ADDITIONAL PRELIMINARY
SOIL AND FOUNDATION INVESTIGATION
PROPOSED 6, 7, AND 9-STORY APARTMENT STRUCTURES,
AND 2-STORY PARKING STRUCTURES
HUI IWA STREET
KANEOHE, OAHU, HAWAII

W. O. 414-00 APRIL 25, 1973

FOR

DAN OSTROW CONSTRUCTION COMPANY

GEOLABS-HAWAII, INC.
1553 COLBURN STREET, SUITE 203
HONOLULU, HAWAII 96817
PHONE: (808) 841-5064

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GEOLABS-HAWAII, Inc.
Soils and Foundation Engineering, Geology
1553 Colburn Street, Suite 203 • Honolulu, Hawaii 96817 • (808) 841-5064

June 29, 1973

W. O. 414-00

Dan Ostrow Construction Co.
700 Bishop Street, Suite 1415
Honolulu, Hawaii 96813

Attention: Mr. James Wodehouse

Subject: Review of Proposed Slope
Vista Garden, Multi Level Apartments

Reference: 1. Grading and Drainage Plan
Prepared by Gray, Rhee & Associates

2. Preliminary Soil Reports dated September 28, 1972 and April 25, 1973, W. O. 414-00 by Geolabs

Gentlemen:

At the request of your engineers, Gray, Rhee & Associates, Inc., this firm has reviewed the proposed slope to the southwest of the referenced project. The slope is proposed at a gradient of 2 horizontal to 1 vertical (2:1) with no benches. The maximum height of the slope is about 40 feet of which the lower 20 feet will be cut while the upper 20 feet will be natural slope whose gradient is very close to 2:1. There will be some thin fills placed in a very small gully towards the southern portion of the slope. These thin fills (and all fills placed on slopes steeper than 5:1) should be well keyed in to natural ground. Since this is a small gully originating locally, we anticipate that a subdrain will not be necessary. However this opinion should be confirmed during grading.

It is our opinion that the proposed slopes would be grossly stable provided that the surface erosion is controlled. This opinion is based upon on the assumption that the materials in the cut slope will be at least equivalent to the ones encountered in nearby borings. This should be confirmed during grading.

As per our discussion with Mr. Rhee, the grading ordinance requires 8 feet wide benches at vertical intervals of 15 feet on the slopes. There are two primary purpose of these benches. One is to provide additional gross

stability to the slope and second is to provide proper drainage for erosion control. It is our opinion that since the slopes would be grossly stable as proposed, benches are not necessary to obtain additional gross stability. However, this area being under relatively intense rainfall zone, a well planned and maintained drainage system would be required for erosion control. Benches with concrete lined drainage ditches may be used as a part of the drainage system for erosion control.

If there are any questions, please do not hesitate to call this office.

Respectfully submitted,

GEOLABS-HAWAII, INC.

H. M. Patel, P.E.

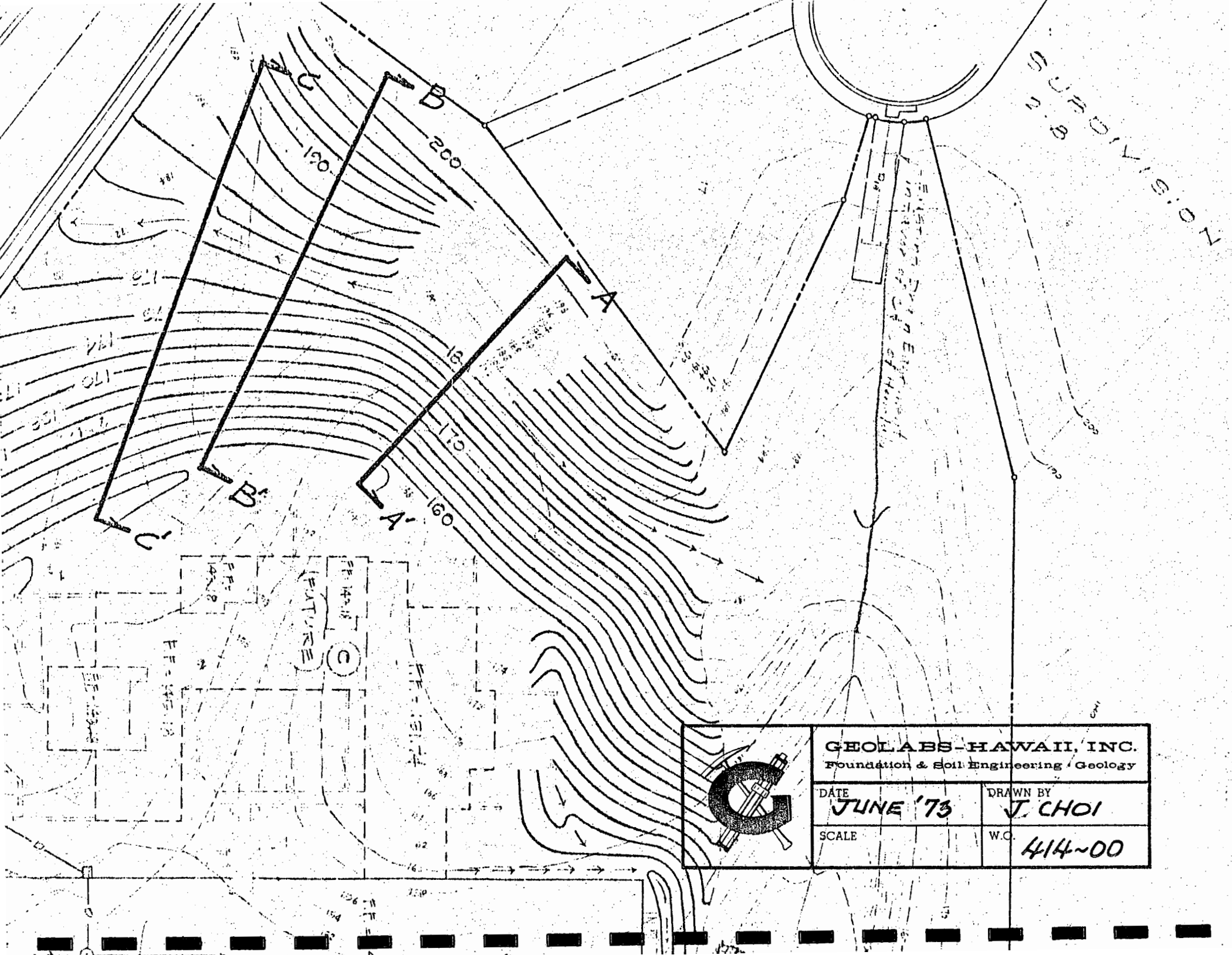
H. M. PATEL
REGISTERED
PROFESSIONAL
ENGINEER
No. 3352
HAWAII, U.S.A.

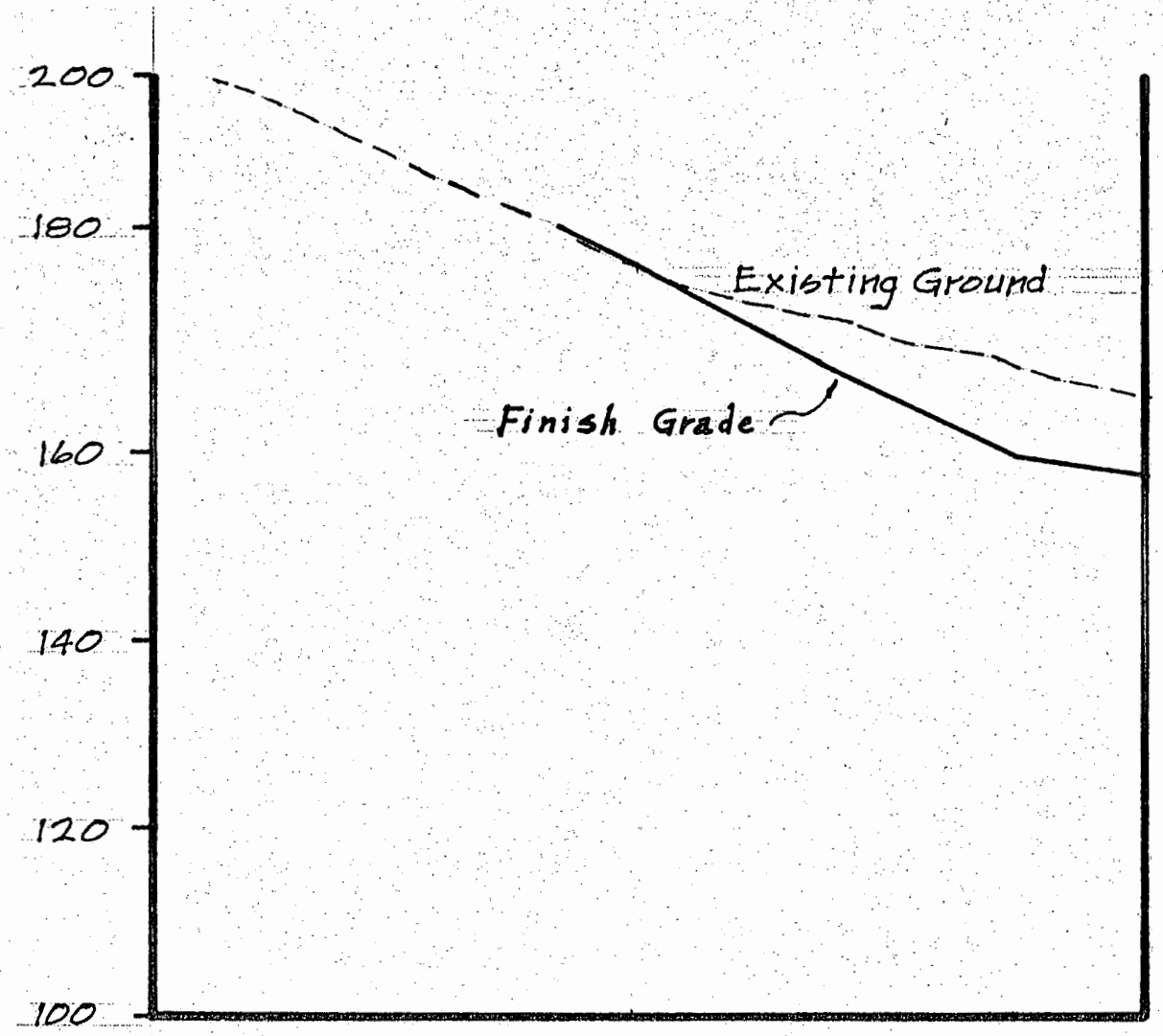
HMP:yk

Enclosure: Cross Sections

xc: (3) Addressee

(1) Gray, Rhee & Associates

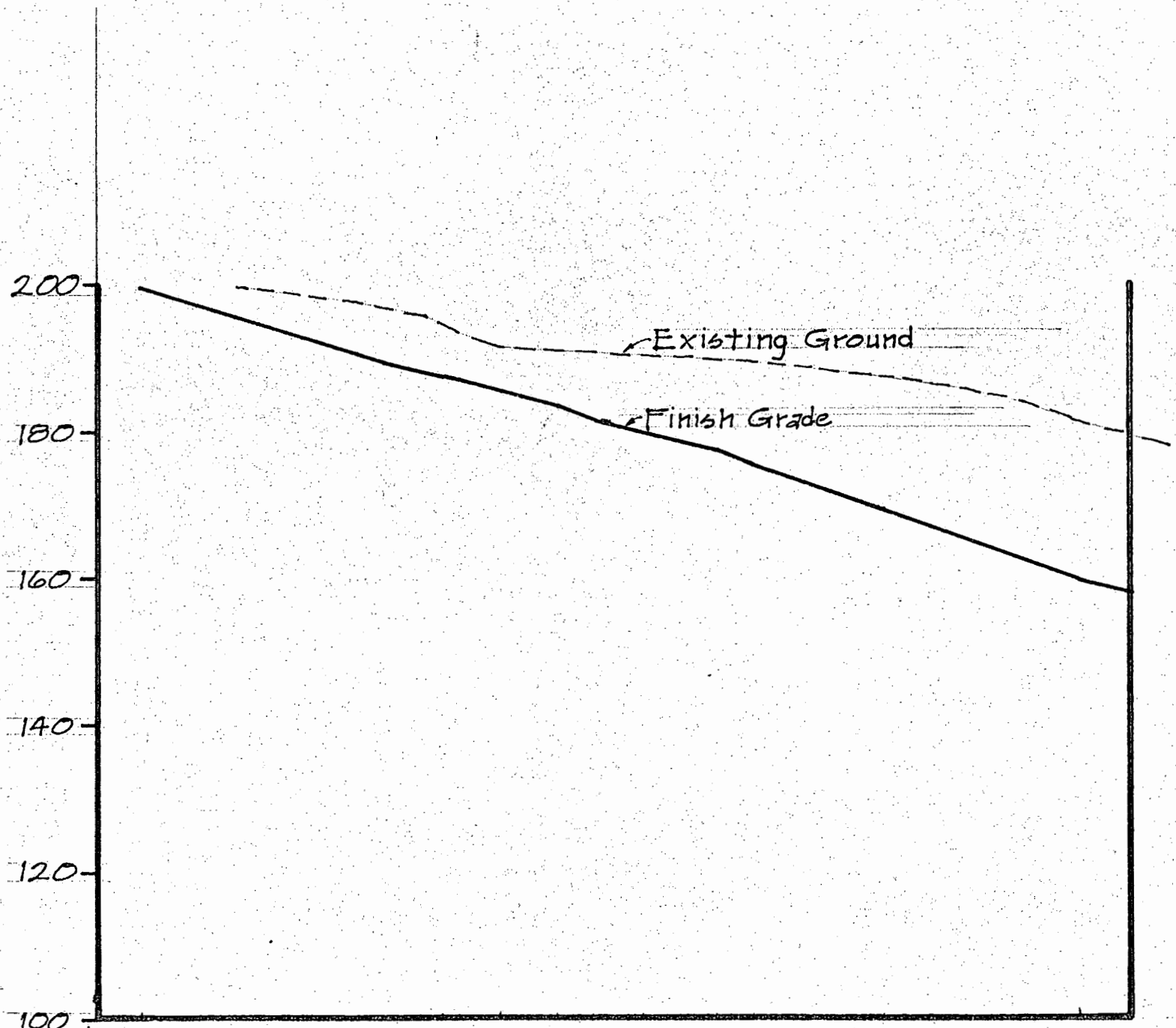

C
B
200
190
A
180
170
160
C'
B'
A'
SUBDIVISION
FEATURE C
GEOLABS-HAWAII, INC.
Foundation & Soil Engineering / Geology
DATE JUNE '73
DRAWN BY J. CHOI
SCALE
W.O. 414-00



SECTION A-A'

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE	DRAWN BY
JUNE '73	B.L.
SCALE	W.O. 414-00



SECTION B-B'

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE JUNE '73
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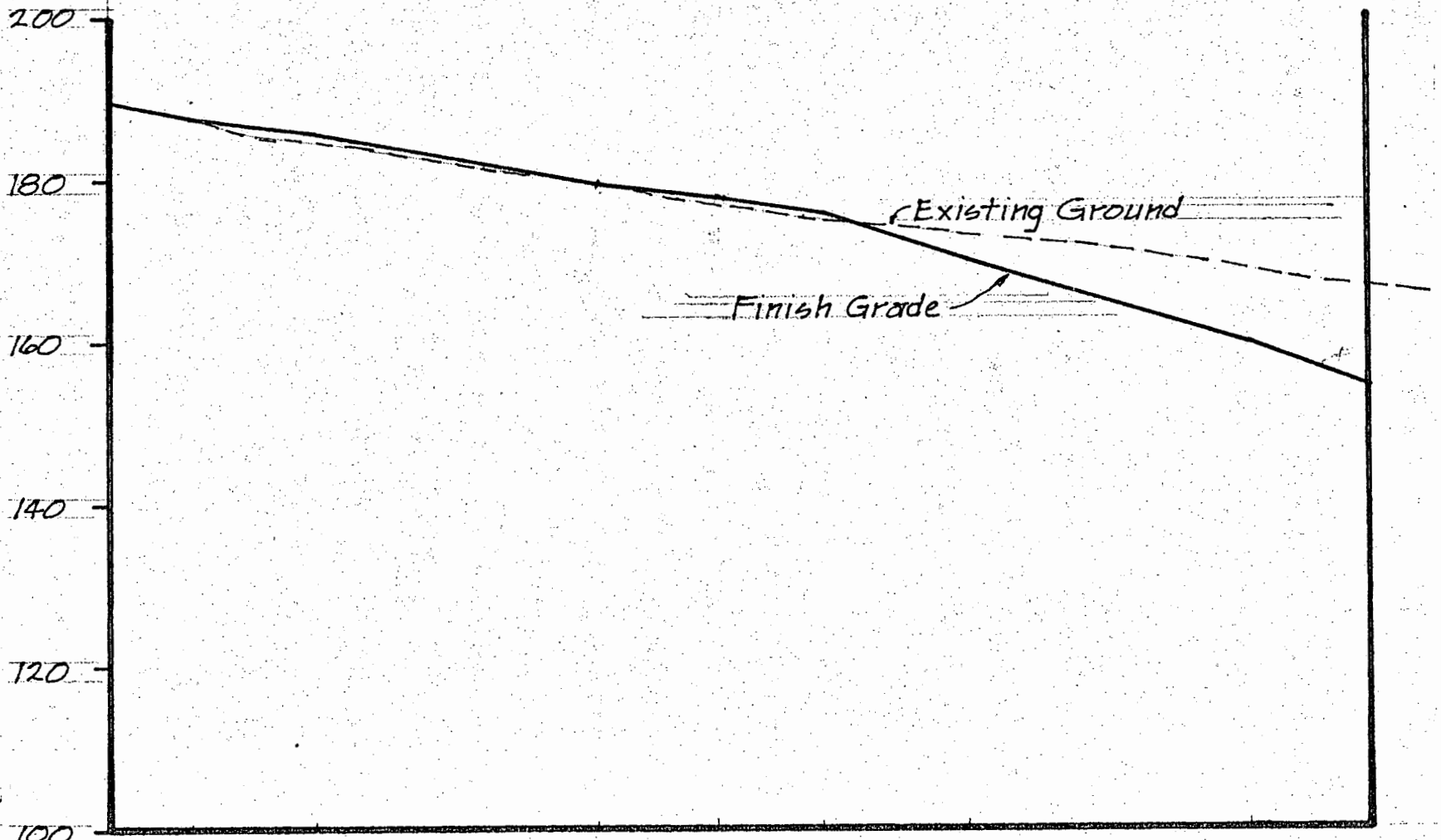
SCALE
W.O. 4414-00



SECTION C-C'

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

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W.O. 414-00

GEOLABS-HAWAII, Inc.
Soils and Foundation Engineering, Geology
1553 Colburn Street, Suite 203 • Honolulu, Hawaii 96817 • (808) 841-5064

April 25, 1973

W. O. 414-00

Dan Ostrow Construction Company
700 Bishop Street, Suite 1415
Honolulu, Hawaii 96813

Attention: Mr. James Wodehouse,
Vice President

Subject: Additional Preliminary Soil and Foundation Investigation
Proposed 6, 7, and 9-Story Apartment Structures and 2-Story Parking Structures
Hui Iwa Street, Kaneohe, Oahu, Hawaii

Reference: Geolabs Preliminary Soil Investigation Report for the (originally) Proposed 6 and 8-Story Apartment Structures dated September 28, 1972
W. O. 414-00

Gentlemen:

This report presents the results of additional soil and foundation investigation performed by this firm for the referenced project.

The purpose of this additional investigation was to obtain sub-surface information for the revised building locations and the added parking structures in the central area, and revise our soil report dated September 28, 1972 in light of additional information thus obtained. It was also planned to penetrate deeper into the bearing stratum of very stiff to hard clayey silt.

FIELD INVESTIGATION

The field investigation included drilling five (1-A to 5-A) exploratory test borings, to depths varying from 51' 6" to 77' 0", at the locations indicated on the enclosed site plan, Plate 1. Boring logs are attached with this report, following the site plan. Appendix A of report dated September 28, 1972 generally indicates the methods of field exploration and laboratory testing.

STRUCTURAL CONSIDERATIONS

The following preliminary information concerning the proposed development was furnished by Mr. Dimitrios Bratakos of Dimitrios Bratakos & Associates, Structural Engineers.

Building Designation (Refer to the attached site plan)	B	A	C	Parking
Number of Stories	7	9	6	2
Maximum Loads	15 kips/ft.	22 kips/ft.	13 kips/ft.	380 kips
Supporting Structure	Bearing Walls	Bearing Walls	Bearing Walls	Columns

We understand that the bearing walls will be supported on grade beams which will be in turn supported on piles. A retaining wall is planned in the Building "C" which would act as a retaining as well as vertical load bearing wall. Height of this combination wall is expected not to exceed one story high (say 10')

SITE CONDITIONS

Surface conditions of the site are essentially similar to those reported in the soil report dated September 28, 1972. The subsurface soils encountered were also more or less similar except that deeper depths were explored for this additional exploration and very stiff to hard clayey silt stratum, referred to as the bearing stratum in soil report dated September 28, 1972, was encountered at depths shown in the following table:

Boring No.	Building Area	Depth to Very Stiff Clayey Silt Stratum (feet)
1	A	28 hard @ 42
2	B	28
3	C	33
4	Parking	33
5	Parking	30

Boring logs 1-A through 5-A indicates the description of materials encountered in each boring.

GROUNDWATER

Standing water was observed in all borings. The water table level and quantity of water flowing in the subsurface has apparently increased considerably since our previous, September 1972, investigation.

The water table may fluctuate considerably depending upon the quantity of rain in the Koolau mountain range to the south.

CONCLUSIONS AND RECOMMENDATIONS

The following recommendations are based upon presently available information only. If any conditions are encountered which are not covered in this report or which are contrary to the contents of this report, the Soil Engineer should be immediately contacted to enable him to review and, if necessary, revise his recommendations in light of changed conditions.

GENERAL

It is our opinion that the apartment structures should be supported on a pile and grade beam foundation system and the design incorporate the foundation recommendations of our report dated September 28, 1972, or as revised hereunder. A shallow foundation system (isolated spread footings, 2600 psf soil pressure for 380 kips column loads) were analyzed for the parking structures and the anticipated total settlements are on the order of 2.75 inches. Mr. Dimitrios Bratakos has expressed his opinion that this magnitude of settlement is not tolerable, hence it is recommended to support the parking structures on a pile and grade beam foundation system.

The piles should extend through the soft overlying bearing stratum consisting of very stiff to hard clayey soils with weathered basalt boulders encountered at depths of from 28 to 33 feet (20 to 40 feet in September, 1972 exploration) below the existing grade.

FOUNDATION SYSTEM

A. 16-Inch Octagonal Pretensioned Concrete Driven Pile

The revised preliminary allowable capacity of a single recommended pile versus depth of embedment below present grade can be obtained from Plate 2. The length of pile to the recommended stratum will be variable, depending on location and design finish grade. For estimating pile lengths, we recommend that pile driving tests be conducted in the specific structural locations prior to construction. If pile driving resistance indicate the possibility of higher allowable loads, then pile load tests should be conducted to substantiate higher allowable loads. All piles should be driven in accordance with the Uniform Building Code requirements. The driving resistance required will mainly depend on the energy of pile driving hammer and pile capacity desired, for example, using a 15000 foot pound pile driver, the number of blows

driving the last foot would vary from 20 to 45 blows for pile loads of 35 to 70 kips.

B. Drilled Cast-In-Place Concrete Piles

The following is a revised formula to obtain the estimated capacities for drilled cast-in-place concrete piles.

Qall = Allowable pile load in kips

$7D + 1.08\ DL + 14D^2$

Minimum depth 35 feet from present grade

D = Diameter of pile in feet

L = Length of the pile below 35 foot depth from the present grade

Due to the possibility of the presence of groundwater, tremie process may be required for placing concrete under water. The remainder of the recommendations for pile groups, settlements, retaining wall, floor slabs, and paving, grading plan review, etc. are the same as given in the report dated September 28, 1972. All site clearing and grading work should be completed prior to foundation construction.

If there are any questions, please do not hesitate to contact this office.

Respectfully submitted,

GEOLABS-HAWAII, INC.

H. M. Patel, P. E.

Reviewed By:

John J. Heneghan, P. E.

HMP/JJH:hlg

JOHN J. HENEGHAN
REGISTERED
PROFESSIONAL
ENGINEER
No. 3285
HAWAII, U.S.A.

ALLOWABLE LOAD IN KIPS FOR 16 INCH PRETENSIONED CONCRETE PILE

10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 75

DEPTH BELOW PRESENT GRADE IN FEET

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

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APRIL 73	HM
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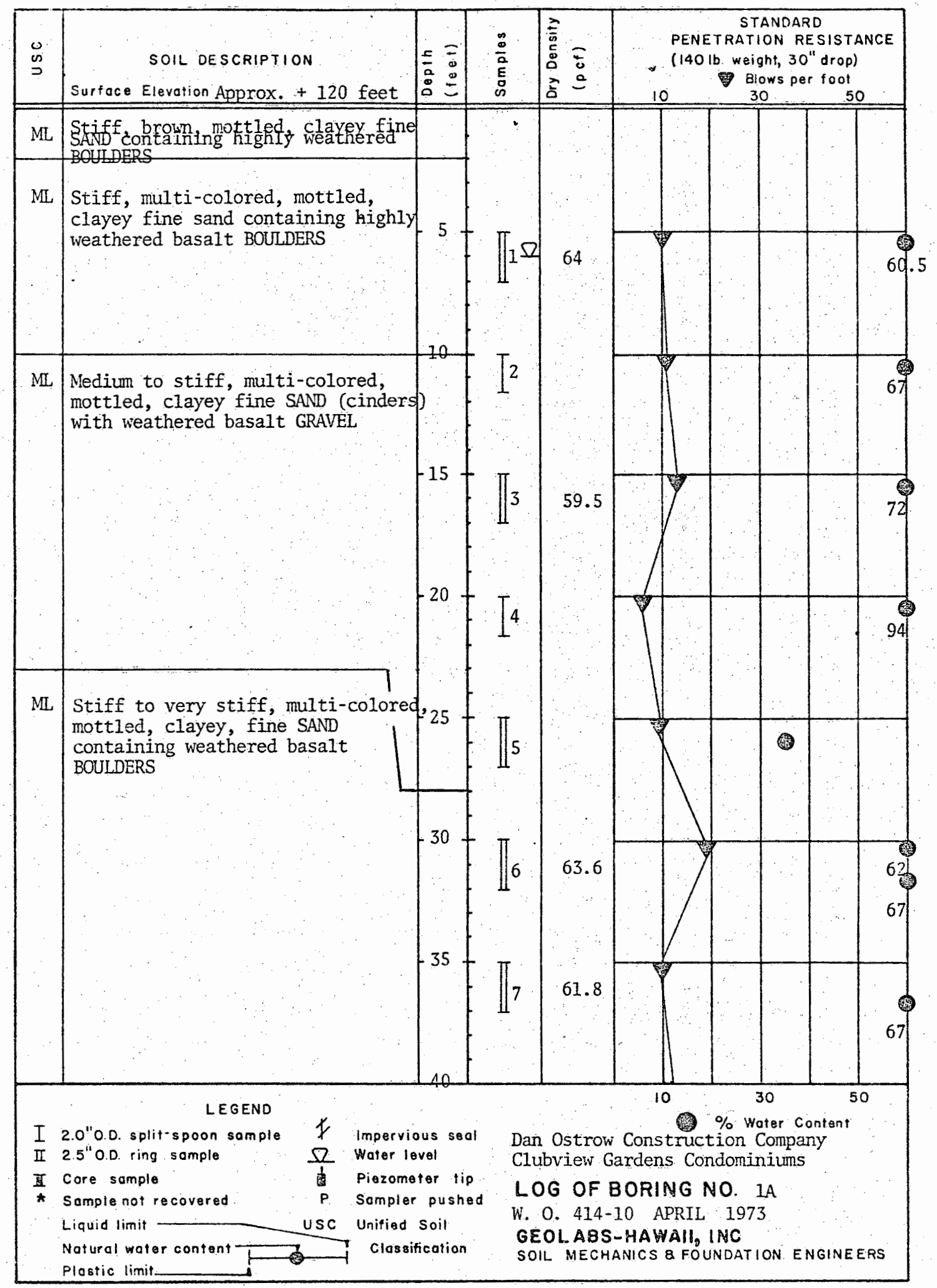
PLATE 2

A P P E N D I X A

Boring Logs



Dan Ostrow Construction Company
Clubview Gardens Condominiums

LOG OF BORING NO. 1A

W. O. 414-10 APRIL 1973

GEOLABS-HAWAII, INC

SOIL MECHANICS & FOUNDATION ENGINEERS

USC	SOIL DESCRIPTION	Depth (feet)	Samples	Dry Density (pcf)	STANDARD PENETRATION RESISTANCE (140 lb. weight, 30" drop) ▼ Blows per foot
	Surface Elevation Approx. + 120 feet	40			10 30 50
GM ML	Stiff to very stiff, multi-colored, mottled, clayey fine SAND containing weathered basalt BOULDERS		8		65
	Hard, red-brown to multi-colored, mottled, gravelly, clayey SILT	45	9	68.2	
		50	10		71
		55	11	72.8	61
		60	12		61
		65	13	67.2	
		70	14		
	Boring Completed 3-27-73	75			

10 30 50

● % Water Content

LEGEND

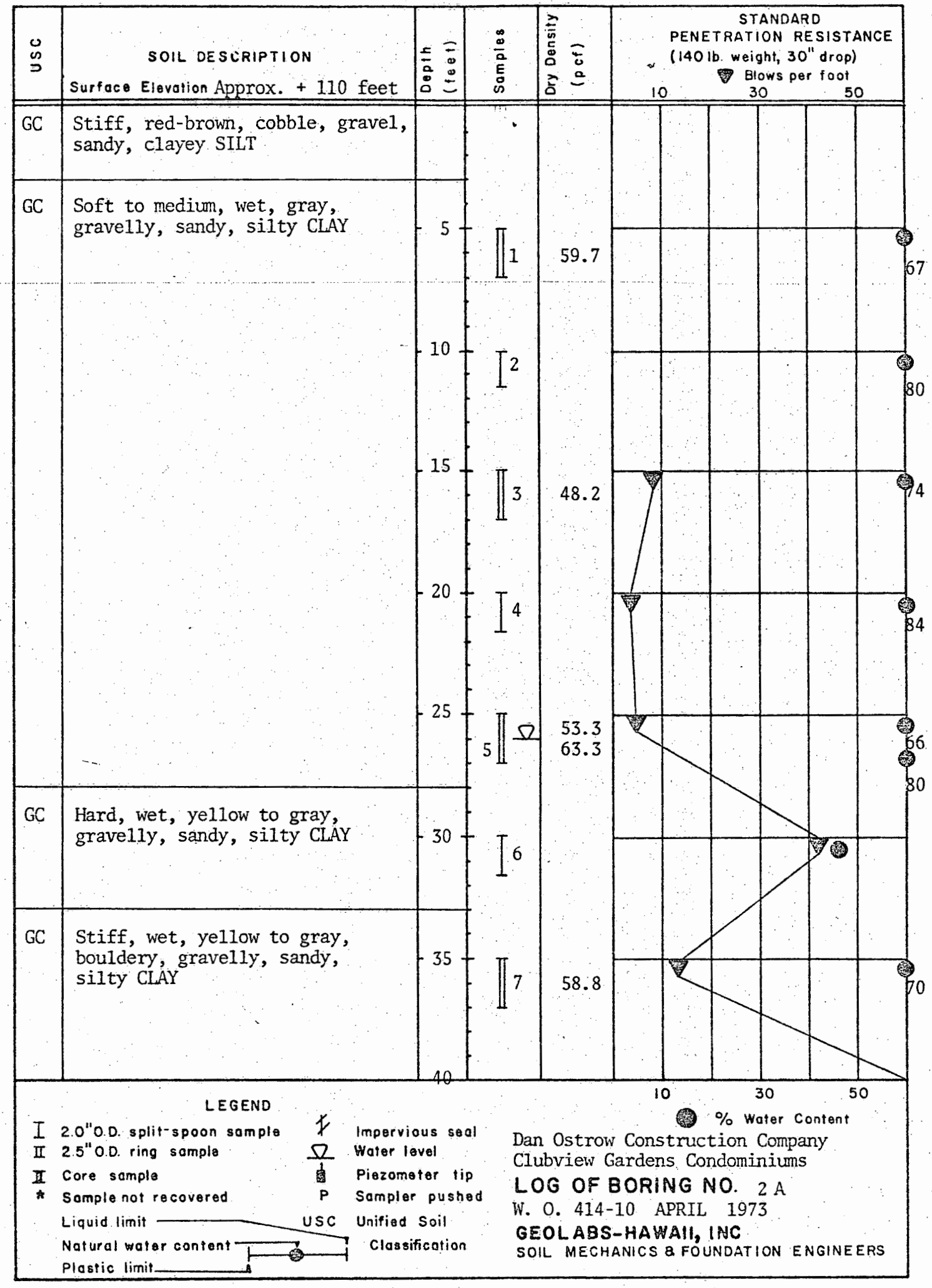
- I 2.0"O.D. split-spoon sample
- II 2.5"O.D. ring sample
- Core sample
- * Sample not recovered
- Liquid limit
- Natural water content
- Plastic limit
- Impervious seal
- Water level
- Piezometer tip
- P Sampler pushed
- USC Unified Soil Classification

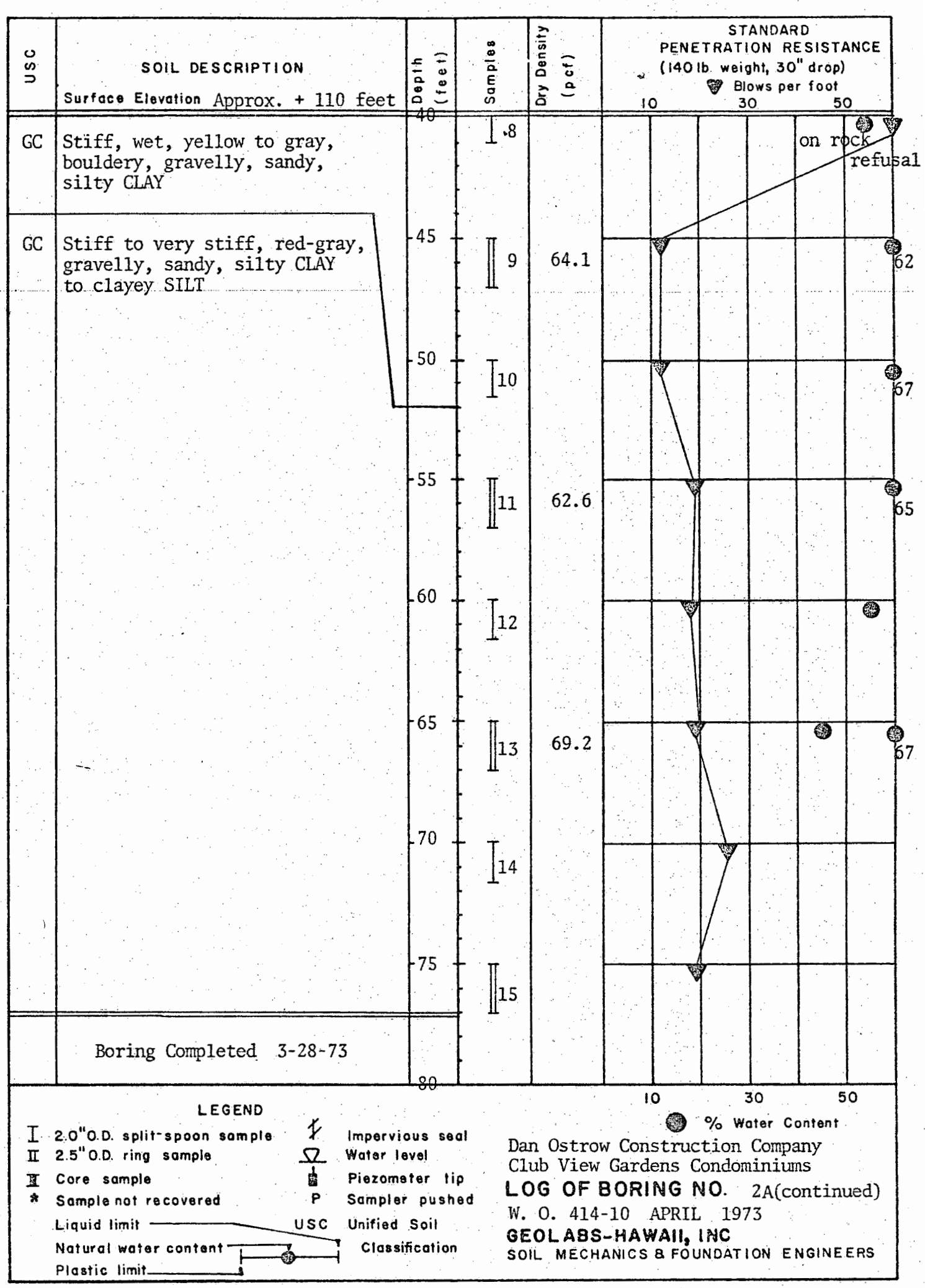
Dan Ostrow Construction Company
Clubview Gardens Condominiums

LOG OF BORING NO. 1A(continued)

W. O. 414-10 APRIL 1973

GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS

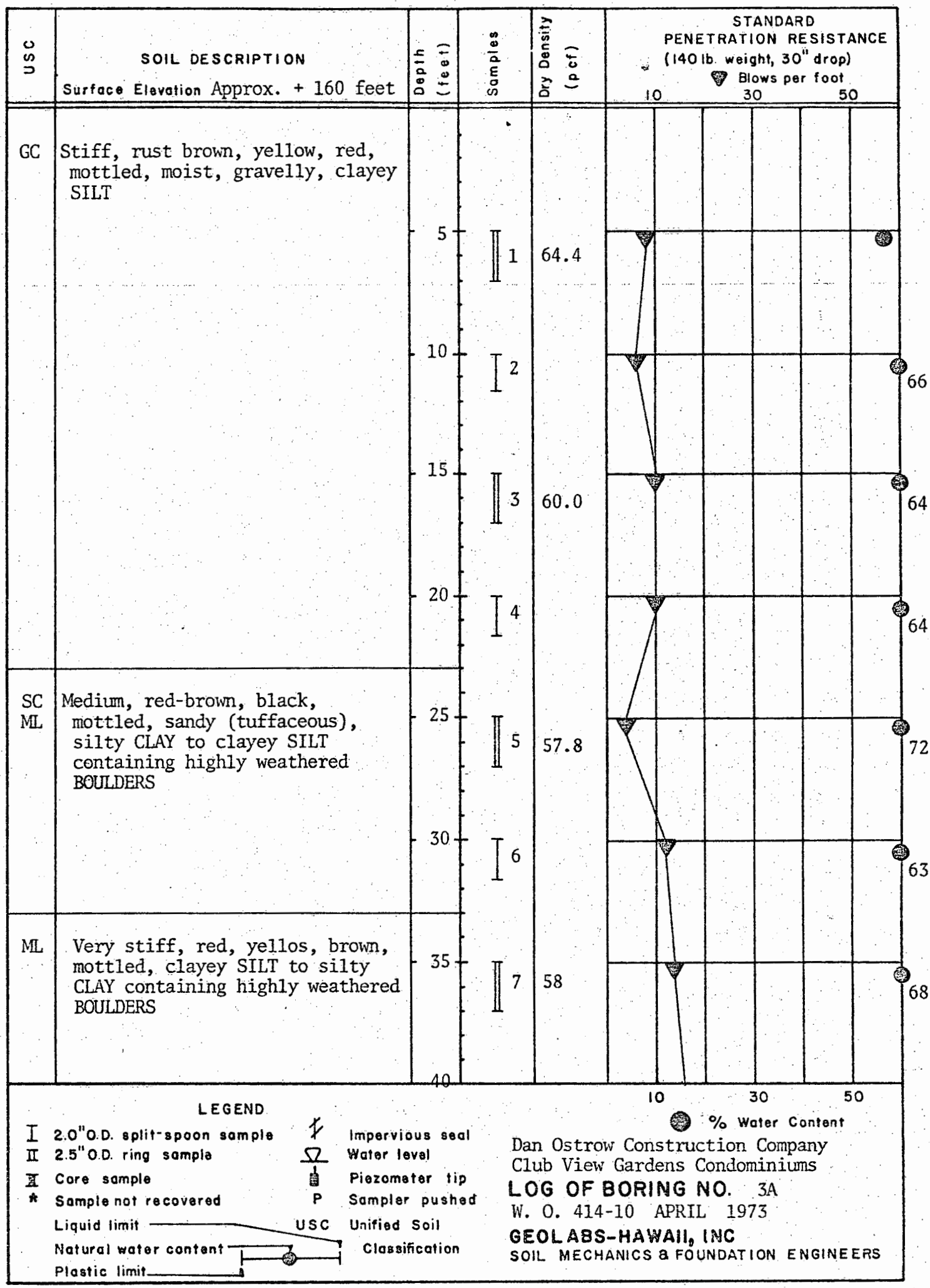

USC
SOIL DESCRIPTION
Surface Elevation Approx. + 110 feet
Depth (feet)
Samples
Dry Density (pcf)
STANDARD PENETRATION RESISTANCE
(140 lb. weight, 30" drop)
Blows per foot
10
30
50
GC
Stiff, red-brown, cobble, gravel, sandy, clayey SILT
GC
Soft to medium, wet, gray, gravelly, sandy, silty CLAY
5
10
15
20
25
30
35
40
1
2
3
4
5
6
7
59.7
48.2
53.3
63.3
58.8
67
80
74
84
66
80
70
GC
Hard, wet, yellow to gray, gravelly, sandy, silty CLAY
GC
Stiff, wet, yellow to gray, bouldery, gravelly, sandy, silty CLAY
10
30
50
% Water Content
LEGEND
I 2.0" O.D. split-spoon sample
II 2.5" O.D. ring sample
III Core sample
* Sample not recovered
Liquid limit
Natural water content
Plastic limit
Impervious seal
Water level
Piezometer tip
P Sampler pushed
USC Unified Soil Classification
Dan Ostrow Construction Company
Clubview Gardens Condominiums
LOG OF BORING NO. 2 A
W. O. 414-10 APRIL 1973
GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS

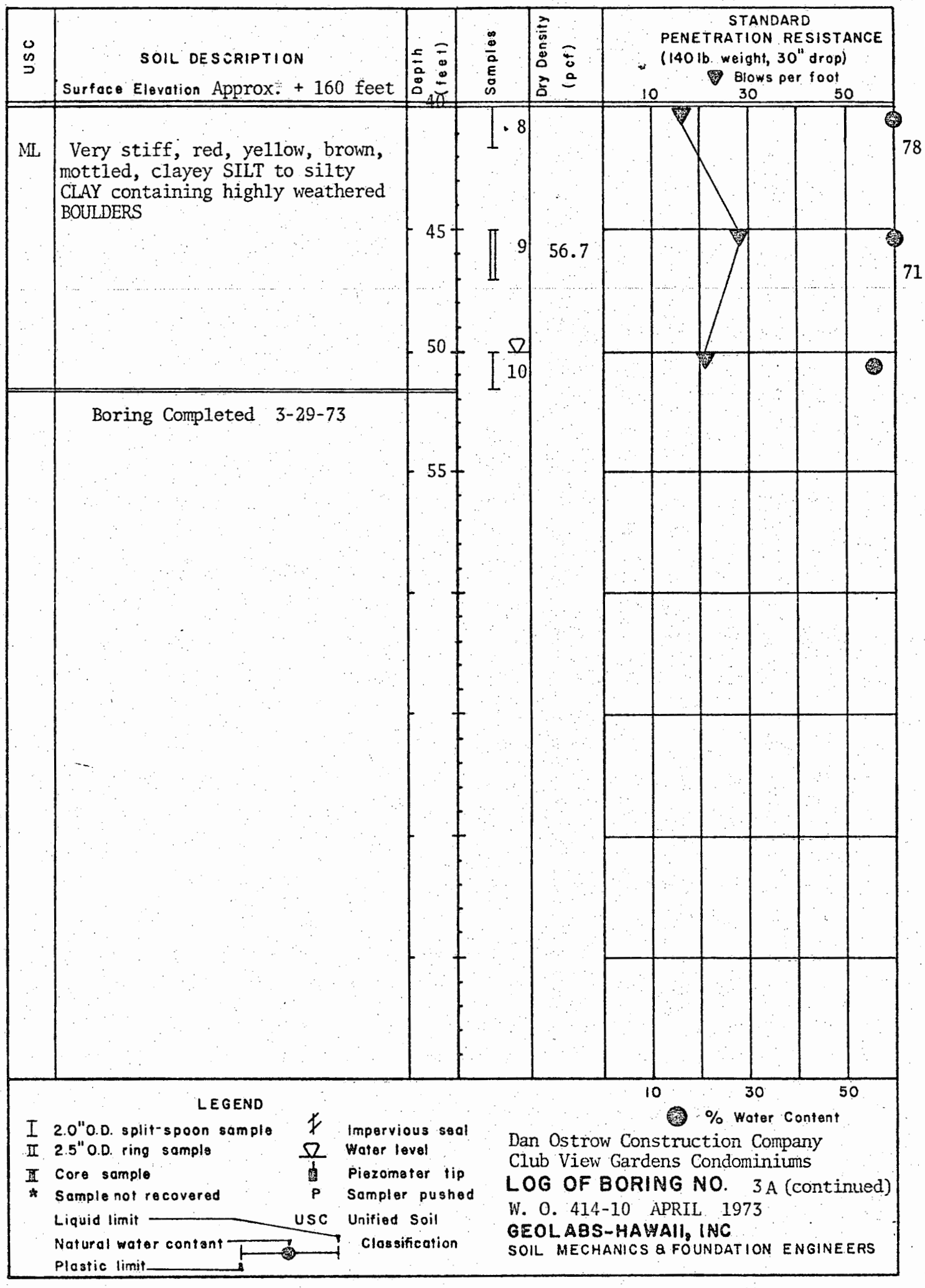


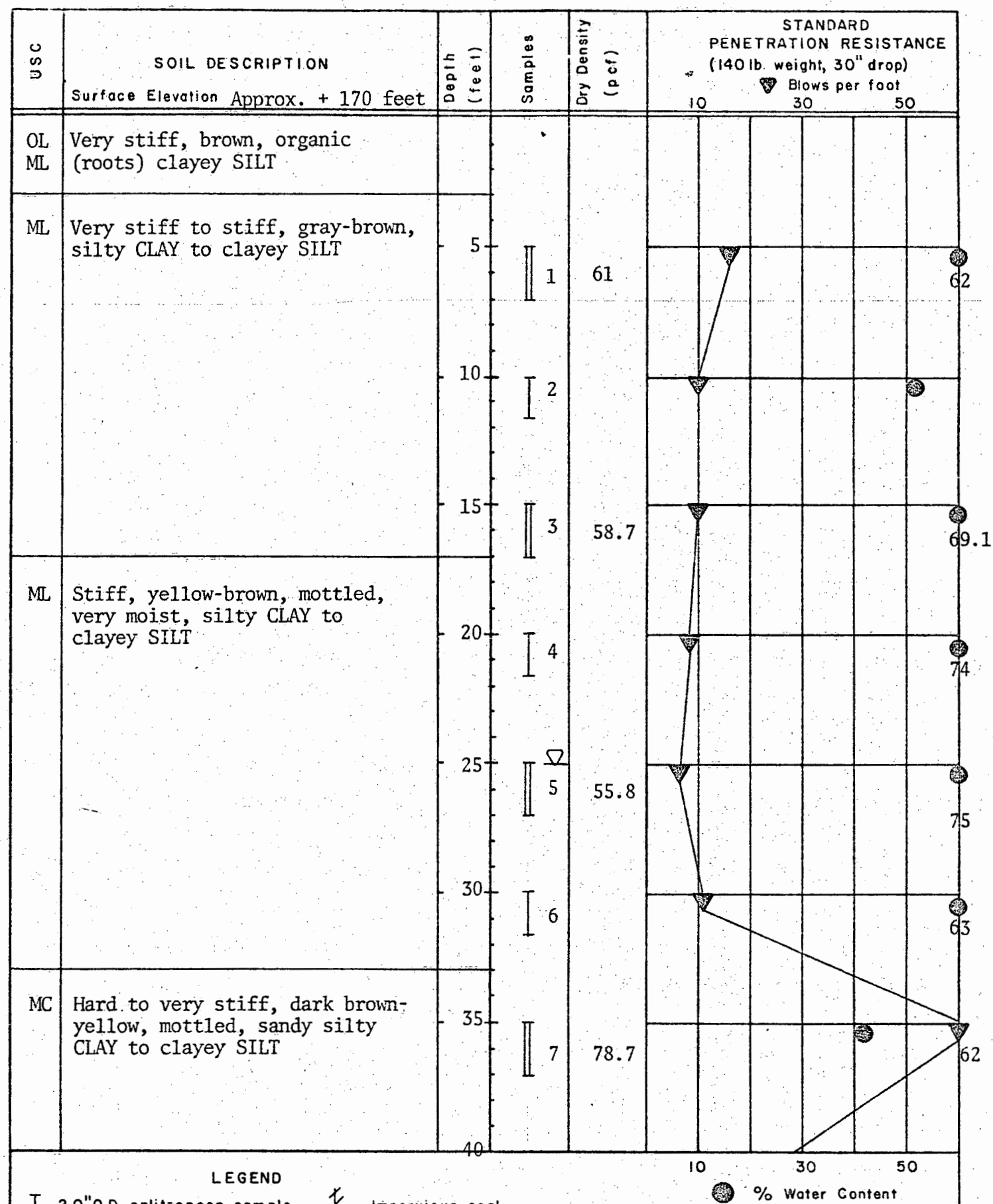
LEGEND

I 2.0" O.D. split-spoon sample
II 2.5" O.D. ring sample
III Core sample
* Sample not recovered
Liquid limit
Natural water content
Plastic limit
Impervious seal
Water level
Piezometer tip
P Sampler pushed
USC Unified Soil Classification

Dan Ostrow Construction Company
Club View Gardens Condominiums
LOG OF BORING NO. 2A(continued)
W. O. 414-10 APRIL 1973
GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS


USC
SOIL DESCRIPTION
Surface Elevation Approx. + 160 feet
Depth (feet)
Samples
Dry Density (pcf)
STANDARD PENETRATION RESISTANCE
(140 lb. weight, 30" drop)
Blows per foot
10
30
50
GC
Stiff, rust brown, yellow, red, mottled, moist, gravelly, clayey SILT
5
10
15
20
1
2
3
4
64.4
60.0
66
64
64
SC
ML
Medium, red-brown, black, mottled, sandy (tuffaceous), silty CLAY to clayey SILT containing highly weathered BOULDERS
25
30
5
6
57.8
72
63
ML
Very stiff, red, yellos, brown, mottled, clayey SILT to silty CLAY containing highly weathered BOULDERS
35
40
7
58
68
10
30
50
% Water Content
LEGEND
I 2.0"O.D. split-spoon sample
II 2.5"O.D. ring sample
Core sample
* Sample not recovered
Liquid limit
Natural water content
Plastic limit
Impervious seal
Water level
Piezometer tip
P Sampler pushed
USC Unified Soil Classification
Dan Ostrow Construction Company
Club View Gardens Condominiums
LOG OF BORING NO. 3A
W. O. 414-10 APRIL 1973
GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS


USC
SOIL DESCRIPTION
Surface Elevation Approx. + 160 feet
Depth (feet)
Samples
Dry Density (pcf)
STANDARD PENETRATION RESISTANCE
(140 lb. weight, 30" drop)
Blows per foot
10
30
50
ML
Very stiff, red, yellow, brown, mottled, clayey SILT to silty CLAY containing highly weathered BOULDERS
40
45
50
55
8
9
10
56.7
78
71
Boring Completed 3-29-73
10
30
50
% Water Content
LEGEND
I 2.0"O.D. split-spoon sample
II 2.5"O.D. ring sample
III Core sample
* Sample not recovered
Liquid limit
Natural water content
Plastic limit
Impervious seal
Water level
Piezometer tip
P Sampler pushed
USC Unified Soil Classification
Dan Ostrow Construction Company
Club View Gardens Condominiums
LOG OF BORING NO. 3A (continued)
W. O. 414-10 APRIL 1973
GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS



LEGEND

- I 2.0"O.D. split-spoon sample
- II 2.5"O.D. ring sample
- Core sample
- * Sample not recovered
- Liquid limit
- Natural water content
- Plastic limit
- Impervious seal
- Water level
- Piezometer tip
- P Sampler pushed
- USC Unified Soil Classification

Dan Ostrow Construction Company
Club View Gardens Condominiums

LOG OF BORING NO. 4A

W. O. 414-10 APRIL 1973

GEOLABS-HAWAII, INC

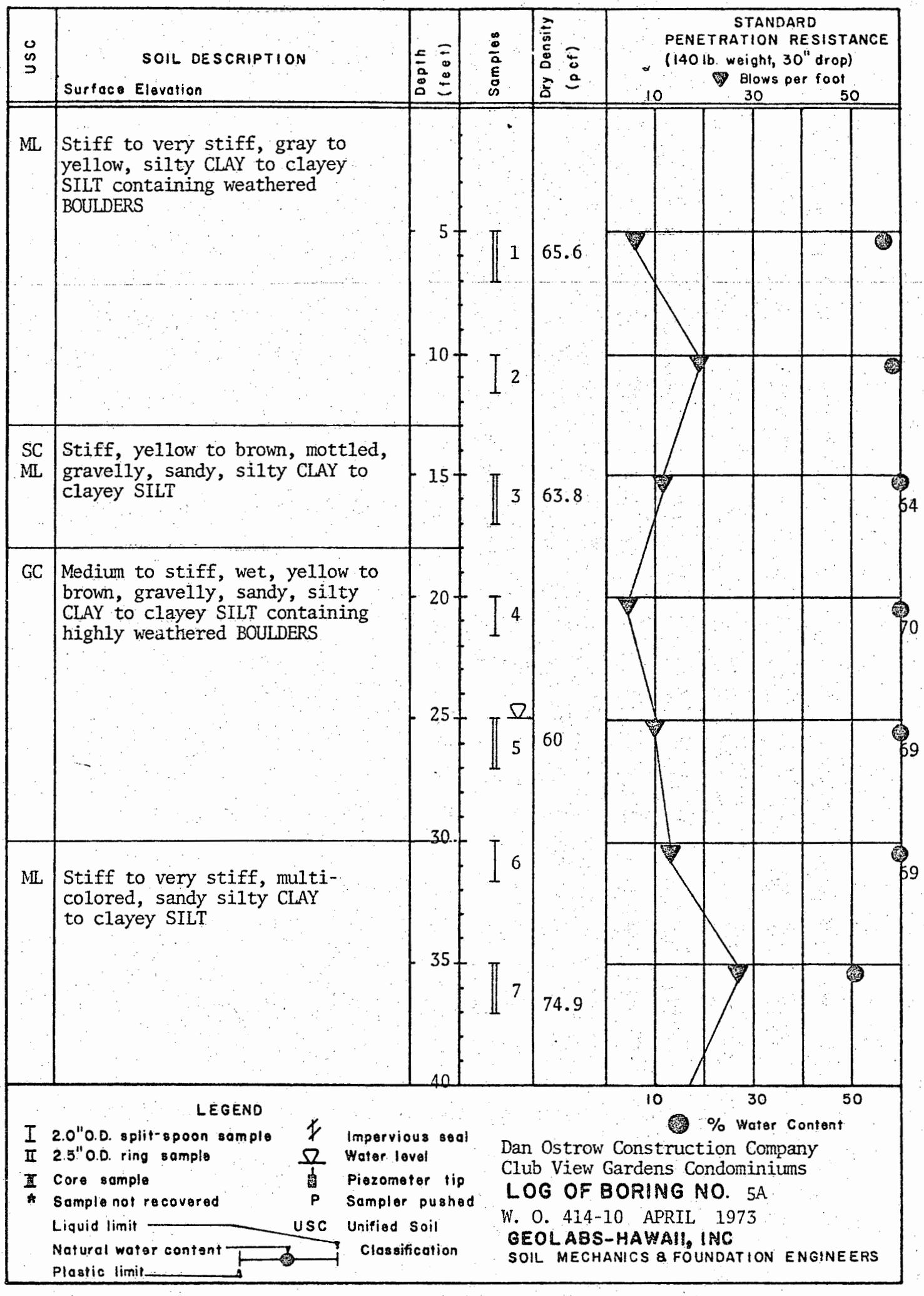
SOIL MECHANICS & FOUNDATION ENGINEERS

USC	SOIL DESCRIPTION Surface Elevation Approx. + 170 feet	Depth (feet)	Samples	Dry Density (pcf)	STANDARD PENETRATION RESISTANCE (140 lb. weight, 30" drop) ▽ Blows per foot 10 30 50	% Water Content
ML	Hard to very stiff, dark brown-yellow, mottled, sandy, silty CLAY to clayey SILT	40	8			74
		45	9	61.7		67
		50	10			65
	Boring Completed 4-02-73	55				

LEGEND

- I 2.0"O.D. split-spoon sample
- II 2.5"O.D. ring sample
- III Core sample
- * Sample not recovered
- Liquid limit
- Natural water content
- Plastic limit
- Impervious seal
- Water level
- Piezometer tip
- P Sampler pushed
- USC Unified Soil Classification

Dan Ostrow Construction Company
Club View Gardens Condominiums
LOG OF BORING NO. 4A (continued)
W. O. 414-10 APRIL 1973
GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS



Dan Ostrow Construction Company
Club View Gardens Condominiums

LOG OF BORING NO. 5A

W. O. 414-10 APRIL 1973

GEOLABS-HAWAII, INC

SOIL MECHANICS & FOUNDATION ENGINEERS

USC	SOIL DESCRIPTION Surface Elevation	Depth (feet)	Samples	Dry Density (pcf)	STANDARD PENETRATION RESISTANCE (140 lb. weight, 30" drop) Blows per foot 10 30 50
ML	Stiff to very stiff, multi-colored, sandy, silty CLAY to clayey SILT	40	8		66
		45	9	77.1	
		50	10		
	Boring Completed 3-30-73	55			

10 30 50

% Water Content

LEGEND

- I 2.0"O.D. split-spoon sample
- II 2.5"O.D. ring sample
- III Core sample
- * Sample not recovered
- Liquid limit
- Natural water content
- Plastic limit

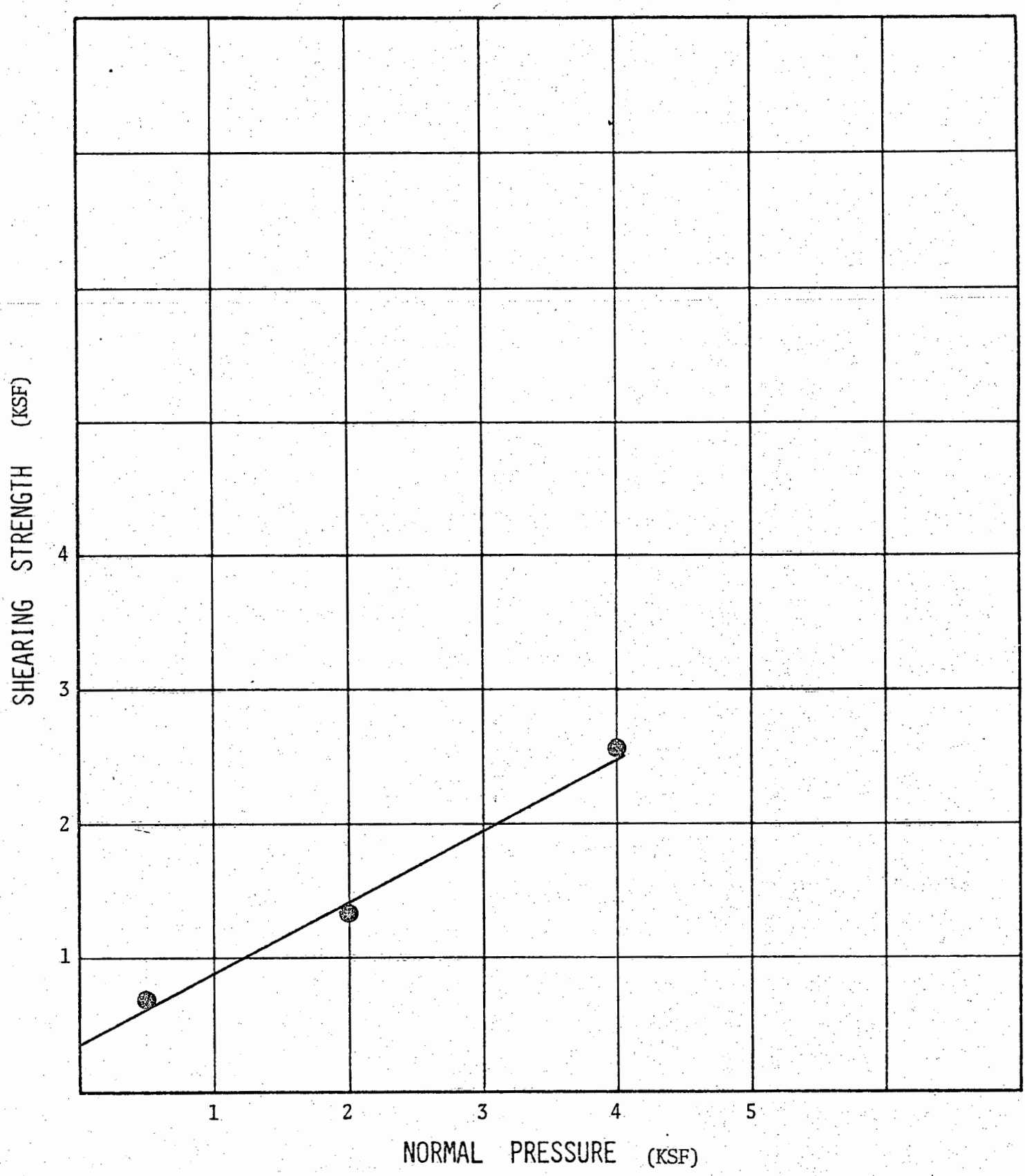
- Impervious seal
- Water level
- Piezometer tip
- P Sampler pushed
- USC Unified Soil Classification

Dan Ostrow Construction Company
Club View Gardens Condominiums
LOG OF BORING NO. 5A (continued)
W. O. 414-10 APRIL 1973

GEOLABS-HAWAII, INC
SOIL MECHANICS & FOUNDATION ENGINEERS

A P P E N D I X B

Laboratory Testing



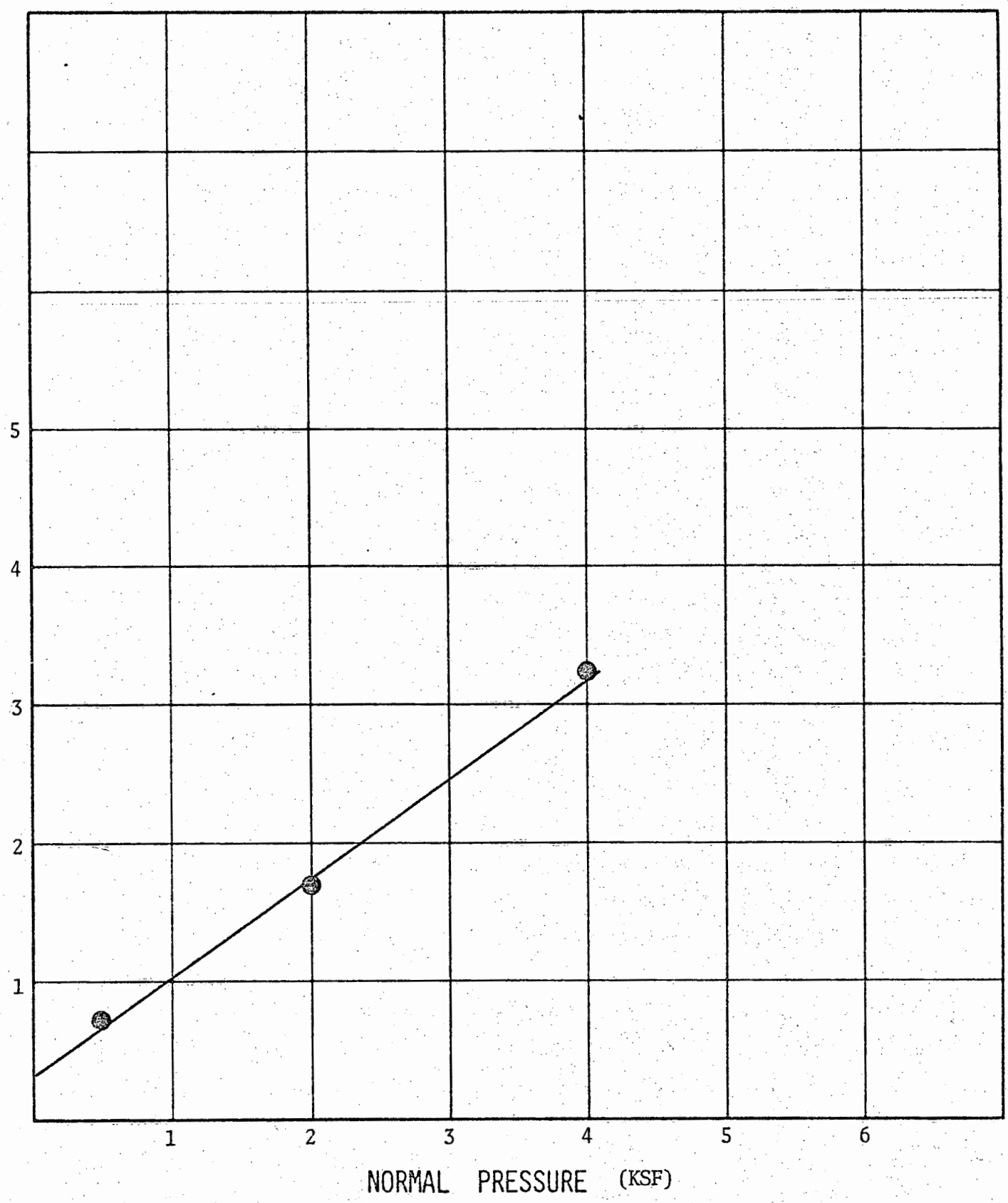
Boring No. 1
Sample No. 6-B
Depth: 31' - 32'
C = 380 psf
Ø = 28°

DIRECT SHEAR TEST

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE	W.O.
APRIL 1973	414-00

PLATE B-1



Boring No. 1
Sample No. 13
Depth: 65' - 67'
C = 300 psf
ϕ = 35°

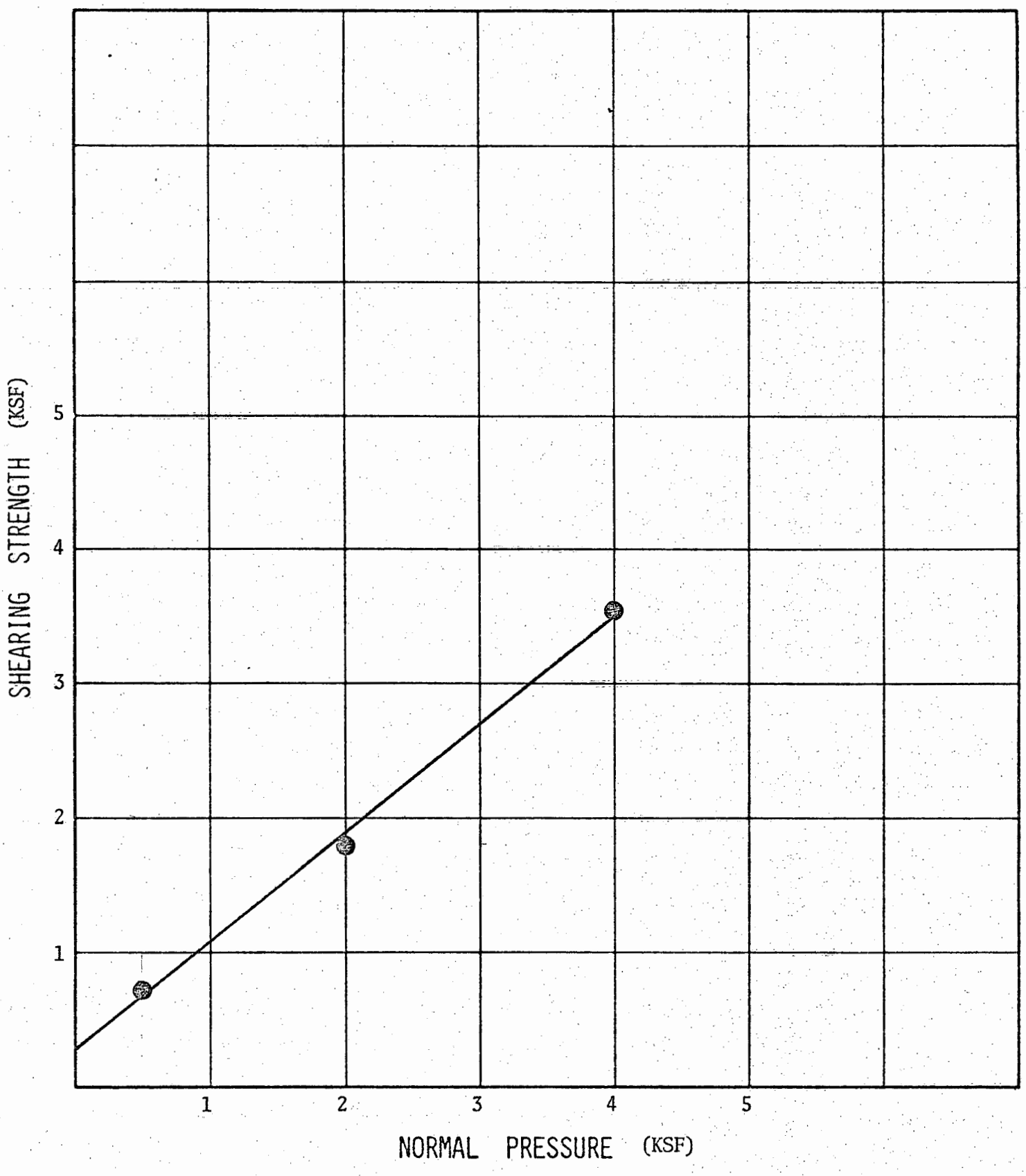
DIRECT SHEAR TEST

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE APRIL 1973

W.O. 414-00

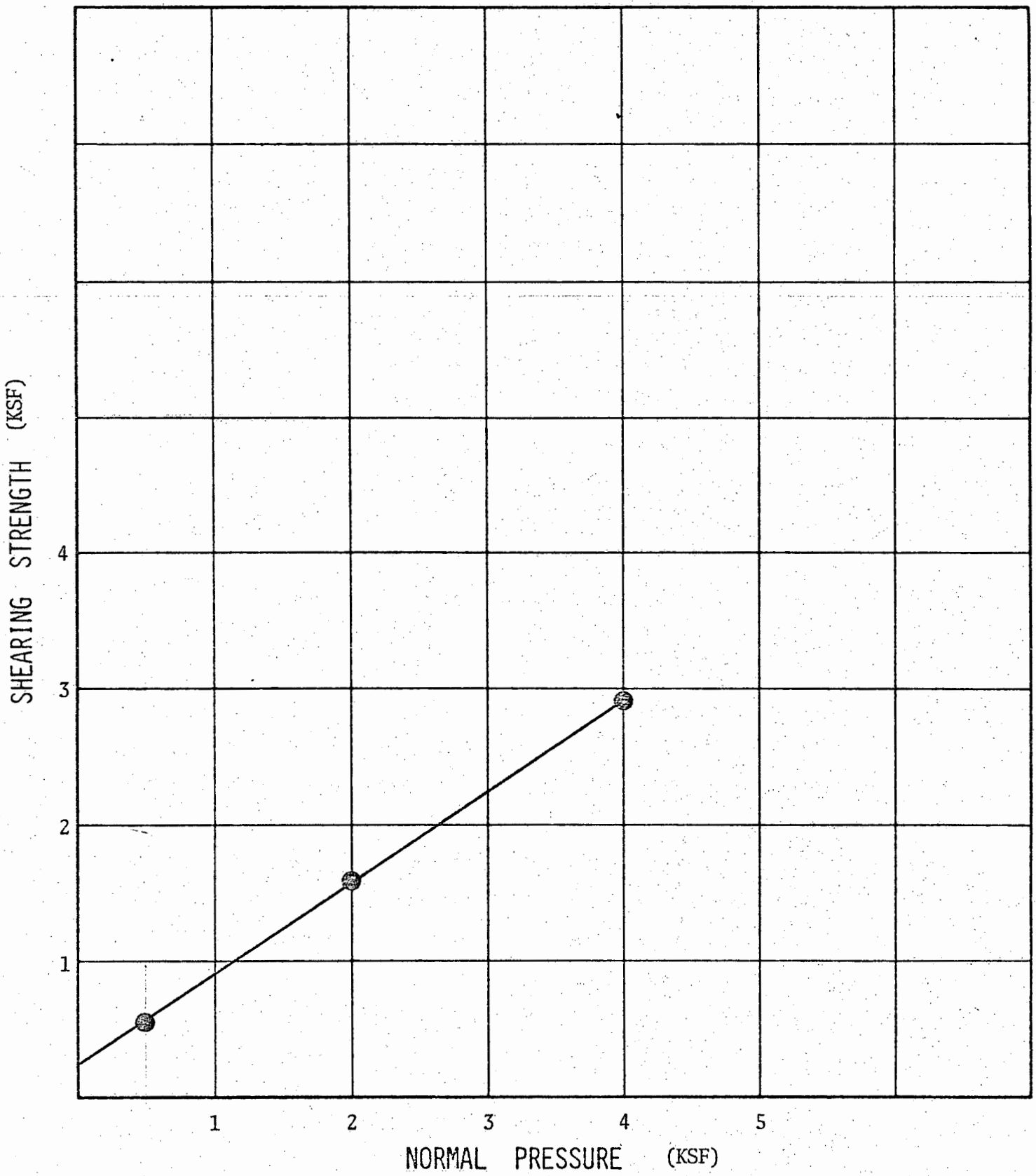
PLATE B-2



Boring No. 2
Sample No. 7
Depth: 35' - 37'
C = 300 psf
ϕ = 39°

DIRECT SHEAR TEST	
GEOLABS-HAWAII, INC. Foundation & Soil Engineering · Geology	
DATE APRIL 1973	W.O. 414-00

PLATE B-3



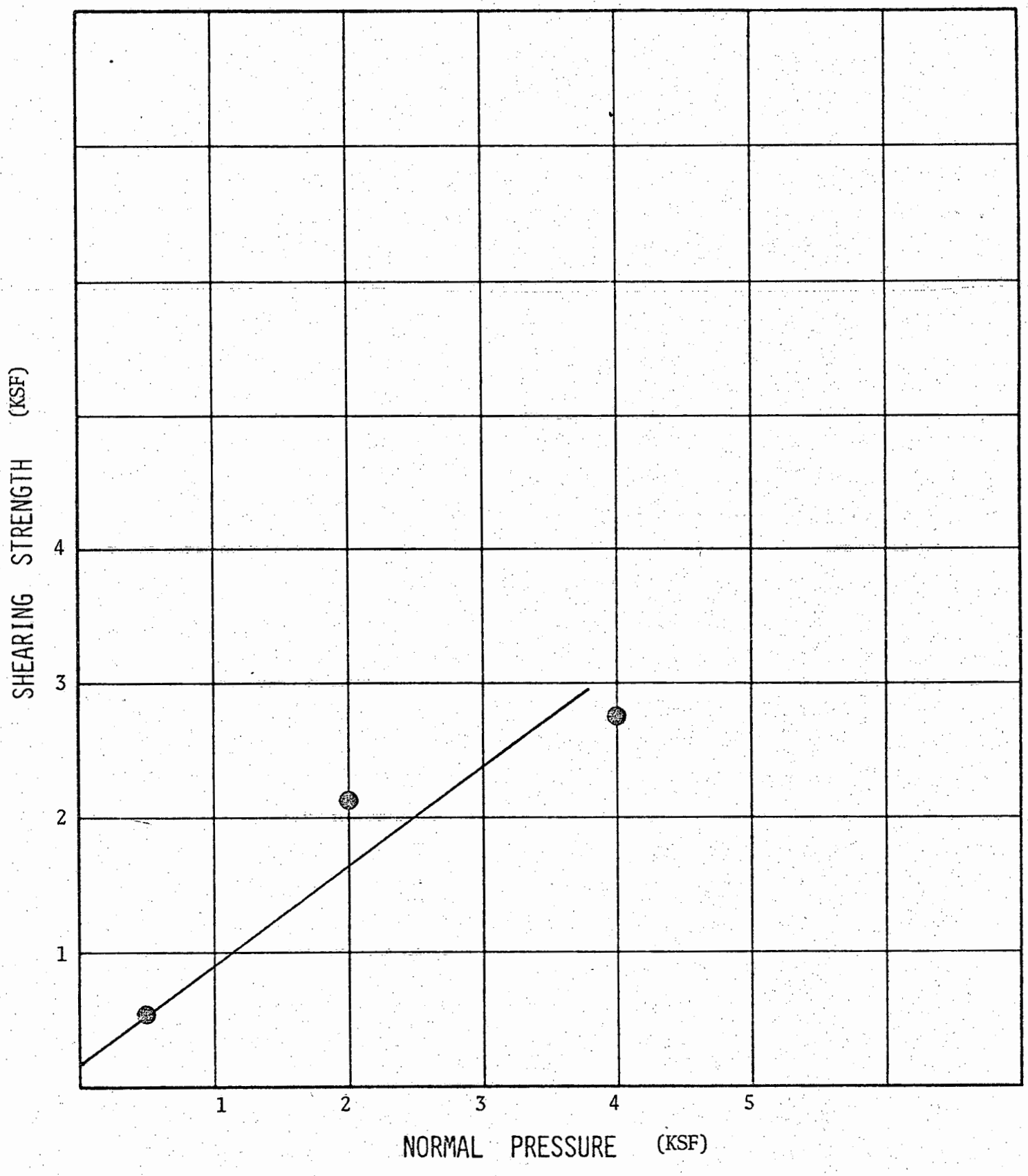
Boring No. 2
Sample No. 13
Depth: 65' - 67'
C = 230 psf
ϕ = 34°

DIRECT SHEAR TEST

GEOLABS-HAWAII. INC.
Foundation & Soil Engineering · Geology

DATE	W.O.
APRIL 1973	414-00

PLATE B-4



Boring No. 3
Sample No. 7
Depth: 35' - 37'
C = 200 psf
ϕ = 37°

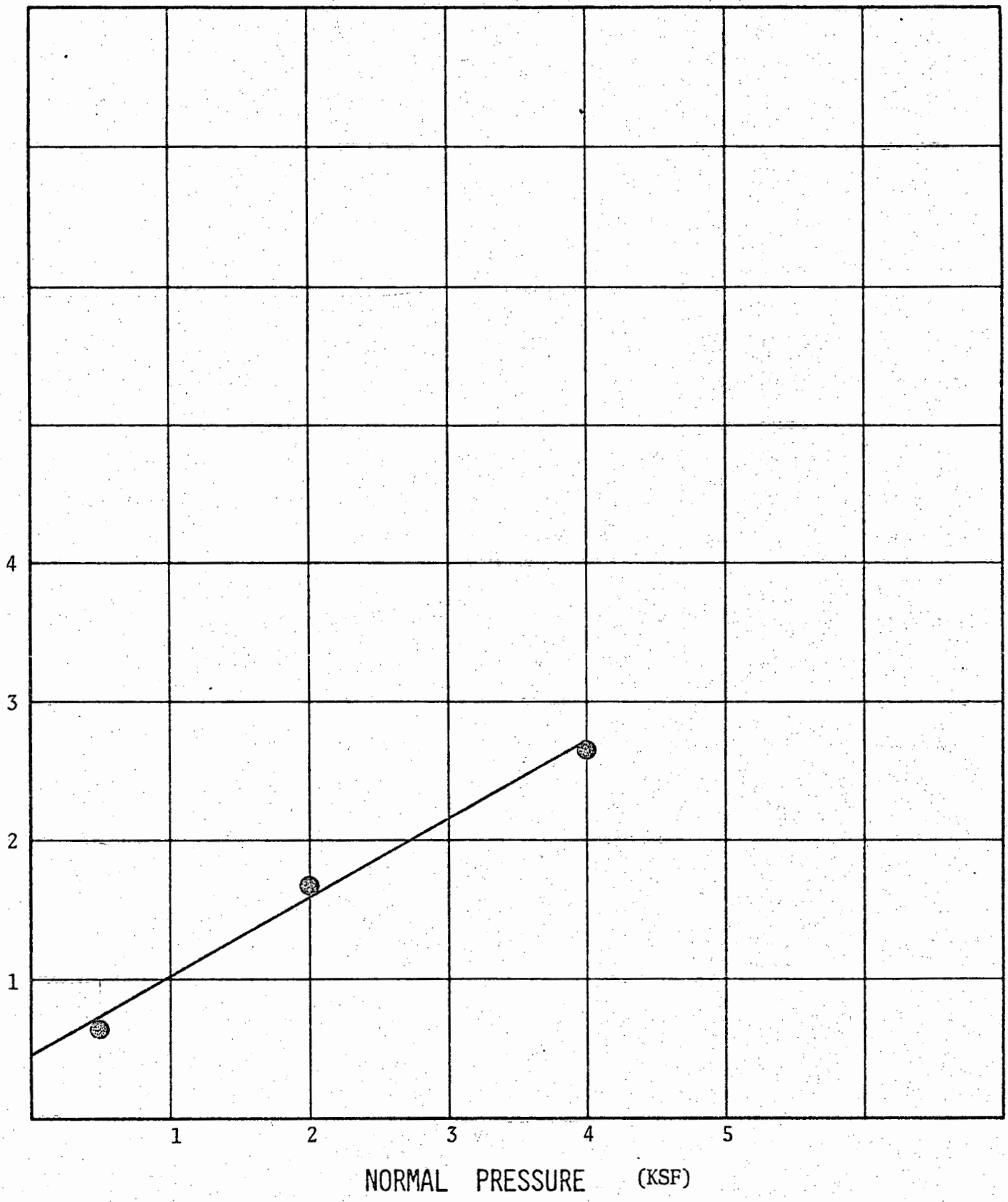
DIRECT SHEAR TEST

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering • Geology

DATE APRIL 1973

W.O. 414-00

PLATE B-5



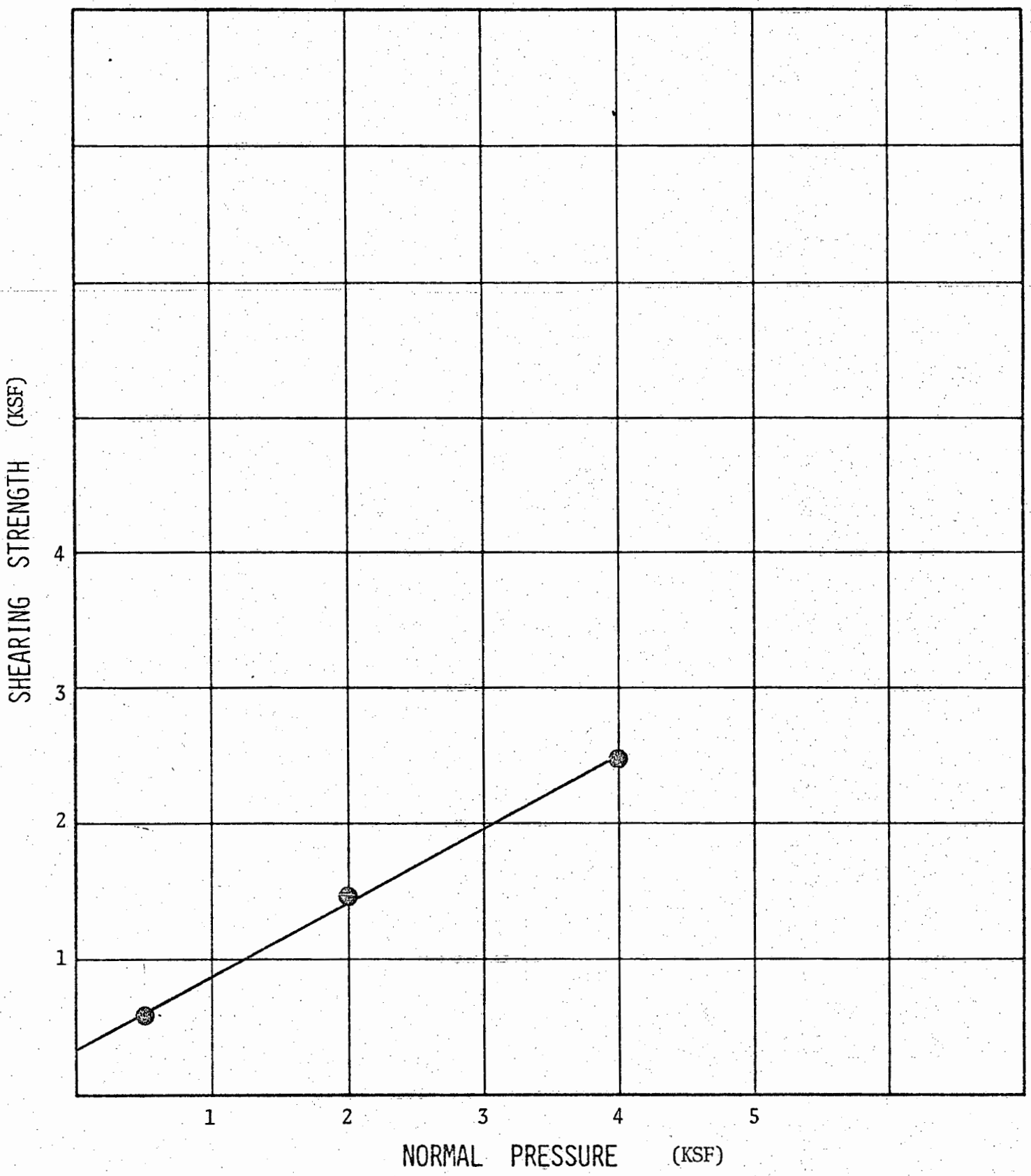
Boring No. 3
Sample No. 9
Depth: 45' - 47'
C = 450 psf
Ø = 30°

DIRECT SHEAR TEST

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE	W.O.
APRIL 1973	414-00

PLATE B-6



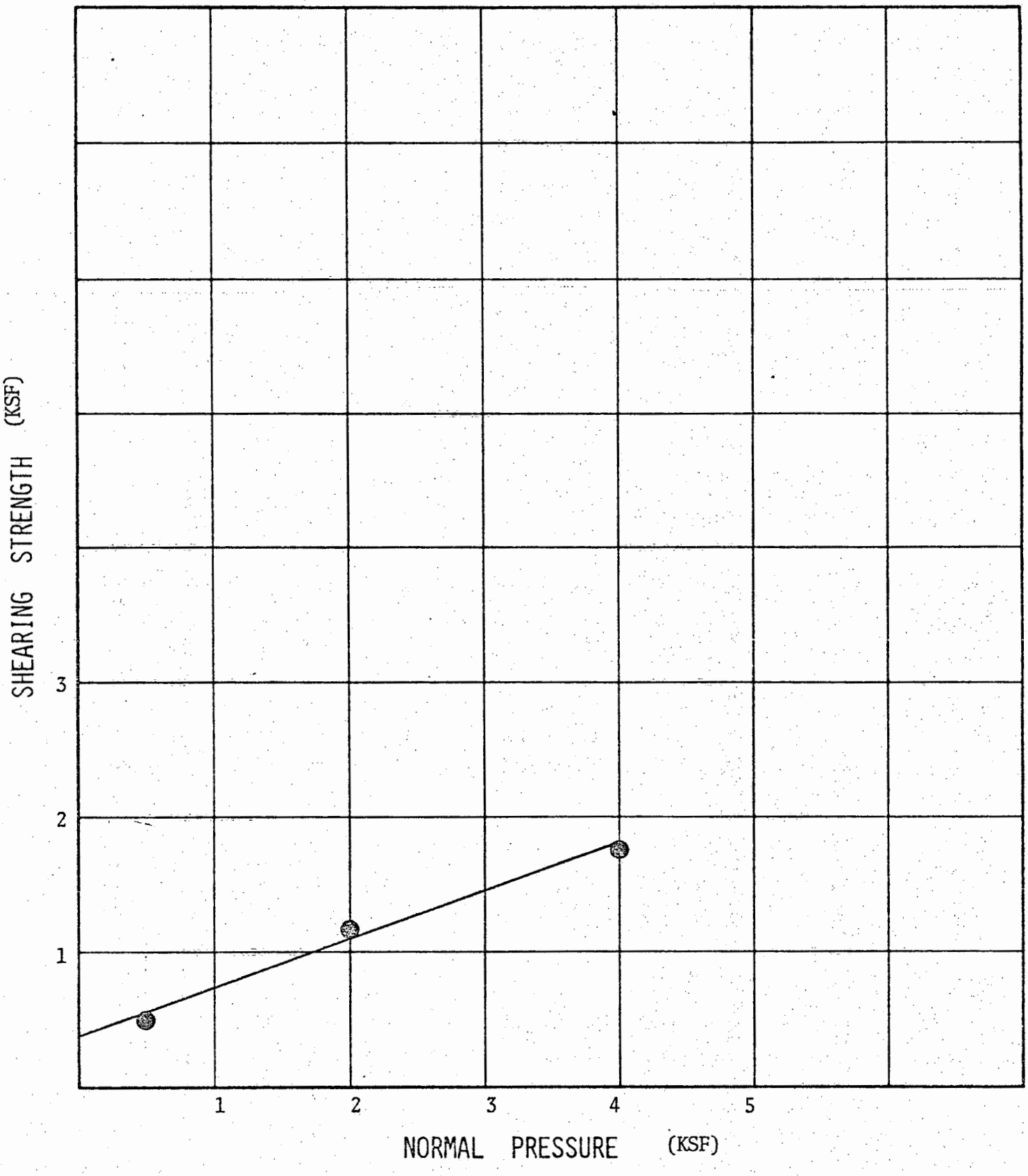
Boring No. 4
Sample No. 9
Depth: 45' - 47'
C = 350 psf
Ø = 28°

DIRECT SHEAR TEST

GEOLABS-HAWAII. INC.
Foundation & Soil Engineering · Geology

DATE	W.O.
APRIL 1973	414-00

PLATE B-7



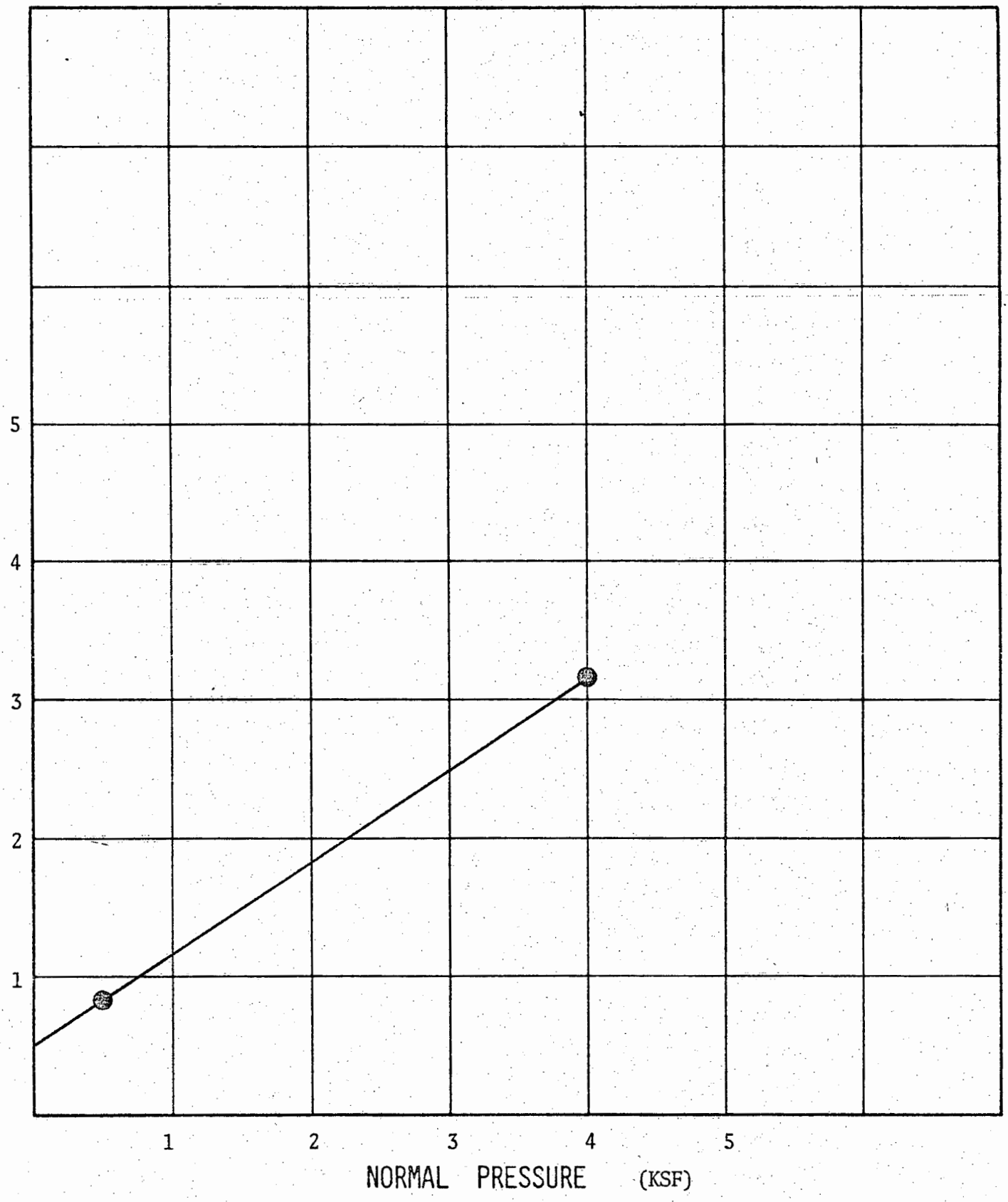
Boring No. 5
Sample No. 5
Depth: 25' - 27'
C = 400 psf
Ø = 20°

DIRECT SHEAR TEST

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE	W.O.
APRIL 1973	414-00

PLATE B-8



Boring No. 5
Sample No. 9
Depth: 45' - 47'
C = 500 psf
ϕ = 34°

DIRECT SHEAR TEST

GEOLABS-HAWAII, INC.
Foundation & Soil Engineering · Geology

DATE	W.O.
APRIL 1973	414-00

PLATE B-9

GEOLABS—HAWAII, INC.

DATE APRIL 1973

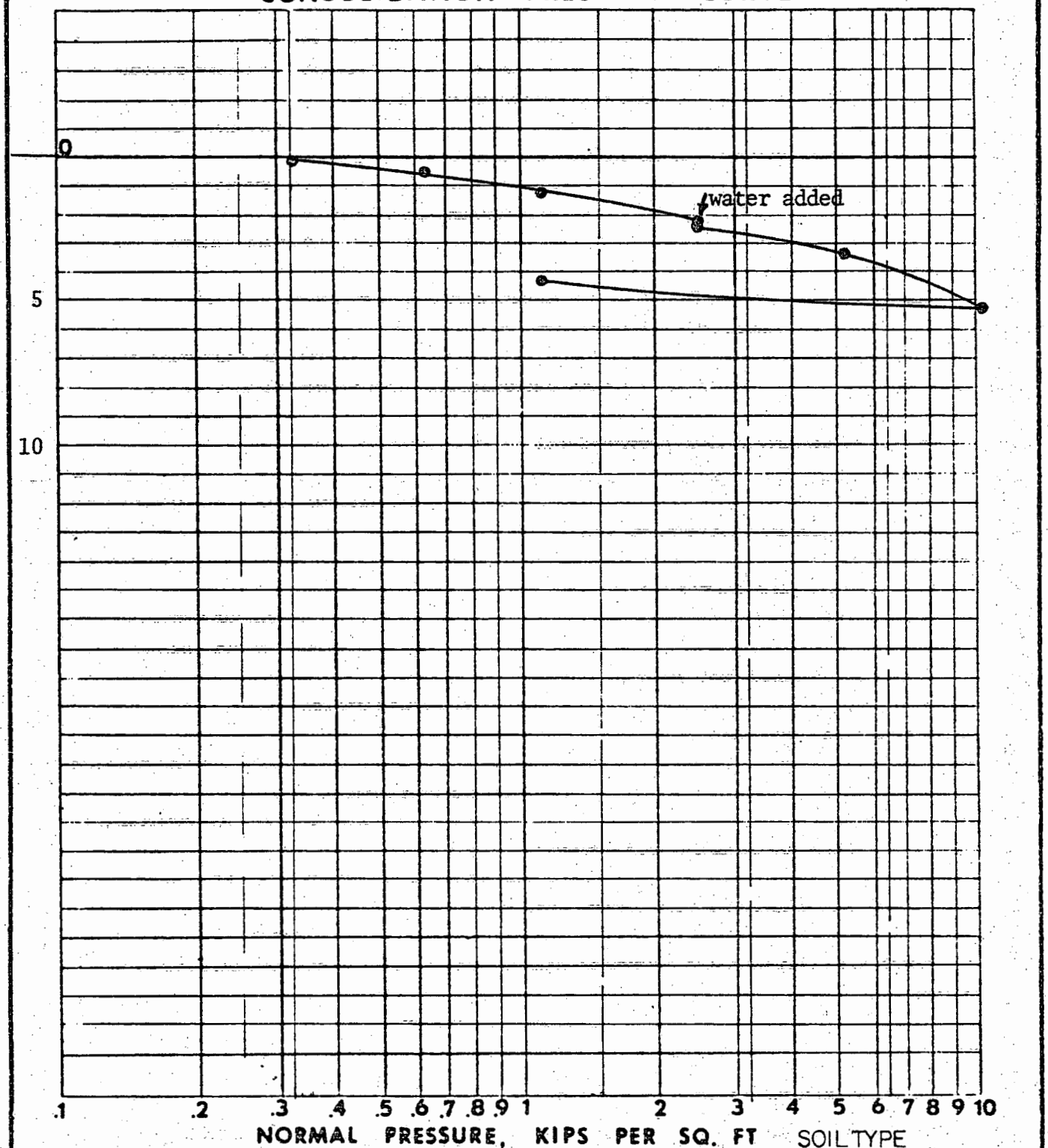
W.O. 414-00

JOB Dan Ostrow Construction - Club View Gardens

BORING NO. 1, S-13

DEPTH 65 - 67 feet

CONSOLIDATION - PRESSURE CURVE



SOIL TYPE

DRY UNIT WT. PCF

LIQUID LIMIT %

PLASTIC LIMIT %

PLASTIC INDEX %

PLATE B-10

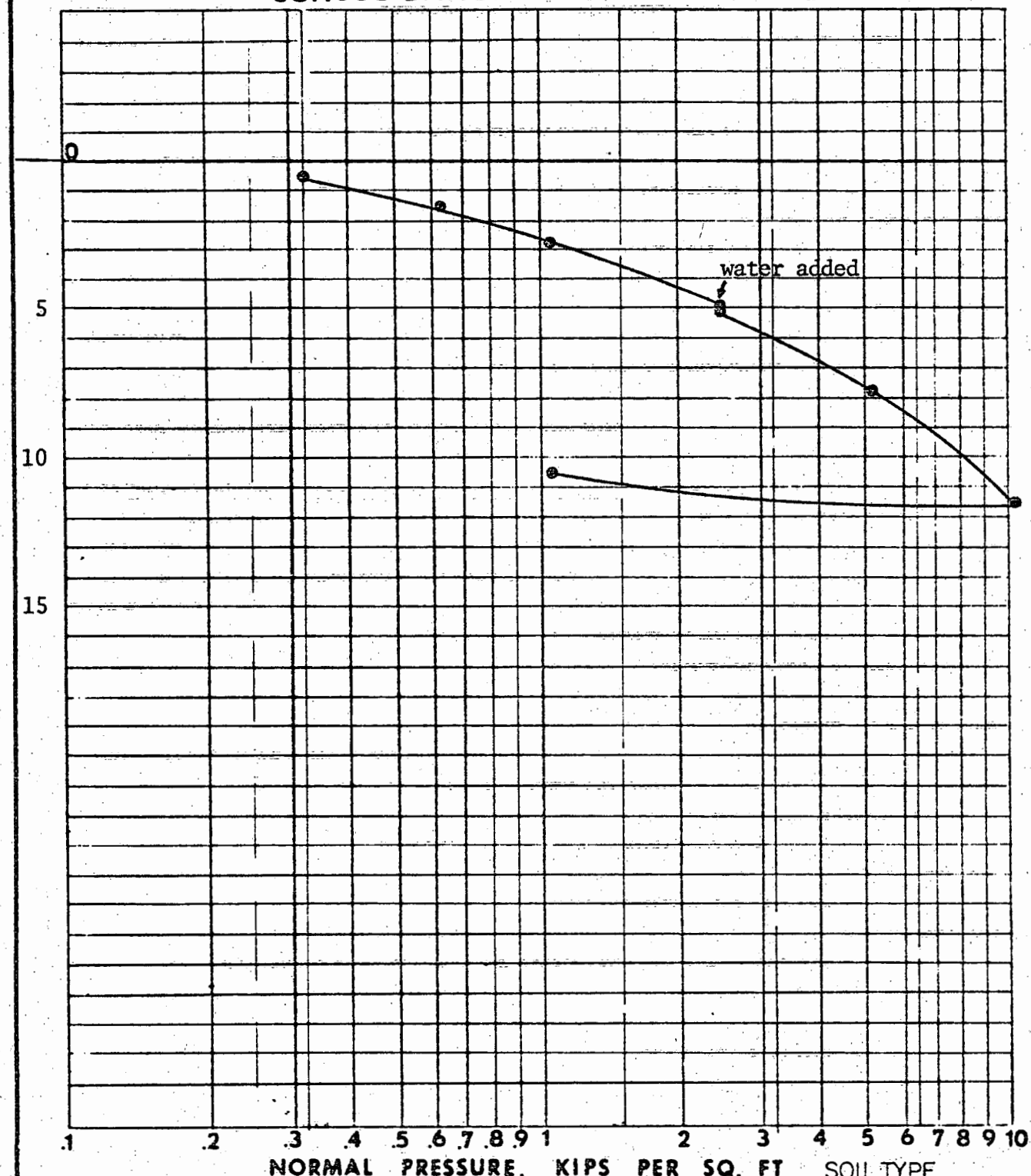
GEOLABS—HAWAII, INC.

DATE APRIL 1973 W.O. 414-00

JOB Dan Ostrow Construction - Club View Gardens BORING NO. 2, S-13

DEPTH 65 - 67 feet

CONSOLIDATION - PRESSURE CURVE



SOIL TYPE
DRY UNIT WT. PCF
LIQUID LIMIT %
PLASTIC LIMIT %
PLASTIC INDEX %

PLATE B-11

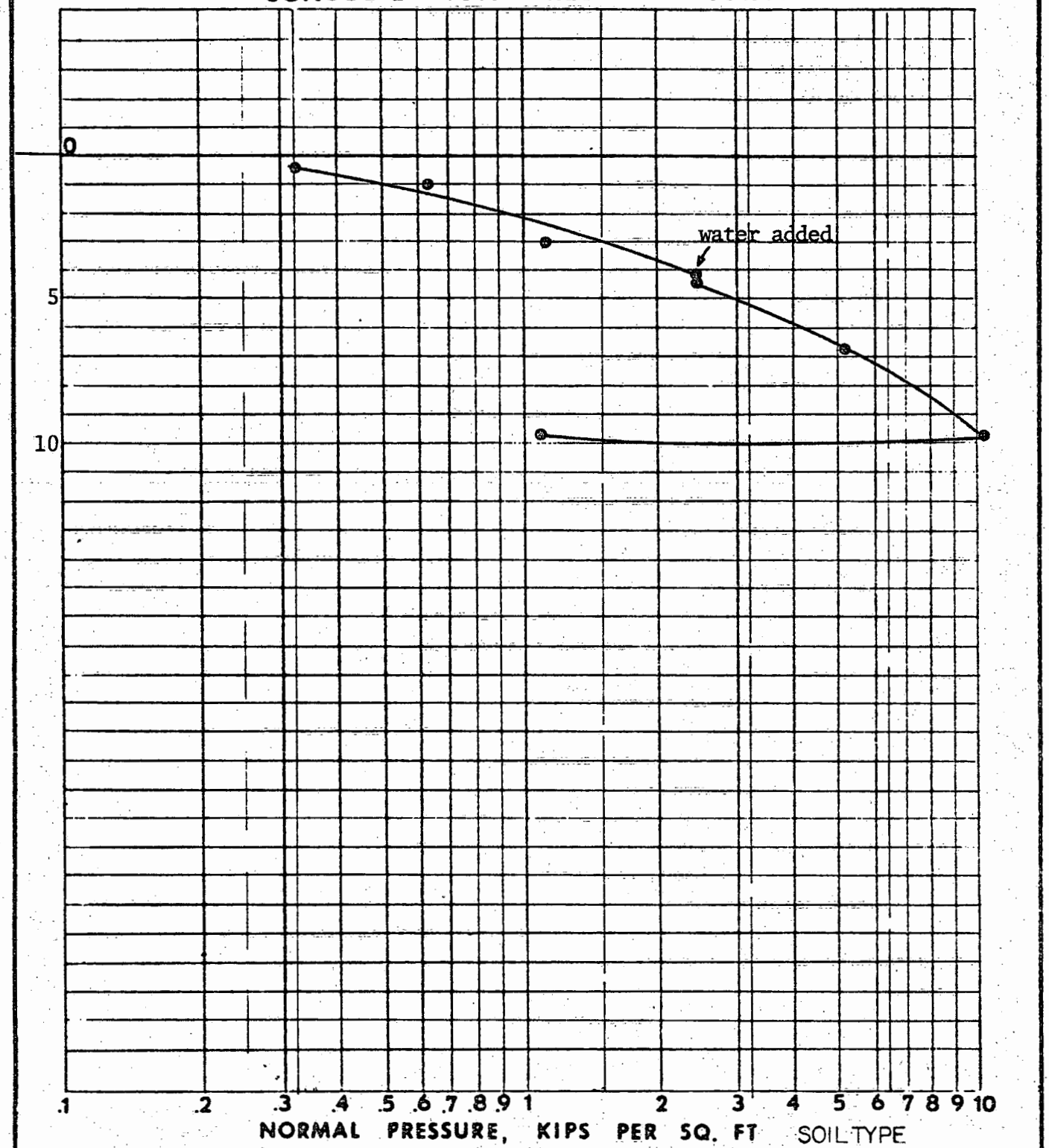
GEOLABS—HAWAII, INC.

DATE APRIL 1973 W.O. 414-00

JOB Dan Ostrow Construction - Club View Gardens BORING NO. 3, S-9

DEPTH 45 - 47 feet

CONSOLIDATION - PRESSURE CURVE



SOIL TYPE
DRY UNIT WT. PCF
LIQUID LIMIT %
PLASTIC LIMIT %
PLASTIC INDEX %

PLATE B-12

GEOLABS—HAWAII, INC.

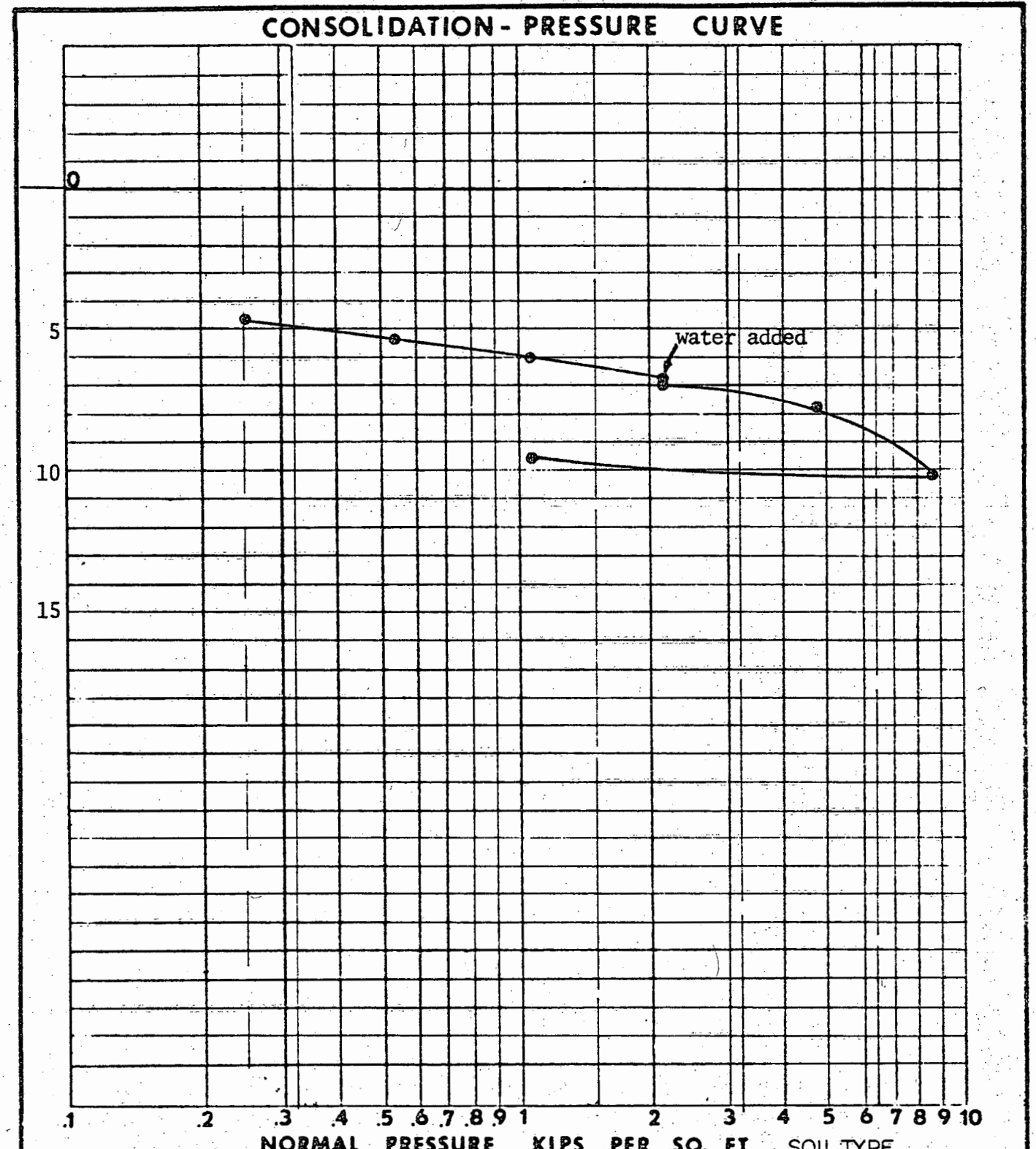
DATE APRIL 1973

W.O. 414-00

JOB Dan Ostrow Construction - Club View Gardens.

BORING NO. 4, S-3

DEPTH 15 - 17 feet



SOIL TYPE

DRY UNIT WT. PCF

LIQUID LIMIT %

PLASTIC LIMIT %

PLASTIC INDEX %

PLATE B-13

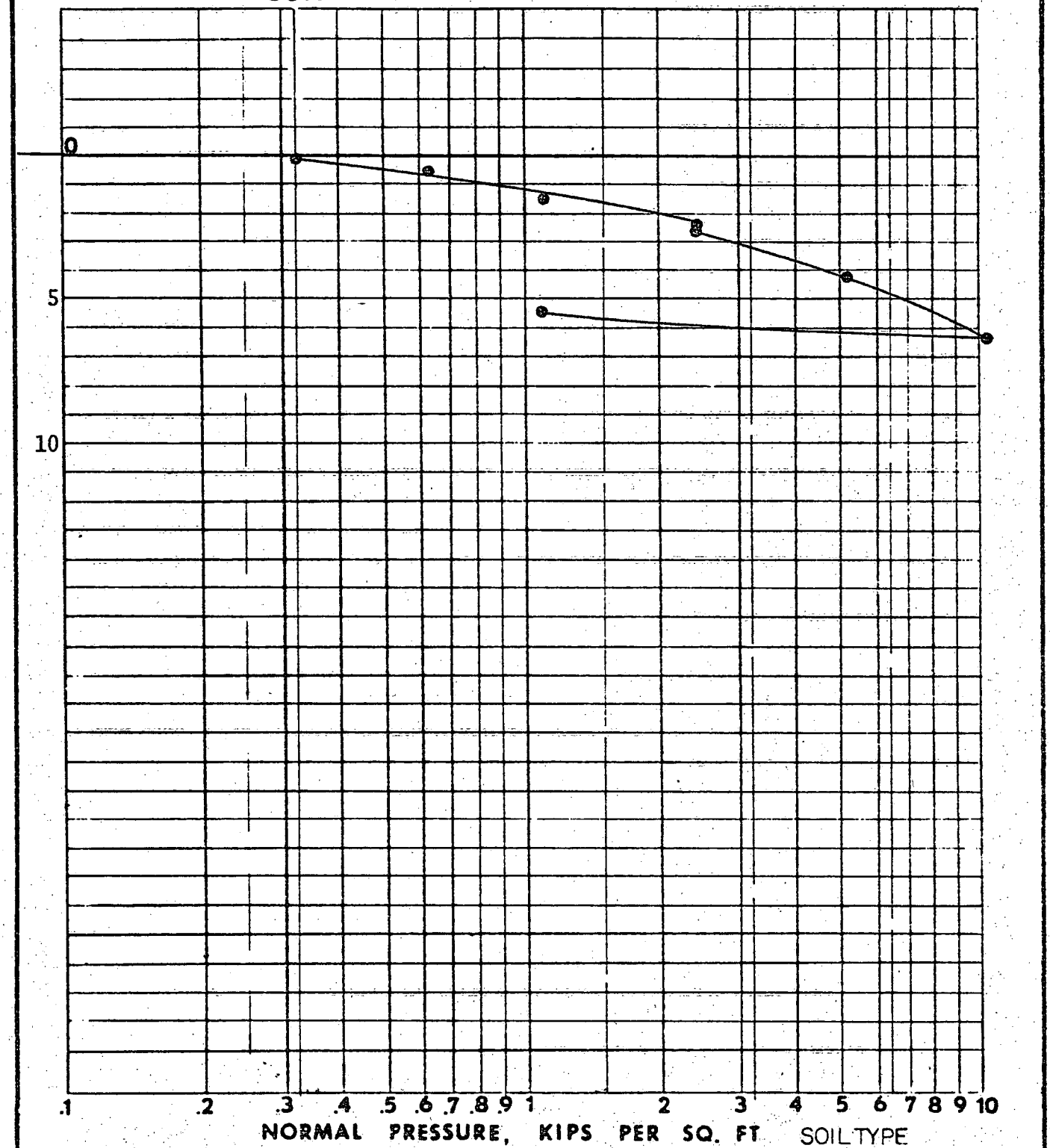
GEOLABS—HAWAII, INC.

DATE April 1973 W.O. 414-00

JOB Dan Ostrow Construction - Club View Gardens BORING NO. 5, S-9

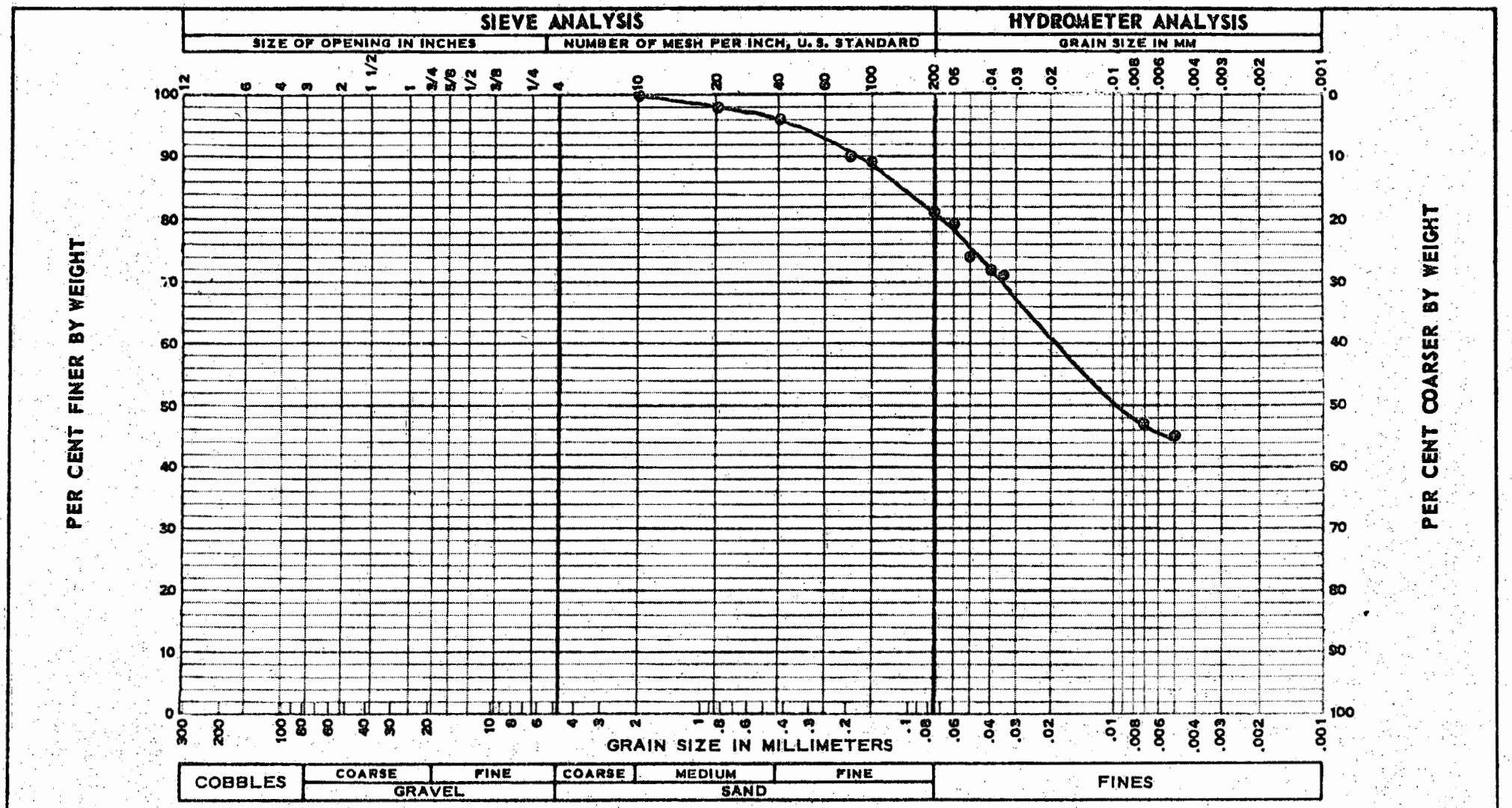
DEPTH 45 - 47 feet

CONSOLIDATION - PRESSURE CURVE



SOIL TYPE
DRY UNIT WT. PCF
LIQUID LIMIT %
PLASTIC LIMIT %
PLASTIC INDEX %

PLATE B-14



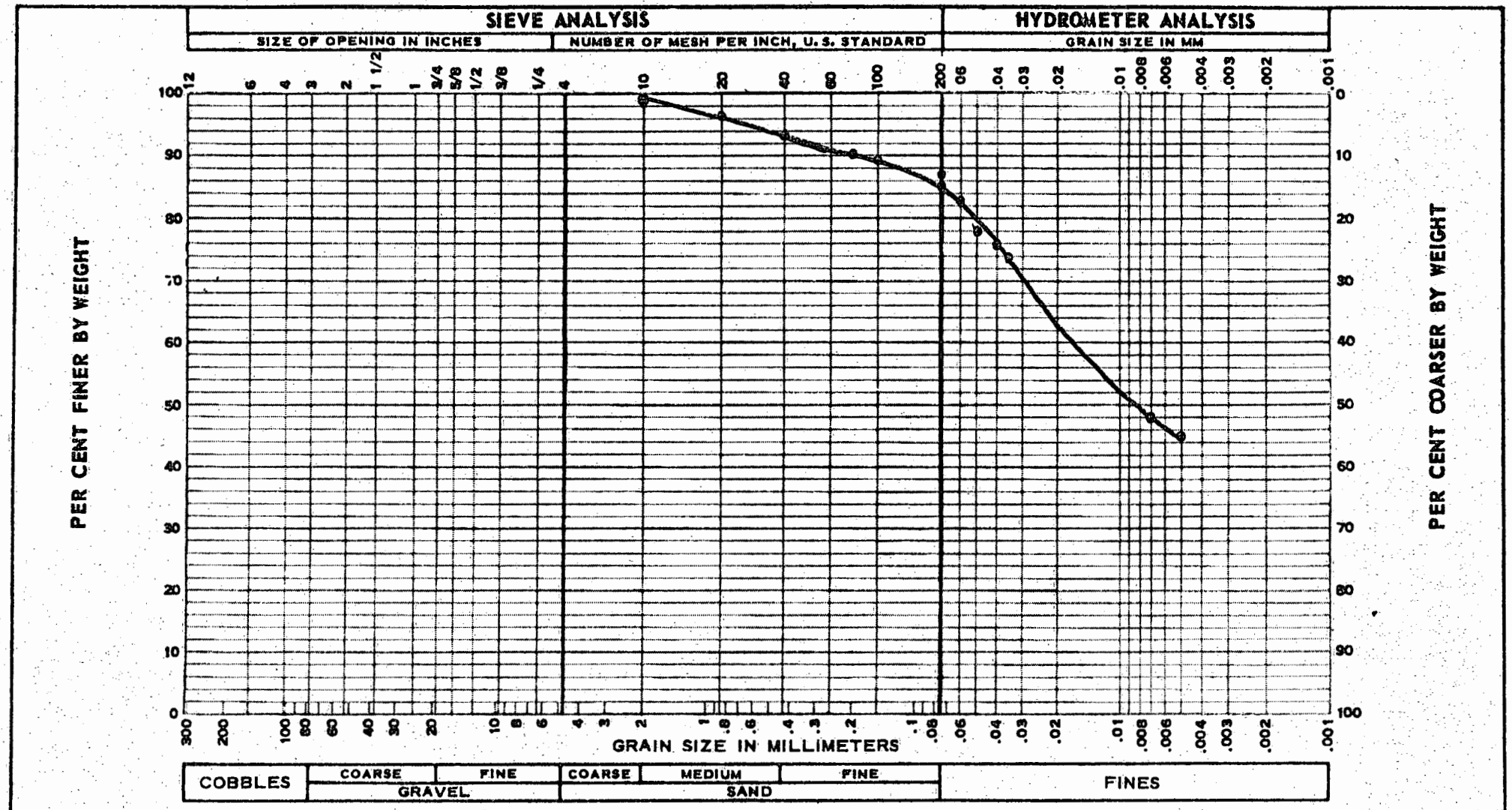
SAMPLE NO.	DEPTH -FT.	U.S.C.	CLASSIFICATION	NAT. W.C. %	LL	PL	PI
B-1, S-13	65 - 67	ML	Brown Clayey silt with some fine sand		Non Plastic (Visual)		

GRAIN SIZE CLASSIFICATION

Dan Ostrow Construction
Club View Gardens
W. O. 414-00 APRIL 1973

GEOLABS-HAWAII, INC.
Foundation Engineering • Soil Engineering • Geology
a serendipity, inc. subsidiary

Plate B-15



SAMPLE NO.	DEPTH -FT.	U.S.C.	CLASSIFICATION	NAT. W.C. %	LL	PL	PI
B-2, S-13	65-67	ML	Mottled clayey silt with some fine sand				

GRAIN SIZE CLASSIFICATION
Dan Ostrow Construction
Club View Gardens
W. O. 414-00 APRIL 1973

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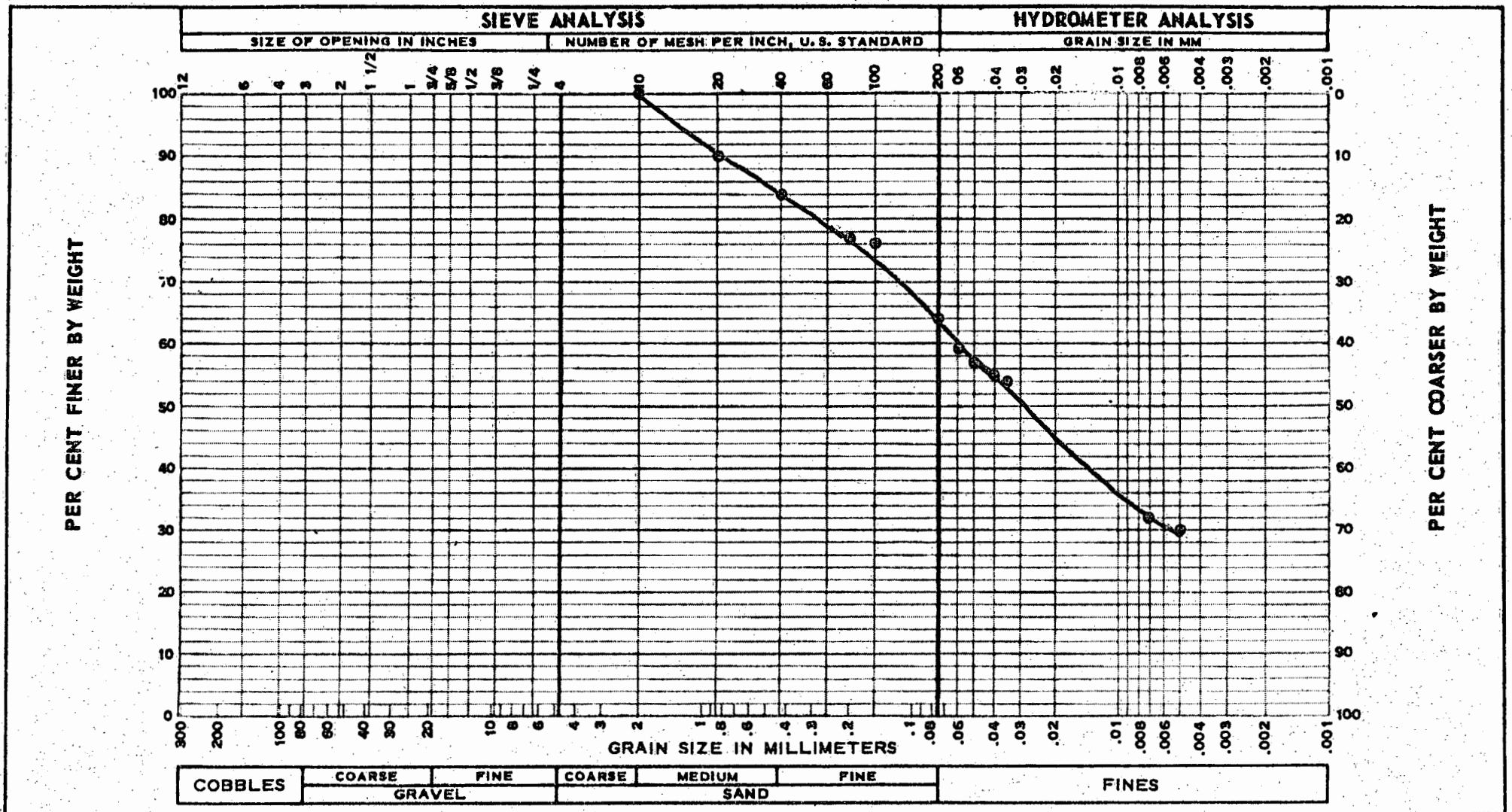
PLATE B-16



SAMPLE NO.	DEPTH -FT.	U.S.C.	CLASSIFICATION	NAT. W.C. %	LL	PL	PI
B-3, S-9	45 - 47	ML	Brown-gray clayey silt with some fine sand		Non	Plastic	

GRAIN SIZE CLASSIFICATION

Dan Ostrow Construction
Club View Gardens
W. O. 414-00 APRIL 1973

GEOLABS-HAWAII, INC.
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a serendipity, inc. subsidiary

PLATE B-17

RESULT OF EXPANSION TESTS

Boring No.	Depth feet	Surcharge psf	Expansion %	Moisture Content %	
				Before	After
1	5 - 7	60	1.9	60.5	-----
2	5 - 7	60	2.9	67.7	70.1
3	5 - 7	60	0.11	61.1	63.9
4	5 - 7	60	0.12	61.8	68.2