US Army Corps of Engineers
Vicksburg District

Flood Control, Mississippi River and Tributaries
Yazoo River Basin - Tallahatchie River
Tallahatchie County, Mississippi

Ascalmore Creek - Tippo Bayou
Item No. 3, Control Structure

FOUNDATION REPORT

January 1992

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	JANUARY 1992	FOUNDATION REPORT - FINAL

4. TITLE AND SUBTITLE
ASCALMORE CREEK - TIPPO BAYOU ITEM NO. 3,
CONTROL STRUCTURE _ FOUNDATION REPORT

5. FUNDING NUMBERS
NA

6. AUTHOR(S)
VICKSBURG DISTRICT CORPS OF ENGINEERS

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
4155 CLAY STREET
VICKSBURG, MS 39180-3435

CELMK-ED-G AND CELMK-CD-C

8. PERFORMING ORGANIZATION REPORT NUMBER
NA

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
4155 CLAY STREET
VICKSBURG, MS 39180-3435

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
NA

11. SUPPLEMENTARY NOTES
NONE

12a. DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE
DISTRIBUTION IS UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*
REPORT PREPARED TO PROVIDE INFORMATION TO THOSE WHO MAY INVESTIGATE FUTURE PROBLEMS ON THIS STRUCTURE AND FOR THOSE INVOLVED IN DESIGNING SIMILAR STRUCTURES. THIS REPORT SERVES AS A BASIS FOR THOSE PERFORMING PERIODIC INSPECTIONS.

14. SUBJECT TERMS
ASCALMORE-TIPPO, FOUNDATION REPORT, GEOLOGY,
PERIODIC INSPECTION, YAZOO BASIN

15. NUMBER OF PAGES
86

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED			UL

ASCALMORE CREEK-TIPPO BAYOU CONTROL STRUCTURE

FOUNDATION REPORT

U.S. ARMY ENGINEER DISTRICT, VICKSBURG

JANUARY 1992

TABLE OF CONTENTS

FOUNDATION REPORT

ASCALMORE CREEK-TIPPO BAYOU CONTROL STRUCTURE

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

PLATES

Ascalmore-Tippo Item 3

TABLES

PHOTOGRAPHS

FOUNDATION REPORT

ASCALMORE CREEK-TIPPO BAYOU CONTROL STRUCTURE

SECTION I - INTRODUCTION

1-01. Location. The Ascalmore Creek-Tippo Bayou Item No. 3 Structure is located approximately 3 miles northeast of Phillip, Mississippi, in Tallahatchie County. It is approximately 1,000 feet from the Little Tallahatchie River (see Plate 1) located on an excavated channel which was constructed in 1979 as part of the Ascalmore Creek-Tippo Bayou Project. The channel connects the Tallahatchie River with Tippo Bayou below its confluence with Ascalmore Creek (Photographs 1 and 2).

1-02. Description. The control structure is a gated structure with two vertical lift gates with 20- x 14-foot openings. It is supported on H-pilings which are both vertical and battered and driven from 70-105 feet.

1-03. Authorization. The project is a feature of the Tributaries Unit of the Yazoo Basin Project, Mississippi River and Tributaries. Authorization is contained in the Flood Control Act approved 15 June 1936, Public Law 678, and was modified by the Flood Control Act approved 28 August 1937, Public Act No. 406, Flood Control Act approved 18 August 1941, Public Law 228, and Flood Control Act of 24 July 1946, Public Law 526.

1-04. Contractor and Contract Supervision. The work was performed under Contract No. DACW38-79-0030. The contract was performed by Tri-Central, Inc., and Key Constructors, Inc., as a joint venture. Principle subcontractors on the project were Hill Brothers Construction Company (structure excavation) and Carolina Dewatering (dewatering). Work began on the project in April 1979 and was completed in August 1981. The supervision and administration of the project was conducted by the Greenwood Area Office.

SECTION II - EXPLORATIONS

2-01. Preconstruction.

a. General. Investigations consisted of borings made by the Vicksburg District using the rotary drilling method with mud. Undisturbed sampling in clays and silts was performed using a 5-inch I.D. sampler of the vacuum type. General samples were obtained with either a 2-1/2-inch drive tube or a standard split spoon.

b. Investigations - Site 1. The investigation for the location and design of the Ascalmore Creek-Tippo Bayou Control Structure was initiated in 1972. An initial site (Site 1) was selected to provide maximum spacing between the Tallahatchie River and an existing county road and to avoid existing dwellings as much as possible. Investigations of Site 1 for the Ascalmore Creek-Tippo Bayou Control Structure are outlined below:

(1) Initial Investigations. On 1 February 1972 one undisturbed boring (ATB-1-72U) was drilled in the proposed structure area and penetrated approximately 5 feet into the substratum unit. During January 1973 four more undisturbed borings (ATB-16-73U through ATB-19-73U) were drilled at the proposed site. All borings except ATB-19-73U penetrated a few feet into the Tertiary horizon. Two of the borings (ATB-16-73U and ATB-17-73U) were located at the abutments of a proposed bridge for the existing county road. The other two borings

(ATB-18-73U and ATB-19-73U) were located riverward of Boring ATB-1-72U. One piezometer was installed in boring ATB-19-73U with the tip located in the substratum sands (at elevation 72.02 NGVD). All elevations in feet, National Geodetic Vertical Datum. Two piezometer tips were installed in Boring ATB-18-73U. One was located in the substratum sand aquifer (Piezometer ATB-18-73U-B, elevation 48.9), and the other was located in the underlying Tertiary Sparta aquifer (Piezometer ATB-18-73U-A, elevation -17.3). The results of these initial investigations are presented in General Design Memorandum No. 36, titled "Ascalmore Creek-Tippo Bayou" (July 1973; revised September 1974).

(2) Secondary Explorations - Site 1. During July 1974, 14 general sample borings (1-74 through 14-74) were drilled at the proposed site to orient the control structure. As a result of these investigations a tentative structure location was chosen and three undisturbed borings (ATB-20-74U, ATB-21-74U, and ATB-22-74U) were drilled during December 1974. Three piezometer tips were installed in Boring ATB-20-74U (Tip A, elevation -17.36; Tip B, elevation 11.4; Tip C, elevation 41.84). On 20-22 October 1975 a field pump test was performed at Site 1 utilizing a fully penetrating 14-inch dewatering well and an array of 26 piezometers (Plate 2). Each piezometer had one tip in the substratum sand and one tip in the Tertiary sand. The results of the pump test are presented in Appendix A of Design

Memorandum No. 40, entitled "Ascalmore Creek-Tippo Bayou Item No. 3 Control Structure, Item No. 4 Closure-Overflow Structure" (February 1978). A graphic presentation of the pump test results is presented on Plate 3. As a result of the information generated by the investigative boring program, several potential construction and operational problems were identified at Site 1. A meeting was held between the Vicksburg District, Engineering Division, and the Mississippi River Commission on 10 September 1976 to discuss and resolve these problems. As a result of the meeting the decision was made to expand the exploration program to consider two additional locations (Sites 2 and 3) located south of Site 1.

c. Investigations of Sites 2 and 3. During September 1976 five general sample borings were drilled at 250-foot intervals along the west edge of the existing county road south of Site 1 (Borings 15-76 through 19-76). In November and December 1976 five additional general sample borings were drilled on 250-foot centers approximately 300 feet west of the existing county road and south of Site 1. As a result of these investigations the structure was relocated approximately 660 feet south of Site 1 to Site 2 (Plate 2 and 3). Investigations at Site 3 were limited to a review of information collected during piezometer installations associated with the field pump test (Piezometers P-8SE and P-9SE). Although the geotechnical conditions present at Site 3 were acceptable, other considerations prevented selection of this site. For a review of the site selection procedure, see "Ascalmore Creek Tippo Bayou, Mississippi, Items 3 and 4, Site Selection Letter Report" (11 April 1977). Pursuant to the selection of Site 2, nine undisturbed borings were made for use in the design phase (ATB-23-77U through ATB-31-77U). In addition, two piezometer tips (H for High; Elevation 56, and L for Low; Elevation 19) were installed in Boring ATB-28-77U. For a review of these investigations, see Design Memorandum No. 40, "Ascalmore Creek-Tippo Bayou, Item No. 3 Control Structure, Item No. 4 Closure-Overflow Structure" (February 1978). Boring locations and profiles from Site 2 are shown on Plates 4 through 10.

d. Laboratory Tests. Laboratory tests, consisting of visual classification, water content determination, grain size analyses, and unconfined compression tests were performed by the Vicksburg District Soils Laboratory. Unconfined compression (UC) tests were performed on undisturbed clay samples only. Specific gravity, Atterberg Limits, unconsolidated undrained (Q) triaxial shear, direct shear (S), and consolidation tests were performed on selected, undisturbed samples by the Lower Mississippi Valley Division Soils Laboratory.

2-02. During Construction.

a. General. Investigations were performed at the Ascalmore-Tippo Control Structure construction site by both the Contractor and the Government during the construction period.

Generally, the investigations were performed to substantiate or refute Contractor allegations of differing site conditions.

b. Investigations of "Rock Stratum." During the installation of the dewatering system the contractor encountered what he considered to be a "rock stratum" near elevation 55. It should be noted that a thin (less than 1 foot thick) lense of rock had been reported in several exploratory borings. However, the elevation ranged between 43 and 55 indicating isolated lenses and not a rock layer condition. On 7 May 1979, the Contractor, in an effort to establish the presence of this rock stratum, hired Ware-Lind Engineers to drill one boring along the centerline of the structure near the approach monolith. A lense of rock about 4 inches thick was encountered near elevation 55. On 5 October through 16 October 1979, the Corps installed six Quality Assurance piezometers to monitor the phreatic surface above and below the elevation where the Contractor claimed the "rock stratum" was present. These investigations were performed in conjunction with a differing site conditions claim as described in paragraph 6-03.

c. Investigation of Backfill Slide Beneath the Gated/Drop Monolith. Two slides occurred in the backfill foundation for the gated/drop monolith as described in paragraph 5-05. Government field investigations consisted of:

(1) Inspecting, surveying, and photographing the slide plane.

(2) Recovering disturbed and undisturbed samples of the materials involved.

(3) Classifying the materials and performing unconfined compression tests on remolded samples in the Foundation and Materials Branch Soils Laboratory. Contractor investigations were performed under the direction of Dr. Oswald Rendon-Herrero. These investigations included, but were not limited to:

(1) Visual inspection of the slide

(2) Performing field vane shear tests.

d. Stability Slide on the Bank of the Tallahatchie River. On or about 3 December 1979, a slide developed on the top bank of the Tallahatchie River adjacent to the excavation cofferdam (Photographs 3 and 4). Investigations included installation of one piezometer (P-7) with the tip at elevation 60 and one slope inclinometer. It was determined that the slide was instigated by a rapid drop in the Tallahatchie River stage and no further problems were encountered.

SECTION III - GEOLOGY

3-01. Physiography-Topography. The Ascalmore-Tippo Control Structure is located in the east-central portion of the Yazoo Basin, a subprovince of the Mississippi Alluvial Valley. The Mississippi Alluvial Valley is located in the Central Gulf Coastal Plain. The control structure is located in what some geologists consider to have been a meander belt of the ancient Ohio River that is currently occupied by the Tallahatchie River (Figure 1). The site is located on a nearly flat alluvial floodplain whose only topographic features are remnants of past river migrations. Ground surface elevations range from approximately 135 to 142 feet with relief in excess of 10 feet being rare. Approximately 8 miles east of the control structure is the Loess Hills physiographic subprovince. The Loess Hills form the valley wall escarpment, have elevations in excess of 350 feet, and exhibit a rugged terrain where local relief may be in excess of 100 feet. Drainage from the Loess Hills subprovince flows toward the west. As a result, a band of braided relic alluvial fan materials, several miles wide, extends west from the valley wall.

3-02. Pleistocene History. The Ascalmore-Tippo Control Structure is located in the alluviated valley of the ancestral Ohio River. During the Pleistocene Epoch, continental glaciers formed on the North American and Eurasian land masses. There were four major periods of continental glaciation and each

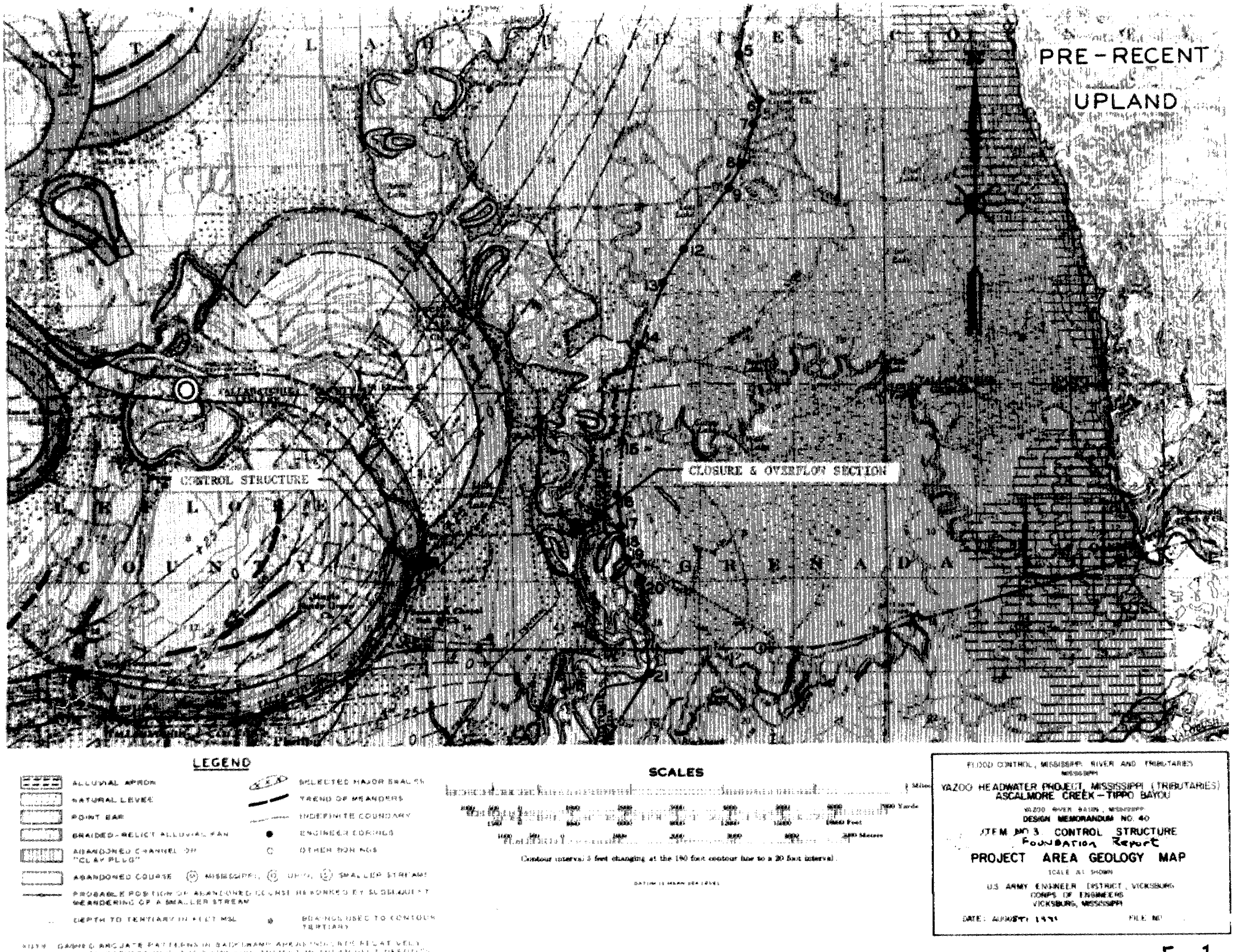

PRE-RECENT
UPLAND
CONTROL STRUCTURE
CLOSURE & OVERFLOW SECTION
G R E N A D A
C O U N T Y
LEGEND
ALLUVIAL APRON
NATURAL LEVEE
POINT BAR
BRAIDED-RELICT ALLUVIAL FAN
ABANDONED CHANNEL OR "CLAY PLUG"
ABANDONED COURSE
SELECTED MAJOR SWALES
TREND OF MEANDERS
INDEFINITE BOUNDARY
ENGINEER BORINGS
OTHER BORINGS
DEPTH TO TERTIARY IN FEET MSL
SCALES
Contour interval 5 feet changing at the 190 foot contour line to a 20 foot interval.
FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO HEADWATER PROJECT, MISSISSIPPI (TRIBUTARIES)
ASCALMORE CREEK - TIPPO BAYOU
YAZOO RIVER BASIN, MISSISSIPPI
DESIGN MEMORANDUM NO. 40
ITEM NO 3 CONTROL STRUCTURE
Foundation Report
PROJECT AREA GEOLOGY MAP
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
DATE: AUGUST 1991
FILE NO.

Fig 1

followed the same basic cycle. During periods of waxing (growing) glaciers, evaporation removed water from the ocean basins and it accumulated on the continents in the form of ice and snow. The volume of water removed was such that sea level was lowered approximately 400 feet worldwide. The resultant continental emergence rejuvenated the Mississippi River system and caused it to degrade its channels and form entrenched valleys, especially in the unconsolidated sediments of the Gulf Coastal Plain. During the waning (retreating) phase of each Ice Age, river regimes changed drastically. The changes resulted from two side effects of waning glaciers, increased sediment load and a rising sea level. The rivers of the Mississippi embayment became choked with sediments which they were no longer capable of transporting. They developed braided regimes and aggraded their channels in adjustment to the new higher stand of sea level. As the sea level continued to rise, the rivers formed meandering regimes. In areas adjacent to the walls of the entrenched valley system, such as the Ascalmore-Tippo site, a second process occurred which modified the typical alluvial sequence. The process was mass wasting along the valley walls and the development of braided fans where smaller streams entered the entrenched valley. In the Ascalmore-Tippo area, the Sparta (sand) Formation outcrops along the valley walls and beneath the alluvium. Colluvial deposits eroded from the Sparta Formation are typically poorly sorted (graded) and lithologically similar to outcrops at the Tertiary source. The presence of these colluvial materials accounts for the poorly defined stratigraphic sequence at the Ascalmore-Tippo Control Structure site.

3-03. Stratigraphy.

a. General. Alluvial materials in the Mississippi Valley are generally divisible into a fine-grained topstratum, which consists of clays, silts, and fine sands, and a coarse-grained substratum, which consists of sands and gravels. By definition, the alluvial sequence is Quaternary (Recent) in age. The base of the substratum is marked by a hiatus between the Quaternary alluvial sequence and the suballuvial Tertiary formation.

b. Topstratum.

(1) General. Topstratum sediments are classified according to the environment in which they are deposited. Each environment represents a specific set of environmental conditions in which the constituent materials are laid down in a specific manner. Typically, each environment has predictable characteristics such as grain size, texture, and other physical properties. Waterways Experiment Station Technical Report 3-480 entitled "Geological Investigations of the Yazoo Basin" (1979) presents a geological interpretation of the construction site based on the topstratum type present. There are seven recognized environments of deposition, four of which are present in and around the Ascalmore-Tippo Control Structure site. The four

recognized environments are abandoned channel, abandoned course, point bar, and braided relic alluvial fan (Figure 1).

(2) Abandoned Channel. The Ascalmore-Tippo Control Structure was constructed in an abandoned channel deposit. Abandoned channels or "clay plugs" are partially or wholly filled segments of stream channels which are formed when a stream shortens its course. The abandoned channel at the construction site was formed when a large ancestral river cut across the neck of one of its meander loops. According to published reports, abandoned channel deposits vary from 60 to 90 feet in thickness. Typically, the upstream ends of the arms of the loop are filled with a wedge of fine sand and silty sand. Soft blue-gray clays (CH) with high water content and high organic content fill in the loop between the sand wedges and comprise the "clay plug" portion of the abandoned channel. The upper parts of the "clay plug" deposit are often overconsolidated as a result of desiccation.

(3) Point Bar. A point bar deposit is located north of the construction site. Point bar topstratum sediments are deposited on the inside of river bends as a result of meandering of the stream. They consist of alternating ridges and swales which conform to the configuration of the river bend. Ridge deposits are remnants of elongated silty and sandy bars deposited during high river stages. Swales are deposited in the slack water between ridges during falling river stages and

consists primarily of clays and silty clays. Topstratum thicknesses in point bar areas vary from approximately 20 to 70 feet, with the thickest sections occurring in swale areas. The initially proposed site (Site 1) was located in a point bar topstratum area.

(4) Abandoned Course. Abandoned courses result when a river shifts its course and abandons a lengthy reach in favor of a new, shorter course. The abandoned course is generally occupied by a former tributary stream which is incapable of maintaining the old channel cross section. As a result, the abandoned course channel is aggraded. Often the smaller stream may meander within the confines of the older channel. Deposits in this environment generally consist of silts and silty sands which extend to the thalwag depth of the master stream. The Tallahatchie River occupies an abandoned course adjacent to the construction site.

(5) Braided Stream Deposits. Braided stream deposits consist of the sediments that were laid down by shallow, rapidly shifting streams during the early stages of the Mississippi River Valley alluviation. Although by far the greatest mass of the sediment deposited is coarse grained (hence included in the substratum), a thin, fine grained portion is often present. This portion also includes fine grained, relic, alluvial fan and apron deposits near the valley walls that

apparently accumulated continuously during the period of substratum deposition.

c. Substratum. Underlying the topstratum is the substratum which consists of sands (SP), silty sands (SP-SM), and sandy gravels (GP). According to published reports, the substratum has a total thickness of 30 to 100 feet. Deposition of the substratum is generally considered Quaternary in age and, as noted earlier, is associated with braided stream deposits as well as mass wasting of the nearby valley walls.

d. Suballuvial. Underlying the alluvial sequence (at the Ascalmore Tippo Control Structure site) are formations of the Eocene age, Claiborne Group. Immediately beneath the substratum is an outcrop of the Sparta Formation. Only a 40- to 60-foot thickness of this formation remains. Published reports describe the Sparta Formation as a fine grained, cross-bedded, lignitic, micaceous sand with highly lignitic silts and some clays above the basal portion. The lower part of the Sparta is recognized as a regional aquifer. Total thickness of the section in the subsurface ranges from 85 to 400 feet. Underlying the Sparta Formation is the Zilpha Formation. This unit consists of chocolate brown or gray, carbonaceous, silty, shaley, cross-bedded clay with stringers and lenses of micaceous sand.

3-04. Structure Tectonics.

a. Regional Structure. The Ascalmore-Tippo Control Structure is located on the west limb of the Mississippi

Structural Trough, a southerly plunging, regional syncline that extends from Cairo, Illinois, to near the latitude of Natchez, Mississippi. The structure separates the southern Appalachian Mountains from the Ouachita Mountains and is outlined at the surface by the Mississippi Embayment. The initial downwarping of this syncline began in the Mesozoic Era. The trough has been inundated several times with the most recent transgression-regression occurring during Vicksburg time (Oligocene Epoch). Subsidence and sediment accumulation occurred concurrently with total accumulations in the vicinity of Ascalmore-Tippo (Mesozoic and Cenozoic) in excess of 4,000 feet. The presence of this structure causes the suballuvial Tertiary formations at the construction site to dip 30 to 60 feet per mile in a west-southwesterly direction.

b. Faulting. A series of northeast-southwest, and northwest-southeast trending lineaments has been postulated for the Mississippi Embayment. This series of lineaments has been based on extrapolation of regional trends and some geomorphological evidence. There is no indication of active faulting in the area during Recent geologic time. However, an inactive fault (Tertiary age). located about 2 miles south-southeast of the control structure site has been mapped. This northeast-southwest trending fault is approximately 20 miles long and has a vertical displacement of about 100 feet with the northwest being the down-throwned side.

c. Earthquakes. No major earthquakes have been recorded in the area. A magnitude (Modified Mercalli Intensity) 5.0 in 1931 at Batesville and a magnitude 4.5 in 1967 at Greenville are the closest known epicenters. ER 1110-2-1806 presents a seismic zone map of the contiguous states that indicates that the Ascalmore-Tippo Control Structure is located in Zone 2, a zone where moderate earthquake damage can be anticipated. ER 1110-2-1806 recommends a seismic coefficient of 0.05 for structures constructed in this area.

3-05. Site Geology.

a. Topstratum. The Ascalmore-Tippo Control Structure is located in an abandoned channel topstratum deposit which consists primarily of clay (CH-CL) with subordinate amounts of silt (ML) and silty sand (SM). Excavation for this structure partially penetrated the topstratum with approximately 20 feet of topstratum materials remaining below final grade. The presence of compressible clay below final grade necessitated installation of foundation pilings (Photographs 5 and 6). Fifteen of 17 investigative borings were made in the abandoned channel topstratum and they revealed the following geology (Plates 11 through 15). The topstratum varies from 34 to 83 feet and averages 65 feet in total thickness. It is composed of 85 percent clay (CH-CL),12 percent silt (ML), and 3 percent silty sand (SM). Clay (CH-CL)was recovered in all 15 exploratory borings and varied in thickness from 32 to 71 feet with an average thickness of 57 feet. The clay was brown, gray to dark gray in color, ranged from soft to very stiff in consistency, and contained concretions, slickensides, wood, silt strata, sand strata, lignite, sandstone fragments, shell fragments, and was crumbly in certain parts. Two distinct zones were observed during the excavation. A zone up to 15 feet thick that contained shell fragments was encountered between elevations 105 and 123 feet. Additionally, a zone of slickensided clay (CH) with silt strata was encountered between elevations 110 and 130 feet (Photographs 7 and 8). Exploratory borings indicate additional zones of silt strata exist below final grade. Silt (ML) was recovered in 14 of 15 investigative borings and showed cumulative thicknesses which ranged from 2 to 23 feet and averaged 8 feet, where present. The silt was brown and gray, ranged from soft to hard in consistency, and was sandy with clay strata, roots, wood, and other organic material. The silty sand (SM) portion of the topstratum was encountered in 5 of the 15 borings and ranged in cumulative thickness from 3 to 10 feet (the average thickness was 6 feet, where present). The silty sand (SM) ranged from black to gray, was fine grained, and contained lignite and clay strata.

b. Substratum. Ten of the 17 investigative borings totally penetrated the substratum. The substratum consisted primarily of sand (SP & SM) and ranged from 22 to 71 feet incumulative thickness with an average thickness of 39 feet. Sand (SP) accounted for about 70 percent of the unit, and silty sand (SM) accounted for around 25 percent of the unit. The substratum also contains minor amounts of sandy gravel (GP) and clay (CH). The substratum sands (SP) are fine, medium, and coarse grained, gray in color, and contain lignite and clay strata. A 5-foot horizon of clay (CH) was encountered in Boring ATB-24-77U. The clay (CH) was gray, hard, and contained up to 50 percent sand. The gravel (GP) encountered in 3 of the investigative borings, was brown and gray and occurred at or near the base of the substratum. Ferruginous sandstone float rock, which ranged up to 0.5 foot in thickness, was encountered in 5 of the investigative borings. This material is known to occur in the Sparta Formation and it is believed that the ferruginous sandstone encountered in the alluvium had been eroded from Sparta outcrops in the uplands and transported to the area by streams. The noticeable variation in elevation where the pieces of sandstone were located (elevation 43 to elevation 55) make it highly unlikely it is an in situ stratum. The substratum was not exposed in the structural excavation.

c. Tertiary. The underlying Tertiary formation at the Ascalmore-Tippo site is the Eocene age Sparta (sand) Formation of the Claiborne Group. As noted earlier, the process of mass wasting did not promote the development of a distinct substratum-Tertiary boundary due the lithologic similarities between the "in situ"Sparta and the "transported" Sparta. Therefore, the definition of this boundary, which is highly irregular and indicates a very complex geologic history, was based on the following criteria:

(1) Relative Uniformity of Grain Size. The Sparta Formation is a relatively homogenous formation of fine grained micaceous sands with abundant lignite. The presence of coarse sands or gravels was believed to represent a reworking of the materials and resulted in assigning them to the substratum unit.

(2) Abundance of Mica and Presence (or Absence) of Lignite. These two accessory materials are generally present in the Sparta Formation, and their absence was a strong indication the material was alluvium.

(3) The Principle of Superposition. This fundamental principle of geology states that in any succession of strata, not severely structurally deformed, the oldest stratum lies at the bottom with successively younger ones above. Therefore, when a sample that appeared to be in situ Sparta was found to overlie a clearly alluvial stratum, it was necessary to assign the overlying sample to the alluvial substratum unit.

The top of the Sparta Formation was encountered at an average elevation of 33 feet although the interface varied from elevation 16 to elevation 45. Tertiary samples were recovered from 10 of the 17 exploratory borings. Six of the 17 exploratory borings completely penetrated the Sparta Formation and showed that it had a maximum thickness of 66 feet, a minimum thickness of 43 feet, and an average thickness of 55 feet in this locality. The Sparta Formation consists primarily of sand (SP), which constitutes about 87 percent of the formation and silty sand (SM), which comprises around 10 percent of the formation. The Sparta is composed of light gray, fine and medium grained sand (SP) and silty sand (SM) with some clay strata present in the silty sand. Underlying the Sparta Formation is the Zilpha Formation. Six exploratory borings recovered samples of the Zilpha Formation and showed that it consisted of a hard, brown clay (CH) with silt strata and sand strata. The Zilpha was encountered at elevations which ranged from -27 to -15 and averaged -23.

3-06. Ground Water Conditions. The alluvial and Tertiary sands form an extensive local aquifer. Investigations prior to construction established that the ground water table rises with stages on the Tallahatchie River, although a delayed response was noted. Investigations also established that the Sparta Sand Formation discharges into the alluvium and maintains the water table near elevation 122 even though the Tallahatchie River stage may fall to elevation 115 or below. This granular section required extensive dewatering during construction to mitigate uplift pressures on the base of the impermeable clay topstratum (see paragraph 5-02).

SECTION IV - DESIGN CONSIDERATIONS

4-01. Design Shear Strengths.

a. Topstratum Clays. As noted above, the construction site was located in an abandoned channel "clay plug." An analysis of the laboratory tests, outlined in paragraph 2-01(d), indicated that the massive clay topstratum could be subdivided into eight zones based on the material's shear strength, Atterberg Limits, wet density, and water content. These zones are shown on Plate 16.

b. Long-term Stability. The design consolidated-drained (S) shear strength of the topstratum clay was based on the results of seven direct shear tests. The envelopes for these tests are presented on Plate 17. Based on the results of these seven tests, a conservative design S-strength of c = 0 psf and Ø = 20° was selected for the clay.

c. Foundation Sands. The design shear strength for the foundation sands was estimated based on experience. A consolidated-drained strength of Ø = 30° and c = 0 psf was used for the design.

d. Excavated Materials, Backfills, Levees. A design shear strength of Ø = 0° and c = 500 psf was estimated from past experience for the excavated materials section, levee fill, cofferdam, and structural backfill.

4-02. Geotechnical Design.

a. Stability Analyses.

(1) General. Stability analyses were performed for the "end of construction case" using the WES computer and the New Orleans District Method of Planes Program, No. 741-G1-A2-160. Lower Mississippi Valley Division Wedge Method Program No. 41-01-Z5-028 was used for more complicated soil conditions. The design undrained strength profile shown on Plate 17 was used for topstratum clays in all analyses. An S-strength was used for the foundation sands. The minimum acceptable factor of safety for the end-of-construction analysis was approximately 1.3. For a complete review of the geotechnical design of the Ascalmore-Tippo Control Structure, see Design Memorandum No. 40, Item No. 3 - Control Structure, Item No. 4 Closure - Overflow Structure (February 1978).

(2) Structure Excavation. Several sections through the excavation were analyzed for the end-of-construction case to determine the steepest slopes feasible. The results of the analyses required that the excavation slope be broken and include a bench at elevation 120 because the shear strength of the topstratum clays was considered relatively low within the slickensided zone. Above elevation 120 a 1-on-5 slope was used. Below the slickensided zone the strength increased and a steeper slope (1V on 3H) was used. This general excavation slope was evaluated during design and extends from the lowest point in the

excavation (elevation 88) to natural ground and includes a spoil section on the top bank. The minimum factor of safety for this slope was 1.29 and it required a spoil setback distance of 100 feet.

(3) Channel Excavation. End of construction stability analysis for the inlet and outlet channels envisioned a bottom elevation for the inlet channel of 118 and a minimum factor of safety (for the 1V on 4-1/2H design slopes) of 1.31. Additionally, the design envisioned a bottom elevation for the outlet channel of 104 and a minimum factor of safety of 1.27 for the 1V on 4-1/2H slopes. The minimum long-term factor of safety for the channel slopes was 1.64.

(4) Structure Backfill Slopes. Sections through the inlet and outlet channel wingwalls were analyzed to determine safe backfill elevations and slopes. These sections were taken perpendicular to the side of each wingwall. Backfill materials included a sand wedge immediately behind each wall and random fill above the excavation slope. Any resistance to sliding provided by the walls and pilings was neglected. Only failure planes beneath the base of the walls were investigated. The inlet wingwall stability analysis included a levee section and an average channel elevation of 100. A skewed section analysis, representative of the 1V on 3-1/2H backfill slope which transitions to a 1V on 4-1/2H channel slope, was analyzed and produced a minimum factor of safety of 1.3. Safe berm distances

for the slopes up to natural ground and the location of the levee fill were also determined. A long-term factor of safety for the 1V on 3-1/2H design slope was 1.27.

b. Foundation Analysis. The control structure consists basically of three U-frame monoliths placed end to end with T-type wingwalls channel side and river side. Each wingwall is divided into two monoliths. Floodwalls are located transverse to the channel centerline on each side of the structure. The north and south floodwalls are divided into six monoliths each. All of the structural components of the control structure are supported by piling.

SECTION V - EXCAVATION PROCEDURES FOR COMPONENT PARTS

5-01. Excavation Grades and Geometry.

a. General. The Ascalmore-Tippo Control Structure consists of six basic components (Plates 11 and 17). The structure is approximately symmetrical and consists of riverside retaining walls (north and south), channel side retaining walls (north and south), an approach monolith, a gated/drop monolith, a stilling basin monolith, and a floodwall (north and south). The control structure was constructed on an H-pile foundation (see Section 7-04).

b. Channel Side Retaining Wall. Each (north and south) channel side retaining wall consists of two monoliths (Monolith A and B). Monolith A measures 25 by 14 feet and is founded at elevations that grade downward from 120.5 feet to 116.38 feet. Monolith B is downstream of Monolith A and has a base which is 23.5 feet by 16 feet. The foundation for this monolith slopes from elevation 115.33 feet (at the junction with Monolith A) to 111.5 feet (at the junction with the approach monolith). Both the north and south channel side retaining walls are identical.

c. Approach Monolith. The approach monolith has a base which is 49.5 feet by 9.9 feet and is founded at elevation 114.5 feet. The approach monolith joins the north and south channel side retaining walls, and its outer 2-foot walls constitute a continuation of the retaining walls. Where the approach monolith joins the gated/drop monolith the base of the monolith widens to 54 feet. There are two 8-foot by 6.5-foot manholes located on the outside of the approach monolith which serve as a part of the backfill drainage system.

d. Gated/Drop Monolith. The gate/drop monolith is identified in two parts: Part A, which contains the gates, breastwall, and stoplogs; and Part B, which constitutes the ogee portion of the monolith. Part A measures 53.5 feet in width and extends 22.6 feet upstream/downstream. The monolith is constructed on a 2-on-1 slope and grades downward from elevation 114.5 feet where it joins the approach monolith to 103.25 feet. The Part B portion of the gate/drop monolith widens from 53.5 feet to 56.2 feet. It has an overall length of 25 feet, 10 inches and is constructed on a 2-on-1 slope from elevation 103.25 feet to elevation 91 feet. The 2-on-1 slope terminates 1.3 feet upstream of the end sill.

e. Stilling Basin. The stilling basin has a foundation which measures 56.2 feet by 20.2 feet. It narrows at its downstream extent to 54 feet. The stilling basin is founded at elevation 91 feet.

f. Riverside Retaining Walls. There are two riverside retaining walls (north and south). Both walls consist of two monoliths (Monoliths C and D). Monolith C adjoins the stilling basin and is 24 feet by 16.9 feet. It is founded at elevation 88 feet which represents the lowest foundation of this structure. Monolith D has a base which measures 30 feet by 19 feet and slopes upward from elevation 88 feet to elevation 95.5 feet.

g. Floodwalls. A north and south floodwall extends from the approach monolith and ties into natural earth. The outermost portion of the floodwall consists of an I-wall which extends to an elevation of 148.5 feet. Individual monoliths and foundation grades for the floodwall are shown on Plates 14 and 15.

5-02. Dewatering Provisions.

a. General. Dewatering of the Ascalmore-Tippo Control Structure site required lowering phreatic surface in the alluvial and Sparta Formation aquifers which are located above the Zilpha Formation. The Zilpha is primarily clay and therefore acts as an aquaclude. The dewatering item of work was performed by Carolina Dewatering Corporation under a subcontract. Dewatering requirements and the system used by the contractor are outlined below.

b. Contract Requirements. Dewatering requirements for the Ascalmore Tippo Control Structure closely followed the guide specifications for dewatering (LMKSP-GS-003, Section 2). The major dewatering requirements the Contractor had to perform were as follows:

(1) Lower the phreatic surface to a point 5 feet below the bottom of the excavation and 5 feet below the

sideslopes. However, once concrete had been placed over the foundation pilings, the phreatic surface was allowed to rise to a point 7 feet above the deepest portion of the excavation. The dewatering system was to be designed, installed, operated, and maintained to dewater the excavation for river stages up to and including elevation 138 feet.

(2) Install a system of construction piezometers to monitor the free water surface beneath the construction site.

(3) Collect and dispose of all surface water, regardless of the source. The surface water control system had to be capable of handling 4 inches of rainfall in 24 hours.

(4) Propose and implement a plan for rewatering the site at the conclusion of work.

(5) Provide a mechanical means for measuring the effluent from each well and from the dewatering system as a whole.

(6) Design, install, and operate the dewatering system in a manner which would preclude sanding and to provide a means to measure the sanding rate of each well.

c. Dewatering System Submitted and Approved. The system originally submitted by the Contractor required modification subsequent to the Corps review as discussed in paragraph 6-03. The revised system, which was approved by the Corps and installed at the Ascalmore-Tippo Control Structure construction site, is outlined below (Plate 18):

(1) The Contractor installed, by the jetting method, 13 partially penetrating 12-inch dewatering wells with 0.040-inch slotted screens. The screen lengths varied from 25 to 40 feet (Photographs 9 through 11). Due to declining production, it was necessary to add an additional well during the construction period (see paragraph 6-03b). The dewatering wells were installed to a total depth of 100 feet. The locations and relevant details are shown on Plate 19. Photograph 12 shows an aerial view of the installed system. Plate 19 graphically outlines the performance of the system during the construction period.

(2) Three construction piezometers were installed by the Contractor to monitor the phreatic surface in the aquifer (Photograph 13). In addition, the Corps of Engineers installed seven quality assurance piezometers as discussed in paragraphs 2-02d and 6-03a. Piezometer locations are shown on Plate 18.

(3) Surface water control was performed utilizing portable sump pumps which were located in low areas and operated on an as-needed basis. Some problems developed due to standing surface water on exposed foundations (see Section 8).

(4) Rewatering was performed by directing the effluent from the dewatering system into the open excavation in a controlled manner. The groundwater table was kept at or below the freewater surface during rewatering.

(5) Metering of the effluent from the dewatering system was achieved utilizing in-line flow meters.

(6) Periodic testing for sanding was performed by collecting samples of discharge from the individual wells and visually checking for sand content.

5-03. Overburden Excavation. Excavation was performed using scrapers, backhoes and dump trucks. No unusual problems were encountered.

5-04. Foundation Preparations. Foundations were kept free of water and cleaned prior to concrete placement. Overexcavated areas beneath the drop structure were backfilled with clay material. Overexcavated areas beneath the stilling basin were backfilled with concrete (Plate 13).

5-05. Unusual Problems.

a. General. Problems were experienced during the backfilling operation at the Ascalmore Creek-Tippo Bayou Control Structure. Slope failures occurred subsequent to backfilling areas beneath the approach and gated/drop monoliths (impervious backfill) and south of the riverside retaining wall (random backfill).

b. Approach and Gated/Drop Monoliths-Impervious Backfill Slide. Construction of the project required excavation of a 1-on-3 slope beneath the approach and gated/drop monoliths. The 1-on-3 slope was backfilled with impervious material to a 1-on-2 slope (both slopes had a common toe). Within days of the backfilling operation the impervious wedge failed along the backfill-excavation grade interface (Photographs 14 through 16). Investigations were performed by District and Greenwood Area Office personnel who concluded that the slide was a result of improper construction practices. The following construction methods are specifically noted as contributing factors:

(1) Backfill material was "dumped" from the top of the 1-on-3 slope. (The contract requires placement in horizontal lifts.)

(2) Compaction was normal to the excavation slope (Photograph 17). (The contract required a compaction effort for each horizontal lift.)

(3) As a result of (1) and (2) above, the required density was not achieved. (Several field density tests, which indicated inadequate compaction, were performed prior to the slope failure.)

(4) The backfill slope was overbuilt; that is, it was steeper than the 1-on-2 design grade. This surcharged the active wedge of soil.

The Contractor was instructed to repair the slide. The required 1-on-3 slope was reestablished, and the impervious backfill was placed as per contract specifications (Photographs 18 and 19). Unfortunately, no attempt was made to ensure that the failure surface was removed and the impervious backfill wedge failed a second time. Field investigations revealed that the second slide resulted from movement on the original failure surface which had not been removed (Photographs 20 and 21). All disturbed material was then removed and the impervious fill was reconstructed as shown on Plate 13. No further problems were encountered.

c. Random Backfill Slide. A slide occurred along the interface between the excavation grade and the random backfill material south of the riverside retaining wall. The outside portion of the south riverside retaining wall contains a pervious fill with a collector pipe system. Areas outside the pervious fill require a random backfill. Ideally, both the random and the pervious fills should be brought up to grade in equal increments. The contractor experienced delays with the installation of the collector pipe system for the pervious fill and elected to place the random fill first. The resulting unrestrained lateral earth pressures that developed in the random fill instigated the slide (Photographs 21, 22, 23 and 24). The area was repaired to the satisfaction of Area Office personnel.

SECTION VI - CHARACTER OF THE FOUNDATION

6-01. Foundation Surfaces of Each Component The Ascalmore Creek-Tippo Bayou Control Structure is located in an abandoned channel (clay plug) topstratum sequence. The site was located as close as possible to the thalwag of the abandoned channel so as to maximize the clay thickness remaining below final excavation grade. All components of the structure were founded on a medium to very stiff clay (CH-CL) material or on a compacted backfill material. The nature of the foundation materials exposed in the open excavation closely paralleled the model developed by design engineers. No unexpected conditions were encountered. The compressible nature of the in-situ clay foundation necessitated the installation of H-piles to ensure adequate bearing capacity for the structural components. The approach monolith and the gated/drop monolith are founded on a varying thickness of compacted impervious backfill (Plate 13), while the floodwall, excluding the I-wall portions, is founded on both random and impervious backfill (Plates 14 and 15). A description of the foundation piling installation is given in Paragraph 7-04 and a review of foundation problems associated with the backfilling operation is presented in Paragraph 5-05.

6-02. Condition of the Foundation. The Foundations for this structure consisted of clay (CH-CL). Foundation area were cleaned and free of surface water prior to concrete placement. Overexcavated foundation areas were backfilled with concrete.

6-03. Water Problems. Problems were encountered during installation and operation of the Contractor's dewatering system as outlined below:

a. Investigations of Alleged Alluvial "Rock Stratum" and Its Effects on Dewatering. During installation of the dewatering system, the Contractor encountered what he claimed to be a sandstone stratum at approximately elevation 55 (See paragraph 30-5b). The Contractor employed Ware Lind Engineering, Inc., Jackson, Mississippi, to perform one exploratory boring to ascertain the nature of the stratum. This boring was drilled on 7 May 1979. Based on this investigation, the Contractor initially envisioned dewatering only that portion of the substratum-Tertiary aquifer located above the alleged rock stratum. The Contractor contended that the lower portion of the aquifer was effectively isolated from the upper portion by the rock stratum. During the review process the Corps required the Contractor to extend his dewatering wells into the lower portion of the granular section. The Contractor complied; however, he requested compensation for additional work above the effort he anticipated based on the contract drawings (i.e., differing site conditions). During the interval 5 October through 16 October 1979, the Corps installed six Quality Assurance piezometers at the site to collect data related to this contention. Piezometers P-1, P-2, and P-3 (tip elevations 60, 40.3, and -10, respectively) were installed adjacent to the county road.

Piezometers P-4, P-5, and P-6 (tip elevations 60, 45, and -10, respectively) were installed downstream of the stilling basin (Plate 18). Readings from these piezometers substantially confirmed the Government's position that the granular materials above and below the claimed rock stratum near elevation 55 are hydrologically connected.

b. Diminishing Well Production. Encrustation of the well screens caused a decrease in dewatering well productions. The dewatering wells were successfully treated with a cleaning agent. In addition, the Contractor installed auxiliary dewatering well 6-A which was utilized during construction. This well was not indicated on the original dewatering plan.

6-04. Foundation Materials Mapped. All soils mapping was done in accordance with the Unified Soil Classification System (USCS). Soil types were grouped together and assigned to their respective geologic units which are identified on Plates 11, 12, 13, 14, and 15. Excavation for the structure was entirely in abandoned channel "clay plug" material. A large part of the structure was constructed on backfill materials and all of the structural components were founded on H-piles. For these reasons no attempt was made to map the exposed foundation areas in plan view. However, samples of foundation materials were recovered. The location and laboratory classification of recovered samples is shown on Plate 17 and Table 1.

SECTION VII - FOUNDATION TREATMENTS

7-01. Cutoffs. Sheet pile cutoffs to prevent loss of foundation materials were installed beneath all major components of the control structure. For a plan showing the location and details of the sheet pile cutoffs, see Plates 20 and 21, and Photograph 25.

7-02. Drainage Provisions.

a. General. Backfill areas of the Ascalmore Creek-Tippo Bayou Control Structure contain select sand for drainage, impervious backfill to prevent groundwater seepage, and random fill (Plates 11 and 22).

b. Impervious Backfill. Impervious backfill was utilized in three general areas of the Ascalmore Creek-Tippo Bayou Control Structure. Impervious backfill was used in the foundation for the approach and gated/drop monoliths. The excavation slope was cut to a 1V on 3H grade and backfilled to a 1V on 2H grade with both slopes converging at the same toe. The purpose of this impervious backfill wedge was to reduce concrete quantities required in the two monoliths. An 8-foot-wide impervious backfill cutoff was constructed beneath the floodwall to prevent underseepage. The impervious core extends from excavation grade to the base of the floodwall. A 12-inch-thick impervious backfill layer (clay cap) overlies all pervious backfill areas (except when pervious material was used as a bedding material in channel areas). The clay cap prevents infiltration of surface water into the structure drainage system.

c. Pervious Backfill. Pervious backfill was placed landside of all structure monoliths to dissipate the hydrostatic pressure against the walls. The pervious backfill consists of a select sand wedge with a filter sand-filter gravel collector system. Eight-inch perforated PVC pipes drain the filter sand-filter gravel system and empty into cleanout manholes both upstream and downstream of the impervious cutoff (Photograph 24, Plate 23).

d. Random Backfill. All backfill areas except the impervious and pervious areas outlined above were backfilled with a random material. Random backfill consisted of excavated fat clay (CH-CL) (Plates 11 and 22).

7-03. Instrumentation. Eight permanent piezometers were installed at the Ascalmore Creek-Tippo Bayou Control Structure to monitor hydrostatic pressures in the backfill areas, beneath the stilling basin, and in the foundation sands (Plate 20). Two backfill piezometers (P-1 and P-2) with tip elevations of 120 are located 50 feet left and right, respectively, of Station 7+60. Two backfill piezometers (P-7 and P-8) with tip elevations of 98 are located 55 feet left and right, respectively, of Station 6+29. Piezometers P-1 and P-2 monitor pressures in the pervious backfill upstream of the floodwall. Piezometers P-7 and P-8 monitor hydrostatic pressures in the pervious backfill downstream of the floodwall. Piezometers P-3, P-4, and P-6 are located in the substratum sands at elevation 55. These piezometers are located on the structure centerline at Stations 7+35, 6+95, and 6+51, respectively. Piezometer P-5 has a tip elevation of 88 and is located 3 feet below the structure stilling basin at Station 6+61. This piezometer records pressure against the base of the stilling basin slab.

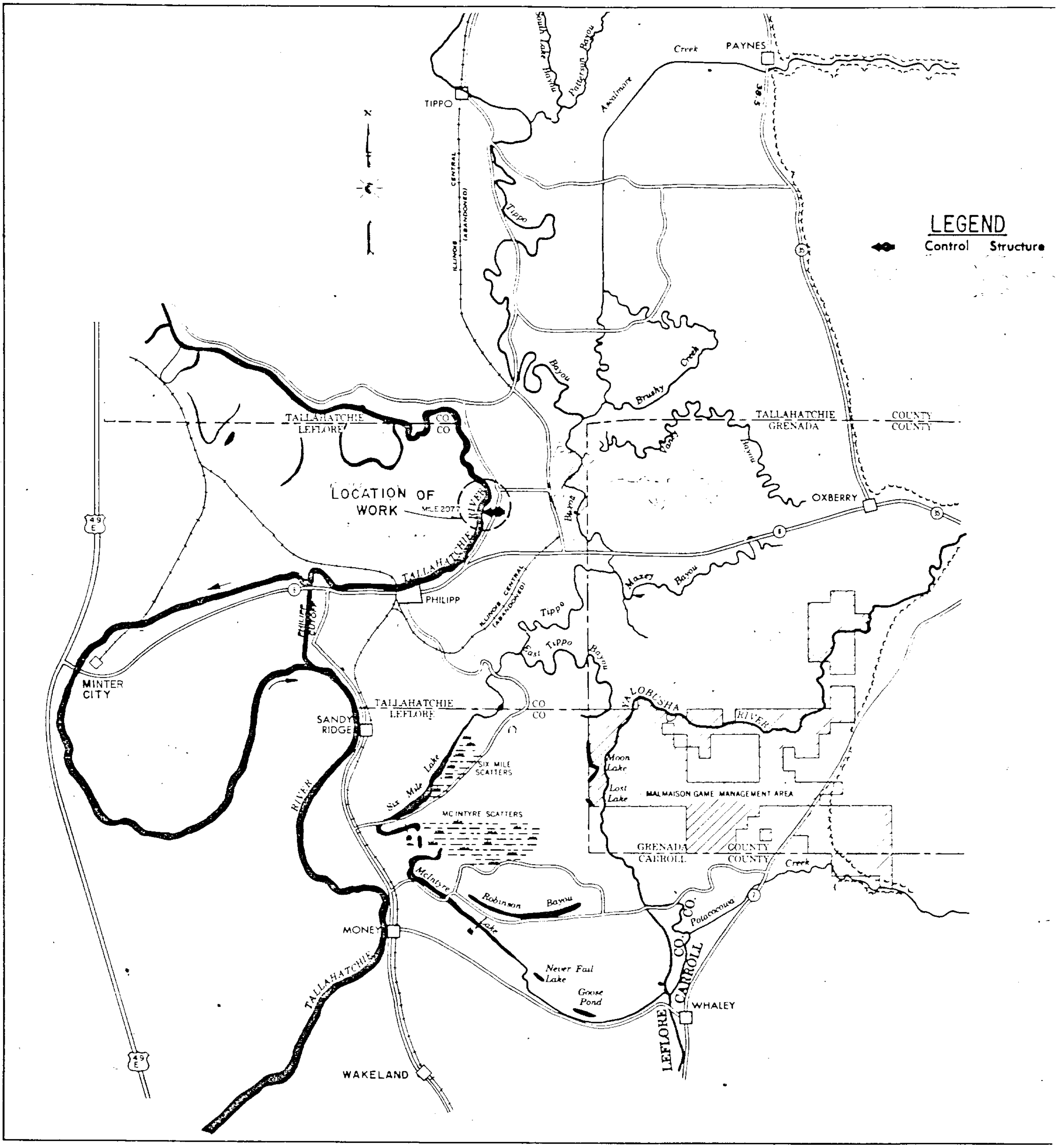
7-04. Pile Installation. All concrete components of the Ascalmore-Tippo Control Structure were constructed on H-piling foundations. H-pilings are both vertical and battered and extend 70 to 105 feet in depth. The pile tips extended into the suballuvial Sparta formation. Actual installation of the foundation piles was preceded by a field load test on two test piles. The test piles were located beneath the approach monolith (Photograph 5) and the stilling basin monolith (Photograph 6).

SECTION VIII - CHANGES FROM DESIGN

Excavation for the Ascalmore-Tippo Control Structure exceeded design grade beneath the gated/drop monolith and the stilling basin monolith. Overexcavation beneath gated/drop structure resulted from removal of the disturbed materials involved in the backfill slide (see Paragraph 5-05b). At the stilling basin, the Contractor overexcavated wet, unsuitable material (3 to 20 inches) and backfilled up to elevation 91 with concrete to develop a dry working surface for concrete placement. These areas are indicated on Plate 13.

SECTION IX - POSSIBLE FUTURE PROBLEMS

9-01. Possible Foundation Problems, Riverside Retaining Walls. Each riverside retaining wall (north and south) contains a 5-foot-deep sheetpile cutoff. These retaining walls are founded on battered H-piles, some of which are on the channel side of the sheetpile cutoff. It has been established that the phreatic surface in the alluvial-Sparta aquifer does not fall below elevation 122. Therefore, during low river stages and especially during periods when the structure is unwatered, ground water could migrate along the foundation piles and lead to piping and the development of subgrade cavities beneath the riverside retaining wall.



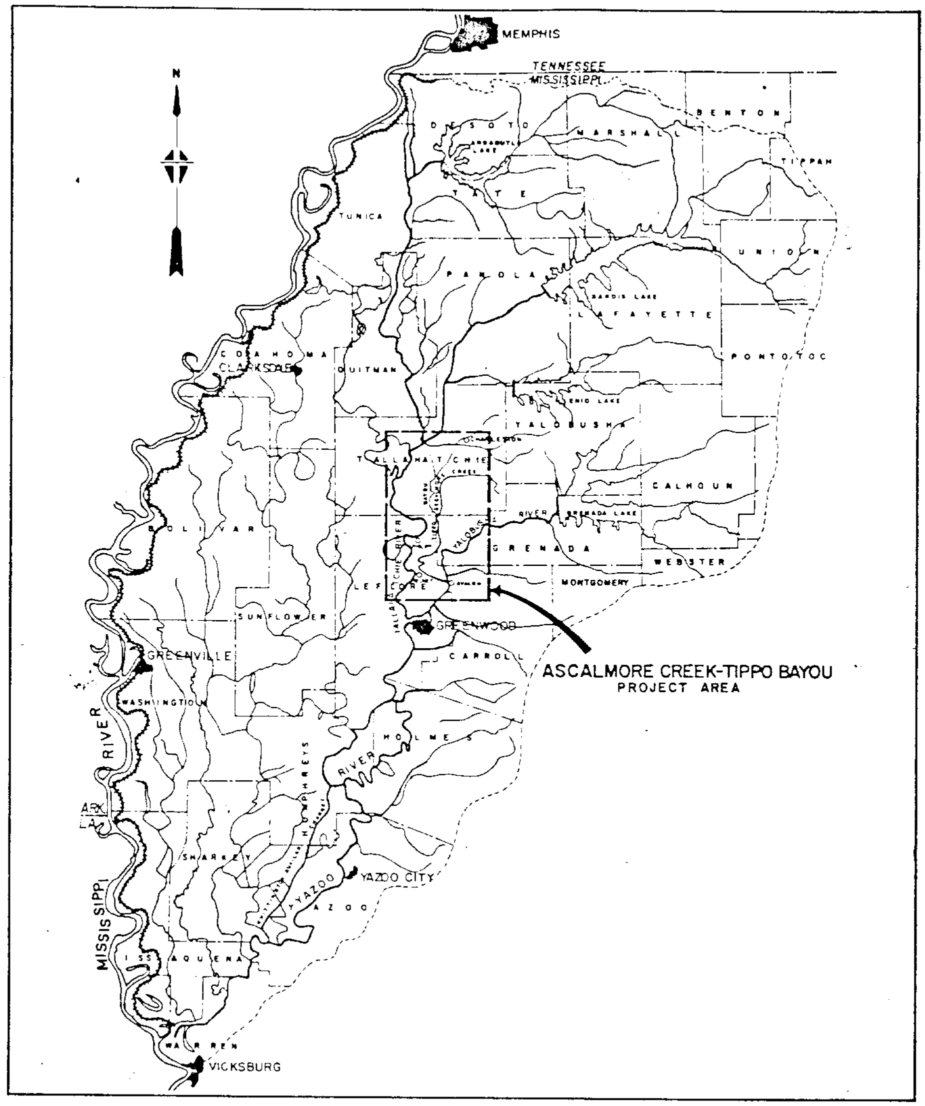
PROJECT LOCATION MAP

SCALE IN MILES

0 1 2 3 4

WORK SAFELY

END
Structure



VICINITY MAP

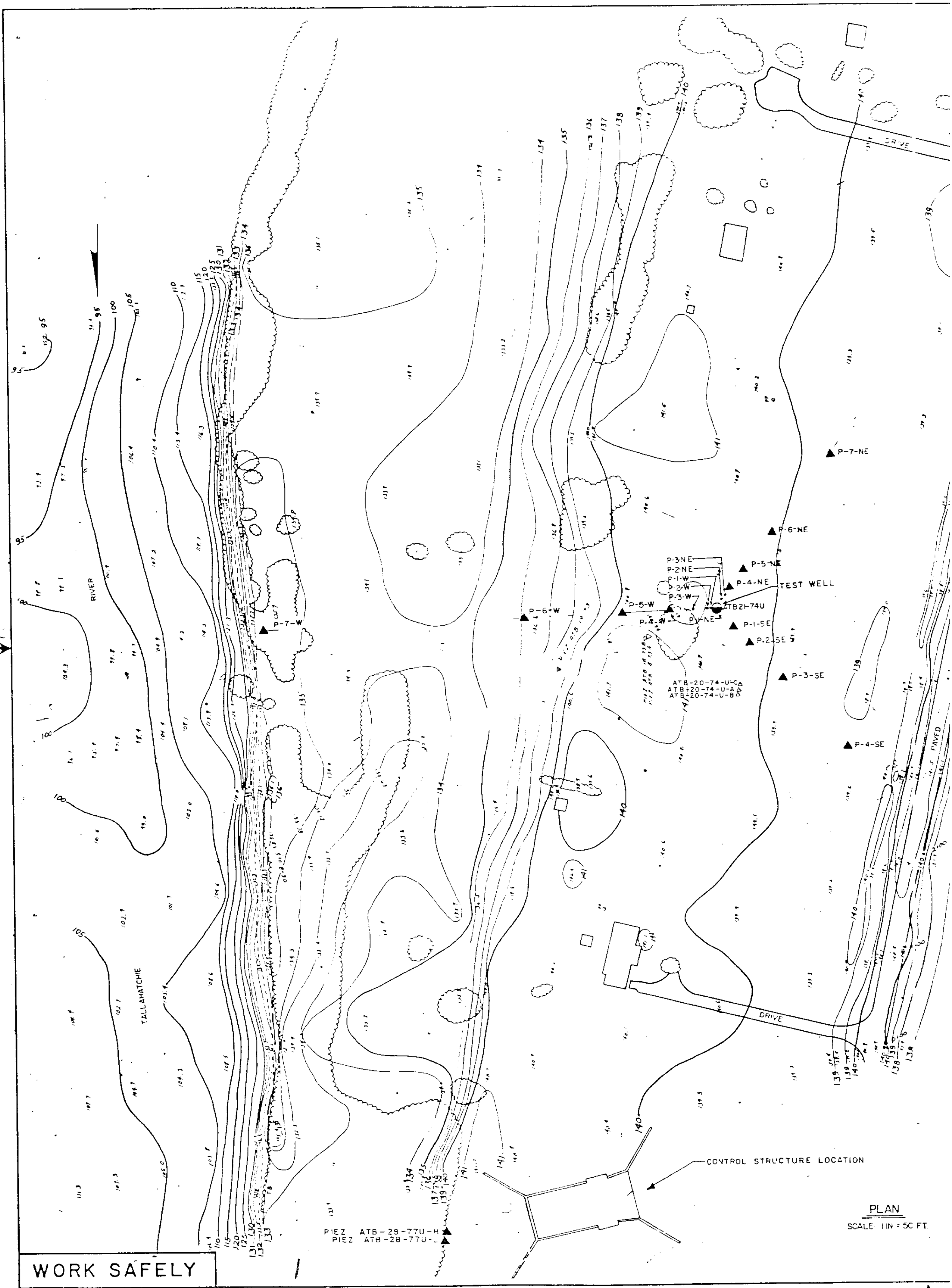
SCALE IN MILES
5 0 5 10 15 20 25 30

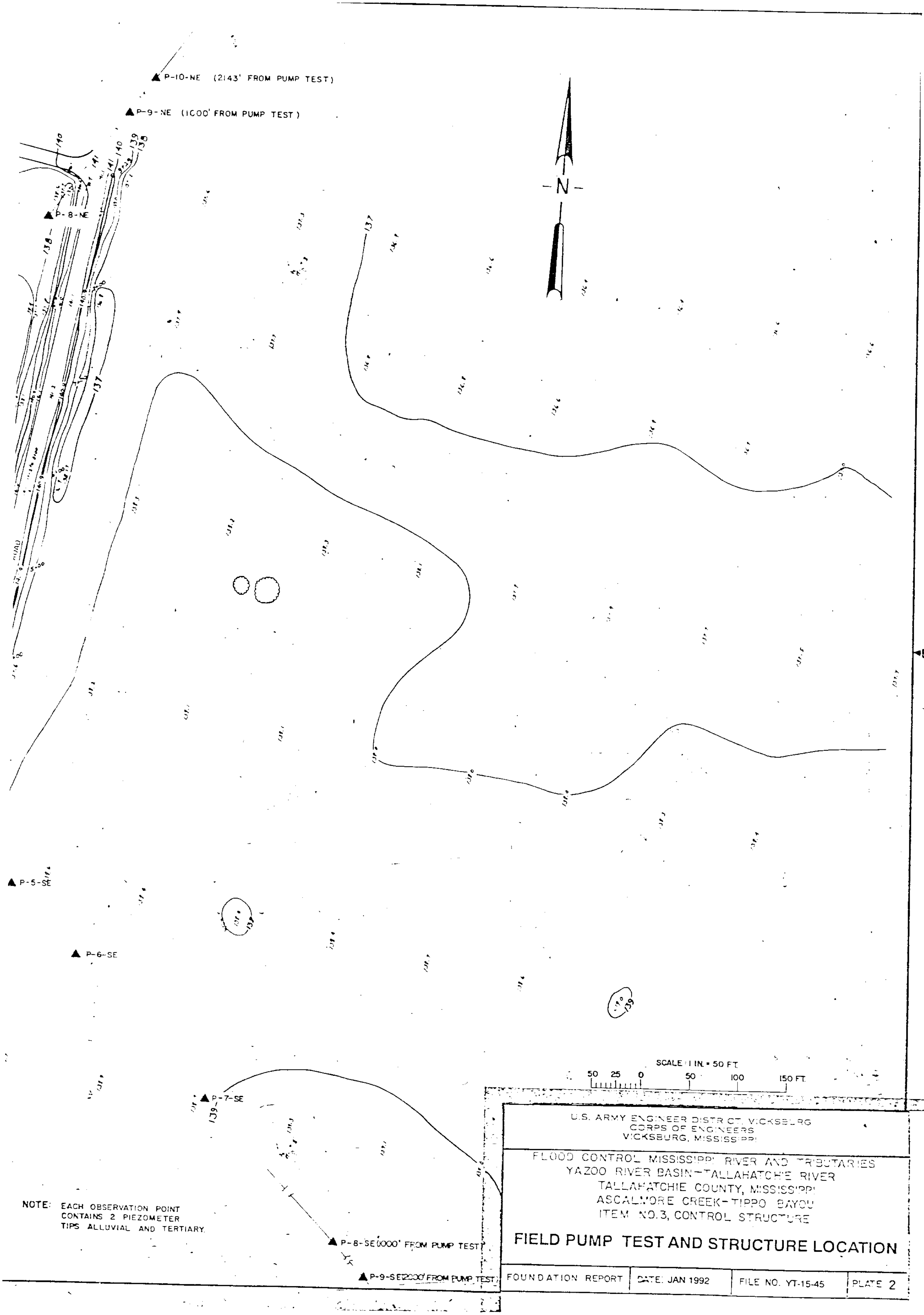
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

PROJECT LOCATION

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 1


TALLAHATCHIE
RIVER
P-7-NE
P-6-NE
P-5-NE
P-4-NE
TEST WELL
P-3-NE
P-2-NE
P-1-W
P-2-W
P-3-W
P-5-W
P-4-W
P-1-NE
ATB2H-74U
P-1-SE
P-2-SE
P-3-SE
P-4-SE
P-6-W
P-7-W
ATB-20-74-U-C
ATB-20-74-U-A
ATB-20-74-U-B
DRIVE
DRIVE
PAVED
CONTROL STRUCTURE LOCATION
PIEZ ATB-29-77U-H
PIEZ ATB-28-77U-L
PLAN
SCALE: 1 IN = 50 FT
WORK SAFELY



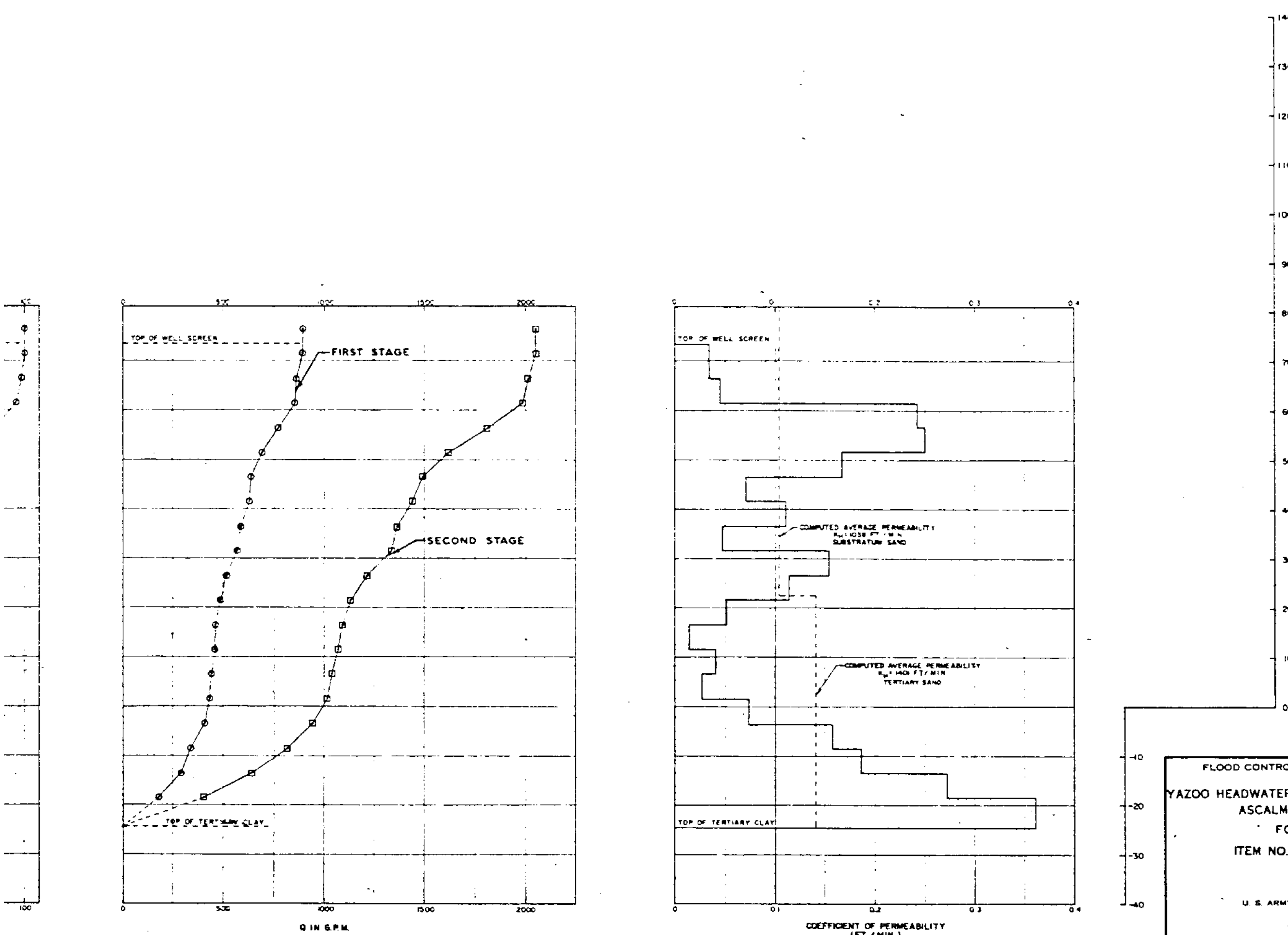
NOTE: EACH OBSERVATION POINT CONTAINS 2 PIEZOMETER TIPS ALLUVIAL AND TERTIARY.

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

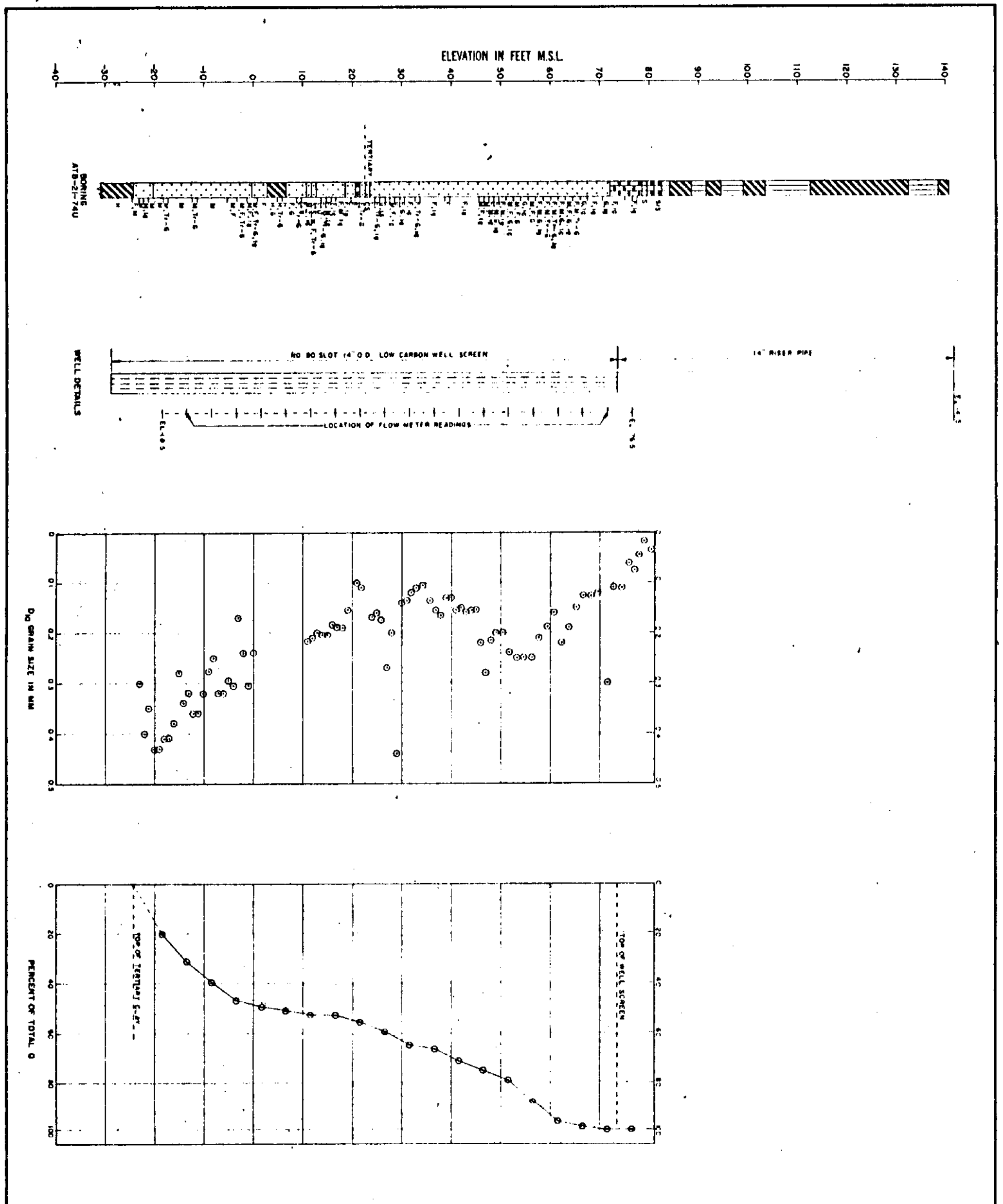
FIELD PUMP TEST AND STRUCTURE LOCATION

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 2

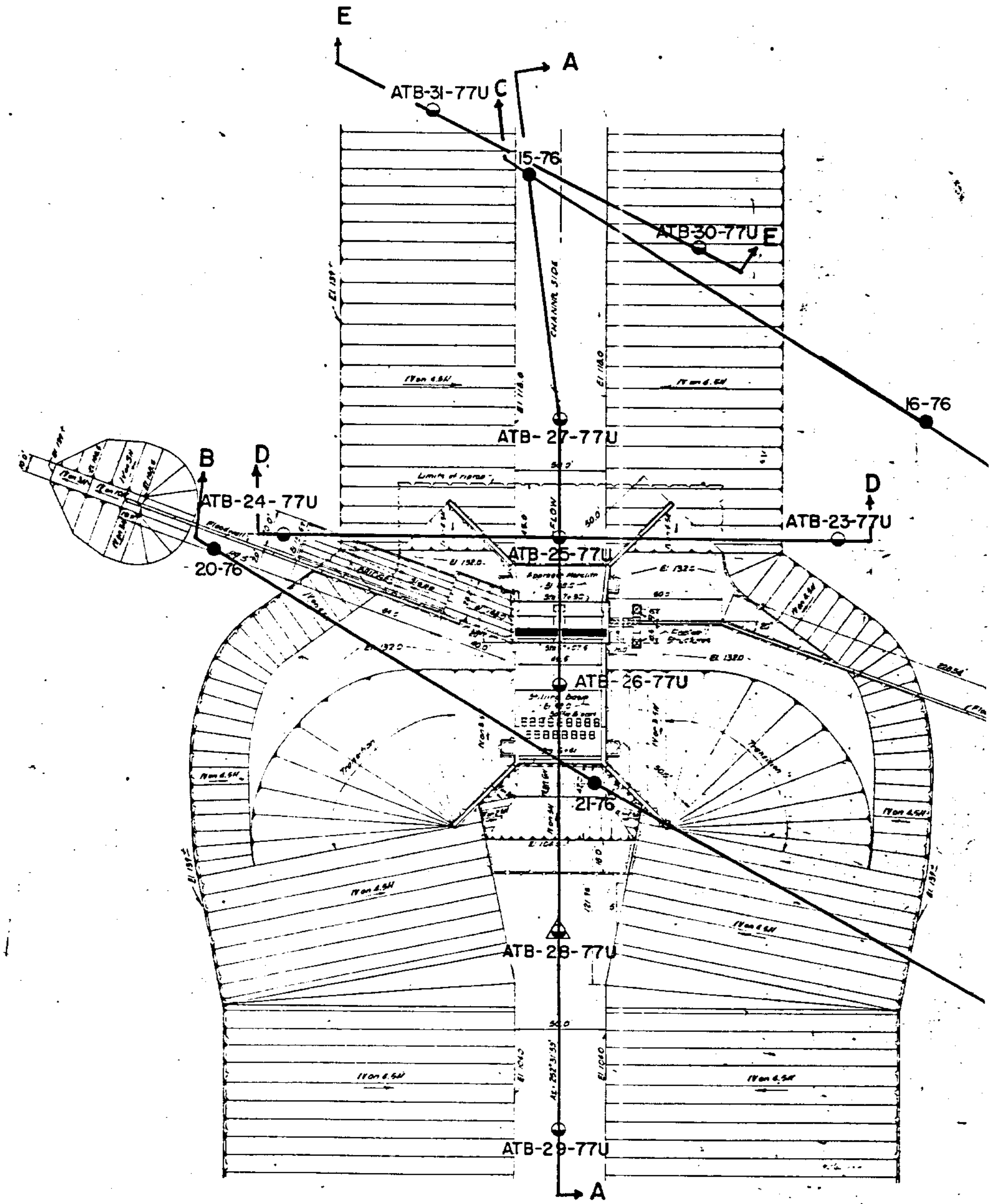


FLOOD CONTROL MISSISSIPPI RIVER & TRIBUTARIES
MISSISSIPPI
YAZOO HEADWATER PROJECT, MISSISSIPPI (TRIBUTARIES)
ASCALMORE CREEK - TIPPO BAYOU
FOUNDATION REPORT
ITEM NO. 3, CONTROL STRUCTURE
PUMP TEST DATA
SCALE AS SHOWN
U. S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
DATE JAN 1992 YT-15-45

PLATE 3

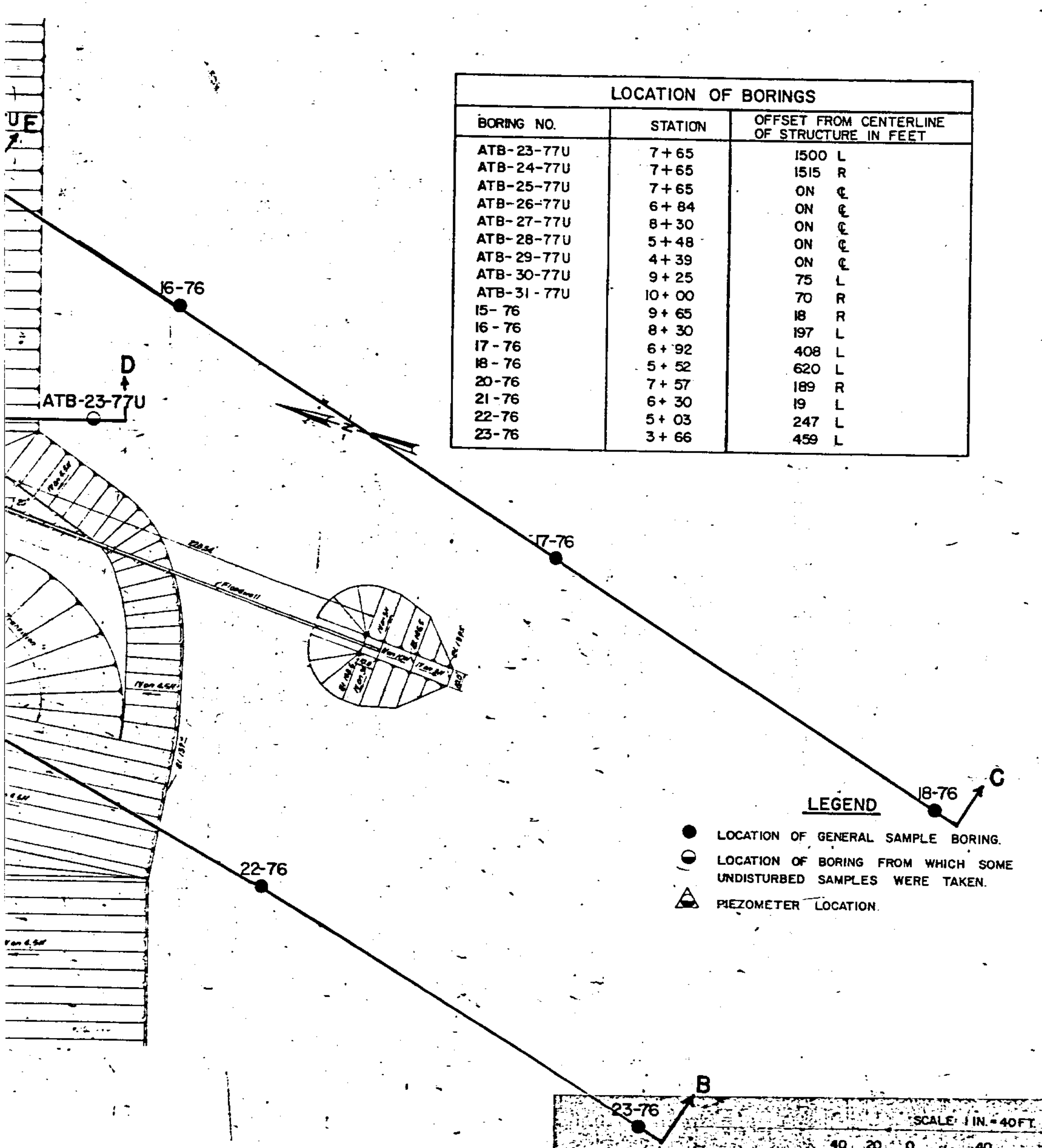


ELEVATION IN FEET M.S.L.
BORING ATB-21-74U
TERTIARY
WELL DETAILS
NO 80 SLOT 14" O.D. LOW CARBON WELL SCREEN
14" RISER PIPE
LOCATION OF FLOW METER READINGS
D10 GRAIN SIZE IN MM
PERCENT OF TOTAL Q
TOP OF TERTIARY S-ST
TOP OF WELL SCREEN



PLAN

SCALE: 1 IN. = 40 FT.



LOCATION OF BORINGS		
BORING NO.	STATION	OFFSET FROM CENTERLINE OF STRUCTURE IN FEET
ATB-23-77U	7+65	1500 L
ATB-24-77U	7+65	1515 R
ATB-25-77U	7+65	ON ℄
ATB-26-77U	6+84	ON ℄
ATB-27-77U	8+30	ON ℄
ATB-28-77U	5+48	ON ℄
ATB-29-77U	4+39	ON ℄
ATB-30-77U	9+25	75 L
ATB-31-77U	10+00	70 R
15-76	9+65	18 R
16-76	8+30	197 L
17-76	6+92	408 L
18-76	5+52	620 L
20-76	7+57	189 R
21-76	6+30	19 L
22-76	5+03	247 L
23-76	3+66	459 L

LEGEND

- ● LOCATION OF GENERAL SAMPLE BORING.
- ◒ LOCATION OF BORING FROM WHICH SOME UNDISTURBED SAMPLES WERE TAKEN.
- △ PIEZOMETER LOCATION.

SCALE: 1 IN. = 40 FT.

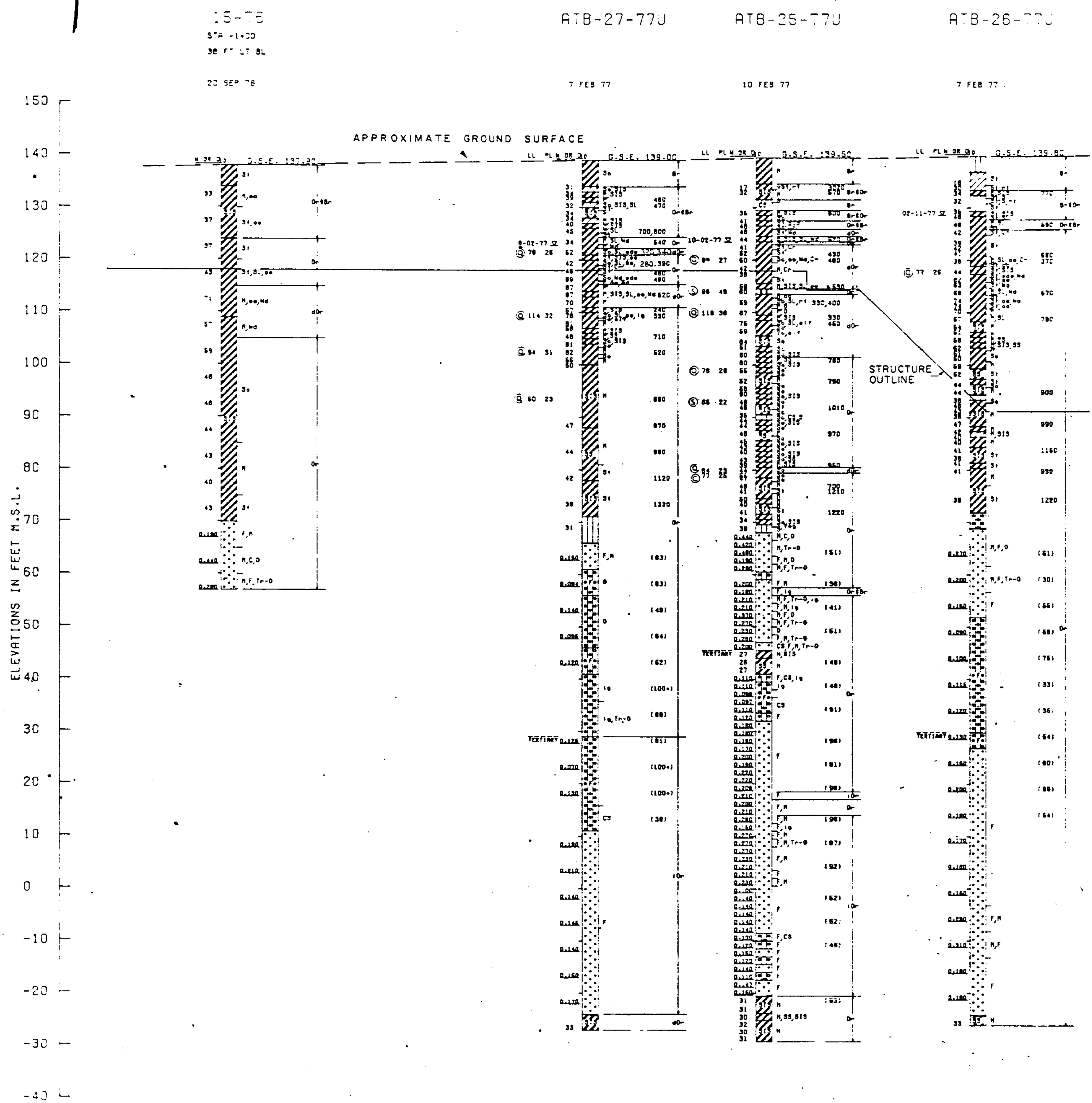
40 20 0 40 80 120 FT.

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

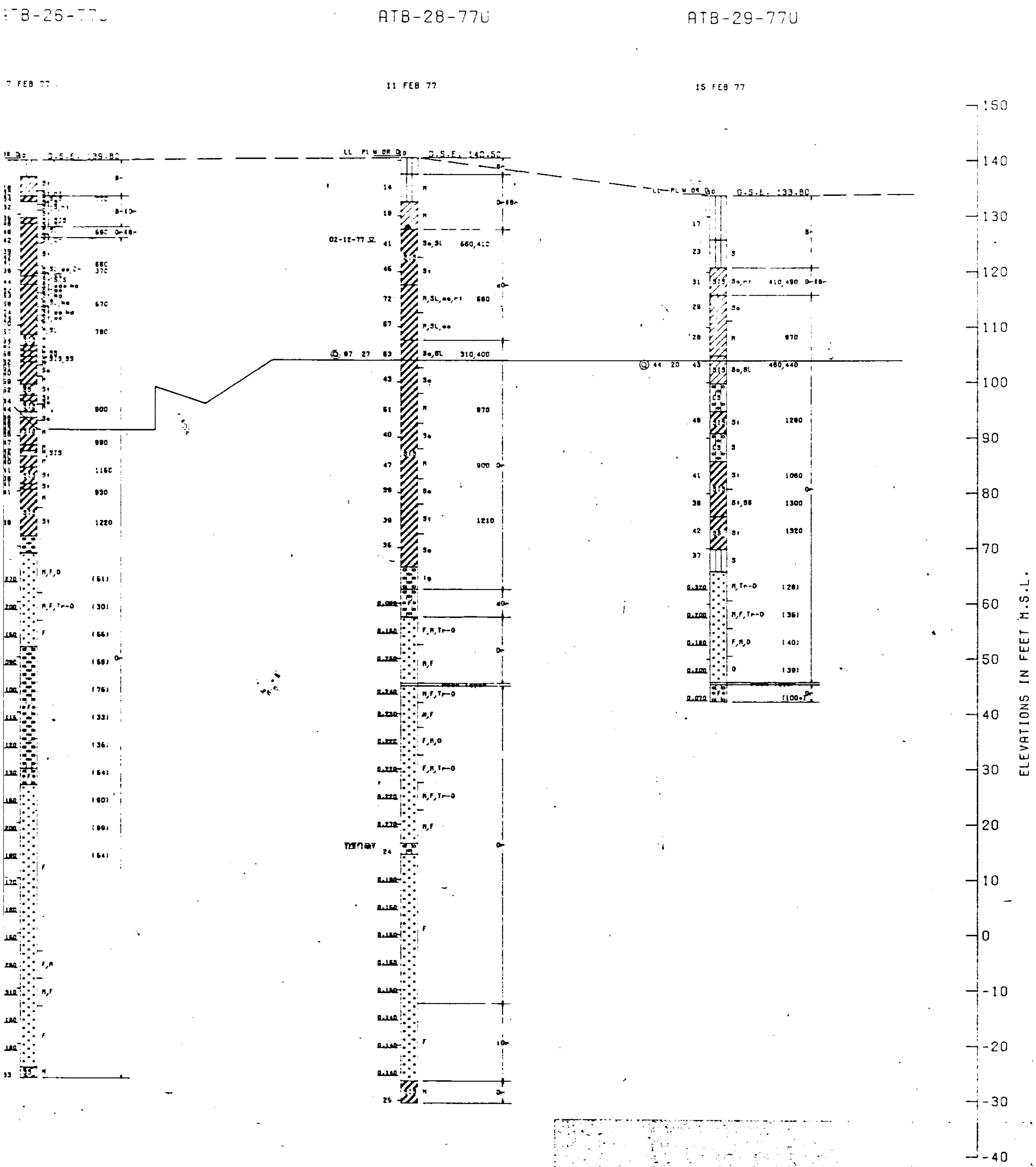
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

LOCATION OF BORINGS

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 4



ATB-27-77J
ATB-25-77J
7 FEB 77
10 FEB 77
7 FEB 77
APPROXIMATE GROUND SURFACE
G.S.E. 139.00
STRUCTURE OUTLINE
TERTIARY
ELEVATIONS IN FEET M.S.L.
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40



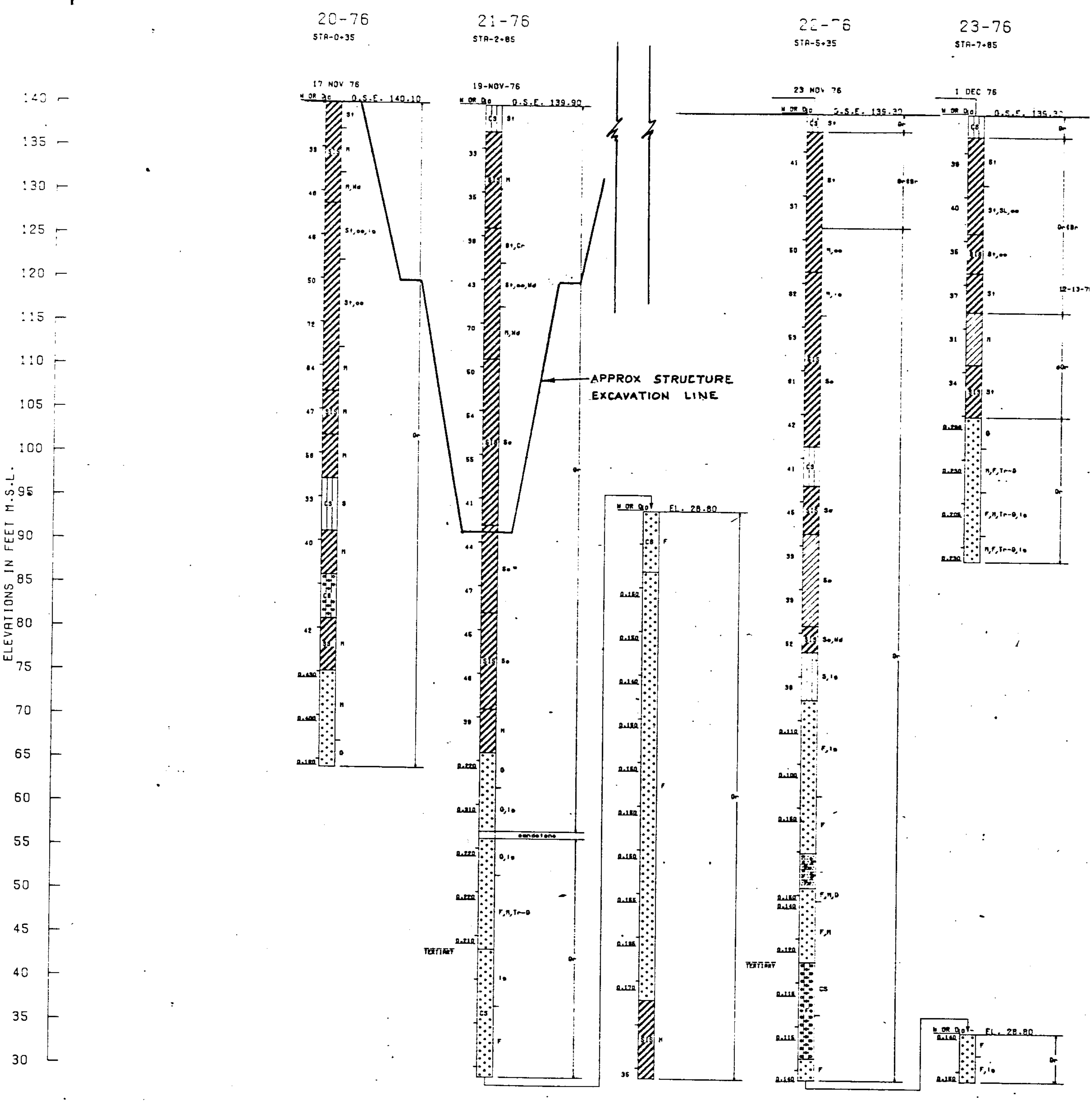
BORINGS MADE BY ROTARY DRILLING METHOD W/MUD DURING SEP 1976 AND FEB 1977. GENERAL SAMPLES WERE TAKEN WITH A 2.5 IN. DRIVE TUBE. UNDISTURBED SAMPLES WERE TAKEN WITH A 5.IN VACUUM TUBE. FIELD BOOKS 6073.6109.6111.6114.6115. HORIZONTAL SCALE 1 INCH EQUALS 20 FEET

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN–TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

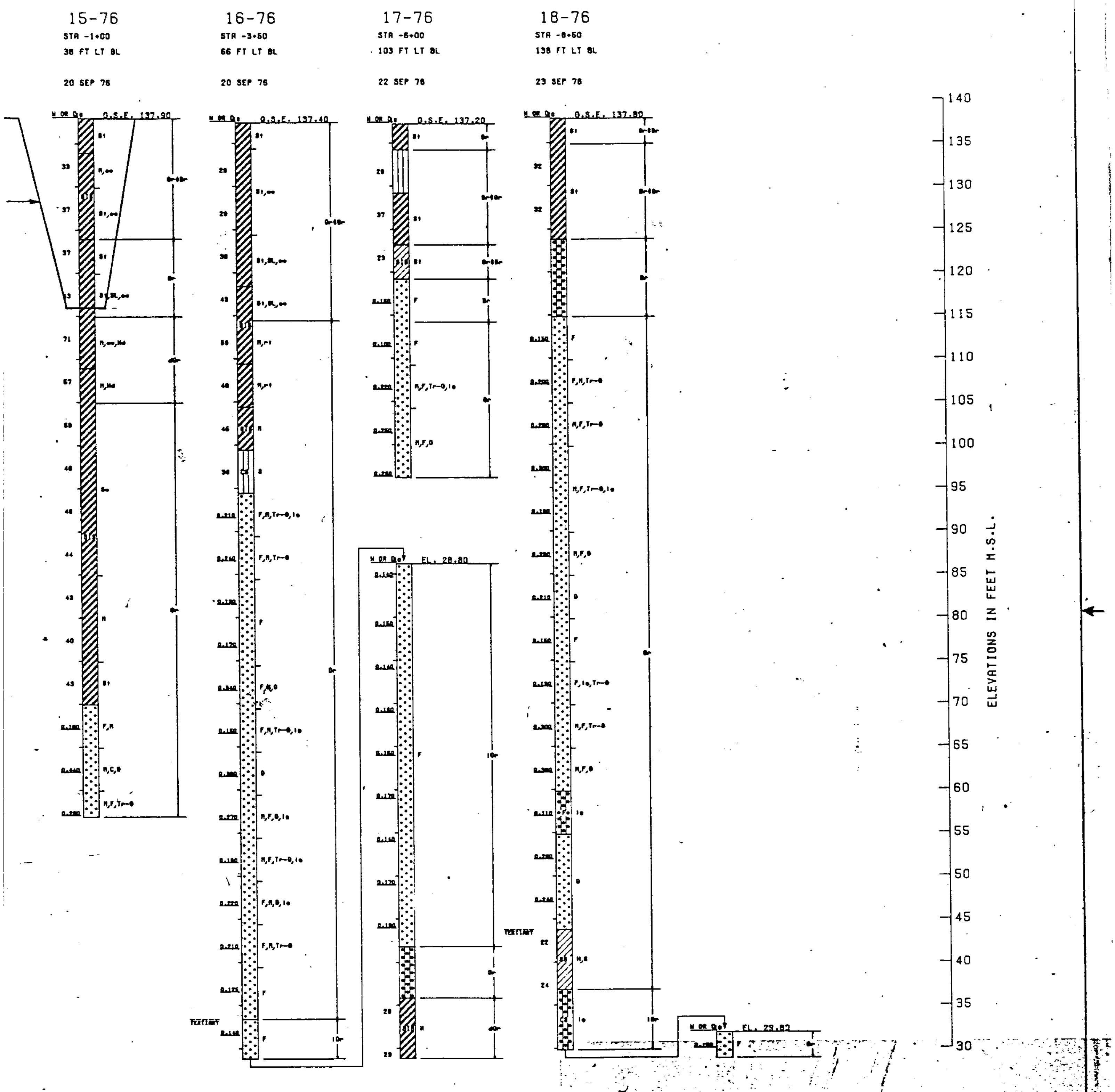
BORING LOG - SECTION A-A

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 5



20-76
STA-0+35
21-76
STA-2+85
STA-5+35
23-76
STA-7+85
17 NOV 76
19-NOV-76
23 NOV 76
1 DEC 76
O.S.E. 140.10
O.S.E. 139.90
APPROX STRUCTURE EXCAVATION LINE
EL. 28.80
TERTIARY
ELEVATIONS IN FEET M.S.L.
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30

WORK SAFELY



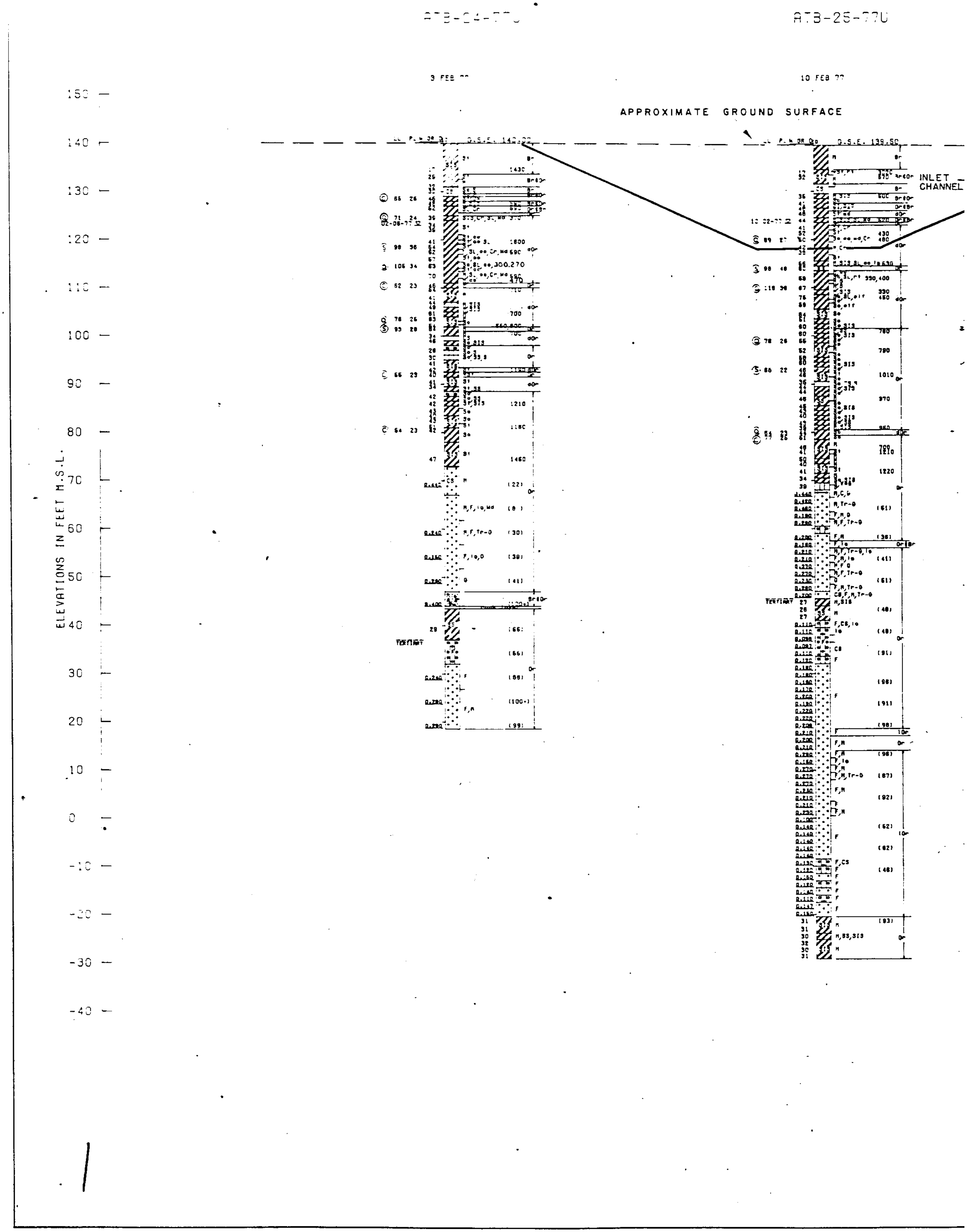
BORINGS MADE BY ROTARY DRILLING METHOD W/MUD DURING SEPTEMBER 1976. GENERAL SAMPLES TAKEN W/ 2.5 IN. DRIVE TUBE. BORING BOOK 6073. HORIZONTAL SCALE 1 INCH EQUALS 83 FEET.

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

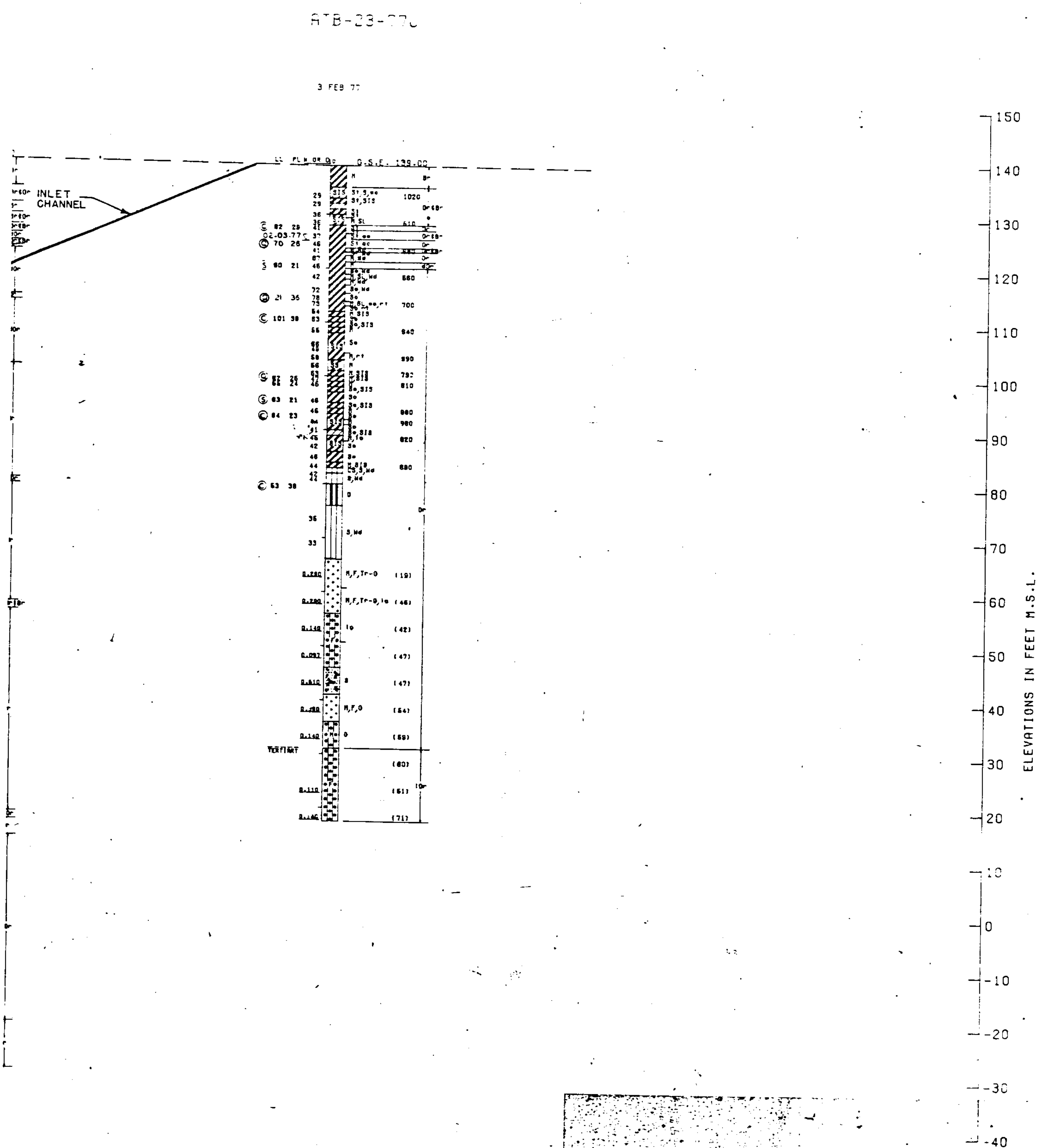
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

BORING LOG - SECTION C-C

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 7



ATB-25-77U
10 FEB 77
APPROXIMATE GROUND SURFACE
INLET CHANNEL
ELEVATIONS IN FEET M.S.L.
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40

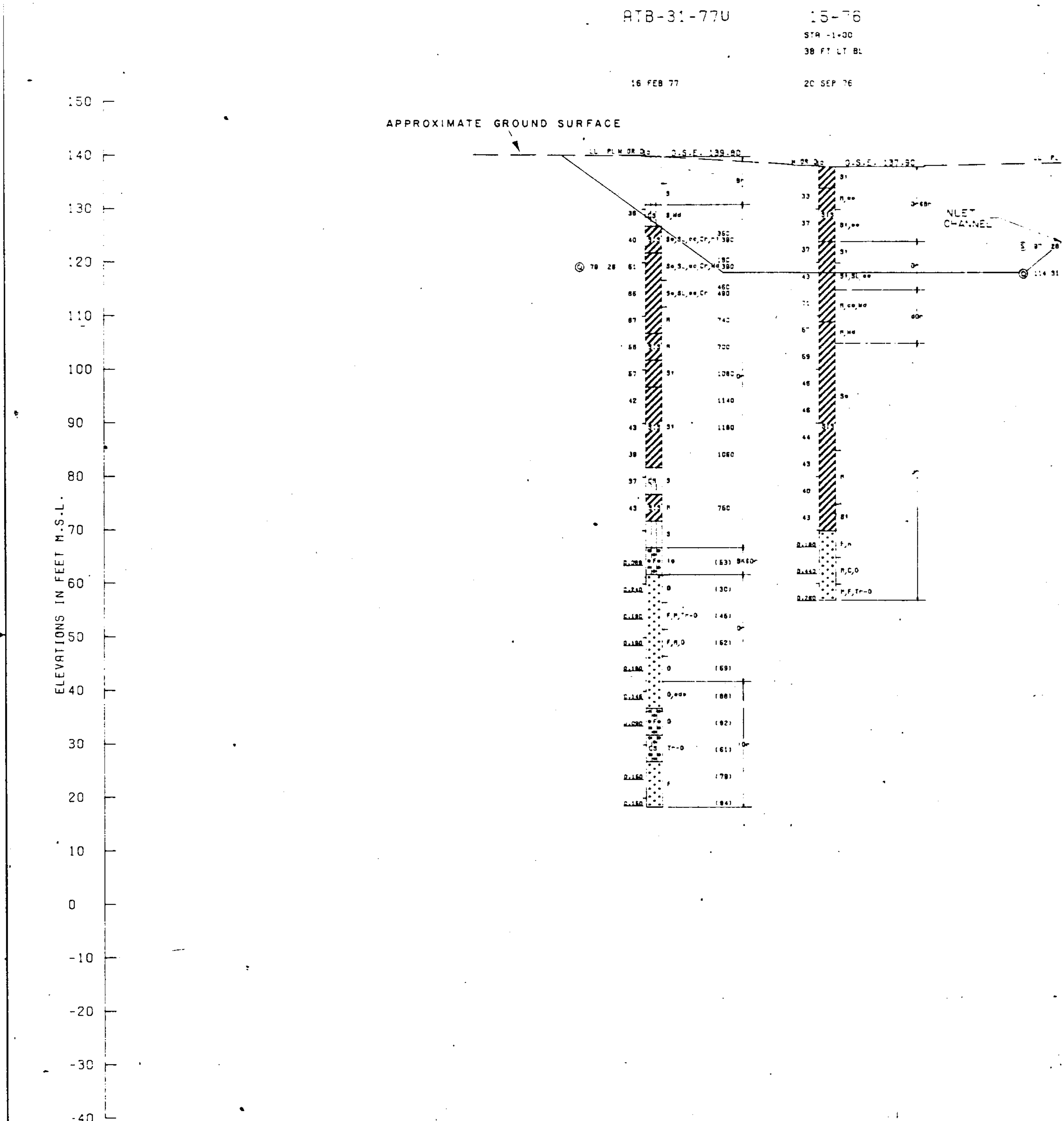


U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

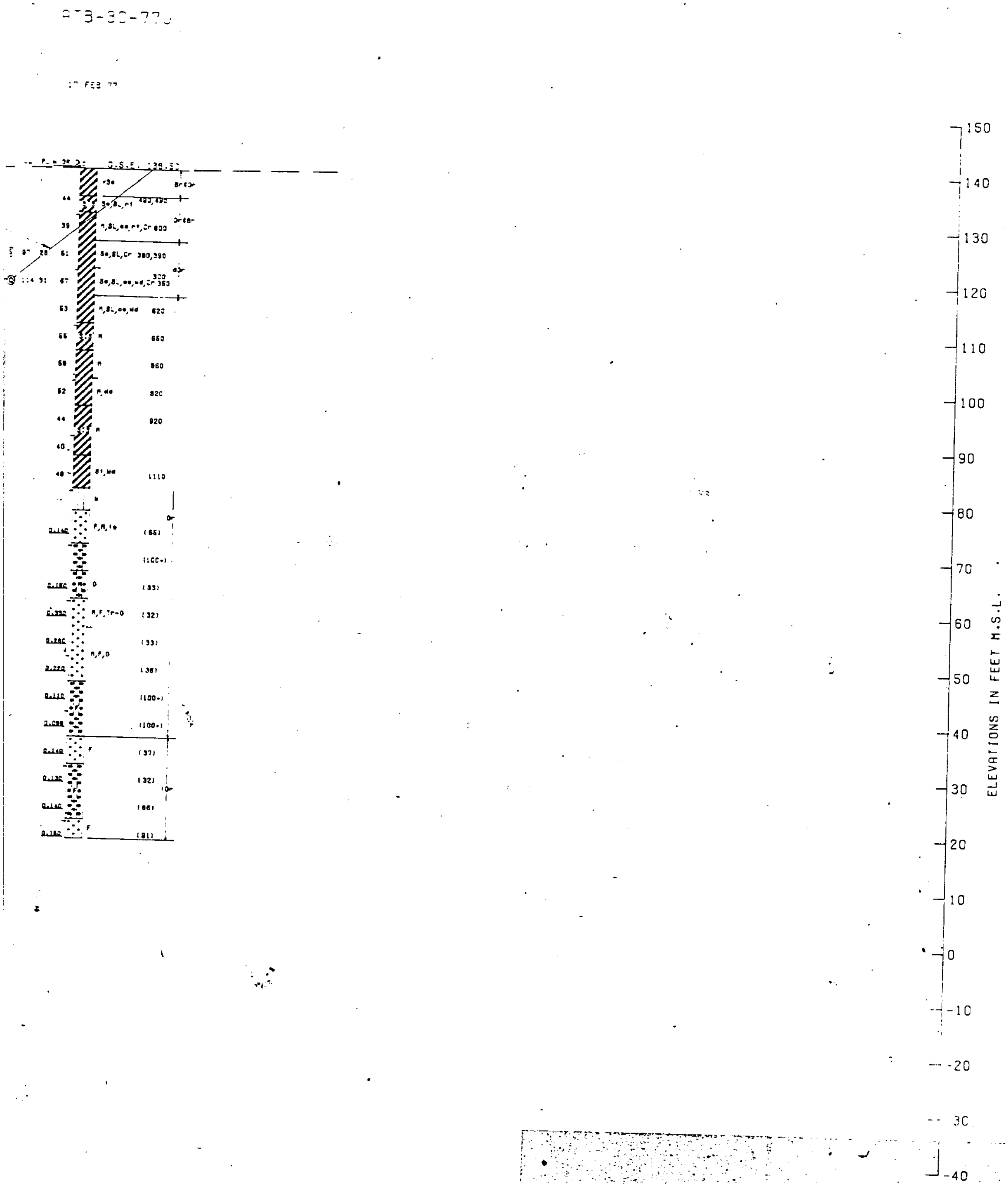
BORING LOG - SECTION D-D

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 8



ATB-31-77U
15-76
STA -1+00
38 FT LT BL
16 FEB 77
20 SEP 76
APPROXIMATE GROUND SURFACE
INLET CHANNEL
ELEVATIONS IN FEET M.S.L.
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40

WORK SAFELY



U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

BORING LOG - SECTION E-E

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 9

2

UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION		TYPE	LETTER SYMBOL	SYMBOL	TYPICAL NAMES
COARSE - GRAINED SOILS More than half of material is larger than No 200 sieve size	GRAVELS More than half of coarse fraction is larger than No 4 sieve size	CLEAN GRAVEL (Little or No Fines)	GW		GRAVEL, Well Graded, gravel - sand mixtures, little or no fines
			GP		GRAVEL, Poorly Graded, gravel - sand mixtures, little or no fines
		GRAVEL WITH FINES (Appreciable Amount of Fines)	GM		SILTY GRAVEL, gravel - sand - silt mixtures
			GC		CLAYEY GRAVEL, gravel - sand - clay mixtures
	SANDS More than half of coarse fraction is smaller than No 4 sieve size	CLEAN SAND (Little or No Fines)	SW		SAND, Well - Graded, gravelly sands
			SP		SAND, Poorly - Graded, gravelly sands
		SANDS WITH FINES (Appreciable Amount of Fines)	SM		SILTY SAND, sand - silt mixtures
			SC		CLAYEY SAND, sand - clay mixtures
FINE - GRAINED SOILS More than half the material is smaller than No 200 sieve size		SILTS AND CLAYS (Liquid Limit < 50)	ML		SILT & very fine sand, silty or clayey fine sand or clayey silt with slight plasticity
			CL		LEAN CLAY; Sandy Clay; Silty Clay; of low to medium plasticity
			OL		ORGANIC SILTS and organic silty clays of low plasticity
		SILTS AND CLAYS (Liquid Limit > 50)	MH		SILT, fine sandy or silty soil with high plasticity
			CH		FAT CLAY, inorganic clay of high plasticity
			OH		ORGANIC CLAYS of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt		PEAT, and other highly organic soil
WOOD			Wd		WOOD
NO SAMPLE					

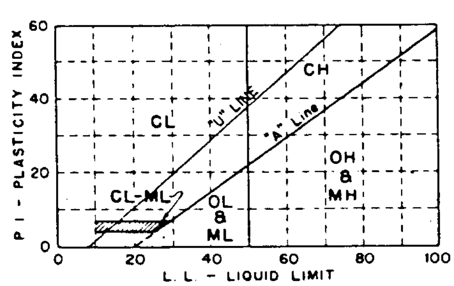
NOTE: Soils possessing characteristics of two groups are designated by combinations of group symbols
A comma will be used between modification symbols. Example: So, Gr, w/SS, SIS, (CH)

DESCRIPTIVE SYMBOLS

COLOR	SYMBOL
TAN	T
YELLOW	Y
RED	R
BLACK	BK
GRAY	Gr
LIGHT GRAY	lGr
DARK GRAY	dGr
BROWN	Br
LIGHT BROWN	lBr
DARK BROWN	dBr
BROWNISH - GRAY	br Gr
GRAYISH - BROWN	gy Br
GREENISH - GRAY	gn Gr
GRAYISH - GREEN	gy Gn
GREEN	Gn
BLUE	Bl
BLUE - GREEN	Bl Gn
WHITE	Wh
MOTTLED	Mot
REDDISH	rd

CONSISTENCY FOR COHESIVE SOILS

CONSISTENCY	COHESION IN LBS./SQ.FT. FROM UNCONFINED COMPRESSION TEST	SYMBOL
VERY SOFT	< 250	vSo
SOFT	250 - 500	So
MEDIUM	500 - 1000	M
STIFF	1000 - 2000	St
VERY STIFF	2000 - 4000	vSt
HARD	> 4000	H



PLASTICITY CHART
For classification of fine - grained soils

MODIFICATIONS		MODIFICATIONS	
MODIFICATION	SYMBOL	MODIFICATION	SYMBOL
Traces	Tr-	Sandy Silt strata	SSIS
Fine	F	Silty Sand strata	SISS
Medium	M	With	w/
Coarse	C	Dense	D
Concretions	cc	Very Dense	vD
Rootlets	rt		
Lignite fragments	lg		
Shale fragments	sh		
Sandstone fragments	sds		
Shell fragments	slf		
Organic matter	O		
Clay strata or lenses	CS		
Silt strata or lenses	SIS		
Sand strata or lenses	SS		
Sandy	S		
Gravelly	G		
Boulders	B		
Slickensides	SL		
Wood	Wd		
Oxidized	Ox		
Crumbly	Cr		
Loose	Lo		
Vegetation	Veg		

NOTES:

FIGURES TO LEFT OF BORING UNDER COLUMN "W OR D_{10}"

Are natural water contents in percent dry weight

When underlined denotes D_{10} size in mm *

FIGURES TO LEFT OF BORING UNDER COLUMNS "LL" AND "PL"

Are liquid and plastic limits, respectively

SYMBOLS TO LEFT OF BORING

∇ Ground-water surface and date observed

(C) Denotes location of consolidation test **

(S) Denotes location of consolidated-drained direct shear test **

(R) Denotes location of consolidated-undrained triaxial compression test **

(Q) Denotes location of unconsolidated-undrained triaxial compression test **

(T) Denotes location of sample subjected to consolidation test and each of the above three types of shear tests **

FW Denotes free water

FIGURES TO RIGHT OF BORING

Are values of cohesion in lbs./sq.ft. from unconfined compression tests

In parenthesis are driving resistances in blows per foot determined with a standard split spoon sampler (1$\frac{3}{8}$" I.D., 2" O.D.) and a 140 lb. driving hammer with a 30" drop

Where underlined with a solid line denotes laboratory permeability in centimeters per second of undisturbed sample

Where underlined with a dashed line denotes laboratory permeability in centimeters per second of sample remoulded to the estimated natural void ratio

* The D_{10} size of a soil is the grain diameter in millimeters of which 10% of the soil is finer, and 90% coarser than size D_{10}.

**Results of these tests are available for inspection in the U.S. Army Engineer District Office, if these symbols appear beside the boring logs on the drawings.

ATIONS·	
ION	SYMBOL
ata	SSIS
rata	SISS
	w/
	D
	vD

GENERAL NOTES:

While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and, if encountered, such variations will not be considered as differing materially within the purview of clause 4 of the contract.

Ground-water elevations shown on the boring logs represent ground-water surfaces encountered on the dates shown. Absence of water surface data on certain borings implies that no ground-water data is available, but does not necessarily mean that ground water will not be encountered at the locations or within the vertical reaches of these borings.

Consistency of cohesive soils shown on the boring logs is based on driller's log and visual examination and is approximate, except within those vertical reaches of the borings where shear strengths from unconfined compression tests are shown.

† The detailed explanation of the Unified Soil Classification System is presented in MIL-STD-619B, 12 June 1968, entitled "Military Standard Unified Soil Classification System for Roads, Airfields, Embankments and Foundations."

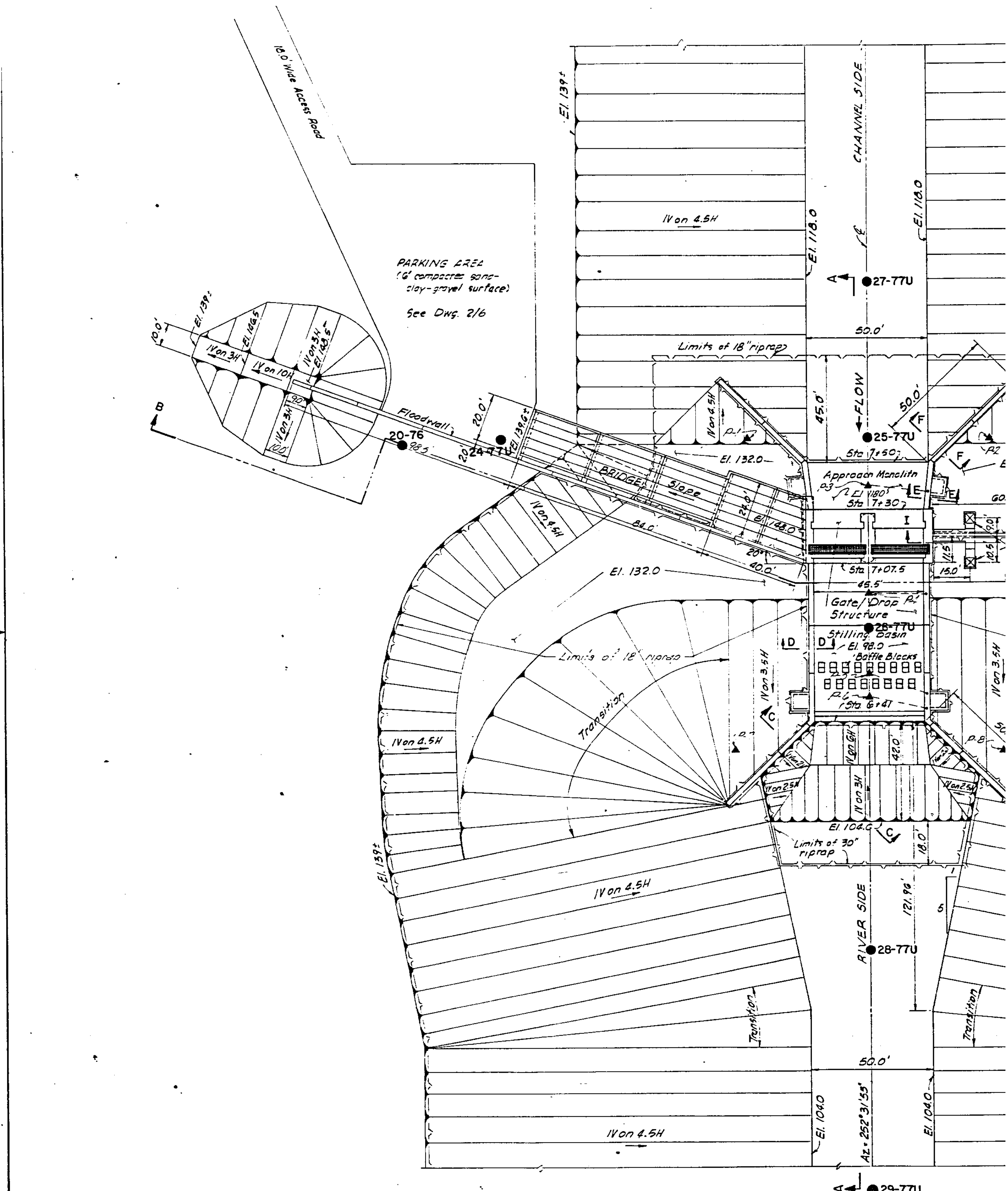
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

BORING LEGEND

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 10

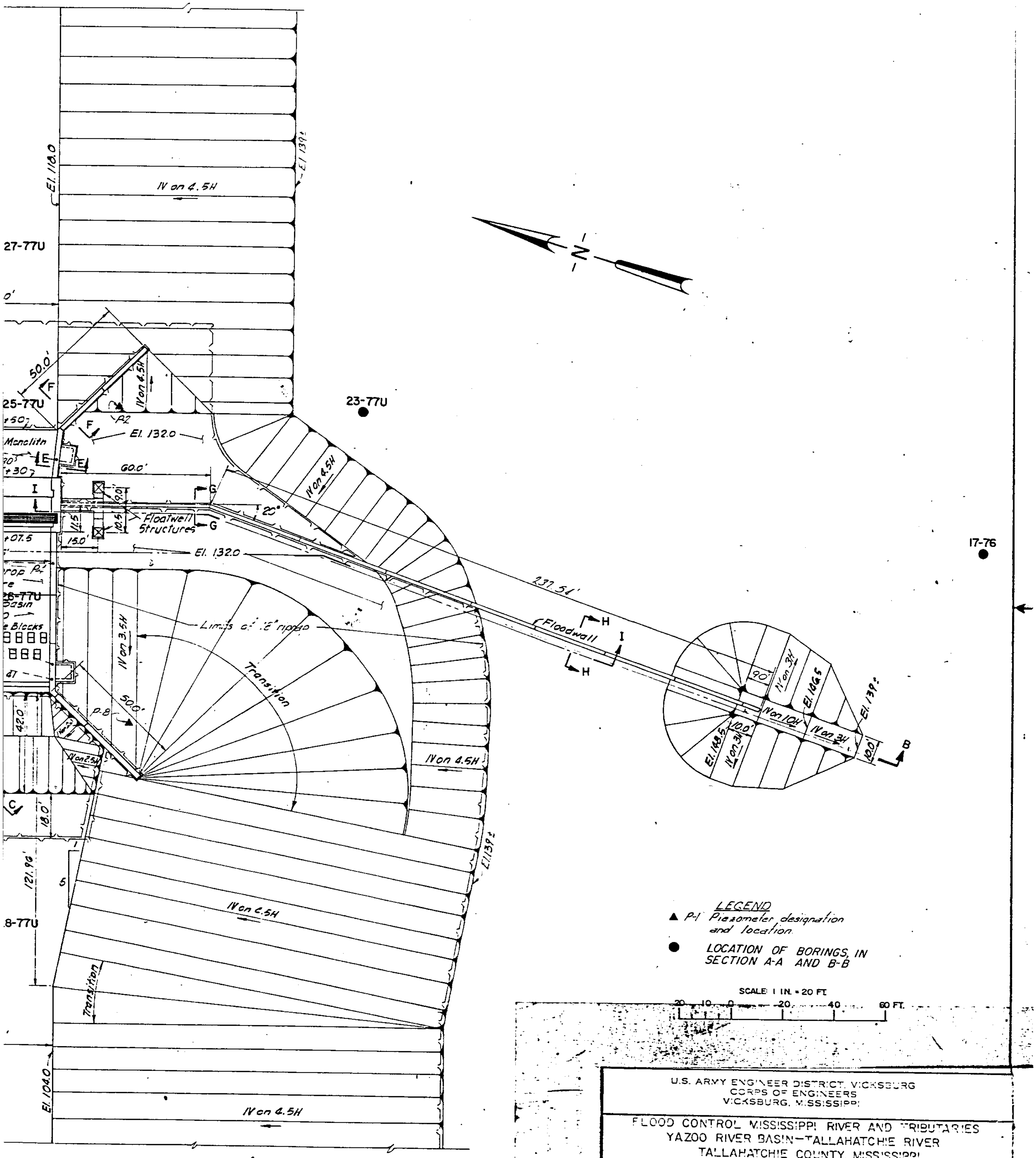
2



GENERAL PLAN

SCALE: 1 IN. = 20 FT.

WORK SAFELY



References:

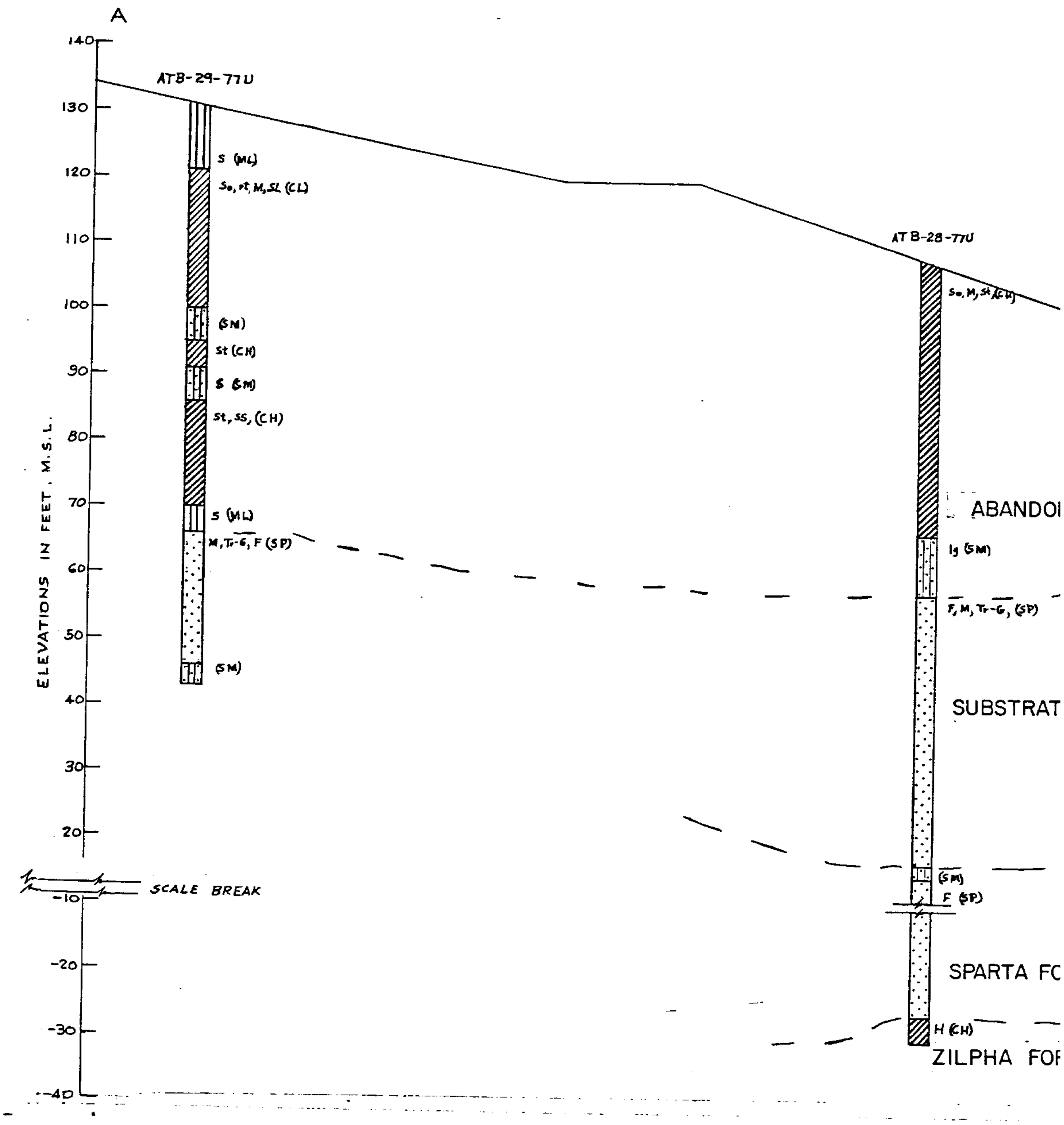
For piezometer details, see dwg 26
For sections A-A and B-B, see dwg 3, 4, 15
For sections C-C, D-D, E-E, F-F, G-G and H-H, see dwg. 22

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

GENERAL PLAN WITH SECTIONS

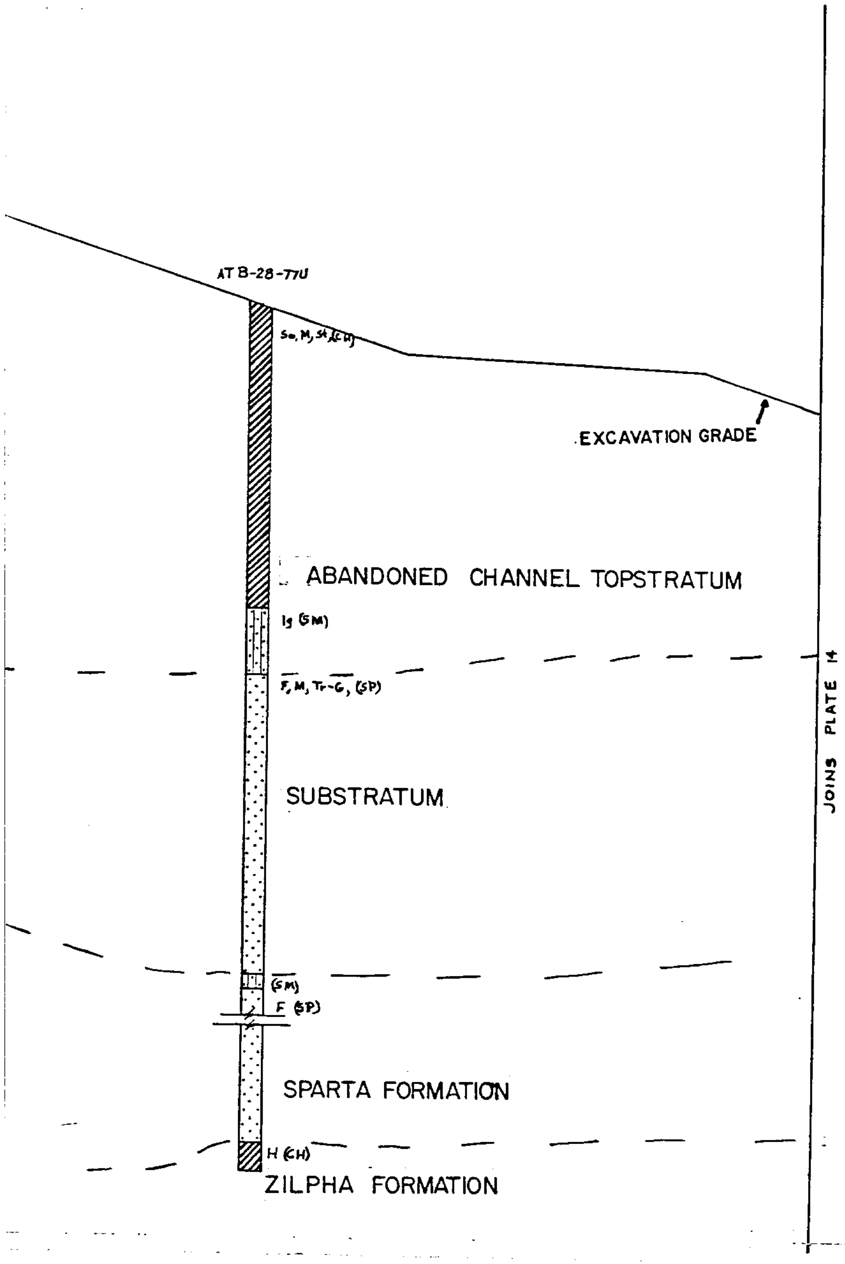
FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 11



NOTE:

1. For Locations of Sectio

2. BORING LOGS ARE I
SHOW GENERAL GEOL
FOR COMPLETE BORI
SEE PLATES 5 THR



NOTE:

1. *For Locations of Sections, see dwg. 11*
2. *BORING LOGS ARE INTENDED TO SHOW GENERAL GEOLOGIC CONDITIONS. FOR COMPLETE BORING LOG INFORMATION SEE PLATES 5 THRU 9.*

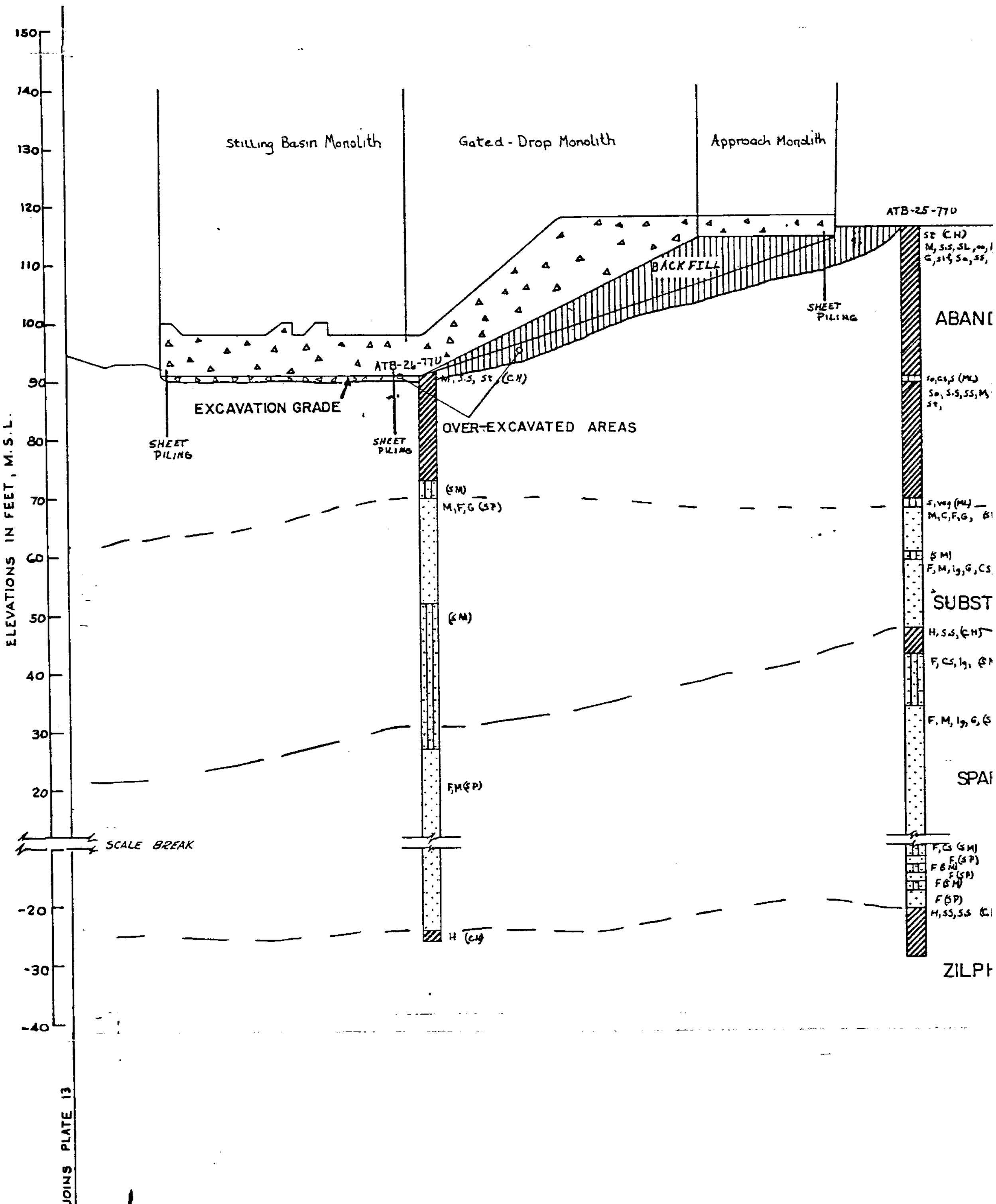
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN–TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

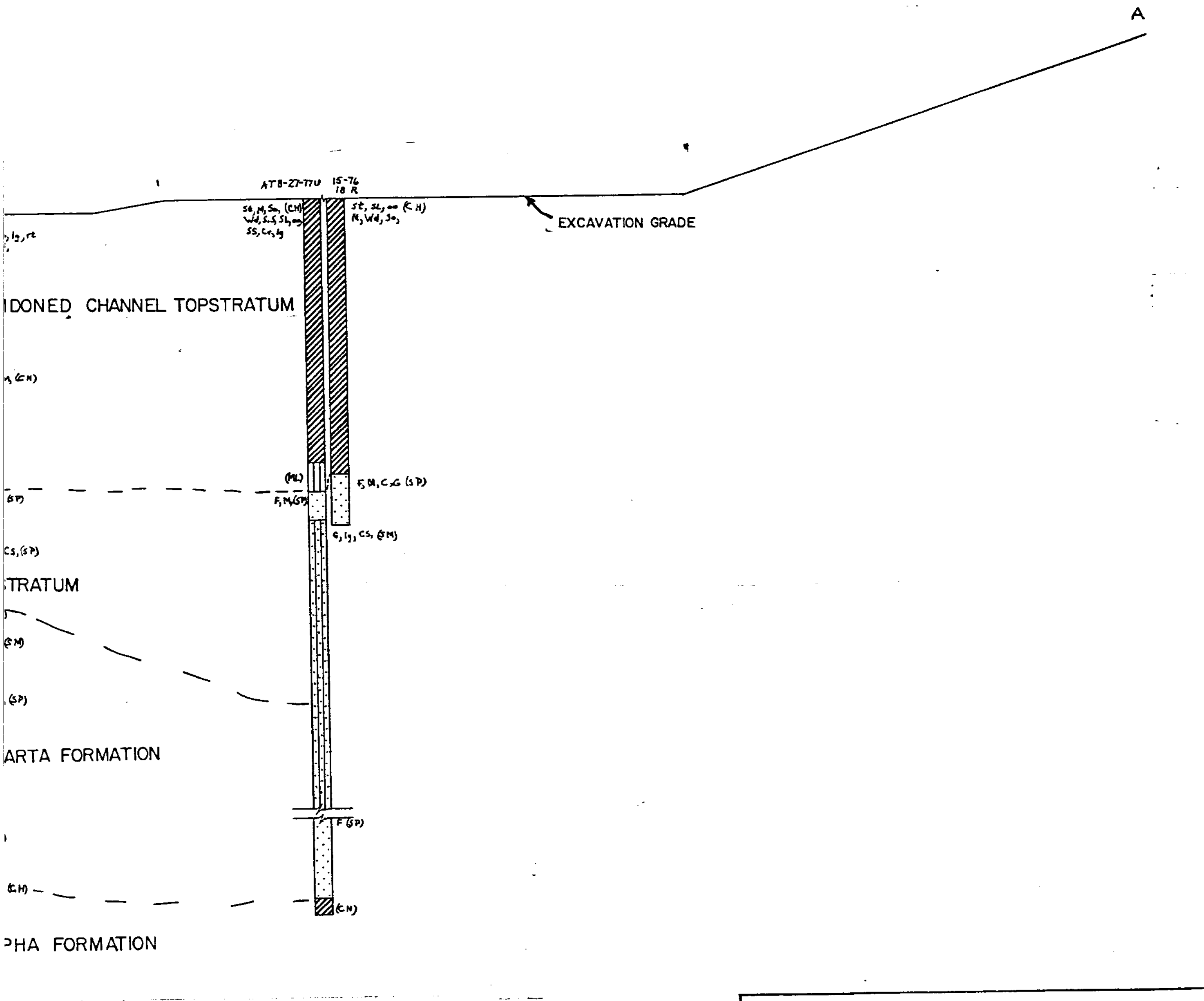
GEOLOGIC PROFILE CENTERLINE CHANNEL A-A SHEET 1 OF 2

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 12

2



ELEVATIONS IN FEET, M.S.L.
150
140
130
120
110
100
90
80
70
60
50
40
30
20
-20
-30
-40
Stilling Basin Monolith
Gated - Drop Monolith
Approach Monolith
ATB-25-770
ATB-26-770
BACKFILL
SHEET PILING
EXCAVATION GRADE
OVER-EXCAVATED AREAS
SCALE BREAK
ABAN
SUBST
SPA
ZILP
JOINS PLATE 13



***NOTE*:**

1. *For Locations of Sections, see dwg. 11*
2. *BORING LOGS ARE INTENDED TO SHOW GENERAL GEOLOGIC CONDITIONS. FOR COMPLETE BORING LOG INFORMATION SEE PLATES 5 THRU 9.*

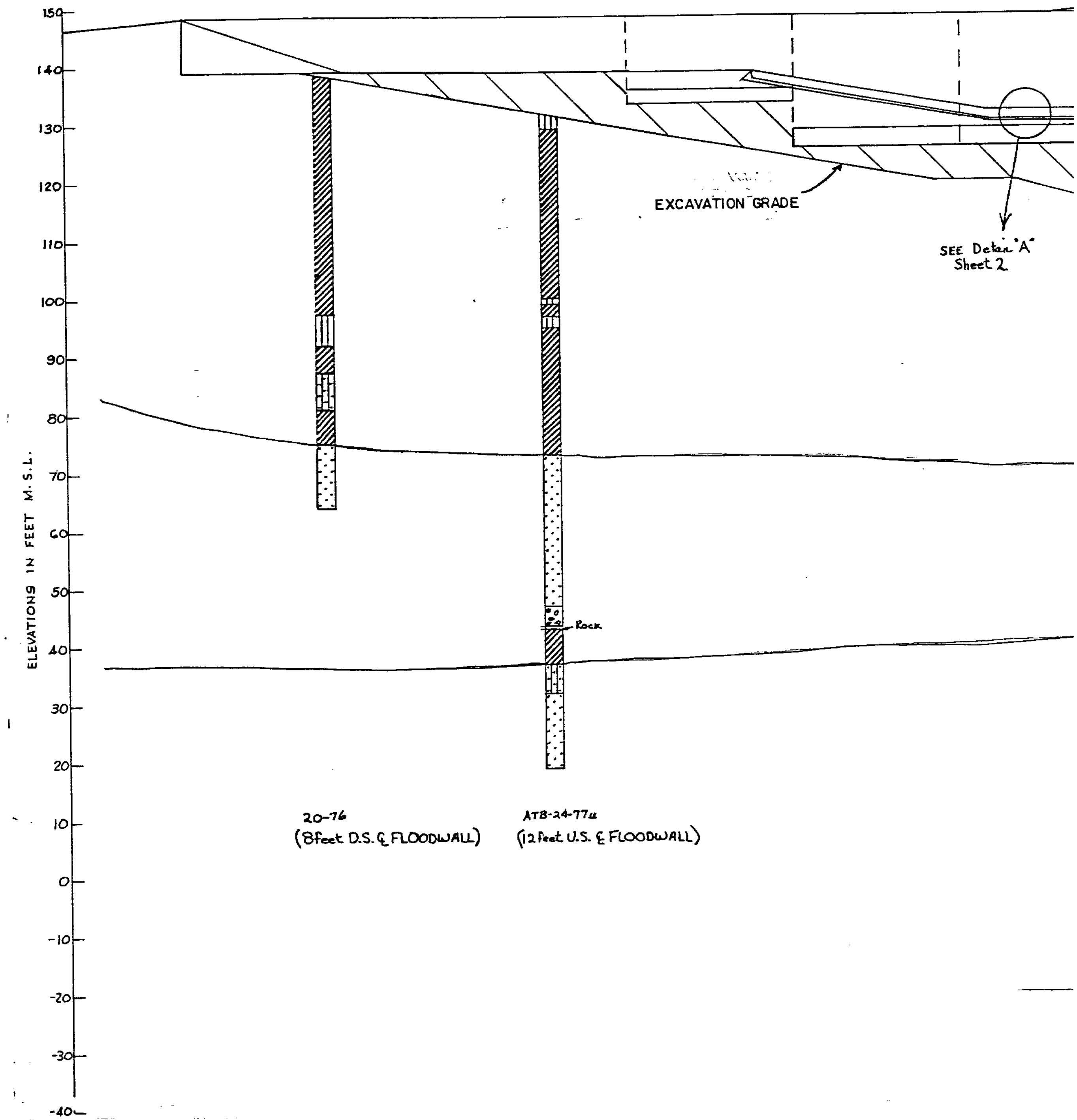
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

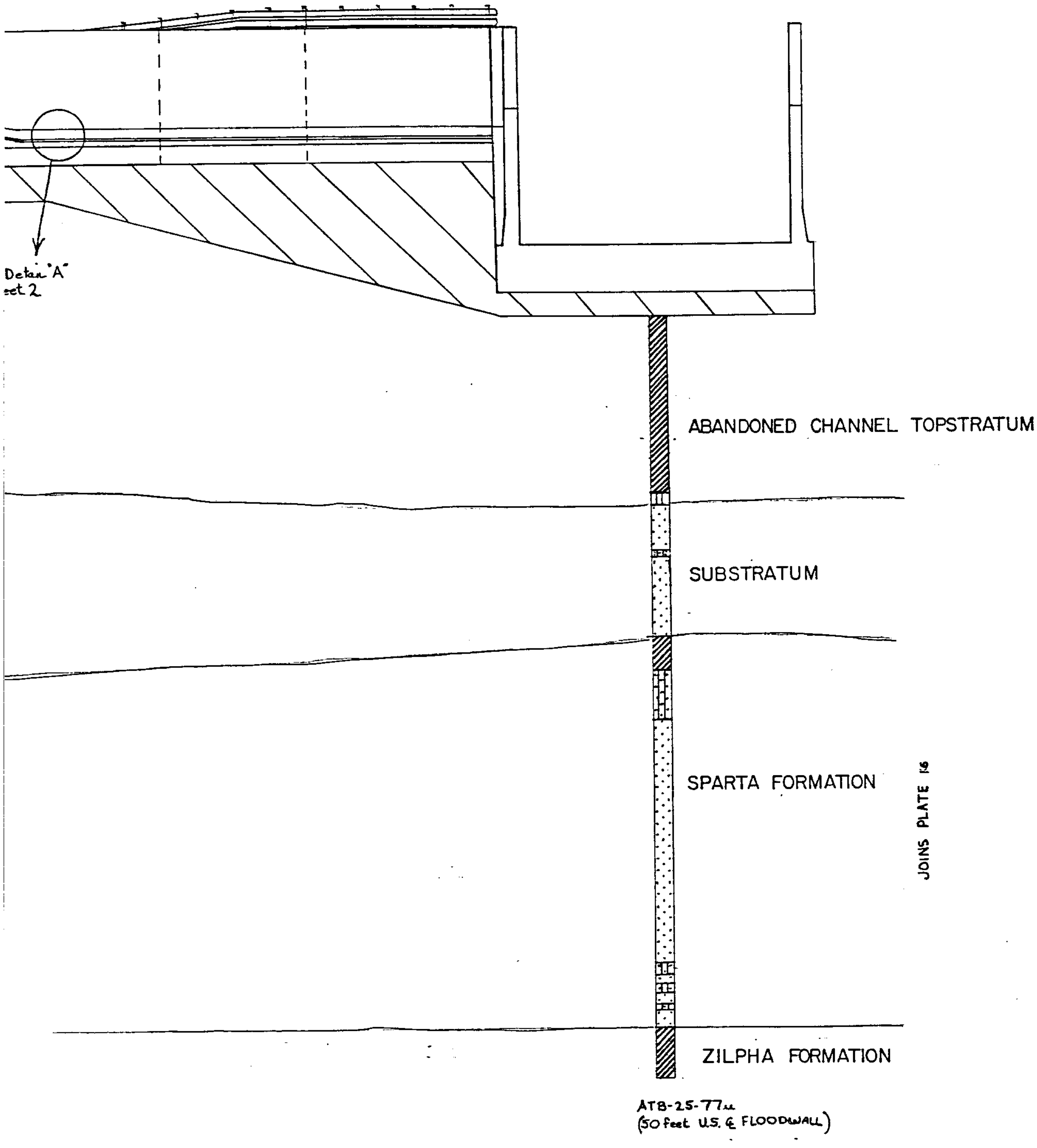
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN–TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

GEOLOGIC PROFILE CENTERLINE CHANNEL
A-A SHEET 2 OF 2

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 13

2


ELEVATIONS IN FEET M.S.L.
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
EXCAVATION GRADE
SEE Detail "A"
Sheet 2
Rock
20-76
(8feet D.S. ℄ FLOODWALL)
ATB-24-77u
(12 feet U.S. ℄ FLOODWALL)



NOTE:

1. For Locations of Sections, see dwg. 11.

2. BORING LOGS ARE INTENDED TO SHOW GENERAL GEOLOGIC CONDITIONS. FOR COMPLETE BORING LOG INFORMATION SEE PLATES 5 THRU 9.

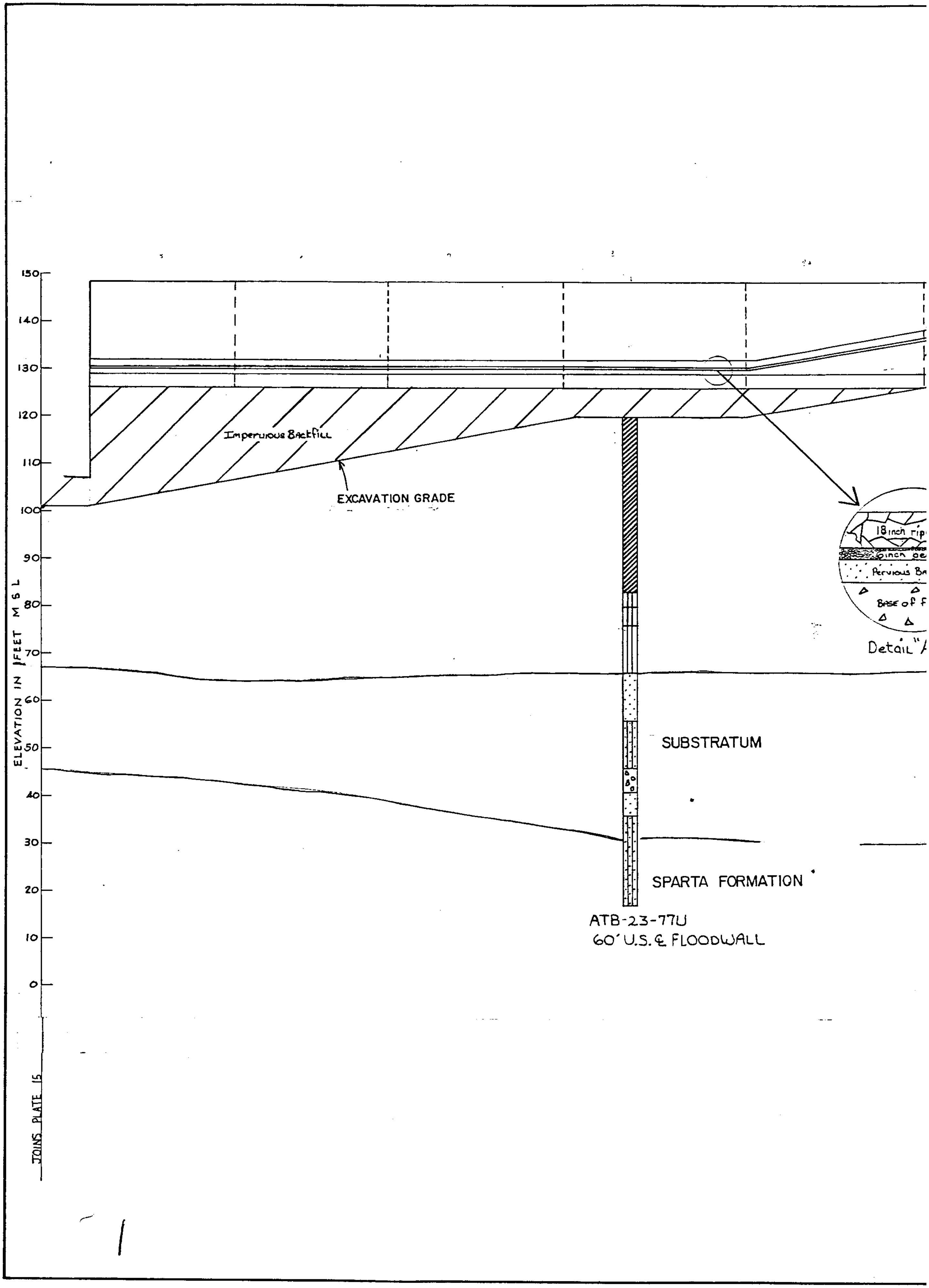
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

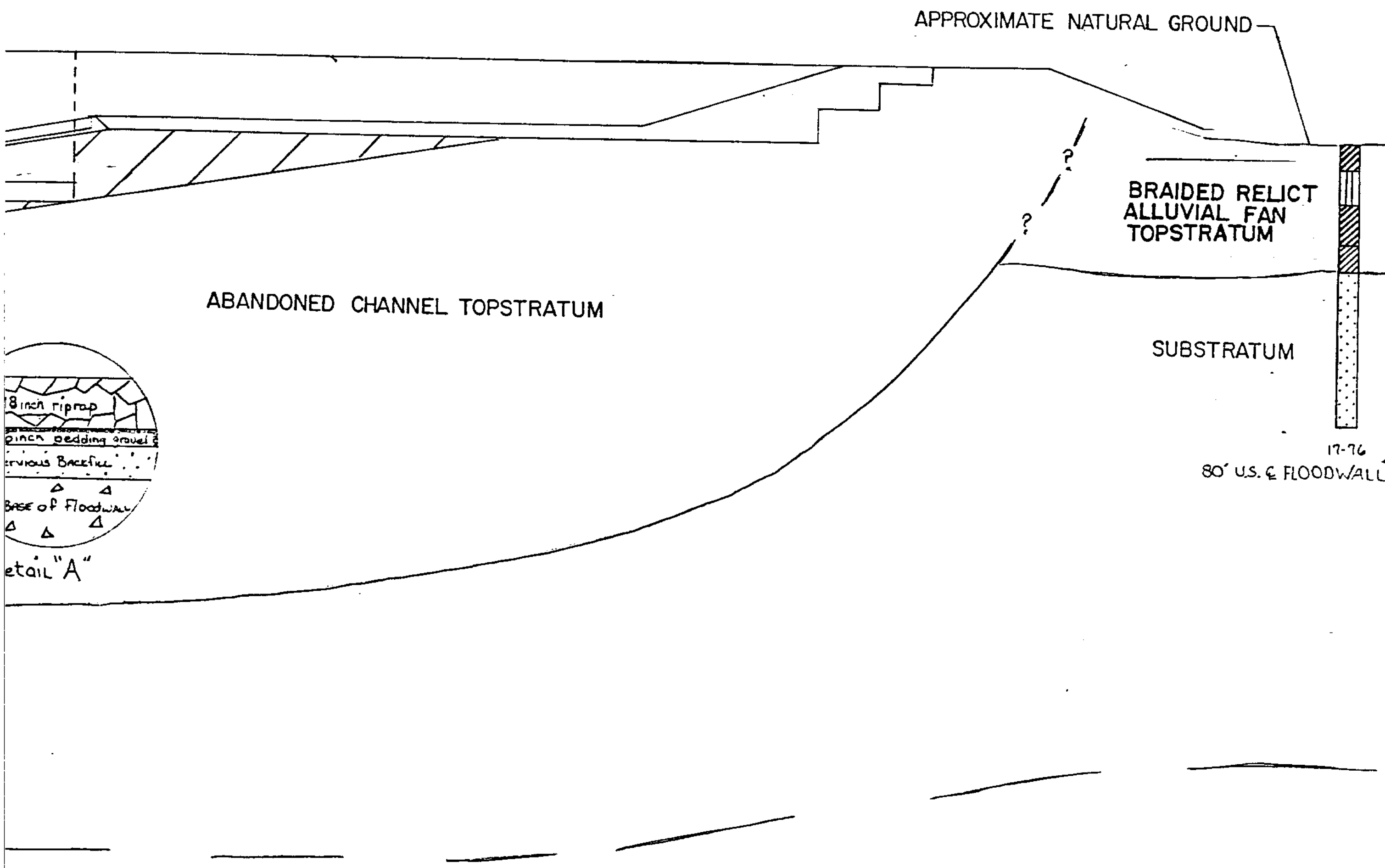
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

GEOLOGIC PROFILE; N-FLOODWALL
B-B SHEET 1 OF 2

2

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 14


150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
ELEVATION IN FEET MSL
Impervious Backfill
EXCAVATION GRADE
18 inch rip
6 inch be
Pervious B
Base of F
Detail "A
SUBSTRATUM
SPARTA FORMATION
ATB-23-77U
60' U.S. ℄ FLOODWALL
JOINS PLATE 15



NOTE:

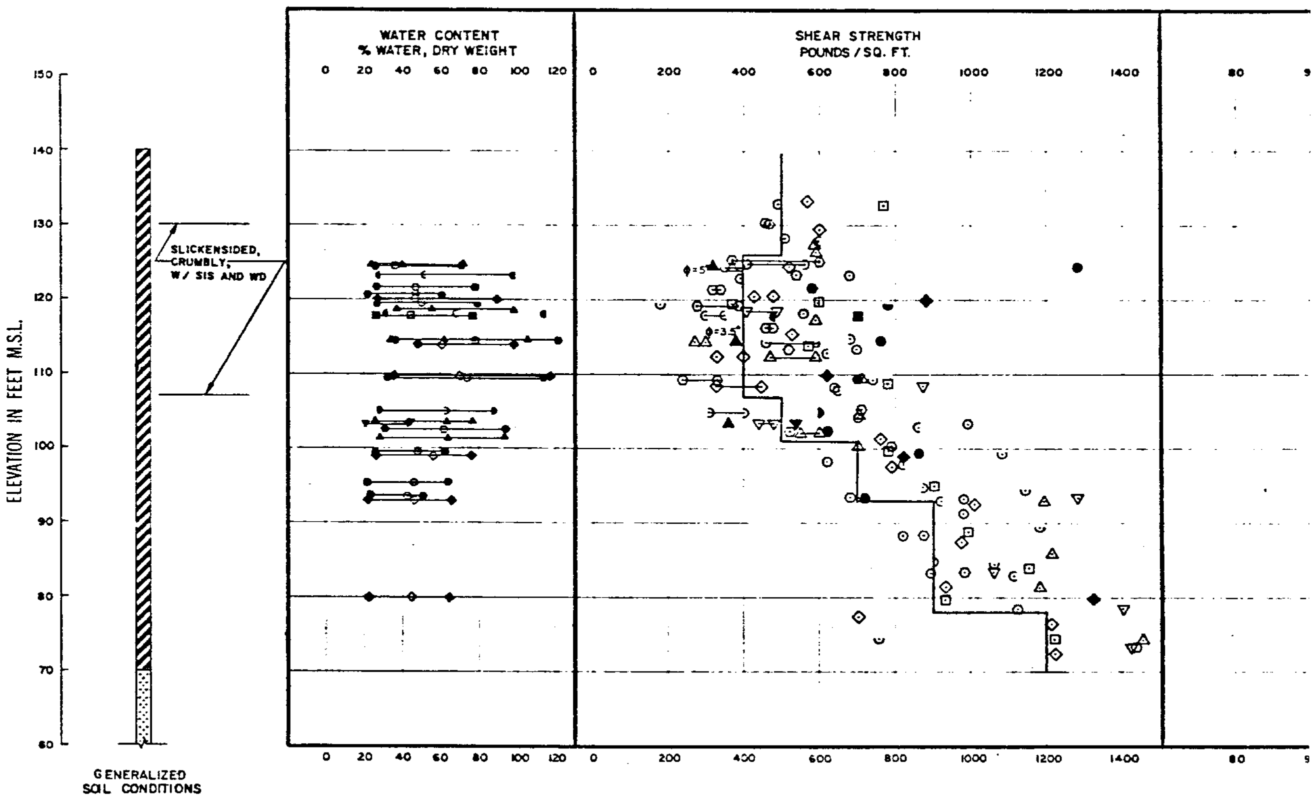
1. For Locations of Sections, see dwg. 11.
2. BORING LOGS ARE INTENDED TO SHOW GENERAL GEOLOGIC CONDITIONS. FOR COMPLETE BORING LOG INFORMATION SEE PLATES 5 THRU 9.

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

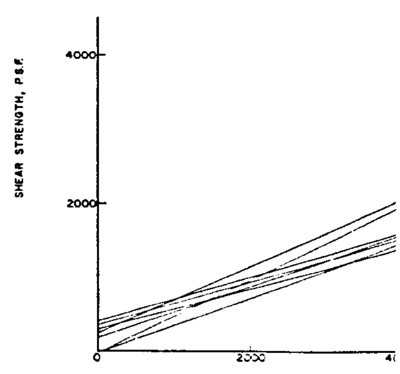
GEOLOGIC PROFILE; S-FLOODWALL
B-B SHEET 2 OF 2

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 15

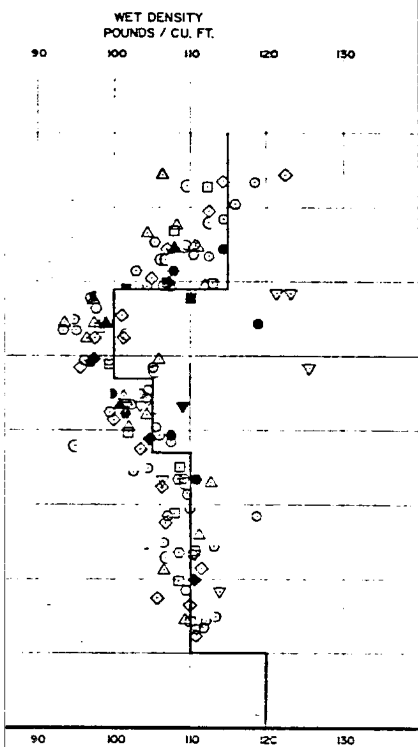


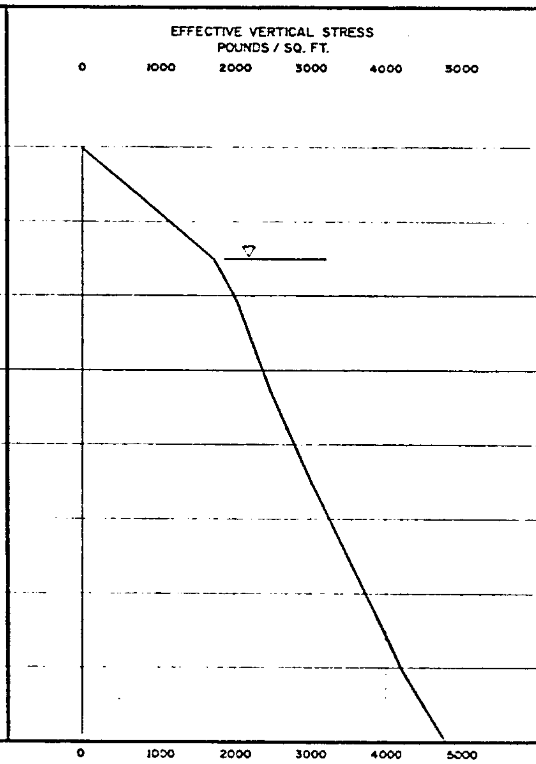
LEGEND

BORING NO.	SYMBOL U.C. TEST	SYMBOL Q. TEST
ATB-23-77U	⊖	●
ATB-24-77U	△	▲
ATB-25-77U	◇	◆
ATB-26-77U	⊡	■
ATB-27-77U	⊙	●
ATB-28-77U	ↄ	◗
ATB-29-77U	▽	▼
ATB-30-77U	c	◖
ATB-31-77U	ᴗ	●



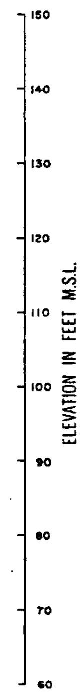
TEST DATA





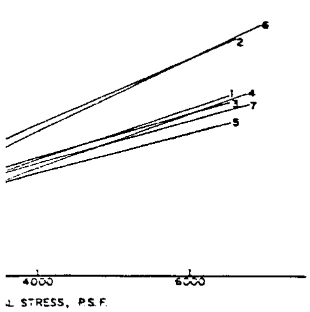
Design Soil Properties

φ DEG.	C PSF	γ PSF
0	500	115
0	400	115
0	400	100
0	500	105
0	700	105
0	700	110
0	900	110
0	1200	110
30	0	120



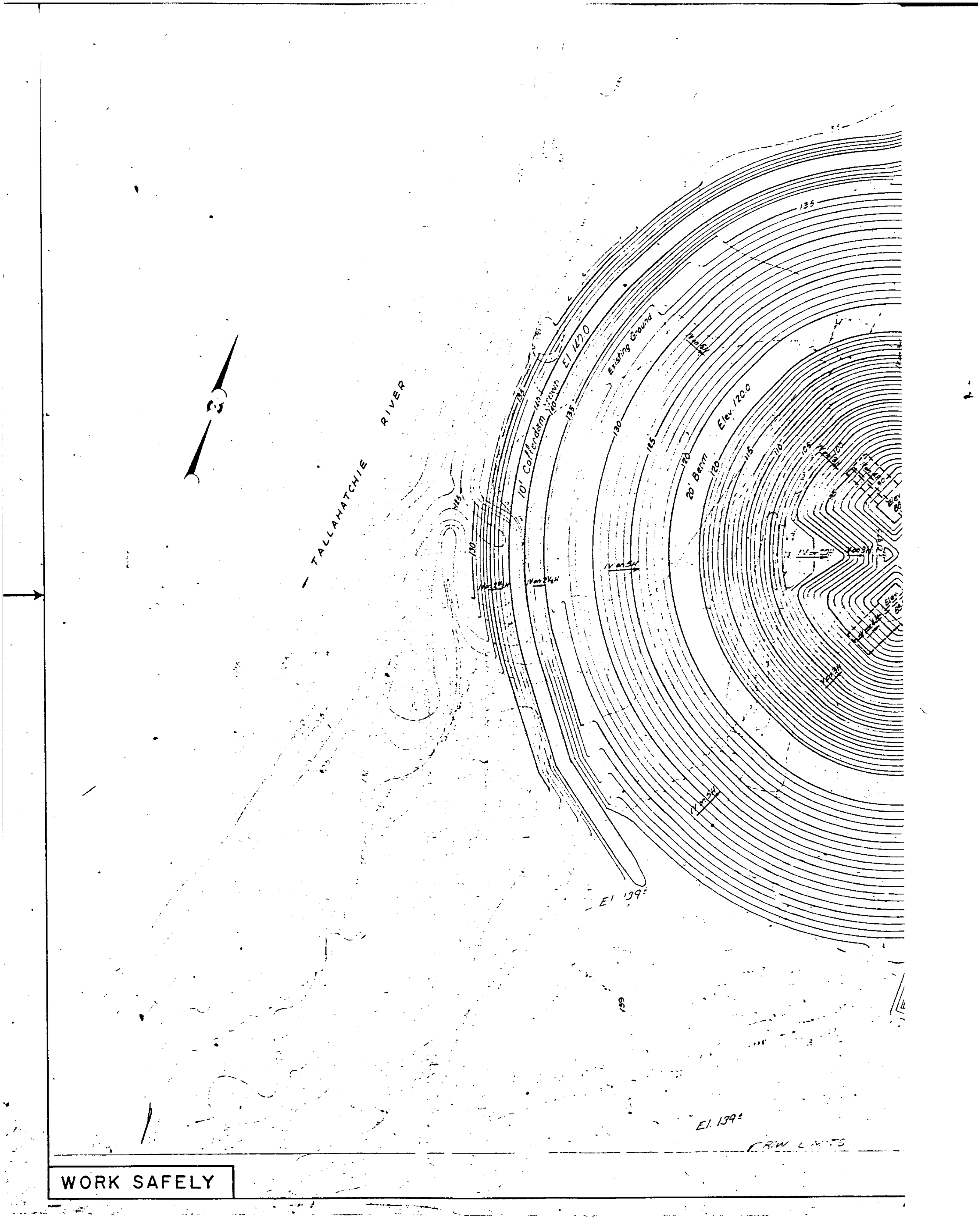
S TEST DATA

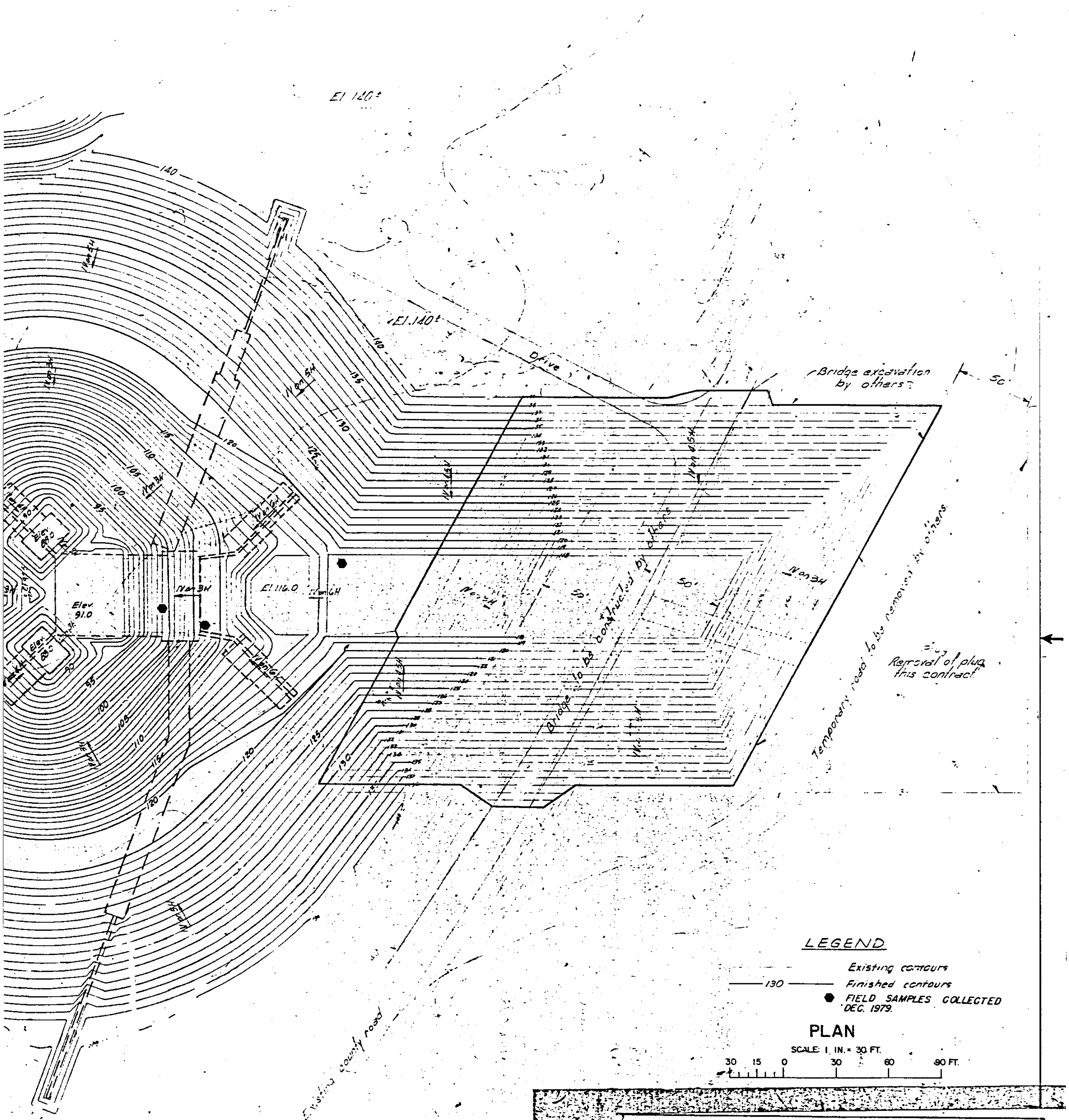
BORING NO.	ENVELOPE NO.	ENVELOPE EL.	STRENGTH φ	STRENGTH C-PSF	CLASS
ATB-23-77U	1	120.4	19°	200	CH
"	2	95.4	24°	260	CH
ATB-24-77U	3	118.5	16.5°	420	CH
"	4	101.4	20°	0	CH
ATB-25-77U	5	114.0	15°	320	MH
"	6	92.9	26°	0	CH
ATB-30-77U	7	123.0	16.2°	360	CH



FLOOD CONTROL, MISSISSIPPI RIVER & TRIBUTARIES
MISSISSIPPI
YAZOO HEADWATER PROJECT, MISSISSIPPI (TRIBUTARIES)
ASCALMORE CREEK - TIPPO BAYOU
FOUNDATION REPORT
ITEM NO. 3, CONTROL STRUCTURE
DESIGN PARAMETERS
SCALE AS SHOWN
U. S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI
DATE JAN 1992 YT-15-45

PLATE 16


TALLAHATCHIE RIVER
Existing Ground
20' Berm
Elev. 120.0
135
130
125
120
115
110
105
El 139±
El. 139±
139
WORK SAFELY

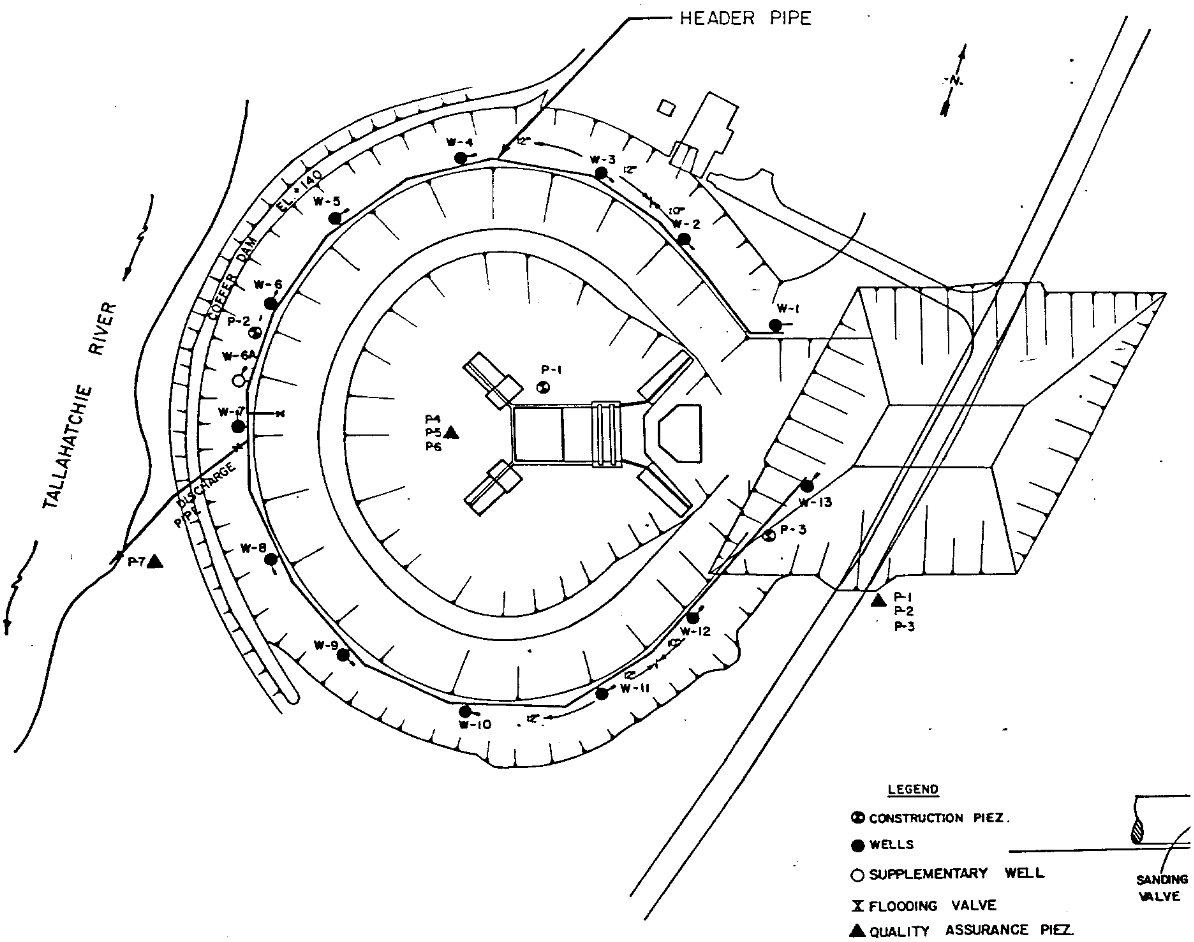


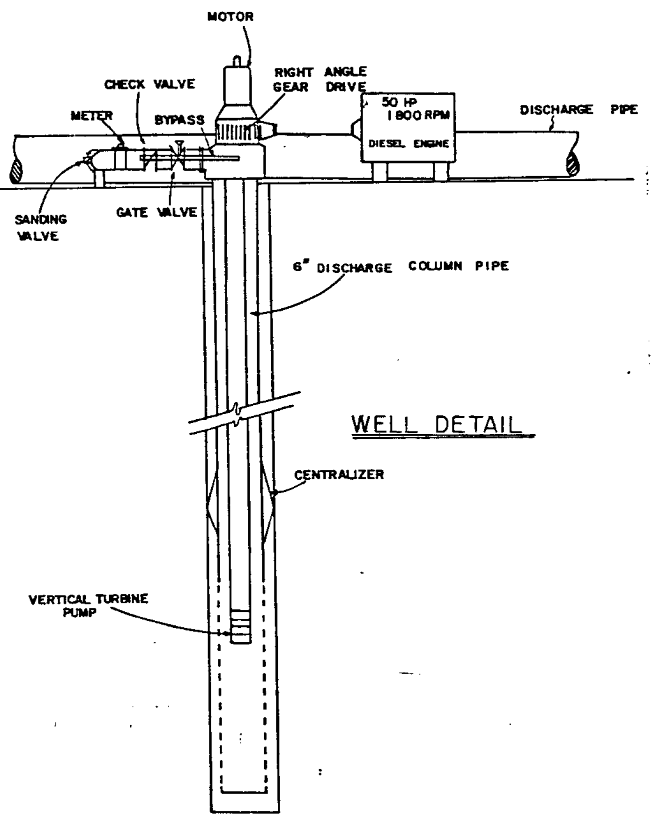
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK-TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

EXCAVATION PLAN

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 17


HEADER PIPE
N
TALLAHATCHIE RIVER
COFFER DAM
EL. 140
DISCHARGE PIPE
W-1
W-2
W-3
W-4
W-5
W-6
W-6A
W-7
W-8
W-9
W-10
W-11
W-12
W-13
P-1
P-2
P-3
P4
P5
P6
P-7
P-1
P-2
P-3
12"
12"
10"
12"
12"
LEGEND
CONSTRUCTION PIEZ.
WELLS
SUPPLEMENTARY WELL
FLOODING VALVE
QUALITY ASSURANCE PIEZ.
SANDING VALVE



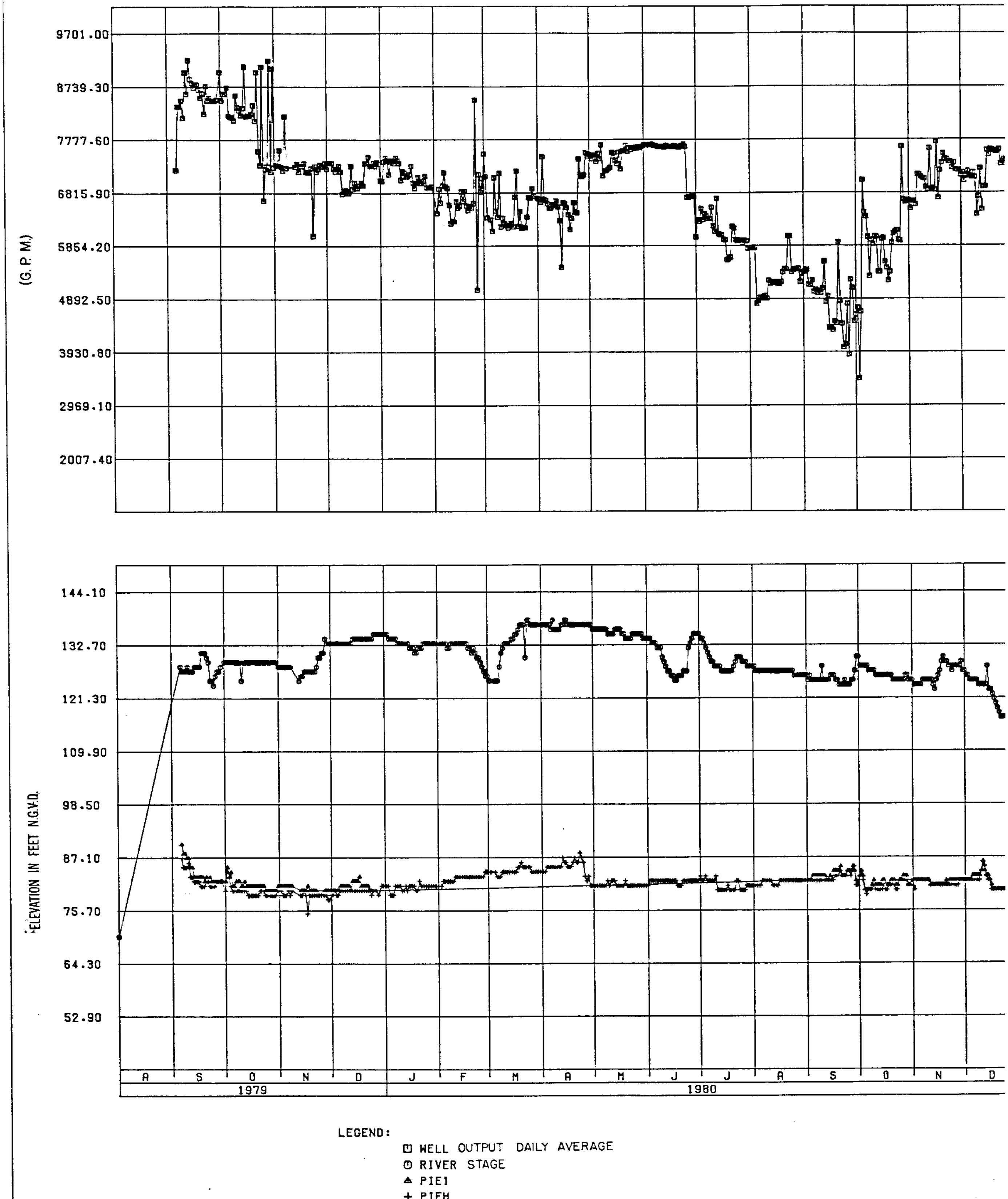
WELL DETAIL

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

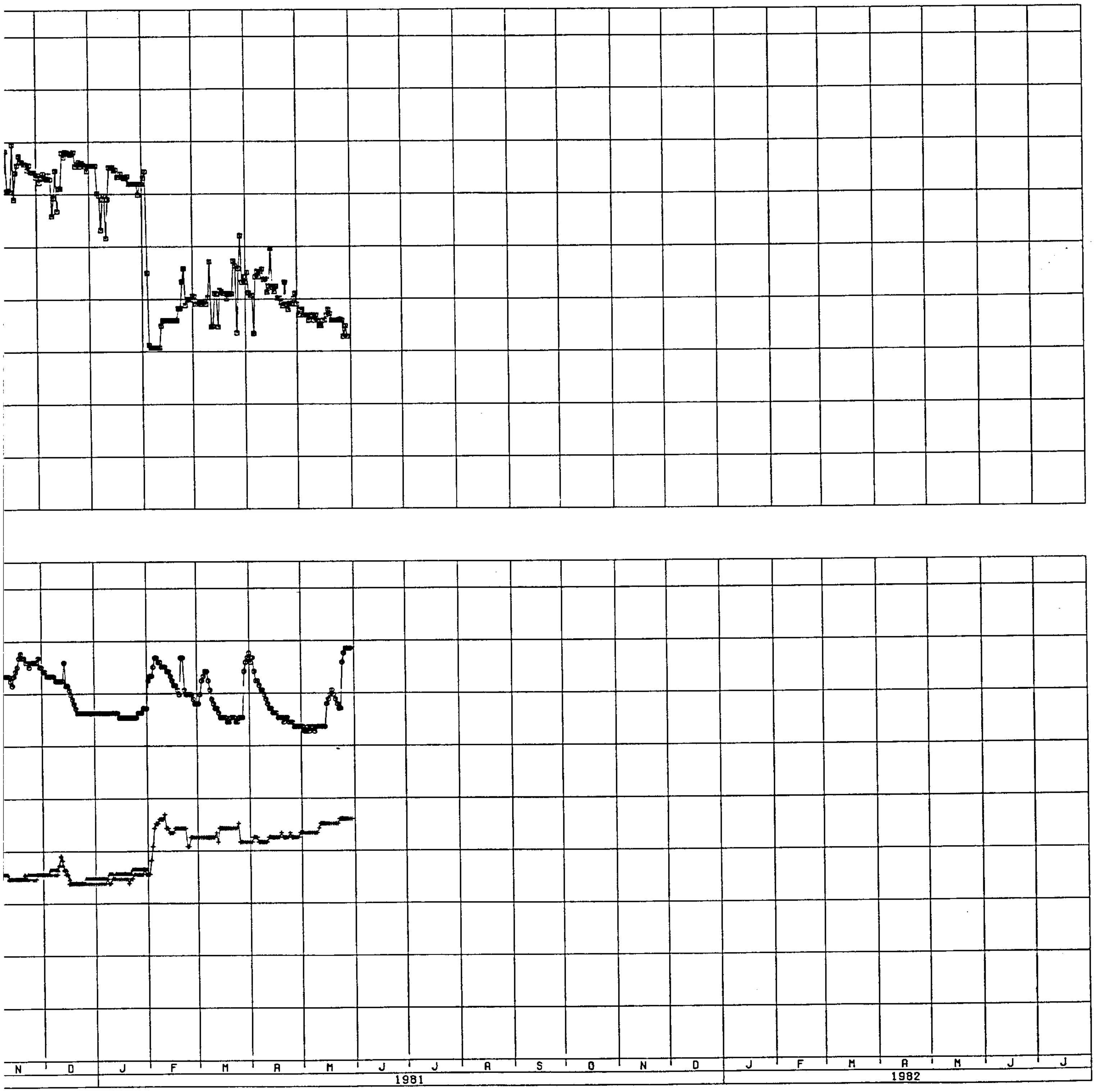
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

DEWATERING WELL - PIEZOMETER LAYOUT

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 18



9701.00
8739.30
7777.60
6815.90
5854.20
4892.50
3930.80
2969.10
2007.40
(G.P.M.)
144.10
132.70
121.30
109.90
98.50
87.10
75.70
64.30
52.90
ELEVATION IN FEET N.G.V.D.
A S O N D J F M A M J J A S O N D
1979
1980
LEGEND:
WELL OUTPUT DAILY AVERAGE
RIVER STAGE
PIE1
PIEH

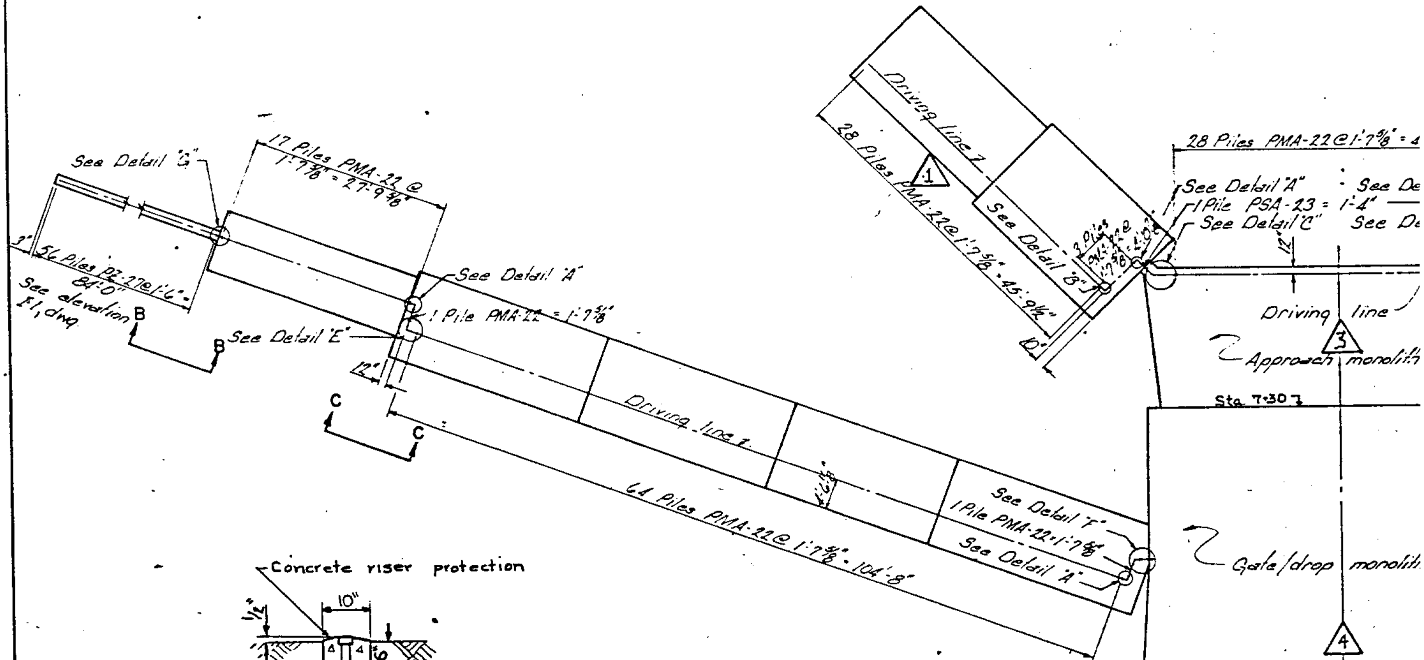


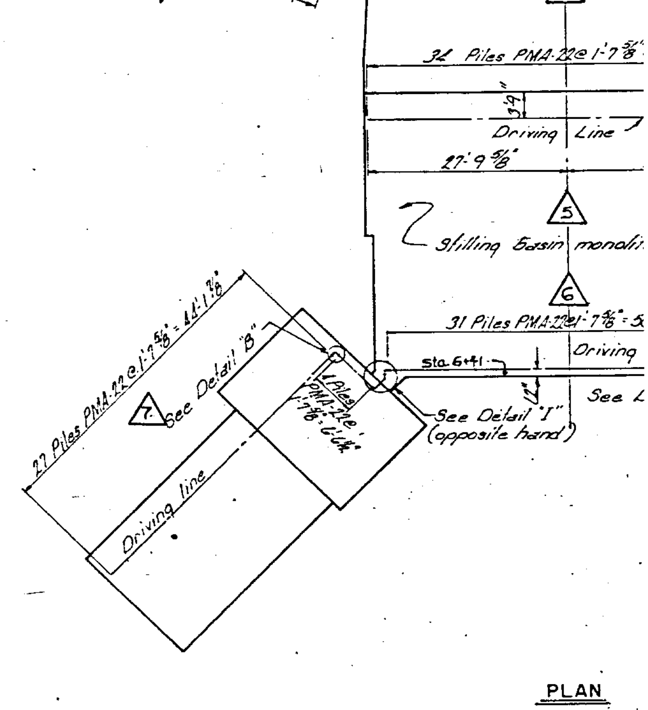
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

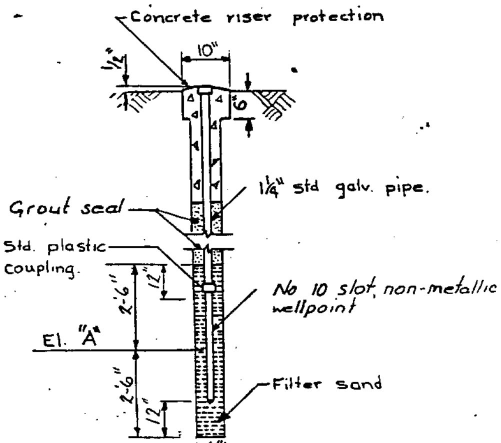
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK-TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

DEWATERING TOTALS

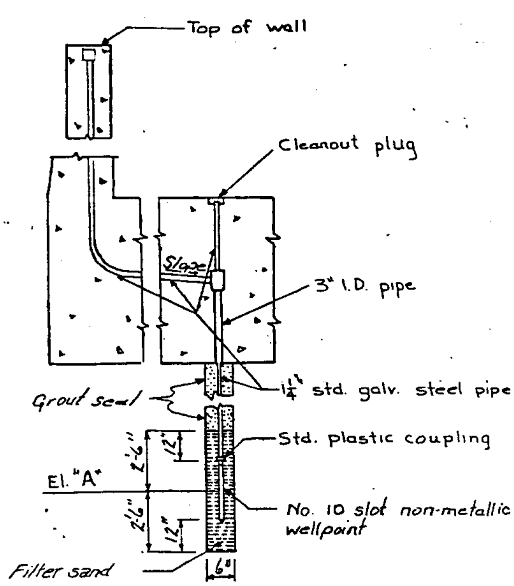
FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 19







BACKFILL PIEZOMETER
(P-1;2;7;&8)

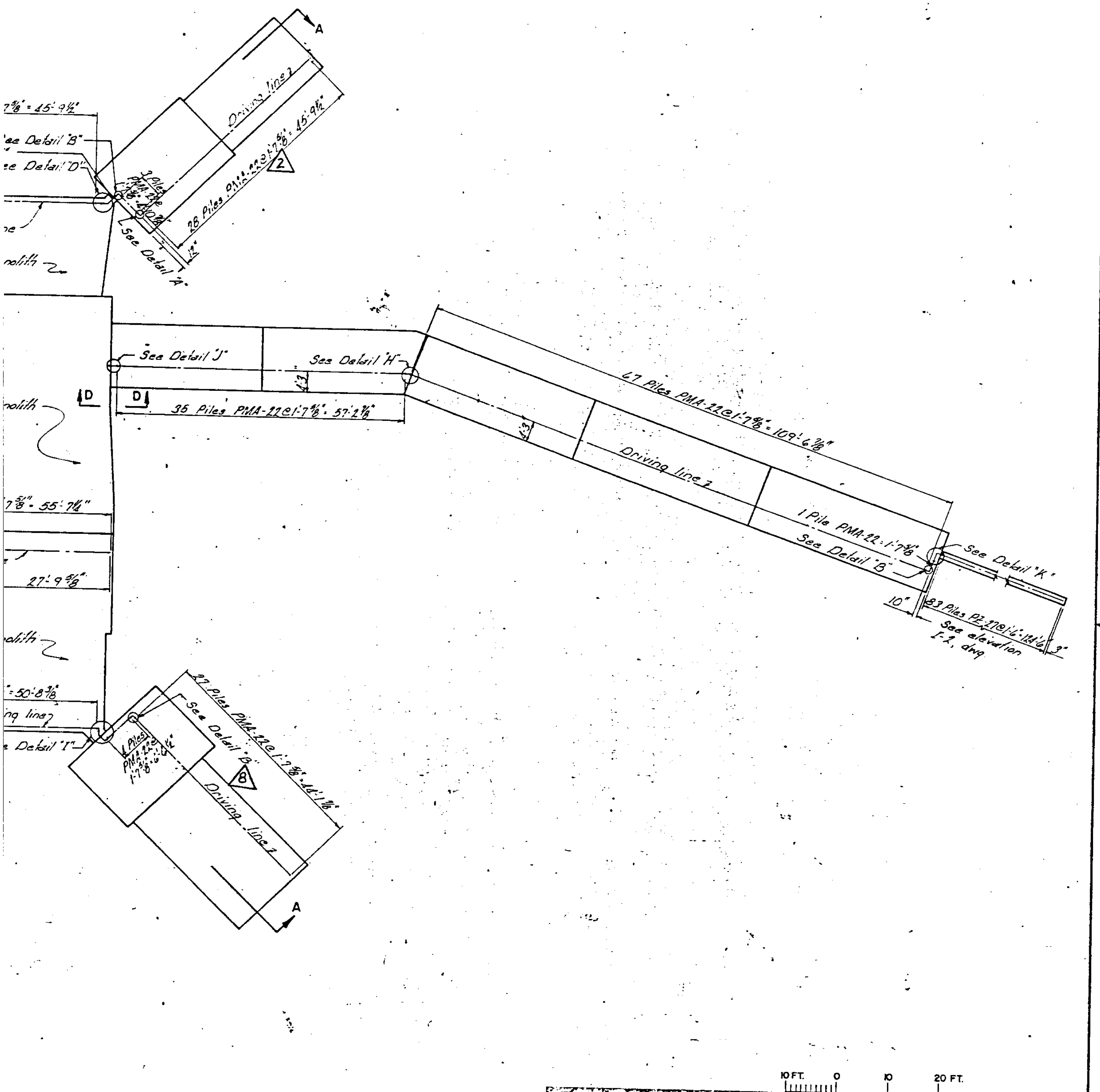


UNDER SLAB PIEZOMETER
(P-3;4;5;&6)

LOCATION OF PIEZOMETERS

PIEZ. NO.	STATION	OFFSET FROM CENTERLINE OF STRUCTURE-FT	ELEVATION "A"
P-1	7+60	50	120.0
P-2	7+60	50	120.0
P-3	7+35	0	55.0
P-4	6+95	0	55.0
P-5	6+61	0	88.0
P-6	6+51	0	55.0
P-7	6+25	55	98.0
P-8	6+29	55	98.0

WORK SAFELY



△ piezometer locations

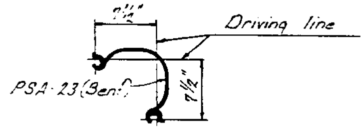
References:
For Sheet Pile details and sections, see dwg. 21

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

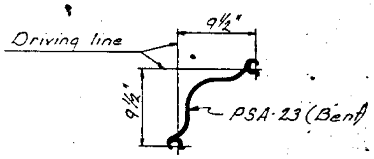
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

PERMANENT PIEZOMETERS AND SHEET PILE LAYOUT

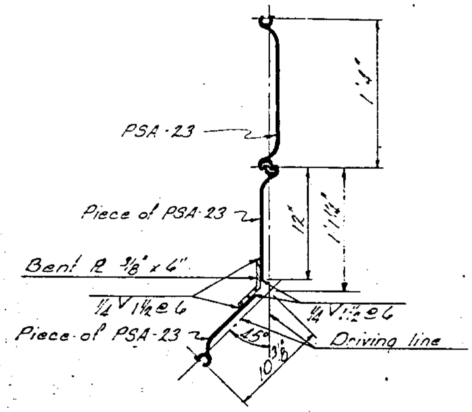
FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 20



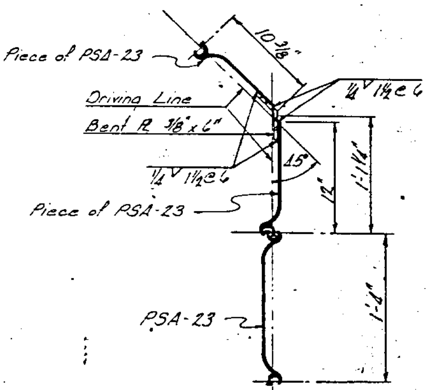
DETAIL A ⚠
SCALE: NONE



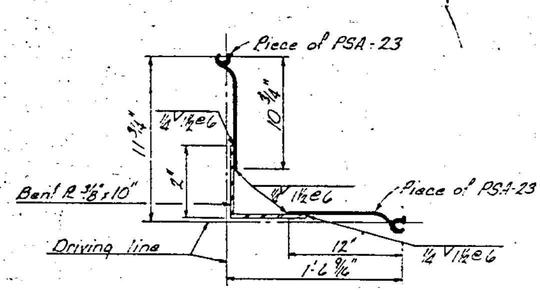
DETAIL B ⚠
SCALE: NONE



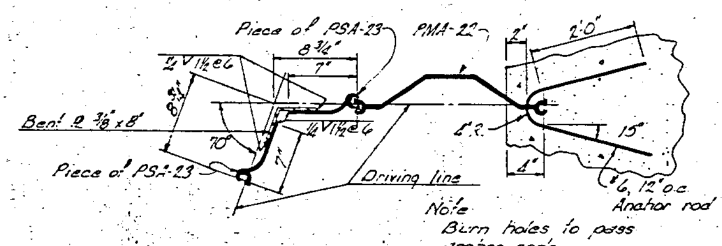
DETAIL C ⚠
SCALE: NONE



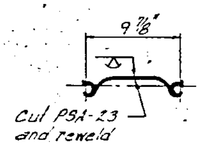
DETAIL D ⚠
SCALE: NONE



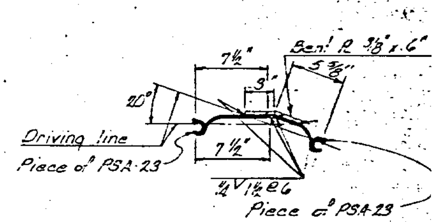
DETAIL E ⚠
SCALE: NONE



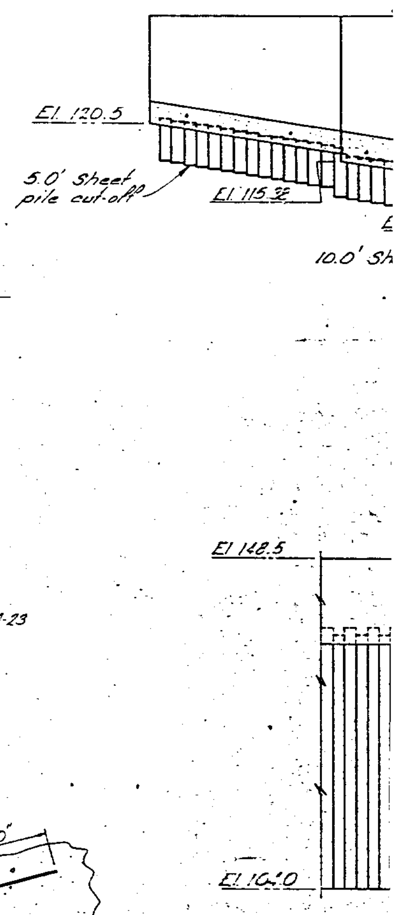
DETAIL F ⚠
SCALE: NONE



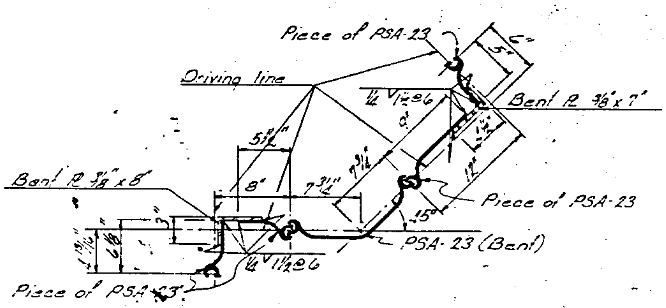
DETAIL G ⚠
SCALE: NONE



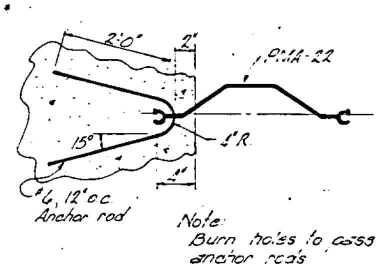
DETAIL H ⚠
SCALE: NONE



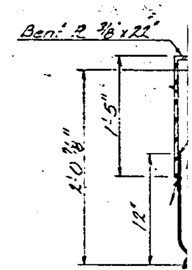
SECTION
SCALE: 1 IN.=



DETAIL I ⚠
SCALE: NONE

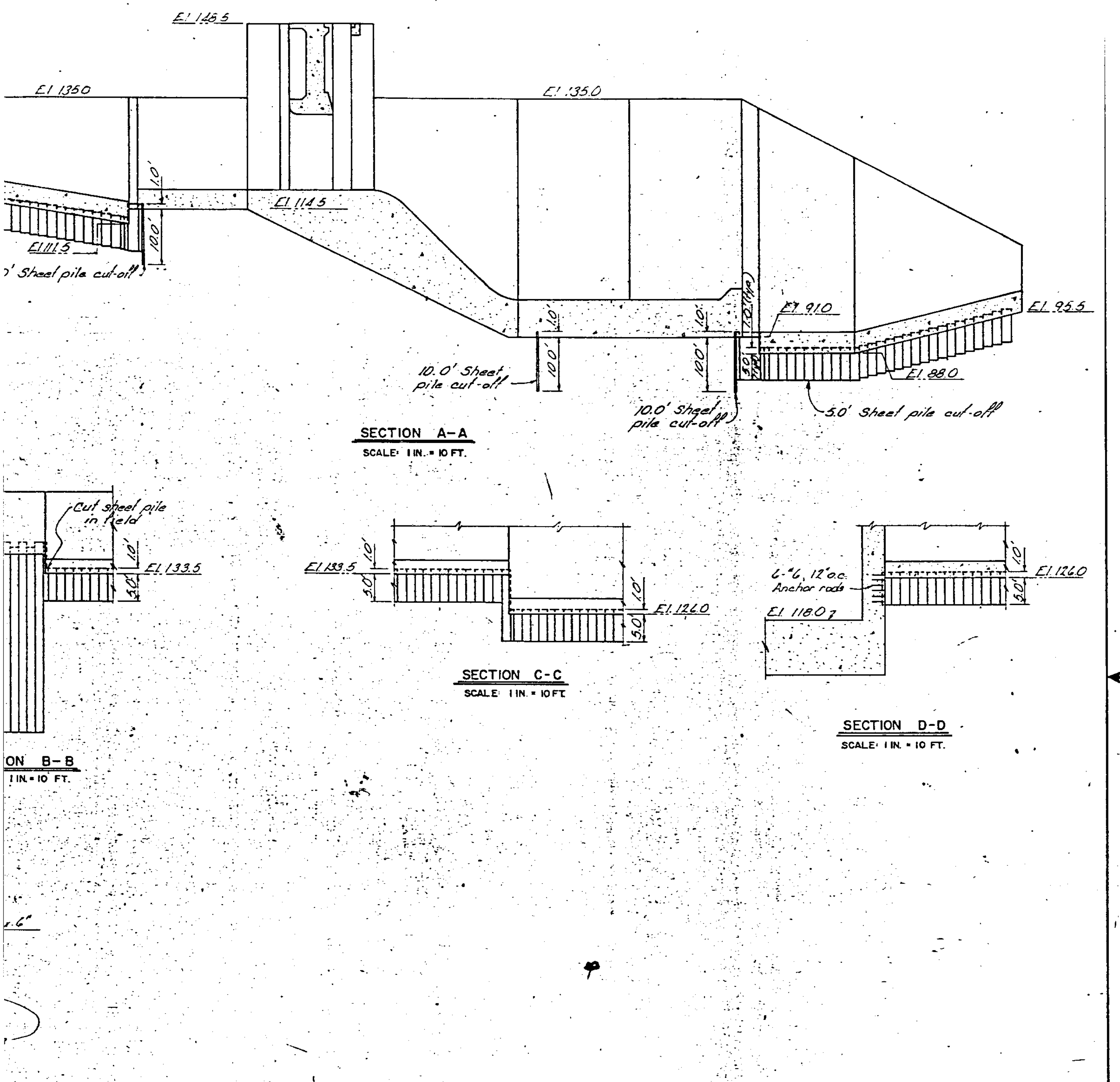


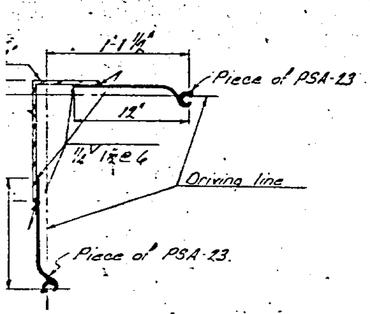
DETAIL J ⚠
SCALE: NONE



DE
SC

WORK SAFELY





DETAIL K

SCALE: NONE

For location of sections see dwg 2

SCALE: 1 IN. = 10 FT.

10 5 0 10 20 30 FT.

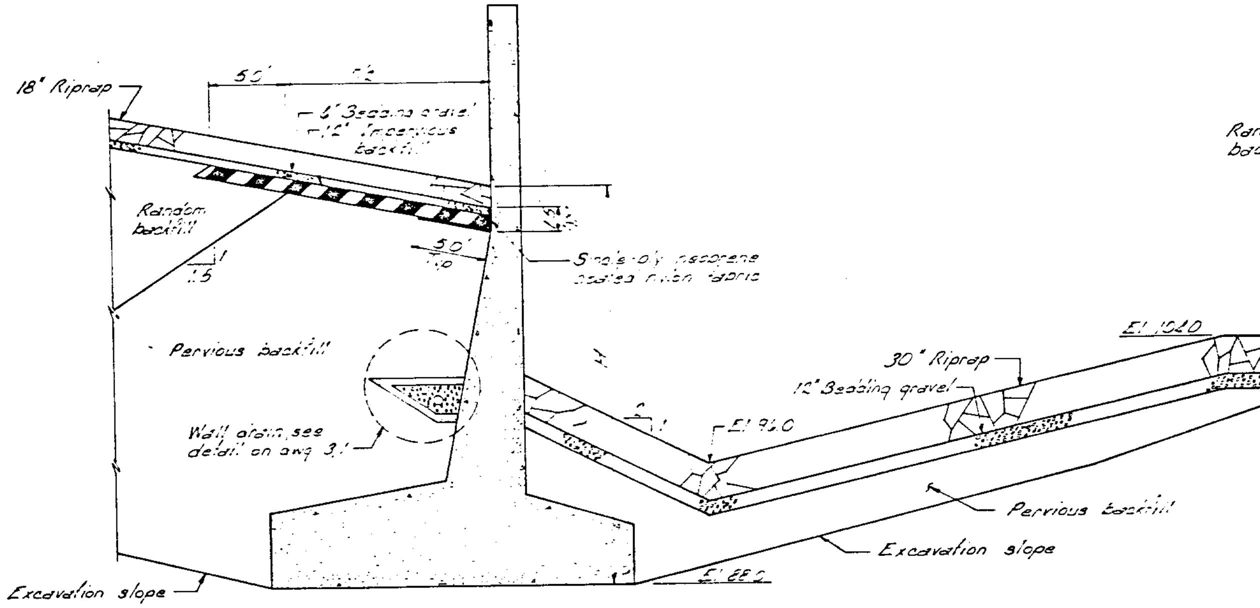
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

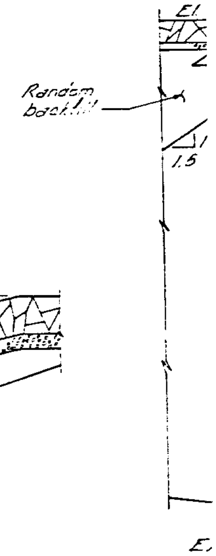
FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN–TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO.3, CONTROL STRUCTURE

SHEET PILE DETAILS

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 21

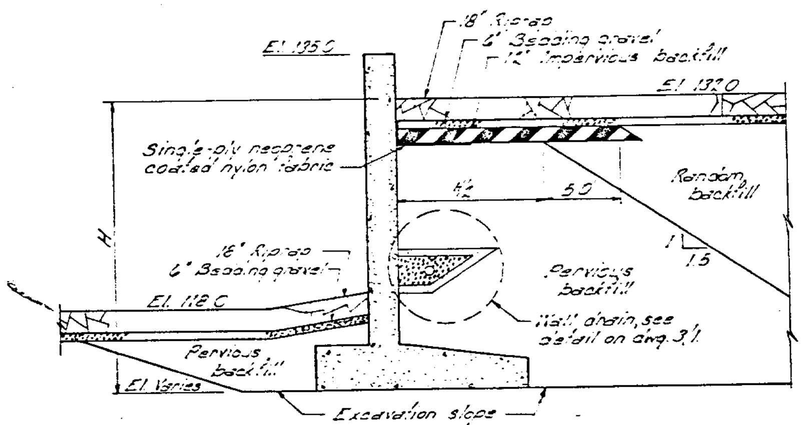
2





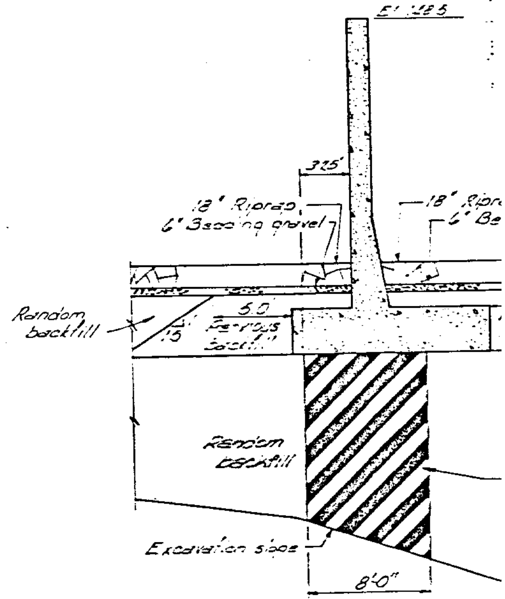
SECTION C-C

SCALE: 1 IN. = 5 FT.



SECTION F-F

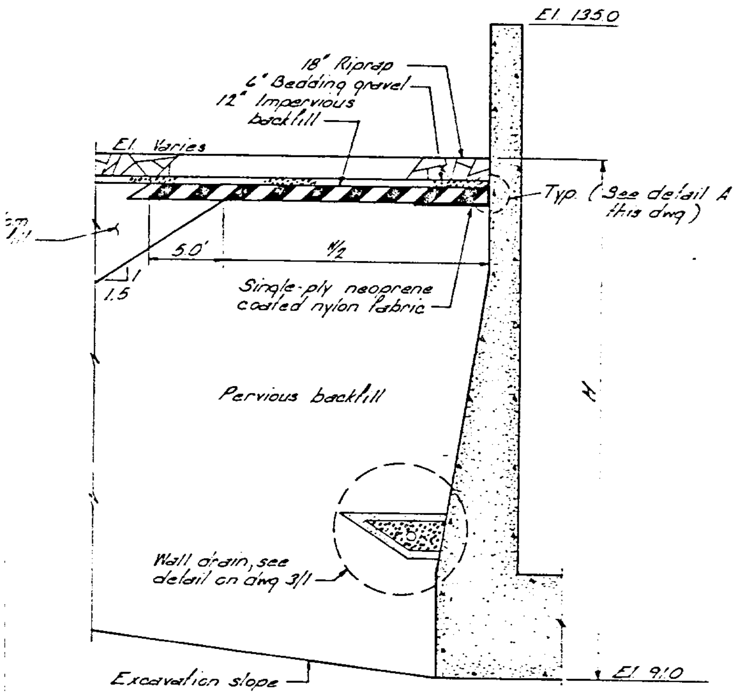
SCALE: 1 IN. = 5 FT.



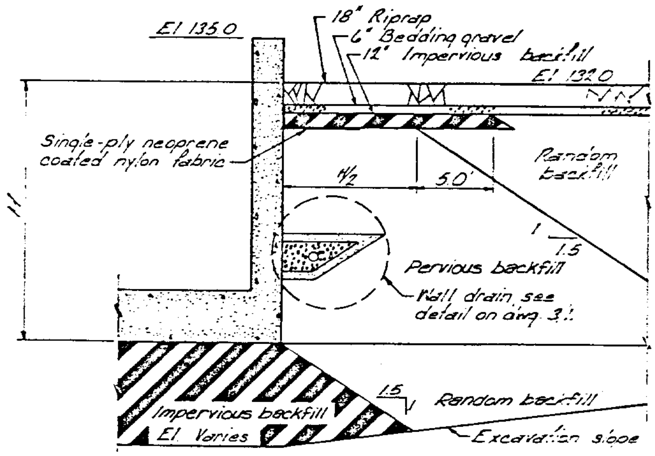
SECTION G-G

SCALE: 1 IN. = 5 FT.

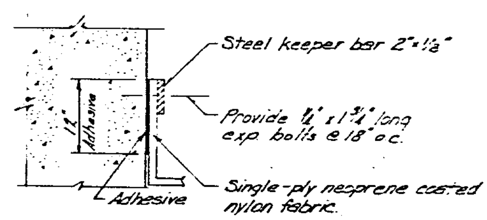
WORK SAFELY



SECTION D-D
SCALE: 1 IN. = 5 FT.

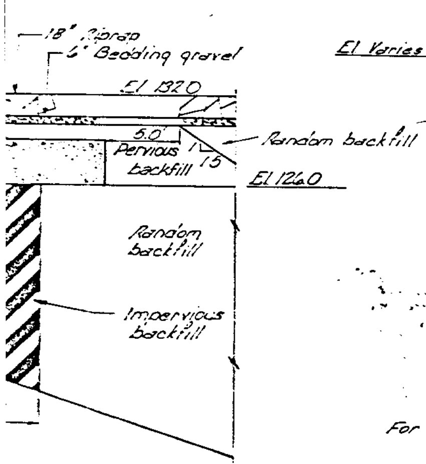


SECTION E-E
SCALE: 1 IN. = 5 FT.

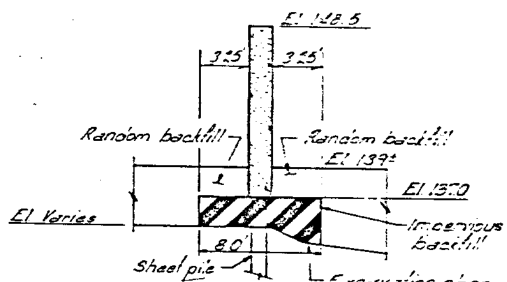


Note:
All laps in single-ply neoprene coated nylon fabric to be cemented to provide a waterproof joint. Minimum lap length shall be 12 inches.

DETAIL A
SCALE NONE



G-G
5 FT.



SECTION H-H
SCALE: 1 IN. = 5 FT.

For location of sections, see dwg ...

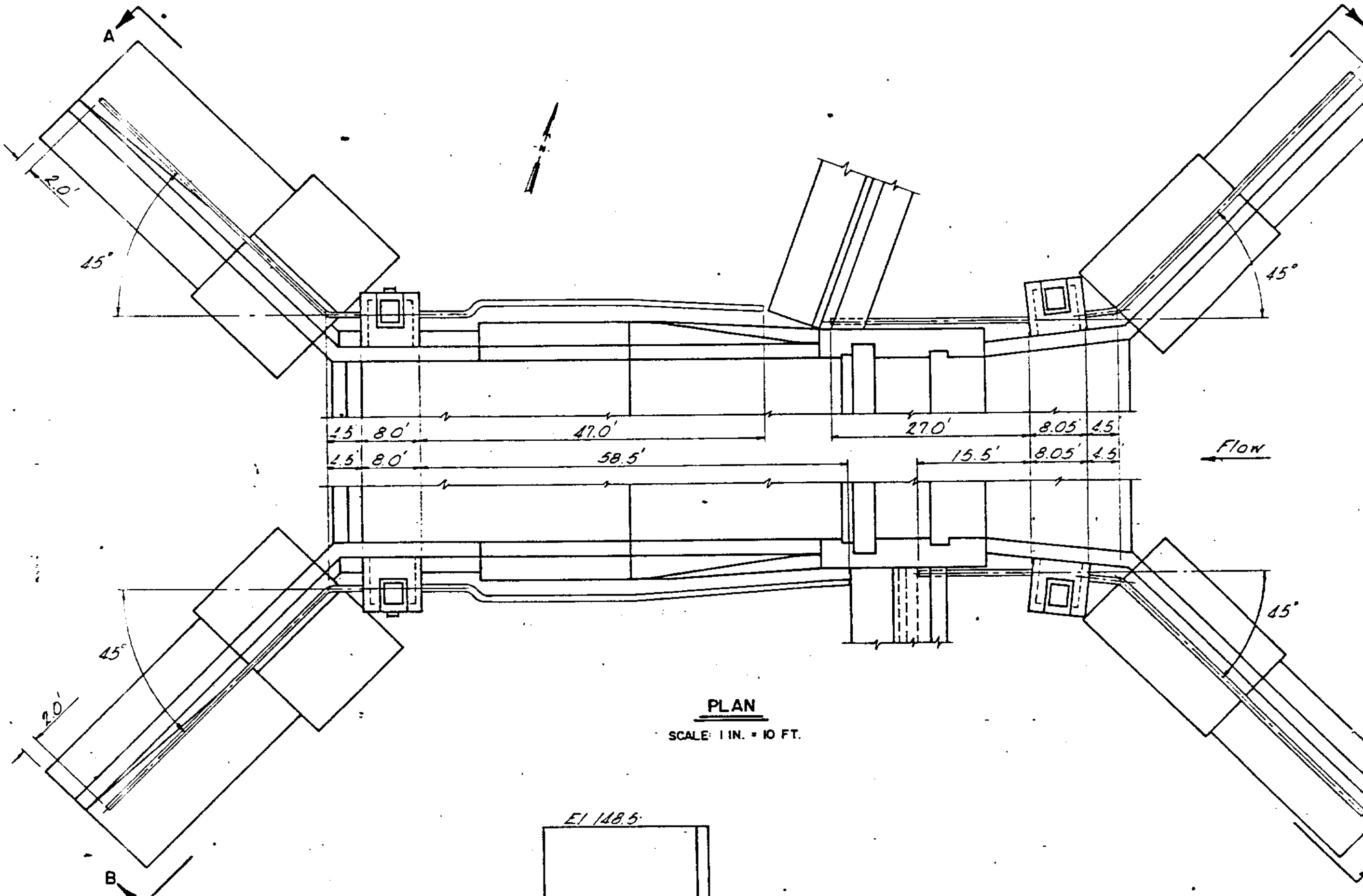
SCALE: 1 IN. = 5 FT.
5 0 1 2 3 FT.

U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK–TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

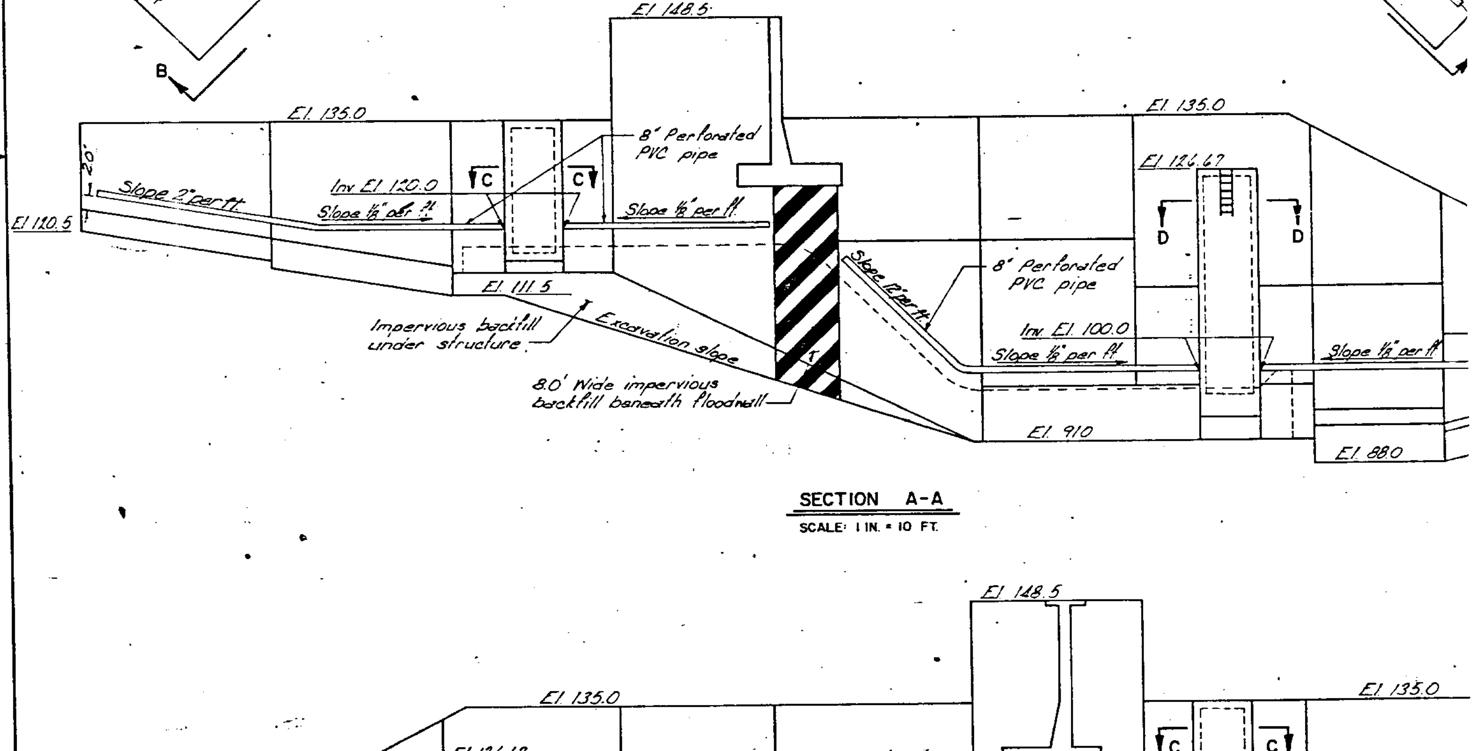
BACKFILL SECTIONS

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 22



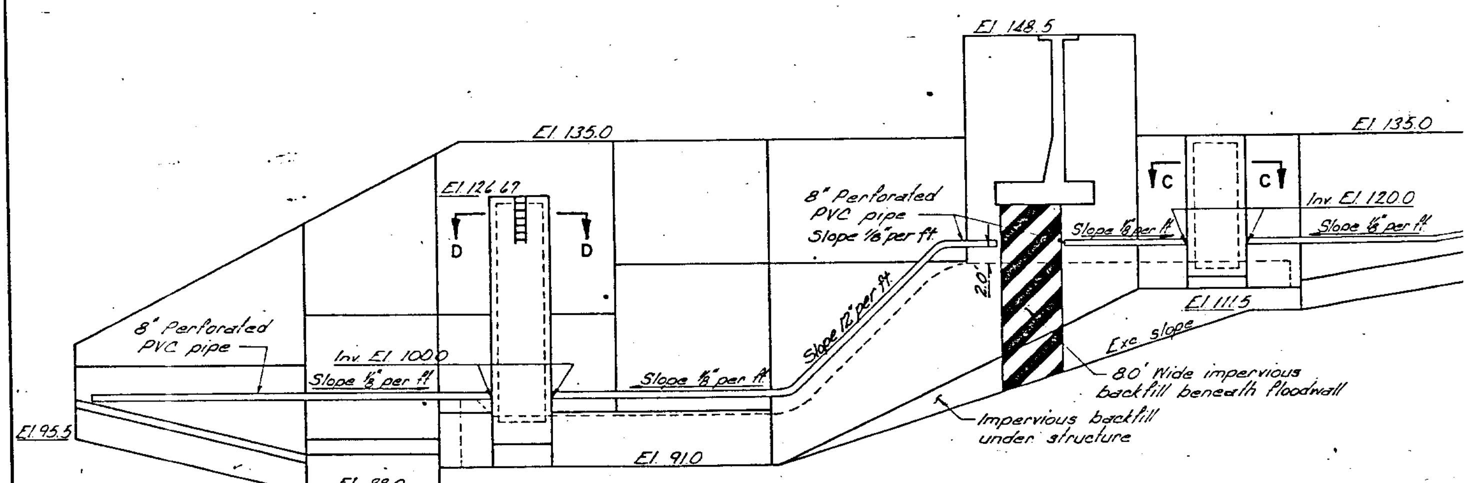
PLAN

SCALE: 1 IN. = 10 FT.



SECTION A-A

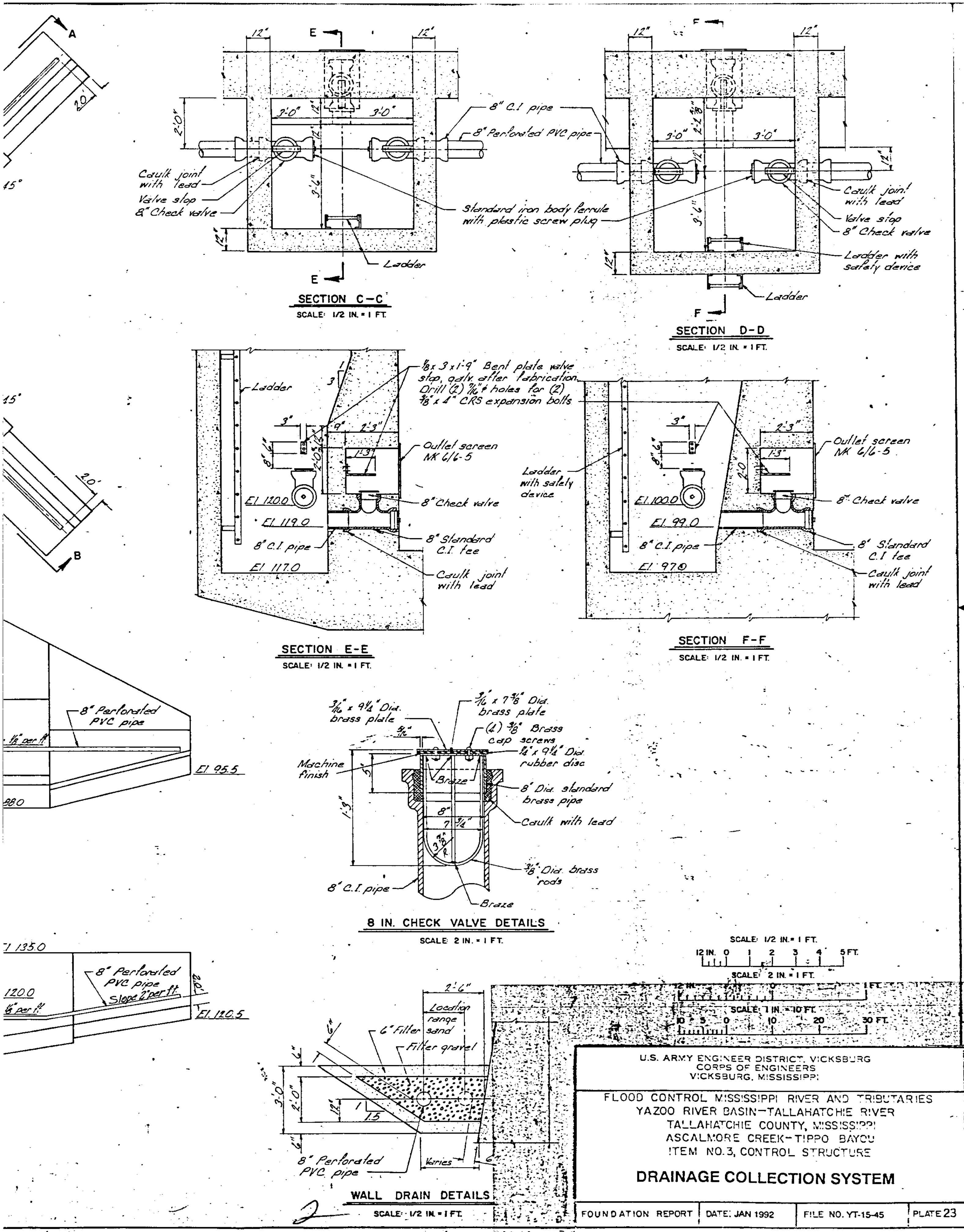
SCALE: 1 IN. = 10 FT.



SECTION B-B

SCALE: 1 IN. = 10 FT.

WORK SAFELY



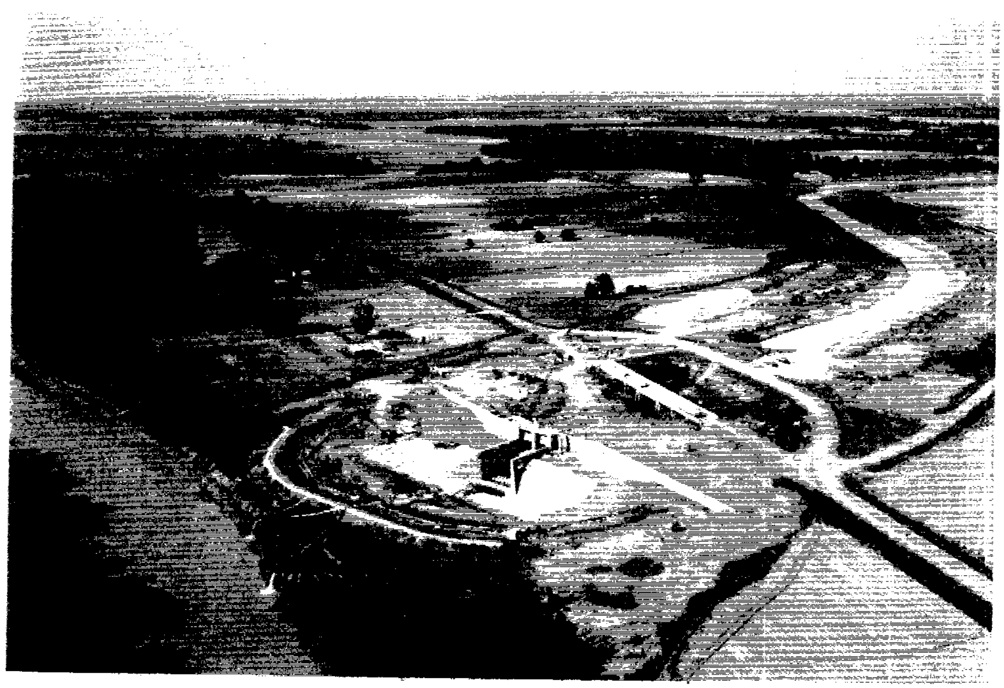
U.S. ARMY ENGINEER DISTRICT, VICKSBURG
CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI

FLOOD CONTROL MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO RIVER BASIN—TALLAHATCHIE RIVER
TALLAHATCHIE COUNTY, MISSISSIPPI
ASCALMORE CREEK—TIPPO BAYOU
ITEM NO. 3, CONTROL STRUCTURE

DRAINAGE COLLECTION SYSTEM

FOUNDATION REPORT	DATE: JAN 1992	FILE NO. YT-15-45	PLATE 23

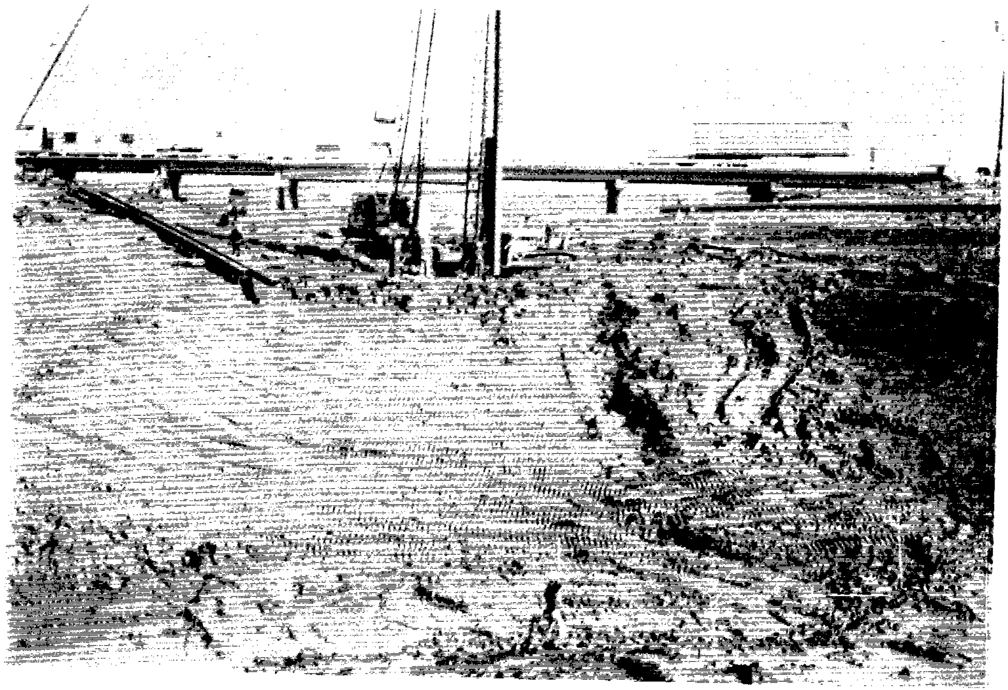
1. COMPLETED, REWATERED STRUCTURE-LOOKING UPSTREAM



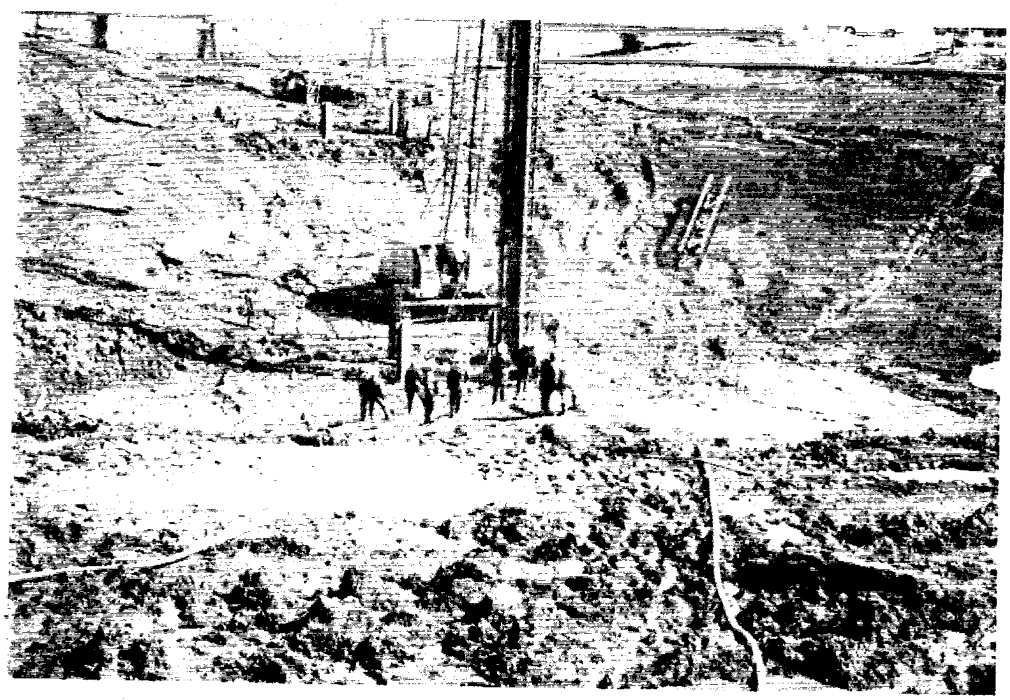
2. AERIAL VIEW OF THE SITE PRIOR TO REWATERING

3. SLIDE AJACENT TO THE TALLAHACHIE RIVER

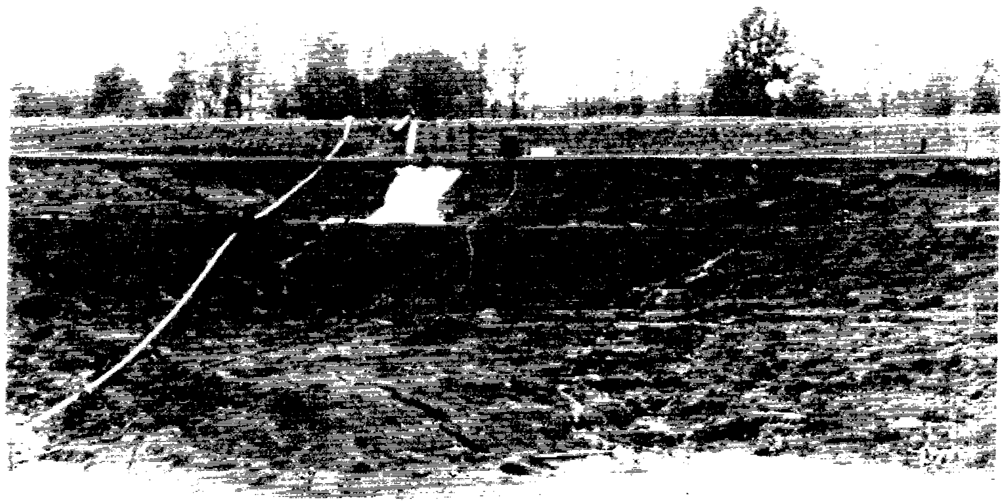
4. SLIDE AJACENT TO THE TALLAHACHIE RIVER



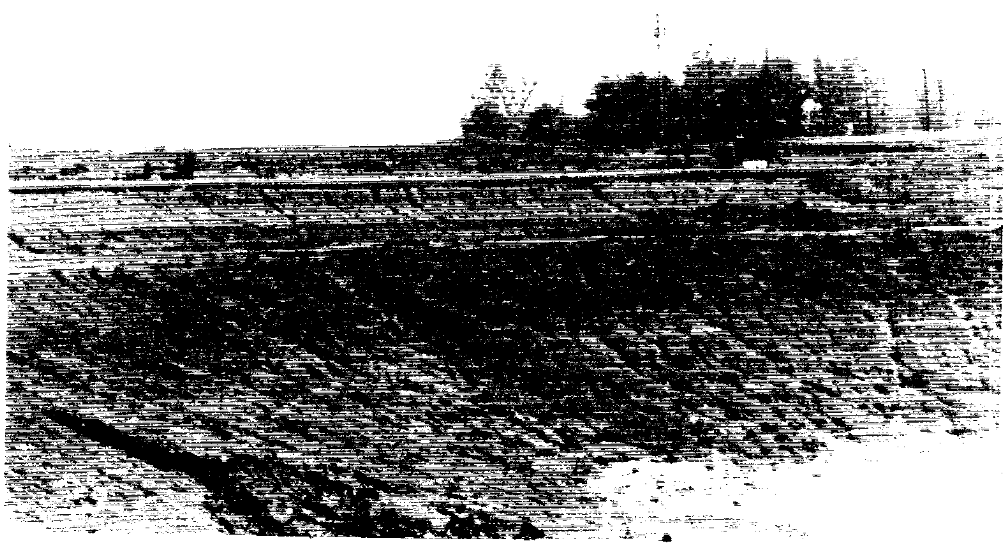
5. DRIVING TEST PILING BENEATH THE APPROACH MONOLITH



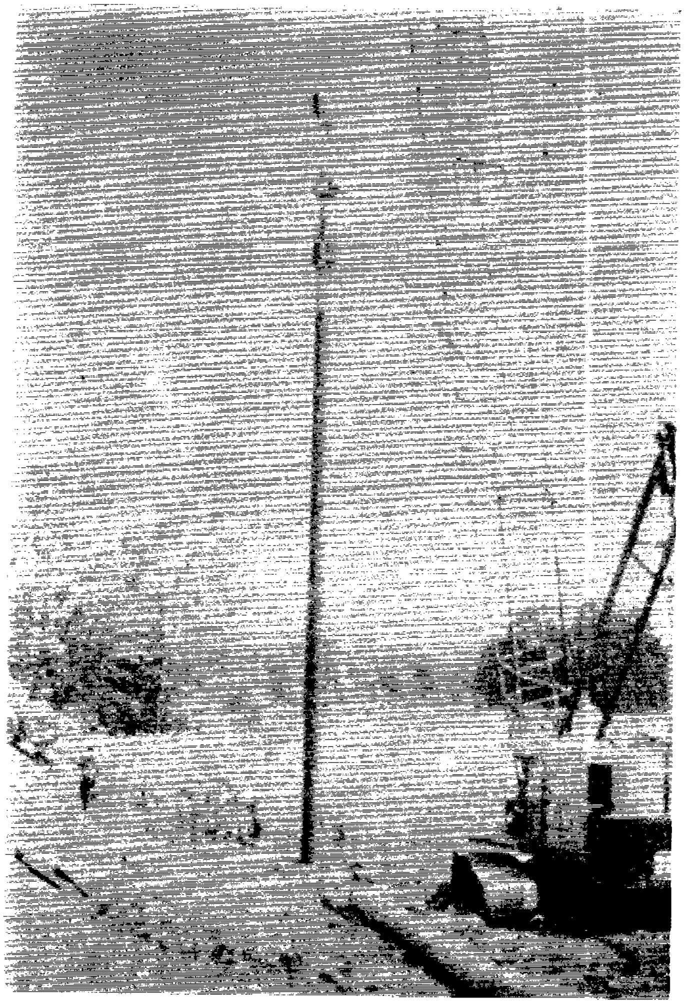
6. DRIVING TEST PILING BENEATH THE STILLING BASIN



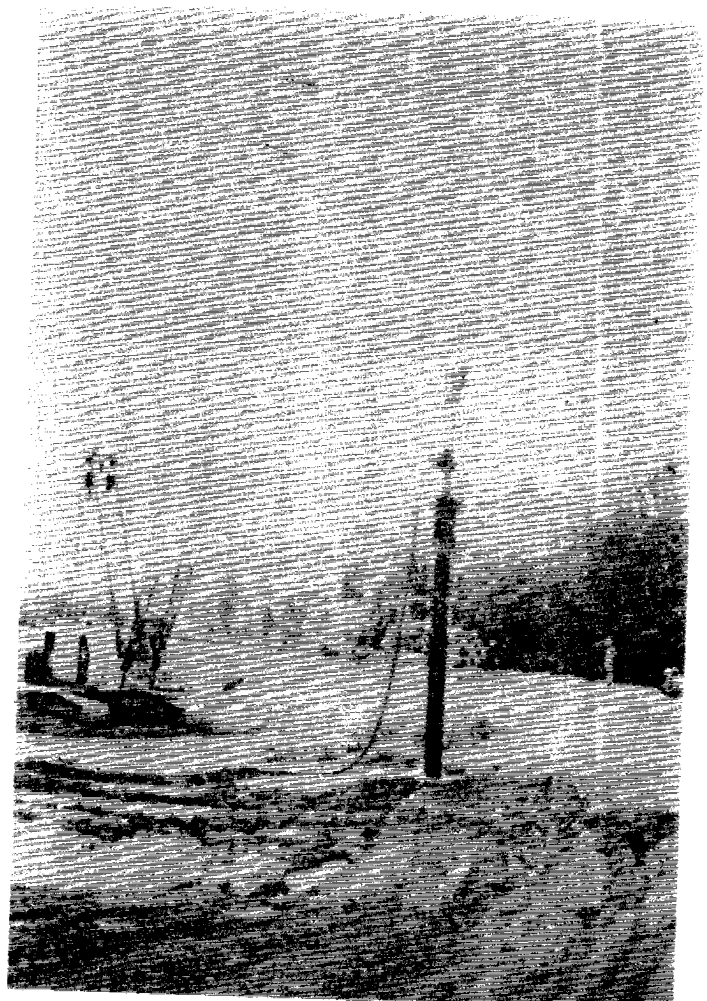
7. NORTH EXCAVATION SIDE SLOPE



8. WEST EXCAVATION SIDE SLOPE



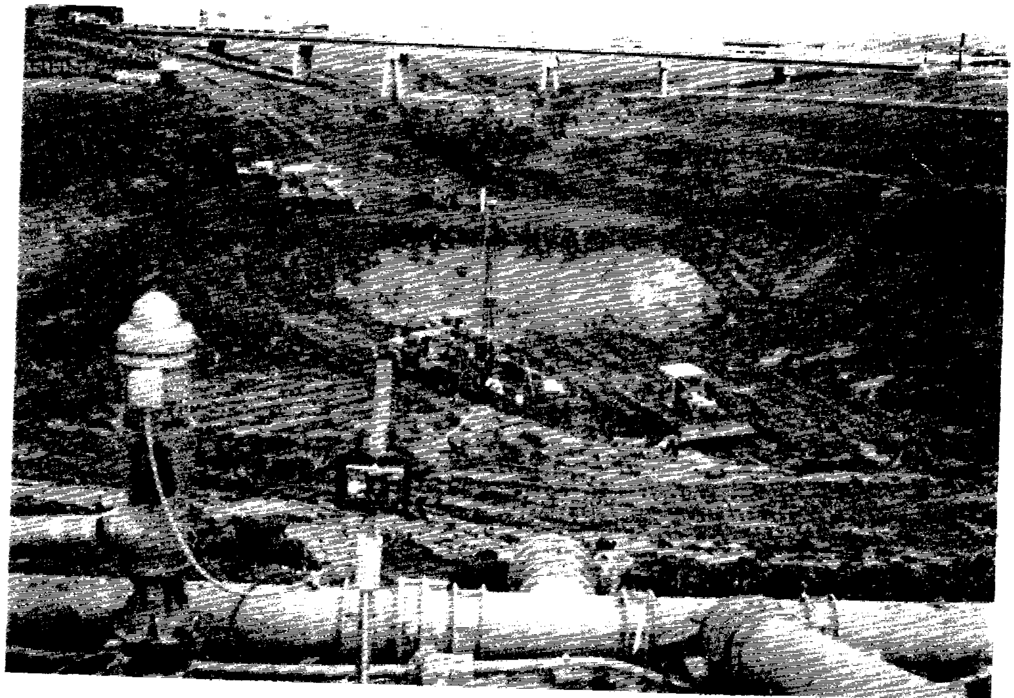
9. INSTALLATION OF DEWATERING WELL WITH JETTING TOOL



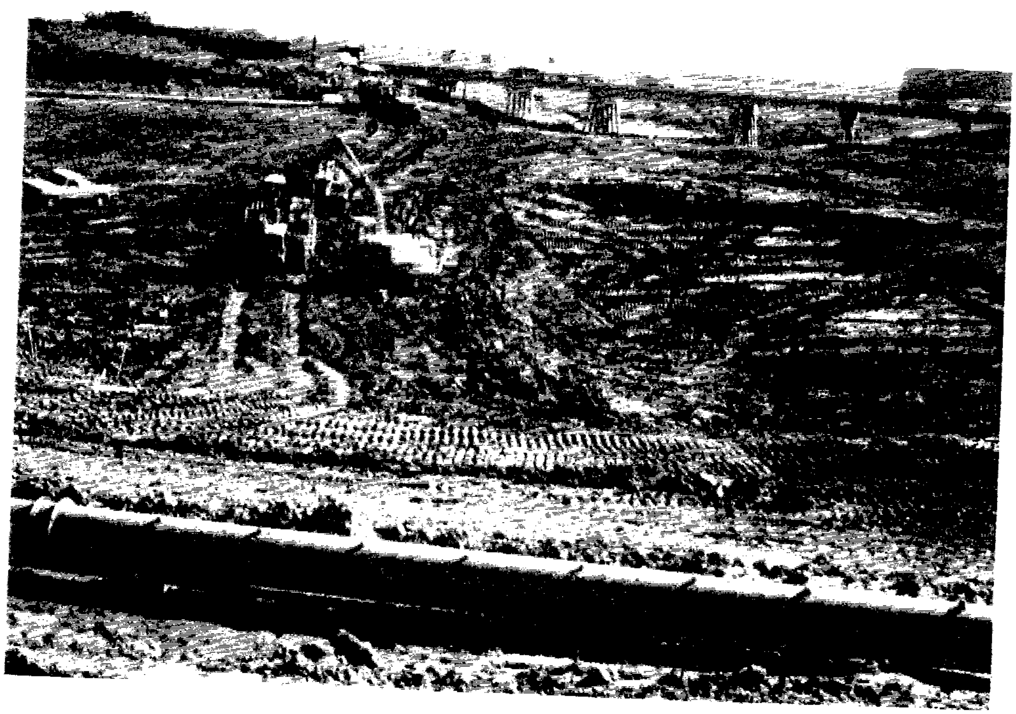
10. INSTALLATION OF DEWATERING WELL WITH JETTING TOOL

11. DEWATERING WELL #6, NOTE PRIMARY (ELECTRIC) AND BACKUP (DIESEL)

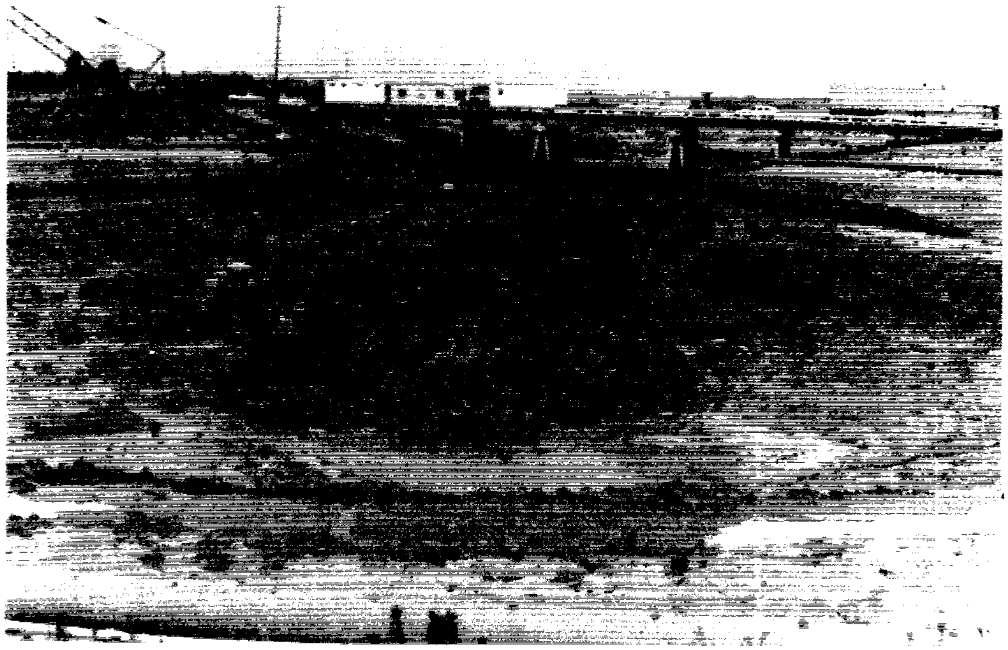
12. AERIAL VIEW OF DEWATERING SYSTEM



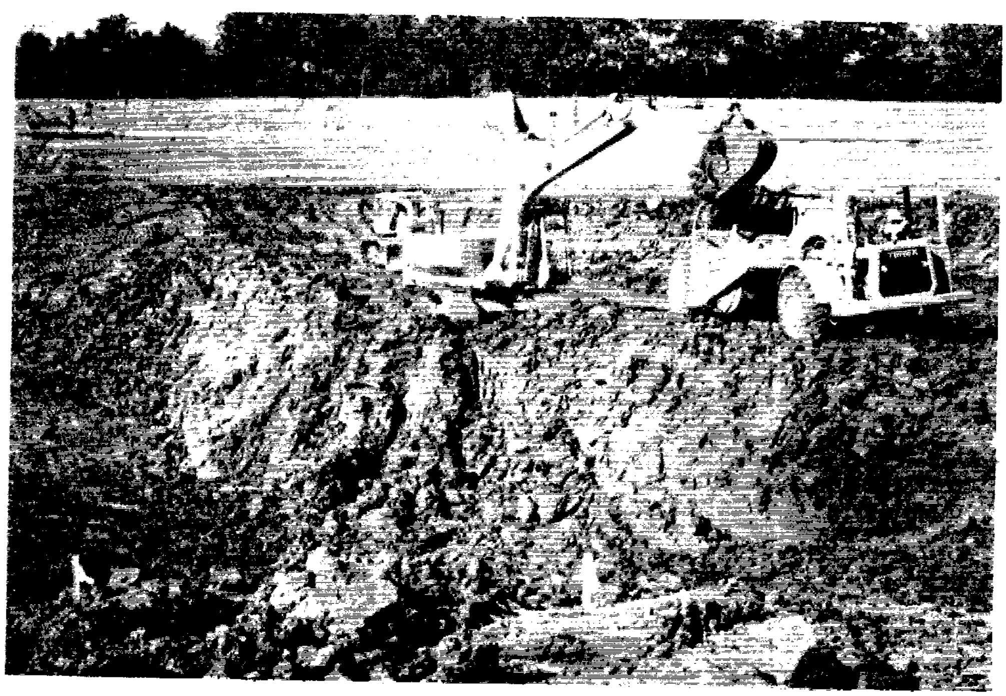
13. INSTALLATION OF CONSTRUCTION PIEZOMETER



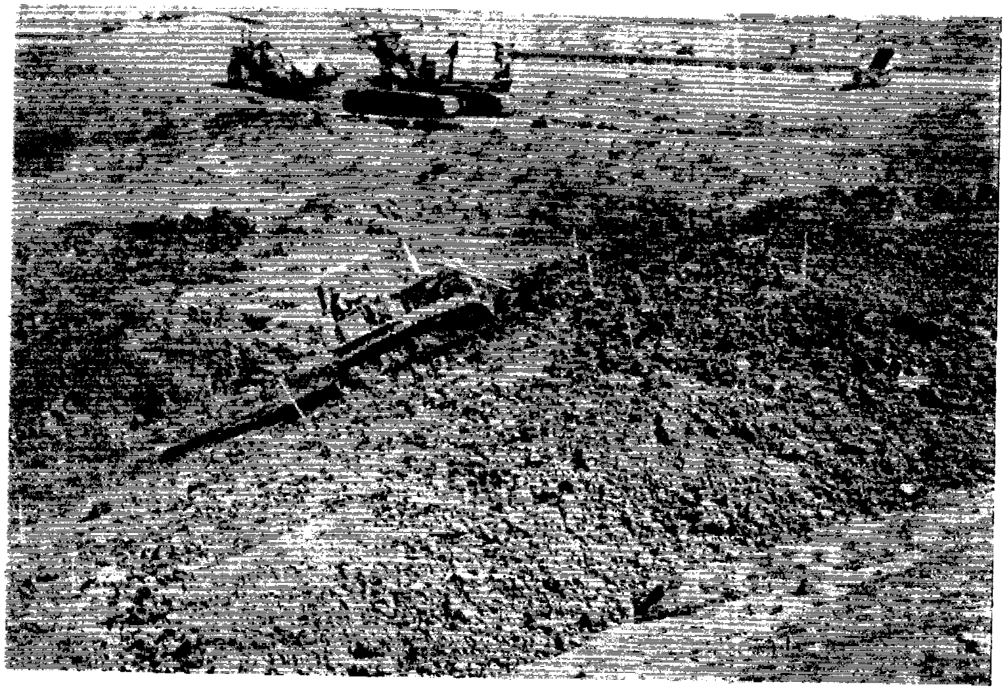
14. EARLY STRUCTURAL EXCAVATION



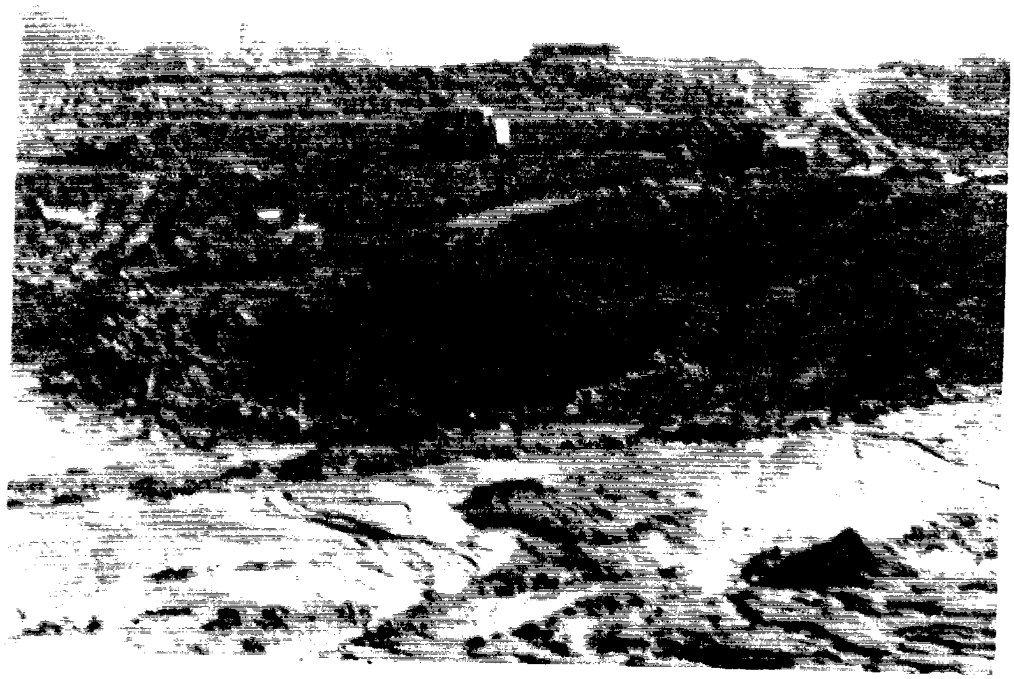
15. FIRST SLIDE-IMPERVIOUS BACKFILL



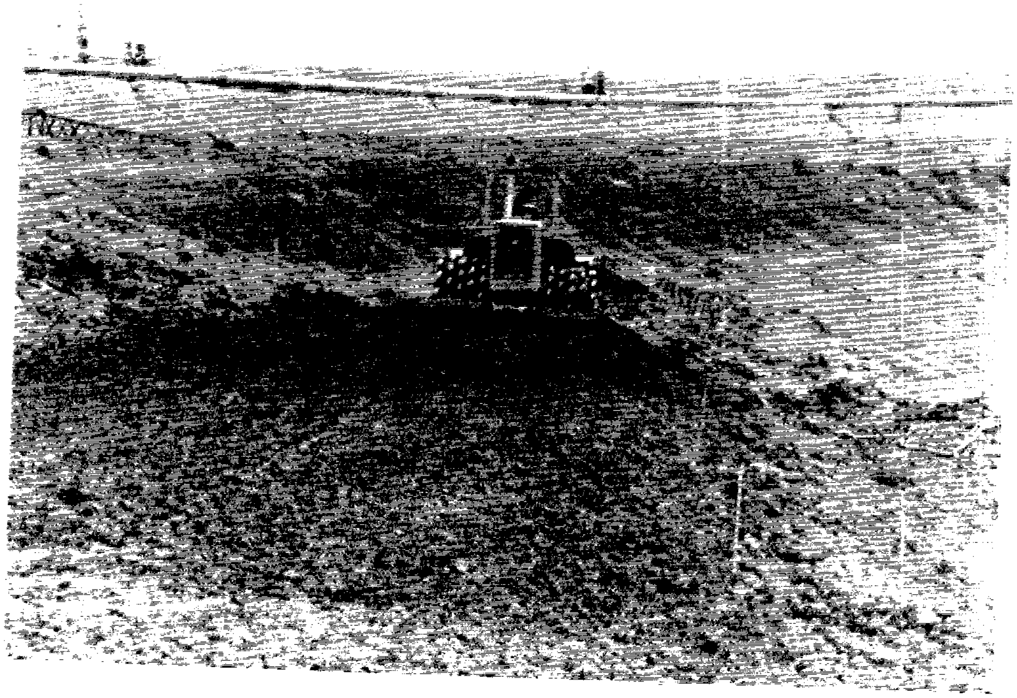
16. REMOVAL OF MATERIAL FROM IMPERVIOUS BACKFILL SLIDE



17. COMPACTING IMPERVIOUS BACKFILL NORMAL TO 1 ON 2 SLOPE



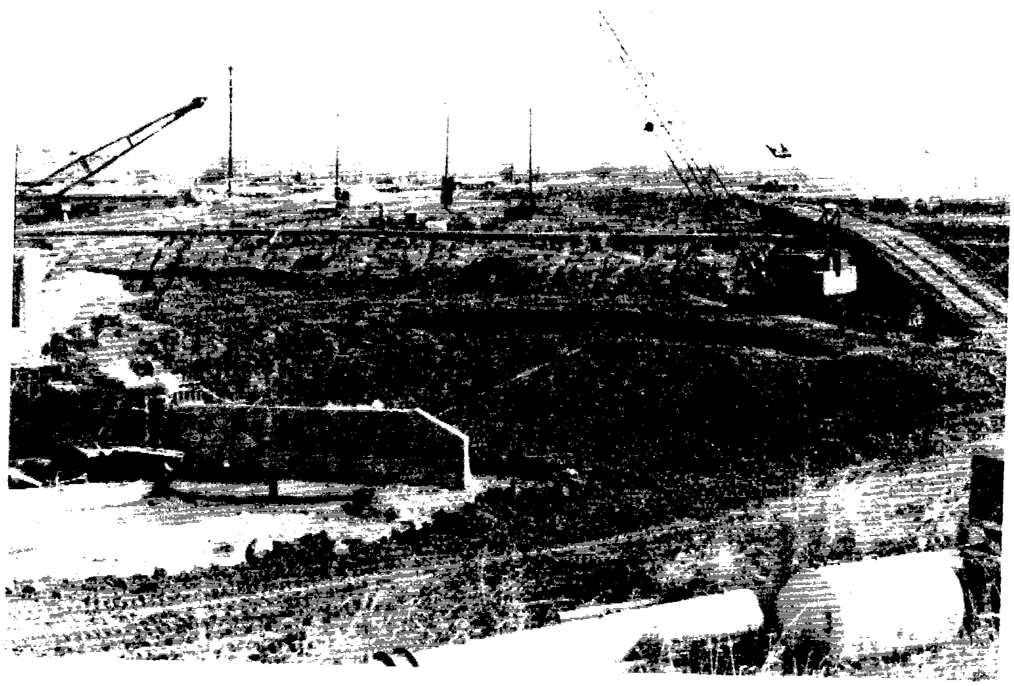
18. FINAL PLACEMENT-IMPRERVIOUS BACKFILL



19. COMPACTING IMPERVIOUS BACKFILL IN HORIZONTAL LIFTS

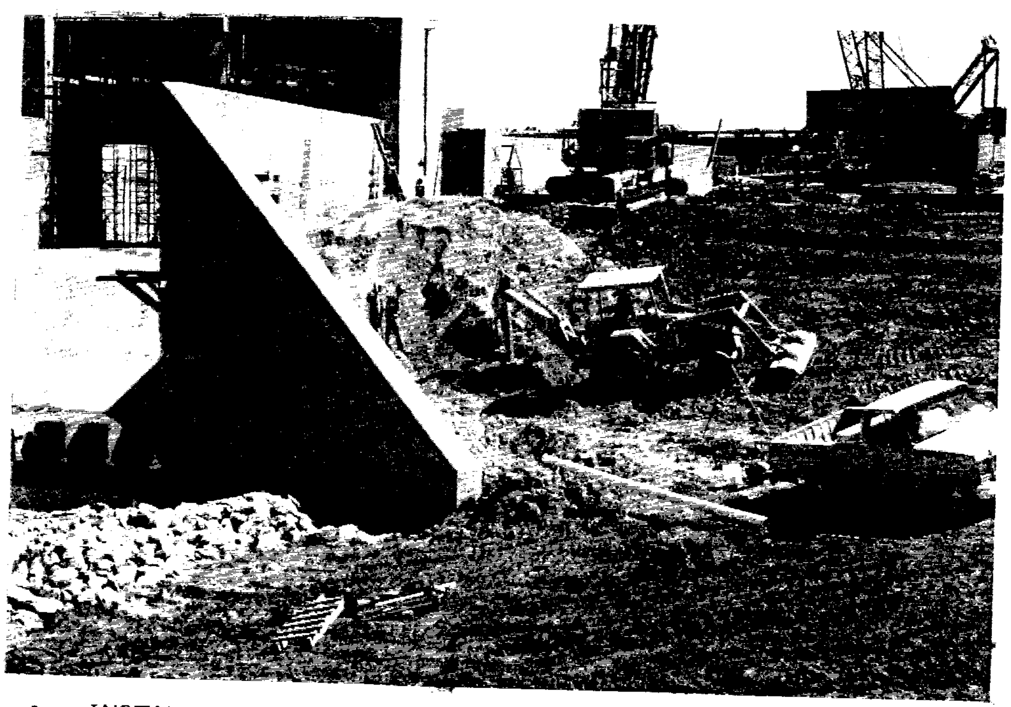
20. PERFORMING FIELD DENSITY TESTS-IMPERVIOUS BACKFILL

21. INSPECTION TRENCH-IMPERVIOUS BACKFILL

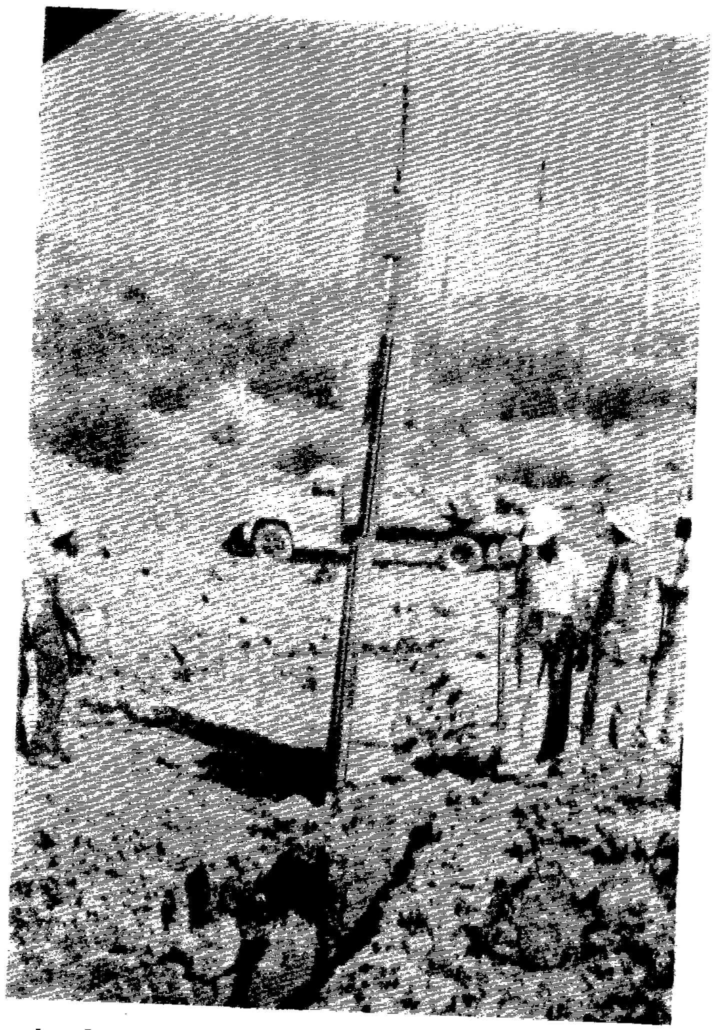


22. SLIDE IN RANDOM BACKFILL MATERIAL

23. RANDOM BACKFILL SLIDE-NOTE ABSENCE OF PERVIOUS BACKFILL



24. INSTALLATION OF COLLECTOR SYSTEM SOUTH RETAINING WALL



25. INSTALLATION OF SHEET PILE CUTOFF