LOW PLASTIC -WET AT 5' -DAMP BELOW 5'		
6								
8								
10						10' BOTTOM OF HOLE -10'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
CLAY %	SILT %	SAND %	GRAVEL %			
-98-	2	0				SHALLOW CUT HERE - O.K.
-88-	12	0				
-92-	8	0				

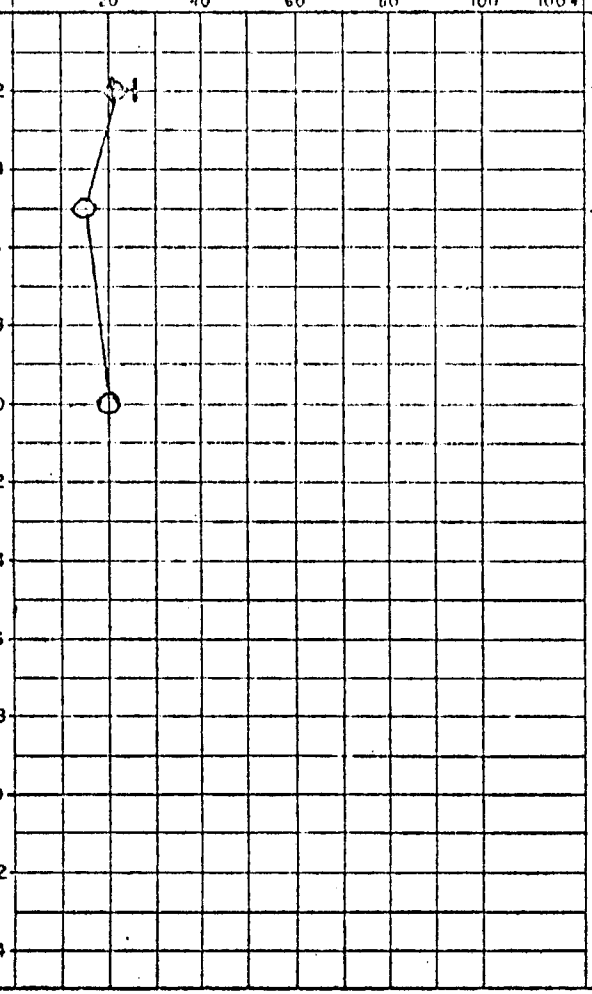
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Aug/73	AIRPHOTO NO:	CHAINAGE:	OFFSET
CKD	TECH	RIG:	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
40	C	L37

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3' ORGANIC MTL OVER		FROST TO 2'							No cut Proposed Here.
2					ML	SANDY CLAY SILT			-98-		2	0			
4						-VERY LOW PLASTIC									
6						-DAMP TO MOIST			-99-		1	0			
8															
10						10'			-82-		18	0			
12						BOTTOM OF HOLE - 10'									
14															
16															
18															
20															
22															
24															



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2168+00	OFFSET ℄
CKD	TECH D.Pronych	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
41	C	L36

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2					ML	2" ORGANIC MTL OVER SANDY SILT -LOW PLASTIC -WET BELOW 9' -DAMP TO 9'		FROST TO 3'	87	13	0				VERY SHALLOW CUT HERE - O.K.
4									89	11	0				
6															
8															
10						10			98	2	0				
						BOTTOM OF HOLE-10'									
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

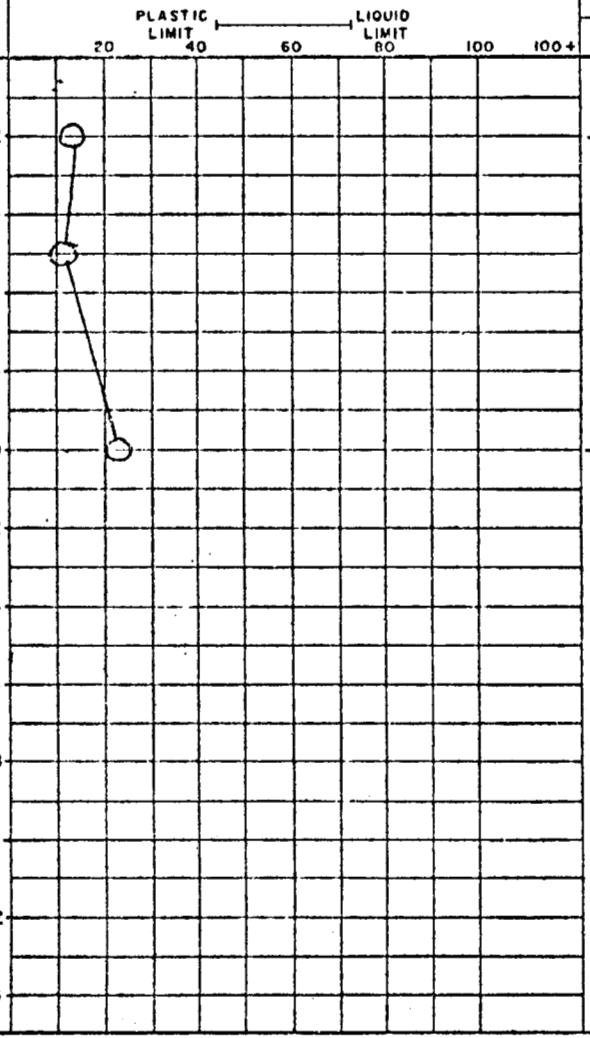
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2190+00	OFFSET 4
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
41	C	L35

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	2" ORGANIC MTL OVER SANDY SILT - LOW PLASTIC TO NON PLASTIC - WET BELOW 8'		FROST TO 3'
4								
6								
8								
10						10' BOTTOM OF HOLE-10'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
2	64	36	0			
4	66	34	0			
10	83	17	0			

REMARKS

No cut Proposed Here.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Aug 73	AIRPHOTO NO.	CHAINAGE 2194+00
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION:

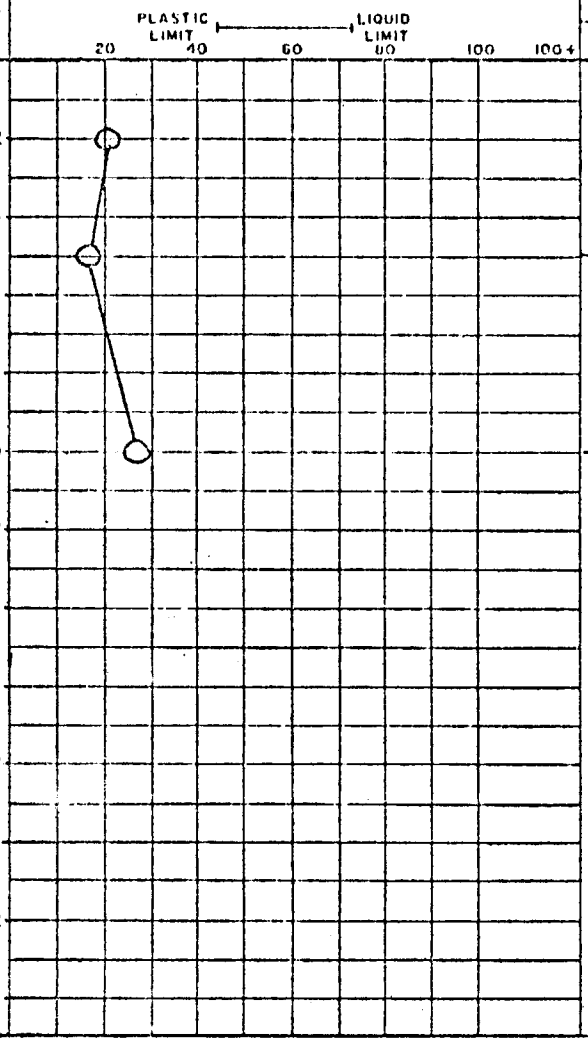
OFFSET 1.

ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
41	C	L34

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						2" ORGANIC MTL OVER SANDY SILT		FROST TO 3'
4					VAL	-MOIST TO WET THROUGHOUT		
6								
8								
10						10'		
						BOTTOM OF HOLE - 10'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
	72	28	0		
	76	24	0		
	89	11	0		

REMARKS

VERY SHALLOW CUT HERE - SHOULD BE O.K. - DO NOT RECOMMEND LOWERING GRADELINE.

DRILL HOLE REPORT

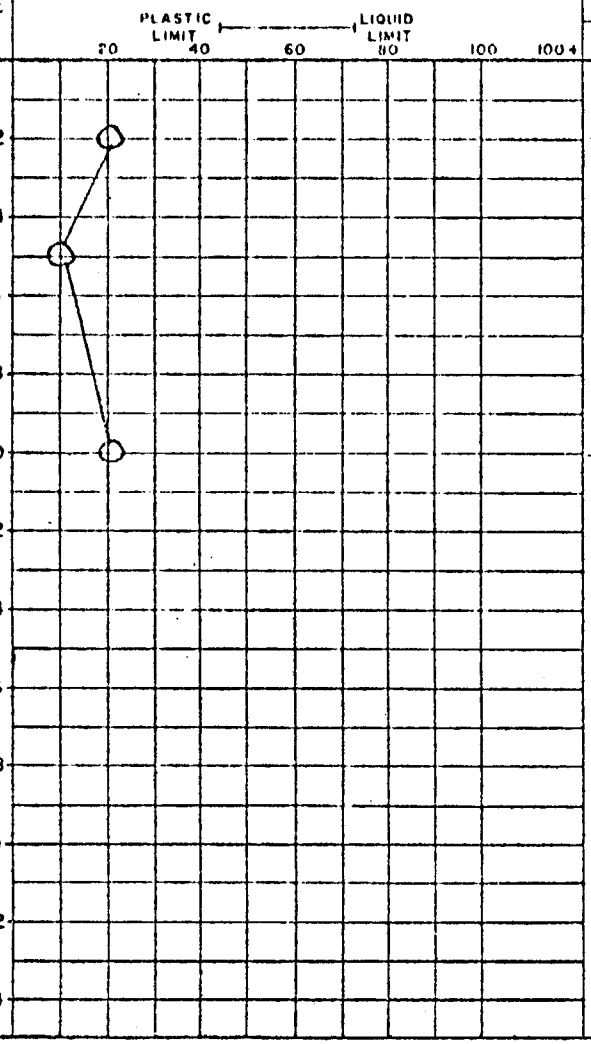
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 2196+00	OFFSET 4
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
41	C	L33

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER SANDY SILT -SOME CLAY -LOW PLASTIC. 4'		FROST TO 4'
					SM	SANDY SILT -NON PLASTIC -DAMP TO 9' -WET BELOW 9' 10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
7	7	23	0		
54	46	0			
60	40	0			

REMARKS

VERY SHALLOW CUT HERE. -GRADELINE COULD BE LOWERED (NOT SO - SEE HOLE L33)

DRILL HOLE REPORT

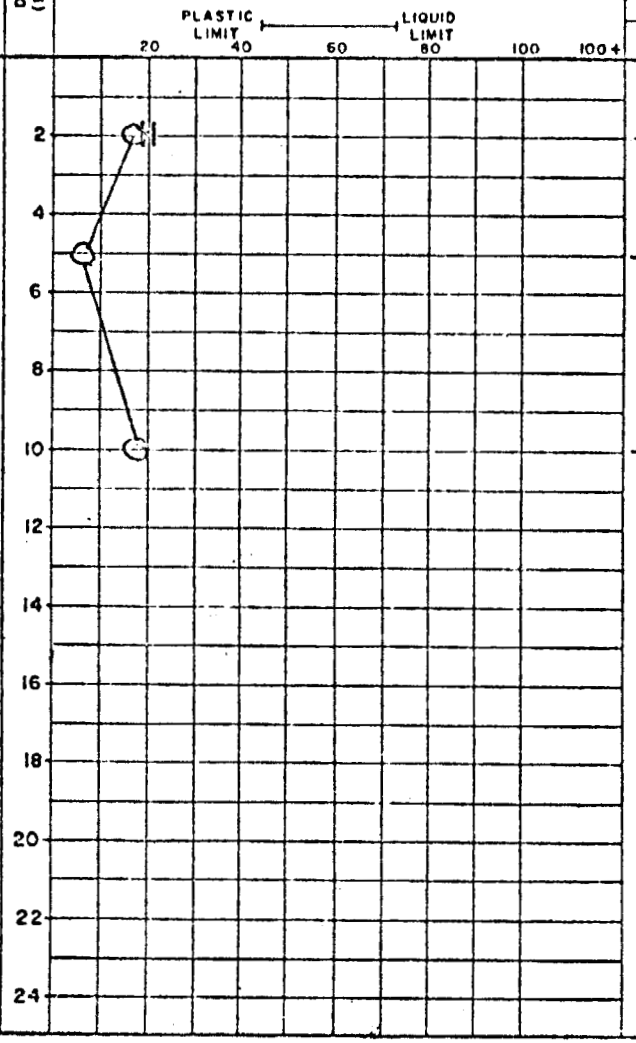
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Aug/73	AIRPHOTO NO:	CHAINAGE 2215+00	OFFSET 4
CKD	TECH D. PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
42	C	L32

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	2" ORGANIC MTL OVER SAND-CLAY-SILT -LOW PLASTIC		FROST TO 2'
						3'		
					ML	SILTY SAND OR SAND SILT -VERY LOW PLASTIC.		
					SM	-DAMP TO 9' -MOIST BELOW 9'		
						10'		
						BOTTOM OF HOLE-10'		

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-82-	18	0			
-39-	61	0			
-64-	32	4			

REMARKS

No cut proposed here. Gradeline could be lowered.

DRILL HOLE REPORT

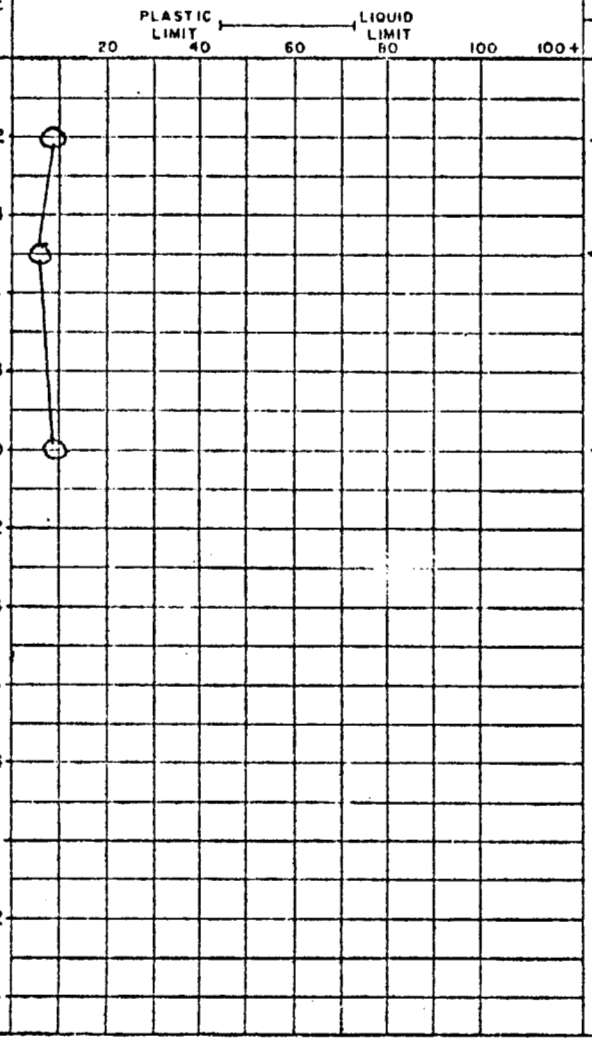
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2247+00	OFFSET ℄
CKD	TECH D. PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
42	C	L31

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						2" ORGANIC MTL OVER SANDY SILT		FROST TO 2'
4					SM	OR SILTY SAND		
6					ML	-LOW PLASTIC TO NON-PLASTIC		
8						-DAMP		
10						10'		
						BOTTOM OF HOLE-10'		
12								
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
CLAY %	SILT %	SAND %	GRAVEL %		
-54-	46	0			
-44-	56	0			
-54-	46	0			

REMARKS

VERY SHALLOW CUT - COULD BE DEEPENED.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

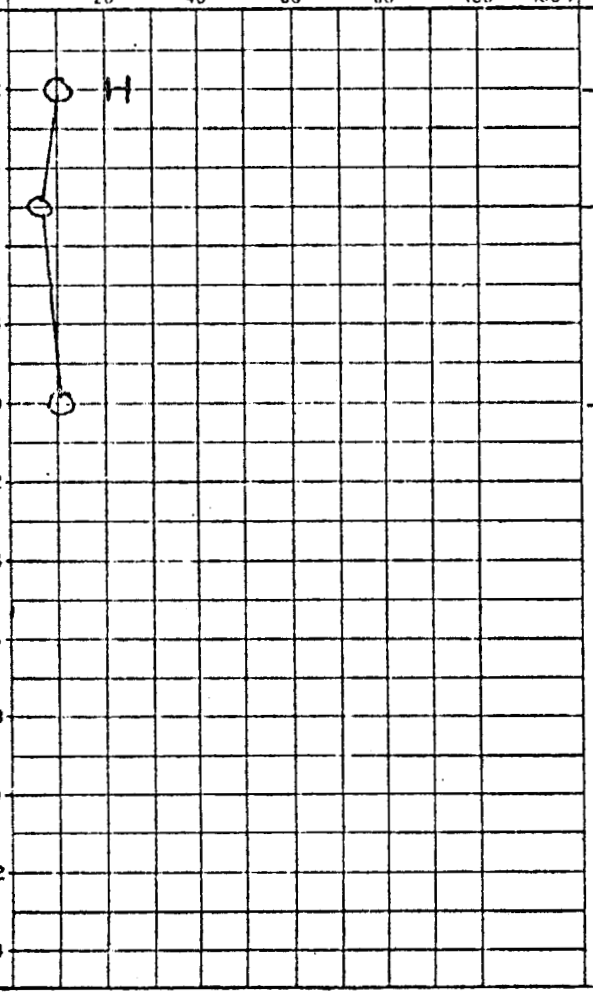
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2250+50	OFFSET ℄
CKD	TECH D. Pewnych	RIG Auger	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE

MILE	D,C,S	NUMBER
42	C	L30

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	2" ORGANIC MTL OVER SANDY CLAY-SILT		FROST TO 2'
						3'		
					ML	SILTY SAND OR SANDY SILT		
					SM	-NON PLASTIC -DAMP.		
						10'		
						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
64	36	0			
43	57	0			
63	37	0			

REMARKS

VERY SHALLOW CUT - COULD BE DEEPENED.

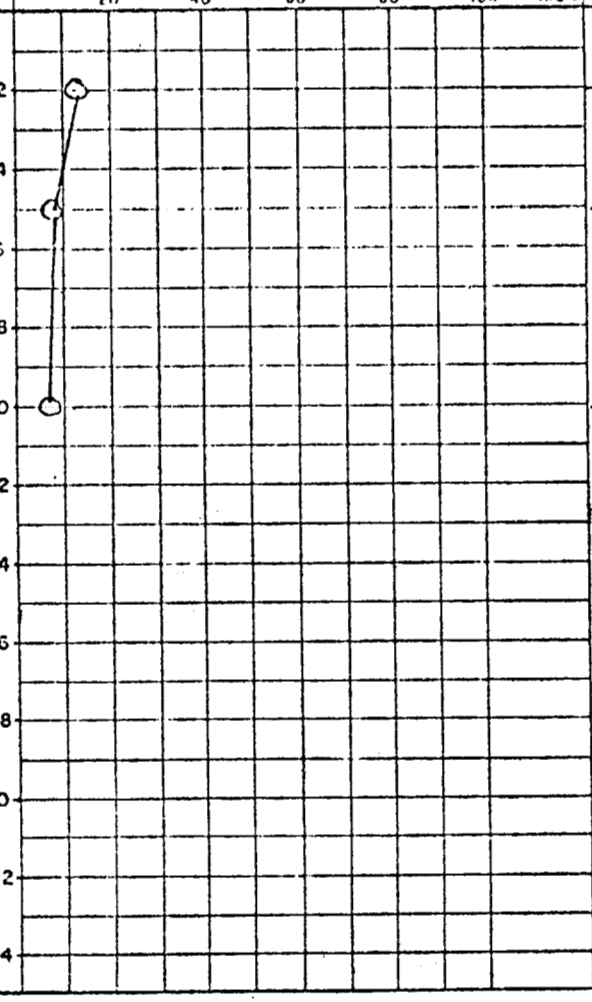
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO.	CHAINAGE 2255+00	OFFSET ℄
CKD	TECH D. Pronych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
42	C	L29

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	2" ORGANIC MTL OVER SANDY CLAY-SILT — 3		FROST TO 4'	81	19	0				VERY SHALLOW CUT – COULD BE DEEPENED
4, 6, 8					SM, ML	SANDY SILT OR SILTY SAND - NON-PLASTIC - DAMP. — 10'			51	49	0				
10						BOTTOM OF HOLE - 10'			56	44	0				



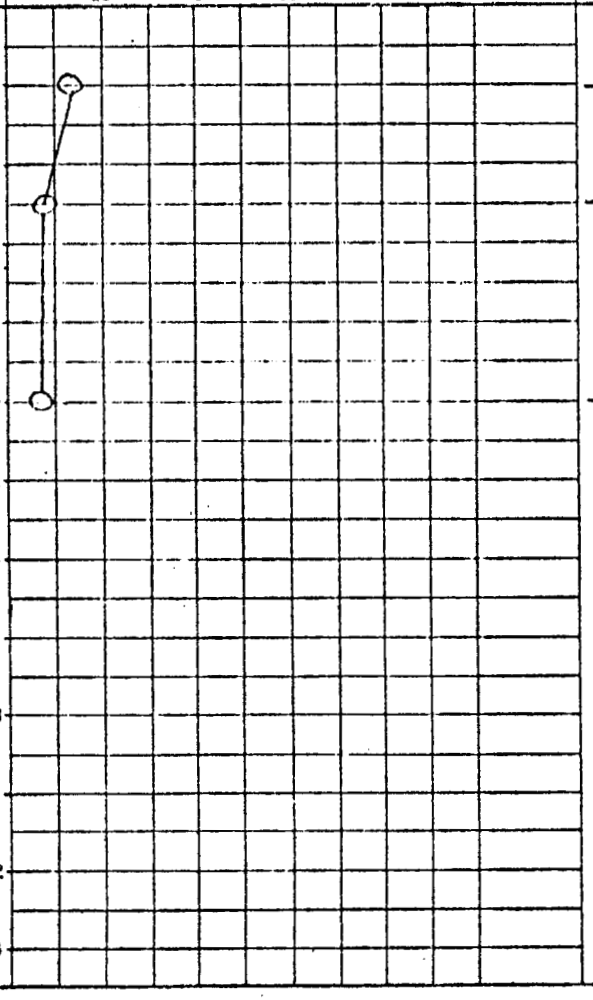
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED/CAK/73	AIRPHOTO NO:	CHAINAGE 2371+50	OFFSET 1'
CKD	TECH DiKonych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
43	C	L28

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL. OVER		FROST TO 2'							6'-7' CUT TO GRADELINE - O.K.
2					S/M	SANDY SILT			-87-	13	0				
4					ML	-LOW PLASTIC TO NON-PLASTIC			-69-	31	0				
6						- DAMP									
8															
10						10'			-45-	55	0				
12						BOTTOM OF HOLE-10'									
14															
16															
18															
20															
22															
24															



DRILL HOLE REPORT

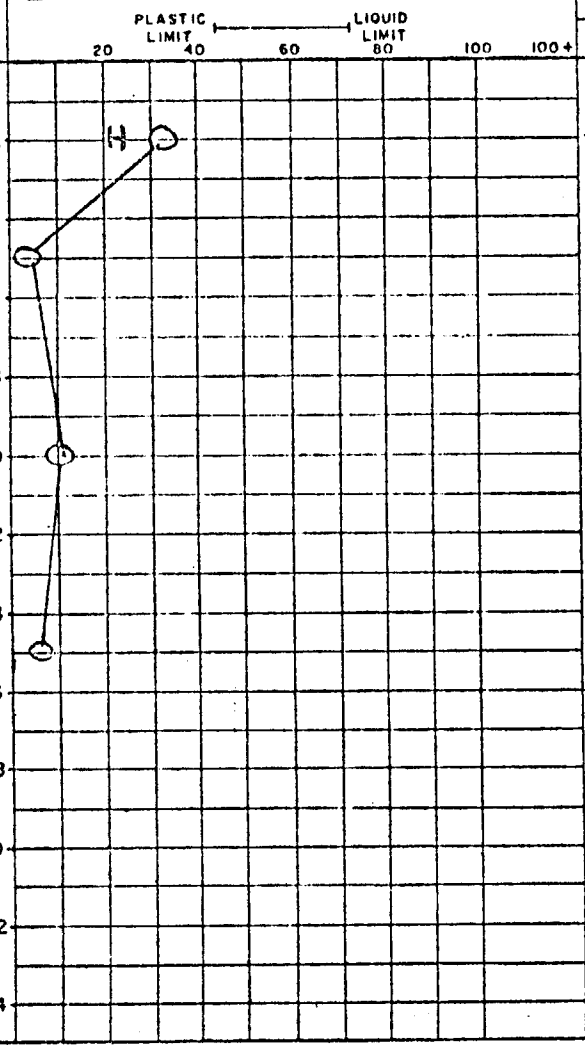
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/13	AIRPHOTO NO:	CHAINAGE 2+01 400	OFFSET 4:
CKD	TECH D.PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
43	C	L27

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	2" ORGANIC MTL OVER SANDY CLAY-SILT -LOW PLASTIC -WET 3'		FROST TO 2'
					SM ML	SILTY SAND OR SAND-SILT -NON-PLASTIC -DRY TO DAMP 15'		
						BOTTOM OF HOLE-15'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
89	11	0			
24	76	0			
57	43	0			
38	62	0			

REMARKS

7' CUT TO GRADE LINE. O.K. - SURFACE WET ZONE MAY BE DUE TO MELTWATER DURING DRILLING.

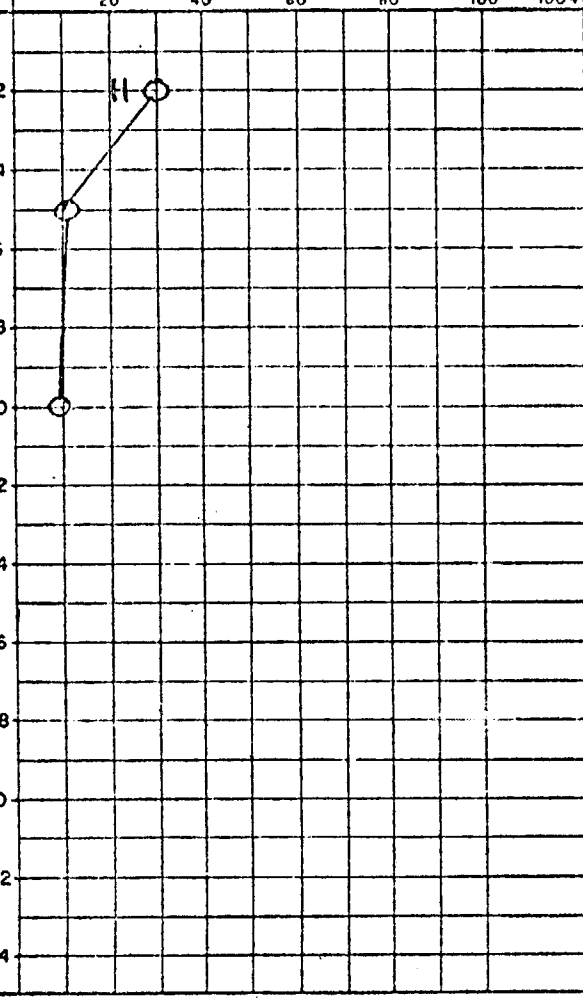
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MC/TB	AIRPHOTO NO:	CHAINAGE: 2303+50	OFFSET ℄
CKD	TECH D. Pronych	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
43	C	L26

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	2" ORGANIC MTL OVER SANDY CLAY-SILT -LOW PLASTIC -WET		
4						4'		
6					SM	SAND-SILT -NON-PLASTIC -DAMP		
8					ML			
10						10'		
12						BOTTOM OF HOLE-10'		
14								
16								
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS				WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
CLAY %	SILT %	SAND %	GRAVEL %		
-94-	6	0			
-61-	39	0			
-51-	49	0			

REMARKS

6-7' CUT TO GRADELINE. SOME SURFACE WET MATERIAL. -DRY WITH DEPTH.

DRILL HOLE REPORT

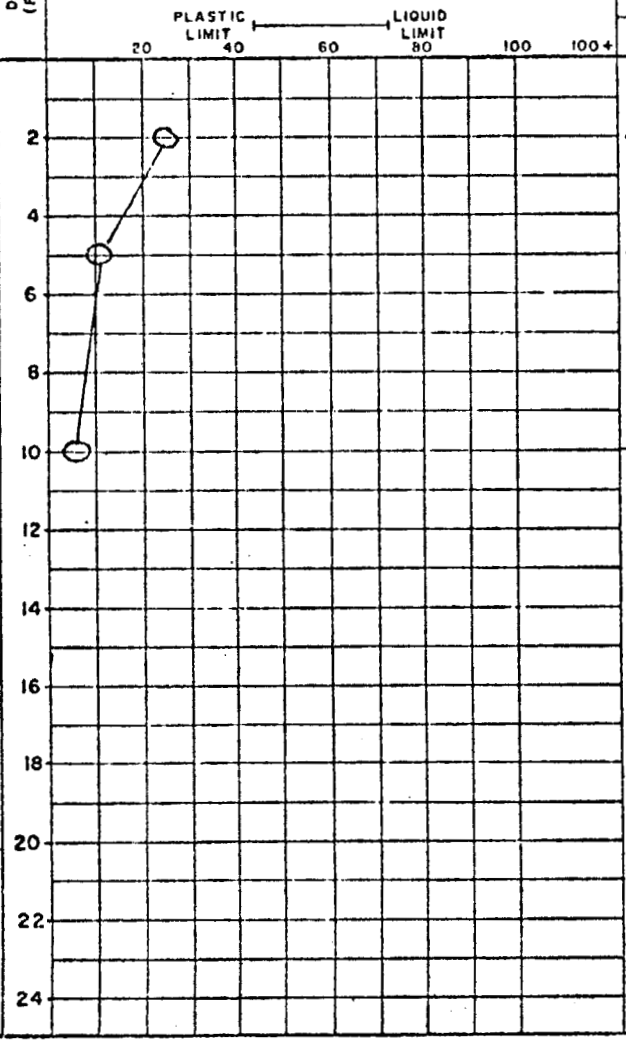
DEPARTMENT OF PUBLIC WORKS, CANADA
~~PROVINCIAL HIGHWAY~~

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2306+00	OFFSET 4
CKD	TECH D.PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	D,C,S	NUMBER
43	C	L25

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 2'
2					M/L	SANDY-CLAY-SILT -MOIST TO WET 3'		
4						SILTY SAND AND SANDY SILT		
6					S/M	-NON-PLASTIC		
					M/L	-DAMP TO DRY		
8								
10						10'		
						BOTTOM OF HOLE-10'		
12								
14								
15								
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
93	7	0				5-6' CUT TO GRADELINE -O.K.
56	44	0				-POSSIBLY SOME WET SURFACE MTL.
43	57	0				

DRILL HOLE REPORT

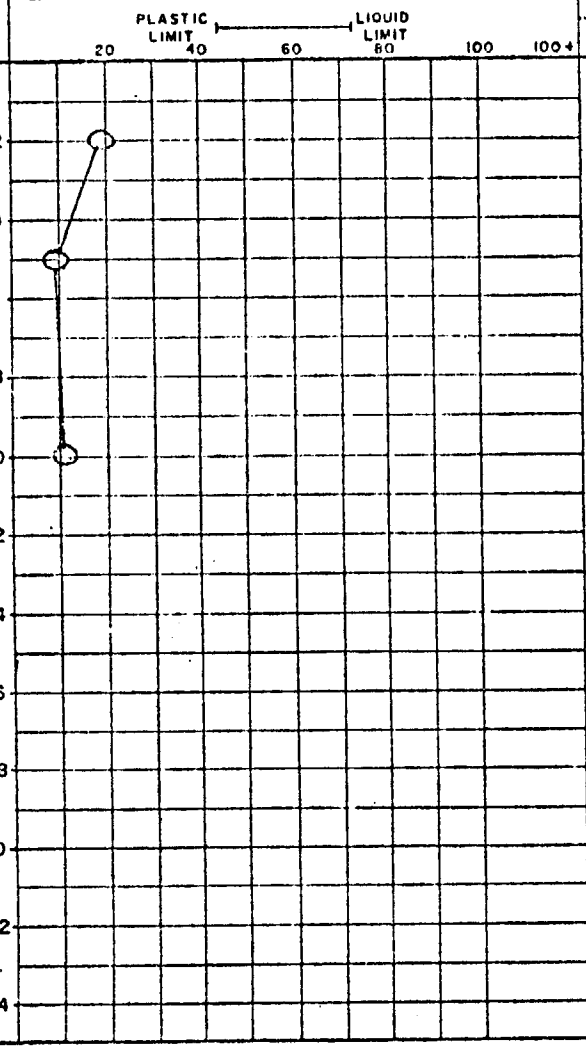
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2316+00	OFFSET: 4
CKD	TECH D. PROUYEN	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
44	C	L24

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	2" ORGANIC MTL OVER SANDY SILT. -VERY LOW PLASTIC -DAMP.		FROST TO 2'	-91-	9	0				VERY SHALLOW CUT - O.K.
4									-69-	31	0				
6															
8															
10						10'			-73-	27	0				
12						BOTTOM OF HOLE -10'									
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

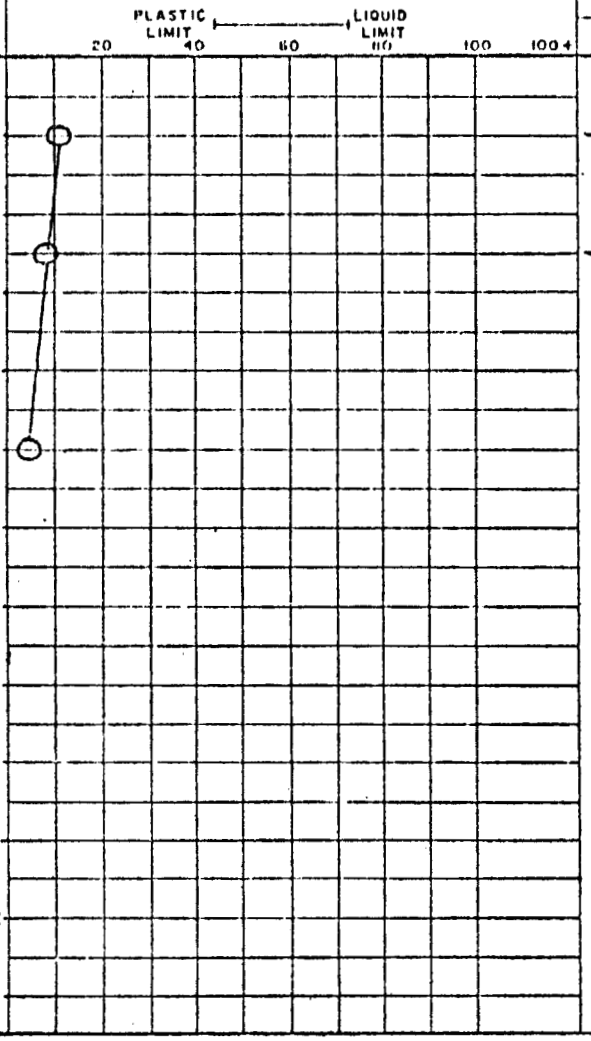
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2321+00	OFFSET ℄
CKD	TECH Drouyed	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
44	C	L23

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	2" ORGANIC MTL OVER SANDY SILT OR		FROST TO 2'
4					SM	SILTY SAND -NON-PLASTIC -DAMP TO DRY		
10						10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
72	28	0				VERY SHALLOW CUT - O.K.
51	49	0				
31	69	0				

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 23333+50	OFFSET ℄
CKD	TECH D. PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

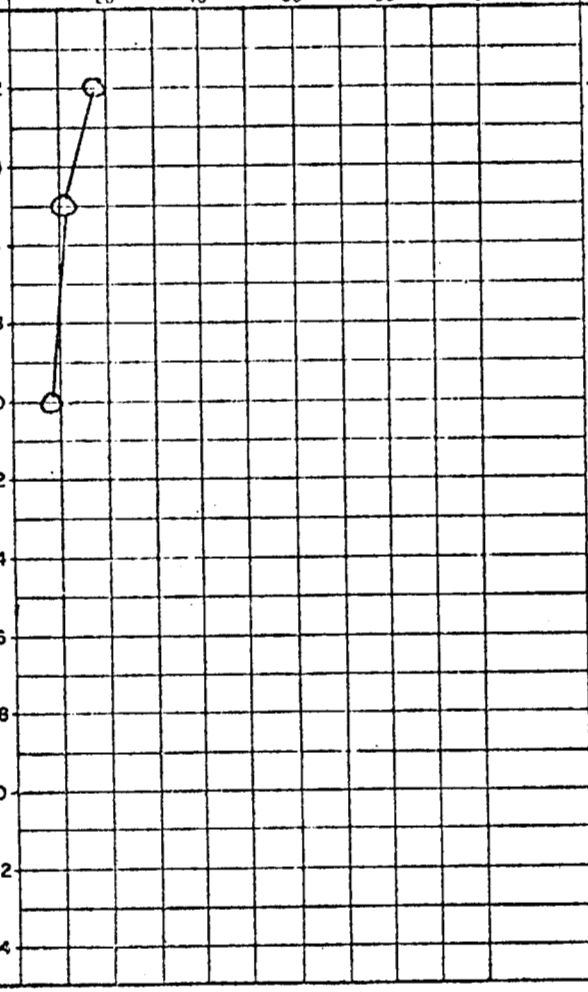
TEST HOLE

MILE	B,C,S	NUMBER
44	C	L22

REMARKS: VERY SHALLOW CUT - O.K.

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER SILTY SAND-SANDY SILT -NON-PLASTIC -DAMP.		FROST TO 2'
					ML	10'		
						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-87-	13	0			
-54-	46	0			
-60-	40	0			

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

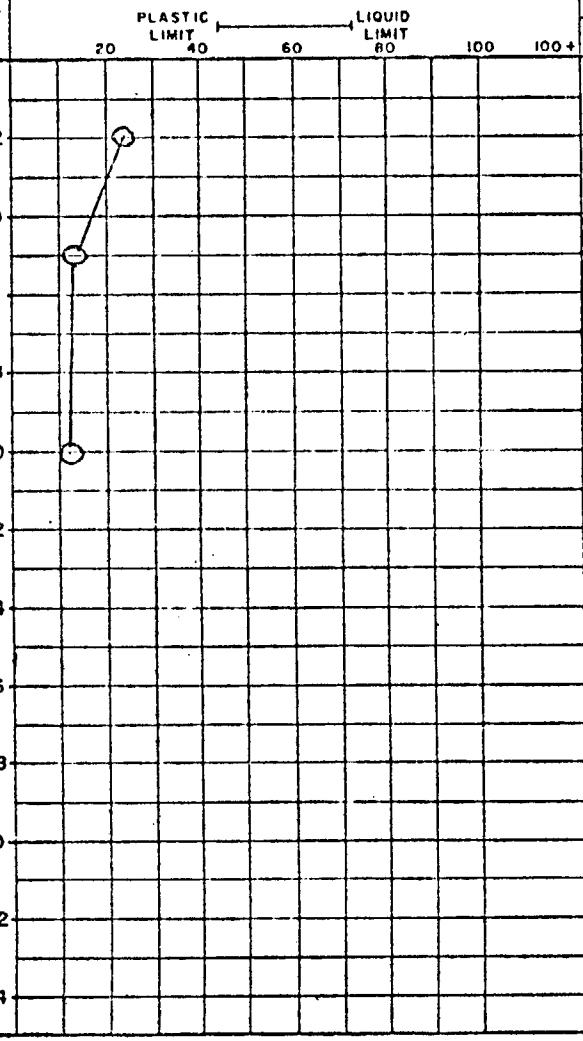
DWN:	FIELD ENG	DATE DRILLED: MAR/73	AIRPHOTO NO:	CHAINAGE: 2317+00	OFFSET: 4L
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
45	C	L21

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER		FROST TO 1'-2'								VERY SHALLOW CUT — O.K.
2						SANDY SILT			2	89	11	0				
4					ML	-VERY LOW PLASTIC			4	60+	40	0				
6						-WET AT SURFACE.			6							
8									8							
10						10'			10	54	46	0				
12						BOTTOM OF HOLE -10'			12							
14									14							
16									16							
18									18							
20									20							
22									22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DRILL HOLE REPORT

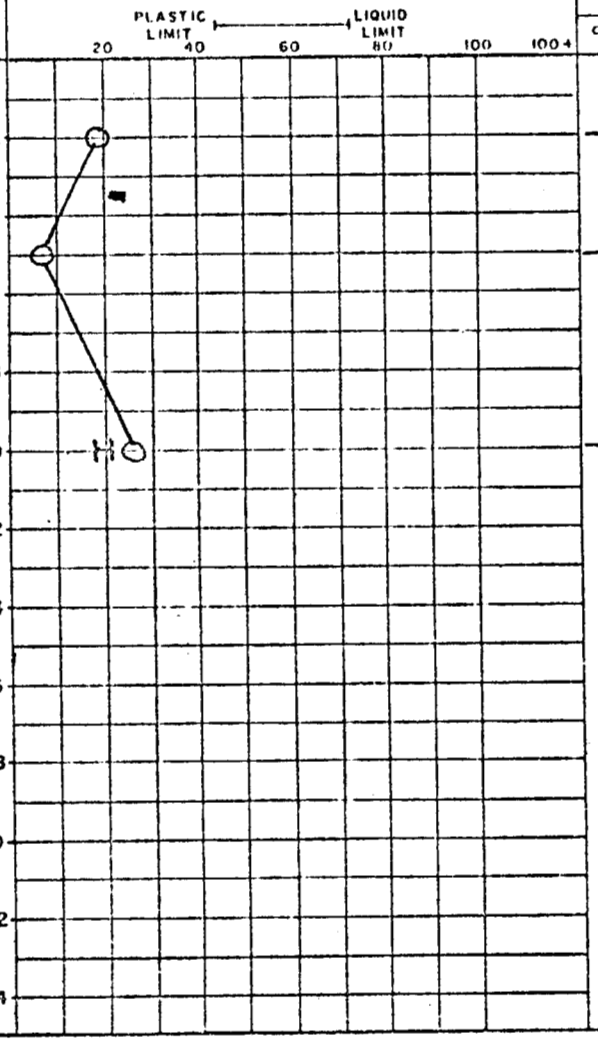
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 7 MAR/73	AIRPHOTO NO:	CHAINAGE 2419+50	OFFSET 4
CKD	TECH D. Prongeit	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
46	C	L20

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 3'
					ML	SANDY-CLAY-SILT — 2'		
					ML	SANDY SILT -LOW PLASTIC -DAMP -FROZEN BELOW 9' -WET ON THAWING. — 10'		FROZEN 9'-10'
						BOTTOM OF HOLE -10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-86-	14	0			
-54-	46	0			
-77-	23	0			

REMARKS

3' CUT TO GRADELINE HERE. -O.K.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

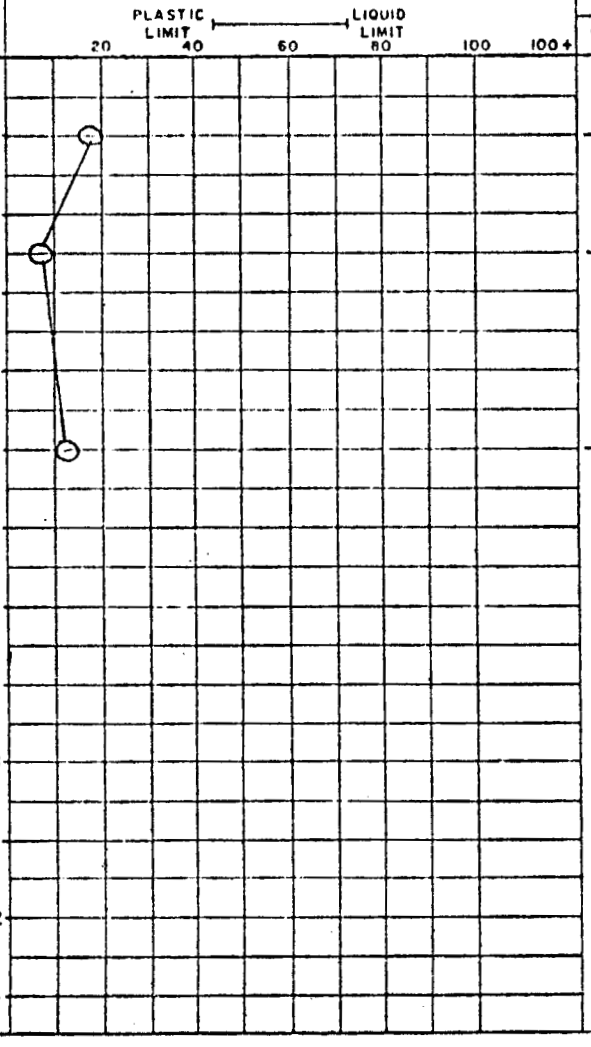
DWN	FIELD ENG	DATE DRILLED Mar/13	AIRPHOTO NO:	CHAINAGE: 2427+00	OFFSET 4
CKD	TECH D Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
46	C	L19

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	2" ORGANIC MTL OVER SAND-CLAY-SILT		FROST TO 2'	84	16	0				VERY SHALLOW CUT - OK.
						3'									
4, 6					SM, ML	SILTY SAND AND SANDY SILT. -NON-PLASTIC -DAMP			48	52	0				
10						10'			55	45	0				
						BOTTOM OF HOLE - 10'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



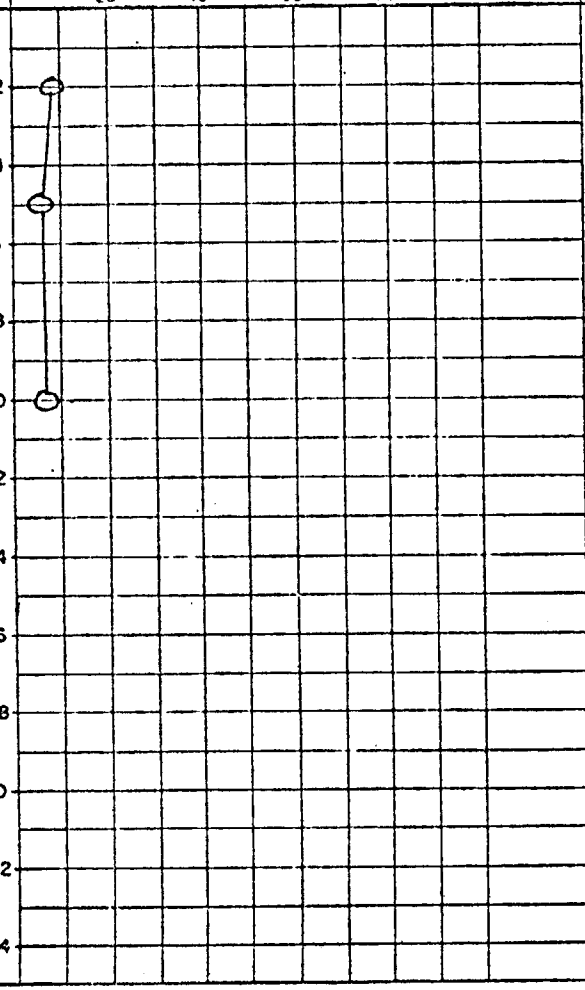
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2440+00	OFFSET ℄
CKD	TECH D.PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
46	C	L18

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER		FROST TO 2'							5-6' CUT TO GRADELINE HERE — O.K.
2						SANDY SILT AND			-60-	40		0			
4					ML	SILTY SAND -NON-PLASTIC			-31-	69		0			
6					SM	-DAMP TO DRY									
8															
10						10'			-31-	69		0			
						BOTTOM OF HOLE-10									
12															
14															
16															
18															
20															
22															
24															



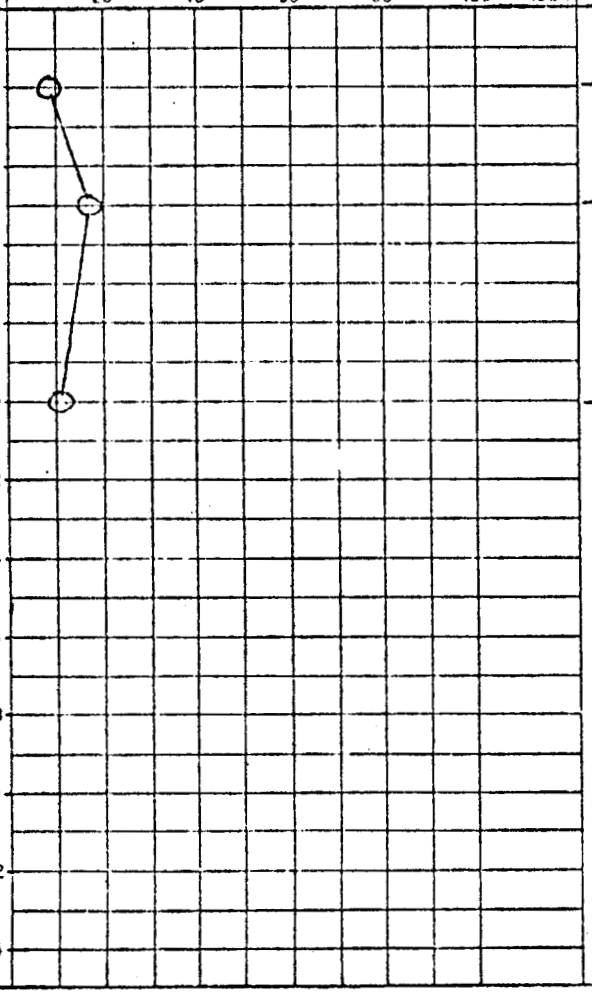
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 4 Mar/73	AIRPHOTO NO:	CHAINAGE: 2512+00	OFFSET ℄
CKD	TECH D. Kronych	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
47	C	L17

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2" ORGANIC MTL OVER									VERY SHALLOW CUT — O.K.
2						SANDY SILT			-84-	16	0				
4					ML	-SOME CLAY NEAR SURFACE.			-83-	17	0				
6						-VERY LOW PLASTIC									
8						-DAMP.									
10						10'			-52-	48	0				
12						BOTTOM OF HOLE -10'									
14															
16															
18															
20															
22															
24															



DRILL HOLE REPORT

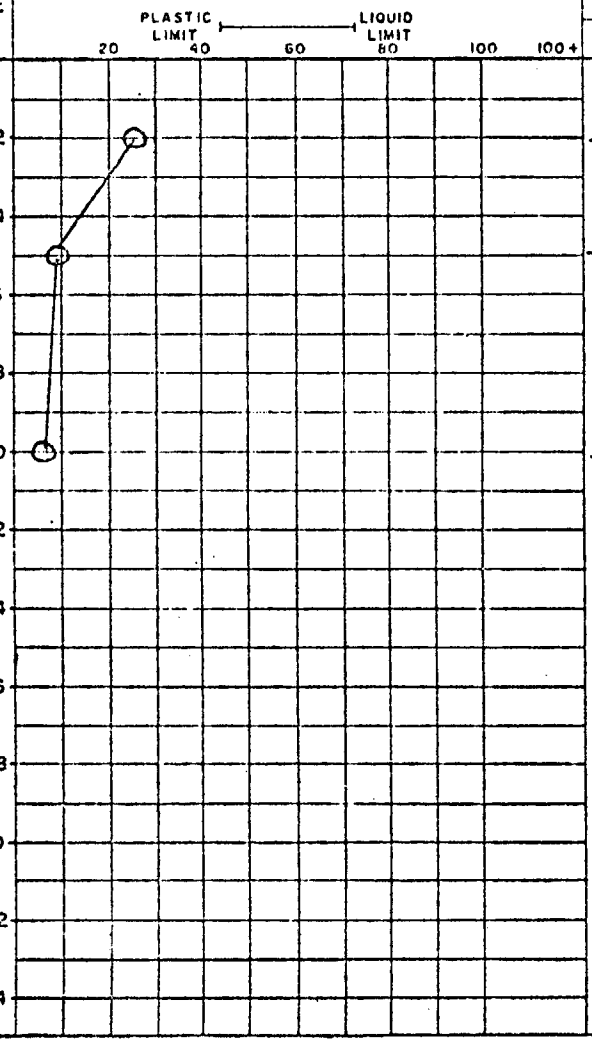
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2520+00	OFFSET 4
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
47	C	L16

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	2" ORGANIC MTL OVER CLAY-SILT		FROST TO 2'
2'								
					ML	SANDY SILT - NON-PLASTIC - DAMP		
10'								
						BOTTOM OF HOLE - 10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
	95	5	0		
	67	33	0		
	57	43	0		

REMARKS

SHALLOW CUT
-NO PROBLEMS ANTICIPATED

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED [illegible]/73	AIRPHOTO NO:	CHAINAGE: 2531+00	OFFSET ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
48	C	L15

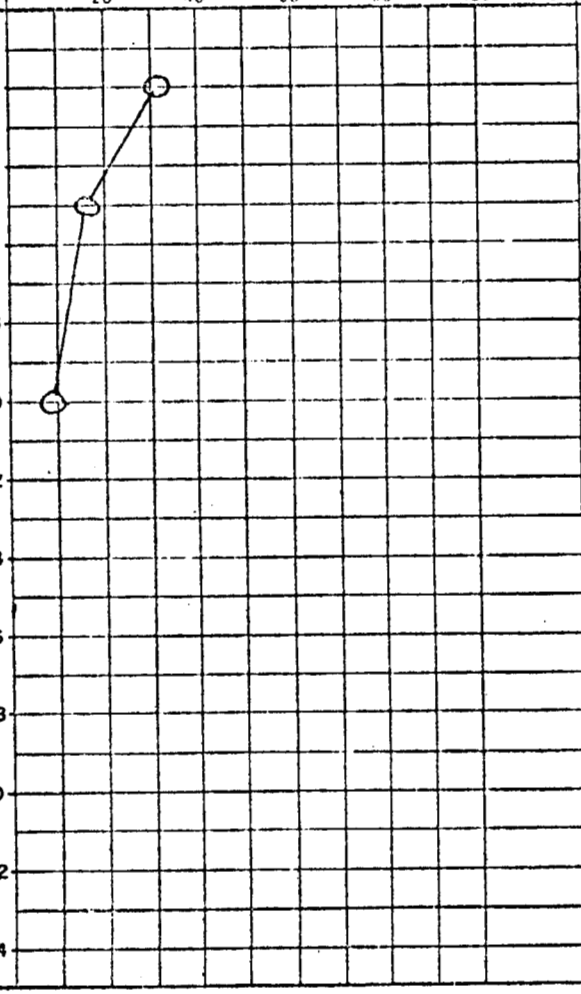
DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	2" ORGANIC MTL OVER CLAY-SILT		FROST TO 2'
2'								
					SM ML	SANDY SILT OR SILTY SAND - NON-PLASTIC - DAMP.		
10'								
						BOTTOM OF HOLE - 10'		

DEPTH (FEET): 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT

20 40 60 80 100 100+



GRAIN-SIZE ANALYSIS				WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
CLAY %	SILT %	SAND %	GRAVEL %		
-94-	6	0			
-85-	15	0			
-52-	48	0			

REMARKS

SHALLOW CUT
NO PROBLEMS
ANTICIPATED.

DRILL HOLE REPORT

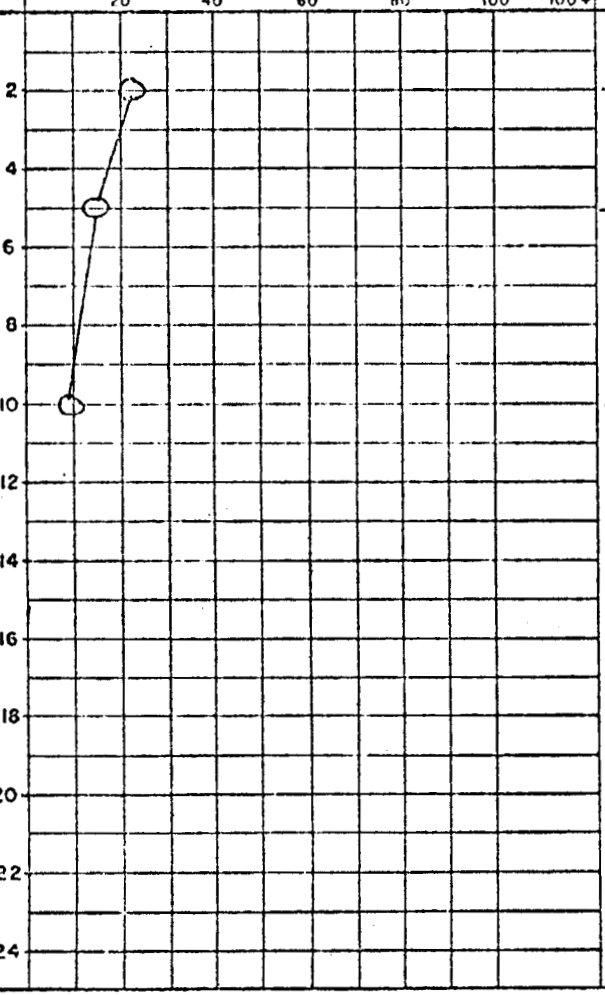
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAY/73	AIRPHOTO NO:	CHAINAGE 2534+00
CKD	TECH D. Pronych	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION

OFFSET ℄ ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
48	C	L14

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER SANDY SILT		FROST TO 2'
2					ML	- LOW PLASTIC TO NON-PLASTIC		
4						- DAMP		
6								
8								
10						10'		
						BOTTOM OF HOLE - 10'		
12								
14								
16								
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
86	14	0			
74	26	0			
66	34	0			

REMARKS

5-6' CUT TO GRADELINE - NEAR SURFACE MTL SLIGHTLY WET BUT NO PROBLEMS ANTICIPATED

DRILL HOLE REPORT

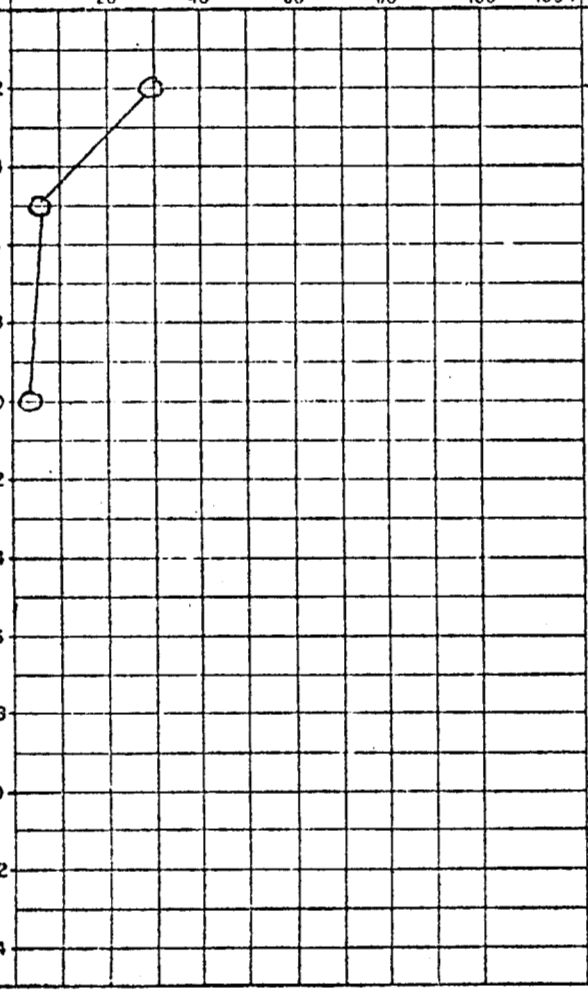
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2542 +00	OFFSET ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
48	C	L13

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
					CL ML	2" ORGANIC MTL OVER CLAY-SILT		FROST TO 2½'							SURFACE MTL. SLIGHTLY WET. BUT SHOULD NOT BE PROBLEM IN CUT.
2						2			-9	2-	8	0			
4					ML SM	SANDY SILT OR SILTY SAND - NON-PLASTIC - DAMP.			-31	-	69	0			
6															
8															
10						10'			-4	5-	55	0			
						BOTTOM OF HOLE - 10'									
12															
14															
16															
18															
20															
22															
24															



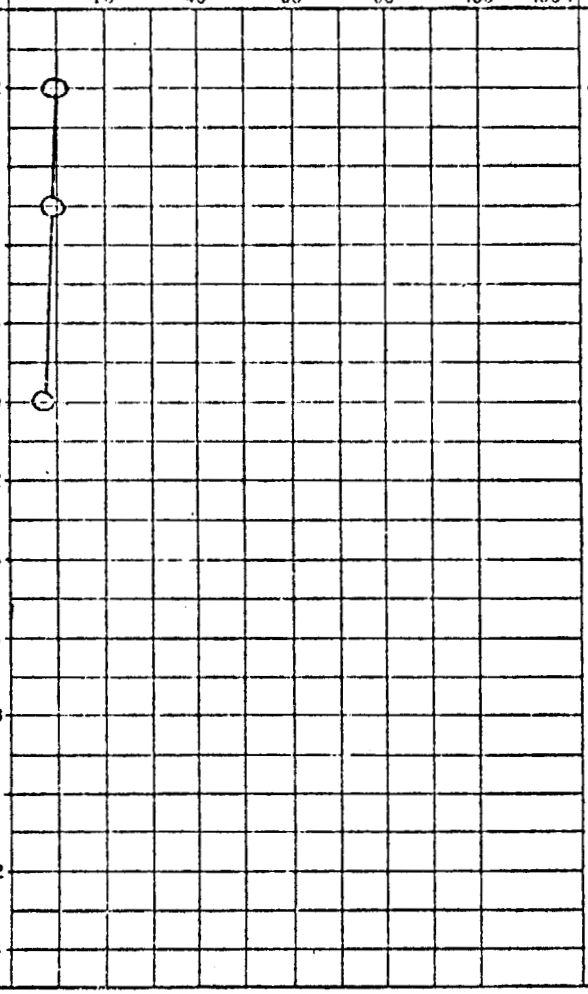
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED Mar/73	AIRPHOTO NO:	CHAINAGE 257+50	OFFSET ℄
CKD	TECH D.Prouvech	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
48	C	L12

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						2" ORGANIC MTL OVER		FROST TO 2'
2						SANDY SILT		
4					ML	OR SILTY SAND		
6					SM	-NON-PLASTIC -DAMP.		
8								
10						2'		
12								
14								
16								
18								
20								
22								
24								



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	57		43	0		
4	49		51	0		
10	22		78	0		

REMARKS

SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

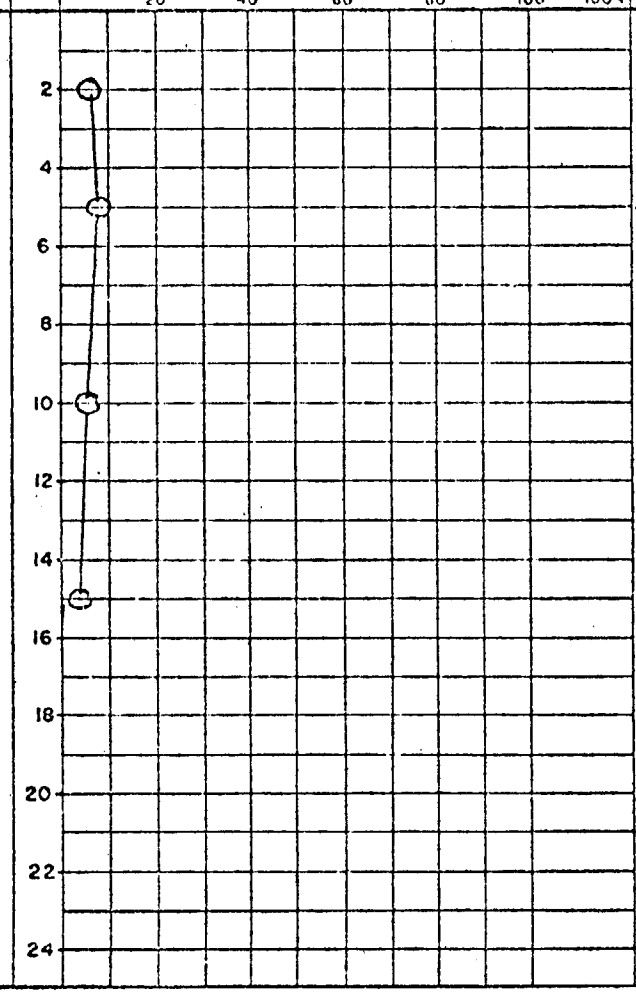
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2577+00	OFFSET 4'
CKD	TECH D. Tremayne	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
48	C	L 11

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2						3" ORGANIC MTL OVER SILTY SAND		FROST TO 2½'
4					SM	- NON-PLASTIC		
6						- DRY TO DAMP		
8								
10								
12								
14						15'		
16						BOTTOM OF HOLE -15'		
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2	33		67	0		
4	42		58	0		
10	23		77	0		
14	21		79	0		

REMARKS

No problems with cut here other than possible post construction wind & water erosion.

DRILL HOLE REPORT

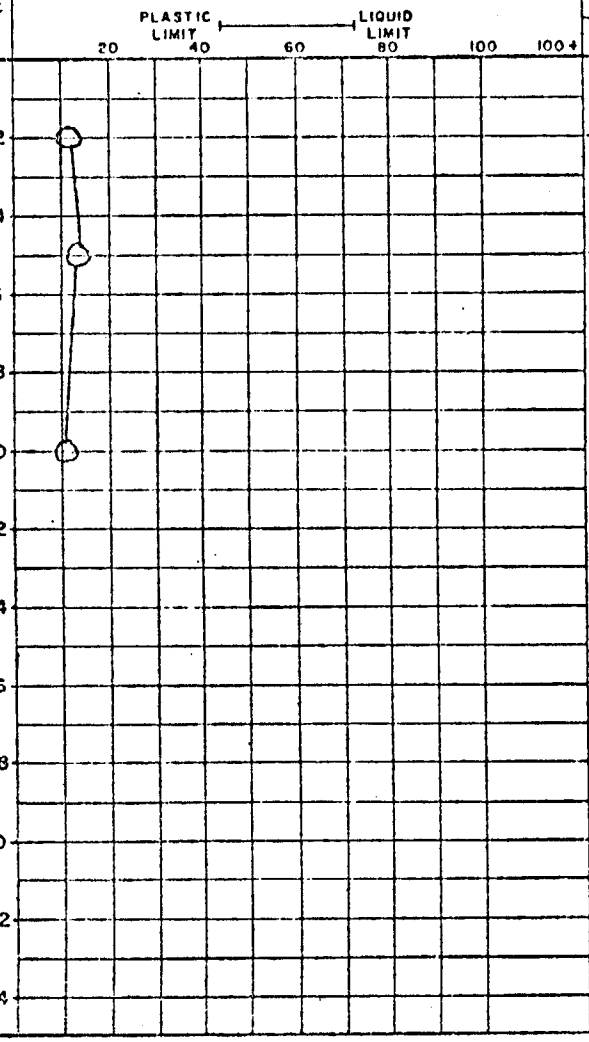
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2589+50	OFFSET: ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
49	C	L10

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3" ORGANIC MTL OVER		FROST TO 2'							5' CUT TO GRADELINE HERE. NO PROBLEMS ANTICIPATED.
2					ML	SANDY SILT			94	-	6	0			
4						-SOME CLAY TO 6'			91	-	9	0			
6						-LOW PLASTIC									
8						-DAMP.									
10						10'			62	-	38	0			
12						BOTTOM OF HOLE - 10'									
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DRILL HOLE REPORT

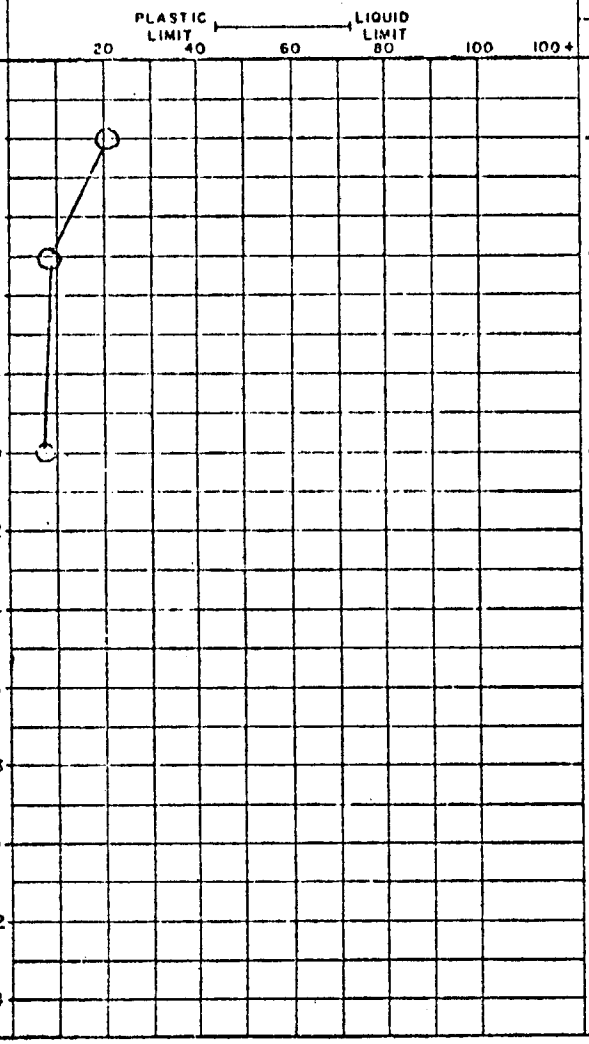
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2592+00	OFFSET ℄
CKD	TECH D.Pronych	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
49	C	L9

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
					ML	3" ORGANIC MATL OVER CLAY-SILT — 2'			-93-	7	0				5' CUT TO GRADELINE HERE. - NO PROBLEMS ANTICIPATED.
					SM	SANDY SILT OR SILTY SAND			-59-	41	0				
					ML	-NON-PLASTIC -DAMP									
						— 10'			-43-	52	0				
						BOTTOM OF HOLE-10'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

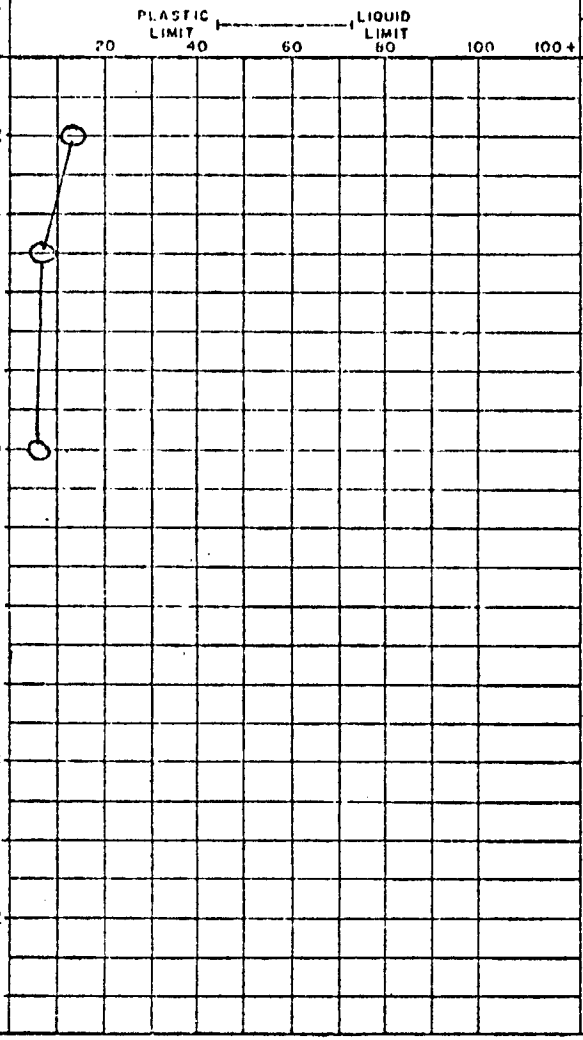
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2605+00	OFFSET 4
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
49	C	L8

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	4" ORGANIC MTL OVER CLAY-SILT WITH SAND 2.5'		FROST TO 2'
					SM/ML	SILTY SAND OR SANDY SILT -FINE TO MEDIUM -DRY TO DAMP -NON-PLASTIC 10'		
						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
80		20	0		
41		59	0		
35		65	0		

REMARKS

VERY SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED - WIND EROSION OF DITCHES BELOW 3' MAY OCCUR.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA
MACKENZIE HIGHWAY

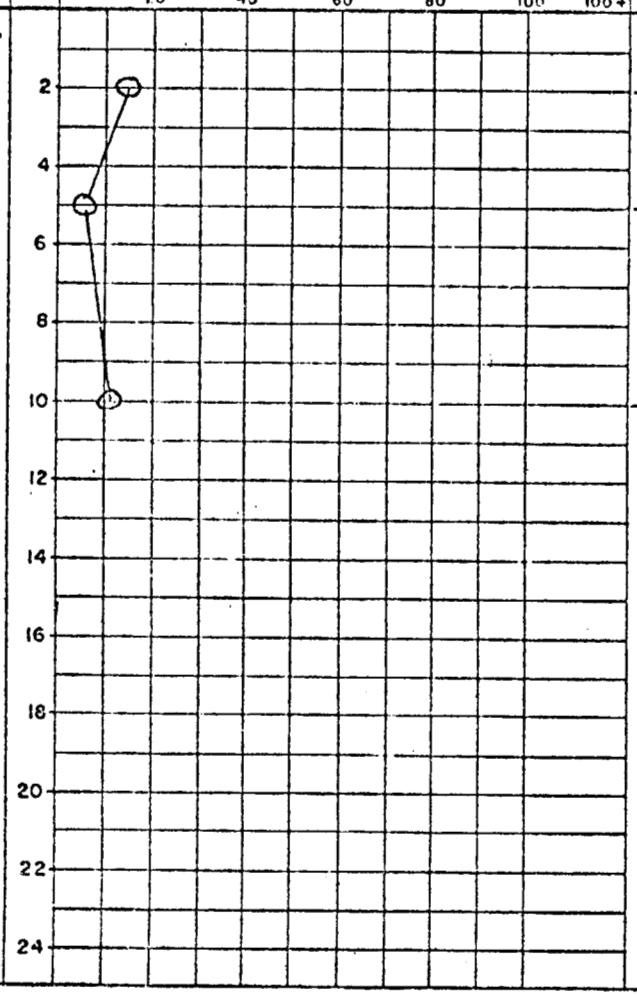
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2633+00	OFFSET ℄
CKD	TECH D PRONYCH	RIG AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
50	C	L7

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	4" ORGANIC MTL OVER CLAY-SAND-SILT		FROST TO 3'
2.5'						SANDY SILT OR SILTY SAND		
					SM ML	-LOW PLASTIC OR NON-PLASTIC -FINE-GRAINED		
10'						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
79	21		0		
40	60		0		
63	37		0		

REMARKS

5' CUT TO GRADE LINE HERE.
NO PROBLEMS ANTICIPATED.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

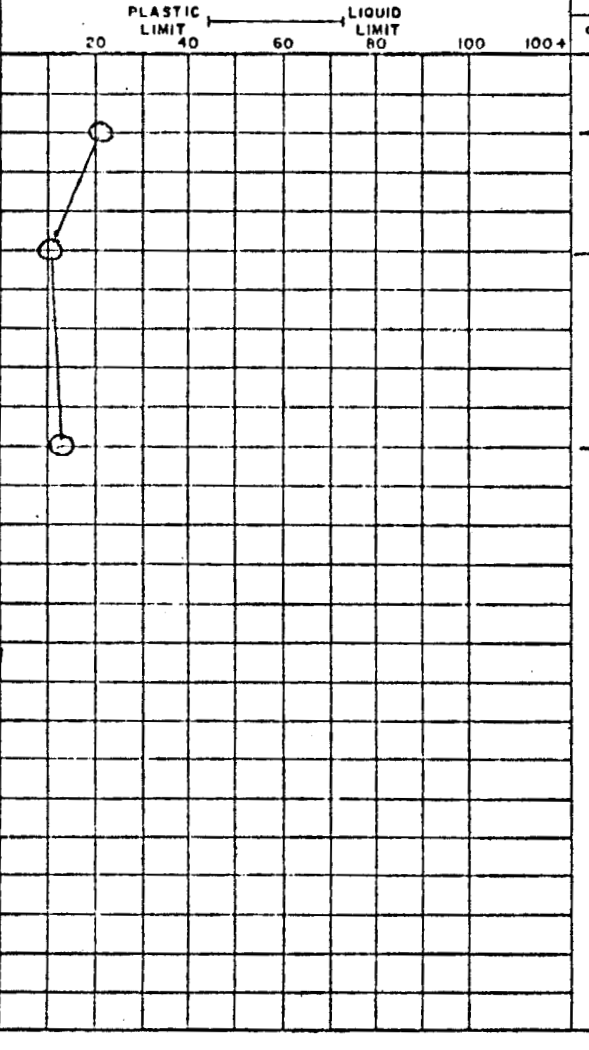
DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE: 2642+00	OFFSET: ℄
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
50	C	L6

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	3" ORGANIC MTL OVER CLAY-SILT -LOW-PLASTIC -DAMP		
4								
6						6'		
8					ML SM	SANDY SILT -NON-PLASTIC -DAMP		
10						10'		
12						BOTTOM OF HOLE-10'		
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
-94-	6	0			
-93-	7	0			
-69-	31	0			

REMARKS

SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED.

DRILL HOLE REPORT

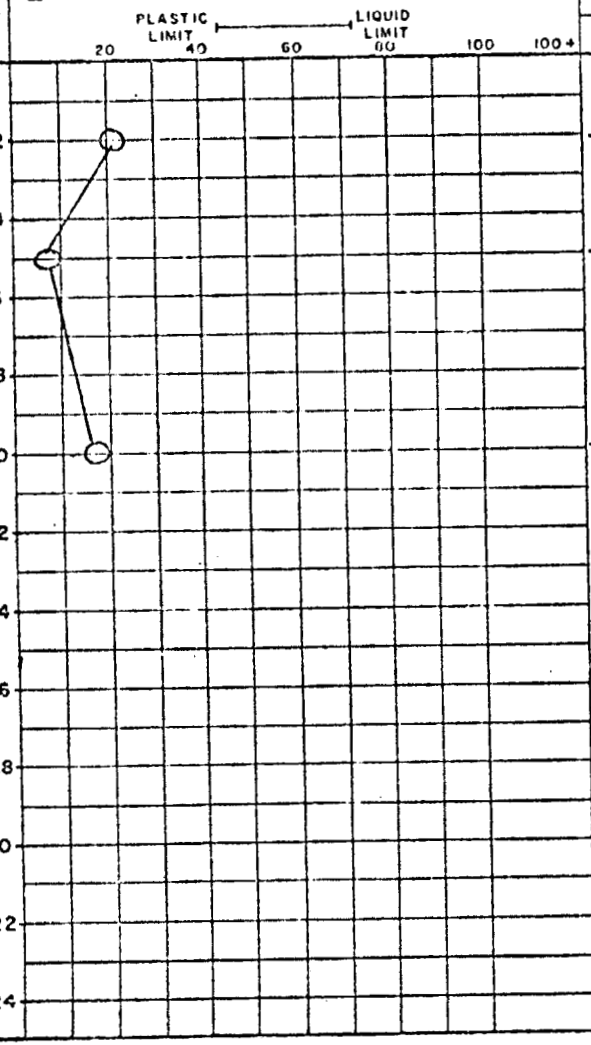
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2665+00	OFFSET do
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
50	C	L5

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER CLAY-SILT		FROST TO 2.5'
2.5'								
						SANDY SILT -LOW PLASTIC -DAMP		
					ML			
10'								
						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (PCF)	DRY DENSITY (PCF)
CLAY %	SILT %	SAND %	GRAVEL %		
90	10	0			
58	42	0			
66	34	0			

REMARKS

SHALLOW CUT HERE <5'
NO PROBLEMS ANTICIPATED.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED MAR/73	AIRPHOTO NO:	CHAINAGE 2669+00	OFFSET 4
CKD	TECH D PRONYCH	RIG ANGER	SURFACE DRAINAGE:	VEGETATION	ELEV

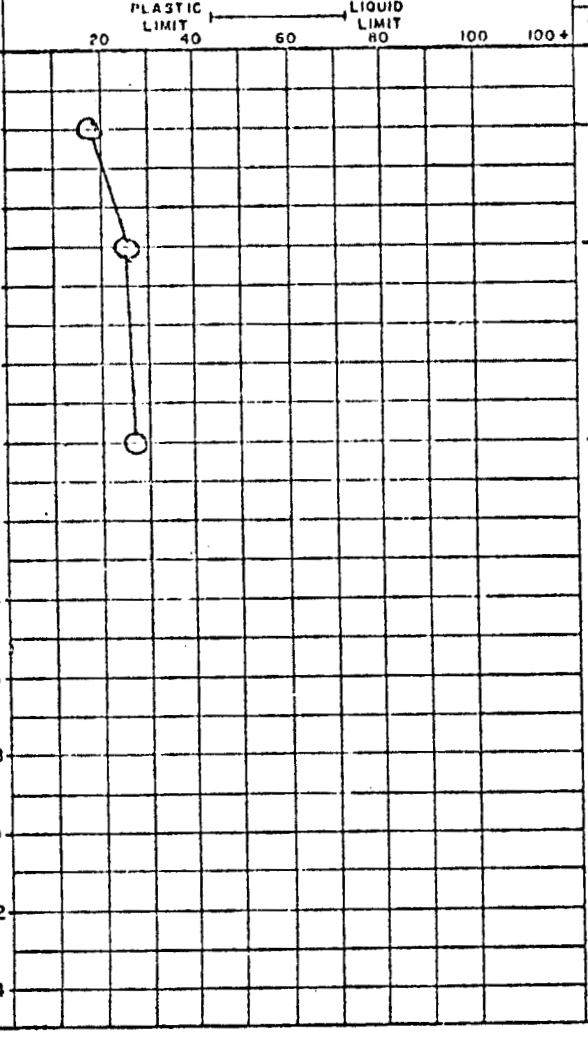
TEST HOLE

MILE	B,C,S	NUMBER
50	C	L4

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					ML	3" ORGANIC MTL OVER SANDY SILT - SOME CLAY - LOW PLASTIC - MOIST BELOW 4' - WET BELOW 7'		FROST TO 2'
4								
6								
8								
10						10' Bottom of Hole-10'		
12								
14								
16								
18								
20								
22								
24								

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
65	35	0			
91	9	0			
75	25	0			

REMARKS

4-5' CUT TO GRADELINE HERE.
- BOTTOM OF DITCHES MAY BE WET
- SUBEXCAVATION AND BACKFILL MAY BE NECESSARY

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

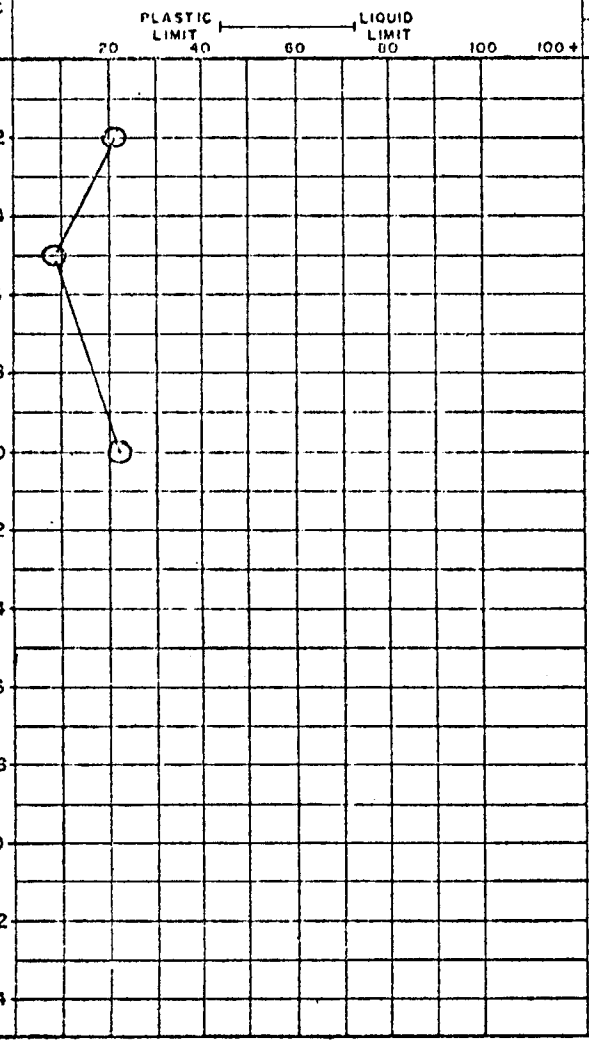
DWN	FIELD ENG	DATE DRILLED 21/3/73	AIRPHOTO NO:	CHAINAGE 2682+00	OFFSET
CKD	TECH D. PRONYCH	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	D,C,S	NUMBER
50	C	L3

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3" ORGANIC MTL OVER CLAY-SILT -LOW-PLASTIC		
						3.5'		
					ML	SANDY SILT -LOW-PLASTIC -DAMP -MOIST BELOW 8'		
						10'		
						BOTTOM OF HOLE-10'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
94	6	0			
46	54	0			
82	18	0			

REMARKS

VERY SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED.

DRILL HOLE REPORT

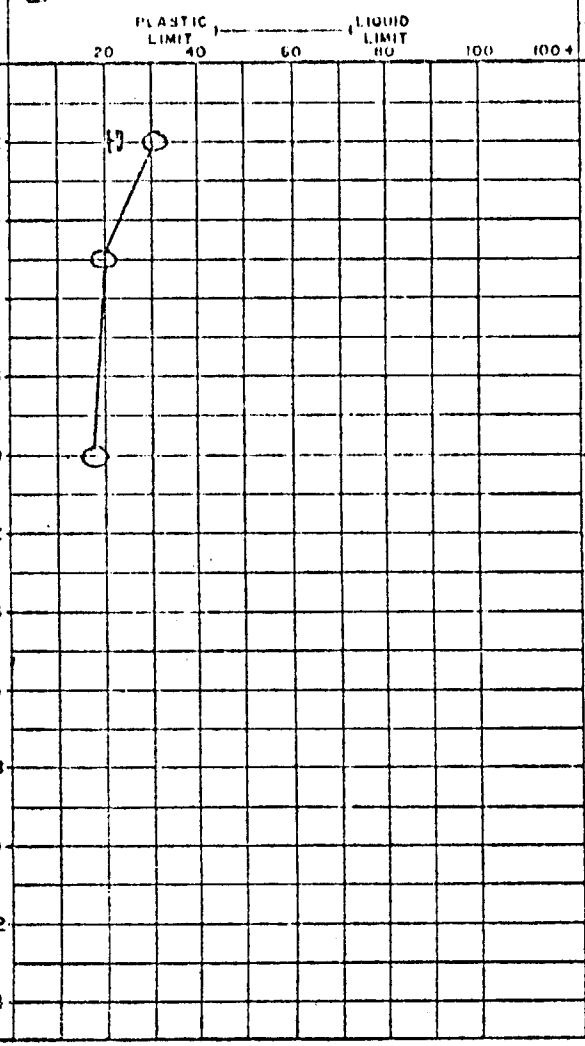
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 21/3/73	AIRPHOTO NO:	CHAINAGE 26+A+00	OFFSET
CKD	TECH D.Pennych	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
51	C	L2

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (p.c.f.)	DRY DENSITY (p.c.f.)	REMARKS
2						4" ORGANIC MTL OVER SANDY CLAYEY SILT.			-85-	15	0				VERY SHALLOW CUT HERE NO PROBLEMS ANTICIPATED.
4					VAL	-LOW PLASTIC			-76-	24	0				
6						-DAMP									
8						-MOIST @ 9'									
10						10'			-87-	13	0				
12						BOTTOM OF HOLE-10'									
14															
16															
18															
20															
22															
24															

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

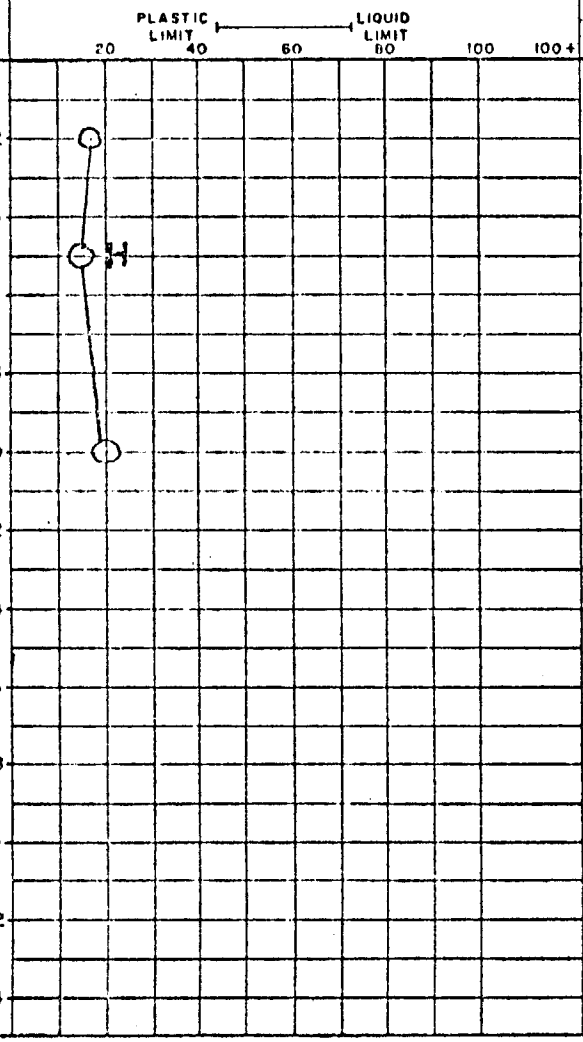
DWN	FIELD ENG	DATE DRILLED 21/3/73	AIRPHOTO NO:	CHAINAGE 2726+00	OFFSET ℄
CKD	TECH D. Pronych	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
51	C	L1

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	4" ORGANIC ATL OVER CLAY-SILT -LOW PLASTIC			98	2	0				SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED.
4						4'									
6					ML	SANDY SILT -SOME CLAY -LOW PLASTIC -MOIST @ 9.5'			88	12	0				
10						10'			52	48	0				
						BOTTOM OF HOLE-10'									

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED 10/5/72	AIRPHOTO NO:	CHAINAGE: 2749+00 OFFSET 4
CKD	TECH G. Beinck.	RIG: Auger	SURFACE DRAINAGE:	VEGETATION: ELEV

TEST HOLE:

MILE	B.C.S	NUMBER
52	C	27

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
2					SM	3" ORGANIC MTL OVER SILTY SAND		
4					ML	OR SANDY SILT		
6						6'		
8					CI	SILTY CLAY -MEDIUM PLASTIC.		
10						11'		
12						BOTTOM OF HOLE -11'		
14								
16								
18								
20								
22								
24								

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT

20 40 60 80 100 100+

DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
2						
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

REMARKS

SURFACE MELTWATER RUNNING INTO HOLE DURING DRILLING

-SUBSOIL SIMILAR TO HOLE #26

-NO PROBLEMS WITH CUT ANTICIPATED.

DRILL HOLE REPORT

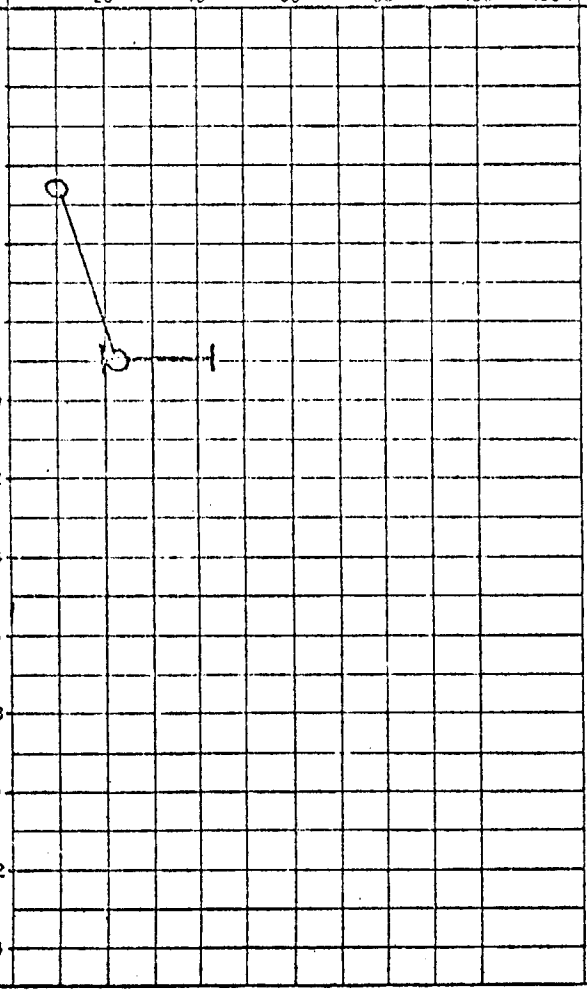
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED: 10/5/72	AIRPHOTO NO:	CHAINAGE: 2753+60	OFFSET: ℄
CKD:	TECH: G. Brinck	RIG: Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV:

TEST HOLE		
MILE	B,C,S	NUMBER
52	C	26

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					SM/ML	3-4" ORGANIC MTL OVER SANDY SILT OR SILTY SAND -DAMP		
						5.5'		
					CL	SILTY CLAY -MEDIUM PLASTIC -DAMP.		
						11'		
						BOTTOM OF HOLE -11'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)



GRAIN-SIZE ANALYSIS				WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
CLAY %	SILT %	SAND %	GRAVEL %		
-47-	53	0			
-97-	3	0			

REMARKS

No problems with cut.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 10/5/72	AIRPHOTO NO:	CHAINAGE 2754+80	OFFSET ℄
CKD	TECH G. Brinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	D.C.S	NUMBER
53	C	25

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	GRAIN SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2-3" ORGANIC MTL OVER										SHALLOW CUT
2					ML	SAND-SILT -LOW-PLASTIC -DAMP			2							-NO PROBLEMS
4						5'			4	-95-		5	0			ANTICIPATED
6					CI	SILTY CLAY -MEDIUM PLASTIC 7'			6	-97-		3	0			
8						BOTTOM OF HOLE -7'			8							
10									10							
12									12							
14									14							
16									16							
18									18							
20									20							
22									22							
24									24							

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG:	DATE DRILLED 10/5/72	AIRPHOTO NO:	CHAINAGE: 2831+00	OFFSET: ℄
CKD:	TECH: G. Brinkel.	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
53	C	24

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20, 40, 60, 80, 100, 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						2-3" ORGANIC MTL OVER SANDY-SILT											VERY SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED.
2					ML	-NON-PLASTIC			2								
4						-DAMP TO SLIGHTLY WET.			4								
6						6.5'			6	○	-94-	6	0				
8						BOTTOM OF HOLE 6.5'			8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 2855+50	OFFSET 4'
CKD	TECH G. BRINCK.	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
54	C	23

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2					ML	6-7" ORGANIC MTL OVER CLAY-SILT — 3'									SURFACE MELTWATER RUNNING INTO HOLE DURING DRILLING
4					SM	SANDY SILT OR SILTY SAND									-VISUAL FIELD ANALYSIS SUGGESTS NO PROBLEMS WITH SHALLOW CUT HERE.
6					ML	-LOW PLASTIC — 8'									
8					CL CI	SILTY CLAY -LOW TO MEDIUM PLASTIC. — 11'									
10						BOTTOM OF HOLE - 11'									
12															
14															
16															
18															
20															
22															
24															

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG.	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 2861+80	OFFSET 4
CKD	TECH G. BRUNSK.	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
54	C	22

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2						9-10" ORGANIC MTL OVER SANDY SILT									SHALLOW CUT HERE. SUBSOIL SLIGHTLY WET BUT SHALLOW CUT SHOULD BE O.K.
4					ML	-VERY LOW PLASTIC - SLIGHTLY WET			-90-		10	0			
6															
8						7.5' BOTTOM OF HOLE -7.5'									
10															
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

DRILL HOLE REPORT

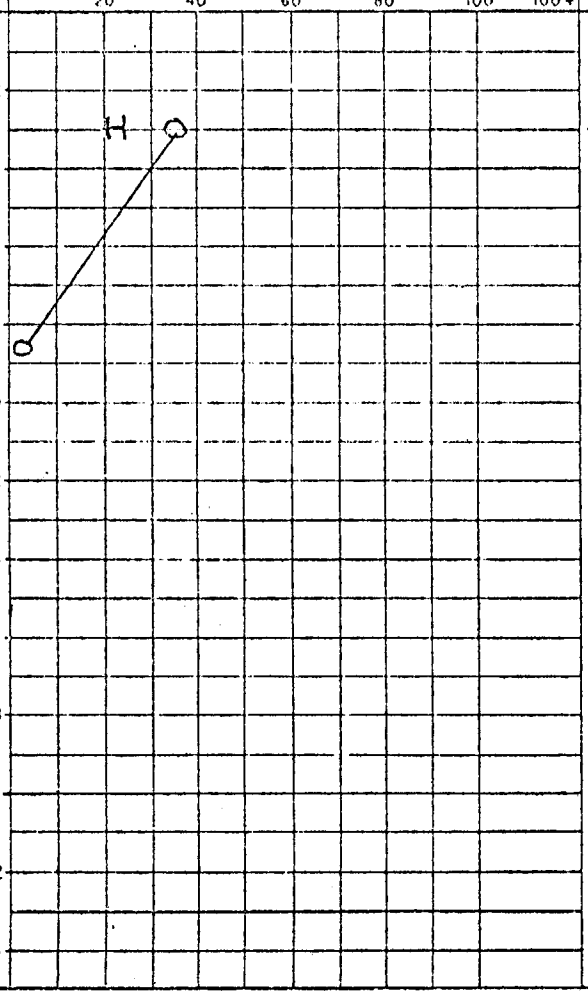
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 6/6/72	AIRPHOTO NO:	CHAINAGE: 2895+50	OFFSET 4
CKD	TECH G. Brewer	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	D,C,S	NUMBER
55	C	13

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
						3-4" ORGANIC MTL OVER		
2					ML	SANDY SILT -LOW PLASTIC -WET.		
4						4.5'		
6					SM	SAND -NON-PLASTIC -MEDIUM GRAINED -DRY		
8								
10						11'		
12						BOTTOM OF HOLE - 11'		
14								
16								
18								
20								
22								
24								



GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
-9	4-	6	0		
-11	-	88	1		

REMARKS

NO PROBLEM WITH CUT. SURFACE WET ZONE DUE TO SMALL DEPRESSION

SAND WILL ERODE EASILY

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG:	DATE DRILLED 6/5/72	AIRPHOTO NO:	CHAINAGE: 2903+75
CKD	TECH G. BRINCK.	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:

OFFSET: 4

ELEV

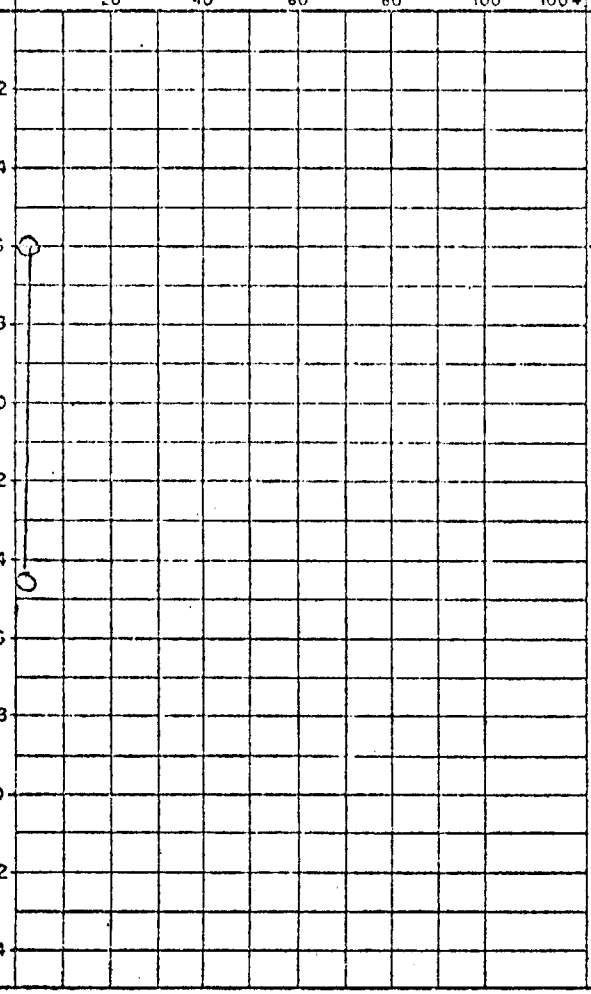
TEST HOLE

MILE	B,C,S	NUMBER
55	C	12

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION
					ML	3-4" ORGANIC MTL OVER SANDY SILT -DAMP		
						4.5'		
					SM, SW	SILTY SAND -NON-PLASTIC -DRY -PEBBLES -MEDIUM TO COARSE		
						16'		
						BOTTOM OF HOLE-16'		

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT



DEPTH (FEET)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)
6	8		83	9		
14	2		94	4		

REMARKS

No problem with cut except possible post construction erosion.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 6/5/72	AIRPHOTO NO	CHAINAGE 2922+80	OFFSET 4
CKD	TECH G. BRINCK	RIG AUGER	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	D,C,S	NUMBER
55	C	10

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	O = WATER CONTENT (% OF DRY WEIGHT) Δ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20 40 60 80 100 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						4" ORGANIC MTL OVER											NO PROBLEM
2						SANDY SILT OR			2								WITH CUT.
					SM	SILTY SAND.											
4									4								
					ML	-LOW PLASTIC											
6						-DAMP			6								
8									8								
10									10	O	-22-	78	0				
						11'											
12						BOTTOM OF HOLE-11'			12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

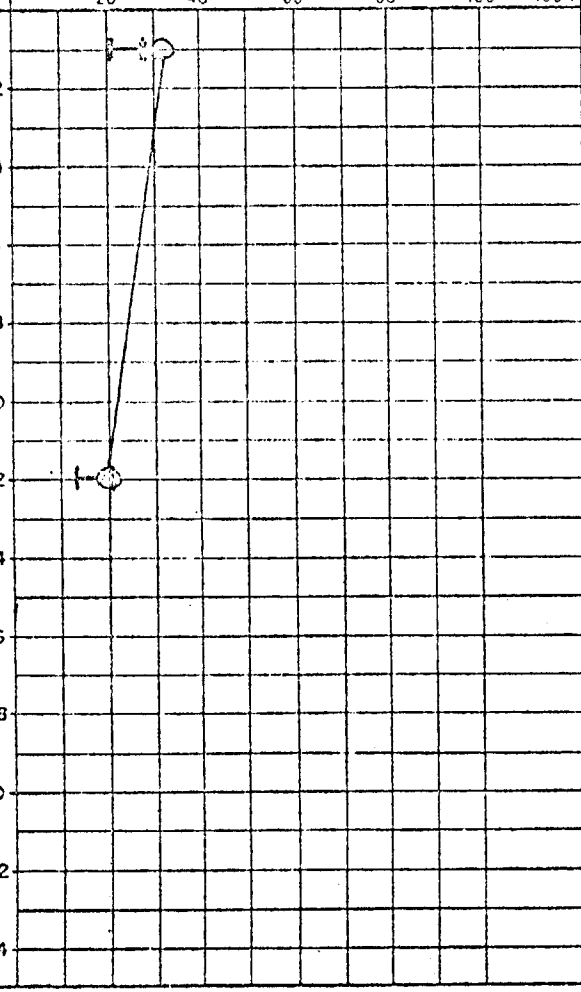
DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 6/5/72	AIRPHOTO NO:	CHAINAGE 2934 +25	OFFSET ℄
CKD	TECH G. Beinck.	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
55	C	9

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
	1					2" ORGANIC MTL OVER SANDY CLAY-SILT -LOW PLASTIC -WET AT SURFACE AND WET BELOW 12'		THIN FROST LAYER AT 6'	-93-		7	0			10' CUT TO GRADELINE HERE -SUBSOIL IS WET BELOW 12' -DITCH CUTS MAY START TO SLOUGH.
12	2								-75-		25	0			-SURFACE WET ZONE LIKELY DUE TO MELTWATER AT SURFACE
16						16' BOTTOM OF HOLE-16'									



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 6/5/72	AIRPHOTO NO:	CHAINAGE: 2938+20	OFFSET: 4L
CKD	TECH G. BRINCK	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
55	C	8

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2						2" ORGANIC MTL OVER SANDY SILT -LOW PLASTIC									CUT MAY BE SLIGHTLY WET -SLOUGHING SHOULD NOT OCCUR.
4															
6	1				S/A AL	-SLIGHTLY WET THROUGHOUT			-93-	7	0				
8						-SURFACE MELTWATER MAY HAVE CONTAMINATED SAMPLES									
10															
12															
14	2								-75-	25	0				
16						16' BOTTOM OF HOLE-16'									
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT

20 40 60 80 100 100+

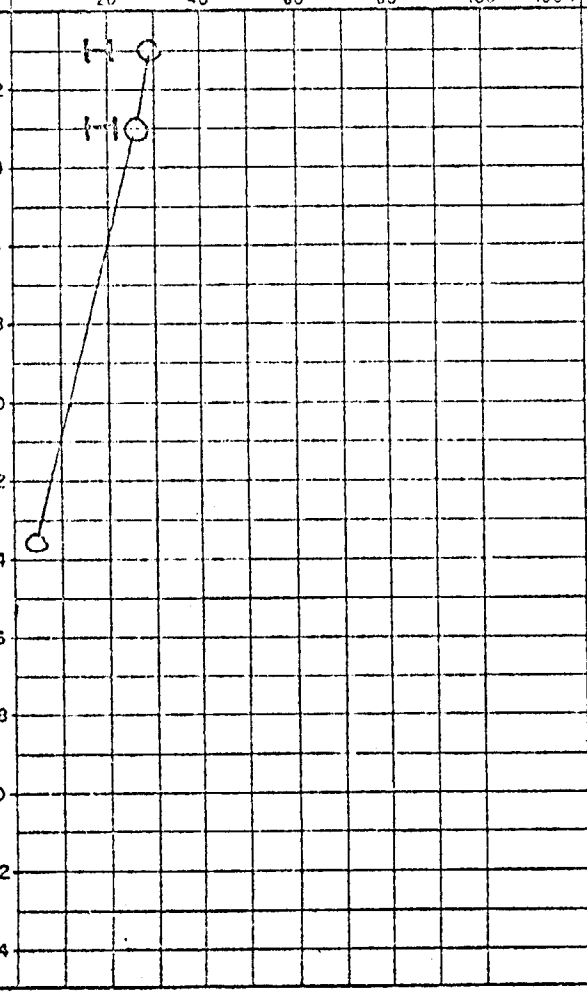
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN:	FIELD ENG	DATE DRILLED 6/5/72	AIRPHOTO NO:	CHAINAGE 2946+00	OFFSET ℄
CKD	TECH G. Brinck	RIG Auger	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
55	C	7

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
	1				ML	3" ORGANIC MTL OVER SANDY SILT -LOW PLASTIC -WET			-61-		39	0			SURFACE MTL WET TO APPROX 4'. -GOOD DRAINAGE AVAILABLE -OTHERWISE NO PROBLEM WITH CUT. -SURFACE WET ZONE LIKELY RESULT OF SURFACE MELT-WATER NEARBY
2	2								-61-		39	0			
4						5'									
6					SM	SILTY SAND -LOW PLASTIC TO NON-PLASTIC -DAMP									
8															
10															
12															
14	3								-26-		74	0			
16						16'									
18						BOTTOM OF HOLE - 16'									
20															
22															
24															



DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 6/5/72	AIRPHOTO NO:	CHAINAGE 2554+60	OFFSET ℄
CKD	TECH G. BRINCK	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
56	C	6

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20 40 60 80 100 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3" ORGANIC MTL. OVER											NO PROBLEM WITH CUT
2						SANDY SILT OR			2								
4					S/M	SILTY SAND			4								
6					ML	-LOW PLASTIC			6								
						- DAMP											
8	1								8	OH	-53-	47	0				
10									10								
						11'											
12						BOTTOM OF HOLE-11'			12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 6/5/72	AIRPHOTO NO	CHAINAGE 2963+40	OFFSET ℄
CKD	TECH G. Belock.	RIG AUGER	SURFACE DRAINAGE	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
56	C	5

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)
						2" ORGANIC MTL OVER								
2						SANDY SILT AND								
					ML	SILTY SAND								
4					SM	-NON-PLASTIC								
6	1					-DAMP			-15-	81	4			
8														
10	2					11'			-55-	45	0			
12						BOTTOM OF HOLE-11'								
14														
16														
18														
20														
22														
24														

O = WATER CONTENT (% OF DRY WEIGHT)
Δ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

REMARKS

No PROBLEMS WITH CUT.

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 9/5/72	AIRPHOTO NO:	CHAINAGE 3116 + 80	OFFSET d.
CKD	TECH G. BRINCK.	RIG AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE		
MILE	B,C,S	NUMBER
59	C	21

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) PLASTIC LIMIT — LIQUID LIMIT (20 40 60 80 100 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
					ML	3-4" ORGANIC MTL OVER CLAY-SILT											VERY SHALLOW CUT HERE. NO PROBLEMS ANTICIPATED.
2						2.5'			2								
4					ML	SILT-SAND WITH PEBBLES AND SOME CLAY			4								
6					SM	-DAMP			6								
8						7.5' BOTTOM OF HOLE-7.5'			8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 7/6/72	AIRPHOTO NO:	CHAINAGE 3138+80	OFFSET ℄
CKD	TECH Co. BRINCK	RIG AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
59	C	14

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
2					ML	2-3" ORGANIC MTL OVER SAND-CLAY-SILT - DAMP									SHALLOW CUT AREA. NO PROBLEMS ANTICIPATED.
4						4.5'									
6					CL ML	SILT-SAND-CLAY WITH GRAVEL - SOME COBBLES - TILL?			55	15	30				
8						8'									
10						BOTTOM OF HOLE-8' COBBLES BELOW 4'									
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT — LIQUID LIMIT
20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE 3322+40	OFFSET 4c
CKD	TECH G. Beinck.	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION:	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
63	C	15

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20 40 60 80 100 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						3-4" ORGANIC MTL OVER											SHALLOW CUT
2					ML	CLAY-SILT -SOME SAND -DAMP			2								NO PROBLEM ANTICIPATED.
4						5'			4	CH	-95-	5	0				
6					CL	SILTY CLAY -LOW PLASTIC			6								
						7'											
8						BOTTOM OF HOLE-7'			8								
10									10								
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 8/15/72	AIRPHOTO NO:	CHAINAGE 34+09+75	OFFSET ℄
CKD	TECH G. BRINCK	RIG: AUGER	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
64	C	16

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
2					ML	3-4" ORGANIC MTL. OVER CLAY-SILT -LOW PLASTIC -WET.									SUBSOIL WET AT DEPTH. SHALLOW CUT HERE -SHOULD BE O.K.
4															
6									-98-	2	0				
						7'									
8						BOTTOM OF HOLE-7'									
10															
12															
14															
16															
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)

PLASTIC LIMIT ——— LIQUID LIMIT

20 40 60 80 100 100+

DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE 3461+75	OFFSET 65' Lt. ℄
CKD	TECH G. Brinck.	RIG Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
65	C	17

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	DEPTH (FEET)	○ = WATER CONTENT (% OF DRY WEIGHT) △ = ICE CONTENT (% OF SAMPLE VOLUME) (PLASTIC LIMIT — LIQUID LIMIT; 20, 40, 60, 80, 100, 100+)	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (PCF)	DRY DENSITY (PCF)	REMARKS
						3-4" ORGANIC MTL OVER											SHALLOW CUT
2					ML	SANDY SILT -LOW PLASTIC			2								NO PROBLEMS
4						-DAMP			4								ANTICIPATED
						5'											
6						CLAY-SILT -LOW PLASTIC			6								
8					CL ML	-DAMP.			8	CH	-97-	3	0				
10						10'			10								
						Bottom of Hole-10'											
12									12								
14									14								
16									16								
18									18								
20									20								
22									22								
24									24								

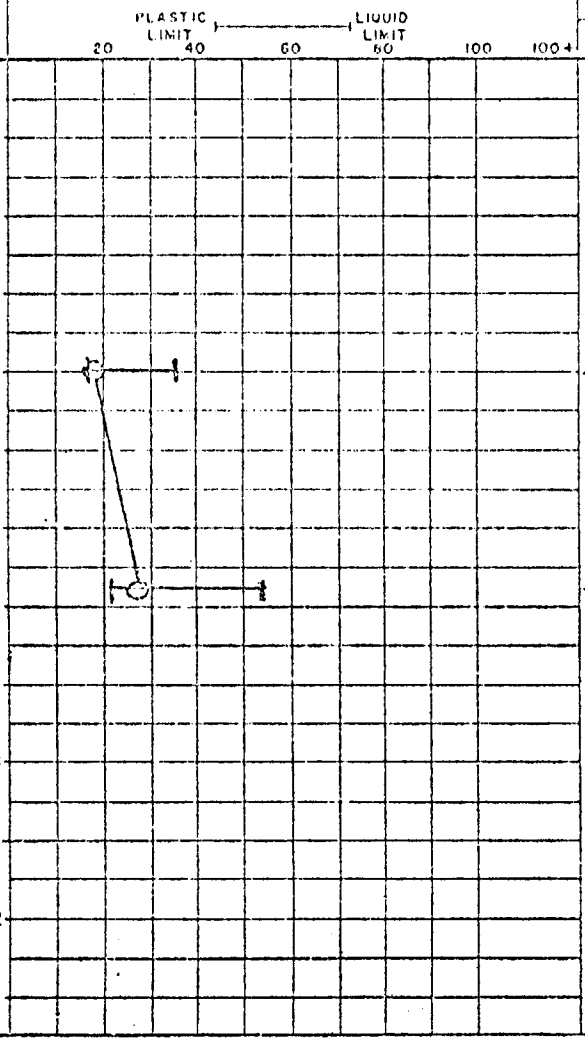
DRILL HOLE REPORT

DEPARTMENT OF PUBLIC WORKS, CANADA

DWN	FIELD ENG	DATE DRILLED 8/5/72	AIRPHOTO NO:	CHAINAGE: 3490+50	OFFSET 60' Rt.
CKD	TECH G. Benock.	RIG: Auger	SURFACE DRAINAGE:	VEGETATION	ELEV

TEST HOLE

MILE	B,C,S	NUMBER
66	C	19

DEPTH (FEET)	SAMPLE NUMBER	SAMPLE TYPE	% RECOVERY	PENETRATION RESISTANCE	UNIFIED SOIL SYMBOL	SOIL DESCRIPTION	LIMITS OF FROZEN GROUND	ICE DESCRIPTION	GRAIN-SIZE ANALYSIS CLAY %	SILT %	SAND %	GRAVEL %	WET DENSITY (P.C.F.)	DRY DENSITY (P.C.F.)	REMARKS
						3" ORGANIC MTL. OVER									12-13' CUT TO GRADE HERE.
2					ML	SANDY SILT									
					SM	OR									
4						SILTY SAND -DAMP									NO PROBLEMS ANTICIPATED.
						5'									
6						SILTY CLAY -MEDIUM TO									
8					CI	HIGHLY PLASTIC			-97-	3	0				
10					CH	-DAMP.									
12															
14									-99-	1	0				
16						16'									
						BOTTOM OF HOLE-16'									
18															
20															
22															
24															

○ = WATER CONTENT (% OF DRY WEIGHT)
△ = ICE CONTENT (% OF SAMPLE VOLUME)