Multiple-Purpose Project
Little Blue River Basin
Little Blue River,
Missouri

AD-A241 910

Longview Lake

Operation and Maintenance Manual

Appendix V
Supplement A

Embankment Criteria a
Performance Report

US Army Corps
of Engineers
Kansas City District

91-134

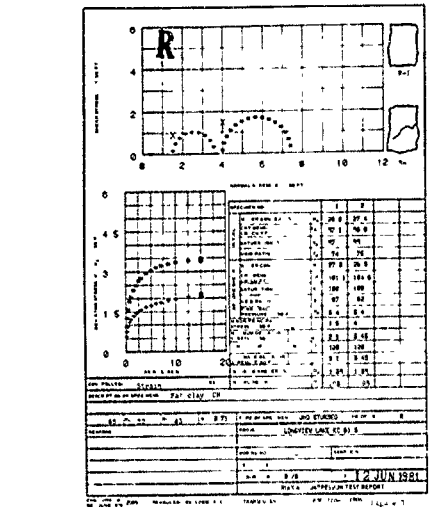
0

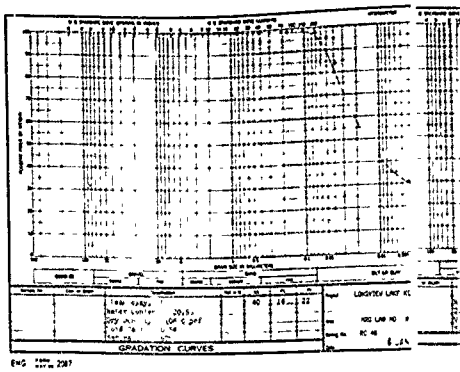
al

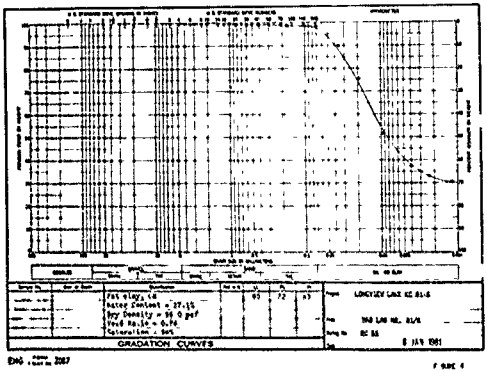
Criteria and Report

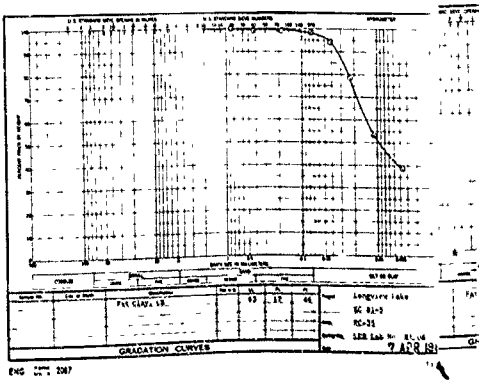
DRAWINGS IN THIS FOLIO HAVE BEEN REDUCED TO ONE HALF THE ORIGINAL SCALE

91-1344


R
Strain
Fat clay CH
LONGVIEW LAKE KC 81-5
12 JUN 1981


GRADATION CURVES
LONGVIEW LAKE KC
ENG 2087


Fat clay, CH
Water Content = 27.1%
Dry Density = 96.0 pcf
Void Ratio = 0.76
Saturation = 96%
GRADATION CURVES
LONGVIEW LAKE KC 81-5
8 JAN 1981
ENG 2087


Fat clay, CH
GRADATION CURVES
Longview Lake
KC 81-5
RC-31
7 APR 1981
ENG 2087

DTIC
ELECTE
NTIS GRA&I
DTIC TAB
Unannounced
Justification
By
Distribution/
Availability Codes
Avail and/or
Dist Special
A-1

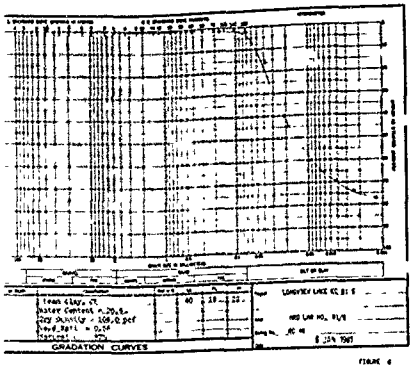


Figure 4

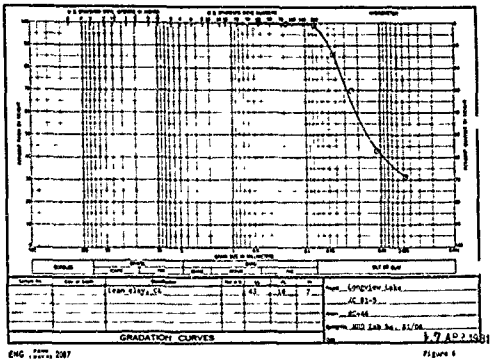


Figure 6

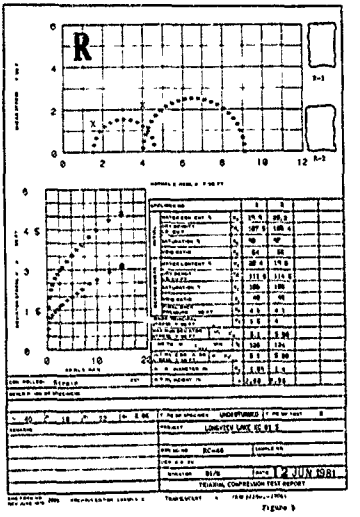


Figure 9

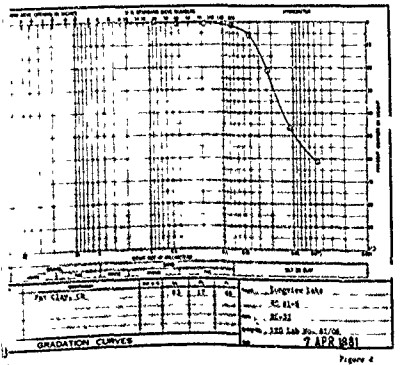


Figure 8

DRAWINGS IN THIS FOLIO HAVE BEEN REDUCED TO ONE HALF THE ORIGINAL SCALE

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

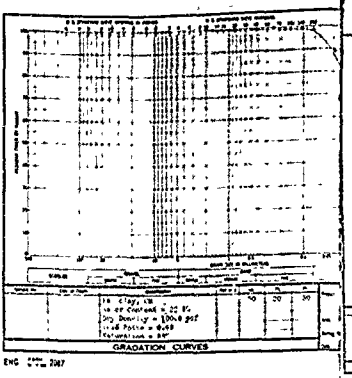
US Army Corps of Engineers

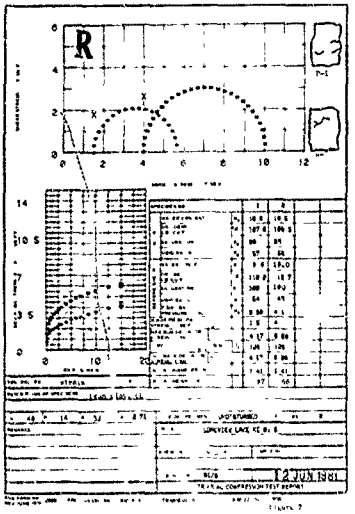
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

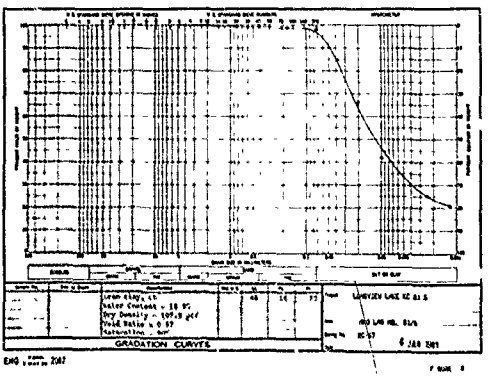
LL 55 IMPERVIOUS STAGE I
RECORD CONTROL R, R, AND
GRADATION TESTS

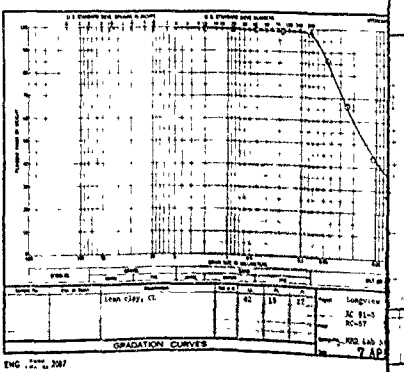
Designed by: R.G.D.	Scale: AS SHOWN	Sheet number: 1 of 16	
Drawn by: P.S.T.	Date:		
Checked by: R.G.D./W.B.E.	Dwg. No.:		FSO No. RBL-3-1488
Submitted by: R.G.D.			

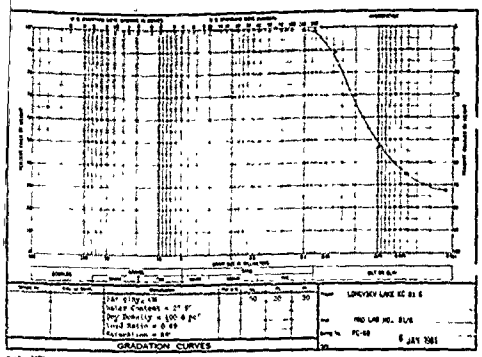
PLATE NO. A1

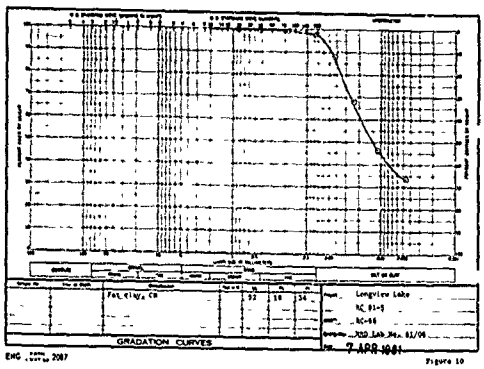

GRADATION CURVES

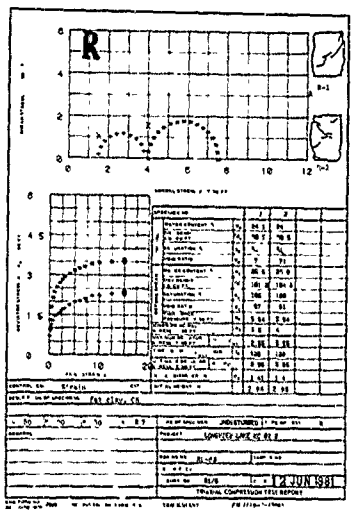

R
12 JUN 1981

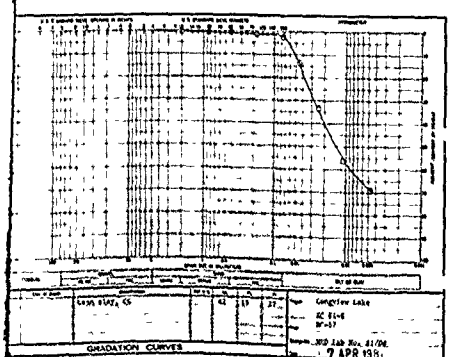

GRADATION CURVES


GRADATION CURVES







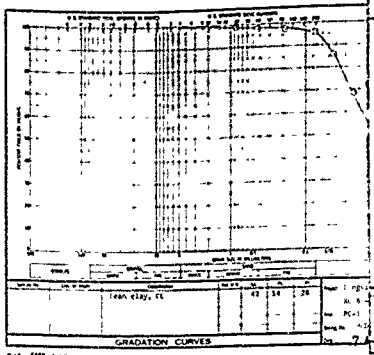


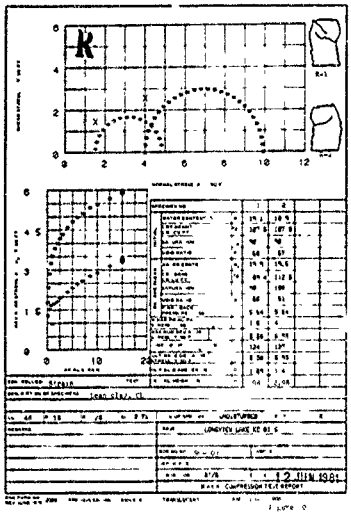
Revisions			
Symbol	Descriptions	Date	Approved

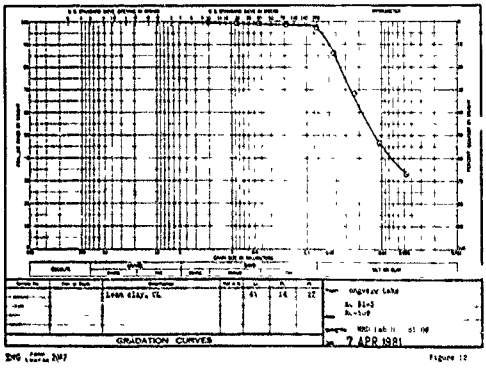
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

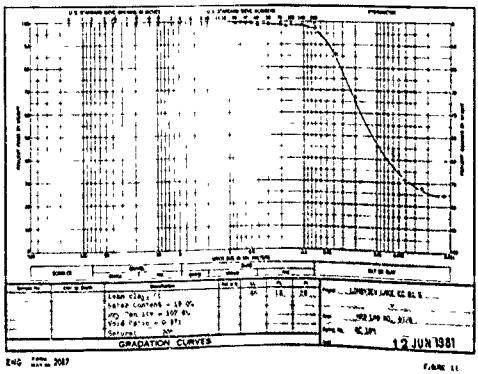
Designed by R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by P.S.T.	
Checked by R.G.D./W.B.E	Scale: AS SHOWN
Submitted by R.G.D.	Date:
	Sheet number 2 of 16
	File No. RBL-3-1489

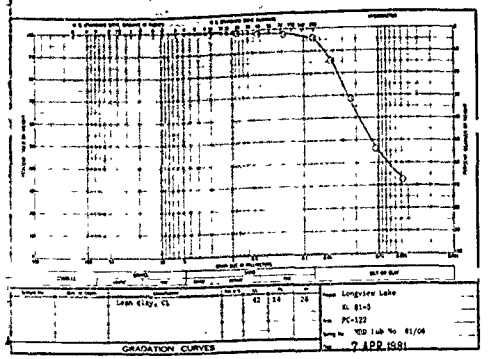
PLATE NO. A2


GRADATION CURVES


12 JUN 1981
DIRECT SHEAR TEST REPORT

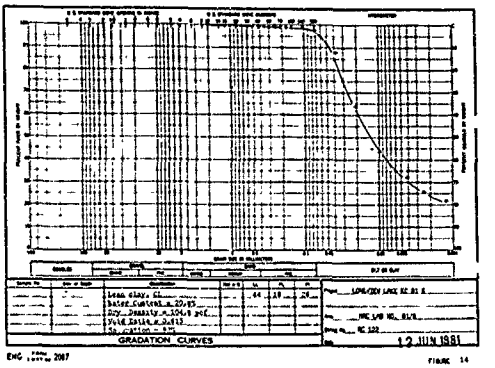

GRADATION CURVES
7 APR 1981


GRADATION CURVES
12 JUN 1981



ENG FORM 2087

Figure 14



ENG FORM 2087

FIGURE 14

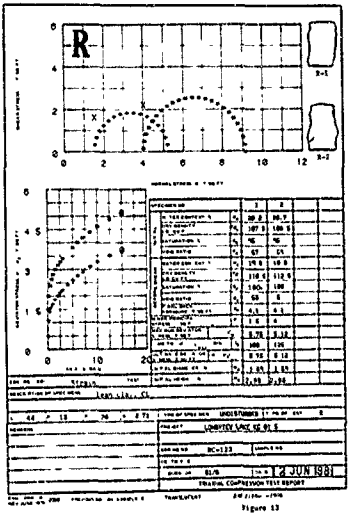


Figure 13

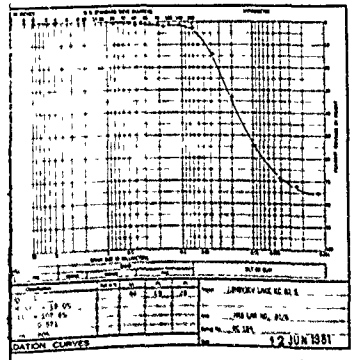


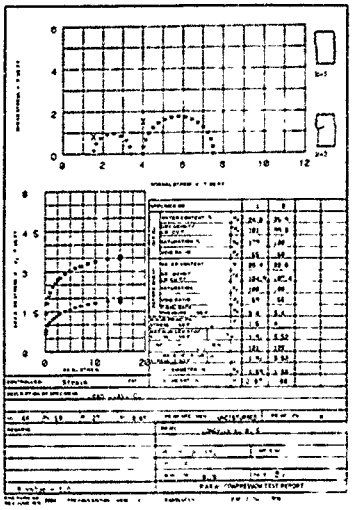
FIGURE 13

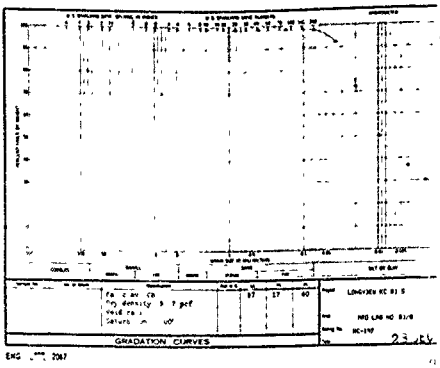
Revisions			
Symbol	Descriptions	Date	Approved

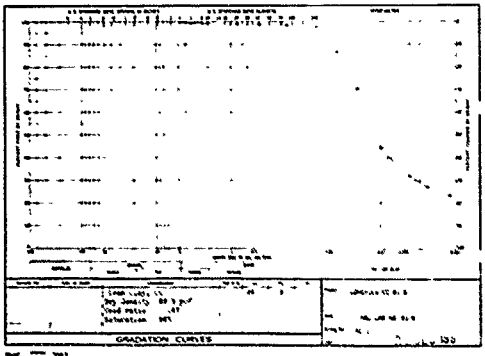
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

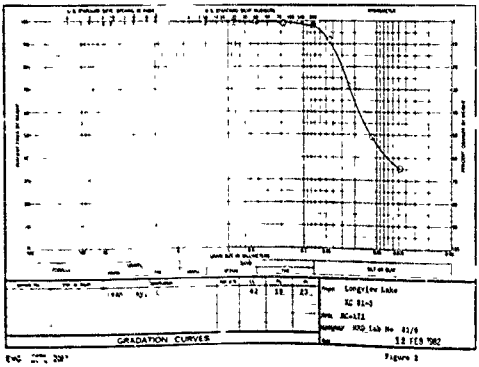
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by: P.S.T	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN — Sheet number: 3 of 16
Submitted by: R.G.D.	Date: — Date Sub.: — File No. RBL-3-1490

PLATE NO. A3


PARK COMPRESSION TEST REPORT


GRADATION CURVES


GRADATION CURVES


GRADATION CURVES
Longview Lake
12 FEB 1982

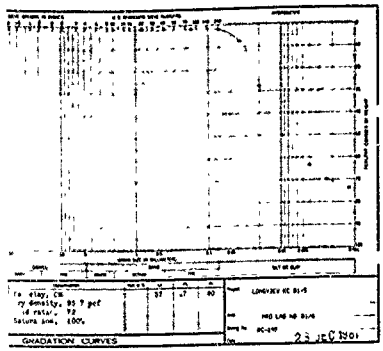
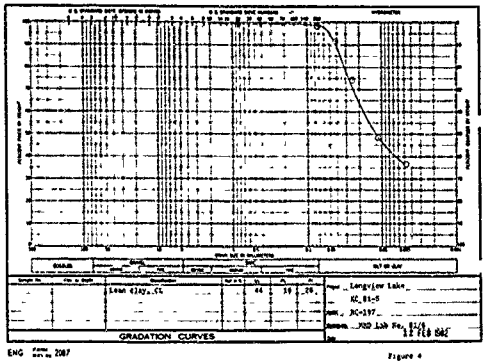


FIGURE 4



ENG Form 2087

Figure 4

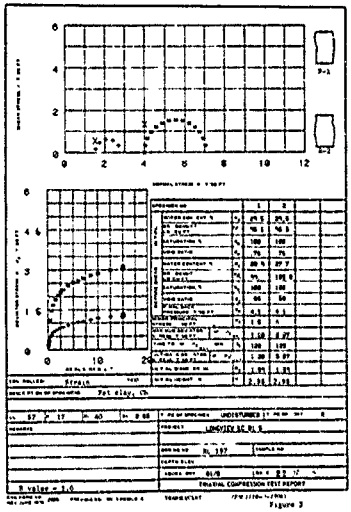


Figure 3

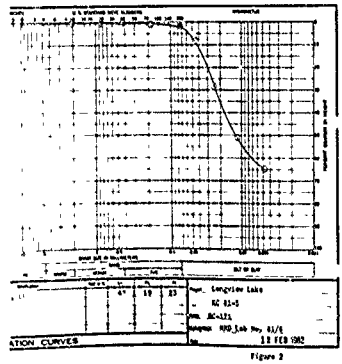


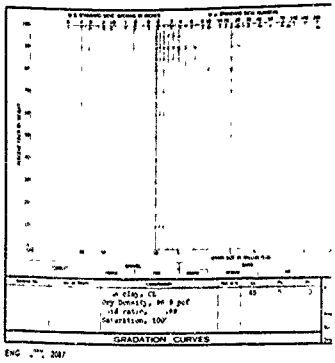
Figure 2

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T	LL 55 IMPERVIOUS STAGE I RECORD CONTROL R,R,AND GRADATION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D.	Sheet number: 4 of 16
	Dwg. No.:
	File No. RBL-3-1491

PLATE NO. A4



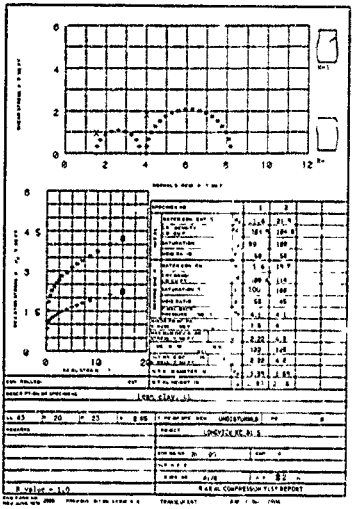


Figure 5

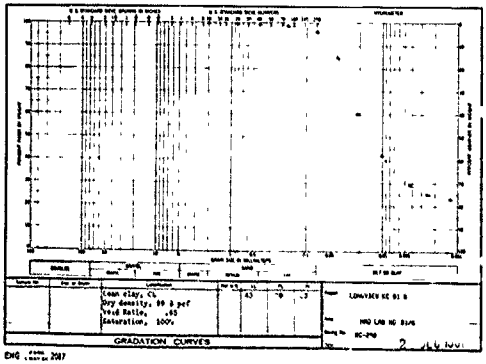


Figure 6

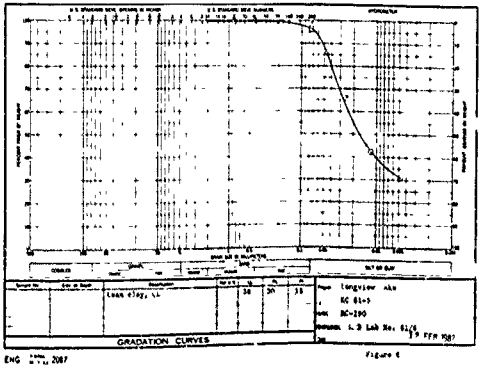
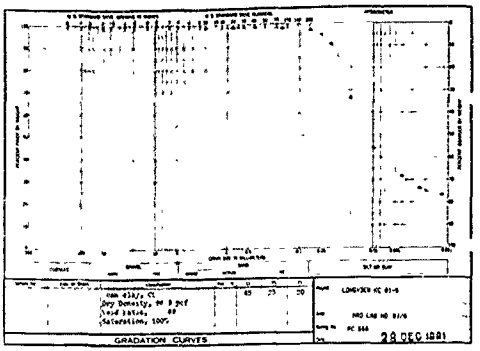


Figure 6



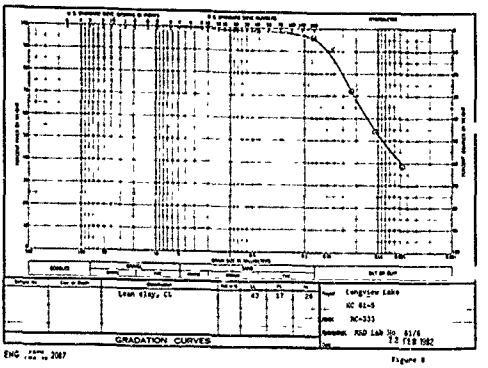


Figure 8

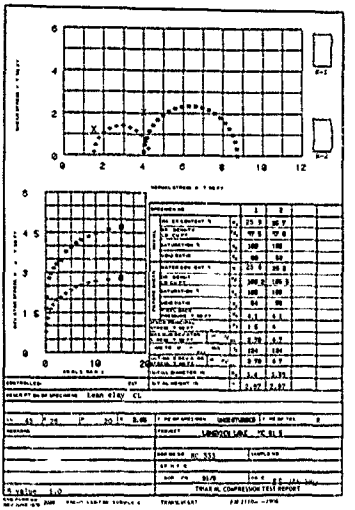


Figure 7

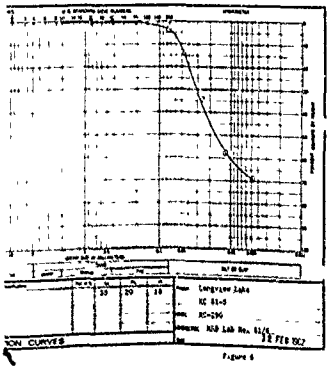


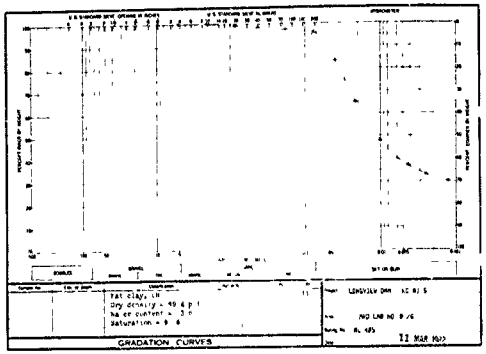
Figure 6

Revisions			
Symbol	Descriptions	Date	Approved

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

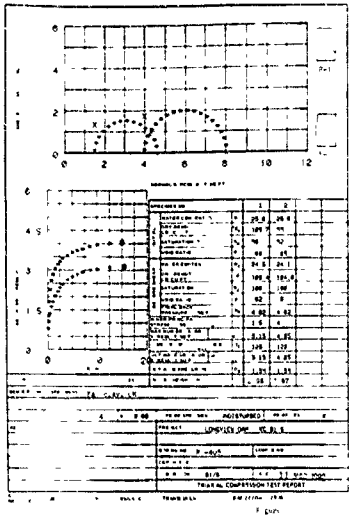
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R,R,AND GRADATION TESTS
Drawn by: P.S.T	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R.G.D.	Date:
	Dwg. No.
	Sheet number: 5 of 16
	File No. RBL-3-1492

PLATE NO A5

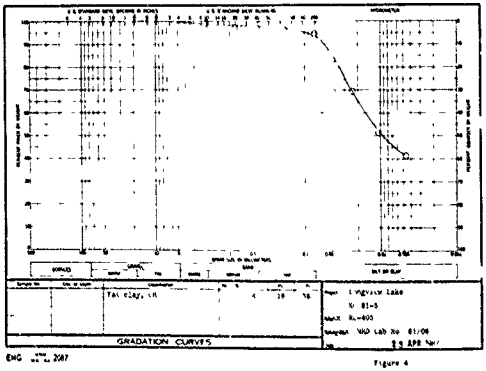


ENG FORM 2087

FIGURE 4

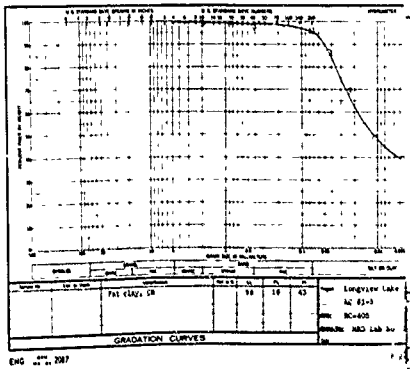


FIGURE

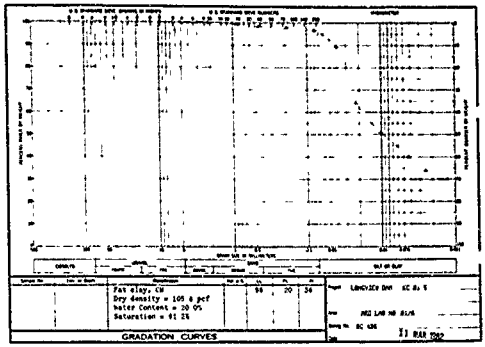


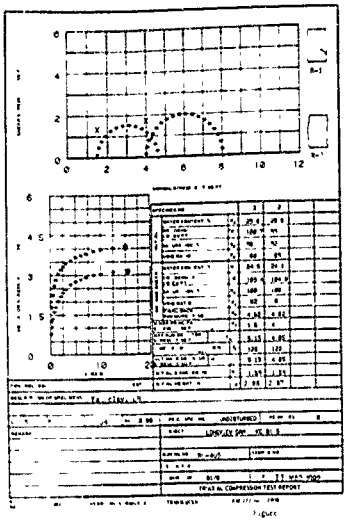
ENG FORM 2087

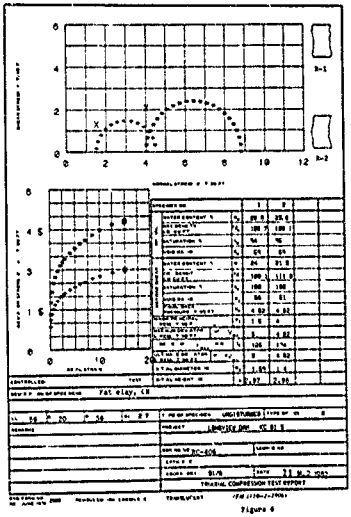
Figure 4

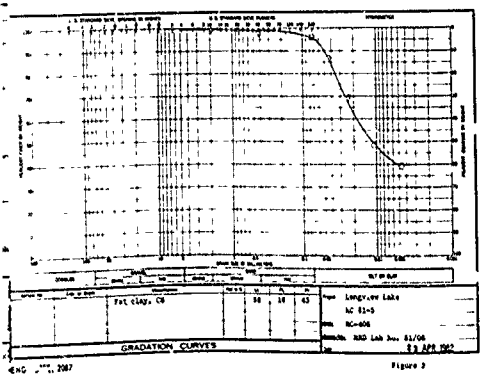


ENG FORM 2087









Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

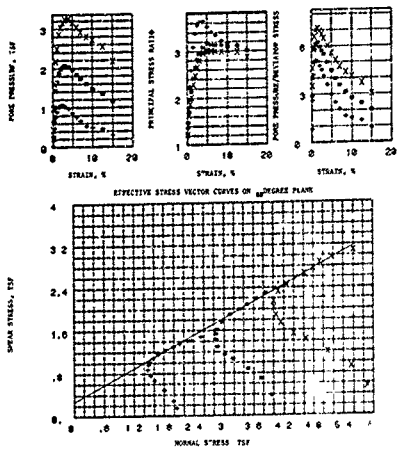
US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL R,R,AND
GRADATION TESTS

Designed by R.G.D	Scale: AS SHOWN	Sheet number 6 of 16	
Drawn by P.S.T	Date:		
Checked by R.G.D./W.B.E	Dwg. No.:	File No. RBL-3-1493	
Submitted by R.G.D			

PLATE NO. A6

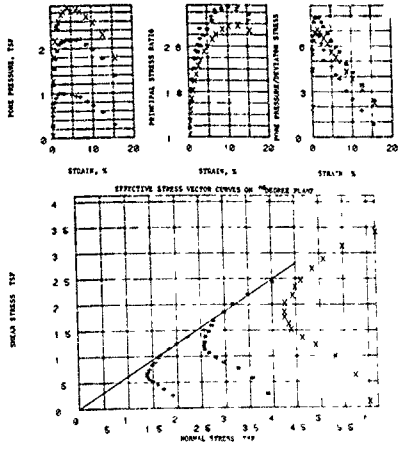


REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

NAD Form 756, 1 May 80

PROJECT: LONGVIEW DAM
BORING NO DH-1
DEPTH/ELEV: 17
NAD LAB NO 85/81
AT 18 JAN 1983

TRIAXIAL COMPRESSION TEST REPORT

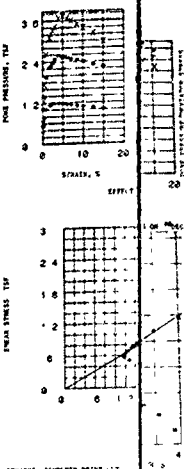


REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
M METHOD DURING SHEAR

Form 756 1 May 80

PROJECT LONGVIEW DAM
BORING NO DH-1
DEPTH/ELEV 24
NAD LAB NO 83-8
DATE 15 FEB 1983

TRIAXIAL COMPRESSION TEST REPORT



REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

NAD Form 756 1 May 80

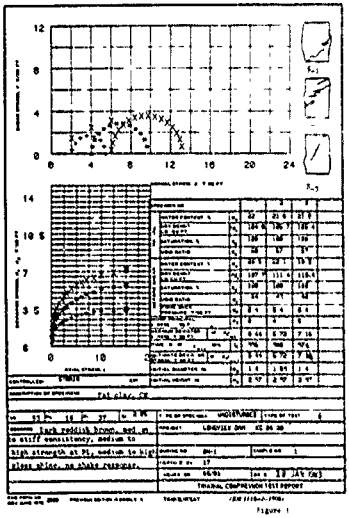


Figure 1

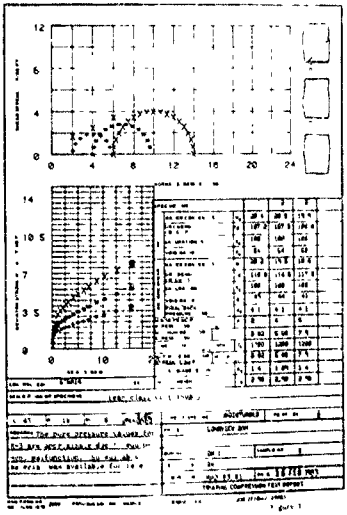
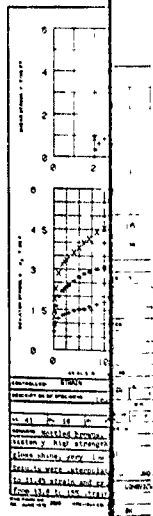
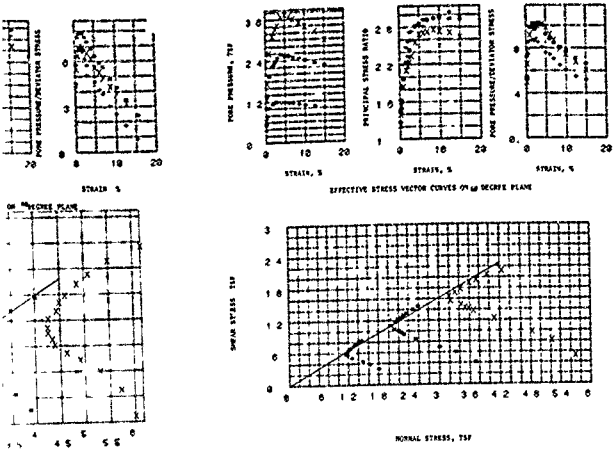
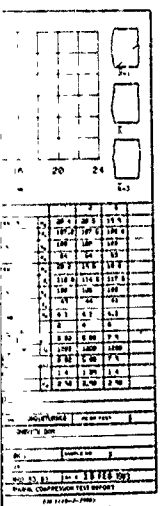
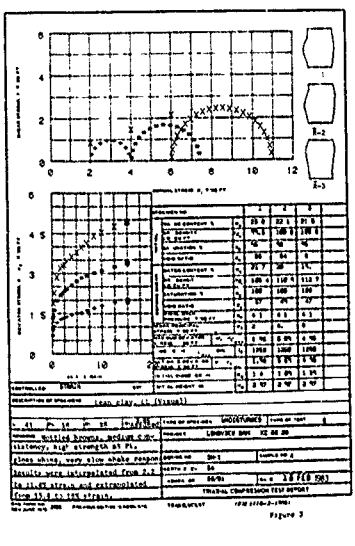


Figure 1









Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

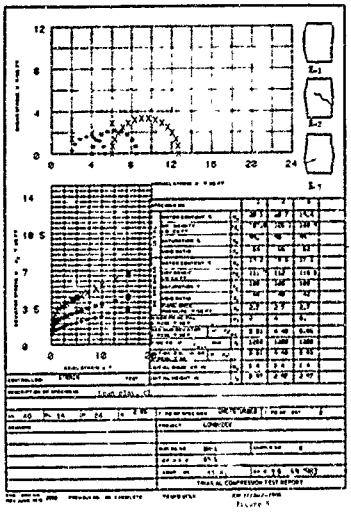
US Army Corps of Engineers

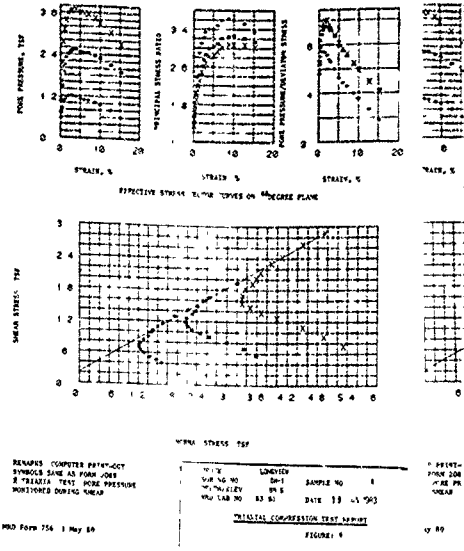
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

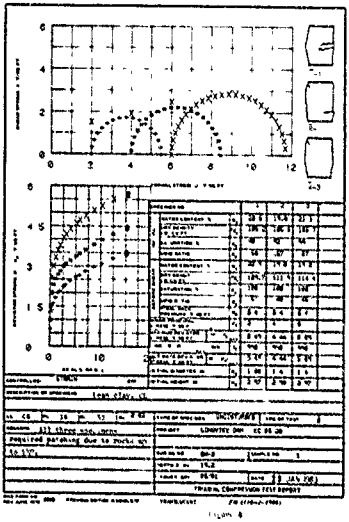
LL 55 IMPERVIOUS STAGE I
RECORD CONTROL R,R,AND
GRADATION TESTS

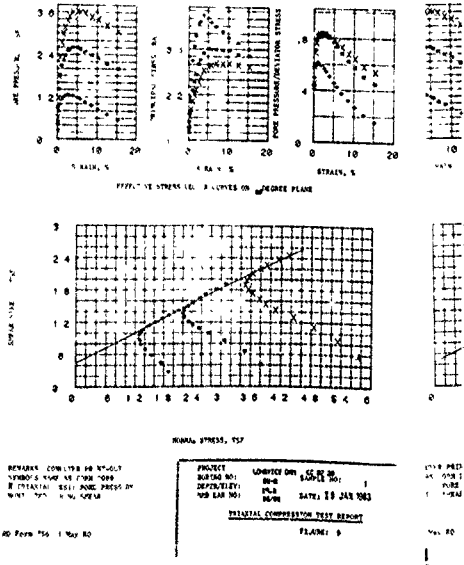
Designed by R.G.D	Scale: AS SHOWN	Sheet number	
Drawn by P.S.T.	Date:	7 of 16	
Checked by R.G.D./M.B.E.			
Submitted by R.G.D.	Dwg. No.:	File No. RBL-3-1494	

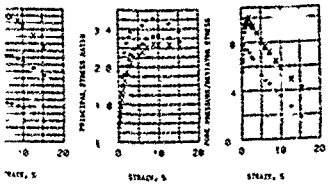
PLATE NO. A7



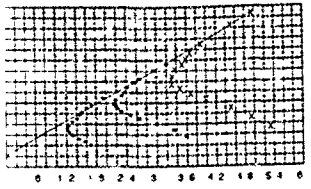








EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE



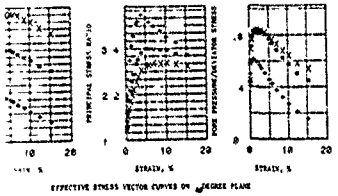
NORMAL STRESS, TSF

PRINT-OUT
FORM 2069
PORE PRESSURE
SHEAR

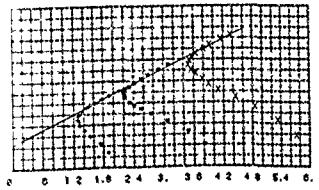
PROJECT	LONGVIEW		
BOR NG NO	[illegible]	SAMPLE NO:	[illegible]
DEPTH/ELEV:	[illegible]		
RND LAB NO:	[illegible]	DATE	19 [illegible] 1983

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 8



EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE



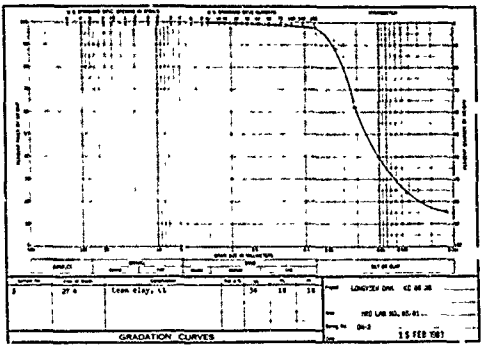
NORMAL STRESS, TSF

PRINT-OUT
FORM 2069
PORE PRESSURE
SHEAR

PROJECT:	LONGVIEW DAM		
BORING NO:	[illegible]	SAMPLE NO:	[illegible]
DEPTH/ELEV:	[illegible]		
RND LAB NO:	[illegible]	DATE:	19 JAN 1983

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 9



ENG FORM 2087

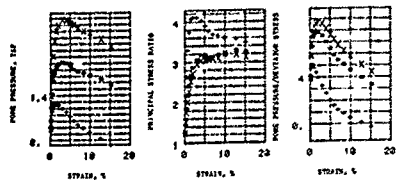
FIGURE 7

Revisions			
Symbol	Descriptions	Date	Approved

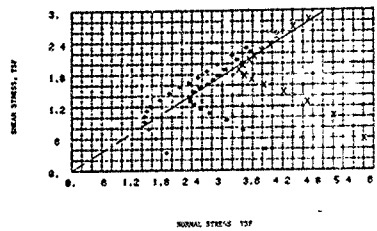
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D.	US Army Corps of Engineers
Drawn by: P.S.T.	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R,R,AND GRADATION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D.	Date:
	Dwg. No.:
	Sheet number: 8 of 16
	File No. RBL-3-1495

PLATE NO. A8



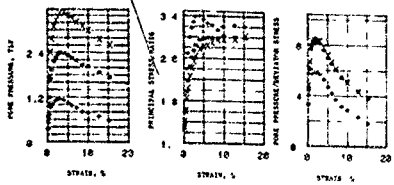
EFFECTIVE STRESS VECTOR CURVES ON 60 DEGREE PLANE



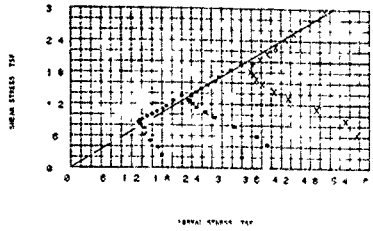
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
Ñ TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

PROJECT: LONGVIEW KC 88-28
BORING NO. DH-2
DEPTH/ELEV 27.4
MRD LAB NO. 88/01
18 FEB 1993
TRIAXIAL COMPRESSION TEST REPORT

MRD Form 754, 1 May 80



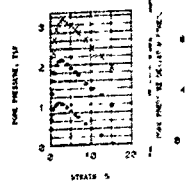
EFFECTIVE STRESS VECTOR CURVES ON 60 DEGREE PLANE

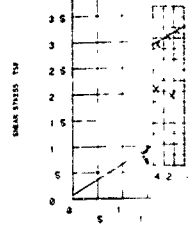


REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
Ñ TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

PROJECT: LONGVIEW DAM KC 88-28
BORING NO. DH-2
DEPTH/ELEV 25.9
MRD LAB NO. 88/01
18 FEB 1993
TRIAXIAL COMPRESSION TEST REPORT

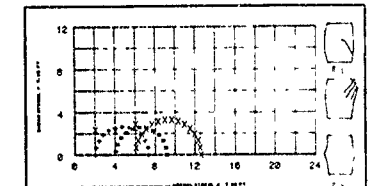
MRD Form 754, 1 May 80





REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
Ñ TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 754, 1 May 80



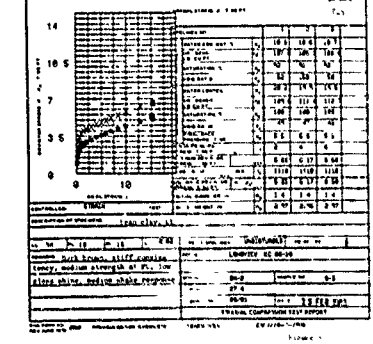
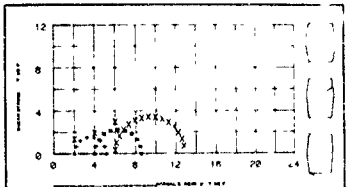


Figure 5



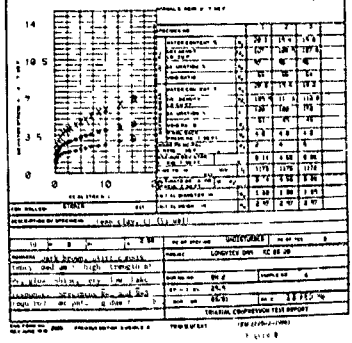
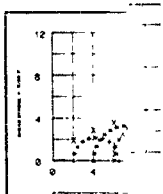
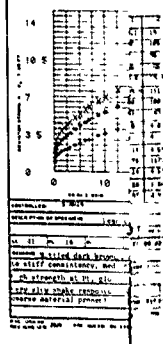
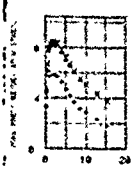
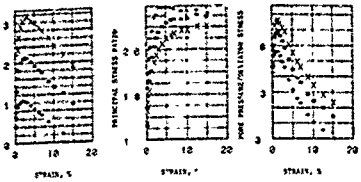


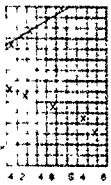
Figure 6

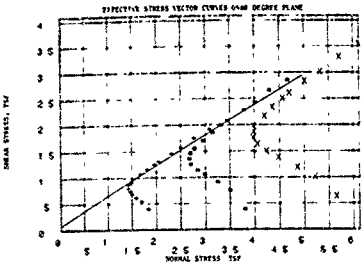












DATE 15 FEB 1983

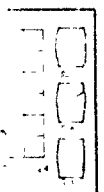
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 756 3 May 80

PROJECT: LONGVIEW DAM KC 88-20
BORING NO: SAMPLE NO 5
DEPTH/ELEV:
MRD LAB NO DATE 15 FEB 1983

TRIAXIAL COMPRESSION TEST REPORT

FIGURE



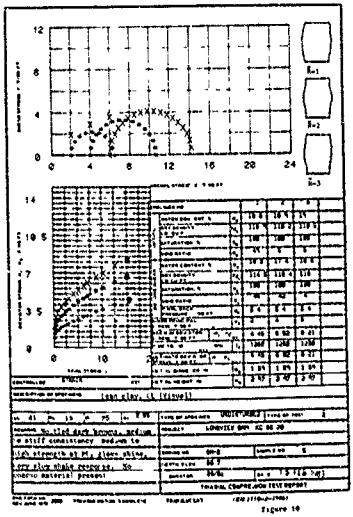


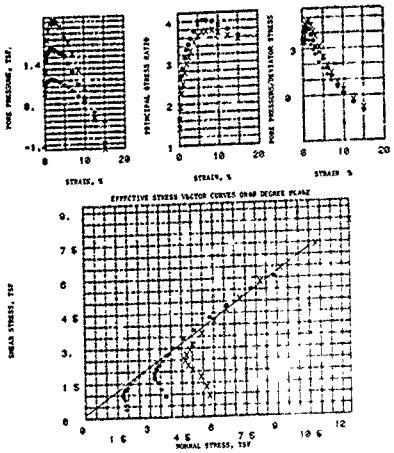
Figure 10

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D.	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by: P.S.T.	
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D.	Date:
	Dwg. No.
	Sheet number: 9 of 16
	File No. RBL-3-1496

PLATE NO. A9



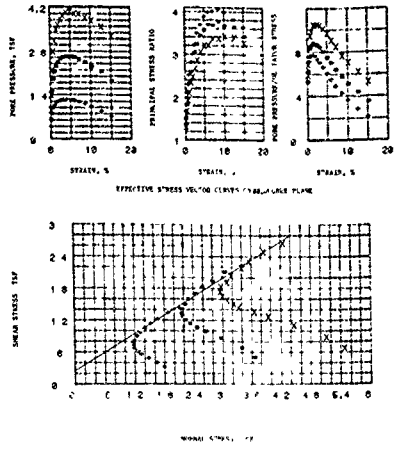
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 756, 1 May 80

PROJECT LONGVIEW DAM
BORING NO
DEPTH/ELEV:
MRD LAB NO:
SAMPLE NO
DATE 19 JAN 1983

TRIAXIAL COMPRESSION TEST REPORT

FIGURE 1



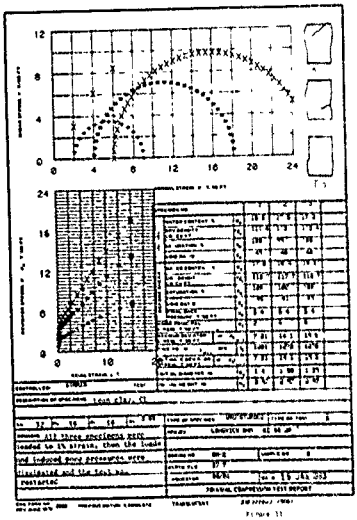
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 756, 1 May 80

PROJECT LONGVIEW DAM
BORING NO
DEPTH/ELEV:
MRD LAB NO:
SAMPLE NO
DATE 19 JAN 1983

TRIAXIAL COMPRESSION TEST REPORT

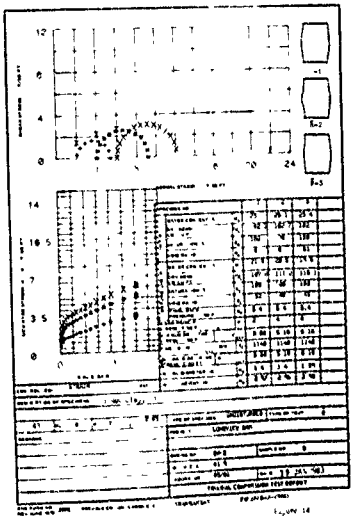
FIGURE 15



All three specimens were loaded to 1% strain, then the loads and induced pore pressures were dissipated and the test was restarted

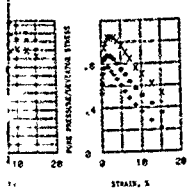
TRIAXIAL COMPRESSION TEST REPORT

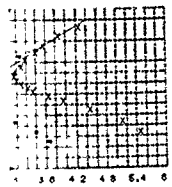
FIGURE 11



TRIAXIAL COMPRESSION TEST REPORT

FIGURE 14





SAMPLE NO
DATE: 19 JAN 1983
TRIAXIAL COMPRESSION TEST REPORT
FIGURE: 15

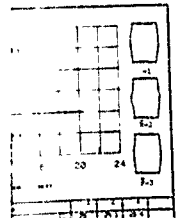


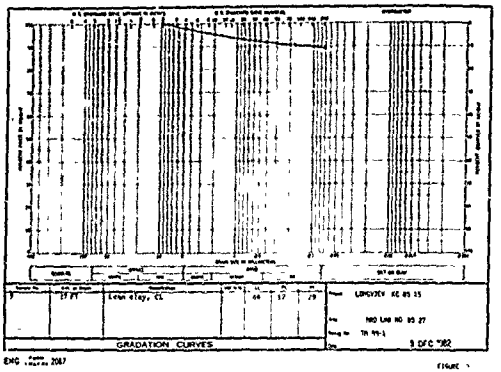
FIGURE 16

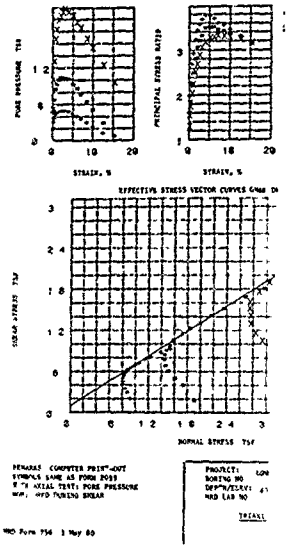
Revisions			
Symbol	Descriptions	Date	Approved

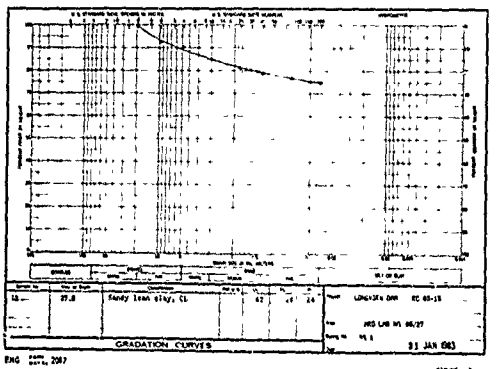
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

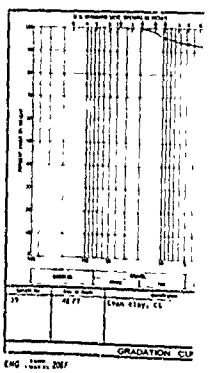
Designed by: R.E.D	US Army Corps of Engineers — LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R,R,AND GRADATION TESTS
Drawn by: P.S.T.	
Checked by: R.E.D./W.E.E	Scale: AS SHOWN — Sheet number: 10 of 16
Submitted by: R.E.D	Date: — Dwg. No.: RBL-3-1497

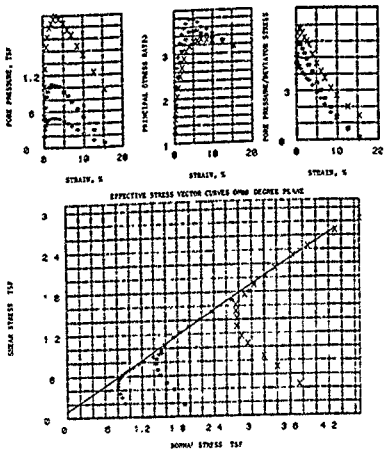
PLATE NO. A10


Lean clay, CL
GRADATION CURVES
ENG
FIGURE


PORE PRESSURE
PRINCIPAL STRESS RATIO
STRAIN, %
STRAIN, %
EFFECTIVE STRESS VECTOR CURVES
SHEAR STRESS
NORMAL STRESS
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2039
PROJECT:
BORING NO
DEPTH/ELEV:
HRD LAB NO
TRIAXIAL
HRD Form 754 1 May 80


Sandy lean clay, CL
GRADATION CURVES
ENG
FIGURE


Lean clay, CL
GRADATION CU
ENG



REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2085
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 754, 1 May 80

PROJECT: LONGVIEW KC 88 1E
BORING NO: TH 99-1 SAMPLE NO: 18
DEPTH/ELEV: 43'
MRD LAB NO 85/27 DATE: 7 JAN 1983

TRIAXIAL COMPRESSION TEST REPORT

FIGURE 4

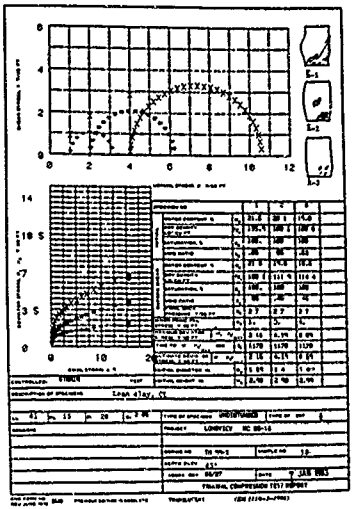
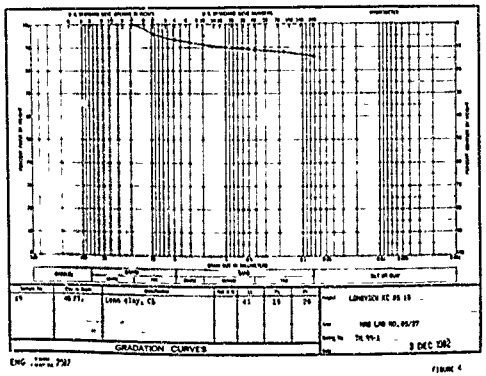


Figure 3



ENG FORM 2087

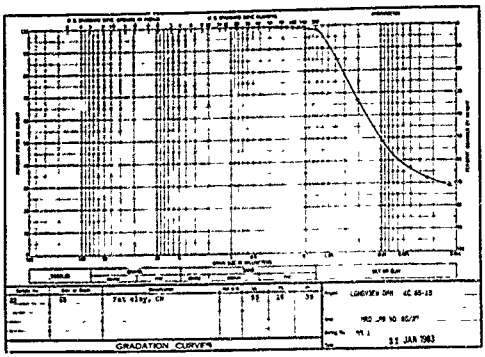
FIGURE 4

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

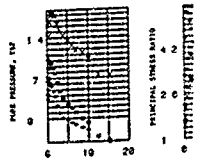
Designed by R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R,R, AND GRADATION TESTS
Drawn by P.S.T	
Checked by R.G.D./W.B.E	Scale: AS SHOWN
Submitted by R.G.D.	Date:
	Dwg. No.
	Sheet number 11 of 16
	File No. RBL-3-1498

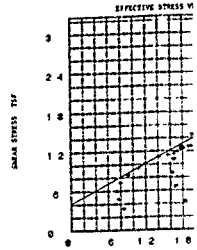
PLATE NO. A11



ENG FORM 2087

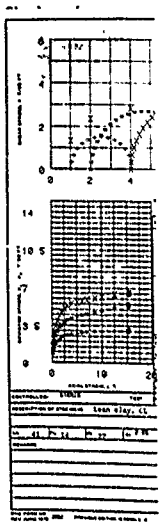
FIGURE

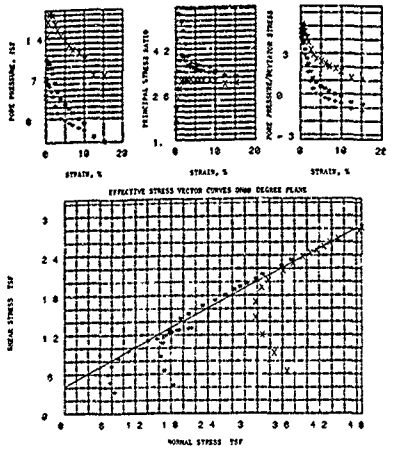




REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
K TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

WES Form 756, 1 May 80





REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MND Form 756, 1 May 60

PROJECT: LONGVIEW KC 88-18
BORING NO: TH 99-1 SAMPLE NO: 16
DEPTH/ELEV: 81 ft
MND LAB NO: 85/27 DATE: 7 JAN 1963

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 6

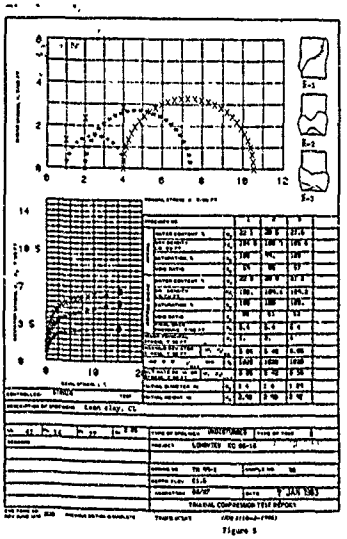


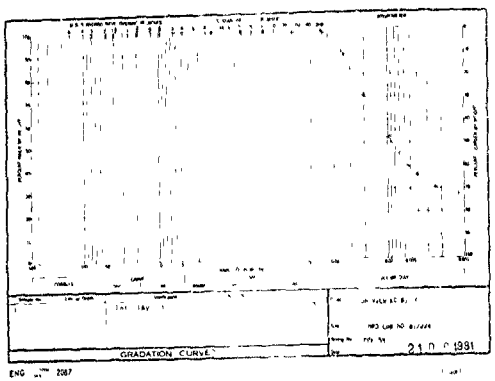
Figure 5

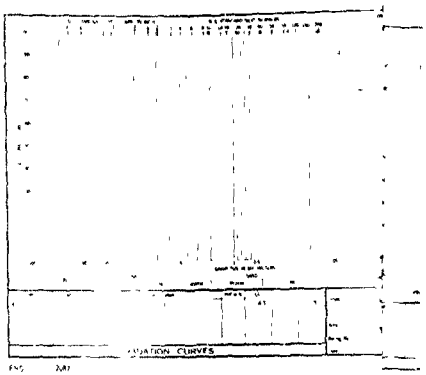
Revisions			
Symbol	Descriptions	Date	Approved

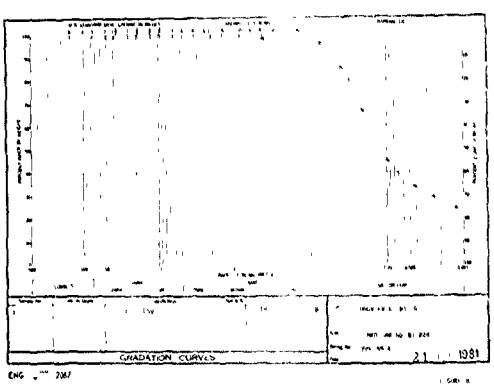
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

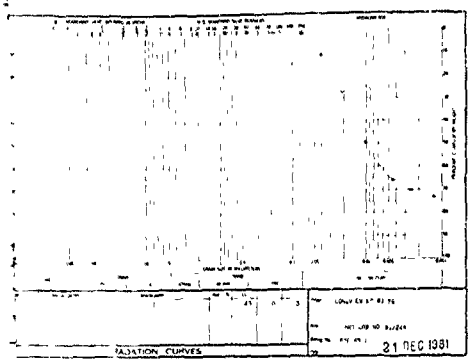
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T	LL 55 IMPERVIOUS STAGE I RECORD CONTROL R,R,AND GRADATION TESTS
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R.G.D	Date:
	Dwg. No.
	Sheet number: 12 of 16
	File No. RBL-3-1499

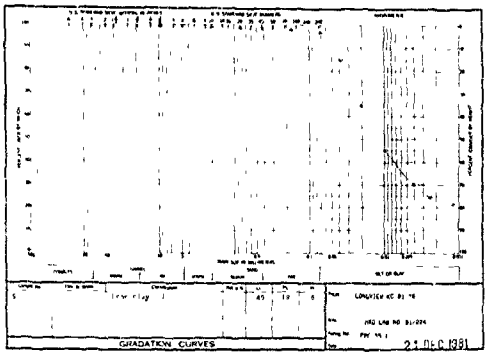
PLATE NO. A 12


GRADATION CURVE
21 D C 1981
ENG 2087


GRADATION CURVES
ENG 2087


GRADATION CURVES
21 1981
ENG 2087





Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

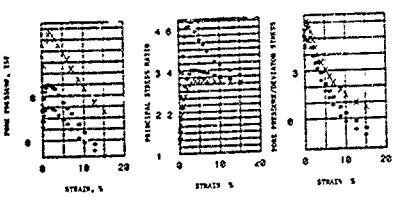
US Army Corps of Engineers

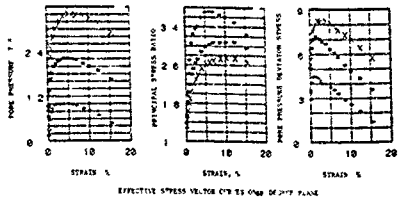
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL R,R,AND
GRADATION TESTS

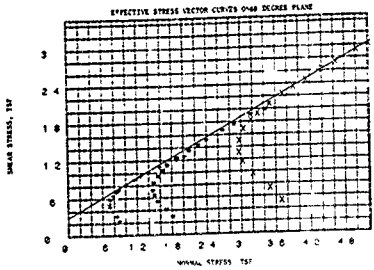
Designed by R G D	Scale AS SHOWN	Sheet number 13 of 16	
Drawn by P S.T	Date		File No. RBL-3-1500
Checked by R.G.D./W.B.E	Dwg No.		
Submitted by R G D			

PLATE NO. A 13

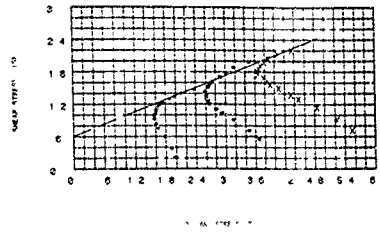




EFFECTIVE STRESS VECTOR CURVES 0-60 DEGREES PLANE

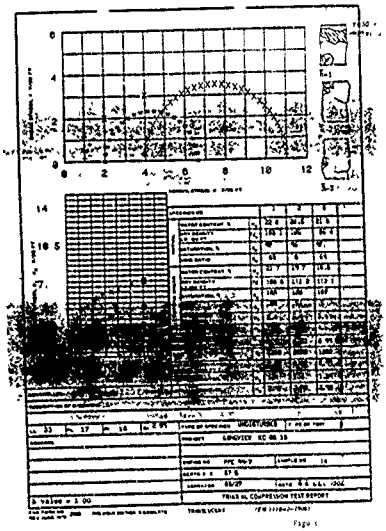


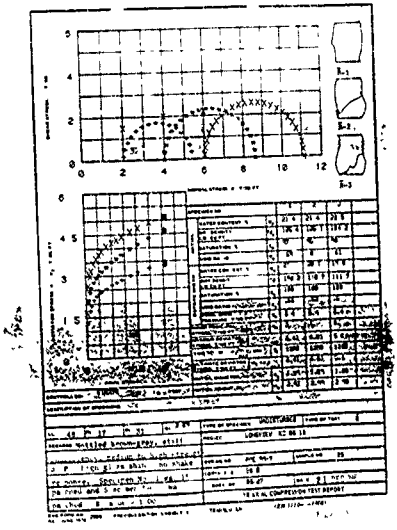
EFFECTIVE STRESS VECTOR CURVES 0-60 DEGREES PLANE

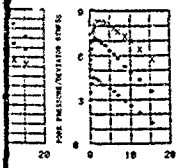


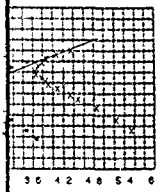
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MEASURED DURING SHEAR

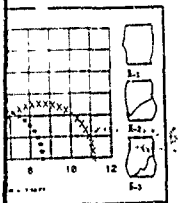
ARD Form 756, 1 May 80











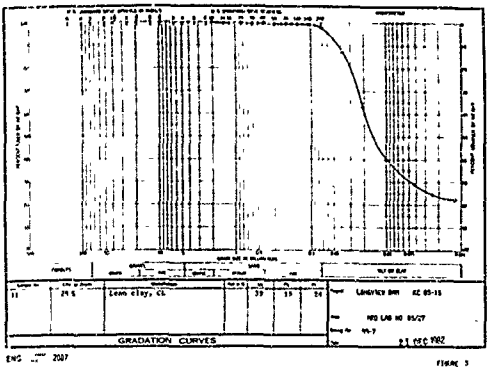


FIGURE 3

Symbol	Descriptions	Date	Approved

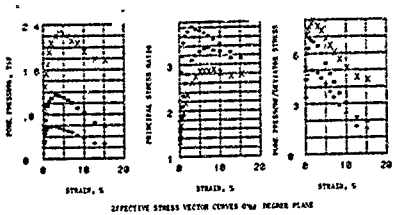
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

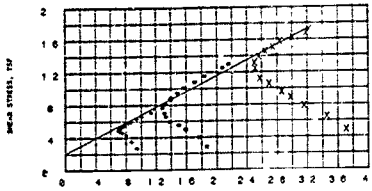
LL 55 IMPERVIOUS STAGE I
RECORD CONTROL R, R, AND
GRADATION TESTS

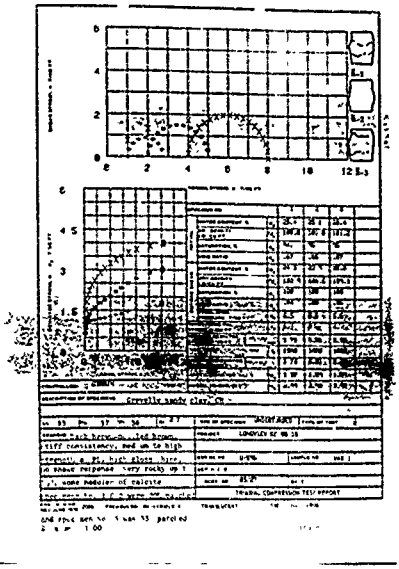
Designed by	R.G.D
Drawn by	P.S.T.
Checked by	R.G.D./W.B.E.
Submitted by	R.G.D
Scale	AS SHOWN
Date	
Dwg. No.	
Sheet number	14 of 16
Tab No.	RBL-3-1501

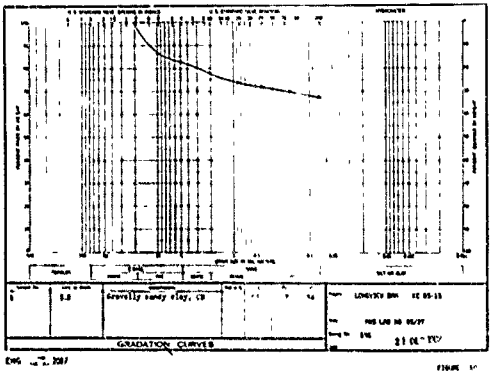
PLATE NO. A 14

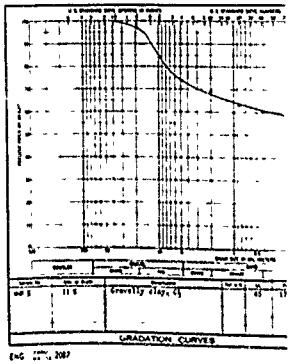


EFFECTIVE STRESS VECTOR CURVES 0'ND DEGREE PLANE









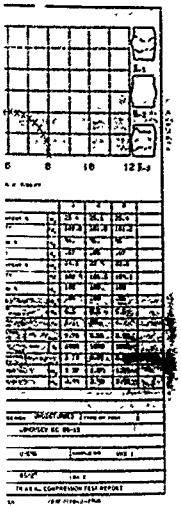


Figure 2

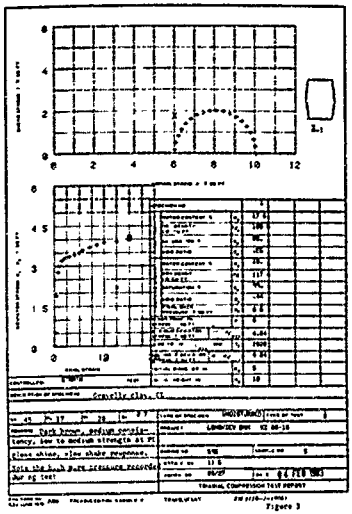
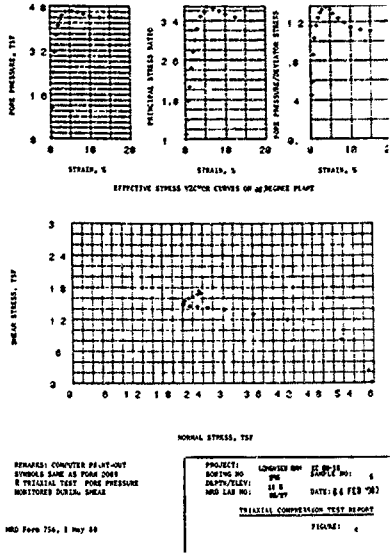
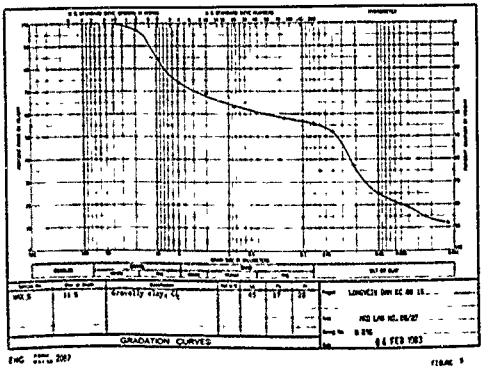


Figure 3





ENG Form 2087

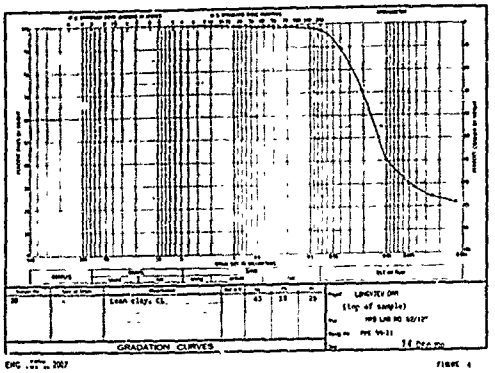
FIGURE 5

Revisions			
Symbol	Descriptions	Date	Approved

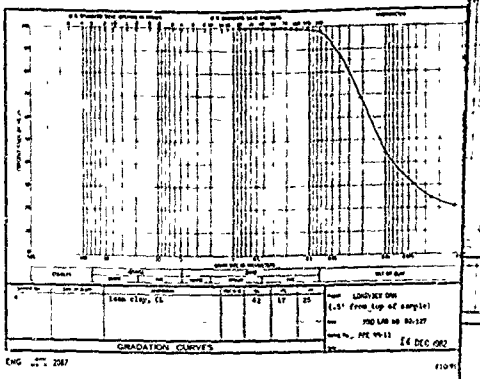
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by: P.E.T	
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D	Sheet number: 15 of 16
	File No: RBL-3-1502

PLATE NO. A 15



Lean clay, CL
43
18
25
LONGVIEW DAM
(top of sample)
GRADATION CURVES
14 DEC 1982
ENG
2087
FIGURE 4



Lean clay, CL
42
17
25
LONGVIEW DAM
(.5' from top of sample)
GRADATION CURVES
14 DEC 1982
ENG
2087

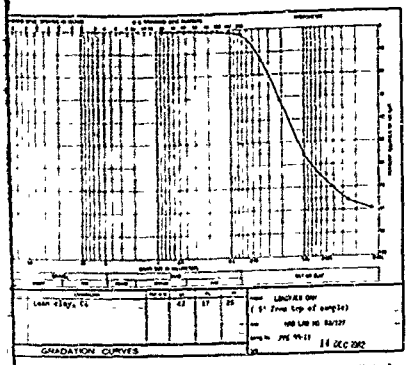


FIGURE 2

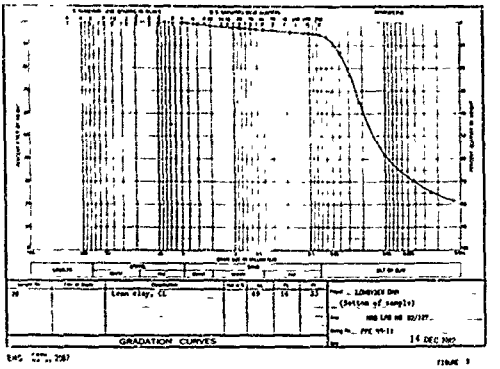


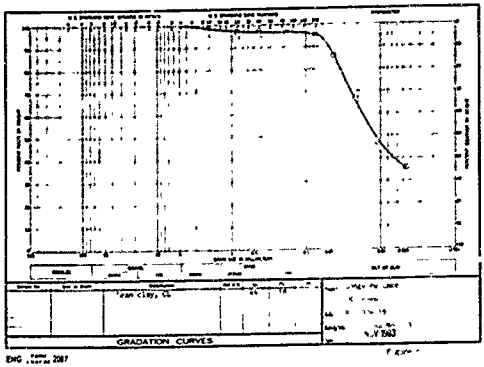
FIGURE 3

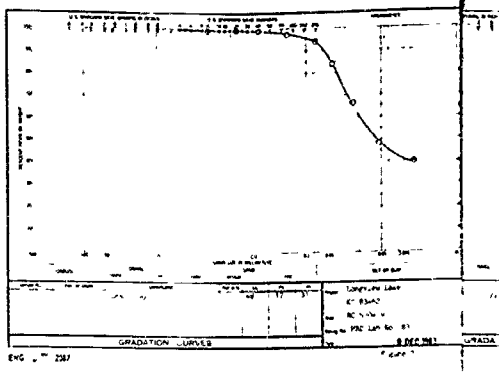
Revisions			
Symbol	Descriptions	Date	Approved

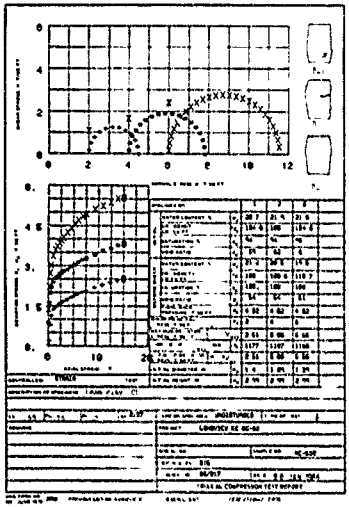
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

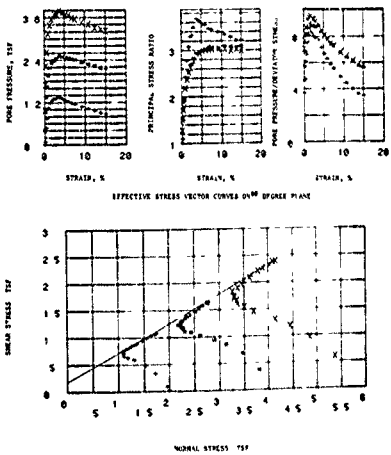
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE I RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by: P.S.T.	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN — Sheet number: 16 of 16
Submitted by: R.G.D.	Date: — Dwg. No.: — File No.: RBL-3-1503

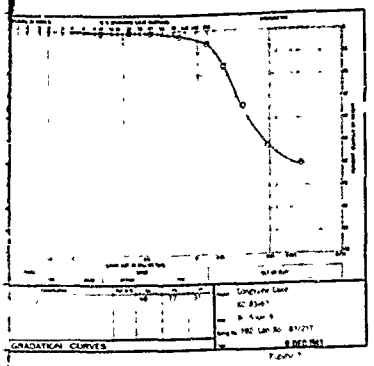
PLATE NO. A 16

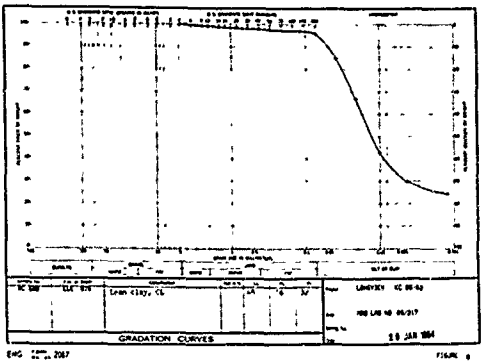

GRADATION CURVES
ENG FORM 2087

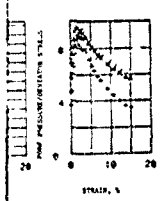

GRADATION CURVES
ENG FORM 2087

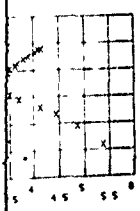

STRAIN
LONGVIEW NC 86-63
TRIAXIAL COMPRESSION TEST REPORT


PORE PRESSURE, TSF
PRINCIPAL STRESS RATIO
PORE PRESSURE/DEVIATION STRESS
STRAIN, %
EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE
SHEAR STRESS TSF
NORMAL STRESS TSF
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2088
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR
NEO Form 754 1 May 80
PROJECT LONGVIEW NC 86-63
BORING NO
SAMPLE NO
DEPTH ELEV
MED LAB NO
DATE
TRIAXIAL COMPRESSION TEST REPORT
FIGURE







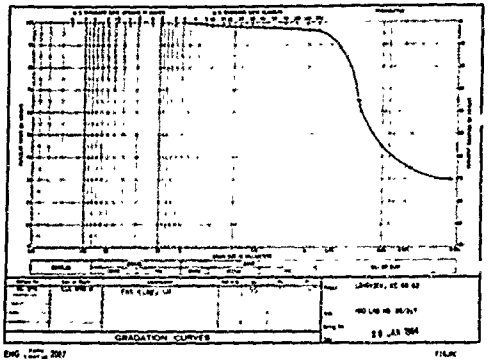


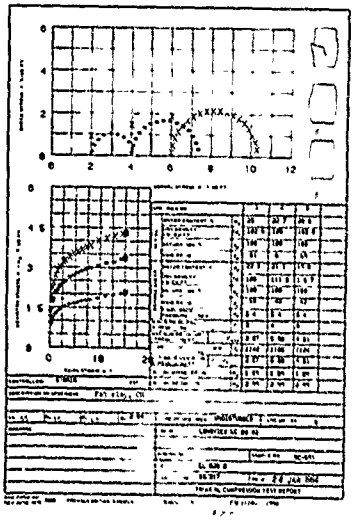
Revisions			
Symbol	Descriptions	Date	Approved

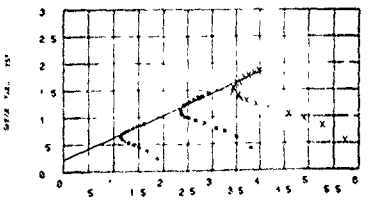
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 55 IMPERVIOUS STAGE II RECORD CONTROL R,R,AND GRADATION TESTS
Drawn by P.S.T.	
Checked by R.G.D./R.E.E	Scale AS SHOWN
Submitted by R.G.D.	Sheet number 1 of 3
	File No. RBL-3-1504

PLATE NO. A 17







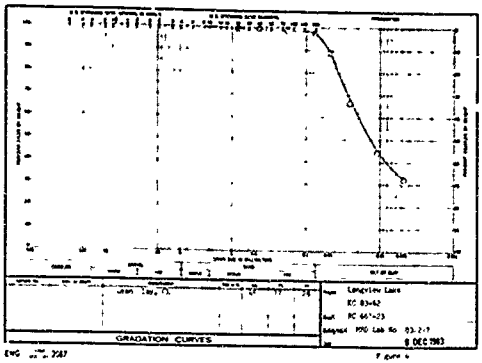
REMARKS: CONVEX FR PP NT-OUT
SYMBOLS SAME AS FORM 7089
S TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

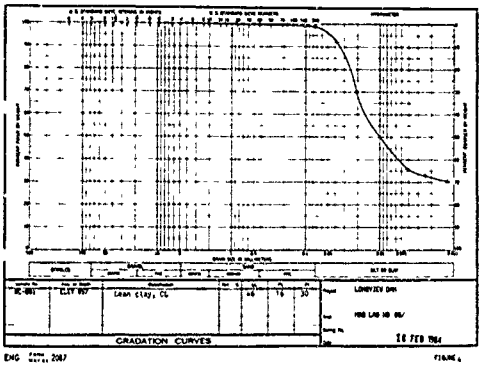
PROJECT
BORING NO
DEPTH X-AV
MND LAB NO

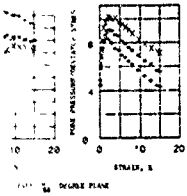
SAMPLE NO
DATE

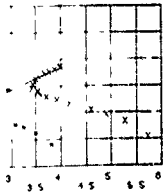
TRIAXIAL COMPRESSION TEST REPORT

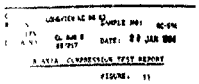
FIGURE: 11









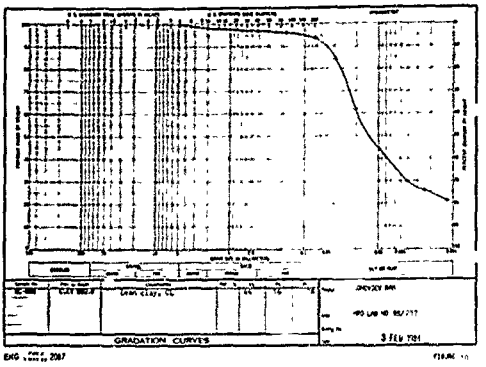


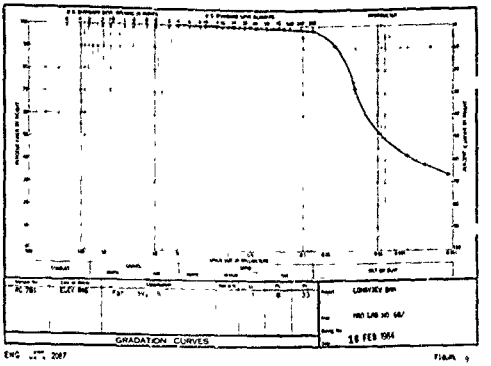
Revisions			
Symbol	Descriptions	Date	Approved

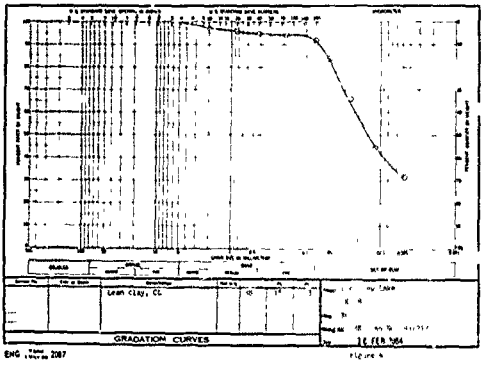
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

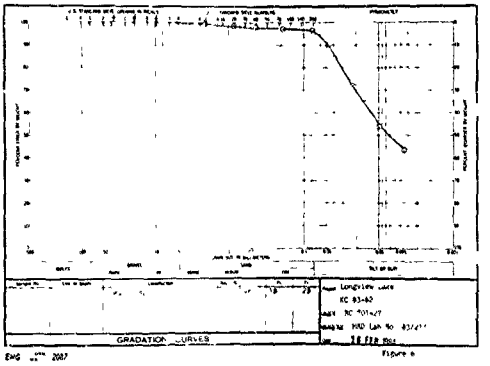
Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P S T	LL 55 IMPERVIOUS STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R G D.	Date:
	Dwg No.:
	Sheet number: 2 of 3
	File No. RBL-3-1505

PLATE NO. A 18


GRADATION CURVES
3 FEB 1981


GRADATION CURVES
16 FEB 1984


GRADATION CURVES
16 FEB 1984


GRADATION CURVES

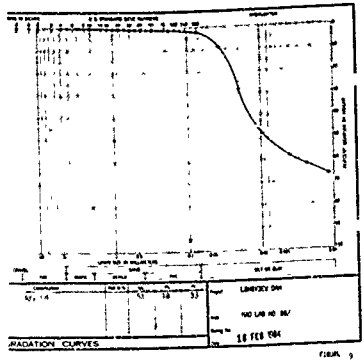


FIGURE 5

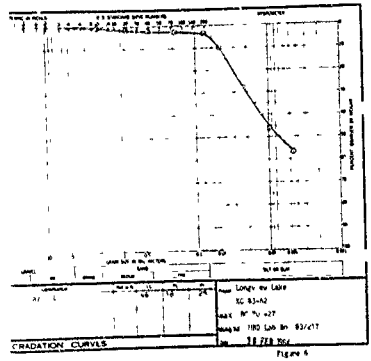


Figure 6

Revisions			
By Who	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

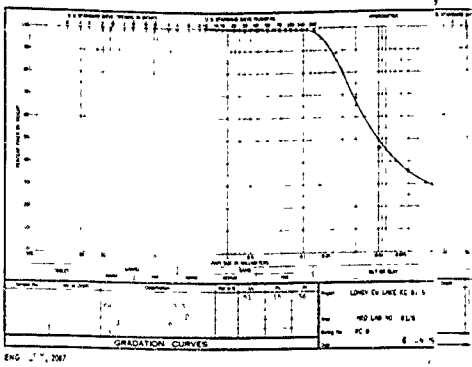
US Army Corps of Engineers

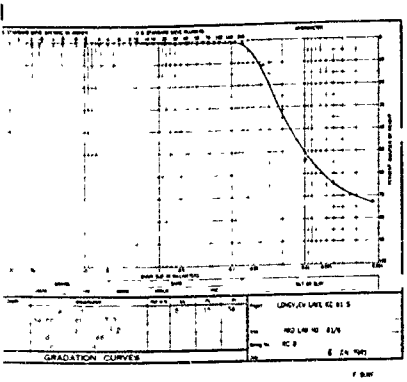
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

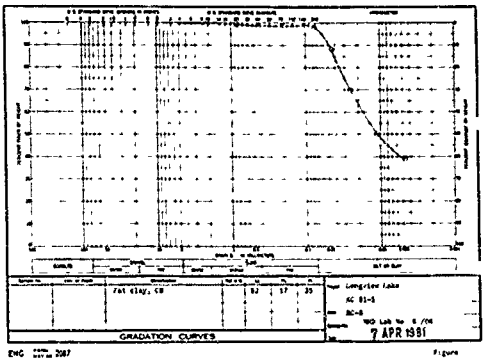
LL 55 IMPERVIOUS STAGE II
RECORD CONTROL R, R, AND
GRADATION TESTS

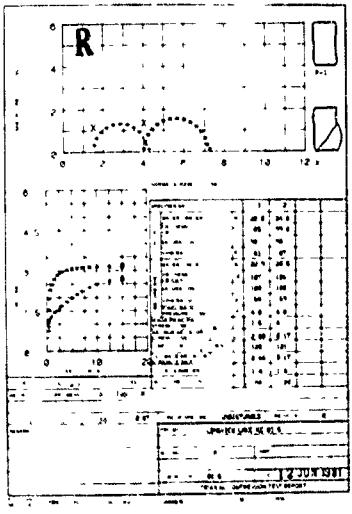
Designed by: R.G.D	Scale: AS SHOWN	Sheet number: 3 of 3	
Drawn by: P.S.T	Date:		
Checked by: R.S.G./K.B.E	Dwg. No.:		File No. RBL-3-1506
Submitted by: R.G.D			

PLATE NO. A 19


GRADATION CURVES





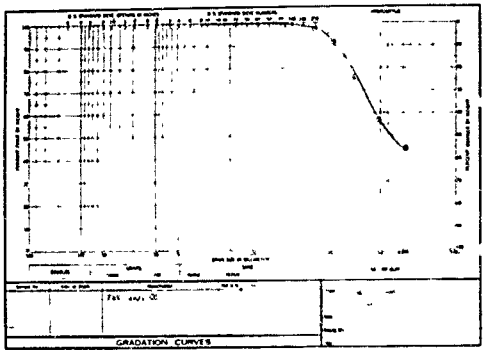


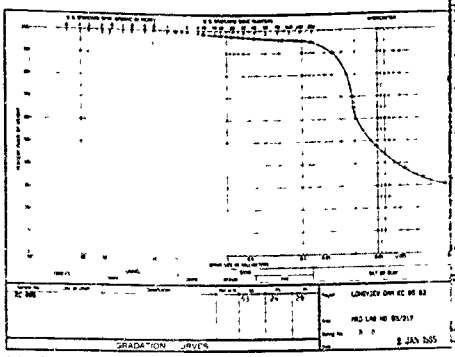
Revisions			
Symbol	Descriptions	Date	Approved

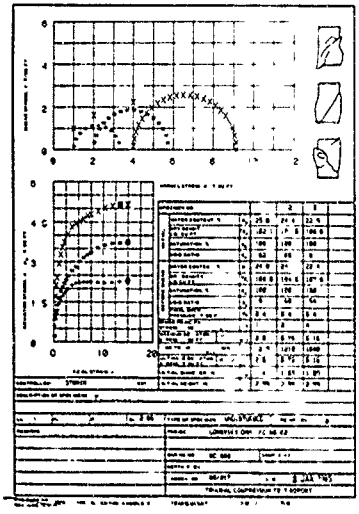
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

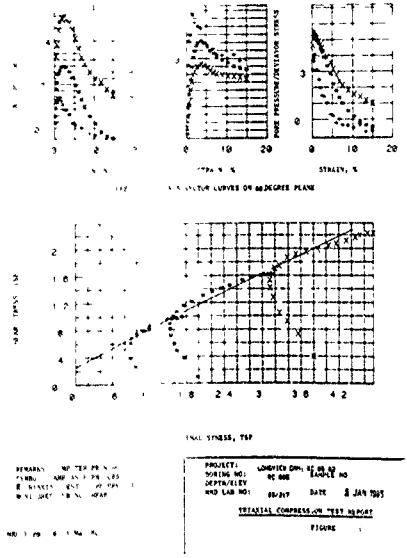
Designed by R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by P.S.T	LL 60 RANDOM STAGE I RECORD CONTROL R, R, AND GRADATION TESTS
Checked by R.G.D./R.B.E	Scale AS SHOWN
Submitted by R.G.D	Sheet number 1 of 1
	Date
	Dwg No. RBL-3-1507

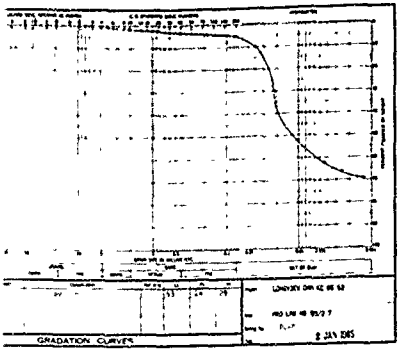
PLATE NO. A 20

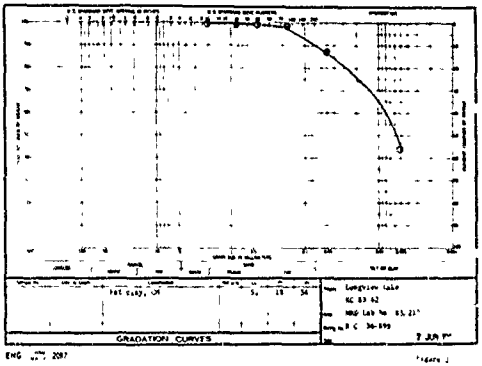

GRADATION CURVES

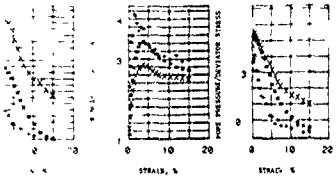

GRADATION CURVES

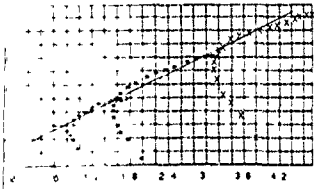

TRIAXIAL COMPRESSION TEST REPORT


PORE PRESSURE/DEVIATOR STRESS
STRAIN, %
FINAL STRESS, TSF
PROJECT:
BORING NO:
DEPTH/ELEV
MND LAB NO:
DATE
TRIAXIAL COMPRESSION TEST REPORT
FIGURE









Symbol	Descriptions	Date	Approved

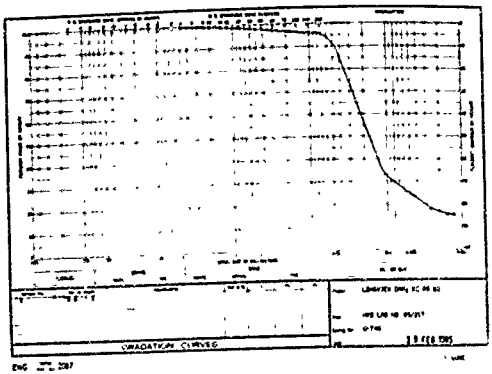
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

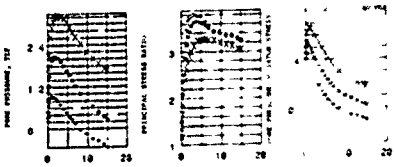
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

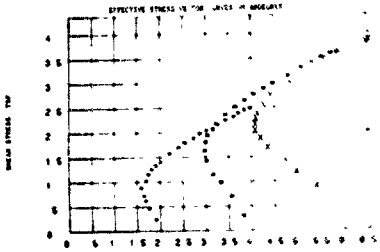
LL 60 IMPERVIOUS STAGE II
RECORD CONTROL R, R, AND
GRADATION TESTS

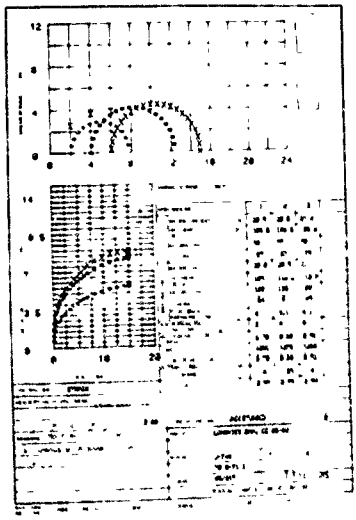
Designed by	R.G.D
Drawn by	P.S.T
Checked by	R.G.D./W.B.E
Submitted by	R.G.D.
Scale	AS SHOWN
Sheet Number	1 of 3
Date	
Dwg. No.	RBL-3-1508

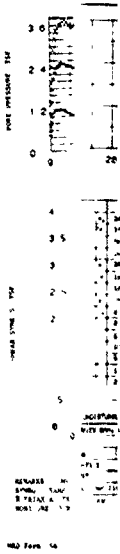
PLATE NO. A 21

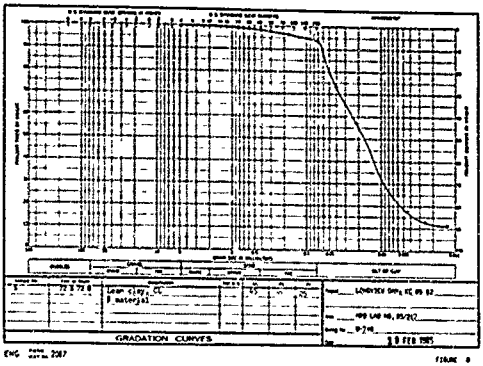

VARIATION CURVES

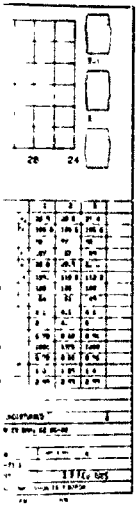

PORE PRESSURE, TSF
PRINCIPAL STRESS RATIO
STRAIN %

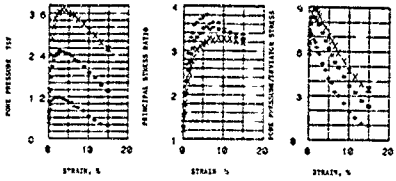

EFFECTIVE STRESS VS PORE PRESSURE
SHEAR STRESS, TSF
NORMAL STRESS, TSF

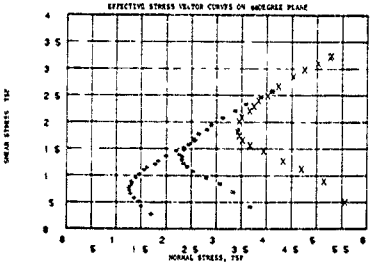












REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

PROJECT: LONGVIEW DAM, KC 88-82
BORING NO: U-746 SAMPLE NO 5
DEPTH/ELEV 72 3-72 8
MRD LAB NO 85/217 DATE: 1 9 FEB 1985

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 7

MRD Form 756, 1 May 80

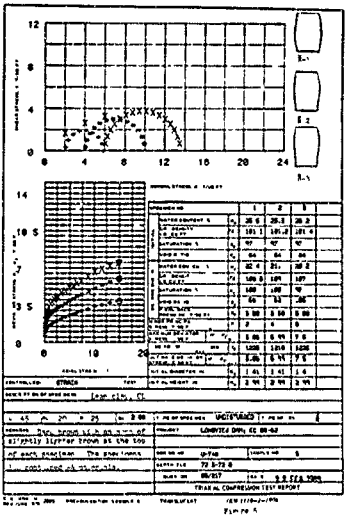


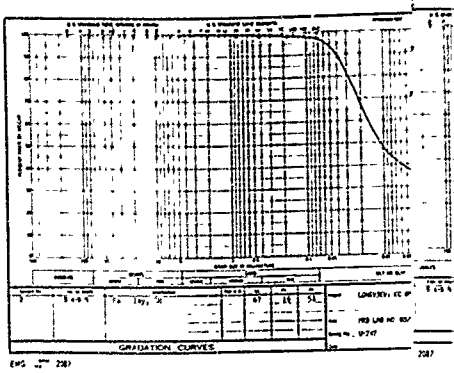
Figure 5

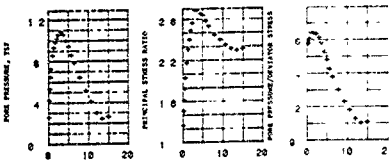
Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

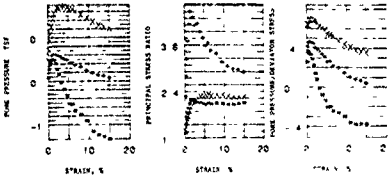
Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 60 IMPERVIOUS STAGE II RECORD CONTROL R̄, R, AND GRADATION TESTS
Drawn by: P S.T	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R.G D	Date:
	Dwg. No
	Sheet number: 2 of 3
	File No RBL-3-1509

PLATE NO. A 22

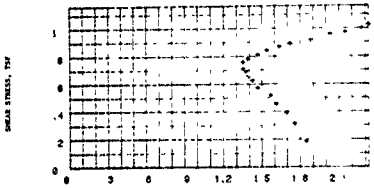


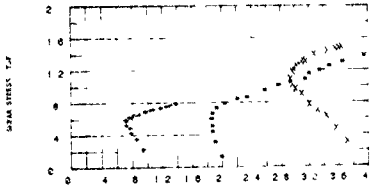


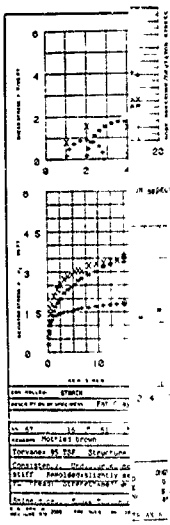
EFFECTIVE STRESS VECTOR CURVES ON [illegible] DEGREE PLANE



EFFECTIVE STRESS VECTOR CURVES ON [illegible] PLANE







REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

NSD Form 756, 1 May 80

PROJECT	[illegible]
BORING NO	[illegible]
DEPTH/ELEV	[illegible]
NSD LAB NO	[illegible] DATE

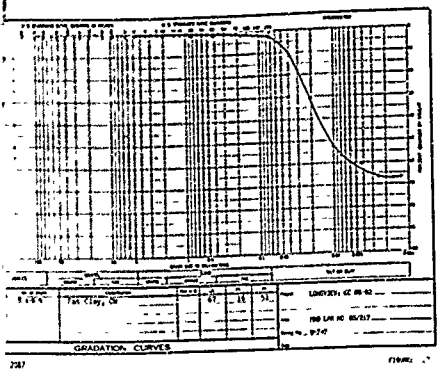
TRIAXIAL COMPRESSION TEST REPORT

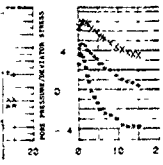
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

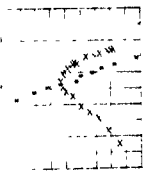
NSD Form 756 1 May 80

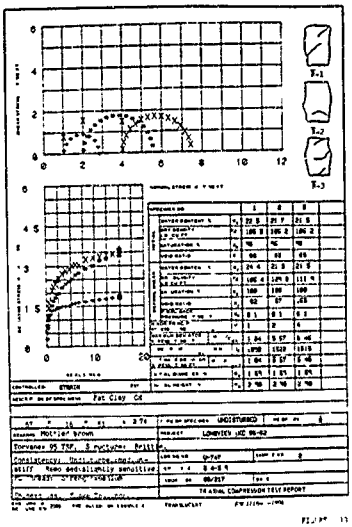
PROJECT	[illegible]
BORING NO	[illegible]
DEPTH/ELEV	[illegible]
NSD LAB NO	[illegible]

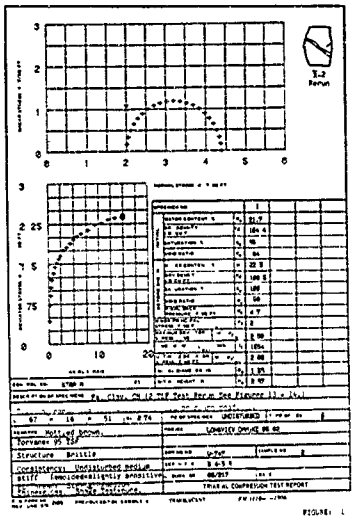
TRIAXIAL COMPRESSION TEST REPORT









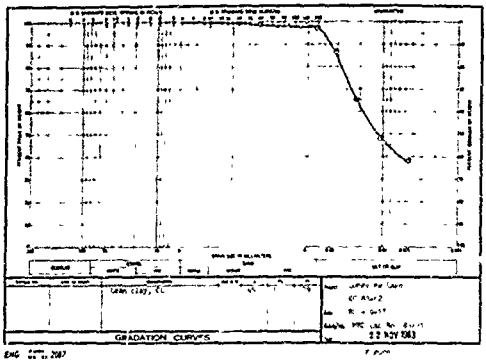


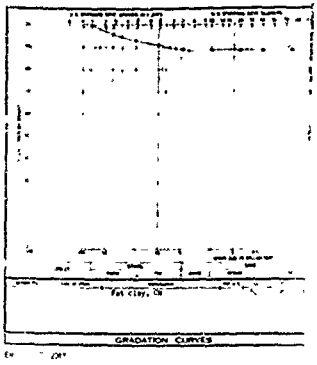
Revisions			
Symbol	Descriptions	Date	Approved

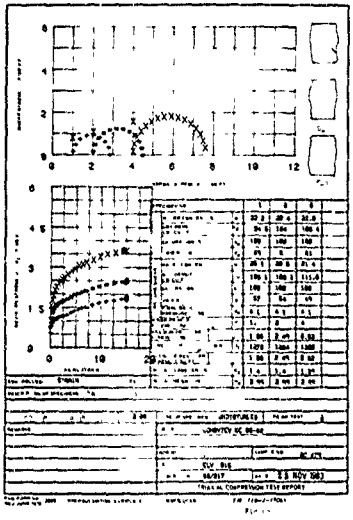
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

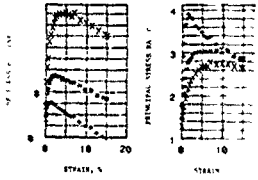
Designed by R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 60 IMPERVIOUS STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by P.S.T	US Army Corps of Engineers
Checked by R.G.D./K.B.E	Scale: AS SHOWN
Submitted by R.G.D	Sheet number 3 of 3
	Date
	Dwg No.
	File No. RBL-3-1510

PLATE NO. A 23

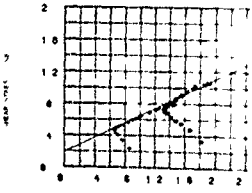








EFFECTIVE STRESS VECTOR

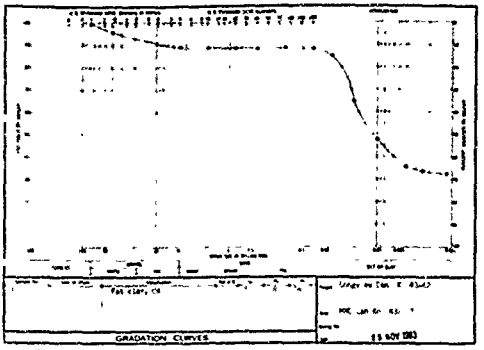


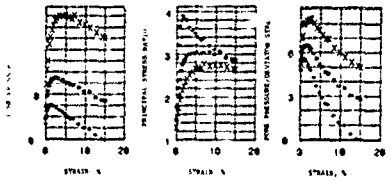
NORMAL STRESS

NOMAHAS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

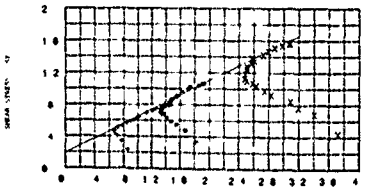
MWD Form 754, 1 May 80

PROJECT
BOEING
DEPTH





EFFECTIVE STRESS VECTOR CURVES ON 60 DEGREE PLANE



REMARKS: COMPUTER PRINTOUT
SYMBOLS SAME AS FORM 2089
P TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

NWD Form 756 1 Mar 63

PROJECT: LONGVIEW LL 60-60
BORING NO. SAMPLE NO. RC 479
DEPTH/ELEV. ELV 843
NWD LAB NO. 55/207 DATE: 25 NOV 1963

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 3

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D.
Drawn by: P.S.T.
Checked by: R.G.D./W.S.E.
Submitted by: R.G.D.

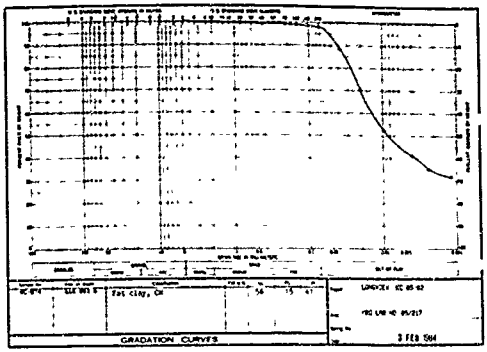
US Army Corps of Engineers

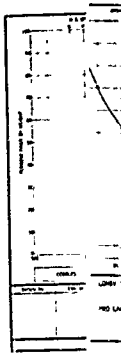
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

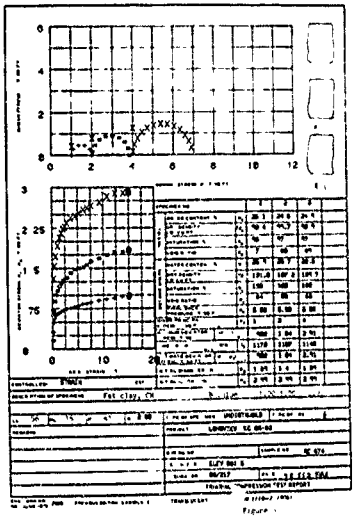
LL 60 RANDOM STAGE II
RECORD CONTROL R, R, AND
GRADATION TESTS

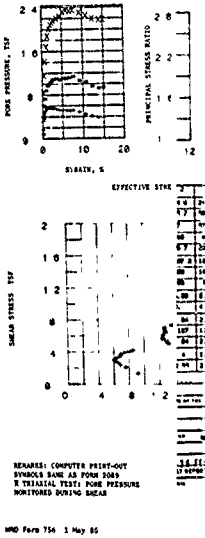
Scale: AS SHOWN
Date:
Dwg. No.:
Sheet number: 1 of 4
File No. RBL-3-1511

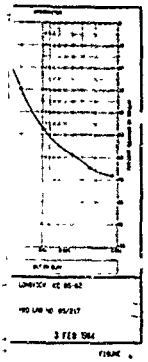
PLATE NO. A 24

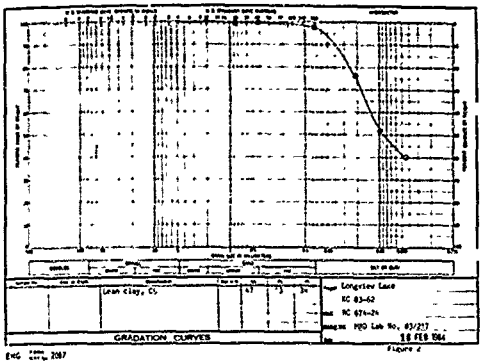

Fat clay, CH
GRADATION CURVES
3 FEB 1984

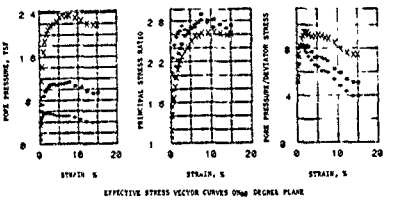



Fat clay, CH

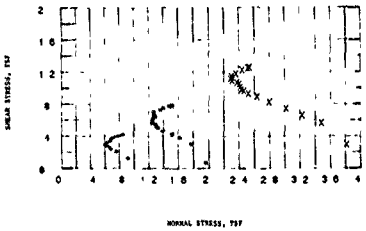

PORE PRESSURE, TSF
PRINCIPAL STRESS RATIO
STRAIN, %
EFFECTIVE STRE
SHEAR STRESS TSF
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 3049
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR
WRD Form 756 1 May 85

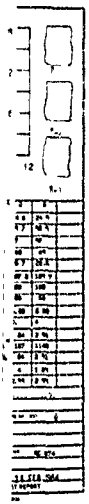






EFFECTIVE STRESS VECTOR CURVES ON 60 DEGREE PLANE





REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2088
N TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 756, 1 May 80

PROJECT: LONGVIEW KC 83-62
BORING NO: SAMPLE NO: KC-674
DEPTH/ELEV: ELEV 863.5
MRD LAB NO: 83/217 DATE 18 FEB 1984

TRIAXIAL COMPRESSION TEST REPORT

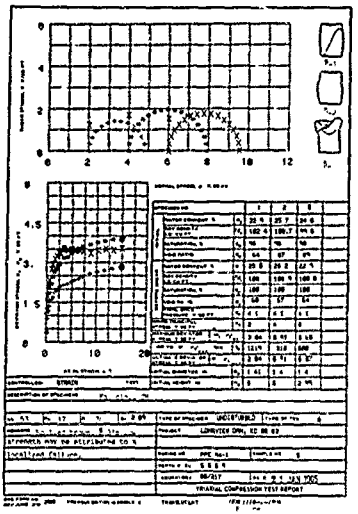
FIGURE: 6

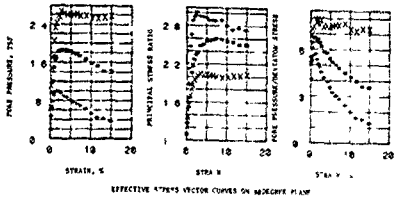
Revisions			
Symbol	Descriptions	Date	Approved

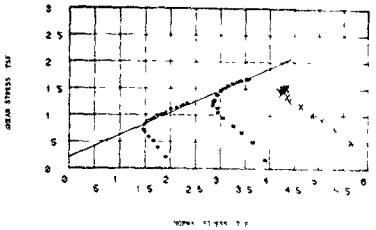
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

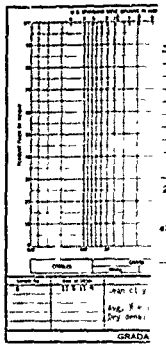
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T	LL 60 RANDOM STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E	Scale: AS SHOWN — Sheet number: 2 of 4
Submitted by: R.S.D.	Date: — Dwg. No.: — File No. RBL-3-1512

PLATE NO. A 25



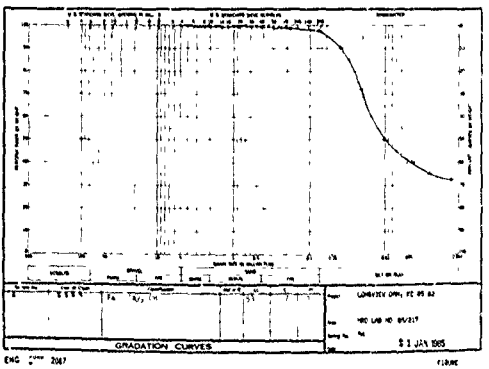


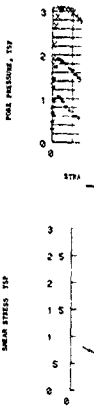




AREA COMPUTER PRINTOUT
WITH SAME AS PORE PRESSURE
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

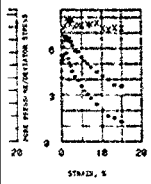
NBD Form 756, 1 May 60



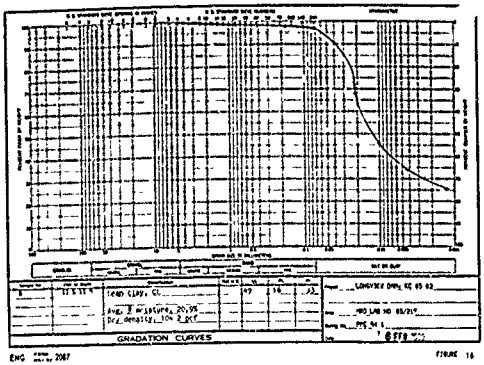


REMARKS COMPUTER
SYMBOLS SAME AS P
R TRIAXIAL TEST
MONITORED DURING

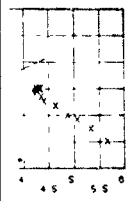
NBD Form 756 1 May



DEGREE PLANE



ENG FORM 2087 FIGURE 16



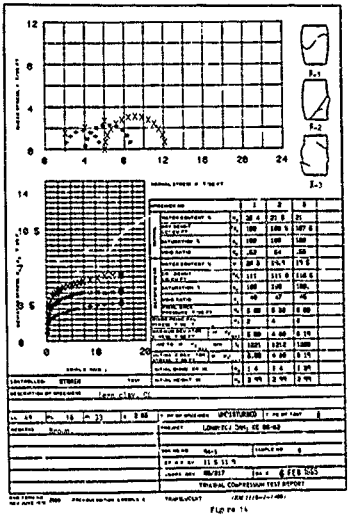
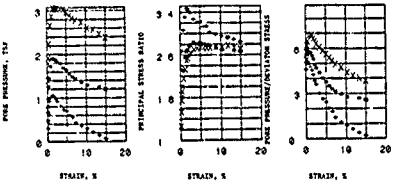
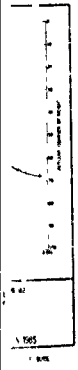
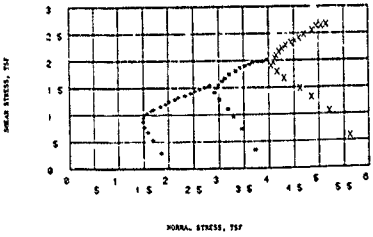


Figure 16



EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE





REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
E TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

NRD Form 754, 1 May 80

PROJECT: LONGVIEW DAM, KC 65 62
BORING NO: 94 1 SAMPLE NO 8
DEPTH/ELEV: 11 5 11 9
NRD LAB NO: 85/217 DATE: 6 FEB 1985

TRIAXIAL COMPRESSION TEST REPORT

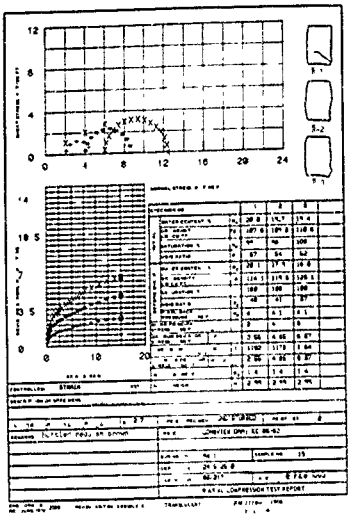
FIGURE: 15

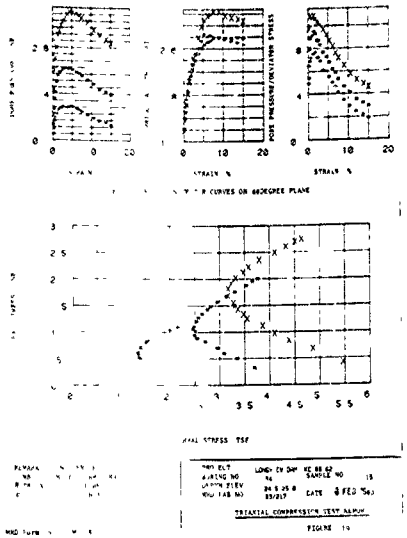
Revisions			
Symbol	Descriptions	Date	Approved

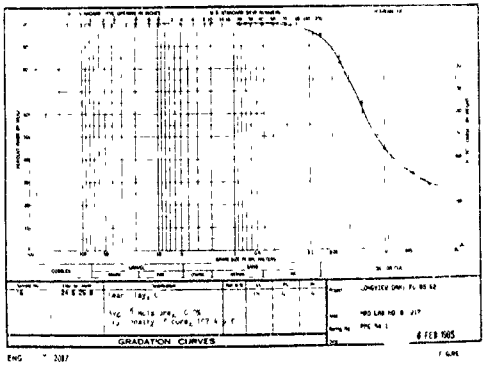
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

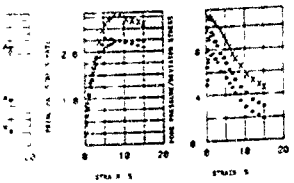
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T	LL 60 RANDOM STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R.G.D	Date:
	Dwg. No.:
	Sheet number: 3 of 4
	File No. RBL-3-1513

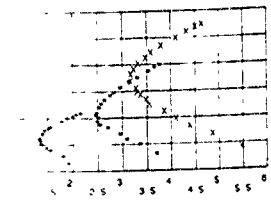
PLATE NO. A 26


TRIAXIAL COMPRESSION TEST REPORT


TRIAXIAL COMPRESSION TEST REPORT
FIGURE 10


GRADATION CURVES
6 FEB 1985



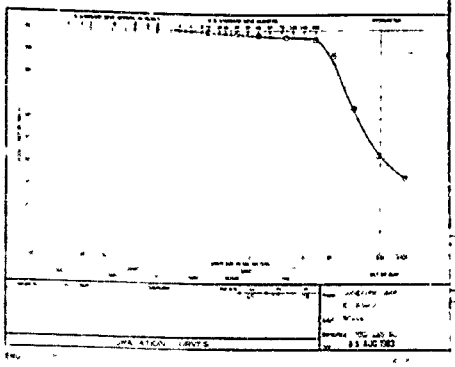


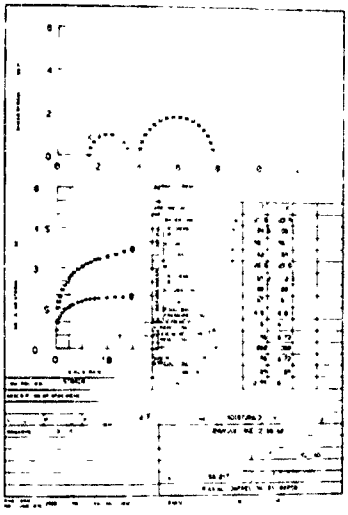
Revisions			
Symbol	Descriptions	Date	Approved

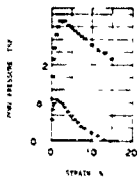
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

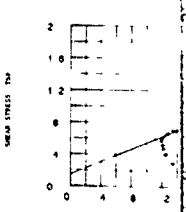
Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 60 RANDOM STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by: P S.T	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R G D	Sheet Number: 4 of 4
	Date:
	Dwg. No.
	File No. RBL-3-1514

PLATE NO. A 27



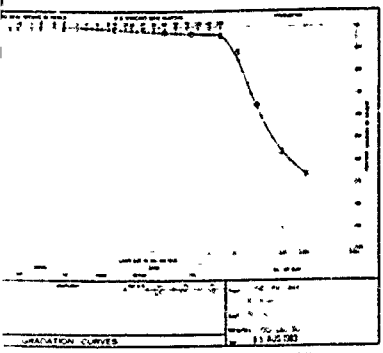


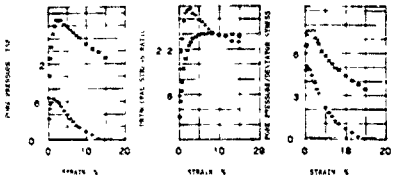


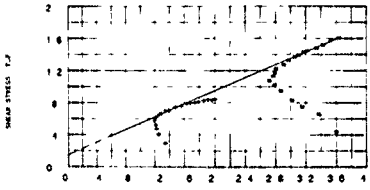


REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 1065
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

NAD Form 56 1 May 62







REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 7069
$\bar{R}$ TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

NRD Form 754 1 May 80

PROJECT	
BORING NO	SAMPLE NO
DEPTH/ELEV	
NRD LAB NO	DATE: 28 AUG 1983

TRIAXIAL COMPRESSION TEST REPORT

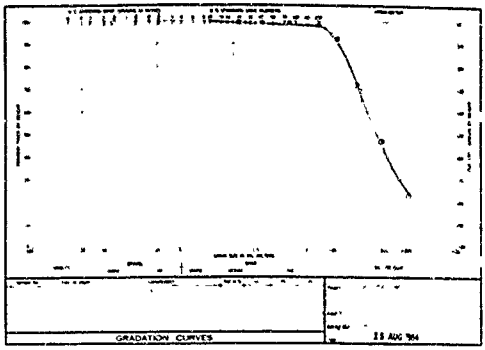
FIGURE:

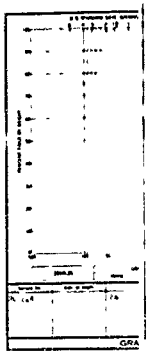
Revisions			
Symbol	Descriptions	Date	Approved

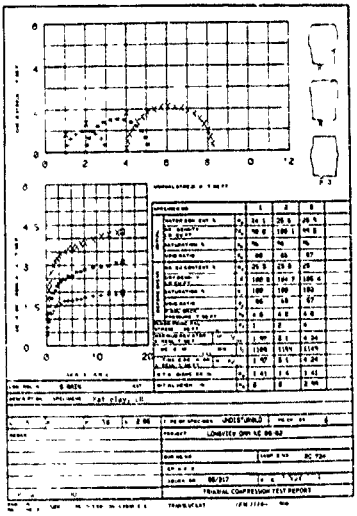
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

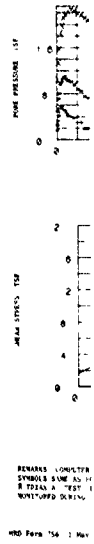
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 65 IMPERVIOUS STAGE II RECORD CONTROL $\bar{R}$, R, AND GRADATION TESTS
Drawn by: P.S.T	
Checked by: R.G.D/W.B.E	Scale: AS SHOWN — Sheet number: 1 of 5
Submitted by: R.G.D	Date: — Dwg No: — File No. RBL-3-1515

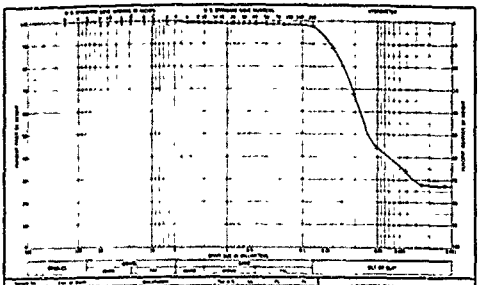
PLATE NO. A 28


GRADATION CURVES
ENG 2087

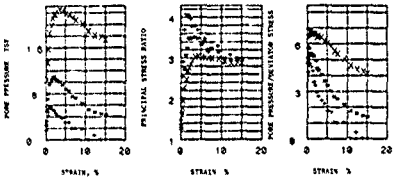

ENG 2087


TRIAXIAL COMPRESSION TEST REPORT

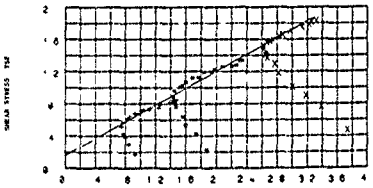




ENG 2087 FIGURE 4



EFFECTIVE STRESS VECTOR CURVES ON ABDEGREE PLANE



NORMAL STRESS, TSF

REMARKS GRAPHER PRINT-OUT
SYMBOLS SAME AS FORM 7089
E TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

MND Form 754 1 May 80

PROJECT [illegible]
BORING NO
DEPTH/ELEV
MND LAB NO 85/217
SAMPLE NO
DATE: 1 NOV 78

TRIAXIAL COMPRESSION TEST REPORT

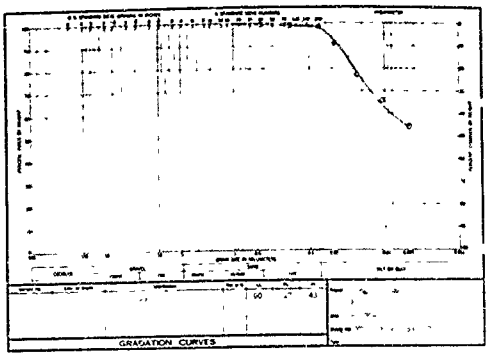
FIGURE: 5

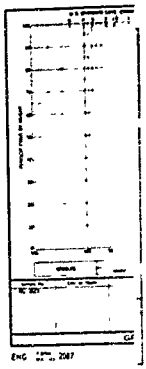
Revisions			
Symbol	Descriptions	Date	Approved

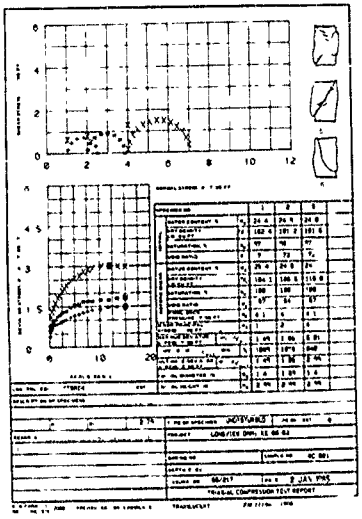
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

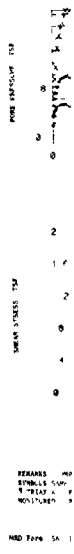
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 65 IMPERVIOUS STAGE II RECORD CONTROL, R, R, AND GRADATION TESTS
Drawn by: P.S.T	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R.G.D	Date:
	Dwg. No.
	Sheet number: 2 of 5
	File No. RBL-3-1516

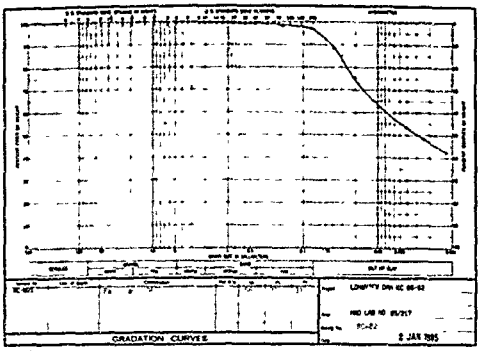
PLATE NO. A 29


GRADATION CURVES
ENG 2087

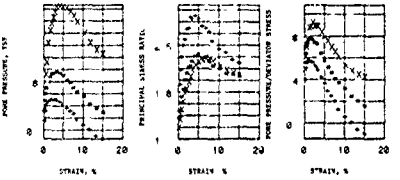

ENG 2087


TRIAXIAL COMPRESSION TEST REPORT

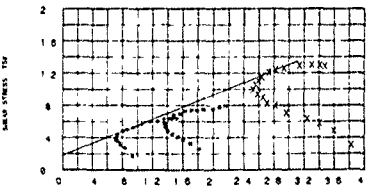

PORE PRESSURE TSF
SHEAR STRESS TSF
REMARKS
SYMBOLS
NOTICED
NRD Form



ENG Form 2087 FIGURE 8



EFFECTIVE STRESS VECTOR CURVES ON 60 DEGREE PLANE



REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FOUR 2089
TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 754 1 May 80

PROJECT LONGVIEW DAM, KC 86-82
BORING NO. CAMPLE NO. KC 831
DEPTH FEET
MRD LAB NO 85/217 DATE 2 JAN 1985

TRIAXIAL COMPRESSION TEST REPORT

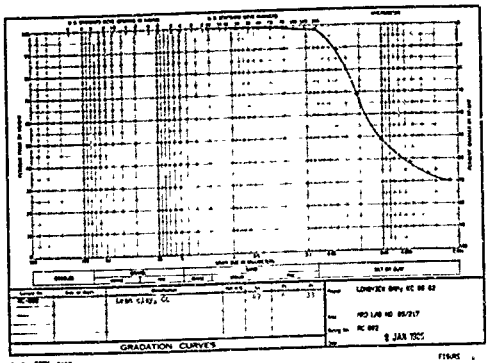
FIGURE

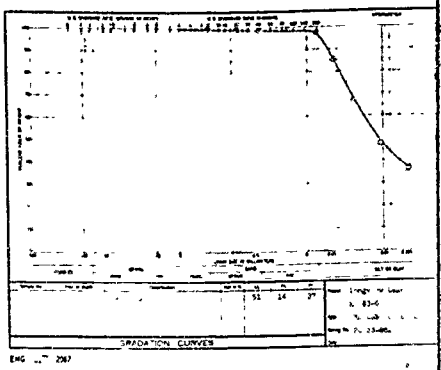
Revisions			
Symbol	Descriptions	Date	Approved

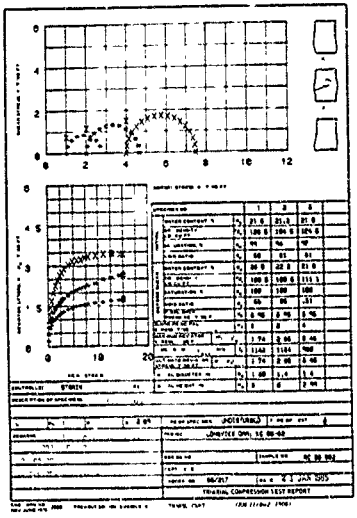
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

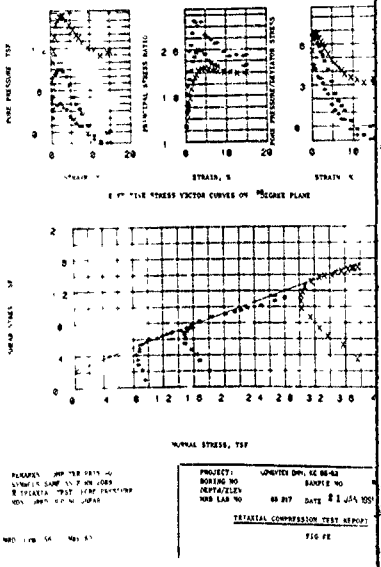
Designed by: R G D	US Army Corps of Engineers — LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P 3 T	LL 65 IMPERVIOUS STAGE II RECORD CONTROL, R, R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E	Scale: AS SHOWN — Sheet number: 3 of 5
Submitted by: R G D	Date: — Dwg No. — File No. RBL-3-1517

PLATE NO. A 30


GRADATION CURVES
FIGURE


GRADATION CURVES


TRIAXIAL COMPRESSION TEST REPORT


PRINCIPAL STRESS RATIO
STRAIN, %
NORMAL STRESS, TSF
PROJECT:
BORING NO
SAMPLE NO
DATE
TRIAXIAL COMPRESSION TEST REPORT
FIG FE

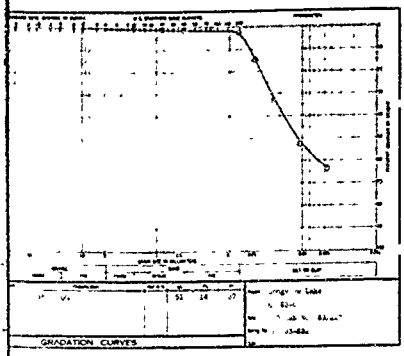
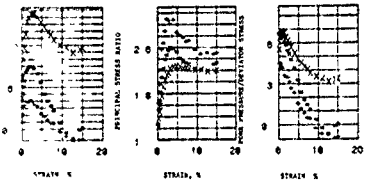
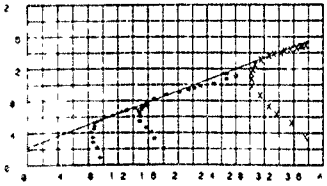


Figure C



EFFECTIVE STRESS VECTOR CURVES ON 45 DEGREE PLANE



NORMAL STRESS, TSF

PROJECT LONGVIEW DAM, AC 66-62
BORING NO SAMPLE NO: AC 66-000
DEPTH/ELEV
MAD LAB NO 66 217 DATE: 21 JAN 1965

TRIAXIAL COMPRESSION TEST REPORT

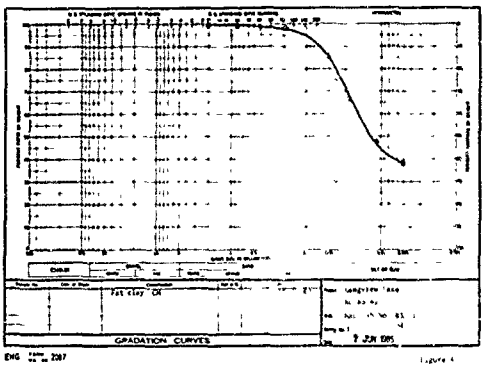
FIGURE

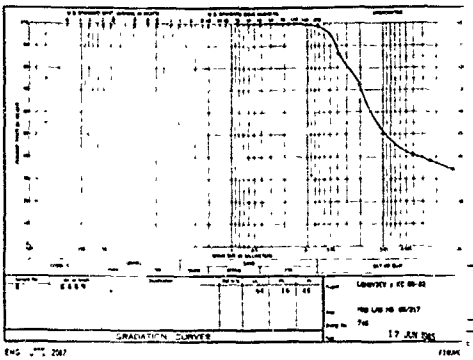
Revisions			
Symbol	Descriptions	Date	Approved

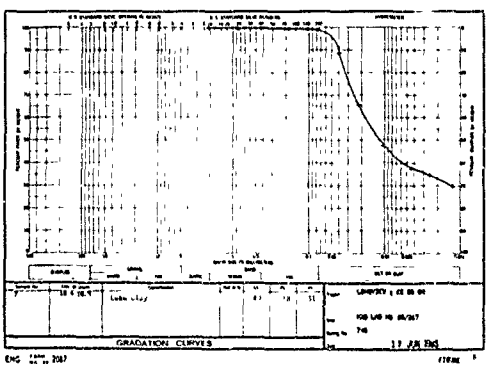
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

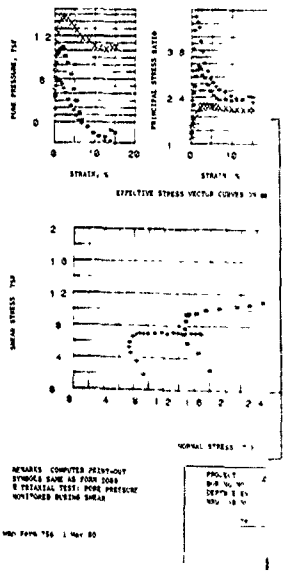
Designed by R.G.D.	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 65 IMPERVIOUS STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by P.S.T.	
Checked by R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by R.G.D.	Date:
	Dwg. No.
	Sheet Number 4 of 5
	File No. RBL-3-1518

PLATE NO A 31


GRADATION CURVES
7 JUN 1985


GRADATION CURVES
17 JUN 1985


GRADATION CURVES
17 JUN 1985


PORE PRESSURE, TSF
PRINCIPAL STRESS RATIO
STRAIN, %
EFFECTIVE STRESS VECTOR CURVES
SHEAR STRESS, TSF
NORMAL STRESS
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2080
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

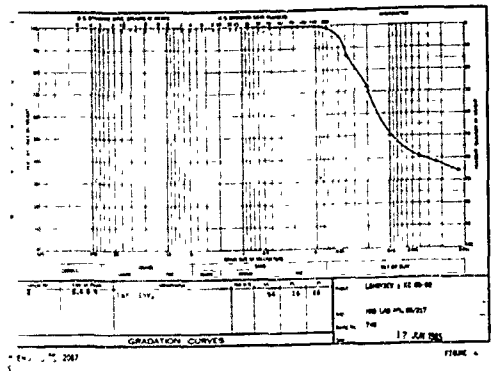


FIGURE 4

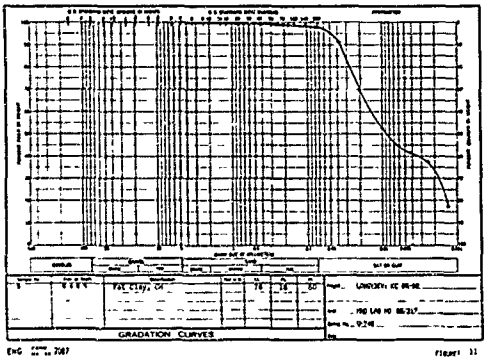
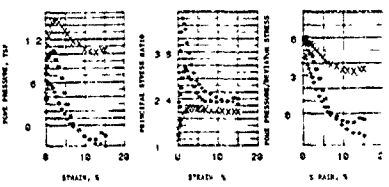
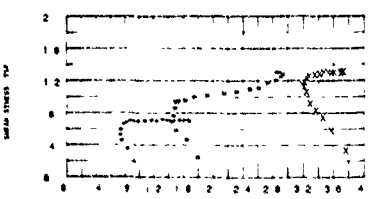


FIGURE 11



EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE



NORMAL STRESS, TSF

REMARKS: COMPUTER PROJECT SYMBOLS SAME AS FORM 1081
R TRIAXIAL TEST PORE PRESSURE MONITORED DURING SHEAR

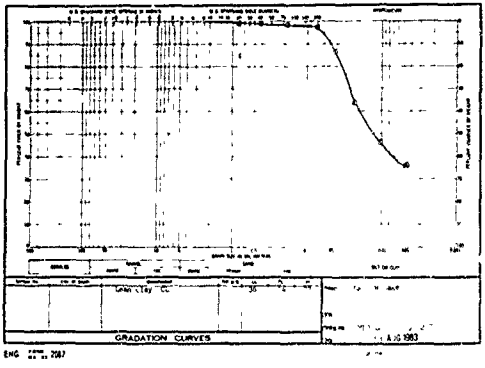
PROJECT
BOX NO
SAMPLE NO
DEPTH, FT
DATE
TRIAXIAL COMPRESSION TEST REPORT

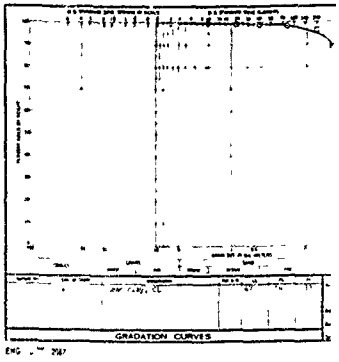
Revisions			
Symbol	Descriptions	Date	Approved

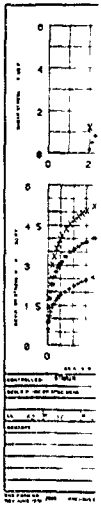
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

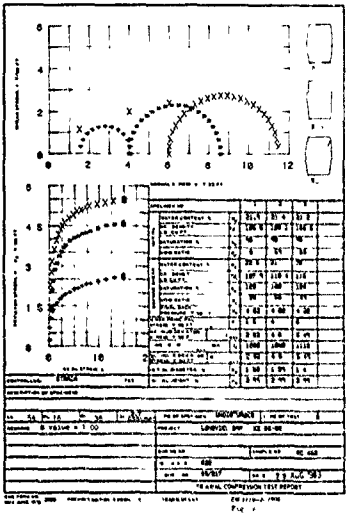
Designed by: R.G.D.	US Army Corps of Engineers — LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T.	LL 65 IMPERVIOUS STAGE II RECORD CONTROL R,R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN — Sheet number: 5 of 5
Submitted by: R.G.D.	Date: — Dwg. No.: — File No. RBL-3-1519

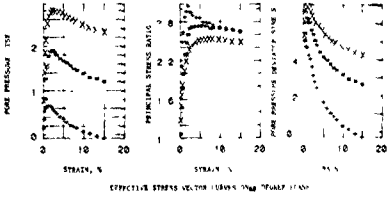
PLATE NO A 32

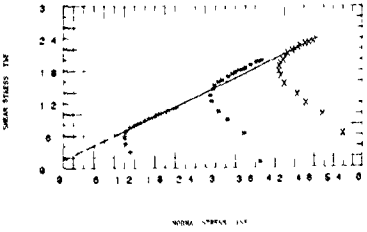






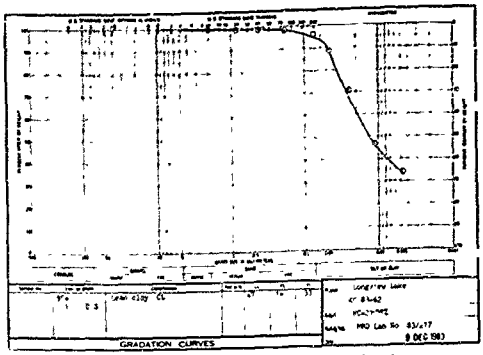




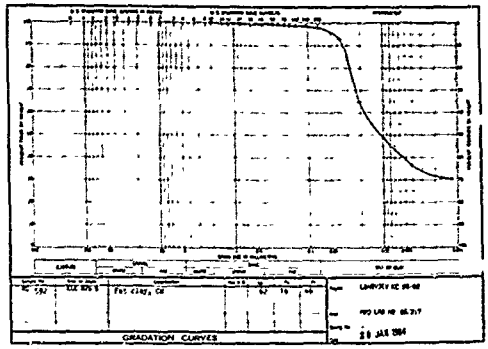


REQUIRES COMPUTER PRINT-OUT
SCHEDULE SAME AS FORM 7089
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

WES Form No. 1 May 80



ENG FORM 2087 Figure 5



ENG FORM 2087 FIGURE 16

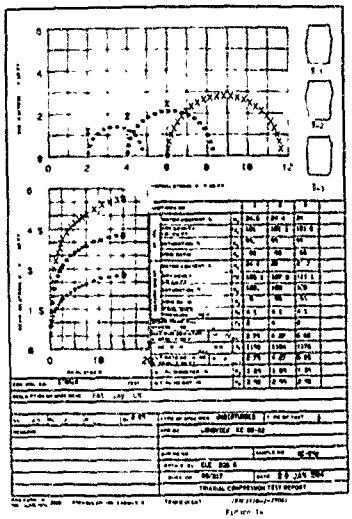
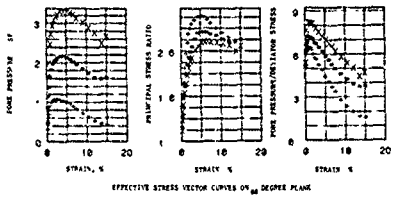
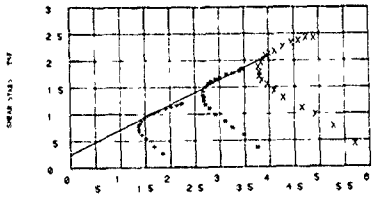
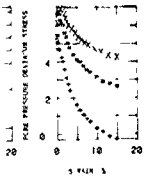


FIGURE 14

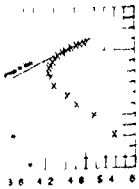


EFFECTIVE STRESS VECTOR CURVES ON 90 DEGREE PLANE





90 DEGREE PLANE



REMARKS: CONSOLIDATED-QUICK
SYMBOLS SAME AS FORM .089
R TRIAXIAL TEST: PORE PRESSURE MONITORED DURING SHEAR

MRD Form 75h, 1 May 80

PROJECT: LONG CK VC 88-52
BORING NO: SAMPLE NO: RC 592
DEPTH/ELEV: GLE 836.8
MRD LAB NO: 85/317 DATE: 28 JAN 1984

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 15

DATE 28 AUG 1983

TRIAXIAL COMPRESSION TEST REPORT

FIGURE 6

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

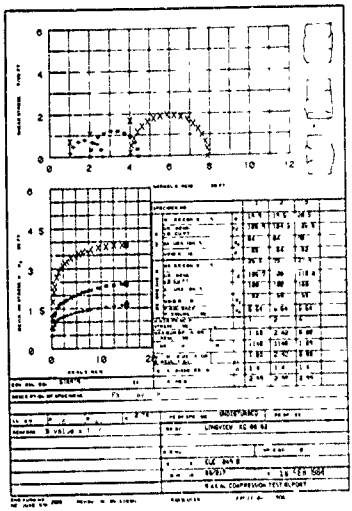
US Army Corps of Engineers

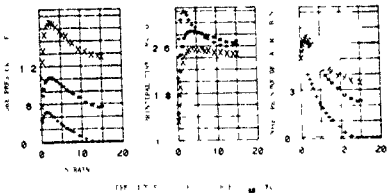
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

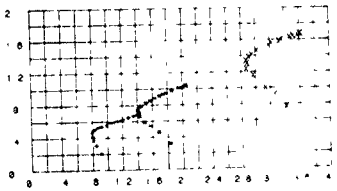
LL 65 RANDOM STAGE II
RECORD CONTROL R,R, AND
GRADATION TESTS

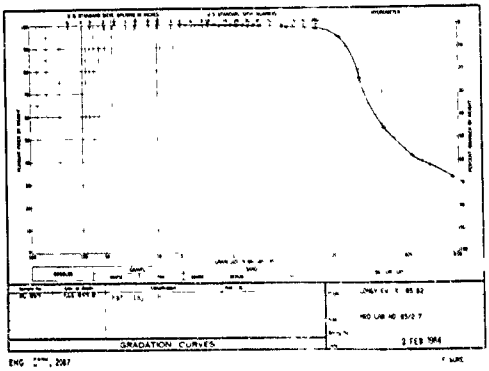
Designed by	RGD
Drawn by	PST
Checked by	RGD/WBE
Submitted by	RGD
Scale	AS SHOWN
Date	
Dwg. No.	
Sheet number	1 of 3
File No.	RBL-3-1520

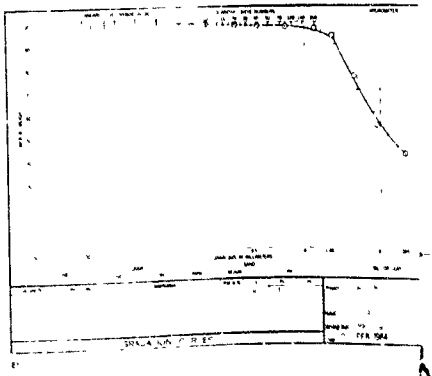
PLATE NO.A 33

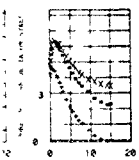


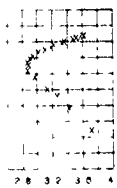


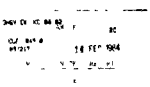


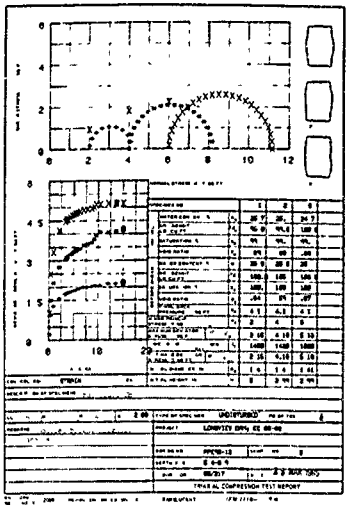

GRADATION CURVES

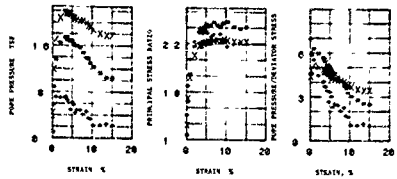




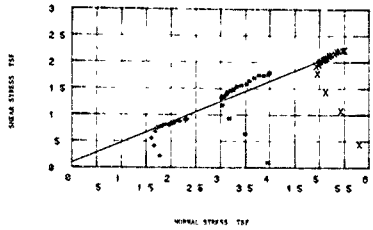








EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE



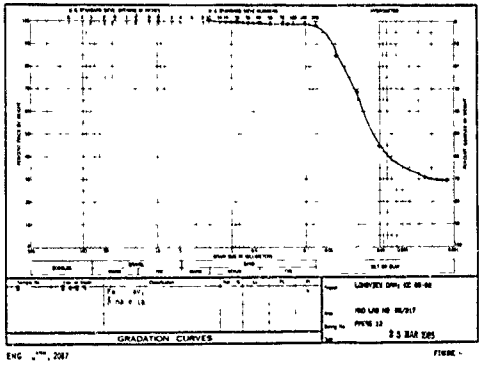
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAX AL TEST PORE PRESSURE
MONITORED DURING SHEAR

PROJECT LONGVIEW DWN; KC 88-88
BORING NO PRESS-12 SAMPLE NO 8
DEPTH/ELEV 8 4-5.9
HRD LAB NO 88/217 DATE 23 MAR 1985

TRIAXIAL COMPRESSION TEST REPORT

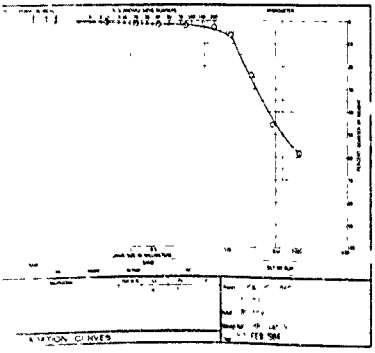
FIGURE

HRD Form 75A 1 May 80



ENG 2087

FIGURE

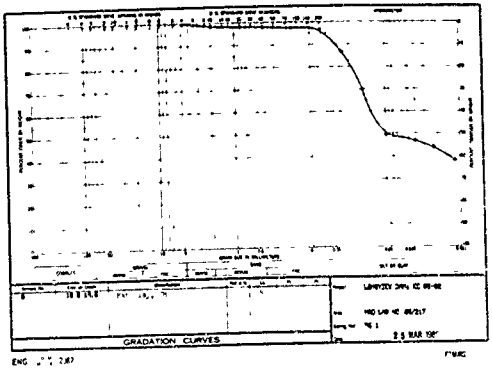


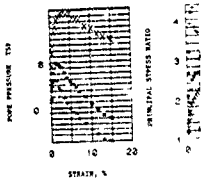
Revisions			
Symbol	Descriptions	Date	Approved

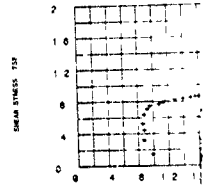
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by P S T	LL 65 RANDOM STAGE II RECORD CONTROL R,R, AND GRADATION TESTS
Checked by R.G.D./W.B.E.	Scale AS SHOWN — Sheet number 2 of 3
Submitted by R G D	Date — Dwg No — File No. RBL-3-1521

PLATE NO. A 34

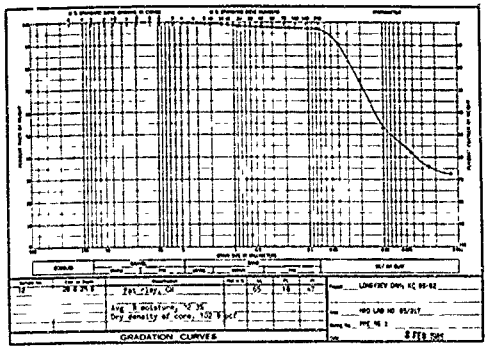


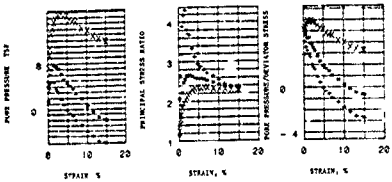




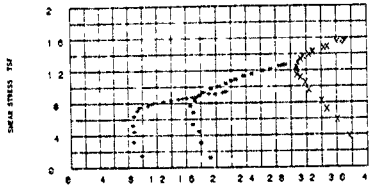
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2049
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

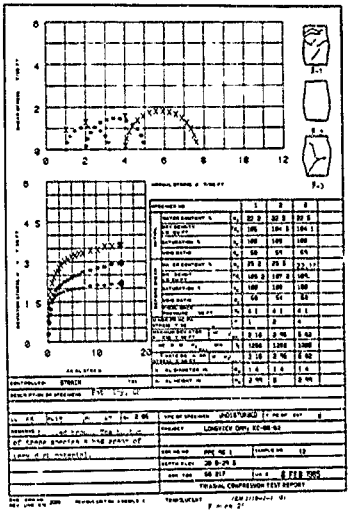
WRD Form 756 3 May 80





EFFECTIVE STRESS VECTOR CURVES ON ABDEGREF PLANE





REMARKS COMPUTER PR VT-OUT
SYMBOLS SAME AS FORM 2088
E TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 756 1 May 80

PROJECT: LONGVIEW DAM, KC 65-62
BORING NO: PPE NO 1 SAMPLE NO 12
DEPTH/ELEV 20 8-29 S
MRD LAB NO 85/217 DATE: 8 FEB 1985

TRIAXIAL COMPRESSION TEST REPORT

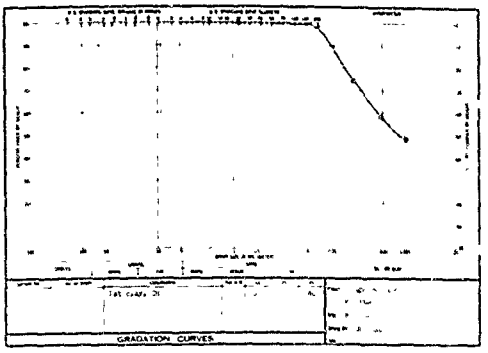
FIGURE: 2'

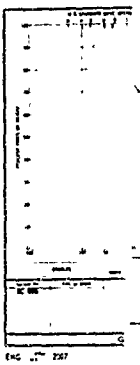
Revisions			
Symbol	Descriptions	Date	Approved

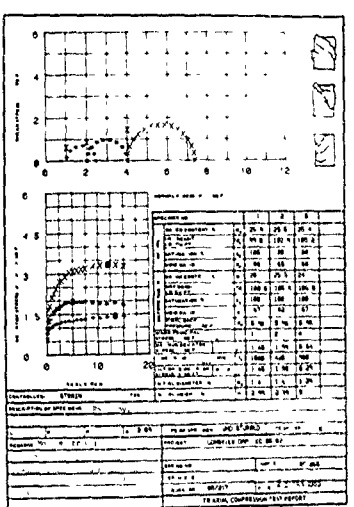
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

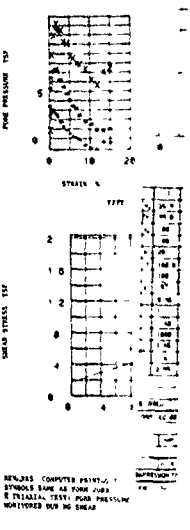
Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 65 RANDOM STAGE II RECORD CONTROL $\bar{R}$, R, AND GRADATION TESTS
Drawn by: P S T	
Checked by: R.G.D./W.B.E	Scale: AS SHOWN
Submitted by: R G D	Date:
	Dwg No
	Sheet number: 3 of 3
	File No: RBL-3-1522

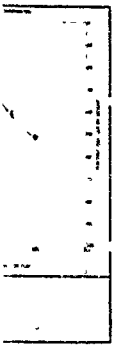
PLATE NO A 35

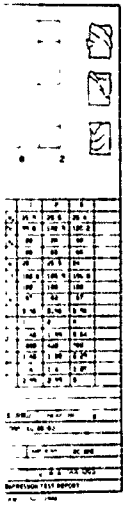

GRADATION CURVES

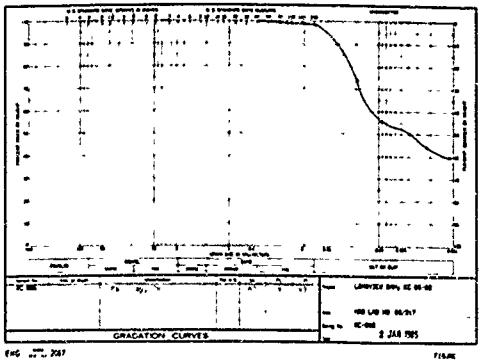


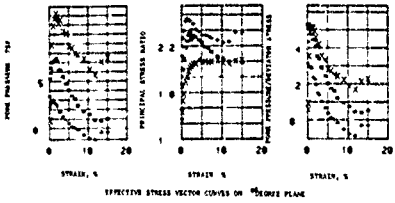

TRIAXIAL COMPRESSION TEST REPORT


PORE PRESSURE TSF
STRAIN %
SHEAR STRESS TSF

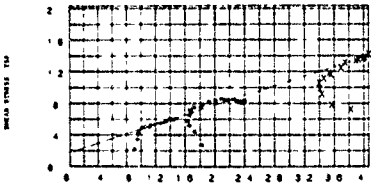








EFFECTIVE STRESS VECTOR CURVES ON [illegible] PLANE



REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2081
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 750 1 May 80

PROJECT	LONGVIEW DAM, KC 86-62		
BORING NO		SAMPLE NO	KC-866
DEPTH, ELEV			
MRD LAB NO	86/217	DATE	2 1 AN 1985

TRIAXIAL COMPRESS ON TEST REPORT

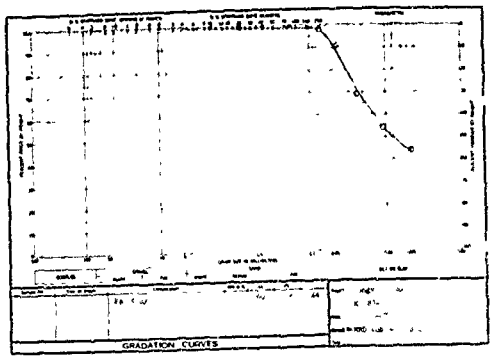
FIGURE

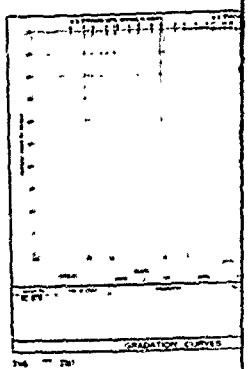
Revisions			
Symbol	Descriptions	Date	Approved

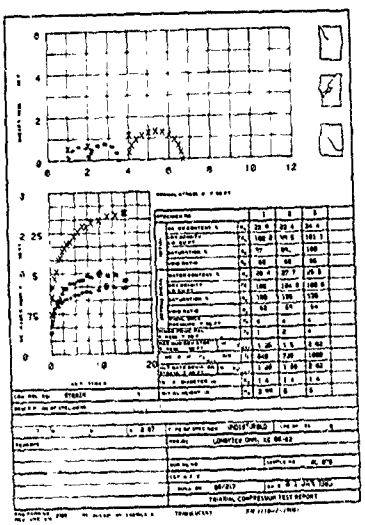
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

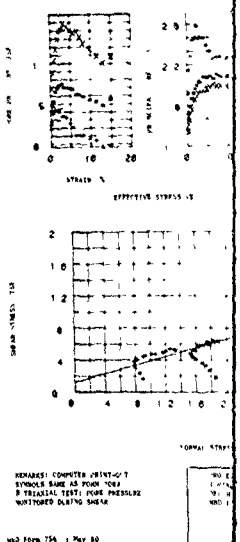
Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P S T	LL 70 RANDOM STAGE II RECORD CONTROL R,R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R G D	Date:
	Dwg. No.
	Sheet number: 1 of 8
	File No. RBL-3-1523

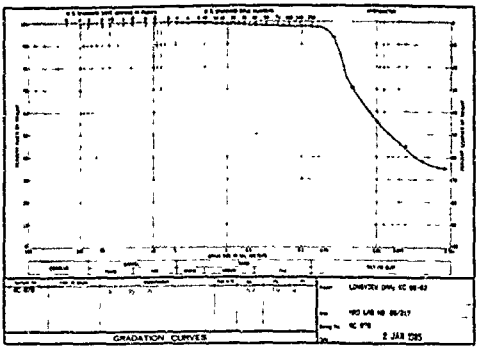
PLATE NO A 36


GRADATION CURVES

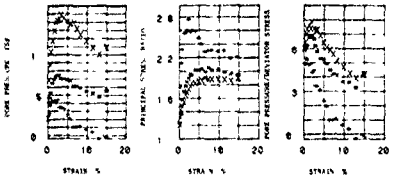

GRADATION CURVES


TRIAXIAL COMPRESSION TEST REPORT

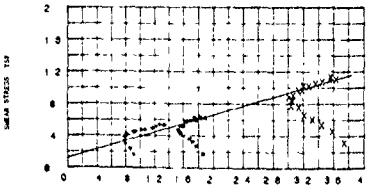

STRAIN %
EFFECTIVE STRESS
REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FOUR TOP
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR
NWD Form 754 1 May 80



ENG FORM 2087 FIGURE



EFFECTIVE STRESS VECTOR CURVES ON 60DEGREE PLANE



REMARKS: COMPUTER PRINTOUT
SYMBOLS SAME AS TOWN LOBS
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MND Form 756 1 May 80

PROJECT LONGVIEW DAM
BORING NO SAMPLE NO
DEPTH/ELEV
RAD LAB NO 85/217 DATE 2 1 JAN 1985

TRIAXIAL COMPRESSION TEST REPORT

FIGURE

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 70 RANDOM STAGE II RECORD CONTROL $\bar{R}$, R, AND GRADATION TESTS
Drawn by P S T	
Checked by R.G.D./W.B.E	Scale AS SHOWN — Sheet Number 2 of 8
Submitted by R G D	Date — Dwg No — File No RBL-3-1524

PLATE NO A 37

5 4 3

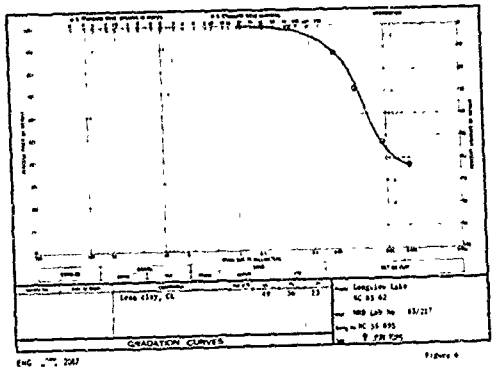
D

C

B

A

5 4 3



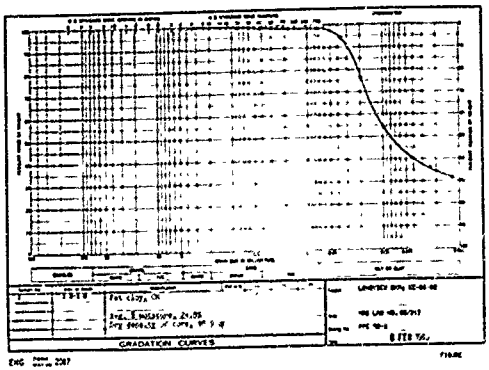
Revisions			
Symbol	Descriptions	Date	Approved

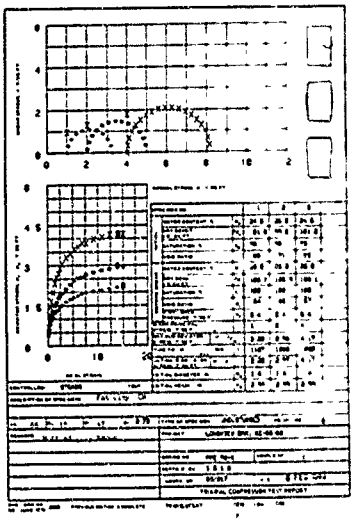
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

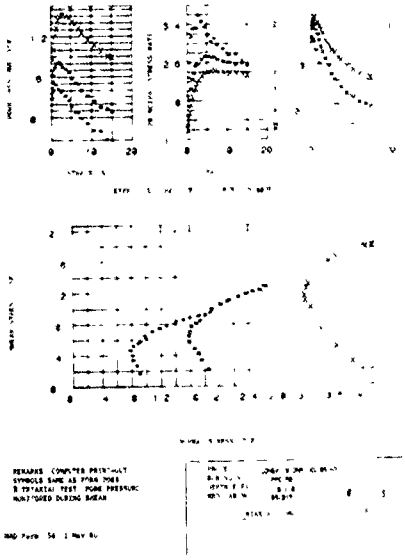
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT
LL 70 RANDOM STAGE II
RECORD CONTROL R,R, AND
GRADATION TESTS

Designed by R G D	US Army Corps of Engineers	Scale AS SHOWN	Sheet Number 3 of 8
Drawn by P S T		Date	File No. RBL-3-1525
Checked by R.G.D./M.S.E.		Dwg No.	
Submitted by R G D			

PLATE NO A 38


GRADATION CURVES


TRIAXIAL COMPRESSION TEST REPORT


REMARKS COMPUTER PRINTOUT
SYMBOLS SAME AS FORM 7063
B TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

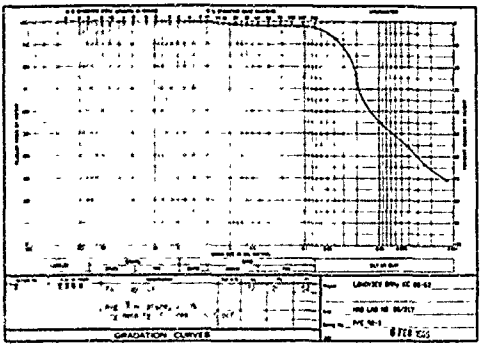
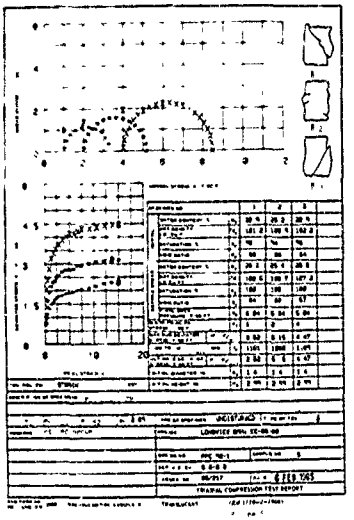
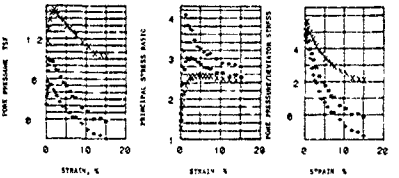
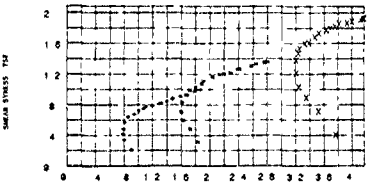


FIGURE A





EFFECTIVE STRESS VECTOR CURVES ON MOHRS PLANE



REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2069
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

HRD Form 756 1 May 80

PROJECT: LONGVIEW DAM, KC 88-02
BORING NO PVC 10-1 SAMPLE NO 3
DEPTH/ELEV 0.0 to 0.0
HRD LAB NO 88/217 DATE 8 FEB 1965

TRIAXIAL COMPRESS ON TEST REPORT

F GLOVE

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

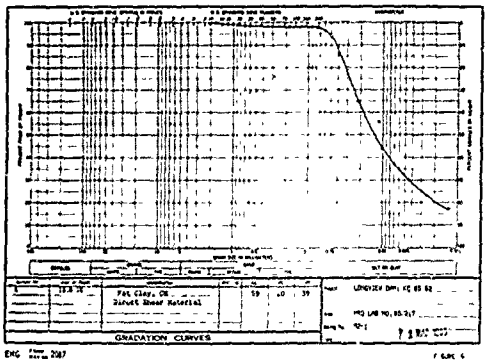
Designed by: R G D
Drawn by: P S T
Checked by: R.G.D/W.B.Z
Submitted by: R G D

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT
LL 70 RANDOM STAGE II
RECORD CONTROL R,R, AND
GRADATION TESTS

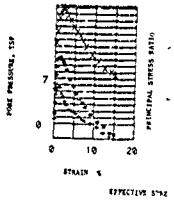
Scale: AS SHOWN
Date:
Dwg No:
Sheet number: 4 of 8
File No: RBL-3-1526

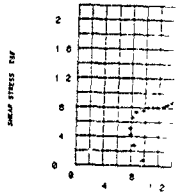
PLATE NO A 39



ENG Form 2087

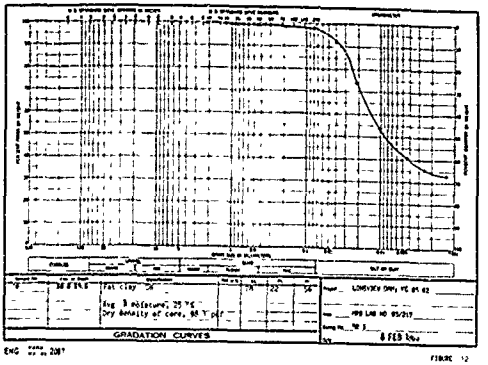
FIGURE 4





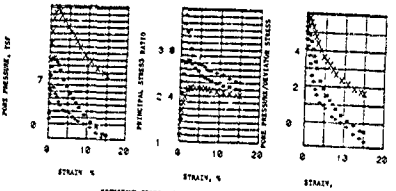
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 756, 1 May 80

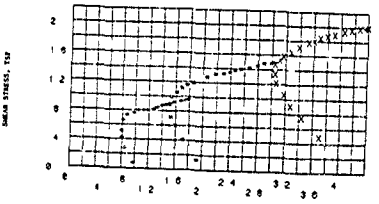


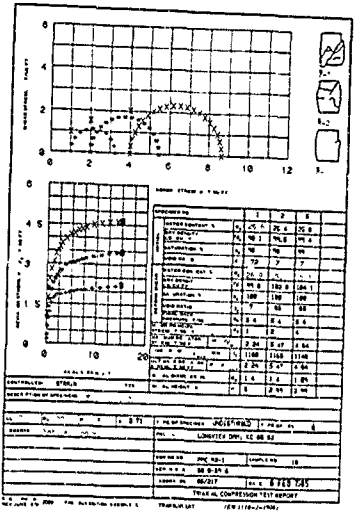
ENG FORM 2087

FIGURE 12



EFFECTIVE STRESS VECTOR CURVES ON DEGREE PLANE





REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 3089
N TRIAXIAL TEST: PORE PRESSURE
MONITORED DURING SHEAR

HRD Form 756 1 May 60

PROJECT: LONGVIEW DAM, KC 65-62
BORING NO: PPC NO-1 SAMPLE NO: 10
DEPTH/ELEV: 50.0-59.0
HRD LAB NO: 65/217 DATE: 6 FEB 1965

TRIAXIAL COMPRESSION TEST REPORT

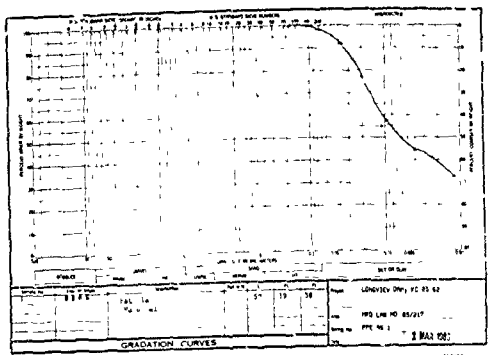
FIGURE: 11

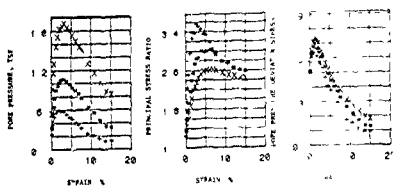
Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

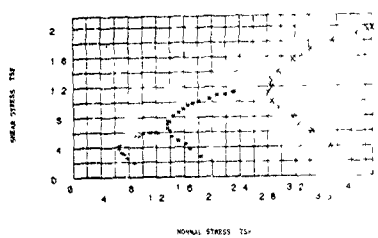
Designed by: R G D	US Army Corps of Engineers — LITTLE BLUE RIVER, MISSOURI, LONGVIEW LAKE, EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P S T	LL 70 RANDOM STAGE II RECORD CONTROL R,R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E	Scale: AS SHOWN — Sheet number: 5 of 8
Submitted by: R G D	Date / Dwg No — File No: RBL-3-1527

PLATE NO A 40



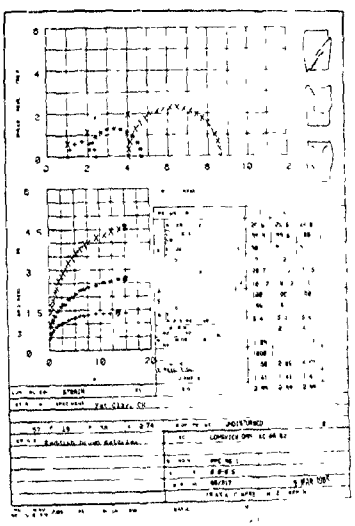


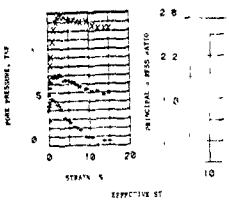
EFFECTIVE STRESS VECTOR CURVES ON SEDIMENT

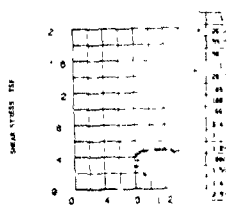


REMARKS COMPUTER PRINT-OUT
SYMBOL SAME AS FORM 2089
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

HRD Form 756 1 May 80

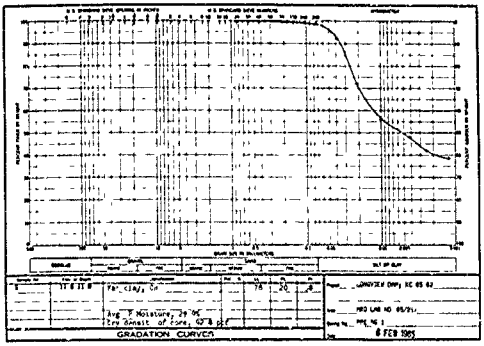


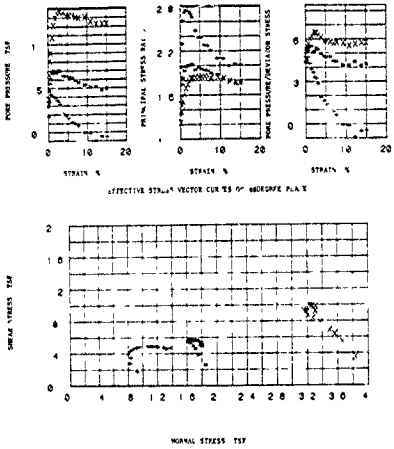


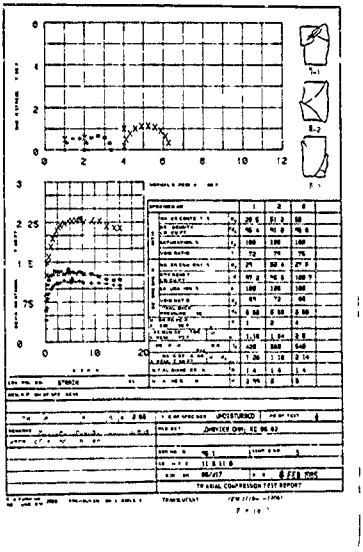


REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

HRD Form 756 1 May 80







REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2069
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

PROJECT LONGVIEW DAM, KC 86 82
BORING NO 86 1 SAMPLE NO 5
DEPTH/ELEV 11 8 11 0
PND LAB NO 85/217 DATE 6 FEB 1985

TRIAXIAL COMPRESSION TEST REPORT

FIGURE 21

NRD Form 756 1 May 80

Revisions			
Symbol	Descriptions	Date	Approved

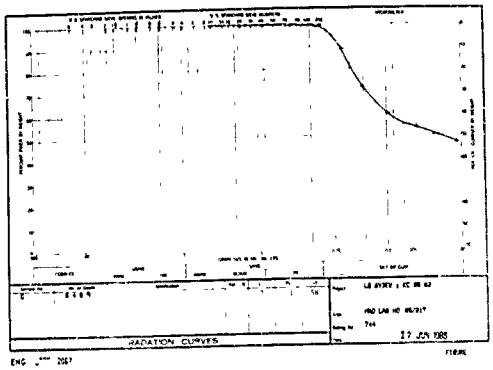
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

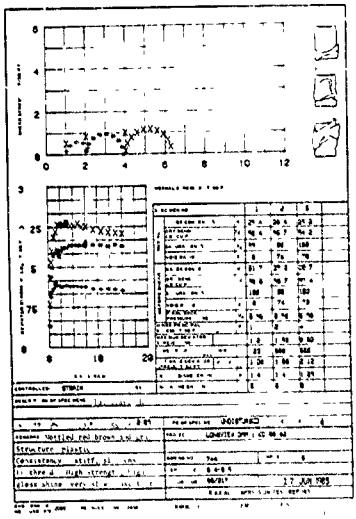
US Army Corps of Engineers

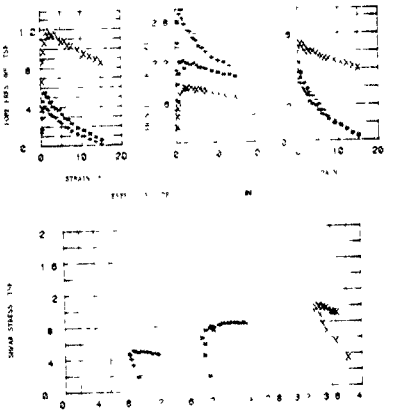
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT
LL 70 RANDOM STAGE II
RECORD CONTROL R, R, AND
GRADATION TESTS

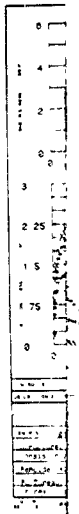
Designed by	R G D
Drawn by	P J T
Checked by	R G D / W.B.E
Submitted by	R G D
Scale	AS SHOWN
Date	
Dwg No	
Sheet number	6 of 8
File No	RBL-3-1528

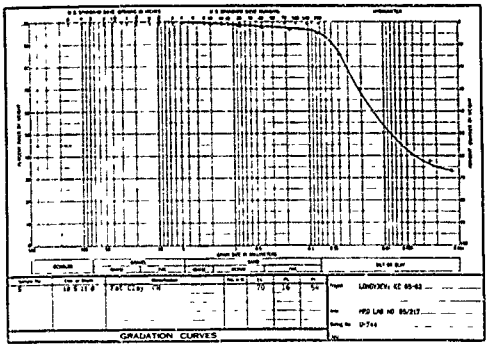
PLATE NO A 41

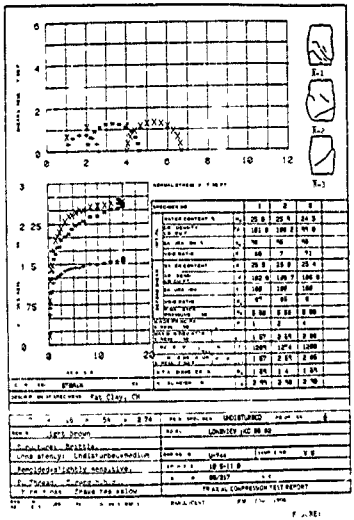

RADIATION CURVES
17 JUN 1985

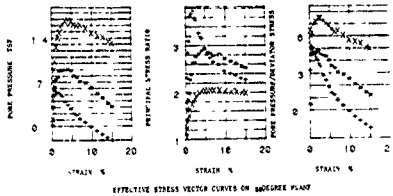


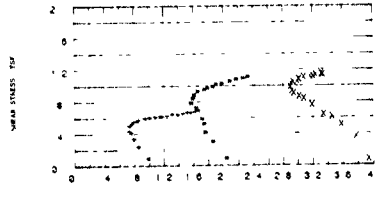












REMARKS CONSOLIDATED PRINCIPAL
SYMBOLS SAME AS PORE 038
R TRIAXIAL TEST PORE PRESSURE
NOT USED DURING SHEAR

PROJECT LONGVIEW, KC 85 83
BORING NO B 744
DEPTH ft 18 5-11 0
KRD LAB NO 85/217
SAMPLE NO
DATE
TRIAXIAL COMPRESSION TEST REPORT
FIGURE 3

KRD Form 56 1 May 80

Revisions			
Symbol	Descriptions	Date	Approved

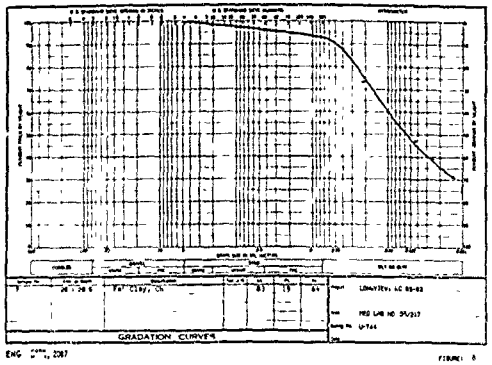
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY MISSOURI

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT
LL 70 RANDOM STAGE II
RECORD CONTROL R,R, AND
GRADATION TESTS

US Army Corps of Engineers

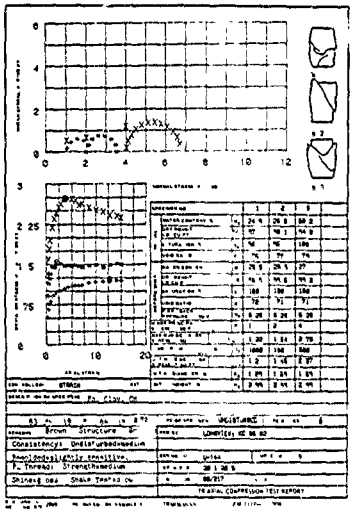
Designed by RGD	Scale AS SHOWN	Sheet number 7 of 8	
Drawn by PST	Date		
Checked by RGD/WBE			
Submitted by RGD	Dwg No	File No RBL-3-1529	

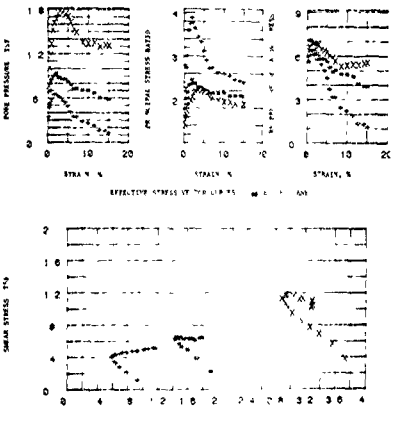
PLATE NO A 42



ENG FORM 2087

FIGURE 6





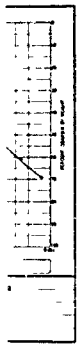
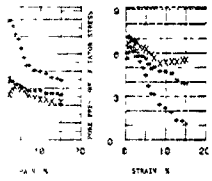


FIGURE 6



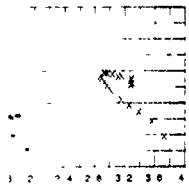


FIGURE 7

Revisions			
Symbol	Descriptions	Date	Approved

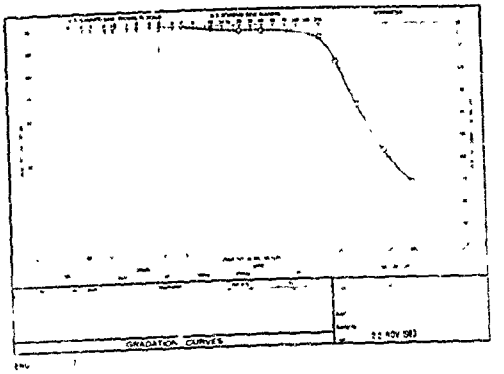
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

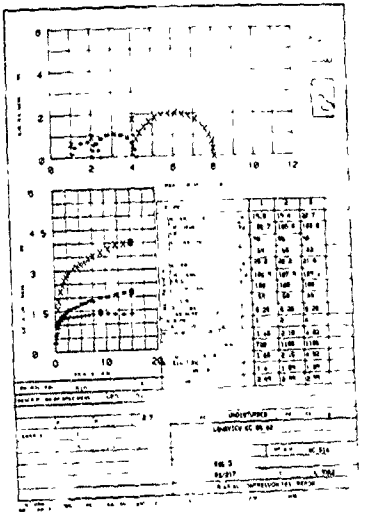
US Army Corps of Engineers

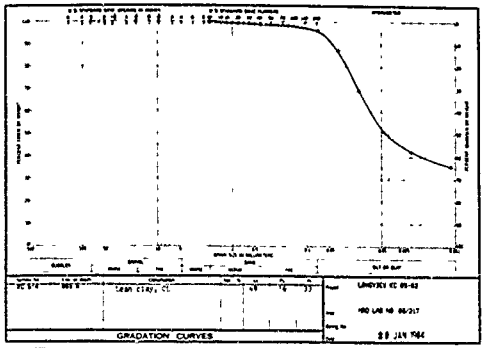
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT
LL 70 RANDOM STAGE II
RECORD CONTROL R, R, AND
GRADATION TESTS

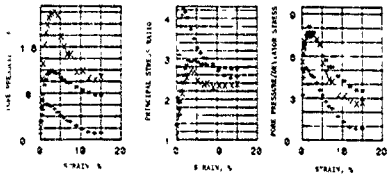
Designed by: RGD	Scale: AS SHOWN	Sheet Number: 8 of 8	
Drawn by: PST	Date		
Checked by: R.G.D./W.B.E.	Dwg. No	File No: KBL-3-1530	
Submitted by: RGD			

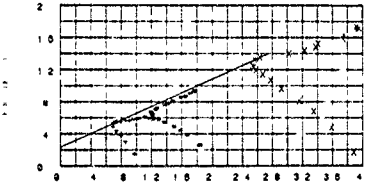
PLATE NO A 43


GRADATION CURVES









NORMAL STRESS, TSF

PROJECT LONGVIEW KC 09-62
BORING NO
DEPTH ELEV
HRD LAB NO 06/217
SAMPLE NO
DATE 28 JAN 1962

TRIAXIAL COMPRESSION TEST REPORT

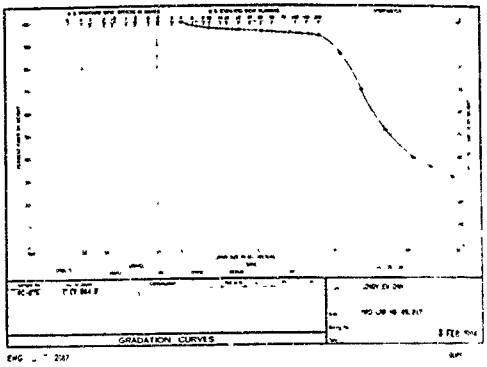
FIGURE: 1

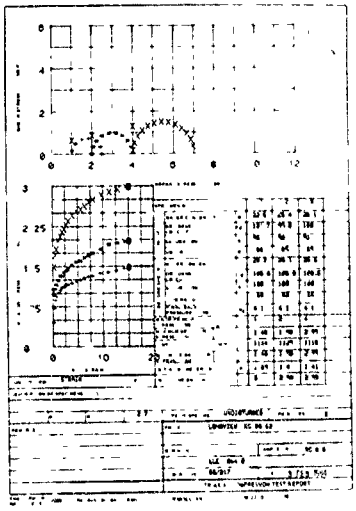
Revisions			
Symbol	Descriptions	Date	Approved

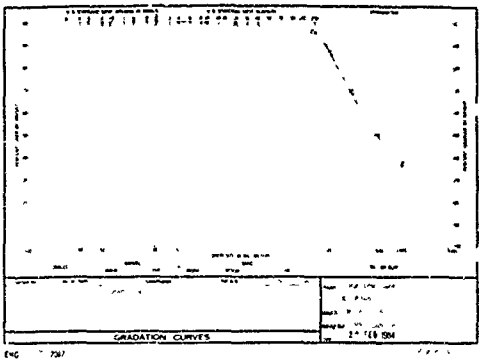
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

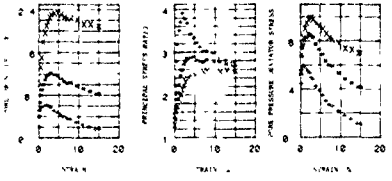
Designed by: R G D	US Army Corps of Engineers — LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT BERM ZONE STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Drawn by: P S T	
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN — Sheet number: 1 of 4
Submitted by: R G D	Date — Dwg No — File No RBL-3-1531

PLATE NO A 44

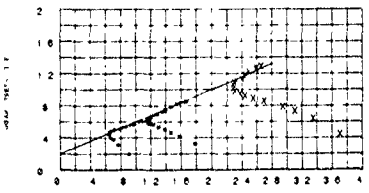

GRADATION CURVES







EFFECTIVE PRESSURE FOR CURVES ONE DEGREE PLANE



NORMAL STRESS (TSF)

REMARKS: UNLIMITED PRINT-OUT
SAMPLE NAME AS FORM 2069
TEST: PORE PRESSURE
MONITORED DURING SHEAR

MRD Form 56 1 May 80

PROJECT: DIVISION KC 66 63
BORING NO: SAMPLE NO: RC 876
DEPTH STRA: ELE 864 0
MRD LAB NO: 69/919
DATE: 3 FEB 1984

TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 7

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: RGD	US Army Corps of Engineers — LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT BERM ZONE STAGE II RECORD CONTROL R.R. AND GRADATION TESTS
Drawn by: PST	
Checked by: RGD/WBE	Scale: AS SHOWN — Sheet Number: 2 of
Submitted by: RGD	Date: — Dwg No: — File No: RBL 7 1532

PLATE NO 4 45

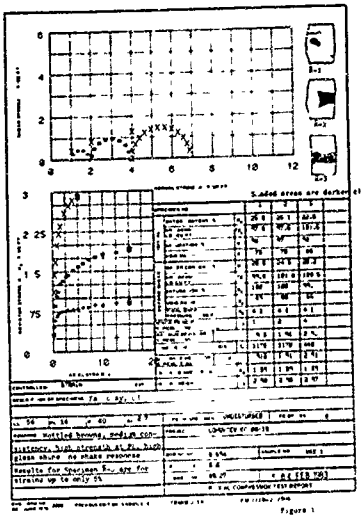
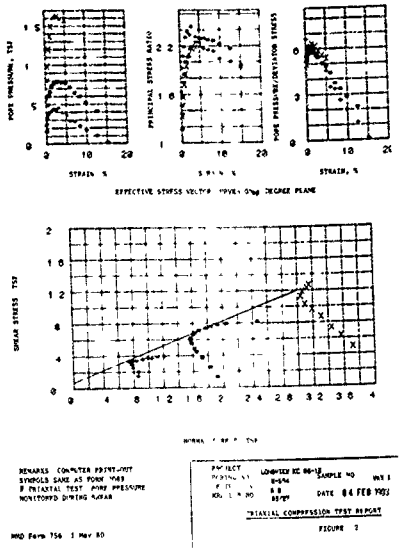
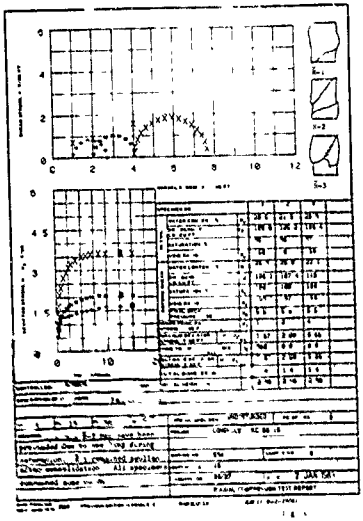
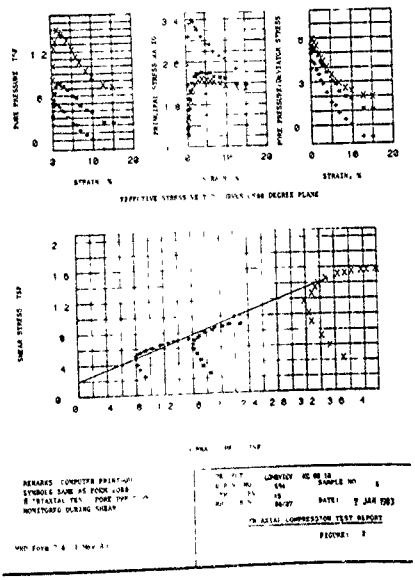
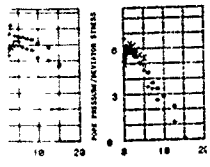

Shaded areas are darkened
Mottled brown, medium consistency, high strength at PL high glass shape no shake response
Results for Specimen 5-, are for strains up to only 5%
LOMBARDIA KC 86-18
TRIAXIAL COMPRESSION TEST REPORT

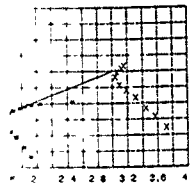
Figure 1


PORE PRESSURE, TSF
PRINCIPAL STRESS RATIO
PORE PRESSURE/DEVIATOR STRESS
STRAIN, %
EFFECTIVE STRESS VECTOR OVER 0 DEGREE PLANE
SHEAR STRESS TSF
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 1083
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR
LOMBARDIA KC 86-18
SAMPLE NO
DATE 04 FEB 1983
TRIAXIAL COMPRESSION TEST REPORT
FIGURE 2
MND Form 756 1 May 80


LOMBARDIA KC 86-18
TRIAXIAL COMPRESSION TEST REPORT

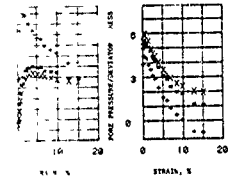

PORE PRESSURE TSF
PRINCIPAL STRESS RATIO
PORE PRESSURE/DEVIATOR STRESS
STRAIN, %
EFFECTIVE STRESS VECTOR OVER 0 DEGREE PLANE
SHEAR STRESS TSF
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 1083
R TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR
LOMBARDIA KC 86-18
SAMPLE NO
DATE: 7 JAN 1983
TRIAXIAL COMPRESSION TEST REPORT
FIGURE: 2
MND Form 756 1 May 80

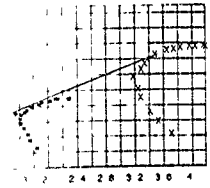




TRIAXIAL COMPRESSION TEST REPORT

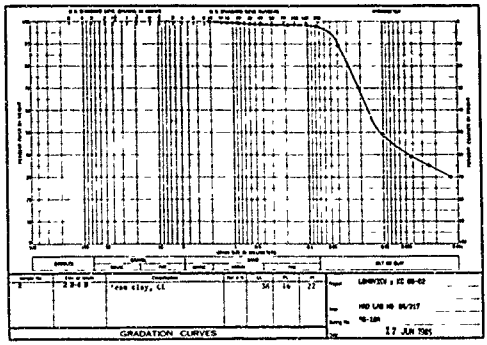
FIGURE: 2





TRIAXIAL COMPRESSION TEST REPORT

FIGURE: 2



ENG Form No. 2087

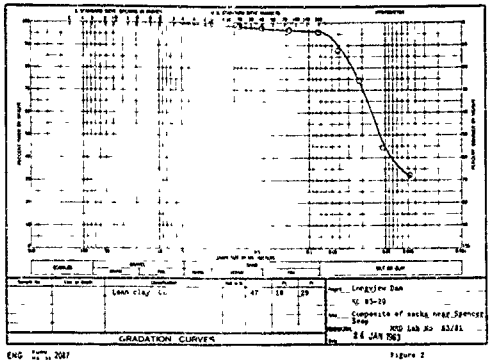
FIGURE 10

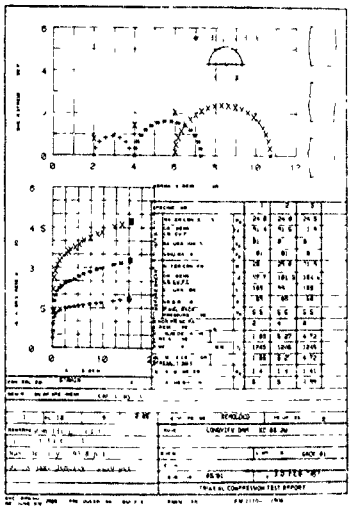
Revisions			
Symbol	Descriptions	Date	Approved

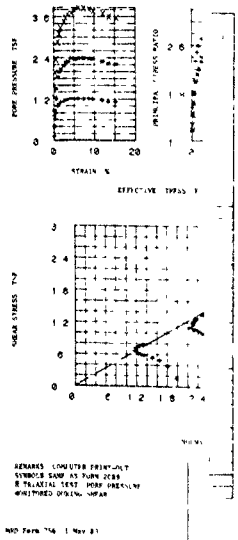
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P S T	BERM ZONE STAGE II RECORD CONTROL R, R, AND GRADATION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN; Sheet number: 3 of 4
Submitted by: R G D	Date; Dwg. No.; File No. RBL-3-1533

PLATE NO A 46


Longview Dam
Composite of sacks near Spencer Shop
GRADATION CURVES
ENG
Figure 2


TRIAXIAL COMPRESSION TEST REPORT


PORE PRESSURE TSF
PRINCIPAL STRESS RATIO
STRAIN %
EFFECTIVE STRESS
SHEAR STRESS TSF
REMARKS COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 2089
TRIAXIAL TEST PORE PRESSURE
MONITORED DURING SHEAR

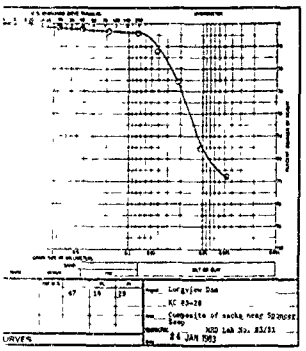
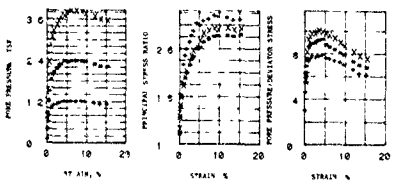
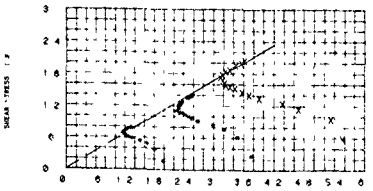


Figure 2



EFFECTIVE STRESS VECTOR CURVES ON [illegible] PLANE



REMARKS: COMPUTER PRINT-OUT
SYMBOLS SAME AS FORM 1089
R TRIAXIAL TEST PORE PRESS RP
MONITORED DURING SHEAR

MRD Form 756 May 83

PROJECT LONGVIEW DAM
BORING NO. SAMPLE NO. BACK PL
DEPTH FEET
MRD LAB NO. 83/91 13 FEB 1983

TRIAXIAL COMPRESSION TEST REPORT

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

BERM ZONE STAGE II
RECORD CONTROL R,R, AND
GRADATION TESTS

Designed by	R G D
Drawn by	P S T
Checked by	R G D/W B E
Submitted by	R G D
Scale	AS SHOWN
Date	
Dwg No	
Sheet number	4 of 4
File	RBL [illegible]

PLATE NO. 4-4

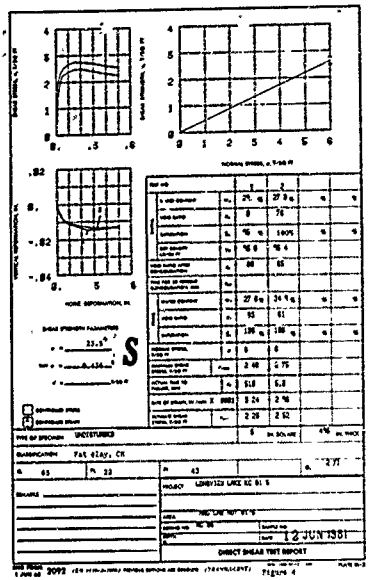


Figure 4

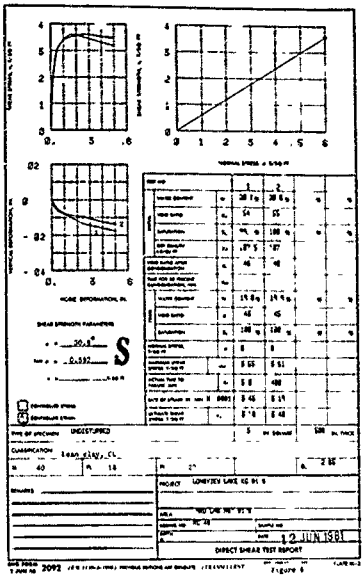
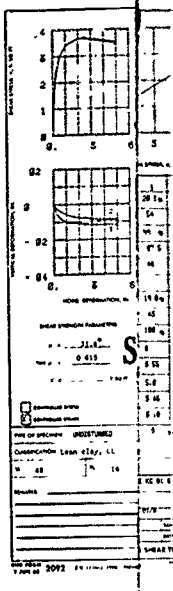


Figure 6



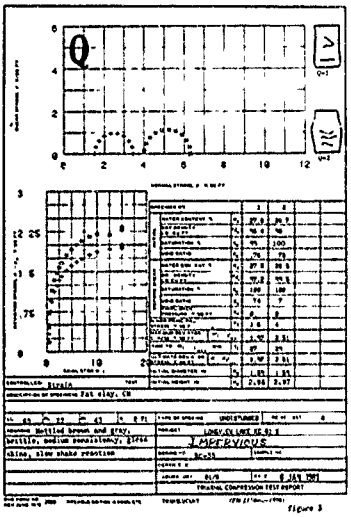


Figure 3

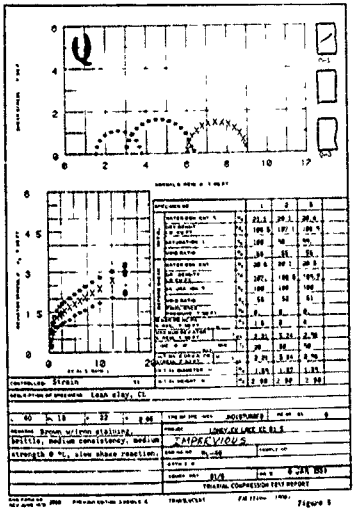
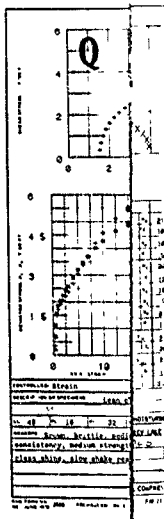


Figure 5



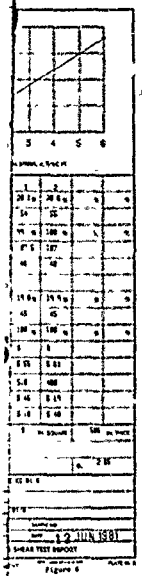


Figure 6

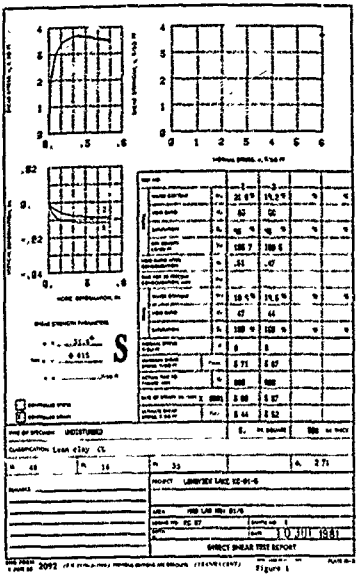


Figure 1

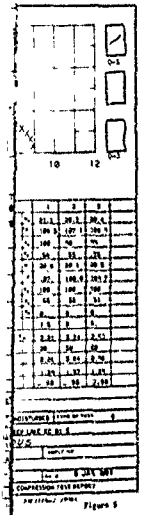


Figure 5

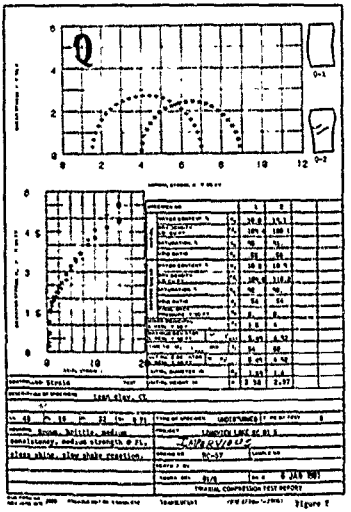


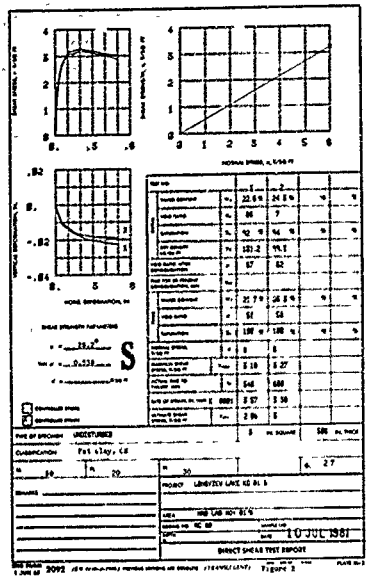
Figure 2

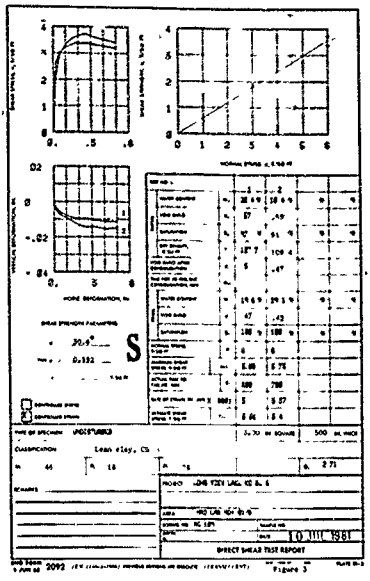
Revisions			
Symbol	Descriptions	Date	Approved

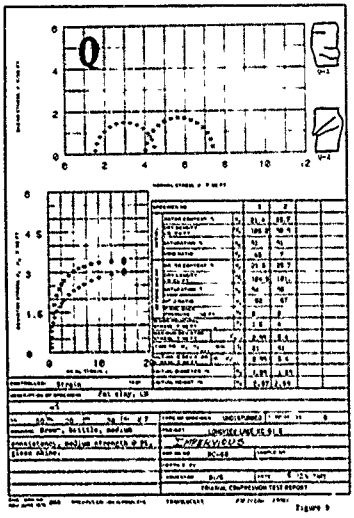
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

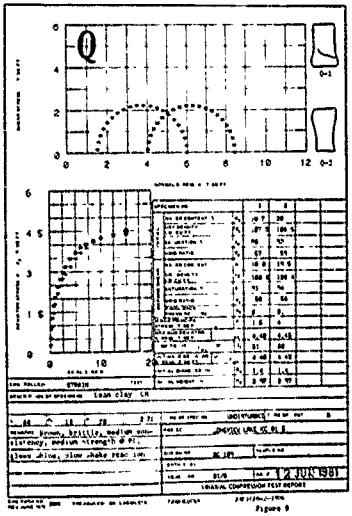
Designed by: R.G.D.	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: R.S.T.	LL 55 IMPERVIOUS STAGE I RECORD CONTROL Q & S TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN — Sheet number: 1 of 8
Submitted by: R.G.D.	Date: — Dwg. No.: — File No. RBL-3-1535

PLATE NO. A 48


S
UNDISTURBED
Fat clay, CH
10 JUL 1981
DIRECT SHEAR TEST REPORT
Figure 2


S
UNDISTURBED
Lean clay, CL
10 JUL 1981
DIRECT SHEAR TEST REPORT
Figure 3


Q
Strain
Fat clay, CH
Figure 8


Q
Lean clay, CL
12 JUN 1981
TRIAXIAL COMPRESSION TEST REPORT
Figure 9

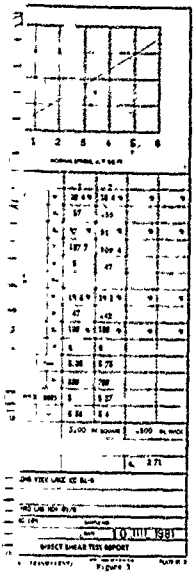


Figure 3

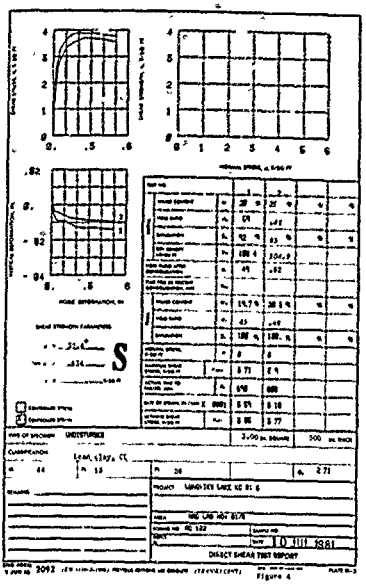


Figure 4

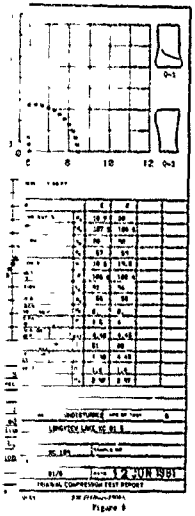


Figure 6

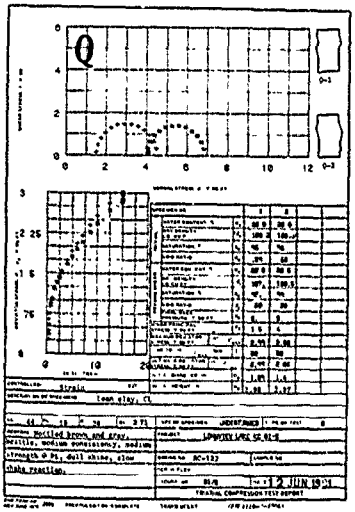


Figure 13

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D

Drawn by: P.S.T.

Checked by: R.G.D./K.B.E.

Submitted by: R.G.D.

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL, Q & S TESTS

Scale: AS SHOWN

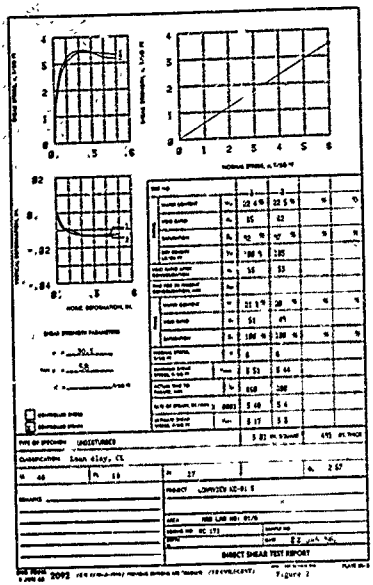
Date:

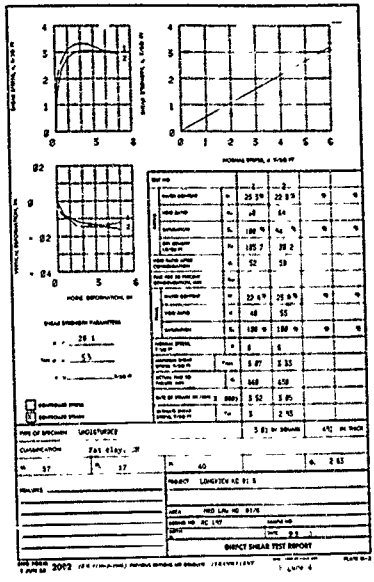
Dwg. No.:

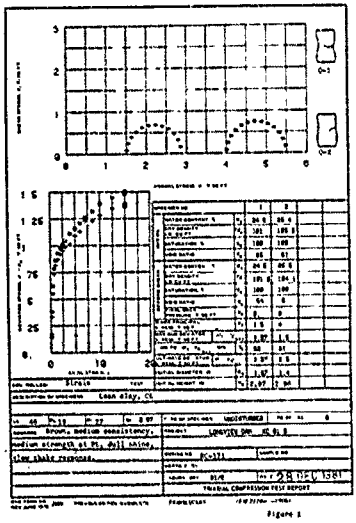
Sheet Number: 2 of 8

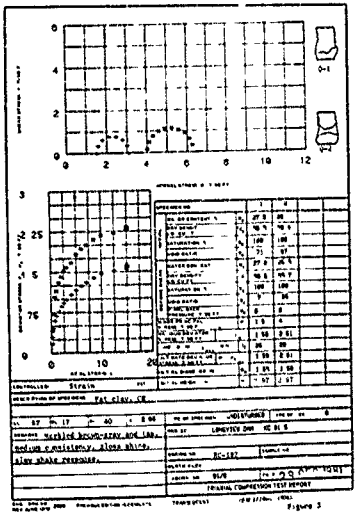
File No. RBL-23-1536

PLATE NO. A 49


DIRECT SHEAR TEST REPORT
Figure 2


DIRECT SHEAR TEST REPORT


TRIAXIAL COMPRESSION TEST REPORT
Figure 3


TRIAXIAL COMPRESSION TEST REPORT
Figure 3

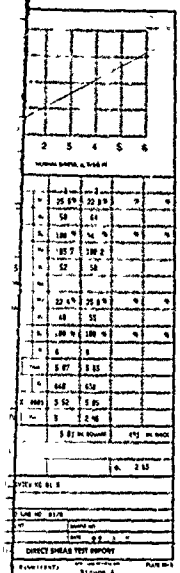


Figure 4

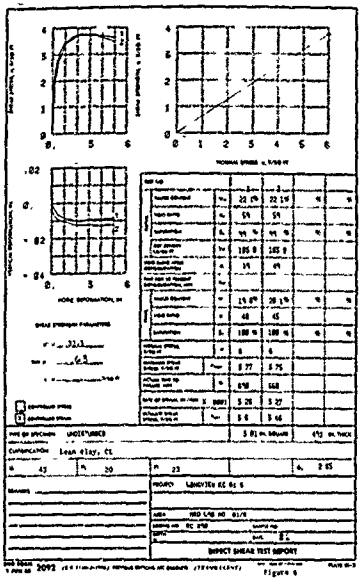


Figure 6

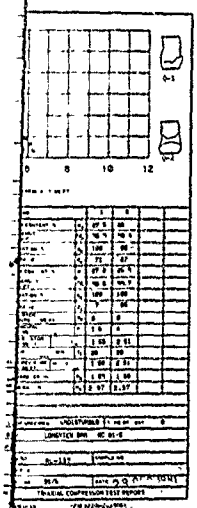


Figure 5

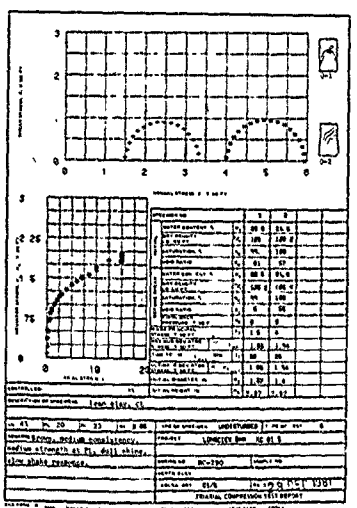


Figure 8

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

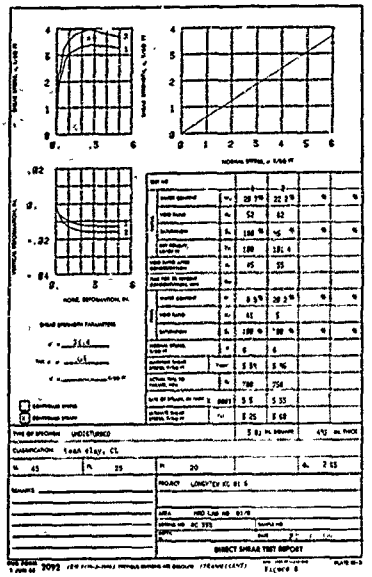
US Army Corps of Engineers

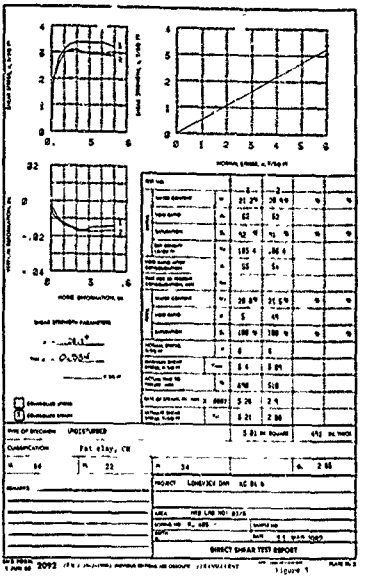
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

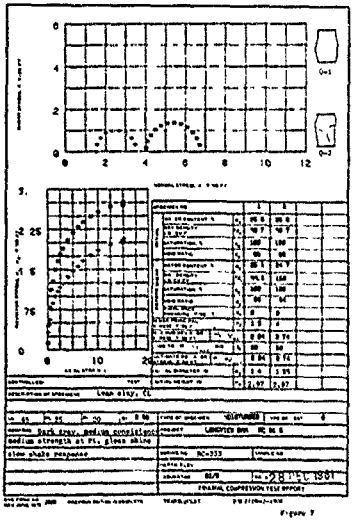
LL 55 IMPERVIOUS STAGE I
RECORD CONTROL O & S TESTS

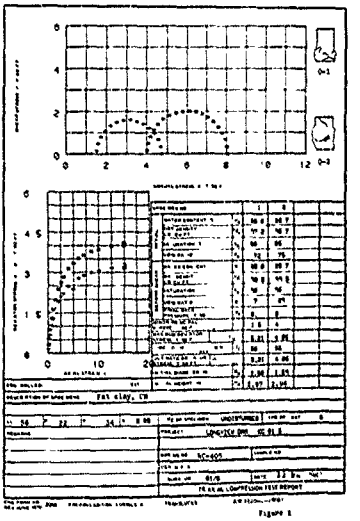
Designed by R.G.D	Scale AS SHOWN	Sheet number 3 of 8	
Drawn by P.S.T.	Date		
Checked by R.G.D./W.B.E.	Dwg. No.	File No. RBL-3-1537	
Submitted by R.G.D			

PLATE NO. A 50


DIRECT SHEAR TEST REPORT
Figure 6


DIRECT SHEAR TEST REPORT
Figure 5


FINAL COMPRESSION TEST REPORT
Figure 7


FINAL COMPRESSION TEST REPORT
Figure 8

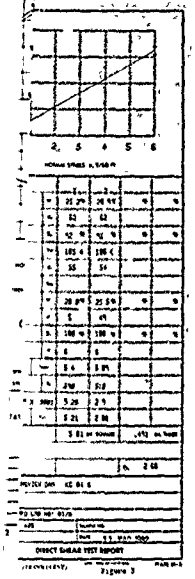


Figure 3

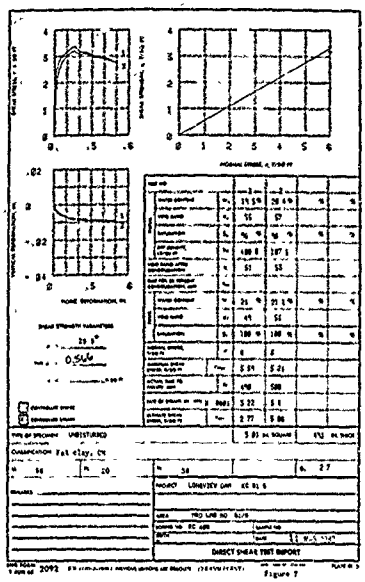


Figure 7

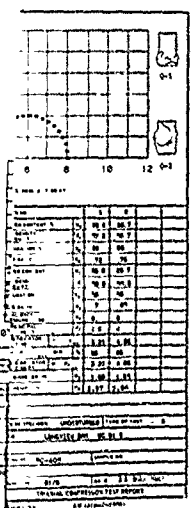


Figure 8

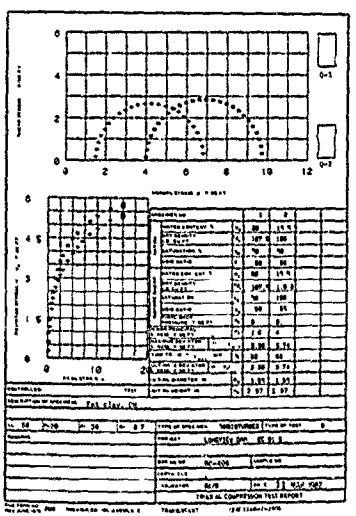


Figure 9

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL Q & S TESTS

Designed by R.G.D	Scale: AS SHOWN	Sheet number 4 of 8	
Drawn by P.S.T	Date		
Checked by R.G.D./W.B.P.	Dwg. No.:	File No. RBL-3-1538	
Submitted by R.G.D.			

PLATE NO. A 5

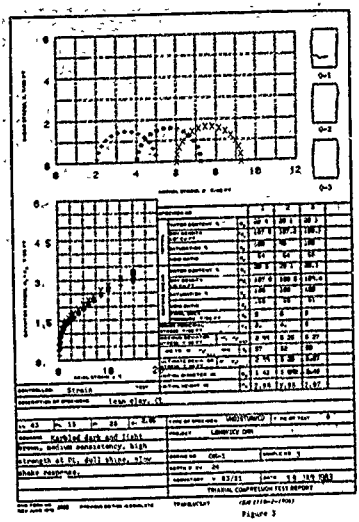


Figure 3

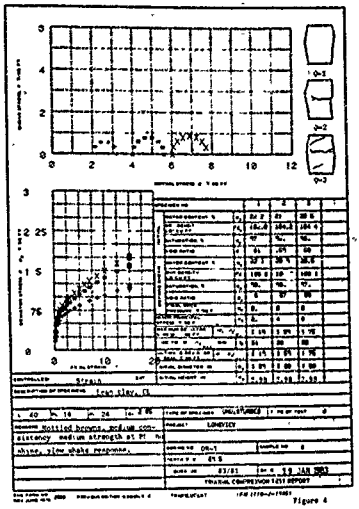


Figure 4

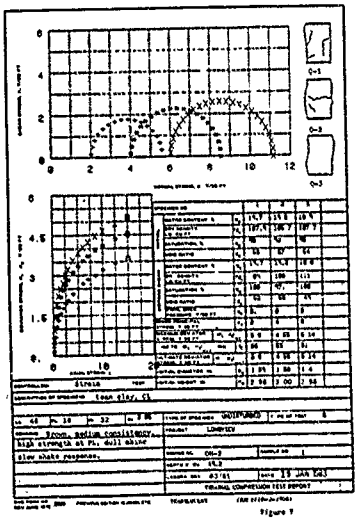


Figure 9

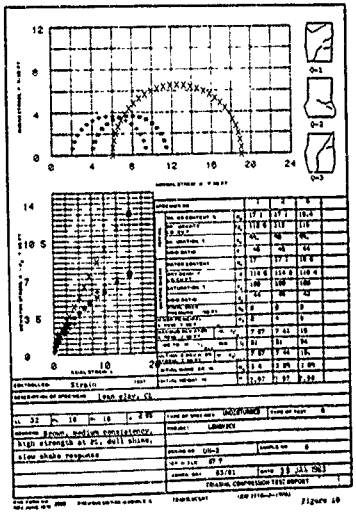


Figure 10

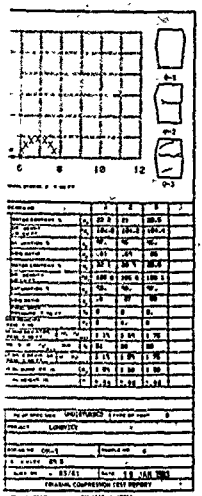


Figure 4

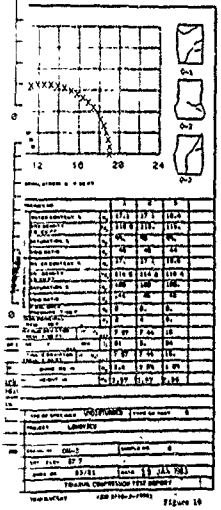


Figure 10

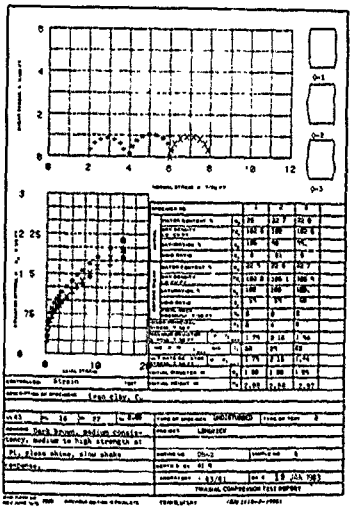


Figure 13

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D

Drawn by: P.S.T.

Checked by: R.G.D./K.B.E.

Submitted by: R.G.D

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL Q & S TESTS

Scale: AS SHOWN

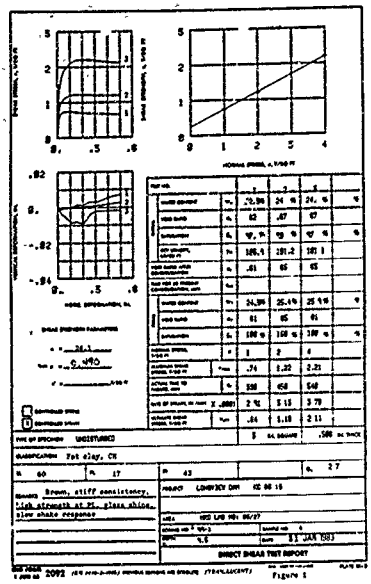
Date:

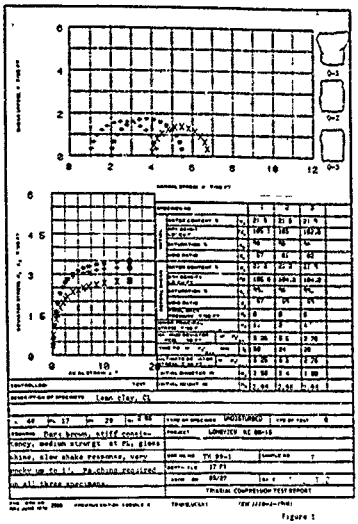
Dwg. No.:

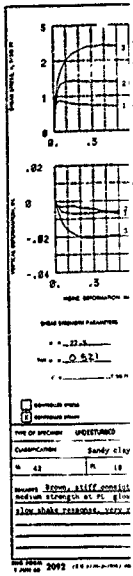
Sheet number: 5 of 8

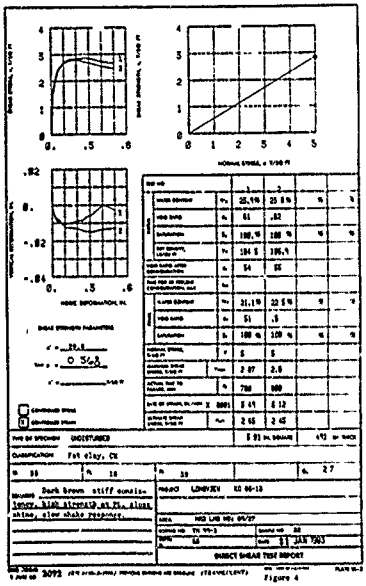
File No. RBL-3-1539

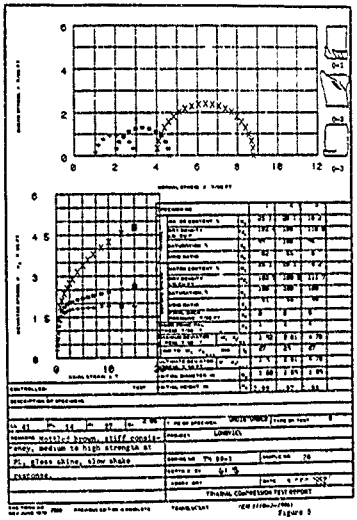
PLATE NO. A 52


DIRECT SHEAR TEST REPORT
Figure 1


TRIAXIAL COMPRESSION TEST REPORT
Figure 2




DIRECT SHEAR TEST REPORT
Figure 4


TRIAXIAL COMPRESSION TEST REPORT
Figure 3

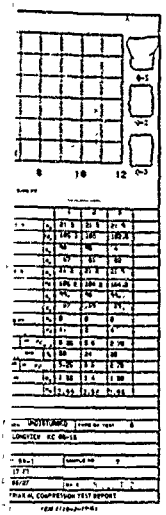


Figure 1

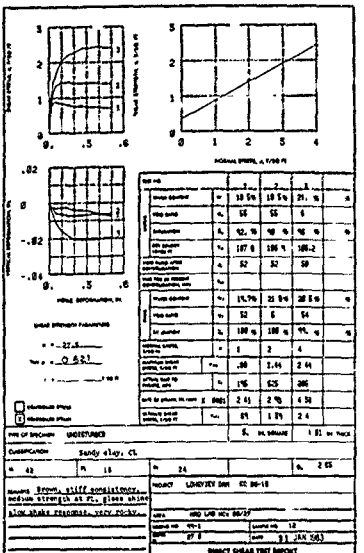


Figure 2

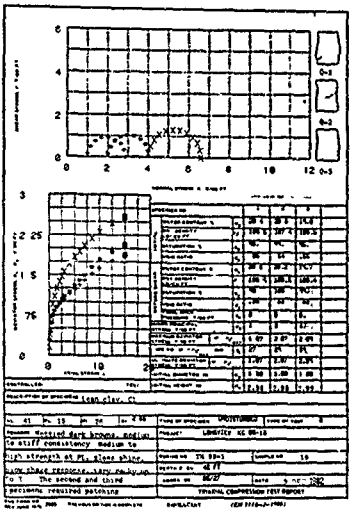


Figure 3

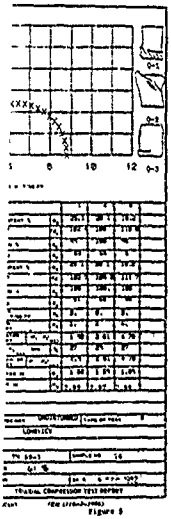


Figure 5

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

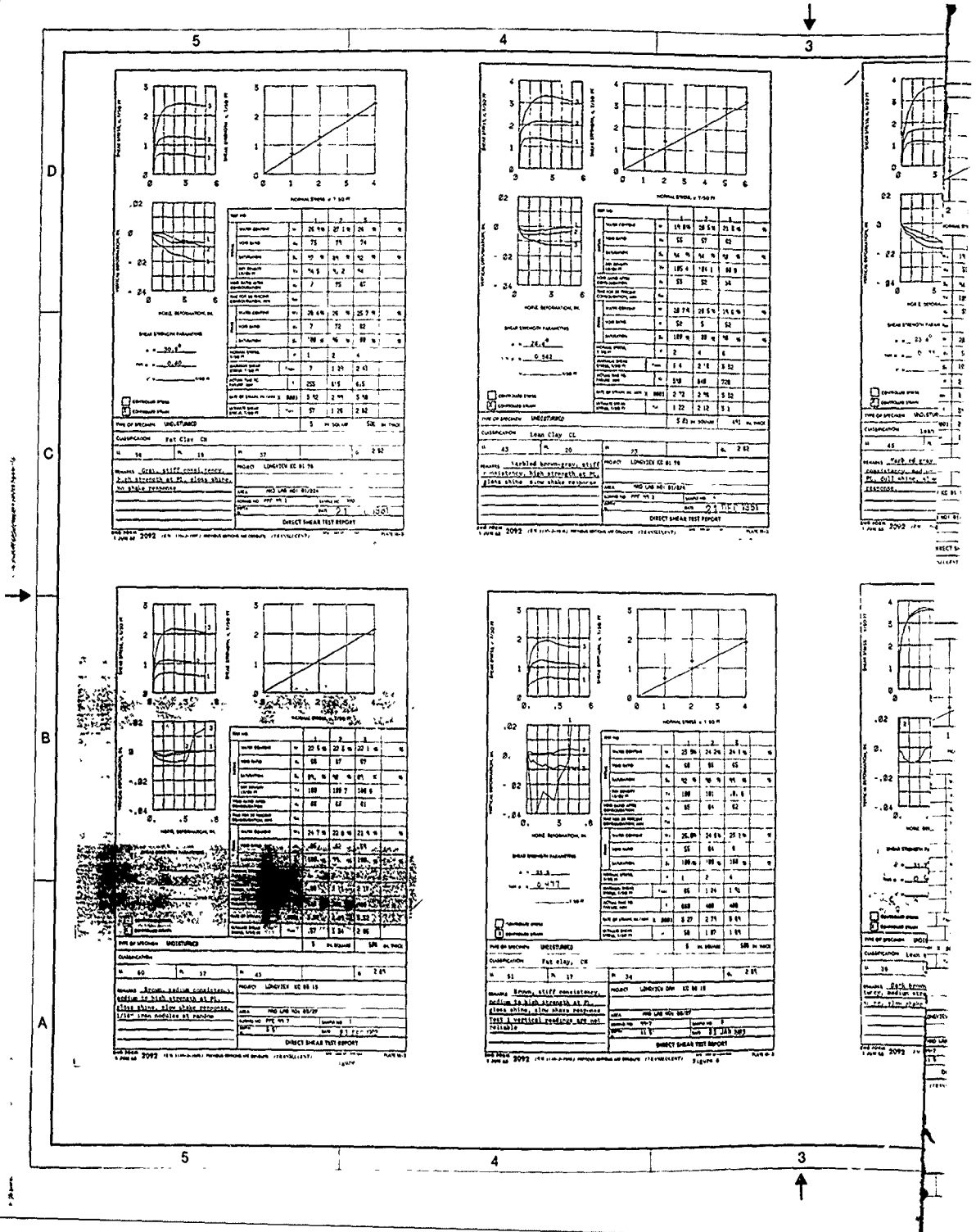
US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONSVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

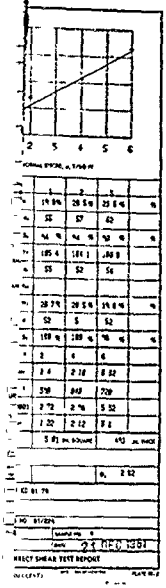
LL 55 IMPERVIOUS STAGE I
RECORD CONTROL Q & S TESTS

Designed by: R.G.D.	Scale: AS SHOWN	Sheet number: 6 of 8	
Drawn by: P.S.T.	Date:		
Checked by: R.G.D./W.B.E.	Dwg No.:		File No. RBL-3-1540
Submitted by: R.G.D.			

PLATE NO. A 53



5
4
3
D
C
B
A
DIRECT SHEAR TEST REPORT
Fat Clay CH
Lean Clay CL
Fat clay, CH
Brown, stiff consistency, medium to high strength at Pl, glass shine, slow shake response. Test 1 vertical readings are not reliable



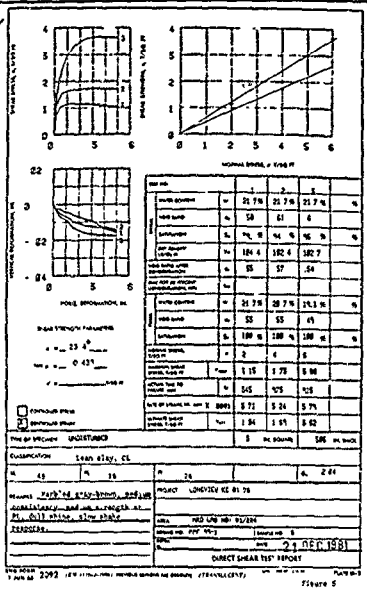


Figure 5

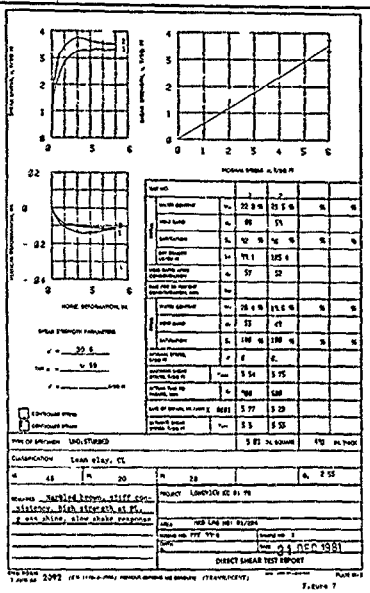


Figure 7

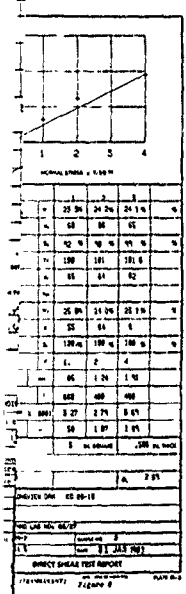


Figure 8

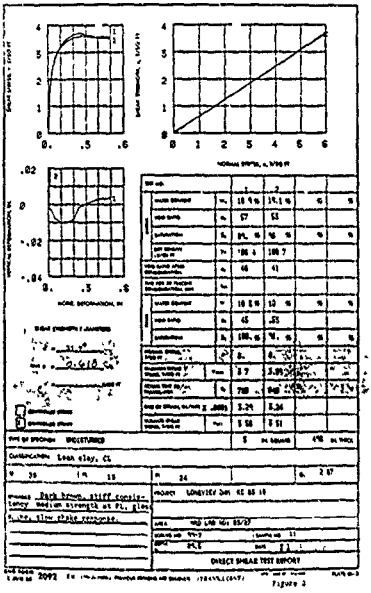


Figure 3

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL Q & S TESTS

Designed by R.G.D	US Army Corps of Engineers		
Drawn by P.S.T			
Checked by R.G.D./W.B.E	Scale: AS SHOWN	Sheet Number 7 of 8	
Submitted by R.G.D	Date		File No. RBL-3-1541

PLATE NO.A 54

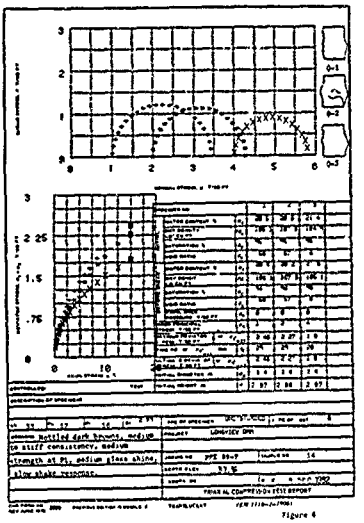


Figure 6

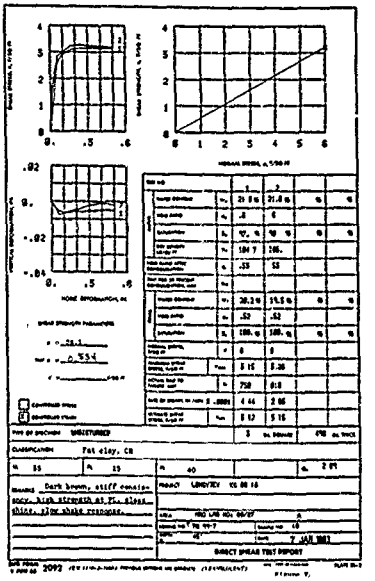
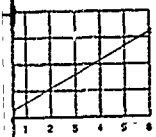


Figure 7



		1	2		
		21.6 %	21.6 %	%	%
		.4	.4		
		97. %	98 %	%	%
		104.7	105		
		55	55		
		28.2 %	24.5 %	%	%
		.52	.52		
		100. %	100. %	%	%
		0.	0		
		5.15	5.20		
		730	810		
		4.44	2.86		
		3.12	3.15		
		3		.498	

ENDVIEW KC 66-16

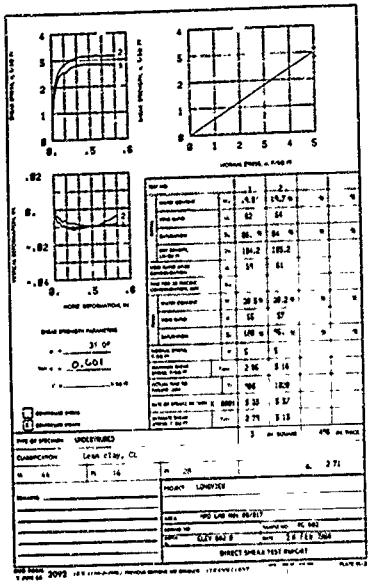
DIRECT SHEAR TEST REPORT

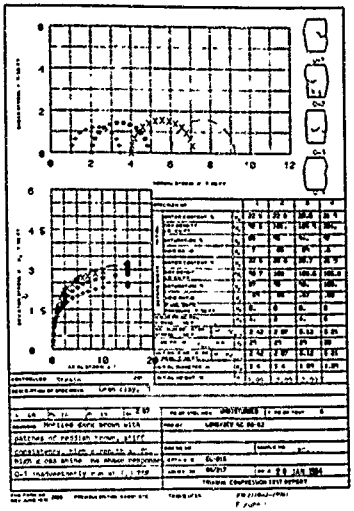
Revisions			
Symbol	Descriptions	Date	Approved

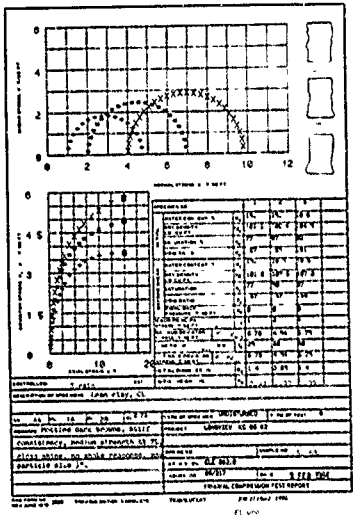
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

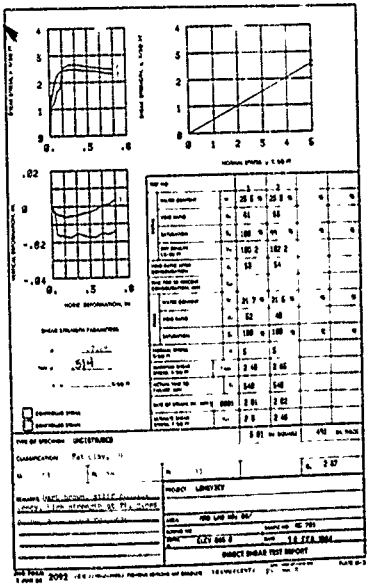
Designed by: R.G.D.	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T.	LL 55 IMPERVIOUS STAGE I RECORD CONTROL Q & S TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D.	Date:
	Dwg. No.:
	Sheet number: 8 of 8
	File No. RBL-3-1542

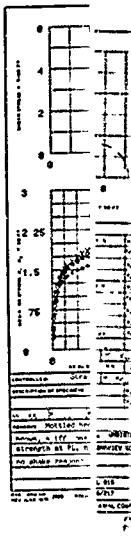
PLATE NO. A 55

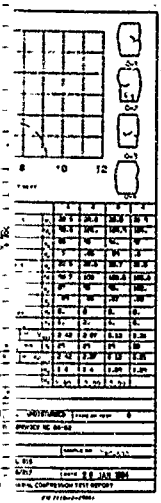


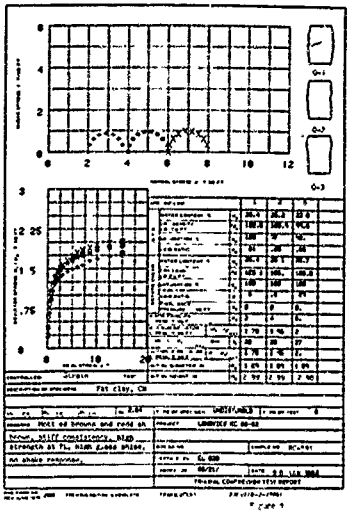


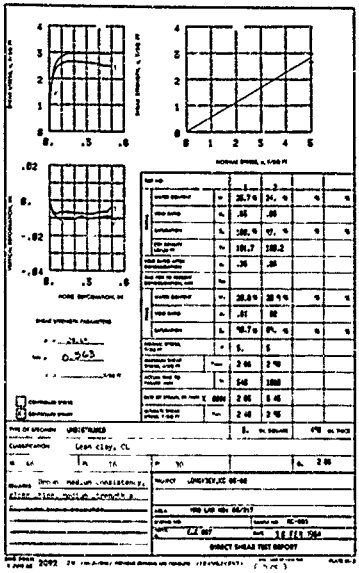


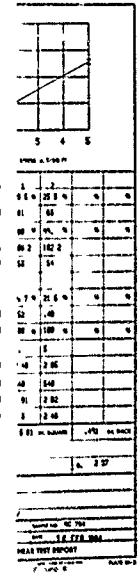












Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R G D
Drawn by: P S.T.
Checked by: R.G.D./W.B.E.
Submitted by: R.G.D

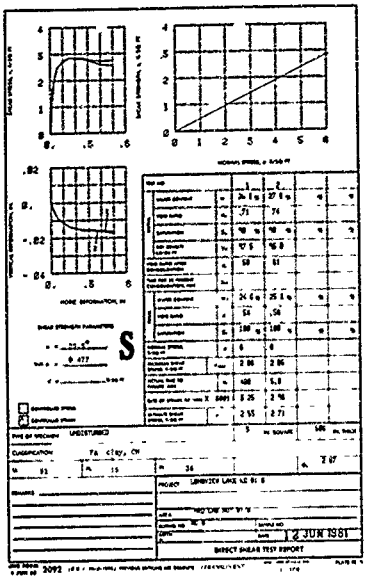
US Army Corps of Engineers

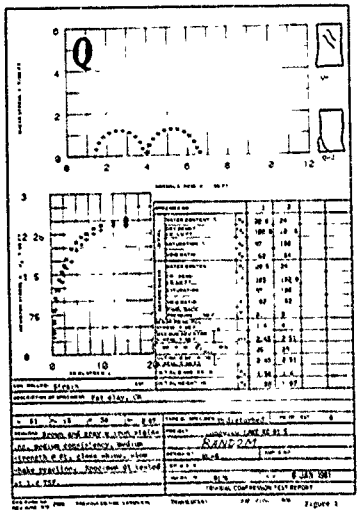
LITTLE BLUE RIVER, MISSOURI
LONSVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE II
RECORD CONTROL Q & S TESTS

Scale: AS SHOWN
Date:
Dwg. No.:
Sheet number: 1 of 1
File No. RBL-3-1543

PLATE NO. A 56


S
UNDISTURBED
2 JUN 1981
DIRECT SHEAR TEST REPORT


Q
RANDOM
6 JUN 1981
TRIAXIAL COMPRESSION TEST REPORT

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

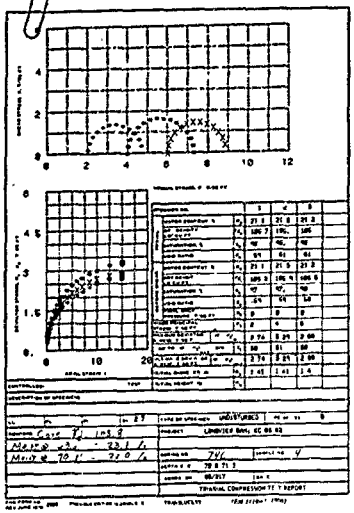
US Army Corps of Engineers

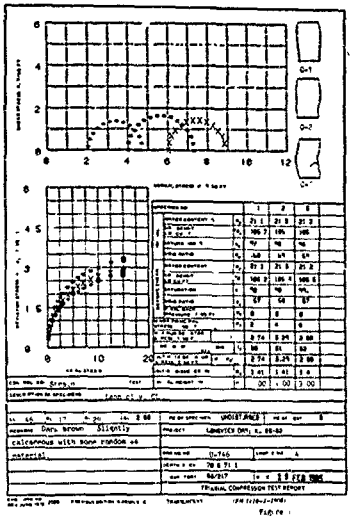
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

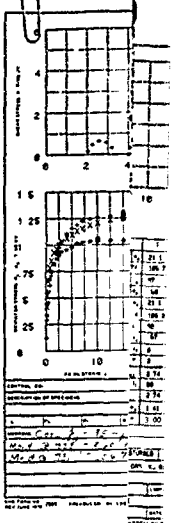
LL 60 RANDOM STAGE I
RECORD CONTROL Q & S TESTS

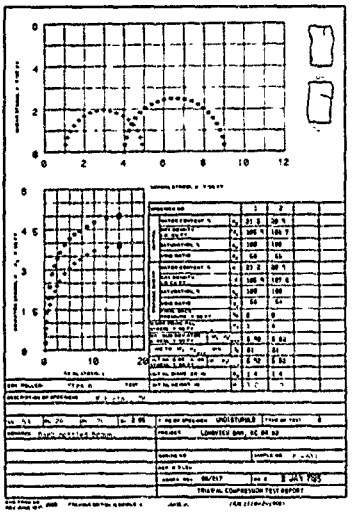
Designed by: R.G.D	Scale: AS SHOWN	Sheet Number: 1 of 1	
Drawn by: P.S.T	Date:		
Checked by: R.G.D./W.B.E	Dwg. No.:	File No.	RBL-3-1544
Submitted by: R.G.D			

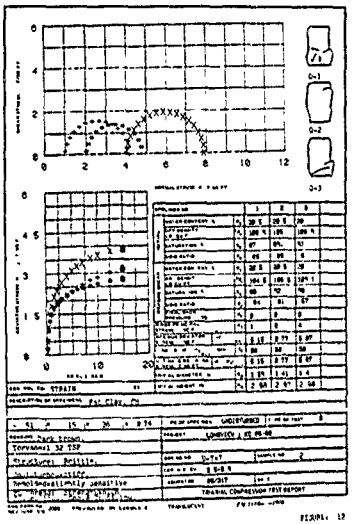
PLATE NO. A 57

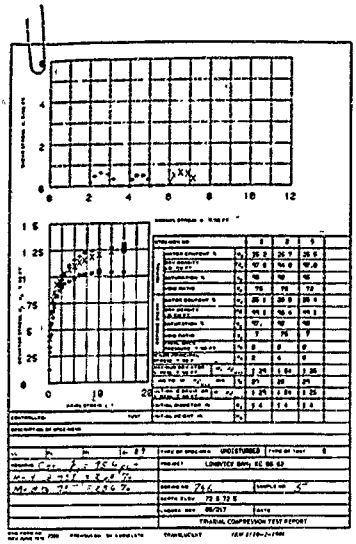

UNDISTURBED
LOMBARDI DAM, SC 86 83
TRIAXIAL COMPRESSION TEST REPORT

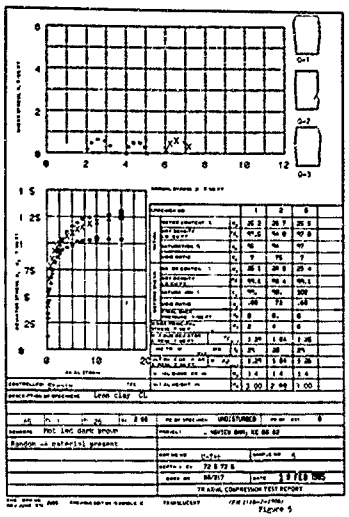

Dark brown Slightly
calcareous with some random
material
UNDISTURBED
LOMBARDI DAM, S. 86-83
TRIAXIAL COMPRESSION TEST REPORT

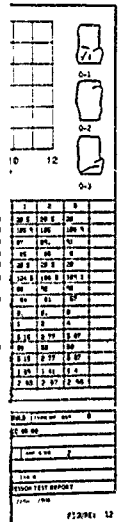



UNDISTURBED
LOMBARDI DAM, SC 86 83
TRIAXIAL COMPRESSION TEST REPORT


UNDISTURBED
LOMBARDI DAM, SC 86 83
TRIAXIAL COMPRESSION TEST REPORT





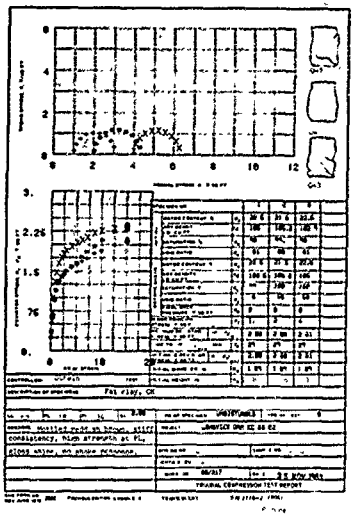


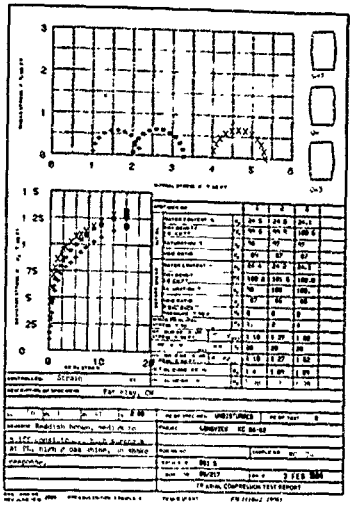
Revisions			
Symbol	Descriptions	Date	Approved

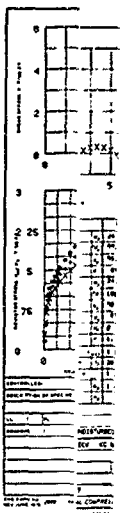
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

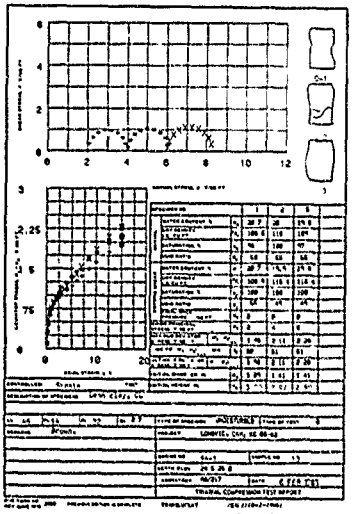
Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T.	LL 60 IMPERVIOUS STAGE II RECORD CONTROL Q & S TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D	Sheet number: 1 of 1
	File No. RBL-3-1545

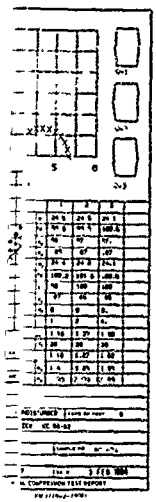
PLATE NO. A 58

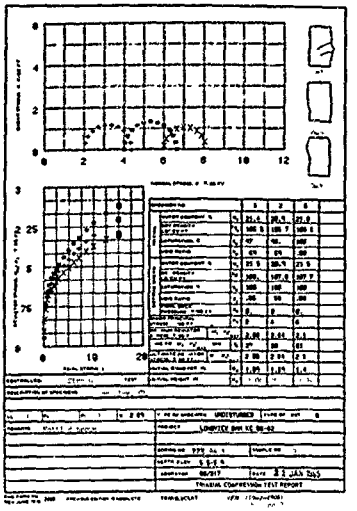


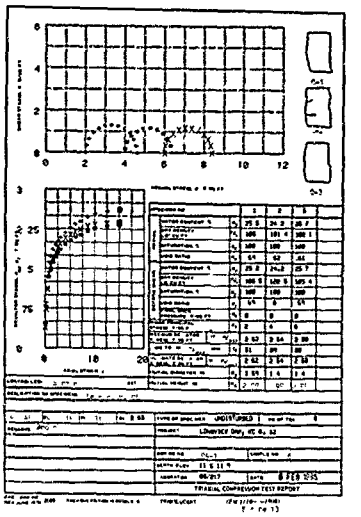










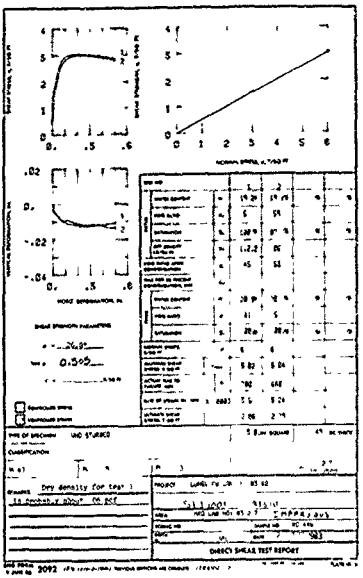


Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT LL 60 RANDOM STAGE II RECORD CONTROL Q & S TEST^
Drawn by P.S.T	
Checked by R.G.D./W.B.E	Scale AS SHOWN
Submitted by R.G.D	Sheet Number 1 of 1
	File No. RBL-3-1546

PLATE NO. A 59



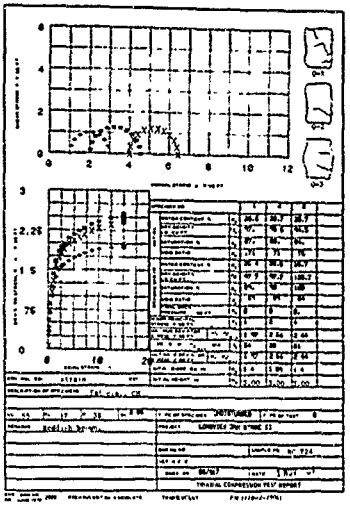
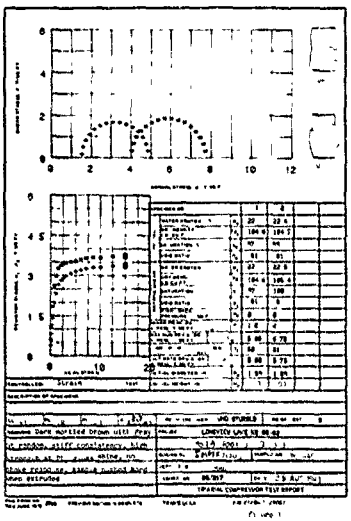


Figure 1



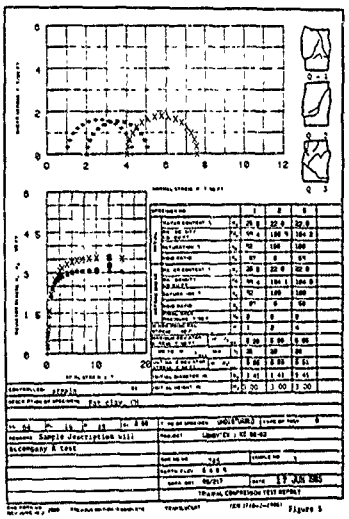


Figure 3

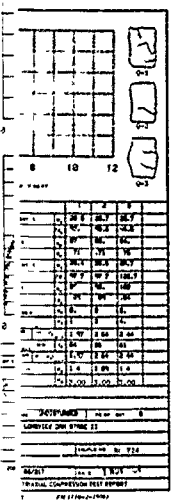


Figure 1

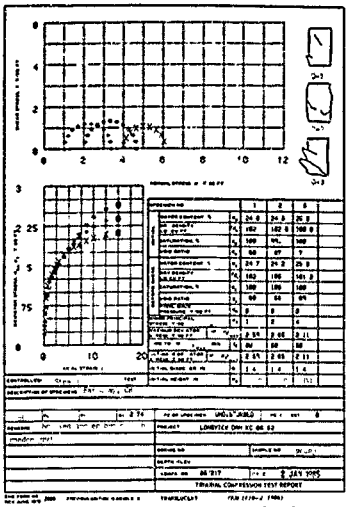


Figure 5

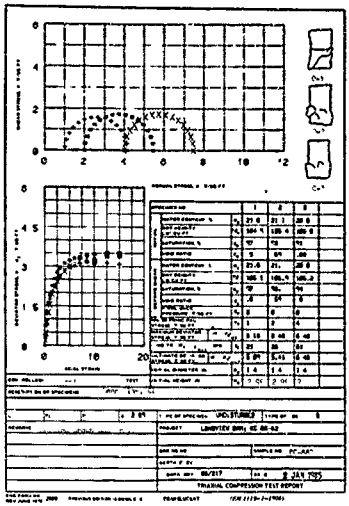


Figure 13

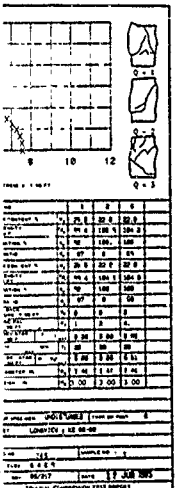


Figure 8

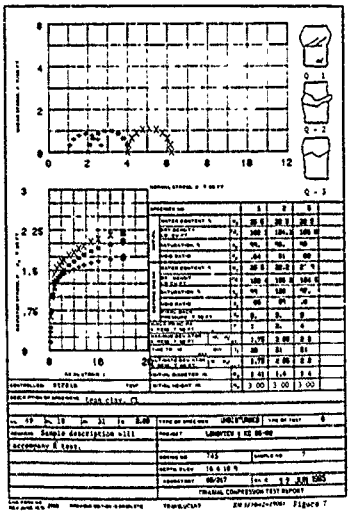


Figure 7

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

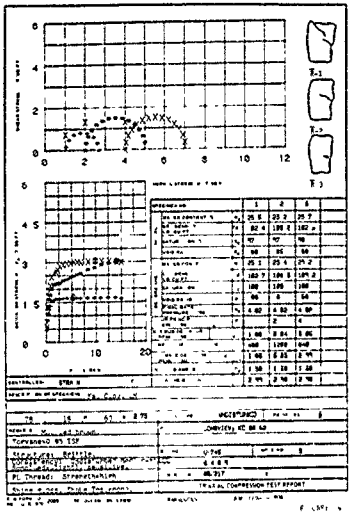
US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 65 IMPERVIOUS STAGE II
RECORD CONTROL Q & S TESTS

Designed by: R.G.D	Scale: AS SHOWN	Sheet number: 1 of 2	
Drawn by: P.S.T	Date:		
Checked by: R.G.D./M.B.E	Dwg. No.:	File No. RBL-3-1547	
Submitted by: R.G.D.			

PLATE NO. A 60


TRIAXIAL COMPRESSION TEST REPORT

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R G D

Drawn by: P S.T

Checked by: R.G.D./W.B.E

Submitted by: R G.D.

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 65 IMPERVIOUS STAGE II
RECORD CONTROL Q & S TESTS

Scale: AS SHOWN

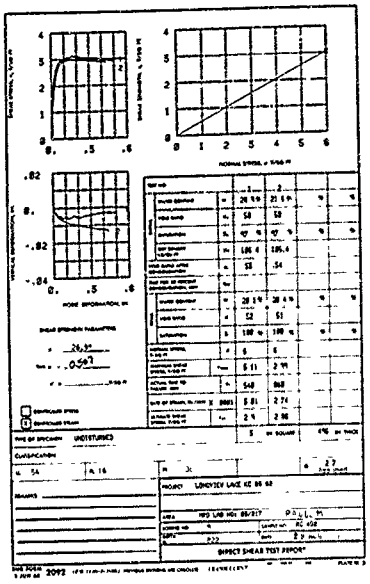
Date:

Dwg. No.:

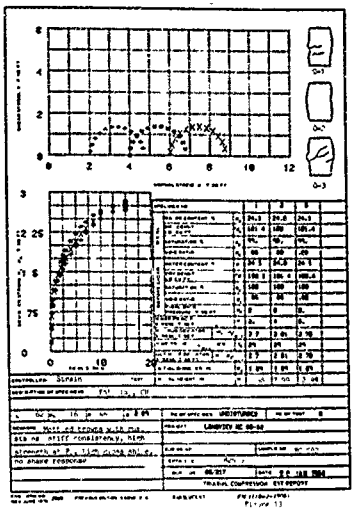
Sheet Number: 2 of 2

File No. RBL-3-1548

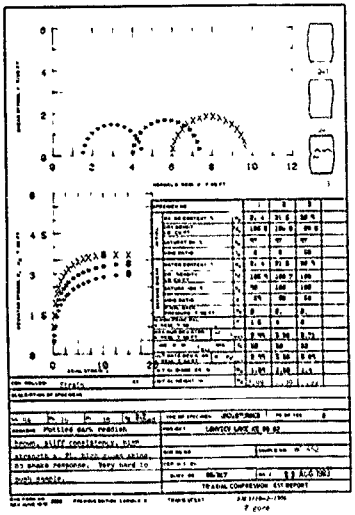
PLATE NO A 61



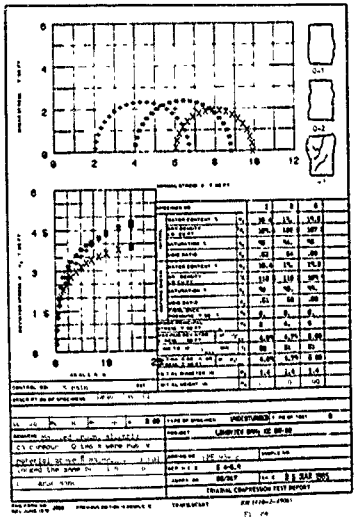
UNDISTURBED
LONGVIEW LAKE KE 88-62
DIRECT SHEAR TEST REPORT



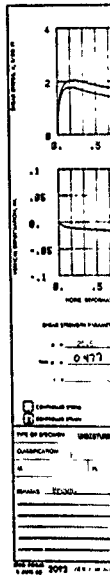
UNDISTURBED
LONGVIEW KE 88-62
TRIAXIAL COMPRESSION TEST REPORT

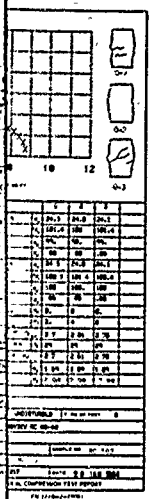


Mottled dark reddish brown, stiff consistency, high strength & Pl. high dust ratio, no shake response. Very hard to push sample.
LONGVIEW LAKE KE 88-62
TRIAXIAL COMPRESSION TEST REPORT



UNDISTURBED
LONGVIEW LAKE KE 88-62
TRIAXIAL COMPRESSION TEST REPORT





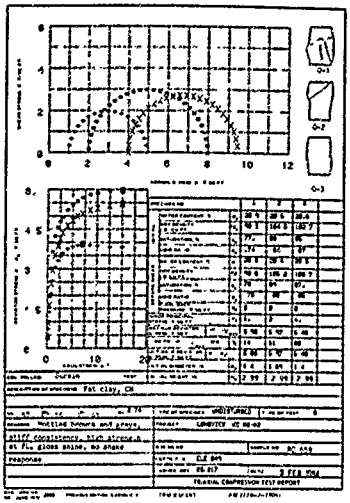
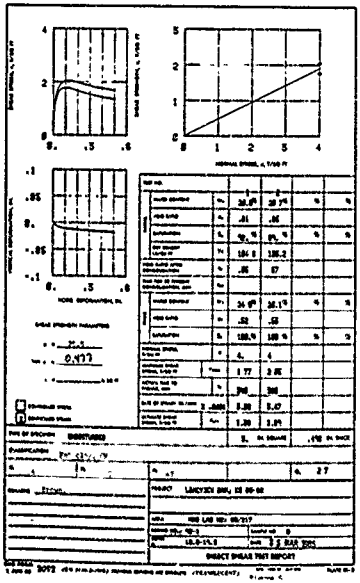


Figure 1

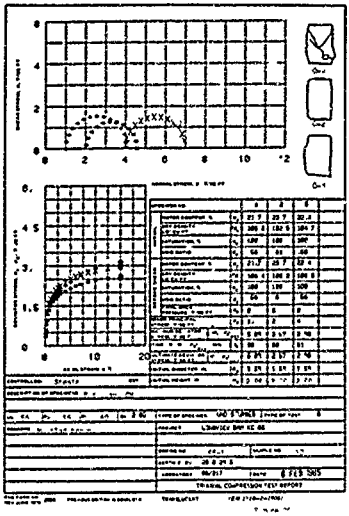


Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P.S.T	LL 65 RANDOM STAGE II RECORD CONTROL Q & S TESTS
Checked by: R.G.D./R.B.E	Scale: AS SHOWN; Sheet number: 1 of 2
Submitted by: R.G.D.	Date: ; Dwg. No.: ; File No. RBL-3-1549

PLATE NO. A 62


TRIAXIAL COMPRESSION TEST REPORT

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

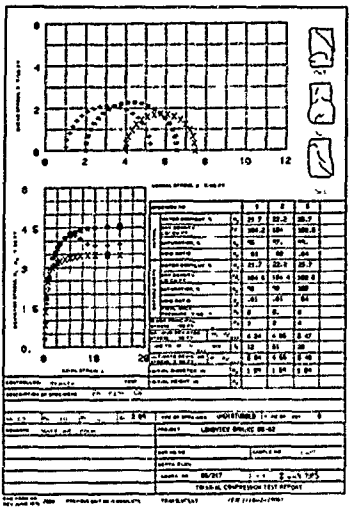
US Army Corps of Engineers

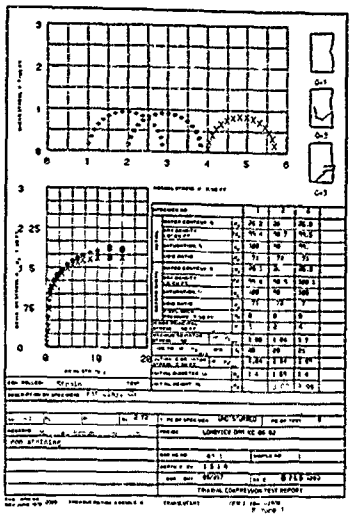
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

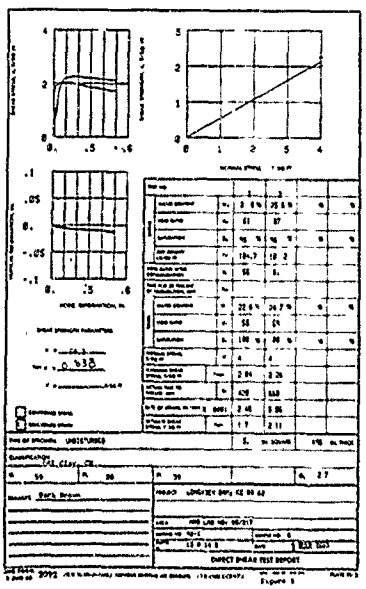
LL 65 RANDOM STAGE II
RECORD CONTROL Q & S TESTS

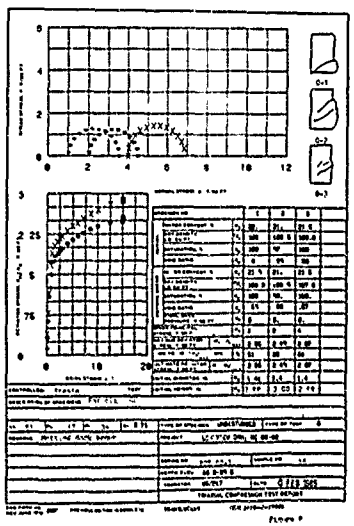
Designed by R.G.D	Scale AS SHOWN	Sheet number 2 of 2	
Drawn by P.S.T.	Date		
Checked by R.G.D./H.B.E	Dwg. No.		File No. RSL-3-1550
Submitted by R.G.D.			

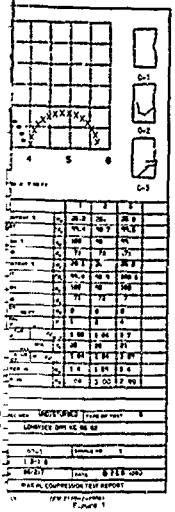
PLATE NO. A 63

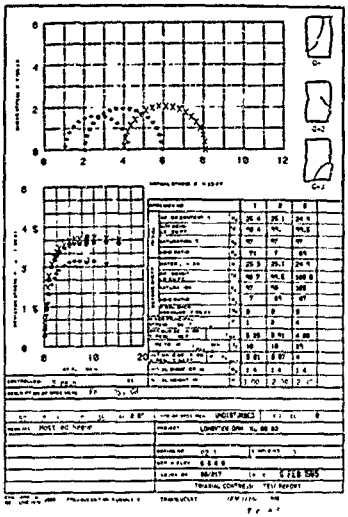

TRIAXIAL COMPRESSION TEST REPORT

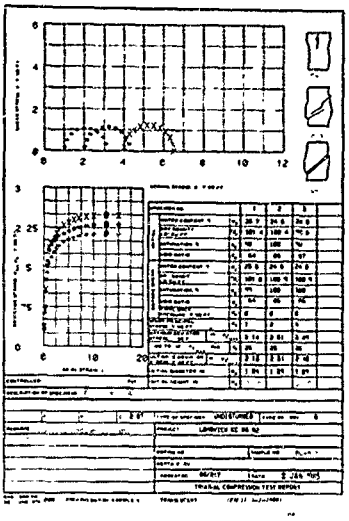

TRIAXIAL COMPRESSION TEST REPORT

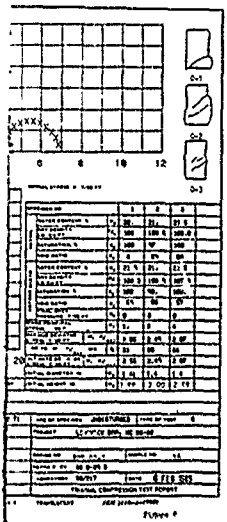

DIRECT SHEAR TEST REPORT


TRIAXIAL COMPRESSION TEST REPORT









Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONSVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 70 RANDOM STAGE II
RECORD CONTROL Q & S TESTS

Designed by R.G.D	Scale AS SHOWN	Sheet number 1 of 2	
Drawn by P.S.T.	Date		
Checked by R.G.D./K.B.E.	Dwg. No.	File No. RBL-3-1551	
Submitted by R.G.D.			

PLATE NO. A 64

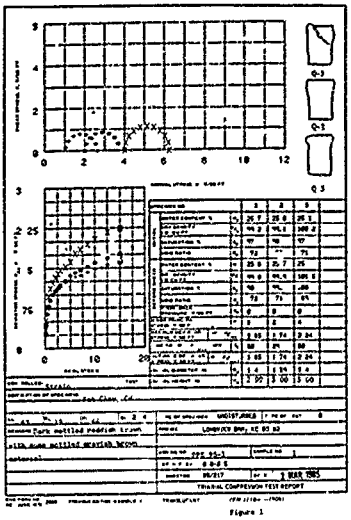
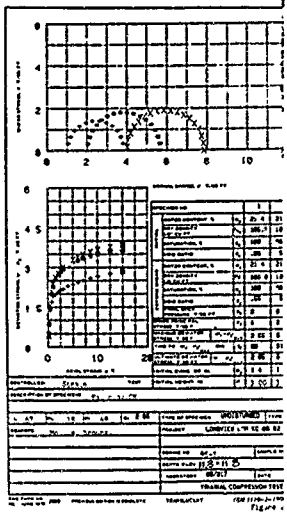
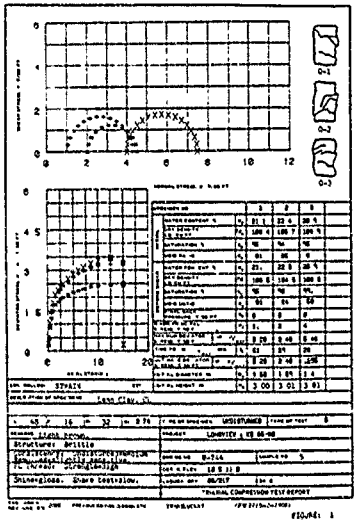
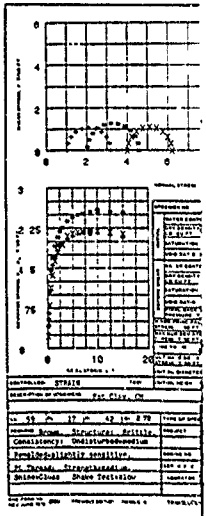

TRIAXIAL COMPRESSION TEST REPORT

Figure 1


TRIAXIAL COMPRESSION TEST


TRIAXIAL COMPRESSION TEST REPORT



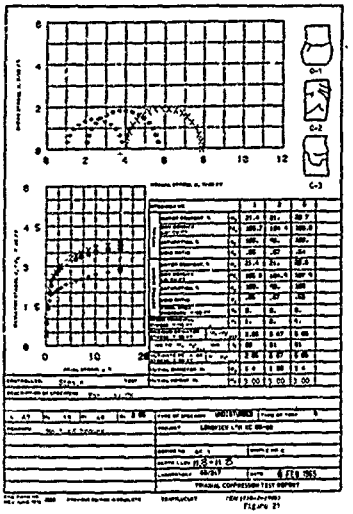


Figure 21

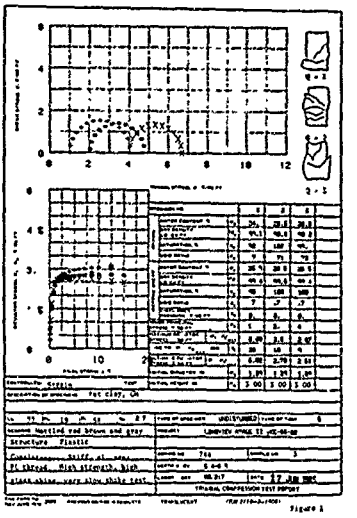


Figure 1

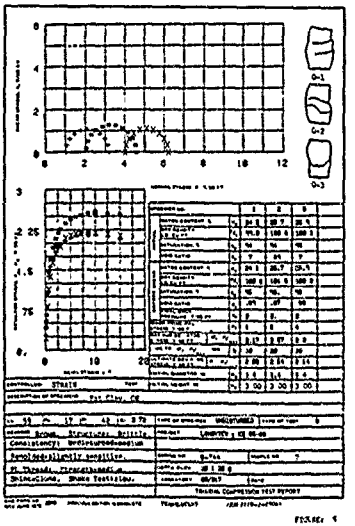


FIGURE 4

Revisions			
Symbol	Description	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R.G.D

Drawn by: P.S.T

Checked by: R.G.D./W.B.E

Submitted by: R.G.D.

LITTLE BLUE RIVER, MISSOURI
LONSVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 70 RANDOM STAGE II
RECORD CONTROL Q & S TESTS

Scale: AS SHOWN

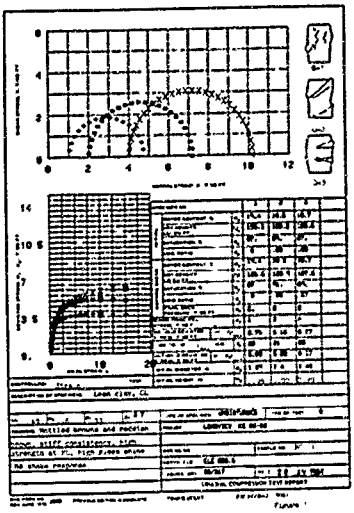
Date:

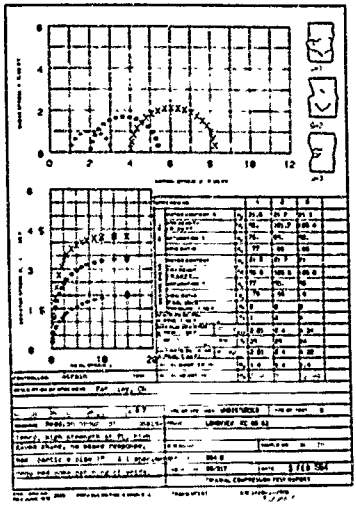
Dwg. No.:

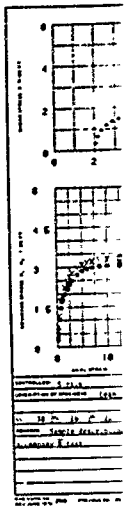
Sheet Number: 2 of 2

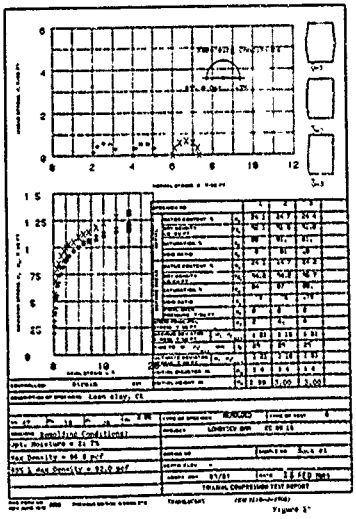
File No. RBL-3-1552

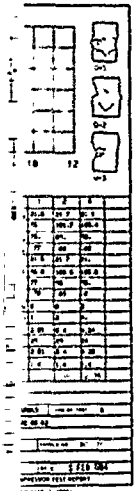
PLATE NO. A 65











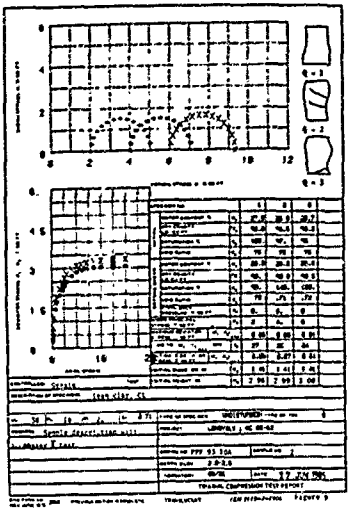


Figure 9

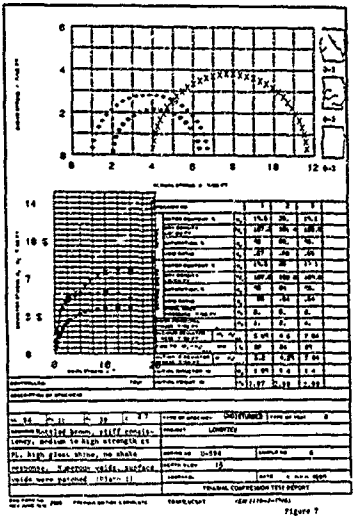


Figure 7

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

BERM ZONE STAGE II
RECORD CONTROL Q & S TESTS

Des gned by: R G D
Drawn by: P S.T.
Checked by: R.G.D./E.B.E.
Submitted by: R.G.D.

Scale: AS SHOWN
Date:
Dwg. No.:
Sheet number: 1 of 1
File No.: RBL-3-1553

PLATE NO. A 66

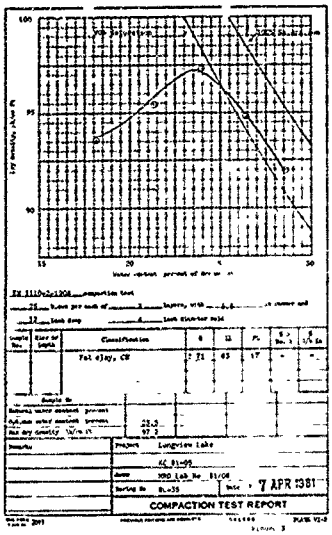


Figure 3

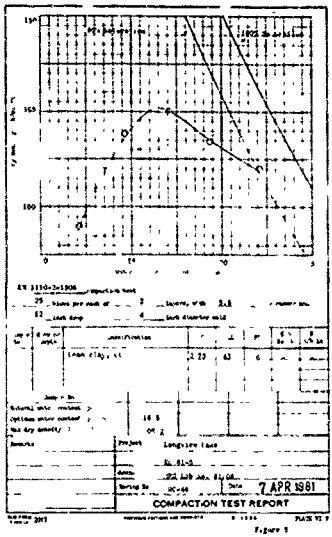


Figure 5

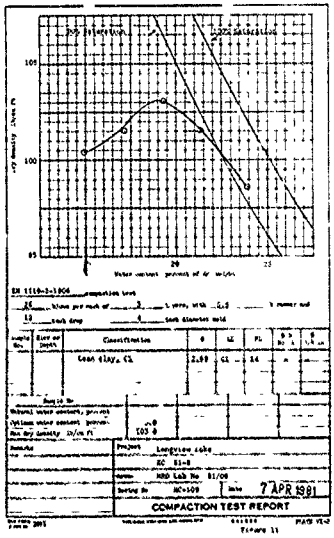


Figure 11

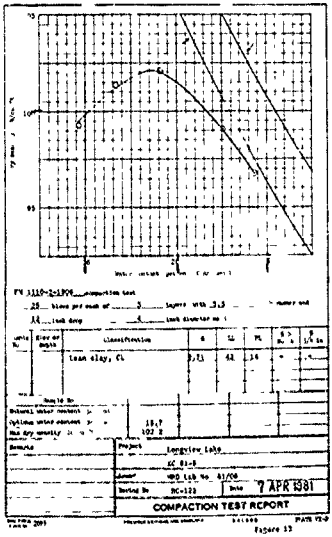


Figure 13

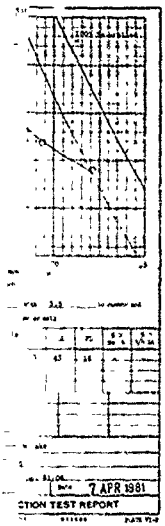


Figure 5

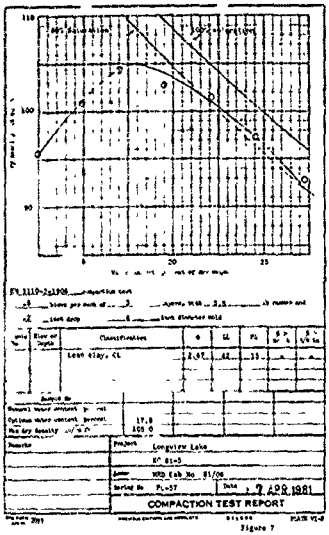


Figure 7

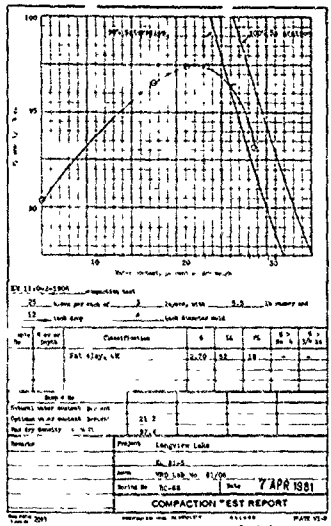


Figure 9

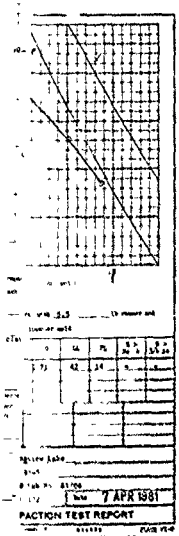


Figure 13

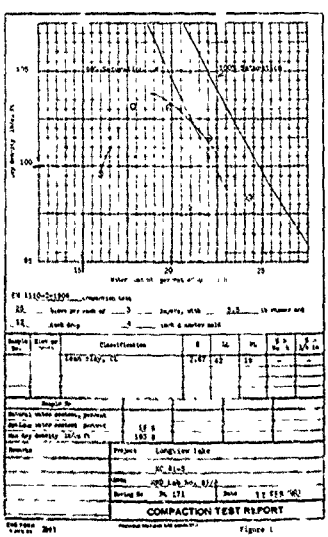


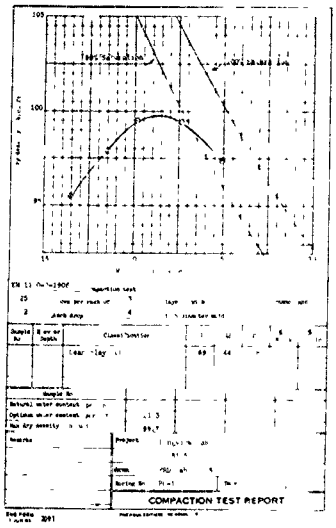
Figure 1

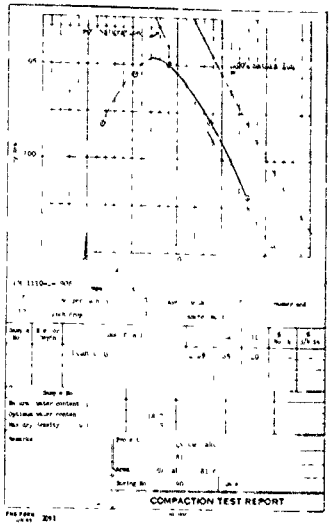
Revisions			
Symbol	Descriptions	Date	Approved

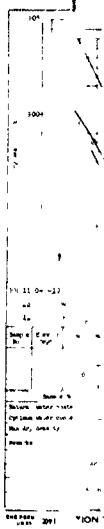
U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

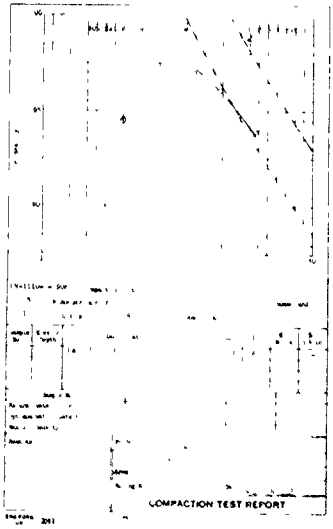
Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P S T	LL 55 IMPERVIOUS STAGE I RECORD CONTROL COMPACTION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R.G.D.	Sheet number: 1 of 2
	File No. RBL-3-1554

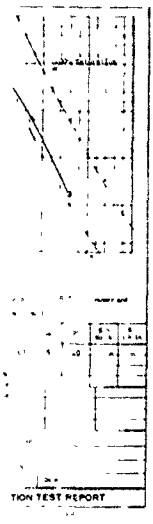
PLATE NO. A 67

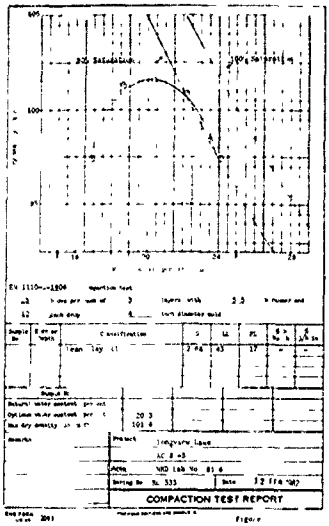

COMPACTION TEST REPORT

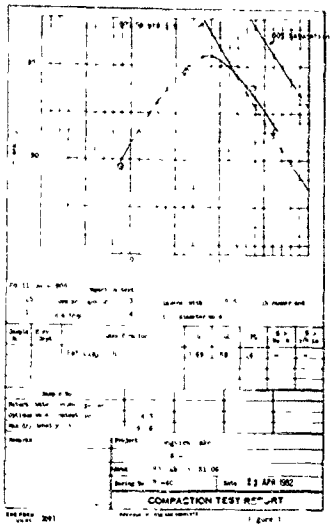

COMPACTION TEST REPORT




COMPACTION TEST REPORT







Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY MISSOURI

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 55 IMPERVIOUS STAGE I
RECORD CONTROL COMPACTION TESTS

Designed by: RGD	Scale: AS SHOWN	Sheet number: 2 of 2	
Drawn by: PST	Date		File No. RBL-3-1555
Checked by: RGD/WBE	Dwg No.		
Submitted by: RGD			

PLATE NO. A 68

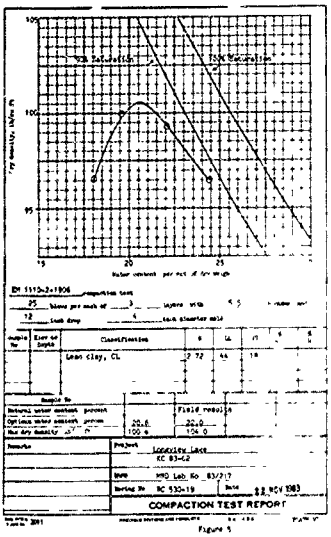
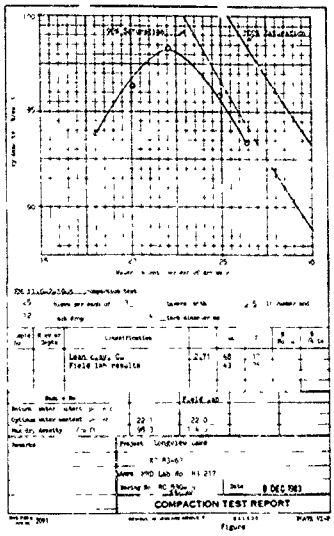
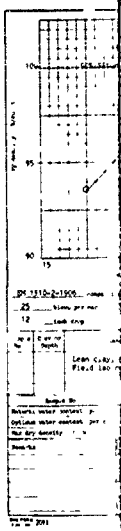
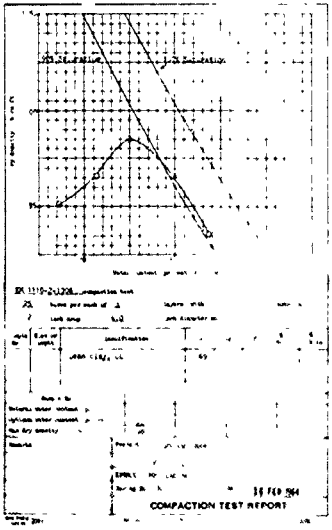


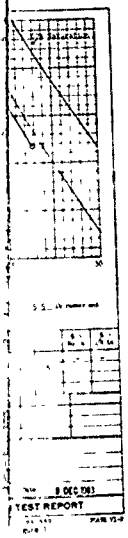
Figure 5



Figure







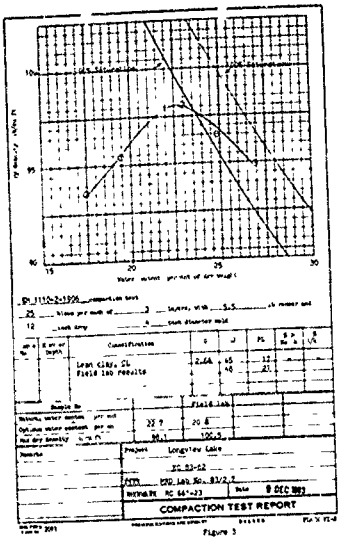
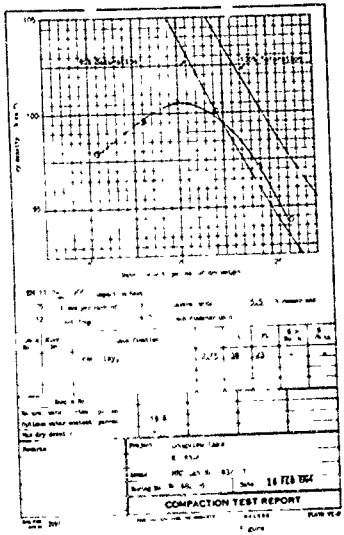


Figure 3

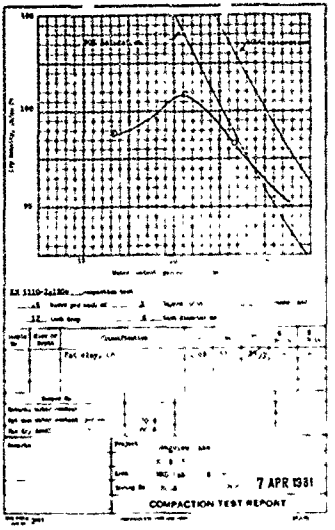


Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by: P S T	LL 55 IMPERVIOUS STAGE II RECORD CONTROL COMPACTION TESTS
Checked by: R.G.D./W.B.E.	Scale: AS SHOWN
Submitted by: R G D	Date:
	Dwg. No.
	Sheet number: 1 of 1
	File No. RBL-3-1556

PLATE NO. A 69


7 APR 1981
COMPACTION TEST REPORT

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

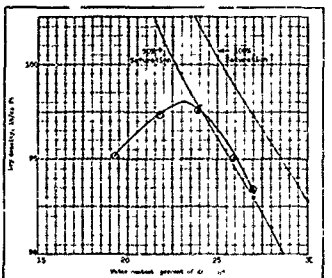
US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONSVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 60 RANDOM STAGE I
RECORD CONTROL COMPACTION TESTS

Designed by	R G D
Drawn by	P S.T
Checked by	R G.D./W.B.E
Submitted by	R G.D
Scale	AS SHOWN
Date	
Dwg. No	
Sheet number	1 of 1
File No	RBL-3-1557

PLATE NO.A 70



EM 1110-2-1906 compaction test

36 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop 4 inch diameter mold

Sample No.	Size or Depth	Classification	G	LL	PL	S > No. 4	S > 3/4 in
		Fat clay, CH	2.49	51	22	-	-

Sample No.	
Natural water content, percent	
Optimum water content, percent	25.2
Max dry density, lb/cu ft	93.0

Remarks

Project Longview Lake

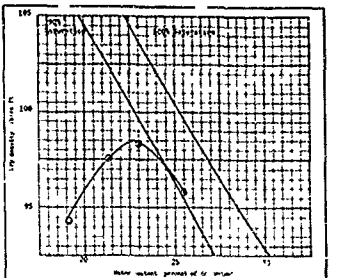
KC 83-62

Area NRD Lab No. 83/

Boring No. RC 29-003 Date

COMPACTION TEST REPORT

Figure 1



EM 1110-2-1906 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop 4 inch diameter mold

Sample No.	Size or Depth	Classification	G	LL	PL	S > No. 4	S > 3/4 in
		Fat clay, CH	2.49	52	18	-	-

Sample No.	
Natural water content, percent	
Optimum water content, percent	22.7
Max dry density, lb/cu ft	98.5

Remarks

Project Longview Lake

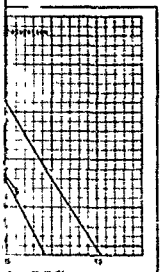
KC 83-62

Area NRD Lab No. 83/217

Boring No. RC 34-892 Date 7 JUN 1985

COMPACTION TEST REPORT

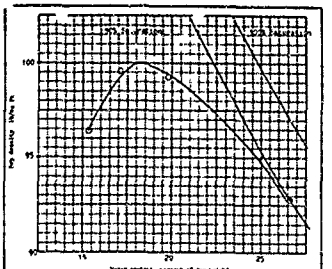
Figure 1



	6	LL	PL	6 > No. 4	6 > 3/4 in
	2.69	32	18	---	---

...ew Lake
...42
...No. 83/217
...Date 7 JAN 1985
...PACTION TEST REPORT

Figure 1



3" all Corps-Lion compaction test
15 inches per each of 5 layers, with 345 gm 10 rammer and
6 inch drop 4.6 inch diameter mold

Sample No	Elev or Depth	Classification	6	LL	PL	6 > No. 4	6 > 3/4 in
			2.66	46	17		

Sample No.	
Natural water content, percent	
Optimum water content, percent	18.3
Max dry density, lb/cu ft	100.0

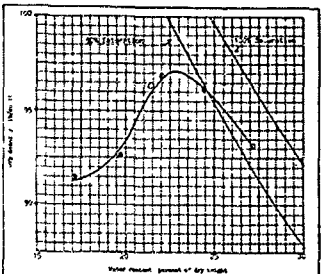
Remarks

Project Longview Lake
EC 83-42
Form MRD Lab No 83/217
Drawing No. 0746 Wat 4 Date 25 FEB 1985

COMPACTION TEST REPORT

ENG FORM 1 JUN 65 2091

Figure 1



3" all Corps-Lion compaction test
15 inches per each of 5 layers, with 345 gm 10 rammer and
6 inch drop 4.6 inch diameter mold

Sample No	Elev or Depth	Classification	6	LL	PL	6 > No. 4	6 > 3/4 in
			2.69	45	19		

Sample No.	
Natural water content, percent	
Optimum water content, percent	22.2
Max dry density, lb/cu ft	97.2

Remarks

Project Longview
EC 83-42
Form MRD Lab No 83/217
Drawing No 0-746 Wat 5 Date 19 FEB 1985

COMPACTION TEST REPORT

ENG FORM 1 JUN 65 2091

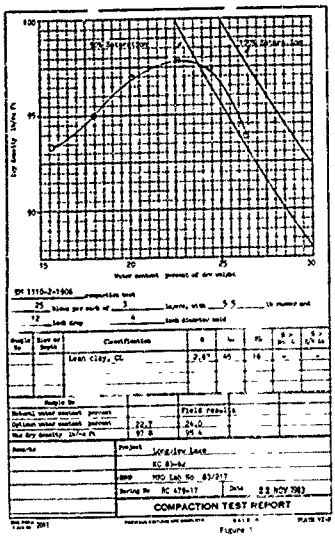
Figure 9

Revisions			
Symbol	Descriptions	Date	Approved

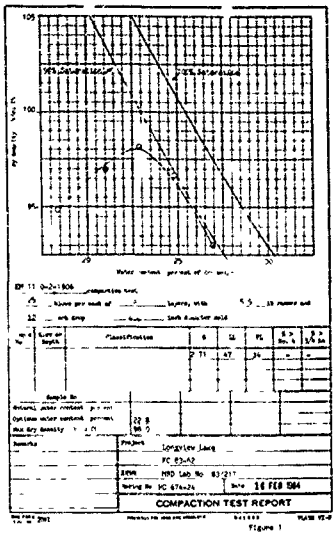
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by P S T	LL 60 IMPERVIOUS STAGE II RECORD CONTROL COMPACTION TESTS
Checked by R.G.D./W.B.E	Scale AS SHOWN
Submitted by R G D	Sheet Number 1 of 1
	File No. RBL-3-1558

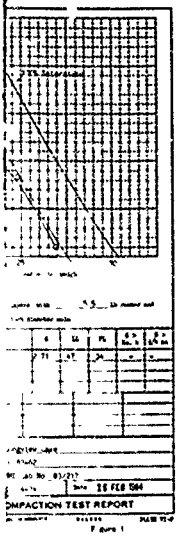
PLATE NO. A 71



100
95
90
15
20
25
30
Water content, percent of dry weight
EM 1110-2-1906 compaction test
25 blows per each of 3 layers, with 5.5 lb rammer and
12 inch drop 4 inch diameter mold
Sample No
Elev or Depth
Classification
Lean clay, CL
2.67
45
16
Sample No
Natural water content, percent
Optimum water content, percent
Max dry density, lb/cu ft
22.7
97.8
Field results
24.0
95.4
Remarks
Project Longview Lake
KC 83-62
MRD Lab No 83/217
Boring No KC 479-17
Date 22 NOV 1983
COMPACTION TEST REPORT
Figure 1



105
100
95
20
25
30
Water content, percent of dry weight
EM 1110-2-1906 compaction test
25 blows per each of 3 layers, with 5.5 lb rammer and
12 inch drop 4 inch diameter mold
Sample No
Elev or Depth
Classification
2.71
47
34
Sample No
Natural water content, percent
Optimum water content, percent
Max dry density, lb/cu ft
22.8
98.0
Remarks
Project Longview Lake
KC 83-62
MRD Lab No 83/217
Boring No KC 474-24
Date 16 FEB 1984
COMPACTION TEST REPORT
Figure 1



Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

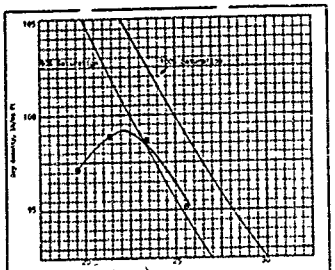
US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONSVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

LL 60 RANDOM STAGE II
RECORD CONTROL COMPACTION TESTS

Designed by R G D	Scale AS SHOWN	Sheet Number 1 of 1	
Drawn by P S T	Date		
Checked by R G D/W B E	Dwg No.	File No. RBL-3-1559	
Submitted by R G D			

PLATE NO. A 72



EM 1110-2-1903 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop, 4 inch diameter mold

Sample No	Elev or Depth	Classification	W	LL	PL	% > No 4	% > 3/4 in
		Lean clay, CL	2.67	43	17	-	-

Sample No.	
Natural water content, percent	
Optimum water content, percent	27.7
Max dry density, lb/cu ft	99.2

Remarks

Project Longview Lake

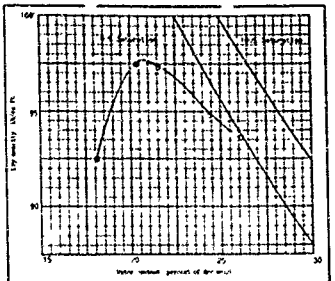
FC 83-62

Remarks MRD Lab No 83/217

Drawing No FC-445 Date 23 AUG 1983

COMPACTION TEST REPORT

Figure 1



EM 1110-2-1906 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop, 4 inch diameter mold

Sample No	Elev or Depth	Classification	W	LL	PL	% > No 4	% > 3/4 in
		Lean clay, CL	2.67	47	15	-	-

Sample No.	
Natural water content, percent	
Optimum water content, percent	20.7
Max dry density, lb/cu ft	97.7

Remarks

Project Longview Lake

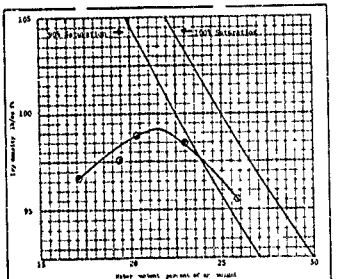
FC 83-62

Remarks MRD Lab No 83/217

Drawing No FC 724-28 Date 18 AUG 1984

COMPACTION TEST REPORT

Figure 1



EM 1110-2-1906 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop, 4 inch diameter mold

Sample No	Elev or Depth	Classification	W	LL	PL	% > No 4	% > 3/4 in
		Fat clay, CH	2.67	55	13	-	-

Sample No.	
Natural water content, percent	
Optimum water content, percent	21.4
Max dry density, lb/cu ft	99.2

Remarks

Project Longview Lake

FC 83-62

Remarks MRD Lab No 83/217

Drawing No FC 56 092 Date 7 JUN 1985

COMPACTION TEST REPORT

Figure 3

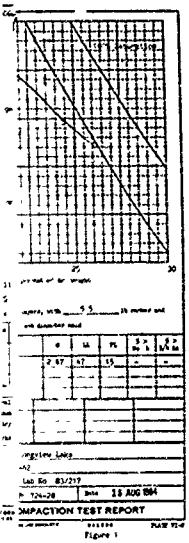


Figure 1

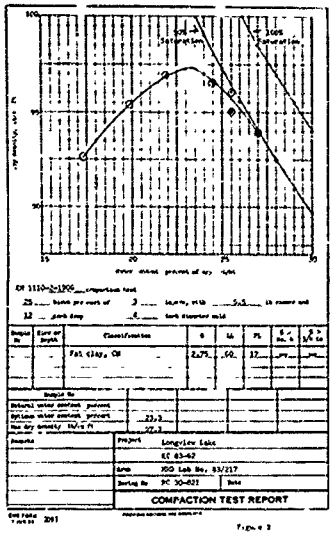


Figure 2

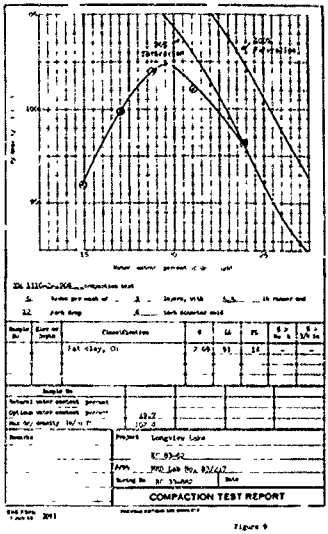


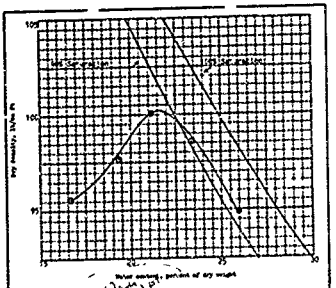
Figure 9

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by P S.T	LL 65 IMPERVIOUS STAGE II RECORD CONTROL COMPACTION TESTS
Checked by R.G.D./W.B.E	Scale AS SHOWN; Sheet number 1 of 1
Submitted by R G D	Date; Dwg No; File No. RBL-3-1560

PLATE NO.A 73



ER 1110-2-1906 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop 4 inch diameter mold

Sample No.	Elev or Depth	Classification	S	LL	PL	S > No. 4	S > 3/4 in
		Lean clay, CL	2.67	36.6	15		
		Field Test		53	24		

Sample No.	
Natural water content, percent	
Optimum water content, percent	21.6
Max dry density lb/cu ft	100.2

Remarks Field Results

6 max. = 100.4 pcf

Opt. moist. = 96.15

Project Longview Lake

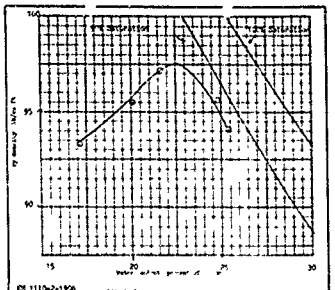
KC 83-62

MRD Lab No. 83/217

Boring No. RC-452 Date 8 9 AUG 1983

COMPACTION TEST REPORT

Figure 3



ER 1110-2-1906 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and

12 inch drop 4 inch diameter mold

Sample No.	Elev or Depth	Classification	S	LL	PL	S > No. 4	S > 3/4 in
		Lean Clay, CL	2.71	42	14		
		Field lab results					

Sample No.		Field lab	
Natural water content, percent			
Optimum water content, percent	22.6	23.0	
Max dry density lb/cu ft	97.5	101.0	

Remarks

95+10 10' D/S

Project Longview Lake

KC 83-62

MRD Lab No. 83/217

Boring No. RC-21 (592) Date 9 DEC 1983

COMPACTION TEST REPORT

Figure 5

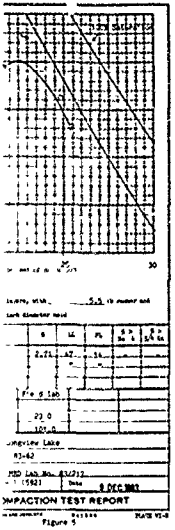


Figure 5

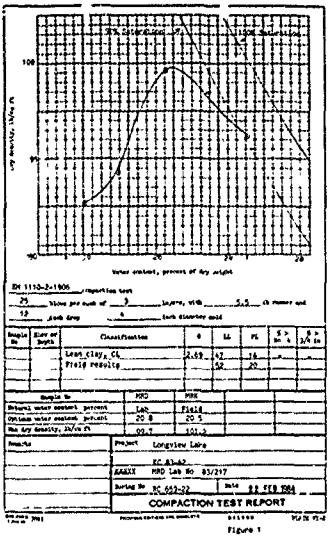


Figure 1

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: R G D
Drawn by: P S T
Checked by: R.G.D./K.B.E.
Submitted by: R.G.D

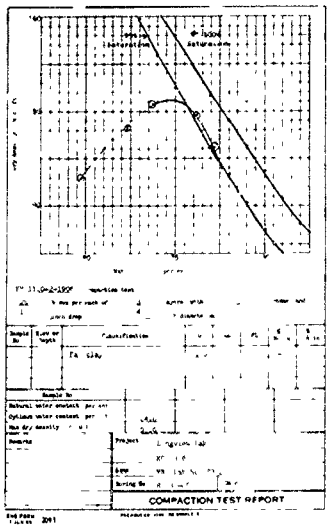
US Army Corps of Engineers

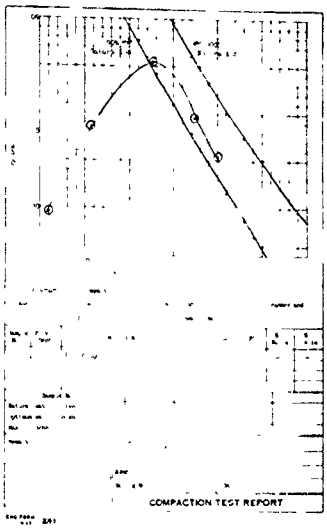
LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

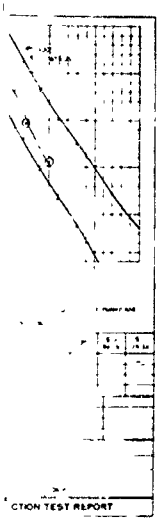
LL 65 RANDOM STAGE II
RECORD CONTROL COMPACTION TESTS

Scale: AS SHOWN
Date:
Dwg. No.:
Sheet number: 1 of 1
File No. RBL-3-1561

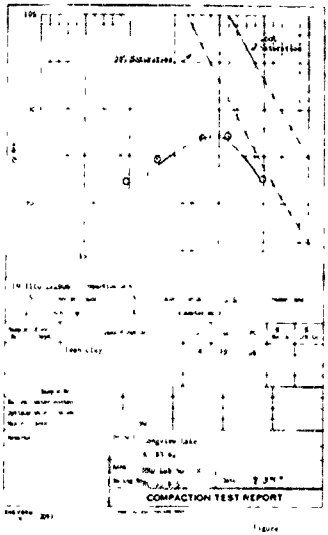
PLATE NO. A 74


COMPACTION TEST REPORT


COMPACTION TEST REPORT



CTION TEST REPORT



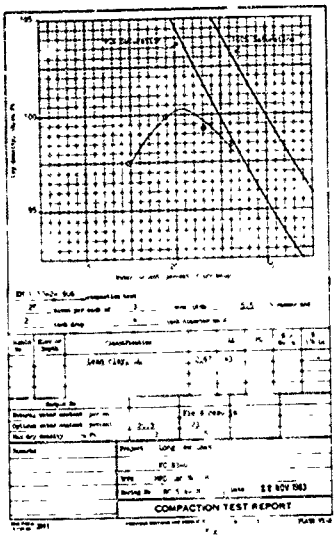
COMPACTION TEST REPORT

Revisions			
Symbol	Descriptions	Date	Approved

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R G D	LITTLE BLUE RIVER, MISSOURI LONGVIEW LAKE EMBANKMENT CRITERIA AND PERFORMANCE REPORT
Drawn by P S T	LL 70 RANDOM STAGE II RECORD CONTROL COMPACTION TESTS
Checked by R G D/W&E	Scale AS SHOWN
Submitted by R G D	Date Dwg No
	Sheet number 1 of 1
	File No RBL-3-1562

PLATE NO. A 75



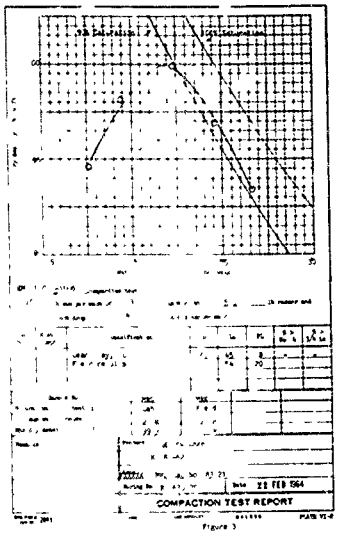
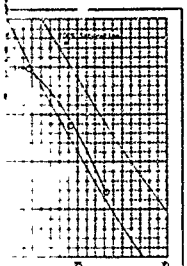


Figure 3



Water content, percent of dry weight

Sample No. 5.5 lb rammer and 12 inch diameter mold

G	LL	PL	G > No. 4	G > 3/4 in
2.62	45	8	-	-
	54	20		

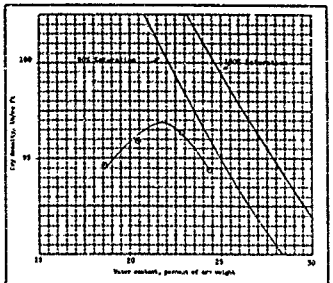
Fine d

Sample No. 83/212

Date 22 FEB 1984

COMPACTION TEST REPORT

Figure 3



Water content, percent of dry weight

EM 1110-2-1906 compaction test

25 blows per each of 3 layers, with 5.5 lb rammer and 12 inch drop 4 inch diameter mold

Sample No.	Elev or Depth	Classification	G	LL	PL	G > No. 4	G > 3/4 in
		Lean clay, CL	2.65	47	18	-	-

Sample No.				
Natural water content, percent				
Optimum water content, percent	21.7			
Max dry density lb/cu ft	99.8			

Remarks By Spencers Soap

Project Longview Dam

Area NWD Lab No 83/81

Testing Sc Sack 1 Date 24 JAN 1983

COMPACTION TEST REPORT

Figure 3

Revisions			
Symbol	Descriptions	Date	Approved

U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by R G D

Drawn by P S T

Checked by R.G.D./W.B.E

Submitted by R G D

US Army Corps of Engineers

LITTLE BLUE RIVER, MISSOURI
LONGVIEW LAKE
EMBANKMENT CRITERIA
AND PERFORMANCE REPORT

BERM ZONE STAGE II
RECORD CONTROL COMPACTION TESTS

Scale AS SHOWN

Date

Dwg. No.

Sheet Number 1 of 1

File No. RBL-3-1563

PLATE NO. A 76