AD-A141 542 GRANGER LAKE EMBANKMENT-OUTLET WORKS-SPILLWAY VOLUME 2 1/3
(U) ARMY ENGINEER DISTRICT FORT WORTH TX G M RUEDE
AUG 83

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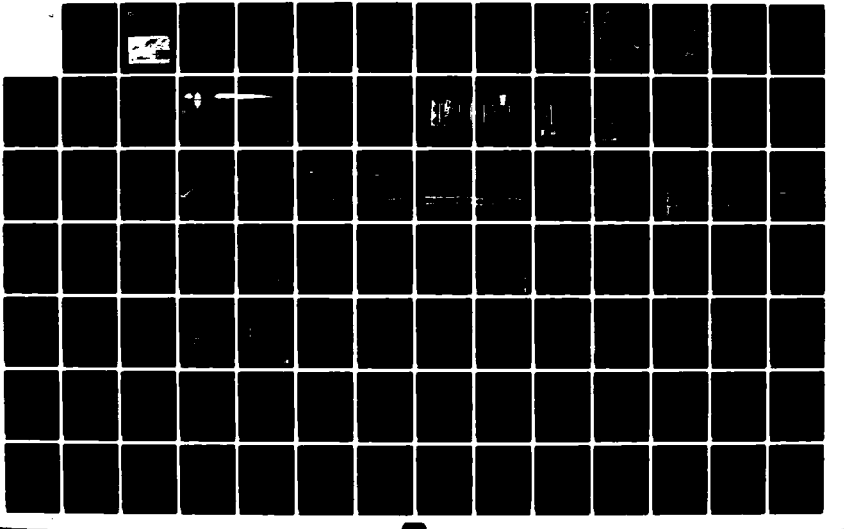

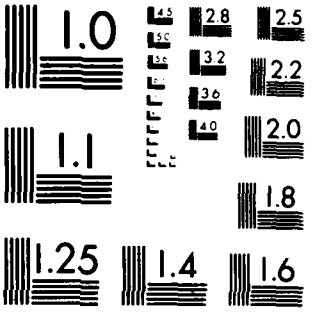

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NATIONAL BUREAU OF STANDARDS 1963 A

(12)

US Army Corps
of Engineers
Fort Worth District

GRANGER LAKE

FINAL FOUNDATION REPORT

EMBANKMENT-OUTLET WORKS-SPILLWAY

AD-A141 542

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VOLUME-2

AUGUST 1983

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A134 541	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Final foundation report, Granger Lake, embankment-outlet works-spillway		5. TYPE OF REPORT & PERIOD COVERED Final report 11/72 - 12/79
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) George M. Ruede, Project Geologist		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army Corps of Engineers, Fort Worth P.O. Box 17300 Fort Worth, Texas 76102		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Corps of Engineers, Fort Worth P.O. Box 17300 Fort Worth, Texas 76102		12. REPORT DATE August 1983
		13. NUMBER OF PAGES 2 volumes
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Embankment
Foundation
Granger Dam
Granger Lake
Outlet works
Spillway

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Granger Dam and Lake, called Laneport Dam and Lake until 3 January 1975, is located in central Texas about 6.5 miles east of Granger, Texas and 9.5 miles northeast of the city of Taylor, Texas. The structure is on the San Gabriel River, 31.9 river miles upstream from its confluence with the Little River. Principal structures of the dam are: a) earthfill embankment approximately 15,240 feet long, maximum height of 114 feet, top elevation of 555 feet, and crown of 30 feet; b) gate controlled outlet works; and c) spillway 950 feet wide, with a crest elevation of 528 feet, located on the right (south) abutment.

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This final foundation report records, documents and provides solutions to problems with regard to foundation conditions (during the construction phase), problems encountered and methods/solutions to resolve foundation problems during actual construction of Granger Dam and Lake. Additionally this report provides information and suggested changes in design of dams (structures) on similar foundations.

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Distribution/
Availability Codes
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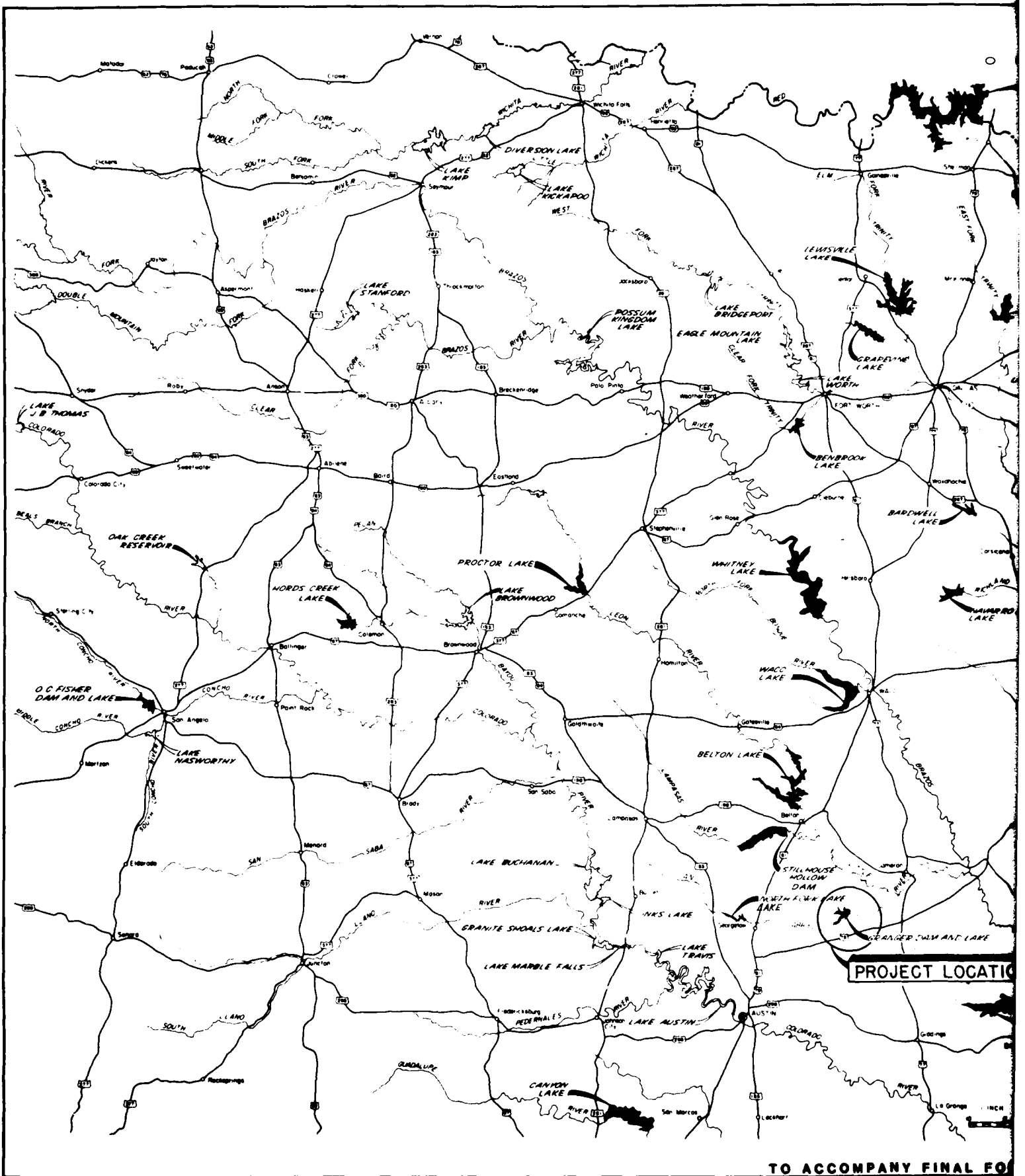
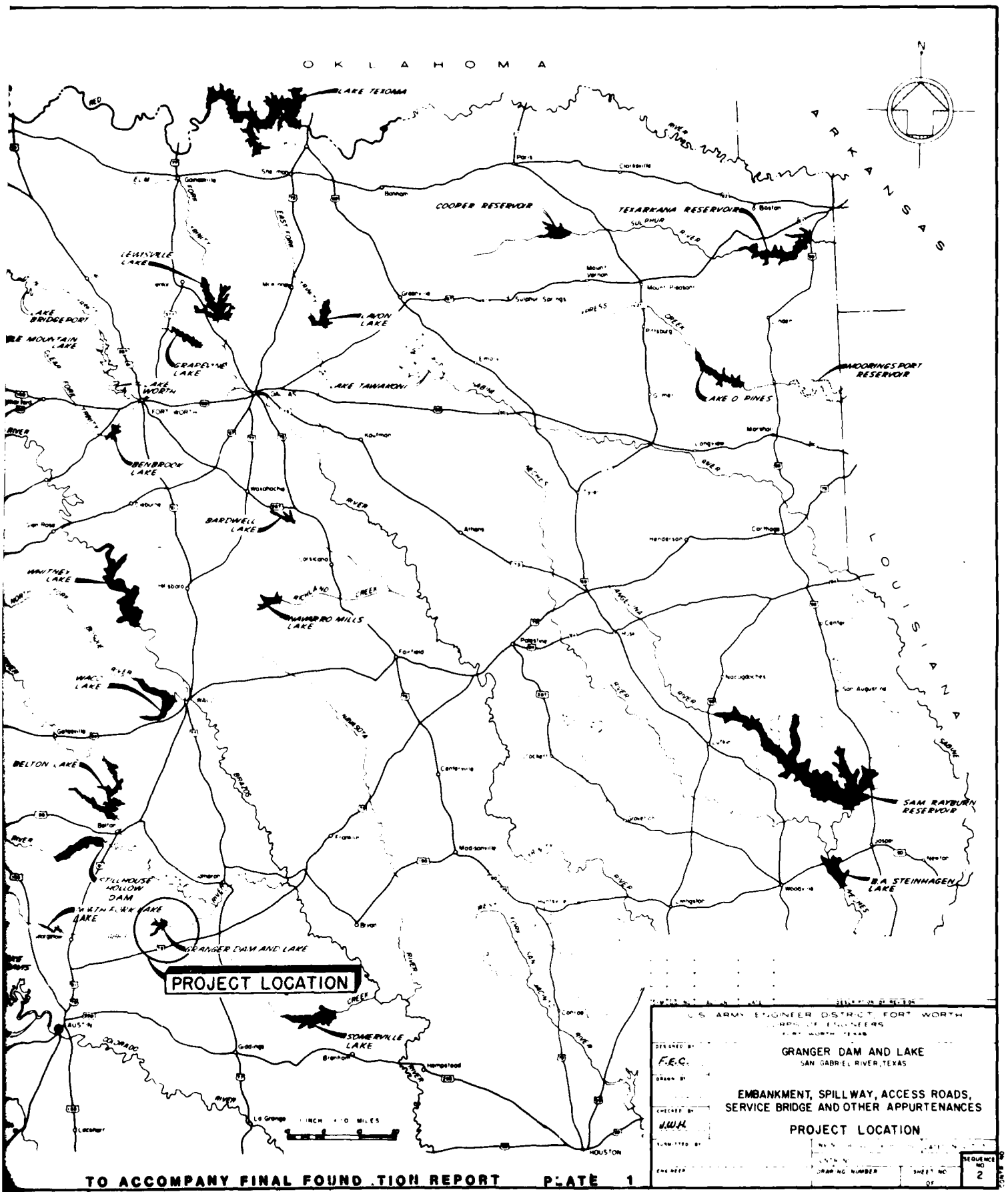

LAKE KEMP
DIVERSION LAKE
LAKE KICKAPOO
LAKE STAMFORD
POSSUM KINGDOM LAKE
EAGLE MOUNTAIN LAKE
LAKE BRIDGEPORT
LEWISVILLE LAKE
GRAPEVINE LAKE
LAKE WORTH
BENBROOK LAKE
BARDWELL LAKE
LAKE J B THOMAS
OAK CREEK RESERVOIR
PROCTOR LAKE
LAKE BROWNWOOD
WHITNEY LAKE
WORDS CREEK LAKE
WACO LAKE
O C FISHER DAM AND LAKE
LAKE NASWORTHY
BELTON LAKE
LAKE BUCHANAN
GRANITE SHOALS LAKE
LAKE MARBLE FALLS
LAKE TRAVIS
LAKE AUSTIN
CANYON LAKE
PROJECT LOCATIO
TO ACCOMPANY FINAL FO



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS

DESIGNED BY F.E.C.
DRAWN BY
CHECKED BY J.W.H.
SUBMITTED BY

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

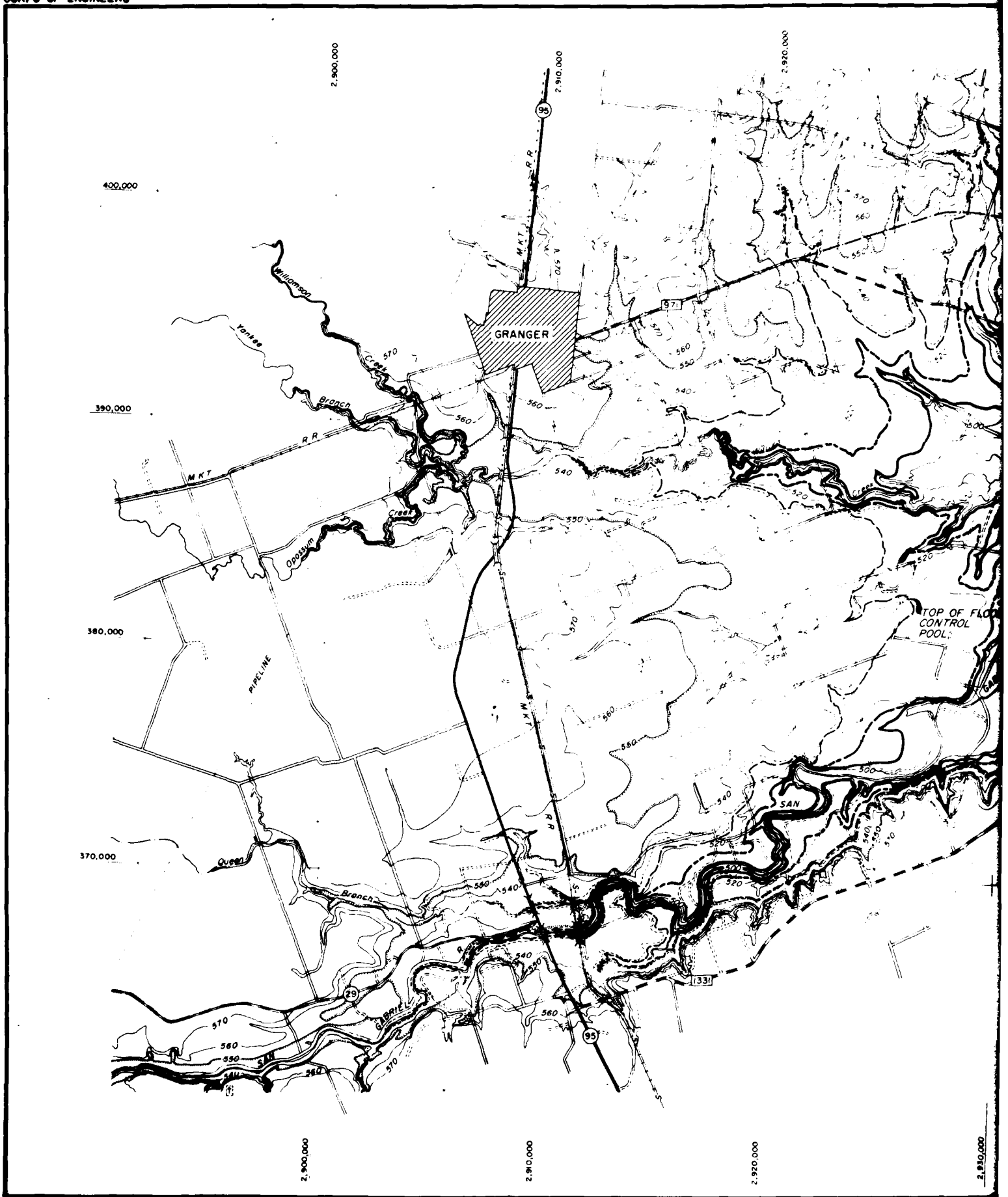
EMBANKMENT, SPILLWAY, ACCESS ROADS, SERVICE BRIDGE AND OTHER APPURTENANCES

PROJECT LOCATION

DRAWING NUMBER | SHEET NO | SEQUENCE NO 2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 1

CORPS OF ENGINEERS



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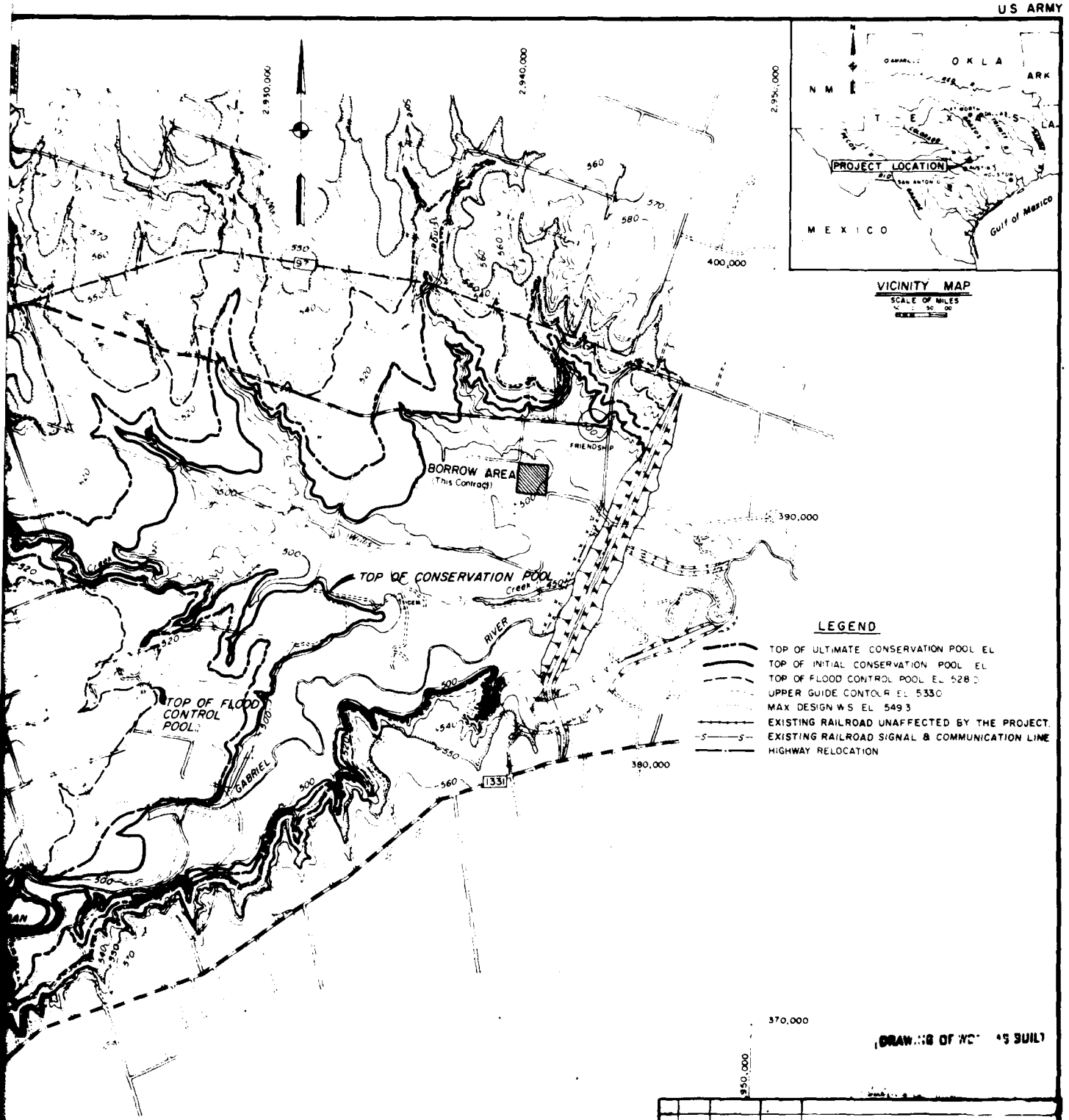
US ARMY



DRAWING OF WORKS AS BUILT

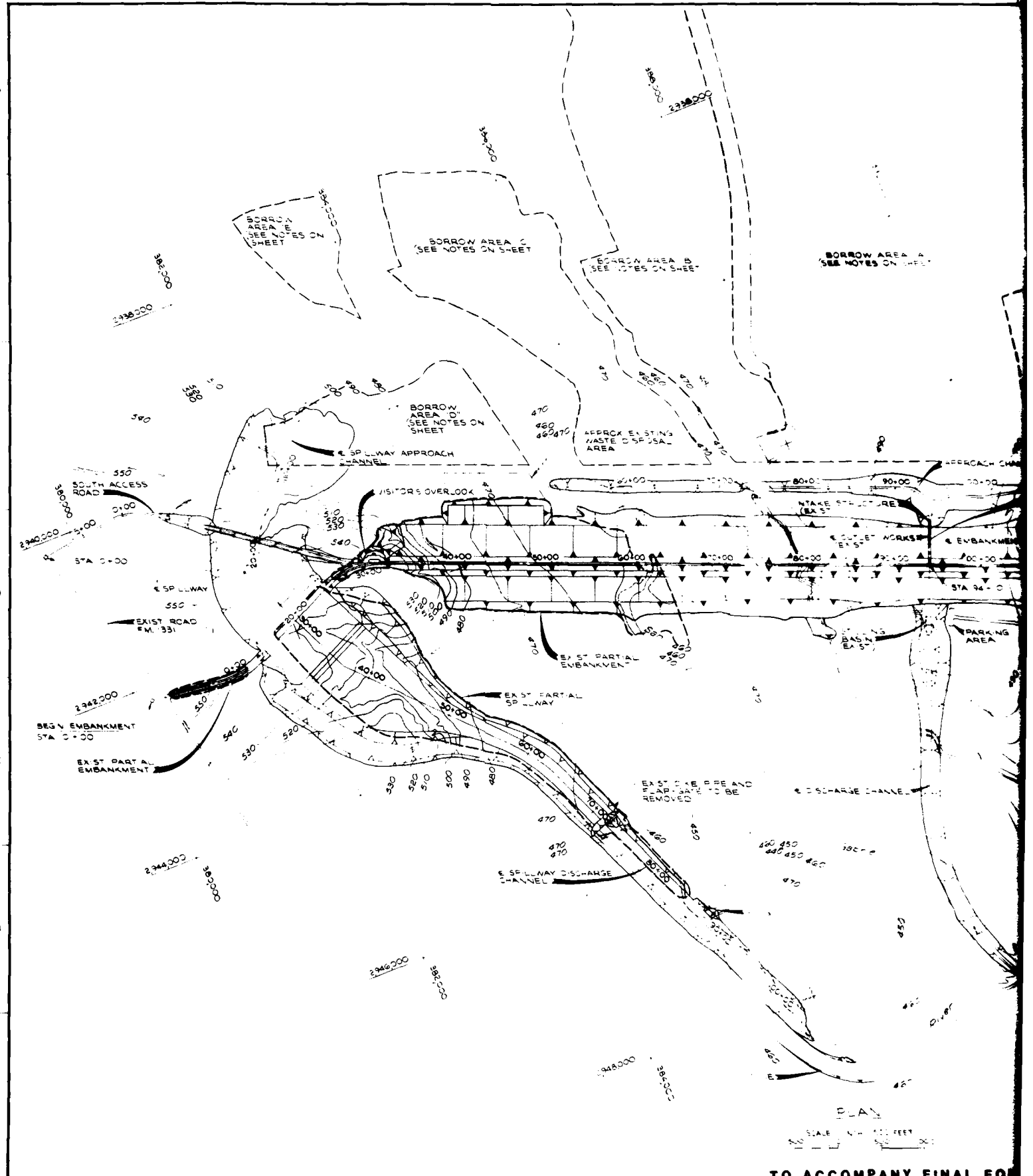
PLAN

SCALE IN FEET

2000 0 2000 4000

FREESE, NICHOLS and ENDRESS CONSULTING ENGINEERS FORT WORTH TEXAS	U S ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH TEXAS		
DESIGNED BY C.O.E.	BRAZOS RIVER BASIN, TEXAS LANEPORT RESERVOIR SAN GABRIEL RIVER, TEXAS		
DRAWN BY J.R.	OUTLET WORKS—PARTIAL EMBANKMENT		
CHECKED BY N.R.B.	SITE MAP		
SUBMITTED BY	INV NO DACW65-74-B-0081	DATED OCT. 1976	
ENGINEER	CONTR NO		SEQUENCE NO. 2
	DRAWING NUMBER	SHEET NO OF	

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 2



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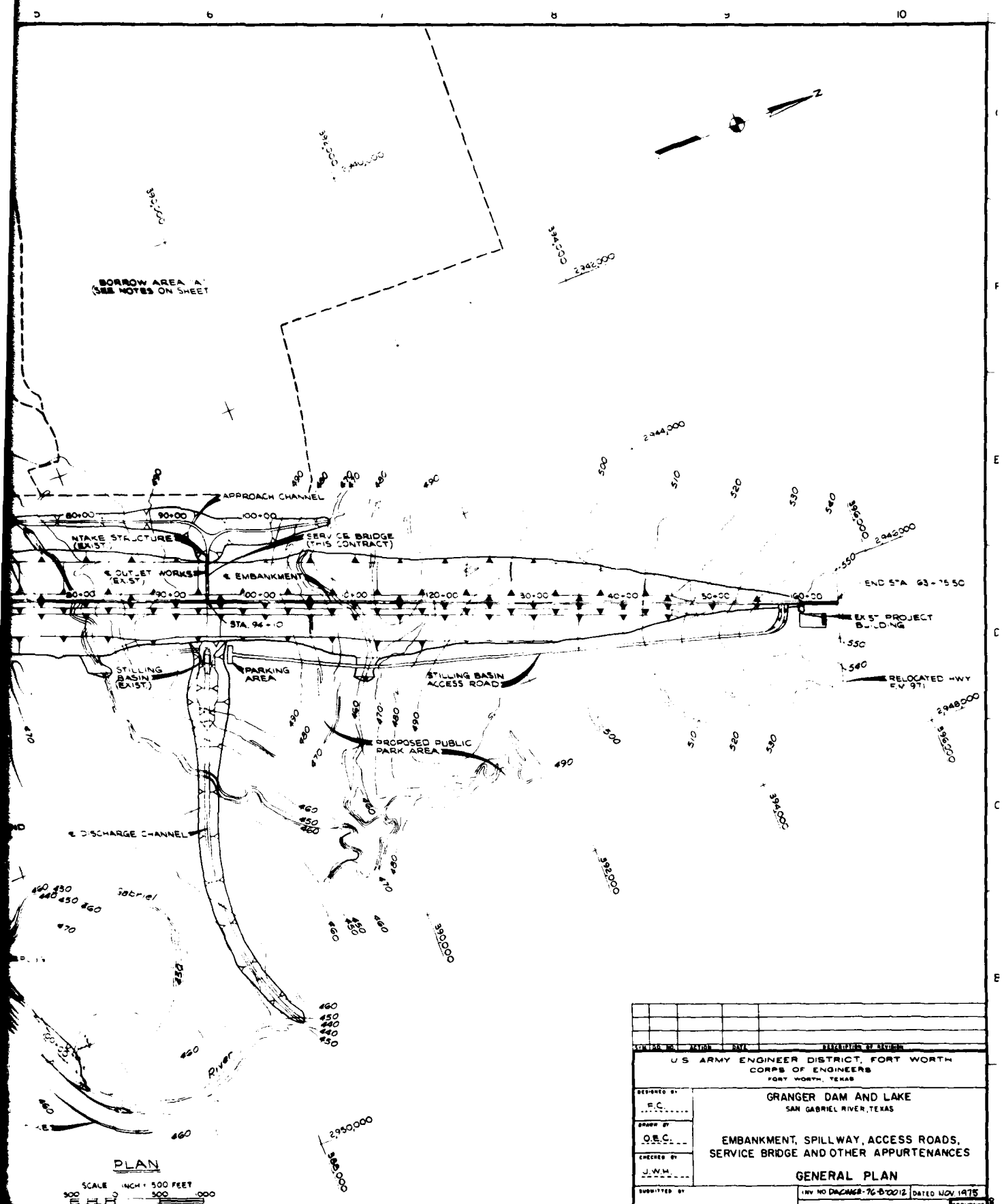


PLAN

SCALE 1 INCH = 500 FEET

U S ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

EMBANKMENT, SPILLWAY, ACCESS ROADS, SERVICE BRIDGE AND OTHER APPURTENANCES

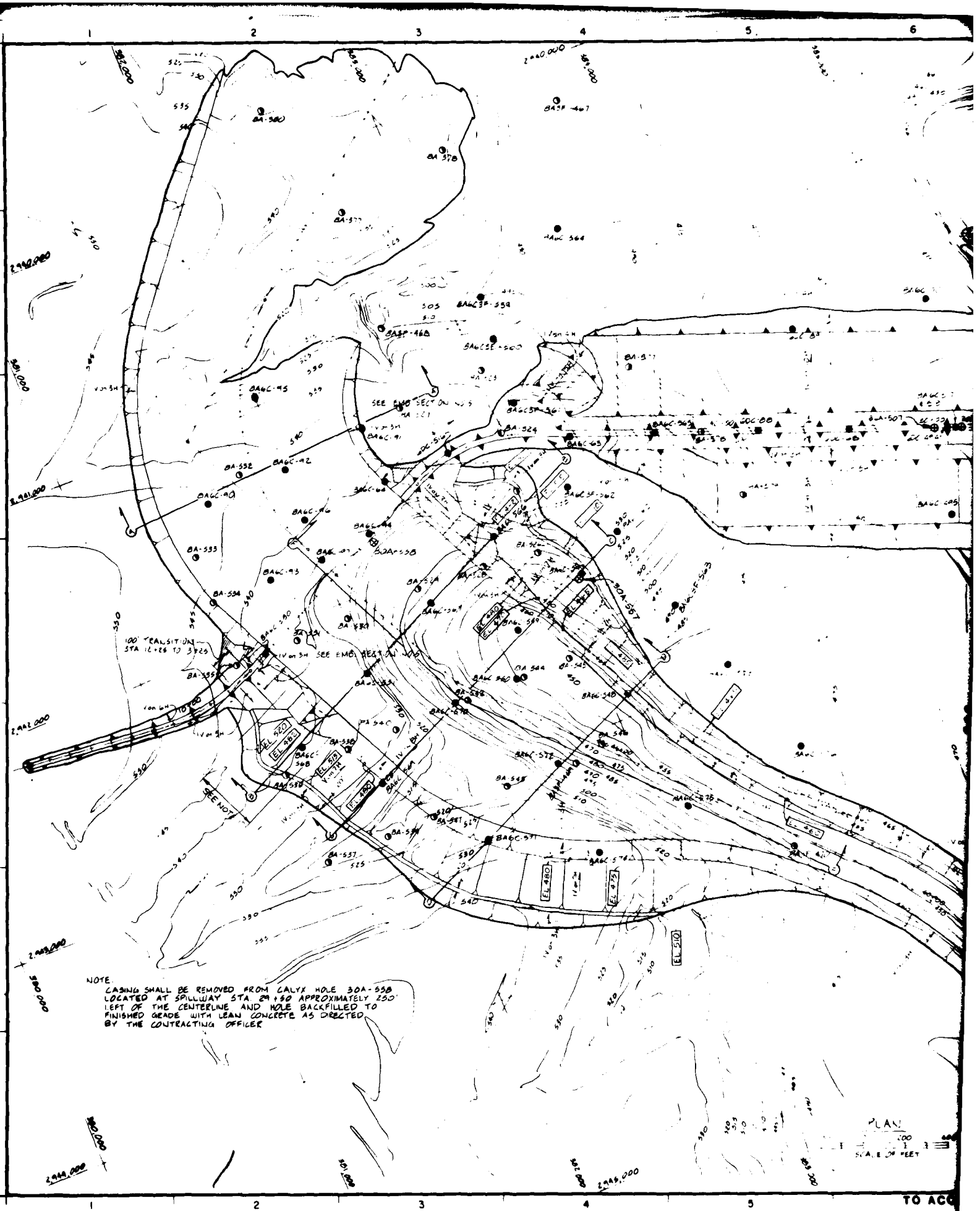
GENERAL PLAN

DESIGNED BY F.C.
DRAWN BY O.B.C.
CHECKED BY J.W.H.
SUBMITTED BY
ENGINEER

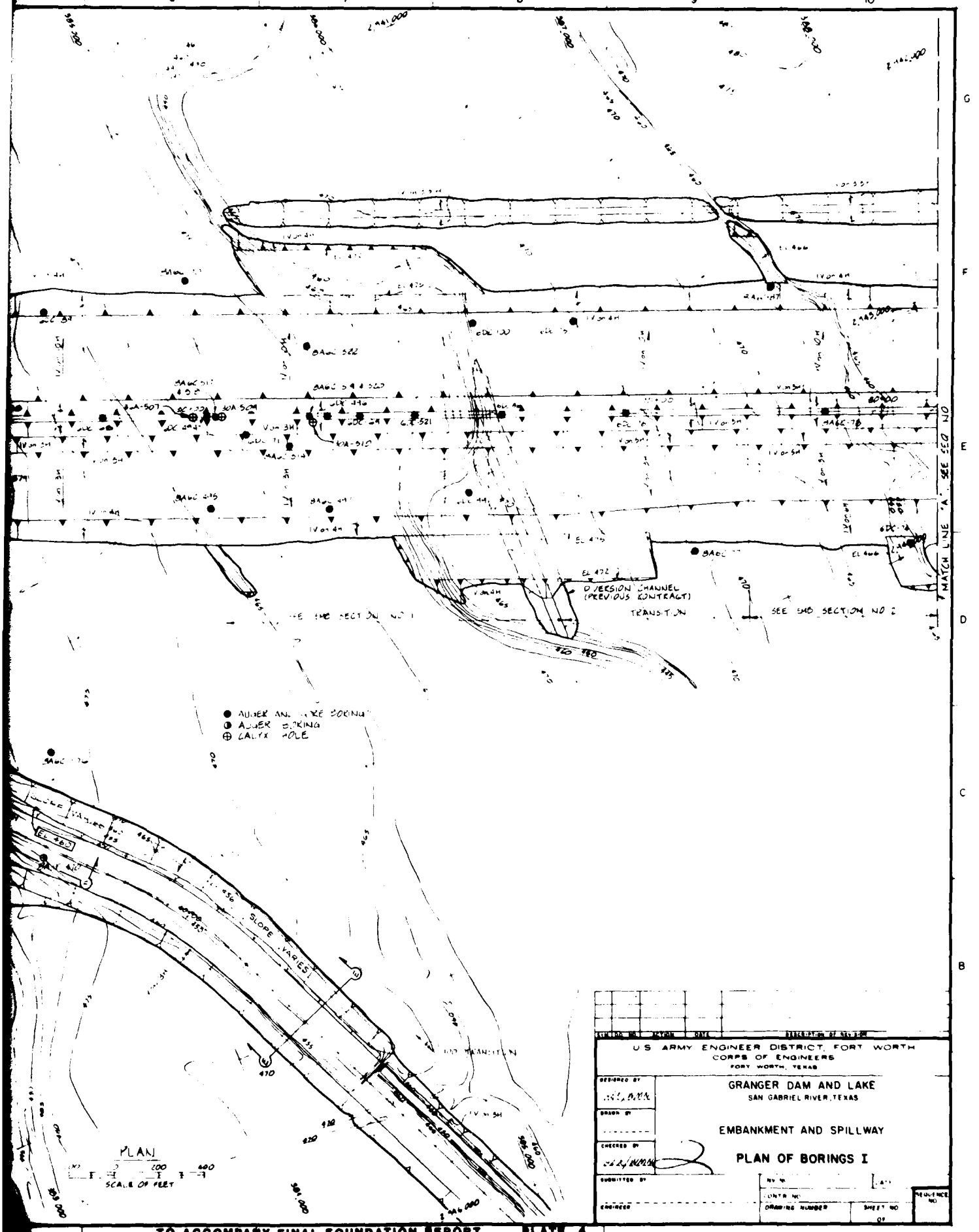
INV NO DACW63-76-B0012 DATED NOV 1975
CONTR NO
DRAWING NUMBER
SHEET NO 07
SEQUENCE NO 4

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 3

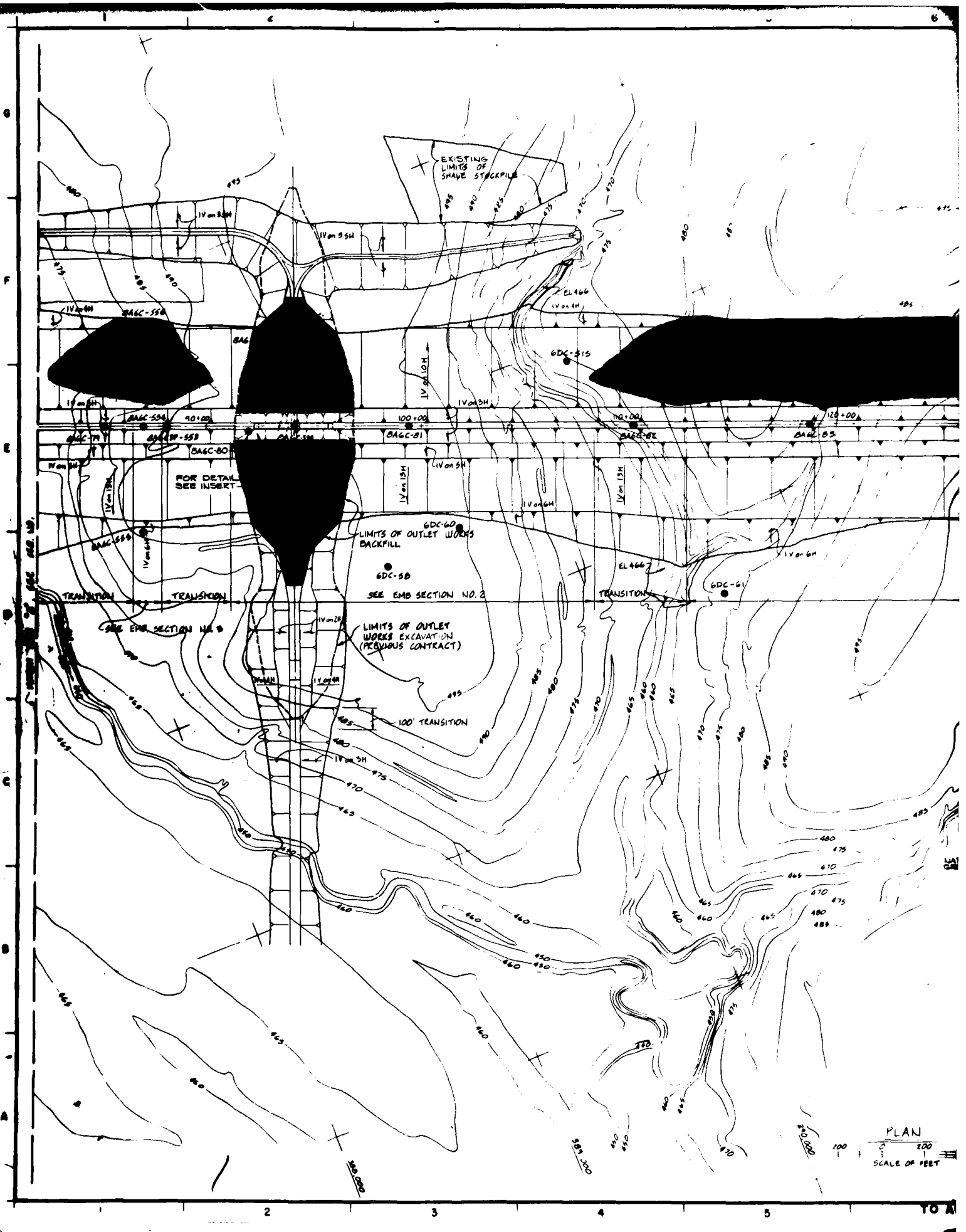
2

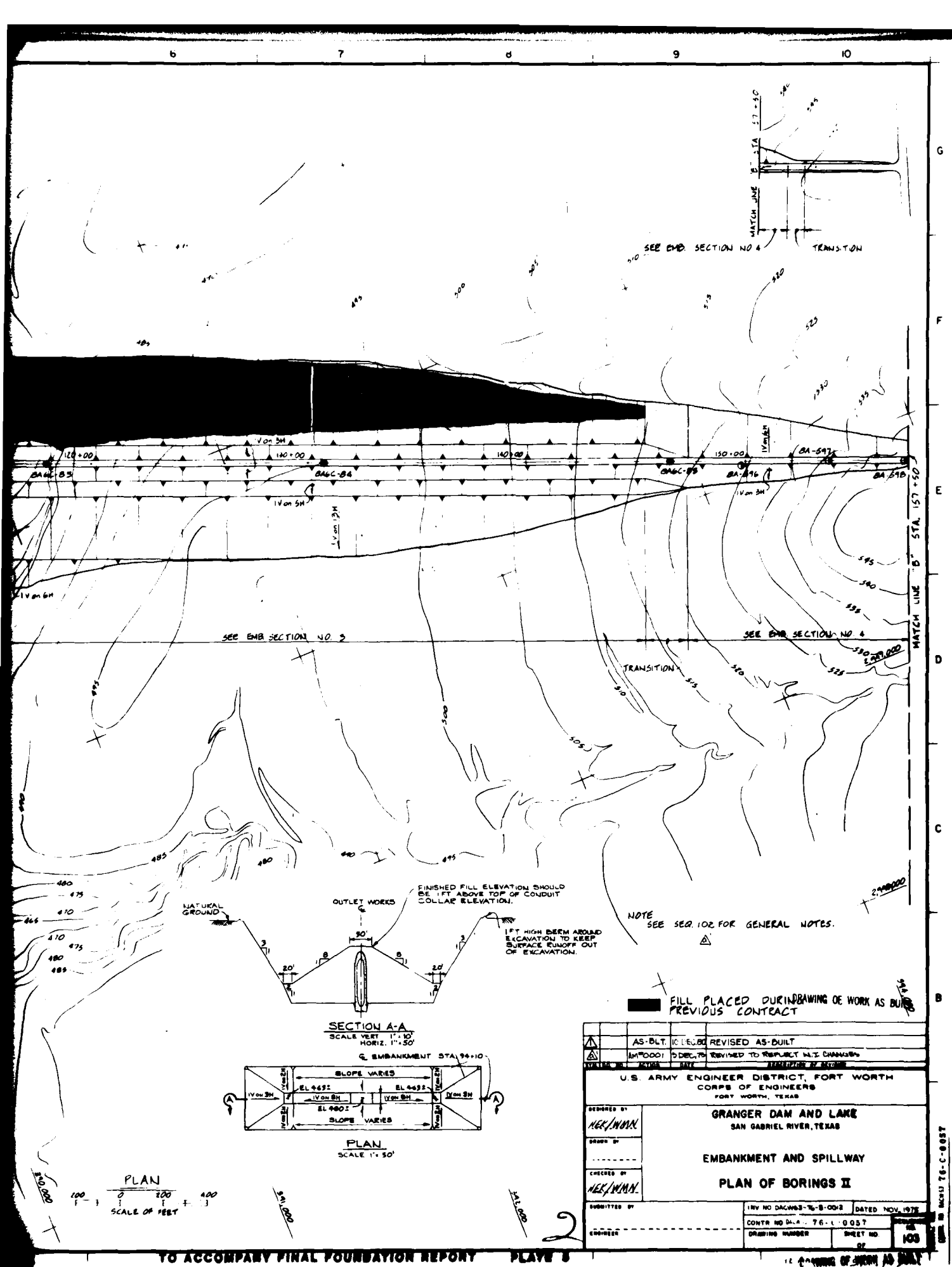


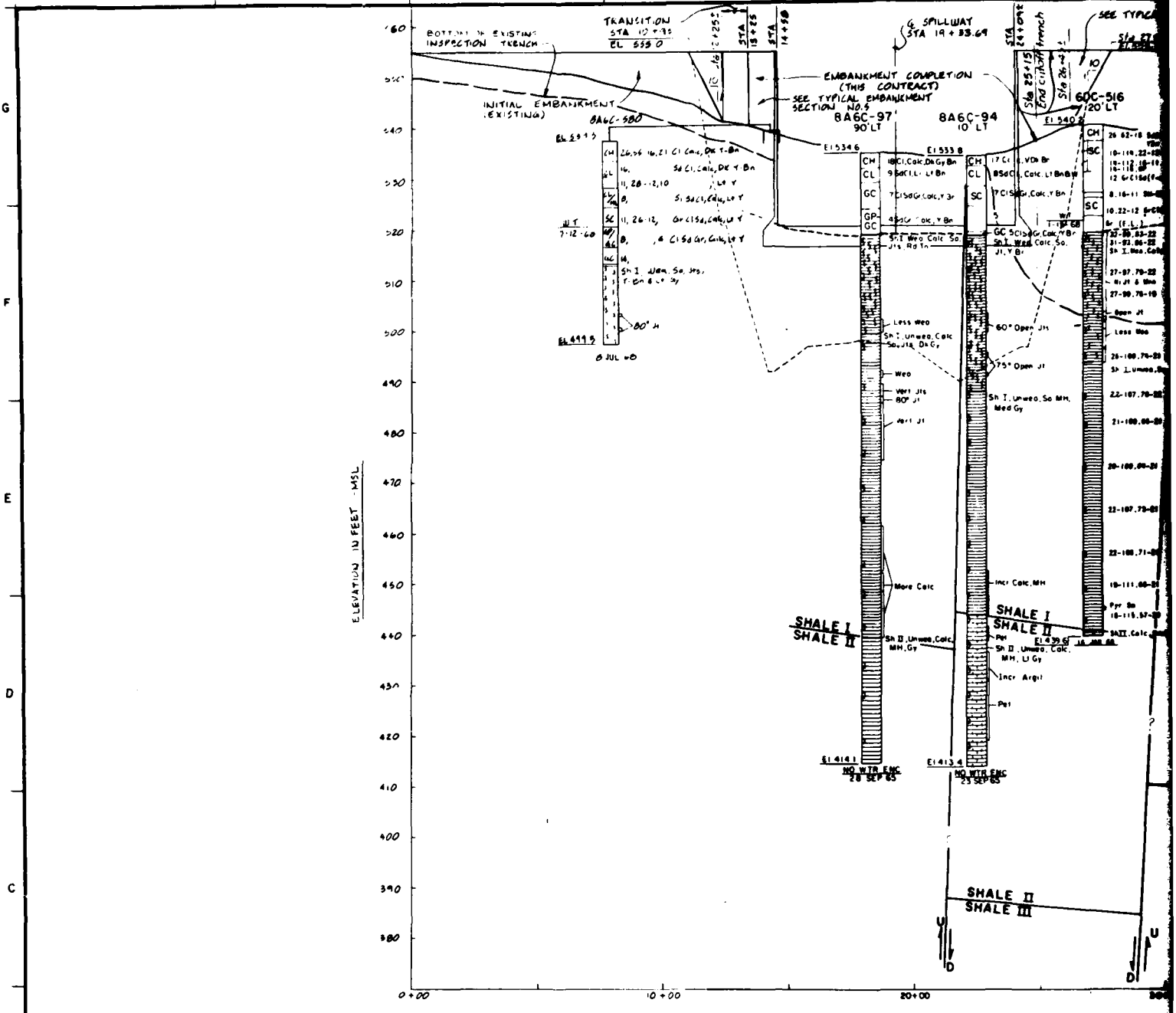
NOTE.
CASING SHALL BE REMOVED FROM CALYX HOLE 30A-558 LOCATED AT SPILLWAY STA. 29+50 APPROXIMATELY 250' LEFT OF THE CENTERLINE AND HOLE BACKFILLED TO FINISHED GRADE WITH LEAN CONCRETE AS DIRECTED BY THE CONTRACTING OFFICER
100' TRANSITION STA 12+25 TO 3+25
SEE EMB SECTION NO 5
SEE NOTE
EL 520
EL 480
EL 475
EL 510
30A-567
PLAN
SCALE OF FEET
TO ACC



TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 4

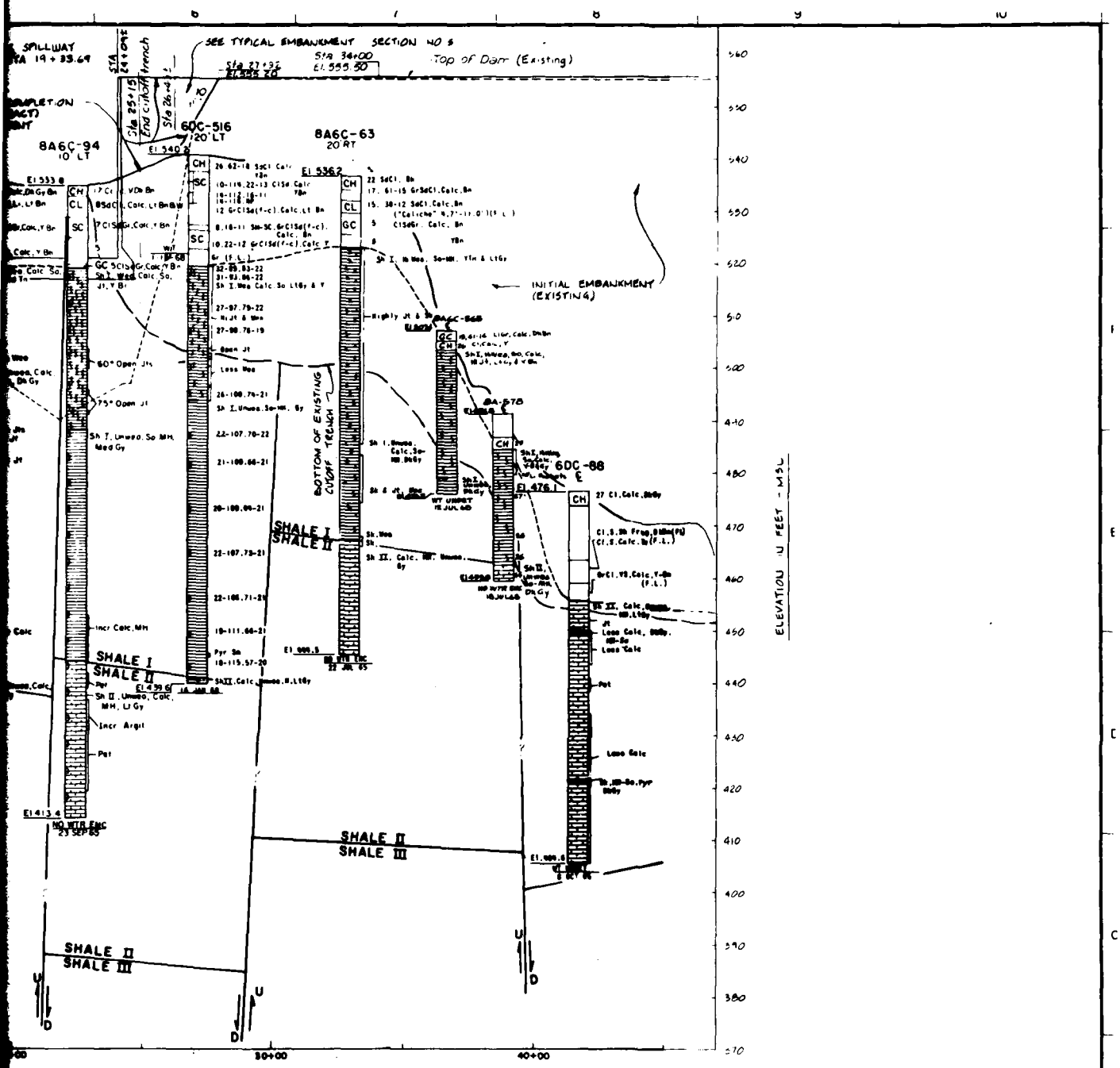

EXISTING LIMITS OF SHALE STOCKPILE
1V on 3.5H
1V on 4H
BAGC-556
EL 466
6DC-515
1V on 10H
1V on 3H
BAGC-554
90+00
100+00
110+00
120+00
BAGC-81
BAGC-82
BAGC-83
BAGC-80
1V on 5H
FOR DETAIL SEE INSERT
1V on 13H
1V on 6H
6DC-60
LIMITS OF OUTLET WORKS BACKFILL
6DC-58
EL 466
6DC-61
TRANSITION
SEE EMB SECTION NO. 2
SEE EMB SECTION NO. 3
1V on 2H
LIMITS OF OUTLET WORKS EXCAVATION (PREVIOUS CONTRACT)
100' TRANSITION
PLAN
SCALE OF FEET
TO A


SEE EMB. SECTION NO 4
TRANSITION
MATCH LINE "B" STA. 157+50
SEE EMB SECTION NO. 3
SEE EMB SECTION NO. 4
TRANSITION
BA-B3
BAGC-B4
BAGC-B5
BA-B96
BA-B97
BA-B98
1V on 5H
1V on 6H
1V on 3H
NOTE
SEE SEQ. 102 FOR GENERAL NOTES.
NATURAL GROUND
OUTLET WORKS
FINISHED FILL ELEVATION SHOULD BE 1FT ABOVE TOP OF CONDUIT COLLAR ELEVATION.
1FT HIGH BERM AROUND EXCAVATION TO KEEP SURFACE RUNOFF OUT OF EXCAVATION.
SECTION A-A
SCALE VERT. 1"=10'
HORIZ. 1"=50'
℄ EMBANKMENT STA 94+10
SLOPE VARIES
EL 469±
EL 480±
PLAN
SCALE 1"=50'
PLAN
SCALE OF FEET
FILL PLACED DURING CONSTRUCTION OF WORK AS BUILT UNDER PREVIOUS CONTRACT
AS-BLT. 10 DEC. 80 REVISED AS-BUILT
AMENDMENT 5 DEC. 79 REVISED TO REFLECT W.I. CHANGES
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS
DESIGNED BY MEK/WMN
DRAWN BY
CHECKED BY MEK/WMN
SUBMITTED BY
ENGINEER
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS
EMBANKMENT AND SPILLWAY
PLAN OF BORINGS II
IRV NO DACW63-76-B-0012 DATED NOV. 1975
CONTR NO DACA63-76-C-0057
DRAWING NUMBER 103
SHEET NO 2 OF
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 8
DRAWING OF WORK AS BUILT



CENTERLINE PROFILE

TO ACCOMPANY FINAL FO



NOTE
FOR LEGEND AND NOTES SEE SEQ

SYM	NO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY HLL/WMN
DRAWN BY
CHECKED BY HLL/WMN
SUBMITTED BY
ENGINEER

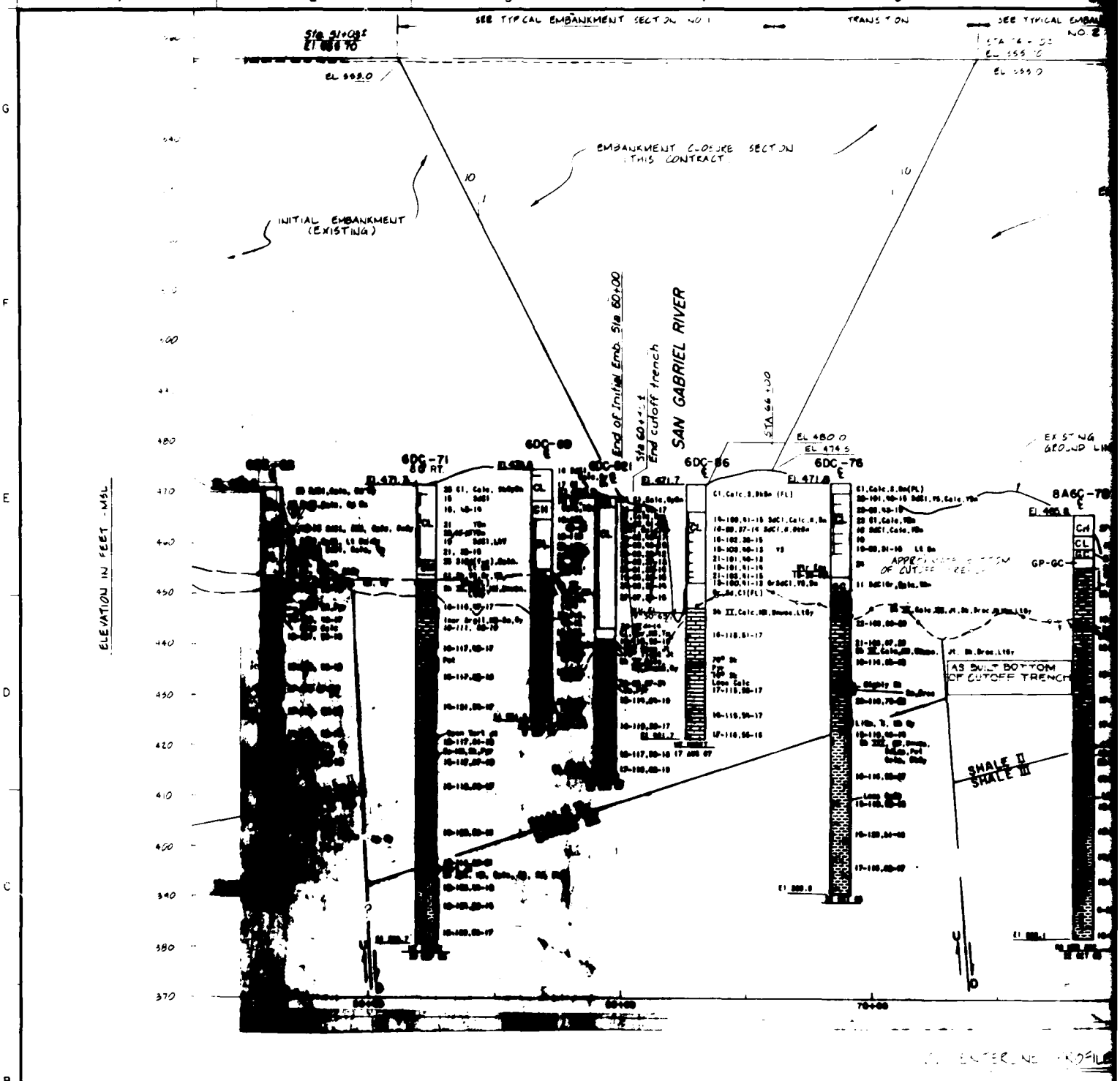
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

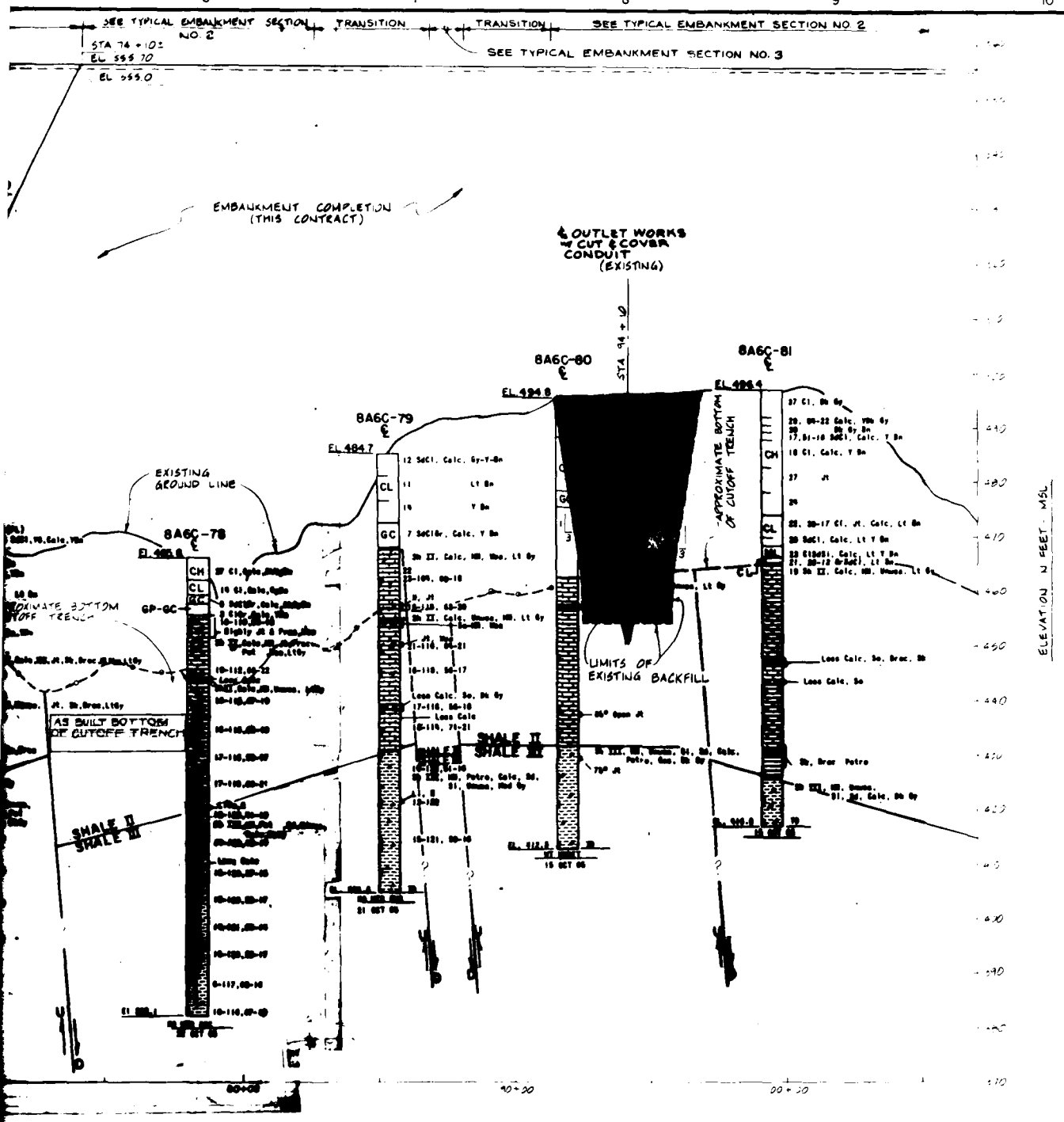
EMBANKMENT AND SPILLWAY
LOGS OF BORINGS
EMBANKMENT CENTERLINE PROFILE I

INV NO DACW63 76-B-0012 | DATED NOV 1975
CONTR NO
DRAWING NUMBER | SHEET NO OF | SEQUENCE NO 109

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 6


SEE TYPICAL EMBANKMENT SECTION NO 1
TRANSITION
SEE TYPICAL EMBANKMENT NO 2
EL 498.0
EMBANKMENT CLOSURE SECTION THIS CONTRACT
INITIAL EMBANKMENT (EXISTING)
End of Initial Emb. Sta 60+00
Sta 60+41.1 End cutoff trench
SAN GABRIEL RIVER
STA 66+00
EL 480.0
EL 474.5
6DC-71
6DC-80
6DC-86
6DC-76
8A6C-76
EXISTING GROUND LINE
ELEVATION IN FEET - MSL
AS BUILT BOTTOM OF CUTOFF TRENCH
SHALE II
SHALE III
GP-GC
50+00
60+00
70+00



△ CENTERLINE PROFILE

NOTES
1. FOR LEGEND AND NOTES SEE SEQ 11
2. FOR DETAILS OF CLOSURE SECTION SEE SEQ 104

SYM	CO. NO.	ACTION	DATE	DESCRIPTION OF REVISION
△		AS-BLT	10 DEC 80	REVISED AS BUILT
		AH #0001	5 DEC 7[illegible]	[illegible]

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CORPS OF ENGINEERS
FORT WORTH, TEXAS

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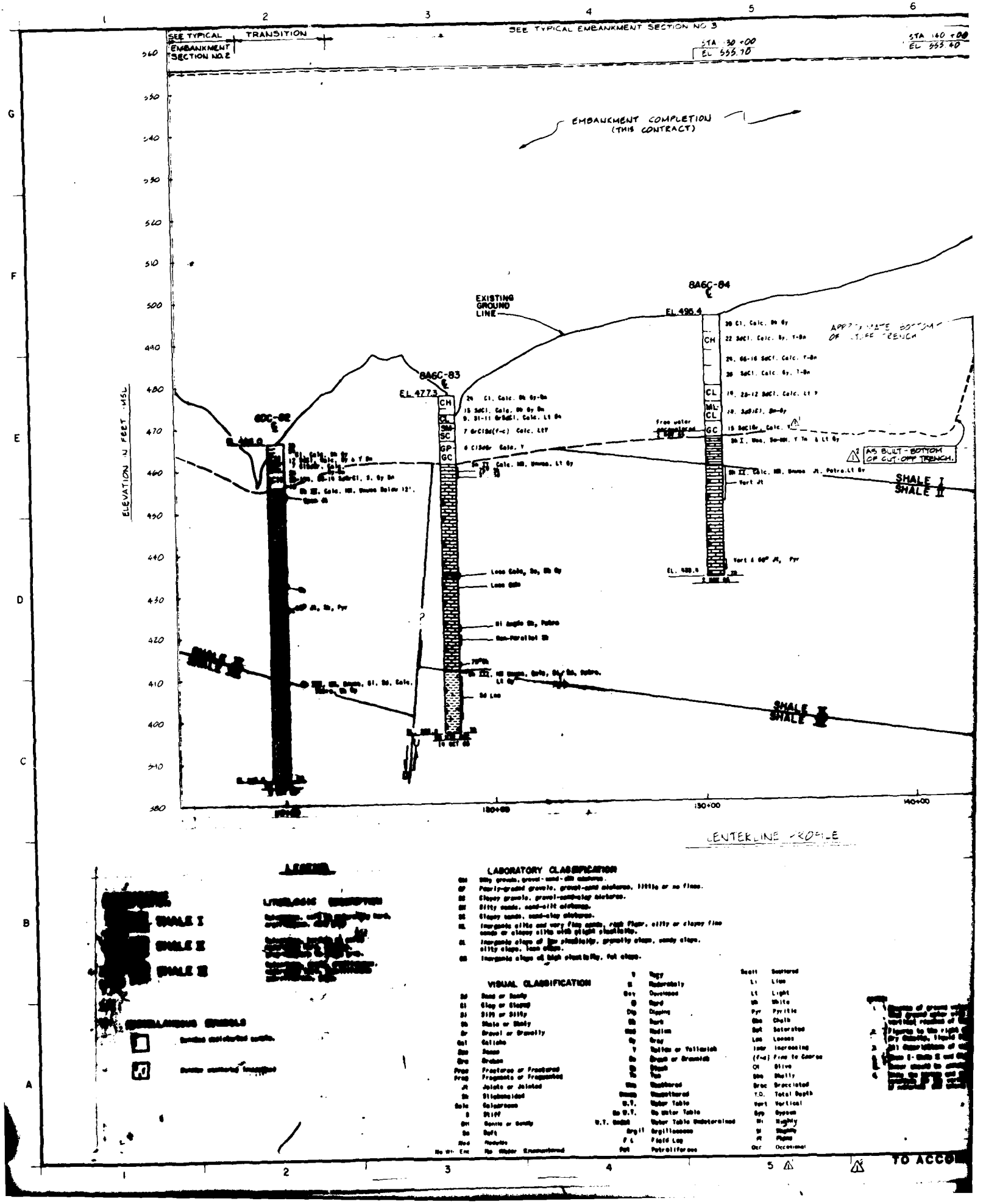
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

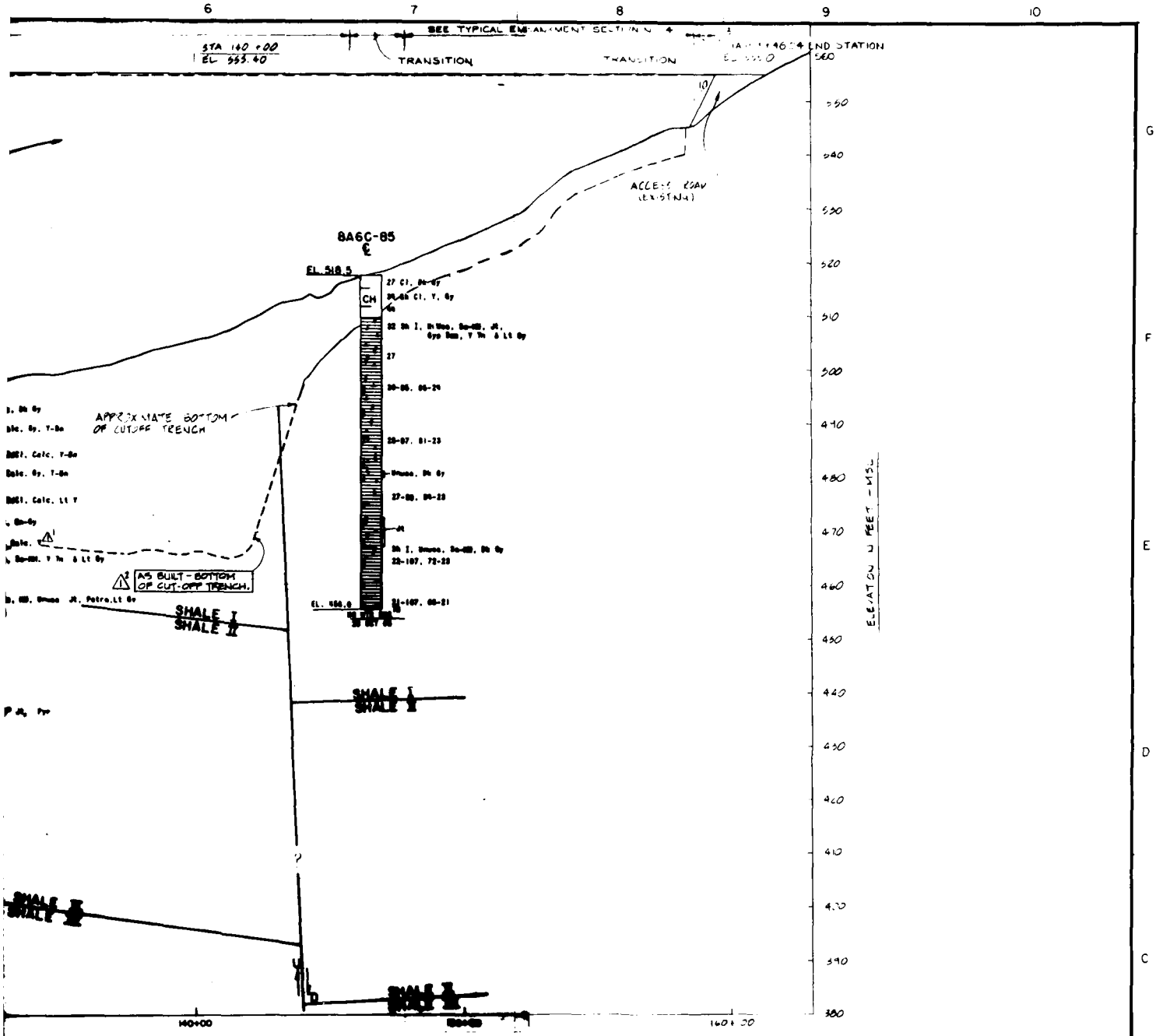
EMBANKMENT AND SPILLWAY
LOGS OF BORINGS
EMBANKMENT CENTERLINE PROFILE II

DRAWING NUMBER
SHEET NO
SEQUENCE NO 110

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 7


SEE TYPICAL EMBANKMENT SECTION NO. 2
TRANSITION
SEE TYPICAL EMBANKMENT SECTION NO. 3
STA 130+00
EL 555.70
STA 140+00
EL 555.40
EMBANKMENT COMPLETION (THIS CONTRACT)
EXISTING GROUND LINE
8A6C-84
EL 495.4
8A6C-83
EL 477.3
6DC-82
ELEVATION IN FEET MSL
AS BUILT - BOTTOM OF CUT-OFF TRENCH.
SHALE I
SHALE II
SHALE III
SHALE IV
SHALE V
130+00
140+00
CENTERLINE PROFILE
LEGEND
LITHOLOGIC DESCRIPTION
SHALE I
SHALE II
SHALE III
LABORATORY CLASSIFICATION
VISUAL CLASSIFICATION
TO ACCO



PROFILE

200 0 200 400
SCALE OF FEET

SYM	NO.	NO.	ACTION	DATE	DESCRIPTION OF REVISION
△3			AS-BLT	10 DEC 80	REVISED AS BUILT

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

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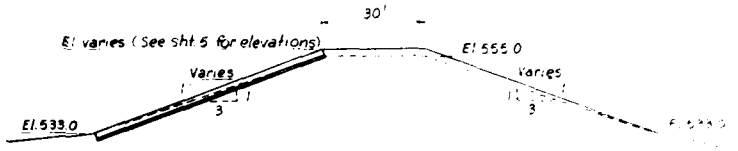
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

EMBANKMENT AND SPILLWAY
LOGS OF BORINGS
EMBANKMENT CENTERLINE PROFILE III

INV NO. DA WAT NO. B-[illegible] DATED NOV. 1975
CONTR NO. [illegible]
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. III

2

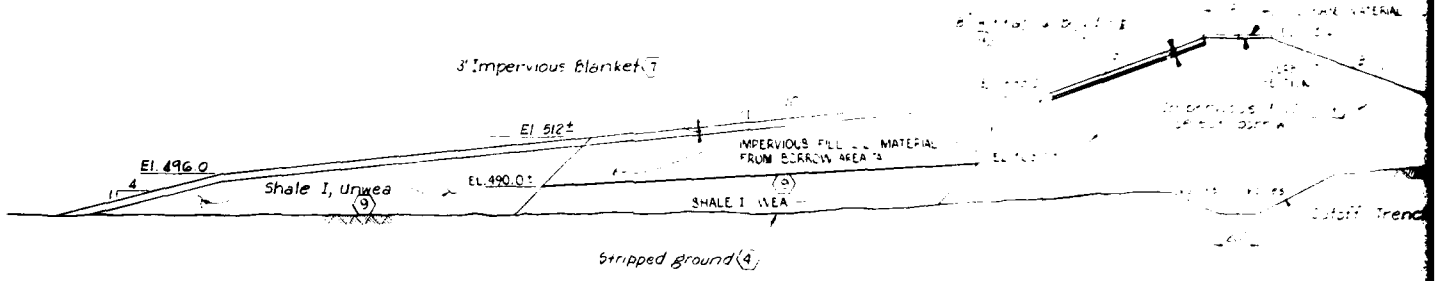
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 8



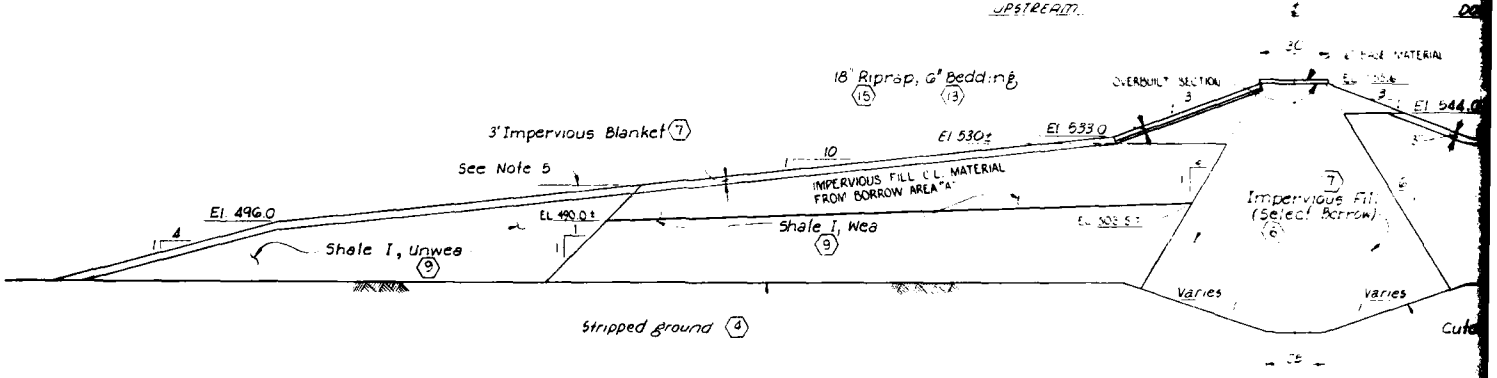
TYPICAL SECTION
(EMBANKMENT OVERBUILD)
NOT TO SCALE

Notes
1 Embankment [illegible] limited to [illegible] above El 533.0
2 See sheet 5 for final grout [illegible] embankment overbuild

STA 0+00 TO STA 12+10±

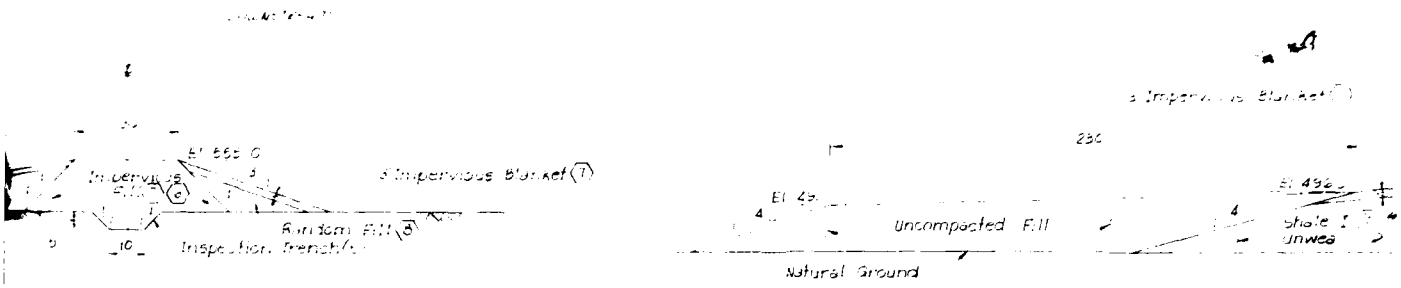


△ STA. 26+40± TO STA. 38+00
SCALE INCH = 30 FEET



△ STA. 39+50 TO STA. 60+00±
SCALE 1 INCH = 30 FEET

△ TO ACCOMPANY FINAL FOU



A. 0+00 TO STA. 12+10±

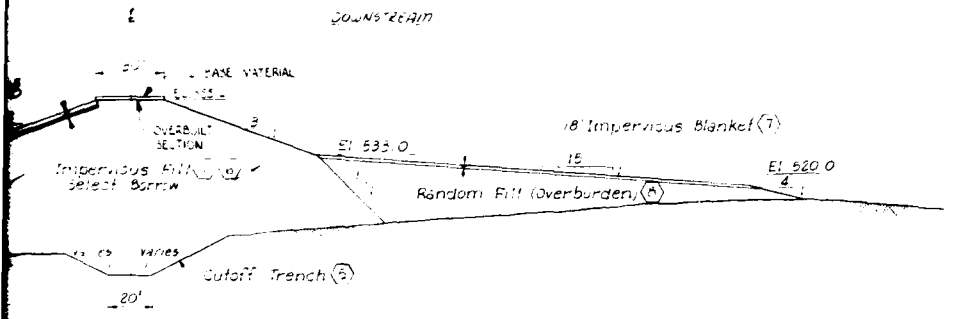
SCALE 1 INCH = 30 FEET

WASTE DISPOSAL BERM

STA 39+00± TO STA. 50+00±

SCALE 1 INCH = 30 FEET

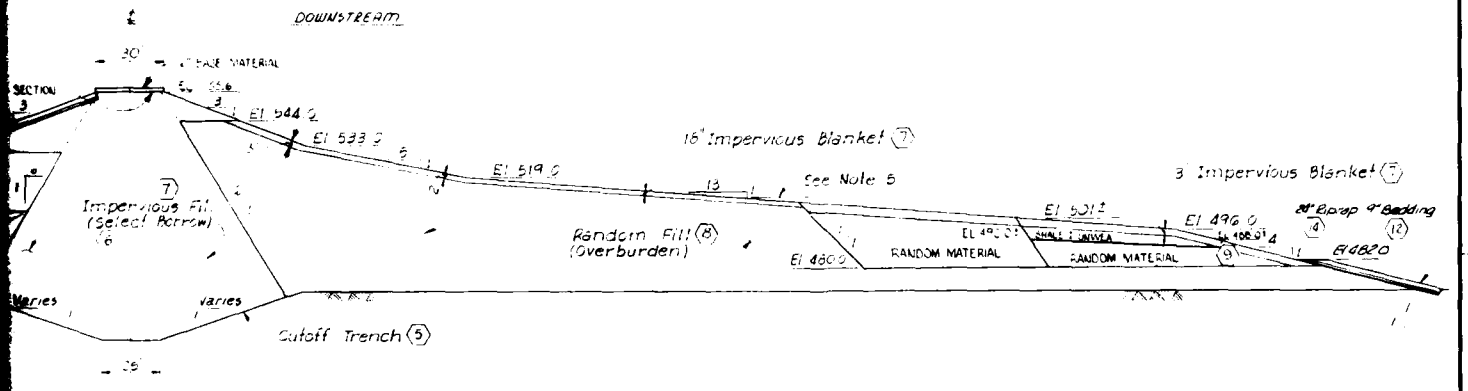
Note
Three-foot impervious blanket shall be omitted where covered by waste disposal berm



A. 26+40± TO STA. 38+00

SCALE 1 INCH = 30 FEET

Note
Transition embankment from Sta 38+00 to Sta 39+50.



A. 39+50 TO STA. 60+00±

SCALE 1 INCH = 30 FEET

Notes
1. Cutoff trench side slopes shall vary with depth as follows:

Depth, Ft	Slope
0 to 10	1 Vert. on 1 Horiz.
10 to 20	1 Vert. on 2 Horiz.
20 to 30	1 Vert. on 3 Horiz.
over 30	1 Vert. on 3.5 Horiz.

2. Cutoff trench will be excavated into sound unweathered Shale II from Sta 41+00± to Sta 61+40 and Shale I on the abutment to depths determined in the field by the Contracting Officer. Approx depth of cut off trench is shown on sheet 5.
3. Any Shale II material encountered in Reqd. excavation shall be wasted.
4. Lines and grades shown on the sections are ultimate sections. Embankment above elevation 533.0 will be overbuilt to compensate for settlement after construction.
5. Zoning of embankment is approximate and depends upon quantities of available materials from required excavations.

2

RECORD DRAWING - WORK AS BUILT

DO NO	ACTION	DATE	DESCRIPTION OF REVISION
		1 JUNE 78	REV. AS BUILT
	AM#0001	31 MAY 72	REV. SECTION STA 39+50 TO STA 60+00±

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: GRP & WMN
DRAWN BY: J.E.O.
CHECKED BY: GRP & WMN

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

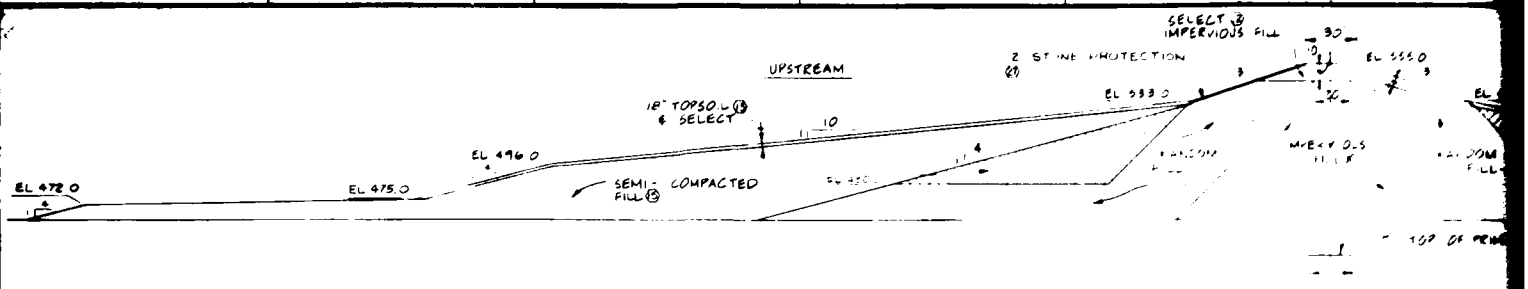
INITIAL EMBANKMENT
TYPICAL SECTIONS

SUBMITTED BY
ENGINEER

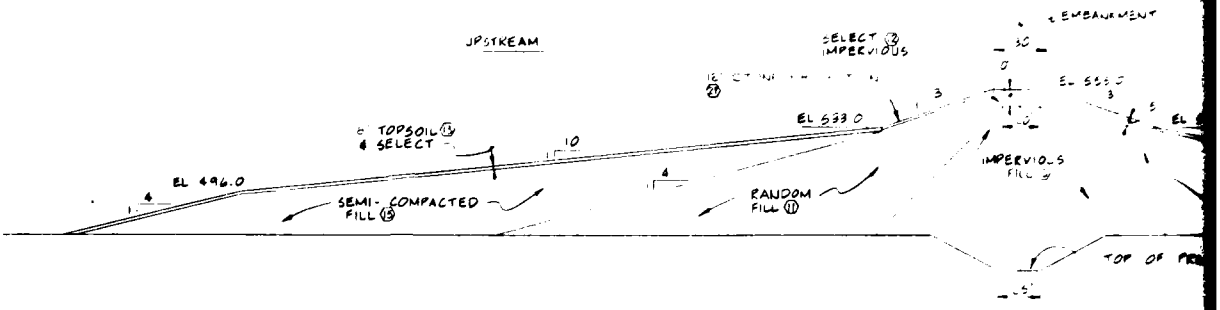
INVITATION NO DACW63-72-B-0095
SPECIFICATIONS DATED MAY 972
DRAWING NUMBER
SHEET NO 6 of 46
SEQUENCE NO 6

ACCOMPANY FINAL FOUNDATION REPORT PLATE 9 RECORD DRAWING - WORK AS BUILT

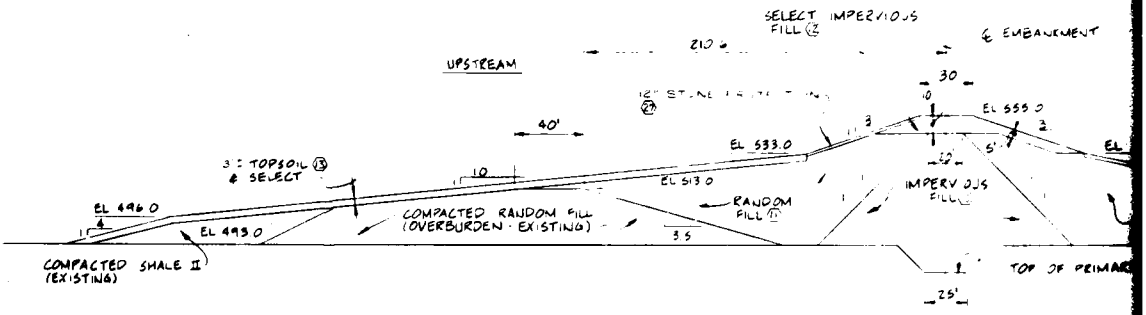
SUPERSEDES SHT 6 OF 46

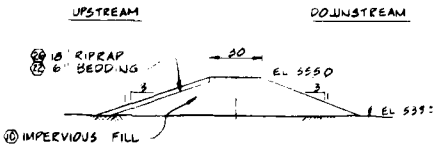


TYPICAL EMBANKMENT SEC
STA [illegible] + 00 TO 6 + 00



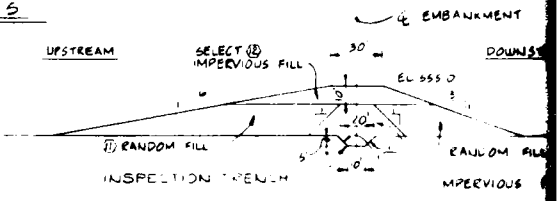
TYPICAL EMBANKMENT SECTION
STA 74 + 10 TO 8[illegible] + 50
STA 91 + 20 TO 108 + 00



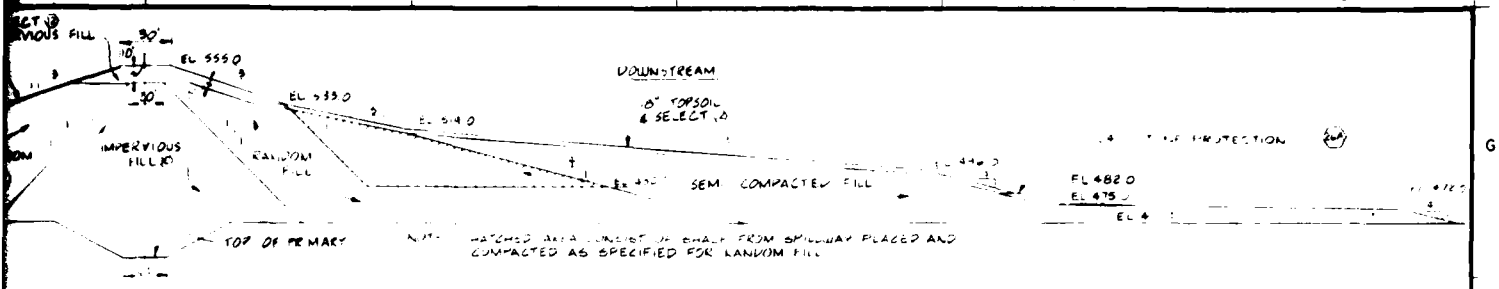


TYPICAL EMBANKMENT SECTION NO. 5
STA 13 + 25 TO 14 + 58
STA 24 + 09 TO 27 + 92

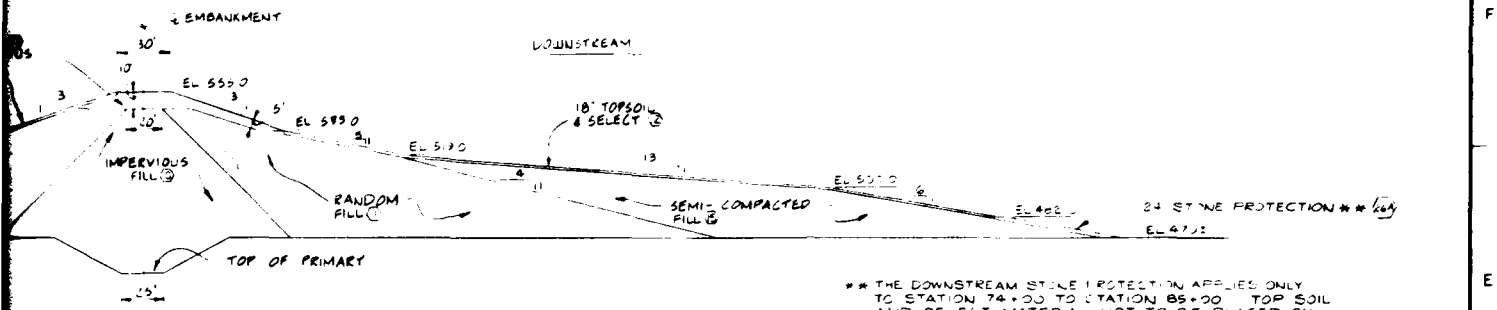
TYPICAL EMBANKMENT SECTION N
STA 86 + 70 TO 88 + 00
STA 112 + 30 TO 145 + 50



TYPICAL EMBANKMENT SECTION
STA 147 + 50 TO 158 + 80

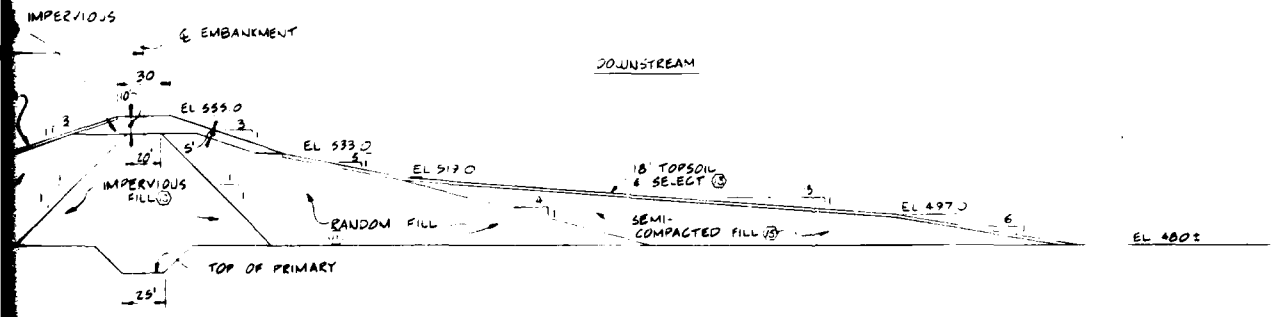


CAL EMBANKMENT SECTION NO. 1
STA 51+00 TO 66+00

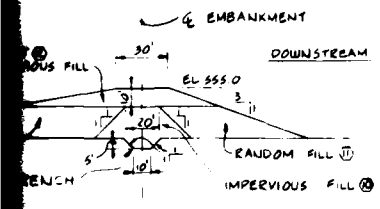


** THE DOWNSTREAM STONE PROTECTION APPLIES ONLY TO STATION 74+00 TO STATION 85+00. TOP SOIL AND SELECT MATERIAL NOT TO BE PLACED ON SLOPE TO BE COVERED BY RIPRAP.

AL EMBANKMENT SECTION NO. 2
STA 74+00 TO 8[illegible]+50
STA 91+20 TO 108+00



EMBANKMENT SECTION NO. 3
STA 86+70 TO 88+00
STA 112+30 TO 145+50



EMBANKMENT SECTION NO. 4
A 147+50 TO 158+80

2

40 0 40 80
SCALE OF FEET

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION
3		AM #0001	5 DEC 73	GENERAL REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: HER/WMH
DRAWN BY: C.M.B.
CHECKED BY: HER/WMH

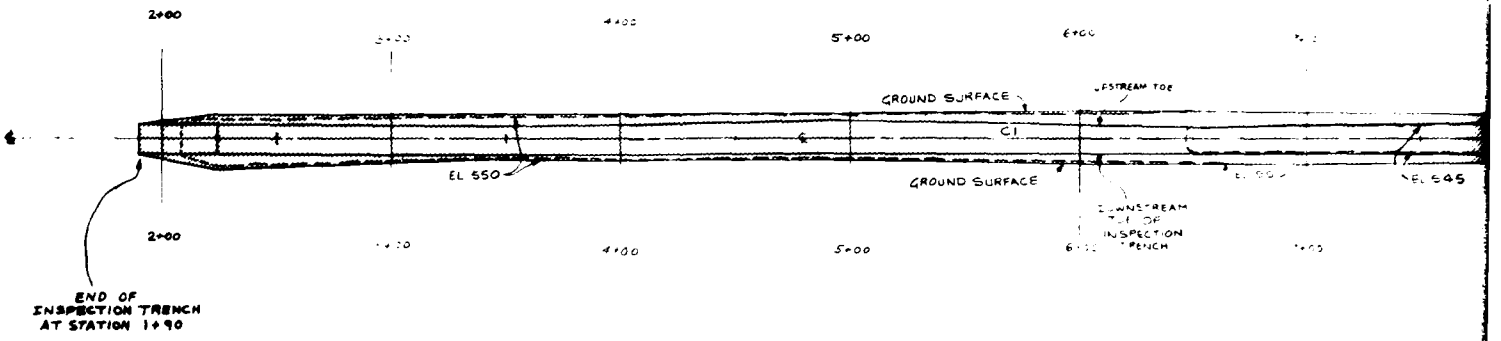
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

EMBANKMENT
TYPICAL EMBANKMENT SECTIONS

SUBMITTED BY
ENGINEER
INV NO
DATED
CONTR NO.
DRAWING NUMBER
SHEET NO
OF
SEQUENCE NO.

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 10

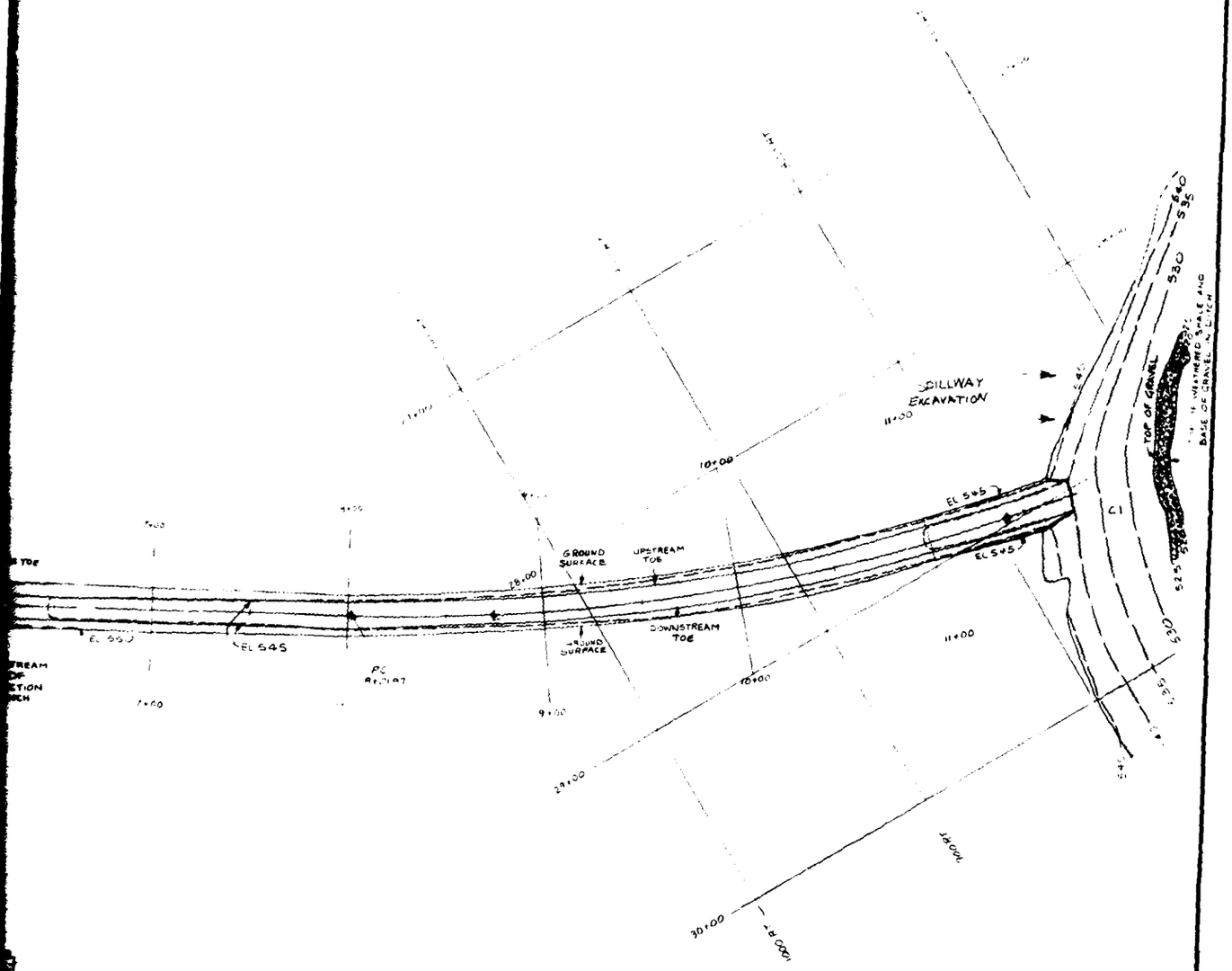
EXHIBIT



MAP SYMBOLS

- CLAY
- UN-WEATHERED SHALE
- WEATHERED SHALE
- GRAVEL
- SAND
- LITHOLOGIC BOUNDARY
- CONTOUR (ELEVATION OF EXCAVATION SURFACE, M.S.L.)
- FAULT, SHOWING DIRECTION OF FAULT DIP
- FAULT, PROBABLE OR POSSIBLE, SHOWING DIRECTION OF FAULT DIP
- DEPRESSION CONTOUR
- DITCH

U S ARMY



30 0 30 60
SCALE OF FEET

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

FINAL FOUNDATION REPORT

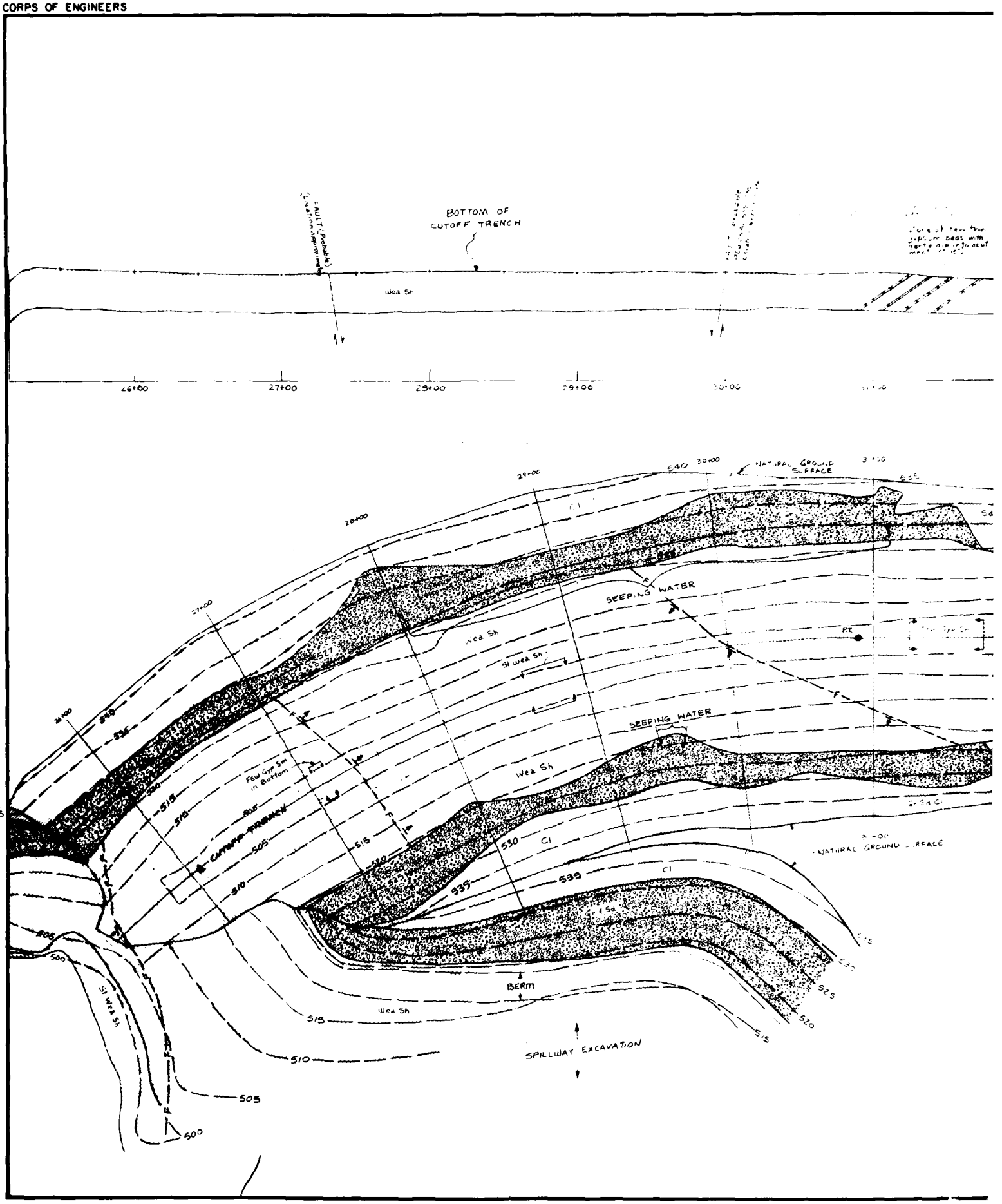
INSPECTION TRENCH
GEOLOGY AND EXCAVATION
STATION 1+90 TO STATION 11+76

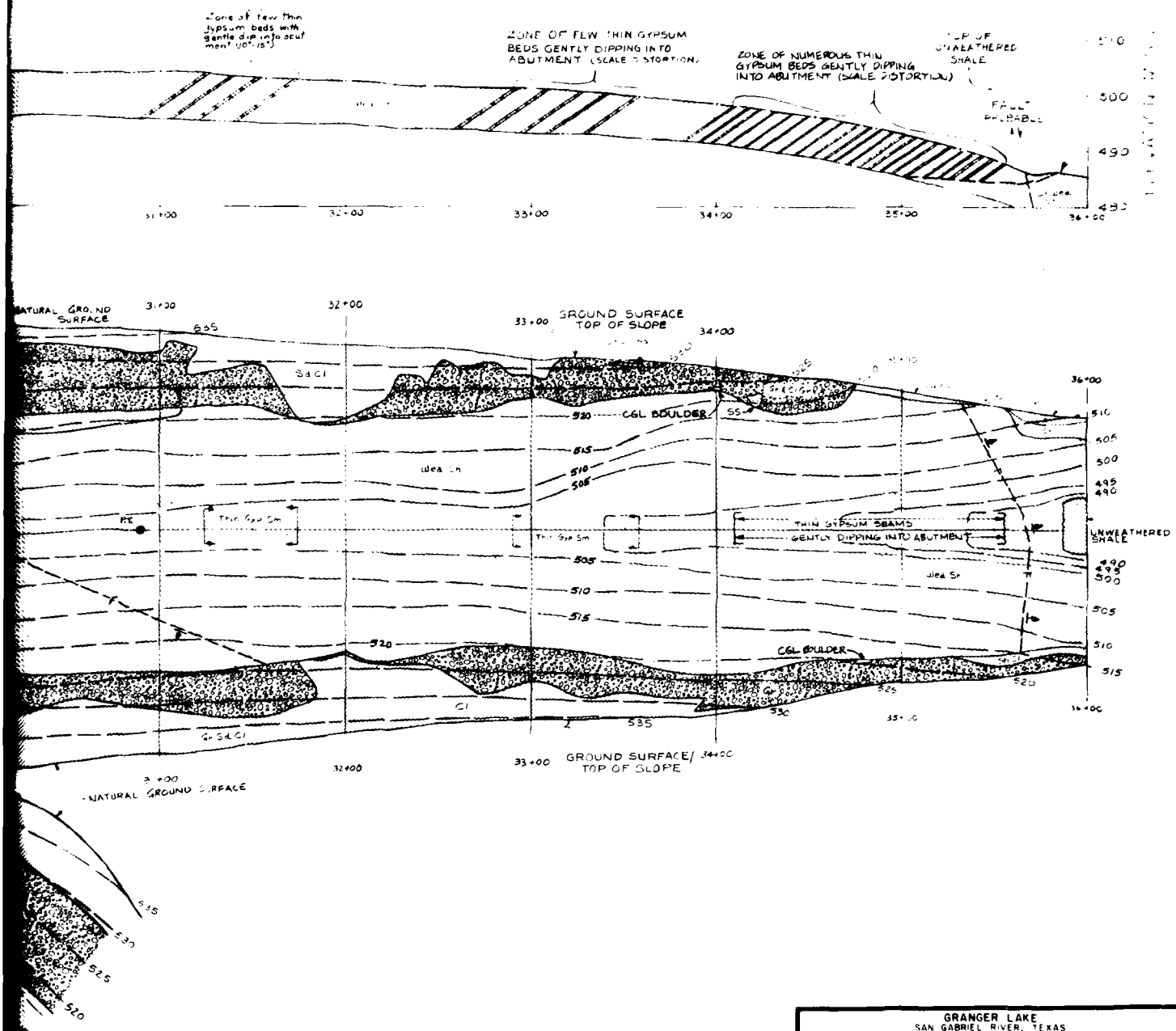
U S ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE II

TO ACCOMPANY FINAL FOUNDATION REPORT

CORPS OF ENGINEERS





30 0 30 60
SCALE OF FEET

NOTE:
FOR MAPPING SYMBOLS, SEE PLATE II

2

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

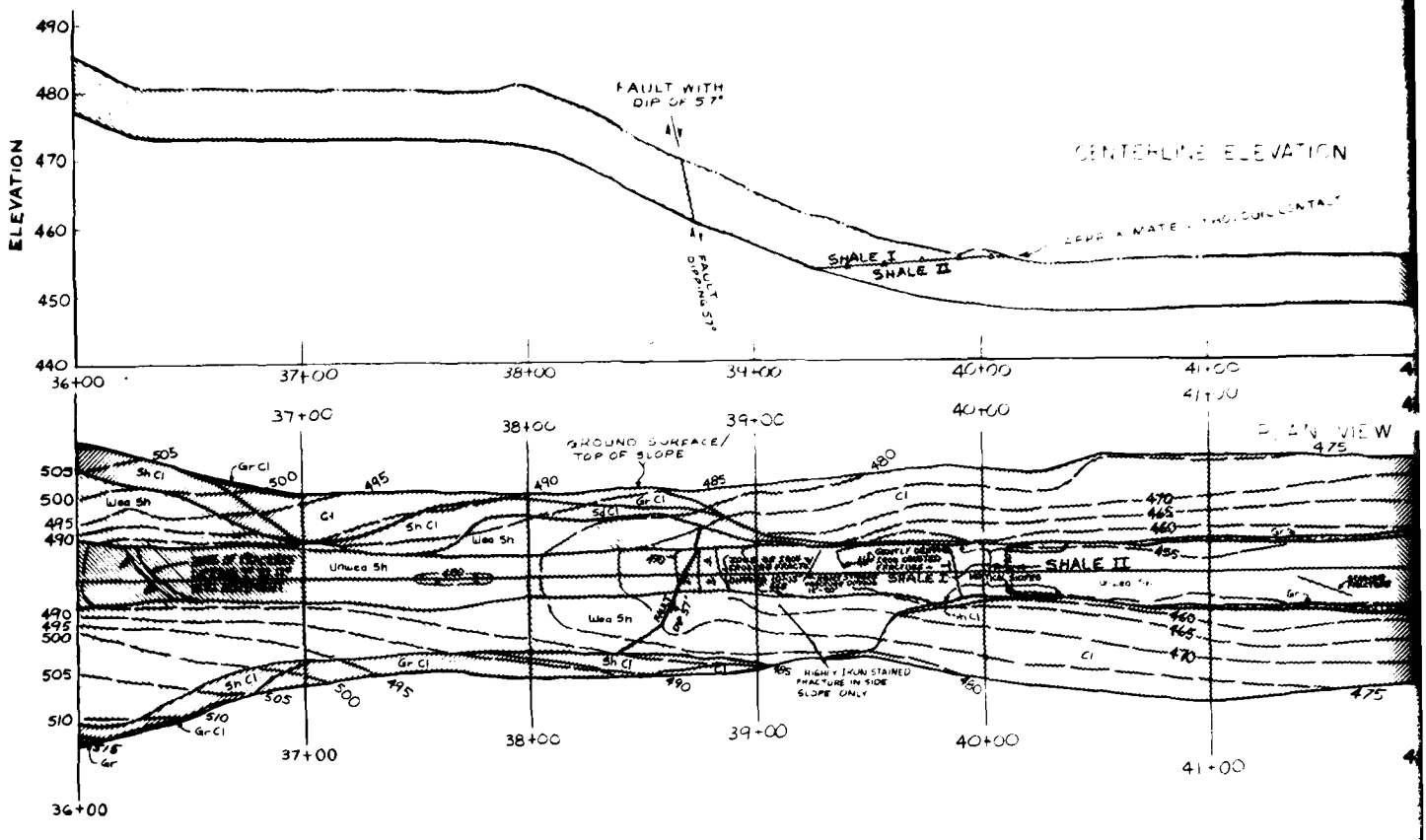
FINAL FOUNDATION REPORT

CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 25+33 TO STATION 36+00

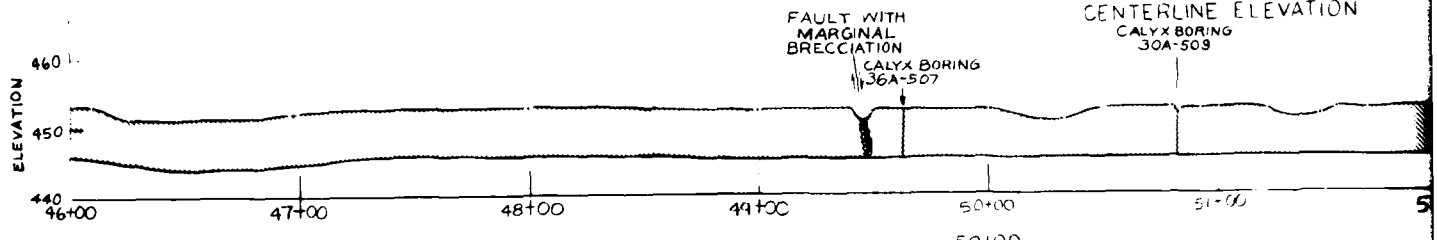
U S ARMY ENGINEER DISTRICT, FORT WORTH

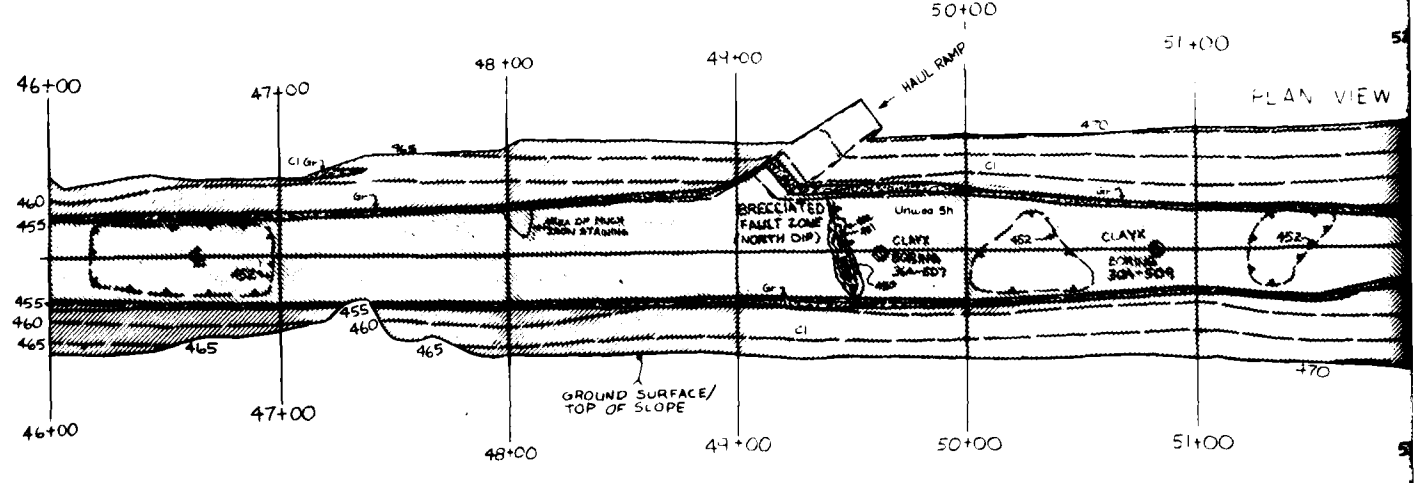
FILE NO PLATE 12

TO ACCOMPANY FINAL FOUNDATION REPORT

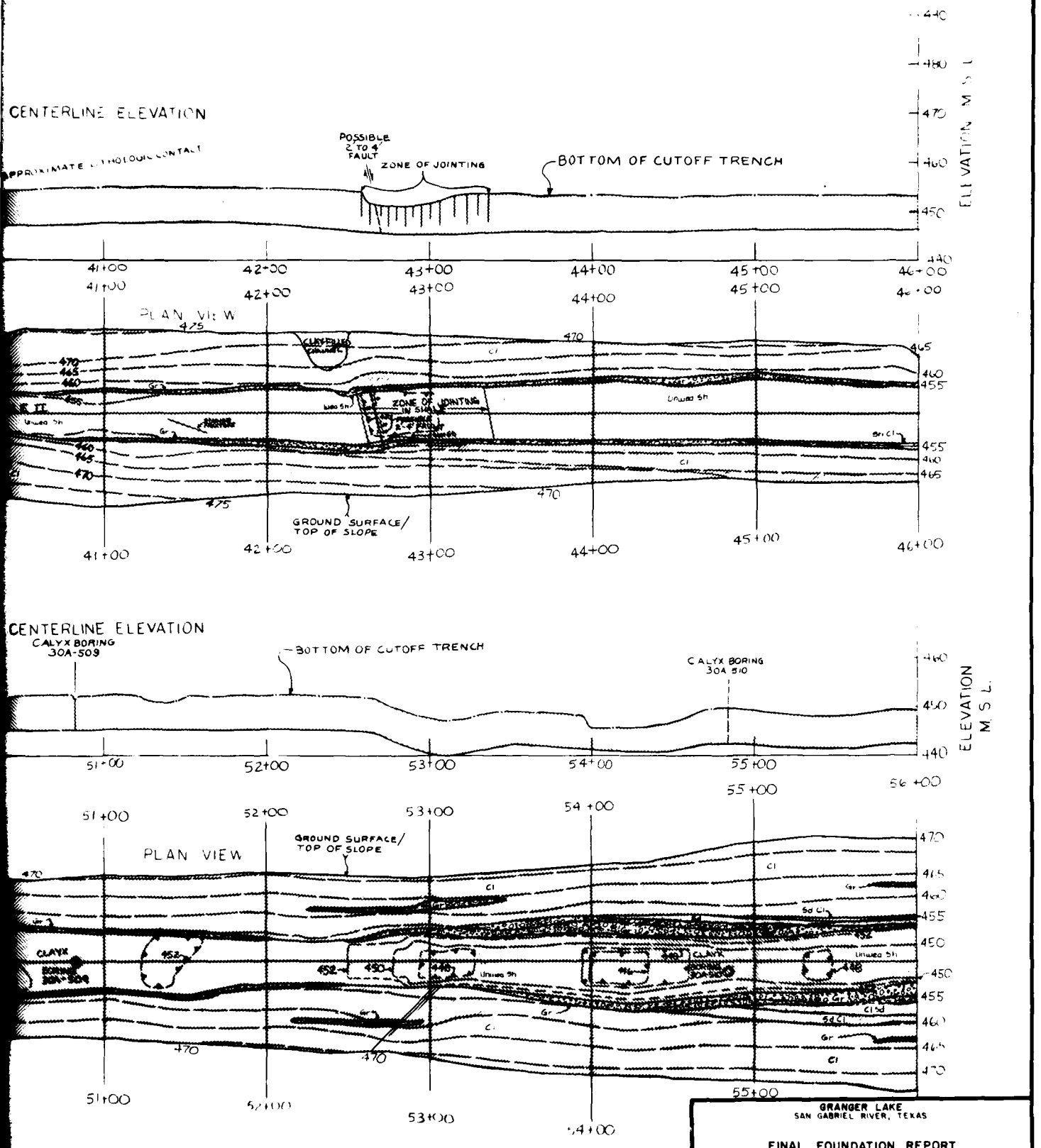

ELEVATION
490
480
470
460
450
440
FAULT WITH DIP OF 57°
FAULT DIPPING 57°
CENTERLINE ELEVATION
SHALE I
SHALE II
36+00
37+00
38+00
39+00
40+00
41+00

GROUND SURFACE/ TOP OF SLOPE
Sh Cl
Gr Cl
Cl
Lea Sh
Unlea Sh
SHALE I
SHALE II
HIGHLY IRON STAINED FRACTURE IN SIDE SLOPE ONLY
PLAN VIEW
36+00
37+00
38+00
39+00
40+00
41+00


ELEVATION
460
450
440
FAULT WITH MARGINAL BRECCIATION
CALYX BORING 36A-507
CENTERLINE ELEVATION
CALYX BORING 30A-509
46+00
47+00
48+00
49+00
50+00
51+00


HAUL RAMP
PLAN VIEW
BRECCIATED FAULT ZONE (NORTH DIP)
AREA OF HIGH IRON STAINING
Unlea Sh
CLAYK BORING 36A-507
CLAYK BORING 30A-509
GROUND SURFACE/ TOP OF SLOPE
46+00
47+00
48+00
49+00
50+00
51+00

US ARMY



NOTE:
FOR MAPPING SYMBOLS, SEE PLATE II.

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

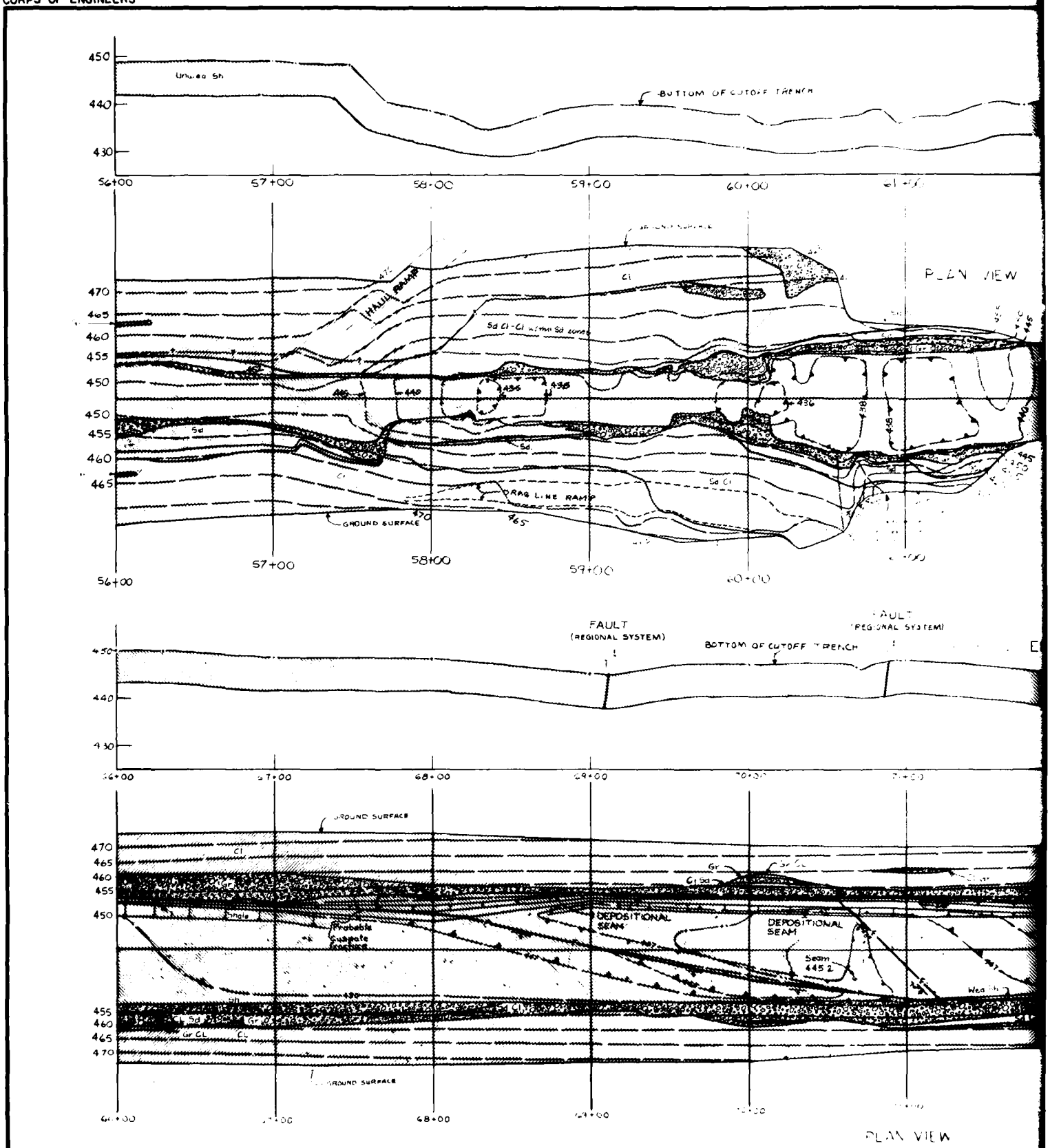
FINAL FOUNDATION REPORT

CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 36+00 TO STATION 46+00
STATION 46+00 TO STATION 56+00

US ARMY ENGINEER DISTRICT, FORT WORTH

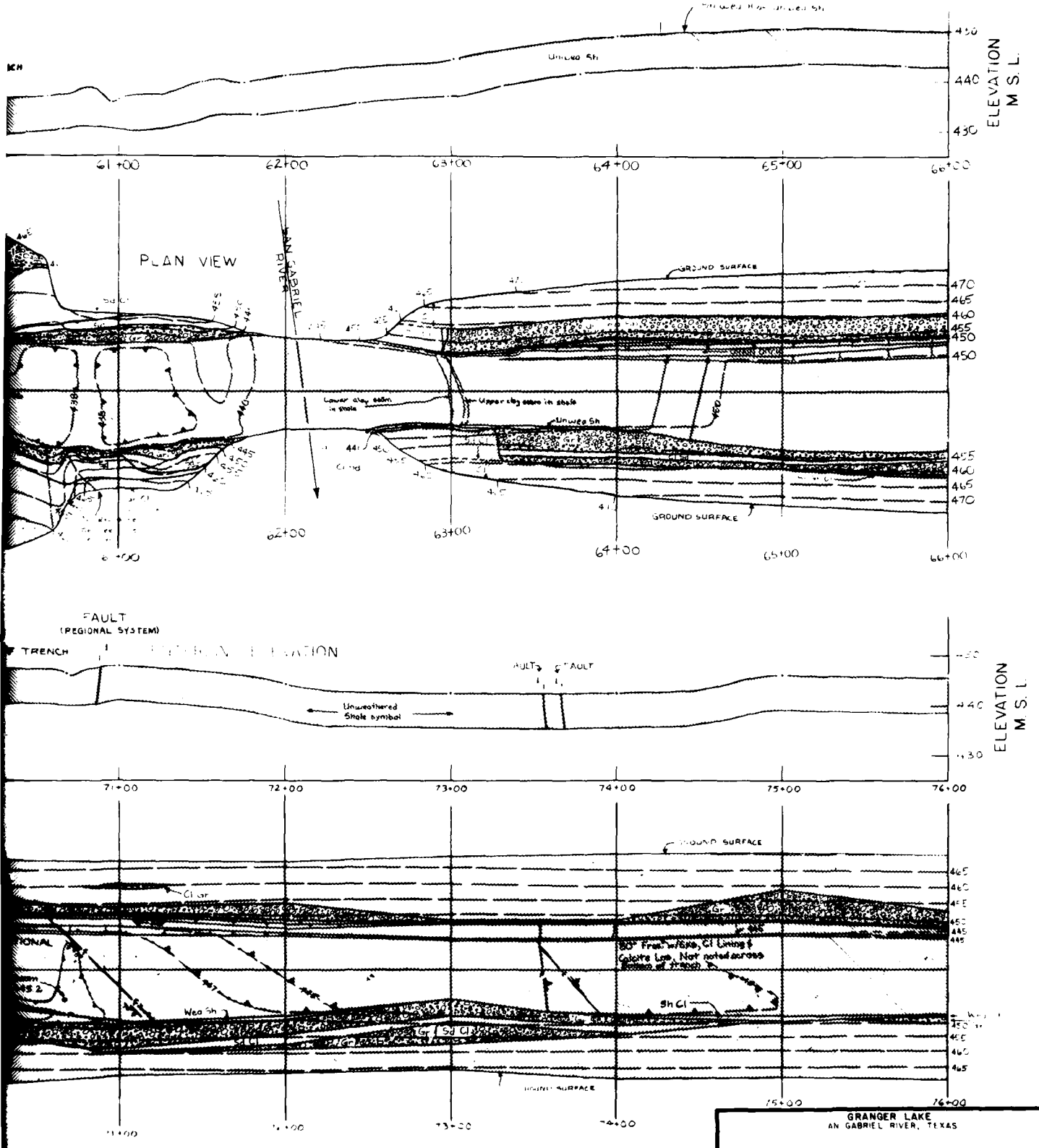
FILE NO PLATE 13

TO ACCOMPANY FINAL FOUNDATION REPORT



BOTTOM OF CUTOFF TRENCH
PLAN VIEW
HAUL RAMP
Sd Cl-Cl with Sd zones
DRAG LINE RAMP
GROUND SURFACE
FAULT
(REGIONAL SYSTEM)
BOTTOM OF CUTOFF TRENCH
GROUND SURFACE
DEPOSITIONAL SEAM
DEPOSITIONAL SEAM
Seam 445.2
Probable Cuspate fracture
GROUND SURFACE
PLAN VIEW

US ARMY



SCALE OF FEET

NOTE:
FOR MAPPING SYMBOLS, SEE PLATE 11.

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

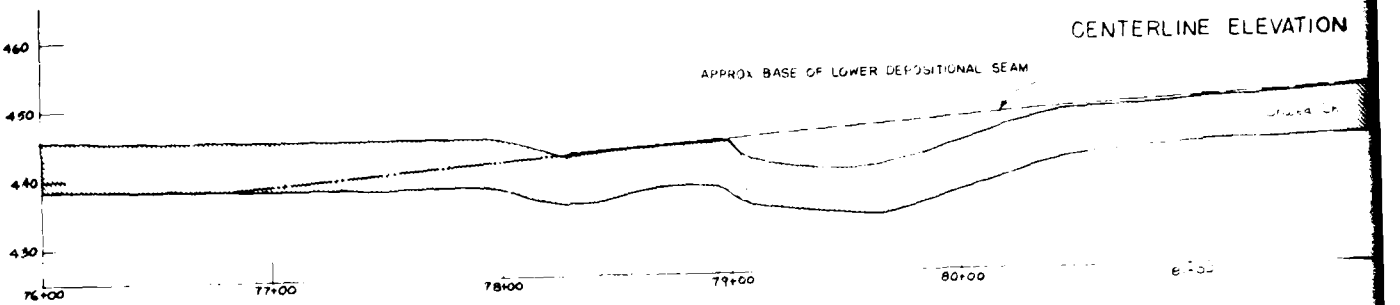
FINAL FOUNDATION REPORT

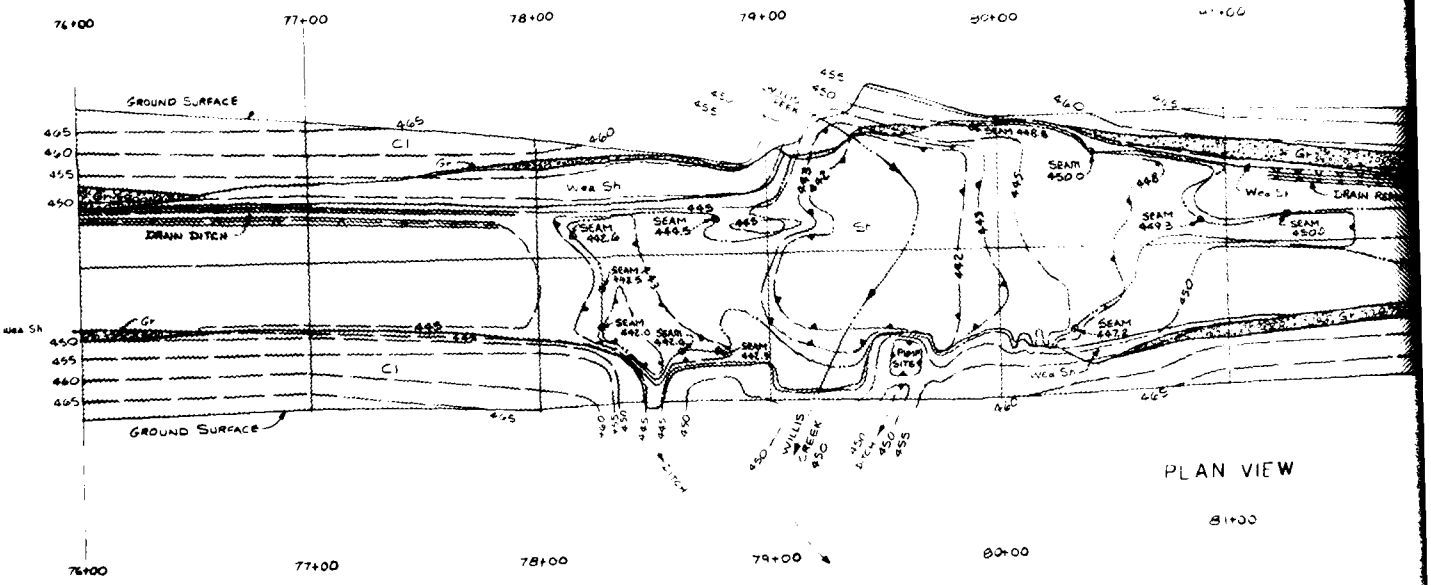
CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 56+00 TO STATION 66+00
STATION 66+00 TO STATION 76+00

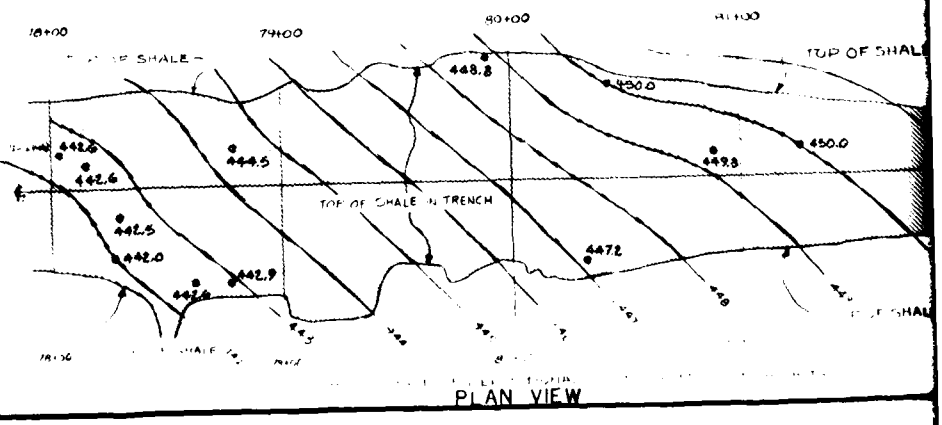
U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 14

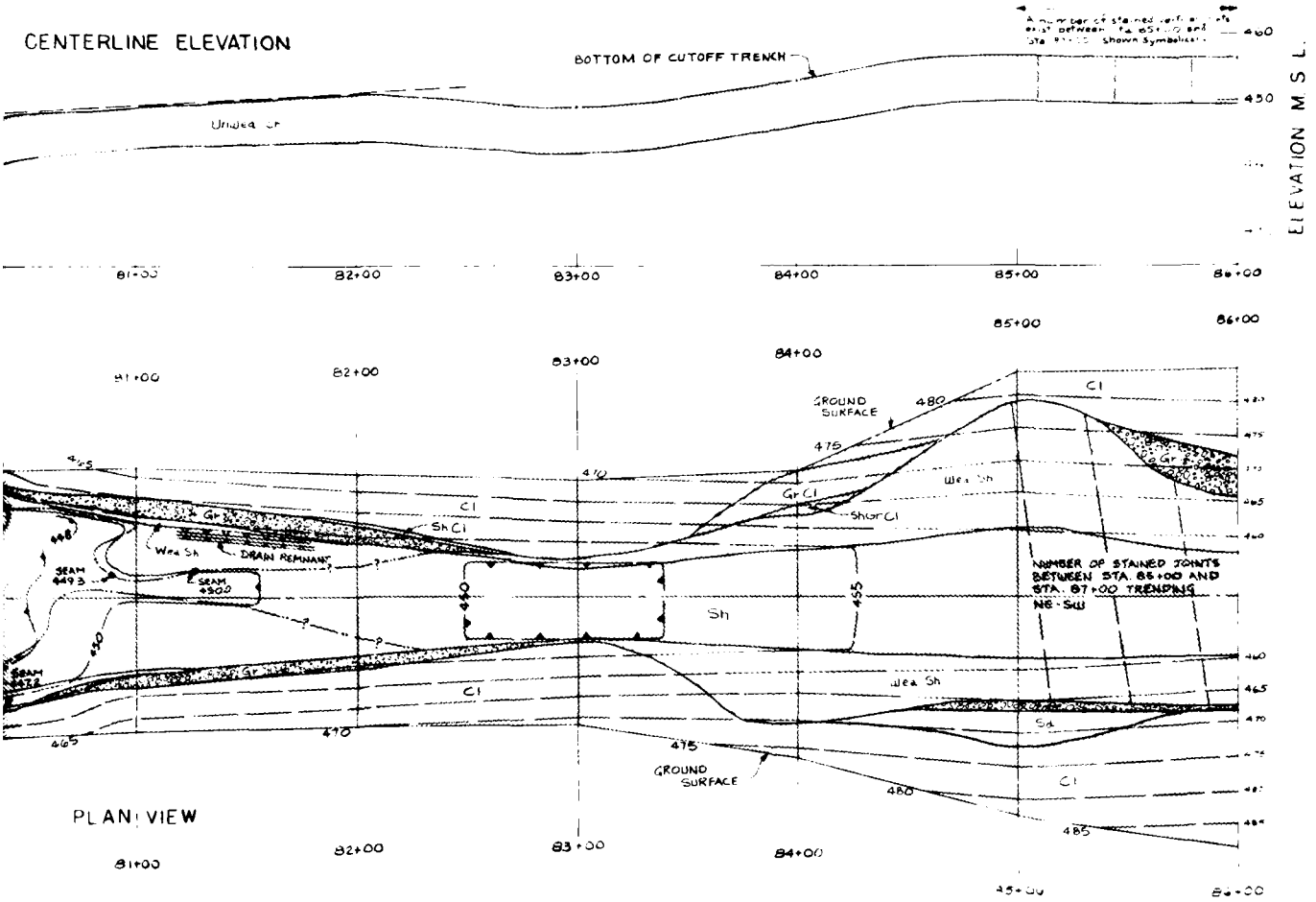
TO ACCOMPANY FINAL FOUNDATION REPORT


CENTERLINE ELEVATION
APPROX BASE OF LOWER DEPOSITIONAL SEAM
460
450
440
430
76+00
77+00
78+00
79+00
80+00

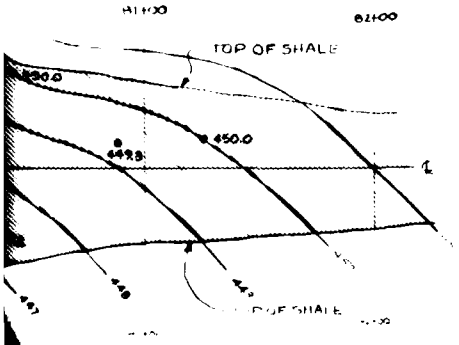

GROUND SURFACE
DRAIN DITCH
Wea Sh
Gr
C1
SEAM 442.6
SEAM 442.5
SEAM 442.0
SEAM 444.5
SEAM 448.8
SEAM 450.0
SEAM 449.3
SEAM 450.0
SEAM 447.2
WILLIS CREEK
76+00
77+00
78+00
79+00
80+00
81+00
PLAN VIEW


TOP OF SHALE
TOP OF SHALE IN TRENCH
442.6
442.6
442.5
442.0
442.9
444.5
448.8
450.0
449.3
450.0
447.2
79+00
80+00
PLAN VIEW

CENTERLINE ELEVATION



PLAN VIEW



30 0 30 60
SCALE OF FEET

NOTE:
FOR MAPPING SYMBOLS, SEE PLATE II

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

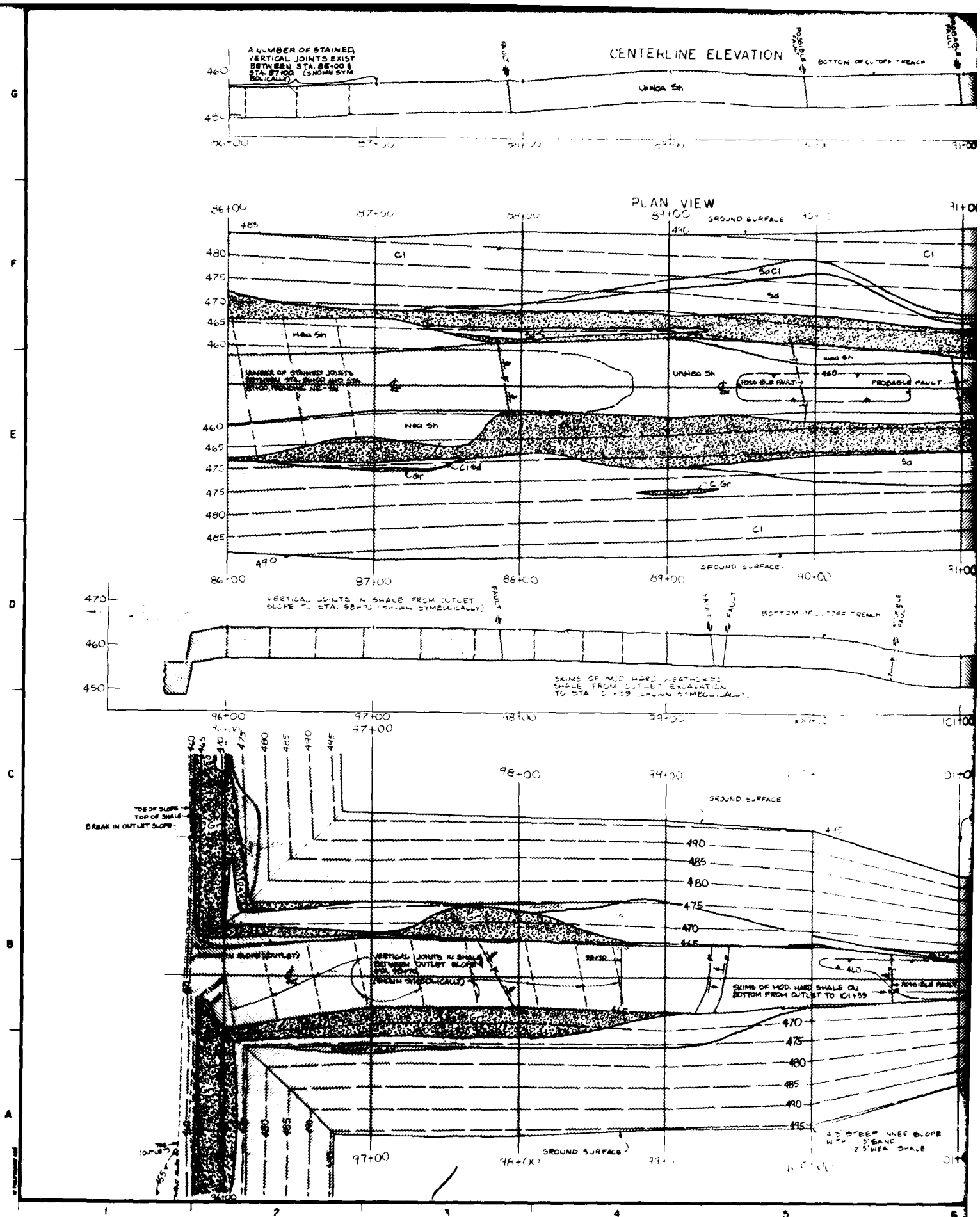
FINAL FOUNDATION REPORT

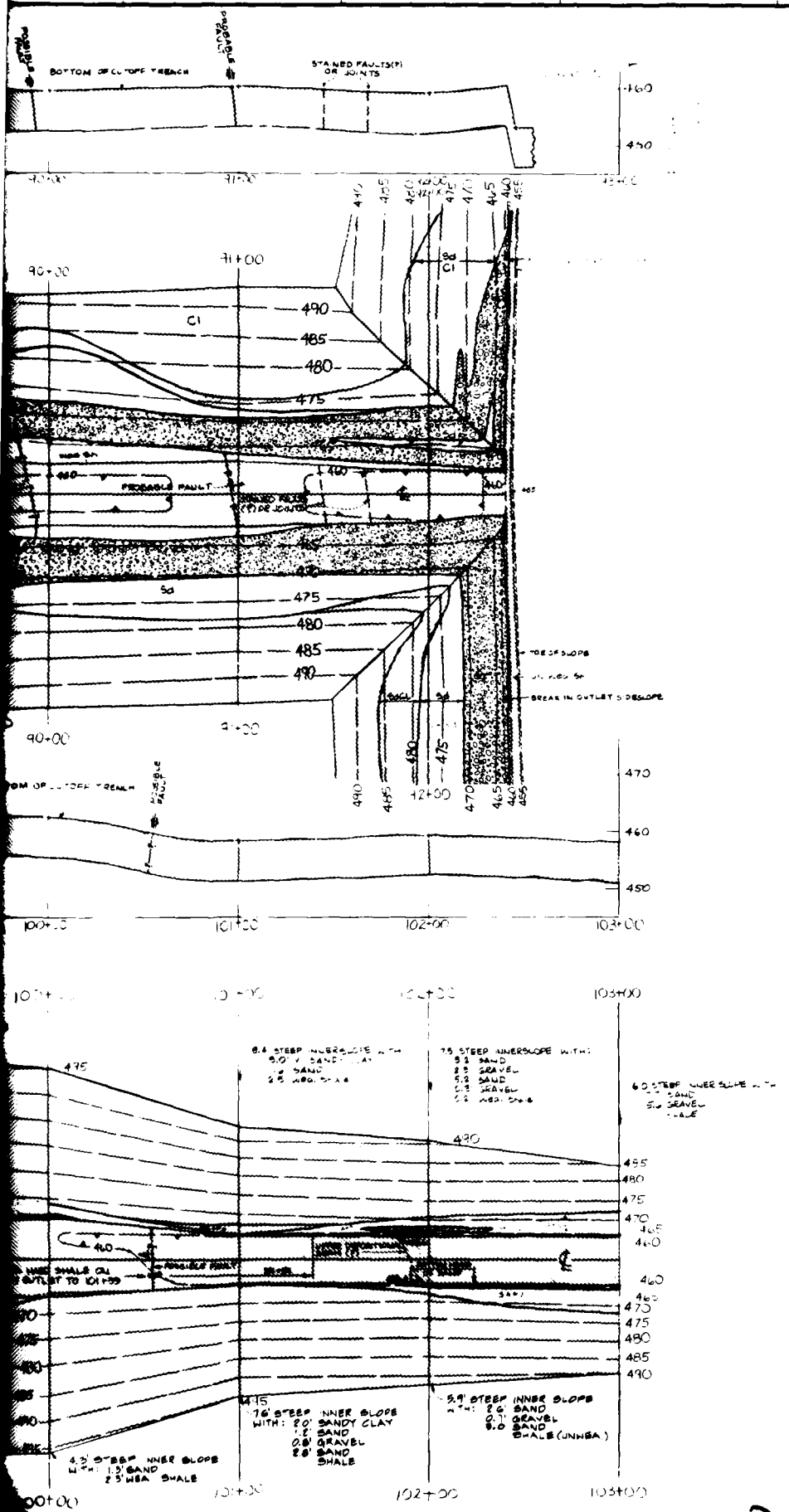
CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 76+00 TO STATION 86+00

U S ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 15

TO ACCOMPANY FINAL FOUNDATION REPORT


CENTERLINE ELEVATION
A NUMBER OF STAINED VERTICAL JOINTS EXIST BETWEEN STA. 86+00 & STA. 87+00 (SHOWN SYMBOLICALLY)
FAULT
POSSIBLE FAULT
PROBABLE FAULT
BOTTOM OF CUTOFF TRENCH
UnWea Sh
PLAN VIEW
GROUND SURFACE
Cl
SdCl
Sd
Wea Sh
Gr
Sa
C. Gr
Cl Sd
NUMBER OF STAINED JOINTS BETWEEN STA. 86+00 AND STA. 87+00, TRENDING NE-SW
POSSIBLE FAULT
PROBABLE FAULT
VERTICAL JOINTS IN SHALE FROM OUTLET SLOPE TO STA. 98+70 (SHOWN SYMBOLICALLY)
SKIMS OF MOD. HARD WEATHERED SHALE FROM OUTLET EXCAVATION TO STA. 101+39 (SHOWN SYMBOLICALLY)
TOE OF SLOPE
TOP OF SHALE
BREAK IN OUTLET SLOPE
VERTICAL JOINTS IN SHALE BETWEEN OUTLET SLOPE & STA. 98+70 (SHOWN SYMBOLICALLY)
SKIMS OF MOD. HARD SHALE ON BOTTOM FROM OUTLET TO 101+39
POSSIBLE FAULT
4.5' STEEP INNER SLOPE WITH 1.5' SAND 2.5' WEA SHALE
TOE (OUTLET)
86+00
87+00
88+00
89+00
90+00
91+00
96+00
97+00
98+00
99+00
101+00
460
465
470
475
480
485
490
495
G
F
E
D
C
B
A
1
2
3
4
5
6



NOTE:
FOR MAPPING SYMBOLS SEE PLATE 11.

50 0 50 100
SCALE OF FEET

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

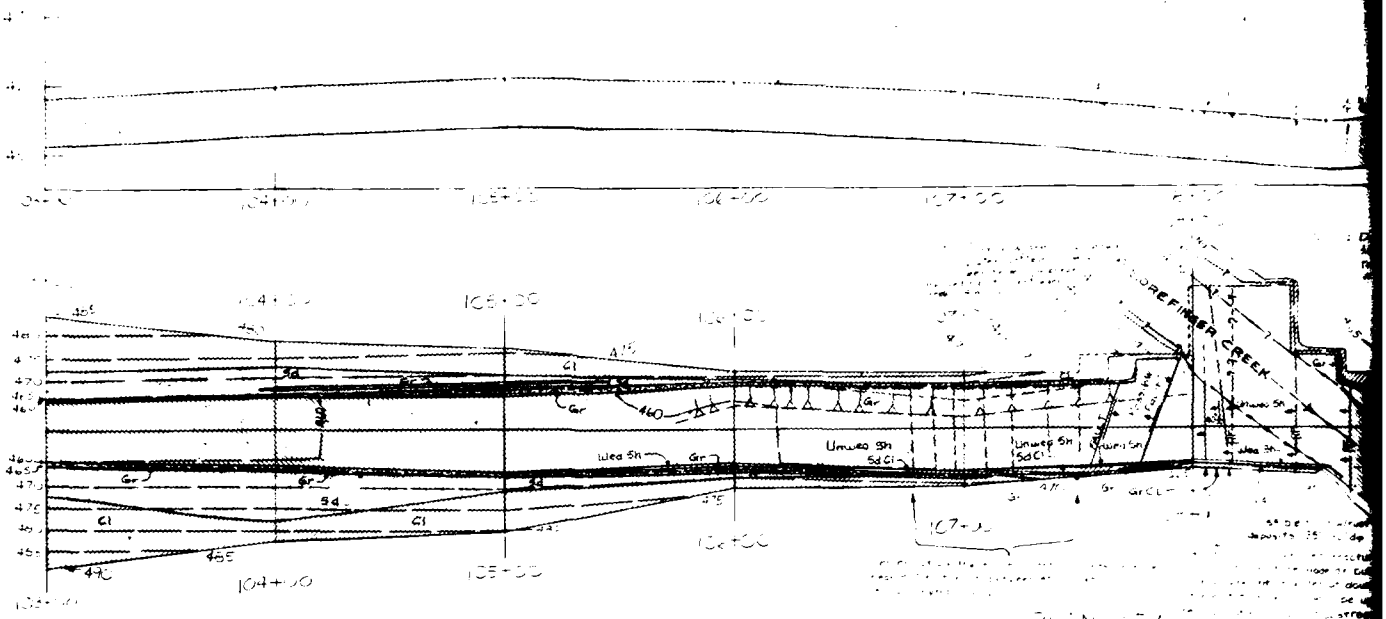
FINAL FOUNDATION REPORT

CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 88+00 TO STATION 92+44
STATION 96+72 TO STATION 103+00

U.S ARMY ENGINEER DISTRICT, FORT WORTH

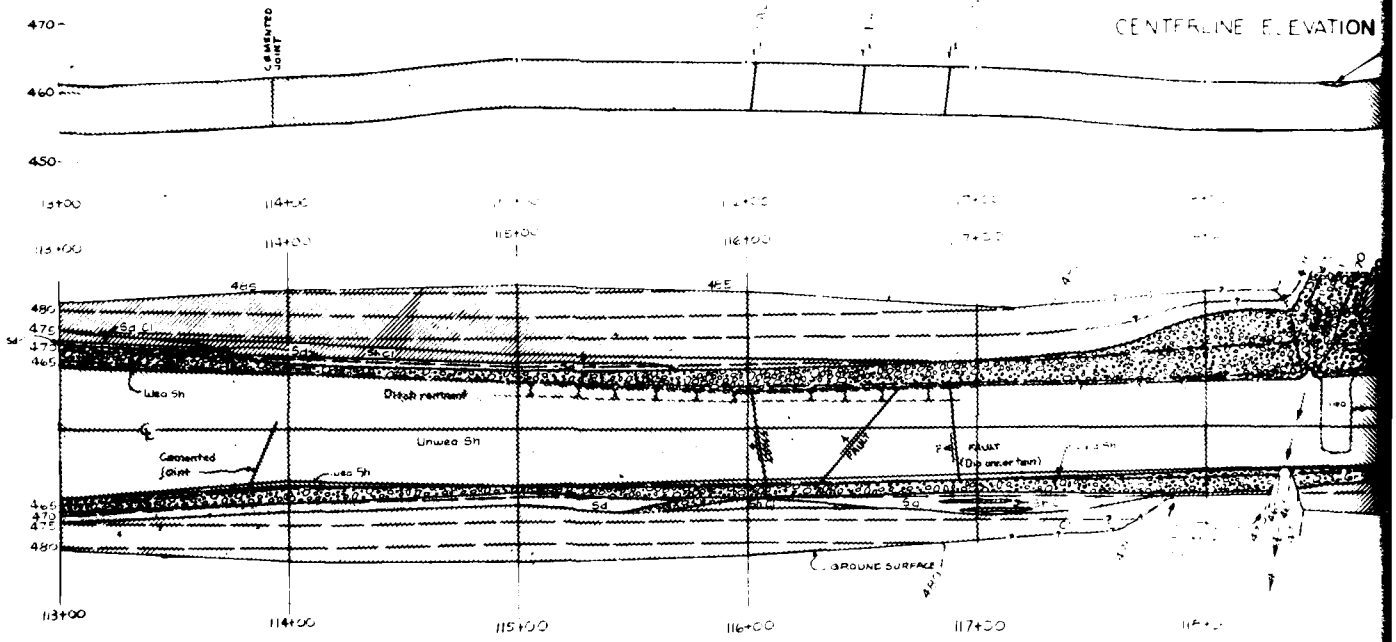
FILE NO PLATE 16

TO ACCOMPANY FINAL FOUNDATION REPORT

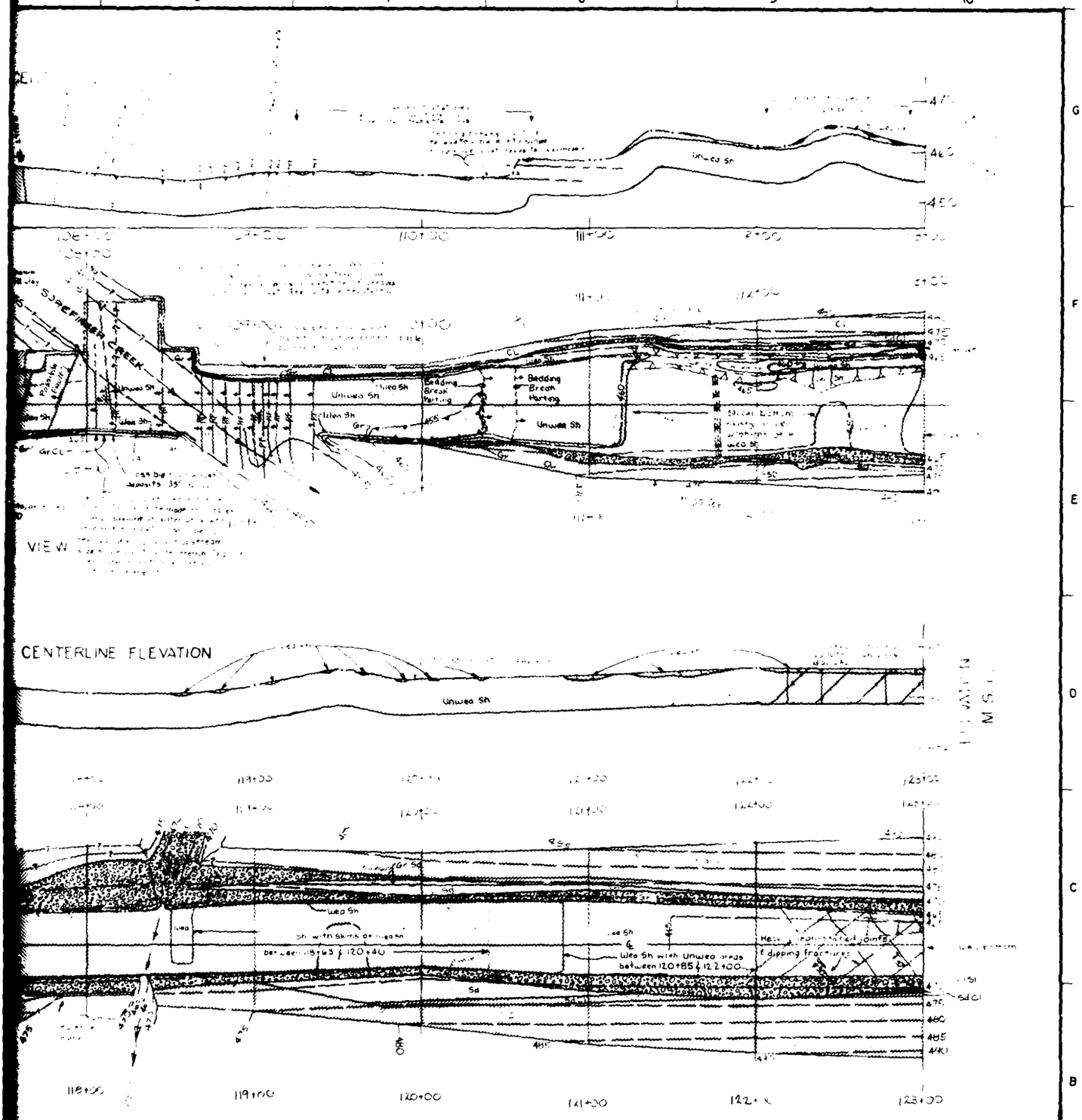


PLAN VIEW

CENTERLINE ELEVATION



PLAN VIEW



VIEW

CENTERLINE ELEVATION

VIEW

SCALE OF FEET

NOTE:
FOR MAPPING SYMBOLS SEE PLATE 11.

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

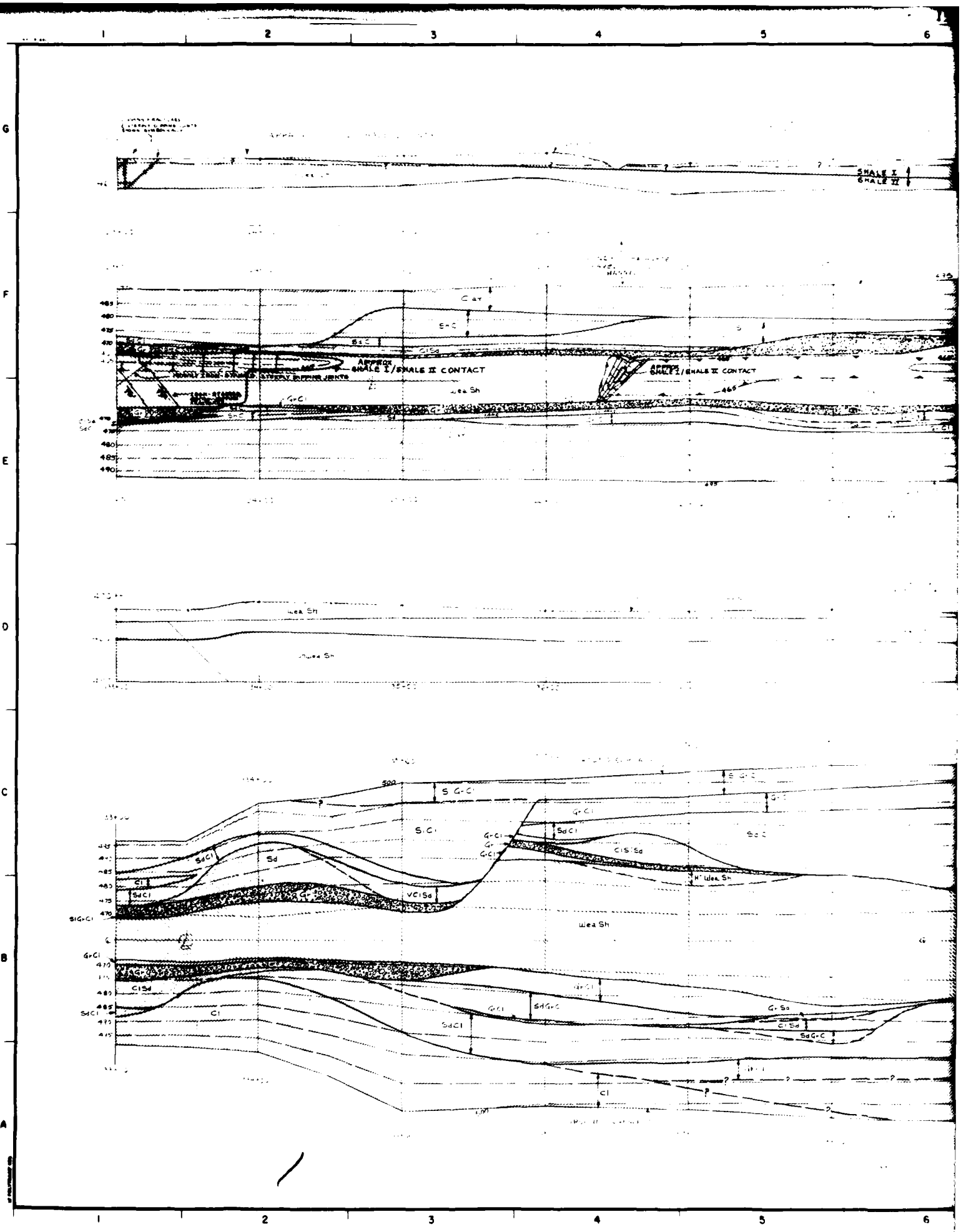
FINAL FOUNDATION REPORT

CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 103+00 TO STATION 113+00
STATION 113+00 TO STATION 123+00

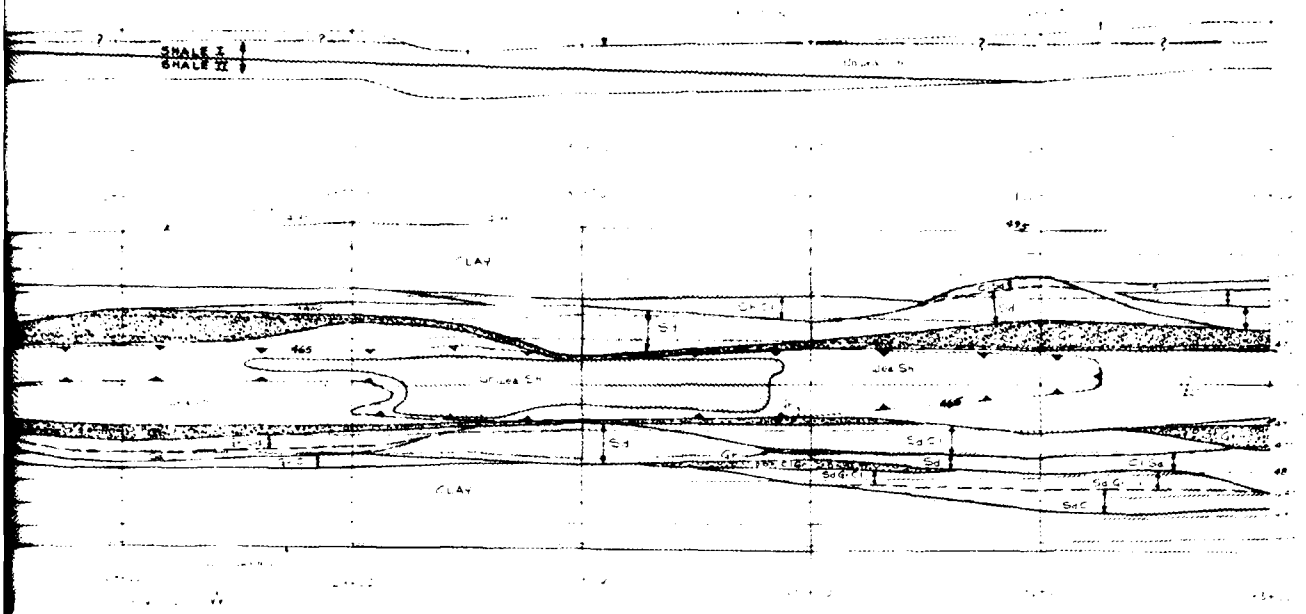
U S ARMY ENGINEER DISTRICT, FORT WORTH

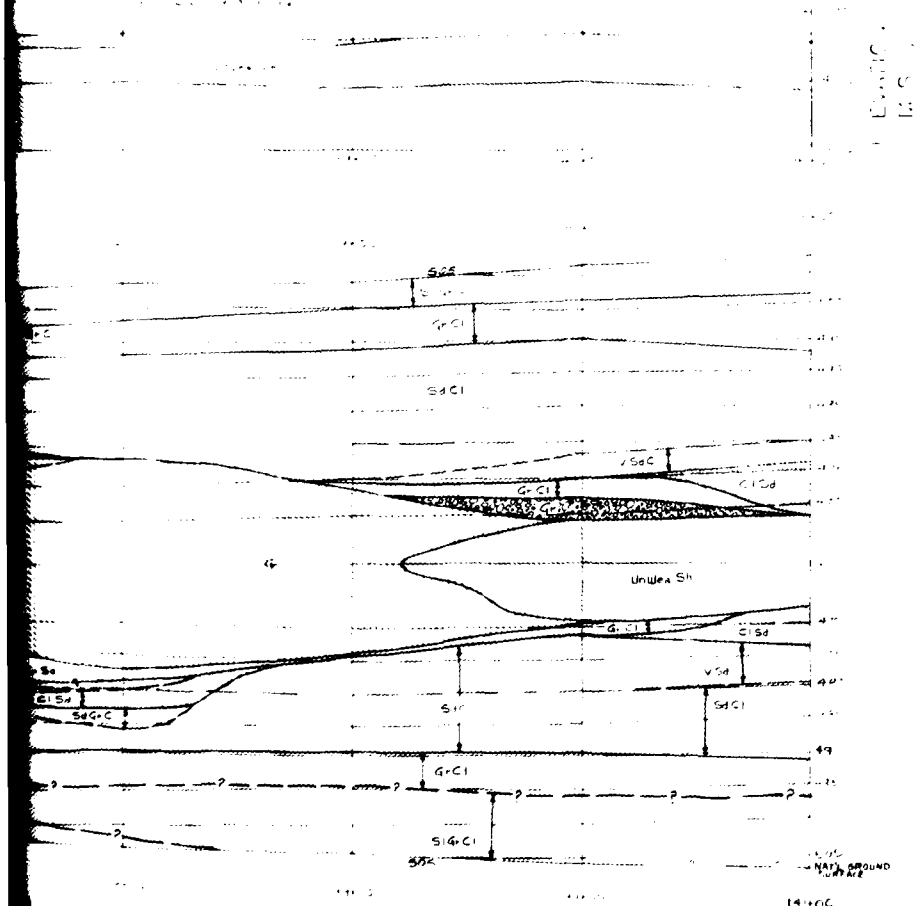
FILE NO PLATE 17

TO ACCOMPANY FINAL FOUNDATION REPORT



SHALE I
SHALE II
APPROX SHALE I/SHALE II CONTACT
APPROX SHALE I/SHALE II CONTACT
Wea Sh
Wea Sh
Wea Sh
Wea Sh





NOTE:
FOR MAPPING S, SEE PLATE II

30 0 30 60
SCALE OF FEET

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

FINAL FOUNDATION REPORT

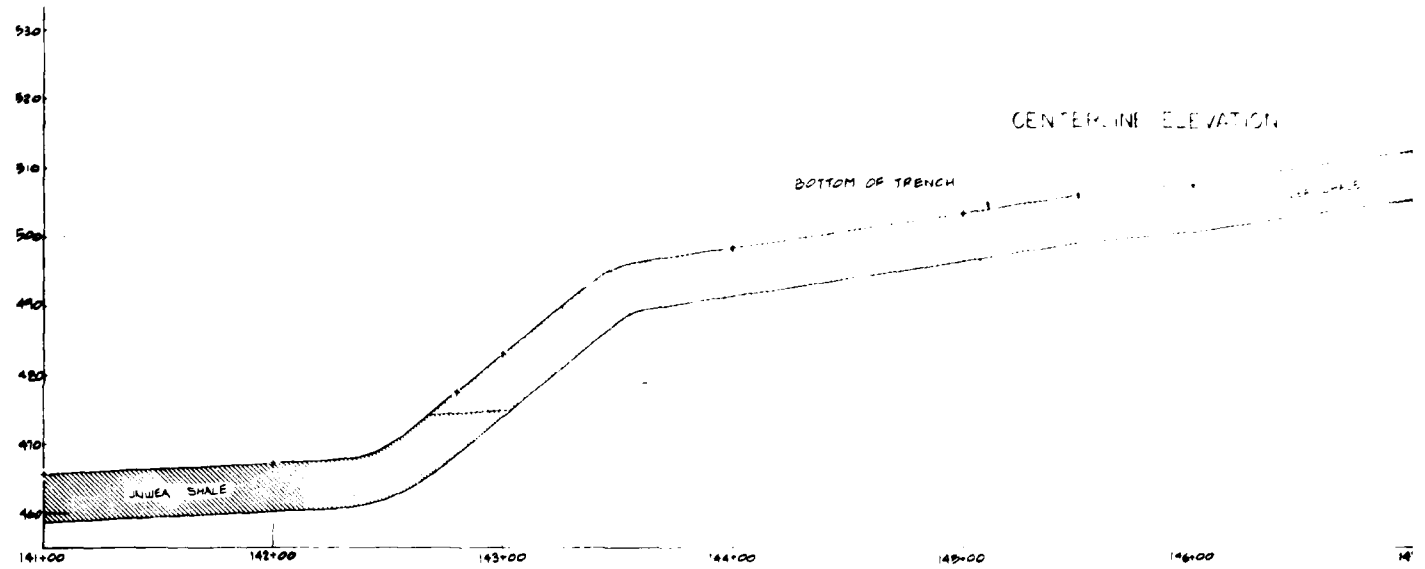
CUTOFF TRENCH
GEOLOGY AND EXCAVATION
STATION 123+00 TO STATION 133+00
STATION 133+00 TO STATION 141+00

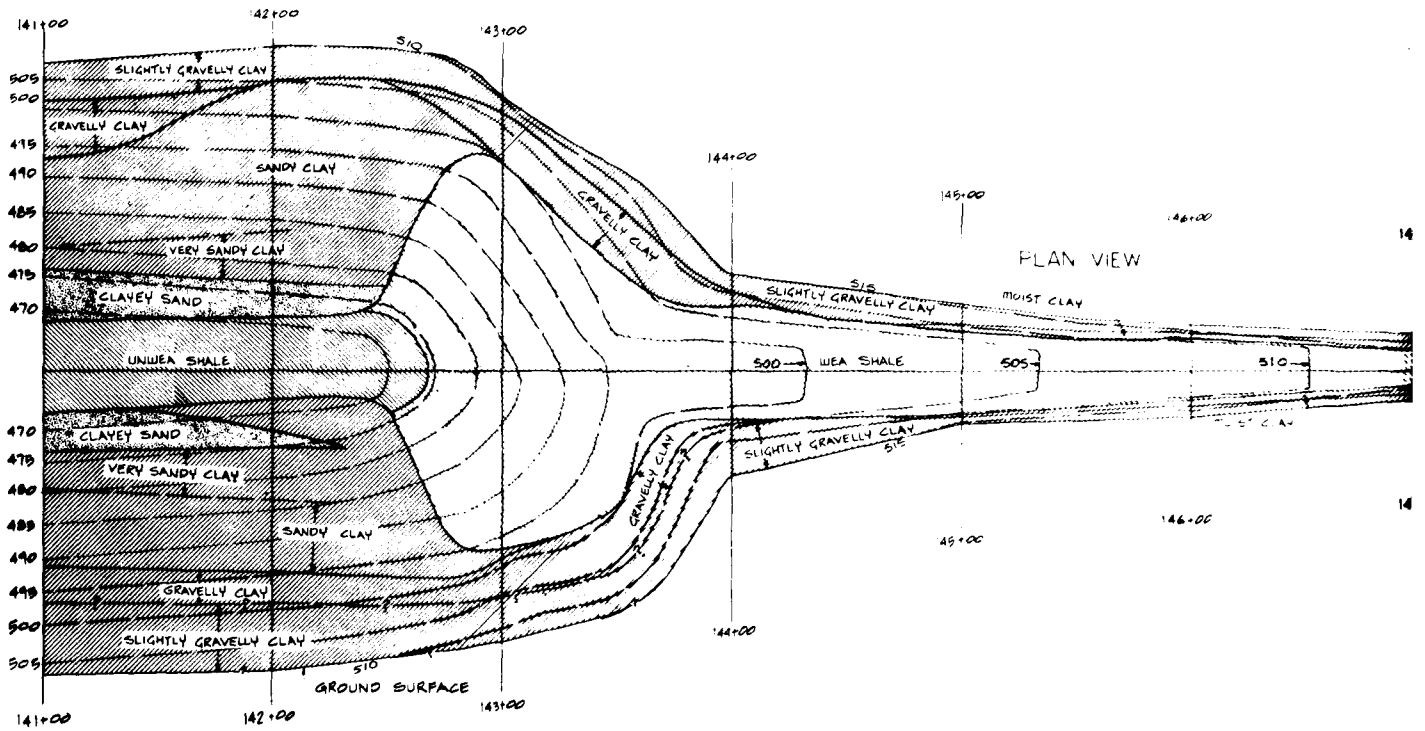
U.S. ARMY ENGINEER DISTRICT, FORT WORTH

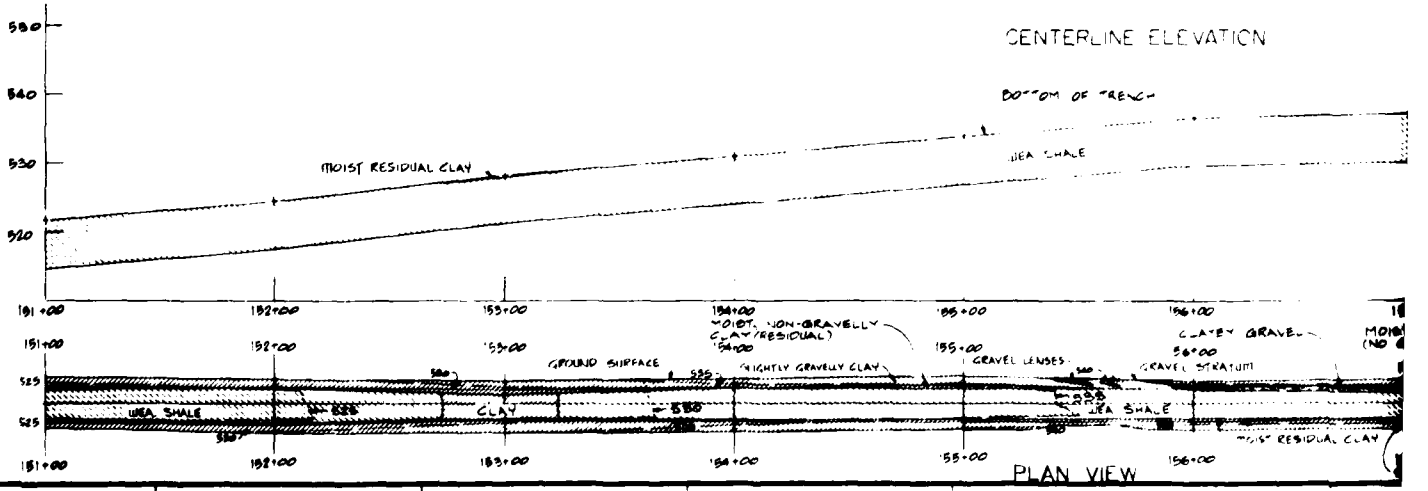
FILE NO PLATE 18

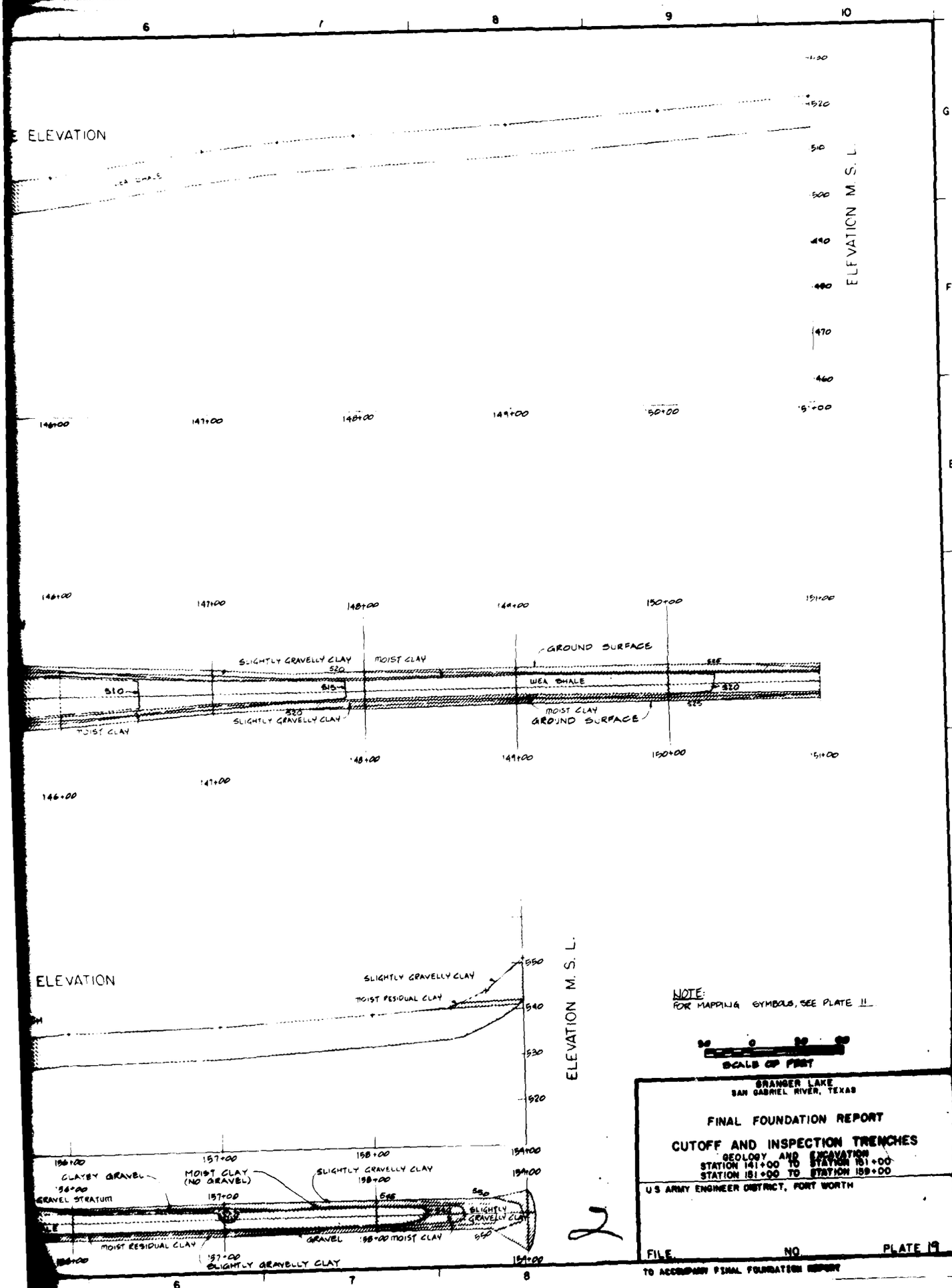
TO ACCOMPANY FINAL FOUNDATION REPORT

2


CENTERLINE ELEVATION
BOTTOM OF TRENCH
UNWEA SHALE
141+00
142+00
143+00
144+00
145+00
146+00


PLAN VIEW
SLIGHTLY GRAVELLY CLAY
GRAVELLY CLAY
SANDY CLAY
VERY SANDY CLAY
CLAYEY SAND
UNWEA SHALE
WEA SHALE
MOIST CLAY
GROUND SURFACE
141+00
142+00
143+00
144+00
145+00
146+00


CENTERLINE ELEVATION
BOTTOM OF TRENCH
MOIST RESIDUAL CLAY
WEA SHALE
GROUND SURFACE
SLIGHTLY GRAVELLY CLAY
GRAVEL LENSES
GRAVEL STRATUM
CLAYEY GRAVEL
UNWEA SHALE
CLAY
MOIST RESIDUAL CLAY
PLAN VIEW



NOTE:
FOR MAPPING SYMBOLS, SEE PLATE II

SCALE OF FEET

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

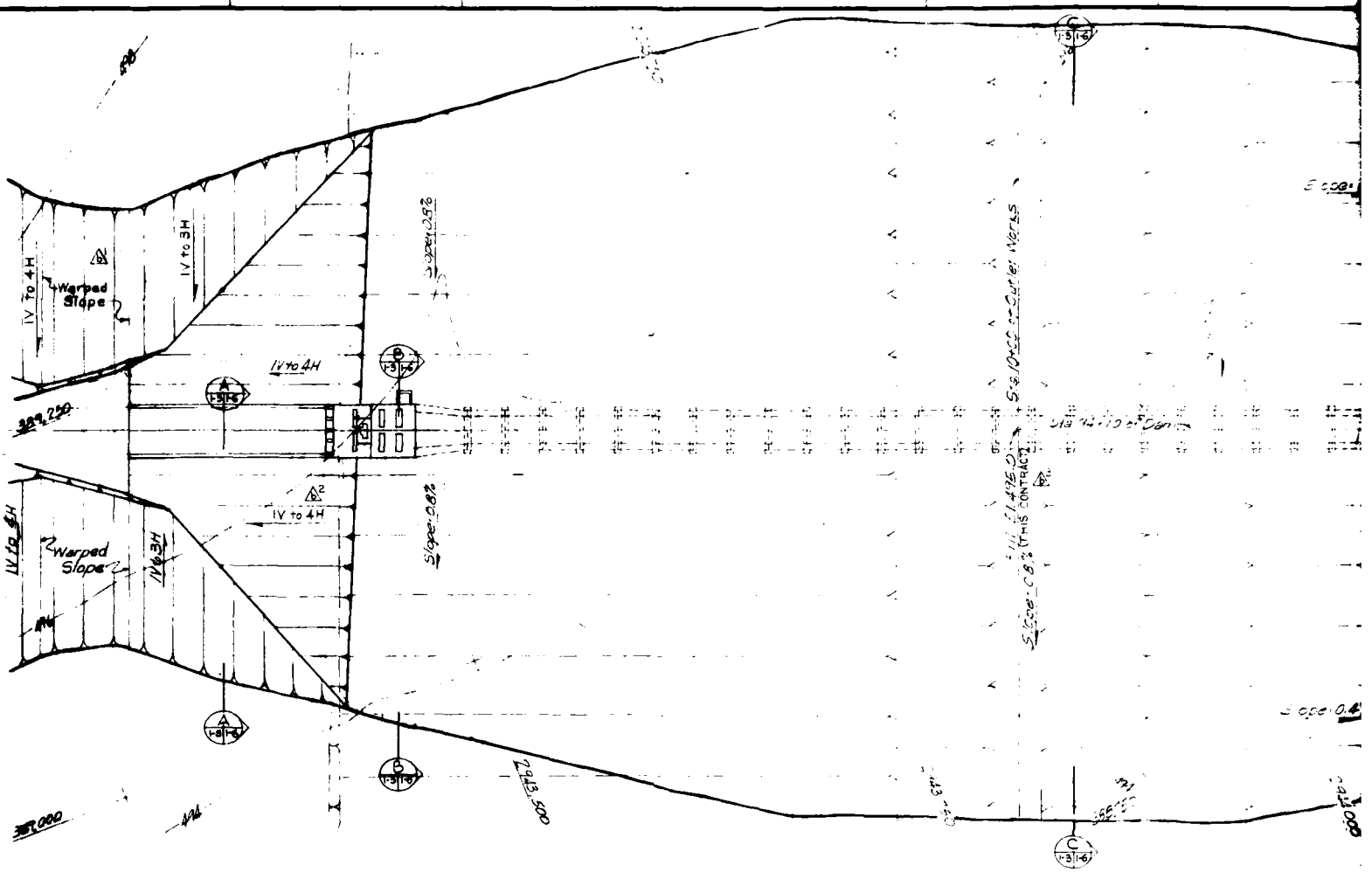
FINAL FOUNDATION REPORT

CUTOFF AND INSPECTION TRENCHES
GEOLOGY AND EXCAVATION
STATION 141+00 TO STATION 181+00
STATION 181+00 TO STATION 199+00

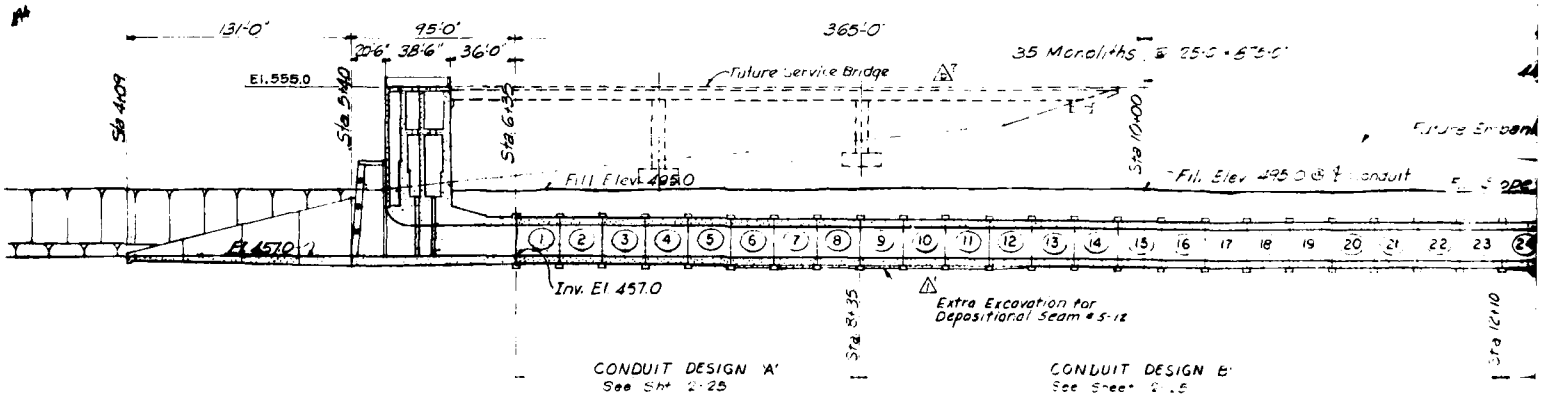
U S ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 19

TO ACCOMPANY FINAL FOUNDATION REPORT

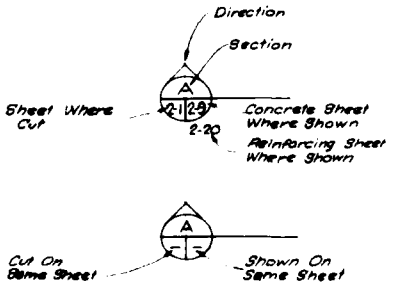


PLAN

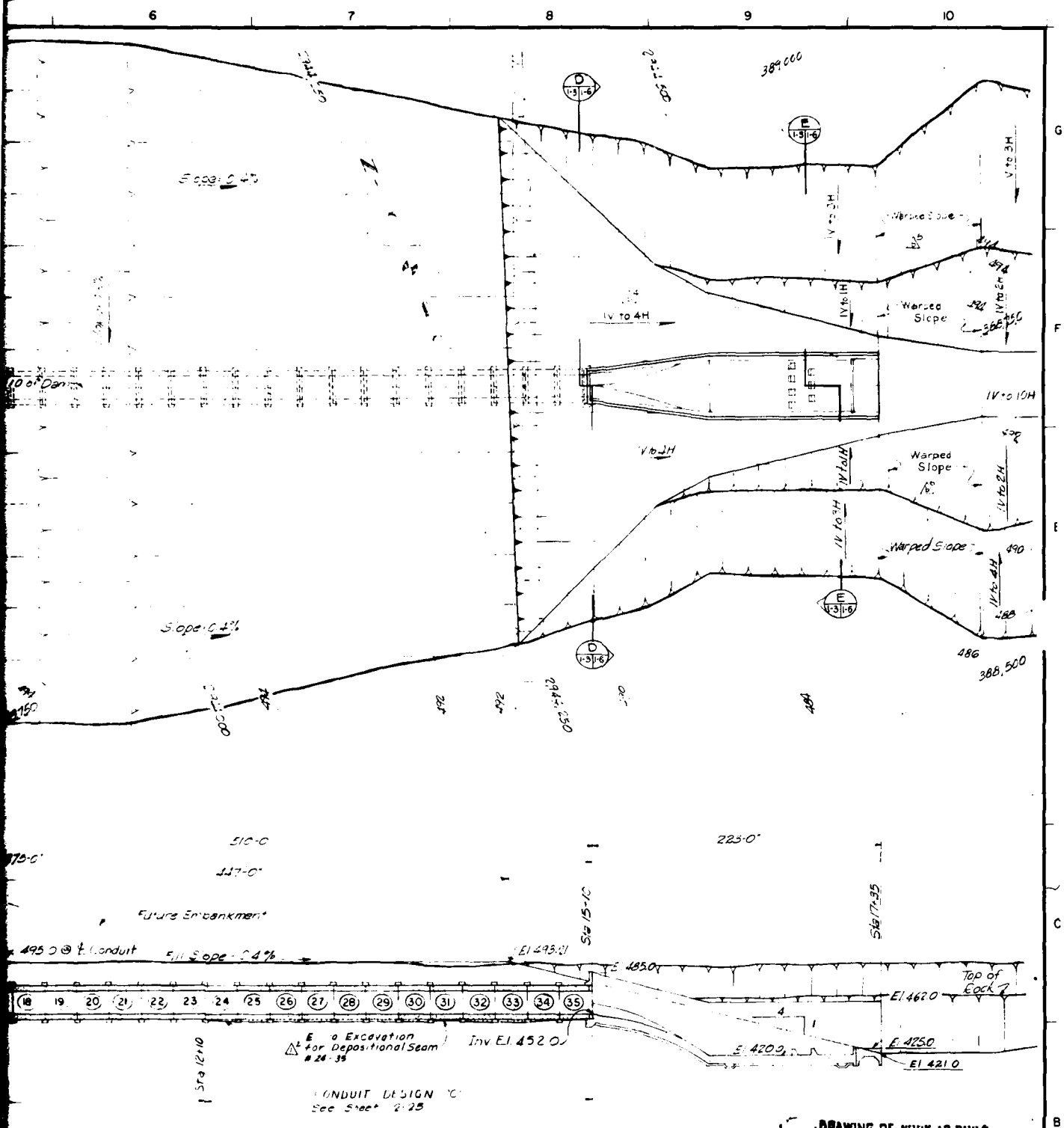


CENTERLINE PROFILE

Scale 1" = 40'



BRASS PLUGS REQ'D @ EACH JOINT ON ℄ OF INVERT OF CONDUIT. SEE SHT 2-25



DRAWING OF WORK AS BUILT

SYMBOL	NO.	ACTION	DATE	DESCRIPTION OF REVISION
△		AS-BLT.	15 DEC. 77	REVISED AS-BUILT
		AM#0002	NOV 73	Revised Plan & Center Line Profile

FREESE, NICHOLS and ENDRESS
CONSULTING ENGINEERS
FORT WORTH TEXAS

U. S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH TEXAS

DESIGNED BY C.D.E.
DRAWN BY J.R.
CHECKED BY G.N.R.

BRAZOS RIVER BASIN, TEXAS
LANEPORT RESERVOIR
SAN GABRIEL RIVER, TEXAS

OUTLET WORKS - PARTIAL EMBANKMENT
GENERAL PLAN AND PROFILE

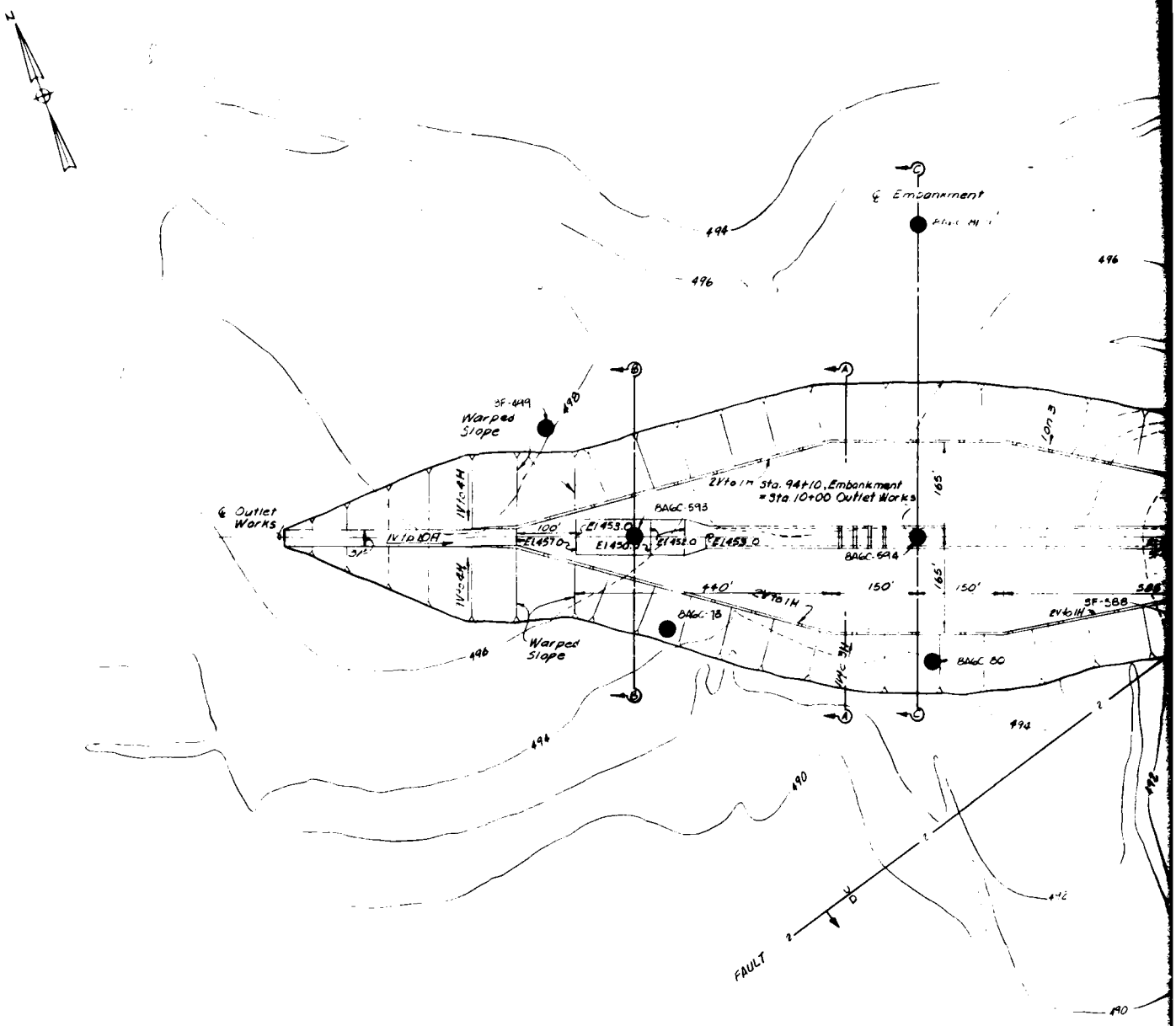
SUBMITTED BY
ENGINEER

INV NO DACW63-74-B-0021 DATED OCT. 1975
CONTR NO
DRAWING NUMBER
SHEET NO. 4

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 20

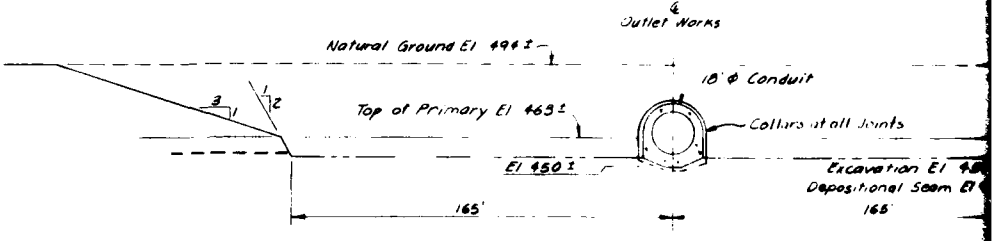
Supersedes Sheet 4



LIMITS OF OUTLET WORKS EXCAVATION

SCALE OF FEET

100 50 0 100 200



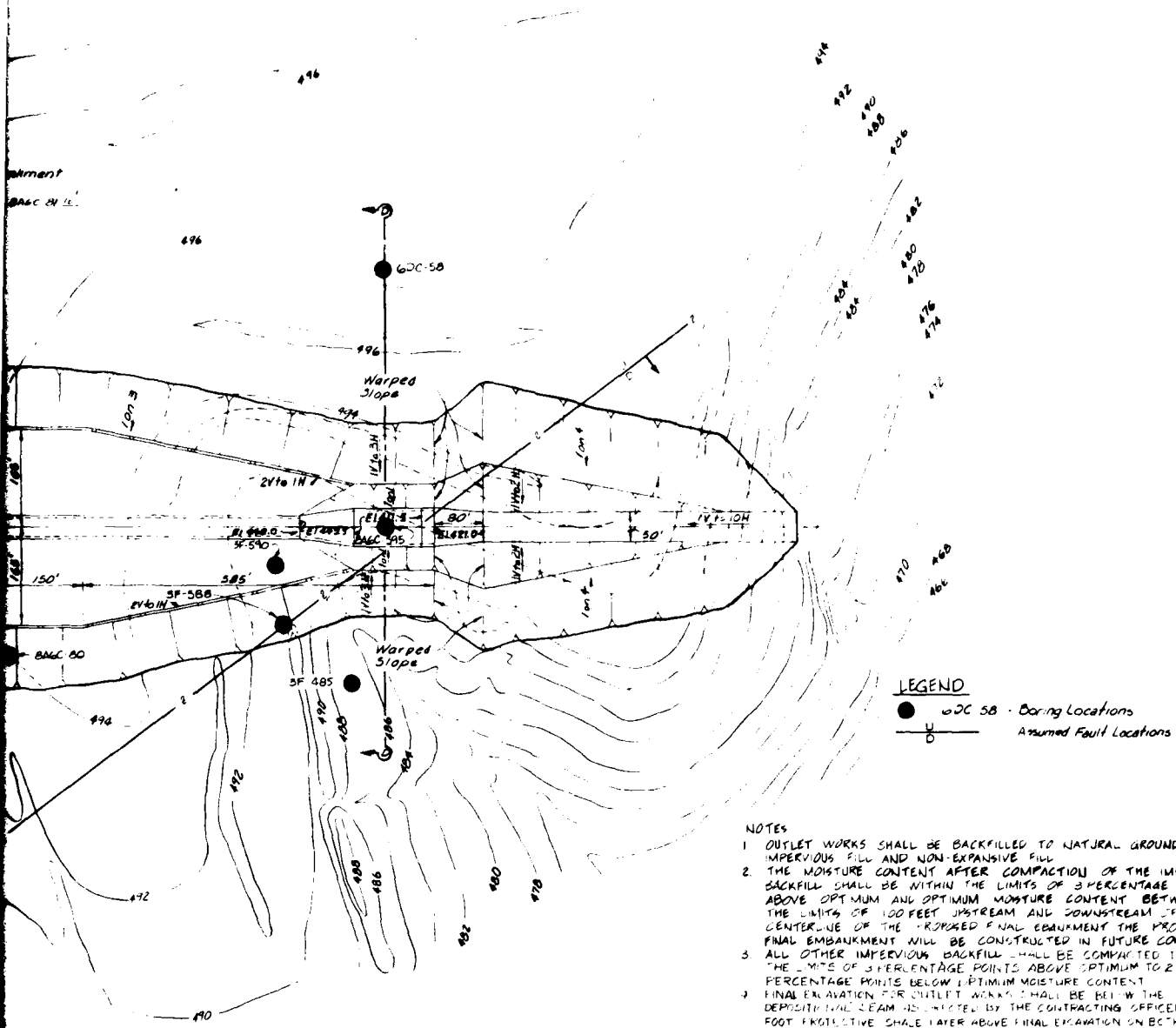
SECTION A-A

SCALE OF FEET

30 0 30 60

OUTLET WORKS EXCAVATION

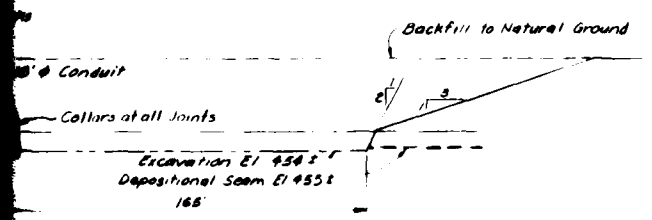
TO AC



NOTES

1. OUTLET WORKS SHALL BE BACKFILLED TO NATURAL GROUND WITH IMPERVIOUS FILL AND NON-EXPANSIVE FILL
2. THE MOISTURE CONTENT AFTER COMPACTION OF THE IMPERVIOUS BACKFILL SHALL BE WITHIN THE LIMITS OF 3 PERCENTAGE POINTS ABOVE OPTIMUM AND OPTIMUM MOISTURE CONTENT BETWEEN THE LIMITS OF 100 FEET UPSTREAM AND DOWNSTREAM OF THE CENTERLINE OF THE PROPOSED FINAL EBANKMENT THE PROPOSED FINAL EMBANKMENT WILL BE CONSTRUCTED IN FUTURE CONTRACTS.
3. ALL OTHER IMPERVIOUS BACKFILL SHALL BE COMPACTED TO WITHIN THE LIMITS OF 3 PERCENTAGE POINTS ABOVE OPTIMUM TO 2 PERCENTAGE POINTS BELOW OPTIMUM MOISTURE CONTENT
4. FINAL EXCAVATION FOR OUTLET WORKS SHALL BE BELOW THE DEPOSITIONAL SEAM AS DIRECTED BY THE CONTRACTING OFFICER A ONE-FOOT PROTECTIVE SHALE LAYER ABOVE FINAL EXCAVATION ON BOTH THE BOTTOM AND SIDE SLOPES SHALL BE LEFT IN PLACE DURING CONSTRUCTION OF THE OUTLET WORKS AND EXCAVATED IMMEDIATELY PRIOR TO BACKFILLING
5. CUT ELEVATIONS SHOWN ON THIS PLAN ARE TO TOP OF PROTECTIVE CONCRETE MINOR CUTS SUCH AS COLLARS AND DRAIN TRENCHES ARE DISREGARDED.
6. SEE SEQ 9 FOR GEOLOGIC PROFILE ON CENTERLINE AND SEQUENCE [illegible] GEOLOGIC SECTIONS B-B, C-C AND [illegible]
7. SEE SEQ 15 THROUGH 78 FOR DETAILED LOGS OF BORINGS
8. BORINGS PREFIXED WITH 6F WERE DRILLED FOR ELECTRIC LOGGING ONLY ELECTRIC LOGS FOR THESE HOLES ARE AVAILABLE [illegible] FT WORTH DISTRICT OFFICE

DRAWING OF WORK AS BUILT



A-A

EXCAVATION

SYMBOL	NO.	ACTION	DATE	DESCRIPTION OF REVISION
		AM# 0002	NOV 73	ADDED BORING NO. AND REVISED NOTE.

FREESE, NICHOLS and ENDRESS
CONSULTING ENGINEERS
FORT WORTH TEXAS

U. S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH TEXAS

DESIGNED BY

DRAWN BY

CHECKED BY

SUBMITTED BY

ENGINEER

BRAZOS RIVER BASIN, TEXAS
LANEPORT RESERVOIR
SAN GABRIEL RIVER, TEXAS

OUTLET WORKS - PARTIAL EMBANKMENT

LIMITS OF OUTLET WORKS EXCAVATION

INV NO DACW65-71-B-0001 DATED [illegible]

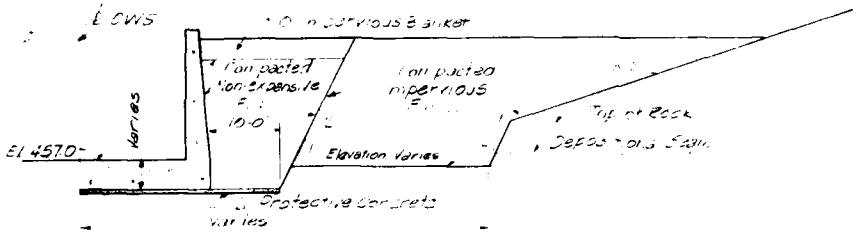
CONTR NO [illegible] 0047

DRAWING NUMBER

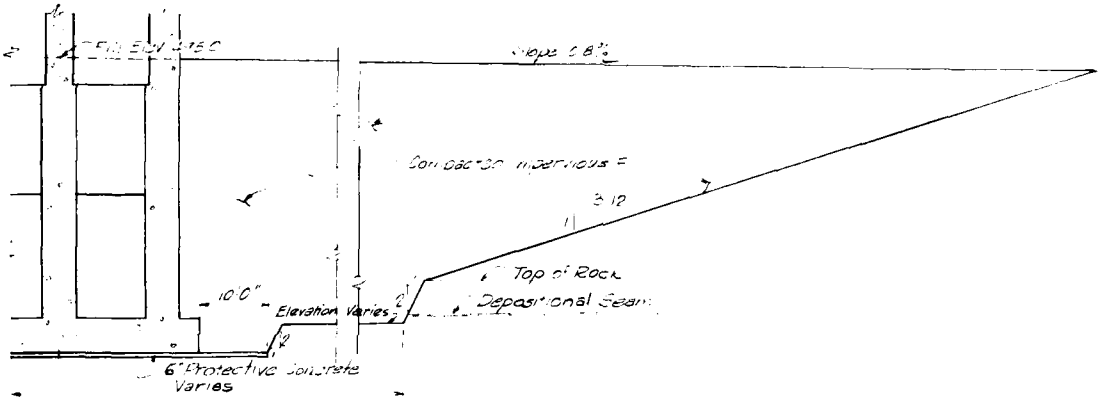
SHEET NO.

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE XV



SECTION (A, 1-3 | 1-6)
Scale: 1" = 10'



SECTION (B, 1-3 | 1-6)
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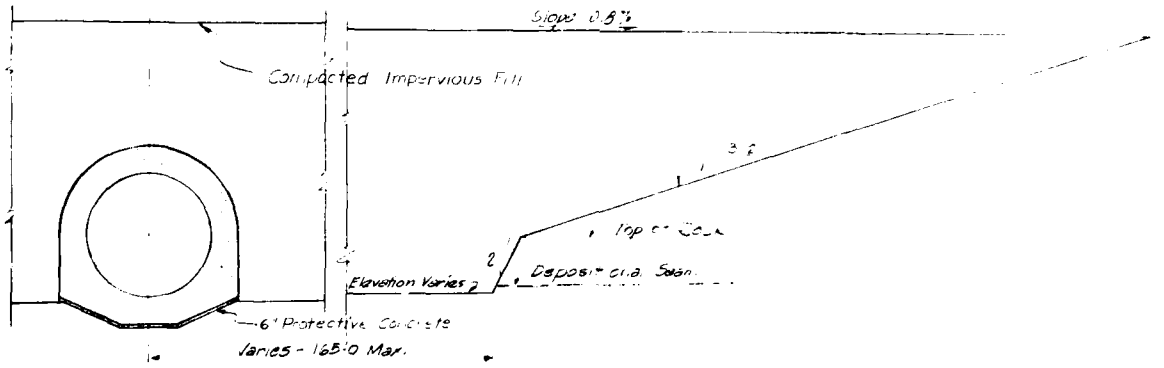

SECTION (C, 1-3 | 1-6)
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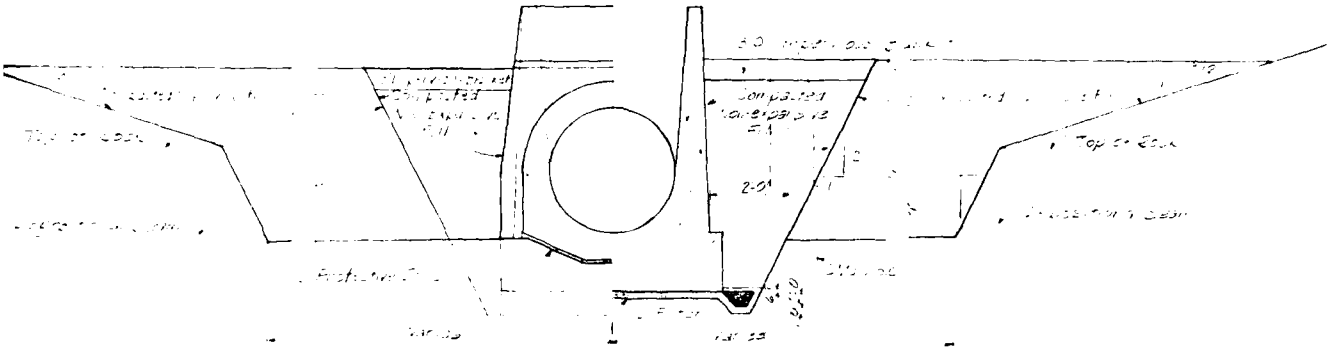
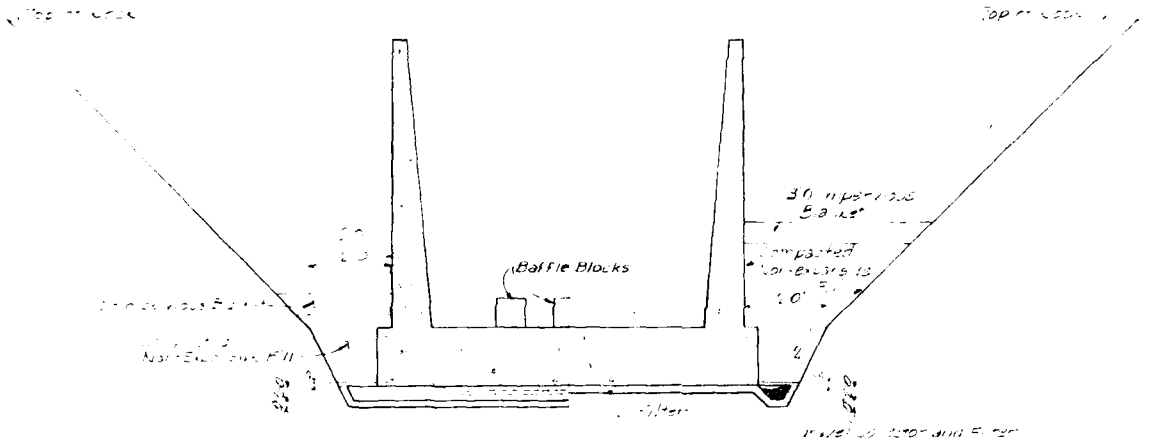


SECTION (D) 1-31-6
Scale: 1"=10'



SECTION (E) 1-31-6
Scale: 1"=10'

Note
Final Excavation For Outlet Works Shall Be Below The Depositional Seam As Determined By The Contracting Officer. A One Foot Protective Shale Layer Above Final Excavation Shall Be Left In Place During Construction Of Outlet Works And Excavated Immediately Prior To Backfilling

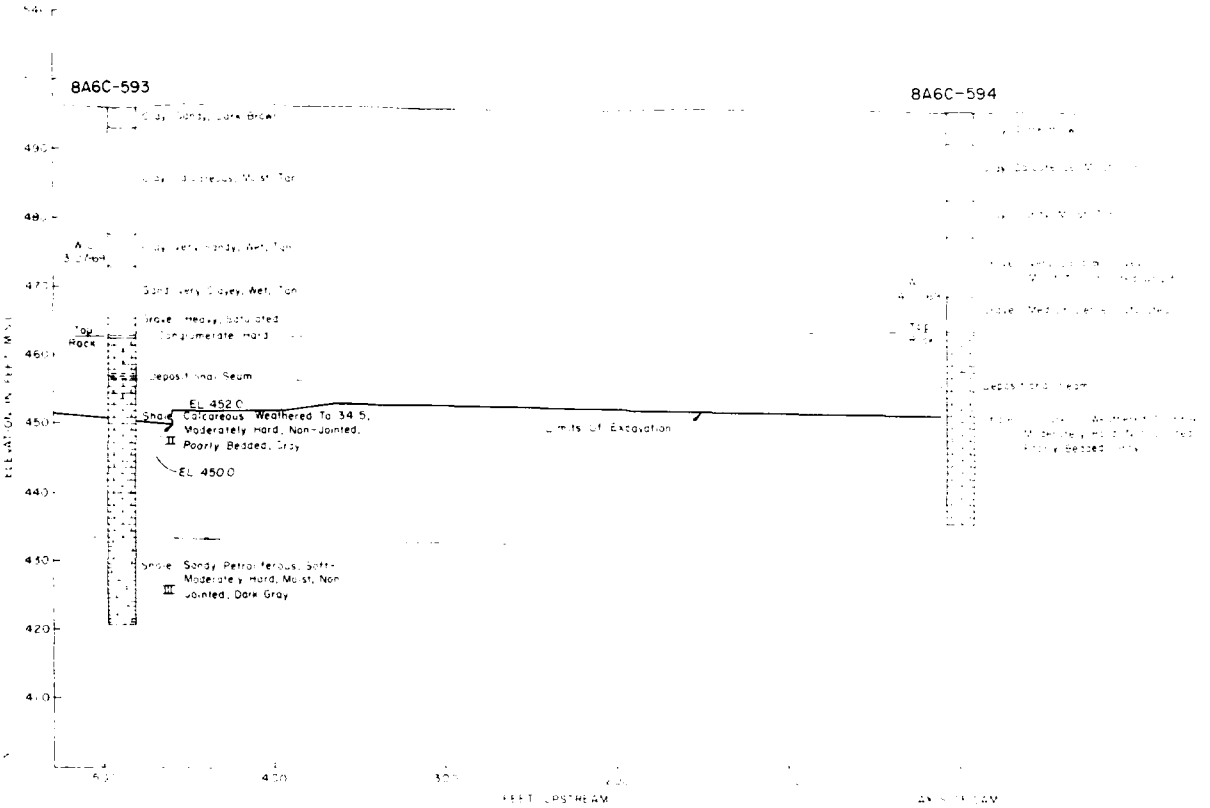
DRAWING

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION

FREESE, NICHOLS and ENDRESS CONSULTING ENGINEERS FORT WORTH TEXAS	U S ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH TEXAS
DESIGNED BY C.O.E.	BRAZOS RIVER BASIN, TEXAS LANEPORT RESERVOIR SAN GABRIEL RIVER, TEXAS
DRAWN BY JR	OUTLET WORKS - PARTIAL EMBANKMENT
CHECKED BY WNJ	EXCAVATION SECTIONS
SUBMITTED BY	INV NO DACW63-78-R-0081 DATED OCT 1978
ENGINEER	CONTR NO 7
	DRAWING NUMBER SHEET NO 8 OF
	SEQUENCE NO

2

AXIS OF DAM



LEGEND A.

STRATIGRAPHIC CLASSIFICATION

CRETACEOUS AGE MIDWAY SERIES NAVARRO GROUP

SHALE II — CALCAREOUS, BORDERS ON MARL, MODERATELY HARD, MASSIVE, GRAY WEATHERS TO LIGHT GREY

SHALE III — CALCAREOUS, SANDY, ARGILLACEOUS, MODERATELY HARD, FOSSILIFEROUS, PETROLIFEROUS, GRAY

LITHOLOGIC DESCRIPTION

LABORATORY CLASSIFICATION

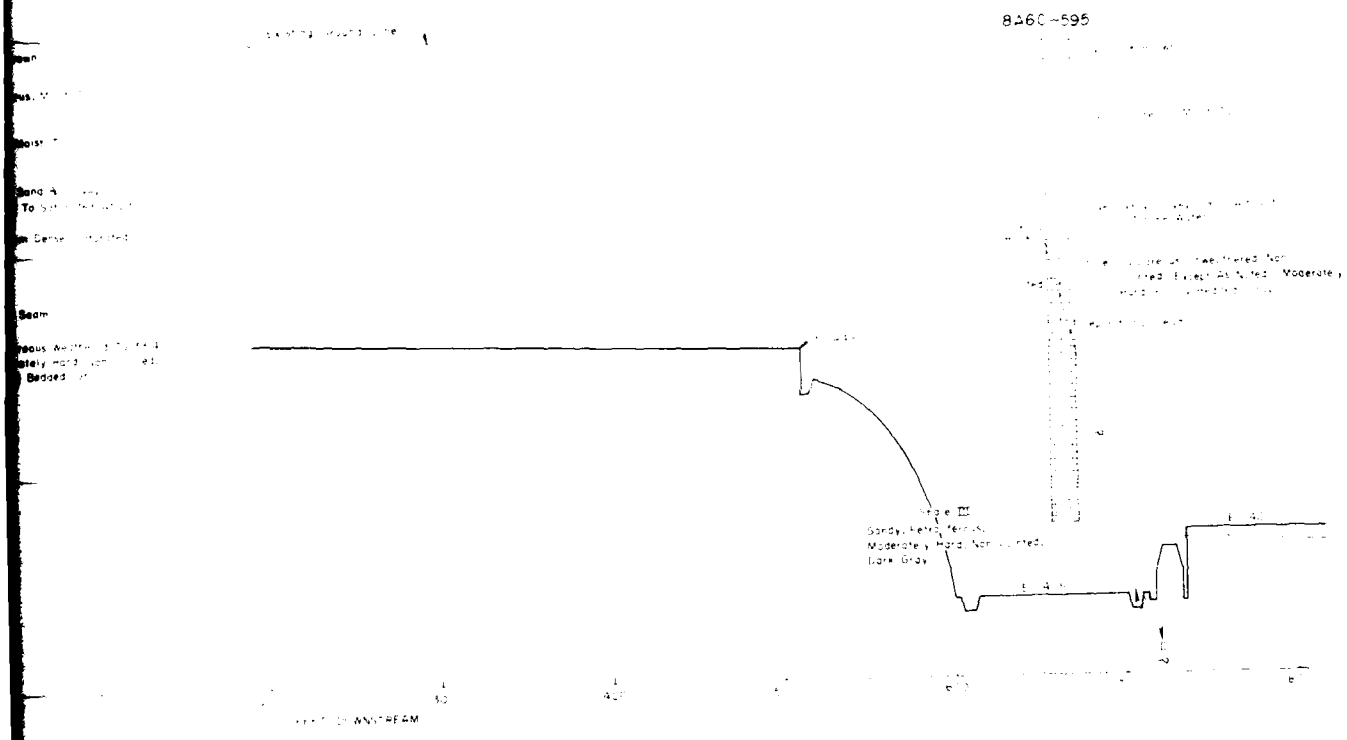
MISCELLANEOUS SYMBOLS

[ ] DENOTES WEATHERING (OXIDATION)

GEN

1
2
3
4

TO ACCOM



GENERAL NOTES

1. SEE SEQUENCE 7 FOR LOCATION OF SECTION
2. ABSENCE OF GROUND WATER LEVELS OPPOSITE BORING LOGS DOES NOT NECESSARILY MEAN THAT GROUND WATER WILL NOT BE ENCOUNTERED AT THE LOCATIONS OR WITHIN THE VERTICAL REACHES OF THE BORINGS
3. WATER SHOULD BE ANTICIPATED IN THE SANDY AND GRAVELLY MATERIALS OVERLYING SHALES
4. WHILE THE BORINGS AND GEOLOGIC STRUCTURAL INTERPRETATIONS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS FOR THE VERTICAL AND HORIZONTAL REACHES AS SHOWN, MINOR VARIATIONS IN CHARACTERISTICS OF MATERIALS AND LATERAL LOCATIONS OF FAULTS MAY BE ENCOUNTERED

SYM	CO NO	ACTION	DATE	DESCRIPTION OF REVISION
		AM #0002	19 NOV 73	REV NOTE 1 AND ADDED LEGEND

U S ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

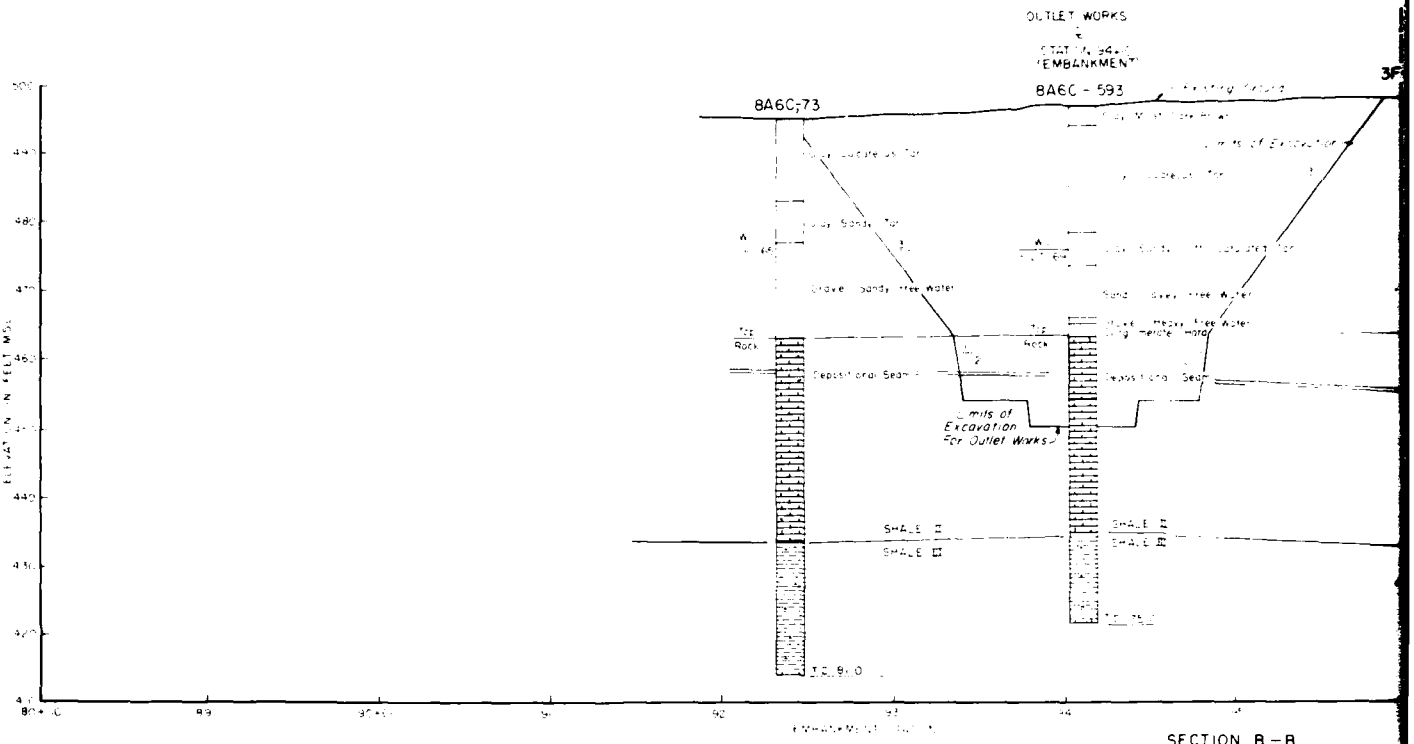
BRAZOS RIVER BASIN, TEXAS
LANEPORT RESERVOIR
SAN GABRIEL RIVER, TEXAS

OUTLET WORKS

GEOLOGIC PROFILE ON CENTERLINE

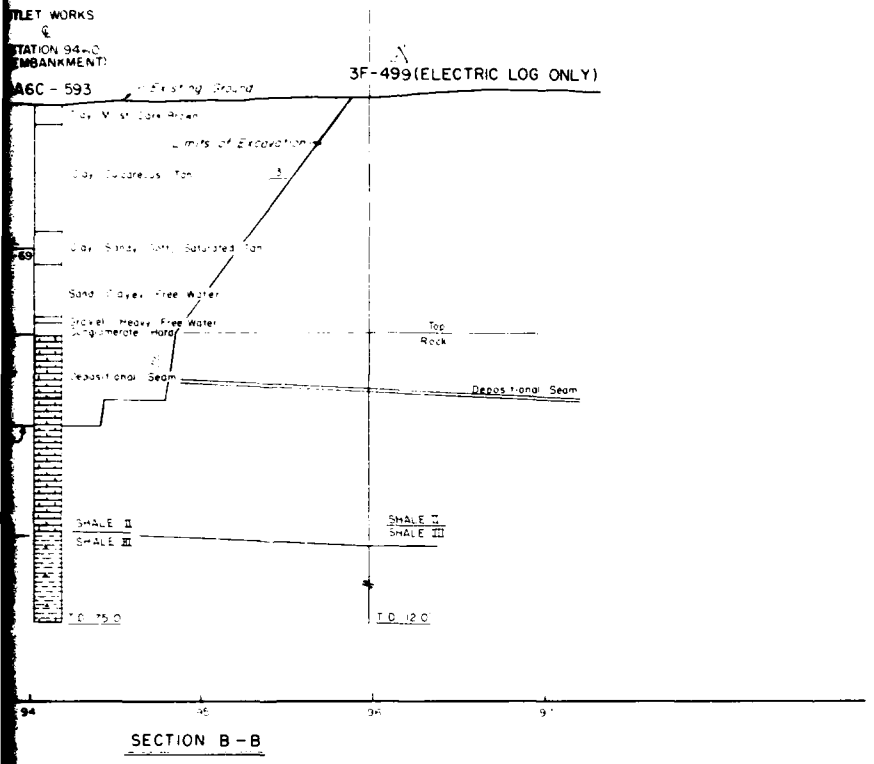
REV NO DRAWING 74-B-0021 DATED OCT, 1975
CONTR NO
DRAWING NUMBER
SHEET NO OF
SEQUENCE NO 9

2



SECTION B-B

TO ACCOMP



SECTION B-B

FOR GENERAL NOTES AND LEGEND SEE SEQ 9

DRAWING OF MODIFIED AS BUILT

2	AN#0002	19NOV'79	REV. TO REFLECT W.I. CHANGES
SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

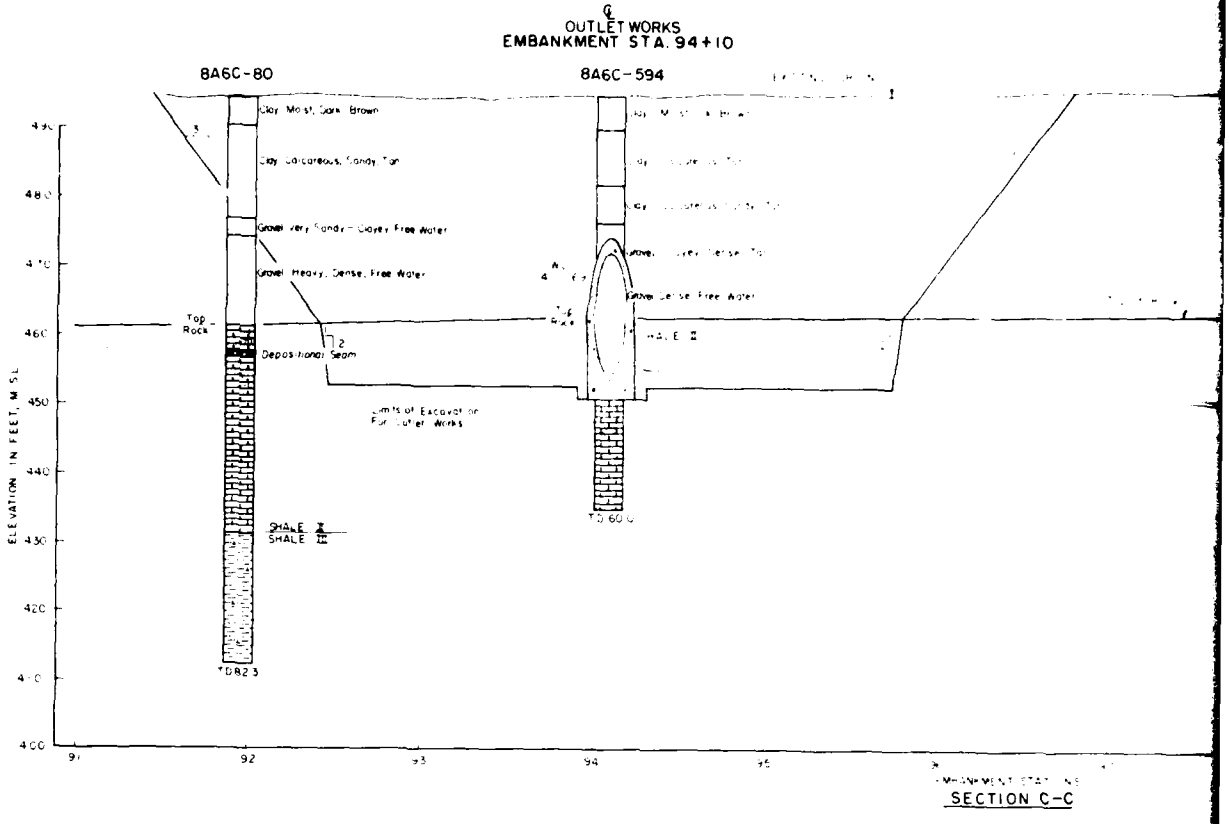
BRAZOS RIVER BASIN, TEXAS
LANEPORT RESERVOIR
SAN GABRIEL RIVER, TEXAS

OUTLET WORKS-PARTIAL EMBANKMENT
GEOLOGIC PROFILES
THRU CUT AND COVER CONDUIT
SECTION B-B

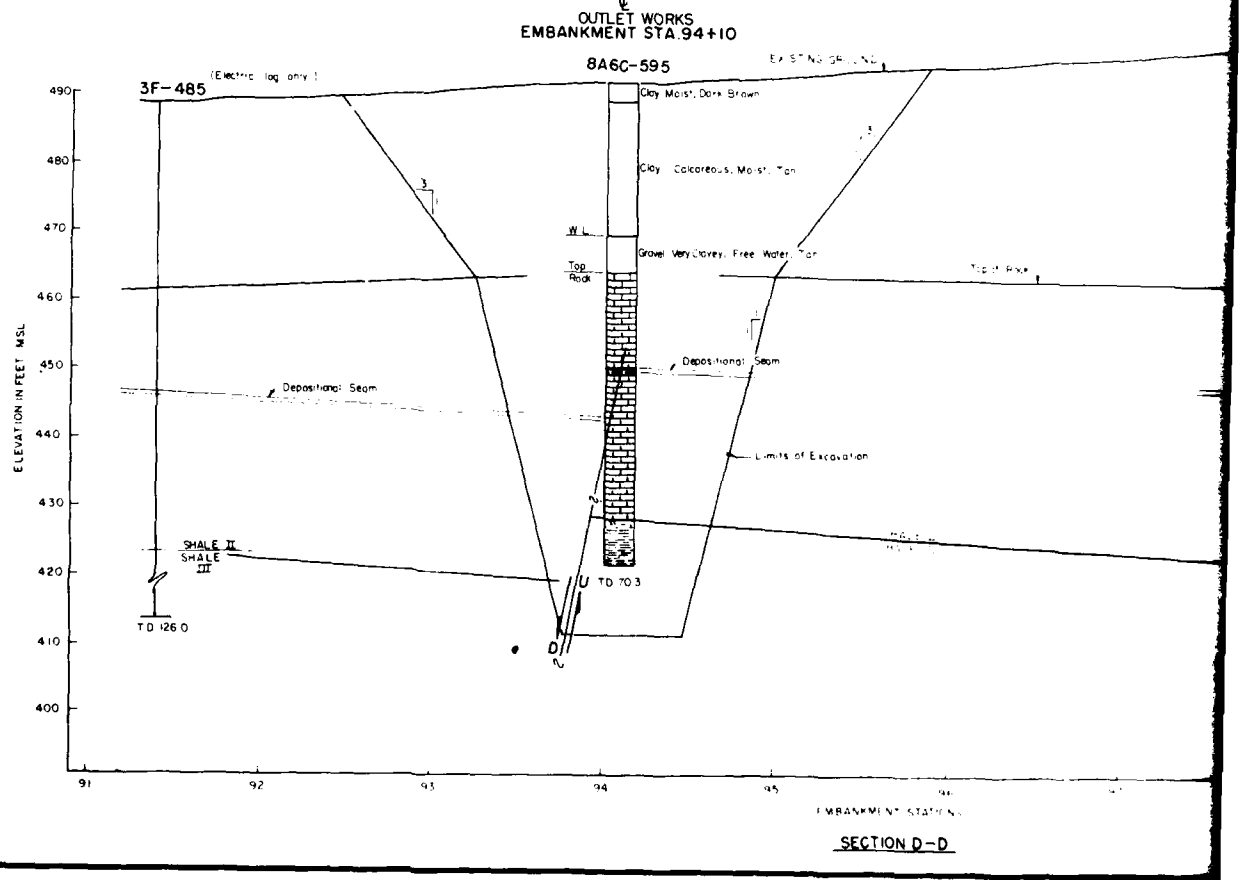
DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED
ENGINEER

INV NO DACW65-74-B-0021 DATED OCT. 1978
CONTR NO
DRAWING NUMBER
SHEET NO OF
SEQUENCE NO 10

2

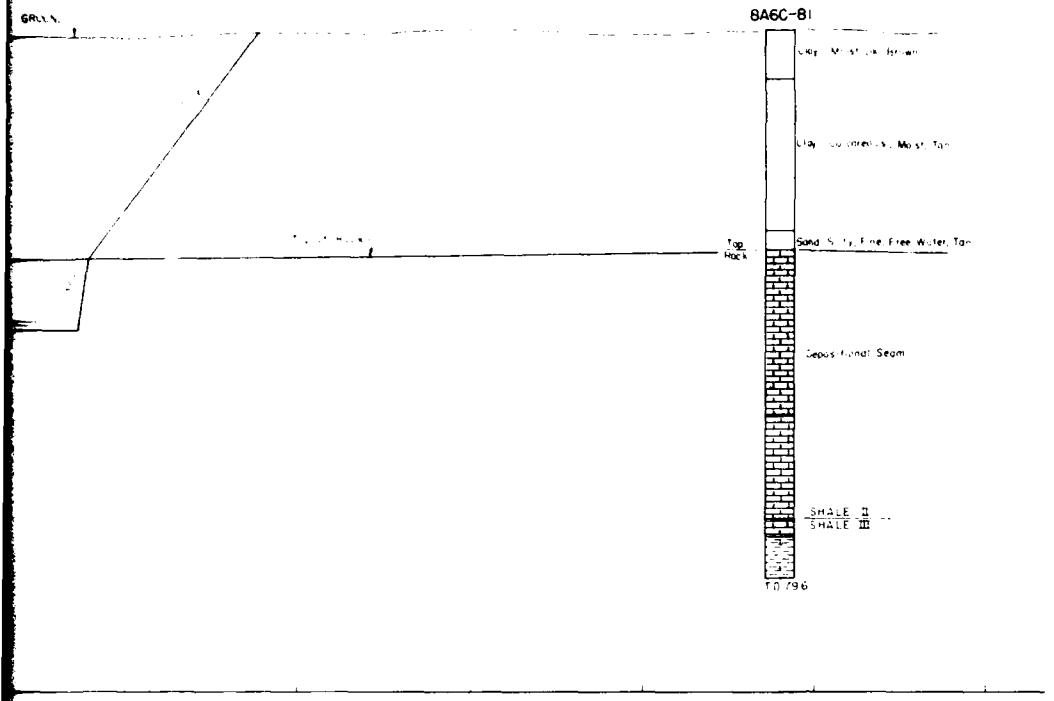


SECTION C-C

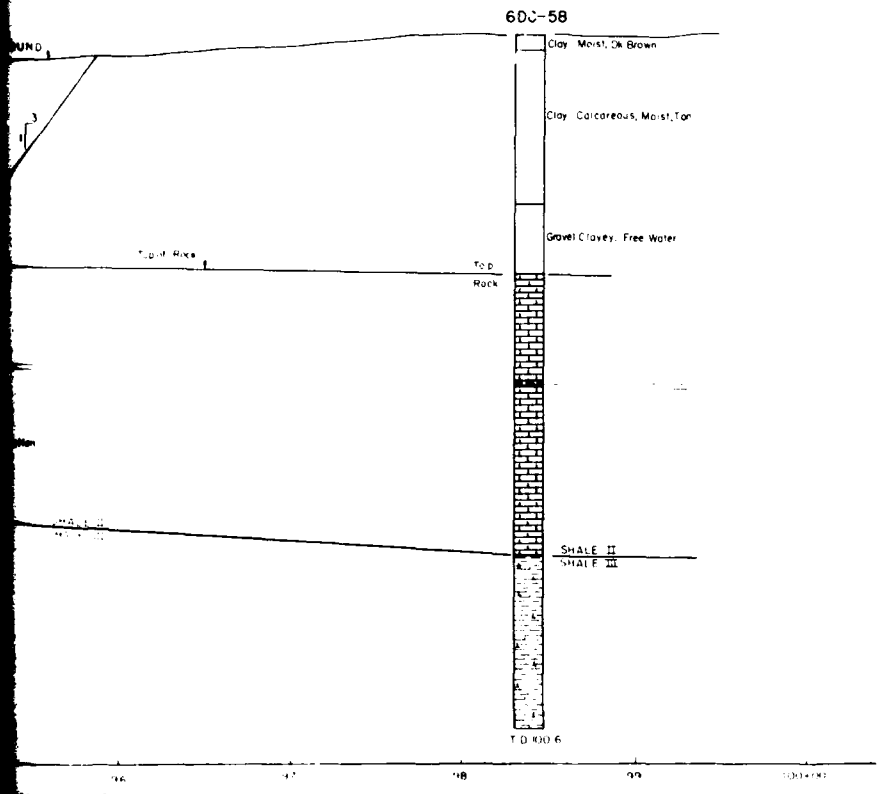


SECTION D-D

TO ACCOMP



SECTION C-C



SECTION D-D

FOR GENERAL NOTES AND LEGEND SEE SEQ 19

DRAWING OF ... AS BUILT

NO.	ACTION	DATE	DESCRIPTION OF REVISION
1	AN#0002	11NOV'73	REV. TO REFLECT W.I. CHANGES

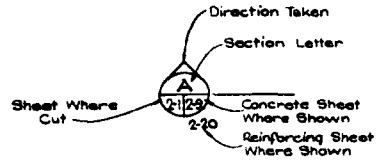
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

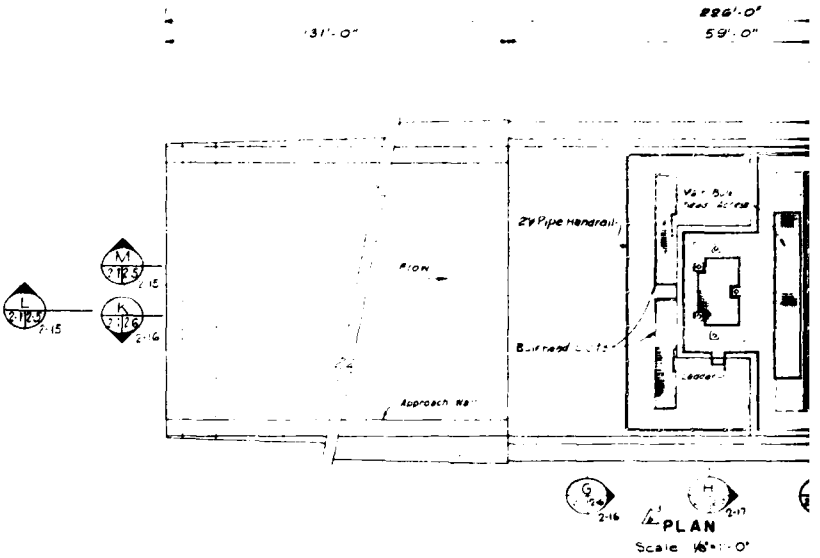
DESIGNED BY
DRAWN BY
CHECKED BY

BRAZOS RIVER BASIN, TEXAS
LANEPORT RESERVOIR
SAN GABRIEL RIVER, TEXAS
OUTLET WORKS-PARTIAL EMBANKMENT
GEOLOGIC PROFILES
THRU CUT AND COVER CONDUIT
SECTIONS C-C & D-D

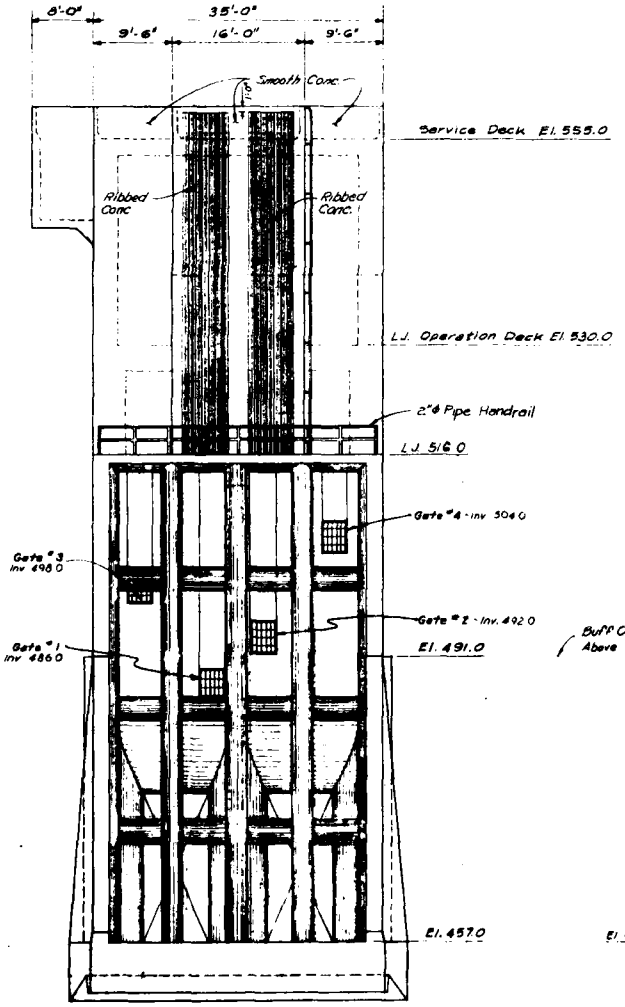
DATED OCT. 1978
DRAWING NUMBER
SHEET NO. OF
SEQUENCE NO. 11

2

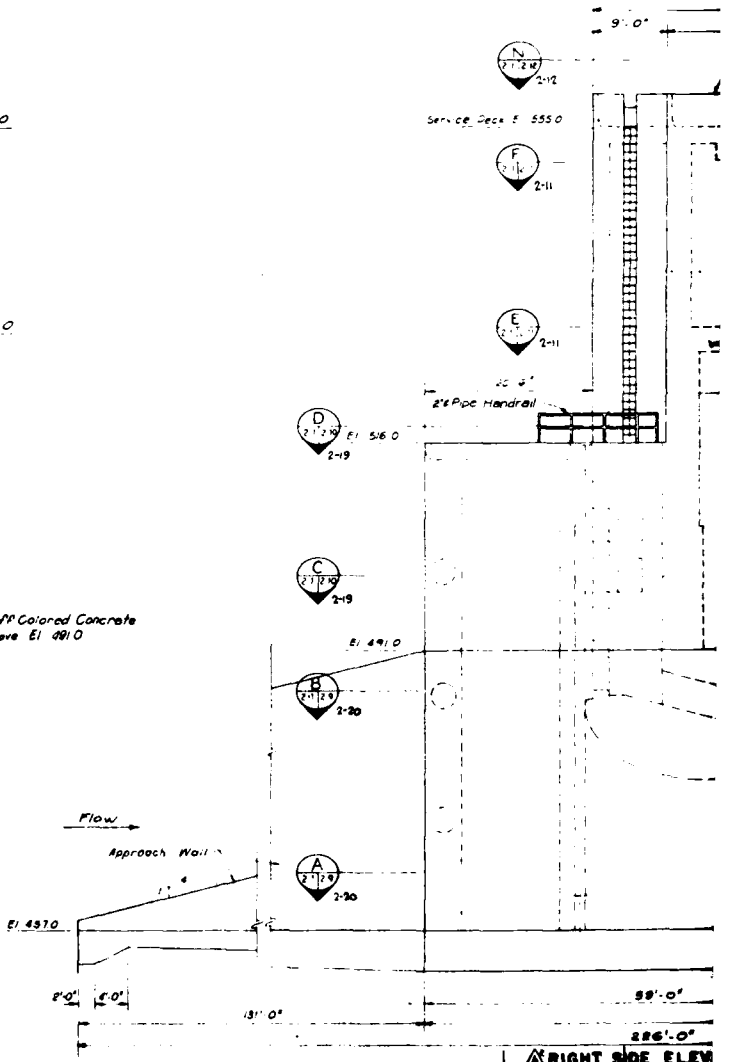




PLAN
Scale 1/8" = 1'-0"

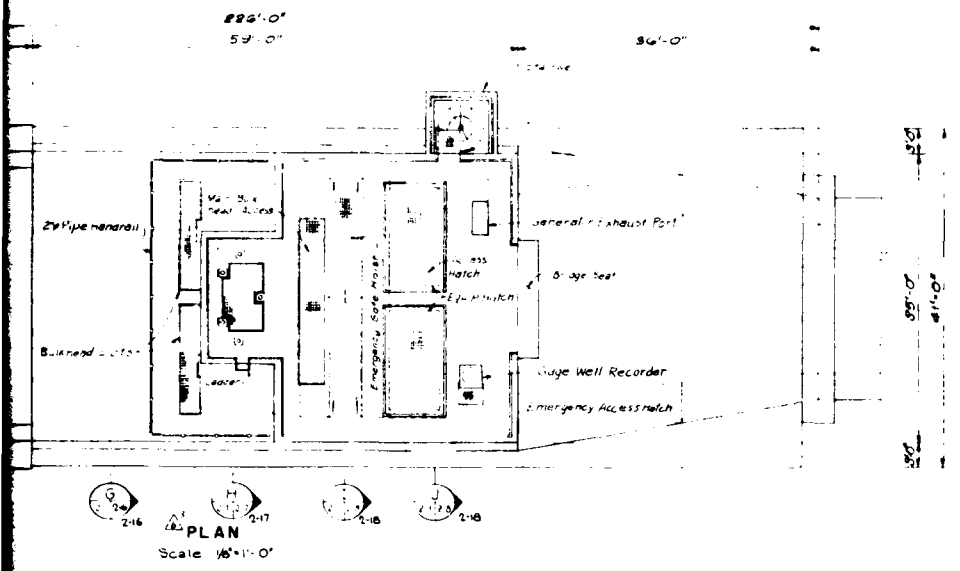


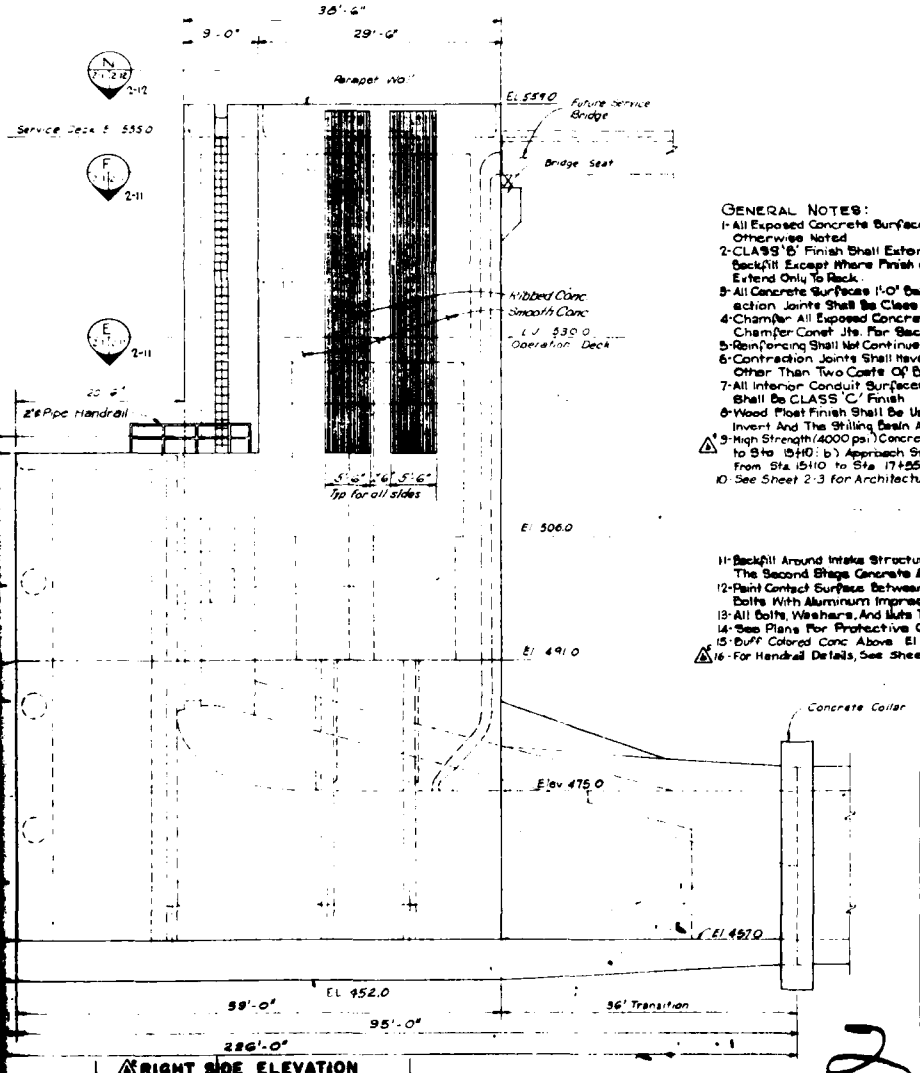
UPSTREAM ELEVATION
Scale : 1/8" = 1'-0"



RIGHT SIDE ELEV

TO ACCOMPAN





TENSION BAR LAP AND EMBEDMENTS

f'_c	f_y	BAR SIZE	LAP LENGTH INCHES TOP BARS	LAP LENGTH INCHES OTHER BARS	EMBEDMENT LENGTH INCHES TOP BARS	EMBEDMENT LENGTH INCHES OTHER BARS
3000 PSI	40.0 KSI	3	12	12	12	12
		4	15	12	12	12
		5	18	13	12	12
		6	23	17	18	12
		7	32	23	20	16
		8	42	30	26	18
		9	53	38	33	23
		10	66	48	42	30
		11	83	59	51	36
		14			70	50

TENSION BAR LAP AND EMBEDMENTS

f'_c	f_y	BAR SIZE	LAP LENGHT INCHES TOP BARS	LAP LENGHT INCHES OTHER BARS	EMBEDMENT LENGHT INCHES TOP BARS	EMBEDMENT LENGHT INCHES OTHER BARS
4000 PSI	40.0 KSI	3	12	12	12	12
		4	15	12	12	12
		5	18	13	12	12
		6	22	16	13	12
		7	30	22	19	13
		8	36	26	22	16
		9	46	33	28	20
		10	58	42	36	26
		11	72	51	44	32
		14			60	43

1 Top Bars Are Horizontal Reinforcement So Placed That More Than 12 In. Of Concrete In Cast In The Member Below The Bar.
2 Lap Lengths shown are in accordance with ACI 318-71 Class "B" Splice.
3 For General Reinforcing Notes, See Sheet 2-2

GENERAL NOTES:

1- All Exposed Concrete Surfaces Shall Have CLASS 'B' Finish Except As Otherwise Noted
2- CLASS 'B' Finish Shall Extend 1'-0" Below FINISH GRADE Or Top Of FUTURE Backfill Except Where Finish Grade Is Rock In Which Case The Finish Shall Extend Only To Rock.
3- All Concrete Surfaces 1'-0" Below Finish Grade Or Backfill And Formed Contraction Joints Shall Be Class 'D' Finish.
4- Chamfer All Exposed Concrete Edges ¾" Unless Otherwise Noted. Do Not Chamfer Const Jts. For Second Stage Concrete.
5- Reinforcing Shall Not Continue Thru Contraction Jt.
6- Contraction Joints Shall Have No Special Joint Cleaning And No Joint Material Other Than Two Coats Of Bituminous Paint.
7- All Interior Conduit Surfaces Including Conduit In Tower Base And Transition Shall Be CLASS 'C' Finish
8- Wood Float Finish Shall Be Used On The Unformed Portion Of The Conduit Invert And The Stilling Basin Apron And Floor Slab, And Other Horizontal Surfaces
3 9- High Strength (4000 psi) Concrete Shall Be Used a) In The Conduit From Sta 0+85 to Sta (5+10; b) Approach Structure From Sta. 4+09 to Sta. 5+60; c) Stilling Basin From Sta 15+10 to Sta 17+55. All Other Concrete Shall Be 3000 PSI Strength.
10- See Sheet 2-3 for Architectural Treatment of Structure above Elev. 516.0

11- Backfill Around Intake Structure Shall Not Be Performed Until After Placing Of The Second Stage Concrete Around Gate, Etc.
12- Paint Contact Surfaces Between Aluminum And Concrete, Steel Shapes Or Steel Bolts With Aluminum Impregnated Caulking Compound
13- All Bolts, Washers, And Nuts To Be Galvanized Except As Otherwise Noted.
14- See Plans For Protective Concrete.
15- Buff Colored Conc Above El 491.0
4 16- For Handrail Details, See Sheet 4-2

4	AMENDED	NOV 73	REVISED PLAN, ELEVATIONS AND NOTES
REVISION NO.	REVISION	DATE	DESCRIPTION OF REVISION

FREESE, NICHOLS and ENDRESS, CONSULTING ENGINEERS, FORT WORTH TEXAS

U. S. ARMY ENGINEER DISTRICT, FORT WORTH, CORPS OF ENGINEERS, FORT WORTH TEXAS

DESIGNED BY C.D.E.
DRAWN BY J.M.S.
CHECKED BY A.D.

BRAZOS RIVER BASIN, TEXAS
LANEPORT RESERVOIR
SAN GABRIEL RIVER, TEXAS

OUTLET WORKS - INTAKE STRUCTURE

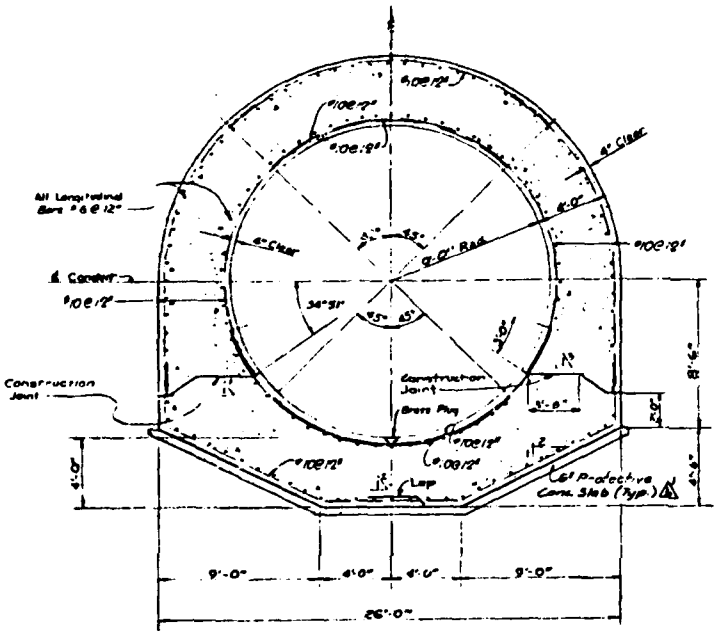
GENERAL ELEVATIONS

SUBMITTED BY

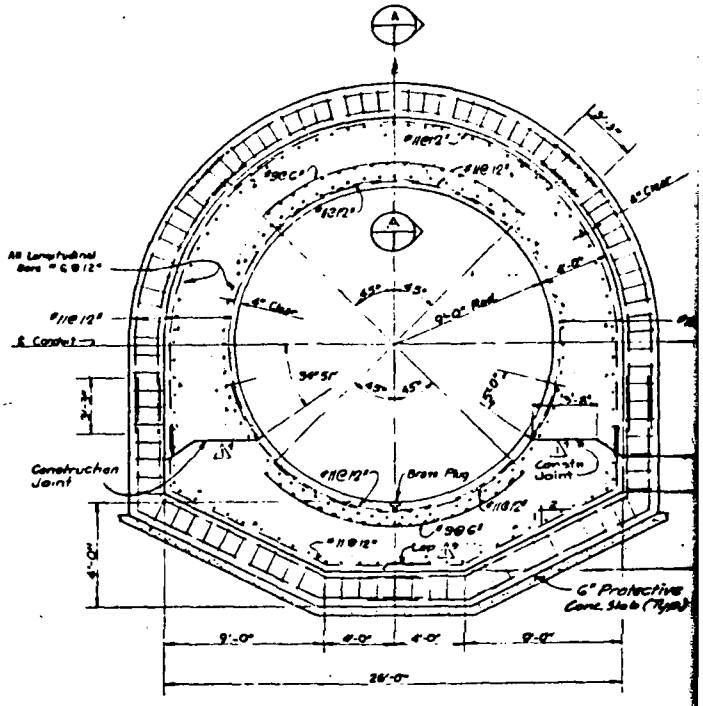
DRAWING NO. Datasol-10-8-2011 | CONTR. NO. | SHEET NO. 2

2

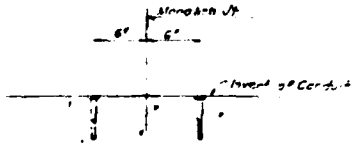
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 26



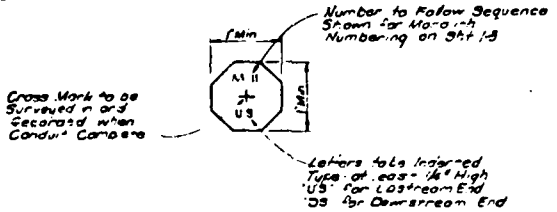
MONOLITHS ① thru ⑧
CONDUIT DESIGN 'A'
SCALE: 1/4" = 1'

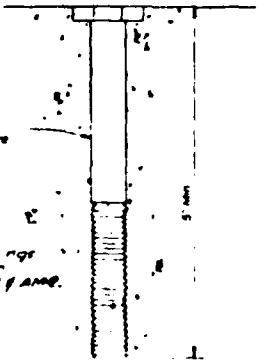


MONOLITHS ⑨ thru ㉙
CONDUIT DESIGN 'B'
SCALE: 1/4" = 1'

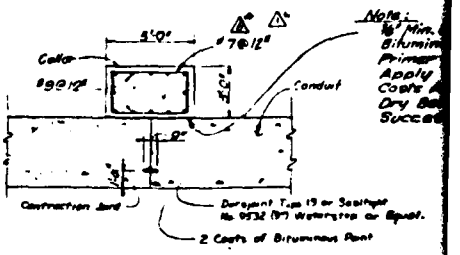


TYPICAL BRASS PLUG INSTALLATION
SCALE: 1½" = 1'-0"



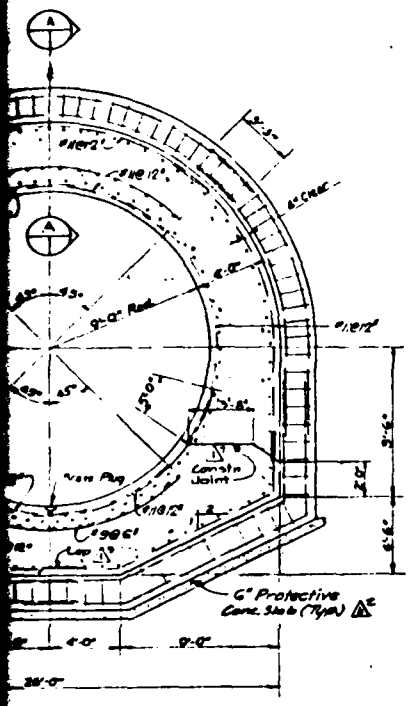


REFERENCE MARK BRASS PLUG

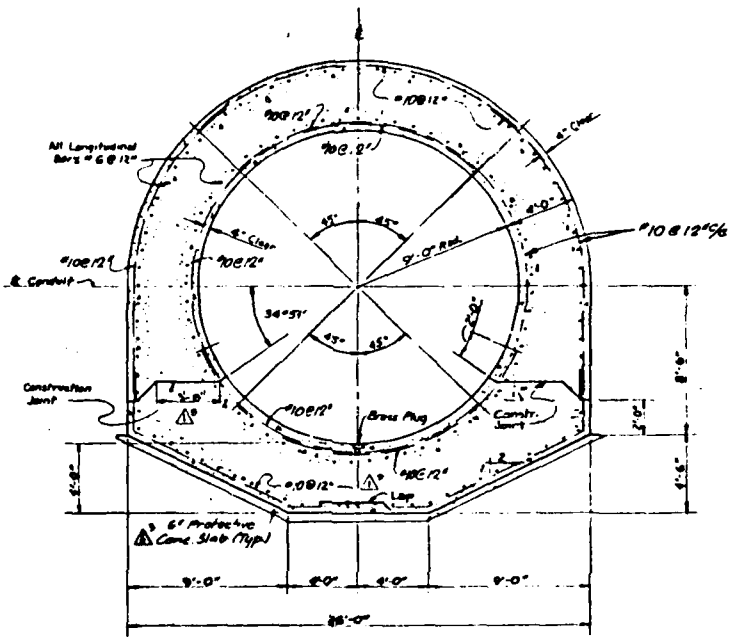


SECTION (A)
TYPICAL FOR CONDUIT DESIGNS A, B & C
SCALE: 1/4" = 1'

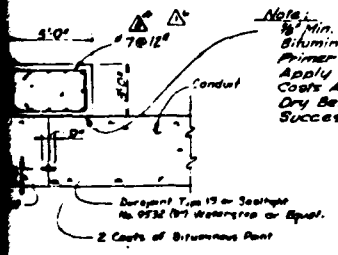
TO ACCOMPANY FINAL FOUNDA



LITHS ⑨ thru ㉓
T DESIGN 'B'
CALE: 1/4"=1'



MONOLITHS ㉔ thru ㊺
CONDUIT DESIGN 'C'
SCALE: 1/4"=1'



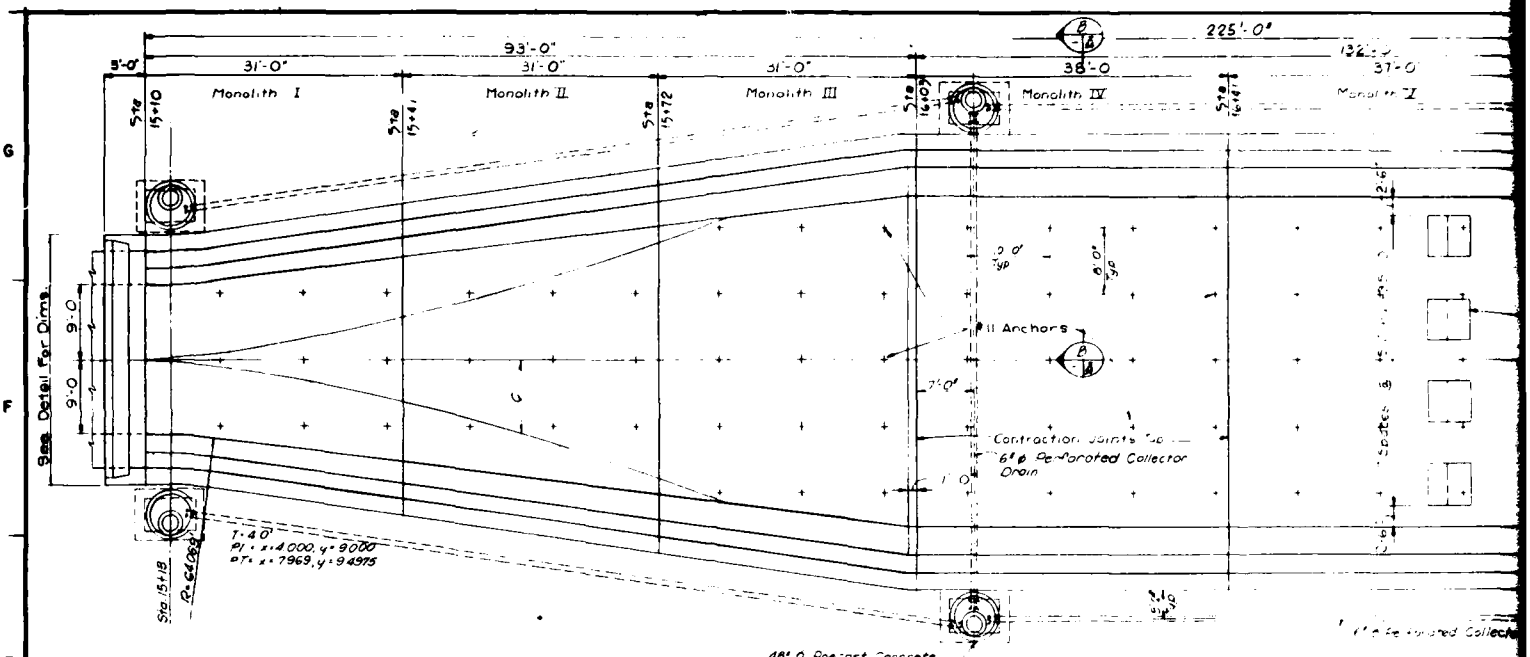
TION
DUIT DESIGNS A, B & C
CALE: 1/4"=1'

Notes 1 For General Notes, See Sheet 2-1.
2 Concrete For Conduit Shall Be High Strength (4000 PSI Compressive Strength at 28 Days.)
3 Long Reinf. Bars Shall Not Extend Thru Contraction Joint ⚠3
4 See Sht. 1-8 For Location Of Casing
5 See Sht. 1-9 For Plan And Profile Of Conduit

RECORD DRAWING - WORK AS BUILT

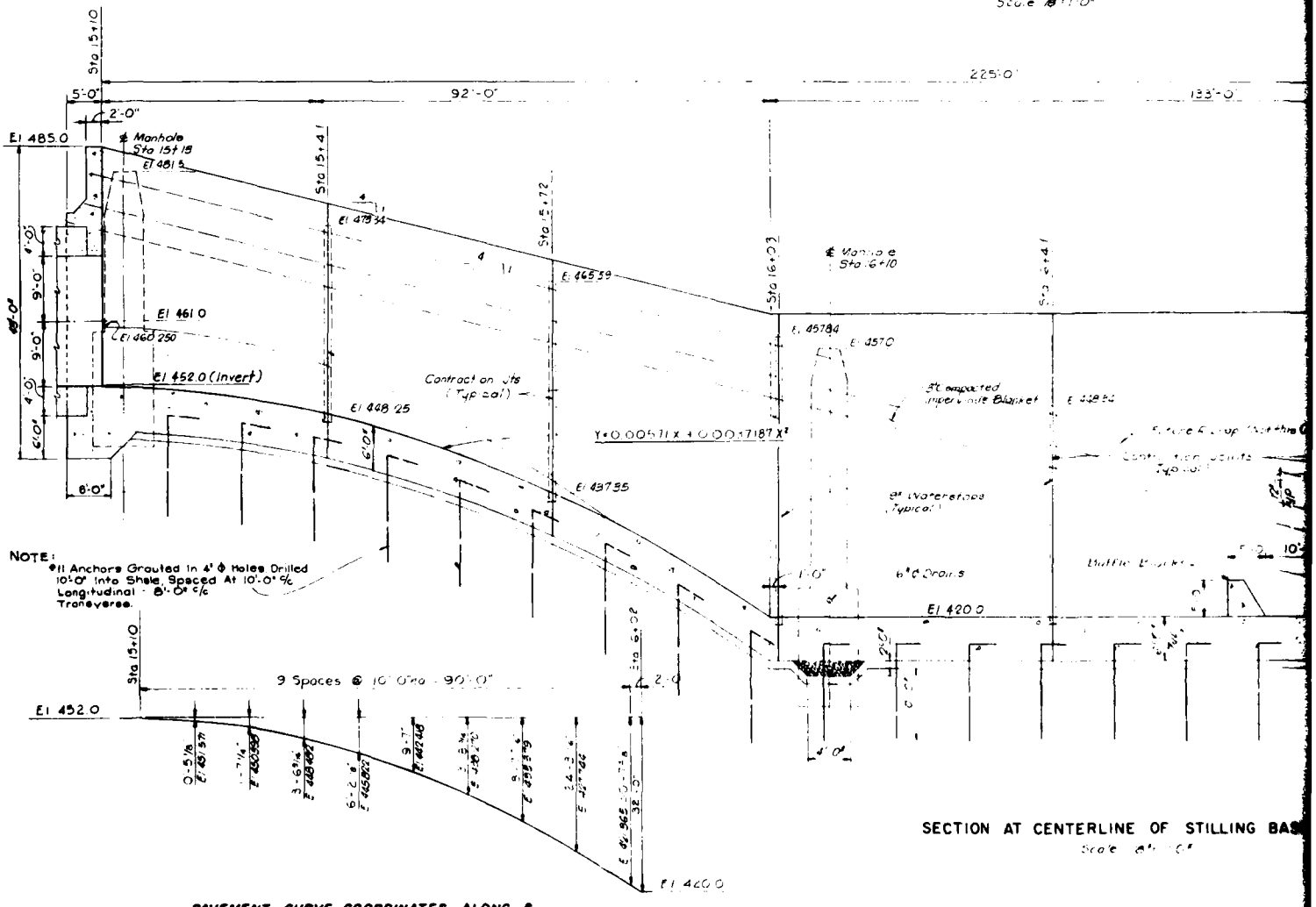
PRESSE, NICHOLS and ENDRESS CONSULTING ENGINEERS FORT WORTH, TEXAS		U. S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: M. E. B.	BRAZOS RIVER BASIN, TEXAS LANEPORT RESERVOIR SAN GABRIEL RIVER, TEXAS	
DRAWN BY: [illegible]	CONDUIT CONCRETE & REINFORCING DETAILS	
CHECKED BY: A. D.		
SUBMITTED BY: [illegible]		DRAWING NO. 37

2



PLAN

Scale 1/8" = 1'-0"



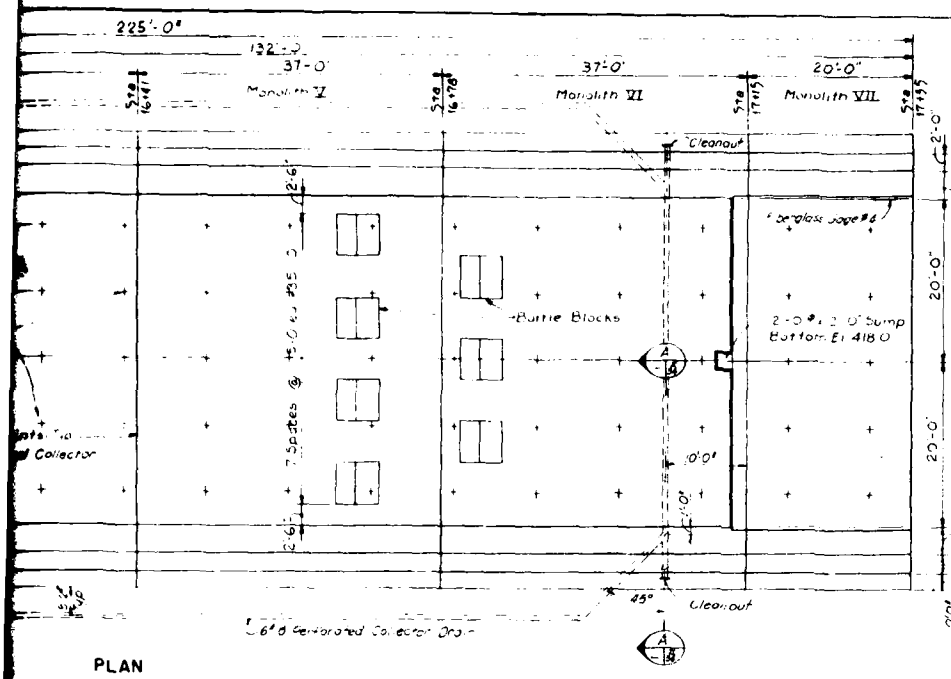
SECTION AT CENTERLINE OF STILLING BAS

Scale 1/8" = 1'-0"

PAVEMENT CURVE COORDINATES ALONG ℄

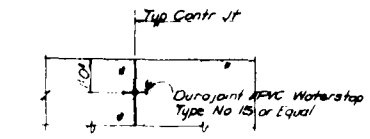
Scale 3/32" = 1'-0"

TO ACCOMPANY FINA



PLAN

Scale: 1" = 10'


Typ Contr Jt
Ø
Ø
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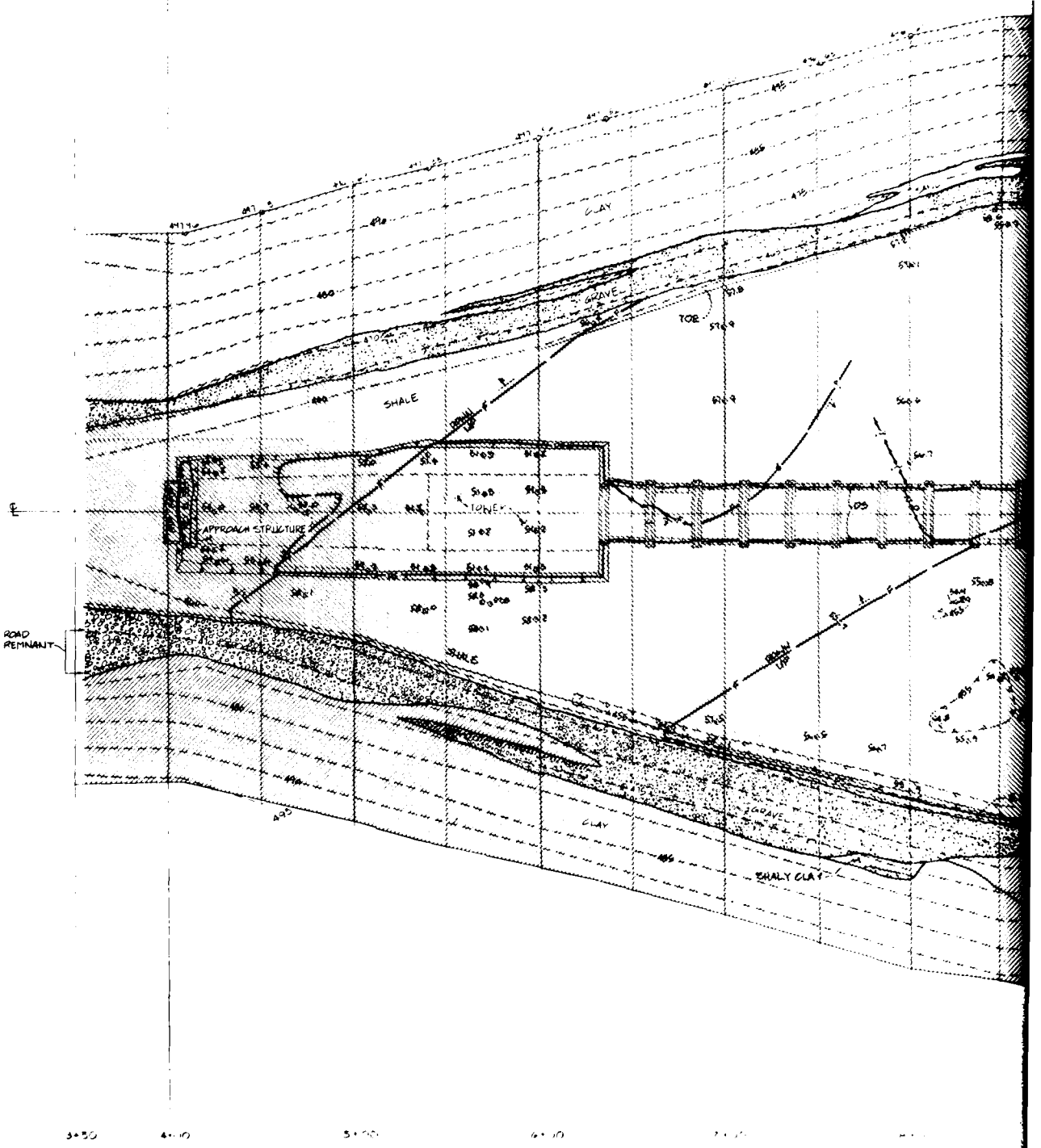
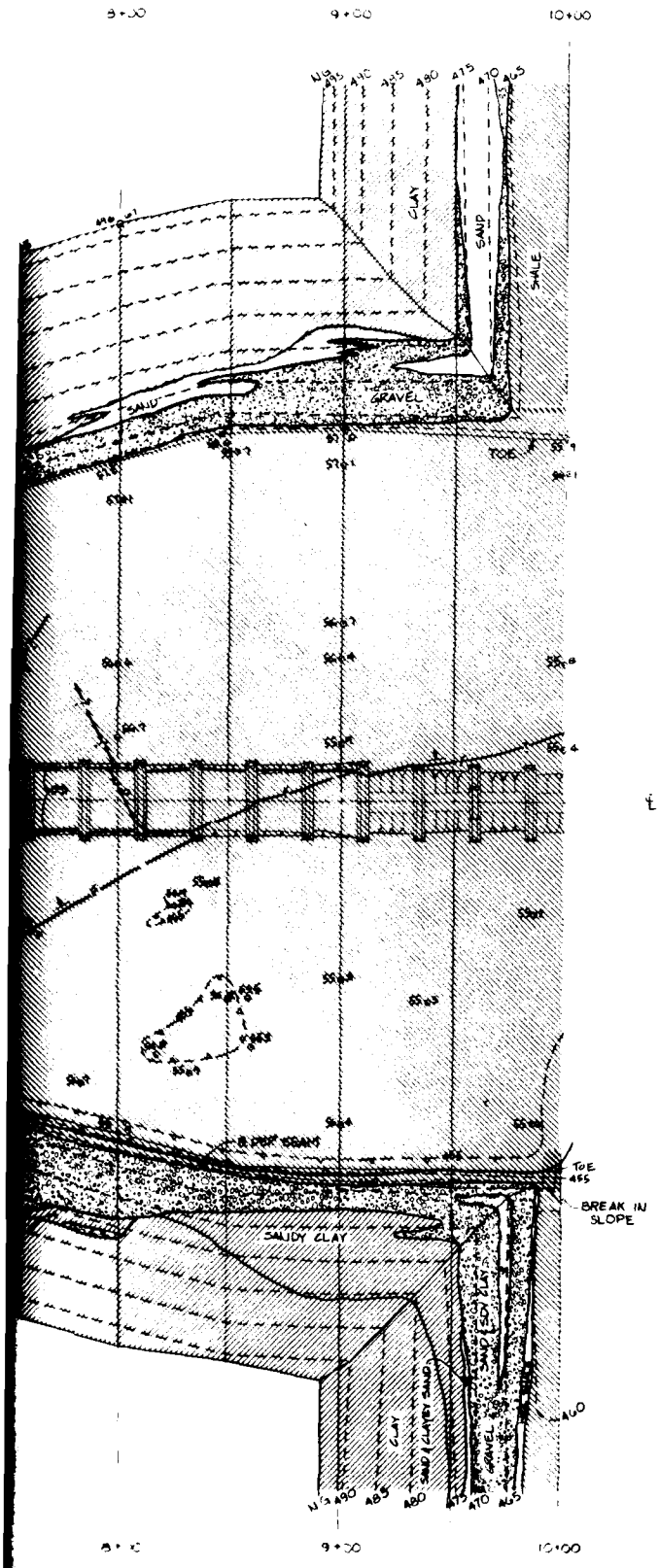
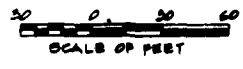

CLAY
GRAVEL
TOE
SHALE
TOWER
APPROACH STRUCTURE
ROAD REMNANT
SHALE
CLAY
GRAVEL
SHALY CLAY



NOTE:
FOR MAPPING SYMBOLS, SEE PLATE II



GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

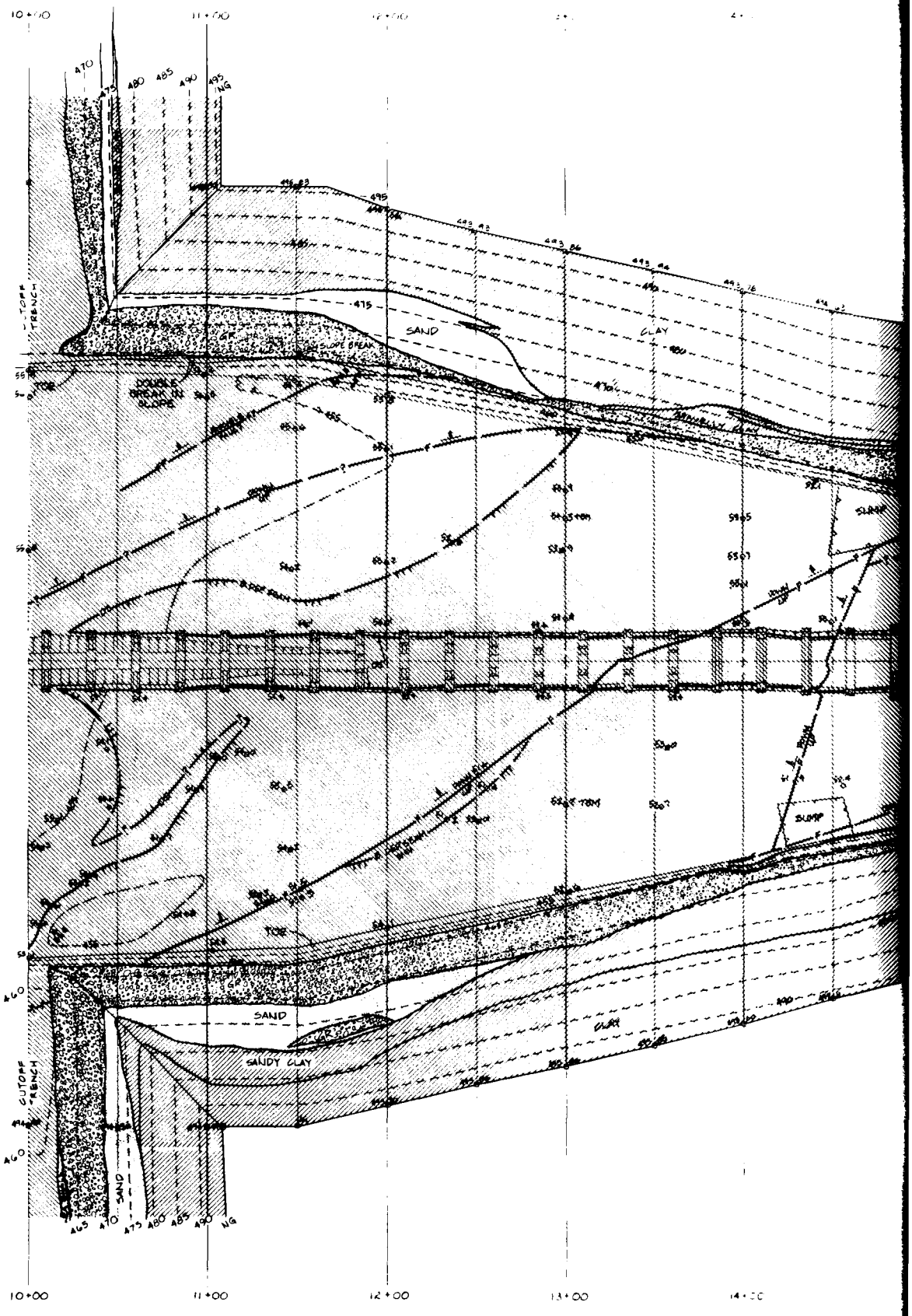
FINAL FOUNDATION REPORT

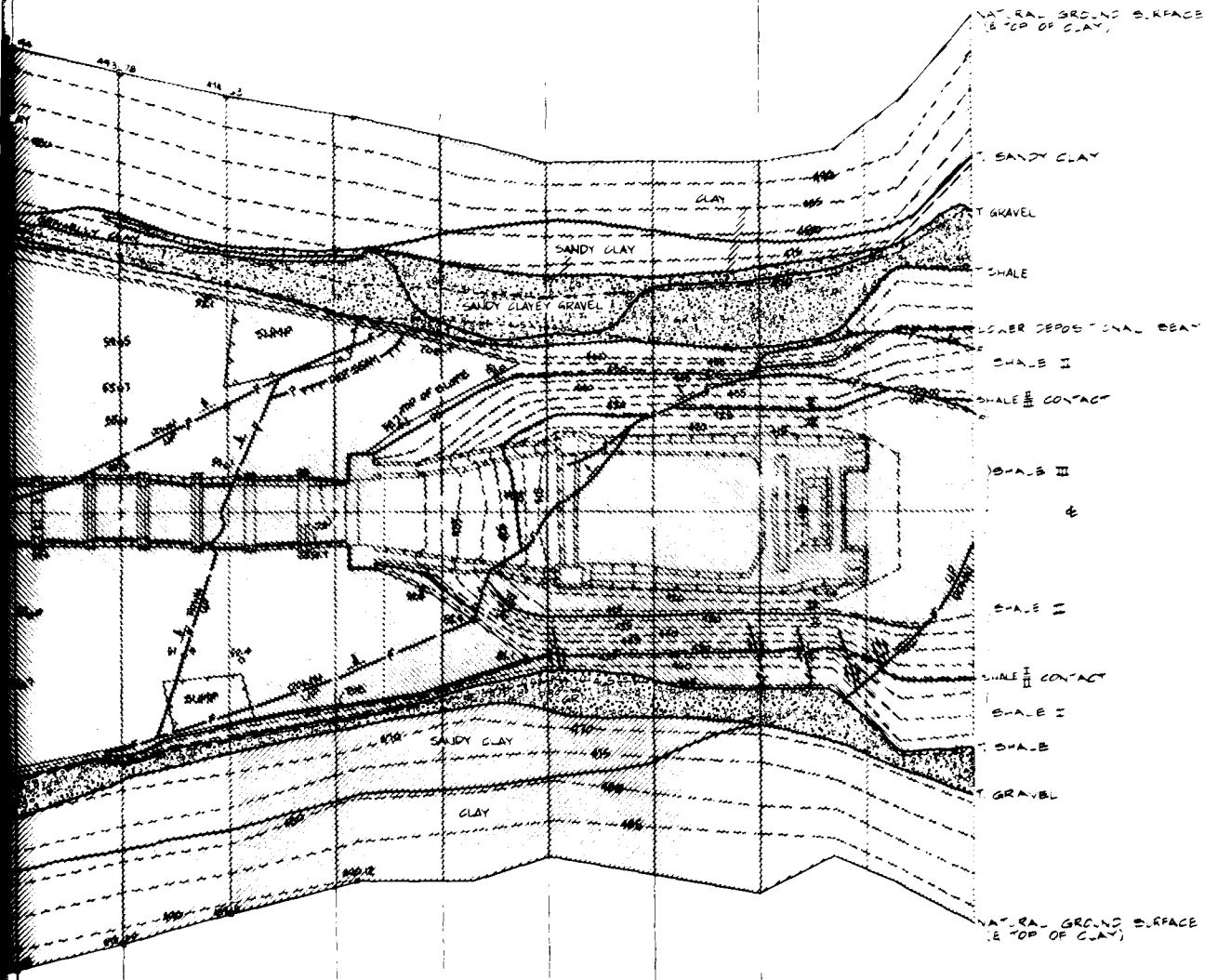
OUTLET WORKS
GEOLOGY AND EXCAVATION
STATION 3+98 TO STATION 10+00

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 29

TO ACCOMPANY FINAL FOUNDATION REPORT


10+00
11+00
12+00
13+00
14+00
CUTOFF TRENCH
TOE
DOUBLE BREAK IN SLOPE
SLOPE BREAK
SAND
CLAY
SLURRY
SUMP
SANDY CLAY
470
475
480
485
490
495
NG



NOTE:
FOR MAPPING SYMBOLS SEE PLATE 11

SCALE OF FEET

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

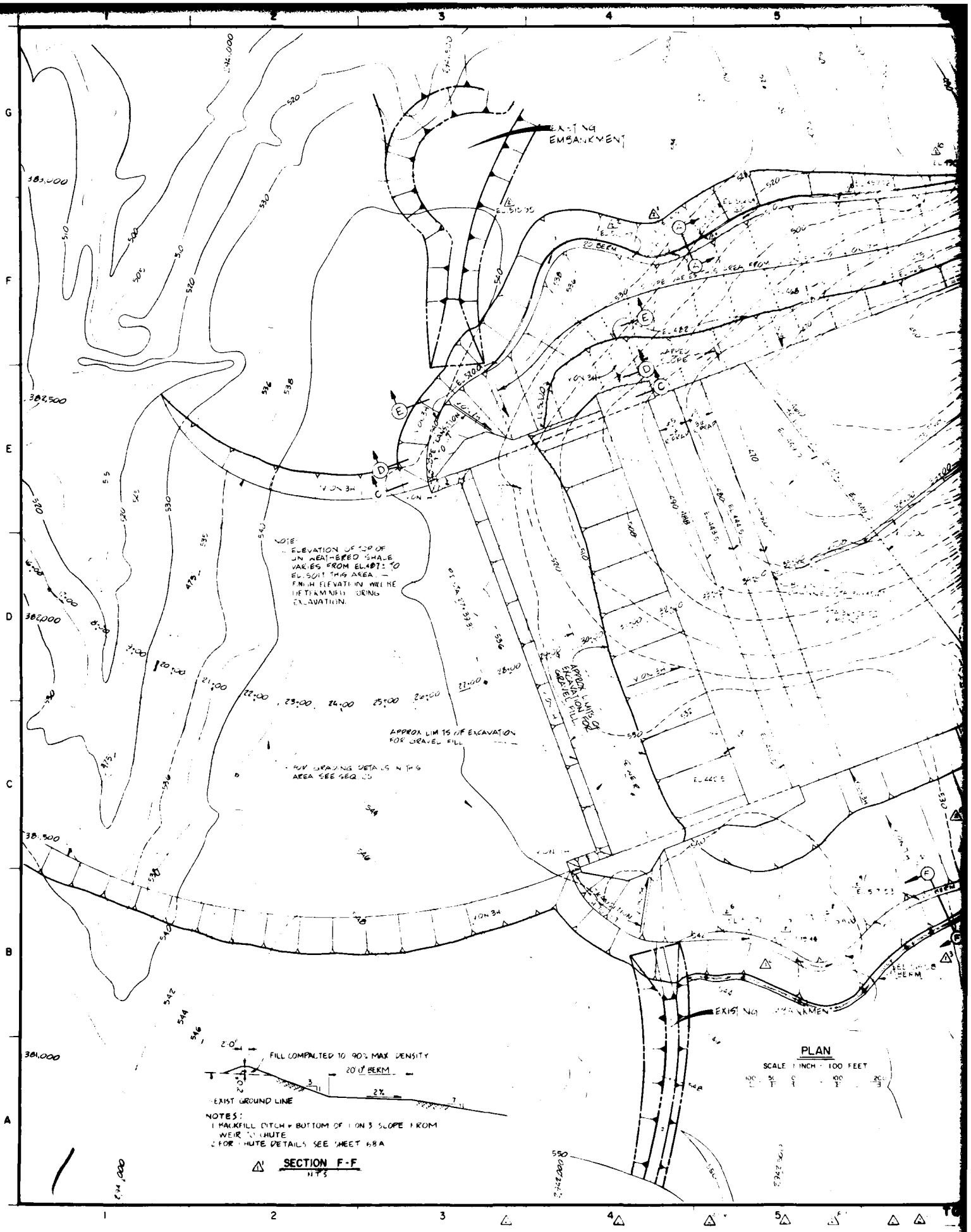
FINAL FOUNDATION REPORT

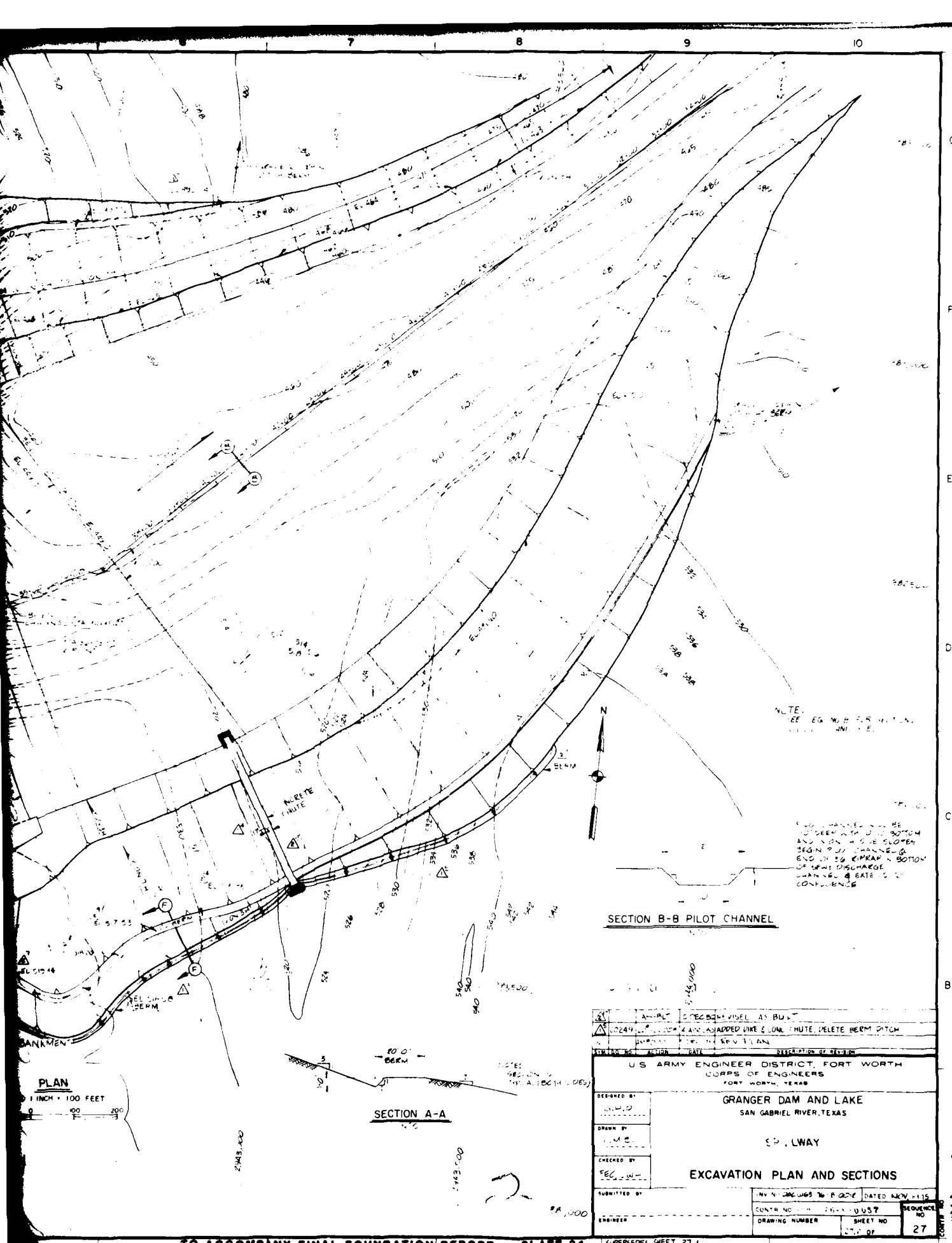
OUTLET WORKS
GEOLOGY AND EXCAVATION
STATION 10+00 TO STATION 18+00

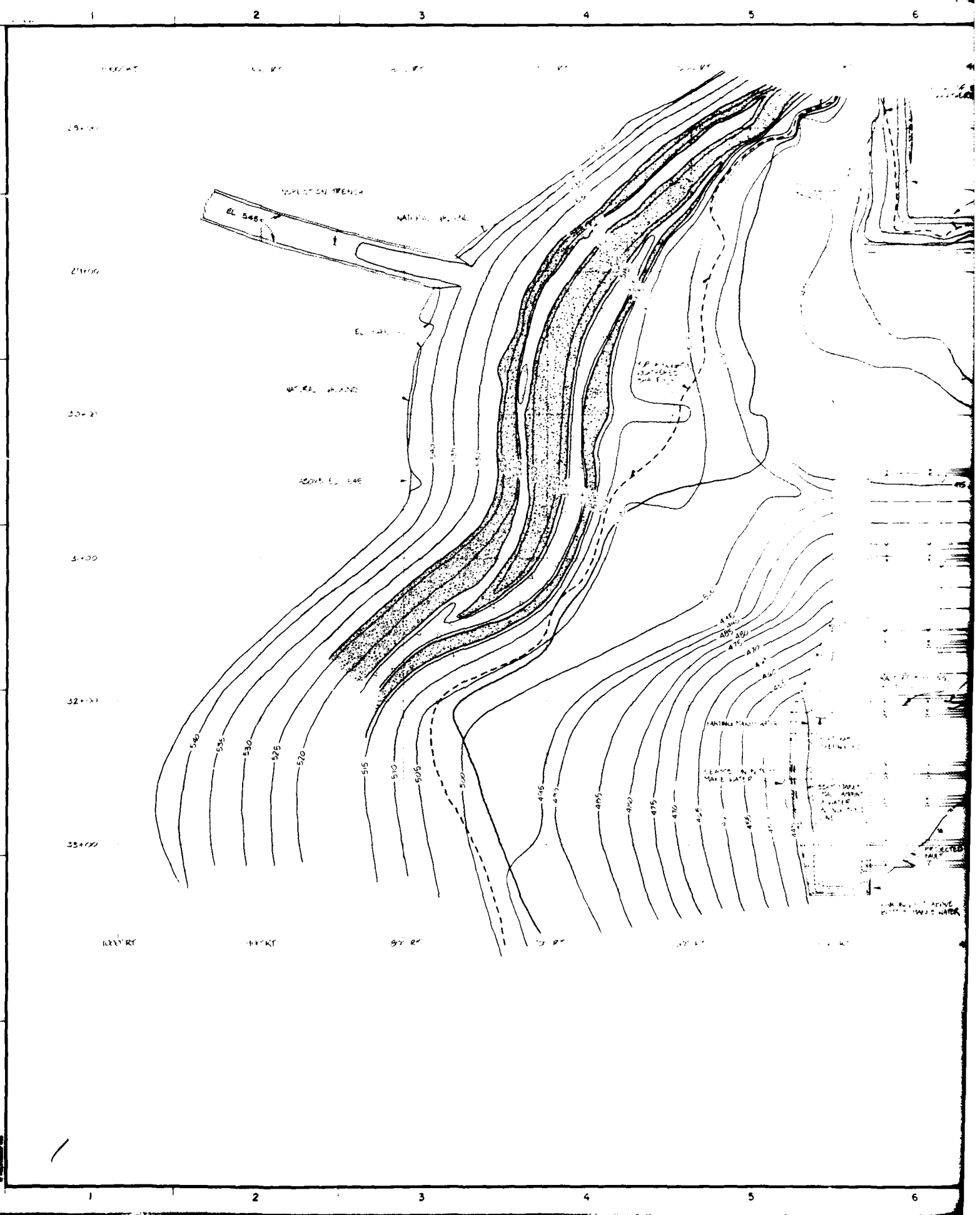
U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 30

TO ACCOMPANY FINAL FOUNDATION REPORT


EXISTING EMBANKMENT
NOTE:
ELEVATION OF TOP OF UNWEATHERED SHALE VARIES FROM EL.487± TO EL.501± THIS AREA. FINISH ELEVATION WILL BE DETERMINED DURING EXCAVATION.
APPROX LIMITS OF EXCAVATION FOR GRAVEL FILL
APPROX LIMITS OF EXCAVATION FOR GRAVEL FILL
FOR GRADING DETAILS IN THIS AREA SEE SEQ. 25
20' BERM
EXISTING EMBANKMENT
FILL COMPACTED TO 90% MAX DENSITY
20' 0" BERM
EXIST GROUND LINE
NOTES:
1 BACKFILL DITCH & BOTTOM OF 1 ON 3 SLOPE FROM WEIR TO CHUTE
2 FOR CHUTE DETAILS SEE SHEET 68A
SECTION F-F
NTS
PLAN
SCALE 1 INCH = 100 FEET


7
8
9
10
G
F
E
D
C
B
N
PLAN
1 INCH = 100 FEET
0
100
200
SECTION A-A
SECTION B-B PILOT CHANNEL
BERM
CONCRETE CHUTE
BANKMEN
EL 515.46
EL 515.68
EL 515.53
EL 515.53
EL 515.53


1
2
3
4
5
6
G
F
E
D
C
B
A
EL 545±
540
535
530
525
520
515
510
505
500
495
490
485
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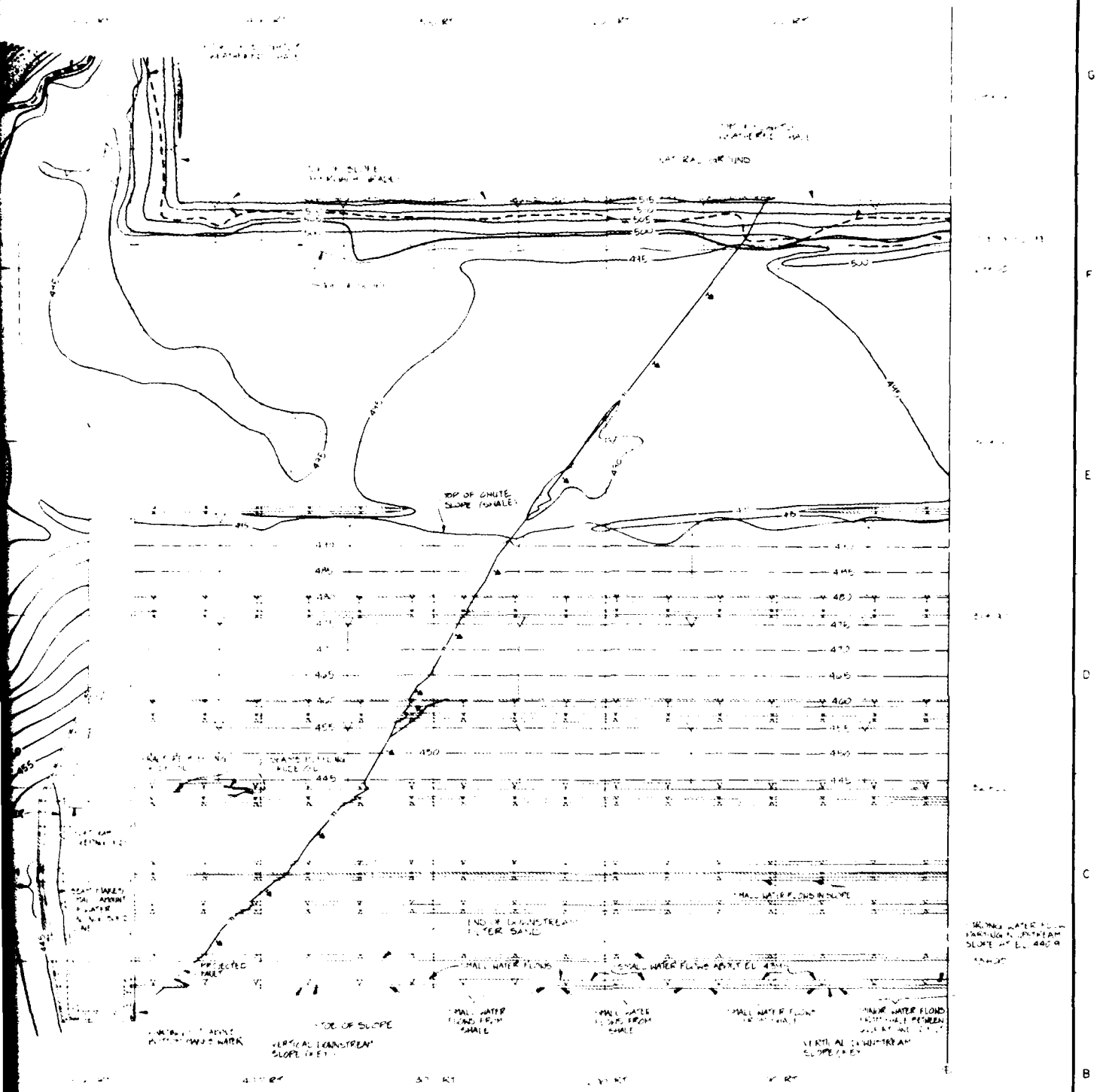
475
470
465
460
455
450
445



30 0 30 60
SCALE OF FEET

2

NOTE
FOR MAPPING SYMBOLS, SEE PLATE 1

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

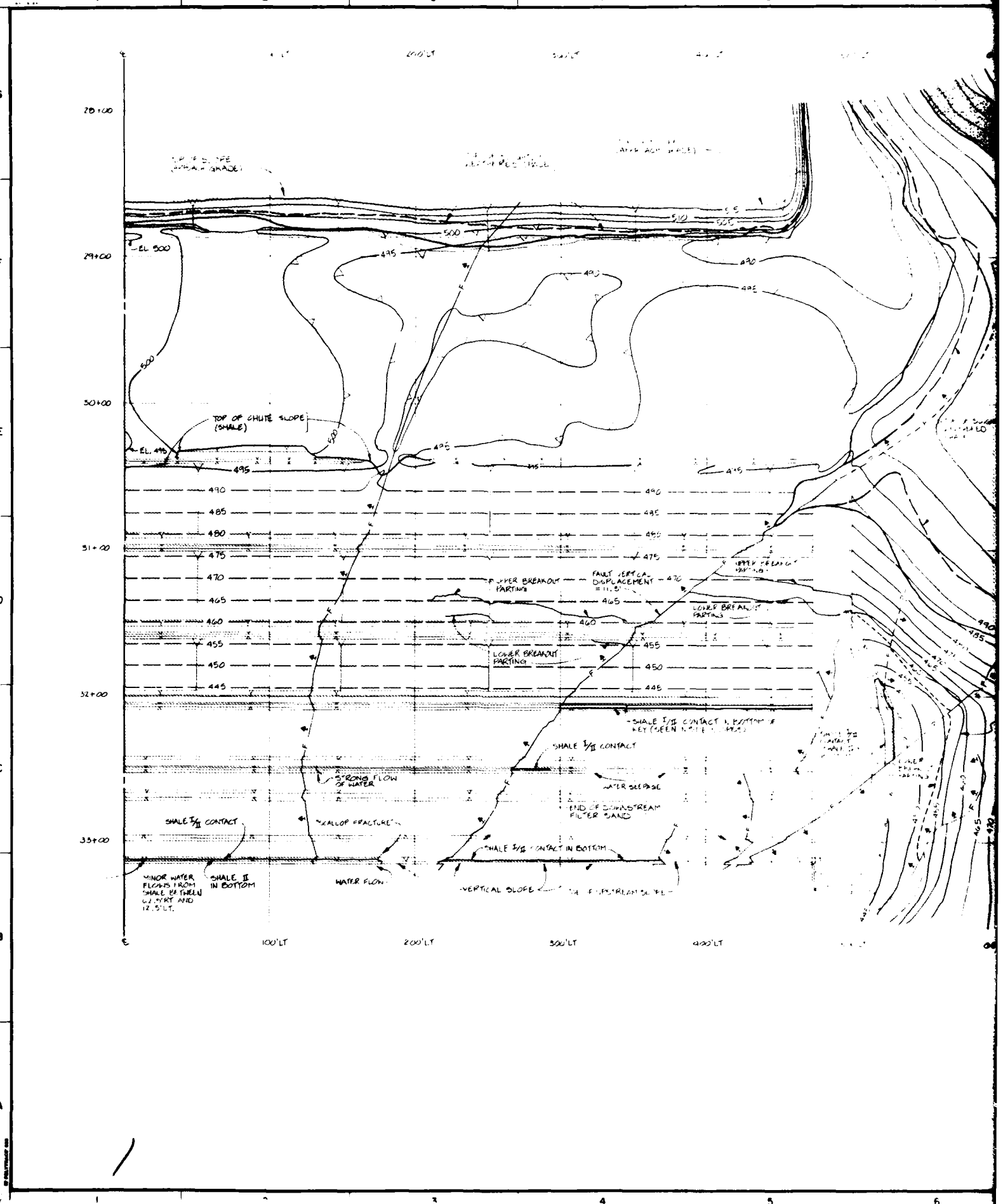
FINAL FOUNDATION REPORT

SPILLWAY
GEOLOGY AND EXCAVATION
RIGHT HALF

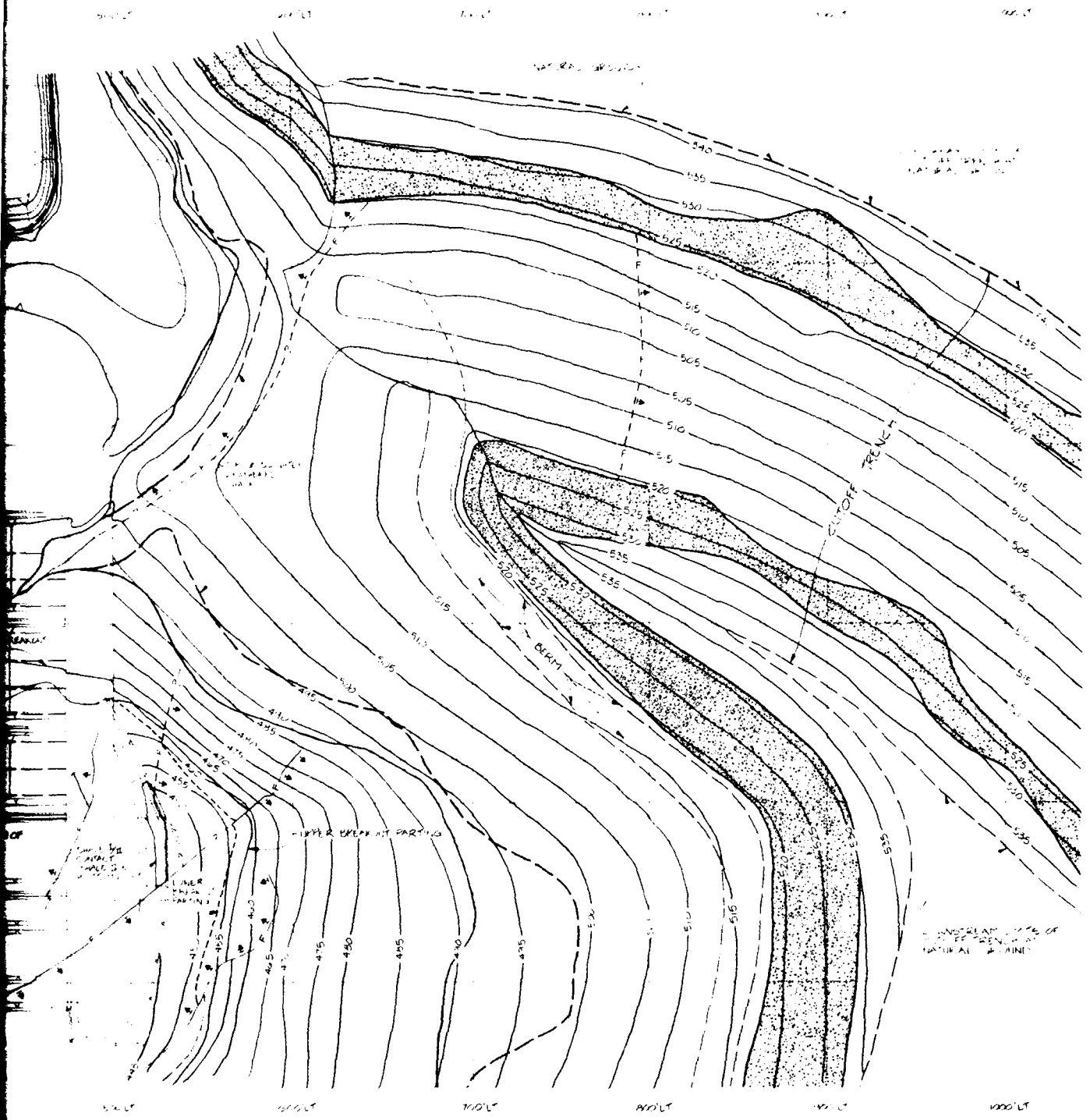
U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 32

TO ACCOMPANY FINAL FOUNDATION REPORT



28+00
29+00
30+00
31+00
32+00
33+00
100'LT
200'LT
300'LT
400'LT
EL 500
EL 495
TOP OF CHUTE SLOPE (SHALE)
UPPER BREAKOUT PARTING
FAULT VERTICAL DISPLACEMENT = 11.5'
LOWER BREAKOUT PARTING
SHALE I/II CONTACT
STRONG FLOW OF WATER
WATER SEEPAGE
END OF DOWNSTREAM FILTER SAND
SHALE I/II CONTACT
"SCALLOP FRACTURE"
SHALE I/II CONTACT IN BOTTOM
MINOR WATER FLOWS FROM SHALE BETWEEN 62.5'RT AND 12.5'LT.
SHALE II IN BOTTOM
WATER FLOW
VERTICAL SLOPE



GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

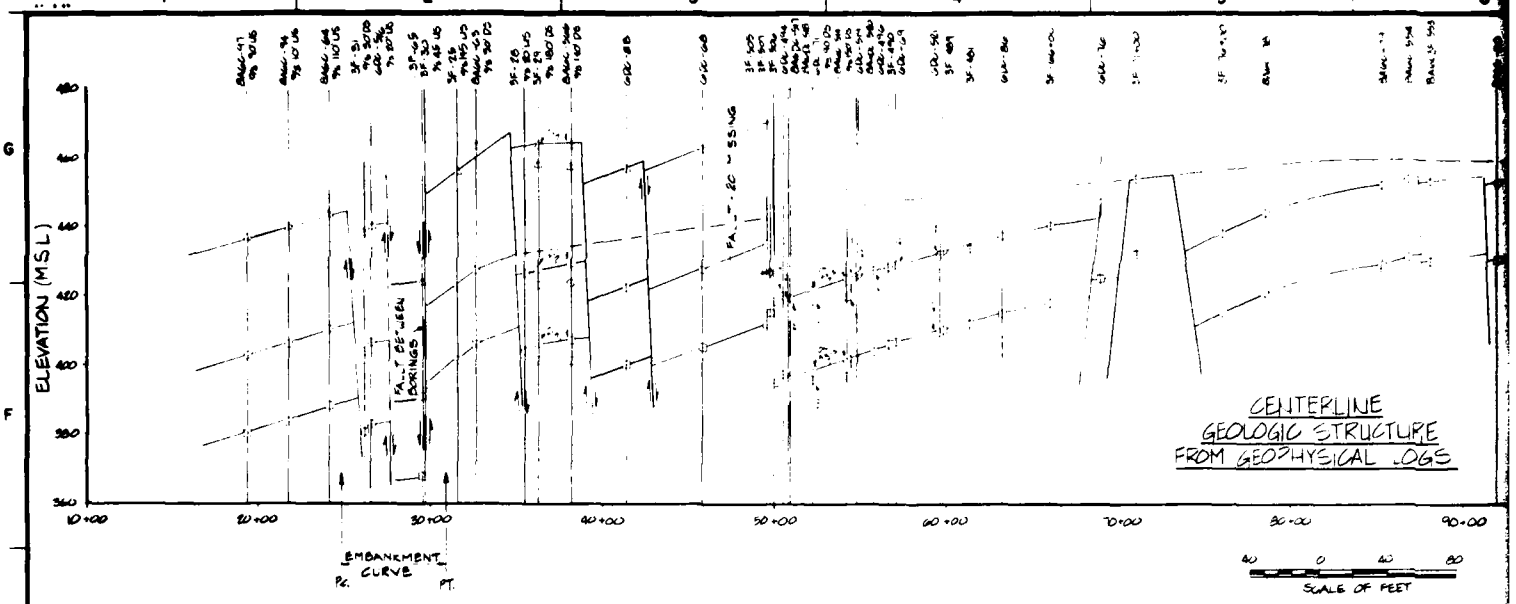
FINAL FOUNDATION REPORT

SPILLWAY
GEOLOGY AND EXCAVATION
LEFT HALF

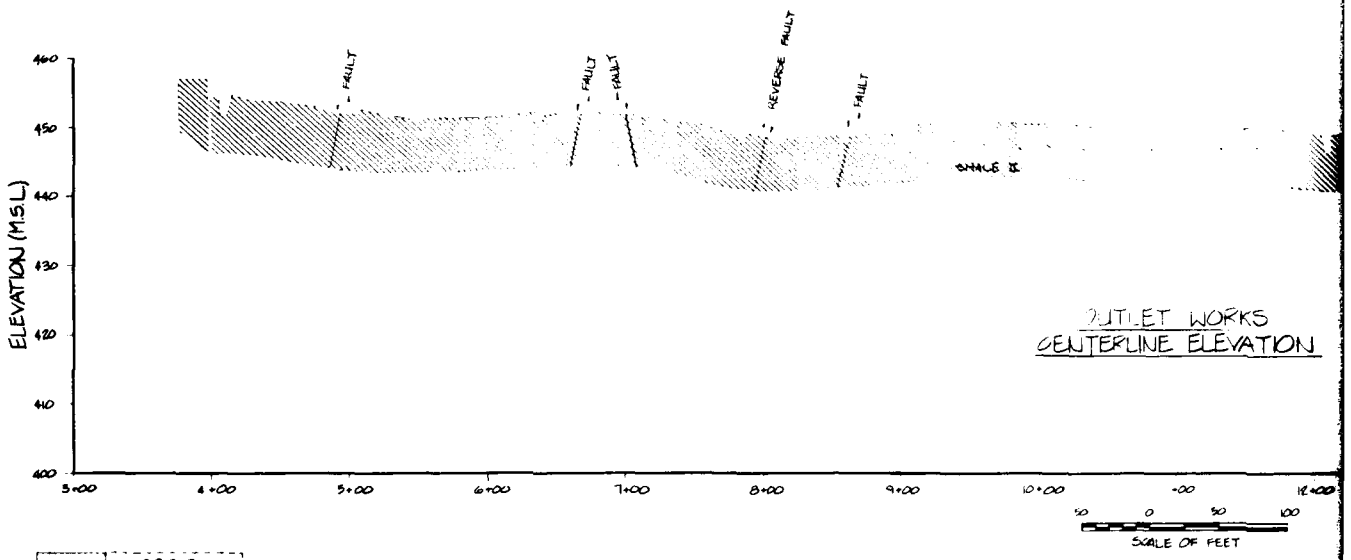
U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 55

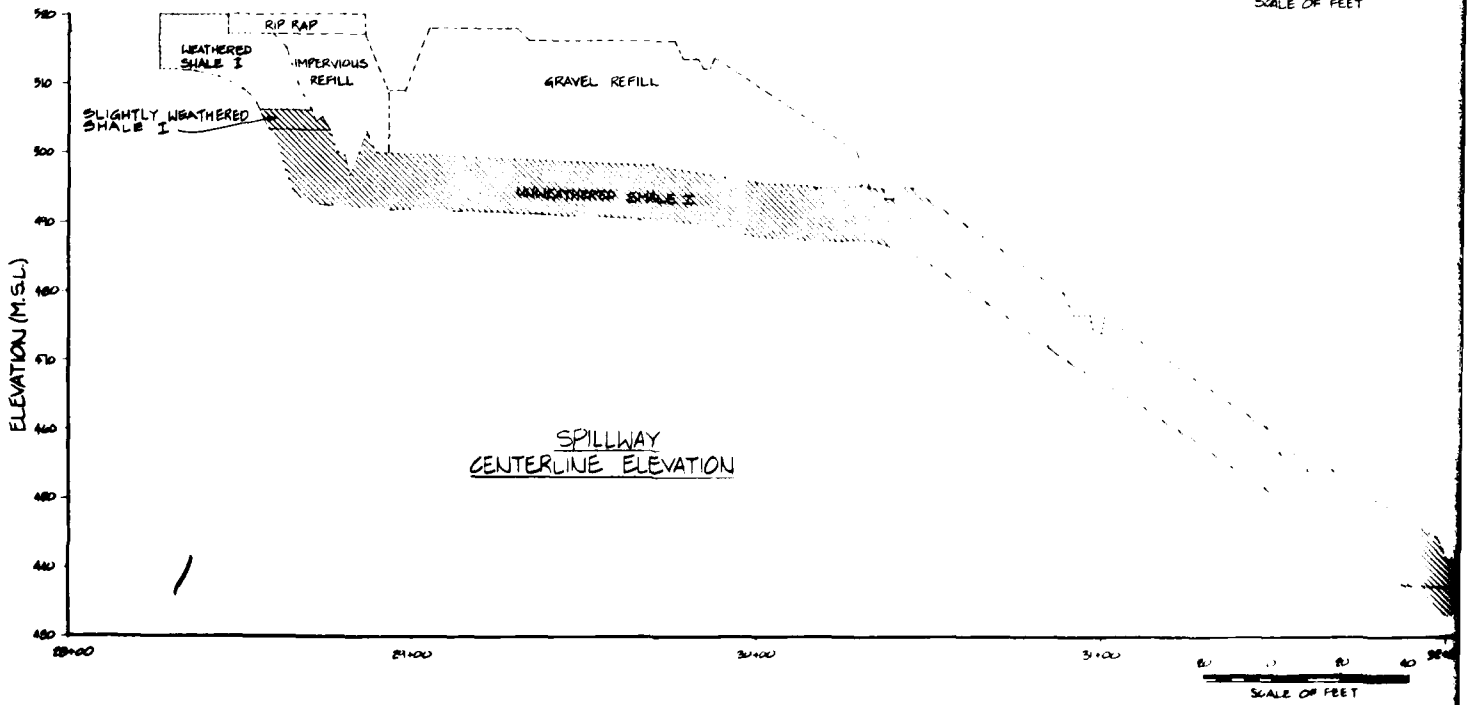
TO ACCOMPANY FINAL FOUNDATION REPORT



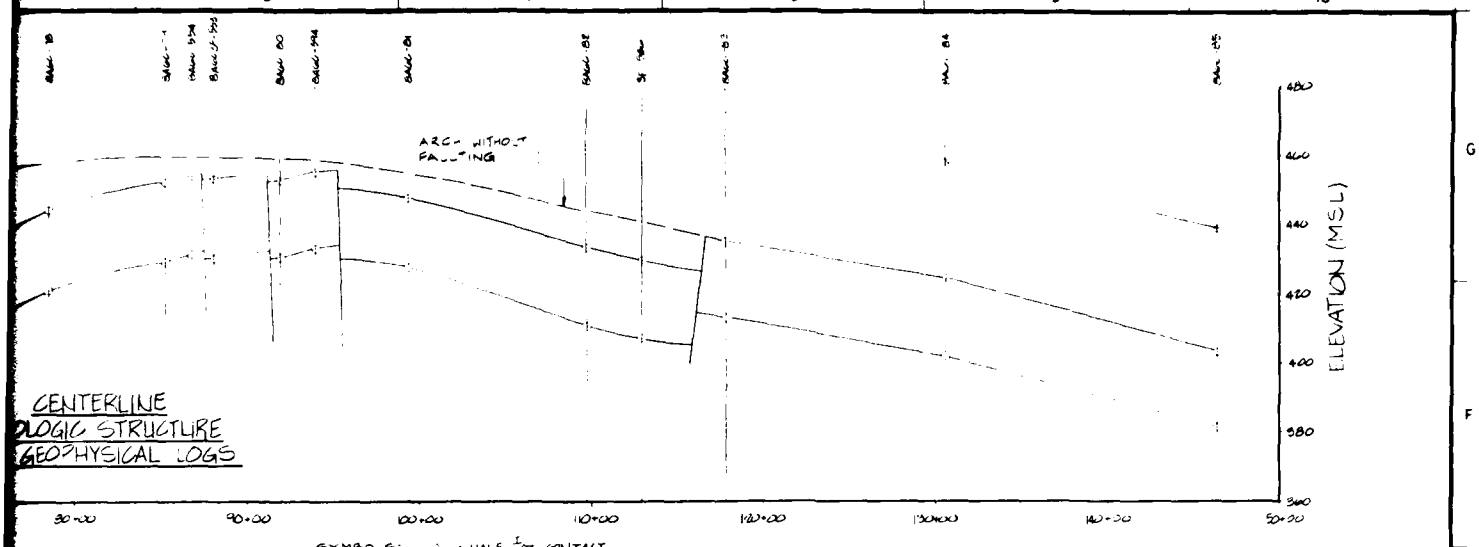
CENTERLINE
GEOLOGIC STRUCTURE
FROM GEOPHYSICAL LOGS



OUTLET WORKS
CENTERLINE ELEVATION



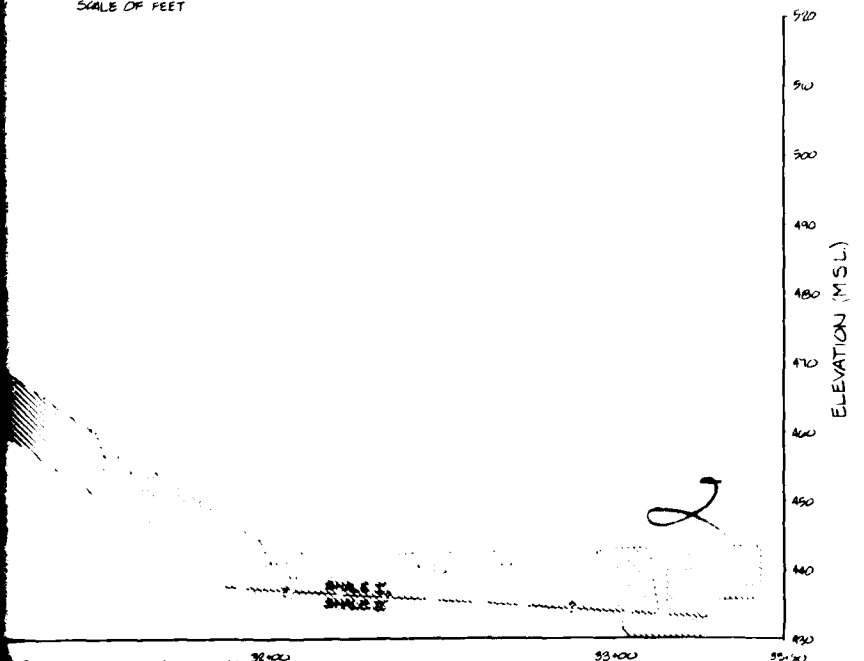
SPILLWAY
CENTERLINE ELEVATION



CENTERLINE
OLOGIC STRUCTURE
GEOPHYSICAL LOGS

SYMBOLS: SHALE I/II CONTACT
BOTTOM OF LOWER DEPOSITIONAL SEAM
SHALE II/III CONTACT

OUTLET WORKS
NTERLINE ELEVATION



NOTE:
FOR MAPPING SYMBOLS. SEE PLATE 11.

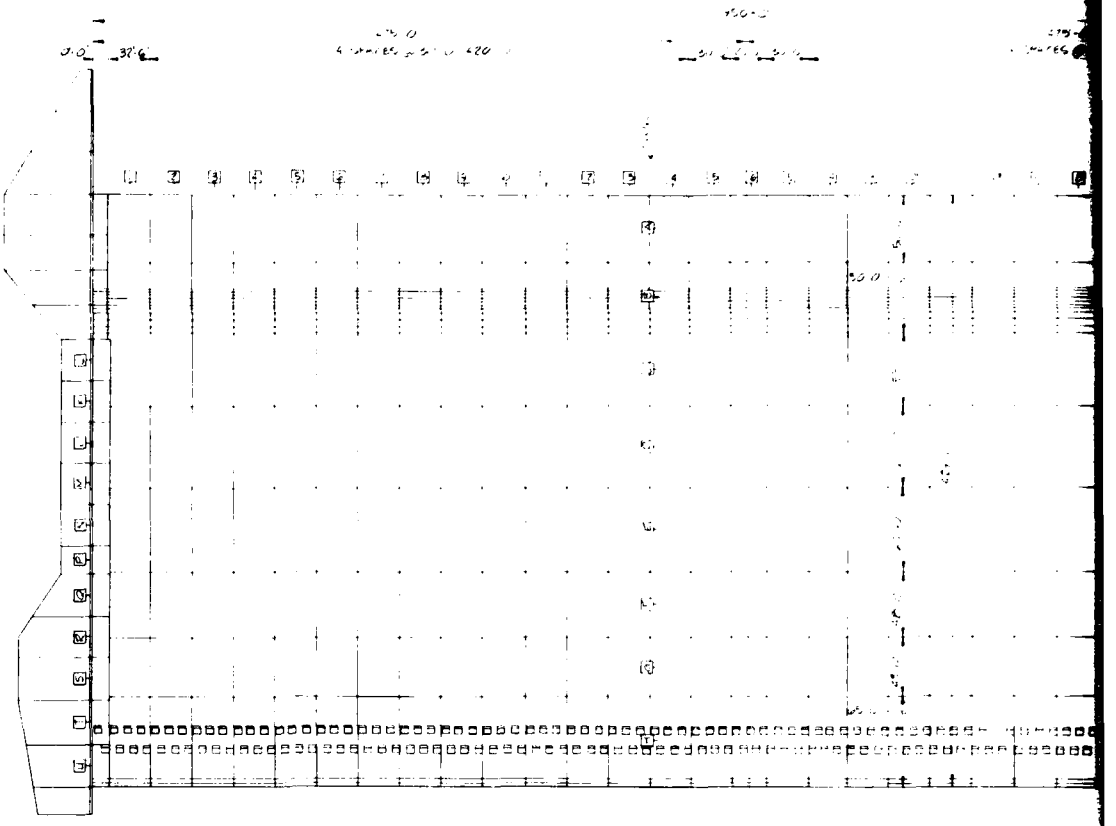
GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

FINAL FOUNDATION REPORT
CENTERLINE GEOLOGIC STRUCTURE
OUTLET CENTERLINE ELEVATION
SPILLWAY CENTERLINE ELEVATION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

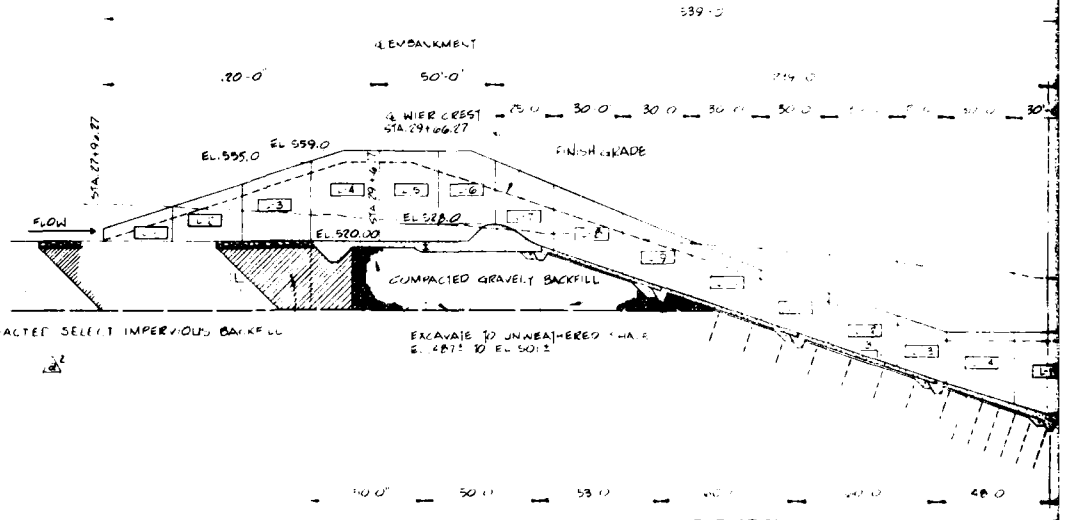
FILE NO PLATE 34

TO ACCOMPANY FINAL FOUNDATION REPORT



PLAN

SCALE 1 INCH = 50 FEET



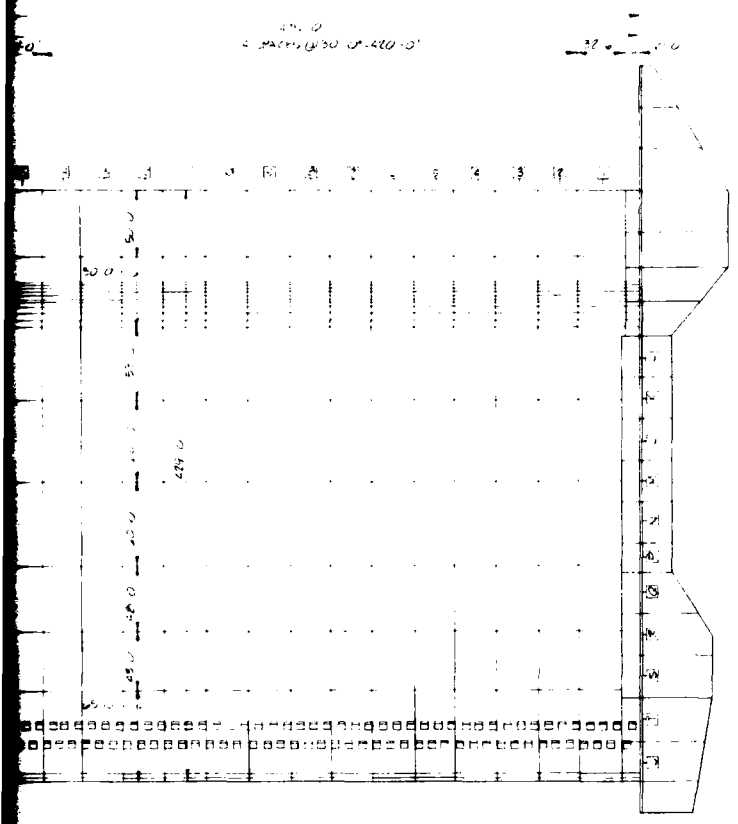
ELEVATION

SCALE 1 INCH = 30 FEET

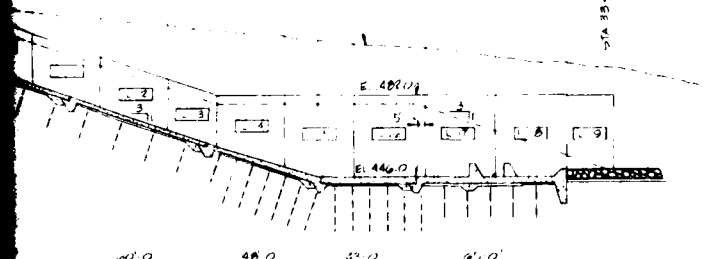
TENSION BAR LAP AND EMBEDMENTS

f_c	f_y	BAR SIZE	LAP LENGTH (INCHES) TOP BARS	LAP LENGTH (INCHES) OTHER BARS	EMBEDMENT (LENGTH IN) TOP BARS	EMBEDMENT (LENGTH IN) OTHER BARS
4000 PSI	60,000 PSI	5	13	12	12	12
		6	18	13	14	12
		7	22	16	17	12
		8	27	19	20	15
		9	33	24	26	19
		10	44	32	34	24
		11	56	40	43	31
		14	71	51	55	39
		18	87	62	67	48
					91	65

TO ACC



APPROX TOP OF NATURAL GROUND @ ℄ SPILLWAY



GENERAL NOTES

ALL CONCRETE SURFACES SHALL BE FINISHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS AND AS OUTLINED BELOW

A. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A CLASS "B" FINISH UNLESS OTHERWISE NOTED.

B. CLASS "B" FINISH SHALL EXTEND -0' BELOW FINISH GRADE OR TOP OF FUTURE BACKFILL EXCEPT WHERE FINISH GRADE IS SHALE IN WHICH CASE THE FINISH SHALL EXTEND ONLY TO SHALE.

C. ALL EXPOSED SURFACES OF THE BAFFLE BLOCKS SHALL BE CLASS "C" FINISH.

D. ALL CONCRETE SURFACES ONE FOOT OR MORE BELOW FINISH GRADE OR BACKFILL AND FORMED CONSTRUCTION AND CONTRACTION JOINTS SHALL BE CLASS "D" FINISH.

F. ALL UNFORMED SURFACES EXCEPT CONSTRUCTION JOINTS SHALL HAVE A WOOD FLOAT FINISH AS INDICATED IN THE SPECIFICATIONS.

2. ALL CONTRACTION AND CONSTRUCTION JOINTS IN EXPOSED FORMED SURFACES SHALL BE CHAMFERED ¾" UNLESS OTHERWISE SHOWN OR NOTED.

3. ALL JOINTS IN THE SPILLWAY SLAB SHALL HAVE TOOLED EDGES OF THE RADIUS SHOWN ON THE DRAWINGS.

4. CONTRACTION JOINTS SHALL HAVE NO SPECIAL JOINT CLEANING AND NO JOINT MATERIAL EXCEPT TWO COATS OF BITUMINOUS PAINT.

5. ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS UNLESS OTHERWISE SHOWN.

6. A. THE SECTIONS OF THE SPILLWAY SLAB AS DIVIDED BY CONSTRUCTION JOINTS SHALL BE PLACED IN ALTERNATE SECTIONS, FORMING A "CHECKER BOARD" PATTERN. THERE SHALL BE A MINIMUM TIME OF 72 HOURS BETWEEN PLACING ADJACENT SECTIONS. CLOSURE SECTIONS NEXT TO THE RETAINING WALLS SHALL NOT BE PLACED UNTIL RETAINING WALLS AND SPILLWAY SLAB HAVE BEEN PLACED AND THEN PLACED IN ALTERNATE SECTIONS.

F. THE CONTRACTOR MAY AT HIS OPTION USE CONTINUOUS PAVING FOR THE CHUTE AND STILLING BASIN SLABS C THROUGH H SHOWN ON SEQ 51. THERE IS NO RESTRICTION AS TO WIDTH OF LANE TO BE USED. IF THIS OPTION IS CHOSEN THE SLABS SHALL BE PLACED IN ALTERNATE LANES WITH A MINIMUM TIME OF 72 HOURS BETWEEN PLACING ADJACENT LANES. CLOSURE SECTIONS NEXT TO THE RETAINING WALLS SHALL NOT BE PLACED UNTIL THE RETAINING WALLS AND SPILLWAY SLAB HAVE BEEN PLACED. CONSTRUCTION JOINTS ARE REQUIRED BETWEEN LANES AND AT THE END OF A DAYS RUN.

7. CONCRETE IN LABS IN HORIZONTAL FILL SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI @ 28 DAYS.

8. TO SECURE A VERTICAL OR NEAR VERTICAL CUT IN THE SHALE THE CONTRACTOR MAY USE ANY METHOD OF EXCAVATION APPROVED BY THE CONTRACTING OFFICER. NO PAYMENT WILL BE MADE FOR OVERBREAKAGE BEYOND EXCAVATING LIMITS SHOWN WHERE CONCRETE IS PLACED AGAINST FACE OF SHALE CUT. THE CONTRACTOR WILL BE REQUIRED TO REPLACE ANY OVERBREAKAGE WITH CONCRETE AT HIS EXPENSE.

9. PNEUMATICALLY PLACED CONCRETE SHALL BE PLACED ON THE VERTICAL OR NEAR VERTICAL SHALE CUTS AS SHOWN ON THE DRAWINGS.

10. THE PAYLINE FOR SHALE EXCAVATIONS AT VERTICAL OR NEAR VERTICAL CUTS SHALL BE THE SHALE SIDE OF THE 1½" PNEUMATIC CONCRETE.

11. FOR BRIDGE NOTES SEE SEQ 10.

12. REINFORCING

A. REINFORCING SHALL NOT EXTEND THROUGH CONTRACTION JOINTS.

B. REINFORCING STEEL WILL BE A.S.T.M.-A-615 GRADE 40 OR 60 UNLESS OTHERWISE NOTED.

C. REINFORCING FOR THE SPILLWAY SLAB INCLUDING THE APPROACH SLAB, CHUTE SLAB, STILLING BASIN SLAB, BAFFLE BLOCKS, END SILL AND ANCHORS WILL BE A.S.T.M.-A-615 GRADE 60.

D. UNLESS OTHERWISE NOTED LAP SPLICE OR EMBEDMENT LENGTHS SHALL CONFORM TO THE APPLICABLE TABLE ON THIS SHEET.

E. ALL PRIMARY REINFORCING UNLESS OTHERWISE NOTED SHALL HAVE A CONCRETE COVER OF 4 INCHES WHEN PLACED ADJACENT TO FORMED SURFACES & FLOAT FINISH SURFACE PROTECTIVE CONCRETE OR PNEUMATICALLY PLACED CONCRETE AND 6 INCHES WHEN PLACED AGAINST THE GROUND.

F. ALL REINFORCING SHALL BE CUT 4 INCHES CLEAR OF CONTRACTION AND EXPANSION JOINTS AND NONE SHALL PASS THROUGH THE JOINTS EXCEPT DOWELS WHICH SHALL BE AS DETAILED.

G. ADDITIONAL LAP SPLICES ARE PERMISSIBLE PROVIDED NO MORE THAN ONE HALF OF THE BARS ARE SPLICED WITHIN ANY ONE LAP LENGTH IN THE RETAINING WALL BASE NO LAPS WILL BE PERMITTED WITHIN 5 FEET OF THE FRONT FACE OF THE WALL UNLESS OTHERWISE DETAILED. ALL ADDITIONAL SPLICES ARE AT CONTRACTORS EXPENSE. NO PAYMENT FOR REINFORCEMENT IN THESE SPLICES WILL BE MADE.

H. RETAINING WALL REINFORCEMENT HAS BEEN DETAILED PRIMARILY BY THE USE OF CROSS SECTIONS. ADDITIONAL DETAILING OF MONOLITH LIFT REINFORCEMENT IS SHOWN ON SEQ 51 TO PROVIDE GENERAL GUIDANCE IN DEVELOPING THE PLAN AND ELEVATION VIEWS NECESSARY TO CONSTRUCT THE WALLS.

J. LONGITUDINAL REINFORCING IN THE RETAINING WALLS IS NOT DETAILED FULLY IN THE SECTIONS PROVIDE #6@12 C.C. IN EACH FACE UNLESS OTHERWISE SHOWN.

K. CONSTRUCTION JOINTS MAY BE PROVIDED BETWEEN THE SPILLWAY SLAB & THE CUTOFF KEYS TO FACILITATE PLACEMENT OF CONCRETE NEITHER THE CHECKER BOARD PATTERN OR THE CONTINUOUS CONCRETE PAVING OPTION. THE PROPOSED CONSTRUCTION JOINTS SHALL BE SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.

3. ABBREVIATION SERIES SHALL MEAN 300 OR 400 SERIES TYPE AUSTENITIC CORROSION RESISTING STEEL BOLTS SHALL CONFORM TO FED SPEC FF-B-575C AND NUTS SHALL CONFORM TO FED SPEC FF-N-836C.

4. WELDING SERIES SHALL CONFORM TO LATEST AMER WELDING SOCIETY SPECIFICATIONS.

TENSION BAR LAP AND EMBEDMENTS

f'c	fy	BAR SIZE	LAP LENGTH (INCHES) TOP BARS	LAP LENGTH (INCHES) OTHER BARS	EMBEDMENT LENGTH (IN) TOP BARS	EMBEDMENT LENGTH (IN) OTHER BARS
3000 PSI	40000 PSI	3	12	12	12	12
		4	12	12	12	12
		5	15	12	12	12
		6	19	14	15	12
		7	26	19	20	15
		8	34	25	26	19
		9	43	32	33	25
		10	54	40	42	32
		11	67	48	52	37
		14			11	51
3000 PSI	60000 PSI	3	15	2	12	2
		4	20	15	6	2
		5	25	19	11	12
		6	30	20	22	16
		7	39	28	30	21
		8	51	36	40	28
		9	64	46	49	36
		10	81	58	63	45
		11	100	72	77	55
		14			136	96

1. TOP BARS ARE HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 2 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
2. LAP LENGTHS SHOWN ARE FOR CLASS "B" SPLICES. LAP LENGTHS AND EMBEDMENTS SHOWN ARE FOR BARS SPACED LATERALLY 2 6" OR MORE AND 2 3" FROM THE SIDE FACE IN ACCORDANCE WITH ACI 318.

NO	DATE	DESCRIPTION OF REVISION
4	AS BUILT 10 DEC 80	REVISED AS BUILT
3	SEPTEMBER 1978	ADDED CLARIFICATIONS TO GENERAL NOTES
2	JUNE 1978	REV TO REFLECT AS BUILT CHANGES
1	5 DEC 75	KEY NOTES, ELEVATION & WING WALL

U S ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH TEXAS

DESIGNED BY W.G.S.
DRAWN BY C.M.B.
CHECKED BY G.E.L.
SUBMITTED BY
ENGINEER

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

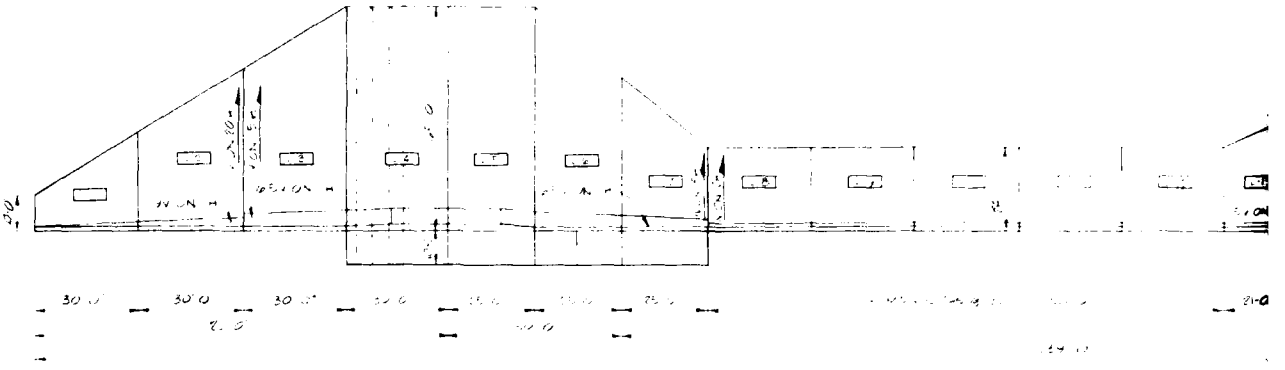
SPILLWAY

PLAN, ELEVATION AND GENERAL NOTES

CONTR NO DACW63-76-B-0012 DATED NOV 1976
DRAWING NUMBER 32.2 SHEET NO 32 SEQUENCE NO

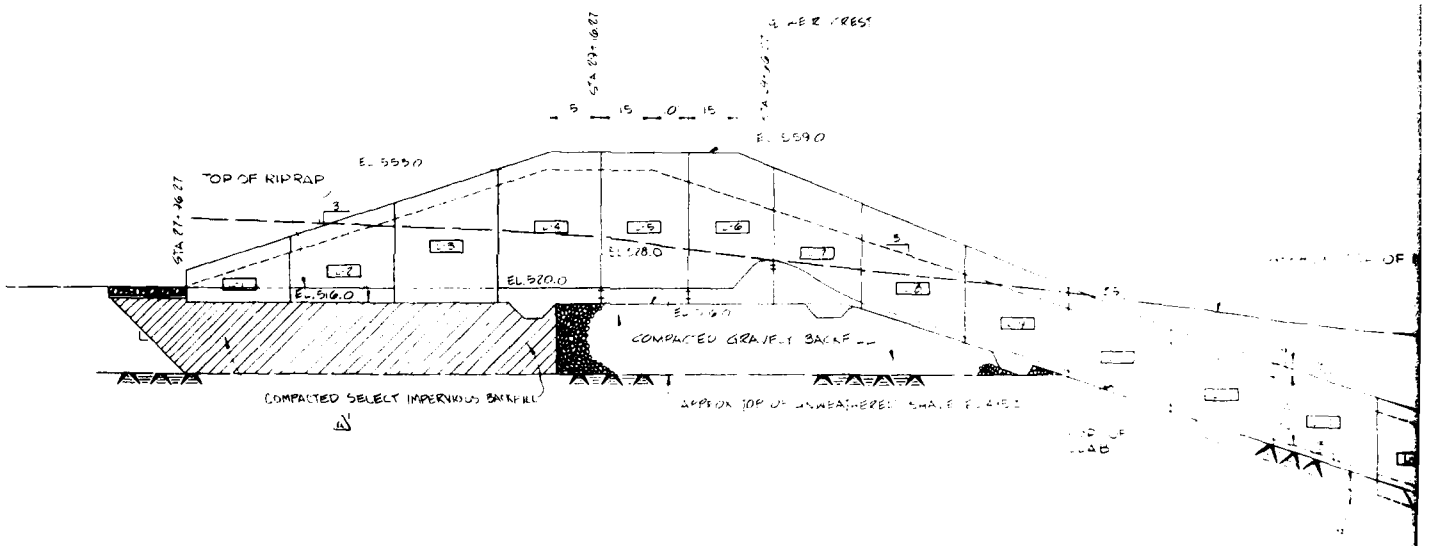
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 35

SUPERSEDES SHEET 32.1 OF WORK AS BUILT



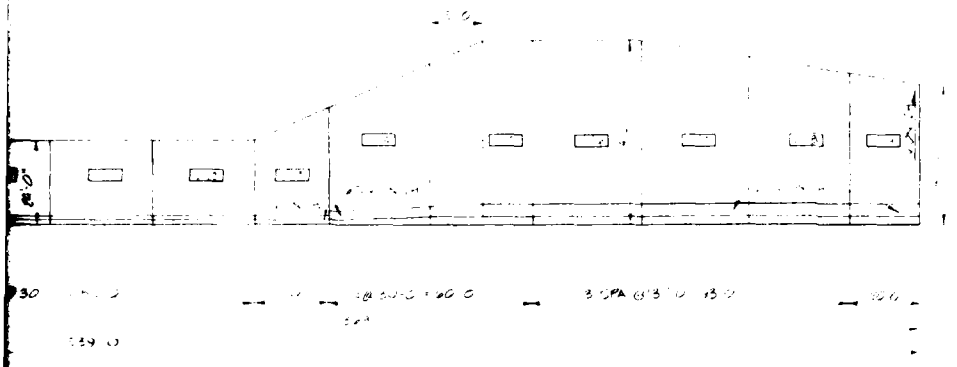
PLAN

SCALE 1 INCH = 20 FEET



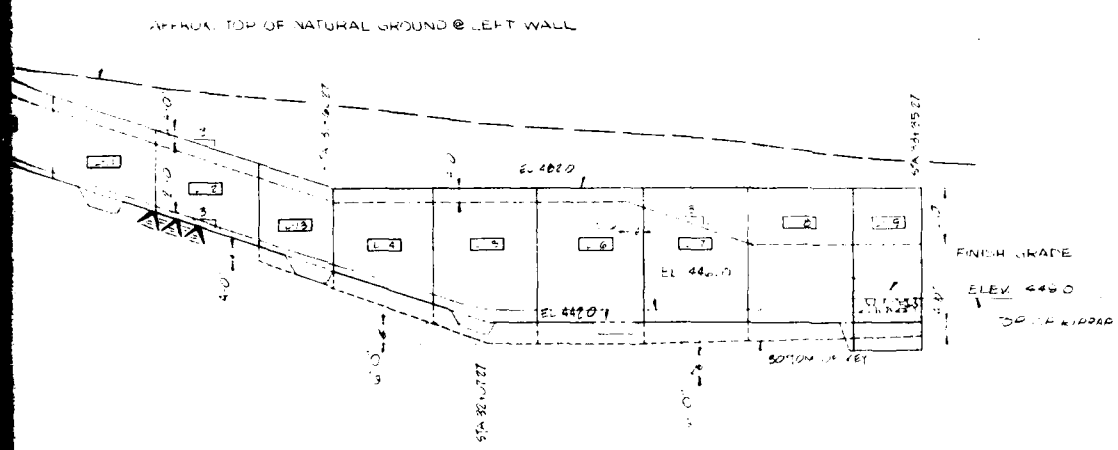
ELEVATION

SCALE 1 INCH = 20 FEET



PLAN

SCALE: 1 INCH = 20 FEET



ELEVATION

1 INCH = 20 FEET

NOTES:
1. FOR GENERAL NOTES SEE SEQ. 32.

SYM	CO. NO.	ACTION	DATE	DESCRIPTION OF REVISION
1		AS BLT	10 DEC 80	REVISED AS BUILT
2		AM #0001	5 DEC 75	REVISED TO REFLECT W.I. CHANGES

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

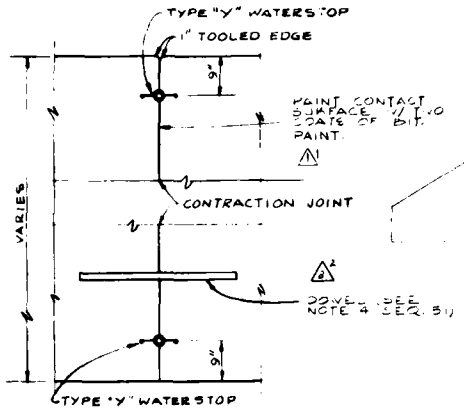
SPILLWAY
RETAINING WALL
PLAN AND ELEVATION

DESIGNED BY: R.W.
DRAWN BY: C.N.B.
CHECKED BY: C.S./C.E.
SUBMITTED BY:
ENGINEER:

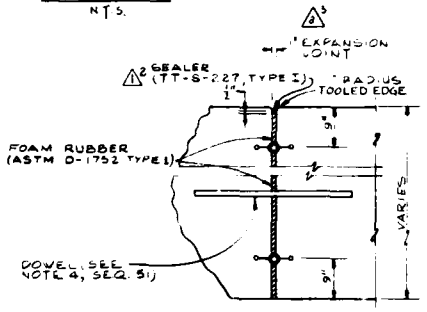
INV. NO. DACW63-76-B-0012 | DATE: NOV. 1975
CONTR. NO.
DRAWING NUMBER | SHEET NO. OF | SEQUENCE NO. 33

2

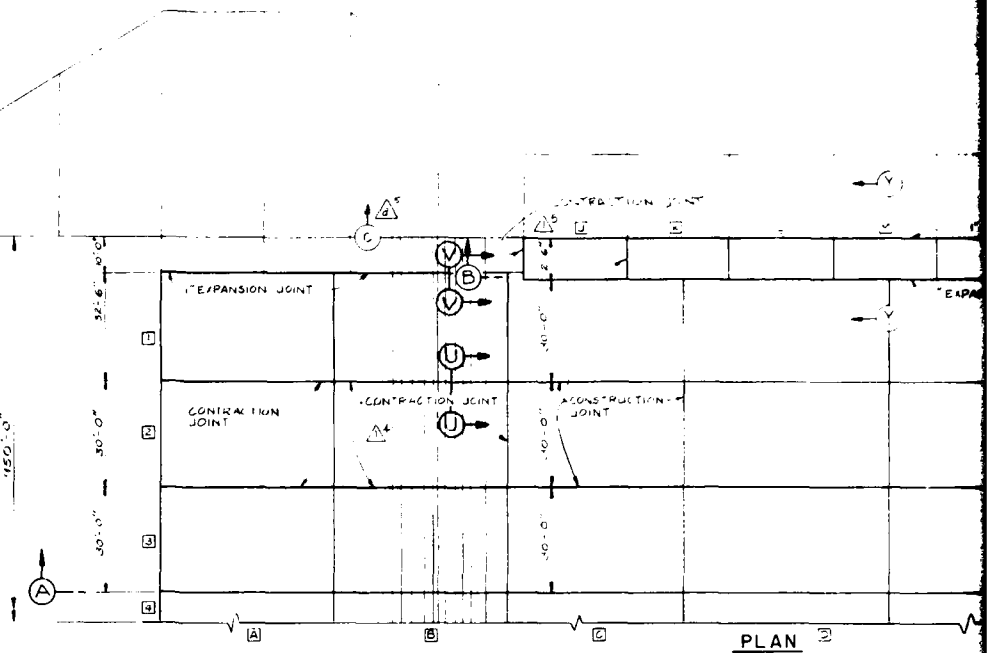
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 36

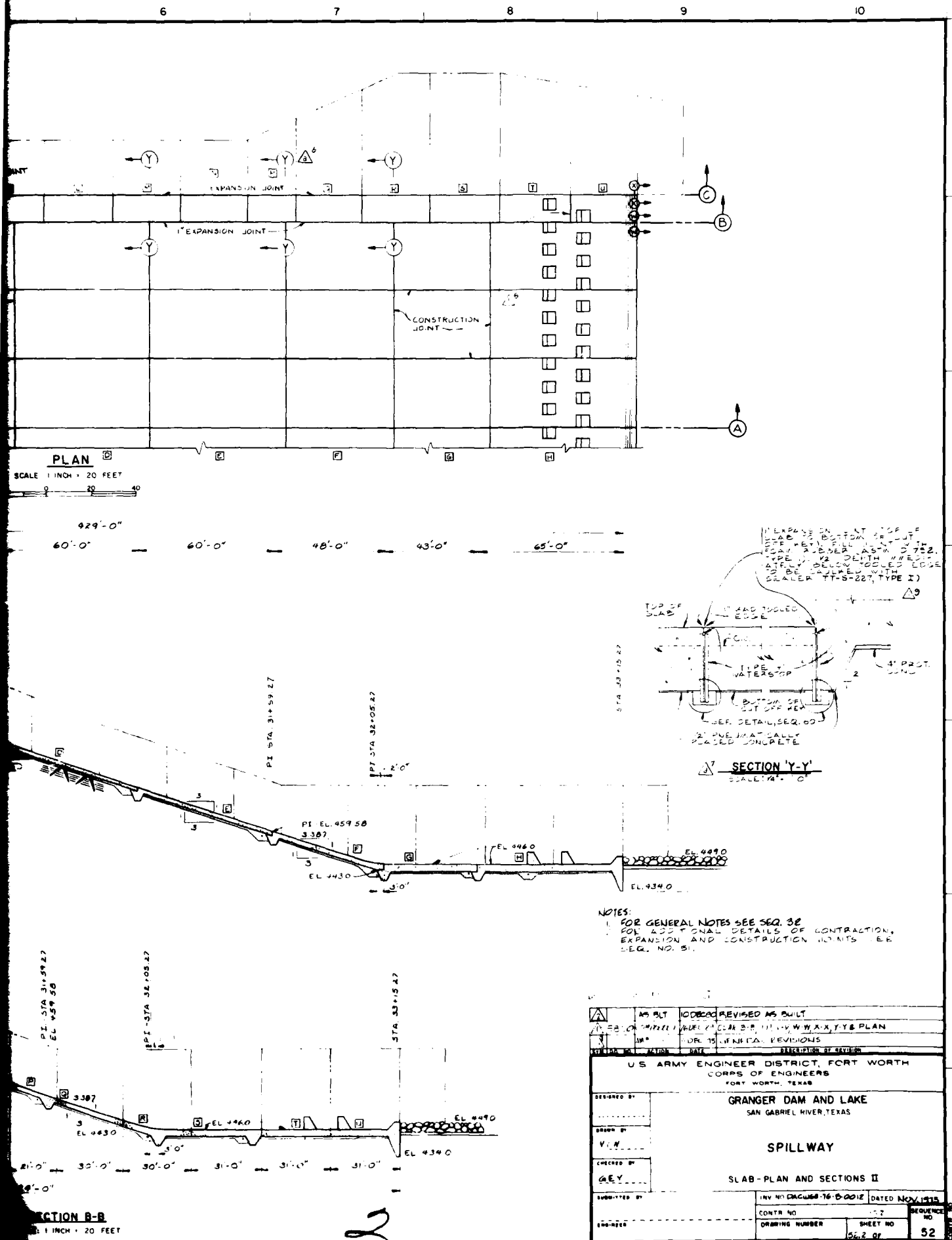


SECTION U-U
N.T.S.



SECTION V-V
N.T.S.


CONTRACTION JOINT
1" EXPANSION JOINT
CONTRACTION JOINT
CONSTRUCTION JOINT
150'-0"
50'-0"
50'-0"
50



NOTES:
1. FOR GENERAL NOTES SEE SEQ. 32
2. FOR ADDITIONAL DETAILS OF CONTRACTION, EXPANSION AND CONSTRUCTION JOINTS SEE SEQ. NO. 51.

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION
2		AS BLT	10 DEC 80	REVISED AS BUILT
1	58	[illegible]	16 DEC 74	CLAR B-B, [illegible] W-W, X-X, Y-Y & PLAN
3		[illegible]	[illegible] DEC 75	GENERAL REVISIONS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

SPILLWAY

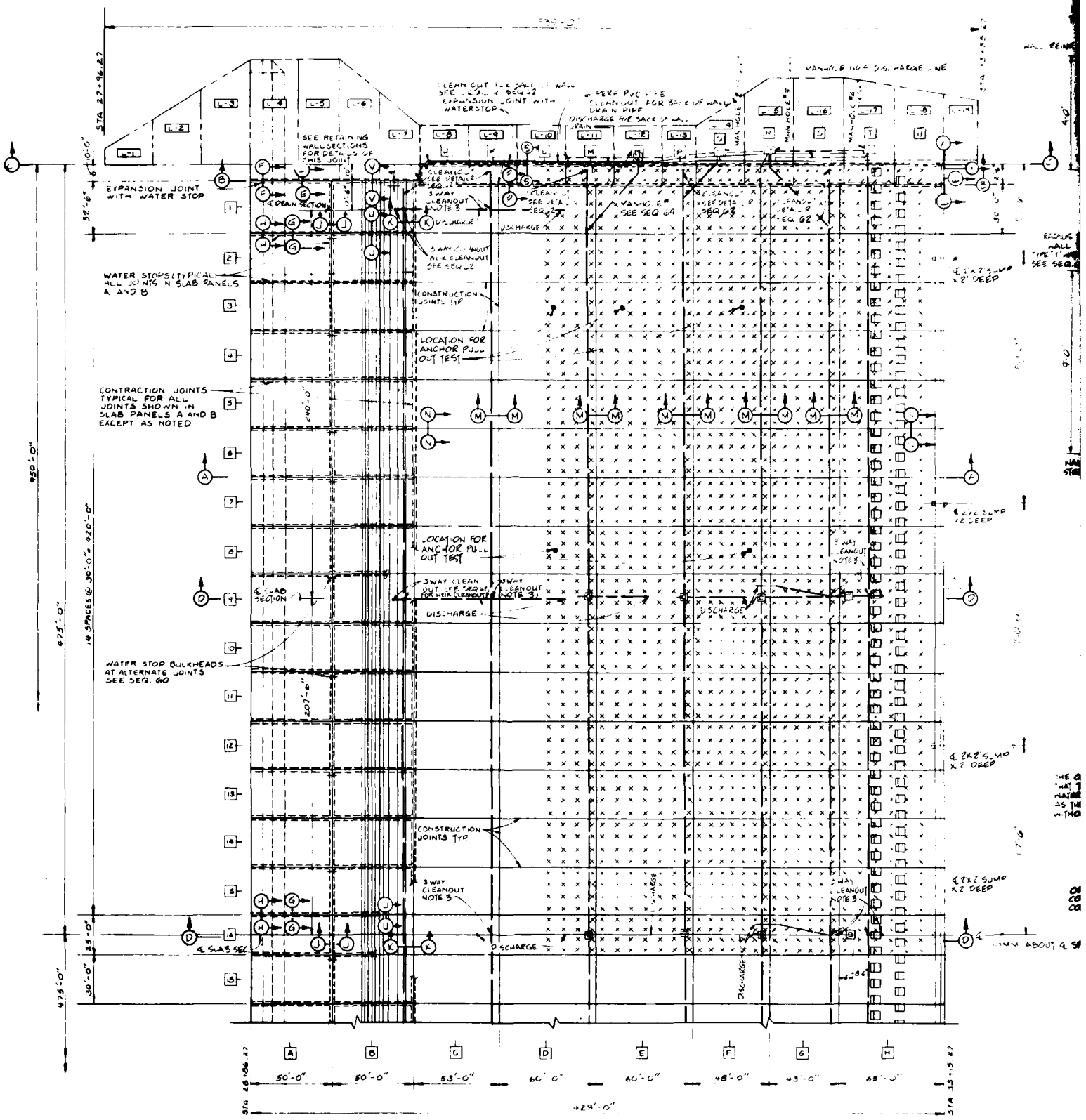
SLAB - PLAN AND SECTIONS II

DESIGNED BY
DRAWN BY VLN
CHECKED BY GEY
SUBMITTED BY
ENGINEER

INV NO DACW68-76-B-0012 | DATED NOV. 1975
CONTR NO
DRAWING NUMBER | SHEET NO 52.2 OF | SEQUENCE NO. 52

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 37 SUPERSEDES SHEET 421


EXPANSION JOINT WITH WATER STOP
WATER STOPS (TYPICAL) ALL JOINTS IN SLAB PANELS A AND B
CONTRACTION JOINTS TYPICAL FOR ALL JOINTS SHOWN IN SLAB PANELS A AND B EXCEPT AS NOTED
WATER STOP BULKHEADS AT ALTERNATE JOINTS SEE SEQ. 60
CONSTRUCTION JOINTS TYP
LOCATION FOR ANCHOR PULL OUT TEST
3 WAY CLEANOUT NOTE 3
DISCHARGE
SEE RETAINING WALL SECTIONS FOR DETAILS OF THIS JOINT
4" PERF PVC PIPE CLEANOUT FOR BACK OF WALL DRAIN
MANHOLE
SEE SEQ 64
SEE SEQ 62
SEE SEQ 32
SEE SEQ 52
SEE SEQ 60
SEE SEQ 63
SEE SEQ 66
SEE SEQ 68
SEE SEQ 72
SEE SEQ 74
SEE SEQ 76
SEE SEQ 78
SEE SEQ 80
SEE SEQ 82
SEE SEQ 84
SEE SEQ 86
SEE SEQ 88
SEE SEQ 90
SEE SEQ 92
SEE SEQ 94
SEE SEQ 96
SEE SEQ

NOTES:
1. FOR GENERAL NOTES, SEE SEQ. 52
2. FOR SLAB, ANY NOTES SHALL NOT BE RELOCATED. SEE SEQ 57 FOR ANCHOR RELOCATION
3. 5 WAY CLEANOUT INCLUDES SECTION G-G AND DETAIL L, SEQ. 62
4. UNLESS OTHERWISE NOTED, DOWELS SHALL BE 1" ℄ SMOOTH BARS x 2'-6" @ 24" O.C.
5. END OF DOWEL SHALL BE GREASED AND PLACED IN EXPANSION CAP (DETAIL "L").
6. FOR SECTION A-A, B-B, SEE SEQ. 52
7. FOR T.W. C-C, SEE SEQ. 6.
8. FOR SECTION D-D SEE SEQ. 62 & 63
9. FOR [illegible] SEE SEQ. 52

DRAWING OF WORK AS BUILT

	AS BLT	10 DEC 68	REVISED AS BUILT
5820	[illegible]	7 DEC 68	CLAR. SECTION E-E F-F & P-P.
	[illegible]	[illegible]	REVISED ENTIRE SHEET
SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

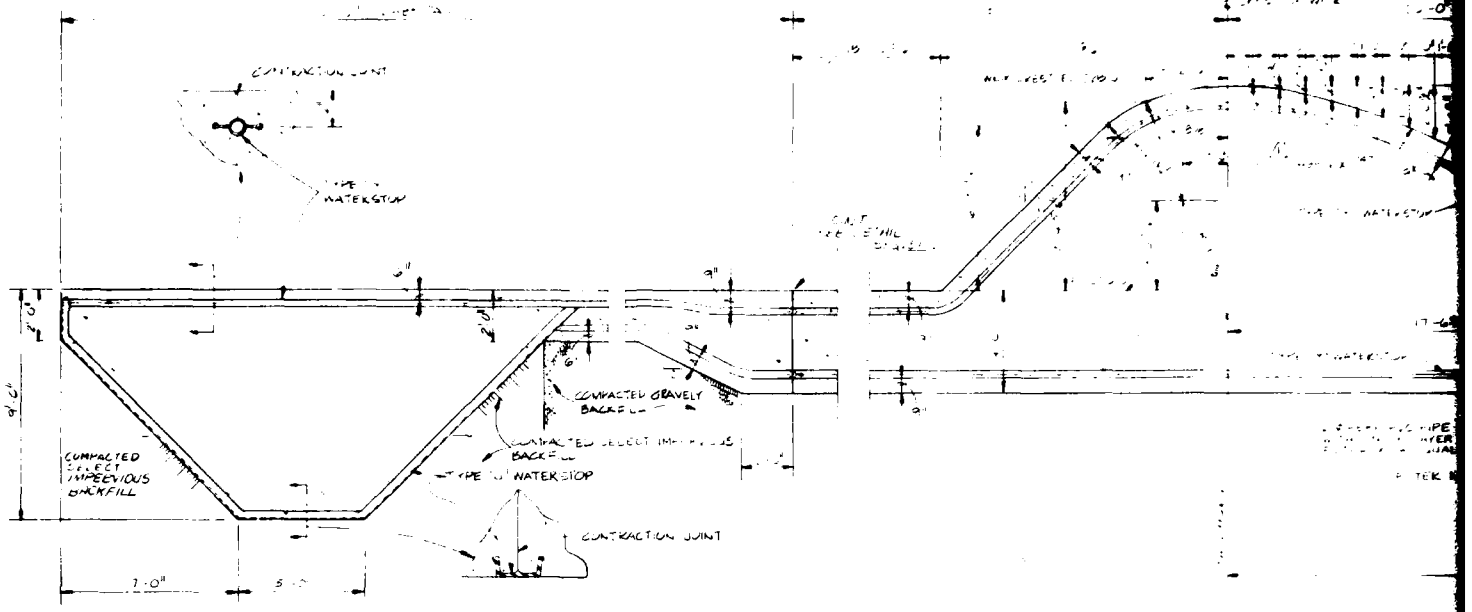
DESIGNED BY
DRAWN BY N.L.N./E.M.B.
CHECKED BY
SUBMITTED BY
ENGINEER

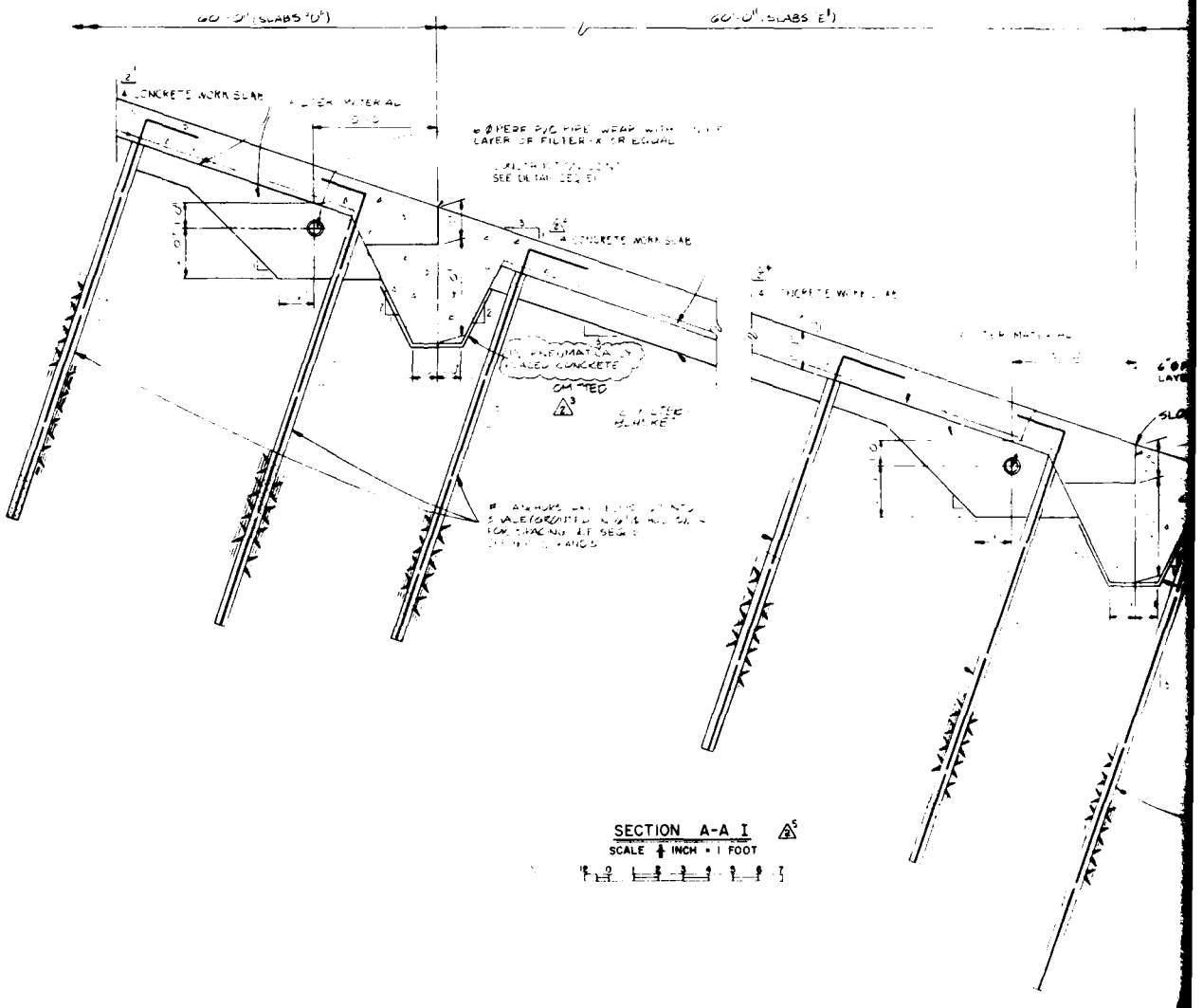
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

SPILLWAY
SLAB PLAN AND SECTIONS

INV NO. [illegible] DATED [illegible]
CONTR NO. [illegible]
DRAWING NUMBER
SHEET NO. 51 of [illegible]
SEQUENCE NO. 51

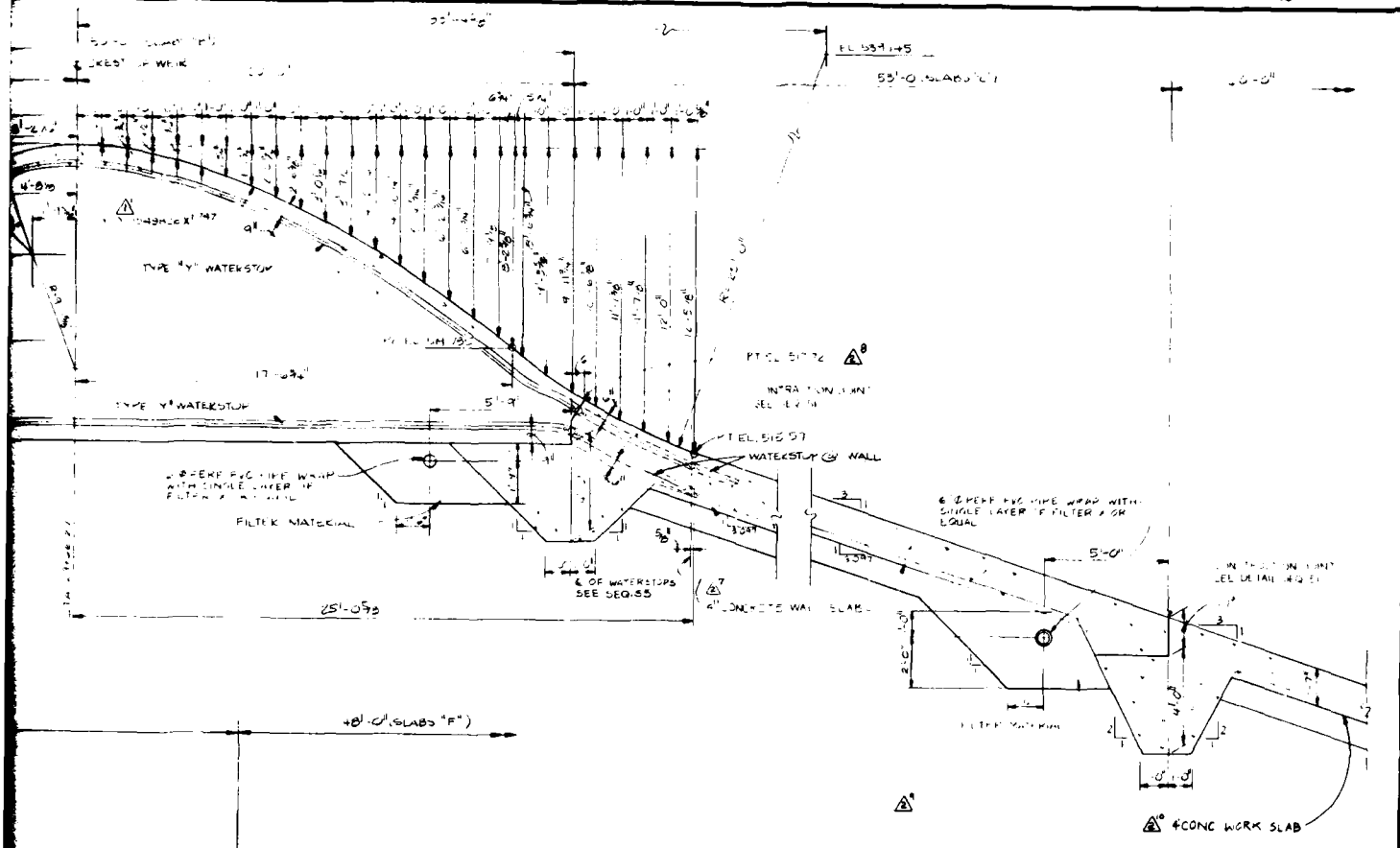
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 38 SUPERSEDES SHEET 51.1



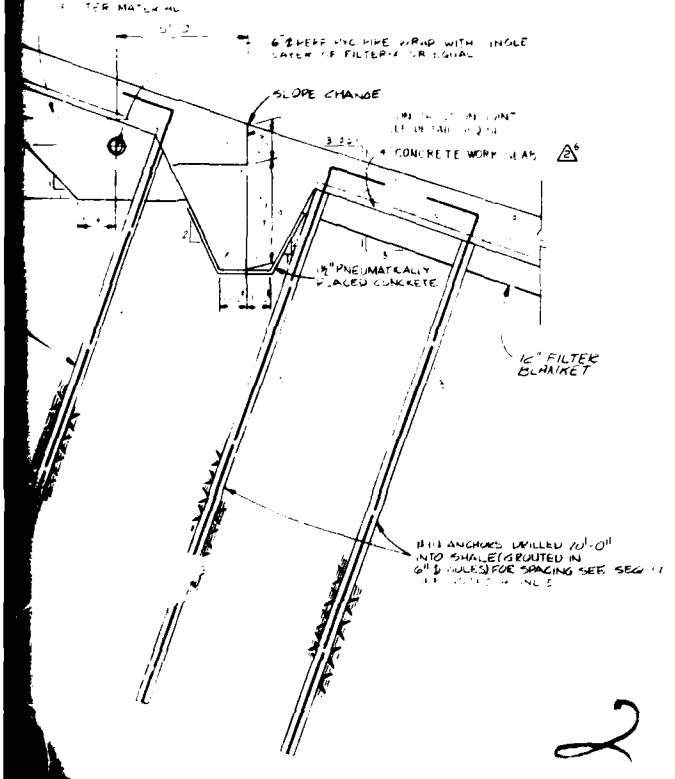


SECTION A-A I

SCALE 1/4 INCH = 1 FOOT



NOTES:
1. FOR GENERAL NOTES, SEE SEQ.
2. FOR WATERSTOP DETAILS SEE SEQ.
3. FOR CONTRACTION AND CONSTRUCTION JOINT DETAILS SEE SEQ. 51 & 52
4. FOR #11 & 14 BAR ANCHORS, THE PORTION OF THE BAR BEGINNING AT THE BOTTOM OF STRUCTURAL CONCRETE AND EXTENDING DOWNWARD A DEPTH OF 5.0' SHALL BE PAINTED WITH TWO COATS OF BITUMINOUS PAINT AND WRAPPED WITH BITUMINOUS IMPREGNATED PAPER. SEE ANCHOR DETAIL, SEQ. 56
5. ANCHOR DEPTHS SHOWN ON THE DRAWING ARE MINIMUM DEPTHS. ACTUAL DEPTHS WILL BE DETERMINED BY PULL OUT TESTS. SEE SPECIFICATIONS.



NO.	ACTION	DATE	DESCRIPTION OF REVISION
4	AS BLT	10 DEC 80	REVISED AS BUILT
3	58	16 DEC 79	CLARIFIED CALL-OUT.
2		5 DEC 78	REV SECTION A-A I & NOTES
1			

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY lk
CHECKED BY

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

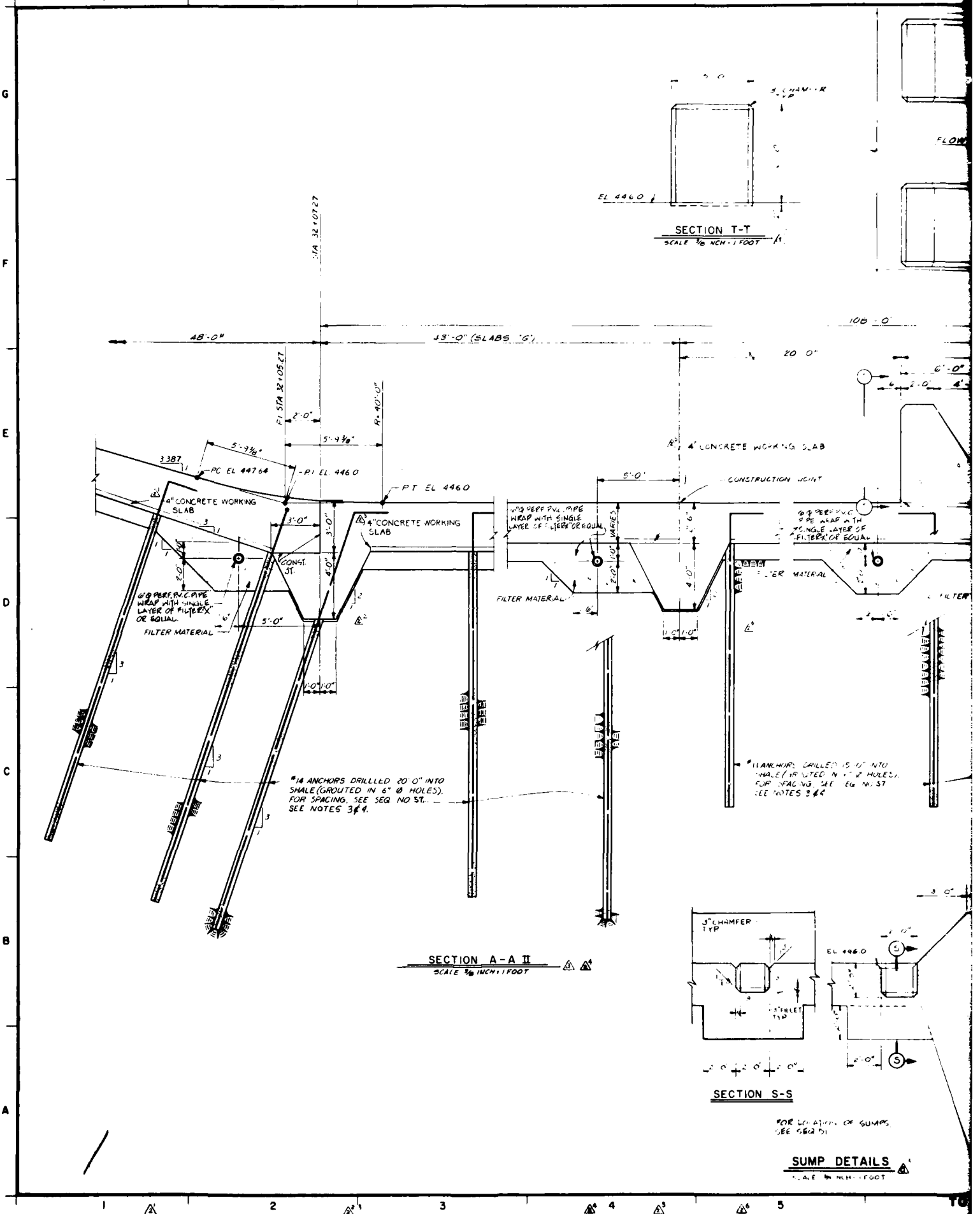
SPILLWAY

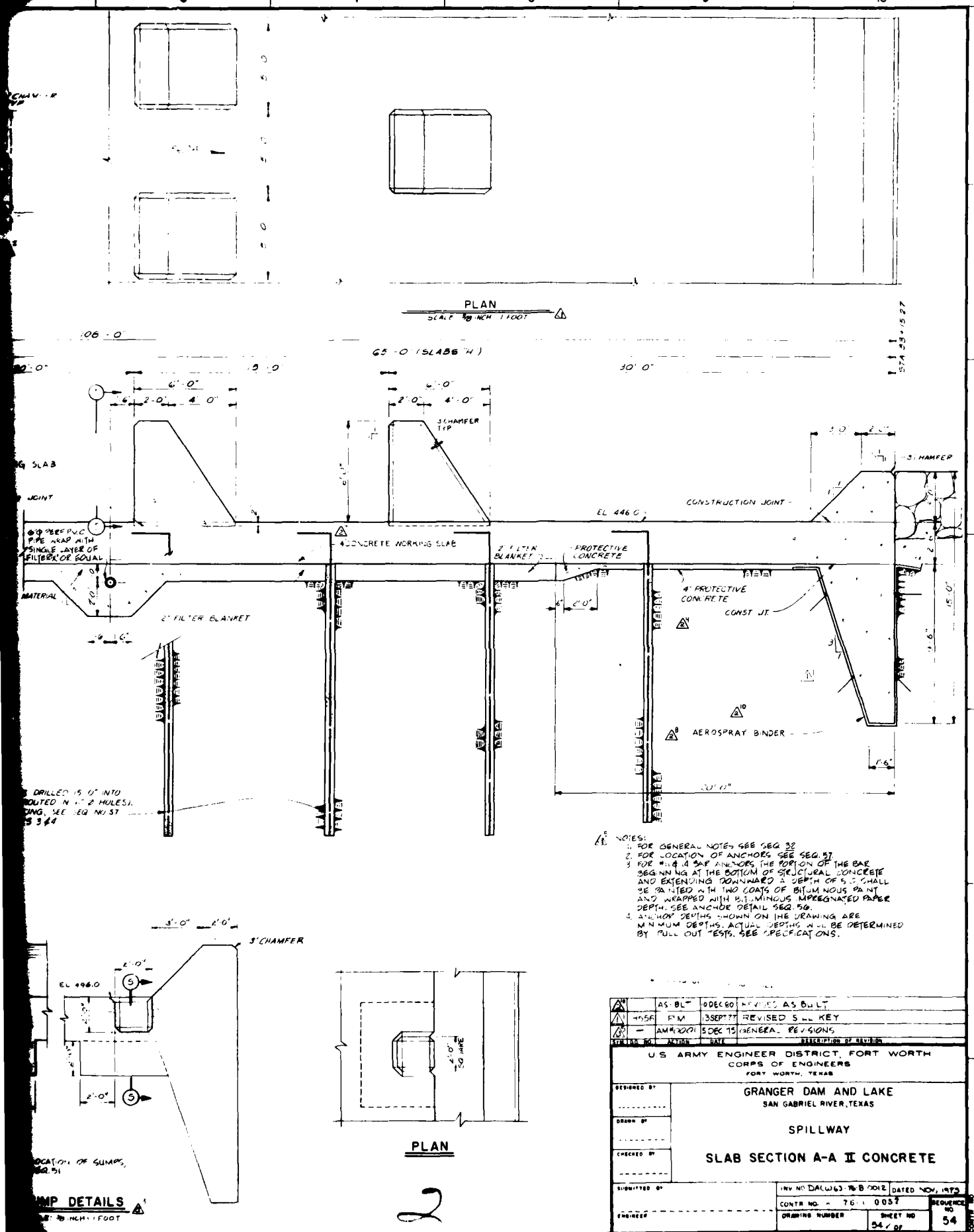
SLAB SECTION
A-A I CONCRETE

SUBMITTED BY
ENGINEER

IRV NO. CA W&F N. R. Y.
CONTR NO
DRAWING NUMBER
SHEET NO 52.2 OF
DATED NOV 1975
SEQUENCE NO 53

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 39 SUPERSEDES SHEET NO. 52.1


SECTION T-T
SCALE 3/8 INCH = 1 FOOT
EL 446.0
3" CHAMFER TYP
STA 32+07.27
STA 32+05.27
48'-0"
33'-0" (SLABS 'G')
100'-0"
20'-0"
R=40'-0"
2'-0"
5'-9 7/8"
3.387
PC EL 447.64
PI EL 446.0
PT EL 446.0
4" CONCRETE WORKING SLAB
CONSTRUCTION JOINT
3'-0"
4'-0"
CONST. JT.
6" Ø PERF. P.V.C. PIPE WRAP WITH SINGLE LAYER OF FILTER-X OR EQUAL
FILTER MATERIAL
5'-0"
1'-0" x 1'-0"
#16 ANCHORS DRILLED 20'-0" INTO SHALE (GROUTED IN 6" Ø HOLES). FOR SPACING, SEE SEQ. NO 57. SEE NOTES 3 & 4.
#11 ANCHORS DRILLED 15'-0" INTO SHALE (GROUTED IN 5" Ø HOLES). FOR SPACING SEE SEQ. NO. 57 SEE NOTES 3 & 4
SECTION A-A II
SCALE 3/8 INCH = 1 FOOT
SECTION S-S
FOR LOCATION OF SUMPS SEE SEQ 51
SUMP DETAILS
SCALE 3/8 INCH = 1 FOOT



NOTES:
1. FOR GENERAL NOTES SEE SEQ 32
2. FOR LOCATION OF ANCHORS SEE SEQ. 57
3. FOR #11 & 14 BAR ANCHORS THE PORTION OF THE BAR BEGINNING AT THE BOTTOM OF STRUCTURAL CONCRETE AND EXTENDING DOWNWARD A DEPTH OF 5.0 SHALL BE PAINTED WITH TWO COATS OF BITUMINOUS PAINT AND WRAPPED WITH BITUMINOUS IMPREGNATED PAPER DEPTH. SEE ANCHOR DETAIL SEQ. 56.
4. ANCHOR DEPTHS SHOWN ON THE DRAWING ARE MINIMUM DEPTHS. ACTUAL DEPTHS WILL BE DETERMINED BY PULL OUT TESTS. SEE SPECIFICATIONS.

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION
2		AS-BLT	10 DEC 80	REVISED AS BUILT
1	4556	PM	13 SEPT 77	REVISED SILL KEY
3	—	AM#0001	5 DEC 75	GENERAL REVISIONS

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

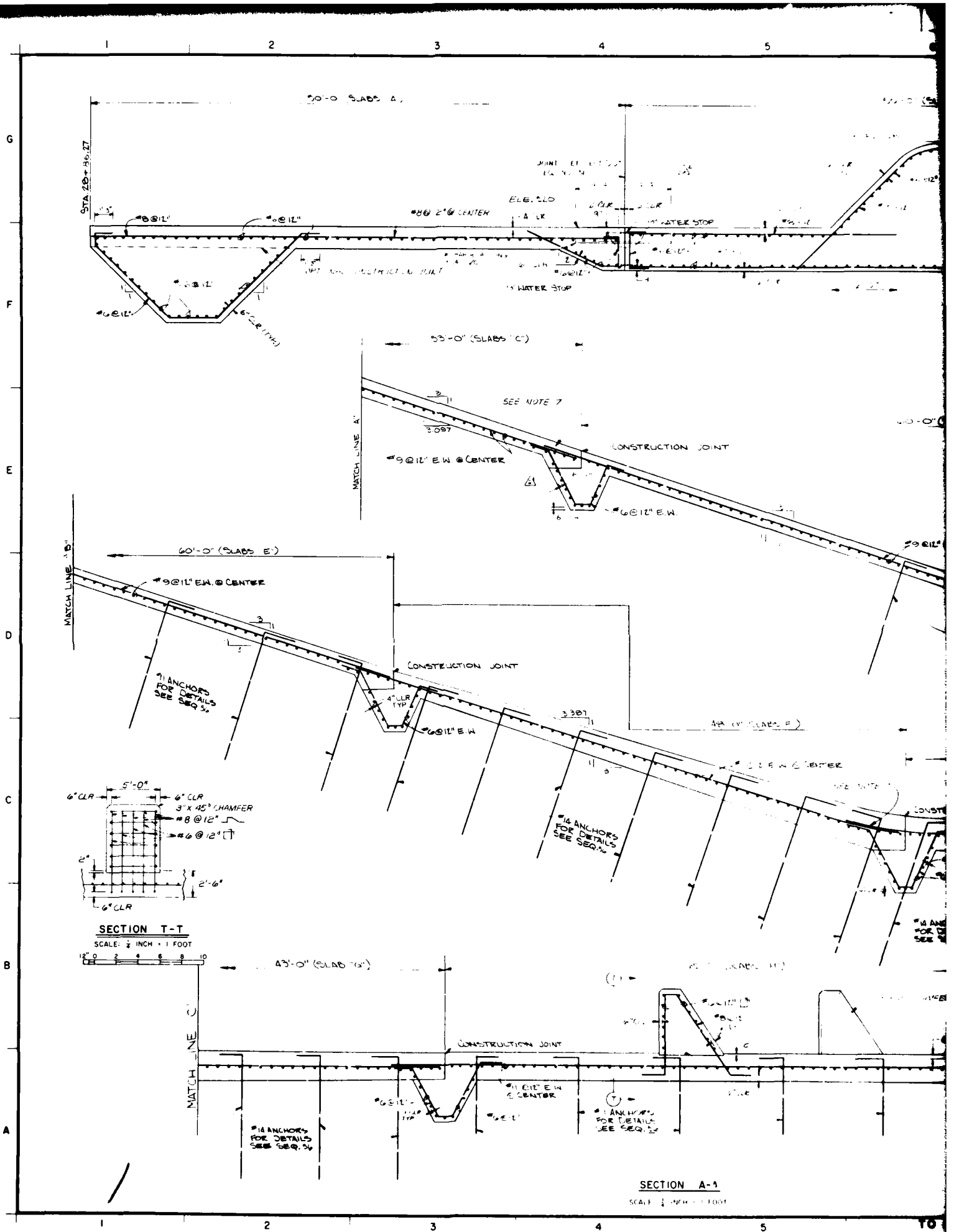
SPILLWAY

SLAB SECTION A-A II CONCRETE

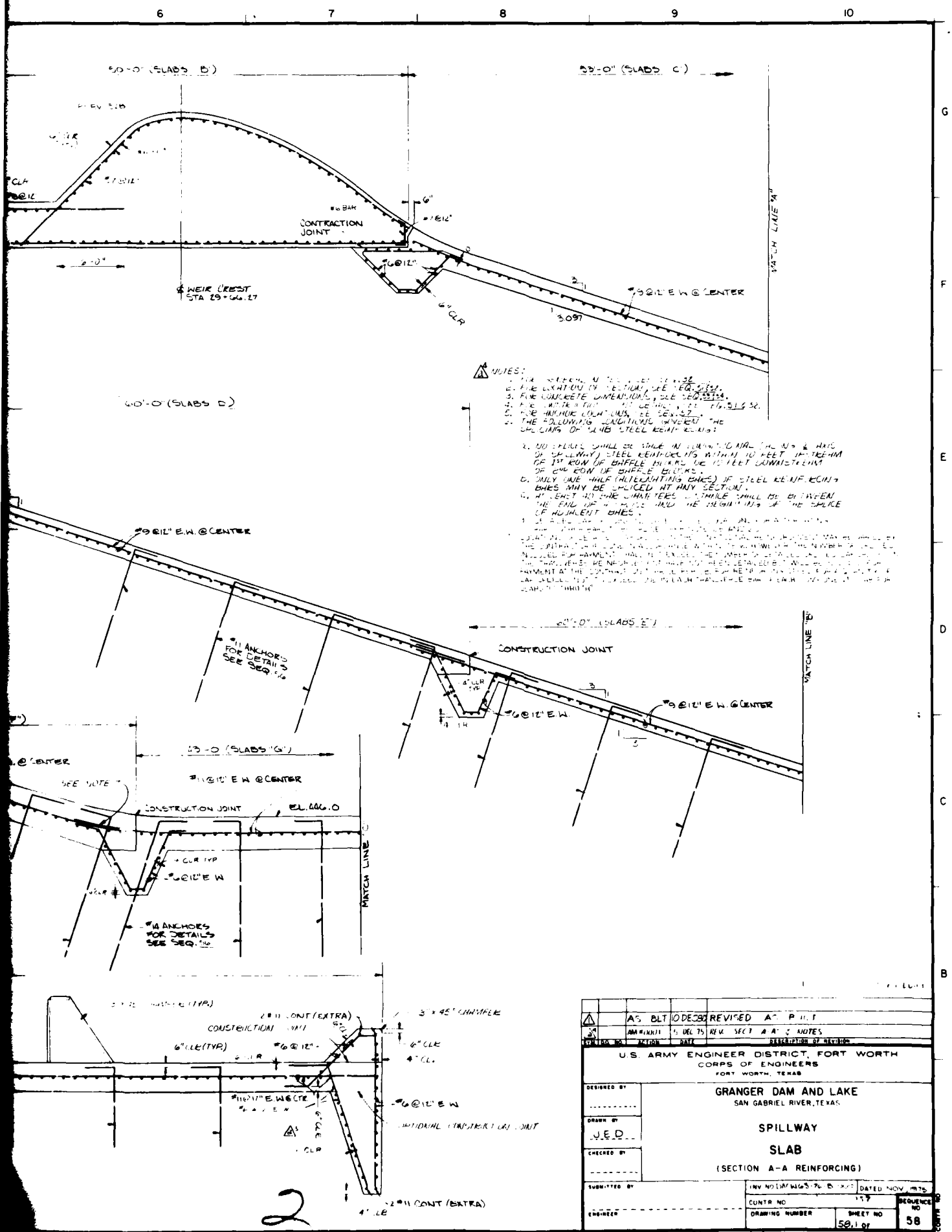
DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

INV NO DACW63-76-B-0012 | DATED NOV, 1975
CONTR NO. 76-1-0057
DRAWING NUMBER | SHEET NO 54 of | SEQUENCE NO 54

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 40 SUPERSEDES SHEET 54.1



50'-0" (SLABS "A")
STA 28+86.27
#8@12"
#6@12"
#8@ 2" @ CENTER
ELE. 520
WATER STOP
6" CLR (TYP)
53'-0" (SLABS "C")
SEE NOTE 7
3.097
MATCH LINE "A"
CONSTRUCTION JOINT
#9@12" E.W. @ CENTER
#6@12" E.W.
60'-0" (SLABS "E")
MATCH LINE "B"
#9@12" E.W. @ CENTER
CONSTRUCTION JOINT
#11 ANCHORS FOR DETAILS SEE SEQ. 56
4" CLR TYP
#6@12" E.W.
3.387
#14 ANCHORS FOR DETAILS SEE SEQ. 56
5'-0"
6" CLR
6" CLR
3" x 45° CHAMFER
#8 @ 12"
#6 @ 12"
2"
2'-6"
6" CLR
SECTION T-T
SCALE: 1/4 INCH = 1 FOOT
43'-0" (SLAB "G")
MATCH LINE "C"
CONSTRUCTION JOINT
#11 @12" E.W. @ CENTER
#14 ANCHORS FOR DETAILS SEE SEQ. 56
SECTION A-A



SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION
1		AS BLT	10 DEC 80	REVISED AS BUILT
2		AM #0001	5 DEC 75	REV. SECT A-A & NOTES

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY

DRAWN BY J.E.D.

CHECKED BY

SUBMITTED BY

ENGINEER

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

SPILLWAY

SLAB

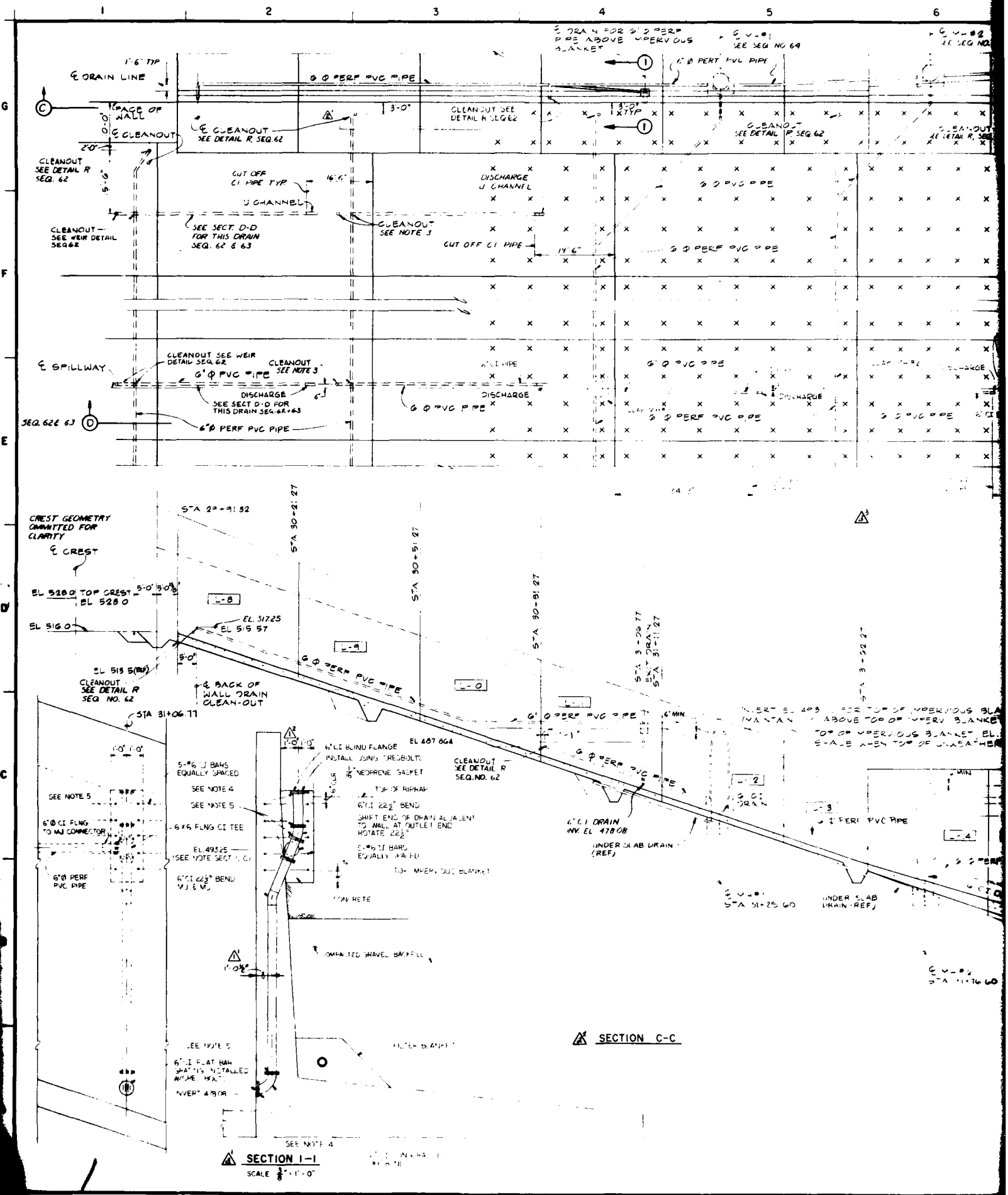
(SECTION A-A REINFORCING)

INV NO DACW63-76-B-0007 | DATED NOV 1975

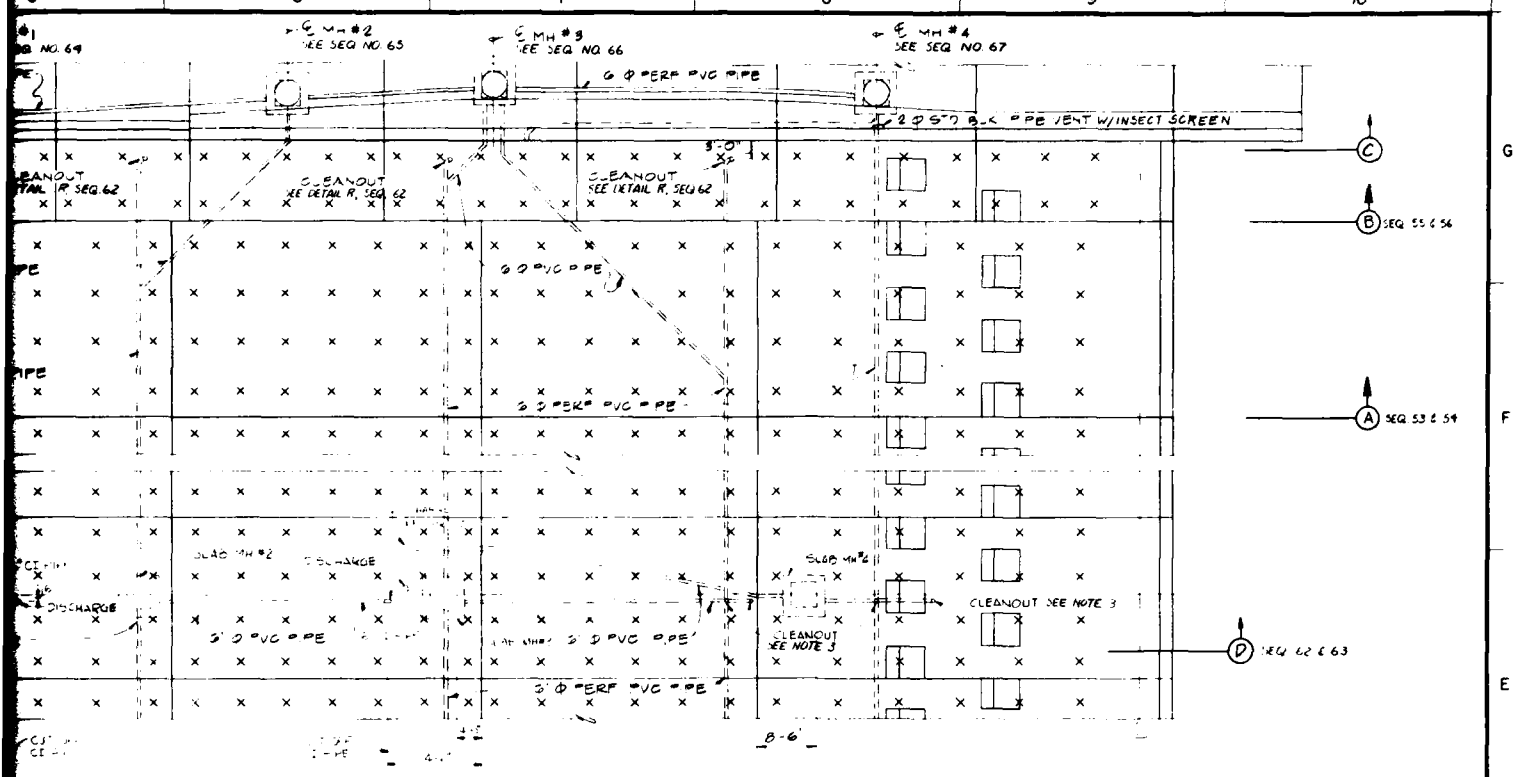
CONTR NO 157

DRAWING NUMBER | SHEET NO 58.1 of | SEQUENCE NO 58

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 41

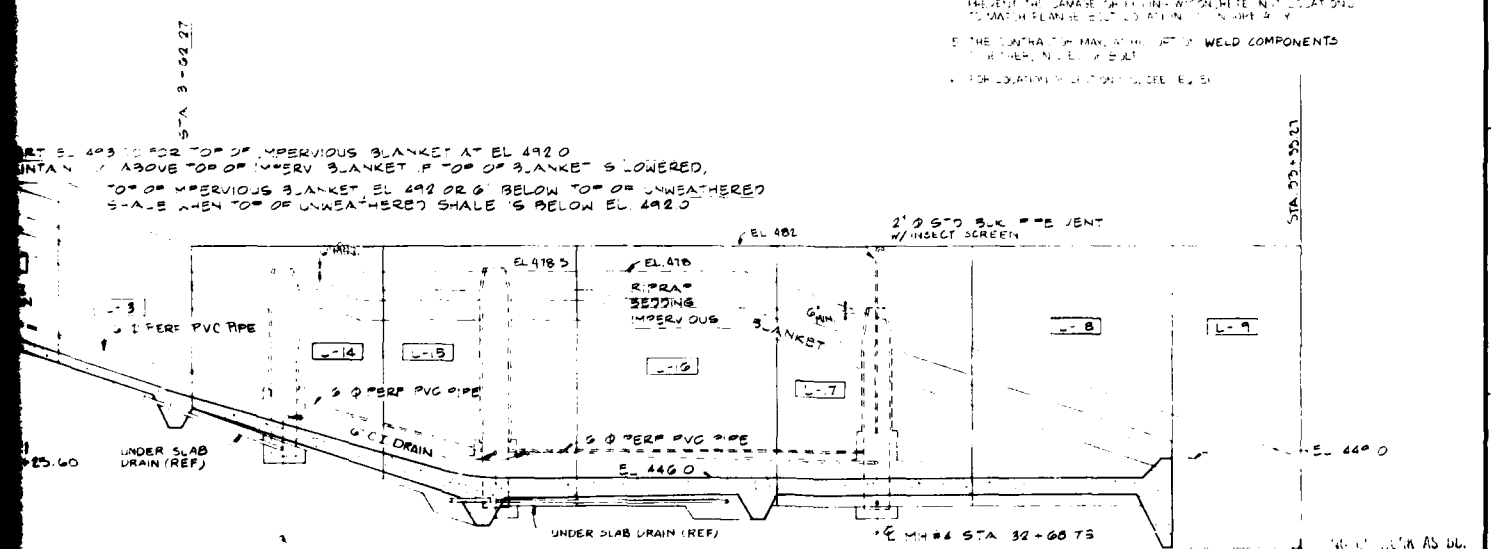


℄ DRAIN LINE
6" Φ PERF PVC PIPE
FACE OF WALL
℄ CLEANOUT
℄ CLEANOUT SEE DETAIL R, SEQ. 62
CLEANOUT SEE DETAIL R SEQ. 62
CUT OFF CI PIPE TYP
U CHANNEL
SEE SECT. D-D FOR THIS DRAIN SEQ. 62 & 63
CLEANOUT SEE NOTE 3
DISCHARGE U CHANNEL
CUT OFF CI PIPE
6" Φ PVC PIPE
℄ SPILLWAY
CLEANOUT SEE WEIR DETAIL SEQ. 62
DISCHARGE
SEE SECT D-D FOR THIS DRAIN SEQ. 62 & 63
SEQ. 62 & 63
6" Φ PERF PVC PIPE
CREST GEOMETRY OMMITTED FOR CLARITY
℄ CREST
EL 528.0 TOP CREST
EL 528.0
EL 516.0
EL. 517.25
EL 515.57
EL 513.5
CLEANOUT SEE DETAIL R SEQ. NO. 62
℄ BACK OF WALL DRAIN CLEAN-OUT
STA 31+06.77
STA 30+21.27
STA 30+51.27
STA 30+81.27
STA 31+11.27
STA 31+25.60
EL 487.864
6" CI BLIND FLANGE
INSTALL USING CRESBOLTS
NEOPRENE GASKET
TOP OF RIPRAP
6" CI 22½° BEND
SHIFT END OF DRAIN ADJACENT TO WALL AT OUTLET END ROTATE 22½°
5-#6 CI BARS EQUALLY SPACED
SEE NOTE 4
SEE NOTE 5
6"Φ CI FLNG TO MJ CONNECTOR
6"Φ PERF PVC PIPE
6"CI 22½° BEND MJ & MJ
CONCRETE
COMPACTED GRAVEL BACKFILL
FILTER BLANKET
6" CI DRAIN INV. EL 478.08
UNDER SLAB DRAIN (REF)
SEE NOTE 4
SECTION C-C
SECTION 1-1
SCALE ⅜" = 1'-0"



NOTES:

1. FOR GENERAL NOTES SEE SEQ. 32
2. SLAB ANCHORS SHALL NOT BE RELOCATED. SEE SEQ 57 FOR ANCHOR LOCATION.
3. 3 WAY CLEANOUT INCLUDES SECTION Q Q & DETAIL R, SEQ. 62.
4. [illegible]
5. THE CONTRACTOR MAY [illegible] WELD COMPONENTS [illegible]
6. FOR LOCATION [illegible] SEE SEQ 51



SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION
2		AS BLT	10 DEC 80	REVISED AS BUILT
1	5820	[illegible]	26 DEC 29	CLARIFIED SECTION 1-1
1	-	[illegible]	5 DEC 75	REV TO REFLECT W I CHANGES
3	-	[illegible]	[illegible]	[illegible]

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY

DRAWN BY "X"

CHECKED BY GEY

SUBMITTED BY

ENGINEER

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

SPILLWAY

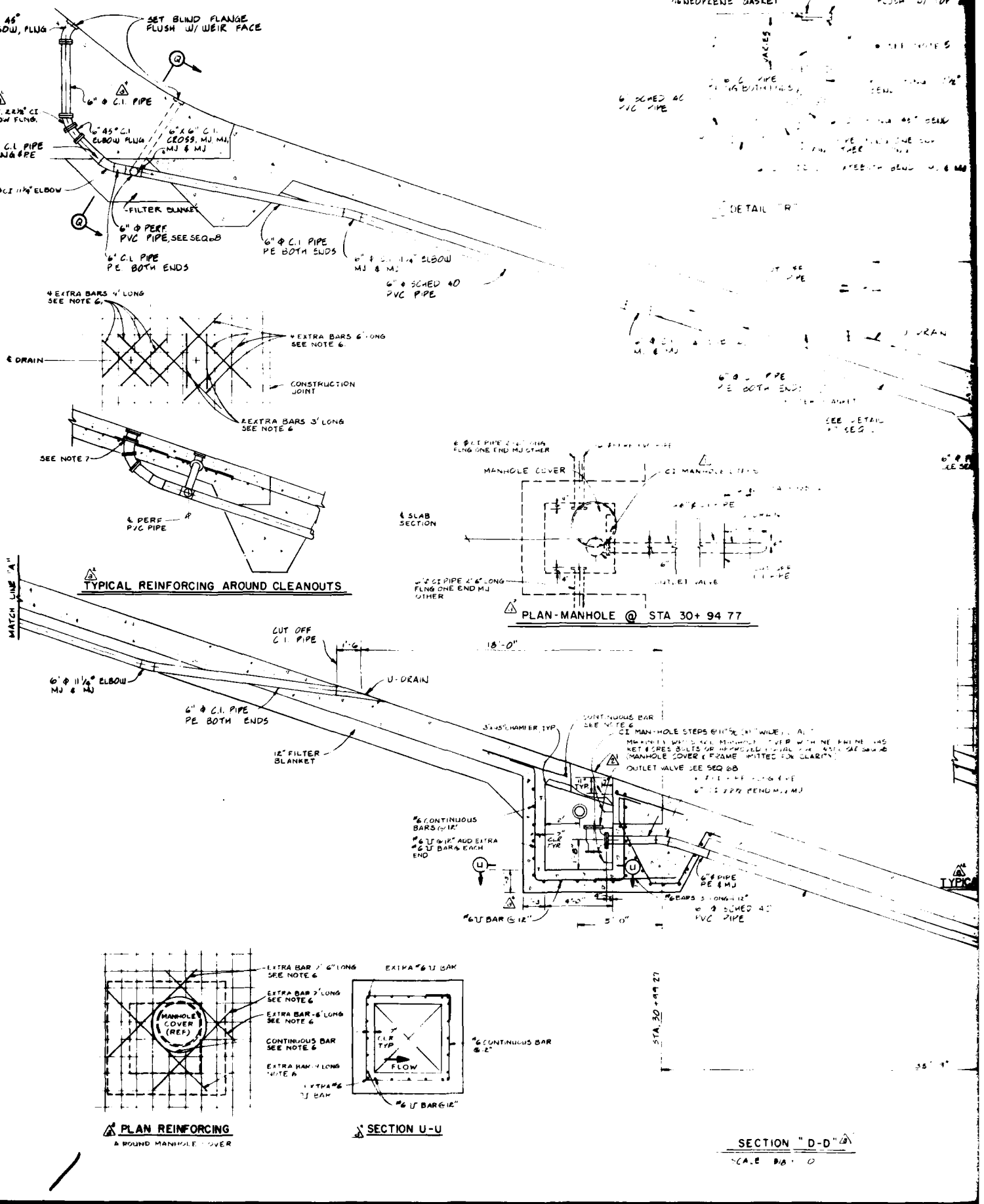
DRAINAGE SYSTEM LAYOUT

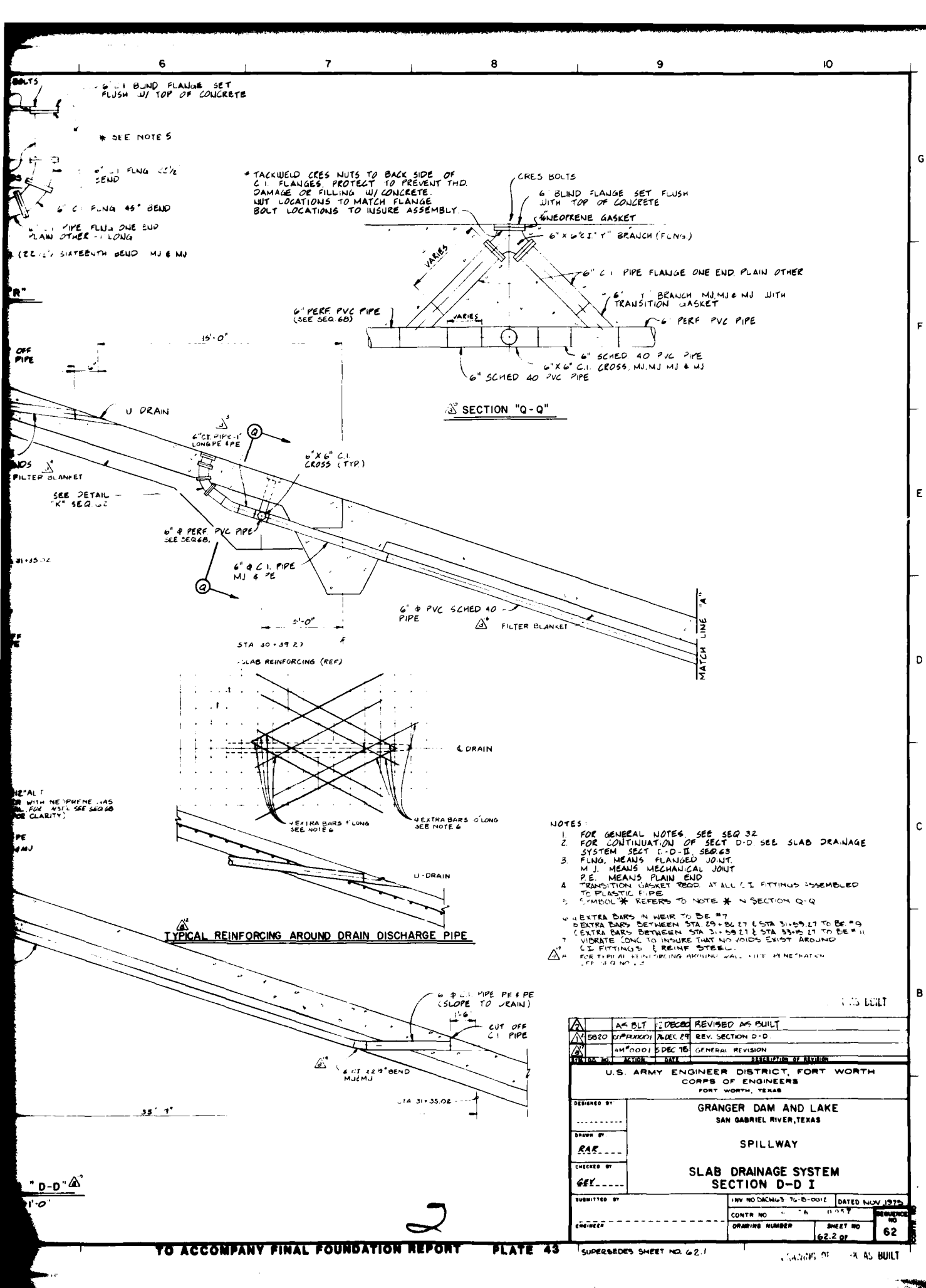
INV NO DACW63 76-B-0007 | DATED NOV. 1975
CONTR NO [illegible] 0057
DRAWING NUMBER | SHEET NO 61.2 OF | SEQUENCE NO 61

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 42

SUPERSEDES SHEET NO. 611


6" 45° ELBOW, PLUG
SET BLIND FLANGE FLUSH W/ WEIR FACE
6" ⌀ C.I. PIPE
6" CI. 22½° CI ELBOW FLNG.
6" 45° C.I. ELBOW PLUG
6" X 6" C.I. CROSS, MJ, MJ, MJ & MJ
6" C.I. PIPE PLUG & PE
6" ⌀ CI 11¼° ELBOW
FILTER BLANKET
6" ⌀ PERF PVC PIPE, SEE SEQ 08
6" C.I. PIPE PE BOTH ENDS
6" ⌀ C.I. PIPE PE BOTH ENDS
6" ⌀ SCHED 40 PVC PIPE
4 EXTRA BARS 4' LONG SEE NOTE 6
⌀ DRAIN
4 EXTRA BARS 6' LONG SEE NOTE 6
CONSTRUCTION JOINT
4 EXTRA BARS 3' LONG SEE NOTE 6
SEE NOTE 7
⌀ PERF PVC PIPE
TYPICAL REINFORCING AROUND CLEANOUTS
⌀ SLAB SECTION
MANHOLE COVER
CI MANHOLE STEPS
OUTLET VALVE
6" CI PIPE 2'-6" LONG FLNG ONE END MJ OTHER
PLAN - MANHOLE @ STA 30+ 94 77
MATCH LINE "A"
CUT OFF C.I. PIPE
1'-6"
18'-0"
6" ⌀ 11¼° ELBOW MJ & MJ
U-DRAIN
6" ⌀ C.I. PIPE PE BOTH ENDS
12" FILTER BLANKET
3"x45° CHAMFER TYP
CONTINUOUS BAR SEE NOTE 6
CI MANHOLE STEPS @ 11½" C/C TYP
MANHOLE WITH 24" ACCESS MANHOLE COVER WITH NEENAH R-1642 KET & CRES BOLTS OR APPROVED EQUAL (NO SEAL OR GASKET ON MANHOLE COVER & FRAME WITHIN 50' OF CLARION)
OUTLET VALVE SEE SEQ 08
6" CI x 22½ BEND MJ x MJ
11" TYP
2" CLR TYP
6" CONTINUOUS BARS @ 12"
6" U @ 12" ADD EXTRA 6" U BARS EACH END
6" ⌀ PIPE PE & MJ
6" BARS 5' LONG @ 12"
6" ⌀ SCHED 40 PVC PIPE
6" U BAR @ 12"
5'-0"
TYPICAL
EXTRA BAR 2'-6" LONG SEE NOTE 6
EXTRA BAR 3' LONG SEE NOTE 6
EXTRA BAR-6' LONG SEE NOTE 6
CONTINUOUS BAR SEE NOTE 6
EXTRA BAR 4' LONG SEE NOTE 6
EXTRA 6" U BAR
MANHOLE COVER (REF.)
PLAN REINFORCING
A ROUND MANHOLE COVER
EXTRA 6" U BAR
2" CLR TYP
FLOW
6" CONTINUOUS BAR @ 12"
6" U BAR @ 12"
SECTION U-U
STA 30+99 27
SECTION "D-D"
SCALE 3/8" = 1'-0"
DETAIL "R"
6" SCHED 40 PVC PIPE
NEOPRENE GASKET
SEE NOTE 5



NOTES:

1. FOR GENERAL NOTES, SEE SEQ 32
2. FOR CONTINUATION OF SECT D-D SEE SLAB DRAINAGE SYSTEM SECT D-D-II SEQ 63
3. FLNG. MEANS FLANGED JOINT.
   MJ. MEANS MECHANICAL JOINT
   P.E. MEANS PLAIN END
4. TRANSITION GASKET REQD. AT ALL C.I. FITTINGS ASSEMBLED TO PLASTIC PIPE.
5. SYMBOL "*" REFERS TO NOTE * IN SECTION Q-Q
6. a 4 EXTRA BARS IN WEIR TO BE #7
   b 4 EXTRA BARS BETWEEN STA 29+86.27 & STA 31+59.27 TO BE #9
   c 4 EXTRA BARS BETWEEN STA 31+59.27 & STA 33+35.27 TO BE #11
7. VIBRATE CONC TO INSURE THAT NO VOIDS EXIST AROUND C.I. FITTINGS & REINF STEEL.
8. FOR TYPICAL REINFORCING AROUND WALL PIPE PENETRATION SEE SEQ NO. 62

AS BUILT

3		AS BLT	12 DEC 80	REVISED AS BUILT
2	5820	CWP80001	26 DEC 79	REV. SECTION D-D
1		AMP80001	5 DEC 78	GENERAL REVISION
ITR NO.		ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY RAE
CHECKED BY GEY

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

SPILLWAY

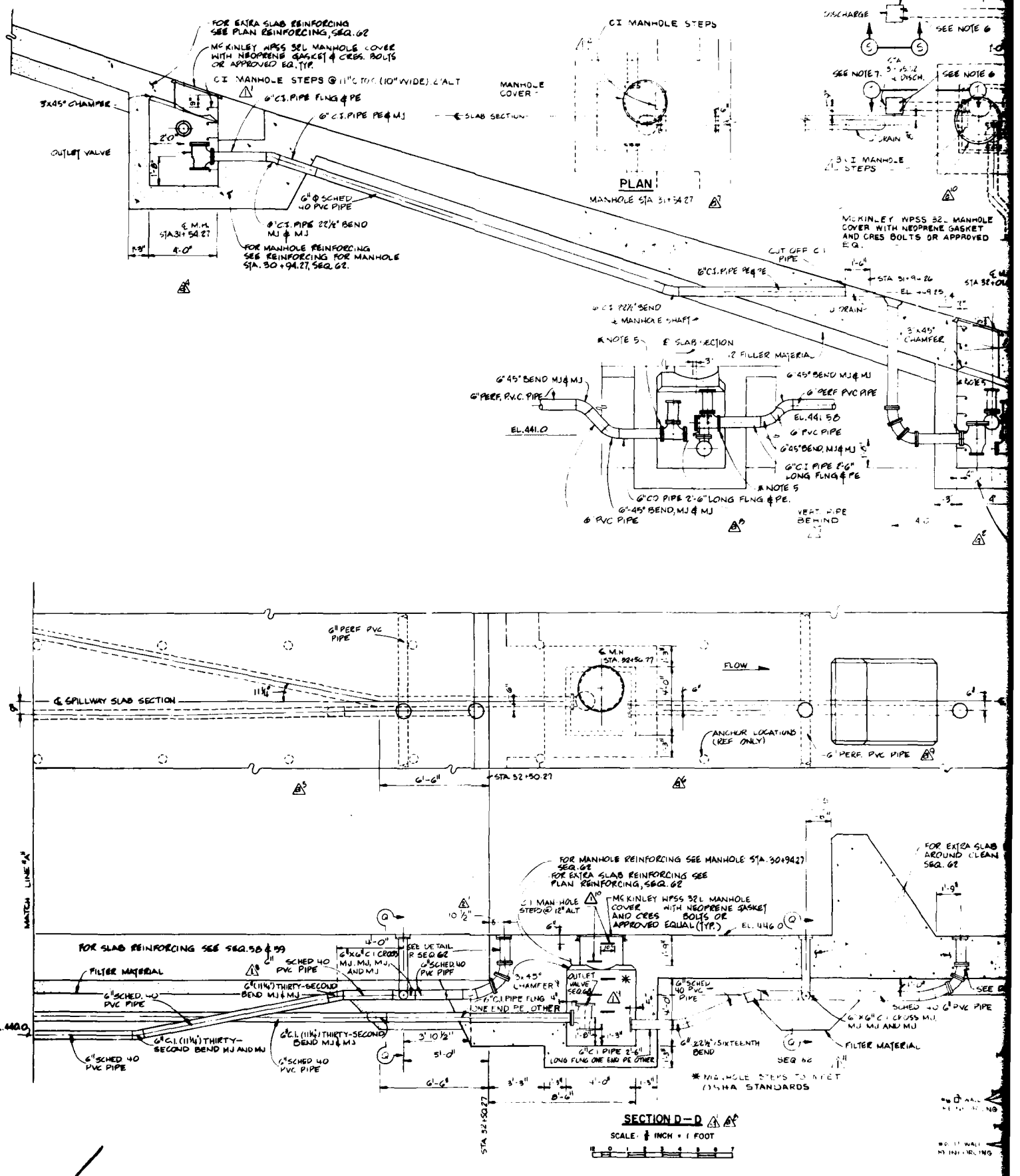
SLAB DRAINAGE SYSTEM
SECTION D-D I

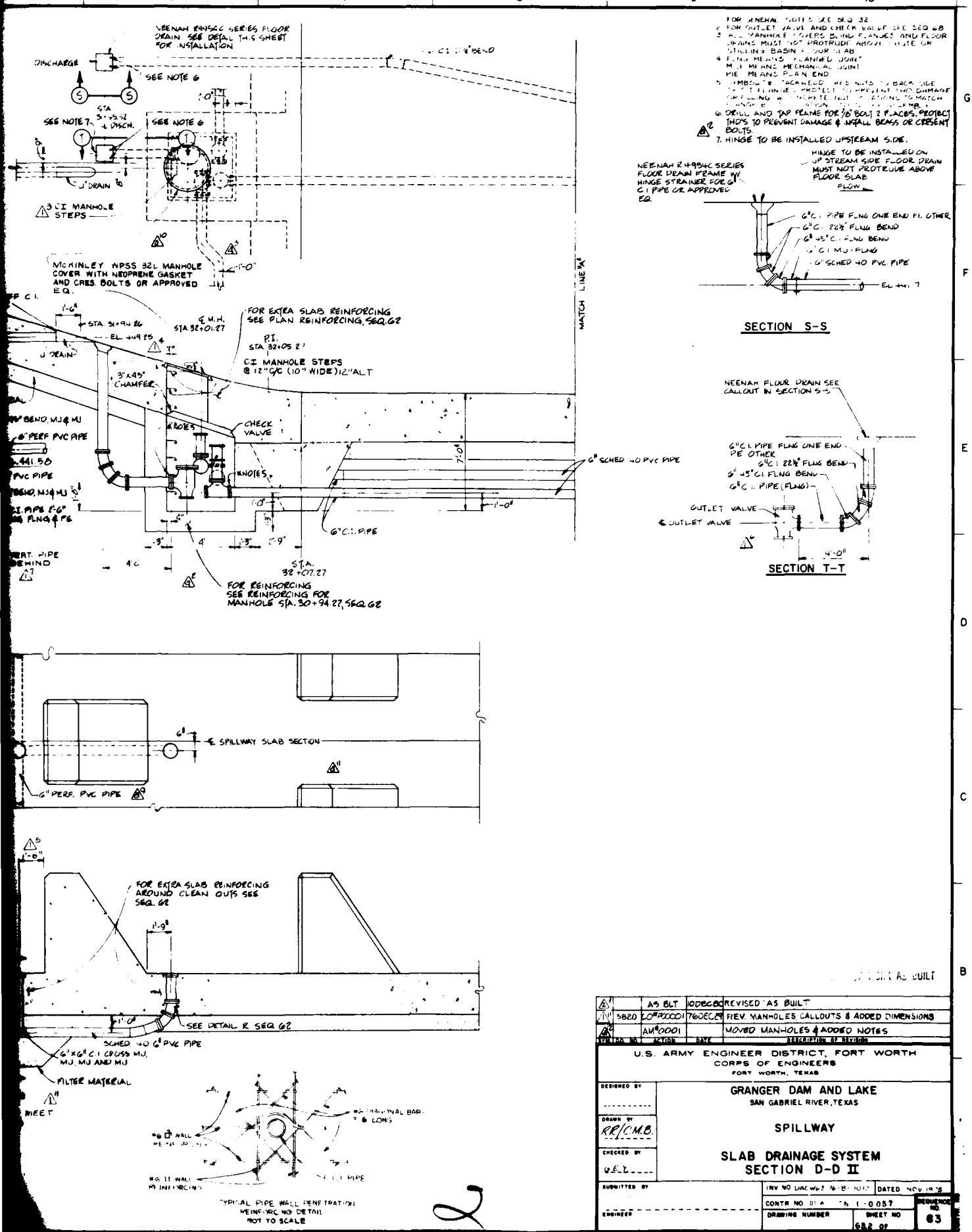
SUBMITTED BY
ENGINEER

INV NO DACW63-76-B-0012 DATED NOV 1975
CONTR NO
DRAWING NUMBER
SHEET NO 62.2 OF
SEQUENCE NO 62

SUPERSEDES SHEET NO. 62.1

AS BUILT


FOR EXTRA SLAB REINFORCING SEE PLAN REINFORCING, SEQ. 62
McKINLEY WPSS 32L MANHOLE COVER WITH NEOPRENE GASKET & CRES. BOLTS OR APPROVED EQ. TYP.
CI MANHOLE STEPS @ 11" C TO C (10" WIDE) 2' ALT
3x45° CHAMFER
6" C.I. PIPE FLNG & PE
6" C.I. PIPE PE & MJ
OUTLET VALVE
6" Φ SCHED 40 PVC PIPE
6" C.I. PIPE 22½° BEND MJ & MJ
FOR MANHOLE REINFORCING SEE REINFORCING FOR MANHOLE STA. 30+94.27, SEQ. 62.
℄ M.H. STA. 31+54.27
4'-0"
CI MANHOLE STEPS
MANHOLE COVER
℄ SLAB SECTION
PLAN
MANHOLE STA 31+54.27
DISCHARGE
SEE NOTE 6
SEE NOTE 7
SEE NOTE 6
3 CI MANHOLE STEPS
McKINLEY WPSS 32L MANHOLE COVER WITH NEOPRENE GASKET AND CRES BOLTS OR APPROVED EQ.
CUT OFF C.I. PIPE
6" C.I. PIPE PE & PE
STA 31+94.26
6" C.I. 22½° BEND
℄ MANHOLE SHAFT
NOTE 5
℄ SLAB SECTION
12 FILLER MATERIAL
3x45° CHAMFER
6" 45° BEND MJ & MJ
6" PERF. P.V.C. PIPE
6" PERF PVC PIPE
EL. 441.0
EL. 441.58
6" PVC PIPE
6" 45° BEND, MJ & MJ
6" C.I. PIPE 2'-6" LONG FLNG & PE
NOTE 5
6" CO PIPE 2'-6" LONG FLNG & PE.
6" 45° BEND, MJ & MJ
6" PVC PIPE
VERT. PIPE BEHIND
6" PERF PVC PIPE
℄ M.H. STA. 32+56.77
FLOW
℄ SPILLWAY SLAB SECTION
ANCHOR LOCATIONS (REF ONLY)
6" PERF. PVC PIPE
6'-6"
STA 32+50.27
MATCH LINE "A"
FOR MANHOLE REINFORCING SEE MANHOLE STA. 30+94.27 SEQ. 62
FOR EXTRA SLAB REINFORCING SEE PLAN REINFORCING, SEQ. 62
C.I. MANHOLE STEPS @ 12" ALT
McKINLEY WPSS 32L MANHOLE COVER WITH NEOPRENE GASKET AND CRES BOLTS OR APPROVED EQUAL (TYP.)
EL. 446.0
FOR EXTRA SLAB AROUND CLEAN SEQ. 62
FOR SLAB REINFORCING SEE SEQ. 58 & 59
FILTER MATERIAL
6" SCHED. 40 PVC PIPE
6" (11¼") THIRTY-SECOND BEND MJ & MJ
6" C.I. (11¼") THIRTY-SECOND BEND MJ AND MJ
6" SCHED 40 PVC PIPE
6" SCHED 40 PVC PIPE
6" x 6" C.I. CROSS MJ, MJ, MJ, AND MJ
SEE DETAIL R SEQ. 62
6" SCHED 40 PVC PIPE
3x45° CHAMFER
OUTLET VALVE SEQ. 68
6" C.I. PIPE FLNG 4" ONE END PE, OTHER
6" C.I. PIPE 2'-6" LONG FLNG ONE END PE OTHER
6" SCHED 40 PVC PIPE
6" 22½° SIXTEENTH BEND
6" x 6" C.I. CROSS MJ, MJ, MJ AND MJ
SCHED 40 6" PVC PIPE
FILTER MATERIAL
SEQ. 62
* MANHOLE STEPS TO MEET OSHA STANDARDS
STA 32+50.27
SECTION D-D
SCALE: ⅛ INCH = 1 FOOT
TO ACC



FOR GENERAL NOTES SEE SEQ 32
2. FOR OUTLET VALVE AND CHECK VALVE SEE SEQ 68
3. ALL MANHOLE COVERS BLIND FLANGES AND FLOOR DRAINS MUST NOT PROTRUDE ABOVE CHUTE OR STILLING BASIN FLOOR SLAB
4. FLNG MEANS FLANGED JOINT
MJ MEANS MECHANICAL JOINT
PIE MEANS PLAIN END
5. SYMBOL "A" TACKWELD RES NUTS TO BACK SIDE OF FLANGE. PROTECT TO PREVENT THD. DAMAGE OR FILLING. INCREASE NUT DIMENSIONS TO MATCH FLANGE BOLTS. SEE SECTION "A" SHEET 2 OF 2.
6. DRILL AND TAP FRAME FOR 7/8" BOLT 2 PLACES. PROTECT THD'S TO PREVENT DAMAGE & INSTALL BRASS OR CRESENT BOLTS.
7. HINGE TO BE INSTALLED UPSTREAM SIDE.

SECTION S-S

SECTION T-T

SYM	NO.	ACTION	DATE	DESCRIPTION OF REVISION
2		AS BLT	10DEC80	REVISED AS BUILT
1	5820	CO#P00001	76DEC29	REV. MANHOLES, CALLOUTS & ADDED DIMENSIONS
2		AM#0001		MOVED MANHOLES & ADDED NOTES

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY RR/C.M.B.
CHECKED BY G.E.Y.
SUBMITTED BY
ENGINEER

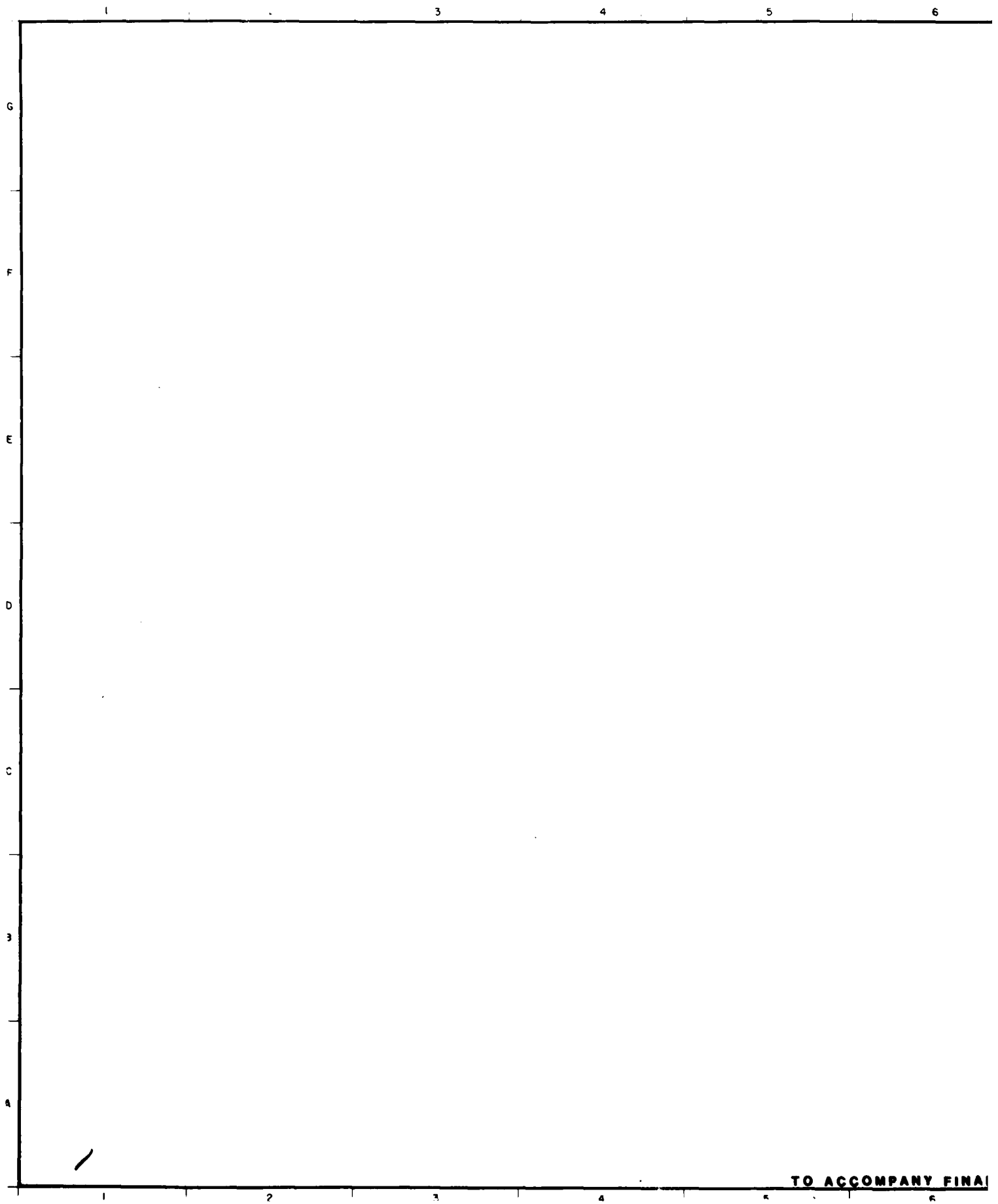
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

SPILLWAY

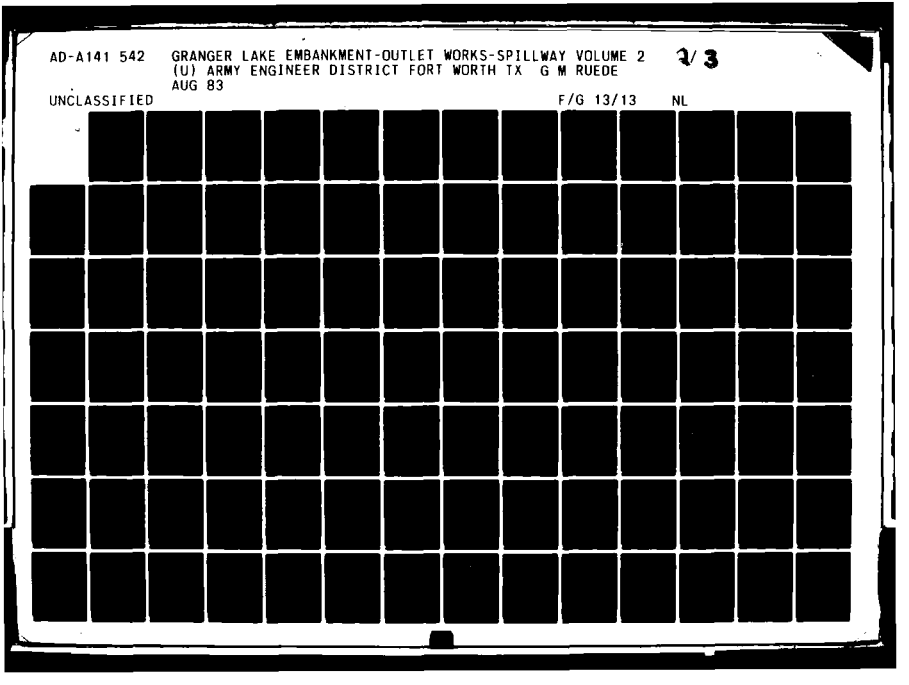
SLAB DRAINAGE SYSTEM
SECTION D-D II

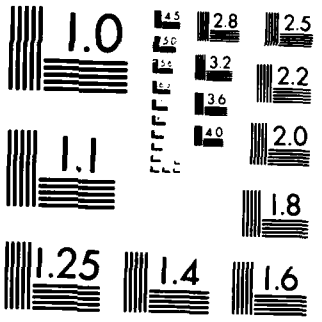
INV NO DACW63 76-B-1012 | DATED NOV 1975
CONTR NO 01-A 76-1-0057
DRAWING NUMBER | SHEET NO 63.2 OF | SEQUENCE NO. 63

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 44 SUPERSEDES SHEET 63.1



TO ACCOMPANY FINA


AD-A141 542 GRANGER LAKE EMBANKMENT-OUTLET WORKS-SPILLWAY VOLUME 2
(U) ARMY ENGINEER DISTRICT FORT WORTH TX G M RUEDE
AUG 83
UNCLASSIFIED
F/G 13/13
NL
2/3



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

INDEX

SEQ NO	TITLE
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2	LOGS OF BORINGS - BA6C 62
3	LOGS OF BORINGS - BA6C 63 & 60C 66
4	LOGS OF BORINGS - 60C 69 & 60C 75
5	LOGS OF BORINGS - BA6C 70 & 60C 71
6	LOGS OF BORINGS - BA6C 73 & 60C 76
7	LOGS OF BORINGS - BA6C 77 & BA6C 78
8	LOGS OF BORINGS - BA6C 79 & BA6C 80
9	LOGS OF BORINGS - BA6C 81 & 60C 82
10	LOGS OF BORINGS - BA6C 83 & BA6C 84
11	LOGS OF BORINGS - BA6C 85 & BA6C 90
12	LOGS OF BORINGS - 60C 86 & 60C 89
13	LOGS OF BORINGS - 60C 87 & 60C 88
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17	LOGS OF BORINGS - BA6C 94
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21	LOGS OF BORINGS - 60C 98
22	LOGS OF BORINGS - 60C 100
23	LOGS OF BORINGS - BA3F 469 & BA3F 470
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29	LOGS OF BORINGS - 60C 516
30	LOGS OF BORINGS - BA60C 517 & BA60C 518
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40	LOGS OF BORINGS - BA6C 550
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44	LOGS OF BORINGS - BA6C-555
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49	LOGS OF BORINGS - BA6C-3F-561
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55	LOGS OF BORINGS - BA6C-568
56	LOGS OF BORINGS - BA6C-569
57	LOGS OF BORINGS - BA6C-570
58	LOGS OF BORINGS - BA6C-571
59	LOGS OF BORINGS - BA6C-572 & BA6C-573
60	LOGS OF BORINGS - BA6C-574
61	LOGS OF BORINGS - BA6C-575 & BA6C-576
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65	LOGS OF BORINGS - BA6C-593 & BA6C-594
66	LOGS OF BORINGS - BA6C-595
67	LOGS OF BORINGS - BA6C-596 & BA6C-597
68	LOGS OF BORINGS - BA-598 & BA-599

SUBTASK NO	ACTION	DATE	DESCRIPTION OF REVISION
	Mod P0001	28NOV75	NEW SHEET ADDED

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

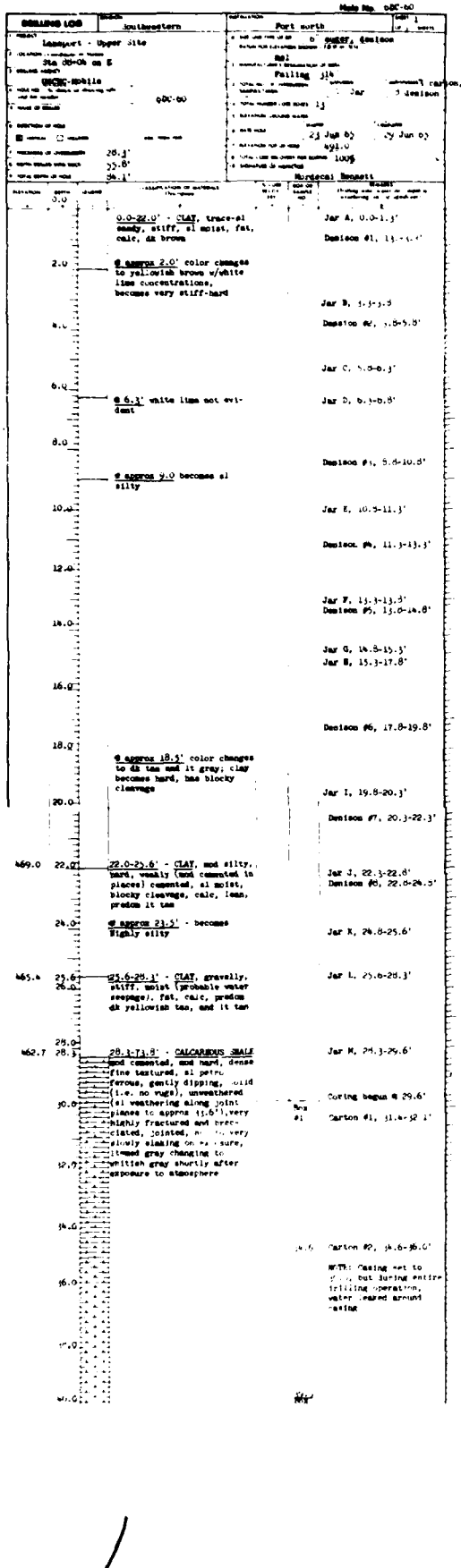
DESIGNED BY ----------
DRAWN BY J.E.P.
CHECKED BY ----------
SUBMITTED BY ----------
ENGINEER ----------

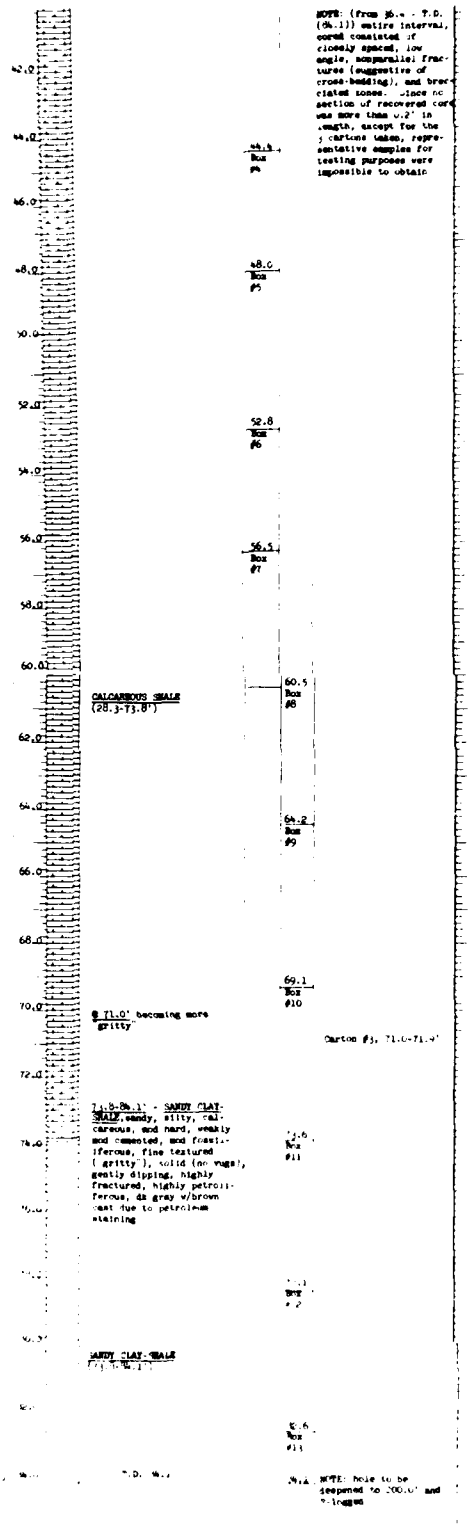
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

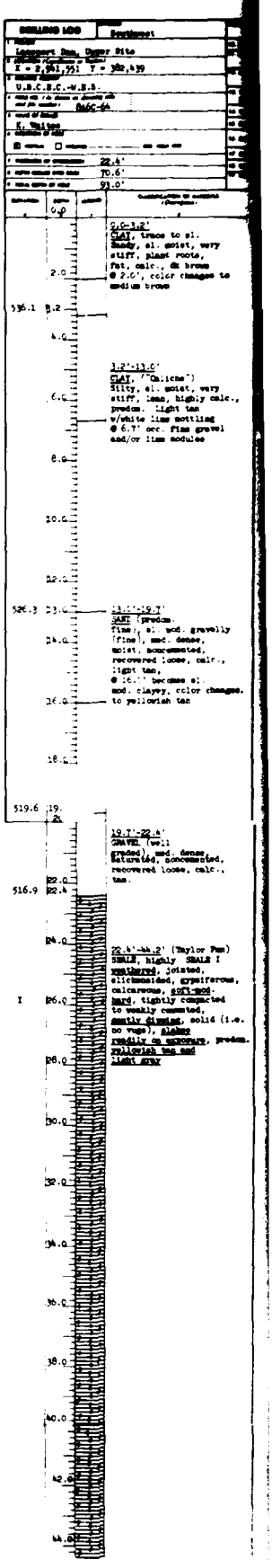
LOGS OF BORINGS
DRAWING INDEX

INV NO DACW63-76-B-0012 DATED NOV 1975
CONTR NO
DRAWING NUMBER
SHEET NO 01
SEQUENCE NO 1
CONTR NO

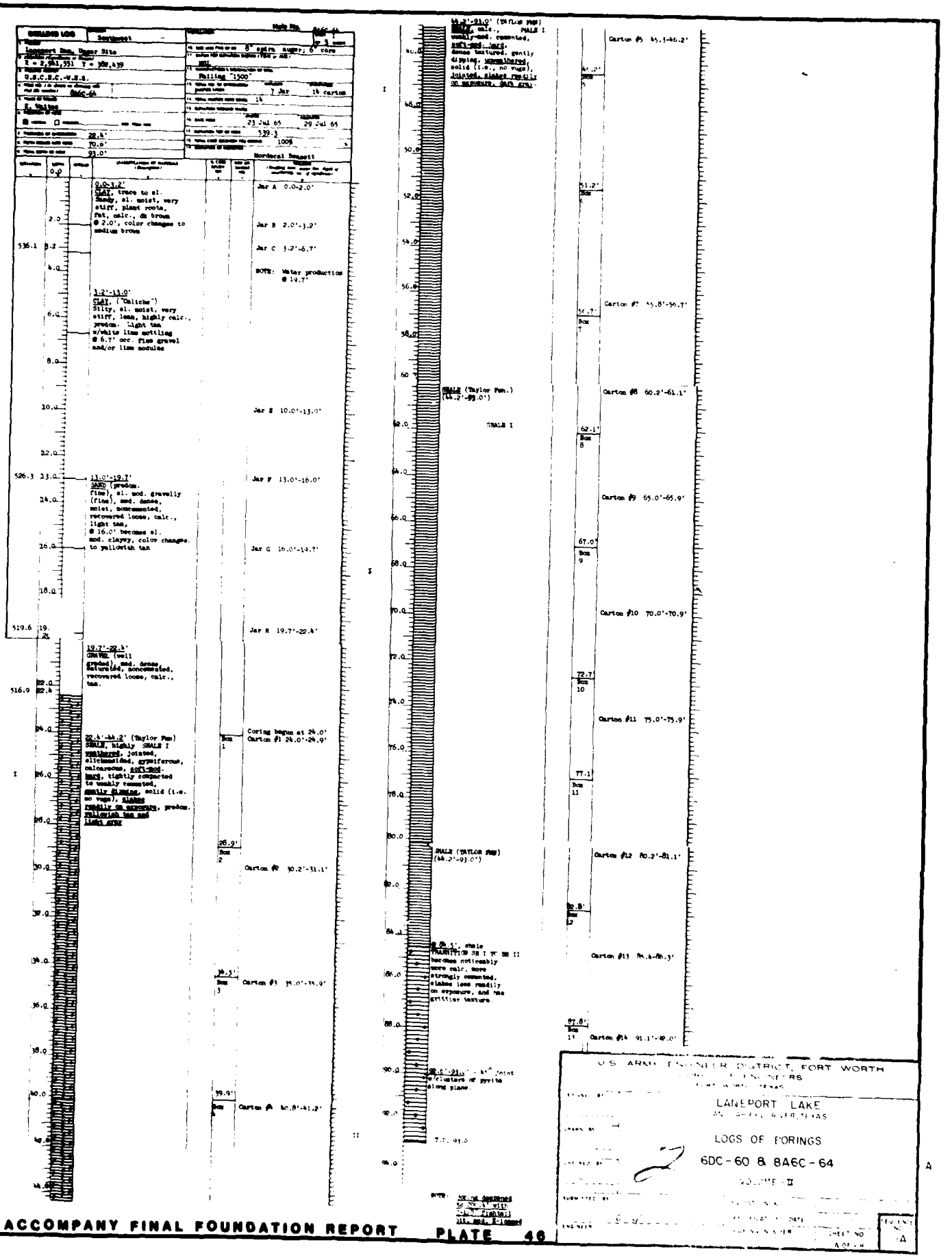
2







TO ACCOMPANY FINAL



TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 46

Hole No. 8A6C-62

DRILLING LOG

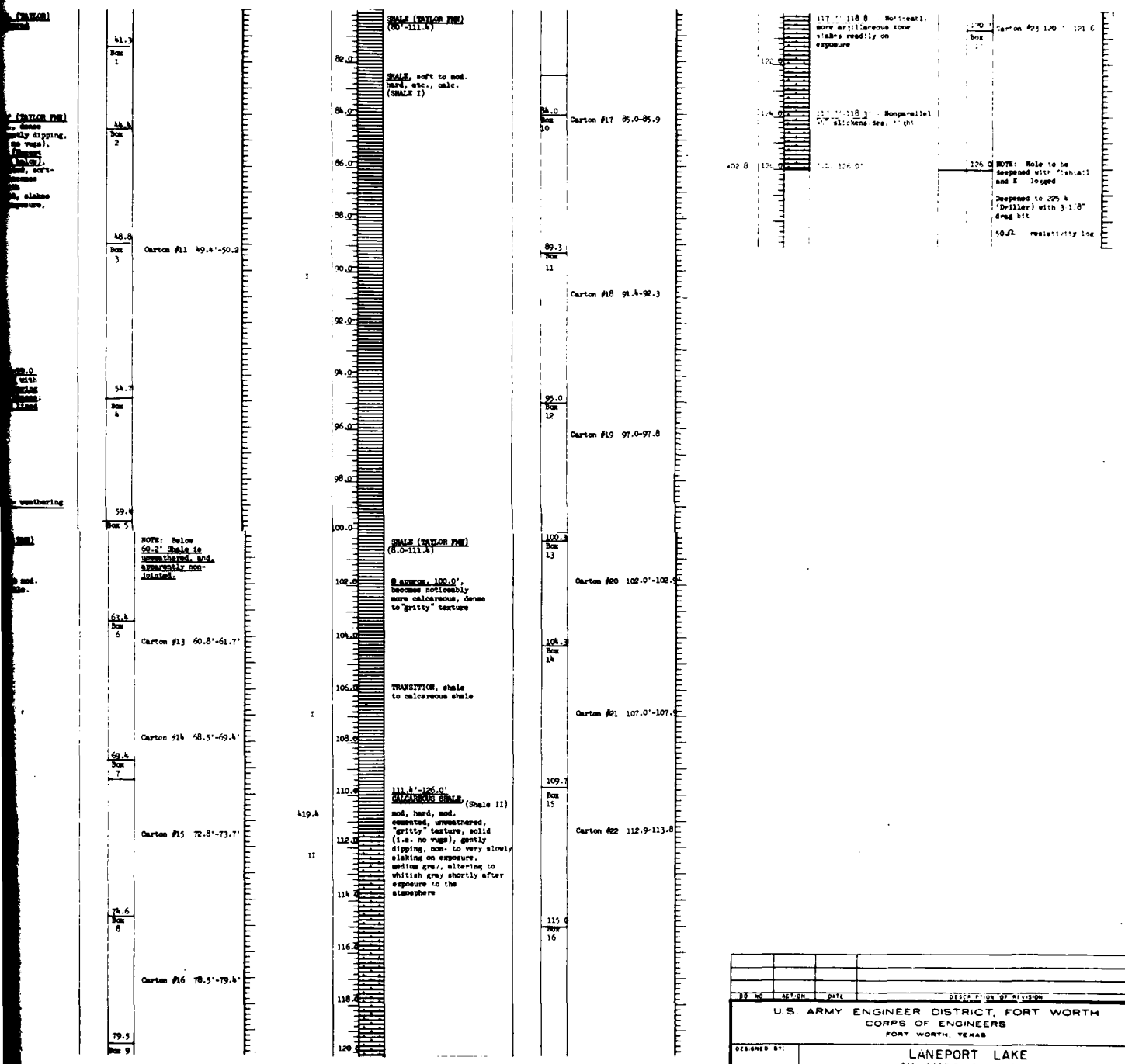
1. PROJECT	10. SIZE AND TYPE OF BIT: 8" spiral, auger 6" core.
2. LOCATION (Coordinates or Station): Lanport - Upper Site	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: USACE - W.E.S.	12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1,500
4. HOLE NO. (As shown on drawing title and file number): 8A6C-62	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 4 jar; DISTURBED: 23 carton
5. NAME OF DRILLER: C. Waites	14. TOTAL NUMBER CORE BOXES: 17
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.	15. ELEVATION TOP OF HOLE: N/31
7. THICKNESS OF OVERBURDEN: 8.0'	16. DATE HOLE: STARTED 7 Jul 65; COMPLETED 16 Jul 65
8. DEPTH DRILLED INTO ROCK: 118.0'	17. TOTAL CORE RECOVERY FOR BORING: 528.7 %
9. TOTAL DEPTH OF HOLE: 1,250'	18. SIGNATURE OF INSPECTOR: Mordecai Bennett

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	RQD or Hardness	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0		0.0-7.0' CLAY, sand trace, occ. gravel, dry, hard, fat, calc., lk brown @ 2.7', becomes mod. - highly gravelly; color changes to med. brown			Jar A 0.0-2.7'
	2.0					Jar B 2.7'-7.0'
	4.0					
521.7	6.0					
	7.0		7.0'-8.0' CLAY ("Caliche")			Jar C 7.0' - 8.0'
520.7	8.0		occ. gravel and lime nodules, stiff, moist, fat, calc., predom. yellowish tan w/pronounced white lime streaks.			Jar D 8.0'-115.'
	10.0					Coring begun @ 11.5'
	12.0		8.0'-44.6' (TAYLOR FMN) SHALE, highly weathered, calc., soft-mod. hard, dense textured, solid (i.e. no vugs), gently dipping, highly jointed (tight), slickensides, highly gypsiferous (gypsum			Carton #1 11.5-14.3'; Carton #2 14.3'17.4'; Carton #3 17.4'-21.0'
	14.0					
	16.0					
	18.0					
	20.0		lining joint and slickenside planes, and, in thin seams parallel to bedding), moist, slakes readily on exposure, color predominantly yellowish tan, and, lt. gray, tightly compacted.			Carton #4 21.0'-24.7'
	22.0					
	24.0					Carton #5 24.7'-28.1'
	26.0					
	28.0		(HIGHLY WEATHERED SHALE 8.0' - 44.6')			Carton #6 28.1'-31.3'
	30.0					Carton #7 31.3'-34.6'
	32.0					
	34.0					Carton #8 34.6'-35.3'
	36.0					Carton #9 35.3'-38.7'
	38.0					Carton #10 38.7'-41.3'
	40.0					

Depth	Description	Box	Carton
	-44.6 SHALE, (TAYLOR) highly weathered	41.3 Box 1	
42.0			
44.0	44.6'-111.4' (TAYLOR FMN) SHALE, calc., dense textured, gently dipping, solid (i.e. no vugs), unweathered (Except as indicated below), weakly cemented, soft-mod. hard (becomes more hard with depth), moist, slakes readily on exposure, dark gray.	44.4 Box 2	
46.0			
48.0		48.8 Box 3	Carton #11 49.4'-50.2
50.0			
52.0			
54.0	NOTE: 44.6'-59.0 SH weathered with intense weathering along joint planes; joint planes lined with gypsum	54.7 Box 4	
56.0			
58.0			
	59.0'-60.2' - weathering trace	59.4 Box 5	
60.0	SHALE (TAYLOR FMN) (8.0'-111.4')		NOTE: Below 60.2' Shale is unweathered, and, apparently non-jointed.
62.0	SHALE, soft to mod. hard, stc., calc. (SHALE I)		
		63.4 Box 6	
64.0			Carton #13 60.8'-61.7'
66.0			
68.0			Carton #14 68.5'-69.4'
		69.4 Box 7	
70.0			
72.0			Carton #15 72.8'-73.7'
74.0			
76.0		74.6 Box 8	
78.0			Carton #16 78.5'-79.4'
		79.5 Box 9	
80.0			

419.4

TO ACCOMPANY FINAL FOUNDA



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: J.L.M.
DRAWN BY:
CHECKED BY: J.L.M.
SUBMITTED BY:
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-62

VOLUME - II

A

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 2 OF 68
SEQUENCE NO 2

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 47

Hole No. 8A6C-63

DRILLING LOG — Southwestern — Fort Worth — Sheet 1 of 2

Lowrance Upper Site
X=1,241,693 Y=161,205

8A6C-63

E. Whitaker

Failing "1500"

5 Jar — 14 Carton

15

19 Jul 65 — 22 Jul 65

536.1

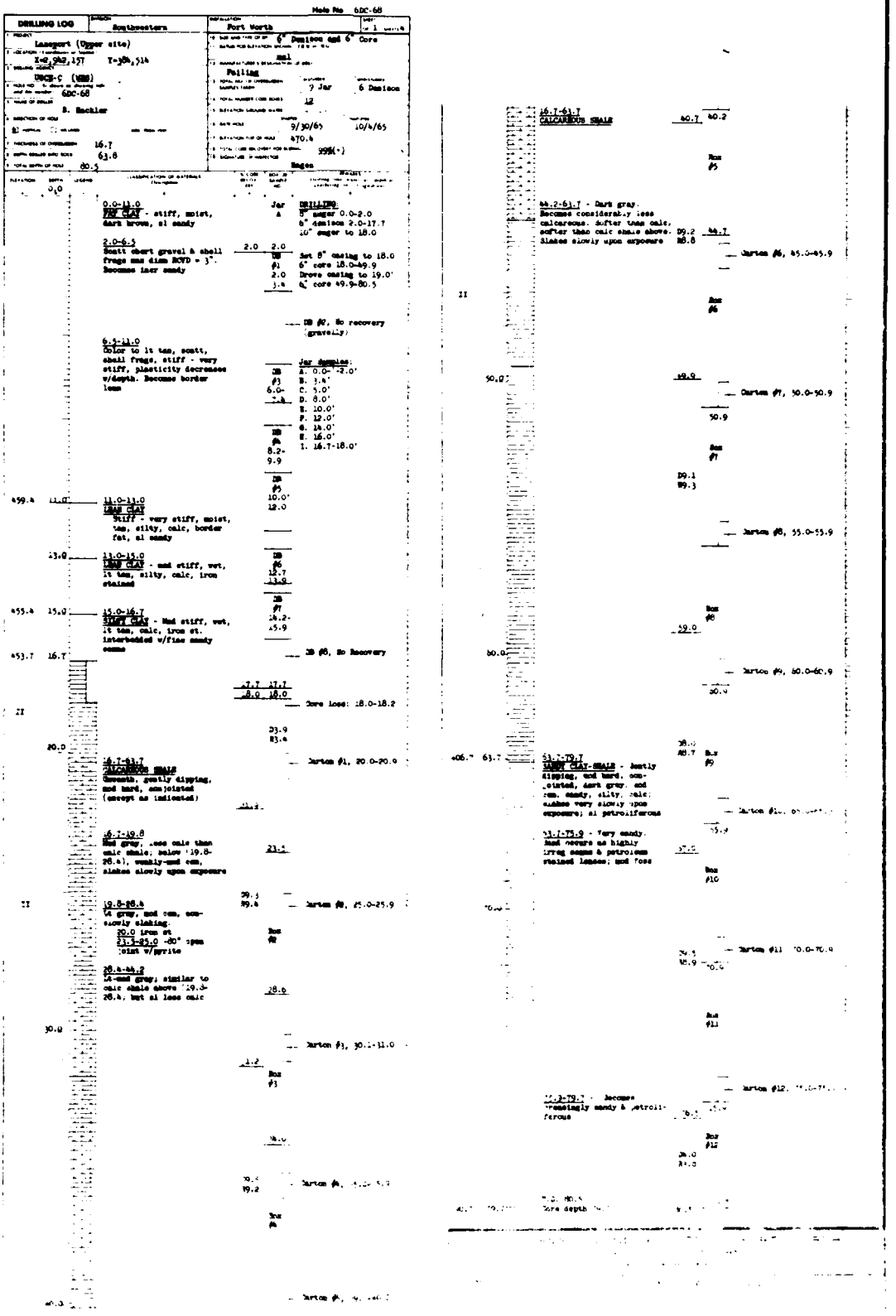
100%

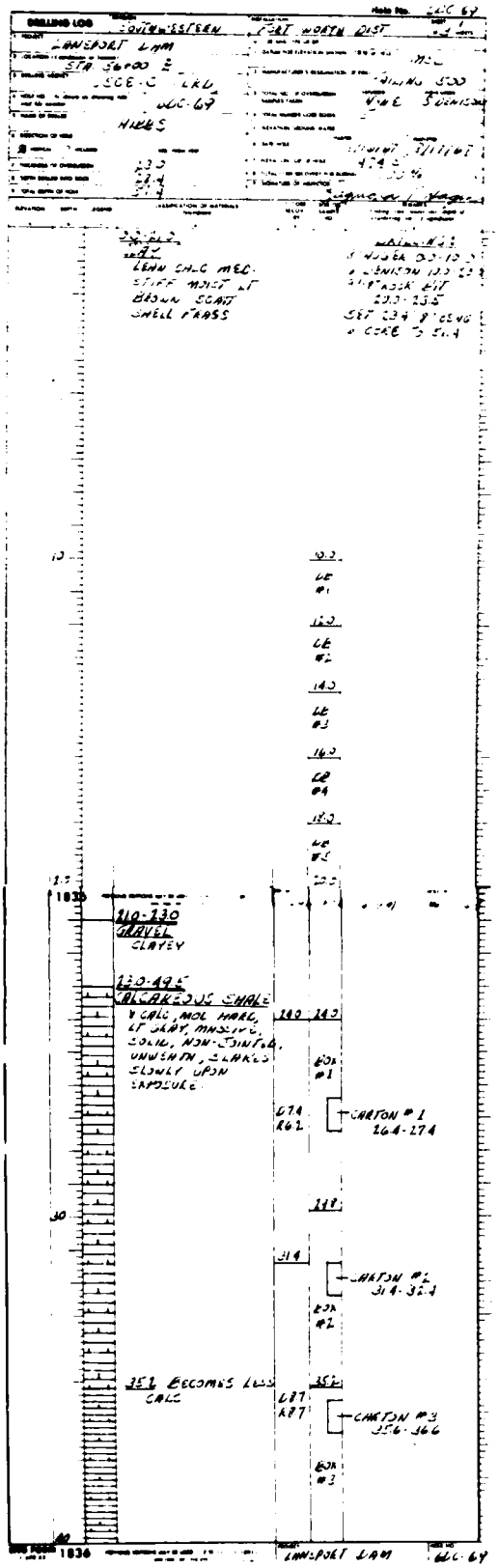
Nordecal Bennett

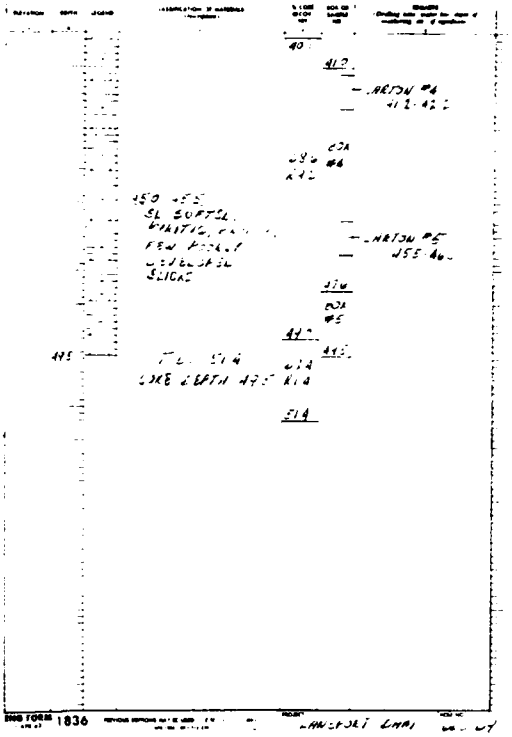
Elev.	Depth	Description	Sample
	0.0		
		0.0-6.7' - CLAY, sand trace, stiff, moist, plant roots, fat, calc, dk brown	Jar A, 0.0-2.5'
	2.0	@ 2.5' become hard, more sandy, color changes to and brown	Jar B, 2.5-6.7'
531.8	6.7	6.7-11.0' - CLAY ("CALICHE"), stiff, moist, soft lime nodules (easily crushed), fat (harder zones), calc, dk brown, lt tan and white lime w/occasional black streaks	Jar C, 6.7-7.1'
	8.0	@ 7.1' become highly gravelly	Jar D, 7.1-11.0'
525.3	11.0	11.0-13.0' - SAND (gradation ?ing), highly gravelly, sl moist, and dense, recovered loose, calc, tan	Jar E, 11.0-13.0'
	12.0	NOTE: No water within augured depth	
523.3	13.0	@ 11.0-13.1' - probable boulder; refusal with auger, interval had to be drilled with roller rock bit	
	16.0		16.0 Coring begun @ 16.0'
			Box #1 Carton #1, 16.0'-16.8'
	18.0	TAYLOR (SHALE I) weathered	
	20.0	21.4-21.6' (TAYLOR PHB) SHALE, highly weathered, highly jointed and altered. (Pieces of bone fragments found with gypsum), soft-med hard, gently dipping, solid (no vugs), tightly cemented-weakly cemented. shale, slakes readily w exposure. predom reddish tan and .t gray	Carton #2, 21.4-22.3'
			21.4 Box #2
	24.0		25.6 Box #3 Carton #3, 27.3-27.8'
	26.0		
	28.0		30.9 Box #4 Carton #4, 33.4-34.1'
	30.0		
	32.0		36.0 Box #5 Carton #5, [illegible]
	34.0		
	36.0		
	38.0		
	40.0		

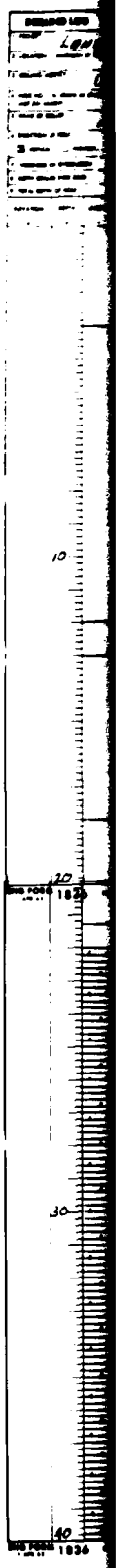
Elev.	Depth	Description	Sample
	42.0		41.3 Box #6 Carton #6, 42.0-42.9
	44.0		
	46.0		46.3 Box #7
	48.0	51.4-70.8 (TAYLOR PHB) SHALE I SHALE, calc, weakly-mod cemented, soft-mod hard, dense textured, gently dipping, solid (i.e. no vugs), slickensided and jointed (as indicated below), slakes readily w exposure dk gray	Carton #7, 50.5-51.4'
	50.0		51.4 Box #8
	52.0		Carton #8, 54.6-55.5'
	54.0		
	56.0		56.8 Box #9
	58.0	61.0' ± .5') 61.5 ± .2') 62.0 ± .2') 62.5 ± .3') 63.5 ± .5') 64.5 ± .05') 65.1 ± .1') 65.2' ± .25') Seams of intense F_eO weathering parallel to bedding	
	60.0		60.2 Box #10
	62.0		Carton #10, 64.5-65.3'
	64.0		
	66.0		
	68.0	68.8' - .ew angle slickenside. intense F_eO weathering along joint 68.3-69.5 noticeable increase in dip of shale 69.1-70.7' - closely spaced, parallel slickensides dipping approx 45° very intense F_eO weathering along planes	67.8 Box #11
	70.0		Carton #11, 70.8-71.7'
	72.0		NOTE: @ 69.5', section of core below sick zone appears to be "ALCARDOUS SHALE" not above, "SHALE"
	74.0		73.0 Box #12
	76.0		Carton #12, 76.8'-77.[illegible]
	78.0		78.6 Box #13
	80.0	80.4-81.7' TAYLOR PHB) "ALCARDOUS SHALE, mod-slightly cemented, mod hard, gently dipping, gritty texture. jointed as indicated below or .d i.e. no vugs.. non to very slowly slaking w exposure, mod-l gray w/ver.. ge of whitish gray chert.y and/or exposure to atmosphere	Carton #13, 81.0-81.9'
	82.0		83 Box #14 Carton #14, 83.0-83.[illegible]
	84.0		
	86.0		
	88.0		
	90.0		
	92.0		
	94.0		
	96.0		
	98.0		
	100.0		

NOTE: [illegible] [illegible] [illegible]

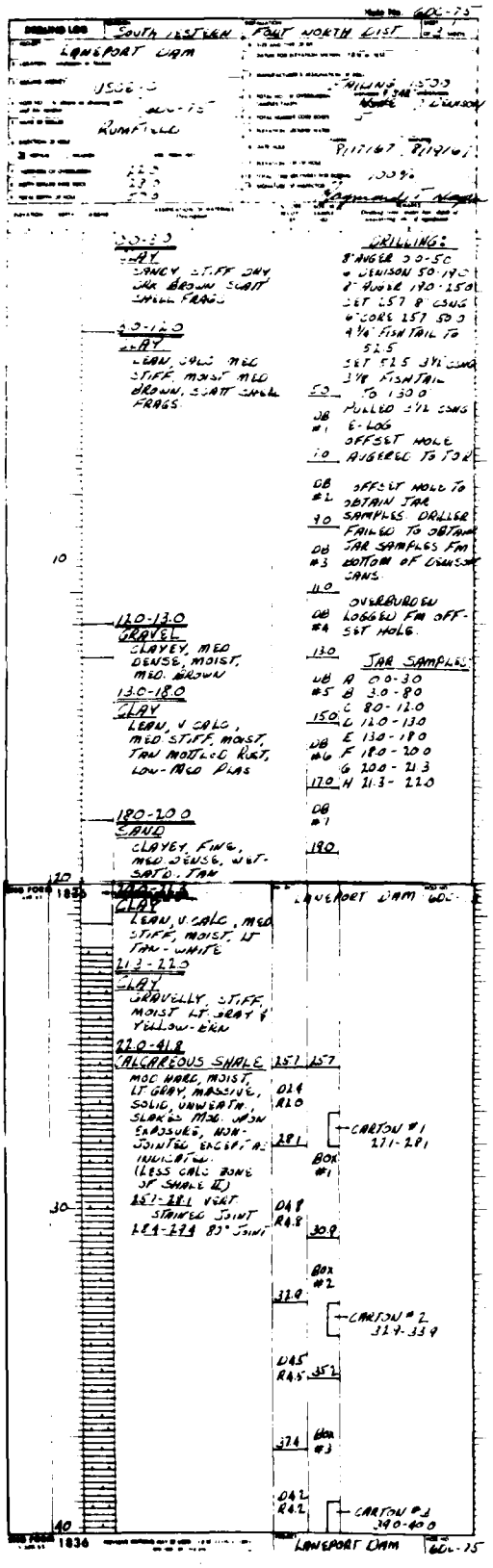

Hole No GDC-68
DRILLING LOG
Southwestern
Fort Worth
Seaport (Upper site)
X=2,342,157 Y=384,514
USCE-C (WES)
GDC-68
B. Hackler
16.7
63.8
80.5
6" Denison and 6" Core
Rotary
Falling
9 Jar
6 Denison
12
9/30/65
10/4/65
470.4
99%(+)
Bagen
0.0-11.0
FAT CLAY - stiff, moist, dark brown, sl sandy
2.0-6.5
Scatt chert gravel & shell frags max diam RCVD = 3". Becomes lser sandy
6.5-11.0
Color to lt tan, scatt, shell frags, stiff - very stiff, plasticity decreases w/depth. Become border less
11.0-13.0
LEAN CLAY
Stiff - very stiff, moist, tan, silty, calc, border fat, sl sandy
13.0-15.0
LEAN CLAY - and stiff, wet, lt tan, silty, calc, iron stained
15.0-16.7
SILTY CLAY - Mod stiff, wet, lt tan, calc, iron st. interbedded w/fine sandy seams
16.7-63.7
CALCAREOUS SHALE
Smooth, gently dipping, mod hard, occ jointed (except as indicated)
16.7-19.8
Mod grey, less calc than calc shale; below 19.8-20.4, weakly-mod cem, slakes slowly upon exposure
19.8-28.4
Lt grey, mod cem, occ slowly slaking.
20.0 iron st
21.3-21.5 -20° open joint w/pyrite
28.4-44.2
Lt-mod grey; similar to calc shale above 19.8-28.4, but sl less calc
44.2-61.7 - Dark gray. Becomes considerably less calcareous. Softer than calc, softer than calc shale above. Slakes slowly upon exposure
61.7-63.7
SILTY CLAY-SHALE - Mostly dipping, mod hard, occ jointed, dark grey, mod cem, sandy, silty, calc; slakes very slowly upon exposure; sl petroliferous
63.7-75.9 - Very sandy. Mod recovrs as highly irreg seams & petroleum stained lenses; mod foss
Jar
A
2.0
2.0
1.4
2.0
3.4
6.0-
7.4
8.2-
9.9
10.0'
12.0
12.7
13.5
14.2-
15.9
17.7
18.0
23.9
23.4
28.0
30.1
30.4
39.2
44.7
49.9
50.9
55.9
59.0
60.2
63.7
70.0
75.9
DRILLING:
8" auger 0.0-2.0
6" denison 2.0-17.7
10" auger to 18.0
Set 8" casing to 18.0
6" core 18.0-49.9
Drove casing to 19.0'
6" core 49.9-80.5
Jar Samples:
A. 0.0'-2.0'
B. 3.4'
C. 5.0'
D. 8.0'
E. 10.0'
F. 12.0'
G. 14.0'
H. 16.0'
I. 16.7-18.0'
Box #1
Box #2
Box #3
Box #4
Box #5
Box #6
Box #7
Box #8
Box #9
Box #10
Box #11
Box #12
Core depth
Core Loss: 18.0-18.2
Barton #1, 20.0-20.9
Barton #2, 25.0-25.9
Barton #3, 30.1-11.0
Barton #4,
Barton #5, 45.0-45.9
Barton #6, 50.0-50.9
Barton #7, 55.0-55.9
Barton #8, 60.0-60.9
Barton #9,
Barton #10,
Barton #11
Barton #12,

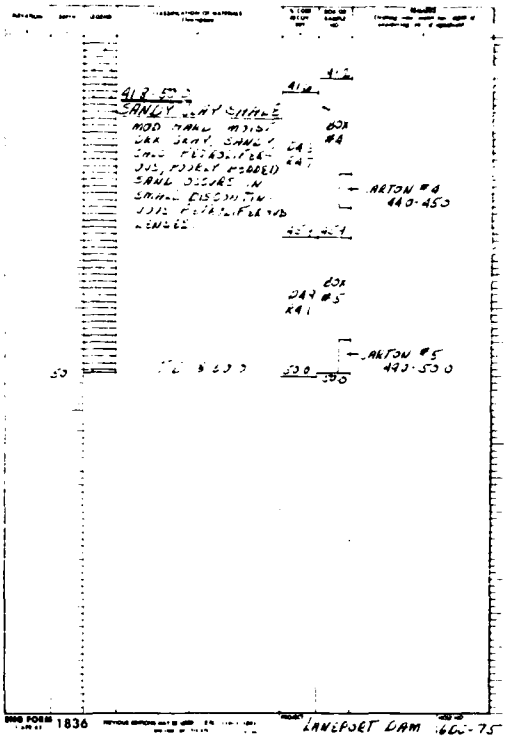






TO ACCOMPANY FINAL FOU





NO	REVISION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY JLM
DRAWN BY
CHECKED BY JLM
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

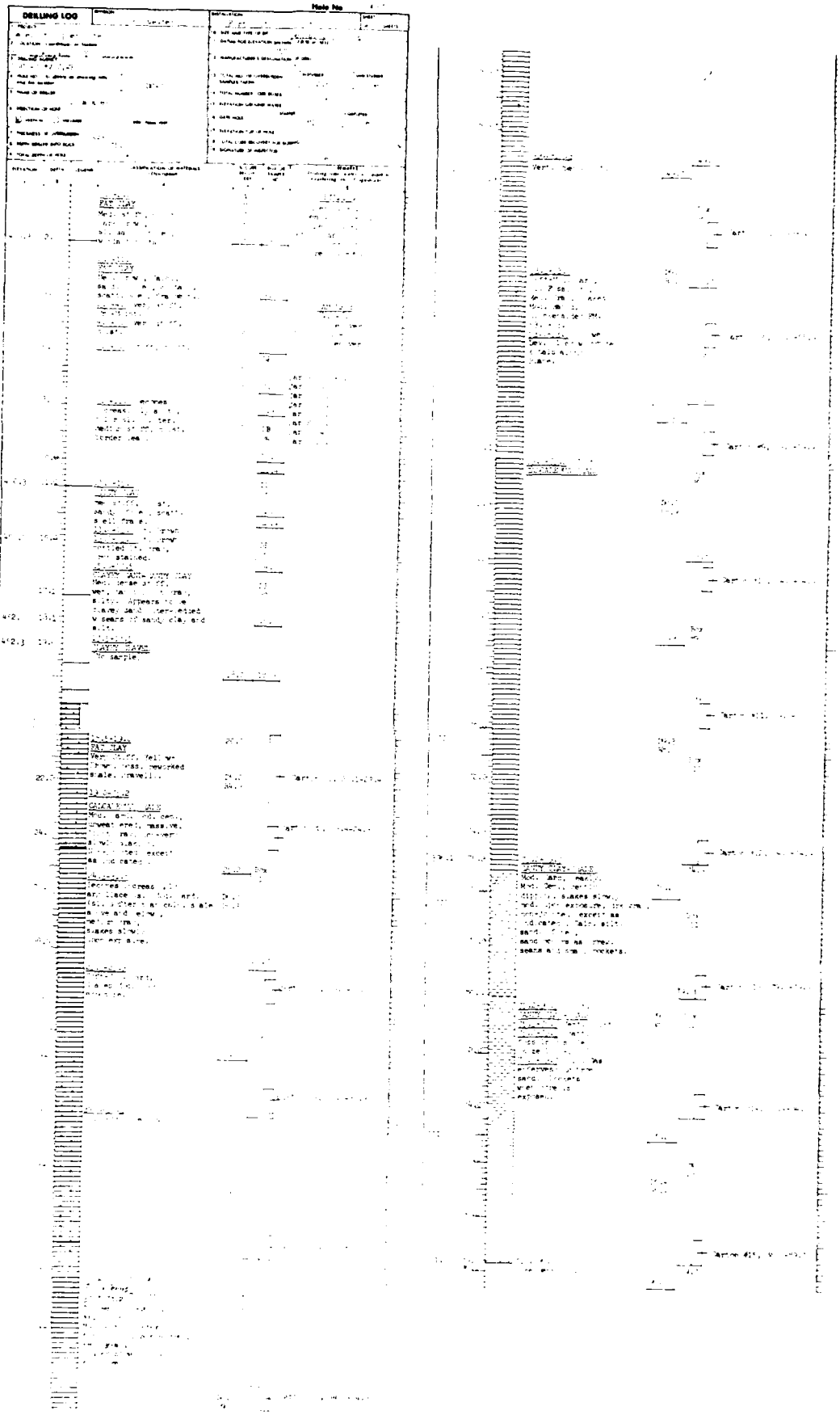
6DC-69 & 6DC-75

VOLUME - II

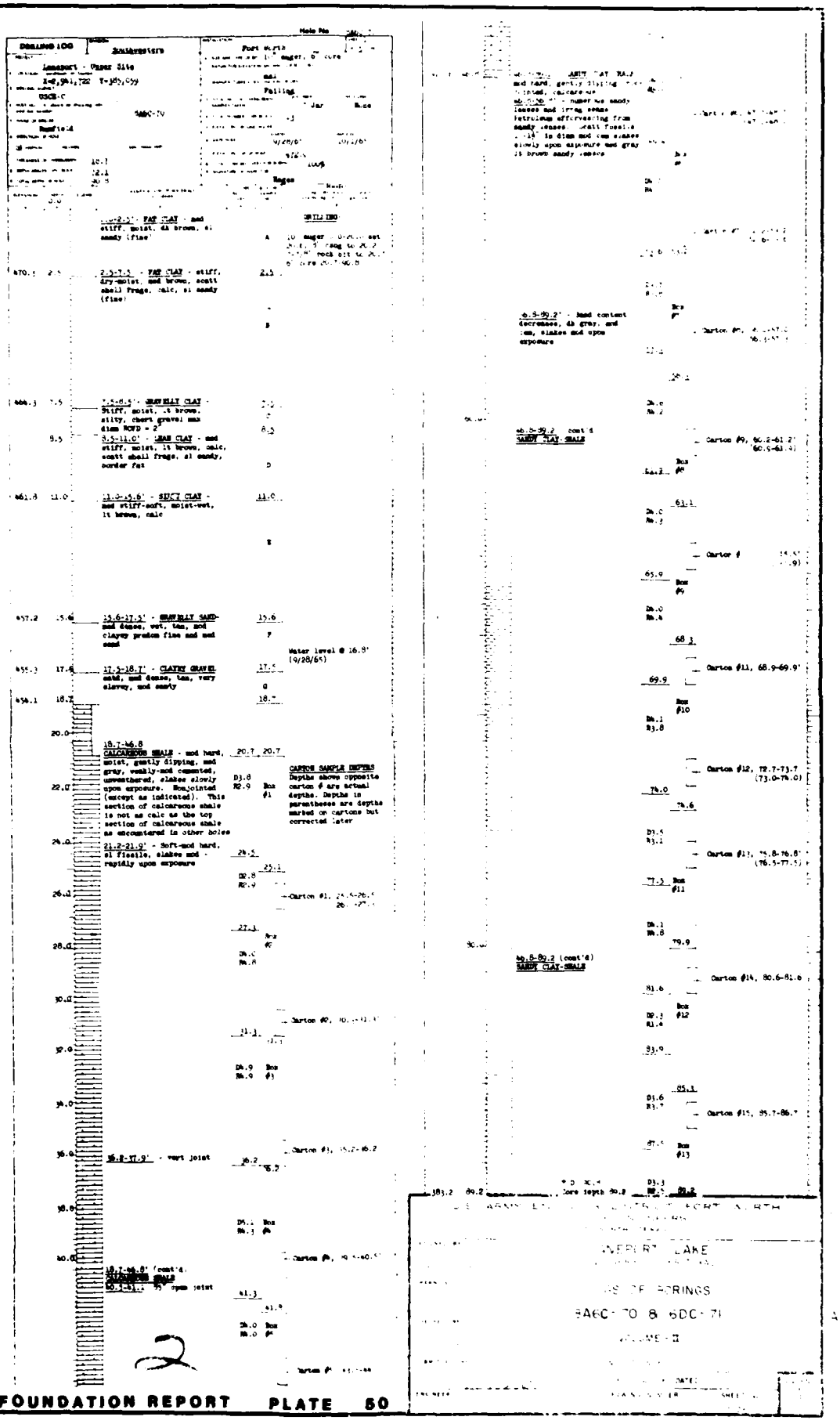
A

INVITATION NO DACW63-72-B-0095
SPECIFICATIONS DATED MAY, 1972
DRAWING NUMBER
SHEET NO 4 OF 69
SEQUENCE NO 4

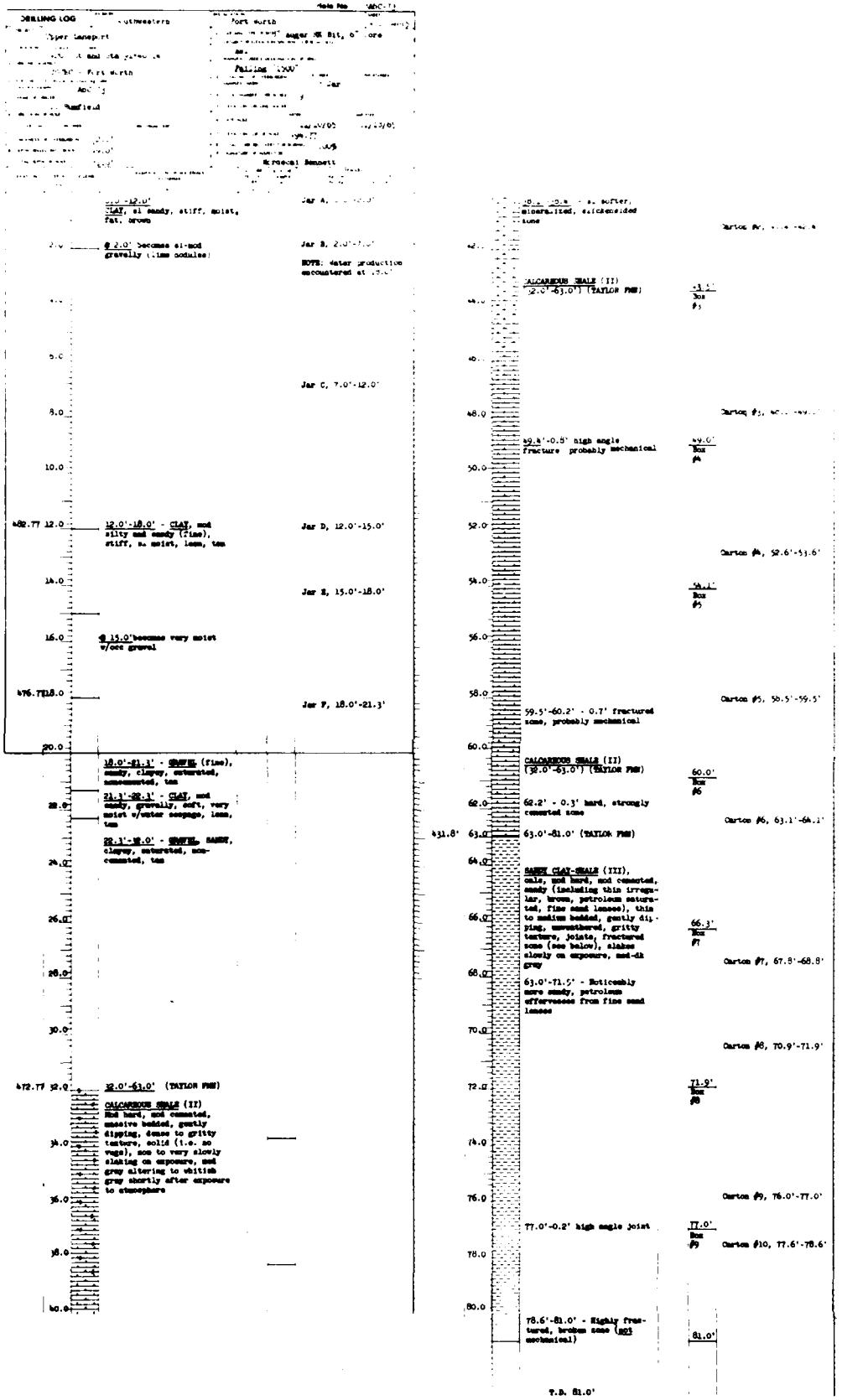
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 49



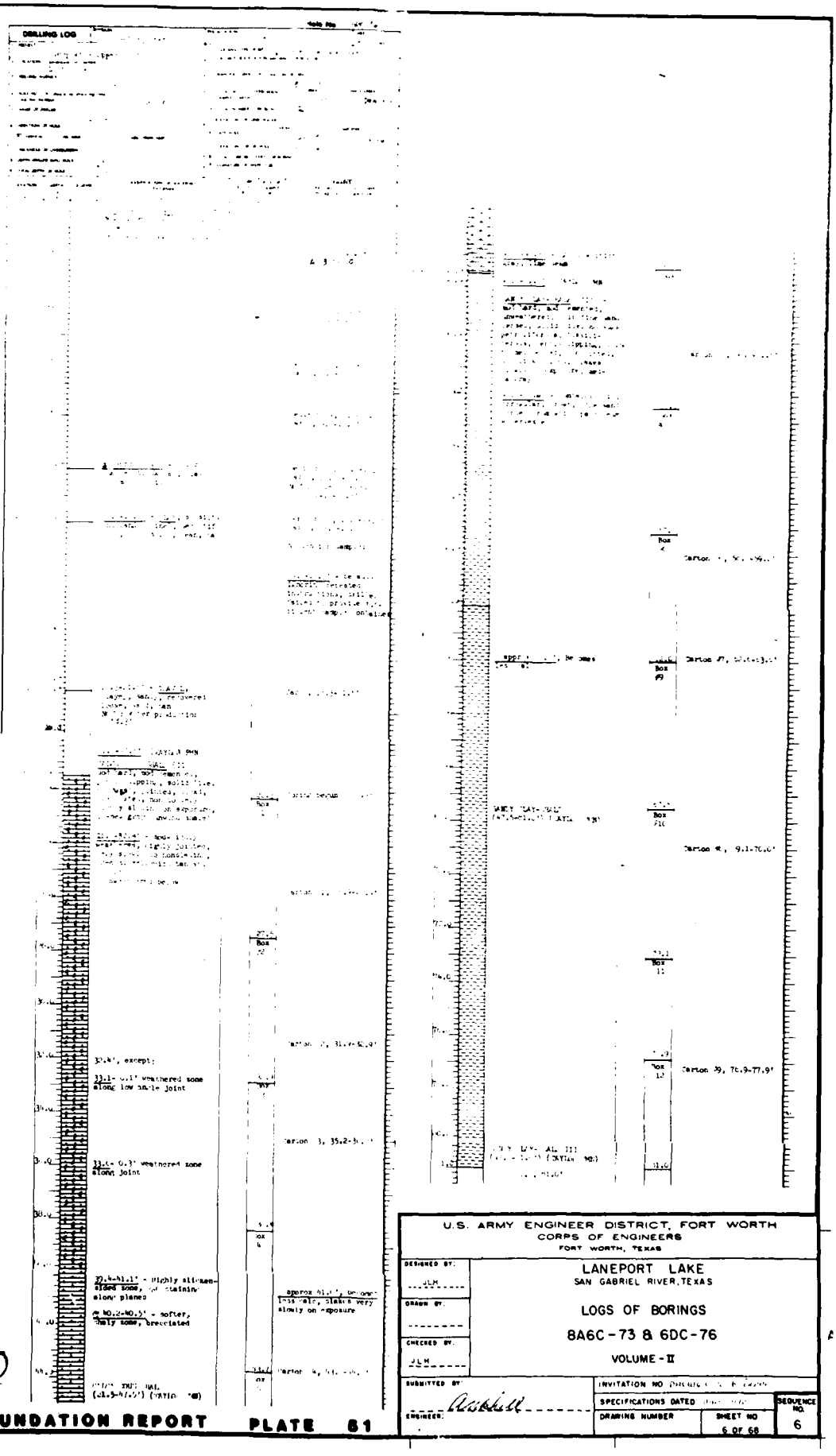
TO ACCOMPANY FINAL



TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 50



TO ACCOMPANY FINAL FOU



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

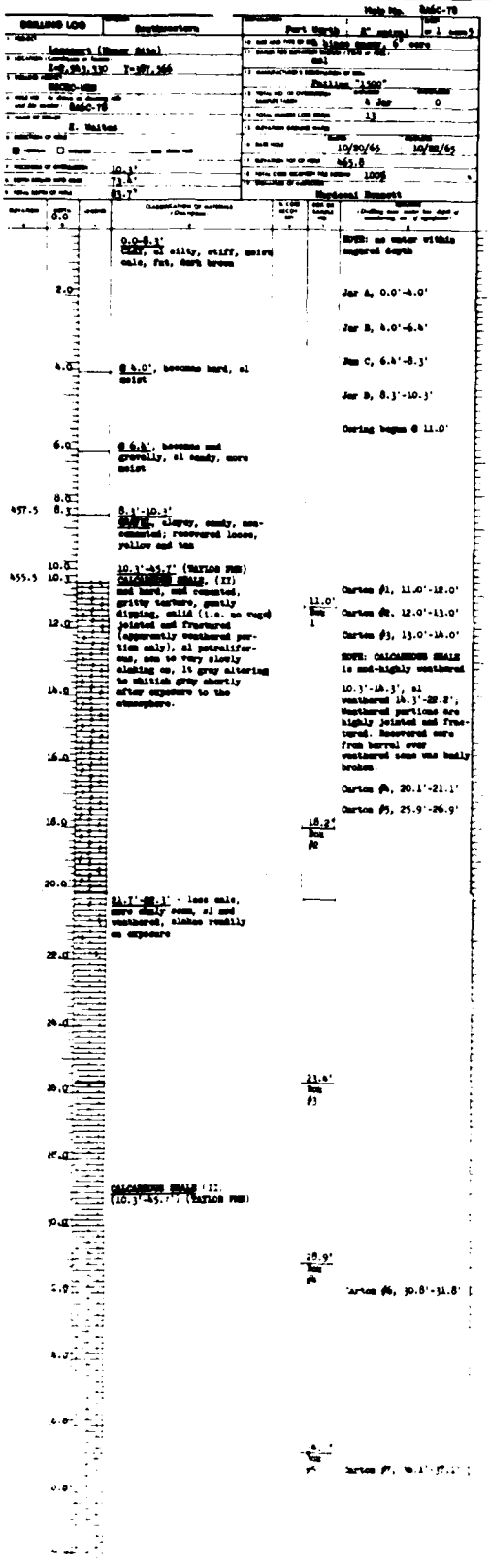
8A6C-73 & 6DC-76

VOLUME - II

SUBMITTED BY:
ENGINEER:

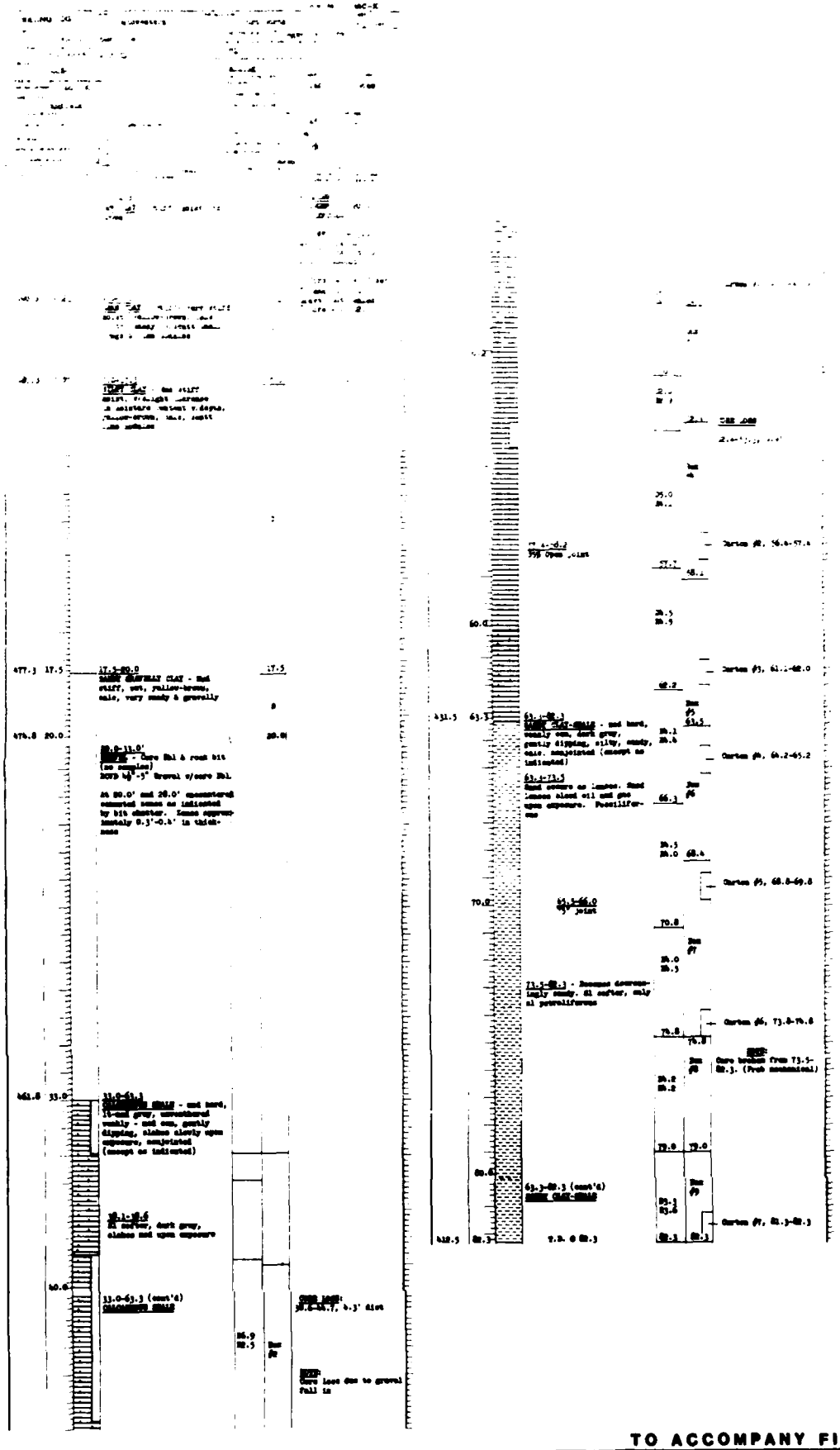
INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 6 OF 68
SEQUENCE NO. 6

ACCOMPANY FINAL FOUNDATION REPORT PLATE 81

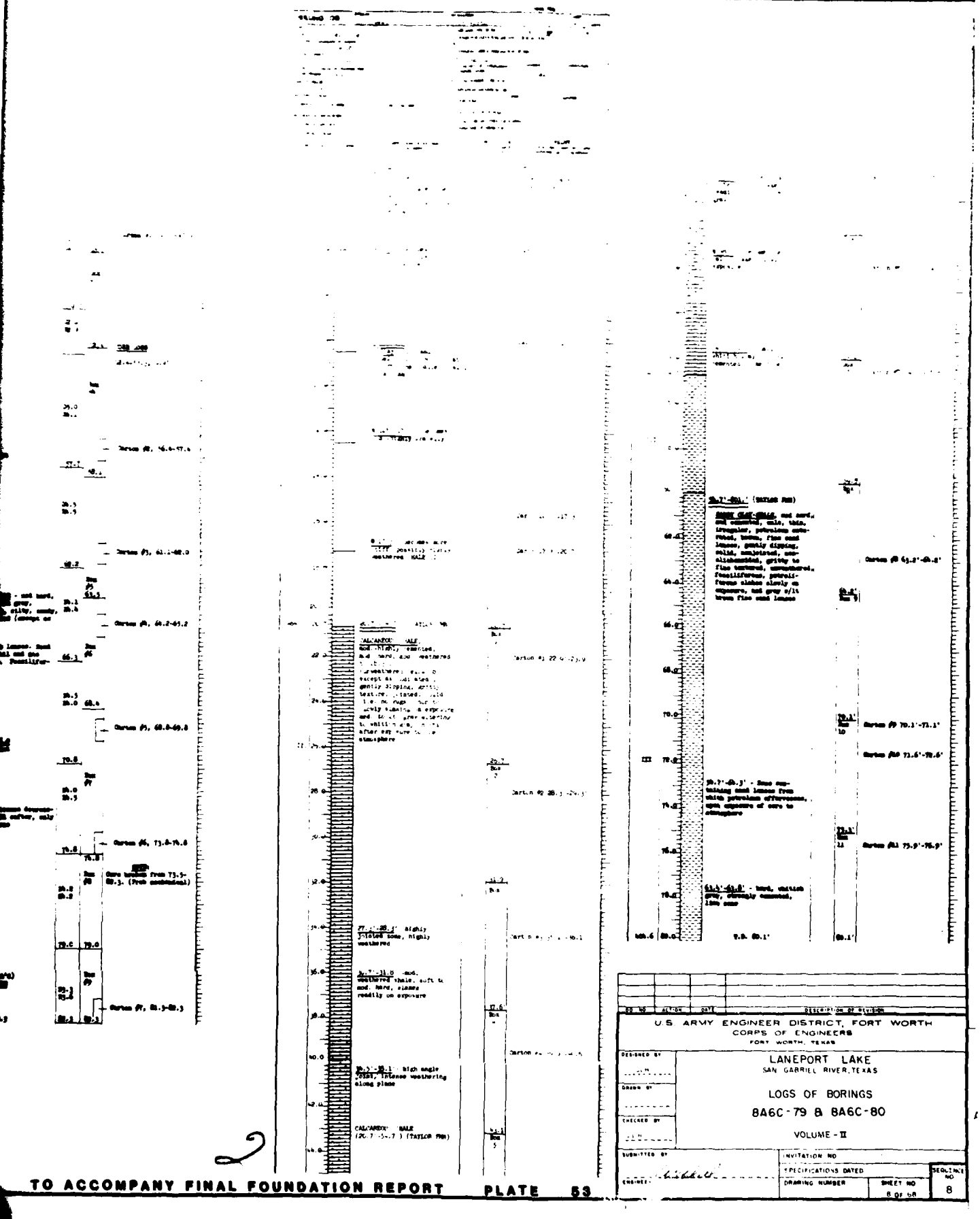


TO ACCOMPANY FINAL FOU

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 52



TO ACCOMPANY FINAL FOUNDAT



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

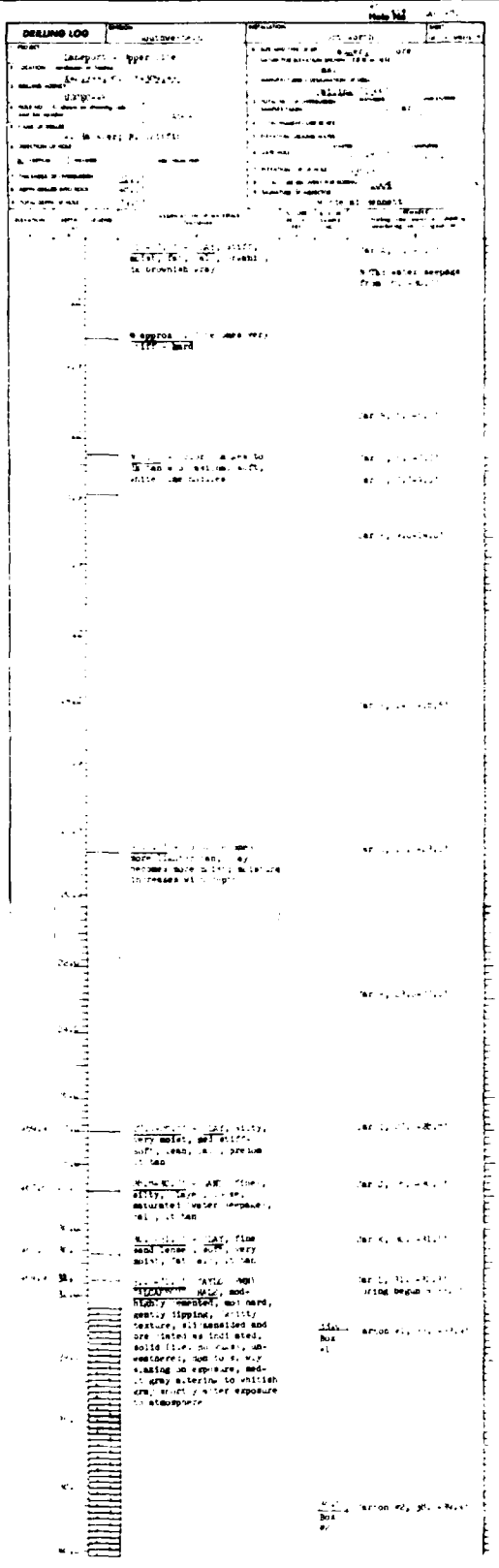
LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

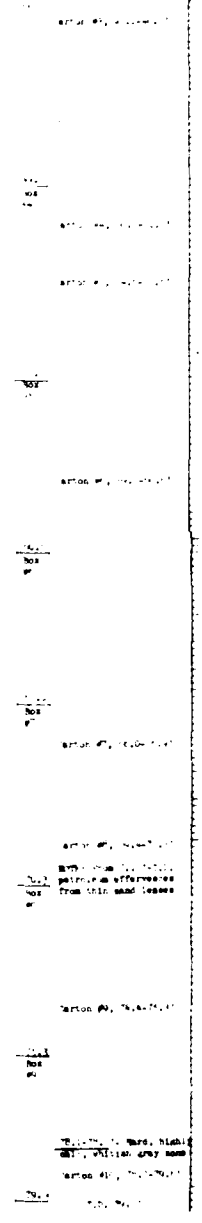
LOGS OF BORINGS
8A6C-79 & 8A6C-80

VOLUME - II

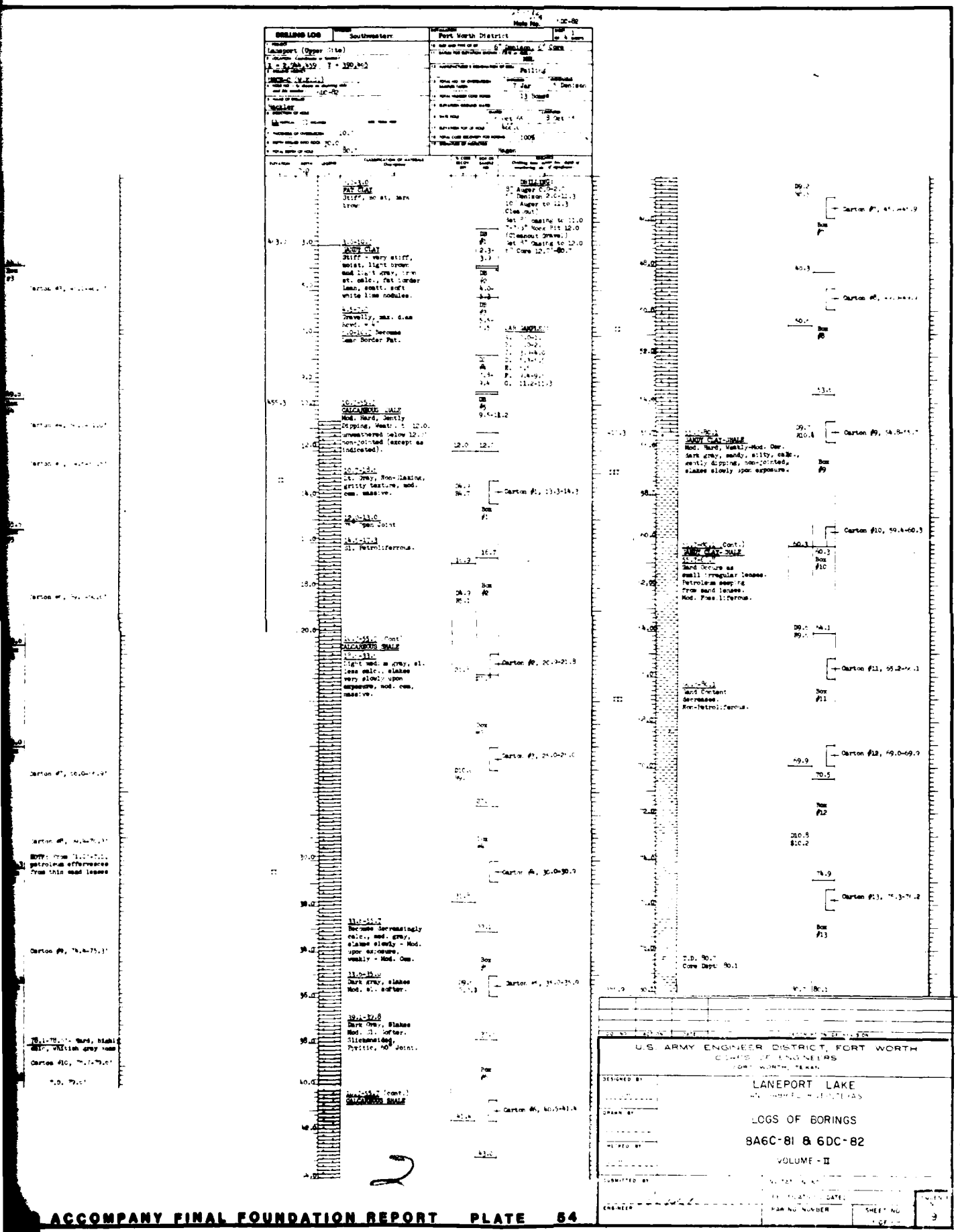
INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 8 OF 58
SEQ. SHT NO 8

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 53

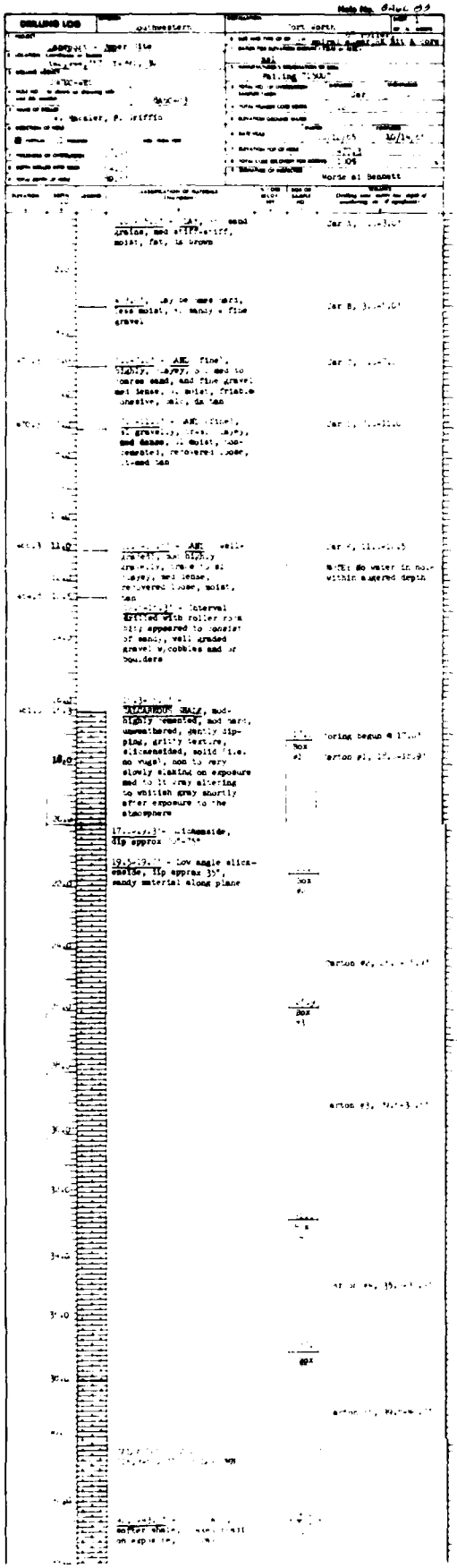


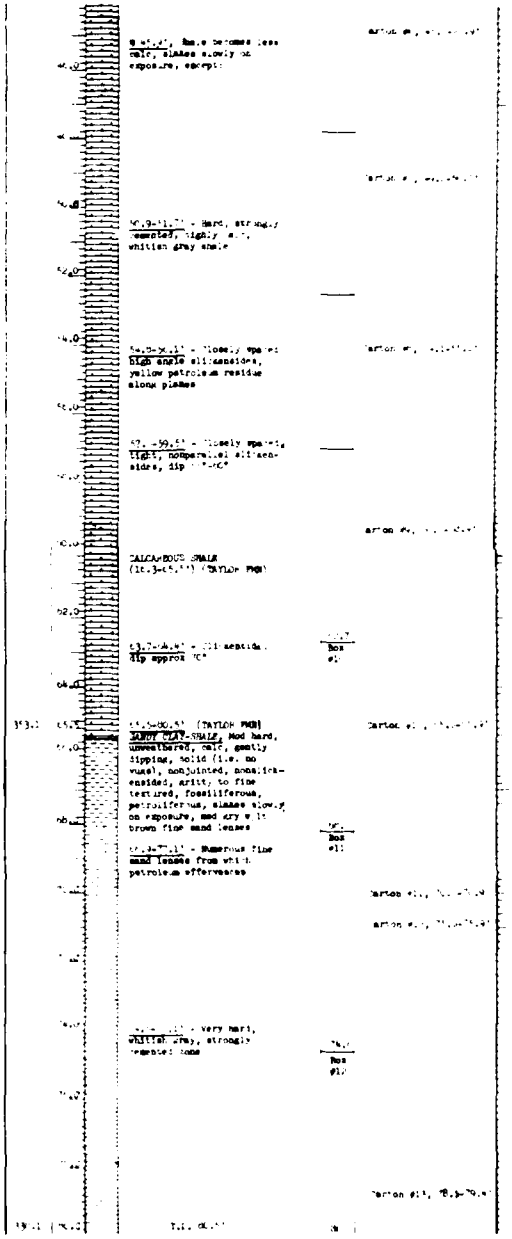


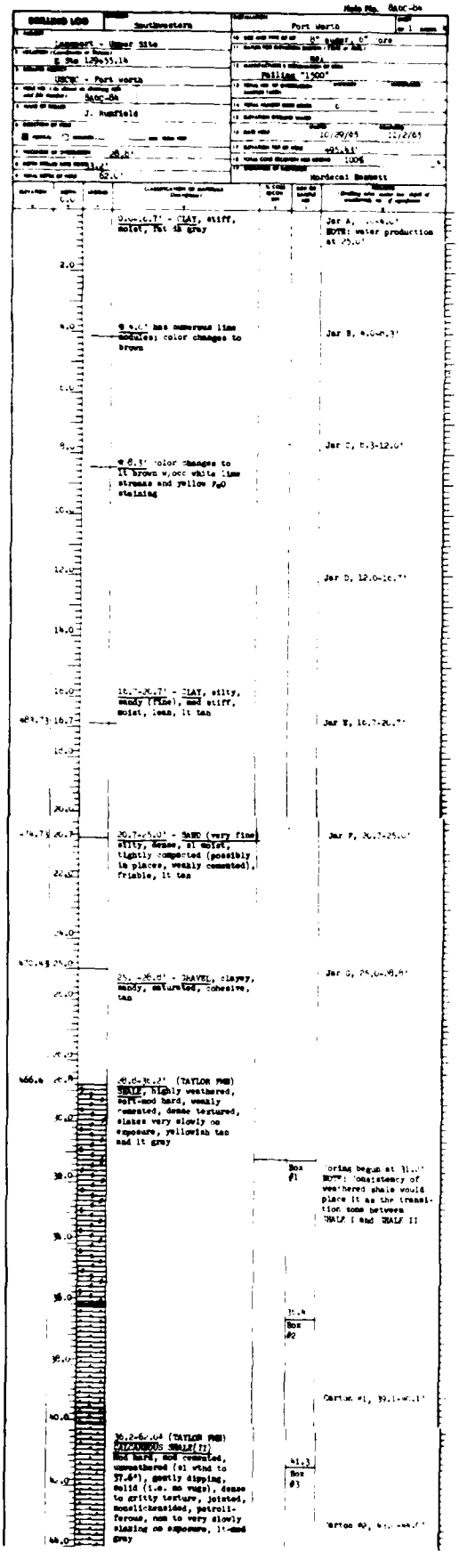
TO ACCOMPANY FINAL FOUND



ACCOMPANY FINAL FOUNDATION REPORT PLATE 54


DRILLING LOG
Horse el Bennett





U S ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
CHIEF

LANEPORT LAKE
GUADALUPE RIVER, TEXAS

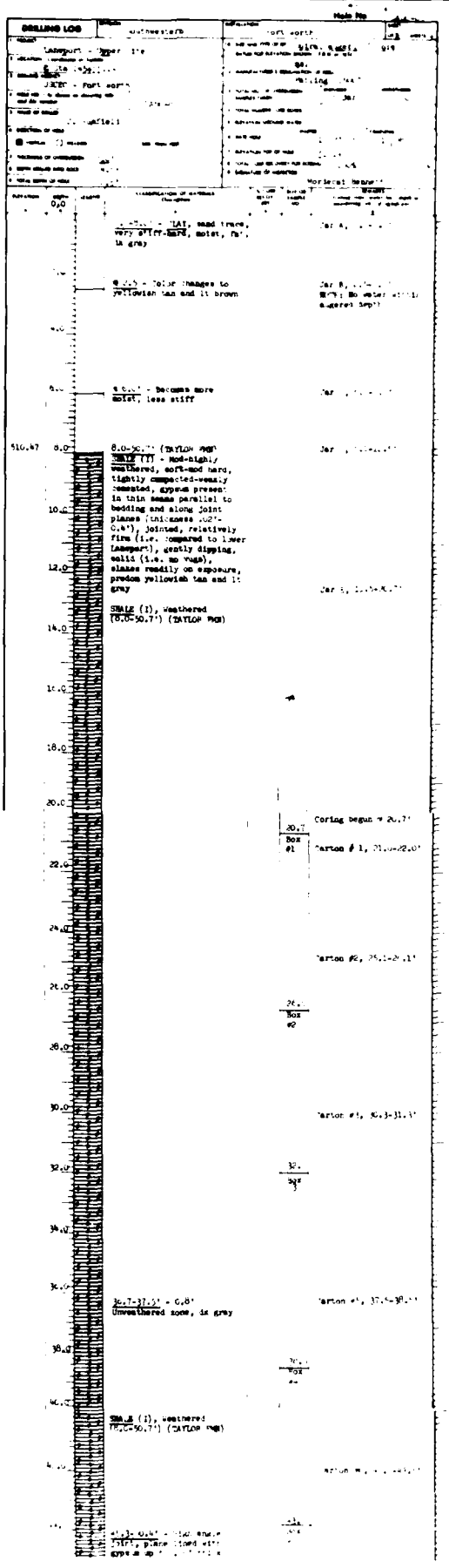
LOGS OF BORINGS

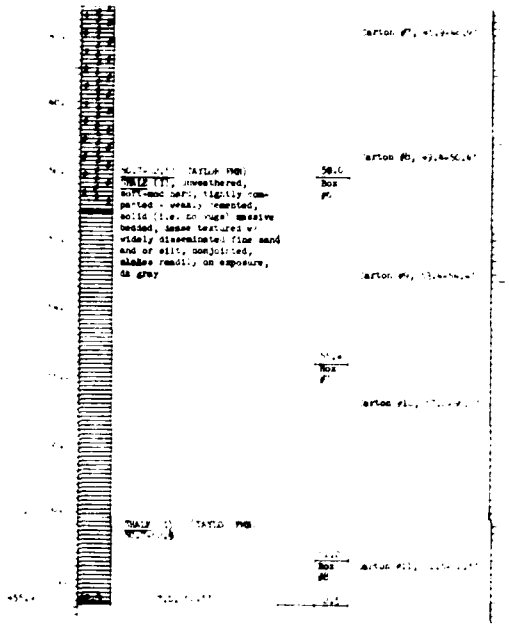
8A6C-83 & 8A6C-84

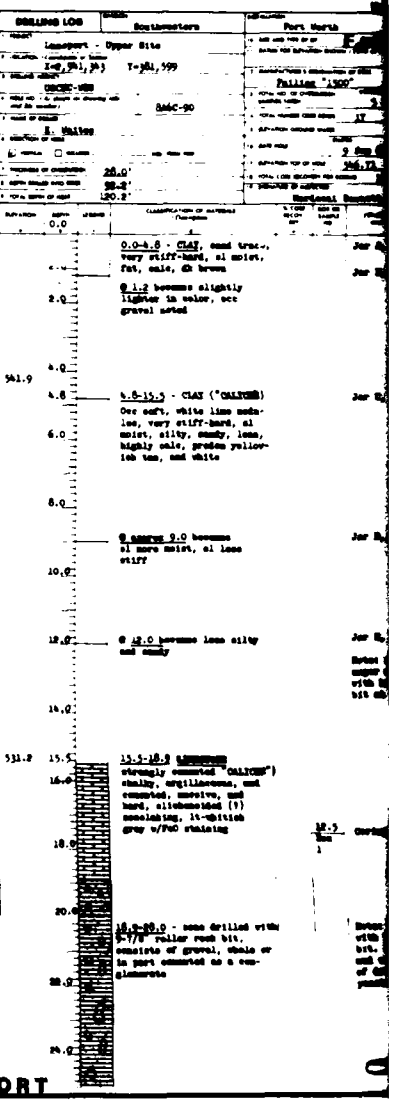
VOLUME - II

INITIATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 10 OF
SERVICE NO.

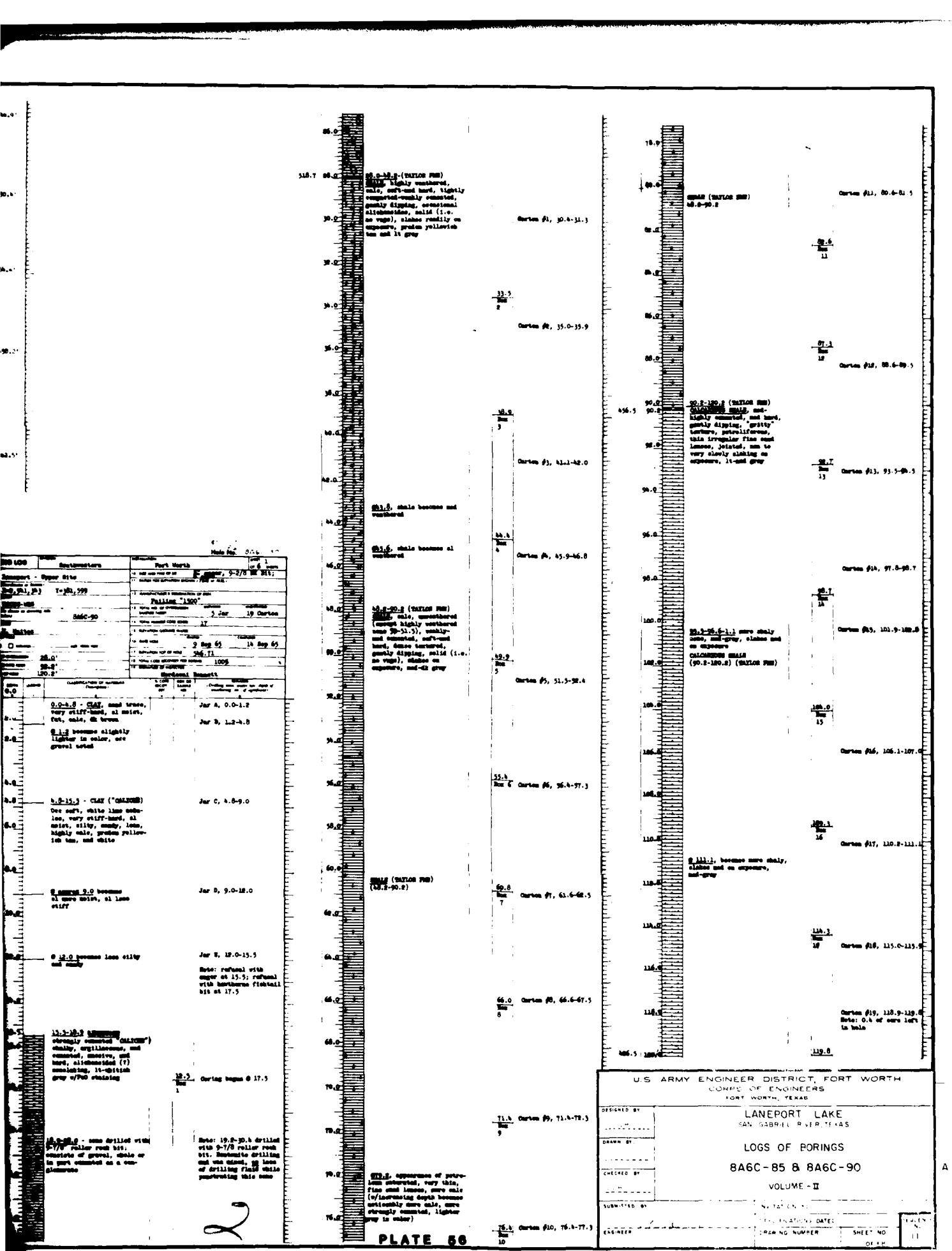
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 55

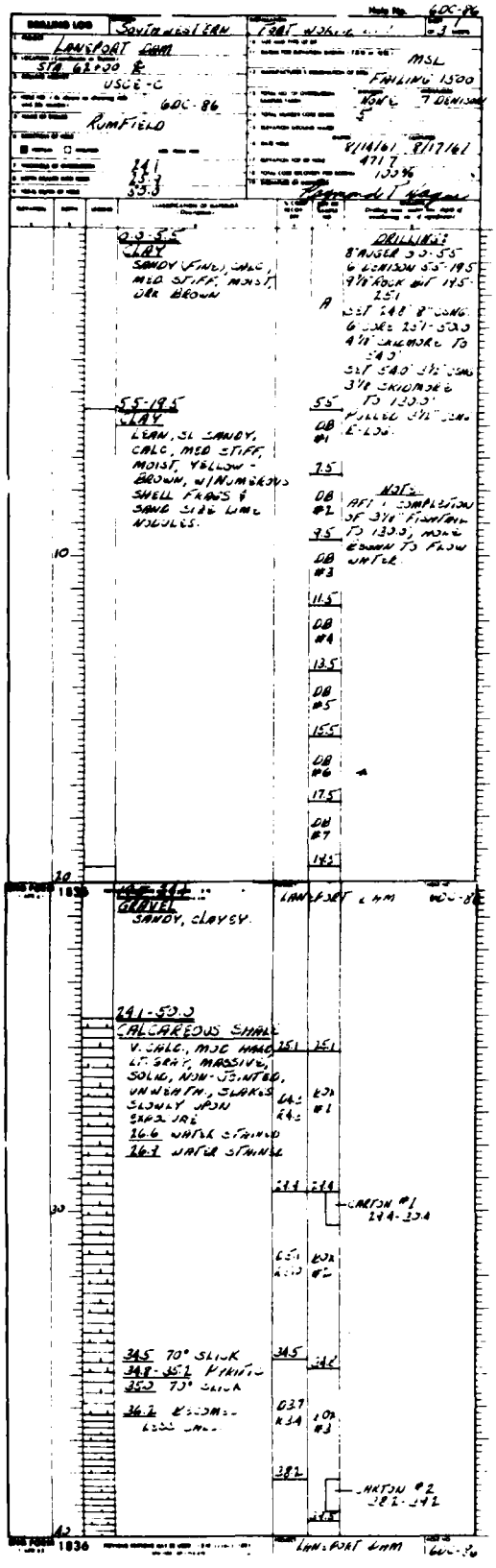


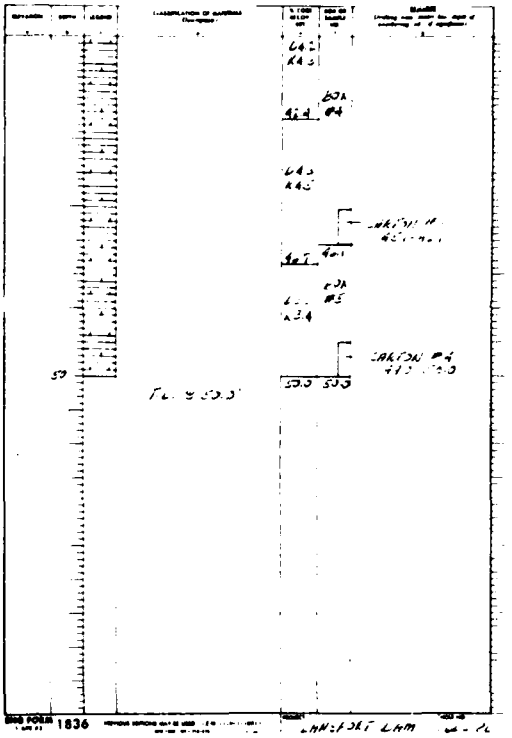


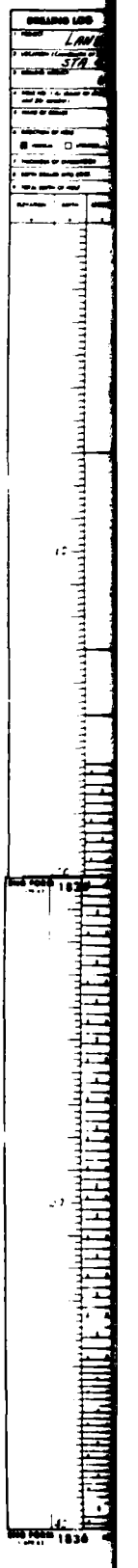


TO ACCOMPANY FINAL FOUNDATION REPORT

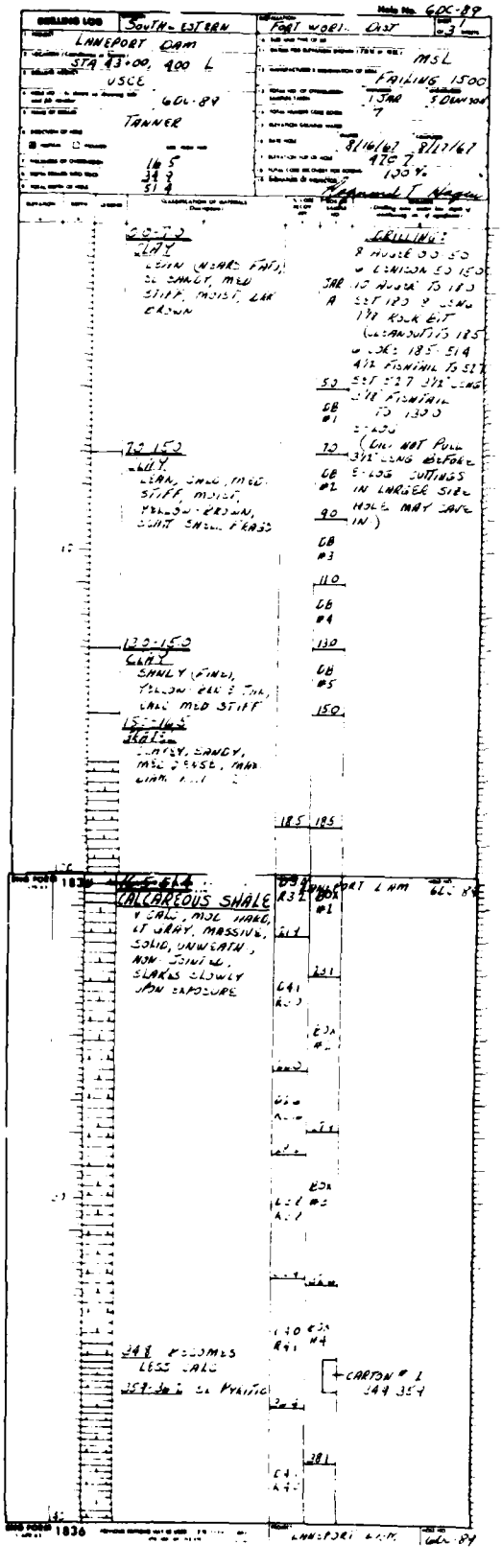

Fort Worth
Failing "1500"
5 Jan
19 Carton
9 Sep 65
14 Sep 65
546.71
1005
Mordecai Bennett
0.0-4.8 - CLAY, sand trace, very stiff-hard, al moist, fat, calc, dk brown
4.8-15.3 - CLAY ("CALCHE") Occ soft, white lime nodules, very stiff-hard, al moist, silty, sandy, lens, highly calc, prsnt yellowish tan, and white
@ approx 9.0 becomes al more moist, al less stiff
@ 12.0 becomes less silty and sandy
15.3-18.2 strongly cemented ("CALCHE") chalky, argillaceous, and cemented, massive, and hard, slightly(?) mottled, lt-mdlttish gray w/FeO staining
18.2-28.0 - zone drilled with 9-7/8 roller rock bit; consists of gravel, shale or in part cemented as a conglomerate
Jar A, 0.0-1.2
Jar B, 1.2-4.8
Jar C, 4.8-9.0
Jar D, 9.0-18.0
Jar E, 12.0-15.5
Note: refusal with auger at 15.5; refusal with hardmetal fishtail bit at 17.5
Coring begun @ 17.5
Note: 19.2-20.4 drilled with 9-7/8 roller rock bit. Concrete drilling and use abond, 25 hrs of drilling field while penetrating this zone
18.2-90.2 (TAYLOR FM) SHALE, highly weathered, calc, soft-and hard, tightly cemented-weakly cemented, gently dipping, occasional slickensides, solid (i.e. no voge), shales readily on exposure, prsnt yellowish tan and lt gray
Carton #1, 30.4-31.3
Carton #2, 35.0-35.9
@31.8, shale becomes mod weathered
@31.6, shale becomes sl weathered
40.8-90.2 (TAYLOR FM) SHALE, calc, generally highly weathered zone 39-51.5), weakly-mod cemented, soft-and hard, dense textured, gently dipping, solid (i.e. no vugs), shales on exposure, med-dk gray
Carton #3, 41.1-42.0
Carton #4, 45.9-46.8
Carton #5, 51.5-52.4
Carton #6, 56.4-57.3
SHALE (TAYLOR FM) (18.2-90.2)
Carton #7, 61.6-62.5
Carton #8, 66.6-67.5
@71.5, appearance of petroleum saturated, very thin, fine sand lenses, zone calc (w/increasing depth becomes noticeably more calc, more strongly cemented, lighter gray in color)
Carton #9, 71.4-72.3
Carton #10, 76.4-77.3
90.2-120.8 (TAYLOR FM) CALCAREOUS SHALE, mod-highly cemented, and hard, gently dipping, "gritty" texture, petroliferous, thin irregular fine sand lenses, jointed, mm to very slowly slaking on exposure, lt-med gray
95.5-96.6-1.1 more shaly zone, med-gray, slakes mod on exposure
CALCAREOUS SHALE (90.2-120.8) (TAYLOR FM)
@ 111.1, becomes more shaly, slakes mod on exposure, med-gray
Carton #11, 80.6-81.5
Carton #12, 88.6-89.5
Carton #13, 93.5-94.5
Carton #14, 97.8-98.7
Carton #15, 101.9-102.8
Carton #16, 106.1-107.0
Carton #17, 110.2-111.1
Carton #18, 115.0-115.9
Carton #19, 118.9-119.8
Note: 0.4 of core left in hole
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS
LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS
LOGS OF BORINGS
8A6C-85 & 8A6C-90
VOLUME - II
DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER
DRAWING NUMBER
SHEET NO
PLATE 56

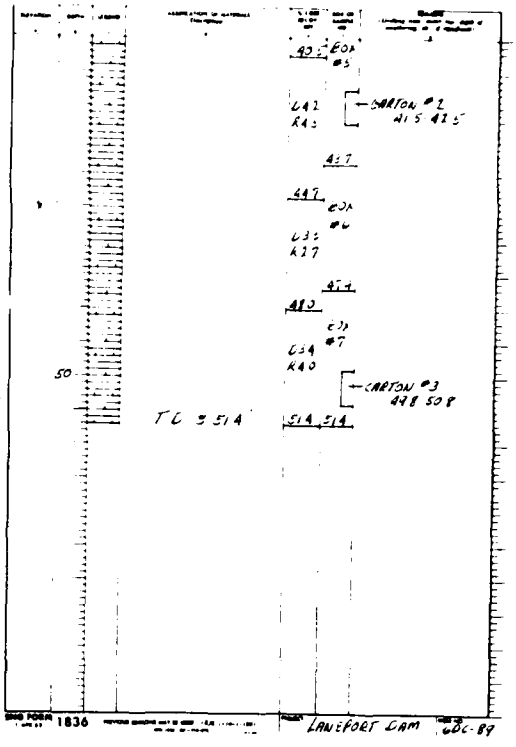






TO ACCOMPANY FINAL





DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
6DC-86 & 6DC-89
VOLUME - II

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO
SEQUENCE NO 12

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 57

DRILLING LOG — Southwestern — Fort Worth

Main No. SaAC-87

Lansgert (Upper Site)

320' SE @ Sta 75+20.14

SaAC-87

E. Waites

8" diam auger, 6" diam core

Falling 1'x00"

5 Jan

12

11/18/65 — 1/17/65

18.6'
65.4
80.0

100%

Horizontal Reservoir Height

0.0

0.0-14.6' CLAY, silt trace, moist, fat, dk brown

Jar A, 0.0-6.0'

NOTE: No water encountered within explored depth

2.0

4.0

@ 4.0', color changes to red brown

Jar B, 6.0-8.6'

6.0

8.0

@ 8.6', becomes red gravelly

Jar C, 8.6-10.0'

10.0

@ 10.0', clay becomes more moist, less stiff, color changes to tan

Jar D, 10.0-14.6'

12.2

14.6-20.1' (TAYLOR FM?)

14.0

641.10

CALCAREOUS SHALE (II) Highly weathered, soft, weakly cemented, jointed, fractured, solid (i.e. no vugs), flakes mod to readily on exposure, lt gray and yellowish tan

Coring began @ 16.0'

16.0'

Carton #1, 16.2-17.1

Carton #2, 17.5-18.5'

16.0

18.0

20.9

20.1-39.5' (TAYLOR FM?) CALCAREOUS SHALE (II), mod hard, mod cemented, massive bedded, gently dipping, dense to gritty texture, solid (i.e. no vugs), slickensided, jointed, fractured, mod to very slowly slaking on exposure, mod gray altering to whitish gray shortly after exposure to atmosphere

NOTE: Sl weathering 20.3-24.3', unweathered below 24.3

22.1' Box #2

Carton #3, 22.8-23.7'

NOTE: - Partially decayed plant roots observed in core 16.0-24.3'

20.2-22.1' - Highly fractured, highly jointed w/white lime powder along joint planes

28.9' - 0.3' hard, strongly cemented zone

26.9' Box #3

Carton #4, 26.9-27.9'

32.0' Box #4

Carton #5, 32.0-33.0'

30.0± 0.1' brecciated zone

36.0-36.8' - irregularly fractured zone

SPECIAL SAMPLE #1 (of 1) 37.4-38.0', this sample delivered to District Lab

36.0-36.8' - irregularly fractured zone

37.4' Box #5

Carton #6, 38.0-39.0

36.8-37.1' - high angle sick

636.2 39.5

40.0

37.1-38.0' - brecciated zone

42.0

19.5-80.0' (TAYLOR FM?) SANDY CLAY-SHALE (III) Calc, mod hard, mod cemented unweathered, sandy (including thin, irregular, brown, petroleum sold, fine sand lenses) thin to mod bedded, gently dipping, gritty texture, joints, slickensided, flakes slowly on exposure, med-dk gray

42.5 Box #6

Carton #7, 42.5-43.5'

44.0

46.0

39.5-50.4' - Noticeably more sandy, petroleum offervesces from fine sand lenses

48.0

48.4 Box #7

Carton #8, 48.4-49.4

50.0

Carton #9, 53.4-54.0'

54.6 Box #8

54.0

56.0

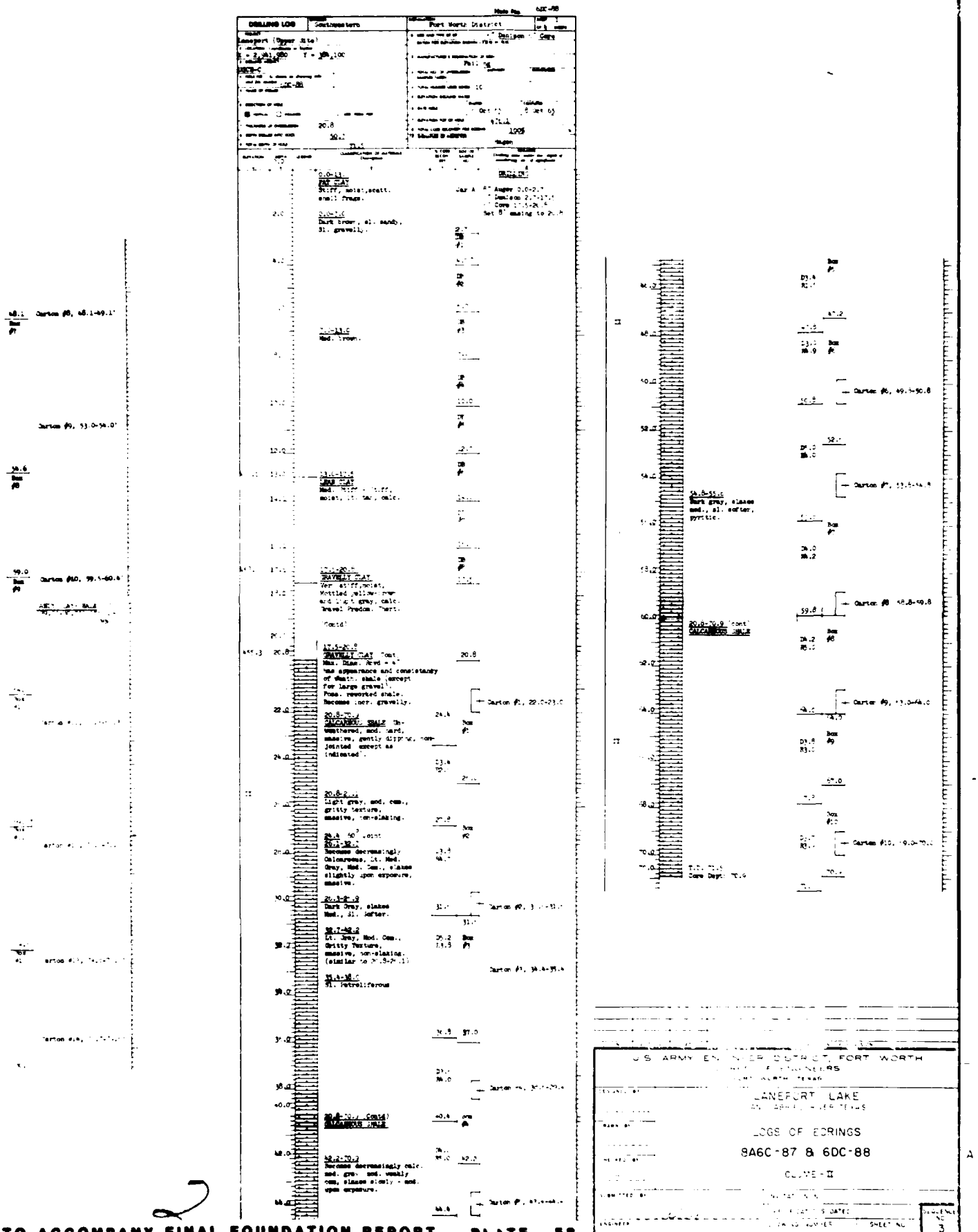
58.0

59.0 Box #9

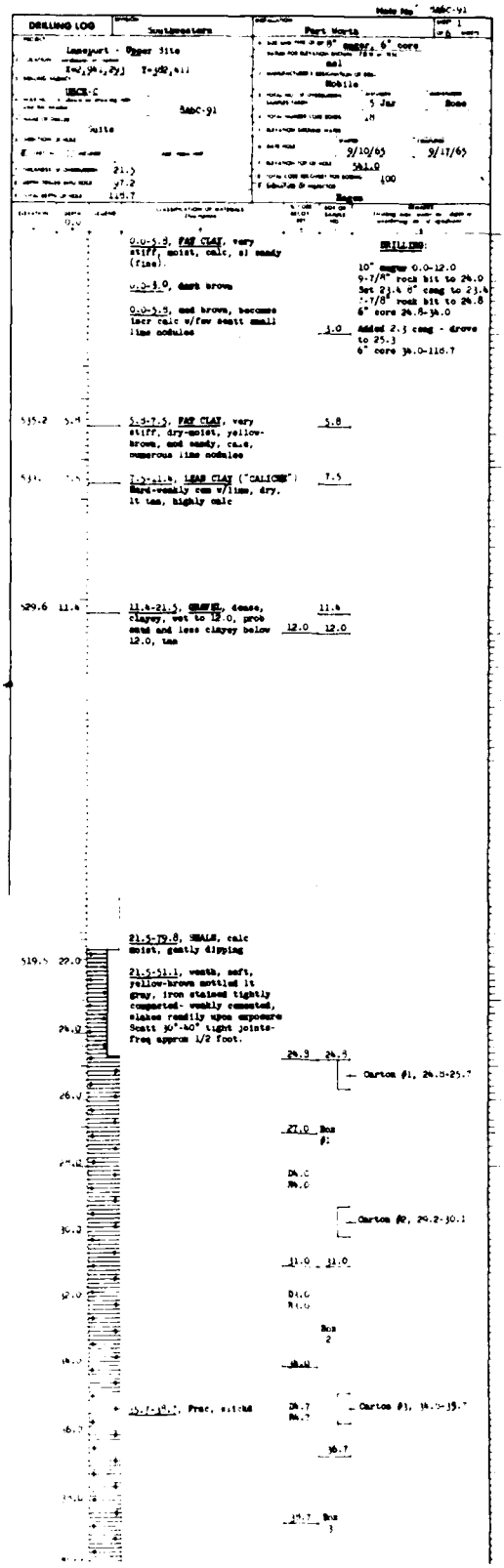
Carton #10, 59.4-60.4

60.0

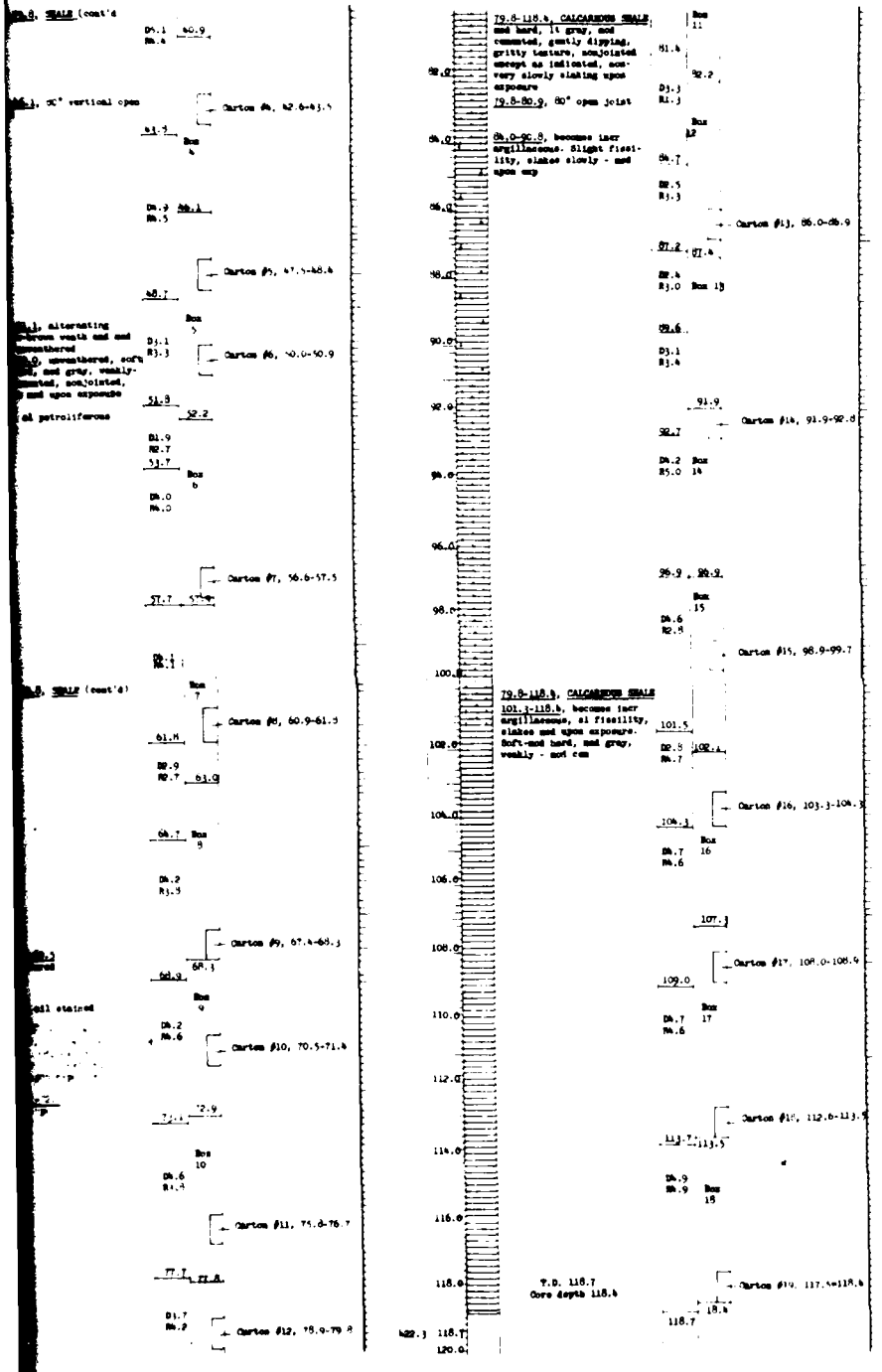
TO ACCOMPANY



TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 88



TO ACCOMPANY FINAL FOUNDA



DO NO.	ACTION	DATE	DESIGN OF MODIFICATION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-91

VOLUME - II

A

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 4 OF
SEQUENCE NO 14

Hole No. 8A6C-92

DRILLING LOG	Division: Southwestern	Installation: Fort Worth	Sheet 1 of 7 sheets
Project: Lanesport - Upper Site		2 7/8" roller, 6" auger, 6" core	
Location: Coordinates or Station: X=2,941,335 Y=382,001		Size and type of air or bottom-hole drilling: mol	
Drilling Agency: WCCO-WES		Manufacturer's designation of drill: Failing "1500"	
Hole No. (To be shown on drawing title and file number): 8A6C-92		Total no. of overburden samples taken: 6 Jar 18 Carton	
Name of Driller: K. Walton		Total number core boxes: 20	
Direction of hole: ☒ Vertical ☐ Inclined		Elevation ground water:	
Thickness of overburden: 25.4		Date hole: 14 Sep 65 17 Sep 65	
Depth drilled into rock: 95.6		Elevation top of hole: 543.80	
Total depth of hole: 121.0		Total core recovery (%): 100%	
		Nordecal Bennett	

Elevation	Depth	Classification of materials (Description)	% Core recovery	Box or sample no.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0	0.0-3.6 [illegible], fine sand trace, [illegible]ry stiff, sl moist, fat, [illegible], dk brown			Jar A, 0.0-3.6 Note: no water encountered within augured depth
	0.2				
540.2	3.6	3.6-14.0-CLAY (CALICHE) nodules of fine gravel and size, silty, hard, sl moist, lean, highly calc, predom lt yellowish tan and whitish gray			Jar B, 3.6-5.3
	4.0	@ 5.3, color changes to yellowish tan			Jar C, 5.3-9.0
	6.0				
	8.0				Jar D, 9.0-14.0 Note: refusal with auger @ 14.0. Zone from 14.0-18.6 drilled with 6" core barrel
	10.0				
	12.0				
529.8	14.0	14.0-18.6, CALICHE (LSTT) mod cemented, massive, chalky, highly calc, whitish gray-lt gray w/yellow FeO staining w/weakly cemented, tan, fine sand lenses: .3 thick @ 14.0 .3 thick @ 15.6 .2 thick @ 16.7	14.0	14.0 Box 1	Jar E, recovered at 15.6
	16.0				
	18.0			17.5 Box 2	Jar F, recovered at 17.9
525.2	18.6				
	20.0	18.6-25.4 - Sand and gravel, at least in part, cemented			Note: 18.6-25.4, drilled with 9-7/8" roller rock bit. No water loss while penetrating this zone
	22.0				
	24.0				
518.4	25.4	25.4-53.2 (TAYLOR FMN) SHALE, highly weathered, tightly compacted to weakly cemented, calc soft-mod hard, dense textured, gently dipping, slickensided, jointed, slakes very readily on exposure, moist, predom lt yellowish tan and lt gray			
	26.0				Carton #1, 26.5-27.5
	28.0				
	30.0			29.5 Box 3	Carton #2, 31.7-32.6
	32.0				
	34.0				
	36.0			35.0 Box 4	Carton #3, 36.3-37.2
	38.0				
	40.0				

Depth	Classification of materials (Description)	Box	Remarks
	SHALE (TAYLOR FMN) weathered (25.4-53.2)	[illegible] Box	Carton #4, 41.6-42.5
42.0	@ 42.6, Shale becomes mod weathered		
44.0	@ 47.6-53.2, alternating weathered and unweathered zones, each approx [illegible] thick	[illegible] Box [illegible]	Carton #5, 46.2-47.[illegible]
46.0			
48.0			
50.0			
52.0		Box	Carton #6, 52.2-53.[illegible]
	53.2-81.7 (TAYLOR FMN) SHALE, calc, soft-mod hard, weakly-mod cemented, dense textured, gently dipping, solid (i.e. no vugs), unweathered (except highly weathered zone 55.3-56.0), slakes readily on exposure, dk gray		
54.0			
56.0			
		[illegible] Box [illegible]	Carton #7, 58.1-59.0
58.0			
60.0	SHALE (TAYLOR FMN) (53.2-81.7)		
62.0		62.5 Box 9	Carton #8, 63.5-64.4
64.0			
66.0			
68.0		67.9 Box 10	Carton #9, 68.0-68.9
70.0			
72.0	@ 72.2, SHALE becomes noticeably more calc, more strongly cemented, lighter in color; appearance of petroleum saturated, irregular, very thin, fine sand lenses	72.2 Box 11	Carton #10, 74.0-74.9
74.0			
76.0			
78.0		77.6 Box 12	Carton #11, 79.0-79.9
80.0			

TO ACCOMPANY FINAL

(TAYLOR FMN)
...ered (25.4-53.2)

40.4
Box
5

Carton #4, 41.6-42.5

...6, Shale becomes mod
...ered

...-53.2, alternating
...ered and unweathered
..., each approx 0.5-0.7

45.5
Box
6

Carton #5, 46.2-47.1

...1
Box
7

Carton #6, 52.2-53.1

...-81.7 (TAYLOR FMN)
..., encl, soft-mod hard,
...y-mod cemented, dense
...ered, gently dipping,
... (i.e. no vugs),
...thered (except highly
...ered zone 55.3-56.0),
... readily on exposure,
...

57.1
Box
8

Carton #7, 58.1-59.0

... (TAYLOR FMN)
...-81.7)

62.5
Box
9

Carton #8, 63.5-64.4

67.9
Box
10

Carton #9, 68.0-68.9

... SHALE becomes
...ly more calc, more
...y cemented, lighter
...; appearance of petro-
...terated, irregular,
...ts, fine sand lenses

72.2
Box
11

Carton #10, 74.0-74.9

77.6
Box
12

Carton #11, 79.0-79.9

462.1

81.7
82.0
84.0
86.0
88.0
90.0
92.0
94.0
96.0
98.0
100.0
102.0
104.0
106.0
108.0
110.0
112.0
114.0
116.0
118.0
120.0

81.7- (TAYLOR FMN)
CALCAREOUS SHALE, mod hard, mod-strongly cemented, unweathered, gently dipping, dense to gritty texture, solid (i.e. no vugs) non to very slowly slaking on exposure, mod gray altering to lt gray shortly after exposure to the atmosphere, irregular very thin, petroleum saturated, fine sand lenses

88.2-89.2, noticeably more shaly zone, dker gray in color, slakes readily on exposure

CALCAREOUS SHALE
(81.7-121.0) (TAYLOR FMN)

@ approx 112.0, becomes noticeably more shaly, darker gray in color
113.3, low angle slickenside, pyrite and calcite along plane
113.3-113.7, irregular pyrite seams
113.4-0.01 soft, glauconitic (?) clay lens, greenish gray

TD 121.0

82.0
Box
13

Carton #12, 84.1-85.0

87.6
Box
14

Carton #13, 91.9-92.8

93.8
Box
15

Carton #14, 97.8-98.7

98.7
Box
16

Carton #15, 103.0-103.9

103.9
Box
17

Carton #16, 108.0-108.9

108.9
Box
18

Carton #17, 113.3-114.2

114.0
Box
19

Carton #18, 116.7-117

119.0
Box
20

DO NO	ACTION	DATE	DESCRIPTION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-92

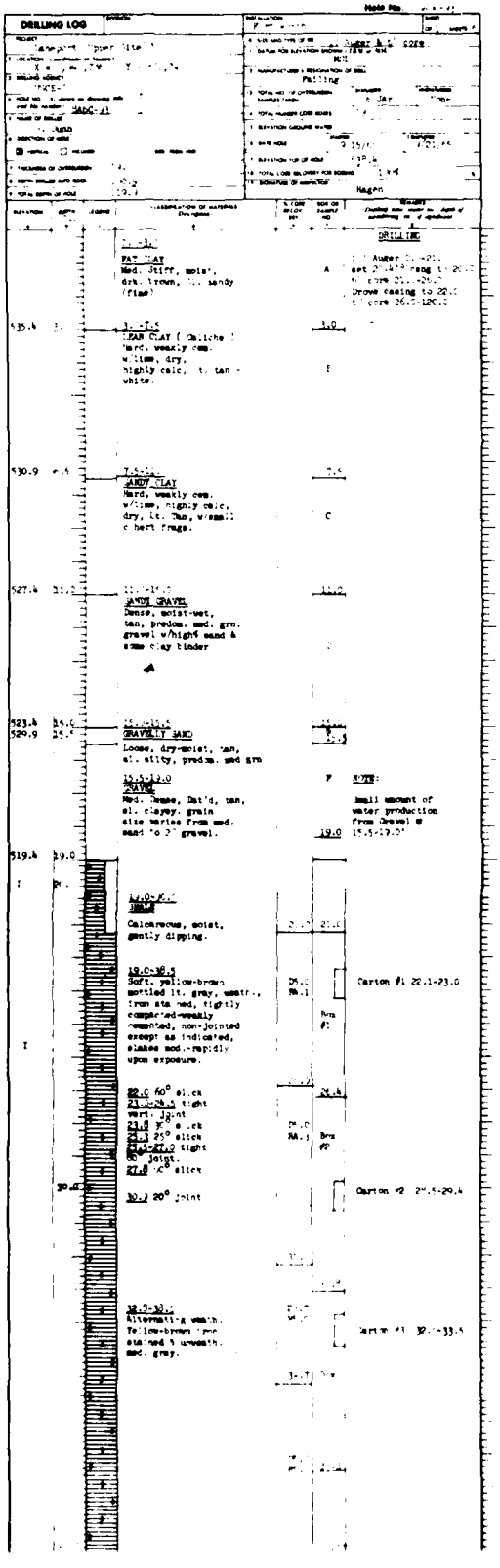
VOLUME - II

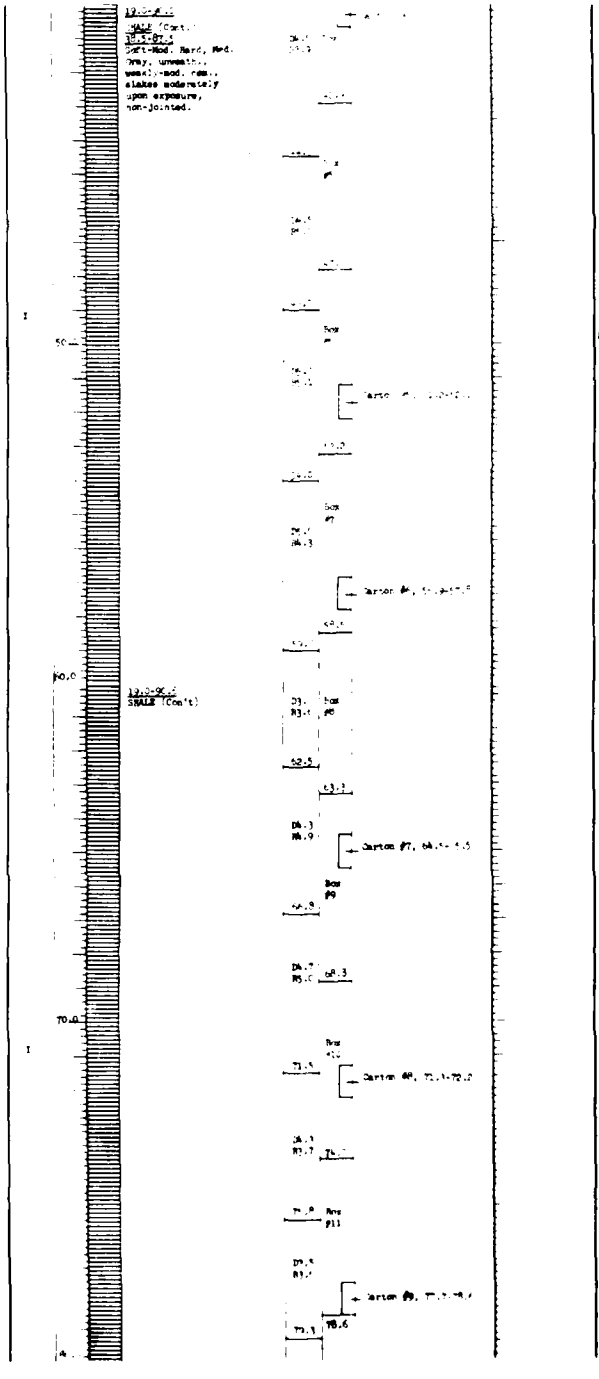
INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO
15 OF 66
SEQUENCE NO
15

A

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 60





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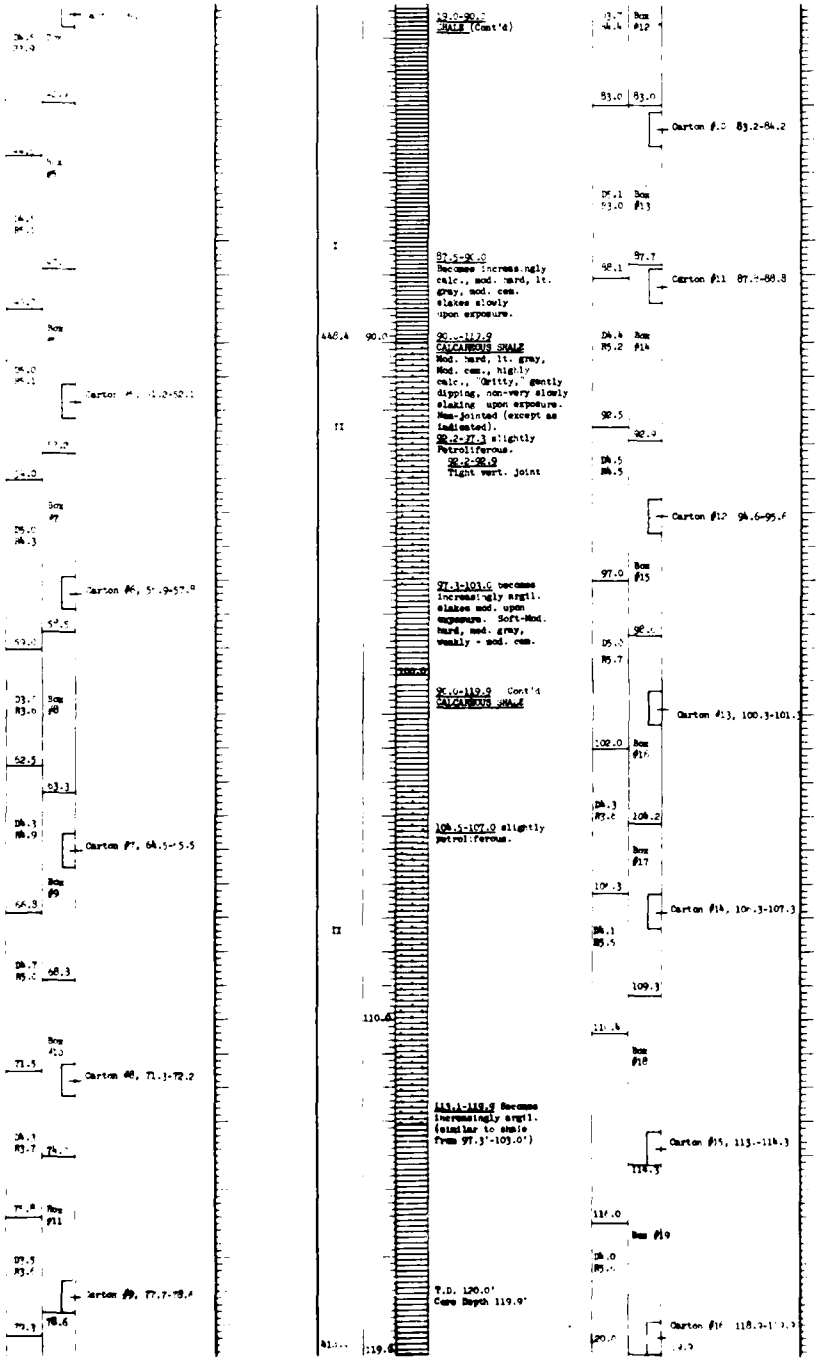

NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
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CHECKED BY

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-93

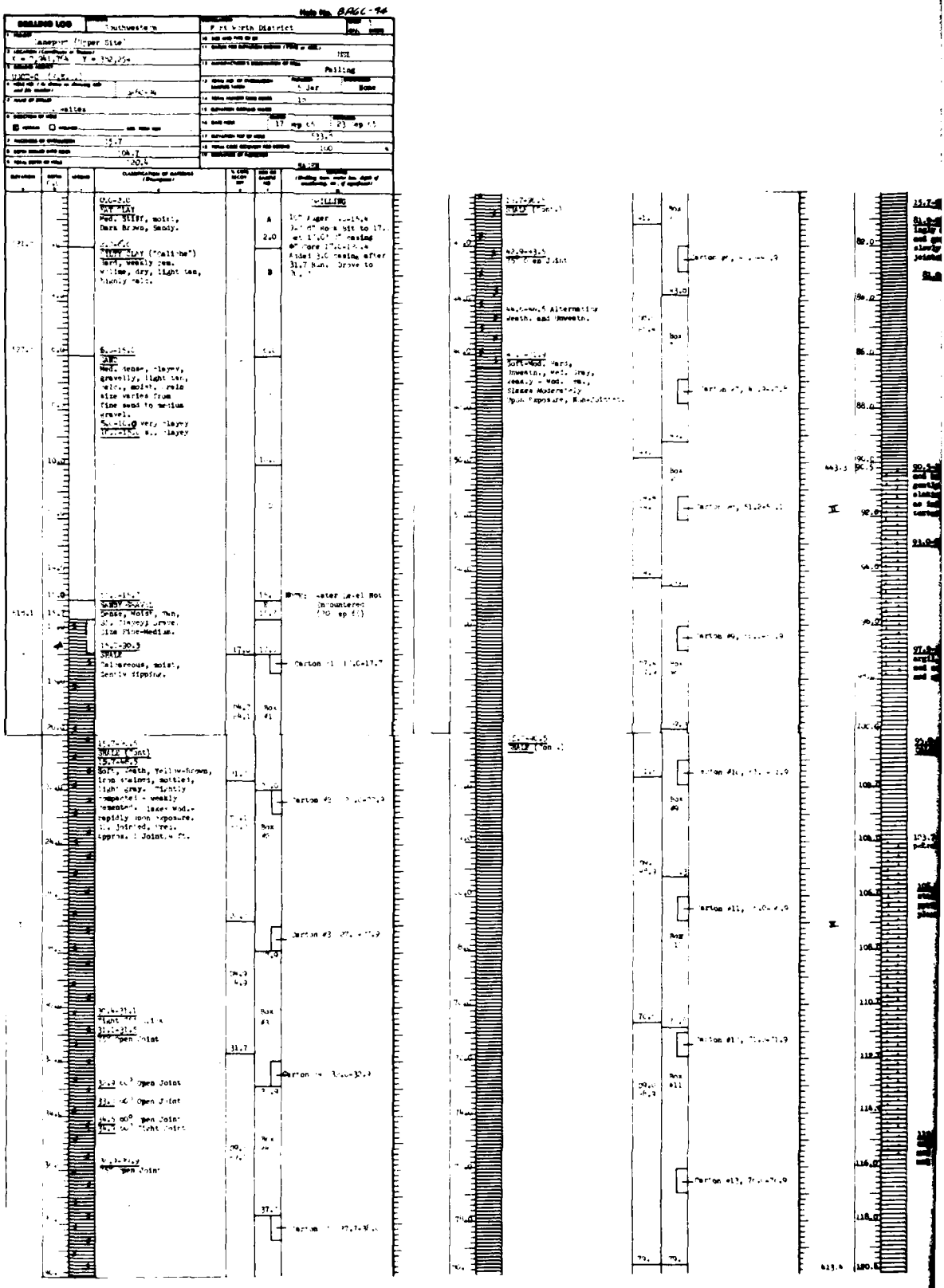
VOLUME - II

SUBMITTED BY
ENGINEER

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 15 of 58
SEQUENCE NO. 16

A

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 61



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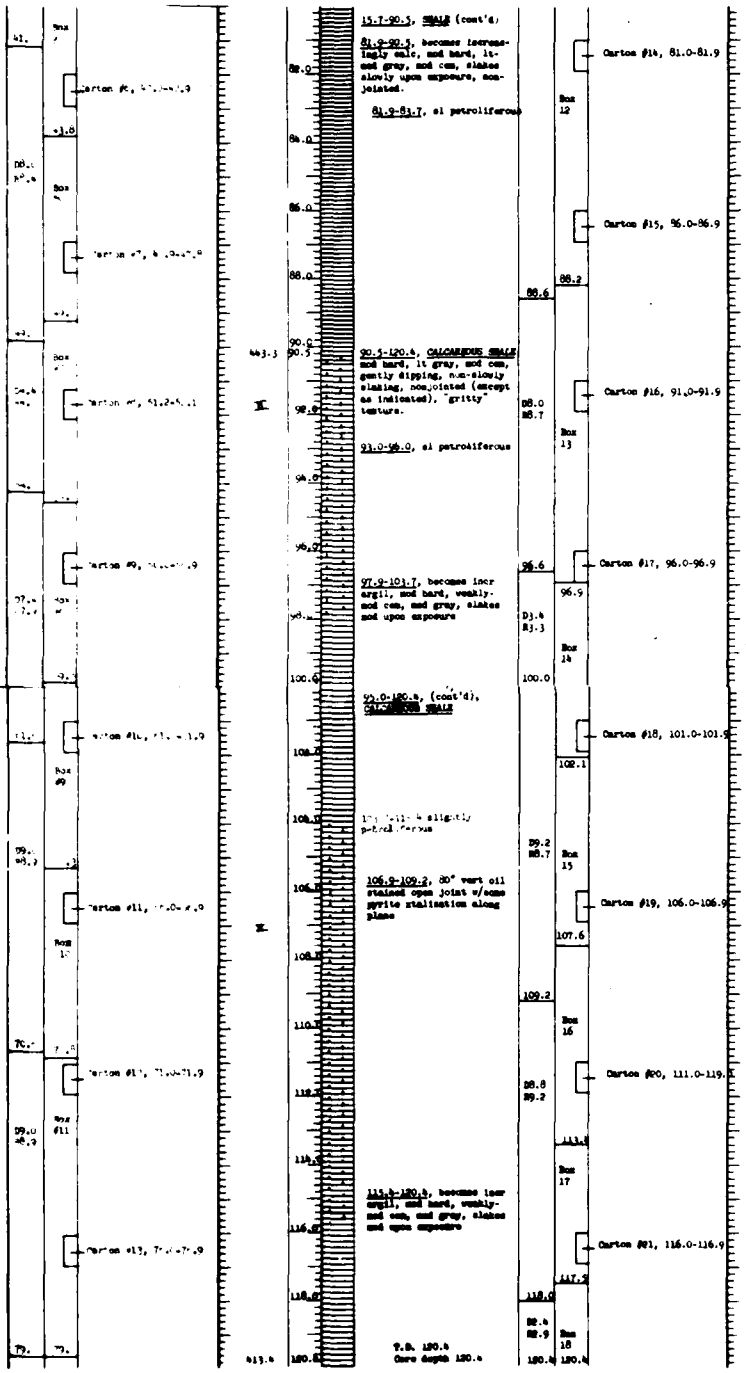


NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY JLM
DRAWN BY
CHECKED BY JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-94

VOLUME - II

A

SUBMITTED BY
ENGINEER

INVITATION NO. DACW63-72-B-0095
SPECIFICATIONS DATED MAY 1972
DRAWING NUMBER
SHEET NO 17 OF 68
SEQUENCE NO 17

ACCOMPANY FINAL FOUNDATION REPORT PLATE 62

Made by: BAGC-95

DRILLING LOG — Name: Southwestern — Fort Worth District — Sheet 1 of 6 sheets

Location (Direct Site): X = 2,340,961 Y = 368,000

USAEC - Fort Worth District

Hole No.: BAGC-95

Name of Driller: Fain

Type: Mobile B-58 (Pacemaker)

Total depth of hole: 101.4 / 119.9

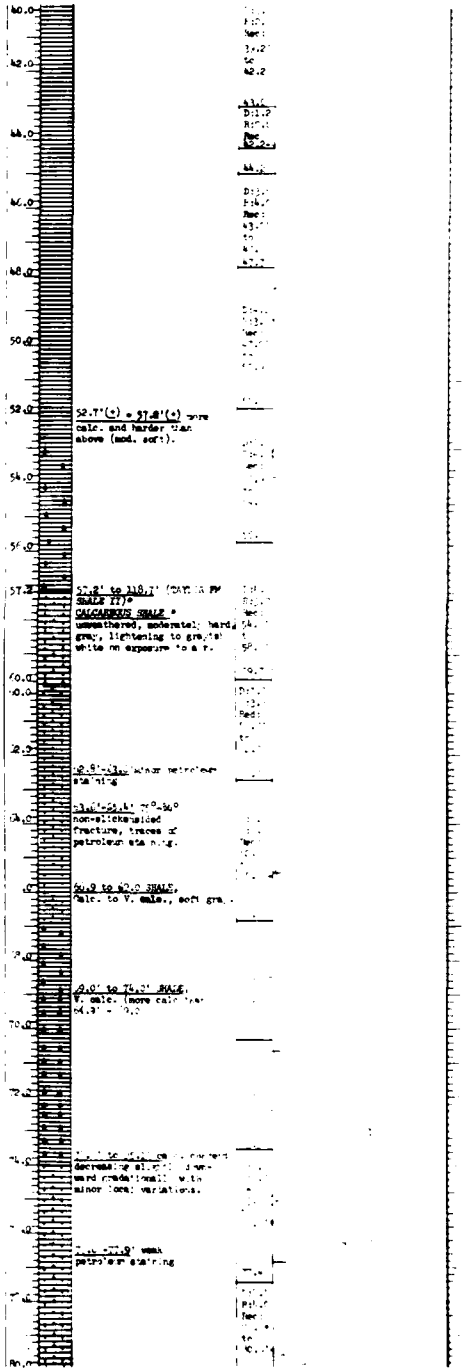
Date hole started: 20 Sep 65 — Date completed: 28 Sep 65

Surface elevation: 532.4

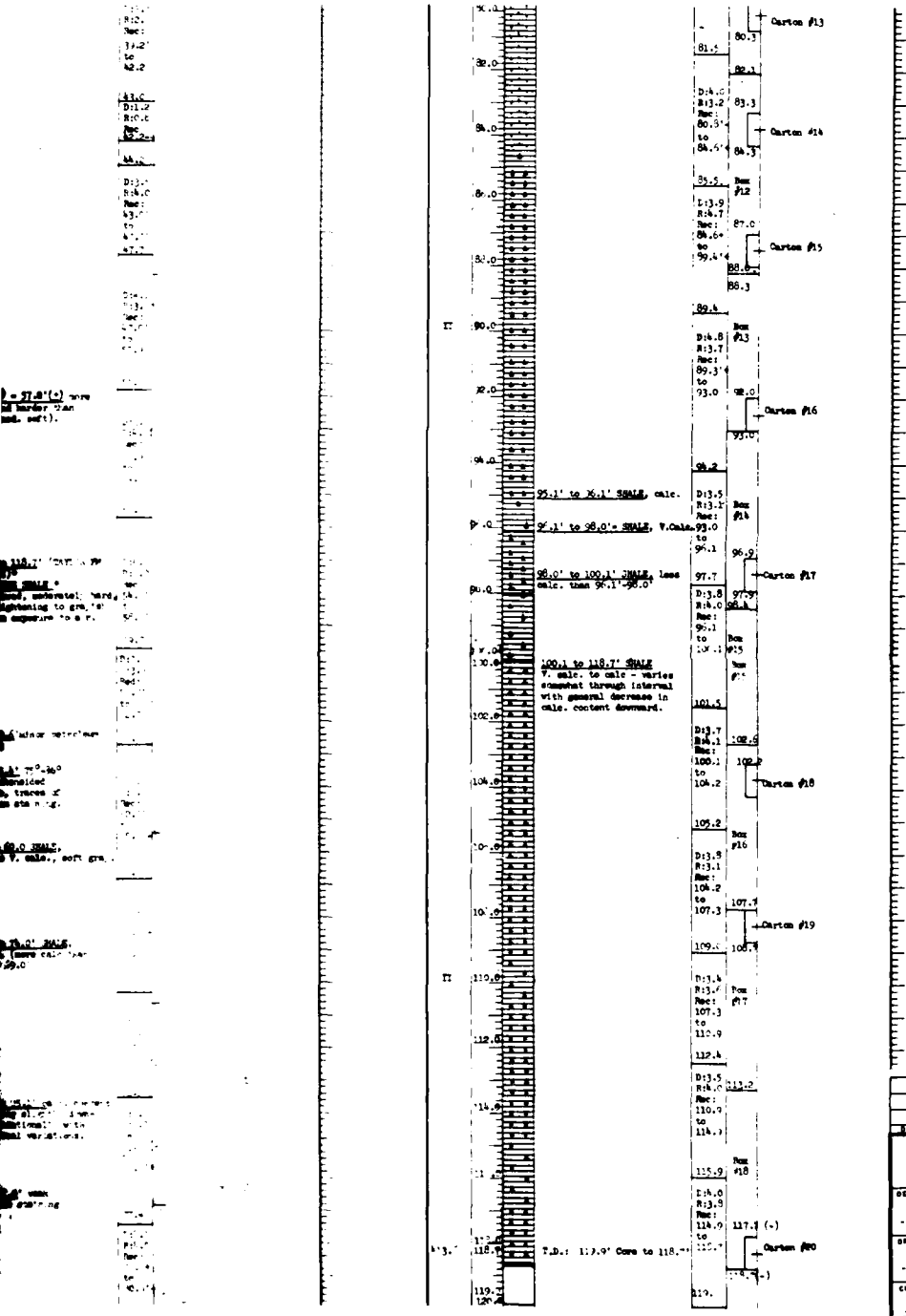
Total core recovery: 99%

Logged by: GEORGE H. RUTHER

Elevation	Depth	Legend	Classification of materials (Description)	% core recovery	Core no.	Remarks (Drilling time, water loss, depth of weathering, etc. if significant)
	0.0		0.0 to 1.5 CLAY, silty, hard, dry few roots, hard to crumbly with fingers, brown.	0.0 A	0.0 A	*Standardized project nomenclature
530.8	1.5		1.5 to 6.5 CLAY, with small % embedded sand grns, hard, very slightly moist, hard to crumbly, brown.		1.5 B	AUGER SAMPLES: No. A: 0.0 to 1.5 No. B: 1.5 to 6.5 No. C: 6.5 to 7.2 Auger refusal at 7.2' Rambit from 7.2' to 18.5'. Clamount from 12.5 - 22.2'. 8" casing to 17.2' Commenced coring at 22.2'.
525.8	6.5		6.5 to 7.2' CLAY, with small % lime nodules, soft, very moist, light brown.		6.5 C 7.2	Overburden logged by S. C. Rehm - relieved by G. H. Ruther while hole at 95.7'.
	8.0		7.2 to 18.5 CLAY, sandy, Auger refusal at 7.2', max. dim 6".		Not Sampled	CORE SAMPLES: (Cartons) No. 1: 20.8' to 25.6' (Should be 24.4'-25.4') #: 30.6' to 31.6' (Should be 30.4'-31.4') 3: 34.4' to 35.3' 4: 41.2' to 42.2' 5: 46.0' to 47.0' 6: 49.9' to 50.7' 7: 53.8' to 54.8' 8: 57.7' to 58.7' 9: 60.7' to 61.7' 10: 67.3' to 68.3' 11: 72.5' to 73.5' 12: 75.8'+ to 76.8'+ 13: 79.8' to 80.8' 14: 83.3' to 84.3' 15: 87.0' to 88.0' 16: 92.0' to 93.0' 17: 96.9' to 97.9' 18: 103.2' to 104.2' 19: 107.7' to 108.7' 20: 117.7' to 118.7'
	14.0					
	16.0					
513.8	18.5		18.5' to 31.6' (Taylor Fm Shale I) SHALE, weathered, moist, soft, tan with few seams of rust yellow. Sparse 60° fracts.		18.5	
I	20.0		Weathered section slakes slightly on exposure to rain, desiccates and cracks on exposure to sun drying.			
	22.0			22.2	22.2	Several minor errors in drill depth were found, based on recognizable marks of going back over core on subsequent run, too much core between marks, etc.
	24.0			D:3.8 R:3.4 Rec: 22.2' to 25.6	Box #1 24.4	
					25.6 Carton #1	
	26.0					
I	26.0			D:3.7 R:3.9 Rec: 25.6' to 29.5'	27.6	
	28.0		28.1'-31.0' few gray, V. slightly weath. seams.			
	30.0			29.7	Box #2 30.4	
500.7	31.6		31.6' to 57.2's (TAYLOR FM. SHALE I) SHALE, unweathered, moist, soft to near med. hard in more calc. zones, gray. No definite joints other than noted below. Occasional cone-in-cone pressure structures. Bedding dipping VERY gently. Desiccates and cracks slightly on sun drying.	D:3.5 R:3.1 Rec: 29.5' to 32.0	Carton #2 31.6	
	32.0				32.7	
				33.2		
I	34.0			D:3.5 R:1.7 Rec: 32.7' to 34.3	34.3 Carton #3 35.7	
	36.0			D:3.5 R: Rec: 34.3' to 39.3	Box #3 38.0	
	38.0			39.2		Minor drill depth error.



TO ACCOMPANY FINAL R



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A6C-95
VOLUME - II

A

SUBMITTED BY
ENGINEER:

INVITATION NO. DACW63-72-B-0095
SPECIFICATIONS DATED MAY 1972
DRAWING NUMBER
SHEET NO 18 OF 68
SEQUENCE NO 18

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 63

Hole No. B46C-96

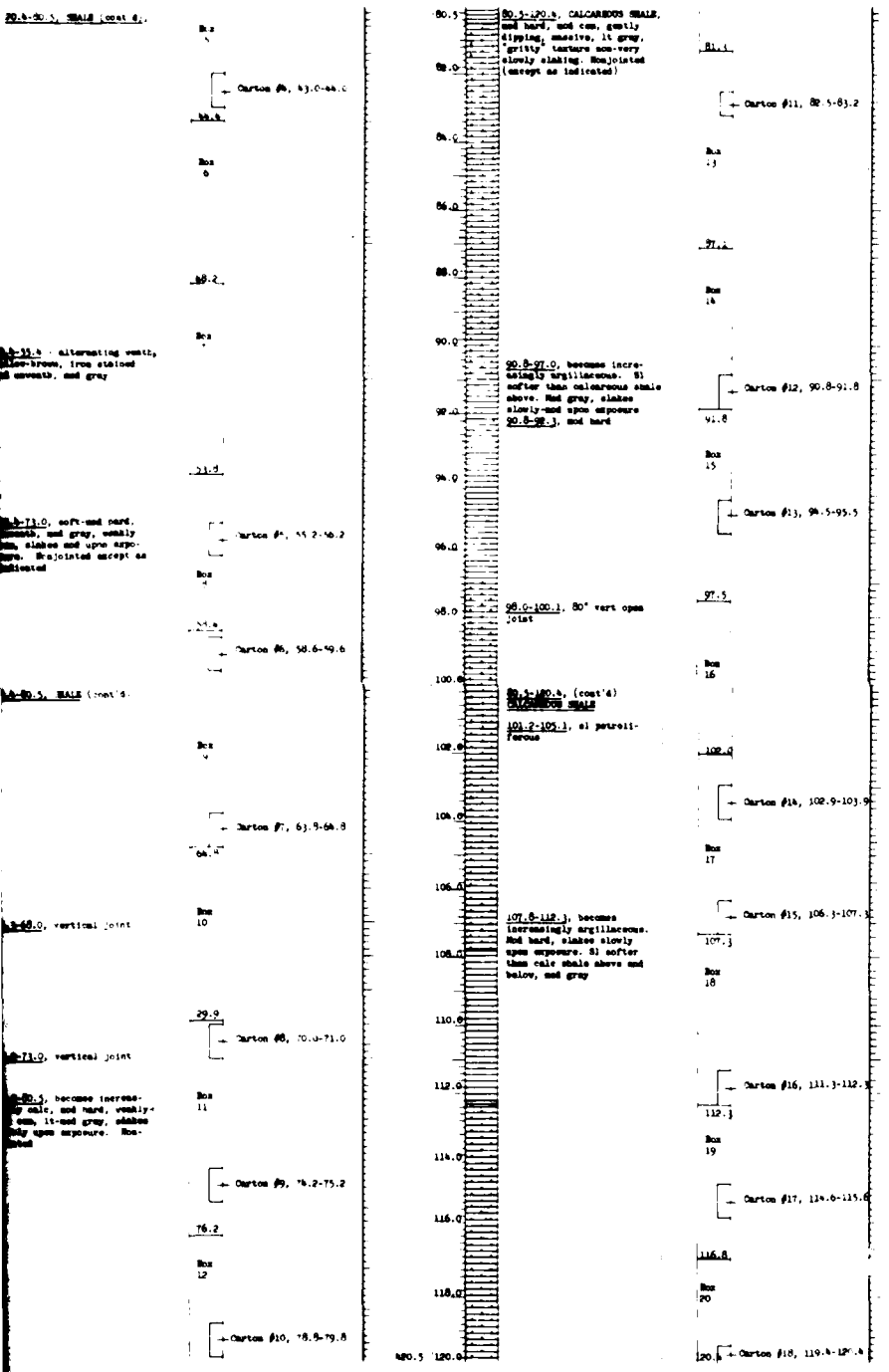
DRILLING LOG — Division: Southwestern — Fort Worth — Sheet 1 of 6 sheets

Project: Lagoon - Other Site
Location: N=2,341,588 T=324,000
Drilling Agency: USCE-C
Hole No.: B46C-96
Name of Driller: Penfield
Direction of Hole: Vertical
Elevation Ground Water: dry
Date Hole: 9/21/65 to 9/28/65
Elevation Top of Hole: 540.8
Total Core Recovery for Boring: 100.0
Total Depth of Hole: 120.8

Type and Size of Equipment: 10" auger, 6" core
Method of Drilling: Failing
Total No. of Core Boxes: 1 Jar
Total Number Core Boxes: 20
Elevation Ground Water: dry
Signature of Inspector: [illegible]

Elevation	Depth	Description of Material	Sample No.	Remarks
540.8	0.0	0.0-4.0, FAT CLAY, stiff, moist, dk brown, sandy (fine)	A	DRILLING: 8" auger 0.0-22.1 9-7/8" rock bit to 22.7 Set 8" casg to 22.7 6" core 22.7 - 120.8
	2.0			
537.5	3.0	3.0-5.0, SILTY CLAY ("CALICHE") hard, weakly cem w/lime, tan & dk brown, dry-moist	3.0	
	4.0		B	
535.5	5.0	5.0-10.0, GRAVELLY SAND, med dense, dry-moist, tan, very gravelly, sl silty, predom fine sand	5.0	
	6.0			
	8.0		C	
530.5	10.0	10.0-14.0, CLAYEY GRAVEL, med dense, moist, tan & yellow-brown, very clayey, sandy	10.0	
	12.0		D	
526.5	14.0	14.0-16.0, GRAVELLY CLAY, med stiff, moist-wet, tan, calc, lens, sl silty	14.0	
			E	
524.5	16.0	16.0-20.4, CLAYEY GRAVEL, med dense-dense, moist-wet, tan, very clayey, max diam RCVD=6"	16.0	Note: Water level not encountered while drilling w/auger (9/21/65)
	18.0		F	
	20.0		20.4	
	22.0	20.4-50.4 SHALE - calcareous, moist, gently dipping 20.4-50.4 Soft, weath, yellow-brown, & lt grey, iron stained, tightly compacted-weakly cemented, slakes readily upon exposure. Jointed, freq of joints approx 1 joint/ 1.5ft dip of joints predom 70°. Few scatt vert joints	22.7	Note: Core in boxes 1 thru 7 is not naturally broken. This core was exposed to atmosphere two days before boxing
			Box 1	
	24.0			
	26.0		27.4	
	28.0		Box 2	
	30.0		Carton #1, 30.2-31.1	
			31.1	
	32.0		Box 3	
	34.0		Carton #2, 34.7-35.6	
	36.0		35.6	
			Box 4	
	38.0			
	40.0		Carton #3, 39.0-40.0	
490.4	50.4	50.4-55.4 - alternating weath, yellow-brown, iron stained and unweath, med gray	Box 6	Carton #4, 49.2-50.2 Carton #5, 50.6-54.6
	55.4		55.4	
	60.0	55.4-71.0, soft-med hard, unweath, med gray, weakly cem, slakes mod upon exposure. Bedjointed except as indicated	Box 8	Carton #6, 60.6-64.6
	64.0		Box 9	Carton #7, 64.8-68.8
	68.0		Box 10	
	70.0	68.4-68.6, vertical joint 71.0-71.2, vertical joint	29.9	Carton #8, 70.0-71.0
	72.0	71.2-76.4, becomes increasingly calc, mod hard, weakly-mod cem, lt-med gray, slakes slowly upon exposure. Non-jointed	Box 11	Carton #9, 74.2-75.2
	76.0		76.2	
			Box 12	
	80.0			Carton #10, 78.8-79.8
460.4				460.4

TO ACCOMPANY FINAL FO



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

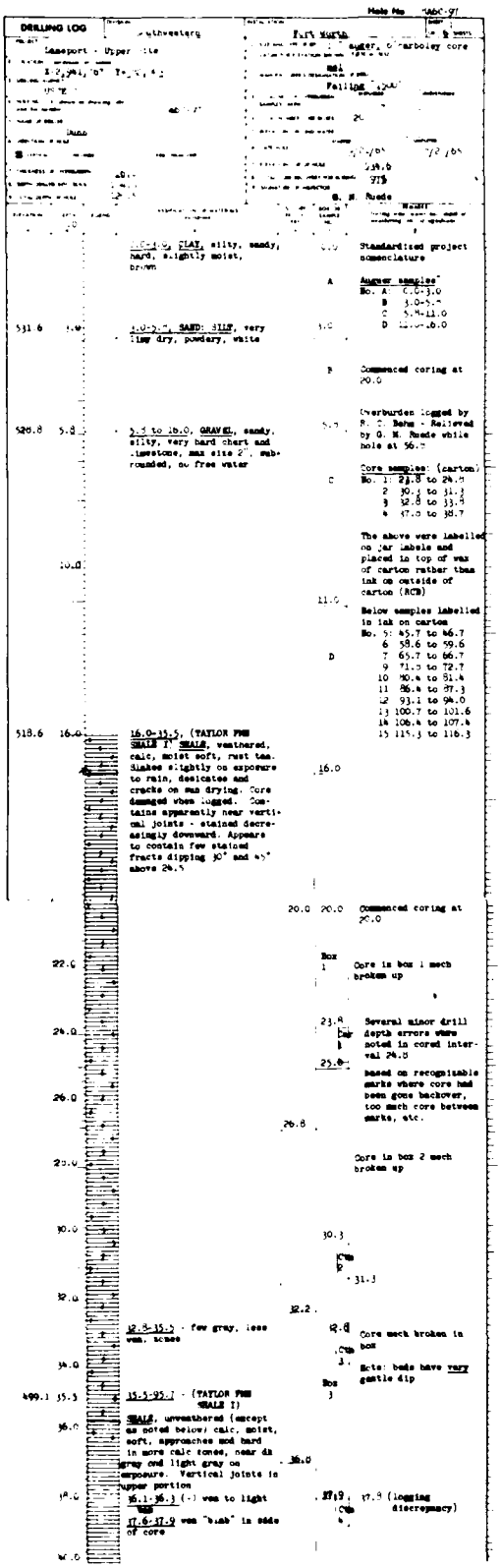
8A6C-96

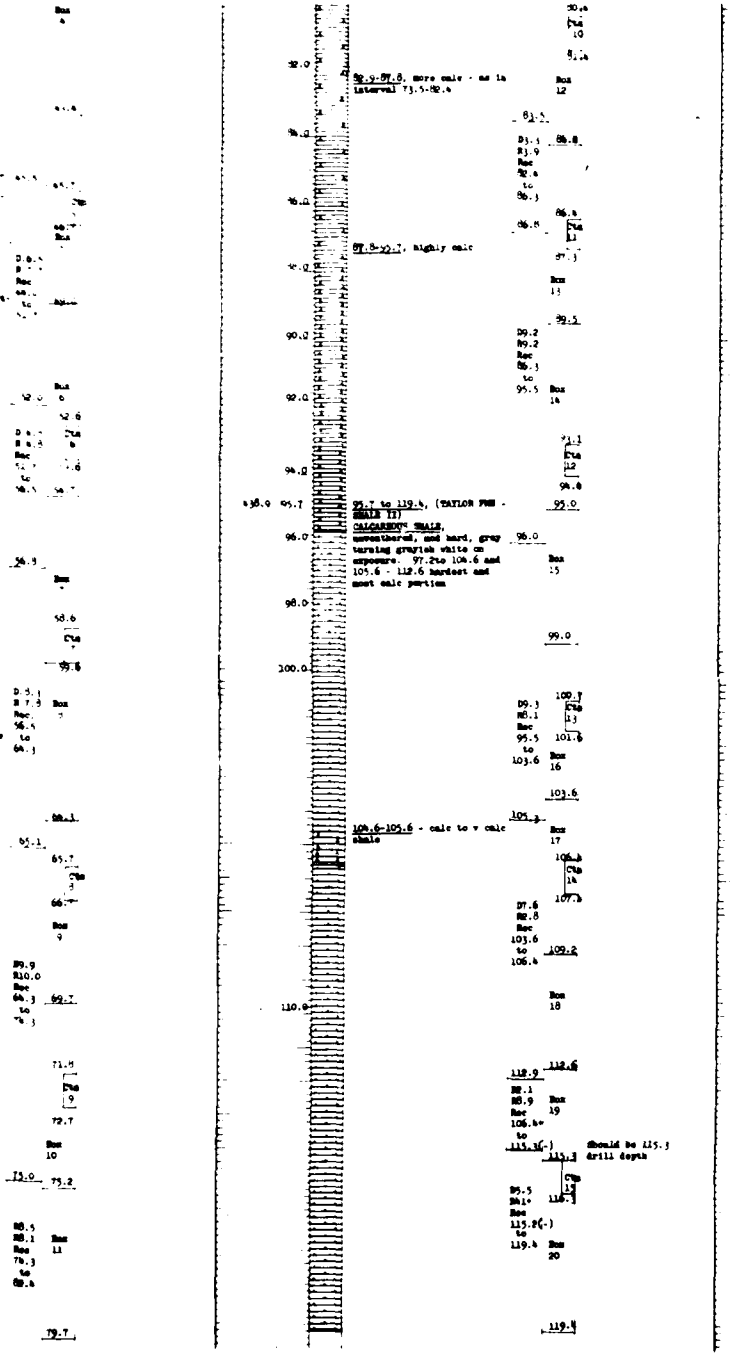
VOLUME - II

NAVIGATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 01
SEQUENCE NO. 19

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 64


DRILLING LOG
Leaseport - Upper
Fort Worth
auger, carboloy core
Falling
G. H. Rueda
0.0-1.0, FLAT, silty, sandy, hard, slightly moist, brown
1.0-2.7, SAND: SILT, very limy dry, powdery, white
2.7 to 16.0, GRAVEL, sandy, silty, very hard chert and limestone, max size 2", sub-rounded, no free water
16.0-35.5, (TAYLOR FM SHALE ?) SHALE, weathered, calc, moist soft, rust tan. Slakes slightly on exposure to rain, desiccates and cracks on sun drying. Core damaged when logged. Contains apparently near vertical joints - stained decreasingly downward. Appears to contain few stained fracts dipping 30° and 45° above 28.5
32.8-35.5 - few gray, less ven. zones
35.5-95.7 - (TAYLOR FM SHALE ?)
SHALE, unweathered (except as noted below) calc, moist, soft, approaches mod hard in more calc zones, near di gray and light gray on exposure. Vertical joints in upper portion
95.1-96.3 (-) ven to light
97.6-97.9 ven "blab" in sdde of core
Standardised project nomenclature
Auger samples:
No. A: C.0-3.0
B 3.0-5.7
C 5.7-11.0
D 11.0-16.0
Commenced coring at 20.0
Overburden logged by R. C. Behm - Relieved by G. H. Rueda while hole at 56.7
Core samples: (carton)
No. 1: 23.8 to 24.8
2 30.3 to 31.3
3 32.8 to 33.8
4 37.0 to 38.7
The above were labelled on jar labels and placed in top of box of carton rather than ink on outside of carton (RCB)
Below samples labelled in ink on carton
No. 5: 45.7 to 46.7
6 58.6 to 59.6
7 65.7 to 66.7
9 71.3 to 72.7
10 90.4 to 91.4
11 86.4 to 87.3
12 93.1 to 94.0
13 100.7 to 101.6
14 106.4 to 107.4
15 115.3 to 116.3
Commenced coring at 20.0
Box 1
Core in box 1 much broken up
Several minor drill depth errors where noted in cored interval 24.8
based on recognizable marks where core had been gone backover, too much core between marks, etc.
Core in box 2 much broken up
Core much broken in box
Note: beds have very gentle dip
17.9 (logging discrepancy)
42.0 minor stained vens
43.0-44.4 ven down to slightly ven
44.2-45.3 very steep dip stained joint with minor marginal matrix ven
45.7-48.2, two near vertical stained joints (terminating @ 46.1), minor matrix alteration
49.5-60.8, essentially continuous, near vertical joints stained and with marginal matrix alteration of top, decreasing to v, slightly stained at base
61.8-62.5, 45° unstained fracture filled with calcite film
62.0-69.7, more calc than above
64.3-65.7, break in core showing probable cone-in-cone pressure structure
71.5-72.4, more calc than upper Shale I
Box 4
Box 5
Box 6
Box 7
Box 8
Box 9
Box 10
Box 11
Box
Rec
R
D
to
TO ACCOMPANY FINAL FOU



DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-97

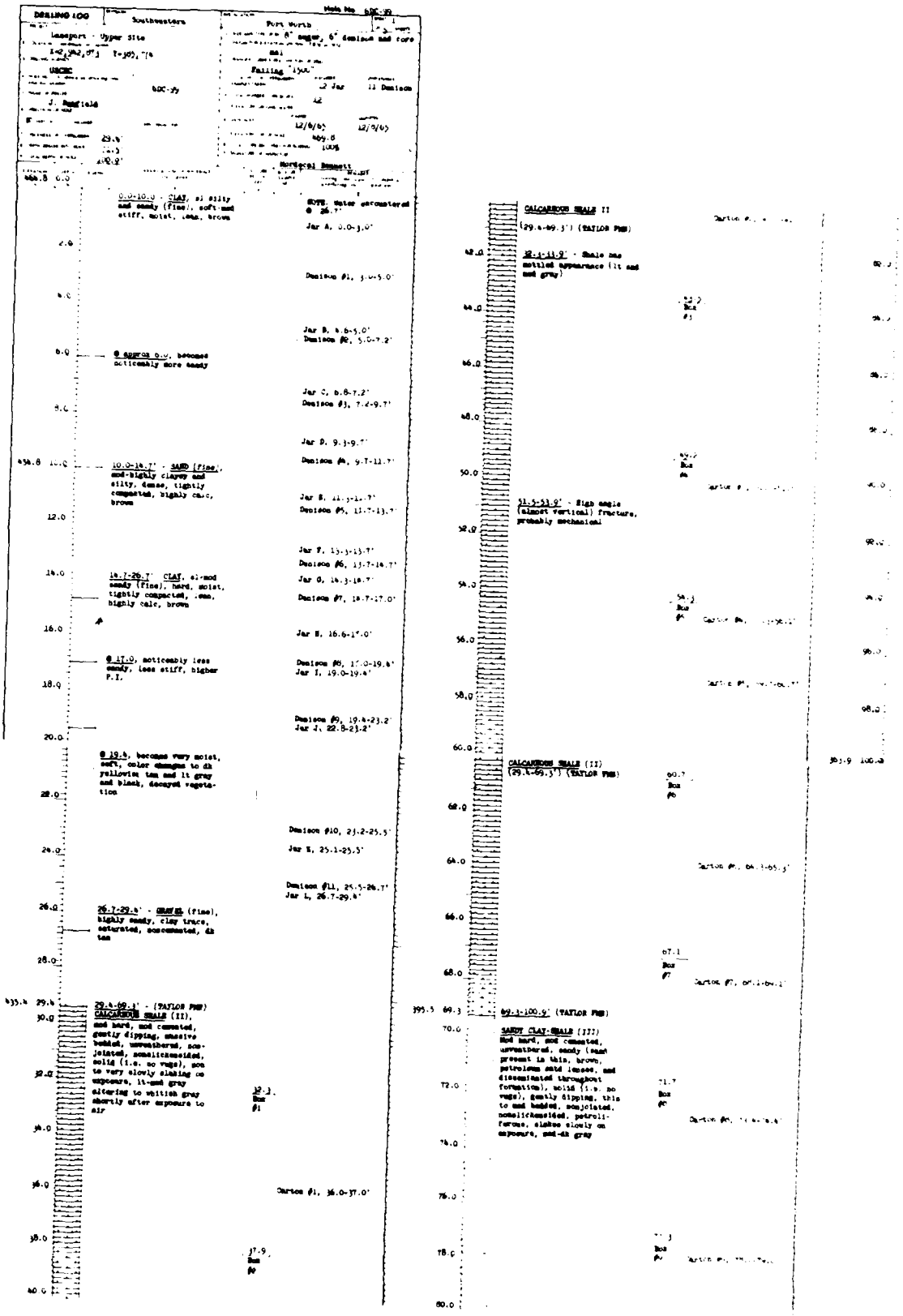
VOLUME - II

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO
SEQUENCE NO 20

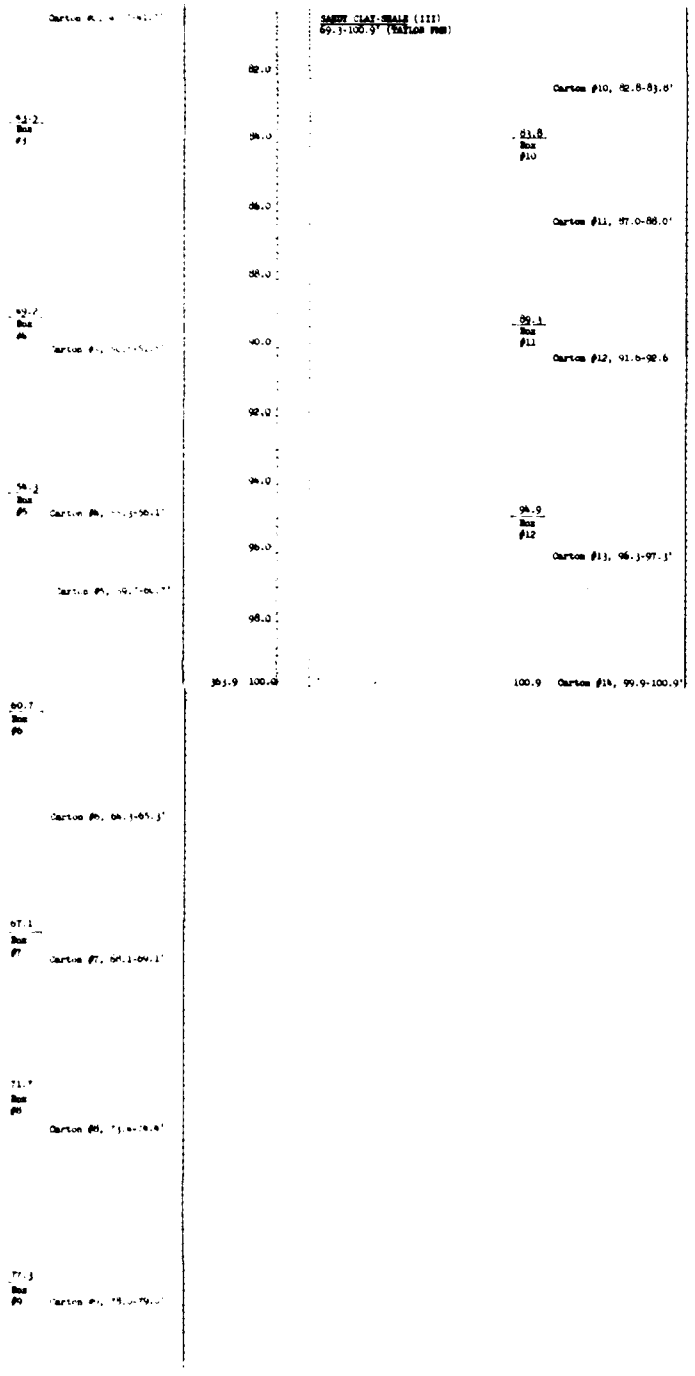
A

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 65



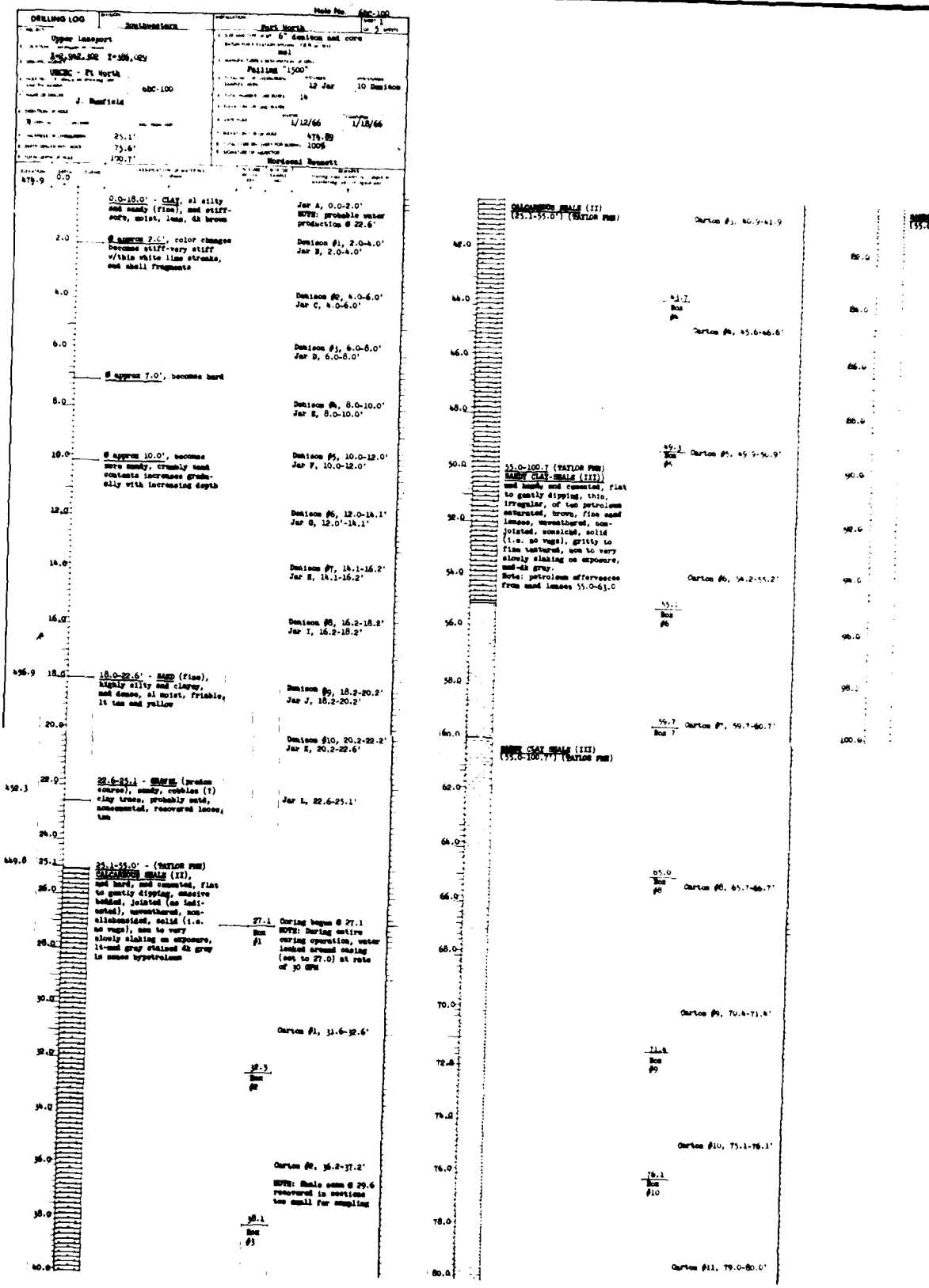
TO ACCOMPANY FINAL FOUNDA



US ARMY ENGINEER DISTRICT, FORT WORTH	
CORPS OF ENGINEERS	
FORT WORTH, TEXAS	
DESIGNED BY	LANEPORT LAKE
DRAWN BY	LOGS OF BORINGS
CHECKED BY	6DC-99
SUBMITTED BY	VOLUME - II
ENGINEER	SPECIFICATIONS DATED
DRAWING NUMBER	SHEET NO 21

A

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 66


DRILLING LOG
Southwestern
Fort Worth
Hole No. obc-100
Sheet 1 of 2 sheets
Upper Lewisport
3-S, 982.3E I-386, 42W
USCEC - Ft Worth
obc-100
J. Benfield
25.1'
75.6'
100.7'
6" dameon and core
Rail
Falling "1500"
12 Jar
10 Damson
14
1/12/66
1/18/66
479.89
1009
Mordecai Bennett
0.0-18.0' - CLAY, sl silty and sandy (fine), and stiff-very, moist, lens, dk brown
@ approx 2.0', color changes becomes stiff-very stiff w/thin white lime streaks, and shell fragments
@ approx 7.0', becomes hard
@ approx 10.0', becomes more sandy, crumbly and content increases gradually with increasing depth
18.0-22.6' - SAND (fine), highly silty and clayey, and dense, sl moist, friable, lt tan and yellow
22.6-25.1 - GRAVEL (predom coarse), sandy, cobbles (?) clay trace, probably sand, cemented, recovered loose, tan
25.1-55.0' - (TAYLOR FM) CALCAREOUS SHALE (II), and hard, and cemented, flat to gently dipping, massive bedded, jointed (as indicated), unweathered, non-slakehosided, solid (i.e. no vugs), ash to very slowly slaking on exposure, lt-med gray stained dk gray in zones hydrotroleum
55.0-100.7 (TAYLOR FM) SANDY CLAY-SHALE (III)) and hard, and cemented, flat to gently dipping, thin, irregular, of ten petroleum saturated, brown, fine sand lenses, unweathered, non-jointed, nonslaked, solid (i.e. no vugs), gritty to fine textured, non to very slowly slaking on exposure, med-dk gray.
Note: petroleum effervesces from sand lenses 55.0-63.0
SHALE CLAY SHALE (III) (55.0-100.7') (TAYLOR FM)
Jar A, 0.0-2.0'
NOTE: probable water production @ 22.6'
Dameon #1, 2.0-4.0'
Jar B, 2.0-4.0'
Dameon #2, 4.0-6.0'
Jar C, 4.0-6.0'
Dameon #3, 6.0-8.0'
Jar D, 6.0-8.0'
Dameon #4, 8.0-10.0'
Jar E, 8.0-10.0'
Dameon #5, 10.0-12.0'
Jar F, 10.0-12.0'
Dameon #6, 12.0-14.1'
Jar G, 12.0'-14.1'
Dameon #7, 14.1-16.2'
Jar H, 14.1-16.2'
Dameon #8, 16.2-18.2'
Jar I, 16.2-18.2'
Dameon #9, 18.2-20.2'
Jar J, 18.2-20.2'
Dameon #10, 20.2-22.2'
Jar K, 20.2-22.6'
Jar L, 22.6-25.1'
27.1 Box #1
Coring began @ 27.1
NOTE: During entire coring operation, water leaked around casing (set to 27.0) at rate of 30 GPM
Carton #1, 31.6-32.6'
32.5 Box #2
Carton #2, 36.2-37.2'
NOTE: Shale seam @ 29.6 recovered in sections too small for sampling
38.1 Box #3
Carton #3, 40.9-41.9'
43.7 Box #4
Carton #4, 45.6-46.6'
49.3 Box #5
Carton #5, 49.9-50.9'
Carton #6, 54.2-55.2'
55.1 Box #6
59.7 Box 7
Carton #7, 59.7-60.7'
65.0 Box #8
Carton #8, 65.7-66.7'
Carton #9, 70.8-71.8'
71.8 Box #9
Carton #10, 75.1-76.1'
76.1 Box #10
Carton #11, 79.0-80.0'
479.9
456.9
452.3
449.8
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0
22.0
24.0
25.1
26.0
28.0
30.0
32.0
34.0
36.0
38.0
40.0
42.0
44.0
46.0
48.0
50.0
52.0
54.0
56.0
58.0
60.0
62.0
64.0
66.0
68.0
70.0
72.8
74.0
76.0
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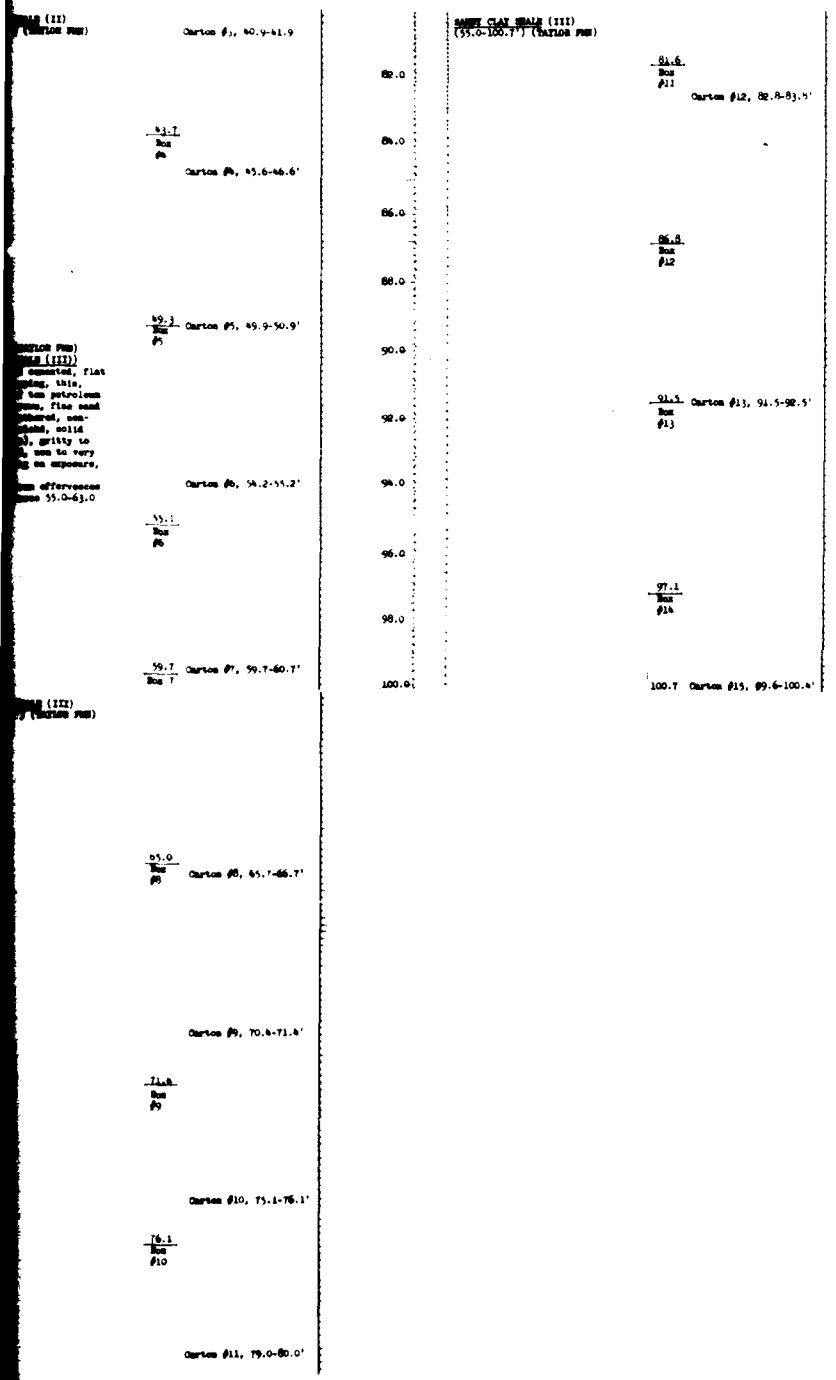
94.0
96.0
98.0
100.0



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

6DC-100

VOLUME - II

A

SUBMITTED BY
ENGINEER

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 22 OF 68
SEQUENCE NO 22

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 87

DRILLING LOG — Division: Southwestern — Area Office: Fort Worth

PROJECT: Lone Star

2 LOCATION (Coordinates or Station): Datum for E.T. & Other Surveys: MSL

3 DRILLING AGENCY: U S C E C - Fort Worth — 12 Manufacturer's Designation of Drill: Failing 1500

4 HOLE NO. (As shown on drawing title and file number): BASF470 — 13 Total No. of Overburden and Rock Samples Taken: 10 Jar — Undisturbed: 0

5 NAME OF DRILLER: R M Dunn — 14 Total Number Core Boxes: 0

6 DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT. — 15 Elevation Ground Water: ∅

7 THICKNESS OF OVERBURDEN: 18.0 — 16 Date Hole: Started: 29 Sept 66 Completed: 29 Sept 66

8 DEPTH DRILLED INTO ROCK: 63.5 — 17 Elevation Top of Hole: 480.67

9 TOTAL DEPTH OF HOLE: 81.5 — 18 Total Core Recovery (Rock Only): N A

19 Signature of Inspector: Mordeco Bennett

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY (Rock Only)	BOX OR SAMPLE NO.	REMARKS (Any free water encountered, drilling aids, etc.)
	0.0		00-18.0' CLAY, occ fine gravel, stiff, moist, fat, grayish black			Jar A 00-20'
	20		At 20', color changes to med gray			Jar B 20-40'
	40				*	Jar C 40-60' Note no water encountered to augered depth
	60		At 60', color changes to yellowish brown			Jar E 60-80'
	80					Jar E 80-100'
	100					Jar F 100-120'
	120					Jar G 120-140'
	140					Jar H 140-160'
	160		At 160', color changes to dk yellowish tan, occ gravel and white lime nodules			Jar I 160-180'
462.7	180		180-200' SHALE, highly weathered gypsiferous, hard, moist, noncemented fat predom yellowish tan			Jar J 180-200' Note boring drilled to fish tail to 81.5' and E-logged
	200					

TO ACCOMPANY FINAL FO

Hole No. 8A3F-470

DIVISION	Southwestern
INSTALLATION	Fort Worth
SHEET	1 OF 1 SHEETS
10. SIZE AND TYPE OF BIT	8" auger, 3" fishtail
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	M.S.L.
12. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 10 Jar; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES	0
15. ELEVATION GROUND WATER	✱
16. DATE HOLE	STARTED 29 Sept 66; COMPLETED 29 Sept 66
17. ELEVATION TOP OF HOLE	480.67
18. TOTAL CORE RECOVERY FOR BORING	N.A. %
19. SIGNATURE OF INSPECTOR	Mordecai Bennett

LOG	Southwestern
Laneport	
U.S.C.E.C. - Fort Worth	
8A3F470	
R.M. Dunn	
HOLE INCLINED	60 FROM VERT
OVERBURDEN	18.0
INTO ROCK	63.5
OF HOLE	81.5

Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
		0.0-18.0' CLAY, occ. fine gravel, stiff, moist, fat, grayish black			Jar A 0.0'-2.0'
		At 2.0', color changes to med gray			Jar B 2.0-4.0
				✱	Jar C 4.0'-6.0 Note no water within augered depth
		At 6.0', color changes to yellowish brown			Jar D 6.0'-8.0
					Jar E 8.0-10.0'
					Jar F 10.0'-12.0'
					Jar G 12.0'-14.0'
					Jar H 14.0'-16.0'
		At 16.0', color changes to dk yellowish tan, occ. gravel and white lime nodules			Jar I 16.0'-18.0'
		18.0-20.0' SHALE, highly wea gypsiferous, hard, moist, noncemented fat, predom. yellowish tan			Jar J 18.0'-20.0' Note boring drilled with fishtail to 81.5' and E-logged

Hole No. 8A3F-469

DRILLING LOG	Southwestern
INSTALLATION	Fort Worth
SHEET	1 OF 1 SHEETS
10. SIZE AND TYPE OF BIT	8" spiral auger, 3" fishtail
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	Sullivan 22
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 11 Jar; UNDISTURBED 0
14. TOTAL NUMBER OF CORE BOXES	0
15. ELEVATION GROUND WATER	✱
16. DATE HOLE	STARTED 27 Sept 66; COMPLETED 30 Sept 66
17. ELEVATION TOP OF HOLE	
18. TOTAL CORE RECOVERY FOR BORING	N.A.
19. SIGNATURE OF INSPECTOR	Mordecai Bennett

Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
0		0.0-4.5' CLAY, silty & sandy gravelly, med. stiff, moist, crumbly, lean, dk brown			Jar A 0.0'-2.0
20		At 2.0', becomes more sandy & gravelly, color changes to med-lt brown			Jar B 2.0-4.0 ✱Note water production at 7.0'
40					Jar C 4.0'-4.5
45		4.5-16.2' CLAY, mod. silty, occ. gravel, soft, very moist, lean, lt yellowish tan			Jar D 4.5'-6.5'
60					Jar E 6.5'-7.0'
		At 7.0' becomes mod gravelly, less silty and saturated			Jar F 7.0-9.0'
80					Jar G 9.0'-11.0'
100					Jar H 11.0-13.0'
120					Jar I 13.0'-15.0'
140					Jar J 15.0'-16.2'
160		16.2'-18.0' SHALE, highly wea., hard, moist, fat, tightly compacted, noncemented, predom. yellowish tan			Jar K 16.2'-18.0'
180		Note boring fishtailed to 123.0'			
200					

NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: J.L.H.
DRAWN BY:
CHECKED BY: J.L.H.
SUBMITTED BY:
ENGINEER:

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A3F-469 & 8A3F-470
VOLUME - II

INVITATION NO. [illegible]
SPECIFICATIONS DATED [illegible]
DRAWING NUMBER
SHEET NO. 23 OF 68
SEQUENCE NO. 23

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 68

Hole No. BHJF-479

DRILLING LOG — SOU. WESTERN — FORT WD 'N LIST — Sheet 1 of 1

LANSPORT LAM

USCE-C (LRD) — BHJF-479 — HOBBS

MSL — FAILING 1500 — 1 JAR NONE NONE

2/27/67 2/28/67 — 466.4

1180 1170 1300

0	0.0-3.5 CLAY SANDY, SL GRAVELLY MED STIFF, MOIST, DRK BROWN	A	DRILLING: 8 AUGER 0.0-196 SET 196 3½" CSNG 3½" FISHTAIL TO 1300 E-LOG.
	3.5-20 CLAY LEAN (NONES FAT) STIFF, MOIST, MED BROWN, MED-HI PLASTICITY, SL SANDY, W/ SCATT SHELL FRAGS	35 B	WATER LEVEL ENCOUNTERED WATER @ 130 (2/27/67)
	20-130 CLAY LEAN, MED STIFF, MOIST, TAN, V CALC, LOW-MED PLASTICITY.	80 C	
10			
	130-180 CLAY V. SANDY (FINE), MED STIFF, WET-SATD, TAN. 150 BECOMES INCR. SANDY. (POOR RECOV. W/ AUGER)	130 D	
180	180 SHALE	180	

1836 — LANSPORT LAM — BHJF-479

Hole No. BHJF-480

DRILLING LOG — SOU. WESTERN — FORT WORTH LIST — Sheet 1 of 2

LANSPORT LAM

STA 63+00, 2800' R

USCE (LRD) — BHJF-480 — HOBBS

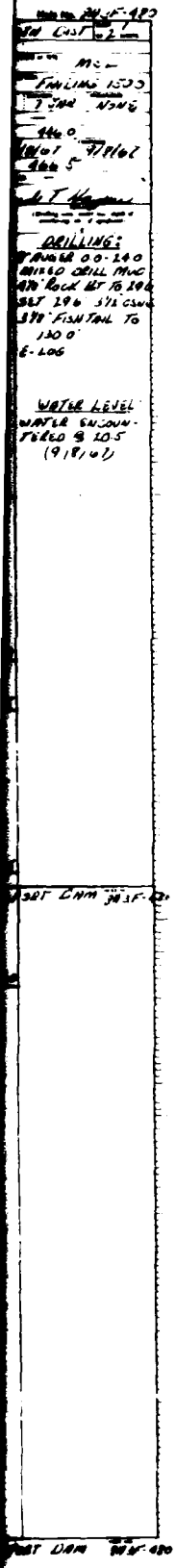
MSL — FAILING 1503 — 1 JAR NONE

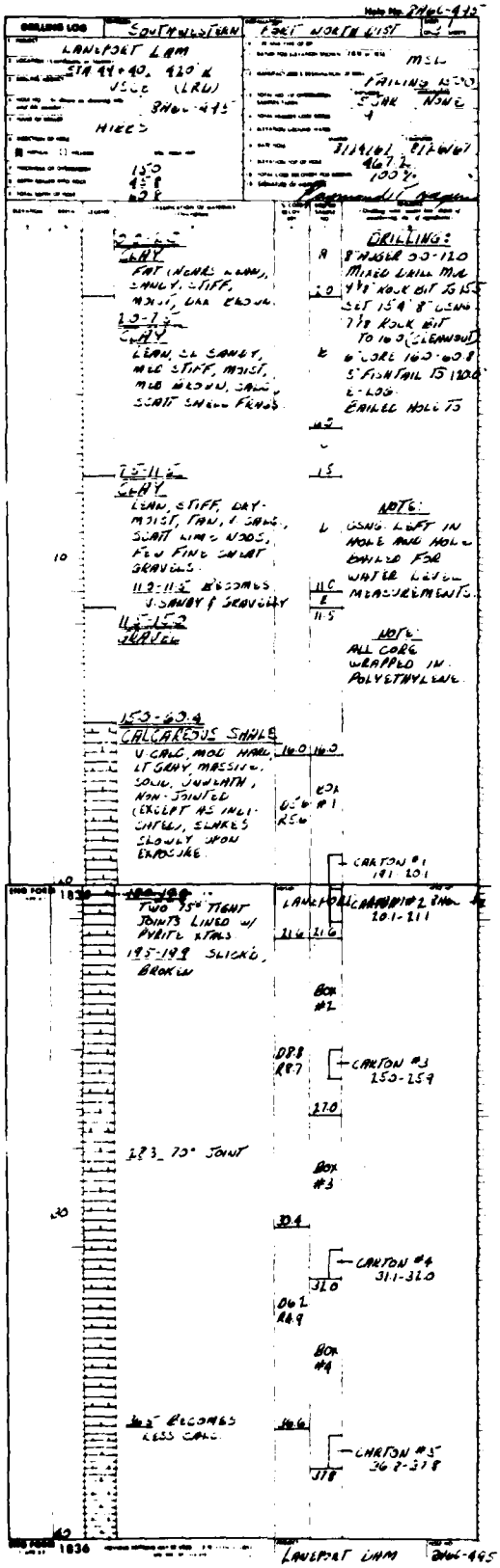
9/8/67 9/9/67 — 466.5 — 1460

230 1070 1300

0	0.0-14.5 CLAY LEAN, MED STIFF, MOIST, SCATT SHELL FRAGS	A	DRILLING: 8 AUGER 0.0-240 MIXED DRILL MUD 4¾ ROCK BIT TO 296 SET 296 3½ CSNG 3½ FISHTAIL TO 1300 E-LOG
	0.0-1.5 SL SANDY DRK BROWN	15 B	
	1.5-3.5 MED BROWN	35	
	3.5-80 SL SANDY, DRK BROWN, STIFF MED-HI PLAS	C	WATER LEVEL WATER ENCOUNTERED @ 20.5 (9/8/67)
	80-130 LT. BROWN	80 D	
10			
	130-145 SL GRAVELLY	130 E	
	14.5-23.0 GRAVEL FINE, CLAYEY, SANDY, MED DENSE, DRY-MOIST, TAN.	145 F	
13		195	
	18.5-23.0 BECOMES V. CLAYEY. 20.5 SATD	G	
230	T.O.R @ 23.0'	230	

1836 — LANSPORT LAM — BHJF-480





NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY JLM
DRAWN BY
CHECKED BY JLM
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

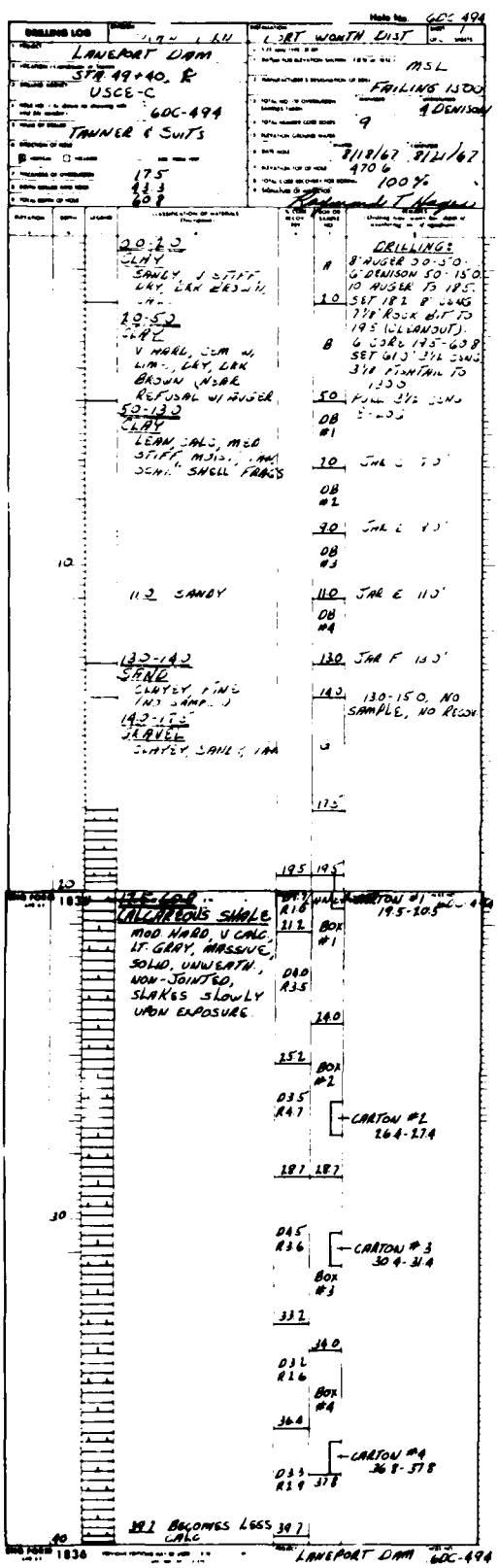
8A3F-479, 8A3F-480 & 8A6C-495

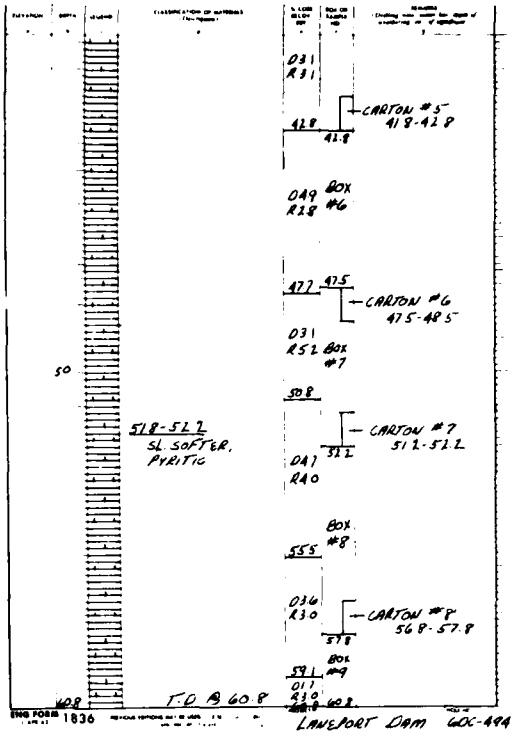
VOLUME - II

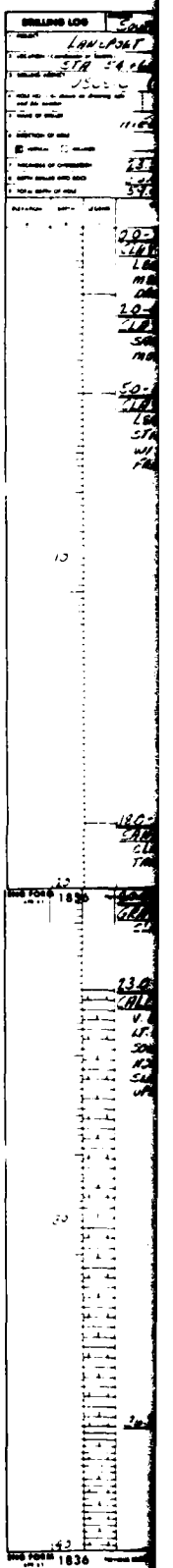
A

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 24 OF 68
SEQUENCE NO 24

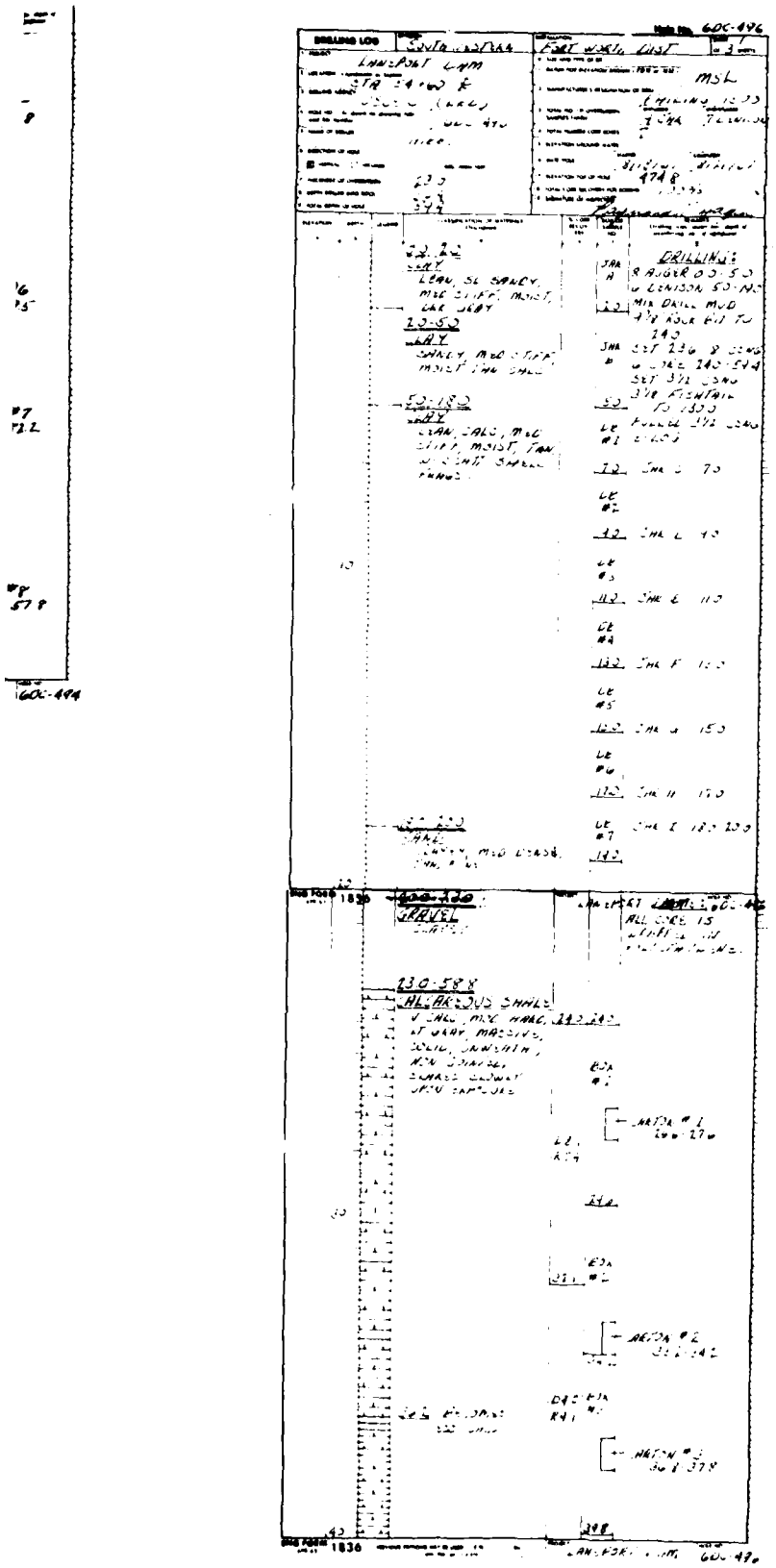
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 68

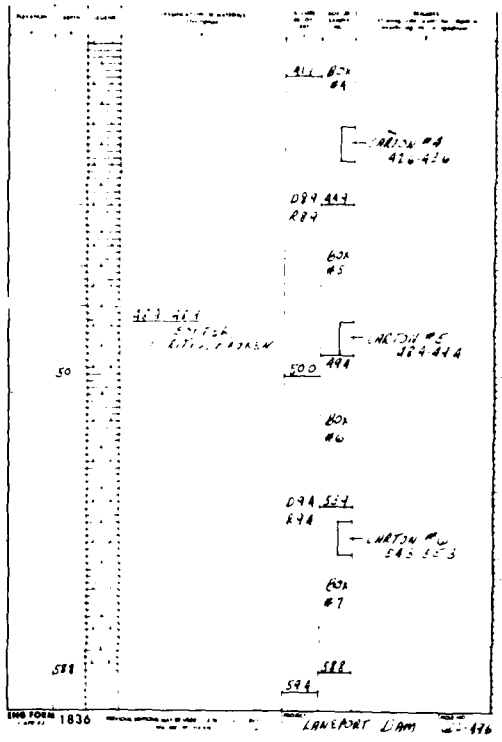






TO ACCOMPANY FINAL FOU





U S ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

LANEPORT LAKE
SAN GABRIEL RIVER TEXAS

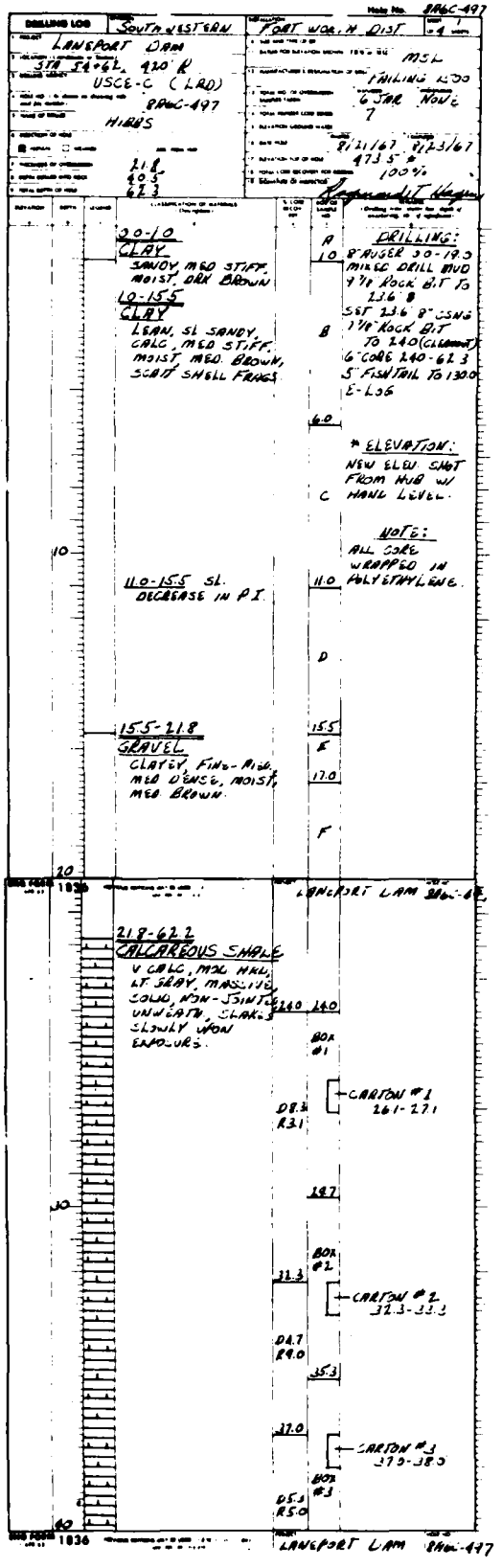
LOGS OF BORINGS

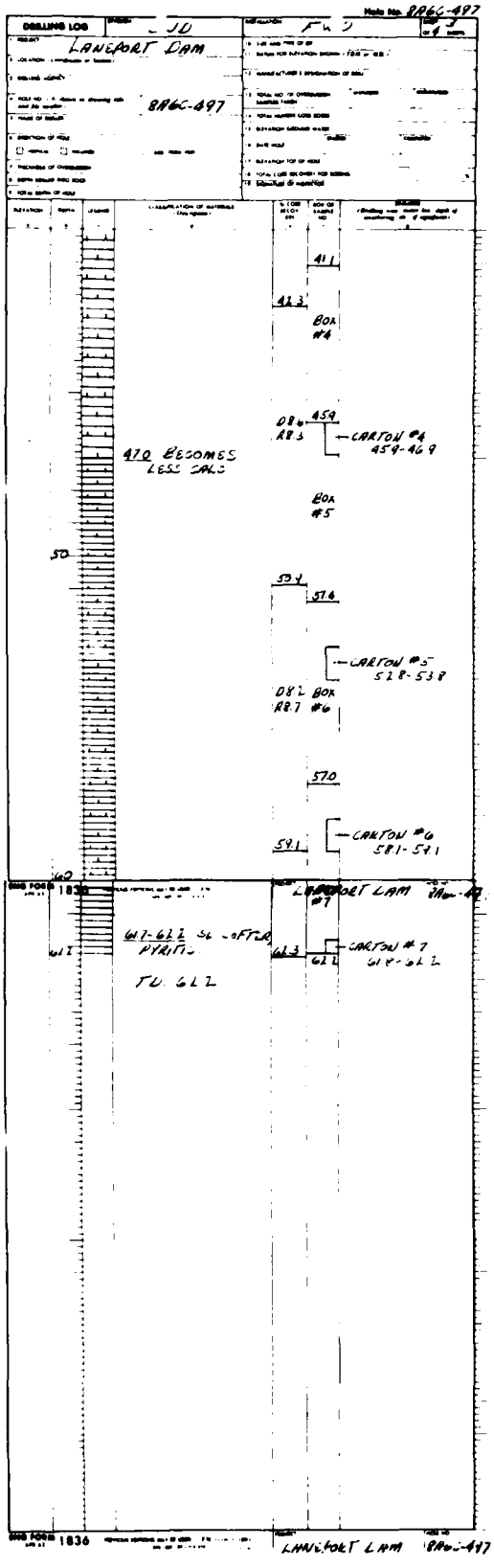
6DC-494 & 6DC-496

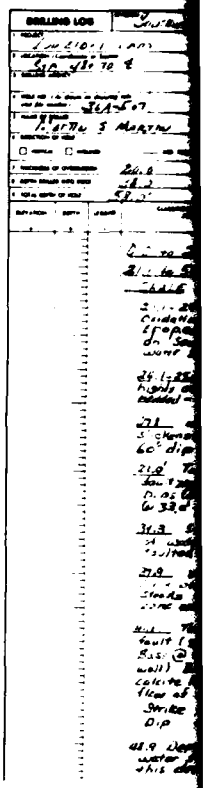
VOLUME - II

SEQUENCE NO 25

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 70







TO ACCOMPANY FINAL FOUN

Hole No. 36A 507

DRILLING LOG			
	Southwestern	Fort Worth District	Sheet 1 of 1
Laneport Lake		36" Auger	
Sep 43 to 4		470 MSL	
36A-507		10-3-67	10-3-67
Martin S Martin			
20.0			
28.0			
58.0			

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			[illegible] Casing			
			[illegible] 540 Calcareous Shale - Shale II			
			[illegible] weathered, Oxidation well developed slickensided on South wall - slow water seep			
			24.1-25.4 softer zone, highly argillaceous, thin bedded - no dip			
			27.1 well developed slickensided zone, 60° dip			
			21.0' Top of upper fault zone, North side Dips @ 60° base @ 33.0' right			
			34.3 Steady seep of water from small faulted area			
			37.9 [illegible] North wall, Steady flow of water zone extends to 41.1'			
			41.1 Top of major fault (southwall) Base @ 46.8' (north wall) Brecciated, calcite lined, Steady flow of water Strike N 60° W Dip 54° NE			
			48.9 Depth of logging water filled below this depth			

DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM
SUBMITTED BY: [signature]
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A6C-497 & 36A-507
VOLUME - II

INVITATION NO [illegible]
SPECIFICATIONS DATED MAY 1972
DRAWING NUMBER
SHEET NO 26 OF 68
SEQUENCE NO 26

A

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 71

Hole No. 308-509

DRILLING LOG | So. Western | Float | 7th Dist | 30' Rigid

Lanesport Dam
Sta 49+67 Rt
USCE-C
308-509
Martin & Martin
10/5/67 | 10/5/67
64.1
Raymond T. Hayes

		Casing To 51.9 (O.D. Steel csg)	Inspection Hole
		51.9-64.1 Calcareous Shale unweath, massive, mod. hard, moist, lt. gray, v. calc.	
		144-144.4 Soft, dark gray, gas escaping (no gaseous odor) no water.	NOTE: On 10/6/67, escaping gas was stopped. Hole still dry.
		137-138.5 Wet spot slick on W side of well.	
		144.7 Gas escaping (no gaseous odor)	
		420 Becomes Less calc.	
		51.1-51.7 Soft, dark gray, pyritic, sl. slicks, water seeping v. slowly.	
		T.D. @ 64.1	

Hole No. 308-510

DRILLING LOG | S. Wwestern | Float | 47th Dist | 30' Rigid

Lanesport Dam
Sta 53+45 Rt
USCE-C
308-510
Martin & Martin
10/5/67 | 10/6/67
64.5
Raymond T. Hayes

		Inspection Hole No. 308-510 Casing 15.8	
		15.8-64.5 Calcareous Shale mod. hard, moist, lt. gray, v. calc., unweath., massive.	
		36.7-37.1 Soft, dark gray, pyritic, water seeping v. slowly.	
		38.8-41.3 Small scattered slicks.	
		42.6 Low point of 8 well developed slickensides dipping north @ approx. 30°. Slick does not extend across well of hole. Approx. .03' of soft brecciated pyritic matl. lining slick.	
		44.4-44.9 Soft, dark gray, pyritic, seeping water.	
		T.D. 64.5	

Hole No 846C-514

DRILLING LOG | Southwestern | Float | W.O. | N Dist | 6 Core | 1

Lanesport Dam
Sta 53+00, 150' Rt
USCE-C
846C-514
Hibbs (LRD)
20.5
54.0
76.5
msl
Failing 1500
5 Jar None
11
10/3/67 | 10/12/67
473.06
Raymond T. Hayes

		00-15 Clay sandy, w/ scatt shell frags, med stiff, moist, dark brown	Drilling: 10' auger 0.0-10.8 set 8" csng to 20.8 7 7/8" rock bit to 140 (clnout) 6" core 140-76.5 5" fishtail to 125.6 E-log
	15	15-110 Clay lean, calc, sl sandy, scatt shell frags, med brown	B
		15-75 med stiff moist	Note: All core is preserved and delivered to FWD Lab
		26.0 stiff dry-moist	75
			C
10			50
		110-150 Clay gravelly, calc, med stiff, moist, med brown	110 D
		150-205 Gravel sandy, med dense, moist, tan	150 E
20			60
		205-737 Calcareous Shale v. calc, mod hard, moist, lt gray, unweath. solid, massive, non-jointed (except as indicated)	140 140
		249 15° Joint	
		158 160 Broken	Box #1
			D75 R69
			196
30			70
		309-321 Broken	Box #2
			315
			333
			332
			Box #3
			D95 R70
			379
40			

TO ACCOMPANY FINAL FOUNDA

Hole No. 8A6C-514

WESTERN | FORT WORTH DIST | 1 of 4

6" CORE

MSL

FAILING 1500

5 JAR NONE

11

10/13/67 10/18/67

473.06

100%

Raymond T. Hagen

DRILLING

10" AUGER 0.0-20.8

SET 8" CSNG TO 20.8

7 7/8" ROCK BIT TO 240 (CLEANOUT)

6" CORE 240-765

5" FISHTAIL TO 1250

E-LOG

NOTE:

ALL CORE IS PRESERVED AND DELIVERED TO FWD LAB

A

2.5

B

7.5

C

11.0

D

15.0

E

24.0 24.0

Box #1

D75 R69

28.6

Box #2

31.5

33.3

Box #3

D95 R70

37.9

W, W. SCATT FRAGS STIFF, MOIST, BROWN

CALC, SL W, SCATT SHELL, MED BROWN

MED STIFF

STIFF, MOIST

LLY, CALC, STIFF, MOIST, BROWN

MED DENSE, TAN

OUS SHALE

, MOD HARD, LT GRAY, TH, SOLID, E, NON- (EXCEPT ICATED)

5° JOINT

BROKEN

BROKEN

50

60

70

73.2

414 BECOMES LESS CALC, DRK GRAY

537-542 SOFT SEAMS, SLICKENSIDED

TD 765 CORE DEPTH 73.2

Box #4

41.0

42.6

D55 R56

Box #5

46.5

46.9

Box #6

D70 R10.0

51.7

53.5

Box #7

56.2

D80 R59

Box #8

60.8

61.5

Box #9

D75 R83

65.5

Box #10

69.0

70.1

Box #11

D75 R55

73.2

76.5

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

CORPS OF ENGINEERS

FORT WORTH, TEXAS

LANEPORT LAKE

LOGS OF BORINGS

30A-509, 30A-510 & 8A6C-514

VOLUME - II

SHEET NO. 27

ACCOMPANY FINAL FOUNDATION REPORT PLATE 72

Hole No. 60C-515

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST.

LAKEPORT DAM

STA 105+70, 300 Lt

USCE-C (LAD)

60C-515

HIBBS

37
463
560

MSL

FALLING 1500

5 SAR 4 DEN

8

7/22/68 7/29/68

46920

95%

Raymond T. Hayden

DRILLING
8 AUGER 00-30
6 DENISON 30-100
6 CORE 100-130
SET 130 8" CSNG
DB 6 CORE 130-560 #1

WATER LEVEL
OBSERVATION WELL
DB INSTALLED IN #2 CORE HOLE ON 7/24/68

JAR SAMPLES
DB A 00-10 #3
B 40
C 60
D 80
E 97-100
DB #4

0-20
CLAY
FAT MED STIFF MOIST, BLACK, SCAT GRAVEL

20
20-40
CLAY
SANDY W/LIME NODS, STIFF, MOIST, LT GRAY-BROWN, CALC.

40
40-60
CLAY
W GRAVELLY SEAMS & CLAYEY GRAVEL, SANDY, CALC., MED STIFF, MOIST, LT GRAY-BROWN

60
80-97
CLAY
SANDY, SL GRAVELLY STIFF, MOIST, LT GRAY MOTTLED RUST. R18

100 100

CARTON #1 108-117

97-517
CALCAREOUS SHALE
MOD HARD, V CALC, LT GRAY, MASSIVE, SOLID, NON-SLOWLY SLAKING NON-JOINTED
97-124 WEATH
97-117 S. SOFTER
14-188 CORE BROKEN (PROB MECHANICAL-GRAVEL IN HOLE) NO SIGN OF SLICKS
SHALE BECOMES LESS CALC IN THIS INTERVAL

130

CORE LOSS
100-06, 06
Box #1 114-188, 16%

D84 R70

170

Box #2

CARTON #2 197-206

214

215

CARTON #3 235-245

D96 R100 Box #3

264-274
80° VERT TIGHT SLICK

281-283
DEPOSITIONAL SEAM, SL SOFTER

CARTON #4 277-287

287 (SAMPLE IN ONE PIECE)

310 Box #4

CARTON #5 317-337

337

D100 R100 Box #5

CARTON #6 384-394

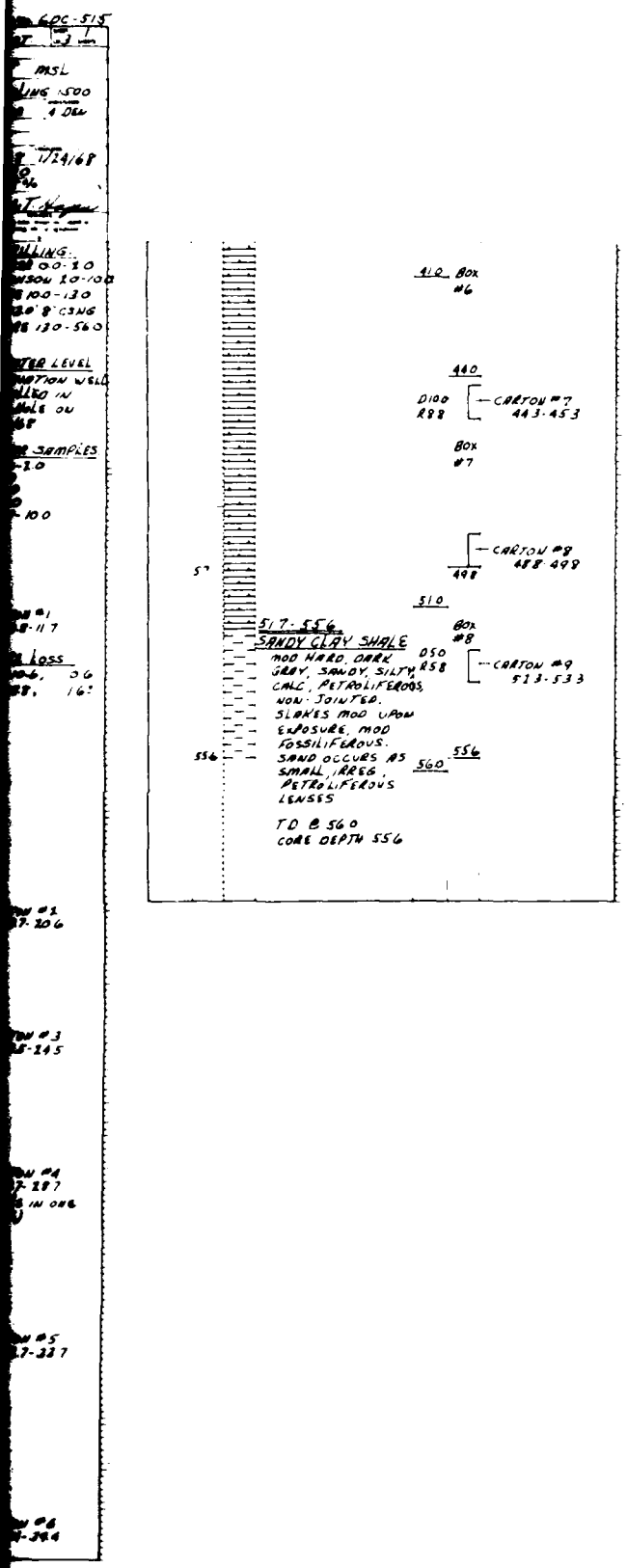
394

517-556
SANDY CLAY SHALE
MOD HARD, DARK GRAY, SANDY, SILTY, CALC, PETROLIFEROUS, NON-JOINTED, SLAKES MOD UPON EXPOSURE, MOD. FOSSILIFEROUS. SAND OCCURS AS SMALL, IRREG. PETROLIFEROUS LENSES

556

TD @ 560
CORE DEPTH 556

TO ACCOMPANY FINAL FOU



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

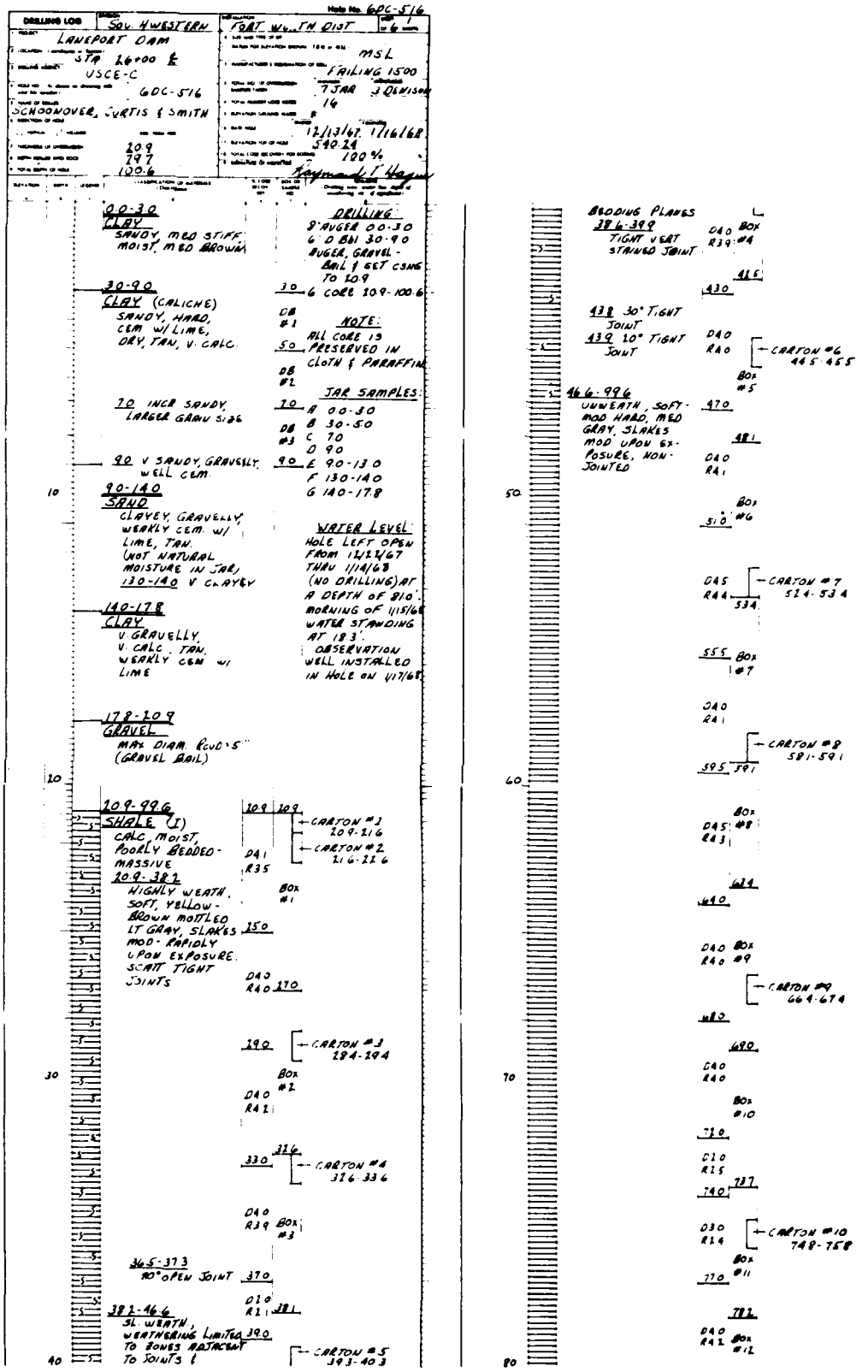
LOGS OF BORINGS

6DC-515

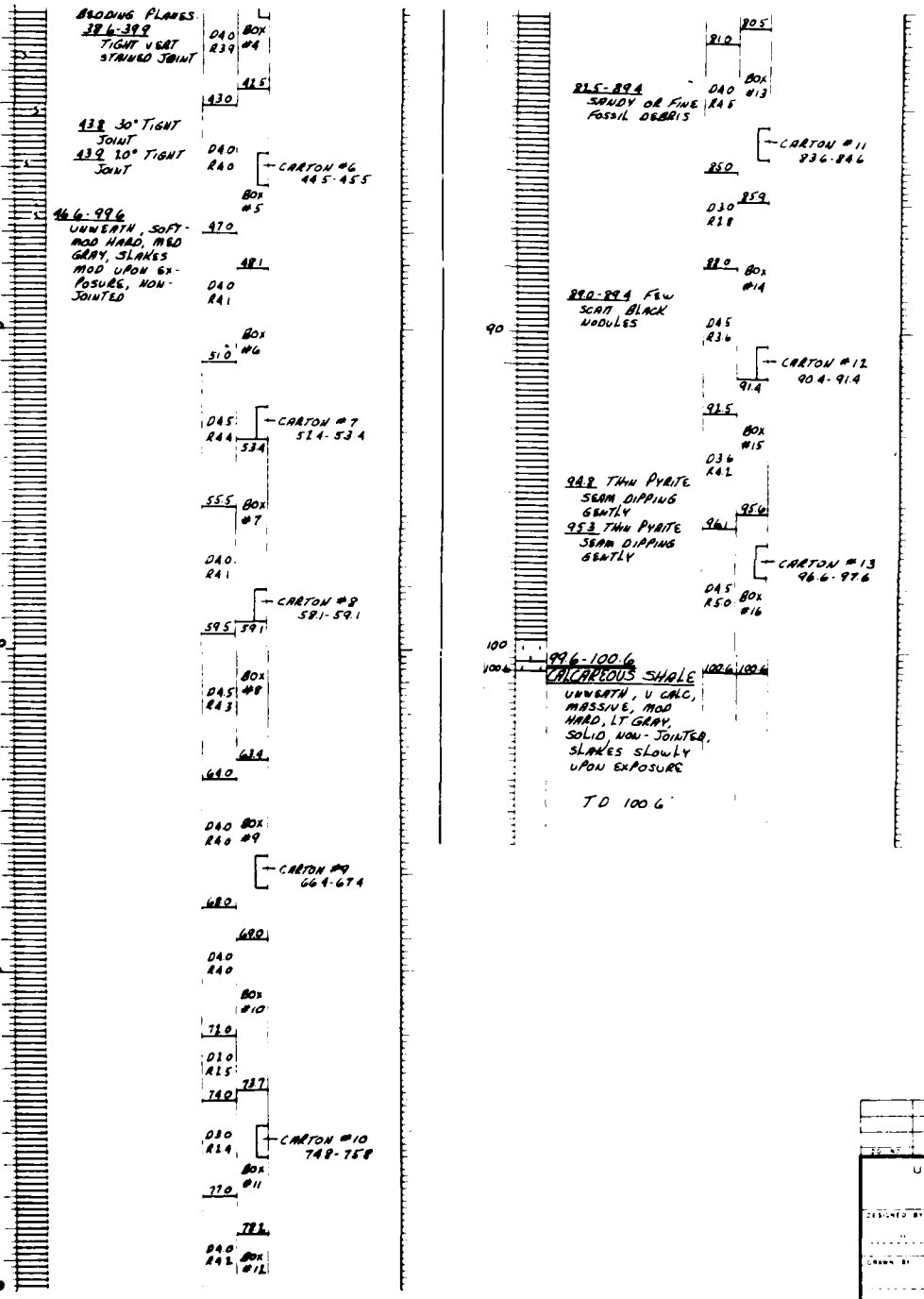
VOLUME - II

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO
SEQUENCE NO 28

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 73



TO ACCOMPANY FINAL FOUN



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

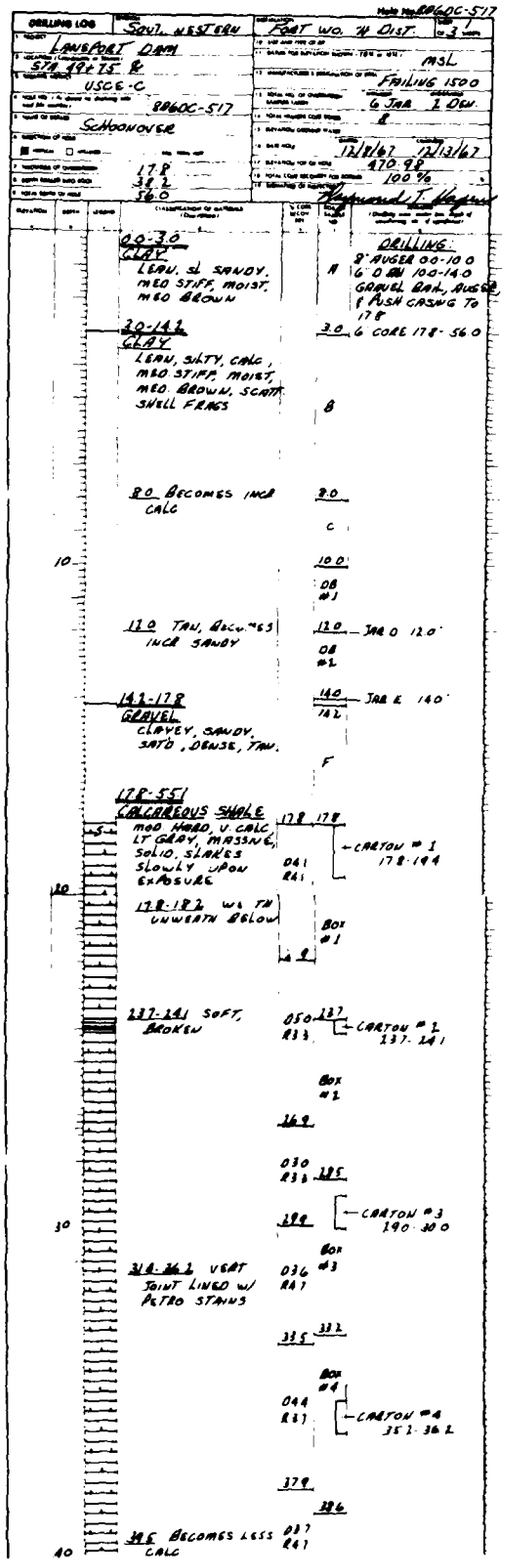
6DC - 516

VOLUME - II

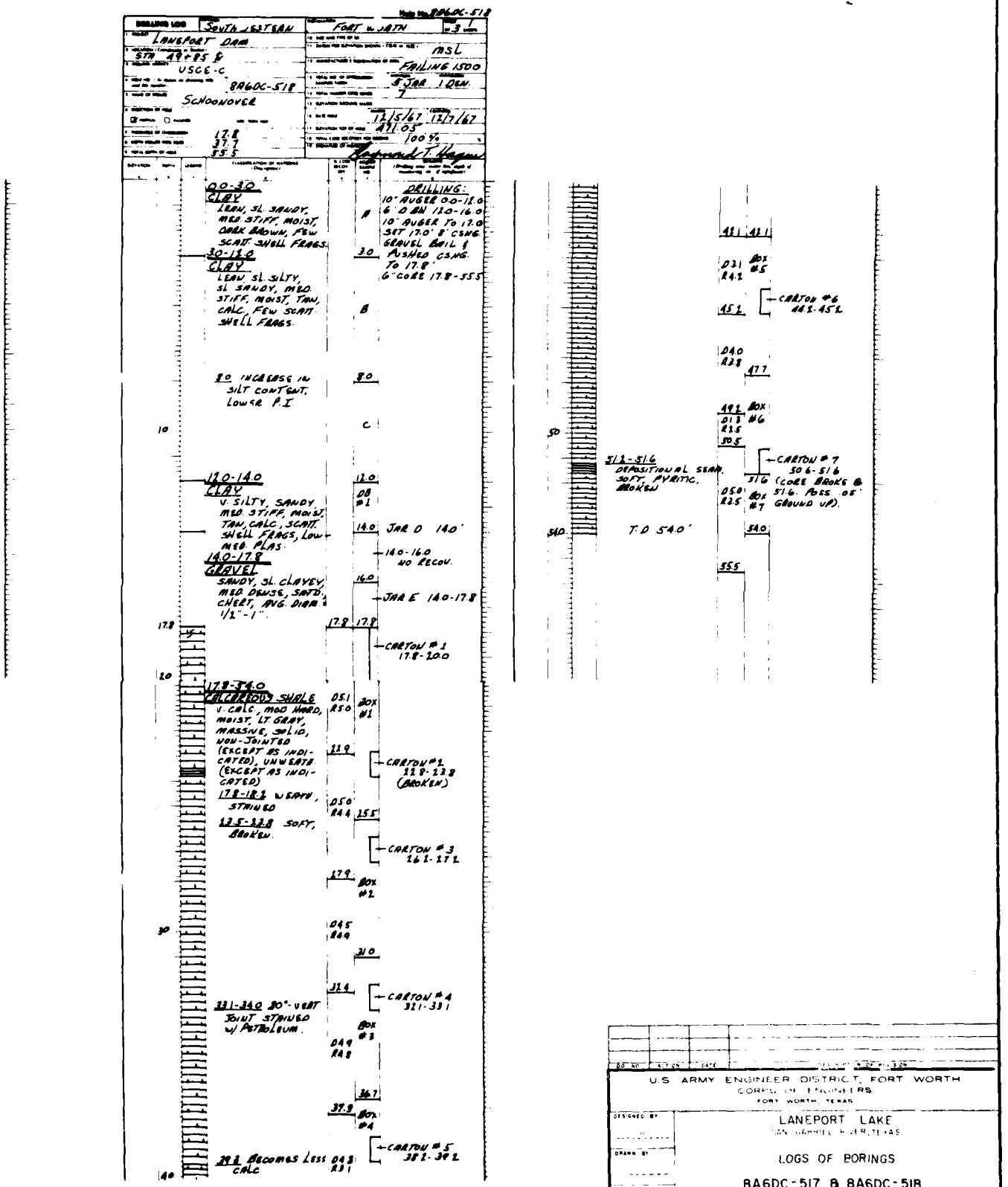
DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER
INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 1 OF 1
SEQUENCE NO. 29

A

2



TO ACCOMPANY FINAL FO



U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

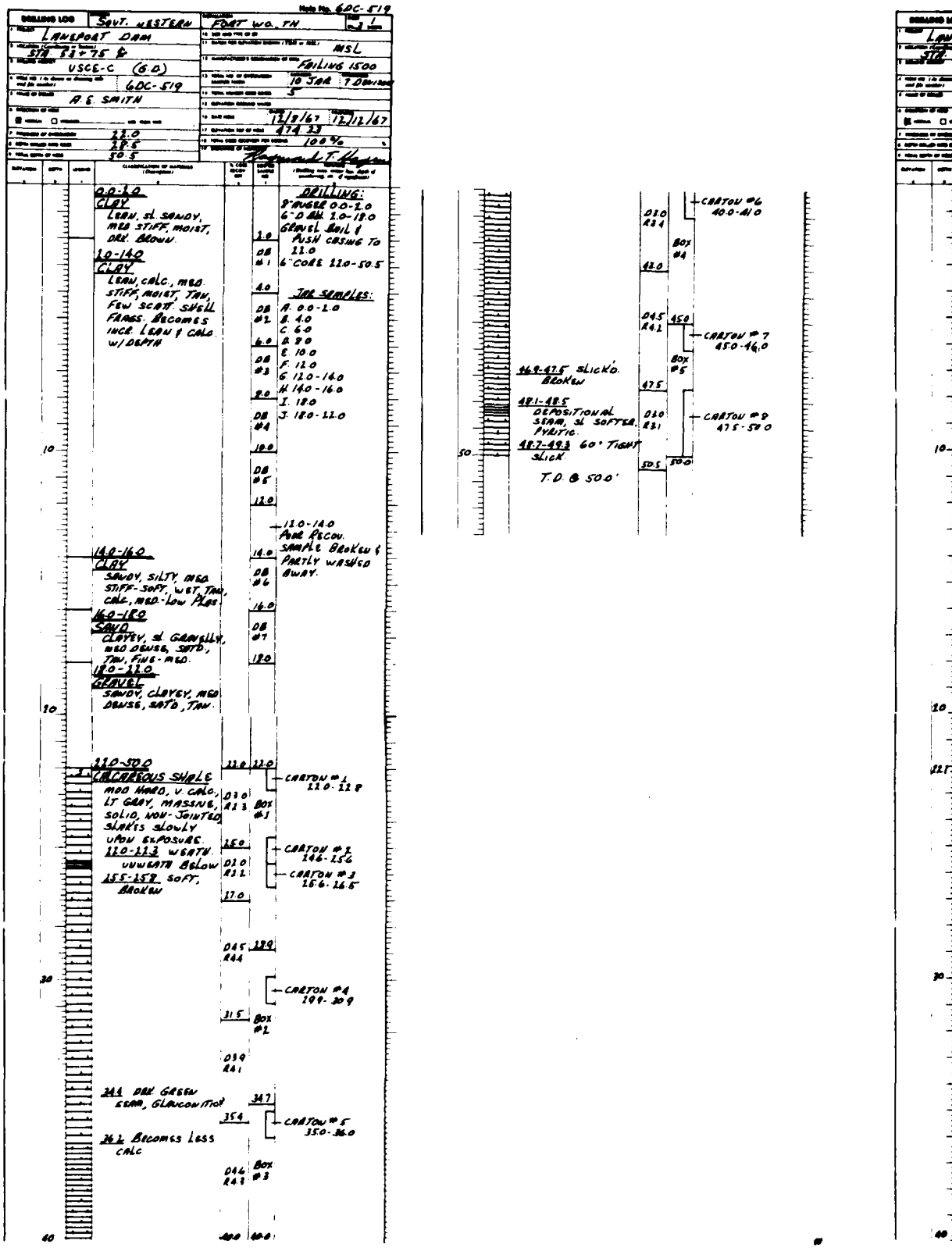
LOGS OF BORINGS

8A6DC-517 & 8A6DC-518

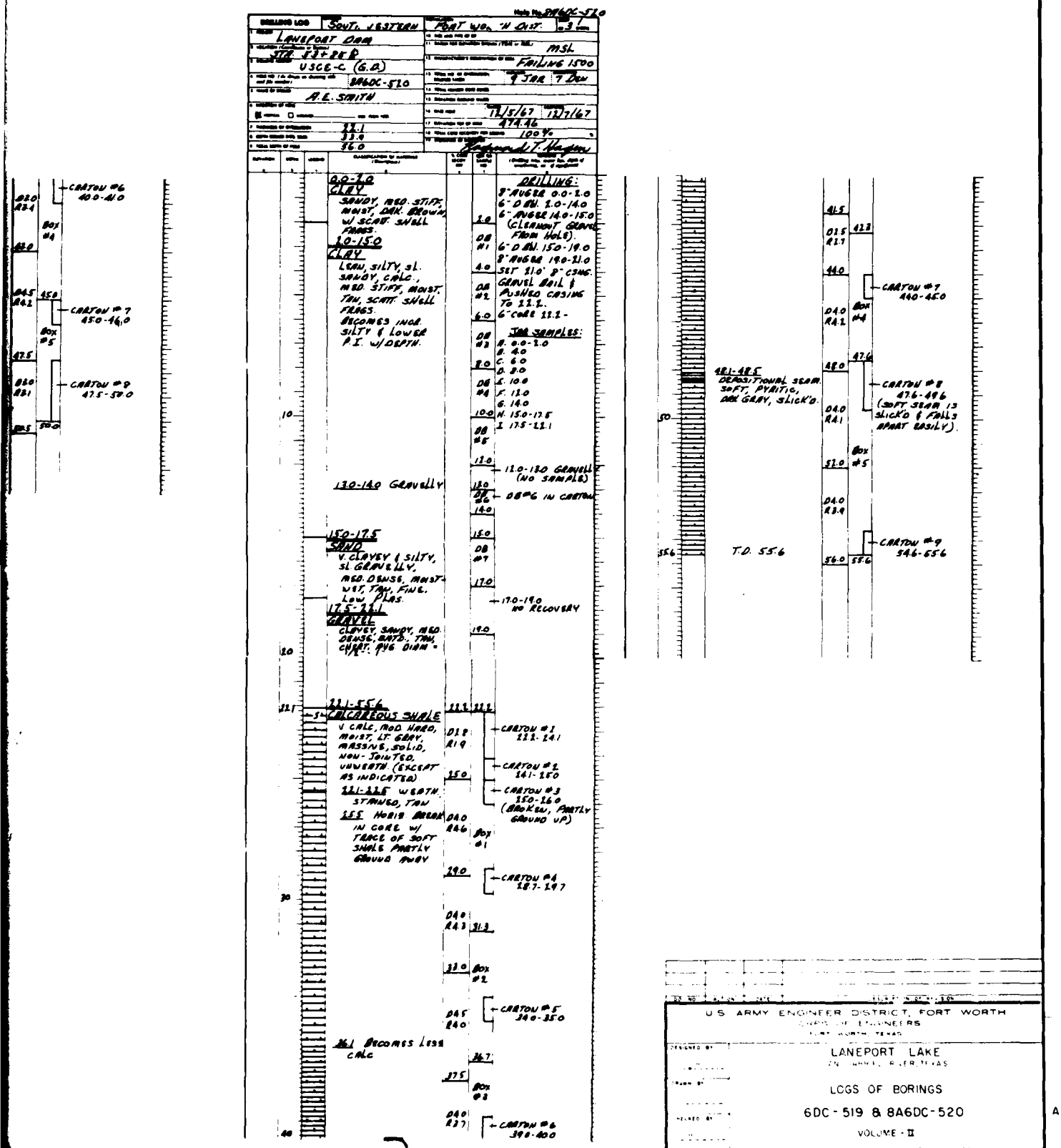
VOLUME - II

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO.
SEQUENCE NO. 30

2



TO ACCOMPANY FINAL FOUN



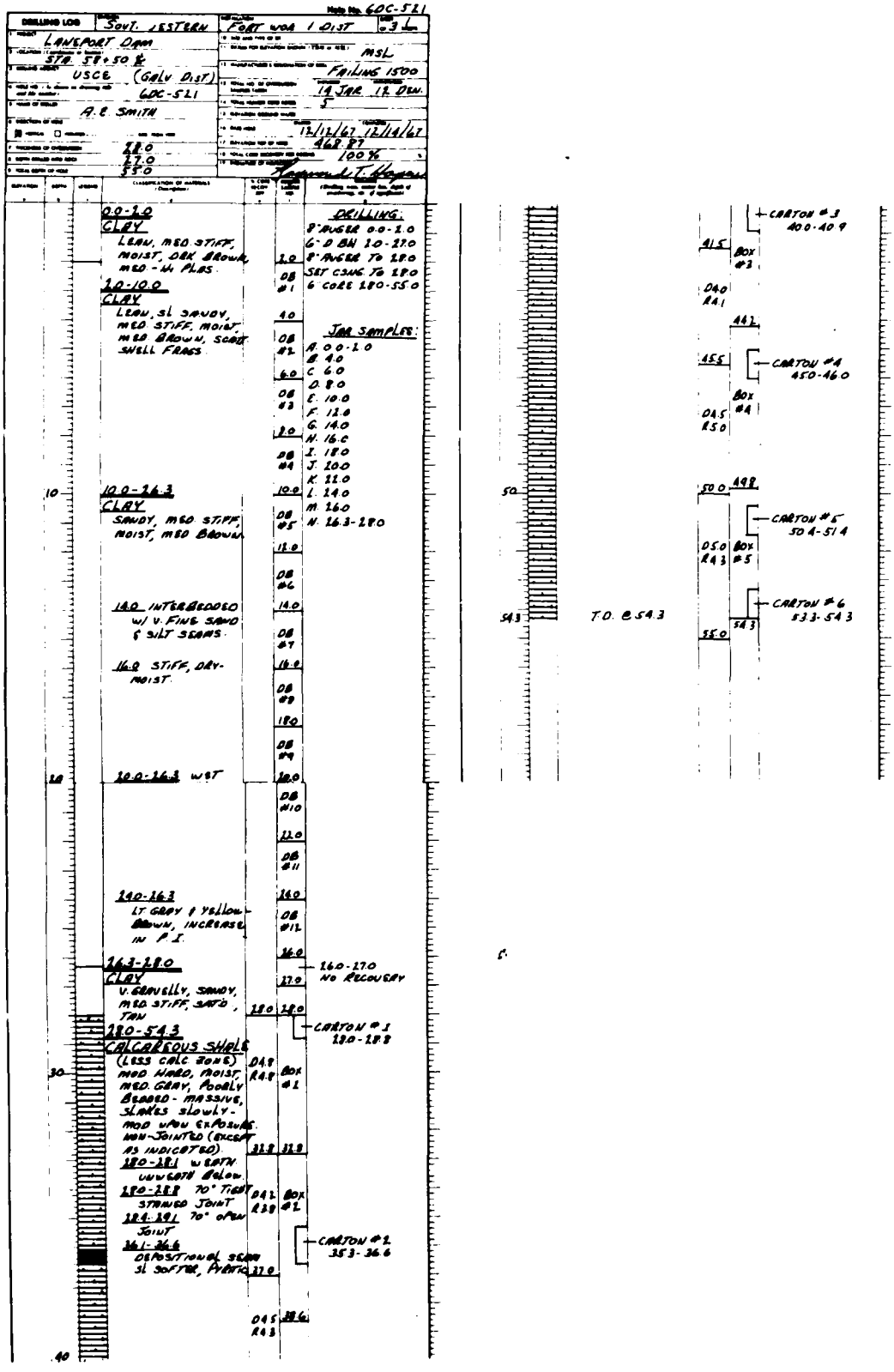
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

LANEPORT LAKE
ON TRINITY RIVER, TEXAS

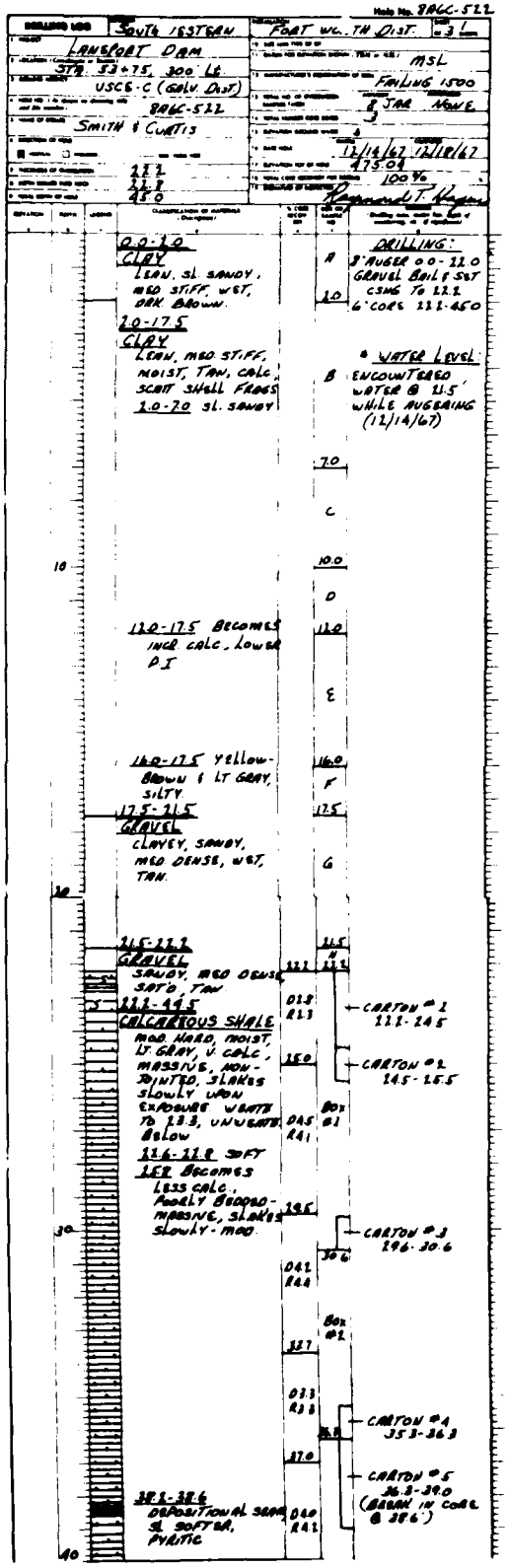
LOGS OF BORINGS
6DC-519 & 8A6DC-520
VOLUME - II

SEQUENCE NO. 31

2



TO ACCOMPANY FINAL FOUN



DESIGNED BY	US ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DRAWN BY	LANEPORT LAKE SAN GABRIEL RIVER, TEXAS
CHECKED BY	LOGS OF BORINGS 6DC-521 & 8A6C-522 VOLUME - II
SUBMITTED BY	INVITATION NO.
ENGINEER	SPECIFICATIONS DATED
	DRAWING NUMBER — SHEET NO 32 OF 68 — SEQUENCE NO 32

A

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 77

Hole No. 8A-523

DRILLING LOG	SOUTHWESTERN
FORT WORTH DIST	1
LANEPORT DAM	8" AUGER
USCE-C (G.D)	FAILING
8A-523	8 JAR NONE
SMITH	NONE
	1/24/68 1/24/68
15.5	
2.0	
17.5	

Raymond T Hagen

Depth	Classification of Materials (Description)	Sample No.
0.0-1.5	CLAY LEAN, ORGANIC, MED STIFF, MOIST, DRK BROWN	A
1.5-8.0	GRAVEL V. CLAYEY, V. SANDY, MED DENSE, MOIST-WET, TAN.	1.5 B
6.5-7.0	SAND FINE, SL GRAVELLY MED DENSE, MOIST, TAN	6.5 C 7.0 D 8.0
8.0-13.0	GRAVEL V. SANDY, SL. CLAYEY, SL. CEMENTED, MOIST, TAN.	E
12.0-13.0	WELL CEM.	
13.0-14.0	CLAY V. SANDY, GRAVELLY, V. CALC., MOD CEM., TAN.	13.0 F 14.0 G
14.0-15.5	GRAVEL SANDY, SL. CLAYEY, MED DENSE, SATD, TAN.	15.5 H
15.5-17.5	SHALE (I) SOFT, HIGHLY WEATH.	17.5
	T.D @ 17.5'	

WATER LEVEL: ENCOUNTERED WATER @ 14.5 WHILE AUGERING. HOLE LEFT OPEN FOR WATER MEASUREMENTS

Hole No. 8A-524

DRILLING LOG	SOUTHWESTERN
FORT WORTH DIST	2
LANEPORT DAM	8" AUGER
USCE-C (G.D)	FAILING 1500
8A-524	8 JAR NONE
SMITH	NONE
	1/23/68 1/24/68
20.0	
2.0	
22.0	

Raymond T Hagen

Depth	Classification of Materials (Description)	Sample No.
0.0-1.2	CLAY FAT, ORGANIC, MED STIFF, MOIST, DRK BRN	A 1.2
1.2-4.0	CLAY LEAN, SL SANDY, MED STIFF, MOIST, MED BROWN	B 4.0
4.0-9.0	CLAY V LEAN, V CALC, CONTAINS WHITE LIME DEPOSITS & NODULES, STIFF, MOIST, TAN	C
9.0-17.0	CLAY V. LEAN, V CALC, SL. CEM W/HARD WELL CEM SEAMS DRY, WHITE	9.0 D
14.0-15.0	HARD, WELL CEM. NEARS PURE LIME	14.0 E
15.0-17.0	GRAVELLY	15.0 F
17.0-20.0	CLAY GRAVELLY, V. STIFF, MOIST, YELLOW-BRN.	17.0 G
20.0-22.0	SHALE (I) HIGHLY WEATH, SOFT	20.0 H
	TD @ 22.0	22.0

WATER LEVEL ENCOUNTERED WATER @ 17.5 WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS

DRILLING LOG

LANEPO

USCE

SMITH

10

20

140

TO ACCOMPANY FINAL FO

Hole No. 8A-524

WORTH DIST 2 1

R. AUGER

FAILING 1500

8 JAR NONE

NONE

1/23/68 1/24/68

WATER LEVEL
ENCOUNTERED WATER @ 17.5 WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS

Hole No. 8A-525

DRILLING LOG | SOUTHWESTERN | FORT WORTH DIST 2 1

LANEPORT DAM | R. AUGER

USCE-C (G.D.) | FAILING 1500

8A-525 | 13 JAR NONE

SMITH | NONE

1/23/68 1/23/68

15.5
8.5
24.0

00-13
CLAY
LEAN, W/ORGANIC MAT'L, MED STIFF, MOIST, DRK BROWN

13-30
CLAY
V SANDY (NEARS A CLAYEY SAND), V CALC, STIFF, DRY-MOIST TAN

30-65
CLAY
LEAN, CALC, W/LIME NODULES, MED STIFF, MOIST, TAN
60-65 TAN & MED. BRN

65-85
CLAY
SANDY, CALC, HARD, CEM W/LIME, DRY, WHITE

85-90
CLAY
GRAVELLY, STIFF, MOIST, DRK BRN

90-100
GRAVEL
V. SANDY, CLAYEY, DENSE, DRY-MOIST, TAN

100-125
SAND
MED-CRS. GRAVELLY, SL CLAYEY, DENSE, MOIST, TAN

125-135
GRAVEL
V. CLAYEY & SANDY, MED DENSE, SATD, TAN

135-155
GRAVEL
HEAVY, MAX DIAM - 5", SATD, TAN

155-240
SHALE (I)
SOFT, WEATH

TD 240'

WATER LEVEL
WATER ENCOUNTERED @ 12.5 WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS

JAR SAMPLES
A 00-13
B 13-30
C 30-40
D 40-60
E 60-65
F 65-85
G 85-90
H 90-100
I 100-125
J 125-135
K 135-155
L 155-205
M 205-240

Hole No. 8A-526

DRILLING LOG | SOUTHWESTERN | FORT WORTH DIST 1 1

LANEPORT DAM | R. AUGER

USCE-C (L.R.D.) | FAILING 1500

8A-526 | 5 JAR NONE

HIBBS | NONE

1/25/68 1/25/68

8.5
1.5
10.0

00-15
CLAY
LEAN, W/ORGANIC MAT'L, MED STIFF, MOIST, DRK BRN - BLACK

15-40
CLAY
GRAVELLY, MED STIFF, MOIST, TAN, CALC

40-65
CLAY
SANDY, V CALC, W/NUMEROUS LIME NODS, MED STIFF, WET, TAN

65-85
GRAVEL
CLAYEY, SANDY, MED DENSE, SATD, TAN

85-100
SHALE (I)
SOFT, HIGHLY WEATH

TD @ 100'

A
15
B
40
C
6.5
D
8.5
E
10.0

WATER LEVEL:
ENCOUNTERED WATER @ 6.5 WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS

ELEVATION:
SURFACE ELEV IS 1.5' LOWER THAN ORIG LOC

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

LANEPORT LAKE
ANCHORAGE RIVER, TEXAS

LOGS OF BORINGS

8A-523, 8A-524, 8A-525 & 8A-526

VOLUME - II

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER
DRAWING NUMBER
SHEET NO.
33

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 78

Hole No. 8A-527

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST — 2 1

LANEPORT DAM — 8" AUGER

USCE-C (GD) — FAILING 1500

8A-527 — 7 JAR NONE

SMITH — NONE

1/25/68 1/25/68

220
20
240

Raymond T Hagen

Depth	Classification of Materials	Sample No.	Water Level
	00-17 CLAY LEAN, SL SANDY, MED STIFF, MOIST, DRK BRN	A	WATER LEVEL ENCOUNTERED WATER @ 175 WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS
	17-65 CLAY LEAN, CALC, W/SCATT LIME NODS, MED STIFF, MOIST, TAN	17 B	
	65-110 CLAY HARD, WELL CEM W/LIME, DRY, TAN-WHITE	65 C	
10			
	110-150 CLAY V SANDY, GRAVELLY, CALC, MED STIFF, WET, TAN	115 D	
	150-200 CLAY SANDY, GRAVELLY, MED STIFF, WET-SATD, YELLOW-BRN	150 E	
20		200	
	200-220 CLAY GRAVELLY, STIFF, WET, YELLOW-BRN, CALC	F	
220	220-240 SHALE (I) SOFT, HIGHLY WEATH	220 G	
240	TD @ 240'	240	

Hole No. 8A-528

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST — 1 1

LANEPORT DAM — 8" AUGER

USCE-C (LRD) — FAILING 1500

8A-528 — 4 JAR NONE

HIBBS — NONE

1/25/68 1/25/68

65
25
90

Raymond T Hagen

Depth	Classification of Materials	Sample No.	Water Level
	00-06 CLAY GRAVELLY, MED STIFF, MOIST, DRK BROWN	A 06	WATER LEVEL ENCOUNTERED WATER @ 40' WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS
	06-50 GRAVEL SANDY, SL CLAYEY, MED DENSE, WET-SATD, TAN, PREDOM FINE GRAVEL	B	
	50-65 GRAVEL HEAVY, MAX DIAM RCVD 5, SATD TAN	50 C	
65	65-90 SHALE (I) SOFT, HIGHLY WEATH	65 D	
90	TD @ 90'	90	

Hole No. 8A-529

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST — 2 1

LANEPORT DAM — 8" AUGER

USCE-C (LRD) — FAILING 1500

8A-529 — 7 JAR NONE

HIBBS — NONE

1/25/68 1/25/68

70
200
270

Raymond T Hagen

Depth	Classification of Materials	Sample No.	Water Level
	00-42 CLAY FAT, SCATT FINE GRAVEL, MED STIFF, MOIST, BLACK	A	WATER LEVEL WATER NOT ENCOUNTERED WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS
	42-70 GRAVEL V CLAYEY, MED DENSE, MOIST, LT GRAY	42 B	
70	70-270 SHALE (I) SOFT, WEATH TO 260 UNWEATH BELOW 260	70 C	
10			
		120 D	
		170 E	
20			
		220 F	
		260 G	
270	TD @ 270	270	

DRILLING LOG — SO

LANEPORT

USCE-C

HIBBS

140

150

TO ACCOMPANY FINAL FOU

Hole No. 8A-529

...TH DIST — 2 — 8" AUGER

FAILING 1500

7 JAR NONE

NONE

1/25/68 1/25/68

WATER LEVEL

WATER NOT ENCOUNTERED WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS

Hole No. 8A-530

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST — 1 — 8" AUGER

LANEPORT DAM

USCE-C (LRD) — 8A-530

HIBBS

FAILING 1500

6 JAR NONE

NONE

1/24/68 1/24/68

14.0

10

15.0

Raymond T. Hagen

Depth	Description	Sample No.
0.0-4.0	CLAY — LEAN, MED STIFF, MOIST, MED BRN	A
4.0-7.0	CLAY — SANDY, NUMEROUS LIME NODS, V CALC, MED STIFF, MOIST, TAN	B
7.0-9.0	CLAY — V CALC, V LEAN, W/LIME NODS, NEARS A PURE LIME, WEAKLY CEM, DRY-MOIST WHITE	C
9.0-12.0	CLAY — V. GRAVELLY (NEARS A CLAYEY GRAVEL), SANDY, MED STIFF, WET, TAN, CALC	D
12.0-14.0	GRAVEL — SL. CLAYEY, MED DENSE, SAT'D, TAN	E
14.0-15.0	SHALE (I) — SOFT, HIGHLY WEATH	F

T.D. @ 15.0'

WATER LEVEL

ENCOUNTERED WATER @ 11.0' WHILE AUGERING. HOLE LEFT OPEN FOR WATER MEASUREMENTS

Hole No. 8A-531

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST — 1 — 8" AUGER

LANEPORT DAM

USCE-C (LRD) — 8A-531

HIBBS

FAILING 1500

8 JAR NONE

NONE

1/24/68 1/24/68

18.5

15

20.0

Raymond T. Hagen

Depth	Description	Sample No.
0.0-3.5	CLAY — LEAN, MED STIFF, MOIST	A
0.0-2.0	DRY BRN	2.0
2.0-3.5	MED BRN	B
3.5-8.0	CLAY — SANDY W/NUMEROUS FINE LIME NODS LEAN, V CALC, MED STIFF, MOIST, TAN	C
8.0-10.0	CLAY — SANDY, SCAT LIME NODS, WEAKLY CEM. W/LIME, DRY, TAN	D
10.0-14.0	GRAVEL — V SANDY, CLAYEY, FINE, WELL GRADED FM MED SAND TO FINE GRAVEL, MED DENSE, TAN, MOIST	E
11.5-14.0	WET, INCR IN GRAVEL SIZE	F
14.0-18.5	GRAVEL — SANDY, MED DENSE, SAT'D, TAN	G
18.5-20.0	SHALE (I) — SOFT, HIGHLY WEATH	H

T.D. @ 20.0'

WATER LEVEL:

ENCOUNTERED WATER @ 14.0' WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS

2

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY

DRAWN BY

CHECKED BY

SUBMITTED BY

ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A-527, 8A-528, 8A-529, 8A-530 & 8A-531

VOLUME - II

INVITATION NO.

SPECIFICATIONS DATED

DRAWING NUMBER

SHEET NO. 14 OF 1[illegible]

SEQUENCE NO. 34

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 79

Hole No. 8A-532

DRILLING LOG	SOUTHWESTERN
FORT WORTH DIST	1 of 2
LANEPORT DAM	8" AUGER
USCE-C (GD)	FAILING 1500
8A-532	8 JAR NONE
SMITH	NONE
	1/25/68 1/25/68
25.0	
2.0	
27.0	Raymond T. Hagen

Depth	Classification of Materials (Description)	Sample No.	Water Level
	0.0-3.0 CLAY LEAN, W/ ORGANIC MATL, MED STIFF, MOIST, DRK BRN	A	WATER LEVEL: ENCOUNTERED WATER @ 24.0' WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS
	3.0-5.0 CLAY LEAN, SANDY W/ SMALL LIME NODS, CALC, MED STIFF, MOIST, MED BRN	3.0 B	
	5.0-7.0 CLAY V LEAN, V CALC, MED STIFF, MOIST, TAN	5.0 C	
	7.0-19.0 CLAY V CALC, MOD-WELL CEMENTED, LT TAN-WHITE, DRY	7.0 D	
10		12.0 E	
	17.5-19.0 SANDY & GRAVELLY	17.5 F	
		19.0	
20	19.0-25.0 CLAY GRAVELLY, STIFF, MOIST, RED-BRN	G	
25.0	25.0-27.0 SHALE (I) SOFT, HIGHLY WEATH	25.0 H	
27.0	T.D. @ 27.0'	27.0	

Hole No. 8A-533

DRILLING LOG	SOUTHWESTERN
FORT WORTH DIST	1 of 2
LANEPORT DAM	8" AUGER
USCE-C (G.D)	FAILING 1500
8A-533	9 JAR NONE
SMITH	NONE
	1/25/68 1/26/68
26.5	
3.5	
30.0	Raymond T. Hagen

Depth	Classification of Materials (Description)	Sample No.	Water Level
	0.0-3.0 CLAY FAT, MED STIFF, MOIST, DRK. BRN	A	WATER LEVEL: ENCOUNTERED WATER @ 24.5 WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS
	3.0-8.0 CLAY V. CALC, W/ LIME NODS & LIME DEPOSITS LEAN, MED STIFF, MOIST, TAN	3.0 B	
	8.0-20.0 CLAY LEAN, WEAKLY CEM. W/ LIME, V. CALC, TAN-WHITE	8.0 C	
10		13.0 D	
	18.0-20.0 SANDY & GRAVELLY	18.0 E	
20	20.0-22.0 CLAY SANDY, MED STIFF, MOIST, YELLOW-BRN. & LT GRAY.	20.0 F	
	22.0-24.0 CLAY V GRAVELLY, SANDY, MED. STIFF, WET, YELLOW-BRN & LT. GRAY	22.0 G	
	24.0-26.5 GRAVEL V CLAYEY, MED DENSE, SAT'D, YELLOW-BRN	24.0 H	
26.5	26.5-30.0 SHALE (I) SOFT, HIGHLY WEATH	26.5 I	
30.0	T.D. @ 30.0'	30.0	

DRILLING LOG

LANEPORT

USCE-C

HIRS

TO ACCOMPANY FINAL F

Hole No. 8A-533

DIST 2 1

AUGER

FAILING 1500

7 JAR NONE

NONE

5/68 1/26/68

Raymond T. Hagen

WATER LEVEL
ENCOUNTERED
WATER @ 245
WHILE AUGERING
HOLE LEFT OPEN
FOR WATER
MEASUREMENTS

Hole No. 8A-534

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST 2 1

LANEPORT DAM — 8" AUGER

USCE-C (L.R.D.) — FAILING 1500

8A-534 — 7 JAR NONE

HIBBS — NONE

1/26/68 1/26/68

25.0

1.0

26.0

Raymond T. Hagen

Depth	Classification of Materials (Description)	Sample No.	Remarks
0.0-3.0	CLAY FAT, MED. STIFF, MOIST, DRK. BRN.	A	WATER LEVEL: ENCOUNTERED WATER @ 23.0' WHILE AUGERING. HOLE LEFT OPEN FOR WATER MEASUREMENTS.
3.0-13.0	CLAY LEAN, W/ NUMEROUS LIME NODS., V. CALC., MED. STIFF, MOIST, TAN.	3.0 B 8.0 C	
13.0-18.0	CLAY LEAN, V. CALC., MOD CEM W/ LIME, DRY, LT. TAN-WHITE	13.0 D	
18.0-23.0	GRAVEL V. CLAYEY & SANDY, MED DENSE, MOIST, YELLOW-BRN.	18.0 E	
23.0-25.0	GRAVEL CLAYEY, MED DENSE, SATD, YELLOW-BRN	23.0 F	
25.0-26.0	SHALE (I) SOFT, HIGHLY WEATH	25.0 G 26.0	
	T.D. @ 26.0		

Hole No. 8A-535

DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST 2 1

LANEPORT DAM — 8" AUGER

USCE-C (L.R.D.) — FAILING 1500

8A-535 — 7 JAR NONE

HIBBS — NONE

1/25/68 1/25/68

27.0

2.0

29.0

Raymond T. Hagen

Depth	Classification of Materials (Description)	Sample No.	Remarks
0.0-4.0	CLAY LEAN, SL. SANDY, MED. STIFF, MOIST, DRK. BRN.	A	WATER LEVEL: ENCOUNTERED WATER @ 20.0' WHILE AUGERING. HOLE LEFT OPEN FOR WATER MEASUREMENTS.
4.0-9.0	CLAY LEAN, V. CALC., W/ NUMEROUS LIME NODS, MED. STIFF, MOIST, TAN.	4.0 B	LOC. & ELEV. HOLE OFFSET 37' NORTH OF ORIG. LOCATION. ELEV. 0.5' LOWER THAN ORIG. ELEV.
9.0-17.0	CLAY V. LEAN, V. CALC., WEAKLY CEM W/ LIME, DRY, TAN	9.0 C	
14.0-17.0	LIME NODS & SCATT. FINE GRAVEL	14.0 D	
17.0-22.0	GRAVEL V. CLAYEY, SANDY, MED DENSE, WET, TAN	17.0 E	
22.0-27.0	GRAVEL SANDY CLAYEY, MED DENSE, SATD, TAN	22.0 F	
27.0-29.0	SHALE (I) SOFT, HIGHLY WEATH	27.0 G	
	T.D. @ 29.0	29.0	

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY

DRAWN BY

CHECKED BY

SUBMITTED BY

ENGINEER

LANEPORT LAKE
ANTI-GARRIED RIVER, TEXAS

LOGS OF BORINGS

8A-532, 8A-533, 8A-534 & 8A-535

VOLUME - II

SPECIFICATIONS DATE

DRAWING NUMBER | SHEET NO. | SCALE

2

A

O ACCOMPANY FINAL FOUNDATION REPORT PLATE 80

Hole No. BA-536

DRILLING LOG — Sour. WESTERN — FORT Wc TH DIST — sheet 1 of 1 sheets

PROJECT: LANEPORT DAM
LOCATION (Coordinates or Station):
DRILLING AGENCY: USCE-C (G.O.)
HOLE NO. (As shown on drawing title) and JOB NUMBER: BA-536
NAME OF DRILLER: SMITH
DIRECTION OF HOLE: VERTICAL ☐ INCLINED ☐ — MEAS. FROM TRUE
THICKNESS OF OVERBURDEN: 18.0
DEPTH DRILLED INTO ROCK: 1.0
TOTAL DEPTH OF HOLE: 19.0

MANUFACTURER'S DESIGNATION OF DRILL: P. AUGER
SIZE AND TYPE OF BIT:
DATUM FOR ELEVATION SHOWN (GS or MSL): FAILING 1500
TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 3 JAR NONE
TOTAL NUMBER CORE BOXES: NONE
ELEVATION GROUND WATER:
DATE HOLE: 1/26/68 1/26/68
ELEVATION TOP OF HOLE:
TOTAL CORE RECOVERY FOR BORING:
SIGNATURE OF INSPECTOR: Raymond T. Hagen

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV	SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant)
	0.0-7.0		CLAY SANDY, STIFF, MOIST, MED. BROWN.		A	WATER LEVEL: ENCOUNTERED WATER @ 15.0' WHILE AUGERING. LEFT HOLE OPEN FOR WATER MEASUREMENTS
	7.0-7.0		CLAY V. LEAN, V. CALC., MED. CEM. W/LIME, WHITE, DRY.		B	LOCATION: HOLE OFFSET 130' EAST NEXT TO COUNTY ROAD
	7.0-12.0		GRAVEL V. CLAYEY, SANDY, MED. DENSE, MOIST, TAN.		C	ELEVATION: ELEV. OF OFFSET LOCATION IS 5.4' LOWER THAN ORIG. LOC.
10	12.0-18.0		CLAY V. GRAVELLY, SANDY, MED. DENSE, WET+ SATD, CALC., TAN.		D	
18.0	18.0-19.0		SHALE (I) SOFT, HIGHLY WEATH.		E	
19.0			T.D. @ 19.0'			

Hole No. BA-537

DRILLING LOG — Sour. WESTERN — FORT Wc TH DIST — sheet 1 of 1 sheets

PROJECT: LANEPORT DAM
LOCATION (Coordinates or Station):
DRILLING AGENCY: USCE-C (L.RO.)
HOLE NO. (As shown on drawing title) and JOB NUMBER: BA-537
NAME OF DRILLER: HIBBS
DIRECTION OF HOLE: VERTICAL ☐ INCLINED ☐ — MEAS. FROM TRUE
THICKNESS OF OVERBURDEN: 5.0
DEPTH DRILLED INTO ROCK: 1.0
TOTAL DEPTH OF HOLE: 6.0

MANUFACTURER'S DESIGNATION OF DRILL: P. AUGER
SIZE AND TYPE OF BIT:
DATUM FOR ELEVATION SHOWN (GS or MSL): FAILING 1500
TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 3 JAR NONE
TOTAL NUMBER CORE BOXES: NONE
ELEVATION GROUND WATER:
DATE HOLE: 1/26/68 1/26/68
ELEVATION TOP OF HOLE:
TOTAL CORE RECOVERY FOR BORING:
SIGNATURE OF INSPECTOR: Raymond T. Hagen

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV	SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant)
	0.0-5.0		CLAY SANDY, SL. GRAVELLY, MED. STIFF, MOIST, MED. BROWN		A	WATER LEVEL: ENCOUNTERED WATER @ 4.0' WHILE AUGERING. LEFT HOLE OPEN FOR WATER MEASUREMENTS.
	5.0-5.0		BECOMES INCR GRAVELLY, WET		B	
	5.0-6.0		SHALE (I) SOFT, HIGHLY WEATH		C	
			T.D @ 6.0'			

Hole No. BA-538

DRILLING LOG — Sour. WESTERN — FORT W. TH DIST — sheet 1 of 1 sheets

PROJECT: LANEPORT DAM
LOCATION (Coordinates or Station):
DRILLING AGENCY: USCE-C (L.R.O.)
HOLE NO. (As shown on drawing title) and JOB NUMBER: BA-538
NAME OF DRILLER: HIBBS
DIRECTION OF HOLE: VERTICAL ☐ INCLINED ☐ — MEAS. FROM TRUE
THICKNESS OF OVERBURDEN: 14.0
DEPTH DRILLED INTO ROCK: 2.0
TOTAL DEPTH OF HOLE: 16.0

MANUFACTURER'S DESIGNATION OF DRILL: P. AUGER
SIZE AND TYPE OF BIT:
DATUM FOR ELEVATION SHOWN (GS or MSL): FAILING 1500
TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 7 JAR NONE
TOTAL NUMBER CORE BOXES: NONE
ELEVATION GROUND WATER:
DATE HOLE: 1/26/68 1/26/68
ELEVATION TOP OF HOLE:
TOTAL CORE RECOVERY FOR BORING:
SIGNATURE OF INSPECTOR: Raymond T. Hagen

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV	SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant)
	0.0-1.0		CLAY SANDY, GRAVELLY, W/LIME NODS, MED. STIFF, MOIST, MED. BRN.		A	WATER LEVEL: WATER ENCOUNTERED @ 10.0' WHILE AUGERING. HOLE LEFT OPEN FOR WATER MEASUREMENTS.
	1.0-6.0		CLAY SANDY, SL. GRAVELLY, HARD, MOD. CEM. W/LIME, DRY, TAN.		B	
	5.5-6.0		WELL CEM.		C	LOCATION: HOLE OFFSET 74' EAST NEXT TO COUNTY ROAD
	6.0-12.5		GRAVEL V. CLAYEY (USARS A GRAVELLY CLAY), SANDY, MED. DENSE, MOIST, TAN.		D	
	7.5-12.5		INCR IN GRAVEL SIZE.		E	ELEVATION: ELEV. OF OFFSET LOCATION IS 4.6' LOWER THAN ORIG. LOC.
10	12.5-14.0		GRAVEL SANDY SL CLAYEY, MED. DENSE, SATD, TAN.		F	
	14.0-16.0		SHALE (I) SOFT, HIGHLY WEATH.		G	
			T.D @ 16.0'			

Hole No. BA-539

DRILLING LOG — Sour. WESTERN — FORT Wc TH DIST — sheet 1 of 1 sheets

PROJECT: LANEPORT DAM
LOCATION (Coordinates or Station):
DRILLING AGENCY: USCE-C (G.O.)
HOLE NO. (As shown on drawing title) and JOB NUMBER: BA-539
NAME OF DRILLER: SMITH
DIRECTION OF HOLE: VERTICAL ☐ INCLINED ☐ — MEAS. FROM TRUE
THICKNESS OF OVERBURDEN: 11.0
DEPTH DRILLED INTO ROCK: 1.0
TOTAL DEPTH OF HOLE: 12.0

MANUFACTURER'S DESIGNATION OF DRILL: P. AUGER
SIZE AND TYPE OF BIT:
DATUM FOR ELEVATION SHOWN (GS or MSL): FAILING 1500
TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 4 JAR NONE
TOTAL NUMBER CORE BOXES: NONE
ELEVATION GROUND WATER:
DATE HOLE: 1/26/68 1/26/68
ELEVATION TOP OF HOLE:
TOTAL CORE RECOVERY FOR BORING:
SIGNATURE OF INSPECTOR: Raymond T. Hagen

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV	SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant)
	0.0-3.0		CLAY FAT, W/SCATT. GRAVEL, MED STIFF, MOIST, BLACK.		A	WATER LEVEL: Hole left open for water measurements
	3.0-6.5		CLAY SANDY, MED. STIFF, MOIST, LT. GRAY MOTTLED YELLOW-BRN		B	
	6.5-11.0		CLAY V. GRAVELLY, MED. STIFF, WET- SATD, YELLOW-BRN.		C	
10	11.0-12.0		SHALE (I) SOFT, HIGHLY WEATH.		D	
			T.D @ 12.0'			

TO ACCOMPANY FINAL FOR

Hole No. 8A-538

DIST
AUGER
FAILING 1500
7 JAR NONE
NONE
1/26/68 1/26/68
Raymond T. Hagen

WATER LEVEL:
WATER ENCOUNTERED @ 10.0' WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS.

LOCATION:
HOLE OFFSET 4' EAST NEXT TO COUNTY ROAD

ELEVATION:
ELEV. OF OFFSET LOCATION IS 6' LOWER THAN ORIG. LOC.

Hole No. 8A-540

DRILLING LOG — SOUTH WESTERN — FORT WORTH DIST — 1 of 1

LANEPORT — 8" AUGER
USCE-C (L.R.D.) — 8A-540 — FAILING 1500
HIBBS — 6 JAR NONE
NONE
1/26/68 1/26/68
13.5
1.0
14.5
Raymond T. Hagen

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Sample No.	Remarks
			0.0-1.0 CLAY SANDY, SL. GRAVELLY, MED. STIFF, MOIST, DRK. BROWN		A 1.0	WATER LEVEL: ENCOUNTERED WATER @ 10.0' WHILE AUGERING HOLE LEFT OPEN FOR WATER MEASUREMENTS.
			1.0-4.5 CLAY LEAN, CALC, SANDY, W/LIME NODS, MED STIFF, MOIST, MED. BRN.		B 4.5	
			4.5-7.0 CLAY HARD, WELL CEM. W/ LIME, WHITE, DRY.		C 7.0	LOCATION: HOLE OFFSET 28' EAST ON COUNTY ROAD.
			7.0-9.0 GRAVEL V. CLAYEY, SANDY, MOD. CEM. W/LIME, DRY-MOIST, TAN.		D 9.0	ELEVATION: ELEV. OF OFFSET LOCATION IS 1.0' LOWER THAN ORIG. LOC.
	10		9.0-13.5 GRAVEL CLAYEY, SANDY, MED. DENSE, SAT'D, TAN.		E	
			13.5-14.5 SHALE (I) SOFT, HIGHLY WEATH.		13.5 F 14.5	

T.D. @ 14.5

Hole No. 8A-542

DRILLING LOG — SOUTH WESTERN — FORT WORTH DIST — 1 of 1

LANEPORT DAM — 8" AUGER
USCE-C (GALV. D.) — 8A-542 — FAILING 1500
SMITH — 4 JAR NONE
NONE
1/26/68 1/26/68
7.5
4.5
12.0
Raymond T. Hagen

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Sample No.	Remarks
			0.0-3.5 CLAY SANDY, GRAVELLY, NUMEROUS LIME NODS, MED. STIFF, MOIST, DRK. BRN.		A 3.5	WATER LEVEL: ENCOUNTERED WATER @ 3.0' WHILE AUGERING LEFT HOLE OPEN FOR WATER MEASUREMENTS.
			3.5-5.0 GRAVEL MAX. DIAM. 5" CLAYEY, SAT'D., TAN.		B 5.0	
			5.0-7.5 CLAY SL. GRAVELLY, MED. STIFF, WET, YELLOW-BRN.		C 7.5	
			7.5-12.0 SHALE SOFT, HIGHLY WEATH.		D	
			T.D. @ 12.0'		12.0	

Hole No. 8A-539

DIST
AUGER
FAILING 1500
4 JAR NONE
NONE
1/26/68 1/26/68
Raymond T. Hagen

WATER LEVEL:
HOLE LEFT OPEN FOR WATER MEASUREMENTS.

Hole No. 8A-541

DRILLING LOG — SOUTH WESTERN — FORT WORTH DIST — 1 of 1

LANEPORT DAM — 8" AUGER
USCE-C (L.R.D.) — 8A-541 — FAILING 1500
HIBBS — 5 JAR NONE
NONE
1/26/68 1/26/68
9.5
1.0
10.5
Raymond T. Hagen

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Sample No.	Remarks
			0.0-2.0 CLAY SANDY, GRAVELLY, MED STIFF, MOIST, DRK. BROWN.		A 2.0	WATER LEVEL: ENCOUNTERED WATER @ 4.0' WHILE AUGERING LEFT HOLE OPEN FOR WATER MEASUREMENTS.
			2.0-4.0 GRAVEL V. CLAYEY, SANDY, MED DENSE, WET, TAN, GRAVEL PREDOM. FINE.		B 4.0	
			4.0-8.0 SAND GRAVELLY, CLAYEY, SAND GRAINS PREDOM. CRS. (NEAR FINE GRAVEL SIZE), MED. DENSE, SAT'D., BROWN.		C 8.0	
			8.0-9.5 CLAY SANDY, GRAVELLY, MED STIFF, WET, YELLOW-BRN. MOTTLED LT GRAY.		D 9.5	
			9.5-10.5 SHALE SOFT, HIGHLY WEATH.		E 10.5	

T.D. @ 10.5

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A-536, 8A-537, 8A-538, 8A-539, 8A-540
8A-541 & 8A-542
VOLUME - II

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 36 OF 68
SEQUENCE NO. 36

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 81

DRILLING LOG — Hole No. BA-543

1. PROJECT: LANGDON DAM	8. HOLE NO. (As shown on drawing title): BA-543
2. LOCATION (Coordinates or Station): USCG-C (L.R.D.)	9. NAME OF DRILLER: HIBBS
3. DIRECTION OF HOLE: VERTICAL ☒ INCLINED ☐	10. DIP OF HOLE:
4. THICKNESS OF OVERBURDEN: 5.0	11. DEPTH DRILLED INTO ROCK: 3.5
5. TOTAL DEPTH OF HOLE: 8.5	12. TOTAL CORE RECOVERY FOR SECTION:

13. SAUL WESTERN	14. FORT WORTH DIST.
15. SIGNATURE & DESIGNATION OF INSPECTOR:	16. TYPE OF BIT: P. AUGER
17. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN:	18. TOTAL NO. OF CORE BOXES: FAILING 1500
19. ELEVATION GROUND WATER:	20. DATE HOLE: STARTED 11/26/68 COMPLETED 11/26/68
21. ELEVATION TOP OF HOLE:	22. TOTAL CORE RECOVERY FOR BEDROCK:
23. SIGNATURE OF DRILLER: Raymond T Hayes	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling water losses; depth of weathering; etc., if significant)
			0.0-2.0 CLAY FAT, ORGANIC, w/ LIME NODS, MED STIFF, MOIST, BLACK		A	WATER LEVEL: ENCOUNTERED WATER @ 2.0' WHILE AUGERING. LEFT HOLE OPEN FOR WATER MEASUREMENTS.
			2.0-5.0 GRAVEL MAX. DIAM ROUND 4" SATD.		2.0 B	
			5.0-8.5 SHALE SOFT, HIGHLY WEATH 5.0-7.0 WHITE LIME DEPOSITS.		5.0 C	
			T.D. @ 8.5		7.0 D	
					8.5	

Hole No. 8A-546

DRILLING LOG	SOUTH WESTERN
1. PROJECT	LANEPORT DAM
2. LOCATION (Coordinates or Station)	USCE-C (L.R.D.)
3. HOLE NO.	8A-546
4. NAME OF DRILLER	HIBBS
5. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED
6. THICKNESS OF OVERBURDEN	9.0
7. DEPTH DRILLED INTO ROCK	1.0
8. TOTAL DEPTH OF HOLE	10.0
9. DISTRICT	FORT WORTH DIST.
10. SIZE AND TYPE OF BIT	8" AUGER
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
12. MANUFACTURER'S DESIGNATION OF DRILL	FAILING 1500
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	4 JAR / NONE
14. TOTAL NUMBER CORE BOXES	NONE
15. ELEVATION GROUND WATER	
16. DATE HOLE	1/26/68 / 1/26/68
17. ELEVATION TOP OF HOLE	
18. TOTAL CORE RECOVERY FOR BORING	%
19. DISTANCE OF DRILL	

Raymond T. Hagen

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	(Drilling time, water loss, depth of weathering, etc., if significant)
			0.0-1.5 CLAY FAT, ORGANIC, MED. STIFF, MOIST, BLACK.		A 1.5	WATER LEVEL: ENCOUNTERED WATER @ 6.0' WHILE AUGERING. HOLE LEFT OPEN FOR WATER MEASUREMENTS
			1.5-6.0 CLAY GRAVELLY, SANDY, MED. STIFF, MOIST, DRK. BRN.		B	
			6.0-9.0 GRAVEL MAX. DIAM. ROUD. 4", SAT'D., TAN.		6.0 C	
	9.0		9.0-10.0 SHALE SOFT, HIGHLY WEATH.		9.0 D 10.0	
			T.D. @ 10.0'			

DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

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DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A-543 & 8A-546
VOLUME - II

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 37 OF 68
SEQUENCE NO. 37

A

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 82

Hole No. BAGC-547

CHEVROLET

USCE-C (SAVH DIST.) | FAILING 1500
BAGC-547 | 4 JAR NONE
A SMITH | 13
3/20/68 3/22/68
7.0
75.0
82.0
519.80
99%
Raymond T Hagen

00-7.0
CLAY
FAT, MED. STIFF, MOIST-WET, BLACK.

7.0-40
CLAY
SANDY, GRAVELLY CALC., MED STIFF WET, YELLOW-BRN.

40-70
CLAY
LEAN, MED.-HI PLAS, MED STIFF, MOIST, YELLOW-BRN., CALC., W/ LIME NODULES.

512.8 7.0

7.0-81.5
SHALE (I)
CALC., POORLY BEDDED, SLAKES MOD.-RAPIDLY UPON EXPOSURE.

10

7.0-21.0
HIGHLY WEATH., SOFT, MOIST, TAN YELLOW-BRN. & LT GRAY, HIGHLY JOINTED (FALLS APART READILY), OPEN HIGHLY STAINED VERT JOINTS.

21.0-39.4
HIGHLY WEATH., SOFT, MOIST, TAN YELLOW-BRN & LT GRAY, NUMEROUS TIGHT JOINTS, 20°-HORIZ JOINTS FILLED W/GYP (FROM APPROX. 1/FOOT FOOT) INTENSE WEATHERING ADJACENT TO JOINTS.

30

35.9-38.8 80°-VERT TIGHT JOINT.
35.9-37.0 JOINT FILLED W/.05' GYP
38.1-39.0 80° OPEN JOINT LINED W/GYP

DRILLING:
A 8" AUGER 0.0-10.5 SET 10.3' 8" CSNG
6" CORE 10.5-21.0 (BROKEN SHALE FALLING IN HOLE)
B ADDED 10.1' CSNG TOTAL CSNG = 20.4
40 6" CORE 21.0-82.0 ELECTRIC LOG. BAILED HOLE.

NOTE:
SHALE IN INTERVAL 7.0-21.0 FALLING IN HOLE.

WATER LOSS.
APPROX. 50% WATER LOSS @ 140'

WATER LEVEL:
105 105 BAILED HOLE TO 57.8 (3/22/68).
— LEFT HOLE OPEN FOR WATER MEASUREMENTS
DA1 RA1 — CARTON #1 11.2-12.2
DX #1

14.6
NOTE:
15.5 NO SAMPLE FTH 12.2-21.0 SHALE BROKEN
DSO RA3 BOX #2

17
17.9 RA5
21.0 BOX #3
CORE LOSS 20.4-21.0 0.6' (CLEAN OUT)
DA5 RA2 — CARTON #2 22.0-23.0

25.5 25.4
DA5 RA4 — CARTON #3 27.0-28.0
BOX #4

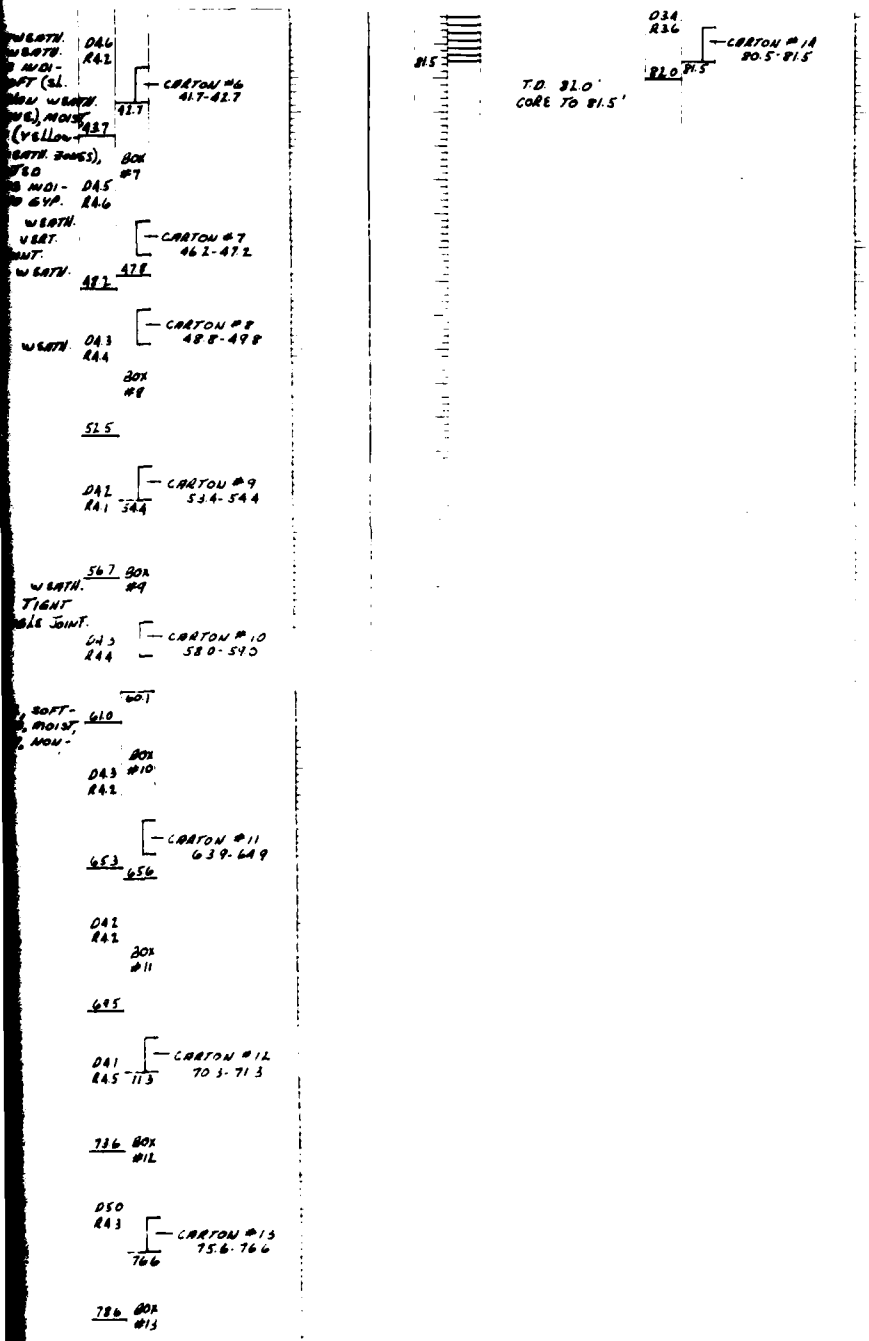
30.0
31.0
DA5 RA5 — CARTON #4 31.8-32.8
BOX #5
34.5

35.9-38.8 80°-VERT TIGHT JOINT.
35.0-37.0 JOINT FILLED W/.05' GYP
38.1-39.0 80° OPEN JOINT LINED W/GYP
DA6 RA9 36.6
— CARTON #5 37.0-38.0
39.1 BOX #6

39.4-58.7
LESSEN. UNWEATH. W/ SOFT WEATH. ZONES AS INDICATED, SOFT (SL. FIRMER THAN WEATH. SHALE ABOVE), MOIST, DRK GRAY (YELLOW-BRN. IN WEATH. ZONES), NON-JOINTED (EXCEPT AS INDICATED), NO GYP.
DA6 RA2
41.7 — CARTON #6 41.7-42.7
43.7
BOX #7
DA5 RA6
41.0-41.8 WEATH.
41.7-43.8 VERT. OPEN JOINT.
47.4-47.7 WEATH.
47.8 — CARTON #7 46.2-47.2
48.2
CARTON #8 48.8-49.8
50.0-50.2 WEATH.
DA3 RA4
BOX #8
50
52.5
DA2 RA1 — CARTON #9 53.4-54.4
54.4
56.7 BOX #9
57.1-58.7 WEATH.
57.1-59.2 TIGHT HIGH ANGLE JOINT.
DA3 RA4 — CARTON #10 58.0-59.0

58.7-81.5
UNWEATH., SOFT-MOD HARD, MOIST, DRK GRAY, NON-JOINTED
60.7
61.0
BOX #10
DA3 RA2
CARTON #11 63.9-64.9
65.3 65.6
DA2 RA2
BOX #11
69.5
70
DA1 RA5 — CARTON #12 70.3-71.3
71.3
73.6 BOX #12
DSO RA3 — CARTON #13 75.6-76.6
76.6
78.6 BOX #13

TO ACCOMPANY FINAL FOUNDA



NO	NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

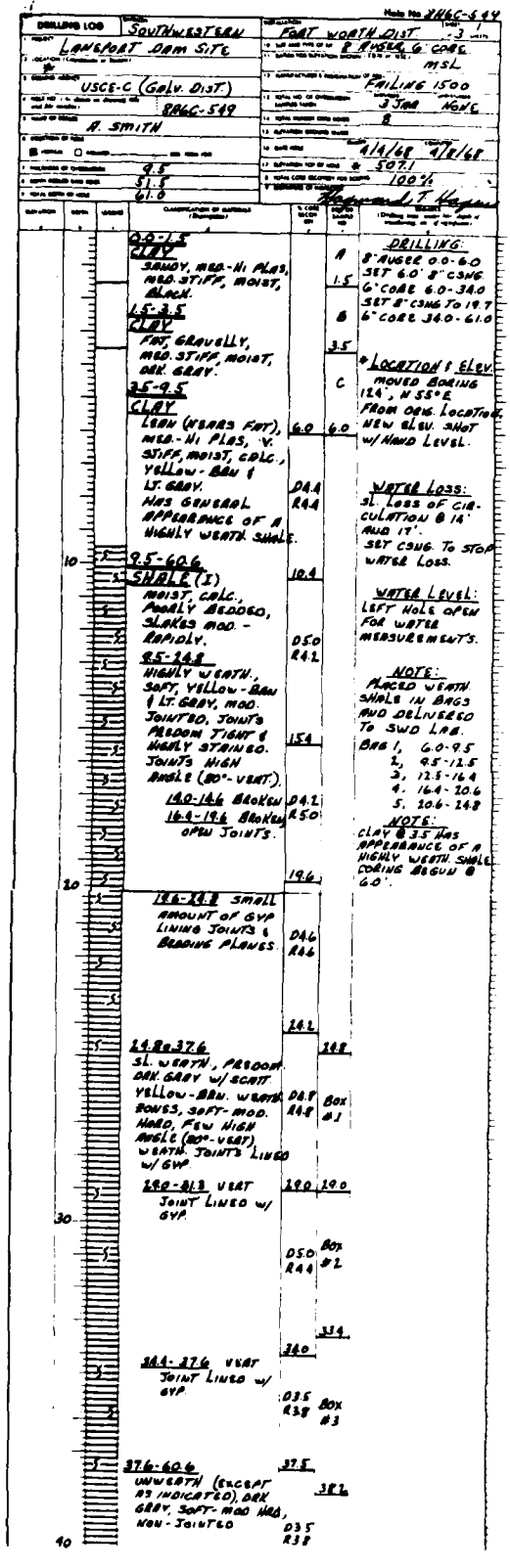
8A6C-547

VOLUME - II

A

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 38 OF 44
SEQUENCE NO 38

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 83



TO ACCOMPANY FINAL FOUND

Hole No. 8A6C-548

DRILLING LOG	SOUTHWESTERN
PROJECT	LANEPORT DAM SITE
DESIGNATION	USCE-C (GALV DIST)
HOLE NO.	8A6C-548
NAME OF DRILLER	A. SMITH
DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED
TOTAL DEPTH OF HOLE	28.2
TOTAL DEPTH OF HOLE	11.5
TOTAL DEPTH OF HOLE	39.7
INSTALLATION	FORT WORTH DIST
SHEET	2
TOTAL DEPTH OF HOLE	8" AUGER 6" CORE
DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	FAILING 1500
TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	8 JAR NONE
TOTAL NUMBER CORE BOXES	4
DIRECTION OF HOLE	4
DATE	4/3/68 4/4/68
ELEVATION TOP OF HOLE	489.33
TOTAL CORE RECOVERY FOR BORING	100%
TOTAL CORE RECOVERY	Raymond T. Hayes

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box of Sample No.	Remarks
			0.0-1.0 CLAY FAT, MED. STIFF-SOFT, MOIST-WET, DRK. GRAY, SL. SANDY, SL. GRAVELLY.		A 1.0	DRILLING: 8" AUGER 0.0-23.5 SET 23.5' 8" CSNG 6" CORE 23.5-40.3 ELECTRIC LOG
			1.0-6.0 CLAY FAT, SANDY, MED. STIFF, MOIST-WET, DRK. GRAY.		B	* WATER LEVEL: WATER SEEPING IN @ 22.5' LEFT HOLE OPEN FOR WATER MEASUREMENTS.
			6.0-10.5 CLAY LEAN, GRAVELLY, MED.-HI PLAS., CALC., STIFF, MOIST, MED. BROWN.		6.0 C	
	10		10.5-12.5 CLAY LEAN, SL. SANDY, SL. GRAVELLY W/ SCATT. LIME NODS, CALC., MED. STIFF, TAN & LT. GRAY.		10.5 D 12.5	
			12.5-24.4 CLAY LEAN (NEARS FAT), MED.-HI PLAS., CALC., MED. STIFF-STIFF, MOIST, YELLOW BRN & LT. GRAY, V. FEW SCATT. FINE GRAVELS. HAS APPEARANCE OF SOFT WEATH. SHALE.		E 17.5	
	20				F	
			22.5-24.4 V. STIFF	23.5	22.5 23.5	JAR G 22.5-24.4
			24.4-26.7 SILT SANDY (V. FINE), DENSE, WET, LT. TAN, CALC, LOW PLAS.	D4.0 R3.2	BOX #1	JAR H 24.4-26.7
			26.7-28.2 CLAY LEAN (NEARS FAT), V. STIFF, MOIST, YELLOW-BRN & LT. GRAY (SAME AS 22.5-24.4).	27.5	28.2	NOTE: CLAY @ 22.5 HAS GENERAL APPEARANCE OF HIGHLY WEATH. SHALE CORING BEGUN @ 23.5. TOP OF PRIMARY @ 28.2
	30		28.2-39.7 SHALE (I) UNWEATH., SOFT-MOD. HARD, MOIST, DRK GRAY, CALC., POORLY BEDDED, SLAKES MOD-RAPIDLY, NON-JOINTED.	D4.2 R4.1 31.7	BOX #2	
			28.2-30.2 SL. STAINING ALONG BEDDING PLANES.	D4.2 R4.4 35.9	33.0 BOX #3	
				D4.4 R4.5	37.7 BOX #4	
	39.7		TD @ 39.7	40.3	39.7	

DO NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-548 & 8A6C-549

VOLUME - II

SUBMITTED BY
ENGINEER
INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO.
SEQUENCE NO. 39

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 84

Hole No. 8A6C-550

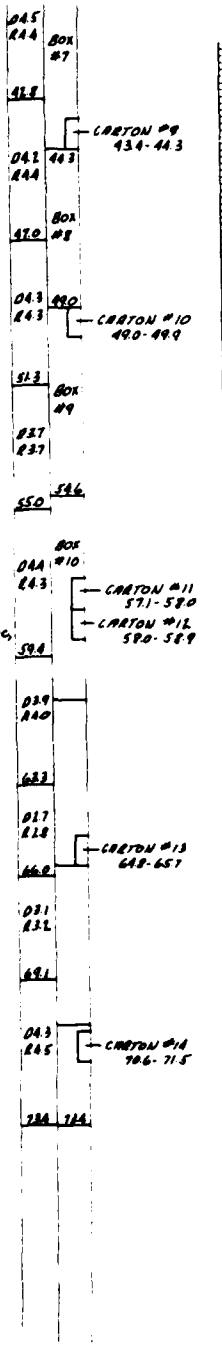
DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST — SHEET 1 OF 4 SHEETS

PROJECT	LAKEPORT Dam
LOCATION (Coordinates or Station)	
DESIGNATION OF DRILL	USCE-C (GALV. DAT.)
HOLE NO. (As shown on drawing) AND (Alt. number)	8A6C-550
NAME OF DRILLER	A. SMITH
DIRECTION OF HOLE	VERTICAL ☐ INCLINED ____ DEG. FROM VER.
TOTAL NUMBER OF CORE BOXES	4.0
TOTAL CORE RECOVERY FOR BORING	69.9
TOTAL DEPTH OF HOLE	73.4
DISTANCE DRILLED FROM	FORT WORTH DIST
SIZE AND TYPE OF BIT	8" AUGER & 6" CORE
DATUM FOR ELEVATIONS SHOWN (TBM or MSL)	MSL
MANUFACTURER'S DESIGNATION OF DRILL	FAILING 1500
TOTAL NUMBER CORE BOXES	13
ELEVATION GROUND WATER	7 JAN NONE
DATE HOLE	STARTED 3/18/68 COMPLETED 4/1/68
ELEVATION TOP OF HOLE	9507.5
TOTAL CORE RECOVERY FOR BORING	100%
SIGNATURE OF INSPECTOR	Raymond T. Hagen

ELEVATION	DEPTH	SCALE	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. BY ____	RUN OR SAMPLE NO.	WEIGHT (Drilling mud, water loss, depth of weathering, etc., if encountered)
	0		**0.0-4.0 CLAY** FAT, MED. STIFF, WET, YELLOW-BRN & DARK GRAY.		A	**DRILLING:** 8" AUGER 0.0-6.5 SET 6.0' 8" CSNG 6" CORE 6.5-66.0 ADDED 16.5' CSNG. (TOTAL CSNG 12.5) (WORTH SHALE FALLING IN HOLE)
	4.0		**4.0-73.4 SHALE (?)** CALC, POORLY BEDDED, SLAKES MOD-RAPIDLY UPON EXPOSURE.			6" CORE 66.0-73.4 PULLED CSNG ELECTRIC LOG.
	5				B	**WATER LOSS:** SL. LOSS @ 11.0'
	6.5			6.5	6.5	
			4.0-10.0 HIGHLY WEATH., SOFT, MOIST, YELLOW-BRN & LT. GRAY, MOD. JOINTED, NUMEROUS TIGHT & OPEN HIGHLY STAINED JOINTS.			**WATER LEVEL:** LEFT HOLE OPEN FOR WATER MEASUREMENTS.
				D4.8 R4.4	Box #1	
	10					*** ELEVATION:** HOLE OFFSET 3' NEW ELEV. SHOT W/ HAND LEVEL.
				11.3		**NOTE:** CORE FROM BOXES 1 THRU 3 PLACED IN BAGS & DELIVERED TO SWD LAB
				12.3		
				D4.2 R4.3	Box #2	
			14.2-15.2 BROKEN			
				15.5		**CARTON SAMPLES:** 1. 7.8-9.9 2. 11.5-12.3 3. 15.7-16.7 4. 17.3-18.3
				D4.4 R4.6		
				18.3		
				19.9		
	20		**20.0-24.5** MOD. WEATH., SOFT, MOIST, YELLOW-BRN W/ FEW DK. GRY ZONES, MOD. JOINTED, JOINTS & BEDDING PLANES LINED W/ GYP.	D4.6 R4.0	Box #3	CARTON #5 20.8-21.7
				23.9		
			24.5-33.1 WEATHERING LIMITED TO AREA ADJACENT TO JOINTS, PREDOM. DK. GRAY, MOD. JOINTED, JOINTS PREDOM. TIGHT IRON STAINED & LINED W/ GYP.	24.5	Box #4	
			28.3-29.8 HIGHLY JOINTED, OPEN 60° JOINTS.	D4.5 R5.0		
				27.5		
				29.0	Box #5	
	30					
				D4.8 R4.5		CARTON #6 30.6-31.5
				31.8		
			33.1-73.4 WEATHERING, SOFT-MOD. HARD, MOIST, DK. GRAY, NON-JOINTED.	33.8	Box #6	
				D4.5 R4.5		CARTON #7 35.8-36.7
				37.8		
				38.3		CARTON #8 38.6-39.5 (BROKEN)
	40					
	50					
	60					58.8-58.9 PYRITIC, SL SOFT ZN.
	70					
73A						T.D. @ 73.4'

D4.5 R4.4	Box #7	
41.8		
D4.2 R4.4	44.3	CARTON #9 43.4-44.3
	Box #8	
47.0		
D4.3 R4.3	49.0	CARTON #10 49.0-49.9
51.3	Box #9	
D3.7 R3.7		
55.0	54.6	
D4.4 R4.3	Box #10	CARTON #11 57.1-58.0
59.4		CARTON #12 58.0-58.9
D3.9 R4.0		
63.3		
D1.7 R1.8		CARTON #13 64.8-65.7
66.0		
D3.1 R3.2		
69.1		
D4.3 R4.5		CARTON #14 70.6-71.5
73.4	73.4	

TO ACCOMPANY FINAL FOUND



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH
SUBMITTED BY:
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-550

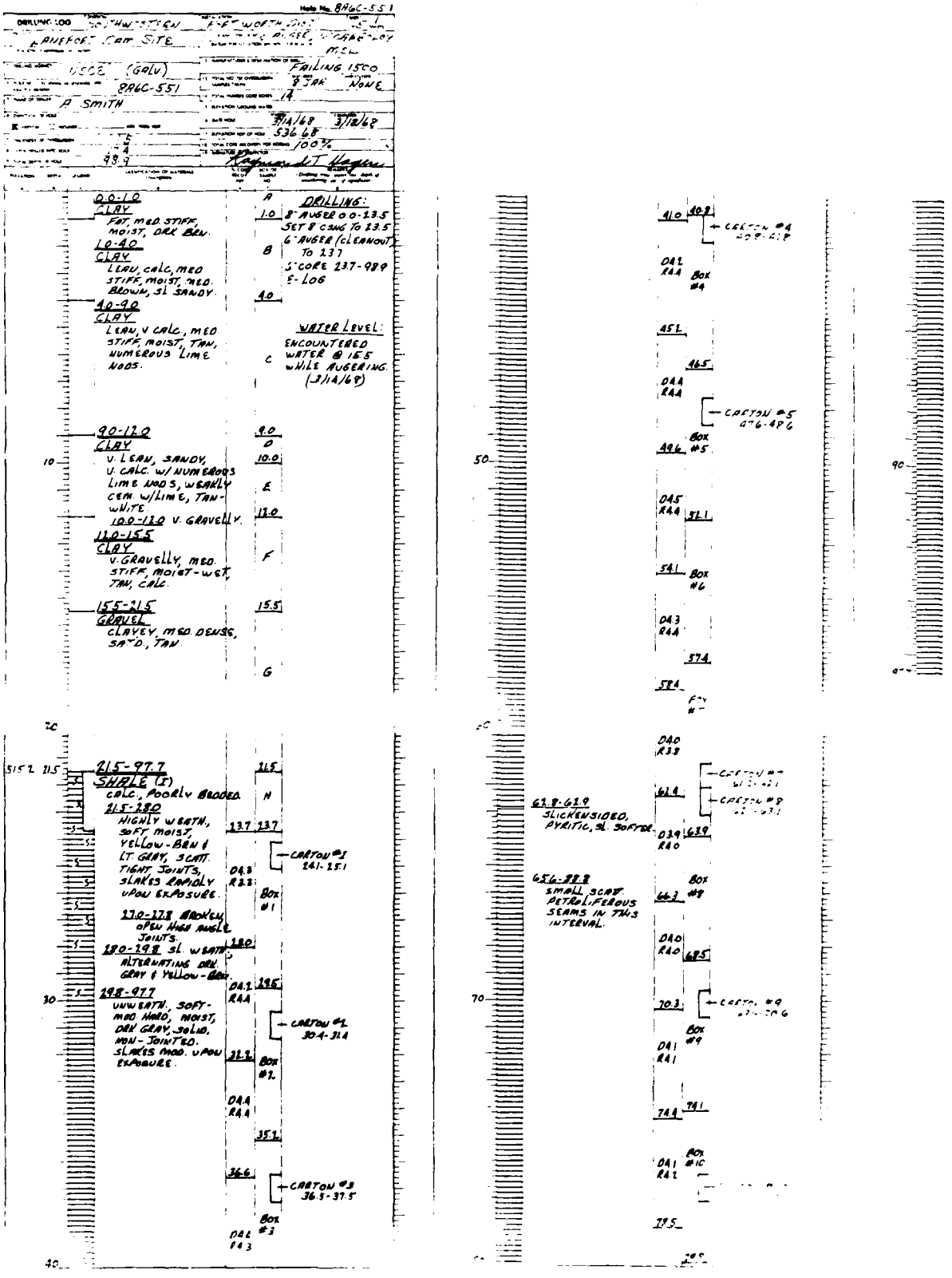
VOLUME - II

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 40 OF 66
SEQUENCE NO 40

A

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 85



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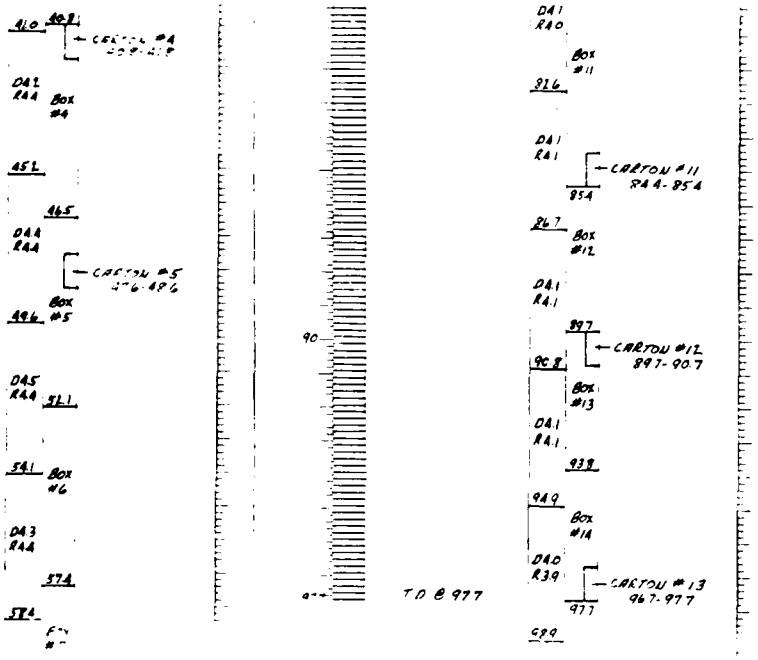
TO ACCOMPANY FINAL FOU



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
ENGINEER

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-551

VOLUME - II

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 41 OF 118
SEQUENCE NO 41

A

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 88

Hole No. 8A6C3F-553

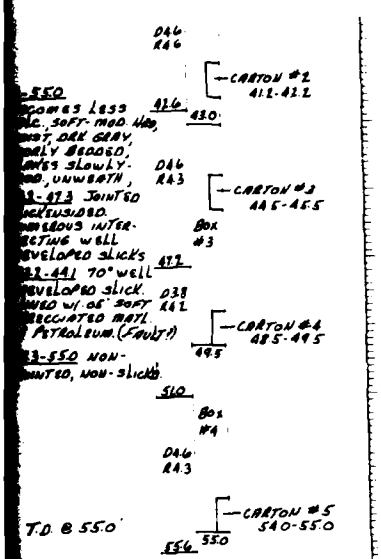
DRILLING LOG	SOUTHWESTERN	FORT WORTH DIST	3
	LANEPORT DAM SITE	8" AUGER, 6" CORE	MSL
	STA 87+02 & USCE-C (GALV. DIST)		FAILING 1500
	8A6C3F-553		12 JAR NONE
	A SMITH		4
			230'
			3/25/68 3/26/68
	29.5		491.94
	26.1		100%
	55.6		Raymond T. Hagen

Depth	Classification of Materials	Sample No.	Drilling
	0.0-1.0 CLAY LEAN (NEARS FAT), SL. SANDY, MED. STIFF, MOIST, DRK BRN	A	DRILLING: 8" AUGER 0.0-34.0 SET 32.5 8" CSNG. 6" CORE 34.0-55.6 5" FISHTAIL 55.6-100.0' ELECTRIC LOG
	1.0-3.0 CLAY LEAN, SL. SANDY, CALC, MED. STIFF, MOIST, MED. BRN	B	
	3.0-6.0 CLAY SANDY, SL GRAVELLY, NUMEROUS LIME NODS, CALC, MED STIFF, MOIST, MED BRN	C	WATER LEVEL: ENCOUNTERED WATER @ 23.0' WHILE AUGERING (3/25/68)
	6.0-11.5 CLAY LEAN, SCATT. FINE LIME NODS, CALC, MED STIFF, MOIST, TAN	D	WATER LOSS: WATER LOSS BETWEEN 34.0-47.0 (APPROX 20%)
10	9.0-11.5 LOWER PI.	E	
	11.5-14.5 CLAY GRAVELLY (CHERT), SANDY, CALC., MED STIFF, MOIST, TAN	F	
	14.5-19.5 CLAY V. SANDY (FINE), MED STIFF, DRY-MOIST, TAN, CALC., LOW-MED PLAS.	G	
20		H	
	19.5-21.0 CLAY LEAN, MED. STIFF, MOIST, TAN, CALC LOW-MED PLAS.	I	
	21.0-23.0 CLAY V. CALC, MED. STIFF, MOIST, TAN-WHITE, LOW-MED. PLAS	J	
	23.0-29.5 GRAVEL SL CLAYEY, MED. DENSE, SATD, TAN, CHERT		
30	29.5-55.0 CALCAREOUS SHALE	K	
	29.5-42.2 V. CALC, MOD. HARD, LT GRAY & BROWN, MASSIVE, NON-SLOWLY SLAKING, SL WEATH., PYRITIC, SLICKENSIDED, JOINTED,	L	
	29.5-39.4 NUMEROUS WELL DEV. SLICKS & JOINTS LINED W/ PYRITE & PETROLEUM. AVG. DIP 30°.		CARTON #1 35.0-35.7
	39.4-41.0 80° WELL DEVELOPED SLICK, BROKEN, PYRITIC, NUMEROUS SMALL SLICKS, ADJACENT FAULT?		
40			

Depth	Classification of Materials	Sample No.	Drilling
	42.2-55.0 BECOMES LESS CALC, SOFT-MOD HRD, MOIST, DRK GRAY, POORLY BEDDED, SLAKES SLOWLY-MOD, UNWEATH,		CARTON #2 41.2-42.2
	42.2-47.3 JOINTED SLICKENSIDED NUMEROUS INTERSECTING WELL DEVELOPED SLICKS		CARTON #3 44.5-45.5
	43.2-44.1 70° WELL DEVELOPED SLICK LINED W/ 0.5' SOFT BRECCIATED MATL & PETROLEUM. (FAULT?)		CARTON #4 48.5-49.5
50	47.3-55.0 NON-JOINTED, NON-SLICKS		
	TD @ 55.0'		CARTON #5 54.0-55.0

D46 R46 — 42.6 — 43.0 — D46 R43 — Box #3 — 47.2 — D38 R42 — 49.5 — 51.0 — Box #4 — D46 R43 — 55.0 — 55.6

TO ACCOMPANY FINAL FOU



NO	REVISION	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY	LANEPORT LAKE
DRAWN BY	SAN GABRIEL RIVER, TEXAS
CHECKED BY	LOGS OF BORINGS
	8A6C-3F-553
	VOLUME - II
SUBMITTED BY	INVITATION NO.
ENGINEER	SPECIFICATIONS DATED
	DRAWING NUMBER
	SHEET NO. 42 OF 68
	SEQUENCE NO. 42

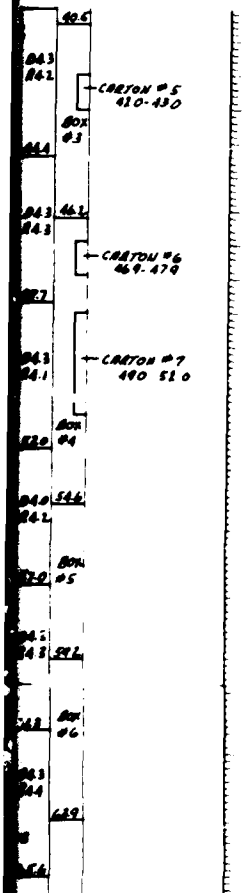
Hole No. 8A6C-554

DRILLING LOG	DIVISION: SOUTHWESTERN	INSTALLATION: FORT WORTH DIST.	SHEET 1 OF 4 SHEETS
PROJECT: LANEPORT DAM SIT.		10. SIZE AND TYPE OF BIT: 8" AUGER, 6" CORE	
2. LOCATION (Coordinates or Station): STA 86+00, ℄		11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL	
3. DRILLING AGENCY: USCE-C (GALV. DIST.)		12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500	
4. HOLE NO. (As shown on drawing title and file number): 8A6C-554		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: 8 TAGS; NONE	
5. NAME OF DRILLER: A. SMITH		14. TOTAL NUMBER CORE BOXES: 8	
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED; ___ DEG. FROM VERT.		15. ELEVATION GROUND WATER:	
7. THICKNESS OF OVERBURDEN: 26.0		16. DATE HOLE: 4/9/68; 4/10/68	
8. DEPTH DRILLED INTO ROCK: 39.6		17. ELEVATION TOP OF HOLE: 490.96	
9. TOTAL DEPTH OF HOLE: 65.6		18. TOTAL CORE RECOVERY FOR BORING: 100%	
		19. SIGNATURE OF INSPECTOR: Raymond T. Hagan	

DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		0.0-1.0 CLAY LEAN, MED. STIFF, MOIST, DRK. BROWN, W/ PLANT ROOTS.		A 1.0	DRILLING: 8" AUGER 0.0-26.2 SET 8" CSNG. & GRAVEL BAIL TO 26.2
		1.0-4.5 CLAY LEAN, SL. SANDY, MED. STIFF, MOIST, DRK. BROWN.		B 4.5	6" CORE 26.2-65.6
		4.5-12.0 CLAY SANDY, W/ SCAT. LIME NODS., MED. STIFF, MOIST, TAN, CALC.		C 9.5	* WATER LEVEL: LEFT HOLE OPEN FOR WATER MEASUREMENTS. ENCOUNTERED WATER @ 22.5' WHILE AUGERING (4/9/68).
10				D 12.0	
		12.0-16.0 CLAY SANDY, WEAKLY CEM. W/ LIME (DIFFICULT TO PENETRATE W/ AUGER), DRY-MOIST, TAN, CALC.		E 16.0	
		16.0-21.5 CLAY V. GRAVELLY, SANDY, STIFF, MOIST, TAN, CALC.		F	BAG # 1 16.0-21.5
20					
		21.5-22.5 CLAY V. GRAVELLY (FINE), NEARS A CLAYEY GRAVEL, SANDY, MED. STIFF, MOIST-WET, TAN		21.5 G 22.5	BAG # 2 22.5-26.0
		22.5-26.0 GRAVEL MED. DENSE, SAT'D., TAN, CHERT, MAX. DIAM. RCVD. = 4".		H 26.0	
		26.0-58.8 CALCAREOUS SHALE V. CALC, SOFT-MOD. HARD, MOIST, POORLY BEDDED, SLAKES SLOWLY-MOD UPON EXPOSURE.	26.2 D4.8 R4.5		CARTON # 1 26.2-27.1; CARTON # 2 27.1-30.4
30		26.0-37.2 WEATH, TAN, SCAT. IRREG. TIGHT JOINTS, OTHER JOINTING AS INDICATED.	31.0		CARTON # 3 30.7-31.7
		26.4 20° OPEN STAINED JOINT; 26.6 10° OPEN STAINED JOINT; 27.1 20° OPEN STAINED JOINT	D4.7 R4.4	BOX # 1	
		31.2-37.2 OCC. GRAY UNWEATH ZONE; 31.8-33.2 TIGHT 80° JOINT	35.7	35.1	
		34.5-36.8 TIGHT VERT. JOINT; 36.8-37.1 BROKEN, DEPOSITIONAL SEAM?	D4.4 R4.3	BOX # 2	CARTON # 4 37.1-38.1
40			40.1		

DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		37.2-58.8 UNWEATH, DRK. GRAY, NON-JOINTED	D4.3 R4.2	40.6	CARTON # 5 41.0-43.0
			44.4	BOX # 3	
			D4.3 R4.3	46.2	CARTON # 6 46.9-47.9
			48.7		
50		50.4-51.3 TIGHT IRREG. PYRITE SEAMS	D4.3 R4.1		CARTON # 7 49.0-51.0
			52.0	BOX # 4	
			D4.0 R4.2	54.6	
			57.0	BOX # 5	
			D4.3 R4.3	59.2	
60		58.8-64.9 SANDY CLAY SHALE SOFT-MOD. HARD, MOIST, DRK. GRAY, UNWEATH, SANDY, CALC, PETROLIFEROUS, POORLY BEDDED, NON-JOINTED. SAND OCCURS IN SMALL PETROLIFEROUS LENSES.	61.3 D4.3 R4.4	BOX # 6	
				63.9	
64.9		58.8-61.9 MOD. FOSSIL., V. CALC	65.6		
		T.D. @ 64.9			

TO ACCOMPANY FINAL FOUND



NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: J.L.M.
DRAWN BY:
CHECKED BY: J.L.M.

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-554

VOLUME - II

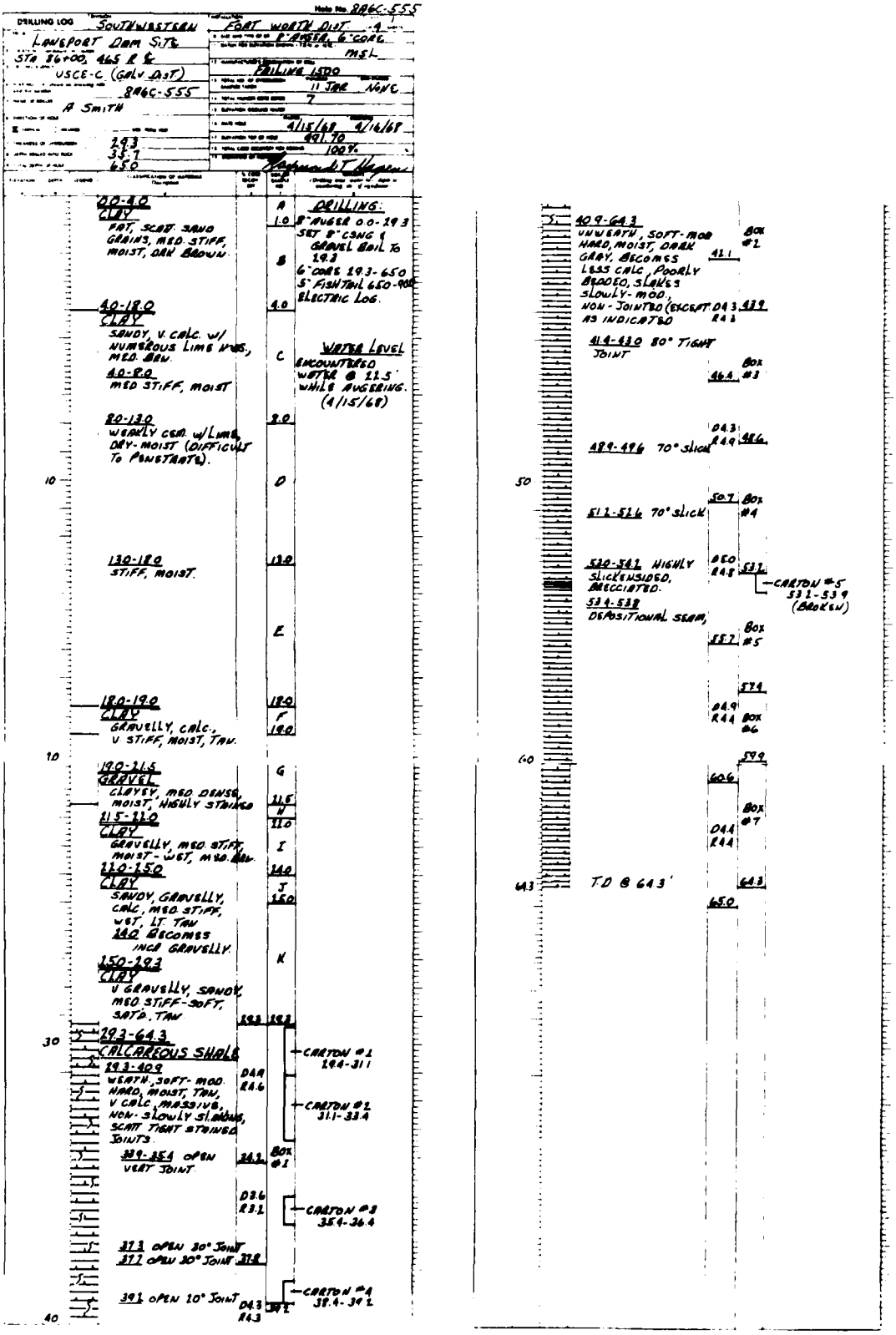
A

SUBMITTED BY
ENGINEER

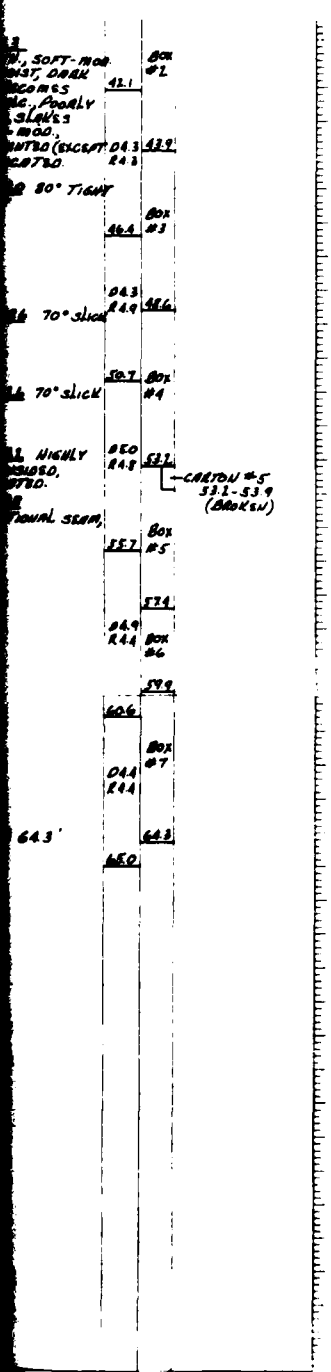
INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 43 OF 44
SEQUENCE NO 43

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 68



TO ACCOMPANY FINAL FOUN



DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C - 555

VOLUME - II

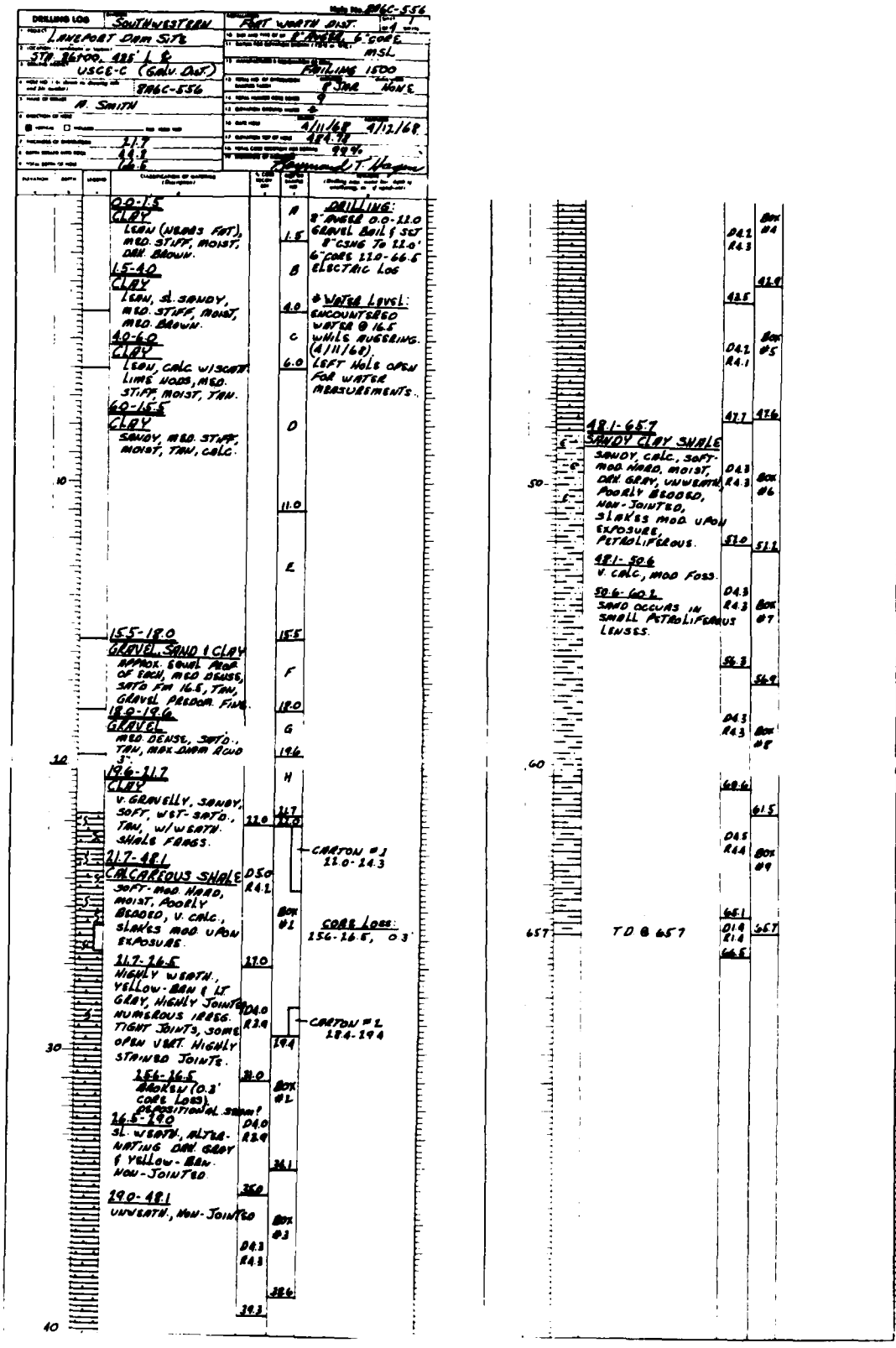
SUBMITTED BY:
ENGINEER:

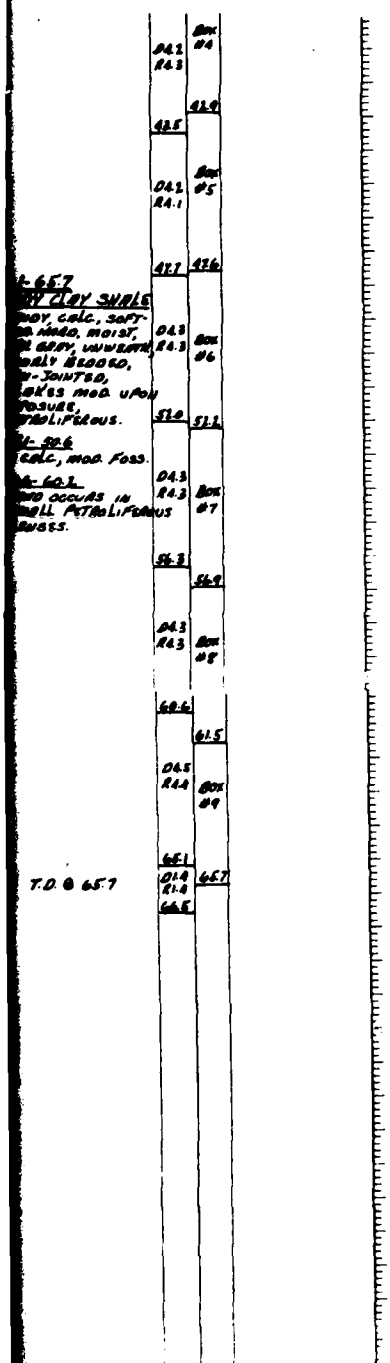
INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 44 OF 68
SEQUENCE NO. 44

A

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 89


DRILLING LOG
SOUTHWESTERN
FORT WORTH DIST.
LAKEPORT Dam Site
STA 36+00. 485 ℄
USCE-C (Galv. Dat)
B86C-556
A. SMITH
4/11/68
4/12/68
484.9
99%
Thomas L. Thayer
0.0-1.5
CLAY
LEAN (WEDGES FAT), MED. STIFF, MOIST, DRK. BROWN.
1.5-4.0
CLAY
LEAN, SL. SANDY, MED. STIFF, MOIST, MED. BROWN.
4.0-6.0
CLAY
LEAN, CALC. W/SCATT. LIME NODS, MED. STIFF, MOIST, TAN.
6.0-16.5
CLAY
SANDY, MED. STIFF, MOIST, TAN, CALC.
15.5-18.0
GRAVEL, SAND & CLAY
APPROX. EQUAL PROP. OF EACH, MED DENSE, SATD FM 16.5, TAN, GRAVEL PREDOM. FINE.
18.0-19.6
GRAVEL
MED. DENSE, SATD., TAN, MAX. DIAM ACUD 3".
19.6-21.7
CLAY
V. GRAVELLY, SANDY, SOFT, WET-SATD., TAN, W/WEATH. SHALE FRAGS.
21.7-48.1
CALCAREOUS SHALE
SOFT-MOD. HARD, MOIST, POORLY BEDDED, V. CALC., SLAKES MOD. UPON EXPOSURE.
21.7-26.5
HIGHLY WEATH., YELLOW-BRN & LT GRAY, HIGHLY JOINTED, NUMEROUS IRREG. TIGHT JOINTS, SOME OPEN VERT. HIGHLY STAINED JOINTS.
25.4-26.5
BROKEN (0.3' CORE LOSS) DEPOSITIONAL SEAM?
26.5-29.0
SL. WEATH., ALTERNATING DRK. GRAY & YELLOW-BRN. NON-JOINTED.
29.0-48.1
UNWEATH., NON-JOINTED
DRILLING:
8" AUGER 0.0-12.0
GRAVEL BAIL & SET 8" CSNG TO 12.0'
6" CORE 12.0-66.5
ELECTRIC LOG
WATER LEVEL:
ENCOUNTERED WATER @ 16.5 WHILE AUGERING. (4/11/68).
LEFT HOLE OPEN FOR WATER MEASUREMENTS.
CARTON #1 12.0-14.3
CORE LOSS: 25.6-26.5, 0.3'
CARTON #2 25.4-29.4
48.1-65.7
SANDY CLAY SHALE
SANDY, CALC., SOFT-MOD. HARD, MOIST, DRK. GRAY, UNWEATH., POORLY BEDDED, NON-JOINTED, SLAKES MOD. UPON EXPOSURE. PETROLIFEROUS.
48.1-50.6
V. CALC., MOD FOSS.
50.6-60.2
SAND OCCURS IN SMALL PETROLIFEROUS LENSES.
TD @ 65.7



DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-556

VOLUME - II

A

SUBMITTED BY
ENGINEER

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 45 OF 68
SEQUENCE NO 45

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 90

Hole No. 30A-557

DRILLING LOG	DIVISION SWD	INSTALLATION CoE FWD	SHEET 1 OF 1 SHEETS

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station): X-2,442,300 Y-383,065
3. DRILLING AGENCY: CoE
4. HOLE NO. (As shown on drawing title and file number): 30A 557
5. NAME OF DRILLER:
6. DIRECTION OF HOLE: VERTICAL / INCLINED / DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 70
8. DEPTH DRILLED INTO ROCK: 74.9
9. TOTAL DEPTH OF HOLE: 81.9
10. SIZE AND TYPE OF BIT: 30" AUGER
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Hugh B. Williams
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED — UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED — COMPLETED
17. ELEVATION TOP OF HOLE: 519.2
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: Ray Hagen

ELEVATION 520.5	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0 to 70' OVERBURDEN			GROUND WATER TABLE NOT ESTABLISHED
513.5	70		70' to 81.9 SHALE I			
	10		70-22.8 highly wea soft, jointed, light gray, yellow brown			ALL MEASUREMENTS TAKEN FROM TOP OF CASING ELEV. 520.5
497.7	20		22.8-43.5. highly wea soft, moist, numerous low angle and irr-Egular joints healed with gypsum			
	30		slow water seeps			
482.5			38.0-43.5 scattered dark gray unweathered zones - less jointed decrease in gyp			
	40					
477.0			43.5-81.9 soft to moderately hard, dark gray			
469.3	50		43.5-50.2 essentially unwea - scattered soft brn. yellow seams			
467.6			53.0-59.4 tight vert. joint, stained SE side of hole			
461.1	60		59.4-59.5 soft seam horizontal			
	70					
438.6	80		T.D 81.9			
	90					

ENG FORM 1836 1 APR 63 PREVIOUS EDITIONS MAY BE USED — PROJECT — HOLE NO. 30A-557

Hole No. 30A 558

DRILLING LOG	DIVISION SWD	INSTALLATION CoE FWD	SHEET 1 OF 1 SHEETS

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station): X-2,444,800 Y-382,260
3. DRILLING AGENCY: USCE
4. HOLE NO. (As shown on drawing title and file number): 30A 558
5. NAME OF DRILLER:
6. DIRECTION OF HOLE: VERTICAL / INCLINED / DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 17.5
8. DEPTH DRILLED INTO ROCK: 64.2
9. TOTAL DEPTH OF HOLE: 81.7
10. SIZE AND TYPE OF BIT: 30" Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Hugh B. Williams
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 0 UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: 0
15. ELEVATION GROUND WATER: NOT ESTABLISHED
16. DATE HOLE: STARTED 7 Mar 68 COMPLETED 7 Mar 68
17. ELEVATION TOP OF HOLE: 533.6
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: Ray Hagen

ELEVATION 535.6	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0 17.5 OVERBURDEN			CASED TO 20.9' ALL MEASUREMENTS FROM TOP CASING
	10					
518.1	17.5		17.5 to 81.7 SHALE I			
	20		17.5 to 48.7 Highly weathered, soft, scattered tight pre-dominately tight joints, yellow brn gray			
	30					
	40					
486.9	48.7		48.7-54.0 Essentially unweathered w/ scatt. soft yellow brn wea zones, tight joint from 49.0-54.0-dips 70°			
481.6	54.0					
	60		54.0-81.7 unweathered SHALE I, mod. hard, soft, calcareous, dark gray			
	70					
453.9	81.7		T D 81.7			

ENG FORM 1836 1 APR 63 PREVIOUS EDITIONS MAY BE USED — PROJECT — HOLE NO.

TO ACCOMPANY FINAL FOUNDA

Hole No. 30A 558

SHEET 1 OF 1 SHEETS

30" Auger

ORIGINATION OF DRILL

Weathers

DISTURBED	UNDISTURBED
0	0

DOWNS 0

COVER Not Established

STARTED 7 May 68 COMPLETED 7 May 68

HOLE 533 E

COVER FOR BORING NA %

WATER Hagen

REMARKS (Plotting rate, water loss, depth of weathering, etc., if significant)

Cased To 20.9'
All Measurements
From Top Casing

DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH

DRAWN BY:

CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

30A-557 & 30A-558

VOLUME - II

SUBMITTED BY: [signature]

ENGINEER:

INVITATION NO

SPECIFICATIONS DATED:

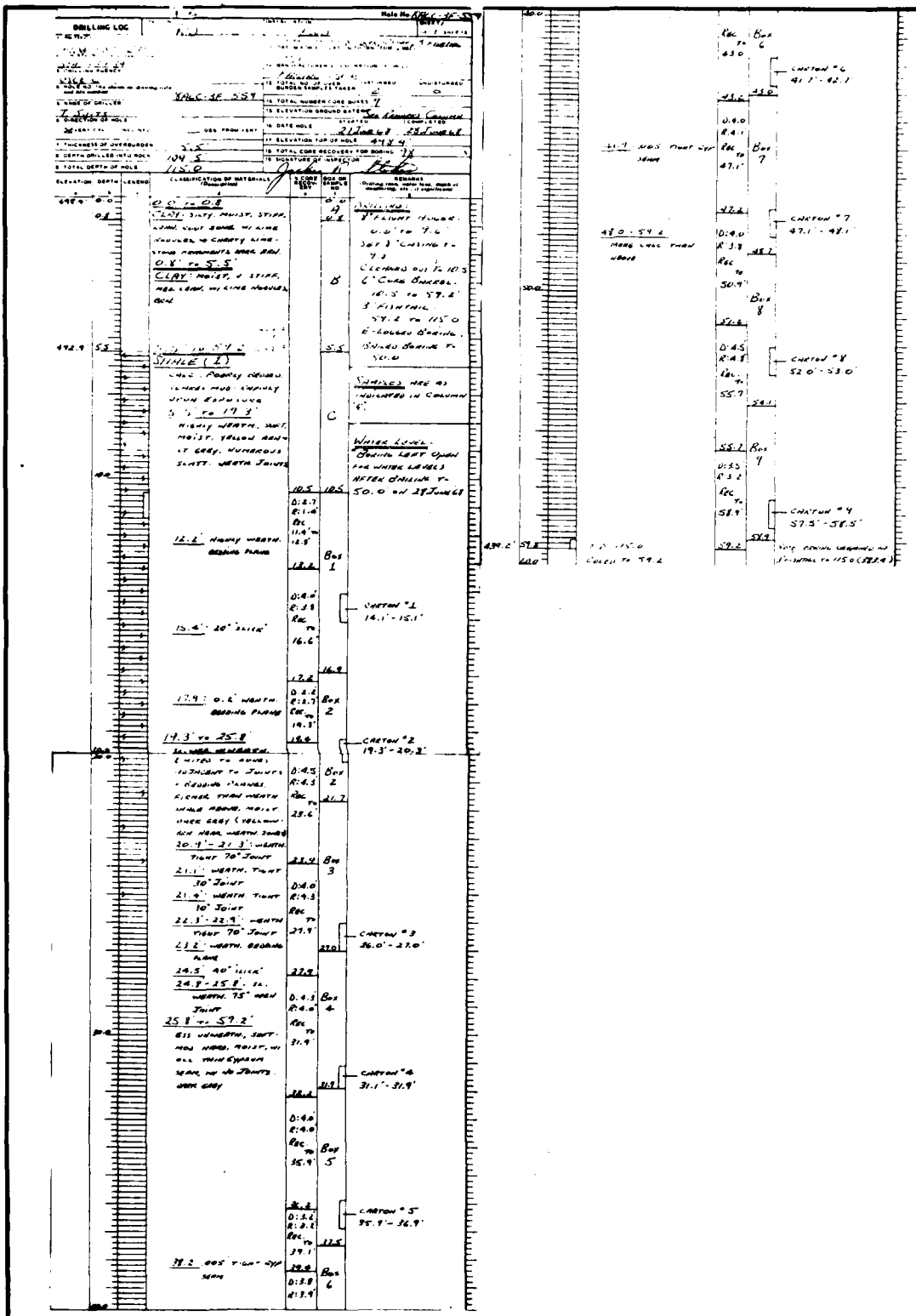
DRAWING NUMBER

SHEET NO 46 OF 68

SEQUENCE NO. 46

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 91



TO ACCOMPANY FINAL FOUND

NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-3F-559

VOLUME - II

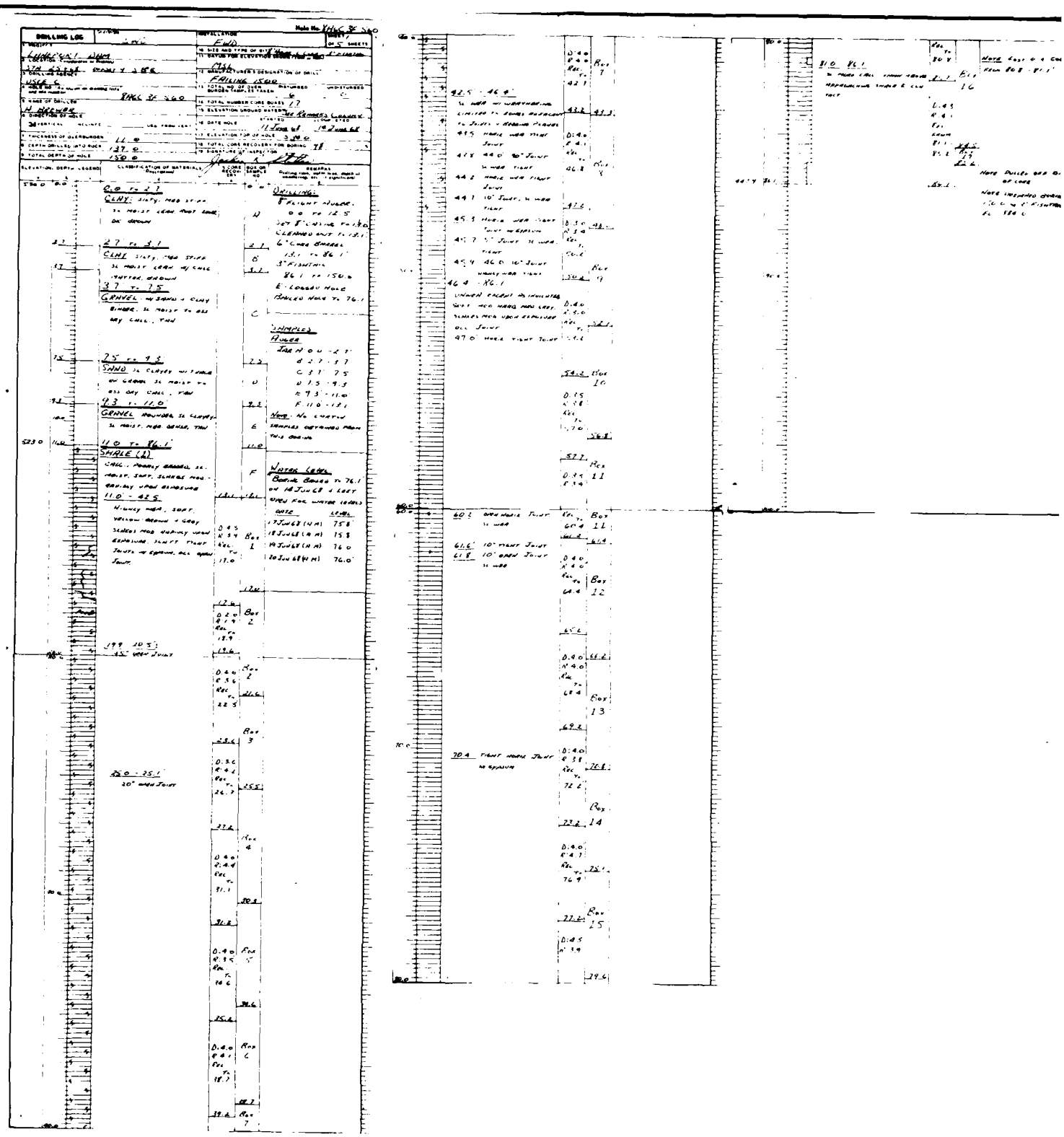
A

SUBMITTED BY
ENGINEER:

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 47 OF 68
SEQUENCE NO. 47

2

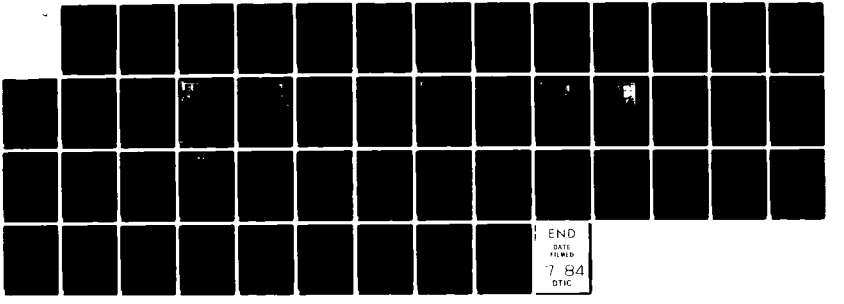
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 92

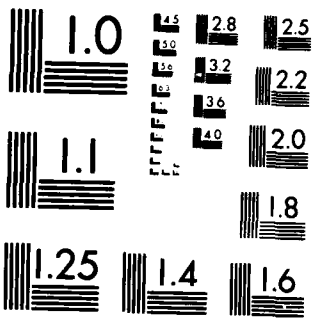


TO ACCOMPANY FINAL FOU

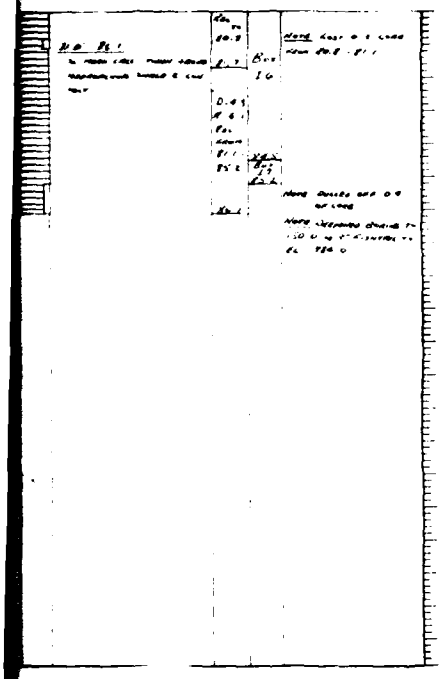
AD-A141 542 GRANGER LAKE EMBANKMENT-OUTLET WORKS-SPILLWAY VOLUME 2 3/3
(U) ARMY ENGINEER DISTRICT FORT WORTH TX G M RUEDE
AUG 83

UNCLASSIFIED F/G 13/13 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



NO.	REVISED	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-3F-560

VOLUME - II

A

SUBMITTED BY: Archbell
ENGINEER:

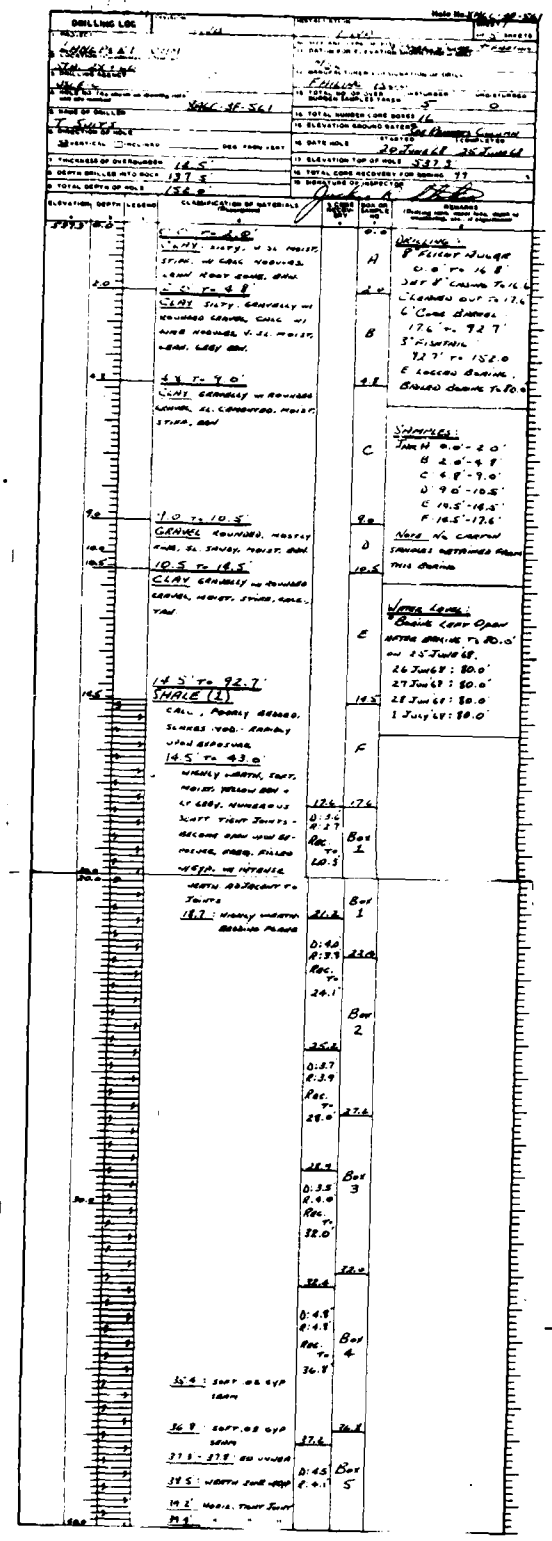
INVITATION NO. DACW63-[illegible]-B-0093

SPECIFICATIONS DATED: [illegible]

DRAWING NUMBER | SHEET NO. 48 OF 58 | SEQUENCE NO. 48

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 93



DRILLING LOG

Phillips

Jack A. Stotler

0.0 to 2.0' CLAY: SILTY, V SL MOIST, STIFF, W/ GRAL ROUNDED LGRAV NDRY GOWL, BRN

2.0 to 4.8' CLAY SILTY, GRAVELLY W/ ROUNDED GRAVEL, CALC W/ SOME ROUNDED V. SL MOIST, HARD, LGRY BRN.

4.8 to 9.0' CLAY: GRAVELLY W/ ROUNDED GRAVEL, SL CEMENTED, MOIST, STIFF, BRN

9.0 to 10.5' GRAVEL ROUNDED, MOSTLY FINE, SL SANDY, MOIST, BRN

10.5 to 14.5' CLAY GRADUALLY W/ ROUNDED GRAVEL, MOIST, STIFF, HARD, YELL

14.5 to 92.7' SHALE (?)

CALC, POORLY BEDDED, SLIGHTLY FOSS - GRADUALLY LIGHT DISCOLOR.

14.5 to 43.0' MAINLY LIGHTH, SOFT, MOIST, YELLOW BRN W LT GRY, NUMEROUS SOFT TIGHT JOINTS - BECOME OPEN WHEN EXPOSED, FRIED, FILLED W/ GYP, W/ INTRUSIVE MATER ADJACENT TO JOINTS

18.7' : HEAVY WATER BEARING PLANE

34.4' : SOFT .02 GYP SEAM

36.9' : SOFT .02 GYP SEAM

37.9 - 37.9' .02 WATER

38.5' : NORTH 30° WEST TIGHT JOINT

39.2' : VERT. TIGHT JOINT

Drilling:
8" Pilot Hole 0.0' to 14.8'
Set 8" Casing To 14.6'
Cleaned out to 17.6'
6" Core Barrel 17.6' to 92.7'
5" Finished 92.7' to 152.0'
6 Locos Bearing, Boiled Drank To 80.0'

Samples:
Box H 0.0'-2.0'
B 2.0'-4.8'
C 4.8'-9.0'
D 9.0'-10.5'
E 10.5'-14.5'
F 14.5'-17.6'

Note: No Caving Samples Returned From This Boring

Water Levels:
Drank Left Open Water Broke To 80.0' on 25 June 68.
26 June 68 : 80.0'
27 June 68 : 80.0'
28 June 68 : 80.0'
1 July 68 : 80.0'

Box 1 (0.0 - 17.6): D: 3.4, R: 2.7, Rec. To 10.5
Box 1 (21.6 - 23.0): D: 4.0, R: 3.9, Rec. To 24.1
Box 2 (25.6 - 27.6): D: 2.7, R: 2.9, Rec. To 28.0
Box 3 (28.4 - 32.0): D: 3.5, R: 4.0, Rec. To 32.0
Box 4 (32.4 - 36.8): D: 4.9, R: 4.8, Rec. To 36.8
Box 5 (37.6 - 42.4): D: 4.5, R: 4.1

30.4' : 45° Tight Joint

41.3 - 41.6' : 45° Tight Joint

42.5' North, Broken Rock

42.4' " "

43.0 - 92.7' Water, Soft Mud Mass, Moist, Hard Gray

Box 6 (41.7 - 45.6): D: 4.0, R: 3.9, Rec. To 44.8
Box 7 (46.7 - 50.6): D: 3.5, R: 3.8, Rec. To 48.0
Box 8 (48.9 - 50.6): D: 4.0, R: 4.0, Rec. To 50.6
Box 9 (53.9 - 58.9): D: 4.0, R: 4.3, Rec. To 58.9
Box 9 (56.7 - 58.9): D: 2.7, R: 4.9, Rec. To 58.9
Box 9 (58.2 - 59.6): D: 4.9, R: 4.9, Rec. To 59.6

51.1' : 30° North Bedding Plane

51.2' : .01 Gyp Seam

53.4' : .01 Gyp Seam

60.5 - 60.8' : 30° Tight Joint

61.7 - 62.4' : 30° Slick

63.4' : .01 Gyp Seam

63.8' : .01 Gyp Seam

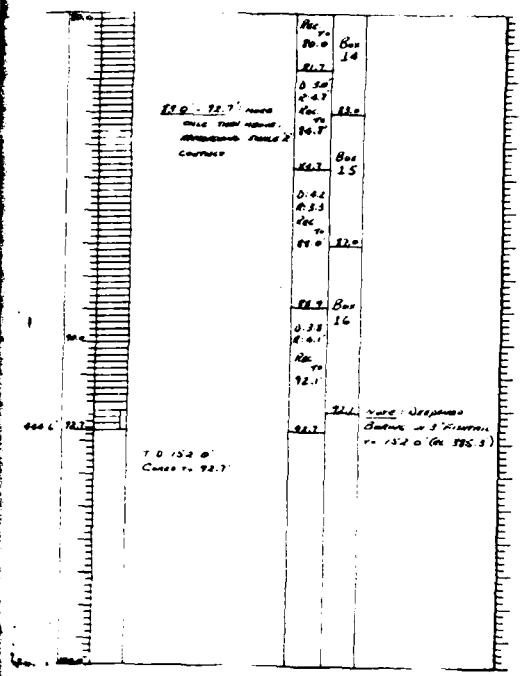
Box 10 (63.1 - 64.1): D: 5.0, R: 5.0, Rec. To 64.1
Box 11 (64.1 - 68.9): D: 5.1, R: 4.9, Rec. To 68.1
Box 12 (68.1 - 72.6): D: 4.0, R: 4.1, Rec. To 73.0
Box 13 (72.6 - 77.6): D: 4.5, R: 2.9, Rec. To 77.1
Box 14 (77.6 - 82.6): D: 5.0, R: 4.7, Rec. To 80.0
Box 15 (82.6 - 87.6): D: 4.6, R: 5.5, Rec. To 88.0
Box 16 (87.6 - 92.6): D: 3.8, R: 4.1, Rec. To 92.1

88.0 - 92.7' Hard Chalk Like Material, Fissile Cuttings

T.D. 152.0
Cased To 92.7

Set Water Sample Bottle at 5' To 152.0' Get

1



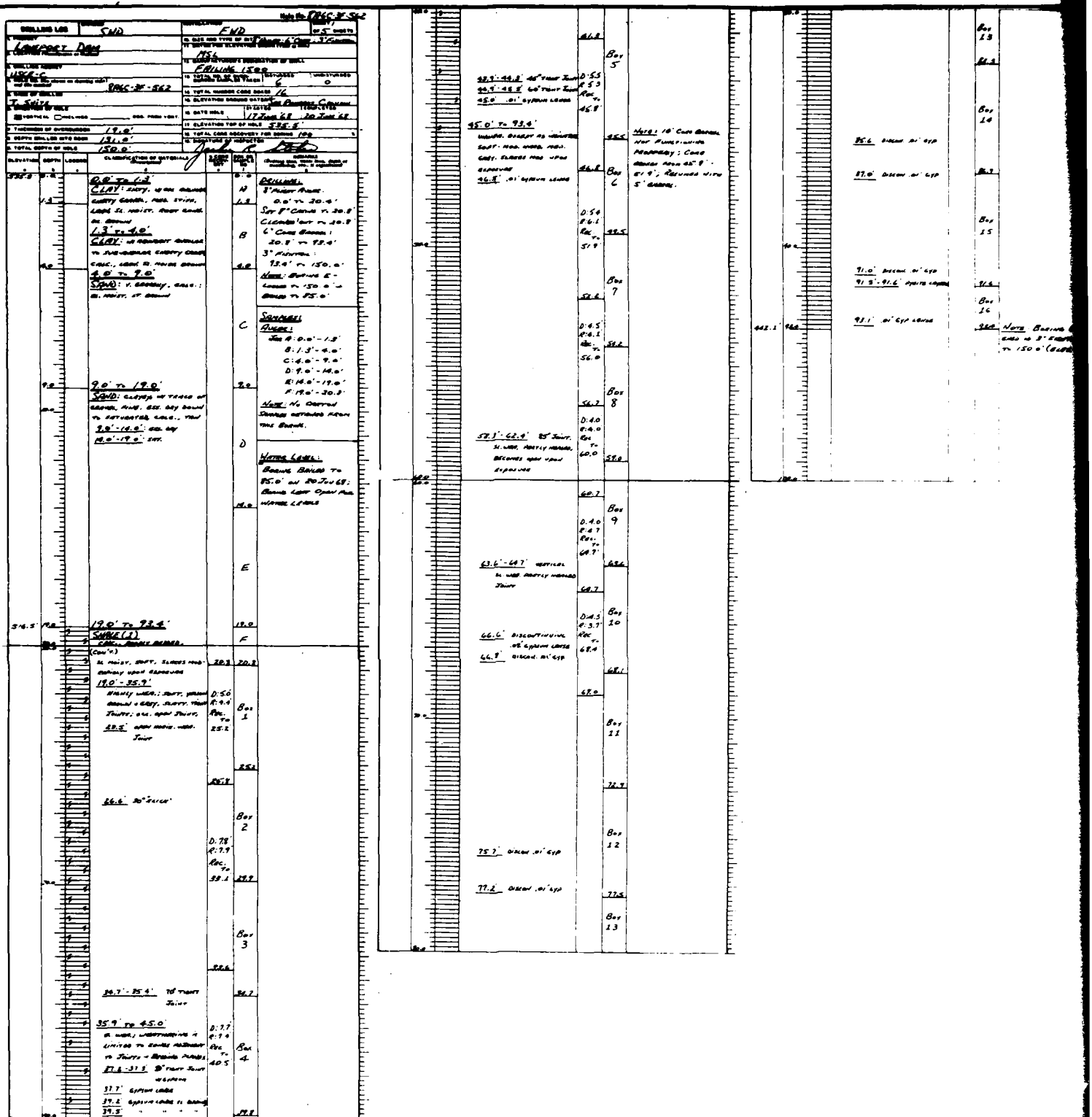
NO	REVISION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

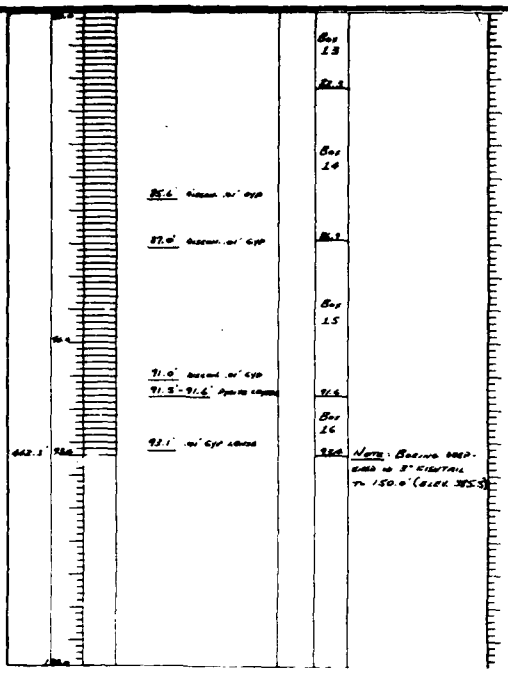
DESIGNED BY: JLM	LANEPORT LAKE SAN GABRIEL RIVER, TEXAS
DRAWN BY:	LOGS OF BORINGS
CHECKED BY: JLM	8A6C-3F-561 VOLUME - II
SUBMITTED BY:	INVITATION NO.
ENGINEER:	SPECIFICATIONS DATED
	DRAWING NUMBER / SHEET NO. 49 OF 68 / SEQUENCE NO. 49

A

ACCOMPANY FINAL FOUNDATION REPORT PLATE 94



TO ACCOMPANY FINAL FOUNDATIO



NO	NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-3F-562

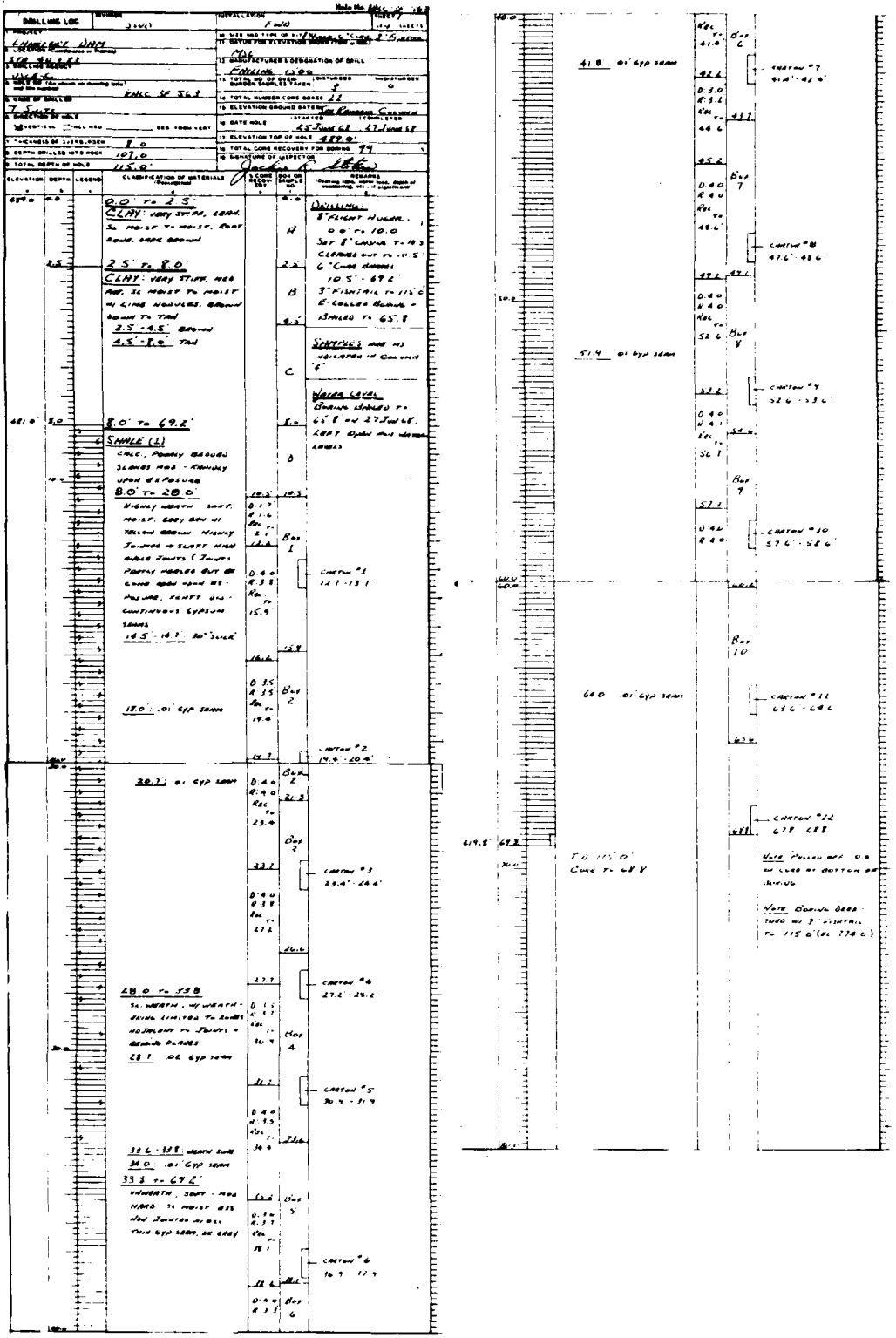
VOLUME - II

SUBMITTED BY
ENGINEER

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 50 OF 58
SEQUENCE NO 50

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 95



TO ACCOMPANY FINAL FOUNDATI

DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-3F-563

VOLUME - II

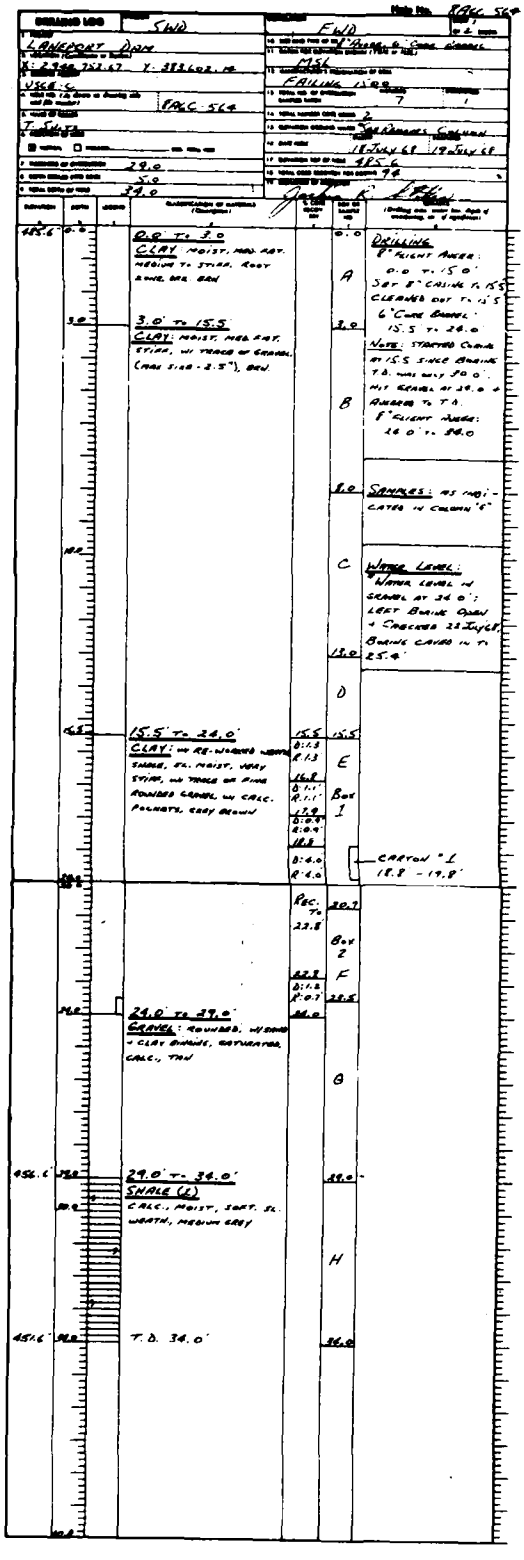
SUBMITTED BY: [signature]
ENGINEER:

INVITATION NO. [illegible]
SPECIFICATIONS DATED [illegible]
DRAWING NUMBER
SHEET NO. 51 OF 68
SEQUENCE NO. 51

A

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 96



DRILLING LOG — SWD — FWD — Hole No. RAGC 564

LANEPORT DAM

X: 2940.752.67 Y: 383.602.14

USCE-C

RAGC 564

T. SHUTT

29.0

5.0

34.0

MSL

FAILING 1500

7 1

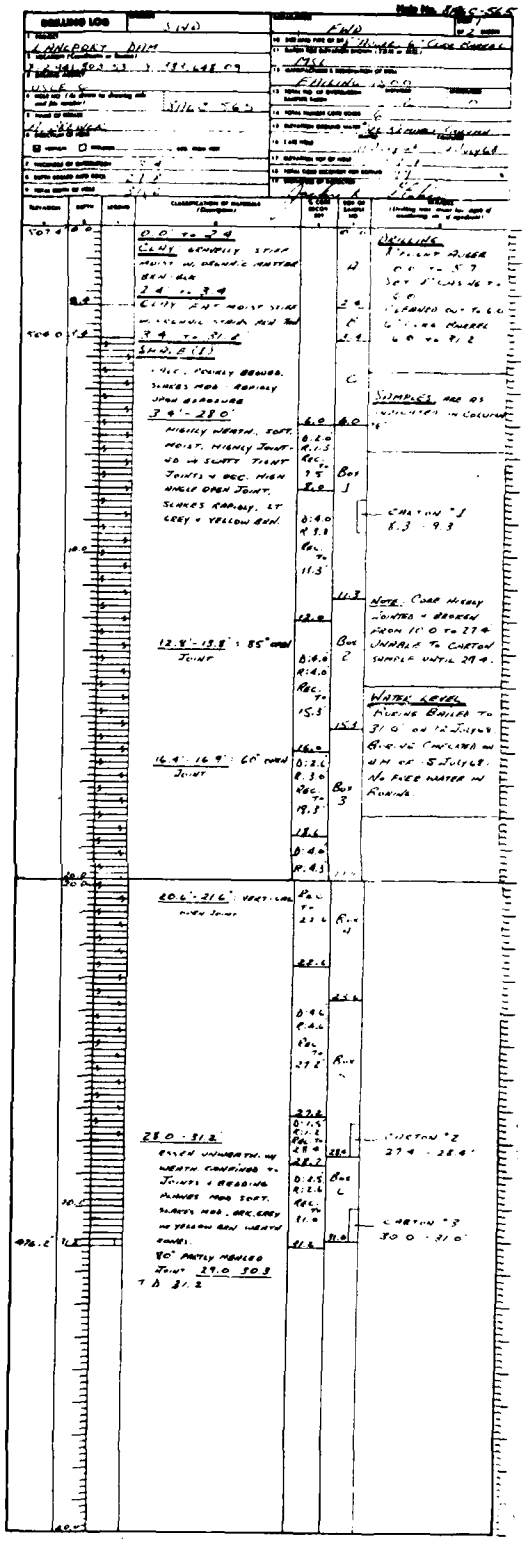
2

See Remarks Column

18 July 68 19 July 68

485.6

Elevation	Depth	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Drilling
485.6	0.0	0.0' to 3.0 CLAY: MOIST, MED. FAT. MEDIUM TO STIFF. ROOT ZONE, DRK. BRN		0.0 A	DRILLING 8" FLIGHT AUGER: 0.0 to 15.0' SET 8" CASING TO 15.5 CLEANED OUT TO 15.5 6" CORE BARREL 15.5 to 24.0
	3.0	3.0' to 15.5 CLAY: MOIST, MED. FAT. STIFF, W/ TRACE OF GRAVEL (MAX SIZE - 2.5"), BRN.		3.0 B	NOTE: STARTED CORING AT 15.5 SINCE BORING T.D. WAS ONLY 30.0'. HIT GRAVEL AT 24.0 & AUGERED TO T.D. 8" FLIGHT AUGER: 24.0' to 34.0
				8.0	SAMPLES: AS INDICATED IN COLUMN "6"
	10.0			C	WATER LEVEL: WATER LEVEL IN GRAVEL AT 24.0'; LEFT BORING OPEN & CHECKED 23 July 68. BORING CAVED IN TO 25.4'
				13.0 D	
	15.5	15.5' to 24.0' CLAY: W/ RE-WORKED WEATH. SHALE, SL. MOIST, VERY STIFF, W/ TRACE OF FINE ROUNDED GRAVEL, W/ CALC. POCKETS, GREY BROWN	15.5 D:1.3 R:1.3 16.8 D:1.1 R:1.1 17.9 D:0.9 R:0.9 18.8 D:4.0 R:4.0	15.5 E Box 1	CARTON "1 18.8 - 19.8'
	20.0		Rec. to 22.8	20.7 Box 2	
			22.8 D:1.2 R:0.7	F 23.5	
	24.0	24.0' to 29.0' GRAVEL: ROUNDED, W/ SAND & CLAY BINDING, SATURATED, CALC., TAN	24.0	G	
456.6	29.0	29.0' to 34.0' SHALE (2) CALC., MOIST, SOFT, SL. WEATH., MEDIUM GREY		29.0 H	
451.6	34.0	T.D. 34.0'		34.0	



DRILLING LOG — SWD — FWD — Hole No. RAGC-565

LANEPORT DAM

X: 2941.303.53 Y: 383.648.09

USCE-C

RAGC 565

MSL

FAILING 1500

6

2

See Remarks Column

18 July 68 19 July 68

Elevation	Depth	Classification of Materials (Description)	Core Recovery	Box or Sample No.	Drilling
507.4	0.0	0.0' to 2.4 CLAY: GRAVELLY STIFF MOIST W/ ORGANIC MATTER BRN-BLK		0.0 A	DRILLING 8" FLIGHT AUGER 0.0 to 5.7 SET 8" CASING TO 5.0 CLEANED OUT TO 6.0 6" CORE BARREL 6.0 to 31.2
	2.4	2.4' to 3.4 CLAY: FAT MOIST STIFF W/ ORGANIC STAIN, RED TAN		2.4 B	
504.0	3.4	3.4' to 31.2 SHALE (1) CALC., POORLY BEDDED, SLAKES MOD. RAPIDLY UPON EXPOSURE		3.4 C	SAMPLES ARE AS INDICATED IN COLUMN "6"
		3.4' - 28.0' HIGHLY WEATH., SOFT, MOIST, HIGHLY JOINTED W/ SCATT. TIGHT JOINTS & OCC. HIGH ANGLE OPEN JOINT. SLAKES RAPIDLY, LT GREY & YELLOW BRN.	6.0 D:2.0 R:1.5 Rec. to 9.5 8.0 D:4.0 R:3.8 Rec. to 11.3	6.0 Box 1	CARTON "1 8.3 - 9.3
	10.0			11.3	NOTE: CORE HIGHLY JOINTED & BROKEN FROM 10.0 to 27.4 UNABLE TO CARTON SAMPLE UNTIL 27.4.
		12.8' - 13.8': 85° OPEN JOINT	12.0 D:4.0 R:4.0 Rec. to 15.3	Box 2	WATER LEVEL: BORING BAILED TO 31.0' ON 12 July 68. BORING CHECKED ON AM OF 5 July 68. NO FREE WATER IN BORING.
		16.4' - 16.9': 60° OPEN JOINT	16.0 D:2.6 R:3.0 Rec. to 19.3	15.3 Box 3	
	20.0		18.6 D:4.0 R:4.3		
	30.0	20.6' - 21.6': VERTICAL OPEN JOINT	Rec. to 22.6	Box 4	
			22.6 D:4.6 R:4.6 Rec. to 27.2	25.6 Box 5	
		28.0 - 31.2 BROKEN UNWEATH. W/ WEATH. CONFINED TO JOINTS & BEDDING PLANES MOD. SOFT. SLAKES MOD. DRK. GREY W/ YELLOW BRN WEATH ZONES. 80° PARTLY HEALED JOINT 29.0 30.3 T.D. 31.2	27.2 D:1.5 R:1.2 Rec. to 28.4 28.7 D:2.5 R:2.6 Rec. to 31.0 31.2	28.4 Box 6	CARTON "2 27.4 - 28.4'
	30.0			31.0	CARTON "3 30.0 - 31.0'
476.2	31.2				
	40.0				

TO ACCOMPANY FINAL FOUNDA

NO	NO	ACTION	DATE	DESCRIPTION OF REVISION

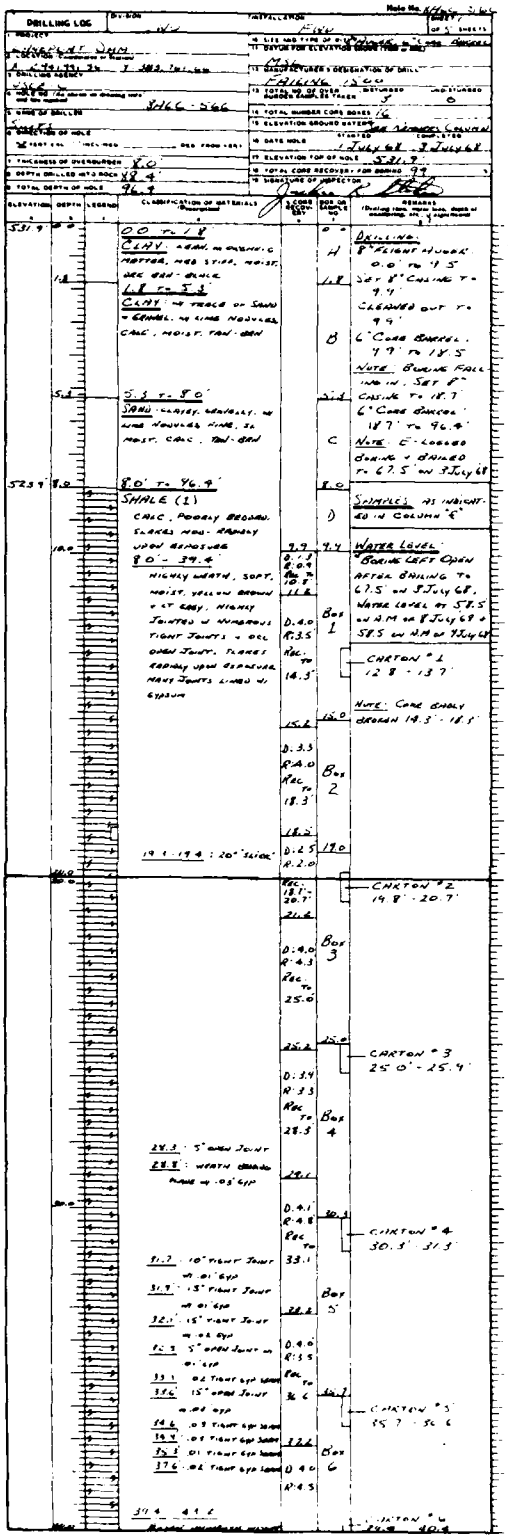
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

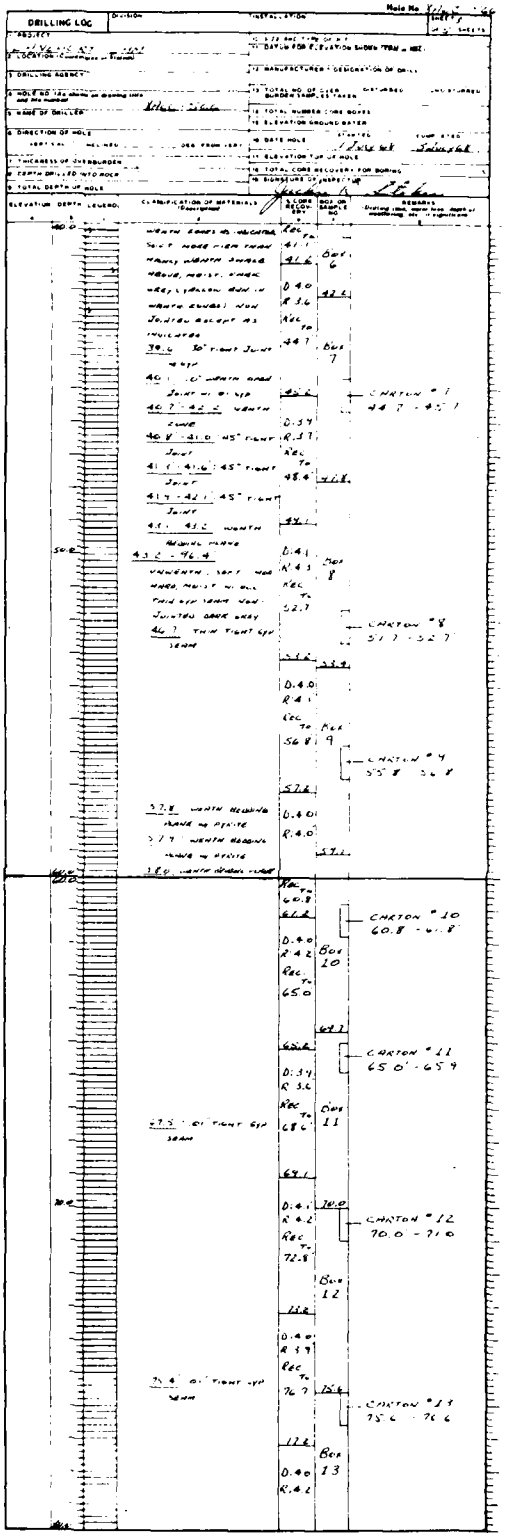
DESIGNED BY: JLH	LANEPORT LAKE SAN GABRIEL RIVER, TEXAS
DRAWN BY:	LOGS OF BORINGS 8A6C-564 & 8A6C-565 VOLUME - II
CHECKED BY: JLH	
SUBMITTED BY:	INVITATION NO. DACW63-72-B-0044
ENGINEER:	SPECIFICATIONS DATED: MAY 1972
	DRAWING NUMBER / SHEET NO 52 OF 58 / SEQUENCE NO. 52

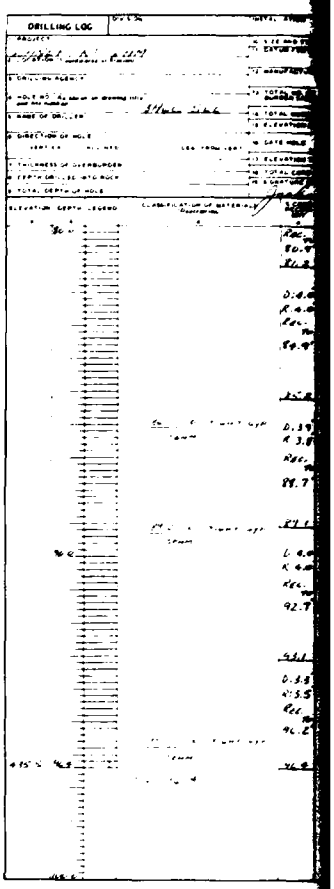
A

2

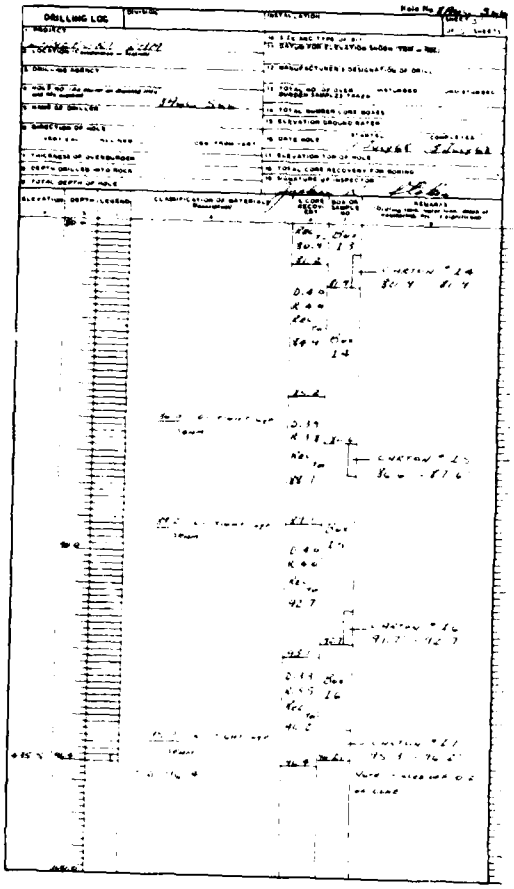
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 97







TO ACCOMPANY FINAL FOUN



BD. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH
SUBMITTED BY:
ENGINEER:

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

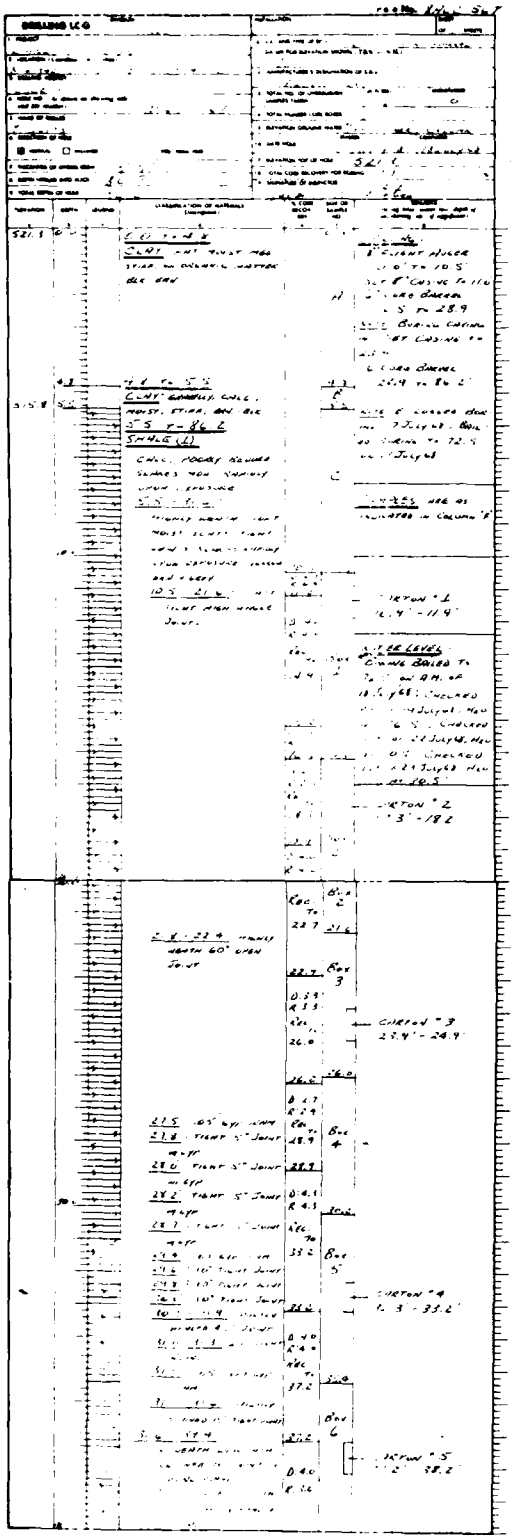
8A6C-566

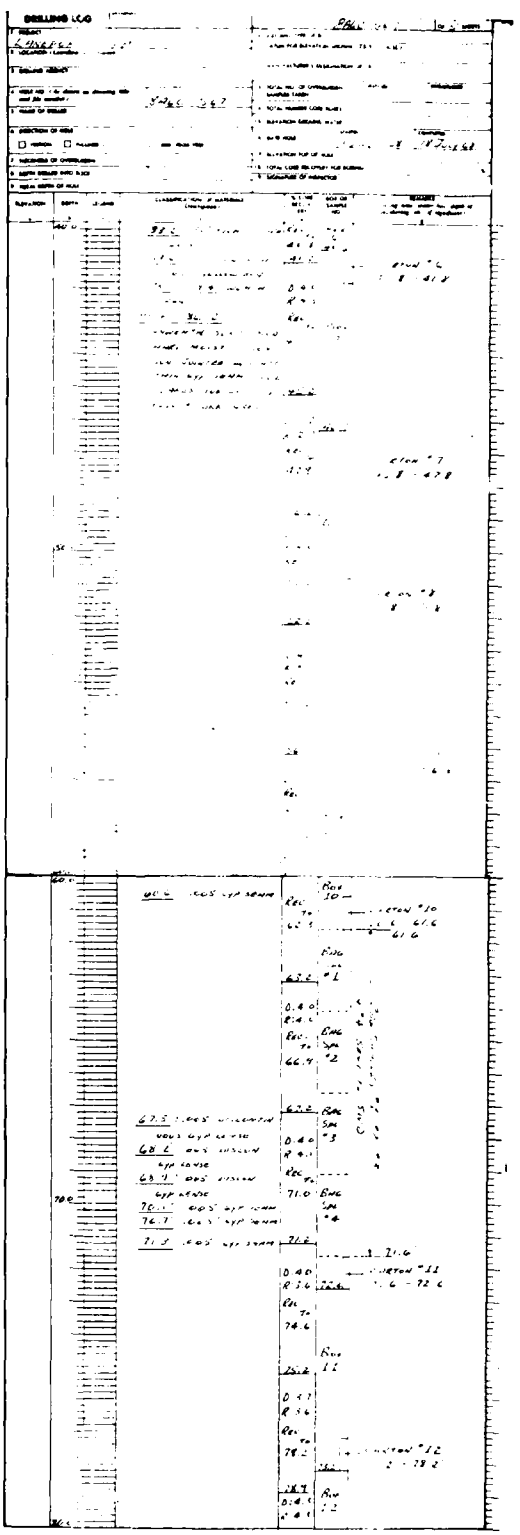
VOLUME - II

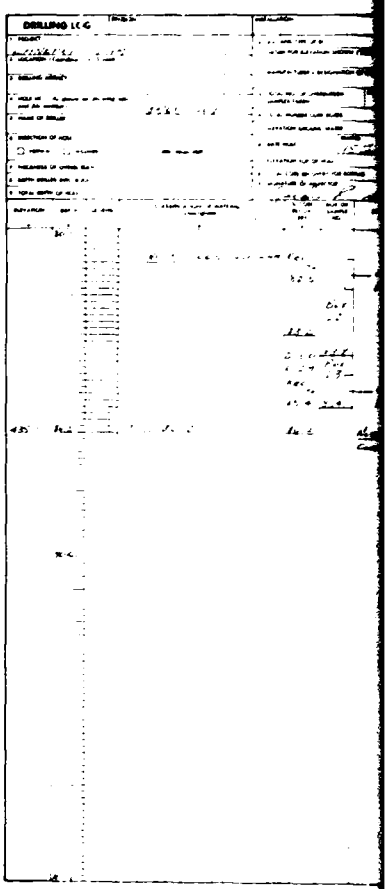
A

INVITATION NO. DACW63-W-B-0015
SPECIFICATIONS DATED: MAY, 1972
DRAWING NUMBER
SHEET NO. 53 OF 66
SEQUENCE NO. 53

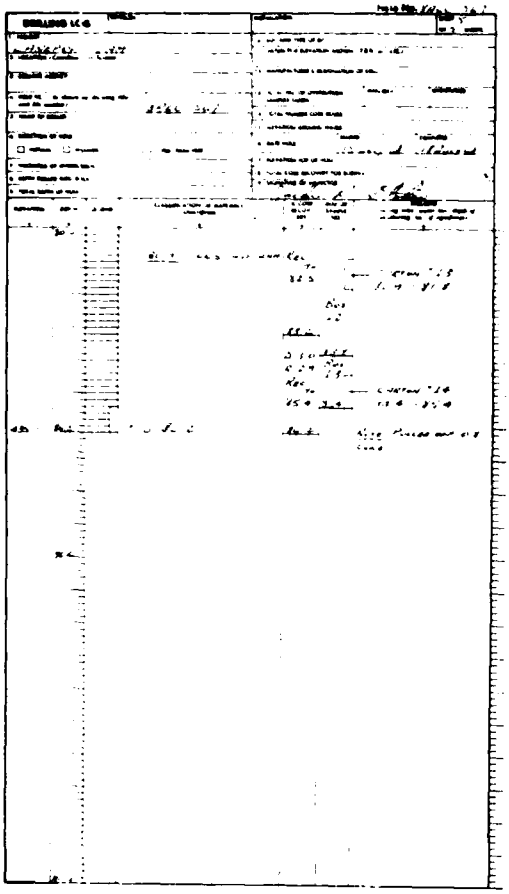
2







TO ACCOMPANY FINAL FOUNDATI



NO. NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-567

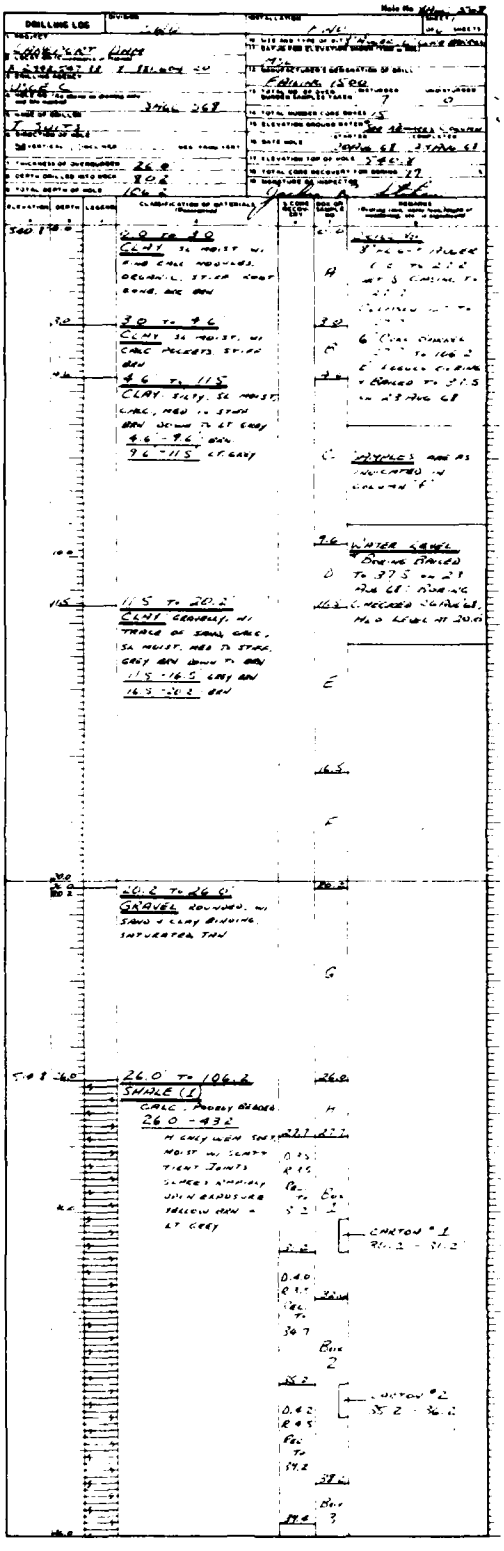
VOLUME - II

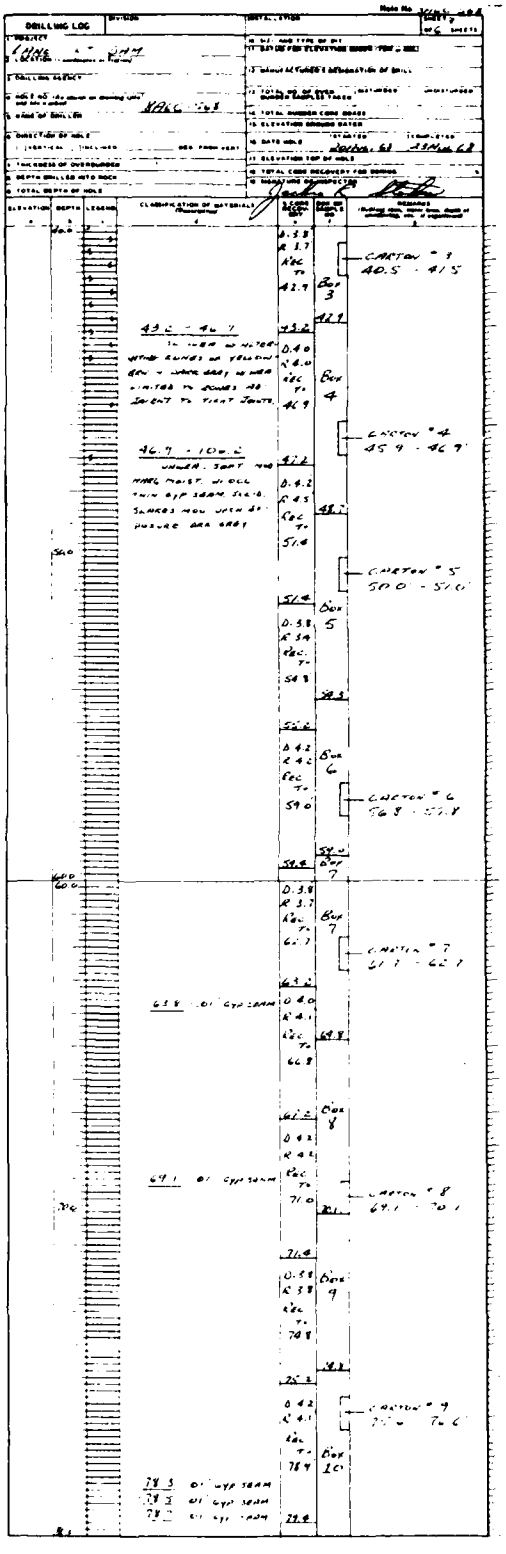
SUBMITTED BY: Anshell
ENGINEER

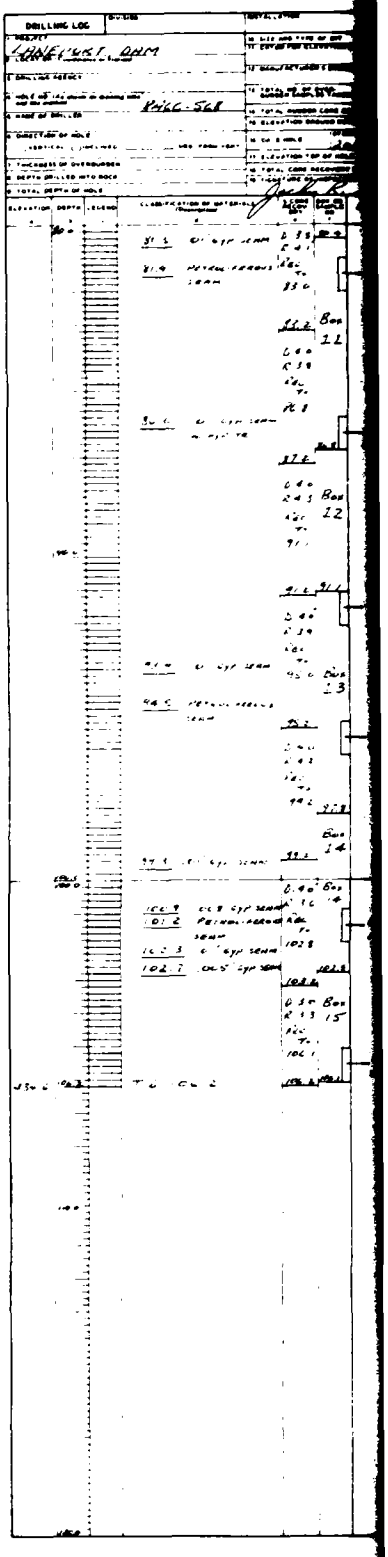
INVITATION NO. [illegible]
SPECIFICATIONS DATED: MAY 1970
DRAWING NUMBER
SHEET NO. 54 OF 68
SEQUENCE NO. 54

A

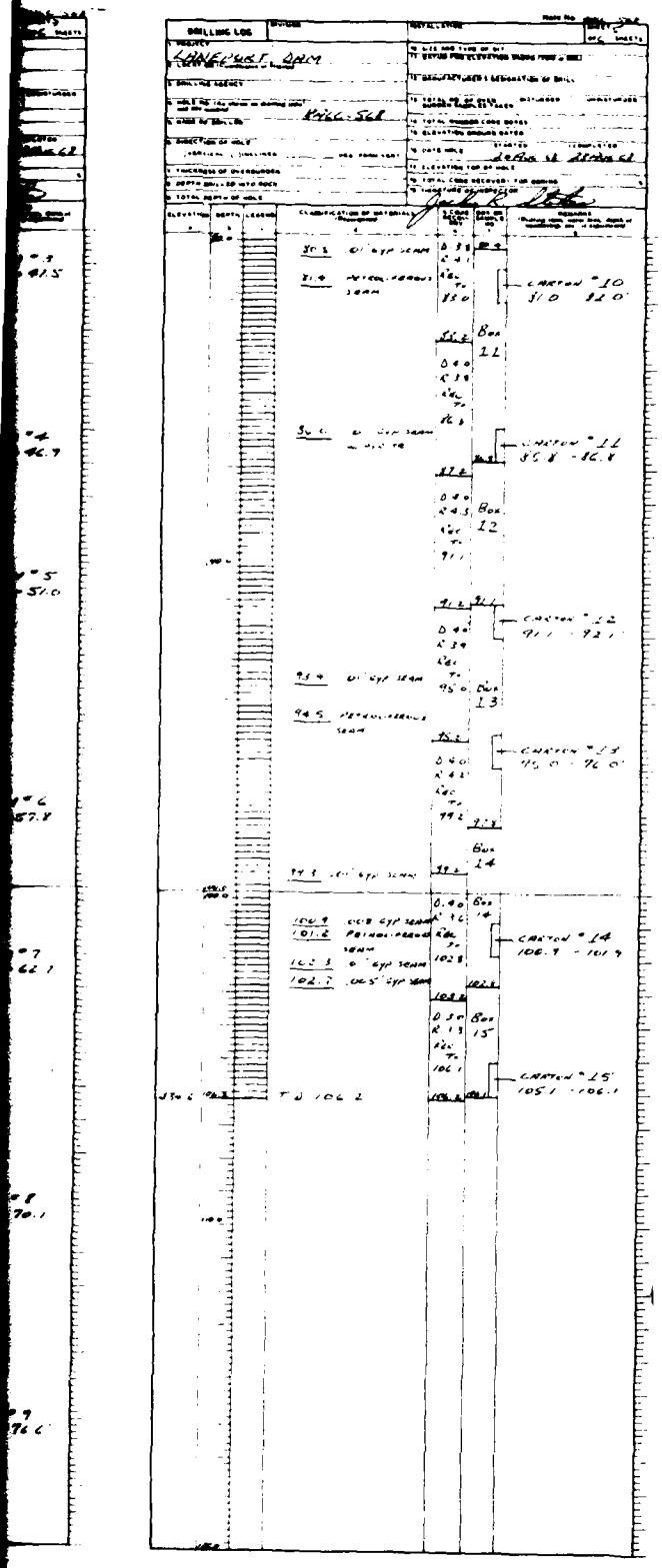
2







TO ACCOMPANY FINAL FOUNDATIO



DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-568

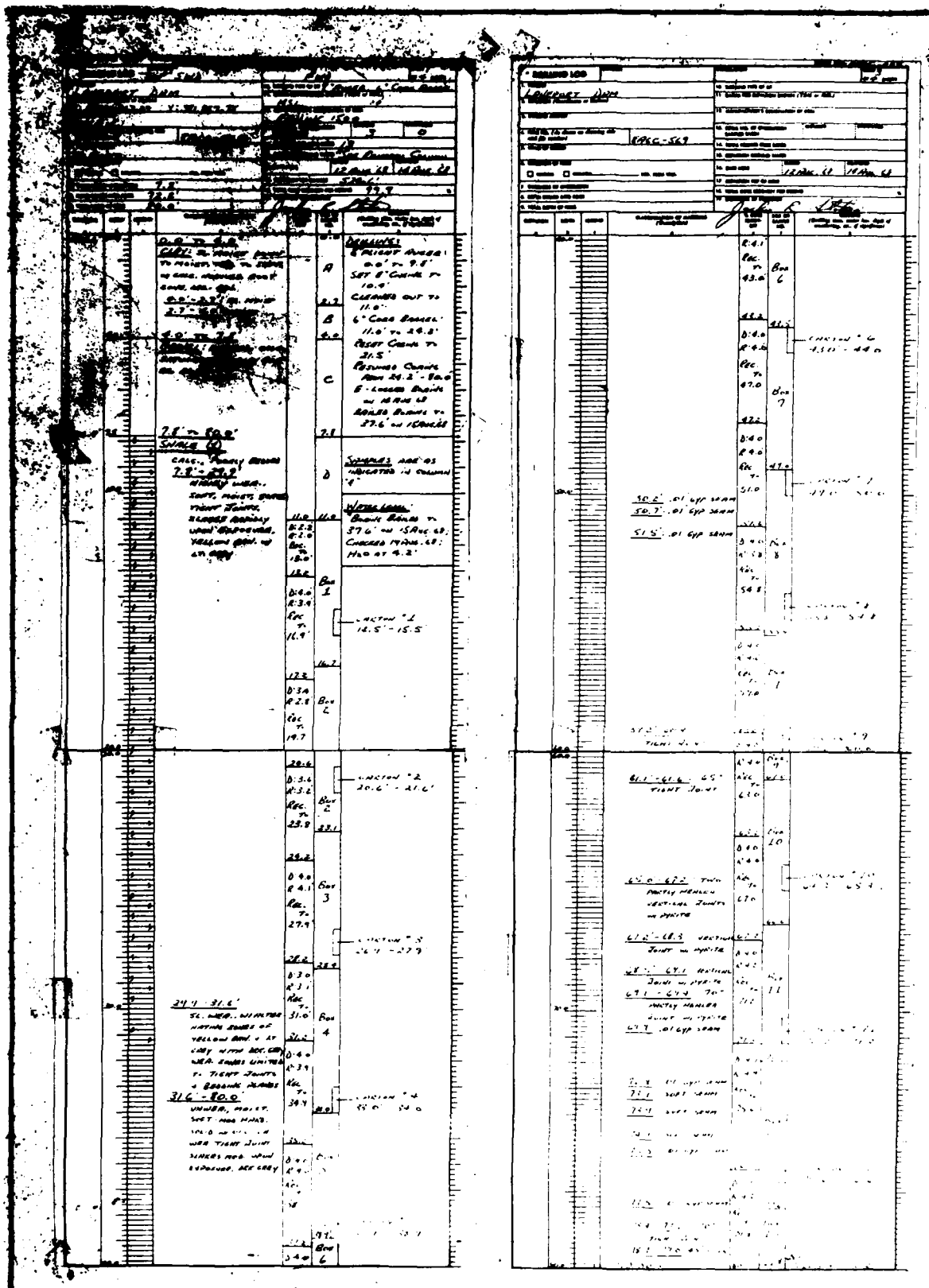
VOLUME - II

SUBMITTED BY: [signature]
ENGINEER:

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 55 OF 68
SEQUENCE NO. 55

2

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 100



TO ACCOMPANY FINAL FOUNDATI

	AMP0001	25 NOV 75	NEW SHEET ADDED
	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ----------
DRAWN BY: ----------
CHECKED BY: ----------

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

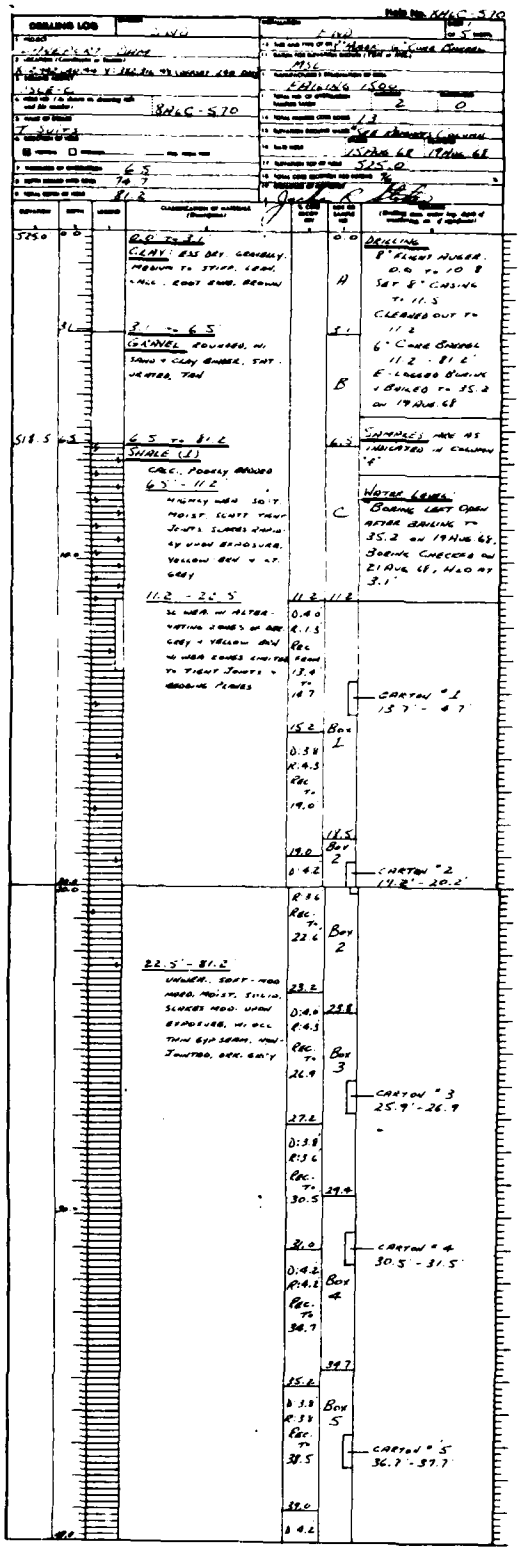
LOGS OF BORINGS

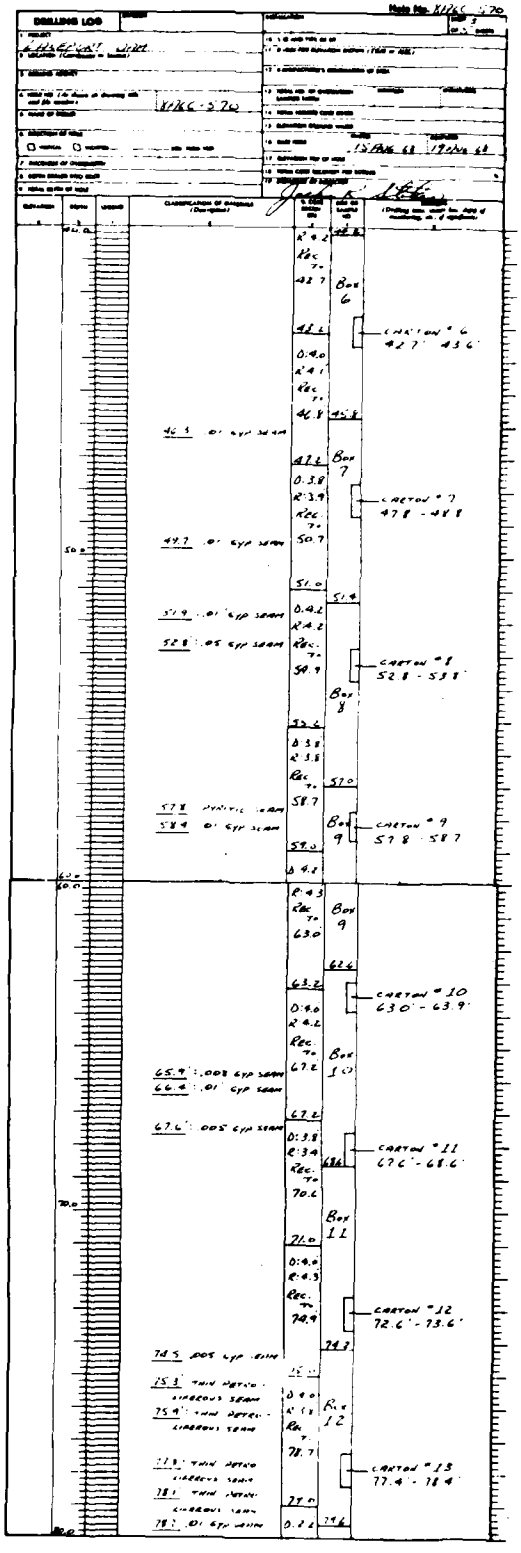
BASC-588

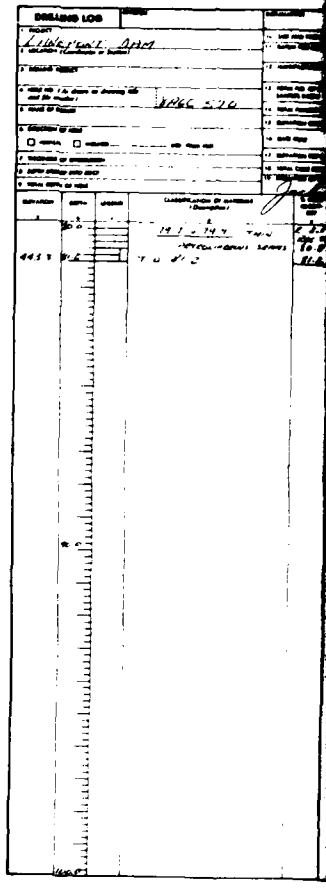
SUBMITTED BY: ----------
RECOMMENDED: ----------

INV. NO. DACW63-76-B-0078 DATED: NOV. 75
CONTR. NO.
DRAWING NUMBER
SHEET NO.

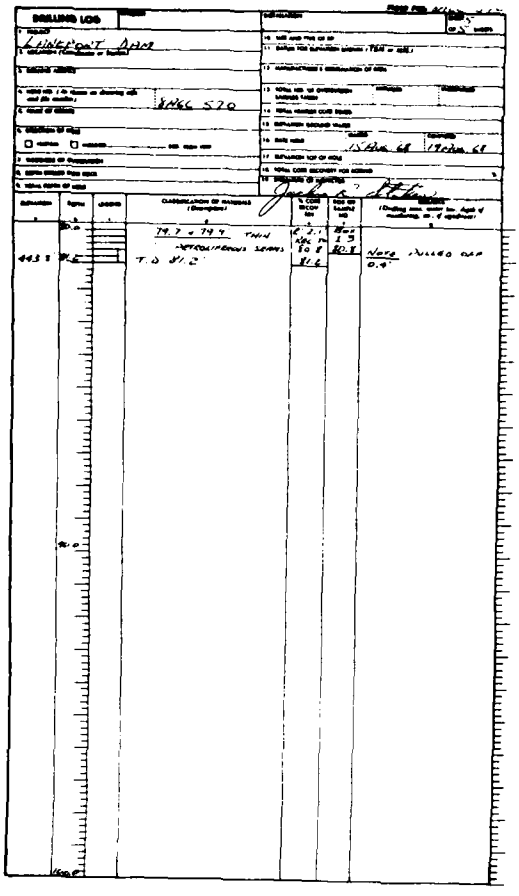
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 191







TO ACCOMPANY FINAL FOUNDA



REV NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-570

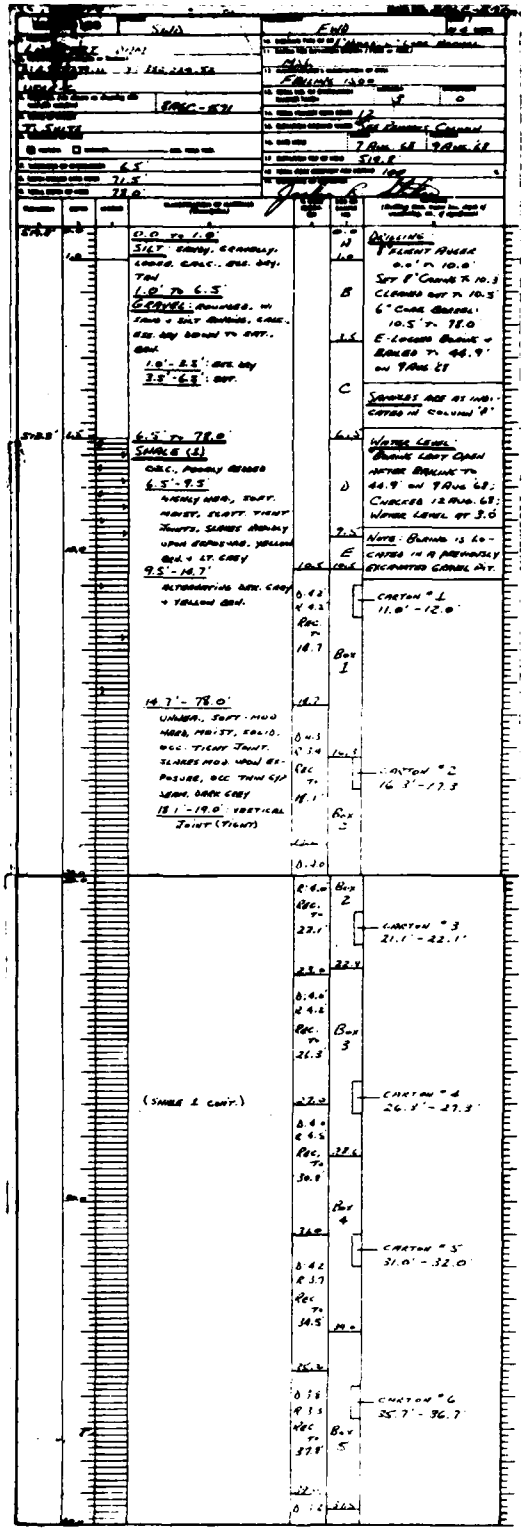
VOLUME - II

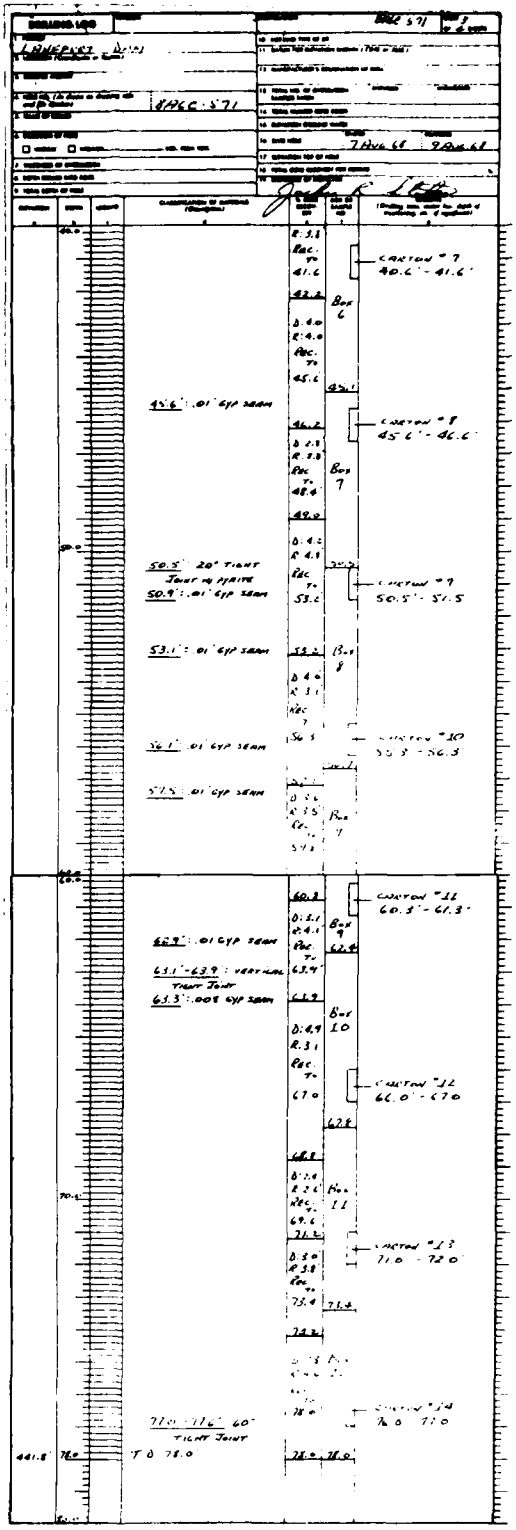
A

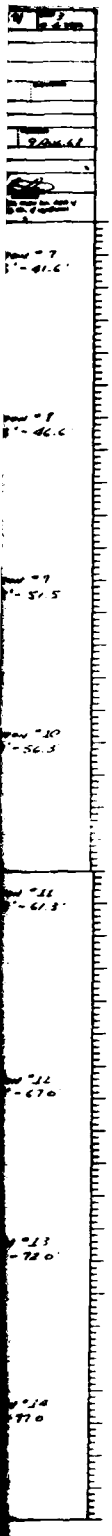
SUBMITTED BY:
ENGINEER:

INVITATION NO. [illegible]
SPECIFICATIONS DATED 447[illegible]
DRAWING NUMBER
SHEET NO 57 OF 58
SEQUENCE NO. 57

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 102







	AM°0001	28 NOV 75	NEW SHEET ADDED
	REVISION NO.	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:

DRAWN BY:

CHECKED BY:

SUBMITTED BY:

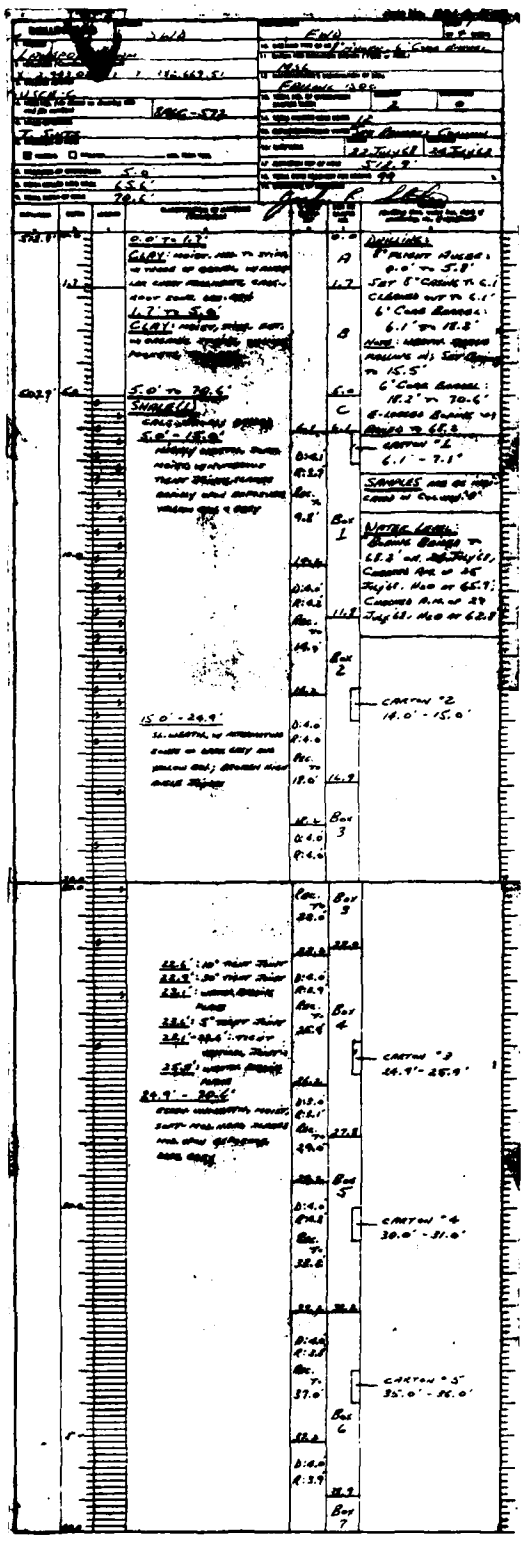
ENGINEER:

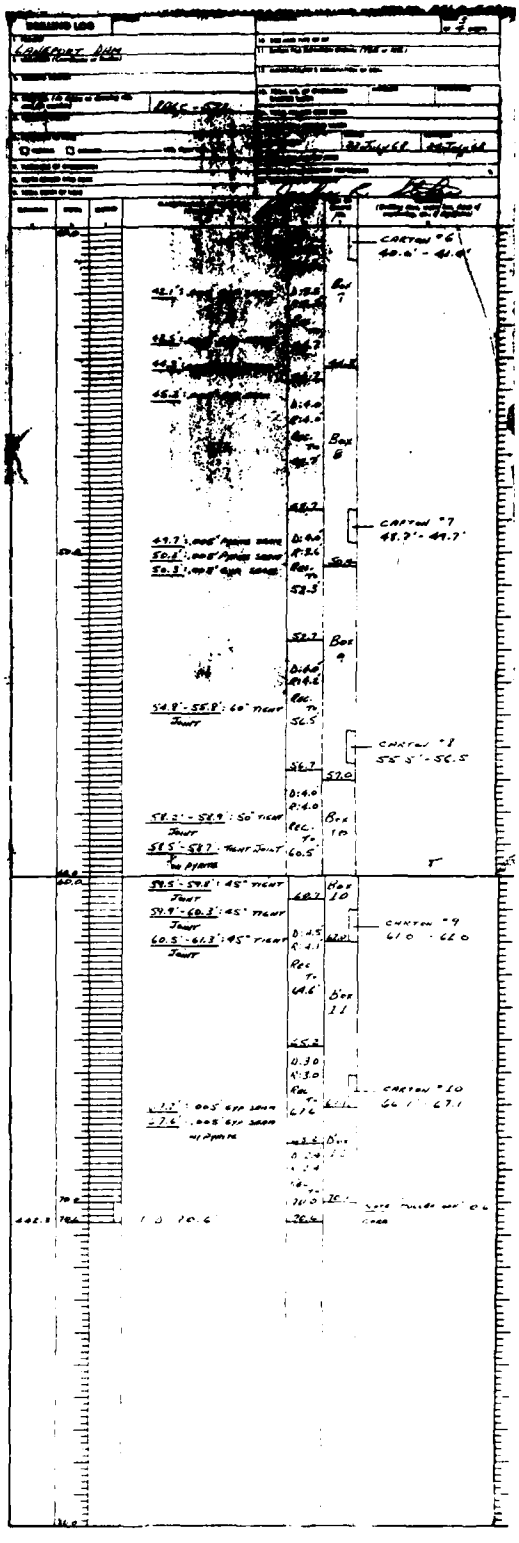
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

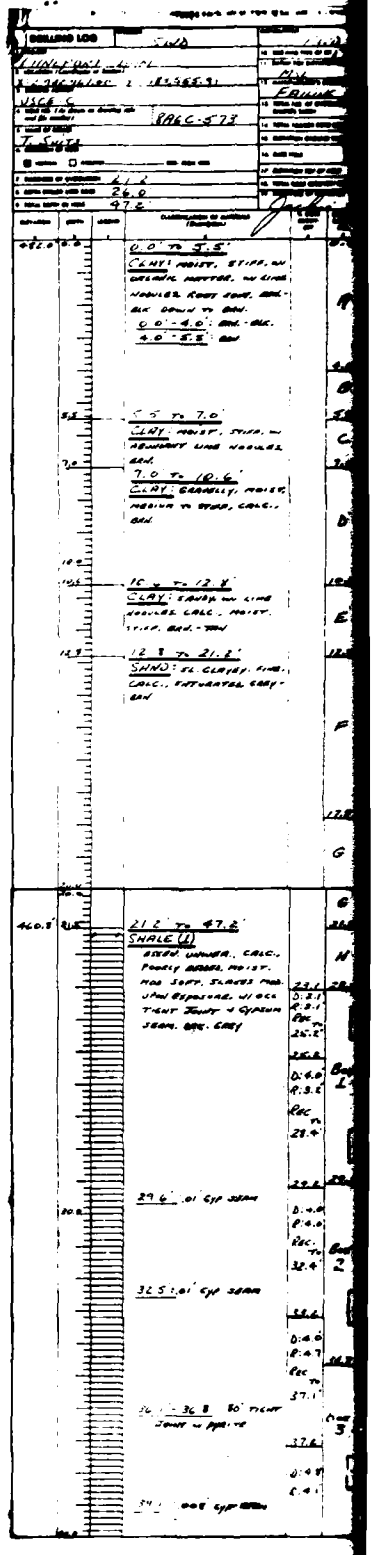
LOGS OF BORINGS
SASC-571

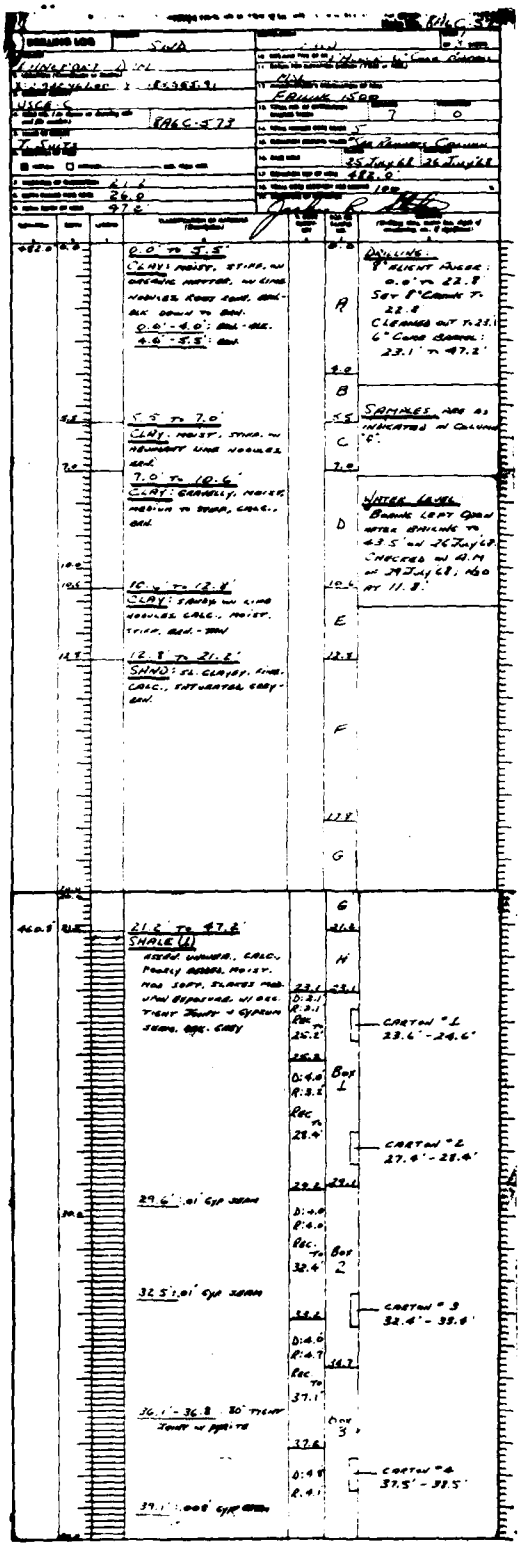
IRV NO DACW63-76-B-0012 DATED: NOV. 76
CONTR NO
DRAWING NUMBER
SHEET NO. 58 OF

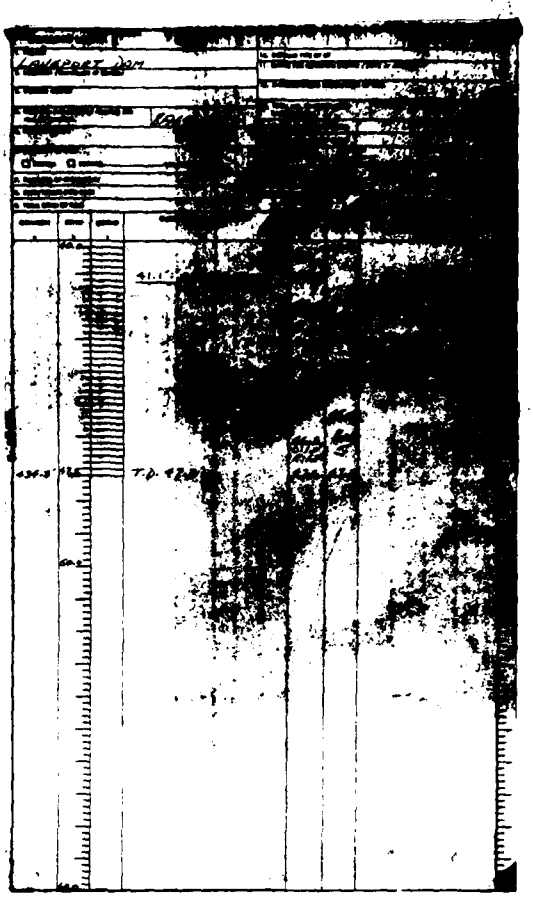
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 103











	AM°0001	28 NOV 75	NEW SHEET ADDED
SYMBOL NO.	REVISION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

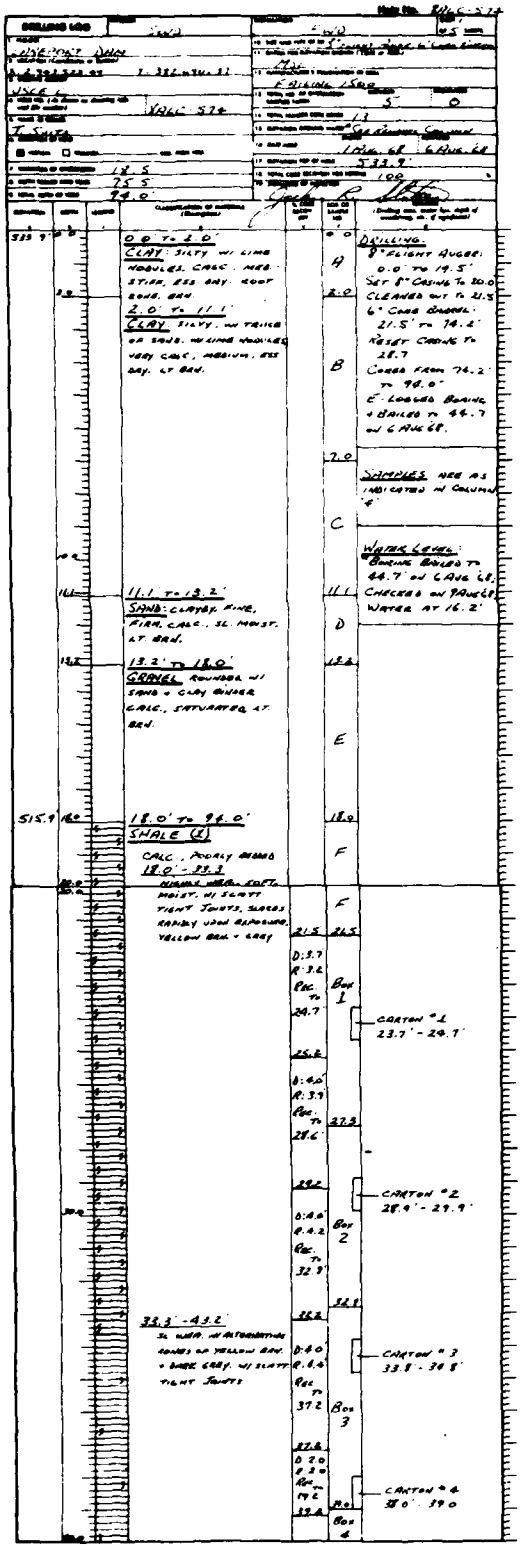
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

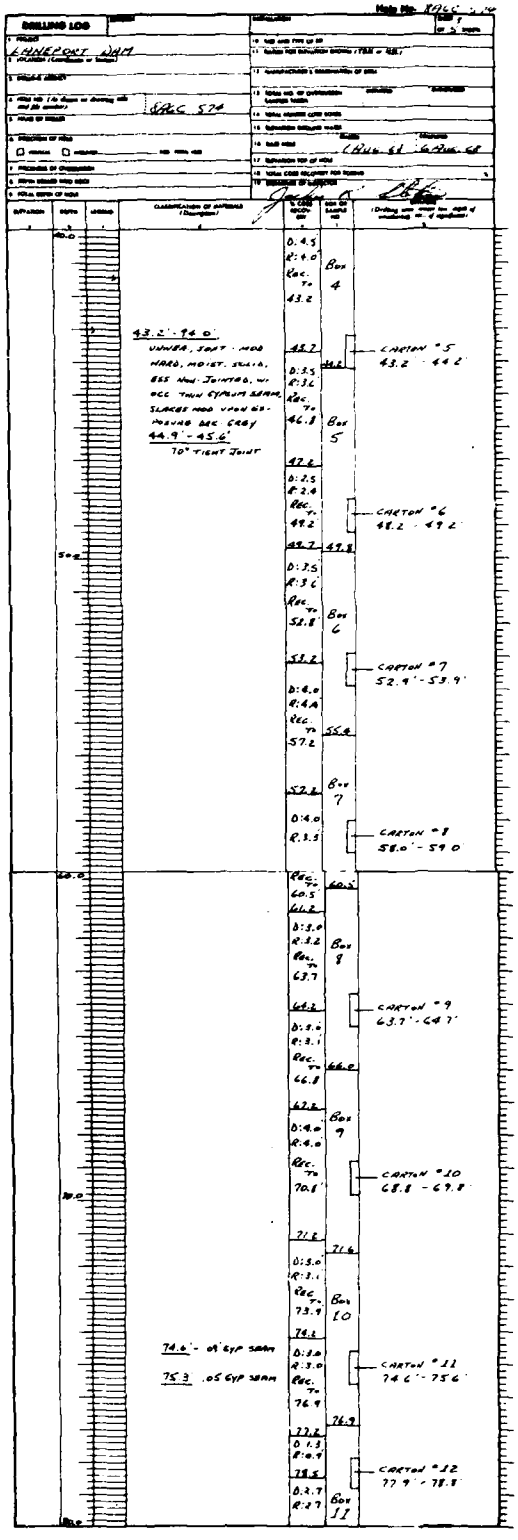
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

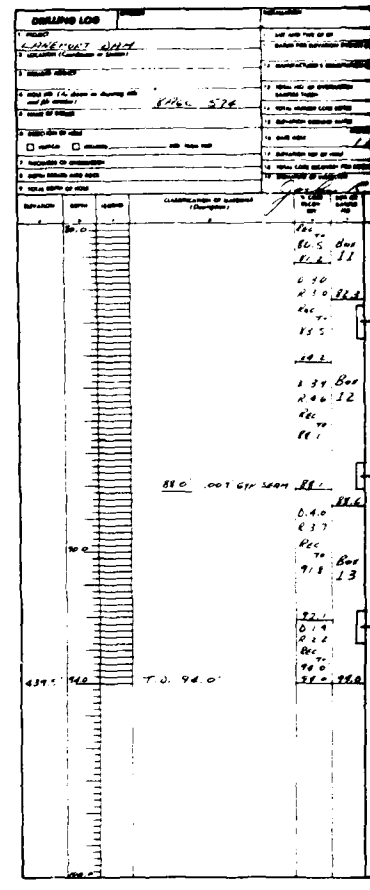
LOGS OF BORINGS
SASC-572 & SASC-573

IRV NO DACW63-76-B-0019 DATED: NOV. 75
CONTR NO
DRAWING NUMBER
SHEET NO. 55 OF

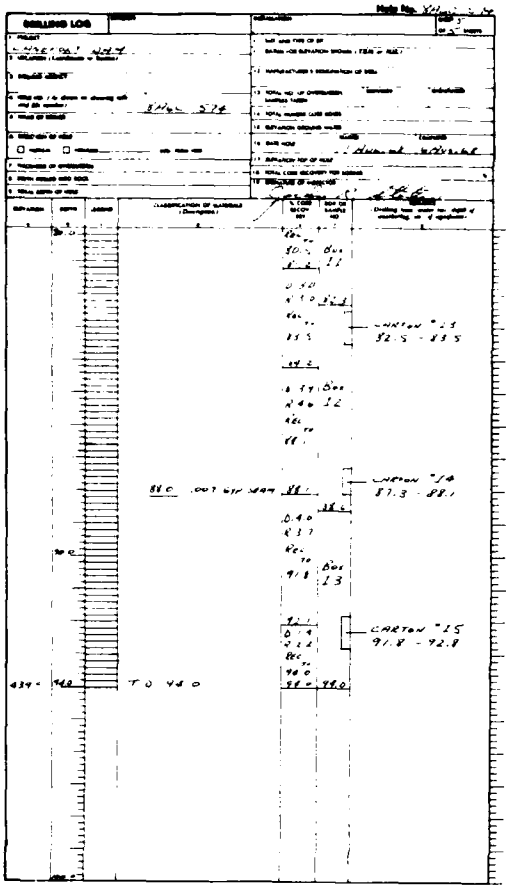
2







TO ACCOMPANY FINAL FOUNDATIO



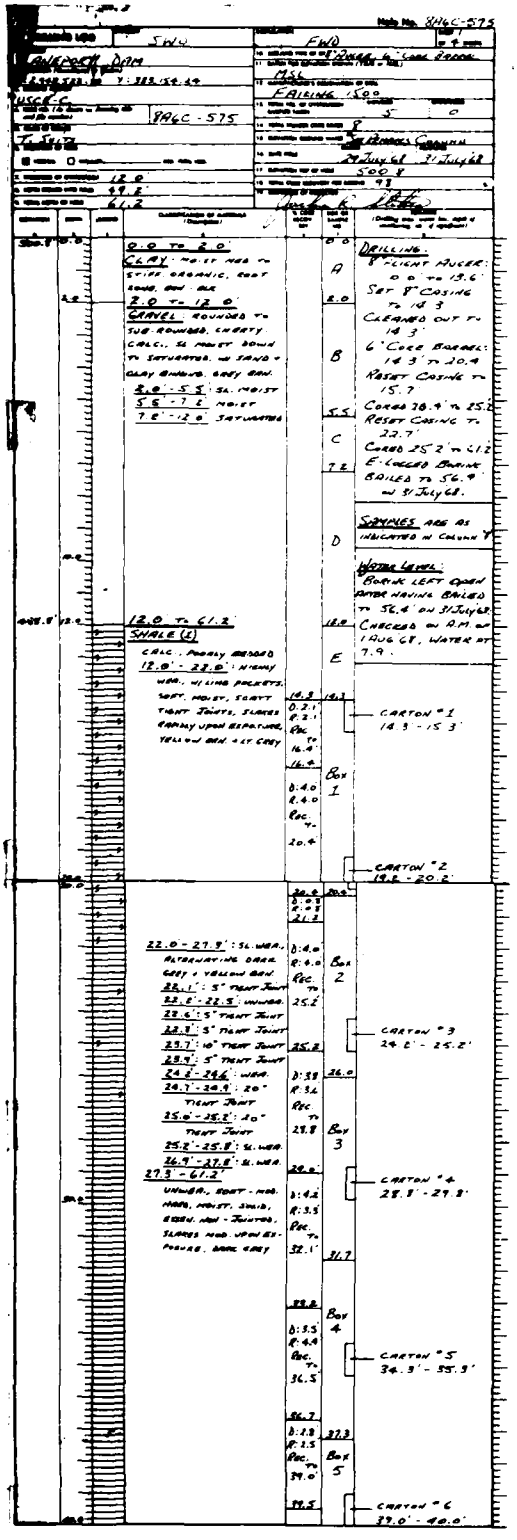
DO NO	ACTION	DATE	DESCRIPTION OF REVISION

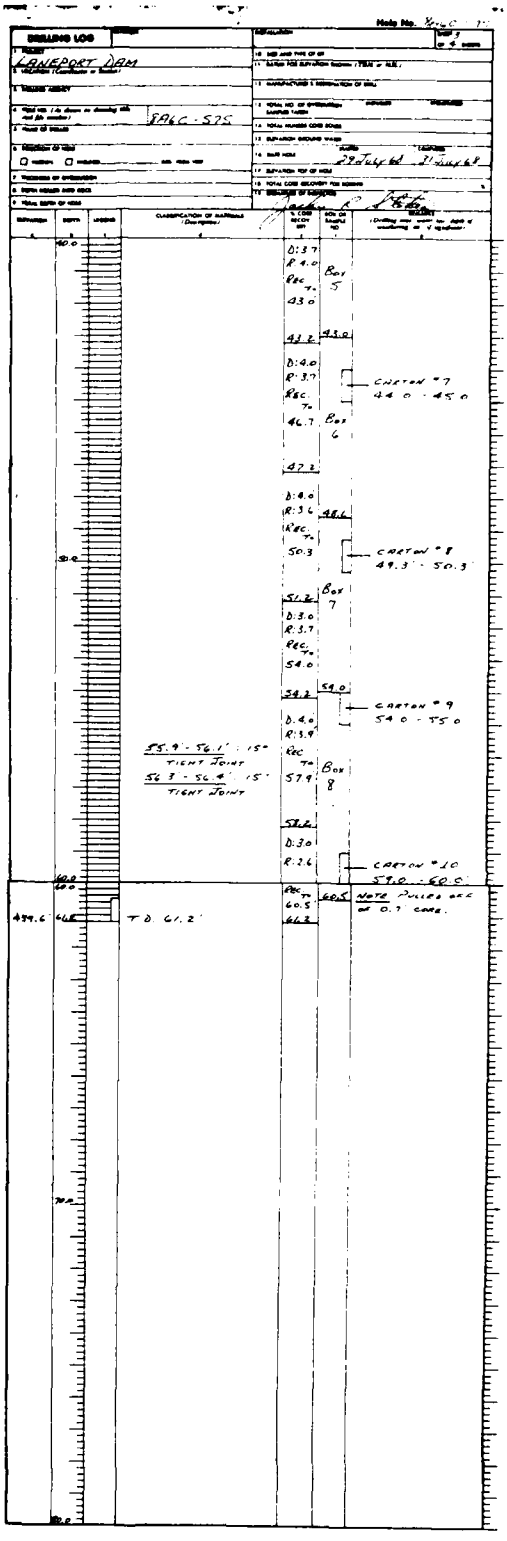
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

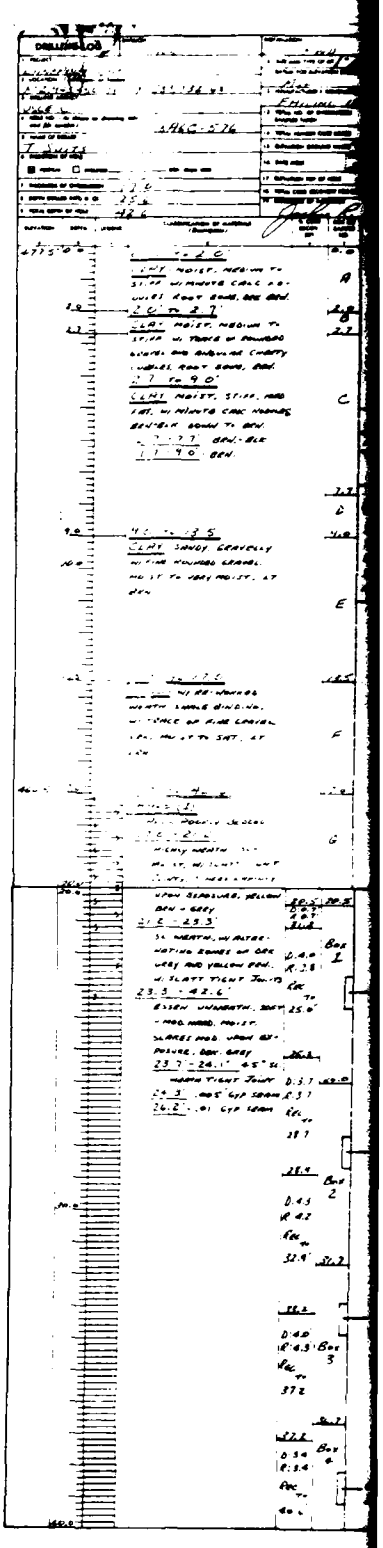
DESIGNED BY JLH	LANEPORT LAKE
DRAWN BY	SAN GABRIEL RIVER, TEXAS
CHECKED BY JLH	LOGS OF BORINGS
	8A6C-574
	VOLUME - II
SUBMITTED BY	INVITATION NO
ENGINEER	SPECIFICATIONS DATED
	DRAWING NUMBER
	SHEET NO
	SEQUENCE NO 60

2

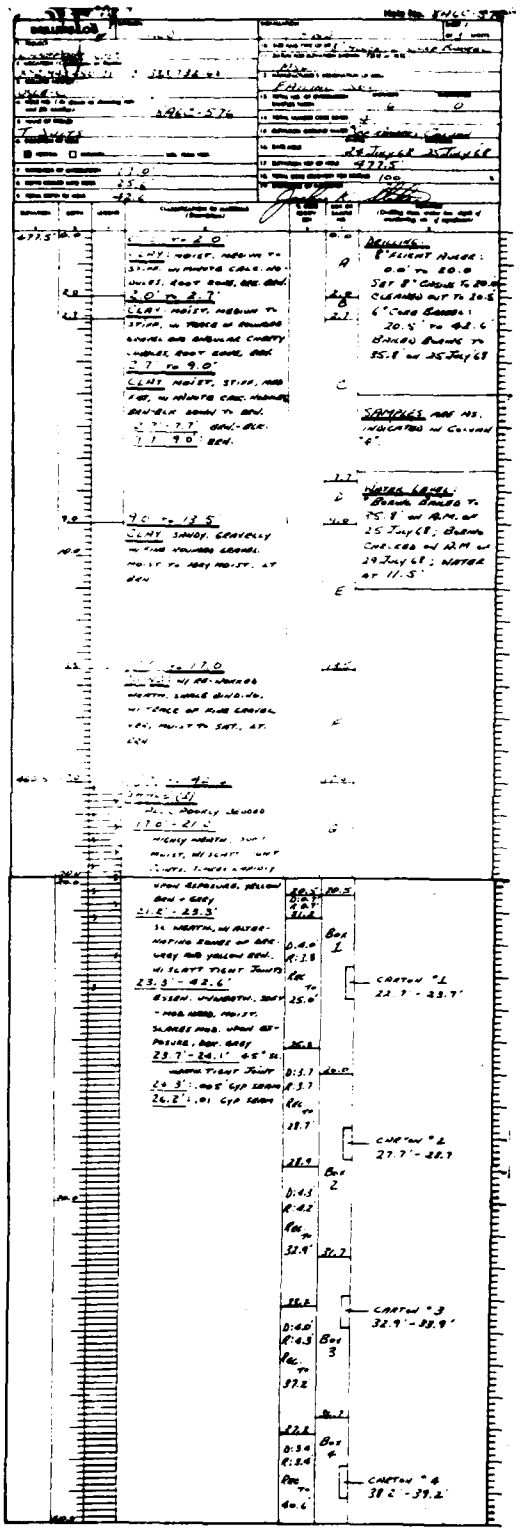
TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 105

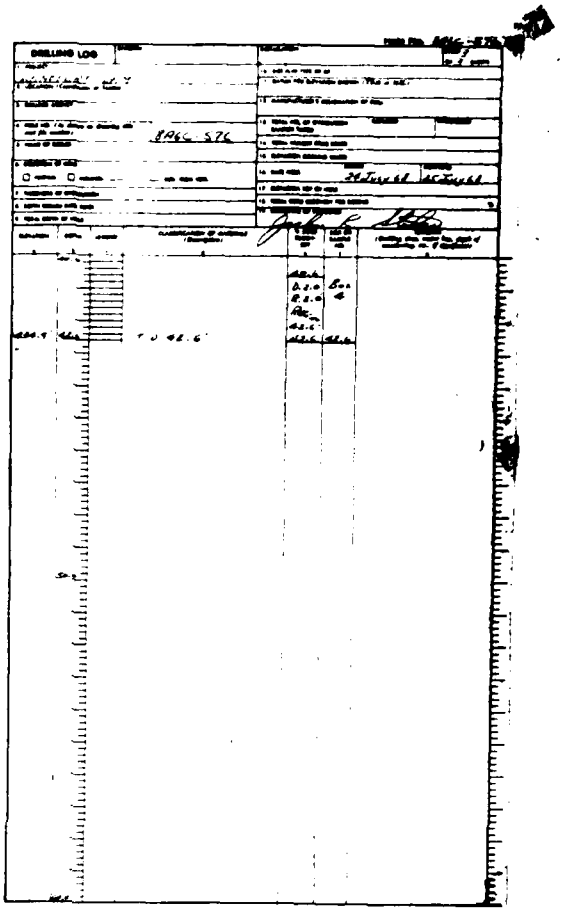






TO ACCOMPANY FINAL FOUNDATION





AM#0001	28 NOV 75	NEW SHEET ADDED	
REVISION NO.	REVISION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

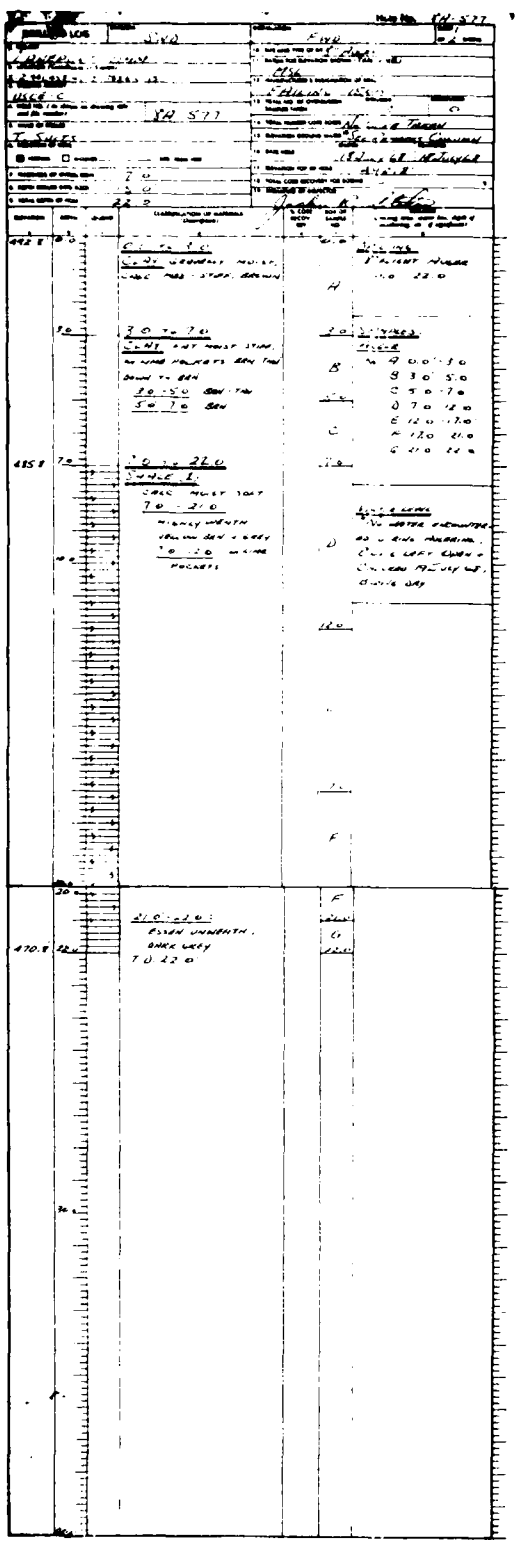
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

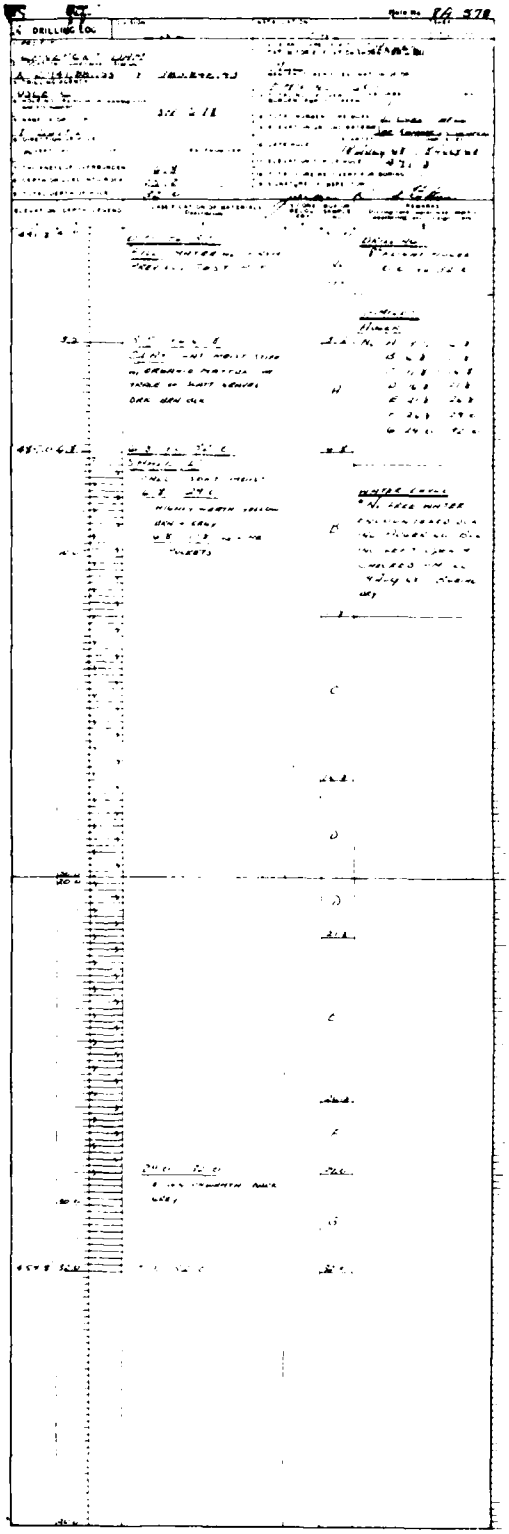
LOGS OF BORINGS
SASC-575 & SASC-576

INV NO DACW63-76-B-0012 DATED: NOV. 75
CONTR. NO
DRAWING NUMBER
SHEET NO. 61
DRAWING NO.

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 106





1	AM-0001	28 NOV 75	NEW SHEET ADDED
REVISION NO.	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY:
DRAWN BY:
CHECKED BY:

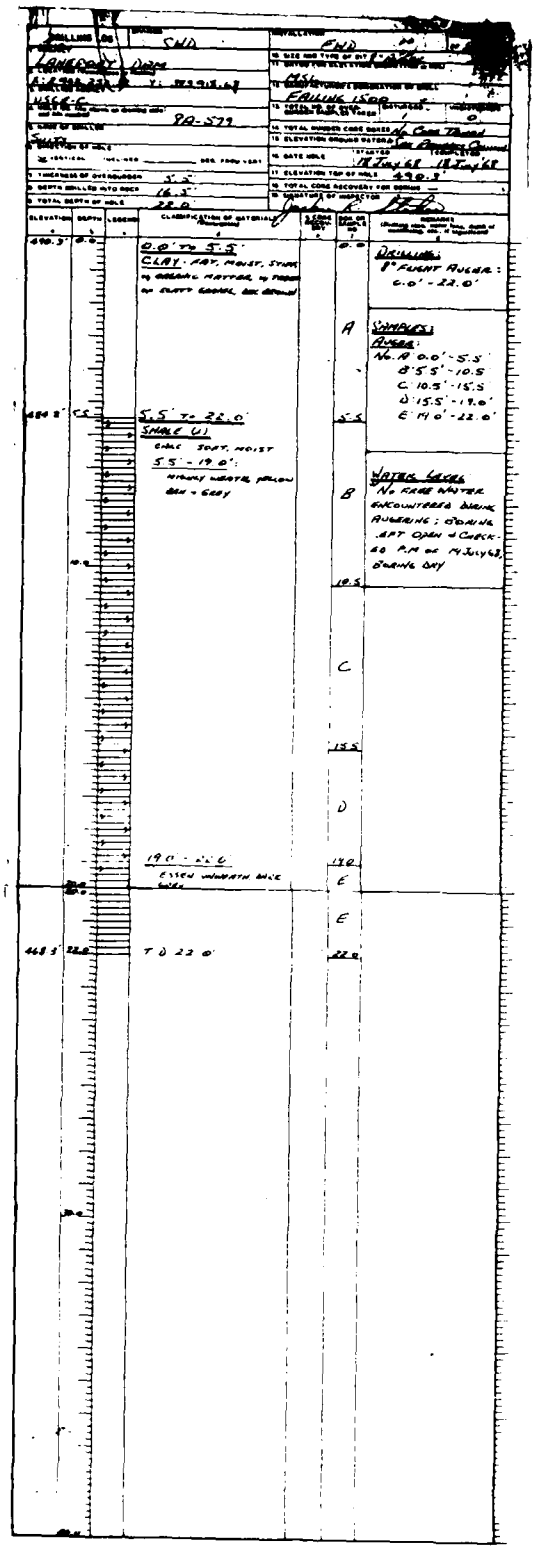
GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A-577 & 8A578

SUBMITTED BY:
ENGINEER:

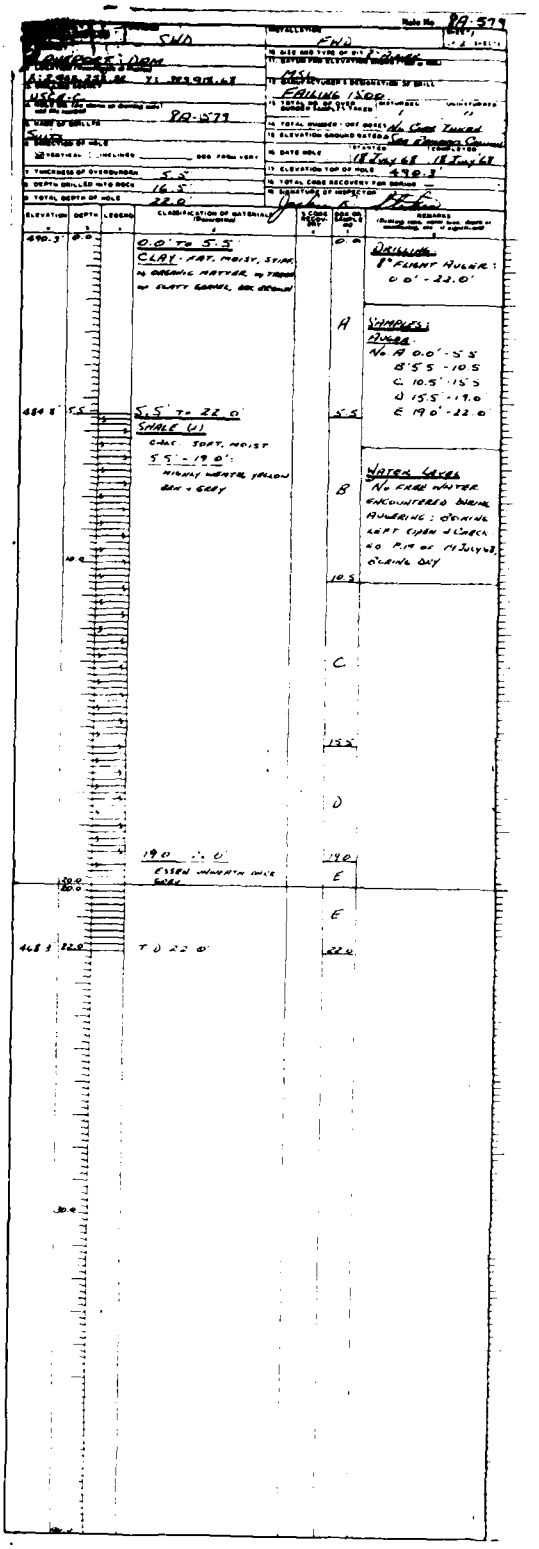
INV NO. DACW63-76-B-0001 DATED NOV. 75
CONTR NO
DRAWING NUMBER
SHEET NO. OF
DRAWING NO. 62

2



DRILLING LOG	SWD
INSTALLATION	FWD
LANEPORT DAM	
6 SIZE AND TYPE OF BIT	8" Auger
7 DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
8 MANUFACTURER'S DESIGNATION OF DRILL	FAILING 1500
9 DIRECTION OF HOLE	
10 TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 1 / UNDISTURBED 0
11 TOTAL NUMBER CORE BOXES	No Core Taken
12 ELEVATION GROUND WATER	See Remarks Column
13 DATE HOLE	STARTED 18 July 68 / COMPLETED 18 July 68
14 ELEVATION TOP OF HOLE	490.3'
15 TOTAL CORE RECOVERY FOR BORING	—
16 SIGNATURE OF INSPECTOR	[signature]
17 TOTAL DEPTH OF HOLE	22.0
18 DEPTH DRILLED INTO ROCK	16.5'
19 TOTAL DEPTH OF HOLE	22.0

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
490.3'	0.0		0.0' TO 5.5' CLAY - FAT, MOIST, STIFF, no ORGANIC MATTER, no TRACE of SLATT GRAVEL, BRK BROWN		0.0	DRILLING: 8" FLIGHT AUGER: 0.0' - 22.0'
					A	SAMPLES: AUGER: No. A 0.0' - 5.5' B 5.5' - 10.5 C 10.5' - 15.5 D 15.5' - 19.0' E 19.0' - 22.0'
484.8'	5.5		5.5' TO 22.0' SHALE (U) CALC. SOFT, MOIST 5.5' - 19.0': HIGHLY WEATHER, YELLOW BRN + GREY		5.5	
					B	WATER LEVEL No FREE WATER ENCOUNTERED DURING AUGERING; BORING LEFT OPEN & CHECKED P.M. OF 14 July 68, BORING DRY
	10.0				10.5	
					C	
					15.5	
					D	
			19.0' - 22.0' ESSEN UNWEATH DARK GREY		19.0	
	20.0				E	
					E	
468.3'	22.0		T.D. 22.0'		22.0	
	30.0					



DRILLING LOG	SWD
INSTALLATION	FWD
LANEPORT DAM	
6 SIZE AND TYPE OF BIT	8" Auger
7 DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
8 MANUFACTURER'S DESIGNATION OF DRILL	FAILING 1500
9 DIRECTION OF HOLE	
10 TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 1 / UNDISTURBED 0
11 TOTAL NUMBER CORE BOXES	No Core Taken
12 ELEVATION GROUND WATER	See Remarks Column
13 DATE HOLE	STARTED 18 July 68 / COMPLETED 18 July 68
14 ELEVATION TOP OF HOLE	490.3'
15 TOTAL CORE RECOVERY FOR BORING	—
16 SIGNATURE OF INSPECTOR	[signature]
17 TOTAL DEPTH OF HOLE	22.0
18 DEPTH DRILLED INTO ROCK	16.5'
19 TOTAL DEPTH OF HOLE	22.0

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
490.3'	0.0		0.0' TO 5.5' CLAY - FAT, MOIST, STIFF, no ORGANIC MATTER, no TRACE of SLATT GRAVEL, BRK BROWN		0.0	DRILLING: 8" FLIGHT AUGER: 0.0' - 22.0'
					A	SAMPLES: AUGER: No. A 0.0' - 5.5' B 5.5' - 10.5 C 10.5' - 15.5 D 15.5' - 19.0' E 19.0' - 22.0'
484.8'	5.5		5.5' TO 22.0' SHALE (U) CALC. SOFT, MOIST 5.5' - 19.0': HIGHLY WEATHER, YELLOW BRN + GREY		5.5	
					B	WATER LEVEL No FREE WATER ENCOUNTERED DURING AUGERING; BORING LEFT OPEN & CHECKED P.M. OF 14 July 68, BORING DRY
	10.0				10.5	
					C	
					15.5	
					D	
			19.0' - 22.0' ESSEN UNWEATH DARK GREY		19.0	
	20.0				E	
					E	
468.3'	22.0		T.D. 22.0'		22.0	
	30.0					

REVISION NO.	ACTION	DATE	DESCRIPTION OF REVISION
1	AM-0001	28 NOV 79	NEW SHEET ADDED

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

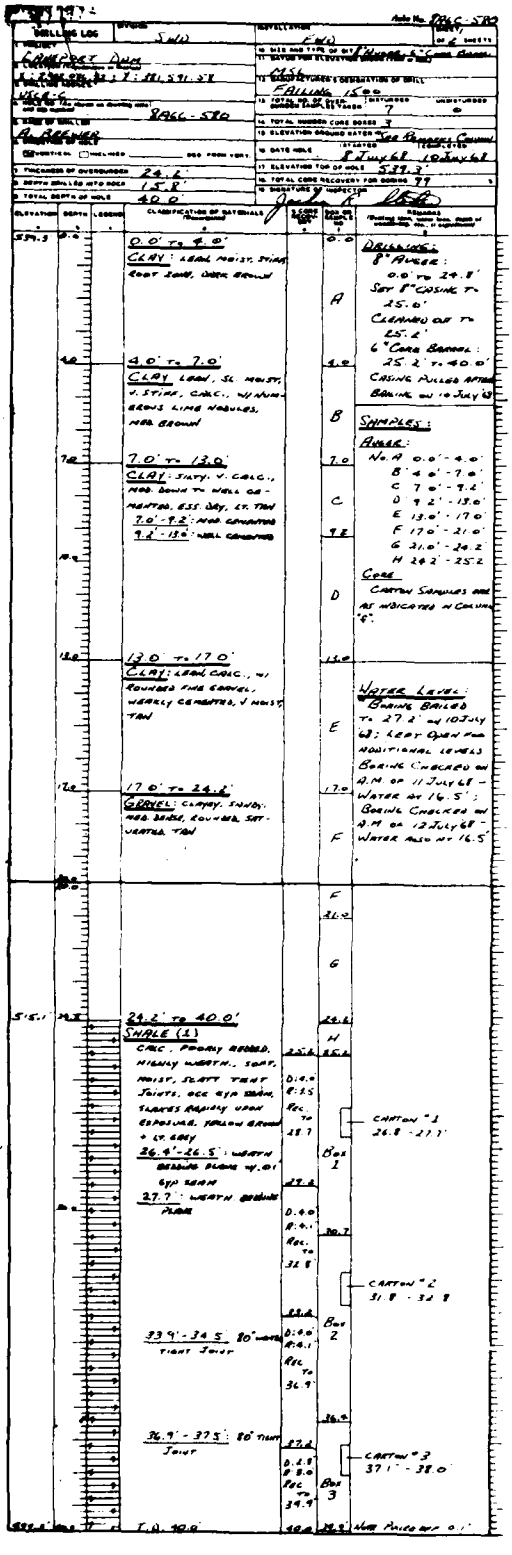
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
BA-579

INV NO. DACW63-74-B-0019 DATED: NOV. 79
CONTR. NO
DRAWING NUMBER
SHEET NO. 65 OF
DRAWING NO.

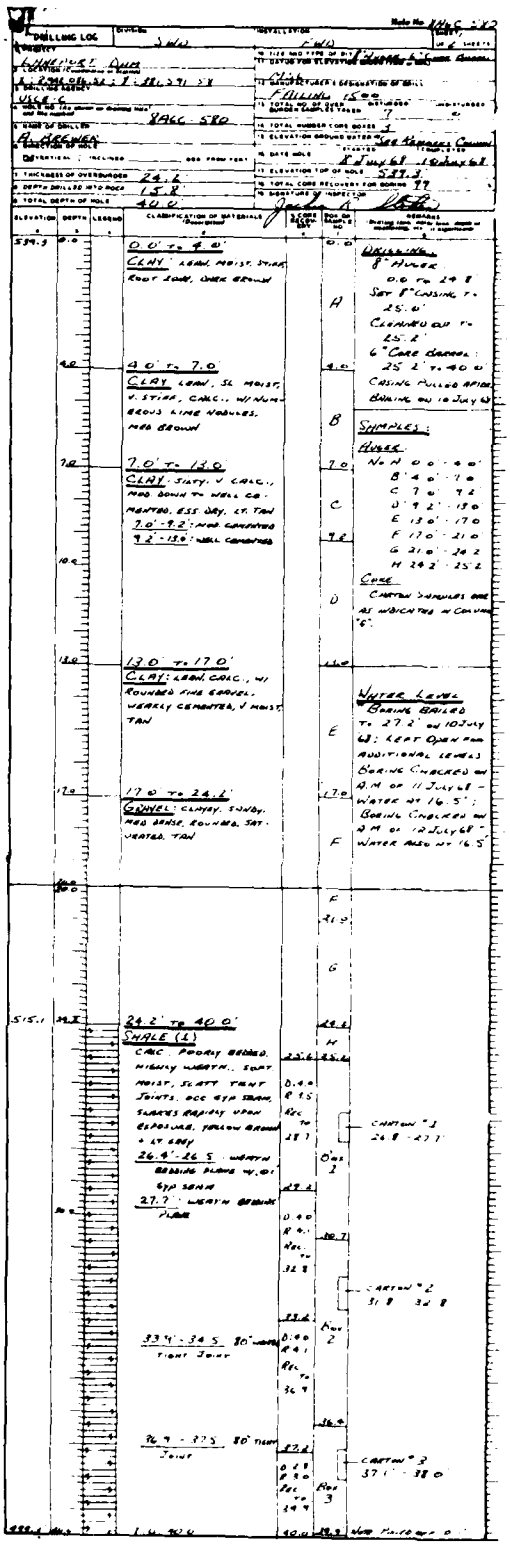
2



DRILLING LOG — SWD — Make No. 8FGC-5R2 — Sheet 1 of 2 Sheets

1. PROJECT: Campbell Dam
2. LOCATION: Lat. 32°-7'-28.22" N, Long. 91°-51'-27" W
3. DRILL HOLE NO.: USCE-6
4. NAME OF DRILLER: R. Greene
5. DIRECTION OF HOLE: Vertical ☐ Inclined ☐ DEG. FROM VERT.
6. THICKNESS OF OVERBURDEN: 24.6'
7. DEPTH DRILLED INTO ROCK: 15.8'
8. TOTAL DEPTH OF HOLE: 40.0'
9. DIST. AND DIR. OF HOLE FROM CENTER OF DAM: 8466 - 5R2
10. ELEVATION GROUND WATER: See Remarks, Column "Remarks"
11. ELEVATION TOP OF HOLE: 539.3
12. TOTAL CORE RECOVERY FOR BORING: 99
13. SIGNATURE OF INSPECTOR: Jones A. Ulch
14. TOTAL NUMBER CORE BOXES: 3
15. ELEVATION GROUND WATER: See Remarks, Column "Remarks"
16. DATE HOLE: STARTED 8 July 68, COMPLETED 10 July 68
17. ELEVATION TOP OF HOLE: 539.3
18. TOTAL CORE RECOVERY FOR BORING: 99
19. SIGNATURE OF INSPECTOR: Jones A. Ulch
20. TOTAL NUMBER CORE BOXES: 3
21. ELEVATION GROUND WATER: See Remarks, Column "Remarks"
22. DATE HOLE: STARTED 8 July 68, COMPLETED 10 July 68
23. ELEVATION TOP OF HOLE: 539.3
24. TOTAL CORE RECOVERY FOR BORING: 99
25. SIGNATURE OF INSPECTOR: Jones A. Ulch

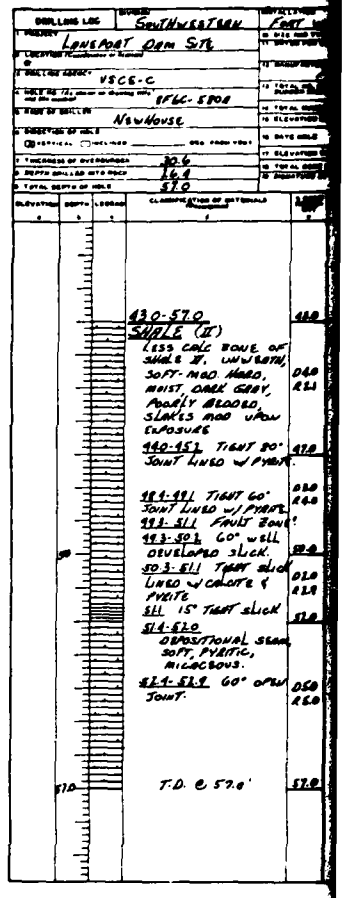
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE SAMPLE NO.	RUN NO.	REMARKS (Drilling time, water loss, depth of weathering, etc.; if applicable)
539.3	0.0		0.0' to 4.0' CLAY: Lean, moist, stiff, root zone, dark brown		A	Drilling: 8" Auger: 0.0 to 24.8' Set 8" casing to 25.0' Cleaned out to 25.2' 6" Core Barrel: 25.2' to 40.0' Casing pulled after Boring on 10 July 68
	4.0		4.0' to 7.0' CLAY: Lean, sl. moist, v. stiff, calc., w/ numerous lime nodules, med. brown		B	Samples: Auger: No. H 0.0 - 4.0' B 4.0 - 7.0' C 7.0 - 9.2' D 9.2' - 13.0' E 13.0' - 17.0' F 17.0' - 21.0' G 21.0' - 24.2' H 24.2' - 25.2' Core Caption Samples are as indicated in Column "6".
	7.0		7.0' to 13.0' CLAY: Silty, v. calc., med. down to well cemented, ESS day, lt. tan 7.0' - 9.2': Mod. cemented 9.2' - 13.0': Well cemented		C	
	10.0				D	
	13.0		13.0' to 17.0' CLAY: Lean, calc., w/ rounded fine gravel, weakly cemented, v moist, tan		E	Water Level: Boring Bailed to 27.2' on 10 July 68; Left Open for additional levels Boring Checked on A.M. of 11 July 68 - Water at 16.5'; Boring Checked on A.M. of 12 July 68 - Water Also at 16.5'
	17.0		17.0' to 24.2' GRAVEL: Clayey, sandy, med. brise, rounded, sat-urated, tan		F	
	20.0				F	
	21.0				G	
515.1	24.2		24.2' to 40.0' SHALE (I) Calc., poorly bedded, highly weath., soft, moist, slaty tent joints, occ gyp seam, slakes rapidly upon exposure, yellow brown + lt. gray 26.4' - 26.5': Weath bedding plane w/ .01' gyp seam 27.7': Weath bedding plane		H	
	25.0			1		Caption "1" 26.8 - 27.7'
	27.0				Box 1	
	30.0			2		Caption "2" 31.8 - 32.8
	33.0				Box 2	
	36.0			3		Caption "3" 37.1' - 38.0'
	39.0				Box 3	
499.4	40.0		T.D. 40.0			Hole Filled w/ 0.1'



DRILLING LOG — SWD — Make No. 8FGC-5R2 — Sheet 2 of 2 Sheets

1. PROJECT: Campbell Dam
2. LOCATION: Lat. 32°-7'-28.22" N, Long. 91°-51'-27" W
3. DRILL HOLE NO.: USCE-6
4. NAME OF DRILLER: R. Greene
5. DIRECTION OF HOLE: Vertical ☐ Inclined ☐ DEG. FROM VERT.
6. THICKNESS OF OVERBURDEN: 24.6'
7. DEPTH DRILLED INTO ROCK: 15.8'
8. TOTAL DEPTH OF HOLE: 40.0'
9. DIST. AND DIR. OF HOLE FROM CENTER OF DAM: 8466 - 5R2
10. ELEVATION GROUND WATER: See Remarks, Column "Remarks"
11. ELEVATION TOP OF HOLE: 539.3
12. TOTAL CORE RECOVERY FOR BORING: 99
13. SIGNATURE OF INSPECTOR: Jones A. Ulch
14. TOTAL NUMBER CORE BOXES: 3
15. ELEVATION GROUND WATER: See Remarks, Column "Remarks"
16. DATE HOLE: STARTED 8 July 68, COMPLETED 10 July 68
17. ELEVATION TOP OF HOLE: 539.3
18. TOTAL CORE RECOVERY FOR BORING: 99
19. SIGNATURE OF INSPECTOR: Jones A. Ulch
20. TOTAL NUMBER CORE BOXES: 3
21. ELEVATION GROUND WATER: See Remarks, Column "Remarks"
22. DATE HOLE: STARTED 8 July 68, COMPLETED 10 July 68
23. ELEVATION TOP OF HOLE: 539.3
24. TOTAL CORE RECOVERY FOR BORING: 99
25. SIGNATURE OF INSPECTOR: Jones A. Ulch

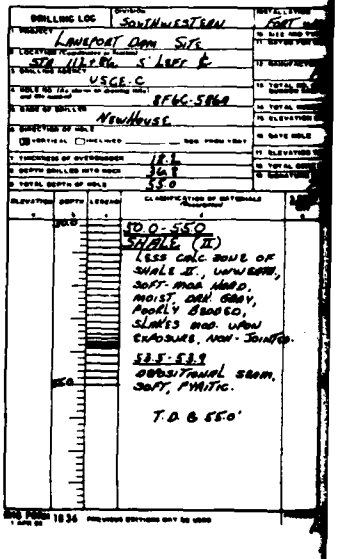
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE SAMPLE NO.	RUN NO.	REMARKS (Drilling time, water loss, depth of weathering, etc.; if applicable)
539.3	0.0		0.0' to 4.0' CLAY: Lean, moist, stiff, root zone, dark brown		A	Drilling: 8" Auger: 0.0 to 24.8' Set 8" casing to 25.0' Cleaned out to 25.2' 6" Core Barrel: 25.2' to 40.0' Casing pulled after Boring on 10 July 68
	4.0		4.0' to 7.0' CLAY: Lean, sl. moist, v. stiff, calc., w/ numerous lime nodules, med. brown		B	Samples: Auger: No. H 0.0 - 4.0' B 4.0 - 7.0' C 7.0 - 9.2' D 9.2' - 13.0' E 13.0' - 17.0' F 17.0' - 21.0' G 21.0' - 24.2' H 24.2' - 25.2' Core Caption Samples are as indicated in Column "6".
	7.0		7.0' to 13.0' CLAY: Silty, v. calc., med. down to well cemented, ESS day, lt. tan 7.0' - 9.2': Mod. cemented 9.2' - 13.0': Well cemented		C	
	10.0				D	
	13.0		13.0' to 17.0' CLAY: Lean, calc., w/ rounded fine gravel, weakly cemented, v moist, tan		E	Water Level: Boring Bailed to 27.2' on 10 July 68; Left Open for additional levels Boring Checked on A.M. of 11 July 68 - Water at 16.5'; Boring Checked on A.M. of 12 July 68 - Water Also at 16.5'
	17.0		17.0' to 24.2' GRAVEL: Clayey, sandy, med. brise, rounded, sat-urated, tan		F	
	20.0				F	
	21.0				G	
515.1	24.2		24.2' to 40.0' SHALE (I) Calc., poorly bedded, highly weath., soft, moist, slaty tent joints, occ gyp seam, slakes rapidly upon exposure, yellow brown + lt. gray 26.4' - 26.5': Weath bedding plane w/ .01' gyp seam 27.7': Weath bedding plane		H	
	25.0			1		Caption "1" 26.8 - 27.7'
	27.0				Box 1	
	30.0			2		Caption "2" 31.8 - 32.8
	33.0				Box 2	
	36.0			3		Caption "3" 37.1' - 38.0'
	39.0				Box 3	
499.4	40.0		T.D. 40.0			Hole Filled w/ 0.1'



DRILLING LOG — Division: Southwestern — Installation: Fort —

1. Project: Lakeport Dam Site
2. Location: STA 111+84, 5' Left ℄
3. Drill Hole No.: USCE-C
4. Name of Driller: Newhouse
5. Direction of Hole: Vertical ☐ Inclined ☐ DEG. FROM VERT.
6. Thickness of Overburden: 30.6'
7. Depth Drilled into Rock: 14.4'
8. Total Depth of Hole: 57.0'
9. Dist. and Dir. of Hole from Center of Dam: 8FGC-5R04
10. Elevation Ground Water:
11. Elevation Top of Hole:
12. Total Core Recovery for Boring:
13. Signature of Inspector:
14. Total Number Core Boxes:
15. Elevation Ground Water:
16. Date Hole: Started, Completed
17. Elevation Top of Hole:
18. Total Core Recovery for Boring:
19. Signature of Inspector:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc.; if applicable)
	30.0		30.0-43.0 SHALE (II) Less calc. zone of Shale II., unweath., soft-mod hard, moist, dark gray, poorly bedded, slakes mod upon exposure		
	40.0		40.0-41.1' Tight 80° Joint Lined w/ Pyrite. 41.1-41.4' Tight 60° Joint Lined w/ Pyrite 41.4-51.1' Fault Zone! 43.3-50.2' 60° well developed slick.		
	50.0		50.3-51.1' Tight slick Lined w/ Calcite & Pyrite 51.1' 15° Tight slick 51.4-52.0 Depositional seam, soft, pyritic, miscbous. 52.4-52.9' 60° open Joint.		
57.0			T.D. @ 57.0'		

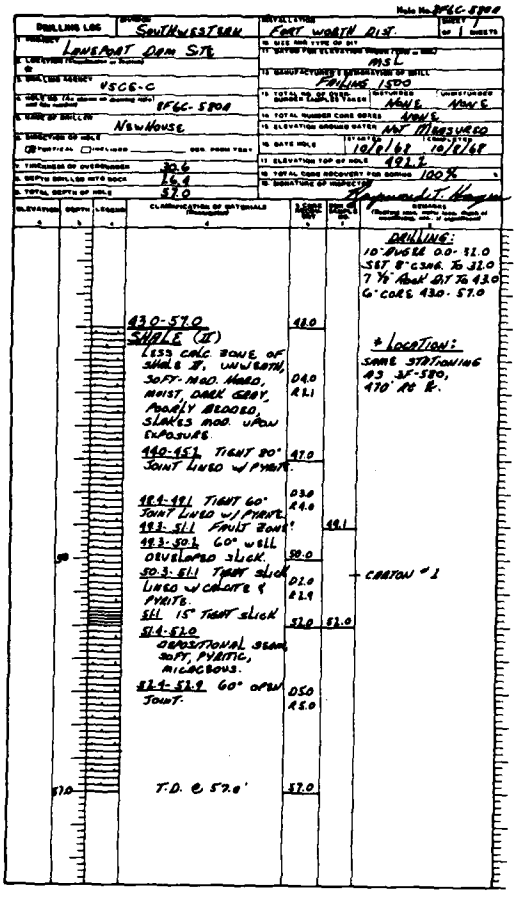


DRILLING LOG — Division: Southwestern — Installation: Fort —

1. Project: Lakeport Dam Site
2. Location: STA 111+84, 5' Left ℄
3. Drill Hole No.: USCE-C
4. Name of Driller: Newhouse
5. Direction of Hole: Vertical ☐ Inclined ☐ DEG. FROM VERT.
6. Thickness of Overburden: 18.1'
7. Depth Drilled into Rock: 36.9'
8. Total Depth of Hole: 55.0'
9. Dist. and Dir. of Hole from Center of Dam: 8FGC-5R04
10. Elevation Ground Water:
11. Elevation Top of Hole:
12. Total Core Recovery for Boring:
13. Signature of Inspector:
14. Total Number Core Boxes:
15. Elevation Ground Water:
16. Date Hole: Started, Completed
17. Elevation Top of Hole:
18. Total Core Recovery for Boring:
19. Signature of Inspector:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc.; if applicable)
	30.0		30.0-55.0 SHALE (II) Less calc. zone of Shale II., unweath., soft-mod hard, moist, dark gray, poorly bedded, slakes mod upon exposure, non-jointed.		
	50.0		53.5-53.9 Depositional seam, soft, pyritic.		
55.0			T.D. @ 55.0'		

TO ACCOMPANY FINAL FOUNDA

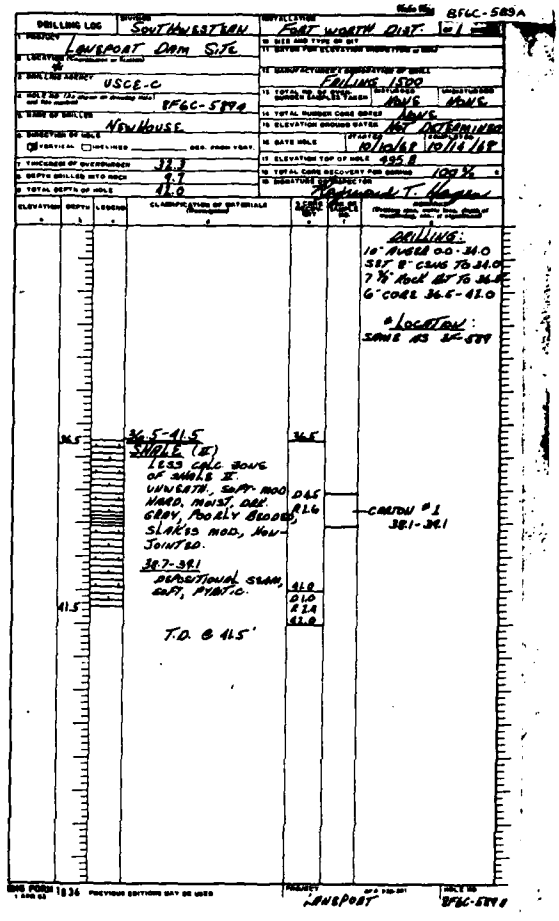


DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST. — Sheet 1 of 1 Sheets

1. PROJECT: LAKEPORT DAM SITE
2. LOCATION (Coordinates or Bearing): STA 11+82 Rt. 5' LEFT ℄
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title) and (As assigned): BFGC-588A
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 18.1
8. DEPTH DRILLED INTO ROCK: 16.9
9. TOTAL DEPTH OF HOLE: 55.0
11. DATE HOLE: STARTED 10/6/68 COMPLETED 10/14/68
12. ELEVATION TOP OF HOLE: 492.2
13. TOTAL CORE RECOVERY FOR BORING: 100%
14. SIGNATURE OF INSPECTOR: Raymond T. Hayes

15. ELEVATION GROUND WATER: NOT MEASURED
16. TOTAL NUMBER CORE BOXES: NONE
17. TOTAL NUMBER SAMPLES: DISTURBED NONE, UNDISTURBED NONE
18. SIGNATURE & DESIGNATION OF DRILLER: —
19. DIRECTION OF SHRINKAGE: —
20. TYPE BIT: —
21. TOTAL CORE RECOVERY FOR BORING: —
22. TOTAL RUN OF CORE BARREL: —

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	CORE SIZE	REMARKS
						DRILLING: 10' AUGER 0.0-32.0 SET 8" CSG TO 32.0 7⅞" ROCK BIT TO 43.0 6" CORE 43.0-57.0
	43.0		SHALE (II) LESS CALC ZONE OF SHALE II, UNWEATH, SOFT-MOD HARD, MOIST, DARK GRAY, POORLY BEDDED, SLAKES MOD. UPON EXPOSURE.	48.0		* LOCATION: SAME STATIONING AS BFGC-588, 470' RT ℄
	44.0		44.0-45.1 TIGHT 90° JOINT LINED W/ PYRITE.	47.0		
	45.1		45.1-46.1 TIGHT 60° JOINT LINED W/ PYRITE.	49.1		
	46.1		46.1-50.1 FAULT ZONE: 46.3-50.1 60° WELL DEVELOPED SLICK.	50.0		
	50.0		50.3-51.1 TIGHT SLICK LINED W/ CALCITE & PYRITE.	52.0		— CARTON #1
	51.1		51.1 15° TIGHT SLICK	53.0	53.0	
	53.0		53.4-57.0 DEPOSITIONAL SEAM, SOFT, PYRITIC, MICACEOUS.			
			52.4-52.9 60° OPEN JOINT.	55.0		
	57.0		T.D. @ 57.0'	57.0		

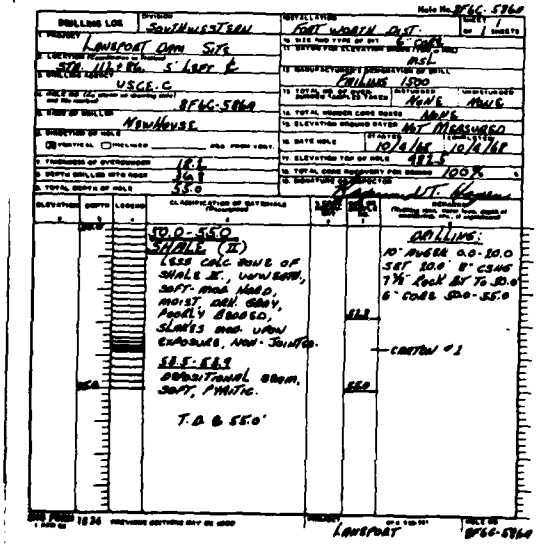


DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST. — Sheet 1 of 1 Sheets

1. PROJECT: LAKEPORT DAM SITE
2. LOCATION (Coordinates or Bearing): STA 11+82 Rt. 5' LEFT ℄
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title) and (As assigned): BFGC-588A
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 32.3
8. DEPTH DRILLED INTO ROCK: 9.7
9. TOTAL DEPTH OF HOLE: 42.0
11. DATE HOLE: STARTED 10/10/68 COMPLETED 10/14/68
12. ELEVATION TOP OF HOLE: 495.8
13. TOTAL CORE RECOVERY FOR BORING: 100%
14. SIGNATURE OF INSPECTOR: Raymond T. Hayes

15. ELEVATION GROUND WATER: NOT ENCOUNTERED
16. TOTAL NUMBER CORE BOXES: NONE
17. TOTAL NUMBER SAMPLES: DISTURBED NONE, UNDISTURBED NONE
18. SIGNATURE & DESIGNATION OF DRILLER: —
19. DIRECTION OF SHRINKAGE: —
20. TYPE BIT: —
21. TOTAL CORE RECOVERY FOR BORING: —
22. TOTAL RUN OF CORE BARREL: —

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	CORE SIZE	REMARKS
						DRILLING: 10' AUGER 0.0-34.0 SET 8" CSG TO 34.0 7⅞" ROCK BIT TO 36.5 6" CORE 36.5-41.0
	36.5		SHALE (II) LESS CALC ZONE OF SHALE II, UNWEATH., SOFT-MOD HARD, MOIST, DRK GRAY, POORLY BEDDED, SLAKES MOD, NON-JOINTED.	36.5		* LOCATION: SAME AS BFGC-589
	38.1		38.1-38.7 DEPOSITIONAL SEAM, SOFT, PYRITIC.	41.0		— CARTON #1 38.1-38.1
	41.5		T.D. @ 41.5'	41.0		



DRILLING LOG — SOUTHWESTERN — FORT WORTH DIST. — Sheet 1 of 1 Sheets

1. PROJECT: LAKEPORT DAM SITE
2. LOCATION (Coordinates or Bearing): STA 11+82 Rt. 5' LEFT ℄
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title) and (As assigned): BFGC-588A
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 18.1
8. DEPTH DRILLED INTO ROCK: 16.9
9. TOTAL DEPTH OF HOLE: 55.0
11. DATE HOLE: STARTED 10/6/68 COMPLETED 10/14/68
12. ELEVATION TOP OF HOLE: 492.2
13. TOTAL CORE RECOVERY FOR BORING: 100%
14. SIGNATURE OF INSPECTOR: J.T. Hayes

15. ELEVATION GROUND WATER: NOT MEASURED
16. TOTAL NUMBER CORE BOXES: NONE
17. TOTAL NUMBER SAMPLES: DISTURBED NONE, UNDISTURBED NONE
18. SIGNATURE & DESIGNATION OF DRILLER: —
19. DIRECTION OF SHRINKAGE: —
20. TYPE BIT: —
21. TOTAL CORE RECOVERY FOR BORING: —
22. TOTAL RUN OF CORE BARREL: —

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	CORE SIZE	REMARKS
						DRILLING: 10' AUGER 0.0-10.0 SET 10.0' 8" CSG 7⅞" ROCK BIT TO 50.0 6" CORE 50.0-55.0
	50.0		SHALE (II) LESS CALC ZONE OF SHALE II, UNWEATH, SOFT-MOD HARD, MOIST, DRK GRAY, POORLY BEDDED, SLAKES MOD. UPON EXPOSURE, NON-JOINTED.	53.2		— CARTON #1
	54.9		54.9-54.9 DEPOSITIONAL SEAM, SOFT, PYRITIC.	55.0		
	55.0		T.D. @ 55.0'			

NO.	ACTION	DATE	DESCRIPTION OF REVISION
AM-0001		28 NOV 75	NEW SHEET ADDED

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: ——— DRAWN BY: ——— CHECKED BY: ——— SUBMITTED BY: ——— ENGINEER:

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
BAGC-588, BFGC-588A, 588A & 589A

INV NO DACW63-76-B-0017 DATED NOV. 75
CONTR NO ———
DRAWING NUMBER 64
SHEET NO. ——— OF ———

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 109

Hole No. 8A6C-593

DRILLING LOG — Division: SOUTHWESTERN — Installation: FORT WORTH DIST — Sheet 1 of 4 Sheets

1. Project: LANEPORT
2. Location: —
3. Drilling Agency: USCE-C
4. Hole No.: 8A6C-593
5. Name of Driller: NEWHOUSE / CLEVELAND
6. Direction of Hole: X Vertical ☐ Inclined — Deg. from vert.
7. Thickness of Overburden: 33.0
8. Depth Drilled into Rock: 41.0
9. Total Depth of Hole: 75.0
10. Size and Type of Bit: 8" AUGER & 6" CORE
11. Datum for Elevation: —
12. Manufacturer's Designation of Drill: FAILING 1500
13. Total No. of Overburden Samples Taken: Disturbed 8 SPT; Undisturbed 46 VST
14. Total Number Core Boxes: 6
15. Elevation Ground Water: 10.9 +
16. Date Hole: Started 3/27/69; Completed 4/1/69
17. Elevation Top of Hole: 496.6
18. Total Core Recovery for Boring: 100%
19. Signature of Inspector: Richard T. Kayser

Elevation	Depth	Legend	Classification of Materials	Sample No.	Blow Counts	Remarks
			0.0-1.8 CLAY FAT, SANDY, MED. STIFF, MOIST, DARK BROWN.		A	DRILLING: 8" AUGER 0.0-31.0 SET CSNG TO 31.0 GRAVEL BAIL 6" CORE (DIAMOND) 31.0-34.6
			1.8-18.2 CLAY LEAN, SL. SANDY, CALCAREOUS w/ LIME NODS, MOIST, TAN. 1.8-12.2 STIFF		1.8 B	DRIVE CSNG. TO 34.0 6" CORE 34.6-75.0
					5.6 C	* WATER LEVEL: ENCOUNTERED WATER @ APPROX. 1.30 WHILE AUGERING WATER ROSE TO 10.9' BEFORE SETTING CASING. (3/27/69).
					6.3 D	NOTE: PRODUCTION OF WATER IN INTERVAL FM 1.30' - 31.5 IS ESTIMATED TO BE GREATER THAN THAT ENCOUNTERED IN 8A6C-594 OR 8A6C-595.
	10				10.8 E	
			12.2-18.2 MED. STIFF		13.2 F	
			18.2-23.0 CLAY V. SANDY, SOFT, WET, TAN.		18.2	
	20				G	
			23.0-30.6 CLAYEY SAND / SANDY CLAY LOOSE / SOFT, SATD. TAN, SCATT. GRAVELS.		23.0 H	
			17.4-30.6 SOFT - V. SOFT, AUGER PENETRATES RAPIDLY, SL MORE GRAVEL NO SAMPLE (WASHES OFF AUGER).		17.4	
	30		30.6-31.5 GRAVEL HEAVY, SATD.		31.0	
			31.5-33.0 CONGLOMERATE (NO SAMPLE)		33.0	NOTE: ATTEMPTED TO CORE CONGLOMERATE FROM 31.0 WITH DIAMOND BIT W/ NO RECOVERY. AUGER PENETRATED CONGLOMERATE FM 31.5-32.0 WITH DIFFICULTY.
			33.0-61.3 CALCAREOUS SHALE WEATH. TO 34.5, MOD HARD, MOIST, GRAY, V. CALC., POORLY BEDDED, NON-JOINTED EXCEPT AS INDICATED	D1.6 R1.5		
			34.5-37.8 FEW TIGHT STAINED JOINTS	34.6 Box #1 D4.1 R3.8		
			36.3 45° JOINT			
			37.1-37.8 60° STAINED WELL DEV. SLICK LINED W/ PYRITE		#37.8	
457.6	40		37.9-39.0 DK. SEAM SOFT, PYRITIC, SLICK'D	39.0		

Hole No. 8A6C-593

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 3 of 4 Sheets

1. Project: LANEPORT
2. Location: —
3. Drilling Agency: —
4. Hole No.: 8A6C-593
5. Name of Driller: —
6. Direction of Hole: ☐ Vertical ☐ Inclined — Deg. from vert.
7. Thickness of Overburden: —
8. Depth Drilled into Rock: —
9. Total Depth of Hole: —
10. Size and Type of Bit: —
11. Datum for Elevation: —
12. Manufacturer's Designation of Drill: —
13. Total No. of Overburden Samples Taken: Disturbed —; Undisturbed —
14. Total Number Core Boxes: —
15. Elevation Ground Water: —
16. Date Hole: Started —; Completed —
17. Elevation Top of Hole: —
18. Total Core Recovery for Boring: —
19. Signature of Inspector: —

Elevation	Depth	Legend	Classification of Materials	Sample No.	Blow Counts	Remarks
					D4.0 R0.6 Box #2	NOTE: SHALE FROM 44.1-53.5 WAS WRAPPED IN ALUMINUM FOIL & MUSLIN AND PRESERVED IN PARAFFIN.
					41.5 D1.0 R4.6 Box #3	
					44.0 D4.0 R4.1	Box #1 44.1-49.0
	50				48.0 D4.0 R3.8	Box #2 49.0-53.5
					52.0 D4.0 R4.3	
					55.7 56.0 D4.5 R4.5 Box #4	
	60				60.5	60.7
			61.3-74.9 SANDY CLAY SHALE SANDY, CALC, PETROLIFEROUS, SOFT-MOD HARD, MOIST, DARK GRAY, POORLY BEDDED, NON-JOINTED SLAKES MOD UPON EXPOSURE. SAND OCCURS IN SMALL PETROLIFEROUS LENSES. 61.3-63.8 V. FOSS	D4.5 R4.6 Box #5		NOTE: SHALE FROM 64.8-73.9 WAS WRAPPED IN ALUMINUM FOIL & MUSLIN AND PRESERVED IN PARAFFIN.
					64.8 D4.5 R3.7	Box #3 64.8-69.4
	70				69.5 D1.5 R3.4	Box #4 69.4-73.9
					73.0 D3.0 R3.0	
					73.4 Box #6 74.9	
74.9			T.D @ 74.9		75.0	

Hole No. 8A6C-593

DRILLING LOG — Division: SOUTHWESTERN — Sheet 4 of 4 Sheets

1. Project: LANEPORT
2. Location: —
3. Drilling Agency: USCE-C
4. Hole No.: 8A6C-593
5. Name of Driller: NEWHOUSE
6. Direction of Hole: X Vertical ☐ Inclined — Deg. from vert.
7. Thickness of Overburden: 31.9
8. Depth Drilled into Rock: 28.1
9. Total Depth of Hole: 60.0

Elevation	Depth	Legend	Classification of Materials
			0.0-4.6 CLAY FAT, MED STIFF, MOIST, DRK
			4.6-12.8 CLAY LEAN, CALC. LIME NODS, STIFF, MOIST,
	10		
			12.8-18.0 CLAY SL SANDY, LIME NODS, STIFF, MOIST, CALC
			18.0-26.8 GRAVEL 18.0-23.0 V. SANDY, MED. MOIST, TAN.
	20		
			23.0-26.8 (LESS CLAY THAN ABOVE DENSE, MOIST TAN
			26.8-31.9 GRAVEL MED DENSE, TAN
	30		
			31.9-59.5 CALCAREOUS V. CALC. MOD. MOIST, GRAY, NON-JOINTED AS INDICATED W/ 6 TO 33.4, TIGHT JOINTS
			37.1-38.9 V
455.4	40		39.1-39.2 DK SEAM MICA PYRITIC, SL

TO ACCOMPANY FINAL FO

Hole No. 8A6C-594

DRILLING LOG	DIVISION SOUTHWESTERN	INSTALLATION FORT WORTH DIST.	SHEET 1 OF 3 SHEETS

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title and file number): 8A6C-594
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 31.9
8. DEPTH DRILLED INTO ROCK: 28.1
9. TOTAL DEPTH OF HOLE: 60.0
10. SIZE AND TYPE OF BIT: 8" AUGER, 6" CORE
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 7 JAR; UNDISTURBED NONE
14. TOTAL NUMBER CORE BOXES: 6
15. ELEVATION GROUND WATER: #
16. DATE HOLE: STARTED 3/20/69; COMPLETED 3/21/69
17. ELEVATION TOP OF HOLE: 455.1
18. TOTAL CORE RECOVERY FOR BORING: 100 %
19. SIGNATURE OF INSPECTOR: Raymond T. Hagan

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0-46 CLAY FAT, MED. STIFF, MOIST, DRK BRN		A	DRILLING: 10" AUGER 0.0-32.8 SET 32.8, 8" CSNG 6" AUGER TO 33.9 (CLEANOUT) 6" CORE 33.9-60.0
			46-128 CLAY LEAN, CALC. W/ NUMEROUS LIME NODS, MED. STIFF, MOIST, TAN		46 B	* WATER LEVEL: ENCOUNTERED WATER AT 26.8 WHILE AUGERING. PULLED CASING ON 3/21/69 AND LEFT HOLE OPEN FOR WATER MEASUREMENTS. DATE: W.L. 3/24/69 21.8; 3/25/69 22.5; 3/27/69 23.7; 3/28/69 24.0; 4/1/69 25.3
	10				96 C	
			128-180 CLAY SL. SANDY, SCATT. LIME NODS, MED. STIFF, MOIST, TAN CALC		128 D	
			180-268 GRAVEL 180-230 V CLAYEY, SANDY, MED. DENSE, MOIST, TAN		180 E	
	20		230-268 CLAYEY (LESS CLAY BINDER THAN ABOVE), MED. DENSE, MOIST-WET, TAN		230 F	
			268-319 GRAVEL MED. DENSE, SAT'D., TAN		268 G	
	30		319-595 CALCAREOUS SHALE V CALC, MOD HARD, MOIST, GRAY, MASSIVE, NON-JOINTED (EXCEPT AS INDICATED), WEATH & STAINED TO 33.4, STAINED TIGHT JOINTS TO 35.1	33.9 D3.7 R2.9	319 33.9 Box #1	
			372-389 VERT JOINT	37.6		
455.4	40		392-397 DEPOSITIONAL SEAM, MICACEOUS, PYRITIC, SLICK'D.	D3.4 R3.4	387	CARTON #1 387-397

Hole No. 8A6C-594

DRILLING LOG	DIVISION SWD	INSTALLATION FWD	SHEET 3 OF 3 SHEETS

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY:
4. HOLE NO. (As shown on drawing title and file number): 8A6C-594
5. NAME OF DRILLER:
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE:
10. SIZE AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL:
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED; UNDISTURBED
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED; COMPLETED
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
				41.0 D4.0 R4.0	BOX #2	
					44.2	
				45.0 D3.8 R3.7	BOX #3	
				48.8	48.9	
	50			D4.2 R3.9	BOX #4	
				53.0	53.7	
				D4.0 R4.4	BOX #5	
					56.2	
				57.0 D3.0 R3.3	BOX #6	
	59.5		TD @ 59.5	60.0	59.5	

DO NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLH
DRAWN BY:
CHECKED BY: JLH

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A6C-593 & 8A6C-594
VOLUME - II

SUBMITTED BY: [signature]
ENGINEER

INVITATION NO.
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO. 65 OF 68
SEQUENCE NO. 65

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 110

Hole No. BA6C-595

DRILLING LOG — DIVISION SOUTHWESTERN — INSTALLATION FORT WORTH DIST. — SHEET 1 of 4 SHEETS

1. PROJECT: LAVEPORT
2. LOCATION (Coordinates or Station): 8" CORE
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title) AND (As shown on transmittal): BA6C-595
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 17.5
8. DEPTH DRILLED INTO ROCK: 41.8
9. TOTAL DEPTH OF HOLE: 70.3
10. DIST. AND TYPE OF BIT: 7 7/8" RYERSON
11. DATUM FOR ELEVATION SHOWN (MSL or Assumed): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF CORES: DISTURBED 6 UNDISTURBED 4
14. TOTAL NUMBER CORE BOXES: 9
15. ELEVATION GROUND WATER: STARTED 3/3/69 COMPLETED 3/24/69
16. DATE HOLE: STARTED 3/3/69 COMPLETED 3/24/69
17. ELEVATION TOP OF HOLE: 441.9
18. TOTAL CORE RECOVERY FOR BORING: 100%
19. SIGNATURE OF INSPECTOR: Raymond T. Nagan, Jr.

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RUN	DEPTH	REMARKS (Drilling time, water loss, depth of weathering, etc., if encountered)
			0.0-2.8 CLAY FAT, MED. STIFF, MOIST, DARK BRN.		A 2.8	DRILLING: 10" AUGER 0.0-19.5 SET 8" CSNG TO 19.5 6" CORE 19.5-70.3
			2.8-22.1 CLAY LEAN, CALC., TAN 18-22 NUMEROUS LIME NODS, MED. STIFF, MOIST.		B 7.8	* WATER LEVEL: ENCOUNTERED SMALL AMOUNT OF WATER IN INTERVAL FR. 22.1-27.5 (GRAVEL) WHILE AUGERING. PULLED CSNG ON 3/16/69, AND LEFT HOLE OPEN FOR WATER MEASUREMENTS. HOLE CAVED-IN ON 3/24/69
	40				C	
			11.8-12.8 SL. SANDY, STIFF, MOIST.		12.8	
					D	
			17.8-22.1 MED. STIFF, MOIST.		17.8	
	50				E	
			22.1-27.5 GRAVEL V. CLAYEY, MED. DENSE, MOIST-WET, TAN.		22.1	
					F	
			27.5-63.6 CALCAREOUS SHALE V. CALC, MOD. HARD, MOIST, GRAY, MASSIVE, UNWEATH, NON-JOINTED (EXCEPT AS INDICATED).	29.5	27.5	
	30			D4.5 R4.0	Box #1	
			33.5 30° OPEN JOINT	34.0	33.5	
			34.4-36.7 HIGHLY SLICK'D, NUMEROUS WELL DEV SLICKS - PREDOM HIGH ANGLE (75°-80°). FAULT	D4.5 R4.2	Box #2	
					37.7	
				38.5		
	40					

Hole No. BA6C-595

DRILLING LOG — DIVISION SWD — INSTALLATION FWD — SHEET 3 of 4 SHEETS

1. PROJECT: LAVEPORT
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY:
4. HOLE NO. (As shown on drawing title) AND (As shown on transmittal): BA6C-595
5. NAME OF DRILLER:
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE:
10. DIST. AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (MSL or Assumed):
12. MANUFACTURER'S DESIGNATION OF DRILL:
13. TOTAL NO. OF CORES: DISTURBED UNDISTURBED
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER: STARTED COMPLETED
16. DATE HOLE: STARTED COMPLETED
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RUN	DEPTH	REMARKS (Drilling time, water loss, depth of weathering, etc., if encountered)
				03.8 R4.0	Box #3	
450.1			41.5-41.8 DEPOSITIONAL SEAM, MICACEOUS.	41.3	41.4	
				D4.0 R3.9	Box #4	
			45.8 10° JOINT			
			46.1 10° JOINT	46.3		
			46.1-47.1 70° SLICK LINED W/ PYRITE.		47.1	
				D4.0 R3.4	Box #5	
			49.0 10° JOINT			
	50			50.3		
					51.5	
				D4.0 R4.3	Box #6	
				54.3		
				D4.0 R4.7	56.2	
				58.3	Box #7	
	60			D4.0 R3.7	60	
				62.3	Box #8	
			63.6-69.5 SANDY CLAY SHALE MOD HARD, MOIST, DK GRAY, POORLY BEADED, SANDY, CALC, PETROLIFEROUS, FOSS.	D4.0 R3.4	65.1	
			63.6-65.1 HIGHLY FOSS	66.3	Box #9	
			65.1-69.5 SAND OCCURS IN SMALL PETROLEUM SATD. LENSES.	D4.0 R4.4		
695			T.D. @ 69.5		69.5	
				70.3		

TO ACCOMPANY FINAL FOU

NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-595

VOLUME - II

SUBMITTED BY
ENGINEER

INVITATION NO
SPECIFICATIONS DATED
DRAWING NUMBER
SHEET NO 66 OF 68
SEQUENCE NO 66

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 111

Hole No. 846C-596

DRILLING LOG — Division: SOUTHWESTERN — Installation: FORT WORTH DIST — Sheet 1 of 4 sheets

1. Project: LANEPORT
2. Location: [illegible]
3. Drilling Agency: USCE-C
4. Hole No. (As shown on drawing title): 846C-596
5. Name of Driller: CLEVELAND
6. Direction of Hole: ☒ Vertical ☐ Inclined ___ deg. from vert.
7. Thickness of Overburden: 4.6
8. Depth Drilled into Rock: 60.9
9. Total Depth of Hole: 65.4
10. Size and Type of Bit: 8" AUGER, 6" CORE
11. Datum for Elevation Shown (ft. msl): [illegible]
12. Manufacturer's Designation of Drill: FAILING 1500
13. Total No. of Overburden Samples Taken: Undisturbed: 7 — Disturbed: NONE
14. Total Number Core Boxes: [illegible]
15. Elevation Ground Water: NOT MEASURED
16. Date Hole: Started: 4/2/69 — Completed: 4/2/69
17. Elevation Top of Hole: 624.4
18. Total Core Recovery for Boring: 100 %
19. Signature of Inspector: Raymond T. Hayes

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
	0.0		0.0-2.5 CLAY FAT, MED. STIFF, MOIST - WET, GRAY, SCATT. GRAVELS.		A	DRILLING: 8" AUGER 0.0 - 51.7 6" CORE 51.7 - 65.4
	2.5		2.5-4.6 CLAY FAT, SL. SANDY, FEW SCATT. GRAVELS, CALC., GYPSIFEROUS, MED. STIFF, MOIST, YELLOW - BROWN.		B	NOTE: WATER LEVEL NOT MEASURED. HOLE BACKFILLED UPON COMPLETION.
	4.6		4.6-64.8 SHALE (I) 4.6-54.8 WEATH., CALC., SOFT, MOIST, YELLOW - BRN & LT. GRAY, NUMEROUS TIGHT JOINTS.		C	
	16.0		16.0-54.8 CONTAINS SECONDARY GYPSUM.		D	
	35.0				E	
	55.0					

Hole No. 846C-596

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 3 of 4 sheets

1. Project: LANEPORT
2. Location: [illegible]
3. Drilling Agency: [illegible]
4. Hole No. (As shown on drawing title): 846C-596
5. Name of Driller: [illegible]
6. Direction of Hole: ☐ Vertical ☐ Inclined ___ deg. from vert.
7. Thickness of Overburden: [illegible]
8. Depth Drilled into Rock: [illegible]
9. Total Depth of Hole: [illegible]
10. Size and Type of Bit: [illegible]
11. Datum for Elevation Shown (ft. msl): [illegible]
12. Manufacturer's Designation of Drill: [illegible]
13. Total No. of Overburden Samples Taken: Undisturbed: [illegible] — Disturbed: [illegible]
14. Total Number Core Boxes: [illegible]
15. Elevation Ground Water: [illegible]
16. Date Hole: Started: [illegible] — Completed: [illegible]
17. Elevation Top of Hole: [illegible]
18. Total Core Recovery for Boring: [illegible]
19. Signature of Inspector: [illegible]

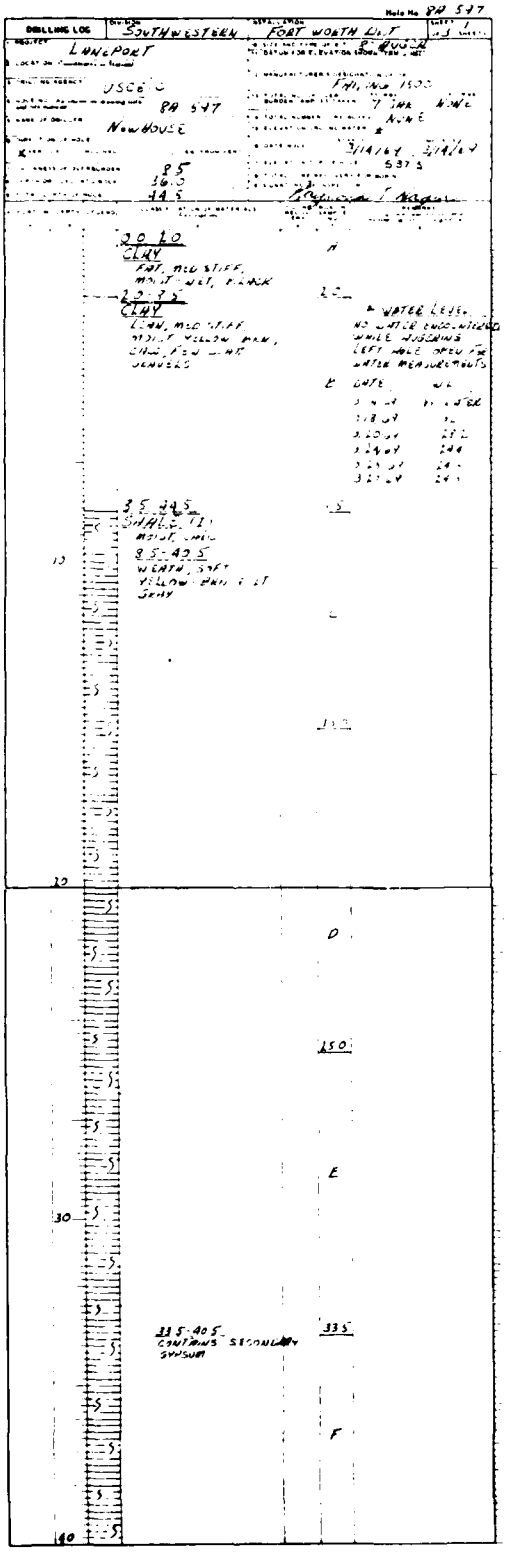
Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
					F	
	45.0		45.0-54.8 SL. LESS WEATH., SL. FRMR.			
					G	
	50					
	51.7			51.7	51.7	
			54.8-64.8 UNWEATH., CALC., SOFT-MOD. HARD, MOIST, DARK GRAY, POORLY BEDDED, NON-JOINTED.	04.3 R3.8	54.8	NOTE: CORE FROM 54.8-59.2 AND 60.7-64.8 IS WRAPPED IN ALUMINUM FOIL AND UNBLEACHED MUSLIN AND PRESERVED IN PARAFFIN.
	57.0				BOX #1	
				04.4 R4.2	59.2	
	60				60.7	
				01.4		
					BOX #2	
				04.0 R4.1		
	64.8		T.D. @ 64.8'		64.8	
	65.4					

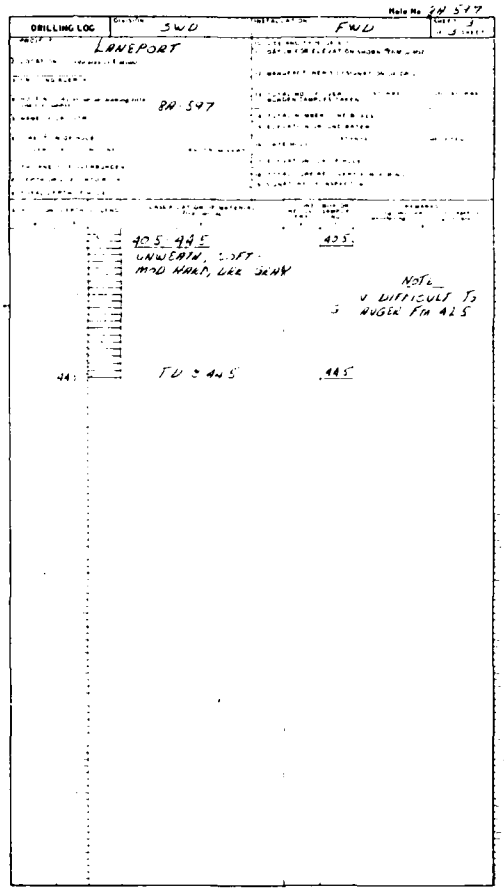
DRILLING LOG — Division: SOUTHWESTERN — Installation: FORT

1. Project: LANEPORT
2. Location: [illegible]
3. Drilling Agency: USCE-C
4. Hole No. (As shown on drawing title): BB 547
5. Name of Driller: NEWHOUSE
6. Direction of Hole: [illegible]
7. Thickness of Overburden: 8.5
8. Depth Drilled into Rock: 36.5
9. Total Depth of Hole: 44.5

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks
	0.0		0.0-2.0 CLAY FAT, MED. STIFF, MOIST - WET, F. BLACK			
	2.0		2.0-8.5 CLAY LEAN, MED. STIFF, MOIST, YELLOW BRN., CHKS., FEW ... NOT. GRAVELS			
	8.5		8.5-40.5 SHALE (I) MOIST, UNWEATH., SOFT YELLOW - BRN & LT. GRAY			
	10					
	30					
	40					

TO ACCOMPANY FINAL FOUNDA





REV NO	ACTION	DATE	DESCRIPTION OF REVISION

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

DESIGNED BY: JLM
DRAWN BY:
CHECKED BY: JLM
SUBMITTED BY:
ENGINEER:

LANEPORT LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS

8A6C-596 & 8A-597

VOLUME - II

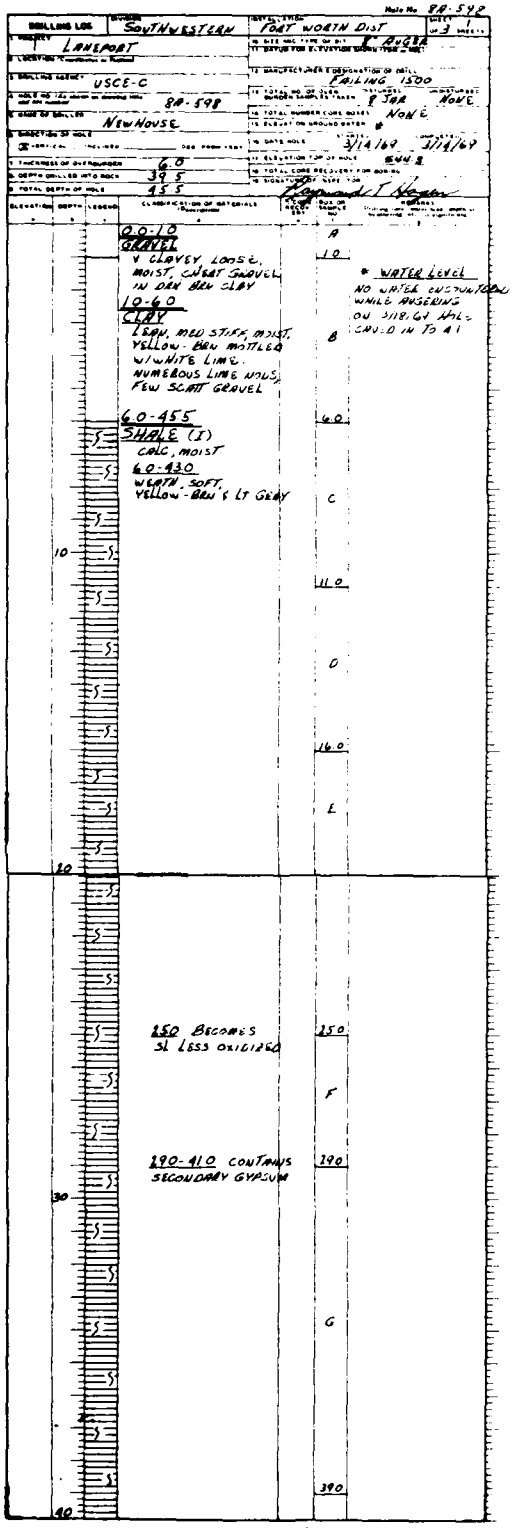
INVITATION NO DACW63-[illegible]
SPECIFICATIONS DATED: MAY
DRAWING NUMBER
SHEET NO. 67 OF 68
SEQUENCE NO. 67

A

2

ACCOMPANY FINAL FOUNDATION REPORT PLATE 112

CORPS OF ENGINEERS



Hole No. 8A-598

DRILLING LOG — DIVISION: SOUTHWESTERN — INSTALLATION: FORT WORTH DIST — SHEET 1 OF 3 SHEETS

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station): USCE-C
3. DRILLING AGENCY: FAILING 1500
4. HOLE NO. (As shown on drawing title and file number): 8A-598
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: VERTICAL / INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 6.0
8. DEPTH DRILLED INTO ROCK: 39.5
9. TOTAL DEPTH OF HOLE: 45.5
10. SIZE AND TYPE OF BIT: 8" AUGER
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: FAILING 1500
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 8 JAR; UNDISTURBED NONE
14. TOTAL NUMBER CORE BOXES: NONE
15. ELEVATION GROUND WATER: #
16. DATE HOLE: STARTED 3/14/69; COMPLETED 3/14/69
17. ELEVATION TOP OF HOLE: 544.8
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR: Raymond T. Hogan

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	BOX OR SAMPLE NO.	REMARKS
			0.0-1.0 GRAVEL V CLAYEY, LOOSE, MOIST, CHERT GRAVEL IN DRK BRN CLAY	A	
			1.0-6.0 CLAY LEAN, MED STIFF, MOIST, YELLOW-BRN MOTTLED W/WHITE LIME. NUMEROUS LIME NODS, FEW SCATT GRAVEL	1.0 B	* WATER LEVEL NO WATER ENCOUNTERED WHILE AUGERING ON 3/18/69 HOLE CAVED IN TO 4.1
			6.0-45.5 SHALE (I) CALC, MOIST	6.0	
			6.0-43.0 WEATH, SOFT, YELLOW-BRN & LT GRAY	C	
	10			11.0 D	
				16.0 E	
	20				
			25.0 BECOMES SL LESS OXIDIZED	25.0 F	
			29.0-41.0 CONTAINS SECONDARY GYPSUM	29.0 G	
	30				
	40			39.0	

Hole No. 8A-598

DRILLING LOG — DIVISION: SWD — INSTALLATION: FWD — SHEET 3 OF 3 SHEETS

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY:
4. HOLE NO. (As shown on drawing title and file number): 8A-598
5. NAME OF DRILLER:
6. DIRECTION OF HOLE: VERTICAL / INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE:
10. SIZE AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL:
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED; UNDISTURBED
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED; COMPLETED
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	BOX OR SAMPLE NO.	REMARKS
			43.0-45.5 UNWEATH, SOFT-MOD HRD, DRK GRAY	H	NOTE V DIFFICULT TO AUGER FM 42'
	45.5		TD @ 45.5	45.5	

DRILLING LOG — DIVISION: SOUTHWESTERN — INSTALLATION: FORT

1. PROJECT: LANEPORT
2. LOCATION (Coordinates or Station): STA 94+10, 94' LEFT ℄ #
3. DRILLING AGENCY: USCE-C
4. HOLE NO. (As shown on drawing title and file number): 8A-599
5. NAME OF DRILLER: NEWHOUSE
6. DIRECTION OF HOLE: VERTICAL / INCLINED ___ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 31.8
8. DEPTH DRILLED INTO ROCK: 1.6
9. TOTAL DEPTH OF HOLE: 33.4

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)
			0.0-3.5 CLAY SANDY, MED STIFF, MOIST, DRK BROWN.
			3.5-6.0 CLAY SANDY, CALC, NUMEROUS LIME NODS, STIFF, MOIST, MED BRN.
			6.0-17.3 CLAY V CALC, V STIFF, DRY-MOIST, TAN, LOW PLAS, WEAKLY CEM. FM 8.0'. LIME NODS FM 13.0'
	10		
			17.3-27.0 GRAVEL V CLAYEY, SANDY, MED. DENSE, MOIST, TAN
	20		22.0 WET
			27.0-31.8 GRAVEL MED DENSE, SAT'D SL. SANDY
	30		31.8-33.4 SHALE II WEATH.

TO ACCOMPANY FINAL FOUND

8A-598

Hole No. 8A-599

DRILLING LOG	DIVISION SOUTHWESTERN	INSTALLATION FORT WORTH DIST	SHEET 1 of 2 SHEETS
1. PROJECT LANSPORT		10. SIZE AND TYPE OF BIT 10" AUGER	
2. LOCATION (Coordinates or Station) STA 94+10, 94' LEFT ℄ *		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY USCE-C		12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 1500	
4. HOLE NO. (As shown on drawing title and file number) 8A-599		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED NONE; UNDISTURBED NONE	
5. NAME OF DRILLER NEWHOUSE		14. TOTAL NUMBER CORE BOXES NONE	
6. DIRECTION OF HOLE: VERTICAL / INCLINED ___ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
		16. DATE HOLE: STARTED 3/19/69; COMPLETED 3/19/69	
7. THICKNESS OF OVERBURDEN 31.8		17. ELEVATION TOP OF HOLE 495.1	
8. DEPTH DRILLED INTO ROCK 1.6		18. TOTAL CORE RECOVERY FOR BORING	
9. TOTAL DEPTH OF HOLE 33.4		19. SIGNATURE OF INSPECTOR Raymond T Hagen	

ELEVATION	DEPTH	LOGGING	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 6 INCHES	DIA. OF SAMPLE	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0-3.5 CLAY SANDY, MED. STIFF, MOIST, DRK. BROWN.			DRILLING: 10" AUGER 0.0-32.4 SET 8" CSNG TO 31.8 6" AUGER TO 33.4 GRAVEL BAIL. NOTE: BOTTOM 10' CASING IS SLOTTED.
			3.5-6.0 CLAY SANDY, CALC, NUMEROUS LIME NODS, STIFF, MOIST, MED. BRN.			WATER LEVEL: ENCOUNTERED WATER @ 27.0' WHILE AUGERING. DATE: W.L. 3/19/69 27.2; 3/20/69 27.2; 3/24/69 27.2; 3/25/69 27.2
			6.0-17.3 CLAY V. CALC, V. STIFF, DRY-MOIST, TAN, LOW PLAS, WEAKLY CEM. FM 8.0'. LIME NODS FM 13.0'			PUMP TEST: USED JET PUMP. SET BOTTOM INTAKE AT 31.0'. PUMPED WATER FOR 6 HOURS 40 MIN. AT THE RATE OF 10 GPM (MAX OUTPUT OF PUMP). WATER LEVEL BEFORE, DURING, AND AFTER PUMPING REMAINED @ 27.2.
	10					* LOCATION: 94' LEFT DAM ℄ IN LINE WITH 8A6C-593, 594 & 595. ELEVATION: SAME AS 8A6C-594
			17.3-27.0 GRAVEL V. CLAYEY, SANDY, MED. DENSE, MOIST, TAN.			
	20		22.0' WET			
			27.0-31.8 GRAVEL MED. DENSE, SAT'D. SL. SANDY.			
	30		31.8-33.4 SHALE II WEATH.			

2

SYM.	NO.	ACTION	DATE	DESCRIPTION OF REVISION
	AM#0001		28 NOV 75	NEW SHEET ADDED

U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

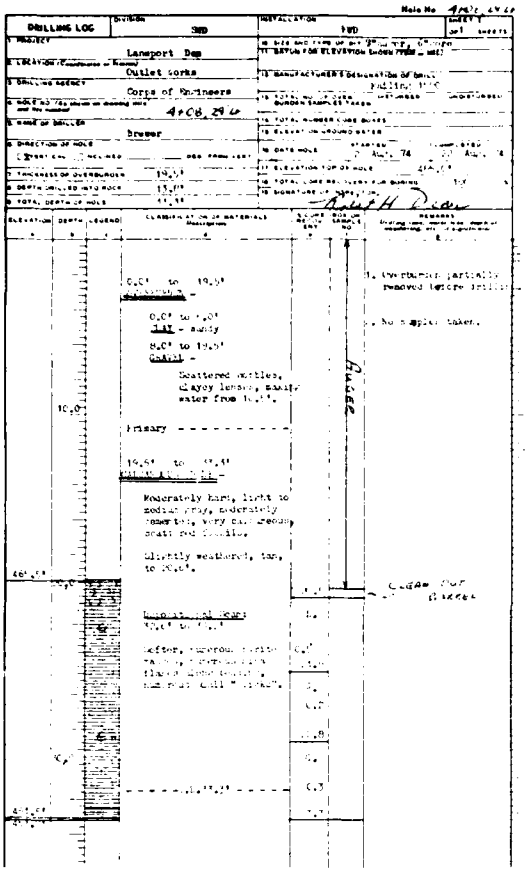
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ENGINEER:

GRANGER DAM AND LAKE
SAN GABRIEL RIVER, TEXAS

LOGS OF BORINGS
8A-598 & 8A-599

INV. NO. DACW63-76-B-0012 DATED: NOV. 75
CONTR NO
DRAWING NUMBER
SHEET NO. OF
GB

TO ACCOMPANY FINAL FOUNDATION REPORT PLATE 113

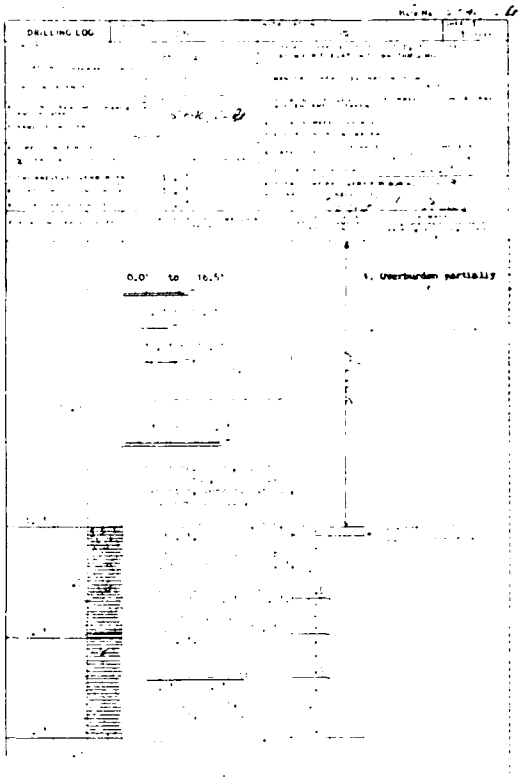


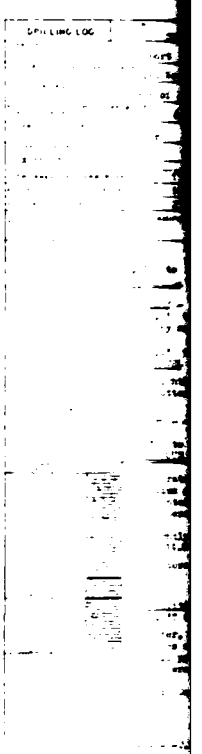
DRILLING LOG	DIVISION SWD	INSTALLATION FWD	Hole No. 4+08.29 L	SHEET 1 of 1 SHEETS
1. PROJECT: Lansport Dam		10. SIZE AND TYPE OF BIT: 8" auger, 6" core		
2. LOCATION (Coordinates or Station): Outlet Works		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY: Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500		
4. HOLE NO. (As shown on drawing title and file number): 4+08.29 L		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED		
5. NAME OF DRILLER: Brewer		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE: VERT. / INCLINED ___ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN: 19.5'		16. DATE HOLE: STARTED 2 Aug. 74; COMPLETED 20 Aug. 74		
8. DEPTH DRILLED INTO ROCK: 13.0'		17. ELEVATION TOP OF HOLE: 494.0'		
9. TOTAL DEPTH OF HOLE: 33.5'		18. TOTAL CORE RECOVERY FOR BORING: 100 %		
		19. SIGNATURE OF INSPECTOR: Ralph H. Dean		

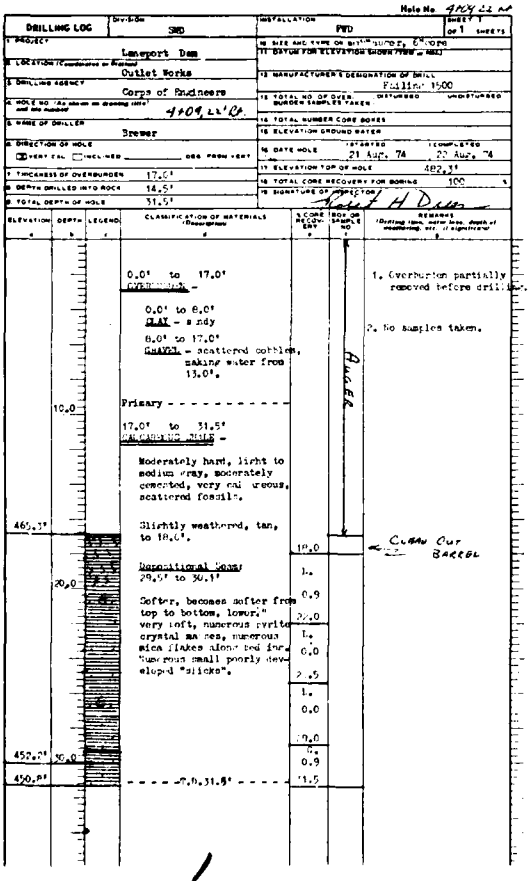
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0.0' to 19.5' OVERBURDEN - 0.0' to 8.0' CLAY - sandy; 8.0' to 19.5' GRAVEL - Scattered cobbles, clayey lenses, making water from 16.5'.			1. Overburden partially removed before drilling. 2. No samples taken.
	10.0		Primary - - - - - - - - - -			
			19.5' to 33.5' [illegible] - Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils. Slightly weathered, tan, to 20.0'.			
465.5'	20.0		Depositional Seam: 29.5' to 30.1' Softer, numerous pyrite [illegible] flakes along bed [illegible], numerous small poorly developed "slicks".			
			- - - - - - 7.0, 31.5' - - - - - -			

Auger

Clean Out Barrel







DRILLING LOG	DIVISION SWD	INSTALLATION FWD	Hole No. 4+09.22 R	SHEET 1 of 1 SHEETS
1. PROJECT: Lansport Dam		10. SIZE AND TYPE OF BIT: 8" auger, 6" core		
2. LOCATION (Coordinates or Station): Outlet Works		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY: Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500		
4. HOLE NO. (As shown on drawing title and file number): 4+09.22 R		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED		
5. NAME OF DRILLER: Brewer		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE: VERT. / INCLINED ___ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN: 17.0'		16. DATE HOLE: STARTED 21 Aug. 74; COMPLETED 22 Aug. 74		
8. DEPTH DRILLED INTO ROCK: 14.5'		17. ELEVATION TOP OF HOLE: 482.3'		
9. TOTAL DEPTH OF HOLE: 31.5'		18. TOTAL CORE RECOVERY FOR BORING: 100 %		
		19. SIGNATURE OF INSPECTOR: Ralph H. Dean		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			0.0' to 17.0' OVERBURDEN - 0.0' to 8.0' CLAY - sandy; 8.0' to 17.0' GRAVEL - scattered cobbles, making water from 13.0'.			1. Overburden partially removed before drilling. 2. No samples taken.
	10.0		Primary - - - - - - - - - -			
			17.0' to 31.5' [illegible] - Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils. Slightly weathered, tan, to 18.0'.			
465.3'	20.0		Depositional Seam: 29.5' to 30.1' Softer, becomes softer from top to bottom, lower, very soft, numerous pyrite crystal masses, numerous mica flakes along bed [illegible]. Numerous small poorly developed "slicks".			
452.2'	30.0					
450.8'			- - - - - - 7.0, 31.5' - - - - - -			

Auger

Clean Out Barrel

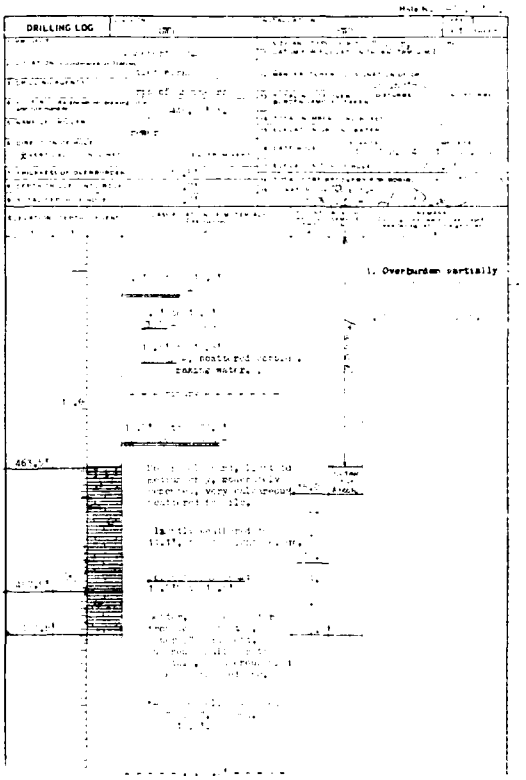
DRILLING LOG	Hole No. [illegible]
[illegible]	

0.0' to 16.5'

1. Overburden partially

DRILLING LOG	Hole No. [illegible]
[illegible]	

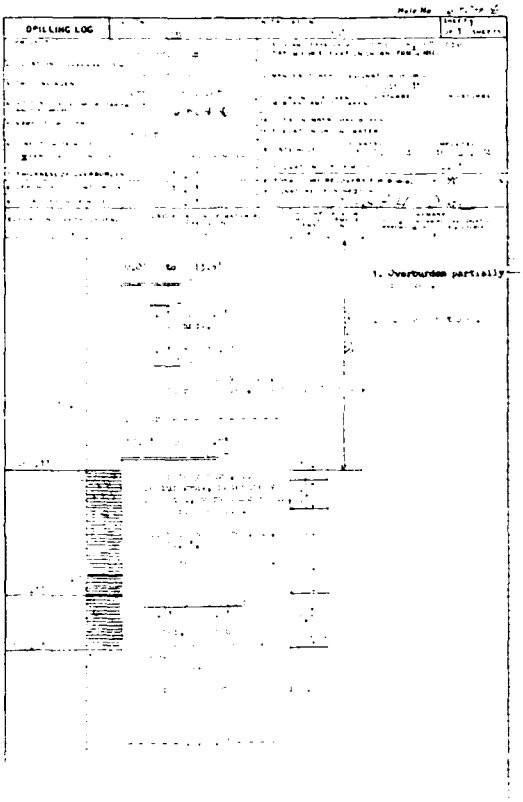
1. Overburden partially

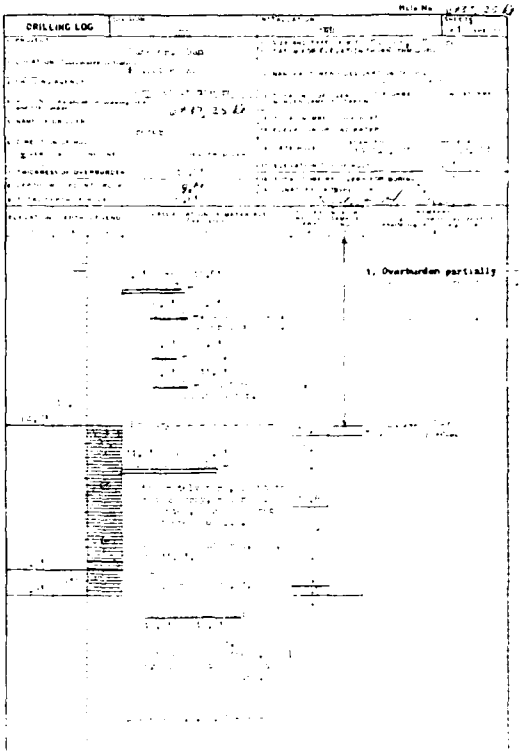


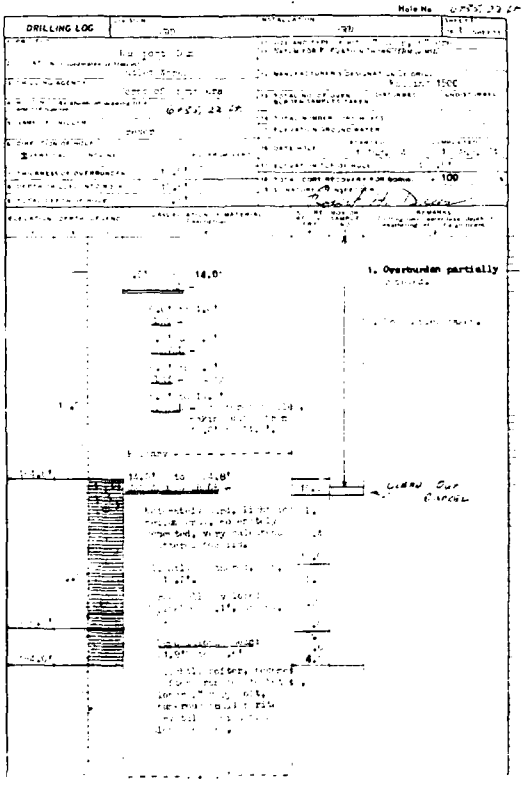
[illegible], scattered cobbles, making water.

463.5'

DRILLING LOG	
[illegible]	







GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

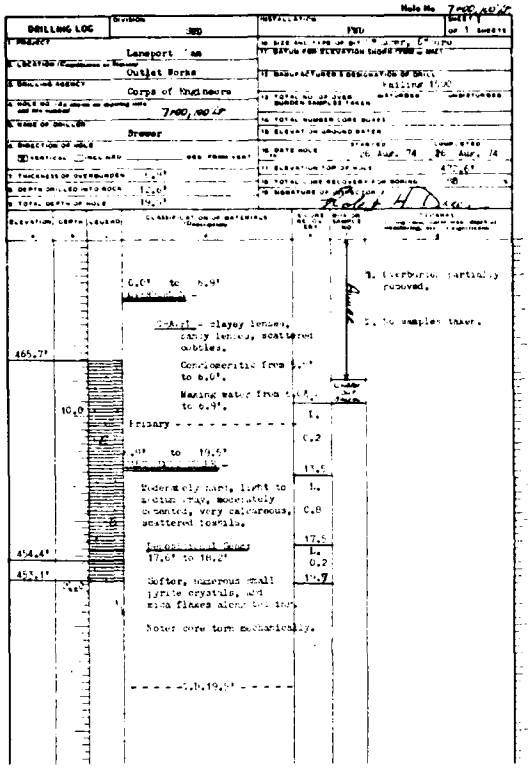
FINAL FOUNDATION REPORT

LOGS OF BORINGS FOR
OUTLET WORKS MODIFICATION
STATION 4+08, 29' LT THRU STATION 6+37, 25' RT

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 114

TO ACCOMPANY FINAL FOUNDATION REPORT



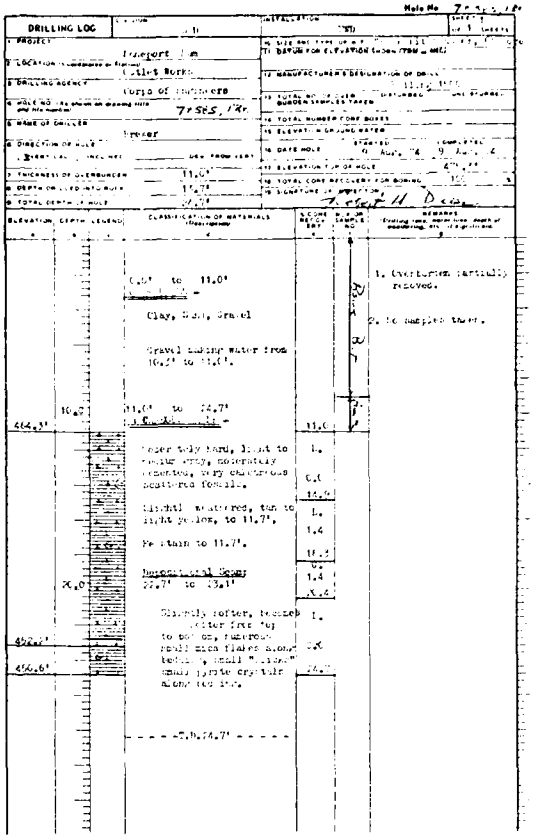
DRILLING LOG

Hole No. 7+00, 90 LT

1 PROJECT: Lanesport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and file number: 7+00, 90 LT
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: VERTICAL
7 THICKNESS OF OVERBURDEN: 11.0'
8 DEPTH DRILLED INTO ROCK: 12.0'
9 TOTAL DEPTH OF HOLE: 19.5'

DIVISION: NAD
INSTALLATION: FWD
SHEET 1 OF 1 SHEETS
10 SIZE AND TYPE OF BIT: 4" Rotary
11 DATUM FOR ELEVATION SHOWN: MSL
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES
15 ELEVATION GROUND WATER
16 DATE HOLE: STARTED 15 Aug. 74 COMPLETED 16 Aug. 74
17 ELEVATION TOP OF HOLE: 475.2'
18 TOTAL CORE RECOVERY FOR BORING: %
19 SIGNATURE OF INSPECTOR: Richard H Dean

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling rate, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 6.9' – Overburden – Sandy, gravelly clayey loam, sandy loam, scattered cobbles. Concentration from 5.0' to 6.0'. Moving water from 6.0' to 6.9'.			1. Overburden partially removed. 2. No samples taken.
465.7'	10.0		Primary	1.		
			10.0' to 19.5' – Bedrock – Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils.	2. 13.5 / 1. 0.8 / 17.5		
			Intermittent Seams: 17.0' to 18.2'	1. 0.2 / 17.7		
454.4'			Softer, numerous small pyrite crystals, and mica flakes along bedding. Noted core torn mechanically.			
455.1'			T.D. 19.5'			



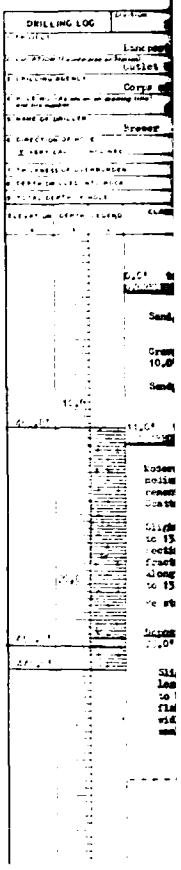
DRILLING LOG

Hole No. 7+585, 180 LT

1 PROJECT: Lanesport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and file number: 7+585, 180 LT
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: VERTICAL
7 THICKNESS OF OVERBURDEN: 11.0'
8 DEPTH DRILLED INTO ROCK: 13.7'
9 TOTAL DEPTH OF HOLE: 24.7'

DIVISION: NAD
INSTALLATION: FWD
SHEET 1 OF 1 SHEETS
10 SIZE AND TYPE OF BIT: 4" Rotary
11 DATUM FOR ELEVATION SHOWN: MSL
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES
15 ELEVATION GROUND WATER
16 DATE HOLE: STARTED 9 Aug. 74 COMPLETED 9 Aug. 74
17 ELEVATION TOP OF HOLE: 475.1'
18 TOTAL CORE RECOVERY FOR BORING: %
19 SIGNATURE OF INSPECTOR: Richard H Dean

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling rate, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 11.0' – Overburden – Clay, Sand, Gravel. Gravel bearing water from 10.2' to 11.0'.			1. Overburden partially removed. 2. No samples taken.
464.1'	10.0		11.0' to 24.7' – Bedrock – Softer body hard, light to medium gray, moderately cemented, very calcareous scattered fossils.	1. 0.4 / 14.0		
			Slightly weathered, tan to light yellow, to 11.7'.	1. 1.4 / 17.5		
			Re-stain to 11.7'.	0. 1.4 / 18.9		
			Intermittent Seams: 22.7' to 23.1'	1. 2.6		
452.4'			Slightly softer, becomes softer from top to bottom, numerous small mica flakes along bedding, small "pockets" small pyrite crystals along bedding.	2.6		
450.1'			T.D. 24.7'			

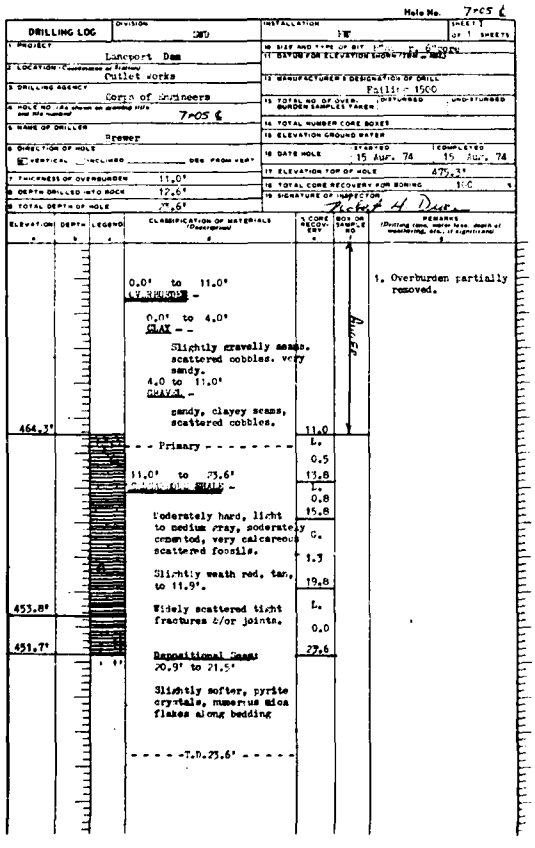


DRILLING LOG

1 PROJECT: Lanesport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and file number:
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: VERTICAL
7 THICKNESS OF OVERBURDEN:
8 DEPTH DRILLED INTO ROCK:
9 TOTAL DEPTH OF HOLE:

DIVISION: NAD
INSTALLATION:
SHEET 1 OF 1 SHEETS
10 SIZE AND TYPE OF BIT:
11 DATUM FOR ELEVATION SHOWN: MSL
12 MANUFACTURER'S DESIGNATION OF DRILL:
13 TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES
15 ELEVATION GROUND WATER
16 DATE HOLE: STARTED COMPLETED
17 ELEVATION TOP OF HOLE:
18 TOTAL CORE RECOVERY FOR BORING:
19 SIGNATURE OF INSPECTOR:

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling rate, water loss, depth of weathering, etc., if significant)
	0.0		Outlet Works			1. Overburden partially removed before drilling. 2. No samples taken.



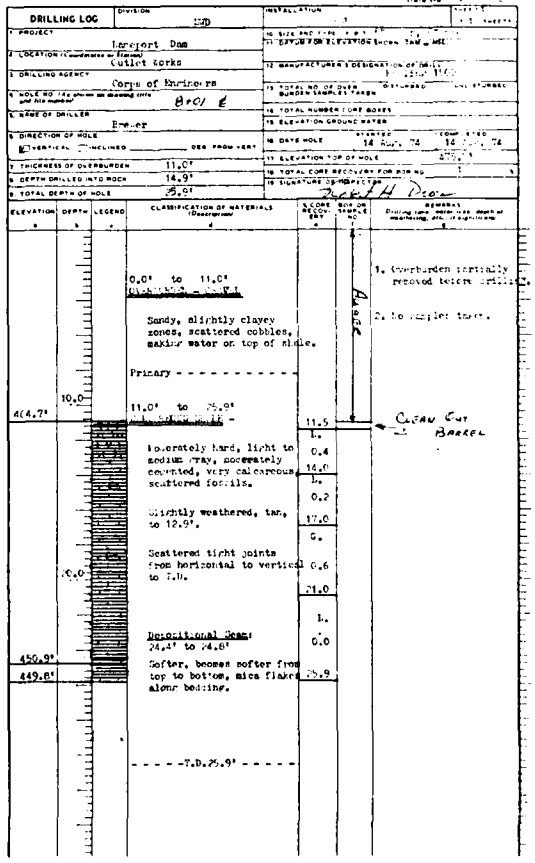
DRILLING LOG

Hole No. 7+05 ℄

1 PROJECT: Lanesport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and file number: 7+05 ℄
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: VERTICAL
7 THICKNESS OF OVERBURDEN: 11.0'
8 DEPTH DRILLED INTO ROCK: 12.6'
9 TOTAL DEPTH OF HOLE: 23.6'

DIVISION: NAD
INSTALLATION: FWD
SHEET 1 OF 1 SHEETS
10 SIZE AND TYPE OF BIT: 4" Rotary
11 DATUM FOR ELEVATION SHOWN: MSL
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES
15 ELEVATION GROUND WATER
16 DATE HOLE: STARTED 15 Aug. 74 COMPLETED 15 Aug. 74
17 ELEVATION TOP OF HOLE: 475.3'
18 TOTAL CORE RECOVERY FOR BORING: 1.0 %
19 SIGNATURE OF INSPECTOR: Richard H Dean

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling rate, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 11.0' – Overburden – CLAY, SILTY, SANDY – 0.0' to 4.0' CLAY – Slightly gravelly seams, scattered cobbles, very sandy. 4.0 to 11.0' CLAY – sandy, clayey seams, scattered cobbles.			1. Overburden partially removed.
464.3'	11.0		Primary	1. 0.5 / 13.8		
			11.0' to 23.6' – Bedrock – SHALE – Moderately hard, light to medium gray, moderately cemented, very calcareous scattered fossils. Slightly weath red, tan, to 11.9'. Widely scattered tight fractures &/or joints.	1. 0.8 / 15.8 / C. 1.3 / 19.8 / 1. 0.0 / 23.6		
453.8'			Depositional Seam: 20.9' to 21.5'			
451.7'			Slightly softer, pyrite crystals, numerous mica flakes along bedding			
			T.D. 23.6'			



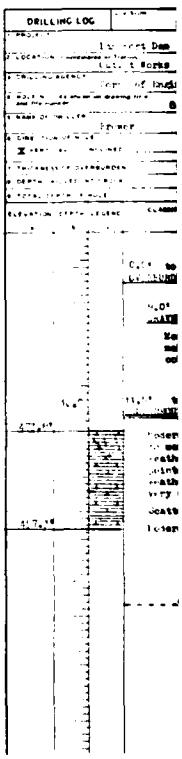
DRILLING LOG

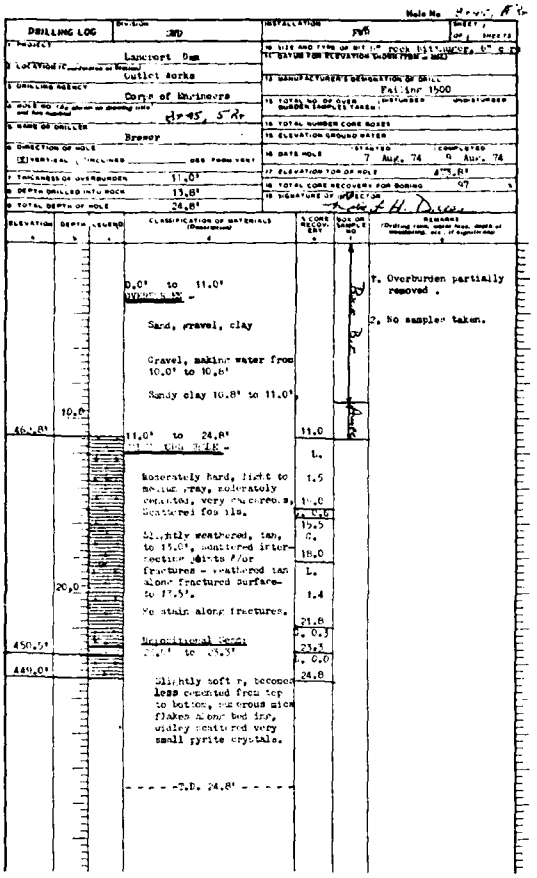
Hole No.

1 PROJECT: Lanesport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and file number: 8+01 ℄
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: VERTICAL
7 THICKNESS OF OVERBURDEN: 11.0'
8 DEPTH DRILLED INTO ROCK: 14.9'
9 TOTAL DEPTH OF HOLE: 25.9'

DIVISION: NAD
INSTALLATION:
SHEET 1 OF 1 SHEETS
10 SIZE AND TYPE OF BIT:
11 DATUM FOR ELEVATION SHOWN: MSL
12 MANUFACTURER'S DESIGNATION OF DRILL:
13 TOTAL NO. OF OVER BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES
15 ELEVATION GROUND WATER
16 DATE HOLE: STARTED 14 Aug. 74 COMPLETED 14 Aug. 74
17 ELEVATION TOP OF HOLE:
18 TOTAL CORE RECOVERY FOR BORING:
19 SIGNATURE OF INSPECTOR: Richard H Dean

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	BOX OR SAMPLE NO.	REMARKS (Drilling rate, water loss, depth of weathering, etc., if significant)
	0.0		0.0' to 11.0' – Overburden – Sandy, slightly clayey zones, scattered cobbles, making water on top of shale.			1. Overburden partially removed before drilling. 2. No samples taken.
			Primary			
464.7'	10.0		11.0' to 25.9' – Bedrock – SHALE –	1. 0.4 / 14.0		Clean Out Barrel
			Moderately hard, light to medium gray, moderately cemented, very calcareous scattered fossils.	1. 0.2 / 17.0		
			Slightly weathered, tan, to 12.9'.	C. 0.6 / 21.0		
			Scattered tight joints from horizontal to vertical to T.D.	1. 0.0		
			Depositional Seam: 24.4' to 24.6'			
450.9'			Softer, becomes softer from top to bottom, mica flakes along bedding.	25.9		
449.8'			T.D. 25.9'			

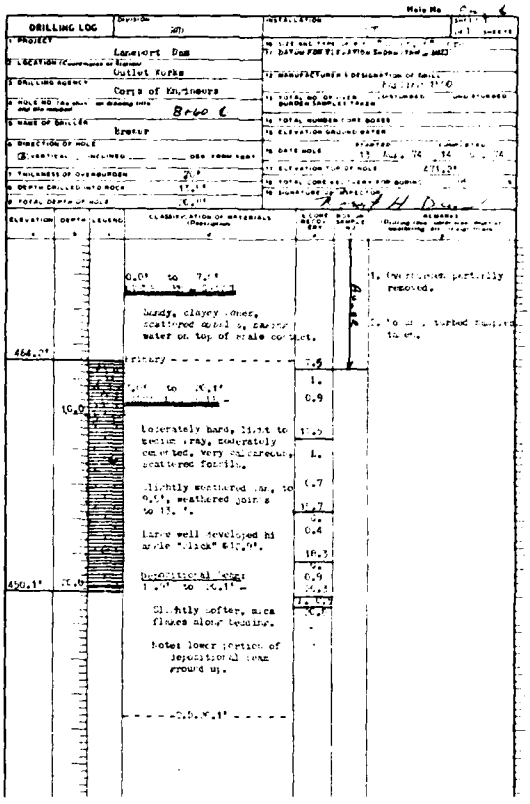




DRILLING LOG — Division: SWD — Installation: FWD — Hole No. 6-50, 5 Rr

1. Project: Lancaster Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: 6-50, 5 Rr
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 11.0'
8. Depth Drilled into Rock: 13.8'
9. Total Depth of Hole: 24.8'
10. Size and type of bit: 7 7/8" rock bit, tungsten, 8" S D
11. Datum for Elevation shown (USGS or Assd.)
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed ____ Disturbed ____
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 7 Aug. 74 Completed 9 Aug. 74
17. Elevation Top of Hole: 475.8'
18. Total Core Recovery for Boring: 97 %
19. Signature of Inspector: Joseph H Dixon

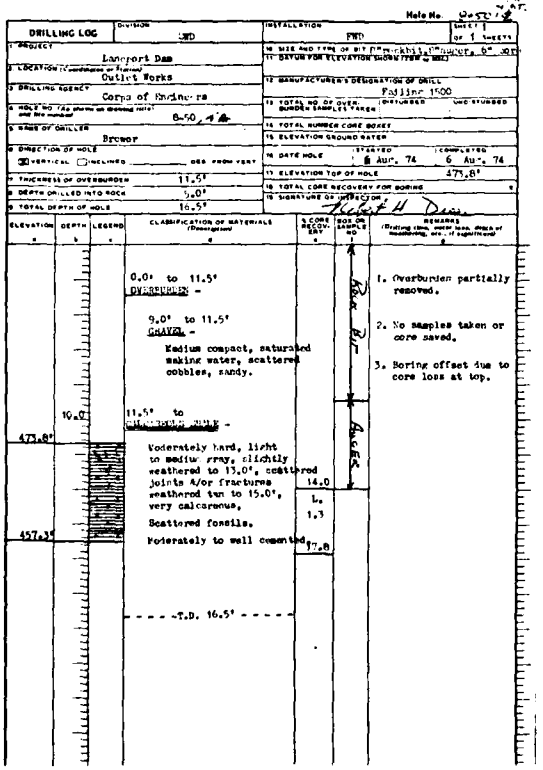
Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ea.	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0' to 11.0'		OVERBURDEN – Sand, gravel, clay Gravel, making water from 10.0' to 10.8' Sandy clay 10.8' to 11.0'		Box No. 1 / Auger	1. Overburden partially removed. 2. No samples taken.
464.8'	11.0' to 24.8'		LIME STONE – Moderately hard, light to medium gray, moderately cemented, very calcareous. Scattered fossils.	11.0 L. 1.5 10.0 L. 0.6 12.5 0. 18.0		
450.5'	20.0		Slightly weathered, tan, to 15.0', scattered intersection bits A/or fractures – weathered tan along fractured surface to 17.5'. No stain along fractures. Unconformity Zone: 17.5' to 23.5'	L. 1.4 21.8 L. 0.3 23.5 L. 0.0		
449.0'			Slightly soft, becomes less cemented from top to bottom, numerous clay flakes along bed ins, widely scattered very small pyrite crystals.	24.8		
			T.D. 24.8'			



DRILLING LOG — Division: SWD — Installation: FWD — Hole No. Cor 6

1. Project: Lancaster Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: B-60 C
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 7.5'
8. Depth Drilled into Rock: 17.1'
9. Total Depth of Hole: 24.6'
10. Size and type of bit:
11. Datum for Elevation shown (USGS or Assd.)
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed ____ Disturbed ____
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 13 Aug. 74 Completed 14 Aug. 74
17. Elevation Top of Hole: 471.5'
18. Total Core Recovery for Boring:
19. Signature of Inspector: Joseph H Dixon

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ea.	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0' to 7.5'		OVERBURDEN – Sandy, clayey gravel, scattered cobbles, caving water on top of shale contact.		Box No. 1 / Auger	1. Overburden partially removed. 2. No samples taken.
464.0'			Tertiary	7.5		
	7.5' to 24.6'		SHALE –	1. 0.9		
454.0'	17.5		Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils.	1. 0.7 17.7		
			Slightly weathered tan, to 0.5', weathered joints to 15.7'.	0.4 18.1		
450.1'	21.0		Fairly well developed hairline "slick" @ 17.9'.	0.9 19.0		
			Unconformity Zone: 17.9' to 24.1' – Slightly softer, mica flakes along fractures.	1.0 20.0		
			Note: lower portion of deposition zone ground up.	0.9 20.9		
			T.D. 24.6'			



DRILLING LOG — Division: SWD — Installation: FWD — Hole No. B-50, 7 Rr

1. Project: Lancaster Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and File number: B-50, 7 Rr
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 11.5'
8. Depth Drilled into Rock: 5.0'
9. Total Depth of Hole: 16.5'
10. Size and type of bit: 7 7/8" rock bit, tungsten, 8" SDT
11. Datum for Elevation shown (USGS or Assd.)
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed ____ Disturbed ____
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 6 Aug. 74 Completed 6 Aug. 74
17. Elevation Top of Hole: 475.8'
18. Total Core Recovery for Boring
19. Signature of Inspector: Joseph H Dixon

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ea.	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	0.0' to 11.5'		OVERBURDEN –		Box No. 1 / Auger	1. Overburden partially removed. 2. No samples taken or core saved. 3. Boring offset due to core loss at top.
	9.0' to 11.5'		GRAVEL – Medium compact, saturated making water, scattered cobbles, sandy.			
473.8'	11.5' to 16.5'		LIME STONE – Moderately hard, light to medium gray, slightly weathered to 13.0', scattered joints A/or fractures weathered tan to 15.0', very calcareous, Scattered fossils.	14.0 L. 1.3		
457.3'			Moderately to well cemented	17.8		
			T.D. 16.5'			

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

FINAL FOUNDATION REPORT

LOGS OF BORINGS FOR
OUTLET WORKS MODIFICATION
STATION 7+00, 100' LT THRU STATION 8+60, ℄

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 115

TO ACCOMPANY FINAL FOUNDATION REPORT

DRILLING LOG

1 PROJECT: Lameport Dam
2 LOCATION: Outlet works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and No. (number): 8423 ¢
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED
7 THICKNESS OF OVERBURDEN: 6.5'
8 DEPTH DRILLED INTO ROCK: 22.7'
9 TOTAL DEPTH OF HOLE: 29.2'
10 SIZE AND TYPE OF BIT: NWD
11 DATUM FOR ELEVATION SHOWN (MSL or ASL):
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES:
15 ELEVATION GROUND WATER:
16 DATE HOLE: STARTED 12 Aug. 74 COMPLETED 13 Aug. 74
17 ELEVATION TOP OF HOLE: 470.0'
18 TOTAL CORE RECOVERY FOR BORING: 100 %
19 SIGNATURE OF INSPECTOR: Robert H Dunn

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 6.5' OVERBURDEN - GRAVEL, - , sand lenses, slightly clayey, making water on top of shale.			1. Overburden partially removed. 2. No samples taken.
463.5'			- - -Primary - - - - - -	6.5		
			6.5' to 29.2' CALCAREOUS SHALE - Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils. Weathered tan to light yellow to 10.0', weathered fractures &/or joints to 13.5'. Scattered probable joints from 4.0' to 13.0' (tight). Large well developed "slicks" @ 14.0', 16.7', 17.5'.	L 0.5 10.5 G 0.4 14.5 L 0.0 18.5 L 0.0 23.0 L 0.7 26.0 G 0.8 29.2		
450.3'	20.0		*-Possible depositional Seam in possible fault plane from 19.5' to 19.7', scattered mica flakes, approx 50° to 60° dip. Numerous small "slicks".			
440.8'			- - - - -T.D.29.2' - - - - -			
	30.0					

DRILLING LOG

1 PROJECT: Lameport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and No. (number): 9403, 5 Sh.
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED
7 THICKNESS OF OVERBURDEN: 0.0'
8 DEPTH DRILLED INTO ROCK: 17.1'
9 TOTAL DEPTH OF HOLE: 17.1'
10 SIZE AND TYPE OF BIT:
11 DATUM FOR ELEVATION SHOWN (MSL or ASL):
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES:
15 ELEVATION GROUND WATER:
16 DATE HOLE: STARTED 12 Aug. 74 COMPLETED 13 Aug. 74
17 ELEVATION TOP OF HOLE: 467.4'
18 TOTAL CORE RECOVERY FOR BORING:
19 SIGNATURE OF INSPECTOR: Robert H Dunn

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 17.1' BEDROCK -			1. Overburden removed before drilling. 2. No samples taken.
			Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils.	L 0.3 *1.2 G 0.9 1.0		
457.4'			Slightly weathered, tan to 11.8% yellow to 3.0'.	0.1 1.0		
	10.0'		Scattered fractures &/or joints.	L 0.6		
			Depositional seam 4.0' to 4.5' Very little difference in hardness, numerous mica flakes along bedding.	12.0 L 0.7 16.0 G 1.3 17.3		
446.3'			- - - - -T.D.17.1' - - - - -			

DRILLING LOG

DRILLING LOG

1 PROJECT: Lameport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and No. (number): Sr82 ¢
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED
7 THICKNESS OF OVERBURDEN: 6.0'
8 DEPTH DRILLED INTO ROCK:
9 TOTAL DEPTH OF HOLE:
10 SIZE AND TYPE OF BIT: NWD
11 DATUM FOR ELEVATION SHOWN (MSL or ASL):
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES:
15 ELEVATION GROUND WATER:
16 DATE HOLE: STARTED 16 Aug. 74 COMPLETED 16 Aug. 74
17 ELEVATION TOP OF HOLE:
18 TOTAL CORE RECOVERY FOR BORING:
19 SIGNATURE OF INSPECTOR: Robert H Dunn

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			[illegible]			1. Overburden removed. 2. No samples taken. Clean bar [illegible]
463.8'			[illegible]			
	10.0'		Primary - - - - - - - - - - - -	L G		
			6.0' to 24.7' [illegible] SHALE - Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils.	L 0.1		
			Slightly weathered, tan to 9.0'.	15.0 L		
			Fractures &/or joints [illegible] to 15.0'.			
			**Large well developed hi angle "slicks" from [illegible]			
			*-*Probable fault zone? 11.0' to 11.9'			
445.1'			[illegible]			
			Laser to core & joint [illegible]			
			- - - - - -T.D.24.7' - - - - -			

DRILLING LOG

1 PROJECT: Lameport Dam
2 LOCATION: Outlet Works
3 DRILLING AGENCY: Corps of Engineers
4 HOLE NO. (As shown on drawing title) and No. (number): 9-50 ¢
5 NAME OF DRILLER: Brewer
6 DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED
7 THICKNESS OF OVERBURDEN: 0.0'
8 DEPTH DRILLED INTO ROCK: 10.3'
9 TOTAL DEPTH OF HOLE: 10.3'
10 SIZE AND TYPE OF BIT: NWD
11 DATUM FOR ELEVATION SHOWN (MSL or ASL):
12 MANUFACTURER'S DESIGNATION OF DRILL: Failing 1500
13 TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
14 TOTAL NUMBER CORE BOXES:
15 ELEVATION GROUND WATER:
16 DATE HOLE: STARTED 2 Aug. 74 COMPLETED 2 Aug. 74
17 ELEVATION TOP OF HOLE: 464.1'
18 TOTAL CORE RECOVERY FOR BORING:
19 SIGNATURE OF INSPECTOR: Robert H Dunn

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 10.3' BEDROCK -			1. Borings located on rock after overburden removed. 2. No samples taken.
			Moderately hard, medium gray, very calcareous, laminated to conchoidal fracture, cemented.	6.1		
457.3'			Scattered fossils.	L		
			Scattered hi angle joints.	0.7		
454.0'	10.0'		Depositional Seam: 4.4' to 7.0'	11.0		
			Slightly softer, numerous mica flakes along bedding planes, reddened small poorly developed "slicks". Many small pyrite crystals.			
			- - - - -T.D.10.3' - - - - -			

DRILLING LOG

Hole No. 4+95, 94 Lt.

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 1 of 1 sheets

1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and file number: 4+95, 94 Lt.
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 13.0'
9. Total Depth of Hole: 13.0'
10. Size and Type of Bit: 7 7/8" rock bit, 6" core
11. Datum for Elevation Shown (USGS or Mean): USGS
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed ____ Undisturbed ____
14. Total Number Core Boxes: 2
15. Elevation Ground Water: ____
16. Date Hole: Started 22 Aug. 74, Completed 23 Aug. 74
17. Elevation Top of Hole: 462.9'
18. Total Core Recovery for Boring: 92 %
19. Signature of Inspector: Robert H Davis

Elevation	Depth	Legend	Classification of Materials (Descriptions)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 13.0' Limestone -	2.0	Rock R.F.	1. Overburden removed.
			Moderately weathered, moderately hard, light to medium gray, moderately cemented very calcareous, scattered fossils.	L. 1.5		2. No samples taken
				1.0		
				L. 0.6		
	10.0		Large "slick", hi angle, @ 12.6'.	9.0		
			Depositional Zone: 11.6' to 12.1'	C. 1.0		
449.8'			Softer, becomes softer from top to bottom, numerous mica flakes, small crystal pyrite ...	13.0		
449.0'				L. 0.1		
				14.0		
			- - - - - T.D. 13.0' - - - - -			

Hole No. 4+73, 1 Lt.

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 1 of 1 sheets

1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and file number: 10+90 L
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 11.0'
9. Total Depth of Hole: 14.7'
10. Size and Type of Bit: 7 7/8" rock bit, 6" core
11. Datum for Elevation Shown (USGS or Mean): USGS
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed ____ Undisturbed ____
14. Total Number Core Boxes: 2
15. Elevation Ground Water: ____
16. Date Hole: Started 14 Aug. 74, Completed 15 Aug. 74
17. Elevation Top of Hole: 460.0'
18. Total Core Recovery for Boring: 98 %
19. Signature of Inspector: Robert H Davis

Elevation	Depth	Legend	Classification of Materials (Descriptions)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 14.7' Limestone -	3.0	Rock R.F.	1. Overburden removed before drilling.
455.3'			Moderately hard, light to medium gray, moderately cemented, very calcareous, scattered fossils.	L. 0.6		2. No samples taken.
			Unweathered.	7.0		
				G. 0.6		
	10.0		Depositional Zone: 4.9' to 5.5'	11.0		
			Very little difference in hardness, numerous small pyrite crystals, and mica flakes along bedding.	L. 0.3		
446.3'			Note: Boring taken deeper to double check seam depth.	11.3		
			- - - - - T.D. 14.7' - - - - -			

Hole No. 4+73, 1 Lt.

DRILLING LOG — Division: SWD — Installation: FWD — Sheet 1 of 1 sheets

1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title) and file number: 10+90, 1.5' Lt.
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 11.2'
9. Total Depth of Hole: 11.2'
10. Size and Type of Bit: 7 7/8" rock bit, 6" core
11. Datum for Elevation Shown (USGS or Mean): USGS
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Disturbed ____ Undisturbed ____
14. Total Number Core Boxes: 2
15. Elevation Ground Water: ____
16. Date Hole: Started 1 Aug. 74, Completed 2 Aug. 74
17. Elevation Top of Hole: 464.4'
18. Total Core Recovery for Boring: 76 %
19. Signature of Inspector: Robert H Davis

Elevation	Depth	Legend	Classification of Materials (Descriptions)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 11.2' Limestone -	7.0	Rock R.F.	1. Boring located on rock after overburden removed.
			Moderately hard, medium gray, very calcareous conchoidal fractured	L. 1.3		2. No samples obtained.
454.4'	10.0		Scattered fossils. Moderately to well cemented in zones.	11.5		
453.6'			Depositional Zone: Softer especially lower 1", numerous mica flakes along bedding planes, scattered small pyrite crystals. Few small poorly developed "slicks".	12.8		
			- - - - - T.D. 11.2' - - - - -			

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

FINAL FOUNDATION REPORT

LOGS OF BORINGS FOR
OUTLET WORKS MODIFICATION
STATION 8+73, 1 THRU STATION 10+90, 15' LT

U S ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 116

2

TO ACCOMPANY FINAL FOUNDATION REPORT

DRILLING LOG — Division: SWD — Installation: WES — Hole No. 11-40, 1 of 2

1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 11-40, 1 of 2
5. Name of Driller: T. Dreger
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 12.5'
9. Total Depth of Hole: 12.5'
10. Size and Type of Bit: 4" rock bit, 4" core
11. Datum for Elevation Shown: [illegible] MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed ____ Disturbed ____
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 1 Aug. 74 Completed 1 Aug. 74
17. Elevation Top of Hole: 465.5'
18. Total Core Recovery for Boring: 78 %
19. Signature of Inspector: Robert H. Dreger

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ser.	Box or Sample No.	Remarks
			0.0' to 12.5' CALCAREOUS SHALE - Moderately hard, medium gray, very calcareous, conchoidal fracture. Scattered fossils. Scattered hi angle joints. Slightly weathered from 0.0' to 1.2', light yellow.	7.0	L.	1. Boring located on rock after overburden removed. 2. No samples obtained.
455.5'	10.0			2.0		
453.0'			Depositional Seam: 10.0' to 10.4' Softer, numerous mica flakes along bedding, scattered small pyrite crystals, scattered small poorly developed "slicks".	12.0	C.	
				0.5		
			-12.5' T.D.	14.0		

DRILLING LOG — Division: SWD — Installation: WES — Hole No. 12-50, 1 of 2

1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 12-50
5. Name of Driller: Dreger
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 14.5'
9. Total Depth of Hole: 14.5'
10. Size and Type of Bit: [illegible]
11. Datum for Elevation Shown: [illegible] MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed ____ Disturbed ____
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 1 Aug. 74 Completed 2 Aug. 74
17. Elevation Top of Hole: 460.1'
18. Total Core Recovery for Boring: [illegible] %
19. Signature of Inspector: Robert H. Dreger

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ser.	Box or Sample No.	Remarks
			0.0' to 14.5' [illegible] - Moderately hard, light to medium gray, very calcareous, moderately to well cemented in zones, thinly bedded to slightly conchoidal fracture.	7.0	L.	1. Boring located on top of rock after overburden removed. 2. No samples taken.
				0.4		
450.1'	10.0		Depositional Seam: 11.2' to 11.4'	11.6	C.	
447.7'			Softer, recurves lean consistency from top to bottom of seam, scattered small masses of small pyrite crystals, numerous mica flakes along bedding.	0.4		
447.0'			Scattered small poorly developed "slicks".	14.4		
			-T.D.14.5'			

DRILLING LOG — Division: SWD — Installation: Fort Worth — Hole No. 12429 6

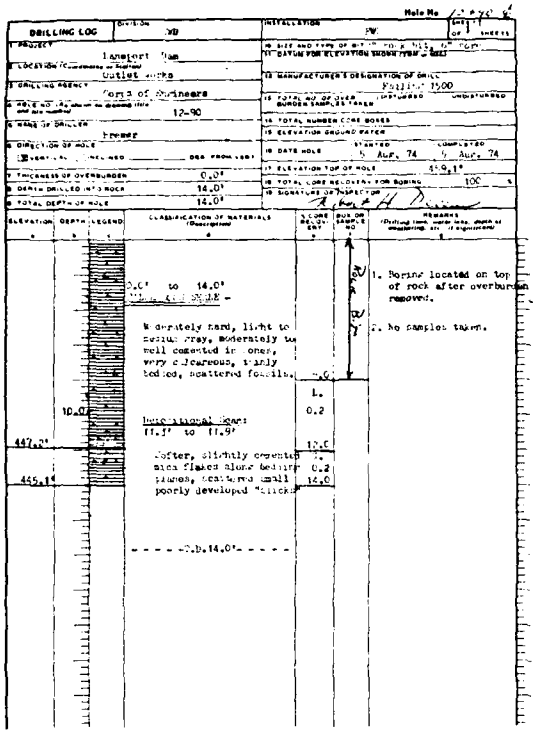
1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 12429 6
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 15.6'
9. Total Depth of Hole: 15.6'
10. Size and Type of Bit: 4" rock bit, 4" core
11. Datum for Elevation Shown: [illegible] MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed 0 Disturbed 0
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 31 July 74 Completed 31 July 74
17. Elevation Top of Hole: 462.6'
18. Total Core Recovery for Boring: 90.0 %
19. Signature of Inspector: Robert H. Dreger

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ser.	Box or Sample No.	Remarks
			0.0' to 15.6' CALCAREOUS SHALE - Moderately hard, medium gray, very calcareous, slightly laminated to conchoidal fracture. Scattered fossils, scattered hi angle joints. Slightly softer from 8.6' to 8.9'. Moderately cemented to 11.8' to 12.3' Depositional Seam: Soft to moderately hard, micaceous, scattered along bedding planes, scattered small pyrite crystals masses, many small well developed "slicks".	Rock		1. No samples obtained. 2. Boring located on rock after overburden removed.
450.5'	10.0			6.8		
447.2'				2.0' L. 0.7		
				Rock		
				6.5		
				L. 0.2		
				9.7		
				L. 1.1		
				14.0		
				C. 1.3		
				16.0		
			-T.D.15.6'			

DRILLING LOG — Division: SWD — Installation: WES — Hole No. 12-69, 2 of 2

1. Project: Lanesport Dam
2. Location: Outlet Works
3. Drilling Agency: Corps of Engineers
4. Hole No. (As shown on drawing title and file number): 12-69, 2 of 2
5. Name of Driller: Brewer
6. Direction of Hole: ☒ Vertical ☐ Inclined ____ deg. from vert.
7. Thickness of Overburden: 0.0'
8. Depth Drilled into Rock: 11.5'
9. Total Depth of Hole: 11.5'
10. Size and Type of Bit: [illegible]
11. Datum for Elevation Shown: [illegible] MSL
12. Manufacturer's Designation of Drill: Failing 1500
13. Total No. of Overburden Samples Taken: Undisturbed ____ Disturbed ____
14. Total Number Core Boxes
15. Elevation Ground Water
16. Date Hole: Started 1 Aug. 74 Completed 1 Aug. 74
17. Elevation Top of Hole: 458.5'
18. Total Core Recovery for Boring: [illegible] %
19. Signature of Inspector: Robert H. Dreger

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recov. Ser.	Box or Sample No.	Remarks
			0.0' to 11.5' [illegible] - Moderately hard, medium gray, very calcareous, conchoidal fracture. Scattered fossils. Moderately to well cemented in thin zones.	Rock		1. Boring located on rock after overburden removed. 2. No samples obtained.
				6.5'		
	10.0			L.		
448.0'			Depositional Seam: 10.5' to 11.2'	0.5		
447.0'			Softer, numerous mica flakes along bedding, scattered small pyrite crystals, scattered small poorly developed "slicks".	12.0		
			-T.D.11.5'			



Hole No. 12+95 6

...ck bit, 6" core	
...Failing 1500	
...74	5 Aug. 74
461.5'	
100	

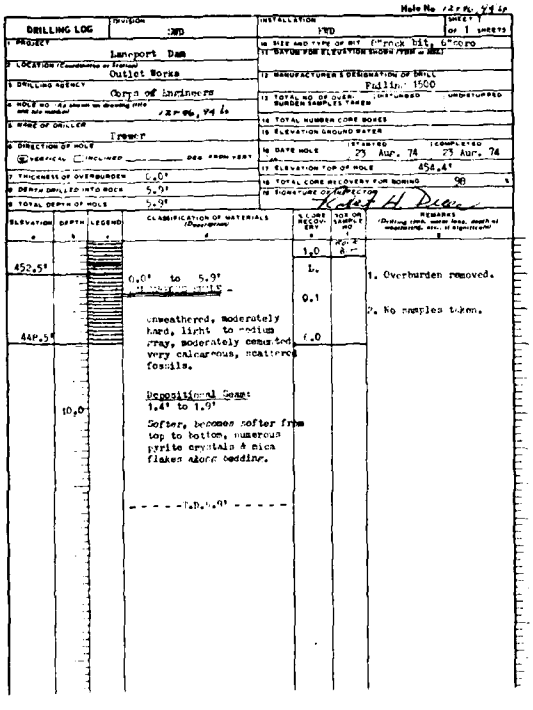
...ing located on top ...rock after overburden ...moved.

...samples taken.

Hole No. 12+90 6

DRILLING LOG	DIVISION SWD	INSTALLATION FWD	SHEET 1 OF 1 SHEETS
1. PROJECT	Lanesport Dam	10. SIZE AND TYPE OF BIT	6" rock bit, 6" core
2. LOCATION (Coordinates or Station)	Outlet Works	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY	Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
4. HOLE NO. (As shown on drawing title and file number)	12-90	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
5. NAME OF DRILLER	Fremer	14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.	15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN	0.0'	16. DATE HOLE	STARTED 5 Aug. 74 / COMPLETED 5 Aug. 74
8. DEPTH DRILLED INTO ROCK	14.0'	17. ELEVATION TOP OF HOLE	459.1'
9. TOTAL DEPTH OF HOLE	14.0'	18. TOTAL CORE RECOVERY FOR BORING	100 %
		19. SIGNATURE OF INSPECTOR	Robert H. Deane

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			0.0' to 14.0' [illegible] - Moderately hard, light to medium gray, moderately to well cemented in zones, very calcareous, thinly bedded, scattered fossils.	6.0	Rock Bit	1. Boring located on top of rock after overburden removed. 2. No samples taken.
	10.0		Depositional Seam: 11.1' to 11.9'	L. 0.2		
447.2'			Softer, slightly cemented mica flakes along bedding planes, scattered small poorly developed "slicks"	12.0 L. 0.2		
445.1'				14.0		
			- - - - - T.D. 14.0' - - - - -			



Hole No. 12+96, 94 Lt

DRILLING LOG	DIVISION SWD	INSTALLATION FWD	SHEET 1 OF 1 SHEETS
1. PROJECT	Lanesport Dam	10. SIZE AND TYPE OF BIT	6" rock bit, 6" core
2. LOCATION (Coordinates or Station)	Outlet Works	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY	Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL	Failing 1500
4. HOLE NO. (As shown on drawing title and file number)	12+96, 94 Lt	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
5. NAME OF DRILLER	Fremer	14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.	15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN	0.0'	16. DATE HOLE	STARTED 23 Aug. 74 / COMPLETED 23 Aug. 74
8. DEPTH DRILLED INTO ROCK	5.9'	17. ELEVATION TOP OF HOLE	454.4'
9. TOTAL DEPTH OF HOLE	5.9'	18. TOTAL CORE RECOVERY FOR BORING	98 %
		19. SIGNATURE OF INSPECTOR	Robert H. Deane

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
				1.0	Rock Bit	
452.5'			0.0' to 5.9' [illegible] - Unweathered, moderately hard, light to medium gray, moderately cemented very calcareous, scattered fossils.	L. 0.1		1. Overburden removed. 2. No samples taken.
448.5'				6.0		
	10.0		Depositional Seam: 1.4' to 1.9' Softer, becomes softer from top to bottom, numerous pyrite crystals & mica flakes along bedding.			
			- - - - - T.D. 5.9' - - - - -			

Hole No. 12+96, 94 Lt

...bit, 6" core	
...ing 1500	
...74	1 Aug. 74
460.1'	
87	

...ing located on ...rock after overburden ...moved.

...samples obtained.

GRANGER LAKE
SAN GABRIEL RIVER, TEXAS

FINAL FOUNDATION REPORT

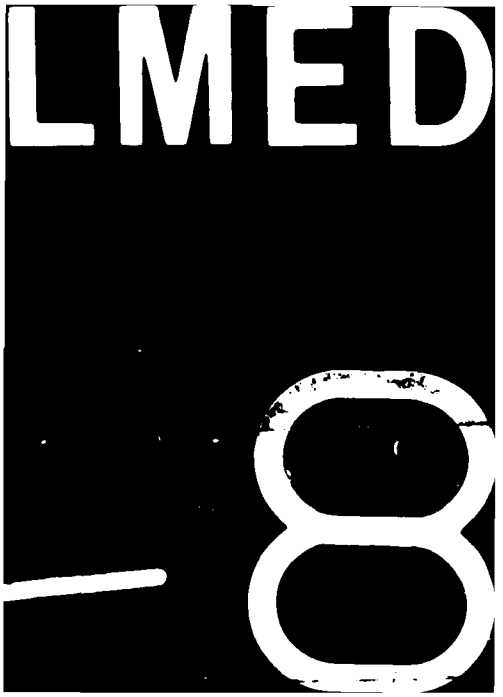
LOGS OF BORINGS FOR
OUTLET WORKS MODIFICATION
STATION 11+40, 1' RT THRU STATION 12+96, 94' LT

U.S. ARMY ENGINEER DISTRICT, FORT WORTH

FILE NO PLATE 117

2

TO ACCOMPANY FINAL FOUNDATION REPORT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