BEKER INDUSTRIES CORPORATION

APPROVAL FOR EXPENDITURE

Location: Rock Area

Date: November 20, 1975

Project No: 165-579

Project Title & Description: (x) Capital Item ( ) Expense Item

Prepare north most gyp pond to act as an interim wash plant tails/reclaim water pond.

Justification Statement: ( ) Major Maintenance & Repair

( ) Addition/Expansion ( ) Environmental Protection (x) Replacement

( ) Economic ( ) New Venture ( ) Other (Explain)

Has this item been approved in the capital budget? ( ) Yes (x) No
Has this project been started? ( ) Yes (x) No
If started, who authorized start? _____

PROJECT COSTS (MAJOR ITEMS)	EQUIP & MATERIALS	LABOR	EXPENSES	TOTAL
Face three sides of pond dike			$65,000.	$65,000.
Reroute & Extend tails discharge line	$12,000.	$6,000.		18,000.
Seal pond bottom with bentonite		2,000.	1,000.	3,000.
Install reclaim weir and pump suction line	8,000.	6,000.		14,000.
GRAND TOTAL				$100,000.

START DATE: Immediate upon AFE approval FINISH DATE: _____

-- APPROVALS --

LOCAL		CORPORATE	
General Manager _____	Date _____	President _____	Date _____
Plant Engineer _____	Date _____	Exec. V. P. _____	Date _____
Plant Controller _____	Date _____	V. P. Finance [signature]	Date 11/26/75
Prod. Manager _____	Date _____	V. P. Engineer _____	Date _____
Requester _____	Date _____	V. P. Operations _____	Date _____

FH0028480

JUSTIFICATION STATEMENT
FOR
NORTH GYP POND PREPARATION FOR WASH PLANT TAILS POND

The existing wash plant tails/reclaim water ponds will be full by approximately March 1, 1976, if current production rates are maintained.

The unused portion of the new north gypsum pond can be converted to a wash plant tails pond for approximately $100,000.

The dollar amount for several items may be low due to insufficient time to adequately define the job scope. The items in question are:

1. Rerouting and extending tails line.
   Depending upon final routing decision , there could be as much as 1500 feet of 12 inch to 16 inch pipe involved.

2. Seal pond bottom with bentonite.

   Although the bentonite clay can be obtained at our mine site for no more than loading & transportation cost, the amount of clay required has not been accurately determined. Sealing of the pond bottom is required because there is at least one and maybe several faults and lava outcrops in the pond area, which flow directly into the #5 well water strata.

3. Install reclaim weir and reclaim pump suction line.

   With in-place wintertime concrete costing approximately $300/c.y., this $14,000 does not leave much to install a suction line to the reclaim pump.

BHF:sm

PURCHASE ORDER

BEKER INDUSTRIES CORP.

P. O. BOX 37, CONDA, IDAHO 83230
(208) 547-4381

P.4.18 168-569

Purchase Order No. COF22630

Date: December 8, 1975
Requisition No. 1433
Cost Code No. 168-000-569
Page: 1 of 1

TO:

Romao Supply
2050 E. Slauson Ave.
Huntington Park, CA 90255

SHIP TO:

Beker Industries Corp.
P. O. Box 37
Conda, Idaho 83230
Attn: J. Pebenito, H. Farrow

Unless otherwise specified, 2% discount will be deducted for payment 10th proximo.

INSTRUCTIONS TO VENDOR

1. To validate this order, return acknowledgement copy promptly duly signed.
2. List Order No. and Item No. on all invoices, Packages and Shipping Document.
3. If shipped unit quantities are less than ordered, contact Purchasing Manager whose signature appears below.
4. Describe in detail on invoice item(s) shipped and Quantities.
5. Send invoices to:
   Beker Industries Corp.
   c/o Accounts Payable
   P. O. Box 37
   Conda, Idaho 83230

Mr. G. Reilly Ext. _____ can furnish information regarding this order.

PROMISED DELIVERY	F. O. B. POINT	SHIP VIA:	BILLING TERMS	FREIGHT PPD	FREIGHT COLL
12-12-75	Shipping Point	☐ RAIL ☐ MTR FREIGHT ☐ TRUCK ☐ OTHER	Net 30		X

ITEM NO.	QUANTITY	U/M	MATERIAL AND DESCRIPTION	QUANTITY RECEIVED—SHIPMENT NO. 1	2	3	4	5	6	7
1.	1	EA	(1) Used 7700 Line General Electric Vertical MCC Section w/ one Size 5 Line Starter (2) Interlocks N.C. N.O. 460V Control Circuit & 400 Amp Molded Case Trip	1						
			Complete							
			CONFIRMATION ONLY - DO NOT DUPLICATE							
			Confirming from G. Reilly to Bob Wolstein.							

SHIPMENT NO.	DATE	FREIGHT BILL NUMBER	AMOUNT	PREP. / COLL.	CARRIER	CAR NUMBER	WEIGHT OR NO. PACKAGES	REMARKS	RECEIVED BY
1	12-23	22630	28.87	Coll	IMC	08 470432			JB

BIC P8 9M 4-75

FH0028482

R.4.18
168-569
#3 Tailings Pond

Washington CONSTRUCTION CO.

November 24, 1975

Beker Industries
P. O. Box 37
Conda, Idaho 83230

Attn: Mr. Don Smedley

Dear Sir:

To confirm our conversations concerning the flattening of the slopes, on east, north and west dykes of the north half of Gyp Pond No. 3, from 1½:1 to 2:1 and widening the top from 15 to 20 feet and the construction of a jetty dyke for reclaiming the water. We can make the necessary equipment available from our mining operation in the immediate future. Move-in costs anticipate the utilization of equipment available in the Soda Springs area and have projected a $2,000.00 total move-in and out cost in the following proposal.

As we pointed out in our conversation it is difficult to anticipate the condition of material we will be handling due to the weather at this time of year and this could present problems in the construction.

Based on this assumption we estimate the following equipment will be required for the dyke construction.

1 - Foreman & pickup
2 - D9 Dozers for push loading
3 - 641 Cat Scrapers or 633 Scrapers
1 - D8 Dozer for fill and slope preparation
1 - 16 Motor Patrol
1 - 651 Cat powered Southwest Compactor

We propose to furnish the above equipment on a hourly maintained rate and the necessary labor in accordance with the following schedule.

Pickup	@ $ 3.25/hr
D-9 Dozer	@ $78.90/hr
633 Scrapers	@ $62.50/hr
641 Scrapers	@ $77.40/hr
D-8 Dozer	@ $53.05/hr
16 Motor Patrol	@ $40.28/hr
Southwest Compactor	@ $59.26/rh

P.O. BOX 1502 • 500 TAYLOR • MISSOULA, MONTANA 59801 • (406) 728-2450 • TWX 910-963-2492

These rates include all necessary fuel and maintenance costs. All labor will be charged as per union requirements which include base and overtime pay, health, welfare and pension, payroll additives and 15% for processing and overhead costs. You can contact Mr. Sherm Mazza at 549-3317 for present pay rates.

We estimate that the flattening and widening of the three slopes will take approximately three to four weeks with the above equipment spread and approximately $65,000.00 cost. The construction of the jetty dyke would take approximately one week with the same equipment spread and the cost would be $25,000.00. Therefore the total cost of the two items would be approximately $90,000.00. We feel that if material can be excavated in the interior of the pond area in close proximity to the required embankments and that soft ground or wet and frozen material doesn't hamper productive efforts we can perform the required work for the above stated price.

Please be aware that as weather conditions worsen the construction costs will increase.

Very truly yours,

WASHINGTON CONSTRUCTION CO.

D. A. Peressini

D. A. PERESSINI
Vice-President

DAP/dlc

Interoffice Memorandum

To: File

File Reference:

Copies To: G. Greer
H. Farrow
T. McReynolds
C. Bassett
Project Engineer

Date: July 21, 1977

From: Dick Fleming

Department: Engineering

Location: C. F. White Plant

Subject: CLOSED AFE

The underwritten AFEs are complete. No further charges should be charged against them.

168-569R - # 3 Tailings Pond
480-613A - K1B 3rd Stage Cylinder (revision)
531-637 - Plant Drainage System
450-640A - Replace Distribution Box Piping
480-663 - NH_3 Plant Shop
410-683A - Remodel # 3 Tailings Pond (revision)
420-686 - Screw Feeders Under 6000 Ton Bin
421-693 - Replace Dust Collection on South Calciner Storage Bin
421-699 - Install RC-3 Belt Scale
562-704 - Fenced Area for Warehouse Inventory
450-715 - Install Stainless Steel Screws in Phos Acid Building Siding
480-716 - NH_3 Convertor Repairs & Modifications
480-740 - Replace B Wac Unit in NH_3
505-756 - Purchase Heavy Duty 3/4 Ton Pickup
505-757 - Purchase Mine Vehicle
440-763 - New Bottom in Sulfuric Acid Storage Tank
480-769 - Replace A Wac Unit in NH_3
530-773 - Purchase New Auto

DF/sk

ORIGINAL FILE P.4.18

Interoffice Memorandum

168-569

To: G. Sneddon

Copies To: E. M. Green
T. McReynolds
A. R. Ramirez
W. Jacobsen
H. Farrow
J. Beaunaux

File Reference:

Date: December 16, 1975

From: D. Baumgartner

Department: Central Services

Location: C. F. White Plant

Subject: NOTICE OF AFE APPROVAL

The following AFE has been approved:

AFE No. 168-569

AMOUNT APPROVED: $100,000.00

TITLE: Prepare north most Gyp Pond as Wash Plant Tailings Pond

Estimated Completion Date: January 1976

Project Engineer: H. Farrow

DDB/kjp

FH0028486

BEKER INDUSTRIES CORPORATION

APPROVAL FOR EXPENDITURE

Location: Rock Area

Date: November 20, 1975

Project No: 168-569

Project Title & Description: (x) Capital Item ( ) Expense Item

Prepare north most gyp pond to act as an interim wash plant tails/reclaim water pond.

Justification Statement: ( ) Major Maintenance & Repair

( ) Addition/Expansion ( ) Environmental Protection (x) Replacement

( ) Economic ( ) New Venture ( ) Other (Explain)

Has this item been approved in the capital budget? ( ) Yes (x) No
Has this project been started? ( ) Yes (x) No
If started, who authorized start?

PROJECT COSTS (MAJOR ITEMS)	EQUIP & MATERIALS	LABOR	EXPENSES	TOTAL
Face three sides of pond dike			$65,000.	$65,000.
Reroute & Extend tails discharge line	$12,000.	$6,000.		18,000.
Seal pond bottom with bentonite		2,000.	1,000.	3,000.
Install reclaim weir and pump suction line	8,000.	6,000.		14,000.
GRAND TOTAL				$100,000.

START DATE: Immediate upon AFE approval

FINISH DATE:

-- APPROVALS --

LOCAL

General Manager Date

Plant Engineer Date

Plant Controller Date

Prod. Manager Date

Requester Date

CORPORATE

President Date

Exec. V. P. Date

V. P. Finance Date 11/26/75

V. P. Engineer Date

V. P. Operations Date

FH0028487

JUSTIFICATION STATEMENT
FOR
NORTH GYP POND PREPARATION FOR WASH PLANT TAILS POND.

The existing wash plant tails/reclaim water ponds will be full by approximately March 1, 1976, if current production rates are maintained.

The unused portion of the new north gypsum pond can be converted to a wash plant tails pond for approximately $100,000.

The dollar amount for several items may be low due to insufficient time to adequately define the job scope. The items in question are:

1. Rerouting and extending tails line.
   Depending upon final routing decision , there could be as much as 1500 feet of 12 inch to 16 inch pipe involved.

2. Seal pond bottom with bentonite.

   Although the bentonite clay can be obtained at our mine site for no more than loading & transportation cost, the amount of clay required has not been accurately determined. Sealing of the pond bottom is required because there is at least one and maybe several faults and lava outcrops in the pond area, which flow directly into the #5 well water strata.

3. Install reclaim weir and reclaim pump suction line.

   With in-place wintertime concrete costing approximately $300/c.y., this $14,000 does not leave much to install a suction line to the reclaim pump.

BHF:sm

Interoffice Memorandum

Mr. Don Baumgartner

December 1, 1975

Art Ramirez

Production

Greenwich

AFE's

The following AFE's have been approved and probably completed some time ago but the official approval papers have not been submitted to you and I am now submitting the same for record purposes only:

#168-535
#168-543
#168-550
#168-548
#168-553
#168-570

Attached also are original AFE's #569 and #571 which have now been fully authorized.

ARR:djh
Attch

From the desk of

DON SMEDLEY

November 20, 1975

Mr. Sneddon:

Attached is an AFE for the #3 Tailings Pond, and also the Justification Statement.

Justification statement by Hank Faucon after consulting with Don Baumgartner.

Don S.

Geotechnical Engineering

Field and Laboratory Investigations
Engineering Analysis and Recommendations
Consultation

NORTHERN TESTING LABORATORIES

Great Falls Billings Montana — Boise Pocatello Idaho — Gillette Wyoming

370 Benjamin Lane
P. O. Box 7867
Boise, Idaho 83707
(208) 377-2100

March 7, 1978

Beker Industries, Inc.
P. O. Box 37
Conda, Idaho 83230

ATTENTION: Mr. Jim Carpita

Subject: Tailings Pond Subsurface Investigation, Conda, Idaho

Gentlemen:

In accordance with our agreement, we herewith transmit a report of laboratory tests performed on soil samples obtained at the proposed site of the expansion of Tailings Pond No. 3. We were authorized to proceed in your Purchase Order No. 14696 dated November 21, 1977. Sample testing instructions were received from Harza Engineering verbally and in test requests dated January 5 and 20, 1978.

The enclosed report presents the results of the tests on borrow, dike and foundation soil samples. Preliminary results for some of the samples were forwarded to you as individual tests were completed. Additional triaxial tests requested by Harza Engineering on the proposed gypsum borrow material are in progress. The results of these tests will be forwarded to you as soon as they are complete.

The first portion of the report summarizes the methods of field investigation and describes the procedures used in preparing and testing the samples. The second part of the report presents the results of the laboratory tests.

Samples are being stored in our laboratories in Boise, Idaho and Billings, Montana. They will be retained for thirty calendar days from the date of this report, unless further instructions are received from you.

If you have any questions, or if we can be of further service, please contact us at your convenience. Thank you for the opportunity to provide this service.

Respectfully submitted,

Richard T. Kanemasu, P. E.

Walter W. Jones

REGISTERED PROFESSIONAL ENGINEER STATE OF IDAHO RICHARD T. KANEMASU

RTK/WVJ/sb
In duplicate
Enclosures
cc: Harza Engineering
In duplicate

REPORT
OF
LABORATORY TEST RESULTS

SUBSURFACE INVESTIGATION
PROPOSED EXPANSION
TAILINGS POND NO. 3
CONDA, IDAHO

TO
BEKER INDUSTRIES, INC.
CONDA, IDAHO

PREPARED
BY
NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
BOISE, IDAHO

MARCH, 1978

FH0028492

INDEX OF TEST DATA
PROPOSED EXPANSION
TAILINGS POND NO. 3
CONDA, IDAHO

	Page No.
FIELD INVESTIGATIONS	1
LABORATORY INVESTIGATIONS	1 - 3

APPENDIX:

	Table No.
Summary of Field and Laboratory Test Results	1

Boring No.	Depth, Feet	Description	Plate No.
--	Surface	Grain Size Analysis	1
		Moisture-Density Test	2
		Consolidated-Undrained Triaxial Shear Test	3
--	Surface	Grain Size Analysis	4
		Moisture-Density Test	5
--	Surface	Grain Size Analysis	6
		Moisture-Density Test	7
--	Surface	Grain Size Analysis	8
		Moisture-Density Test	9
HD-2	35.0-37.0	Grain Size Analysis	10
		Consolidation Test	11-12
		Unconsolidated-Undrained Triaxial Shear Test	13-16
	40.0-41.5	Grain Size Analysis	17
HD-3	5.0- 7.5	Grain Size Analysis	18
	20.0-22.5	Consolidated-Undrained Triaxial Shear Test	19
	33.0-35.0	Grain Size Analysis	20
		Consolidated-Undrained Triaxial Shear Test	21
HD-4	42.5-44.0	Consolidated-Undrained Triaxial Shear Test	22
HF-5	7.5- 9.5	Grain Size Analysis	23
		Unconsolidated-Undrained Triaxial Shear Test	24-27
HF-6	12.5-14.5	Consolidated-Undrained Triaxial Shear Test	28

FH0028493

Index of Test Data, continued

Boring No.	Depth, Feet	Description	Plate No.
HF-7	7.5- 9.5	Grain Size Analysis.....	29
		Unconsolidated-Undrained Triaxial Shear Test.....	30-32
	12.5-14.5	Grain Size Analysis.....	33
		Unconsolidated-Undrained Triaxial Shear Test.....	34-37
		Consolidation Test.....	38-39
HF-8	17.5-19.5	Unconsolidated-Undrained Triaxial Shear Test.....	40-43

FH0028494

BEKER TAILINGS POND
DESCRIPTION OF FIELD AND LABORATORY PROCEDURES

FIELD INVESTIGATIONS

The drilling and sampling program at the proposed tailings pond site near Conda, Idaho, was conducted as requested by Beker Industries. All work was performed under the direction of Harza Engineering personnel. A Mobile Drill, Model B-53, truck-mounted drill rig was used for the investigation program.

Four types of samples of the borrow, dike, and foundation materials were obtained -- sack samples of the borrow material, undistrubed shelby and pitcher tube samples of the dike and foundation materials, and split spoon samples of the dike and foundation materials.

Sample Handling

Most of the samples were delivered to our Boise laboratory, where they were stored until specific test programs were developed by Harza Engineering. Some of the samples were retained by Harza Engineering personnel and were delivered to their office in Chicago, Illinois.

The samples were tested by Northern Testing Laboratories in Boise, Idaho and Billings, Montana and by Shannon and Wilson, Inc., in Seattle, Washington. The two samples tested by Shannon and Wilson were sent to them in order to meet the short time schedule for this project.

LABORATORY INVESTIGATIONS

Sample Preparation

Upon arrival at our laboratory in Boise, Idaho, all undisturbed samples were resealed with additional wax and stored in the sample tubes in the 100 percent relative humidity room until required for testing.

All soil samples were prepared for testing in accordance with ASTM procedures and special instructions received from Harza Engineering.

The remolded triaxial test samples were compacted in a split mold, 2.8 inches in diameter and 6 inches in height. The soil was mixed to the required moisture content of 2% over optimum moisture and compacted in six equal lifts to 98% of maximum density, as determined in accordance with ASTM D 698.

FH0028495

Samples for the remolded permeability tests were compacted in one lift in a 4.0 inch diameter mold to a height of 2 inches. The soil was mixed to optimum moisture content prior to compacting the soil in the mold at 95% of maximum density.

Undisturbed gypsum samples used for triaxial and permeability tests were obtained by cutting a short length from the thin wall sampling tube and mounting it in a triaxial test chamber. The sample was saturated by the back pressure method, removed from the test chamber, extruded from the sampling tube and prepared for the required test. This special procedure was necessary in order to obtain testable samples. The gypsum, at its natural moisture content, was too dry and brittle and crumbled when extruded from the sampling tube. Saturating the specimen in the sampling tube section before extruding allowed the specimen to develop enough "apparent cohesion" to withstand extruding and trimming.

Test Procedures

Standard Tests

Test	
Grain size distribution	D 422
Atterberg Limits	D 423, D 424
Moisture Content	D 2216
Visual Classification	D 2488
Unconsolidated-Undrained Triaxial Test	D 2850
Permeability	D 2434
Specific Gravity	D 854
Moisture-Density Relation of Soils	D 1557
Consolidation	D 2435
Consolidated-Undrained Triaxial Test	Bishop & Henkel, The Measurement of Soil Properties in the Triaxial Test, Second Edition, 1962, Edward Arnold, London, England

Unconsolidated-Undrained Triaxial Tests

The unconsolidated-undrained (UU) triaxial tests were performed on disturbed and undisturbed samples prepared in accordance with the procedures described under sample preparation. The tests were performed with the samples at their natural moisture content for undisturbed samples and at the requested moisture content for remolded samples. Confining pressures, as directed in the test requested from Harza Engineering, were applied.

FH0028496

APPENDIX

Consolidated-Undrained Triaxial Tests

The consolidated-undrained (CU) triaxial tests were performed on undisturbed and remolded samples prepared in accordance with the procedures described under sample preparation. The samples were saturated by use of a high back pressure until a 95 percent or better pore pressure response had been obtained. At this point a confining pressure, as specified by Harza personnel, was applied and flow out of the sample was monitored. When flow out of the sample was complete the test was performed. Filter strips were normally placed around the outside of the sample to facilitate pore pressure equalization during the consolidation phase and when the test was performed.

Permeability Tests

One permeability test was performed on an undisturbed gypsum sample from HD-3. The test specimen was prepared in accordance with the procedures outlined in sample preparation. The specimen was then remounted in the test chamber and resaturated. Permeability was then measured by the constant head method using the head specified by Harza Engineering.

Permeability tests were also performed on remolded samples prepared in accordance with the procedures described under sample preparation.

Water Content Determination

As per Harza Engineering specification, all moisture content determinations on gypsum samples were made by drying the samples for at least 48 hours in an oven set at 45°C., (113°F). Moisture content determinations on other samples were made in accordance with ASTM Standards.

FH0028498

NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
Great Falls, Billings, Montana - Boise, Pocatello, Idaho - Gillette, Wyoming

TABLE 1

SUMMARY OF FIELD AND LABORATORY TEST RESULTS
BEKER TAILINGS POND
BEKER INDUSTRIES, INC.
CONDA, IDAHO

JOB NO. 77-337-1
Sheet 1 of 3

Boring Number	Depth Feet	Classification	Moisture Content Percent	Atterberg Limits LL,%	PL,%	PI,%	Gradation Percent Retained Gravel	Sand	Silt	Clay	Dry Unit Weight, pcf	Other Tests
--	Surface	Gypsum	--	--	--	--	--	17	74	9	83	Moisture-Density Test Plate No. 2, Grain Size Analysis Plate No. 1, C/U Triaxial w/pore pressure meas., Plate No. 3
				Falling Head (5.54'-3.76') Permeability, $k = 8.3 \times 10^{-5}$ cm/sec								
--	Surface	Gypsum	--	--	--	--	--	20	70	10	--	Grain Size Analysis, Plate No. 4; Moisture-Density Test, Plate No. 5
--	Surface	Gypsum	--	--	--	--	--	18	73	9	--	Grain Size Analysis, Plate No. 6; Moisture-Density Test, Plate No. 7
--	Surface	Gypsum	--	--	--	--	--	18	72	10	99	Grain Size Analysis, Plate No. 8; Moisture-Density Test, Plate No. 9
				Falling Head (8.27'-6.5') Permeability, $k = 7.6 \times 10^{-5}$ cm/sec								
HD-1	5.0 - 6.3	Gypsum	16	--	--	--	--	--	--	--	--	---
	30.0 -31.5	Gypsum	16	Granular, Non-Plastic			--	--	--	--	--	---
	42.5 -44.5	SILT	26	Granular, Non-Plastic			--	--	--	--	96	---

FH0028499

NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
Great Falls, Billings, Montana - Boise, Pocatello, Idaho - Gillette, Wyoming

TABLE I

SUMMARY OF FIELD AND LABORATORY TEST RESULTS
BEKER TAILINGS POND
BEKER INDUSTRIES, INC.
CONDA, IDAHO

JOB NO. 77-337-1
Sheet 2 of 3

Boring Number	Depth Feet	Classification	Moisture Content Percent	Atterberg Limits LL,%	PL,%	PI,%	Gradation Percent Retained Gravel	Sand	Silt	Clay	Dry Unit Weight, pcf	Other Tests
HD-2	10.0-12.5	Gypsum	13	--	--	--	--	--	--	--	91	---
	15.0-17.5	Gypsum	18	--	--	--	--	--	--	--	95	---
	30.0-31.0	SILT, Clayey	21	--	--	--	--	--	--	--	101	---
	35.0-37.0	SILT, Clayey (CL-ML)	--	29	21	8	0	3	80	17	103	Specific Gravity = 2.78 Grain Size Analysis, Plate No.10 Consolidation, Plate No. 11-12 U/U Triaxial, Plate No. 13-16
	40.0-41.5	--	--	--	--	--	0	67	29	4	--	Grain Size Analysis, Plate No.17
	41.5-43.0	CLAY, Sandy (CL)	16	37	19	18	--	--	--	--	--	---
HD-3	5.0- 7.5	Gypsum	--	--	--	--	0	16	72	12	--	Grain Size Analysis, Plate No.18
	20.0-22.5	Gypsum	15	Constant Head (75') Permeability $k = 3.4 \times 10^{-5}$ cm/sec							89	C/U Triaxial Test w/pore press. meas., Plate 19
	30.0-31.5	SILT	27	Granular, Non-Plastic			--	--	--	--	--	---
	33.0-35.0	SILT, Sandy (ML)	29	29	23	6	0	38	42	20	89	Grain Size Analysis, Plate No.20 C/U Triaxial Test w/pore press. meas., Plate 21
HD-4	10.0-12.5	Gypsum	22	--	--	--	--	--	--	--	95	---
	25.0-26.5	SILT, Sandy	20	Granular, Non-Plastic			--	--	--	--	--	---
	42.5-44.0	SILT, Clayey	22	--	--	--	--	--	--	--	104	C/U Triaxial Test w/pore press. meas., Plate 22
HF-5	2.5- 4.0	SILT, Sandy	13	Granular, Non-Plastic			--	--	--	--	--	---
	7.5- 9.5	SILT, Sandy	23	--	--	--	0	35	51	14	86	Grain Size Analysis, Plate No.23 U/U Triaxial, Plates Nos.24-27
	12.5-14.5	SILT, Sandy (some cementation)	21	--	--	--	--	--	--	--	42	---
	22.5-24.0	CLAY, Silty (CL)	20	33	16	17	--	--	--	--	108	---

FH0028500

NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
Great Falls, Billings, Montana - Boise, Pocatello, Idaho - Gillette, Wyoming

TABLE 1

SUMMARY OF FIELD AND LABORATORY TEST RESULTS
BEKER TAILINGS POND
BEKER INDUSTRIES, INC.
CONDA, IDAHO

JOB NO. 77-337-1
Sheet 3 of 3

Boring Number	Depth Feet	Classification	Moisture Content Percent	Atterberg Limits LL,%	PL,%	PI,%	Gradation Percent Retained Gravel	Sand	Silt	Clay	Dry Unit Weight, pcf	Other Tests
HF-6	7.5- 9.5	SAND, Silty	8	--	--	--	--	--	--	--	77	---
	12.5-14.5	SILT (CL-ML)	27	28	20	8	--	--	--	--	90	C/U Triaxial w/pore press. meas., Plate No. 28
	14.5-16.0	--	--	--	--	--	--	--	--	--	81	---
	17.5-19.5	SILT, Sandy	11	--	--	--	--	--	--	--	--	---
	19.5-21.0	CLAY, Silty	18	31	16	15	--	--	--	--	--	---
HF-7	7.5- 9.5	SAND, Silty	24	Granular, Non-Plastic			0	51	42	7	77	U/U Triaxial Test, Plates No. 30-32; Grain Size Analysis, Plate No. 29
	12.5-14.5	SILT, Clayey (CL-ML)	24	32	21	11	0	4	76	20	98	Specific Gravity = 2.76 Grain Size Analysis, Plate No. 34; U/U Triaxial, Plates No. 35-37; Consolidation, Plates No.38-3
	17.5-19.3	CLAY, Silty	30	--	--	--	--	--	--	--	74	---
HF-8	17.5-19.5	CLAY, Silty (CL)	24	38	18	20	--	--	--	--	90	U/U Triaxial, Plates No. 40-43

FH0028501

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Beker Industries: Tailings Pond
Job No. 77-337-1
Date Sampled December 1977
Where Sampled N.R.

Sample No. 68919
Produced By ---
Aggregate Size ---
Sampled By Harza Engineering Personnel

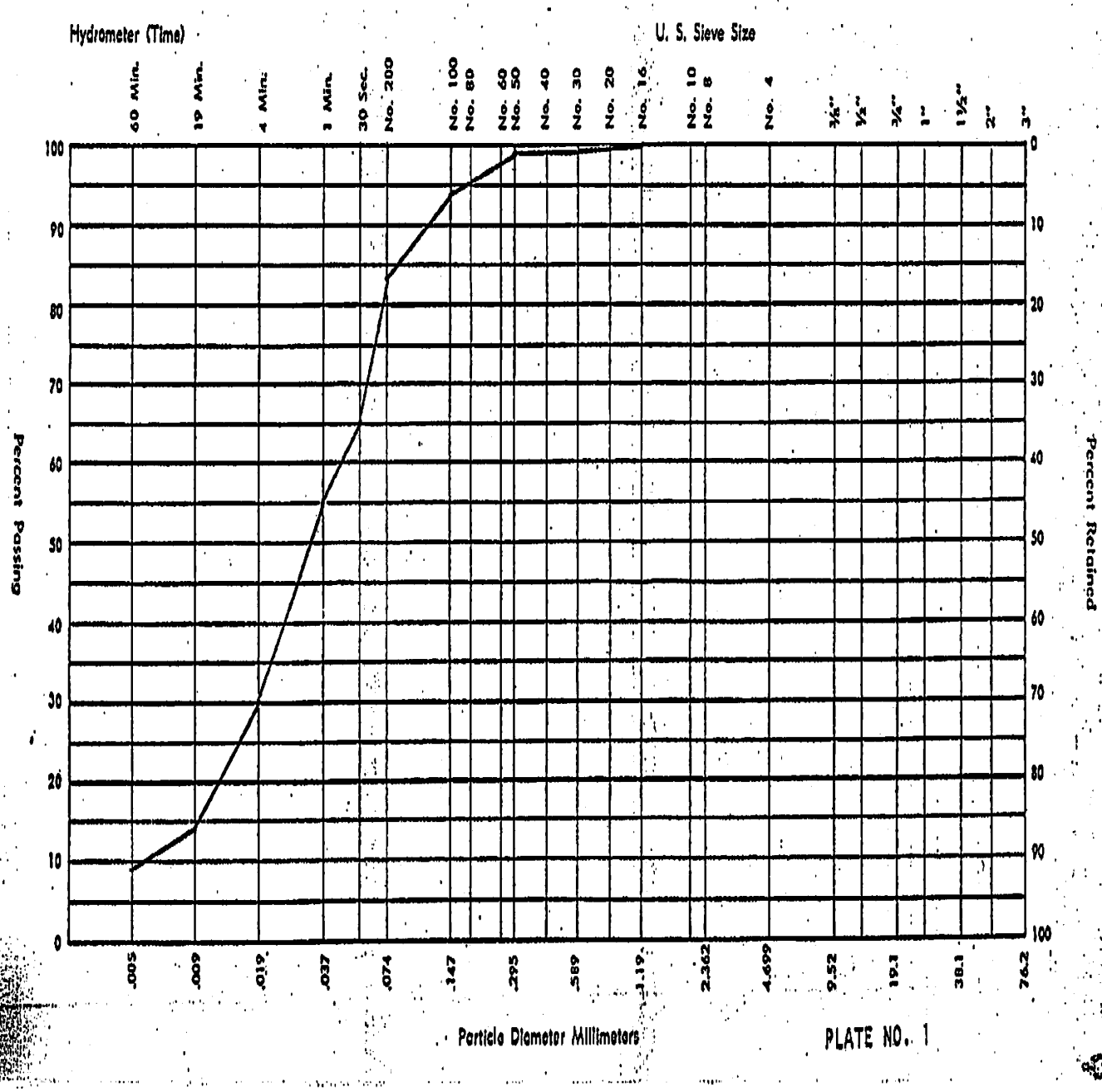


PLATE NO. 1

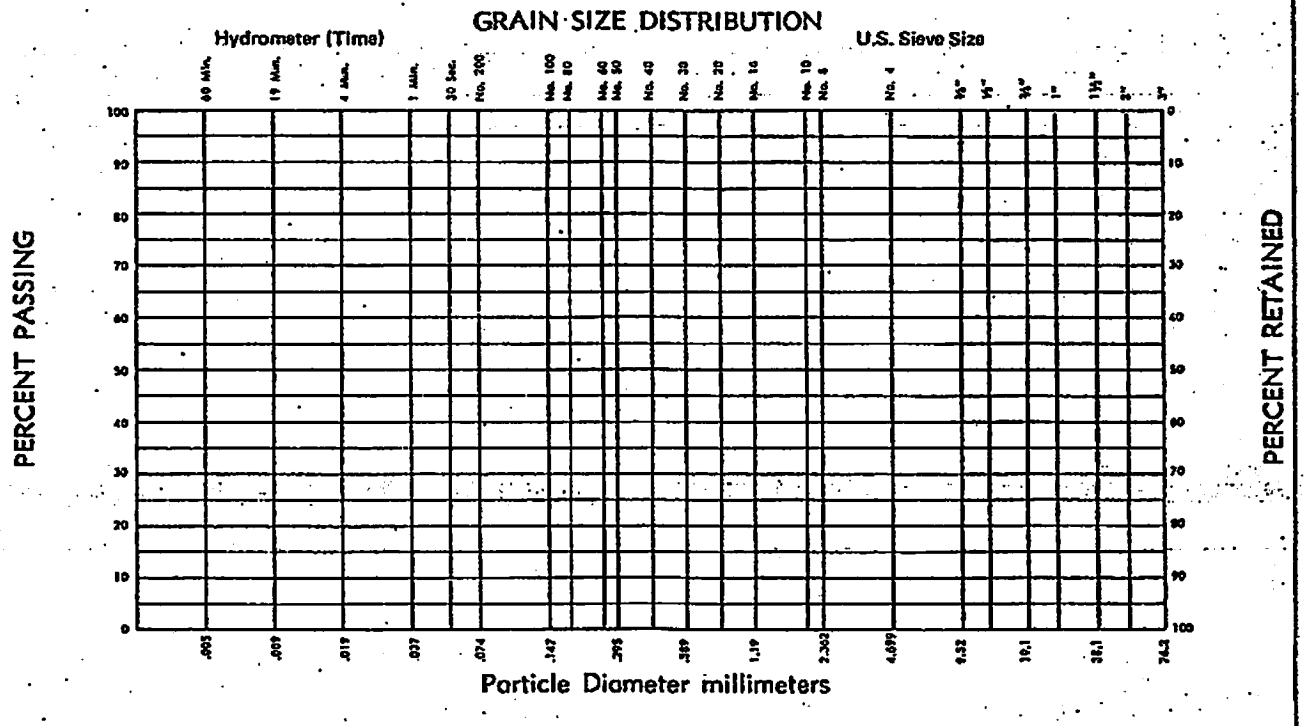
FH0028502

NORTHERN TESTING LABORATORIES

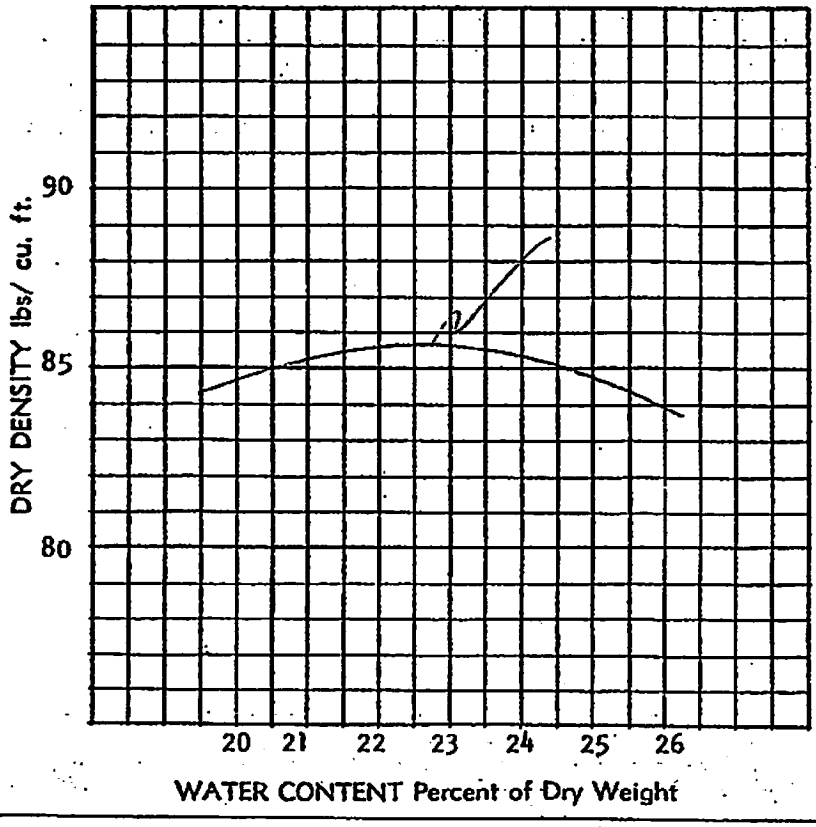
GREAT FALLS • BILLINGS MONTANA • BOISE IDAHO • GILLETTE WYOMING

SOIL SAMPLE TEST DATA

GRAIN SIZE DISTRIBUTION



MOISTURE-DENSITY RELATIONSHIP



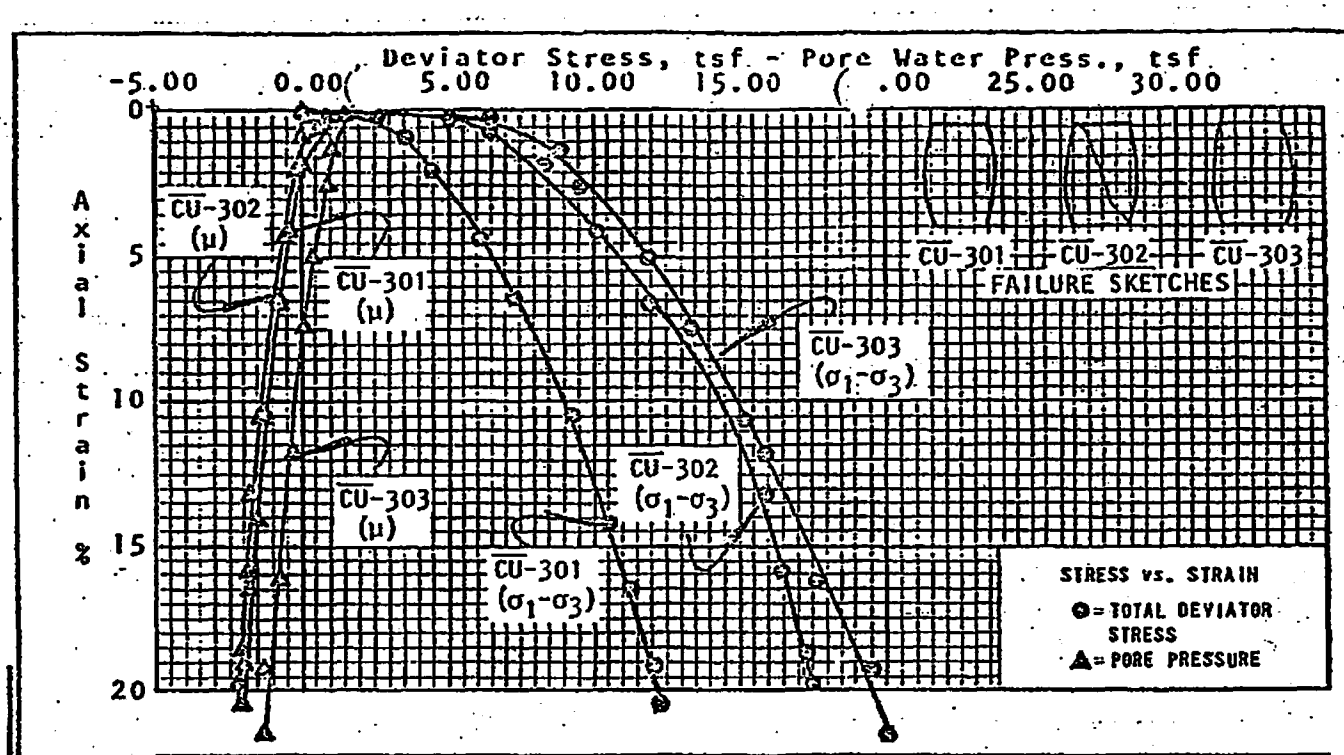
TEST METHODS	
ASTM D 698	
Method "A"	
1/30	cu. ft. mold
5.5	lb. hammer
12	in. drop
3	layers
25	blows/layer

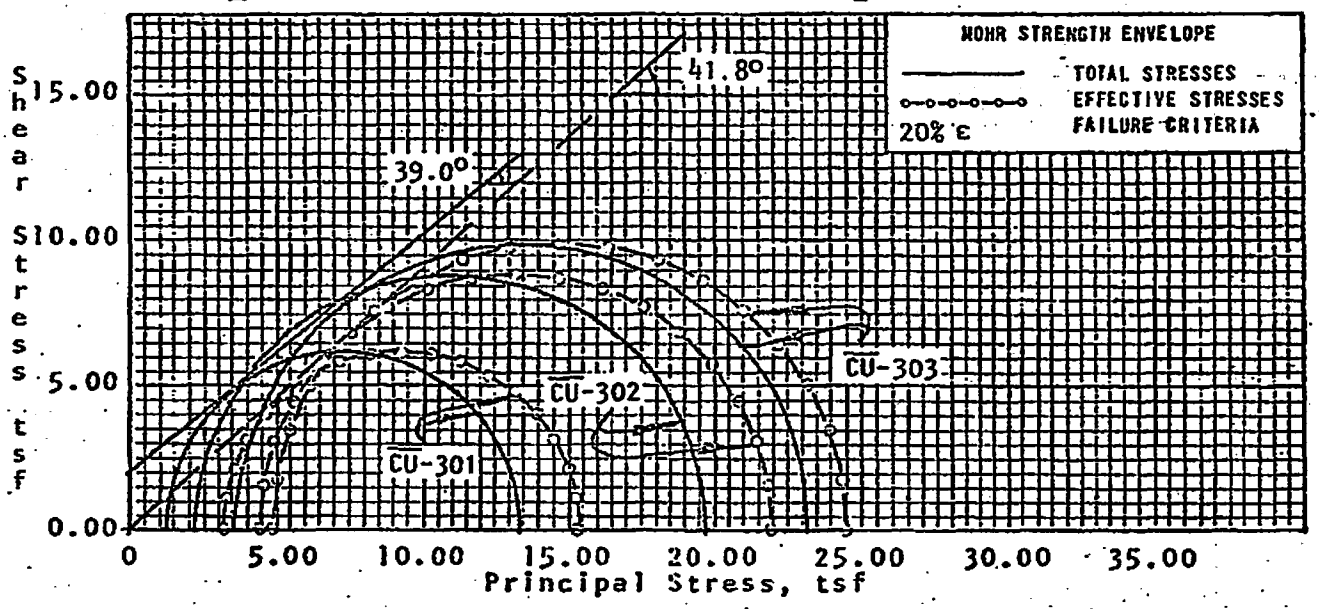
SOIL CONSTANTS		
Classification	Gypsum	
Liquid Limit	---	
Plasticity Index	---	
Max. Density	85.8	pcf
Optimum Moisture	22.8	%
Penetration Resis.	---	psi

BEKER INDUSTRIES, INC.
Beker Tailings Pond
Conda, Idaho
Sack Sample

Sample No. 68919 Job No. 77-337-1

FH0028503





Test No.	CU-301	CU-302	CU-303
Sample No.	68919	68919	68919
Eff. Confining Pressure, tsf	1.08	2.16	3.60
Back Press., psi	50.0	50.0	50.0
Ht., in.	6.63	6.63	6.63
Dia., in.	2.83	2.83	2.83
Ht./Dia. Ratio	2.34	2.34	2.34
Dry Unit Wt., pcf	82.7	82.7	82.0
Water Content, %			
Before Test	26.9	26.9	26.9
After Test	29.7	28.5	27.9
Degree of Saturation, %	98.0	100.0	100.0
Skempton's "B"	1.00	1.00	.95
Avg. % Strain/Min.	.048	.058	.055
Compaction, %			
Specimens Compacted			
Strain Controlled Test			

CLASSIFICATION: Light gray GYPSUM

BEKER INDUSTRIES

CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST WITH PORE PRESS. MEAS.

Sack Sample
Sample No. 68919

Jan. 1978 W-3325-01

NORTHERN TESTING LABORATORIES
CONSULTING GEOTECHNICAL ENGINEERS

PLATE NO. 3

FH0028504

Drawn HF Date 1-18-78 Checked CL Date 1-20-78 Approved ____ Date ____ Revised ____ Date ____ Approved ____ Date ____

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Baker Industries: Tailings Pond
Job No. 77-337-1
Date Sampled December 1977
Where Sampled N.R.

Sample No. 68920
Produced By ---
Aggregate Size ---
Sampled By Harza Engineering Personnel

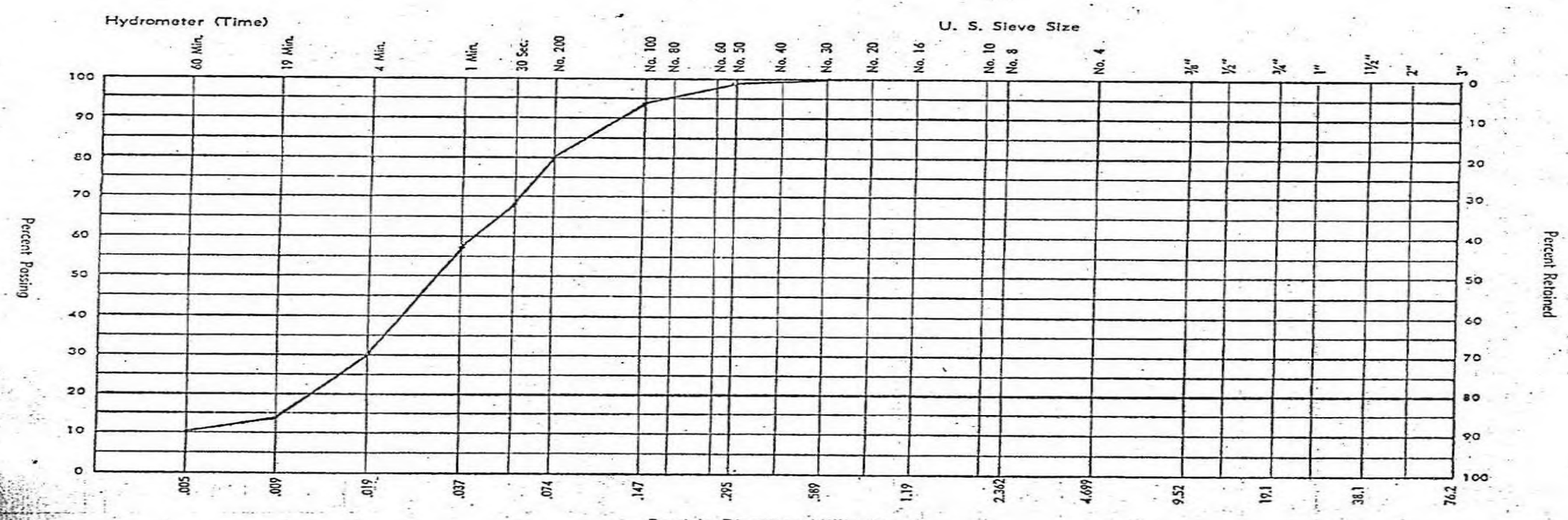


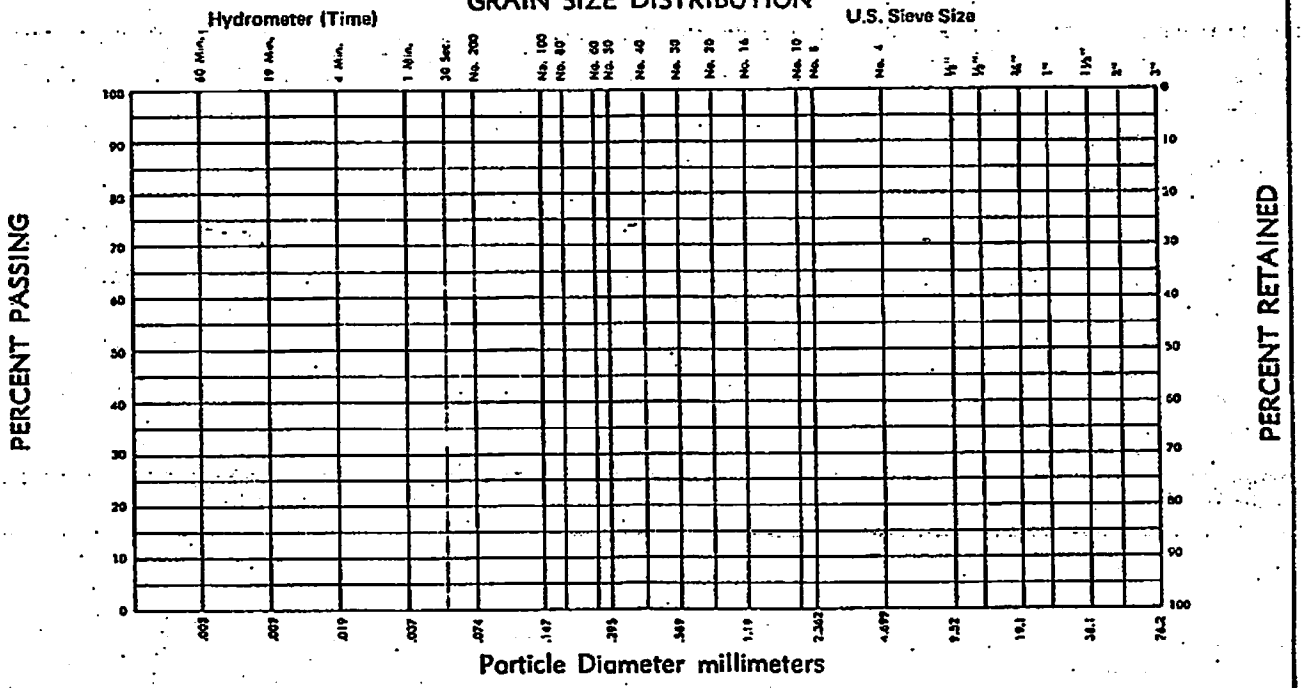
PLATE NO. 4

FH0028505

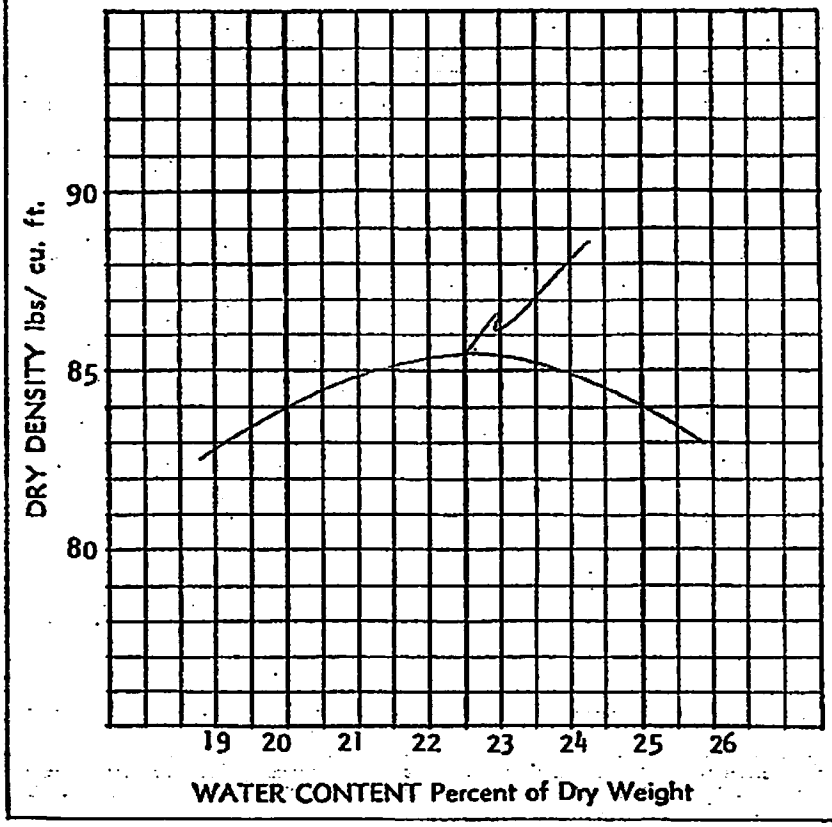
GREAT FALLS • BILLINGS MONTANA • BOISE IDAHO • GILLETTE WYOMING

SOIL SAMPLE TEST DATA

GRAIN SIZE DISTRIBUTION



MOISTURE-DENSITY RELATIONSHIP



TEST METHODS	
ASTM D 698	
Method "A"	
1/30	cu. ft. mold
5.5	lb. hammer
12	in. drop
3	layers
25	blows/layer

SOIL CONSTANTS		
Classification	Gypsum	
Liquid Limit	---	
Plasticity Index	---	
Max. Density	85.5	pcf
Optimum Moisture	22.5	%
Penetration Resis.	---	psi

BEKER INDUSTRIES, INC.
Beker Tailings Pond
Conda, Idaho

Sack Sample

Sample No. 68920 Job No. 77-337-1

PLATE NO. 5

NTL 114

FH0028506

GREAT FALLS • MISSOULA • BILLINGS, MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project: Beker Industries: Tailing Ponds
Job No.: 77-337-1
Date Sampled: December 1977
Where Sampled: N.R.

Sample No.: 68921
Produced By: ---
Aggregate Size: ---
Sampled By: Harza Engineering Personnel

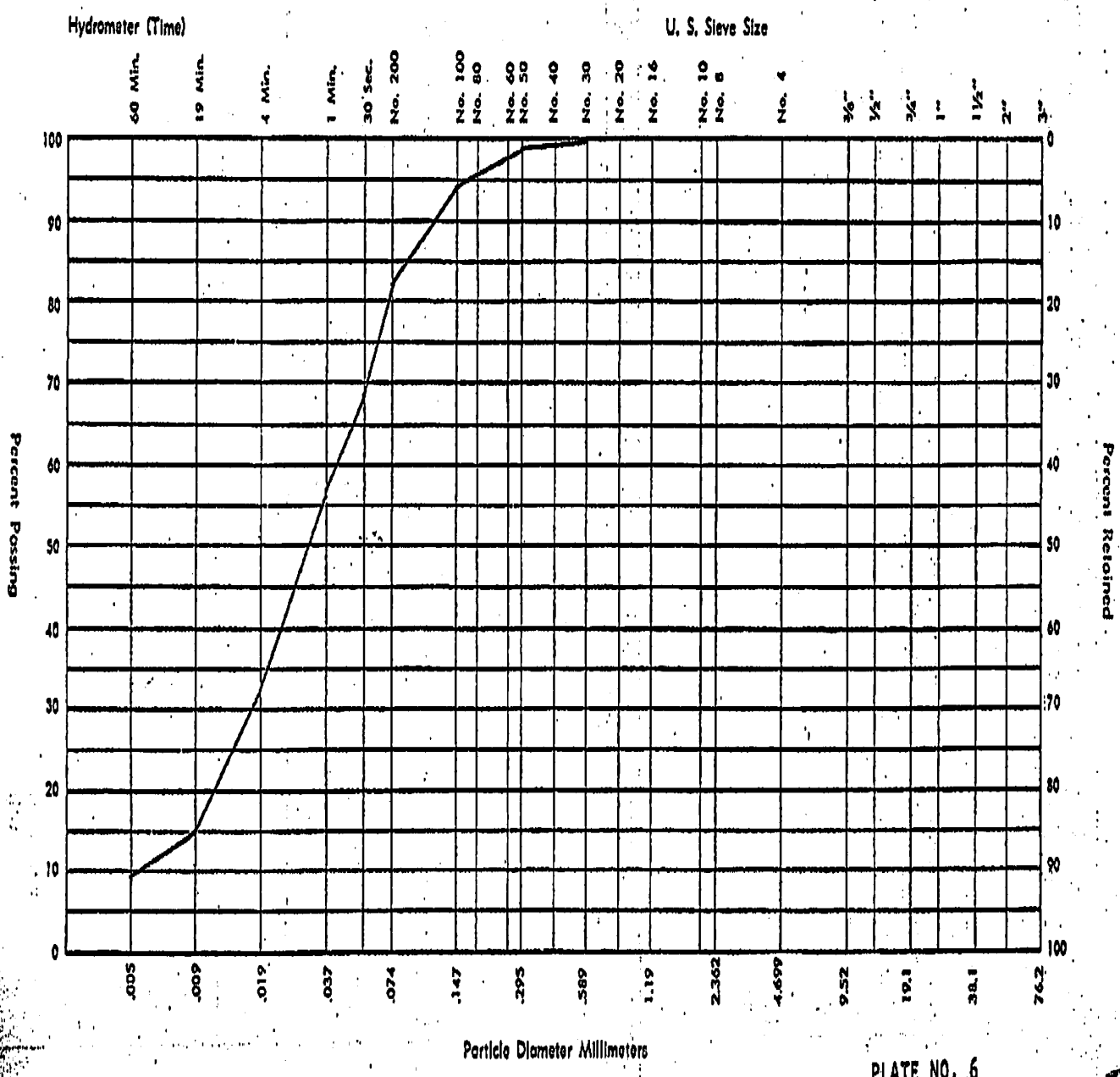


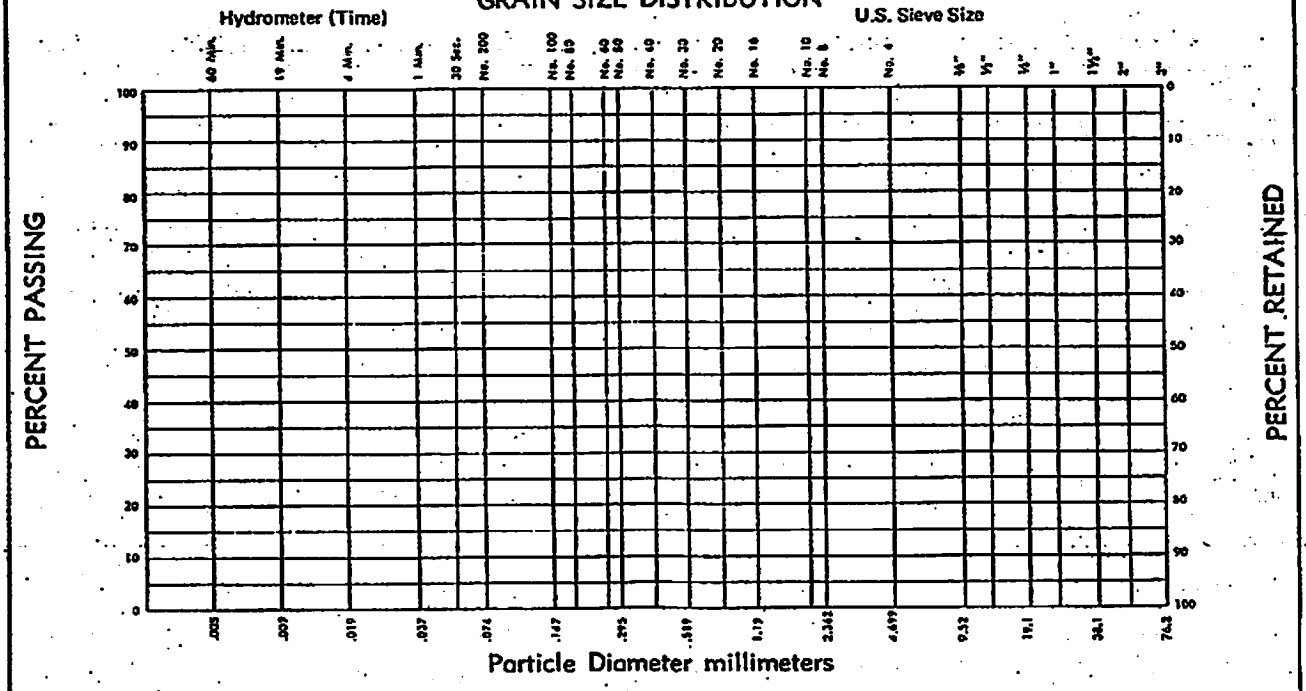
PLATE NO. 6

FH0028507

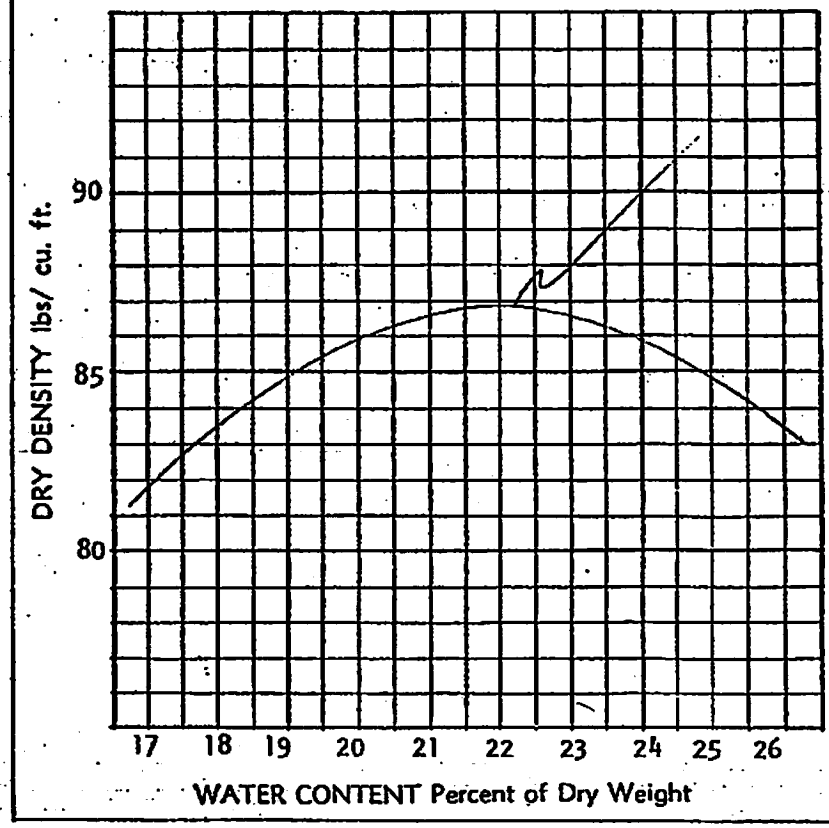
GREAT FALLS • BILLINGS MONTANA • BOISE IDAHO • GILLETTE WYOMING

SOIL SAMPLE TEST DATA

GRAIN SIZE DISTRIBUTION



MOISTURE-DENSITY RELATIONSHIP



TEST METHODS

ASTM D 698

Method "A"

1/30	cu. ft. mold
5.5	lb. hammer
12	in. drop
3	layers
25	blows/layer

SOIL CONSTANTS

Classification	Gypsum	
Liquid Limit	---	
Plasticity Index	---	
Max. Density	87.0	pcf
Optimum Moisture	22.2	%
Penetration Resis.	---	psi

BEKER INDUSTRIES, INC.
Beker Tailings Pond
Conda, Idaho

Sack Sample
Sample No. 68921 Job No. 77-337-1

PLATE NO. 7

NTL-116

FH0028508

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Beker Industries - Tailings Pond
Job No. 77-337-1
Date Sampled December 1977
Where Sampled N.R.

Sample No. 68922
Produced By ---
Aggregate Size ---
Sampled By Harza Engineering Personnel

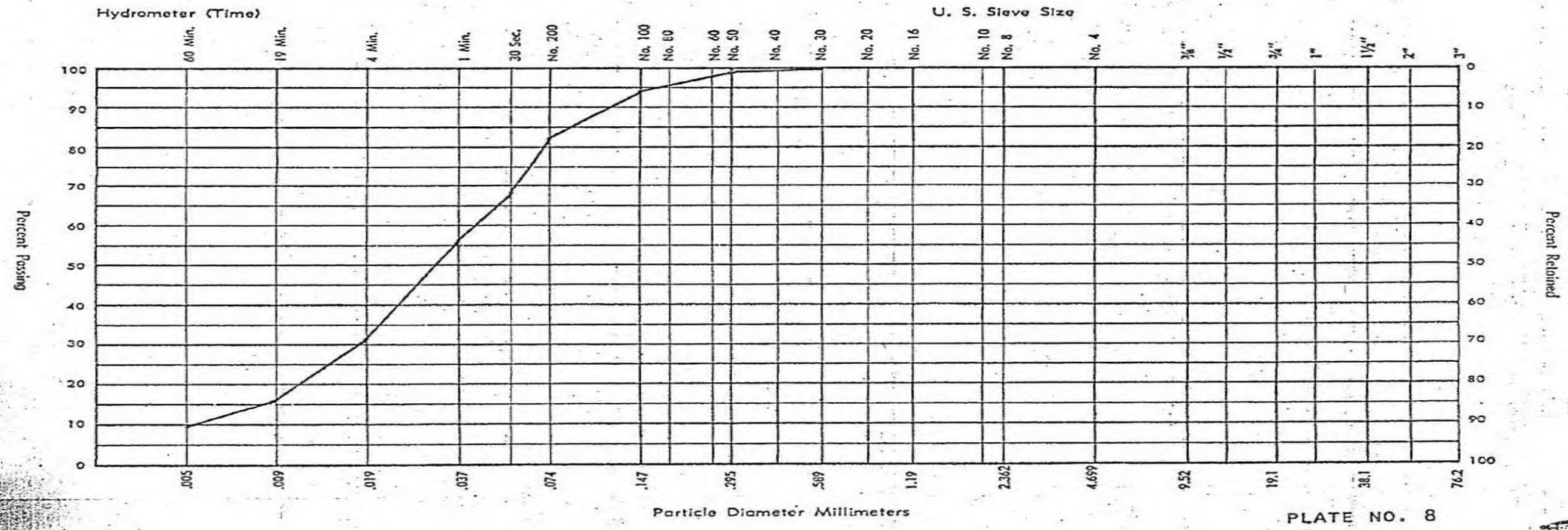


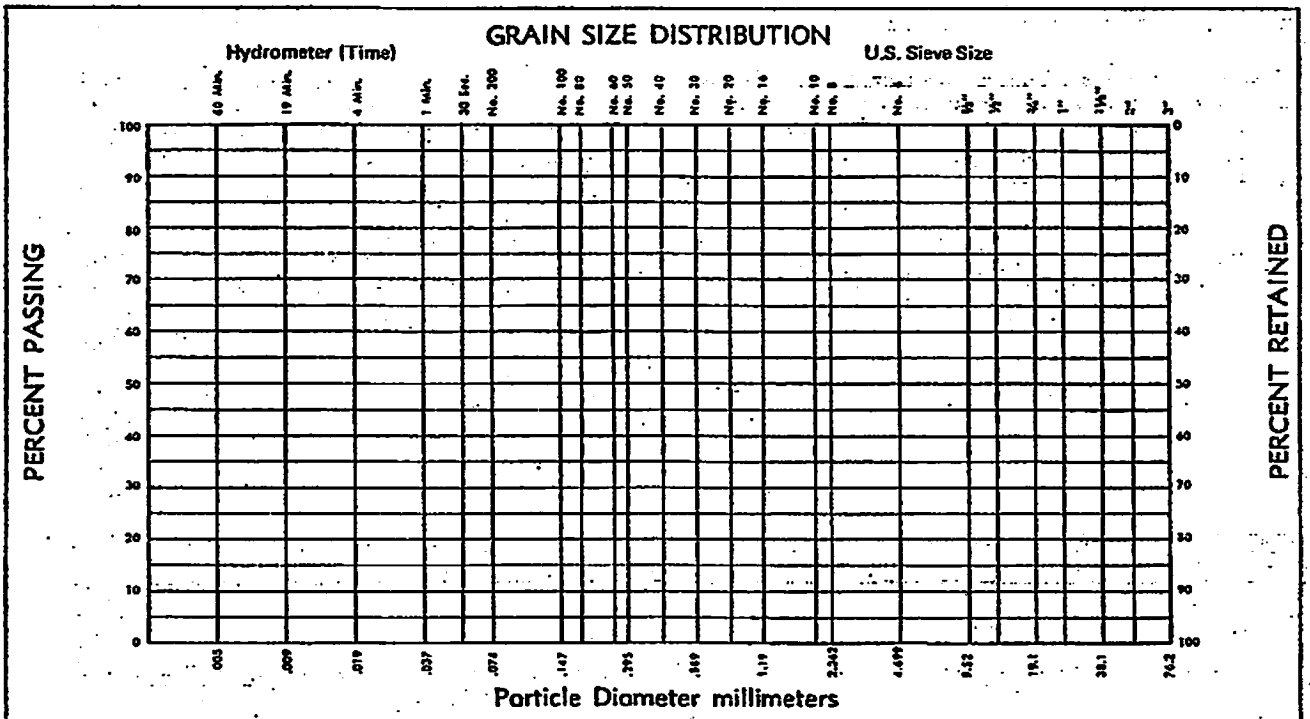
PLATE NO. 8

FH00028509

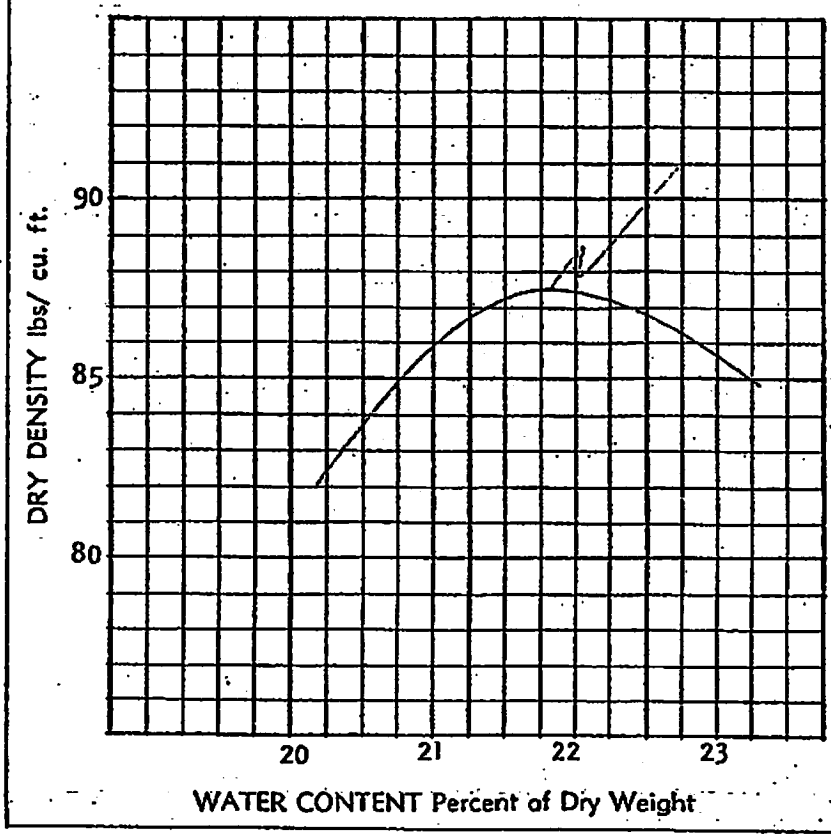
NORTHERN TESTING LABORATORIES

SOIL SAMPLE TEST DATA

GRAIN SIZE DISTRIBUTION



MOISTURE-DENSITY RELATIONSHIP



TEST METHODS

ASTM D 698	
Method "A"	---
1/30	cu. ft. mold
5.5	lb. hammer
12	in. drop
3	layers
25	blows/layer

SOIL CONSTANTS

Classification	Gypsum	
Liquid Limit	---	
Plasticity Index	---	
Max. Density	87.5	pcf
Optimum Moisture	21.8	%
Penetration Resis.	---	psi

BEKER INDUSTRIES, INC.
Beker Tailings Pond
Conda, Idaho

Sack Sample

Sample No. 68922 Job No. 77-377-1

PLATE NO. 9

NTL-116

FH0028510

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Beker Tailings Pond
Job No. 77-337-1
Date Sampled December 13, 1977
Where Sampled HD-2: 35.0' to 37.0'

Sample No. 69094
Produced By N/A
Aggregate Size N/A
Sampled By Harza Engineering: Joe Miller

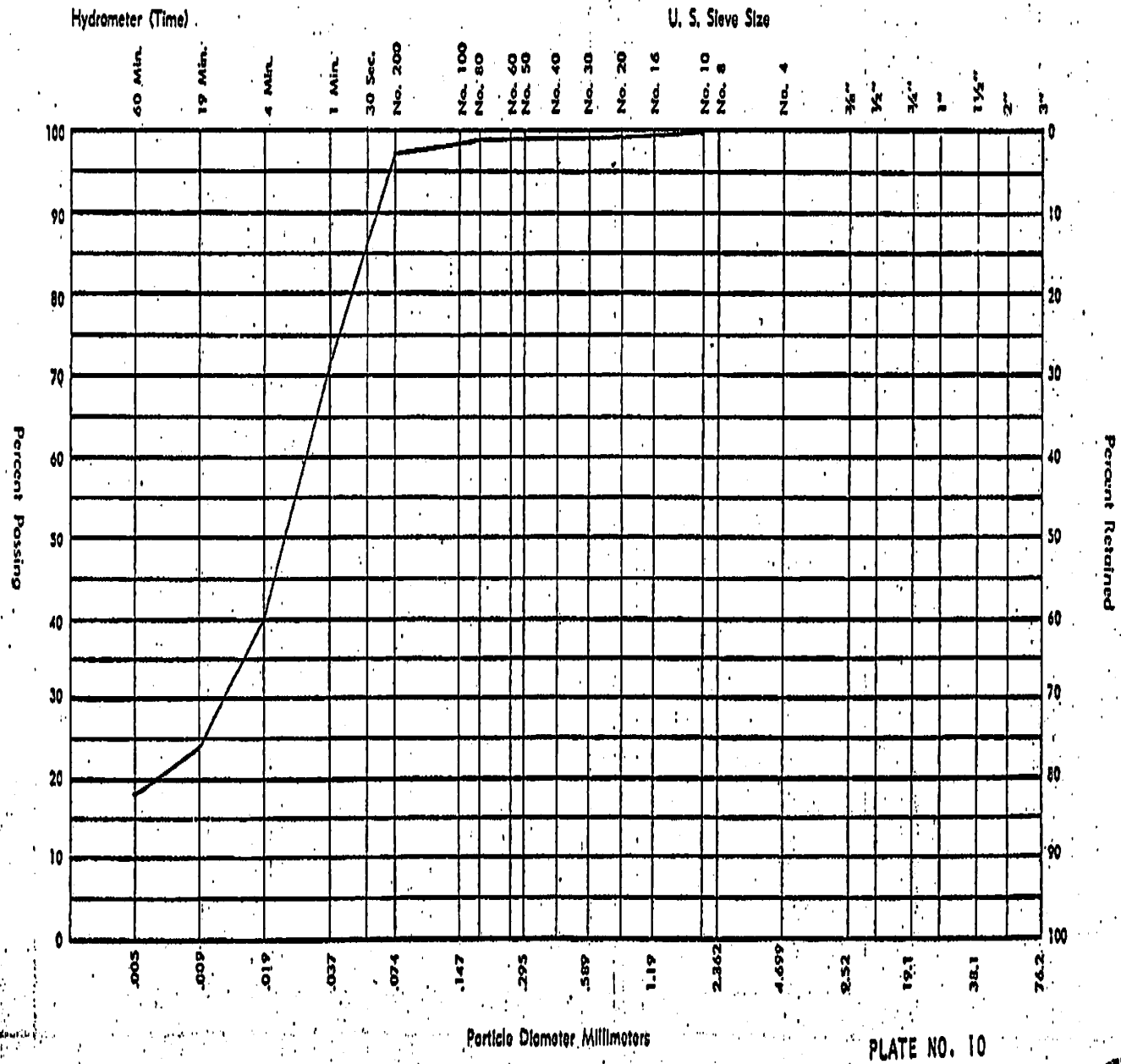


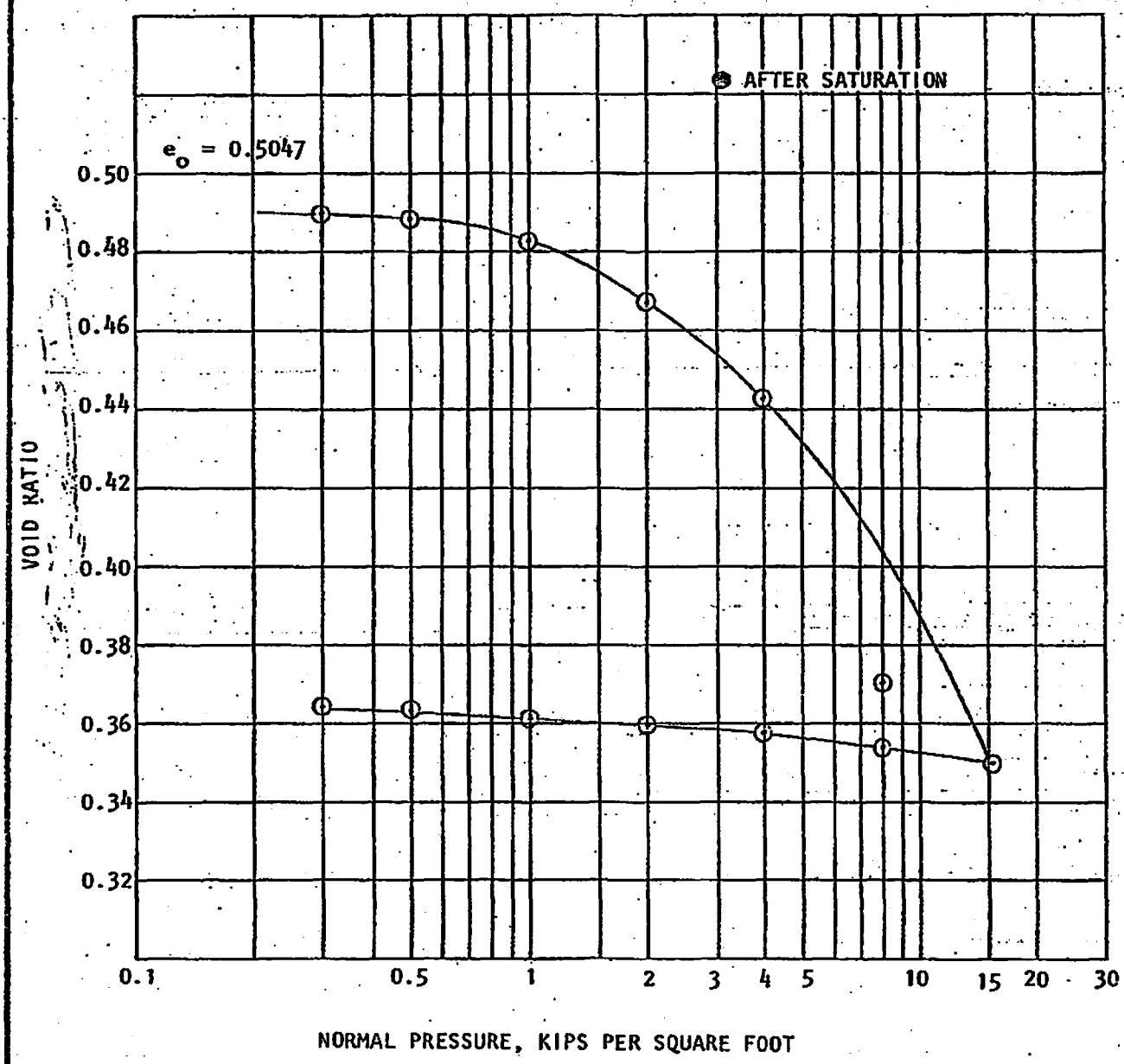
PLATE NO. 10

FH0028511

CONSOLIDATION TEST

DRILL HOLE HD -2
DEPTH 35.0' - 37.0'
SAMPLE NO. 69094

MOIST UNIT WEIGHT : 134 pcf
DRY UNIT WEIGHT : 115 pcf
INITIAL MOISTURE CONTENT: 17%
FINAL MOISTURE CONTENT : 12%
CLASSIFICATION : SILT, Clayey



BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 11

NTL 156

FH0028512

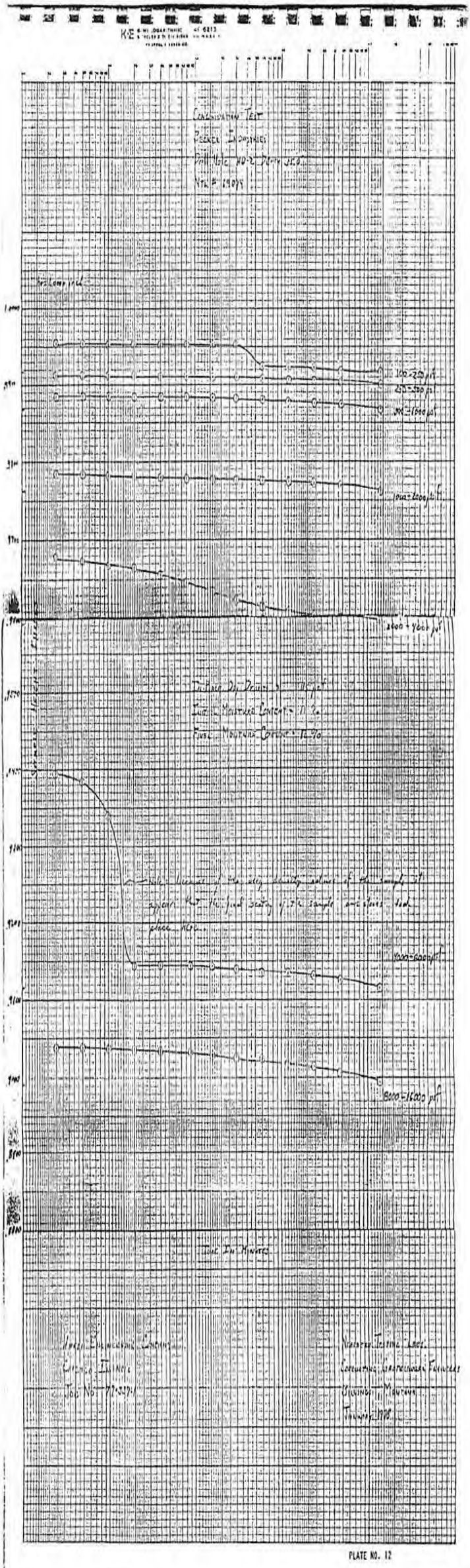
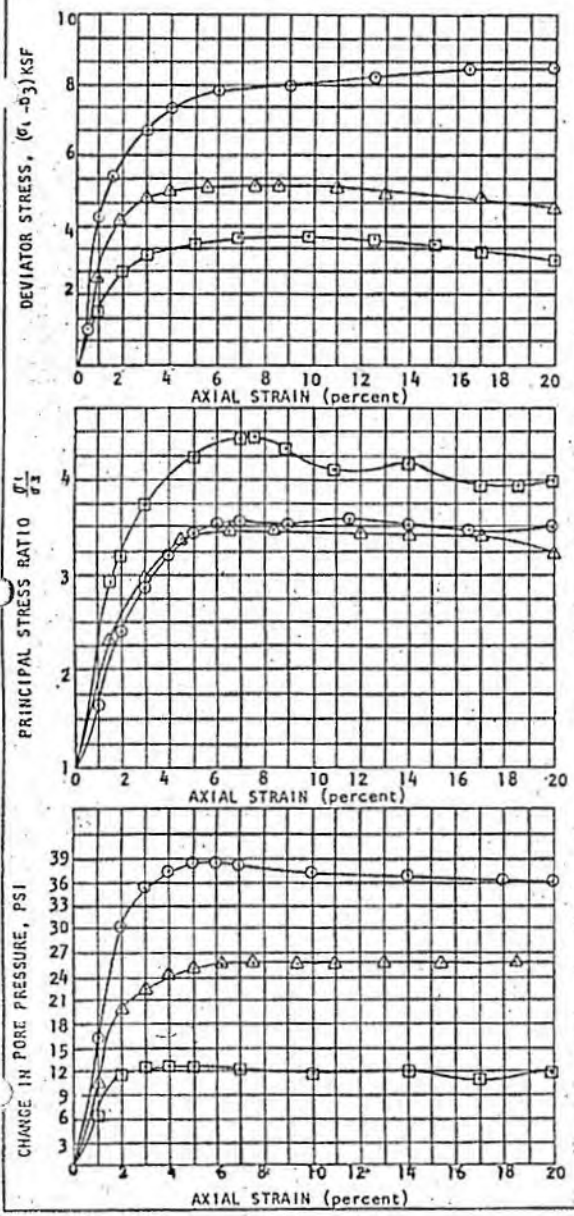
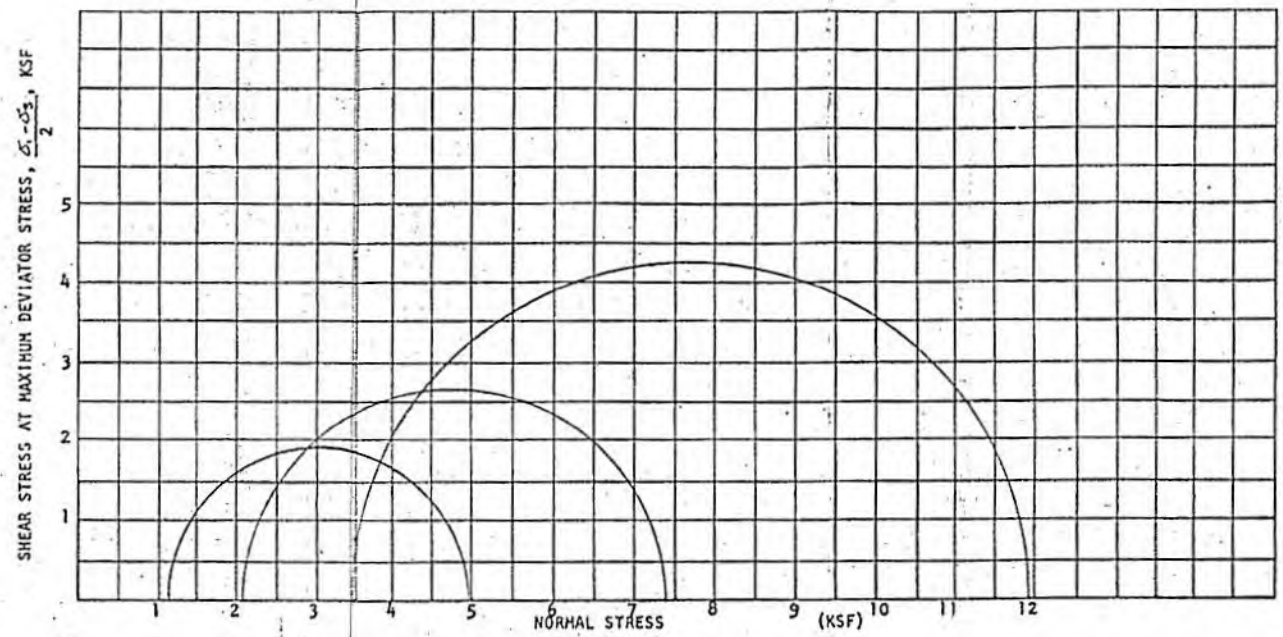


PLATE NO. 12

FH0028513

CONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST (UNDISTURBED SAMPLE)
DRILL HOLE HD-3 DEPTH: 33.0' - 35.0'
SAMPLE NO. 69104





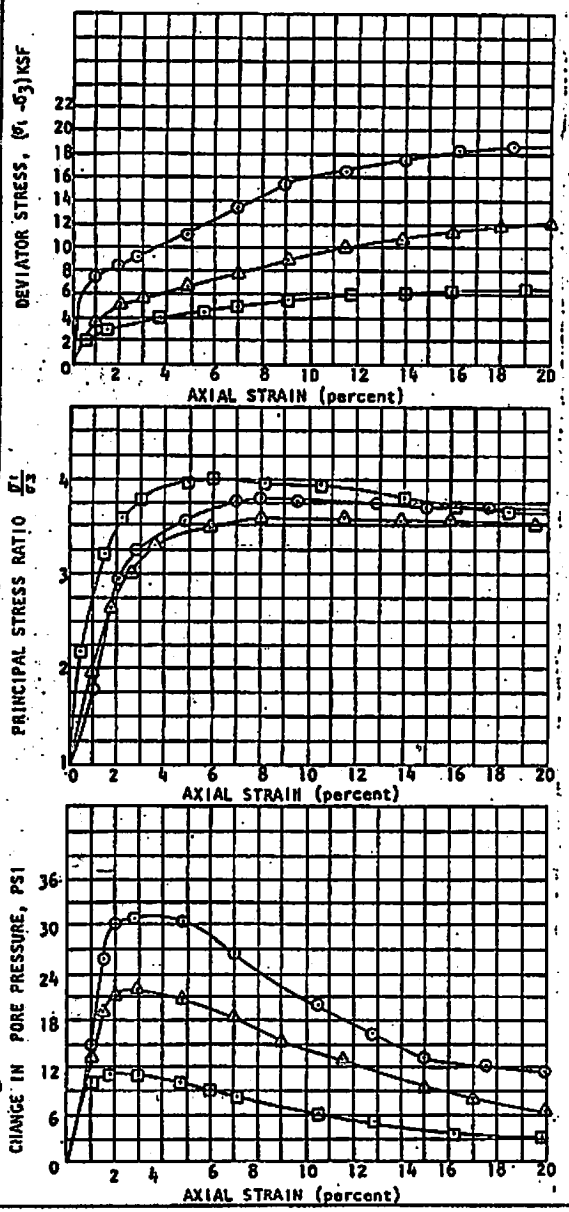
TEST NO OR SYMBOL	BORING NO AND DEPTH DH-3	SAMPLE DATA: DRY DENSITY (pcf)	MOISTURE CONTENT (percent): Initial	MOISTURE CONTENT (percent): Final	DEGREE OF SATURATION (percent)	CONFINING PRESSURE σ_3 KSF	MAXIMUM DEVIATOR STRESS $\sigma_1 - \sigma_3$ KSF	MAXIMUM PRINCIPAL STRESS RATIO σ_1 / σ_3	VALUES AT MOHR COULOMB FAILURE: MINOR PRINCIPAL STRESS σ_3 KSF	VALUES AT MOHR COULOMB FAILURE: MAJOR PRINCIPAL STRESS σ_1 KSF	Sample Length (Inches)	Sample Diameter (Inches)	Strain Rate (Inches/minute)
⊡	33.3'-33.8'	86	29	32	98	2.88	3.74	4.46	1.17	4.91	5.16	2.36	0.006
△	33.8'-34.3'	90	29	30	97	5.76	5.23	3.47	2.12	7.34	4.97	2.36	0.006
⊙	34.3'-34.8'	92	29	32	96	8.64	8.53	3.56	3.41	11.95	4.95	2.36	0.003

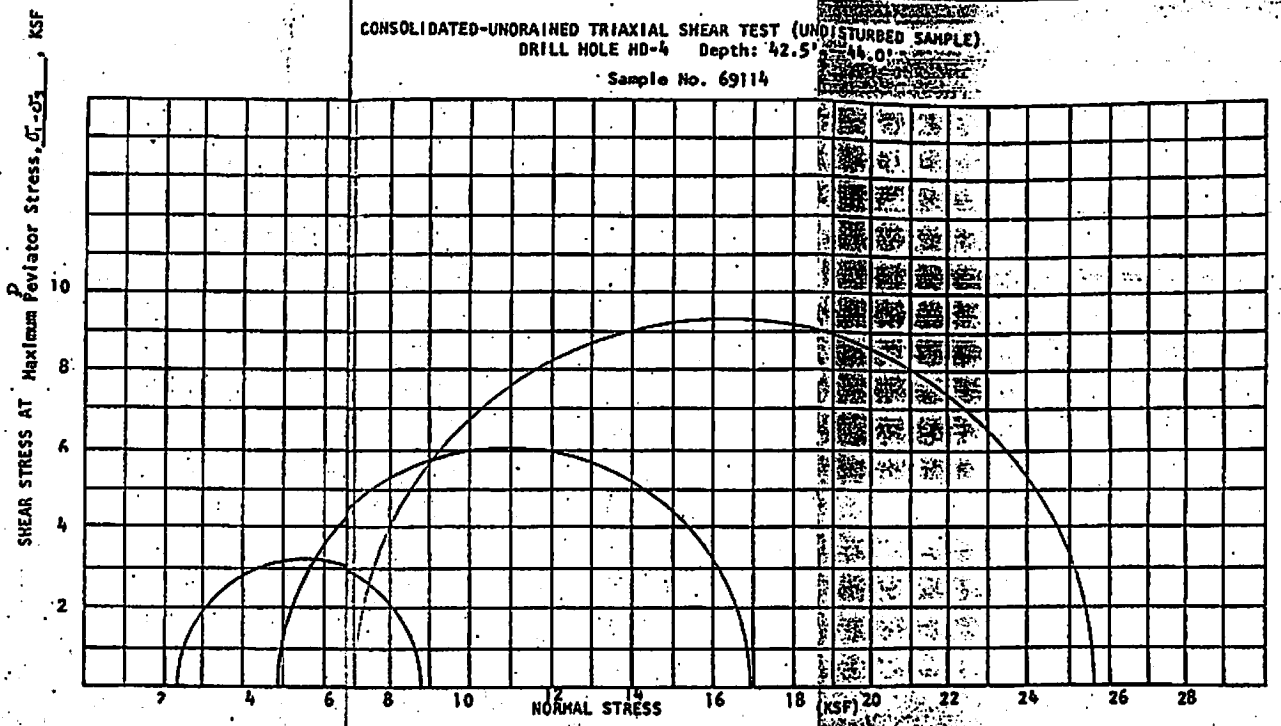
NORTHERN TESTING LABORATORIES, INC. Boise, Idaho	TRIAXIAL SHEAR TEST RESULTS		
	BEKER INDUSTRIES, INC. BEKER TAILINGS POND CONDA, IDAHO		
CONSULTING GEOTECHNICAL ENGINEERS	JOB NO. 77-337-1	DATE February, 1978	PLATE NO. 21

NTL 157

FH0028514

CONSOLIDATED-UNDRAINED TRIAXIAL SHEAR TEST (UNDISTURBED SAMPLE)
DRILL HOLE HD-4 Depth: 42.5' - 44.0'
Sample No. 69114





TEST NO. OR SYMBOL	BORING NO AND DEPTH	SAMPLE DATA: DRY DENSITY (pcf)	MOISTURE CONTENT (percent): Initial	MOISTURE CONTENT (percent): Final	DEGREE OF SATURATION (percent)	CONFINING PRESSURE σ_3 KSF	MAXIMUM DEVIATOR STRESS $\sigma_1 - \sigma_3$ KSF	MAXIMUM PRINCIPAL STRESS RATIO σ_1 / σ_3	VALUES AT MOHR COULOMB FAILURE: MINOR PRINCIPAL STRESS σ_3 KSF	VALUES AT MOHR COULOMB FAILURE: MAJOR PRINCIPAL STRESS σ KSF	Sample Length (Inches)	Sample Length (Inches)	Strain Rate (Inches) (minute)
⊡	HD-2 42.5' - 43.0'	100	25	24	98	2.88	6.32	4.02	2.38	8.70	4.92"	2.36	0.009
△	43.0'- 43.5'	101	24	23	96	5.76	12.06	3.61	4.84	16.90	4.92"	2.36	0.009
⊙	43.5' - 44.0'	111	18	24	98	8.64	18.60	3.79	7.00	25.60	4.75"	2.36	0.009

NORTHERN TESTING LABORATORIES, INC.
Boise, Idaho

CONSULTING GEOTECHNICAL ENGINEERS

TRIAXIAL SHEAR TEST RESULTS

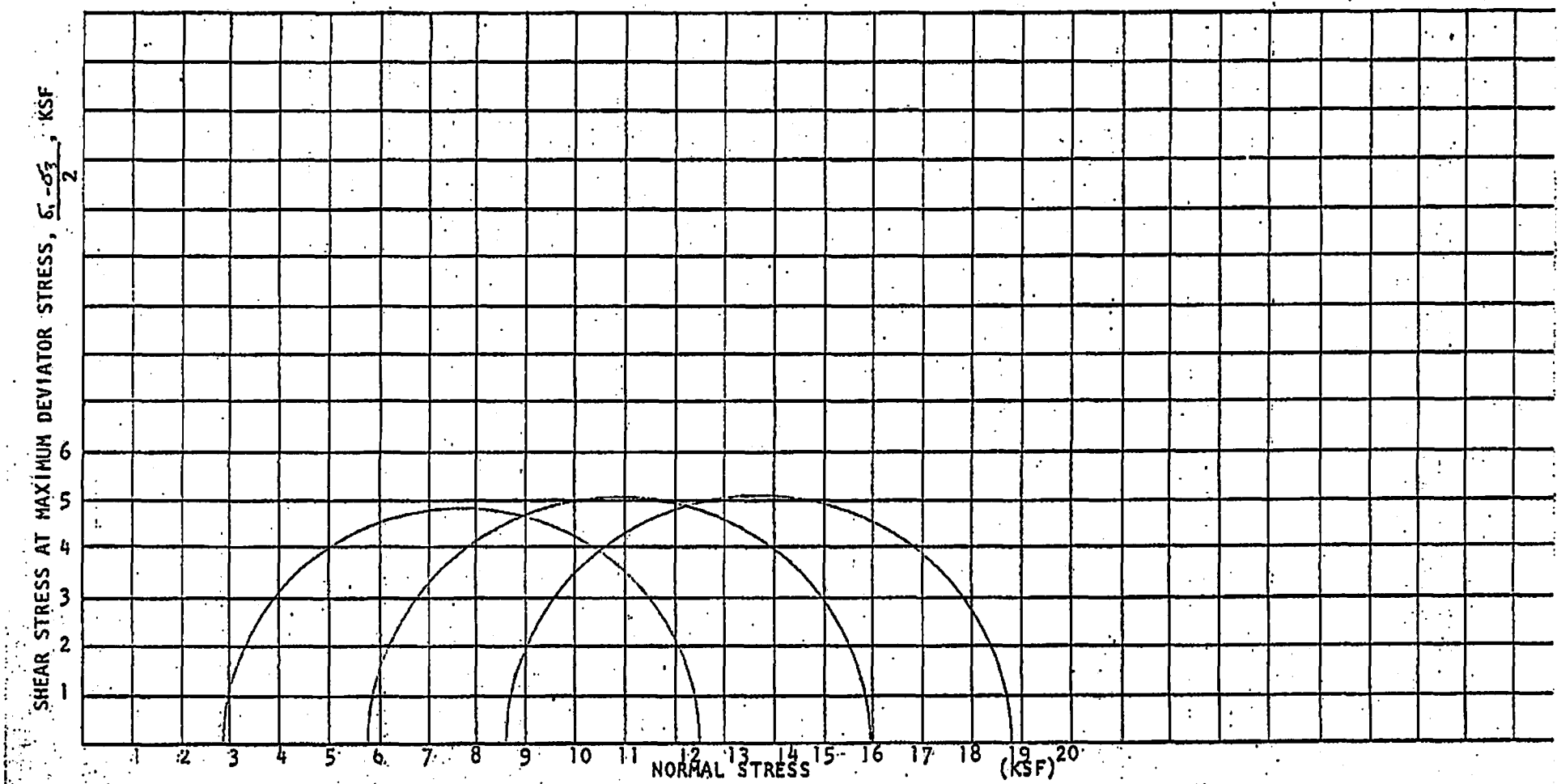
Baker Industries
Baker Tailings Pond
Conda, Idaho

JOB NO.	DATE	PLATE NO.
73-337-1	February 1978	22

NTL-157

FH0028515

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
BEKER TAILINGS POND
DRILL HOLE HD-2 DEPTH: 35' - 37'
NTL NO. 69094
CLASSIFICATION: SILT, Clayey



BEKER INDUSTRIES
Conda, Idaho
JOB NO. 77-337-1

NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
BOISE, IDAHO

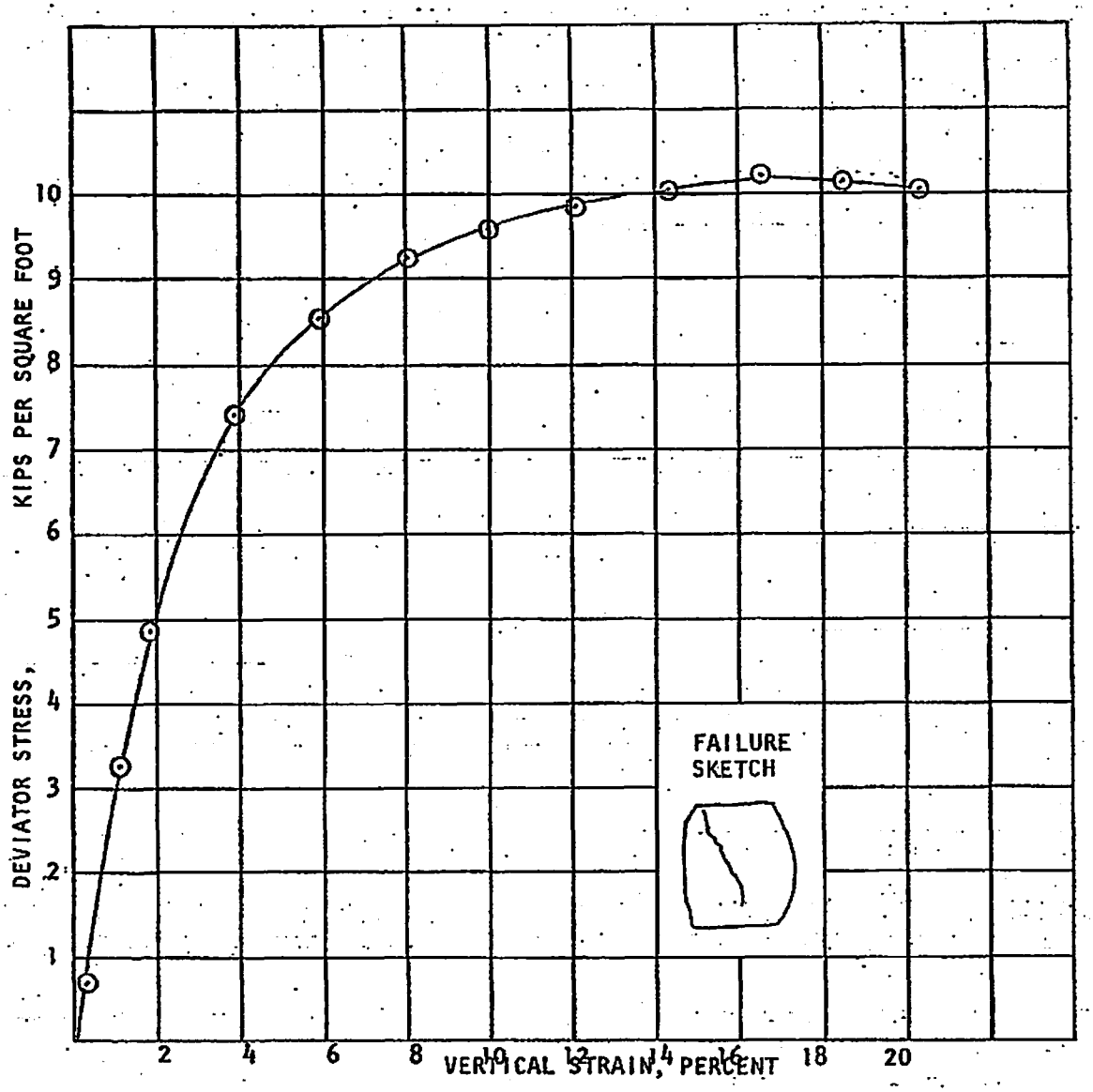
FEBRUARY, 1978 PLATE NO. 13

FH0028516

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HD - 2
DEPTH 36.4' - 36.9'
SAMPLE NO. 69094

MOIST UNIT WEIGHT: 124 pcf
DRY UNIT WEIGHT : 102 pcf
MOISTURE CONTENT : 22%
CLASSIFICATION: SILT, Clayey
CONFINING STRESS: 60 psi



Sample size - L_o = 4.78"
d_o = 2.34"

Deviator Stress at Failure = 10,214 psf
Strain at Failure = 16.3%

Strain rate = 0.020"/min.

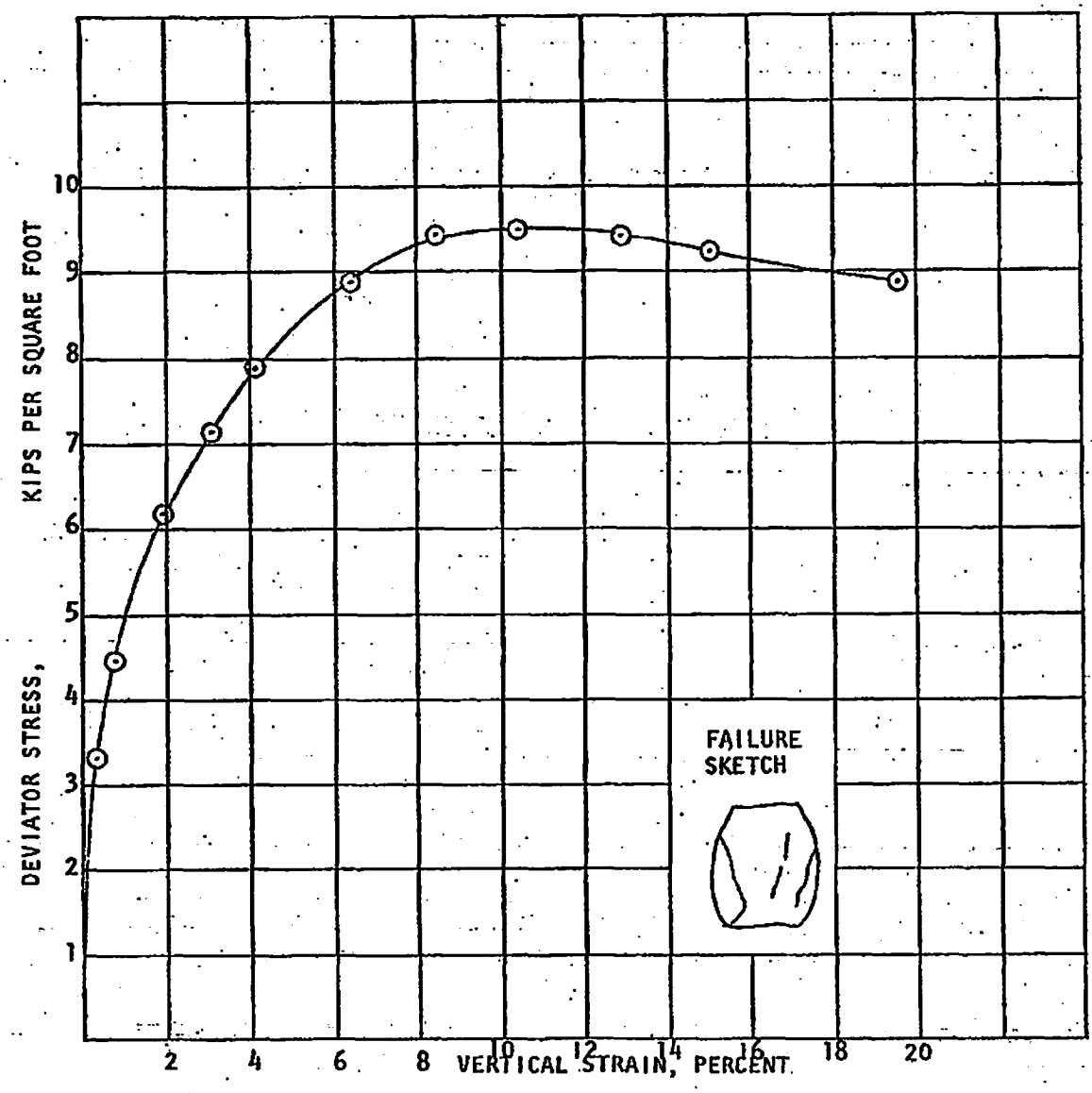
Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 14

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HD 2
DEPTH 35.2' - 35.7'
SAMPLE NO. 69094

MOIST UNIT WEIGHT: 129 pcf
DRY UNIT WEIGHT : 106 pcf
MOISTURE CONTENT : 23%
CLASSIFICATION: SILT, Clayey
CONFINING STRESS: 20 psi



Sample size - L_o = 4.50"
d_o = 2.34"

Deviator Stress at Failure = 9561 psf
Strain at Failure = 10.7%

Strain rate = 0.020"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 15

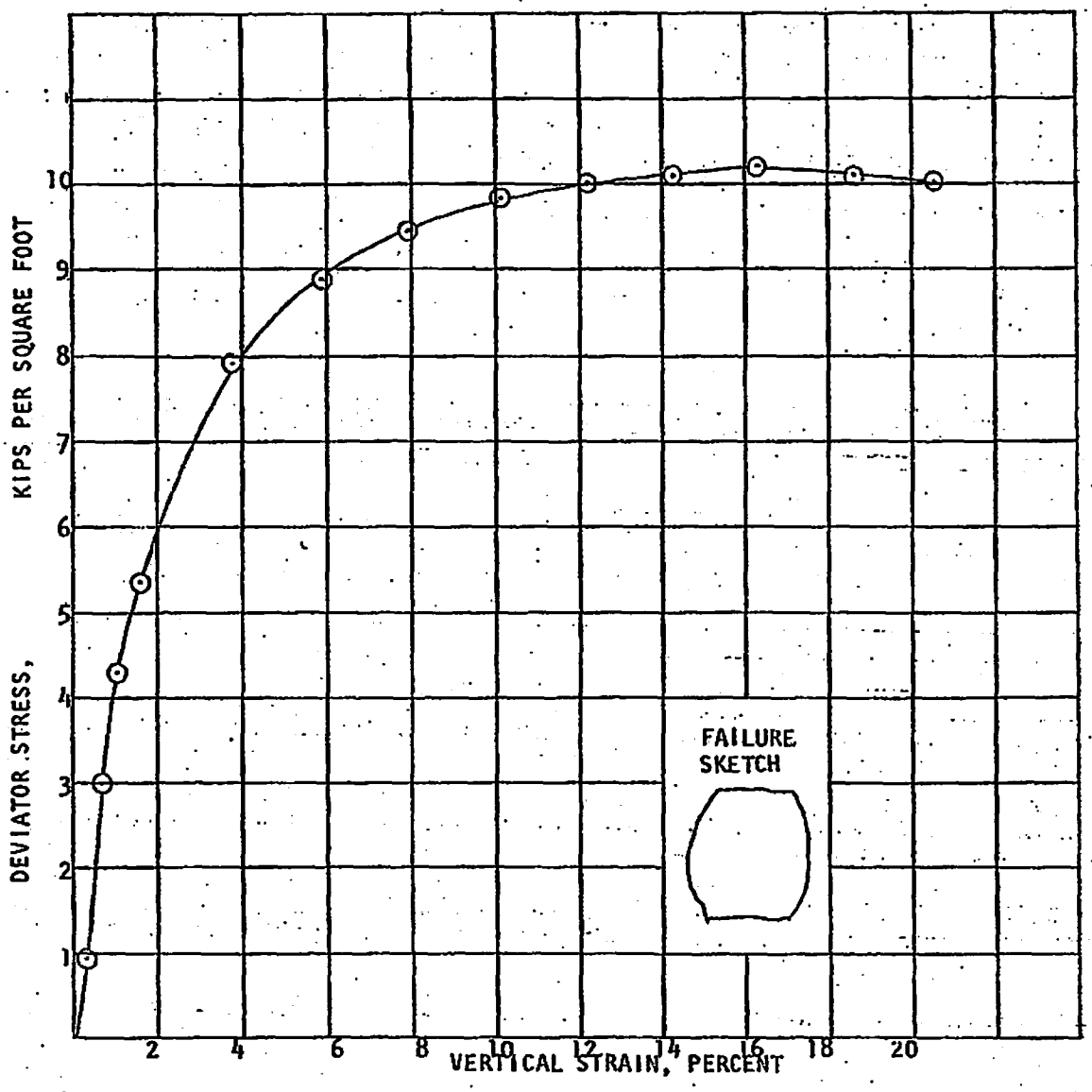
NTL 155

FH0028518

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HD - 2
DEPTH 35.8' - 36.3'
SAMPLE NO. 69094

MOIST UNIT WEIGHT: 124 pcf
DRY UNIT WEIGHT : 102 pcf
MOISTURE CONTENT : 22%
CLASSIFICATION: SILT, Clayey
CONFINING STRESS: 40 psi



Sample size - L_o = 4.78"
d_o = 2.34"

Deviator Stress at Failure = 10,205 psf
Strain at Failure = 16.3%

Strain rate = 0.020"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 16

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project: Beker Tailings Pond
Job No.: 77-337-1
Date Sampled: December 13, 1977
Where Sampled: HD-2: 40.0' to 41.5'

Sample No.: 69095
Produced By: N/A
Aggregate Size: N/A
Sampled By: Harza Engineering: Joe Miller

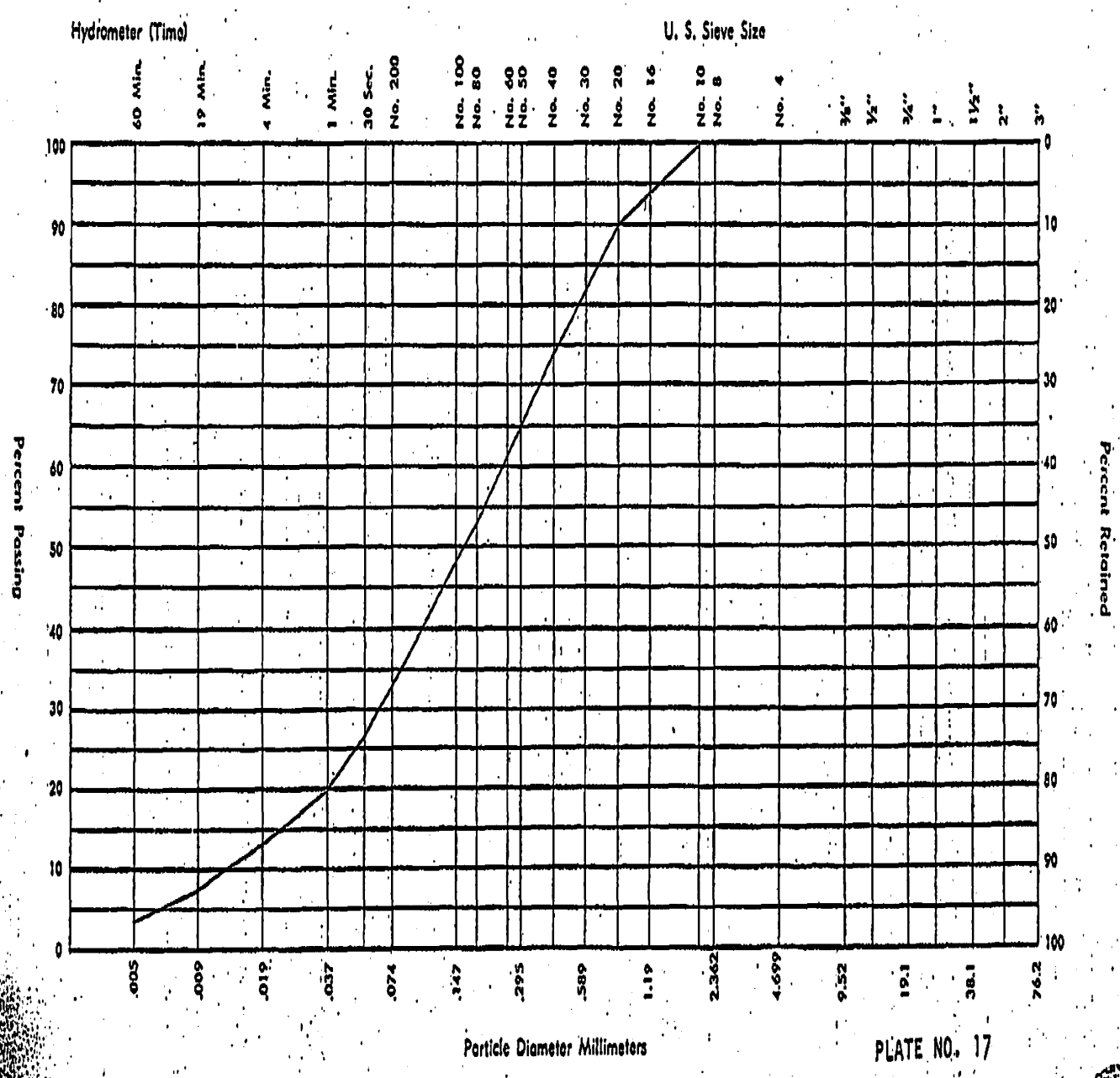


PLATE NO. 17

FH0028520

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project: Beker Industries: Tailings Pond
Job No.: 77-337-1
Date Sampled: December 1977
Where Sampled: HD-3: 5.0' to 7.5'

Sample No.: 68979
Produced By: ---
Aggregate Size: ---
Sampled By: Harza Engineering Personnel

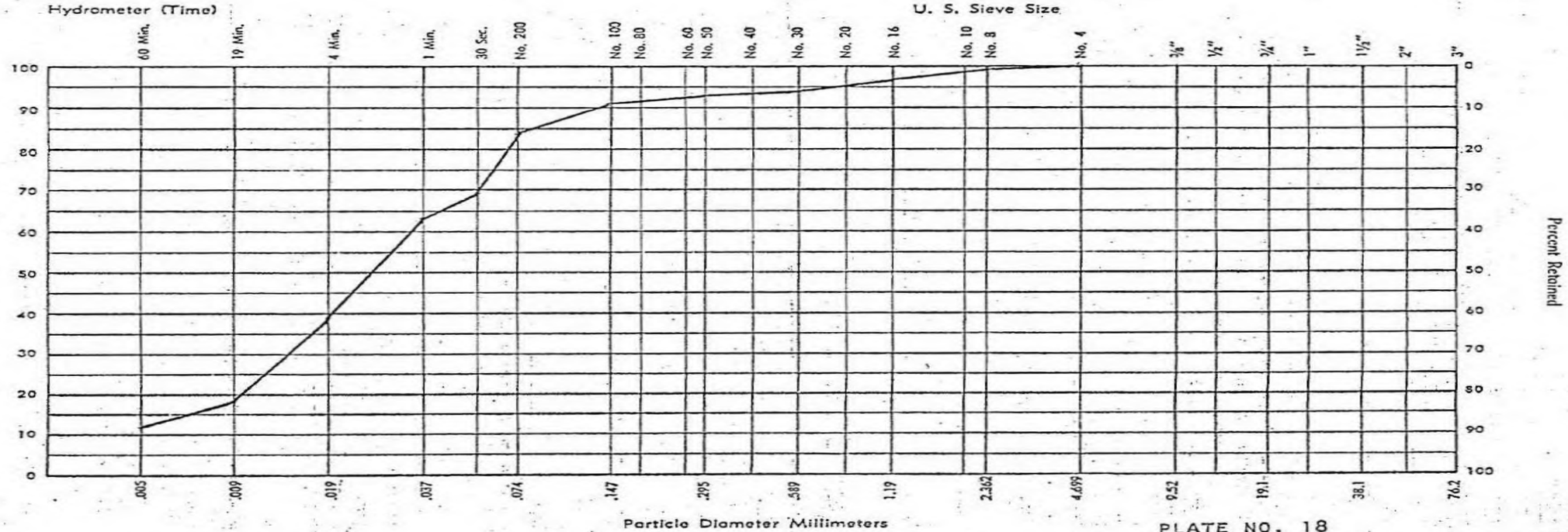
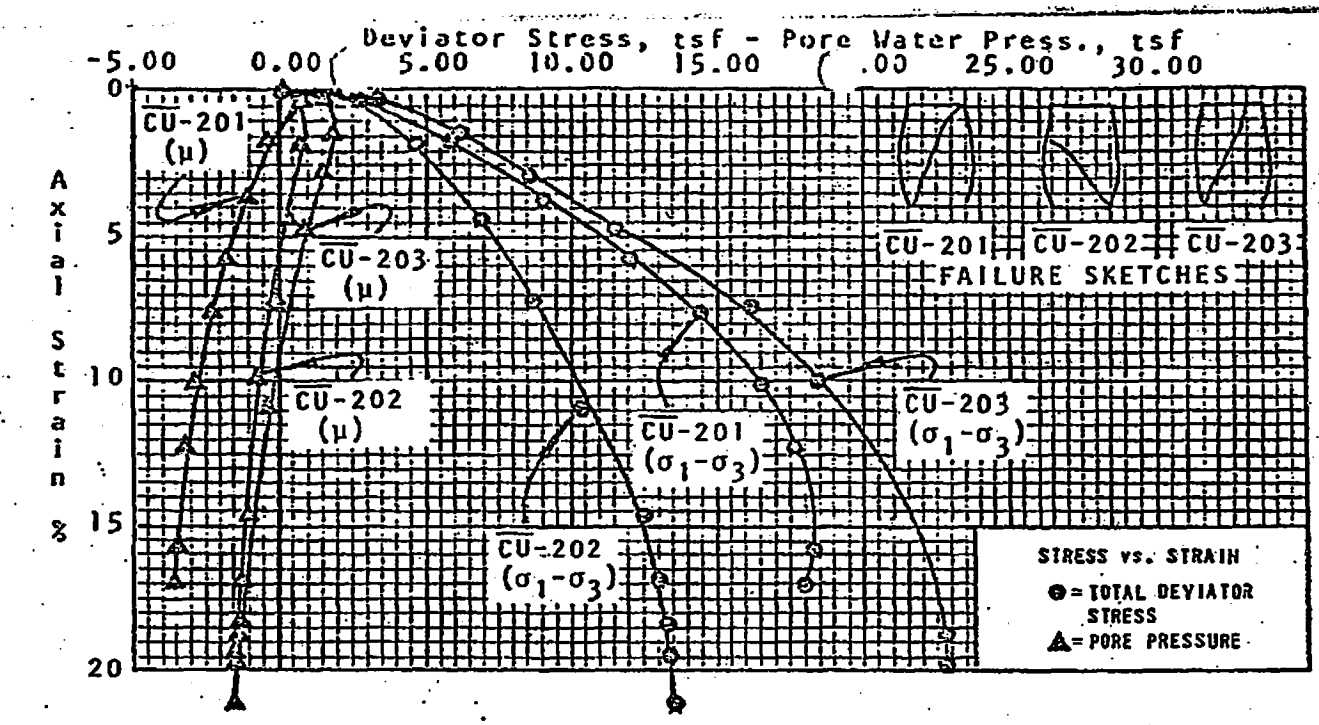
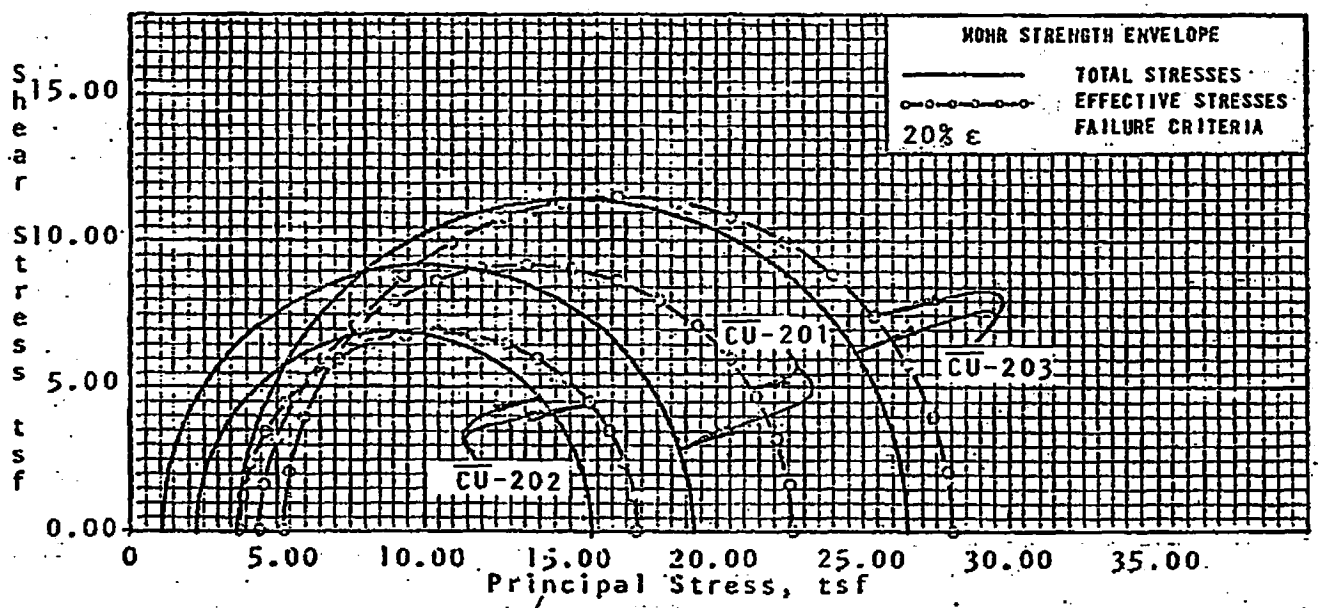


PLATE NO. 18

FH0028521





Test No.	CU-201	CU-202	CU-203
Boring No.	3	3	3
Sample No.	69100	69100	69100
Eff. Confining Pressure, tsf	1.08	2.16	3.60
Back Press., psi	50.0	50.0	50.0
Ht., in.	6.50	5.75	6.14
Dia., in.	2.83	2.83	2.83
Ht./Dia. Ratio	2.30	2.03	2.17
Wet Unit Wt., pcf	103.2	98.1	102.9
Water Content, %			
Before Test	14.7	13.8	14.7
After Test	26.6	29.2	28.5
Degree of Saturation, %	96.1	95.0	100.0
Skempton's "B"	1.00	1.00	1.00
Avg. % Strain/Min.	.065	.066	.063

Specimens Undisturbed
Strain Controlled Test

CLASSIFICATION: Light gray GYPSUM

BEKER INDUSTRIES
CONSOLIDATED, UNDRAINED, TRIAXIAL COMPRESSION TEST WITH PORE PRESS. MEAS.

Boring No. 3
Sample No. 69100
Depth 20.0 -22.5 Ft.

Jan. 1978

NORTHERN TESTING LABORATORIES
CONSULTING GEOTECHNICAL ENGINEERS

PLATE NO. 19

FH0028522

Drawn Date 1-17-78 Checked Date 1-20-78 Approved Date Revi Approved Date

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Beker Tailings Pond
Job No. 77-337-1
Date Sampled December 12, 1977
Where Sampled HD-3: 33.0' to 35.0'

Sample No. 69104
Produced By N/A
Aggregate Size N/A
Sampled By Harza Engineering: Joe Miller

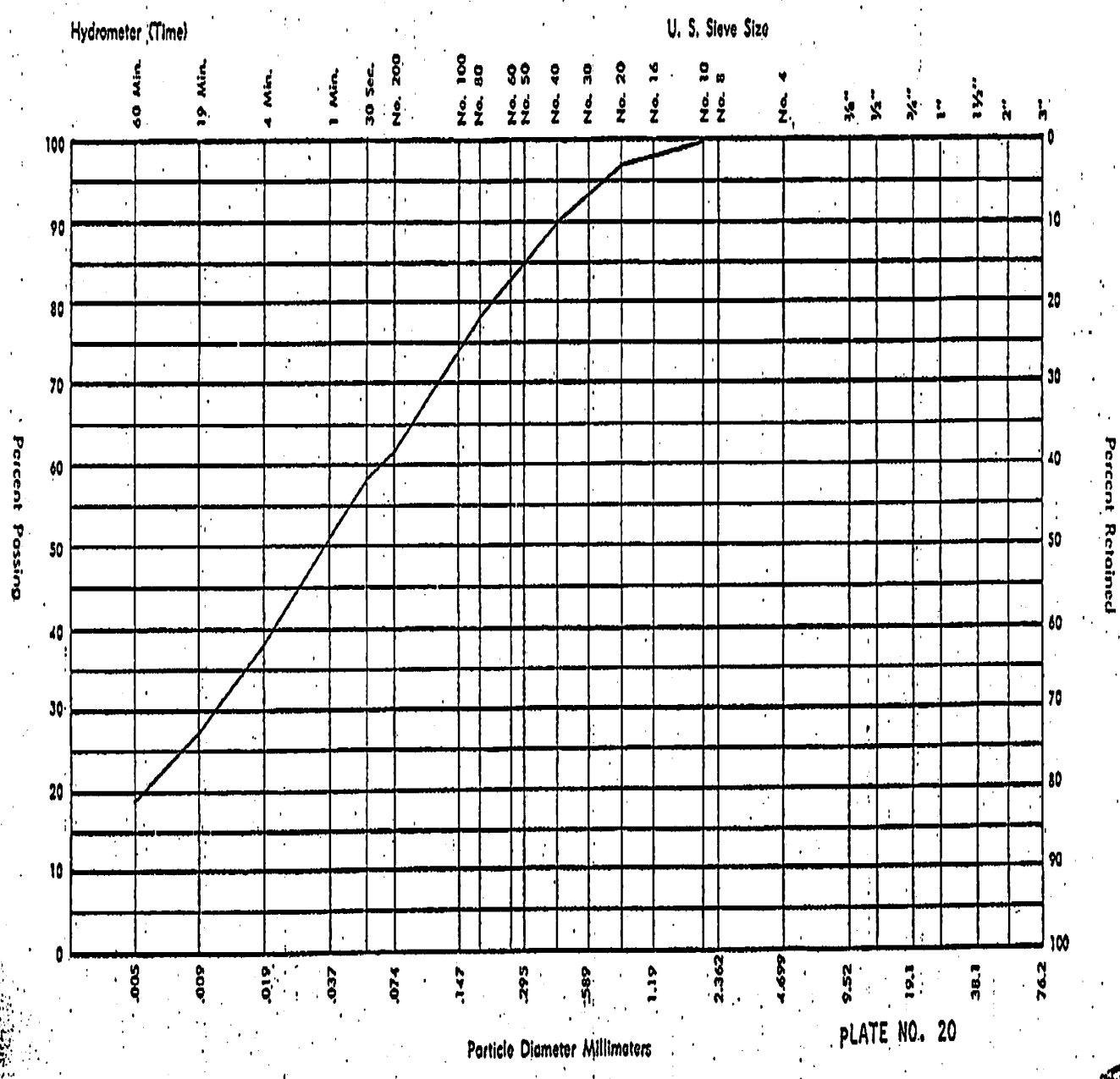


PLATE NO. 20

FH0028523

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Baker Tailings Pond
Job No. 77-337-1
Date Sampled December 7, 1977
Where Sampled HF-5: 7.5' to 9.5'

Sample No. 69119
Produced By N/A
Aggregate Size N/A
Sampled By Harza Engineering: Joe Miller

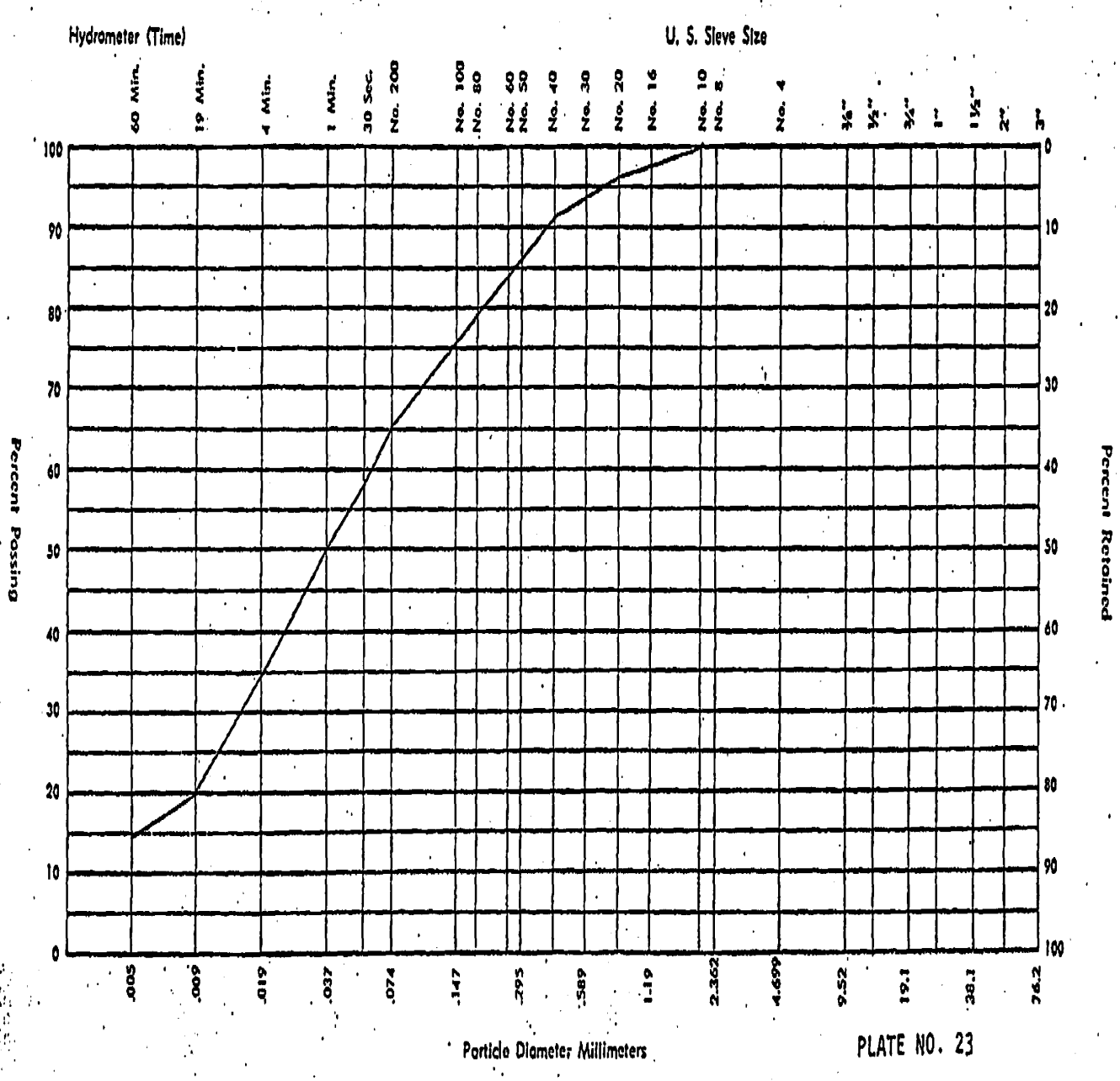
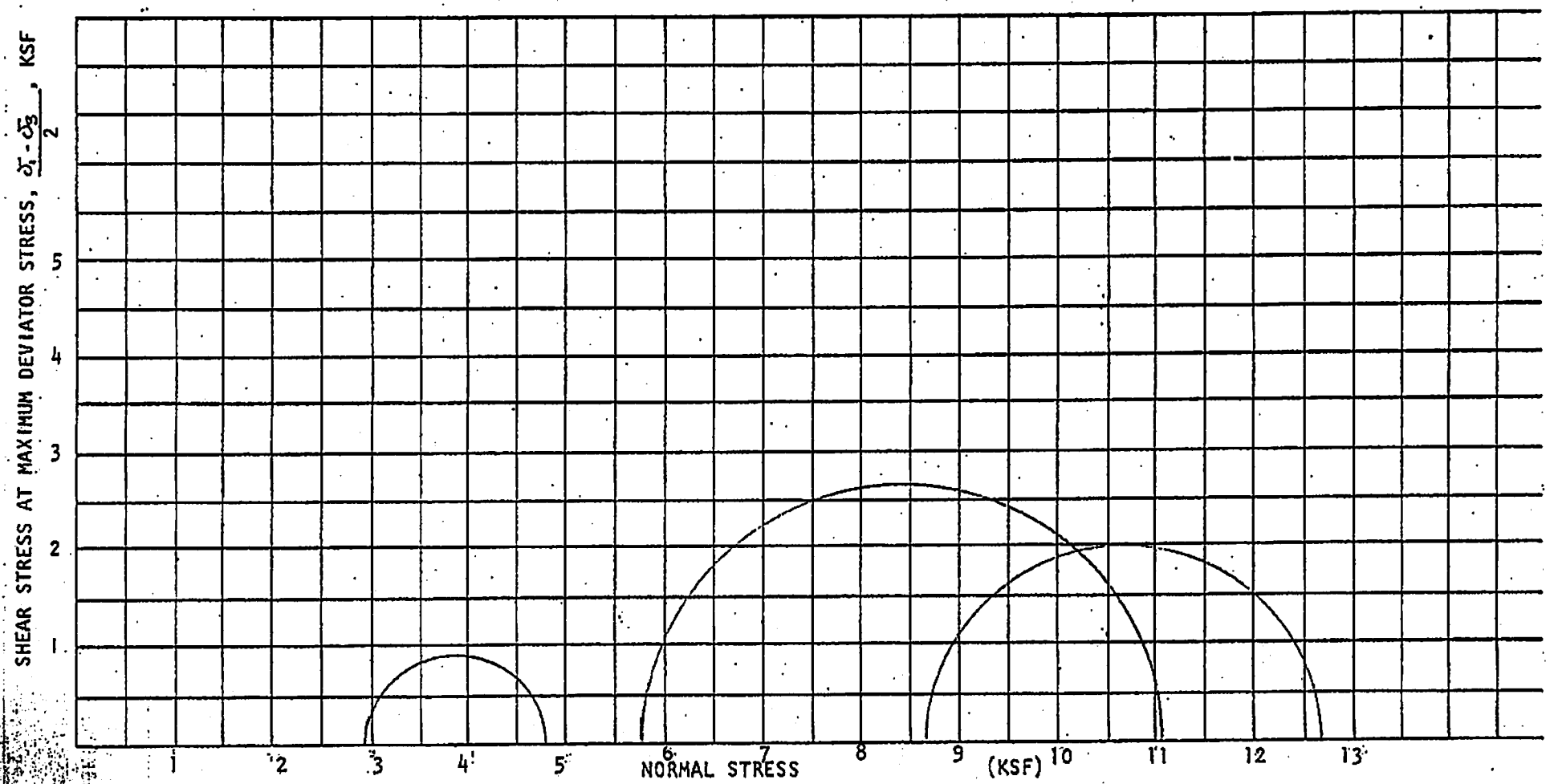


PLATE NO. 23

FH0028524

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
BEKER TAILINGS POND
DRILL HOLE HF-5 DEPTH: 7.5' - 9.5'
NTL NO. 69119
CLASSIFICATION: SILT, Sandy



BEKER INDUSTRIES
Conda, Idaho
JOB NO. 77-337-1

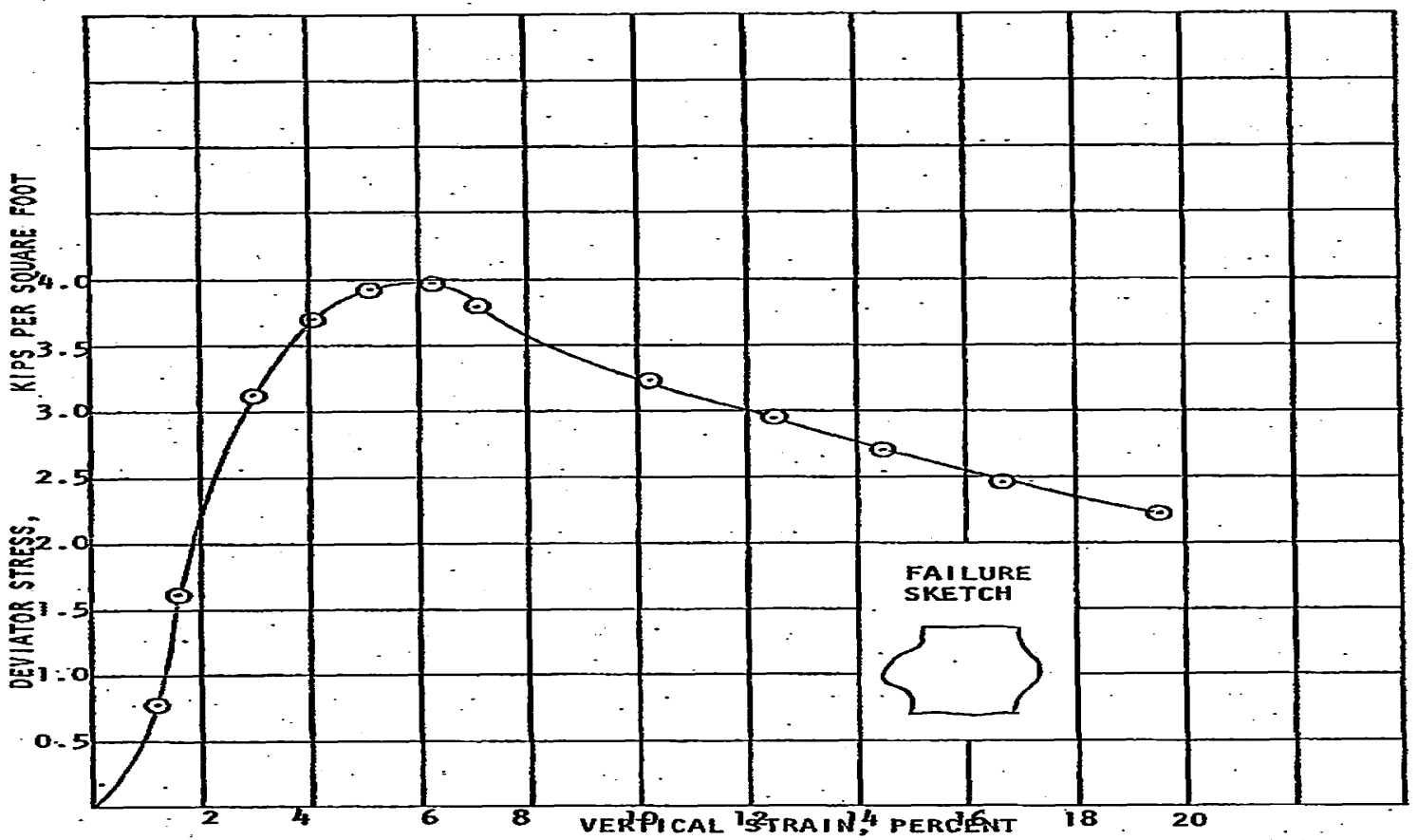
NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
BOISE, IDAHO
FEBRUARY, 1978 PLATE NO. 24

FH0028525

UNCONSOLIDATED - UNDRAINED
TRIAXIAL SHEAR TEST

DRILL HOLE HF - 5
DEPTH 8.8' - 9.5'
SAMPLE NO. 69119

MOIST UNIT WEIGHT: 106 pcf
DRY UNIT WEIGHT : 85 pcf
MOISTURE CONTENT : 25%
CLASSIFICATION: SILT, Sandy
CONFINING STRESS: 60 psi



Sample size - L_o = 4.75"
d_o = 2.38"

Deviator Stress at Failure = 3996 psf
Strain at Failure = 6.2%

Strain rate = 0.020"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 25

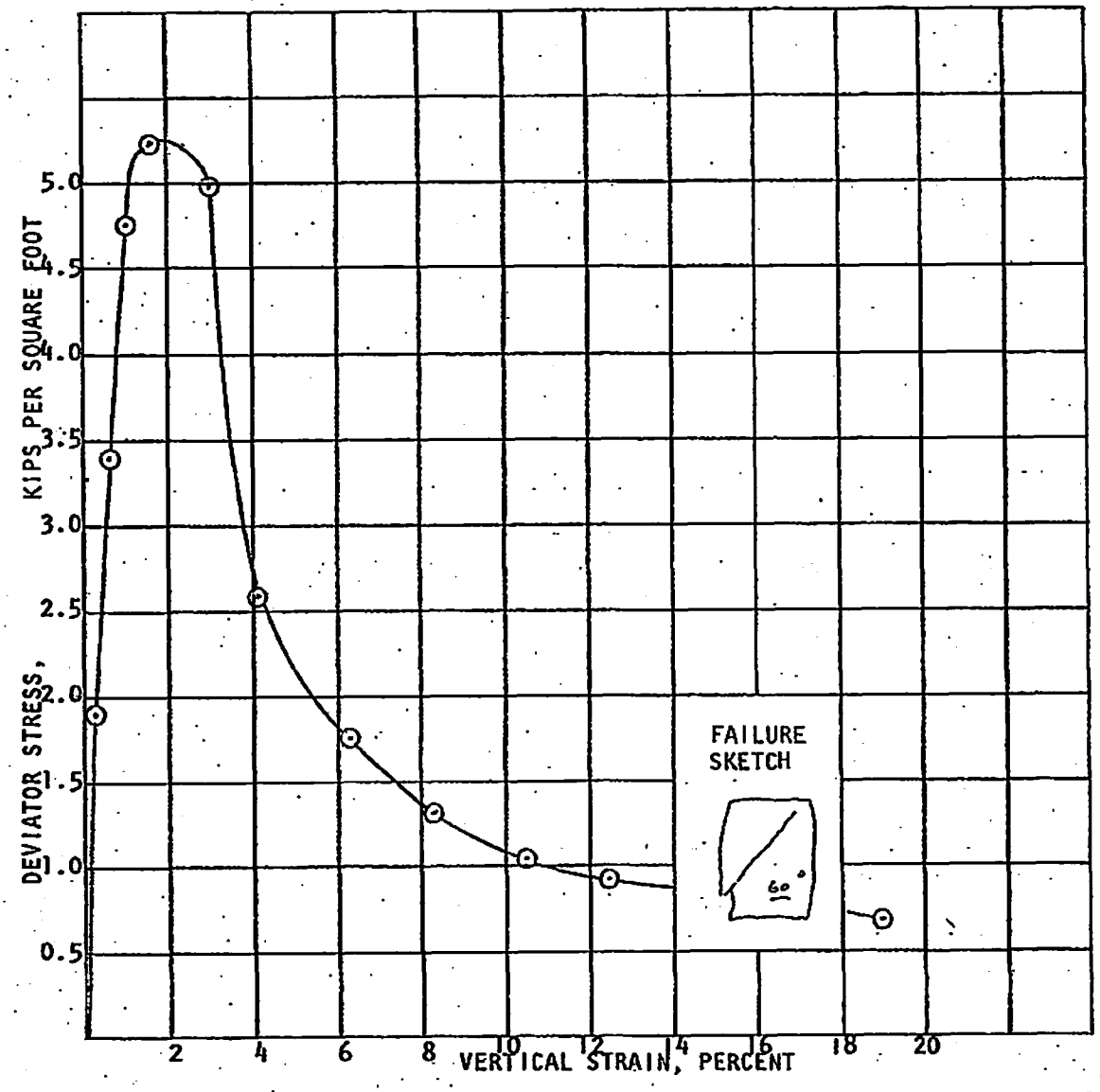
NTL 155

FH0028526

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HF - 5
DEPTH 8.2' - 8.8'
SAMPLE NO. 69119

MOIST UNIT WEIGHT: 107 pcf
DRY UNIT WEIGHT : 85 pcf
MOISTURE CONTENT : 25%
CLASSIFICATION: SILT, Sandy
CONFINING STRESS: 40 psi



Sample size - L_o = 4.75"
d_o = 2.38"

Deviator Stress at Failure = 5311 psf
Strain at Failure = 1.7%

Strain rate = 0.020"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 26

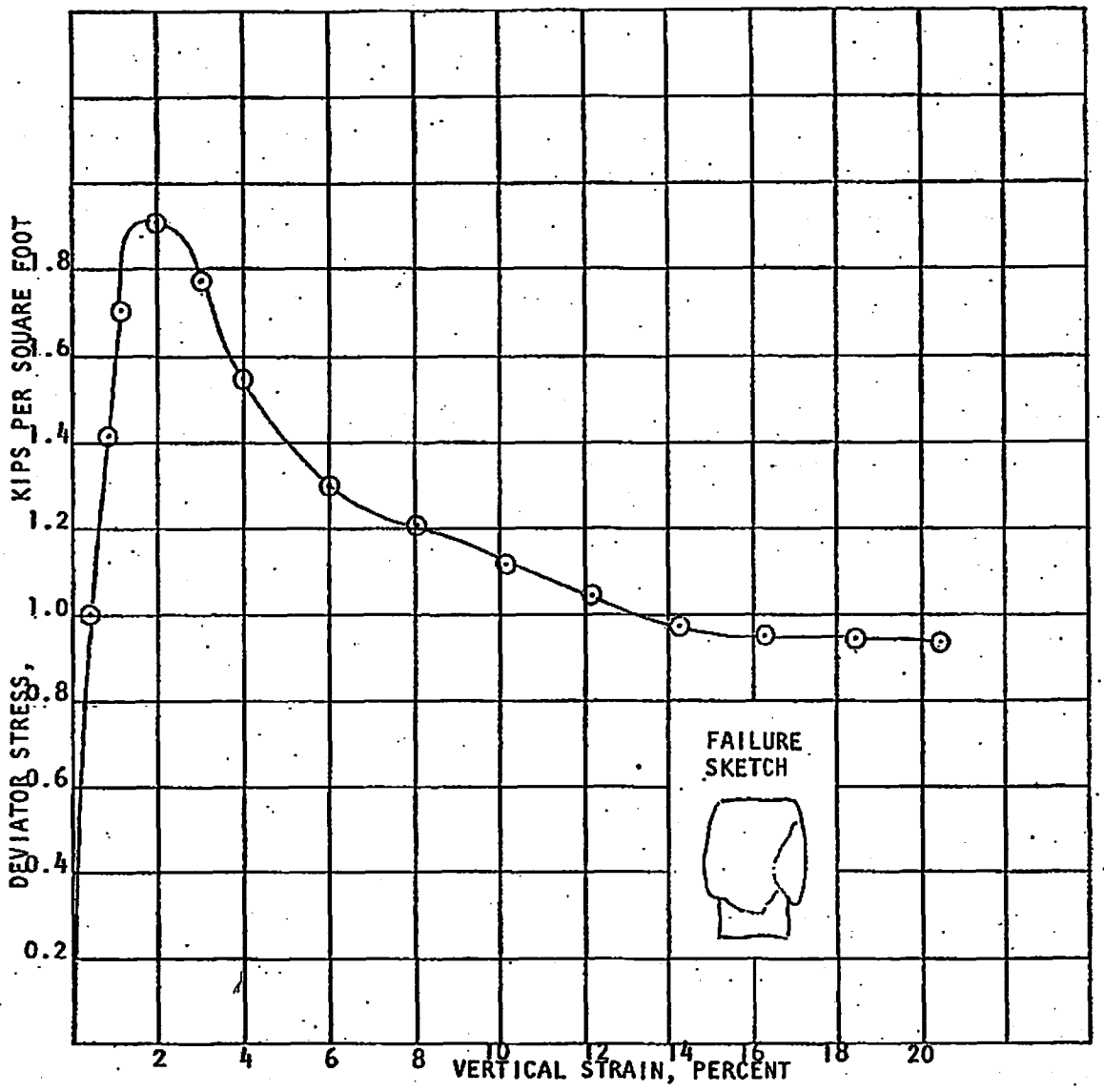
NTL-155

FH0028527

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HF - 5
DEPTH 7.5' - 8.2'
SAMPLE NO. 69119

MOIST UNIT WEIGHT: 103 pcf
DRY UNIT WEIGHT : 87
MOISTURE CONTENT : 19%
CLASSIFICATION: SILT, Sandy
CONFINING STRESS: 20 psi



Sample size - L_o = 4.92"
d_o = 2.38"

Deviator Stress at Failure = 1899 psf
Strain at Failure = 2.0%

Strain rate = 0.020"/min.

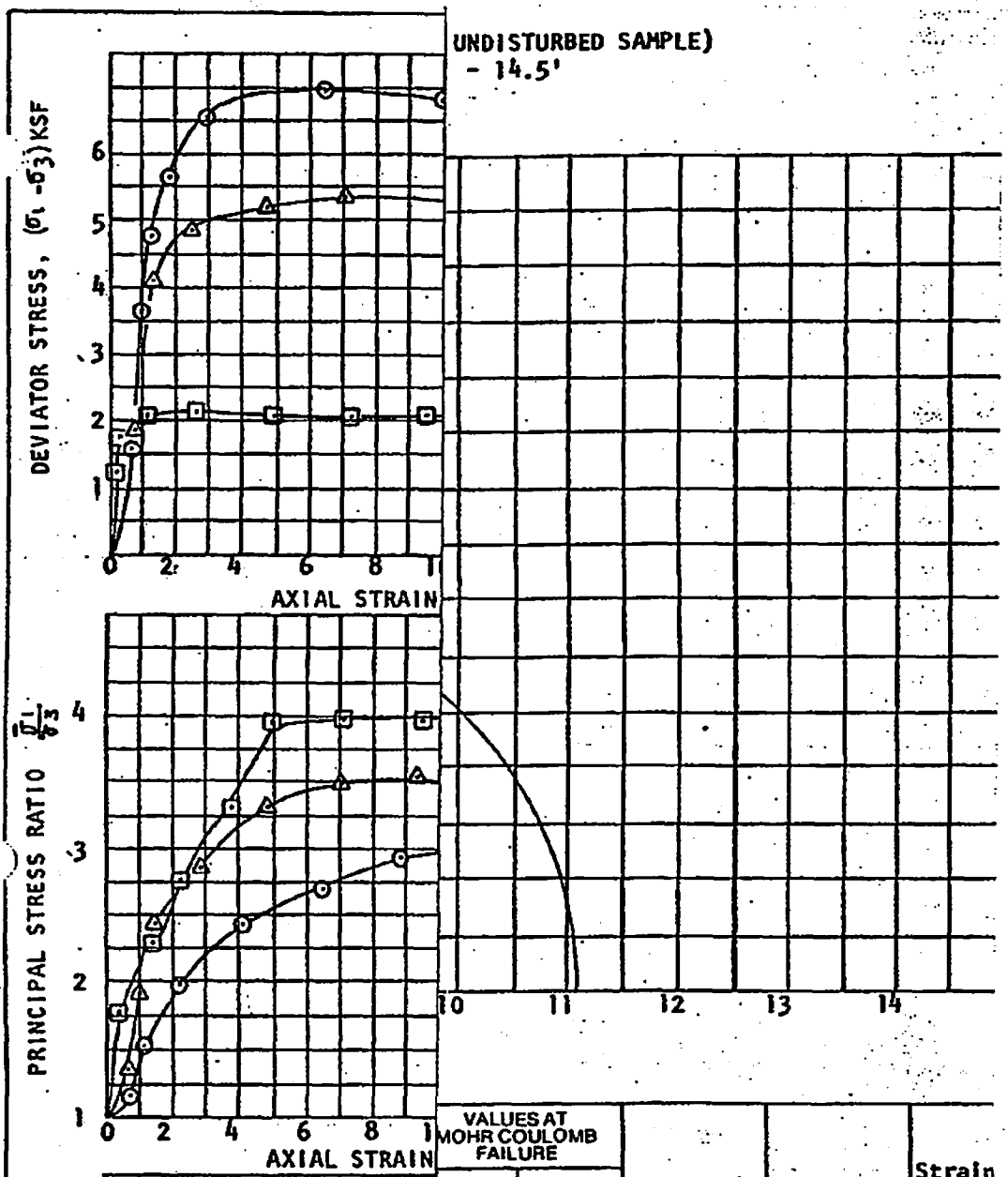
Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 27

NTL-155

FH0028528

UNDISTURBED SAMPLE)
- 14.5'



VALUES AT MOHR COULOMB FAILURE		Sample Length (inches)	Sample Diameter (inches)	Strain Rate (inche minut
MINOR PRINCIPAL STRESS σ_3 KSF	MAJOR PRINCIPAL STRESS σ_1 KSF			
0.76	2.87	4.93	2.36	0.0
2.15	7.50	4.92	2.36	0.0
4.09	11.07	4.89	2.36	0.0

TRIAXIAL SHEAR TEST RESULTS

BEKER INDUSTRIES, INC.
BEKER TAILINGS POND
CONDA, IDAHO

NO.	DATE	PLATE NO.
	February, 1978	28

NTL 15

FH0028529

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project Beker Tailings Pond
Job No. 77-337-1
Date Sampled December 6, 1977
Where Sampled HF-7: 7.5' to 9.5'

Sample No. 69133
Produced By N/A
Aggregate Size N/A
Sampled By Harza Engineering: Joe Miller

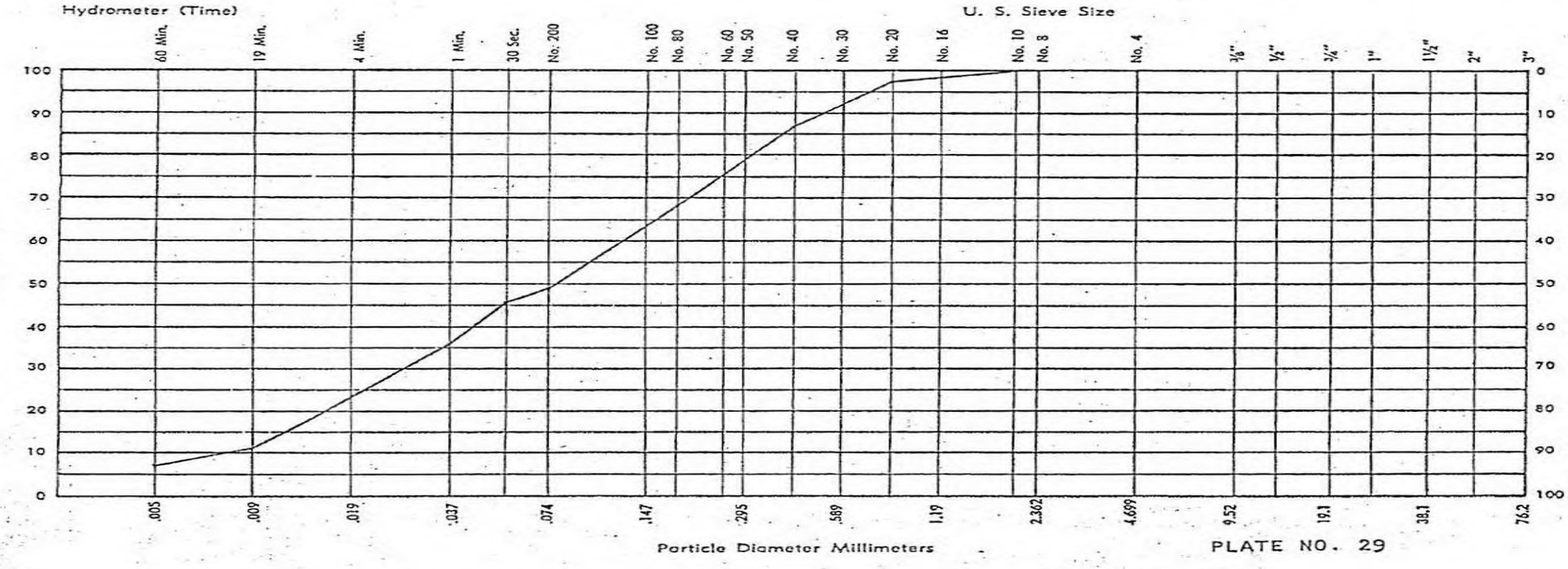
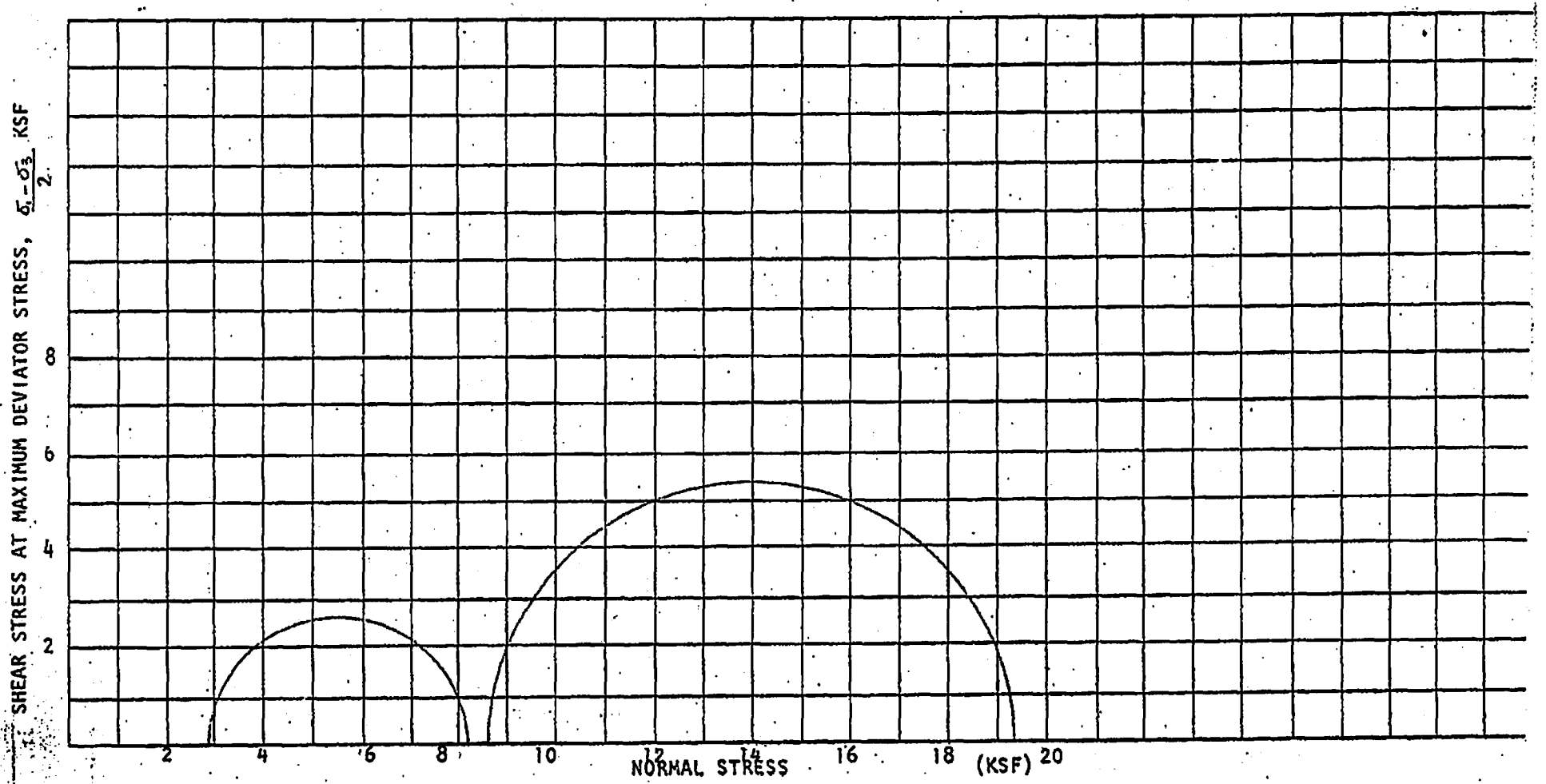


PLATE NO. 29

FH0028530

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
BEKER TAILINGS POND
DRILL HOLE HF-7 DEPTH: 7.5' - 9.5'
NTL NO. 69133
CLASSIFICATION: SAND, Silty;
with organics



BEKER INDUSTRIES
Conda, Idaho
JOB NO. 77-337-1

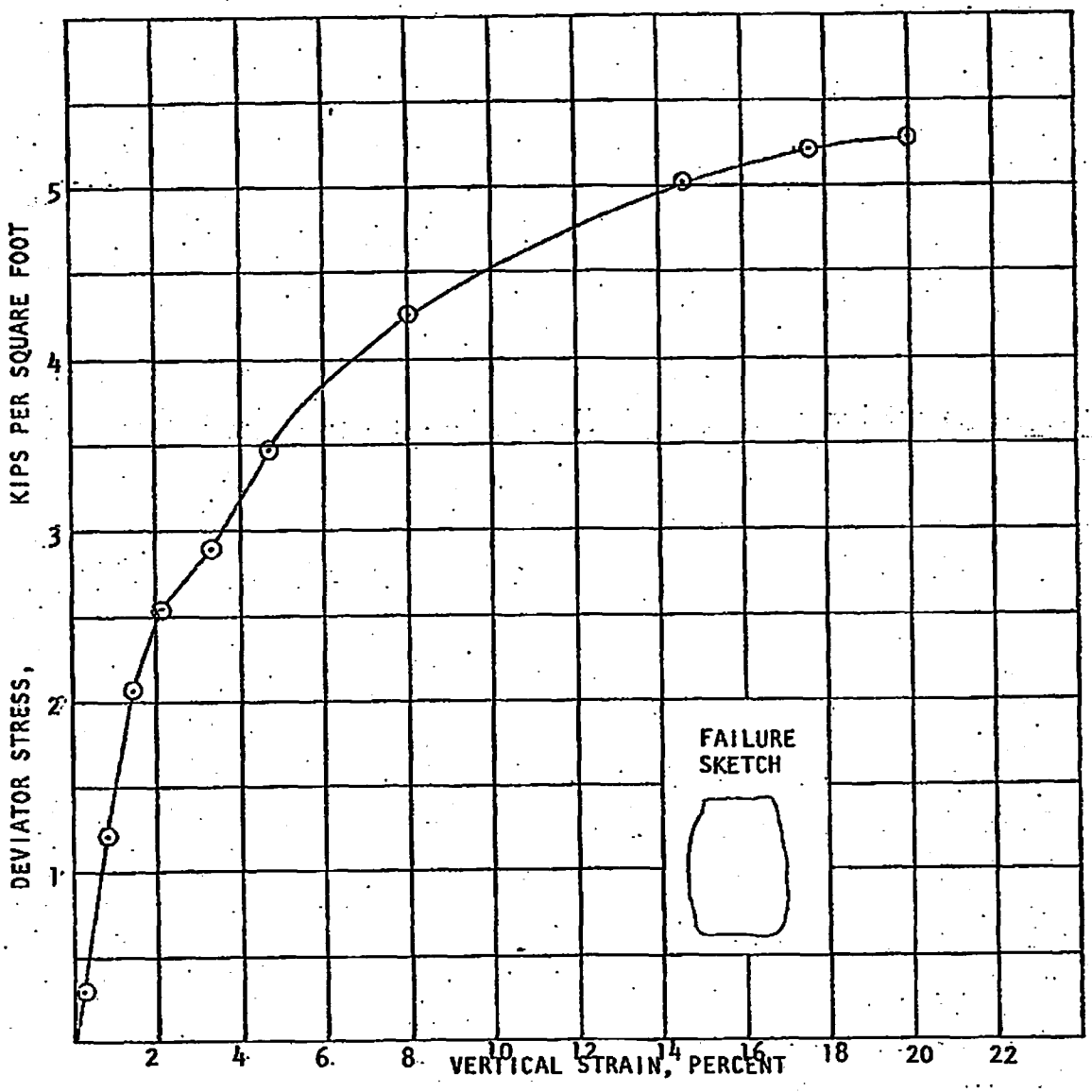
NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
Boise, Idaho
FEBRUARY, 1978 PLATE NO. 30

FH0028531

UNCONSOLIDATED - UNDRAINED
TRIAXIAL SHEAR TEST

DRILL HOLE HF - 7
DEPTH 7.5' - 9.5'
SAMPLE NO. 69133A

MOIST UNIT WEIGHT: 89 pcf
DRY UNIT WEIGHT : 71 pcf
MOISTURE CONTENT : 26%
CLASSIFICATION: SAND, Silty; with organic
CONFINING STRESS: 20 psi



Sample size - L_o = 3.06"
d_o = 1.42"

Deviator Stress at Failure = 5283 psf
Strain at Failure = 20.3%

Strain rate = 0.015"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS BOISE, IDAHO
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 31

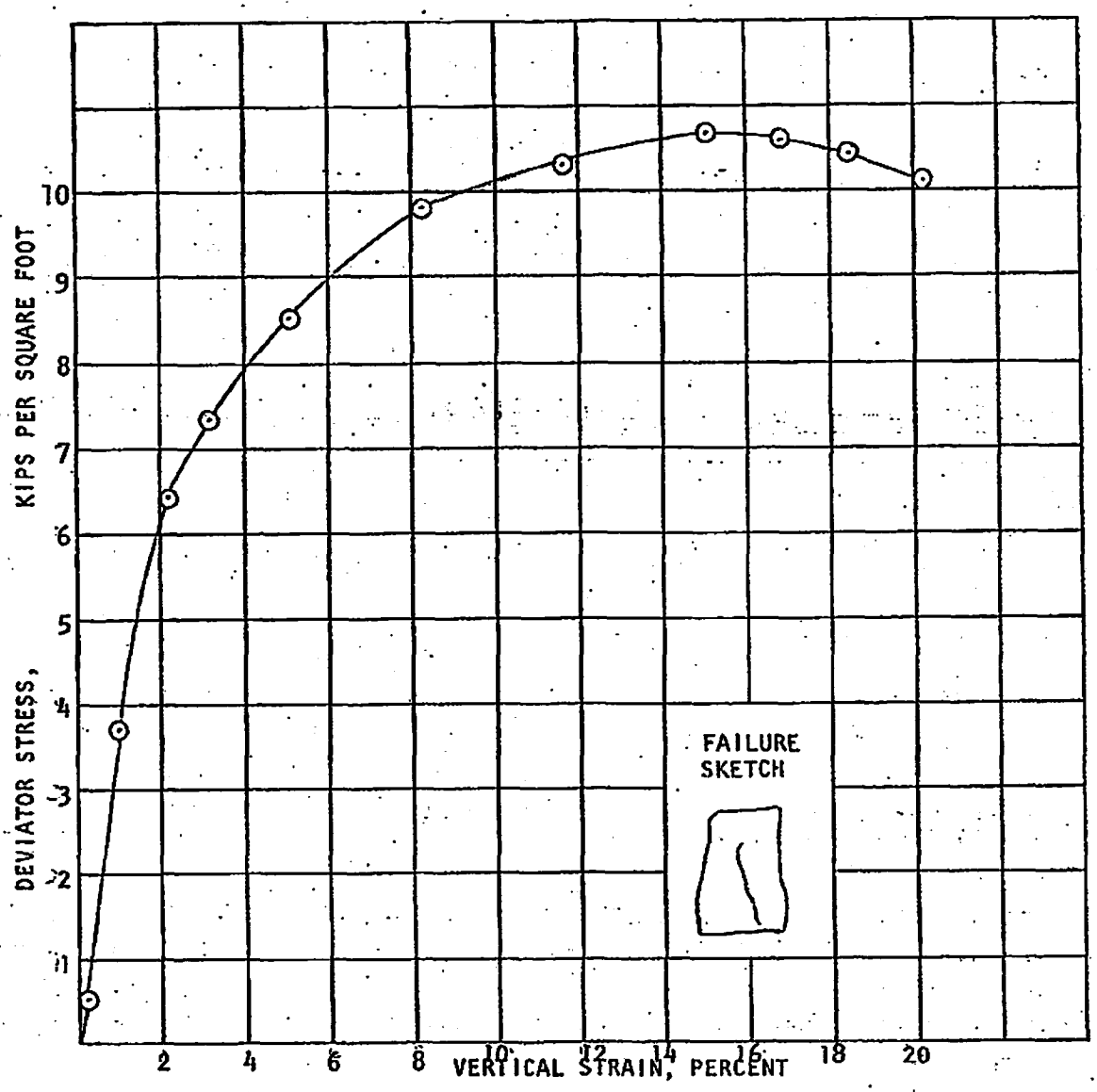
NTL-155

FH0028532

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HF - 7
DEPTH 7.5' - 9.5'
SAMPLE NO. 69133B

MOIST UNIT WEIGHT: 100 pcf
DRY UNIT WEIGHT : 83 pcf
MOISTURE CONTENT : 21%
CLASSIFICATION: SAND, Silty; with organic
CONFINING STRESS: 60 psi



Sample size = L_o = 2.91"
d_o = 1.41"

Deviator Stress at Failure = 10,645 psf
Strain at Failure = 15.2%

Strain rate = 0.015"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 32

NTL 155
FH0028533

GREAT FALLS • MISSOULA • BILLINGS MONTANA • BOISE IDAHO

AGGREGATE GRADING CHART

Project: Beker Tailings Pond
Job No.: 77-337-1
Date Sampled: December 6, 1977
Where Sampled: HF-7: 12.5' to 14.5'

Sample No.: 69135
Produced By: N/A
Aggregate Size: N/A
Sampled By: Harza Engineering: Joe Miller

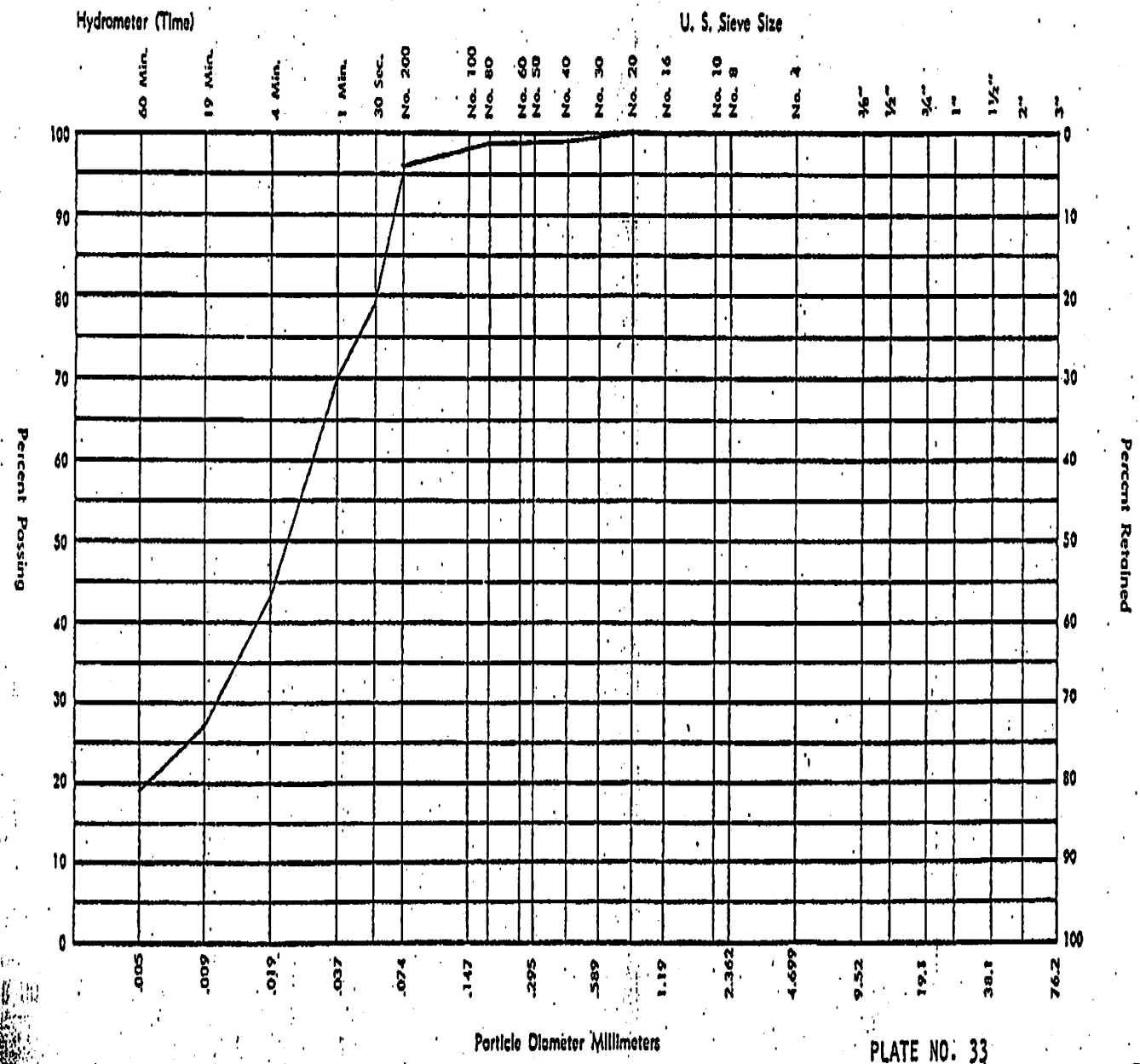
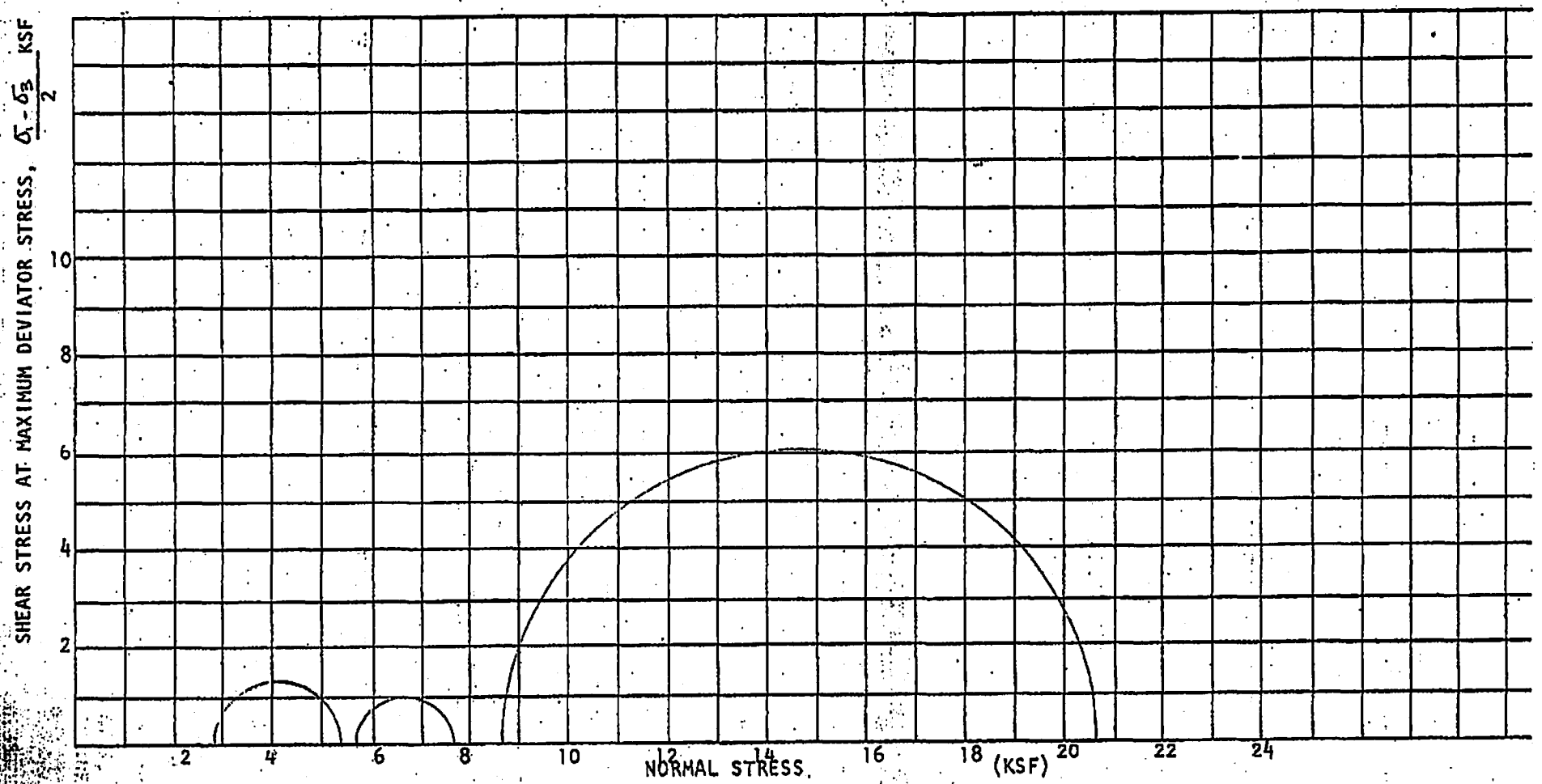


PLATE NO. 33

FH00028534

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
BEKER TAILINGS POND
DRILL HOLE HF-7 DEPTH: 12.5' - 14.5'
NTL NO. 69135
CLASSIFICATION: SILT, Clayey



BEKER INDUSTRIES
Conda, Idaho
JOB NO. 77-337-1

NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
BOISE, IDAHO

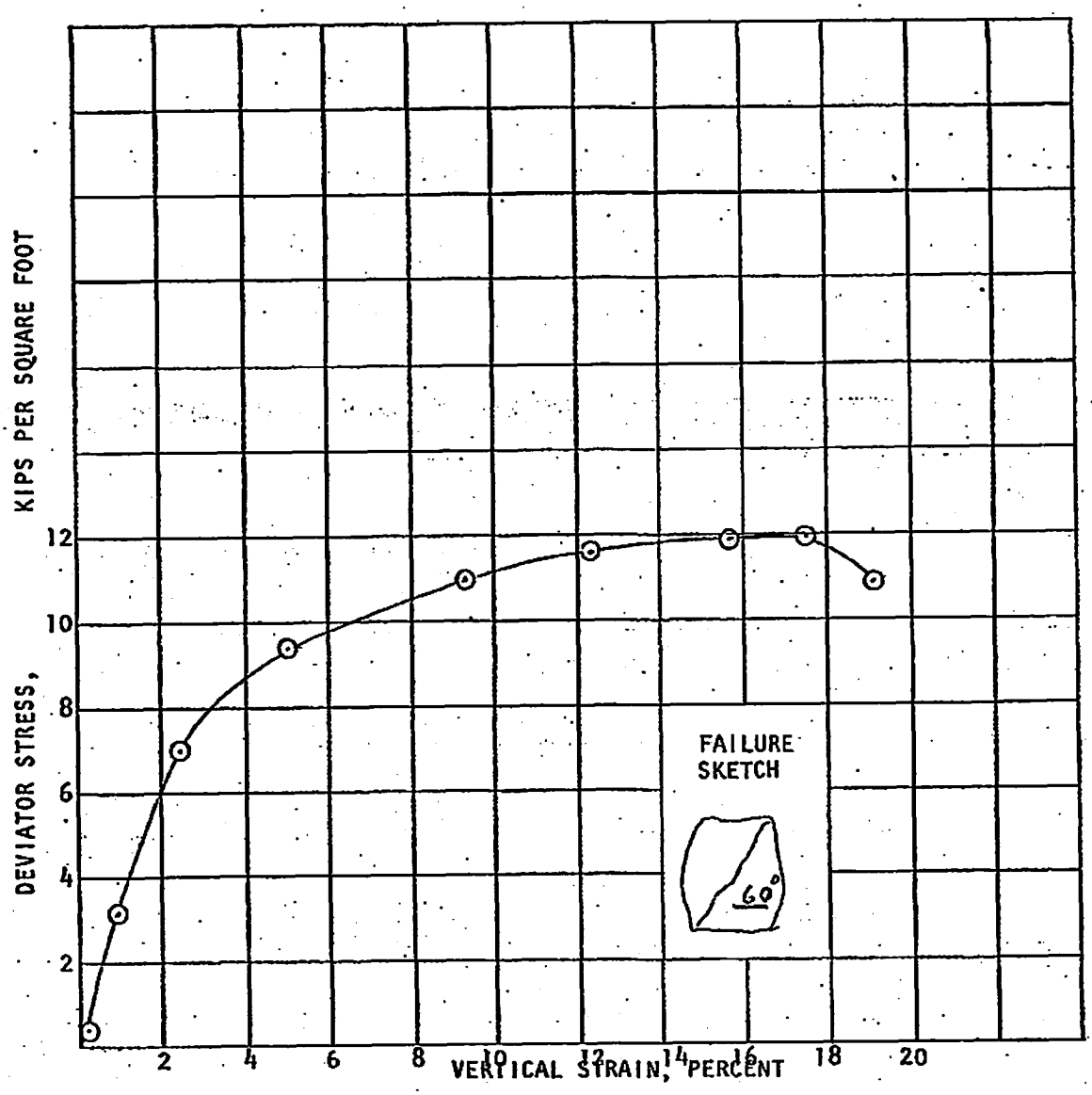
FEBRUARY, 1978 PLATE NO. 34

FH0028535

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HF - 7
DEPTH 12.5' - 14.5'
SAMPLE NO. 69135C

MOIST UNIT WEIGHT: 125 pcf
DRY UNIT WEIGHT : 103 pcf
MOISTURE CONTENT : 21%
CLASSIFICATION: SILT, Clayey
CONFINING STRESS: 60 psi



Sample size - L_o = 2.78"
d_o = 1.92"

Deviator Stress at Failure = 11,927 psf
Strain at Failure = 17.6%

Strain rate = 0.015"/min.

Tested at Natural Moisture Content

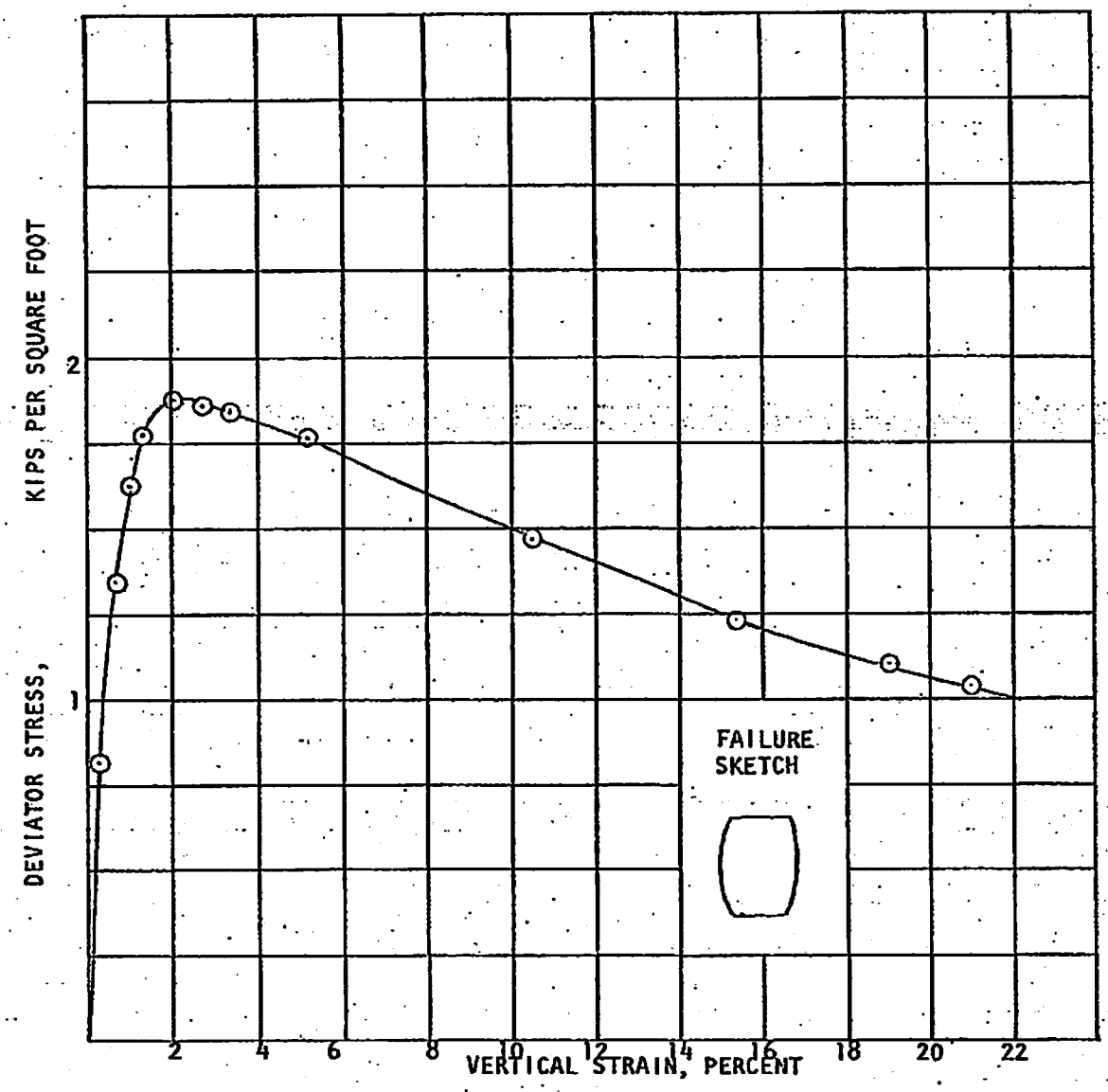
BEKER INDUSTRIES Boise, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 35

NTI 155
FH0028536

UNCONSOLIDATED - UNDRAINED
TRIAXIAL SHEAR TEST

DRILL HOLE HF - 7
DEPTH 12.5' - 14.5'
SAMPLE NO. 69135B

MOIST UNIT WEIGHT: 122 pcf
DRY UNIT WEIGHT : 96 pcf
MOISTURE CONTENT : 26%
CLASSIFICATION: SILT, Clayey
CONFINING STRESS: 40 psi



Sample size - L_o = 2.89"
d_o = 1.42"

Deviator Stress at Failure = 1873 psf
Strain at Failure = 2.0%

Strain rate = 0.015"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 36

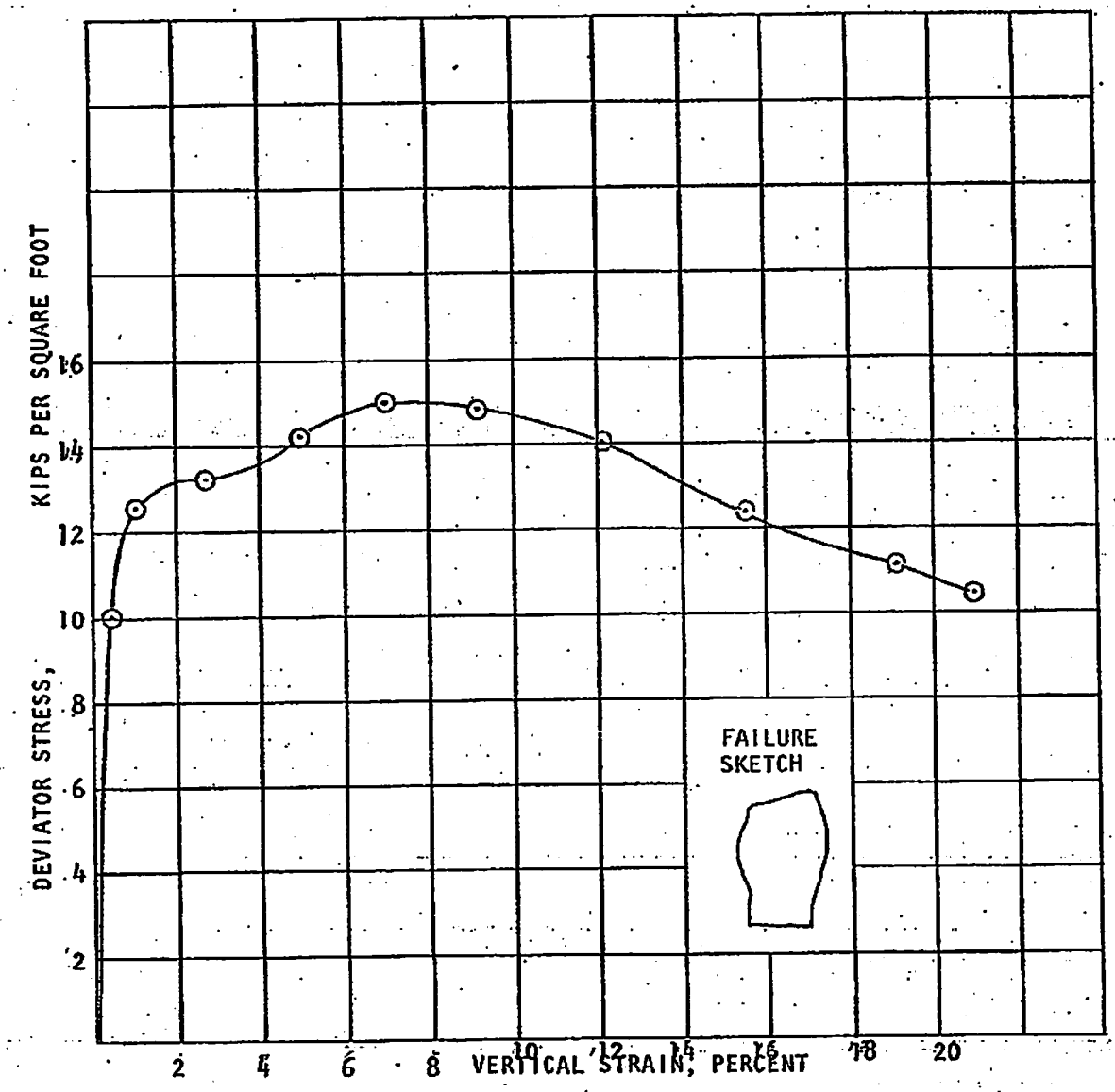
NTL-155

FH0028537

UNCONSOLIDATED - UNDRAINED
TRIAXIAL SHEAR TEST

DRILL HOLE HF - 7
DEPTH 12.5' - 14.5'
SAMPLE NO. 69135A

MOIST UNIT WEIGHT: 118 pcf
DRY UNIT WEIGHT : 95 pcf
MOISTURE CONTENT : 25%
CLASSIFICATION: SILT, Clayey
CONFINING STRESS: 20 psi



Sample size = L_o = 2.88"
d_o = 1.42"

Deviator Stress at Failure = 1501 psf
Strain at Failure = 6.9%

Strain rate = 0.015"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 37

NTL-155

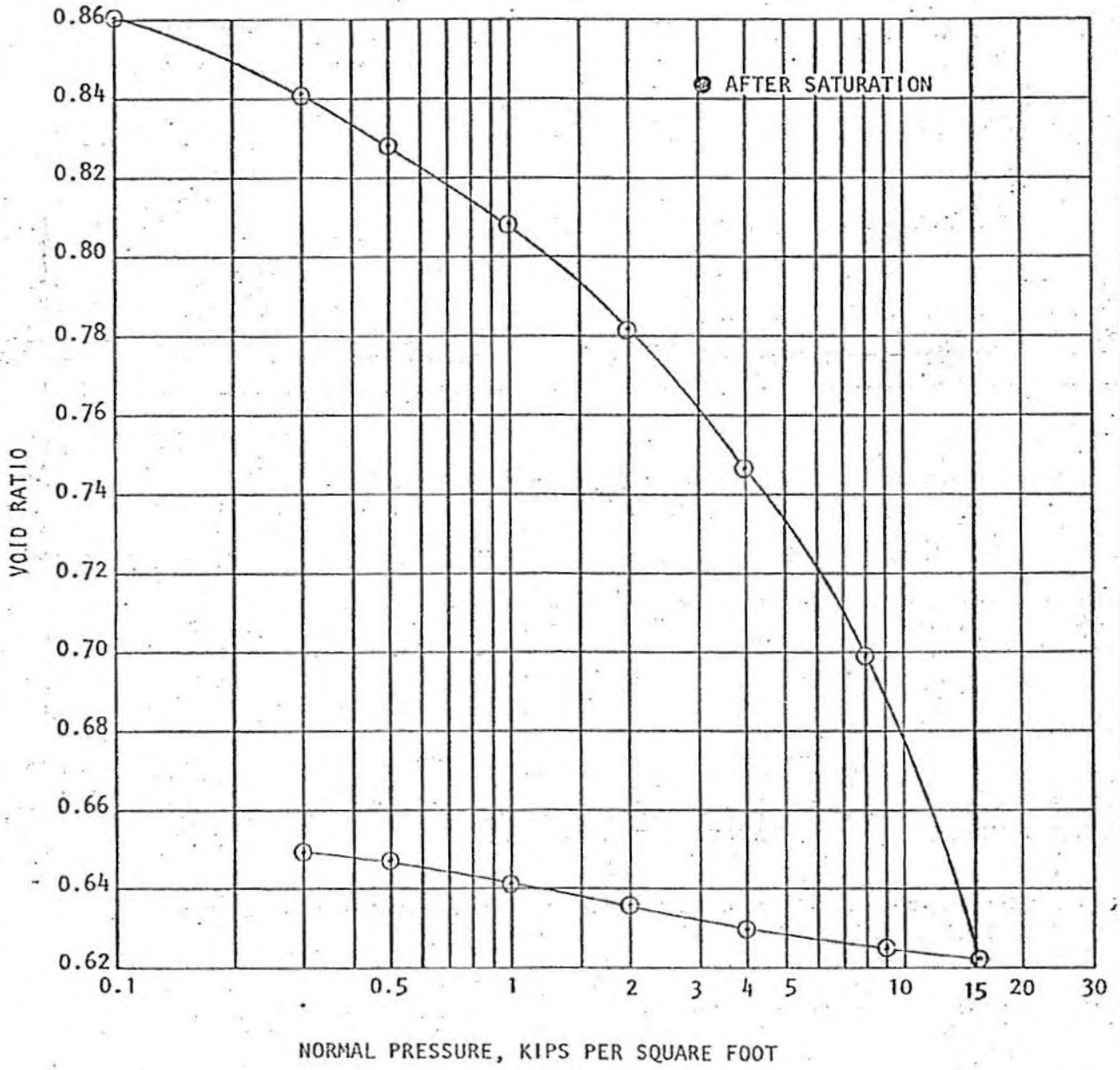
FH0028538

CONSOLIDATION TEST

DRILL HOLE HF - 7
DEPTH 12.5' - 14.5'
SAMPLE NO. 69135

MOIST UNIT WEIGHT : 117 pcf
DRY UNIT WEIGHT : 92 pcf
INITIAL MOISTURE CONTENT: 28%
FINAL MOISTURE CONTENT : 20%
CLASSIFICATION : SILT, Clayey

e_o = 0.8608



BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 38

NTL 156

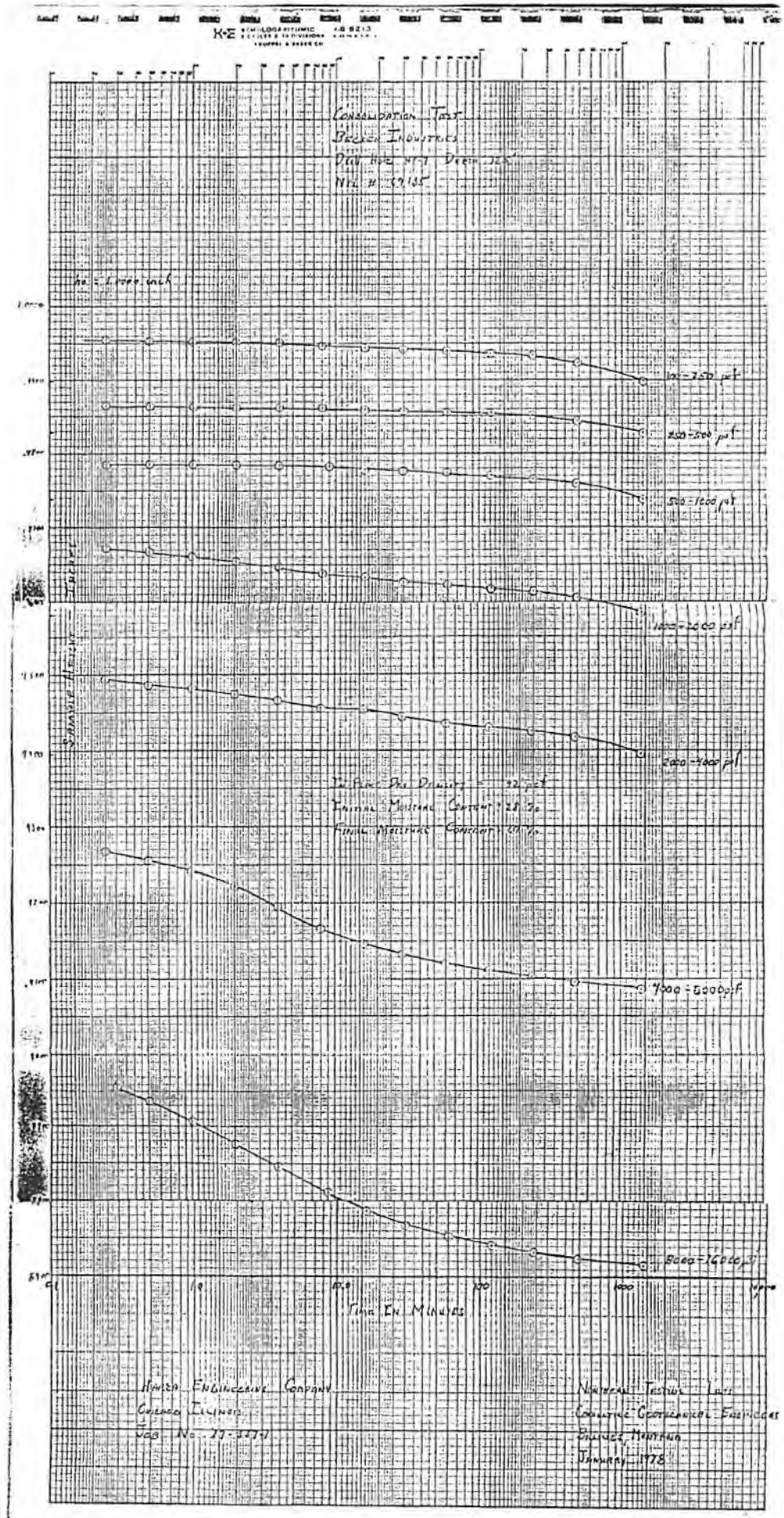
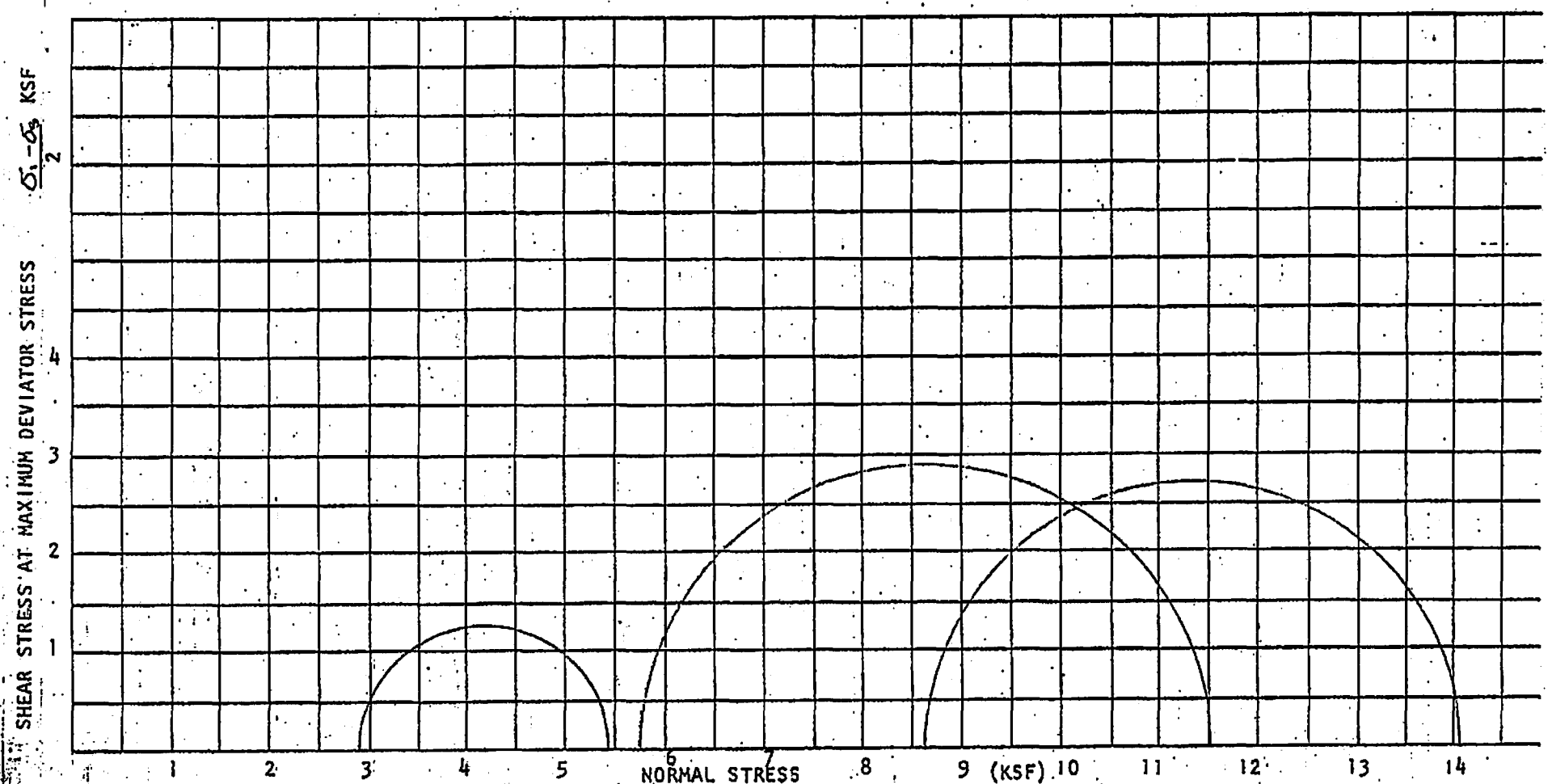


PLATE NO. 39

FH0028540

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST
BEKER TAILINGS POND
DRILL HOLE HF-8 DEPTH: 17.5' - 19.5'
NTL NO. 69141
CLASSIFICATION: CLAY, Silty



BEKER INDUSTRIES
Conda, Idaho
JOB NO. 77-337-1

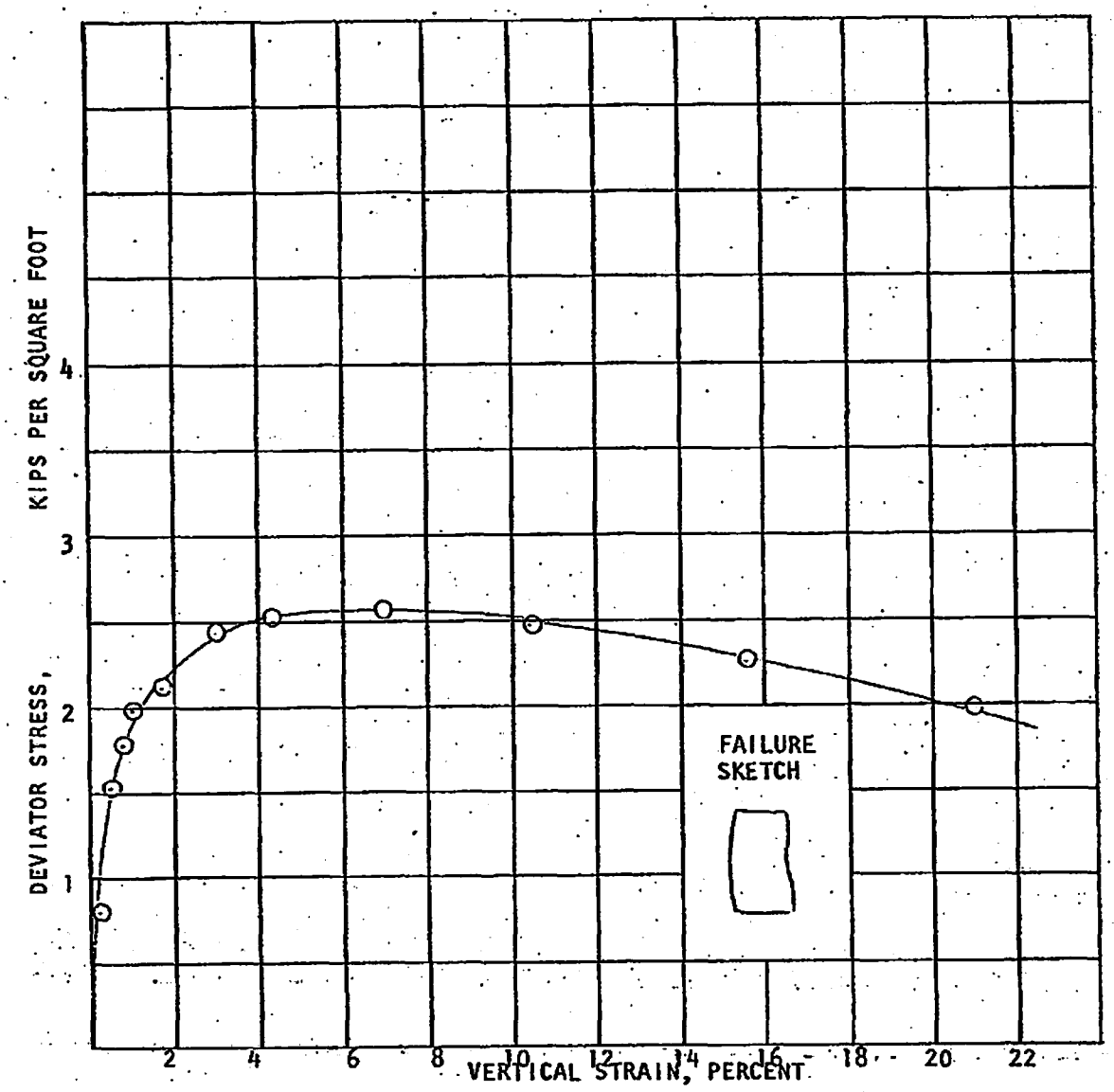
NORTHERN TESTING LABORATORIES, INC.
CONSULTING GEOTECHNICAL ENGINEERS
Boise, Idaho
FEBRUARY, 1978 PLATE NO. 40

FH00028541

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HF - 8
DEPTH 17.5' - 18.2'
SAMPLE NO. 69141

MOIST UNIT WEIGHT: 111 pcf
DRY UNIT WEIGHT : 89 pcf
MOISTURE CONTENT : 25%
CLASSIFICATION: CLAY, Silty
CONFINING STRESS: 20 psi



Sample size = L_o = 2.88"
d_o = 1.40"

Deviator Stress at Failure = 2549 psf
Strain at Failure = 6.9%

Strain Rate = 0.015"/min.

Tested at Natural Moisture Content

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 41

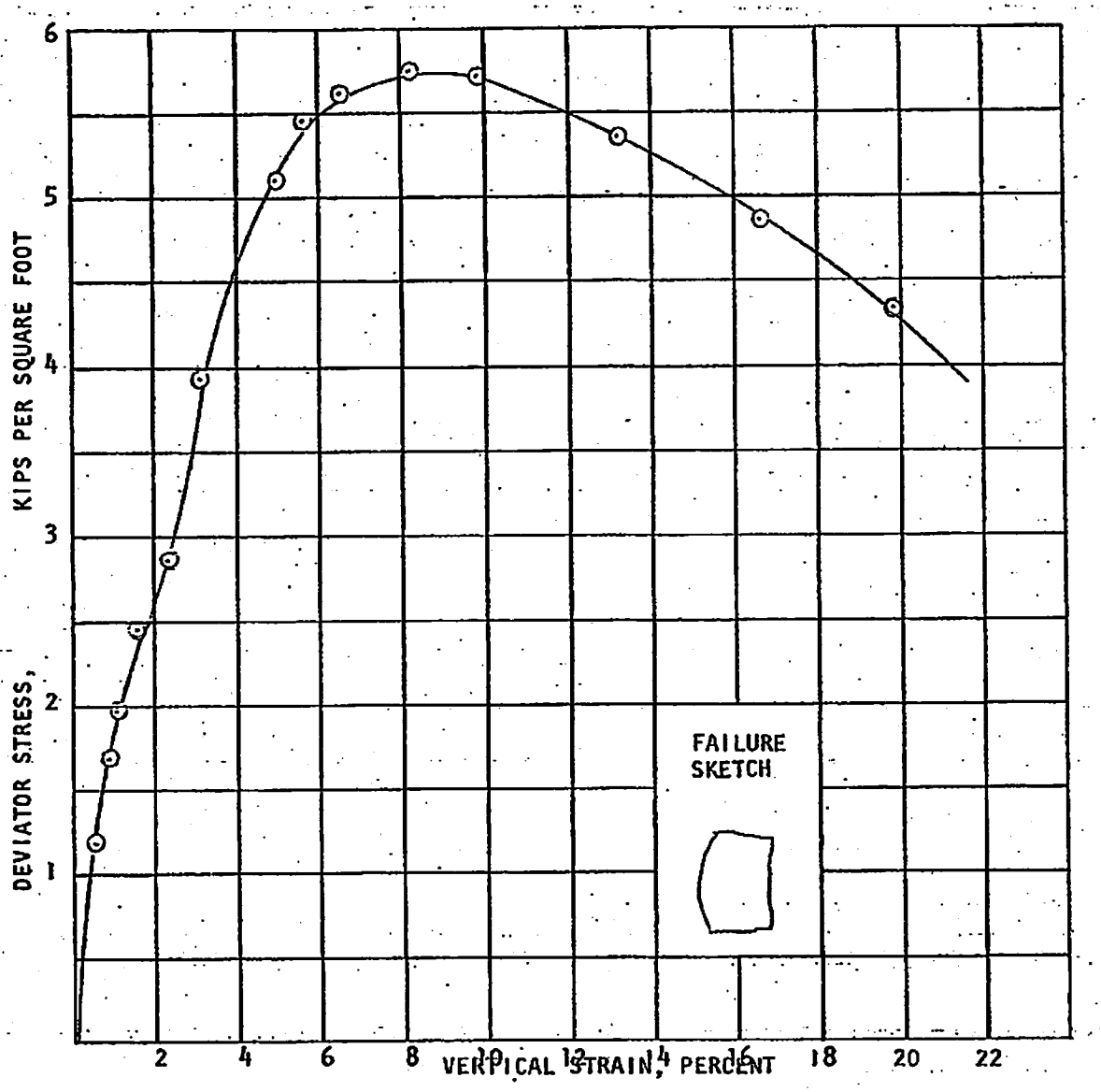
NTL 155

FH0028542

UNCONSOLIDATED - UNDRAINED TRIAXIAL SHEAR TEST

DRILL HOLE HF - 8
DEPTH 18.2' - 8.8'
SAMPLE NO. 69141

MOIST UNIT WEIGHT: 112 pcf
DRY UNIT WEIGHT : 91 pcf
MOISTURE CONTENT : 24%
CLASSIFICATION: CLAY, Silty
CONFINING STRESS: 40 psi



Sample size - L_o = 3.00"
d_o = 1.40"

Strain Rate = 0.015"/min.

Tested at Natural Moisture Content

Deviator Stress at Failure = 5750 psf
Strain at Failure = 8.2%

BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 42

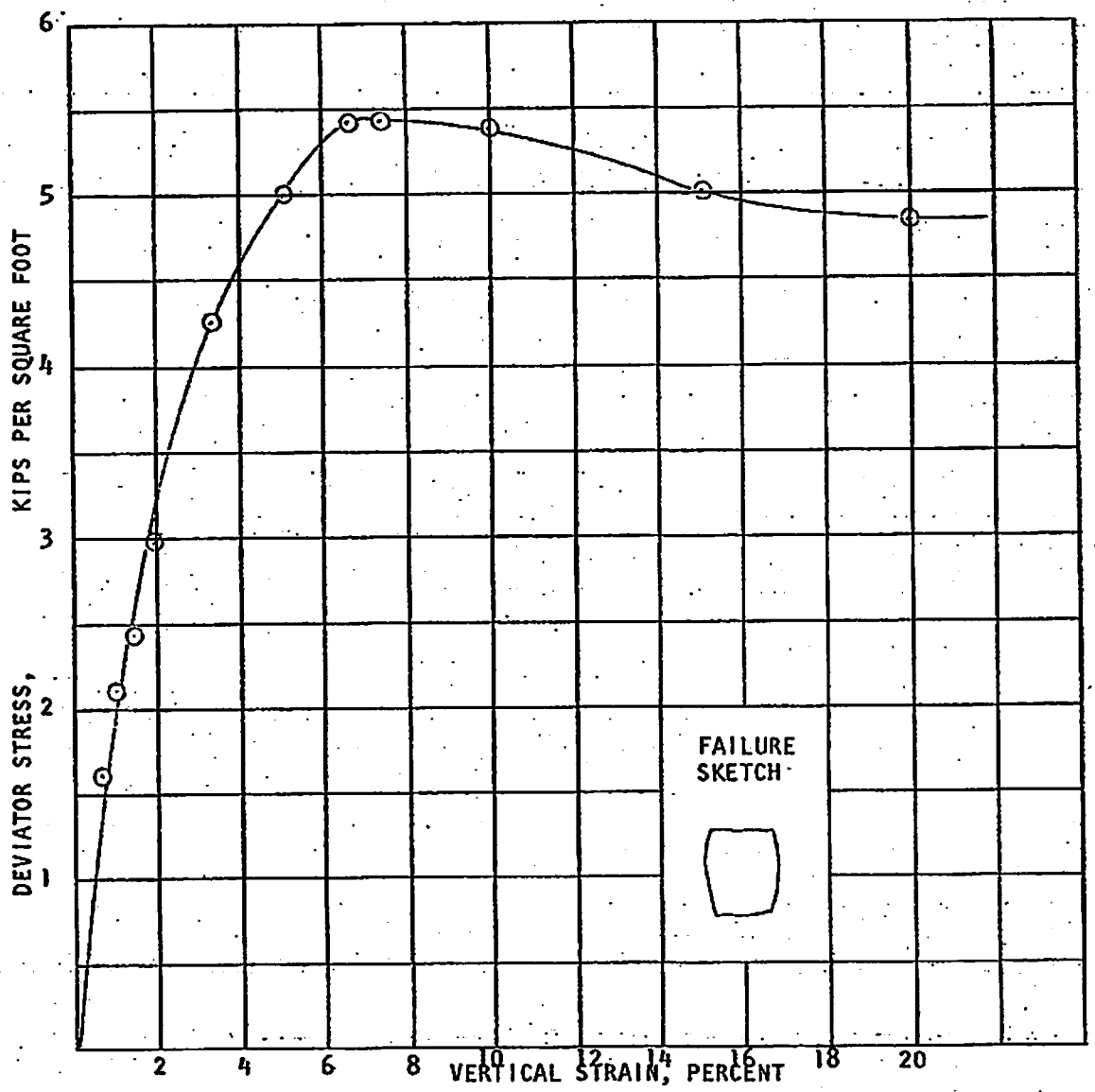
NTL 155

FH0028543

UNCONSOLIDATED - UNDRAINED
TRIAXIAL SHEAR TEST

DRILL HOLE HF - 8
DEPTH 18.8' - 19.5'
SAMPLE NO. 69141

MOIST UNIT WEIGHT: 111 pcf
DRY UNIT WEIGHT : 90 pcf
MOISTURE CONTENT : 24%
CLASSIFICATION: CLAY, Silty
CONFINING STRESS: 60 psi



Sample size - L_o = 2.94"
d_o = 1.40"

Deviator Stress at Failure = 5444 psf
Strain at Failure = 8.4%

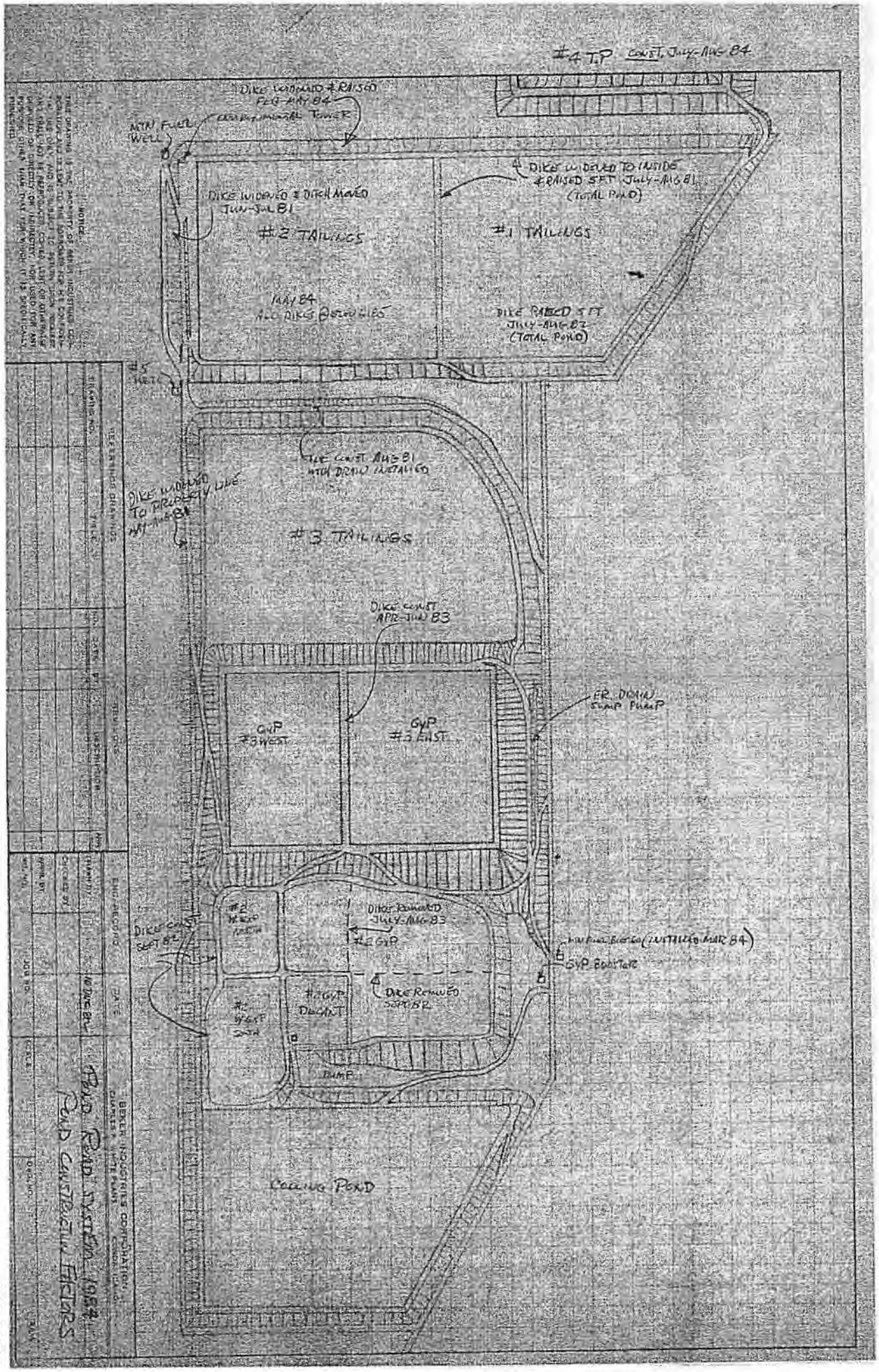
Strain Rate = 0.015"/min.

Tested at Natural Moisture Content

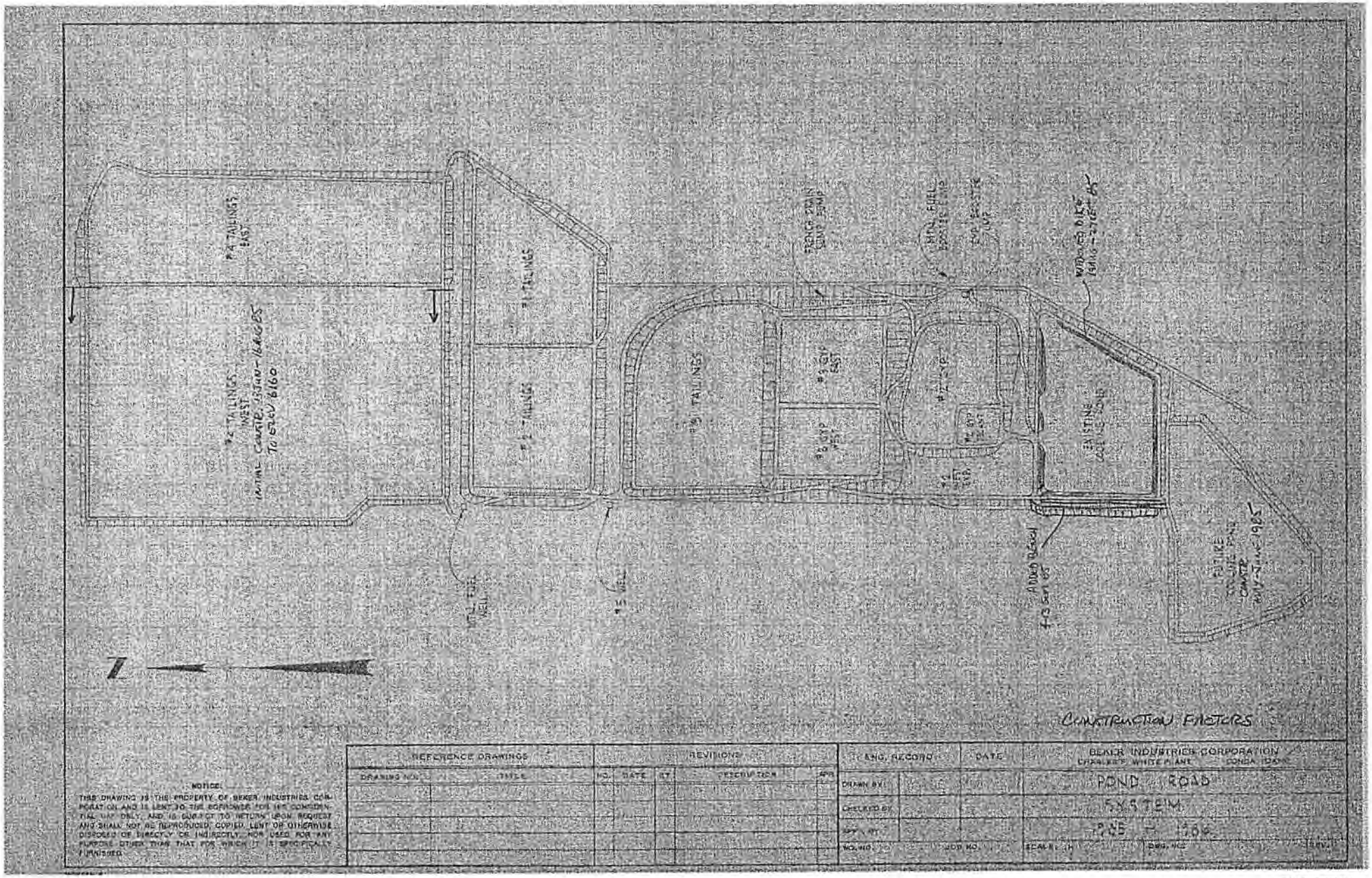
BEKER INDUSTRIES Conda, Idaho	NORTHERN TESTING LABORATORIES, INC. CONSULTING GEOTECHNICAL ENGINEERS Boise, Idaho
BEKER TAILINGS POND	JOB NO. 77-337-1 PLATE NO. 43

NTL 155

FH0028544


#4 TP CONST. JULY-AUG 84
DIKE WIDENED & RAISED FEB-MAY 84
MTN FUEL WELL
DIKE WIDENED TO INSIDE & RAISED 5 FT JULY-AUG 81 (TOTAL POND)
DIKE WIDENED & DITCH MOVED JUN-JUL 81
#2 TAILINGS
#1 TAILINGS
MAY 84 ALL DIKES REGRADED
DIKE RAISED 5 FT JULY-AUG 82 (TOTAL POND)
#5 WELL
TILE CONST AUG 81 WITH DRAIN INSTALLED
DIKE WIDENED TO PROPERTY LINE MAY-AUG 81
#3 TAILINGS
DIKE CONST APR-JUN 83
GVP #3 WEST
GVP #3 EAST
FR. DRAIN SUMP PUMP
#2 WEST DITCH
DIKE REMOVED JULY-AUG 83
#2 GVP
DIKE CONST SEPT 82
GVP BOOSTER
#6 GVP DITCH
DIKE REMOVED SEPT 82
#6 GVP SUMP
PUMP
COOLING POND
DESERT RIDGE DRAWINGS
DRAWING NO.
REVISIONS
DATE
DESCRIPTION
BY
CHECKED BY
DRAWN BY
ENGINEERED
DATE
J. BERGER INDUSTRIES CORPORATION
CHARLES A. WITTE PLANT
CONDON, OREGON
POND ROAD SYSTEM 1984
POND CONSTRUCTION FACTS

FH00028545



REFERENCE DRAWINGS		REVISIONS					ENG. RECORD	DATE	BEAKER INDUSTRIES CORPORATION CHARLES'S WHITE PLANT CONDA, IDAHO
DRAWING NO.	TITLE	NO.	DATE	BY	DESCRIPTION	APR.	DRAWN BY		POND ROAD
							CHECKED BY		SYSTEM
							APP'D BY		PLAN
							WO. NO.	JOB NO.	SCALE: 1" = DWG. NO. REV.

NOTICE:
THIS DRAWING IS THE PROPERTY OF BEKER INDUSTRIES CORPORATION AND IS LENT TO THE BORROWER FOR ITS CONFIDENTIAL USE ONLY, AND IS SUBJECT TO RETURN UPON REQUEST AND SHALL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISCLOSED DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIFICALLY FURNISHED.

FH0028546