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GEOTECHNICAL REVIEW
CRANDON PROJECT
WASTE DISPOSAL SYSTEM
PROJECT REPORT 2
VOLUME 2

TD
194.66
.W62
C716
1981
v. 2
pt. 2

COPY No. 12



Golder Associates

CONSULTING GEOTECHNICAL AND MINING ENGINEERS

GEOTECHNICAL REVIEW
CRANDON PROJECT
WASTE DISPOSAL SYSTEM
PROJECT REPORT 2
VOLUME 2

LABORATORY TEST DATA
TEST PIT LOGS
G40 SERIES BORING LOGS

Submitted to:

Exxon Minerals Company
655 Washington Street
Post Office Box 813
Rhineland, Wisconsin 54501

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October, 1981

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V.2
Pt.2

VOLUME 2
LABORATORY TEST DATA
TEST PIT LOGS
G40 SERIES BORING LOGS

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LIST OF ABBREVIATIONS

The abbreviations and terms commonly employed on each boring log and test pit log are as follows:

SAMPLE TYPES

AH	Air hammer
AS	Auger sample
CS	Chunk sample
DO	Drive open
DS	Denison sample
PS	Pitcher sample
RX	Rock core
ST	Slotted tube
TO	Thin-walled, open
TP	Thin-walled, piston
WS	Wash sample

Relative Density
of Cohesionless SoilsStandard Penetration
Resistance
N (blows/ft.)

Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	over 50

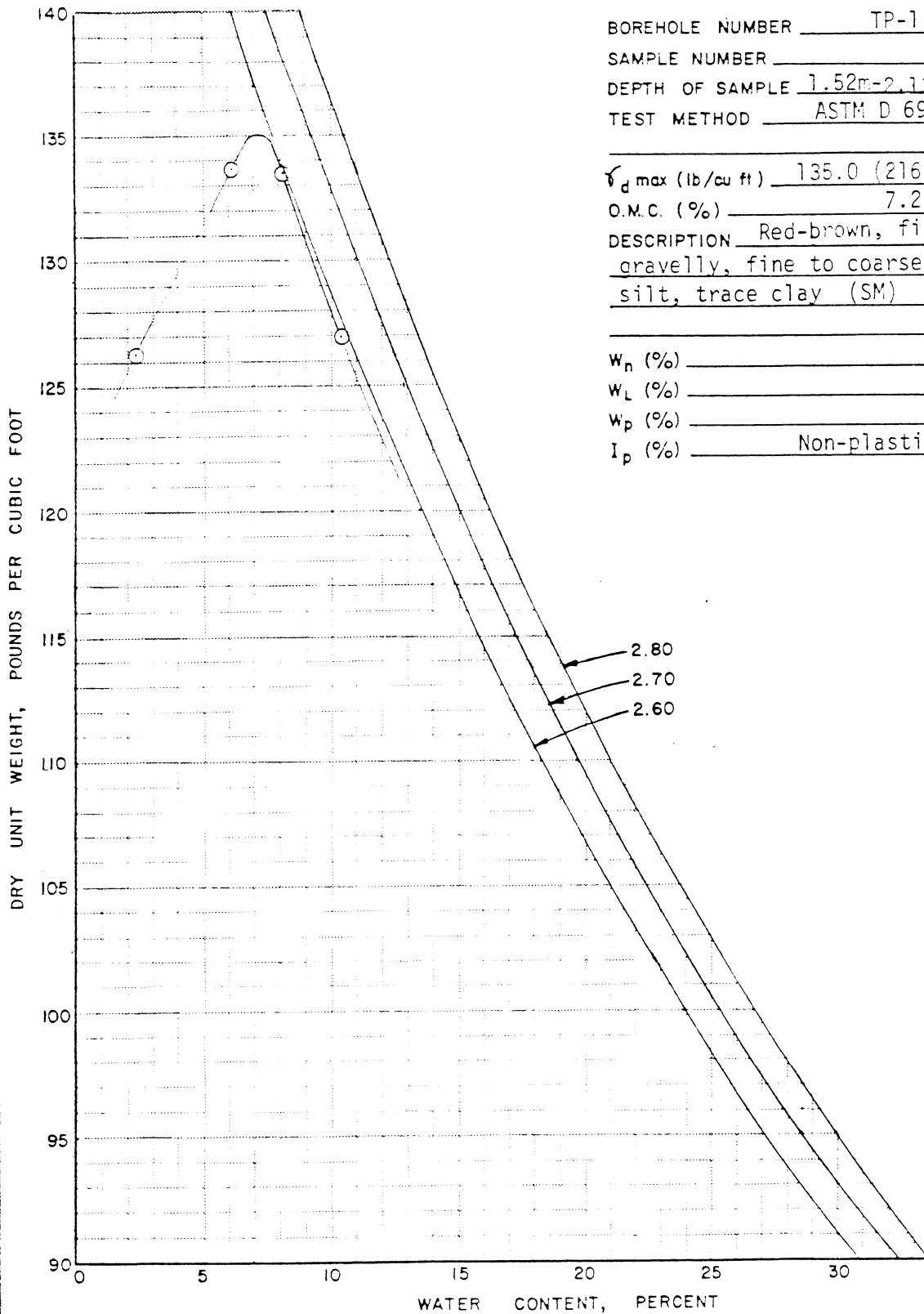
Standard Penetration Resistance, "N" = the number of blows required to drive a 2 in. O.D. split spoon sampler one foot using a 140 lb. hammer falling 30 in.

Consistency of
Cohesive SoilsCohesion
CU (psf)

Very Soft	less than 250
Soft	250 to 500
Firm	500 to 1,000
Stiff	1,000 to 2,000
Very stiff	2,000 to 4,000
Hard	over 4,000

COMPACTION TEST RESULTS

FIGURE V2-1



BOREHOLE NUMBER TP-1

SAMPLE NUMBER _____

DEPTH OF SAMPLE 1.52m-2.13m (5.0'-7.0')

TEST METHOD ASTM D 698-Method D

γ_d max (lb/cu ft) 135.0 (2162.7 kg/m³)

O.M.C. (%) 7.2

DESCRIPTION Red-brown, fine to coarse
gravelly, fine to coarse SAND, some
silt, trace clay (SM)

W_n (%) _____

W_L (%) _____

W_p (%) _____

I_p (%) Non-plastic

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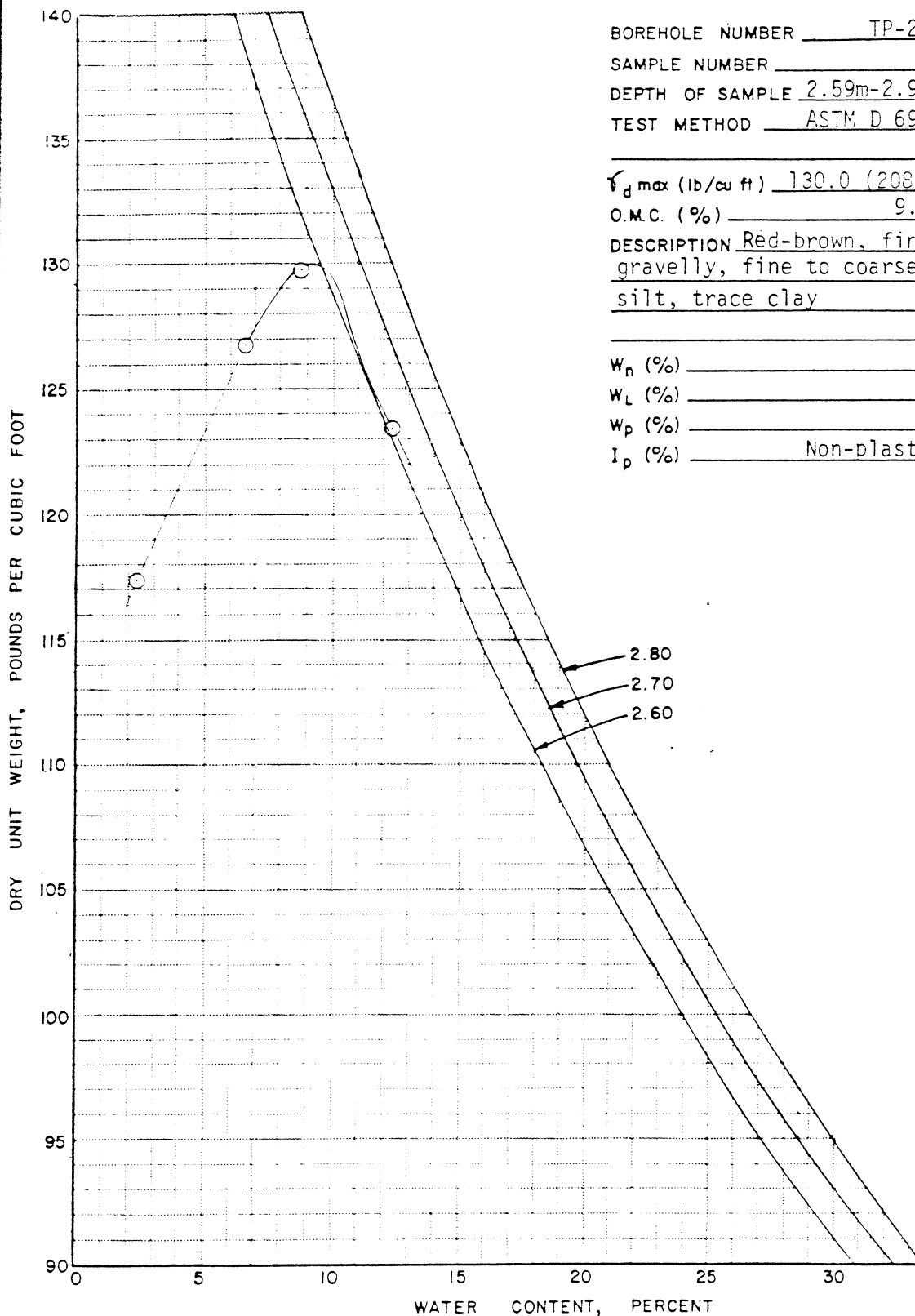
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COMPACTION TEST RESULTS

FIGURE V2-2



BOREHOLE NUMBER TP-2

SAMPLE NUMBER _____

DEPTH OF SAMPLE 2.59m-2.90m (8.5'-9.5')

TEST METHOD ASTM D 698-Method D

$\gamma_d \text{ max (lb/cu ft)}$ 130.0 (2082.6 kg/m³)

O.M.C. (%) 9.2

DESCRIPTION Red-brown, fine to coarse, gravelly, fine to coarse SAND, trace silt, trace clay

W_n (%) _____

W_L (%) _____

W_p (%) _____

I_p (%) Non-plastic

Date 1/3/80

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COMPACTION TEST RESULTS

FIGURE V2-3

BOREHOLE NUMBER TP-4

SAMPLE NUMBER _____

DEPTH OF SAMPLE 1.68m-1.98m (5.5'-6.5')

TEST METHOD ASTM D 698-Method D

γ_d max (lb/cu ft) 124.5 (1994.5 kg/m³)

O.M.C. (%) 12.4

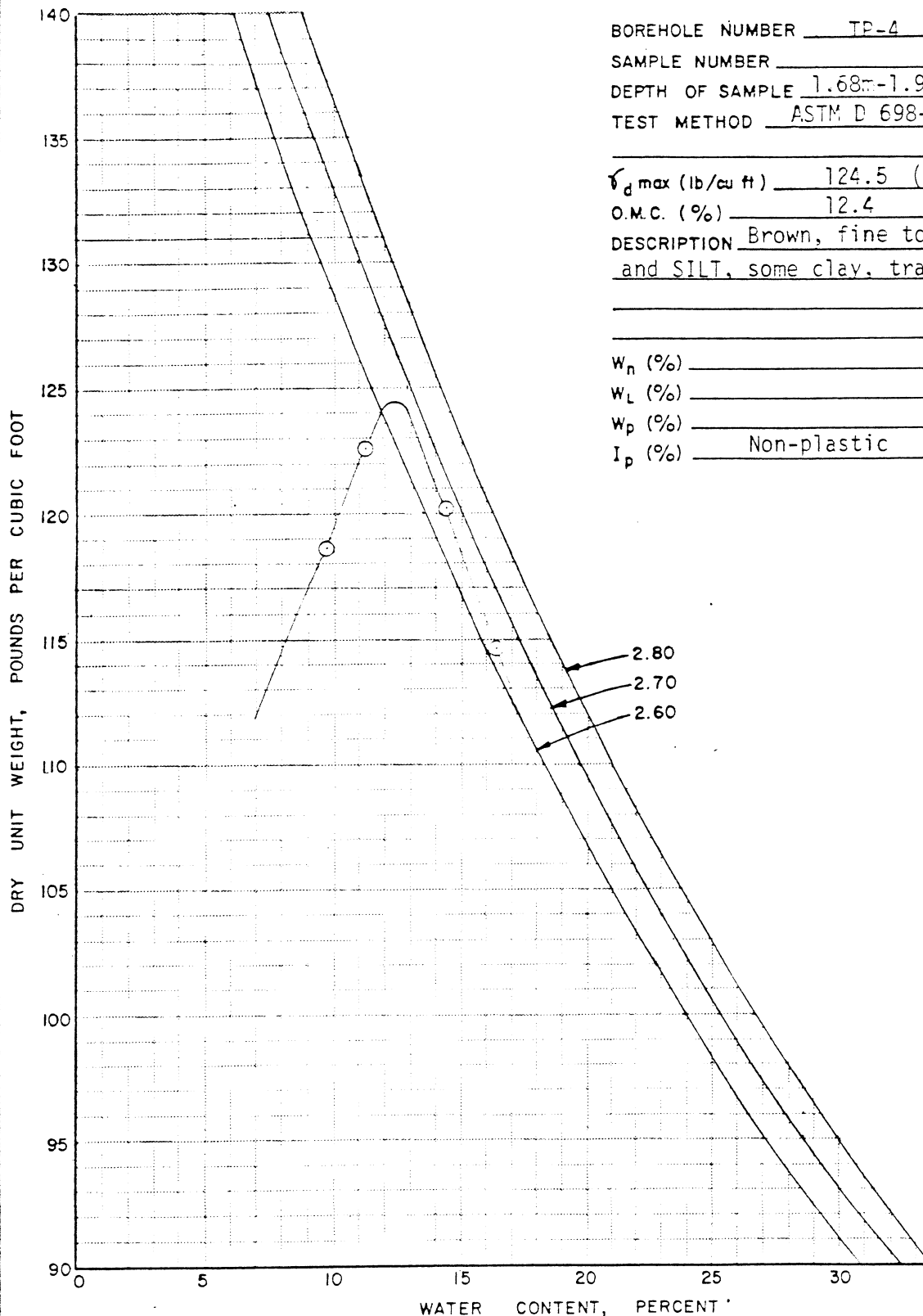
DESCRIPTION Brown, fine to coarse SAND
and SILT, some clay, trace fine gravel

w_n (%) _____

w_L (%) _____

w_p (%) _____

I_p (%) Non-plastic



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COMPACTION TEST RESULTS

FIGURE V2-4

BOREHOLE NUMBER TP 5

SAMPLE NUMBER _____

DEPTH OF SAMPLE 1.83m-2.13m (6.0'-7.0')

TEST METHOD ASTM D 698-Method D

γ_d max (lb/cu ft) 136.5 (2186.7 kg/m³)

O.M.C. (%) 8.0

DESCRIPTION Red-brown, fine to coarse

SAND, some silt, some fine to coarse

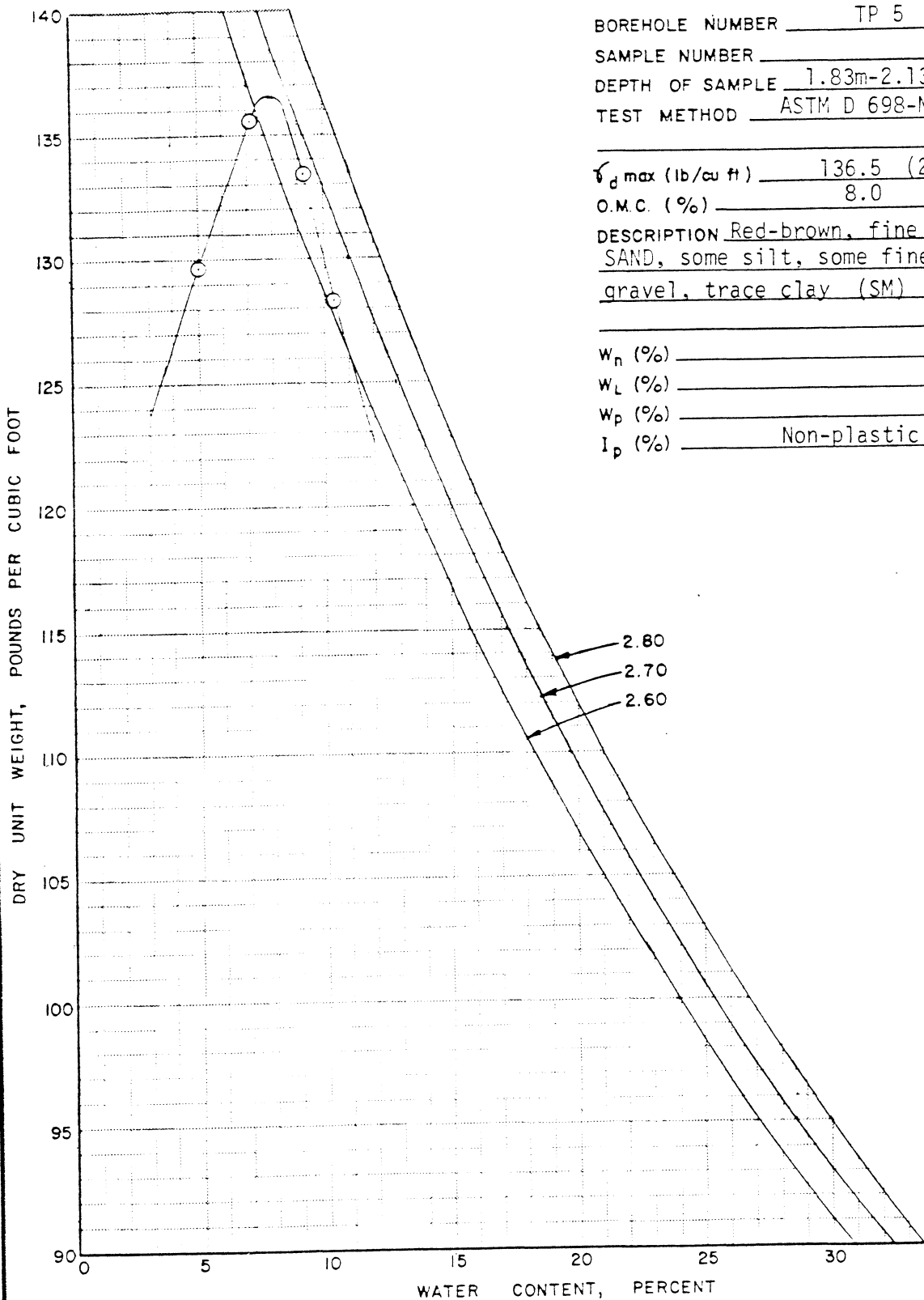
gravel, trace clay (SM)

w_n (%) _____

w_L (%) _____

w_p (%) _____

I_p (%) Non-plastic



Date 1-4-80

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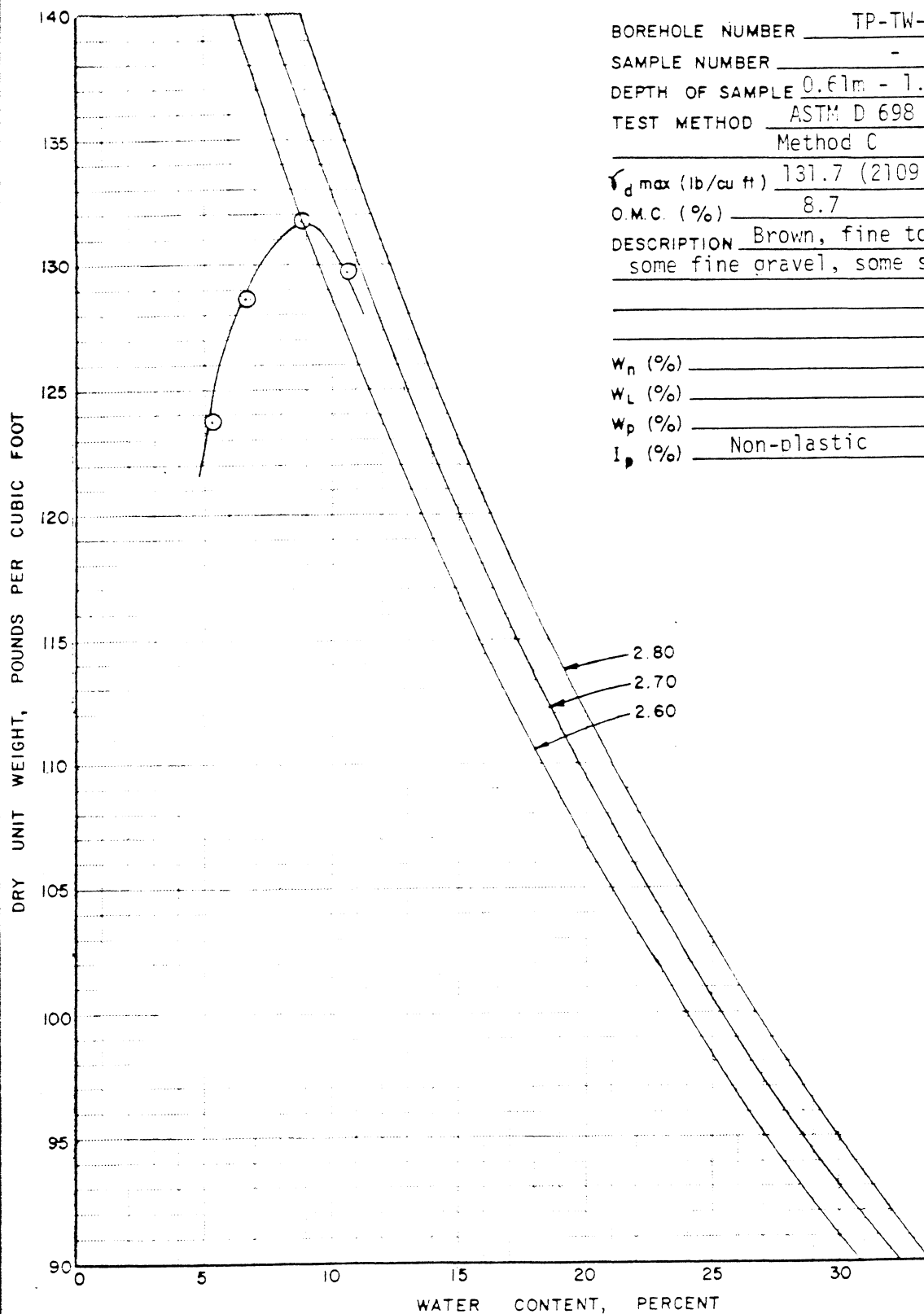
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COMPACTION TEST RESULTS

FIGURE V2-5



BOREHOLE NUMBER TP-TW-41
 SAMPLE NUMBER -
 DEPTH OF SAMPLE 0.61m - 1.83m (2.0'-6.0')
 TEST METHOD ASTM D 698
Method C
 γ_d max (lb/cu ft) 131.7 (2109.8 kg/m³)
 O.M.C. (%) 8.7
 DESCRIPTION Brown, fine to coarse SAND,
some fine gravel, some silt, trace clay

w_n (%)
 w_L (%)
 w_p (%)
 I_p (%) Non-plastic

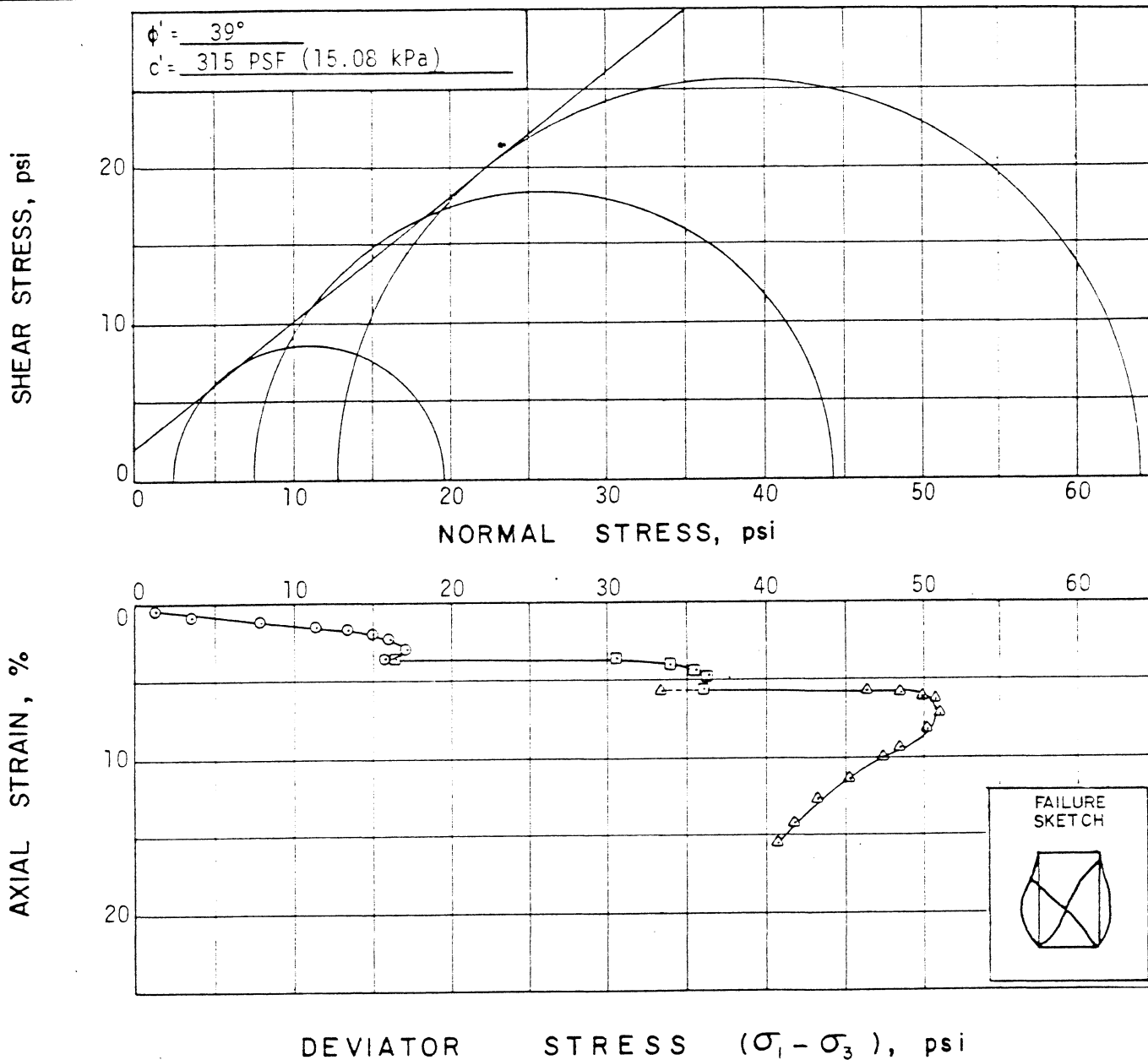
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TRIAXIAL TEST RESULTS

FIGURE V2-6



SAMPLE NUMBER	1	2	3
CONFINING PRESSURE, psi	2.5	7.4	12.8
BACK PRESSURE, psi	0	0	0
CONSOLIDATION PRESSURE, psi	2.5	7.4	12.8
WET UNIT WEIGHT, pcf	113.3	-	-
MOISTURE CONTENT, %	-	-	-
SYMBOL	○	□	△

BOREHOLE NUMBER TP-1

SAMPLE NUMBER 1

DEPTH OF SAMPLE 5.0'-7.0'

TYPE OF TEST Staged-Vacuum Consol.-Dry

TYPE OF SPECIMEN Compacted

SOIL CLASSIFICATION Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

NOTE: 1. TEST PERFORMED ON AIR DRY SAMPLE WITH CONFINING PRESSURE APPLIED USING VACUUM.
 2. TEST PERFORMED USING MATERIALS PASSING 3/4" SIEVE.

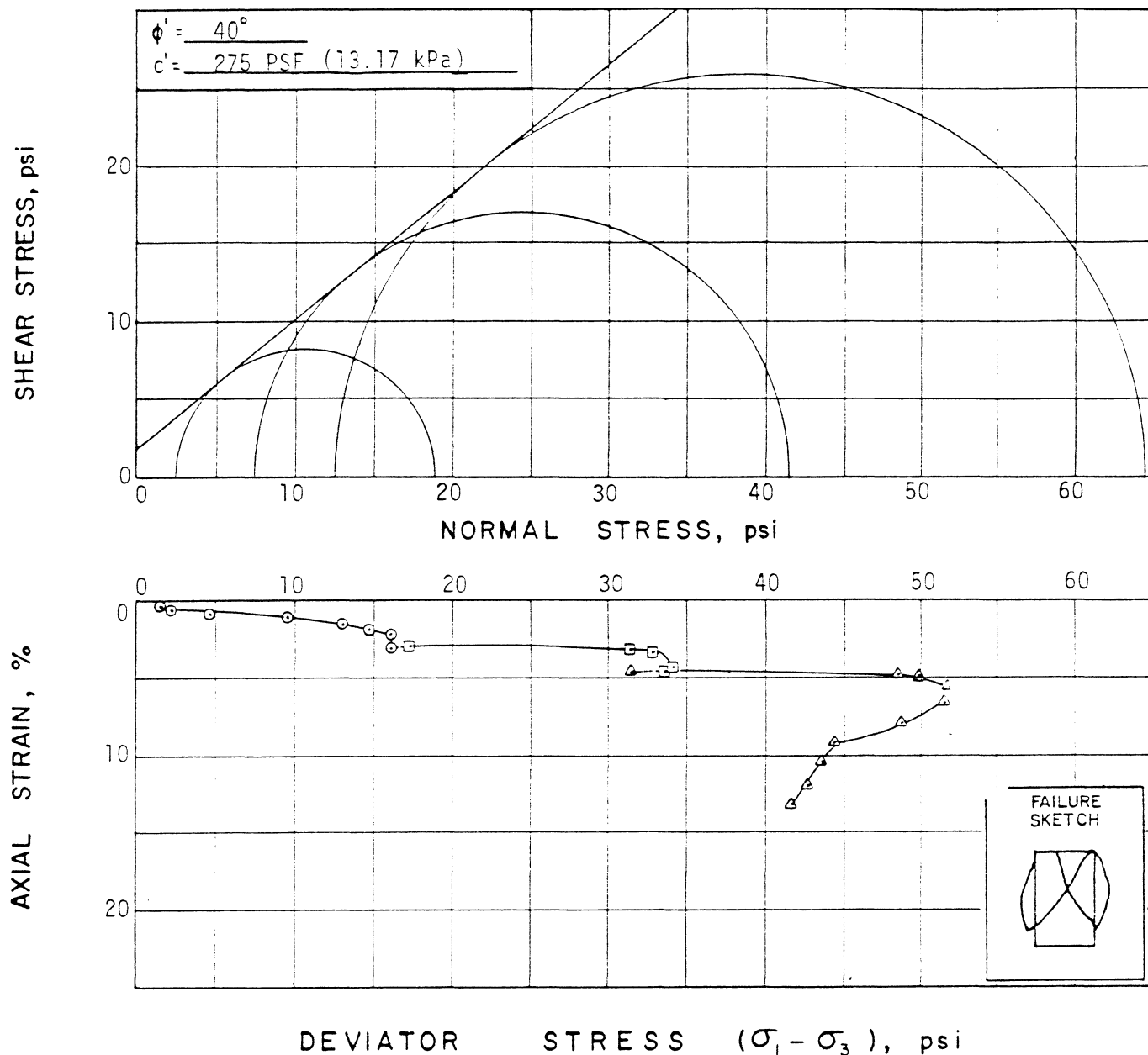
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TRIAXIAL TEST RESULTS

FIGURE V2-7



SAMPLE NUMBER	1	2	3
CONFINING PRESSURE, psi	2.5	7.4	12.4
BACK PRESSURE, psi	0	0	0
CONSOLIDATION PRESSURE, psi	2.5	7.4	12.4
WET UNIT WEIGHT, pcf	119.9	-	-
MOISTURE CONTENT, %	-	-	-
SYMBOL	○	□	△

BOREHOLE NUMBER TP-1
SAMPLE NUMBER 1
DEPTH OF SAMPLE 5.0'-7.0'
TYPE OF TEST Staged-Vacuum Consol. - Dry
TYPE OF SPECIMEN Compacted
SOIL CLASSIFICATION Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

NOTE: 1. TEST PERFORMED ON AIR DRY SAMPLE WITH CONFINING PRESSURE APPLIED USING VACUUM.
2. TEST PERFORMED USING MATERIALS PASSING 3/4" SIEVE.

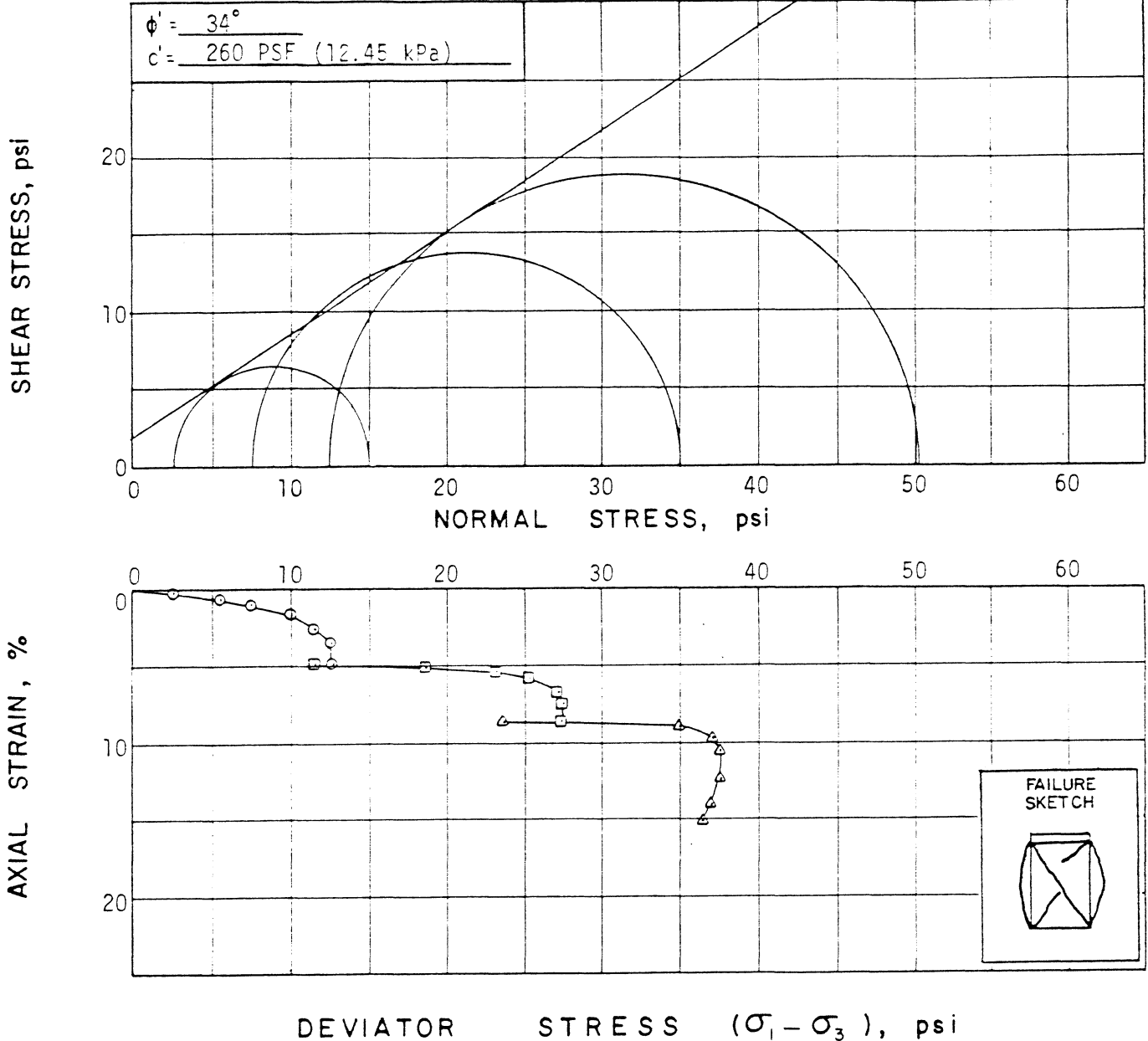
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TRIAXIAL TEST RESULTS

FIGURE V2-8



SAMPLE NUMBER	1	2	3
CONFINING PRESSURE, psi	2.5	7.4	12.3
BACK PRESSURE, psi	0	0	0
CONSOLIDATION PRESSURE, psi	2.5	7.4	12.3
WET UNIT WEIGHT, pcf	103.0	-	-
MOISTURE CONTENT, %	-	-	-
SYMBOL	○	□	△

BOREHOLE NUMBER TP-1

SAMPLE NUMBER 1

DEPTH OF SAMPLE 5.0' - 7.0'

TYPE OF TEST Staged-Vacuum Consol.-Dry

TYPE OF SPECIMEN Compacted

SOIL CLASSIFICATION Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

NOTE: 1. TEST PERFORMED ON AIR DRY SAMPLE WITH CONFINING PRESSURE APPLIED USING VACUUM.
 2. TEST PERFORMED USING MATERIALS PASSING 3/4" SIEVE.

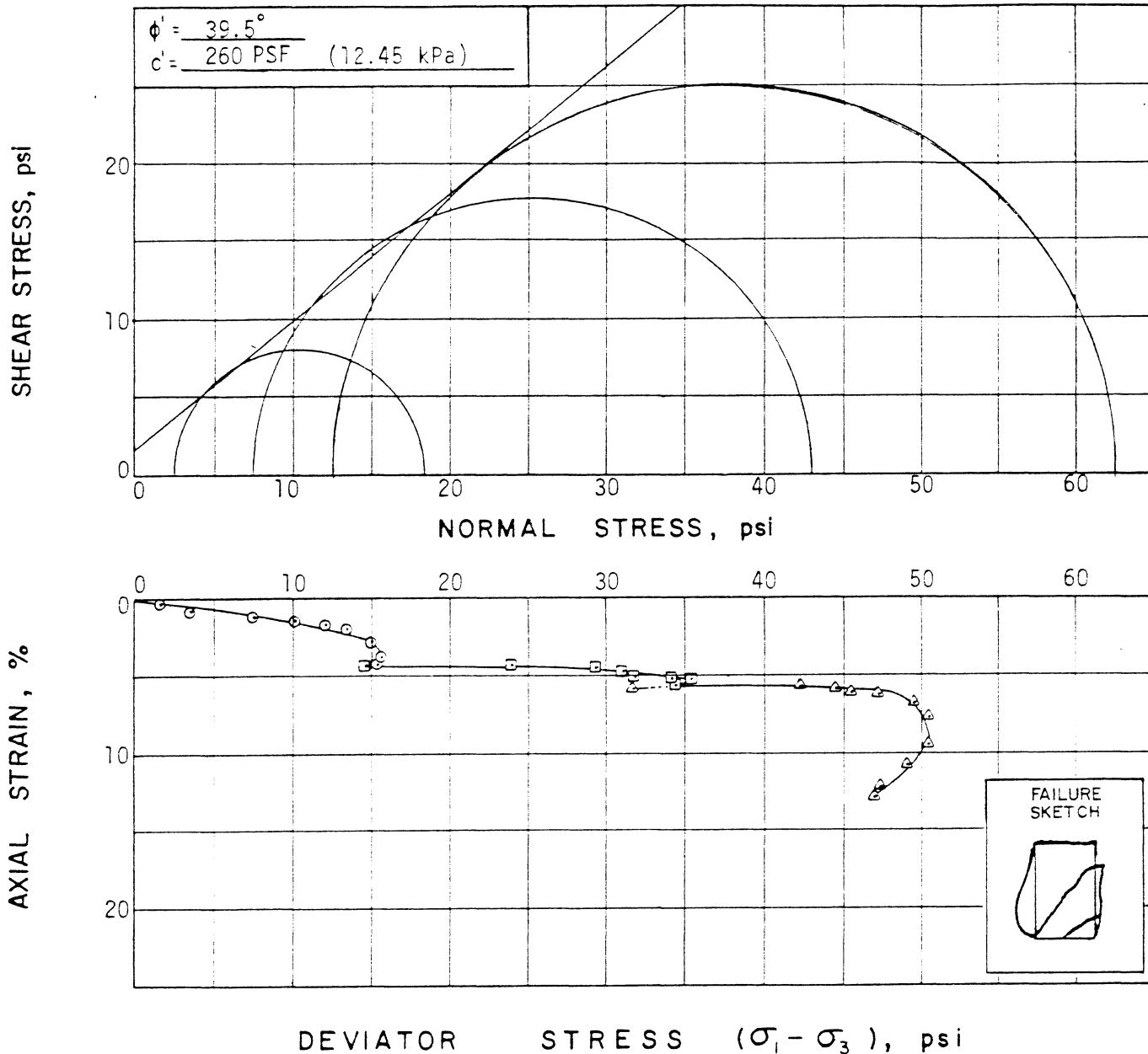
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TRIAXIAL TEST RESULTS

FIGURE V2-9



SAMPLE NUMBER	1	2	3
CONFINING PRESSURE, psi	2.5	7.4	12.3
BACK PRESSURE, psi	0	0	0
CONSOLIDATION PRESSURE, psi	2.5	7.4	12.3
WET UNIT WEIGHT, pcf	110.4	-	-
MOISTURE CONTENT, %	-	-	-
SYMBOL	○	□	△

BOREHOLE NUMBER TP-2
SAMPLE NUMBER 1
DEPTH OF SAMPLE 8.5'-9.5'
TYPE OF TEST Staged-Vacuum Consol.-Dry
TYPE OF SPECIMEN Compacted
SOIL CLASSIFICATION Red-brown, fine to coarse gravelly, fine to coarse SAND, trace silt, trace clay (SM)

Note: 1. TEST PERFORMED ON AIR DRY SAMPLE WITH CONFINING PRESSURE APPLIED USING VACUUM.
2. TEST PERFORMED USING MATERIALS PASSING 3/4" SIEVE.

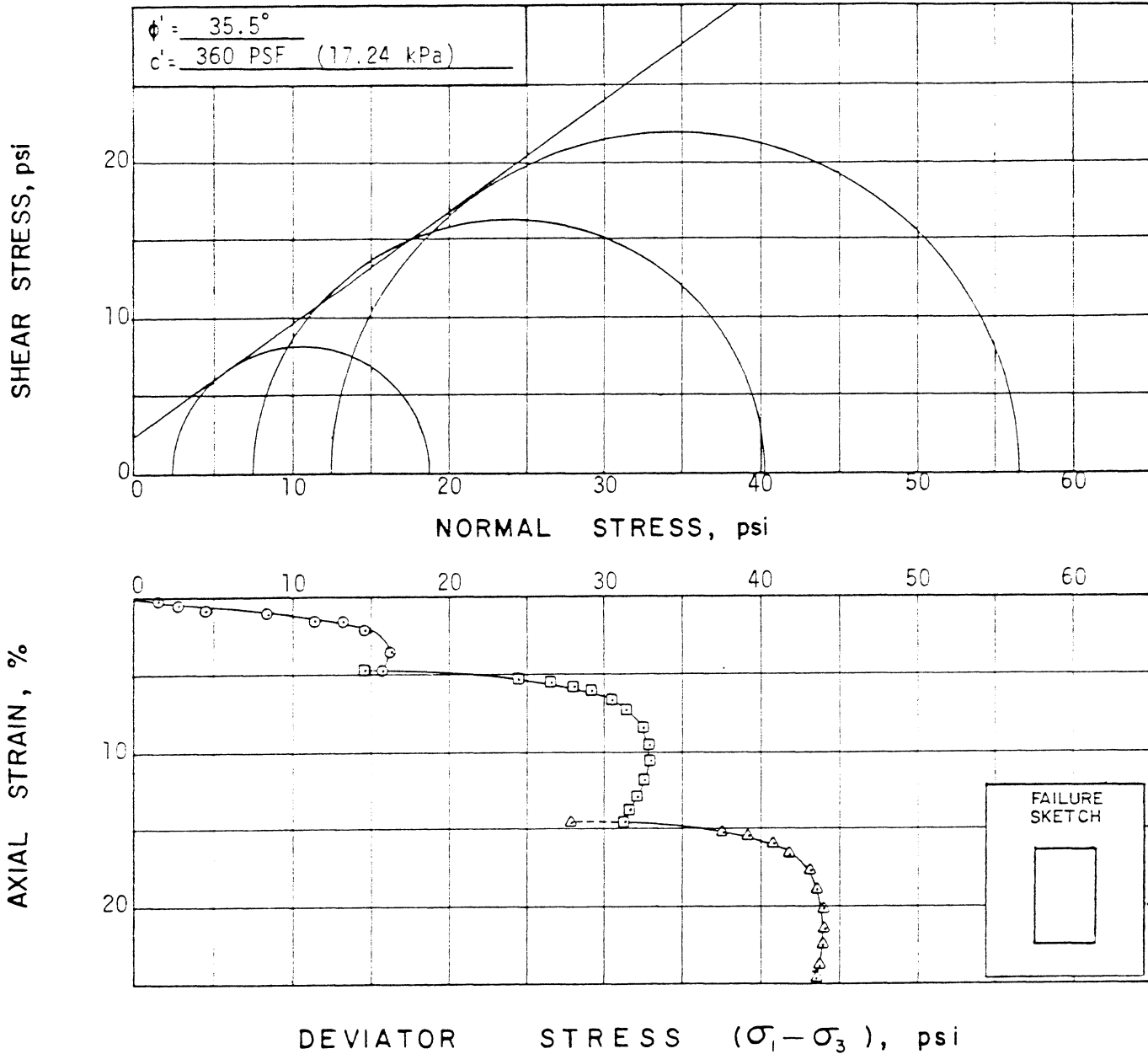
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TRIAXIAL TEST RESULTS

FIGURE V2-10



SAMPLE NUMBER	1	2	3
CONFINING PRESSURE, psi	2.5	7.4	12.3
BACK PRESSURE, psi	0	0	0
CONSOLIDATION PRESSURE, psi	2.5	7.4	12.3
WET UNIT WEIGHT, pcf	106.6	-	-
MOISTURE CONTENT, %	-	-	-
SYMBOL	○	□	△

BOREHOLE NUMBER TP-4

SAMPLE NUMBER 1

DEPTH OF SAMPLE 5.5'-6.5'

TYPE OF TEST Staged-Vacuum Consol.-Dry

TYPE OF SPECIMEN Compacted

SOIL CLASSIFICATION Brown, fine to coarse SAND and SILT, some clay, trace fine gravel (CL)

NOTE: 1. TEST PERFORMED ON AIR DRY SAMPLE WITH CONFINING PRESSURE APPLIED USING VACUUM.

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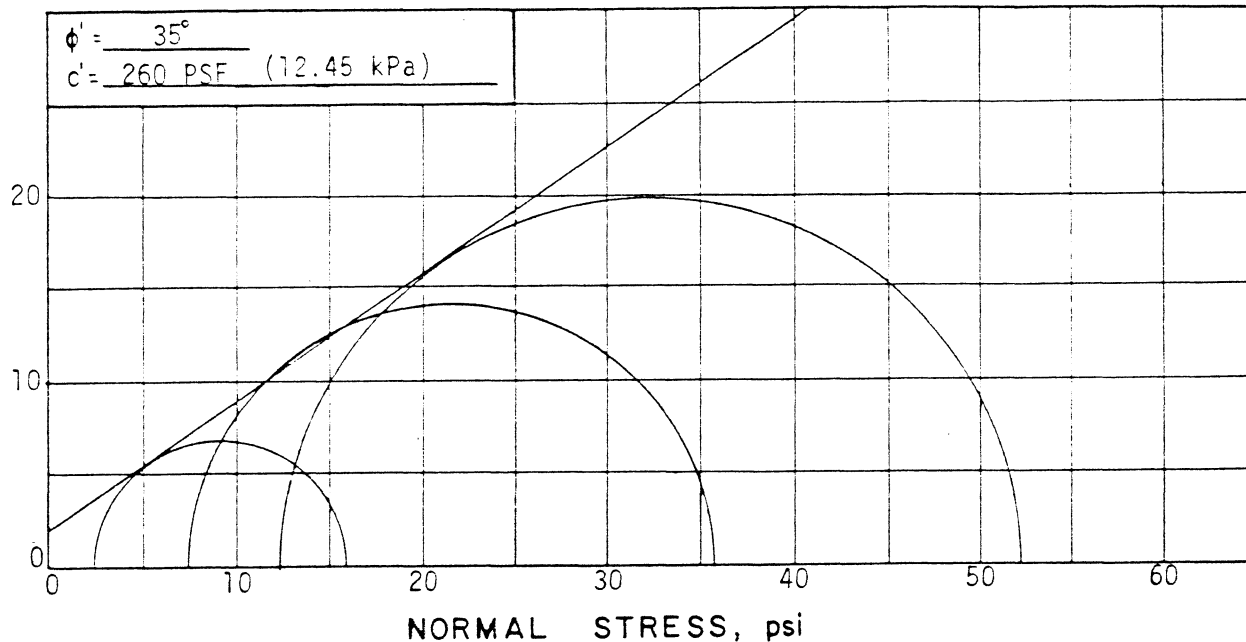
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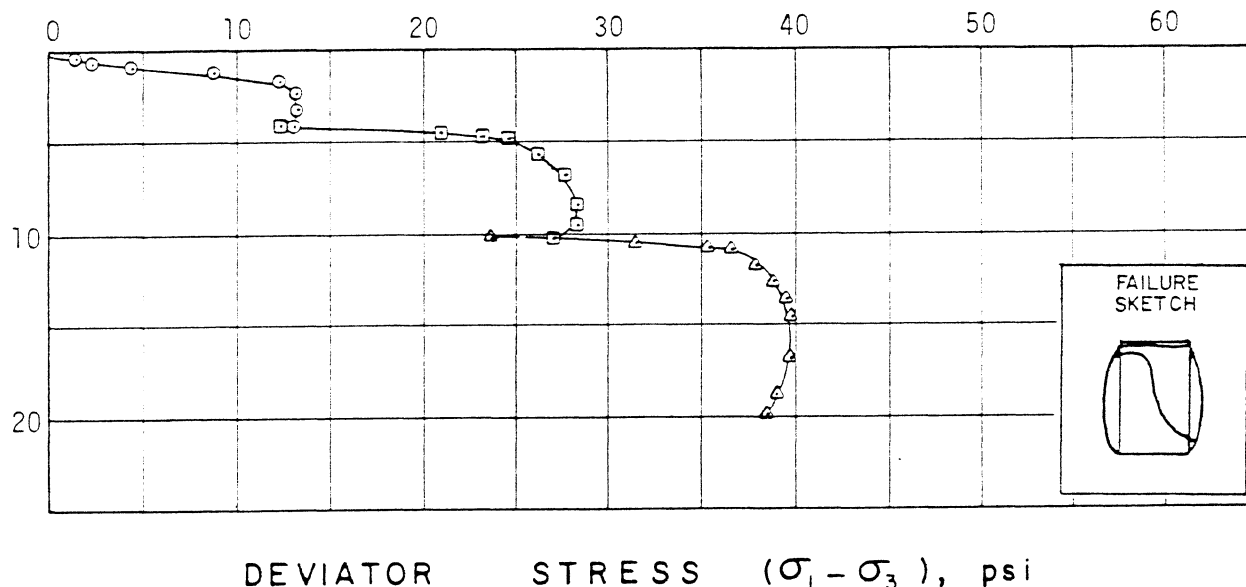
TRIAXIAL TEST RESULTS

FIGURE V2-11

SHEAR STRESS, psi



AXIAL STRAIN, %



SAMPLE NUMBER	1	2	3
CONFINING PRESSURE, psi	2.5	7.4	12.3
BACK PRESSURE, psi	0	0	0
CONSOLIDATION PRESSURE, psi	2.5	7.4	12.3
WET UNIT WEIGHT, pcf	112.3	-	-
MOISTURE CONTENT, %	-	-	-
SYMBOL	○	□	△

BOREHOLE NUMBER TP-5
 SAMPLE NUMBER 1
 DEPTH OF SAMPLE 6.0'-7.0'
 TYPE OF TEST Staged-Vacuum Consol.-Dry
 TYPE OF SPECIMEN Compacted
 SOIL CLASSIFICATION Red-brown, fine to coarse SAND, some silt, some fine to coarse gravel, trace clay (SM)

NOTE: 1. TEST PERFORMED ON AIR DRY SAMPLE WITH CONFINING PRESSURE APPLIED USING VACUUM.
 2. TEST PERFORMED USING MATERIALS PASSING 3/4" SIEVE.

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PERMEABILITY TEST RESULTS

FIGURE V2-12

SAMPLE IDENTIFICATION	PERMEABILITY VALUES										
	Corps of Engineers Method			Constant Head Using Triaxial Cell				Constant Head Using Proctor Mold			
	Dry Density Kg/m ³ (PCF)	Final Moisture Content (%)	Permeability (m/s)	Compacted Dry Density Kg/m ³ (PCF)	Molding Moisture Content (%)	Final Moisture Content (%)	Permeability (m/s)	Compacted Dry Density Kg/m ³ (PCF)	Molding Moisture Content (%)	Final Moisture Content (%)	Permeability (m/s)
TP-1, 1.52m-2.13m (5.0'-7.0')	1841 (114.9)	15.9	3.9x10 ⁻⁵	2032 (130.6)	4.5	10.0	1.9x10 ⁻⁶	2054 (128.2)	7.7	8.9	3.5x10 ⁻⁸
	2049 (see Note #4) (127.9)	10.4	1.4x10 ⁻⁷ (see Note #4)	2115 (132.0)	8.4	(See Note 5)	1.1x10 ⁻⁷				
TP-2, 2.59m-2.90m (8.5'-9.5')	1759 (109.8)	18.0	2.3x10 ⁻⁵	1902 (118.7)	8.5	13.7	1.7x10 ⁻⁷	2033 (126.9)	9.4	10.1	2.3x10 ⁻⁸
TP-4, 1.67m-1.98m (5.5'-6.5')	1581 (98.7)	17.6	2.9x10 ⁻⁶	1870 (116.7)	13.5	15.7	2.5x10 ⁻¹⁰				
				1836 (114.6)	14.3	15.9	2.9x10 ⁻¹⁰				
TP-5, 1.83m-2.13m (6.0'-7.0')	1962 (122.5)	12.2	2.5x10 ⁻⁶	1998 (124.7)	8.0	11.4	1.2x10 ⁻⁷	2102 (131.2)	8.3	8.3	1.9x10 ⁻⁹
TP-TW-41, 0.61m-1.83m (2.0'-6.0')				2091 (130.5)	7.4 (see note #6)	10.1	2.4x10 ⁻⁸	2079 (129.8) 2091 (130.5)	9.0 7.4	9.9 -	5.7x10 ⁻⁹ 3.5x10 ⁻⁹

NOTES:

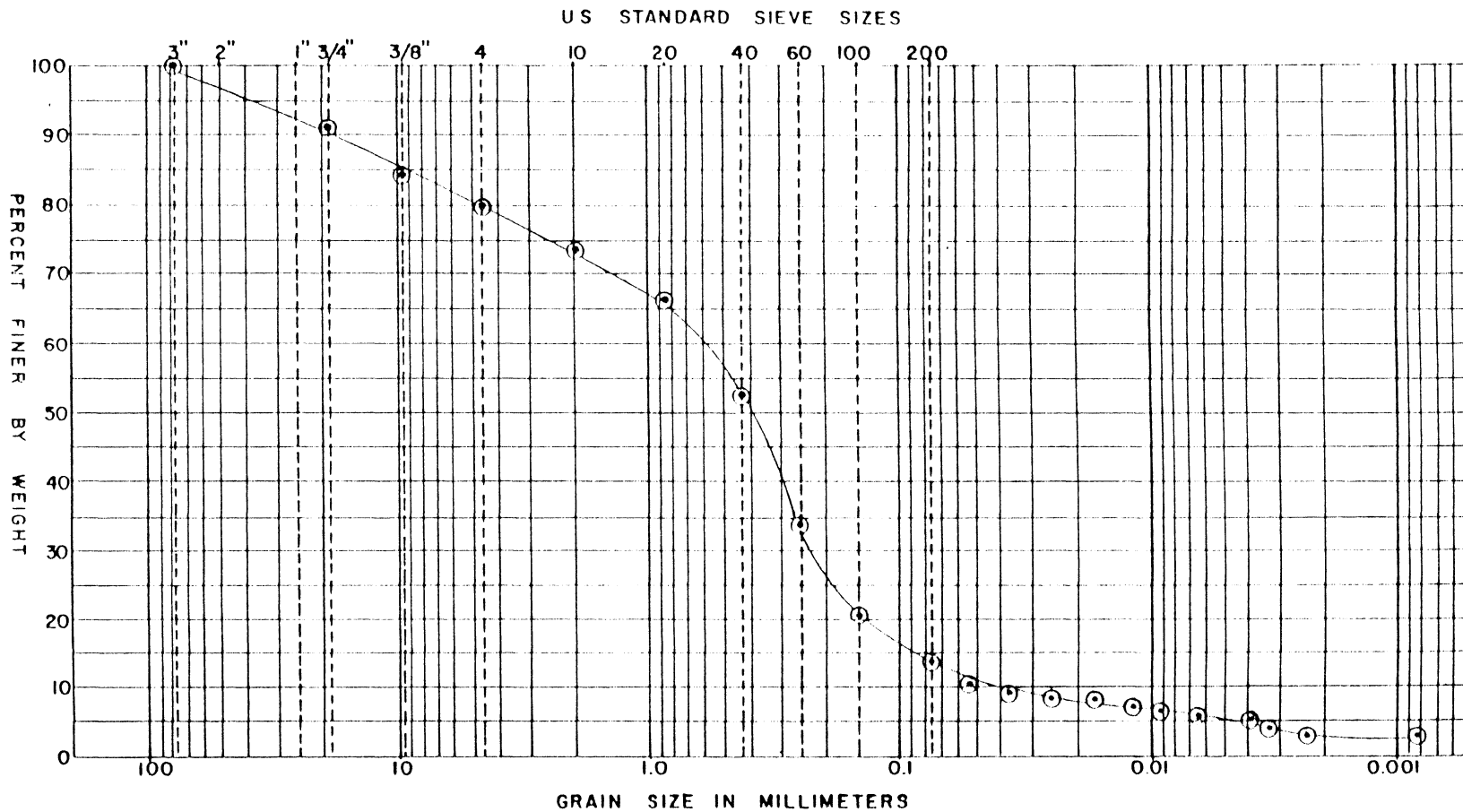
- Nominal Sample diameter and height are respectively 4.0 inches (101.60mm) and 4.58 inches (116.33mm).
- Constant Head Tests using triaxial cell were performed employing pressure differential of 2 to 10 psi (13.79 to 68.95 kPa), and materials passing 1/2" (12.70mm) sieve.
- Constant Head Tests using Proctor mold were performed employing the following:
 - Materials passing 3/4" (19.05mm) sieve
 - Pressure differential of 5 to 15 psi (34.48 to 103.43 kPa)
 - Inside of the mold covered with a thin bentonite coating (see the text for details)
- Results are suspected to be influenced by piping along side of the mold.
- Saturation checked by pore pressure parameter "B". B = 0.93.
- For comparison, after performing the permeability test in a Proctor Mold, the specimen was extruded and tested in the triaxial cell under pressure differential of 5 to 15 psi (34.48 to 103.43 kPa). Note #2 is not applicable for these test results.

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
TP 1	1.52m- 2.13m (5.0'-7.0')	17.2	-	-	-	Red-brown, fine to coarse, gravelly, coarse SAND, some silt, trace clay (SM)

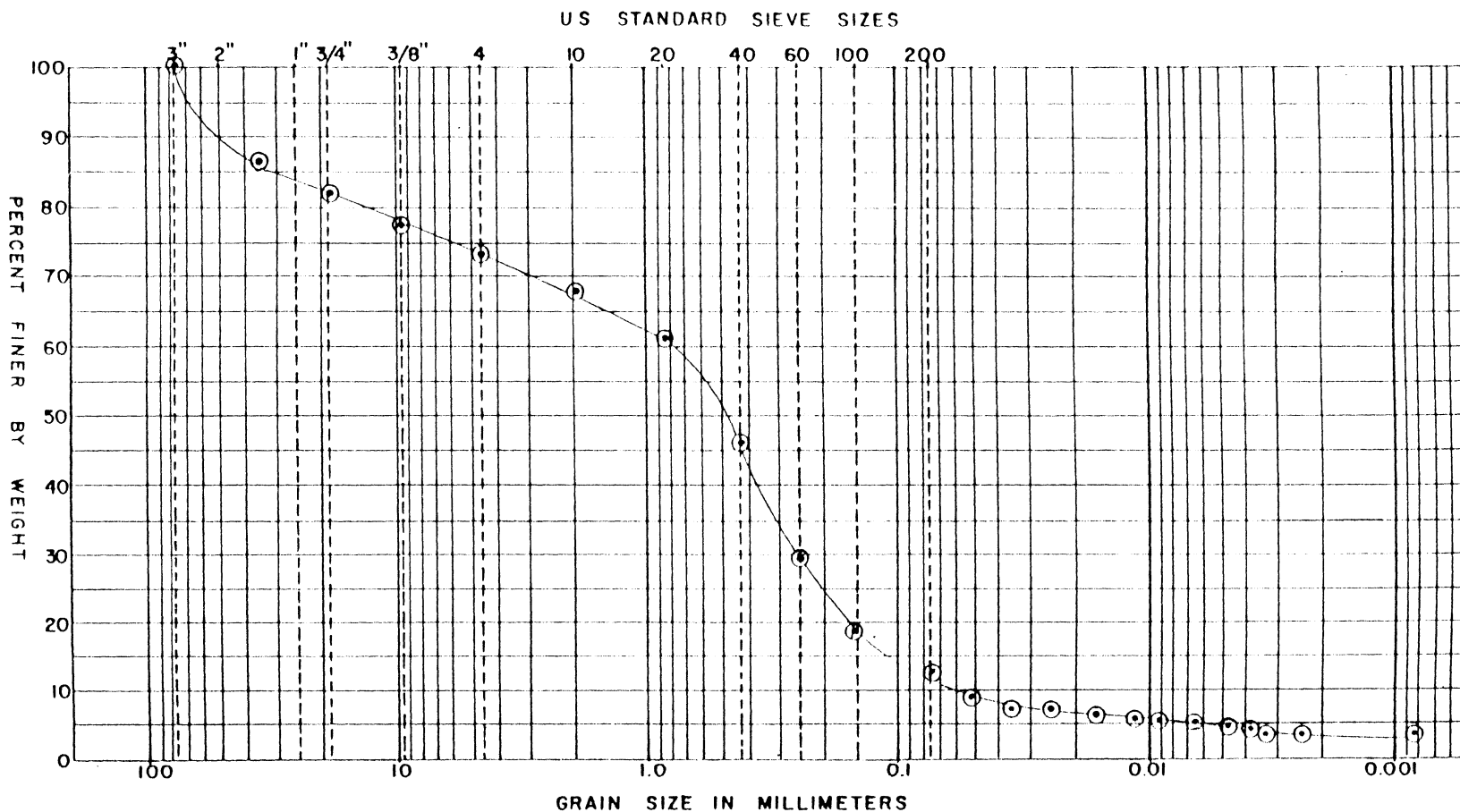
FIGURE V2-13

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
TP 2	2.59m-2.90m (8.5'-9.5')	14.6	-	-	-	Red-brown, fine to coarse, gravelly, fine to coarse SAND, trace silt, trace clay (SM)

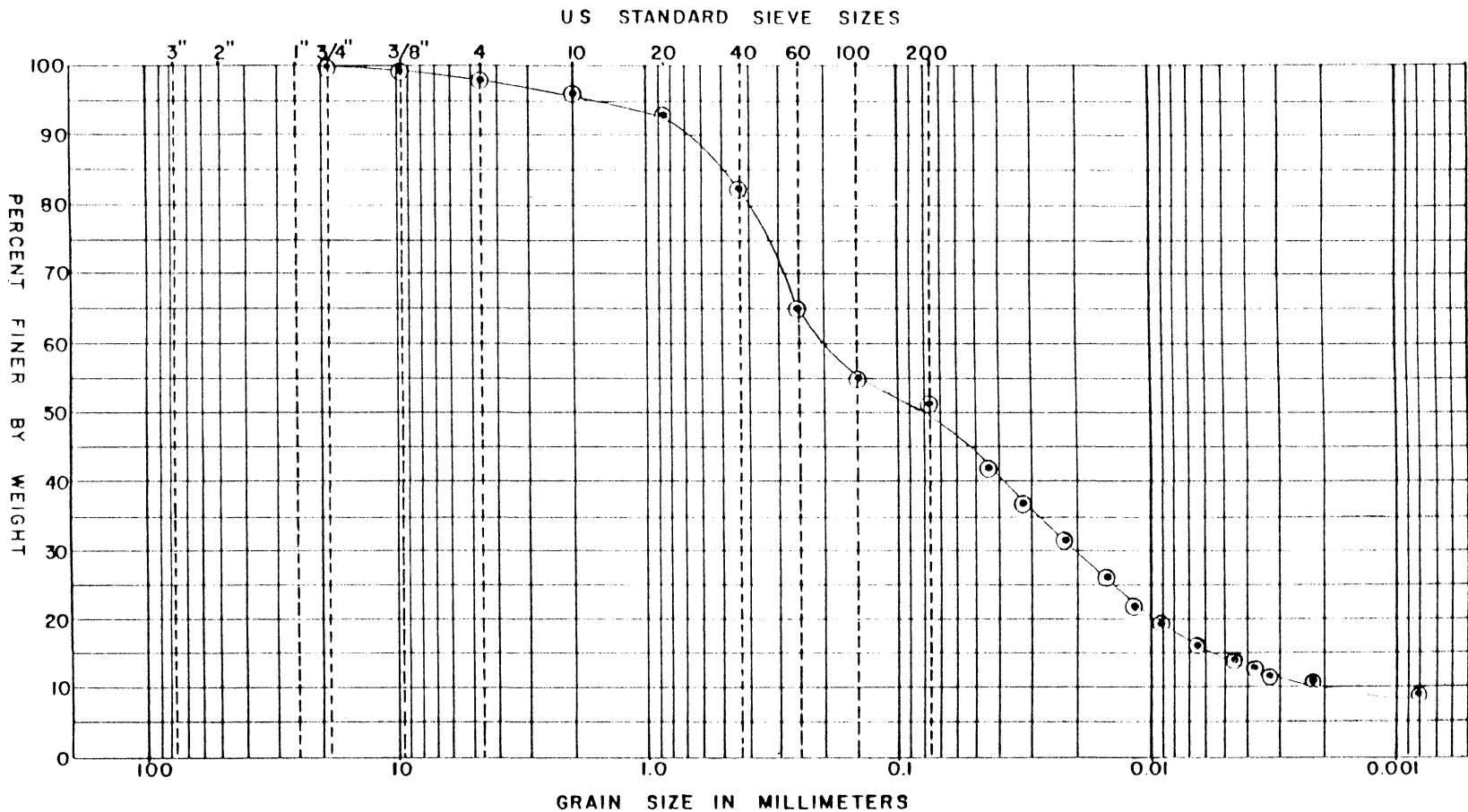
FIGURE V2-14

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
TP 4	1.68m-1.98m (5.5'-6.5')	14.1	25	16	9	Brown, fine to coarse SAND and silt, some clay, trace fine gravel (CL)

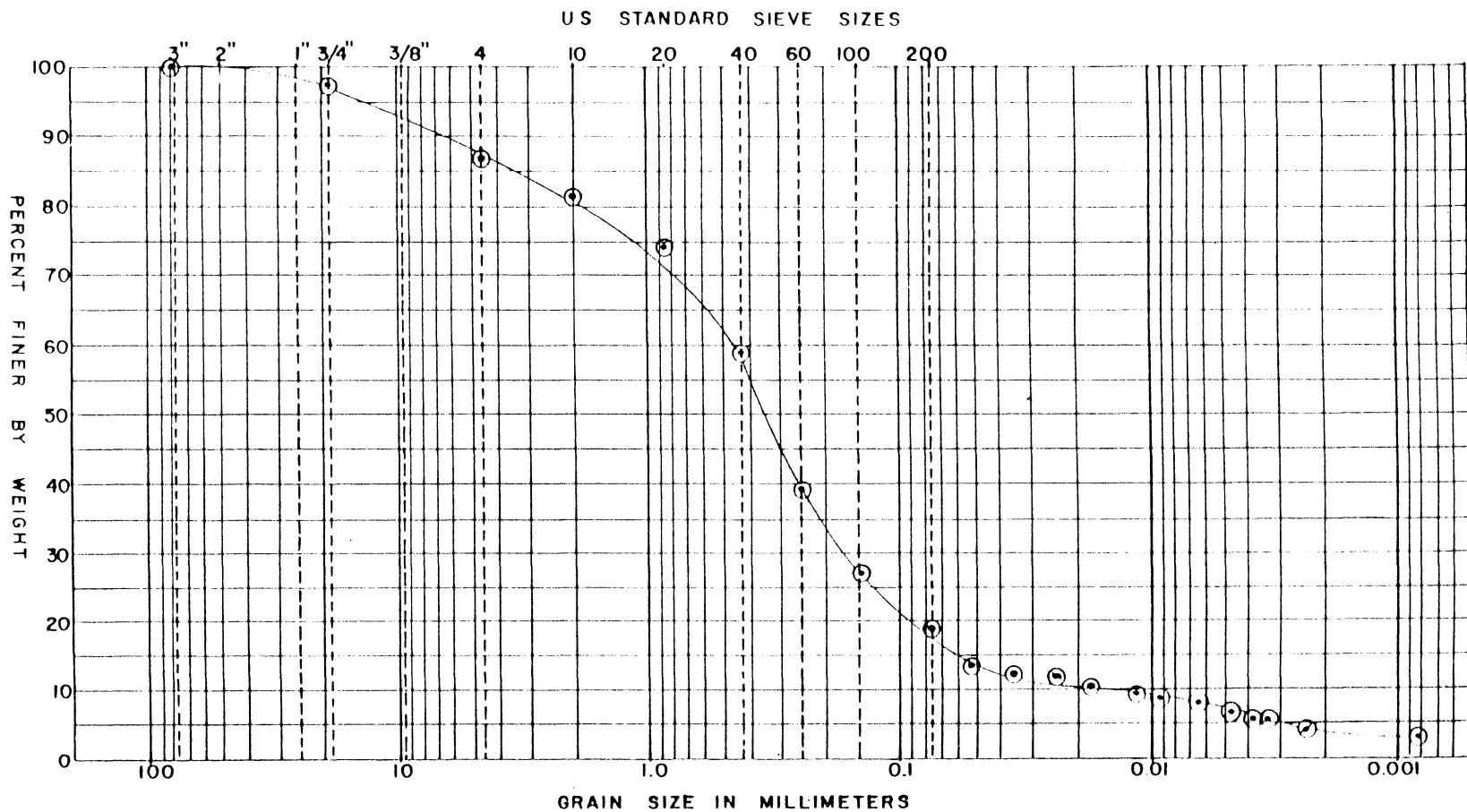
FIGURE V2-15

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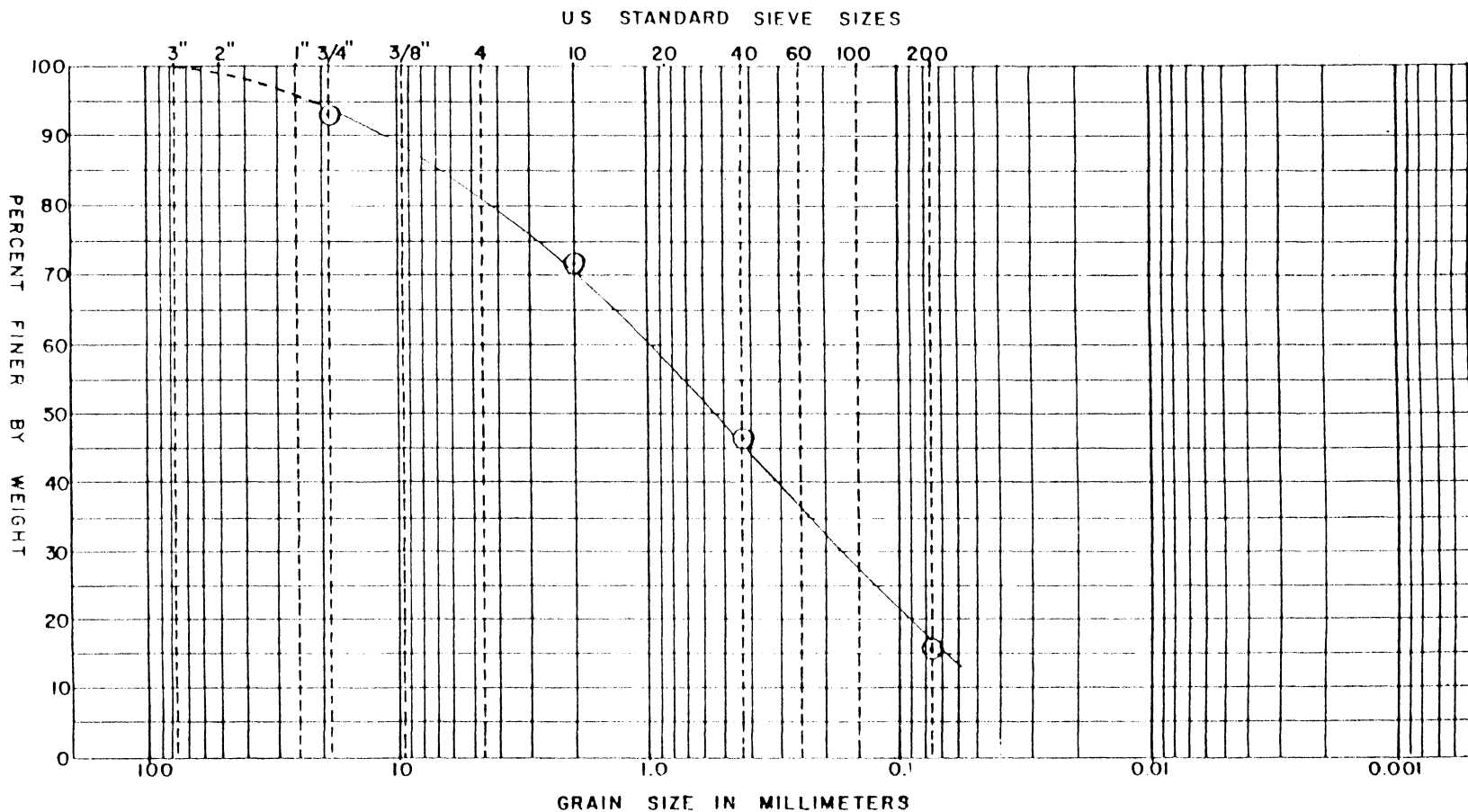
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GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
TP-11	2.44m-2.74m (8.0'-9.0')					Brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM)

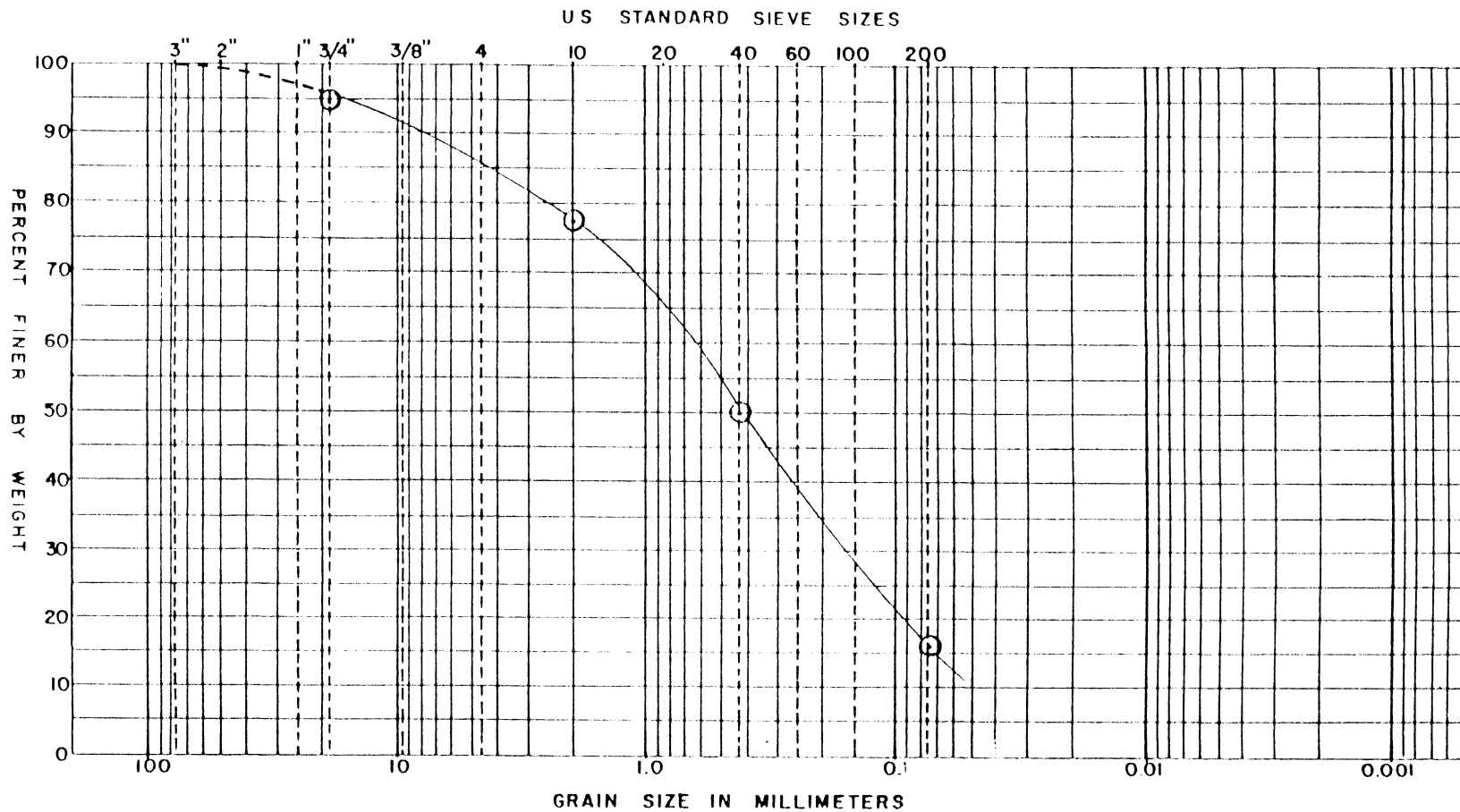
FIGURE V2-17

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
TP-21	3.05m-3.35m (10.0'-11.0')					Brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM)

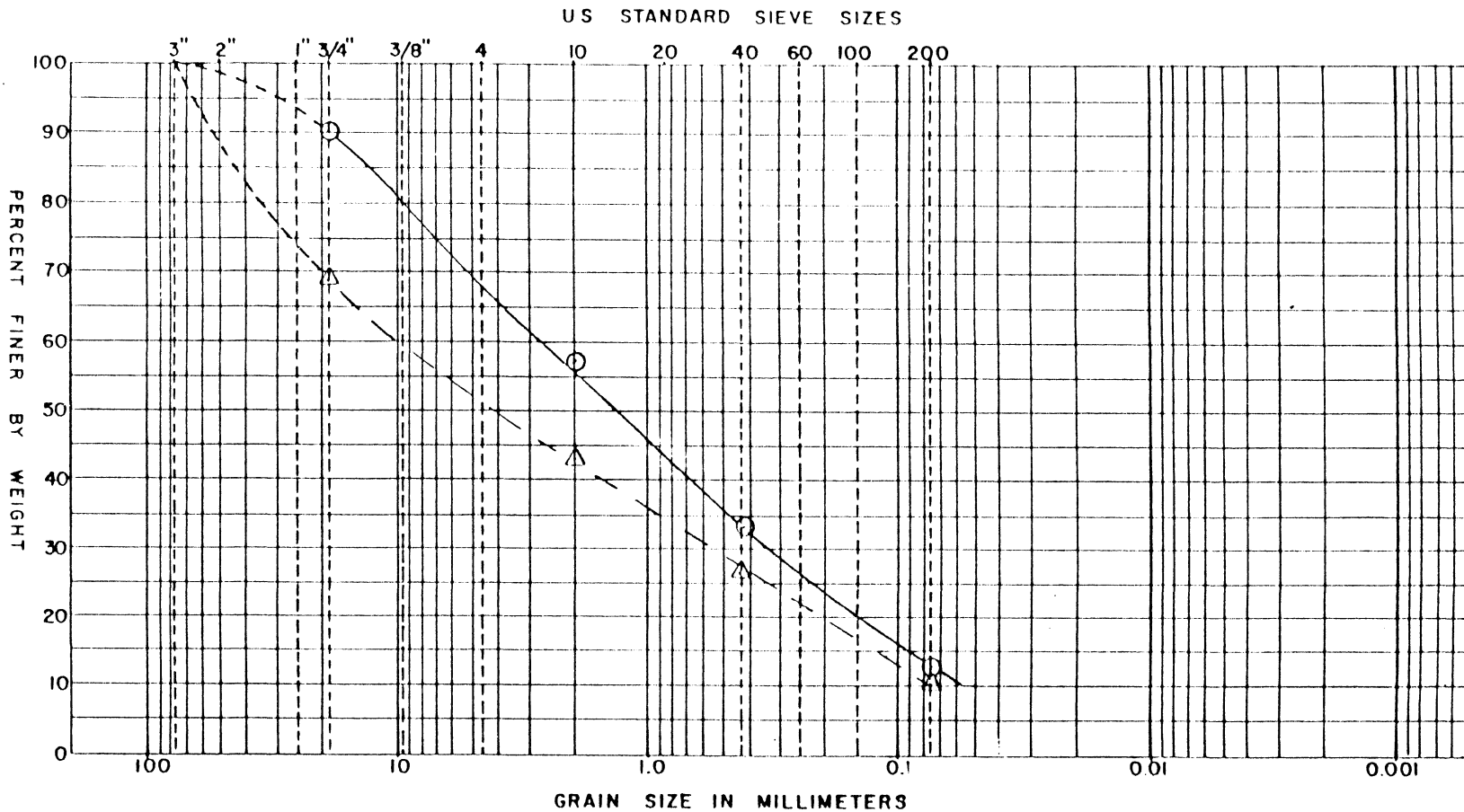
FIGURE V2-18

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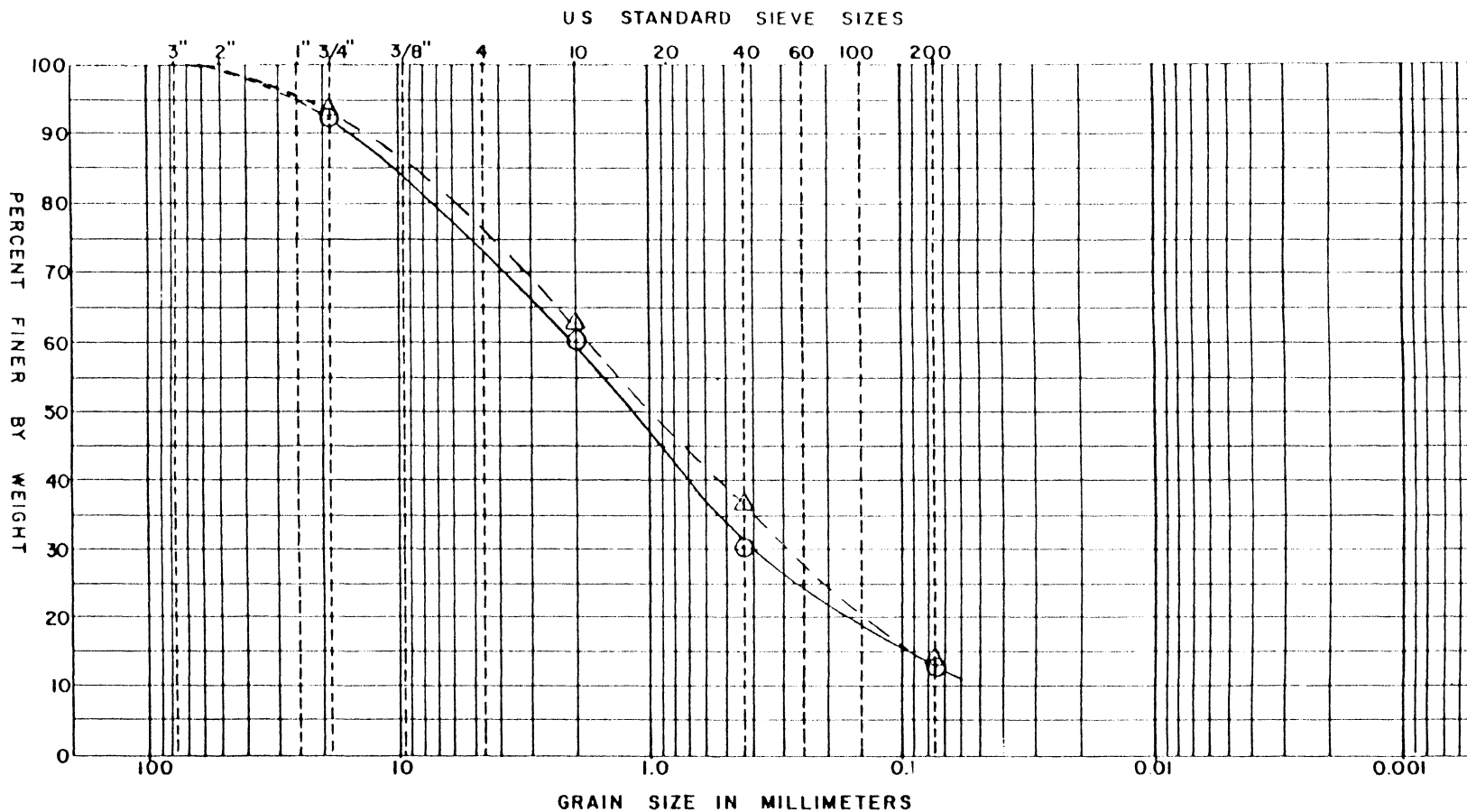
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GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
TP-22						
SA-3a 	} 3.35m-3.66m { (11.0'-12.0')					{ Brown, fine to coarse, gravelly, fine to coarse { SAND, some silt (SM)
SA-3b 						
(Both samples taken from one ton bulk sample)						

FIGURE V2-20

Date 3/15/81
Job No. 786085

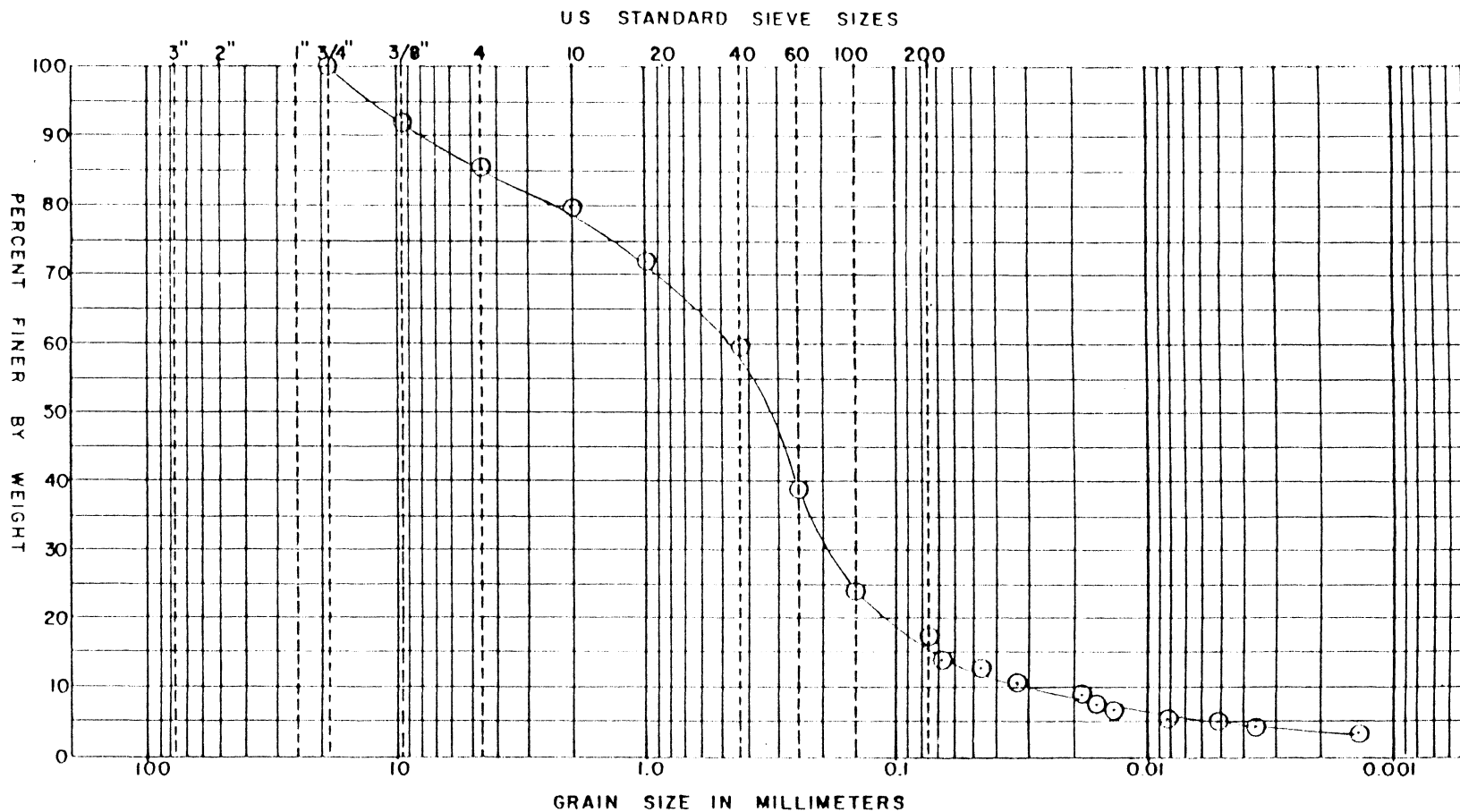
Golder Associates

Drawn MQB

Checked [Signature]

Reviewed

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
TP-TW-41	0.61m-1.83m (2.0'-6.0')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)

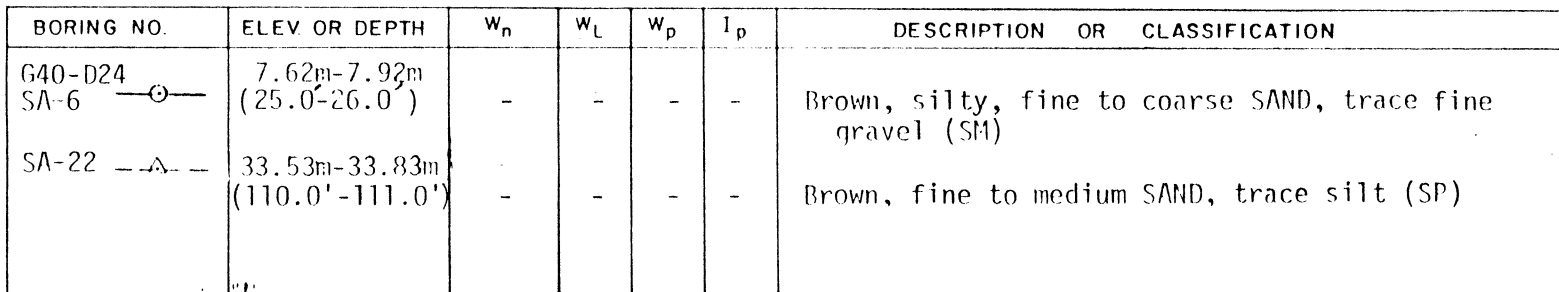
FIGURE V2-21

Date 6/25/80
Job No 786085

Golder Associates

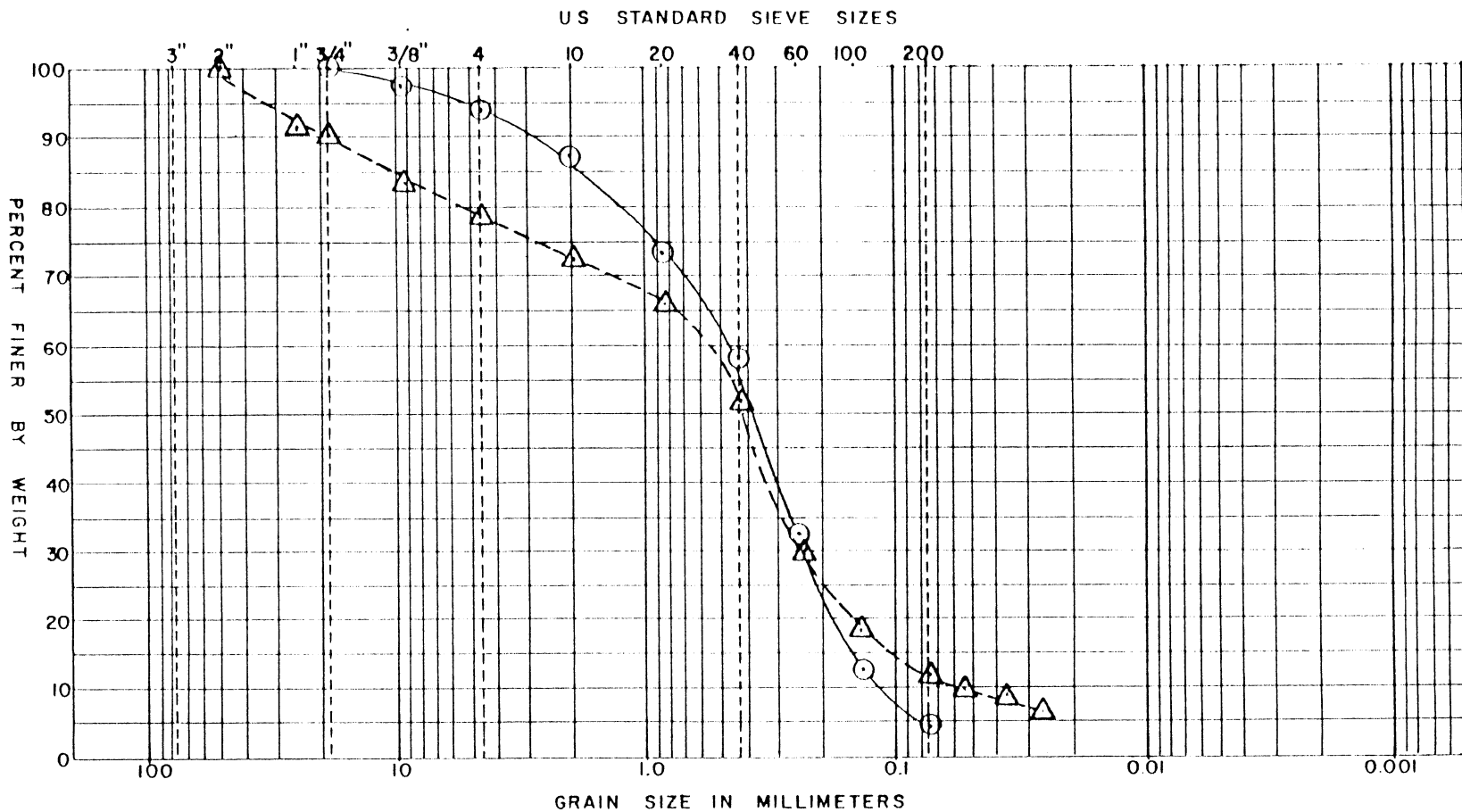
Drawn MRE
Checked [Signature]
Reviewed _____

FIGURE V2-22



Drawn jls
Checked WFE
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-G24 SA-4 —△—	4.57m-5.03m (15.0'-16.5')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt (SW-SM)
SA-14 —○—	19.81m-20.21m (65.0'-66.3')	-	-	-	-	Brown, fine to coarse SAND, trace fine gravel, trace silt (SP)

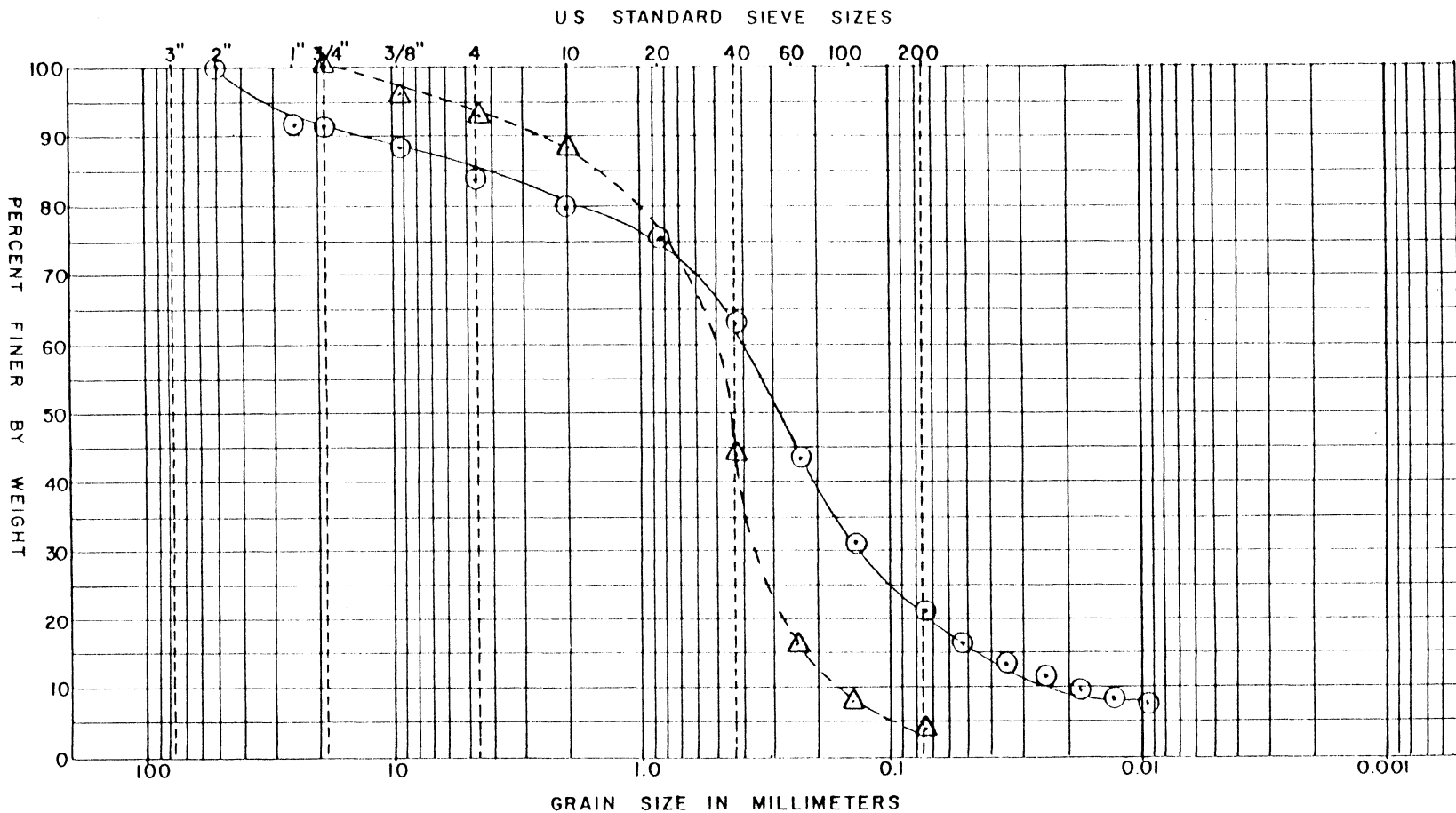
FIGURE V2-23

Date 1-7-30
Job No. 786085

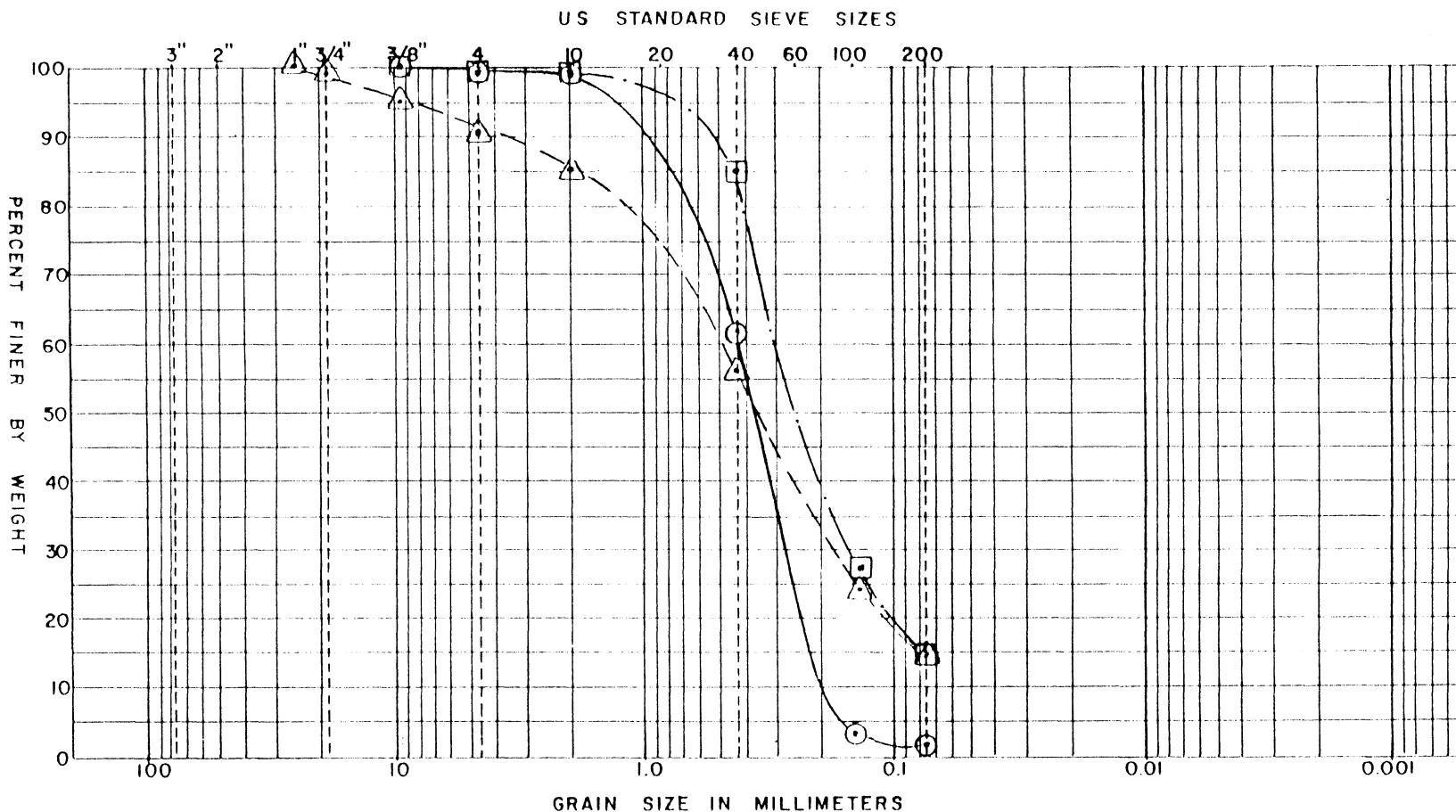
Golder Associates

Drawn JLS
Checked hif
Approved [Signature]

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G40-H13 SA-5 ○	6.10m-6.55m (20.0'-21.5')	-	-	-	-	Light brown, fine to coarse SAND, trace silt (SP)
SA-9 △	12.19m-12.65m (40.0'-41.5')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine to coarse gravel (SM)
SA-13 □	18.29m-18.65m (60.0'-61.2')	-	-	-	-	Light brown, fine to coarse SAND, some silt (SM)

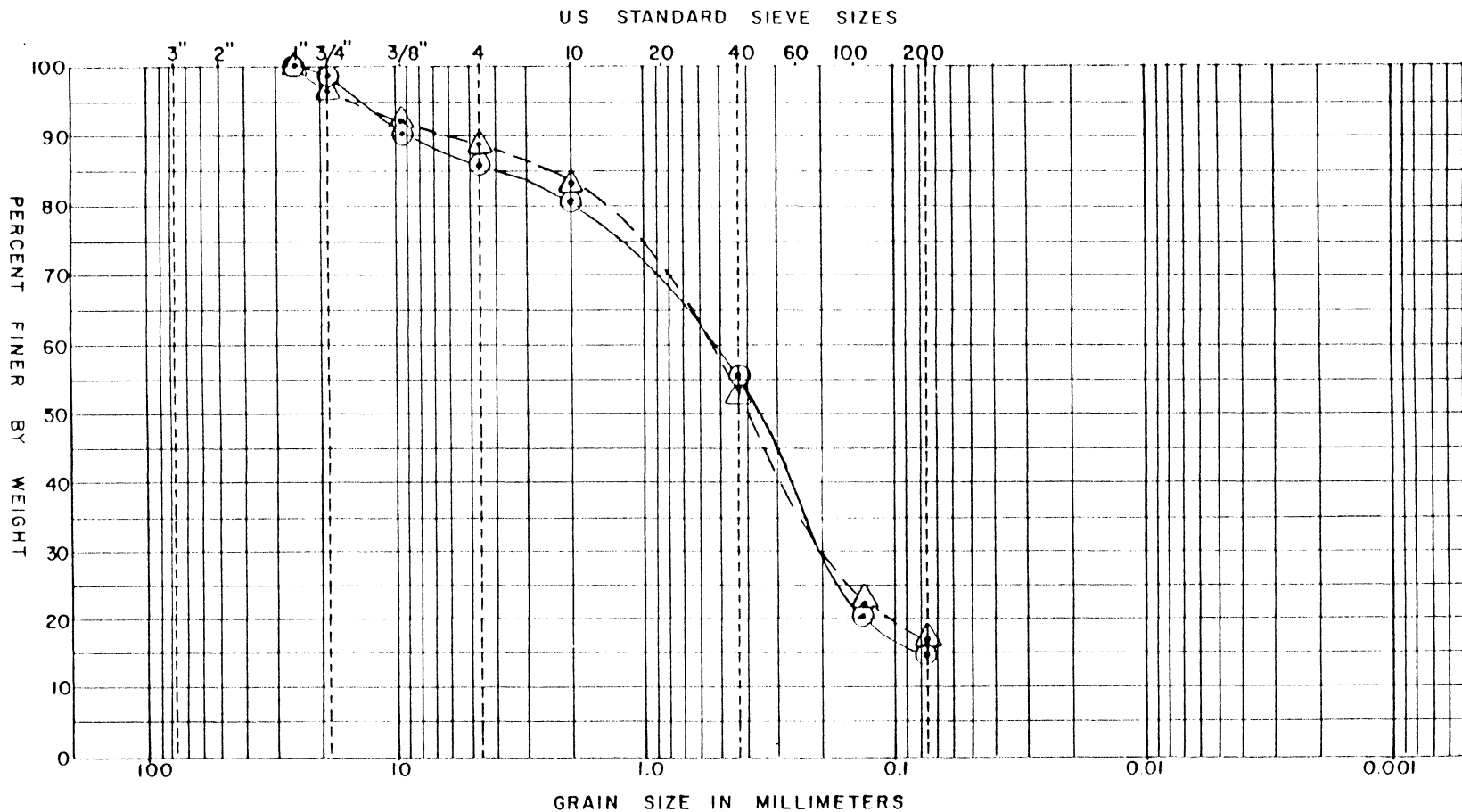
FIGURE V2-25

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-H13 SA-22 --○--	35.05m-35.51m (115.0'-116.5')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM)
SA-25 --△--	44.20m-44.65m (145.0'-146.5')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM)

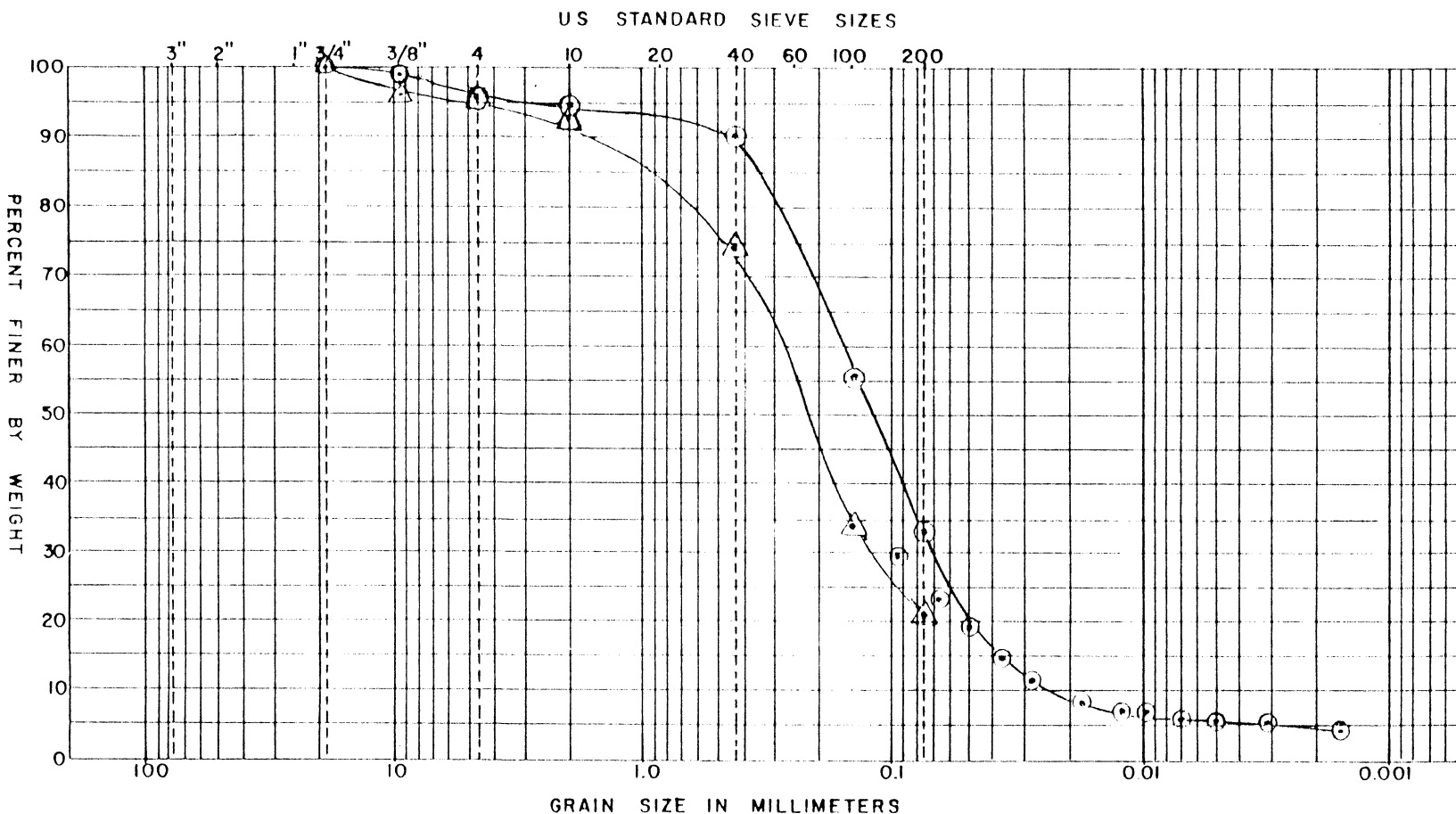
FIGURE V2-26

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
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Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G40-H16 SA-2 -C-	1.52m-1.98m (5.0'-6.5')	-	-	-	-	Brown, silty, fine to coarse SAND, trace fine gravel, trace clay (SM)
SA-11 -Δ-	13.72m-14.17m (45.0'-46.5')	-	-	-	-	Light brown, fine to coarse SAND, some SILT, trace clay, trace fine gravel (SM)

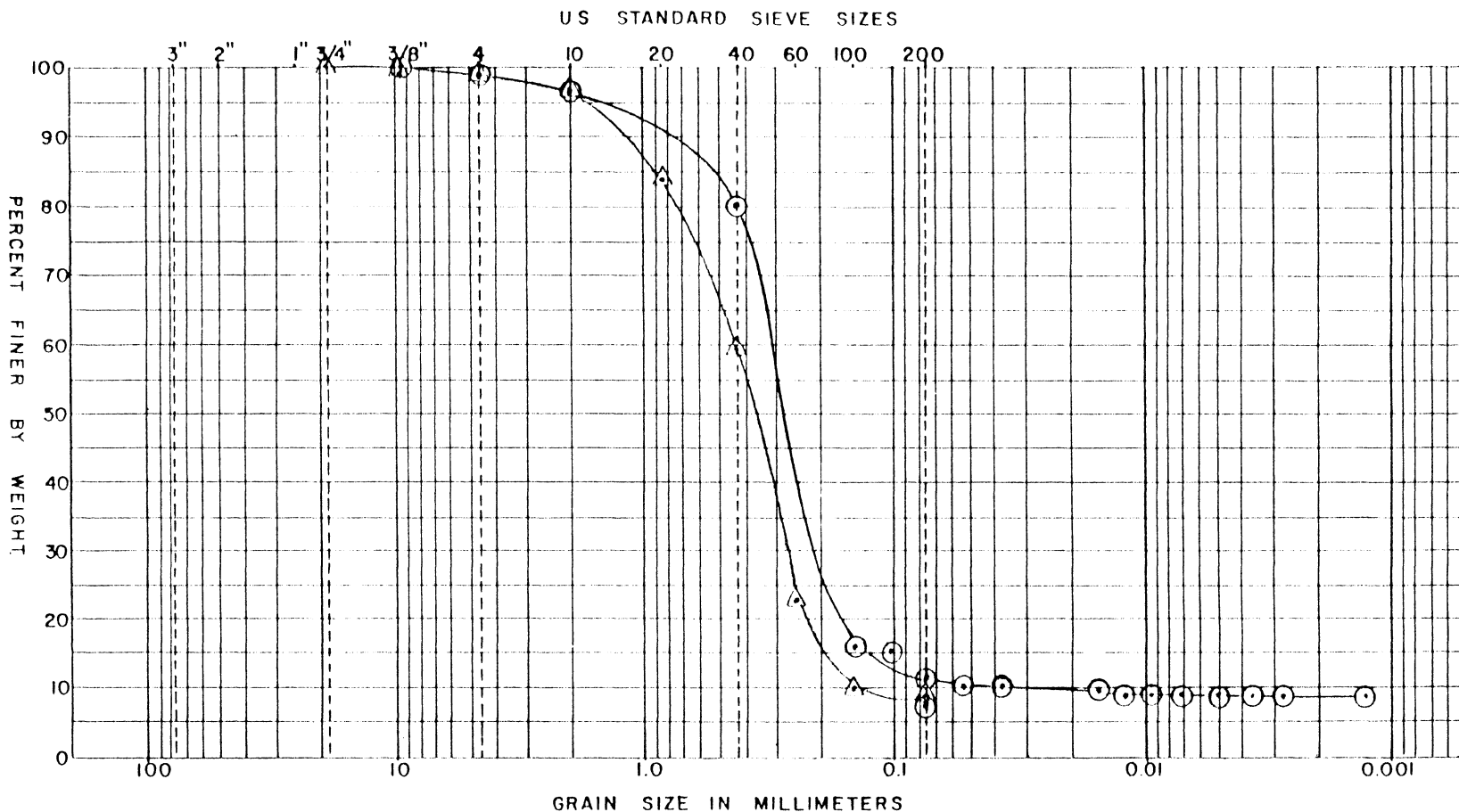
FIGURE V2-27

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-H16 SA-18 --△--	24.38m-24.66m (80.0'-80.9')	-	-	-	-	Brown, fine to coarse SAND, trace fine gravel, trace silt, trace clay (SP-SM)
G40-H16 SA-24 --○--	36.58m-36.85m (120.0'-120.9')	-	-	-	-	Brown, fine to coarse SAND, trace fine gravel, trace silt, trace clay (SP-SM)

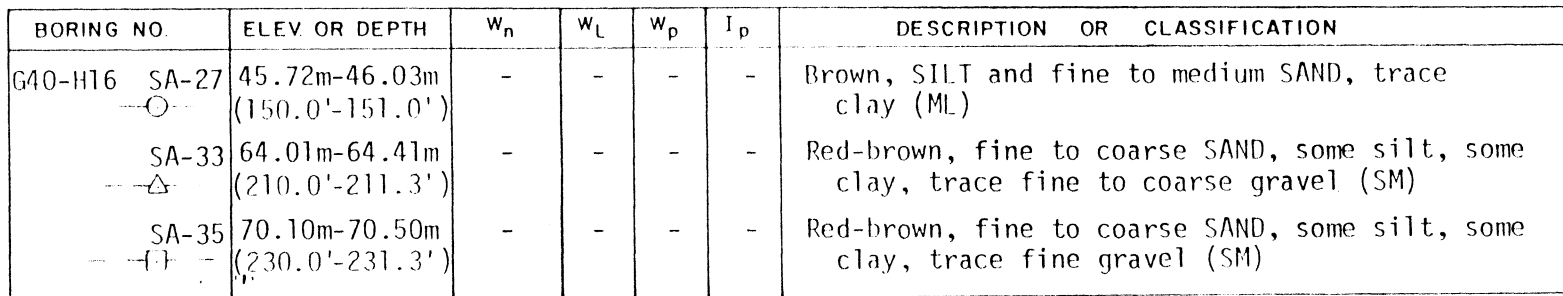
FIGURE V2-28

Date 5/30/79
Job No 786085

Golder Associates

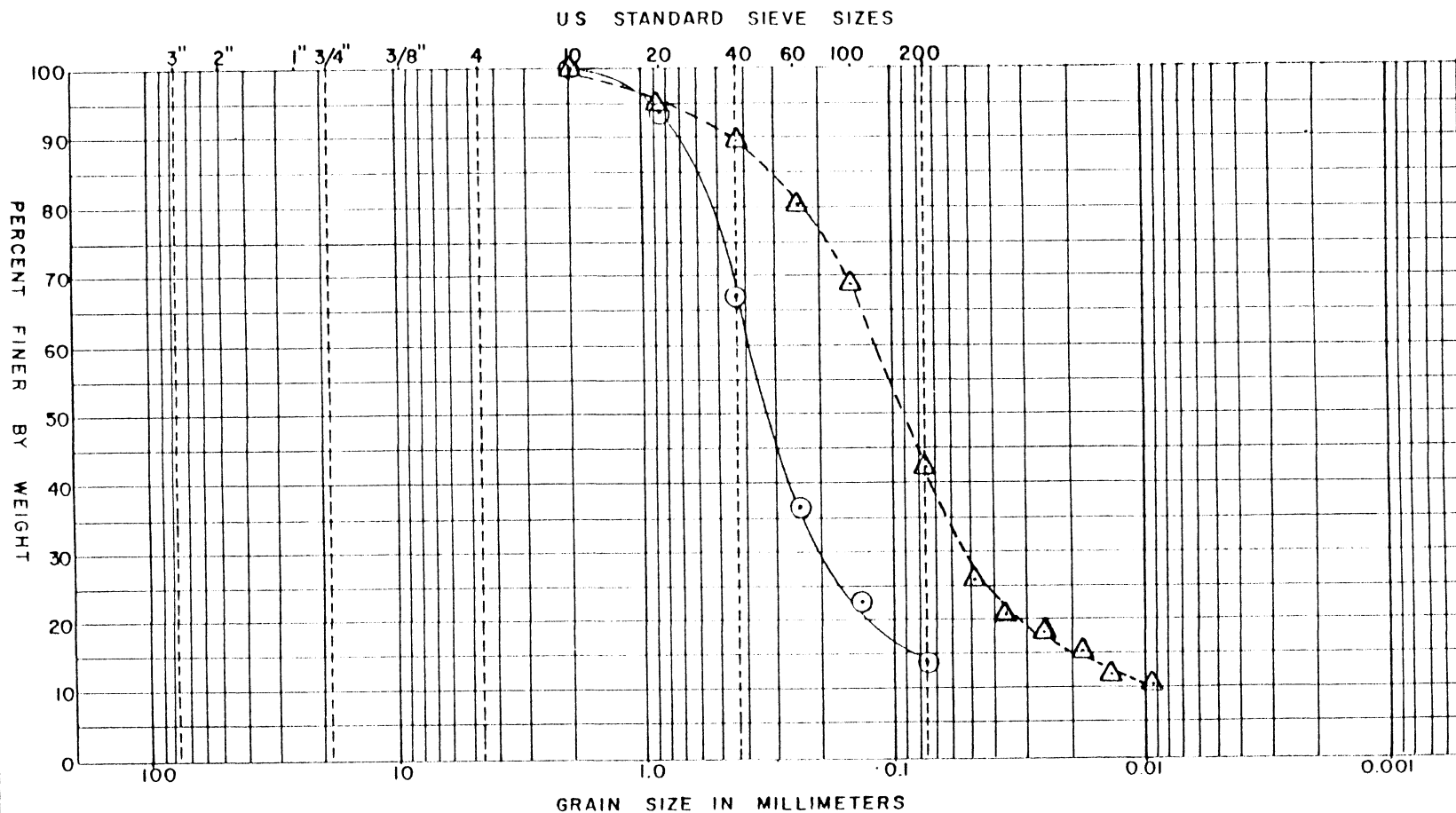
Drawn AST
Checked JFC
Approved JFC

FIGURE V2-29



Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G40-H27 SA-7 - Δ -	9.14m-9.42m (30.0'-30.9')	-	-	-	-	Brown, fine to medium SAND and SILT, trace clay (SM)
SA-13 - ○ -	18.29m-18.75m (60.0'-61.5')	-	-	-	-	Red-brown, fine to medium SAND, some silt (SM)

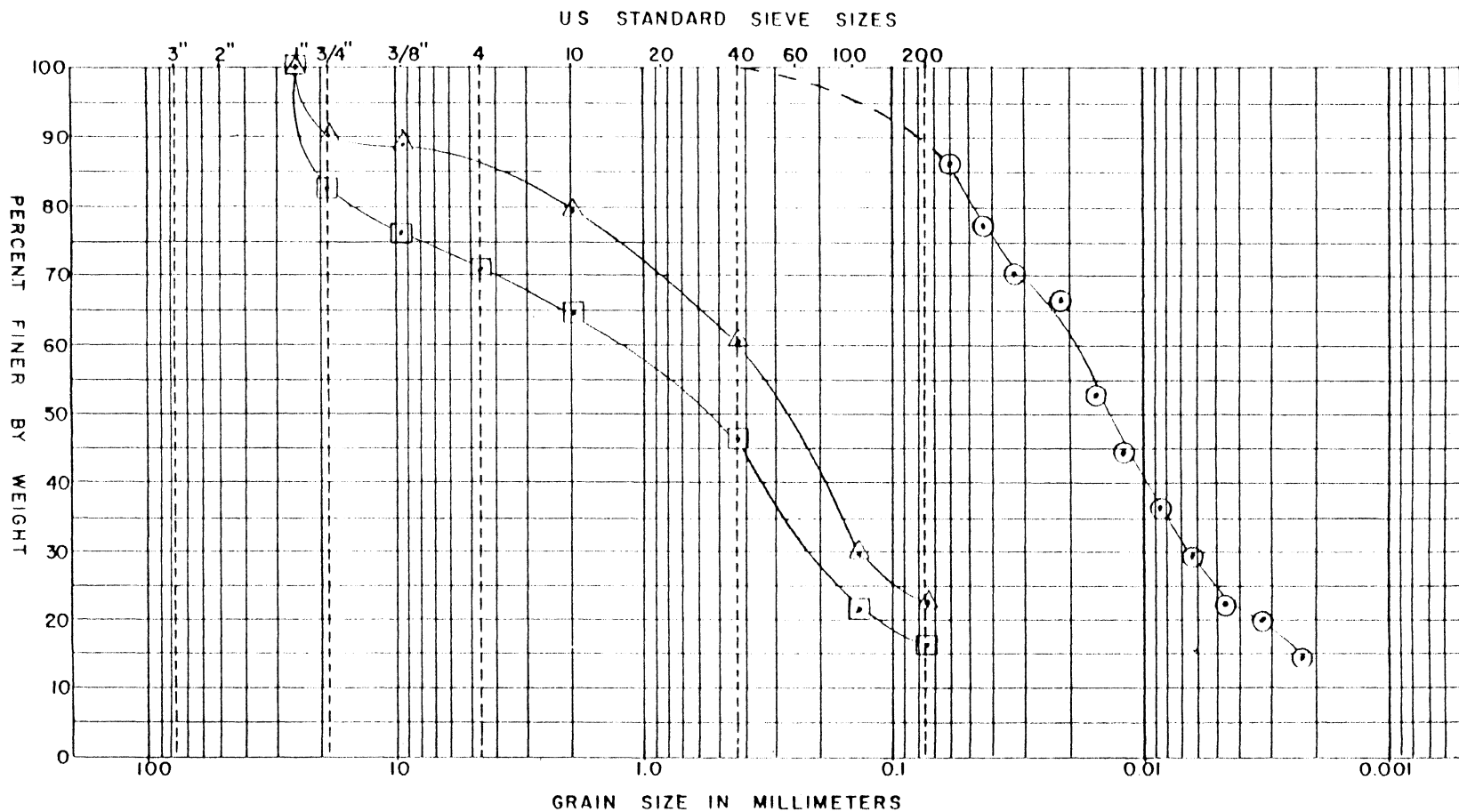
FIGURE V2-30

Date 1-7-80
Job No. 786085

Golder Associates

Drawn JLS
Checked mpf
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G40-J15 SA-5 --○--	5.18m (17.0')	-	32	19	13	Gray-green, SILT, some clay(CL)
G40-J15 SA-8 --△--	9.14m-9.60m (30.0'-31.5')	-	-	-	-	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
G40-J15 SA-10 --□--	12.19m-12.65m (40.0'-41.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, some silt (SM)

FIGURE V2-31

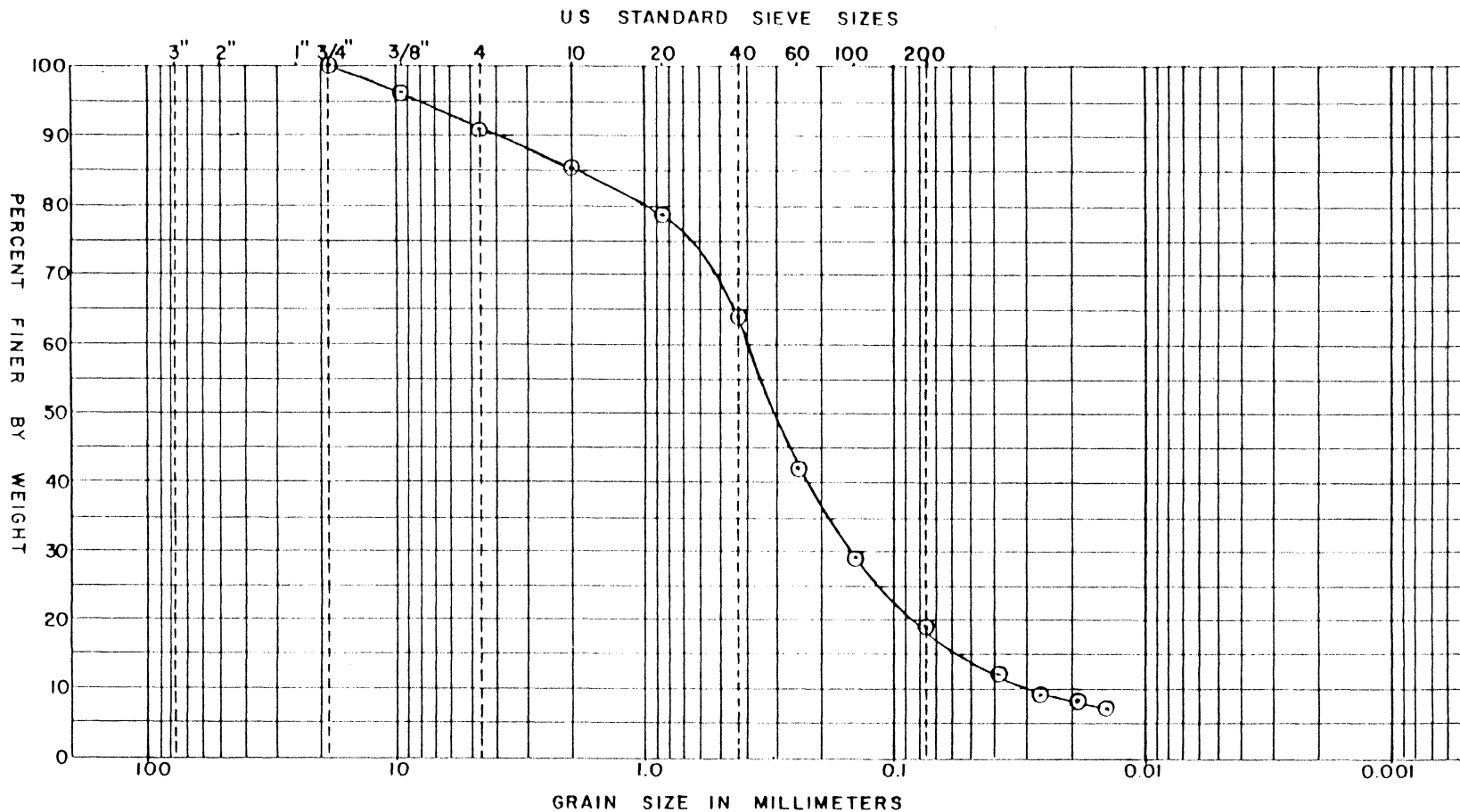
Date 6/17/79
Job No. 786035

Golder Associates

Drawn JLS
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION

FIGURE V2-32



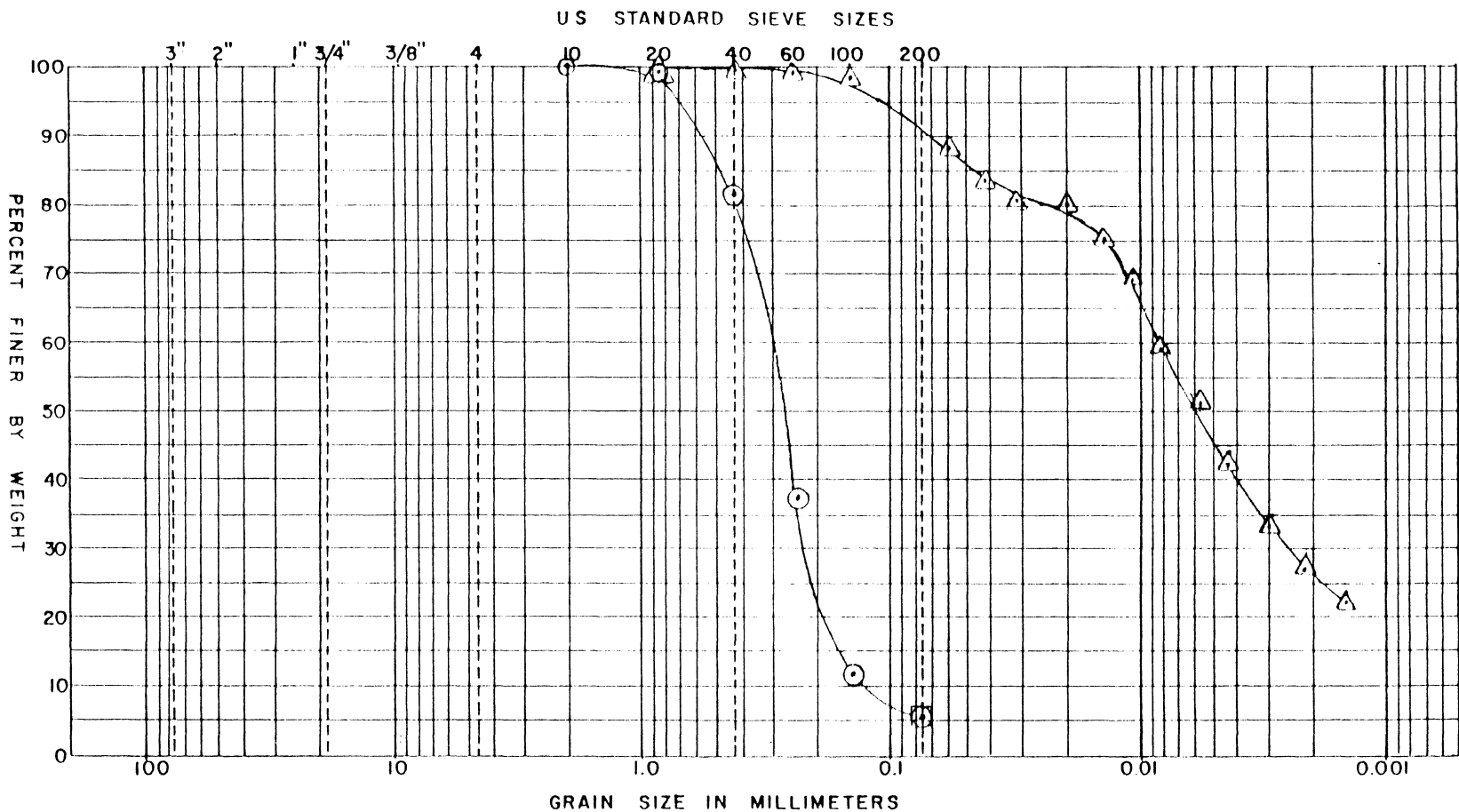
COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-J20 SA-7	9.14m-9.45m (30.0'-31.0')	-	-	-	-	Brown, fine to coarse SAND, some silt, trace fine gravel (SM)

Date 1/22/80
Job No. 786085

Golder Associates

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Checked APR
Approved APR



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

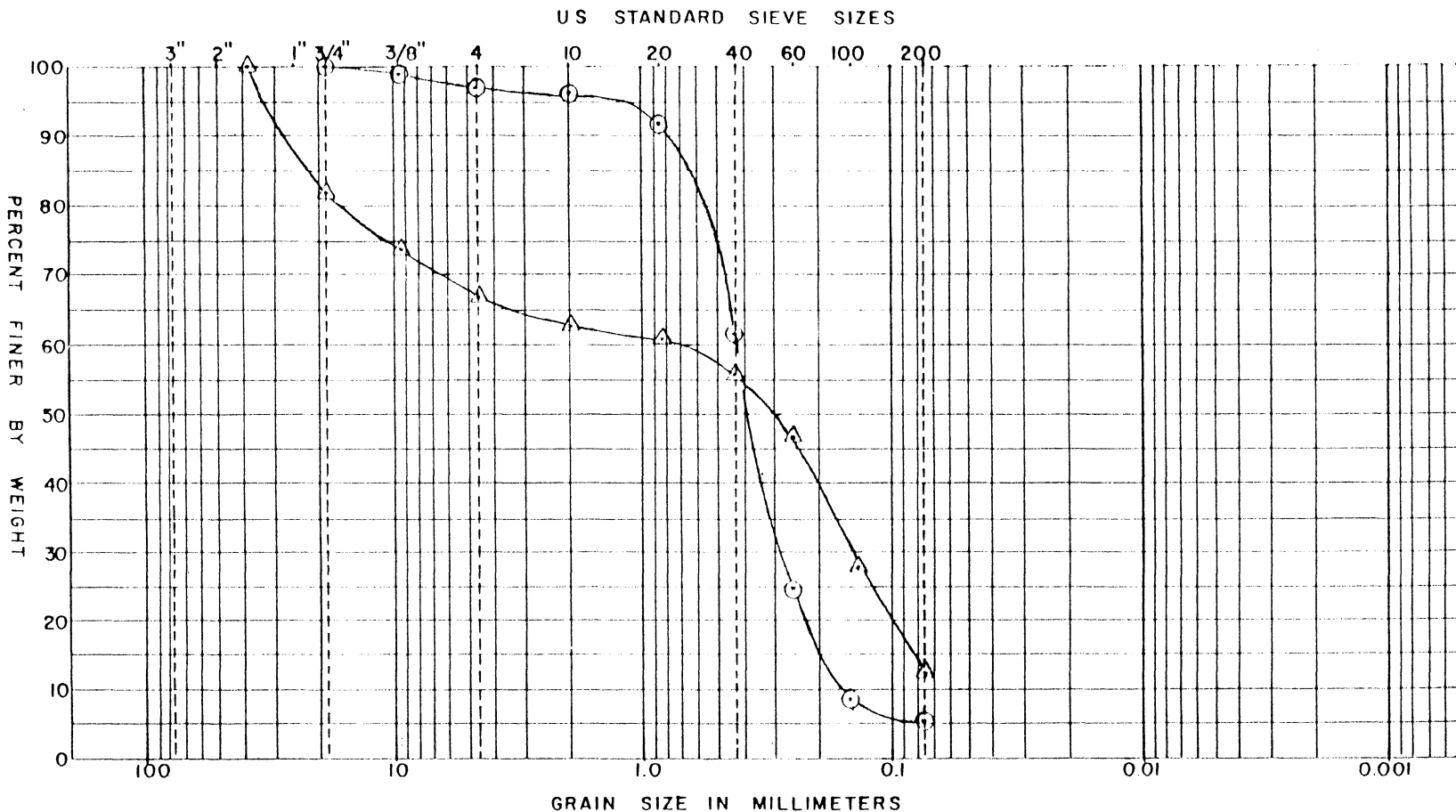
BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-K13 SA-4 —●—	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Green, fine to medium SAND, trace silt (SP-SM)
SA-6 —△—	6.10m-6.71m (20.0'-22.0')	-	31	20	11	Gray-green, clayey SILT, trace fine sand (CL)

Date 6/7/79
Job No. 786035

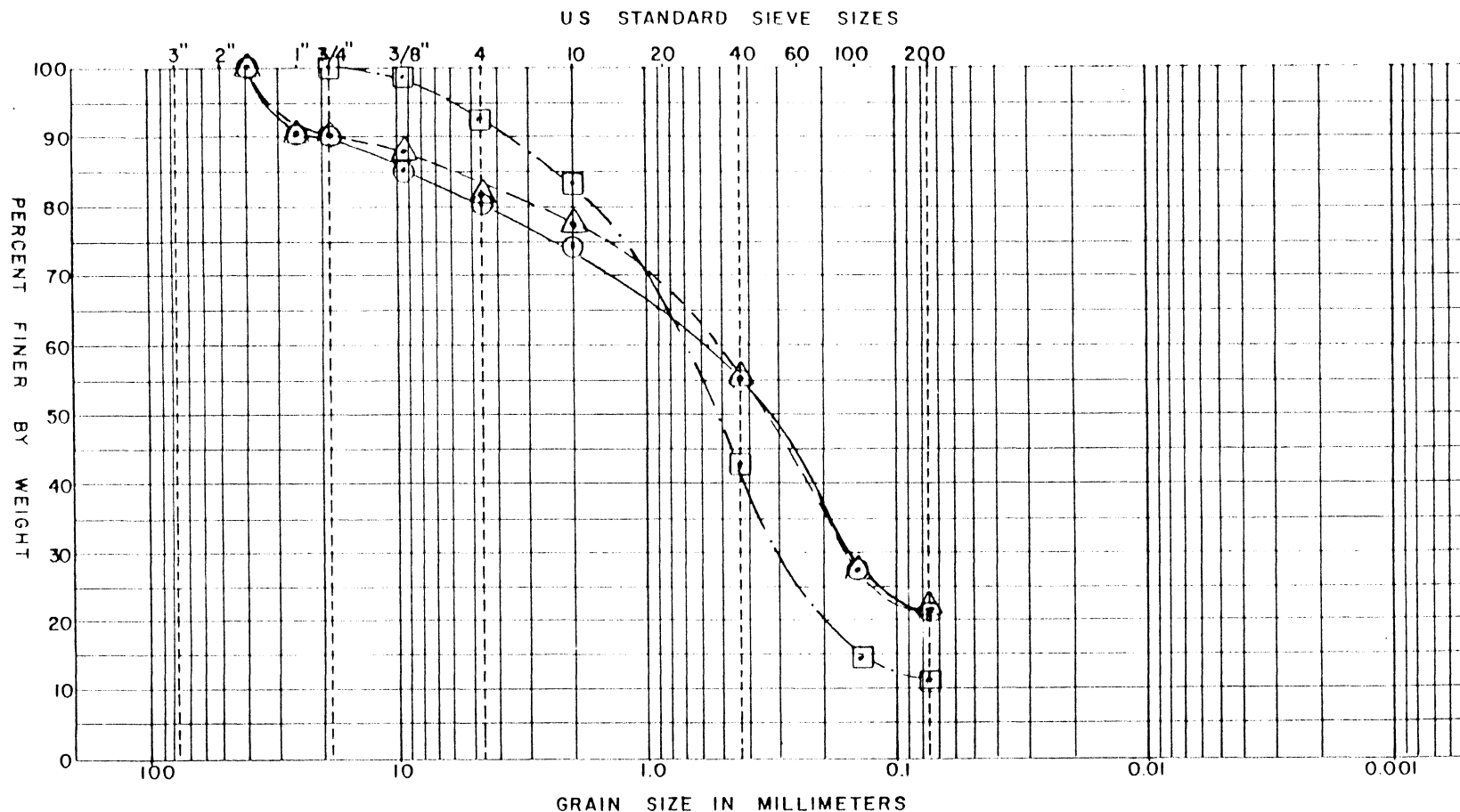
Golder Associates

Drawn JJS
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-L19 SA-8 —○—	10.67m-11.03m (35.0'-36.2')	-	-	-	-	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
SA-15 -△-	21.34m-21.79m (70.0'-71.5')	-	-	-	-	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
SA-20 -□-	28.96m-29.11m (95.0'-95.5')	-	-	-	-	Brown, fine to coarse SAND, some silt, trace fine gravel (SP-SM)

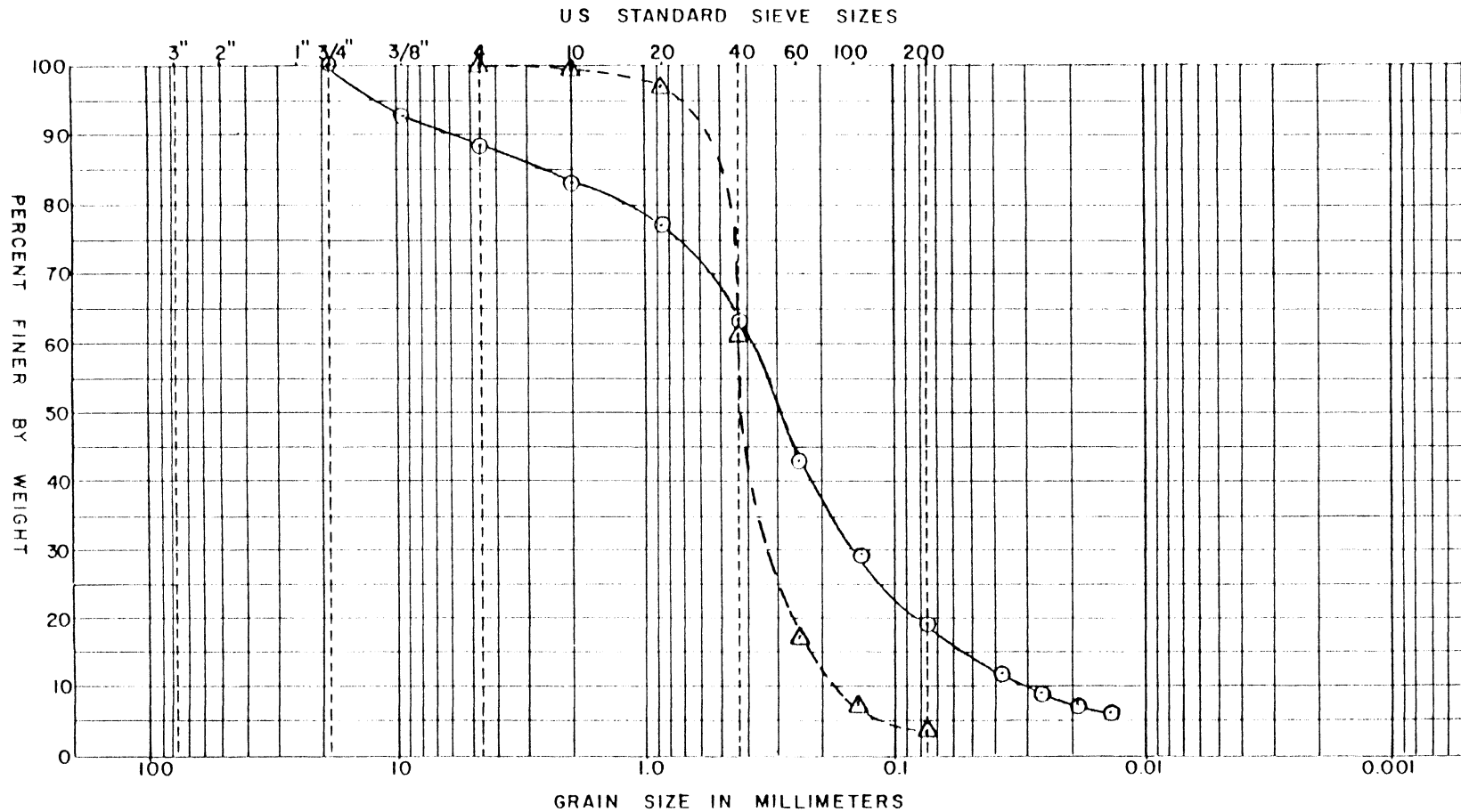
FIGURE V2-35

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Job No. 786085

Golder Associates

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G40-L23 SA-6 —○—	7.62m-8.08m (25.0'-26.5')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM)
SA-17 —△—	24.38m-24.66m (80.0'-80.9')	-	-	-	-	Brown, fine to medium SAND, trace silt (SP)

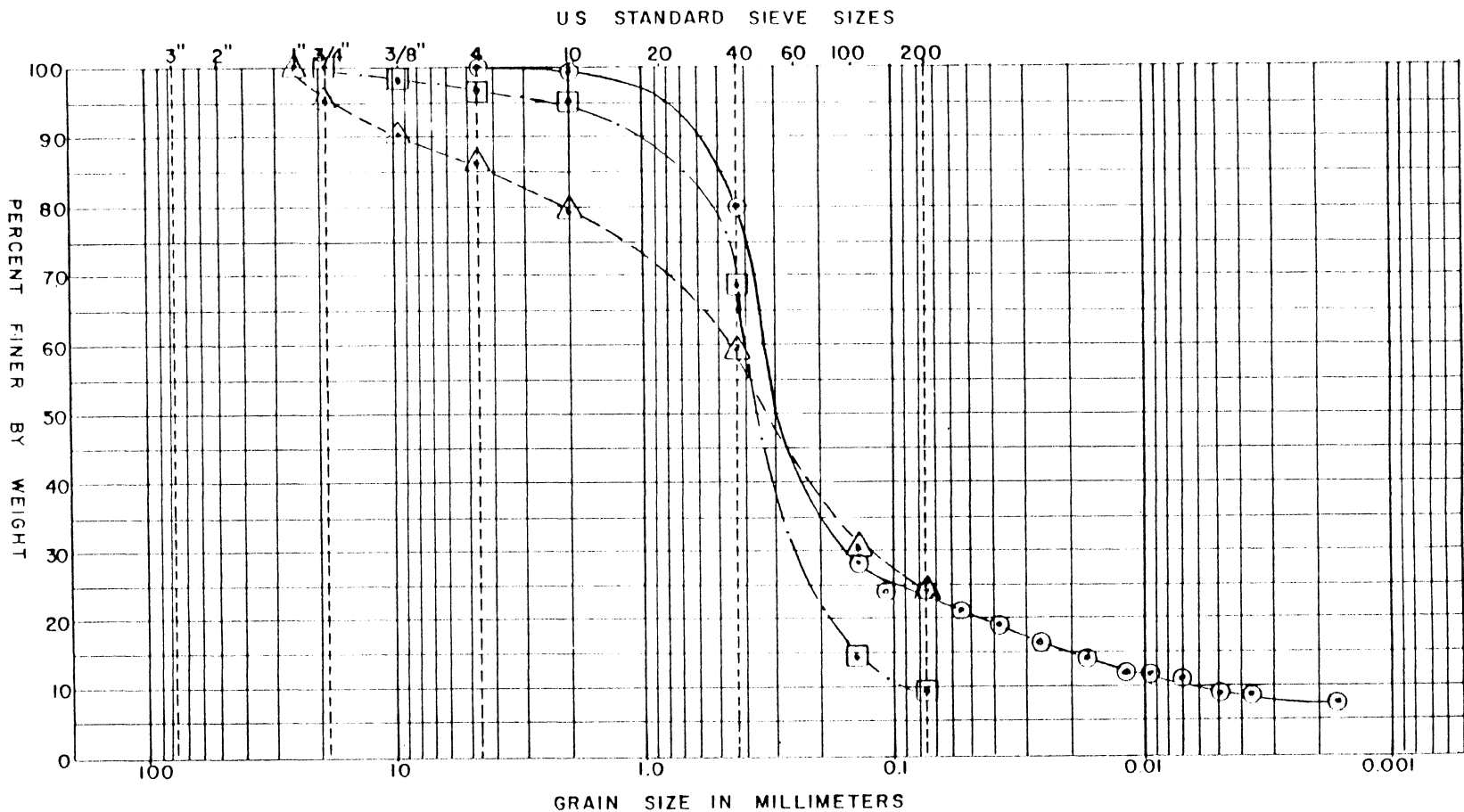
FIGURE V2-36

Date 1/22/80
Job No. 786085

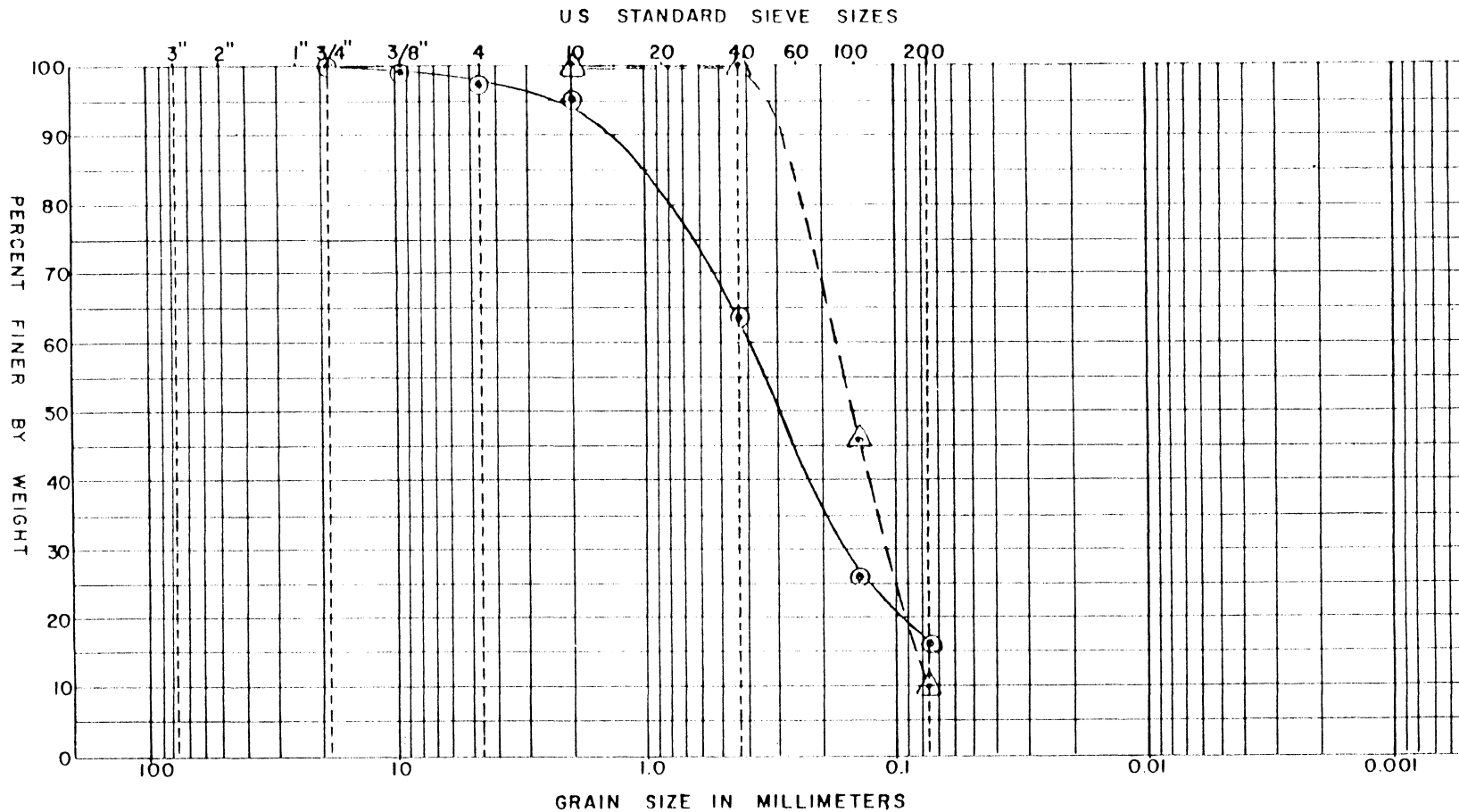
Golder Associates

Drawn JLS
Checked HPB
Approved [Signature]

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-M15 SA-28 —○—	48.77m-49.07m (160.0'-161.0')	-	-	-	-	Brown, fine to coarse SAND, some silt, trace fine gravel (SM)
SA-32 —△—	60.96m-61.17m (200.0'-200.7')	-	-	-	-	Red-brown, fine SAND, trace silt (SP-SM)

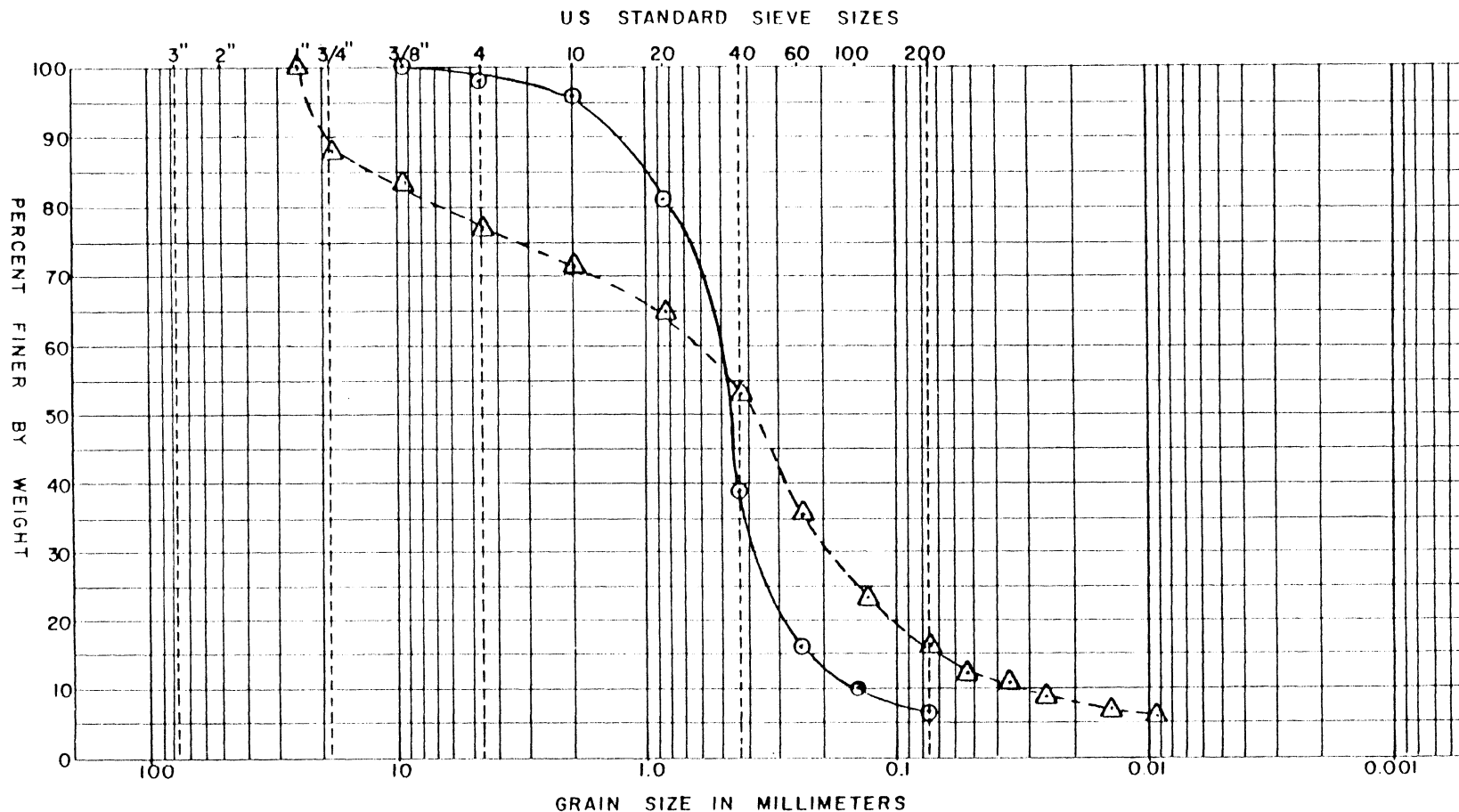
FIGURE V2-38

Date 5/30/79
Job No 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-P10 SA-6	7.62m-7.89m (25.0'-25.9')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, some silt (SM)
SA-11	15.24m-15.48m (50.0'-50.8')	-	-	-	-	Brown, fine to coarse SAND, trace silt (SP-SM)

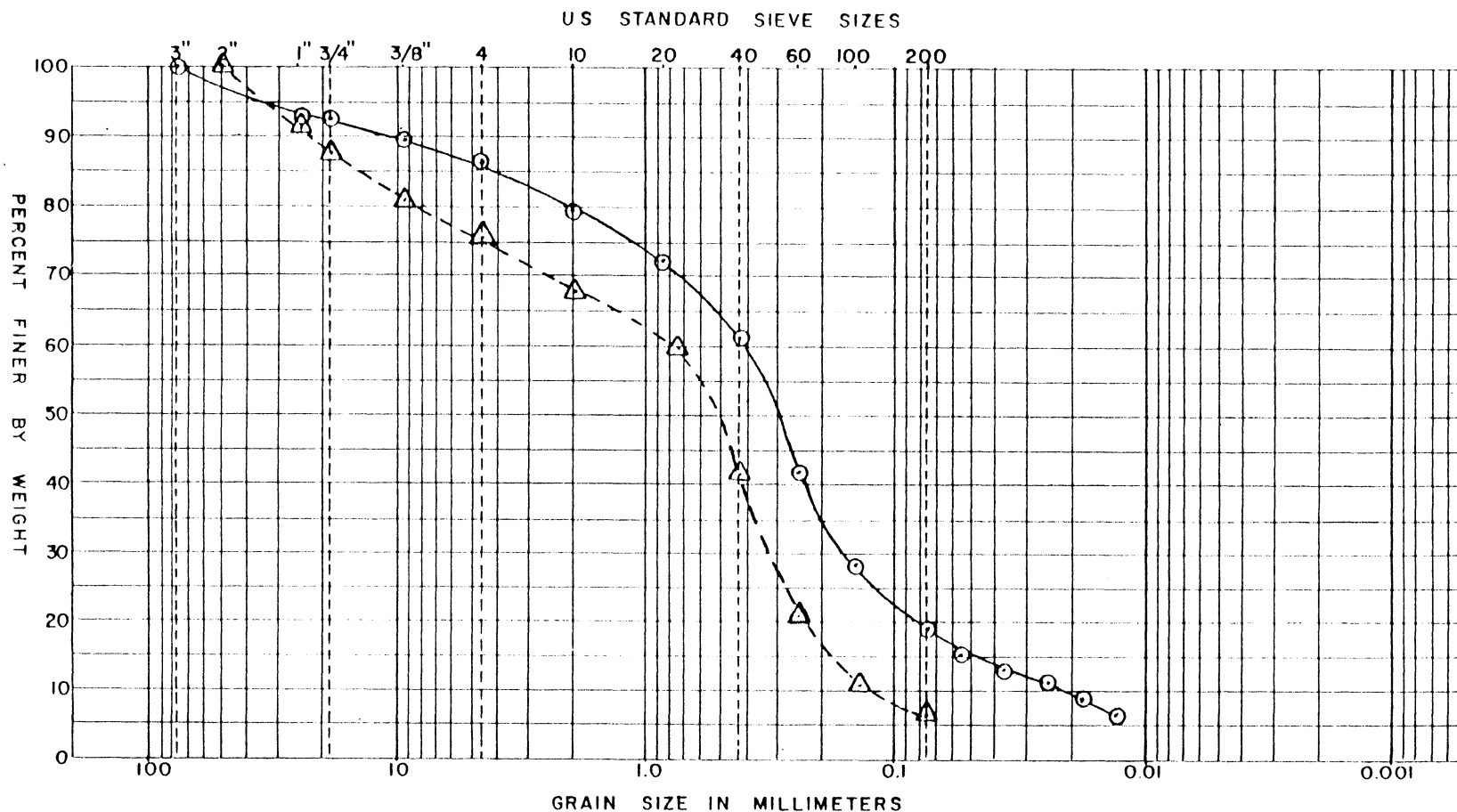
FIGURE V2-40

Date 1/7/80
Job No. 786085

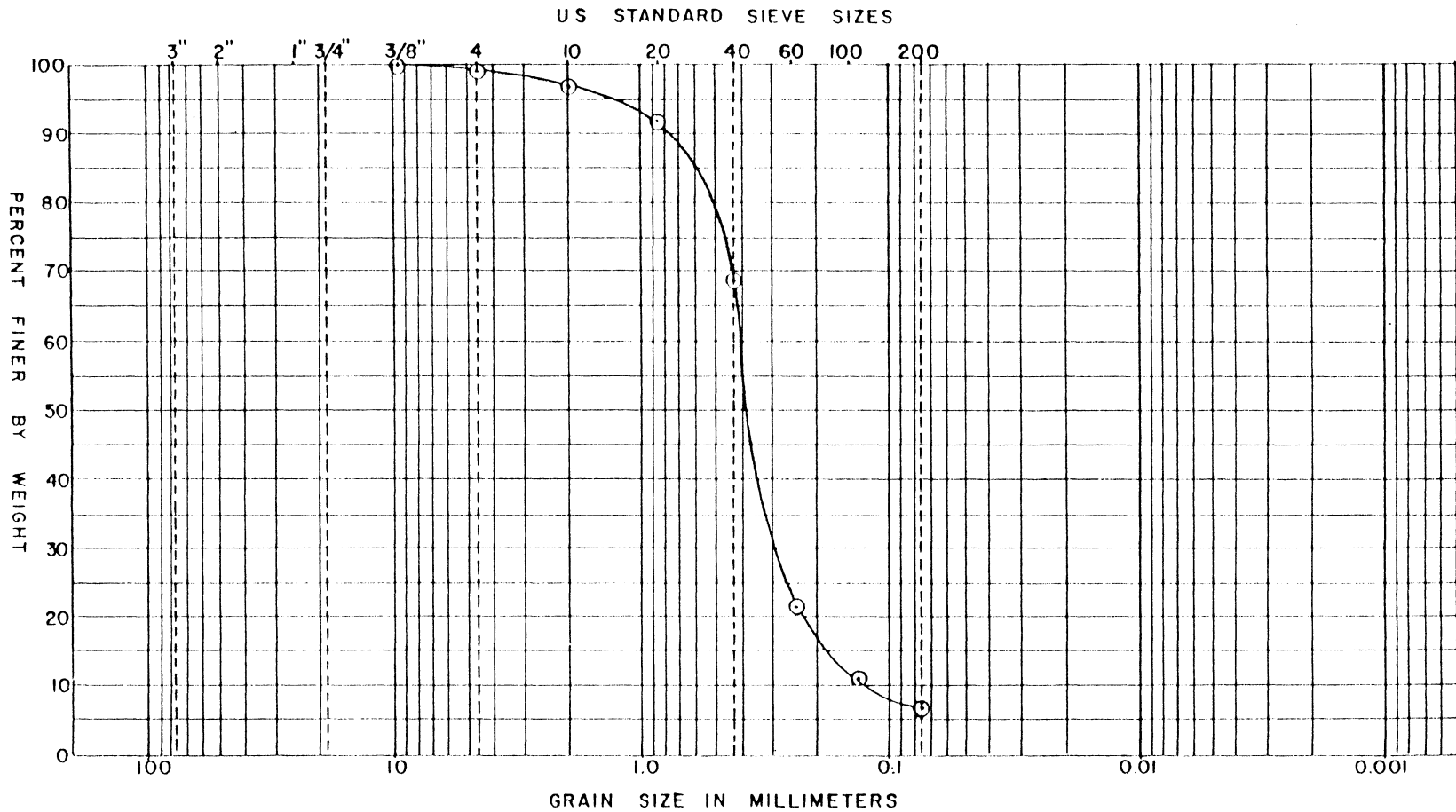
Golder Associates

Drawn JJS
Checked Bill
Approved [Signature]

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-P20 SA-15	21.34m-21.79m (70.0'-71.5')	-	-	-	-	Brown, fine to medium SAND, trace silt (SP-SM)

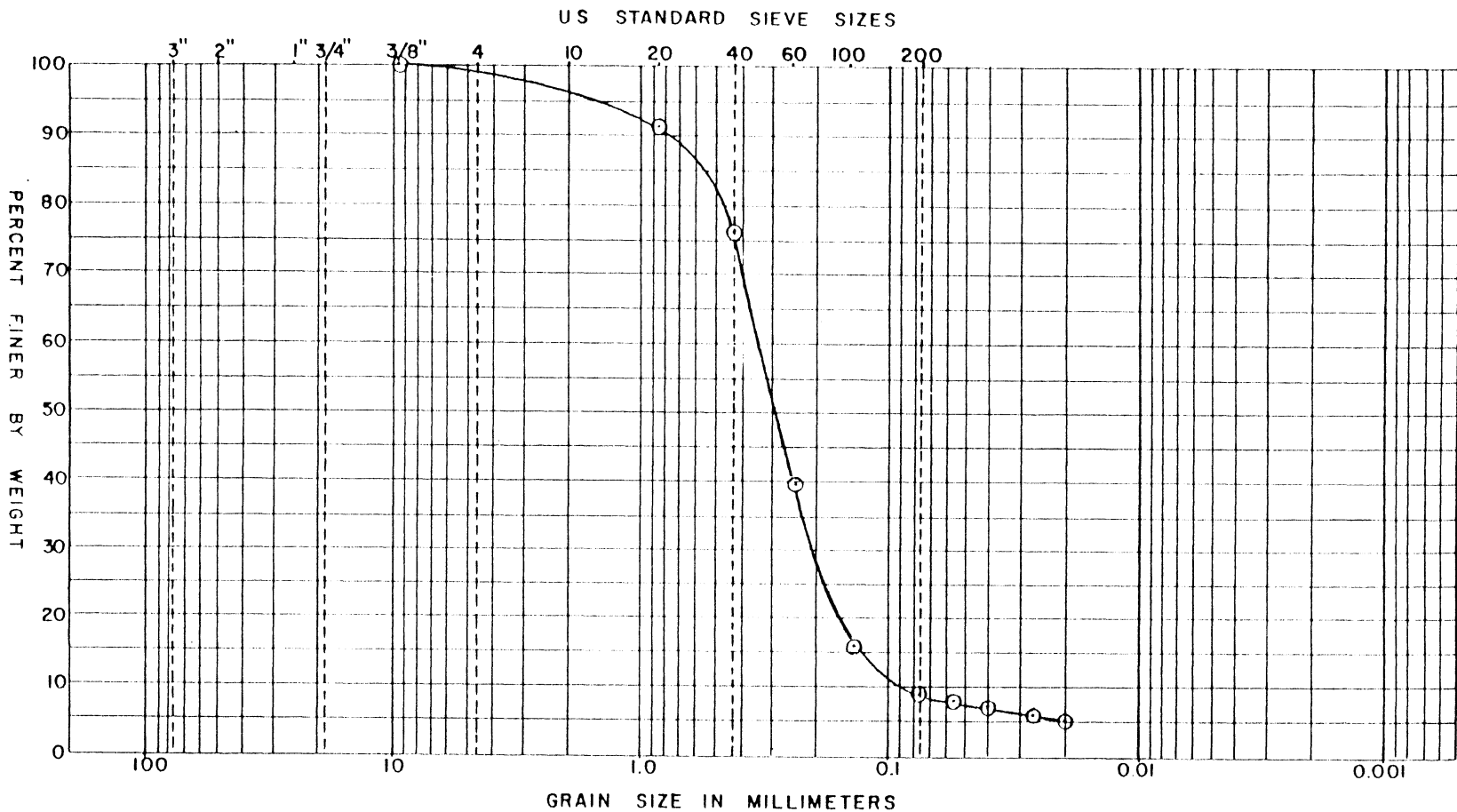
FIGURE V2-42

Date 1/22/80
Job No. 786085

Golder Associates

Drawn JLS
Checked MAB
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-R23 SA-15	21.34m-21.64m (70.0'-71.0')	-	-	-	-	Brown, fine to medium SAND, trace silt (SP-SM)

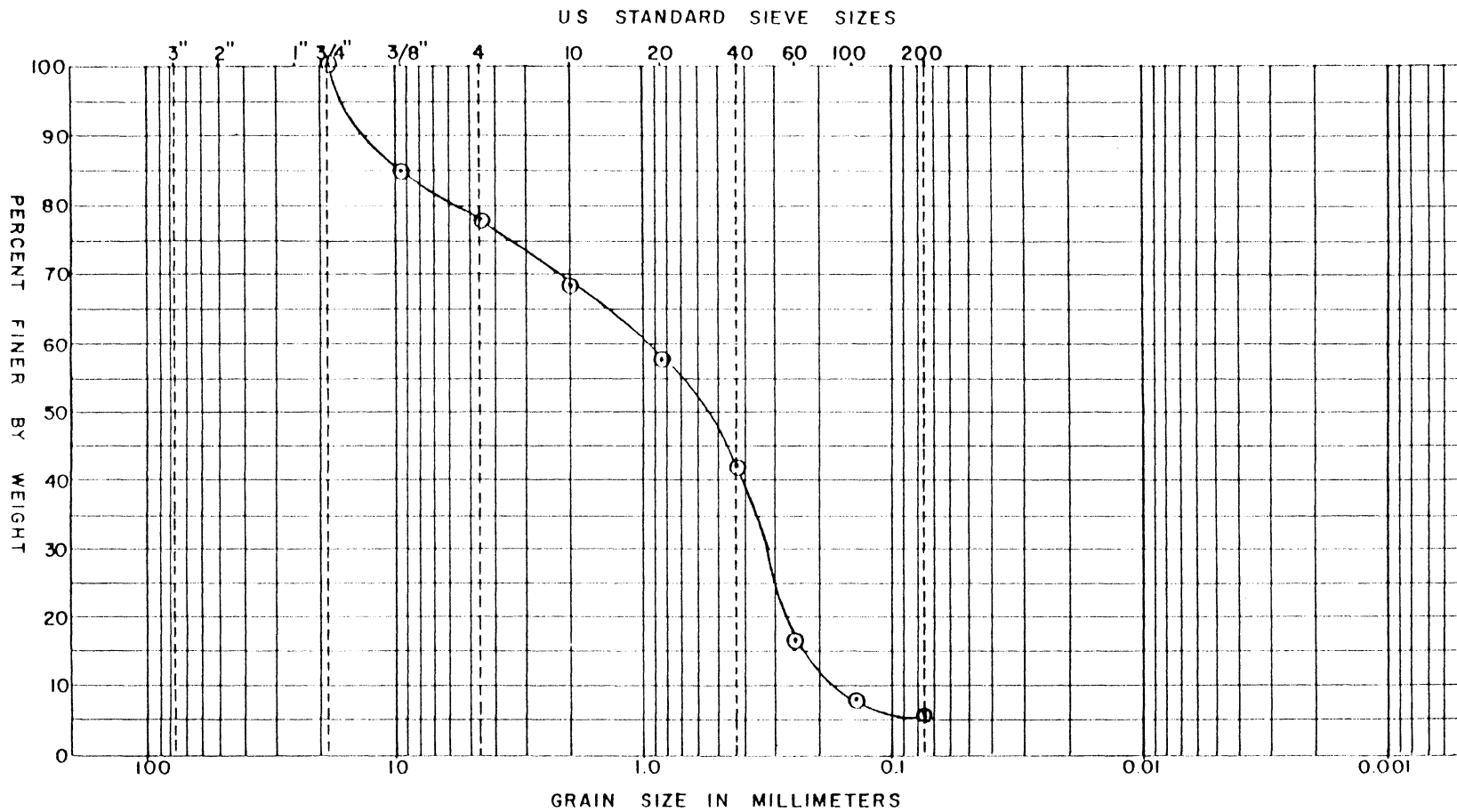
FIGURE V2-43

Date 1/22/80
Job No. 786085

Golder Associates

Drawn JLS
Checked MLB
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G40-S11 SA-12	16.76m-17.07m (55.0'-56.0')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP-SM)

FIGURE V2-44

Date 1/7/80
Job No. 786085

Golder Associates

Drawn JIS
Checked MSB
Approved [Signature]

GRAIN SIZE DISTRIBUTION

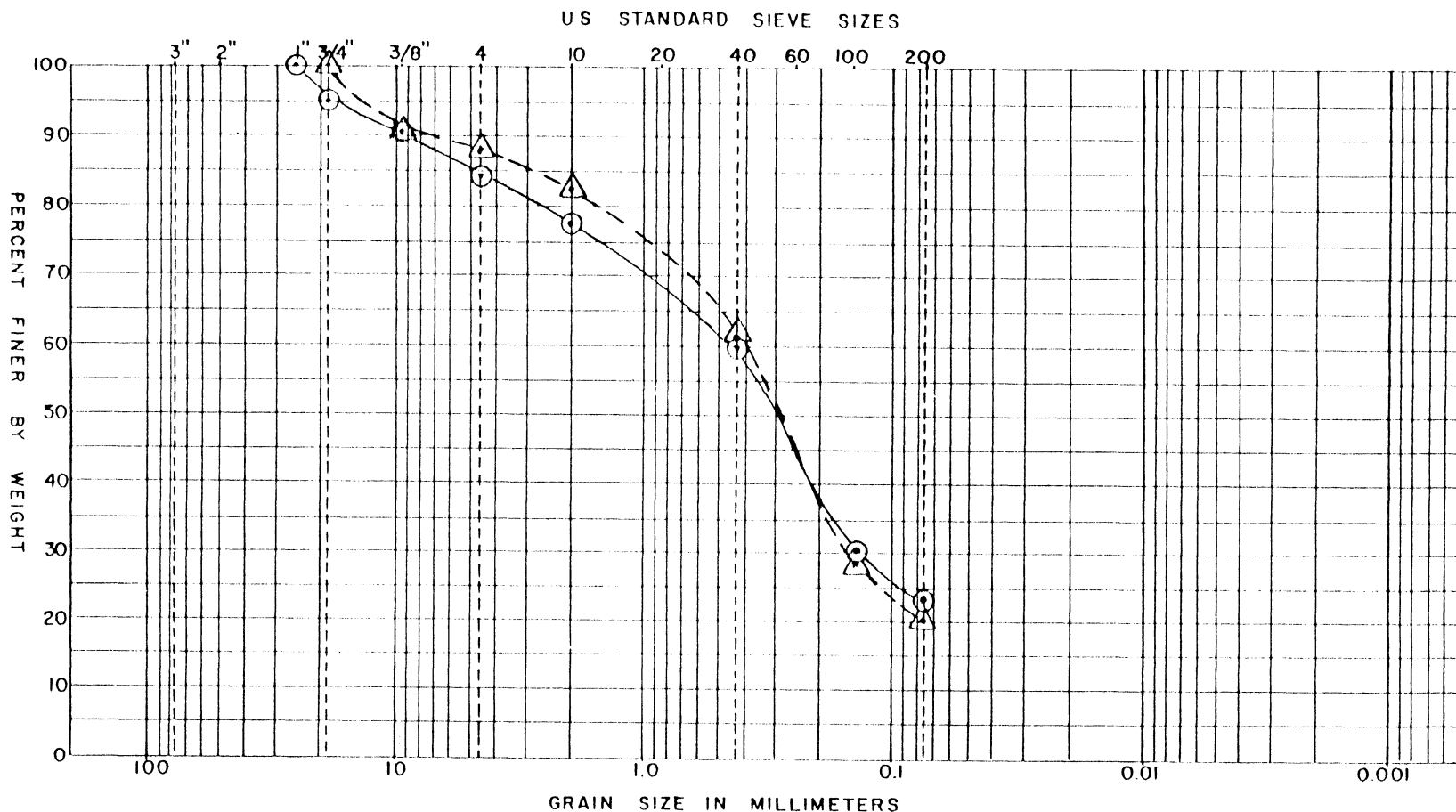
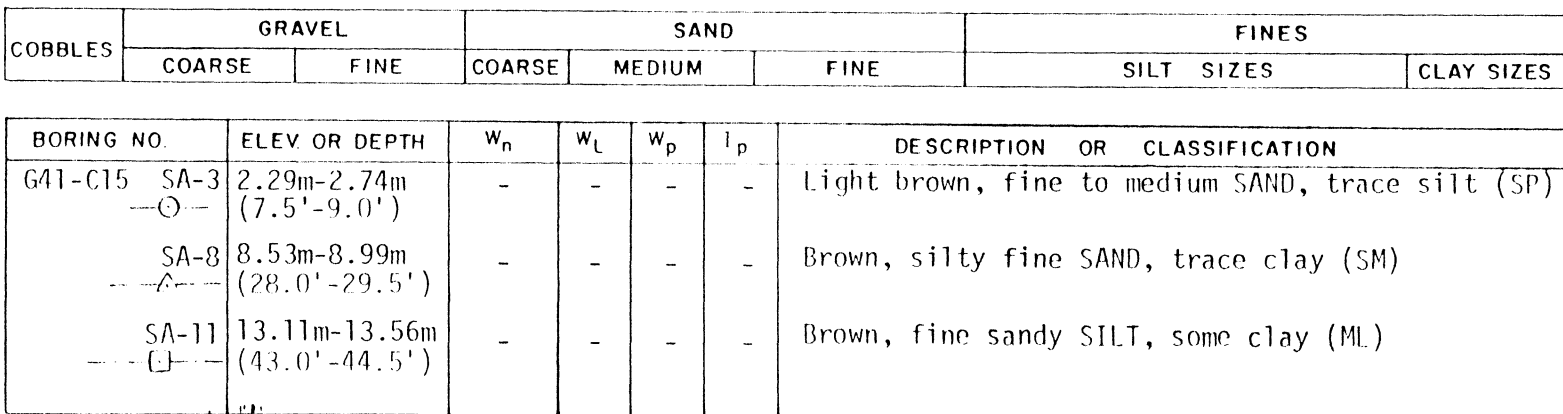
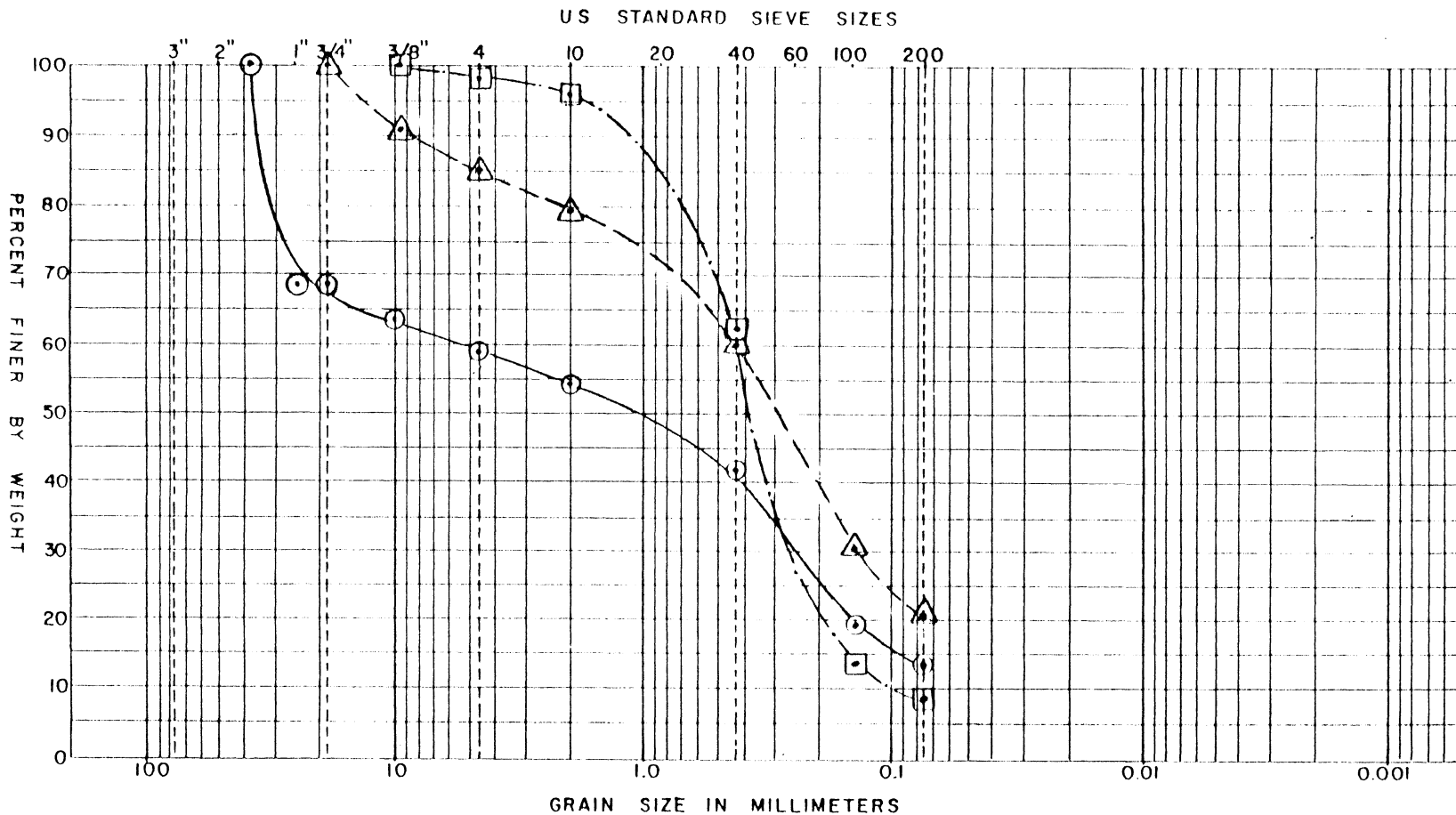


FIGURE V2-46



Drawn AST
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Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-C15 SA-14 ○	17.68m-18.14m (58.0'-59.5')	-	-	-	-	Red-brown, fine to coarse SAND and fine to coarse GRAVEL, some silt (SM)
SA-20 △	27.43m-27.68m (90.0'-90.8')	-	-	-	-	Red-brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-25 □	39.62m-39.93m (130.0'-131.0')	-	-	-	-	Brown, fine to coarse SAND, trace fine gravel, trace silt (SP-SM)

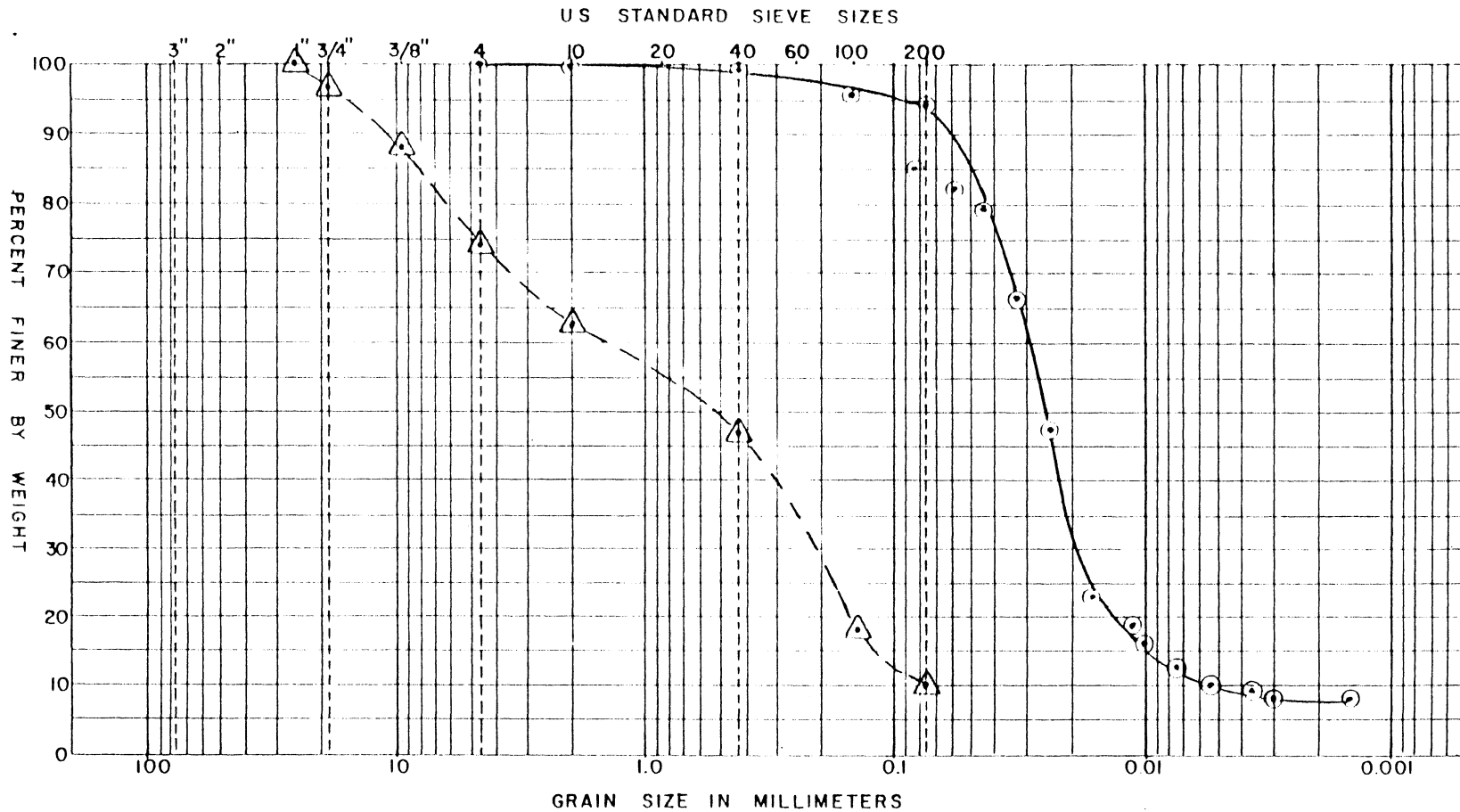
FIGURE V2-47

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES
BORING NO.	ELEV. OR DEPTH		w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-C15 SA-31	57.91m-58.13m (190.0'-190.7')		-	NP	NP	NP	Brown, SILT, trace fine to medium sand, trace clay (ML)
SA-32	60.96m-61.17m (200.0'-200.7')		-	-	-	-	Brown, fine gravelly, fine to coarse SAND, trace silt (SP-SM)

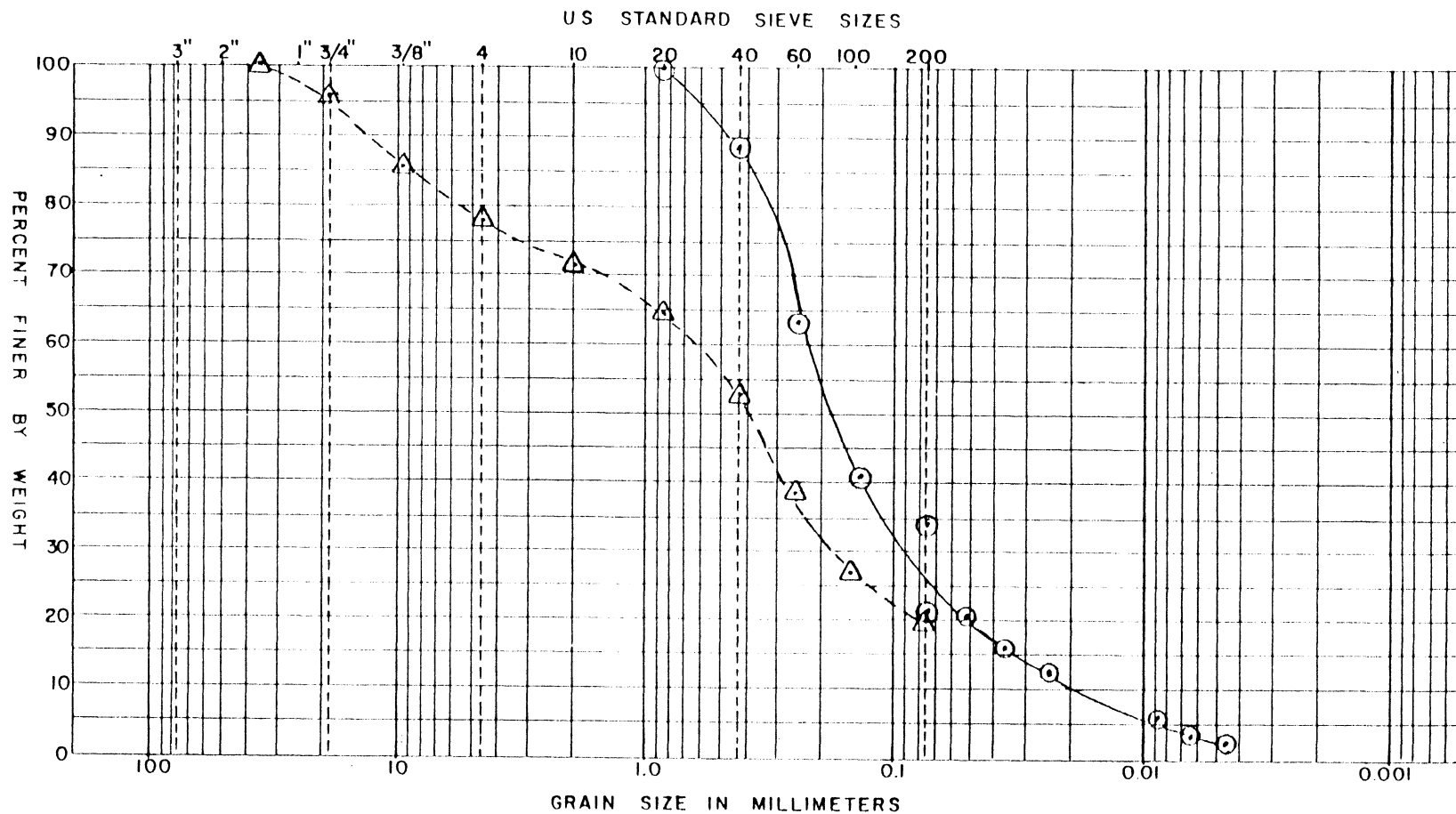
FIGURE V2-48

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-C15B						
SA-2A	1.37m-1.74m (4.5'-5.7')	-	-	-	-	Black, peat and silty, fine to medium SAND, trace clay (PT)
SA-6	7.47m-7.92m (24.5'-26.0')	-	-	-	-	Gray, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

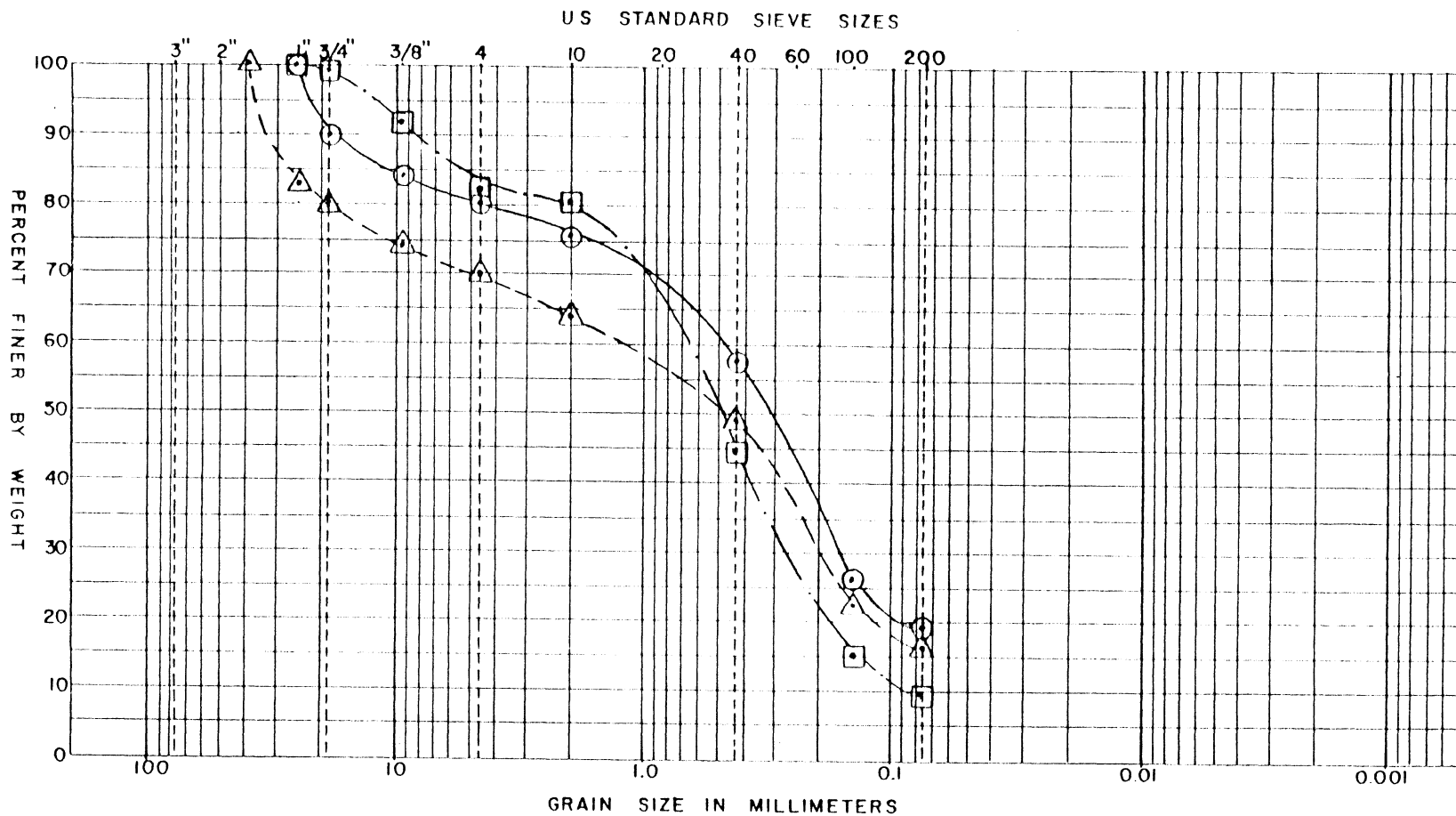
FIGURE V2-49

Date 6/17/79
Job No. 786085

Golder Associates

Drawn JIS
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-D18 SA-1 ○	.76m-1.22m (2.5'-4.0')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-3 △	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, trace silt, trace clay (SM)
SA-5 □	6.10m-6.34m (20.0'-20.8')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, trace silt (SP-SM)

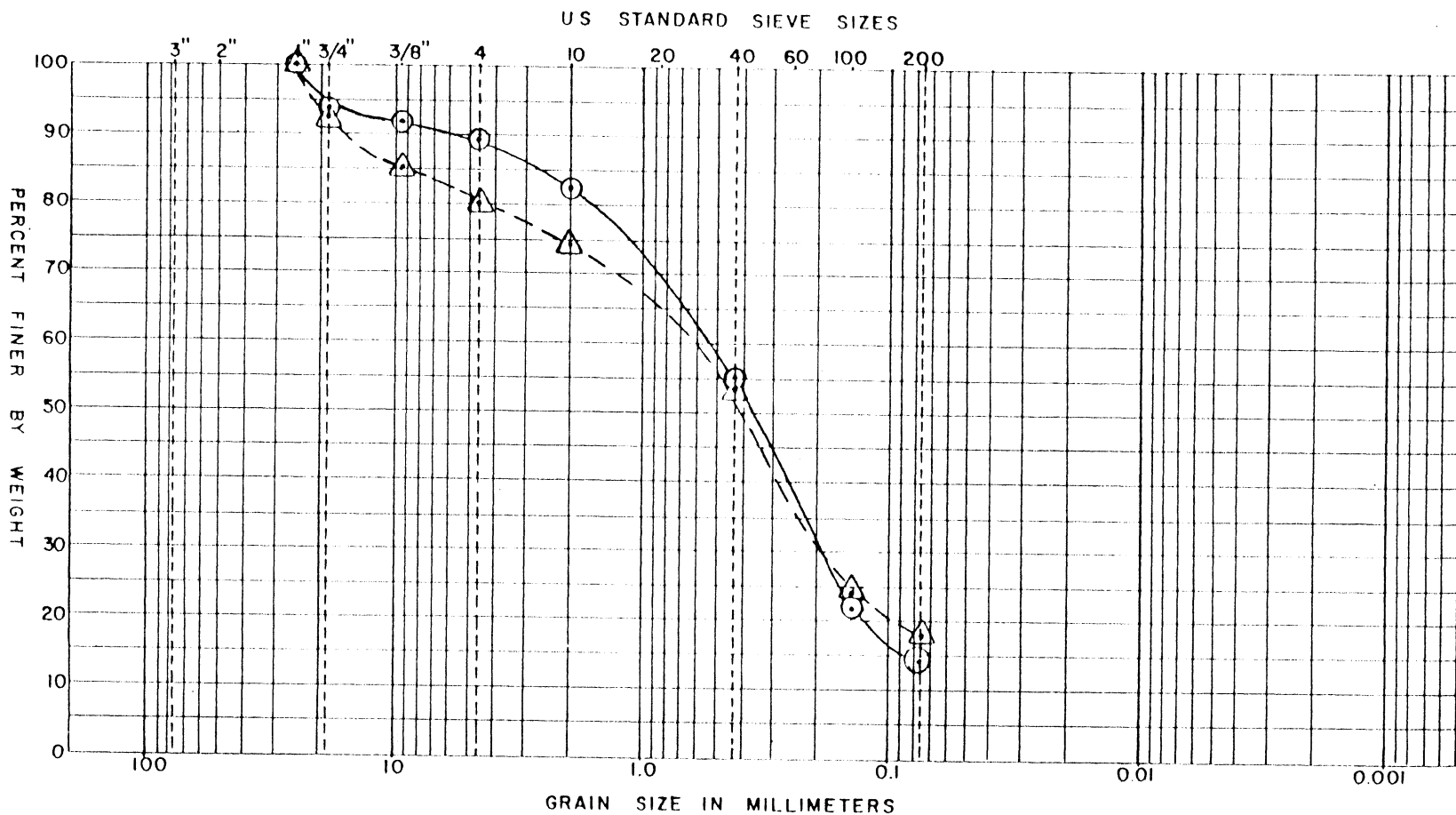
FIGURE V2-50

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-D18 SA-8 —○—	10.67m-11.03m (35.0'-36.2')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
SA-11 —△—	15.24m-15.45m (50.0'-50.7')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)

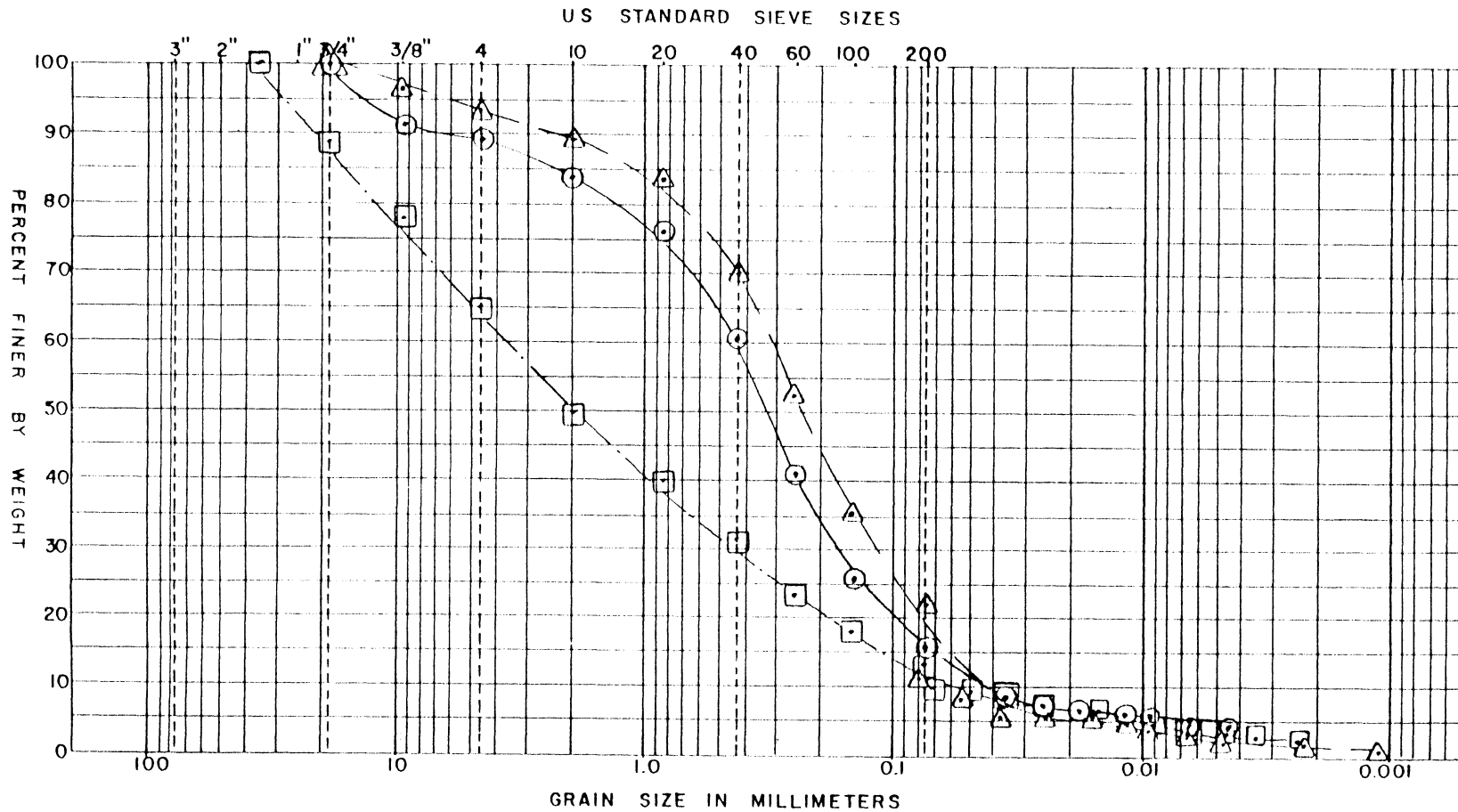
FIGURE V2-51

Date 5/30/79
Job No 786085

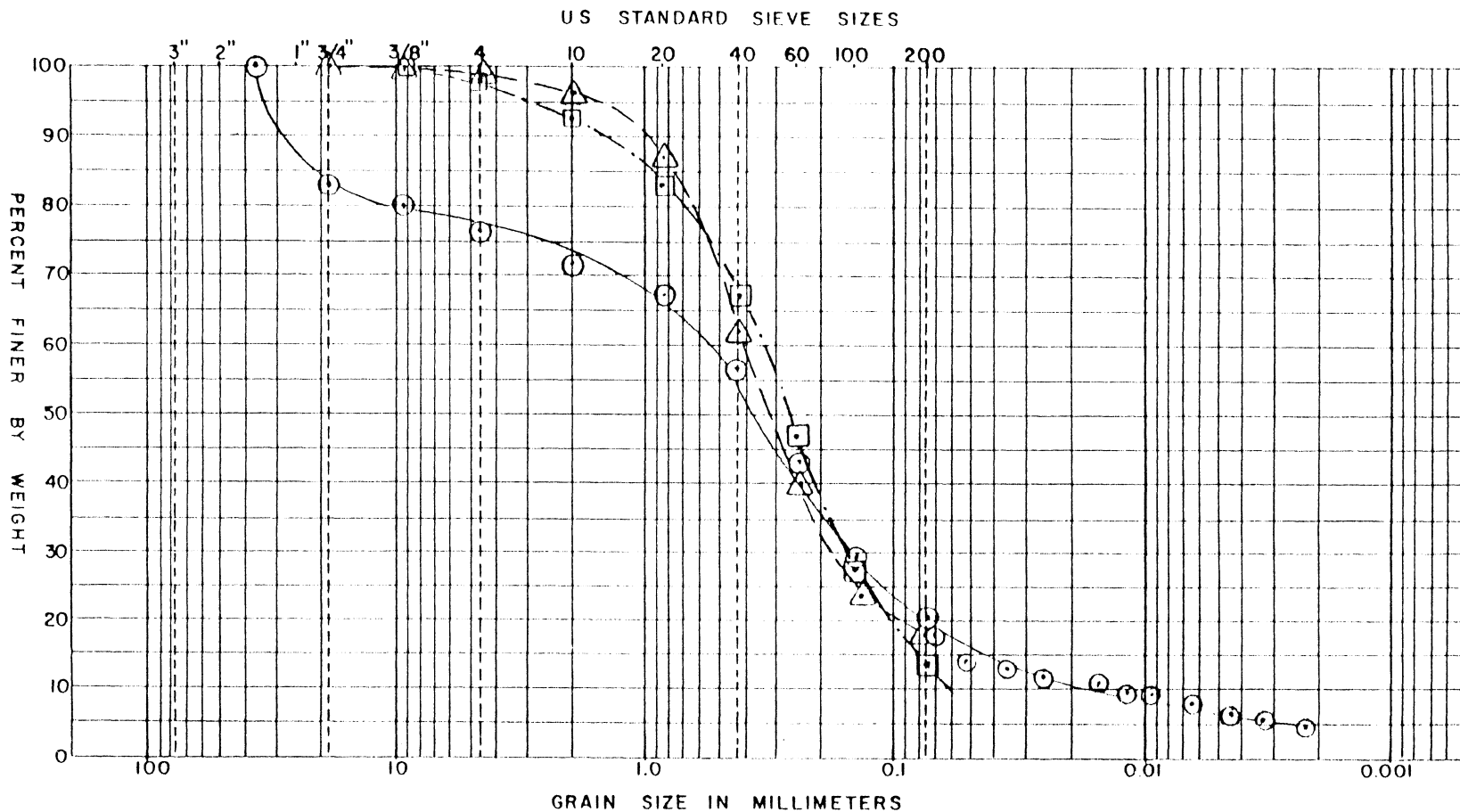
Golder Associates

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Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E13						
SA-13&14 —○—	19.31m-19.96m (65.0'-65.5')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-21 —△—	30.48m-30.72m (100.0'-100.8')	-	-	-	-	Red-brown, fine to coarse SAND, trace fine gravel, some silt, trace clay (SM)
SA-22 —□—	33.53m-33.83m (110.0'-111.0')	-	-	-	-	Light brown, fine to coarse SAND, some silt, trace fine gravel (SM)

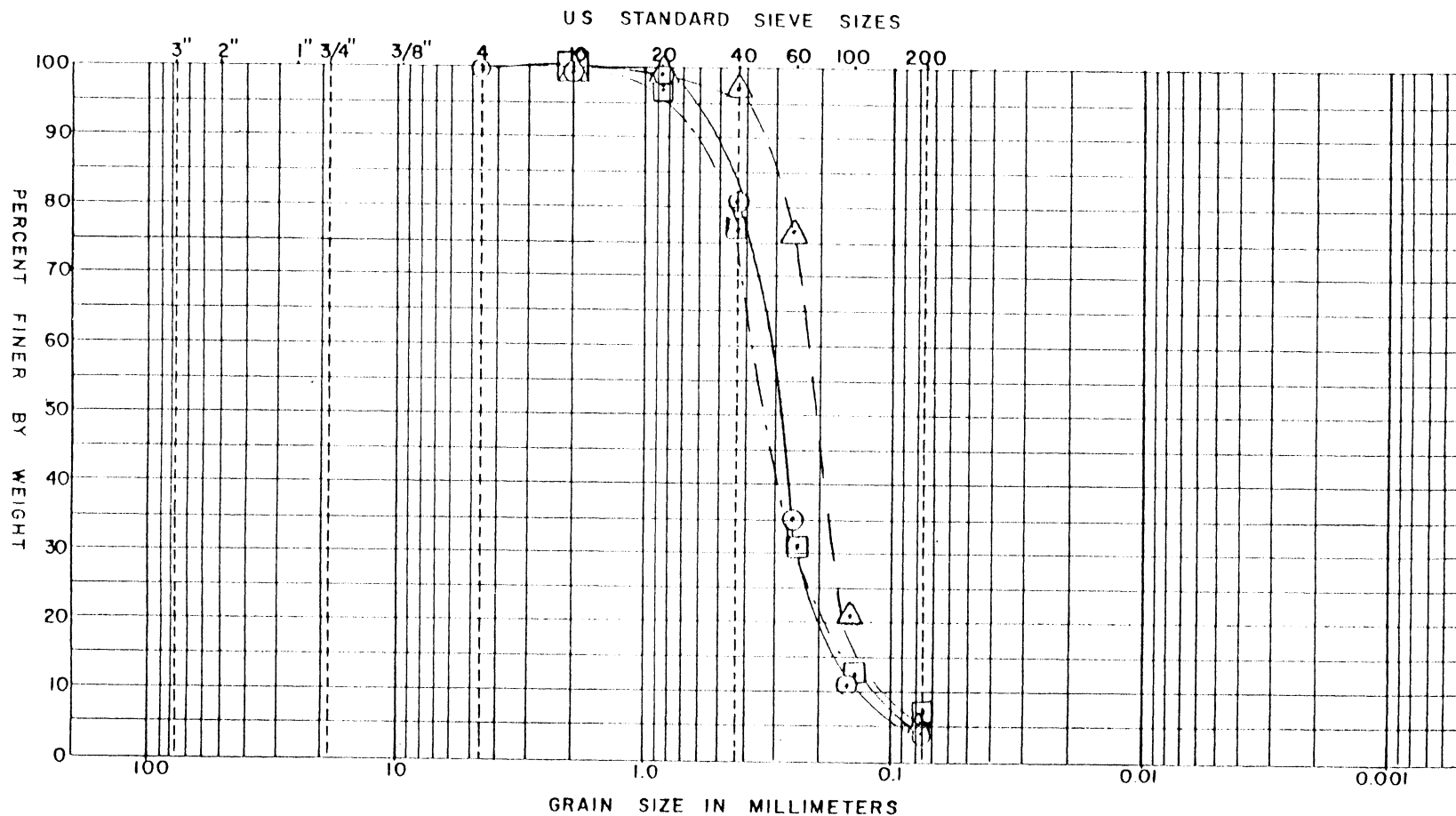
FIGURE V2-53

Date 6/3/79
Job No. 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E13 SA-25 (140.0'-141.0')	42.67m-42.98m	-	-	-	-	Red-brown, fine to medium SAND, trace silt (SP)
SA-30 (190.0'-191.0')	57.91m-58.22m	-	-	-	-	Red-brown, fine to medium SAND, trace silt (SP-SM)
SA-34 (230.0'-231.0')	70.10m-70.41m	-	-	-	-	Red-brown, fine to medium SAND, trace silt (SP-SM)

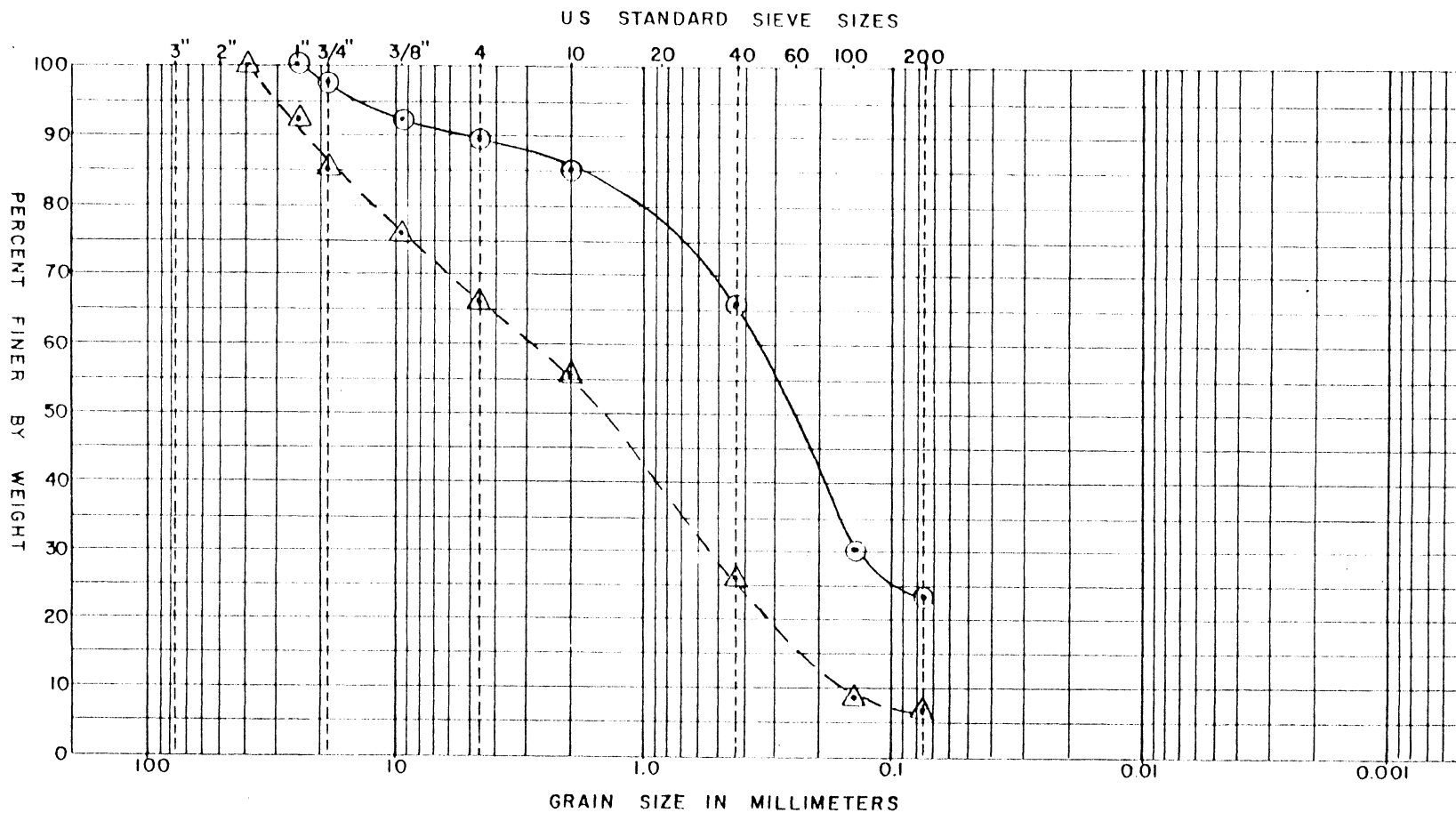
FIGURE V2-54

Date 6/22/79
Job No. 736025

Golder Associates

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Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E15 SA-3	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
SA-8	10.67m-10.88m (35.0'-35.7')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP-SM)

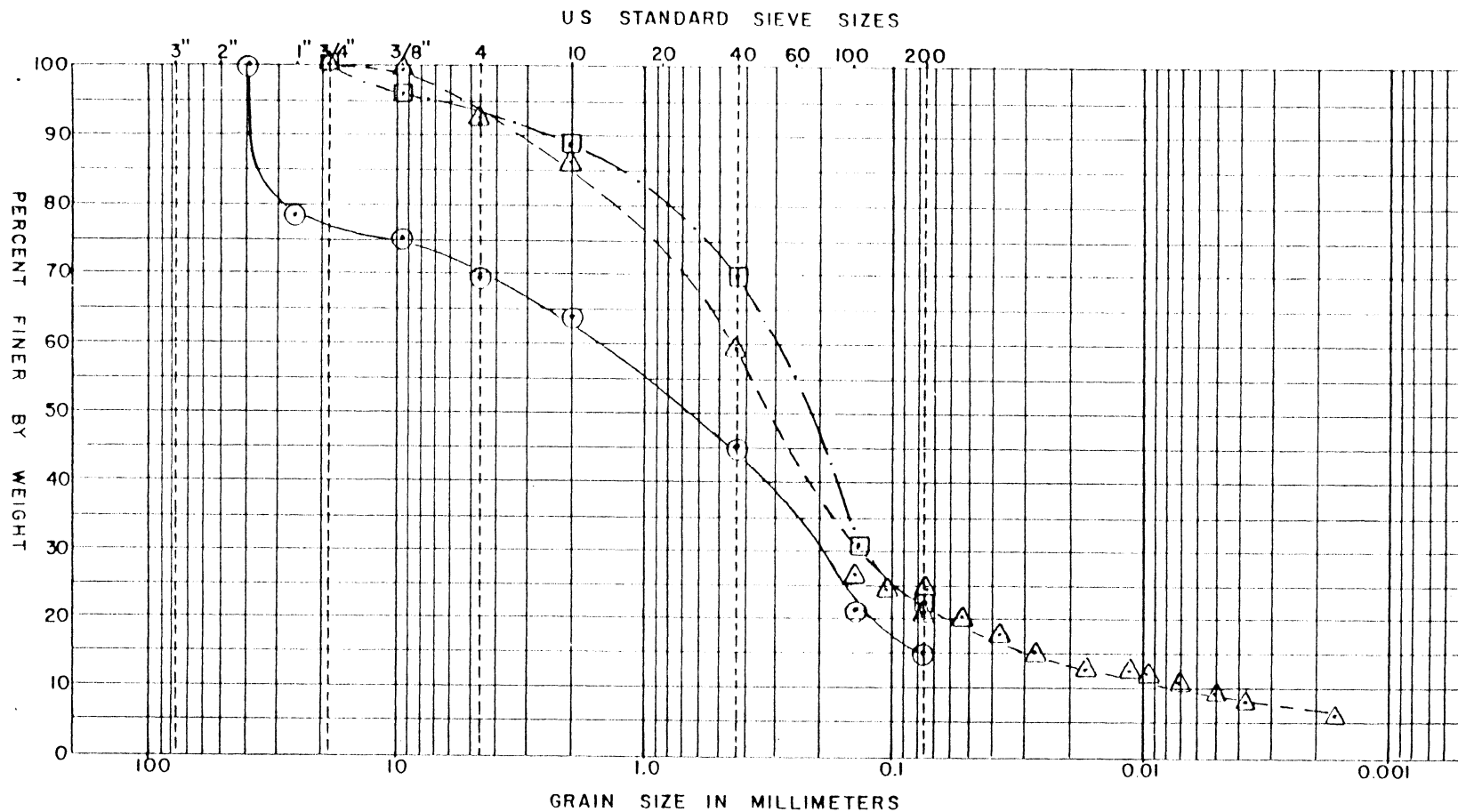
FIGURE V2-55

Date 5/30/79
Job No. 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E17 SA-2	3.66m-4.11m (12.0'-13.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, some silt (SM)
SA-7	12.19m-12.65m (40.0'-41.5')	-	-	-	-	Brown, fine to coarse SAND, some silt, trace fine gravel, trace clay (SM)
SA-16	26.21m-26.67m (86.0'-87.5')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine gravel, trace clay (SM)

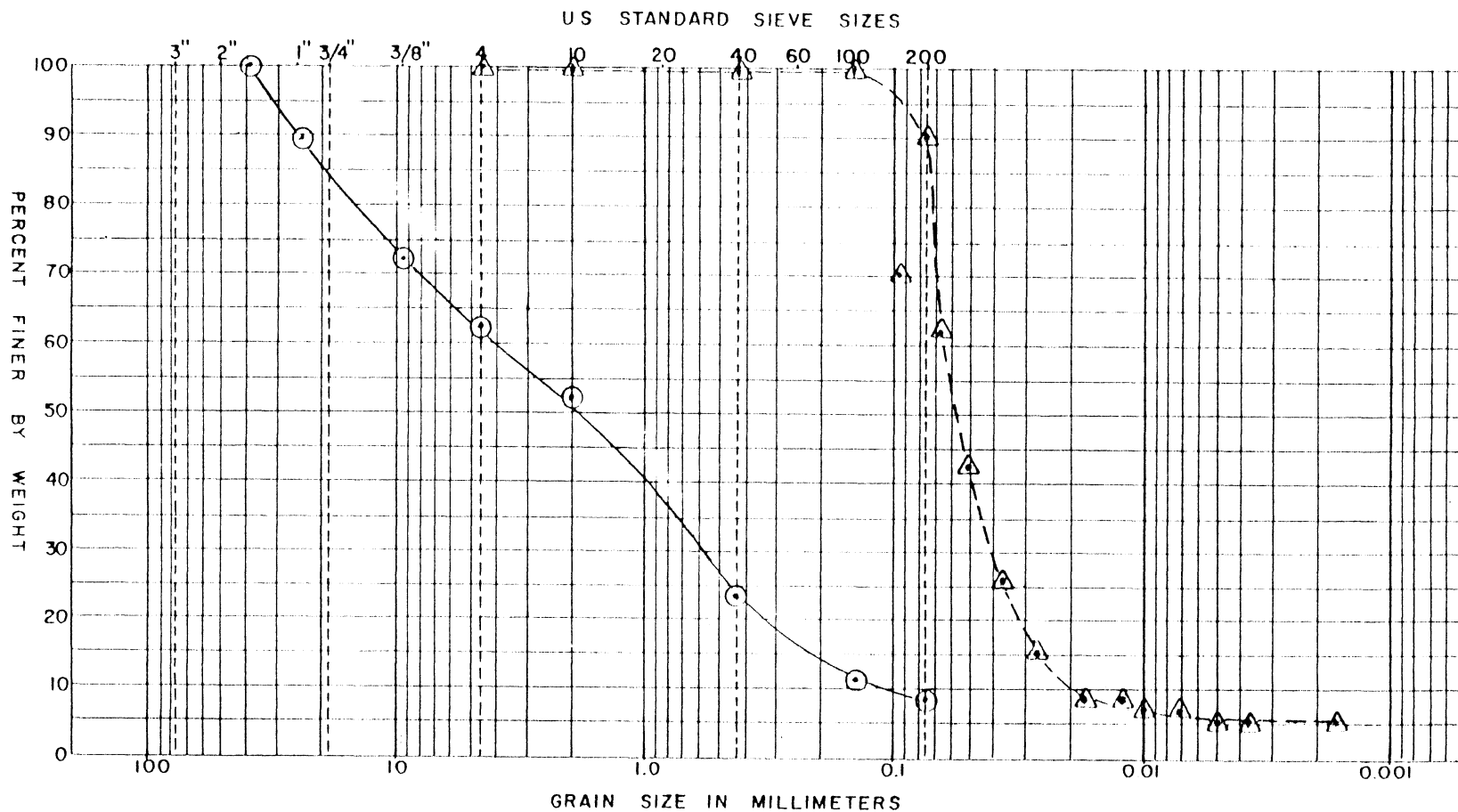
FIGURE V2-56

Date 5/30/79
Job No 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E17 SA-24 —○—	46.79m-47.24m (153.5'-155.0')	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, trace silt (SP-SM)
SA-30 —△—	65.23m-65.69m (214.0'-215.5')	-	-	-	-	Red-brown, SILT, trace fine sand, trace gravel (ML)

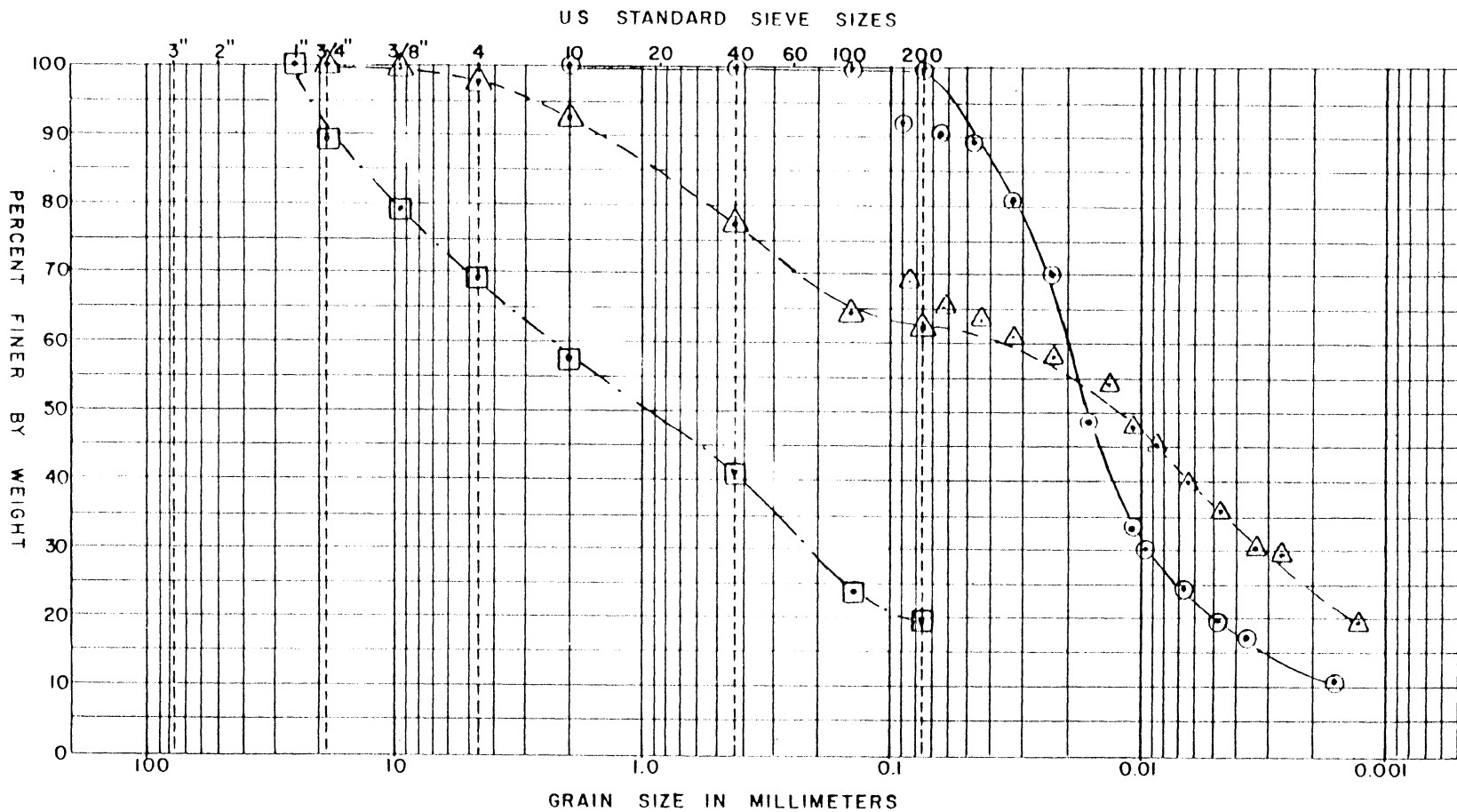
FIGURE V2-57

Date 5/30/79
Job No 786085

Golder Associates

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E17 SA-31 ○	68.43m-68.89m (224.5'-226.0')	-	24	23	1	Red-brown, SILT, some clay, trace fine sand (ML)
SA-32 △	71.32m-71.63m (234.0'-235.0')	-	-	-	-	Red-brown, fine to coarse clayey SAND and SILT, trace fine gravel (ML)
SA-33 □	74.83m-75.13m (245.5'-246.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

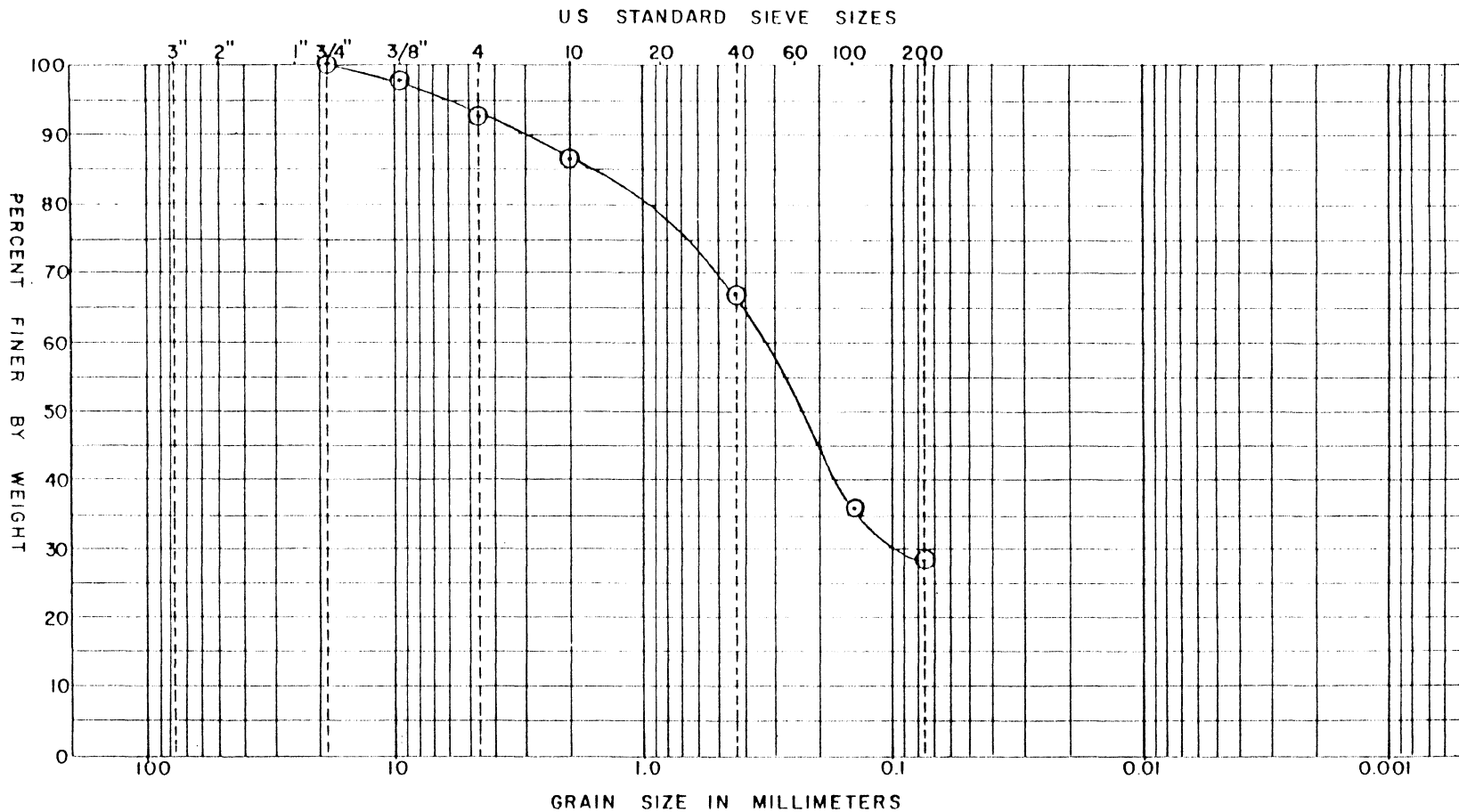
FIGURE V2-58

Date 5/30/79
Job No. 786085

Golder Associates

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Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-E19 SA-3 —○—	2.29m-2.59m (7.5'-8.5')	-	-	-	-	Brown, fine to coarse SAND, some silt, some clay, trace fine gravel (SM)

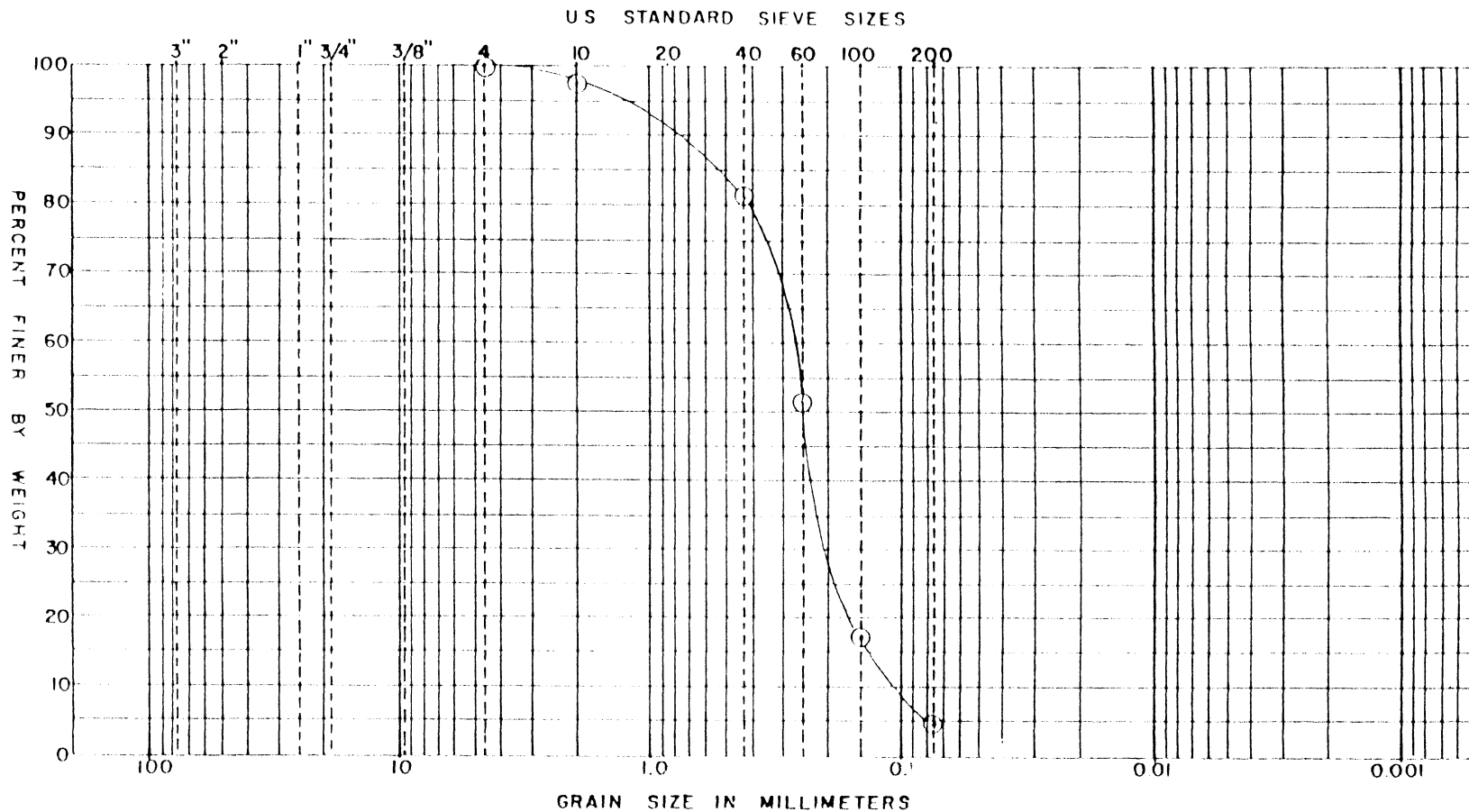
FIGURE V2-59

Date 6/14/79
Job No. 786085

Golder Associates

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Checked JFC
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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-F19A						
SA-13A — ⊙ —	36.58m-37.03m (120.0'-121.5')	-	-	-	-	Light red-brown fine to medium SAND, trace silt (SP)

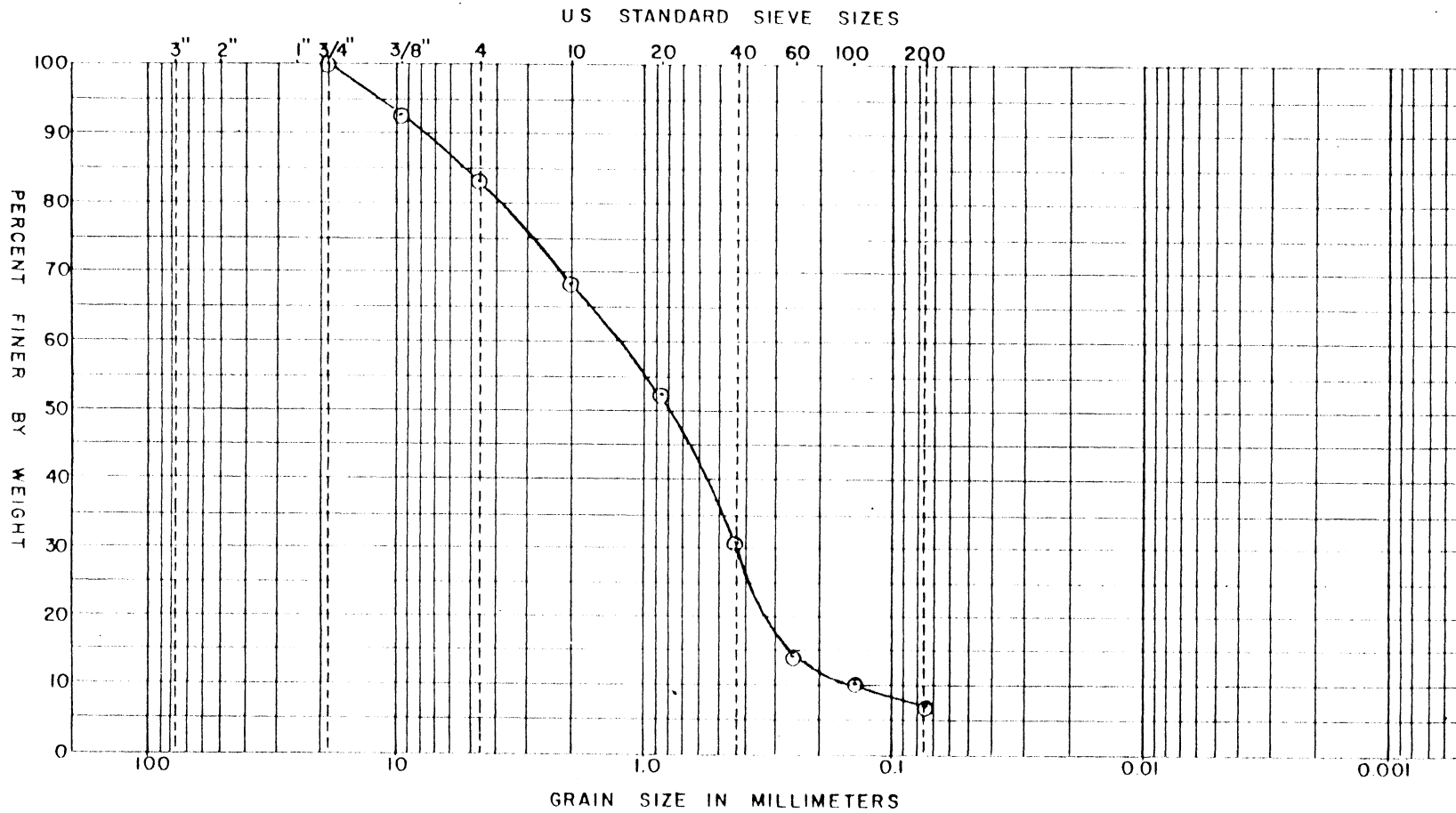
FIGURE V2-60

Date 9-16-81
Job No. 786035

Goldier Associates

Drawn BR
Checked TL
Reviewed HL

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-F24 SA 15	22.86m-23.32m (75.0-76.5)	-	-	-	-	Light brown, fine to coarse SAND, some fine gravel, trace silt (SW-SM)

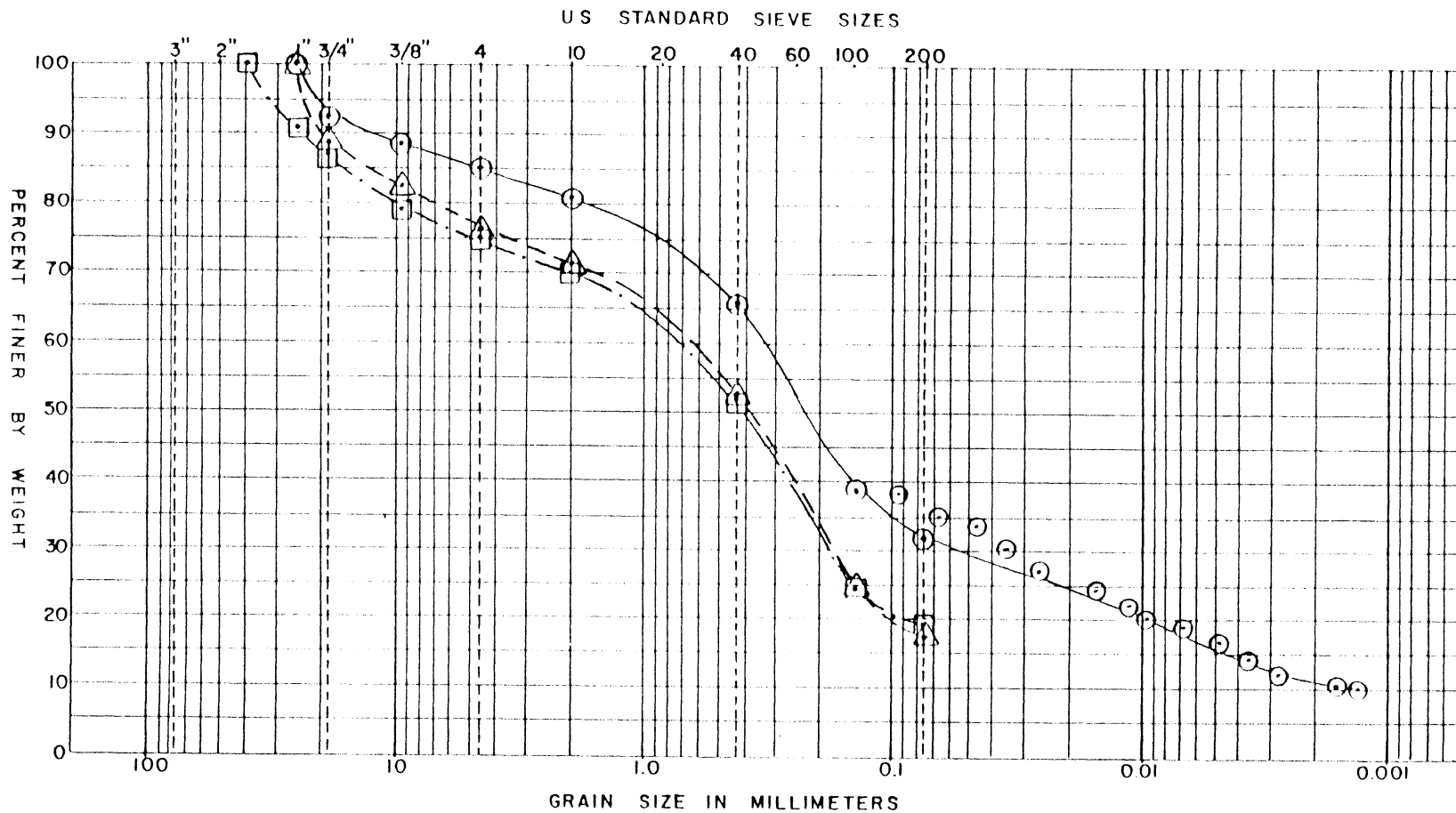
FIGURE V2-61

Date 1/22/80
Job No. 786085

Golder Associates

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Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G11 SA-1 —○—	0.0m-0.46m (0.0'-1.5')	-	-	-	-	Red-brown, silty, fine to coarse SAND, some fine to coarse gravel, some clay (SM)
SA-4 —△—	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-6 —□—	6.10m-6.55m (20.0'-21.5')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

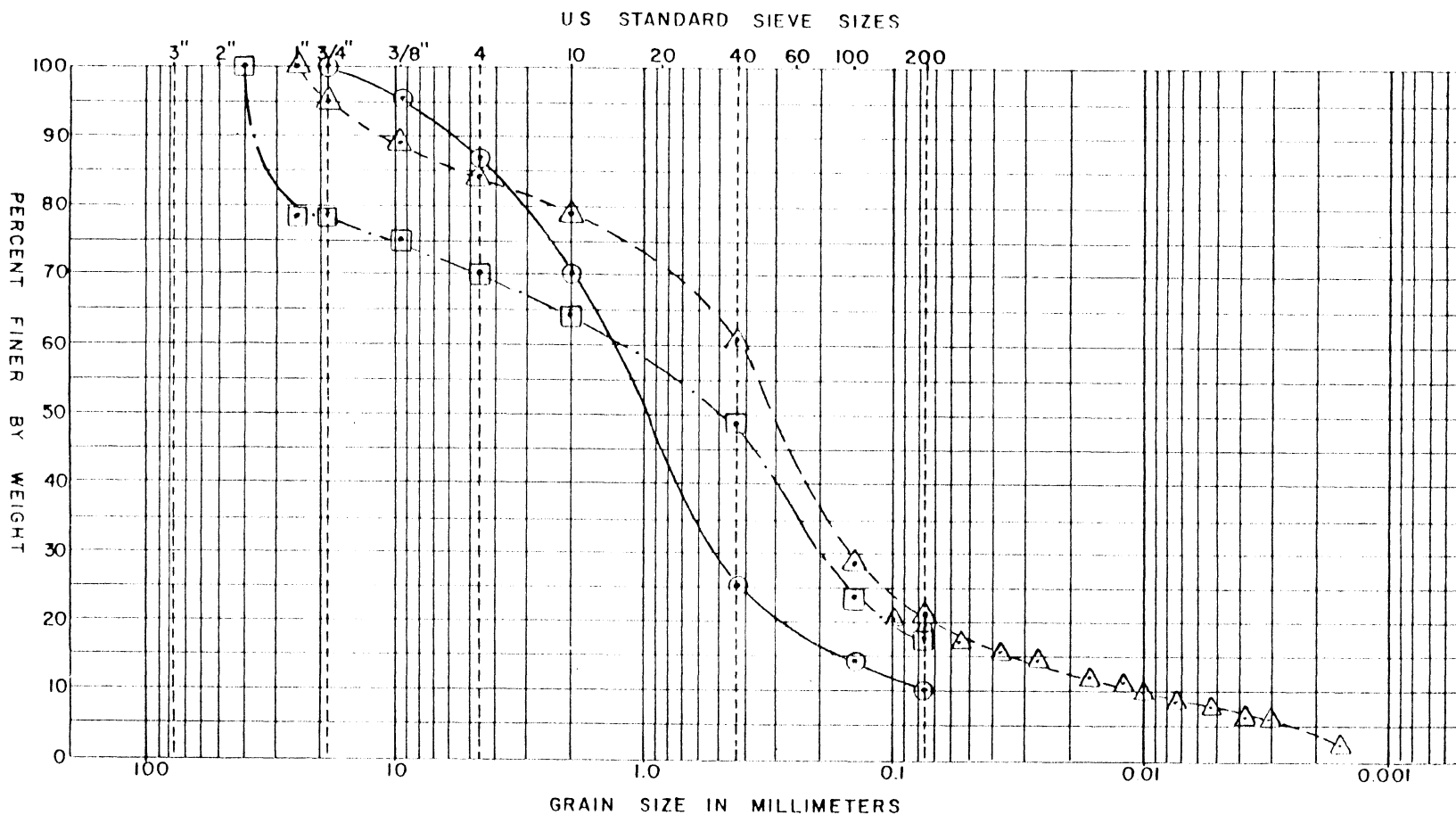
FIGURE V2-62

Date 5/30/79
Job No. 786035

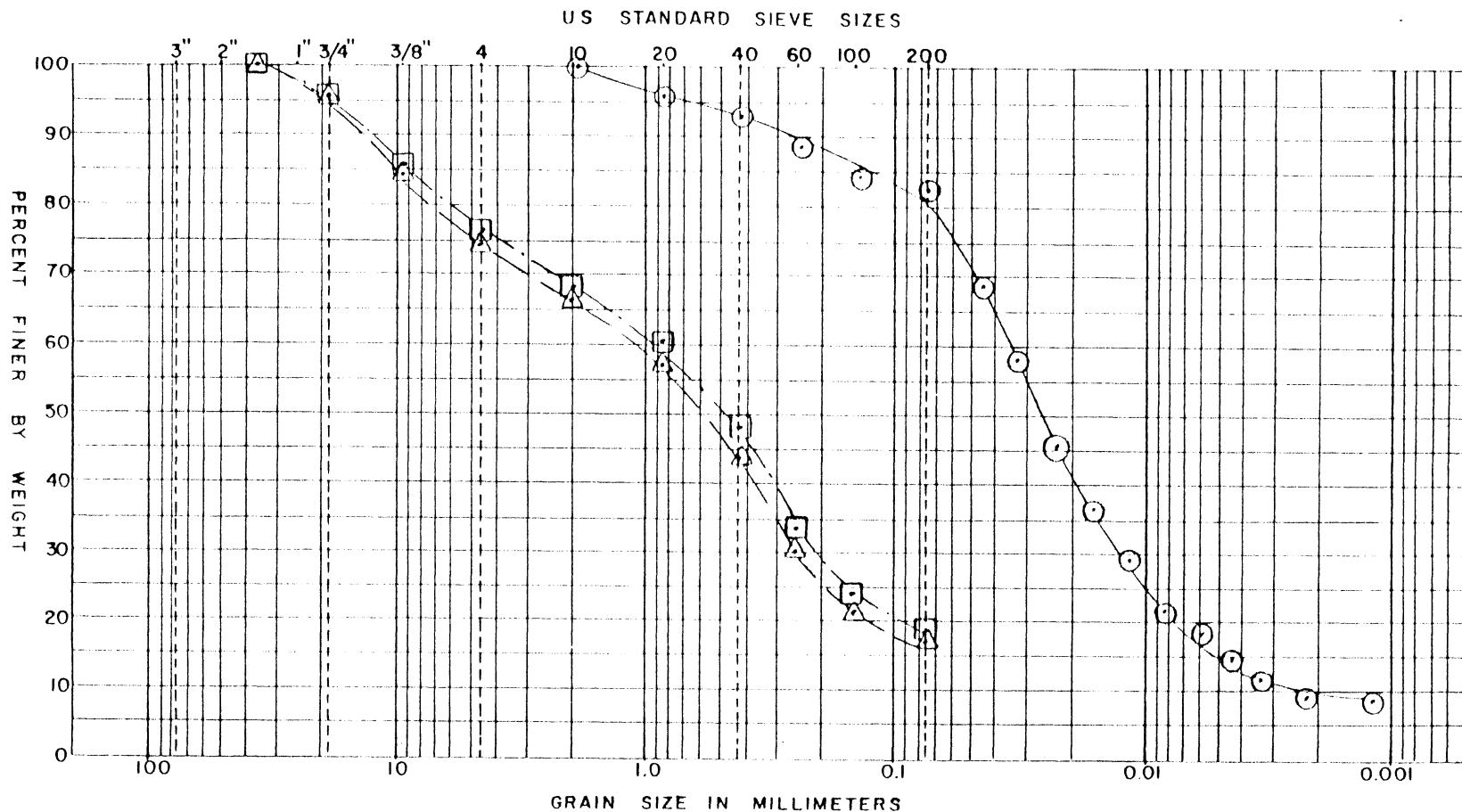
Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G12 SA-1 --○--	0.0m-0.46m (0.0'-1.5')	-	NP	NP	NP	Red-brown, SILT, some fine to medium sand, trace clay (ML)
SA-4 --△--	4.42m-4.83m (14.5'-16.0')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-5 --□--	5.94m-6.40m (19.5'-21.0')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

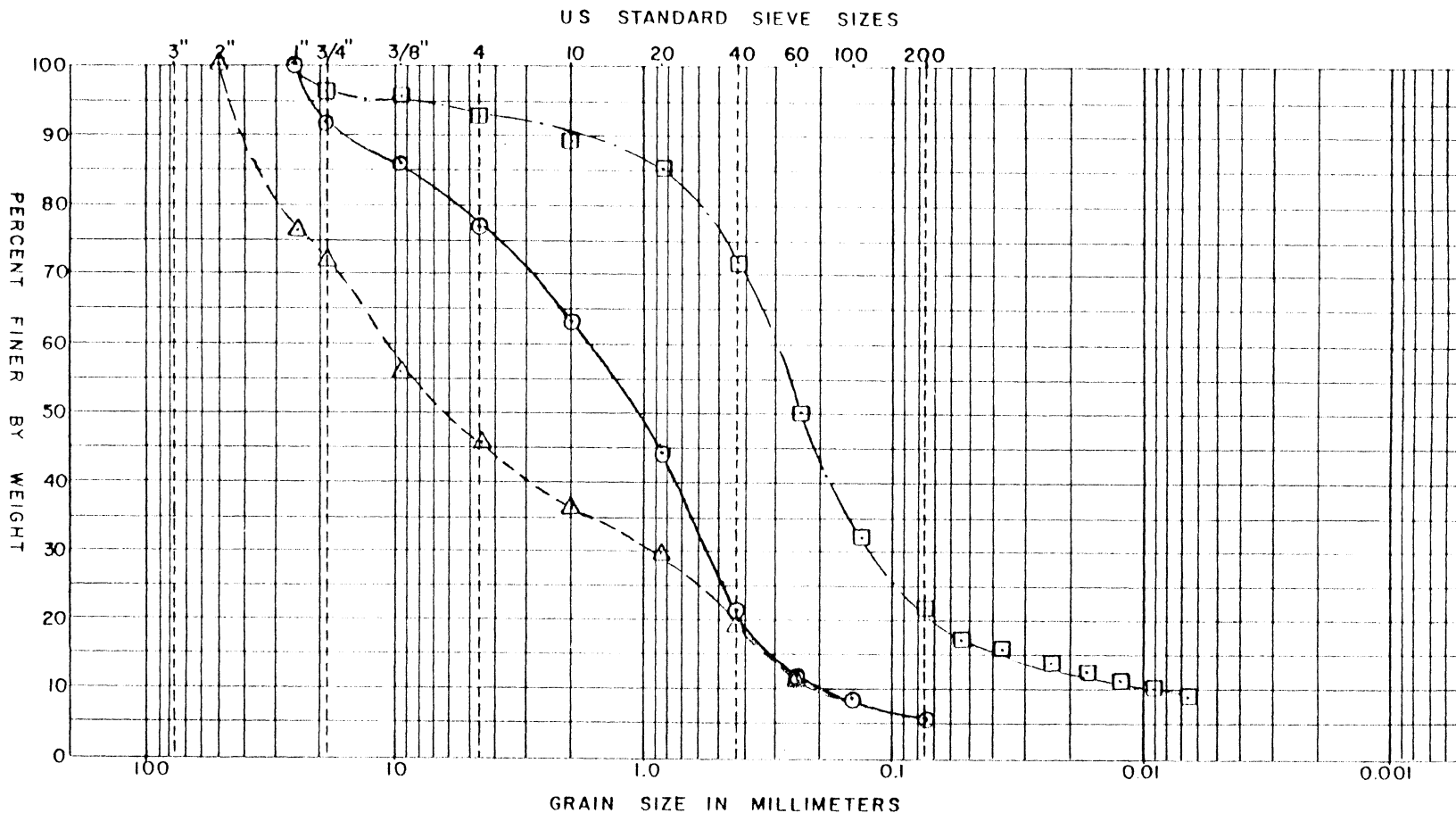
FIGURE V2-64

Date 6/7/79
Job No. 786035

Golder Associates

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Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-G14A	30.48m-30.63m	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP-SM)
SA 1	(100.0'-100.5')	-	-	-	-	
SA 2	33.53m-33.83m	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, trace silt (GP-GM)
	(110.0'-111.0')	-	-	-	-	
SA 3	36.58m-37.03m	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine to coarse gravel, trace clay (SM)
	(120.0'-121.5')	-	-	-	-	

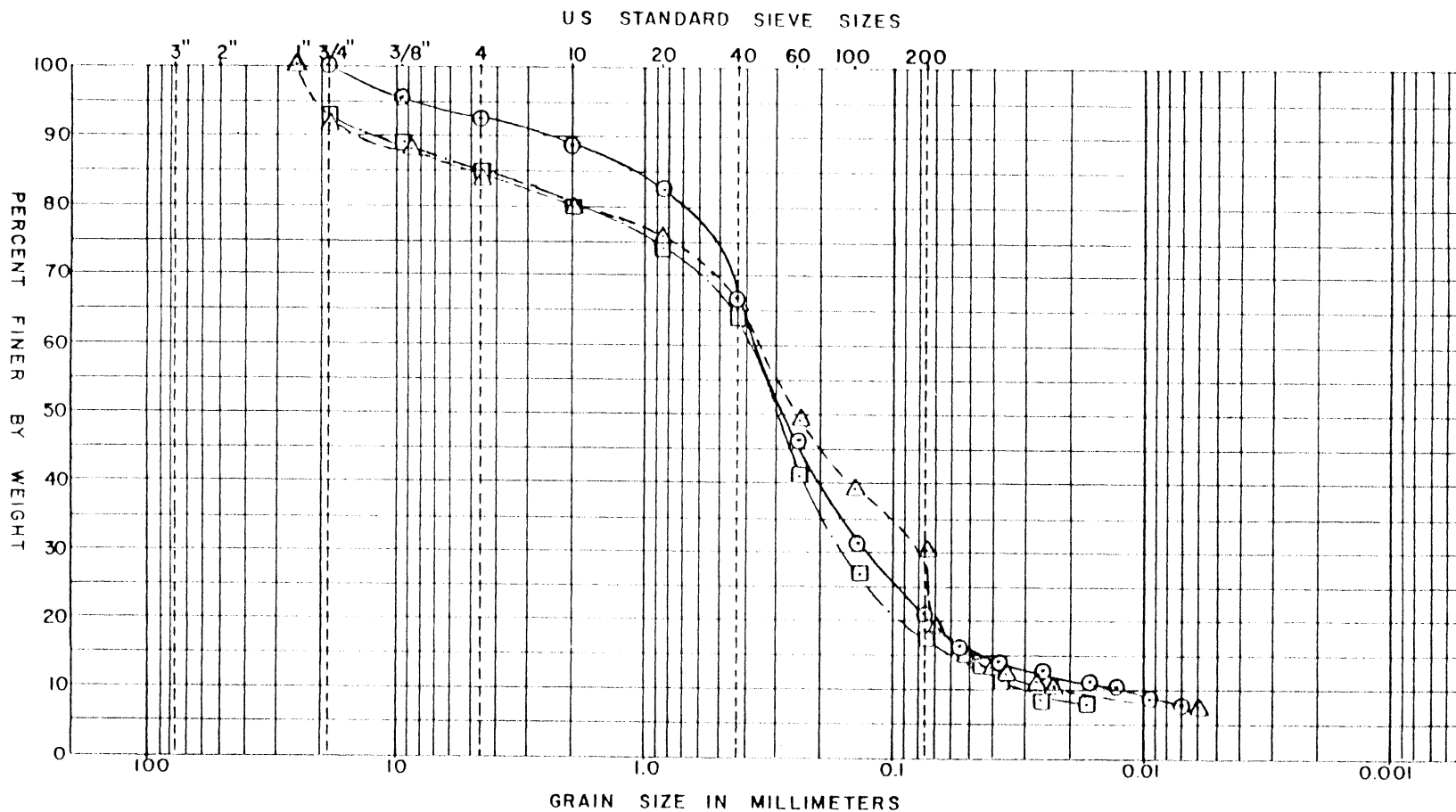
FIGURE V2-65

Date 12/26/79
Job No. 736035

Golder Associates

Drawn JLS
Checked LMS
Approved

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-G14A	39.62m-39.93m	-	-	-	-	
SA 4	(130.0'-131.0')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine gravel, trace clay (SM)
SA 5	42.67m-42.98m	-	-	-	-	Red-brown, silty, fine to coarse SAND, some fine to coarse gravel, trace clay (SM)
SA 7	(140.0'-141.0')	-	-	-	-	
	43.77m-49.04m	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
	(160.0'-160.9')	-	-	-	-	

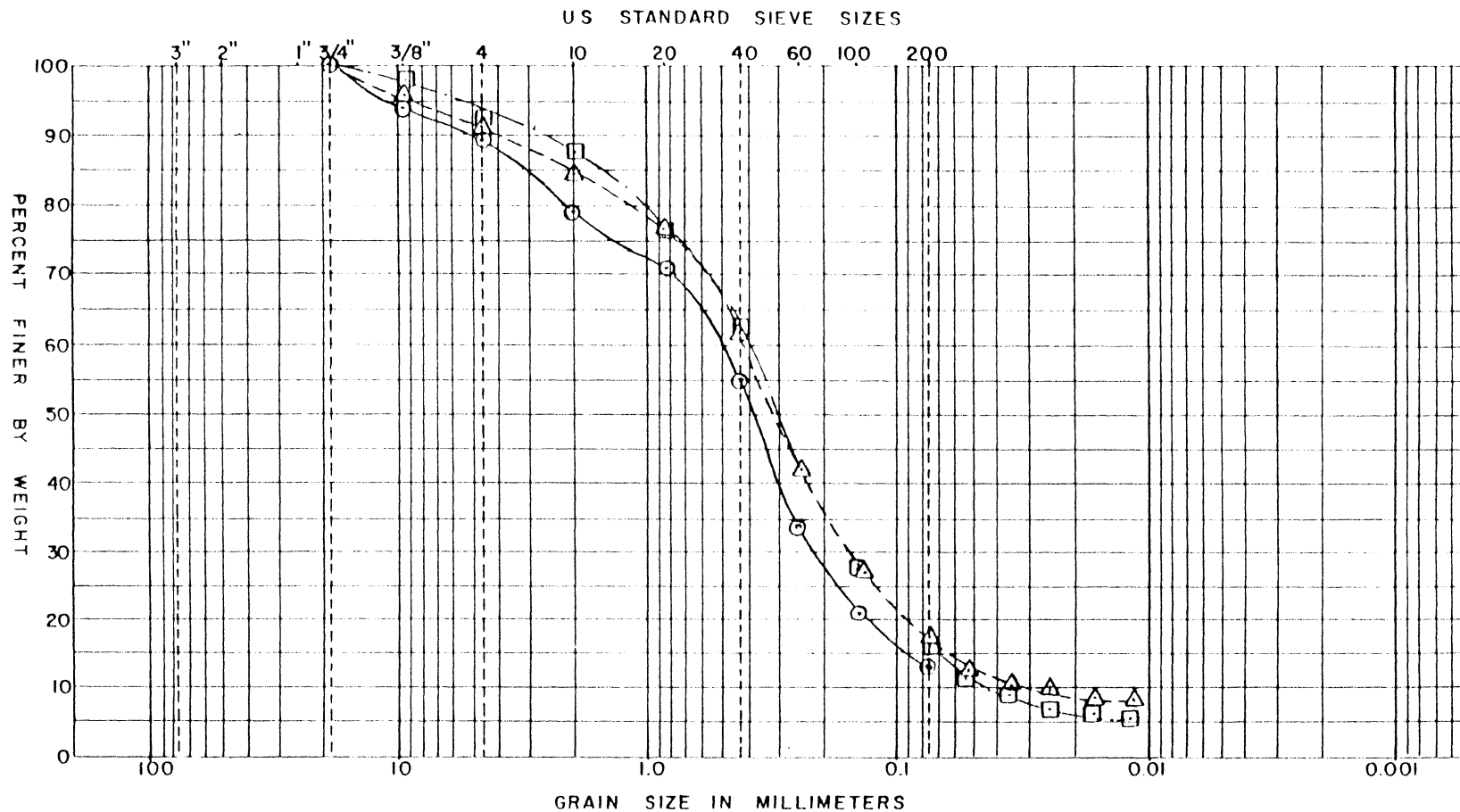
FIGURE V2-66

Date 12/26/79
Job No. 786085

Golder Associates

Drawn JLS
Checked *[Signature]*
Approved *[Signature]*

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G14A SA 8 —○—	51.82m-52.12m (170.0'-171.0')	-	-	-	-	Red-brown, fine to coarse SAND, some fine gravel, some silt (SM)
SA 9 —△—	54.86m-55.17m (180.0'-181.0')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace some gravel, trace clay (SM)
SA 10 —□—	57.91m-58.22m (190.0'-191.0')	-	-	-	-	Dark brown, fine to coarse SAND, some silt, trace fine gravel (SM)

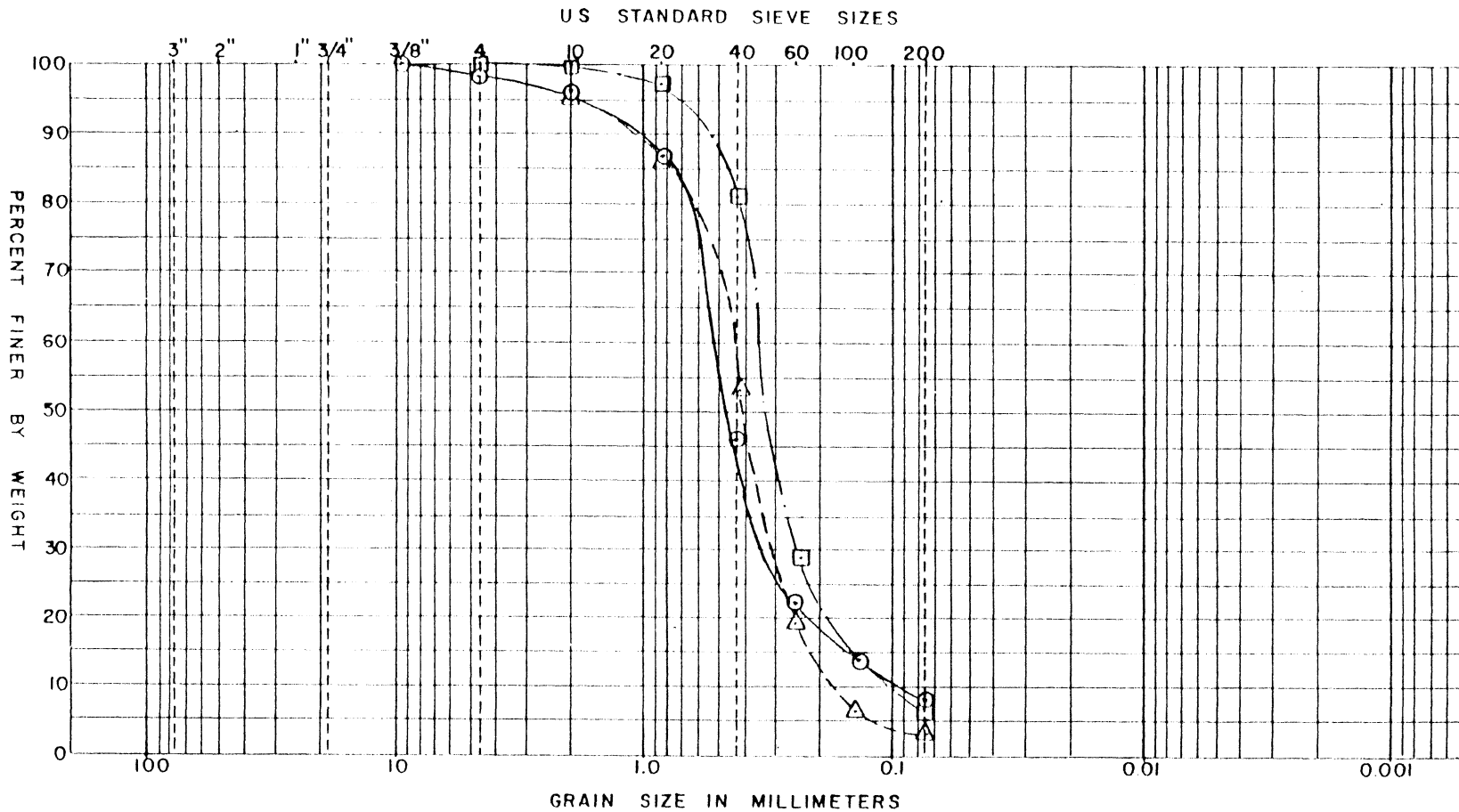
FIGURE V2-67

Date 12/25/79
Job No. 786085

Golder Associates

Drawn JJS
Checked HMC
Approved HMC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G14A SA 13 —○—	62.48m-62.94m (205.0'-206.5')	-	-	-	-	Brown, fine to medium SAND, trace silt (SP-SM)
SA 14 —△—	64.01m-64.47m (210.0'-211.5')	-	-	-	-	Brown, fine to coarse SAND, trace silt (SP)
SA 15 —□—	65.53m-65.99m (215.0'-216.5')	-	-	-	-	Brown, fine to medium SAND, trace silt (SP-SM)

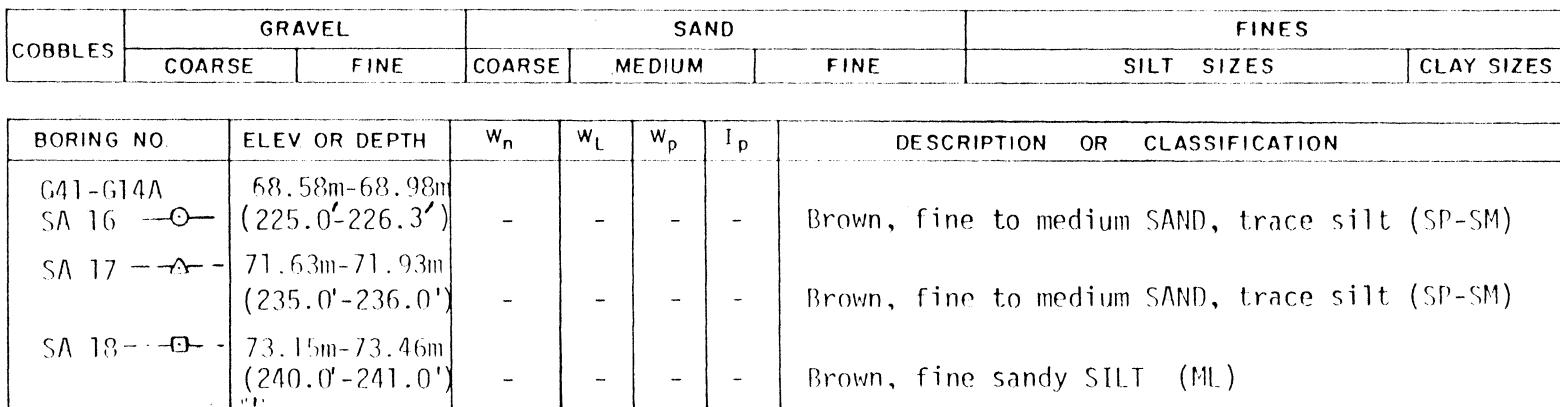
FIGURE V2-68

Date 12/26/79
Job No 786035

Golder Associates

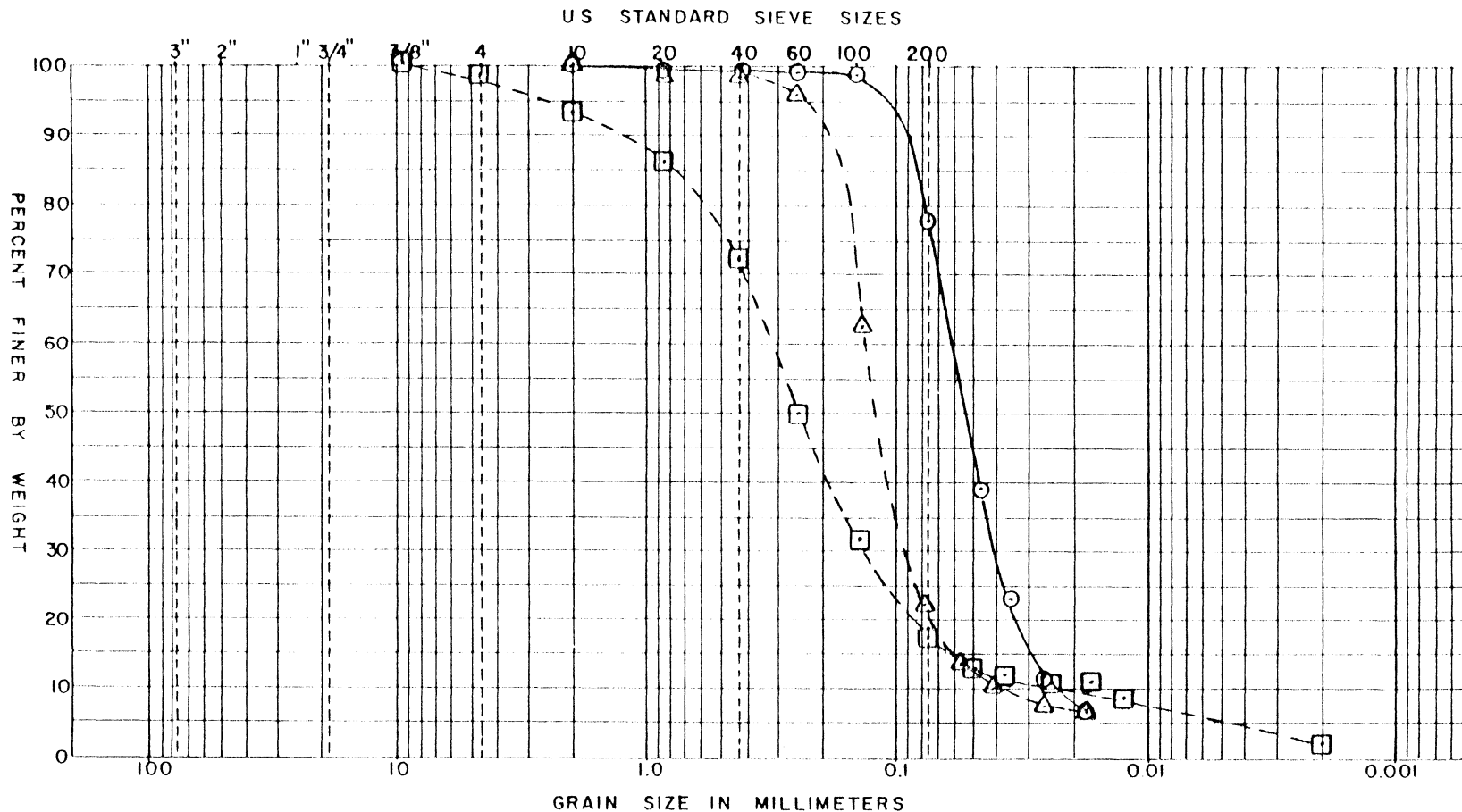
Drawn JLS
Checked HYM
Approved WLA

FIGURE V2-69



Drawn 115
Checked 100
Approved 100

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G14B	74.68m-75.13m					
SA 1 --△--	(245.0'-246.5')	-	-	-	-	Brown, silty, fine SAND, trace clay (SM)
SA 2 --○--	76.20m-76.66m (250.0'-251.5')	-	-	-	-	Brown, fine sandy SILT (ML)
SA 3 --□--	77.72m-78.18m (255.0'-256.5')	-	-	-	-	Red-brown, fine to coarse SAND, some silt (SM)

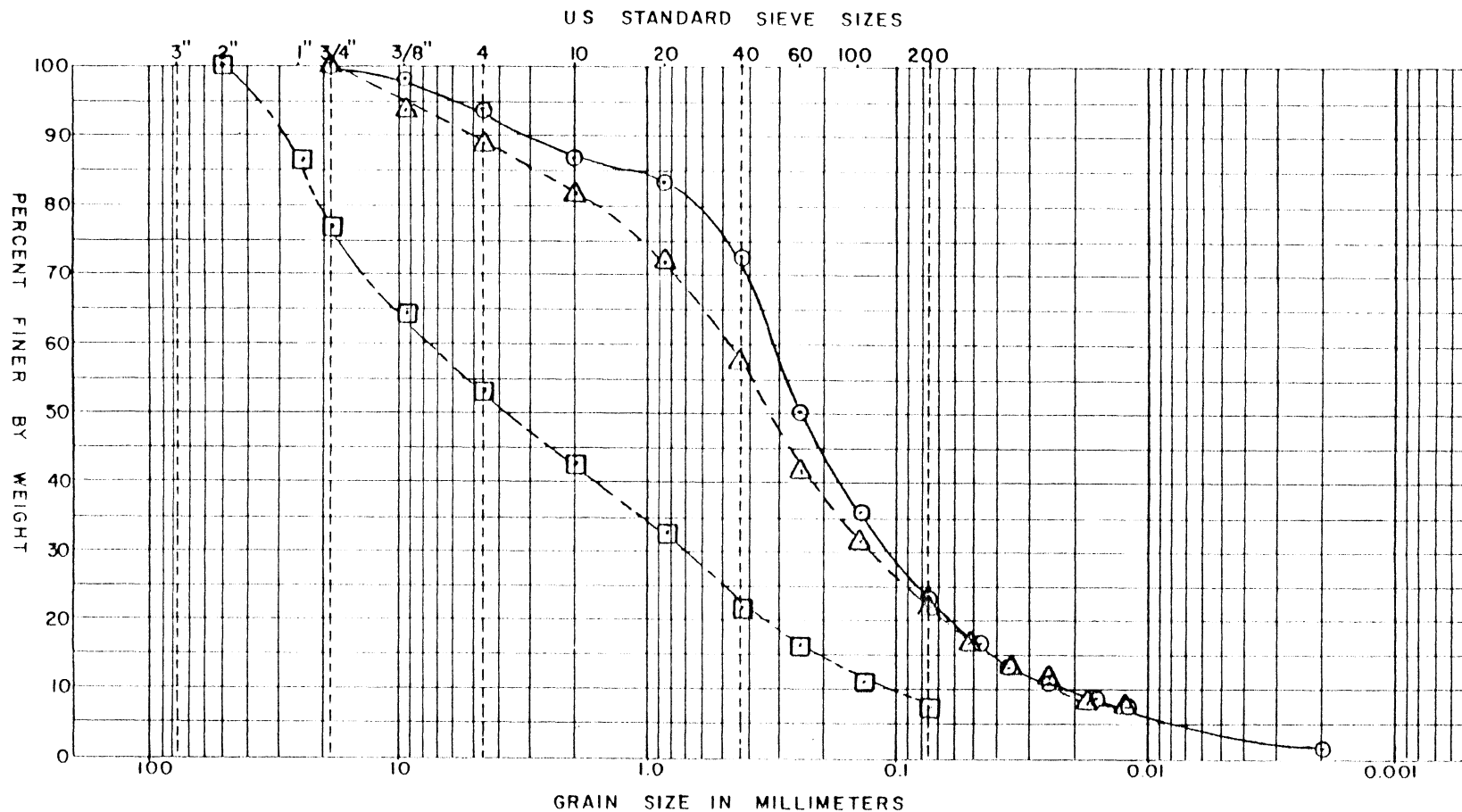
FIGURE V2-70

Date 12/26/79
Job No 786085

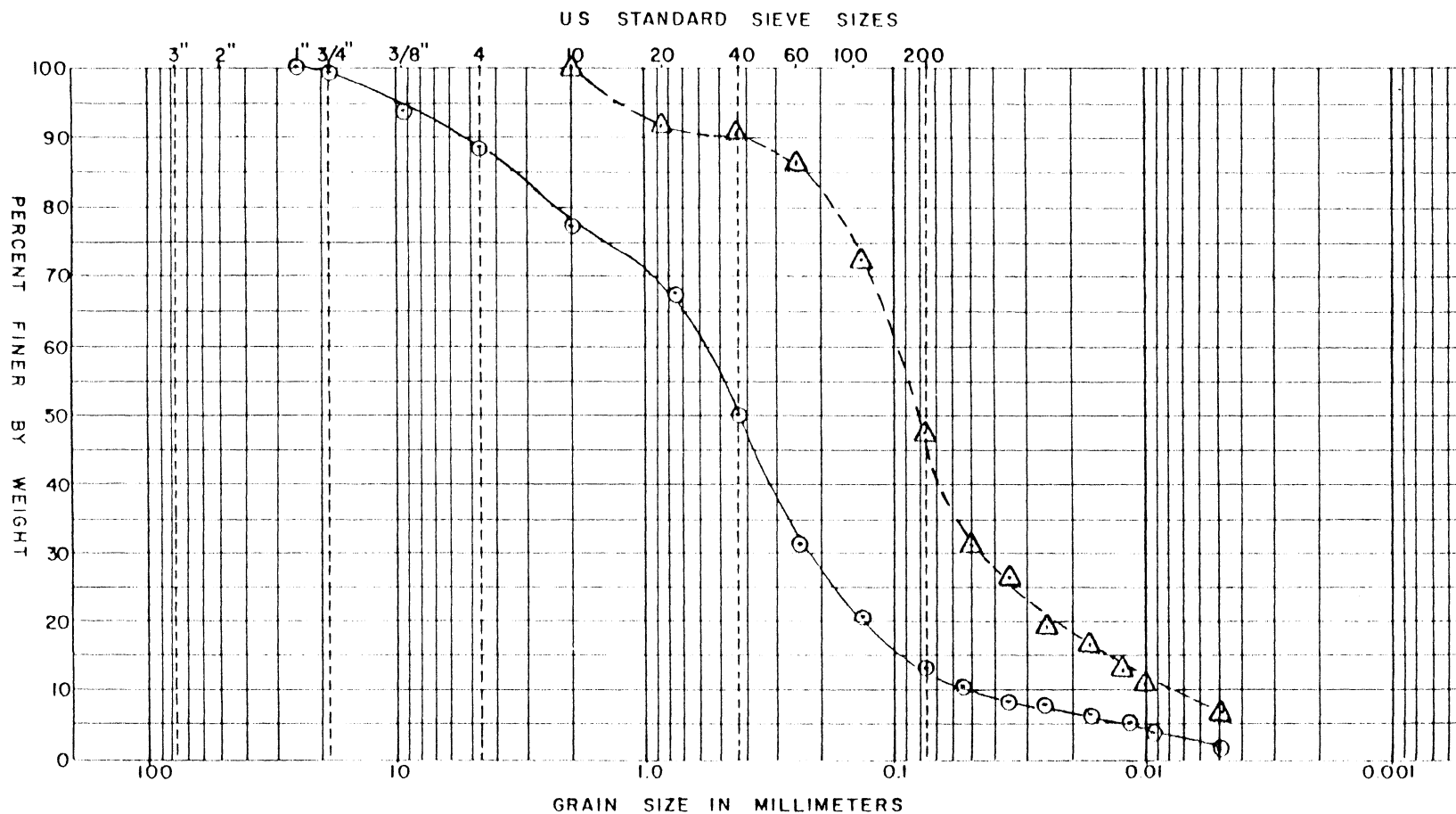
Golder Associates

Drawn JLS
Checked *[Signature]*
Approved *[Signature]*

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-G14B SA 7 —○—	89.92m-90.04m (295.0'-295.4')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt (SM)
SA 9 —△—	94.45m-94.58m (310.0'-310.3')	-	-	-	-	Brown, fine to coarse SAND and SILT, trace fine gravel (SM)

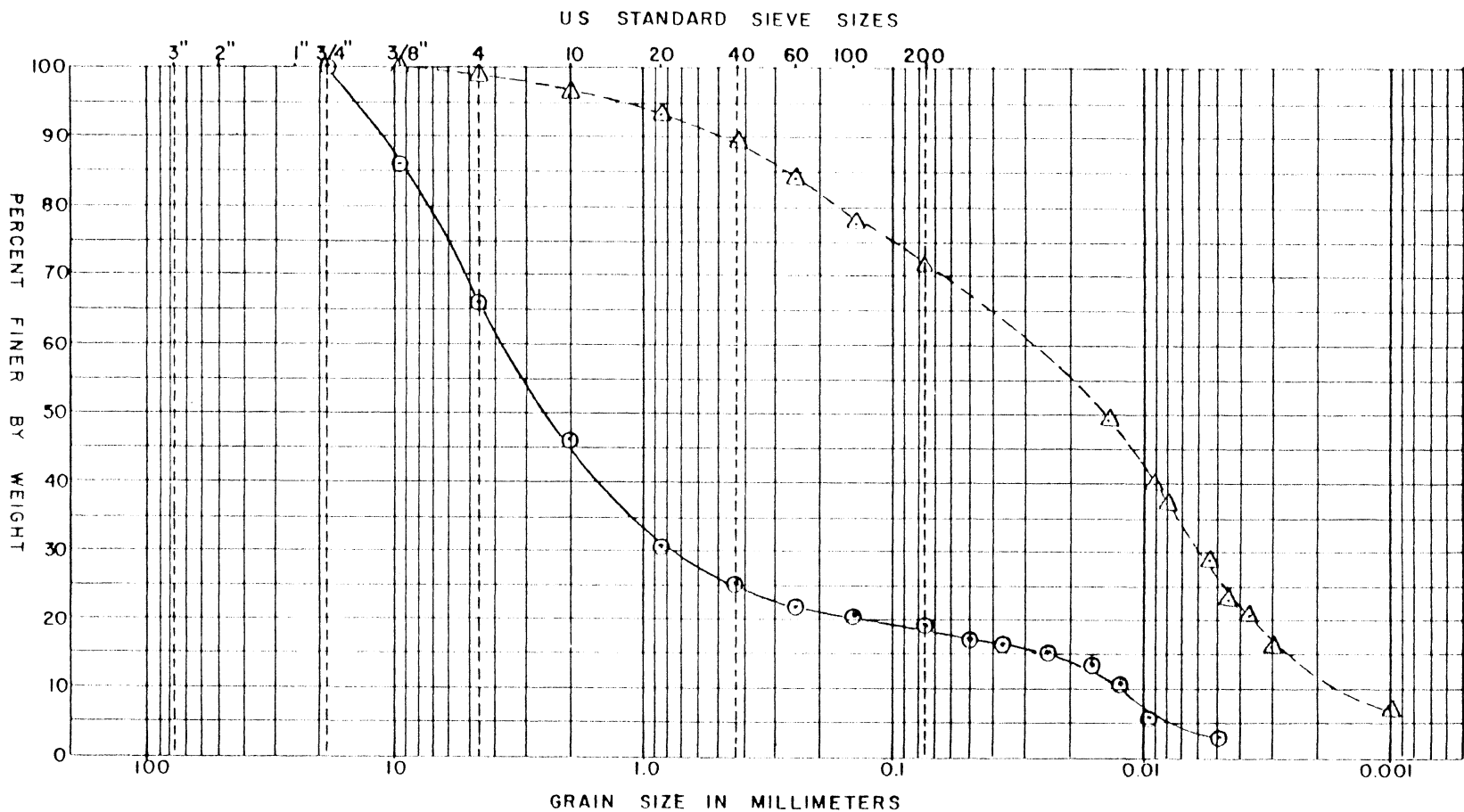
FIGURE V2-72

Date 12/26/79
Job No. 786085

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Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G14B SA 10 -- 	97.54m-97.69m (320.0'-320.5')	-	-	-	-	Brown, fine to coarse sandy SILT, some clay (ML)
SA 11 -- 	100.58m-100.68m (330.0'-330.3')	-	-	-	-	Brown, fine gravelly, fine to coarse SAND, some silt (SM)

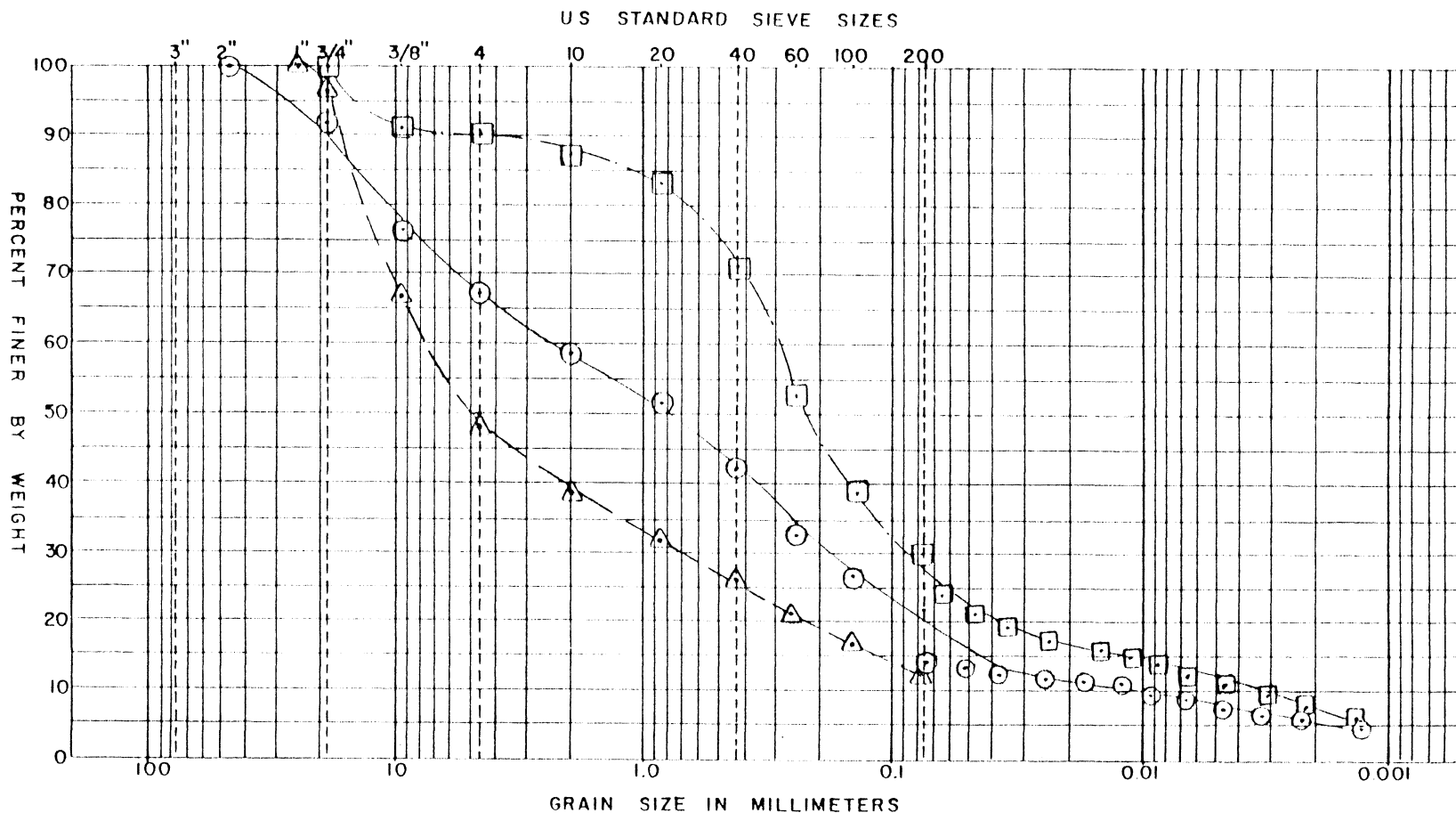
FIGURE V2-73

Date 12/26/79
Job No. 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV. OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-G15 SA-1 —○—	13.11m-13.41m (43.0'-44.0')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-3 —△—	16.46m-16.61m (54.0'-54.5')	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, some silt (GM)
SA-5A&B —□—	19.96m-20.27m (65.5'-66.5')	-	-	-	-	Red-brown, silty, fine to coarse SAND, some fine gravel, trace clay (SM)

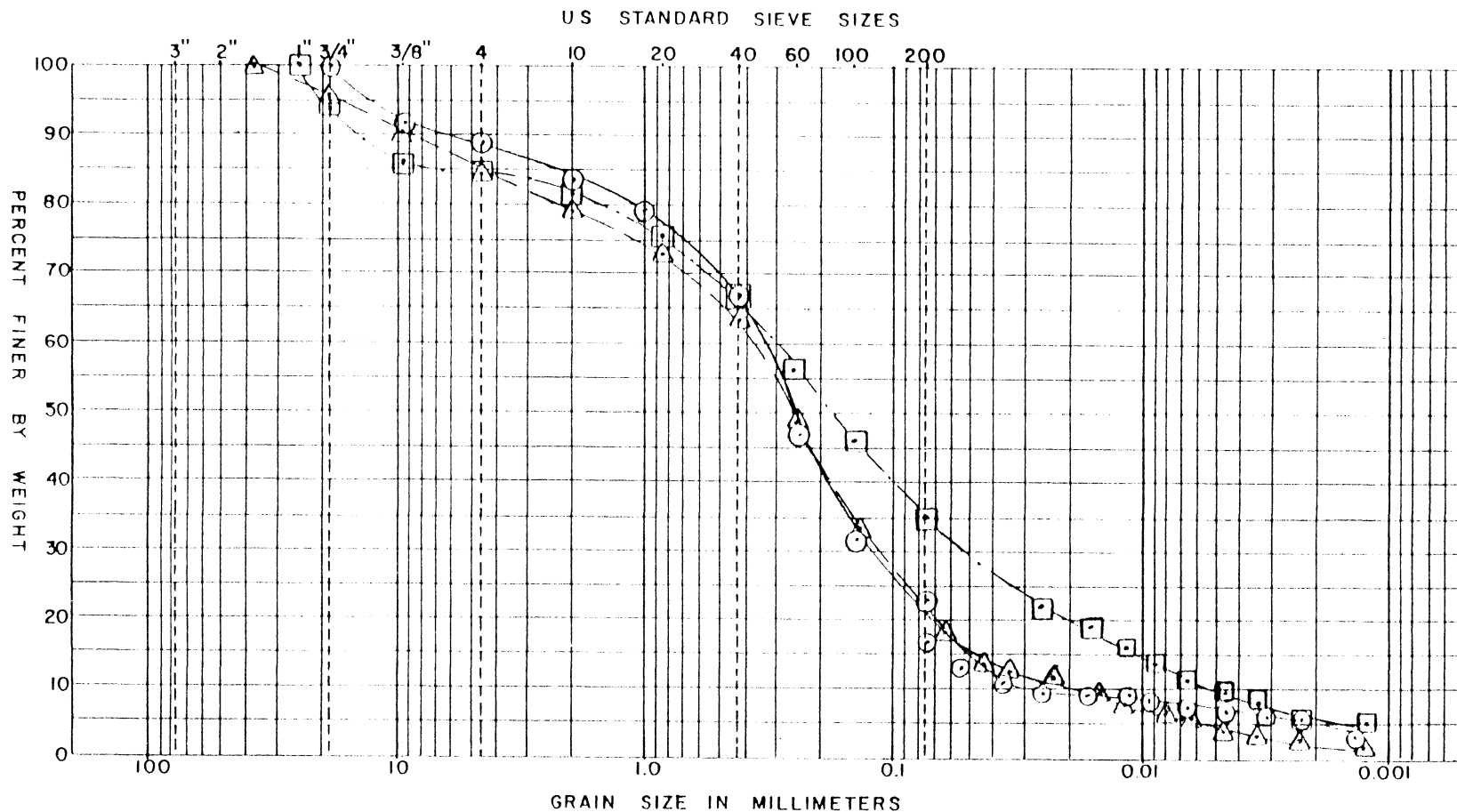
FIGURE V2-74

Date 6/7/79
Job No. 786035

Golder Associates

Drawn JIS
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G15 SA-3 -○-	24.69m-24.99m (81.0'-82.0')	-	-	-	-	Red-brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-17 -△-	46.48m-46.79m (152.5'-153.5')	-	-	-	-	Red-brown, silty, fine to coarse SAND, some fine to coarse gravel, trace clay (SM)
SA-27 -□-	74.63m-74.77m (245.0'-245.3')	-	-	-	-	Red-brown, silty, fine to coarse SAND, some fine to coarse gravel, trace clay (SM)

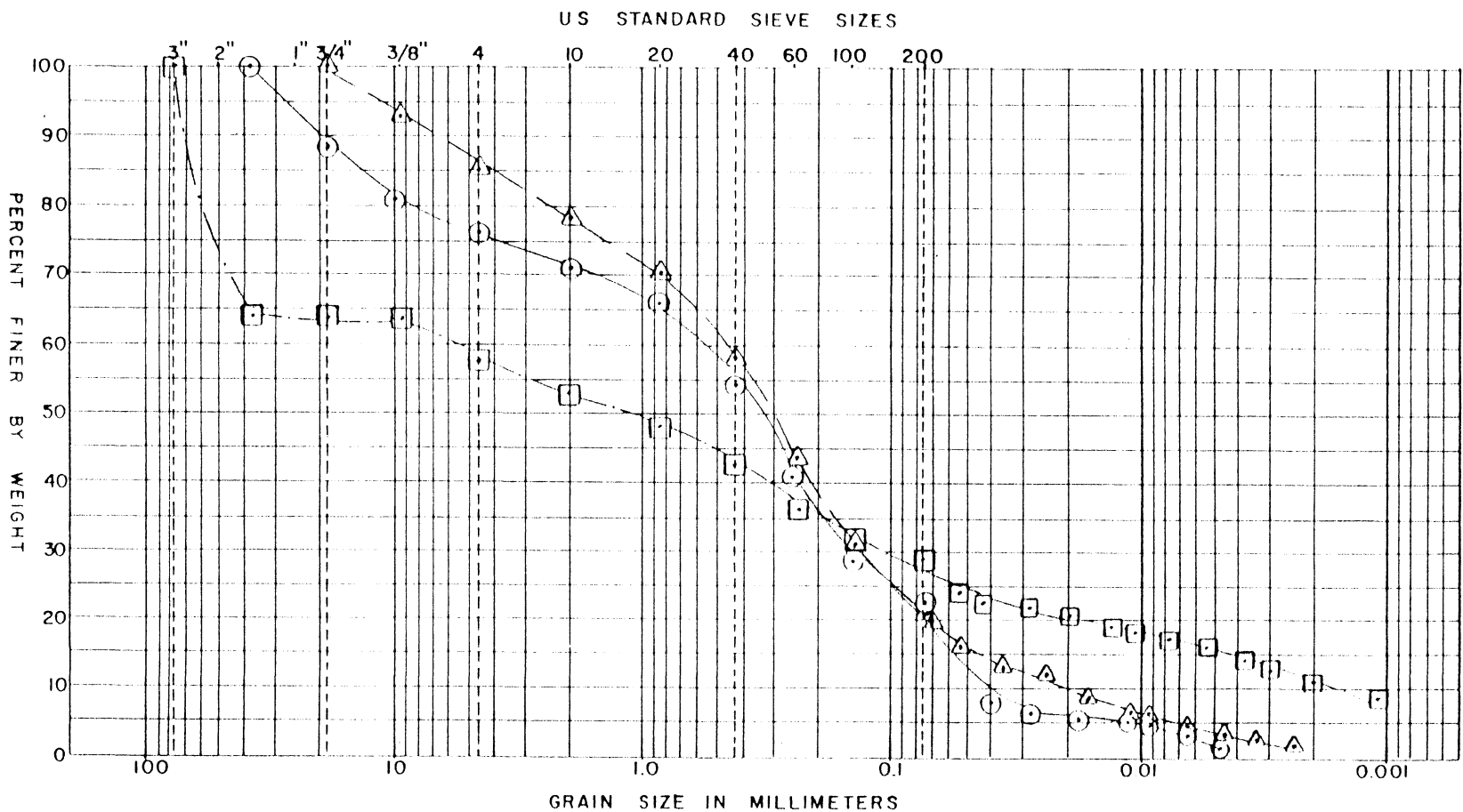
FIGURE V2-75

Date 6/7/79
Job No 786085

Golder Associates

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G15A SA-3 ---○---	5.49m-5.79m (18.0'-19.0')	-	-	-	-	Brown, fine to coarse gravelly, silty, fine to coarse SAND (SM)
SA-4 ---△---	7.01m-7.32m (23.0'-24.0')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-7 ---□---	11.58m-11.64m (38.0'-38.2')	-	-	-	-	Brown, fine to coarse sandy, fine to coarse GRAVEL, some silt, some clay (GM)

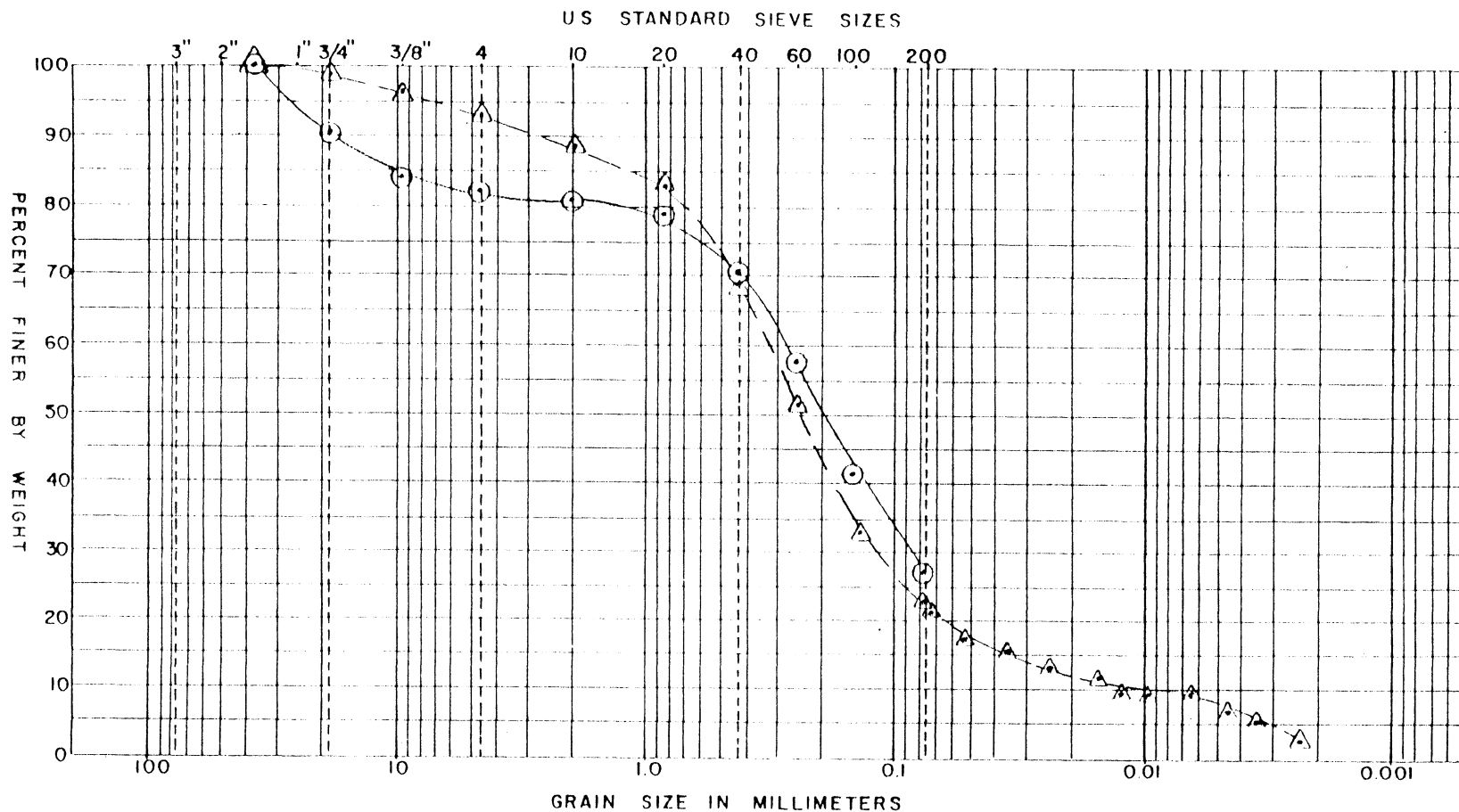
FIGURE V2-76

Date 6/7/79
Job No. 786035

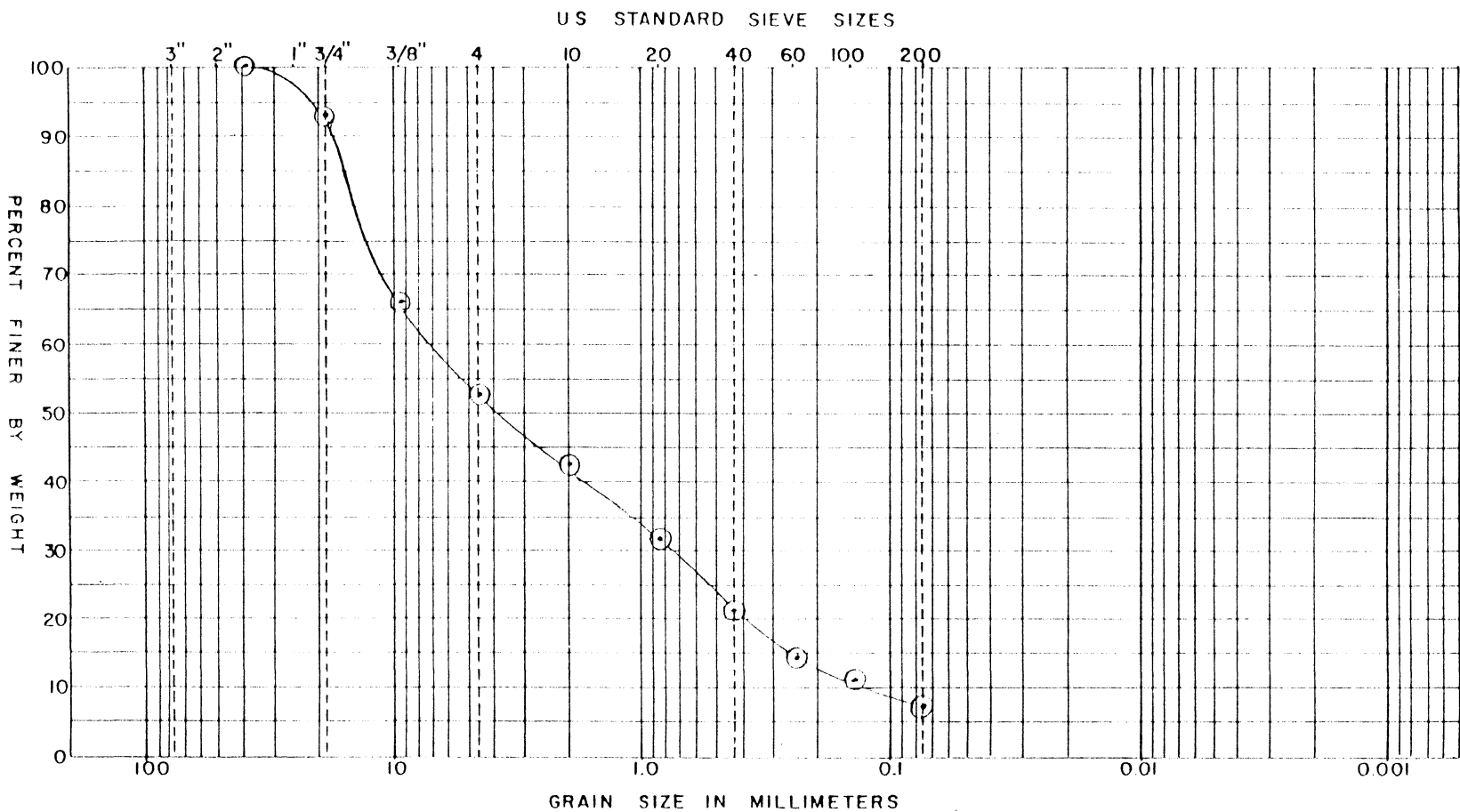
Golder Associates

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GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G15B SA-2A —○—	50.90m-51.36m (167.0'-168.5')	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, trace silt (GP-GM)

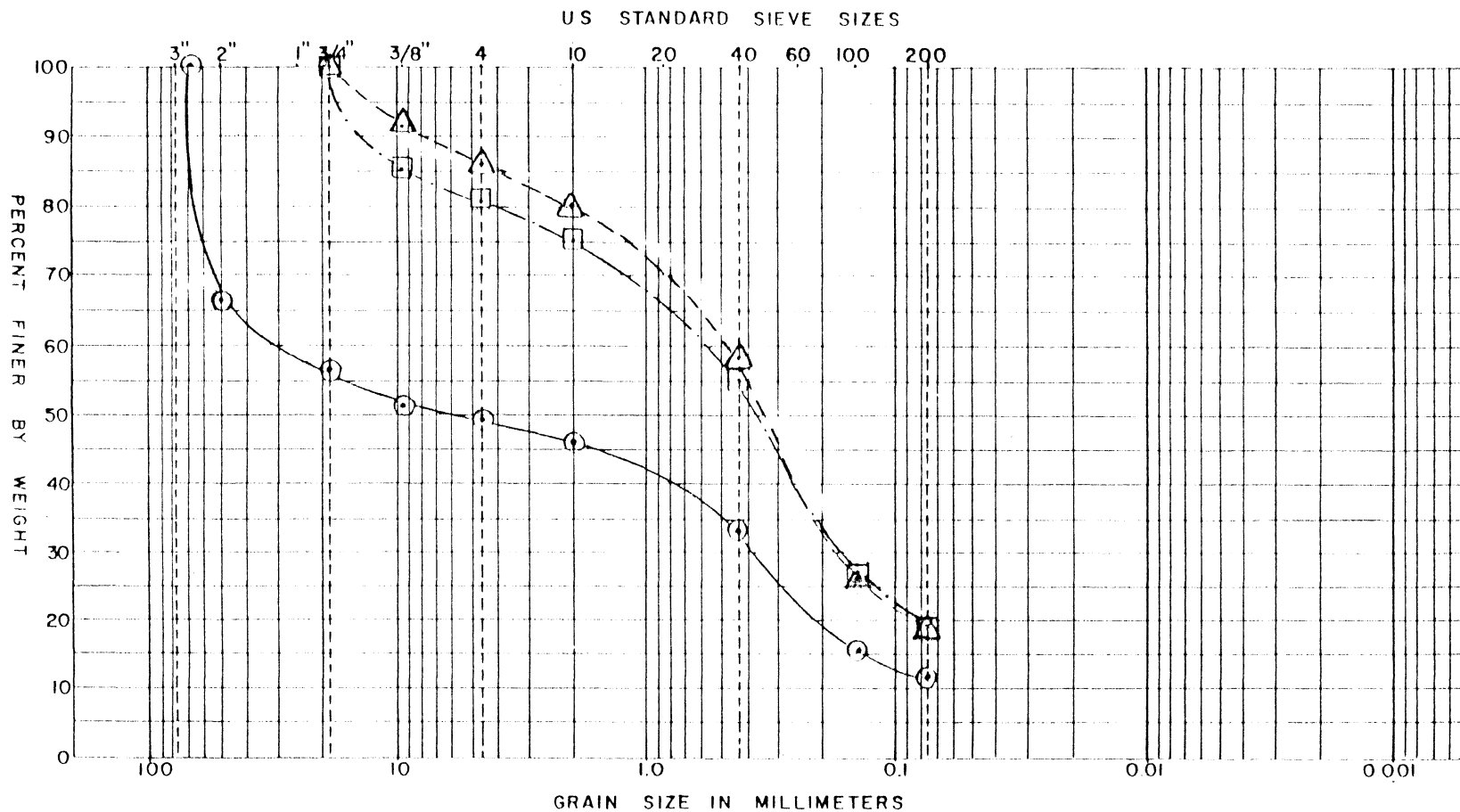
FIGURE V2-78

Date 6/7/79
Job No. 786035

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G19 SA-2 —○—	1.52m-1.98m (5.0'-6.5')	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, some silt (GP-GM)
SA-4 —△—	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-9 —□—	10.67m-11.13m (35.0'-36.5')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)

FIGURE V2-79

Date 5/30/79
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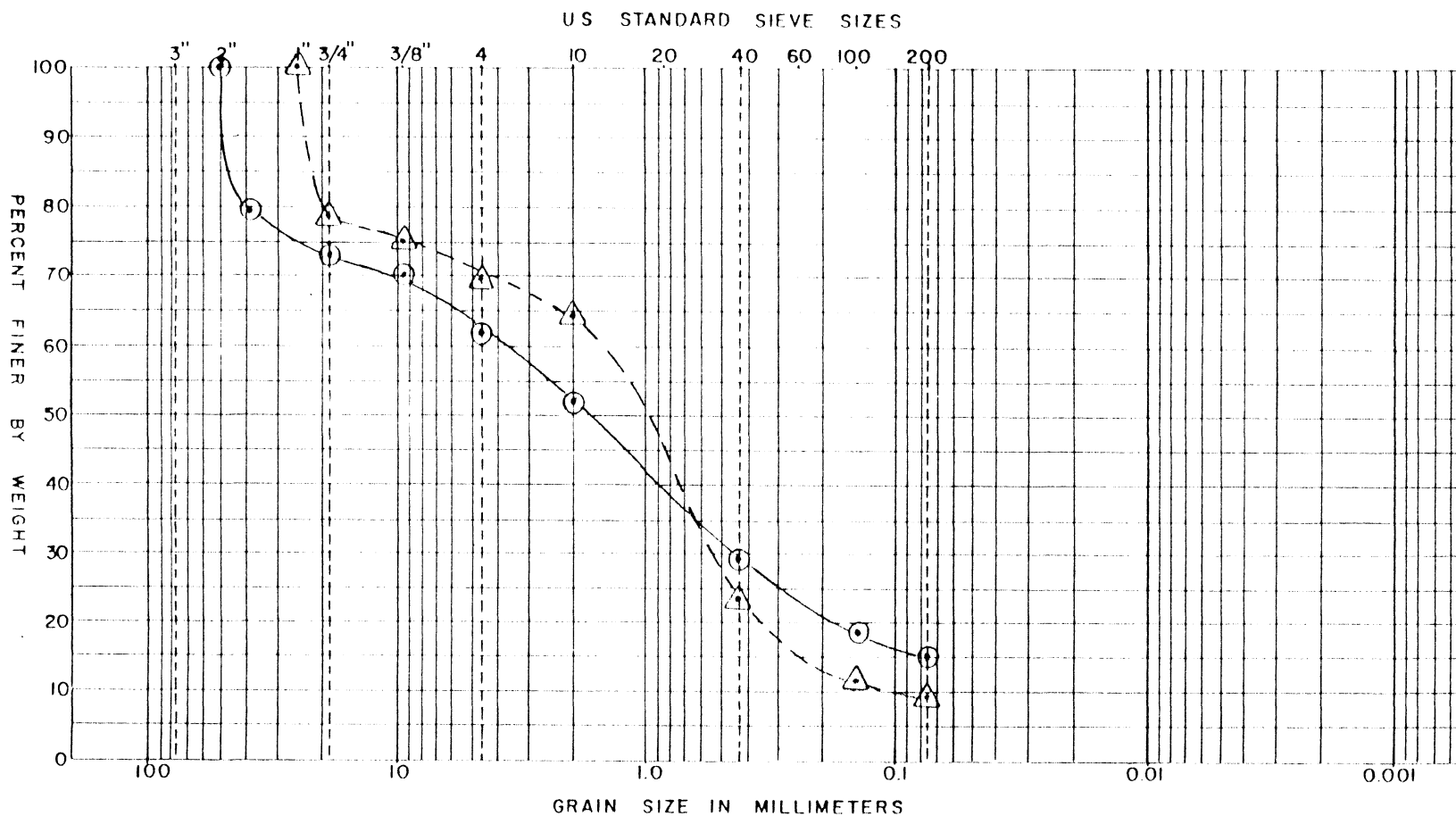
Golder Associates

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Job No. 180087

Goldner Associates

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Approved JFC



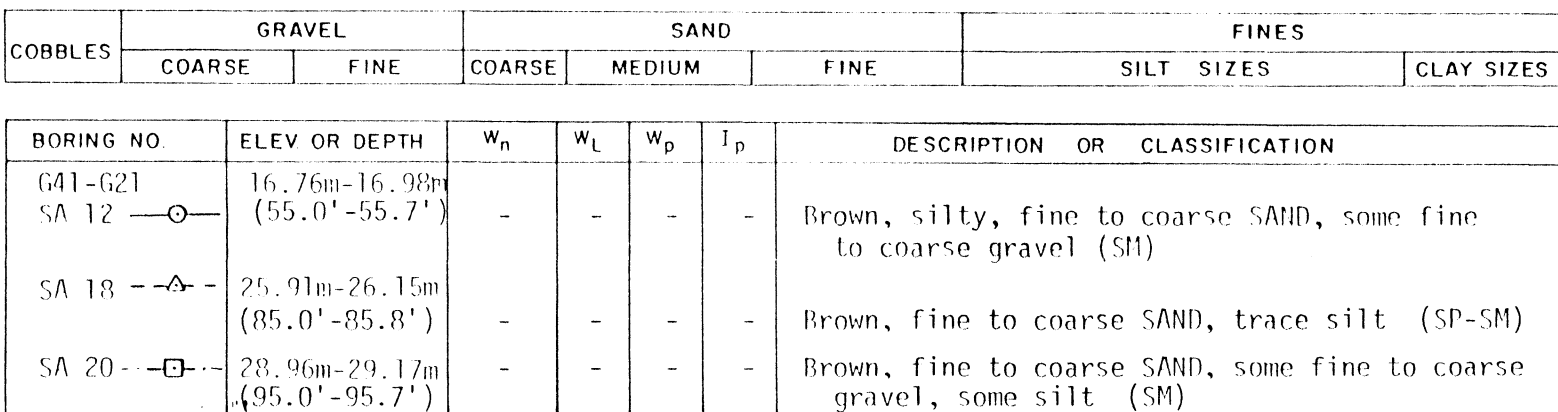
COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-G19 SA-12 ---(C)---	15.24m-15.39m (50.0'-50.5')	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, some silt (SM)
SA-16 ---(A)---	21.34m-21.55m (70.0'-70.7')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP-SM)

GRAIN SIZE DISTRIBUTION

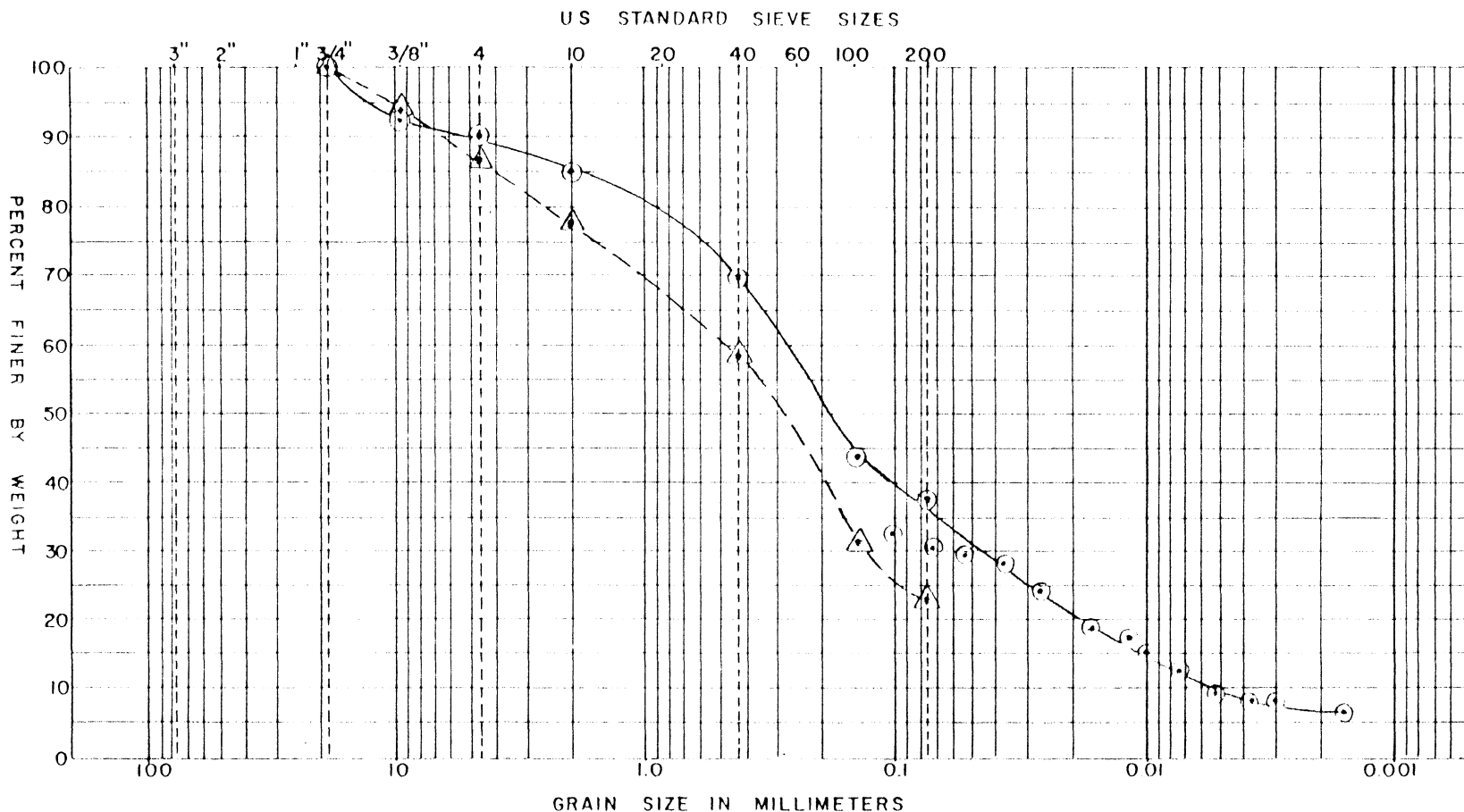
FIGURE V2-80

FIGURE V2-81



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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-H13 SA-1	0.0m-0.46m (0.0'-1.5')	-	-	-	-	Brown to dark brown, silty fine to coarse SAND, some fine gravel, trace clay (SM)
SA-7	8.84m-9.30m (29.0'-30.5')	-	-	-	-	Brown, silty fine to coarse SAND, some fine gravel, trace clay (SM)

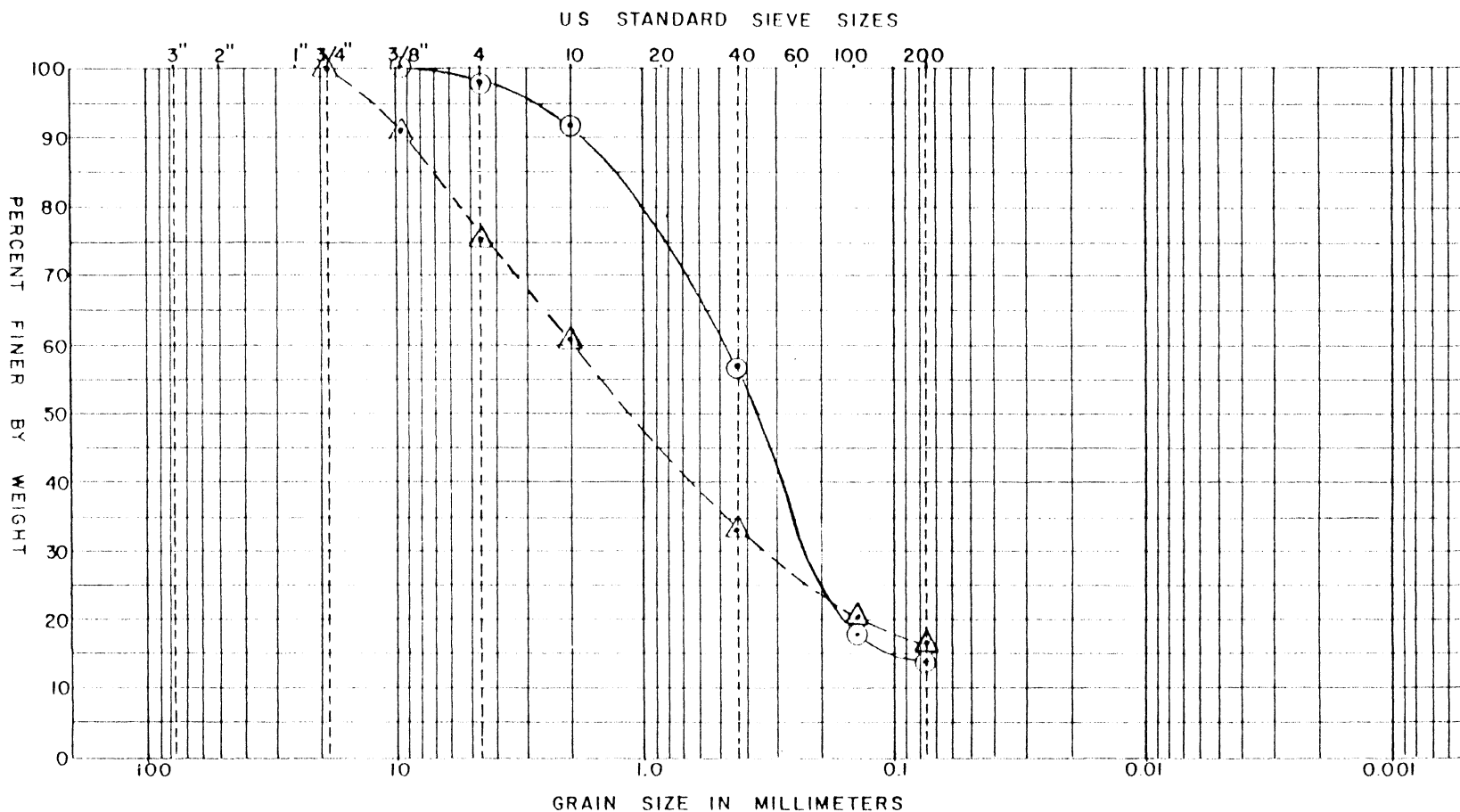
FIGURE V-2-82

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Job No 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-H13 SA-15 ○	21.64m-22.01m (71.0'-72.2')	-	-	-	-	Light brown, fine to coarse SAND, trace gravel, trace silt, trace clay (SM)
SA-22 △	31.70m-31.94m (104.0'-104.8')	-	-	-	-	Brown, fine gravelly, fine to coarse SAND, some silt, trace clay (SM)

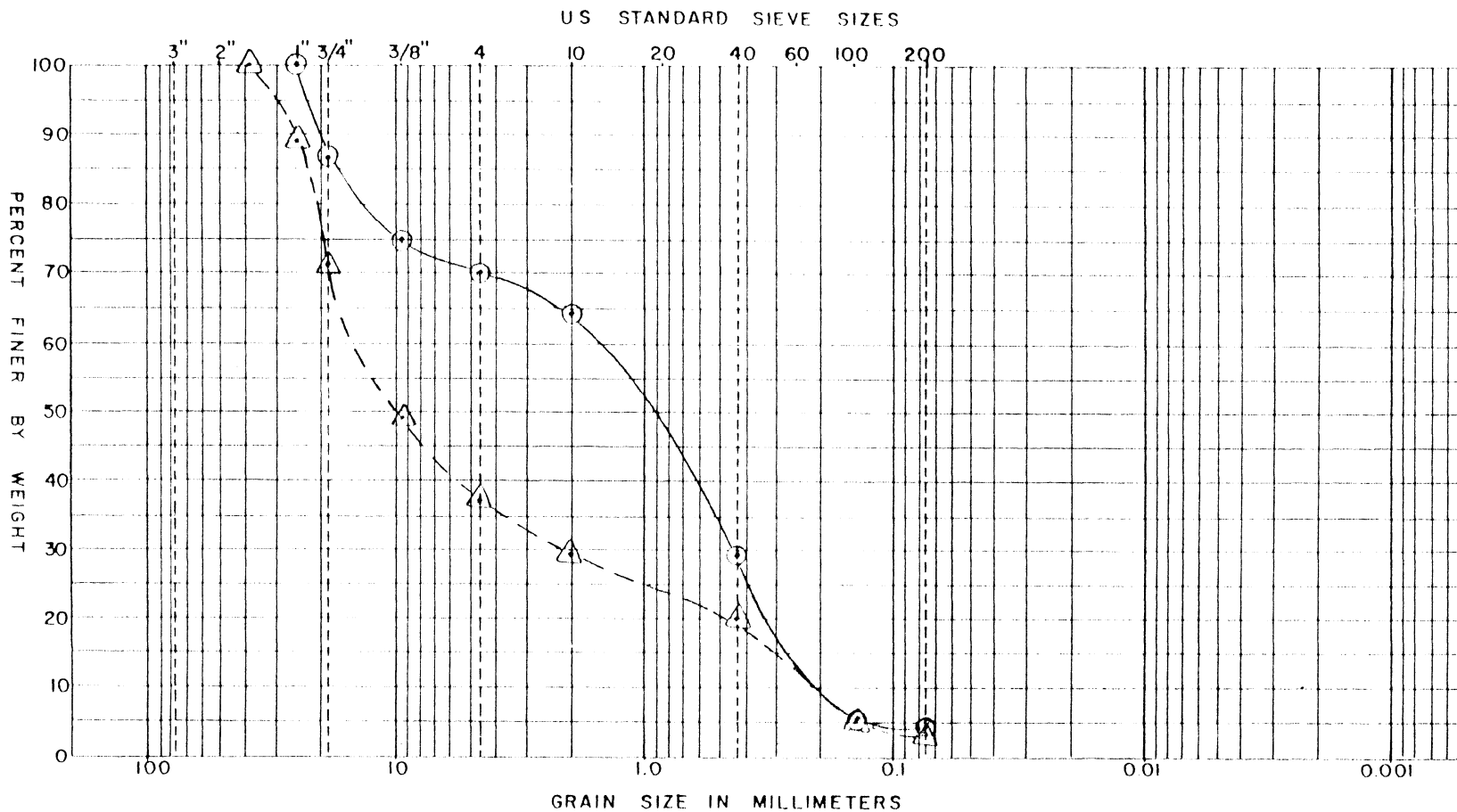
FIGURE V2-83

Date 5/30/79
Job No. 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-H17 SA-3 ○	2.74m-3.20m (9.0'-10.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP)
SA-6 △	7.32m-7.77m (24.0'-25.5')	-	-	-	-	Brown, fine to coarse sandy, fine to coarse GRAVEL, trace silt (GP)

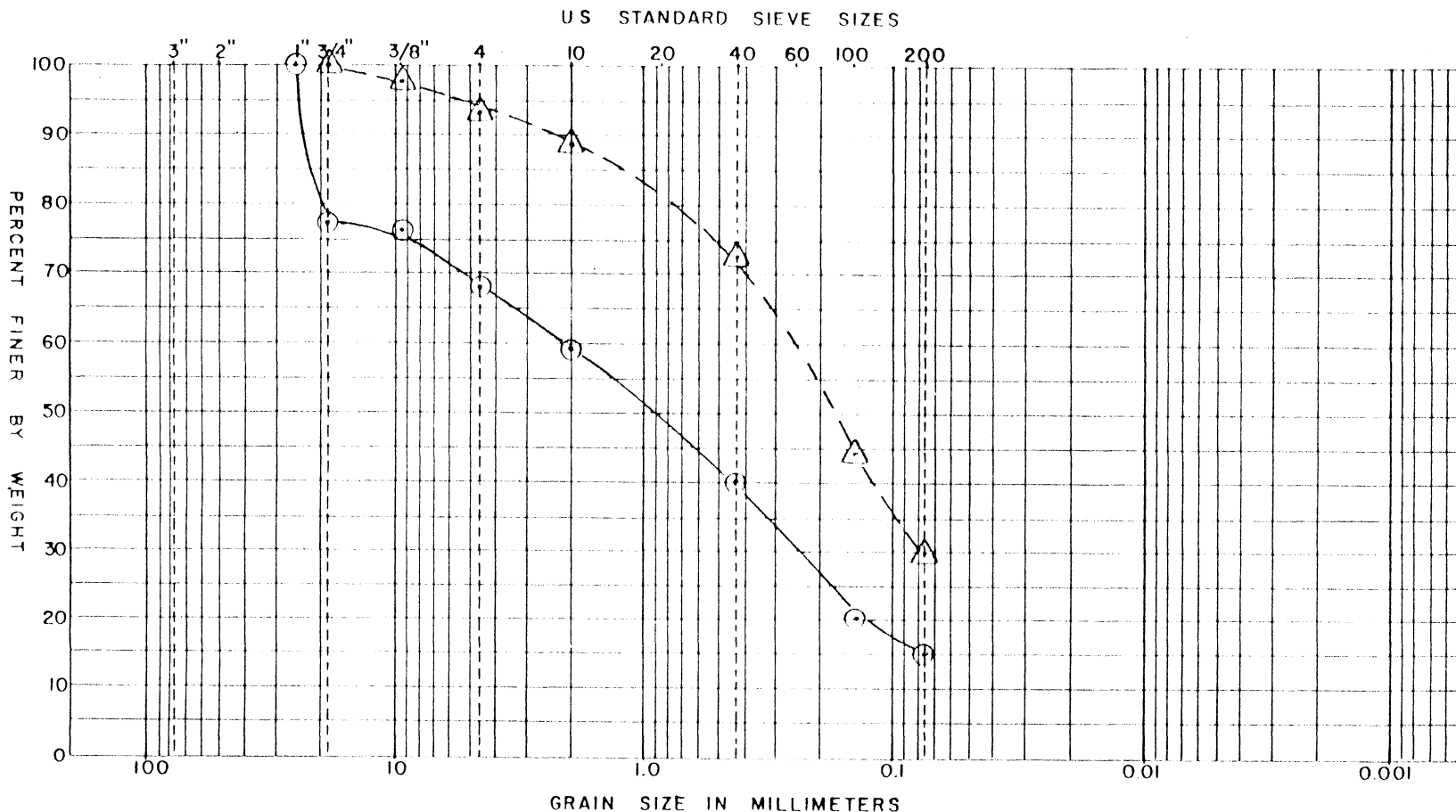
FIGURE V2-84

Date 5/30/79
Job No. 786085

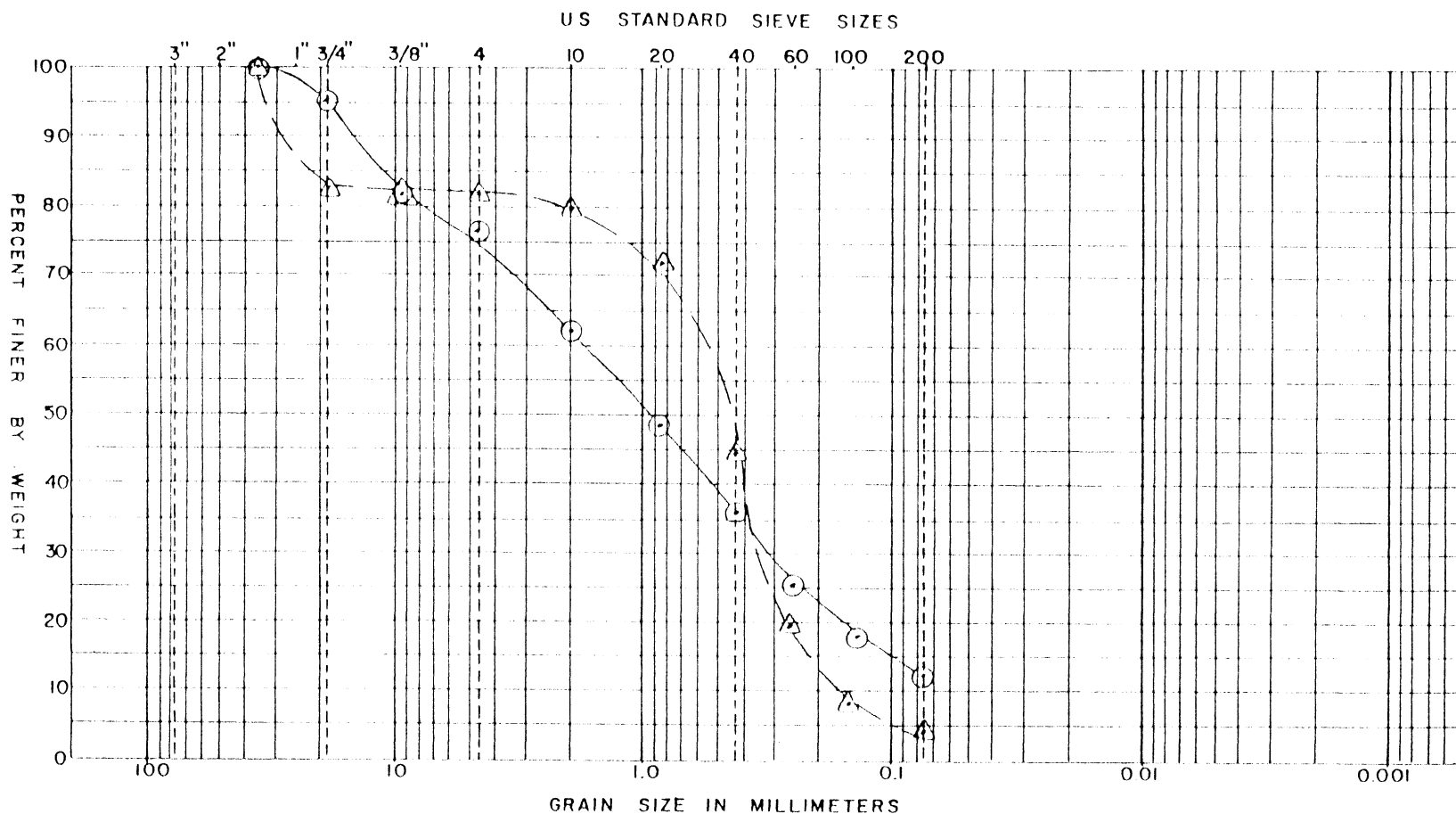
Golder Associates

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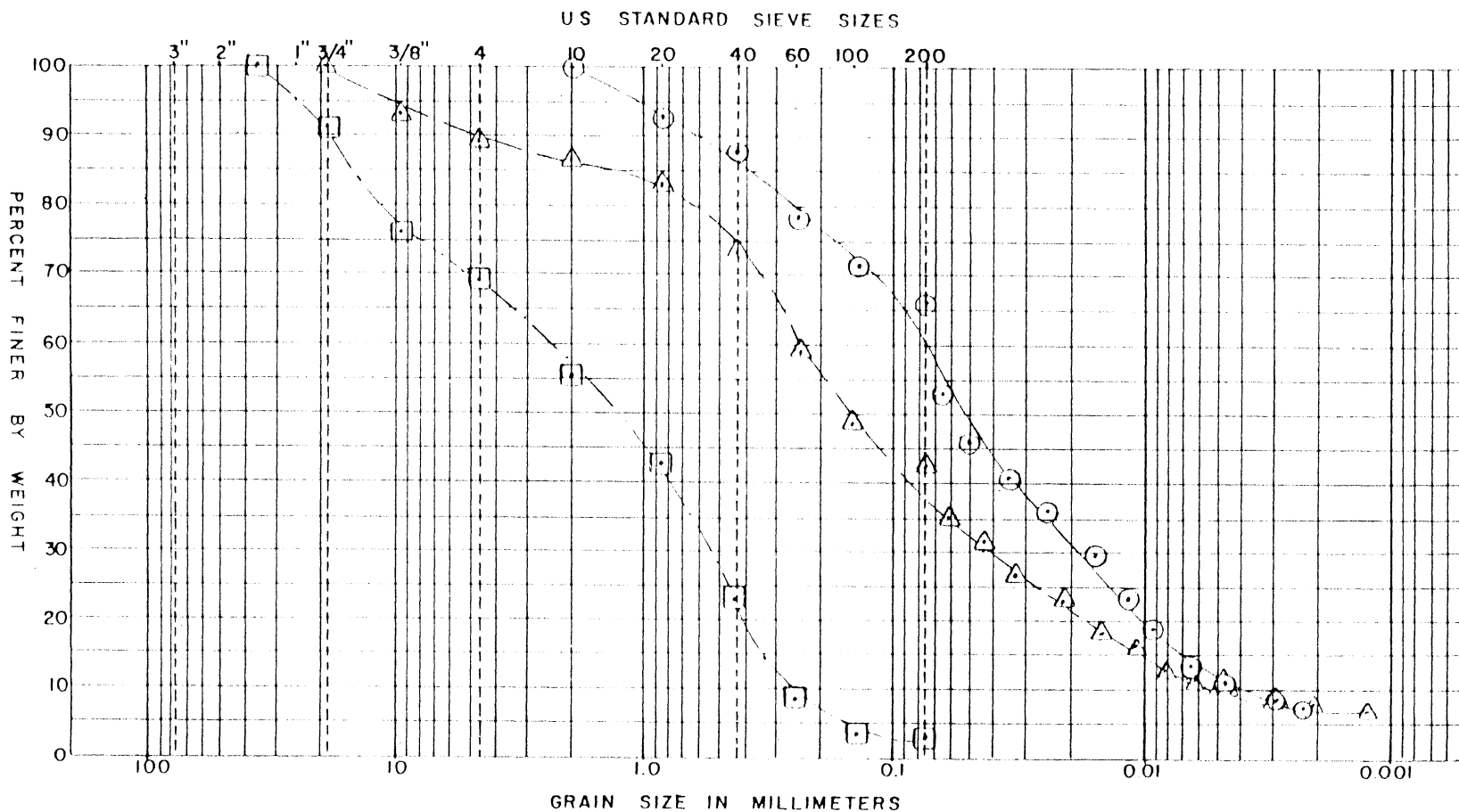
GRAIN SIZE DISTRIBUTION



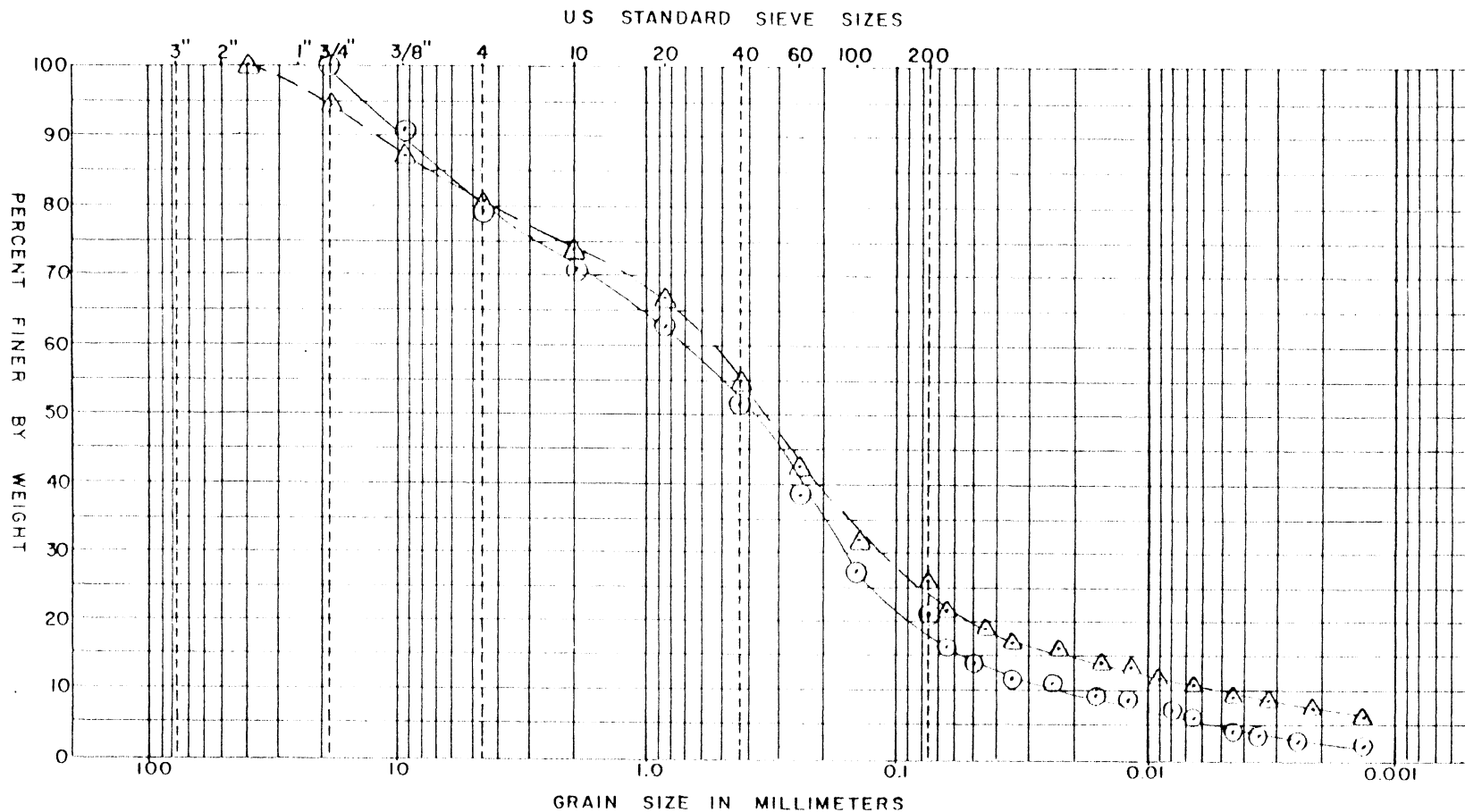
GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-J17 SA-3 --○--	5.79m-5.94m (19.0'-19.5')	-	-	-	-	Brown, fine gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-6 --△--	10.67m-10.97m (35.0'-36.0')	-	-	-	-	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)

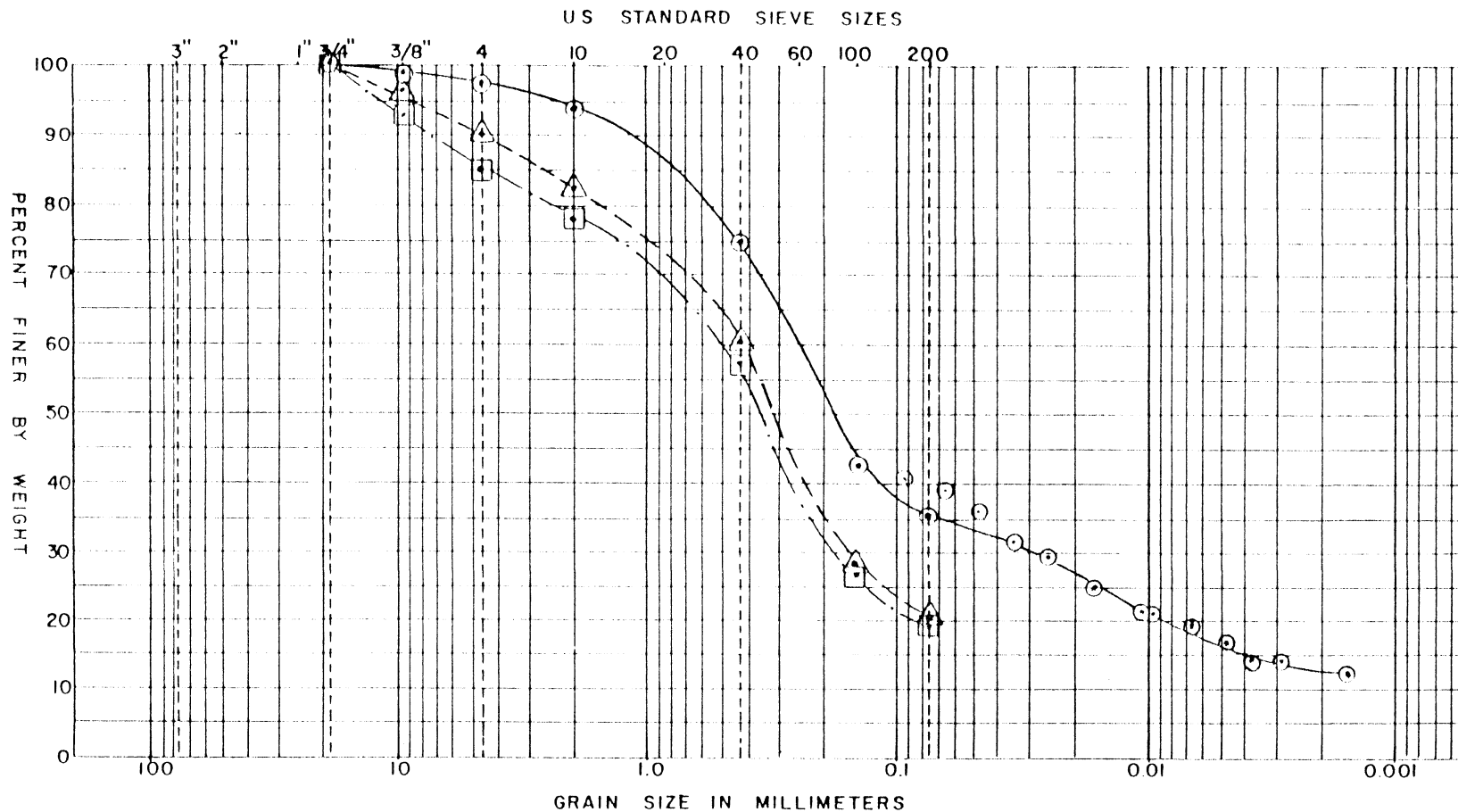
FIGURE V2-88

Date 6/7/79
Job No 786035

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-J18 SA-1B ○	0.91m-1.22m (3.0'-4.0')	-	NP	NP	NP	Red-brown, silty, fine to coarse SAND, some clay, trace fine gravel, trace organics (SM)
SA-3 -△-	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, some fine gravel, trace clay (SM)
SA-4 -□-	4.57m-5.03m (15.0'-16.5')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, some fine gravel, trace clay (SM)

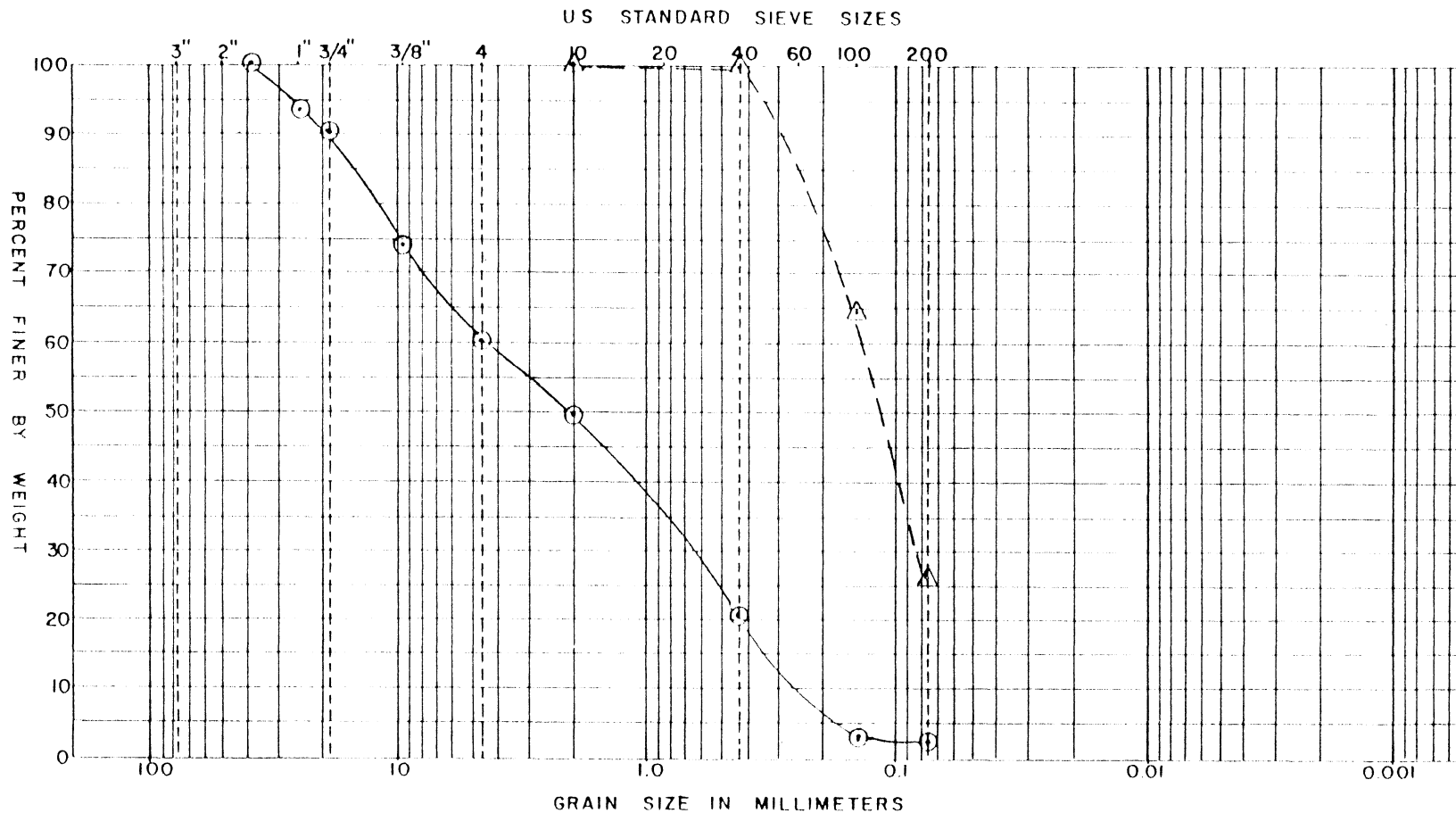
FIGURE V2-89

Date 5/30/79
Job No 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-J18 SA-7 --()--	9.14m-9.60m (30.0'-31.5')	-	-	-	-	Brown, fine to coarse GRAVEL and fine to coarse SAND, trace silt (SP)
SA-10 --△--	13.72m-14.17m (45.0'-46.5')	-	-	-	-	Light brown, silty, fine SAND (SM)

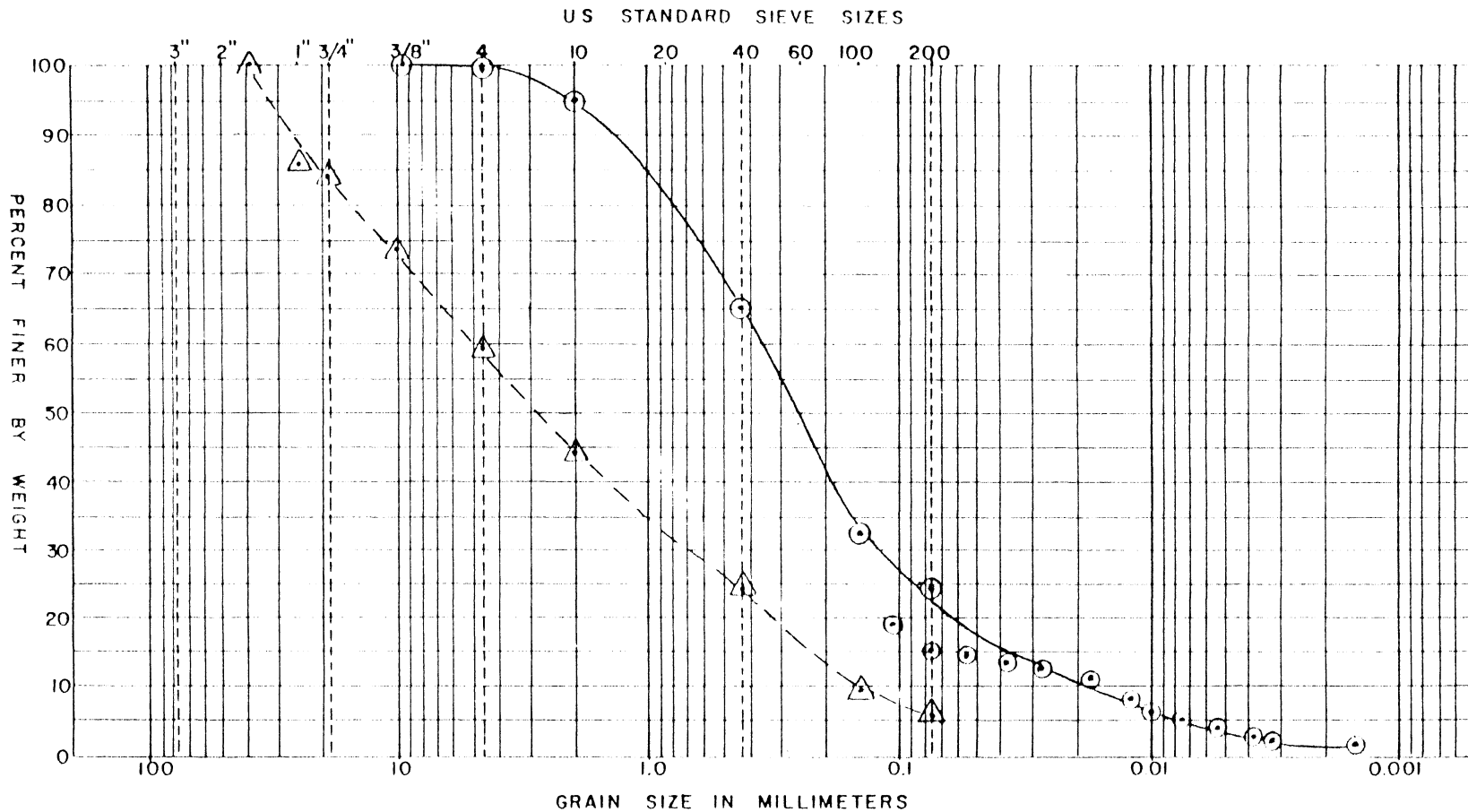
FIGURE V2-90

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Job No 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV. OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-J13 SA-11 ○	15.24m-15.70m (50.0'-51.5')	-	NP	NP	NP	Brown, silty, fine to coarse SAND, trace clay (SM)
SA-15 △	21.34m-21.49m (70.0'-70.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP-SM)

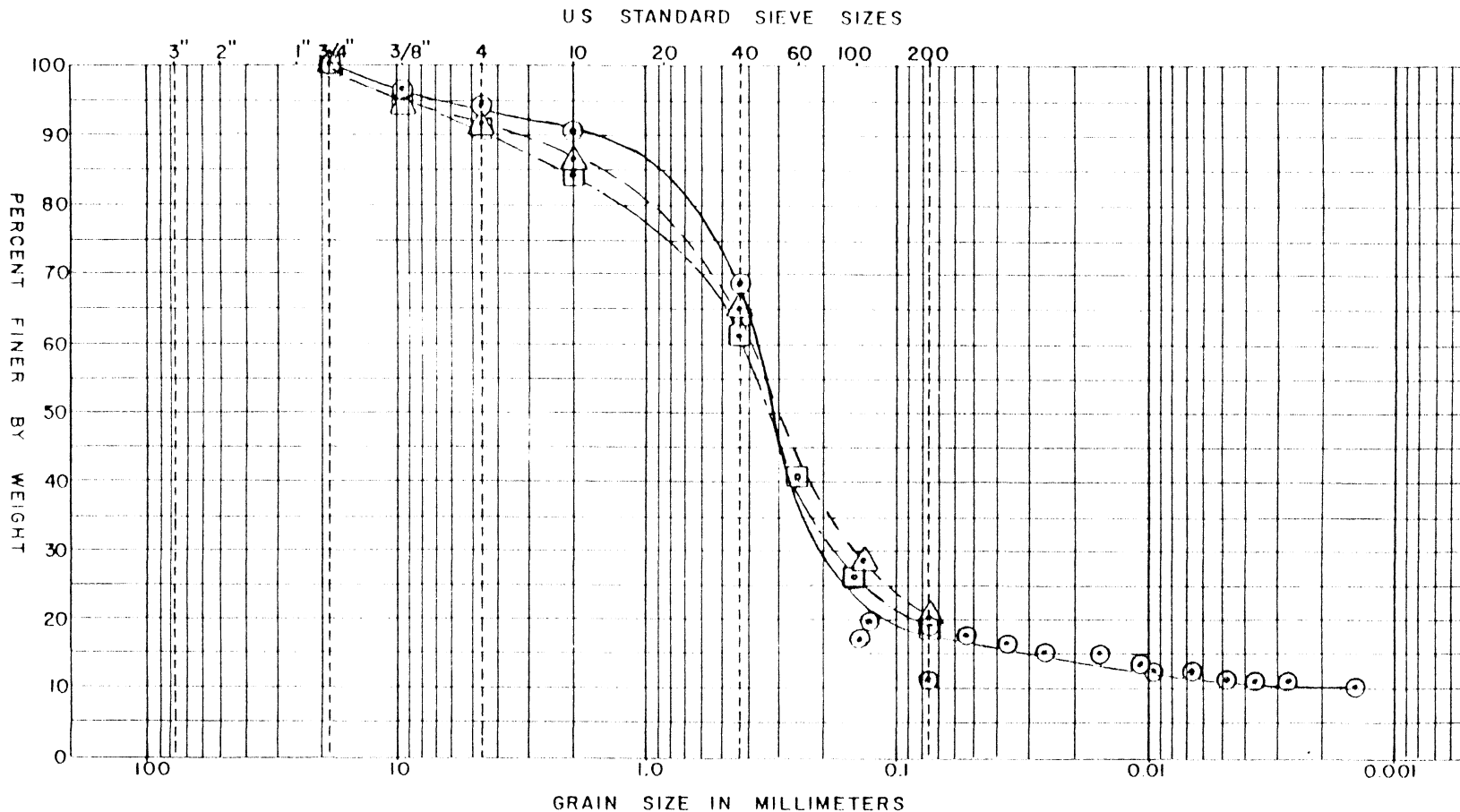
FIGURE V2-91

Date 5/30/79
Job No. 786035

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-K13 SA-1	36.58m-36.82m (120.0'-120.8')	-	-	-	-	Yellow-brown, fine to coarse SAND, trace fine gravel, trace silt, trace clay (SM)
SA-3	43.28m-43.59m (142.0'-143.0')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine gravel, trace clay (SM)
SA-5	49.38m-49.68m (162.0'-163.0')	-	-	-	-	Brown, fine to coarse SAND, some silt, trace fine gravel (SM)

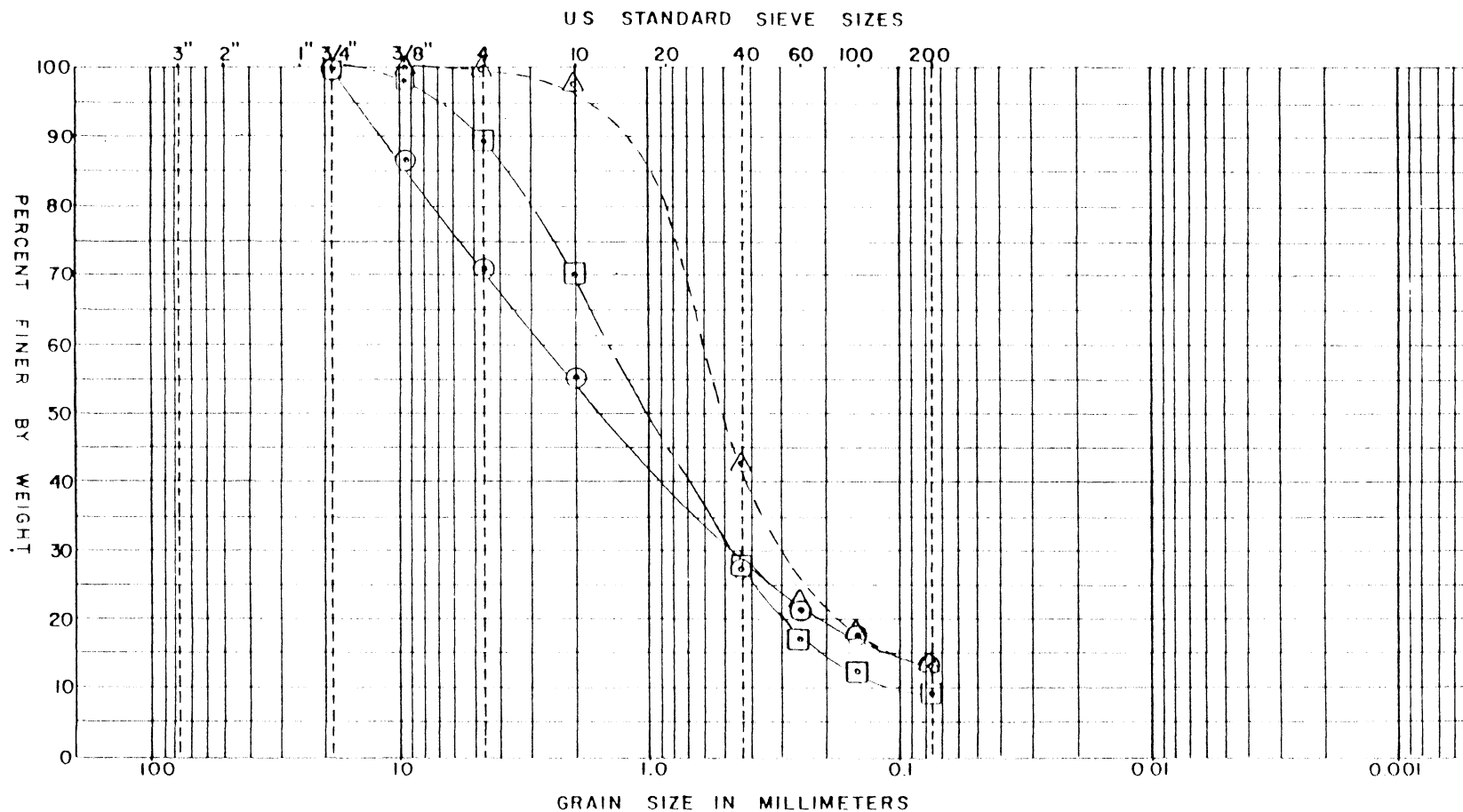
FIGURE V2-92

Date 5/30/79
Job No 786035

Golder Associates

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-K13 SA-6 —○—	52.43m-52.73m (172.0'-173.0')	-	-	-	-	Brown, fine, gravelly, fine to coarse SAND, some silt (SM)
SA-8 --△--	58.52m-58.82m (192.0'-193.0')	-	-	-	-	Yellow-brown, fine to coarse SAND, some silt (SM)
SA-9A, 9B ---□---	61.87m-62.33m (203.0'-204.5')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, trace silt (SW-SM)

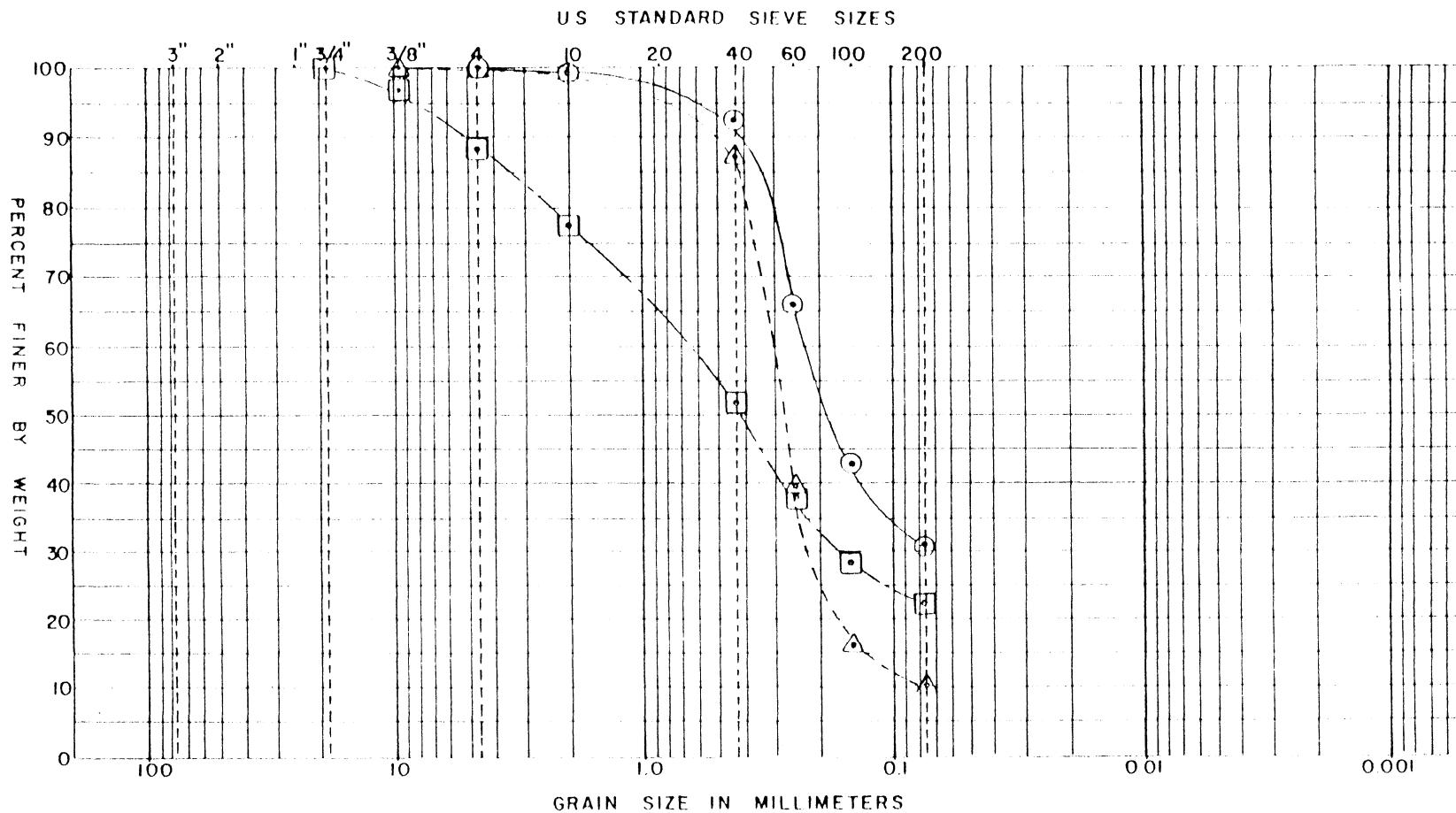
FIGURE V2-93

Date 2/12/81
Job No 786085

Golder Associates

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Approved GHC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-K13 SA-10	64.92m-65.07m	-	-	-	-	Brown, fine to medium SAND and SILT (SM)
—○—	(213.0'-213.5')					
SA-11	67.97m-68.27m	-	-	-	-	Brown, fine to medium SAND, trace silt (SP-SM)
—△—	(223.0'-224.0')					
SA-12	71.32m-71.48m	-	-	-	-	Brown, silty, fine to coarse SAND, some fine gravel (SM)
—□—	(234.0'-234.5')					

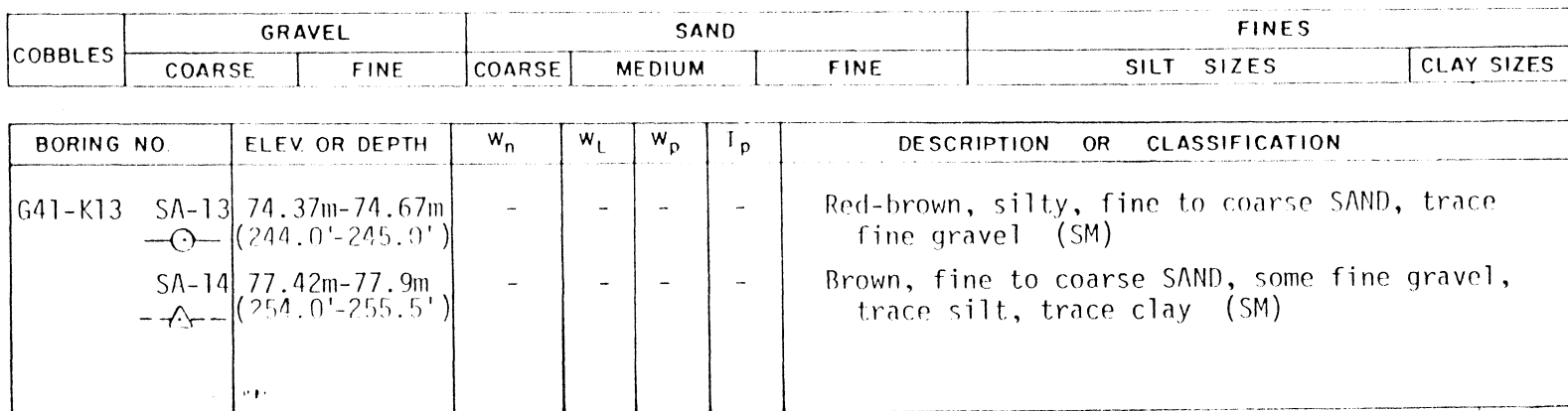
FIGURE V2-94

Date 2/12/81
Job No 786085

Golder Associates

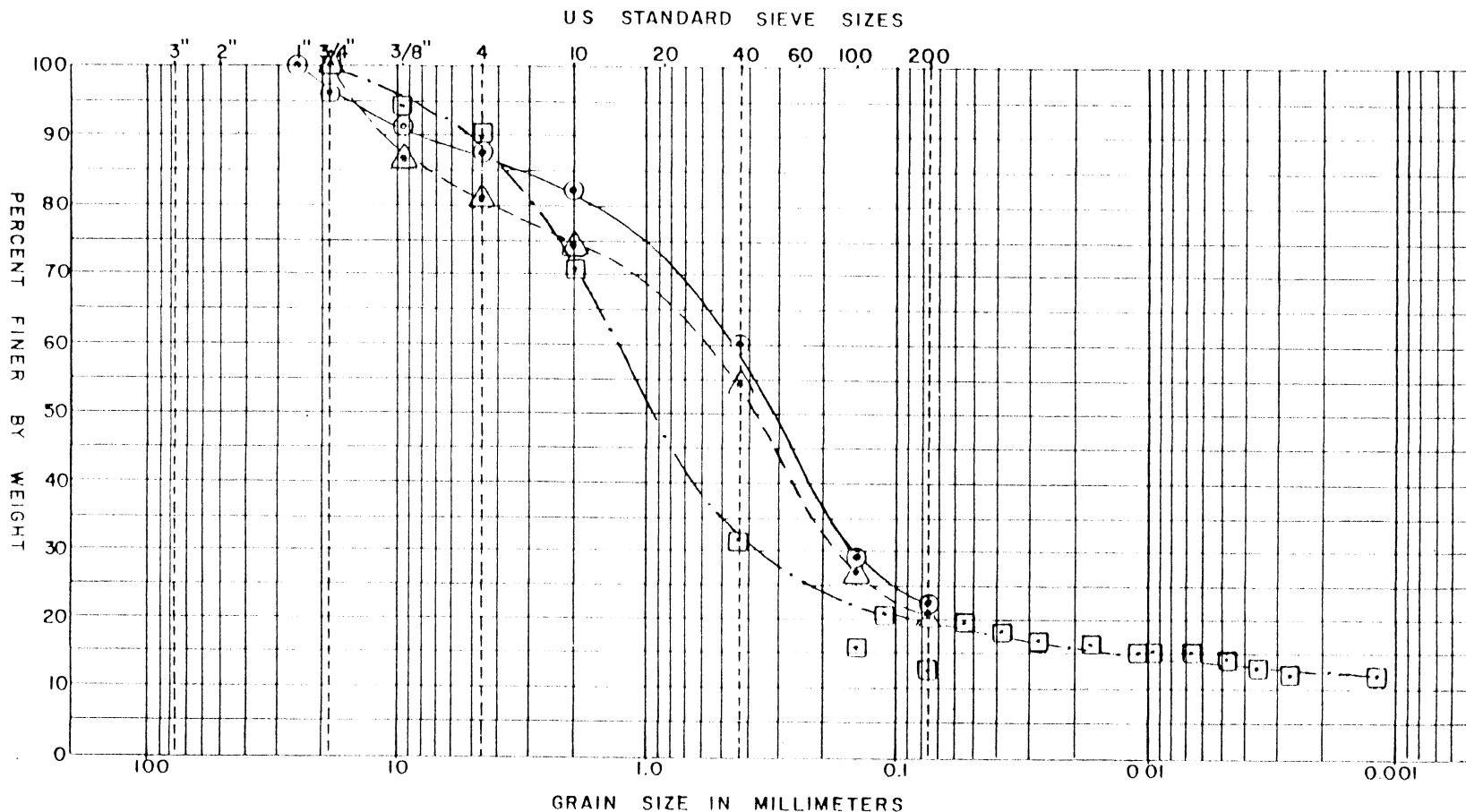
Drawn SKB
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Approved GHC

FIGURE VZ-95



Drawn SKB
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Approved GHC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-K13A SA-2 —○—	1.52m-1.98m (5.0'-6.5')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)
SA-8 —△—	10.67m-10.76m (35.0'-35.3')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-13 —□—	18.29m-18.47m (60.0'-60.6')	-	-	-	-	Red-brown, fine to coarse SAND, some fine gravel, some clay, trace silt (SM)

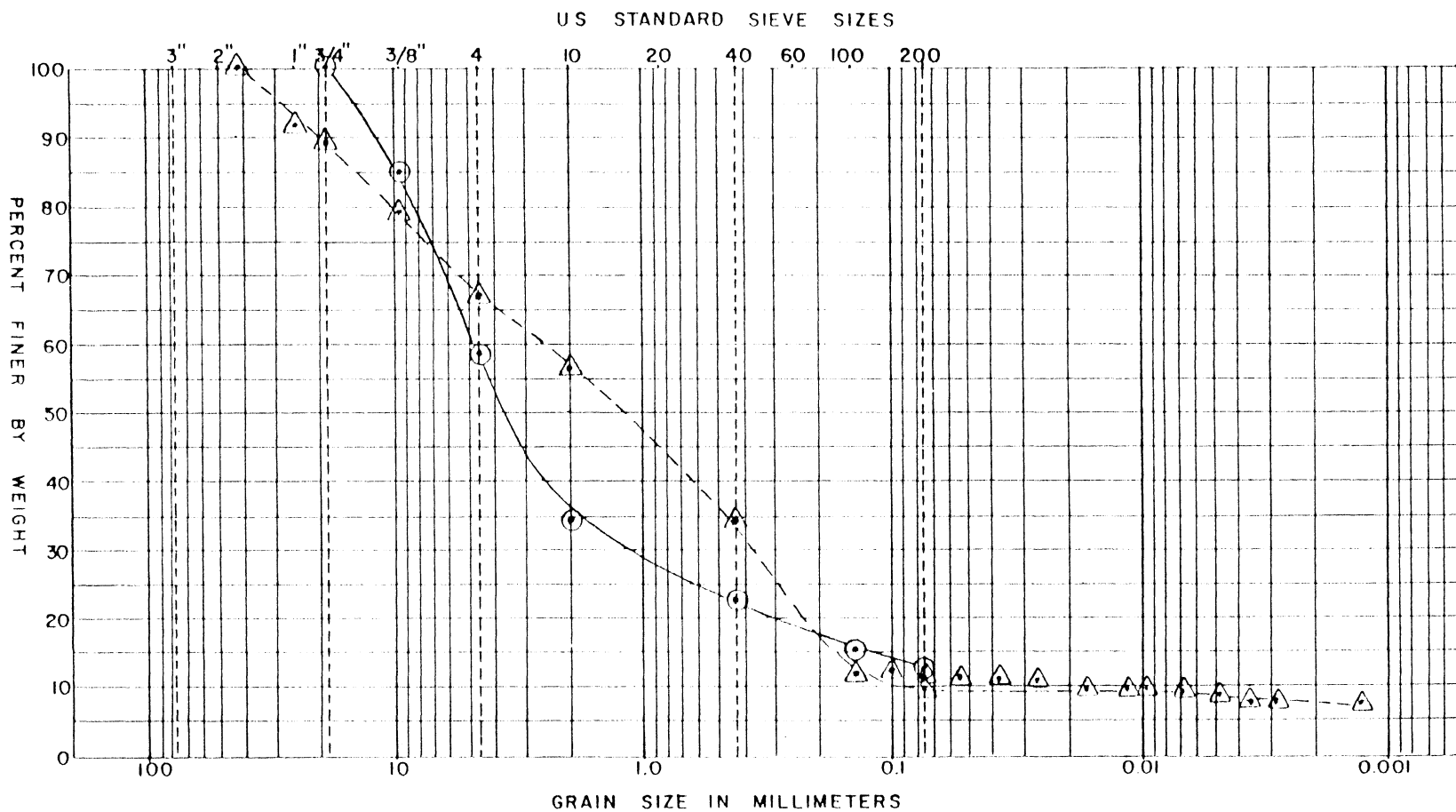
FIGURE V-2-96

Date 5/30/79
Job No 786035

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-K13A SA-15 --C--	21.34m-21.43m (70.0'-70.3')	-	-	-	-	Brown, fine GRAVEL and fine to coarse SAND, some silt (GM)
SA-16 --X--	22.86m-23.01m (75.0'-75.5')	-	-	-	-	Green-gray, fine to coarse gravelly, fine to coarse SAND, trace silt, trace clay (SP-SM)

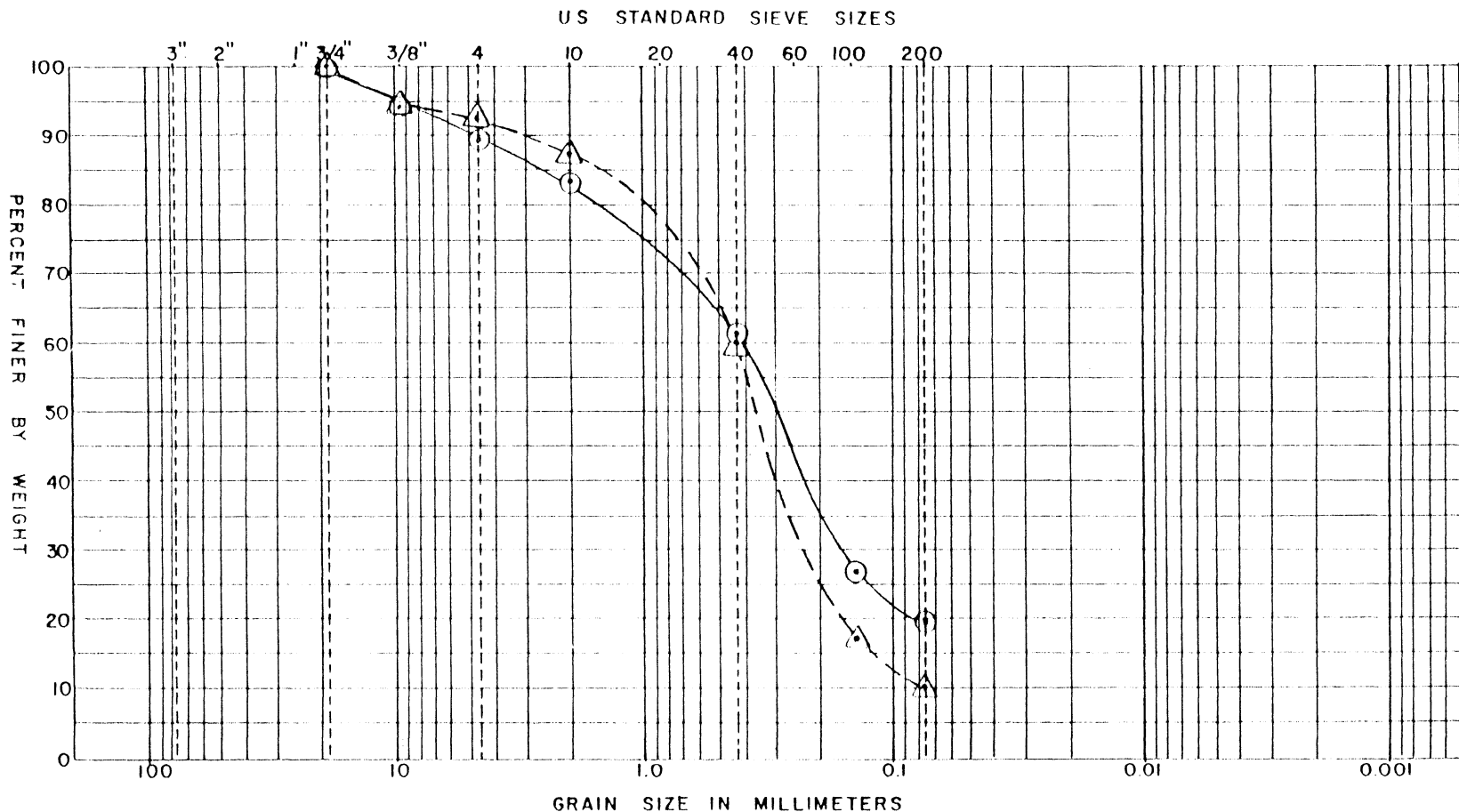
FIGURE V2-97

Date 5/30/79
Job No 786085

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-K13A SA-20 ○	28.96m-29.26m (95.0'-96.0')	-	-	-	-	Red-brown, fine to coarse SAND, some fine gravel, some silt (SM)
SA-23A △	35.36m-35.45m (116'-116.3')	-	-	-	-	Brown, fine to coarse SAND, trace fine gravel, trace silt (SP-SM)

FIGURE V2-98

Date 5/30/79
Job No. 786085

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FIGURE V2-99

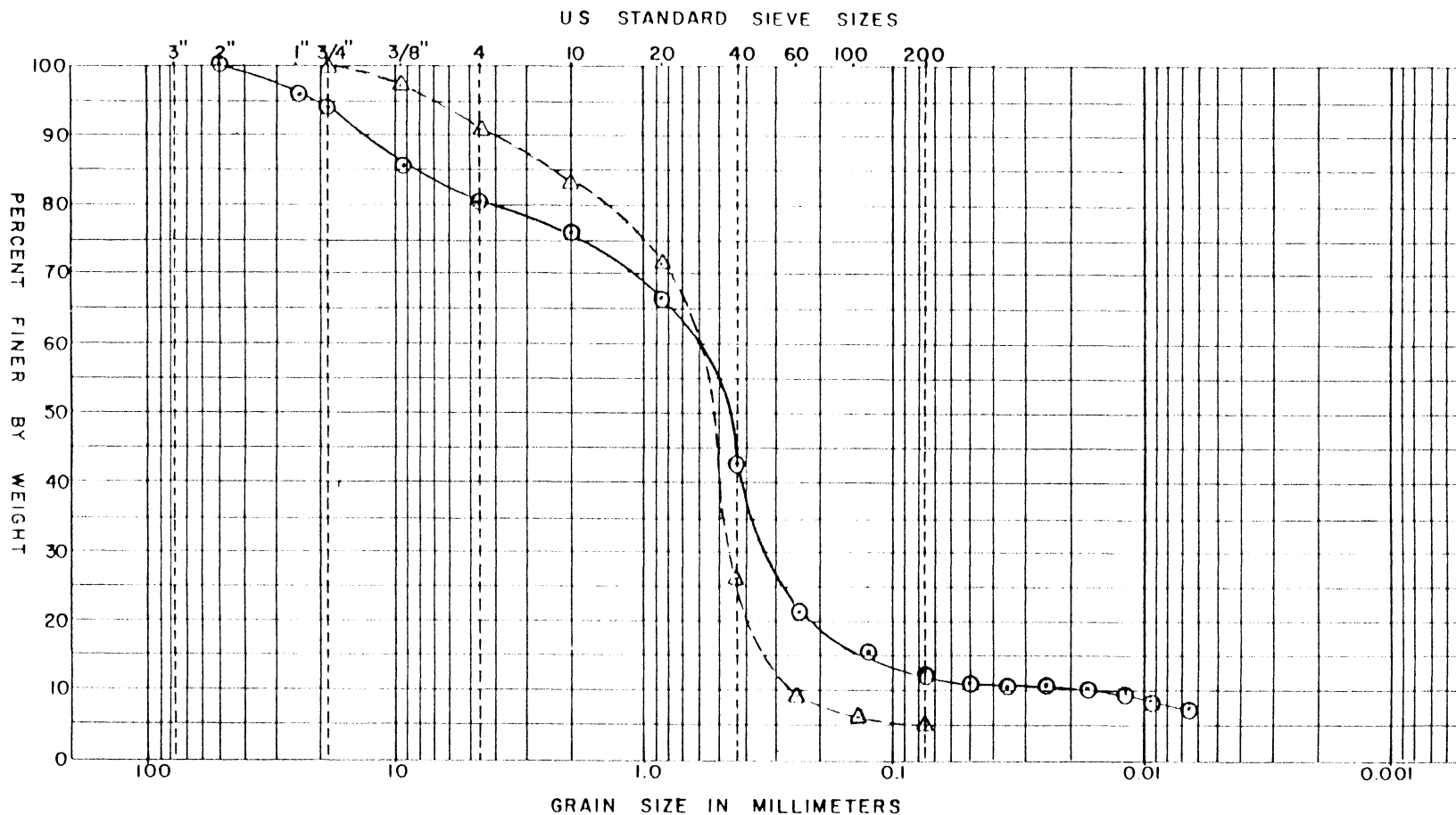


BORING NO.	ELEV. OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-K13B SA-1 —○—	0.30m-0.76m (1.0'-2.5')	-	NP	NP	NP	Brown, fine to medium sandy SILT, trace clay (ML)
SA-3 —△—	2.90m-3.35m (9.5'-11.0')	-	22	18	4	Red-brown, SILT, trace fine to medium SAND, trace clay (CL-ML)
SA-5 —□—	5.94m-6.10m (19.5'-20')	-	-	-	-	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay (SM)

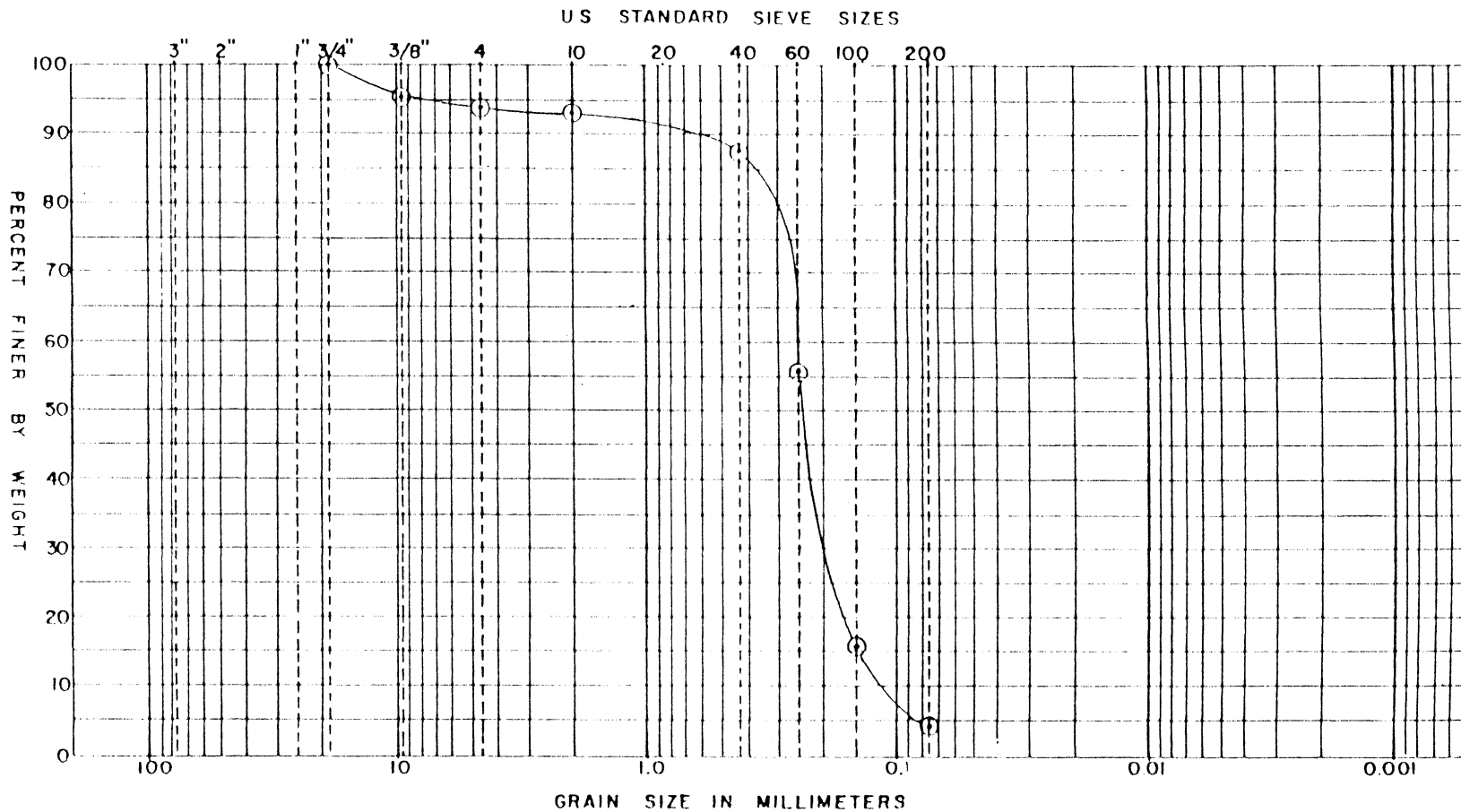
Golder Associates

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Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-K26						
SA-18	51.82m-52.27m (170.0'-171.5')	-	-	-	-	Brown fine to medium SAND, trace fine gravel, trace silt (SP)

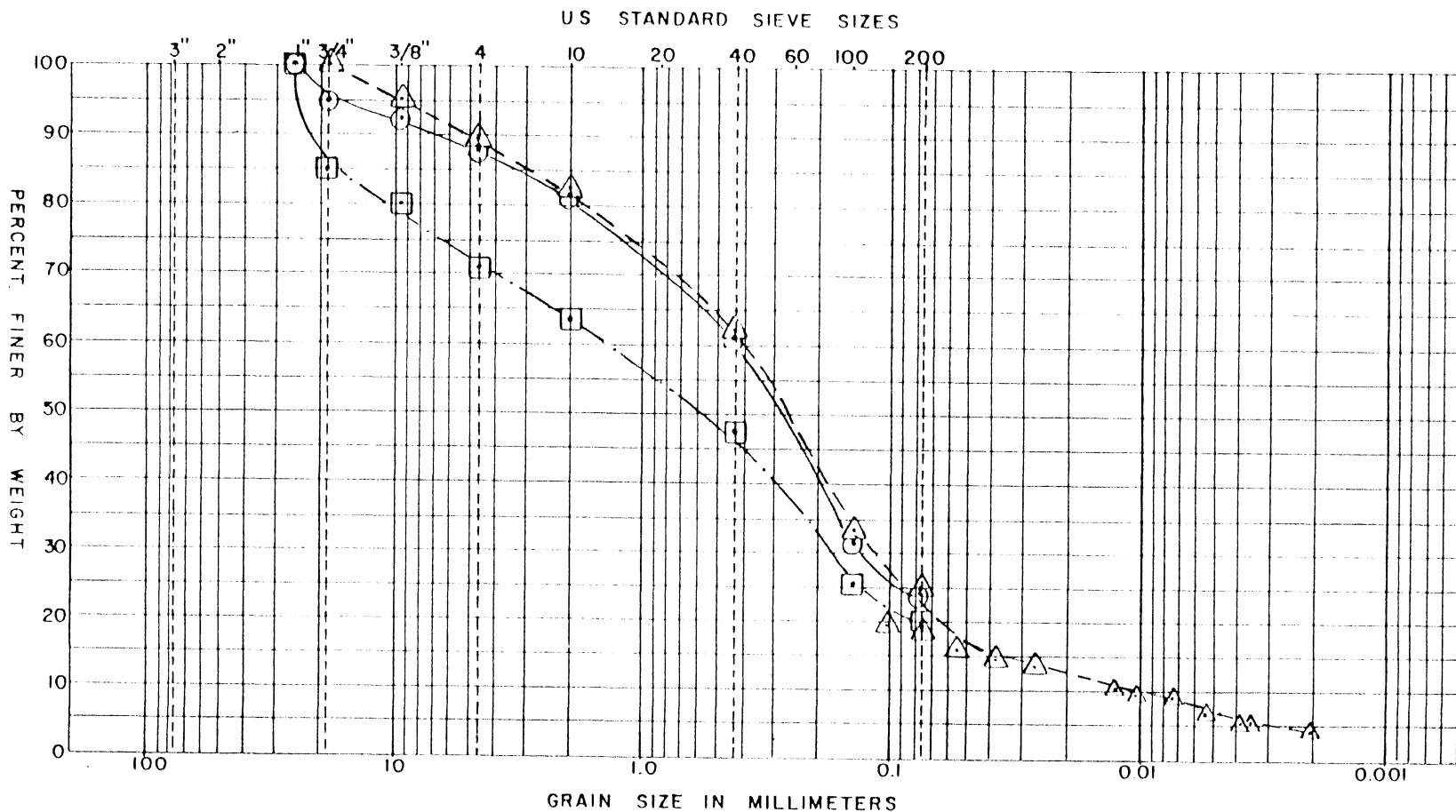
FIGURE V2-101

Date 9/16/81
Job No 786085

Golder Associates

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GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-L11 SA-2 ○	1.52m-1.98m (5.0'-6.5')	-	-	-	-	Brown to red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay(SM)
SA-4 △	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Brown to red-brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-6 □	6.10m-6.55m (20.0'-21.5')	-	-	-	-	Brown to red-brown, fine to coarse, gravelly, fine to coarse SAND, some silt, trace clay (SM)

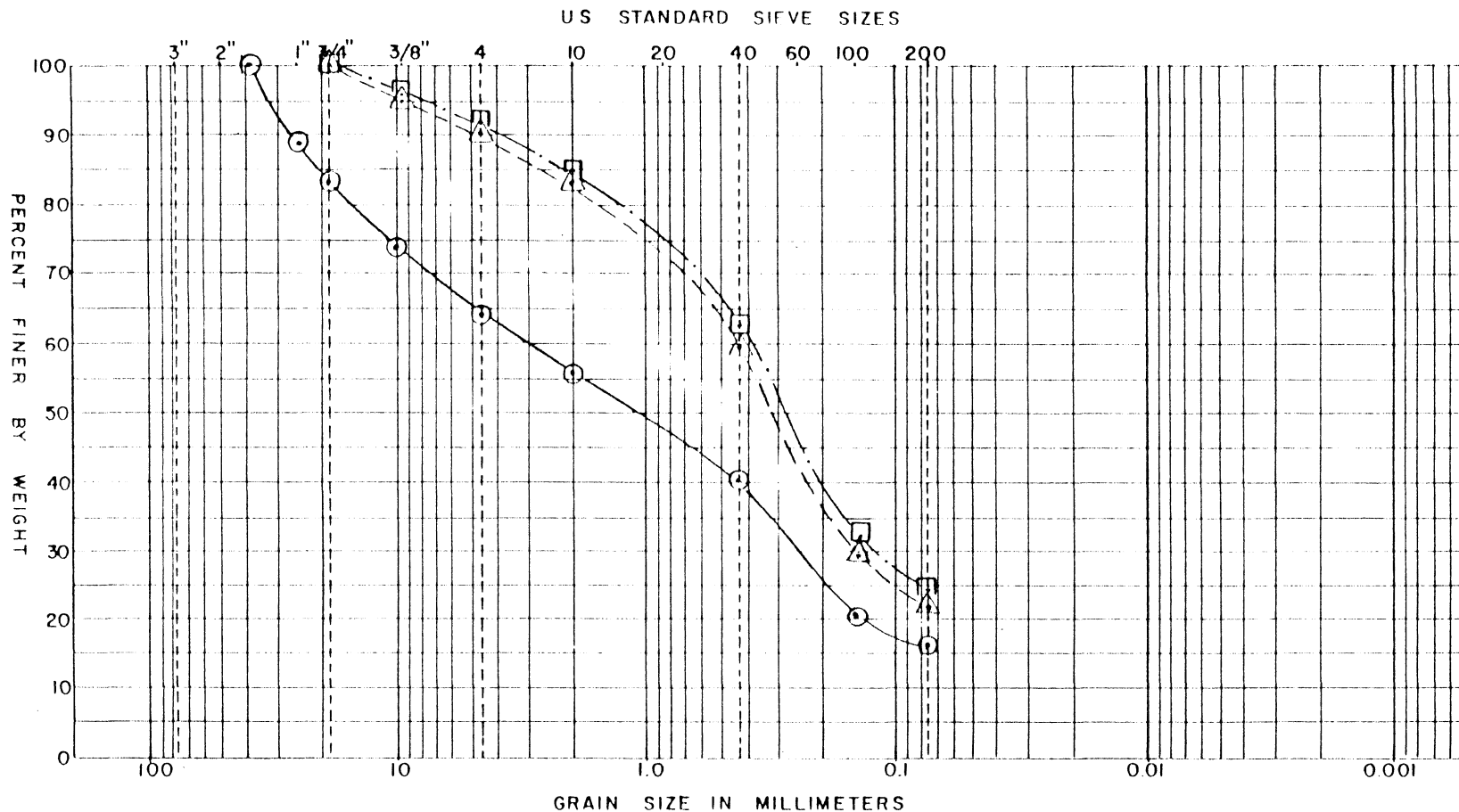
FIGURE V2-102

Date 5/30/79
Job No. 786085

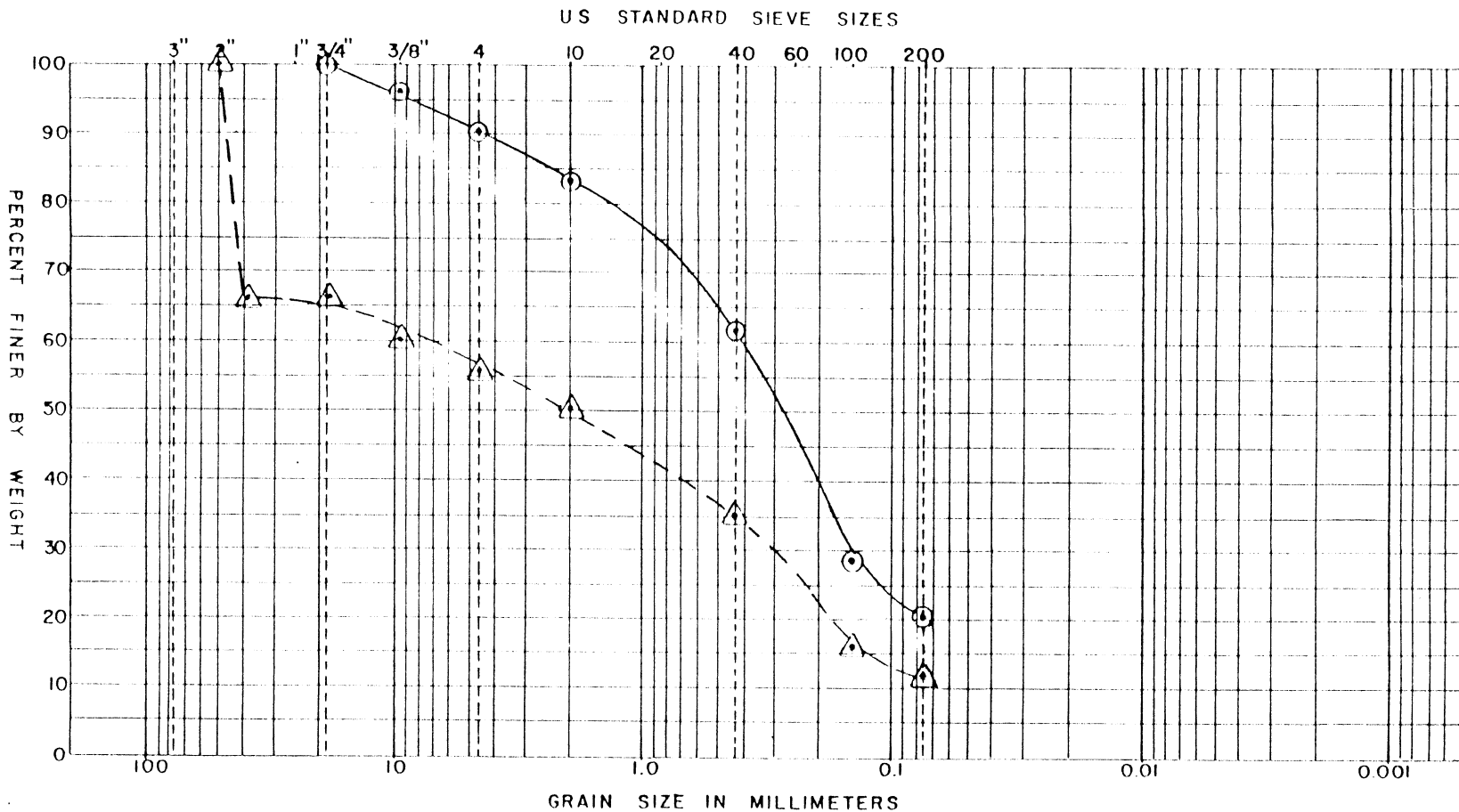
Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-L11 SA-16	21.34m-21.55m (70.0'-70.7')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine gravel, trace clay (SM)
SA-13	24.38m-24.54m (80.0'-80.5')	-	-	-	-	Red-brown, fine to coarse GRAVEL and fine to coarse SAND, some silt (GM)

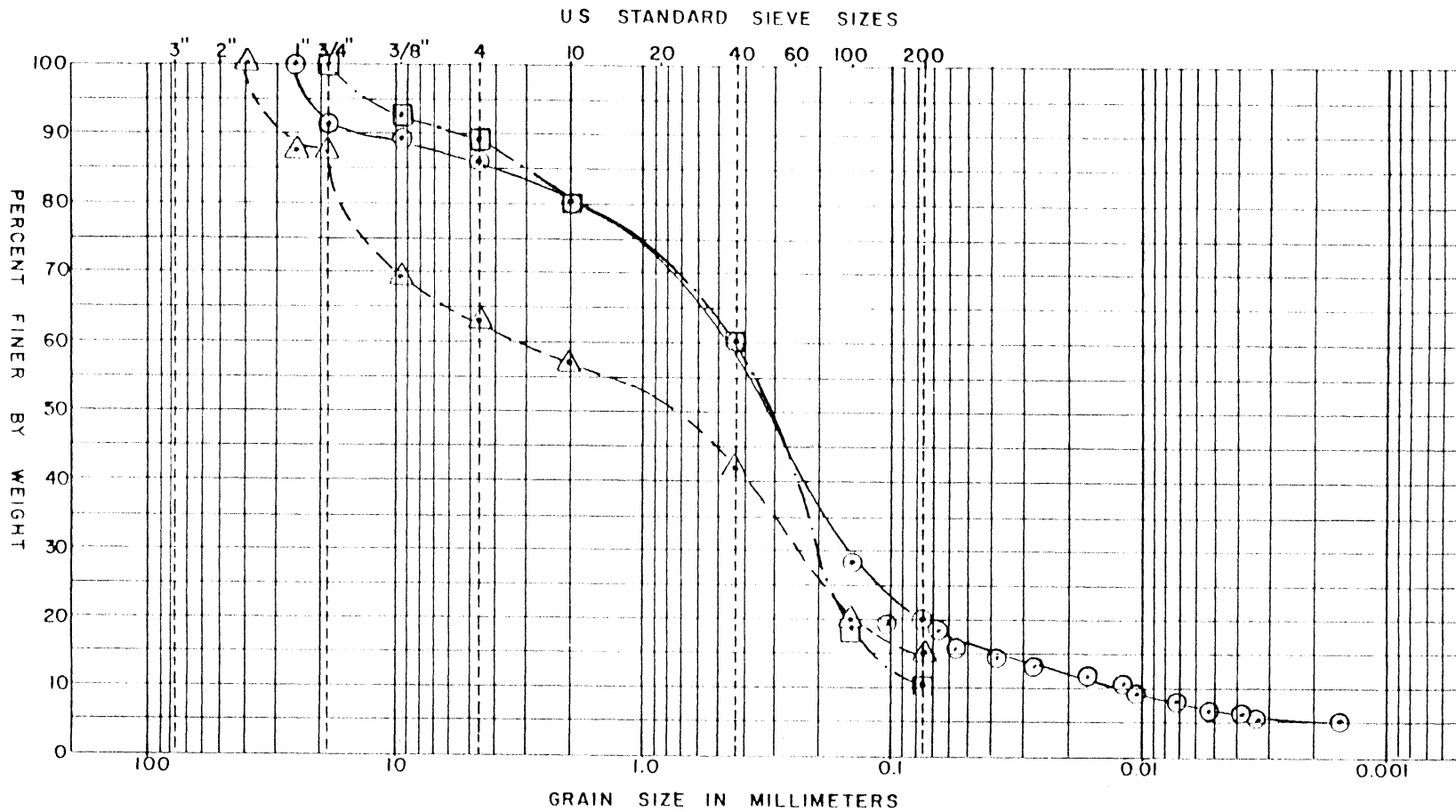
FIGURE V2-104

Date 5/30/79
Job No 786085

Golder Associates

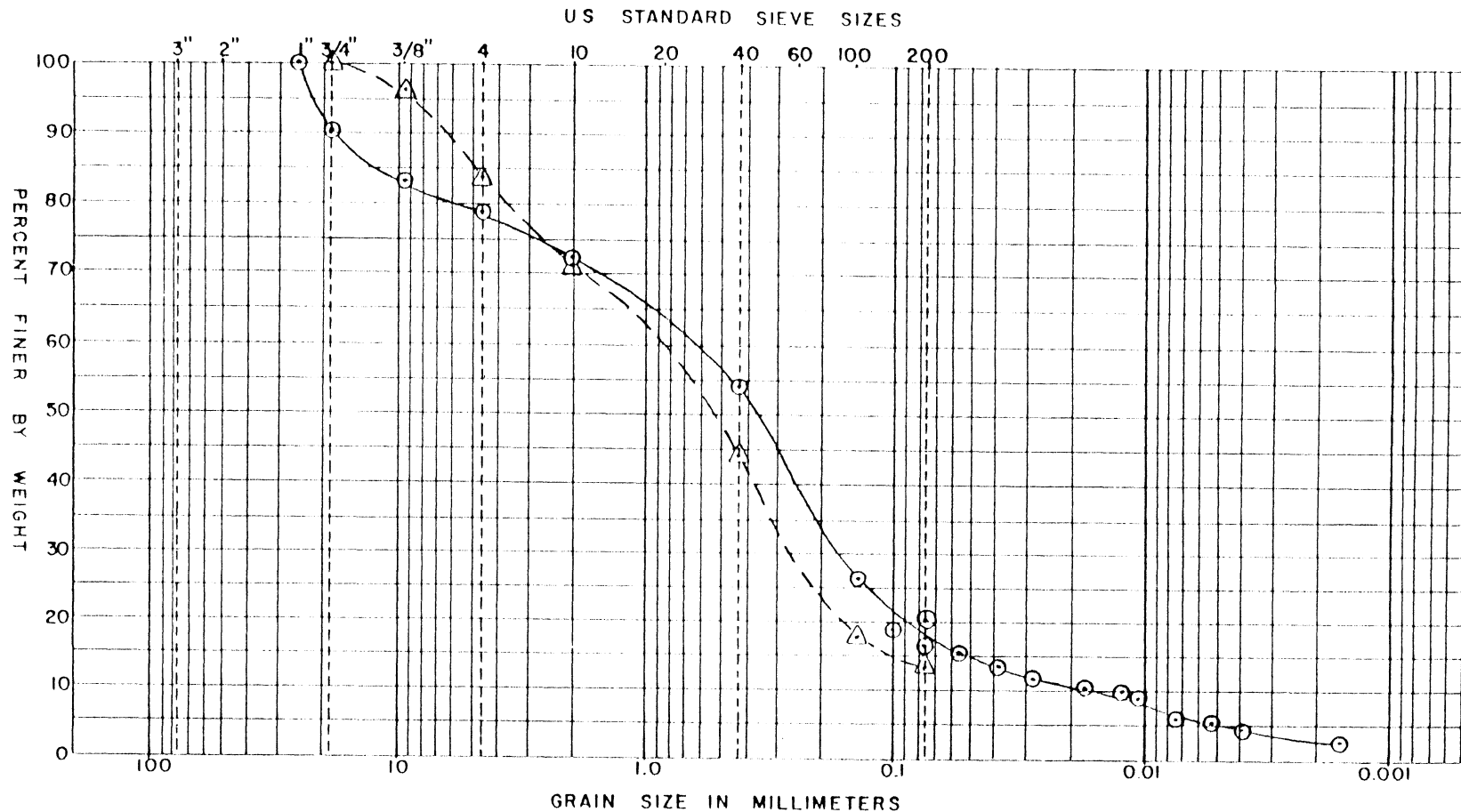
Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION

FIGURE V2-106



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

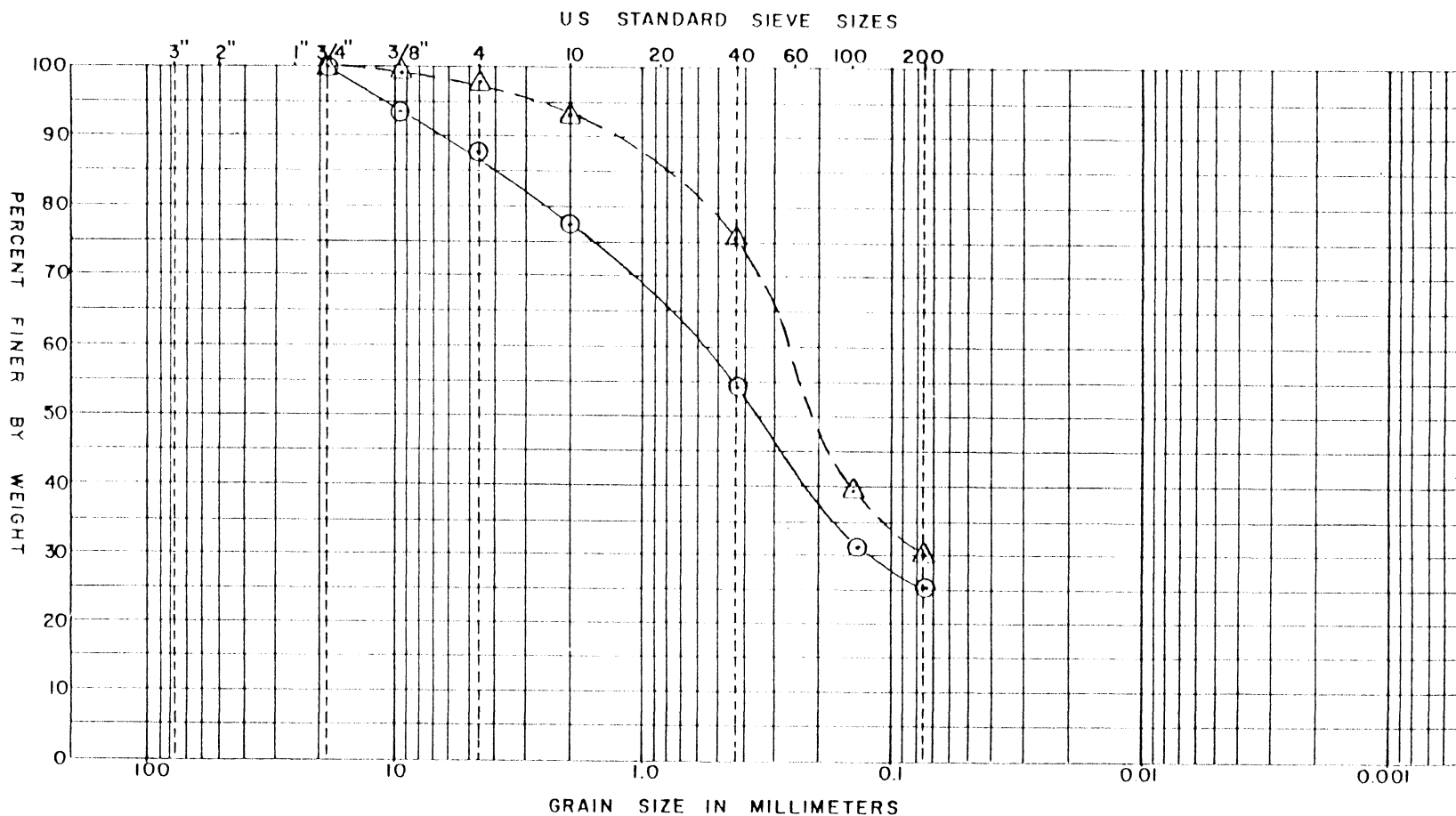
BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-L19 SA-2 —○—	2.74m-3.20m (9.0'-10.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)
SA-5 --△--	7.32m-7.77m (24.0'-25.5')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)

Date 6/14/79
Job No 786035

Golder Associates

Drawn ast
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-L19 SA-11 —○—	16.46m-16.61m (54.0'-54.5')	-	-	-	-	Brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
SA-12 —△—	17.98m-18.14m (59.0'-59.5')	-	-	-	-	Brown, fine to coarse SAND, some silt, some clay, trace fine gravel (SM)

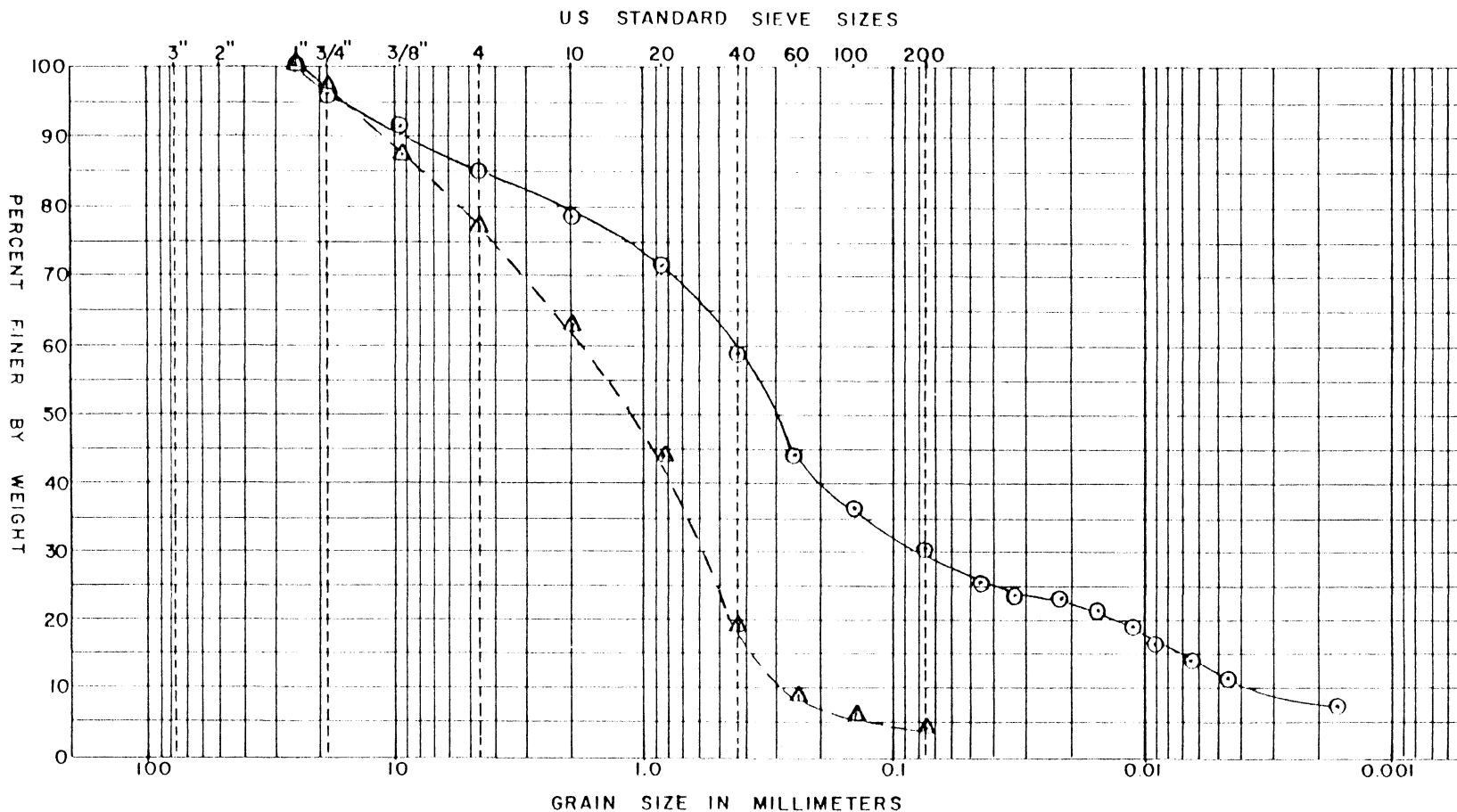
FIGURE V2-107

Date 6/14/79
Job No. 786085

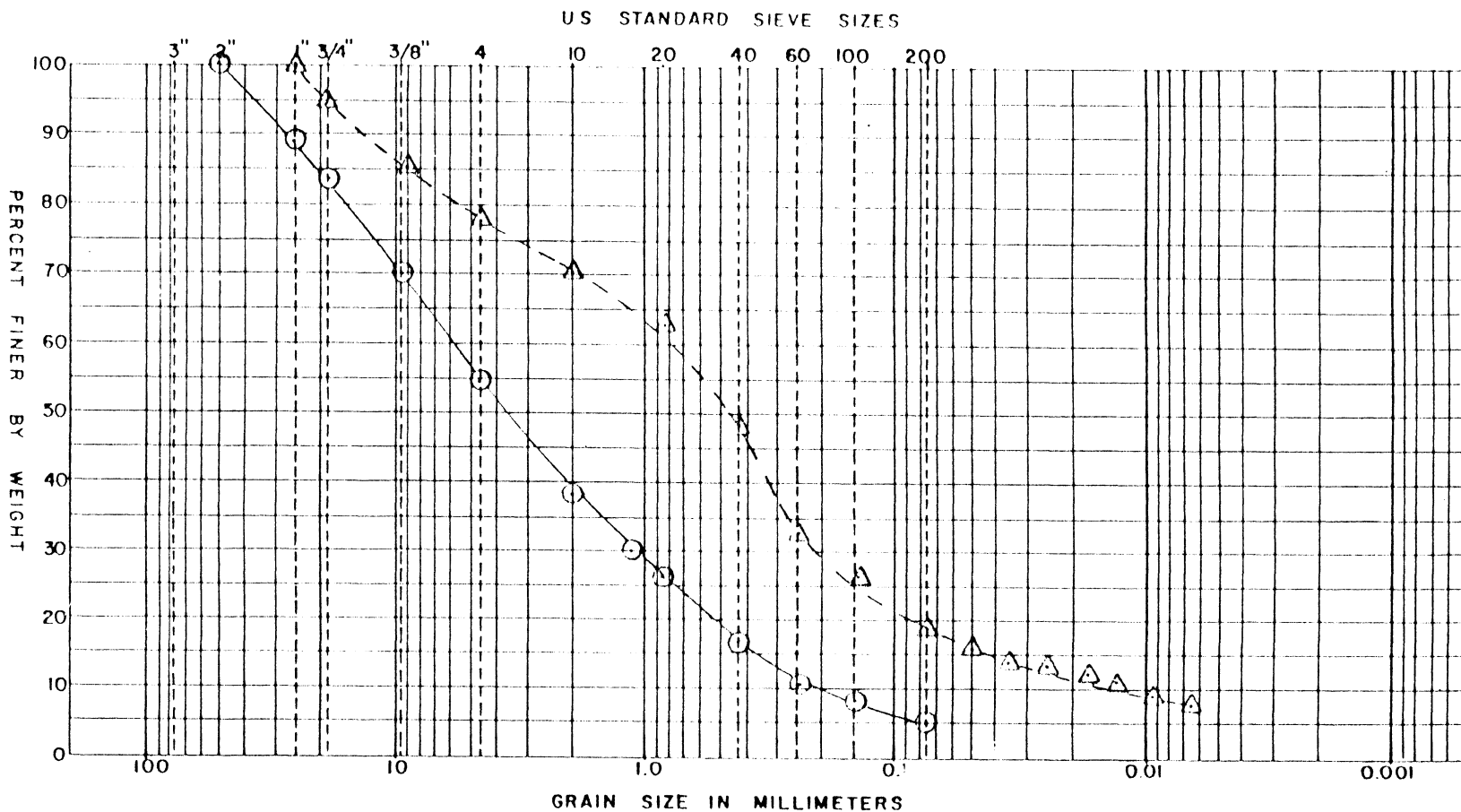
Golder Associates

Drawn ast
Checked JFC
Approved JFC

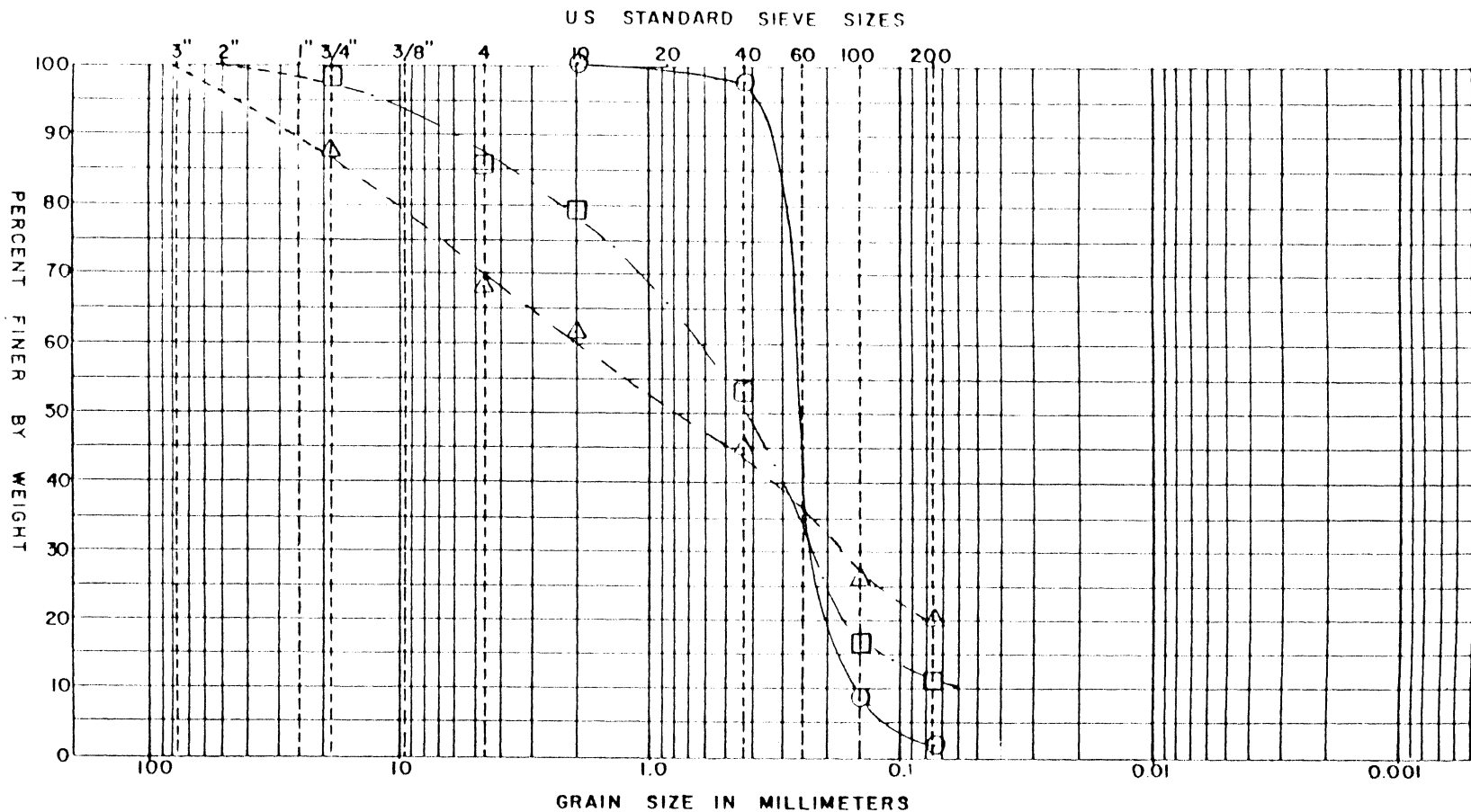
GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-M11, SA-5 —○—	11.73m-12.19m (38.5'-40.0')					Light brown fine SAND, trace silt (SP)
SA-10 —△—	27.13m-27.89m (89.0'-91.5')					Brown, fine to coarse gravelly, fine to coarse SAND, some silt (SM)
SA-14 —□—	39.17m-39.62m (128.5'-130.0')					Brown, fine to coarse SAND, some fine to coarse gravel, some silt (SP-SM)

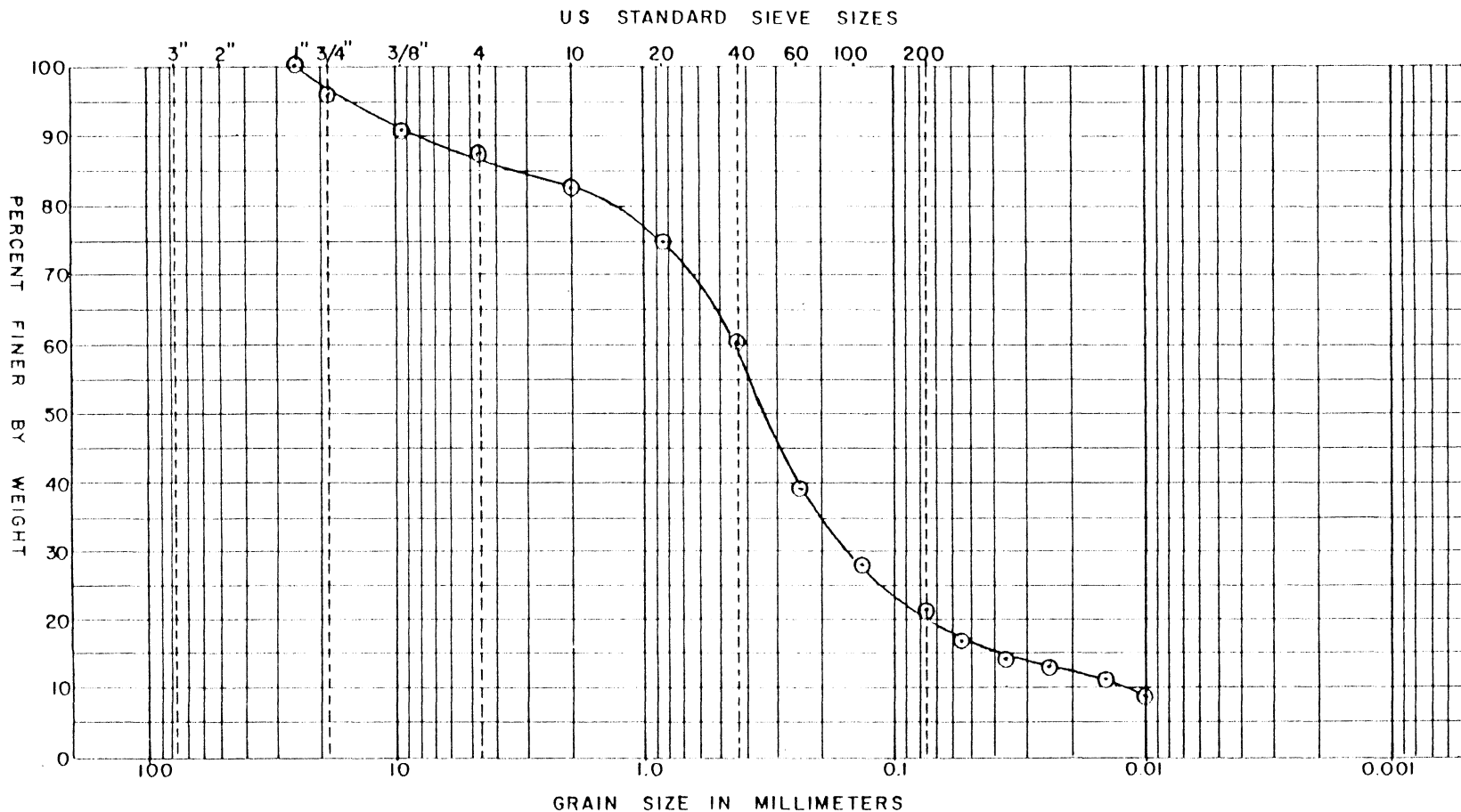
FIGURE V2-110

Date 4/27/81
Job No 786085

Golder Associates

Drawn MS
Checked dm
Reviewed _____

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-M24 SA 1	0.00m-1.52m (0.0'-5.0')	-	-	-	-	Brown, silty, fine to coarse SAND, some fine gravel (SM)

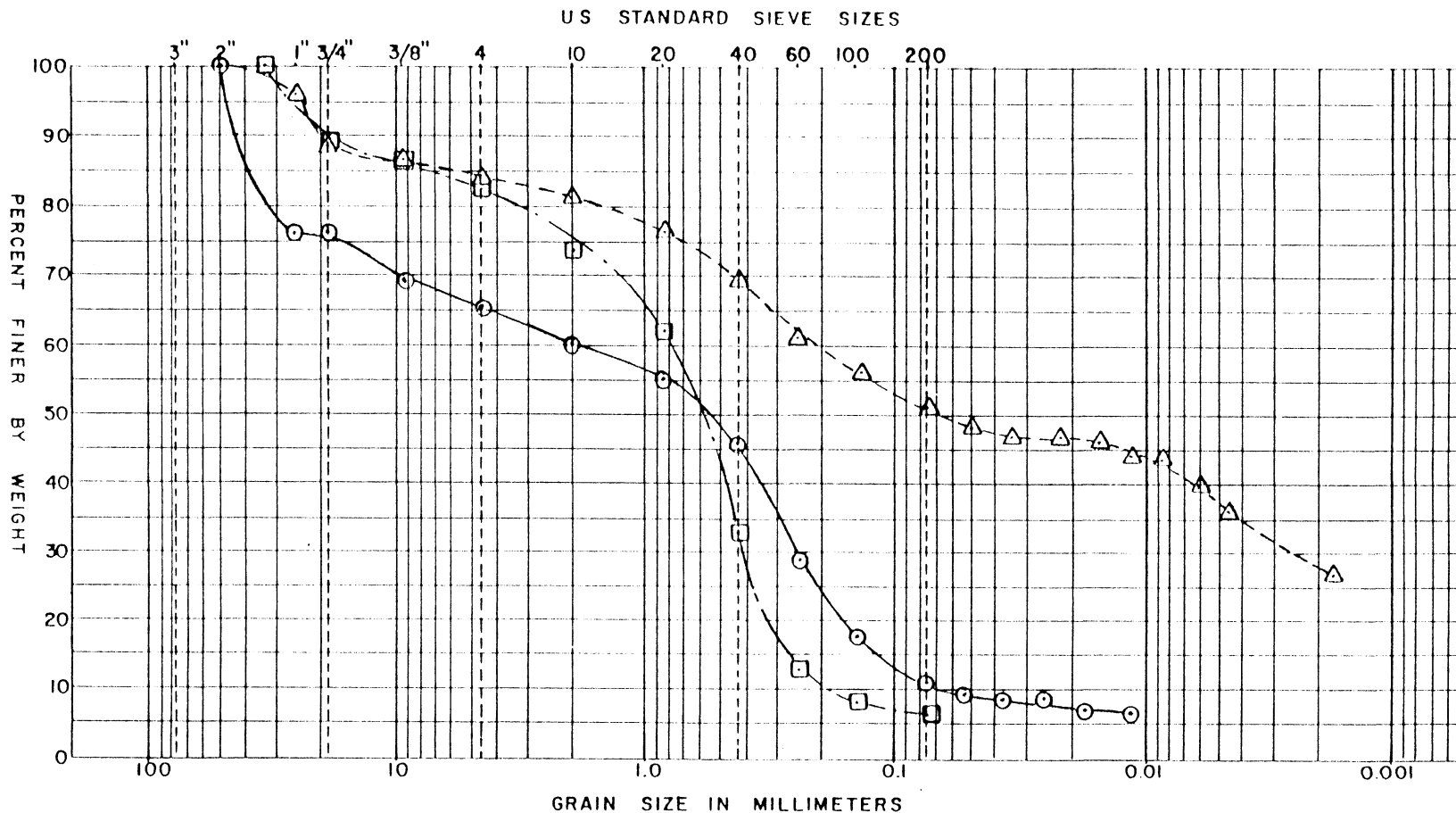
FIGURE V2-111

Date 1/7/80
Job No. 786085

Golder Associates

Drawn JLS
Checked WFG
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w _n	w _L	w _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-N21 SA 3 —○—	3.05m-3.51m (10.0'-11.5')	-	-	-	-	Brown, fine to coarse SAND and fine to coarse GRAVEL, trace silt (SP-SM)
SA 17 —△—	24.08m-24.54m (79.0'-80.5')	-	-	-	-	Brown, clayey, silty fine to coarse SAND, some fine to coarse gravel (ML-CL)
SA 26 —□—	45.72m-45.87m (150.0'-150.5')	-	-	-	-	Brown, fine to coarse SAND, some fine to coarse gravel, trace silt (SP)

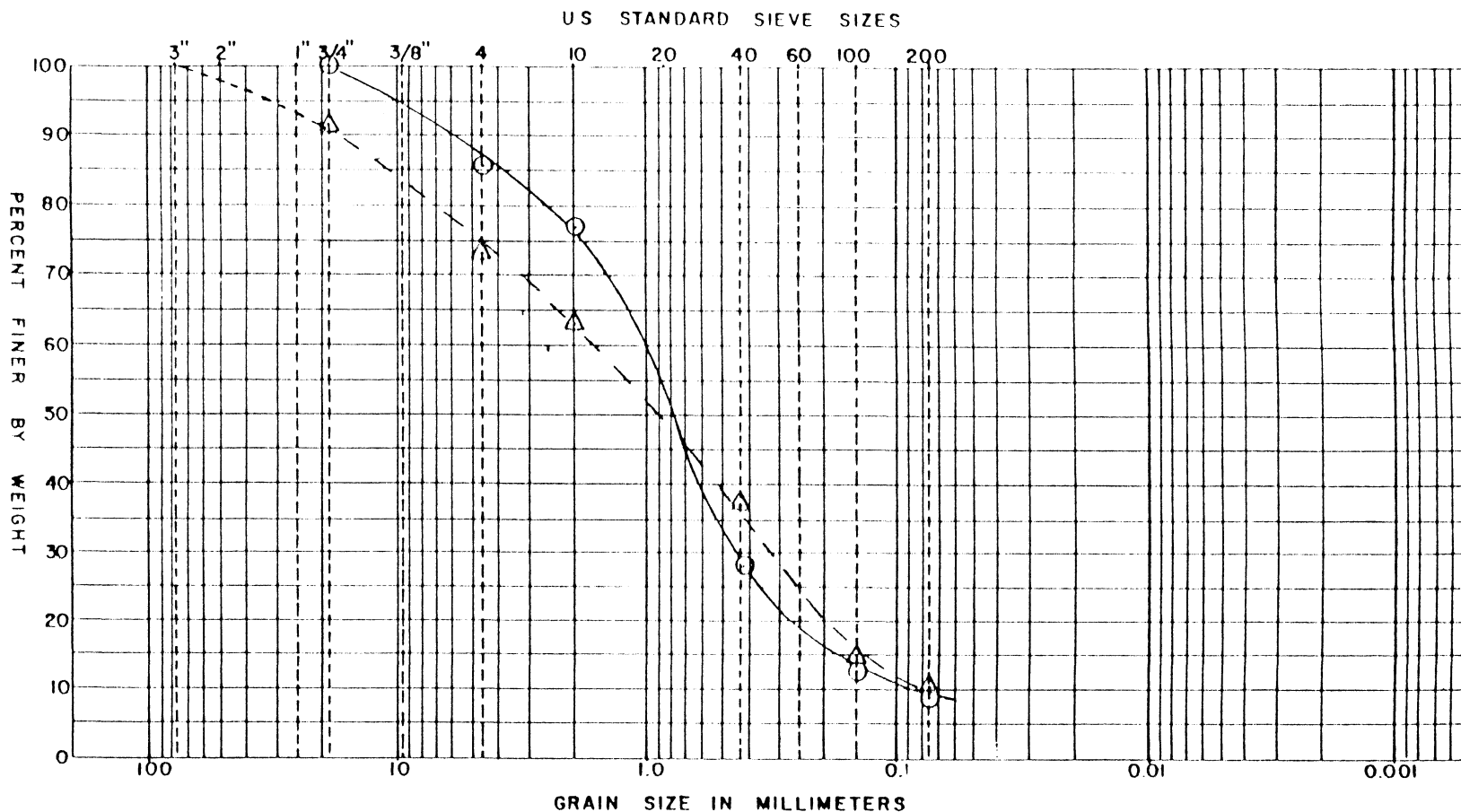
FIGURE V2-112

Date 1/7/80
Job No. 786085

Golder Associates

Drawn JIS
Checked PEB
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-P16, SA-3 —○—	6.10m-6.55m (20.0'-21.5')					Brown, fine to coarse SAND, some fine gravel, trace silt (SW-SM)
SA-12 —△—	33.53m-33.99m (110.0'-111.5')					Brown, fine to coarse gravelly, fine to coarse SAND, some silt (SP-SM)

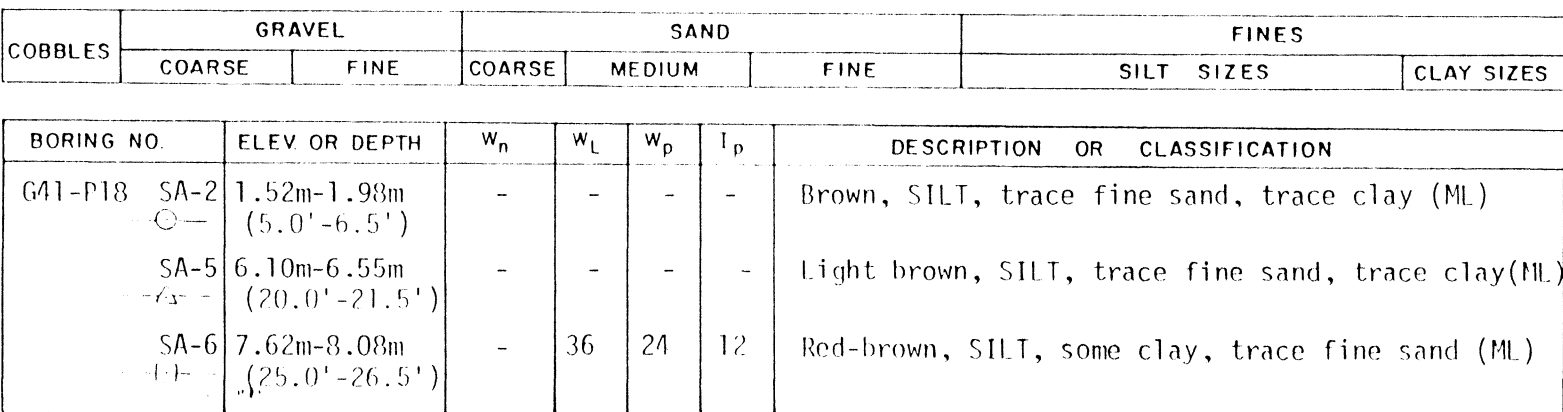
FIGURE V2-113

Date 4-29-81
Job No 786095

Golder Associates

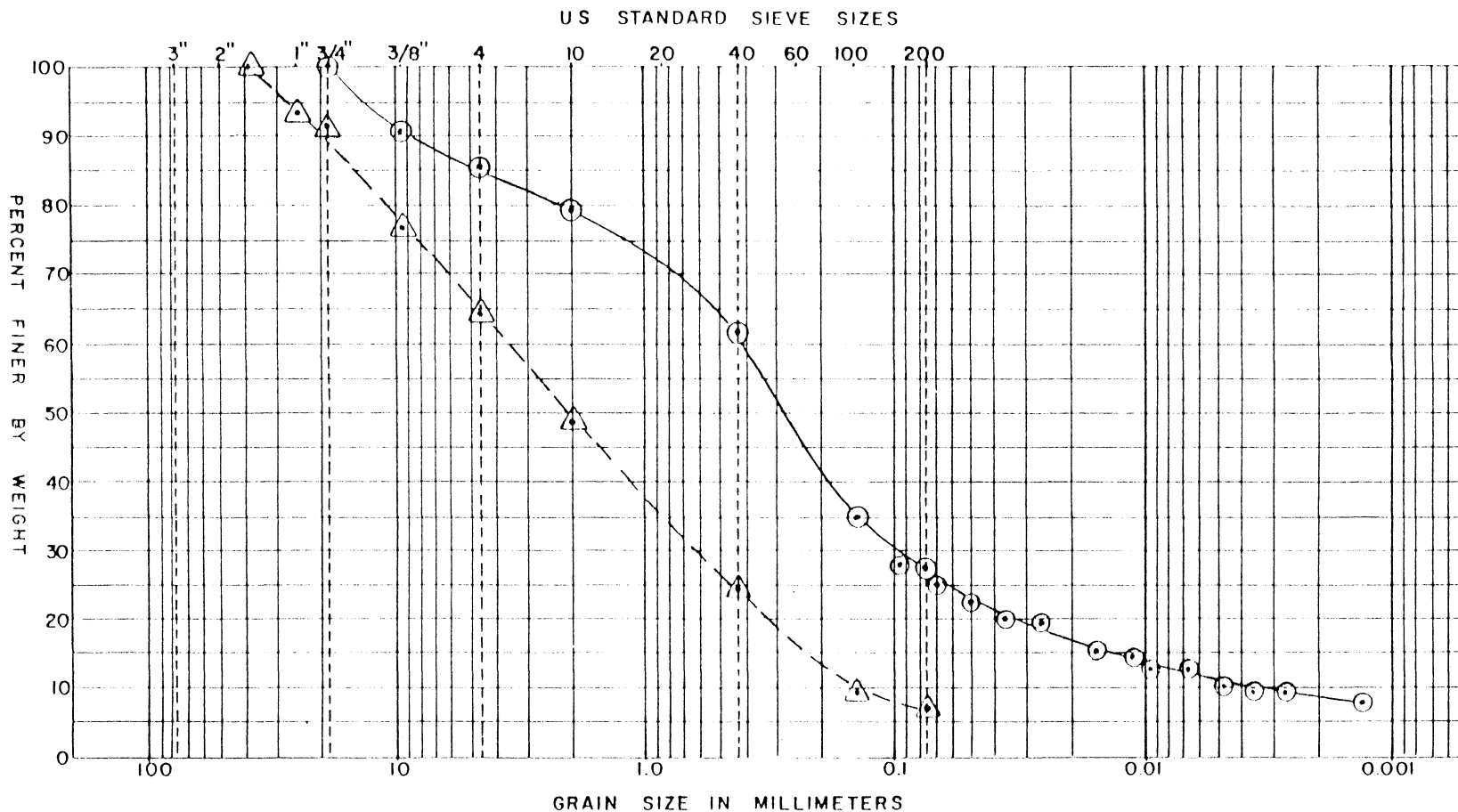
Drawn MBB
Checked Chw
Reviewed _____

FIGURE V2-114



Drawn	AST
Checked	JFC
Approved	JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV OR DEPTH	W _n	W _L	W _p	I _p	DESCRIPTION OR CLASSIFICATION
G41-P18	SA-10	13.72m-14.17m	-	-	-	Red-brown, fine to coarse SAND, some fine gravel, some silt, trace clay (SM)
	○	(45.0'-46.5')				
	SA-12	16.76m-17.22m	-	-	-	Red-brown, fine to coarse GRAVEL and fine to coarse SAND, trace silt (SP-SM)
	△	(55.0'-56.5')				

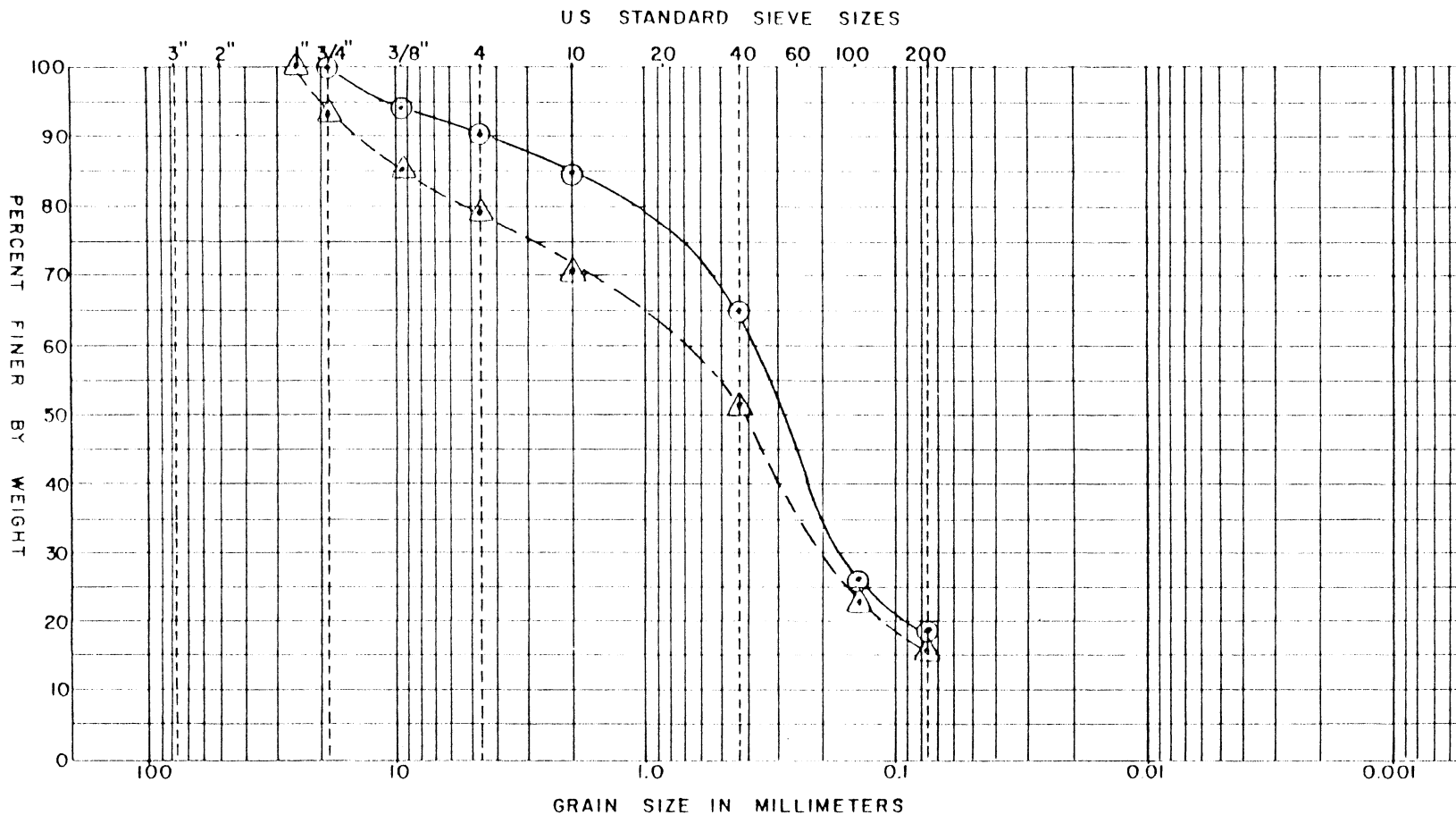
FIGURE V2-115

Date 5/30/79
Job No. 786085

Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-P18 SA-20 ○	28.96m-29.41m (95.0'-96.5')	-	-	-	-	Red-brown, fine to coarse SAND, some silt, trace fine gravel, trace clay (SM)
SA-21 △	30.48m-30.79m (100.0'-101.0')	-	-	-	-	Red-brown, fine to coarse gravelly, fine to coarse SAND, some silt, trace clay (SM)

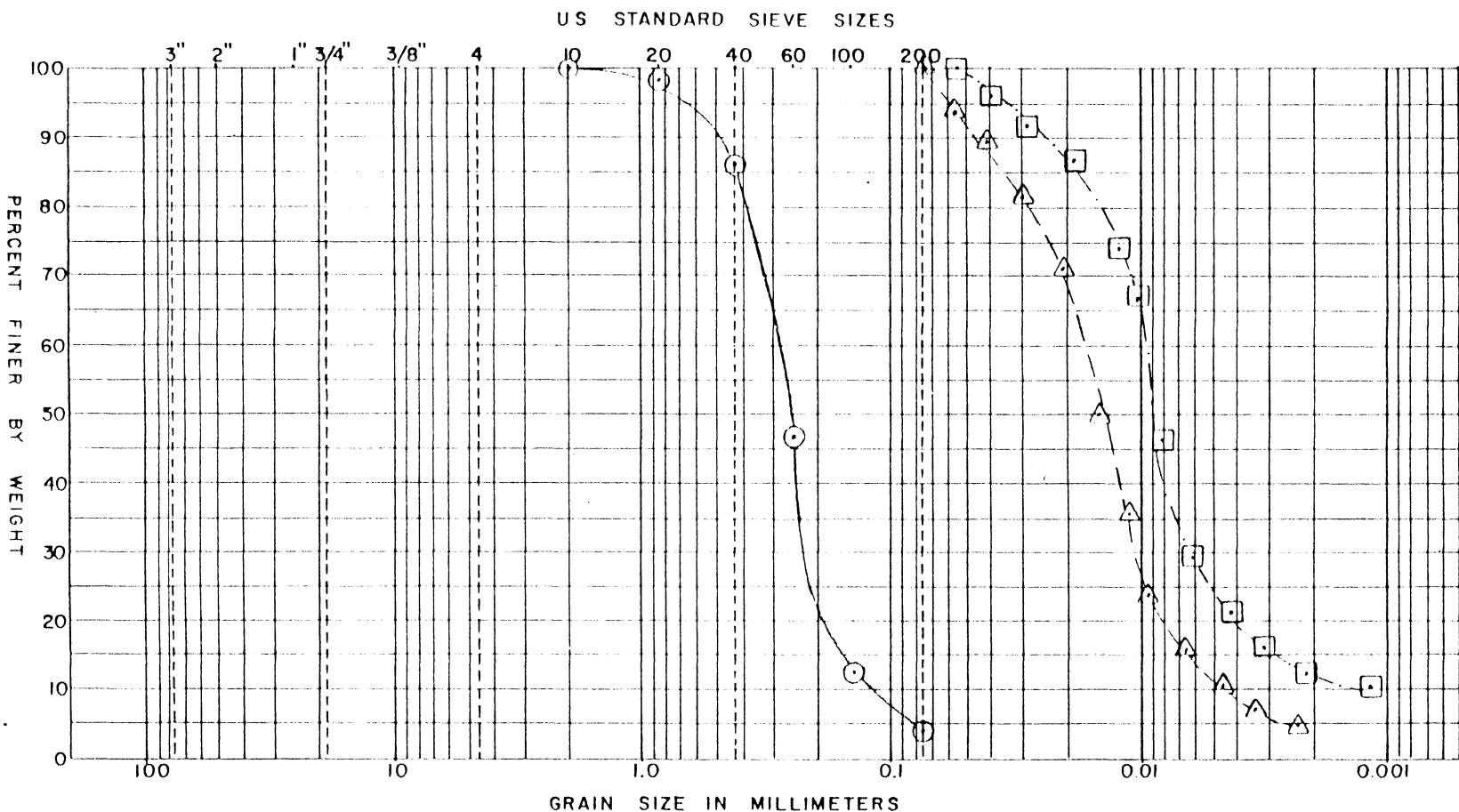
FIGURE V2-116

Date 5/30/79
Job No 786035

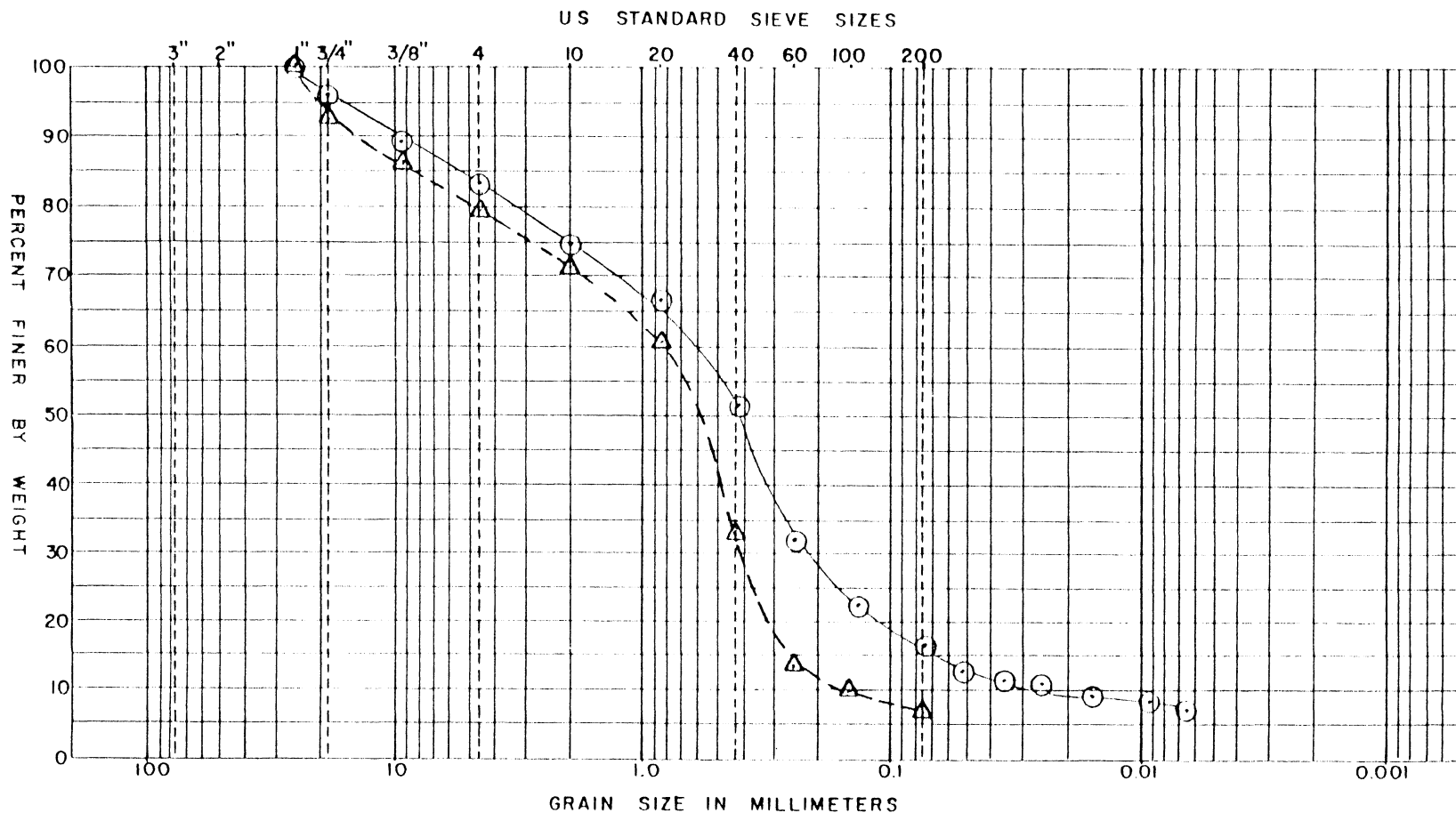
Golder Associates

Drawn AST
Checked JFC
Approved JFC

GRAIN SIZE DISTRIBUTION



GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-P24 SA 4 	4.57m-5.03m (15.0'-16.5')	-	-	-	-	Brown, fine to coarse gravelly, fine to coarse SAND, trace silt (SP-SM)
SA 7 	9.14m-9.51m (30.0'-31.2')	-	-	-	-	Brown, fine to coarse SAND, some fine to coarse gravel, some silt (SM)

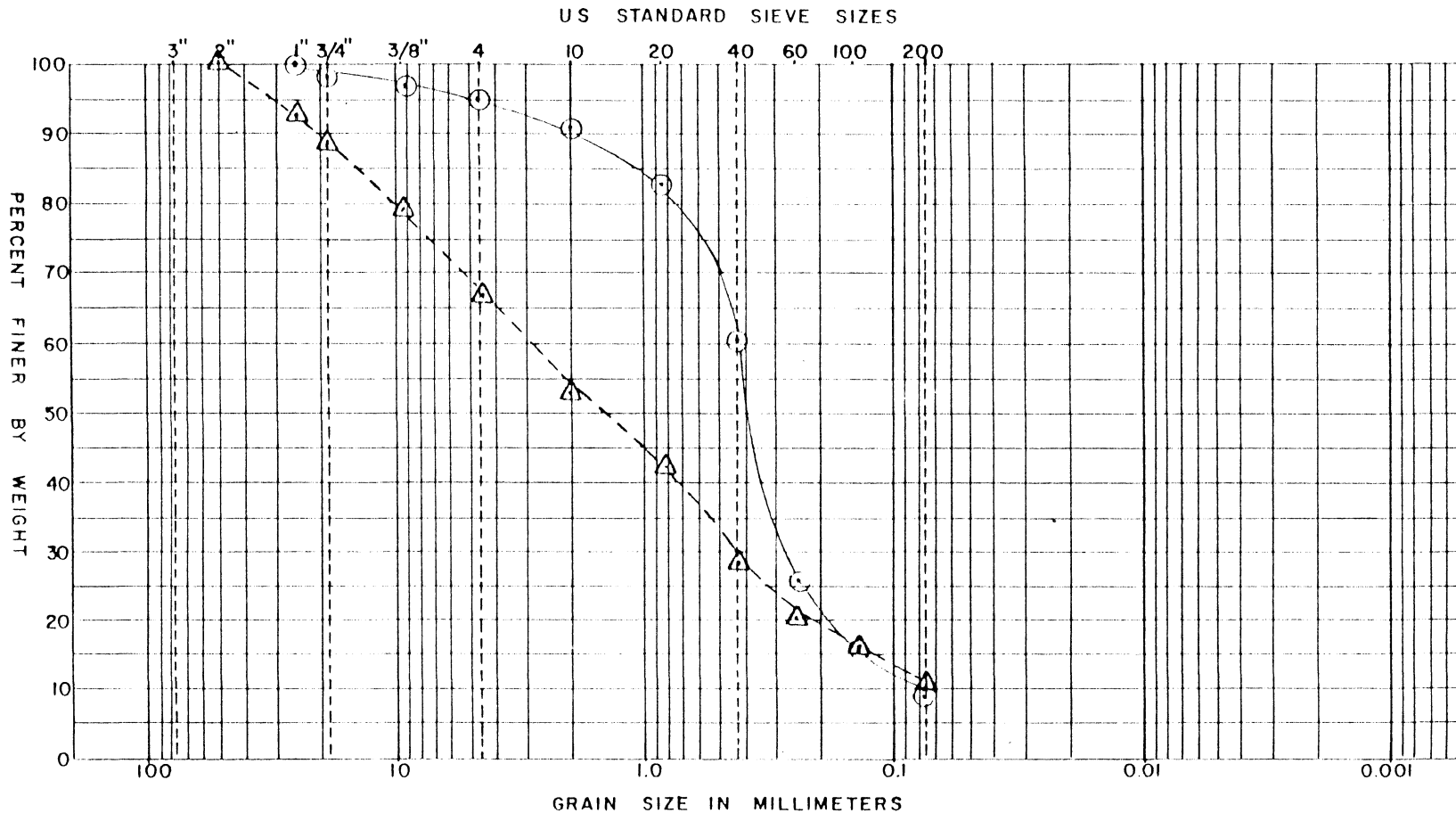
FIGURE V2-118

Date 1-7-80
Job No. 786085

Golder Associates

Drawn JJS
Checked MP
Approved [Signature]

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT SIZES	CLAY SIZES

BORING NO.	ELEV. OR DEPTH	w_n	w_L	w_p	I_p	DESCRIPTION OR CLASSIFICATION
G41-P24 SA 23 —○—	35.05m-35.36m (115.0'-116.0')	-	-	-	-	Light brown, fine to coarse SAND, trace fine gravel, trace silt (SP-SM)
SA 26B —△—	45.72m-46.02m (150.0'-151.0')	-	-	-	-	Light brown, fine to coarse gravelly, fine to coarse SAND, some silt (SW-SM)

FIGURE V2-119

Date 1-7-80
Job No. 786085

Golder Associates

Drawn JJS
Checked [Signature]
Approved [Signature]

APPROX. N110900 ft. (N33802m)

COORD. E2285500 ft. (E696620m)

TEST PIT LOG TP-1

SHEET 1 of 1

SURFACE ELEV. APPROX. (512.06m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SITE

DATUM USGS MSL

DATE STARTED 11/15/79

DATE COMPLETED 11/16/79

EQUIPMENT John Deere 690 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.305	Topsoil and rootmat	PT	Seep at 3.0' (0.91m)
1.0	Red-brown, fine to coarse SAND, trace to some fine to coarse gravel, trace to some silt, trace clay, occasional cobbles and boulders Thin discontinuous clean fine to coarse sand layers at 3.0'	SM	
1.83			
6.0	Brown, fine to coarse SAND, trace fine	SP to	Seep at 7.0' (2.13m) Sand cone density at 7.0' (2.13m) $\gamma_d = 138.3$ pcf (2216 kg/m ³) $w_L = 7.2$
2.13	gravel, trace silt	SP-SM	
7.0	Red-brown, fine to coarse SAND, trace fine to coarse gravel, trace to some silt, trace clay, occasional cobbles and boulders	SM	
3.09			
10.0	Brown, fine to coarse SAND, trace to some fine to coarse gravel	SP	
4.88			

16.0

END OF PIT

Job No. 786085
Scale 1"=2.5'

Golder Associates

Drawn jls
Checked MCB

APPROX. N116000 ft. (N35356m)

COOR. E2285600 ft. (E696650m)

TEST PIT LOG TP-2

SHEET 1 OF 1

SURFACE ELEV. Approx. 1715 ft.
(522.73m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SITE

DATUM USGS MSL

DATE STARTED 11/16/79

DATE COMPLETED 11/16/79

EQUIPMENT John Deere 690 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.305	Topsoil and rootmat	PT	
1.0	Brown, fine to coarse SAND, trace fine to coarse gravel, trace silt, occasional cobbles and boulders	SP to SP-SM	
2.13			Seep at 7.0' (2.13m)
7.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay to fine to coarse gravelly, fine to coarse SAND, some silt, occasional cobbles and boulders	SM	Sand cone density at 8.5' (2.59) $\gamma_d = 122.4$ pcf (1961 kg/m ³) $w_L = 14.6$
4.57			
15.0	END OF PIT		

Job No. 786085

Scale 1"=2.5'

Golder Associates

Drawn jls

Checked MMB

APPROX. N114200 ft. (N34808m)
 COOR. E2282900 ft. (E695827m) 1620 ft.
TEST PIT LOG TP-3 SHEET 1 OF 1
 SURFACE ELEV. Approx. (493.78m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 11/16/79 DATE COMPLETED 11/16/79
 EQUIPMENT John Deere 690 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
	Topsoil and rootmat	PT	
.457			
1.5	Red-brown, fine to coarse SAND, trace to some silt, trace fine to coarse gravel, trace clay, occasional cobbles and boulders	SP-SM	
	Occasional layers of gray-brown SILT, trace fine to coarse sand, trace clay		
2.13			
7.0	Brown, fine to coarse SAND, trace fine to coarse gravel, trace silt	SP to SP-SM	Stratified
2.74			Heavy seep at 9.0' (2.74m)
9.0	Dark brown, fine to coarse SAND, trace fine to coarse gravel, trace silt, occasional cobbles and bouldes	SP	
5.18			
17.0	END OF PIT		

Job No. 786085
 Scale 1"=2.5'

Golder Associates

Drawn jls
 Checked RRB

APPROX. N113700 ft. (N34655m)
COORD. E2275800 ft. (E693663m)

TEST PIT LOG TP-4

SHEET 1 OF 1

SURFACE ELEV. APPROX. (493.78m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 11/29/79 DATE COMPLETED 11/29/79

EQUIPMENT John Deere 690 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.305	Black rootmat	PT	Light seep at 2.0'-3.5' (0.61m to 1.07m)
1.0	Dark brown, fine to coarse SAND, some silt, trace clay, trace organics	SM	
.610	Dark brown to black, organic SILT, some clay, some fine sand	OL	
2.0	Brown, fine to coarse SAND, some silt to SILT, some clay, trace fine sand, occasional cobbles Pockets of each material appear randomly interlayered with each other	SM to ML	Sand cone density at 5.5' (1.68m) $\gamma_d = 114.6$ (1836 kg/m ³) $w_L = 14.1$
1.07			
3.5			
3.66			

12.0

END OF PIT

Job No. 786085
Scale 1"=2.5'

Golder Associates

Drawn jls
Checked MCB

APPROX. N. 112600 ft. (N34320m)
COORD. E2273700 ft. (E693023m)

TEST PIT LOG TP-5

SHEET 1 OF 1

1705 ft.
SURFACE ELEV. Approx. (519.68m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 11/29/79

DATE COMPLETED 11/29/79

EQUIPMENT John Deere 690 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.152	Black to dark brown, fibrous rootmat	PT	Sand cone density at 6.0' (1.83m) $\gamma_d = 110.4$ pcf (1769 kg/m ³) $w_L = 4.8$
0.5	Light brown, fine to coarse SAND, some silt, trace clay	SM	
.610	-----		
2.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay, occasional cobbles and boulders Silt layer, maximum 6" thick at 4.0' Pocket of clean sand, some gravel over part of pit, 5' long, 12" thick at 8.0'	SM	
3.35			

11.0

END OF PIT

Job No. 786085
Scale 1"=2.5'

Golder Associates

Drawn jls
Checked MFE

APPROX. N111100 ft. (N33863m)

COORD. E2270100 ft. (E691926m)

TEST PIT LOG TP-6

SHEET 1 OF 1

SURFACE ELEV. APPROX. (495.3m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 11/30/79 DATE COMPLETED 11/30/79

EQUIPMENT John Deere 690 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.152	Black, rootmat and topsoil	PT	Sand cone density at 5.0'(1.52m) $\gamma_d=118.2$ pcf (1894 kg/m ³) $w\%=7.9$
0.5	Brown, fine to coarse SAND, some silt, trace fine gravel to Brown, silty, fine to coarse SAND, gray and orange silt layers at 5.0'	SM	
1.52 5.0	Light brown to red-brown, fine to coarse SAND, trace to some fine gravel, trace silt. Pocket of cobbles in part of the pit from 6.5' to 8.0' Pocket of medium to coarse sand over part of the pit from 8.5' to 10.0'	SP to SP-SM	
3.96 13.0	END OF PIT		

Job No. 786085
Scale 1"=2.5'

Golder Associates

Drawn jls
Checked RKE

APPROX. N115980 ft. (N35351m)

COORD. E2285270 ft. (E696550m)

TEST PIT LOG TP-7

SHEET 1 OF 1

SURFACE ELEV. *Approx. 1710 ft.
(521.21m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/12/81

DATE COMPLETED 3/12/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.15 0.5	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	Slow seep at 4.0' (1.22m)
.46 1.5	Brown, silty, fine to coarse SAND, some fine to coarse gravel	SM	
1.22 4.0	Brown, fine to coarse SAND, some silt, trace clay, occasional cobbles	SP-SM to SM	
	Brown to red-brown, fine to coarse SAND, some silt, trace clay, trace fine to coarse gravel, occasional cobbles and boulders	SM	
3.05 10.0	END OF PIT *Estimated from topographic map		SA-1, 7.5'-8.5' (2.29m-2.59m): % finer than #200 sieve=20.3% (By field sieve analysis)

b No. 786085

scale 1" = 2.5'

Golder Associates

Drawn MRB

Checked *MRB*

APPROX. N116100 ft. (N35387m)
COORD. 12285570 ft. (E696642m)
1709 ft.

TEST PIT LOG TP-8

SHEET 1 OF 1

SURFACE ELEV. *Approx. (520.90m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/12/81

DATE COMPLETED 3/12/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.30 1.0	Brown, silty fine to coarse SAND, trace fine to coarse gravel	SM	
3.66 12.0	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	Moderate seep at 8.0' (2.44m) SA-1, 9.0'-10.0' (2.74m-3.05m): % finer than #200 sieve=17.4% SA-2, 11.0'-12.0' (3.35m-3.66m): % finer than #200 sieve=17.1% (Both results by field sieve analyses)
	END OF PIT *Estimated from elevation of adjacent boring G41-J11		

Job No. 786085
Scale 1" = 2.5'

Golder Associates

Drawn MRB
Checked [Signature]

APPROX. N115960 ft. (N35345m)
 COOR. E2284920 ft. (E696444m) **TEST PIT LOG** TP-9 SHEET 1 OF 1
 1707 ft.
 SURFACE ELEV. *Approx. (520.29m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/12/81 DATE COMPLETED 3/12/81
 EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.30	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	Heavy seep starting at 4.0' (1.22m) forced abandonment of test pit
1.0	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace organics, occasional cobbles and boulders	SM	
1.07			
3.5	Cobbles and fine to coarse gravel	GP	
1.52			
5.0	END OF PIT *Estimated from topographic map		

APPROX. N116080 ft. (N35381m)
 COOR. E2284160 ft. (E696212m) **TEST PIT LOG** TP-10 SHEET 1 OF 1
 SURFACE ELEV. *Approx. (516.64m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/13/81 DATE COMPLETED 3/13/81
 EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.61	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
2.0			
	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt	SM	
3.05			
10.0	END OF PIT *Estimated from topographic map		

APPROX. N115720 ft. (N35271m)
 COOR. E2283900 ft. (E696133m) 1680 ft.
 TEST PIT LOG TP-11 SHEET 1 OF 1
 SURFACE ELEV. *Approx. (512.06m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/13/81 DATE COMPLETED 3/13/81
 EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.61 2.0	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
3.66 12.0	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	
	END OF PIT *Estimated from topographic map		

Job No. 786085
 Scale 1" = 2.5'

Golder Associates

Drawn MRR
 Checked *[Signature]*

APPROX. N115820 ft. (N35302m)

COORD. E2283800 ft. (E696102m)

TEST PIT LOG TP-12

SHEET 1 OF 1

SURFACE ELEV. *Approx. 1695 ft. (516.64m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/13/81 DATE COMPLETED 3/13/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.30 1.0	Brown, silty, fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
2.59 8.5	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	
	END OF PIT *Estimated from topographic map		

Job No. 786085

Scale 1" = 2.5'

Golder Associates

Drawn MRB

Checked *HW*

APPROX. N115320 ft. (N35120m)
 COOR. E2283920 ft. (E696139m) 1674 ft.
 TEST PIT LOG TP-13 SHEET 1 OF 1
 SURFACE ELEV. *Approx. (510.24m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/13/81 DATE COMPLETED 3/13/81
 EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.30 1.0	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
1.52 5.0	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM	
3.05 10.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt	SM	
	END OF PIT *Estimated from topographic map		

APPROX. N114480 ft. (N34894m)
 COOR. E2283040 ft. (E695871m) **TEST PIT LOG** TP-14 SHEET 1 OF 1
 SURFACE ELEV. *Approx. 1635 ft. (498.35m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/13/81 DATE COMPLETED 3/13/81
 EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
			Topsoil previously removed in this area
	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	
2.74			
9.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders with pockets of brown fine to coarse SAND, some silt	SM with SP-SM	
3.05			
10.0			
	END OF PIT *Estimated from topographic map		Slight seep at 8.0' (2.44m)

APPROX. N114860 ft. (N35009m)

COORD. E2282840 ft. (E695810m)

1643 ft.

SURFACE ELEV. *Approx. (500.79m)

TEST PIT LOG TP-15

SHEET 1 OF 1

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/13/81

DATE COMPLETED 3/13/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
1.52 5.0	Brown, silty fine to coarse SAND, some fine to coarse gravel, trace organics	SM	
3.05 10.0	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM	
	END OF PIT *Estimated from topographic map		

Job No. 786085

Scale 1" = 2.5'

Golder Associates

Drawn MRB.

Checked *Chw*

APPROX. N115920 ft. (N35332m)
 COOR. E2284090 ft. (E696191m) 1683 ft.
 SURFACE ELEV. *Approx. (512.38m)
 DATUM USGS MSL
 EQUIPMENT John Deere 410 Backhoe

TEST PIT LOG TP-16

SHEET 1 OF 1

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATE STARTED 3/13/81 DATE COMPLETED 3/13/81

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
2.44	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	
8.0	END OF PIT *Estimated from topographic map		

b No. 786085
 Scale 1" = 2.5'

Golder Associates

Drawn MRB
 Checked *Haw*

APPROX. N113860 ft. (N34705m) SHEET 1 OF 1
 COOR. E2282880 ft. (E695822m) **TEST PIT LOG** TP-17
 SURFACE ELEV. *Approx. (497.43m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/14/81 DATE COMPLETED 3/14/81
 EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.30	Black PEAT	OL	
1.0	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
.91 3.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	
3.05 10.0	END OF PIT *Estimated from topographic map		

APPROX. N113400 ft. (N34564m)
 COOR. E2282860 ft. (E695816m) **TEST PIT LOG** TP-18 SHEET 1 OF 1
 SURFACE ELEV. *Approx. (502.01m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 3/14/81 DATE COMPLETED 3/14/81
 EQUIPMENT John Deere 470 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.30 1.0	Brown, silty fine to coarse SAND, some fine to coarse gravel, trace organics	SM	
3.05 10.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay, occasional cobbles and boulders	SM	
	END OF PIT *Estimated from topographic map and elevation of adjacent boring G41-E15		

APPROX. N112460 ft. (N34278m)

COORD. E2283060 ft. (E695877m)

1666 ft.

TEST PIT LOG TP-19SHEET 1 OF 1SURFACE ELEV. *Approx. (507.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEMDATUM USGS MSL DATE STARTED 3/14/81 DATE COMPLETED 3/14/81EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	Slight seep at 4.0' (1.22m)
.91 3.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay, occasional cobbles and boulders	SM	
1.52 5.0	Red-brown, fine to coarse SAND, trace fine to coarse gravel, trace to some silt	SP- SM	
2.13 7.0	END OF PIT *Estimated from topographic map and elevation of adjacent boring G41-E17		

Job No. 786085
Scale 1" = 2.5'

Golder Associates

Drawn MRB
Checked thw

APPROX. N112200 ft. (N34199m)
COORD. E2285500 ft. (E696620m)

TEST PIT LOG TP-20

SHEET 1 OF 1

1685 ft.
SURFACE ELEV. *Approx. (519.59m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/14/81

DATE COMPLETED 3/14/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
.30 1.0	Brown, silty fine to coarse SAND, some fine to coarse gravel, trace organics	SM	
2.74 9.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, trace silt, occasional cobbles and boulders	SM	
3.66 12.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, trace silt, occasional cobbles and boulders with pockets of brown, fine to coarse SAND, some fine to coarse gravel, trace to some silt	SP with SP-SM	
	END OF PIT *Estimated from topographic map and elevation of adjacent boring G41-J17		

Job No. 786085
Scale 1" = 2.5'

Golder Associates

Drawn MRB
Checked *HW*

APPROX. N109240 ft. (N33296m)
COORD. E2288320 ft. (E697480m)

TEST PIT LOG TP-21

SHEET 1 OF 1

SURFACE ELEV. *Approx. (526.39m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/14/81

DATE COMPLETED 3/14/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS.	REMARKS
0.30 1.0	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
	Brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders with occasional pockets of brown, fine to coarse SAND, trace to some silt, trace fine to coarse gravel	SP with SP-SM	
3.35 11.0	END OF PIT *Estimated from elevation of adjacent boring G41-N21		

Job No. 786085

Scale 1" = 2.5'

Golder Associates

Drawn MRB

Checked Haw

APPROX. N107600 ft. (N32796m)
COORD. E2288700 ft. (E697596m)
1682 ft.

TEST PIT LOG TP-22

SHEET 1 OF 1

SURFACE ELEV. *Approx. (512.67m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/81 DATE COMPLETED 3/14/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.3 1.0	Brown, silty fine to coarse SAND, trace fine to coarse gravel, trace organics	SM	
1.83 6.0	Red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	
3.35 11.0 3.66 12.0	Brown, fine to coarse GRAVEL and fine to coarse SAND, trace to some silt, frequent cobbles and boulders	SP-SM to GP-GM	
	Brown, fine to coarse gravelly, fine to coarse SAND, some silt	SM	
	END OF PIT *Estimated from elevation of adjacent boring G41-P24		

Job No. 786085
Scale 1" = 2.5'

Golder Associates

Drawn MRB
Checked *[Signature]*

APPROX. N114150 ft. (N34793m)

COORD. E2284250 ft. (E696239m)

1705 ft.

TEST PIT LOG TP-TW-41

SHEET 1 OF 1

SURFACE ELEV. *Approx. (519.68m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 5/23/81

DATE COMPLETED 5/23/81

EQUIPMENT John Deere 410 Backhoe

DEPTH METER FEET	DESCRIPTION	UNIFIED CLASS	REMARKS
.46	Dark reddish brown silty, fine to coarse SAND, some fine gravel, trace cobbles	SM	Bulk Sample from 2.0' to 3.0' (0.61m-0.91m)
1.5	Light brown, fine to coarse SAND, some silt, trace to some fine gravel	SM	
1.22			
4.0	Brown, fine to coarse SAND, some silt, some fine to coarse gravel, trace clay, trace cobbles	SM	Bulk Sample from 4.0' to 6.0' (1.22m-1.83m) with cobbles removed
2.44			
8.0	Brown and red-brown, silty fine to coarse SAND, some fine to coarse gravel, trace cobbles	SM	
4.88			
16.0	END OF PIT *Estimated from topographic map		

Job No. 786085

Scale 1" = 2.5'

Golder Associates

Drawn JFC

Checked *[Signature]*

COORD. N108060 ft. (N32937m)
E2266940 ft. (E690964m)

BORING LOG G40-D24

SHEET 1 of 6

SURFACE ELEV. 1629.9 ft. (496.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSI DATE STARTED 12/12/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
0.0		Compact, brown, fine to coarse SAND, some silt, trace to some fine to coarse gravel	SM	-	1	AS	-	-	
				25	2	DO	10-10-15	18/18	
2.29		Very dense, brown, fine to coarse SAND, trace fine to coarse gravel, trace to some silt, occasional cobbles	SP-SM						
7.5				74	3	DO	7-21-53	18/18	
				143	4	DO	41-102	12/12	
				196	5	DO	63-133	9/12	
6.86		Very dense, brown, silty, fine to coarse SAND, trace fine gravel to fine to coarse SAND, some silt, trace fine to coarse gravel, occasional cobbles	SM						
22.5				188	6	DO	45-143	11/12	
				186 9"	7	DO	61-125/3"	6/9	
				155 10"	8	DO	55-100/4"	7/10	
10.97		CONTINUED							
36.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked mle

COORD. N108060 ft. (N32937m)
E2266940 ft. (E690964m)

BORING LOG G40-D24

SHEET 2 OF 6

SURFACE ELEV. 1629.9 ft. (496.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/12/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
10.97 36.0		CONTINUED							
		Very dense, brown, silty, fine to coarse SAND, trace fine gravel to fine to coarse SAND, some silt, trace fine to coarse gravel, occasional cobbles	SM	154 10"	9	DO	54-100/4"	10/10	
				167 10"	10	DO	67-100/4"	9/10	
14.48 47.5		Very dense, brown, fine to coarse SAND, trace fine to coarse gravel, trace to some silt	SP SM	144 11"	11	DO	44-100/5"	9/11	
16.00 52.5				152	12	DO	52-100	7/12	
		Very dense, brown, fine to medium SAND, trace silt to fine to coarse SAND, some fine to coarse gravel, trace silt	SP	181 11"	13	DO	44-81-100 5"	13/17	
		Boulder noted at 54.0'-55.4'		154	14	DO	54-100	8/12	
21.03 69.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCB

COORD. N108060 ft. (N32937m)
E2266940 ft. (E690964m)

BORING LOG G40-D24

SHEET 3 OF 6

SURFACE ELEV. 1629.9 ft. (496.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/12/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 125 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
21.03 69.0		CONTINUED							
				185 10"	15	DO	38-85- 4"	100 4"	15/16
				166	16	DO	51-115	8/12	▼ 1-7-80 23.10 ≈ 75.8
				189 10"	17	DO	67-89- 4"	100 4"	14/16
		Very dense, brown, fine to medium SAND, trace silt to fine to coarse SAND, some fine to coarse gravel, trace silt	SP						
				152	18	DO	57-95	10/12	
				120	19	DO	42-78	10/12	
				100 5"					
				4	20	DO	55-100/5"	10/11	
				159	21	DO	49-110	7/12	
31.39 103.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RLB

COORD. N108060 ft. (N32937m)
E2266940 ft. (E690964m)

BORING LOG G40-D24

SHEET 4 OF 6

SURFACE ELEV. 1629.9 ft. (496.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/12/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
31.39		CONTINUED							
103.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCB

SURFACE ELEV. 1629.9 ft. (496.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
 DATUM USGS MSL DATE STARTED 12/12/79 DATE COMPLETED 12/20/79
 DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

[illegible]

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn: jls
Checked: MLB

COOR. N108060 ft. (N32937m)
E2266940 ft. (E690964m)

BORING LOG G40-D24

SHEET 6 OF 6

SURFACE ELEV. 1629.9 ft. (496.80m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/12/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC./ATT. (ins.)	
51.21		CONTINUED							CONTINUED
168.0		Very dense, brown, fine to coarse SAND, trace fine gravel, trace to some silt	SP SM	165 9"	28	DO	65-100/3"	9/9	Pea Gravel
53.34									53.04
175.0		Very dense, brown, fine to medium SAND, some silt (residual material)	SM	150 5"	29	DO	150/5"	3/5	174.0
55.93									56.08
183.5		Gray, metavolcanic TUFF							184.0
57.45									Pea Gravel
188.5		END OF BORING			30	AX RC	-	13/18	

NOTES

- Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24 in. (Samples 2 - 29)
- Elevation of top of protector pipe, 1632.3 ft. (497.52m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	1/7/80	6/11/80	7/26/80	9/10/80	6/10/81		
DEPTH (m)	23.10	23.16	23.13	23.23	23.32		
DEPTH (ft.)	75.8	76.0	75.9	76.2	76.5		

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCB

COORD. N113255 ft. (N34520m)
E2267520 ft. (E691141m)

BORING LOG G40-E16.

SHEET 1 OF 2

SURFACE ELEV. 1574.4 ft. (479.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/13/79 DATE COMPLETED 3/13/79

DRILL RIG Joy 125 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC / ATT. (ins.)	
0.15		Topsoil and rootmat		11	1	DO	3-5-6	12/18	
0.5									
				37	2	DO	14-18-19	18/18	
		Compact to very dense, light brown, fine to coarse SAND, trace fine to coarse gravel, trace to some silt	SP SM	35	3	DO	9-14-21	15/18	
				45	4	DO	14-17-28	14/18	
				70	5	DO	22-29-41	2/18	
				25	6	DO	9-12-13	12/18	
				21	7	DO	10-12-9	12/18	
10.36									
34.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RLB

COORD. N113255 ft. (N34520m)
E2267520 ft. (E691141m)

BORING LOG G40-E16

SHEET 2 OF 2

SURFACE ELEV. 1574.4 ft. (479.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/13/79 DATE COMPLETED 3/13/79

DRILL RIG Joy 125 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
10.36 34.0		CONTINUED							
		Compact to very dense, light brown, fine to coarse SAND, trace fine to coarse gravel, trace to some silt	SP-SM	30	8	DO	12-12-18	14/18	
				54	9	DO	12-22-32	18/18	
				35	10	DO	18-18-17	10/18	
15.70				85	11	DO	40-85-100	14/18	

51.5
END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

- Standard Penetration Test - Driving 2" O.D. sampler with 140 lb. hammer freely falling 30". (All samples)

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked as

COORD. N109650 ft. (N33422m)
E2267465 ft. (E691125m)

BORING LOG G40-E22

SHEET 1 OF 2

SURFACE ELEV. 1594.1 ft. (484.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/9/80 DATE COMPLETED 1/10/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC. / ATT. (ins.)	
0.0		Compact to very dense, brown, fine to coarse SAND, some silt, trace fine gravel to fine to coarse SAND, some fine to coarse gravel, some silt	SM	-	1	AS	-	-	
				23	2	DO	11-10-13	18/18	
				12	3	DO	4-5-7	18/18	
				18	4	DO	5-8-10	18/18	
		Very dense, brown to light brown, fine SAND, trace silt to fine to coarse SAND, trace silt	SP 1 SP- SM						
				24	5	DO	10-12-12	18/18	
				114	6	DO	27-57-57	18/18	
8.38 27.5									
				88	7	DO	25-38-53	12/18	
11.13 36.5				154	8	DO	39-115	7/12	
		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MLB

COOR. N109650 ft. (N33422m)
E2267465 ft. (E691125m)

BORING LOG G40-E22

SHEET 2 OF 2

SURFACE ELEV. 1594.1 ft. (484.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/9/80 DATE COMPLETED 1/10/80

DRILL RIG JOY 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
11.13		CONTINUED							
36.5		Very dense, brown to light brown, fine SAND, trace silt to fine to coarse SAND, trace silt	SP to SP- SM						
				85	9	D0	28-38-47	16/18	
				115	10	D0	23-44-71	15/18	
15.70				67	11	D0	21-27-40	16/18	

51.5
END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 11)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MKR

COORD. N111340 ft. (N33937m)
E2269350 ft. (E691699m)

BORING LOG G40-G19

SHEET 1 OF 2

SURFACE ELEV. 1649.9 ft. (502.90m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/21/79 DATE COMPLETED 3/21/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
0.30		Topsoil and rootmat							
1.0									
				67	1	DC	54-28-39	10/18	
				102	2	DC	35-79-23	6/18	
				46	3	DC	24-21-25	8/18	
		Dense to very dense, red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM	188	4	DC	58-89-100	12/15	
		Boulder at 22.5'-23.5'		179	5	DC	79-100/3"	8/9	
				200	6	DC	200/4"	4/4	
				200	7	DC	200/5"	3/5	
				200	8	DC	200/5"	5/5	
11.28									
37.01		CONTINUED							

Job No. 786025
Scale 1"=5'

Golder Associates

Drawn jls
Checked 003

COORD. N111340 ft. (N33937m)
E2269350 ft. (E691699m)

BORING LOG 640-G19

SHEET 2 OF 2

SURFACE ELEV. 1649.9 ft. (502.90m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/21/79 DATE COMPLETED 3/21/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC/ATT (ins.)	
11.28		CONTINUED							
37.0				200 5"	9	DO	200/5"	5/5	
				200 4"	10	DO	200/4"	4/4	
		Dense to very dense, red-brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM	200 3"	11	DO	200/3"	3/3	
				200 4"	12	DO	200/4"	4/4	
				200 4"	13	DO	200/4"	4/4	
19.96				162 6"	14	DO	162/6"	6/6	

65.5

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

- Standard Penetration Test - Driving 2" O.D. sampler with 140 lb. hammer freely falling 30". (All samples)

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *JB*

COORD. N107830 ft. (N32867m)
E2268850 ft. (E691548m)

BORING LOG G40-G24

SHEET 1 OF 3

SURFACE ELEV. 1658.7 ft. (505.57m)

PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 12/10/79

DATE COMPLETED 12/11/79

DRILL RIG Joy 12B

DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
0.0		Compact, brown, fine to coarse SAND, trace to some fine to coarse gravel, some silt, trace organics	SM	-	1	AS	-	-	
				21	2	DO	10-12-9	8/18	
2.29 7.5				40 7"	3	DO	15-25/1"	7/7	
		Very dense, brown to red-brown, fine to coarse SAND, some silt, trace fine gravel to fine to coarse gravelly, fine to coarse SAND, some silt, occasional cobbles and boulders Boulder noted at 10.5'-13.0'	SP- SM to SM to SW SM	90	4	DO	25-44-46	18/18	
				114	5	DO	26-38-76	18/18	
				151	6	DO	41-110	12/12	
				151	7	DO	43-108	10/12	
10.36									
34.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RCB

COOR. N107830 ft. (N32867m)
E2268850 ft. (E691548m)

BORING LOG G40-G24

SHEET 2 OF 3

SURFACE ELEV. 1658.7 ft. (505.57m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/10/79 DATE COMPLETED 12/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
10.36		CONTINUED							
34.0		Very dense, brown to red-brown, fine to coarse SAND, some silt, trace fine gravel to fine to coarse gravelly, fine to coarse SAND, some silt, occasional cobbles and boulders	SP- SM to SM to SW- SM	130	8	DO	28-54-76	15/18	
				148	9	DO	26-48-100	18/18	
				119	10	DO	27-56-63	18/18	
				147	11	DO	37-110	12/12	
16.76				153	12	DO	43-110	10/12	
55.0									
		Very dense, brown, fine to medium SAND, trace silt to fine to coarse SAND, trace fine gravel, trace silt	SP	198	13	DO	39-78-120	10/18	
				186 10"	14	DO	33-86- $\frac{100}{4}$ "	8/16	
20.73									
68.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *[Signature]*

COORD. N107830 ft. (N32867m)
E2268850 ft. (E691548m)

BORING LOG G40-G24

SHEET 3 OF 3

SURFACE ELEV. 1658.7 ft. (505.57m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/10/79 DATE COMPLETED 12/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
20.73		CONTINUED							
68.0		Very dense, brown, fine to medium SAND, trace silt to fine to coarse SAND, trace fine gravel, trace silt	SP	135 11"	15	DO	35-100/5"	7/11	
				148 11"	16	DO	48-100/5"	3/11	
				147 11"	17	DO	42-105/5"	3/11	
				190 9"	18	DO	90-100/3"	4/9	
				142 10"	19	DO	42-100/4"	6/10	
				143 11"	20	DO	43-100/5"	6/11	
				179 9"	21	DO	75-104/3"	5/9	
30.72									

100.8 END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 21)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *[signature]*

COORD. N106690 ft. (N32518m)
E2268660 ft. (E691490m)

BORING LOG G40-G26

SHEET 1 OF 3

SURFACE ELEV. 1678.7 ft. (511.65m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/7/79 DATE COMPLETED 12/12/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
0.0		Compact, brown, silty, fine to coarse SAND to fine to coarse SAND, some silt	SM	-	1	AS	-	-	
				17	2	DO	6-10-7	18/18	
2.29 7.5		Dense to very dense, brown, fine to coarse SAND, trace to some fine to coarse gravel, trace to some silt, occasional cobbles	SP-SM						
				25	3	DO	10-10-15	18/18	
				186	4	DO	39-83-103	18/18	
				130	5	DO	32-54-76	8/18	
6.86 22.5		Very dense, brown, silty, fine to coarse SAND, trace fine to coarse gravel to fine to coarse SAND, some silt, some fine to coarse gravel, occasional cobbles and boulders	SM						
				171	6	DO	39-71-100	18/18	
				172 11"					
				7	DO	72-100/5"	10/11		
				155 5"					
				8	DO	55-100/5"	10/11		
10.97 36.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked P. C. P.

COORD. N106690 ft. (N32518m)
E2268660 ft. (E691490m)

BORING LOG G40-G26

SHEET 2 OF 3

SURFACE ELEV. 1678.7 ft. (511.65m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/7/79 DATE COMPLETED 12/12/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
10.97 36.0		CONTINUED							
					9	DO	No Recovery	0/0	
					179 10"	10 DO	54-125/4"	7/10	
		Very dense, brown, silty, fine to coarse SAND, trace fine to coarse gravel to fine to coarse SAND, some silt, some fine to coarse gravel, occasional cobbles and boulders	SM		155	11 DO	45-110	10/12	
		Boulder noted at 38.5'-39.5'			200	12 DO	42-90-110	18/18	
					150	13 DO	50-100	9/12	
					145	14 DO	37-60-85	18/18	
20.57 67.5		Very dense, fine to coarse SAND, trace fine to coarse gravel, trace to some silt	SP-170 SM 170"		15	DO	70-100/4"	7/10	
21.64 71.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked pkb

COORD. N106690 ft. (N32518m)
E2268660 ft. (E691490m)

BORING LOG G40-G26

SHEET 3 OF 3

SURFACE ELEV. 1678.7 ft. (511.65m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/7/79 DATE COMPLETED 12/12/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS.	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC./ATT. (ins.)	
21.64 71.0		CONTINUED							
		Very dense, fine to coarse SAND, trace fine to coarse gravel, trace to some silt	SP- SM						
				146	16	D0	46-100	12/12	
				150	17	D0	29-55-95	14/18	
25.15 82.5									
		Very dense, brown, fine to coarse SAND, trace silt, trace fine gravel	SP						
				181 17	18	D0	44-81-100 5"	17/17	
				150 10"	19	D0	50-100/4"	7/10	
				189 8"	20	D0	89-100/2"	7/8	
30.78 101.0									
				155	21	D0	55-100	12/12	

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 21)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCB

COORD. N115275 ft. (N35135m)

E2269330 ft. (E691693m)

BORING LOG G40-H13SHEET 1 OF 6SURFACE ELEV. 1762.2 ft. (537.12m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEMDATUM USGS MSLDATE STARTED 3/14/79DATE COMPLETED 3/21/79DRILL RIG Joy 12B

DRILLING METHOD

Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1) (ins.)	REC / ATT.	
0.15 0.5		topsoil and rootmat		8	1	D0	1-4-4	12/18	
		Loose to compact, red-brown, fine to medium SAND, trace to some fine gravel, trace silt	SP- SM						
			to SM	16	2	D0	5-8-8	18/18	
2.44 8.0									
				43	3	D0	12-18-25	18/18	
				95	4	D0	20-45-50	18/18	
		Dense to very dense, red- brown, fine to coarse SAND, trace to some fine to coarse gravel, trace to some silt, occasional cobbles and boulders (layer of fine to medium sand, trace silt at 20.0') Boulders and cobbles noted at 14.0'-15.0' and 24.0'-24.5'	SP- SM						
			to SM	85	5	D0	15-25-60	14/18	
				140	6	D0	40-100	4/12	
				225	7	D0	75-150	12/12	
				180	8	D0	50-130	10/12	
11.28 37.0		CONTINUED							

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RB

COOR. N115275 ft. (N35135m)
E2269330 ft. (E691693m)

BORING LOG G40-H13

SHEET 2 OF 6

SURFACE ELEV. 1762.2 ft. (537.12m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/21/79

DRILL RIG Joy 12E DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
11.28		CONTINUED						
37.0		Dense to very dense, red-brown, fine to coarse SAND, trace to some fine to coarse gravel, trace to some silt, occasional cobbles and boulders	SP- SM to SM	142	9	DO	50-67-75	18/18
		Boulders and cobbles noted at 49.0'-50.0' and 51.0'-51.5'		155	10	DO	55-100	3/12
				205 9"				
				11	DO	55-150/3"	6/9	
16.15								
53.0				100 4"	12	DO	35-85- ¹⁰⁰ ₄	8/10
		Very dense, light brown, fine to coarse SAND, trace to some silt, occasional cobbles	SP- SM to SM	172 9"	13	DO	35-72- ¹⁰⁰ ₃	9/9
				170	14	DO	50-120	6/12
21.79				174	15	DO	44-130	4/12
71.5		CONTINUED						

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MB

COORD. N115275 ft. (N35135m)
E2269330 ft. (E691693m)

BORING LOG G40-H13

SHEET 3 OF 6

SURFACE ELEV. 1762.2 ft. (537.12m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/14/79

DATE COMPLETED 3/21/79

DRILL RIG Jay 125

DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC/ATT (ins.)	
21.79									
71.5		Very dense, light brown, fine to coarse SAND, trace to some silt, occasional cobbles		172					
22.25				11"					
73.0		SP-SM to SM			16	DO	72-100/5"	3/10	
				200					
				3"	17	DO	200/3"	0/3	
		Very dense, light brown to red-brown, fine to coarse SAND, trace to some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	165					
				6"	18	DO	165/6"	1/6	
				320					
				10'					
					19	DO	80-240/4"	3/10	
				270	20	DO	70-200	10/12	
				75					
				2"	21	DO	75/2"	1/2	
32.61									
107.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn JLS
Checked OCB

SURFACE ELEV. 1762.2 ft. (537.12m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/21/79

DRILL RIG Joy 12E DRILLING METHOD Mud Rotary

[illegible]

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn — jls —
Checked *ac* —

COOR. N115275 ft. (N35135m)

E2269330 ft. (E691693m)

BORING LOG G40-H13

SHEET 5 OF 6

SURFACE ELEV. 1762.2 ft. (537.12m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/21/79

DRILL RIG Joy 125 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLCT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC. / ATT. (ins.)	
42.67		CONTINUED							
140.0									
				320	25	DO	46-120-200	14/18	
		Very dense, light brown to red-brown, fine to coarse SAND, trace to some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	250	26	DO	38-100-150	8/16	
				310					
				9"					
				27	DO		160-150/3"	6/9	
52.12									
171.0		CONTINUED							

Job No. 786035

Scale 1"=5'

Golder Associates

Drawn jls

Checked JCB

COORD. N115275 ft. (N35135m)
E2269330 ft. (E691693m)

BORING LOG G40-H13

SHEET 6 OF 6

SURFACE ELEV. 1762.2 ft. (537.12m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/21/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1) REC. / ATT. (ins.)	
52.12		CONTINUED						
171.0								
				255 7"	28	DO	155-100/1" 4/7	
		Very dense, light brown to red-brown, fine to coarse SAND, trace to some fine to coarse gravel, some silt, occasional cobbles and boulders	SM	200 1"	29	DO	200/1" 0/1	
				250 4"	30	DO	250/4" 3/4	
59.53								
195.3								

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 300 lb. hammer freely falling 20". (Samples 1-19, 23 and 24)

Penetration Test - Driving 2" O.D. sampler with 300 lb. hammer freely falling 20". (Samples 20-22 and 25-30)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked JB

COORD. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 1 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC. / ATT. (ins.)	
0.0		Compact to dense, brown, silty, fine to coarse SAND, trace clay, organic matter throughout	SM	-	1	AS	-	-	
				21	2	DO	6-11-10	18/13	
2.13		Dense to very dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt	SM	14	3	DO	5-7-7	16/13	
7.0				17	4	DO	11-9-3	12/13	
				26	5	DO	12-13-13	0/18	
				30	6	DO	16-14-16	14/18	
				116 10"					
					7	DO	30-86/4"	6/10	
8.38		Very dense, brown, fine to coarse SAND, trace silt	SP						
27.5				56	8	DO	17-21-35	12/13	
9.91		Very dense, brown, fine to coarse gravelly fine to coarse SAND to fine to coarse SAND, some fine to medium gravel, trace to some silt, occasional cobbles and boulders	SP- SM to SM	150 9'					
32.5					9	DO	50-100/3"	9/9	
11.13									
36.5		CONTINUED							

Job No. 786035
Scale 1"=5'

Golder Associates

Drawn jls
Checked oob

COOR. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 2 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79
DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
11.13		CONTINUED							
36.5		Very dense, brown, fine to coarse gravelly fine to coarse SAND to fine to coarse SAND, some fine to medium gravel, trace to some silt, occasional cobbles and boulders	SP- SM to	110					
				4"	10	DO	110/4"	3/4	
			SM						
13.41		Very dense, light brown, fine to medium SAND, some silt, trace fine gravel, trace clay		121	11	DO	26-49-72	12/18	
44.0				172					
				6"	12	DO	172/6"	0/6	
			SM						
				58					
				10"					
				13	DO		58-100/4"	6/10	
17.69		Very dense, brown, silty fine to coarse SAND, some fine to medium gravel to fine to coarse gravelly fine to coarse SAND, some silt		163					
58.0				10"					
				14	DO		63-100/4"	10/10	
			SM						
				87	15	DO	30-57	12/12	
20.57		Very dense, brown, fine to medium SAND, trace silt	SP						
67.5				154	16	DO	55-99	12/12	
21.79									
71.5		CONTINUED							

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *CB*

COOR. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG 640-H16

SHEET 3 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
21.79									
22.10		Very dense, brown, fine to medium SAND, trace silt	SP						
72.5				152 10"					
					17	DO	52-100/4"	8/10	
		Very dense, brown to red-brown, fine to coarse SAND, trace fine gravel, trace to some silt	SP SM	167 10"					
					18	DO	62-105/4"	10/10	
				144 10"					
					19	DO	44-100/4"	10/10	
26.67									
87.5				169 9"					
					20	DO	69-100/3"	9/9	
				181 10"					
		Very dense, brown to red-brown, fine to coarse SAND, trace silt	SP		21	DO	81-100/4"	10/10	
				122 6"					
					22	DO	122/6"	6/6	
32.00									
105.0		Very dense, brown, fine to coarse SAND, some fine gravel, trace silt	SP						
32.61									
107.0		CONTINUED							

Grout (to surface)
2" Solid PVC Pipe to Surface

Bentonite
Clay Seal

CONTINUED

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *DB*

COORD. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 4 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC. / ATT. (ins.)	
32.61		CONTINUED							CONTINUED
107.0		Very dense, brown, fine to coarse SAND, some fine gravel, trace silt	SP	164 10'					Bentonite Clay Seal
					23	DO	64-100/4"	8/10	33.53 110.0
34.90		Very dense, brown, fine to medium SAND, trace fine gravel, trace to some silt, occasional boulders	SP-SM	156 10'					2" Solid PVC pipe Pea Gravel
114.5					24	DO	56-100/4"	8/10	
					96	25 DO	31-65	10/12	
41.15		Stiff, brown fine SAND, some silt to SILT, some fine to medium sand							
135.0									
42.52									
139.5		CONTINUED							CONTINUED

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked as

COORD. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 5 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
42.52		CONTINUED							CONTINUED
139.5		Stiff, brown fine SAND, some silt to SILT, some fine to medium sand	SM to ML	115	26	DO	31-50-65	18/18	2" Solid PVC Pipe Pea Gravel
									44.20
									145.0
				128	27	DO	30-98	12/12	2" Slotted PVC Pipe Pea Gravel
									47.24
									155.0
									Pea Gravel
									48.16
									158.0
									(Note 2)
				98	28	DO	14-26-72	18/18	
				154					
				10'					
					29	DO	54-100/4"	10/10	
52.43									
172.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *as*

COORD. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 6 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
52.43		CONTINUED							
172.0		Stiff, brown SILT and fine to medium SAND to SILT, some fine to medium sand	SM to ML						
53.34									
175.0									
				115 6"	30	DO	115/6"	4/6	
		Very dense red-brown, fine to coarse SAND, some fine to medium gravel, some silt, trace clay	SM						
				150	31	DO	40-110	12/12	
59.44									
195.0									
		Very dense, red-brown, fine to coarse SAND, some silt, trace to some clay, trace fine to coarse gravel, occasional cobbles and boulders	SM						
				130	32	DO	29-101	12/12	
62.18									
204.0									
		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked AB

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 125 DRILLING METHOD Mud Rotary

[illegible]

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MB

COORD. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 8 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/29/79

DRILL RIG JOV 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
72.85		CONTINUED		115				
239.0				6" 36	DO	115/6"	6/6	
		Very dense, red-brown, fine to coarse gravelly fine to coarse SAND, trace silt to fine to coarse gravelly fine to coarse SAND and SILT	SP- SM to SM					
				- 37	NX RC	-	90 90	
79.86								
262.0		Green-gray, weathered, metavolcanic TUFF		-	-	Drill Cuttings	-	
81.69								
268.0		END OF BORING						(Note 2)

NOTES

1. Penetration test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 25". (Samples 2 - 36)
2. Rock core barrel and drilling rod left in borehole at 158.0 ft. (48.16m) to 268.0 ft. (81.69m). Borehole caved to 158.0'.

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked gld

COORD. N113260 ft. (N34522m)
E2269110 ft. (E691626m)

BORING LOG G40-H16

SHEET 9 OF 9

SURFACE ELEV. 1617.1 ft. (492.88m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/14/79 DATE COMPLETED 3/28/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

NOTES (continued)

3. Elevation of top of protector pipe, 1619.5 ft. (493.61m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	4/19/79	11/12/79	7/26/80	9/10/80			
DEPTH (m)	17.34	17.01	17.22	17.25			
DEPTH (ft.)	56.9	55.8	56.5	56.6			

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn JEE
Checked SPB

COORD. N105930 ft. (N32287m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 1 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6IN. (Note 1)	REC/ATT. (ins.)	
0.0		Compact, brown, silty, fine to coarse SAND, trace fine to coarse gravel to fine to coarse SAND, some silt, trace fine to coarse gravel	SM	-	1	AS	-	-	
				13	2	DO	7-5-8	18/18	
2.29 7.5		Dense to very dense, light brown to brown, fine to coarse SAND, trace to some fine to coarse gravel, trace to some silt, occasional cobbles and boulders	SP SM						
				26	3	DO	7-11-15	18/18	
				88	4	DO	30-36-52	18/18	
				87	5	DO	28-41-46	18/18	
				93	6	DO	20-33-60	18/18	
8.38 27.5		Very dense, brown, fine to coarse SAND and SILT, trace clay	SM	158 11"	7	DO	58-100/5"	10/11	
9.91 32.5									
10.52 34.5		See next page							
		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MRB

COORD. N105930 ft. (N32287m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 2 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
10.52		CONTINUED		163					
34.5				10"	8	DO	63-100/4"	8/10	
				125					
				6"	9	DO	125/6"	6/6	
		Very dense, brown, fine to medium SAND, some silt to fine to coarse SAND, some silt, trace fine to coarse gravel	SM						
				162					
				9"	10	DO	62-100/3"	6/9	
				148					
				10"	11	DO	48-100/4"	6/10	
				141					
				10"	12	DO	41-100/4"	10/10	
				163					
				13	DO	26-53-110	18/18		
19.05				152					
62.5				11"					
		Very dense, light brown to brown, fine to coarse SAND, trace to some silt, trace fine gravel to fine to coarse SAND, some fine gravel, trace silt	SP to SP-SM						
				14	DO	52-100/5"	11/11		
21.18									
69.5		CONTINUED							

▼ 1/7/80 15.94
52.3

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked PLC

COORD. N105930 ft. (N32887m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 3 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
21.18		CONTINUED							
69.5				185 10"	15	DO	35-85-100 4"	14/16	
				30 0"	16	DO	30/0"	0/0	
				185 11"	17	DO	35-85-100 5"	15/17	
			SP to SP- SM						
				103 6"	18	DO	103/6"	5/6	
				162 11"	19	DO	58-104/5"	10/11	
				160 11"	20	DO	60-100/5"	10/11	
				157	21	DO	53-104	10/12	
31.39									
103.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RLL

COORD. N105930 ft. (N32887m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 4 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSI DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
31.39 103.0		CONTINUED							
		Very dense, light brown to brown, fine to coarse SAND, trace to some silt, trace fine gravel to fine to coarse SAND, some fine gravel, trace silt	SP to SP-SM	135	22	DO	38-55-80	16/18	
				168 11"	23	DO	34-68-100 5"	17/17	
38.1 125.0		Very dense, brown, fine to coarse SAND, some silt, trace to some fine to coarse gravel	SM	105 5"	24	DO	105/5"	5/5	
41.61 136.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCE

COORD. N105930 ft. (N32887m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 5 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79
DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
41.61		CONTINUED							
136.5				100 4"	25	DO	100/4"	3/4	
				100 5"	26	DO	100/5"	5/5	
		Very dense, brown, fine to coarse SAND, some silt, trace to some fine to coarse gravel	SM						
				40 0"	27	DO	40/0"	0/0	
50.90									
167.0		CONTINUED							

Grout
(to surface)

Bentonite
Clay Seal

Pea Gravel

2" Solid PVC Pipe to Surface

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked PAB

COORD. N105930 ft. (N32887m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 6 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
50.90		CONTINUED							CONTINUED
167.0		Very dense, brown, fine to coarse SAND, some silt, trace to some fine to coarse gravel	SM	100 5"	28	DO	100/5"	3/5	2" Solid PVC Pipe 52.12 171.0
				167 8"	29	DO	90-77/2"	7/8	2" Slotted PVC Pipe 55.17 181.0
									Pea Gravel (to bottom of boring)
57.91		Very dense, brown, silty, fine to coarse SAND, trace fine gravel	SM	100 1"	30	DO	100/1"	1/1	
190.0									
60.35		CONTINUED							
198.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked PHE

COORD. N105930 ft. (N32887m)
E2269650 ft. (E691790m)

BORING LOG G40-H27

SHEET 7 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
60.35		CONTINUED							
198.0		Very dense, brown, silty, fine to coarse SAND, trace fine gravel	SM	105				5.5"	
				5.5"	31	DO	105/5.5"	5.5"	
62.48		Greenish-gray, highly weathered to weathered metavolcanic TUFF		100					
205.0				5"	32	DO	100/5"	5/5	
				100					
				4"	33	DO	100/4"	4/4	
				100					
				3"	34	DO	100/3"	0/3	
70.71		CONTINUED							
232.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked FLB

COOR. N105930 ft. (N32887m)
E2269650 ft. (E691790m)

BORING LOG G40-H29

SHEET 8 OF 8

SURFACE ELEV. 1602.1 ft. (488.33m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/11/79 DATE COMPLETED 12/20/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
70.71		CONTINUED							
232.0									
		Greenish-gray, highly weathered to weathered metavolcanic TUFF		40 0"	35	D0	40/0"	0/0	
					-	-	Drill Cuttings	-	
76.2									

250.0 END OF BORING

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 35)
2. Elevation of top of protector pipe, 1604.0 ft. (488.91m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	1/7/80	6/28/80	7/26/80	9/10/80			
DEPTH (m)	15.94	16.00	16.00	16.03			
DEPTH (ft.)	52.3	52.5	52.5	52.6			

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MKB

COOR. N113810 ft. (N34689m)
E2270150 ft. (E691943m)

BORING LOG G40-J15

SHEET 1 OF 2

SURFACE ELEV. 1603.6 ft. (488.79m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/2/79 DATE COMPLETED 3/2/79

DRILL RIG Joy 12E DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC/ATT (ins.)	
0.0		Soft, brown, highly organic, clayey SILT and PEAT	PT	-	1	AS	-	-	2" Solid PVC Pipe Grout
1.83									
6.0		Compact, gray-green, fine to medium SAND, trace to some silt, occasional layer of firm gray-green silty clay with trace fine sand	SM to CL	-	2	TO	Push	-	
				13	3	DO	3-5-8	12/18	
				16	4	DO	10-9-7	9/18	
4.88									
16.0		Soft to stiff, gray-green, SILT, some clay	CL	-	5	TO	Push	30/30	
				9	6	DO	3-4-5	18/18	
				12	7	DO	3-5-7	18/18	
8.84									
29.0		Dense to very dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt to fine to coarse gravelly fine to coarse SAND, some silt	SM	76	8	DO	44-42-34	12/18	Bentonite Clay Seal
10.21									Pea Gravel
33.5		CONTINUED							CONTINUED

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked as

COORD. N113810 ft. (N34689m)
E2270150 ft. (E691943m)

BORING LOG G40-115

SHEET 2 OF 2

SURFACE ELEV. 1603.6 ft. (488.79m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/2/79 DATE COMPLETED 3/2/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC./ATT. (ins.)	
10.21		CONTINUED							CONTINUED
33.5		Dense to very dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt to fine to coarse gravelly fine to coarse SAND, some silt	SM	52	9	DO	30-30-22	10/18	2" Solid PVC Pipe Pea Gravel 11.28 37.0
				98	10	DO	30-28-70	10/18	2" Slotted PVC Pipe Pea Gravel 4/18/79 12.62 41.4
				44	11	DO	68-24-20	6/18	14.33 47.0
15.70				48	12	DO	19-56-92	4/18	

51.5 END OF BORING

NOTES

- Standard Penetration Test - Driving 2" O.D. sampler with 140 lb. hammer freely falling 30". (Samples 3, 4 and 6 - 12)
- Elevation of top of protector pipe, 1605.6 ft. (489.39m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	4/18/79	11/11/79	11/12/79	6/12/80	7/26/80	9/10/80	
DEPTH (m)	12.62	12.22	11.73	12.16	12.25	12.31	
DEPTH (ft.)	41.4	40.1	38.5	39.9	40.2	40.4	

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RLB

COOR. N111140 ft. (N33876m)
E2269905 ft. (E691869m)

BORING LOG G40-J20

SHEET 1 OF 3

SURFACE ELEV. 1629.7 ft. (496.72m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/10/80 DATE COMPLETED 1/14/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
0.0		Compact, brown, silty, fine to coarse SAND, trace to some fine to coarse gravel	SM						
				-	1	AS	-	-	
				14	2	DO	3-5-9	18/18	
2.29 7.5		Compact to very dense, brown, fine to coarse SAND, some fine to coarse gravel, trace to some silt to fine to coarse SAND, trace fine gravel, trace silt	SP to SP- SM						
				16	3	DO	5-8-8	16/18	
				69	4	DO	16-26-43	8/18	
				111	5	DO	20-44-67	16/18	
		Very dense, light brown to brown, fine to medium SAND, some silt to fine to coarse SAND, some silt, trace fine to coarse gravel	SM						
				84	6	DO	26-49-35	18/18	
8.38 27.5									
				120	7	DO	35-85	12/12	
10.52 34.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MKB

COORD. N111140 ft. (N33876m)
E2269905 ft. (E691869m)

BORING LOG G40-J20

SHEET 2 OF 3

SURFACE ELEV. 1629.7 ft. (496.72m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/10/80 DATE COMPLETED 1/14/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			REMARKS	
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)		REC./ATT. (ins.)
10.52		CONTINUED							
34.5		Very dense, light brown to brown, fine to medium SAND, some silt to fine to coarse SAND, some silt, trace fine to coarse gravel	SM	145	8	DO	27-55-90	18/18	
				79	9	DO	20-32-47	15/18	
12.95		Very dense, brown to light brown, fine SAND, trace silt to fine to coarse SAND, some fine gravel, trace silt	SP to SP SM	130	10	DO	30-100/4"	8/10	
42.5				184	11	DO	84-100/3"	8/9	
				132	12	DO	32-100/4"	10/10	
				147	13	DO	47-100/4"	8/10	
				156	14	DO	56-100/2"	8/8	
20.42		CONTINUED							
67.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MLB

COORD. N111140 ft. (N33876m)
E2269905 ft. (E691869m)

BORING LOG G40-J20

SHEET 3 OF 3

SURFACE ELEV. 1629.7 ft. (496.72m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/10/80 DATE COMPLETED 1/14/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
20.42		CONTINUED							
67.0		Very dense, brown to light brown, fine SAND, trace silt to fine to coarse SAND, some fine gravel, trace silt	SP to SP- SM						
				109	15	DO	35-74	10/12	
23.16				136	16	DO	41-95	10/12	
76.0									

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 16)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MLG

COORD. N115130 ft. (N35091m)
E2270885 ft. (E692167m)

BORING LOG

G40-K13

SHEET 1 OF 2

SURFACE ELEV. 1600.9 ft. (487.97m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/1/79 DATE COMPLETED 3/1/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
0.30		Fibrous, brown organic matter	PT	-	1	AS	-	-	(Note 2)
1.0		Loose, green-brown, fine to coarse SAND, some silt	SM	-	2	TO	Push	22/30	Grout
				-	3	TO	Push	29/30	
				5	4	DO	3-3-2	18/18	
4.27		Very soft, gray-green, silty CLAY, trace fine sand (thin seams of fine to medium sand)	CL	1	5	DO	1/12-1/12	18/18	2" Solid PVC Pipe
14.0									
6.71		Compact to dense, brown to gray-brown, fine to medium SAND, some gravel, some silt	SM	-	6	TO	Push	24/30	Bentonite Clay Seal
22.0									
				40	7	DO	10-23-17	18/18	
				39	8	DO	13-18-21	12/18	Pea Gravel
10.36		CONTINUED							CONTINUED
34.0									

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *as*

COORD. N115130 ft. (N35091m)
E2270885 ft. (E692167m)

BORING LOG G40-K13

SHEET 2 OF 2

SURFACE ELEV. 1600.9 ft. (487.97m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/1/79 DATE COMPLETED 3/1/79

DRILL RIG Joy 125 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
10.36		CONTINUED							CONTINUED 10.36
34.0									34.0
		Compact to dense, brown to gray-brown, fine to medium SAND, some gravel some silt	SM	19	9	DO	10-10-9	12/18	3/20/79 11.43 37.5
				15	10	DO	10-6-9	8/18	Pea Gravel
									13.41
				35	11	DO	17-20-15	8/18	44.0
									Bentonite Clay Seal
15.32				100	3	12	DO	100/3"	3/3
50.25		END OF BORING							

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 25". (Samples 4, 5 and 7 - 12)
2. Water ponded on ground surface, 4/18/79.
3. Elevation of top of protector pipe, 1603.8 ft. (488.84m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	3/20/79	11/11/79	11/12/79	9/10/80			
DEPTH (m)	11.43	10.36	10.67	10.85			
DEPTH (ft.)	37.5	34.0	35.0	35.6			

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MB

COORD. N111060 ft. (N33852m)
E2271025 ft. (E692210m)

BORING LOG G40-L19

SHEET 1 OF 4

SURFACE ELEV. 1671.3 ft. (509.42m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/17/79 DATE COMPLETED 3/20/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC/ATT. (ins.)	
0.30		Topsoil and rootmat							
1.0									
					71	1 DO	17-19-52	8/18	
					17	2 DO	9-9-8	12/18	
		Compact to very dense, red-brown to brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM		13	3 DO	8-7-6	12/18	
					21	4 DO	9-10-11	10/18	
					43	5 DO	22-23-20	5/18	
					43	6 DO	20-21-22	9/18	
					104	7 DO	34-49-55	12/18	
9.91									
32.5		CONTINUED							

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked AB

COORD. N111060 ft. (N33852m)
E2271025 ft. (E692210m)

BORING LOG G40-L19

SHEET 2 OF 4

SURFACE ELEV. 1671.3 ft. (509.42m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/17/79 DATE COMPLETED 3/20/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
9.91		CONTINUED							
32.5									
					200	8 DO	72-100-100	13/15	
					218	9 DO	87-131	8/12	
					200	4" 10 DO	200/4"	4/4	
					171	9" 11 DO	71-100/3"	7/9	
		Compact to very dense, red-brown to brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM						
					100	3" 12 DO	100/3"	3/3	
					163	13 DO	59-104	9/12	
					189	10"			
					14	DO	89-100/4"	9/10	
20.42									
67.0		CONTINUED							

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked as

COORD. N111060 ft. (N33852m)
E2271025 ft. (E692210m)

BORING LOG G40-L19

SHEET 3 OF 4

SURFACE ELEV. 1671.3 ft. (509.42m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM
DATUM USGS MSL DATE STARTED 3/17/79 DATE COMPLETED 3/20/79
DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
20.42		CONTINUED							
67.0									
					193	15 DO	61-81-112	9/18	
		Compact to very dense, red-brown to brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay	SM		151	16 DO	69-60-91	9/18	
					200				
					3"	17 DO	200/3"	0/3	
					202				
					10"				
						18 DO	102-100/4"	10/10	
26.82									
88.0					200				
					6"				
						19 DO	200/6"	6/6	
		Very dense, brown, fine to coarse SAND, some silt, trace fine to coarse gravel	SM		212				
					6"	20 DO	212/6"	6/6	
					200				
					4"	21 DO	200/4"	4/4	
30.94									
101.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked DB

SURFACE ELEV. 1671.3 ft. (509.42m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/17/79 DATE COMPLETED 3/20/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLCT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
30.94 101.5		CONTINUED						
		Very dense, brown, fine to coarse SAND, some silt, trace fine to coarse gravel						
			SM	230 6"	22	DO	230/6"	6/6
36.73								

120.5 END OF BORING
- HOLE GROUTED AT COMPLETION

NOTES

1. Standard Penetration Test - Driving 2" O.D. sampler with 140 lb. hammer freely falling 30". (Samples 5-23)

Penetration Test - Driving 3" O.D. sampler with 300 lb. hammer freely falling 20". (Samples 1-4)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked *as*

COOR. N108920 ft. (N33200m)
E2271065 ft. (E692222m)

BORING LOG G40-L23

SHEET 1 OF 3

SURFACE ELEV. 1639.3 ft. (499.65m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/14/80 DATE COMPLETED 1/15/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC/ATT. (ins.)	
0.0									
				-	1	AS	-	-	
				17	2	DO	7-7-10	18/18	
				66	3	DO	15-26-40	18/18	
			SM						
		Compact to very dense, red-brown to brown, fine to coarse SAND, some silt, trace fine to coarse gravel to fine to coarse SAND, some fine to coarse gravel, some silt, occasional to frequent cobbles		109	4	DO	26-83	10/12	
				133	5	DO	28-54-79	17/18	
				114	6	DO	31-52-62	18/18	
				113	7	DO	46-67	10/12	
				117	8	DO	32-85	9/12	
11.13									
36.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked KCB

COORD. N108920 ft. (N33200m)
E2271065 ft. (E692222m)

BORING LOG G40-L23

SHEET 2 OF 3

SURFACE ELEV. 1639.3 ft. (499.65m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/14/80 DATE COMPLETED 1/15/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
11.13		CONTINUED							
36.5									
		Compact to very dense, red-brown to brown, fine to coarse SAND, some silt, trace fine to coarse gravel to fine to coarse SAND, some fine to coarse gravel, some silt, occasional to frequent cobbles	SM	147 9"	9	DO	47-100/3"	6/9	
				142	10	DO	25-59-83	18/18	
				140	11	DO	52-88	10/12	
16.76									
55.0				98	12	DO	31-67	8/12	
		Very dense, light brown to brown, fine SAND, trace silt to fine to coarse SAND, trace silt	SP to SP- SM	143 10"	13	DO	43-100/4"	8/10	
				142 10"	14	DO	42-100/4"	7/10	
20.27									
66.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MBB

COORD. N108920 ft. (N33200m)
E2271065 ft. (E692222m)

BORING LOG G40-L23

SHEET 3 OF 3

SURFACE ELEV. 1639.3 ft. (499.65m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/14/80 DATE COMPLETED 1/15/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			GROUNDWATER OBSERVATION WELL			
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)		REC/ATT. (ins.)		
20.27 66.5		CONTINUED									
		Very dense, light brown to brown, fine SAND, trace silt to fine to coarse SAND, trace silt	SP to SP- SM	151 9"	15	DO	51-100/3"	6/9	Grout (to surface) 21.64 71.0 Bentonite Clay Seal 22.56 74.0 Pea Gravel 2/11/80 23.38 76.7 23.47 77.0 Pea Gravel 26.52 87.0 Pea Gravel		
						124 8"	16	DO		74-50/2"	6/8
						141 11"	17	DO		41-100/5"	10/11
						147 10"	18	DO		47-100/4"	10/10
						145 11"	19	DO		45-100/5"	9/11
27.68											

90.9

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

- Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 19)
- Elevation of top of protector pipe, 1641.2 ft. (500.24m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	2/11/80	7/10/80	5/20/80	7/26/80	8/11/80	9/10/80	
DEPTH (m)	23.38	23.38	23.47	23.41	23.44	23.47	
DEPTH (ft.)	76.7	76.7	77.0	76.8	76.9	77.0	

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RAE

COORD. N114595 ft. (N34928m)
E2271820 ft. (E692452m)

BORING LOG G40-M14

SHEET 1 OF 3

SURFACE ELEV. 1649.6 ft. (502.79m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/15/79 DATE COMPLETED 3/16/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLCT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
0.15 0.5		Topsoil and rootmat						
				42	1	DO	19-23-19	12/18
				17	2	DO	9-9-8	12/18
				40	3	DO	23-17-23	11/18
		Compact to very dense, red to red-brown, fine to coarse SAND, some silt, some gravel, trace clay	SM	100 6"	4	DO	100/6"	6/6
				108 6"	5	DO	108/6"	6/6
				178 6"	6	DO	173/6"	6/6
				100 4"	7	DO	100/4"	4/4
				147 6"	8	DO	147/6"	6/6
10.97 36.0		CONTINUED						

Job No 786085
Scale 1"=5'

Golder Associates

Drawn JLS
Checked AB

COORD. N114595 ft. (N34928m)
E2271820 ft. (E692452m)

BORING LOG G40-M14

SHEET 2 OF 3

SURFACE ELEV. 1649.6 ft. (502.79m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/15/79 DATE COMPLETED 3/16/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLCT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
10.97		CONTINUED							
36.0		Compact to very dense, red to red-brown, fine to coarse SAND, some silt, some gravel, trace clay	SM	200					
				1" 9 DO 200/1" 0/1					
13.72		Very dense, brown, fine to coarse SAND, trace silt, trace gravel, occasional boulders	SP	183					
45.0				10" 10 DO 83-100/4" 10/10					
				100					
				4" 11 DO 100/4" 4/4					
				153					
		6" 12 DO 153/6" 6/6							
		151							
		6" 13 DO 151/6" 6/6							
		174							
		6" 14 DO 174/6" 6/6							
21.18		CONTINUED							
69.5									

Job No 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RB

COORD. N114595 ft. (N34928m)
E2271820 ft. (E692452m)

BORING LOG G40-M14

SHEET 3 OF 3

SURFACE ELEV. 1649.6 ft. (502.79m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/15/79 DATE COMPLETED 3/16/79

DRILL RIG Mobile B-61 DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLLOT	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN (Note 1)	REC/ATT (ins.)	
21.18		CONTINUED		183					
69.5				6	15	DO	183/6"	6/6	
				216					
				6	16	DO	216/6"	6/6	
				112					
		Very dense, brown, fine to coarse SAND, trace silt, trace gravel, occasional boulders	SP	6	17	DO	112/6"	6/6	
				431	18	DO	145-236	12/12	
				300					
				5	19	DO	300/5"	5/5	
				300					
28.96				0	20	DO	300/0"	0/0	
95.0									

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 300 lb. hammer freely falling 20". (All samples)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked AB

COOR. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 1 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT (ins.)	
0.08		Topsoil and rootmat							
0.25		Compact, brown, fine SAND, some silt, trace clay, occasional cobbles	SM	-	1a	AS	-	-	
				-	1b	AS	-	-	
2.13				27	2	DO	8-16-11	18/18	
7.0		Dense to very dense, brown to red-brown, fine to coarse SAND, some gravel, some silt, trace clay	SM	57	3	DO	18-22-35	18/18	
				30	4	DO	17-11-19	12/13	
				63	5	DO	23-25-38	10/18	
				75	6	DO	16-33-42	4/18	
				102	7	DO	45-41-61	15/18	
				118 6	8	DO	118/6"	6/6	
10.36									
34.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked as

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 2 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
10.36		CONTINUED							
34.0									
		Dense to very dense, brown to red-brown, fine to coarse SAND, some gravel, some silt, trace clay	SM	142					
				10					
					10	DO	42-100/4"	8/10	
				107	11	DO	39-68	12/12	
14.48									
47.5									
				140	12	DO	48-92	10/12	
		Compact to very dense, brown, fine to coarse SAND, some fine gravel, trace silt	SP						
				108	13	DO	39-35-73	12/18	
				68	14	DO	28-30-38	8/18	
				95	15	DO	28-38-57	16/18	
20.73									
68.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked 203

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 3 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
20.73		CONTINUED							
68.0		Compact to very dense, brown, fine to coarse SAND, some fine gravel, trace silt	SP						▼ 4/18/79 21.25 ≈ 69.7
				82	16	DO	23-33-49	12/18	
				12	17	DO	6-5-7	15/18	
				35	18	DO	15-14-21	16/18	
26.67									
87.5				38	19	DO	9-13-25	15/18	
		Very dense, brown, fine SAND to fine to coarse SAND, trace silt	SP						
				90	20	DO	26-38-52	18/18	
				60	21	DO	22-24-36	18/18	
				145	22	DO	24-48-97	18/18	
31.39									
103.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked AB

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 4 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL

DATE STARTED 3/28/79

DATE COMPLETED 4/11/79

DRILL RIG Joy 12B

DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWs / FOOT	SAMPLES			GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
31.39		CONTINUED						
103.0								
				161 10'				
				23	DO	61-100/4"	10/10	
		Very dense, brown, fine SAND to fine to coarse SAND, trace silt	SP					
				138 9'				
				24	DO	63-75/3"	8/9	
				153 10'				
				25	DO	53-100/4"	6/10	
41.0								
134.5		CONTINUED						

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked JCB

COOR. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 5 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
41.0		CONTINUED							
134.5		Very dense, brown, fine SAND to fine to coarse SAND, trace silt	SP						
41.91									
137.5		Stiff, brown SILT, trace fine sand to stiff, brown SILT, some fine sand, trace fine gravel	ML	75	26	DO	16-21-54	16/18	
45.42				162					
149.0		Very dense, brown to red- brown, fine to coarse SAND, some silt	SM	9	27	DO	62-100/3"	6/9	
				120	28	DO	26-94	12/12	
50.29									
165.0		Very dense, brown to red- brown, fine SAND, trace silt	SP to SP SM						
51.51									
169.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked OCB

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 6 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
51.51		CONTINUED		125					
169.0				7" 29	DO	100-25/1"	7/7		
				155					
				10" 30	DO	55-100/4"	6/10		
		Very dense, brown to red-brown, fine SAND, trace to silt	SP to SP- SM						
				191	31	DO	56-135	8/12	
				135					
				9" 32	DO	60-75/3"	9/9		
62.64									
205.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MB

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 7 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
62.64		CONTINUED							
205.5									
				130 9"					
					33	DO	60-70/3"	3/9	
		Very dense, brown to red- brown, fine SAND, trace silt	SP to SP- SM						
				127 9"					
					34	DO	77-50/3"	9/9	
68.58									
225.0									
				140 8"					
					35	DO	90-50/2"	6/8	
		Very dense, brown, silty fine SAND with thin silt layers to stiff brown SILT with seams of silt and fine sand	SM to ML						
72.85									
239.0		CONTINUED							

Job No. 785085
Scale 1"=5'

Golder Associates

Drawn jls
Checked JB

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS.	BLOWS / FOOT	SAMPLES			GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
72.85		CONTINUED						
239.0		Very dense, brown, silty fine SAND with thin silt layers to stiff brown SILT with seams of silt and fine sand	SM to ML	128 10				
				36 DO 28-100/4" 10/10				
76.20		Very dense, red-brown, silty fine to coarse SAND, some fine to coarse gravel, trace clay	SM	135 10				
250.0				37 DO 35-100/4" 0/10				
				128 11				
				38 DO 28-100/5" 11/11				
82.91								
272.0		CONTINUED						

Grout
(to surface)

2" Solid PVC Pipe to Surface

79.25
Bentonite 260.0
Clay Seal 80.47
264.6

2" Slotted PVC Pipe

Pea Gravel

CONTINUED

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked as

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 9 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
82.91		CONTINUED							CONTINUED
272.0		Very dense, red-brown, silty fine to coarse SAND, some fine to coarse gravel, trace clay	SM	-	39	BX RC	-	24/24	Pea Gravel 83.52 274.0
86.87									Pea Gravel (to bottom of boring)
285.0									
93.12		Hard, red and green CLAY (residual material)	CH	-	-	-	Drill Cuttings	-	
305.5									
		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked AB

COORD. N113660 ft. (N34644m)
E2271735 ft. (E692426m)

BORING LOG G40-M15

SHEET 10 OF 10

SURFACE ELEV. 1637.6 ft. (499.13m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 3/28/79 DATE COMPLETED 4/11/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
93.12		CONTINUED							
305.5		Hard, red and green CLAY (residual material)	CH	-	-	-	Drill Cuttings	-	
94.49									(Note 2)
310.0									

NOTES

- Standard Penetration Test - Driving 2" O.D. sampler with 140 lb. hammer freely falling 30". (Samples 2 - 9)

Penetration Test - Driving 2" O.D. sampler with 360 lb. hammer freely falling 25". (Samples 10 - 22)

Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 25". (Samples 23 - 38)
- Split tube sampler left in bottom of borehole.
- Elevation of top of protector pipe, 1639.2 ft. (499.63m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	4/18/79	11/12/79	6/12/80	7/26/80	9/10/80		
DEPTH (m)	21.25	20.42	20.73	20.85	20.88		
DEPTH (ft.)	69.7	67.0	68.0	68.4	68.5		

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked 208

COOR. N117145 ft. (N35706m)
E2273040 ft. (E692823m)

BORING LOG G40-P10

SHEET 1 OF 3

SURFACE ELEV. 1634.0 ft. (498.06m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/5/79 DATE COMPLETED 12/19/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
0.0				-	1	AS	-	-	
		Compact to very dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt to fine to coarse gravelly, fine to coarse SAND some silt, occasional cobbles, boulders on ground surface	SM	15	2	DO	8-7-8	18/18	
				33	3	DO	13-13-20	18/18	
		Cobbles and boulders noted at 23.0'-24.0' and 27.0'-27.7'		97	4	DO	16-37-60	18/18	
				150	5	DO	50-100/4"	6/10	
				173	6	DO	73-100/5"	6/11	
8.44		Very dense, brown, fine to coarse SAND, trace to some fine to coarse gravel, trace silt	SP to SP SM						
27.7				170	7	DO	34-75-95	18/18	
				185	8	DO	85-100/4"	6/10	
10.97									
36.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked M.B.B.

COORD. N117145 ft. (N35706m)
E2273040 ft. (E692823m)

BORING LOG G40-P10

SHEET 3 OF 3

SURFACE ELEV 1634.0 ft. (498.06m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/5/79 DATE COMPLETED 12/19/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

NOTES

1. Standard Penetration Test - Driving 2" O.D. sampler with 140 lb. hammer freely falling 30". (Sample 11)

Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 10)

Penetration Test - Driving 3" O.D. sampler with 140 lb. hammer freely falling 30". (Samples 12 - 15)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked _____

Coor. N112710 ft. (N34355m)
E2273490 ft. (E692961m)

BORING LOG G40-P17

SHEET 1 OF 3

SURFACE ELEV. 1707.9 ft. (520.58m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/5/79 DATE COMPLETED 12/6/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
0.0		Dense, brown, silty, fine to coarse SAND, some fine to coarse gravel to fine to coarse SAND, some silt	SM	-	1	AS	-	-	
				43	2	DO	8-21-22	12/18	
				28	3	DO	15-16-12	18/18	
4.06		Dense to very dense, brown, fine to coarse SAND, trace silt to fine to coarse gravelly, fine to coarse SAND, trace silt Boulder noted at 27.0'-28.5'	SP-SM	45	4	DO	13-20-25	18/18	
16.0									
				128 11"	5	DO	19-48-80 5"	17/17	
				34	6	DO	26-20-14	18/18	
8.38		Very dense, brown, silty, fine to coarse SAND, to fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles	SM						
27.5				195	7	DO	51-70-125	16/18	
10.36		CONTINUED							
34.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MB

COOR. N112710 ft. (N34355m)
E2273490 ft. (E692961m)

BORING LOG G40-P17

SHEET 2 OF 3

SURFACE ELEV. 1707.9 ft. (520.58m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/5/79 DATE COMPLETED 12/6/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
10.36 34.0		CONTINUED		138 9"	8	DO	38-100/3"	7/9	
		Very dense, brown, silty, fine to coarse SAND to fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles	SM	188 9"	9	DO	88-100/3"	7/9	
12.95 42.5		Very dense, brown, fine to coarse SAND, trace fine gravel, trace silt	SP	193 9"	10	DO	93-100/3"	7/9	
14.48 47.5		Very dense, brown, silty, fine to coarse SAND, trace fine gravel to fine to coarse gravelly, fine to coarse SAND, some silt, frequent cobbles and boulders	SM	130 5"	11	DO	130/5"	3/5	
				50 0"	12	DO	50/0"	0/0	
				100 4"	13	DO	100/4"	2/4	
				150 5"	14	DO	150/5"	3/5	
20.73 68.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked mlb

COORD. N112710 ft. (N34355m)
E2273490 ft. (E692961m)

BORING LOG G40-P17

SHEET 3 OF 3

SURFACE ELEV. 1707.9 ft. (520.58m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 12/5/79 DATE COMPLETED 12/6/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES			REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	
20.73		CONTINUED						
68.0				150 5"	15	DO	150/5"	0/5
		Very dense, brown, silty, fine to coarse SAND, trace fine gravel to fine to coarse gravelly, fine to coarse SAND, some silt, frequent cobbles and boulders	SM	140 6"	16	DO	140/6"	4/6
				50 0"	17	DO	50/0"	0/0
				150 6"	18	DO	150/6"	5/6
				210	19	DO	72-138	5/12
28.19				112 5"	20	DO	112/5"	3/5
92.5		Very dense, brown, fine to coarse SAND and fine to coarse gravel, trace silt to fine to coarse SAND, some fine to coarse gravel, trace silt	SP to SW					
				125 6"	21	DO	125/6"	3/6
30.63								

100.5 END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 21)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RCB

COOR. N111070 ft. (N33854m)
E2273515 ft. (E692969m)

BORING LOG G40-P20

SHEET 1 OF 3

SURFACE ELEV. 1641.1 ft. (500.21m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/2/80 DATE COMPLETED 1/3/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC/ATT. (ins.)	
0.0		Compact, brown, fine to coarse SAND, some silt, trace fine to coarse gravel	SM	-	1	AS	-	-	
				21	2	DO	8-9-12	18/18	
2.29		Dense to very dense, brown, fine to coarse SAND, trace to some silt, trace fine gravel to fine to coarse SAND, some fine to coarse gravel, trace to some silt	SP-SM						
7.5				31	3	DO	10-15-16	16/18	
				36	4	DO	12-19-17	15/18	
				44	5	DO	29-21-23	13/18	
		Very dense, brown, fine to coarse SAND, some silt, trace fine gravel	SM						
8.38									
27.5				19	7	DO	9-10-9	18/18	
10.36		CONTINUED							
34.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MLB

COORD. N111070 ft. (N33854m)
E2273515 ft. (E692969m)

BORING LOG G40-P20

SHEET 2 OF 3

SURFACE ELEV. 1641.1 ft. (500.21m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/2/80 DATE COMPLETED 1/3/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL		
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)			
10.36		CONTINUED		157							
34.0		Very dense, brown, fine to coarse SAND, some silt, trace fine gravel	SM	111	8	DO	57-100/5"	11/11			
						180	9	DO	53-80-100/5"	17/17	
12.95		Very dense, light brown to brown, fine to medium SAND, trace silt to fine to coarse SAND, some fine to coarse gravel, trace silt, occasional cobbles	SP to SP-SM	144	10	DO	44-100/5"	8/11			
42.5											
						147	11	DO	42-105	9/12	
						168	12	DO	68-100/4"	7/10	
				205	13	DO	105-100/4"	6/10			
				172	14	DO	72-100/25"	5/8.5			
20.73		CONTINUED									
68.0											

Grout (to surface)

2" Solid PVC Pipe to Surface

Bentonite Clay Seal

Pea Gravel

Pea Gravel

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCB

COORD. N111070 ft. (N33854m)
E2273515 ft. (E692969m)

BORING LOG G40-P20

SHEET 3 OF 3

SURFACE ELEV. 1641.1 ft. (500.21m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/2/80 DATE COMPLETED 1/3/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
20.73		CONTINUED							CONTINUED
68.0		Very dense, light brown to brown, fine to medium SAND, trace silt to fine to coarse SAND, some fine to coarse gravel, trace silt, occasional cobbles	SP to SP- SM	45	15	D0	19-24-21	12/18	1/15/80 21.46 70.4
									Pea Gravel
				97	16	D0	16-36-61	17/18	23.16 76.0
									Pea Gravel
24.69				151	17	D0	41-110	12/12	
81.0									

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 17)
2. Elevation of top of protector pipe, 1643.3 ft. (500.88m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	1/16/80	6/12/80	9/10/80				
DEPTH (m)	21.46	21.12	21.24				
DEPTH (ft.)	70.4	69.3	69.7				

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked MCB

COORD. N119050 ft. (N36287m)
E2274350 ft. (E693223m)

BORING LOG G40-07

SHEET 1 OF 3

SURFACE ELEV. 1608.1 ft. (490.14m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/16/80 DATE COMPLETED 1/17/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLAT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
0.0		Brown, silty, fine to coarse SAND, trace fine gravel, trace organics	SM						
				-	1	AS	-	-	
1.37		Compact, brown, fine to coarse SAND, trace to some silt	SP- SM						
4.5				22	2	DO	8-10-12	18/18	
		Dense to very dense, brown silty fine to coarse SAND, some fine to coarse gravel to silty, fine to coarse gravelly, fine to coarse SAND	SM	9	3	DO	4-4-5	18/18	
3.81									
12.5				31 8"	4	DO	13-18/2"	7/8	
				105 6"	5	DO	20-55-50	12/15	
6.86		Very dense, light brown to brown, fine to medium SAND, trace silt to fine to coarse SAND, trace silt	SP to SP- SM						
22.5				133 11"					
					6	DO	33-100/5"	9/11	
					7	DO	28-100/5"	9/11	
				97	8	DO	22-75	10/12	
11.13									
36.5		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked mlb

COORD. N119050 ft. (N36287m)
E2274350 ft. (E693223m)

BORING LOG G40-Q7

SHEET 2 OF 3

SURFACE ELEV. 1608.1 ft. (490.14m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/16/80 DATE COMPLETED 1/17/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC. / ATT. (ins.)	
11.13		CONTINUED							
36.5		Very dense, light brown to brown, fine to medium SAND, trace silt to fine to coarse SAND, trace silt	SP to SP-SM	103 9"	9	DO	25-53-50 3"	12/15	Grout (to surface) 2/11/80 13.01
									42.7
				144	10	DO	18-46-98	15/18	14.17
									46.5
15.24									Bentonite Clay Seal
50.0				96	11	DO	33-63	11/12	15.24
									50.0
				44	12	DO	10-20-24	17/18	Pea Gravel
									17.37
		Very dense, red-brown to brown, fine to coarse SAND, some fine to coarse gravel, some silt, trace clay to fine to coarse gravelly, fine to coarse SAND, some silt, occasional cobbles	SM	50 6"	13	DO	50/6"	5/6	57.0
				165 10"	14	DO	30-65-100 4"	15/16	Pea Gravel
									20.42
		Boulder noted at 61.0'-62.5'							67.0
				100 6"	15	DO	100/6"	4/6	Pea Gravel
21.49									
70.5		END OF BORING HOLE GROUTED AT COMPLETION							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked NBB

COOR. N119050 ft. (N35287m)

E2274350 ft. (E693223m)

BORING LOG G40-07SHEET 3 OF 3SURFACE ELEV. 1608.1 ft. (490.14m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEMDATUM USGS MSL DATE STARTED 1/16/80 DATE COMPLETED 1/17/80DRILL RIG Joy 12B DRILLING METHOD Mud RotaryNOTES

1. Penetration Test - Driving 3" O.D. samples with 360 lb. hammer freely falling 24". (Samples 2 - 15)
2. Elevation of top of protector pipe, 1609.9 ft. (490.70m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	2/11/80	5/19/80	8/12/80	9/10/80	6/10/81		
DEPTH (m)	13.01	13.50	13.08	13.08	13.29		
DEPTH (ft.)	42.7	44.3	42.9	42.9	43.6		

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked EPB

COORD. N108770 ft. (N33153m)
E2274805 ft. (E693361m)

BORING LOG G40-R23

SHEET 1 OF 3

SURFACE ELEV. 1620.3 ft. (493.87m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/3/80 DATE COMPLETED 1/8/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
0.0		Compact to very dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt to fine to coarse gravelly, fine to coarse SAND, some silt	SM	-	1	AS	-	-	
				26	2	DO	9-12-14	18/18	
				59	3	DO	12-14-45	12/18	
3.81		Very dense, brown, fine to medium SAND, trace silt, to fine to coarse SAND, some fine to coarse gravel, trace silt, occasional cobbles	SP to SP- SM						
12.5									
				59	4	DO	9-16-43	4/18	
				76	5	DO	18-28-48	18/18	
				88	6	DO	28-45-43	18/18	
				100 4"	7	DO	100/4"	0/4	
10.36		CONTINUED							
34.0									

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn ils
Checked RLB

COORD. N108770 ft. (N33153m)
E2274805 ft. (E693361m)

BORING LOG G40-R23

SHEET 2 OF 3

SURFACE ELEV. 1620.3 ft. (493.87m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/3/80 DATE COMPLETED 1/8/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
10.36		CONTINUED							
34.0		Very dense, brown, fine to medium SAND, trace silt, to fine to coarse SAND, some fine to coarse gravel, trace silt, occasional cobbles	SP to SP- SM	158 0"	8	DO	20-55-103 3"	12/15	
				174 8"	9	DO	74-100/2"	6/8	
		Boulder noted at 45.0'-46.5' and 48.8'-49.8'							
					10	DO	Boulder	0/0	
14.48		Very dense, red-brown, fine to coarse SAND, some silt, trace fine gravel, trace clay	SM	115 1"	11	DO	115/1"	1/1	
47.5									
					139	12	DO	10-44-95	12/18
				160 9"	13	DO	60-100/3"	7/9	
19.05		Very dense, brown, fine to medium SAND, trace to some silt to fine to coarse SAND, trace to some silt, trace fine gravel	SP- SM						
62.5					134	14	DO	39-95	12/12
21.03		CONTINUED							
69.0									

Grout
(to surface)

2" Solid PVC Pipe to Surface

15.42
50.6

17.07
56.0

Bentonite
Clay Seal

18.29
60.0

Pea Gravel

20.12
66.0

Pea Gravel

CONTINUED

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked AKB

COOR. N108770 ft. (N33153m)
E2274805 ft. (E693361m)

BORING LOG G40-R23

SHEET 3 OF 3

SURFACE ELEV. 1620.3 ft. (493.87m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 1/3/80 DATE COMPLETED 1/8/80

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				GROUNDWATER OBSERVATION WELL
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC / ATT. (ins.)	
21.03		CONTINUED							CONTINUED
69.0		Very dense, brown, fine to medium SAND, trace to some silt to fine to coarse SAND, trace to some silt, trace fine gravel	SP-SM	134	15	DO	39-95	12/12	Pea Gravel
				96	16	DO	31-65	12/12	23.16
									76.0
24.69				87	17	DO	24-63	12/12	Pea Gravel
81.0		END OF BORING							

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 17)
2. Elevation of top of protector pipe, 1622.45 ft. (494.52m).

Table of Water Level Readings by Date. Readings Indicate Depth Below Ground Surface.

DATE	1/15/80	2/11/80	5/20/80	6/11/80	7/26/80	8/12/80	9/10/80
DEPTH (m)	15.42	15.54	15.42	15.51	15.42	15.51	15.51
DEPTH (ft.)	50.6	51.0	50.6	50.9	50.6	50.9	50.9

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked msb

COOR. N116240 ft. (N35430m)
E2275365 ft. (E693533m)

BORING LOG G40-S11

SHEET 1 OF 3

SURFACE ELEV. 1639.9 ft. (499.84m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSI DATE STARTED 11/26/79 DATE COMPLETED 11/27/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT. PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS	
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)		
0.0		Compact, brown, fine SAND, some silt, trace clay	SM	-	1	AS	-	-		
				11	2	DO	2-4-7	18/18		
2.29										
7.5		Compact, brown, fine to coarse SAND, trace fine gravel, trace silt	SP							
				15	3	DO	8-7-8	9/18		
				25	4	DO	9-12-13	12/18		
5.33		Compact to dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles	SM							
17.5				21	5	DO	10-10-11	18/18		
				34	6	DO	13-13-21	14/18		
				61	7	DO	27-28-33	14/18		
10.06										
33.0		CONTINUED								

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked ME

COORD. N116240 ft. (N35430m)
E2275365 ft. (E693533m)

BORING LOG G40-S11

SHEET 2 OF 3

SURFACE ELEV. 1639.9 ft. (499.84m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 11/26/79 DATE COMPLETED 11/27/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ ATT. (ins.)	
10.06		CONTINUED							
33.0		Compact to dense, brown, fine to coarse SAND, some fine to coarse gravel, some silt, occasional cobbles	SM						
10.97				71	8	DO	28-31-40	15/18	
36.0									
				154	9	DO	32-122	8/12	
				137	10	DO	37-100	7/12	
			SP to SP-SM	162	11	DO	50-112	7/12	
		Very dense, brown, gravelly, fine to coarse SAND, trace silt to fine to coarse SAND, trace fine gravel, trace silt							
				217	12	DO	80-137	8/12	
				137	13	DO	52-67-70	12/18	
				86	14	DO	24-36-50	14/18	
20.42									
67.0		CONTINUED							

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked RLB

COORD. N116240 ft. (N35430m)
E2275365 ft. (E693533m)

BORING LOG G40-S11

SHEET 3 OF 3

SURFACE ELEV. 1639.9 ft. (499.84m) PROJECT EXXON CRANDON TAILINGS DISPOSAL SYSTEM

DATUM USGS MSL DATE STARTED 11/26/79 DATE COMPLETED 11/27/79

DRILL RIG Joy 12B DRILLING METHOD Mud Rotary

DEPTH METER FEET	STRAT PLOT	DESCRIPTION	UNIFIED CLASS	BLOWS / FOOT	SAMPLES				REMARKS
					NUMBER	TYPE	HAMMER BLOWS PER 6 IN. (Note 1)	REC./ATT. (ins.)	
20.42		CONTINUED							
67.0		Very dense, brown, gravelly, fine to coarse SAND, trace silt to fine to coarse SAND, trace fine gravel, trace silt	SP to SP- SM						
				158	15	DO	33-53-105	14/18	
				198	16	DO	30-73-125	14/18	
24.63				220 9"	17	DO	110-110/3"	8/9	
80.8									

END OF BORING
HOLE GROUTED AT COMPLETION

NOTES

1. Penetration Test - Driving 3" O.D. sampler with 360 lb. hammer freely falling 24". (Samples 2 - 17)

Job No. 786085
Scale 1"=5'

Golder Associates

Drawn jls
Checked ALB

NORTH



NOTE
BASEMAP PROVIDE BY EXXON MINERALS COMPANY

- LEGEND
- GOLDER ASSOCIATES BORINGS
 - DAMES & MOORE BORINGS
 - TEST PIT LOCATIONS
 - COUNTY LINE

SCALE IN METERS
0 250 500 750 1000

FIGURE V2

Golder Associates Atlanta, Georgia			
EXXON MINERALS COMPANY CRANDON PROJECT			
TITLE BORING LOCATION PLAN			
SCALE AS SHOWN	STATE WISCONSIN	COUNTY FOREST, LANGLADE	
DRAWN BY CAB	DATE 9-14-81	CHECKED BY 7B	DATE 10/6/81
APPROVED BY [Signature]	DATE 10/6/81	APPROVED BY [Signature]	DATE 10/6/81
APPROVED BY [Signature]	DATE 10/6/81	APPROVED BY [Signature]	DATE 10/6/81
DRAWING NO. 050-1-81328		SHEET OF	
REVISION NO.		REVISION NO.	

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UW-STEVENS POINT



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