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ADOBE DAM

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DAM, OUTLET WORKS AND SPILLWAY

PERIODIC INSPECTION

REPORT NO. 1

JUNE 1982

U.S. ARMY ENGINEER DISTRICT, LOS ANGELES

CORPS OF ENGINEERS

COPY #3

-11

TEAM INSPECTION OF ADOBE DAM
Periodic Inspection Report No. 1
Dated June 1982

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SPD Trip Report I-1

OCE Trip Report-None was submitted.

Appendix II

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Appendix III

General Project Description III-1

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2711
LOS ANGELES, CALIFORNIA 90053

IN REPLY REFER TO

SPLED-DA

1 OCT 1982

Mr. D. E. Sagramoso
Chief Engineer and General Manager
Flood Control District of Maricopa County
3335 West Durango Street
Phoenix, Arizona 85009

Dear Mr. Sagramoso:

Inclosed are three copies of Periodic Inspection Report No. 1 for Adobe Dam.

Sincerely,

Robert L Hall

NORMAN ARNO
Chief, Engineering Division

1 Incl
As stated

FLOOD CONTROL DISTRICT
RECEIVED
OCT

	CH ENG		HYD
	FINANCE		

REMARKS

FLOOD CONTROL DISTRICT
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REMARKS

Copies 4 & 5

PIR

TEAM INSPECTION OF ADOBE DAM

1. INSPECTION TEAM. On 9 June 1982, the first periodic team inspection of Adobe Dam was made as required by ER 1110-2-100. The inspection team consisted of the following personnel:

OCE		SPD	
Ben Kelly	Geology Sect.	Allen Verza	Con-Ops
Art Walz	Soils Sect.	Dan Parrillo	Geo-Tech
Ivar Paavola	Struct. Sect.	Mort Markowitz	H & H
		Dick Thompson	Engineering

LAD		FLOOD CONTROL DISTICT OF MARICOPA COUNTY	
Tom Hembree	Design Br	Bob Payette	Engineering
Tak Yamashita	Mat'ls. Sect.		
Mike Ternak	Soils Sect.	Paul DiPierro	Maintenance
Dave Lukesh	Geology Sect.		
Tom Falck	Oper. Br	ARIZONA DEPT. OF WATER RESOURCES	
Rick Grover	Oper. Br	Ken Hussain	Civil Engr.

2. PROJECT CONDITIONS.

a. The weather was clear and sunny with a high temperature of 100°F.

b. The reservoir was dry with no flow through the outlet works.

3. MAXIMUM WATER SURFACE ELEVATIONS. The water surface recorder had not been installed at the time of the inspection, however, no appreciable amount of water had been impounded by the dam prior to the inspection.

4. INSPECTION RESULTS.

a. Embankment.

(1) Crest. The crest of the dam was clean and free of weeds and brush (photos 1, 2 and 3). The asphalt pavement was in excellent condition. There was no evidence of cracking or erosion on the crest.

(2) Abutment contacts. The abutment contacts were in excellent condition.

(3) Upstream and downstream slopes. The embankment slopes were in excellent overall condition (photos 2, 3 and 4). There was no evidence of differential settlement, cracks or erosion. The type I and II stone on the upstream slope was in good condition. The type III stone on the downstream slope shows evidence of breaking down. To document the breakdown, one set of two photographs was taken at each of three areas on the downstream slope (photos 5 thru 10). One wide angle and one detail photo were taken at each area. Each detail photo depicts an area approximately 3 to 5 feet below the crest of the dam. Stations 11+50, 12+52 and 13+50 were selected for the

documenting photographs because they are opposite settlement monuments on the upstream side of the crest and can be readily located. Each area is considered representative with the breakdown more obvious at station 12+52.

(4) Upstream and downstream toes. No signs of erosion, seepage, undermining or settlement was observed at the toes.

b. Spillway.

(1) Approach channel. The approach channel was in good condition (photo 11). There was only minor raveling of the excavated slopes. The channel was clean and unobstructed, except for a rock barricade which had been placed at the entrance to prevent vehicular access to the spillway.

(2) Control section (photos 13 and 14). Concrete in the sill was in good condition. There was only minor raveling of the excavated slopes.

(3) Outlet channel. The outlet channel was in good condition (photo 12). There was only minor raveling of the excavated slopes. The channel was clean and unobstructed, except for a rock barricade which had been placed at the downstream end to prevent vehicular access to the spillway.

c. Outlet Works.

(1) Approach channel (photo 15). The approach channel was free of debris and unobstructed. As a result of the pre-final construction inspection, the area at the left side of the intake between the recorder well and the trash rack structure was re-evaluated and additional grouted stone protection was added (photos 15 and 16).

(2) Trash rack structure (photo 16). The concrete side walls and the steel in the structure were in good condition.

(3) Conduit (photo 17). Concrete in the conduit was sound with no signs of structural inadequacy or distress.

(4) Energy dissipator (photos 18 and 19). Concrete in the stilling basin walls, invert and dentates was in good condition.

(5) Outlet channel (photos 18 and 19). The type II stone facing on the side slopes and invert of the trapezoidal channel upstream of the sill was in good condition. Concrete in the sill was also in good condition. The type III facing stone on the side slopes and invert downstream of the sill was showing evidence of breaking down, similar to the downstream slope of the dam.

(6) Gaging station bridge (photo 18). The bridge was in good condition with no signs of structural distress.

d. Instrumentation. The instrumentation installed at Adobe Dam is described and locations are shown in Appendix III.

(1) Settlement monuments. Initial survey of the settlement monuments was accomplished in August 1982. Readings are shown on Plate 1. At the time of this survey, station markers were installed on the crest of the dam and in the outlet conduit, as suggested by OCE.

(2) Subsidence monuments. The subsidence monuments were installed prior to construction and initially surveyed in 1977. The monuments were surveyed again in August 1982, following completion of the project. The results of the survey indicate negligible subsidence.

(3) Water depth recorders and rain gage. Delivery of the last components is scheduled for September 1982. Installation is planned for October 1982.

5. CONCLUSIONS.

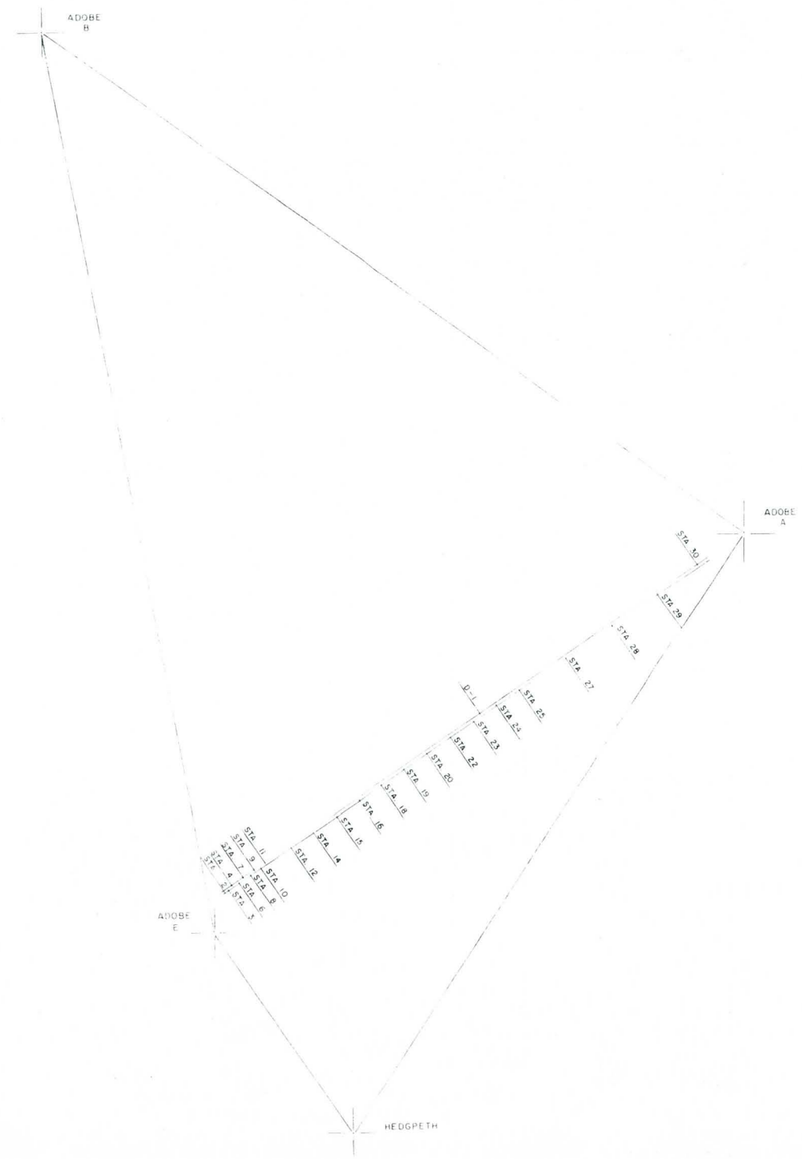
a. The breakdown of the type III stone on the downstream slope of the dam and in the outlet channel was observed prior to the inspection, and wet/dry tests (10 cycles) were conducted on a representative +1/2" sample to determine the soundness of stone. Gradations were obtained after each cycle to determine the particle breakdown. The wet/dry test results indicated that some breaking down would occur. The areas should be monitored by inspection personnel during future periodic inspections. The purpose of the type III stone is to provide erosion protection from surface runoff and breakdown of the stone will not significantly affect the erosion protection capability provided by the stone. The breakdown of the type III stone does not affect the stability or safety of the dam and outlet channel.

b. The dam and appurtenances appear to be in excellent condition and are functioning as designed. There were no unusual conditions noted which would affect the safety of the structures.

6. REQUIRED ACTION. A representative of the Geotechnic Branch of the Los Angeles District will participate in future periodic inspections of Adobe Dam to monitor the condition of the type III facing stone.

7. FUTURE INSPECTIONS. The next team inspection is scheduled for April 1983. Future inspections will be conducted by the Flood Control District of Maricopa County in accordance with ER 1110-2-100, 30 March 1977, with the Corps of Engineers to participate. The inspections are to be conducted at one-year intervals for the next four years, at two-year intervals for the following four years, and then may be extended to each five years if warranted by the results of previous inspections. The Flood Control District will survey the instrumentation prior to each periodic inspection and include an evaluation of the readings in each inspection report.

SUBSIDENCE MONUMENTS	ELLIS, MURPHY & HOLGATE 1977	CARRILLO AUG. 1982
	ELEV M	ELEV M
Sub # 15 *	405.3169	* *
Sub # 1	416.3122	* 416.3122
Sub # 2	417.2330	417.2330
Sub # 3	408.8029	* *
Sub # 4	409.1371	409.1363
Sub # 5	410.0057	410.0029
Sub # 6	[illegible]	* *
Sub # 7	412.2055	* *
Sub # 8	413.3844	* *
Sub # 9	415.1541	415.1561
Sub # 10	416.3534	416.3436
Sub # 11	418.3575	418.3498
Sub # 12	420.4637	420.4310
Sub # 13	422.4762	422.4676
Sub # 14	423.5283	423.5362
Sub # 15	424.5930	424.6119
Sub # 16	429.1019	429.1019
TBM # 17	429.9961	* 429.9961
TBM # L	424.7284	* *
TBM # F *	430.3120	* *
SETTLEMENT MONUMENTS		
SM - 1		433.4509
SM - 1A *		429.4309
SM - 2		427.6872
SM - 3		427.7119
SM - 4		427.7012
SM - 5		419.5686
SM - 6		427.7465
SM - 7		427.7654
SM - 8		427.8052
SM - 9		427.8512
SM - 10		427.7541
SM - 11		427.8305
SM - 12		427.8808
SM - 13		420.9817
SM - 14		427.9681
SM - 15		427.9964
SM - 16		428.0875
SM - 17		421.7362
SM - 18		428.1275
SM - 19		428.1223
SM - 20		428.1250
SM - 21		421.7455
SM - 22		428.1632
SM - 23		428.1590
SM - 24		428.1024
SM - 25		428.0758
SM - 26		424.2445
SM - 27		428.0535
SM - 28		427.9381
SM - 29		427.7734
SM - 30		427.5890
SM - 31A *		429.3072
D - 1		428.1139
SETTLEMENT MON. HORIZ. CONTROL		NORTHINGS / EASTINGS
SM - 2		974,021.71 / 428,122.16
SM - 3		974,077.16 / 428,204.14
SM - 4		974,133.35 / 428,287.39
SM - 6		974,190.12 / 428,370.97
SM - 7		974,243.95 / 428,450.75
SM - 8		974,301.27 / 428,535.99
SM - 9		974,358.84 / 428,620.37
SM - 10		974,411.26 / 428,698.81
SM - 11		974,469.94 / 428,785.14
SM - 12		974,749.75 / 429,197.71
SM - 14		975,028.04 / 429,608.50
SM - 15		975,308.92 / 430,022.34
SM - 16		975,590.65 / 430,439.64
SM - 18		975,871.90 / 430,854.18
SM - 19		976,149.74 / 431,264.73
SM - 20		976,429.63 / 431,678.46
SM - 22		976,713.43 / 432,096.91
SM - 23		976,991.05 / 432,506.81
D - 1		977,090.36 / 432,653.54
SM - 24		977,272.67 / 432,923.71
SM - 25		977,551.02 / 433,334.81
SM - 27		978,113.07 / 434,164.88
SM - 28		978,674.07 / 434,992.84
SM - 29		979,234.42 / 435,819.71
SM - 30		979,795.30 / 436,648.14
ADOBE A *		980,335.06 / 437,474.58
ADOBE B *		989,318.21 / 425,084.84
ADOBE E *		973,318.96 / 427,933.77
HEDGPETH *		969,715.41 / 430,359.03



* BASIS OF VERTICAL OR HORIZONTAL CONTROL

* * STATION MISSING

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY:

DRAWN BY:

CHECKED BY:

ADOBE DAM SETTLEMENT SURVEY

SUBMITTED BY:

DATE:

SPEC. NO.

DRAWING NUMBER

DISTRICT FILE NO. 252/118

SHEET

PLATE 1

Photo 1. Crest of dam, looking toward left abutment from near the turnaround and recorder house at right abutment.

Photo 2. Upstream slope of dam, looking toward left abutment from same location as Photo 1.

Photo 3. Downstream slope of dam, looking toward left abutment from same location as Photo 1.

Photo 4. Downstream slope of dam near outlet works.

Photo 5. Wide angle photo of downstream slope of dam at station 11+50. Top of photo is at crest of dam.

Photo 6. Detail photo of facing stone at station 11+50 and El.1398± (center of Photo 5). One cracked stone is visible at top left corner of photo.

Photo 7. Wide angle photo of downstream slope of dam at station 12+52±. Top of photo is at crest of dam.

Photo 8. Detail photo of facing stone at station 12+52± and El.1398± (center of Photo 7). Several cracked stones are visible.

Photo 9. Wide angle photo of downstream slope of dam at station 13+50. Top of photo is at crest of dam.

Photo 10. Detail photo of facing stone at station 13+50 and El.1400± (center of Photo 9). One cracked stone is visible at pencil point in center of photo.

Photo 11. Upstream end of spillway, looking upstream toward reservoir.

Photo 12. Downstream end of spillway, looking upstream to concrete sill.

Photo 13. Spillway invert, looking downstream showing concrete sill.

Photo 14. Right abutment of spillway concrete sill.

Photo 15. Reservoir and approach to outlet works, looking north from crest of dam at right abutment.

Photo 16. Trash rack structure and approach to outlet works.

Photo 17. Bellmouth entrance to outlet works conduit.

Photo 18. Outlet works stilling basin and outlet channel, looking dowstream from above downstream end of conduit.

Photo 19. Outlet works outlet channnel and stilling basin, looking upstream from gaging station bridge.

DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
630 Sansome Street, Room 1216
San Francisco, California 94111

REPLY TO
ATTENTION OF:

SPDED

MEMORANDUM FOR THE RECORD

SUBJECT: First Periodic Inspection, Adobe Dam, Arizona

1. Subject inspection was held on 9 June 1982. A list of participants is attached. Organizations represented were USACE, SPD, SPL, Maricopa County Flood Control District and the State of Arizona (Dam Safety).

2. After inspecting the embankment outlet works and spillway, a discussion of observations by various group members was held. Comments are as follows:

a. General (Instrumentation): District should provide a schedule for installation of hydrologic recording and transmitting instrumentation and for surveying the settlement-alignment monuments on the dam crest and embankment. The inspection report should include a plan or table showing the location of all instrumentation and the foundation treatment/geologic information missing from the pre-inspection brochure. (District indicated that installation of hydrologic recording instrumentation is scheduled for August 1982, surveys of surface survey monuments are already contracted for and foundation treatment/geologic information is being prepared).

b. USACE (Walz). Stationing needs to be marked for future reference on dam crest and in outlet conduit. (District will consider doing both when surface survey monuments are surveyed in the near future.) The inspection report should include a table or plan showing location of all instrumentation. USACE also suggested that the District look at additional protection for the left side of the intake for the outlet works.

c. LAD. Some breakdown of the Type 3 stone on the downstream face of the embankment has been noted. The District will establish baseline data (photographs) for consideration in future inspections.

SPDED
SUBJECT: First Periodic Inspection, Adobe Dam, Arizona

3. Additional SPD comments not discussed following the inspection are:

a. Future periodic inspections would benefit from inclusion in the pre-inspection brochure of the check list required by Paragraphs 6b and c of Appendix A to ER 1110-2-100. The brochure should be submitted in advance of the inspection.

b. Plates in the inspection brochure did not show the trash rack or the concrete baffle blocks in the energy dissipator. There was some discussion as to the effectiveness of the latter. Both should be shown in the first inspection report.

R. C. THOMPSON
Dam Safety

DANIEL G. PARRILLO
Acting Chief, Geotechnical & Materials Branch

E. MORTON MARKOWITZ
Hydraulic Engineer

ALLEN VERZA
Civil Engineer

APPENDIX II

AGENDA FOR INSPECTION OF
ADOBE DAM

Tuesday, 8 June 1982 - Members will arrive at Phoenix, Arizona by plane. Arrangements for cars will be made by each individual. Single room reservations will be made for all members for 8 June 1982. The name and address of the hotel is:

The Pointe Tapatio
11111 N. 7th Street
Phoenix, Arizona 85020
Telephone Number: (602) 866-7500

Wednesday, 9 June 1982

0730	Depart from hotel for Adobe Dam.
0800	Arrive at Adobe Dam. Inspection briefing.
0815	Inspect project.
1215	Lunch.
1330	Return to airport for travel to duty stations.

APPENDIX III

ADOBE DAM

GENERAL PROJECT DESCRIPTION

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APPENDIX III

ADOBE DAM
GENERAL PROJECT DESCRIPTION

1. PURPOSE AND SCOPE. This report is prepared in accordance with ER 1110-2-100, entitled "Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures" and dated 30 March 1977, which defines objectives, assigns functions, and establishes procedures by which the Corps of Engineers carries out its responsibilities for assuring the continuing structural integrity and operational adequacy of its major civil works structures in service. Periodic evaluation of constructed structures is accomplished by periodic inspection for the purpose of detecting conditions of significant structural distress and to provide a basis for timely initiation of corrective measures to be taken when necessary.

Adobe Dam was designed and constructed by the Corps of Engineers who has transferred the responsibility for operation and maintenance of the project to the Maricopa County Flood Control District (M.C.F.C.D.). In accordance with ER 1110-2-100, the operating entity is also responsible for the periodic inspections and observations necessary for assuring the continuing structural integrity and operational adequacy of the structure. The M.C.F.C.D. should conduct the inspections and prepare the inspection reports. The Corps of Engineers should be invited to participate in the inspections. The initial inspection was conducted by the Los Angeles District and the report was prepared by the Los Angeles District. Subsequent inspections should be made at one-year intervals for the next four years, at two-year intervals for the following four years, and then may be extended to each five years if warranted by the results of the previous inspections.

2. GENERAL. Adobe Dam is located in Maricopa County, Arizona, approximately 16 miles north of downtown Phoenix (see pl. 1). The dam is on Skunk Creek across Deer Valley Drive about 1.8 miles west of the Black Canyon Highway. The site lies in the northern portion of Deer Valley, a part of the Salt River Valley. Deer Valley is an undissected plain which slopes upward from the Arizona Canal to the the Hedgepeth Hills on the north. The hard rock slopes of the Phoenix Mountains and Union Hills form the eastern border of Deer Valley, and the New River limits the valley on the west. Skunk Creek, the major tributary of the New River, rises in the New River Mountains about 35 miles north of Phoenix and flows generally 30 miles southward through the site to its confluence with the New River. The Skunk Creek drainage area is approximately 110 square miles. The gradient in the vicinity of the dam is approximately 40 feet per mile. The dam provides flood protection to the City of Phoenix from floodwaters emanating from the 89.6-square-mile drainage area upstream of the dam. The drainage area extends in a northeasterly direction from the damsite to within 5 miles of the county line of Maricopa and Yavapai Counties. The drainage area is dumbbell in shape with a width of from 2 to 8 miles and a length of about 20 miles. The northern quarter of the drainage area is characterized by rugged terrain where ground elevations vary from 2,000 feet above mean sea level (MSL) at the base of the mountains to elevations of greater than 4,000 feet at the mountain peaks. The southern three-quarters of the drainage area is primarily composed of flatlands with

scattered hills and mountains. Almost the entire drainage area is undeveloped with the exception of two sparse subdivisions and scattered residences. Desert plants of various species are scattered throughout the drainage area with more concentration of desert riparian trees and shrubs occurring along the streambeds. The wildlife found in the project area includes snakes, lizards, small desert rodents and various birds.

The principal features of the project (shown on pl. 2) include the embankment, the outlet works, an unlined spillway and access roads.

a. The embankment is a compacted earthfill structure, 11,245 feet long, with a crest width of 20 feet and a maximum height of 63 feet (see pls. 6 thru 22). Twelve feet of the crest width is paved to function as a service road, accessible from 35th Avenue which is ramped over the dam. The embankment is constructed with a sloped core and random shells. The core extends to the maximum water surface elevation (El. 1,397.5) and has a top width of 15 feet and side slopes of 1.75V on 1H upstream and 11V on 1H downstream. The random shells have minimum outer slopes of 1V on 2.5H upstream and 1V on 2.25 H downstream. A 3 to 5-foot-thick inclined gravel drain connected to a 2 to 3-foot-thick horizontal gravel filter drain is placed downstream of the core.

b. The outlet works consists of an approach channel, intake structure, conduit, energy dissipator and outlet channel (see pls. 23 thru 26).

(1) The approach channel is 110 feet long and has a 55.5-foot-wide base and 1V on 2H side slopes. It drains into the intake structure.

(2) The intake structure is located at the end of the approach channel. The structure has an open rectangular section 31.36 feet in length, measured along the centerline. The walls, which transition toward the conduit at about 4 to 1, range in height from 2.5 feet to 15.8 feet. The top of the headwall is 15.8 feet above the invert. The width of the headwall is 14.84 feet. A trash rack (see pl. 32), consisting of structural steel members and pipe, is provided to prevent large size debris from entering the intake structure and clogging the conduit.

(3) The 290-foot-long conduit has a 5.9-foot-wide by 8.85-foot-high concrete rectangular section. A bellmouth entrance is provided at the top and sides of the upstream end to improve flow conditions.

(4) A reinforced concrete energy dissipator (see pl. 33) is located at the downstream end of the conduit. The rectangular section varies in width from 5.9 feet at the conduit terminus to 20 feet at the stilling basin. Wall heights in the 59.5-foot transition vary from about 11.4 feet at the headwall to a minimum of about 7.6 feet partway through the transition to a maximum of 22.5 feet at the stilling basin. The 20-foot-wide stilling basin is 53.4 feet in length with the invert 16.25 feet below the invert of the outlet conduit. Five concrete baffle blocks, 2 feet wide by 2 feet high, are placed across the basin at 4-foot centers to dissipate the energy of high velocity flows discharging from the outlet conduit. The total length of the energy dissipator is about 113 feet.

(5) The outlet channel extends from the energy dissipator to the existing Skunk Creek channel, 1,847 feet downstream. The upstream 70-foot reach is a trapezoidal section lined with revetment transitioning from a base width of 35 feet to 15 feet. An adverse slope raises the invert at the downstream end of the trapezoidal section 8 feet above the invert of the dissipator. The remaining channel is a trapezoidal section with a 15-foot base width and 1V on 2H side slopes. It is lined with Type III stone. Channel depths range from 14 to 10.5 feet.

c. The spillway, which is alined to fit the natural terrain to minimize excavation costs, is located in a natural saddle about 2,000 feet west of the west abutment of the embankment (see pls. 27 thru 30). The crest elevation is 1,377.8 feet, which with the selected conduit size will control the standard project flood. Based on hydrologic, hydraulic, and least overall cost requirements, the detached spillway is trapezoidal in cross section with sideslopes of 1V on 0.5H and a base width of 36 feet. Benches 12 feet wide at 30-foot-height intervals were required in rock excavation. In the surficial alluvium the side slopes were flattened to 1V on 2H and the top of the slopes were rounded to minimize erosion. The excavated spillway channel, which is 1,325 feet in length, is not lined since it is excavated in rock. To control the flow and stabilize the invert, a concrete sill was constructed. The sill is 5 feet wide at the top and 3 feet wide at the bottom and is poured into a trench excavated 5 feet deep in rock. The sill extends a vertical distance of 15.7 feet up the side slope.

d. Access Roads (see pl. 2).

(1) Access to the top of the dam is from 35th Avenue which is ramped over the dam.

(2) A 0.8 mile long access road is provided along the downstream toe of the dam from the end of Deer Valley Drive to the outlet works. The 18-foot-wide road is surfaced with a 6-inch aggregate base course on a 6-inch compacted subgrade. The surface of the aggregate base course is treated with asphalt.

(3) Access to the spillway is from Beardsley Road located downstream from the spillway.

3. GEOLOGY.

a. Regional Geology. The rock types existing in the mountainous areas within the project area are very similar. The basement complex consists predominantly of Precambrian schistose and massive metaigneous rocks with lesser amounts of gneiss and quartzite. These rocks outcrop near Thunderbird Park approximately 2.75 miles to the north-northwest, and also at Cave Buttes Dam to the east. The trend of foliation in the schistose rock formations is in a northwest direction, and generally is steeply dipping. Igneous rocks in the area consist of granite, rhyolite, andesite, dacite, vesicular basalt flows, tuff and tuffaceous agglomerate. Lava flows of Tertiary age cover a considerable area along the northern margin of the valley, and they also cap a few small isolated hills which rise out of the flat valley floor. Older

Quaternary sediments are found on the slopes of some of the hills and form several predominant ridges on the east side of Deer Valley. The most extensive Quaternary deposits in the area are the unconsolidated older alluvial materials which consist of gravel, sand, silt, and clay containing varying amounts of caliche. These materials form the flat valley floor and extend to undetermined depths below the surface of the valley. Recent alluvium consisting of unconsolidated silt, sand and gravel fill the channels of the main stream courses and tributaries associated with flood plain washes. Bedrock, similar to that of the nearby hills and mountains, underlays the alluvial deposits at great depths.

b. Local Geology. The project is located approximately 16 miles northwest of Phoenix, and about 2 miles west of the Black Canyon Highway. The damsite spans Skunk Creek between Adobe Mountain and the Hedgepeth Hills. The hills are capped with Tertiary lava flows and are covered with large talus blocks derived from the flows. The Tertiary volcanics are composed predominantly of basalt, flow breccia, andesite and latite. The flat valley floor consists of poorly to well-cemented Quaternary gravels, sands, silts and clays that have been estimated to extend approximately 3,000 feet below the present ground surface. The Recent alluvium is usually confined to the channels of the creeks and consists of loose sands and gravels. The project is located in an area of relatively low seismicity. The site is located in Zone 1, according to EM 1110-2-1902, "Stability of Earth and Rockfill Dams".

4. EMBANKMENT. The embankment was constructed with materials obtained from the borrow areas located upstream of the dam and suitable material from the foundation excavations. The embankment was overbuilt for estimated post-construction settlements. The embankment has a central core and random shells. The core extends to the maximum water surface elevation and has a top width of 20 feet and side slopes of 1.75V on 1H upstream and 11V on 1H downstream. The random shells have outer slopes of 1V on 2.5H upstream and 1V on 2.25H downstream. A 5-foot-thick inclined gravel filter drain connected to a 5-foot-thick horizontal gravel filter drain blanket was constructed downstream of the core from the right abutment to station 13+20. From station 13+20 to station 85+00, a 5-foot-thick inclined gravel filter drain was connected to a 3-foot-thick horizontal gravel filter drain blanket. From station 85+00 to the left abutment, the inclined gravel filter drain is 3 feet wide and the horizontal gravel filter drain blanket is 2 feet thick. The inclined gravel drain is designed to control seepage through the embankment. The drain is designed to prevent migration of soil and subsequent internal erosion. A horizontal blanket placed at the bottom of the foundation excavation will collect any underseepage and also serve as a discharge conduit for the inclined gravel drain. To reduce seepage through the right abutment, the upstream portion of the abutment contact was air cleaned and blanketed with a layer of core material having a minimum thickness of 5 feet. Typical embankment cross sections are presented on plates 15 through 22.

a. Upstream Slope Protection. The stone revetment between elevation 1393 and the top of dam is designated Type I stone, consisting of stone having a minimum median size of 130 pounds and a minimum layer thickness of 18 inches

over a 9-inch bedding layer. Below elevation 1393 the slope protection consists of a 15-inch thick layer of stone designated as Type II stone, having a minimum median size of 50 pounds over a 6-inch bedding layer.

b. Downstream Slope Protection. The downstream slope of the dam is protected from surface runoff by a 6-inch layer of slope protection. The slope protection is Type III stone with the same gradation as the bedding stone.

5. FOUNDATION CONDITIONS.

a. Dam Foundation. The foundation materials consist of non-homogeneous alluvial soils extending to a depth of at least 1,250 feet. The erratic layering of the soils indicated by the soil logs, is evidence of the depositional characteristics typical of arid drainage areas of the southwest. Typically, the foundation soils are moderately to highly cemented, sands-silty sands and gravels with fine contents varying from 3 to 28 percent. These materials are interspersed with lenses and layers of fine silty and clayey sands and an occasional layer of sandy clay. Cobbles and boulders are present throughout the foundation area.

The foundation materials consist principally of coarse grained materials classifying predominantly as silty and clayey gravelly sands and containing small lenses and layers of silty and clayey sands, sandy silts, clays, cobbles and boulders. Cemented areas with varying degrees of cementation occur throughout the foundation area. The materials east of station 50+00 are relatively cleaner than the materials west of station 50+00. Layers and lenses of relatively clean gravelly sands containing less than 10 percent fines and varying in thickness from 3 to 16 feet are present throughout the foundation. The lenses and layers of coarse materials are found predominantly east of station 50+00 (Skunk Creek) with a few lenses near the right abutment that extend to approximately station 25+00. Profiles normal to the embankment axis indicate that the coarse lenses extend through the embankment foundation. A layer of fine material consisting of clayey sand and sandy clay and varying in thickness from 3 to 11 feet was encountered at a depth of approximately 25 feet. The layer appears to be continuous and extends from the right abutment to approximately station 60+00. The clayey layer would tend to confine any underseepage to the near surface foundation materials.

The results of in-place density tests, conducted between the depths of 5 to 15 feet, indicate the dry densities range from 88 to 140 pcf or 77 to 104 percent of maximum density based on ASTM 698-70 compaction test method. Consolidation tests on undisturbed samples of materials, between the depths of 10 to 30 feet, indicate the materials would not be susceptible to collapse when subjected to embankment loads and saturation. The coefficient of permeability of the coarse lenses and layers are estimated to range between 0.1 to 100 feet per day based on the material gradation and field permeability test.

b. Right Abutment. The materials exposed on the right abutment have the appearance of a large rubble pile and consist of older alluvium varying in thickness from 5 to 12 feet. The alluvium consists of talus debris, slope

wash and large quantities of basalt blocks measuring up to 6 foot in diameter. Some of the material is cemented with caliche. The underlying bedrock consists of a medium to highly fractured basalt and andesite with refractive seismic velocities of 6,000 to 14,000 feet per second. Most fractures and occasional small cavities in the overlying basalt are filled with a fine tuff ash material, which is relatively impermeable. The andesite, which is encountered at a depth of approximately 50 feet below the surface of the basalt, is more highly fractured and porous. There is no evidence of recently active faulting on the right abutment.

c. Left Abutment. The left abutment is founded in the toe of Adobe Mountain. The surficial materials are similar to the right abutment as described above. There is no evidence of faulting.

d. Spillway. The spillway site has a mantle of slightly cemented slope wash and talus debris containing cobbles and boulders. The alluvial materials (Qoal) vary in thickness from 0 feet near the crest of the spillway to approximately 4.5 feet at the north end and 4.0 feet at the south end of the spillway. Approximately 40 feet of agglomerate (QTa) and caliche-cemented volcanics underlie the alluvium on the north end of the spillway site. Bedrock underlying the alluvium and agglomerate consists of moderate to highly fractured andesites and flow breccia. These rocks were deposited in irregular layers or flows. Contacts both vertically and laterally interfinger and grade into one another, as some remelting took place when the successive flows were originally laid down. The flow breccia consists of fragments of andesite in a volcanic ash matrix. The material ranges from soft to moderately hard and is generally highly brecciated. Three separate andesite units were identified in the spillway excavation. They are generally moderately to very highly fractured and jointed, and are responsible for locally unstable slopes.

A postulated buried fault, shown on the original contract drawings, which trended sub-parallel with the spillway alinement was not encountered during excavation at the spillway. The only faulting identified trended perpendicular to the cut and was probably last active several million years ago.

e. Outlet Works. The materials along the alinement of the outlet consist of a 5 to 9-foot layer of alluvium composed of slightly cemented silty sand matrix with cobbles and large boulders overlying highly fractured basalt bedrock, with occasional thin pockets of tuffaceous material. The basalt is very hard and varies in thickness from 20 to 40 feet. The outlet is founded on basalt which provides a sound foundation for the structure.

6. FOUNDATION TREATMENT.

a. Dam.

(1) Right Abutment to Station 85+90. After clearing, grubbing and stripping (ranging up to about 4 inches of surficial soil), the entire foundation was excavated to an average depth of 5 feet, measured from the

cleared and grubbed surface. An exploration trench was then excavated near the centerline of the embankment to a depth of about 10 feet, measured from the excavated surface, from the right abutment to station 85+00 with the depth varying from 10 to 0-feet between station 85+00 to 85+90. Clearing, grubbing and stripping consisted of the removal and disposal of all organic materials. The foundation excavation consisted of removing loose and cemented fine grained material down to underlying coarse material. The excavation removed foundation materials which exhibit undesirable settlement and collapsible properties of the upper 5 feet of the foundation materials. The excavated material was stockpiled and used in the designated embankment fill zone. The trench had a constant 20-foot bottom width and side slopes of 1V on 1.5H. After inspection of the trench bottom and walls for open work gravel lenses and nested cobbles, the exploration trench and bottom of foundation excavation was scarified uniformly, moistened to the specified moisture content and compacted with 8 passes of a 50-ton rubber tired roller. At the toe of the right abutment to station 16+00 the exploration trench was extended to a depth of 15 feet. Additional excavations were conducted where required to remove nested cobbles and boulders or pockets of gravels down to materials with suitable gradation properties.

(2) Station 85+90 to Left Abutment. At station 85+90 the embankment is founded above spillway crest elevation and is less than 26 feet in height. The foundation treatment consisted of the same procedure as described for the reach between the right abutment to station 85+90 but without the exploration trench.

(3) Right Abutment. The right abutment core contact zone was excavated to bedrock. After excavation of the entire abutment surface, all loose rock was removed with a backhoe prior to hand picking and cleaning by air blasting. A single line of grout holes was drilled to a miximum 40-foot depth with a 10-foot spacing along the core contact zone. This was essentially a foundation investigative grouting program. The grouting program determined that pervious zones existed in the second stage (20-40-foot depth) of the foundation. These were grouted to refusal using a split-spacing method. The numerous surface fractures and joints were sealed with concrete mortar or dental concrete to prevent seepage paths along the abutment contact. In areas where core material could not be readily placed, additional dental concrete was used to form a uniform surface on which to place fill material. To decrease the potential for seepage along the abutment the upstream portion of the abutment contact was blanketed with a layer of core material with a minimum thickness of 5 feet. Any seepage through the abutment will be collected by the drain blanket covering the downstream portion of the abutment. The core materials at the abutment contact were compacted wet of optimum moisture.

(4) Left Abutment. The embankment height at the left abutment is approximately 7 feet above existing ground. With a freeboard of 5.5 feet the maximum pool at the abutment contact would be less than 2 feet deep. The left abutment contact was cleaned of loose surface rock and alluvium to a firm foundation. Zones of nested cobbles and gravels were removed prior to placing any embankment materials.

b. Spillway. Excavation of the spillway was in moderately hard to hard bedrock. Although some of the excavation was accomplished by ripping with D-9H and D-9L dozers, most of the rock was loosed by blasting prior to excavation. Controlled (pre-split) blasting was required in order to minimize damage to the rock at the final grade lines. All cut slopes are 1 vertical on 0.5 horizontal, with 12-foot wide benches, about 30 feet high.

c. Outlet Works. The outlet works was excavated by removing 5 to 9 feet of overburden prior to excavating fractured bedrock. The overburden material was excavated with conventional construction equipment after loosening by blasting. The bedrock was broken up by blasting and then excavated. Controlled (pre-split) blasting was required in order to minimize damage to the rock at the final grade lines. All cut slopes in rock were 1 vertical on 0.5 horizontal and were moderately to very irregular due to the blocky nature of the basalt foundation rock. Grouting was conducted along the contact between bedrock and the concrete plug.

7. CONSTRUCTION HISTORY. Construction of the Adobe Dam project was completed in May 1982 under one contract awarded 29 September 1980 to:

M. M. Sundt Construction Co.
P.O. Box 27507
4101 East Irvington
Tucson, Arizona 85726
Contract No. DACW09-80-C-0121
Total Cost as of 2 June 1982:
$8,388,025.00

8. ENGINEERING DATA. Engineering data for the project are stored in the office of the Flood Control District of Maricopa County, 3325 West Durango Street, Phoenix, Arizona 85009. The following items are or will be included:

a. Adobe Dam Design Memorandum No. 3- April 1979

b. As-Constructed Drawings and Specifications

c. Operation and Maintenance Manual

d. Periodic Inspection Reports

e. Foundation Report

f. Embankment Criteria and Performance Report

9. INSPECTION CHECKLIST.

a. Embankment
(1) Crest
(2) Abutment contacts
(3) Upstream and downstream slopes
(4) Upstream and downstream toes

b. Spillway
   (1) Approach channel
   (2) Control section
   (3) Outlet channel

c. Outlet Works
   (1) Approach channel
   (2) Trash rack structure
   (3) Conduit
   (4) Energy dissipator
   (5) Outlet channel
   (6) Gaging station bridge

10. INSTRUMENTATION.

a. Settlement Monuments. Twenty-six settlement monuments were installed at the upstream edge of the crest of the dam to determine the rate and magnitude of post-construction settlement and lateral displacements. In addition, 5 settlement monuments were installed on the upstream slope. The locations of the settlement monuments are shown on plate 31.

b. Subsidence Monuments. Twenty survey monuments were installed downstream of the embankment toe to monitor any subsidence. The locations of the subsidence monuments are shown on the embankment drawings, plates 6 through 14.

c. Sediment Range Monuments and Sediment Staff Gages. Eight sediment range monuments and eight sediment staff gages were installed in the reservoir to monitor accumulation of sediment. Locations are shown on plate 31.

d. Water Depth Recorders. Water depth recorders are on order for measuring depths at both ends of the outlet works. The recorders will be installed in the recorder house at the right abutment.

e. A rain gage will be installed in the recorder house.

f. Twelve staff gages were installed on the upstream slope of the dam facing the recorder house.

11. PERTINENT DATA.

Reservoir		
Drainage area	sq mi	89.6
Dam (rolled earthfill)		
Crest elevation	ft msl	1,403.0*
Maximum height above streambed	ft	63
Crest length	ft	11,245
Freeboard	ft	5.5
Spillway		
Crest elevation	ft msl	1,377.8
Crest length	ft	36
Elevation of maximum water surface	ft msl	1,397.5

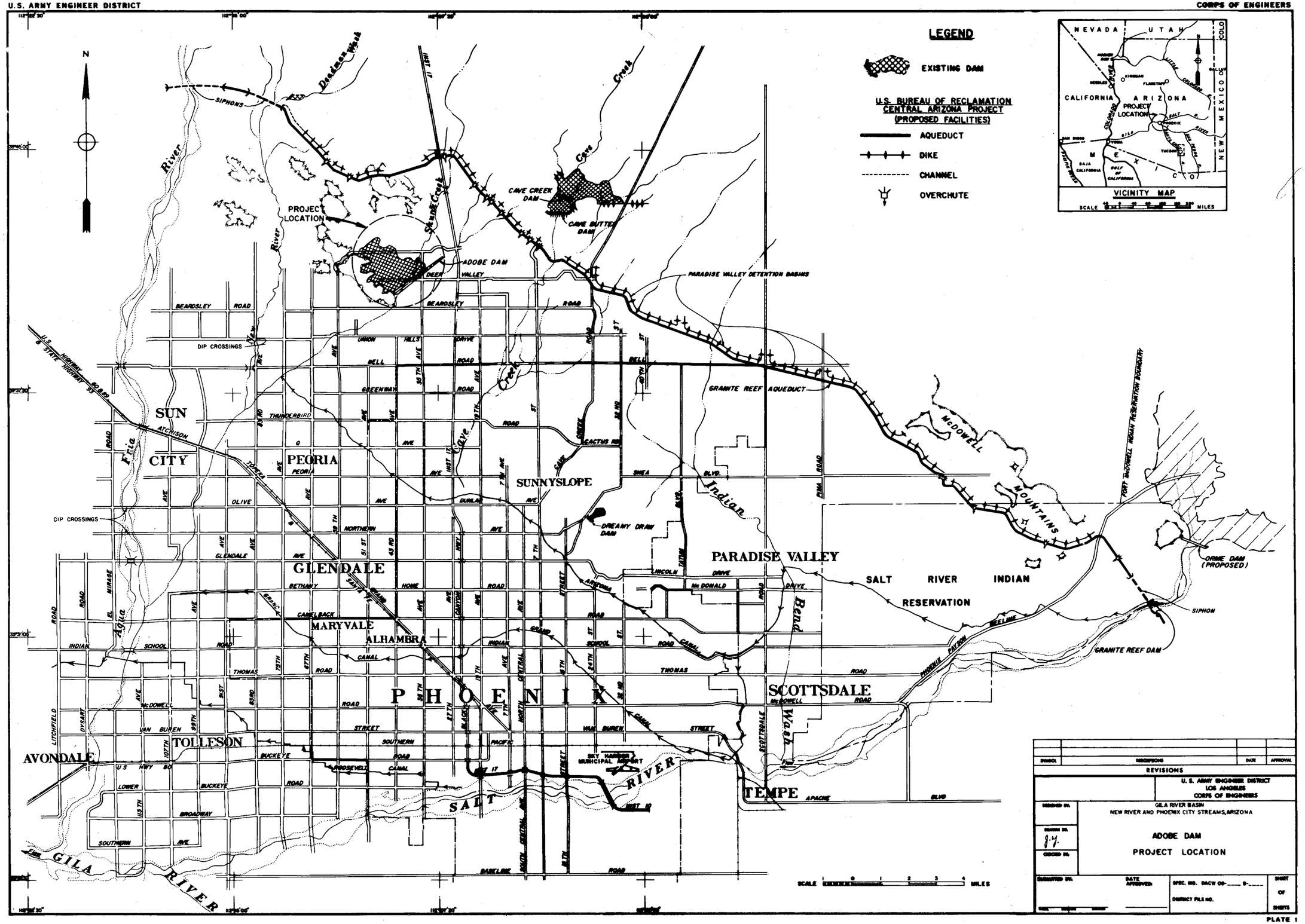
Outlet works		
Size of conduit	ft	5.9W x 8.85H
Length of conduit	ft	289.5
Intake elevation	ft msl	1,338.0
Reservoir area at spillway crest	acre	1,320
Capacity (gross) at spillway crest	acre-ft	18,350
Storage allocation below spillway crest		
Flood control (net)	acre-ft	15,650
Sedimentation (100-year storage)	acre-ft	2,700
Standard project flood		
Total volume	acre-ft	17,000
Peak inflow	cfs	66,000
Peak outflow	cfs	1,890
Drawdown time	hr	229
Maximum probable flood		
Total volume	acre-ft	61,000
Peak inflow	cfs	119,000
Peak outflow	cfs	12,000
Drawdown time	hr	122

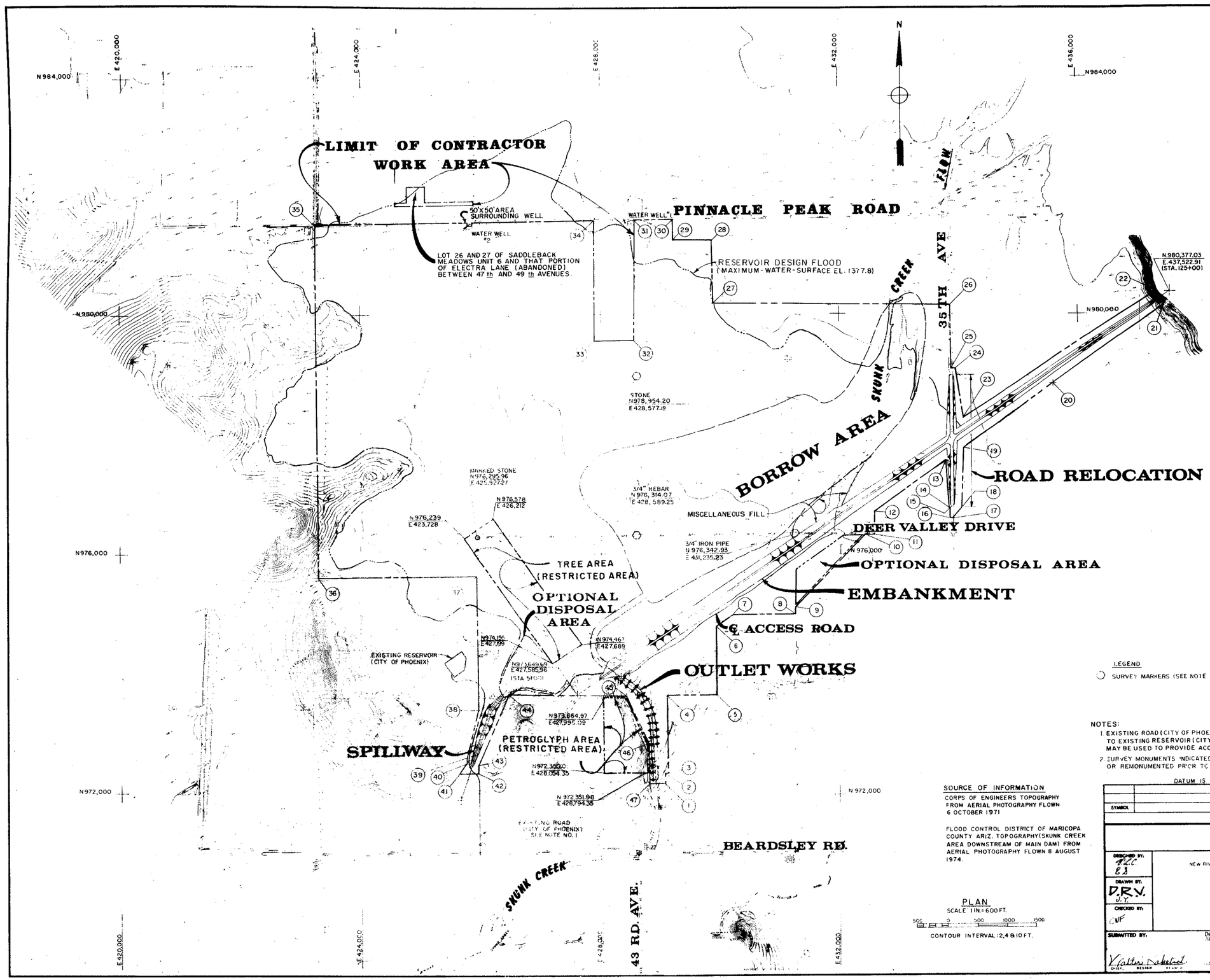
*Does not include 1.83-foot settlement allowance.

12. PLATES.

1. Project Location.
2. General Plan.
3. General Site Geology, Plan.
4. Embankment and Spillway, Geologic and Geophysical Exploration, Plan.
5. West Abutment and Outlet Works, Geology and Foundation Exploration, Plan and Profiles.
6. Embankment, Plan and Profile, Sta. 9+60 to Sta. 18+00 and Access Road, Plan.
7. Embankment, Plan and Profile, Sta. 18+00 to Sta. 31+00 and Access Road, Plan.
8. Embankment, Plan and Profile, Sta. 31+00 to Sta. 45+00 and Access Road, Plan.
9. Embankment, Plan and Profile, Sta. 45+00 to Sta. 59+00 and Access Road, Plan.
10. Embankment, Plan and Profile, Sta. 59+00 to Sta. 73+00.
11. Embankment, Plan and Profile, Sta. 73+00 to Sta. 86+00.
12. Embankment, Plan and Profile, Sta. 86+00 to Sta. 99+00.
13. Embankment, Plan and Profile, Sta. 99+00 to Sta. 112+00.
14. Embankment, Plan and Profile, Sta. 112+00 to Sta. 121+80±.
15. Embankment, Cross Sections No. 1.
16. Embankment, Cross Sections No. 2.
17. Embankment, Cross Sections No. 3.

18. Embankment, Cross Sections No. 4.
19. Embankment, Cross Sections No. 5.
20. Embankment, Cross Sections No. 6.
21. Embankment, Cross Sections No. 7.
22. Embankment, Cross Sections No. 8.
23. Outlet Works, Plan and Profile, Sta. 77+50 to Sta. 62+69.73.
24. Outlet Works, Plan and Profile, Sta. 62+69.73 to Sta. 53+20.
25. Outlet Works, Cross Sections No. 1.
26. Outlet Works, Cross Sections No. 2.
27. Spillway, Plan and Profile, Sta. 26+24± to Sta. 13+06±.
28. Spillway, Cross Sections No. 1.
29. Spillway, Cross Sections No. 2.
30. Spillway, Cross Sections No. 3.
31. Settlement Monuments, Sediment Range Monuments, Sediment Staff Gages, and Utilities, General Plan and Details.
32. Outlet Works, Intake Structure, Trash Rack, Structural Details No. 1.
33. Outlet Works - Energy Dissipator, Structural Details.


LEGEND
EXISTING DAM
U.S. BUREAU OF RECLAMATION
CENTRAL ARIZONA PROJECT
(PROPOSED FACILITIES)
AQUEDUCT
DIKE
CHANNEL
OVERCHUTE
VICINITY MAP
NEVADA
UTAH
COLO
CALIFORNIA
ARIZONA
NEW MEXICO
MEXICO
PROJECT LOCATION
SCALE MILES
N
SIPHONS
Dedeckera Wash
Cave Creek
CAVE CREEK DAM
CAVE BUTTE DAM
PROJECT LOCATION
ADOBE DAM
DEER VALLEY
PARADISE VALLEY DETENTION BASINS
GRANITE REEF AQUEDUCT
DIP CROSSINGS
SUN CITY
PEORIA
SUNNYSLOPE
DREAMY DRAW DAM
PARADISE VALLEY
GLENDALE
MARYVALE
ALHAMBRA
PHOENIX
SCOTTSDALE
TOLLESON
AVONDALE
TEMPE
SKY HARBOR MUNICIPAL AIRPORT
SALT RIVER INDIAN RESERVATION
McDOWELL MOUNTAINS
FORT McDOWELL INDIAN RESERVATION BOUNDARY
ORME DAM (PROPOSED)
SIPHON
GRANITE REEF DAM
SALT RIVER
GILA RIVER
Indian Bend Wash
Agua Fria River
SCALE MILES
REVISIONS
SYMBOL
DESCRIPTIONS
DATE
APPROVAL
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
PROJECT LOCATION
DESIGNED BY
DRAWN BY
J.Y.
CHECKED BY
SUBMITTED BY
DATE APPROVED
SPEC. NO. DACW 09-____ B-____
DISTRICT FILE NO.
SHEET OF SHEETS



POINT NO.	NORTHING	EASTING
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2	N.972,346.35	E.429,004.05
3	N.972,346.90	E.429,054.05
4	N.973,671.51	E.429,049.10
5	N.973,681.03	E.429,922.12
6	N.974,922.07	E.429,917.49
7	N.975,005.15	E.430,037.79
8	N.975,018.24	E.431,240.17
9	N.975,102.93	E.431,239.85
10	N.976,348.87	E.432,410.21
11	N.976,349.62	E.432,557.15
12	N.976,759.79	E.432,557.49
13	N.977,616.87	E.433,760.65
14	N.976,778.10	E.433,811.85
15	N.976,778.10	E.433,836.46
16	N.976,599.72	E.433,837.42
17	N.976,600.27	E.433,917.42
18	N.976,779.21	E.434,041.35
19	N.977,844.10	E.434,088.91
20	N.978,848.15	E.435,539.21
21	N.980,165.54	E.437,424.55
22	N.980,372.56	E.437,284.40
23	N.978,241.52	E.434,059.28
24	N.979,160.80	E.433,900.22
25	N.979,160.25	E.433,820.22
26	N.980,142.78	E.433,858.42
27	N.980,171.69	E.429,899.33
28	N.981,246.36	E.429,884.74
29	N.981,255.37	E.429,225.48
30	N.981,599.51	E.429,222.28
31	N.981,594.42	E.428,564.66
32	N.979,594.44	E.428,574.15
33	N.979,586.54	E.427,914.20
34	N.981,586.52	E.427,904.71
35	N.981,531.16	E.423,259.89
36	N.975,614.17	E.423,285.24
37	N.975,646.20	E.425,931.98
38	N.973,393.59	E.425,951.75
39	N.972,608.09	E.425,758.64
40	N.972,498.10	E.425,759.61
41	N.972,338.67	E.425,631.00
42	N.972,339.55	E.425,631.00
43	N.972,498.63	E.425,959.61
44	N.973,660.87	E.426,459.41
45	N.973,666.04	E.428,395.09
46	N.972,801.42	E.428,771.73
47	N.972,144.17	E.428,804.81

COORDINATES FOR LIMIT OF CONTRACTOR WORK AREA (T.M. CENTRAL)

LEGEND

SURVEY MARKERS (SEE NOTE 2)

NOTES:

1. EXISTING ROAD (CITY OF PHOENIX) TO EXISTING RESERVOIR (CITY OF PHOENIX) MAY BE USED TO PROVIDE ACCESS TO SPILLWAY
2. SURVEY MONUMENTS INDICATED ARE TO BE PROTECTED IN PLACE OR REMONUMENTED PRIOR TO COMPLETION OF CONTRACT

DATUM IS MEAN SEA LEVEL

SOURCE OF INFORMATION

CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 6 OCTOBER 1971

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY ARIZ. TOPOGRAPHY (SKUNK CREEK AREA DOWNSTREAM OF MAIN DAM) FROM AERIAL PHOTOGRAPHY FLOWN 8 AUGUST 1974

PLAN

SCALE 1 IN = 600 FT.

500 0 500 1000 1500

CONTOUR INTERVAL: 2, 4 & 10 FT.

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: TCC, B.S.
DRAWN BY: D.R.V., J.T.
CHECKED BY: WF

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

GENERAL PLAN

SUBMITTED BY: Walter Dabelstein, CHIEF, DESIGN BRANCH

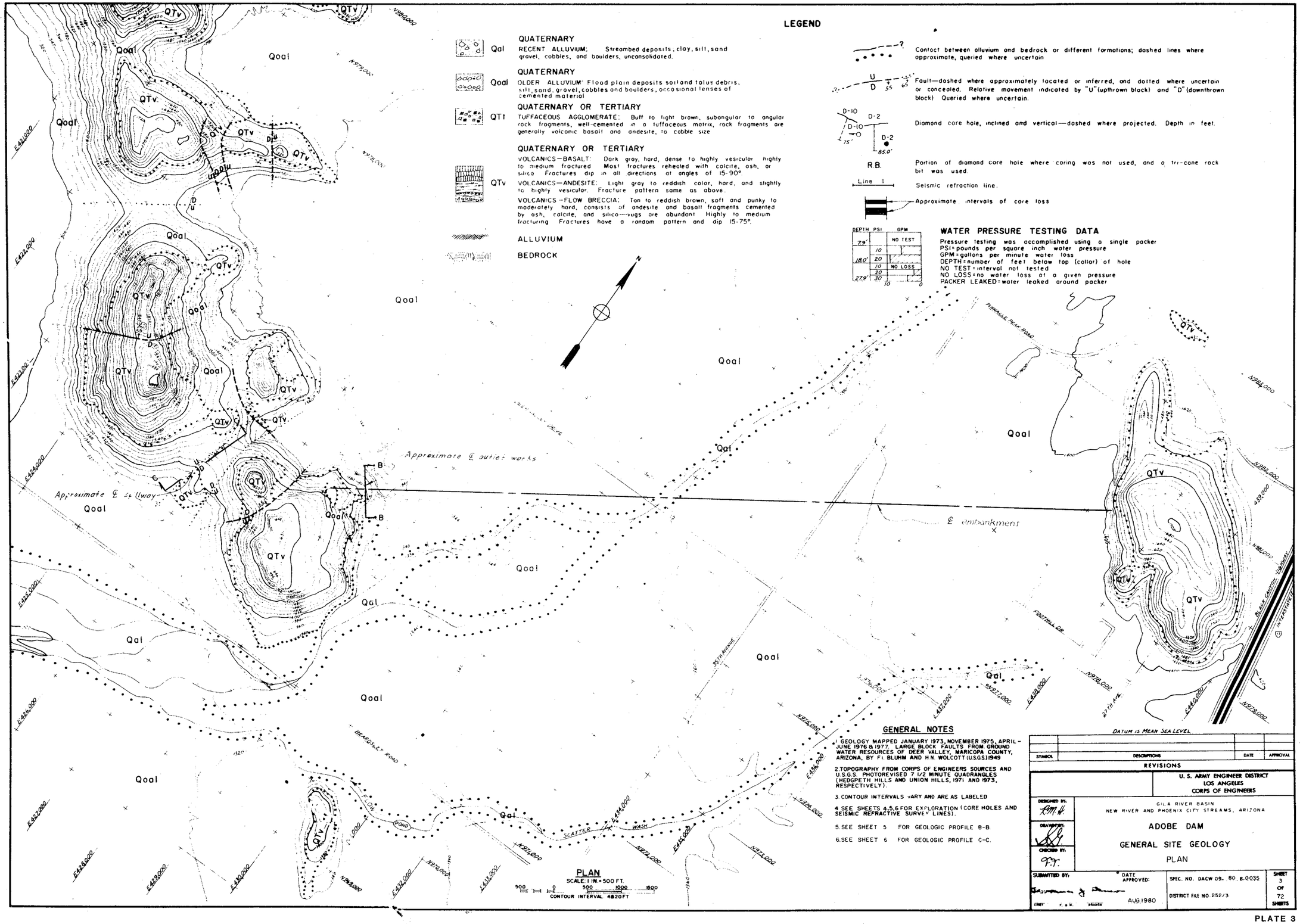
DATE APPROVED: AUG 1980

SPEC. NO. DACW09-08-B-0035

DRAWING FILE NO. 252/2

SHEET 2 OF 72 SHEETS

PLATE 2



LEGEND

Qal — **QUATERNARY**
RECENT ALLUVIUM: Streambed deposits; clay, silt, sand gravel, cobbles, and boulders, unconsolidated.

Qoal — **QUATERNARY**
OLDER ALLUVIUM: Flood plain deposits soil and talus debris, silt, sand, gravel, cobbles and boulders, occasional lenses of cemented material

QTt — **QUATERNARY OR TERTIARY**
TUFFACEOUS AGGLOMERATE: Buff to light brown, subangular to angular rock fragments, well-cemented in a tuffaceous matrix, rock fragments are generally volcanic basalt and andesite, to cobble size

QTv — **QUATERNARY OR TERTIARY**
VOLCANICS—BASALT: Dark gray, hard, dense to highly vesicular highly to medium fractured Most fractures rehealed with calcite, ash, or silica Fractures dip in all directions at angles of 15-90°
VOLCANICS—ANDESITE: Light gray to reddish color, hard, and slightly to highly vesicular. Fracture pattern same as above.
VOLCANICS—FLOW BRECCIA: Tan to reddish brown, soft and punky to moderately hard, consists of andesite and basalt fragments cemented by ash, calcite, and silica—vugs are abundant Highly to medium fracturing Fractures have a random pattern and dip 15-75°.

ALLUVIUM

BEDROCK

Contact between alluvium and bedrock or different formations; dashed lines where approximate, queried where uncertain

Fault—dashed where approximately located or inferred, and dotted where uncertain or concealed. Relative movement indicated by "U"(upthrown block) and "D"(downthrown block) Queried where uncertain.

Diamond core hole, inclined and vertical—dashed where projected. Depth in feet.

R.B. Portion of diamond core hole where coring was not used, and a tri-cone rock bit was used.

Line 1 Seismic refraction line.

Approximate intervals of core loss

DEPTH	PSI	GPM
7.9'		NO TEST
	10	
18.0'	20	
	10	NO LOSS
	20	
27.9'	30	

WATER PRESSURE TESTING DATA

Pressure testing was accomplished using a single packer
PSI=pounds per square inch water pressure
GPM=gallons per minute water loss
DEPTH=number of feet below top (collar) of hole
NO TEST=interval not tested
NO LOSS=no water loss at a given pressure
PACKER LEAKED=water leaked around packer

GENERAL NOTES

1. GEOLOGY MAPPED JANUARY 1973, NOVEMBER 1975, APRIL-JUNE 1976 & 1977. LARGE BLOCK FAULTS FROM GROUND WATER RESOURCES OF DEER VALLEY, MARICOPA COUNTY, ARIZONA, BY F.I. BLUHM AND H.N. WOLCOTT (U.S.G.S.) 1949
2. TOPOGRAPHY FROM CORPS OF ENGINEERS SOURCES AND U.S.G.S. PHOTOREVISED 7 1/2 MINUTE QUADRANGLES (HEDGPETH HILLS AND UNION HILLS, 1971 AND 1973, RESPECTIVELY).
3. CONTOUR INTERVALS VARY AND ARE AS LABELED
4. SEE SHEETS 4,5,6 FOR EXPLORATION (CORE HOLES AND SEISMIC REFRACTIVE SURVEY LINES).
5. SEE SHEET 5 FOR GEOLOGIC PROFILE B-B
6. SEE SHEET 6 FOR GEOLOGIC PROFILE C-C.

PLAN
SCALE: 1 IN.=500 FT.
500 0 500 1000 1500
CONTOUR INTERVAL 4&20FT

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: RMH
DRAWN BY:
CHECKED BY: G.T.

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

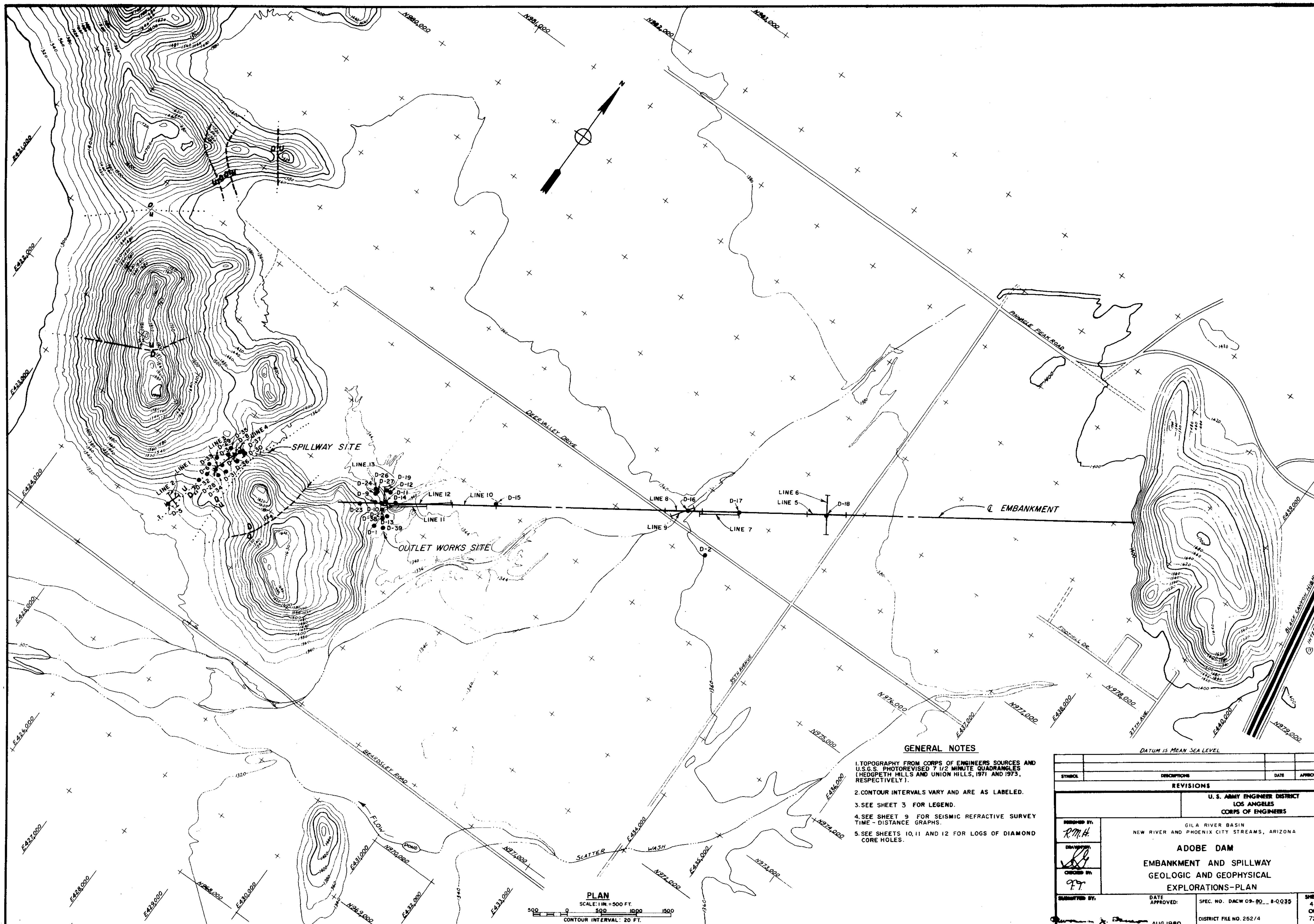
ADOBE DAM

GENERAL SITE GEOLOGY

PLAN

SUBMITTED BY: CHIEF, F. & M. BRANCH
DATE APPROVED: AUG 1980
SPEC. NO. DACW 09-80-B-0035
DISTRICT FILE NO. 252/3
SHEET 3 OF 72 SHEETS

PLATE 3



GENERAL NOTES

1. TOPOGRAPHY FROM CORPS OF ENGINEERS SOURCES AND U.S.G.S. PHOTOREVISED 7 1/2 MINUTE QUADRANGLES (HEDGPETH HILLS AND UNION HILLS, 1971 AND 1973, RESPECTIVELY).
2. CONTOUR INTERVALS VARY AND ARE AS LABELED.
3. SEE SHEET 3 FOR LEGEND.
4. SEE SHEET 9 FOR SEISMIC REFRACTIVE SURVEY TIME - DISTANCE GRAPHS.
5. SEE SHEETS 10, 11 AND 12 FOR LOGS OF DIAMOND CORE HOLES.

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

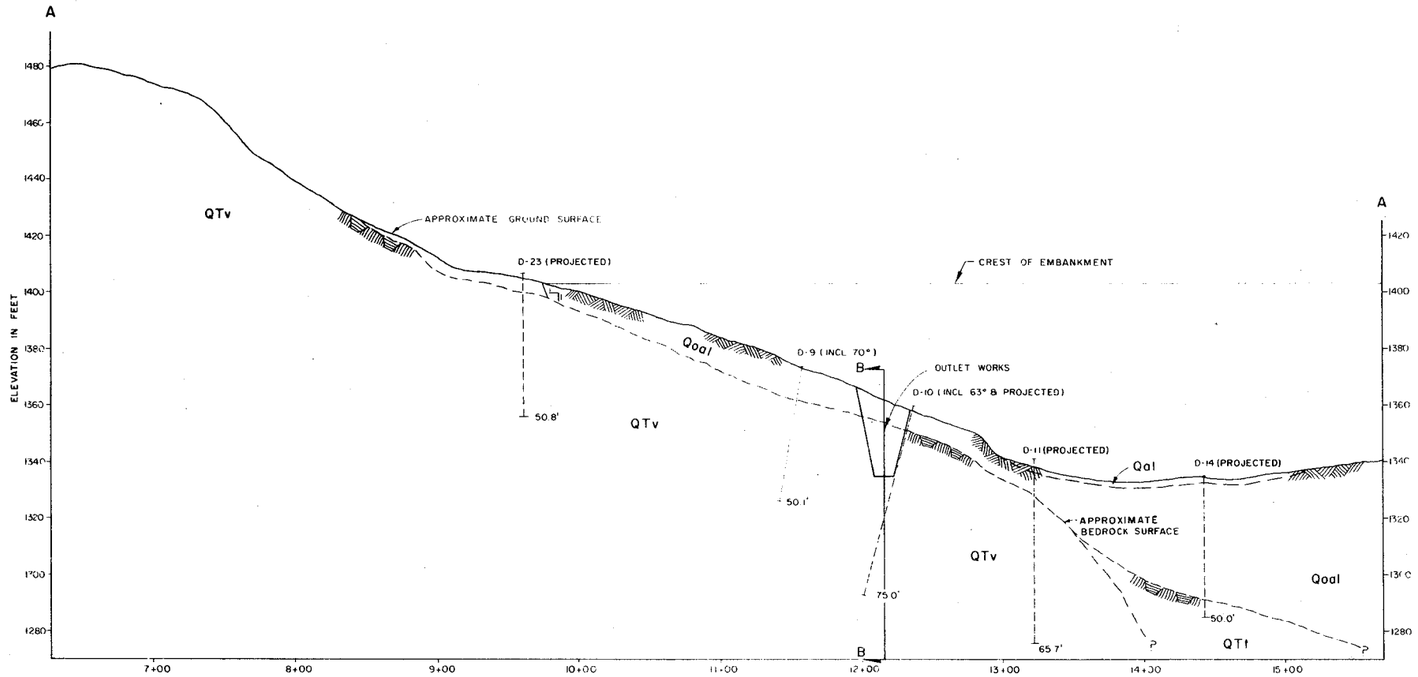
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: R.M.H.
DRAWN BY: [signature]
CHECKED BY: F.T.

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

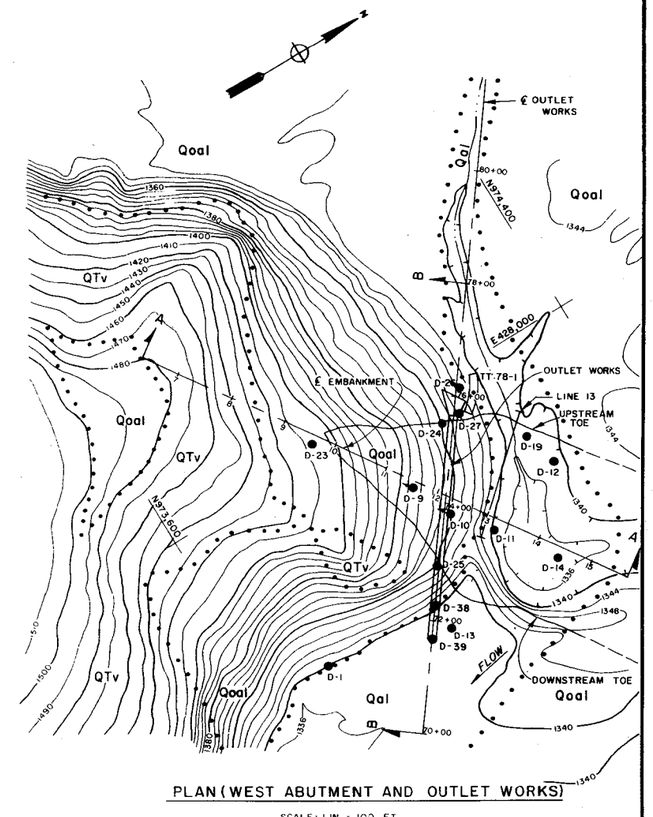
ADOBE DAM
EMBANKMENT AND SPILLWAY GEOLOGIC AND GEOPHYSICAL EXPLORATIONS-PLAN

SUBMITTED BY: [signature] CHIEF F. & D. BRANCH
DATE APPROVED: AUG 1980
SPEC. NO. DACW 09-80__8-0035
DISTRICT FILE NO. 252/4
SHEET 4 OF 72 SHEETS



PROFILE A-A (WEST ABUTMENT)

HORIZ. SCALE: 1 IN = 40 FT
VERT. SCALE: 1 IN = 20 FT.

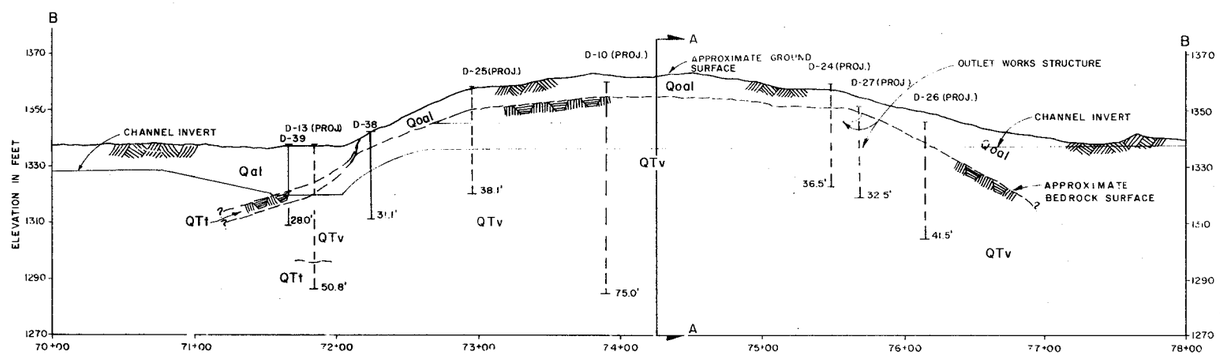


PLAN (WEST ABUTMENT AND OUTLET WORKS)

SCALE: 1 IN = 100 FT
CONTOURS ARE IN 4 FT AND 10 FT INTERVALS

GENERAL NOTES

1. SEE SHEET 3 FOR GENERAL GEOLOGY OF AREA AND LEGEND.
2. SEE SHEETS 4 & 6 FOR LOCATION OF OTHER SEISMIC-REFRACTIVE SURVEY LINES.
3. SEE SHEET 10, 11 AND 12 FOR LOGS OF DIAMOND CORE HOLES AND TEST TRENCH.



PROFILE B-B ALONG ℄ OUTLET WORKS

HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.

DATUM IS MEAN SEA LEVEL

SCALE: 1 IN = 100 FT
SCALE 100 0 100 200 300 FEET

SCALE: 1 IN = 40 FT.
HORIZ SCALE 50 0 50 100 FEET

SCALE: 1 IN. = 20 FT.
VERT SCALE 10 0 10 20 30 40 50 FEET

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: R.M.H.
DRAWN BY: H.A.A. / R.B.A.
CHECKED BY: G.P.P.
SUBMITTED BY: CHIEF, F. & M. BRANCH

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM
WEST ABUTMENT AND OUTLET WORKS
GEOLOGY AND FOUNDATION EXPLORATION
PLAN AND PROFILES

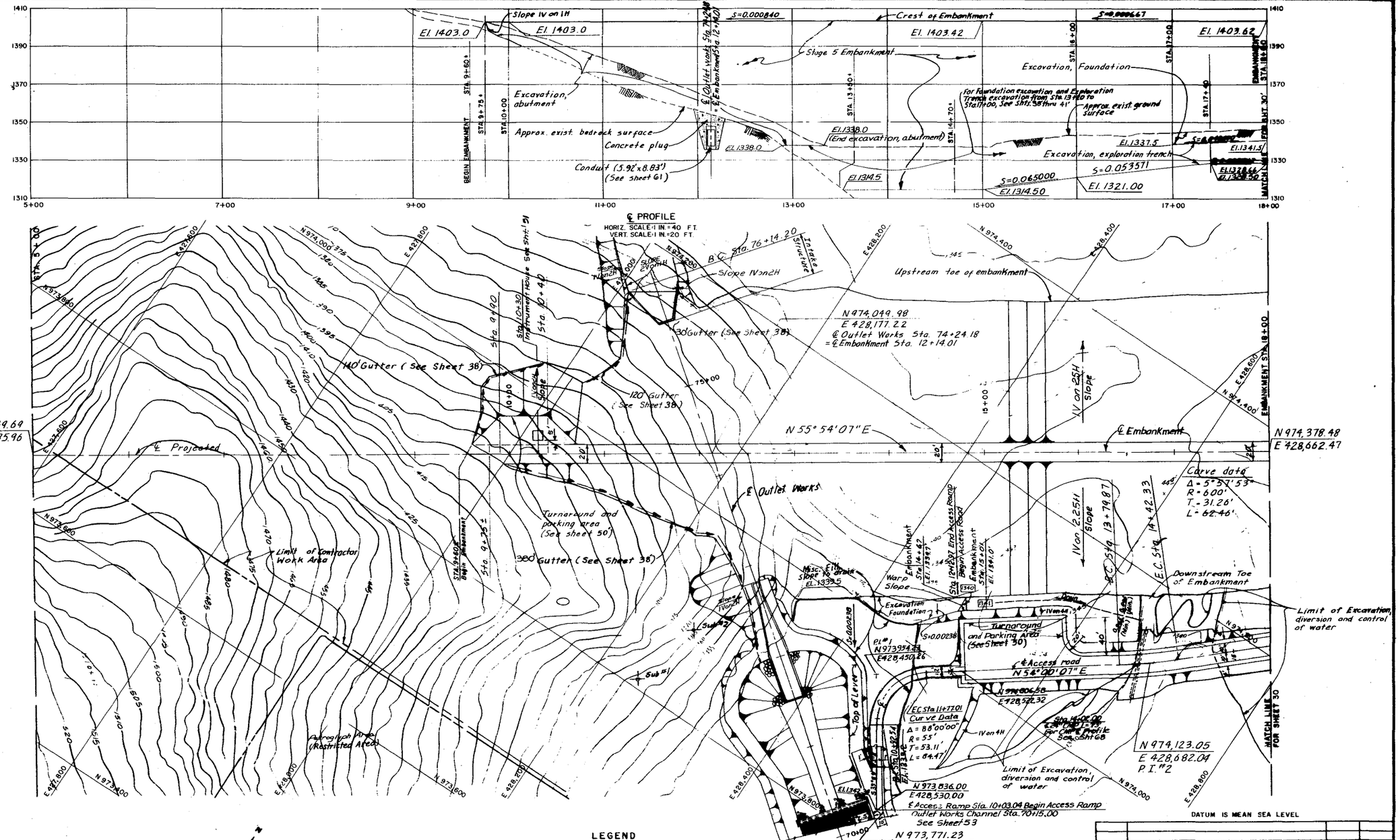
DATE APPROVED: AUG 1980

SPEC. NO. DACW 09-80-B-0035

DISTRICT FILE NO. 252/5

SHEET 5 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



LEGEND

- Sub # — EXISTING SUBSIDENCE MONUMENT (Protect in place)
- MOUNDS TO BE CONSTRUCTED TO OUTLINED CONTOURS
- 1355 — EXISTING CONTOUR
- 1355 — GRADED CONTOUR

PLAN

SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL: 1 & 5 FT.

SOURCE OF INFORMATION

CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.

SCALE: 1 IN. = 40 FT.
HORIZ. SCALE 50 0 50 100 FEET

SCALE: 1 IN. = 20 FT.
VERT. SCALE 10 0 10 20 30 40 50 FEET

DATUM IS MEAN SEA LEVEL

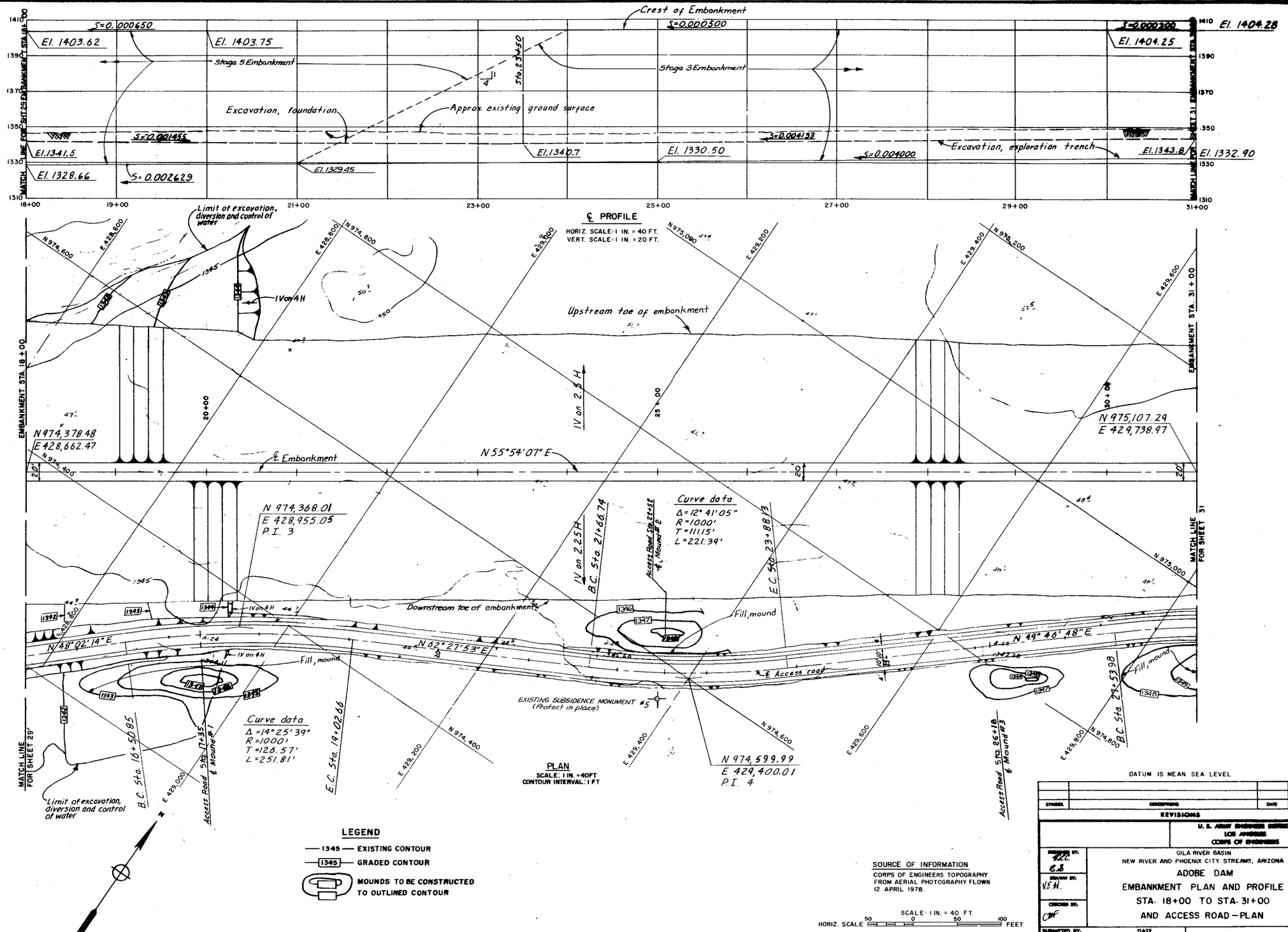
SYMBOL	DESCRIPTION	DATE	APPROVAL
	REVISIONS		

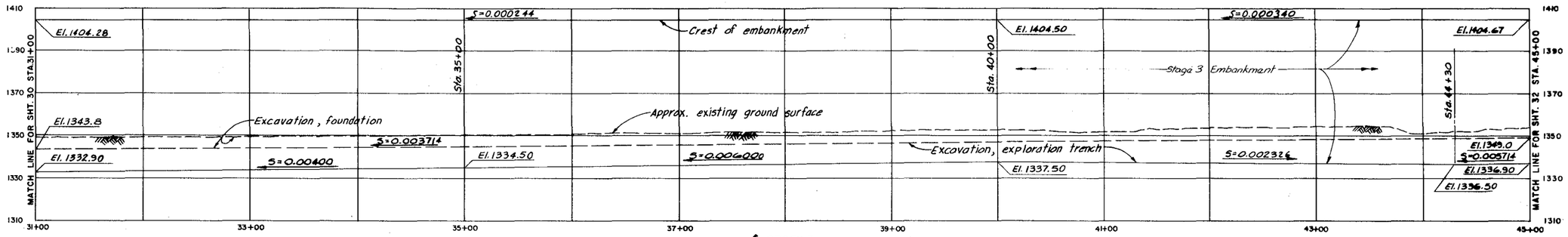
U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

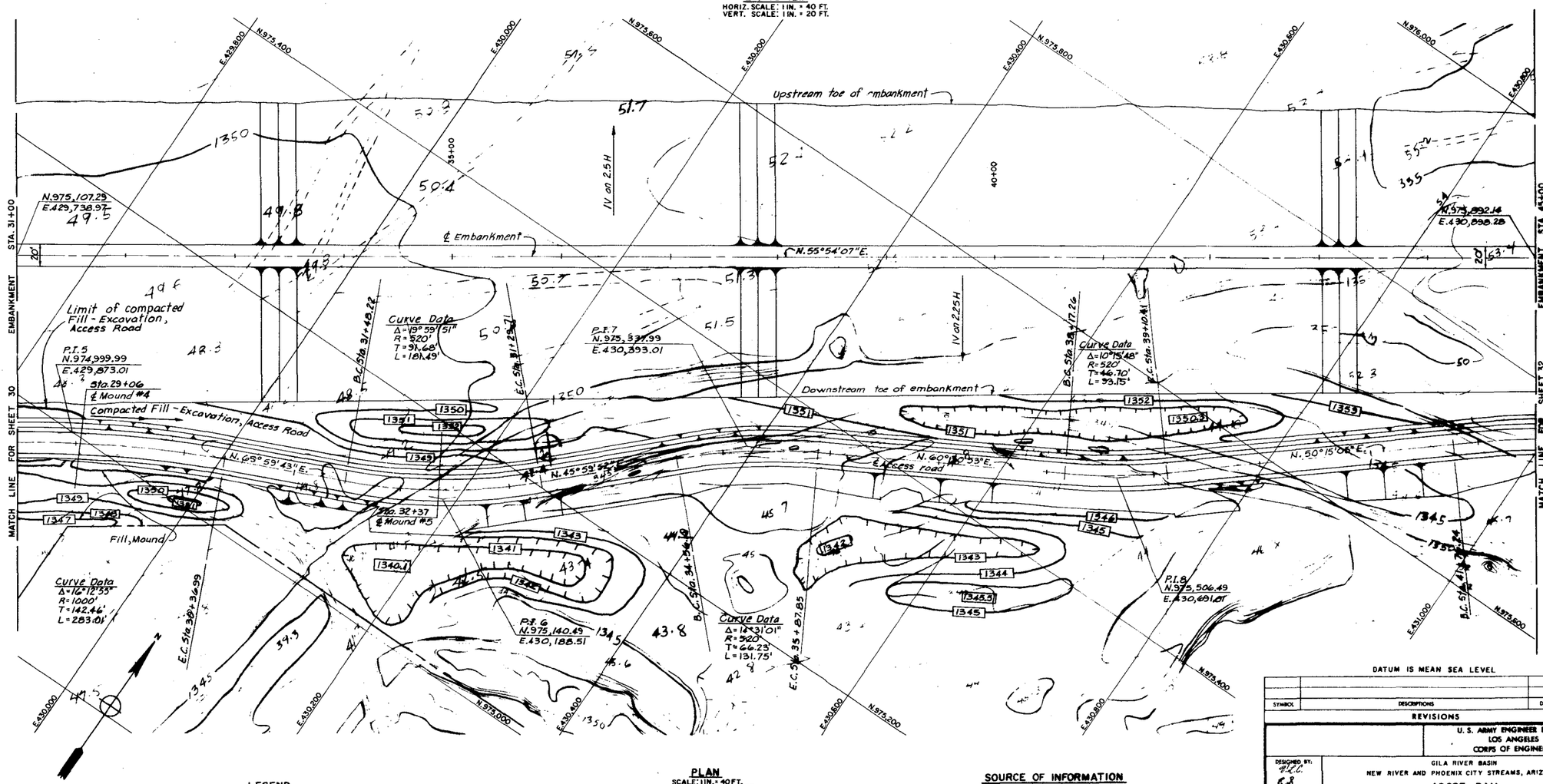
ADOBE DAM
EMBANKMENT – PLAN AND PROFILE
STA. 9+60± TO STA. 18+00
AND ACCESS ROAD – PLAN

DESIGNED BY: R.L.C.
DRAWN BY: V.E.H.
CHECKED BY: CWF
SUBMITTED BY: Wm. S. Rabitsch
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0006
DISTRICT FILE NO. 292/29
SHEET 29 OF 72


Crest of Embankment
S=0.000650
S=0.000500
El. 1404.28
El. 1403.62
El. 1403.75
El. 1404.25
Stage 5 Embankment
Stage 3 Embankment
Sta. 23+50
Excavation, foundation
Approx. existing ground surface
S=0.001455
S=0.001133
El. 1341.5
El. 1340.7
El. 1330.50
S=0.004000
Excavation, exploration trench
El. 1343.8
El. 1332.90
El. 1328.66
S=0.002629
El. 1329.45
MATCH LINE FOR SHT 29
MATCH LINE FOR SHT 31
18+00
19+00
21+00
23+00
25+00
27+00
29+00
31+00
℄ PROFILE
HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.
Limit of excavation, diversion and control of water
1V on 4H
Upstream toe of embankment
EMBANKMENT STA. 18+00
EMBANKMENT STA. 31+00
1V on 2.5H
N 974,378.48
E 428,662.47
℄ Embankment
N 55°54'07" E
N 975,107.29
E 429,738.97
N 974,368.01
E 428,955.05
P.I. 3
Curve data
Δ=12° 41' 05"
R=1000'
T=111.15'
L=221.39'
B.C. Sta. 21+66.74
E.C. Sta. 23+88.13
Access Road Sta. 21+58 ℄ Mound #2
Downstream toe of embankment
Fill, mound
N 48°02'14" E
N 62°27'53" E
N 49°46'48" E
℄ Access road
EXISTING SUBSIDENCE MONUMENT #5 (Protect in place)
Curve data
Δ=14° 25' 39"
R=1000'
T=128.57'
L=251.81'
B.C. Sta. 16+50.85
E.C. Sta. 19+02.66
Access Road Sta. 17+35 ℄ Mound #1
Access Road Sta. 26+18 ℄ Mound #3
B.C. Sta. 27+53.98
N 974,599.99
E 429,400.01
P.I. 4
MATCH LINE FOR SHEET 28
MATCH LINE FOR SHEET 31
Limit of excavation, diversion and control of water
PLAN
SCALE: 1 IN. = 40 FT
CONTOUR INTERVAL: 1 FT
LEGEND
1345 EXISTING CONTOUR
1345 GRADED CONTOUR
MOUNDS TO BE CONSTRUCTED TO OUTLINED CONTOUR
SOURCE OF INFORMATION
CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.
SCALE: 1 IN. = 40 FT.
HORIZ. SCALE 50 0 50 100 FEET
SCALE: 1 IN. = 20 FT.
VERT. SCALE 10 0 10 20 30 40 50 FEET
DATUM IS MEAN SEA LEVEL
SYMBOL
DESCRIPTIONS
DATE
APPROVAL
REVISIONS
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
DESIGNED BY: R.L.C. E.S.
DRAWN BY: V.E.H.
CHECKED BY: C.W.F.
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
EMBANKMENT PLAN AND PROFILE
STA. 18+00 TO STA. 31+00
AND ACCESS ROAD—PLAN
SUBMITTED BY:
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0088
DISTRICT FILE NO. 252/30
SHEET 30 OF 72 SHEETS
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



℄ PROFILE
HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.



PLAN
SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL: 1 FT.

LEGEND

- 1359 — EXISTING CONTOUR
- 1359 — GRADED CONTOUR
- MOUNDS TO BE CONSTRUCTED TO OUTLINED CONTOURS.
- DEPRESSION TO BE CONSTRUCTED TO OUTLINED CONTOURS.

SOURCE OF INFORMATION

CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 24 JANUARY 1980.

HORIZ. SCALE 50' 0' 50' 100' FEET
VERT. SCALE 10' 0' 10' 20' 30' 40' 50' FEET

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

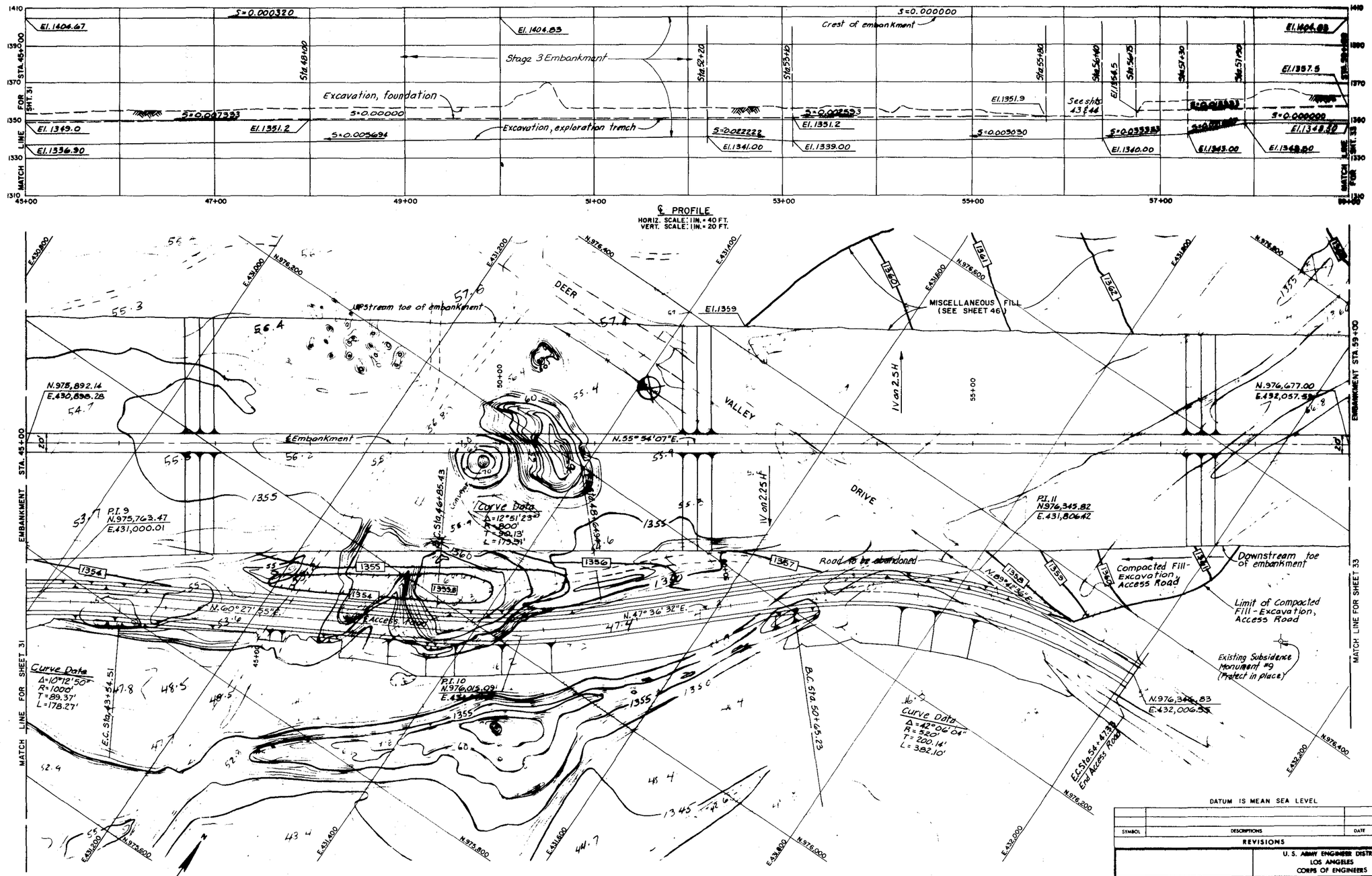
REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: W.C.C. / E.B.
DRAWN BY: DRV
CHECKED BY: CWF

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
EMBANKMENT - PLAN AND PROFILE
STA. 31+00 TO STA. 45+00
AND ACCESS ROAD - PLAN

SUBMITTED BY: Walter Robertson, Chief, Design Branch
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 252/31
SHEET 31 OF 72 SHEETS



LEGEND

—1359— EXISTING CONTOUR

—1359— GRADED CONTOUR

DEPRESSION TO BE CONSTRUCTED TO OUTLINED CONTOURS.

PLAN
SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL: 1 FT.

SOURCE OF INFORMATION
CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 24 JANUARY 1980.

HORIZ. SCALE 50' 0' 50' 100' FEET
VERT. SCALE 10' 0' 10' 20' 30' 40' 50' FEET

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

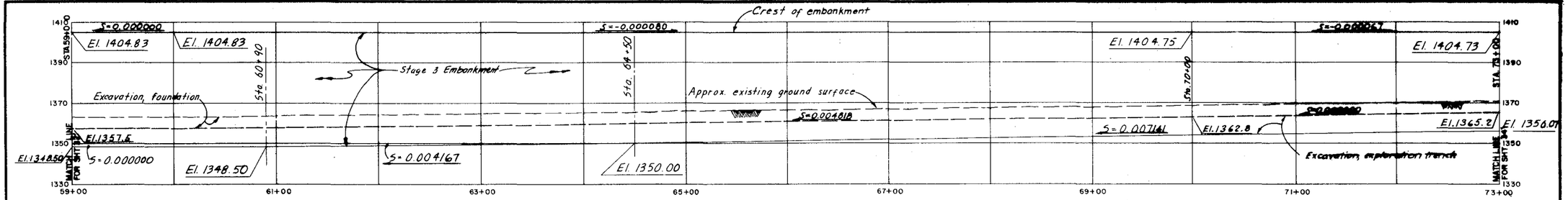
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: ARC / EJ
DRAWN BY: DRV
CHECKED BY: CWF

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

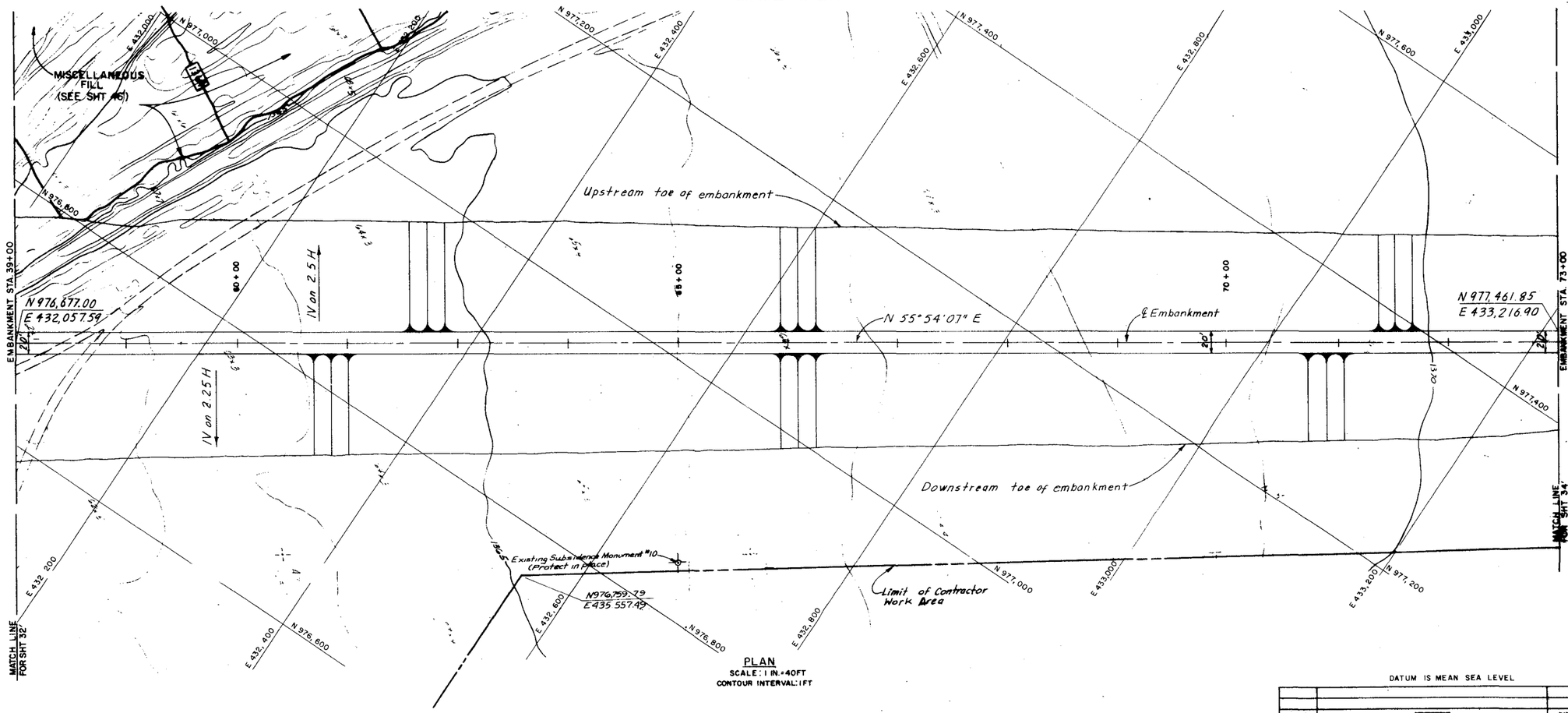
ADOBE DAM
EMBANKMENT - PLAN AND PROFILE
STA. 45+00 TO STA. 59+00
AND ACCESS ROAD - PLAN

SUBMITTED BY: Walter Rabitzsch, CHIEF, HYDRAULIC BRANCH
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 252/32
SHEET 32 OF 72 SHEETS



℄ PROFILE

HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.



PLAN
SCALE: 1 IN. = 40FT
CONTOUR INTERVAL: 1FT

DATUM IS MEAN SEA LEVEL

SOURCE OF INFORMATION
CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.

SCALE: 1 IN. = 40 FT.
HORIZ. SCALE 50 0 50 100 FEET

SCALE: 1 IN. = 20 FT.
VERT. SCALE 10 0 10 20 30 40 50 FEET

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

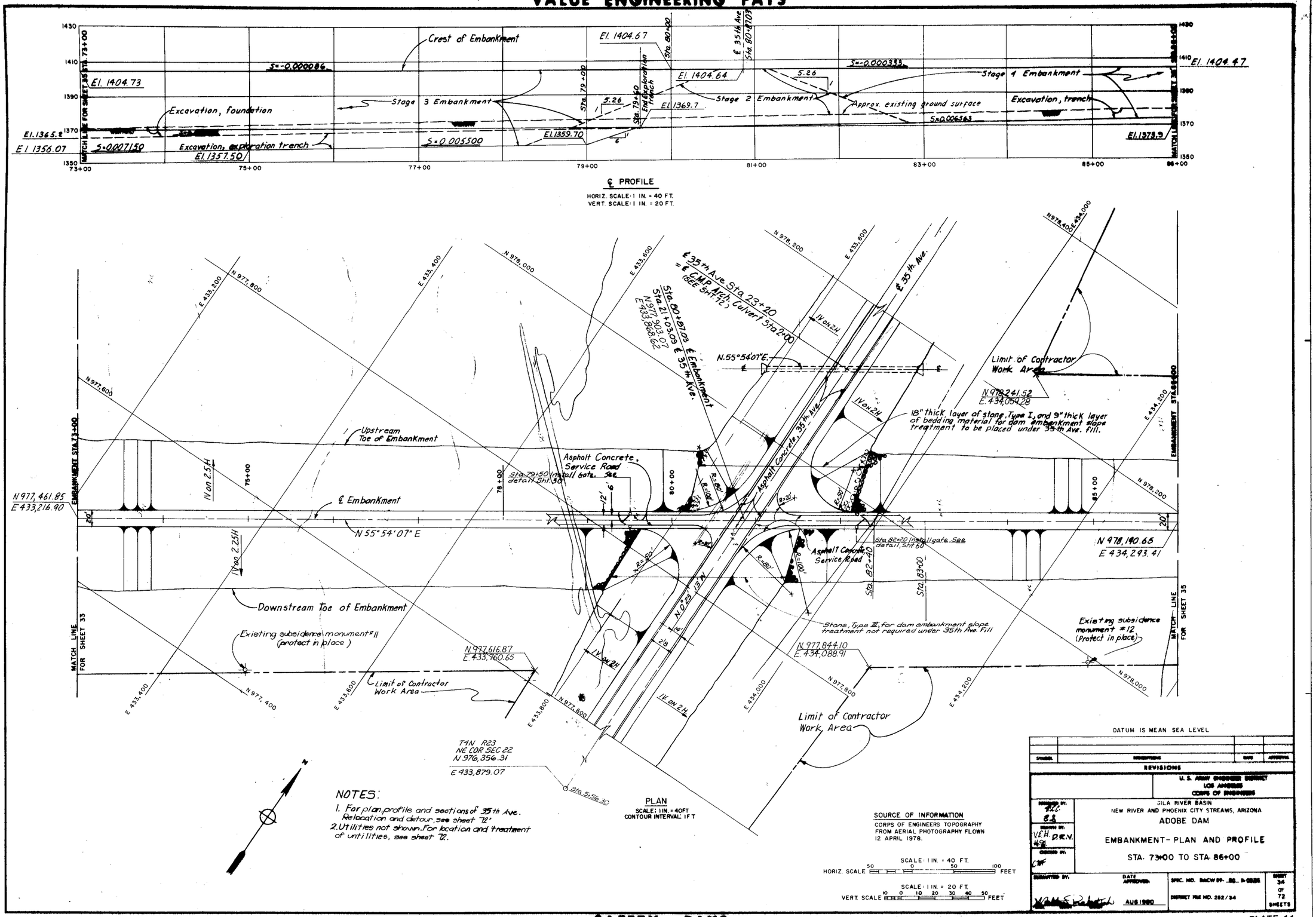
ADOBE DAM

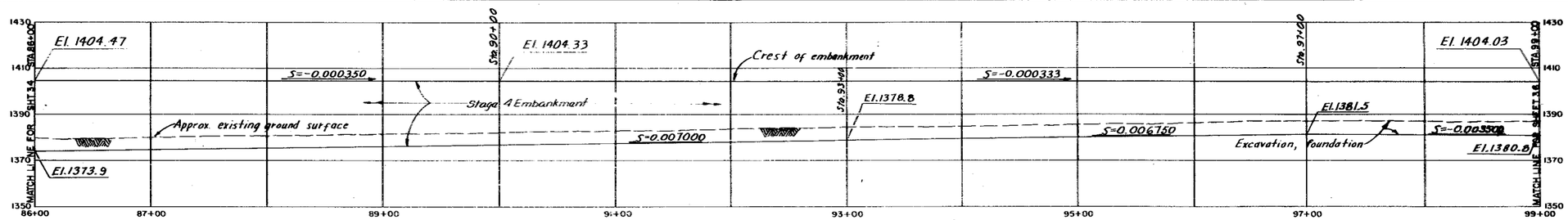
EMBANKMENT—PLAN AND PROFILE

STA. 59+00 TO STA. 73+00

DESIGNED BY: RJC
DRAWN BY: V.L.H.
CHECKED BY: CWF
SUBMITTED BY: DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0038
DISTRICT FILE NO. 282/33
SHEET 33 OF 72 SHEETS

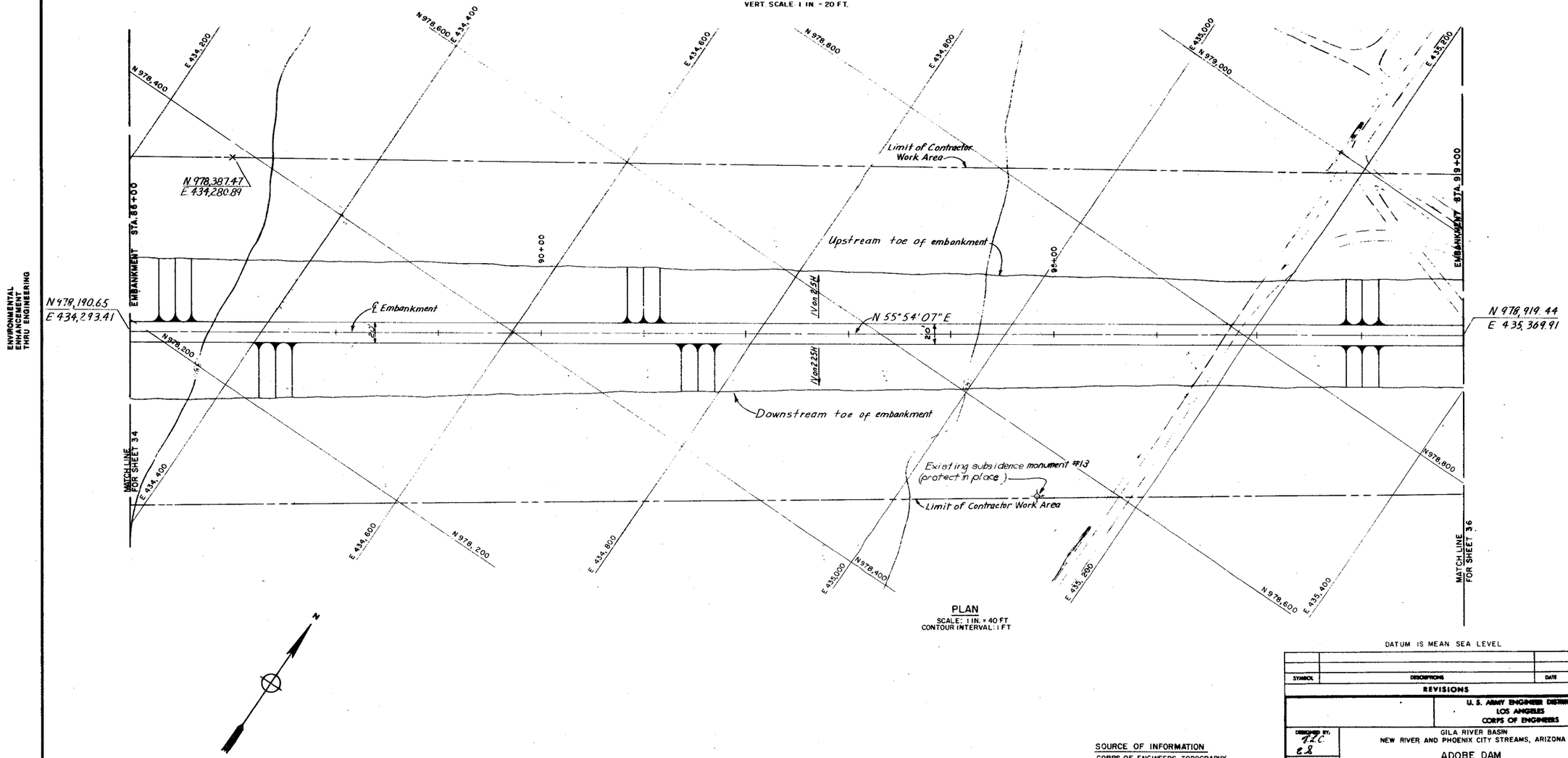
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


Crest of Embankment
El. 1404.67
Sta. 80+00
℄ 35th Ave Sta 80+87.03
S=-0.000086
El. 1404.73
Sta. 79+00
Sta. 79+50
End Exploration Trench
El. 1404.64
5.26
S=-0.000333
Stage 4 Embankment
El. 1404.47
Stage 3 Embankment
Stage 2 Embankment
Approx. existing ground surface
Excavation, foundation
El. 1369.7
Excavation, trench
S=0.006563
El. 1365.2
El. 1356.07
S=0.007150
Excavation, exploration trench
El. 1357.50
S=0.005500
El. 1359.70
El. 1373.9
MATCH LINE FOR SHEET 33
MATCH LINE FOR SHEET 35
73+00
75+00
77+00
79+00
81+00
83+00
85+00
86+00
℄ PROFILE
HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING
℄ 35th Ave Sta 23+20
= ℄ C.M.P. Irrig. Culvert Sta 2+00
(SEE SHT. 12)
Sta. 80+87.03 ℄ Embankment
Sta. 21+03.09 ℄ 35th Ave.
N 978,000
E 433,600
N 978,200
E 433,800
N 978,400
E 434,000
N 977,800
E 433,200
E 433,400
N 977,600
N 977,400
E 433,600
E 433,800
E 434,000
E 434,200
N 978,000
N 978,200
N 55°54'07"E
1V on 2H
℄ 35th Ave.
Limit of Contractor Work Area
N 978,241.52
E 434,054.28
18" thick layer of stone, Type I, and 9" thick layer of bedding material for dam embankment slope treatment to be placed under 35th Ave. fill.
Upstream Toe of Embankment
Asphalt Concrete, Service Road
Sta. 79+50 Install gate. See detail, Sht. 30
Sta. 82+20 Install gate. See detail, Sht. 30
℄ Embankment
N 55° 54' 07" E
N 977,461.85
E 433,216.90
N 978,190.65
E 434,293.41
Downstream Toe of Embankment
Existing subsidence monument #11 (protect in place)
Existing subsidence monument #12 (Protect in place)
N 977,616.87
E 433,760.65
N 977,844.10
E 434,088.91
Stone, Type III, for dam embankment slope treatment not required under 35th Ave. Fill
Limit of Contractor Work Area
T4N R23
NE COR SEC 22
N 976,356.31
E 433,879.07
Sta. 5+56.30
N 0°23'13"W
EMBANKMENT STA. 73+00
EMBANKMENT STA. 86+00
MATCH LINE FOR SHEET 33
MATCH LINE FOR SHEET 35
73+00
75+00
78+00
80+00
85+00
82+40
83+00
20'
12'
6'
14'
2'6'
R=50'
R=80'
R=100'
R=20'
PLAN
SCALE: 1 IN. = 40 FT
CONTOUR INTERVAL: 1 FT
SOURCE OF INFORMATION
CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.
SCALE: 1 IN. = 40 FT.
HORIZ. SCALE 50 0 50 100 FEET
SCALE: 1 IN. = 20 FT.
VERT. SCALE 10 0 10 20 30 40 50 FEET
DATUM IS MEAN SEA LEVEL
SYMBOL
DESCRIPTIONS
DATE
APPROVED
REVISIONS
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
DESIGNED BY: T.L.C.
DRAWN BY: V.E.H. D.R.N.
CHECKED BY: C.W.F.
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
EMBANKMENT- PLAN AND PROFILE
STA. 73+00 TO STA. 86+00
SUBMITTED BY:
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0038
DISTRICT FILE NO. 282/34
SHEET 34 OF 72 SHEETS
NOTES:
1. For plan, profile and sections of 35th Ave. Relocation and detour, see sheet 72.
2. Utilities not shown. For location and treatment of utilities, see sheet 72.



℄ PROFILE

HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE 1 IN. = 20 FT.



PLAN

SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL: 1 FT

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: T.L.C. E.B.
DRAWN BY: V.E.H.
CHECKED BY: CWF

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

EMBANKMENT - PLAN AND PROFILE

STA. 86+00 TO STA. 99+00

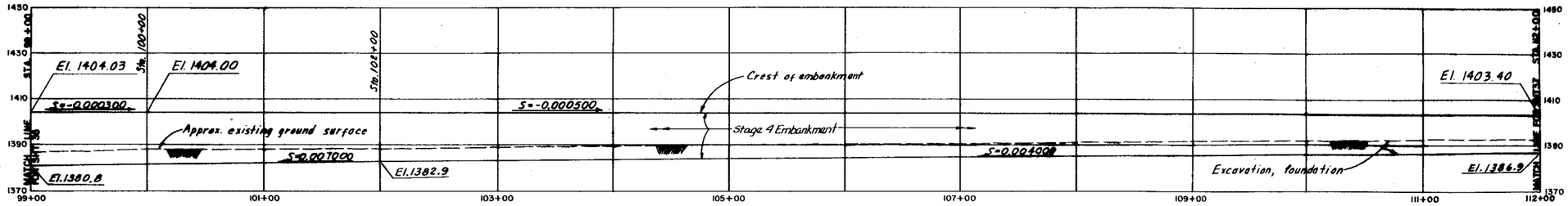
SUBMITTED BY: Walter Rabatich
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0035
DISTRICT FILE NO. 252/35
SHEET 3B OF 72 SHEETS

SOURCE OF INFORMATION

CORPS OF ENGINEERS TOPOGRAPHY
FROM AERIAL PHOTOGRAPHY FLOWN
12 APRIL 1978.

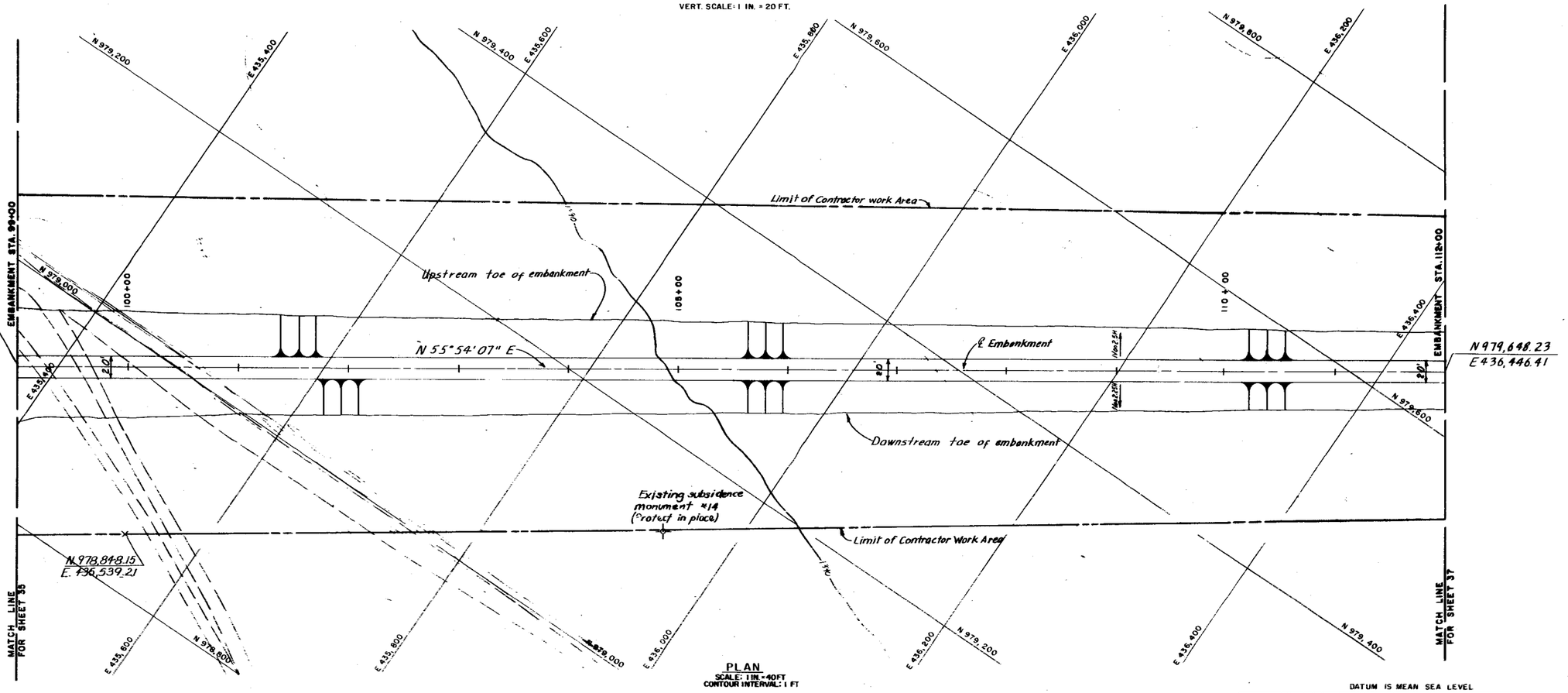
SCALE: 1 IN. = 40 FT.
HORIZ. SCALE 50 0 50 100 FEET

SCALE: 1 IN. = 20 FT.
VERT. SCALE 10 0 10 20 30 40 50 FEET



℄ PROFILE

HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.



PLAN
SCALE: 1 IN.=40FT
CONTOUR INTERVAL: 1 FT

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

DATUM IS MEAN SEA LEVEL

SOURCE OF INFORMATION
CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.

HORIZ. SCALE 50 0 50 100 FEET — SCALE: 1 IN. = 40 FT.

VERT. SCALE 10 0 10 20 30 40 50 FEET — SCALE: 1 IN. = 20 FT

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

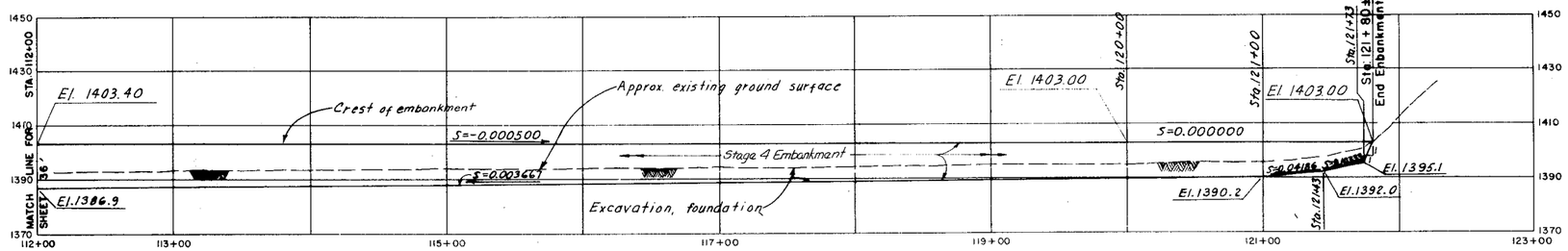
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

EMBANKMENT–PLAN AND PROFILE

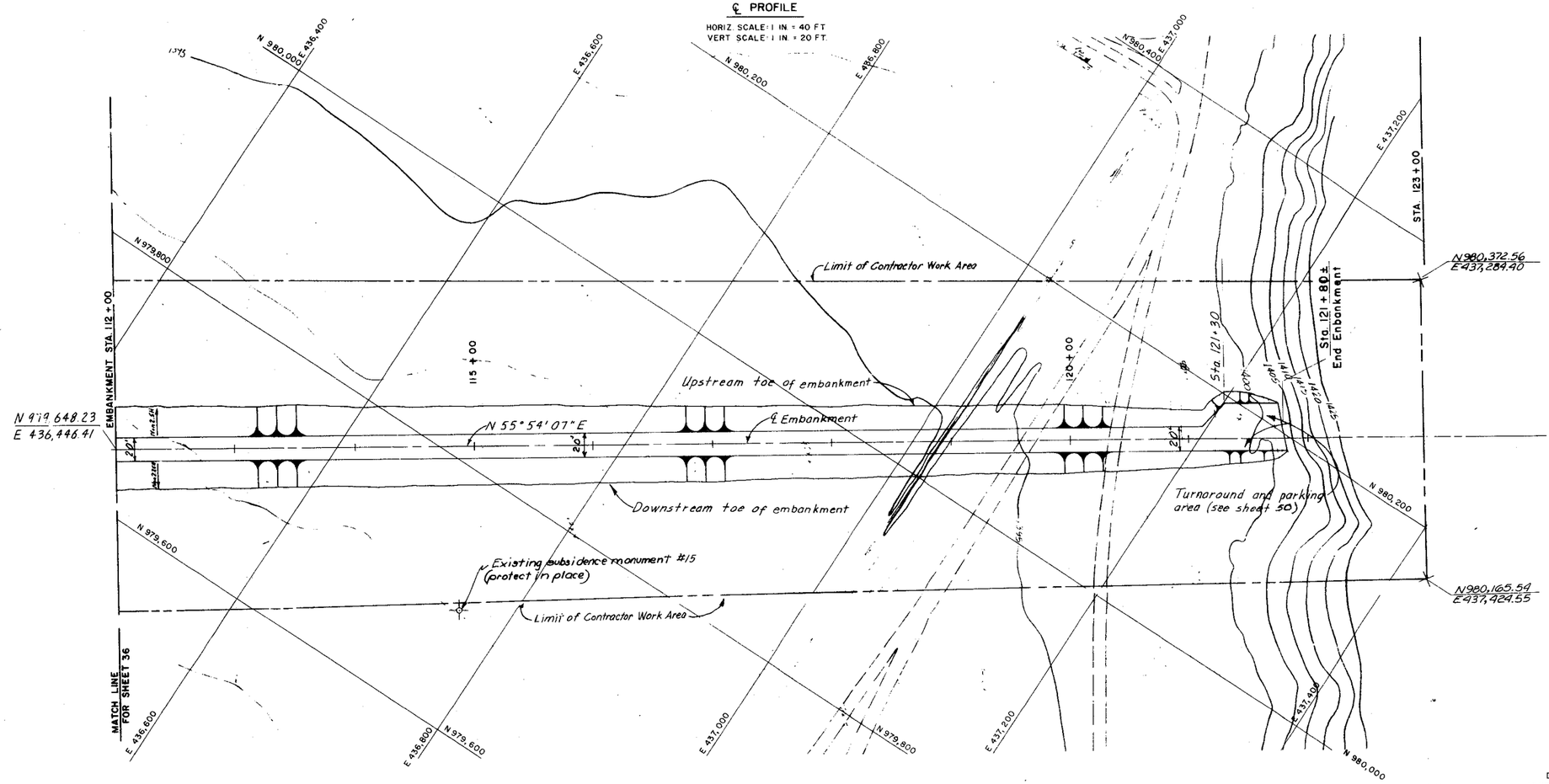
STA. 99+00 TO STA. 112+00

DESIGNED BY: R.E.C. / C.S.
DRAWN BY: V.E.H.
CHECKED BY: CWF
SUBMITTED BY: Matt Robertson
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-__80-B-0088
DISTRICT FILE NO. 282/36
SHEET 36 OF 72 SHEETS



℄ PROFILE

HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 20 FT.



PLAN

SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL = 1 FT.

SOURCE OF INFORMATION

CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.

SCALE: 1 IN. = 40 FT.
HORIZ. SCALE 50 0 50 100 FEET

SCALE: 1 IN. = 20 FT.
VERT. SCALE 10 0 10 20 30 40 50 FEET

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

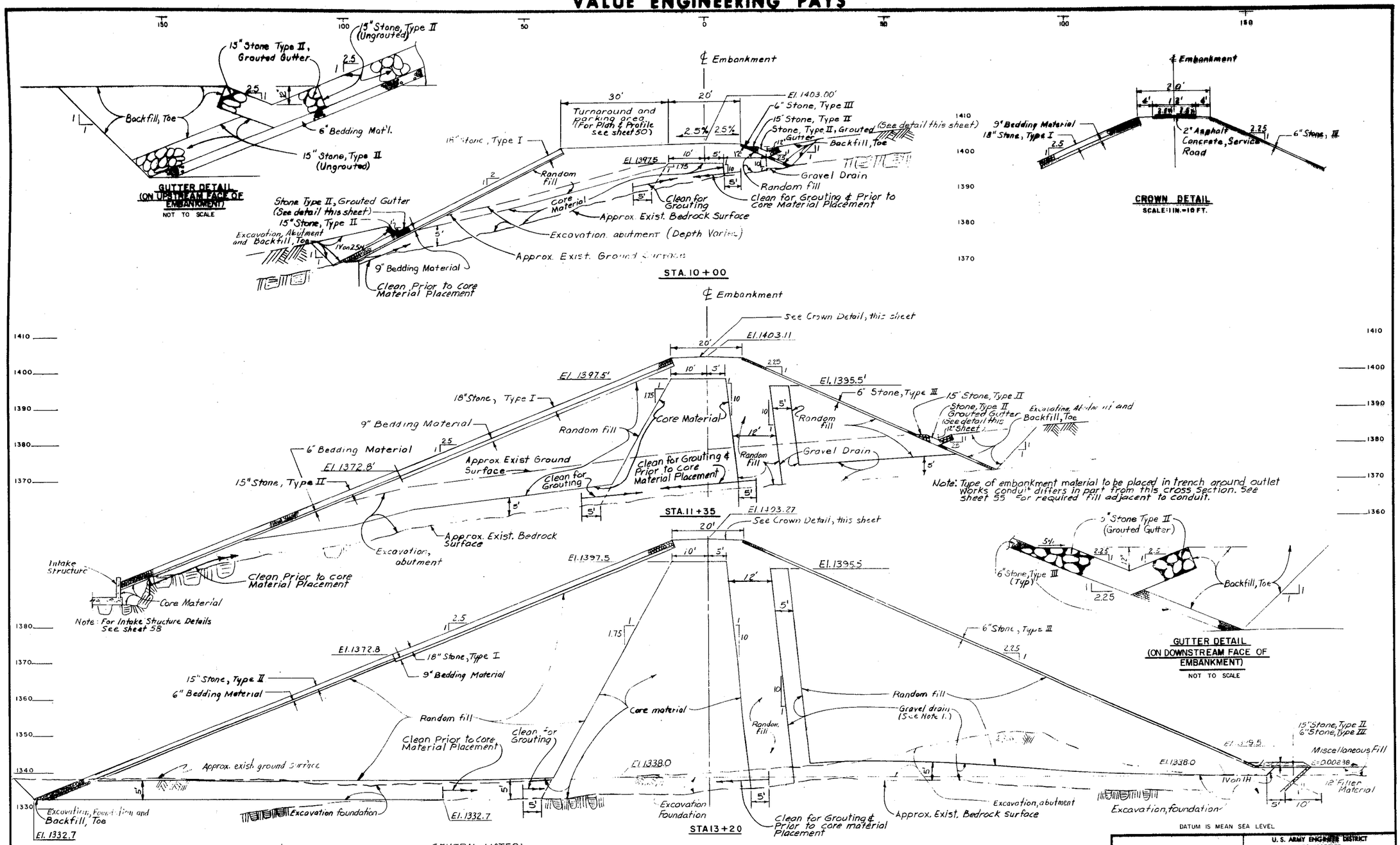
ADOBE DAM

EMBANKMENT-PLAN AND PROFILE

STA. 112+00 TO STA. 121+80±

DESIGNED BY: T.J.C.
DRAWN BY: V.E.H.
CHECKED BY: CWF
SUBMITTED BY: Walter Rabstad
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 282/37
SHEET 37 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



GENERAL NOTES:

1. Place 5.0 ft thick gravel drain on foundation from Sta. 9+60± to Sta. 13+20. From Sta. 13+20, to Sta. 85+90 place 3.0 ft. thick gravel drain on foundation.
2. For Plan and Profile of Embankment, see sheets 29 thru. sheet 37.
3. Esthetic Treatment Fill on slopes not shown; see sheets 47 thru. 49.
4. For Plan of Grouted Gutters, see sheet 29.
5. 12" Filter material & 15" Stone, Type II, used for downstream toe protection is to run from Sta. 12+96 to Sta. 85+90.
6. Views of cross sections are looking eastward toward increasing stations.
7. Minimum widths of 5 ft. between Sta. 10+00± and Sta. 85+90 and 3 ft. between Sta. 85+90 and Sta. 121+10 are required for the inclined (1 vertical on 10 horizontal) portion of the gravel drain. The widths may be increased for the Contractor's convenience, but at no additional costs to the Federal government.

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.
10 0 10 20 30

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

EMBANKMENT

CROSS SECTIONS NO. I

DESIGNED BY: R.L.C. E.I.
DRAWN BY: G.T. R.A.G.
CHECKED BY: CWF

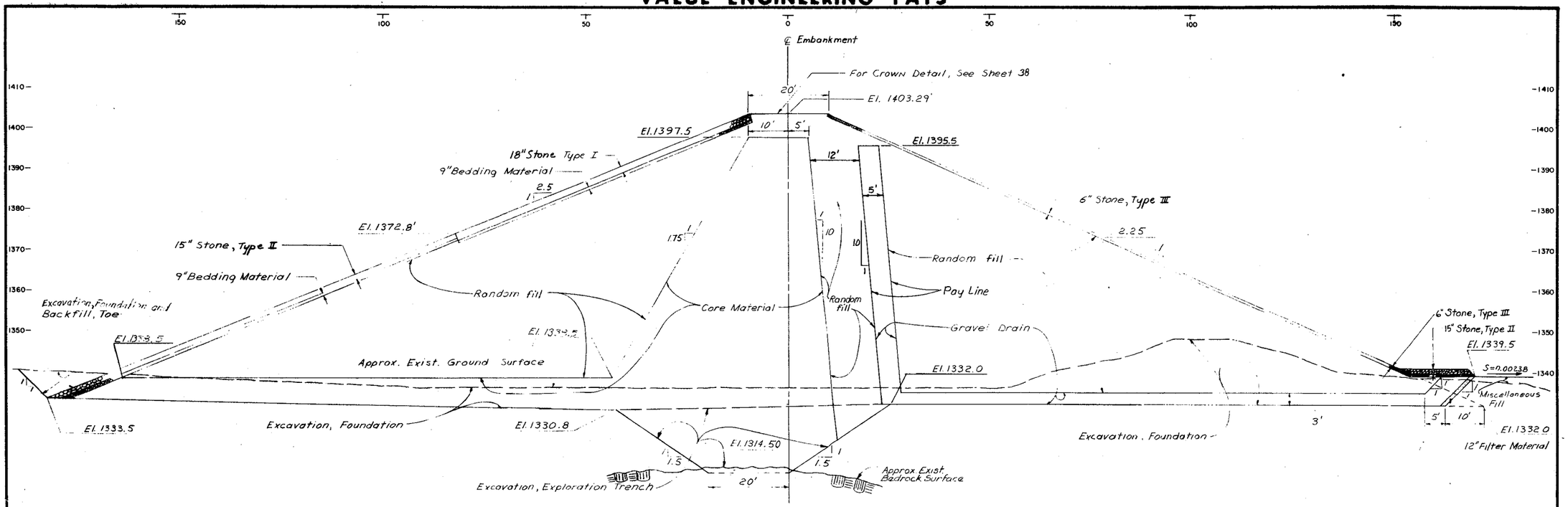
SUBMITTED BY: Walter R. Rabitsch
DATE APPROVED: AUG 1980

SPEC. NO. DACW09-80-B-0038
DISTRICT FILE NO. 262/38

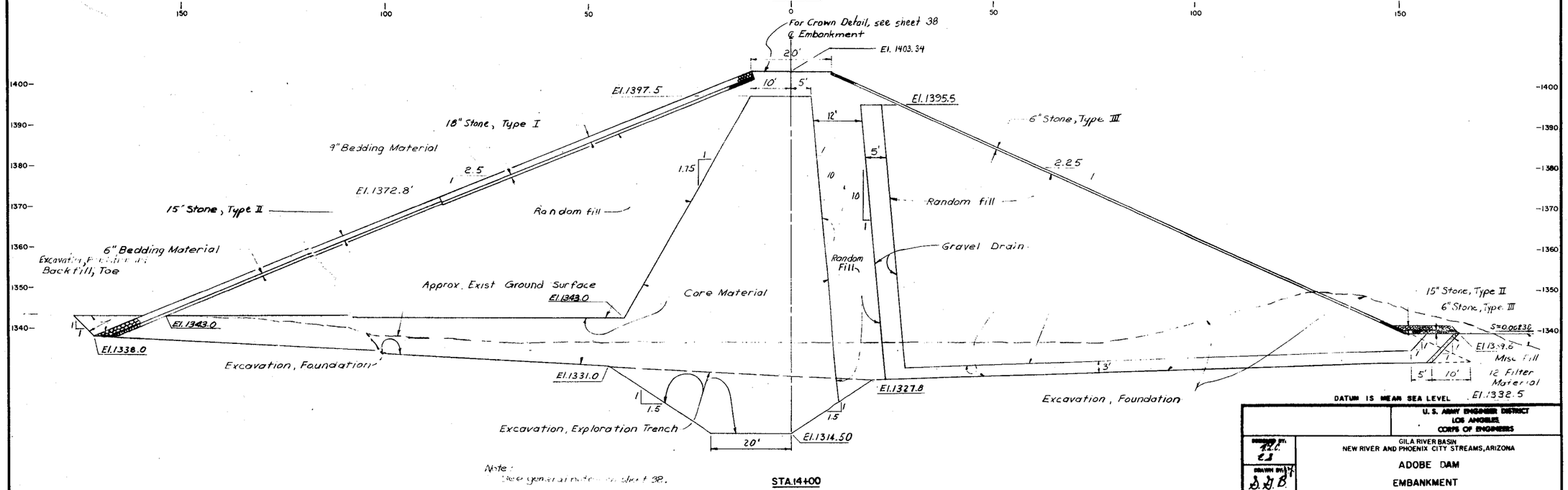
SHEET 38 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



STA.13+50



Note: See general notes on sheet 38.

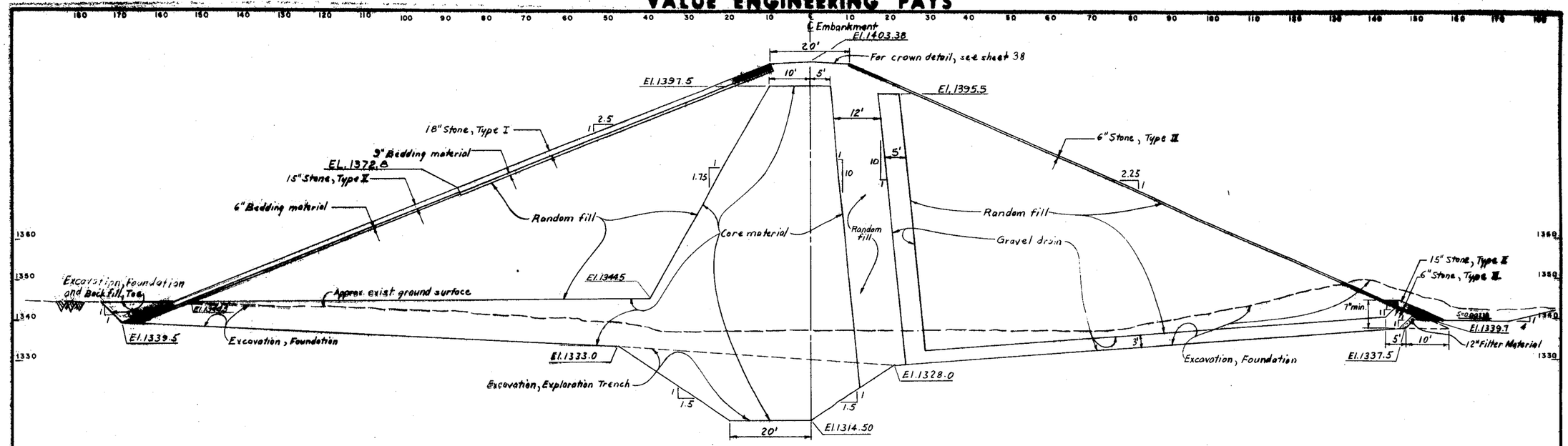
STA.14+00

DATUM IS MEAN SEA LEVEL

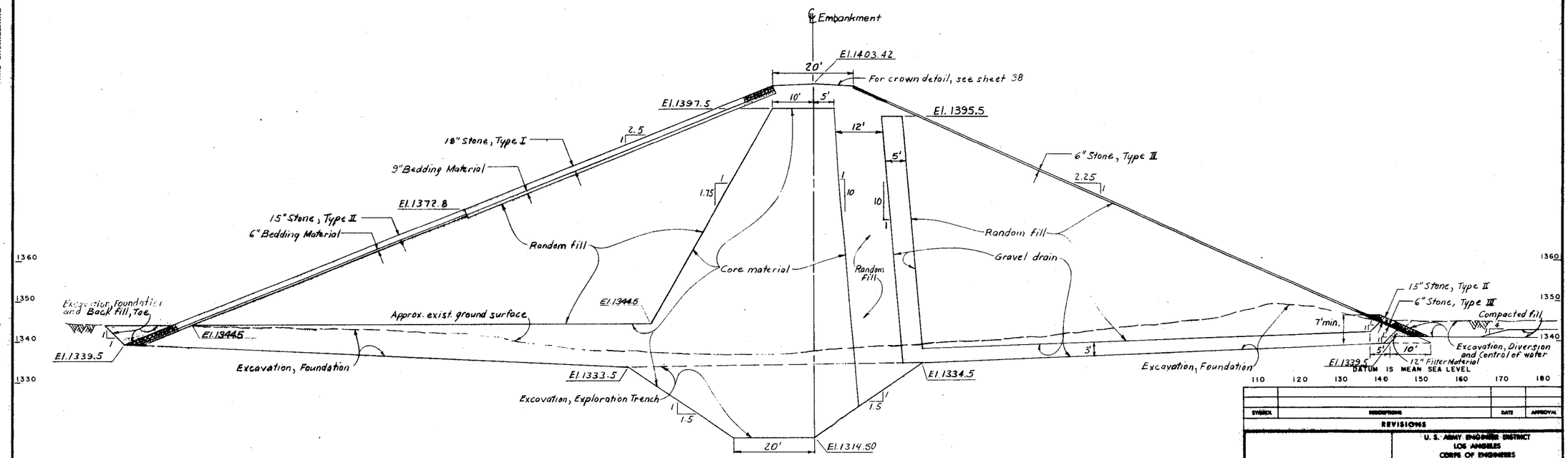
SCALE: 1 IN. = 10 FT

	U. S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS
DESIGNED BY: R.L. E.J.	GILA RIVER BASIN NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
DRAWN BY: D.D.B.	ADOBE DAM
CHECKED BY: CWF	EMBANKMENT CROSS SECTIONS NO.2
SUBMITTED BY: Mike Robitsch	DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036	SHEET 39 OF 72 SHEETS
DISTRICT FILE NO. 282/39	

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



STA.14+50



Notes:
See general note on sheet 38.

STA.15+00

VERT. SCALE: 1 IN.=10 FT.
HORIZ. SCALE: 1 IN.=10 FT.

SYMBOL	DESCRIPTION	DATE	APPROVAL
	REVISIONS		

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

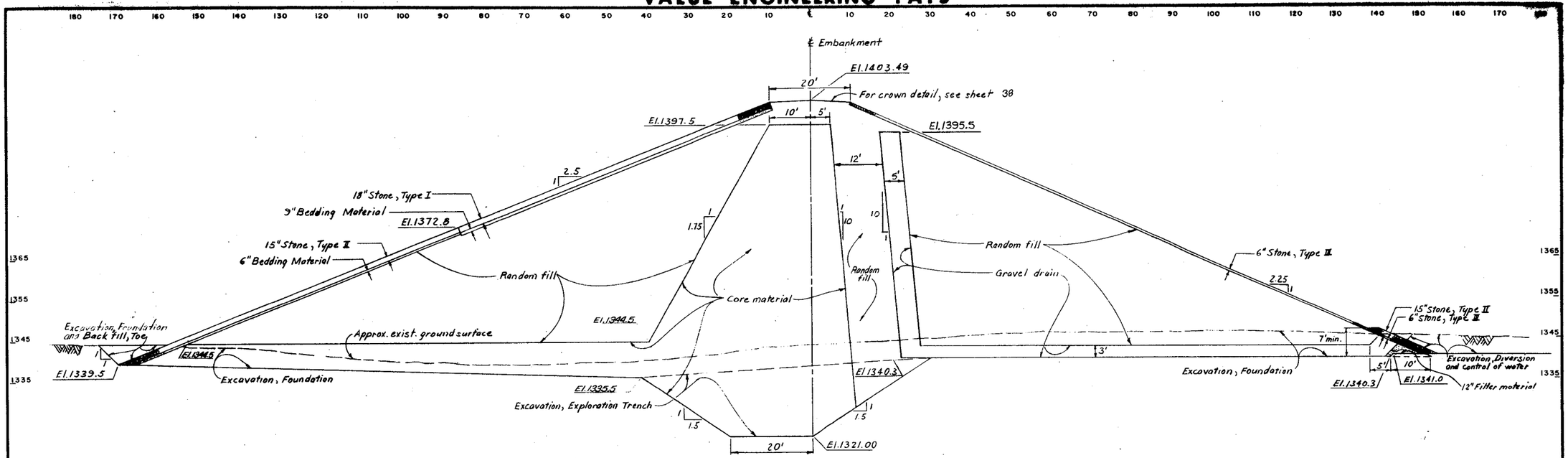
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

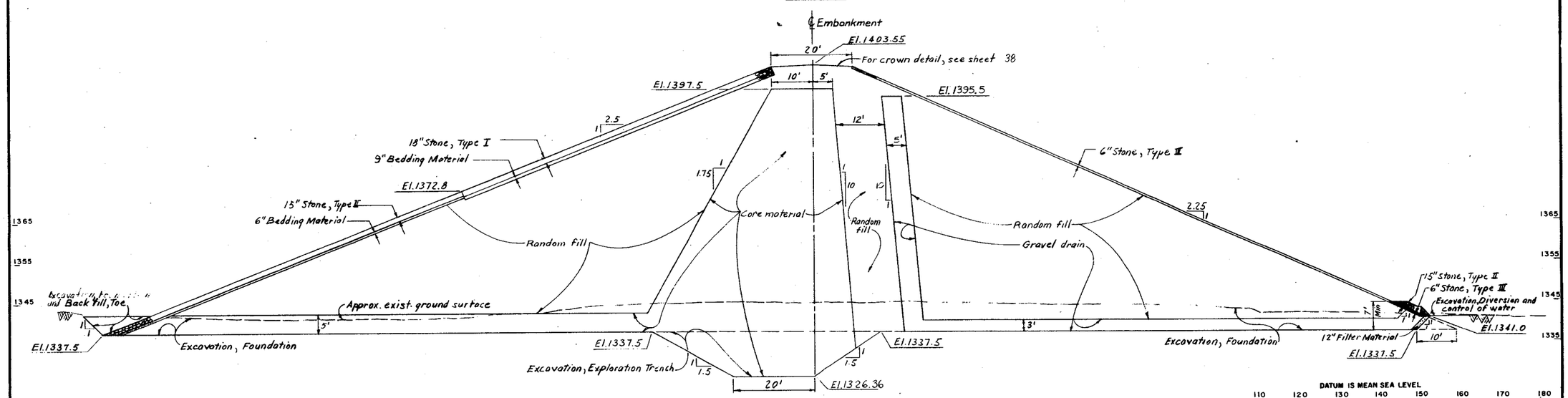
EMBANKMENT

CROSS SECTIONS NO.3

DESIGNED BY: J.L.C. C.S.
DRAWN BY: J.Y.
CHECKED BY: CWF
SUBMITTED BY: William Roberts
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0028
DISTRICT FILE NO. 252/40
SHEET 40 OF 72 SHEETS



STA.16+00



STA.17+00

Note:
See general notes on sheet 38.

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTION	DATE	APPROVAL
	REVISIONS		

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

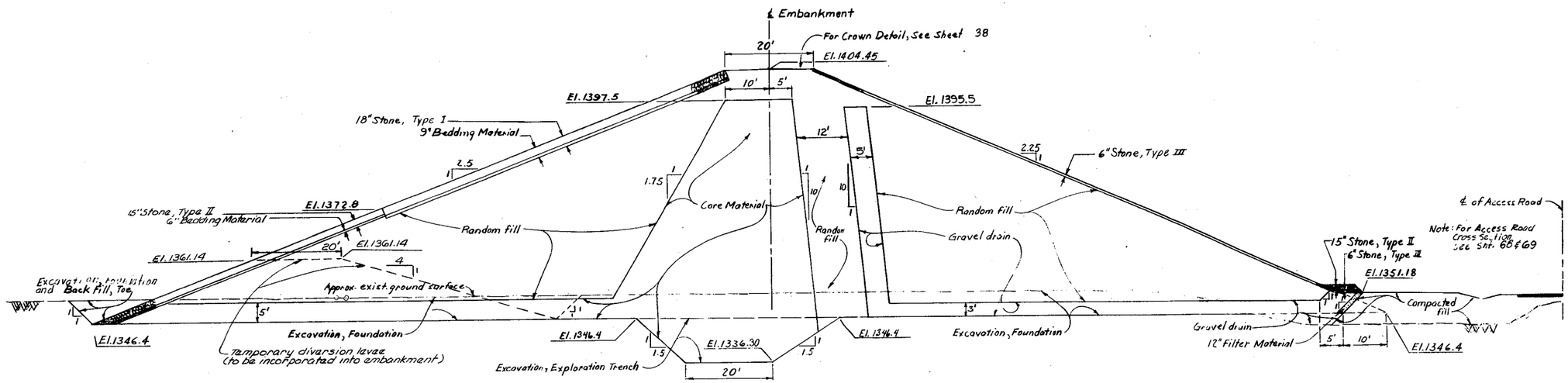
ADOBE DAM

EMBANKMENT

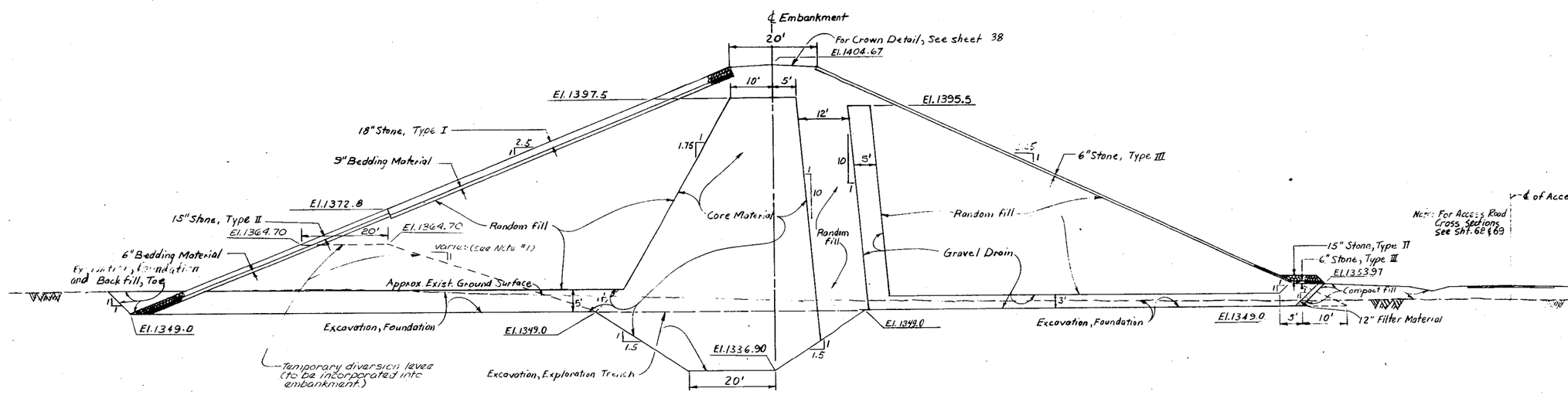
CROSS SECTIONS NO.4

DESIGNED BY: R.L.C. E.S.
DRAWN BY: J.Y.
CHECKED BY: CWF
SUBMITTED BY: [signature]
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0006
DISTRICT FILE NO. 288/41
SHEET 41 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



STA38+00



STA45+00

NOTES:
1. The downstream slope of the diversion levee is 1V on 4H except where a steeper slope is required to allow excavation of the excavation trench. For that case, a steeper slope will be constructed to the North edge of the exploration trench.
2. See general notes on sheet 38.

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

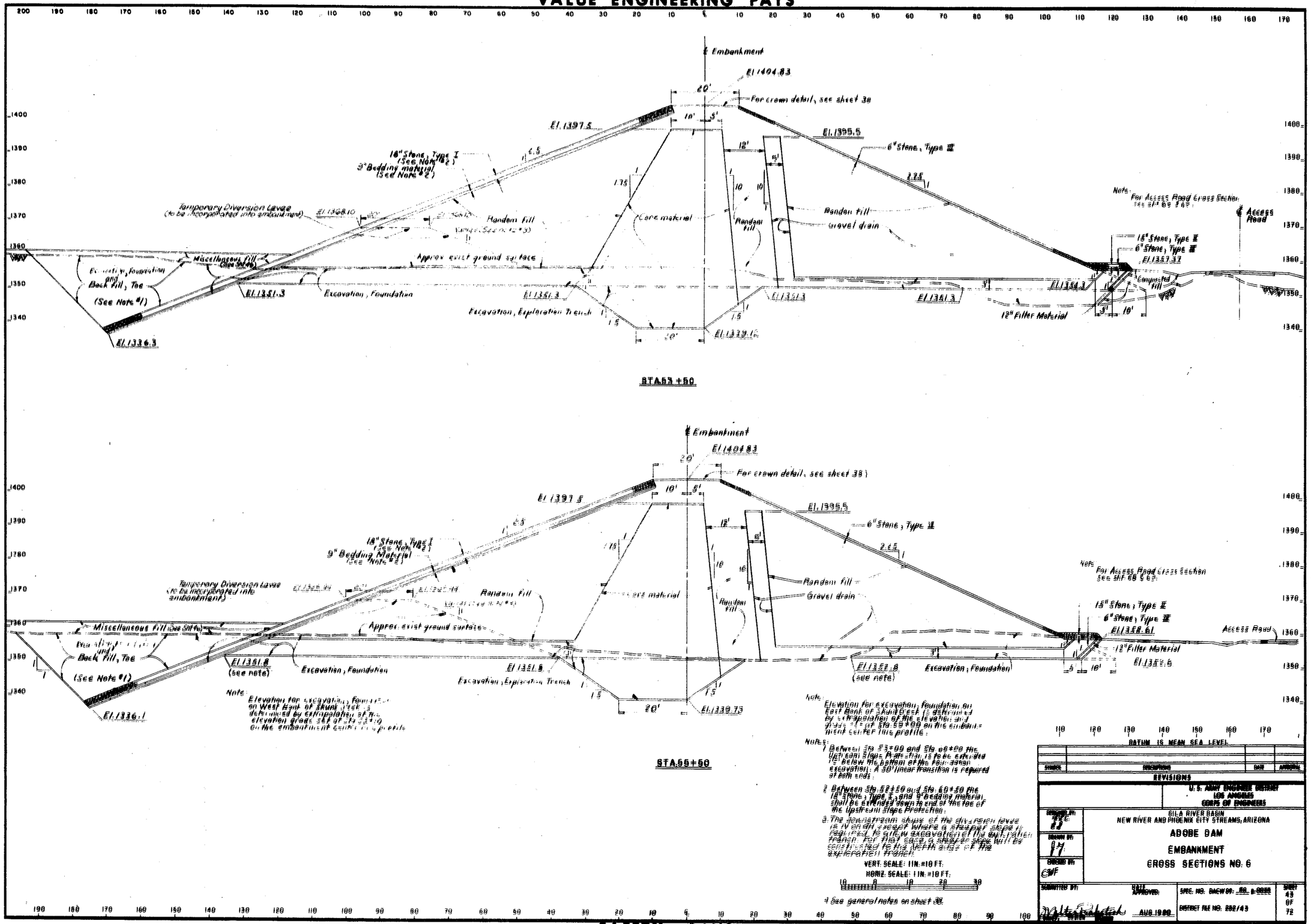
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

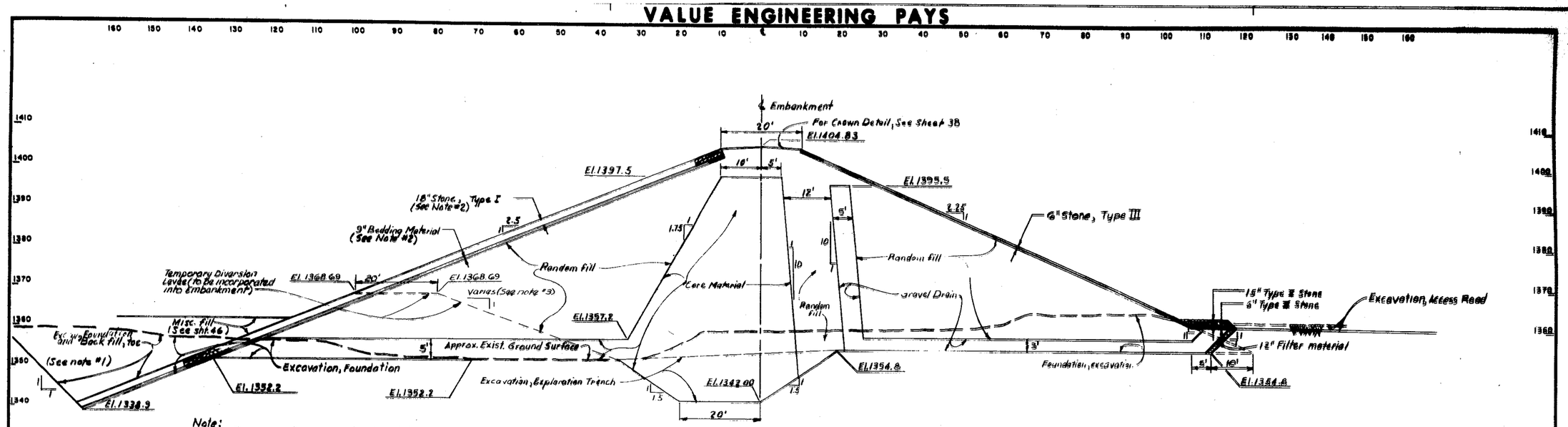
ADOBE DAM

EMBANKMENT
CROSS SECTIONS NO.5

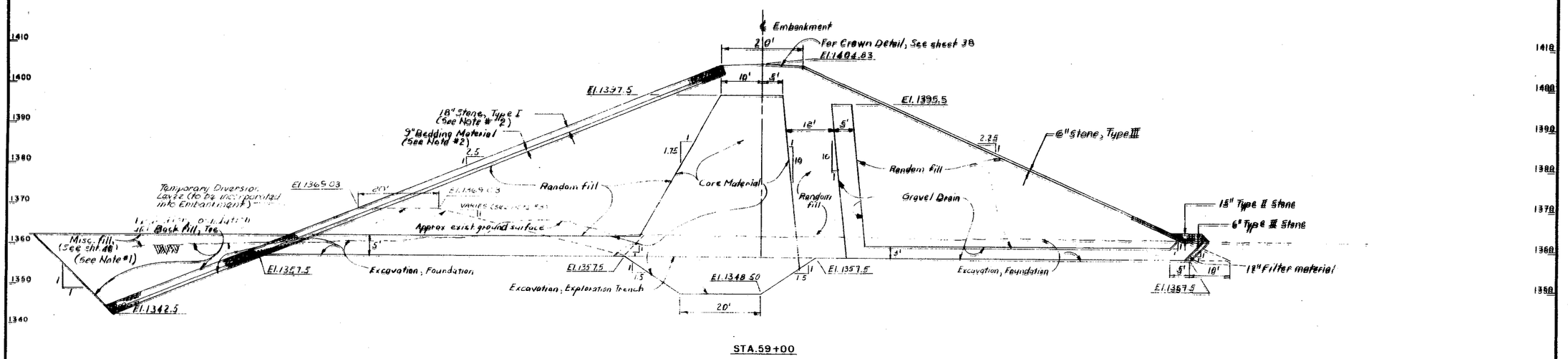
DESIGNED BY: R.L.C. E.I.
DRAWN BY: J.Y.
CHECKED BY: C.W.F.
SUBMITTED BY: Walter Kobatich, CHIEF, DESIGN BRANCH
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 252/42
SHEET 42 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


℄ Embankment
El. 1404.83
For crown detail, see sheet 38
El. 1397.5
El. 1395.5
6" Stone, Type III
18" Stone, Type I (See Note #2)
9" Bedding material (See Note #2)
Temporary Diversion Levee (to be incorporated into embankment)
El. 1368.10
Random fill
Core material
Random fill
Gravel drain
Approx. exist. ground surface
Miscellaneous fill (See Note #6)
Excavation, Foundation and Back fill, Toe (See Note #1)
El. 1351.3
Excavation, Foundation
Excavation, Exploration Trench
El. 1339.13
El. 1336.3
STA. 53+50
Note: For Access Road Cross Section see sht. 68 & 69.
℄ Access Road
15" Stone, Type II
6" Stone, Type III
El. 1357.37
Compacted fill
12" Filter Material
El. 1354.3
El. 1351.8 (see note)
El. 1352.8 (see note)
El. 1358.61
El. 1356.6
El. 1339.73
Access Road
STA. 55+50
Note: Elevation for excavation, foundation on West Bank of Skunk Creek is determined by extrapolation of the elevation grade set at Sta. 53+00 on the embankment centerline profile.
Note: Elevation for excavation, foundation on East Bank of Skunk Creek is determined by extrapolation of the elevation grade set at Sta. 53+00 on the embankment centerline profile.
Note: 1. Between Sta. 53+00 and Sta. 60+00 the upstream slope protection is to be extended 5' below the bottom of the non-seepage excavation; A 30' linear transition is required at both ends.
2. Between Sta. 52+50 and Sta. 60+50 the 18" Stone, Type I, and 9" bedding material shall be extended down to end of the toe of the upstream slope protection.
3. The downstream slope of the diversion levee is 1V on 4H except where a steeper slope is required to allow excavation of the exploration trench. For that case, a steeper slope will be constructed to the North side of the exploration trench.
4. See general notes on sheet 38.
VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.
DATUM IS MEAN SEA LEVEL
SYMBOL
DESCRIPTION
DATE
APPROVAL
REVISIONS
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
EMBANKMENT
CROSS SECTIONS NO. 6
DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
DATE APPROVED:
AUG 1980
SPEC. NO. DACW09-
DISTRICT FILE NO. 252/43
SHEET 43 OF 72



Note: Elevation for excavation, foundation, on West Bank at Skunk Creek is determined by extrapolation of the elevation and grade set at Sta. 55+10 on the embankment centerline profile.



NOTES:

1. Between Sta. 53+00 and 60+00 the upstream slope protection is to be extended 15' below the bottom of the foundation excavation. A 50' linear transition is required at both ends.
2. Between Sta. 56+50 and Sta. 60+50 the 18" stone, Type I, and 9" bedding material shall be extended down to the end of the toe of the upstream slope protection.
3. The downstream slope of the Diversion Levee is 1V:4H except where a steeper slope is required to allow excavation of the exploration trench. For that case, a steeper slope will be constructed to the North edge of the exploration trench.
4. See general notes on sheet 38.

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

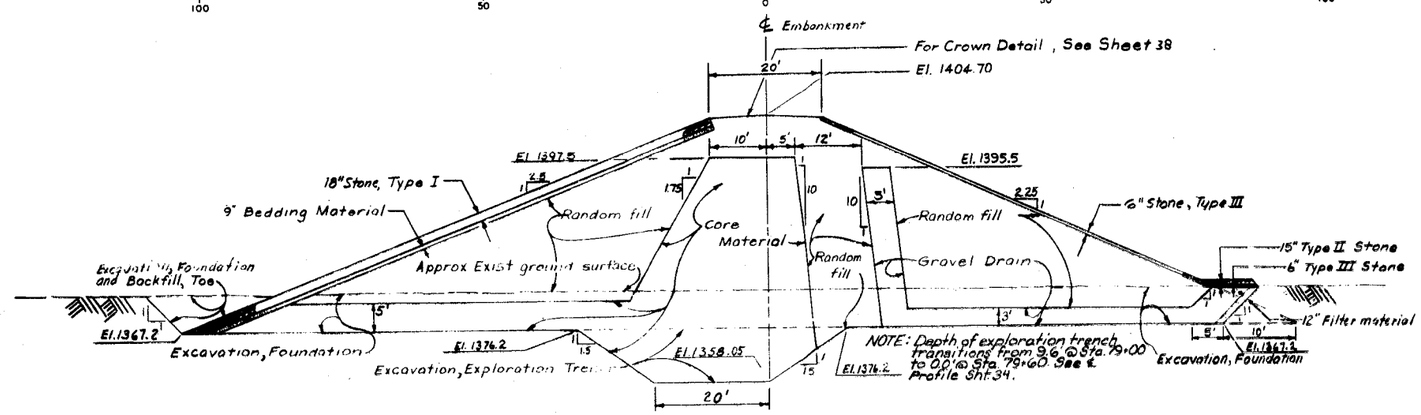
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

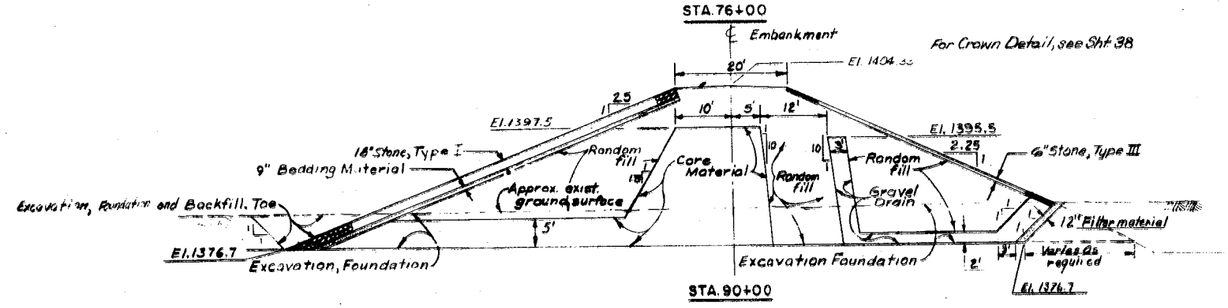
ADOBE DAM

EMBANKMENT
CROSS SECTIONS NO. 7

DESIGNED BY: ACE
DRAWN BY: G.Y.
CHECKED BY: CWF
SUBMITTED BY:
DATE APPROVED: AUG 1980
SPEC. NO. DACW 09-80-B-0000
DISTRICT FILE NO. 292/44
SHEET 44 OF 72 SHEETS

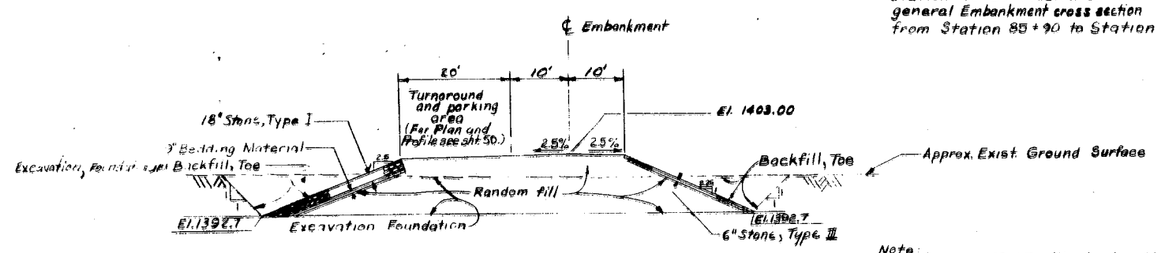


STA. 76+00



STA. 90+00

Note:
Station 90+00 illustrates the general Embankment cross section from Station 85+90 to Station 121+10.



STA. 121+50

Note:
Station 121+50 illustrates the general Embankment cross sections from Station 121+10 to Station 121+85.

Note:
See general notes on sheet 38.

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.
10 0 10 20 30

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

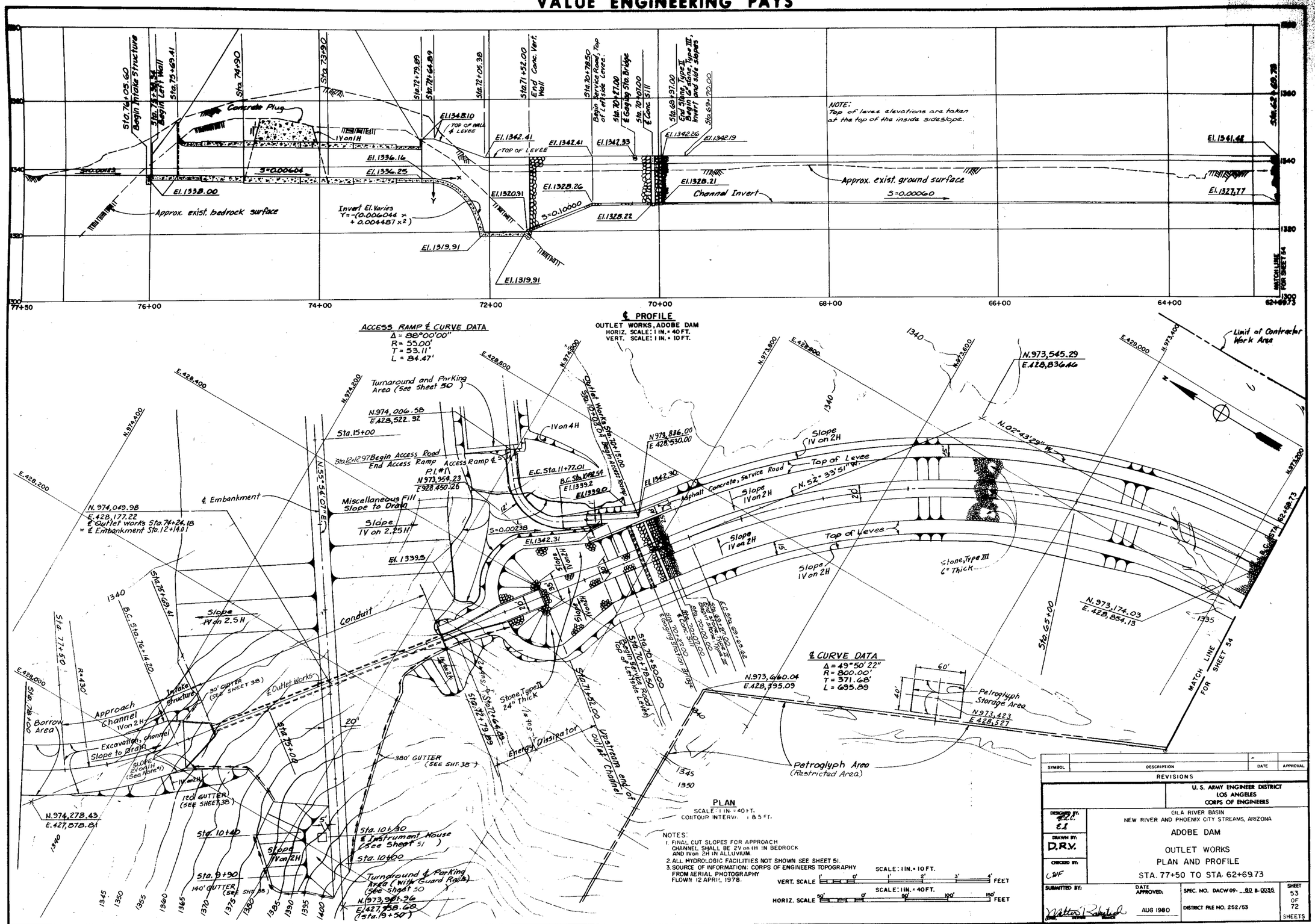
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

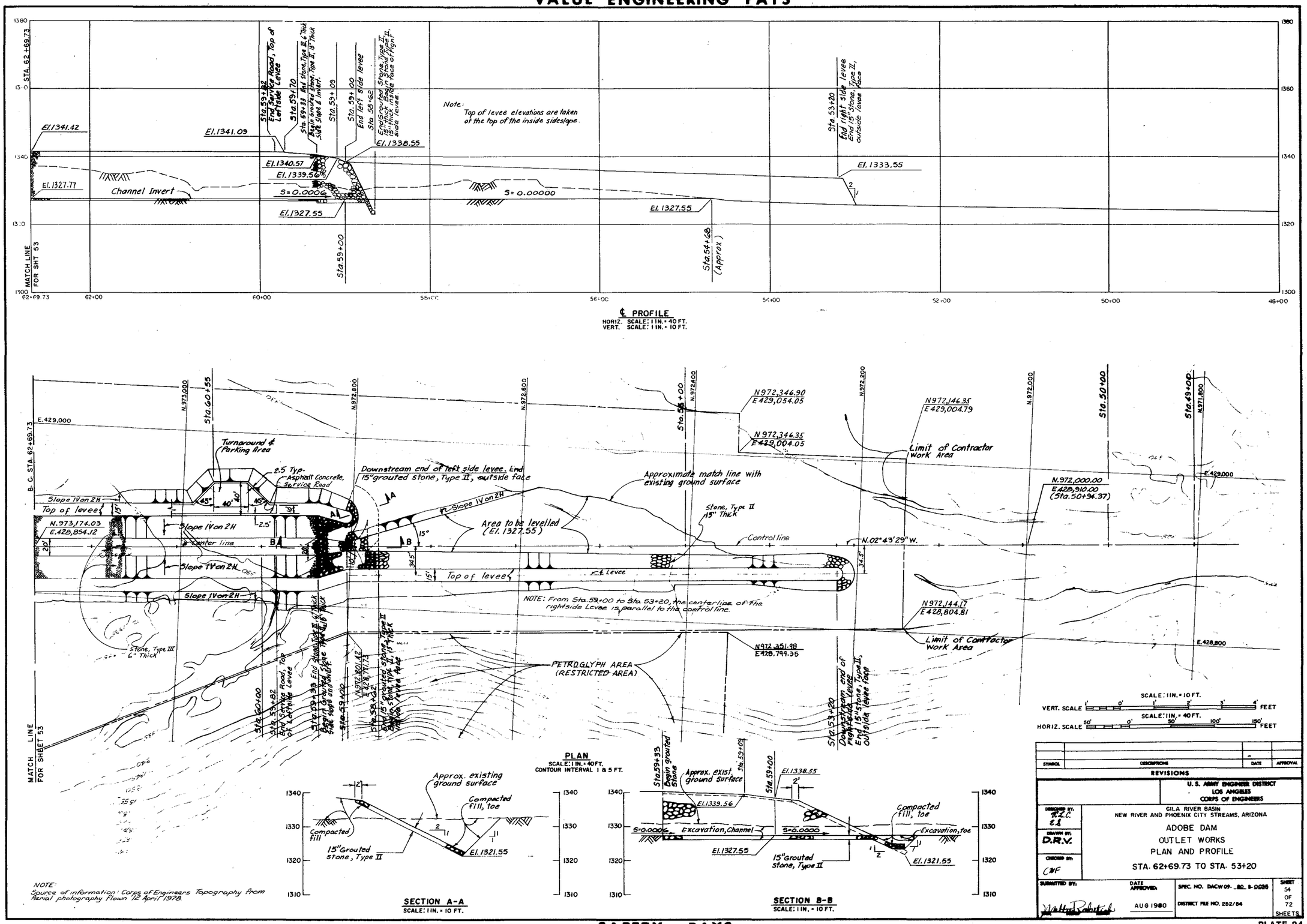
ADOBE DAM

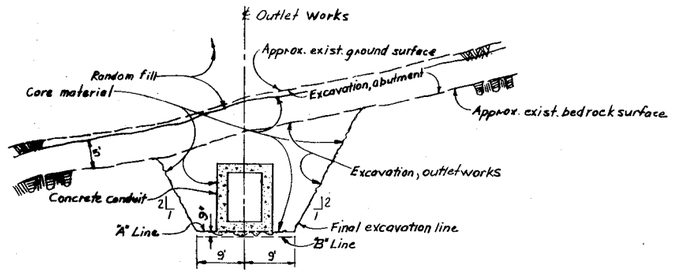
EMBANKMENT
CROSS SECTIONS NO. 8

DESIGNED BY: E.J.
DRAWN BY: J.T.
CHECKED BY: CWF
SUBMITTED BY: (CHIEF, DESIGN BRANCH)
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-_80_-B-0039
DISTRICT FILE NO. 88E/46
SHEET 45 OF 72 SHEETS

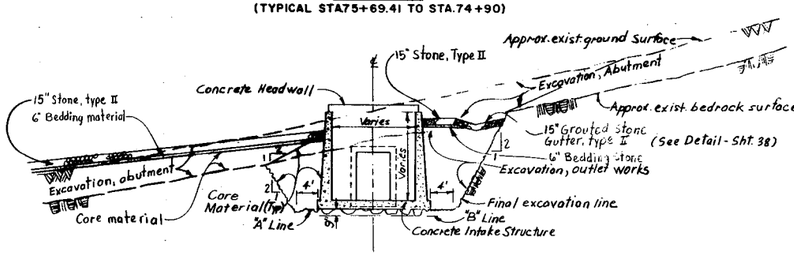
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


℄ PROFILE
OUTLET WORKS, ADOBE DAM
HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 10 FT.
NOTE:
Top of levee elevations are taken at the top of the inside sideslope.
Approx. exist. bedrock surface
Approx. exist. ground surface
S=0.00060
Channel Invert
Concrete Plug
Invert El. Varies
Y=-(0.006044 x + 0.004487 x²)
S=0.10000
S=0.00604
S=0.00238
Conduit
Intake Structure
Approach Channel
Borrow Area
Excavation, channel
Slope to drain
Turnaround and Parking Area (See Sheet 50)
Turnaround & Parking Area (With Guard Rails) (See Sheet 50)
Outlet Works
Energy Dissipator
Upstream end of Outlet Channel
Petroglyph Area (Restricted Area)
Petroglyph Storage Area
Stone, Type III 6" Thick
Stone, Type II 24" Thick
Asphalt Concrete, Service Road
Top of Levee
Slope 1V on 2H
Limit of Contractor Work Area
MATCH LINE FOR SHEET 54
ACCESS RAMP ℄ CURVE DATA
Δ = 88°00'00"
R = 55.00'
T = 53.11'
L = 84.47'
℄ CURVE DATA
Δ = 49°50'22"
R = 800.00'
T = 371.68'
L = 695.89
PLAN
SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL 1.5 FT.
NOTES:
1. FINAL CUT SLOPES FOR APPROACH CHANNEL SHALL BE 2V on 1H IN BEDROCK AND 1V on 2H IN ALLUVIUM.
2. ALL HYDROLOGIC FACILITIES NOT SHOWN SEE SHEET 51.
3. SOURCE OF INFORMATION: CORPS OF ENGINEERS TOPOGRAPHY FROM AERIAL PHOTOGRAPHY FLOWN 12 APRIL 1978.
SCALE: 1 IN. = 10 FT.
VERT. SCALE
SCALE: 1 IN. = 40 FT.
HORIZ. SCALE
SYMBOL
DESCRIPTION
DATE
APPROVAL
REVISIONS
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
OUTLET WORKS
PLAN AND PROFILE
STA. 77+50 TO STA. 62+69.73
DESIGNED BY:
DRAWN BY: D.R.V.
CHECKED BY:
SUBMITTED BY:
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80 B-0039
DISTRICT FILE NO. 252/53
SHEET 53 OF 72 SHEETS
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

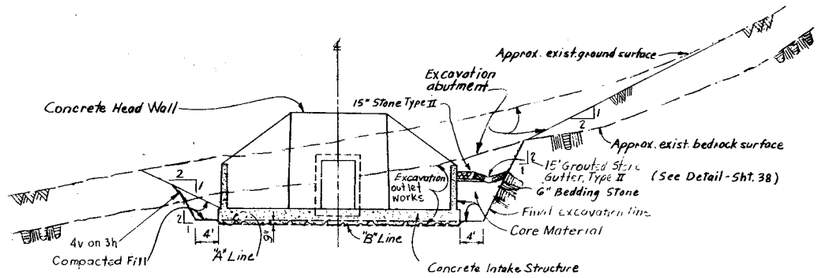

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING
℄ PROFILE
HORIZ. SCALE: 1 IN. = 40 FT.
VERT. SCALE: 1 IN. = 10 FT.
Note: Top of levee elevations are taken at the top of the inside sideslope.
El. 1341.42
El. 1341.09
El. 1340.57
El. 1339.56
El. 1338.55
El. 1327.77
El. 1327.55
El. 1333.55
Channel Invert
S=0.0006
S=0.00000
Sta. 59+82 End Service Road, Top of Leftside Levee
Sta. 59+70
Sta. 59+33 End Stone, Type III, 6" Thick
Begin Grouted Stone, Type II, 18" Thick side slope & invert.
Sta. 59+09
Sta. 59+00
End left side levee
Sta. 58+42
End Grouted Stone, Type II, 15" Thick. Begin Stone Type II, 15" Thick, face of right side levee.
Sta. 53+20
End right side levee
End 15" Stone, Type II, outside levee face
Sta. 54+68 (Approx)
MATCH LINE FOR SHT 53
62+69.73
62+00
60+00
58+00
56+00
54+00
52+00
50+00
48+00
PLAN
SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL 1 & 5 FT.
B.C. STA. 62+69.73
N.973,000
N.972,800
N.972,600
N.972,400
N.972,200
N.972,000
N.971,800
Sta. 60+55
Sta. 50+00
Sta. 49+00
E.429,000
E.428,800
N972,346.90
E429,054.05
N972,346.35
E429,004.79
N972,146.35
E429,004.79
N972,000.00
E428,910.00
(Sta. 50+94.37)
N972,144.17
E428,804.81
N972,351.98
E428,799.55
N973,174.03
E.428,854.12
Turnaround & Parking Area
2.5 Typ. Asphalt Concrete, Service Road
Downstream end of left side levee. End 15" grouted stone, Type II, outside face
Approximate match line with existing ground surface
Limit of Contractor Work Area
Slope 1V on 2H
Top of levee
Center line
Area to be levelled (El. 1327.55)
Stone, Type II 15" Thick
Control line
N.02°43'29"W.
℄ Levee
NOTE: From Sta. 59+00 to Sta. 53+20, the centerline of the rightside Levee is parallel to the control line.
Stone, Type III 6" Thick
PETROGLYPH AREA (RESTRICTED AREA)
MATCH LINE FOR SHEET 53
SCALE: 1 IN. = 10 FT.
VERT. SCALE
HORIZ. SCALE
SCALE: 1 IN. = 40 FT.
FEET
Approx. existing ground surface
Compacted fill, toe
Compacted fill
15" Grouted stone, Type II
El. 1321.55
SECTION A-A
SCALE: 1 IN. = 10 FT.
Sta. 59+33 Begin grouted Stone
Approx. exist. ground surface
El. 1339.56
Excavation, Channel
El. 1327.55
Excavation, Toe
Sta. 53+20 Downstream end of rightside levee End 15" stone, Type II, outside levee face
SECTION B-B
SCALE: 1 IN. = 10 FT.
NOTE: Source of information: Corps of Engineers Topography from Aerial photography flown 12 April 1978
SYMBOL
DESCRIPTIONS
DATE
APPROVAL
REVISIONS
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
OUTLET WORKS
PLAN AND PROFILE
STA. 62+69.73 TO STA. 53+20
DESIGNED BY: R.L.C. E.A.
DRAWN BY: D.R.V.
CHECKED BY: CWF
SUBMITTED BY:
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 252/54
SHEET 54 OF 72 SHEETS



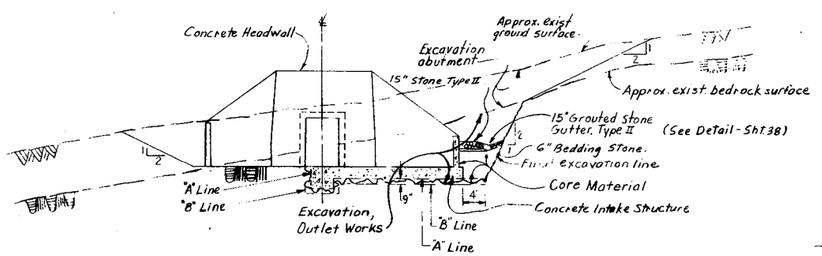
STA.75+00
(TYPICAL STA.75+69.41 TO STA.74+90)



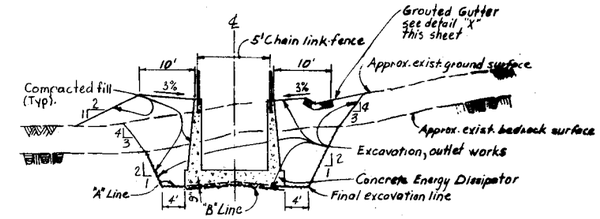
STA.75+69.41
(TYPICAL STA.75+81.41 TO STA. 75+69.41)



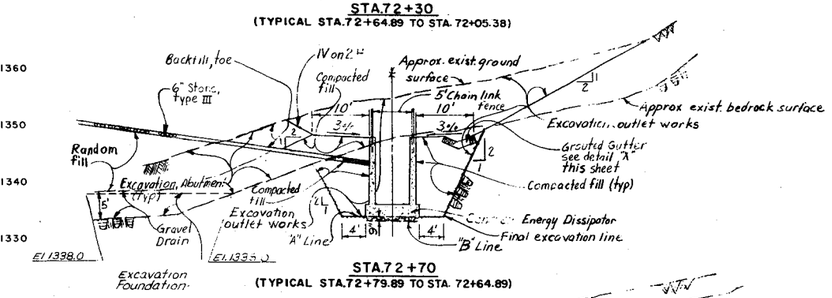
STA.75+94.17
(TYPICAL STA.75+98.34 TO STA. 75+81.41)



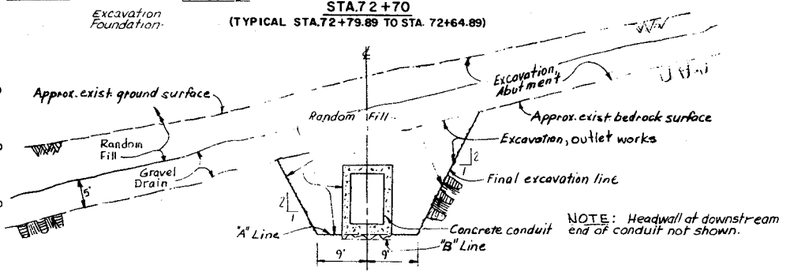
STA.76+05.60
(TYPICAL STA.76+14.20 TO STA. 75+98.34)



STA.72+30
(TYPICAL STA.72+64.89 TO STA. 72+05.38)

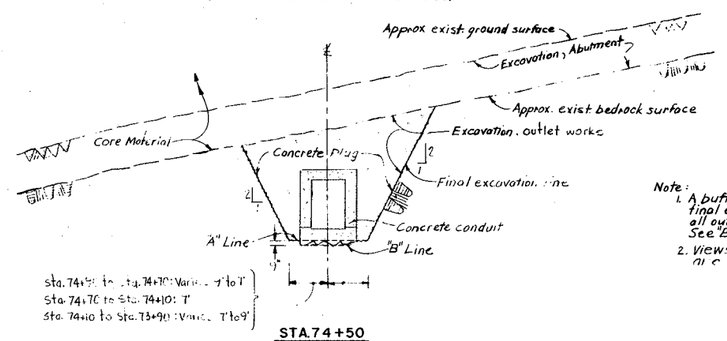


STA.72+70
(TYPICAL STA.72+79.89 TO STA. 72+64.89)



NOTE: Headwall at downstream end of conduit not shown.

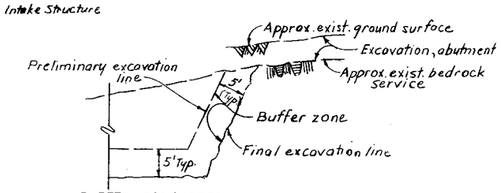
STA.73+50
(TYPICAL STA.73+90 TO STA.72+79.89)



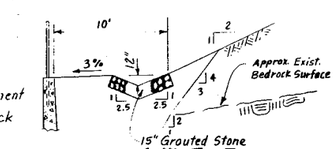
Sta. 74+50 to Sta. 74+70: Varies 7' to 1'
Sta. 74+70 to Sta. 74+10: 1'
Sta. 74+10 to Sta. 73+90: Varies 1' to 9'

STA.74+50
(TYPICAL STA.74+90 TO 73+90)

Note:
1. A buffer zone between preliminary and final excavation lines is required for all outlet works rock excavation. See Buffer Zone Detail hereon.
2. Views of cross section are looking [illegible]



BUFFER ZONE DETAIL
(TYPICAL SECTION)
SCALE: 1 IN. = 10 FT.



DETAIL "X" STA. 72+70 AND 72+30
NOT TO SCALE

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.

DATUM IS MEAN SEA LEVEL

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS ARIZONA

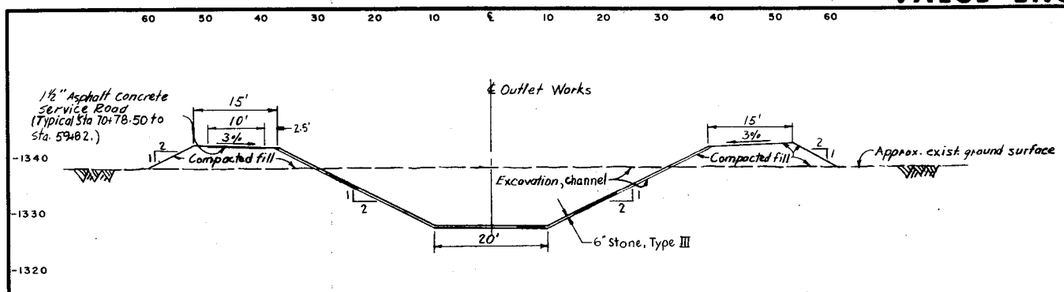
ADOBE DAM

OUTLET WORKS
CROSS SECTIONS NO. 1

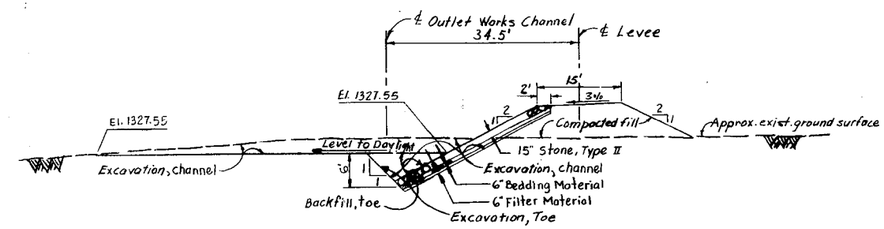
DESIGNED BY: [illegible]
DRAWN BY: J.Y.
CHECKED BY: CWF
SUBMITTED BY: Walter Rabstejnek
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 252/55
SHEET 55 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

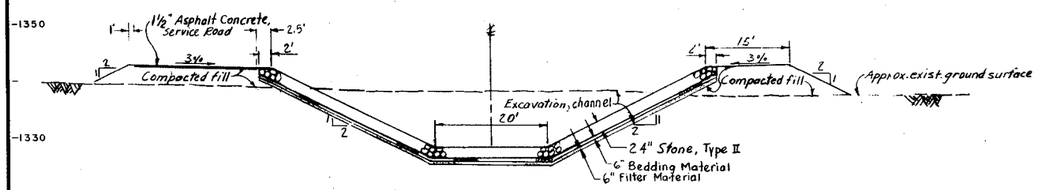
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



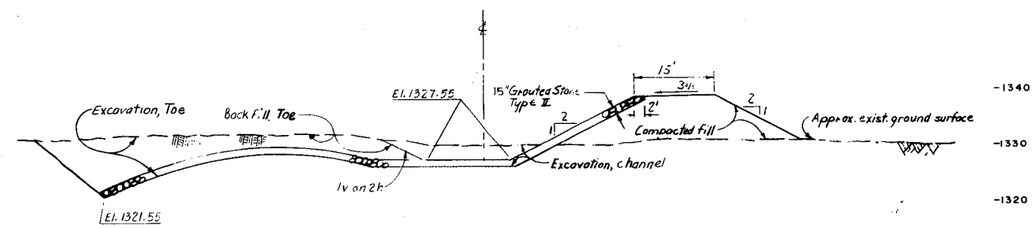
STA.+65+00
(TYPICAL STA.70+15 TO STA.59+33)



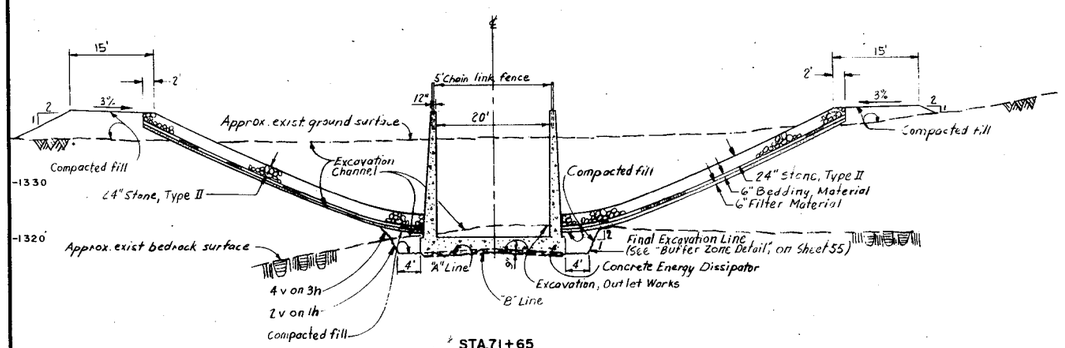
STA.56+00
(TYPICAL STA.58+62 TO STA.53+20)



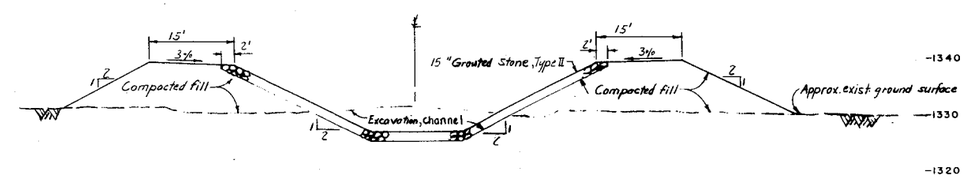
STA.70+50
(TYPICAL STA.70+78.5 TO STA.70+15)



STA58+80
(TYPICAL STA.59+00 TO STA.58+62)



STA.71+65
(TYPICAL STA.72+05.38 TO STA.71+52)



STA.59+20
(TYPICAL STA.59+33 TO STA.59+00)

Note: Views of cross sections are looking downstream.

VERT. SCALE: 1 IN. = 10 FT.
HORIZ. SCALE: 1 IN. = 10 FT.

SYMBOL	DESCRIPTION	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

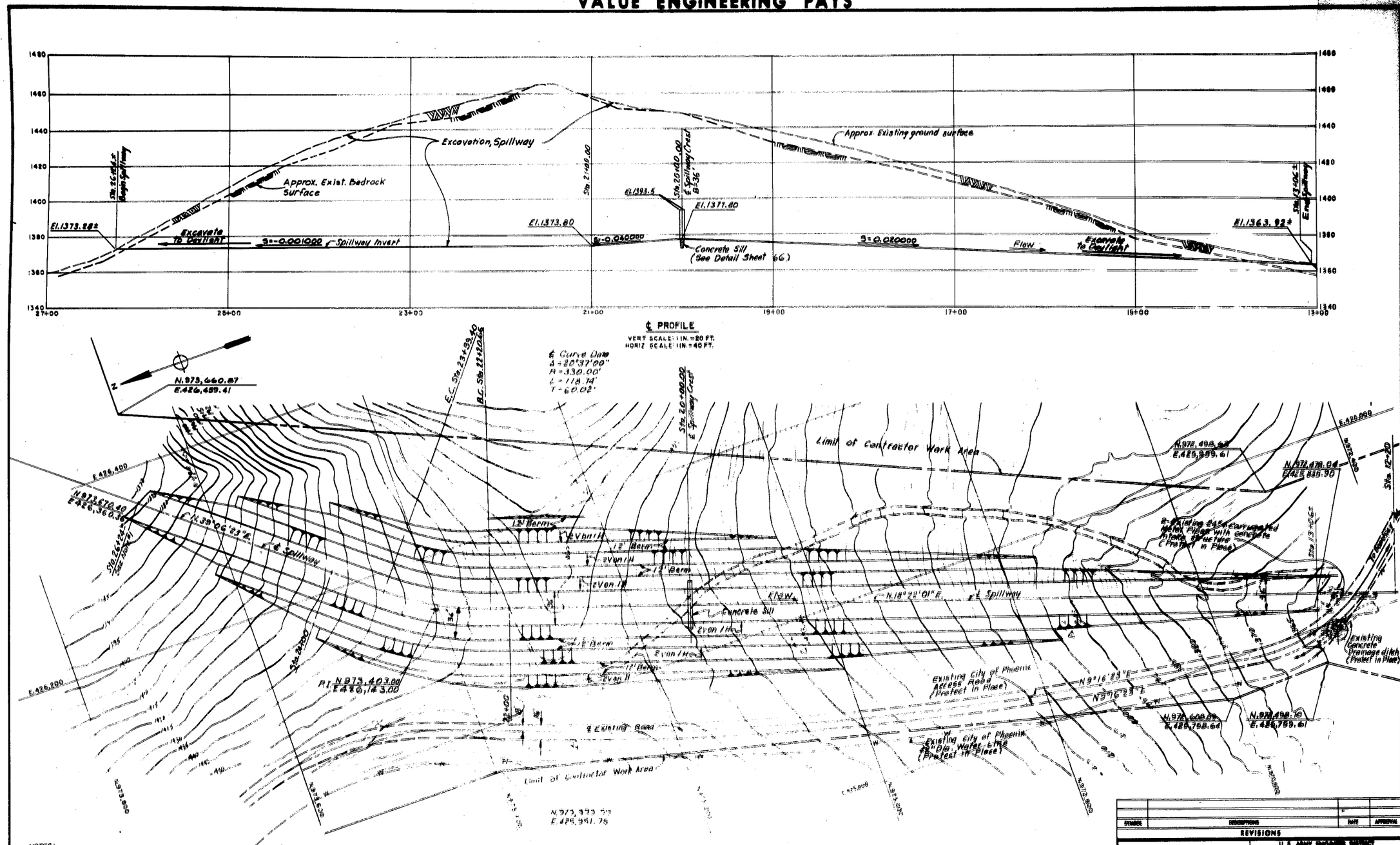
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS ARIZONA

ADOBE DAM

OUTLET WORKS
CROSS SECTIONS NO.2

DESIGNED BY: H.L.C. E.J.
DRAWN BY: J.M. Gill
CHECKED BY: CWF
SUBMITTED BY: Walter Rabstad
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0028
DISTRICT FILE NO. 252/56
SHEET 56 OF 72 SHEETS

PLATE 26



NOTES:

1. Existing Access Ramp Running up to Northern end of Spillway Site is not shown. Access Ramp is to be removed or excavate and disposed within the official disposal area in accordance with the specifications. For estimating purposes the amount of material in the Access Ramp is approximately 3360 CY.
2. Location of 42" water line to be verified in field
3. Source of information Corps of Engineers Topography from aerial photography March 12 1975.

PLAN
SCALE: 1 IN. = 40 FT.
CONTOUR INTERVAL 1.0 FT.

SCALE: 1/2 IN. = 1 FT.
VERT SCALE 10 8 10 20 30 40 50 FEET
HORIZ SCALE 50 0 50 100 FEET

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

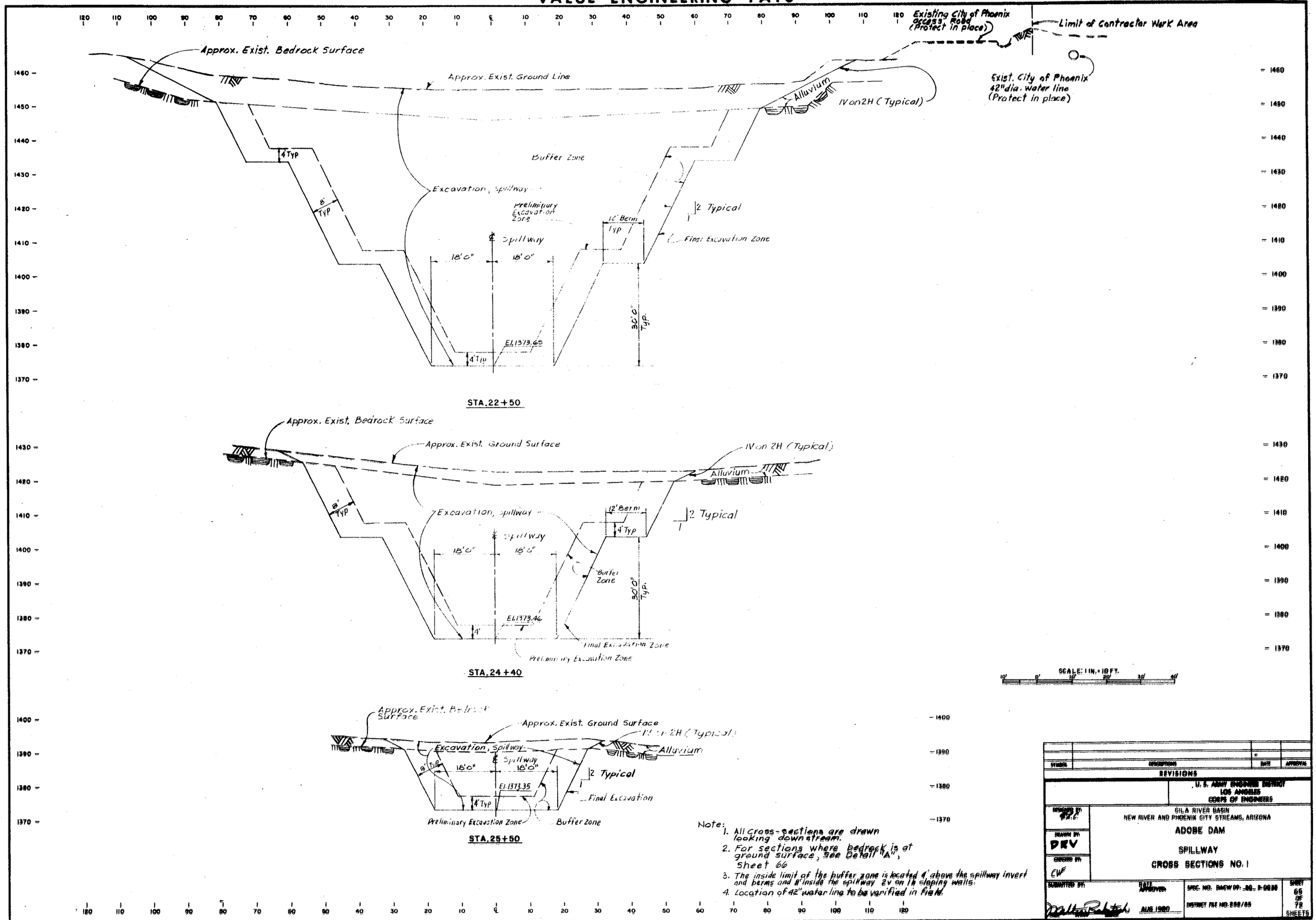
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

SPILLWAY
PLAN AND PROFILE
STA. 26+24± TO STA. 13+06±

DESIGNED BY: [illegible]
DRAWN BY: [illegible]
CHECKED BY: CWF
SUBMITTED BY: [illegible] CHIEF, DESIGN BRANCH
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-[illegible]
DISTRICT FILE NO. 252/64
SHEET 64 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



Note:
1. All cross-sections are drawn looking downstream.
2. For sections where bedrock is at ground surface, see Detail "A", Sheet 66
3. The inside limit of the buffer zone is located 4' above the spillway invert and berms and 8' inside the spillway 2v on 1h sloping walls.
4. Location of 42" water line to be verified in Field.

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: [illegible]
DRAWN BY: DEV
CHECKED BY: CWF
SUBMITTED BY: [illegible]
DATE APPROVED: AUG 1980

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

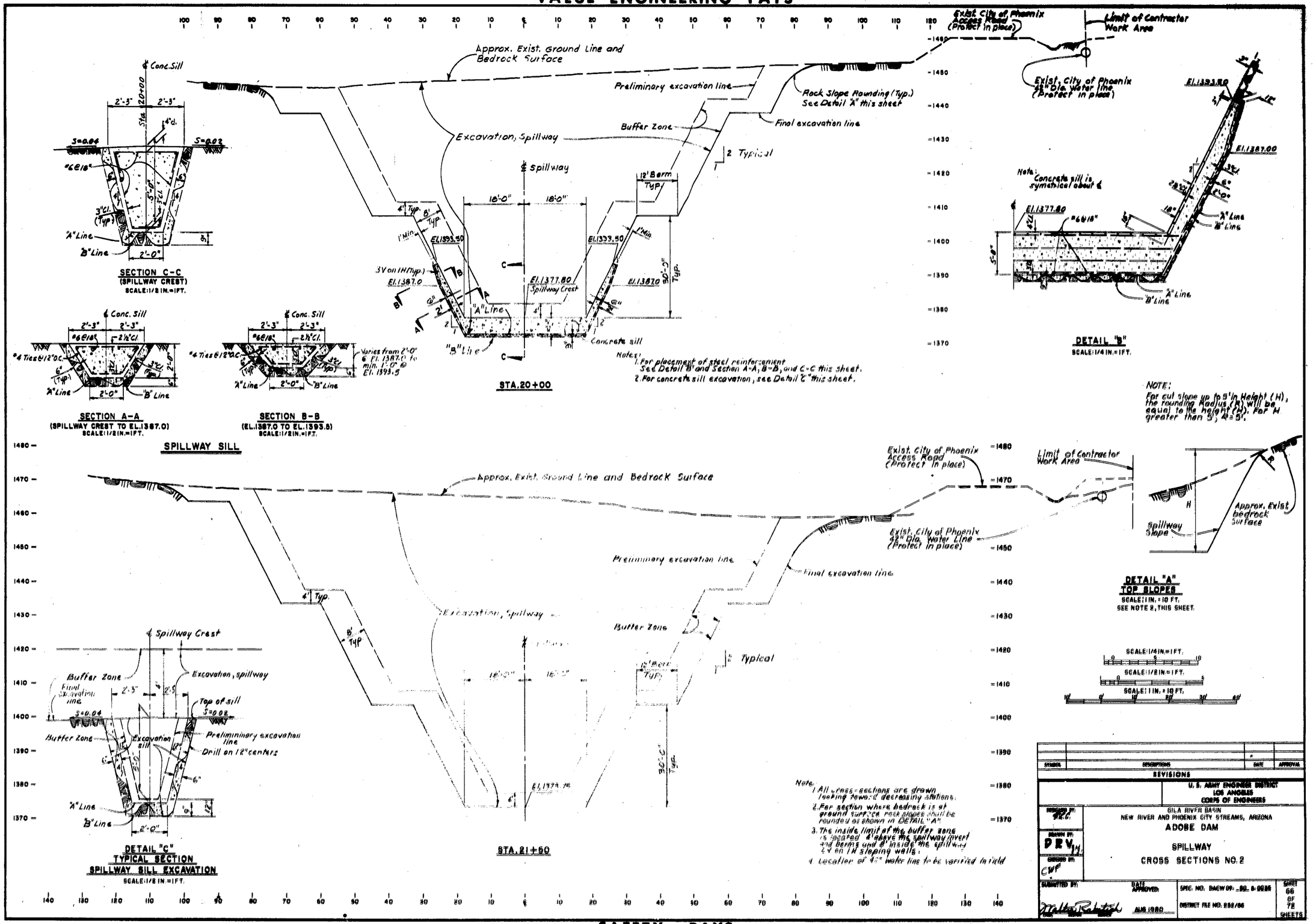
SPILLWAY

CROSS SECTIONS NO. 1

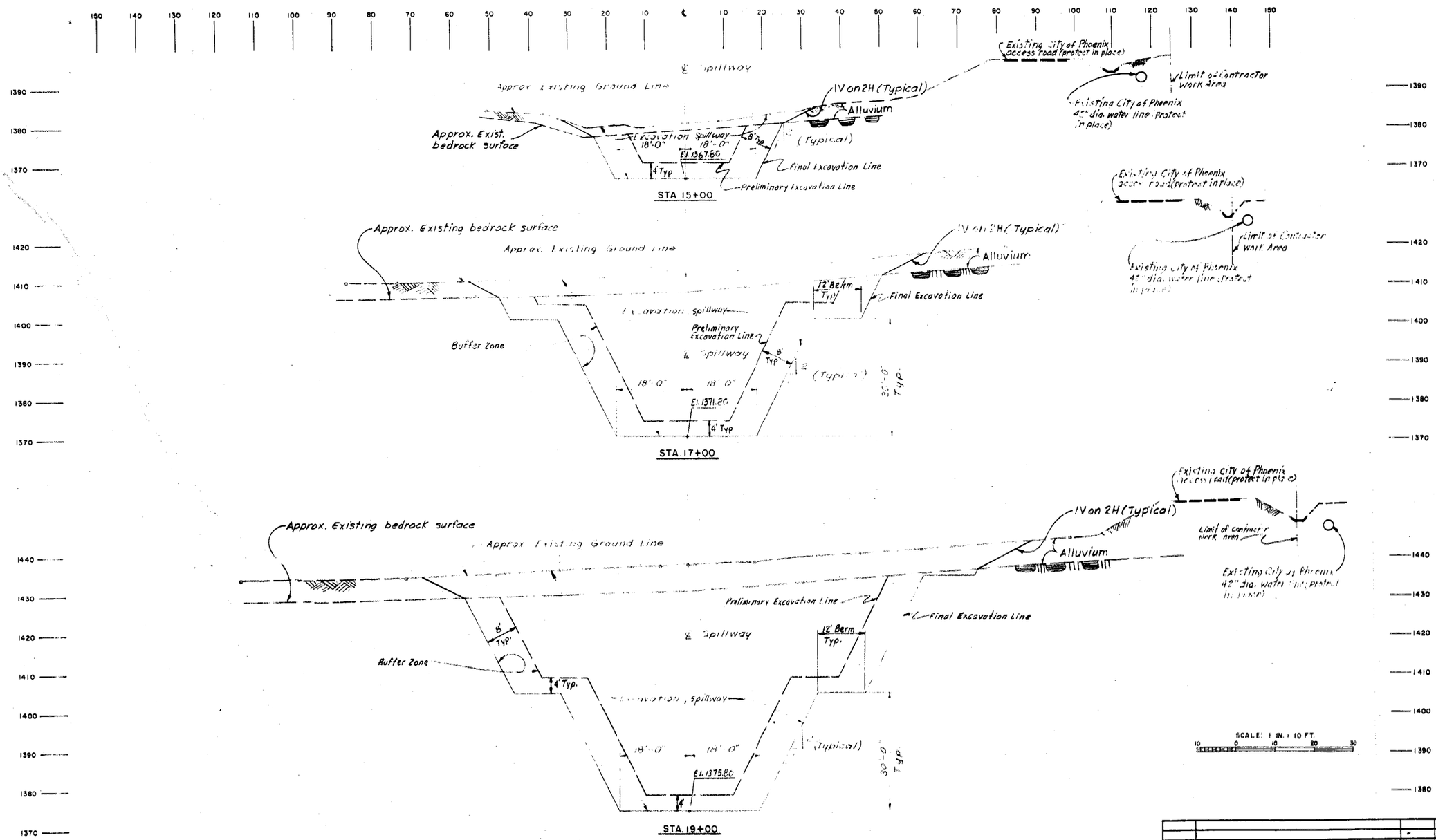
SPEC. NO: DACW09-80-B-0030
DISTRICT FILE NO: 252/85

SHEET 65 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



Note:

1. All Cross-sections are Drawn Looking toward decrease stations.
2. For sections where bedrock is at ground surface, See Detail "A", Sheet 66.
3. The inside limit of the buffer zone is located 4' above the spillway invert and berms and 8' inside the spillway 2v on 1h sloping walls.
4. Location of 42" water line to be verified in field.

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

REVISIONS

U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

DESIGNED BY: H.E.C.
DRAWN BY: A.H.B.
CHECKED BY: CWF

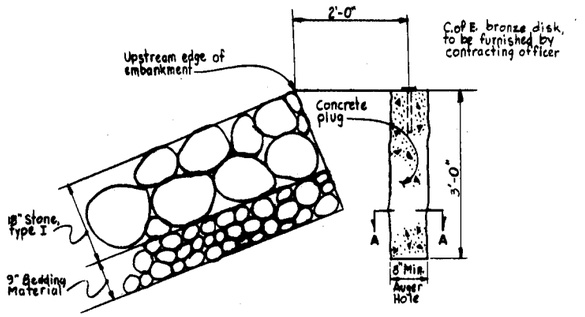
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA

ADOBE DAM

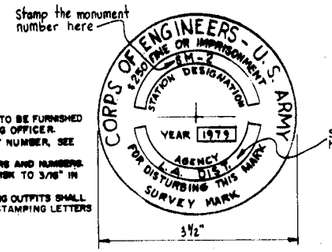
SPILLWAY
CROSS SECTIONS NO. 3

SUBMITTED BY: Walter Rabatich
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0038
DISTRICT FILE NO. 888/87
SHEET 67 OF 72 SHEETS

ENVIRONMENTAL ENGINEERING
ENVIRONMENTAL SAFETY
THRU ENGINEERING

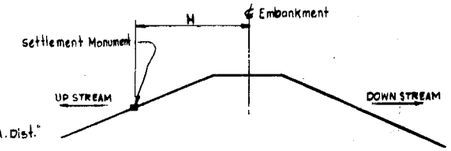


MONUMENTS ON CREST OF EMBANKMENT
(VIEW LOOKING EASTWARD)



NOTES:
1. BRONZE DISKS TO BE FURNISHED BY CONTRACTING OFFICER.
2. FOR MONUMENT NUMBER, SEE SCHEDULE.
3. SIZE OF LETTERS AND NUMBERS STAMPED ON DISK TO 3/16" IN HEIGHT.
4. METAL STAMPING OUTFITS SHALL BE USED FOR STAMPING LETTERS AND NUMBERS.

TOP VIEW OF BRONZE DISK
N. T. S.

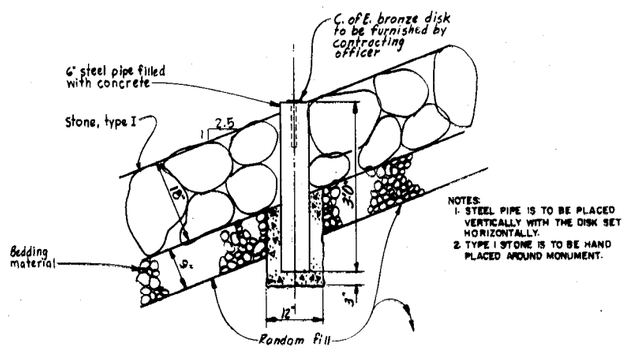


DETAIL A
SETTLEMENT MONUMENT PLACEMENT
N. T. S.

LOCATION OF SETTLEMENT MONUMENTS

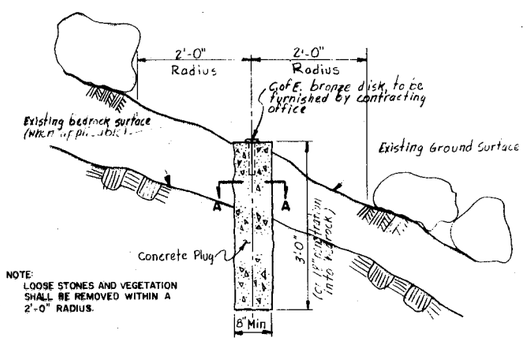
MONUMENT IDENTIFICATION NO.	EMBANKMENT STATION	H/B	MONUMENT IDENTIFICATION NO.	EMBANKMENT STATION	H/B
SM-1	9+60**	0	SM-17	39+50	60
SM-2	11+50	8	SM-18	44+50	8
SM-3	12+50	8	SM-19	49+50	8
SM-4	13+50	8	SM-20	54+50	8
SM-5	13+60	75	SM-21	54+50	60
SM-6	14+50	8	SM-22	59+50	8
SM-7	15+50	8	SM-23	64+50	8
SM-8	16+50	8	SM-24	69+50	8
SM-9	17+50	8	SM-25	74+50	8
SM-10	18+50	8	SM-26	74+50	40
SM-11	19+50	8	SM-27	84+50	8
SM-12	24+50	8	SM-28	94+50	8
SM-13	24+50	65	SM-29	104+50	8
SM-14	29+50	8	SM-30	114+50	8
SM-15	34+50	8	SM-31	124+50**	0
SM-16	39+50	8			

* SEE DETAIL "A", THIS SHEET
** PROJECTED



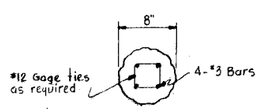
NOTES:
1. STEEL PIPE IS TO BE PLACED VERTICALLY WITH THE DISK SET HORIZONTALLY.
2. TYPE I STONE IS TO BE HAND PLACED AROUND MONUMENT.

MONUMENTS ON EMBANKMENT SLOPE
(VIEW LOOKING EASTWARD)

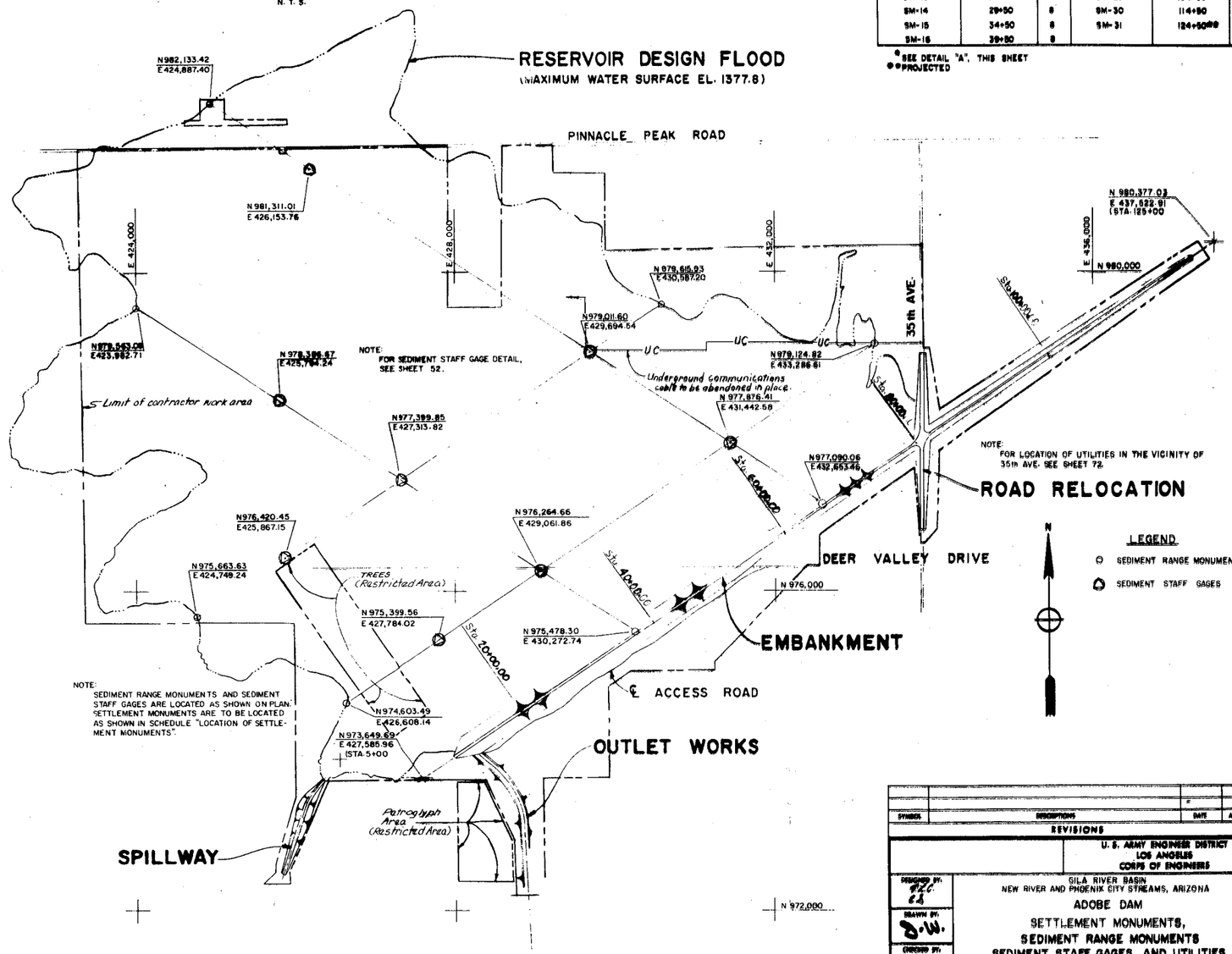


NOTE:
LOOSE STONES AND VEGETATION SHALL BE REMOVED WITHIN A 2'-0" RADIUS.

MONUMENTS ON EXISTING GROUND
TYPICAL MONUMENT DETAILS
SCALE: 1 IN. = 1 FT.



SECTION A-A
N. T. S.



SEDIMENT RANGE MONUMENT AND SEDIMENT STAFF GAGE PLACEMENT-PLAN
SCALE: 1 IN. = 600 FT.

SCALES
1 IN. = 600 FT.
300 0 500 1000 1500
1 IN. = 1 FT.
1 1/2 0 1 2 3

SYMBOL	DESCRIPTIONS	DATE	APPROVAL
	REVISIONS		

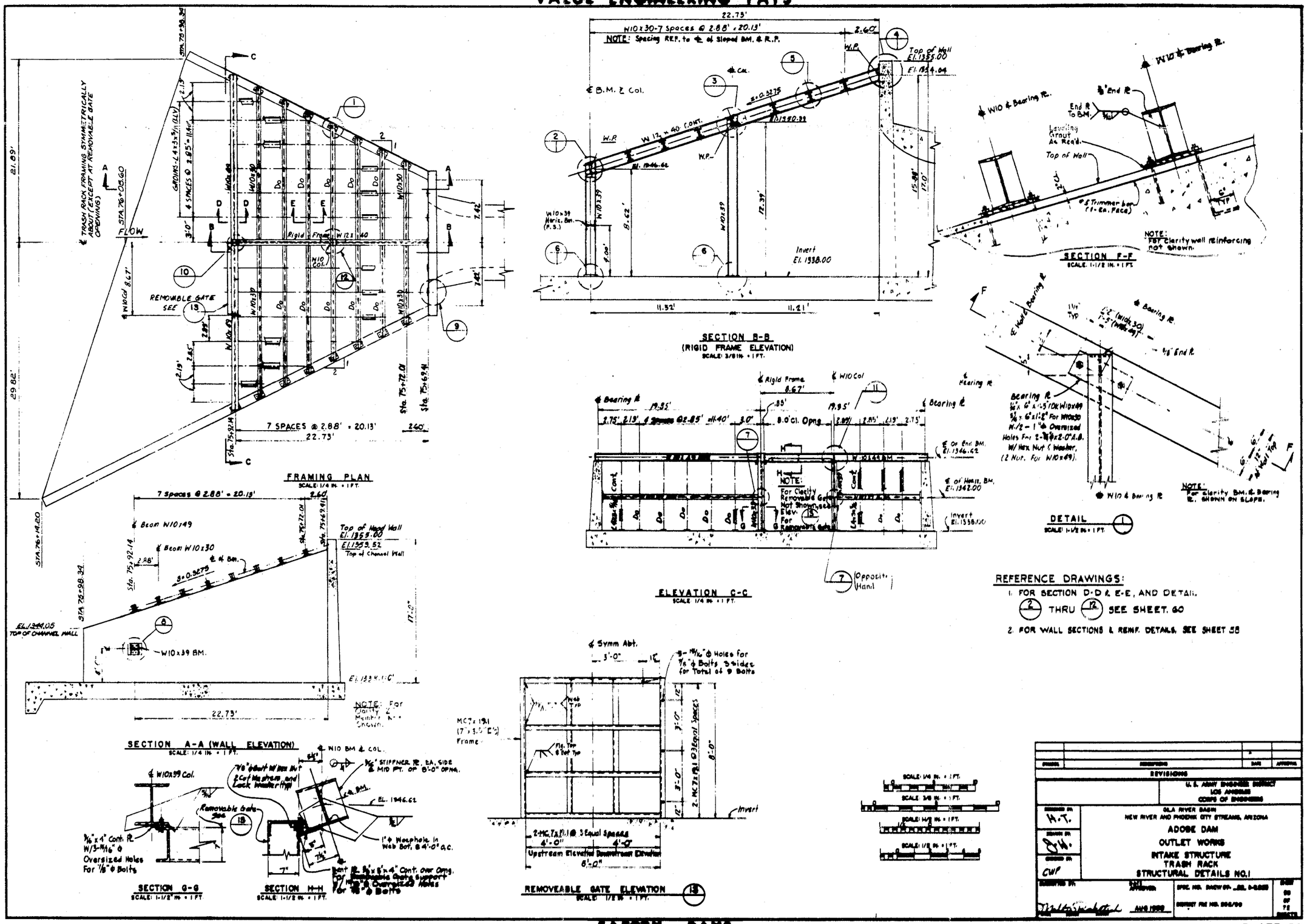
U. S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS

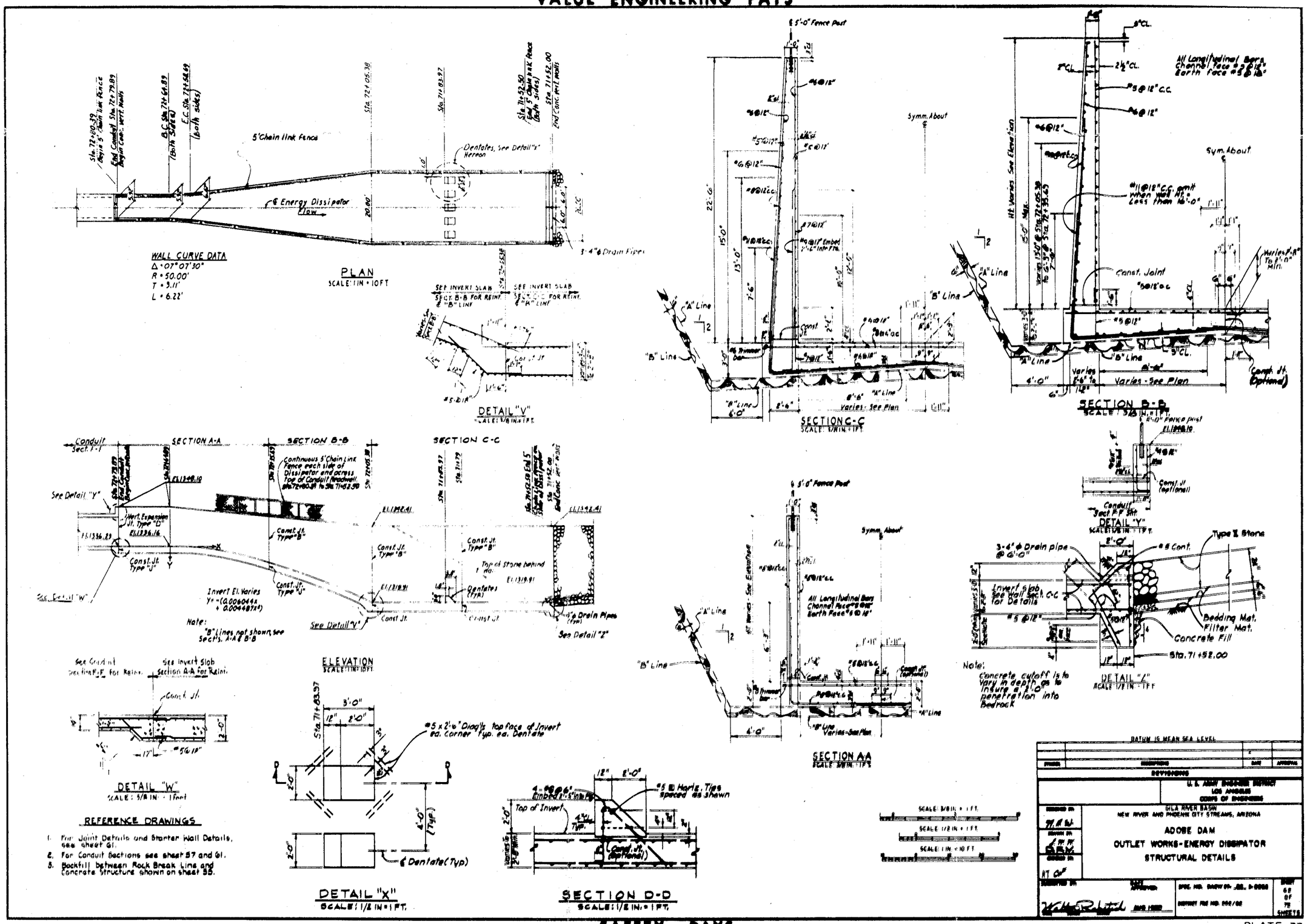
DESIGNED BY: R.C. E.A.
DRAWN BY: D.W.
CHECKED BY: CWF

GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
SETTLEMENT MONUMENTS,
SEDIMENT RANGE MONUMENTS
SEDIMENT STAFF GAGES, AND UTILITIES
GENERAL PLAN AND DETAILS

SUBMITTED BY: Walter Sabatish
CHIEF, DESIGN BRANCH
DATE APPROVED: AUG 1980
SPEC. NO. DACW09-80-B-0036
DISTRICT FILE NO. 858/71
SHEET 71 OF 72 SHEETS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


FRAMING PLAN
SCALE: 1/4 IN. = 1 FT.
7 SPACES @ 2.88' = 20.13'
22.73'
TRASH RACK FRAMING SYMMETRICALLY ABOUT ℄ EXCEPT AT REMOVABLE GATE OPENING
FLOW
REMOVABLE GATE SEE 13
Rigid Frame W12x40
SECTION B-B
(RIGID FRAME ELEVATION)
SCALE: 3/8 IN. = 1 FT.
W10x30-7 Spaces @ 2.88' = 20.13'
NOTE: Spacing REF. to ℄ of Sloped BM. & R.P.
Top of Wall El. 1355.00
Invert El. 1338.00
SECTION F-F
SCALE: 1-1/2 IN. = 1 FT.
NOTE: For clarity well reinforcing not shown.
ELEVATION C-C
SCALE 1/4 IN. = 1 FT.
DETAIL 1
SCALE: 1-1/2 IN. = 1 FT.
NOTE: For Clarity BM. & Bearing R. SHOWN ON SLOPE.
SECTION A-A (WALL ELEVATION)
SCALE: 1/4 IN. = 1 FT.
Top of Head Wall El. 1355.00
Top of Channel Wall
W10x39 BM.
22.73'
SECTION G-G
SCALE: 1-1/2 IN. = 1 FT.
SECTION H-H
SCALE: 1-1/2 IN. = 1 FT.
REMOVEABLE GATE ELEVATION 13
Upstream Elevation Downstream Elevation
REFERENCE DRAWINGS:
1. FOR SECTION D-D & E-E, AND DETAIL 2 THRU 12 SEE SHEET 60
2. FOR WALL SECTIONS & REINF. DETAILS, SEE SHEET 58
REVISIONS
U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS
GILA RIVER BASIN
NEW RIVER AND PHOENIX CITY STREAMS, ARIZONA
ADOBE DAM
OUTLET WORKS
INTAKE STRUCTURE
TRASH RACK
STRUCTURAL DETAILS NO.1
AUG 1969



REFERENCE DRAWINGS

1. For Joint Details and Starter Wall Details, see sheet 61.
2. For Conduit Sections see sheet 57 and 61.
3. Backfill between Rock Break Line and Concrete Structure shown on sheet 55.