REPORT OF GEOTECHNICAL INVESTIGATION PROPOSED CONDOMINIUMS

2055 AVENUE OF THE STARS
CENTURY CITY DISTRICT OF LOS ANGELES, CALIFORNIA

Prepared for:

AVENUE OF THE STARS ASSOCIATES, LLC
Los Angeles, California

Prepared by:

MACTEC Engineering and Consulting, Inc.

September 6, 2005

Project 4953-05-1851

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September 6, 2005

Avenue of the Stars Associates, LLC
c/o Mr. Jim Sinsheimer
Vice President - Construction
The Related Companies
18201 Von Karman Avenue, Suite 900
Irvine, California 92612

Subject: **Report of Geotechnical Investigation**
Proposed Condominiums
2055 Avenue of the Stars
Century City District of Los Angeles, California
MACTEC Project 4953-05-1851

Dear Mr. Sinsheimer:

We are pleased to submit this geotechnical report for the proposed redevelopment of the existing St. Regis hotel complex at 2055 Avenue of the Stars in the Century City District of Los Angeles, California into high-rise condominiums. We have submitted a preliminary geotechnical report for the subject site dated June 29, 2005. This report supersedes our preliminary report and incorporates the data from the current subsurface explorations and laboratory testing.

The results of our investigation and design recommendations for the proposed redevelopment are presented in this report. Please note that you or your representative should submit copies of this report to the appropriate governmental agencies for their review and approval prior to obtaining a building permit.

MACTEC Engineering and Consulting, Inc.
200 Citadel Drive • Los Angeles, CA 90040 • Phone: 323.889.5300 • Fax: 323.721.6700
www.mactec.com

It has been a pleasure to be of professional service to you. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

MACTEC Engineering and Consulting, Inc.

Venkat Bhadriraju
Staff Engineer

Carl C. Kim
Principal Engineer/Project Manager

REGISTERED PROFESSIONAL ENGINEER
CARL CHONG-SOO KIM
No. 2620
Exp. 6-30-06
GEOTECHNICAL
STATE OF CALIFORNIA

Perry A. Maljian
Senior Vice President

REGISTERED PROFESSIONAL ENGINEER
P. A. MALJIAN
No. 558
Exp. 3-31-07
GEOTECHNICAL
STATE OF CALIFORNIA

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(4 copies submitted)

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EXECUTIVE SUMMARY

This report presents the subsurface data and geotechnical recommendations for the proposed redevelopment of the St. Regis Hotel in the Century City District of Los Angeles into high-rise condominiums. The subsurface conditions and foundation design recommendations are summarized below.

Fill soils to a depth of 30 feet, likely related to the existing hotel's basement backfill, were found in our borings. Deeper fill down to about 5 feet below the depth of the existing basement level will likely be encountered within and immediately adjacent to existing basement areas. Fill soils primarily consist of sandy clay. The natural soils down to a depth of about 35 feet below the existing ground surface (bgs) consist predominantly of very stiff to hard lean clay with embedded layers of silts and sands. Deeper soils consist of dense to very dense sands. Ground water was not encountered at the site within the depths explored.

The results of the methane gas investigation for the project site are presented in a companion report. High concentrations of methane gas levels were recorded. Methane gas mitigation measures will be required during construction and will have to be implemented in the design of the proposed structures.

The excavation for the planned subterranean construction will extend to about 45 feet bgs, roughly the lowermost basement depth of the existing hotel building, which will be demolished to accommodate the proposed development. The soils at and below the planned level of excavation are generally hard or dense, and the proposed building may be supported on spread-type shallow foundations such as footings or a mat foundation. Floor slabs may be supported on grade.

1.0 SCOPE

This report presents the results of our geotechnical investigation for the proposed condominiums to be constructed at 2055 Avenue of the Stars in the Century City District of Los Angeles, California. The location of the site is shown on Figure 1, Site Location Map. The locations of the proposed structures and our current and prior explorations are shown on Figure 2, Plot Plan.

This investigation was authorized to determine the physical characteristics of the soils at the project site and to provide recommendations for foundation design, floor slab support, and grading and excavation for the development. The results of methane soil gas testing at the project site using procedures conforming to the Los Angeles Department of Building and Safety (LADBS) Methane Mitigation Standards are presented in a separate report.

The scope of this investigation did not include geologic or seismic studies for the site. Also, the assessment of general site environmental conditions for the presence of contaminants in the soils and groundwater of the site was beyond the scope of this investigation.

Our recommendations are based on the results of our current and prior field explorations, laboratory tests, and appropriate engineering analyses. The results of the current subsurface explorations and laboratory tests are presented in Appendix A. Our predecessor firm LeRoy Crandall & Associates has previously performed the geotechnical investigation for the original development of the project site (Project Nos. ADE 82211 dated August 30, 1982 and ADE-82211-B dated March 4, 1983). Results of prior subsurface explorations and laboratory tests are presented in Appendix B. We have reviewed the prior exploration and laboratory test data, conclusions, and findings of the prior reports referenced above and concur with the data and findings presented therein.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Avenue of the Stars, LLC and their design consultants to be used solely in the design of the proposed condominiums. The report has not been prepared for use by other parties, and may not contain sufficient information for purpose of other parties or other uses.

2.0 PROJECT DESCRIPTION

The project site is currently occupied by a 32-story hotel building with three basement levels. The ground level of the existing building is at about Elevation +317 feet above Mean Seal Level (MSL) underlain by basement levels at +303, +291 and +279 feet MSL respectively.

Based on information provided to us, the proposed redevelopment consists of a 147-unit, 40-story condominium tower topped with a 20-foot-high mechanical room. Beyond the tower's footprint, a two-story podium will house restaurants, conference rooms, and other amenities. The structures will be underlain by a three-level subterranean parking garage that will extend to essentially the same depth as the lowermost basement level of the existing hotel building, which will be demolished to accommodate the proposed development.

We understand that the proposed condominium tower will be of steel frame construction and the subterranean portion will be of reinforced concrete construction. We have assumed that the maximum column load will be about 6,000 kips for the proposed tower and 1,000 kips for the podium structure.

3.0 SITE CONDITIONS

The project site is located at the northwest corner of Avenue of the Stars and Olympic Boulevard in the Century City district of Los Angeles, California. The site is currently occupied by an existing 32-story hotel tower over three subterranean levels including tunnels, bridges and retaining walls. The project site is located within the City of Los Angeles Methane Zone and a site-specific assessment of the methane hazard was performed as a part of the current evaluation.

4.0 EXPLORATIONS AND LABORATORY TESTS

The subsurface exploration program for the current study consisted of a total of 4 borings. Two borings were drilled with an 8-inch-diameter hollow-stem auger to a depth of about 75 feet below the existing ground surface (bgs) at the locations shown on Figure 2. Two shallow borings to a depth of 5 feet were installed using hand auger equipment to screen methane at shallow depths[1]. Details of the explorations and the logs of the borings are presented in Appendix A.

In addition, prior borings drilled to a maximum depth of approximately 100 feet bgs by our predecessor firm LeRoy Crandall and Associates at the locations shown on Figure 2 for the original development of the project site were reviewed. The prior borings were drilled using 16- or 18-inch-diameter bucket augers. The results of our prior borings are presented in Appendix B.

Laboratory tests were performed on selected samples obtained from the current borings to aid in the classification of the soils and to determine the pertinent engineering properties of the foundation soils. In addition, results from pertinent prior laboratory testing by our predecessor firms were used in our analysis and are incorporated into this report. The following tests were performed during the current and prior investigations: moisture content and dry density determinations, direct shear, and consolidation. All testing was done in general accordance with applicable ASTM specifications at the time of testing. Details of the laboratory testing program and test results are presented in Appendices A and B.

5.0 SOIL CONDITIONS

Fill soils to a depth of 30 feet, likely related to basement backfill, were found in our borings. Deeper fill down to about 5 feet below the depth of the existing basement level will likely be encountered within and immediately adjacent to existing basement areas. Fill soils consist of sandy clay. The natural soils down to a depth of about 45 feet below the ground surface (bgs) consist predominantly of very stiff to hard lean clay with embedded layers of silts and sands. Deeper soils consist of dense to very dense sands.

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[1] *The results of methane soil gas testing at the project site using procedures conforming to the Los Angeles Department of Building and Safety (LADBS) Methane Mitigation Standards are presented in a separate report.*

Ground water table was not encountered during our current and prior explorations. The historic high ground-water level for the site reported by the California Geologic Survey[2] is at a depth of about 50 feet bgs. Shallower perched zones will likely be encountered and should be anticipated in the design and construction.

The corrosion studies indicate that the on-site soils are corrosive to ferrous metals, aggressive to copper, and have negligible sulfate attack potential on concrete. Corrosion test results are presented at the end of Appendix A.

6.0 LIQUEFACTION POTENTIAL

Liquefaction potential is greatest where the ground water level is shallow, and submerged loose, fine sands occur within a depth of about 50 feet or less. Liquefaction potential decreases as grain size and clay and gravel content increase. As ground acceleration and shaking duration increase during an earthquake, liquefaction potential increases. According to the City of Los Angeles Safety Element[3] and the California Geological Survey, the site is not located within a liquefaction hazard area. The results of our subsurface explorations confirm that the granular site soils are dense to very dense and will not be susceptible to liquefaction. Accordingly, liquefaction need not be considered in the design of the proposed development.

7.0 RECOMMENDATIONS

The excavation for the planned basement levels will extend about 45 feet bgs. Although ground water table was not encountered in our current or prior explorations, some perched water may be encountered during the excavation that will require control, collection, and removal. The natural soils at and below the planned level of excavation are generally hard or dense, and the proposed building may be supported on spread-type shallow foundations such as footings or a mat foundation established in undisturbed natural soils.

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[2] *California Division of Mines and Geology, 1998: Seismic Hazard Evaluation of the Beverly Hills 7.5-Minute Quadrangle, Los Angeles County, California; Open-File Report 98-14.*

[3] *Los Angeles, City of, 1996: Safety Element of the General Plan.*

High concentrations of methane gas levels were recorded. Methane gas mitigation measures will be required during construction (proper ventilation, special non-sparking construction equipment, etc.) and will have to be implemented in the design of the proposed structures.

7.1 FOUNDATIONS

Bearing Value

Spread footings established in undisturbed natural soils at the lowermost planned basement level and at least 4 feet below the lowest adjacent grade or floor level may be designed to impose a net dead-plus-live load pressure of 12,000 pounds per square foot. The excavations should be deepened as necessary to extend into satisfactory soils. The design allowable bearing value should be determined considering the anticipated settlement discussed in the section below.

A one-third increase may be used for wind or seismic loads. The recommended bearing value is a net value, and the weight of concrete in the footings can be taken as 50 pounds per cubic foot; the weight of soil backfill can be neglected when determining the downward loads. Where adjacent footings will have to be established at different elevations, the higher of the two adjacent footings should extend below a 1:1 plane extending upward from the near edge of the lower footing.

Footings for minor structures (loading dock walls, minor retaining walls, and free-standing walls) that are structurally separate from the proposed plaza can be designed to impose a net dead-plus-live load pressure of 1,500 pounds per square foot at a depth of 1½ feet below the lowest adjacent grade. Such footings can be established in either properly compacted fill soils or undisturbed natural soils.

Settlement

We estimate the settlement of the structure, supported on spread footings with footprints ranging from 144 to 520 square feet, will range from ¾ inch for a bearing pressure of 6,000 pounds per square foot to 1¼ inch for a bearing value of 12,000 pounds per square foot.

Lateral Resistance

Lateral loads can be resisted by soil friction and by the passive resistance of the soils. A coefficient of friction of 0.4 can be used between the footings and the floor slab and the supporting soils. The passive resistance of natural soils or properly compacted fill soils can be assumed to be equal to the pressure developed by a fluid with a density of 300 pounds per cubic foot. A one-third increase in the passive value can be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

7.2 DYNAMIC SITE CHARACTERISTICS

Site-Specific Response Spectra

The site-specific response spectrum for a seismic event with a 10% probability of being exceeded in 50 and 100 years (DBE) was estimated from a Probabilistic Seismic Hazard Analysis (PSHA) using the computer program EZ-FRISK, Version 7.11. Background seismicity was also included in the PSHA.

The response spectra were developed using the average of the ground motions obtained from the attenuation relationships of Abrahamson & Silva (1997), Sadigh et al. (1997), and Boore et al. (1997). For the Boore et al. (1997) relationship, we have used a shear wave velocity equivalent to that of a typical soil site (310 meters per second). For the attenuation relationships of Abrahamson & Silva and Sadigh et al., we have used the form of the equations developed for deep soil or soils site conditions.

EZ-FRISK modifies the attenuation equations to account for rupture directivity from earthquakes occurring on nearby faults as recommended by Somerville et al. (1997)[4]. To account for the uncertainty in the ground motion attenuation relationships, each relationship was integrated to six standard deviations beyond the median. EZ-FRISK uses the relationships developed by Wells and Coppersmith (1994) and others to obtain estimates of earthquake magnitude from rupture size.

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[4] *Somerville, P. G., Smith, N. F., Graves, R. W., and Abrahamson, N. A., 1997: Modification of Empirical Strong Ground Motion Attenuation Relations to Include the Amplitude and Duration Effects of Rupture Directivity, Seismological Research Letters, Vol. 68, No.1.*

The response spectrum for a seismic event with a 10% probability of being exceeded in 50 years and 100 years is presented on Figures 3 and 4 respectively for 2, 5 and 10% of critical structural damping. The response spectra in digitized form are shown on Tables 1 and 2.

Site Coefficient and Seismic Zonation

The site coefficient, S, can be determined as established in the Earthquake Regulations under Section 1629 of the California Building Code (CBC), 2001 edition, for seismic design of the proposed redevelopment. Based on our review of the local soil and geologic conditions, the site may be classified as Soil Profile Type S_C as specified in the 2001 code. The site is located within CBC Seismic Zone 4.

The site is near the Santa Monica Fault, which has been determined to be a Type B seismic source by the California Division of Mines and Geology. According to Map M-32 in the 1997 publication from the International Conference of Building Officials entitled "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada," the proposed project site is located at a distance of 2.25 miles South of Santa Monica Fault. At this distance from a seismic source type B, the near source factors, N_a and N_v, are to be taken as 1.28 and 1.57, respectively, based on Tables 16-S and 16-T of the 2001 CBC.

7.3 FLOOR SLAB SUPPORT

If the subgrade is prepared as recommended in the following section on grading, the lowermost basement floor slab and concrete walks and slabs adjacent to the buildings may be supported on grade. Construction activities and exposure to the environment may cause deterioration of the prepared subgrade. Therefore, we recommend that our field representative observe the condition of the final subgrade soils immediately prior to slab-on-grade construction and, if necessary, perform further density and moisture content tests to determine the suitability of the final prepared subgrade.

Although the bulk of the lowermost basement floor slab will be used for parking, where vinyl or other moisture-sensitive floor covering is planned (if any), we recommend that the floor slab be underlain by a capillary break consisting of a vapor-retarding membrane over a 4-inch-thick layer of gravel. A 2-inch-thick layer of sand should be placed between the gravel and the membrane to decrease the possibility of damage to the membrane.

A suggested gradation for the gravel would be as follows:

Sieve Size	Percent Passing
¾″	90–100
No. 4	0–10
No. 100	0–3

If a membrane is used, a low-slump concrete should be used to minimize possible curling of the slabs. A 2-inch-thick layer of coarse sand should be placed over the membrane to reduce slab curling. Care should be taken during the placement of the concrete to prevent displacement of the sand. The concrete slabs should be allowed to cure properly before placing vinyl or other moisture-sensitive floor covering.

Where vinyl or other moisture-sensitive floor covering is not planned, the floor slab may be supported directly on the prepared final prepared subgrade. A permanent dewatering and methane gas control system will be required beneath the lowermost floor slab.

7.4 EXCAVATION SLOPES

Excavations down to about 40 to 50 feet will be required for the lower subterranean parking levels of the proposed development. Where the necessary space is available, temporary unsurcharged embankment may be sloped back at 1:1 without shoring. Adjacent to the existing structures, the bottom of any unshored excavation should be restricted so as not to extend below a plane drawn at 1½:1 (horizontal to vertical) downward from the foundations of existing structures. Where space is not available, shoring will be required. Data for design of shoring are presented in the following section.

Because of space limitations, the majority of the planned excavation will most likely require shoring. In any event, where sloped embankments are used, the tops of the slopes should be barricaded to prevent vehicles and storage loads within 10 feet of the tops of the slopes. A greater setback may be necessary when considering heavy vehicles, such as concrete trucks and cranes; we should be advised of such heavy vehicles so that specific setback requirements can be established. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes, where necessary, to prevent runoff water from entering the excavation and eroding the slope faces.

The excavation should be observed by personnel of our firm so that any necessary modifications based on variations in the soil conditions encountered can be made. All applicable safety requirements, including OSHA requirements, should be met.

7.5 SHORING

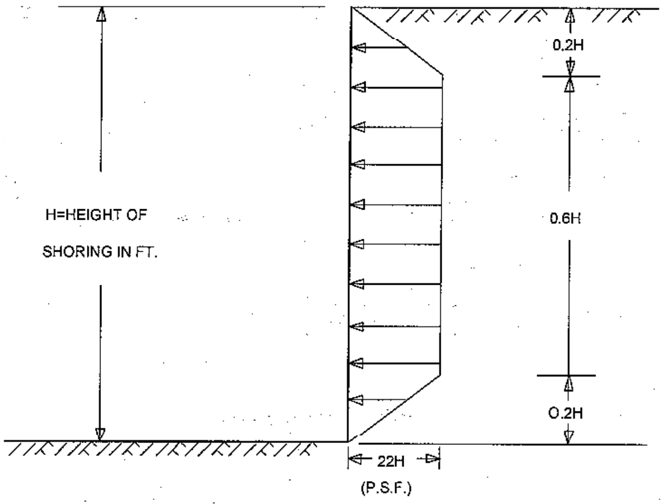
Excavations to a maximum depth of 15 feet may be shored using cantilevered shoring. Considering the anticipated depth of excavation, the main excavation for the project will require tied-back or braced shoring. Shoring would typically consist of steel soldier piles placed in drilled holes and backfilled with concrete, and tied back with earth anchors or internally braced.

If there are any existing basements in adjacent properties, planned excavation may have to be supported with internally braced shoring. The potential raveling and caving of sand layers may pose some difficulty in the drilling of the soldier piles and tie-back anchors. Sand layers that have the potential for raveling and caving were encountered the borings. Also, the presence of gravel and cobbles may cause some difficulty in drilling. Accordingly, the shoring contractor should be prepared to use special techniques and measures, if necessary, to permit the proper installation of the soldier piles and/or tied-back anchors.

Lateral Pressures

For the design of temporary cantilevered shoring, where the surface of the backfill is level, it can be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 30 pounds per cubic foot.

For the design of tied-back or braced shoring, we recommend the use of a trapezoidal distribution of earth pressure. The recommended pressure distribution, for the case where the grade is level behind the shoring, is illustrated below with the maximum pressure equal to 22H in pounds per square foot, where H is the height of the shoring in feet. Where a combination of sloped embankment and shoring is used, the pressure would be greater and must be determined for each combination.



In addition to the recommended earth pressures, the upper 10 feet of shoring adjacent to streets should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the shoring due to normal street traffic. If the traffic is kept back at least 10 feet from the shoring, the traffic surcharge may be neglected. We can determine lateral surcharge pressures for specific cases, such as a construction crane, concrete trucks, and other heavy construction equipment adjacent to shoring, if requested.

Shoring extending below a 2:1 (horizontal to vertical) plane extending downward from the bottoms of adjacent building foundations should be designed to support the lateral surcharge pressure from the existing building foundations. We can determine the lateral surcharge pressure from the foundations when their locations and imposed loads are known.

Design of Soldier Piles

For the design of soldier piles spaced at least two diameters on centers, the allowable lateral bearing value (passive value) of the soils below the level of excavation may be assumed to be 600 pounds per square foot at the excavated surface, up to a maximum of 6,000 pounds per square foot. To develop the full lateral value, provisions should be taken to assure firm contact between the soldier piles and the undisturbed soils. The concrete placed in the soldier pile excavations may be a lean-mix concrete. However, the concrete used in that portion of the soldier pile which is below the planned excavated level should be of sufficient strength to adequately transfer the imposed loads from the soldier pile to the surrounding soils.

The frictional resistance between the soldier piles and the retained earth may be used in resisting the downward component of the anchor load. The coefficient of friction between the soldier piles and the retained earth may be taken as 0.4. This value is based on the assumption that uniform full bearing will be developed between the steel soldier beam and the lean-mix concrete and between the lean-mix concrete and the retained earth. In addition, provided that the portion of the soldier piles below the excavated level is backfilled with structural concrete, the soldier piles below the excavated level may be used to resist downward loads. The frictional resistance between the concrete soldier piles and the soils below the excavated level may be taken as equal to 500 pounds per square foot.

Lagging

Continuous lagging will be required between the soldier piles. Careful installation of the lagging will be necessary to achieve bearing against the retained earth.

The soldier piles and anchors should be designed for the full anticipated lateral pressure. However, the pressure on the lagging will be less due to arching in the soils. For clear spans of up to 6 feet, we recommend that the lagging be designed for a semi-circular distribution of earth pressure where the maximum pressure is 400 pounds per square foot at the mid-line between soldier piles, and 0 pounds per square foot at the soldier piles.

Anchor Design

Tie-back friction anchors may be used to resist lateral loads. For design purposes, it may be assumed that the active wedge adjacent to the shoring is defined by a plane drawn at 35 degrees from the vertical through the bottom of the excavation. The anchors should extend at least 40 feet beyond the potential active wedge and to a greater length if necessary to develop the desired capacities.

The capacities of anchors should be determined by testing of the initial anchors as outlined in a following section. For design purposes, it may be estimated that drilled friction anchors will develop an average friction value of 600 pounds per square foot. For post-grouted anchors, it may be estimated that the anchors could develop an average friction of up to 1,800 pounds per square foot. Only the frictional resistance developed beyond the active wedge would be effective in resisting lateral loads. If the anchors are spaced at least 6 feet on centers, no reduction in the capacity of the anchors need be considered due to group action.

Anchor Installation

The anchors may be installed at angles of 15 to 40 degrees below the horizontal. Caving of the anchor holes should be anticipated and provisions made to minimize such caving. Mining (removal of soils from the anchor holes without advancing the drilling auger) of the sandy and gravelly soils could occur and the shoring contractor should take special care to prevent or at least minimize such mining.

The conventional anchors should be filled with concrete placed by pumping from the tip out, and the concrete should extend from the tip of the anchor to the active wedge. To minimize chances of caving, we suggest that the portion of the anchor shaft within the active wedge be backfilled with sand before testing the anchor. This portion of the shaft should be filled tightly and flush with the face of the excavation. The sand backfill may contain a small amount of cement to allow the sand to be placed by pumping.

Anchor Testing

Our representative should select at least two of the initial anchors for 24-hour 200% tests, and eight additional anchors for quick 200% tests. The purpose of the 200% test is to verify the friction value assumed in design. The anchors should be tested to develop twice the assumed friction value. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained.

For post-grouted anchors where concrete is used to backfill the anchor along its entire length, the test load should be computed as that required to develop the appropriate friction along the entire bonded length of the anchor. The test load should therefore be computed as:

$$P_{test} = P_{design} * \frac{L_b}{L_a} * M$$

where L_a=Length of Anchor beyond the Active Wedge
L_b=Bonded Length of Anchor
M=150% or 200%, depending on the test performed

The total deflection during the 24-hour 200% tests should not exceed 12 inches during loading; the anchor deflection should not exceed ¾ inch during the 24-hour period, measured after the 200% test load is applied. If the anchor movement after the 200% load has been applied for 12 hours is less than ½ inch, and the movement over the previous 4 hours has been less than 0.1 inch, the test may be terminated.

For the quick 200% tests, the 200% test load should be maintained for 30 minutes. The total deflection of the anchor during the 200% quick tests should not exceed 12 inches; the deflection after the 200% test load has been applied should not exceed ¼ inch during the 30-minute period. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained.

All of the production anchors should be pretested to at least 150% of the design load; the total deflection during the tests should not exceed 12 inches. The rate of creep under the 150% tests should not exceed 0.1 inch over a 15-minute period for the anchor to be approved for the design loading.

After a satisfactory test, each production anchor should be locked-off at the design load. The locked-off load should be verified by rechecking the load in the anchor. If the locked-off load varies by more than 10% from the design load, the load should be reset until the anchor is locked-off within 10% of the design load.

The installation of the anchors and the testing of the completed anchors should be observed by our firm.

Internal Bracing

Raker bracing, if used, could be supported laterally by temporary concrete footings (deadmen). For design of such temporary footings, poured with the bearing surface normal to rakers inclined at 45 to 60 degrees with the vertical, a bearing value of 4,000 pounds per square foot may be used, provided the shallowest point of the footing is at least 1 foot below the lowest adjacent grade. To reduce the movement of the shoring, the rakers should be tightly wedged against the footings and/or shoring system.

Deflection

It is difficult to accurately predict the amount of deflection of a shored embankment. It should be realized, however, that some deflection will occur. We estimate that this deflection could be on the order of 1½ to 2 inches at the top of a shored embankment up to 50 feet in height.

If greater deflection occurs during construction, additional bracing may be necessary to minimize settlement of adjacent structures and of any utilities in the adjacent streets. If desired to reduce the deflection of the shoring, a greater active pressure could be used in the shoring design.

Monitoring

Some means of monitoring the performance of the shoring system is recommended. The monitoring should consist of periodic surveying of the lateral and vertical locations of the tops of all the soldier piles. We will be pleased to discuss this further with the design consultants and the contractor when the design of the shoring system has been finalized.

We recommend that the adjacent existing streets be surveyed for horizontal and vertical locations. Also, a careful survey of existing cracks and offsets in the streets should be performed and recorded and photographic records made. A pre-construction benchmark survey establishing horizontal locations and vertical elevations for the adjacent buildings combined with documentation of existing cracks and offsets may be useful in responding to claims of building distress and damage (if any are made).

7.6 WALLS BELOW GRADE

Lateral Pressures

For design of cantilevered walls below grade and retaining walls, where the surface of the backfill is level, it may be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 30 pounds per cubic foot.

The subterranean building walls should be designed to resist a trapezoidal distribution of lateral earth pressure plus any surcharges from adjacent loads. The lateral earth pressure on the permanent subterranean walls will be similar to that recommended for design of temporary shoring except that the maximum lateral pressure will be 24H in pounds per square foot, where H is the height of the basement wall in feet. The recommended earth pressure assumes that a subdrain system will be installed below the floor slab of the lower subterranean level and behind the subterranean walls, so that external hydrostatic pressure will not be developed, if the ground water rises to the historical depth of 40 feet below the existing grade.

The recommended earth pressure assumes that a drainage system will be installed behind the walls below grade so that external water pressure will not develop against the subterranean walls.

In addition to the recommended earth pressures, the upper 10 feet of walls adjacent to vehicular traffic areas should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal traffic. If the traffic is kept back at least 10 feet from the walls, the traffic surcharge may be neglected. The walls should also be designed to resist any surcharge from adjacent footings.

Backfill

All required backfill should be mechanically compacted in layers; flooding should not be permitted. Proper compaction of backfill will be necessary to minimize settlement of the backfill and to minimize settlement of overlying slabs and paving. Backfill should be compacted to at least 90% to minimize settlement of overlying slabs, walks, and paving. Backfill should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction. The excavated soils may be used in the compacted backfill; however, cobbles larger than six inches in diameter should be omitted from the backfill to minimize possible damage to the walls. Also, clay soils should not be used for backfill behind walls.

Some settlement of the backfill should be anticipated, and any utilities supported therein should be designed to accept differential settlement, particularly at the points of entry to the building. Also, provisions should be made for some settlement of concrete walks supported on backfill.

Drainage

Building walls below grade should be waterproofed or at least dampproofed, depending upon the degree of moisture protection desired. As required in the City of Los Angeles, we recommend that a perimeter drain system be installed at the base of building walls below grade. For sloped excavations, the perimeter drain may consist of a four inch diameter perforated pipe placed with the perforations down and surrounded by at least four inches of filter gravel. Non-building walls should also be provided with a drain or weep holes.

Where shoring or shotcrete walls are planned, strips of Miradrain 6000 (or equivalent) may be used to provide drainage behind the basement walls. Miradrain is a waffle-like plastic drain material covered by a filter fabric. In our opinion, Miradrain attached to the lagging and protected from the concrete placement of the wall would provide satisfactory drainage.

Miradrain strips may be placed at a depth starting at about 4 feet bgs. We would suggest that Miradrain strips at least 4 feet wide be spaced corresponding to the width of two soldier pile bays. The Miradrain strips should be connected to a continuous 4-foot-wide Miradrain strip placed at the bottom of the excavation. We can provide additional details to implement this drainage option if requested.

7.7 PAVING

To provide support for paving, the subgrade soils should be prepared as recommended in the following section on grading. Compaction of the subgrade, including trench backfills, to at least 90%, and achieving a firm, hard, and unyielding surface will be important for paving support. The preparation of the paving area subgrade should be performed immediately prior to placement of the base course. Proper drainage of the paved areas should be provided since this will reduce moisture infiltration into the subgrade and increase the life of the paving.

Asphalt Concrete

The required paving and base thicknesses will depend on the expected wheel loads and volume of traffic (Traffic Index or TI). Assuming that the paving subgrade will consist of the upper on-site or comparable soils compacted to at least 90% as recommended, the minimum recommended paving thicknesses are presented in the following table.

Paving Thickness if Supported Directly on Clayey Soils (R Value of 9)

Traffic Index	Asphalt Concrete (inches)	Base Course (inches)
4	3	6
5	3	10
6	4	12
7	4	15

However, if the upper subgrade soils are removed and replaced with relatively non-expansive soils, the following paving sections may be used. It is assumed that such a subgrade will have an R-value of at least 40, which has to be verified during site grading.

Paving Thickness if Underlain by 12 Inches of Relatively Non-Expansive Soils (R value of 40)

Traffic Index	Asphalt Concrete (inches)	Base Course (inches)
4	3	4
5	3	4
6	4	5
7	4	7

The asphalt paving sections were determined using the Caltrans design method. We can determine the recommended paving and base course thicknesses for other Traffic Indices if required. Careful inspection is recommended to verify that the recommended thicknesses or greater are achieved, and that proper construction procedures are followed.

Portland Cement Concrete Paving

Portland cement concrete paving sections as well as all other concrete slabs and walks supported on grade should be underlain by at least 2 feet of properly compacted fill consisting of relatively non-expansive soils. We have assumed that such a subgrade will have an R-value of at least 40, which will need to be verified during grading.

Portland cement concrete paving sections were determined in accordance with procedures developed by the Portland Cement Association. Concrete paving sections for a range of Traffic Indices are presented in the following table. We have assumed that the Portland cement concrete will have a compressive strength of at least 3,000 pounds per square inch.

Paving Thickness

Traffic Index	Concrete Paving (inches)	Base Course (inches)
4	6½	4
5	7	4
6	7½	4
7	7½	4

The paving should be provided with expansion joints at regular intervals no more than 15 feet in each direction. Load transfer devices, such as dowels or keys, are recommended at joints in the paving to reduce possible offsets. The paving sections in the above table have been developed based on the strength of unreinforced concrete. Steel reinforcing may be added to the paving to reduce cracking and to prolong the life of the paving.

Base Course

The base course for both asphalt concrete and portland cement concrete paving should meet the specifications for Class 2 Aggregate Base as defined in Section 26 of the latest edition of the State of California, Department of Transportation, Standard Specifications. Alternatively, the base course could meet the specifications for untreated base as defined in Section 200-2 of the latest edition of the Standard Specifications for Public Works Construction. The base course should be compacted to at least 95%.

7.8 GRADING

Minor grading will likely be required for paved and hardscaped areas adjacent to the main structures. Excavation of existing fill and unsuitable natural soils and replacement with properly compacted fill will be required to provide good support for paving and hardscape.

The near-surface clayey soils are expansive and will shrink and swell with changes in the moisture content. These clayey soils near the ground surface, where encountered beneath portland cement concrete paving and at-grade concrete walks and slabs, should be excavated to allow the placement of at least 2 feet of relatively non-expansive soil. The recommended base course thickness beneath PCC paving, given in Section 8.8, Paving, may be considered part of the required relatively non-expansive soil layer.

We recommend that the existing fill be removed and replaced with properly compacted fill beneath asphalt concrete paving. However, if the risk of some increased maintenance is deemed acceptable, the proposed asphalt concrete paving may be installed directly on the existing soils (after clearing and proof-rolling with heavy equipment to identify and rework soft spots).

Site Preparation and Compaction

After removing the existing structure at the site and clearing the site and excavating to design elevations, the exposed soils should be carefully observed for the removal of all loose and disturbed soils. Next, the exposed soils should be rolled with heavy compaction equipment. The upper 6 inches of exposed soils should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction.

After compacting the exposed soils or placing the layer of crushed rock, the required fill should be placed in loose lifts not more than 8 inches thick and compacted to at least 90%. It is recommended that the moisture content of the on-site cohesive soils at the time of compaction be brought to between 2% and 4% over optimum moisture content. The granular soils should be compacted to a moisture content varying no more than 2% below or above optimum moisture content.

Backfill

All required backfill should be mechanically compacted in layers; flooding should not be permitted. Proper compaction of backfill will be necessary to minimize settlement of the backfill and to reduce settlement of overlying slabs and paving. Backfill should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction.

The on-site soils can be used in the compacted backfill. However, the clayey on-site soils are expansive and will be difficult to compact, and should not be used as wall backfill or within the upper 2 feet of any backfill supporting concrete slabs-on-grade. The exterior grades should be sloped to drain away from the foundations to prevent ponding of water.

Some settlement of the backfill should be expected, and any utilities supported therein should be designed to accept differential settlement, particularly at the points of entry to the building. Also, provisions should be made for some settlement of concrete walks supported on backfill.

Material for Fill

The on-site soils, less debris or organic materials within any existing fill soils, may be used in required fills. All required imported fill should consist of relatively non-expansive soils. The Expansion Index of the relatively non-expansive material should be less than 35. Import material should contain sufficient fines (binder material) so as to provide a compacted fill that will be relatively impermeable and will be stable in shallow trenches.

7.9 GEOTECHNICAL OBSERVATION

The reworking of the upper soils and the compaction of all required fill should be observed and tested during placement by a representative of our firm. This representative should perform at least the following duties:

- Observe the clearing and grubbing operations for proper removal of all unsuitable materials.
- Observe installation and testing of shoring.
- Observe the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished subgrade. The representative should also observe proofrolling and delineation of areas requiring overexcavation.
- Evaluate the suitability of on-site and import soils for fill placement; collect and submit soil samples for required or recommended laboratory testing where necessary.
- Observe the fill and backfill for uniformity during placement.
- Test backfill for field density and compaction to determine the percentage of compaction achieved during backfill placement.
- Observe and probe foundation materials to confirm that suitable bearing materials are present at the design foundation depths.

The governmental agencies having jurisdiction over the project should be notified prior to commencement of grading so that the necessary grading permits can be obtained and arrangements can be made for required inspection(s). The contractor should be familiar with the inspection requirements of the reviewing agencies.

8.0 BASIS FOR RECOMMENDATIONS

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Avenue of the Stars, LLC and their design consultants to be used solely in the design of the proposed Condominiums. The report has not been prepared for use by other parties, and may not contain sufficient information for purpose of other parties or other uses.

The recommendations provided in this report are based upon our understanding of the described project information and on our interpretation of the data collected during our subsurface explorations. We have made our recommendations based upon experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in the structure configuration, loads, location, or the site grades should be provided to us so that we can review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based upon the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as expected. This also provides for the procedure whereby the client can be advised of unexpected or changed conditions that would require modifications of our original recommendations. In addition, the presence of our representative at the site provides the client with an independent professional opinion regarding the geotechnically related construction practices. If another firm is retained for the geotechnical observation services, our professional responsibility and liability would be limited to the extent that we would not be the geotechnical engineer of record.

TABLES

Table 1: Pseudospectral Velocity in Inches/Second

	2% damping		5% damping		10% damping	
Period in Seconds	DBE*	MCE**	DBE	MCE	DBE	MCE
0.01	0.31	0.39	0.31	0.39	0.31	0.39
0.05	2.18	2.77	2.18	2.77	2.18	2.77
0.10	6.81	8.53	5.70	7.13	4.85	6.07
0.20	19.12	24.41	14.77	18.86	11.48	14.65
0.30	28.50	36.69	22.60	29.09	18.14	23.35
0.40	35.12	45.30	28.61	36.90	23.68	30.54
0.50	40.84	52.58	33.27	42.83	27.54	35.46
0.75	53.27	69.93	43.39	56.96	35.92	47.15
1.00	58.62	78.97	47.75	64.33	39.53	53.25
2.00	60.20	79.76	51.08	67.67	44.18	58.53
3.00	54.21	72.30	45.99	61.34	39.78	53.06
4.00	48.13	64.51	40.83	54.73	35.32	47.34

By VB 08/18/04
Chkd IS 9/6/05

---

* Design Basis Earthquake (10% Probability of Exceedance in 50 Years)

** Maximum Capable Earthquake (10% Probability of Exceedance in 100 Years)

Table 2: Pseudospectral Acceleration in g

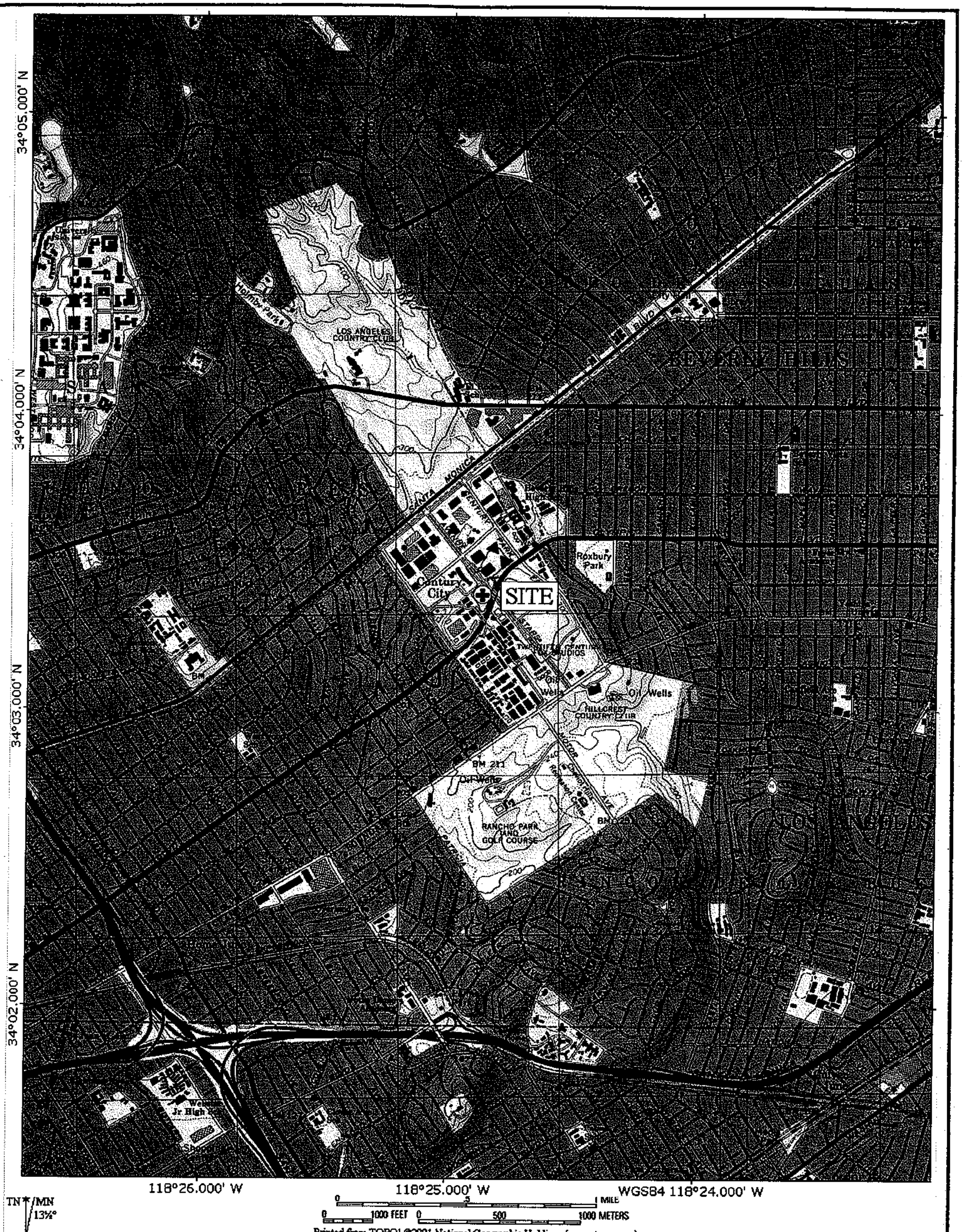
	2% damping		5% damping		10% damping	
Period in Seconds	DBE*	MCE**	DBE	MCE	DBE	MCE
0.01	0.51	0.64	0.51	0.64	0.51	0.64
0.05	0.71	0.90	0.71	0.90	0.71	0.90
0.10	1.11	1.39	0.93	1.16	0.79	0.99
0.20	1.55	1.98	1.20	1.53	0.93	1.19
0.30	1.54	1.99	1.23	1.58	0.98	1.27
0.40	1.43	1.84	1.16	1.50	0.96	1.24
0.50	1.33	1.71	1.08	1.39	0.90	1.15
0.75	1.15	1.52	0.94	1.24	0.78	1.02
1.00	0.95	1.28	0.78	1.05	0.64	0.87
2.00	0.49	0.65	0.42	0.55	0.36	0.48
3.00	0.29	0.39	0.25	0.33	0.22	0.29
4.00	0.20	0.26	0.17	0.22	0.14	0.19

By VB 08/18/04
Chkd LT 9/6/05

* Design Basis Earthquake (10% Probability of Exceedance in 50 Years)
** Maximum Capable Earthquake (10% Probability of Exceedance in 100 Years)

FIGURES

JOB 4953-05-1851 DATE 09/07/05 F.T. DR. T.T. O.E. Venkat B. CHKD



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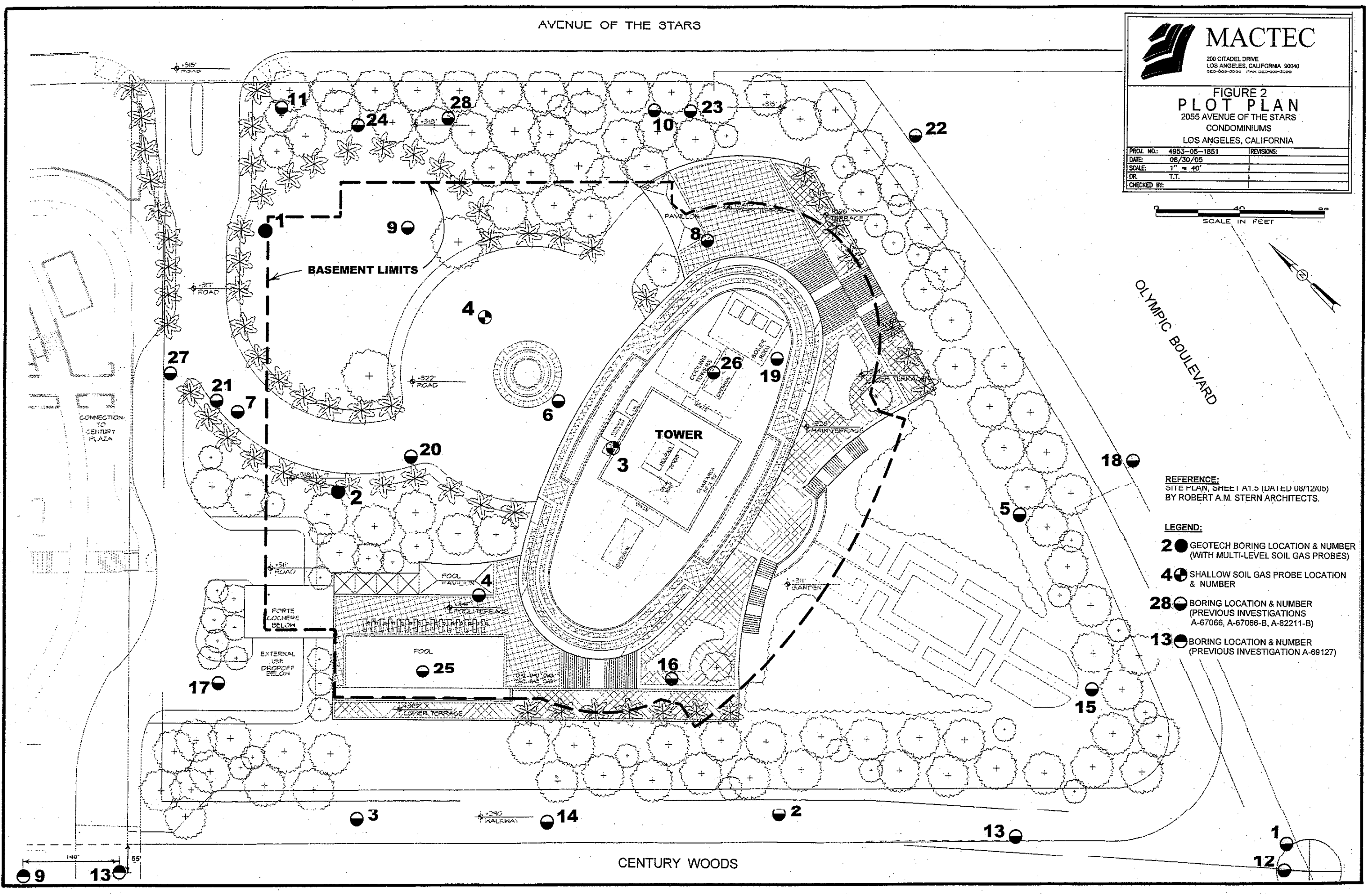
VICINITY MAP

MACTEC

FIGURE 1



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200 CITADEL DRIVE
LOS ANGELES, CALIFORNIA 90040

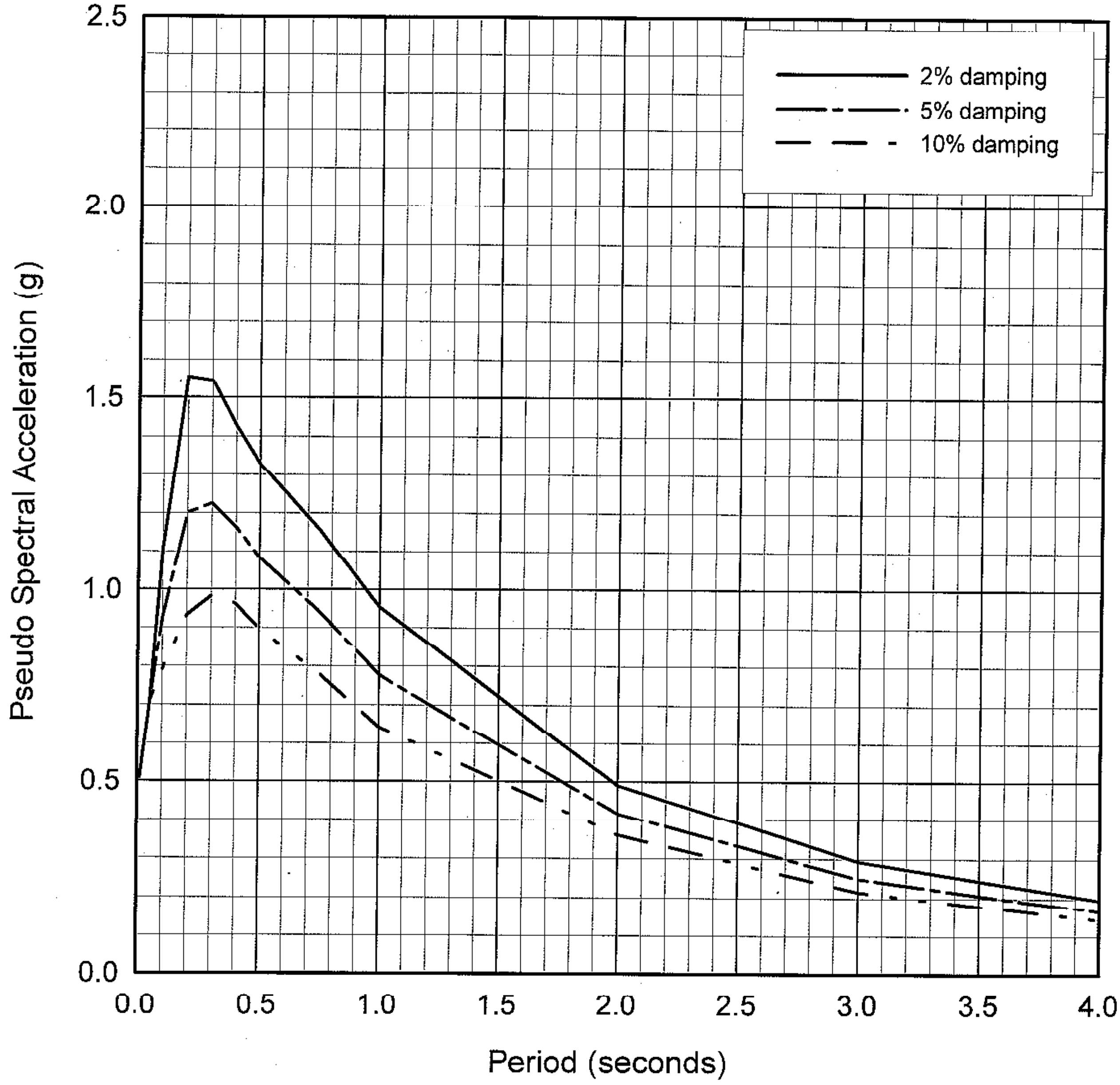
FIGURE 2
PLOT PLAN
2055 AVENUE OF THE STARS
CONDOMINIUMS
LOS ANGELES, CALIFORNIA

PROJ. NO.:	4953–05–1851	REVISIONS:
DATE:	08/30/05	
SCALE:	1" = 40'	
DR.	T.T.	
CHECKED BY:		

REFERENCE:
SITE PLAN, SHEET A1.5 (DATED 08/12/05)
BY ROBERT A.M. STERN ARCHITECTS.

LEGEND:

- **2** ● GEOTECH BORING LOCATION & NUMBER (WITH MULTI-LEVEL SOIL GAS PROBES)
- **4** ⊕ SHALLOW SOIL GAS PROBE LOCATION & NUMBER
- **28** ◒ BORING LOCATION & NUMBER (PREVIOUS INVESTIGATIONS A-67066, A-67066-B, A-82211-B)
- **13** ◒ BORING LOCATION & NUMBER (PREVIOUS INVESTIGATION A-69127)



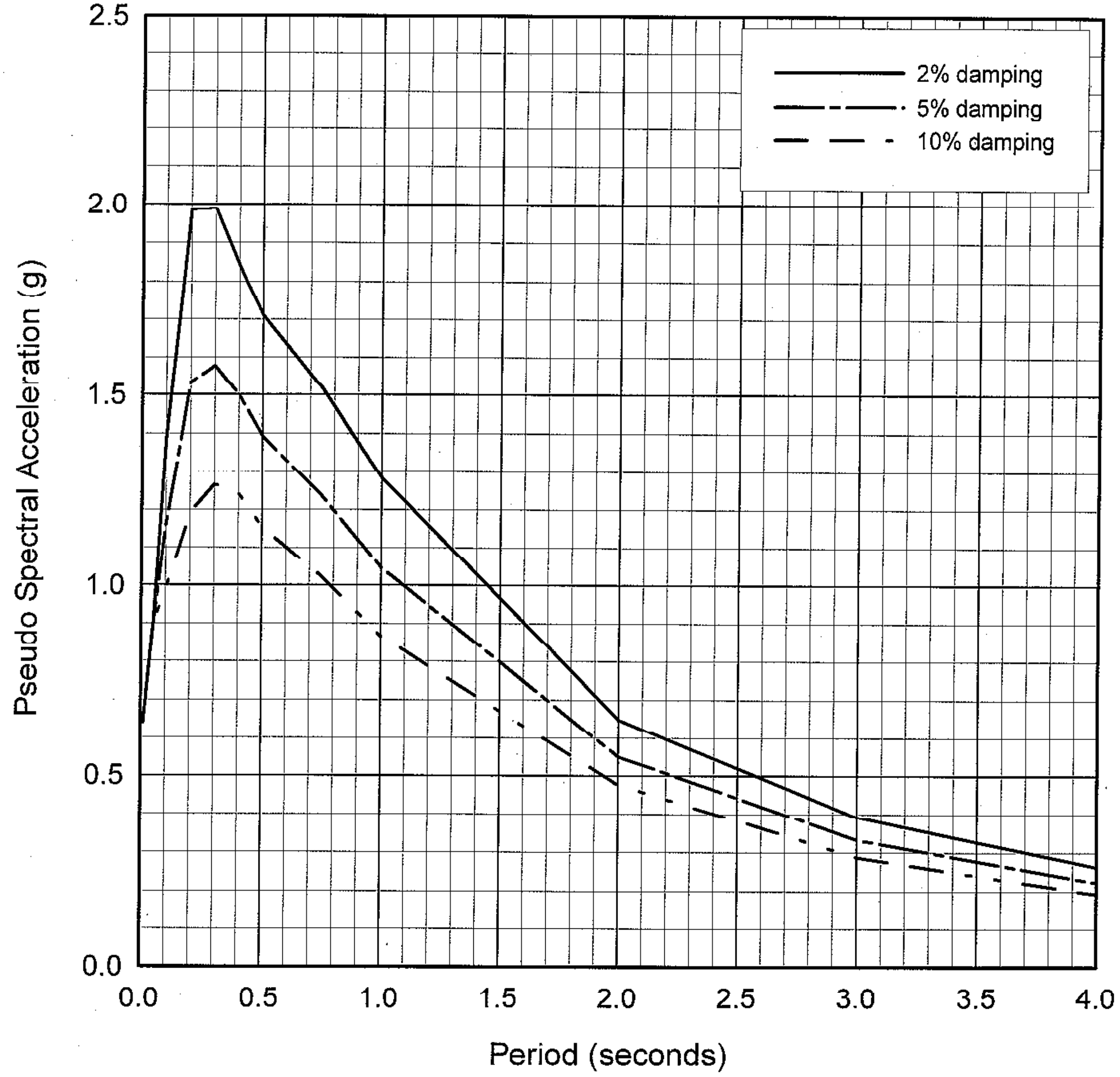
HORIZONTAL RESPONSE SPECTRA - SITE SPECIFIC
2055 Avenue of the Stars
DBE - 10% Probabiltiy of Exceedance in 50 Years

JOB: 4953-05-1851 DATE: August 18, 2005 F.T.: AR DR.: VB O.E.: CK CHKD: LT

MACTEC

FIGURE 3

JOB: 4953-05-1851 DATE: August 18, 2005 F.T.: AR DR.: VB O.E.: CK CHKD: LT



HORIZONTAL RESPONSE SPECTRA - SITE SPECIFIC
2055 Avenue of the Stars
MCE - 10% Probabiltiy of Exceedance in 100 Years

MACTEC

FIGURE 4

APPENDIX A

CURRENT EXPLORATIONS AND LABORATORY TESTS

APPENDIX A

CURRENT EXPLORATIONS AND LABORATORY TESTS

Two deep borings were drilled with an 8-inch-diameter hollow-stem auger to a depth of about 75 feet below the existing ground surface (bgs) at the locations shown on Figure 2, Plot Plan, and nested soil gas probes were installed for methane testing. Two shallow borings to depths of 5 feet were drilled in the lowermost basement level of the existing former hotel building using hand augers borings for screening methane.

The soils encountered were logged by our field technician and undisturbed and bulk samples were obtained for laboratory inspection and testing. The logs of the borings are presented on Figures A-1.1 through A-1.2. The depths at which undisturbed samples were obtained are indicated to the left of the boring logs. The number or blows required to drive the Crandall sampler 12 inches is indicated on the logs. In addition, standard penetration tests (SPTs) were performed in our current boring; the results of the tests are indicated on the logs. The soils are classified in accordance with the Unified Soil Classification System described on Figure A-2.

LABORATORY TEST RESULTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to evaluate their engineering properties.

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are presented to the left of the boring logs.

Direct shear tests were performed on selected undisturbed samples to determine the strength of the soils. The tests were performed at field moisture contents and at various surcharge pressures. The yield point values determined from the direct shear tests are presented in Figure A-3, Direct Shear Test Data.

Confined consolidation tests were performed on undisturbed samples. Water was added to the samples during the test to illustrate the effect of moisture on the compressibility. The results of the tests are presented in Figure A-4.1 through A-4.2, Consolidation Test Data.

Soil corrosivity tests were performed on samples of the on-site soils. The results are presented at the end of this appendix.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

BORING 1

DATE DRILLED: July 29, 2005 and August 1, 2005
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 322 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	OVA(ppm)***	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
									17" Thick Concrete Slab, No Base Course
320								CL	FILL - SANDY CLAY - moist, brown, fine to medium sand, few gravel, concrete fragments
	5								
			0	12.9	113	43/10"	▨		
315									Concrete chunk
	10								Few ½" slate gravel
310			0	13.0	114	35	▨		
	15	61	0				☒		
305			0	18.4	110	55	▨		
	20		0	16.3	113	22	▨	CL	FILL - SANDY CLAY - moist, dark grayish green, very fine sand Becomes grayish green, very fine Sand
300									
								CL	SILTY CLAY - very stiff, moist, grayish green
	25		0	15.9	114	37	▨		
295									
	30		0	17.8	104	40	▨		
290								SM	SILTY SAND - medium dense, slightly moist, light brown, fine
	35		0	6.9	105	34	▨		
285									
	40								

* Number of blow required to drive Crandall sampler 12 inches using a 140 pound hammer falling from 30 inches.

** Elevation is obtained from topographic map prepared by Skidmore, Owings and Merrill Architects/Engineers.

*** GasTech #1238 used for OVA readings.

Field Tech: AR
Prepared By: VB
Checked By: JT 9/6/05

(CONTINUED ON FOLLOWING FIGURE)

B15SOIL_CRANDALL 51852.GPJ LAW_CRAN.GDT 9/6/05

2055 AVENUE OF THE STARS
Century City, California

MACTEC

LOG OF BORING
Project: 4953-05-1851 Figure: A-1.1a

BORING 1 (Continued)

DATE DRILLED: July 29, 2005 and August 1, 2005
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 322 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	OVA(ppm)***	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
		50/6"	0				☒		Becomes very dense
280									
			0	2.6	96	74	▩		
	45							SP	POORLY GRADED SAND - very dense, slightly moist, light brown and gray, fine to medium
		98/9"	0				☒		
275									
			0	2.0	97	80	▩		
	50								
270		50/6"	0				☒		
									Some gravel
	55								
			0	6.6	120	87/10"	▩		
265									
		50/6"	0				☒		
	60								
260			0			86	○		
	65								
			0	7.9	90	82/10"	▩		
255									
								ML	SANDY SILT - hard, moist, light gray, fine to medium Sand
	70								
		50/6"	0				☒	SM	SILTY SAND - very dense, moist, light gray, fine
250									
	75								
			0	19.0	94	50/6"	▩		END OF BORING AT 76 FEET
245									
	80								

NOTES: Hand augered upper 10 feet. Water retention line encountered at 18 feet. Move boring location 25 feet north on August 1, 2005. Water not encountered. Gas probes installed at 45, 50 and 60 feet below grade. Boring backfilled with soil cuttings. Installed 8" well cover.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: VB
Checked By: LT 9/6/05

2055 AVENUE OF THE STARS
Century City, California

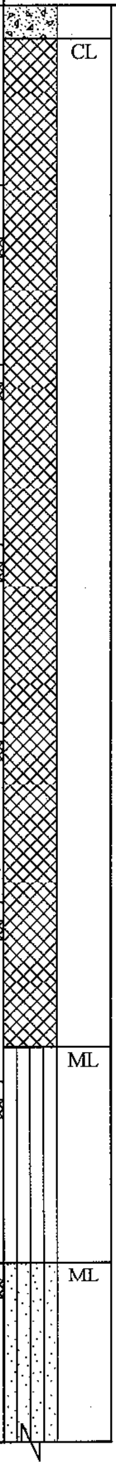
MACTEC

LOG OF BORING
Project: 4953-05-1851 Figure: A-1.1b

BORING 2

DATE DRILLED: August 1, 2005
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 321 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	OVA(ppm)***	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.
320							
	5						
315							
			0	14.9	116	22	☒
	10						
			0	13.1	117	25	☒
310							
	15						
			0	14.6	110	20	☒
305							
	20						
			0	15.1	115	37	☒
300							
	25						
			0	19.5	85	32	☒
295							
	30						
			0	10.9	108	35	☒
290							
	35						
			0	5.9	94	41	☒
285							
	40						



11" Thick Concrete Slab, No Base Course

CL FILL - SANDY CLAY - moist, light brown to brown and gray, fine to medium Sand, few gravel

Sand seams

Some grayish green

ML SILT - very stiff, moist, light brown and gray, fine sand, some Clay

ML SANDY SILT - very stiff, slightly moist, brown and grayish green, fine sand

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: VB
Checked By: LT 9/6/05

2055 AVENUE OF THE STARS
Century City, California

MACTEC

LOG OF BORING
Project: 4953-05-1851 Figure: A-1.2a

BORING 2 (Continued)

DATE DRILLED: August 1, 2005
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 321 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	OVA(ppm)***	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
								SM	SILTY SAND - dense, moist, grayish green, fine
280		45	0				☒		
								SP	POORLY GRADED SAND - dense, slightly moist, greenish gray, fine
			0	4.3	102	47	▩		
	45								
275		50/6"	0	7.4	117		☒	SM	SILTY SAND - very dense, slightly moist, greenish gray, few slate gravel
								SP	POORLY GRADED SAND - very dense, moist, light gray, fine, layers of Silty Sand
			0			80	▩		
	50								
270									
		50/6"	0				☒		
	55								Becomes dense
265			0	4.3	100	67	▩		
		50/6"	0				☒		
									Becomes very dense Few gravel
	60								Some slate gravel, becomes bluish gray
260									
			0			80	▩		
	65	50/6"	0				☒		
255									
	70								
250			0			83	▩		
	75								Layer of Silty Sand, some Clay
245		59	0				☒		
									END OF BORING AT 76½ FEET
	80								

END OF BORING AT 76½ FEET

NOTES: Hand auger upper 6 feet. Water not encountered. Gas probes installed at 45, 50 and 64 feet below grade. Boring backfilled with soil cuttings. Installed 8" well cover.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: AR
Prepared By: VB
Checked By: cT 9/6/05

2055 AVENUE OF THE STARS
Century City, California

MACTEC

LOG OF BORING

Project: 4953-05-1851 Figure: A-1.2b

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel - sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel - sand - silt mixtures.
			GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand - silt mixtures
			SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts and with slight plasticity.
			CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils.

<u>BOUNDARY CLASSIFICATIONS:</u> Soils possessing characteristics of two groups are designated by combinations of group symbols.

SILT OR CLAY	SAND			GRAVEL		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		

No.200 No.40 No.10 No.4 3/4" 3" 2"

U.S. STANDARD SIEVE SIZE

Reference: The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

■	Undisturbed Sample	▌	Auger Cuttings
☒	Standard Penetration Test	≀	Bulk Sample
▯	Rock Core	▩	Crandall Sampler
▩	Dilatometer	⁙	Pressure Meter
□	Packer	○	No Recovery
▽	Water Table at time of drilling	▼	Water Table after 24 hours

Correlation of Penetration Resistance with Relative Density and Consistency

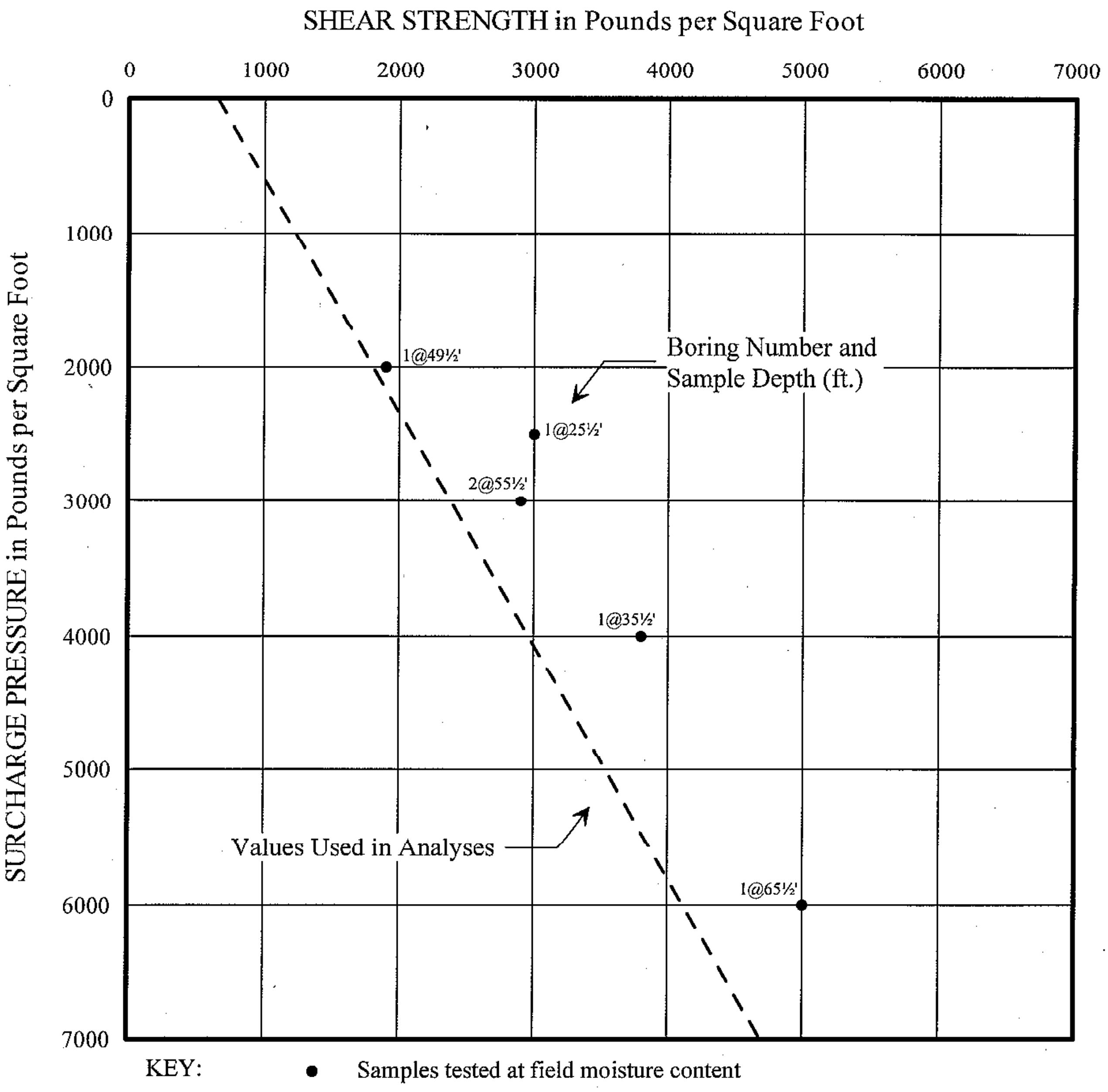
SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 30	Medium Dense	5 - 8	Medium Stiff
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		Over 30	Hard

KEY TO SYMBOLS AND DESCRIPTIONS

MACTEC

FIGURE A-2

JOB 4953-05-1851 DATE August 18, 2005 F.T. AR DR. VB O.E. CK CHKD LJ

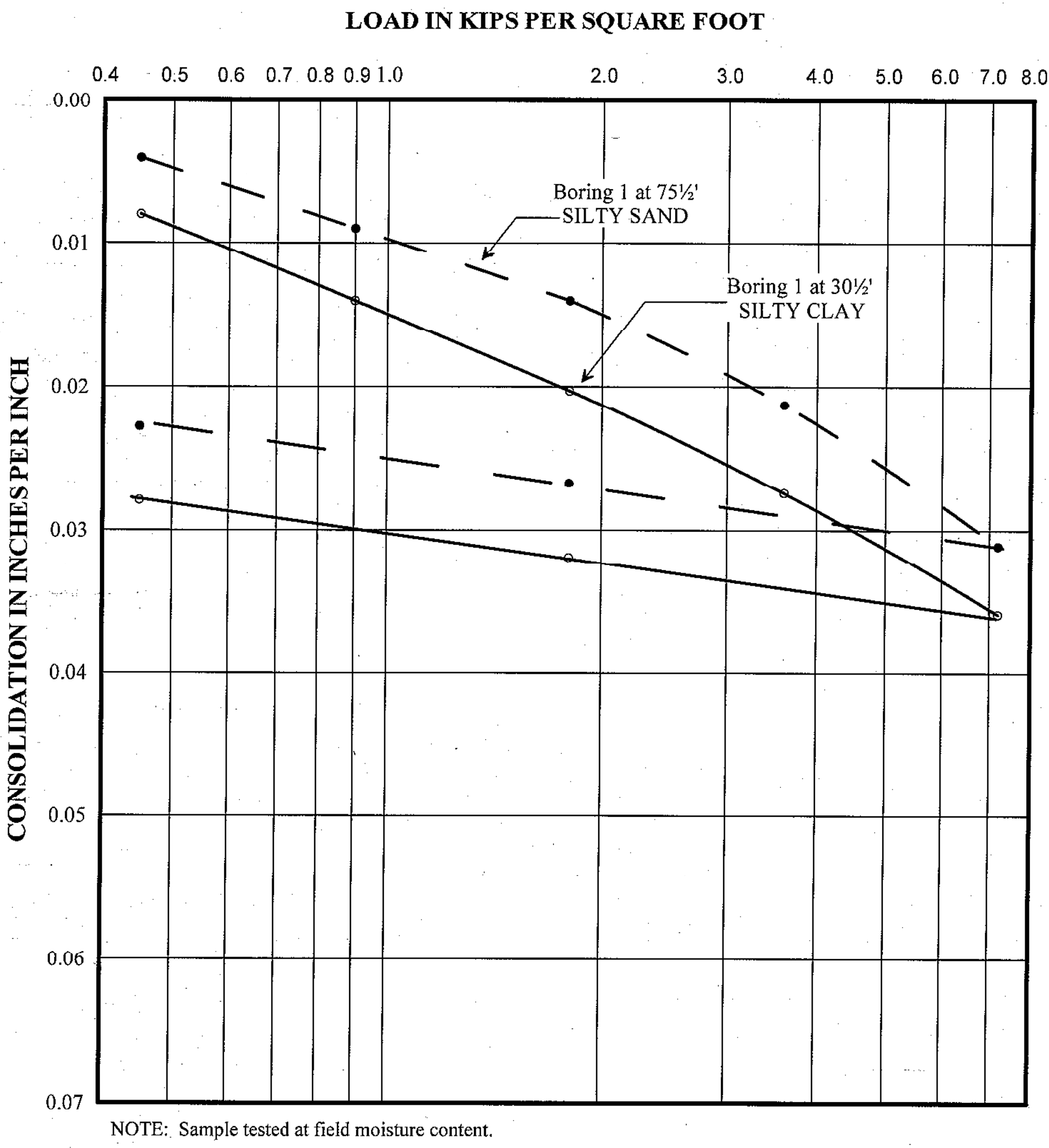


DIRECT SHEAR TEST DATA

MACTEC

FIGURE A - 3

JOB 4954-05-1851 DATE August 18, 2005 F.T. DR ____ VB ____ O.E. ____ CK ____ CHKD LT



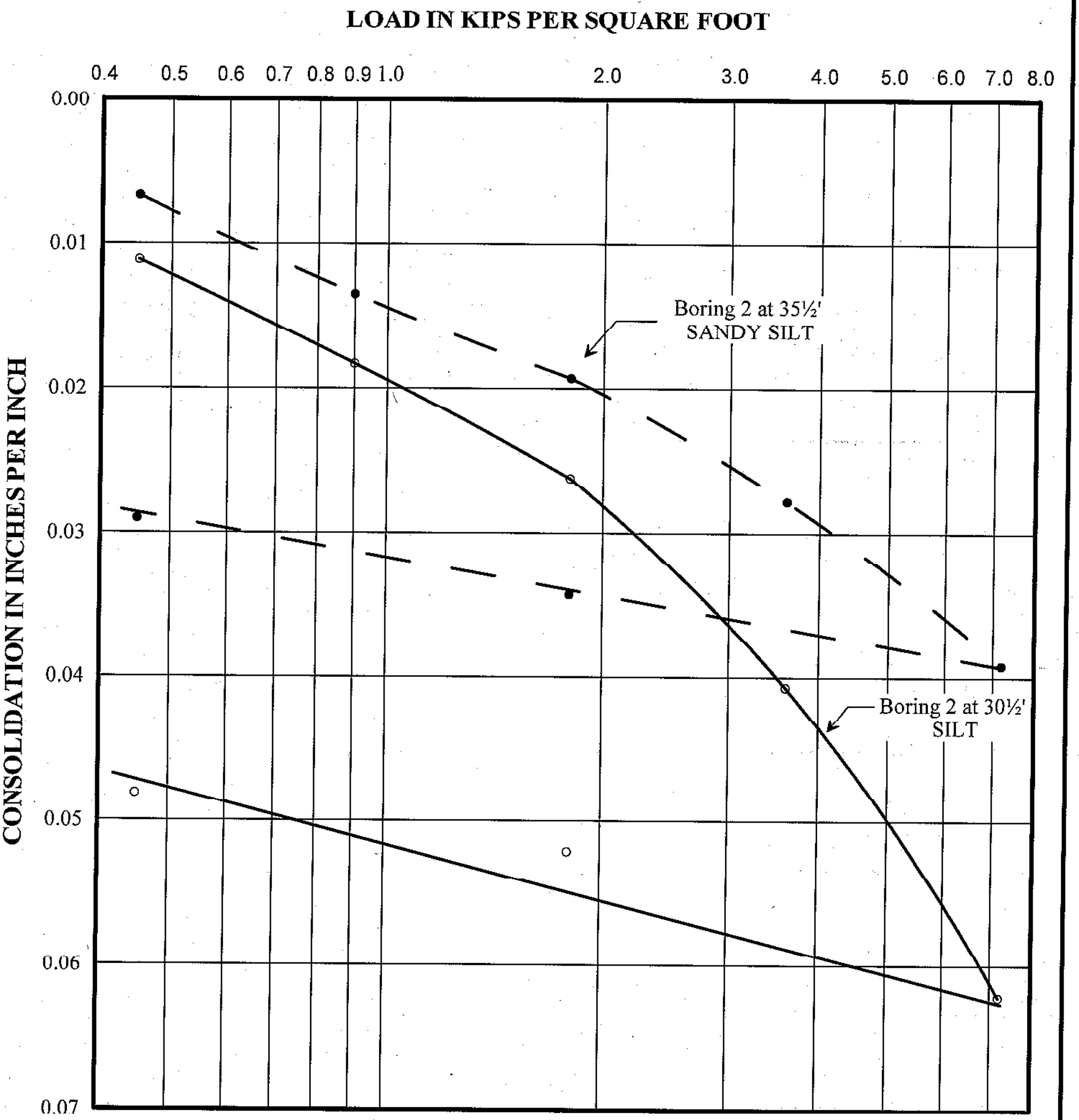
NOTE: Sample tested at field moisture content.

CONSOLIDATION TEST DATA

MACTEC

FIGURE A - 4.1

JOB 4954-05-1851 DATE August 18, 2005 F.T. DR VB O.E. CK CHKD LT



NOTE: Sample tested at field moisture content.

CONSOLIDATION TEST DATA

MACTEC

M. J. Schiff & Associates, Inc.

Consulting Corrosion Engineers - Since 1959 *Phone: (909) 626-0967 Fax: (909) 626-3316*
431 W. Baseline Road *E-mail lab@mjschiff.com*
Claremont, CA 91711 *website: mjschiff.com*

Table 1 - Laboratory Tests on Soil Samples

MACTEC
ST. REGIS HOTEL
Your #4953-05-1852, MJS&A #05-1151LAB
12-Aug-05

Sample ID			1 25'	1 40'
Resistivity		**Units**		
as-received		ohm-cm	3,600	58,000
saturated		ohm-cm	560	1,000
pH			8.4	8.2
Electrical Conductivity		mS/cm	0.67	0.30
Chemical Analyses				
Cations				
calcium	Ca^{2+}	mg/kg	48	20
magnesium	Mg^{2+}	mg/kg	32	10
sodium	Na^{1+}	mg/kg	465	214
Anions				
carbonate	CO_3^{2-}	mg/kg	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	143	122
chloride	Cl^{1-}	mg/kg	725	250
sulfate	SO_4^{2-}	mg/kg	116	100
Other Tests				
ammonium	NH_4^{1+}	mg/kg	0.6	1.0
nitrate	NO_3^{1-}	mg/kg	ND	ND
sulfide	S^{2-}	qual	Positive	na
Redox		mV	-116	na

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

APPENDIX B

PRIOR EXPLORATIONS AND LABORATORY TESTS

APPENDIX B

PRIOR EXPLORATIONS AND LABORATORY TESTS

Twenty eight prior borings were drilled at the project site with an 18- to 24-inch-diameter bucket-auger drilling equipment to depths of about 30 to 135 feet below the pre-existing ground surface (bgs) at the locations shown on Figure 2, Plot Plan. The soils encountered were logged by our field technician and undisturbed and bulk samples were obtained for laboratory inspection and testing. The logs of all the borings are presented on Figures B-1.1 through B-1.28. The depths at which undisturbed samples were obtained are indicated to the left of the boring logs. The soils are classified in accordance with the Unified Soil Classification System described on Figure B-2.

LABORATORY TEST RESULTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to evaluate their engineering properties.

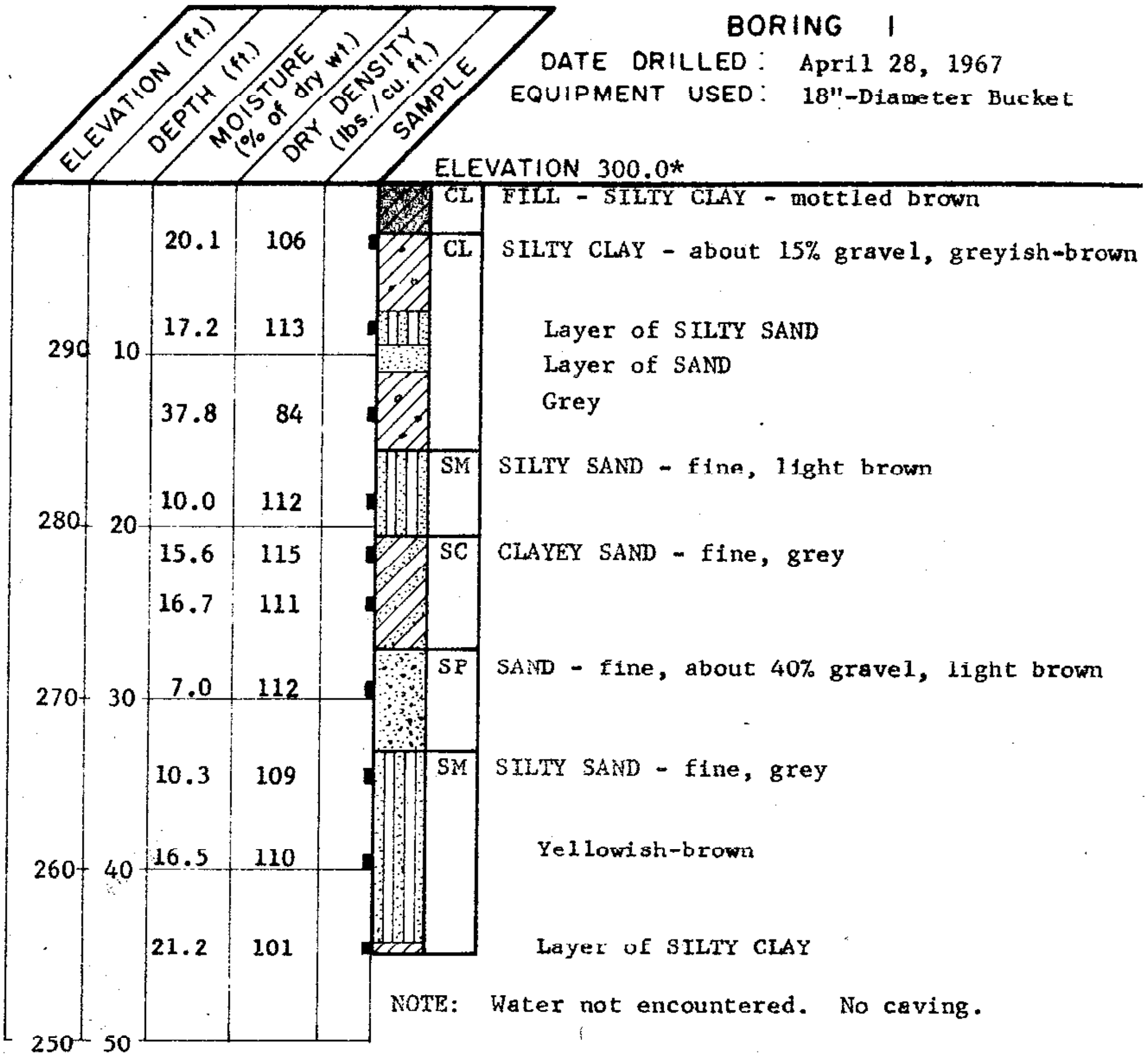
The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are presented to the left of the boring logs.

Direct shear tests were performed on selected undisturbed samples to determine the strength of the soils. The tests were performed at field moisture contents and at various surcharge pressures. The yield point values determined from the direct shear tests are presented in Figures B-3.1 through B-3.4, Direct Shear Test Data.

Confined consolidation tests were performed on undisturbed samples. Water was added to the samples during the test to illustrate the effect of moisture on the compressibility. The results of the tests are presented in Figure B-4.1 through B-4.12, Consolidation Test Data.

BORING 1

DATE DRILLED: April 28, 1967
EQUIPMENT USED: 18"-Diameter Bucket



*Elevations refer to datum of reference drawing; see Plate 1.

Soils classified in accordance with the Unified Soil Classification System.

LOG OF BORING

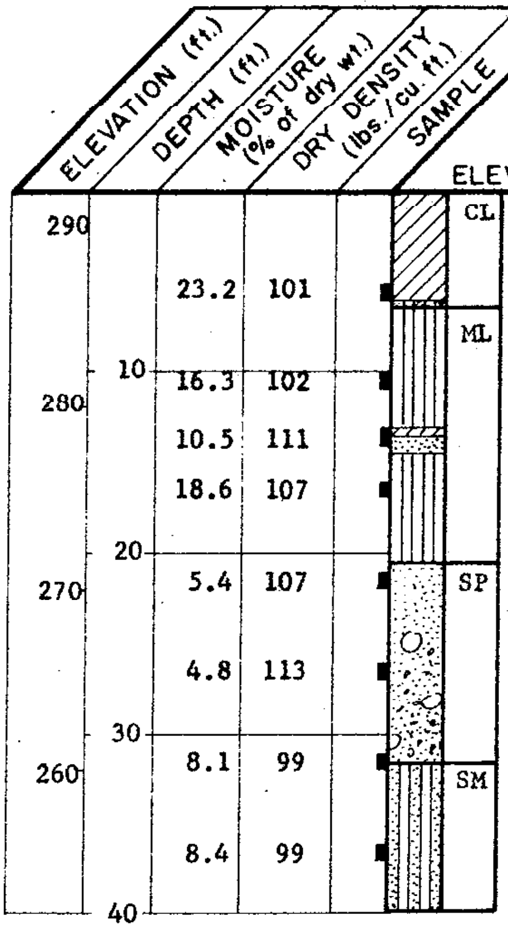
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.1

BORING 2

DATE DRILLED: April 28, 1967
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 292.0



ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)	SAMPLE		
290					CL	SILTY CLAY - greyish-brown
		23.2	101	■		Layer of SILTY SAND
					ML	CLAYEY SILT - grey
	10	16.3	102	■		
280						
		10.5	111	■		Layer of SILTY CLAY Layer of SAND
		18.6	107	■		
	20					
270		5.4	107	■	SP	SAND - fine, grey
						About 20% gravel, few cobbles
		4.8	113	■		
	30					
260		8.1	99	■	SM	SILTY SAND - fine, grey
		8.4	99	■		
	40					

NOTE: Water not encountered. No caving.

LOG OF BORING

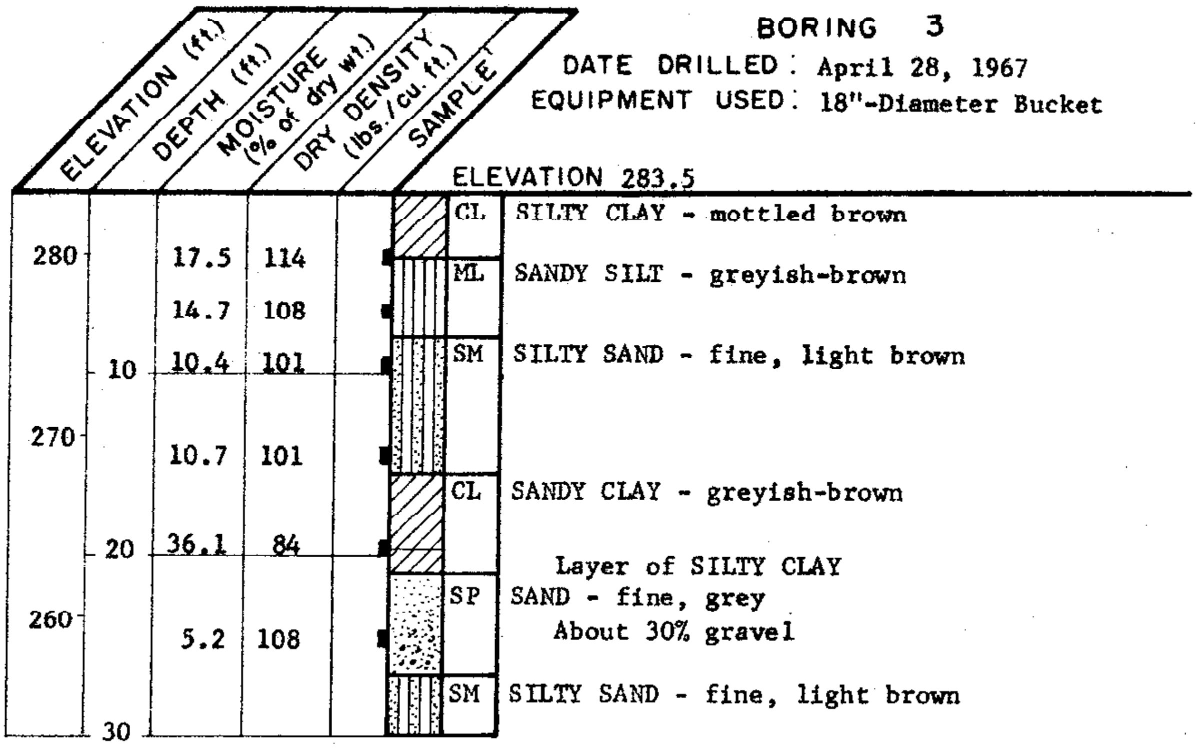
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.2

BORING 3

DATE DRILLED: April 28, 1967

EQUIPMENT USED: 18"-Diameter Bucket



SILTY CLAY - mottled brown

SANDY SILT - greyish-brown

SILTY SAND - fine, light brown

SANDY CLAY - greyish-brown

Layer of SILTY CLAY

SAND - fine, grey

About 30% gravel

SILTY SAND - fine, light brown

NOTE: Water not encountered. No caving.

LOG OF BORING

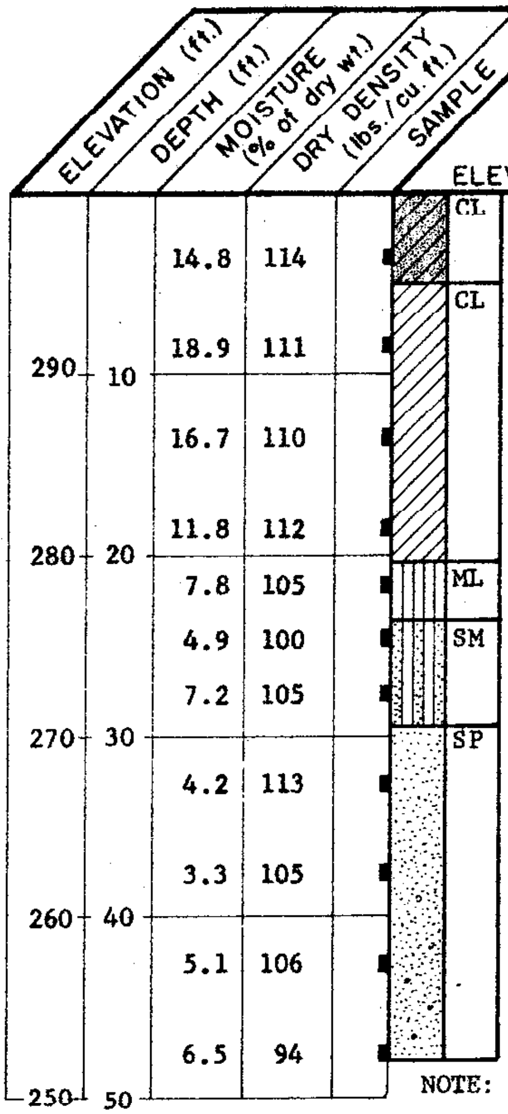
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.3

BORING 4

DATE DRILLED: April 27, 1967
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION -300.0



ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	SAMPLE		
					CL	FILL - SILTY CLAY - mottled brown
		14.8	114	■		
					CL	SILTY CLAY - patches of Sand, mottled grey
		18.9	111	■		
290	10					
		16.7	110	■		Greyish-brown
		11.8	112	■		
280	20				ML	SANDY SILT - light greyish-brown
		7.8	105	■		
					SM	SILTY SAND - fine, light greyish-brown
		4.9	100	■		
		7.2	105	■		
270	30				SP	SAND - fine, greyish-brown
		4.2	113	■		
		3.3	105	■		Grey About 15% gravel
260	40					
		5.1	106	■		
		6.5	94	■		
250	50					

NOTE: Water not encountered. No caving.

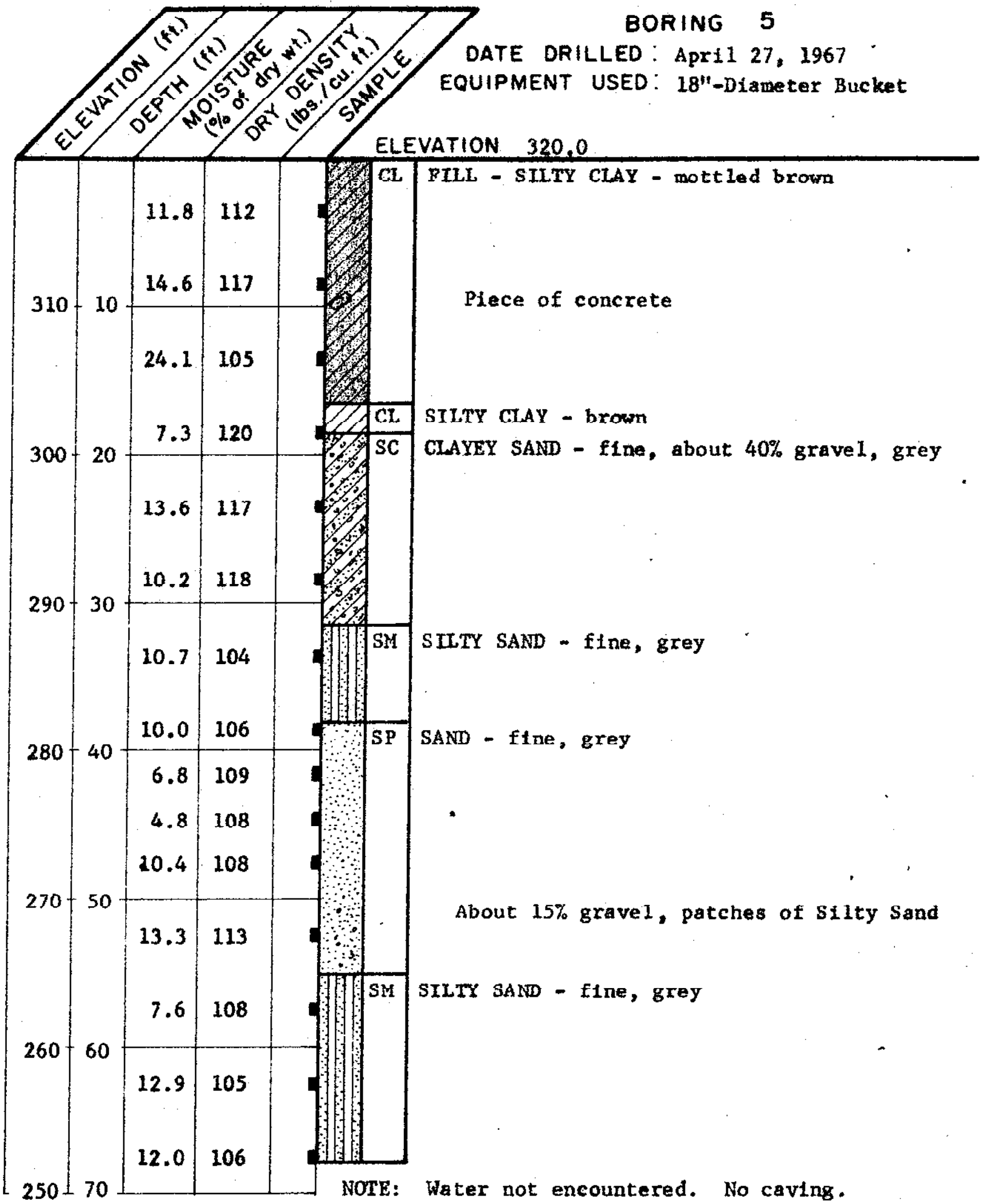
LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.4

BORING 5

DATE DRILLED: April 27, 1967
EQUIPMENT USED: 18"-Diameter Bucket



ELEVATION 320.0

ELEVATION (ft)	DEPTH (ft)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)	SAMPLE
		11.8	112	■
		14.6	117	■
310	10			
		24.1	105	■
		7.3	120	■
300	20			
		13.6	117	■
		10.2	118	■
290	30			
		10.7	104	■
		10.0	106	■
280	40			
		6.8	109	■
		4.8	108	■
		10.4	108	■
270	50			
		13.3	113	■
		7.6	108	■
260	60			
		12.9	105	■
		12.0	106	■
250	70			

CL FILL - SILTY CLAY - mottled brown

Piece of concrete

CL SILTY CLAY - brown

SC CLAYEY SAND - fine, about 40% gravel, grey

SM SILTY SAND - fine, grey

SP SAND - fine, grey

About 15% gravel, patches of Silty Sand

SM SILTY SAND - fine, grey

NOTE: Water not encountered. No caving.

LOG OF BORING

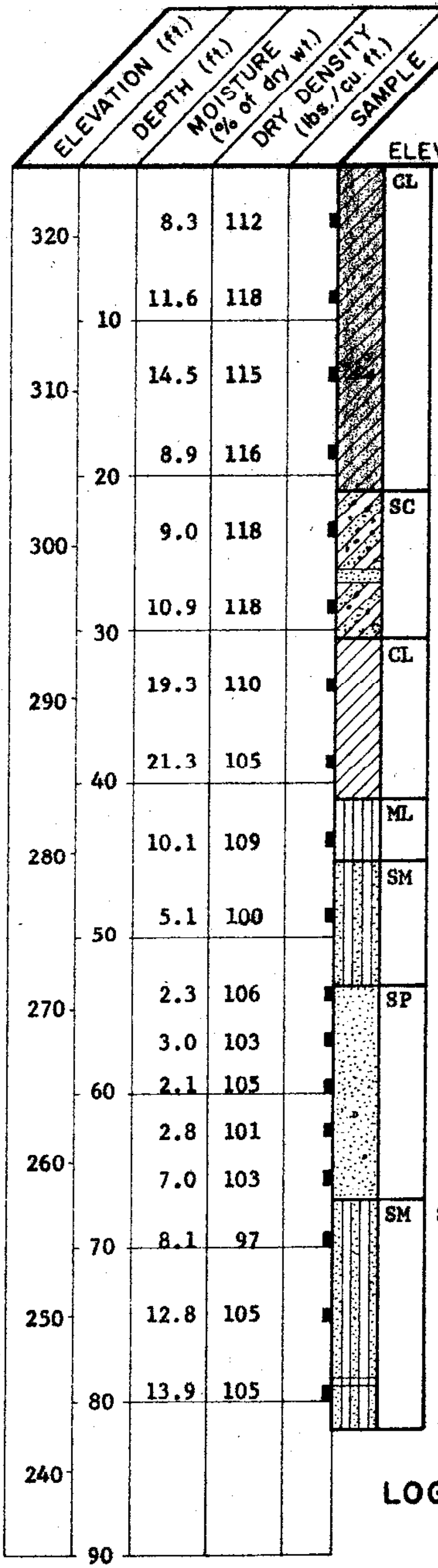
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.5

BORING 6

DATE DRILLED: April 25 & 26, 1967
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 324.5



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
8.3	112
11.6	118
14.5	115
8.9	116
9.0	118
10.9	118
19.3	110
21.3	105
10.1	109
5.1	100
2.3	106
3.0	103
2.1	105
2.8	101
7.0	103
8.1	97
12.8	105
13.9	105

CL FILL - SILTY CLAY - mottled brown

Pieces of wood and concrete

SC CLAYEY SAND - fine, about 30% gravel, greyish-brown

Layer of SAND

CL SILTY CLAY - grey

ML SANDY SILT - fine, greyish-brown

SM SILTY SAND - fine, grey

SP SAND - fine, grey

Few gravel

SM SILTY SAND - fine, grey

Layer of SILT

NOTE: Water not encountered. Severe caving from 45' to 60'.

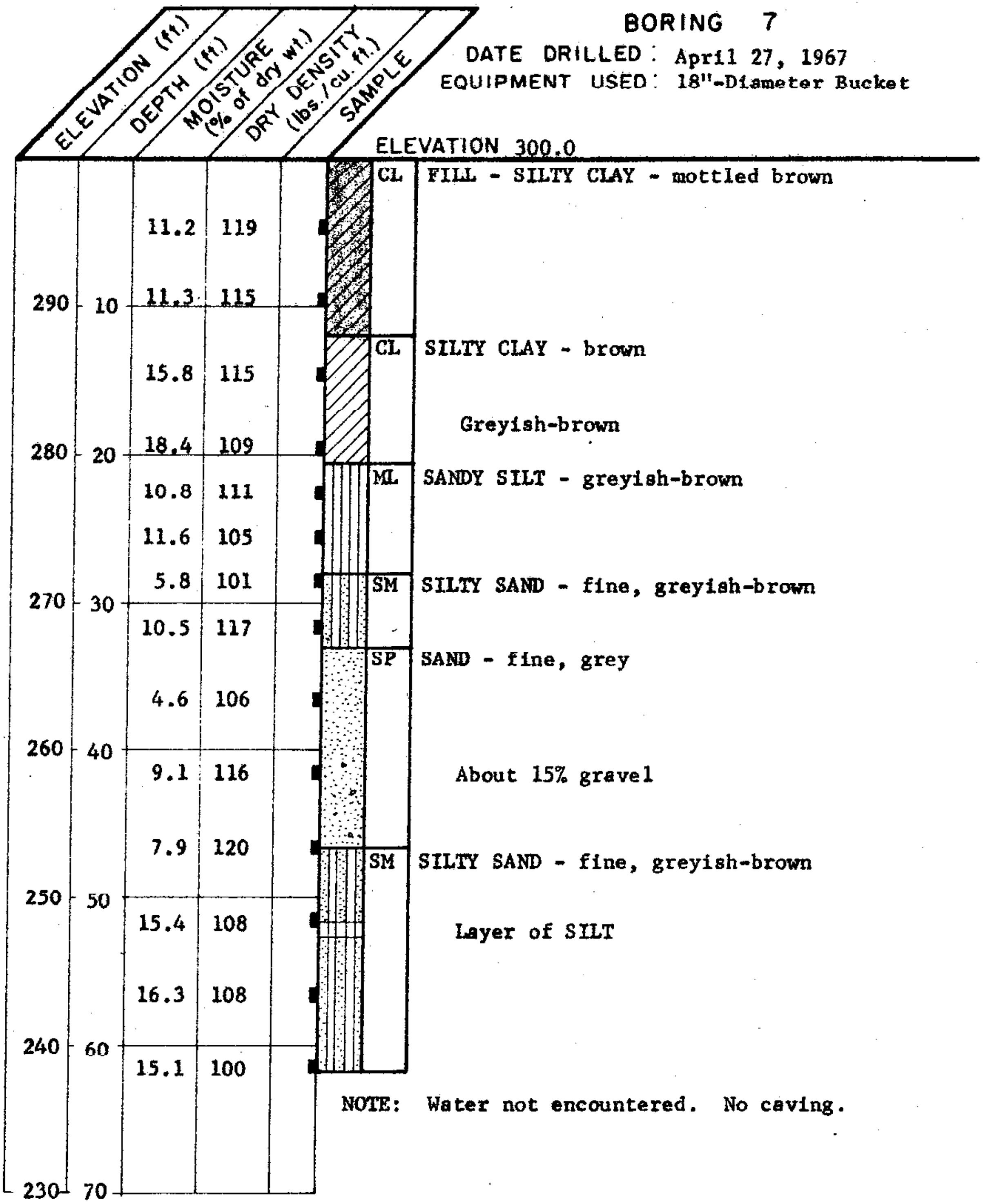
LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.6

BORING 7

DATE DRILLED: April 27, 1967
EQUIPMENT USED: 18"-Diameter Bucket



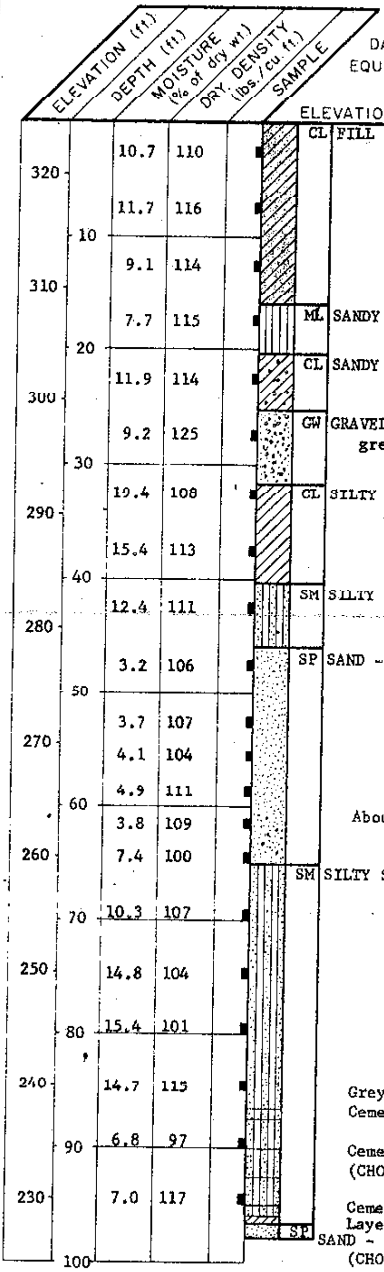
NOTE: Water not encountered. No caving.

LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

BORING 8
DATE DRILLED: April 24 & 25, 1967
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 324.5



MOISTURE (% of dry wt)	DRY DENSITY (lbs/cu ft)
10.7	110
11.7	116
9.1	114
7.7	115
11.9	114
9.2	125
19.4	108
15.4	113
12.4	111
3.2	106
3.7	107
4.1	104
4.9	111
3.8	109
7.4	100
10.3	107
14.8	104
15.4	101
14.7	115
6.8	97
7.0	117

CL FILL - SILTY CLAY - mottled brown

ML SANDY SILT - brown

CL SANDY CLAY - about 20% gravel, greyish-brown

GW GRAVEL - well graded, about 40% Clay and Sand, greyish-brown

CL SILTY CLAY - greyish-brown

SM SILTY SAND - fine, grey

SP SAND - fine, grey

About 25% gravel

SM SILTY SAND - fine, grey

Greyish-brown
Cemented layer

Cemented layer
(CHOPPING BUCKET USED FROM 90' TO 92½')

Cemented layer
Layer of CLAY

SP SAND - fine, cemented, grey
(CHOPPING BUCKET USED FROM 96½' TO 98')

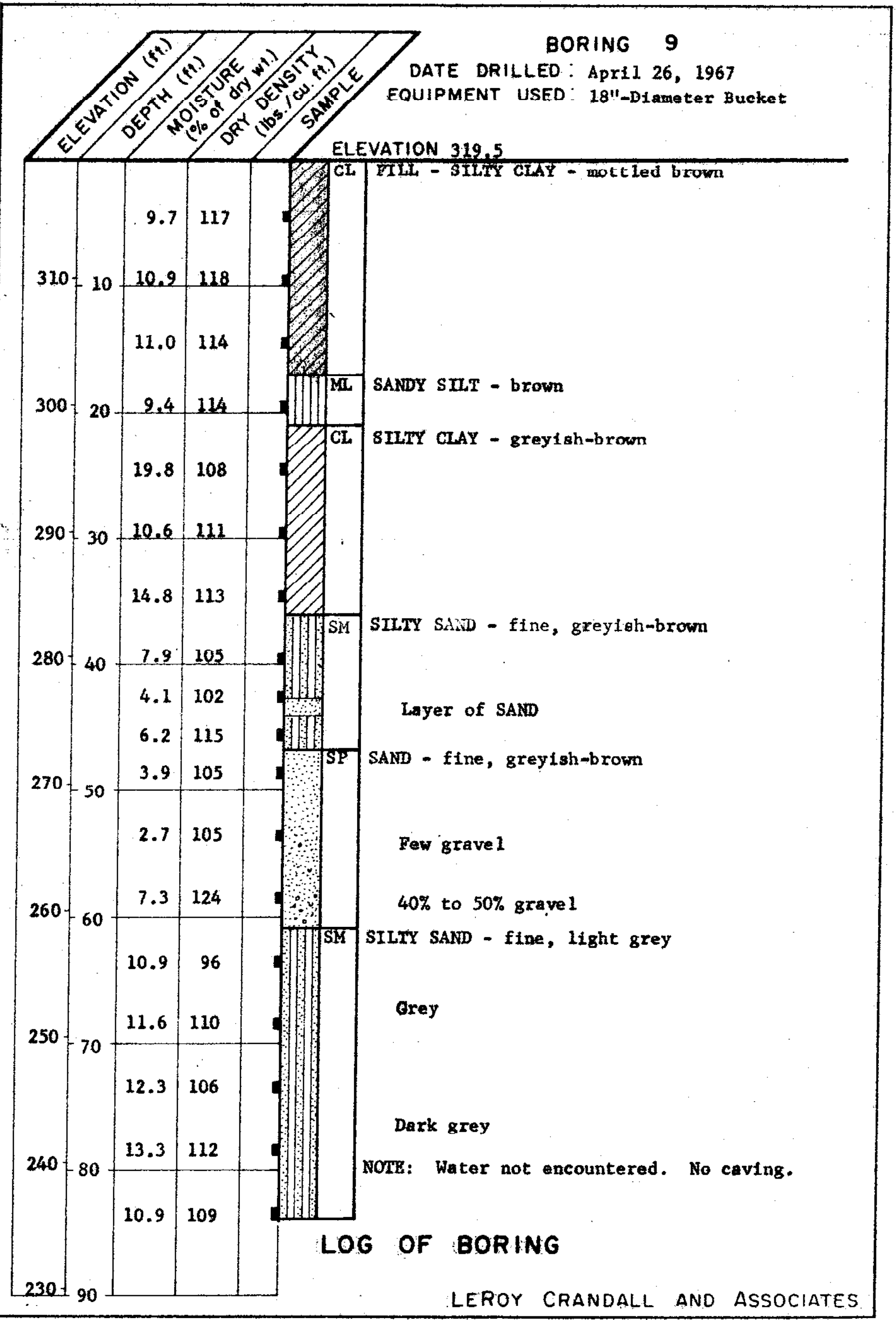
NOTE: Water not encountered. No caving.

JOB A-67066 DATE 5-9-67 DR V.M. O.E. JP CHKD.

LOG OF BORING

LEROY CRANDALL & ASSOCIATES

FIGURE B-1.8



BORING 9

DATE DRILLED: April 26, 1967
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 319.5

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)
		9.7	117
310	10	10.9	118
		11.0	114
300	20	9.4	114
		19.8	108
290	30	10.6	111
		14.8	113
280	40	7.9	105
		4.1	102
		6.2	115
270	50	3.9	105
		2.7	105
260	60	7.3	124
		10.9	96
250	70	11.6	110
		12.3	106
240	80	13.3	112
		10.9	109
230	90		

CL FILL - SILTY CLAY - mottled brown

ML SANDY SILT - brown

CL SILTY CLAY - greyish-brown

SM SILTY SAND - fine, greyish-brown

Layer of SAND

SP SAND - fine, greyish-brown

Few gravel

40% to 50% gravel

SM SILTY SAND - fine, light grey

Grey

Dark grey

NOTE: Water not encountered. No caving.

LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

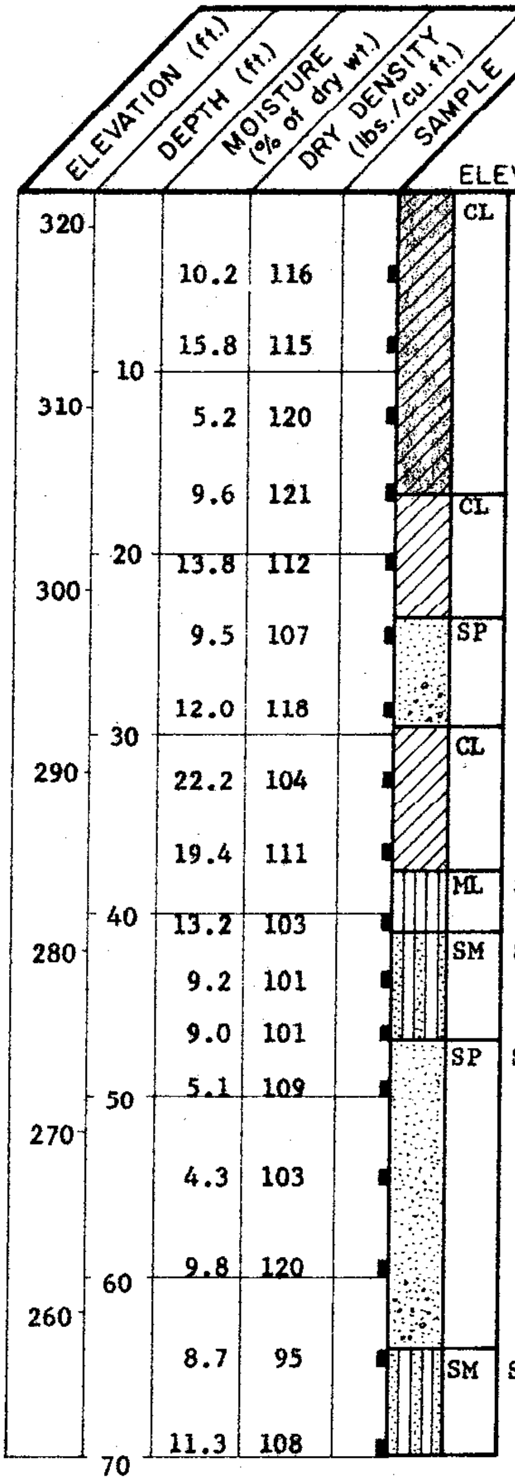
FIGURE B-1.9

BORING 10

DATE DRILLED: April 20, 1967

EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 322.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
10.2	116
15.8	115
5.2	120
9.6	121
13.8	112
9.5	107
12.0	118
22.2	104
19.4	111
13.2	103
9.2	101
9.0	101
5.1	109
4.3	103
9.8	120
8.7	95
11.3	108

CL FILL - SILTY CLAY - mottled brown

Patches of Silty Sand

CL SANDY CLAY - greyish-brown

SP SAND - fine, greyish-brown

About 40% gravel

CL SILTY CLAY - grey

ML SANDY SILT - grey

SM SILTY SAND - fine, grey

SP SAND - fine, grey

About 20% gravel

SM SILTY SAND - fine, grey

NOTE: Water not encountered. No caving.

LOG OF BORING

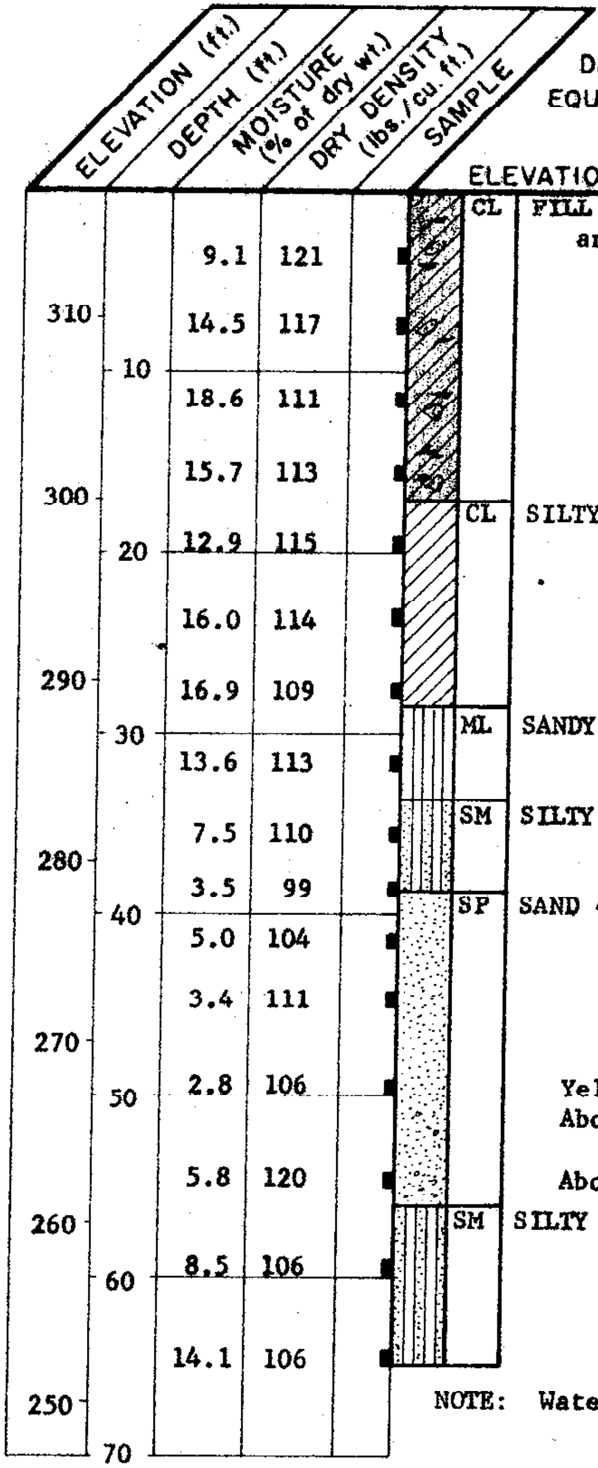
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.10

BORING 11

DATE DRILLED: April 19 & 20, 1967
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 317.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
9.1	121
14.5	117
18.6	111
15.7	113
12.9	115
16.0	114
16.9	109
13.6	113
7.5	110
3.5	99
5.0	104
3.4	111
2.8	106
5.8	120
8.5	106
14.1	106

CL FILL - SILTY CLAY - pieces of asphaltic paving and concrete, mottled brown

CL SILTY CLAY - greyish-brown

ML SANDY SILT - greyish-brown

SM SILTY SAND - fine, greyish-brown

SP SAND - fine, grey

Yellowish-brown
About 15% gravel

About 25% gravel

SM SILTY SAND - fine, grey

NOTE: Water not encountered. No caving.

LOG OF BORING

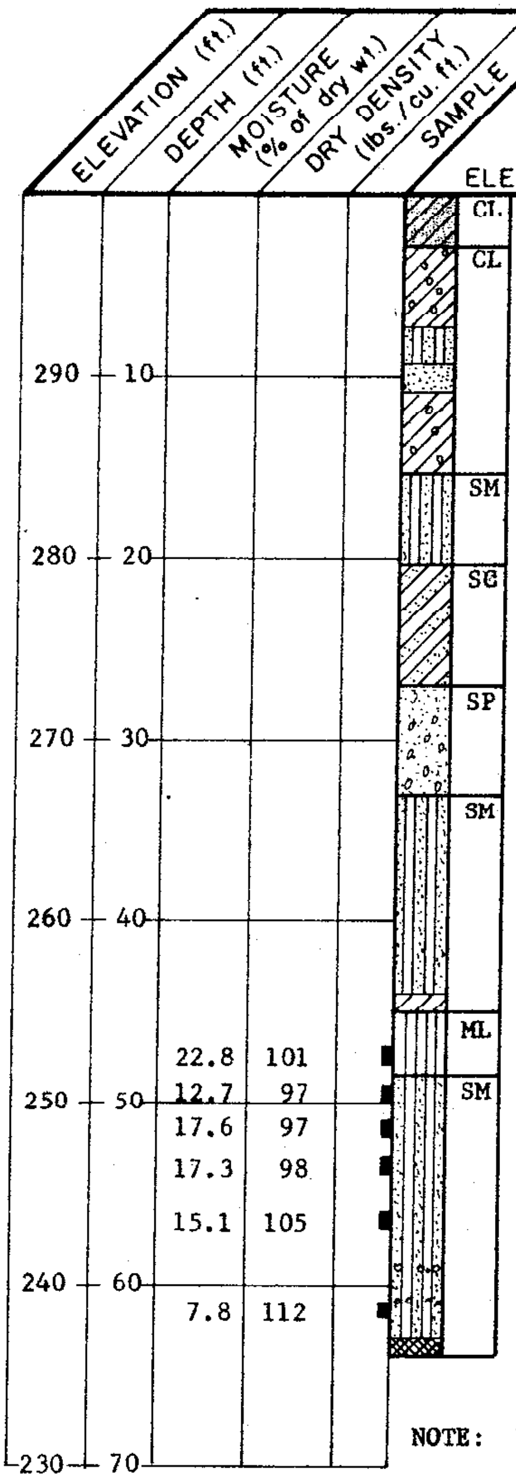
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.11

BORING 12

DATE DRILLED: October 17, 1968
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 300.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
22.8	101
12.7	97
17.6	97
17.3	98
15.1	105
7.8	112

FILL - SILTY CLAY - mottled brown

SILTY CLAY - about 15% gravel, greyish-brown

Layer of SILTY SAND
Layer of SAND
Grey

SILTY SAND - fine, light brown

CLAYEY SAND - fine, grey

SAND - fine, about 40% gravel, light brown

SILTY SAND - fine, grey

Yellowish-brown

Layer of SILTY CLAY

SANDY SILT - light grey

SILTY SAND - fine, light grey

Occasional gravel layers

Cemented below 63' (GAD AND CHOPPING BUCKET USED)

NOTE: Water not encountered. No caving.

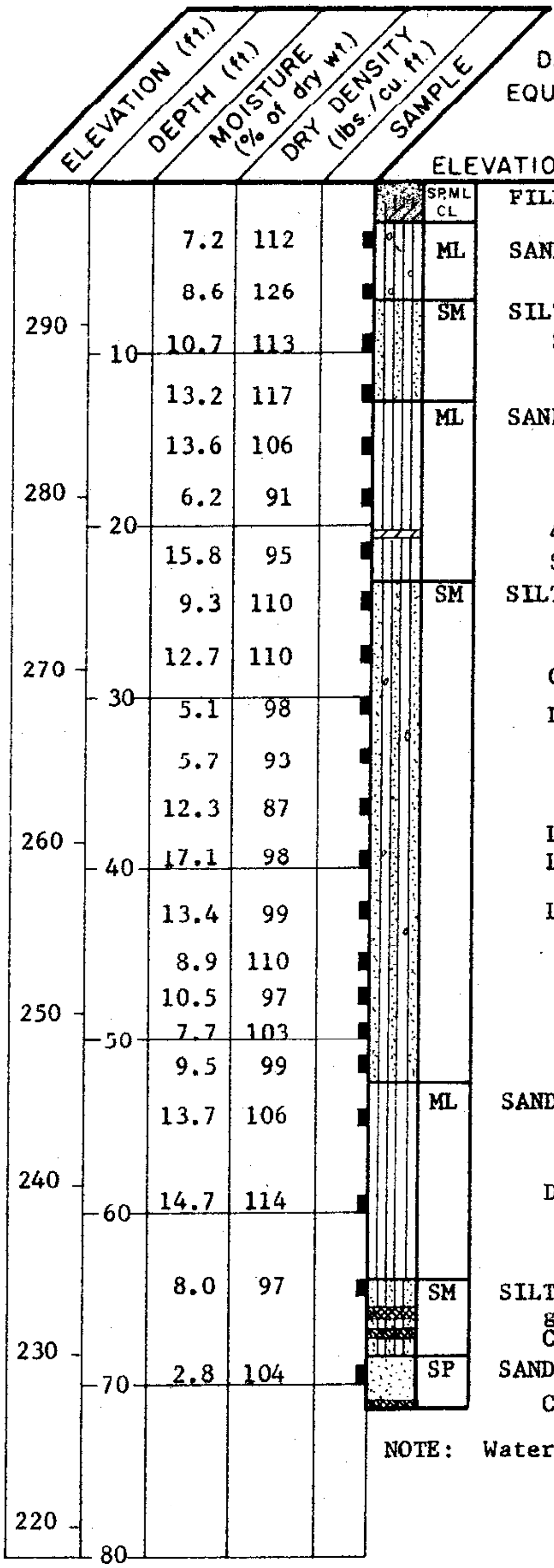
LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.12

BORING 13

DATE DRILLED: October 16 & 17, 1968
EQUIPMENT USED: 18"-Diameter Bucket



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)
7.2	112
8.6	126
10.7	113
13.2	117
13.6	106
6.2	91
15.8	95
9.3	110
12.7	110
5.1	98
5.7	93
12.3	87
17.1	98
13.4	99
8.9	110
10.5	97
7.7	103
9.5	99
13.7	106
14.7	114
8.0	97
2.8	104

SP ML CL FILL - SAND, SILT, AND CLAY - chunks of concrete (GAD AND CHOPPING BUCKET USED TO 2½')

ML SANDY SILT - 5% gravel, mottled grey and brown

SM SILTY SAND - fine, mottled grey and brown
Some Clay

ML SANDY SILT - light yellowish-brown

4" layer of SILTY CLAY
Streaks of Sandy Silt and Clayey Silt

SM SILTY SAND - grey

Occasional gravel
Light grey

Lenses of Silt and Clay
Light yellowish-brown

Light grey

ML SANDY SILT - grey

Dark grey

SM SILTY SAND - fine, occasional cemented lump, grey
Cemented layers at 66' and 67' (GAD USED)

SP SAND - fine, grey
Cemented layer at 71'

NOTE: Water not encountered. No caving.

LOG OF BORING

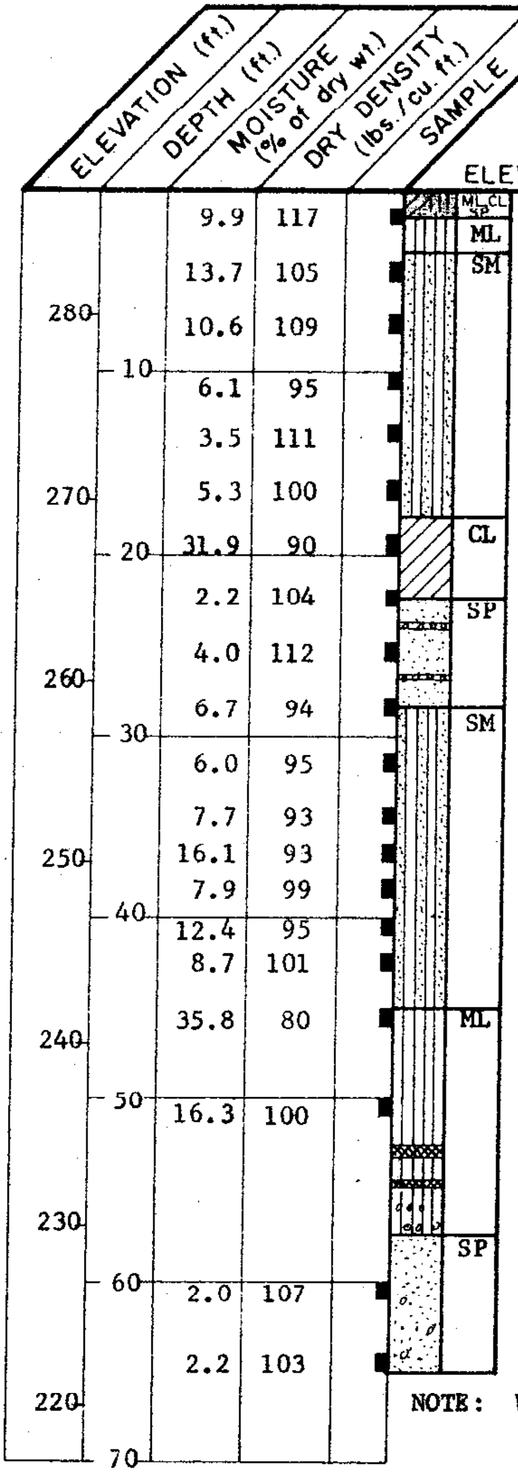
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.13

BORING 14

DATE DRILLED: October 16, 1968
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 287.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
9.9	117
13.7	105
10.6	109
6.1	95
3.5	111
5.3	100
31.9	90
2.2	104
4.0	112
6.7	94
6.0	95
7.7	93
16.1	93
7.9	99
12.4	95
8.7	101
35.8	80
16.3	100
2.0	107
2.2	103

FILL - SILT, CLAY, AND SAND - mottled brown
SANDY SILT - greyish-brown
SILTY SAND - fine, light greyish-brown

Mottled light brown and grey

Coarser

Lenses of Silt

SILTY CLAY - greyish-brown

SAND - fine, light greyish-brown
Layers with 10% to 20% gravel

SILTY SAND - fine, light brown to yellowish-brown

Light bluish-grey

SANDY SILT - bluish-grey

Cemented layers at 53' and 54½'

Few gravel

SAND - fine, light bluish-grey

Some gravel

NOTE: Water not encountered. No caving.

LOG OF BORING

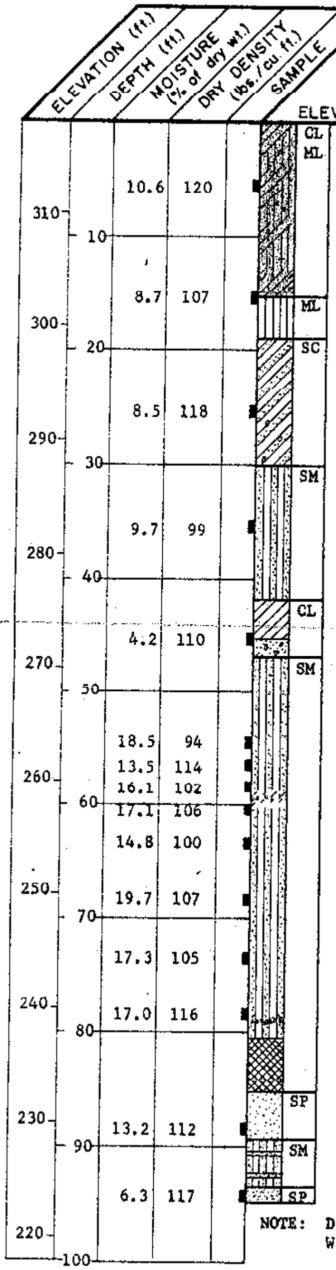
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.14

BORING 15

DATE DRILLED : October 22, 1968
EQUIPMENT USED : 6"-Diameter Rotary Wash

ELEVATION 318.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
10.6	120
8.7	107
8.5	118
9.7	99
4.2	110
18.5	94
13.5	114
16.1	102
17.1	106
14.8	100
19.7	107
17.3	105
17.0	116
13.2	112
6.3	117

CL ML FILL - SILTY CLAY, CLAYEY SILT, and SANDY SILT - 10% gravel, mottled brown

ML SANDY SILT - some Clay, greyish-brown

SC CLAYEY SAND - fine, grey

Some gravel

SM SILTY SAND - fine, light grey

CL SILTY CLAY - mottled grey and yellowish-brown

Layer of SAND with gravel

SM SILTY SAND - fine, light yellowish-brown
Lenses of SANDY SILT

Patches of Clay

Lenses of SILTY CLAY - light bluish-grey

Light grey

Lenses of SANDY SILT - dark grey

Few shells

Cemented from 80' to 85', some gravel

SP SAND - fine, light grey

SM SILTY SAND - fine, some gravel, cemented, light grey
Layers of SAND

SP SAND - fine, grey

NOTE: Drilling mud used in drilling process.
Water level not established.

JOB A-67066-A DATE 11-9-68 DR O.E. CHKD

LOG OF BORING

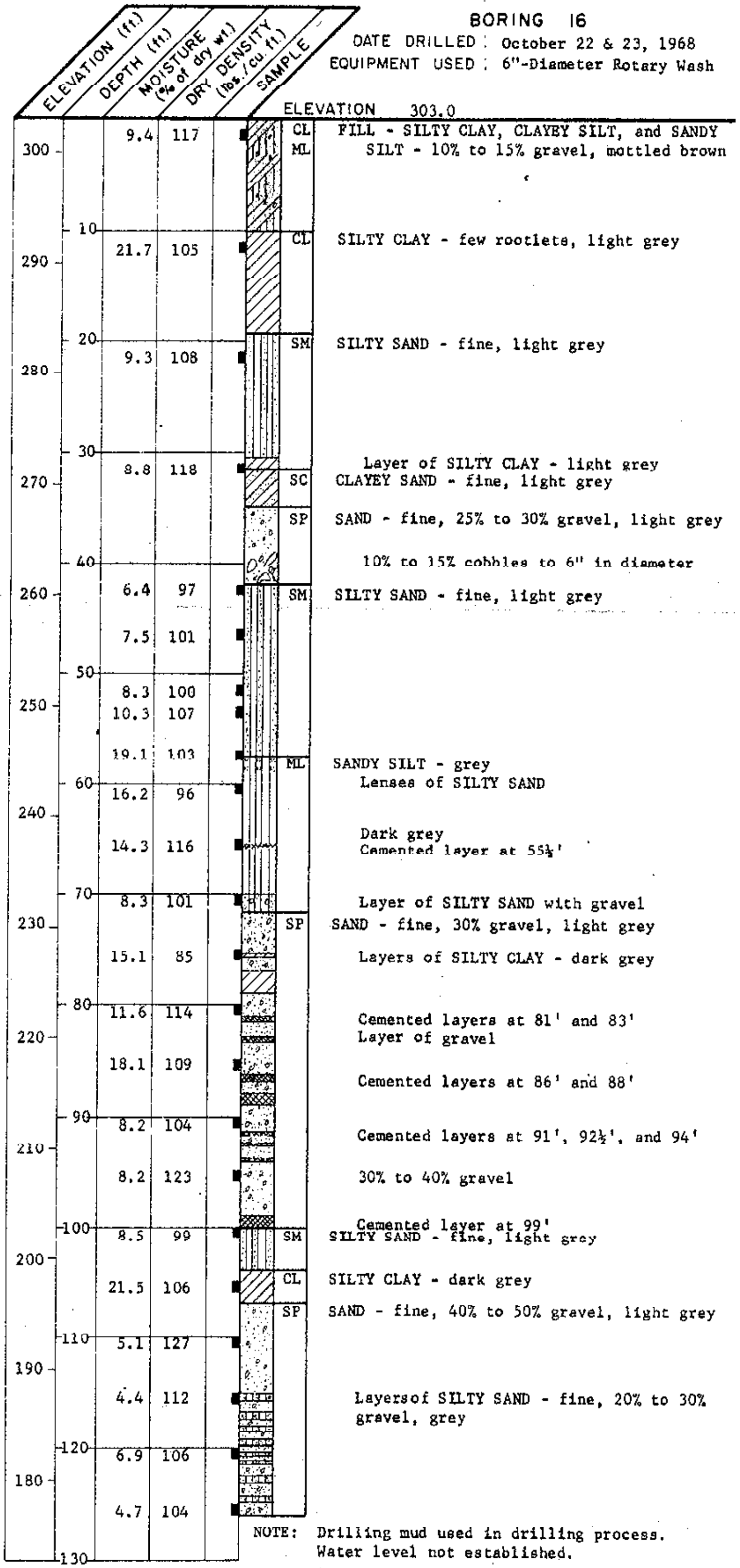
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.15

BORING 16

DATE DRILLED : October 22 & 23, 1968
EQUIPMENT USED : 6"-Diameter Rotary Wash

ELEVATION 303.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)
9.4	117
21.7	105
9.3	108
8.8	118
6.4	97
7.5	101
8.3	100
10.3	107
19.1	103
16.2	96
14.3	116
8.3	101
15.1	85
11.6	114
18.1	109
8.2	104
8.2	123
8.5	99
21.5	106
5.1	127
4.4	112
6.9	106
4.7	104

CL ML FILL - SILTY CLAY, CLAYEY SILT, and SANDY SILT - 10% to 15% gravel, mottled brown

CL SILTY CLAY - few rootlets, light grey

SM SILTY SAND - fine, light grey

Layer of SILTY CLAY - light grey

SC CLAYEY SAND - fine, light grey

SP SAND - fine, 25% to 30% gravel, light grey

10% to 15% cobbles to 6" in diameter

SM SILTY SAND - fine, light grey

ML SANDY SILT - grey
Lenses of SILTY SAND

Dark grey
Cemented layer at 55½'

Layer of SILTY SAND with gravel

SP SAND - fine, 30% gravel, light grey

Layers of SILTY CLAY - dark grey

Cemented layers at 81' and 83'
Layer of gravel

Cemented layers at 86' and 88'

Cemented layers at 91', 92½', and 94'

30% to 40% gravel

Cemented layer at 99'

SM SILTY SAND - fine, light grey

CL SILTY CLAY - dark grey

SP SAND - fine, 40% to 50% gravel, light grey

Layersof SILTY SAND - fine, 20% to 30% gravel, grey

NOTE: Drilling mud used in drilling process.
Water level not established.

JOB A-67066-B DATE 11-9-68 DR OE CHKD

LOG OF BORING

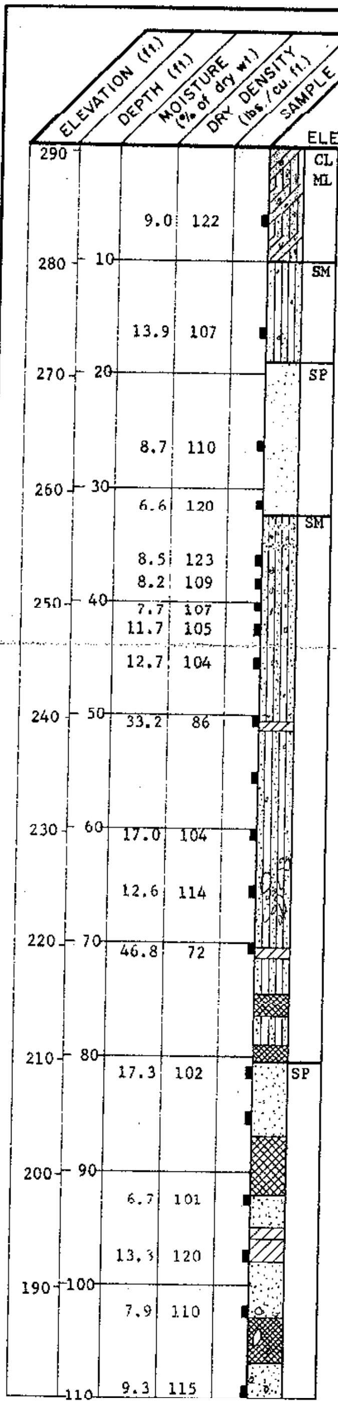
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.16

BORING 17

DATE DRILLED : October 24, 1968
EQUIPMENT USED : 6"-Diameter Rotary Wash

ELEVATION 290.5



FILL - SILTY CLAY, SANDY SILT, and CLAYEY SILT - 10% gravel, pieces of wood and asphaltic paving, mottled brown

SILTY SAND - fine, 10% gravel, light yellowish-grey

SAND - fine, light grey

SILTY SAND - fine, 30% to 40% gravel, light greyish-brown
Lenses of SAND - fine, light grey
Less gravel

Layer of SILTY CLAY - dark grey

5% gravel, few cobbles to 8" in diameter

Layer of SILTY CLAY - dark grey

Cemented layer from 74½' to 76½'

Cemented layer from 79' to 80½'
SAND - fine, light grey

Cemented from 87' to 92'

Layer of SILTY CLAY - dark grey
Layer of SANDY CLAY - some organic matter, few gravel, dark grey
Grey
Cemented from 103' to 107', 30% gravel
Few cobbles to 6" in diameter
Few gravel

NOTE: Drilling mud used in drilling process.
Water level not established.

JOB A-67066-B DATE 11-9-68 DR [illegible] O.E. [illegible] lb CHKD

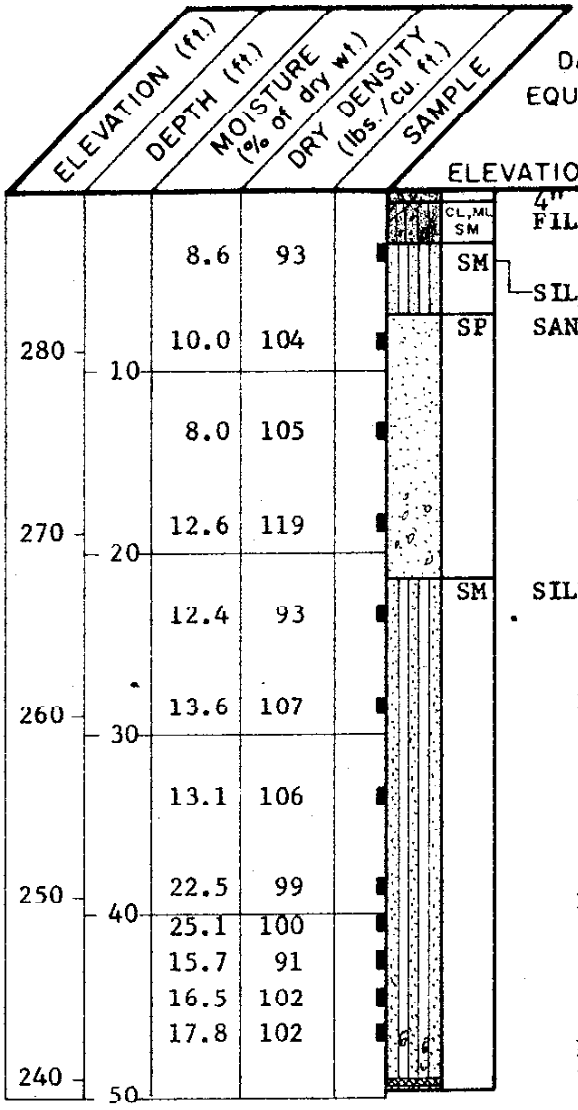
LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.17

BORING 18

DATE DRILLED: October 23, 1968
EQUIPMENT USED: 18"-Diameter Bucket



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
8.6	93
10.0	104
8.0	105
12.6	119
12.4	93
13.6	107
13.1	106
22.5	99
25.1	100
15.7	91
16.5	102
17.8	102

4" CONCRETE PAVING; 6" SAND and GRAVEL BASE
FILL - CLAY, SILT, and SAND - 10% to 15% gravel, mottled brown
Chunks of concrete and brick
SILTY SAND - fine, light grey
SAND - fine, light grey

Few gravel

SILTY SAND - fine, light yellowish-grey

Light yellowish-brown

Light grey

Few shells
Highly cemented at 49'
(BORING TERMINATED DUE TO FIRM DRILLING)

NOTE: Water not encountered. No caving.

LOG OF BORING

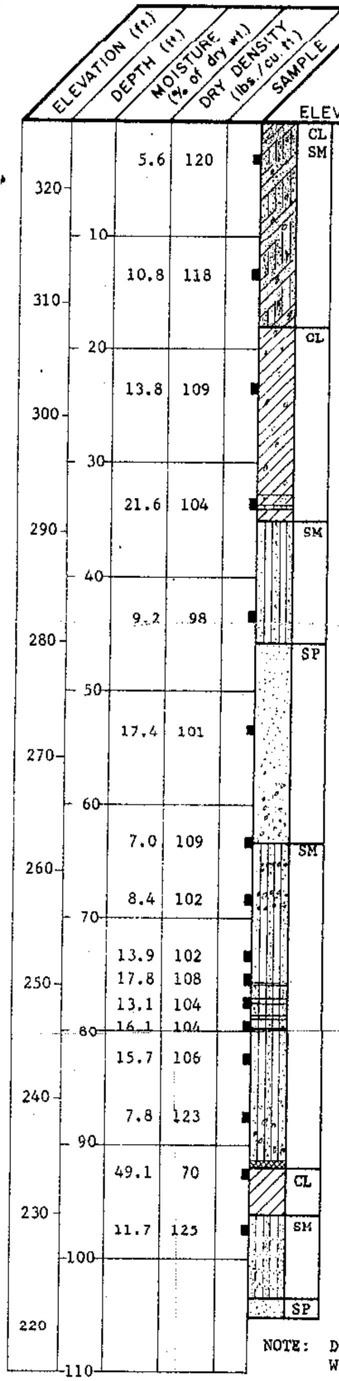
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.18

BORING 19

DATE DRILLED : October 21, 1968
EQUIPMENT USED : 6"-Diameter Rotary Wash

ELEVATION 326.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
5.6	120
10.8	118
13.8	109
21.6	104
9.2	98
17.4	101
7.0	109
8.4	102
13.9	102
17.8	108
13.1	104
16.1	104
15.7	106
7.8	123
49.1	70
11.7	125

FILL - SILTY CLAY and SILTY SAND - 10% to 20% gravel, mottled brown

Piece of wood

SANDY CLAY - 10% to 25% gravel, mottled grey

Layer of CLAYEY SAND
Layer of CLAYEY SILT

SILTY SAND - fine, light grey

SAND - fine, light grey

30% fine gravel

SILTY SAND - fine, light grey
Thin layers of fine gravel

Layers of SANDY SILT

30% gravel, few shells, dark grey

Cemented layer at 91½'

SILTY CLAY - dark grey

SILTY SAND - fine, grey
Lenses of SAND

SAND - fine, grey

NOTE: Drilling mud used in drilling process.
Water level not established.

JOB A-67066-B DATE 11-9-68 DR maa O.E. 1/1/18 CHKD

LOG OF BORING

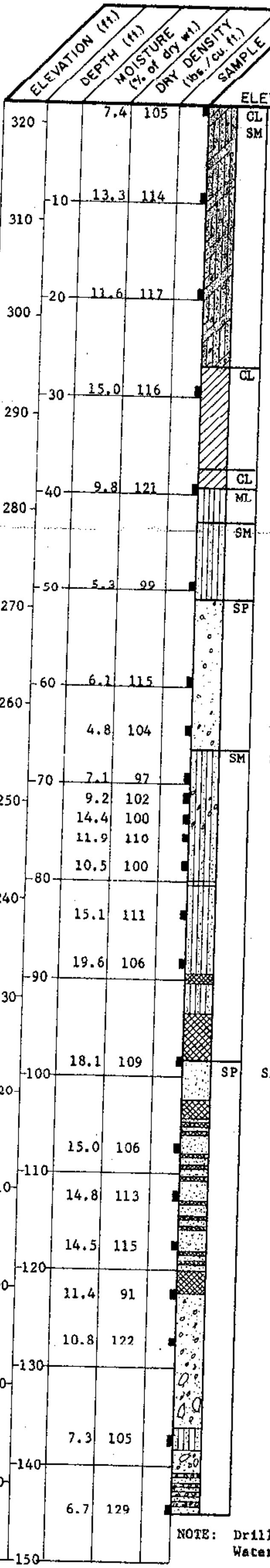
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.19

BORING 20

DATE DRILLED : October 18 & 19, 1968
EQUIPMENT USED : 6"-Diameter Rotary Wash

ELEVATION 322.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)
7.4	105
13.3	114
11.6	117
15.0	116
9.8	121
5.3	99
6.1	115
4.8	104
7.1	97
9.2	102
14.4	100
11.9	110
10.5	100
15.1	111
19.6	106
18.1	109
15.0	106
14.8	113
14.5	115
11.4	91
10.8	122
7.3	105
6.7	129

CL SM FILL - SILTY CLAY and SILTY SAND - 10% gravel, mottled brown

CL SILTY CLAY - some Sand, mottled greyish-brown

CL SANDY CLAY - some Silt, mottled greyish-brown

ML SANDY SILT - some Clay, mottled greyish-brown

SM SILTY SAND - fine, light yellowish-brown

SP SAND - fine, trace of gravel, yellowish-brown and grey

Brown

20% to 30% fine gravel

SM SILTY SAND - fine, light grey and reddish-brown

30% gravel to 3" in diameter

Light grey

Layer of SANDY SILT - grey

Grey

Shells, cemented layer

Cemented layer at 89½'

Cemented layer from 94' to 98'

SP SAND - fine, light grey

Layers of cemented SILTY SAND

Grey

Large amount of gravel, few cobbles to 3"

Layer of SILTY SAND - fine, light grey

Layers of gravel, few cobbles

NOTE: Drilling mud used in drilling process.
Water level not established.

LEROY CRANDALL AND ASSOCIATES

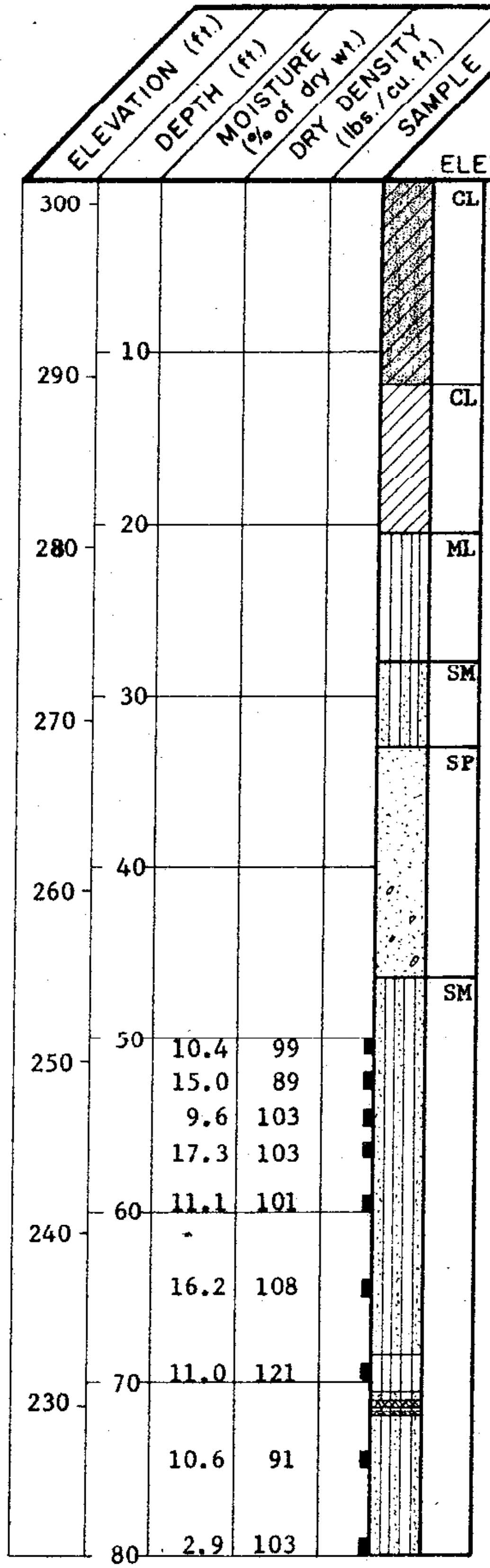
JOB A-67066-B DATE 11-9-68 DR Juan O.E. CHKD.

FIGURE B-1.20

BORING 21

DATE DRILLED: October 19, 1968
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 301.5



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)
10.4	99
15.0	89
9.6	103
17.3	103
11.1	101
16.2	108
11.0	121
10.6	91
2.9	103

FILL - SILTY CLAY - mottled brown

SILTY CLAY - brown

Greyish-brown

SANDY SILT - greyish-brown

SILTY SAND - fine, greyish-brown

SAND - fine, grey

About 15% gravel

SILTY SAND - fine, greyish-brown

Light yellowish-grey

Light grey

Layer of SANDY SILT - grey

Cemented layers at 71' and 72'

NOTE: Water not encountered. No caving.

LOG OF BORING

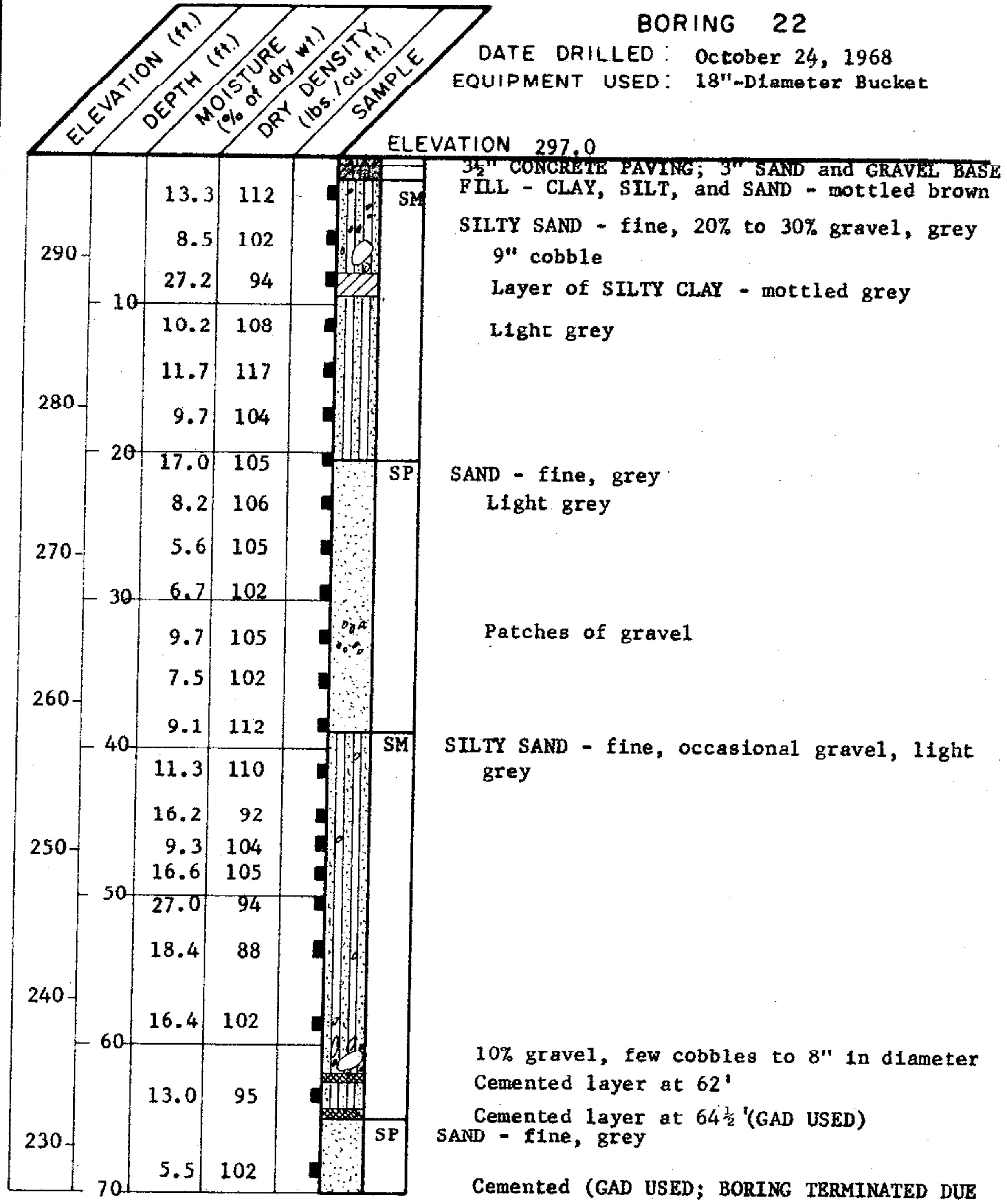
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.21

BORING 22

DATE DRILLED: October 24, 1968
EQUIPMENT USED: 18"-Diameter Bucket

ELEVATION 297.0



MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)
13.3	112
8.5	102
27.2	94
10.2	108
11.7	117
9.7	104
17.0	105
8.2	106
5.6	105
6.7	102
9.7	105
7.5	102
9.1	112
11.3	110
16.2	92
9.3	104
16.6	105
27.0	94
18.4	88
16.4	102
13.0	95
5.5	102

3½" CONCRETE PAVING; 3" SAND and GRAVEL BASE

FILL - CLAY, SILT, and SAND - mottled brown

SILTY SAND - fine, 20% to 30% gravel, grey

9" cobble

Layer of SILTY CLAY - mottled grey

Light grey

SAND - fine, grey

Light grey

Patches of gravel

SILTY SAND - fine, occasional gravel, light grey

10% gravel, few cobbles to 8" in diameter

Cemented layer at 62'

Cemented layer at 64½'(GAD USED)

SAND - fine, grey

Cemented (GAD USED; BORING TERMINATED DUE TO FIRM DRILLING)

NOTE: Water not encountered. No caving.

LOG OF BORING

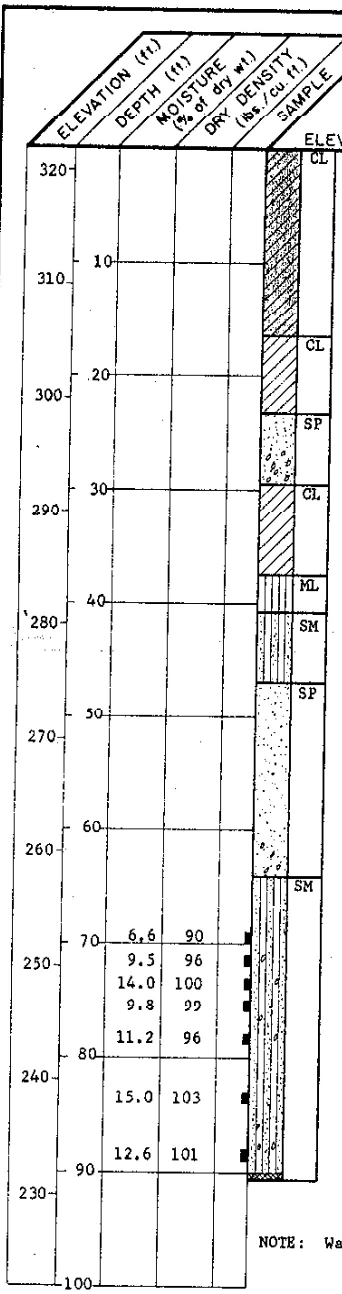
LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.22

BORING 23

DATE DRILLED : October 18, 1968
EQUIPMENT USED : 18"-Diameter Bucket

ELEVATION 322.0



FILL - SILTY CLAY - mottled brown

Patches of Silty Sand

SANDY CLAY - greyish-brown

SAND - fine, greyish-brown
About 40% gravel

SILTY CLAY - grey

SANDY SILT - grey

SILTY SAND - fine, grey

SAND - fine, grey

About 20% gravel

SILTY SAND - fine, grey

Few gravel

Shells, dark grey

Few gravel
Cemented below 90' (GAD USED; BORING TERMINATED DUE TO FIRM DRILLING)

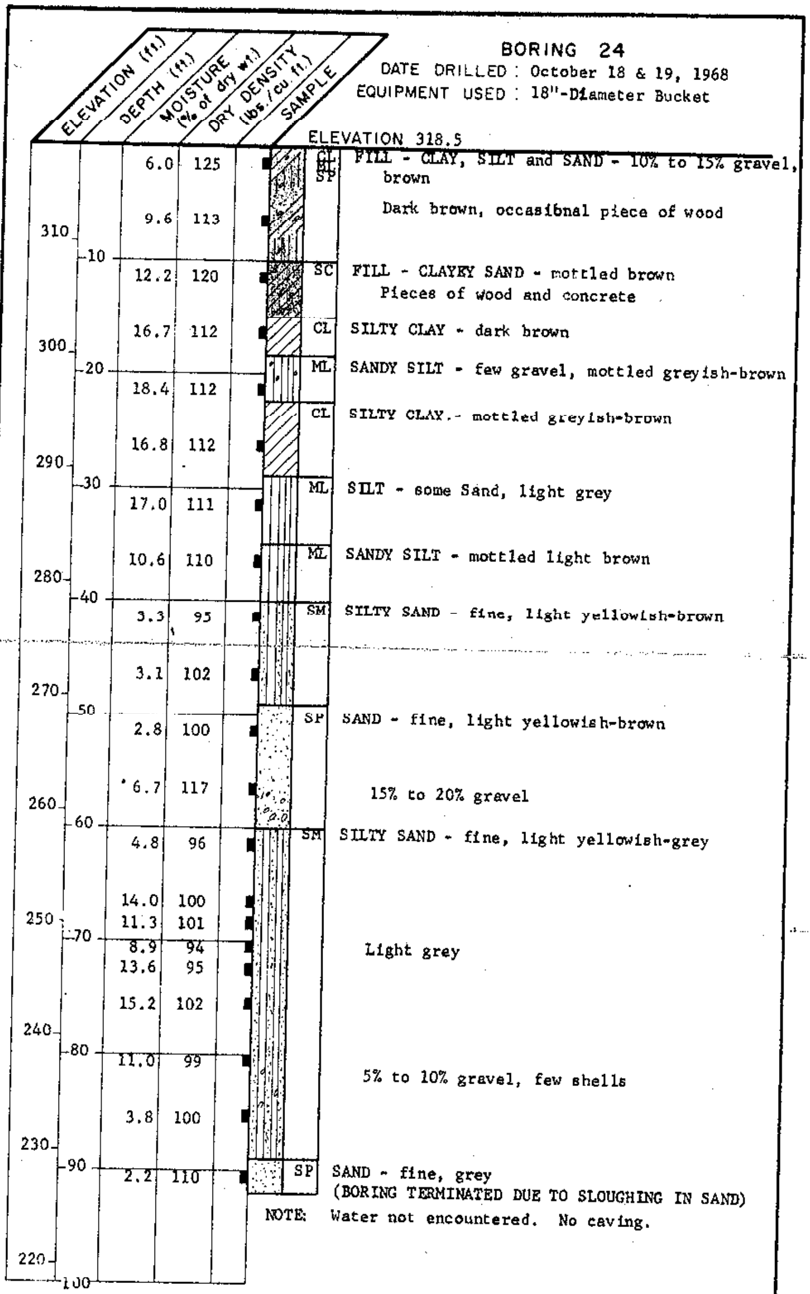
NOTE: Water not encountered. No caving.

JOB A-67066-8 DATE 11-9-68 DR /uau O.E. 15 CHKD. ___

LOG OF BORING

LEROY CRANDALL AND ASSOCIATES

FIGURE B-1.23



BORING 24

DATE DRILLED : October 18 & 19, 1968
EQUIPMENT USED : 18"-Diameter Bucket

ELEVATION 318.5

ELEVATION (ft.)	DEPTH (ft.)	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu ft.)	SAMPLE		
		6.0	125	■	CL ML SP	FILL - CLAY, SILT and SAND - 10% to 15% gravel, brown
		9.6	113	■		Dark brown, occasional piece of wood
310	10					
		12.2	120	■	SC	FILL - CLAYEY SAND - mottled brown Pieces of wood and concrete
		16.7	112	■	CL	SILTY CLAY - dark brown
300	20				ML	SANDY SILT - few gravel, mottled greyish-brown
		18.4	112	■		
					CL	SILTY CLAY - mottled greyish-brown
		16.8	112	■		
290	30				ML	SILT - some Sand, light grey
		17.0	111	■		
		10.6	110	■	ML	SANDY SILT - mottled light brown
280	40					
		3.3	95	■	SM	SILTY SAND - fine, light yellowish-brown
		3.1	102	■		
270	50				SP	SAND - fine, light yellowish-brown
		2.8	100	■		
		6.7	117	■		15% to 20% gravel
260	60					
		4.8	96	■	SM	SILTY SAND - fine, light yellowish-grey
		14.0	100	■		
		11.3	101	■		
250	70					
		8.9	94	■		Light grey
		13.6	95	■		
		15.2	102	■		
240	80					
		11.0	99	■		5% to 10% gravel, few shells
		3.8	100	■		
230	90					
		2.2	110	■	SP	SAND - fine, grey (BORING TERMINATED DUE TO SLOUGHING IN SAND)
220	100					

NOTE: Water not encountered. No caving.

JOB A-67066-B DATE 11-9-68 DR [illegible] O.E. [illegible] CHKD.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

FIGURE B-1.24

BORING 1

DATE DRILLED: February 9, 1983

EQUIPMENT USED: 24"-Diameter Bucket

ELEVATION 300*

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD. PEN. TEST	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)	DRIVE ENERGY (ft-kips/ft.)	SAMPLE LOC		
								1½" Asphaltic Paving
			13.2	110	3	■	CL ML	FILL - CLAY and SILT - some Sand, mottled brown and grey Chunks of conrete, pieces of wood, paper and aluminum foil, some voids
295	5		11.1	115	5	■		
								Few gravel
			8.7	122	11	■		
290	10							
			12.0	116	8	■		
			13.6	116	11	■		
285	15							
			13.4	118	16	■	ML	SANDY SILT - grey
			11.6	104	6	■		
280	20							
			12.5	96	8	■	SM	SILTY SAND - fine, grey
275	25							
			13.4	109	25	■		
							SP	SAND - fine, light grey
			3.5	111	20	■		
270	30							

NOTE: Water not encountered. No caving.

*Elevations refer to datum of reference survey; See Plate 1.

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

FIGURE B-1.25

BORING 2

DATE DRILLED: February 8, 1983

EQUIPMENT USED: 24"-Diameter Bucket

ELEVATION 318

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD PEN. TEST	MOISTURE (% of dry wt)	DRY DENSITY (lbs./cu.ft.)	DRIVE ENERGY (ft-kips/ft.)	SAMPLE LOC.
315						
			12.7	119	8	■
	5					
			12.8	122	8	■
310						
	10		12.3	123	8	■
			9.9	123	11	■
305						
	15					
			13.4	114	6	■
300						
			12.3	120	8	■
	20					
			11.2	121	11	■
295						
	25		9.8	119	10	■

2" Asphaltic Paving

CL ML — FILL - CLAY and SILT - some Sand, few gravel, mottled brown

Piece of brick

Some Shale fragments, dark mottled grey

(CONTINUED ON FOLLOWING PLATE)

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

FIGURE B-1.26a

BORING 2 (CONTINUED)

DATE DRILLED: February 8, 1983
EQUIPMENT USED: 24"-Diameter Bucket

ELEVATION (ft.)	DEPTH (ft.)	"N" VALUE STD. PEN. TEST	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu.ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC		
							SM	FILL - SILTY SAND - fine to course, some Shale fragments, dark grey
290			10.0	122	12	■		
	30							
			10.3	111	10	■		
285			5.1	126	9	■		
	35							
			9.7	124	15	■		
280							SM	SILTY SAND - fine, few gravel, grey
			15.3	106	9	■		
	40							
							SP	SAND - fine, light grey
275			6.3	102	9	■		
	45							
			6.5	104	10	■		
270								
	50		7.1	106	15	■		

NOTE: Water not encountered. No caving.

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

JO_ -82- B DATE 1/83 DR JIN W.F. CHKD

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LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

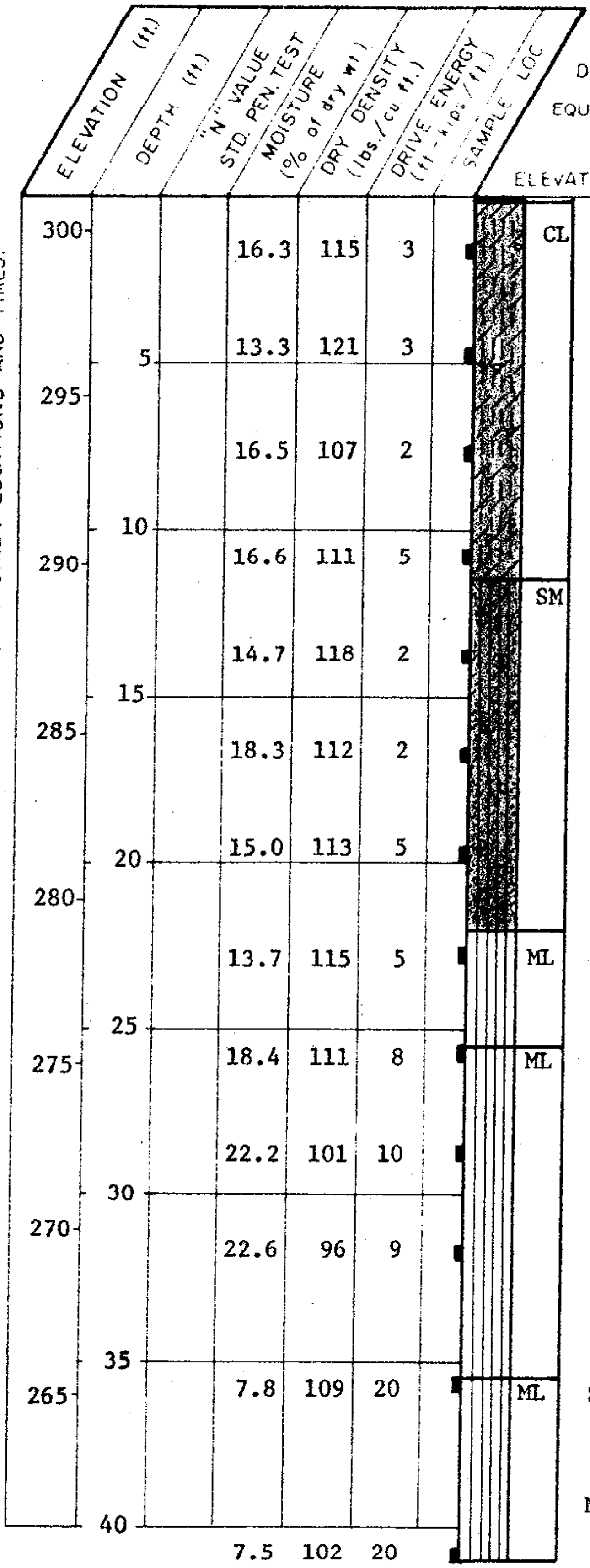
FIGURE B-1.26b

BORING 3

DATE DRILLED: February 7, 1983

EQUIPMENT USED 24"-Diameter Bucket

ELEVATION 301



16.3	115	3
13.3	121	3
16.5	107	2
16.6	111	5
14.7	118	2
18.3	112	2
15.0	113	5
13.7	115	5
18.4	111	8
22.2	101	10
22.6	96	9
7.8	109	20
7.5	102	20

2" Asphaltic Paving

CL FILL - CLAY and SILT - some Sand, few gravel, piece of brick, greyish-brown

Large amount of Sand

Chunk of asphaltic paving (8" in size)

Mottled brown

SM FILL - SILTY SAND - fine, about 10% gravel, mottled grey

Pieces of asphaltic paving

About 30% debris, wood boards, bolts, steel brackets, concrete chunks (USED GAD FROM 20' to 22')

ML SANDY SILT - dark grey

ML CLAYEY SILT - grey

ML SANDY SILT - light grey

NOTE: Water not encountered. No caving.

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

FIGURE B-1.27

BORING 4

DATE DRILLED: February 8, 1983
EQUIPMENT USED: 24"-Diameter Bucket

ELEVATION 325

ELEVATION (ft.)	DEPTH (ft.)	"N" VALUE STD. PEN. TEST	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu ft.)	DRIVE ENERGY (ft-kips/ft.)	SAMPLE LOC		
							CL ML SP	2" Asphaltic Paving FILL - CLAY, SILT and SAND - few gravel, pieces of asphaltic paving, mottled brown
			12.2	122	8	■		
320	5							
			8.5	118	8	■		Pieces of wood
			15.4	113	6	■		
315	10							
			21.4	101	6	■		Some chunks of conrete (to 8" in size)
			13.6	120	6	■		
310	15							
								Piece of brick
			15.2	116	8	■		
305	20							
			14.9	115	6	■		
							ML	CLAYEY SILT - grey
			16.3	110	10	■		
300	25							

(CONTINUED ON FOLLOWING PLATE)

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

JO 82 3 TE 4/E DR HN WP 1

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

FIGURE B-1.28a

BORING 4 (CONTINUED)

DATE DRILLED: February 8, 1983
EQUIPMENT USED: 24"-Diameter Bucket

ELEVATION (ft.)	DEPTH (ft.)	"N" VALUE STD. PEN. TEST	MOISTURE (% of dry wt.)	DRY DENSITY (lbs./cu. ft.)	DRIVE ENERGY (ft.-kips/ft.)	SAMPLE LOC.
			18.4	105	11	■
295	30					
			15.1	114	12	■
290	35		15.0	113	11	■
285	40		16.0	114	12	■
280	45		5.6	102	16	■
275	50		4.0	93	16	■

Few gravel, dark grey

CL SILTY CLAY - greyish-brown

ML CLAYEY SILT - grey

ML SANDY SILT - light grey

SM SILTY SAND - fine, light grey

NOTE: Water not encountered. No caving.

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

124 JO 822 ITE 1/8 DR IN W.P. lg D

LOG OF BORING

LeROY CRANDALL AND ASSOCIATES

FIGURE B-1.28b

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amt. of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

<u>BOUNDARY CLASSIFICATIONS</u>: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

NO. 200 NO. 40 NO. 10 NO. 4 3/4 in. 3 in. (12 in.)

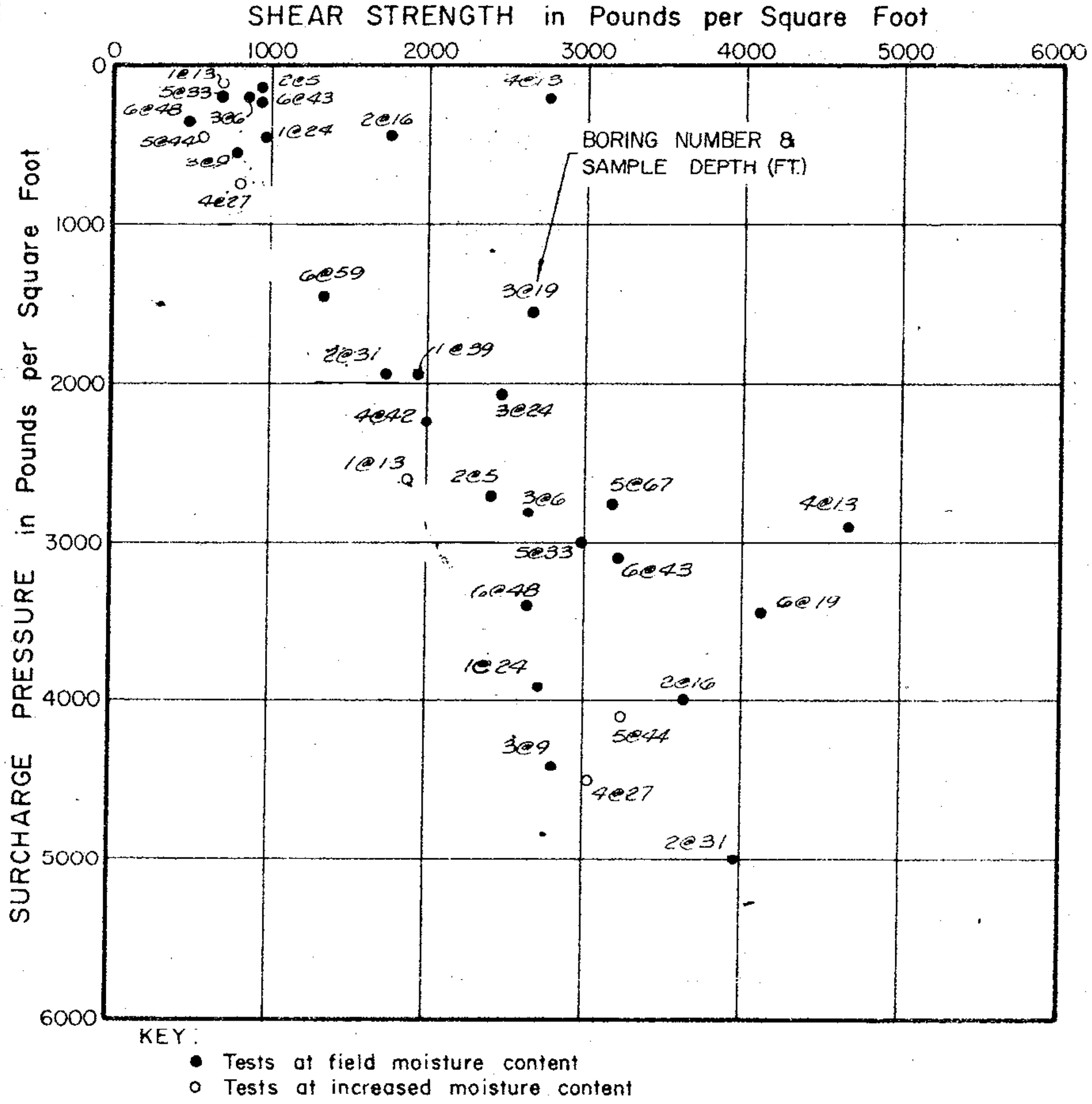
U. S. STANDARD SIEVE SIZE

UNIFIED SOIL CLASSIFICATION SYSTEM

Reference :
The Unified Soil Classification System, Corps of Engineers, U. S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953. (Revised April, 1960)

LEROY CRANDALL AND ASSOCIATES

FIGURE B-2



DIRECT SHEAR TEST DATA

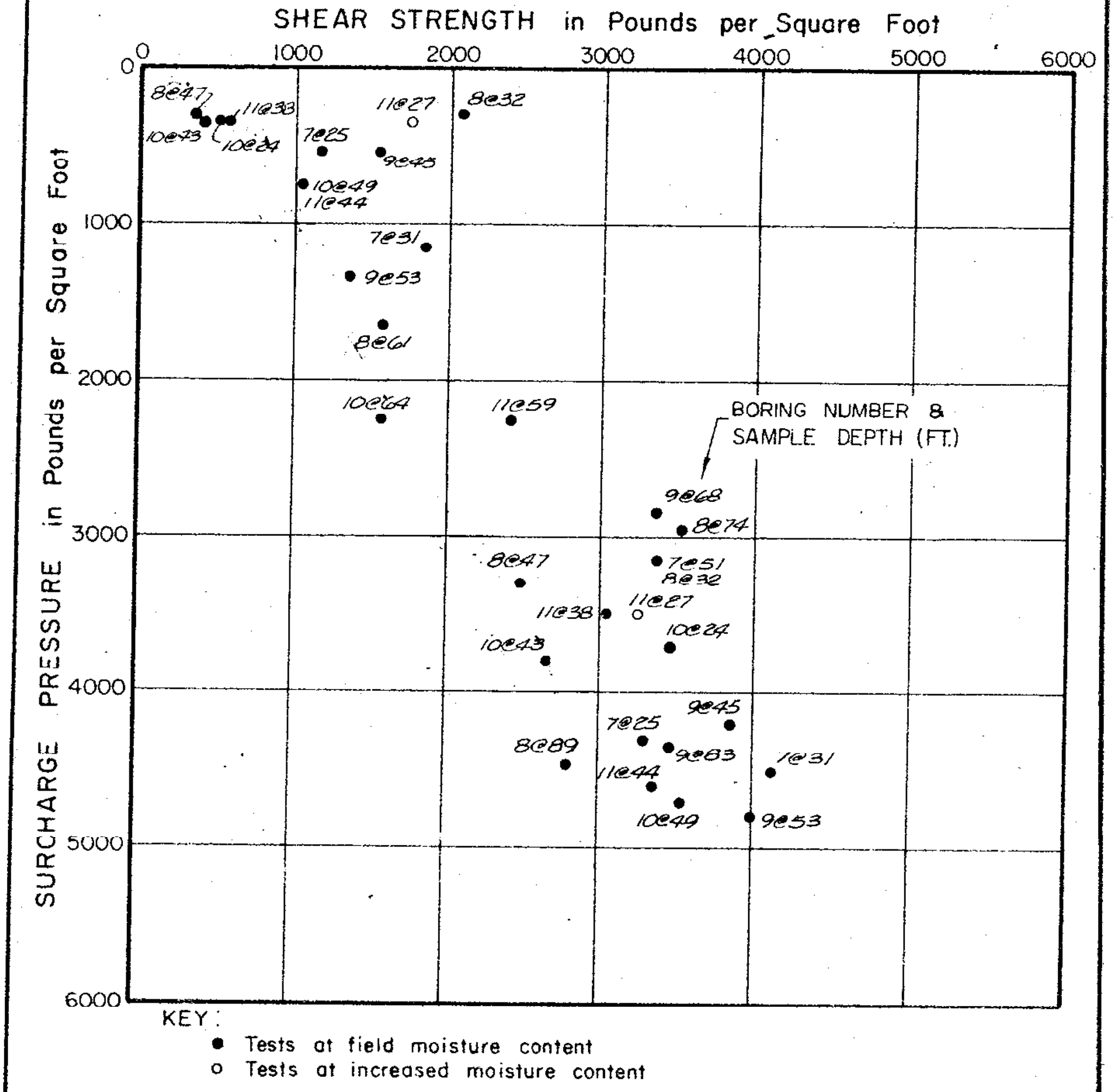
(BORINGS 1 THROUGH 6)

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-3.1

3A- 11-E DA 5-15-6 -R V.F.T. CHKD. GMC



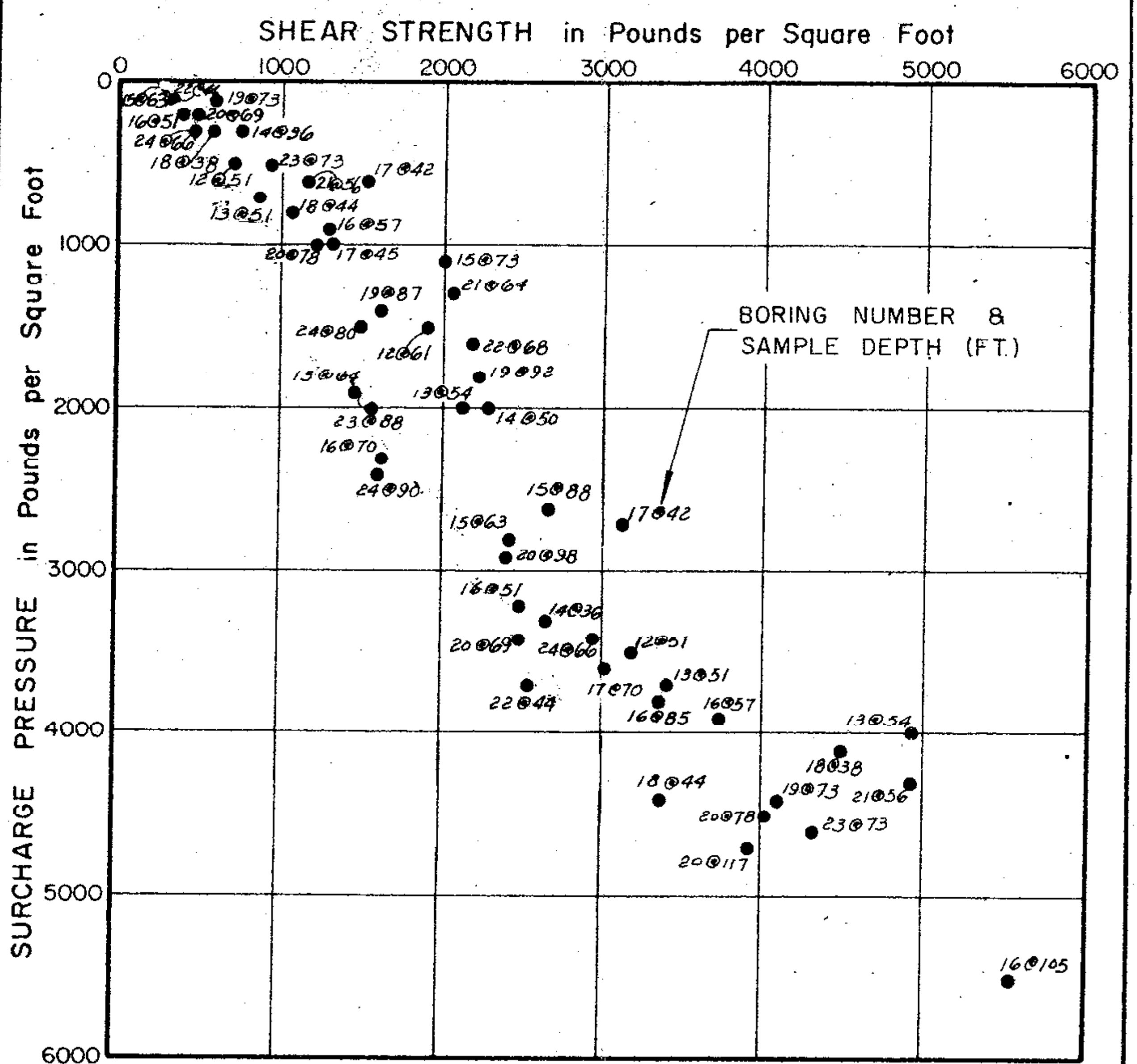
DIRECT SHEAR TEST DATA

(BORINGS 7 THROUGH 11)

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-3.2



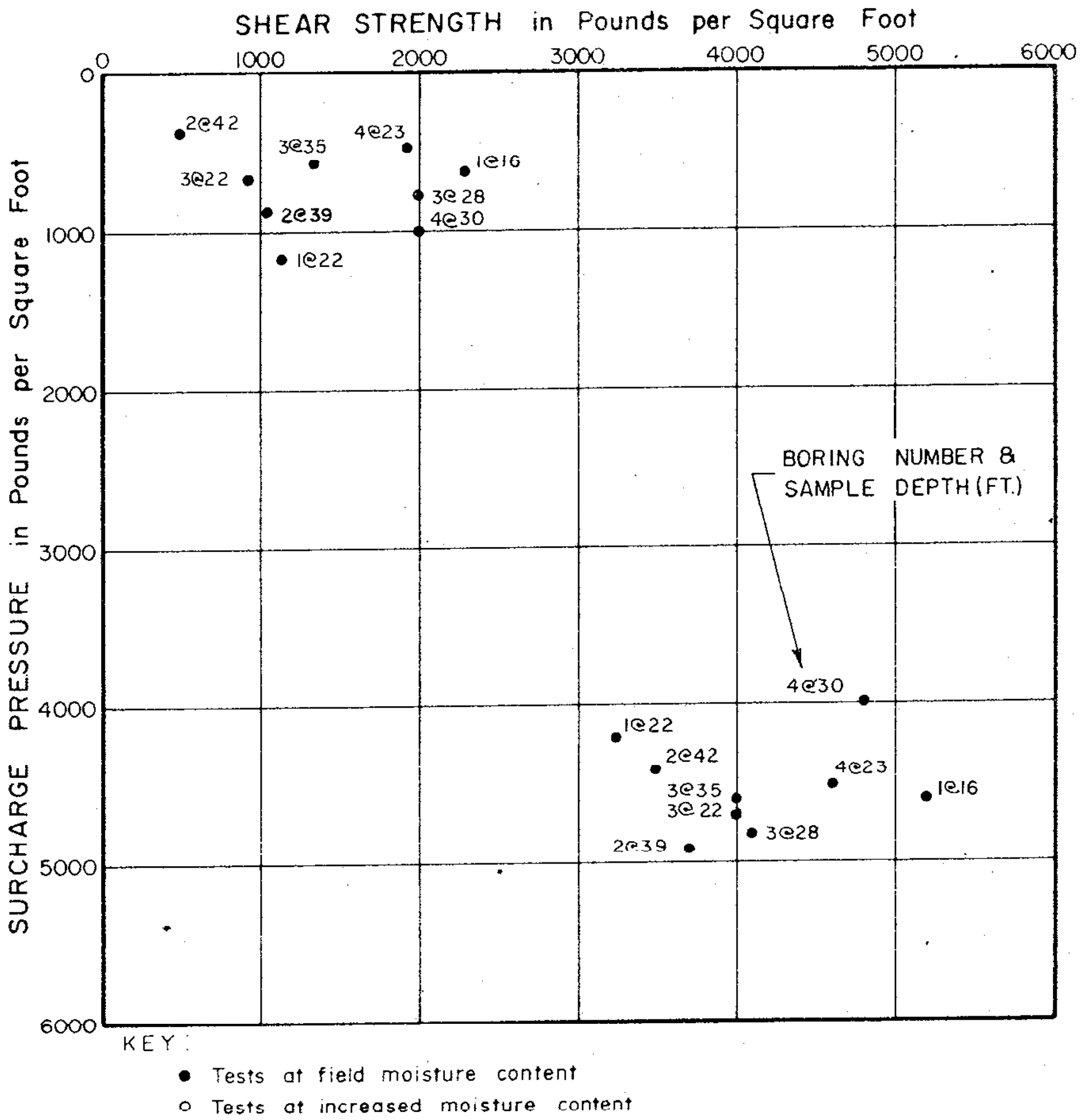
NOTE: SAMPLES TESTED AT FIELD MOISTURE CONTENT.

DIRECT SHEAR TEST DATA

(BORINGS 12 THROUGH 24)
(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-3.3



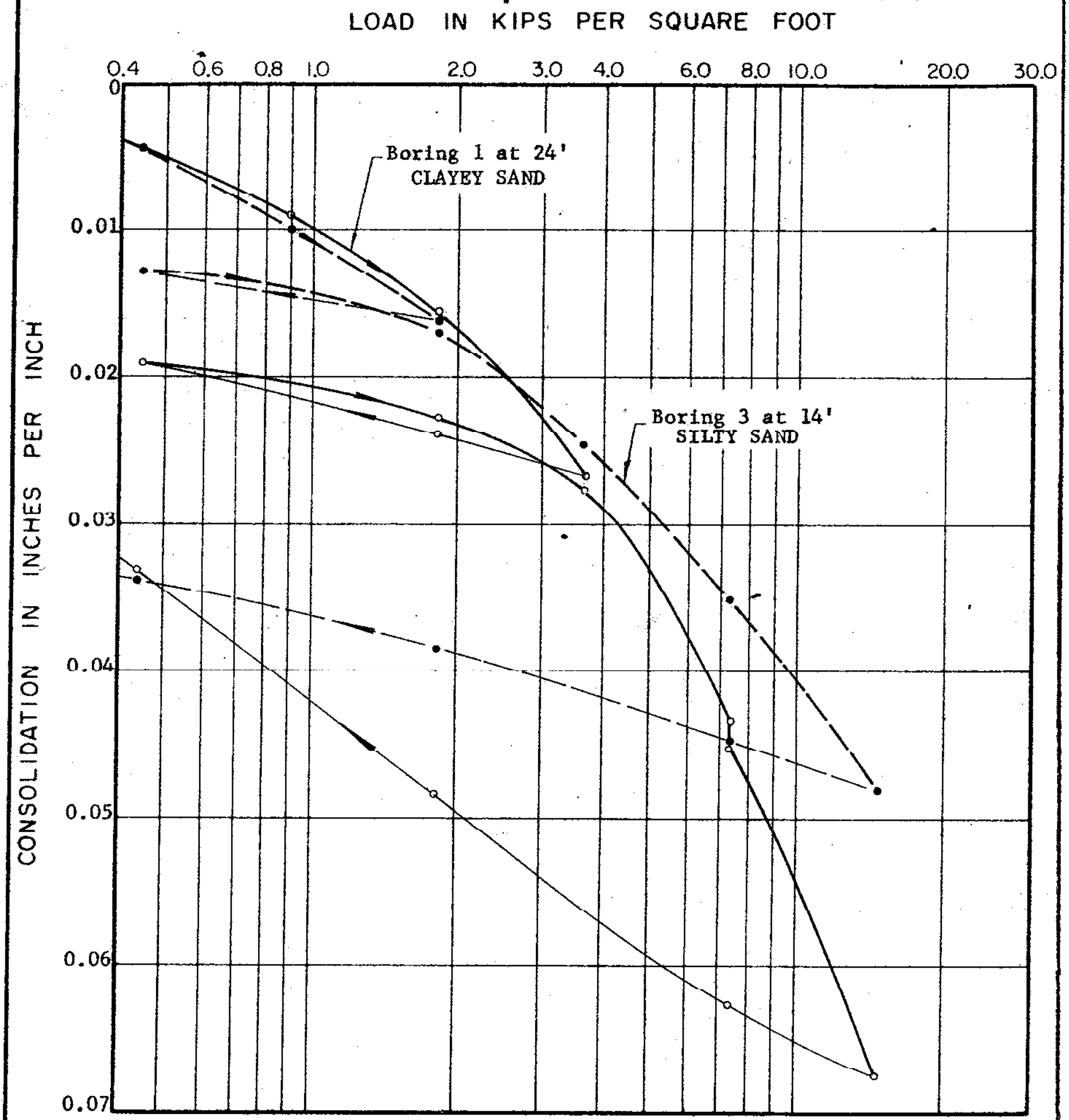
DIRECT SHEAR TEST DATA
(CURRENT INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-3.4

BA: 11-E D. - 2/1 ,83 JR JOHN D.E. CHKD.

8



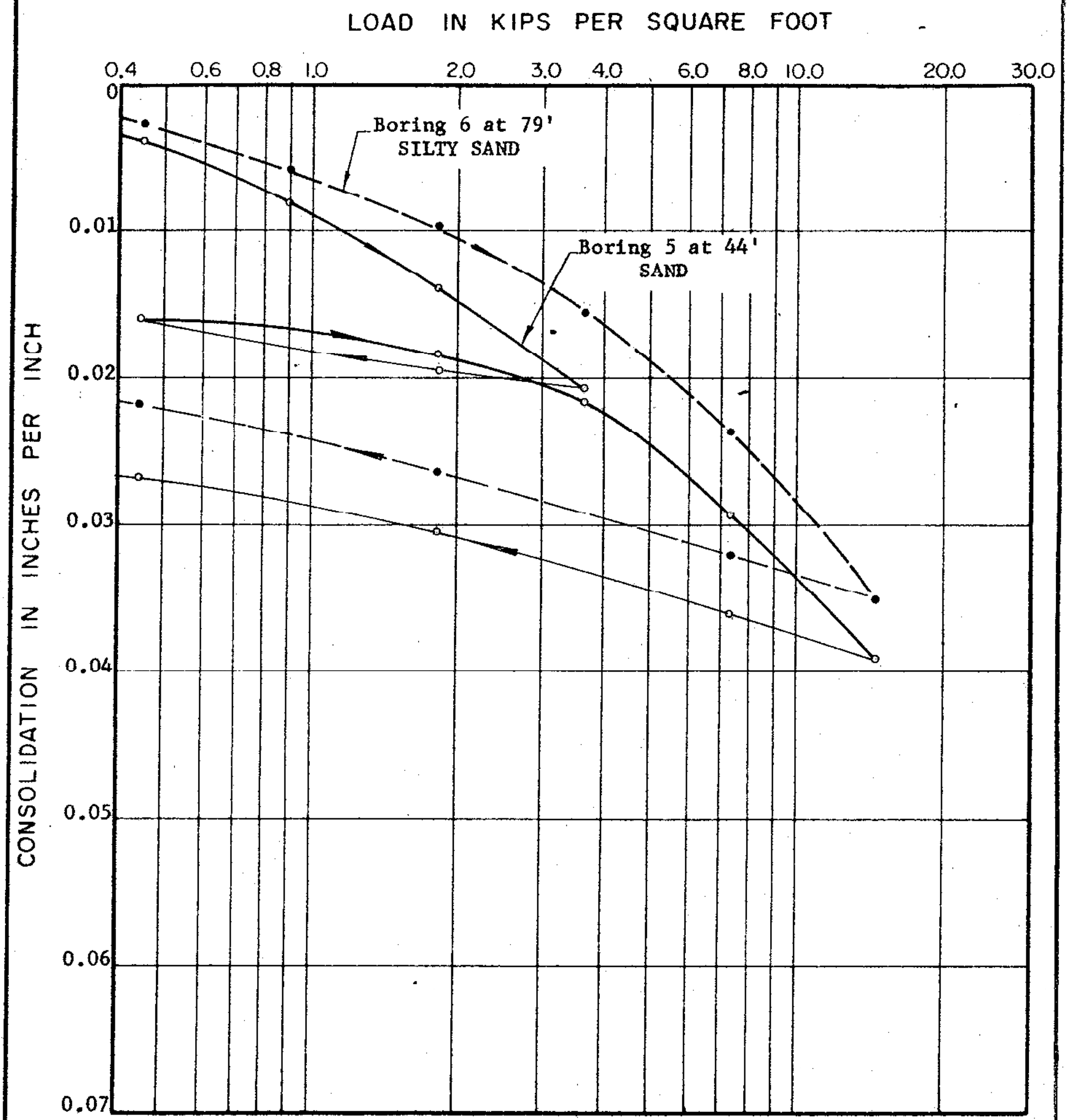
NOTE: Water added to sample from Boring 1 after consolidation under a load of 7.2 kips per square foot. The other sample tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.1



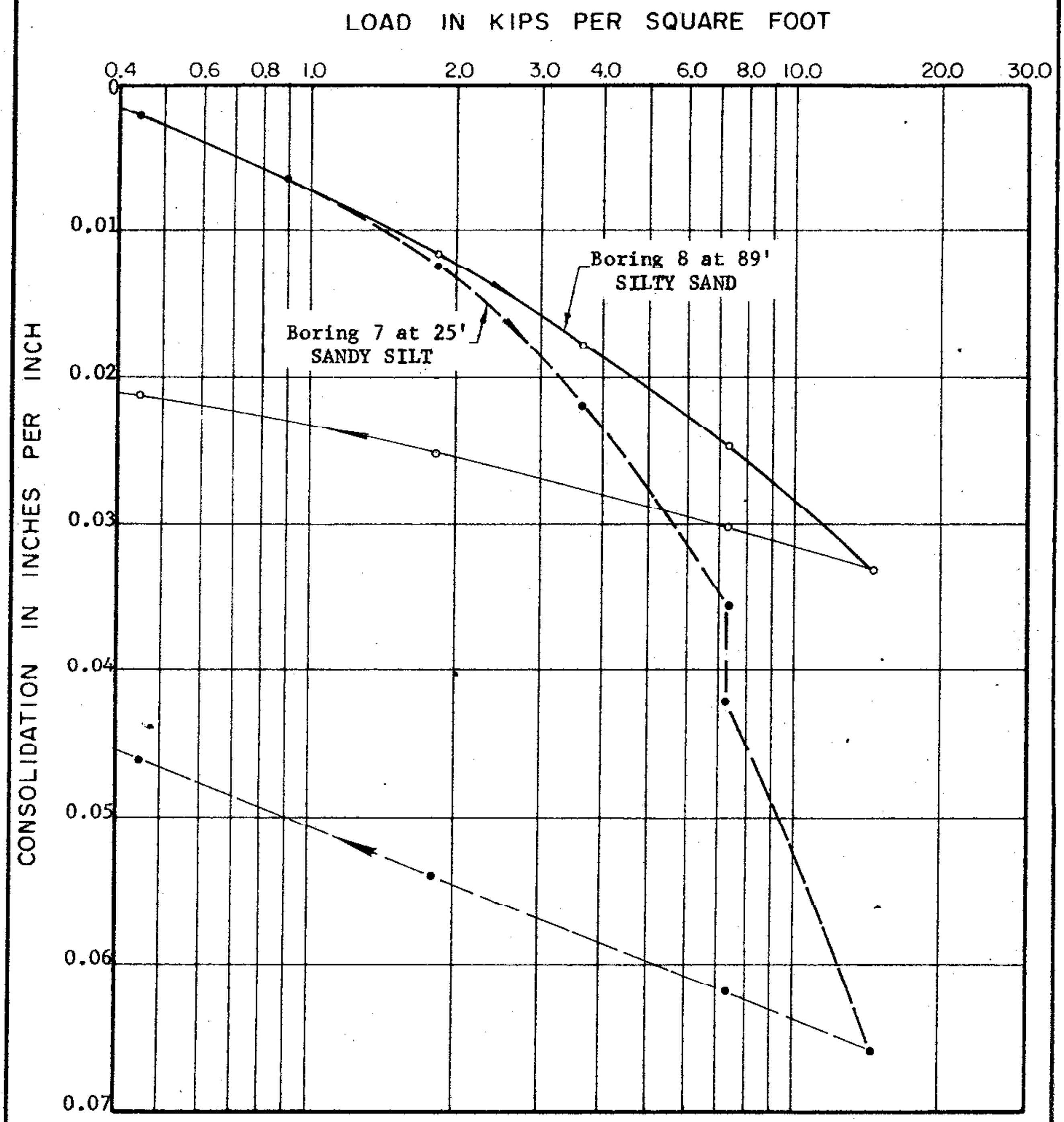
NOTE: Samples tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.2



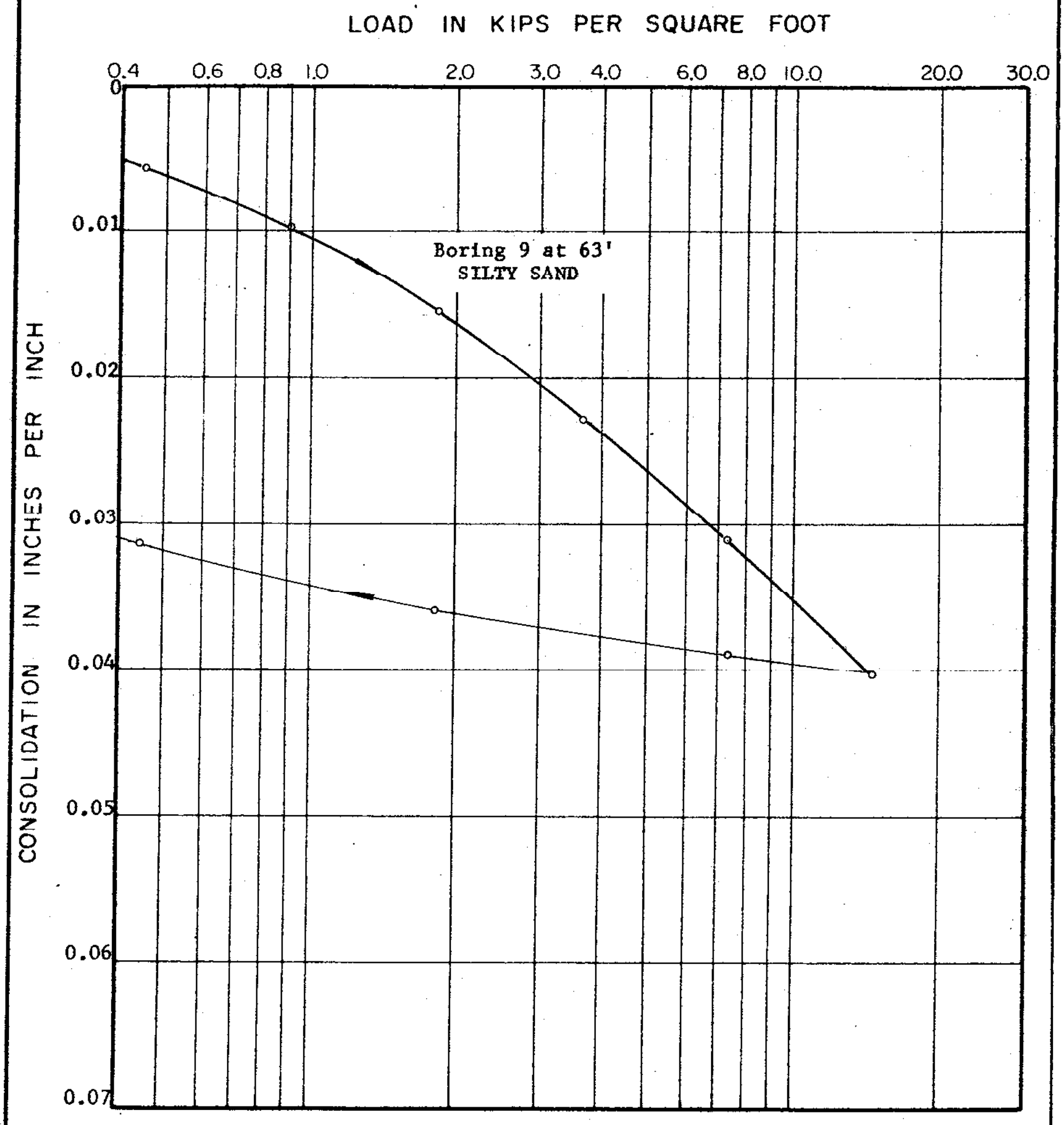
NOTE: Water added to sample from Boring 7 after consolidation under a load of 7.2 kips per square foot. The other sample tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.3



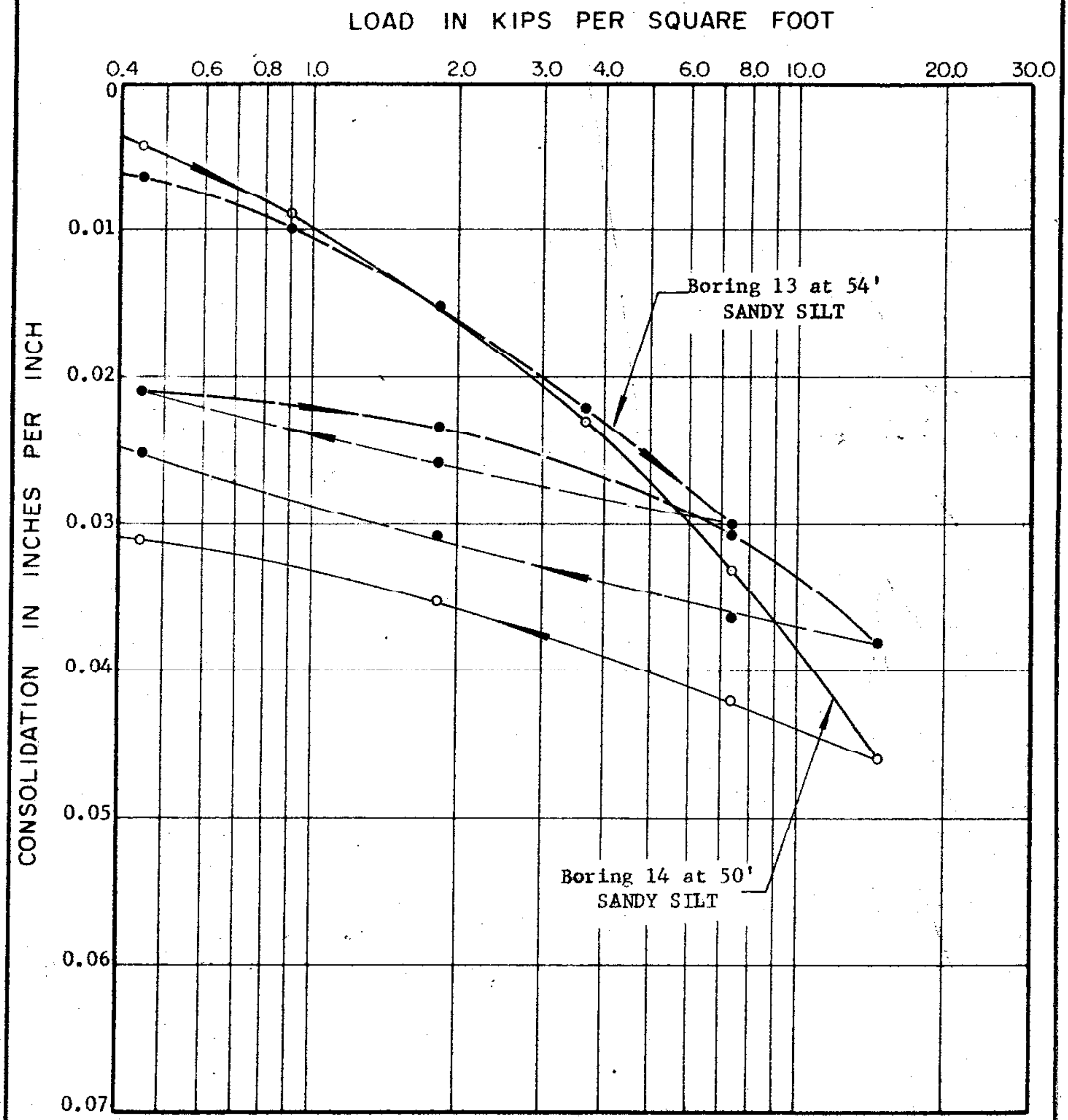
NOTE: Sample tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.4



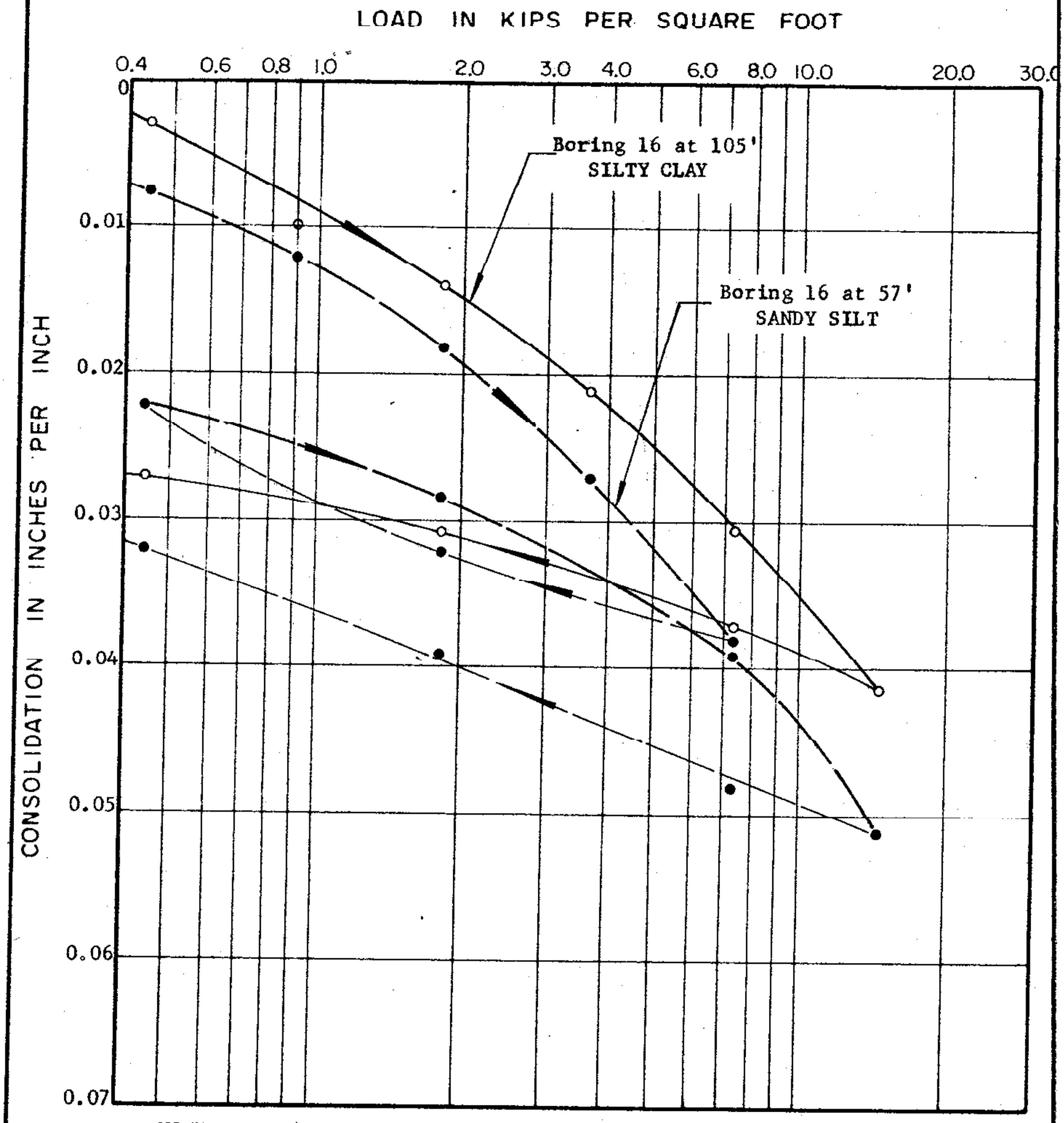
NOTE: Samples tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.5



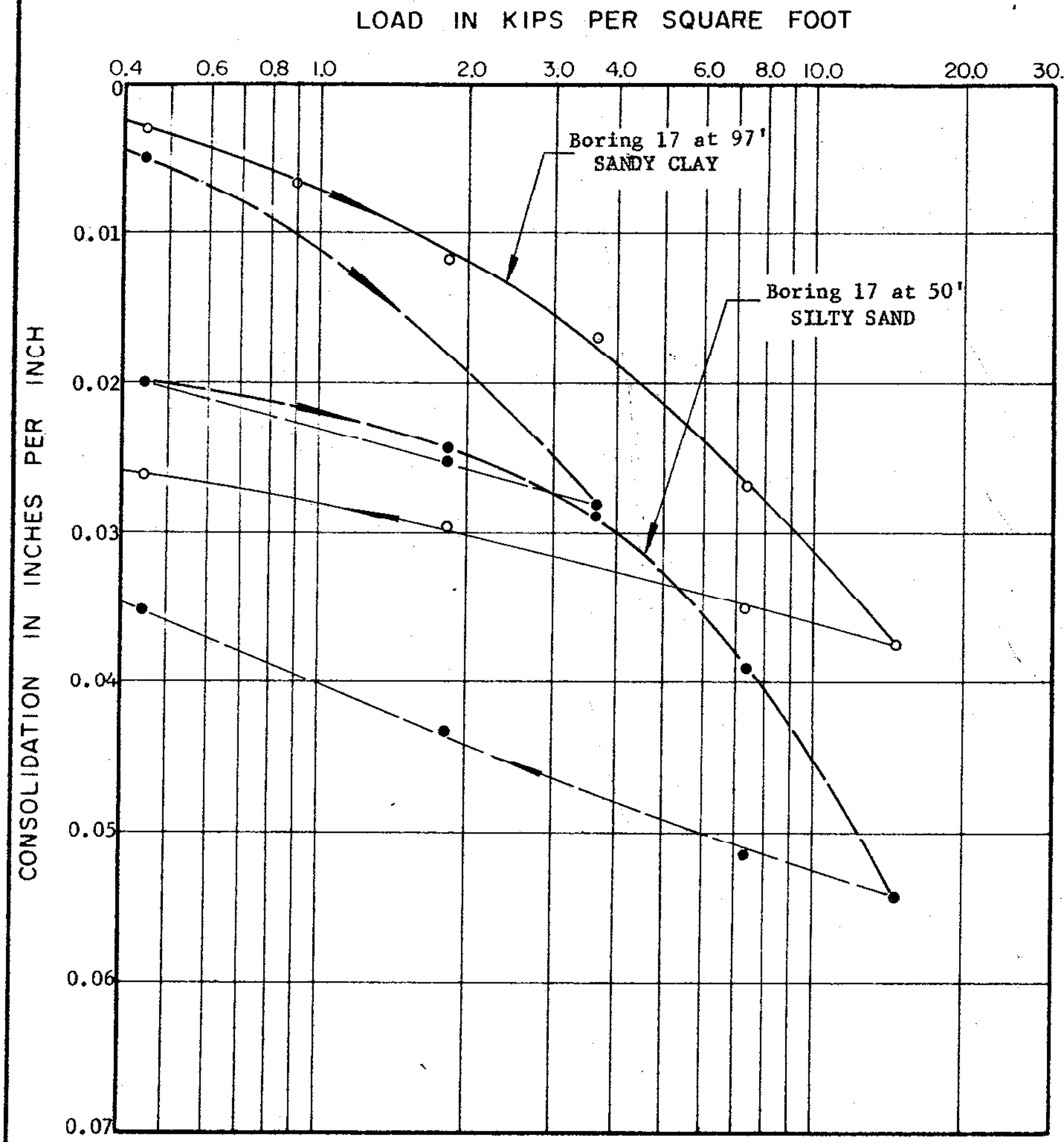
NOTE: Samples tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.6



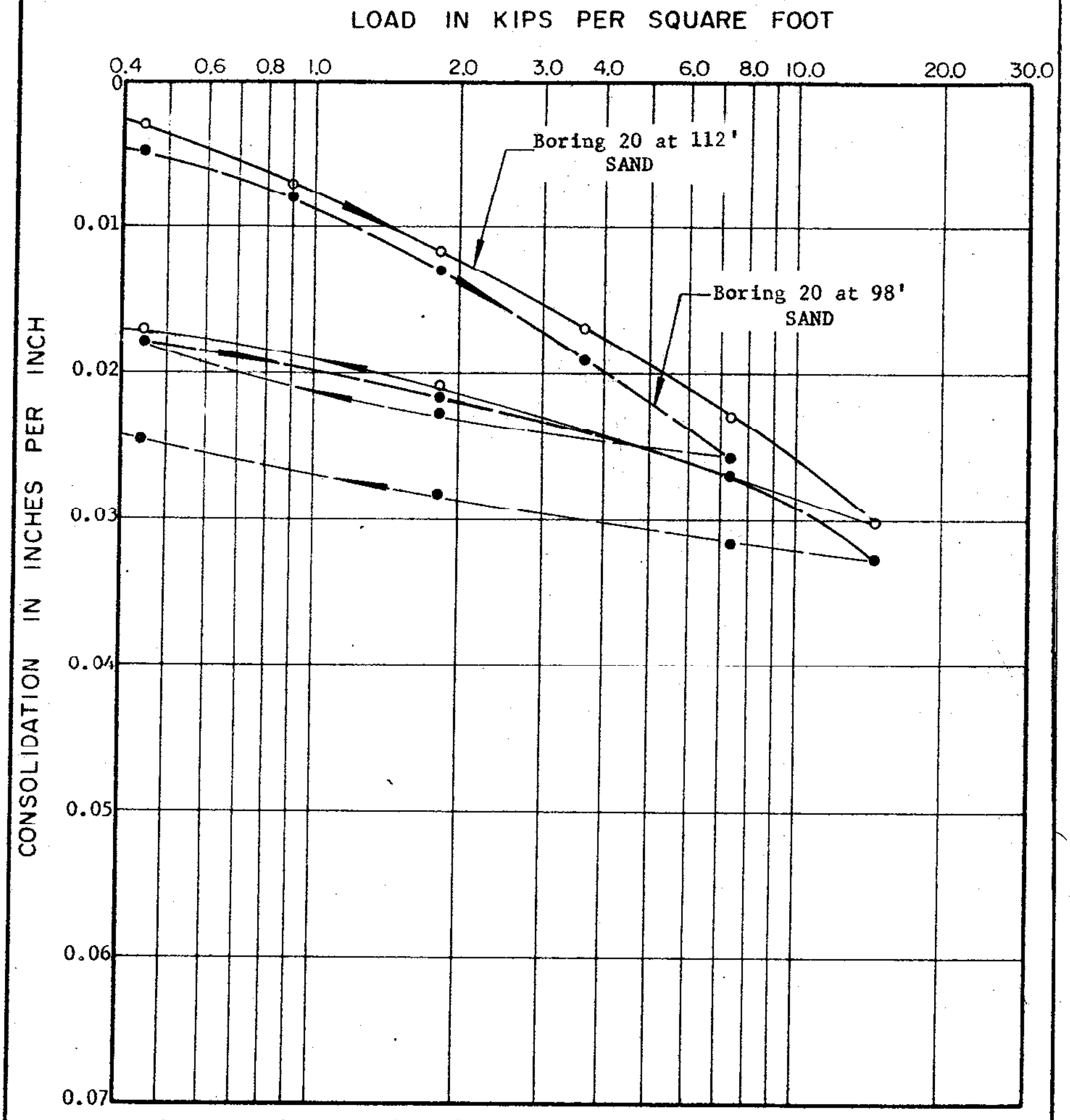
NOTE: Samples tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.7



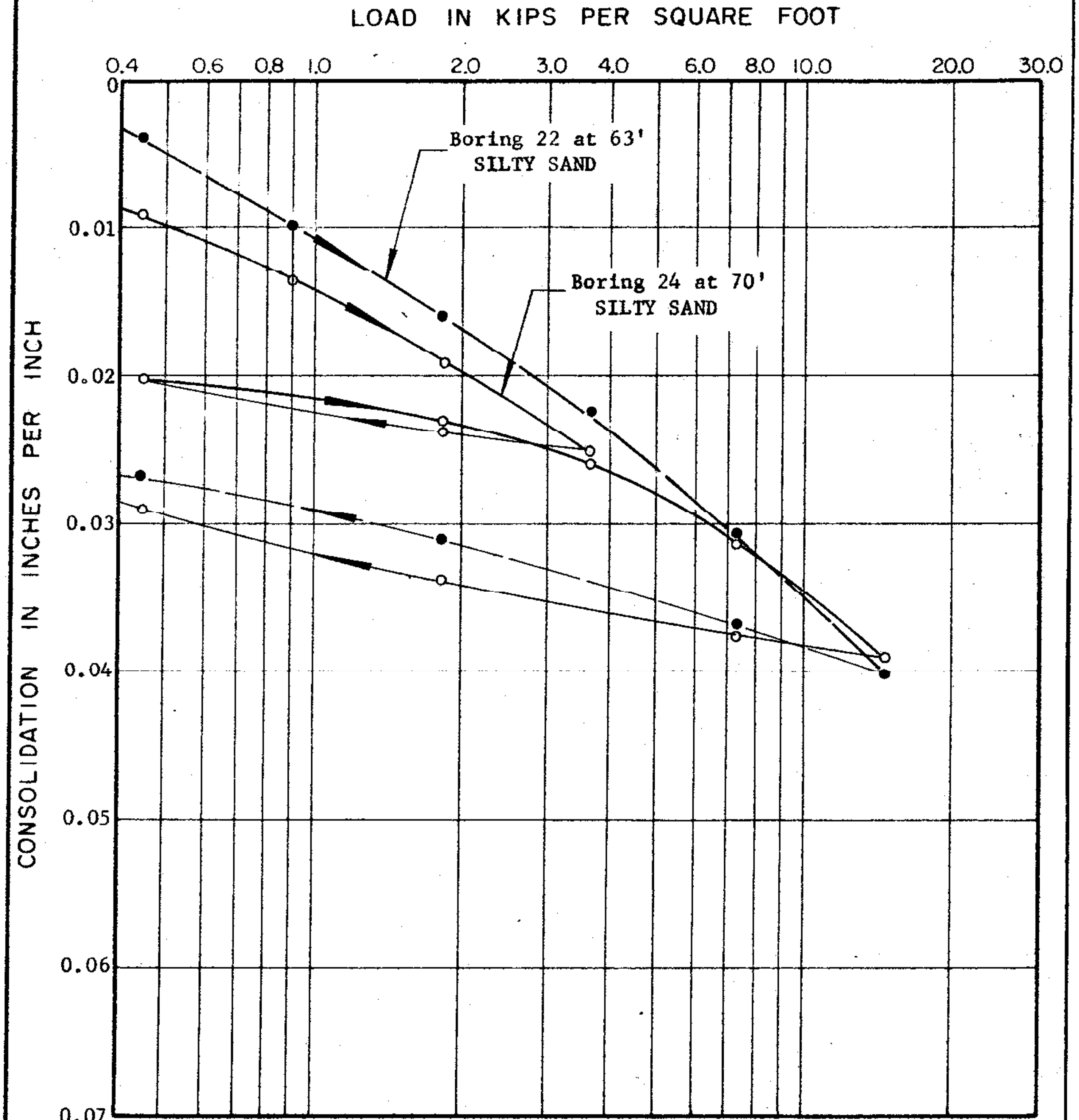
NOTE: Samples tested at field moisture content.

CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.8



NOTE: Samples tested at field moisture content.

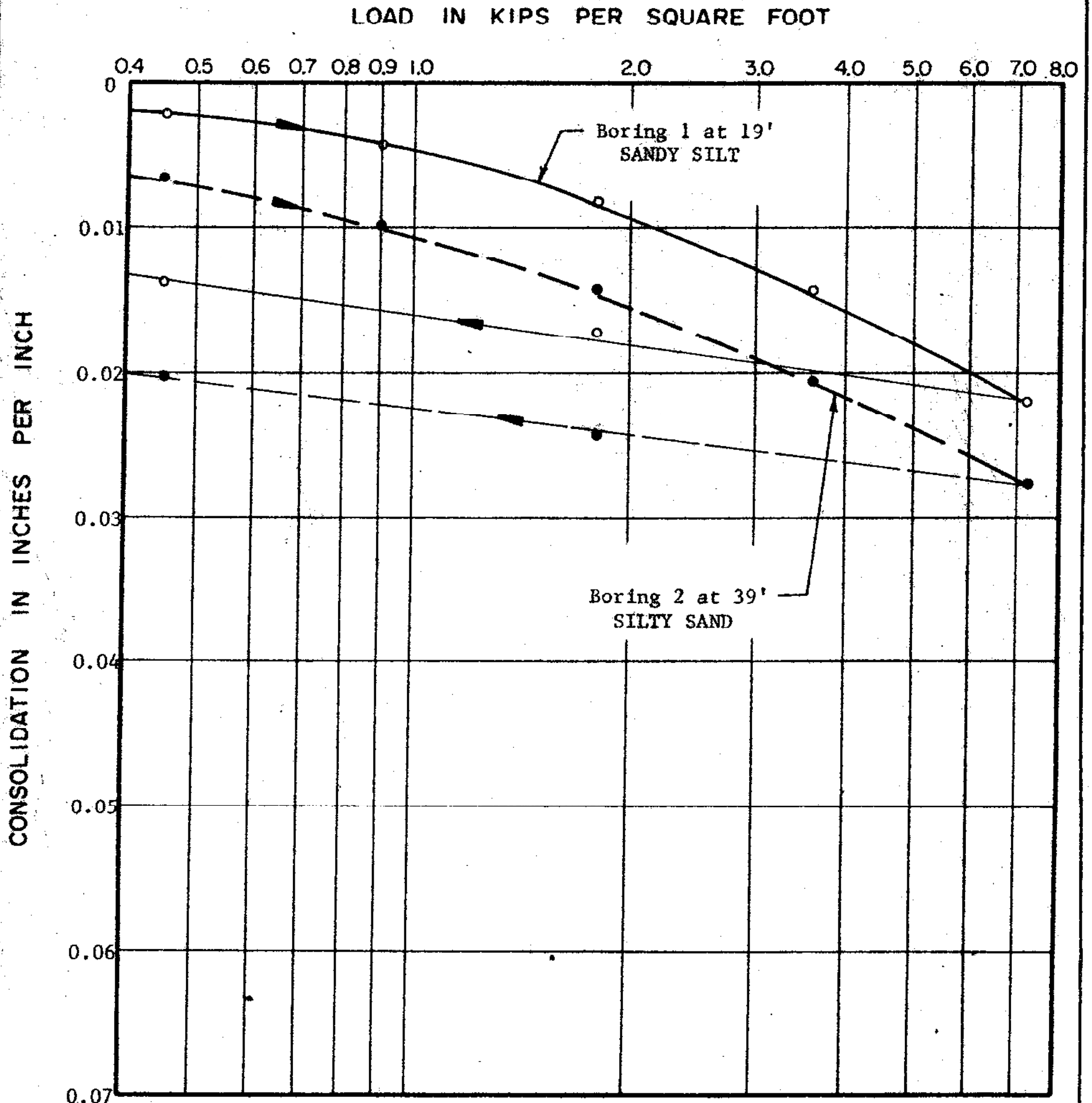
CONSOLIDATION TEST DATA

(PRIOR INVESTIGATION)

LEROY CRANDALL & ASSOCIATES

FIGURE B-4.9

JOB A-82211-B DATE 2/16/83 DR. JOHN O.E. DM M W.P. ng CHKD



NOTE: Samples tested at field moisture content.

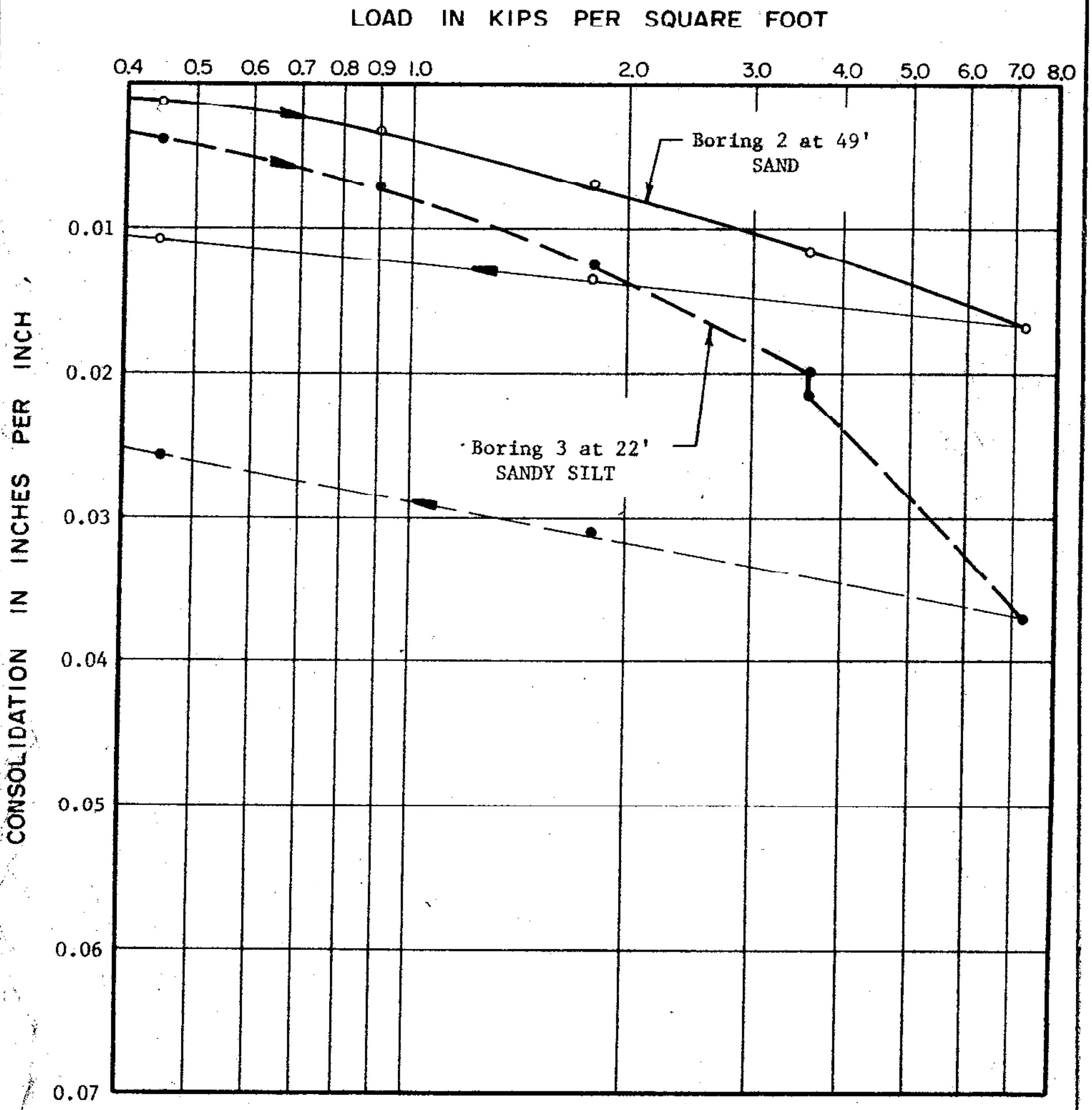
CONSOLIDATION TEST DATA

(CURRENT INVESTIGATION)

LeROY CRANDALL AND ASSOCIATES

FIGURE B-4.10

JOB A-82211-B DATE 2/16/83 DR. JOHN C.E. W.P. pg CHKD



NOTE: Water added to sample from Boring 3 after consolidation under a load of 3.6 kips per square foot. The other sample tested at field moisture content.

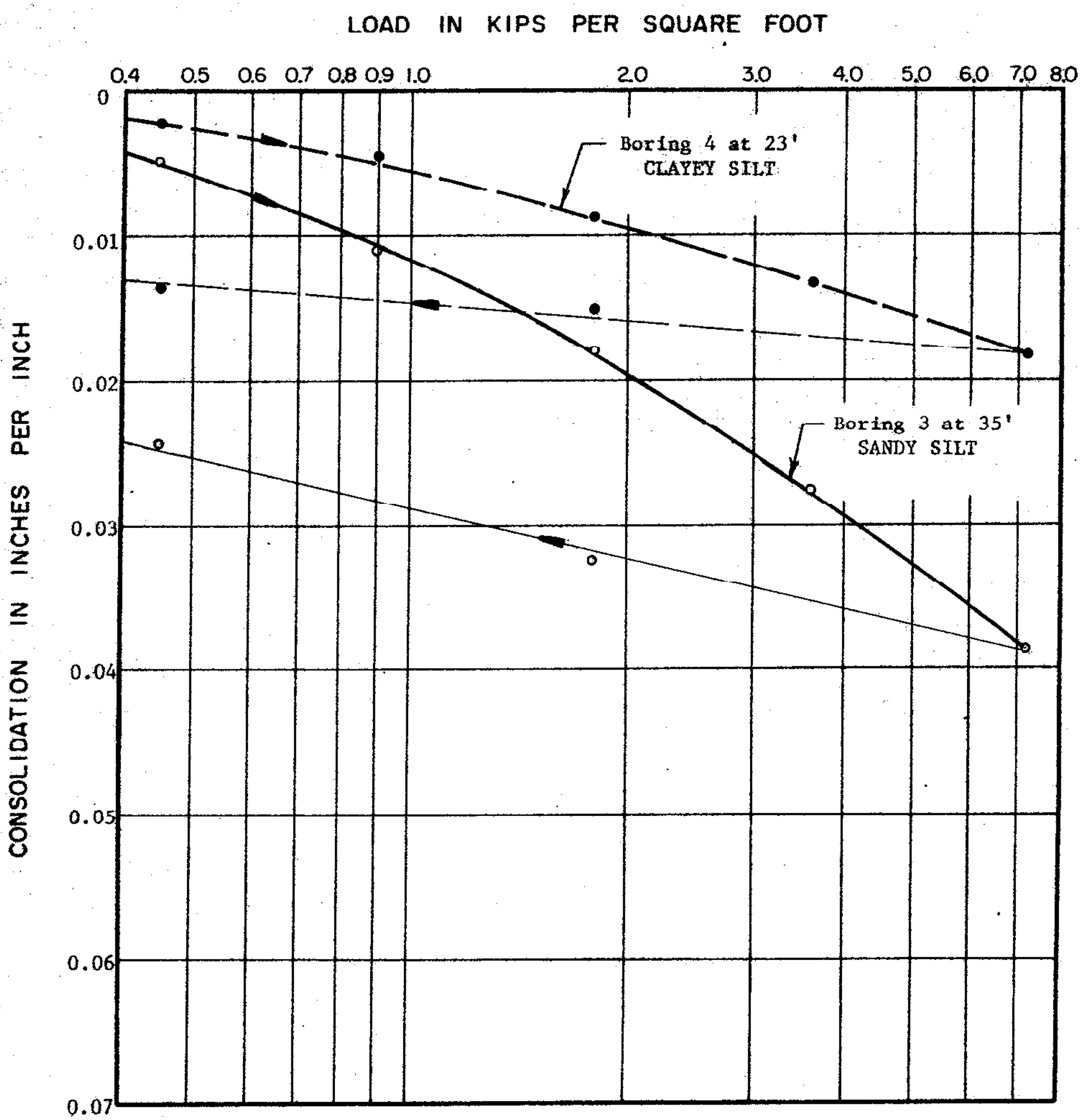
CONSOLIDATION TEST DATA

(CURRENT INVESTIGATION)

LeROY CRANDALL AND ASSOCIATES

FIGURE B-4.11

JOB A-82211-B DATE 2/16/82 DR. JOHN C.E. W.P. CHKD



NOTE: Samples tested at field moisture content.

CONSOLIDATION TEST DATA

(CURRENT INVESTIGATION)

LeROY CRANDALL AND ASSOCIATES

FIGURE B-4.12