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DEPARTMENT OF NATURAL RESOURCES

DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

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Report of Investigations 86-3

A GEOTECHNICAL CROSS SECTION OF DOWNTOWN ANCHORAGE: AN ASSESSMENT USING THE ELECTRIC-CONE-PENETRATION TEST

By

Randall G. Updike and Catherine A. Ulery

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INTRODUCTION

Scope

The Fourth Avenue and L Street landslides in downtown Anchorage were among the most catastrophic ground failures that resulted from the 1964 Prince William Sound Earthquake (figs. 1, 2, and 3). This project assesses the engineering soils responsible for those landslides based on state-of-the-art _in-situ_ testing using the electric-cone-penetration test (CPT) correlated with nearby geotechnical boreholes.

Rationale

Intense construction has occurred in downtown Anchorage since the 1964 earthquake (fig. 4). Some of the multiple-occupancy residences and high-rise commercial buildings were constructed in areas that sustained ground failure in 1964. Construction continues on soils believed to be identical to those that failed during previous earthquakes. Very little technical research has been conducted on these soils or their mechanics of failure since the post-earthquake investigations of Shannon and Wilson, Inc. (1964), Hansen (1965), and Kerr and Drew (1965). Because of economic pressures, these areas will continue to be sites of additional high-rise construction. To benefit future planning and development, the latest geotechnical techniques should be used to assess the current _in-situ_ conditions of these soils and to document their distribution.

Location of Study Area

Eight testing sites were selected along the Delaney Park strip in downtown Anchorage along an east-west survey line from E Street to P Street (figs. 5 and 6). The line lies between and parallel to West Ninth and West 10th Avenues. The Delaney Park strip forms the current southern boundary of most urban high-rise-building development in downtown Anchorage. The project area is within sec. 18, T. 13 N., R. 3 W. and sec. 13, T. 13 N., R. 4 W., Anchorage A-8 NW. Quadrangle.

Geologic History of the Study Area

The generalized geology of Anchorage, including the study area, was mapped by Miller and Dobrovolny (1959), Karlstrom (1964), and Schmoll and Dobrovolny (1972). Recently subsurface geotechnical data was used to make a detailed geologic map of southwest Anchorage (Ulery and Updike, 1983; Updike and Ulery, 1986). These reports show that the Bootlegger Cove Formation, which underlies the study area, was deposited in an ice-marginal glacio-

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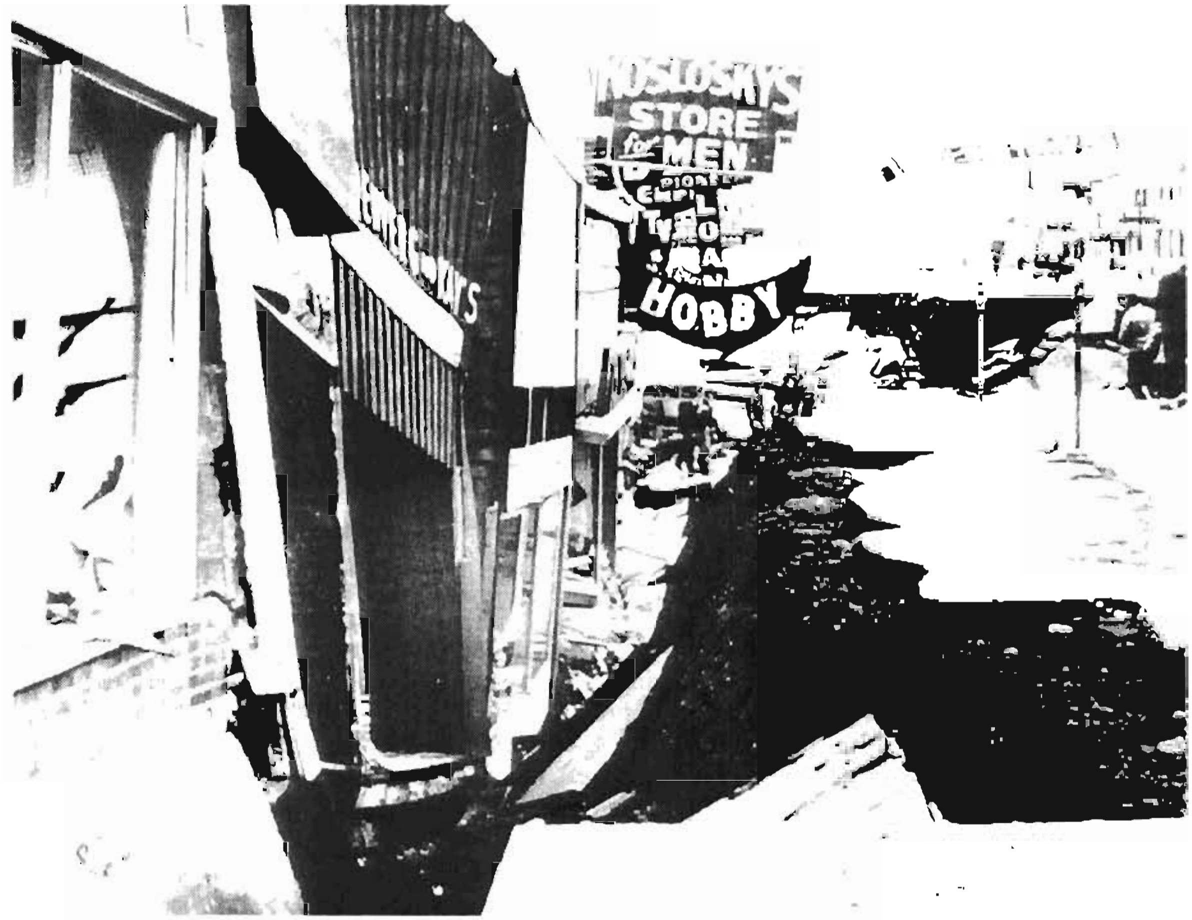


Figure 1. Buildings on the north side of Fourth Avenue, Anchorage, were damaged by the 1964 earthquake. Note the vertical displacement between the roadway level and entrances to the stores. Photograph courtesy of National Oceanographic and Atmospheric Administration - Environmental Data Service, April 2, 1964.

lacustrine basin during late Pleistocene time. The deposits grade from fan-delta sand and gravel in the Point Woronzof area to silt and clay in the downtown Anchorage area. Subtle variations in the glaciomarine depositional regime resulted in seven sedimentary facies within the Bootlegger Cove Formation. Each facies (F) has a distinct engineering parametric signature (Updike, 1982; Updike and Carpenter, 1986):

F.I	Clay, with very minor silt and sand
F.II	Silty clay or clayey silt, or both
F.III	Silty clay or clayey silt, or both, sensitive fabric
F.IV	Silty clay and clayey silt, with thin silt and sand lenses
F.V	Silty clay and clayey silt, with random pebbles, cobbles, and boulders
F.VI	Silty fine sand, with silt and clay layers

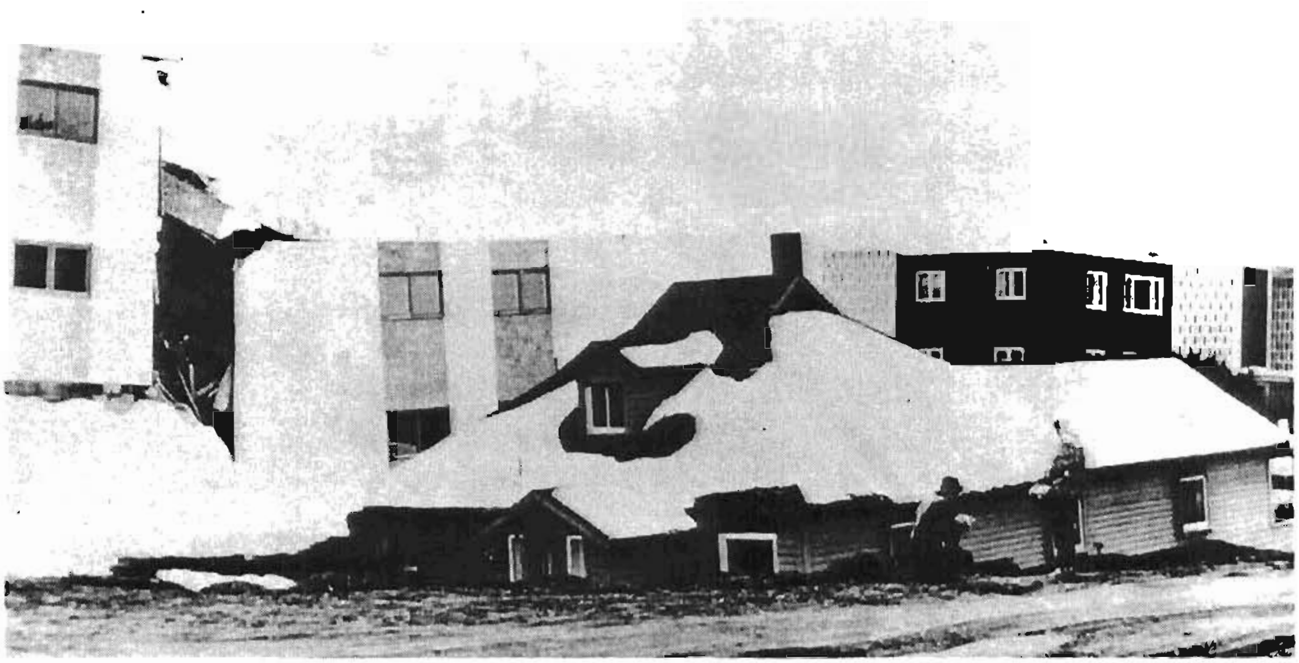


Figure 2. A house near Eighth Avenue and M Street, Anchorage, dropped into a slide graben that developed when the L Street landslide was laterally displaced during the 1964 earthquake. Photograph courtesy of National Oceanographic and Atmospheric Administration - Environmental Data Service, March 29, 1964.

F.VII Fine to medium sand, with traces of silt and gravel

The Bootlegger Cove Formation unconformably overlies a sequence of indurated till and glaciofluvial deposits of late Pleistocene age (Reger and Updike, 1983). Within the project area, the top of the Bootlegger Cove Formation includes fine to coarse, well-sorted sand beds (F.VI and F.VII) that represent the waning phase of the depositional basin when the source-area ice was stagnant, glacial dams were breached, and the basin was essentially drained. Although less than 5 m (16 ft) thick, F.VI and F.VII are typical throughout Anchorage regardless of the overlying stratigraphy. Their ubiquity suggests that the upper surface of the formation has been eroded very little since deposition in late Pleistocene time (ca. 12,500 yr B.P.).

F.VI and F.VII are overlain by outwash sand and gravel associated with the very latest Pleistocene glacial advance from the north that terminated in the Eagle River area. These outwash deposits thin to the southwest and eventually disappear in the Turnagain Heights area. In some areas, a thin layer (generally less than 1 m) of tan silt and peat overlie the outwash sediments.

During Holocene time, the stratigraphic sequence was subjected to isostatic rebound and periodic tectonic uplift (Brown and others, 1977) that, combined with fluctuations in sea level, resulted in the present bluff topography along Knik Arm. The bluffs have gradually retreated because of the effects of tidal erosion and the slope instability of the Bootlegger Cove Formation. Periodic seismic events have enhanced this retreat by causing

Figure 3. Aerial photograph of part of the L Street landslide at the west end of Delaney Park strip, Anchorage. Photograph courtesy of the U.S. Army, Mohawk Photograph M-64-64, No. 156, April 1964.

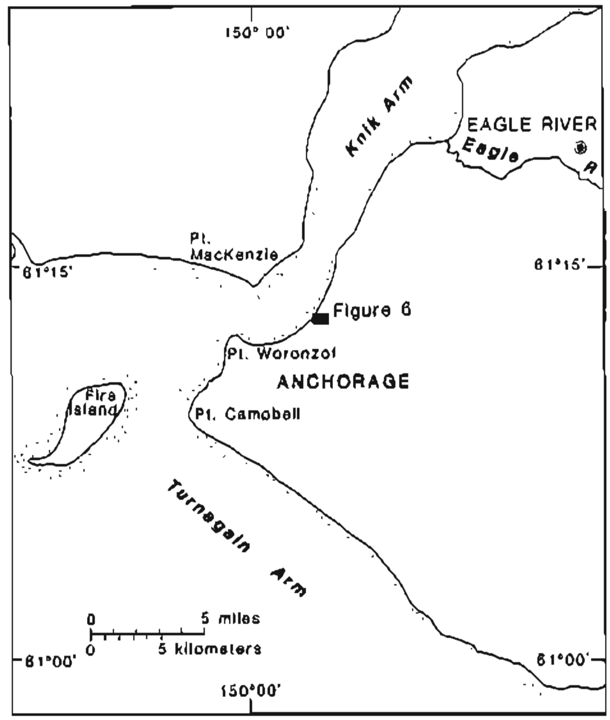
massive landslides like the one that occurred on L Street at the western end of the study area in 1964.

Previous Investigations

In addition to the geologic mapping described above, the 1964 L Street landslide and other landslides in Anchorage were studied intensively after the 1964 earthquake to discover the cause and mechanics of such slides. Two mechanisms were proposed: liquefaction of sands (Shannon and Wilson, 1964; Seed and Wilson, 1967; Seed, 1968, 1976) and failure of sensitive silty clays (Hansen, 1965; Kerr and Drew, 1965, 1968; Long and George, 1966). The Anchorage area has become an engineering case-history model for both types of landslide mechanisms. To date, a definitive agreement has not been reached as to which mechanism is primarily responsible for the slides, or whether sands or clays have the greater potential for future failure.

Figure 4. Oblique aerial photograph (to the west) of downtown Anchorage. The Delaney Park strip is in left center, Knik Arm is at the top of the photograph, and Ship Creek is in the upper right corner. Photograph courtesy of North Pacific Aerial Surveys, Oblique 7, October 5, 1982.

Figure 5. Regional map showing the location of the project area.



The Bootlegger Cove Formation also plays an important role as a confining layer in the ground-water regime of the region. This formation has been the subject of several hydrologic studies (Cederstrom and others, 1964; Trainer and Waller, 1965; Barnwell and others, 1972). The formation continues to be studied by the Alaska Division of Geological and Geophysical Surveys (DGGS), the U.S. Geological Survey (USGS) Water Resources Division, and the Municipality of Anchorage.

TESTING PROCEDURE

Subsurface soil conditions can be evaluated by drilling, sampling, and laboratory testing, or <u>in-situ</u> testing. Regardless of the care exercised, the first method has inherent problems with sample disturbance and simulation of actual field conditions. <u>In-situ</u> testing is limited by the variety of techniques available and by data interpretation based on existing soil-behavior theory. Penetration testing, which is the <u>in-situ</u> approach generally used, is based on the concept that the force or energy required to push or drive a standardized probe into the soil can be translated into a measure of soil strength or bearing capacity. Two penetration-test methods are currently used: the standard-penetration test (SPT) and the cone-penetration test (CPT). The SPT method has been used in Alaska for many years and remains a standard for local foundation design. Although the CPT method has been used in Europe for several years, it has only recently attained acceptance in the United States geotechnical industry. The CPT system selected for this project has been used in a variety of major projects in the contiguous United States, but has only been used in Alaska since 1982 (Updike, 1984).

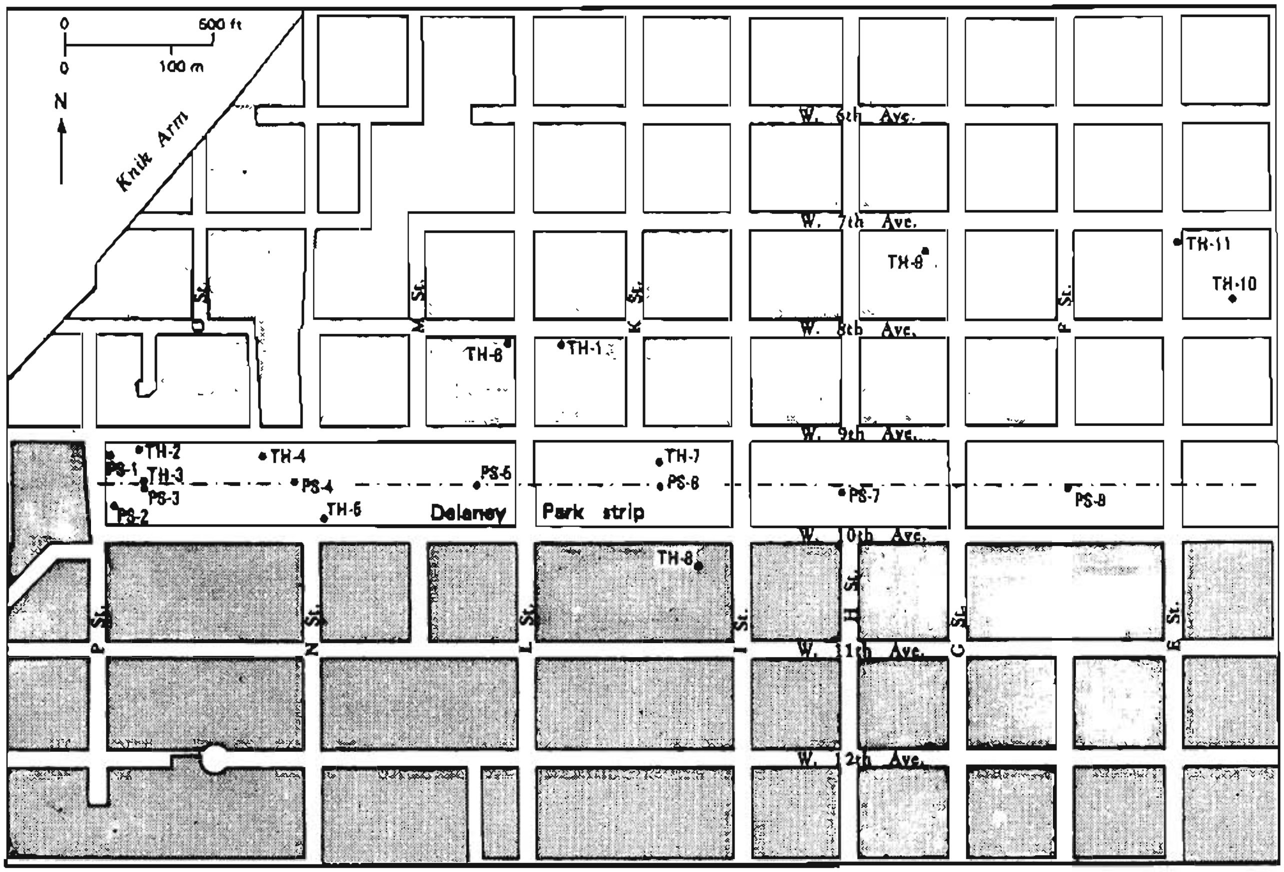


Figure 6. Detailed street map of part of downtown Anchorage showing the location of the cone-penetration-testing sites (PS prefix) and the geotechnical-borehole sites (TH prefix) The map designators correlate with those used in figure 20. The dashed line shows the location of the cross section on figure 20.

Equipment and Method

The cone-penetration test consists of pushing an instrumented, cone-tipped probe into the soil while continuously recording the resistance of the soil to that penetration. The tests for this project were conducted according to specifications set by the American Society for Testing and Materials (ASTM-D3441-79) using an electric-cone penetrometer. The test equipment consists of a cone assembly, a series of hollow sounding rods, a hydraulic frame to push the cone and rods into the soil, an analog strip-chart recorder, and a truck to transport the test equipment and provide the needed 20-ton thrust-reaction capacity (fig. 7). The cone penetrometer (figs. 8 and 9) consists of a conical tip with a 60° apex angle and a cylindrical friction sleeve above the tip. The cone assembly used for this study has a cross-sectional area of 15 cm^2 (2.32 $in.^2$) and a sleeve surface area of 200 cm^2 (31 $in.^2$). Strain gauges inside the assembly simultaneously measure cone and sleeve resistance during penetration (fig. 10). Continuous electric signals from the strain gauges are transmitted by a cable in the sounding rods to the recorder at the ground surface.

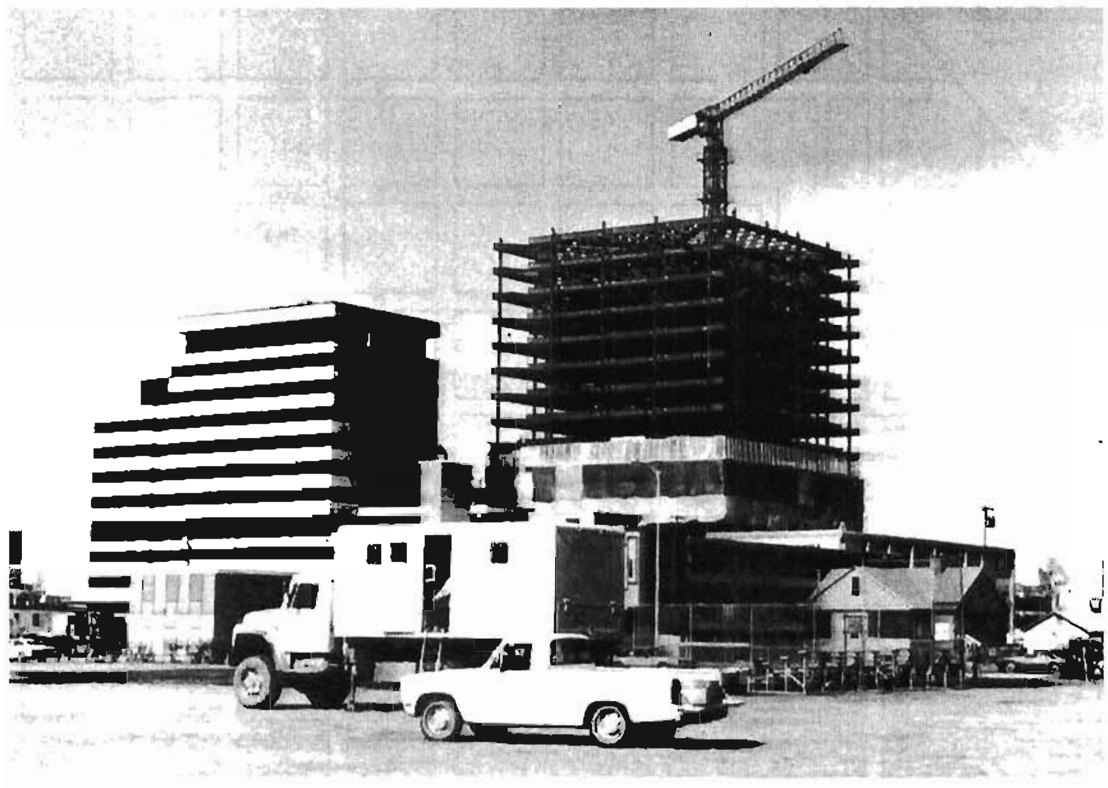


Figure 7. Truck-mounted CPT system operating at station PS-8, Delaney Park strip, Anchorage. Photograph by R.G. Updike, April 13, 1982.

Data Reduction and Interpretation

Reduction of the CPT data involved digitization of field strip-chart recordings, and subsequent computer processing. Digitizing and processing were conducted at the data-processing center of Earth Technology Corporation (Ertec), Long Beach, California. In addition to field-data reduction, computer subroutines evaluated CPT soil-behavior types, equivalent SPT blow counts, estimated clay shear strengths vs. depth, and cone resistance vs. friction ratio for selected depth intervals.

TESTING RESULTS

Eight CPT soundings were taken at the Delaney Park strip on April 6, 7, and 13, 1982, that ranged in total depth from 30 to 48 m (98 to 157 ft). The resultant stripcharts, shown in figures 11 through 18, include the friction resistance (sleeve friction, f_s, in ton/ft^2), cone resistance (end bearing, q_c, in ton/ft^2), and friction ratio ($R_f = f_s/q_c$). All soundings except PS-C-4 and PS-C-5 penetrated the base of the Bootlegger Cove Formation.

The appendix lists the tabulated CPT soil-behavior predictions derived from the CPT profiles. The Ertec computer program estimates soil types by tracking the cone end-bearing values (q_c) and the average friction ratio (R_f)

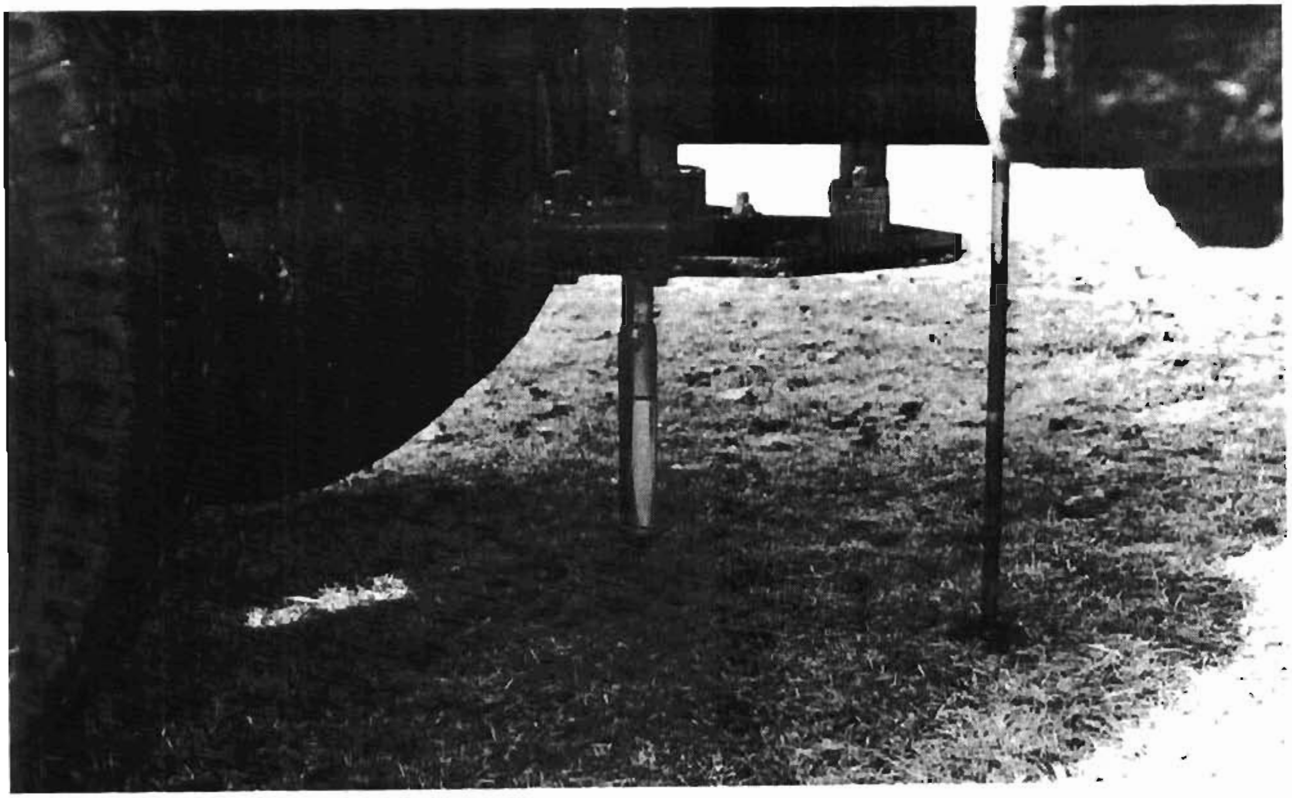
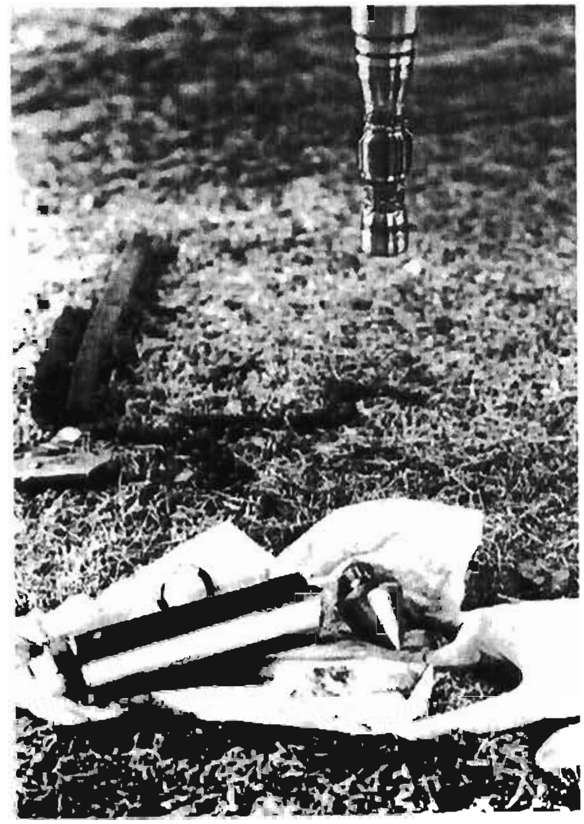


Figure 8. The CPT probe is positioned to initiate sounding. The rod (at right) is used to calibrate the vertical lift of the truck during sounding. Photograph by R.G. Updike, April 5, 1982.

at depth intervals of 0.3 m (1 ft). On the basis of guidelines of a classification chart that evolved from the work of Bergemann (1965), Schmertmann (1971), and Sanglerat (1972), the chart was calibrated to project equipment by Douglas and Olsen (1981). By comparing plots of cone resistance (q_c) vs. friction ratio (R_f) with data from nearby boreholes, site-specific correlations can be made. The basic classification chart was modified to tabulate soil-behavior types in figure 19.

Numerous efforts have been made to correlate CPT data with <u>in-situ</u> shear strength (Sanglerat, 1972; Lunne and others, 1976; Schmertmann, 1978). Shear strength is of primary concern due to failure of cohesive soils in the Bootlegger Cove Formation; therefore, an approximation of the undrained shear strength (S_u) was included in the computer analyses. Because penetration of the cone tip into undisturbed silts and clays is a bearing-capacity problem, most studies back-calculate shear strength by using the bearing-capacity equation:

Figure 9. Cone assembly with the cone and friction sleeve removed to show the strain gauges. See figure 10 for a cross section of the assembly.



$$q_u = S_u N_c + \sigma_v \qquad \text{(eq. 1)}$$

where q_u = ultimate bearing capacity
S_u = undrained shear strength
N_c = a dimensionless bearing-capacity factor, and
σ_v = the total vertical stress

By setting q_u equal to q_c (from the CPT), a theoretical value of the shear strength can be determined:

$$S_u = (q_c - \sigma_v)/N_c \qquad \text{(eq. 2)}$$

The primary difficulty of equation 1 is selecting a proper value for N_c. Previous investigators used measured field and laboratory results for S_u to back-calculate N_c values that ranged from five (for high-sensitivity clays) to 25 (for overconsolidated dry clays). The possible error in arbitrarily selecting and applying the N_c value to CPT data to determine shear strength is critical. For this project, N_c values of 16 and 20 were chosen based on field and laboratory test results of samples from borings near the CPT locations. The field tests included torvane and pocket-penetrometer tests. Torvane and unconfined compression tests were also performed on correlative samples in the laboratory. By comparing the results with the corresponding CPT-sounding log, the N_c factor was estimated based on the above measurements and on previous measurements taken by Douglas (oral commun., 1983) on similar soils.

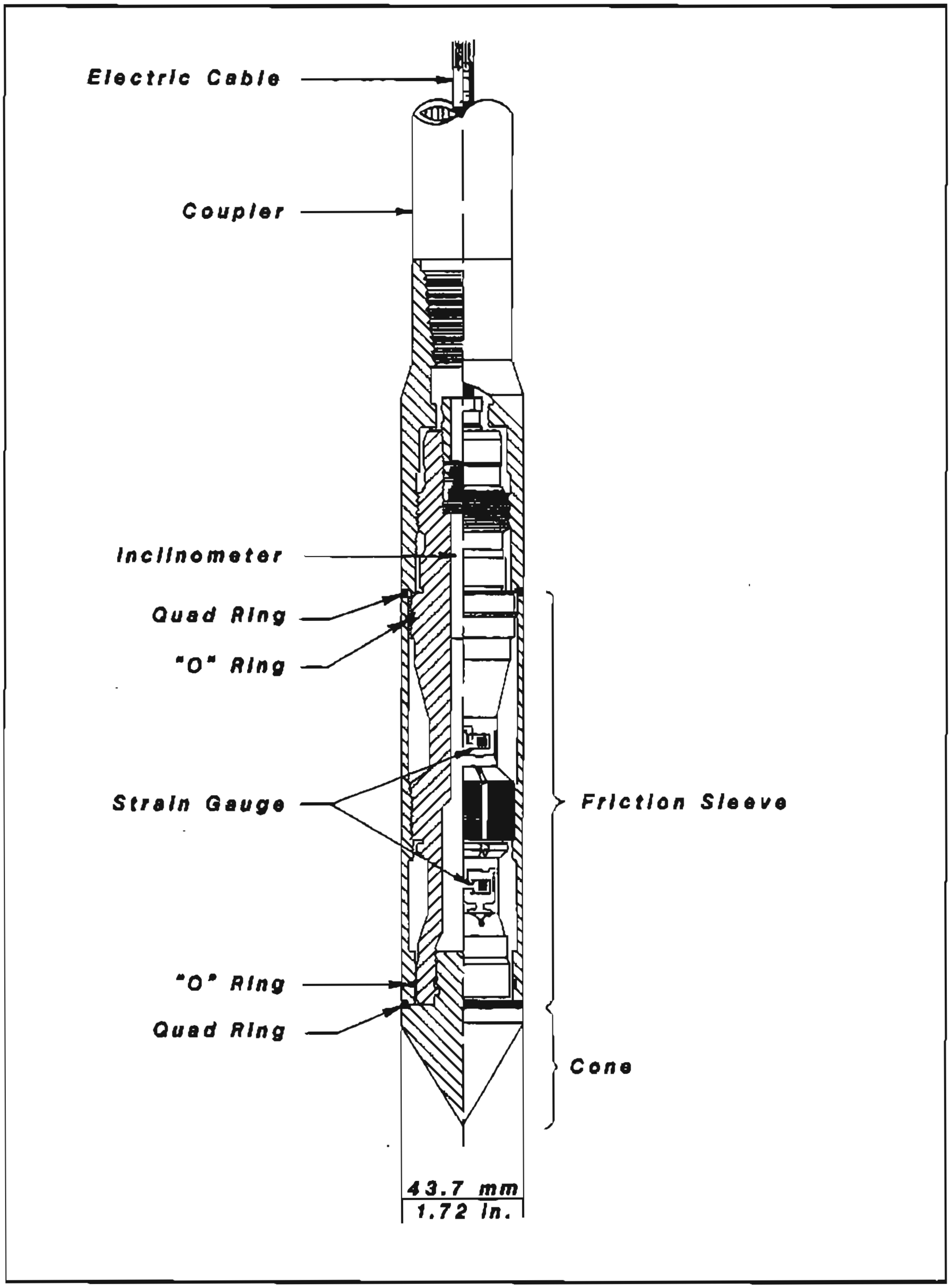


Figure 10. Cross section of the electric-cone assembly used in this project (figs. 8 and 9).

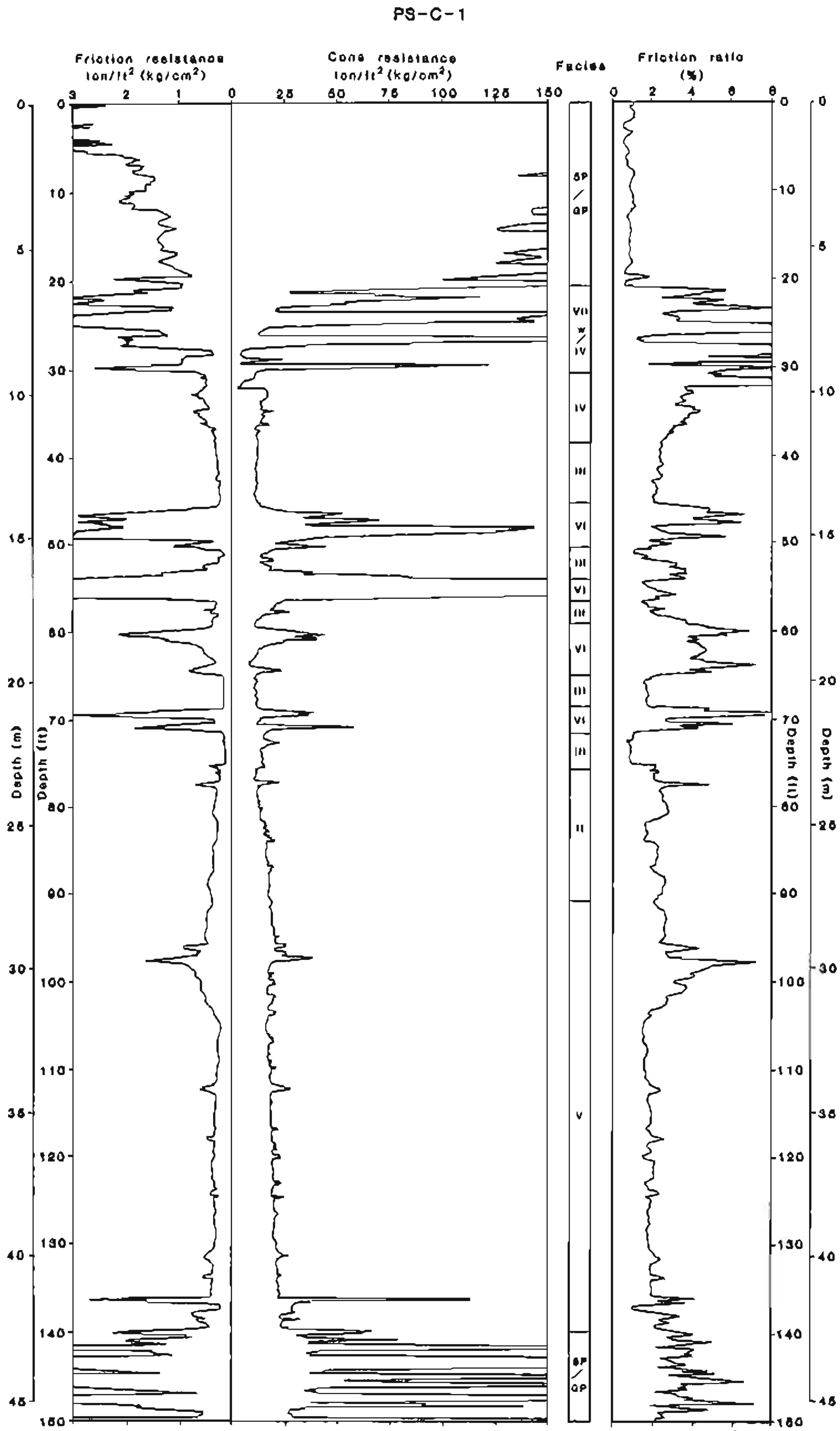


Figure 11. Computer-generated CPT strip charts obtained April 6, 1982, for site PS-1 (fig. 6).

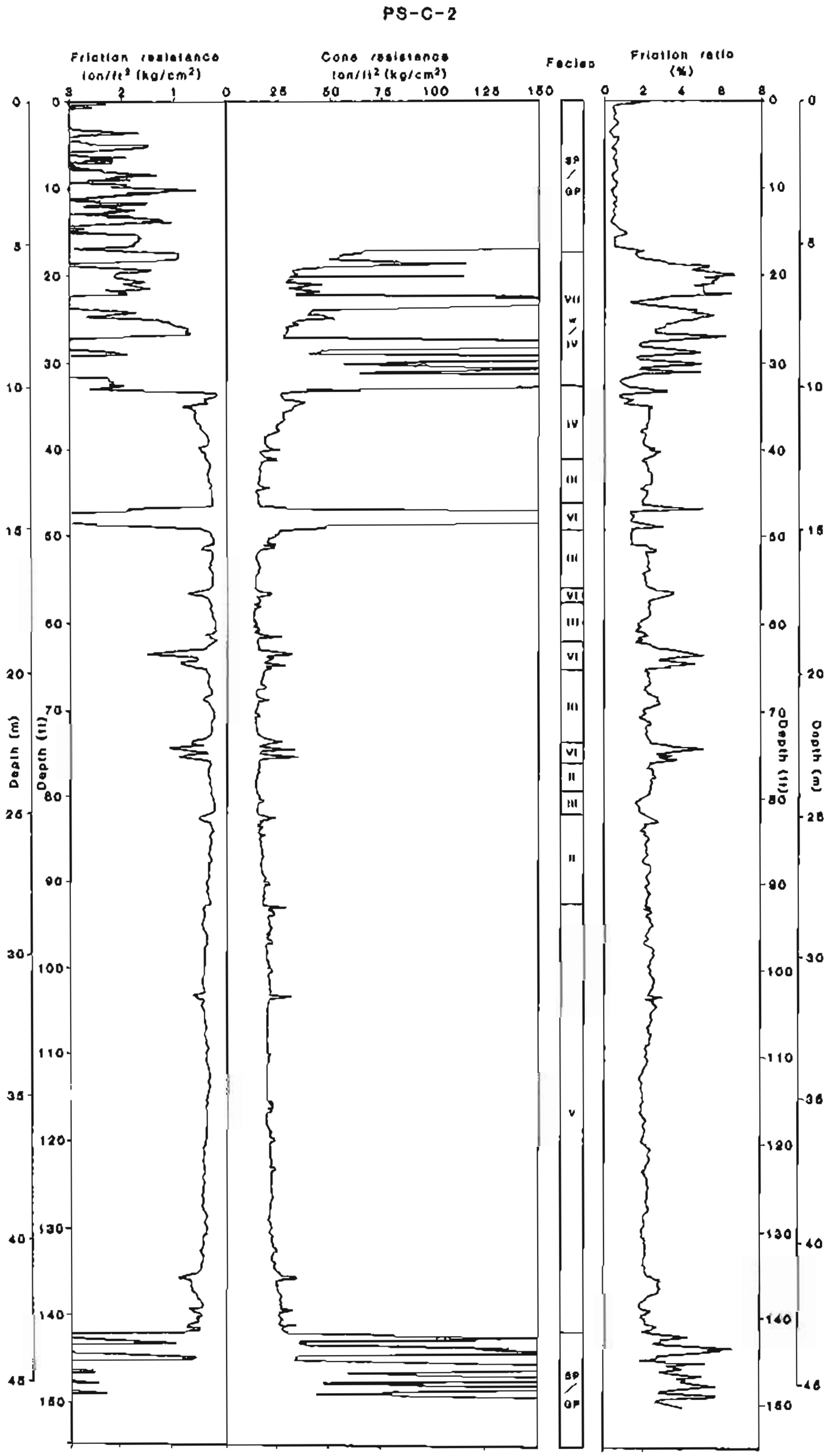


Figure 12. Computer-generated CPT strip charts obtained April 6, 1982, for site PS-2 (fig. 6).

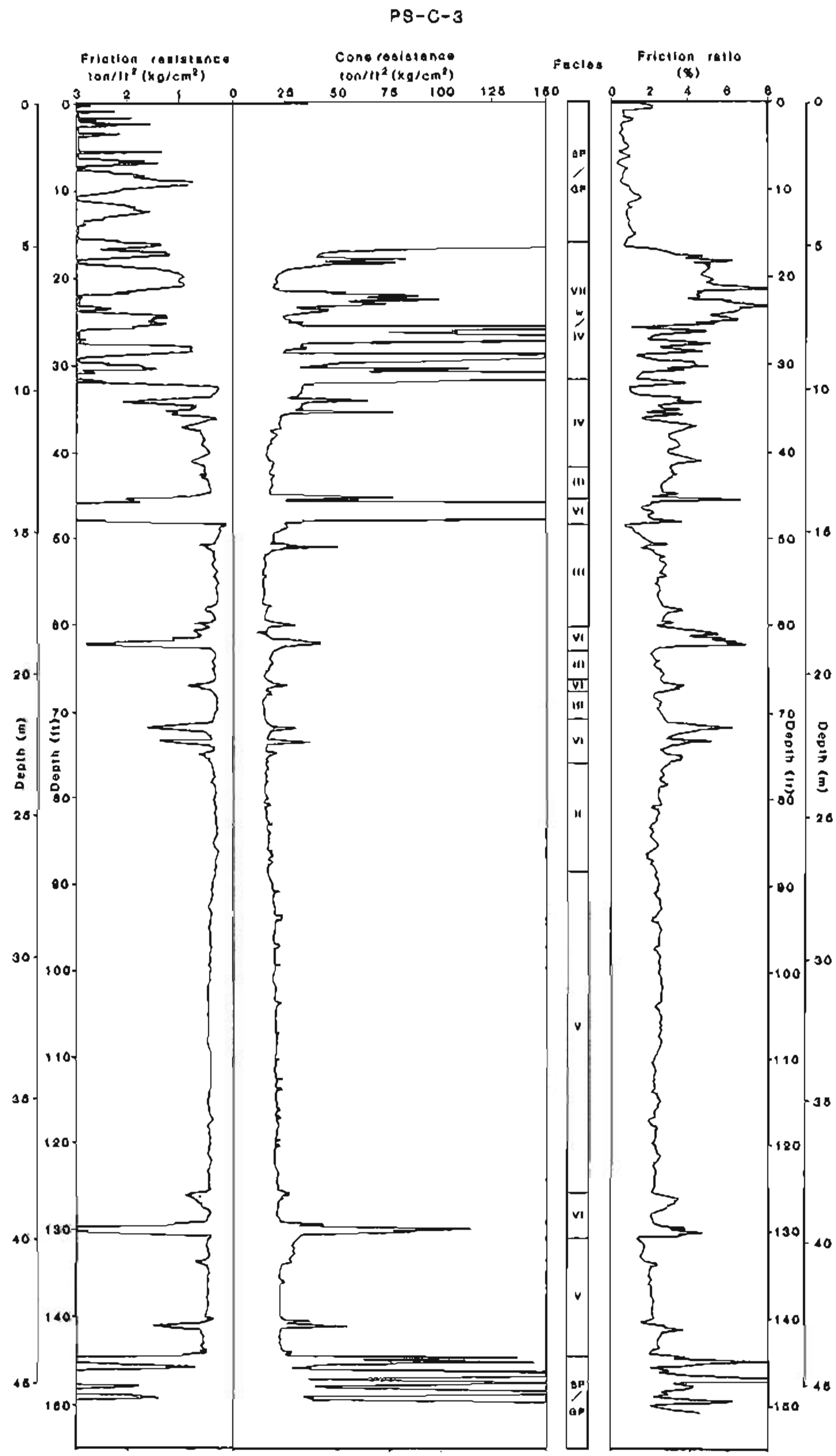


Figure 13. Computer-generated CPT strip charts obtained April 6, 1982, for site PS-3 (fig. 6).

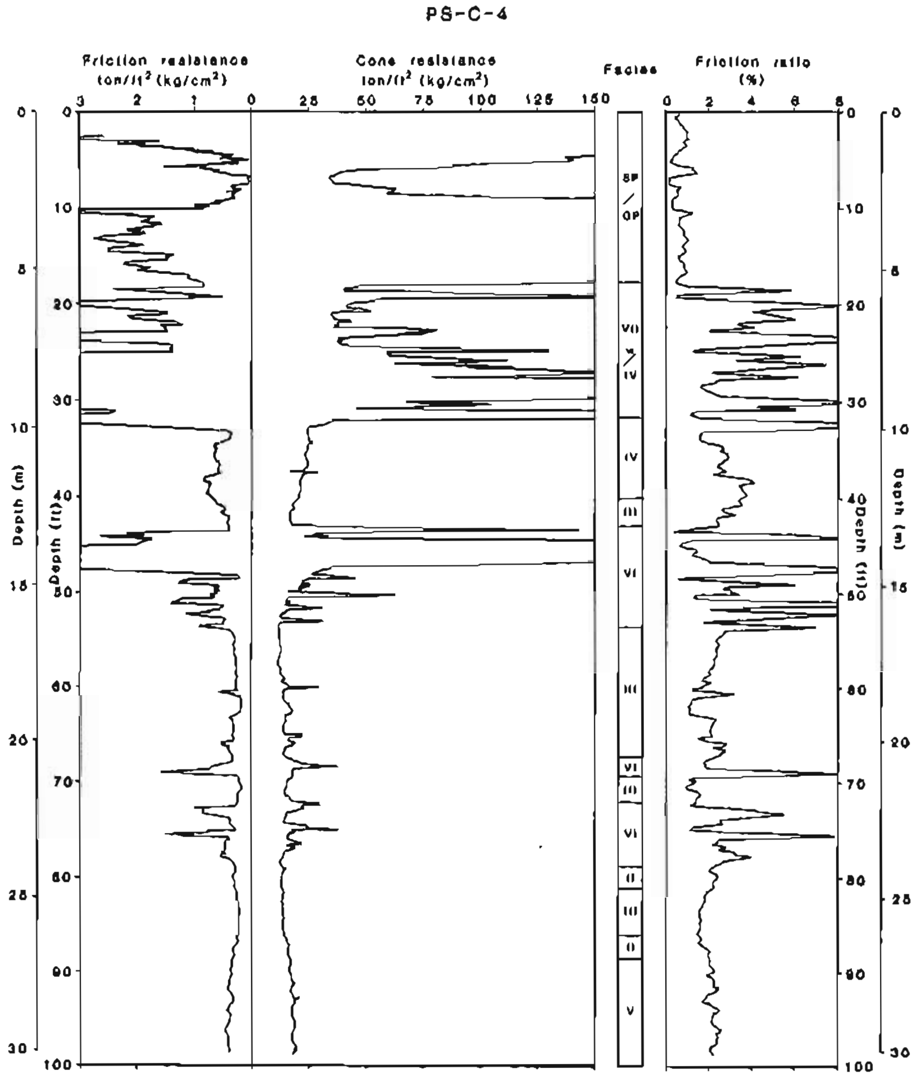


Figure 14. Computer-generated CPT strip charts obtained April 6, 1982, for site PS-4 (fig. 6).

For comparative purposes, S_u was also calculated based on the hypothesis that the sleeve-friction value (f_s) represents the shear-strength value between the calculated undisturbed shear strength and the remolded shear strength (Schmertmann, 1978). A dimensionless constant of 1.10 was multiplied by the f_s values to derive the second set of S_u values tabulated in the appendix. Because of the present lack of a theoretical understanding of the cone-sleeve-soil interaction and the remolding phenomena as the tip passes through a cohesive soil, the calculation of S_u based on CPT data should be regarded cautiously.

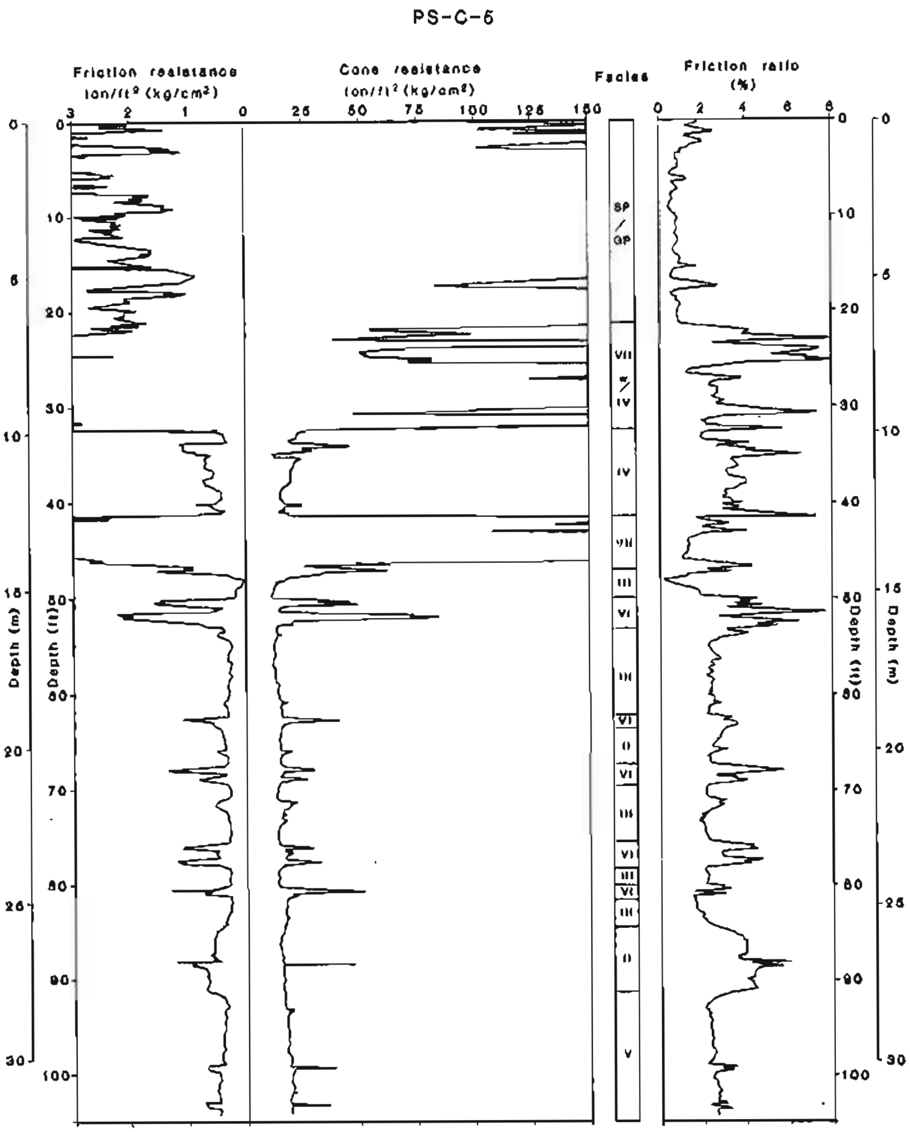


Figure 15. Computer-generated CPT strip charts obtained April 6, 1982, for site PS-5 (fig. 6).

CALIBRATION AND CORRELATION

The character of each engineering-geologic facies of the Bootlegger Cove Formation has been carefully documented in several areas of Anchorage (Updike, 1982, 1986; Updike and others, 1982; Updike and Carpenter, 1986; Updike and Ulery, 1986). On the basis of field and laboratory inspection of numerous samples of each facies, the CPT profiles can be calibrated to distinguish these facies throughout Anchorage. The following characteristics can be applied to other CPT profiles of the formation. F.I is not listed because true clay layers are generally too thin to be distinguished on a CPT profile.

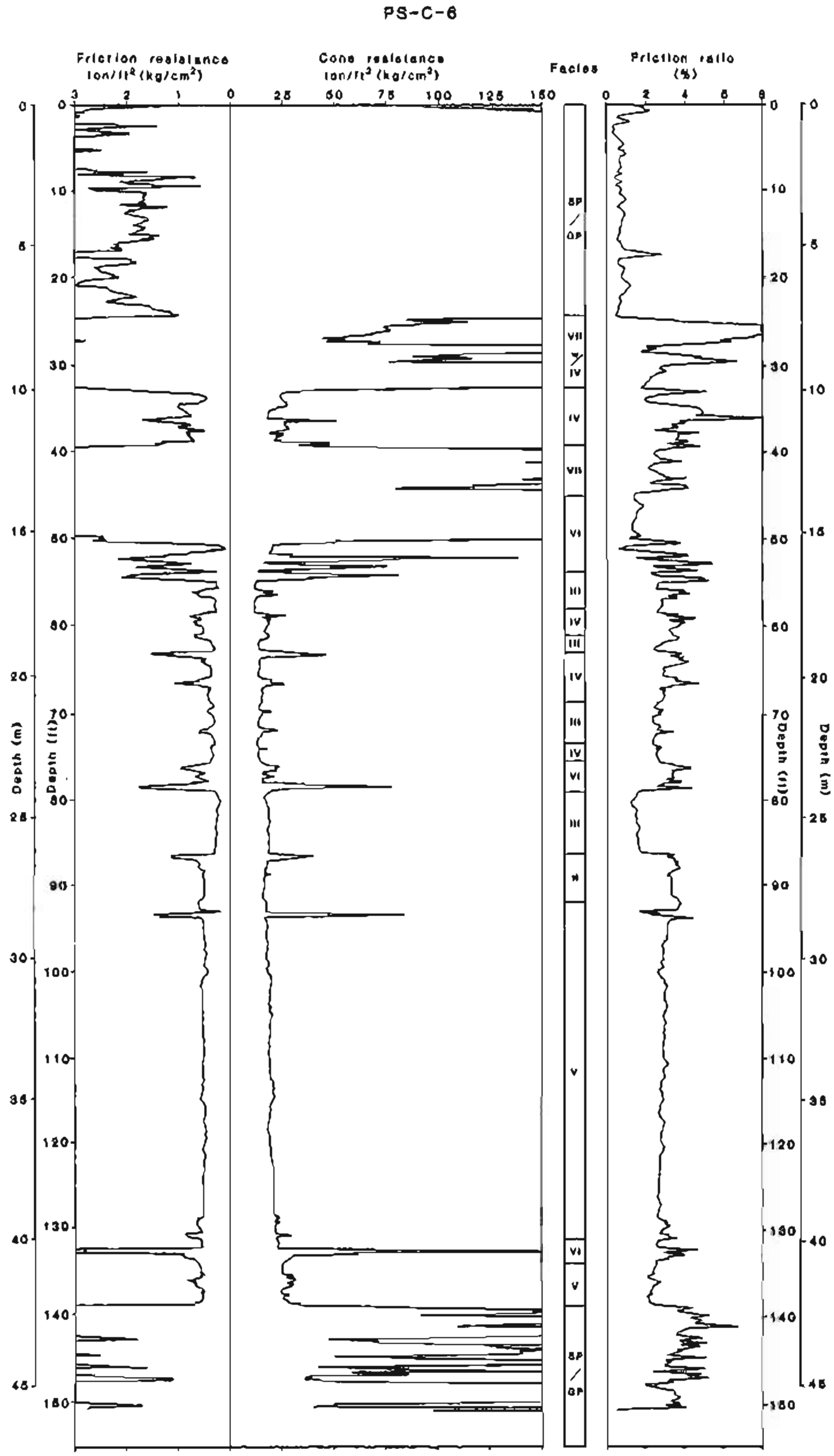


Figure 16. Computer-generated CPT strip charts obtained April 7, 1982, for site PS-6 (fig. 6).

F.II Profile relatively smooth with minor spikes due to sandy-silt layers.
$q_c < 25$ ton/ft^2
$f_s < 1$ ton/ft^2
$R_f = 2$ to 4 percent

F.III Profile very smooth with a vertical slope.
$q_c < 15$ ton/ft^2
$f_s < 0.4$ ton/ft^2
$R_f < 2$ percent

F.IV Profile very erratic with numerous spikes; often slopes toward the 'O' line with increasing depth.
$q_c = 15$ to 35 ton/ft^2
$f_s = 1$ to 2 ton/ft^2
$R_f = 3$ to 7 percent

F.V Profile erratic, but often bell-shaped; spikes due to sand and stones.
$q_c = 25$ to 30 ton/ft^2
$f_s = 0.5$ to 2.0 ton/ft^2
$R_f = 3$ to 7 percent

F.VI Profile shows abrupt spikes on three curves.
$q_c = 25$ to 50 ton/ft^2
$f_s > 1$ ton/ft^2
$R_f > 4$ percent

F.VII Profile shows abrupt spike on q_c, minor spike on f_s, trough on R_f
$q_c > 100$ ton/ft^2
$f_s < 2$ ton/ft^2
$R_f < 1$ percent

Other geologic units found by CPT soundings at Delaney Park strip also produce distinctive profiles. The stratified sand-and-gravel glacial outwash deposits yield erratic, but consistently high q_c and f_s profiles, and the resultant R_f profile was generally less than 1 percent. The upper meter of soil was frozen during the soundings and produced spikes that were off the scale for q_c and f_s with a resultant R_f near zero. Sediments below the Bootlegger Cove Formation were also generally off the scale for q_c and f_s; numerous 'troughs' indicate silt interbeds. Friction ratios for these deep soils usually exceed 2 percent.

Eleven geotechnical boreholes previously drilled by private industry in or near the Delaney Park strip were selected for stratigraphic correlation. The CPT soundings were calibrated according to the facies criteria discussed above. The cross section selected (fig. 6) passes through all of the CPT sites (except PS-1 and PS-2) and is near the chosen boreholes. The borehole logs were calibrated using the previously established engineering-geologic-facies criteria of Updike and Carpenter (1986). The resultant stratigraphic cross section (fig. 20) shows an excellent match between major units.

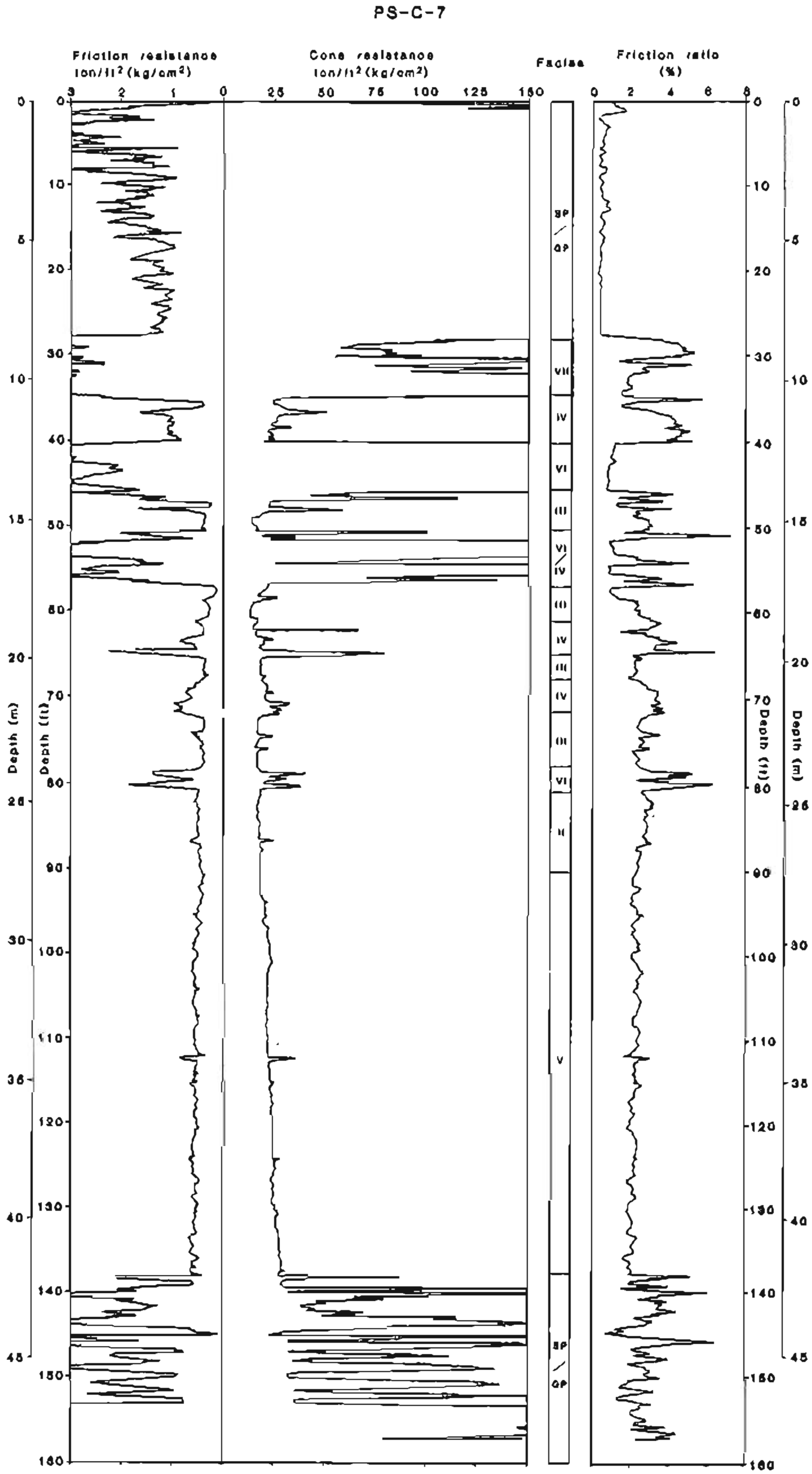


Figure 17. Computer-generated CPT strip charts obtained April 13, 1982, for site PS-7 (fig. 6).

PS-C-8

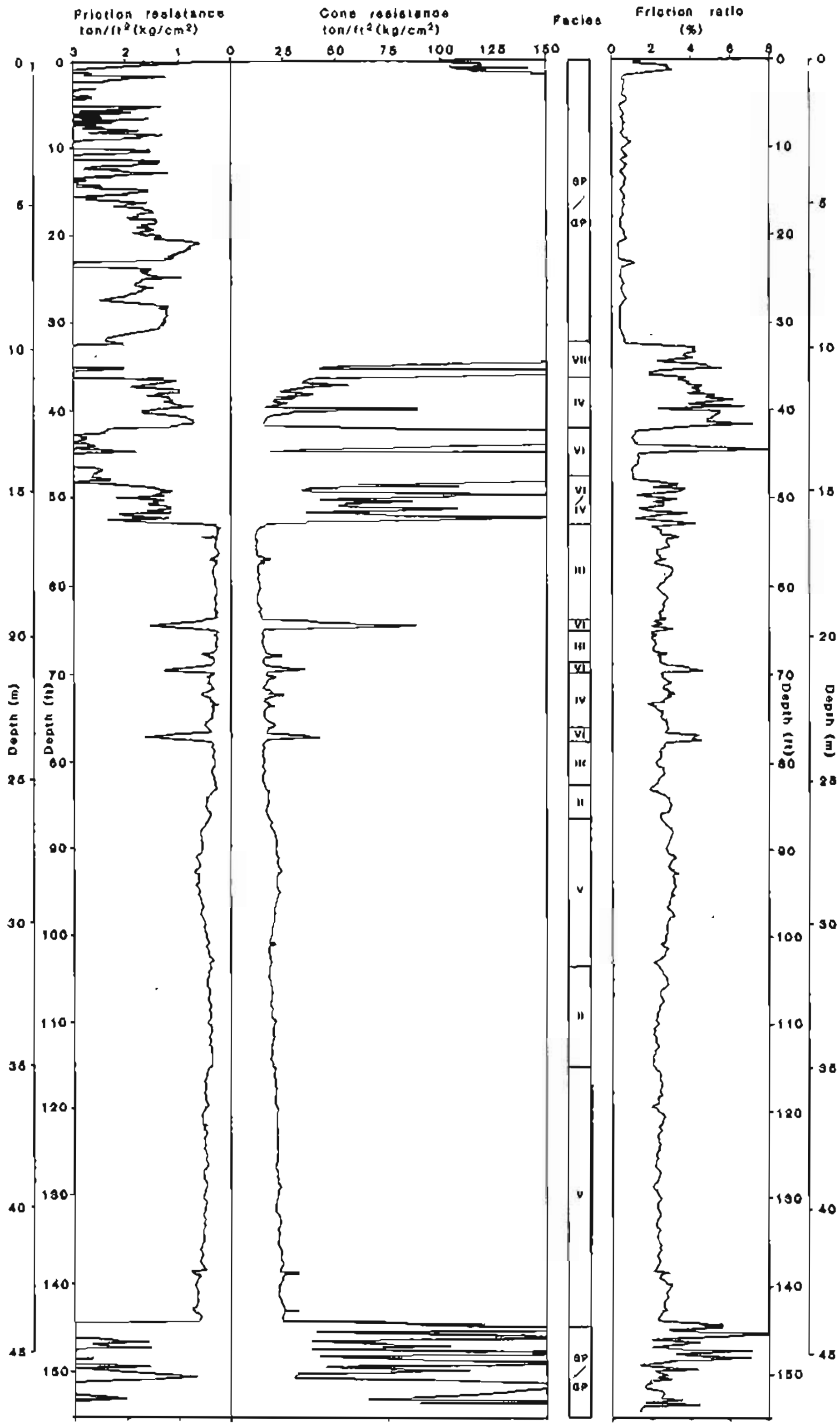


Figure 18. Computer-generated CPT strip charts obtained April 13, 1982, for site PS-8 (fig. 6).

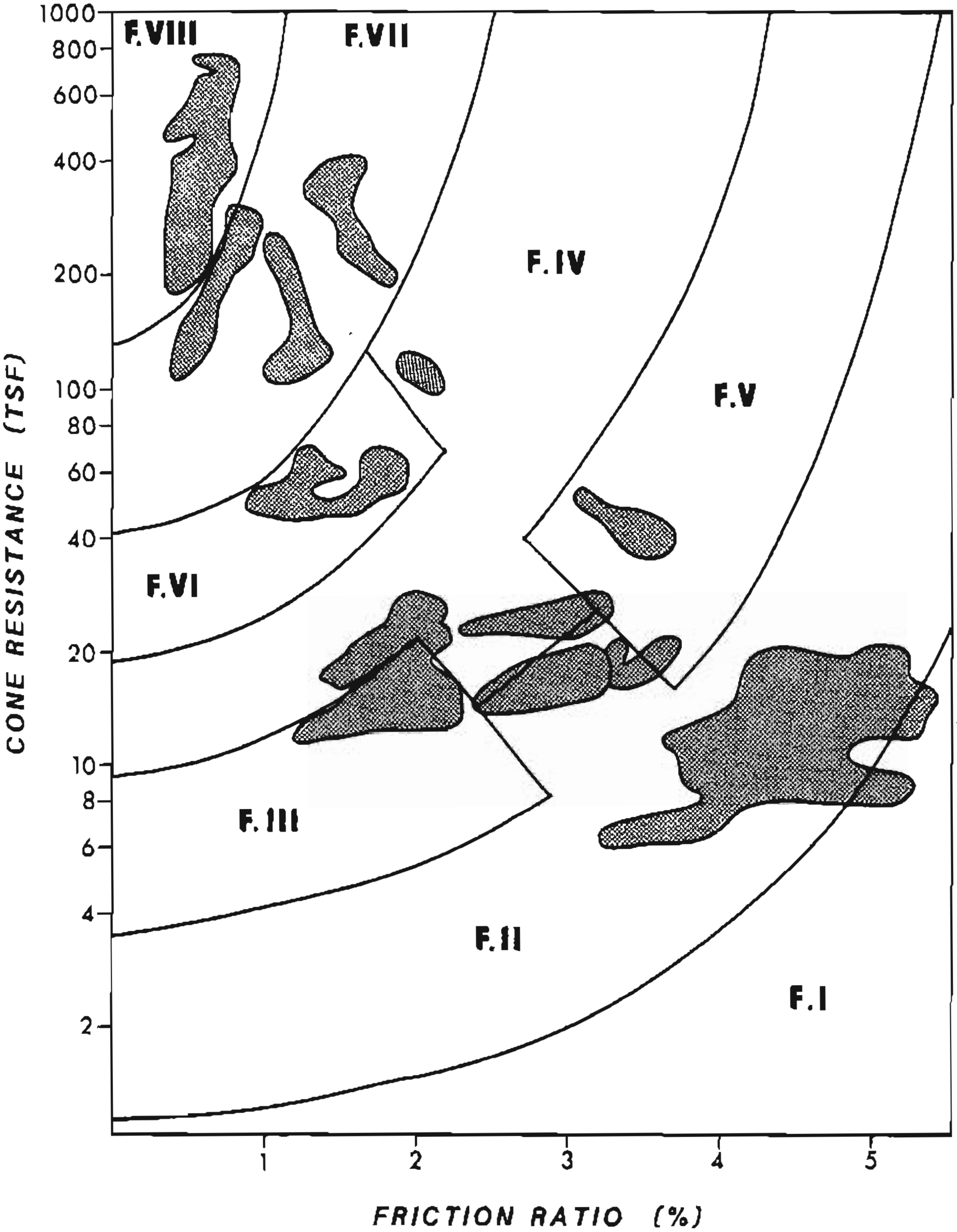


Figure 19. Graph of friction ratio vs. cone resistance derived from CPT data showing soil-behavior domains for facies of the Bootlegger Cove Formation.

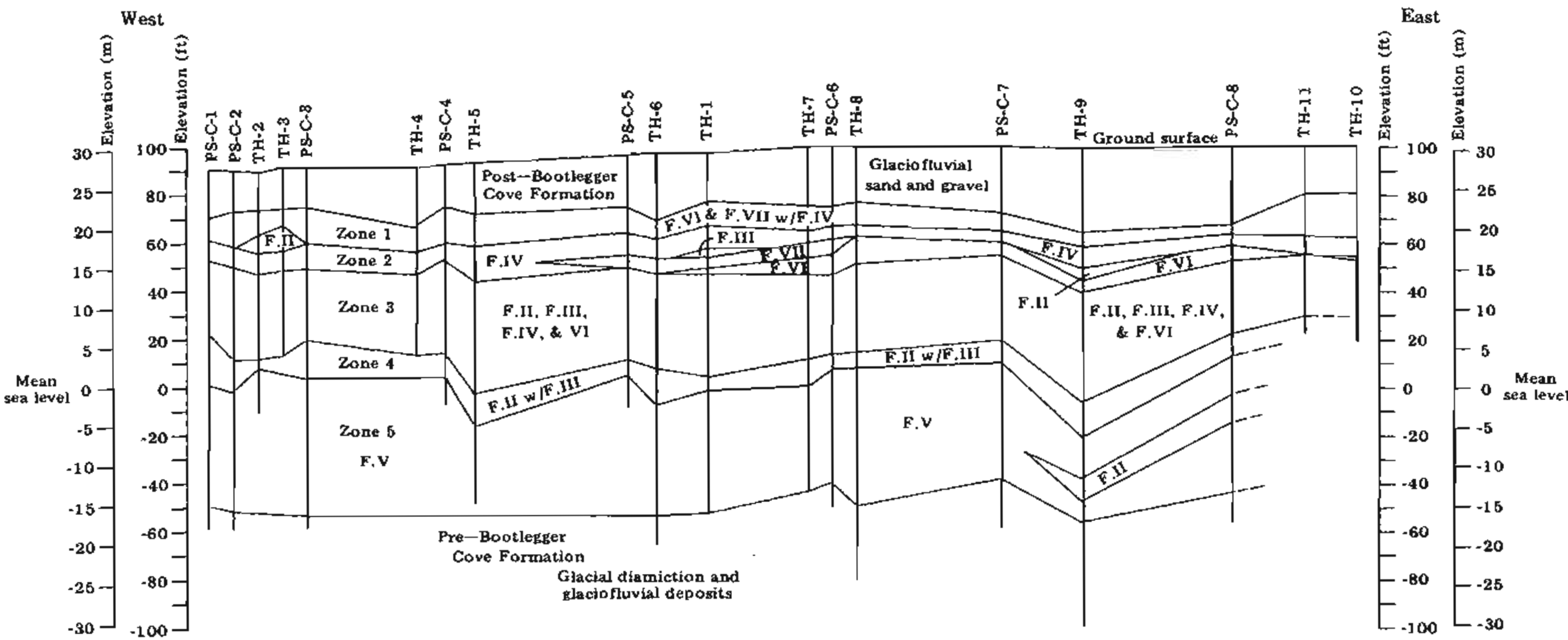


Figure 20. East-west cross section based on geotechnical boreholes and cone-penetration soundings along Delaney Park strip, downtown Anchorage (see figs. 5 and 6).

Three main stratigraphic units are recorded on the profiles: 1) very late Pleistocene (post-Bootlegger Cove Formation) glacial outwash sand and gravel deposits; 2) late Pleistocene Bootlegger Cove Formation; and 3) late Pleistocene (pre-Bootlegger Cove Formation) diamicton and glaciofluvial deposits. The uppermost unit varies from 6 to 11 m (20 to 35 ft) thick; the top 0.60 to 0.76 m (2 to 2.5 ft) is seasonally frozen. The Bootlegger Cove Formation is consistently about 38 m (125 ft) thick over a horizontal distance of approximately 1,212 m (4,000 ft). The unit below the Bootlegger Cove Formation is far more overconsolidated than the soils above so that penetration was very difficult, and resistance quickly exceeded the equipment's 20-ton capacity. Borehole logs indicate that this unit is several meters thick and varies from overconsolidated clayey silt to sandy gravel. The abrupt transition in q_c and f_s values at the contact between the Bootlegger Cove Formation and these older sediments supports the interpretation that the contact marks a substantial time hiatus. The high end-bearing values below the contact also indicate either substantially higher lithostatic loads in pre-Bootlegger time or a long time interval in which these older sediments were exposed to desiccation and weathering. The latter explanation would most adequately be explained by an episode of tidewater glaciation that preceded deposition of the Bootlegger Cove Formation.

In the Bootlegger Cove Formation, all facies are distinguishable except for F.I, which is generally only identifiable in laboratory samples. A typical sequence of facies zones predominates throughout the series of holes and CPT soundings (fig. 20): (from top to bottom) zone 1) sands of F.VI and F.VII with minor F.IV; zone 2) a sequence of F.IV that intertongues with F.VI and F.VII to the east; zone 3) a uniform, thick sequence of interbedded F.II, F.III, and F.IV, with thin, but distinct intercalated layers of F.VI less than 1 m (3.3 ft) thick; zone 4) a continuous layer of F.II with discontinuous F.III layers; and zone 5) an overconsolidated layer of F.V that marks the formation's base (fig. 20). The sensitive F.III generally occurs at elevations between -2 to +10 m (-5 to +35 ft) from mean sea level. This sequence of zones is remarkably consistent along the cross section.

CONCLUSIONS

Although the logs recorded by the CPT system correlate very well with the geotechnical-borehole logs, they result from continuous soundings and yield a more detailed characterization of the soil than can be attained from a discontinuous sampling technique. The CPT approach is most effective in a testing program complemented by conservative drilling, sampling, and laboratory testing.

The correlation of borehole logs and CPT profiles in the Delaney Park strip provides a three-dimensional stratigraphic picture consistent with the previously proposed model of a quiet-water depositional basin near ablating ice margins. The early phase of this system included the accumulation of F.V ice-rafted debris. The succeeding time interval of probably hundreds or thousands of years, represented by F.II and F.III, was a period of shallow marine deposition. The climax of basin deposition consisted of more varied textures of interbedded clays, silts, and sands (F.II, F.III, F.IV, and F.VI) in a restricted basin where fresh water from nearby glaciers could affect sedimentation rates and energy. The top of the formation is marked by a bed of silty fine sand (F.VI) to medium sand (F.VII) that represents the final withdrawal of sedimentary basin waters, after which the glaciolacustrine-glaciomarine cohesive sediments were covered by emergent tidal-flat sands.

The L Street landslide resulted from failure within a 9-m-thick zone (30 ft) directly above modern sea level. F.III occurs within this zone throughout the study area and is of primary importance in analyzing local seismic-slope stability. Therefore, geotechnical testing for design work in downtown Anchorage should evaluate soils to a depth of at least 45 m (150 ft). These studies should also measure strength degradation of the silty clay under cyclic-loading conditions from depths below 23 m (75 ft). Although F.II and F.III have similar undisturbed shear-strength values, dynamic loading produces significantly different strain behavior between the two facies (Updike and others, 1982). Unless sampling and testing are carefully performed, these differences may be overlooked. Because of the horizontal strata, facies variation can confidently be projected through a particular site, although some fluctuation in elevation should be anticipated.

The L Street landslide is particularly interesting because several meters of horizontal displacement occurred with very little vertical displacement except in the 'graben' that developed at the back of the sliding block. Studies by Updike (1983, 1984) and Updike and Carpenter (1986) state that the F.VI and F.VII units have low liquefaction susceptibility, even during major earthquakes. Updike and Oscarson (1984) found that F.III typically has an open boxwork fabric very similar to the sensitive clay fabrics cited in engineering literature (for example, Mitchell, 1976). Failure along beds of F.III in the L Street area under long-duration cyclic stress would result in horizontal displacement on the developed glide plane. The significantly higher strength of the overlying soils would allow displacement of the slide block with only minor distress or vertical displacement.

ACKNOWLEDGMENTS

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APPENDIX

Tabulated data derived from digitization of the rectified CPT profiles shown in figures 11 through 18. Soil-behavior types are based on computer tracking of friction ratio (R_f) vs. cone resistance (q_c) (fig. 19). Undrained shear strengths (Su) were computer calculated using the indicated empirical equations (see text for discussion).

PROJECT NAME : DGGS
PROJECT NUMBER : 82-101-55
SITE : PS-C-01
CONE NUMBER : F15CKE070 SCALE END : 106.000 (ton/ft²)/in.
DATE : APRIL 6, 1982 SCALE SIDE : 1.050 (ton/ft²)/in.
RATE OF PENETRATION : 2.0 cm/sec SCALE DEPTH : 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
40.0	11.84	0.27	2.33	SENS. CLAYEY SI-SI CLAY	597.	1231.	16.
41.0	11.21	0.26	2.32	SENS. CLAYEY SI-SI CLAY	571.	1147.	16.
42.0	11.60	0.27	2.37	SENS. CLAYEY SI-SI CLAY	595.	1189.	16.
43.0	11.35	0.23	1.99	SENS. CLAYEY SI-SI CLAY	498.	1151.	16.
44.0	10.31	0.21	2.14	SENS. CLAYEY SI-SI CLAY	457.	1015.	16.
45.0	12.17	0.25	2.00	SENS. CLAYEY SI-SI CLAY	552.	1241.	16.
46.0	22.89	0.98	4.10	SILTY CLAY TO CLAY	2165.	2575.	16.
47.0	46.18	1.99	5.11	SILTY CLAY TO CLAY	4387.	5480.	16.
48.0	117.65	2.07	3.30	CLAYEY SA TO SANDY CLAY			
49.0	93.12	3.16	3.96	SANDY CLAY TO SILTY CLAY	6956.	9069.	20.
50.0	28.88	0.86	2.47	SILTY CLAY	1894.	3299.	16.
51.0	14.28	0.14	1.01	SANDY SI TO CLAYEY SILT			
52.0	12.89	0.24	2.16	SENS. CLAYEY SI-SI CLAY	525.	1288.	16.
53.0	25.42	0.95	3.43	SILTY CLAY	2081.	2848.	16.
54.0	102.21	3.72	3.18	CLAYEY SA TO SANDY CLAY			
55.0	400.74	7.22	1.86	SAND TO SILTY SAND			
56.0	144.06	3.26	2.45	SILTY SA TO CLAYEY SAND			
57.0	19.29	0.33	1.65	SANDY SI TO CLAYEY SILT			
58.0	14.31	0.27	2.15	SENS. CLAYEY SI-SI CLAY	600.	1428.	16.
59.0	10.20	0.37	3.74	SILTY CLAY TO CLAY	818.	908.	16.
60.0	30.30	2.10	5.96	CLAY	4624.	3414.	16.
61.0	24.43	0.85	4.02	SILTY CLAY TO CLAY	1860.	2674.	16.
62.0	12.06	0.56	4.65	SILTY CLAY TO CLAY	1227.	1121.	16.
63.0	9.32	0.35	4.05	SILTY CLAY TO CLAY	772.	773.	16.
64.0	15.34	0.75	5.21	SILTY CLAY TO CLAY	1656.	1519.	16.
65.0	10.30	0.18	1.94	SENS. CLAYEY SI-SI CLAY	406.	883.	16.
66.0	9.48	0.15	1.59	SENS. CLAYEY SI-SI CLAY	332.	779.	16.
67.0	10.56	0.18	1.71	SENS. CLAYEY SI-SI CLAY	394.	903.	16.
68.0	11.04	0.17	1.61	SENS. CLAYEY SI-SI CLAY	380.	957.	16.
69.0	33.58	2.61	6.79	CLAY	5736.	3768.	16.
70.0	11.74	0.31	2.62	SENS. CLAYEY SI-SI CLAY	675.	1031.	16.
71.0	18.75	0.77	3.31	SILTY CLAY TO CLAY	1693.	1901.	16.
72.0	15.50	0.16	0.90	SANDY SI TO CLAYEY SILT			
73.0	14.98	0.13	0.87	SANDY SI TO CLAYEY SILT			
74.0	15.16	0.12	0.78	SANDY SI TO CLAYEY SILT			
75.0	15.23	0.29	1.62	SENS. CLAYEY SI-SI CLAY	630.	1437.	16.
76.0	11.64	0.22	2.16	SENS. CLAYEY SI-SI CLAY	489.	982.	16.
77.0	20.43	0.61	3.43	SILTY CLAY TO CLAY	1338.	2074.	16.
78.0	11.79	0.28	2.37	SENS. CLAYEY SI-SI CLAY	606.	988.	16.
79.0	12.05	0.30	2.47	SENS. CLAYEY SI-SI CLAY	669.	1014.	16.
80.0	14.81	0.36	2.71	SENS. CLAYEY SI-SI CLAY	799.	1353.	16.
81.0	13.14	0.31	2.37	SENS. CLAYEY SI-SI CLAY	692.	1138.	16.
82.0	14.94	0.25	1.60	SENS. CLAYEY SI-SI CLAY	545.	1357.	16.
83.0	14.73	0.26	1.68	SENS. CLAYEY SI-SI CLAY	576.	1324.	16.
84.0	16.02	0.32	1.87	SENS. CLAYEY SI-SI CLAY	711.	1478.	16.
85.0	15.04	0.34	2.16	SENS. CLAYEY SI-SI CLAY	758.	1451.	16.
86.0	16.24	0.34	2.11	SENS. CLAYEY SI-SI CLAY	745.	1495.	16.
87.0	17.75	0.37	1.92	SENS. CLAYEY SI-SI CLAY	807.	1677.	16.
88.0	17.43	0.45	2.53	SENS. CLAYEY SI-SI CLAY	994.	1631.	16.
89.0	17.96	0.45	2.48	SENS. CLAYEY SI-SI CLAY	980.	1691.	16.
90.0	16.65	0.38	2.30	SENS. CLAYEY SI-SI CLAY	831.	1521.	16.
91.0	18.45	0.38	2.05	SENS. CLAYEY SI-SI CLAY	839.	1740.	16.
92.0	18.47	0.47	2.58	SENS. CLAYEY SI-SI CLAY	1044.	1735.	16.
93.0	18.53	0.48	2.60	SENS. CLAYEY SI-SI CLAY	1057.	1736.	16.
94.0	19.22	0.48	2.52	SENS. CLAYEY SI-SI CLAY	1065.	1817.	16.
95.0	20.13	0.50	2.51	SENS. CLAYEY SI-SI CLAY	1107.	1924.	16.
96.0	21.91	0.93	3.93	SILTY CLAY TO CLAY	2035.	2141.	16.
97.0	26.82	0.75	2.91	SILTY CLAY	1640.	2747.	16.
98.0	17.77	0.88	5.12	SILTY CLAY TO CLAY	1933.	1610.	16.
99.0	19.65	0.71	3.96	SILTY CLAY TO CLAY	1562.	1839.	16.
100.0	18.82	0.62	3.16	SILTY CLAY TO CLAY	1357.	1728.	16.
101.0	16.36	0.58	3.45	SILTY CLAY TO CLAY	1269.	1415.	16.
102.0	19.46	0.53	2.75	SENS. CLAYEY SI-SI CLAY	1168.	1797.	16.
103.0	16.63	0.36	2.16	SENS. CLAYEY SI-SI CLAY	790.	1436.	16.
104.0	16.67	0.29	1.70	SENS. CLAYEY SI-SI CLAY	632.	1435.	16.
105.0	15.58	0.22	1.45	SANDY SI TO CLAYEY SILT			
106.0	17.04	0.26	1.51	SANDY SI TO CLAYEY SILT			
107.0	17.11	0.29	1.63	SANDY SI TO CLAYEY SILT			
108.0	17.37	0.28	1.67	SANDY SI TO CLAYEY SILT			
109.0	16.96	0.26	1.50	SANDY SI TO CLAYEY SILT			

[1] Cone resistance.
[2] Friction resistance.
[3] Friction ratio.
[4] Undrained shear strength: $S_u = \frac{(q_c - \delta_v)}{N_c}$ where δ_v is the total vertical stress and N_c is a dimensionless bearing-capacity faction.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
110.0	18.16	0.30	1.63	SANDY SI TO CLAYEY SILT			
111.0	18.01	0.31	1.67	SANDY SI TO CLAYEY SILT			
112.0	25.96	0.63	2.23	SANDY SI TO CLAYEY SILT			
113.0	18.15	0.31	1.72	SANDY SI TO CLAYEY SILT			
114.0	17.72	0.33	1.85	SENS. CLAYEY SI-SI CLAY	727.	1504.	16.
115.0	17.90	0.34	1.89	SENS. CLAYEY SI-SI CLAY	747.	1520.	16.
116.0	18.18	0.35	1.89	SENS. CLAYEY SI-SI CLAY	761.	1549.	16.
117.0	18.49	0.35	1.87	SENS. CLAYEY SI-SI CLAY	768.	1577.	16.
118.0	18.66	0.42	2.22	SENS. CLAYEY SI-SI CLAY	930.	1597.	16.
119.0	20.34	0.37	1.81	SANDY SI TO CLAYEY SILT			
120.0	22.56	0.36	1.64	SANDY SI TO CLAYEY SILT			
121.0	19.03	0.38	2.02	SENS. CLAYEY SI-SI CLAY	838.	1624.	16.
122.0	19.13	0.38	2.04	SENS. CLAYEY SI-SI CLAY	843.	1630.	16.
123.0	20.47	0.36	1.64	SANDY SI TO CLAYEY SILT			
124.0	18.55	0.42	2.22	SENS. CLAYEY SI-SI CLAY	933.	1546.	16.
125.0	19.53	0.35	1.84	SANDY SI TO CLAYEY SILT			
126.0	19.12	0.32	1.68	SANDY SI TO CLAYEY SILT			
127.0	19.95	0.35	1.77	SANDY SI TO CLAYEY SILT			
128.0	19.24	0.32	1.68	SANDY SI TO CLAYEY SILT			
129.0	19.20	0.32	1.68	SANDY SI TO CLAYEY SILT			
130.0	20.15	0.35	1.77	SANDY SI TO CLAYEY SILT			
131.0	23.89	0.49	2.08	SANDY SI TO CLAYEY SILT			
132.0	20.36	0.38	1.88	SANDY SI TO CLAYEY SILT			
133.0	21.12	0.39	1.85	SANDY SI TO CLAYEY SILT			
134.0	20.63	0.37	1.94	SANDY SI TO CLAYEY SILT			
135.0	21.24	0.41	1.89	SANDY SI TO CLAYEY SILT			
136.0	33.74	1.66	2.89	SILTY CLAY	3658.	3369.	16.
137.0	28.20	0.25	0.94	SILTY SAND TO SANDY SILT			
138.0	22.09	0.71	2.98	SILTY CLAY	1567.	1901.	16.
139.0	22.20	0.46	2.22	SILTY CLAY	1013.	1908.	16.
140.0	44.77	1.82	3.49	SANDY CLAY TO SILTY CLAY	4003.	3778.	20.
141.0	38.16	1.88	4.29	SILTY CLAY TO CLAY	4125.	3890.	16.
142.0	42.95	1.66	3.86	SANDY CLAY TO SILTY CLAY	3654.	3587.	20.
143.0	175.78	5.55	2.73	SILTY SA TO CLAYEY SAND			
144.0	72.35	3.40	3.60	SANDY CLAY TO SILTY CLAY	7480.	6516.	20.
145.0	168.27	7.29	4.60	SANDY CLAY TO SILTY CLAY	16048.	16103.	20.
146.0	114.54	3.46	3.63	SANDY CLAY TO SILTY CLAY	7620.	10726.	20.
147.0	202.15	6.33	3.45	CLAYEY SA TO SANDY CLAY			
148.0	67.94	2.53	4.25	SANDY CLAY TO SILTY CLAY	5573.	6056.	20.
149.0	26.31	0.58	2.49	SILTY CLAY	1268.	2359.	16.

PROJECT NAME : DGGS
PROJECT NUMBER : 82-101-55
SITE : PS-C-02
CONE NUMBER : F15CKE070 SCALE END : 106.000 (ton/ft²)/in.
DATE : APRIL 6, 1982 SCALE SIDE : 1.050 (ton/ft²)/in.
RATE OF PENETRATION : 2.0 cm/sec SCALE DEPTH : 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
1.0	668.02	3.76	0.53	GRAVELLY SAND TO SAND			
2.0	366.74	4.56	0.58	GRAVELLY SAND TO SAND			
3.0	562.26	2.93	0.47	GRAVELLY SAND TO SAND			
4.0	604.27	3.12	0.67	GRAVELLY SAND TO SAND			
5.0	436.76	1.75	0.46	GRAVELLY SAND TO SAND			
6.0	508.12	2.83	0.58	GRAVELLY SAND TO SAND			
7.0	424.18	2.16	0.65	GRAVELLY SAND TO SAND			
8.0	385.62	2.33	0.55	GRAVELLY SAND TO SAND			
9.0	444.64	2.97	0.60	GRAVELLY SAND TO SAND			
10.0	262.62	1.19	0.47	GRAVELLY SAND TO SAND			
11.0	440.96	3.43	0.64	GRAVELLY SAND TO SAND			
12.0	361.30	2.64	0.59	GRAVELLY SAND TO SAND			
13.0	436.48	2.10	0.57	GRAVELLY SAND TO SAND			
14.0	501.41	2.44	0.49	GRAVELLY SAND TO SAND			
15.0	232.60	2.84	1.06	SAND TO SILTY SAND			
16.0	270.18	1.72	0.59	GRAVELLY SAND TO SAND			
17.0	131.81	2.29	1.75	SILTY SAND TO SANDY SILT			
18.0	53.79	0.99	2.09	SANDY SI TO CLAYEY SILT			
19.0	41.18	2.16	4.75	SILTY CLAY TO CLAY	4745.	5030.	16.
20.0	30.04	2.15	6.42	CLAY	4720.	3632.	16.
21.0	40.42	1.81	4.99	SILTY CLAY TO CLAY	3984.	4922.	16.
22.0	34.61	2.50	5.07	SILTY CLAY TO CLAY	5503.	4191.	16.
23.0	233.91	3.20	1.69	SAND TO SILTY SAND			
24.0	41.16	1.96	4.67	SILTY CLAY TO CLAY	4321.	4997.	16.
25.0	36.43	1.46	4.23	SILTY CLAY TO CLAY	3212.	4399.	16.
26.0	29.20	0.74	2.73	SILTY CLAY	1632.	3489.	16.
27.0	32.58	2.03	5.57	SILTY CLAY TO CLAY	4458.	3902.	16.
28.0	271.67	5.15	2.04	SAND TO SILTY SAND			
29.0	70.72	2.20	3.36	SANDY CLAY TO SILTY CLAY	4831.	6929.	20.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
30.0	89.04	3.45	4.09	SANDY CLAY TO SILTY CLAY	7585.	8755.	20.
31.0	81.65	3.99	3.76	SANDY CLAY TO SILTY CLAY	8773.	8011.	20.
32.0	294.42	2.25	0.78	GRAVELLY SAND TO SAND			
33.0	89.08	2.61	2.98	CLAYEY SA TO SANDY CLAY			
34.0	27.12	0.32	1.20	SANDY SI TO CLAYEY SILT			
35.0	32.55	0.86	2.11	SANDY SI TO CLAYEY SILT			
36.0	27.55	0.65	2.29	SANDY SI TO CLAYEY SILT			
37.0	23.87	0.51	2.17	SILTY CLAY	1123.	2754.	16.
38.0	19.88	0.40	1.97	SENS. CLAYEY SI-SI CLAY	875.	2250.	16.
39.0	18.05	0.36	1.99	SENS. CLAYEY SI-SI CLAY	791.	2014.	16.
40.0	20.70	0.51	2.54	SENS. CLAYEY SI-SI CLAY	1125.	2339.	16.
41.0	22.91	0.40	2.01	SANDY SI TO CLAYEY SILT			
42.0	15.05	0.34	2.21	SENS. CLAYEY SI-SI CLAY	737.	1621.	16.
43.0	15.61	0.38	2.43	SENS. CLAYEY SI-SI CLAY	835.	1684.	16.
44.0	13.52	0.30	2.13	SENS. CLAYEY SI-SI CLAY	670.	1666.	16.
45.0	14.05	0.30	2.13	SENS. CLAYEY SI-SI CLAY	656.	1477.	15.
46.0	14.84	0.30	1.92	SENS. CLAYEY SI-SI CLAY	658.	1569.	16.
47.0	61.79	1.92	2.93	CLAYEY SA TO SANDY CLAY			
48.0	238.41	3.57	1.34	SAND TO SILTY SAND			
49.0	46.75	0.88	2.12	SANDY SI TO CLAYEY SILT			
50.0	23.07	0.31	1.32	SANDY SI TO CLAYEY SILT			
51.0	18.29	0.30	1.75	SANDY SI TO CLAYEY SILT			
52.0	13.75	0.30	2.11	SENS. CLAYEY SI-SI CLAY	661.	1395.	16.
53.0	14.95	0.34	2.19	SENS. CLAYEY SI-SI CLAY	742.	1539.	16.
54.0	14.73	0.28	2.00	SENS. CLAYEY SI-SI CLAY	614.	1505.	16.
55.0	13.52	0.28	2.05	SENS. CLAYEY SI-SI CLAY	616.	1348.	16.
56.0	14.09	0.35	2.74	SENS. CLAYEY SI-SI CLAY	779.	1413.	16.
57.0	14.98	0.37	2.55	SENS. CLAYEY SI-SI CLAY	804.	1517.	16.
58.0	15.16	0.33	2.26	SENS. CLAYEY SI-SI CLAY	735.	1534.	16.
59.0	12.45	0.28	2.23	SENS. CLAYEY SI-SI CLAY	608.	1189.	16.
60.0	14.21	0.24	1.74	SENS. CLAYEY SI-SI CLAY	531.	1402.	16.
61.0	14.44	0.28	2.03	SENS. CLAYEY SI-SI CLAY	625.	1426.	16.
62.0	14.14	0.26	1.82	SENS. CLAYEY SI-SI CLAY	568.	1381.	16.
63.0	19.22	0.62	3.66	SILTY CLAY TO CLAY	1362.	2011.	16.
64.0	20.71	0.55	3.04	SILTY CLAY TO CLAY	1212.	2190.	16.
65.0	20.49	0.41	2.58	SENS. CLAYEY SI-SI CLAY	901.	2157.	16.
66.0	16.78	0.38	2.20	SENS. CLAYEY SI-SI CLAY	831.	1687.	16.
67.0	18.19	0.36	2.08	SENS. CLAYEY SI-SI CLAY	798.	1856.	16.
68.0	13.45	0.32	2.42	SENS. CLAYEY SI-SI CLAY	698.	1258.	16.
69.0	14.50	0.36	2.59	SENS. CLAYEY SI-SI CLAY	794.	1382.	16.
70.0	13.58	0.28	1.93	SENS. CLAYEY SI-SI CLAY	615.	1262.	16.
71.0	13.63	0.30	2.18	SENS. CLAYEY SI-SI CLAY	655.	1261.	16.
72.0	13.69	0.29	2.07	SENS. CLAYEY SI-SI CLAY	640.	1262.	16.
73.0	17.54	0.40	2.20	SENS. CLAYEY SI-SI CLAY	875.	1737.	16.
74.0	14.60	0.43	4.05	SILTY CLAY TO CLAY	955.	1364.	16.
75.0	16.88	0.71	2.93	SILTY CLAY TO CLAY	1568.	1643.	16.
76.0	15.03	0.34	2.26	SENS. CLAYEY SI-SI CLAY	744.	1406.	16.
77.0	15.37	0.37	2.49	SENS. CLAYEY SI-SI CLAY	805.	1441.	16.
78.0	13.64	0.33	2.35	SENS. CLAYEY SI-SI CLAY	732.	1219.	16.
79.0	13.89	0.31	2.26	SENS. CLAYEY SI-SI CLAY	683.	1244.	16.
80.0	15.32	0.26	1.76	SENS. CLAYEY SI-SI CLAY	573.	1417.	16.
81.0	13.83	0.24	1.74	SENS. CLAYEY SI-SI CLAY	535.	1224.	16.
82.0	15.48	0.35	2.24	SENS. CLAYEY SI-SI CLAY	763.	1425.	16.
83.0	16.44	0.33	2.10	SENS. CLAYEY SI-SI CLAY	723.	1538.	16.
84.0	14.79	0.30	2.01	SENS. CLAYEY SI-SI CLAY	656.	1325.	16.
85.0	15.13	0.31	2.07	SENS. CLAYEY SI-SI CLAY	679.	1361.	16.
86.0	16.38	0.34	2.07	SENS. CLAYEY SI-SI CLAY	755.	1511.	16.
87.0	16.51	0.33	1.96	SENS. CLAYEY SI-SI CLAY	722.	1522.	16.
88.0	16.31	0.37	2.32	SENS. CLAYEY SI-SI CLAY	818.	1491.	16.
89.0	17.24	0.36	2.11	SENS. CLAYEY SI-SI CLAY	793.	1600.	16.
90.0	17.58	0.40	2.12	SENS. CLAYEY SI-SI CLAY	881.	1636.	16.
91.0	17.33	0.40	2.21	SENS. CLAYEY SI-SI CLAY	881.	1599.	16.
92.0	16.76	0.34	2.03	SENS. CLAYEY SI-SI CLAY	754.	1521.	16.
93.0	20.39	0.49	2.20	SENS. CLAYEY SI-SI CLAY	1072.	1969.	16.
94.0	19.12	0.44	2.33	SENS. CLAYEY SI-SI CLAY	970.	1804.	16.
95.0	20.91	0.47	2.31	SENS. CLAYEY SI-SI CLAY	1032.	2022.	16.
96.0	19.67	0.43	2.14	SENS. CLAYEY SI-SI CLAY	944.	1860.	16.
97.0	18.30	0.40	2.09	SENS. CLAYEY SI-SI CLAY	881.	1683.	16.
98.0	18.92	0.45	2.39	SENS. CLAYEY SI-SI CLAY	981.	1754.	16.
99.0	20.09	0.45	2.28	SENS. CLAYEY SI-SI CLAY	980.	1894.	16.
100.0	21.18	0.46	2.24	SENS. CLAYEY SI-SI CLAY	1019.	2024.	16.
101.0	19.48	0.50	2.47	SENS. CLAYEY SI-SI CLAY	1092.	1805.	16.
102.0	19.63	0.47	2.37	SENS. CLAYEY SI-SI CLAY	1043.	1818.	16.
103.0	19.56	0.58	2.48	SENS. CLAYEY SI-SI CLAY	1281.	1803.	16.
104.0	19.35	0.48	2.50	SENS. CLAYEY SI-SI CLAY	1054.	1770.	16.
105.0	19.04	0.43	2.30	SENS. CLAYEY SI-SI CLAY	944.	1726.	16.
106.0	18.63	0.43	2.32	SENS. CLAYEY SI-SI CLAY	938.	1667.	16.
107.0	18.46	0.41	2.21	SENS. CLAYEY SI-SI CLAY	907.	1641.	16.
108.0	18.59	0.42	2.23	SENS. CLAYEY SI-SI CLAY	914.	1651.	16.
109.0	18.95	0.39	2.04	SENS. CLAYEY SI-SI CLAY	856.	1689.	16.
110.0	19.60	0.41	2.08	SENS. CLAYEY SI-SI CLAY	903.	1764.	16.
111.0	19.24	0.39	2.03	SENS. CLAYEY SI-SI CLAY	864.	1712.	16.
112.0	18.61	0.34	1.83	SENS. CLAYEY SI-SI CLAY	741.	1628.	16.
113.0	19.28	0.36	1.83	SANDY SI TO CLAYEY SILT			
114.0	18.57	0.35	1.87	SENS. CLAYEY SI-SI CLAY	779.	1610.	16.
115.0	19.60	0.38	1.96	SENS. CLAYEY SI-SI CLAY	830.	1733.	16.
116.0	22.16	0.41	1.89	SANDY SI TO CLAYEY SILT			
117.0	18.93	0.37	2.04	SENS. CLAYEY SI-SI CLAY	815.	1636.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
118.0	18.84	0.37	1.97	SENS. CLAYEY SI-SI CLAY	818.	1619.	16.
119.0	20.13	0.41	1.91	SANDY SI TO CLAYEY SILT			
120.0	20.28	0.42	2.04	SENS. CLAYEY SI-SI CLAY	934.	1787.	16.
121.0	20.08	0.44	2.19	SENS. CLAYEY SI-SI CLAY	967.	1756.	16.
122.0	20.91	0.48	2.21	SENS. CLAYEY SI-SI CLAY	1049.	1852.	16.
123.0	24.06	0.43	1.95	SANDY SI TO CLAYEY SILT			
124.0	21.10	0.46	2.18	SENS. CLAYEY SI-SI CLAY	1004.	1864.	16.
125.0	20.96	0.47	2.17	SENS. CLAYEY SI-SI CLAY	1030.	1840.	16.
126.0	21.24	0.47	2.14	SENS. CLAYEY SI-SI CLAY	1041.	1870.	16.
127.0	20.72	0.44	2.20	SENS. CLAYEY SI-SI CLAY	971.	1797.	16.
128.0	20.46	0.41	2.01	SENS. CLAYEY SI-SI CLAY	898.	1759.	16.
129.0	20.61	0.42	2.04	SENS. CLAYEY SI-SI CLAY	923.	1772.	16.
130.0	20.17	0.38	1.89	SANDY SI TO CLAYEY SILT			
131.0	21.56	0.45	2.05	SILTY CLAY	980.	1878.	16.
132.0	22.40	0.48	2.06	SANDY SI TO CLAYEY SILT			
133.0	21.68	0.43	2.01	SANDY SI TO CLAYEY SILT			
134.0	22.84	0.49	2.04	SANDY SI TO CLAYEY SILT			
135.0	25.39	0.53	2.22	SANDY SI TO CLAYEY SILT			
136.0	23.99	0.66	2.71	SILTY CLAY	1448.	2150.	16.
137.0	24.44	0.69	2.68	SILTY CLAY	1519.	2201.	16.
138.0	25.43	0.49	1.97	SANDY SI TO CLAYEY SILT			
139.0	25.74	0.46	2.08	SANDY SI TO CLAYEY SILT			
140.0	25.59	0.51	1.97	SANDY SI TO CLAYEY SILT			
141.0	25.96	0.74	2.49	SILTY CLAY	1637.	2366.	16.
142.0	33.74	1.67	3.85	SILTY CLAY TO CLAY	3673.	3332.	16.
143.0	39.19	0.94	3.20	SILTY CLAY	2073.	4006.	16.
144.0	163.86	7.65	4.93	SANDY CLAY TO SILTY CLAY	16820.	15667.	20.
145.0	33.65	0.66	3.15	SILTY CLAY	1459.	3301.	16.
146.0	194.59	8.69	3.51	CLAYEY SA TO SANDY CLAY			
147.0	239.69	8.96	4.35	SANDY CLAY TO SILTY CLAY	19712.	23235.	20.
148.0	148.52	6.23	4.61	SANDY CLAY TO SILTY CLAY	13696.	14113.	20.
147.0	43.58	2.86	4.58	SILTY CLAY TO CLAY	6288.	4518.	16.
150.0	300.89	11.34	3.62	CLAYEY SA TO SANDY CLAY			

PROJECT NAME	: DGGS		
PROJECT NUMBER	: 82-101-55		
SITE	: PS-C-03		
CONE NUMBER	: F15CKE070	SCALE END	: 106.000 (ton/ft²)/in.
DATE	: APRIL 6, 1982	SCALE SIDE	: 1.050 (ton/ft²)/in.
RATE OF PENETRATION	: 2.0 cm/sec	SCALE DEPTH	: 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
1.0	578.17	3.55	0.64	GRAVELLY SAND TO SAND			
2.0	238.30	2.70	0.82	SAND TO SILTY SAND			
3.0	733.99	4.45	0.53	GRAVELLY SAND TO SAND			
4.0	775.37	4.48	0.63	GRAVELLY SAND TO SAND			
5.0	586.58	5.28	0.75	GRAVELLY SAND TO SAND			
6.0	471.45	3.57	0.79	GRAVELLY SAND TO SAND			
7.0	517.53	3.53	0.59	GRAVELLY SAND TO SAND			
8.0	321.81	1.78	0.63	GRAVELLY SAND TO SAND			
9.0	169.37	0.82	0.51	SAND TO SILTY SAND			
10.0	230.76	2.41	1.09	SAND TO SILTY SAND			
11.0	252.75	2.65	1.10	SAND TO SILTY SAND			
12.0	195.64	1.69	0.91	SAND TO SILTY SAND			
13.0	307.02	2.51	0.86	SAND TO SILTY SAND			
14.0	335.77	3.20	0.95	SAND TO SILTY SAND			
15.0	272.06	3.62	1.20	SAND TO SILTY SAND			
16.0	239.35	1.42	0.70	GRAVELLY SAND TO SAND			
17.0	41.09	1.26	3.23	SANDY CLAY TO SILTY CLAY	2772.	4025.	20.
18.0	66.04	3.02	5.08	SILTY CLAY TO CLAY	6651.	8144.	16.
19.0	24.64	1.17	4.86	SILTY CLAY TO CLAY	2568.	2962.	16.
20.0	20.50	1.11	5.21	SILTY CLAY TO CLAY	2438.	2439.	16.
21.0	18.51	1.45	7.09	CLAY	3189.	2184.	16.
22.0	75.13	3.09	4.36	SANDY CLAY TO SILTY CLAY	6803.	7405.	20.
23.0	46.07	3.11	7.08	CLAY	6832.	5616.	16.
24.0	29.57	1.52	5.58	SILTY CLAY TO CLAY	3341.	3548.	16.
25.0	32.13	1.32	5.05	SILTY CLAY TO CLAY	2911.	3862.	16.
26.0	84.74	4.05	3.80	SANDY CLAY TO SILTY CLAY	8911.	8346.	20.
27.0	146.53	3.32	2.78	CLAYEY SA TO SANDY CLAY			
28.0	27.46	0.87	3.17	SILTY CLAY	1922.	3259.	16.
29.0	159.56	3.21	1.97	SILTY SA TO CLAYEY SAND			
30.0	31.38	1.69	3.96	SILTY CLAY TO CLAY	3715.	3737.	16.
31.0	263.01	3.53	1.36	SAND TO SILTY SAND			
32.0	35.46	1.02	2.71	SILTY CLAY	2253.	4234.	16.
33.0	30.94	0.40	1.24	SILTY SAND TO SANDY SILT			
34.0	35.63	1.79	3.72	SILTY CLAY TO CLAY	3944.	4243.	16.
35.0	50.68	1.07	2.60	SANDY SI TO CLAYEY SILT			
36.0	22.60	0.38	1.94	SANDY SI TO CLAYEY SILT			
37.0	21.59	0.84	4.07	SILTY CLAY TO CLAY	1843.	2468.	16.
38.0	19.24	0.58	3.01	SILTY CLAY TO CLAY	1269.	2170.	16.
39.0	16.32	0.58	3.43	SILTY CLAY TO CLAY	1277.	1798.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	$(q_c - \sigma_v)$	N_c
40.0	15.52	0.51	3.29	SILTY CLAY TO CLAY	1130.	1692.	16.
41.0	19.10	0.64	3.39	SILTY CLAY TO CLAY	1416.	2133.	16.
42.0	16.94	0.54	3.21	SILTY CLAY TO CLAY	1185.	1856.	16.
43.0	17.45	0.50	2.76	SENS. CLAYEY SI-SI CLAY	1093.	1915.	16.
44.0	17.11	0.45	2.61	SENS. CLAYEY SI-SI CLAY	987.	1866.	16.
45.0	52.44	2.03	4.12	SANDY CLAY TO SILTY CLAY	4471.	5020.	20.
46.0	333.94	5.39	1.68	SAND TO SILTY SAND			
47.0	246.32	4.61	1.93	SAND TO SILTY SAND			
48.0	24.07	0.21	1.90	SANDY SI TO CLAYEY SILT			
49.0	20.21	0.27	1.34	SANDY SI TO CLAYEY SILT			
50.0	19.44	0.38	1.99	SENS. CLAYEY SI-SI CLAY	832.	2119.	16.
51.0	23.04	0.48	1.97	SANDY SI TO CLAYEY SILT			
52.0	14.38	0.35	2.38	SENS. CLAYEY SI-SI CLAY	770.	1474.	16.
53.0	14.98	0.39	2.67	SENS. CLAYEY SI-SI CLAY	865.	1543.	16.
54.0	13.64	0.40	2.63	SENS. CLAYEY SI-SI CLAY	886.	1370.	16.
55.0	13.79	0.31	2.35	SENS. CLAYEY SI-SI CLAY	678.	1381.	16.
56.0	14.17	0.33	2.36	SENS. CLAYEY SI-SI CLAY	726.	1422.	16.
57.0	13.26	0.34	2.50	SENS. CLAYEY SI-SI CLAY	738.	1303.	16.
58.0	15.51	0.56	3.34	SILTY CLAY TO CLAY	1237.	1577.	16.
59.0	14.65	0.40	2.62	SENS. CLAYEY SI-SI CLAY	870.	1465.	16.
60.0	16.15	0.49	2.95	SILTY CLAY TO CLAY	1074.	1646.	16.
61.0	16.38	0.65	4.84	SILTY CLAY TO CLAY	1426.	1668.	16.
62.0	36.95	2.86	5.68	SILTY CLAY TO CLAY	6281.	4232.	16.
63.0	17.73	0.35	2.05	SENS. CLAYEY SI-SI CLAY	772.	1824.	16.
64.0	17.63	0.41	2.32	SENS. CLAYEY SI-SI CLAY	910.	1805.	16.
65.0	16.38	0.40	2.50	SENS. CLAYEY SI-SI CLAY	878.	1642.	16.
66.0	14.97	0.38	2.56	SENS. CLAYEY SI-SI CLAY	834.	1461.	16
67.0	16.44	0.63	3.18	SILTY CLAY TO CLAY	1381.	1638.	16.
68.0	14.39	0.33	2.27	SENS. CLAYEY SI-SI CLAY	734.	1400.	16.
69.0	14.11	0.33	2.39	SENS. CLAYEY SI-SI CLAY	732.	1334.	16.
70.0	14.20	0.38	2.64	SENS. CLAYEY SI-SI CLAY	832.	1338.	16.
71.0	15.77	0.55	3.89	SILTY CLAY TO CLAY	1216.	1530.	16.
72.0	17.19	0.59	3.45	SILTY CLAY TO CLAY	1292.	1700.	16.
73.0	23.97	1.34	3.97	SILTY CLAY TO CLAY	2956.	2542.	16.
74.0	15.07	0.37	2.61	SENS. CLAYEY SI-SI CLAY	804.	1422.	16.
75.0	15.26	0.55	3.44	SILTY CLAY TO CLAY	1205.	1441.	16.
76.0	15.57	0.40	2.63	SENS. CLAYEY SI-SI CLAY	882.	1473.	16.
77.0	14.61	0.39	2.55	SENS. CLAYEY SI-SI CLAY	856.	1347.	16.
78.0	15.40	0.47	2.85	SENS. CLAYEY SI-SI CLAY	1024.	1438.	16.
79.0	14.69	0.35	2.39	SENS. CLAYEY SI-SI CLAY	773.	1343.	16.
80.0	15.45	0.39	2.51	SENS. CLAYEY SI-SI CLAY	864.	1433.	16.
81.0	14.63	0.35	2.32	SENS. CLAYEY SI-SI CLAY	765.	1324.	16.
82.0	15.43	0.35	2.30	SENS. CLAYEY SI-SI CLAY	774.	1417.	16.
83.0	17.44	0.33	1.98	SENS. CLAYEY SI-SI CLAY	721.	1663.	16.
84.0	16.67	0.33	2.00	SENS. CLAYEY SI-SI CLAY	720.	1561.	16.
85.0	16.77	0.39	2.33	SENS. CLAYEY SI-SI CLAY	862.	1566.	16.
86.0	18.02	0.31	1.82	SENS. CLAYEY SI-SI CLAY	683.	1716.	16.
87.0	17.97	0.36	2.06	SENS. CLAYEY SI-SI CLAY	799.	1704.	16.
88.0	16.01	0.38	2.26	SENS. CLAYEY SI-SI CLAY	831.	1452.	16.
89.0	16.90	0.40	2.35	SENS. CLAYEY SI-SI CLAY	875.	1558.	16.
90.0	17.95	0.41	2.35	SENS. CLAYEY SI-SI CLAY	904.	1683.	16.
91.0	18.77	0.43	2.31	SENS. CLAYEY SI-SI CLAY	940.	1779.	16.
92.0	19.11	0.48	2.49	SENS. CLAYEY SI-SI CLAY	1048.	1815.	16.
93.0	19.09	0.44	2.33	SENS. CLAYEY SI-SI CLAY	959.	1807.	16.
94.0	19.25	0.46	2.26	SENS. CLAYEY SI-SI CLAY	1014.	1820.	16.
95.0	19.48	0.49	2.50	SENS. CLAYEY SI-SI CLAY	1072.	1842.	16.
96.0	18.90	0.45	2.41	SENS. CLAYEY SI-SI CLAY	999.	1764.	16.
97.0	21.85	0.46	2.19	SILTY CLAY	1006.	2127.	16.
98.0	19.10	0.47	2.46	SENS. CLAYEY SI-SI CLAY	1024.	1777.	16.
99.0	19.00	0.48	2.50	SENS. CLAYEY SI-SI CLAY	1062.	1758.	16.
100.0	18.74	0.47	2.49	SENS. CLAYEY SI-SI CLAY	1037.	1719.	16.
101.0	18.58	0.47	2.57	SENS. CLAYEY SI-SI CLAY	1043.	1693.	16.
102.0	19.46	0.50	2.56	SENS. CLAYEY SI-SI CLAY	1106.	1797.	16.
103.0	19.39	0.50	2.54	SENS. CLAYEY SI-SI CLAY	1096.	1782.	16.
104.0	19.88	0.49	2.47	SENS. CLAYEY SI-SI CLAY	1080.	1836.	16.
105.0	19.55	0.51	2.52	SENS. CLAYEY SI-SI CLAY	1117.	1789.	16.
106.0	19.58	0.49	2.53	SENS. CLAYEY SI-SI CLAY	1074.	1787.	16.
107.0	21.58	0.48	2.47	SILTY CLAY	1060.	2031.	16.
108.0	20.12	0.51	2.54	SENS. CLAYEY SI-SI CLAY	1126.	1842.	16.
109.0	19.95	0.47	2.35	SENS. CLAYEY SI-SI CLAY	1035.	1814.	16.
110.0	19.52	0.42	2.13	SENS. CLAYEY SI-SI CLAY	927.	1754.	16.
111.0	19.43	0.44	2.29	SENS. CLAYEY SI-SI CLAY	965.	1736.	16.
112.0	20.23	0.44	2.18	SENS. CLAYEY SI-SI CLAY	976.	1830.	16.
113.0	19.96	0.46	2.26	SENS. CLAYEY SI-SI CLAY	1004.	1790.	16.
114.0	20.12	0.48	2.36	SENS. CLAYEY SI-SI CLAY	1059.	1805.	16.
115.0	20.58	0.49	2.40	SENS. CLAYEY SI-SI CLAY	1071.	1856.	16.
116.0	22.33	0.47	2.20	SILTY CLAY	1035.	2068.	16.
117.0	20.43	0.41	1.93	SANDY SI TO CLAYEY SILT			
118.0	20.95	0.48	2.32	SENS. CLAYEY SI-SI CLAY	1067.	1882.	16.
119.0	20.13	0.46	2.28	SENS. CLAYEY SI-SI CLAY	1017.	1774.	16.
120.0	19.63	0.47	2.35	SENS. CLAYEY SI-SI CLAY	1035.	1705.	16.
121.0	19.86	0.51	2.50	SENS. CLAYEY SI-SI CLAY	1120.	1728.	16.
122.0	19.88	0.43	2.21	SENS. CLAYEY SI-SI CLAY	948.	1724.	16.
123.0	20.96	0.49	2.30	SENS. CLAYEY SI-SI CLAY	1086.	1853.	16.
124.0	20.90	0.46	2.23	SENS. CLAYEY SI-SI CLAY	1013.	1839.	16.
125.0	21.14	0.45	2.12	SENS. CLAYEY SI-SI CLAY	1000.	1863.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
126.0	22.87	0.83	3.32	SILTY CLAY	1826.	2073.	16.
127.0	21.27	0.61	2.91	SILTY CLAY TO CLAY	1346.	1867.	16.
128.0	20.76	0.43	2.13	SENS. CLAYEY SI-SI CLAY	957.	1797.	16.
129.0	31.33	0.79	2.77	SILTY CLAY	1741.	3111.	16.
130.0	85.48	3.84	4.22	SANDY CLAY TO SILTY CLAY	8458.	7899.	20.
131.0	29.87	0.48	1.60	SANDY SI TO CLAYEY SILT			
132.0	28.85	0.50	1.69	SANDY SI TO CLAYEY SILT			
133.0	27.32	0.47	1.71	SANDY SI TO CLAYEY SILT			
134.0	23.12	0.48	2.15	SILTY CLAY	1062.	2054.	16.
135.0	22.68	0.49	2.08	SANDY SI TO CLAYEY SILT			
136.0	22.04	0.50	2.10	SANDY SI TO CLAYEY SILT			
137.0	22.21	0.48	2.15	SILTY CLAY	1059.	1922.	16.
138.0	22.28	0.49	2.22	SILTY CLAY	1079.	1924.	16.
139.0	22.27	0.49	2.21	SILTY CLAY	1088.	1916.	16.
140.0	24.74	0.39	1.79	SANDY SI TO CLAYEY SILT			
141.0	26.50	1.11	3.33	SILTY CLAY	2433.	2433.	16.
142.0	22.10	0.55	2.49	SILTY CLAY	1210.	1877.	16.
143.0	23.66	0.62	2.53	SILTY CLAY	1374.	2065.	16.
144.0	26.27	0.81	3.13	SILTY CLAY	1778.	2385.	16.
145.0	117.69	5.31	4.45	SANDY CLAY TO SILTY CLAY	11675.	11046.	20.
146.0	192.05	4.71	3.07	CLAYEY SA TO SANDY CLAY			
147.0	73.62	4.05	7.98	CLAY	8910.	8286.	16.
148.0	68.92	3.05	3.41	SANDY CLAY TO SILTY CLAY	6711.	8153.	20.
149.0	35.86	1.46	4.72	SILTY CLAY TO CLAY	3209.	3553.	16.
150.0	277.24	8.59	2.95	SILTY SA TO CLAYEY SAND			

PROJECT NAME	: DGGS		
PROJECT NUMBER	: 82-101-55		
SITE	: PS-C-04		
CONE NUMBER	: F15CKE070	SCALE END	: 106.000 (ton/ft²)/in.
DATE	: APRIL 6, 1982	SCALE SIDE	: 1.050 (ton/ft²)/in.
RATE OF PENETRATION	: 2.0 cm/sec	SCALE DEPTH	: 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
1.0	876.99	4.79	0.61	GRAVELLY SAND TO SAND			
2.0	403.52	4.24	0.98	SAND TO SILTY SAND			
3.0	235.10	2.04	0.99	SAND TO SILTY SAND			
4.0	179.11	1.03	0.50	GRAVELLY SAND TO SAND			
5.0	132.35	0.15	0.27	SAND TO SILTY SAND			
6.0	49.69	0.77	1.39	SILTY SAND TO SANDY SILT			
7.0	34.01	0.08	0.14	SILTY SAND TO SANDY SILT			
8.0	60.51	0.23	0.55	SAND TO SILTY SAND			
9.0	178.91	0.35	0.25	GRAVELLY SAND TO SAND			
10.0	311.40	1.58	0.54	GRAVELLY SAND TO SAND			
11.0	309.06	1.80	0.60	GRAVELLY SAND TO SAND			
12.0	275.22	2.01	0.73	GRAVELLY SAND TO SAND			
13.0	259.71	2.65	0.96	SAND TO SILTY SAND			
14.0	294.89	2.13	0.77	GRAVELLY SAND TO SAND			
15.0	271.89	1.50	0.55	GRAVELLY SAND TO SAND			
16.0	234.19	1.92	0.85	SAND TO SILTY SAND			
17.0	209.29	1.09	0.57	GRAVELLY SAND TO SAND			
18.0	67.43	0.84	1.83	SILTY SAND TO SANDY SILT			
19.0	149.63	0.51	0.89	SAND TO SILTY SAND			
20.0	41.75	3.42	7.49	CLAY	7525.	9095.	16.
21.0	34.24	1.58	4.94	SILTY CLAY TO CLAY	3469.	4150.	16.
22.0	37.41	1.19	3.58	SILTY CLAY	2626.	4541.	16.
23.0	71.82	3.29	4.80	SILTY CLAY TO CLAY	7231.	8835.	16.
24.0	38.50	2.05	5.53	SILTY CLAY TO CLAY	4518.	4664.	16.
25.0	66.15	2.85	3.95	SANDY CLAY TO SILTY CLAY	6274.	6491.	20.
26.0	69.53	4.96	6.08	CLAY	10918.	8530.	16.
27.0	199.01	3.73	2.82	SILTY SA TO CLAYEY SAND			
28.0	176.15	4.71	2.01	SILTY SA TO CLAYEY SAND			
29.0	371.73	8.27	2.18	SAND TO SILTY SAND			
30.0	67.25	7.47	8.56	CLAY	16443.	8220.	16.
31.0	205.35	2.38	2.44	SILTY SA TO CLAYEY SAND			
32.0	53.59	3.62	6.62	CLAY	7964.	6500.	16.
33.0	24.90	0.57	3.36	SILTY CLAY	1261.	2857.	16.
34.0	24.70	0.42	1.79	SANDY SI TO CLAYEY SILT			
35.0	24.45	0.63	2.63	SILTY CLAY	1379.	2839.	16.
36.0	23.79	0.63	2.66	SILTY CLAY	1391.	2750.	16.
37.0	22.36	0.62	2.50	SILTY CLAY	1356.	2565.	16.
38.0	21.00	0.83	3.95	SILTY CLAY TO CLAY	1818.	2389.	16.
39.0	21.40	0.75	3.61	SILTY CLAY	1650.	2433.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	$(q_c - \delta_v)$	N_c
40.0	20.13	0.67	3.42	SILTY CLAY TO CLAY	1472.	2267.	16.
41.0	18.93	0.48	2.75	SENS. CLAYEY SI-SI CLAY	1054.	2112.	16.
42.0	16.60	0.38	2.41	SENS. CLAYEY SI-SI CLAY	846.	1814.	16.
43.0	51.22	0.42	1.11	SILTY SAND TO SANDY SILT			
44.0	29.22	2.66	6.70	CLAY	5842.	3379.	16.
45.0	309.07	2.59	0.94	SAND TO SILTY SAND			
46.0	333.30	5.44	1.43	SAND TO SILTY SAND			
47.0	76.99	5.89	8.50	CLAY	12961.	9331.	16.
48.0	29.44	0.55	2.59	SILTY CLAY	1206.	3381.	16.
49.0	25.41	1.06	4.46	SILTY CLAY TO CLAY	2324.	2872.	16.
50.0	44.19	0.60	2.10	SANDY SI TO CLAYEY SILT			
51.0	16.96	1.37	8.03	CLAY	3017.	1803.	16.
52.0	13.77	0.79	6.51	CLAY	1741.	1398.	16.
53.0	18.19	0.51	3.24	SILTY CLAY TO CLAY	1122.	1944.	16.
54.0	12.24	0.33	2.87	SENS. CLAYEY SI-SI CLAY	721.	1194.	16.
55.0	12.70	0.31	2.44	SENS. CLAYEY SI-SI CLAY	682.	1245.	16.
56.0	12.65	0.31	2.39	SENS. CLAYEY SI-SI CLAY	676.	1232.	16.
57.0	11.67	0.26	2.26	SENS. CLAYEY SI-SI CLAY	580.	1104.	16.
58.0	12.47	0.25	2.04	SENS. CLAYEY SI-SI CLAY	547.	1198.	16.
59.0	14.74	0.25	1.88	SENS. CLAYEY SI-SI CLAY	543.	1475.	16.
60.0	23.53	0.27	1.58	SANDY SI TO CLAYEY SILT			
61.0	14.37	0.18	1.40	SENS. CLAYEY SI-SI CLAY	386.	1416.	16.
62.0	16.09	0.19	1.08	SANDY SI TO CLAYEY SILT			
63.0	14.68	0.34	2.16	SENS. CLAYEY SI-SI CLAY	754.	1443.	16.
64.0	13.58	0.29	2.09	SENS. CLAYEY SI-SI CLAY	639.	1299.	16.
65.0	18.85	0.34	1.86	SENS. CLAYEY SI-SI CLAY	746.	1951.	16.
66.0	19.03	0.52	2.54	SENS. CLAYEY SI-SI CLAY	1140.	1968.	16.
67.0	13.94	0.34	2.38	SENS. CLAYEY SI-SI CLAY	738.	1325.	16.
68.0	24.75	0.46	1.80	SANDY SI TO CLAYEY SILT			
69.0	17.70	1.23	6.03	CLAY	2708.	1783.	16.
70.0	15.41	0.17	1.19	SANDY SI TO CLAYEY SILT			
71.0	14.90	0.23	1.52	SENS. CLAYEY SI-SI CLAY	515.	1420.	16.
72.0	18.95	0.26	1.27	SANDY SI TO CLAYEY SILT			
73.0	15.82	0.84	4.93	SILTY CLAY TO CLAY	1855.	1523.	16.
74.0	14.09	0.37	2.55	SENS. CLAYEY SI-SI CLAY	825.	1301.	16.
75.0	18.43	0.75	3.27	SILTY CLAY TO CLAY	1646.	1836.	16.
76.0	17.60	0.43	2.34	SENS. CLAYEY SI-SI CLAY	953.	1727.	16.
77.0	16.59	0.46	2.87	SENS. CLAYEY SI-SI CLAY	1016.	1594.	16.
78.0	13.32	0.35	2.96	SILTY CLAY TO CLAY	781.	1178.	16.
79.0	14.80	0.28	2.06	SENS. CLAYEY SI-SI CLAY	619.	1357.	16.
80.0	13.49	0.31	2.27	SENS. CLAYEY SI-SI CLAY	673.	1188.	16.
81.0	13.35	0.27	2.08	SENS. CLAYEY SI-SI CLAY	596.	1164.	16.
82.0	13.31	0.24	1.81	SENS. CLAYEY SI-SI CLAY	529.	1153.	16.
83.0	13.57	0.22	1.60	SENS. CLAYEY SI-SI CLAY	476.	1179.	16.
84.0	14.30	0.23	1.60	SENS. CLAYEY SI-SI CLAY	503.	1264.	16.
85.0	13.99	0.22	1.59	SENS. CLAYEY SI-SI CLAY	490.	1219.	16.
86.0	14.56	0.24	1.63	SENS. CLAYEY SI-SI CLAY	524.	1284.	16.
87.0	16.40	0.27	1.69	SENS. CLAYEY SI-SI CLAY	594.	1507.	16.
88.0	16.16	0.30	1.94	SENS. CLAYEY SI-SI CLAY	671.	1471.	16.
89.0	17.26	0.34	2.03	SENS. CLAYEY SI-SI CLAY	750.	1603.	16.
90.0	16.80	0.33	2.03	SENS. CLAYEY SI-SI CLAY	733.	1539.	16.
91.0	17.56	0.39	2.21	SENS. CLAYEY SI-SI CLAY	855.	1628.	16.
92.0	16.76	0.38	2.20	SENS. CLAYEY SI-SI CLAY	843.	1522.	16.
93.0	18.06	0.32	1.79	SENS. CLAYEY SI-SI CLAY	710.	1678.	16.
94.0	17.48	0.44	2.35	SENS. CLAYEY SI-SI CLAY	963.	1599.	16.
95.0	18.36	0.39	2.11	SENS. CLAYEY SI-SI CLAY	854.	1702.	16.
96.0	18.05	0.47	2.50	SENS. CLAYEY SI-SI CLAY	1031.	1658.	16.
97.0	17.49	0.41	2.39	SENS. CLAYEY SI-SI CLAY	892.	1581.	16.
98.0	19.36	0.41	2.10	SENS. CLAYEY SI-SI CLAY	891.	1809.	16.

PROJECT NAME : DGGS
PROJECT NUMBER : 82-101-55
SITE : PS-C-05
CONE NUMBER : F15CKE070 SCALE END : 106.000 (ton/ft²)/in.
DATE : APRIL 6, 1982 SCALE SIDE : 1.050 (ton/ft²)/in.
RATE OF PENETRATION : 2.0 cm/sec SCALE DEPTH : 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	$(q_c - \delta_v)$	N_c
1.0	141.74	2.66	2.10	SILTY SA TO CLAYEY SAND			
2.0	245.22	4.23	1.69	SAND TO SILTY SAND			
3.0	133.72	1.10	1.06	SAND TO SILTY SAND			
4.0	653.46	4.99	0.78	GRAVELLY SAND TO SAND			
5.0	590.12	5.38	0.72	GRAVELLY SAND TO SAND			
6.0	584.14	8.41	1.02	GRAVELLY SAND TO SAND			
7.0	465.57	3.61	0.81	GRAVELLY SAND TO SAND			

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
8.0	376.65	1.98	0.51	GRAVELLY SAND TO SAND			
9.0	350.94	1.37	0.39	GRAVELLY SAND TO SAND			
10.0	331.57	2.18	0.78	GRAVELLY SAND TO SAND			
11.0	308.13	2.21	0.77	GRAVELLY SAND TO SAND			
12.0	355.06	2.89	0.77	GRAVELLY SAND TO SAND			
13.0	277.12	2.21	0.74	GRAVELLY SAND TO SAND			
14.0	256.17	1.66	0.74	SAND TO SILTY SAND			
15.0	225.76	1.71	1.12	SAND TO SILTY SAND			
16.0	175.77	0.86	0.48	GRAVELLY SAND TO SAND			
17.0	76.92	1.40	1.66	SILTY SAND TO SANDY SILT			
18.0	246.14	1.07	0.61	GRAVELLY SAND TO SAND			
19.0	271.12	2.27	0.84	SAND TO SILTY SAND			
20.0	275.23	2.10	0.74	GRAVELLY SAND TO SAND			
21.0	229.27	1.72	0.85	SAND TO SILTY SAND			
22.0	54.52	2.32	3.74	SANDY CLAY TO SILTY CLAY	5105.	5343.	20.
23.0	42.98	3.54	5.87	CLAY	7786.	5230.	16.
24.0	64.08	4.63	6.97	CLAY	10191.	7862.	16.
25.0	79.84	5.85	7.52	CLAY	12870.	9825.	16.
26.0	304.79	5.33	1.83	SAND TO SILTY SAND			
27.0	126.35	4.91	3.11	CLAYEY SA TO SANDY CLAY			
28.0	202.38	5.51	2.49	SILTY SA TO CLAYEY SAND			
29.0	321.46	7.45	2.44	SILTY SA TO CLAYEY SAND			
30.0	163.32	5.74	3.39	CLAYEY SA TO SANDY CLAY			
31.0	150.29	4.36	4.05	SANDY CLAY TO SILTY CLAY	9597.	14875.	20.
32.0	186.20	3.79	3.02	CLAYEY SA TO SANDY CLAY			
33.0	21.59	0.39	1.83	SANDY SI TO CLAYEY SILT			
34.0	45.33	1.11	3.54	SANDY CLAY TO SILTY CLAY	2443.	4364.	20.
35.0	12.32	0.62	5.81	CLAY	1374.	1322.	16.
36.0	20.43	0.71	3.54	SILTY CLAY TO CLAY	1572.	2331.	16.
37.0	19.36	0.60	3.04	SILTY CLAY TO CLAY	1331.	2190.	16.
38.0	17.71	0.71	3.84	SILTY CLAY TO CLAY	1572.	1978.	16.
39.0	14.43	0.44	2.99	SILTY CLAY TO CLAY	973.	1562.	16.
40.0	16.66	0.74	3.28	SILTY CLAY TO CLAY	1621.	1834.	16.
41.0	15.46	0.72	4.34	SILTY CLAY TO CLAY	1580.	1678.	16.
42.0	179.54	3.99	2.51	SILTY SA TO CLAYEY SAND			
43.0	120.35	4.49	2.98	CLAYEY SA TO SANDY CLAY			
44.0	375.88	4.59	1.24	SAND TO SILTY SAND			
45.0	351.55	4.21	1.21	SAND TO SILTY SAND			
46.0	186.17	2.63	1.74	SAND TO SILTY SAND			
47.0	61.94	1.44	2.90	SANDY CLAY TO SILTY CLAY	3167.	5960.	20.
48.0	16.55	0.01	0.43	SANDY SI TO CLAYEY SILT			
49.0	11.43	0.19	1.52	SENS. CLAYEY SI-SI CLAY	409.	1124.	16.
50.0	29.13	1.07	3.66	SILTY CLAY	2346.	3331.	16.
51.0	14.05	0.47	4.28	SILTY CLAY TO CLAY	1040.	1439.	16.
52.0	43.90	2.04	3.92	SANDY CLAY TO SILTY CLAY	4499.	6131.	20.
53.0	12.95	0.40	3.97	SILTY CLAY TO CLAY	875.	1289.	16.
54.0	12.81	0.35	2.96	SILTY CLAY TO CLAY	777.	1265.	16.
55.0	11.79	0.25	2.20	SENS. CLAYEY SI-SI CLAY	554.	1131.	16.
56.0	11.87	0.32	2.68	SENS. CLAYEY SI-SI CLAY	712.	1136.	16.
57.0	12.49	0.27	2.32	SENS. CLAYEY SI-SI CLAY	599.	1206.	16.
58.0	12.68	0.26	2.16	SENS. CLAYEY SI-SI CLAY	576.	1224.	16.
59.0	14.10	0.34	2.30	SENS. CLAYEY SI-SI CLAY	737.	1395.	16.
60.0	14.72	0.31	2.22	SENS. CLAYEY SI-SI CLAY	686.	1467.	16.
61.0	14.41	0.33	2.44	SENS. CLAYEY SI-SI CLAY	736.	1421.	16.
62.0	15.09	0.30	2.30	SENS. CLAYEY SI-SI CLAY	665.	1500.	16.
63.0	16.10	0.57	3.50	SILTY CLAY TO CLAY	1249.	1620.	16.
64.0	15.01	0.41	2.74	SENS. CLAYEY SI-SI CLAY	898.	1478.	16.
65.0	14.80	0.36	2.42	SENS. CLAYEY SI-SI CLAY	795.	1445.	16.
66.0	16.75	0.41	2.53	SENS. CLAYEY SI-SI CLAY	904.	1683.	16.
67.0	14.52	0.33	2.28	SENS. CLAYEY SI-SI CLAY	718.	1398.	16.
68.0	15.49	0.73	4.11	SILTY CLAY TO CLAY	1603.	1513.	16.
69.0	15.03	0.59	3.37	SILTY CLAY TO CLAY	1304.	1449.	16.
70.0	13.19	0.29	2.05	SENS. CLAYEY SI-SI CLAY	632.	1213.	16.
71.0	14.31	0.44	2.74	SENS. CLAYEY SI-SI CLAY	979.	1347.	16.
72.0	16.37	0.39	2.41	SENS. CLAYEY SI-SI CLAY	860.	1598.	16.
73.0	16.15	0.30	1.86	SENS. CLAYEY SI-SI CLAY	663.	1564.	16.
74.0	13.34	0.27	2.00	SENS. CLAYEY SI-SI CLAY	594.	1206.	16.
75.0	13.58	0.30	2.16	SENS. CLAYEY SI-SI CLAY	653.	1231.	16.
76.0	27.14	1.12	4.46	SILTY CLAY TO CLAY	2459.	2920.	16.
77.0	16.43	0.45	3.37	SILTY CLAY TO CLAY	980.	1574.	16.
78.0	15.76	0.42	2.86	SENS. CLAYEY SI-SI CLAY	934.	1484.	16.
79.0	13.64	0.30	2.12	SENS. CLAYEY SI-SI CLAY	653.	1213.	16.
80.0	13.79	0.30	2.37	SENS. CLAYEY SI-SI CLAY	663.	1226.	16.
81.0	20.24	0.56	2.13	SENS. CLAYEY SI-SI CLAY	1231.	2026.	16.
82.0	16.99	0.27	1.57	SANDY SI TO CLAYEY SILT			
83.0	16.63	0.30	1.83	SENS. CLAYEY SI-SI CLAY	655.	1562.	16.
84.0	16.87	0.34	2.18	SENS. CLAYEY SI-SI CLAY	748.	1585.	16.
85.0	15.98	0.53	3.40	SILTY CLAY TO CLAY	1174.	1468.	16.
86.0	14.13	0.57	3.93	SILTY CLAY TO CLAY	1257.	1230.	16.
87.0	14.97	0.61	3.93	SILTY CLAY TO CLAY	1332.	1331.	16.
88.0	15.56	1.24	4.59	SILTY CLAY TO CLAY	2724.	1399.	16.
89.0	16.13	0.69	4.32	SILTY CLAY TO CLAY	1522.	1462.	16.
90.0	17.22	0.66	4.11	SILTY CLAY TO CLAY	1451.	1592.	16.
91.0	16.12	0.69	4.19	SILTY CLAY TO CLAY	1517.	1448.	16.
92.0	16.11	0.39	2.36	SENS. CLAYEY SI-SI CLAY	850.	1441.	16.
93.0	20.07	0.36	2.00	SENS. CLAYEY SI-SI CLAY	799.	1929.	16.
94.0	16.93	0.39	2.24	SENS. CLAYEY SI-SI CLAY	859.	1530.	16.
95.0	17.80	0.39	2.23	SENS. CLAYEY SI-SI CLAY	869.	1633.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
96.0	17.74	0.42	2.33	SENS. CLAYEY SI-SI CLAY	915.	1619.	16.
97.0	17.44	0.40	2.34	SENS. CLAYEY SI-SI CLAY	885.	1575.	16.
98.0	19.11	0.46	2.32	SENS. CLAYEY SI-SI CLAY	1004.	1778.	16.
99.0	18.11	0.71	2.92	SILTY CLAY TO CLAY	1571.	1647.	16.
100.0	19.63	0.46	2.39	SENS. CLAYEY SI-SI CLAY	1021.	1837.	16.
101.0	20.00	0.51	2.57	SENS. CLAYEY SI-SI CLAY	1123.	1870.	16.
102.0	19.29	0.51	2.58	SENS. CLAYEY SI-SI CLAY	1124.	1775.	16.
103.0	19.45	0.69	2.60	SENS. CLAYEY SI-SI CLAY	1516.	1789.	16.
104.0	18.69	0.48	2.53	SENS. CLAYEY SI-SI CLAY	1062.	1688.	16.

PROJECT NAME : DGGS
PROJECT NUMBER : 82-101-55
SITE : PS-C-06
CONE NUMBER : F15CKE070 SCALE END : 108.000 (ton/ft²)/in.
DATE : APRIL 6, 1982 SCALE SIDE : 5.450 (ton/ft²)/in.
RATE OF PENETRATION : 2.0 cm/sec SCALE DEPTH : 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
1.0	230.04	3.22	1.39	SAND TO SILTY SAND			
2.0	361.88	4.60	0.94	SAND TO SILTY SAND			
3.0	814.34	2.50	0.31	GRAVELLY SAND TO SAND			
4.0	751.31	4.83	0.66	GRAVELLY SAND TO SAND			
5.0	614.36	3.59	0.60	GRAVELLY SAND TO SAND			
6.0	597.14	4.21	0.74	GRAVELLY SAND TO SAND			
7.0	577.72	3.58	0.70	GRAVELLY SAND TO SAND			
8.0	351.54	2.87	0.63	GRAVELLY SAND TO SAND			
9.0	242.81	2.00	0.70	GRAVELLY SAND TO SAND			
10.0	279.44	1.86	0.70	GRAVELLY SAND TO SAND			
11.0	167.64	1.68	0.93	SAND TO SILTY SAND			
12.0	262.42	1.97	0.66	GRAVELLY SAND TO SAND			
13.0	188.76	1.64	0.86	SAND TO SILTY SAND			
14.0	274.72	1.72	0.65	GRAVELLY SAND TO SAND			
15.0	286.77	1.77	0.59	GRAVELLY SAND TO SAND			
16.0	318.09	2.17	0.64	GRAVELLY SAND TO SAND			
17.0	212.11	2.59	1.36	SAND TO SILTY SAND			
18.0	362.05	1.90	0.68	GRAVELLY SAND TO SAND			
19.0	273.38	2.56	0.91	SAND TO SILTY SAND			
20.0	315.17	2.15	0.75	GRAVELLY SAND TO SAND			
21.0	241.35	2.66	1.10	SAND TO SILTY SAND			
22.0	290.61	1.79	0.67	GRAVELLY SAND TO SAND			
23.0	327.95	2.07	0.62	GRAVELLY SAND TO SAND			
24.0	238.12	1.13	0.47	GRAVELLY SAND TO SAND			
25.0	113.94	3.92	4.26	SANDY CLAY TO SILTY CLAY	8624.	11270.	20.
26.0	75.15	5.90	7.91	CLAY	12972.	9232.	16.
27.0	55.60	2.98	6.45	CLAY	6545.	6783.	16.
28.0	176.87	5.01	2.11	SILTY SA TO CLAYEY SAND			
29.0	100.53	4.76	4.54	SANDY CLAY TO SILTY CLAY	10473.	9909.	20.
30.0	355.54	10.09	3.10	SILTY SA TO CLAYEY SAND			
31.0	320.45	7.94	2.43	SILTY SA TO CLAYEY SAND			
32.0	226.99	4.22	1.93	SAND TO SILTY SAND			
33.0	34.03	1.73	4.17	SILTY CLAY TO CLAY	3800.	4049.	16.
34.0	25.09	0.49	2.01	SANDY SI TO CLAYEY SILT			
35.0	21.16	1.00	4.68	SILTY CLAY TO CLAY	2209.	2428.	16.
36.0	17.28	1.16	5.75	CLAY	2556.	1937.	16.
37.0	26.22	0.89	3.33	SILTY CLAY	1962.	3048.	16.
38.0	23.93	0.85	3.90	SILTY CLAY TO CLAY	1880.	2756.	16.
39.0	47.43	1.46	3.99	SANDY CLAY TO SILTY CLAY	3209.	4549.	20.
40.0	227.03	5.39	2.47	SILTY SA TO CLAYEY SAND			
41.0	175.75	6.58	3.19	CLAYEY SA TO SANDY CLAY			
42.0	430.05	9.55	2.17	SAND TO SILTY SAND			
43.0	147.35	6.55	3.32	CLAYEY SA TO SANDY CLAY			
44.0	112.64	4.18	3.80	SANDY CLAY TO SILTY CLAY	9206.	11045.	20.
45.0	350.47	4.74	1.35	SAND TO SILTY SAND			
46.0	398.23	7.35	1.73	SAND TO SILTY SAND			
47.0	399.76	5.68	1.44	SAND TO SILTY SAND			
48.0	366.92	4.63	1.29	SAND TO SILTY SAND			
49.0	302.84	3.72	1.33	SAND TO SILTY SAND			
50.0	182.74	2.46	1.76	SAND TO SILTY SAND			
51.0	19.50	0.13	0.79	SANDY SI TO CLAYEY SILT			
52.0	29.14	1.32	3.09	SILTY CLAY	2915.	3319.	16.
53.0	18.21	0.91	4.04	SILTY CLAY TO CLAY	2004.	1946.	16.
54.0	32.77	0.63	2.55	SILTY CLAY	1380.	3760.	16.
55.0	12.15	0.47	3.86	SILTY CLAY TO CLAY	1039.	1177.	16.
56.0	14.17	0.54	3.67	SILTY CLAY TO CLAY	1198.	1423.	16.
57.0	11.77	0.31	2.96	SILTY CLAY TO CLAY	675.	1117.	16.
58.0	11.00	0.29	2.66	SENS. CLAYEY SI-SI CLAY	641.	1014.	16.
59.0	15.19	0.79	3.62	SILTY CLAY TO CLAY	1731.	1531.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	$(q_c - \sigma_v)$	N_c
60.0	17.16	0.63	3.52	SILTY CLAY TO CLAY	1376.	1772.	16.
61.0	18.49	0.64	3.51	SILTY CLAY TO CLAY	1416.	1932.	16.
62.0	13.09	0.36	2.70	SENS. CLAYEY SI-SI CLAY	795.	1250.	16.
63.0	34.65	1.12	3.09	SILTY CLAY	2462.	3939.	16.
64.0	13.02	0.54	3.95	SILTY CLAY TO CLAY	1199.	1229.	16.
65.0	13.01	0.38	2.89	SILTY CLAY TO CLAY	833.	1221.	16.
66.0	18.84	0.67	3.92	SILTY CLAY TO CLAY	1470.	1943.	16.
67.0	14.35	0.39	2.86	SENS. CLAYEY SI-SI CLAY	868.	1376.	16.
68.0	14.42	0.41	2.88	SILTY CLAY TO CLAY	902.	1379.	16.
69.0	13.61	0.32	2.50	SENS. CLAYEY SI-SI CLAY	700.	1272.	16.
70.0	14.79	0.35	2.59	SENS. CLAYEY SI-SI CLAY	760.	1412.	16.
71.0	12.85	0.31	2.47	SENS. CLAYEY SI-SI CLAY	683.	1164.	16.
72.0	14.98	0.62	3.02	SILTY CLAY TO CLAY	1368.	1423.	16.
73.0	12.81	0.29	2.33	SENS. CLAYEY SI-SI CLAY	637.	1147.	16.
74.0	13.22	0.37	2.60	SENS. CLAYEY SI-SI CLAY	808.	1192.	16.
75.0	13.80	0.35	2.56	SENS. CLAYEY SI-SI CLAY	775.	1258.	16.
76.0	23.75	0.80	3.74	SILTY CLAY TO CLAY	1753.	2495.	16.
77.0	18.19	0.61	3.31	SILTY CLAY TO CLAY	1337.	1794.	16.
78.0	29.68	0.67	3.14	SILTY CLAY	1469.	3249.	16.
79.0	18.66	0.28	1.83	SENS. CLAYEY SI-SI CLAY	605.	1840.	16.
80.0	16.97	0.20	1.24	SANDY SI TO CLAYEY SILT			
81.0	18.48	0.27	1.47	SANDY SI TO CLAYEY SILT			
82.0	18.12	0.27	1.46	SANDY SI TO CLAYEY SILT			
83.0	17.96	0.29	1.61	SANDY SI TO CLAYEY SILT			
84.0	18.15	0.27	1.53	SANDY SI TO CLAYEY SILT			
85.0	18.10	0.29	1.60	SANDY SI TO CLAYEY SILT			
86.0	18.02	0.31	1.97	SENS. CLAYEY SI-SI CLAY	673.	1716.	16.
87.0	19.95	0.67	3.49	SILTY CLAY TO CLAY	1467.	1951.	16.
88.0	16.21	0.59	3.54	SILTY CLAY TO CLAY	1299.	1478.	16.
89.0	15.04	0.52	3.27	SILTY CLAY TO CLAY	1133.	1425.	16.
90.0	15.64	0.51	3.28	SILTY CLAY TO CLAY	1122.	1394.	16.
91.0	15.34	0.50	3.30	SILTY CLAY TO CLAY	1097.	1350.	16.
92.0	16.63	0.63	3.68	SILTY CLAY TO CLAY	1380.	1505.	16.
93.0	16.95	0.26	2.97	SILTY CLAY TO CLAY	581.	1539.	16.
94.0	16.79	0.53	3.30	SILTY CLAY TO CLAY	1171.	1513.	16.
95.0	17.14	0.52	3.06	SILTY CLAY TO CLAY	1134.	1550.	16.
96.0	16.89	0.51	3.07	SILTY CLAY TO CLAY	1127.	1513.	16.
97.0	17.34	0.49	2.81	SENS. CLAYEY SI-SI CLAY	1072.	1563.	16.
98.0	16.86	0.48	2.83	SENS. CLAYEY SI-SI CLAY	1054.	1496.	16.
99.0	18.18	0.51	2.78	SENS. CLAYEY SI-SI CLAY	1121.	1655.	16.
100.0	17.78	0.46	2.57	SENS. CLAYEY SI-SI CLAY	1004.	1599.	16.
101.0	19.60	0.57	2.90	SILTY CLAY TO CLAY	1255.	1820.	16.
102.0	18.80	0.55	2.93	SILTY CLAY TO CLAY	1215.	1714.	16.
103.0	18.70	0.52	2.89	SILTY CLAY TO CLAY	1153.	1696.	16.
104.0	19.49	0.57	3.00	SILTY CLAY TO CLAY	1244.	1788.	16.
105.0	19.58	0.56	2.88	SILTY CLAY TO CLAY	1228.	1793.	16.
106.0	18.73	0.55	2.94	SILTY CLAY TO CLAY	1220.	1680.	16.
107.0	18.68	0.53	2.89	SILTY CLAY TO CLAY	1167.	1668.	16.
108.0	18.01	0.52	2.87	SENS. CLAYEY SI-SI CLAY	1148.	1578.	16.
109.0	18.00	0.51	2.84	SENS. CLAYEY SI-SI CLAY	1125.	1570.	16.
110.0	18.25	0.53	2.90	SILTY CLAY TO CLAY	1165.	1595.	16.
111.0	18.59	0.54	2.89	SILTY CLAY TO CLAY	1180.	1632.	16.
112.0	19.16	0.56	2.88	SILTY CLAY TO CLAY	1224.	1696.	16.
113.0	20.03	0.56	2.74	SENS. CLAYEY SI-SI CLAY	1234.	1799.	16.
114.0	20.19	0.55	2.78	SENS. CLAYEY SI-SI CLAY	1216.	1812.	16.
115.0	19.91	0.56	2.76	SENS. CLAYEY SI-SI CLAY	1229.	1772.	16.
116.0	19.13	0.50	2.63	SENS. CLAYEY SI-SI CLAY	1108.	1668.	16.
117.0	18.31	0.52	2.82	SENS. CLAYEY SI-SI CLAY	1135.	1559.	16.
118.0	17.45	0.49	2.83	SENS. CLAYEY SI-SI CLAY	1079.	1445.	16.
119.0	18.10	0.50	2.73	SENS. CLAYEY SI-SI CLAY	1108.	1531.	16.
120.0	18.44	0.52	2.83	SENS. CLAYEY SI-SI CLAY	1138.	1556.	16.
121.0	19.09	0.53	2.76	SENS. CLAYEY SI-SI CLAY	1174.	1632.	16.
122.0	19.35	0.51	2.67	SENS. CLAYEY SI-SI CLAY	1133.	1658.	16.
123.0	19.75	0.52	2.63	SENS. CLAYEY SI-SI CLAY	1143.	1701.	16.
124.0	20.28	0.53	2.64	SENS. CLAYEY SI-SI CLAY	1169.	1761.	16.
125.0	20.15	0.52	2.59	SENS. CLAYEY SI-SI CLAY	1145.	1739.	16.
126.0	20.40	0.52	2.57	SENS. CLAYEY SI-SI CLAY	1146.	1764.	16.
127.0	20.03	0.54	2.67	SENS. CLAYEY SI-SI CLAY	1187.	1711.	16.
128.0	20.97	0.54	2.56	SENS. CLAYEY SI-SI CLAY	1180.	1823.	16.
129.0	21.02	0.65	2.95	SILTY CLAY TO CLAY	1434.	1822.	16.
130.0	20.97	0.57	2.75	SENS. CLAYEY SI-SI CLAY	1259.	1810.	16.
131.0	21.65	0.74	3.07	SILTY CLAY	1618.	1889.	16.
132.0	22.33	0.62	3.41	SILTY CLAY	1360.	1967.	16.
133.0	29.05	0.90	3.31	SILTY CLAY	1990.	2801.	16.
134.0	24.58	0.61	2.48	SILTY CLAY	1337.	2236.	16.
135.0	24.33	0.59	2.23	SILTY CLAY	1303.	2199.	16.
136.0	28.20	0.73	2.61	SILTY CLAY	1613.	2677.	16.
137.0	23.91	0.51	2.24	SILTY CLAY	1131.	2134.	16.
138.0	25.68	0.55	2.14	SANDY SI TO CLAYEY SILT			
139.0	100.23	4.20	3.95	SANDY CLAY TO SILTY CLAY	9248.	9329.	20.
140.0	157.44	6.43	4.78	SANDY CLAY TO SILTY CLAY	14155.	15045.	20.
141.0	109.45	7.95	5.55	SILTY CLAY TO CLAY	17500.	12801.	16.
142.0	222.47	7.85	3.67	CLAYEY SA TO SANDY CLAY			
143.0	68.86	4.64	4.51	SANDY CLAY TO SILTY CLAY	10213.	6172.	20.
144.0	138.76	5.15	3.52	CLAYEY SA TO SANDY CLAY			
145.0	177.30	5.84	3.12	CLAYEY SA TO SANDY CLAY			
146.0	77.07	3.75	3.72	SANDY CLAY TO SILTY CLAY	8251.	6978.	20.
147.0	35.85	1.73	4.27	SILTY CLAY TO CLAY	3814.	3564.	16.
148.0	317.59	7.50	2.45	SILTY SA TO CLAYEY SAND			
149.0	252.50	9.50	3.69	CLAYEY SA TO SANDY CLAY			
150.0	67.63	1.86	3.48	SANDY CLAY TO SILTY CLAY	4092.	6014.	20.

PROJECT NAME : DGGS
PROJECT NUMBER : 82-101-55
SITE : PS-C-07
CONE NUMBER : F15CKE070 SCALE END : 108.000 (ton/ft²)/in.
DATE : APRIL 13, 1982 SCALE SIDE : 5.450 (ton/ft²)/in.
RATE OF PENETRATION : 2.0 cm/sec SCALE DEPTH : 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
1.0	178.48	3.36	1.60	SAND TO SILTY SAND			
2.0	669.18	1.50	0.32	GRAVELLY SAND TO SAND			
3.0	591.36	4.99	0.73	GRAVELLY SAND TO SAND			
4.0	420.79	2.53	0.56	GRAVELLY SAND TO SAND			
5.0	564.95	3.17	0.51	GRAVELLY SAND TO SAND			
6.0	430.48	2.60	0.56	GRAVELLY SAND TO SAND			
7.0	368.19	1.59	0.42	GRAVELLY SAND TO SAND			
8.0	413.82	2.72	0.71	GRAVELLY SAND TO SAND			
9.0	364.48	1.22	0.32	GRAVELLY SAND TO SAND			
10.0	392.37	1.34	0.40	GRAVELLY SAND TO SAND			
11.0	349.75	1.39	0.44	GRAVELLY SAND TO SAND			
12.0	366.54	1.85	0.73	GRAVELLY SAND TO SAND			
13.0	270.12	2.23	0.68	GRAVELLY SAND TO SAND			
14.0	378.76	2.12	0.56	GRAVELLY SAND TO SAND			
15.0	326.88	1.41	0.43	GRAVELLY SAND TO SAND			
16.0	307.67	1.75	0.55	GRAVELLY SAND TO SAND			
17.0	258.30	0.96	0.39	GRAVELLY SAND TO SAND			
18.0	401.91	1.57	0.40	GRAVELLY SAND TO SAND			
19.0	339.96	1.41	0.35	GRAVELLY SAND TO SAND			
20.0	478.83	1.10	0.24	GRAVELLY SAND TO SAND			
21.0	392.56	1.64	0.41	GRAVELLY SAND TO SAND			
22.0	327.28	1.43	0.40	GRAVELLY SAND TO SAND			
23.0	316.40	1.12	0.35	GRAVELLY SAND TO SAND			
24.0	346.27	1.21	0.36	GRAVELLY SAND TO SAND			
25.0	361.05	1.32	0.33	GRAVELLY SAND TO SAND			
26.0	368.43	1.19	0.33	GRAVELLY SAND TO SAND			
27.0	365.55	1.27	0.34	GRAVELLY SAND TO SAND			
28.0	130.91	3.70	2.69	CLAYEY SA TO SANDY CLAY			
29.0	57.08	2.99	4.72	SILTY CLAY TO CLAY	6588.	6955.	16.
30.0	54.05	3.02	4.19	SANDY CLAY TO SILTY CLAY	6635.	5257.	20.
31.0	81.83	4.15	3.73	SANDY CLAY TO SILTY CLAY	9135.	8029.	20.
32.0	148.84	3.36	2.39	SILTY SA TO CLAYEY SAND			
33.0	300.26	5.03	1.73	SAND TO SILTY SAND			
34.0	319.56	4.73	1.58	SAND TO SILTY SAND			
35.0	25.74	1.56	4.12	SILTY CLAY TO CLAY	3427.	3000.	16.
36.0	30.02	0.72	2.31	SANDY SI TO CLAYEY SILT			
37.0	25.40	1.00	4.07	SILTY CLAY TO CLAY	2190.	2945.	16.
38.0	22.62	1.04	4.22	SILTY CLAY TO CLAY	2295.	2592.	16.
39.0	24.13	1.14	4.51	SILTY CLAY TO CLAY	2502.	2774.	16.
40.0	101.44	1.93	2.94	CLAYEY SA TO SANDY CLAY			
41.0	331.37	3.18	0.98	SAND TO SILTY SAND			
42.0	306.23	3.32	1.05	SAND TO SILTY SAND			
43.0	276.13	2.23	0.77	GRAVELLY SAND TO SAND			
44.0	371.37	2.68	0.72	GRAVELLY SAND TO SAND			
45.0	382.81	2.71	0.72	GRAVELLY SAND TO SAND			
46.0	60.65	2.68	3.51	SANDY CLAY TO SILTY CLAY	5893.	5836.	20.
47.0	22.19	0.46	2.32	SILTY CLAY	1017.	2482.	16.
48.0	43.61	0.82	2.84	SANDY CLAY TO SILTY CLAY	1804.	4122.	20.
49.0	13.46	0.39	2.79	SENS. CLAYEY SI-SI CLAY	860.	1378.	16.
50.0	15.74	0.46	2.66	SENS. CLAYEY SI-SI CLAY	1002.	1656.	16.
51.0	22.37	1.32	4.85	SILTY CLAY TO CLAY	2905.	2479.	16.
52.0	318.00	3.04	0.98	SAND TO SILTY SAND			
53.0	273.85	3.02	1.25	SAND TO SILTY SAND			
54.0	56.22	1.73	3.21	SILTY CLAY	3796.	4192.	16.
55.0	316.96	2.53	0.82	GRAVELLY SAND TO SAND			
56.0	81.81	2.32	2.59	CLAYEY SA TO SANDY CLAY			
57.0	21.27	0.18	1.35	SANDY SI TO CLAYEY SILT			
58.0	16.14	0.20	1.24	SANDY SI TO CLAYEY SILT			
59.0	13.78	0.32	2.35	SENS. CLAYEY SI-SI CLAY	711.	1355.	16.
60.0	13.02	0.30	2.44	SENS. CLAYEY SI-SI CLAY	666.	1254.	16.
61.0	16.58	0.59	3.28	SILTY CLAY TO CLAY	1298.	1693.	16.
62.0	13.95	0.40	2.37	SENS. CLAYEY SI-SI CLAY	876.	1358.	16.
63.0	20.67	0.72	3.52	SILTY CLAY TO CLAY	1593.	2192.	16.
64.0	17.01	0.57	3.13	SILTY CLAY TO CLAY	1250.	1728.	16.
65.0	64.49	1.22	2.38	SANDY SI TO CLAYEY SILT			
66.0	18.11	0.39	2.17	SENS. CLAYEY SI-SI CLAY	868.	1853.	16.
67.0	17.92	0.37	2.16	SENS. CLAYEY SI-SI CLAY	821.	1822.	16.
68.0	19.20	0.47	2.52	SENS. CLAYEY SI-SI CLAY	1044.	1977.	16.
69.0	20.36	0.69	3.25	SILTY CLAY TO CLAY	1525.	2116.	16.
70.0	20.09	0.64	3.27	SILTY CLAY TO CLAY	1419.	2075.	16.
71.0	24.51	0.85	3.39	SILTY CLAY	1874.	2622.	16.
72.0	17.95	0.47	2.66	SENS. CLAYEY SI-SI CLAY	1037.	1795.	16.
73.0	16.36	0.39	2.35	SENS. CLAYEY SI-SI CLAY	855.	1590.	16.
74.0	16.26	0.55	2.97	SILTY CLAY TO CLAY	1219.	1571.	16.
75.0	16.26	0.41	2.47	SENS. CLAYEY SI-SI CLAY	902.	1566.	16.
76.0	16.82	0.38	2.17	SENS. CLAYEY SI-SI CLAY	837.	1629.	16.
77.0	16.54	0.37	2.33	SENS. CLAYEY SI-SI CLAY	808.	1588.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c \cdot \delta_v$)	N_c
78.0	17.02	0.49	2.98	SILTY CLAY TO CLAY	1073.	1641.	16.
79.0	25.06	0.79	3.48	SILTY CLAY	1739.	2641.	16.
80.0	34.28	1.65	4.51	SILTY CLAY TO CLAY	3620.	3786.	16.
81.0	18.36	0.51	2.81	SENS. CLAYEY SI-SI CLAY	1114.	1790.	16.
82.0	17.34	0.53	3.10	SILTY CLAY TO CLAY	1167.	1656.	16.
83.0	17.55	0.50	2.81	SENS. CLAYEY SI-SI CLAY	1099.	1677.	16.
84.0	17.11	0.48	2.80	SENS. CLAYEY SI-SI CLAY	1053.	1615.	16.
85.0	17.44	0.50	2.84	SENS. CLAYEY SI-SI CLAY	1097.	1630.	16.
86.0	17.46	0.49	2.81	SENS. CLAYEY SI-SI CLAY	1068.	1647.	16.
87.0	17.98	0.43	2.45	SENS. CLAYEY SI-SI CLAY	950.	1705.	16.
88.0	18.56	0.46	2.51	SENS. CLAYEY SI-SI CLAY	1020.	1771.	16.
89.0	18.64	0.44	2.37	SENS. CLAYEY SI-SI CLAY	975.	1776.	16.
90.0	18.14	0.41	2.27	SENS. CLAYEY SI-SI CLAY	909.	1706.	16.
91.0	18.54	0.42	2.20	SENS. CLAYEY SI-SI CLAY	918.	1750.	16.
92.0	18.38	0.45	2.49	SENS. CLAYEY SI-SI CLAY	989.	1724.	16.
93.0	19.13	0.38	2.05	SENS. CLAYEY SI-SI CLAY	835.	1811.	16.
94.0	20.75	0.45	2.18	SENS. CLAYEY SI-SI CLAY	996.	2008.	16.
95.0	20.19	0.58	2.46	SENS. CLAYEY SI-SI CLAY	1271.	1931.	16.
96.0	20.22	0.42	2.12	SENS. CLAYEY SI-SI CLAY	918.	1929.	16.
97.0	22.40	0.48	2.24	SILTY CLAY	1058.	2195.	16.
98.0	22.48	0.55	2.38	SILTY CLAY	1208.	2199.	16.
99.0	23.06	0.58	2.46	SILTY CLAY	1275.	2266.	16.
100.0	23.65	0.51	2.07	SANDY SI TO CLAYEY SILT			
101.0	24.21	0.57	2.41	SILTY CLAY	1260.	2397.	16.
102.0	22.03	0.59	2.62	SILTY CLAY	1296.	2118.	16.
103.0	22.48	0.56	2.40	SILTY CLAY	1235.	2168.	16.
104.0	21.94	0.45	2.27	SILTY CLAY	994.	2095.	16.
105.0	21.92	0.55	2.56	SILTY CLAY	1219.	2086.	16.
106.0	21.81	0.54	2.50	SILTY CLAY	1189.	2066.	16.
107.0	21.57	0.52	2.28	SILTY CLAY	1139.	2029.	16.
108.0	21.39	0.46	2.21	SILTY CLAY	1014.	2000.	16.
109.0	22.06	0.55	2.51	SILTY CLAY	1219.	2078.	16.
110.0	22.00	0.54	2.38	SILTY CLAY	1190.	2065.	16.
111.0	22.39	0.50	2.21	SILTY CLAY	1091.	2106.	16.
112.0	32.12	0.84	2.48	SANDY SI TO CLAYEY SILT			
113.0	22.64	0.54	2.28	SILTY CLAY	1183.	2150.	16.
114.0	23.25	0.57	2.22	SILTY CLAY	1248.	2195.	16.
115.0	24.98	0.65	2.49	SILTY CLAY	1425.	2405.	16.
116.0	23.64	0.51	2.20	SILTY CLAY	1124.	2232.	16.
117.0	24.11	0.45	1.95	SANDY SI TO CLAYEY SILT			
118.0	24.40	0.48	2.08	SANDY SI TO CLAYEY SILT			
119.0	25.17	0.54	2.12	SANDY SI TO CLAYEY SILT			
120.0	24.86	0.45	1.87	SANDY SI TO CLAYEY SILT			
121.0	24.87	0.54	2.18	SANDY SI TO CLAYEY SILT			
122.0	24.55	0.58	2.35	SILTY CLAY	1267.	2308.	16.
123.0	24.72	0.59	2.34	SILTY CLAY	1294.	2323.	16.
124.0	24.87	0.64	2.29	SILTY CLAY	1397.	2335.	16.
125.0	26.56	0.58	2.21	SANDY SI TO CLAYEY SILT			
126.0	25.00	0.53	2.20	SANDY SI TO CLAYEY SILT			
127.0	25.05	0.54	2.06	SANDY SI TO CLAYEY SILT			
128.0	24.89	0.51	2.15	SANDY SI TO CLAYEY SILT			
129.0	24.03	0.48	2.05	SANDY SI TO CLAYEY SILT			
130.0	26.04	0.49	1.89	SANDY SI TO CLAYEY SILT			
131.0	25.87	0.53	2.05	SANDY SI TO CLAYEY SILT			
132.0	26.10	0.56	2.10	SANDY SI TO CLAYEY SILT			
133.0	27.21	0.55	2.06	SANDY SI TO CLAYEY SILT			
134.0	27.78	0.59	2.13	SANDY SI TO CLAYEY SILT			
135.0	28.43	0.63	2.21	SANDY SI TO CLAYEY SILT			
136.0	28.80	0.52	1.83	SANDY SI TO CLAYEY SILT			
137.0	28.87	0.62	2.01	SANDY SI TO CLAYEY SILT			
138.0	30.85	2.10	3.52	SILTY CLAY	4625.	2995.	16.
139.0	29.08	0.77	3.02	SILTY CLAY	1689.	2767.	16.
140.0	47.42	3.07	4.87	SILTY CLAY TO CLAY	6732.	5053.	16.
141.0	45.42	2.01	3.30	SANDY CLAY TO SILTY CLAY	4419.	3838.	20.
142.0	41.44	1.58	3.87	SANDY CLAY TO SILTY CLAY	3483.	3435.	20.
143.0	107.63	2.27	2.76	CLAYEY SA TO SANDY CLAY			
144.0	82.34	1.53	1.89	SILTY SAND TO SANDY SILT			
145.0	73.86	0.85	1.53	SILTY SAND TO SANDY SILT			
146.0	177.77	8.23	4.75	SANDY CLAY TO SILTY CLAY	18098.	17048.	20.
147.0	35.02	0.99	2.70	SILTY CLAY	2179.	3460.	16.
148.0	34.75	1.25	3.24	SILTY CLAY	2754.	3421.	16.
149.0	117.10	3.15	2.94	CLAYEY SA TO SANDY CLAY			
150.0	32.28	1.20	3.06	SILTY CLAY	2631.	3099.	16.
151.0	117.20	1.69	1.59	SAND TO SILTY SAND			
152.0	144.55	2.55	1.95	SILTY SA TO CLAYEY SAND			
153.0	47.79	1.76	2.66	SANDY SI TO CLAYEY SILT			
154.0	273.40	5.91	2.07	SAND TO SILTY SAND			
155.0	226.38	6.63	2.71	SILTY SA TO CLAYEY SAND			
156.0	256.82	5.68	2.99	SILTY SA TO CLAYEY SAND			
157.0	125.21	4.04	3.34	CLAYEY SA TO SANDY CLAY			

PROJECT NAME : DGGS
PROJECT NUMBER : 82-101-55
SITE : PS-C-08
CONE NUMBER : F15CKE070 SCALE END : 108.000 (ton/ft²)/in.
DATE : APRIL 13, 1982 SCALE SIDE : 5.450 (ton/ft²)/in.
RATE OF PENETRATION : 2.0 cm/sec SCALE DEPTH : 5.080 ft/in.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
1.0	104.58	3.33	2.73	CLAYEY SA TO SANDY CLAY			
2.0	498.61	2.31	0.50	GRAVELLY SAND TO SAND			
3.0	687.79	3.75	0.50	GRAVELLY SAND TO SAND			
4.0	707.69	3.38	0.54	GRAVELLY SAND TO SAND			
5.0	541.86	1.98	0.43	GRAVELLY SAND TO SAND			
6.0	578.87	3.89	0.54	GRAVELLY SAND TO SAND			
7.0	550.66	3.15	0.58	GRAVELLY SAND TO SAND			
8.0	394.80	2.31	0.50	GRAVELLY SAND TO SAND			
9.0	417.43	3.69	0.70	GRAVELLY SAND TO SAND			
10.0	473.41	2.28	0.52	GRAVELLY SAND TO SAND			
11.0	492.15	3.39	0.68	GRAVELLY SAND TO SAND			
12.0	333.76	2.49	0.68	GRAVELLY SAND TO SAND			
13.0	470.39	2.63	0.47	GRAVELLY SAND TO SAND			
14.0	464.34	2.93	0.60	GRAVELLY SAND TO SAND			
15.0	447.62	2.06	0.44	GRAVELLY SAND TO SAND			
16.0	373.46	1.87	0.53	GRAVELLY SAND TO SAND			
17.0	318.11	1.50	0.49	GRAVELLY SAND TO SAND			
18.0	381.52	1.92	0.46	GRAVELLY SAND TO SAND			
19.0	389.39	1.70	0.42	GRAVELLY SAND TO SAND			
20.0	214.84	1.31	0.62	GRAVELLY SAND TO SAND			
21.0	253.86	0.74	0.29	GRAVELLY SAND TO SAND			
22.0	352.17	1.08	0.31	GRAVELLY SAND TO SAND			
23.0	376.21	4.03	0.88	GRAVELLY SAND TO SAND			
24.0	376.05	1.73	0.41	GRAVELLY SAND TO SAND			
25.0	352.19	1.70	0.45	GRAVELLY SAND TO SAND			
26.0	353.56	1.63	0.47	GRAVELLY SAND TO SAND			
27.0	386.83	2.27	0.59	GRAVELLY SAND TO SAND			
28.0	350.30	1.16	0.39	GRAVELLY SAND TO SAND			
29.0	372.68	1.25	0.34	GRAVELLY SAND TO SAND			
30.0	373.54	1.29	0.36	GRAVELLY SAND TO SAND			
31.0	405.27	1.91	0.48	GRAVELLY SAND TO SAND			
32.0	400.96	2.23	0.62	GRAVELLY SAND TO SAND			
33.0	202.00	8.25	4.13	SANDY CLAY TO SILTY CLAY	18145.	20036.	20.
34.0	169.27	4.97	3.02	CLAYEY SA TO SANDY CLAY			
35.0	42.16	2.26	5.03	SILTY CLAY TO CLAY	4983.	5053.	16.
36.0	106.00	3.04	3.01	CLAYEY SA TO SANDY CLAY			
37.0	45.92	1.94	4.06	SANDY CLAY TO SILTY CLAY	4269.	4408.	20.
38.0	37.86	1.64	4.41	SILTY CLAY TO CLAY	3598.	4497.	16.
39.0	26.39	1.10	4.60	SILTY CLAY TO CLAY	2422.	3056.	16.
40.0	37.58	1.70	4.01	SILTY CLAY TO CLAY	3750.	4449.	16.
41.0	15.29	0.72	4.89	SILTY CLAY TO CLAY	1581.	1656.	16.
42.0	85.37	2.37	2.91	CLAYEY SA TO SANDY CLAY			
43.0	279.57	2.75	0.95	SAND TO SILTY SAND			
44.0	114.19	2.94	2.63	CLAYEY SA TO SANDY CLAY			
45.0	271.02	3.57	1.72	SAND TO SILTY SAND			
46.0	293.88	3.65	1.23	SAND TO SILTY SAND			
47.0	278.84	2.55	0.94	SAND TO SILTY SAND			
48.0	169.32	2.99	1.75	SAND TO SILTY SAND			
49.0	32.14	1.17	3.26	SILTY CLAY	2568.	3713.	16.
50.0	68.39	1.86	2.72	SANDY CLAY TO SILTY CLAY	4091.	5390.	20.
51.0	74.99	1.17	1.77	SILTY SAND TO SANDY SILT			
52.0	80.73	1.61	1.65	SILTY SAND TO SANDY SILT			
53.0	15.26	0.31	2.85	SENS. CLAYEY SI-SI CLAY	673.	1578.	16.
54.0	11.39	0.28	3.02	SILTY CLAY TO CLAY	610.	1080.	16.
55.0	11.79	0.32	2.72	SENS. CLAYEY SI-SI CLAY	704.	1131.	16.
56.0	11.61	0.27	2.23	SENS. CLAYEY SI-SI CLAY	587.	1103.	16.
57.0	14.20	0.30	2.29	SENS. CLAYEY SI-SI CLAY	664.	1420.	16.
58.0	12.05	0.37	3.04	SILTY CLAY TO CLAY	814.	1145.	16.
59.0	12.21	0.33	2.64	SENS. CLAYEY SI-SI CLAY	718.	1159.	16.
60.0	13.38	0.29	2.30	SENS. CLAYEY SI-SI CLAY	627.	1299.	16.
61.0	11.86	0.33	2.72	SENS. CLAYEY SI-SI CLAY	735.	1102.	16.
62.0	12.50	0.33	2.53	SENS. CLAYEY SI-SI CLAY	731.	1177.	16.
63.0	13.85	0.33	2.33	SENS. CLAYEY SI-SI CLAY	723.	1340.	16.
64.0	44.03	1.16	2.20	SANDY SI TO CLAYEY SILT			
65.0	14.54	0.28	2.25	SENS. CLAYEY SI-SI CLAY	619.	1413.	16.
66.0	13.97	0.30	2.13	SENS. CLAYEY SI-SI CLAY	668.	1335.	16.
67.0	15.14	0.29	2.07	SENS. CLAYEY SI-SI CLAY	649.	1475.	16.
68.0	14.68	0.34	2.36	SENS. CLAYEY SI-SI CLAY	748.	1411.	16.
69.0	25.24	0.99	3.55	SILTY CLAY	2171.	2725.	16.
70.0	18.83	0.48	2.46	SENS. CLAYEY SI-SI CLAY	1049.	1918.	16.
71.0	15.35	0.39	2.69	SENS. CLAYEY SI-SI CLAY	866.	1476.	16.
72.0	20.67	0.61	2.91	SILTY CLAY TO CLAY	1338.	2136.	16.
73.0	15.79	0.37	2.17	SENS. CLAYEY SI-SI CLAY	807.	1519.	16.
74.0	14.94	0.38	2.44	SENS. CLAYEY SI-SI CLAY	845.	1407.	16.
75.0	15.74	0.43	2.68	SENS. CLAYEY SI-SI CLAY	948.	1500.	16.
76.0	16.93	0.46	2.76	SENS. CLAYEY SI-SI CLAY	1019.	1643.	16.

DEPTH (FT)	q_c[1] (TON/FT²)	f_s[2] (TON/FT²)	R_f[3] (f_s/q_c)	SOIL-BEHAVIOR TYPES	S_u[4] (LB/FT²)	($q_c - \delta_v$)	N_c
77.0	41.39	1.41	4.22	SANDY CLAY TO SILTY CLAY	3104.	3755.	20.
78.0	15.50	0.39	2.53	SENS. CLAYEY SI-SI CLAY	868.	1451.	16.
79.0	14.80	0.37	2.42	SENS. CLAYEY SI-SI CLAY	810.	1358.	16.
80.0	14.79	0.34	2.24	SENS. CLAYEY SI-SI CLAY	738.	1351.	16.
81.0	15.20	0.40	2.56	SENS. CLAYEY SI-SI CLAY	885.	1396.	16.
82.0	15.01	0.34	2.30	SENS. CLAYEY SI-SI CLAY	755.	1366.	16.
83.0	15.82	0.28	1.97	SENS. CLAYEY SI-SI CLAY	606.	1461.	16.
84.0	16.79	0.49	2.80	SENS. CLAYEY SI-SI CLAY	1086.	1575.	16.
85.0	16.74	0.50	2.92	SILTY CLAY TO CLAY	1097.	1563.	16.
86.0	16.71	0.41	2.48	SENS. CLAYEY SI-SI CLAY	892.	1553.	16.
87.0	18.32	0.51	2.77	SENS. CLAYEY SI-SI CLAY	1119.	1748.	16.
88.0	20.03	0.60	2.95	SILTY CLAY TO CLAY	1311.	1956.	16.
89.0	20.96	0.59	2.80	SENS. CLAYEY SI-SI CLAY	1294.	2065.	16.
90.0	20.85	0.58	2.76	SENS. CLAYEY SI-SI CLAY	1275.	2046.	16.
91.0	22.31	0.66	3.03	SILTY CLAY	1443.	2222.	16.
92.0	22.04	0.61	2.84	SILTY CLAY	1348.	2182.	16.
93.0	21.08	0.64	3.03	SILTY CLAY TO CLAY	1416.	2055.	16.
94.0	21.39	0.69	3.15	SILTY CLAY	1514.	2087.	16.
95.0	21.93	0.67	2.96	SILTY CLAY	1470.	2099.	16.
96.0	20.35	0.58	2.81	SENS. CLAYEY SI-SI CLAY	1281.	1945.	16.
97.0	20.00	0.60	2.96	SILTY CLAY TO CLAY	1310.	1895.	16.
98.0	19.58	0.54	2.76	SENS. CLAYEY SI-SI CLAY	1184.	1836.	16.
99.0	19.13	0.52	2.76	SENS. CLAYEY SI-SI CLAY	1146.	1774.	16.
100.0	18.11	0.49	2.67	SENS. CLAYEY SI-SI CLAY	1075.	1640.	16.
101.0	20.76	0.51	2.59	SENS. CLAYEY SI-SI CLAY	1113.	1966.	16.
102.0	17.14	0.45	2.60	SENS. CLAYEY SI-SI CLAY	998.	1506.	16.
103.0	18.25	0.42	2.22	SENS. CLAYEY SI-SI CLAY	926.	1639.	16.
104.0	17.69	0.44	2.53	SENS. CLAYEY SI-SI CLAY	968.	1563.	16.
105.0	17.93	0.49	2.71	SENS. CLAYEY SI-SI CLAY	1076.	1587.	16.
106.0	18.10	0.40	2.39	SENS. CLAYEY SI-SI CLAY	890.	1612.	16.
107.0	18.37	0.48	2.54	SENS. CLAYEY SI-SI CLAY	1051.	1629.	16.
108.0	18.31	0.43	2.32	SENS. CLAYEY SI-SI CLAY	957.	1616.	16.
109.0	18.93	0.43	2.20	SENS. CLAYEY SI-SI CLAY	946.	1686.	16.
110.0	19.53	0.43	2.18	SENS. CLAYEY SI-SI CLAY	937.	1756.	16.
111.0	19.25	0.38	2.10	SENS. CLAYEY SI-SI CLAY	843.	1714.	16.
112.0	18.66	0.40	2.23	SENS. CLAYEY SI-SI CLAY	889.	1634.	16.
113.0	18.32	0.39	2.17	SENS. CLAYEY SI-SI CLAY	868.	1586.	16.
114.0	18.53	0.38	2.07	SENS. CLAYEY SI-SI CLAY	845.	1605.	16.
115.0	20.61	0.44	2.23	SENS. CLAYEY SI-SI CLAY	973.	1859.	16.
116.0	19.95	0.47	2.41	SENS. CLAYEY SI-SI CLAY	1034.	1770.	16.
117.0	20.45	0.51	2.44	SENS. CLAYEY SI-SI CLAY	1120.	1827.	16.
118.0	20.60	0.54	2.48	SENS. CLAYEY SI-SI CLAY	1180.	1864.	16.
119.0	20.81	0.50	2.27	SENS. CLAYEY SI-SI CLAY	1098.	1859.	16.
120.0	22.02	0.53	2.43	SILTY CLAY	1155.	2004.	16.
121.0	21.77	0.52	2.52	SILTY CLAY	1143.	1967.	16.
122.0	21.26	0.54	2.50	SENS. CLAYEY SI-SI CLAY	1198.	1897.	16.
123.0	21.68	0.52	2.34	SILTY CLAY	1141.	1942.	16.
124.0	21.51	0.50	2.36	SILTY CLAY	1091.	1915.	16.
125.0	21.80	0.48	2.23	SILTY CLAY	1052.	1945.	16.
126.0	21.23	0.48	2.21	SENS. CLAYEY SI-SI CLAY	1046.	1868.	16.
127.0	21.85	0.54	2.46	SILTY CLAY	1185.	1939.	16.
128.0	22.40	0.53	2.28	SILTY CLAY	1170.	2001.	16.
129.0	23.19	0.49	2.17	SILTY CLAY	1078.	2094.	16.
130.0	21.53	0.54	2.43	SILTY CLAY	1192.	1880.	16.
131.0	21.46	0.49	2.36	SILTY CLAY	1075.	1865.	16.
132.0	22.59	0.55	2.42	SILTY CLAY	1214.	2000.	16.
133.0	22.70	0.52	2.26	SILTY CLAY	1143.	2033.	16.
134.0	23.01	0.54	2.36	SILTY CLAY	1190.	2041.	15.
135.0	22.19	0.53	2.43	SILTY CLAY	1165.	1931.	16.
136.0	23.79	0.57	2.40	SILTY CLAY	1251.	2126.	16.
137.0	23.74	0.58	2.41	SILTY CLAY	1265.	2113.	16.
138.0	23.00	0.51	2.26	SILTY CLAY	1112.	2015.	16.
139.0	24.32	0.58	2.53	SILTY CLAY	1267.	2173.	16.
140.0	22.59	0.67	3.00	SILTY CLAY	1484.	1950.	16.
141.0	22.06	0.63	2.85	SILTY CLAY	1376.	1878.	16.
142.0	23.98	0.62	2.63	SILTY CLAY	1372.	2112.	16.
143.0	25.44	0.69	2.54	SILTY CLAY	1528.	2288.	16.
144.0	24.43	0.60	4.04	SILTY CLAY TO CLAY	1328.	2156.	16.
145.0	262.97	6.93	4.10	SANDY CLAY TO SILTY CLAY	15250.	25573.	20.
146.0	165.44	2.91	3.31	CLAYEY SA TO SANDY CLAY			
147.0	81.74	1.72	3.65	SANDY CLAY TO SILTY CLAY	3785.	7440.	20.
148.0	78.95	4.63	5.24	SILTY CLAY TO CLAY	10190.	8945.	16.
149.0	160.55	2.18	2.01	SILTY SA TO CLAYEY SAND			
150.0	37.17	1.08	2.60	SANDY SI TO CLAYEY SILT			
151.0	142.71	3.16	1.90	SILTY SA TO CLAYEY SAND			
152.0	130.90	3.50	2.63	SILTY SA TO CLAYEY SAND			
153.0	124.73	2.32	2.68	CLAYEY SA TO SANDY CLAY			
154.0	424.65	6.43	1.52	SAND TO SILTY SAND			