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REFERENCE NO. 312-S.2

DE LEUW CATHER, CANADA LTD.

REPORT VOLUME 1 OF

GEOTECHNICAL INVESTIGATIONS

SOUTH EAST CITY

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

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REPORT NO. 312-S.2 VOLUME 1

RESULTS OF SHALLOW BOREHOLES - FACTUAL DATA

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RESULTS OF SHALLOW BOREHOLES - FACTUAL DATA

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1. INTRODUCTION

-1-

As their contribution to the geotechnical investigation for South-East Ottawa City K. H. King Associates Limited have conducted subsoil investigations designed to give broad overall coverage of the project area. A preliminary investigation in a limited area performed in September and October, 1972 (K. H. King Associates Limited Report Reference No. 209-S.15) had revealed that the following aspects of the subsurface conditions would be of prime importance in the planning of the development:

- a) The presence of a surficial sand stratum or of a crust on the Leda Clay known to underlie the site.
- b) The depth to a hard bearing stratum of glacial till or bedrock suitable to support pile or caisson foundations.

The specific objectives of the present phase of the investigation were therefore to map the surficial soil strata and the underlying till bedrock. This has been done in sufficient detail at this stage to determine if any trends are evident which can guide the overall planning from the point of view of foundation conditions. Because the work was performed at widely-spaced locations the results should be considered to be indicative only and caution should be exercised in interpolating between borehole locations.

To secure the necessary information the following investigation work was performed. The upper 28 foot zone of the soil was explored by means of boreholes. The probable depths to till or bedrock were determined mainly by geophysical methods using a seismograph. Generally the coverage given was at approximately 2,000 foot intervals around the perimeter of the site to extend the previous information. In some areas, particularly in the south-east corner, where more favourable subsurface conditions were encountered

additional intermediate boreholes and seismic determinations were made. In addition to all of the field work information on the conditions in and adjacent to the project area was obtained from other agencies such as the Geological Survey of Canada; The National Research Council; The Ministry of Transportation and Communications of Ontario and The Ministry of the Environment of Ontario. This has been reviewed and incorporated herein in preparing the mapping.

Presentation of all of the data obtained is made in two volumes, namely:

Report No. 312-S.2 - Details of procedures employed and all factual data
Volume 1 in the form of borehole logs, laboratory test results
and descriptions of soil strata and groundwater conditions.

Report No. 312-S.2 - Review and interpretation of the data and its presentation
Volume 2 in the form of maps.

Our interpretation of the data as it affects the design and planning of the development is given in Volume 2.

2. FIELD WORK

A total of 61 exploratory boreholes was performed in this phase of the investigation in the period January to March 1974. The locations of these boreholes, which are numbered 100 to 160 inclusive, are shown on the enclosed Drawing No. 312-S.2-1 together with the locations of all of the previous boreholes applicable to this area. The latter were performed in September and October, 1972 under Report Reference 209-S.15 and are numbered 1 to 36 and 44 and 45. Most of the boreholes were located along the roads bordering the site and in order to avoid any possible local effects they were taken

about 50 to 100 feet into the adjoining fields. The co-ordinates of all of the boreholes based on the one thousand metre U. T. M. grid are tabulated in Appendix C.

The boreholes were advanced by a continuous-flight power auger equipped for soil sampling. Because of caving ground conditions hollow-stem augers were employed. The drill was mounted on a Bombardier tractor for ease of access.

Since the prime purpose of these boreholes was to explore the variations in the upper zones of the subsoil they were taken to a constant depth of 28 feet and a uniform sampling and testing pattern was employed. The samples were obtained at 2.5 foot intervals of depth, mostly by driving a 2 inch diameter split-spoon sampler by Standard Penetration Test methods. In this test the sampler is driven by a 140 pound hammer falling freely for a distance of 30 inches and the number of blows required to advance the sampler one foot after an initial penetration of 6 inches is recorded as the Standard Penetration Resistance or 'N' value of the soil. The results of these field tests, which are plotted on the borehole logs enclosed, have been used to estimate the relative density of non-cohesive soil strata. Since the Standard Penetration Test does not give reliable values for the consistency of cohesive soils the undrained shear strength was measured in-situ by means of vane shear tests performed at 2.5 foot intervals of depth where the boreholes were in clay. In these tests a four-bladed vane was attached to 'A' size drill rods and pushed through the hollow-stem augers about 12 inches into undisturbed soil after the removal of each sample. The drill rods were attached to a ball-bearing collar at the top of the augers to hold the weight of the equipment and

to minimize side friction. The torque required to shear the clay was measured with a calibrated torque-wrench equipped with a follow-up pointer to record the maximum reading. After measuring the undisturbed shear strength, in which failure was reached in about one minute, the vane was rotated rapidly about six times and the remoulded shear strength was measured. In order to assess the amount of friction in the apparatus a number of dummy tests were performed using a plain rod in place of the vane, however it was found that the torque required to turn this was negligible and therefore no correction had to be applied to the actual test readings. The undrained shear strength of the clay was calculated from the torque readings using a vane constant 10 per cent less than the theoretical value. This compensates, at least in part, for the effect of the relatively rapid rate at which the vane tests were performed.

Special series of in-situ vane tests were performed in an attempt to determine by field testing if the clay had any marked anisotropic properties (i.e. variations in shear strength between the horizontal and vertical planes). In these tests, performed adjacent to boreholes 135; 141 & 141A, separate boreholes were put down about 6 to 7 feet apart in which vane tests were conducted throughout using a vane of different properties of diameter to length in each borehole. The vanes used had square ends and the following dimensions:

- i. 5" length X 2" diameter; $D/H = 0.40$ Constant = 48
- ii. 3" length X $2\frac{1}{2}$ " diameter; $D/H = 0.83$ Constant = 48
- iii. $1\frac{1}{2}$ " length X 3" diameter; $D/H = 2.00$ Constant = 46
- iv. 6" length X $2\frac{5}{8}$ " diameter; $D/H = 0.44$ Constant = 22
(approx.)

(iv) was the "standard" vane used in this investigation. The ends were tapered at 45° and the length of the cylindrical portion was 6". Careful measurements were made to ensure that the vane tests were performed at the same depths in all of the boreholes in a group. Since some of the difference between the results at any one depth could be due to natural variations in the clay, and hence not wholly attributable to the use of vanes of different proportions, two series of vane tests (borehole 159) were conducted with the "standard" vane in boreholes 6 feet apart.

A number of relatively undisturbed samples of the clay for laboratory strength and consolidation testing were obtained with a 2 3/4 inch diameter thin-walled tube piston sampler. This was pushed into the soil by hydraulic pressure. The piston sampler was of the inner-rod driven type but the rods were not used. Whilst it is recognized that this sampler may not be the most effective in this highly sensitive clay it is felt that the laboratory test results show that it was successful in securing reasonably undisturbed samples.

Dynamic Cone Penetration Tests were performed adjacent to most of the boreholes by driving a 60° point 2" diameter cone attached to 'A' drill rods continuously from the ground surface using a driving energy of 4,200 inch-pounds per blow. The number of blows for each foot of penetration was recorded and this provides a profile of soil consistency and density changes with depth. It was hoped that the Dynamic Cone Test would be an expedient method of detecting the presence of a surficial sand stratum or clay crust and that it would be possible to replace some of boreholes with

cone tests only. However, the initial results were inconclusive and it was felt that the cone test alone was not a reliable method. At selected locations dynamic cone tests were driven from the bottom of the boreholes to refusal to estimate the depth to harder strata. It was noted during some of these deep penetration tests that the driving resistance generally showed a marked increase at each 10 foot increment of depth. This was probably due to increased adhesion on the drill rods during the time required to add an additional rod to the string and therefore is not necessarily indicative of any significant change in soil properties.

In boreholes 153 to 158 inclusive and in 160 cone penetration tests only were performed in order to determine the depth to refusal.

For expediency groundwater observations were made in plastic standpipes installed to the bottom of each borehole. During the course of the field work the groundwater level in the area was generally at or close to the ground surface and it was frozen. The water levels in the standpipes were recorded on the last day of the field work.

After identification in the field all of the samples recovered were shipped to our soils laboratory in Toronto for a detailed examination and classification and the performance of laboratory tests. Samples will be stored in our laboratory for a period of six months after which time we will ask for instructions regarding their disposal.

The drilling equipment was owned and operated by F. E. Johnston Drilling Company Limited. One of our senior soils technicians supervised the field work, performed field tests and recorded all of the results. Boreholes were located with reference to local landmarks which could be identified

on an aerial photographic mosaic. This mosaic, supplied by the National Capital Commission, has the one thousand U. T. M. grid superimposed on it and hence it was possible to determine the co-ordinates of the boreholes. Ground surface elevations at the boreholes were determined ^{by} De Leuw Cather, Canada Ltd.,. It is understood that these are referred to Geodetic Datum.

3. FIELD WORK - GEOPHYSICAL

A geophysical survey of the site was made by the seismic method to estimate the probable depths to till or bedrock and in an attempt to define the depth of clay crust or surficial sand stratum.

It was found that in most cases the surficial layer was too thin for the initial wave arrivals to be distinguished clearly on the record. Where the first break could be observed it was possibly influenced by frozen ground and was not necessarily indicative therefore of a layered soil system. The interpretation of the results at shallow depths was further complicated by the saturated conditions which resulted in many cases in the measured seismic velocities being close to that of water with insufficient contrast to distinguish individual layers. For these reasons it was concluded that the interpretation of the seismic data within the upper twenty feet was not sufficiently reliable under winter conditions. It was found however

that there was sufficient contrast between the velocities in the Leda Clay and in the underlying till or bedrock to permit a successful determination of the lower boundary of the clay. The contrast between the till and the bedrock could not be detected, partly because of a small difference in seismic velocities and also because the till is relatively thin. The seismic results were checked in a number of cases by performing seismic determinations adjacent to a deep borehole or cone test where the depth to refusal was known accurately.

As with all geophysical methods the results are necessarily approximate only and in the present case it is considered that they have an accuracy of ± 10 per cent. The seismograph used was a single-channel instrument recording the arrival times of seismic waves on sensitized paper. The source of energy was a 25 pound sledge-hammer striking a steel plate on the ground surface. The instrument was owned and operated by K. H. King Associates Limited who were responsible also for the interpretation of the results.

The results of the seismic survey are presented in Volume 2 of this report where they have been combined with data from other sources to produce a preliminary map showing bedrock contours.

4. LABORATORY TESTING

The laboratory testing was confined mainly to the identification and classification of the soils. For this purpose the tests conducted consisted of grain-size analyses; liquid and plastic limits and natural water contents.

In order to assess the possible variations in the compressibility of the Leda Clay across the site a number of consolidation tests were performed on selected thin-walled tube samples. The tests were performed in an 11:1 lever arm direct loading machine with a fixed-ring consolidation cell. The stainless steel rings were Teflon-coated and smeared with molybdenum-disulphide grease prior to insertion of the trimmed samples. To further reduce side friction effects a nominal sample diameter of 2 3/4" was used. The nominal height of the specimens was 3/4". The actual dimensions of the rings were measured by Vernier calipers to the nearest 1/1000". Most of the load increments in the consolidation tests were at less than normal 1:1 ratio in order to define better the preconsolidation pressures. Load increments were applied at the stage where consolidation under the previous increment was just past the point of 100 per cent primary consolidation as determined by a plot of settlement versus the logarithm of time or of settlement versus the square root of time. In practice it was found that the semi-log. plot gave the more consistent results. The results of the laboratory tests are presented on the enclosed figures and are plotted on the appropriate borehole logs.

5. SOIL CONDITIONS

The detailed stratigraphy revealed by the boreholes and inferred from the cone penetration tests in the project area is presented on the borehole logs of Figures 1 to 98A inclusive in this volume. For completeness the logs of the earlier boreholes have reproduced herein in addition to those of the boreholes performed in the present investigation. All of this surficial data has been assimilated together with information obtained

from an air-photo interpretation and mapping by the Geological Survey of Canada to produce the plans in Volume 2 of this report showing-

1. Surficial Geology - Drawing No. 312-S.2-2
2. Thickness of Clay/Sand - Drawing No. 312-S.2-3
Crust
3. Bedrock Contours - Drawing No. 312-S.2-4

In this section the engineering properties of the strata relevant to design and construction are described. This discussion necessarily relates to the properties within the top 28 feet below the ground surface but it covers the whole project area. For a detailed description of the properties of the strata with depth at five specific locations reference should be made to Volume 3, Report 73908 -1 prepared by H. Q. Golder & Associates Limited. This latter report also contains a more detailed discussion of the properties of the Leda Clay at this site based on the extensive sampling and testing programme performed in the deep boreholes.

5.1 Loose to Dense Silty Sand

In some areas, covering roughly 50 per cent of the site area as shown on the surficial geology map of Drawing No. 312-S.2-2 in Volume 2 of this report, a surficial deposit of sand was encountered. This occurs particularly in a band bordering the south side of Highway 417 where the maximum depth as encountered reached 17 feet (boreholes 123 and 143). Elsewhere the sand is sporadic in occurrence and its thickness is generally less than 8 feet. Possibly the sand deposits are of different geological origin however they are considered as one for the purpose of this report.

The sand is predominantly of uniform gradation and consists of fine sand particles with up to about 40 per cent silt as shown by the grain-size distribution curves of Figures 99 to 101 inclusive. In borehole 106 the amount of silt increases to between 50 and 60 per cent as shown on Figure 61 and the material here is classified as a fine sand and silt. Frequently the sand contains seams and interbedded layers of clay.

The colour of the sand varies from brown to gray-brown and gray mottled with black.

The relative density is highly variable. The Standard Penetration Tests gave "N" values ranging from 2 to 35 blows per foot with most values being in the range of 10 to 20 blows per foot. This variation is reflected also in the dynamic cone penetration test results which gave approximately the same range of penetration values. Thus the relative density of the sand is described as being loose to dense but generally in the compact range of values.

5.2 Stiff To Soft Clay

The significant soil stratum underlying the site and known to occur extensively throughout the region is known generally as Leda Clay. Although commonly referred to as one soil deposit it is in fact probably composed of three or four strata of different geological origins. Since these variations are probably only of significance when dealing with the succession of strata throughout the full depth of the clay for the purposes of the following discussion, which deals with the clay within 30 feet of the ground surface, it will be considered as one soil deposit

although some variations were observed between the boreholes. The clay was encountered in all of the boreholes put down in this investigation. The total thickness of the Leda Clay strata varies considerably under this project area. In the south-east corner the least thickness (about 20 feet) is found whilst in the north-west corner the thickness is inferred to be about 190 feet. Elsewhere the thickness of the deposit may be inferred from the contours of till/bedrock which are plotted on Drawing 312-S.2-4 in Volume 2.

Generally the clay as encountered at depth was gray in colour with distinct bands of red-brown colouration in places. Occasional black mottlings were also observed. In places the upper part of the clay is brown in colour as a result of oxidation and again it is banded with red-brown clay. The gray part of the clay has a blocky structure in that it fails along pre-determined planes of weakness. The upper parts of the stratum, particularly where oxidation has taken place, are highly fissured.

Grain-size curves for the clay are plotted on Figure 102 which shows that the portion of clay particles (finer than 0.002 mm. in size) is relatively high at between 50 and 70 per cent.

The results of Atterberg Limit tests on the clay are plotted on the relevant borehole logs and are combined from all of the boreholes on the classification Chart of Figure 103. This shows that the clay is of medium to high plasticity (Liquid Limit = 28 to 86 and Plasticity Index = 14 to 63). The results fall close to a straight line which is approximately parallel to the 'A' Line.

This indicates that all of the samples represent soil of the same origin.

Natural water contents of the clay are plotted on the borehole logs and on the combined plot of consistency versus depth of Figure 104. It can be seen that the values range between 28 and 102 per cent with the lowest values being obtained in the upper part of the stratum denoting desiccation.

With depth the natural water content of the clay is generally of the order of 60 ± 20 per cent with occasional values of 100 per cent. Generally the clay has a natural water content at or above its Liquid Limit except in the desiccated crust where the Liquidity Index drops to about 0.3.

These findings indicate that the clay has a low shearing resistance and that it has received little, if any, pre-compression in its history.

Values of undrained shear strength of the clay were determined by in-situ vane shear tests and the results are plotted on the borehole logs and on the summary plots of shear strength versus depth of Figure 105 and of shear strength versus elevation of Figure 106. A combined plot of the test results from all of the boreholes was made. This showed a considerable scatter of values, possibly due in part to the effect of silt or sand layers, however it is felt that there were a sufficient number of consistent results for the following significant conclusions to be drawn. In places there is a stiff upper crust on the clay where it has been desiccated as already noted. The areas where this occurs are mapped on Drawing No. 312-S.2-3 in Volume 2 of this report. In the crust the shear strength ranges up to 2.5 kips per square foot and over. At the same time the Standard Penetration Tests gave 'N' values of 6 to 29 blows per foot in the crust and thus its consistency is stiff to hard. Below the crust, where it exists, or immediately below the ground surface at other locations the shear strength

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of the clay ranges from 0.2 to 0.7 kips per square foot within the depth of 28 feet explored. In many of the boreholes an approximately linear increase of shear strength with depth was observed. This usually indicates normally consolidated to lightly- overconsolidated clays. This pattern can be observed on Figure 105 which is a plot of the envelopes of shear strength versus depth for all of the boreholes. Several of the boreholes (numbers 114; 116; 117; 121 and 140) give results consistently falling close to the line of lowest values. The ratio of shear strength to effective overburden pressure (c/p ratio) for this line is 0.50. Nearly all of the observed values fall within the shaded area shown on Figure 105, which represent a comparatively narrow range of values bounded by the lowest. In a few of the boreholes (numbers 7 and 17 for example) the shear strength versus depth relationship is significantly higher than the norm. The higher values in these boreholes could possibly be explained by the fact that they are all located close to water courses and have been affected by local drawdown. Reference is made here to Figures 109 and 110 which are discussed more fully in the following section. These profiles of shear strength versus depth were obtained in boreholes spaced only 6 to 7 feet apart and the results show a good degree of reproductibility. In borehole 159 plotted on Figure 110 there is a consistent linear increase of strength with depth (ignoring one high value) with a c/p ratio of 0.27. On the other hand borehole 141A plotted on Figure 109 shows a distinctly wavy pattern of shear strength with depth. A profile of the lowest values of shear strength having a c/p ratio of 0.30 can be interpreted with two distinct zones of higher shear strength around the 10 and 25 foot depths.

A similar pattern is shown by the results of borehole 141 plotted on Figure 105. This suggests the presence of other desiccated layers within the clay stratum. Since the shear strength versus depth profiles, when projected upwards, pass close to the origin it is concluded that the clay has little, if any, preconsolidation. Based on these test results the consistency of the clay is described as being very soft to firm generally with significant variations between boreholes. It should be noted that in some boreholes (particularly numbers 114; 116; 117; 121 and 140) the consistency is very soft at shallow depths.

The clay within the upper 28 feet is moderately sensitive to remoulding. The ratio of undisturbed to remoulded shear strength measured in the vane tests being generally 4 to 6 with occasional values of 10 being recorded. Values of up to 100 have been reported elsewhere for Leda Clay.

As discussed under "Field Work - Exploratory Boreholes" special field vane shear tests were conducted to assess any possible anisotropy of the clay which would lead to different values of shear strength on the horizontal and vertical planes. It was felt that this data would be of assistance in the interpretation of field and laboratory determinations of shear strength. The results of these tests are presented on the plots of shear strength versus depth (Figures 107 to 109) as obtained with vanes of various proportions in boreholes spaced 6 to 7 feet apart. At the bottom of each figure is an analysis of the results in the format adopted by ^{*}Aas to determine the ratio of shear strengths on the horizontal and vertical planes (C_H/C_V).

* G. Aas " A Study of The Effect of Vane Shape and Rate of Strain on The Measured Values of In-Situ Shear Strength of Clays"
Proc. 6th Int. Conf. of Soil Mechanics and Foundation Engineering, Montreal, 1965.

In order to assess any possible natural variations in shear strength over a short distance two series of vane tests were conducted in borehole 159 using the "standard" vane which was employed throughout the investigation. The results of this borehole are plotted on Figure 110 which also shows a combined analysis of the average results obtained in the other tests. Figure 110 shows that although in general consistent results are obtained and the average values of shear strength for the profiles are essentially equal there can also be occasional significant local differences. This finding is borne out by the results of borehole 141A (Figure 109) where it can be seen that the three vanes gave essentially similar results throughout. The inferred ratio of $C_H : C_V$ for this borehole is in fact 1.13. It is concluded therefore that differences in average shear strength recorded by the different vane profiles at one location reflect anisotropy of the clay. The results suggest that the anisotropic effect may be quite high in places with the ratio of $C_H : C_V$ reaching a value of about 2. These findings should be viewed qualitatively rather than quantitatively since it is felt that more reliable values would be obtained from laboratory tests on undisturbed block samples. Nevertheless it is believed that the tests indicate a variable anisotropic effect across the site which may be at least a partial explanation of the reported discrepancy between shear strengths determined by the vane and those determined by compression tests on block samples. It is noted that because of this effect the values of shear strength deduced from standard vanes having a ratio of diameter to length of about one-half generally is significantly less than

the values deduced from vanes having a ratio of diameter to length of two. This is particularly evident in boreholes 135 and 141. The question of which shape of vane or test procedure should be used in this clay merits further investigation.

The results of conventional one-dimensional consolidation tests on undisturbed thin-walled tube samples of the clay are presented on the compression versus logarithm of pressure plots of Figures 111 to 117 inclusive. Values of the Virgin Compression Ratio determined from the steepest parts of the compression/log.pressure curves at pressures just above the pre-consolidation pressures, range between 0.24 and 1.20 and show the normal tendency to increase with increasing water content found in all soils in our experience. This is exhibited on Figure 114 which is a plot of Virgin Compression Ratio versus natural water content. The values of recompression ratio at pressures less than the preconsolidation pressure are typically about 0.02 to 0.05.

It appears from the consolidation test results above that the clay is generally slightly overconsolidated by a past pressure of at least 0.5 kips per square foot in excess of the existing overburden pressure increasing to an excess preconsolidation pressure of 3 K.S.F or more in the crust and these values are plotted against depth and elevation on Figure 118. This Figure shows also the possible preconsolidation pressures which may be deduced from the strength versus depth and elevation plots of Figures 105 and 106. Unfortunately most of the consolidation test samples were obtained by chance in those boreholes

which do not exhibit a regular shear strength profile. Therefore a direct comparison between the results of the two tests is possible only in boreholes 140 and 145. Also the consolidation tests were performed in boreholes which have a comparatively narrow range of ground surface elevations whereas the shear strength profiles represent a wide range of ground elevations. The plot of preconsolidation pressure versus depth of Figure 118 suggests that the consolidation tests give higher values than might be indicated from the shear strength profiles, however a better agreement is obtained when the plot against elevation is considered. Although the approach using vane shear strengths may reflect only that part of the preconsolidation pressure which is due to previous overburden having been removed and not any additional preconsolidation due to delayed compression, and there is some doubt as to the applicability of vane test results because of anisotropy as discussed earlier, it is nevertheless concluded that there are areas of the site where the preconsolidation pressure may be as low as about 0.2 kips per square foot in excess of the existing overburden pressure.

Stiff to Hard Clayey Silt Till

In two of the boreholes only was the Leda Clay penetrated to an underlying stratum of glacial till. This was encountered at depths of 19.5 and 22.5 feet in boreholes 101 and 102 respectively. These boreholes were terminated at depths 7 feet and 4 feet into the till. Based on other data it is believed that the till underlies the site generally and that it has a thickness of the order of 10 to 20 feet.

As encountered the till is a typically glacial deposit consisting of a heterogeneous mixture of sand and gravel in a clayey silt matrix. As encountered in these two boreholes it is considered to^{be} a cohesive soil and its consistency, on the basis of "N" values of 42 to 64 blows per foot is described as hard.

GROUNDWATER CONDITIONS

Observations of the free-standing water levels in the standpipes or in the open boreholes are presented on the borehole logs. The boreholes were performed at different times as follows:

Boreholes 1 to 45 September and October 1973

Boreholes 100 to 160 January to March 1974

The observations at both times show a generally high water level, sometimes at or even above the ground surface. Undoubtedly this indicates the surface ponding of water within the sand stratum over the relatively impermeable clay. It appears that this condition exists throughout most of the year and reflects the poor drainage of the site. Of great significance to development of the site is the pore-water pressure in the body of the Leda Clay and its past and future fluctuations. Some evidence of past levels can be gathered from piezometric observations made by the National Research Council for two adjacent sites. C. F. S. Gloucester & Boundary Road. These are reproduced on Figures 120 to 124 herein. Figure 120 is a plot of the piezometric heads observed at different times in piezometers installed at various depths as shown. It should be noted that the observations were taken at irregular and generally long time intervals and therefore the

actual maximum and minimum values in any year are unlikely to have been observed. Also the piezometers are of the open-flow type and the time-lag in response may invalidate any interpretation of the readings. Figures 121 to 124 inclusive are plots of head versus depth of piezometer on selected dates.

As may be expected the water levels are high during the winter months dropping to low values in July and August. Also the fluctuations in head are greater for shallow piezometers than for the deeper ones.

At C. F. S. Gloucester the observed head in the piezometer at the 10 foot depth fluctuated 6.4 feet over the period of observations whilst the head in the 45 foot piezometer fluctuated 4.2 feet. For this group of piezometers the level of the phreatic surface (zero head) ranged between depths of about 2 feet and 9 feet below the ground surface. The corresponding observations for Boundary Road show a fluctuation in head of 4.0 feet at the 10 foot depth and of only 0.7 feet at the 45 foot depth. At this latter site the phreatic surface is inferred to range between depths of about 5 feet and 10 feet below the ground surface.

The plots of head versus depth of Figures 121 to 124 for selected dates show that the variation in head is approximately linear with depth and generally greater than required for hydrostatic equilibrium. This implies that generally downward seepage is occurring, at least to the 45 foot depth. At greater depths the reverse trend should exist since it is known that water in the underlying bedrock is under artesian pressure.

In the piezometers at C. F. S. Gloucester a trend to increasing head with depth, whilst the upper piezometric head has remained virtually unchanged, is noted for the last three observations. Figure 121 shows that on 20.6.73 essentially hydrostatic conditions had been attained.

K. H. KING ASSOCIATES



K. H. King, P. Eng.
President

KHK/dc

LOG OF BOREHOLE No. 1

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 1

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: SEPTEMBER 28, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
257	GROUND SURFACE									
0.0	Stiff Brown Silty CLAY with sand seams									
252.5		1	DO	12	4					
4.5	Very Soft to Soft Grey CLAY	2	DO	1						
		3	DO	1	8					
		4	DO	1						
		5	DO	1	12					
		6	DO	1	16					
		7	DO	1	20					
		8	DO	1	24					
229										
28.0	End of Borehole				28					

W.L. @ 0.3'

RESULTS

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

K.H. KING ASSOCIATES LIMITED

LOG OF BOREHOLE No. 2 (30.0' to 53.0')

LABORATORY TEST RESULTS

JOB No.: 209-S.15 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 2A
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY
METHOD OF BORING: HOLLOW-STEM AUGER DATE: OCTOBER 11, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)		UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)	
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					W _p	W _L		VERTICAL PRESSURE (K.S.F.)	
227	Continued from Figure 2														
30.0	Firm to Stiff Gray CLAY	8	TO	-											
					34										
		9	DO	1											
					38										
		10	DO	1											
			42												

LOG OF BOREHOLE No. 3

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 3

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 2, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
⊙ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL	WATER CONTENT (%)			UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)						W _p		W _L		VERTICAL PRESSURE (K.S.F.)			
						X	0.5	1.0	1.5	2.0		20	40	60	80				
252	GROUND SURFACE																		
0.0	6" TOPSOIL Firm, Mottled Brown & Gray Silty CLAY Sand Seams										▽								
		1	DO	4	4														
		2	DO	3															
243		3	DO	2	8														
9.0	Soft to Firm Gray CLAY										W. L. @ 2.3'								
		4	DO	1	12														
		5	DO	1															
		6	TO	-	16														
		7	DO	1	20														
					24														
		8	DO	1															
222.5																			
26.5	End of Borehole				28														

K.H. KING ASSOCIATES LIMITED

LOG OF BOREHOLE No. 4

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 4

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 2, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)						VERTICAL PRESSURE (K.S.F.)								
						X	0.5	1.0	1.5	2.0		W _p		W _L						
255	GROUND SURFACE																			
0.0	3" TOPSOIL Dense Gray-Brown Fine & Medium SAND																			
250.5		1	DO	31	4															
4.5	Very Soft to Soft Gray CLAY	2	DO	1																
		3	DO	11	8															
		4	DO	1																
		5	DO	1	12															
		6	DO	1																
237					16															
18.0	End of Borehole				20															

K.H. KING ASSOCIATES LIMITED

LOG OF BOREHOLE No. 5

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY

FIG. No.: 5

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 2, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
259	GROUND SURFACE									
0.0	4" TOPSOIL									
	Compact Brown to Gray Fine to Medium SAND	1	DO	23						
					4					
		2	DO	8						
252										
7.0	Very Stiff Mottled Brown & Gray Silty CLAY	3	DO	20	8					
249										
10.0	Soft Gray CLAY	4	DO	1						
					12					
		5	DO	5						
		6	DO	1	16					
241										
18.0	End of Borehole				20					

W.L. @ 0 3'

LOG OF BOREHOLE No. 6

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 6

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 3, 1972

ELEV.	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)	WATER LEVEL
DEPTH		No.	TYPE	"N"		10 20 30 40 SHEAR STRENGTH (K.S.F.) 0.5 1.0 1.5 2.0	
262	GROUND SURFACE						
0.0	5" TOPSOIL Stiff Mottled Brown & Gray Silty CLAY Sand Seams						
		1	DO	8	4		
		2	DO	13			
255	Soft Gray CLAY						W.L. @ 1.3'
7.0		3	DO	1	8		
						X	
		4	DO	2			
					12	X	
		5	DO	1			
						X	
		6	DO	1	16		
244						X	
18.0	End of Borehole				20		

LOG OF BOREHOLE No. 7

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER CARLETON CTY FIG. No.: 7

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 3, 1972

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ⊙ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION LOG.
 PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		10	20	30	40		W _p			W _L		VERTICAL PRESSURE (K.S.F.)			
252	GROUND SURFACE																		
0.0	Compact Brown Fine SAND																		
		1	DO	16															
247.5					4														
4.5	Stiff Mottled Brown & Gray Silty CLAY	2	DO	11															
		3	DO	10	8														
242.5																			
9.5	Firm Gray CLAY	4	DO	1															
					12														
		5	DO	1	16														
		6	DO	1	20														
					24														
		7	TO	-															
					28														
222																			
30.0	Continued on Figure 7A																		
					30														

FORM 100-1

DATE: OCTOBER 3, 1972

DATE: OCTOBER 3, 1972

ELEV.	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
DEPTH		No.	TYPE	"N"		SHEAR STRENGTH 0.5 1.0 1.5 2.0 (K.S.F.)				
222	Continued from Figure 7									
30.0	Firm Grey CLAY	8	DO	1						
					34					
		9	DO	1						
					38					
		10	DO	1						
					42					
209										
43.0	End of Borehole									

LOG OF BOREHOLE No. 8


JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 8

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: SEPTEMBER 28, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR	20 STRENGTH	30 1.5	40 2.0 (K.S.F.)	
256	GROUND SURFACE									
0.0	5" TOPSOIL									 W.L. @ 1.3'
253.5	Brown Fine SAND									
2.5	Stiff Brown Silty CLAY	1	DO	9	4					
251.5										
4.5	Very Soft to Soft Gray CLAY	2	DO	2						
	With Sand Seams	3	TO	-	8					
		4	DO	1						
		5	TO	-	12					
		6	DO	1	16					
238										
18.0	End of Borehole				20					

LOG OF BOREHOLE No. 9

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 9

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: SEPTEMBER 28, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
265	GROUND SURFACE									
0.0	6" TOPSOIL Firm, Mottled, Brown & Gray Silty CLAY Sand Seams									
		1	DO	7						
					4					
		2	DO	1						
257										
		3	DO	1	8					
8.0	Soft Gray CLAY									
		4	TO	-						
					12					
		5	DO	1						
		6	DO	1	16					
		7	DO	1	20					
242										
23.0	End of Borehole				24					

W.L. @ 0.5'

LOG OF BOREHOLE No. 10

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 10

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: SEPTEMBER 29, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
⊙ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION — LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		10	20	30	40		W _p			W _L		VERTICAL PRESSURE (K.S.F.)			
255	GROUND SURFACE																		
0.0	5" TOPSOIL Brown SAND																		
251.5		1	DO	3															
3.5	Soft Gray CLAY				4														
		2	DO	1															
		3	TO	-	8														
		4	DO	1															
					12														
		5	DO	1															
		6	TO	-	16														
237																			
18.0	End of Borehole				20														

LOG OF BOREHOLE No. 11

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No.: 11

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: SEPTEMBER 29, 1972

ELEV.	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)	WATER LEVEL	
DEPTH		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)		
						10 20 30 40 0.5 1.0 1.5 2.0		
255	GROUND SURFACE							
0.0	Loose to Compact Brown Fine SAND							
		1	DO	10				
249		2	DO	3	4			
	Soft Gray CLAY							
6.0					8			
		3	TO	-				
		4	DO	1				
					12			
		5	DO	1				
		6	TO	-				
237					16			
	End of Borehole							
18.0								
					20			

W.L. @ 4.0'

LOG OF BOREHOLE No. 12

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No. 12

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: SEPTEMBER 29, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)		WATER LEVEL
		No.	TYPE	"N"		10 SHEAR	20 STRENGTH (K.S.F.)	
261	GROUND SURFACE							
0.0	6" TOPSOIL Compact Brown to Gray Fine SAND With Clay Seams							
		1	DO	18	4			
		2	DO	7				
		3	DO	16	8			
251.5								
9.5	Soft Gray CLAY	4	DO	1	12			
		5	TO	-				
		6	DO	6	16			
243								
18.0	End of Borehole				20			

LOG OF BOREHOLE No. 13

LABORATORY TEST RESULTS

JOB No.: 209-S.15 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No. 13
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION SOUTH EAST OTTAWA CITY
METHOD OF BORING: HOLLOW-STEM AUGER DATE: OCTOBER 3, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)			UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)		
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					W _P		W _L		VERTICAL PRESSURE (K.S.F.)		
						10	20	30	40		20	40	60	80			
						X	0.5	1.0	1.5	2.0							
260	GROUND SURFACE																
0.0	9" TOPSOIL Loose Brown Fine SAND																
		1	DO	5													
255.5					4												
4.5	Soft Gray CLAY	2	DO	1													
		3	DO	1	8												
		4	DO	1													
					12												
		5	TO	-													
		6	DO	1	16												
					20												
		7	DO	1													
					24												
		8	DO	1													
232					28												
28.0	End of Borehole				32												

LOG OF BOREHOLE No. 14

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 14

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 5, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR	20 STRENGTH	30	40 (K.S.F.)	
260	GROUND SURFACE									
0.0	3" PEAT Compact Brown & Gray Fine SAND									
		1	DO	23						
		2	DO	25						
253										
7.0	Soft Brown-Gray CLAY	3	DO	4						
		4	DO	1						
		5	DO	1						
		6	DO	1						
242										
18.0	End of Borehole									

LOG OF BOREHOLE No. 15


JOB No.: 209-S 15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTYFIG. No.: 15

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 5, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR 0.5	20 STRENGTH 1.0	30 1.5	40 2.0 (K.S.F.)	
260	GROUND SURFACE									
0.0	Compact to Dense Brown to Gray Fine SAND Some Silt and Clay Seams	1	DO	32	4					
		2	DO	18						
		3	DO	27						
		4	DO	35						
247	Soft Gray CLAY	5	DO	3	12					W.L. @ 28'
13.0										
		6	DO	1	16					
242										
18.0	End of Borehole				20					

FORM (100-1)

LOG OF BOREHOLE No. 16

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 16

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 3, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR	20 STRENGTH	30	40 (K.S.F.)	
						0.5	1.0	1.5	2.0	
260	GROUND SURFACE									
0.0	3" PEAT Compact Brown SAND									
		1	DO	17						
					4					
254		2	DO	1						
6.0	Soft Gray CLAY									
		3	DO	1	8					
		4	DO	1						
					12					
		5	DO	1						
		6	TO	-	16					
		7	DO	1	20					
232		8	DO	1	24					
28.0	End of Borehole				28					

W.L. @ 0.3'

LOG OF BOREHOLE No. 17

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No. 17

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 3, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		10	20	30	40		W _p			W _L		VERTICAL PRESSURE (K.S.F.)			
250	GROUND SURFACE																		
0.0	6" TOPSOIL Loose Gray-Brown Silty SAND	1	DO	4	4	○				▽									
245.5																			
4.5	Firm Gray CLAY	2	DO	1		○								○					
		3	DO	1	8	○			X					○					
		4	TO	-					X					○					
					12				X					○					
		5	DO	1		○								○					
									X										
		6	DO	1	16	○								○					
232									X										
18.0	End of Borehole				20														

W. L. @ 1.5'

LOG OF BOREHOLE No. 18

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 18

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 4, 1972

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					VERTICAL PRESSURE (K.S.F.)								
265	GROUND SURFACE																		
0.0	Loose to Compact	1	DO	9	4	O	X	0.5	1.0	1.5	2.0	Wp	20	40	60	80			
262	Brown SAND & Fill	2	DO	14															
3.0	Very Stiff Mottled Brown & Gray Silty CLAY	3	DO	19															
		4	DO	21															
		5	DO	26															
256.5	Sand Seams				8														
8.5	Soft Gray CLAY	6	DO	1	12	O	X					W.L. @ 6.5'							
		7	DO	1															
247		8	DO	1	16	O	X												
18.0	End of Borehole				20														
					24														
					28														
					32														

K.H. KING ASSOCIATES LIMITED

LOG OF BOREHOLE No. 19

LABORATORY

TEST

RESULTS

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER CARLETON CTY FIG. No: 19

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 5, 1972

W_p — PLASTIC LIMITW_L — LIQUID LIMIT

○ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		10	20	30	40		W _p			W _L		VERTICAL PRESSURE (K.S.F.)			
255	GROUND SURFACE																		
0.0	4" TOPSOIL																		
252.5	Brown SAND																		
2.5	Stiff, Mottled, Brown & Gray Silty CLAY	1	DO	10	4														
		2	DO	4															
248	Soft Gray CLAY	3	DO	1	8														
		4	DO	1															
					12														
		5	DO	1															
		6	DO	1	16														
237	End of Borehole																		
18.0																			

LOG OF BOREHOLE No. 20


JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 20

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 5, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (Blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
262	GROUND SURFACE									
0.0	5" TOPSOIL									
	Stiff, Mottled, Brown & Gray, Silty CLAY	1	DO	11						
256.8					4					
5.2	Dense Gray-Brown sAND	2	DO	42						
255										
7.0		3	DO	1	8					
	Soft, Gray, CLAY	4	DO	1						
		5	DO	1	12					
		6	DO	1	16					
244										
18.0	End of Borehole				20					W.L. @ 1.3'

LOG OF BOREHOLE No. 21

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 21

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CTY.

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 4, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR	20 STRENGTH	30 (K.S.F.)	40 2,0	
265	GROUND SURFACE									
0.0	Compact, Brown, SAND FILL	1	DO	26	4					▽
		2	DO	16						
260.5		3	DO	14						
4.5	Very Stiff, Mottled, Brown & Gray, Silty, CLAY	4	DO	29	8					
		5	DO	12						
256.5	Sand Seams									
8.5	Soft, Gray, CLAY	6	DO	1	12					
		7	DO	1						
		8	DO	1	16					
247										
18.0	End of Borehole				20					

W.L. @ 3.3'

LOG OF BOREHOLE No. 22


JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 22

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 4, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
265	GROUND SURFACE									
0.0	Compact, Gray, SAND FILL	1	DO	35	4					
		2	DO	21						
		3	DO	20						
		4	DO	22						
		5	DO	11						
256.5					8					
8.5	Very Stiff, Mottled, Brown & Gray, Silty CLAY Sand Seams									
253.5		6	DO	18						
11.5	Soft, Gray, CLAY				12					
		7	DO	1						
		8	DO	1						
247					16					
18.0	End of Borehole				20					

W.L. @ 6.0'

LOG OF BOREHOLE No. 23

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 23

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 4, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
265	GROUND SURFACE									
0.0	Compact, Brown, SAND FILL	1	DO	24	4					
		2	DO	17						
		3	DO	14						
259.5		4	DO	12						
5.5	Stiff, Mottled, Brown & Gray, Silty CLAY	5	DO	7	8					
253		Sand Seams	6	DO		18				
12.0	Soft, Gray CLAY	7	DO	1	12					
		8	DO	1						
247					16					W.L. @ 4.5'
18.0	End of Borehole				20					

LOG OF BOREHOLE No. 24

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 24

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 6, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
255	GROUND SURFACE									
0.0 253	3" TOPSOIL Brown, Fine SAND									
2.0	Firm to Stiff, Mottled, Brown & Gray, Silty CLAY	1	DO	6	4					
		2	DO	23						
248										
7.0	Soft, Gray, CLAY	3	DO	1	8					
		4	DO	1						
		5	DO	1	12					
		6	DO	1						
					16					
237										
18.0	End of Borehole				20					

W.L. @ 0.5'

RESULTS

⊙ NATURAL WATER CONTENT

K.H. KING ASSOCIATES LIMITED

LOG OF BOREHOLE No. 26

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 26

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 12, 1972

[illegible]

LOG OF BOREHOLE No. 27

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 27

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 11, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
260	GROUND SURFACE									▽
0.0	Vane Tests Only				4					W.L. @ 0.0'
					8					
					12					
					16					
					20					
243	End of Borehole				24					
					28					
					32					
					36					
					40					

K.H. KING ASSOCIATES LIMITED

LOG OF BOREHOLE No. 28

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 28

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 10, 1972

ELEV.	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)	WATER LEVEL
		No.	TYPE	"N"		10 20 30 40	
DEPTH					SHEAR STRENGTH (K.S.F.)		
					0.5 1.0 1.5 2.0		
260	GROUND SURFACE						
0.0	Vane Tests Only						
4							
8							
12							
16							
243							
17.0	End of Borehole						
20							

K.H. KING ASSOCIATES LIMITED

FORM (100-1)

LOG OF BOREHOLE No. 29

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 29

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 11, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
253	GROUND SURFACE									▽
0.0	Vane Tests Only									
236										
17.0	End of Borehole									

W.L. @ 0.0'

FORM (100-1)

LOG OF BOREHOLE No. 30

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No.: 30

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 12, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
263	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) 0.5 1.0 1.5 2.0				
0.0	Vane Tests Only									
4										
8										
12										
16										
246										
17.0	End of Borehole									

W.L. @ 0.5'

FORM (100-1)

LOG OF BOREHOLE No. 31


JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 31

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 12, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR 0.5	20 STRENGTH 1.0	30 1.5	40 (K S.F.) 2.0	
253	GROUND SURFACE									
0.0	Vane Tests Only									 W.L. @ 3.0'
					4					
					8					
					12					
					15					
235										
17.0	End of Borehole									
					20					

LOG OF BOREHOLE No. 32

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 32

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 18, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
265	GROUND SURFACE									
0.0	Compact, Brown to Gray, Fine, SAND	1	DO	8						
		2	DO	10						
		3	DO	26						
		4	DO	36	4					
		5	DO	18						
256.5					8					
8.5	Very Soft to Soft, Gray, CLAY	6	DO	1						
					12					
		7	DO	2						
					16					
		8	DO	2	20					
242.0										
23.0	End of Borehole				24					



W.L. @ 4.0'

FORM 100-1

LOG OF BOREHOLE No. 35

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 33

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 19, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
					SHEAR STRENGTH (K.S.F.)					
					0.5	1.0	1.5	2.0		
258	GROUND SURFACE									
0.0	Loose, Brown, Fine, SAND									▽
		1	DO	4						
253.5					4					
4.5		2	DO	3						
		3	DO	1	8					
		4	DO	1						
	Soft, Gray, CLAY				12					W.L. @ 3.0'
		5	DO	1	16					
		6	DO	1	20					
235.0										
23.0	End of Borehole				24					

LOG OF BOREHOLE No. 44


JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 35

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 23, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
267.0	GROUND SURFACE									
0.0	Sand & Gravel FILL									
1.5	Loose, Brown, Fine, SAND	1	DO	5	4					 W.L. @ 1.8'
		2	DO	13						
260.0										
7.0	Soft, Gray, CLAY	3	DO	1	8					
		4	DO	1						
		5	DO	1	12					
		6	DO	1	16					
249.0										
18.0	End of Borehole				20					

LOG OF BOREHOLE No. 45

JOB No.: 209-S.15

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 36

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: OCTOBER 23, 1972

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
260	GROUND SURFACE									
0.0	Sand & Gravel Fill									
1.5	Compact, Brown, Fine, SAND	1	DO	11						
253.5		2	DO	21						
6.5	Loose , to Compact, Gray, Fine, SAND	3	DO	8	4					
		4	DO	14						
247.0										
13.0	Firm, Gray, CLAY With Sand Seams	5	DO	1	8					
		6	DO	1						
					12					
		7	DO	1	16					
232.0		8	DO	1	20					
28.0	End of Borehole				24					
					28					

LOG OF BOREHOLE No. 100

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 37

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 15, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
0.0	7" TOPSOIL Loose, Brown, Silty CLAY with clay layers	1	DO	5							
4.3	Soft, to Firm, Grey, CLAY with occasional silt and fine sand seams	2	DO	1	4						
		3	DO	1	8						
		4	DO	1							
		5	DO	1	12						
		6	TO	PM	16						
		7	DO	1							
		8	DO	1	20						
		9	DO	3	24						
		10	DO	1							
28.0		End of Sampled Borehole Dynamic Cone Penetration Test driven from bottom of borehole				28					
32.0	For continuation of log see Figure 37A				32						

STANDPIPE INSTALLED TO 25' W.L. @ 1.3' ABOVE GROUND SURFACE MARCH 7, 1974

LOG OF BOREHOLE No. 100 (Cone Test from 32' to refusal)

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 37A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 15, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		20	40	60	80		
	Continued from Figure 37										
	Probably Firm CLAY				30						
					40						
					50						
					60						
					70						
					80						
					90						
90.0		Possibly Glacial Till									
99.2		Refusal to driving in cone test. 39 blows for 2" then 70 blows for no penetration. probably on bedrock				100					

LOG OF BOREHOLE No. 101

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No.: 38

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 16-17, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
0.0	7" TOPSOIL Brown CLAY with sand seams	1	AS	-							
2.5	Stiff to Very Stiff, Brown CLAY with occasional silt and sand seams	2	DO	4							
		3	DO	8							
7.0	Soft, Grey CLAY with occasional silt and fine sand seams	4	DO	1							
		5	DO	1							
		6	DO	1							
		7	DO	1							
		8	DO	1							
19.5	Stiff, Red-Brown, Silty CLAY TILL	9	DO	5							
22.0	Dense, Red-Brown, Clayey SILT TILL with shale fragments	10	DO	43							
		11	DO	55							
26.5	End of Borehole										

STANDPIPE INSTALLED TO 25'. W.L. @ 0.7' ABOVE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 102

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 39

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 21-22, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
						SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
GROUND SURFACE											
0.0	7" TOPSOIL										
	Very Stiff, Red-Brown, Silty, CLAY	1	DO	5							
	with sand seams	2	DO	2							
7.0		3	DO	1							
	Soft, Grey, CLAY	4	TO	PM							
	with occasional silt and fine sand seams	5	DO	1							
		6	DO	1							
		7	DO	1							
		8	DO	1							
22.5	Dense, Red-Brown, Clayey SILT TILL	9	DO	42							
	shale fragments	10	DO	64							
26.5	End of Borehole										

STANDPIPE INSTALLED TO 25' W.L. @ 0.5' ABOVE GROUND SURFACE
 MARCH 7, 1974

LOG OF BOREHOLE No. 103

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 40
 JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY
 METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 18, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		0	10	20	30	40	
	GROUND SURFACE					X	0.5	1.0	1.5	2.0	
0.0	8" TOPSOIL Loose Brown SAND Trace of silt	1	DO	6	4						
4.5	Soft, Red-Brown. CLAY with some silt and sand seams	2	DO	1							
		3	DO	1	8						
9.5	Soft, Grey. CLAY with occasional silt and fine sand seams	4	TO	PM							
		5	DO	1	12						
		6	DO	1	16						
		7	DO	1							
		8	DO	1	20						
		9	DO	1	24						
		10	DO	1							
28.0	End of Sampled Borehole				28						
32.0	Dynamic Cone Penetration Test driven from bottom of borehole. For continuation of log see Figure 40A				32						

STANDPIPE INSTALLED TO 25' W.L. @ 2.2' MARCH 7, 1974

LOG OF BOREHOLE No. 103 (Cone Test from 30' to refusal)

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 40A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: DYNAMIC CONE PENETRATION TEST

DATE: JAN. 18/74

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)		WATER LEVEL
		No.	TYPE	"N"		20	40	
	Continued from Fig. 40A							
30.0	Probably Soft CLAY				30			
					40			
					50			
					60			
61.6	REFUSAL TO DRIVING in cone test. 100 blows for 7" then 50 blows for no penetration Probably on till.				70			

LOG OF BOREHOLE No. 104

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 41

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 22-23, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
0.0	6" TOPSOIL	1	AS	-							
	Layers of Compact, Brown, SILT & SAND some clay layers	2	DO	15	4						
5.0	Soft to Firm, Grey, CLAY with occasional silt and fine sand seams	3	DO	2	8						
		4	DO	1							
		5	TO	PM	12						
		6	DO	1	16						
		7	DO	1							
16.5	Compact, Grey, SAND & SILT	8	DO	16	20						
18.5	Soft to Firm, Red-Brown, CLAY layers of silt	9	DO	1	24						
		10	DO	3							
		11	DO	2	28						
28.0	End of Borehole										

STANDPIPE INSTALLED TO 25'. W.L. @ 2.5' MARCH 7, 1974

JOB No. 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No. 42
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY
METHOD OF BORING HOLLOW-STEM AUGER DATE: JANUARY 23, 1974

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)						W _p	W _L				VERTICAL PRESSURE (K.S.F.)			
	GROUND SURFACE					X	0.5	1.0	1.5	2.0		20	40	60	80					
0.0	7" TOPSOIL Brown SILT	1	AS	-																
2.0	Layers of Brown-Red, CLAY & Fine SAND	2	DO	6																
		3	DO	5																
7.0	Soft, Grey-Brown, CLAY with seams of sand and silt	4	DO	1																
		5	DO	1																
		6	TO	PH																
15.0	Compact, Grey, SAND & SILT	7	DO	22																
		8	DO	2																
19.5	Soft, Grey-Brown, CLAY with occasional silt and sand seams	9	DO	1																
		10	DO	1																
		11	DO	1																
28.0	End of Borehole																			

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LOG OF BOREHOLE No. 106

LABORATORY

TEST

RESULTS

JOB No. 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No. 43

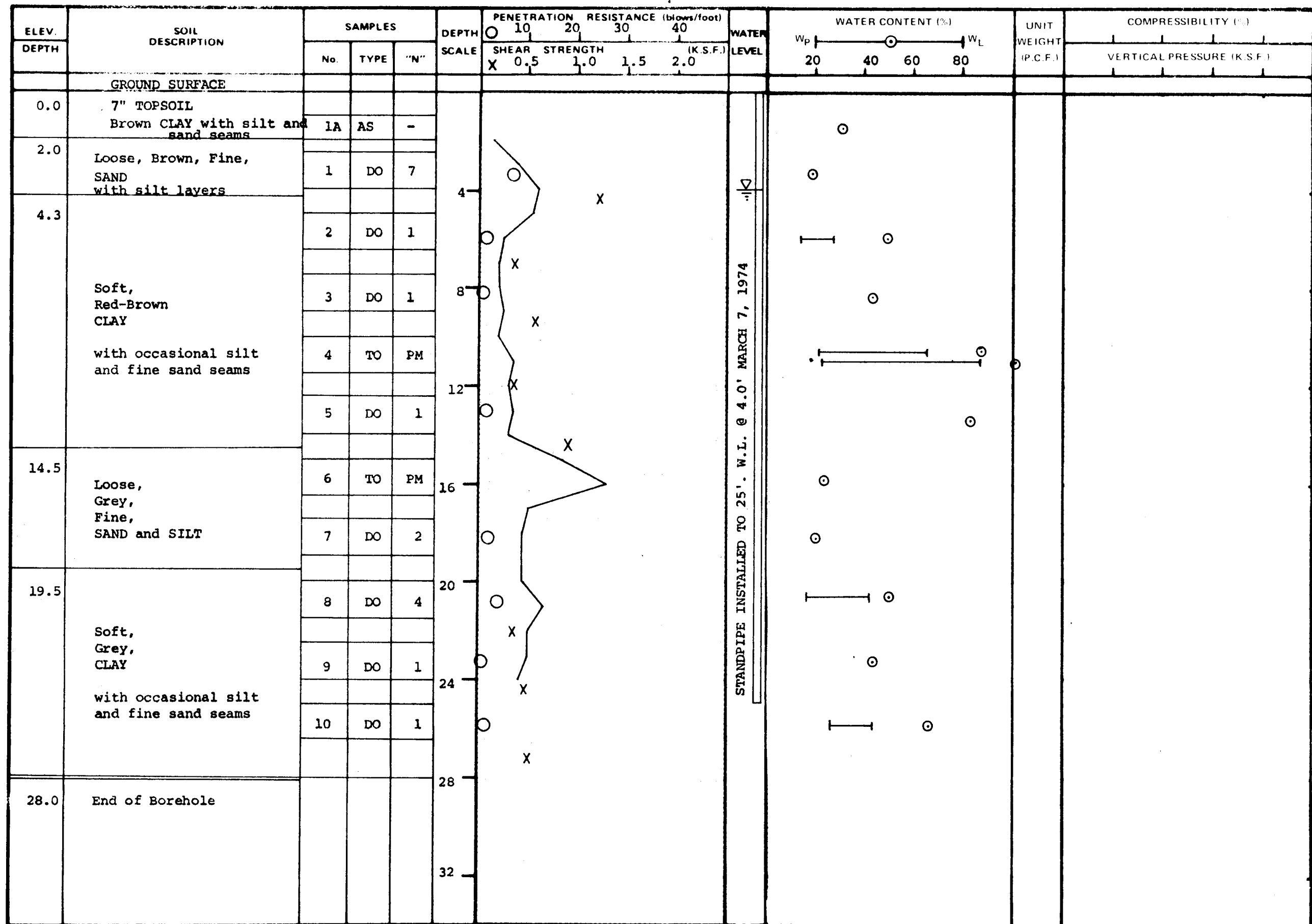
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 24, 1974

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ○ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION LOG.
 PRESSURE CURVE (Fig. 1)



LOG OF BOREHOLE No. 107

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 44

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 24, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		○ 10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)				
						X 0.5	1.0	1.5	2.0	
0.0	10" TOPSOIL Brown, Saturated, Fine SAND	1A	AS	--						
2.5	layers of red-brown CLAY grey silt and fine sand	1	DO	8						
4.0	Soft, Red-Brown CLAY with occasional silt and fine sand seams	2	DO	1	4					
		3	DO	1	8					
		4	DO	1	12					
		5	DO	6	16					
		6	DO	1	20					
14.0	Very Loose, Grey, Fine SAND with some silt	7	DO	1	24					
		8	DO	1	28					
20.0	Soft to Firm, Grey-Brown CLAY with occasional silt and fine sand seams	9	DO	1	32					
		10	DO	1						
28.0	End of Borehole									

STN DPIPE INSTALLED TO 25'. W.L. @ 1.8' MARCH 7, 1974

LOG OF BOREHOLE No. 108

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 45

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 25, 1974

ELEV.	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
DEPTH		No.	TYPE	"N"		SHEAR STRENGTH		(K.S.F.)			
						X	0.5	1.0	1.5	2.0	
	GROUND SURFACE										
0.0	7" TOPSOIL Loose, Brown, Fine, SAND with some silt	1	AS	-							<div>▽</div>
		2	DO	4							
3.5	red-brown reddish-grey Soft to Firm, CLAY with occasional silt and sand seams				4						
		3	DO	3							
		4	DO	1	8						
		5	TO	PH							
		6	DO	1	12						
		7	TO	PM	16						
		8	DO	3							
		9	TO	PM	20						
		10	DO	2	24						
		11	DO	1							
28.0	End of Borehole				28						
					32						

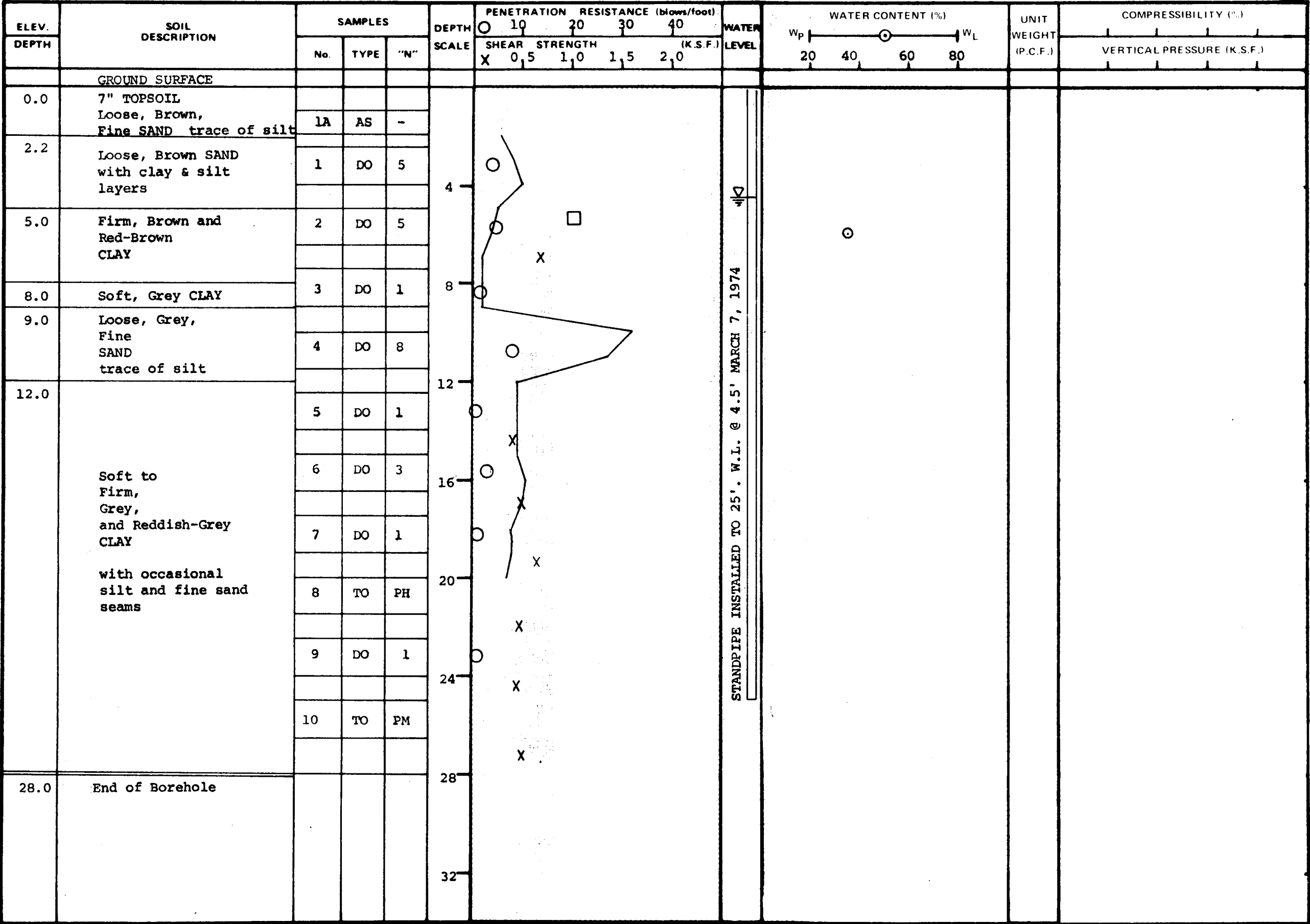
STANDPIPE INSTALLED TO 25'. W.L. @ 1.7' MARCH 7, 1974

STANDPIPE INSTALLED TO 25'. W.L. @ 1.7' MARCH 7, 1974

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 46
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY
METHOD OF BORING: HOLLOW-STEM AUGER DATE: JANUARY 28, 1974

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
⊙ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION LOG
PRESSURE CURVE (Fig.)



JOB No. 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No. 47

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 28-29, 1974

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ⊙ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION - LOG
 PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		10	20	30	40		W _p			W _L		VERTICAL PRESSURE (K.S.F.)			
	GROUND SURFACE																		
0.0	8" TOPSOIL Loose, Brown, Silty, Fine SAND	1A	AS	-															
2.5	Firm, Brown CLAY with some silt and sand seams fine sand layer from 7' to 8'	1	DO	3															
		2	DO	1	4		X												
		3	DO	6	8			X											
9.0	Soft, Grey CLAY with occasional silt and fine sand seams firm	4	DO	1															
		5	DO	3	12		X												
		6	TO	PM	16														
		7	DO	1			X												
		8	DO	1	20														
		9	DO	1	24		X												
		10	DO	1															
28.0	End of Sampled Borehole Dynamic cone penetration test driven from bottom of borehole.				28		X												
30.0	For continuation of log see Figure 11A				32														

STANDPIPE INSTALLED TO 25'. W.L. @ 0.9' ABOVE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 110

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

47A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: Jan. 29/74

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR 0.5	20 STRENGTH 1.0	30 1.5	40 2.0 (K.S.F.)	
	Continued from Fig. 11									
30.0	Probably Firm CLAY				30					
					40					
					50					
					60					
					70					
					80					
					90					
					100					
90.1	Refusal to driving in Dynamic Cone Test; 129 blows for 12" then 200 blows for 1" at 90' probably on very dense till or bedrock.									

LOG OF BOREHOLE No. 111

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 48

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 29, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)				
						X 0.5	1.0	1.5	2.0	
0.0	6" TOPSOIL Brown, Silty, Fine SAND with clay layers	1	AS	-						
2.0	Brown, Soft to Firm CLAY with sand & silt seams	2	DO	3						
4.0	brownish-grey grey Soft to Firm CLAY with occasional silt and sand seams	3	DO	1	4					
		4	DO	1	8					
		5	DO	1	12					
		6	DO	1	16					
		7	DO	1	20					
		8	DO	1	24					
		9	DO	1	28					
		10	DO	1	32					
		11	DO	1						
28.0	End of Borehole									

STANDPIPE INSTALLED TO 25'. W.L. @ 0.5' ABOVE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 112

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 49

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 29, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0				
0.0	7" TOPSOIL Loose, Brown, Fine SAND trace of silt	1	AS	-						
2.5	Loose to Firm, Brown SAND & CLAY layers	2	DO	7	4					
4.5	brownish-grey sand layer	3	DO	1						
		4	DO	12	8					
		5	DO	1						
		6	DO	1	12					
	Soft to Firm, Grey CLAY	7	TO	PM	16					
	with occasional silt and sand seams	8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25'. W.L. @ 1.6' MARCH 7, 1974

LOG OF BOREHOLE No. 113

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 50

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 10-11, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)		WATER LEVEL
		No.	TYPE	"N"		10	20	
	GROUND SURFACE							
0.0	7" TOPSOIL Stiff, Brown CLAY with sand layers	1	DO	8				
4.5	Compact, Gray, Fine SAND (saturated)	2	DO	14				
		3	DO	3				
9.5	Soft to Firm, Gray CLAY with occasional silt and fine sand seams	4	DO	1				
		5	DO	1				
		6	DO	1				
		7	DO	1				
		8	DO	1				
		9	DO	3				
		10	DO	2				
28.0	End of Borehole							

STANDPIPE INSTALLED TO 25' W.L. @ 1.7' MARCH 7, 1974

LOG OF BOREHOLE No. 114

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No.: 51

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 10, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
0.0	6" TOPSOIL Brown, Silty CLAY with some sand seams	1A	AS	-							
2.0	brown grey Fine SAND trace of silt	1	DO	16							
	compact very loose				4						
		2	DO	1							
7.0		3	DO	1	8						
		4	DO	1							
		5	DO	1	12						
	Soft, Gray CLAY	6	DO	1	16						
	with occasional silt and fine sand seams	7	DO	1							
		8	DO	1	20						
		9	DO	1	24						
		10	DO	1	28						
28.0	End of Borehole				32					STANDPIPE INSTALLED TO 25'. W.L. @ 0.8' MARCH 7, 1974	

LOG OF BOREHOLE No. 115

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 52

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 8, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0				
0.0	6" TOPSOIL Compact, Fine SAND	1	AS	-						
		2	DO	10	4					
		3	DO	21						
7.0	Grey, Soft CLAY with fine SAND layers	4	DO	1	8					
10.0		5	DO	1	12					
		6	DO	1						
		7	TO	-	16					
		8	DO	1	20					
		9	DO	1	24					
		10	DO	1						
		11	DO	1	28					
28.0	End of Borehole				32					

STANDPIPE INSTALLED TO 25'. W.L. @ 0.7' MARCH 7, 1974

LOG OF BOREHOLE No. 116

LABORATORY

TEST

RESULTS

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG No.: 53

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 7, 1974

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ⊙ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION LOG.
 PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		10	20	30	40		W _p			W _L		VERTICAL PRESSURE (K.S.F.)			
	GROUND SURFACE																		
0.0	6" TOPSOIL Loose, Brown, Fine SAND (Saturated)	1	DO	8															
4.5	Gray CLAY with very occasional silt and fine sand seams soft firm	2	DO	1															
		3	DO	1															
		4	DO	1															
		5	DO	1															
		6	DO	1															
		7	DO	1															
		8	DO	1															
		9	DO	1															
		10	DO	1															
28.0	End of Borehole																		

LOG OF BOREHOLE No. 117

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 54

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE JANUARY 4, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE									
0.0	10" TOPSOIL Loose, Brown, Fine SAND (Saturated)	1A	AS	-						
		1	DO	4	4					
4.0	Soft to Firm, Grey CLAY occasional fine sand and silt seams to 10', then very occasional occasional thin, black, organic layers	2	DO	1						
		3	DO	1	8					
		4	DO	1						
		5	DO	1	12					
		6	DO	1	16					
		7	DO	1						
		8	DO	1	20					
		9	DO	1	24					
		10	DO	1	28					
28.0	End of Borehole				32					

STANDPIPE INSTALLED TO 25'. W.L. @ 1.0' MARCH 7, 1974

LOG OF BOREHOLE No. 118

LABORATORY

TEST

RESULTS

JOB No: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No. 55

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 3, 1974

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
○ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					VERTICAL PRESSURE (K.S.F.)								
	GROUND SURFACE																		
0.0	5" TOPSOIL Brown SAND, trace of silt	1A	AS	-															
2.0	Firm, Brown-Grey CLAY with saturated sand seams	2	DO	5															
		3	DO	2															
7.0		Soft to Firm, Grey CLAY with very occasional silt and fine sand seams	4	DO	1														
	5		DO	1															
	6		DO	1															
	7		DO	1															
	8		TO	PM															
26.0	End of Borehole																		

LOG OF BOREHOLE No. 119

LABORATORY TEST RESULTS

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. - FIG. No.: 56
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY
METHOD OF BORING: HOLLOW-STEM AUGER DATE: JANUARY 31, 1974

W_p — PLASTIC LIMIT
W_L — LIQUID LIMIT
⊙ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (lb./sq. in./foot)					WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)						VERTICAL PRESSURE (K.S.F.)								
						X	0.5	1.0	1.5	2.0		W _p		W _L						
	GROUND SURFACE																			
0.0	Firm to Stiff, Brown CLAY with some sand and silt layers	1	AS	-																
		1	DO	4																
		2	DO	1	4				X											
7.0	Soft, Grey CLAY with occasional silt and fine sand seams	3	DO	1	8					X										
										X										
		4	DO	1																
					12					X										
		5	DO	1																
										X										
		6	DO	1	16															
										X										
		7	DO	1																
					20						X									
									X											
		8	DO	1																
		9	DO	1	24															
		10	DO	1																
					</															

LOG OF BOREHOLE No. 120

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 57

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 31, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE									
0.0	5" TOPSOIL									
	Brown SAND									
	with CLAY layers									
2.2	Brown, Firm, SILTY CLAY	1	DO	6						
	with fine sand seams									
4.5	brown Soft, Grey CLAY with occasional thin silt and fine sand seams firm	2	DO	1						
		3	DO	1						
		4	DO	1						
		5	DO	1						
		6	TO	PM						
		7	DO	1						
		8	TO	PM						
		9	DO	1						
		10	DO	1						
28.0	End of Borehole									

LOG OF BOREHOLE No. 121

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 58

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 30, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0					
0.0	8" TOPSOIL Brown, Fine SAND with silty clay layers	1A	AS	-							
2.3	Soft to Stiff, Grey-Brown CLAY with sand seams	1	DO	4	4						
6.0	Soft, Grey CLAY with occasional thin silt layers thin black organic seams	2	DO	1	8						
		3	DO	1							
		4	TO	PM							
		5	DO	1	12						
		6	DO	1	16						
		7	DO	1							
		8	DO	1	20						
		9	DO	1	24						
		10	DO	1							
		28.0	End of Borehole				28				
					32						

STANDPIPE INSTALLED TO 25'. W.L. @ 1.0' ABOVE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 122

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 59

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 31-FEBRUARY 1, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		0 10 20 30 40	SHEAR STRENGTH (K.S.F.)			
	GROUND SURFACE					X _{0.5}	1.0	1.5	2.0	
0.0	8" Black, Organic TOPSOIL Loose, Brown, Saturated Silty Fine SAND	1A	AS	--						
		1	DO	7						
3.5	Loose, Grey, Fine SAND with silty clay layers				4					
		2	DO	8						
7.0	Occasional thin sand seams and reddish-grey bands to 16'	3	DO	1	8					
	Soft, Grey CLAY	4	DO	1						
	with occasional thin silt layers	5	DO	1	12					
	occasional thin black seams	6	DO	1	16					
		7	DO	1						
		8	DO	1	20					
		9	DO	1	24					
	firm	10	DO	1	28					
28.0	End of Borehole				32					

STANDPIPE INSTALLED TO 25'. W.L. 0.5' ABOVE THE GROUND SURFACE MAR. 7/74

STANDPIPE INSTALLED TO 25'. W.L. 0.5' ABOVE THE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 123

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 60

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 4, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0				
0.0	8" TOPSOIL	1	DO	13						
	Compact, Saturated, Fine SAND	2	DO	12	4					
	with some silt brown grey	3	DO	11	8					
		4	DO	13	12					
		5	DO	21	16					
	clay layers dense	6	DO	34	20					
17.0	fine sand layers	7	DO	7	24					
	Soft to Firm, Grey and Reddish-Grey CLAY	8	DO	1	28					
	with occasional silt and fine sand seams	9	DO	1	32					
		10	DO	1						
28.0	End of Borehole									

W.L. IN STANDPIPE AT 2.7'
MARCH 7, 1974

LOG OF BOREHOLE No. 124

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 61

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 4, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
0.0	GROUND SURFACE									
	7" TOPSOIL	1A	AS	-						
	brown									
	grey & saturated	1	DO	9						
	Very Loose to Compact, Fine SAND with some silt	2	DO	20	4					
	clay layers	3	DO	3	8					
9.5		4	DO	1						
	grey and reddish-grey	5	DO	1	12					
	Soft, Grey CLAY	6	TO	PM	16					
	with occasional silt and sand seams	7	DO	1	20					
		8	TO	PM						
		9	DO	1	24					
	firm	10	DO	1	28					
28.0	End of Borehole				32					

STANDPIPE INSTALLED TO 25'. W.L. @ 4.8' MARCH 7, 1974

LOG OF BOREHOLE No. 125

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 62

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 5, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
0.0	6" TOPSOIL Compact, Fine SAND with some silt	1A	AS	---							
		1	DO	11							
		2	DO	14							
		3	DO	28							
		4	DO	46							
13.0	CLAY, SILT and FINE SAND layers	5	DO	NA							
15.0	Firm, Gray, (occ. reddish-grey) CLAY with occasional thin silt and fine sand seams	6	DO	3							
		7	DO	1							
		8	TO	PM							
		9	DO	1							
		10	DO	1							
28.5	End of Borehole										

STANDPIPE INSTALLED TO 25'. W.L. @ 2.0' MARCH 7, 1974

LOG OF BOREHOLE No. 126

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 63

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 5, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		0	10	20	30	40	
	GROUND SURFACE					X	0.5	1.0	1.5	2.0	
0.0	5" TOPSOIL	1A	AS	--							
	Loose to Compact, Brown, Saturated, Silty, Fine SAND	1	DO	6							
		2	DO	12	4						
		3	DO	9	8						
	Grey	4	DO	1							
10.5		5	DO	1	12						
	Grey and Reddish-Grey, Soft CLAY	6	DO	1							
		7	DO	1	16						
	with occasional silt and fine sand seams	8	DO	1	20						
		9	DO	1							
		10	DO	1	24						
28.0	End of Borehole				28						
					32						

STANDPIPE INSTALLED TO 25' W.L. @ 4.0' MARCH 7, 1974

LOG OF BOREHOLE No. 127

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 64

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	(K.S.F.)	
	GROUND SURFACE					X	0.5	1.0	1.5	2.0	
0.0	6" TOPSOIL yellow-brown	1A	AS	--							
	Compact, Silty, Fine SAND	1	DO	12							
		2	DO	15							
	brown grey	3	DO	17							
		4	DO	22							
12.0	Layers of Compact SAND & Firm CLAY	5	DO	15							
14.8	Grey and Reddish-Grey, Soft CLAY	6	DO	1							
	with occasional silt and fine sand seams	7	DO	1							
		8	DO	1							
		9	TO	PM							
		10	DO	1							
	firm										
28.0	End of Borehole										

STANDPIPE INSTALLED TO 25'. W.L. @ 10.5' MAR. 7/74

LOG OF BOREHOLE No. 128

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CITY FIG. No.: 65

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEB. 6-7, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					
	GROUND SURFACE					X	0.5	1.0	1.5	2.0	
0.0	7" TOPSOIL										
	brown	1A	AS	--							
3.0	grey and saturated	1	DO	8							
	Loose to Compact, Silty, Fine SAND	2	DO	9	4						
		3	DO	11	8						
		4	DO	13							
		5	DO	8	12						
14.5	Soft, Grey CLAY	6	DO	1	16						
	with occasional silt and fine sand seams	7	DO	1							
		8	DO	1	20						
		9	TO	PM							
		10	DO	1	24						
28.0	End of Borehole				28						
					32						

STANDPIPE INSTALLED TO 25'. W.L. @ 9.0' MAR. 7/74

STANDPIPE INSTALLED TO 25'. W.L. @ 9.0' MAR. 7/74

LOG OF BOREHOLE No. 129

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 66

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 7, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					
						0	10	20	30	40	
						X	0.5	1.0	1.5	2.0	
	GROUND SURFACE										
0.0	7" TOPSOIL	1A	AS	--							
		1	DO	8							
	brown				4						
	gray										
	Loose to Compact, Fine SAND	2	DO	10							
	with some silt	3	DO	18	8						
9.5	Layers of Loose SAND and Soft CLAY	4	DO	4							
		5	DO	1	12						
		6	DO	PM	16						
16.5	Soft, Gray and Reddish-Gray CLAY	7	DO	1							
	with occasional silt and fine sand seams	8	DO	1	20						
		9	TO	PM	24						
		10	DO	1							
28.0	End of Borehole				28						
					32						

SPAN PIPE INSTALLED TO 25'. W.L. @ 4.0' MARCH 7, 1974

LOG OF BOREHOLE No. 130

LABORATORY

TEST

RESULTS

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 67

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 20, 1974

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ⊙ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION - LOG.
 PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL	WATER CONTENT (%)		UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)	
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)						W _p	W _L		VERTICAL PRESSURE (K.S.F.)	
	GROUND SURFACE					X	0.5	1.0	1.5	2.0						
0.0	8" TOPSOIL Compact, Fine SAND with some silt brown grey very loose															
		1	AS	-												
		2	DO	18												
					4											
		3	DO	13												
		4	DO	16	8											
		5	DO	2												
					12											
13.0	Soft to Firm, Gray CLAY with some silt and fine sand seams	6	DO	1												
		7	DO	1	16											
		8	DO	18												
18.0	Compact, Gray, Fine SAND				20											
20.0	Soft, Gray CLAY with occasional silt and fine sand seams	9	DO	1												
		10	DO	1	24											
		11	TO	PM												
					28											
28.0	End of Borehole Cone Penetration Test continues See Figures 67A and 67B				32											

STANDPIPE INSTALLED TO 25' W.L. @ 14.5' MAR. 7/74

STANDPIPE INSTALLED TO 25' W.L. @ 14.5' MAR. 7/74

LOG OF BOREHOLE No. 130 (Cone Test 30' to 100')

JOB No.: 312-S.2

LOCATION: Twp. of Gloucester, CARLETON CTY. FIG. No.:

67A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: February 20, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10 SHEAR	20 STRENGTH	30	40 (K.S.F.)	
	continued from Fig. 67				30					
30.0	Probably Firm CLAY									
100.0	Cone Test Continued on Figure 67B				100					
					110					

LOG OF BOREHOLE No. 130 (Cone Test 100' to 120')

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 67B

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: February 20, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued From Fig. 67B				100					
100.0										
					110					
					120					
120.0	End of Cone Test 108 blows for last 12" penetration									
	NOTE: - Change of Penetration Resistance Scale									

LOG OF BOREHOLE No. 131

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 68

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 21, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE									
0.0	7" TOPSOIL Loose, Brown, Fine SAND with some silt	1	AS	-						
2.5	Firm, Brown-Grey, CLAY with some fine sand and silt layers...	2	DO	2	4					
		3	DO	1						
7.5	Grey and Reddish-Grey, Soft CLAY with occasional silt and fine sand seams	4	DO	1	8					
		5	DO	1						
		6	DO	1	12					
		7	DO	1	16					
		8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25' W.L. @ 0.5' ABOVE GROUND SURFACE MARCH 7, 1974

LOG OF BOREHOLE No. 132

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No.: 69

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 20-21, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE									
0.0	9" TOPSOIL Loose, Brown, Saturated, Fine SAND with some silt	1	AS	-						
		2	DO	7	4					
		3	DO	1						
5.8	Soft, Red-Brown CLAY with occasional silt and fine sand seams	4	DO	1	8					
		5	DO	1	12					
		6	DO	1						
14.0	Compact SAND									
15.0	Soft to Firm, Grey and Reddish-Grey CLAY with occasional silt and fine sand seams	7	DO	1	16					
		8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25'. W.L. @ 1.5' MARCH 7, 1974

LOG OF BOREHOLE No. 133

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 70

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 18, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE									
0.0	9" TOPSOIL Loose, Brown, Saturated, Fine SAND & SILT	1	AS	--						
		2	DO	5						
3.5	reddish-brown and brown grey and reddish-grey Soft to Firm CLAY with occasional silt and fine sand seams	3	DO	1	4					
		4	DO	1	8					
		5	DO	1						
		6	DO	1	12					
		7	TO	PH	16					
		8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25'. W.L. @ 3.8' MARCH 7, 1974

LOG OF BOREHOLE No. 134

LABORATORY TEST RESULTS

JOB No.: 312-S.2 LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 71
JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY
METHOD OF BORING: HOLLOW-STEM AUGER DATE: FEBRUARY 18, 1974

Wp PLASTIC LIMIT
WL LIQUID LIMIT
NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
OF THE COMPRESSION - LOG.
PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)		UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)	
		No.	TYPE	"N"		10	20	30	40		Wp	WL		VERTICAL PRESSURE (K.S.F.)	
	GROUND SURFACE														
0.0	9" TOPSOIL Loose, Brown, Saturated, Fine SAND & SILT	1	AS	-											
		2	DO	4	4										
4.5	Soft to Firm CLAY with occasional silt and fine sand seams	3	DO	4											
		4	DO	1	8										
		5	TO	PM											
		6	DO	1	12										
		7	DO	12	16										
		8	DO	1											
16.0	red-brown SILT & FINE SAND														
17.0	reddish-grey and grey	9	DO	1	20										
		10	DO	1	24										
		11	DO	1											
28.0	End of Borehole Cone Test continues See Figures 71A and 71B				28										
					32										

STANDPIPE INSTALLED TO 25'. W.L. @ 3.0' MARCH 7, 1974

LOG OF BOREHOLE No. 134 (Cone Test 30' to 100')

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCHESTER, CARLETON CTY. FIG. No.: 71A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: February 18, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL			
		No.	TYPE	"N"		10	20	30	40				
	Continued From Figure 71				30								
30.0	Probably Firm CLAY												
100.0	Continued on Figure 71B				100								

LOG OF BOREHOLE No. 134 (Cone Test 100' to 121.4')

JOB No.: 312-S.2

LOCATION:

FIG. No.:

71B

JOB DESCRIPTION: ONTARIO HOUSING CORP. TWP. OF GLOUCESTER, CARLETON CTY.

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: February 18, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	Continued from Figure 71A				100					
100.0					110					
					120					
121.4	End of Cone Test 100 Blows For Last 5" of Penetration				130					

FORM (100-1)

LOG OF BOREHOLE No. 135

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 72

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 11 and 12, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)				
						10	20	30	40	
						0.5	1.0	1.5	2.0	
	GROUND SURFACE									
0.0	8" TOPSOIL									
	dark brown	1A	AS	-						
	brown									
	Loose to Compact, Fine SAND	1	DO	12						
	with some silt and clay layers	2	DO	6						
7.0										
		3	DO	1						
		4	DO	1						
	Reddish-Grey and Grey, Soft CLAY	5	DO	PM						
	with occasional silt and fine sand seams	6	DO	3						
		7	DO	PM						
	frequent silt and sand seams	8	DO	PM						
		9	DO	1						
	firm									
		10	DO	PM						
	thin black seams									
28.0	End of Borehole									

STANDPIPE INSTALLED TO 25'. W.L. @ 4.3' MAR. 7/74

LOG OF BOREHOLE No. 136

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 73

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 19, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		0-10	10-20	20-30	30-40	
	GROUND SURFACE									
0.0	9" TOPSOIL Loose, Brown, Saturated, Fine to Medium SAND with some silt	1	AS	-						
		2	DO	9	4					
		3	DO	7						
4.8	Very Stiff, Red-Brown CLAY with occasional silt and fine sand seams	4	DO	6	8					
		5	DO	7						
11.0	Compact, Fine SAND				12					
12.5	Reddish-Grey and Grey, Firm CLAY with occasional silt and fine sand seams	6	DO	1						
		7	DO	1	16					
		8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25' W.L. @ 4.8' MARCH 7, 1974

LOG OF BOREHOLE No. 137

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 74

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 19, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		0-10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0				
0.0	8" TOPSOIL Dark Brown, Saturated, Silty, Fine SAND	1	AS	-						
2.8	brown and reddish-brown ----- grey and reddish-grey sand layer Soft to Firm CLAY with occasional silt and fine sand seams black thin layers ----- grey	2	DO	5	4					
		3	DO	1						
		4	DO	1	8					
		5	DO	1						
		6	DO	1	12					
		7	DO	1	16					
		8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					STANDPIPE INSTALLED TO 25'. W.L. @ 2.0' MARCH 7, 1974
					32					

LOG OF BOREHOLE No. 138

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 75

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 11, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0				
0.0	7" TOPSOIL	1A	AS	-						
	Brown, Fine SAND	1A	AS	-						
	with some silt	1	DO	14	4					
	compact	2	DO	14						
	loose	3	DO	8	8					
10.0	Loose, grey, silty SAND with clay layers	4	DO	9	12					
12.0	Soft, Greyish-Brown CLAY	5	DO	1						
	with occasional silt and fine sand seams	6	DO	2	16					
		7	DO	1						
		8	TO	PM	20					
		9	DO	1	24					
	firm	10	DO	1						
28.0	End of Sampled Borehole				28					
30.0	Dynamic Cone Penetration Test driven from bottom of Borehole. For continuation of log see Figure 75A				32					

STAND PIPE INSTALLED TO 25' W.L. @ 4.8' MARCH 8, 1974

LOG OF BOREHOLE No. 138 (Cone Test from 30' to Refusal)

JOB No.: 312-S,2

LOCATION: Twp. of GLOUCESTER, CARLETON CITY FIG. No.: 75A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: February 11, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	Continued from Figure 75									
30.0	Probably firm CLAY									
90.3	Refusal to driving in Dynamic Cone Test; 125 Blows for 3" probably on very dense till.									

FORM 1100-1

LOG OF BOREHOLE No. 139

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 76

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 30, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		0 10 20 30 40	SHEAR STRENGTH X 0.5 1.0 1.5 2.0	(K.S.F.)		
	GROUND SURFACE									
0.0	8" TOPSOIL Brown, Fine SAND with clay layers	1A	AS	-						
2.3	Soft, Brown, Silty CLAY with sand seams	1	DO	3						
4.2	Dense, Grey, Fine SAND trace silt	2	DO	39						
7.3	Soft, Grey CLAY with occasional thin silt and fine sand seams	3	DO	1						
		4	DO	1						
		5	DO	1						
		6	TO	PM						
		7	DO	1						
		8	DO	1						
		9	DO	1						
		10	DO	1						
28.0	End of Borehole									

STANDPIPE INSTALLED TO 25' W.L. @ 0.7' ABOVE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 140

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 77

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: JANUARY 30, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		0 10 20 30 40	SHEAR STRENGTH (K.S.F.)	0.5 1.0 1.5 2.0		
	GROUND SURFACE									
0.0	8" TOPSOIL Brown, Fine SAND with some clay layers	1A	AS	--						
2.5	Firm, Brown CLAY with some sand seams	1	DO	4						
5.0	Soft, Grey CLAY with occasional silt and fine sand seams	2	DO	1						
		3	DO	1						
		4	DO	1						
		5	TO	PM						
		6	DO	1						
		7	DO	1						
		8	DO	1						
		9	DO	1						
		10	DO	1						
28.0		End of Borehole								

STAKEHOLE INSTALLED TO 25' W.L. @ O.G. ABOVE GROUND SURFACE MAR. 7, 1974

LOG OF BOREHOLE No. 141

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 78

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEB. 13/14, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
	GROUND SURFACE									
0.0	7" TOPSOIL Saturated, Compact, Fine SAND brown greyish- brown trace silt	1A	AS	-						
		1	DO	11	4					
		2	DO	27						
7.7	Grey, Soft to Firm, CLAY with occasional silt and fine sand seams occasional black organic laminations below 15'	3	DO	1	8					
		4	DO	PM						
		5	DO	PM	12					
		6	DO	PM	16					
		7	DO	PM						
		8	TO	PM	20					
		9	DO	PM						
		10	DO	PM	24					
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25'. W.L. @ 0.6' ABOVE GROUND SURFACE MAR. 7/74

LOG OF BOREHOLE No. 141A

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY/F.G. No.: 79

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 15, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		SHEAR 0.5	STRENGTH 1.0	(K.S.F.) 1.5	2.0	
0.0	GROUND SURFACE									
	Vane Tests Only									
					4					
					8	X				
						X				
						X				
					12	X				
						X				
						X				
					16	X				
						X				
						X				
					20	X				
						X				
						X				
					24	X				
						X				
						X				
						X				
27.0	End of Hole				28					
					32					

LOG OF BOREHOLE No. 142

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 80

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 21, 1974

ELEV.	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
DEPTH		No.	TYPE	"N"		0	10	20	30		40
						SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
	GROUND SURFACE										
0.0	8" TOPSOIL	1	AS	--							
	Loose to Compact, Fine SAND with some silt <u>brown</u> grey	2	DO	10	4						
		3	DO	7							
		4	DO	13	8						
		5	DO	8	12						
13.0		6	DO	4	16						
	Grey and Reddish-Grey, Firm CLAY with occasional silt and fine sand seams	7	DO	1							
		8	DO	1	20						
		9	DO	1	24						
		10	DO	1							
		11	DO	1	28						
28.0	End of Borehole				32						

STANDPIPE INSTALLED TO 25' W.L. @ 2.7' MARCH 8, 1974

STW DPIPE INSTALLED TO 25'. W.L. @ 2.7' MARCH 8, 1974

LOG OF BOREHOLE No. 143

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 81

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 22, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
	GROUND SURFACE									
0.0	9" TOPSOIL	1	AS	-						
		2	DO	13	4					
		3	DO	7						
	brown									
	grey	4	DO	7	8					
	Loose to Compact, Saturated, Fine SAND	5	DO	18						
	with traces to some silt	6	DO	9	12					
	very loose	7	DO	2	16					
17.0	Grey and Reddish-Grey, Firm CLAY	8	DO	1						
	with occasional silt and fine sand seams	9	DO	1	20					
		10	DO	1	24					
		11	DO	1						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25' W.L. @ 2.8' MARCH 8, 1974

LOG OF BOREHOLE No. 144

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 82

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEB. 25-26, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						0.5	1.0	1.5	2.0	
	GROUND SURFACE									
0.0	9" TOPSOIL	1	AS	--						
	Saturated, Silty, Fine SAND	2	DO	13						
	<u>brown</u> grey				4					
	occasional silt seams	3	DO	17						
	<u>compact</u> very loose									
		4	DO	2	8					
10.5		5	DO	5						
	Grey CLAY				12					
	with occasional silt and fine sand seams	6	DO	1						
	<u>firm</u> soft									
		7	TO	PM	16					
	<u>grey</u> grey and reddish-grey									
		8	DO	1	20					
		9	DO	1						
		10	DO	1	24					
		11	DO	PM						
28.0	End of Borehole				28					
					32					

STANDPIPE INSTALLED TO 25' W.L. @ 5.5' MARCH 8, 1974

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 83

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 26, 1974

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ⊙ NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION - LOG.
 PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	WATER CONTENT (%)				UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)			
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)					W _p ——— W _L					VERTICAL PRESSURE (K.S.F.)			
						X	0.5	1.0	1.5	2.0		20	40	60	80				
	GROUND SURFACE																		
0.0	9"TOPSOIL Brown, Saturated, Silty, Fine SAND	1	AS	-															
2.8	stiff firm brown and reddish-brown grey and reddish-grey CLAY with occasional silt and fine sand seams	2	DO	4															
					4					X									
		3	TO	PM															
										X									
		4	DO	1	8														
										X									
		5	DO	1															
					12					X									
		6	DO	1															
										X									
		7	DO	1	16														
									X										
				20															
									X										
				24															
									X										
					</														

STANDPIPE INSTALLED TO 25'. W.L. @ 0.5' ABOVE GROUND SURFACE MAR. 8/74

LOG OF BOREHOLE No. 145

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

83A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: DYNAMIC CONE PENETRATION TEST

DATE: FEBRUARY 26, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure 83									
30.0	Probably Firm CLAY				30					
					40					
					50					
57.8	Refusal to driving in Dynamic Cone Penetration Test; 102 blows for 12" then 110 blows for 8" probably on very dense till				60					

LOG OF BOREHOLE No. 146

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 84

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 27, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE										
0.0	10" TOPSOIL	1	AS	-							
	Compact, Brown, Saturated, Fine SAND	2	DO	17							
	with some silt										
4.5		3	DO	1	4						
		4	DO	1	8						
		5	TO	PM	12						
	brown and reddish- brown	6	DO	1	16						
	grey and reddish-grey	7	DO	1	20						
	Soft to Firm CLAY	8	DO	1	24						
	with some silt and fine sand seams	9	DO	1	28						
		10	DO	1							
		11	DO	PM							
28.0	End of Sampled Borehole Dynamic Cone Penetration Test driven from bottom of Borehole										
32.0	For continuation of Log see Figure 84A										

LOG OF BOREHOLE No. 146

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

84A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 27, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure 84									
30.0	Cone dropped from 28' to 44' under weight of hammer				30					
	Probably Soft to Firm CLAY				40					
					50					
					60					
					70					
					80					
77.8	Refusal to driving in Dynamic Cone Penetration Test; 145 blows for 9" probably on very dense Till									

LOG OF BOREHOLE No. 147

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 85

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 27, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
	GROUND SURFACE									
0.0	10" TOPSOIL Brown, Saturated, Silty, Fine SAND	1	AS	-						
3.0	firm to stiff soft brown and reddish-brown greyish and reddish-brown CLAY with occasional fine sand and silt seams grey and reddish-grey	2	DO	5	4					
		3	TO	PM						
		4	DO	2	8					
		5	DO	1						
		6	DO	1	12					
		7	DO	1	16					
		8	DO	1						
		9	DO	1	20					
		10	DO	1	24					
		11	DO	PM						
28.0	End of Sampled Borehole				28					
30.0	Dynamic Cone Penetration Test driven from bottom of Borehole For continuation of log see Figure 85A				32					

STANDPIPE INSTALLED TO 25'. W.L. @ 0.6' ABOVE GROUND SURFACE MAR. 8/74

LOG OF BOREHOLE No. 147

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLTON CTY.

FIG. No.: 85A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEB. 27, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure 85									
30.0	Cone dropped from 28' to 40' under weight of hammer. Probably soft to firm CLAY.				30					
	Probably Till				40					
45.5	Refusal to cone driving in Dynamic Cone Penetration Test; 102 blows for 6" probably on very dense Till				50					

FORM (100-1)

LOG OF BOREHOLE No. 148





















JOB No. 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY FIG. No.: 86

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 28, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		10	20	30	40		
	GROUND SURFACE					SHEAR STRENGTH (K.S.F.) X 0.5 1.0 1.5 2.0					
0.0	8" TOPSOIL Brown, Saturated, Silty, Fine SAND	1	AS	-							
2.8	stiff soft reddish-brown and brown ----- grey and reddish-grey CLAY with occasional silt and fine sand seams ----- grey	2	DO	8	4						
											
		3	TO	PM							
		4	DO	1	8						
											
		5	DO	1							
					12						
		6	DO	1							
											
		7	DO	1	16						
											
		8	DO	1							
											
		9	TO	PM	20						
											
		10	DO	1	24						
											
		11	DO	1							
											
28.0	End of Sampled Borehole Dynamic Cone Penetration Test driven from bottom of Borehole				28						STANDPIPE INSTALLED TO 25' W.L. @ 1.2' MARCH 8, 1974
32.0	For Continuation of log see Figure 86A				32						

LOG OF BOREHOLE No. 148

JOB No.: 312-S.2

LOCATION:

FIG. No.: 86A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION TWP. OF GLOUCESTER, CARLETON CTY.

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 28, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure 86									
30.0	Cone dropped from 28' to 32' under weight of hammer Probably Firm CLAY				30					
					40					
					50					
					60					
65.5	Refusal to driving in Dynamic Cone Penetration Test; 124 blows for 6" probably on very dense Till				70					

LOG OF BOREHOLE No. 149

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 87

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 28, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		10	20	30	40		
						SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
	GROUND SURFACE										
0.0	8" TOPSOIL Brown, Saturated, Silty Fine SAND	1	AS	-							
3.0	brown-red brown and reddish-brown grey and reddish-grey CLAY with occasional silt and fine sand seams grey	2	DO	8							
		3	DO	2	4						
		4	DO	1	8						
		5	TO	PM							
		6	DO	1	12						
		7	DO	1	16						
		8	DO	1							
		9	TO	PM	20						
		10	DO	1	24						
		11	DO	1							
28.0		End of Sampled Borehole Dynamic Cone Penetration Test driven from bottom of Borehole				28					
32.0	For continuation of Log see Figure 87A				32						

STAIN PIPE INSTALLED TO 25'. W.L. @ 0.9' ABOVE GROUND SURFACE MAR. 8/74

LOG OF BOREHOLE No. 149

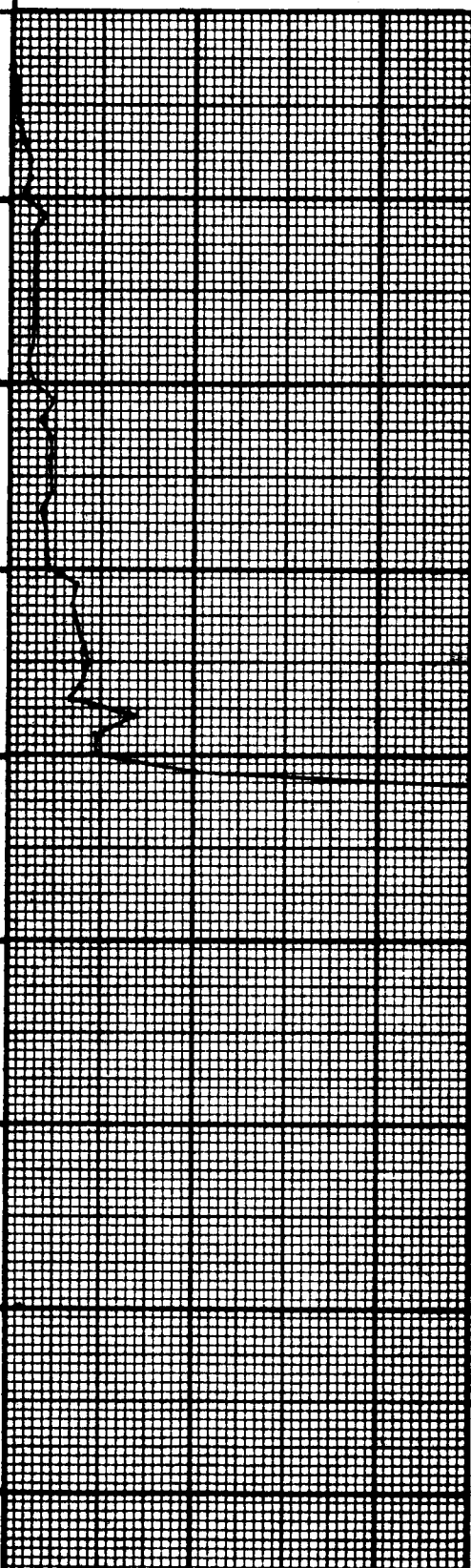
JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 87A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: FEBRUARY 28, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL				
		No.	TYPE	"N"		20	40	60	80					
	Continued from Figure 87													
30.0	Cone dropped from 28' to 33' under weight of hammer				30									
	Probably Soft to Firm CLAY				40									
					50									
					60									
					70									
71.5	Refusal to driving in Dynamic Cone Penetration Test; 75 blows for 6" then no penetration for 25 blows probably on very dense Till or Bedrock				80									

LOG OF BOREHOLE No. 150

LABORATORY

TEST

RESULTS

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 88

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: MARCH 1, 1974

W_p — PLASTIC LIMIT
 W_L — LIQUID LIMIT
 ○ — NATURAL WATER CONTENT

COMPRESSIBILITY IS THE SLOPE
 OF THE COMPRESSION - LOG.
 PRESSURE CURVE (Fig.)

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL	WATER CONTENT (%)		UNIT WEIGHT (P.C.F.)	COMPRESSIBILITY (%)	
		No.	TYPE	"N"		SHEAR STRENGTH (K.S.F.)						W _p	W _L		VERTICAL PRESSURE (K.S.F.)	
	GROUND SURFACE					X	0.5	1.0	1.5	2.0						
0.0	8" TOPSOIL Brown, Saturated, Fine SAND with some silt silt & clay layers	1	AS	-												
		2	DO	22	4											
		3	DO	18												
7.0	 brown and reddish-brown reddish-brown and grey silt and sand layer sand layer	4	DO	2	8											
	 stiff	5	TO	PH						X						
		6	DO	1	12					X						
		7	DO	1	16					X						
		8	DO	16						X						
		9	DO	1	20					X						
		10	TO	PH	24					X						
		11	DO	1						X						
28.0	End of Sampled Borehole				28											
32.0	Dynamic Cone Penetration Test driven from bottom of Borehole For Continuation of Log See Figure 88A				32											

STANDPIPE INSTALLED TO 25'. W.L. @ 8.2' MAR. 8/74

STANDPIPE INSTALLED TO 25'. W.L. @ 8.2' MAR. 8/74

LOG OF BOREHOLE No. 150

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 88A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: MARCH 1, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL			
		No.	TYPE	"N"		20	40	60	80				
	Continued from Figure 88												
30.0	Probably Firm CLAY				30								
					40								
					50								
					60								
					70								
					80								
					90								
					100								
					110								
110.0	For Continuation of Log See Figure 88B				110								

FORM (100-1)

LOG OF BOREHOLE No. 150

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 88B

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGER

DATE: MARCH 1, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure	88A								
110	Probably Firm to Stiff CLAY				110					
					120					
123.0	Refusal to driving in Dynamic Cone Penetration Test; 109 blows for 12" probably on very dense till.				130					

FORM (100-1)

LOG OF BOREHOLE No. 151

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 89

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 4-5, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)					WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	(K.S.F.)	
	GROUND SURFACE					X	0.5	1.0	1.5	2.0	
0.0	8" TOPSOIL										
	Brown SAND with clay layers	1	AS	-							
2.5	sand layers stiff firm Soft To Firm CLAY With Occasional Sand and Silt Seams reddish- brown brownish- grey	2	DO	6							
					4						
		3	DO	2							
					8						
		4	DO	1							
		5	TO	PH							
					12						
		6	DO	1							
		7	DO	1							
					16						
		8	DO	1							
		9	DO	1							
					20						
		10	DO	1							
					24						
		11	TO	PM							
28.0	End of Sampled Borehole				28						
	Dynamic Cone Penetration										
	Test driven from bottom of										
	borehole										
32.0	Log Continues on				32						
	Figure 89A										

STANDPIPE INSTALLED TO 25'. W.L. @ 0.6' ABOVE GROUND SURFACE MARCH 8, 1974

LOG OF BOREHOLE No. 151

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

89A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 4-5, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure 89									
30.0	Cone sank under wt. of rods from 28' to 36'				30					
	Probably Soft to Firm CLAY				40					
					50					
58.0	Refusal to driving in Dynamic Cone Test; 110 Blows 12", probably on very dense Till				60					

LOG OF BOREHOLE No. 152

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 90

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 5, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		10	20	30	40	
						SHEAR STRENGTH (K.S.F.)				
						X 0.5	1.0	1.5	2.0	
	GROUND SURFACE									
0.0	8" TOPSOIL Brown, Saturated Fine SAND	1	AS	-						
3.0	Sand Layers	2	DO	6	4					
	Reddish-Brown and Brown Reddish Brown	3	DO	6						
	firm to stiff									
	Soft CLAY with occasional sand and silt seams	4	DO	1	8					
		5	TO	PM						
		6	DO	1	12					
		7	DO	1	16					
	greyish brown									
	brownish grey	8	DO	PM						
		9	DO	1	20					
		10	TO	PM	24					
		11	DO	1						
28.0	End of Sampled Borehole Dynamic Cone Penetration Test driven from bottom of borehole				28					
32.0	Log continues on Figure 90A				32					

STANDPIPE INSTALLED TO 25' W.L. @ 1.3' MARCH 8, 1974

LOG OF BOREHOLE No. 152

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

90A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 5, 1974

[illegible]

LOG OF BOREHOLE No. 153

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY.

FIG. No.:

91

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 5, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	GROUND SURFACE									
0.0	Augered 0' to 2' Dynamic Cone Penetration Test from 2' to 64.5' Probably Soft to Firm CLAY									
64.5	Refusal to driving in Dynamic Cone Test; 40 Blows for 6" then no penetration for 60 Blows probably on boulder very dense till or bedrock									

LOG OF BOREHOLE No. 154

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

92

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	GROUND SURFACE									
0.0	Augered from 0' to 2' Dynamic Cone Penetration Test from 2' to 48.4' Probably Soft to Firm CLAY									
48.4	Refusal to driving in Dynamic Cone Test 100 Blows for 5" Probably on very dense till									

LOG OF BOREHOLE No. 155

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 93

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	GROUND SURFACE									
0.0	Augered from 0' to 2' Dynamic Cone Penetration Test from 2' to 45.8' Probably Soft to Firm CLAY									
45.8	Refusal to driving in Dynamic Cone Test 100 Blows for 9" Probably on very dense Till									

LOG OF BOREHOLE No. 156

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.:

94

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	GROUND SURFACE									
0.0	Augered 0' to 2' Dynamic Cone Penetration Test from 2' to 43.8' Probably Soft to Firm CLAY									
43.8	Refusal to driving in Dynamic Cone Test 3 Blows for 6" then 100 Blows for 3" Probably on boulder or very dense Till									

LOG OF BOREHOLE No. 157

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 95

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	GROUND SURFACE									
0.0	Augered 0' to 2' Dynamic Cone Penetration Test from 2' to 31.8' Probably Soft to Firm CLAY									
31.8	Refusal to driving in Dynamic Cone Test 100 Blows for 10" Probably on very dense Till									

LOG OF BOREHOLE No. 158

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 96

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	GROUND SURFACE									
0.0	Augered 0' to 2' Dynamic Cone Penetration Test from 2' to 54.8' Probably Soft to Firm CLAY									
54.8	Refusal to driving in Dynamic Cone Test 60 Blows for 10" then no penetration for 40 Blows Probably on Boulder or very dense Till									

LOG OF BOREHOLE No. 159

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER CARLETON CTY. FIG. No.: 97

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 6, 1974

ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL	
		No.	TYPE	"N"		20	40	60	80		
						SHEAR STRENGTH (K.S.F.)					
						X	0.5	1.0	1.5	2.0	
	GROUND SURFACE										
0.0	7" TOPSOIL										
	Compact to dense	1	AS	-							
	Brown										
	Fine SAND Cobble	2	DO	33							
					4						
5.0	compact to sand	3	DO	20							
	very stiff layers										
	Soft to Firm				8	X					
	CLAY										
					12	X					
					16	X					
					20	X					
					24	X					
						X					
26.5	End of Borehole				28						

STANDPIPE INSTALLED TO 25'. W.L. @ 1.2' MARCH 7, 1974

LOG OF BOREHOLE No. 160

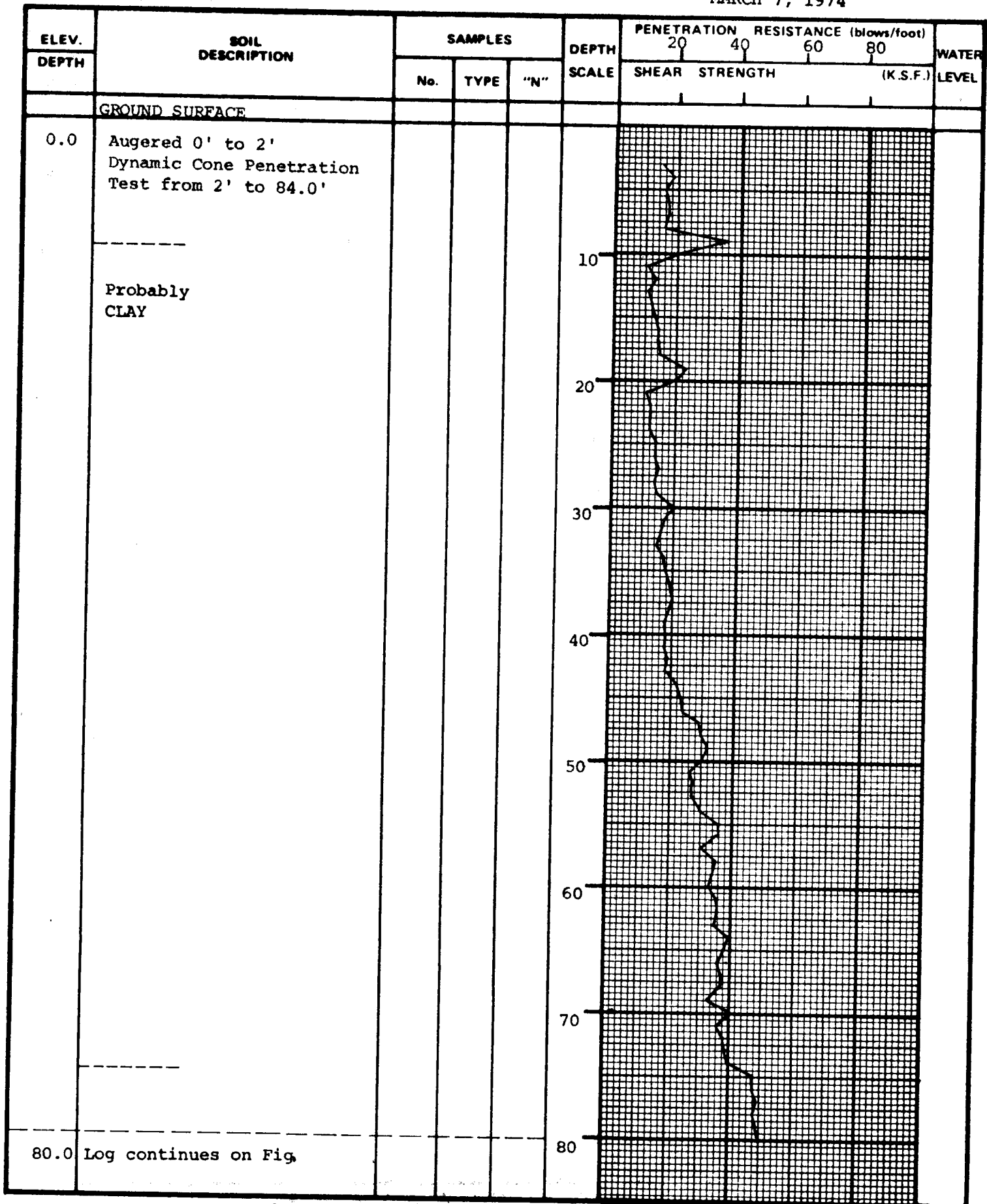
JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY. FIG. No.: 98

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 7, 1974



LOG OF BOREHOLE No. 160

JOB No.: 312-S.2

LOCATION: TWP. OF GLOUCESTER, CARLETON CTY.

FIG. No.:

98A

JOB DESCRIPTION: ONTARIO HOUSING CORPORATION, SOUTH EAST OTTAWA CITY

METHOD OF BORING: HOLLOW-STEM AUGERING

DATE: MARCH 7, 1974

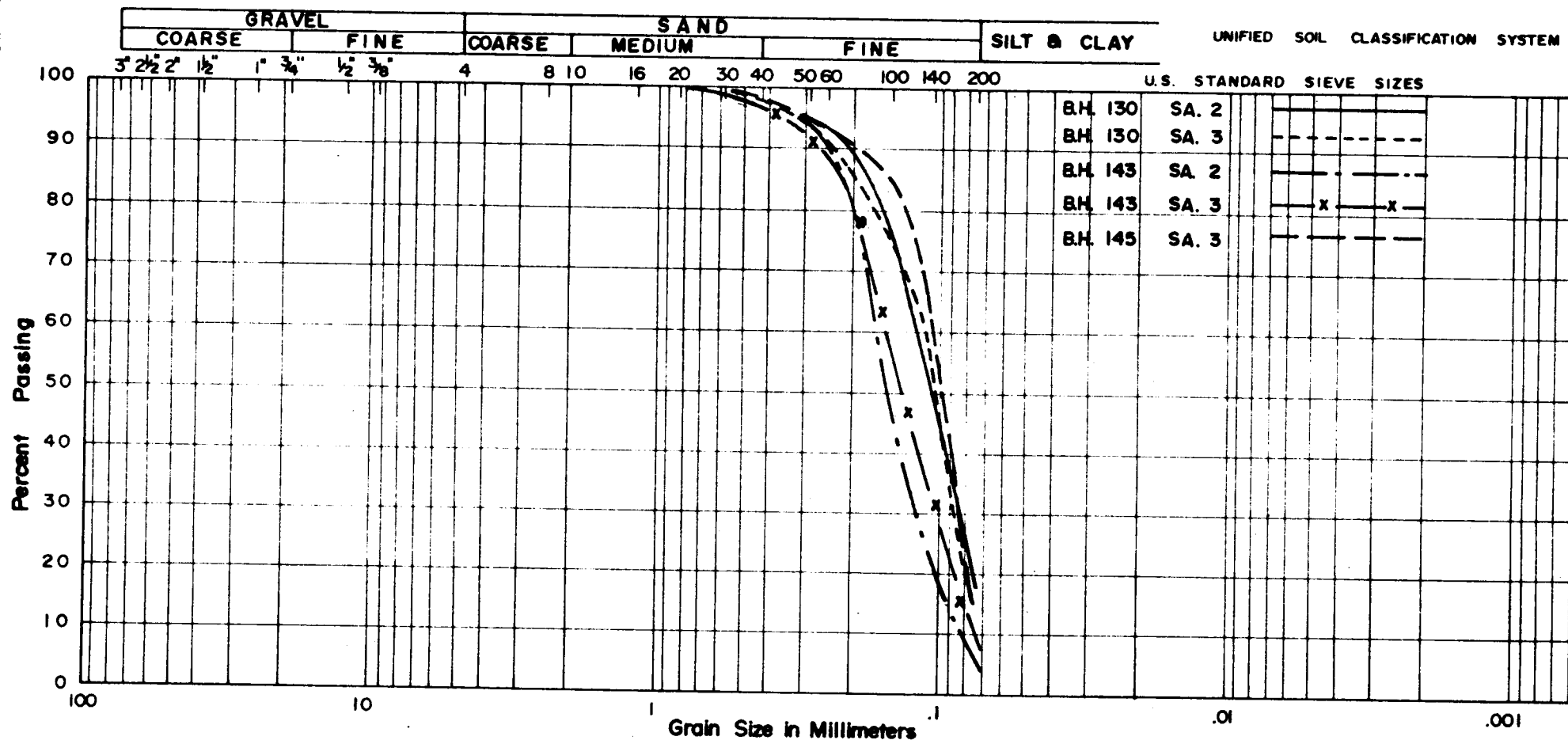
ELEV. DEPTH	SOIL DESCRIPTION	SAMPLES			DEPTH SCALE	PENETRATION RESISTANCE (blows/foot)				WATER LEVEL
		No.	TYPE	"N"		20	40	60	80	
	Continued from Figure 98									
80.0					80					
84.0	Refusal to driving in Dynamic Cone Test 53 Blows for 12" then no penetration for 70 Blows Probably on Till or bedrock				90					



K.H.KING ASSOCIATES LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO 312 -S. 2



PROJECT:
LOCATION:
BOREHOLE NO:
SAMPLE NO:
DEPTH:
ELEVATION:

COEFFICIENT OF UNIFORMITY:
COEFFICIENT OF CURVATURE:

Classification of Sample and Group Symbol:
FINE SAND WITH SOME SILT &
SILTY FINE SAND

PLASTIC PROPERTIES
LIQUID LIMIT % =
PLASTIC LIMIT % =
PLASTICITY INDEX % =
MOISTURE CONTENT % =

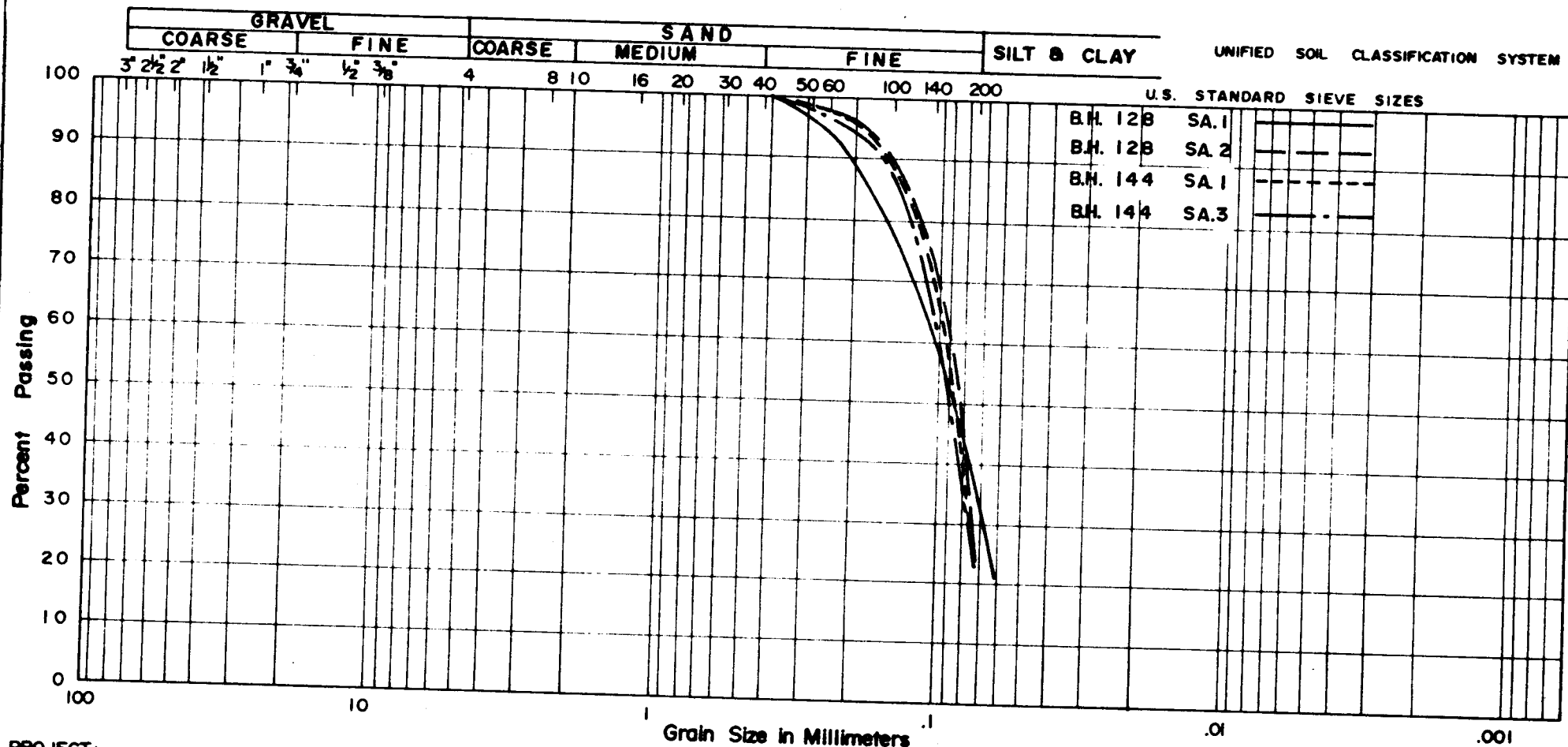
ENCLOSURE NO 99



K.H.KING ASSOCIATES LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE № 312-S.2



PROJECT:
LOCATION:
BOREHOLE №:
SAMPLE №:
DEPTH:
ELEVATION:

COEFFICIENT OF UNIFORMITY:
COEFFICIENT OF CURVATURE:

Classification of Sample and Group Symbol:
FINE SAND & SILT

PLASTIC PROPERTIES
LIQUID LIMIT % =
PLASTIC LIMIT % =
PLASTICITY INDEX % =
MOISTURE CONTENT % =

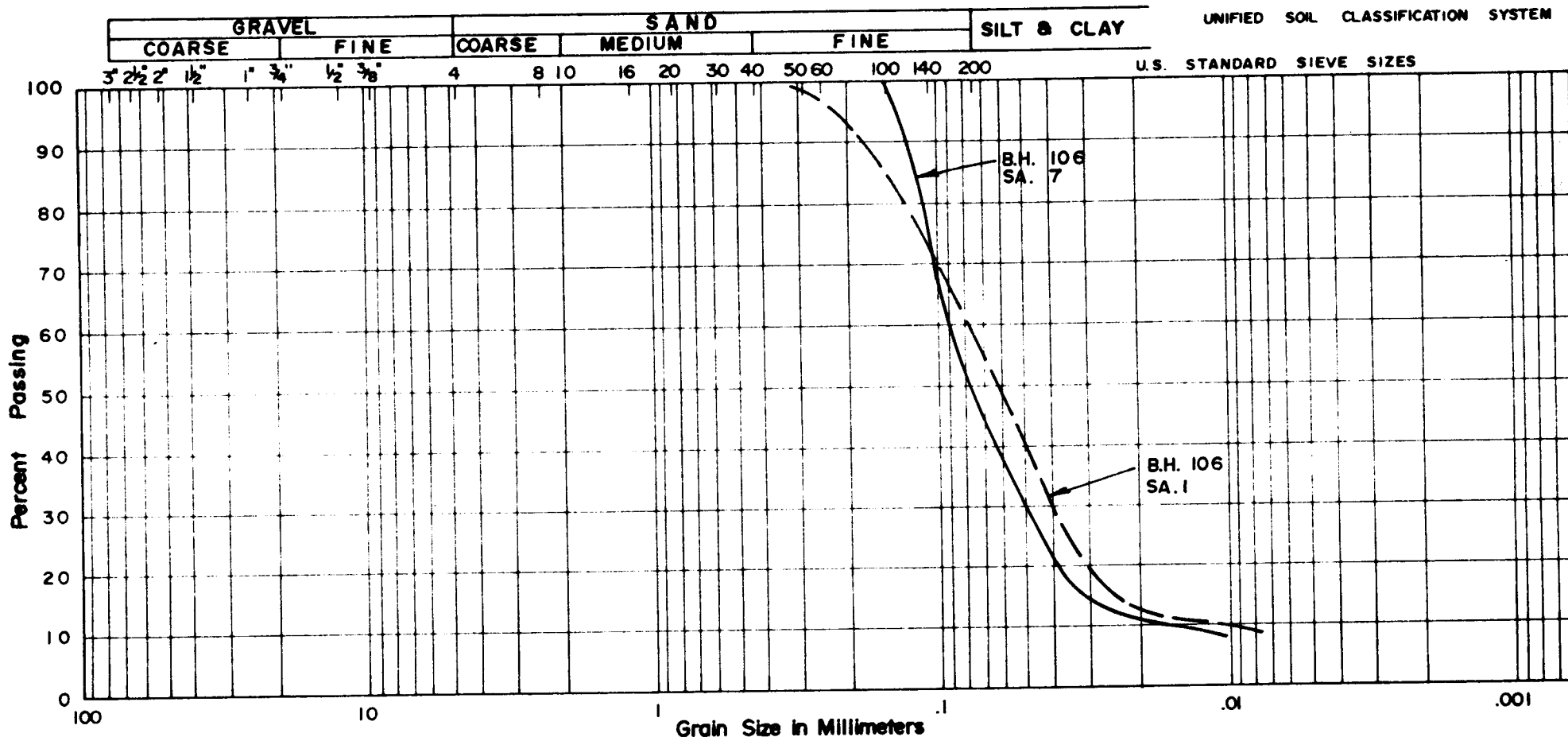
ENCLOSURE № 100



K.H.KING ASSOCIATES LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE № 312-S.2



PROJECT:
LOCATION:
BOREHOLE №:
SAMPLE №:
DEPTH:
ELEVATION:

COEFFICIENT OF UNIFORMITY :
COEFFICIENT OF CURVATURE :

Classification of Sample and Group Symbol:

PLASTIC PROPERTIES

LIQUID LIMIT	% =
PLASTIC LIMIT	% =
PLASTICITY INDEX	% =
MOISTURE CONTENT	% =

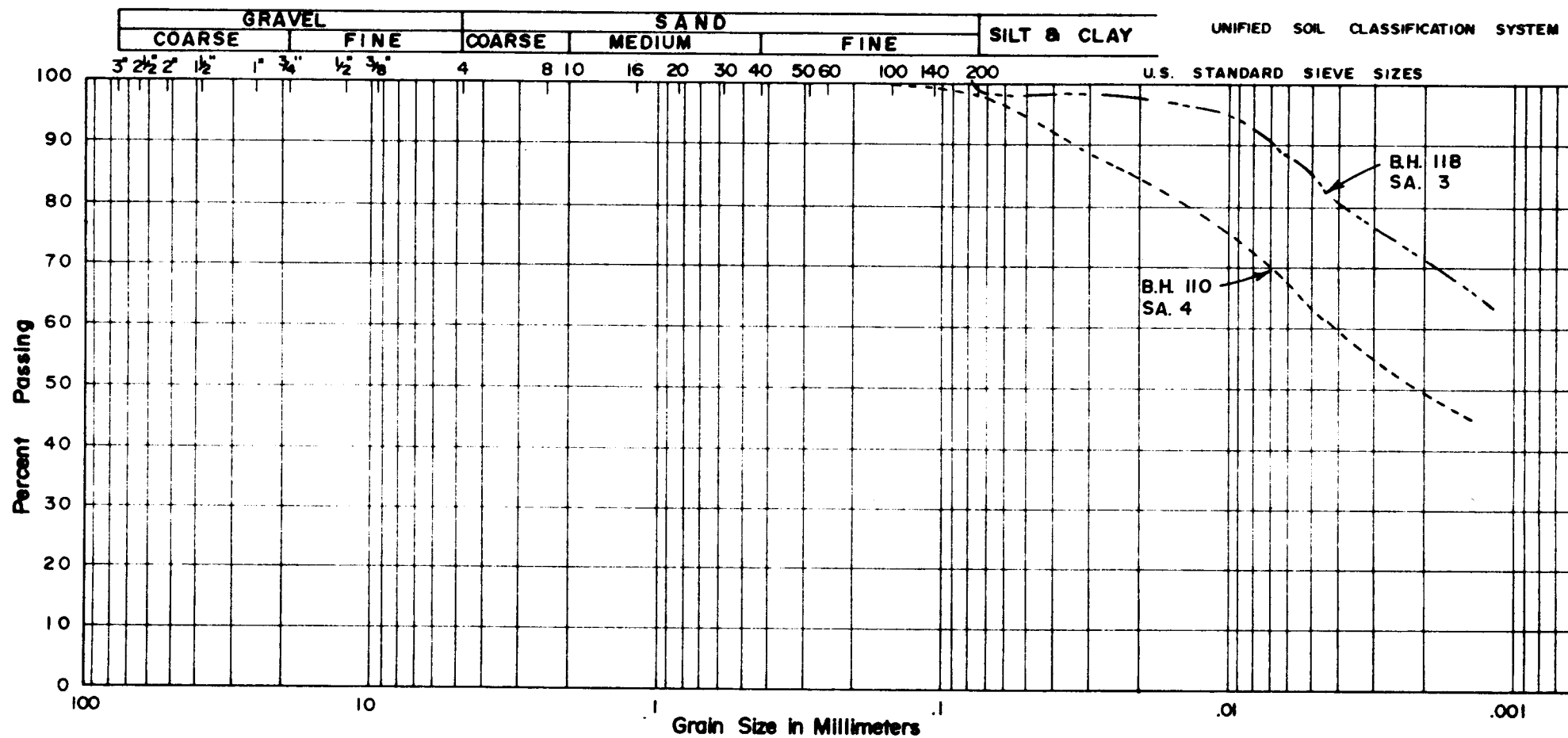
ENCLOSURE № 101



K.H.KING ASSOCIATES LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO 312-S. 2



PROJECT:

LOCATION:

BOREHOLE NO: 110 | 118

SAMPLE NO: 4 | 3

DEPTH:

ELEVATION:

COEFFICIENT OF UNIFORMITY:

COEFFICIENT OF CURVATURE:

PLASTIC PROPERTIES

LIQUID LIMIT % =

PLASTIC LIMIT % =

PLASTICITY INDEX % =

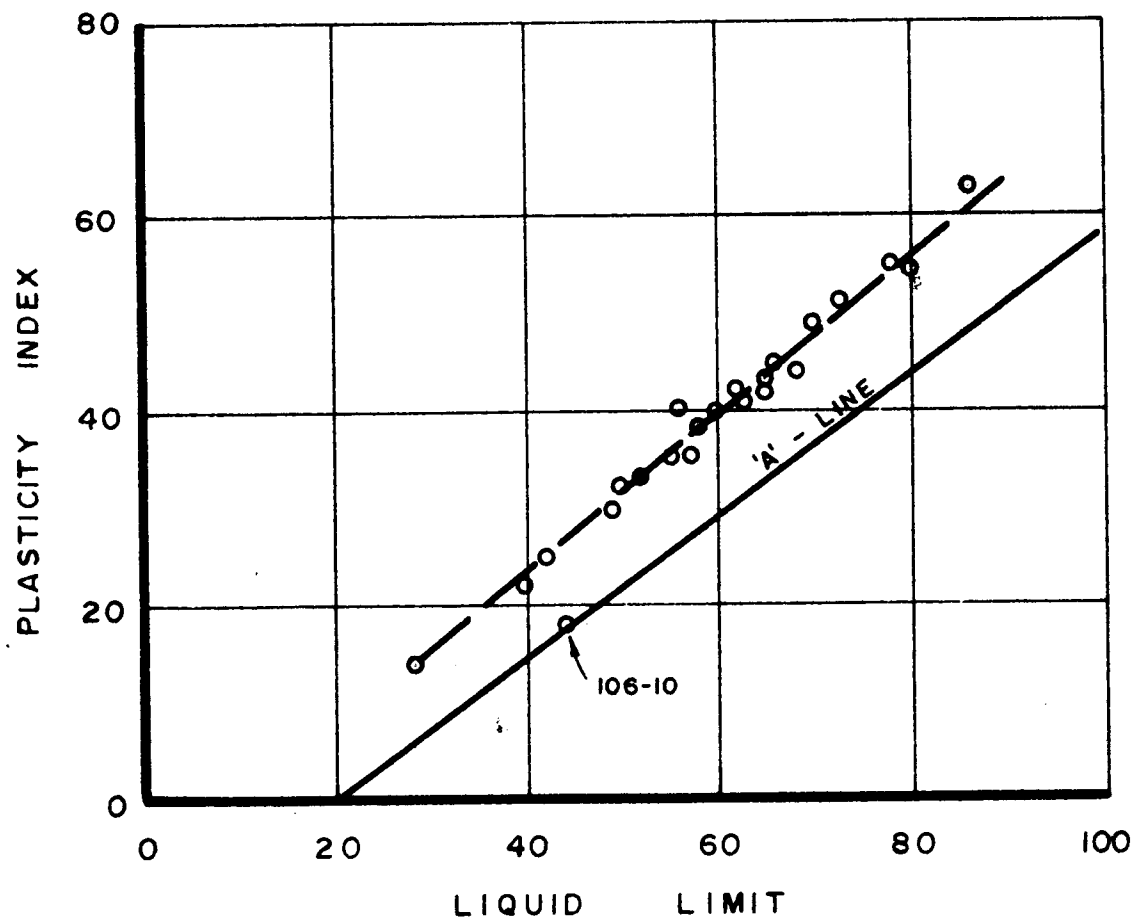
MOISTURE CONTENT % =

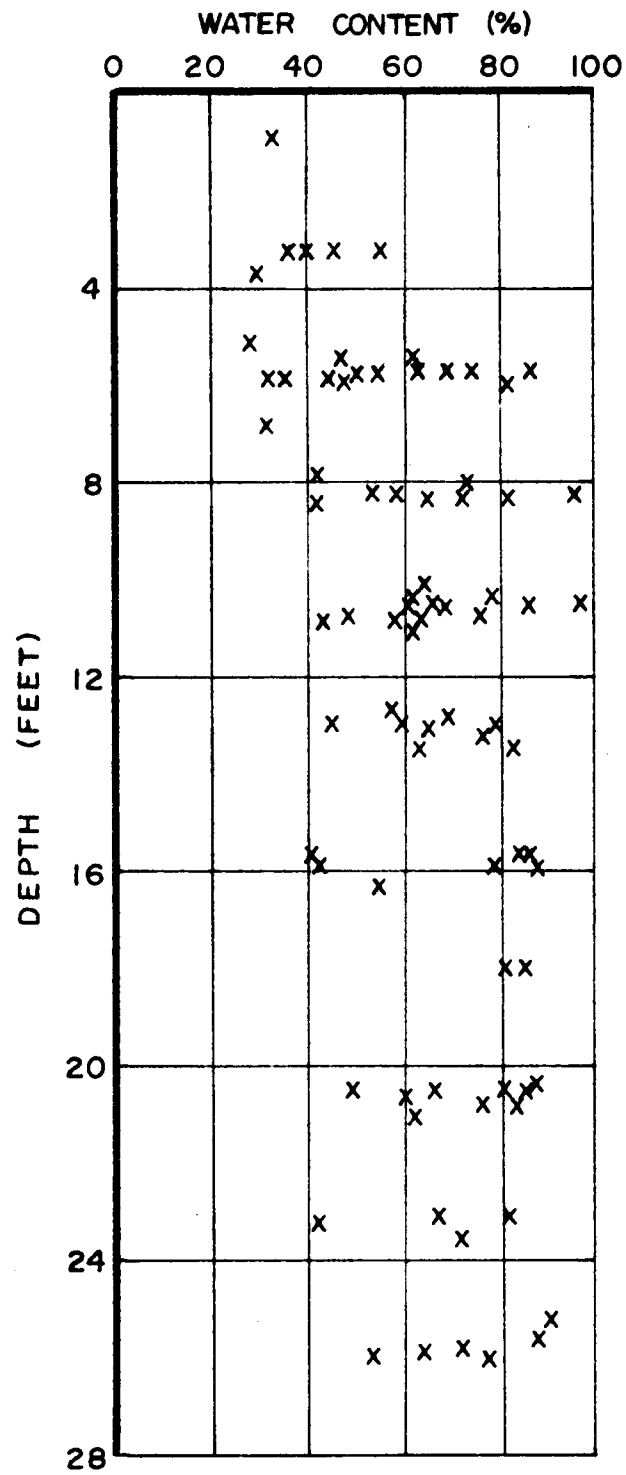
Classification of Sample and Group Symbol:

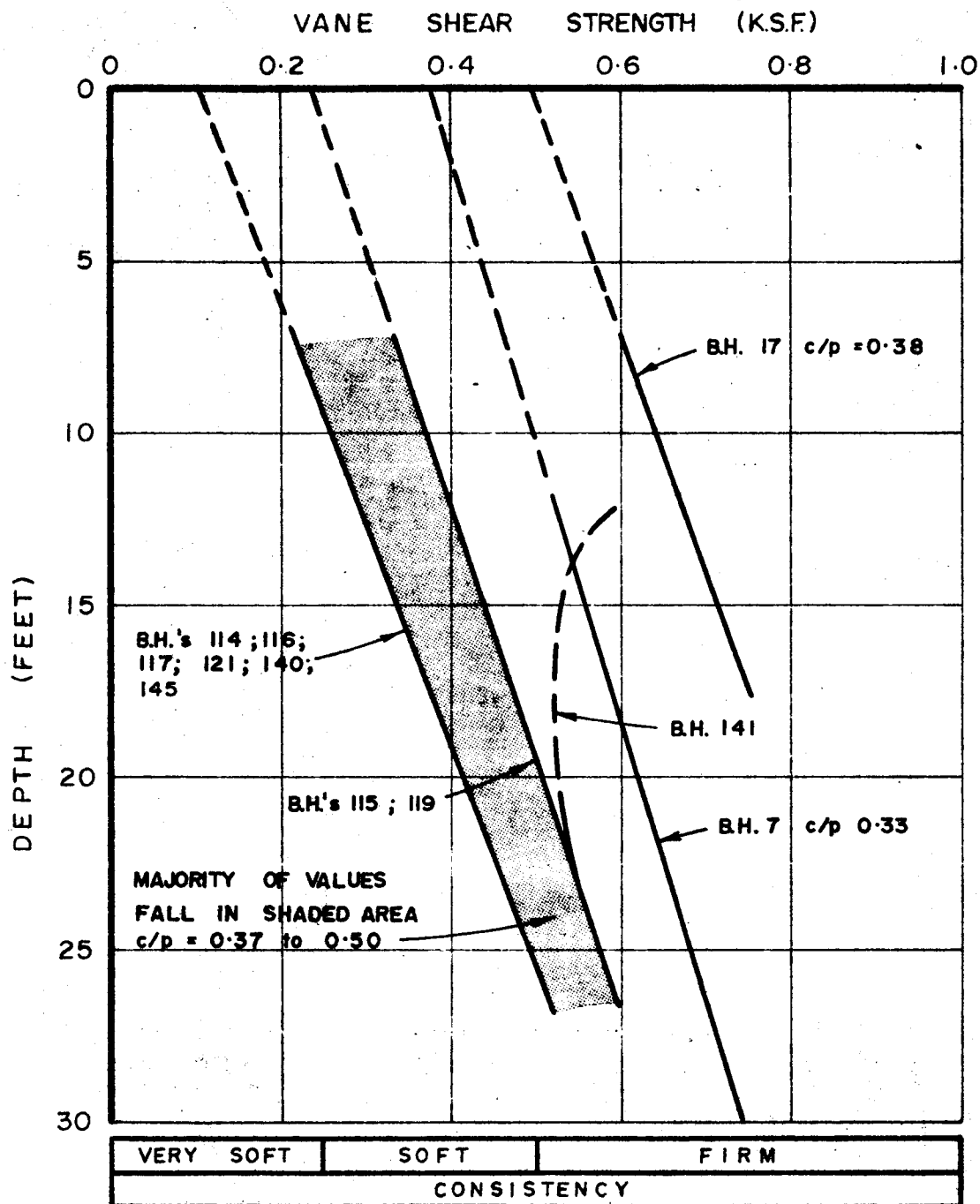
LEDA CLAY

ENCLOSURE NO 102

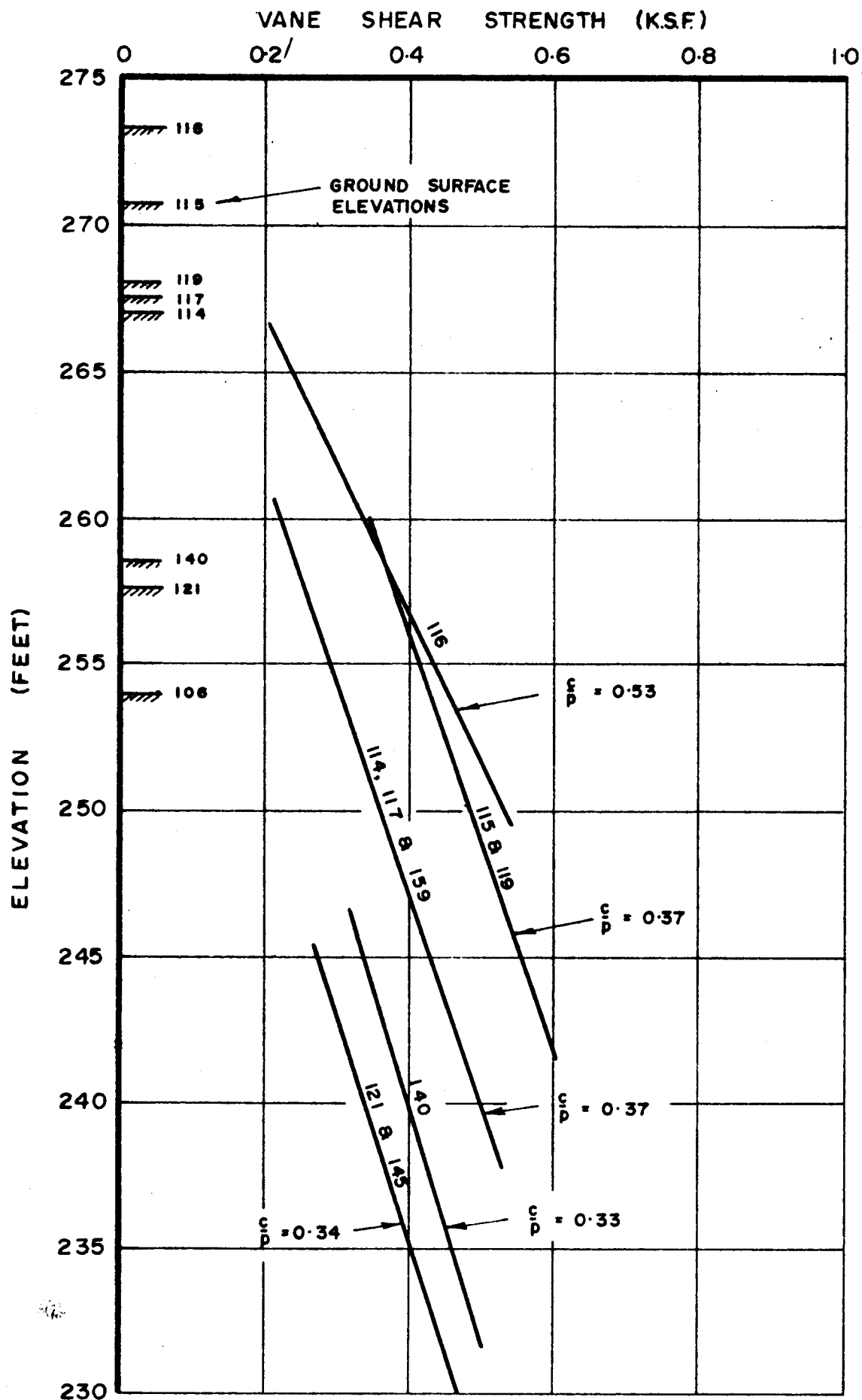
PLASTICITY CHART

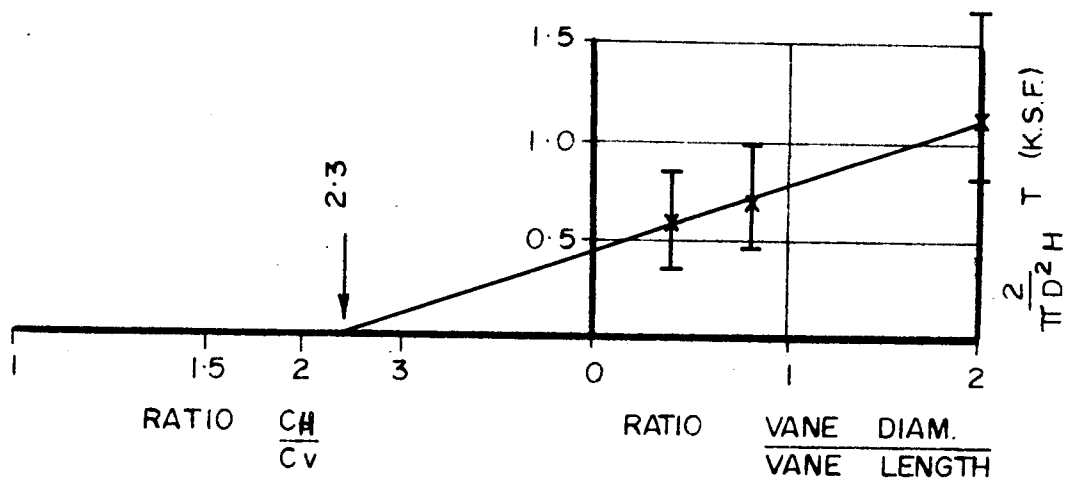
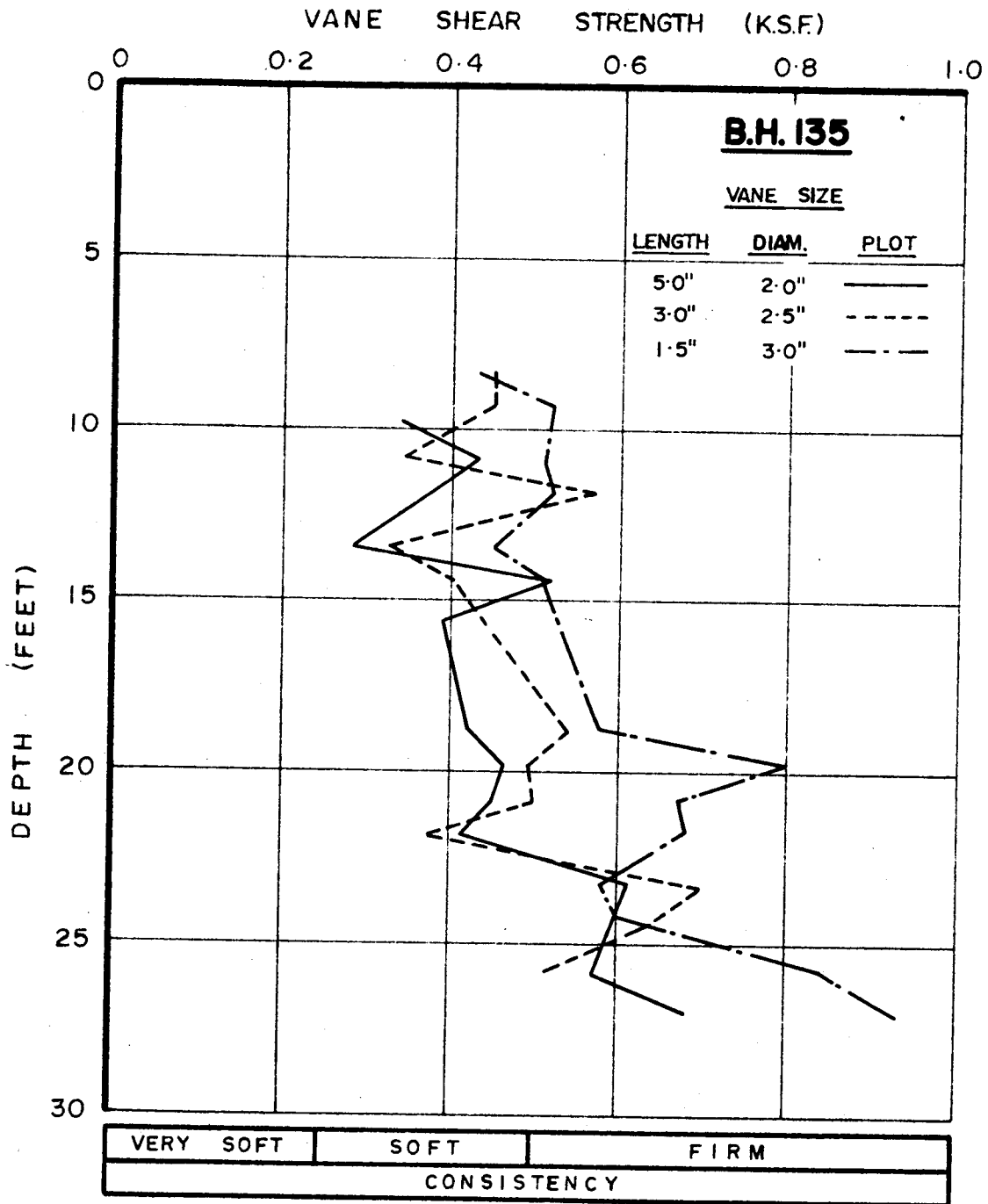


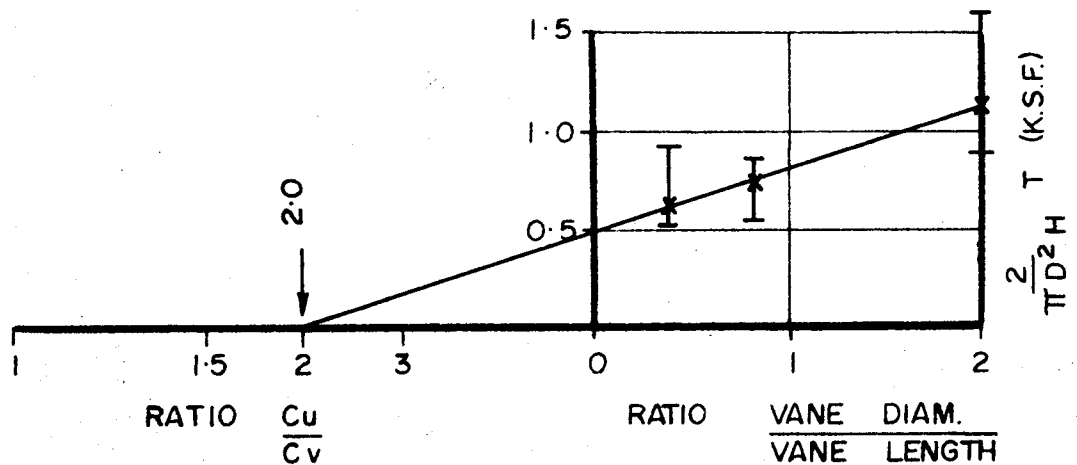
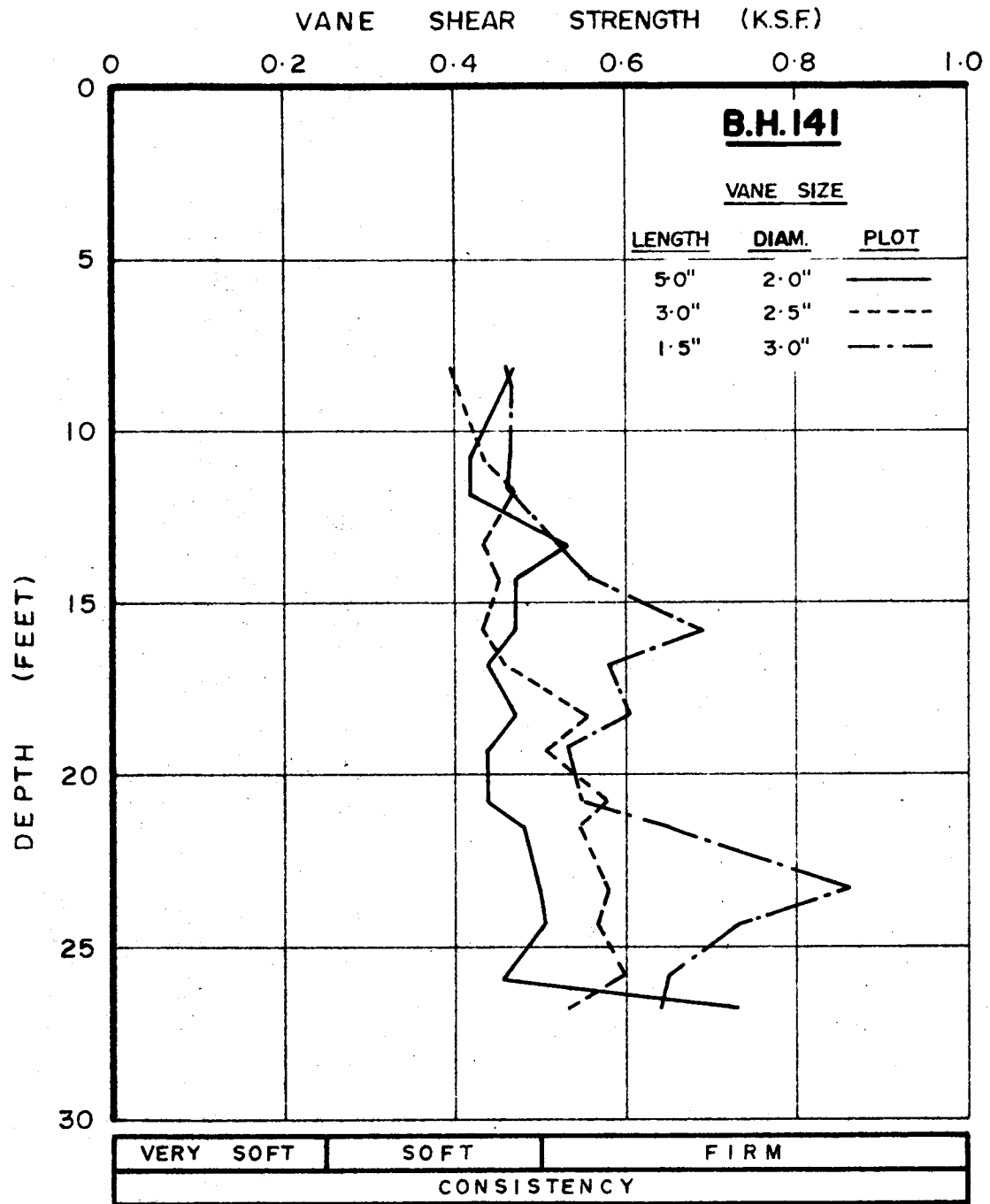


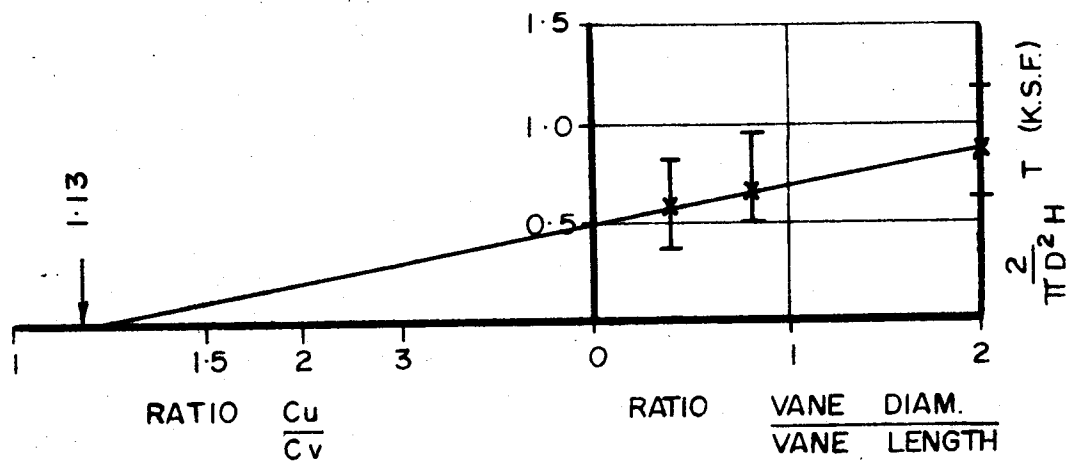
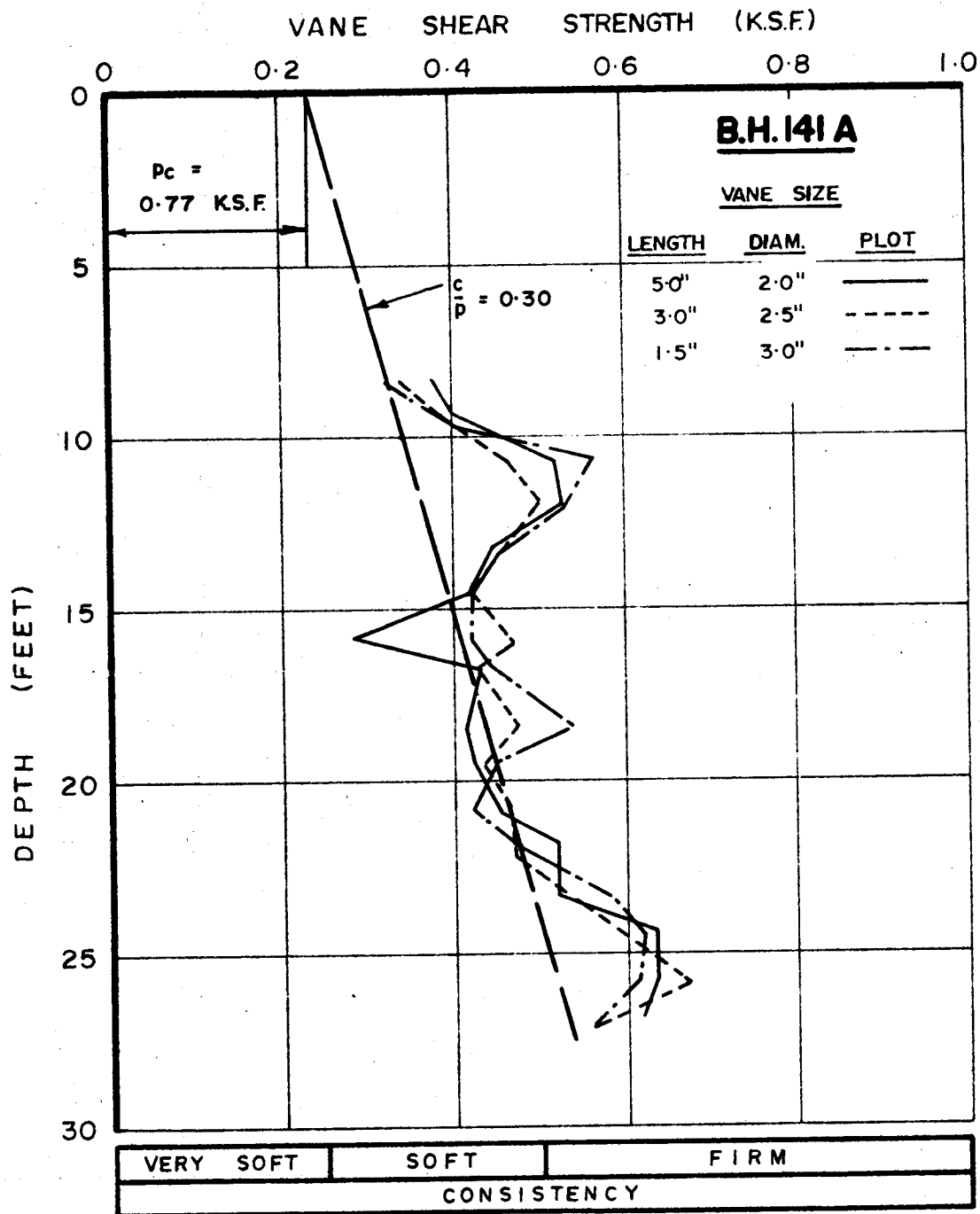


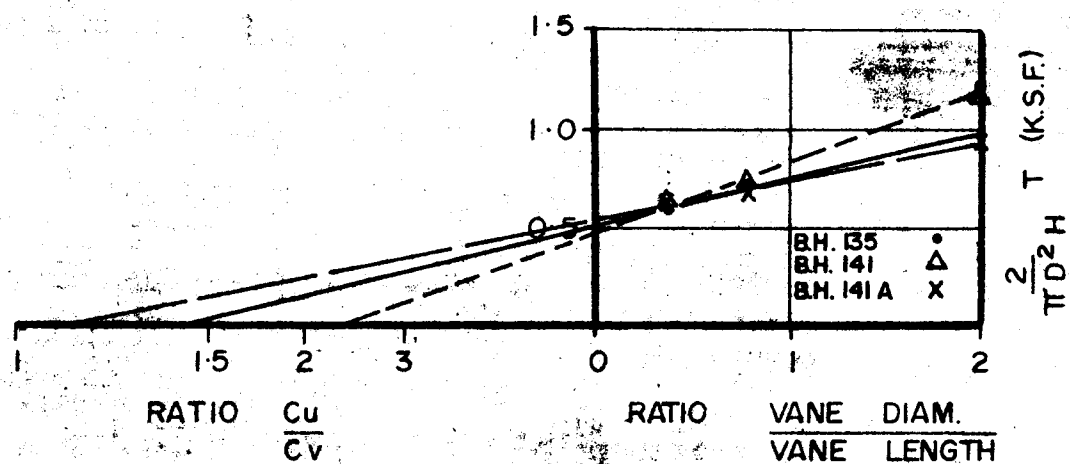
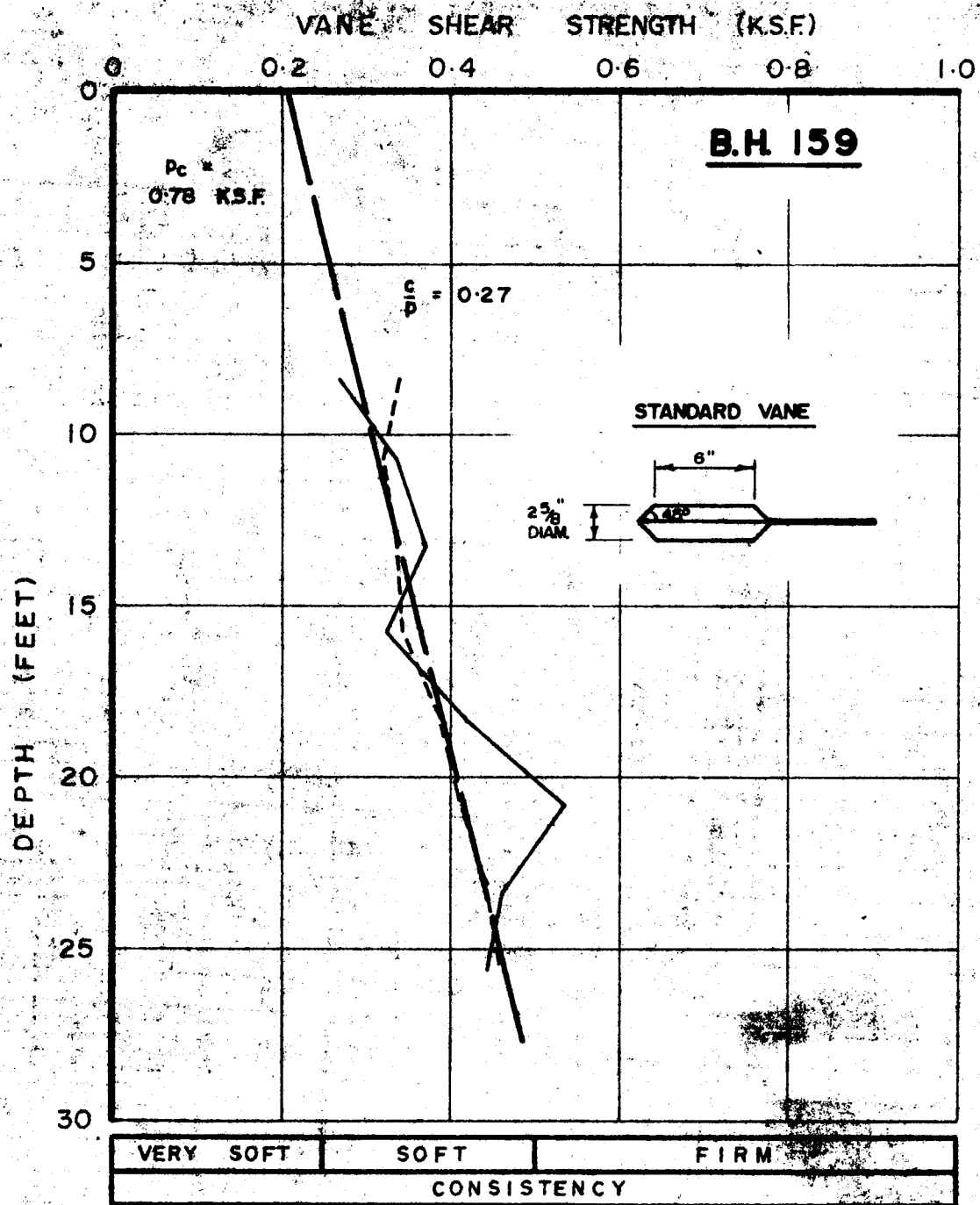
**SUMMARY PLOT OF SHEAR STRENGTH
OF CLAY VS DEPTH FOR ALL BOREHOLES**

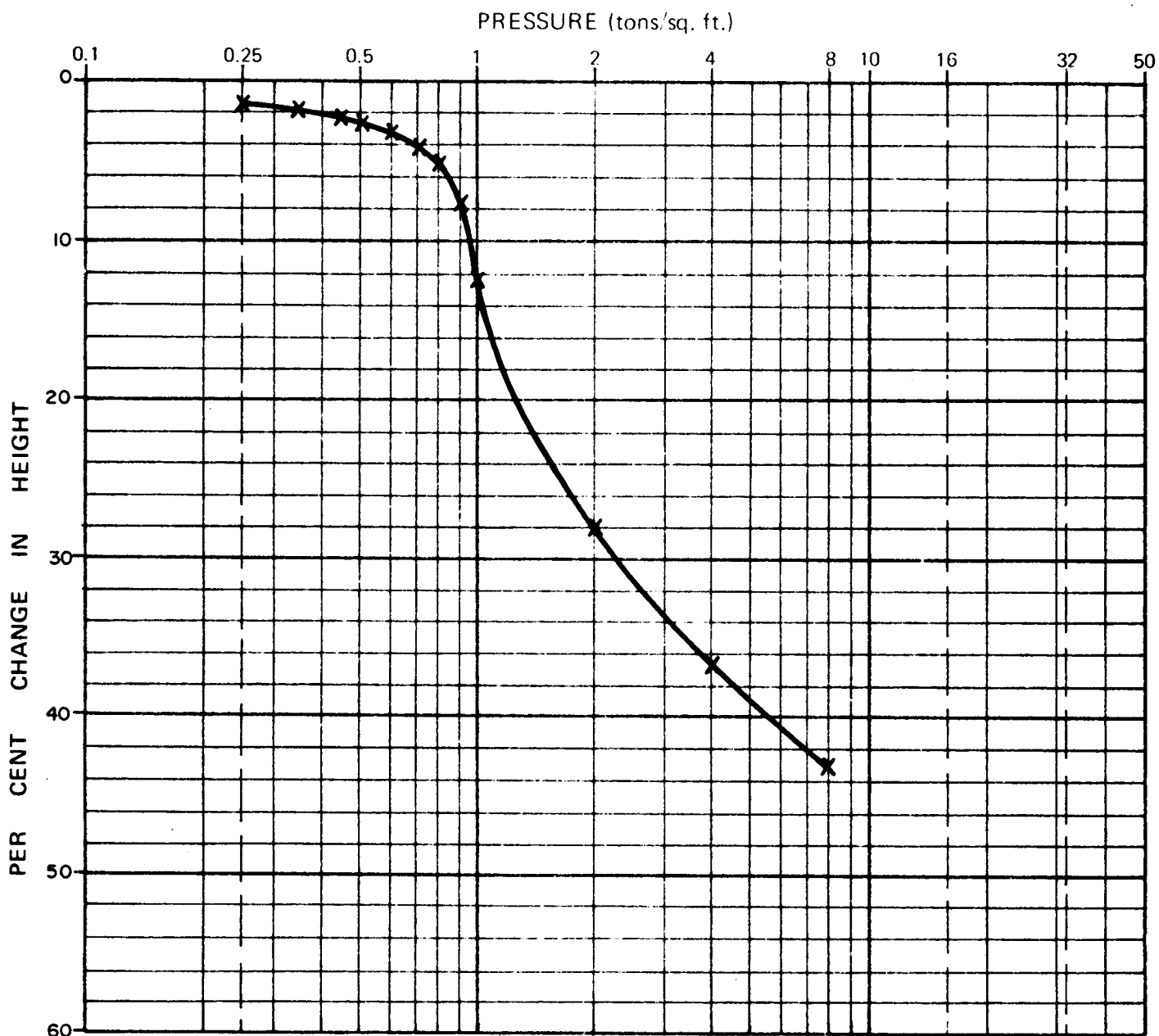










CONSOLIDATION TEST RESULTS**Plot of Compression vs. Log Pressure**BOREHOLE No. 106 SAMPLE No. 4 DEPTH 11.0'

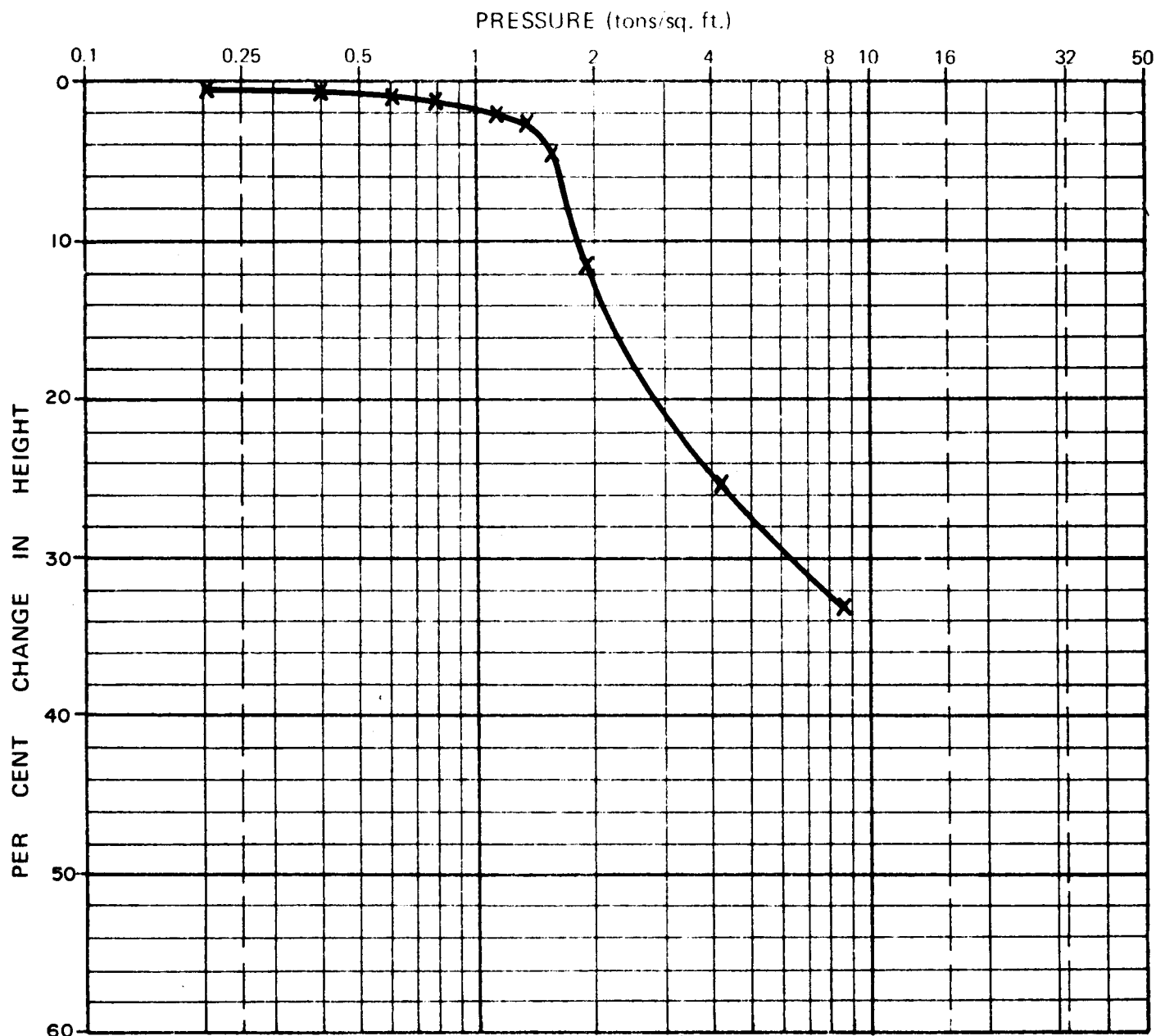
C_v (ft. ² /day)								
-------------------------------	--	--	--	--	--	--	--	--

$\frac{C_c}{1 + e_0}$	LABORATORY	FIELD	RELOAD
	1.20 Max.		0.040

OVERBURDEN PRESS.	0.25	T.S.F.	PRE-CONSOLIDATION PRESS.	0.85	T.S.F.
-------------------	------	--------	--------------------------	------	--------

NATURAL WATER CONTENT	95.2	%	INITIAL VOID RATIO	2.73
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K.H. KING ASSOCIATES LIMITED

CONSOLIDATION TEST RESULTS**PLOT OF COMPRESSION VS. LOG PRESSURE**BOREHOLE N^o. 130 SAMPLE N^o. 11 DEPTH 26.0'

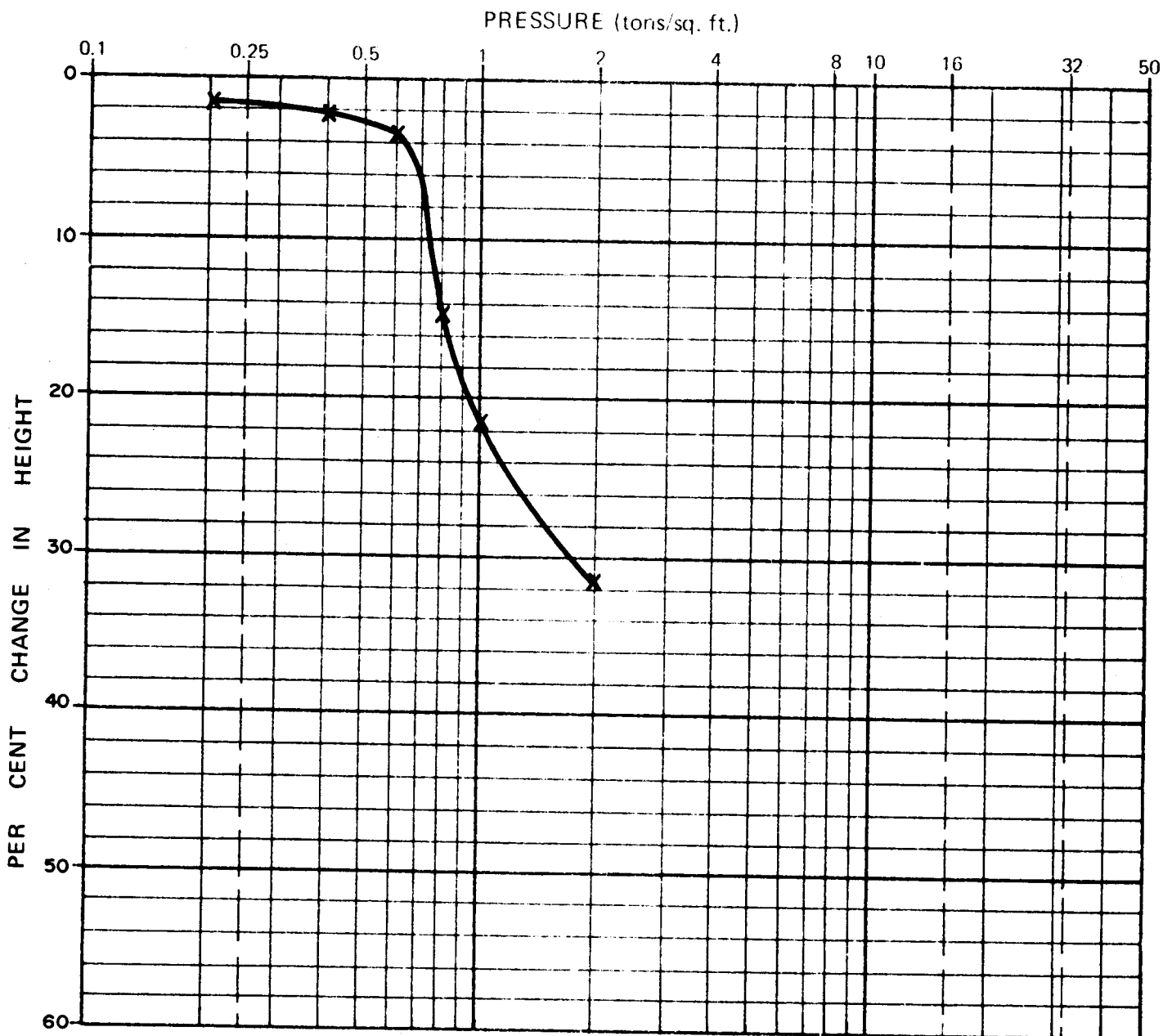
C_v (ft. ² /day)								
-------------------------------	--	--	--	--	--	--	--	--

$\frac{C_c}{1 + e_0}$	LABORATORY	FIELD	RELOAD
	0.58 Max.		0.053

OVERBURDEN PRESS.	0.60	T.S.F.	PRE-CONSOLIDATION PRESS.	1.45	T.S.F.
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NATURAL WATER CONTENT	66.4	%	INITIAL VOID RATIO	1.99
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K.H. KING ASSOCIATES LIMITED

CONSOLIDATION TEST RESULTS**PLOT OF COMPRESSION VS. LOG PRESSURE**BOREHOLE No. 134 SAMPLE No. 5 DEPTH 11.0' C_v (ft.²/day)

C_c	LABORATORY	FIELD	RELOAD
$1 + e_0$	1.20 Max.		0.026

OVERBURDEN PRESS. 0.25

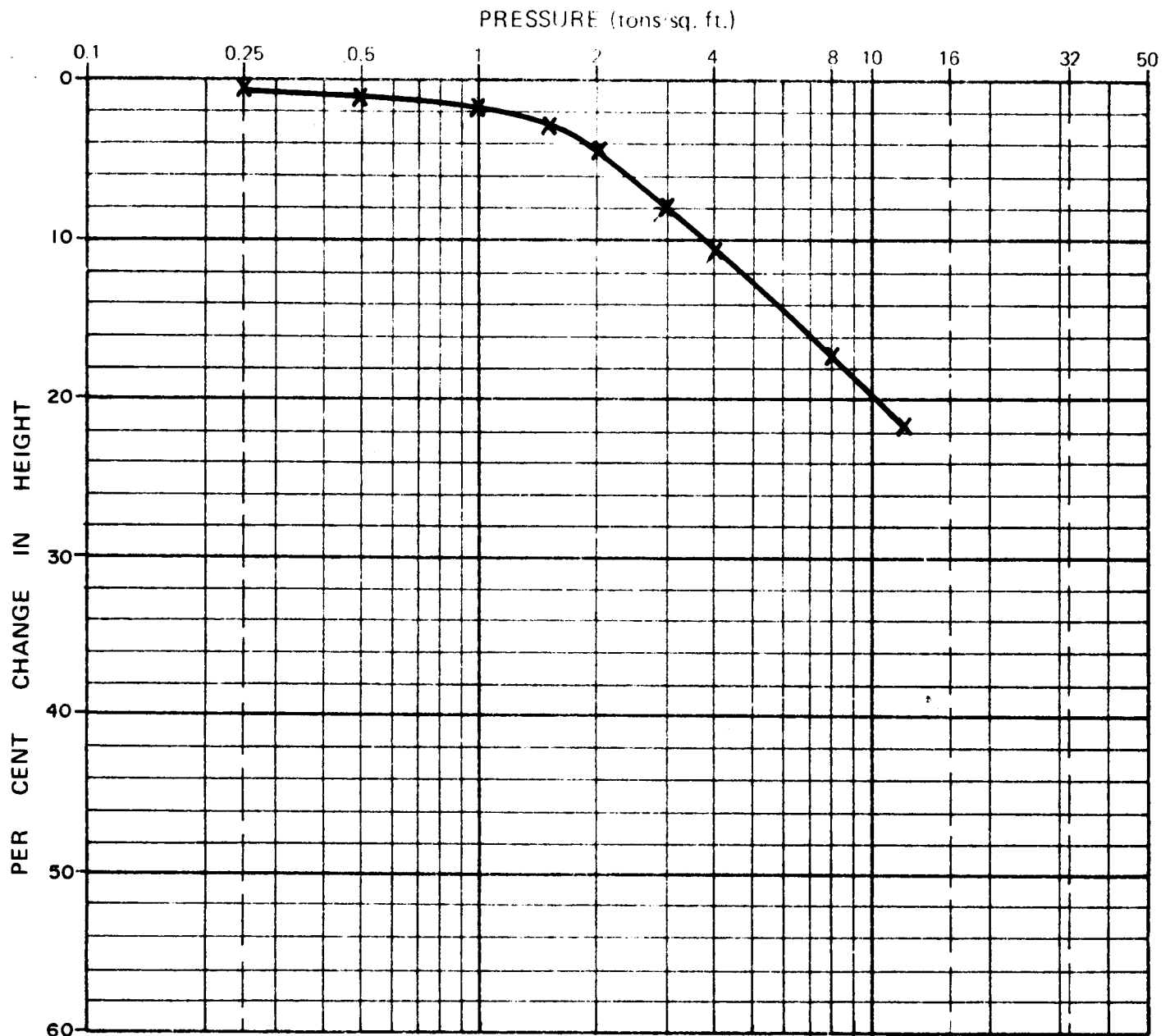
T.S.F.

PRE-CONSOLIDATION PRESS. 0.68 T.S.F.

NATURAL WATER CONTENT 101.5 %

INITIAL VOID RATIO 2.87

K.H. KING ASSOCIATES LIMITED

CONSOLIDATION TEST RESULTS**PLOT OF COMPRESSION VS. LOG PRESSURE**BOREHOLE N^o. 145 SAMPLE N^o. 3 DEPTH 5.5'

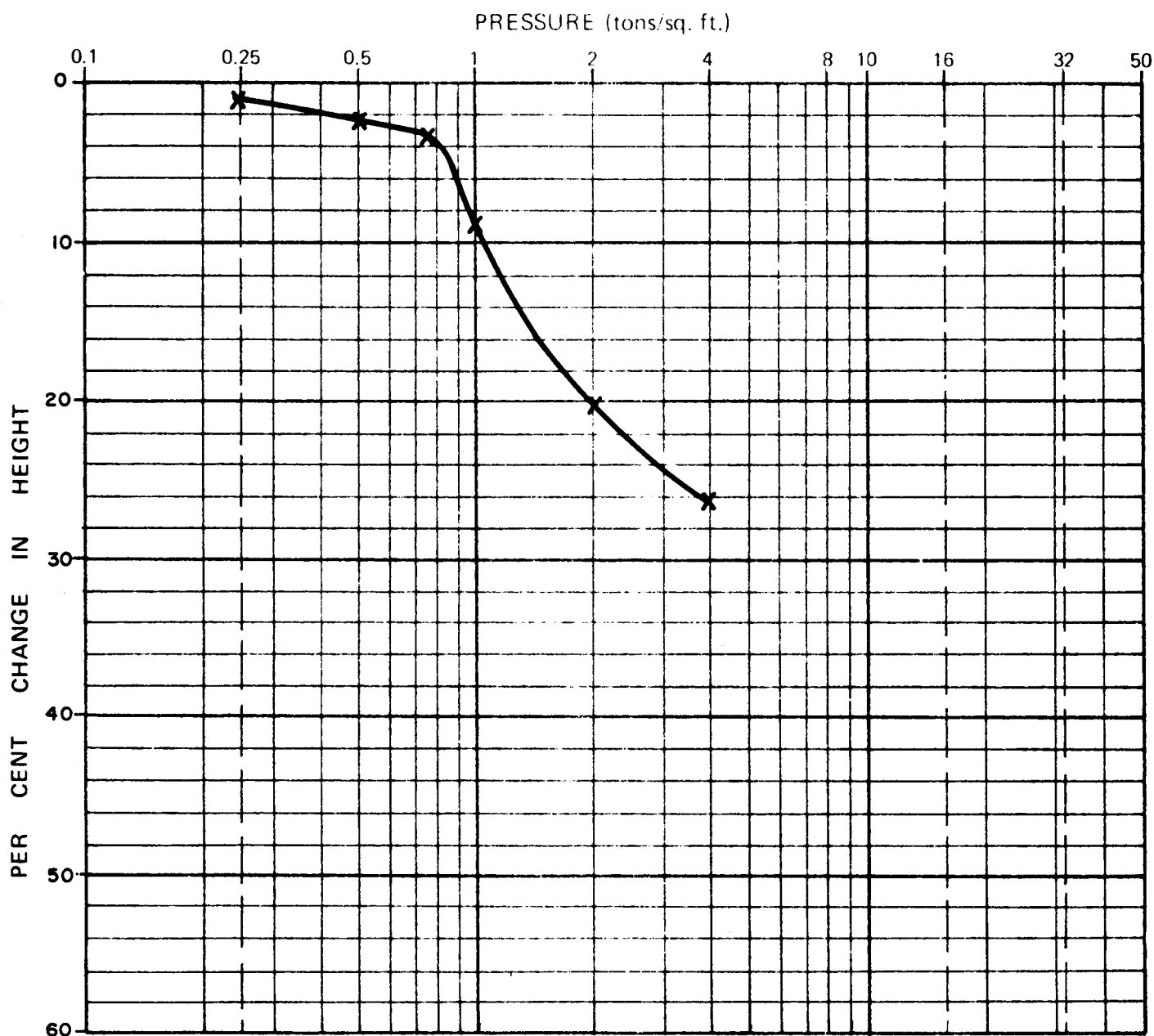
C_v (ft. ² /day)								
-------------------------------	--	--	--	--	--	--	--	--

$\frac{C_c}{1 + e_0}$	LABORATORY	FIELD	RELOAD
	0.24		0.02

OVERBURDEN PRESS. 0.17	T.S.F.	PRE-CONSOLIDATION PRESS. 1.80	T.S.F.
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NATURAL WATER CONTENT	49.4 %	INITIAL VOID RATIO	1.50
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K.H. KING ASSOCIATES LIMITED

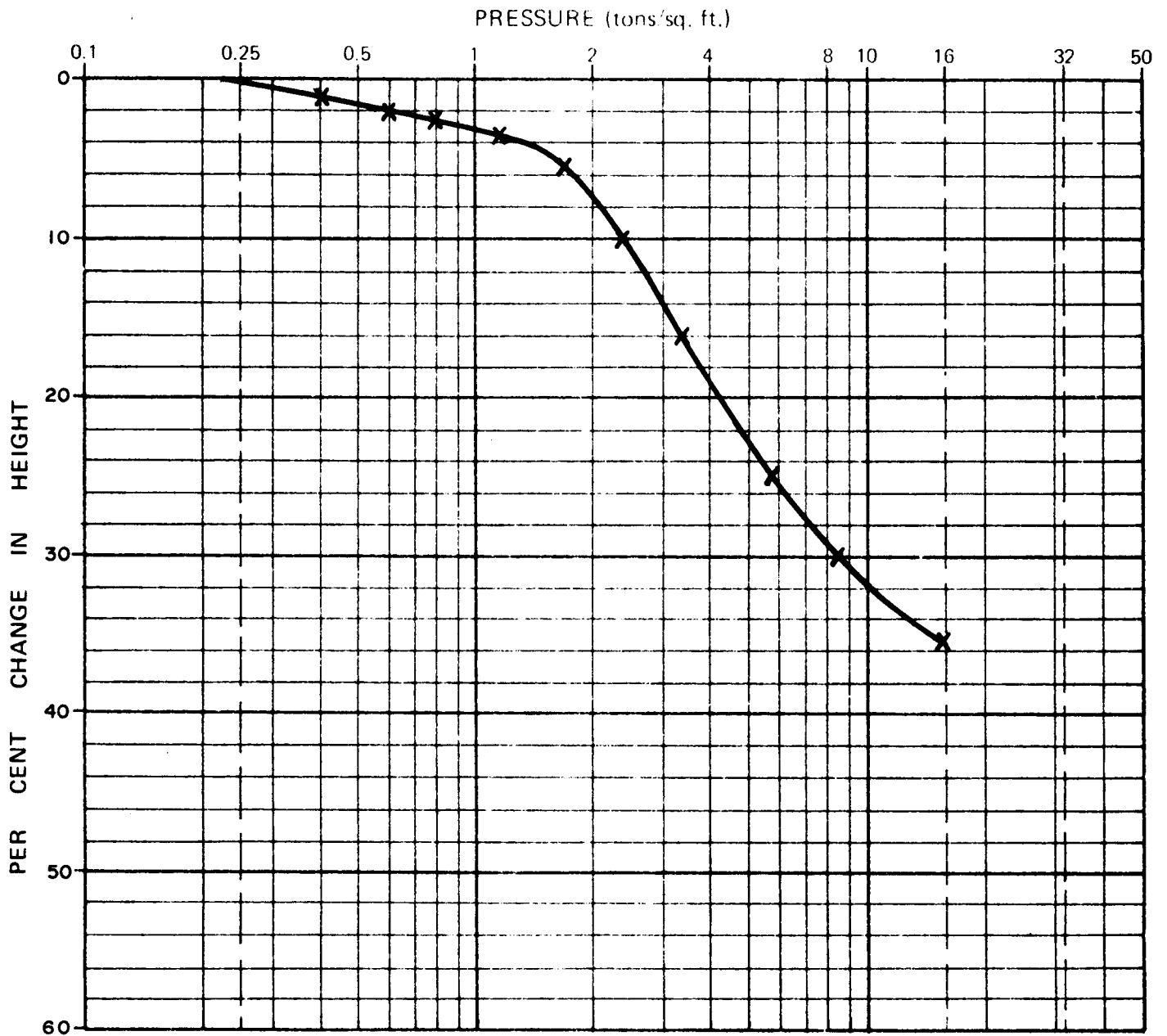
CONSOLIDATION TEST RESULTS**PLOT OF COMPRESSION VS. LOG PRESSURE**BOREHOLE No. 145 SAMPLE No. 11 DEPTH 26'

C_v (ft. ² /day)							
-------------------------------	--	--	--	--	--	--	--

$\frac{C_c}{1 + e_0}$	LABORATORY	FIELD	RELOAD
	0.60 Max.		0.04

OVERBURDEN PRESS. 0.60 T.S.F.	PRE-CONSOLIDATION PRESS. 0.85 T.S.F.
-------------------------------	--------------------------------------

NATURAL WATER CONTENT 61.5 %	INITIAL VOID RATIO 1.89
------------------------------	-------------------------

CONSOLIDATION TEST RESULTS**PLOT OF COMPRESSION VS. LOG PRESSURE**BOREHOLE No. 148 SAMPLE No. 3 DEPTH 6'

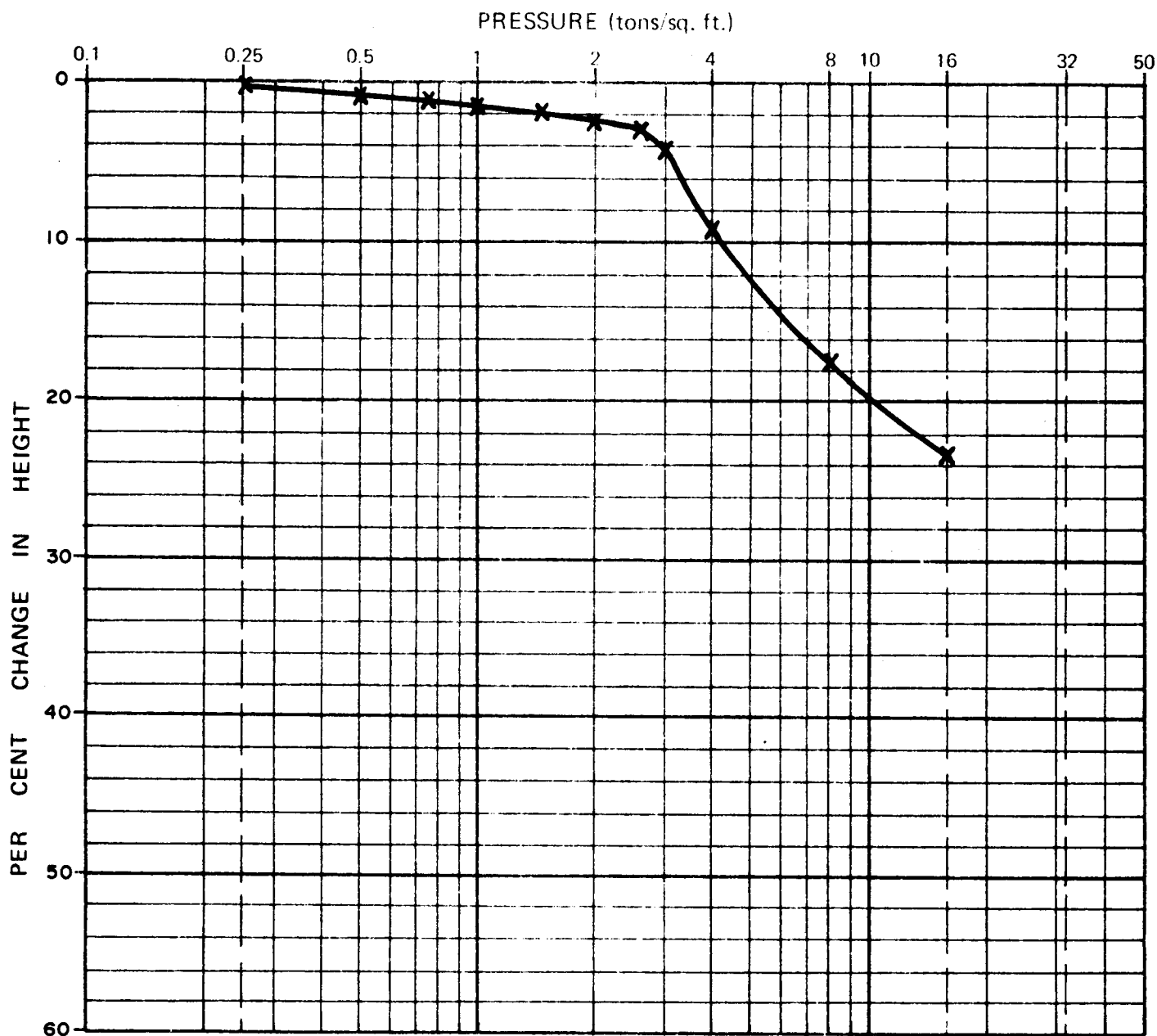
C_v (ft. ² /day)								
-------------------------------	--	--	--	--	--	--	--	--

$\frac{C_c}{1 + e_0}$	LABORATORY	FIELD	RELOAD
	0.53 Max.		0.04

OVERBURDEN PRESS.	0.17	T.S.F.	PRE-CONSOLIDATION PRESS.	1.60	T.S.F.
-------------------	------	--------	--------------------------	------	--------

NATURAL WATER CONTENT	48.5	%	INITIAL VOID RATIO	2.24
-----------------------	------	---	--------------------	------

K.H. KING ASSOCIATES LIMITED

CONSOLIDATION TEST RESULTS**PLOT OF COMPRESSION VS. LOG PRESSURE**BOREHOLE No. 150 SAMPLE No. 5 DEPTH 11.0'

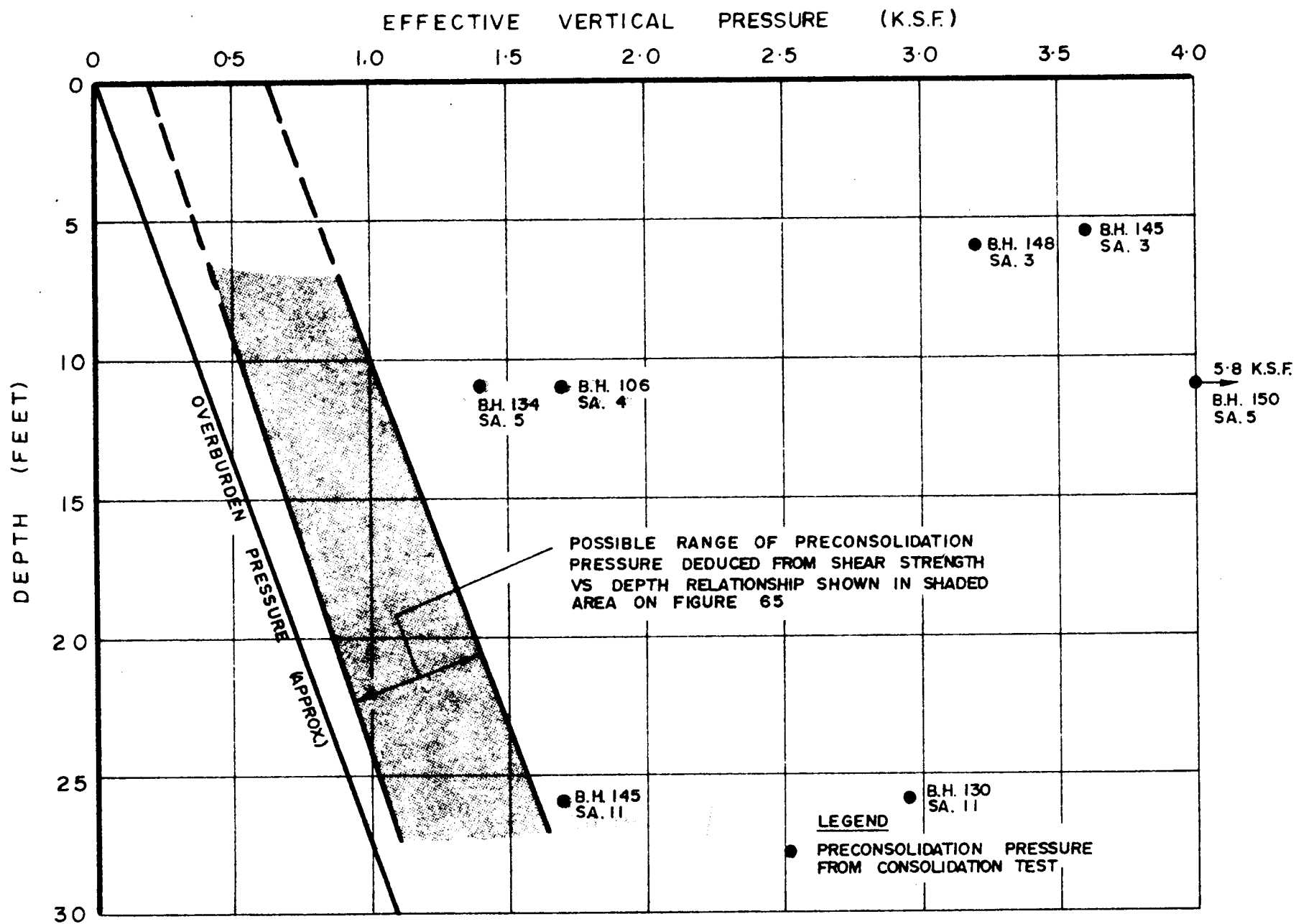
C_v (ft. ² /day)							
-------------------------------	--	--	--	--	--	--	--

C_c	LABORATORY	FIELD	RELOAD
$1 + e_0$	0.37 Max.		0.022

OVERBURDEN PRESS.	0.25 T.S.F.	PRE-CONSOLIDATION PRESS.	2.90 T.S.F.
-------------------	-------------	--------------------------	-------------

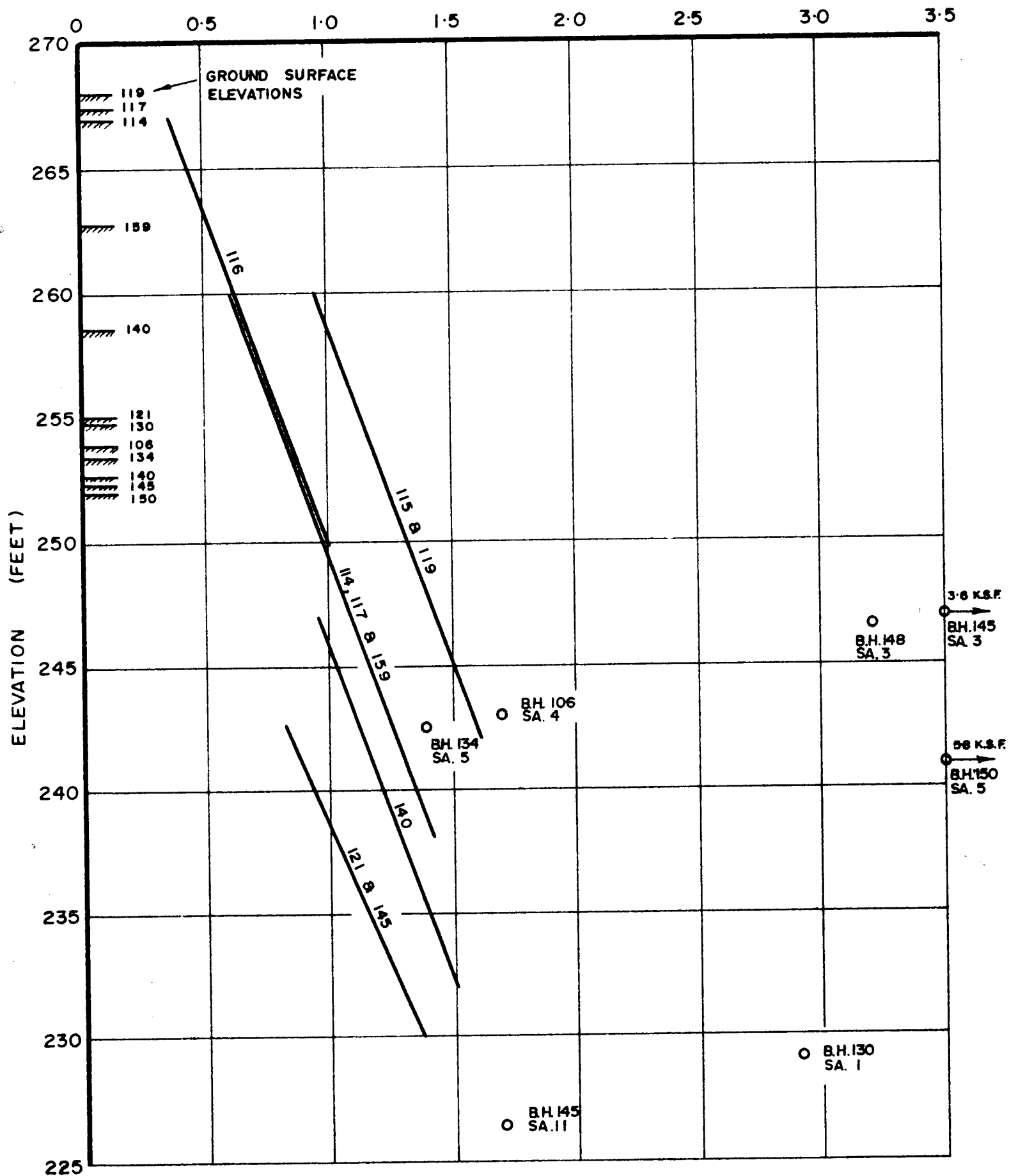
NATURAL WATER CONTENT	42.0 %	INITIAL VOID RATIO	1.28
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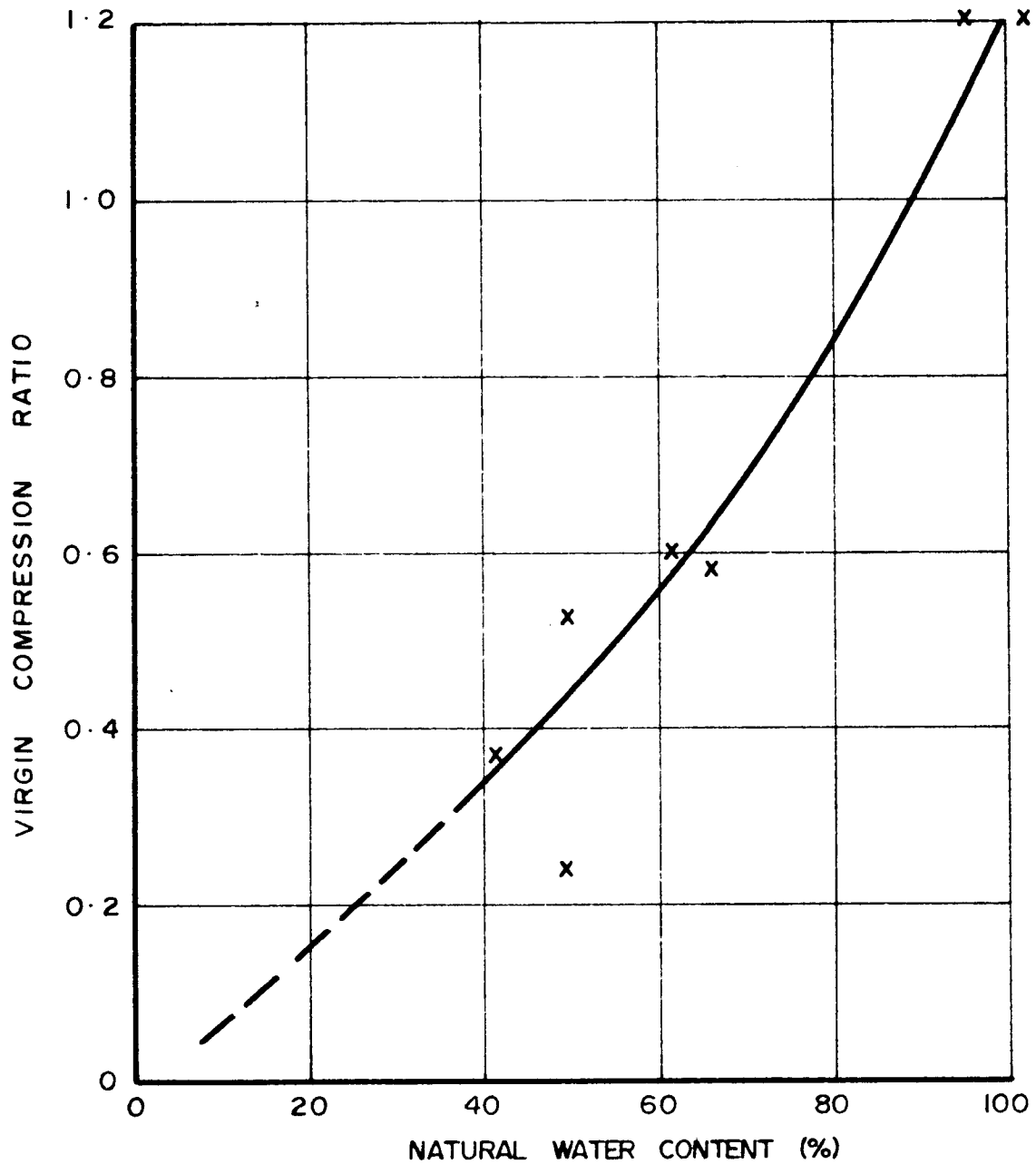
K.H. KING ASSOCIATES LIMITED

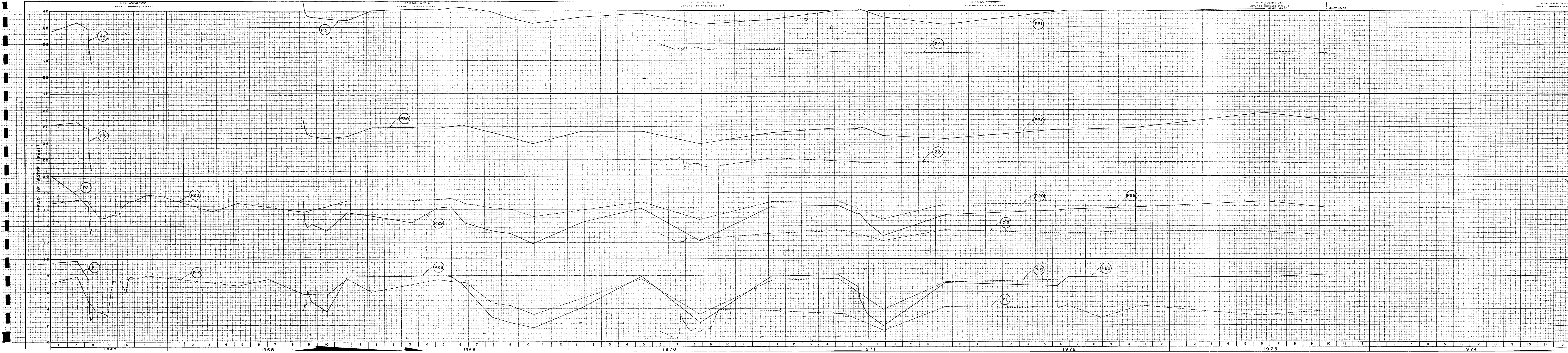


PRECONSOLIDATION PRESSURE VS. DEPTH

EFFECTIVE VERTICAL PRESSURE (K.S.F.)



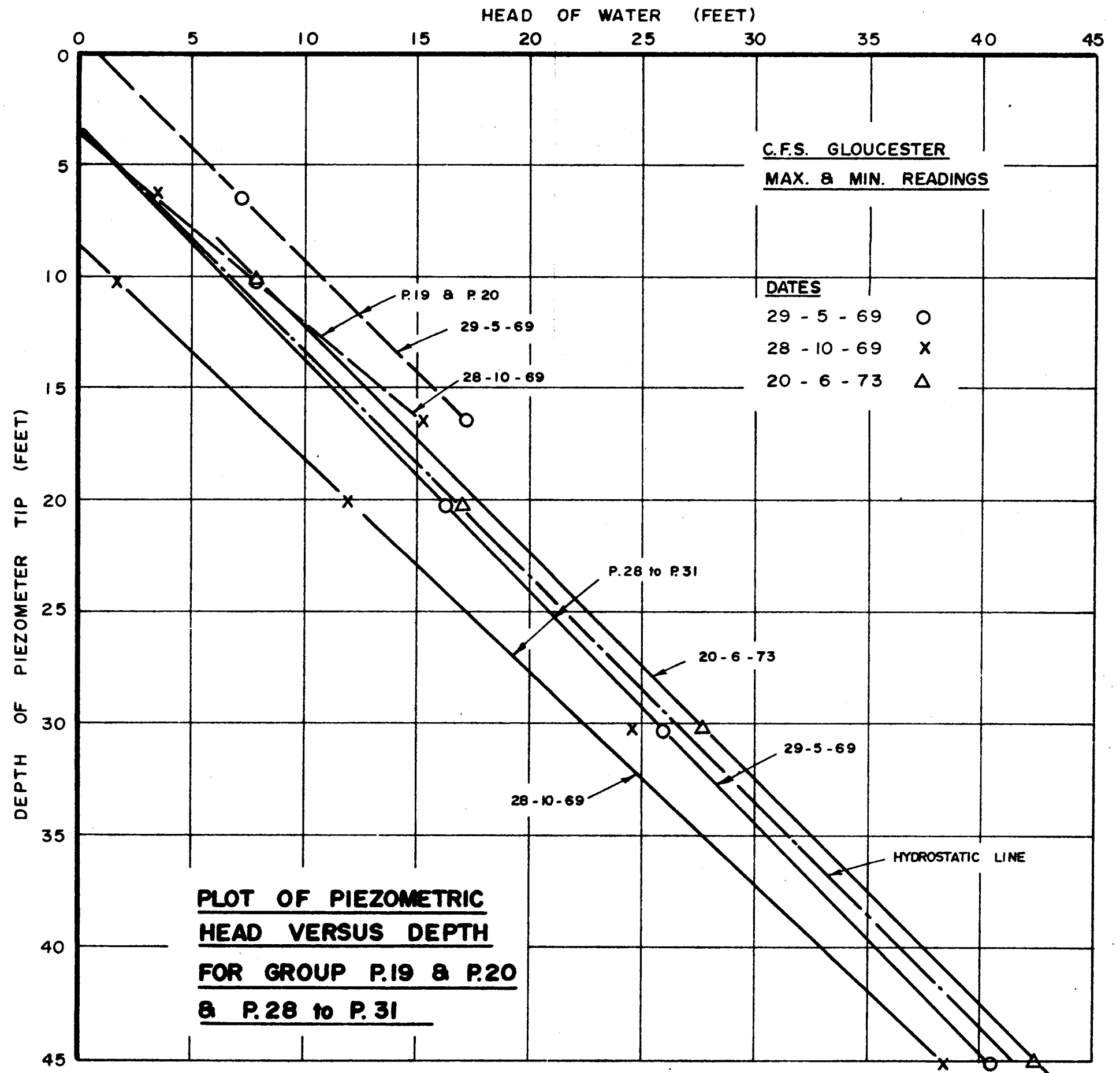
CONSOLIDATION TEST RESULTS

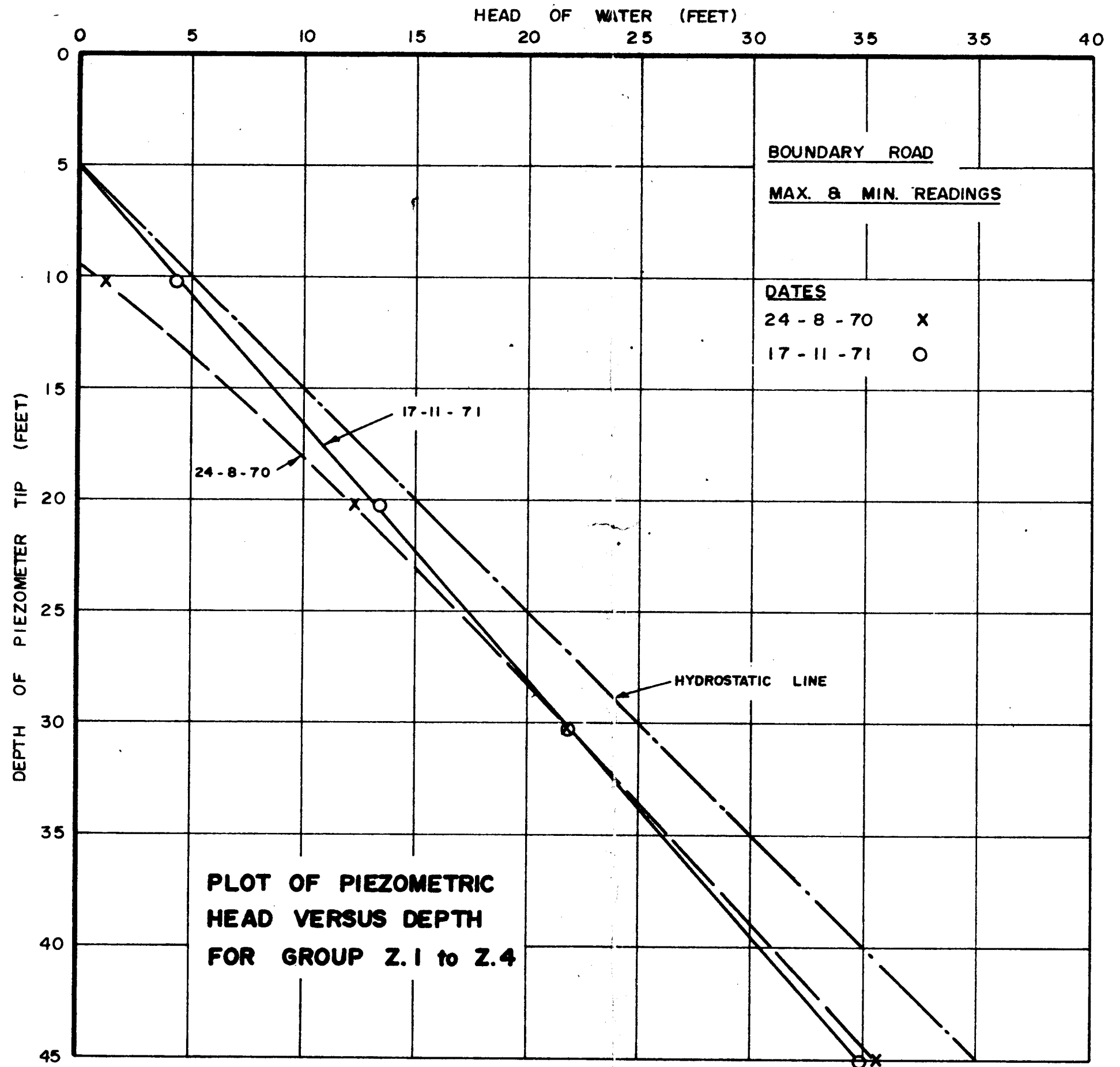


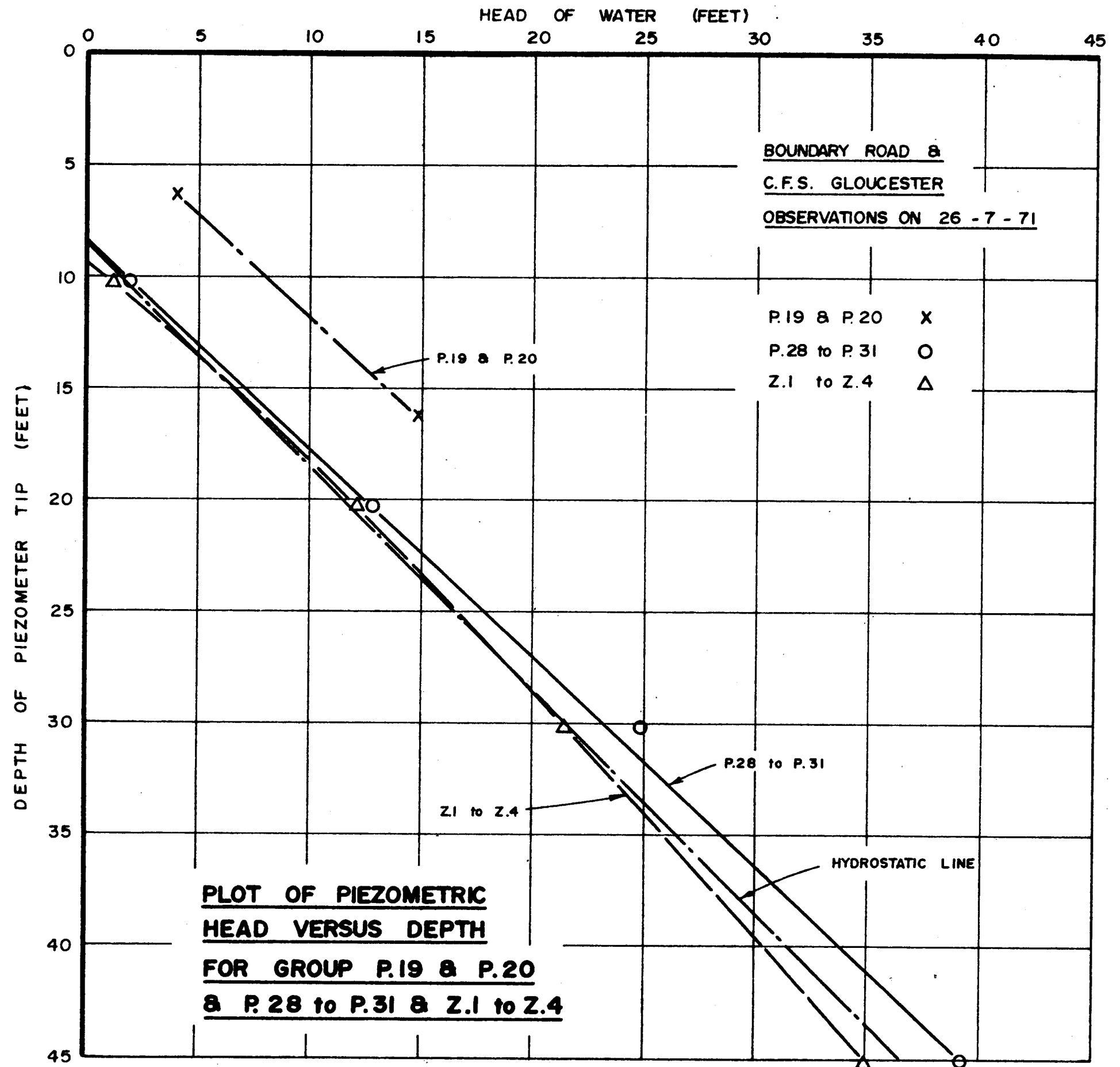
PIEZOMETER INSTALLATION DETAILS			
PIEZOMETER NO.	DEPTH OF TIE	DATE INSTALLED	LOCATION
P-1	10.8'	25.8.66	C.F.S. Gloucester
P-2	18.8'	24.8.66	" "
P-3	28.7'	24.8.66	" "
P-4	46.9'	24.8.66	" "
P-19	6.4'	1.9.66	" "
P-20	16.5'	1.9.66	" "
P-28	10.17'	4.9.68	" "
P-29	20.17'	4.9.68	" "
P-30	30.17'	4.9.68	" "
P-31	45.17'	4.9.68	" "
Z-1	10.17'	8.6.70	Boundary Road N.E. Carleton Springs
Z-2	20.17'	8.6.70	" "
Z-3	30.17'	8.6.70	" "
Z-4	45.17'	8.6.70	" "

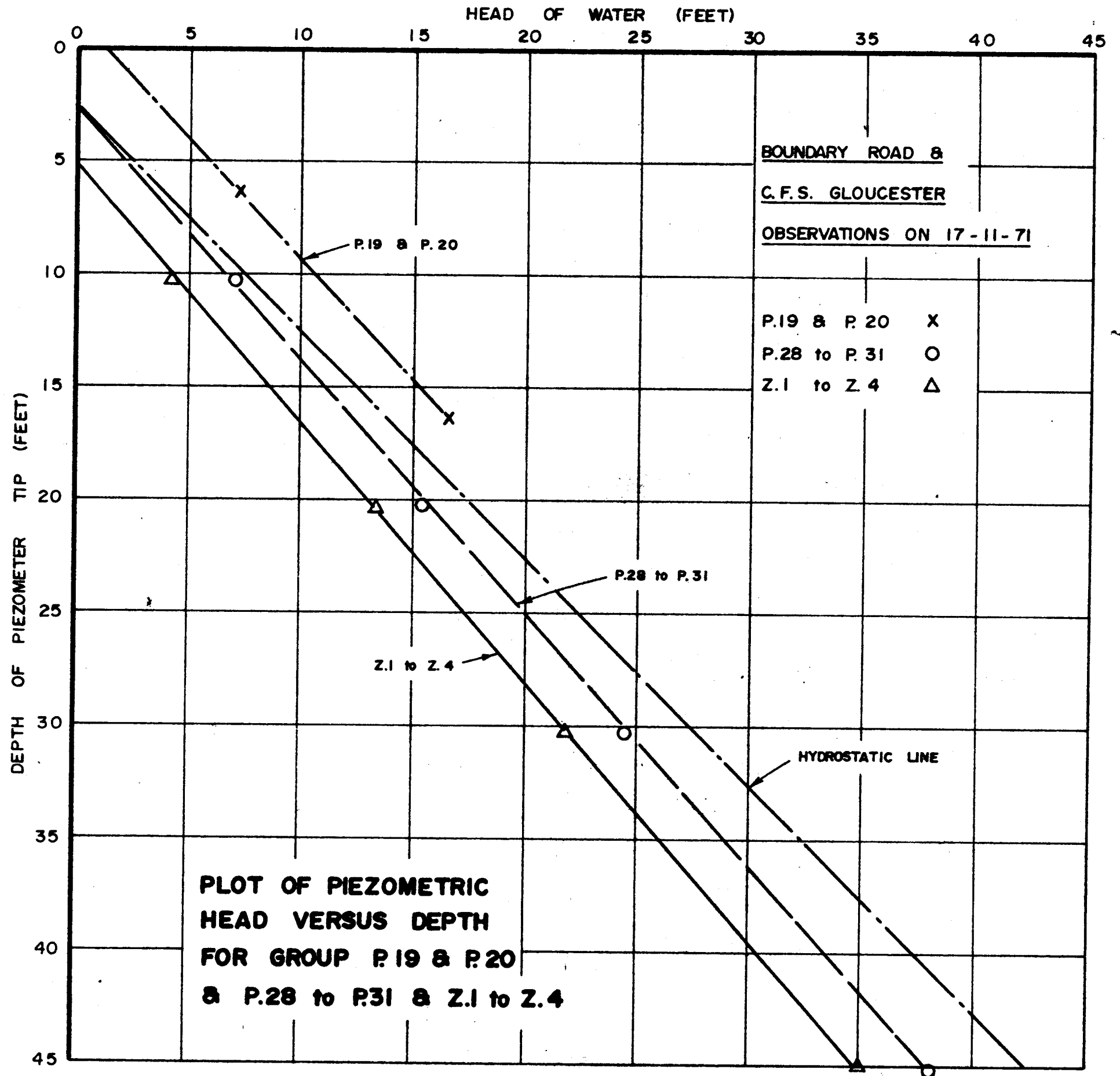
- NOTES:-
- OBSERVATIONS ON PIEZOMETERS P-1, P-2, P-3 & P-4 WERE INFLUENCED BY FILLING AFTER 14-8-67 AND HAVE NOT BEEN RECORDED.
 - SINCE THE PURPOSE OF THESE PIEZOMETERS WAS TO SERVE AS A REFERENCE FOR THE MEASUREMENT OF PORE-PRESSURES UNDER FIELD THE OBSERVATIONS HAVE BEEN MADE AT IRREGULAR AND GENERALLY LARGE INTERVALS OF TIME. THIS MOST OF THE NATURAL FLUCTUATIONS OF GROUNDWATER PRESSURE ARE NOT RECORDED AND, FOR THE SAME REASON, THE MAXIMUM AND MINIMUM VALUES HAVE NOT NECESSARILY BEEN OBSERVED.
 - ALL INSTALLATIONS & OBSERVATIONS BY THE DIVISION OF BUILDING RESEARCH OF THE NATIONAL RESEARCH COUNCIL OF CANADA.

K. H. KING ASSOCIATES LIMITED			
PROPOSED DEVELOPMENT SITE			
IN GLOUCESTER TOWNSHIP - CARLETON COUNTY			
ONTARIO HOUSING CORPORATION			
PIEZOMETER OBSERVATIONS			
DRAWN BY	DATE	APPROVED BY	SCALE
D.A.M.	JAN 1973	AS SHOWN	209 - 5.16









APPENDIX CCO-ORDINATES OF BOREHOLES ON U.T.M. GRIDAND GROUND SURFACE ELEVATIONS

<u>BOREHOLE NO.</u>	<u>EASTING</u>	<u>NORTHING</u>	<u>ELEVATION</u>
1	462 590	5020 750	
2	462 440	5021 690	
3	461 990	5022 590	
4	462 000	5022 000	
5	461 580	5022 370	
6	461 000	5021 970	
7	461 710	5021 150	
8	461 860	5020 390	
9	460 860	5019 830	
10	460 590	5020 720	
11	460 380	5020 600	
12	460 950	5020 880	
13	459 720	5021 440	
14	459 060	5022 740	
15	459 500	5022 530	
16	460 170	5022 700	
17	460 520	5021 840	
18	460 300	5020 900	
19	459 320	5022 000	
20	460 000	5020 450	

APPENDIX CCO-ORDINATES OF BOREHOLES ON U.T.M. GRIDAND GROUND SURFACE ELEVATIONS

<u>BOREHOLE NO.</u>	<u>EASTING</u>	<u>NORTHING</u>	<u>ELEVATION</u>
21	459 850	5021 260	
22	460 850	5020 430	
23	461 290	5020 080	
24	461 600	5021 000	
25	460 250	5021 510	
26	459 960	5021 530	
27	460 450	5022 370	
28	461 150	5020 820	
29	461 900	5022 190	
30	459 870	5020 720	
31	462 610	5021 200	
32	457 700	5023 060	
35	457 270	5022 370	
36	456 350	5022 000	
44	457 920	5023 400	
45	458 870	5023 260	
100	465 650	5020.000	251.8
101	464 960	5019 575	253.1
102	464 450	5019 275	252.8
103	464 060	5019 075	253.5
104	463 250	5018 640	255.4
105	462 570	5018 225	252.5
106	462 080	5018 150	253.9

APPENDIX CCO-ORDINATES OF BOREHOLES ON U.T.M. GRIDAND GROUND SURFACE ELEVATIONS

<u>BOREHOLE NO.</u>	<u>EASTING</u>	<u>NORTHING</u>	<u>ELEVATION</u>
107	461 850	5018 770	256.4
108	461 630	5019 440	259.1
109	460 275	5019 450	264.0
110	459 680	5019 110	264.4
111	459 370	5020 000	265.3
112	459 200	5020 490	266.9
113	458 930	5020 980	263.1
114	458 340	5020 640	266.9
115	457 760	5020 320	270.7
116	457 170	5019 990	273.3
117	456 840	5020 840	267.4
118	456 600	5021 450	270.6
119	456 440	5021 890	268.0
120	456 820	5022 110	267.1
121	457 780	5022 650	255.0
122	458 560	5023 030	259.6
123	459 260	5023 420	262.4
124	460 160	5023 310	262.3

APPENDIX CCO-ORDINATES OF BOREHOLES ON U.T.M. GRIDAND GROUND SURFACE ELEVATIONS

<u>BOREHOLE NO.</u>	<u>EASTING</u>	<u>NORTHING</u>	<u>ELEVATION</u>
125	460 690	5023 210	263.1
126	460 290	5023 100	259.6
127	462 620	5022 750	260.4
128	463 120	5022 360	256.4
129	463 640	5021 950	251.5
130	464 490	5021 670	254.8
131	464 790	5021 300	250.0
132	465 380	5020 700	
133	463 670	5019 660	
134	463 380	5020 500	253.4
135	463 210	5021 000	255.1
136	463 780	5021 300	247.5
137	463 000	5021 590	250.9
138	462 760	5022 260	255.5
139	458 560	5021 620	261.9
140	458 210	5022 610	258.6
141	457 130	5021 640	265.5
141A	456 856	5021 580	268.1
142	460 680	5022 500	
143	459 790	5023 100	

APPENDIX CCO-ORDINATES OF BOREHOLES ON U.T.M. GRIDAND GROUND SURFACE ELEVATIONS

<u>BOREHOLE NO.</u>	<u>EASTING</u>	<u>NORTHING</u>	<u>ELEVATION</u>
144	461 380	5022 840	
145	465 170	5020 250	252.4
146	465 000	5020 580	254.6
147	464 740	5020 320	253.3
148	464 430	5019 950	252.6
149	464 180	5019 490	
150	463 840	5020 740	252.0
151	465 250	5020 020	252.6
152	464 850	5019 870	253.7
153	465 480	5019 870	252.8
154	465 240	5019 750	253.8
155	464 770	5020 120	252.8
156	464 850	5019 690	252.8
157	464 690	5019 440	253.9
158	464 650	5019 580	252.8
159	458 770	5021 290	262.8
160	464 710	5020 640	



K. H. KING ASSOCIATES LIMITED

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REFERENCE NO. 312-S.2

DE LEUW CATHER, CANADA LTD.

REPORT VOLUME 2 OF

GEOTECHNICAL INVESTIGATIONS

SOUTH EAST CITY

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON

DISTRIBUTION:

- 8 copies - De Leuw Cather, Canada Ltd.
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- 2 copies - H.Q. Golder & Associates Limited
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- 2 copies - K.H. King Associates Limited
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PREFACE

H. Q. Golder & Associates Ltd. and K. H. King and Associates Ltd. have been retained by DeLeuw Cather, Canada Ltd., Consulting Engineers to the Ontario Housing Corporation, to jointly carry out a geotechnical investigation at the site of a proposed new community which is being planned for a portion of the Township of Gloucester in the south-east section of the Regional Municipality of Ottawa-Carleton. Previous limited investigations had indicated that subsurface conditions would influence the planning for the new community. The purpose of this investigation was to obtain more detailed information on the subsurface conditions. On the basis of the additional information together with previous published and unpublished data relevant to the proposed site, engineering recommendations are made regarding the geotechnical factors which influence the planning of the proposed development.

The geotechnical work incorporated a variety of shallow and deep boreholes, geophysical tests, trial excavations as well as extensive laboratory testing./ For convenience the information has been prepared in the following reports:

- Vol. 1 Subsurface Investigations carried out by
 K. H. King and Associates Ltd. (Report 312-S2-Vol.1).
- Vol. 2 Geotechnical Mapping prepared by K. H. King
 and Associates Ltd. (Report 312-S2-Vol. 2)
- Vol. 3 Subsurface Investigations carried out by
 H. Q. Golder & Associates Ltd. (Report 73908-1)
- Vol. 4 Engineering Recommendations prepared by
 H. Q. Golder & Associates Ltd. (Report 73908-2)

Volumes 1 and 3 contain the factual information which was obtained during the field investigations and associated laboratory testing. This information has been incorporated with earlier information in the preparation of the remaining two reports.

GEOTECHNICAL MAPPING

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2.1 Surficial Geology	3
2.2 Clay Crust/Surficial Sand Strata	4
2.3 Depth to Till or Bedrock	5

DRAWINGS

Drawing No. 312-S.2-2	Surficial Geology
Drawing No. 312-S.2-3	Thickness of Clay/Sand Crust
Drawing No. 312-S.2-4	Till/Bedrock Contours
Drawing No. 312-S.2-5	Inferred Surface of Bedrock on Section A-A

1. INTRODUCTION

As their contribution to the geotechnical investigation for South-East Ottawa City K.H. King Associates Limited have conducted subsoil investigations designed to give broad overall coverage of the project area. A preliminary investigation in a limited area performed in September and October, 1972 (K.H. King Associates Limited Report Reference No. 209-S.15) had revealed that the following aspects of the subsurface conditions would be of prime importance in the planning of the development:

- a) The presence of a surficial sand stratum or of a crust on the Leda Clay known to underlie the site.
- b) The depth to a hard bearing stratum of glacial till or bedrock suitable to support pile or caisson foundations.

The specific objectives of the present phase of the investigation were therefore to map the surficial soil strata and the underlying till bedrock. This has been done in sufficient detail at this stage to determine if any trends are evident which can guide the overall planning from the point of view of foundation conditions. Because the work was performed at widely-spaced locations the results should be considered to be indicative only and caution should be exercised in interpolating between borehole locations.

To secure the necessary information the following investigation work was performed. The upper 28 foot zone of the soil was explored by means of boreholes. The probable depths to till or bedrock were determined mainly by geophysical methods using a seismograph. Generally the coverage given was at approximately 2,000 foot intervals around the perimeter of the site to extend the previous information. In some areas, particularly in the

south-east corner, where more favourable subsurface conditions were encountered additional intermediate boreholes and seismic determinations were made. In addition to all of the field work information on the conditions in and adjacent to the project area was obtained from other agencies such as the geological Survey of Canada; The National Research Council; The Ministry of Transportation and Communications of Ontario and the Ministry of the Environment of Ontario. This has been reviewed and incorporated herein in preparing the mapping.

Presentation of all of the data obtained is made in two volumes, namely:

Report No. 312-S.2 - Details of procedures employed and all factual data
Volume 1 in the form of borehole logs, laboratory test results
and descriptions of soil strata and groundwater conditions.

Report No. 312-S.2 - Review and interpretation of the data and its presentation
Volume 2 in the form of maps.

Our interpretation of the data as it affects the design and planning of the development is given in Volume 2.

2. INTERPRETATION OF RESULTS

The results of the shallow boreholes; cone tests and seismic surveying described in Volume 1 of this report are interpreted herein to provide an overall picture of the subsurface conditions underlying the project area. This interpretation is presented in the form of maps showing the salient features of the site relating to the geotechnical aspects of planning and design. These will be discussed fully with the presentation of engineering recommendations in Volume 4, Report 73908-2 by H.Q. Golder & Associates Limited. In the following paragraphs background information is presented to assist in the interpretation of the Geotechnical Mapping.

2.1 Surficial Geology

Drawing No. 312-S.2-2 enclosed is a plan of the project area showing the surficial geology. This is based on data, both published and unpublished, obtained from the Geological Survey of Canada supplemented by the borehole results and by an air-photo interpretation. This data has been reviewed from the point of view of foundation conditions and not of the geological origin of strata and thus two surficial soil deposits only are identified, namely sand and clay. For the present purpose it was considered that the presence of the sand stratum was of significance only where it had a thickness greater than 4 feet and the mapping was done on that basis.

In addition the upper layers of the subsoil consist frequently of inter-bedded layers of sand and clay and it is a matter of judgement as to which soil predominates. For these reasons there may be some divergence between the boundaries plotted on Drawing No. 312-S.2-2 contained herein and those which are depicted by the Geological Survey.

2.2 Clay Crust/Surficial Sand Strata

The geotechnical properties of the upper 28 feet explored in the present boreholes are relevant to the design and construction of shallow foundations and of services. For this purpose three main conditions may be recognized as follows:-

- a) Areas with a sand cover exceeding 4 feet in thickness.
- b) Areas in which there is a significant crust on the Leda Clay.
- c) Areas in which the soft Leda Clay is encountered at shallow depths and governs the design of normal footing foundations.

For the present purpose, which is to produce guidelines for planning on the basis of the most favourable foundation conditions, no differentiation has been made between (a) and (b) above; it being assumed that the sand and the clay crust are equally suitable bearing strata. This is not to say that design bearing values will be constant throughout since the relative density of the sand, and the shear strength of the clay crust, vary considerably from place to place. These variations would have to be taken into account in the detailed design of foundations for any particular structure.

In the areas of sand cover or clay crust the load-carrying capabilities of the ground are enhanced by the spreading effect of the stiffer soil which reduces the pressures transmitted to the underlying soft clay. This effect increases with increasing thickness of the surface stratum and therefore the site has been divided into zones of various thicknesses as shown on

Drawing No. 312-S.2-3. Those areas which are the most favourable from the point of view of foundation conditions are coloured green on the drawing; the least favourable areas are coloured red.

2.3 Depth to Till or Bedrock

It is evident that end-bearing pile or caisson foundations will have to be considered for some structures. Thus the depth to a suitable bearing stratum is of importance in planning. Based on the presently available data the inferred elevations of such strata are plotted on Drawing No. 312-S.2-3 enclosed. Drawing No. 312-S.2-4 is a profile of the till or bedrock along Section Line A-A.

The depths and elevations of the clay/till and till/bedrock boundaries are known accurately only at the locations of the five deep boreholes performed by Golder Associates. At all other locations the depths and elevations have been inferred from indirect evidence, such as cone penetration tests; seismic determinations and water-well records.

In addition to the inaccuracies inherent in these methods the ground surface elevations at many of these locations had to be obtained by interpolation from the 10 foot contours shown on the N.T.S. maps of the area. Thus the inferred contours must be considered as approximate and indicative of general trends only.

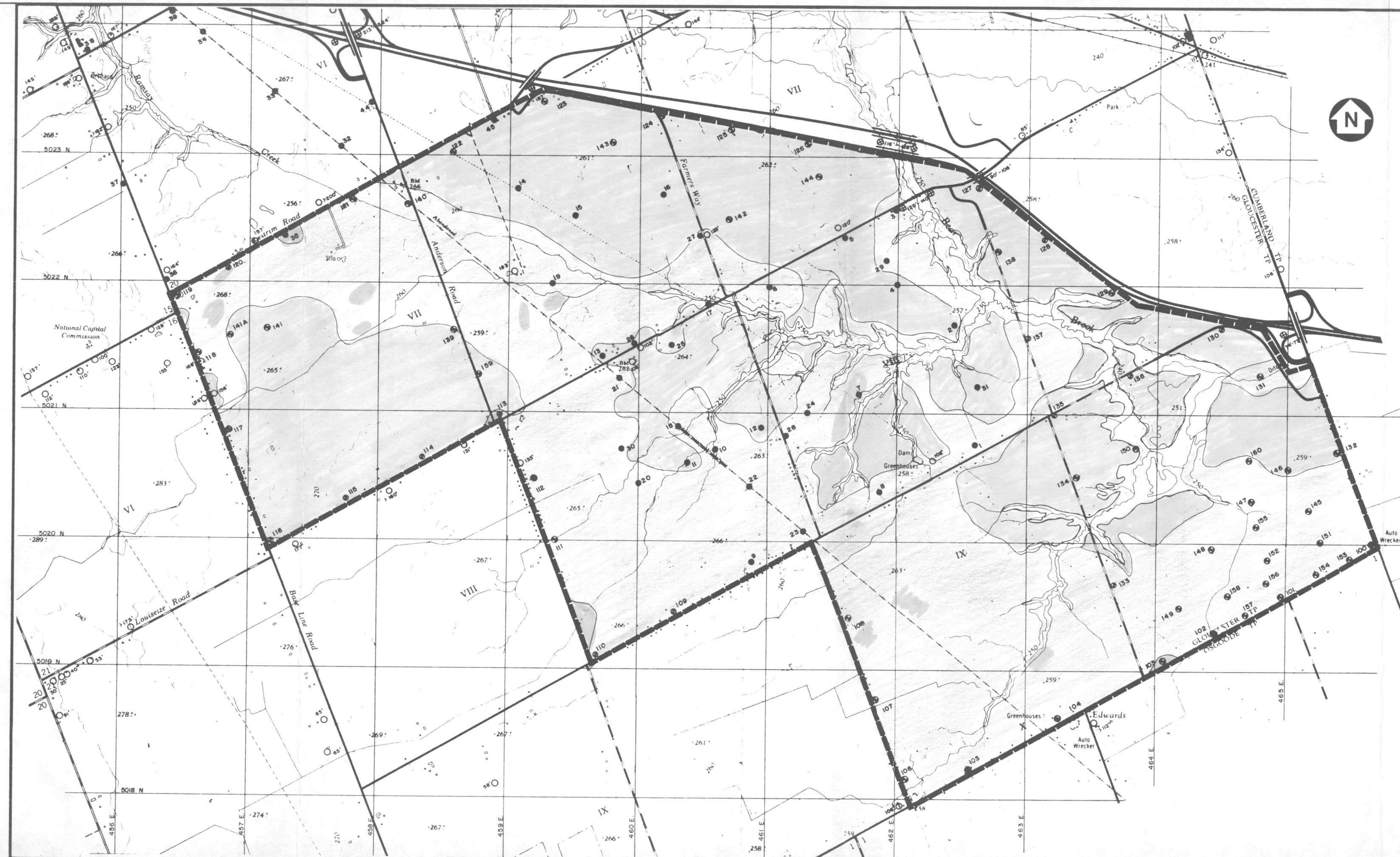
K.H. KING ASSOCIATES LIMITED



K.H. King, P.Eng.



KHK:sg



LEGEND

- BOREHOLES PERFORMED BY K.H. KING ASSOCIATES LIMITED IN PRELIMINARY INVESTIGATION IN 1972 (Ref. N° 209 - S.15)
- NEW SERIES OF BOREHOLES PERFORMED IN 1974 (Ref. N° 312 - S.2)

— — — APPROXIMATE OUTLINE OF PROJECT

NOTE: RE GRID REFERENCE

THE PLAN SHOWS THE ONE THOUSAND METRE U.T.M. GRID. THE LAST THREE FIGURES HAVE BEEN OMITTED FOR CLARITY.

- AREAS WITH 4 FEET OR MORE SAND CAP
- AREAS COVERED WITH CLAY OR LESS THAN 4 FEET OF SAND CAP

ONTARIO HOUSING CORPORATION

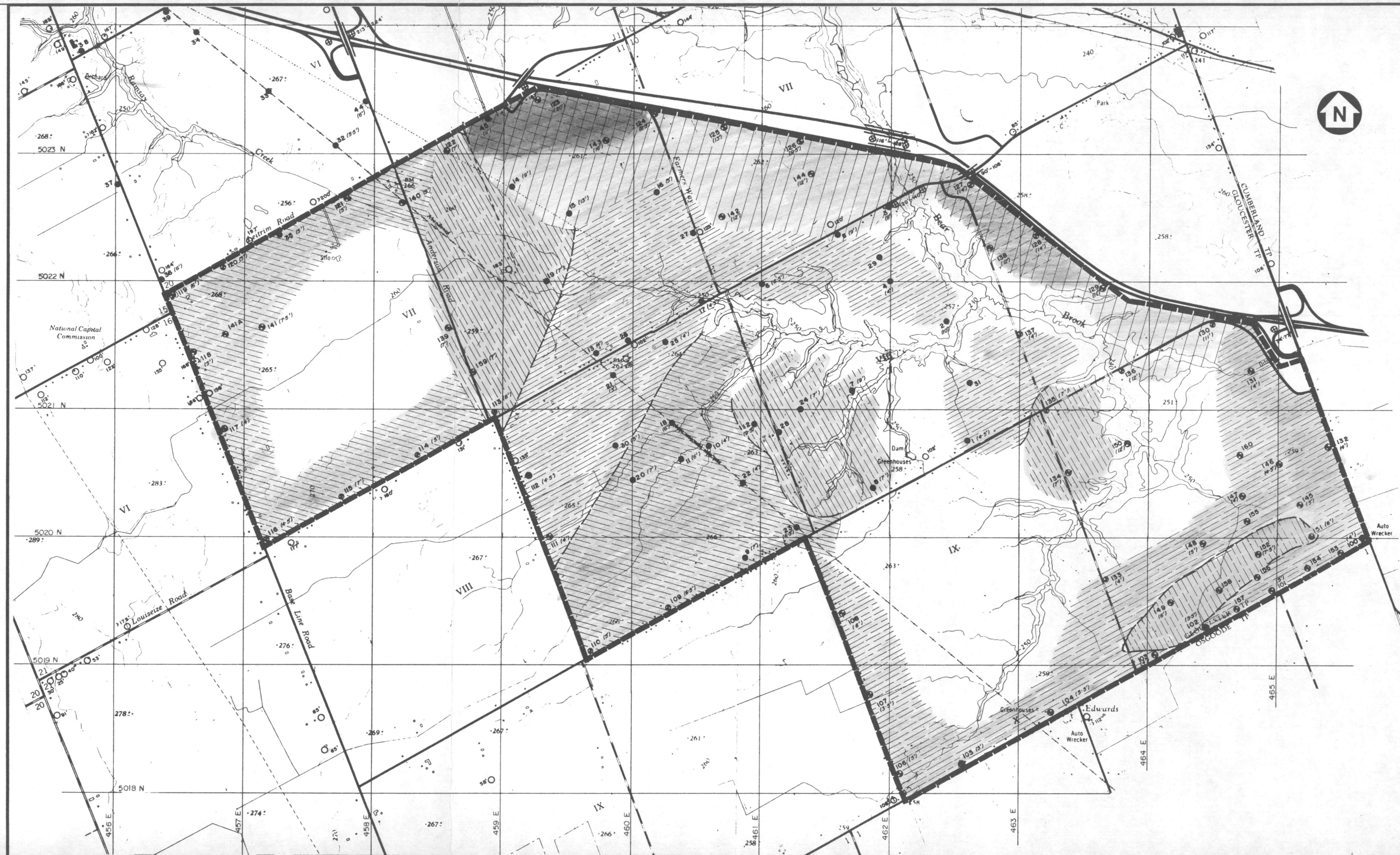
SOIL INVESTIGATION FOR
SOUTH EAST OTTAWA CITY

SURFICIAL GEOLOGY

K. H. KING ASSOCIATES LIMITED

DRAWN BY: *RAM* DATE: MAY, 1974 SCALE: 1:25,000

APPROVED: *Zakus* DRAWING N° 312 - S.2 - 2



LEGEND

- BOREHOLES PERFORMED BY K.H. KING ASSOCIATES LIMITED IN PRELIMINARY INVESTIGATION IN 1972 (Ref. N° 209 - S.15)
- NEW SERIES OF BOREHOLES PERFORMED IN 1974 (Ref. N° 312 - S.2)

— APPROXIMATE OUTLINE OF PROJECT

NOTE: RE GRID REFERENCE

THE PLAN SHOWS THE ONE THOUSAND METRE U.T.M. GRID. THE LAST THREE FIGURES HAVE BEEN OMITTED FOR CLARITY.

LEGEND FOR CRUST THICKNESSES

(4') INFERRED CRUST THICKNESS AT BOREHOLE LOCATION
ZONE DESIGNATIONS

- 4' TO 6'
- 4' TO 8'
- 6' TO 8'
- 8' TO 12'
- 12' TO 14'
- 12' TO 16'

NOTE: THE REGIONS SHOWN ON THIS DRAWING HAVE BEEN INTERPOLATED FROM DATA OBTAINED AT WIDELY SPACED LOCATIONS AND SHOULD THEREFORE BE REGARDED AS APPROXIMATE ONLY.

ONTARIO HOUSING CORPORATION

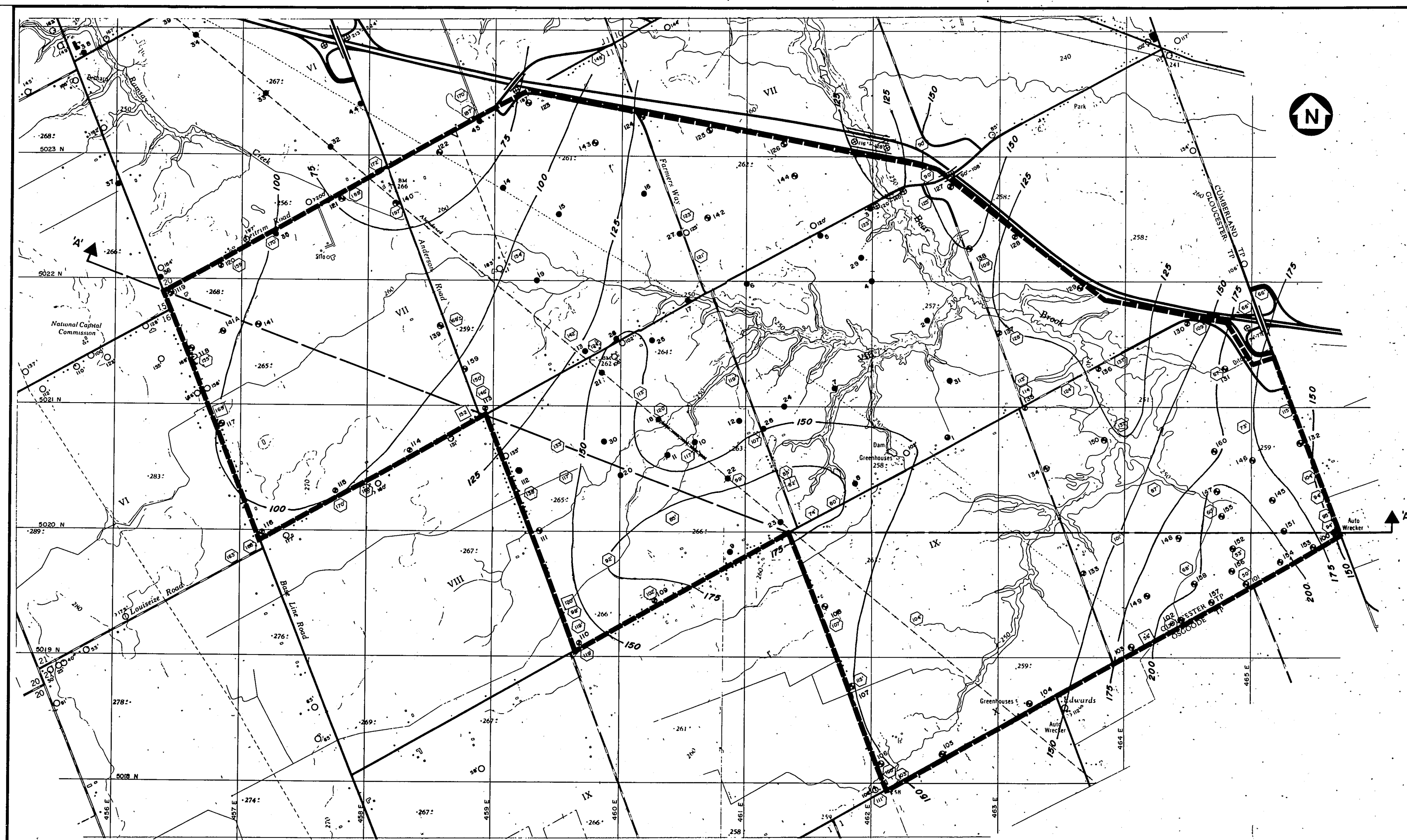
SOIL INVESTIGATION FOR
SOUTH EAST OTTAWA CITY

THICKNESS OF CLAY / SAND CRUST

K. H. KING ASSOCIATES LIMITED

DRAWN BY: *RAH* DATE: MAY, 1974 SCALE: 1:25,000

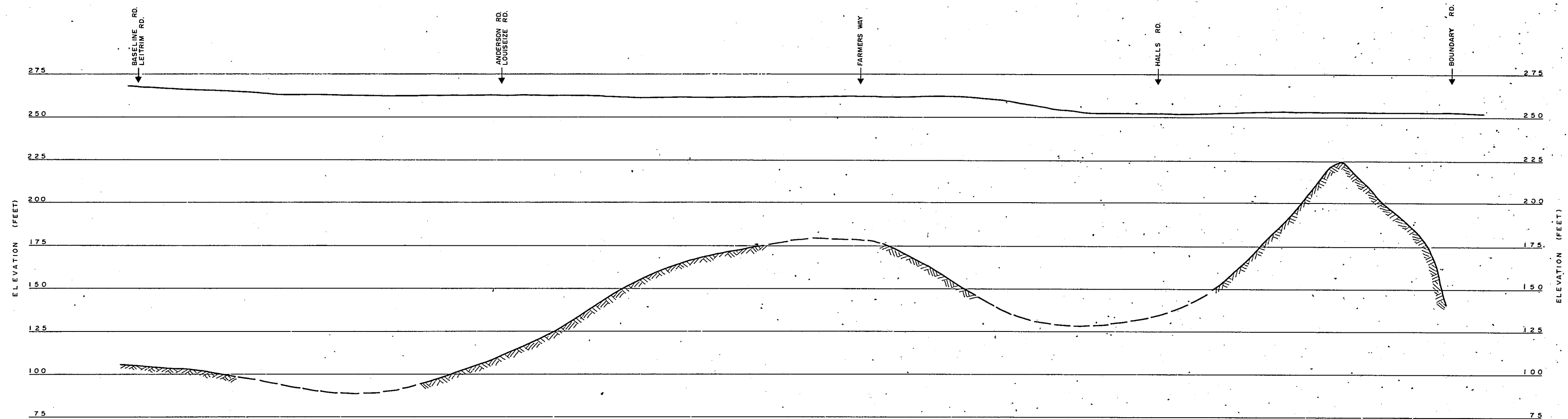
APPROVED: *John J. O'Brien* DRAWING N° 312 - S.2 - 3



- LEGEND**
- BOREHOLES PERFORMED BY K.H. KING ASSOCIATES LIMITED IN PRELIMINARY INVESTIGATION IN 1972 (Ref. N° 209 - S. 15)
 - NEW SERIES OF BOREHOLES PERFORMED IN 1974 (Ref. N° 312 - S. 2)
 - WATER WELL LOCATIONS SHOWING DEPTH TO BEDROCK
 - APPROXIMATE OUTLINE OF PROJECT
 - ⊕ M.T.C. RECORDS SHOWING DEPTH TO BEDROCK
 - NOTE: RE GRID REFERENCE
 - THE PLAN SHOWS THE ONE THOUSAND METRE U.T.M. GRID. THE LAST THREE FIGURES HAVE BEEN OMITTED FOR CLARITY.
 - 50' SEISMIC DATA DEPTH TO BEDROCK (FT.)
 - 7' DEEP BOREHOLE DATA DEPTH TO BEDROCK (FT.)
 - 175 INFERRED BEDROCK CONTOURS (ELEV.)

- NOTES:
1. THE CONTOURS SHOW THE GEODETIC ELEVATION OF THE BEDROCK SURFACE.
 2. THE CONTOURS HAVE BEEN INTERPOLATED FROM DATA OBTAINED AT WIDELY SPACED LOCATIONS AS SHOWN. THE CONTOURS ARE THEREFORE APPROXIMATE ONLY AND SIGNIFICANT VARIATIONS MAY EXIST IN CERTAIN LOCATIONS.

ONTARIO HOUSING CORPORATION		
SOIL INVESTIGATION FOR SOUTH EAST OTTAWA CITY		
BEDROCK CONTOURS		
K. H. KING ASSOCIATES LIMITED		
DRAWN BY: <i>RAM</i>	DATE: MAY 1974	SCALE: 1:25,000
APPROVED: <i>KHK</i>	DRAWING N° 312 - S. 2 - 4	



ONTARIO HOUSING CORPORATION

SOIL INVESTIGATION FOR
SOUTH EAST OTTAWA CITY

INFERRED PROFILE OF BEDROCK
ALONG SECTION 'A-A'

K. H. KING ASSOCIATES LIMITED

DRAWN BY: *R.H.* DATE: MAY, 1974 SCALE: HORIZ. 1"=25,000
VERT. 1"=50 FT.

APPROVED: _____ DRAWING N° 312-S.2-5