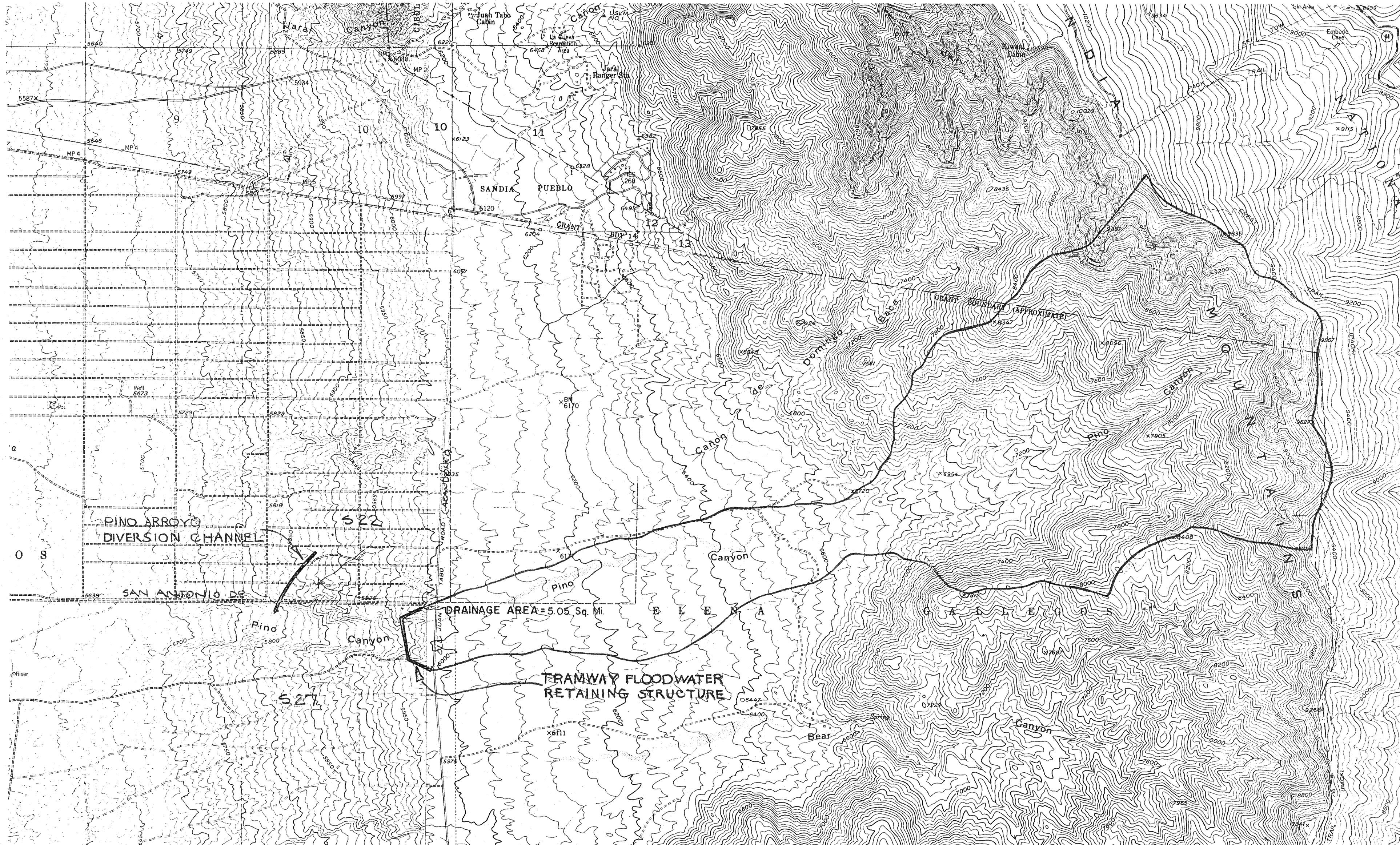




MAP
of the
TRAMWAY FLOODWATER RETAINING STRUCTURE

State of New Mexico } ss.
County of Bernalillo }

I, J. Caldwell Wilson, hereby certify that the PROJECT DRAWINGS and the PROJECT MANUAL were prepared under my direction and that I am a duly registered Engineer/Land Surveyor under the laws of the State of New Mexico, Registration No. 516.

J. Caldwell Wilson
Signature

12-22-77
Date

Albuquerque Metropolitan Arroyo Flood Control Authority, Applicant
Located in Bernalillo County, State of New Mexico. All courses true. Scale of Map, 1 in. = 2,000 feet. The undersigned, Albuquerque Metropolitan Arroyo Flood Control Authority, claimant, whose post office address is P.O. Box 2585 Albuquerque, County of Bernalillo, State of New Mexico has caused to be located by a qualified registered engineer the Tramway Floodwater Retaining Structure as hereinafter described and indicated, hereby makes these several statements relative thereto and offers this map and statements for acceptance and filing in compliance with the laws of the State of New Mexico.

The outlet tower of the Detention Dam is situated in the Northeast quarter, Section 27, Township 11 North, Range 4 East, N.M.P.M., at a point whose State Plane Coordinate is x = 424,641.88, y = 1,512,347.90.

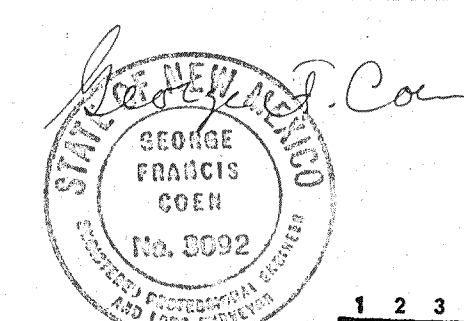
The Tramway Floodwater Retaining Structure has the following properties:

Maximum height above foundation 58 ft.
Length 2,100 ft.
Maximum width at base 266 ft.
Crest width 15 ft.
Slope upstream face 2:1
Slope downstream face 2:1
Elevation at crest of dam 5,991
Elevation at spillway crest 5,980
Elevation of bottom tower outlet 5,940
Elevation of flow line of outlet conduit at discharge end 5,926
Freeboard 0.9 ft.
Width of spillway 290 ft.
Discharge capacity of spillway CFS at elev. 5990.5 32,009 cfs
Outlet conduit type and size 36" Conc. Cylinder Pipe
Outlet conduit capacity 218 cfs
Outlet conduit uncontrolled
Evacuation time - hours96 hrs.
Drainage areas 5.05 sq. mi.

State of New Mexico } ss.
County of Bernalillo }

I, George Francis Coen, being first duly sworn, upon my oath state that I am the registered professional engineer and land surveyor who made the map(s); that such maps consisting of 8 sheets were prepared from field notes of actual surveys made by me or under my direction and that the same are true and correct to the best of my knowledge and belief.

George F. Coen
Registered Professional Engineer and
Land Surveyor, New Mexico License No. 3092



1 2 3 4 5 6 7 8 9 10 11 12
08 09 20 17 78

State of New Mexico } ss.
County of Bernalillo }

I, James D. Smith, being first duly sworn, upon my oath, state I am the Executive Engineer of the Albuquerque Metropolitan Arroyo Flood Control Authority, a political subdivision duly organized under the laws of the State of New Mexico, that the accompanying maps and statements were made under authority of the Board of Directors of said political subdivision, and that, in their behalf, I have read and examined the statements and representations thereon and state that the same are true to the best of my knowledge and belief.

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY
Claimant

James D. Smith

Subscribed and sworn to before me this 5 day of

January, 1978.

Notary Public

My commission expires 12/12/1989

(SEAL)

State of New Mexico } ss.
County of Santa Fe }

I hereby certify that the accompanying map(s) and statements have been examined by me and approved as to form and content, and were duly accepted for filing on the 6th day of January, 1978.

S.E. Reynolds
State Engineer

by: *William J. Chief*
Technical Division

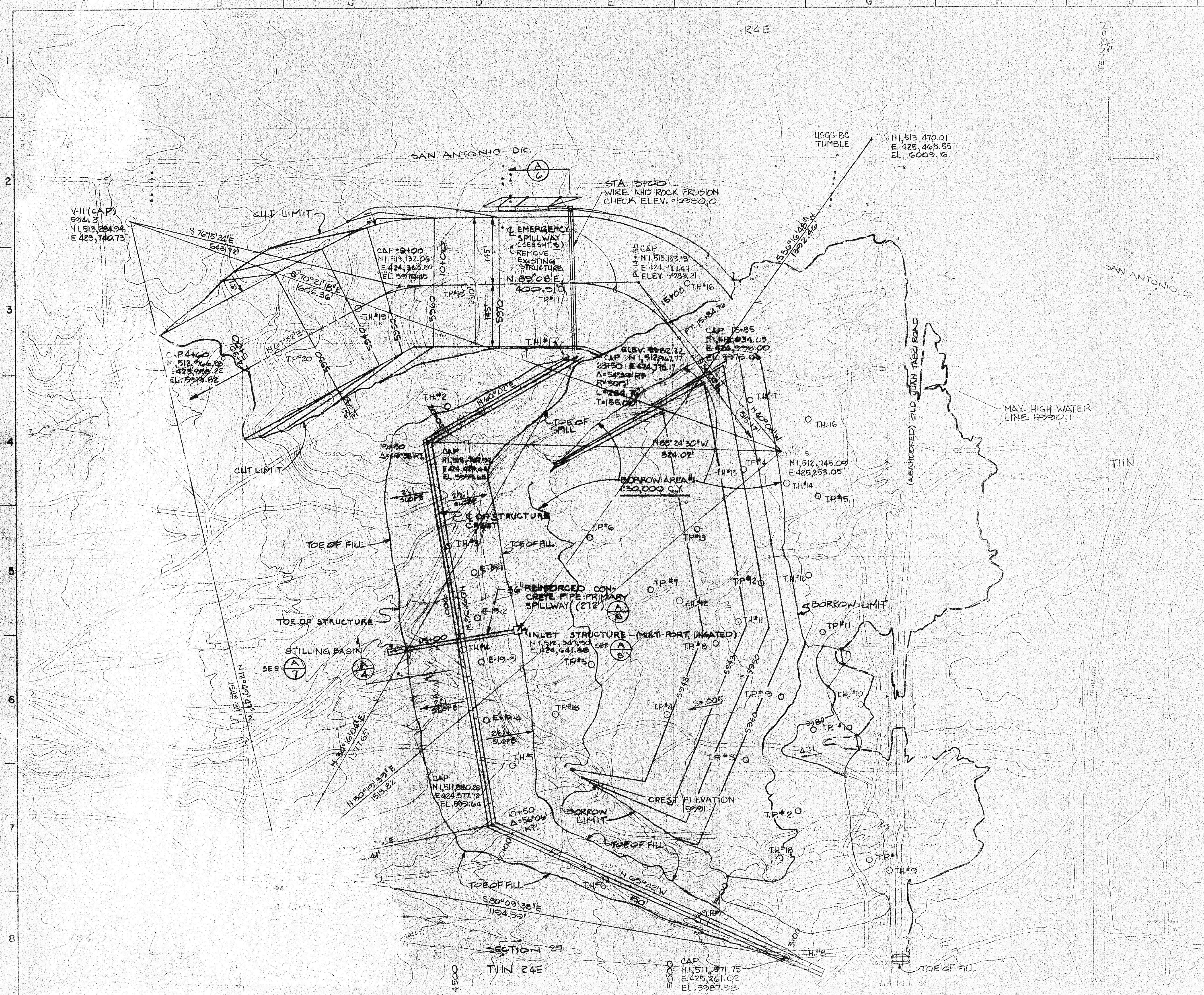
NO.	INDEX	DATE	REVISION	CK'D	APP

BOVAY ENGINEERS, INC.
HOUSTON • SPOKANE • BATON ROUGE
AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.

TRAMWAY FLOODWATER
RETAINING STRUCTURE

DRAINAGE AREA

DESIGNED: GFC	SCALE: 1" = 2000'
DRAWN: DLW	PROJECT NUMBER: 6017-1
CHECKED: DJL	DRAWING NUMBER: 1
APPROVED: EGA	DATE: 1/17/78
APPROVED: [Signature]	
DATE: 1/17/78	



LEGEND

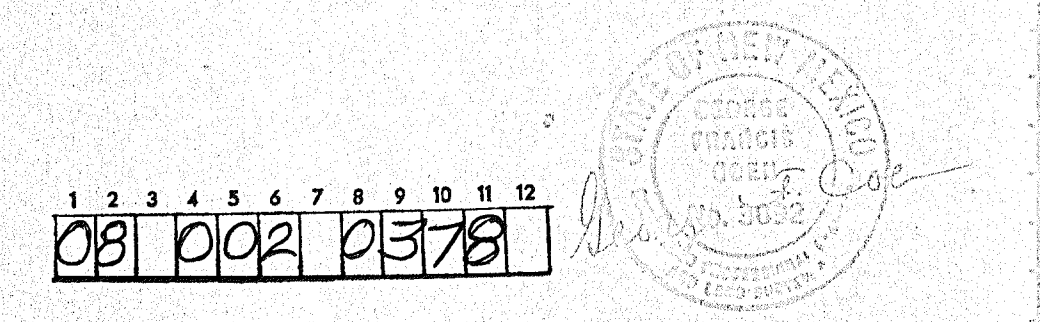
T.H. TEST HOLE
V. VERTICAL CONTROL
H.V. HORIZ. & VERT. CONTROL
T.P. TEST PIT

NOTES:

1) ALL BEARINGS SHOWN ARE WITH REFERENCE TO THE NEW MEXICO STATE PLANE GRID SYSTEM (CENTRAL ZONE), $\Delta = -0^{\circ}34'00''$.

2) ALL DISTANCES HEREON ARE WITH REFERENCE TO GROUND DATUM. GROUND TO GRID CONVERSION FACTOR: 0.9999646

3) ALL COORDINATE VALUES INDICATED HEREON REFER TO THE NEW MEXICO STATE PLANE COORDINATE GRID SYSTEM (CENTRAL ZONE).



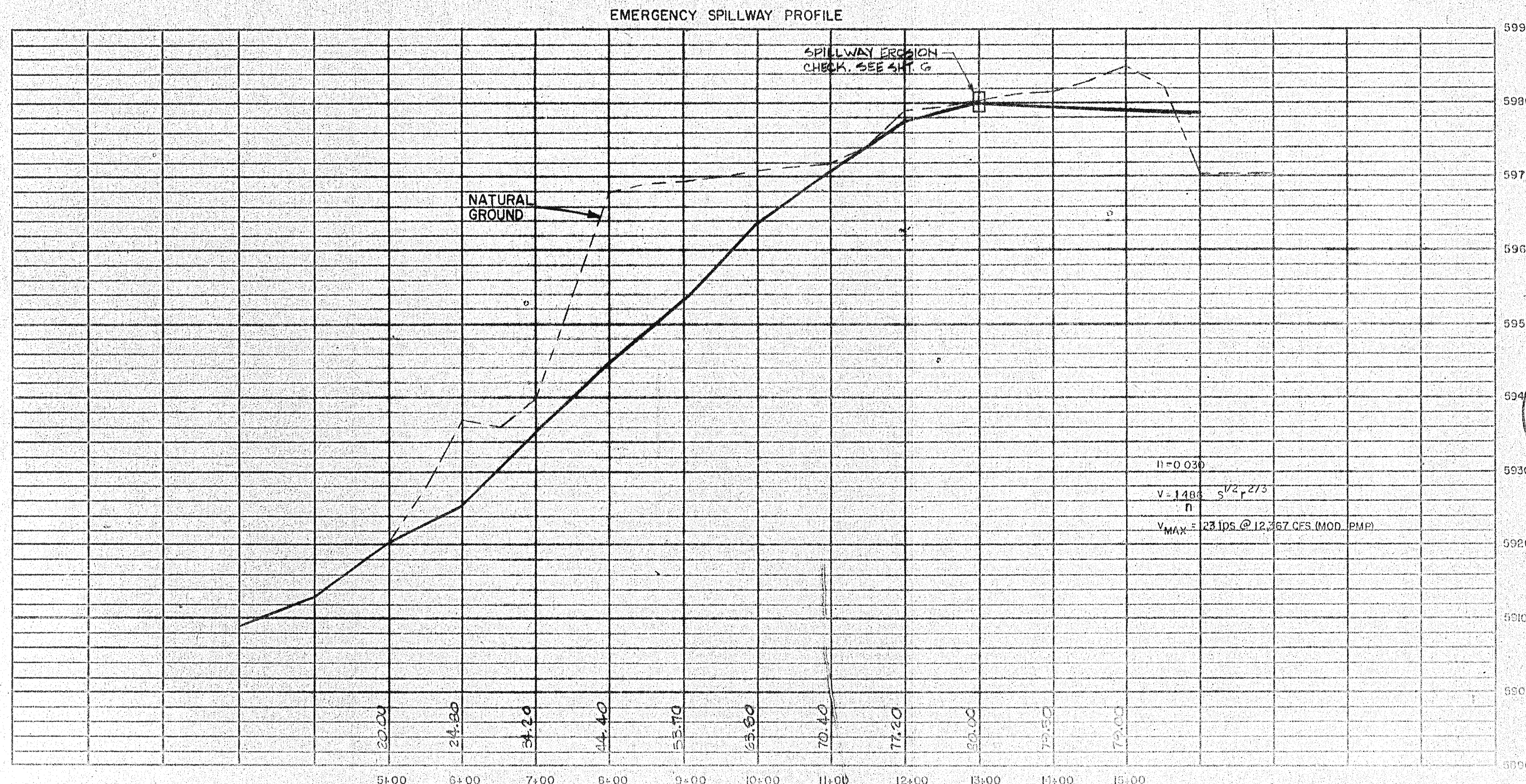
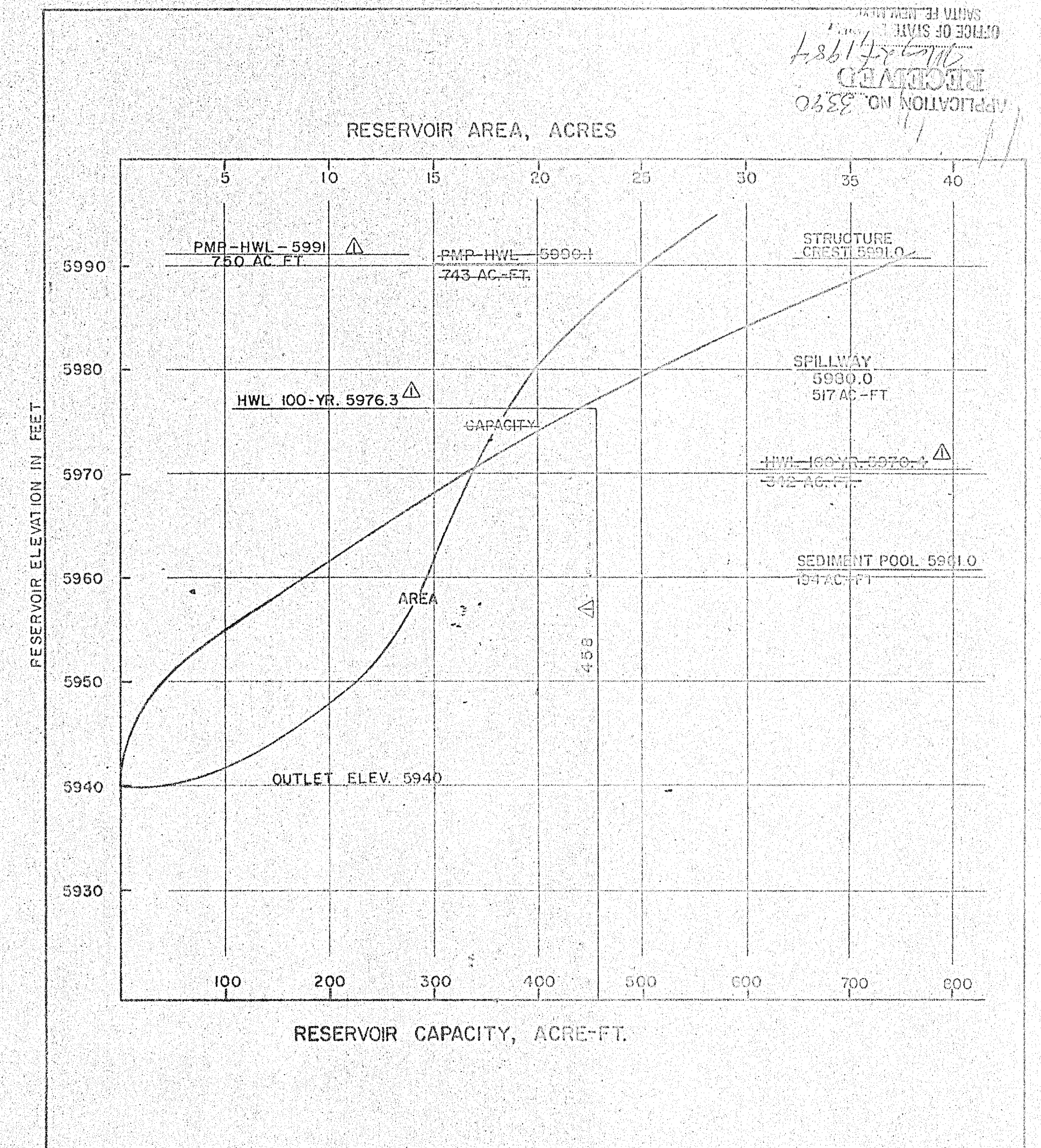
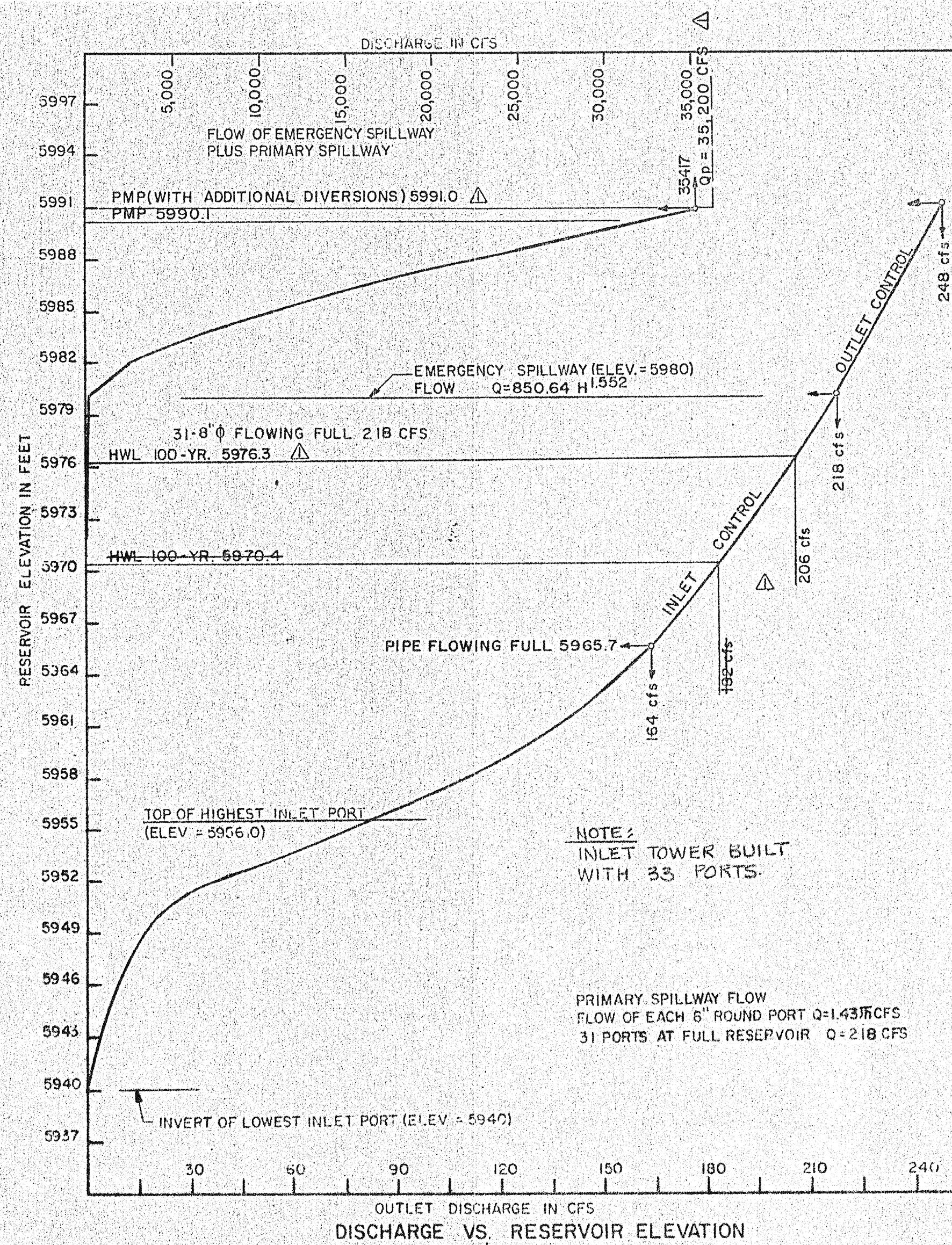
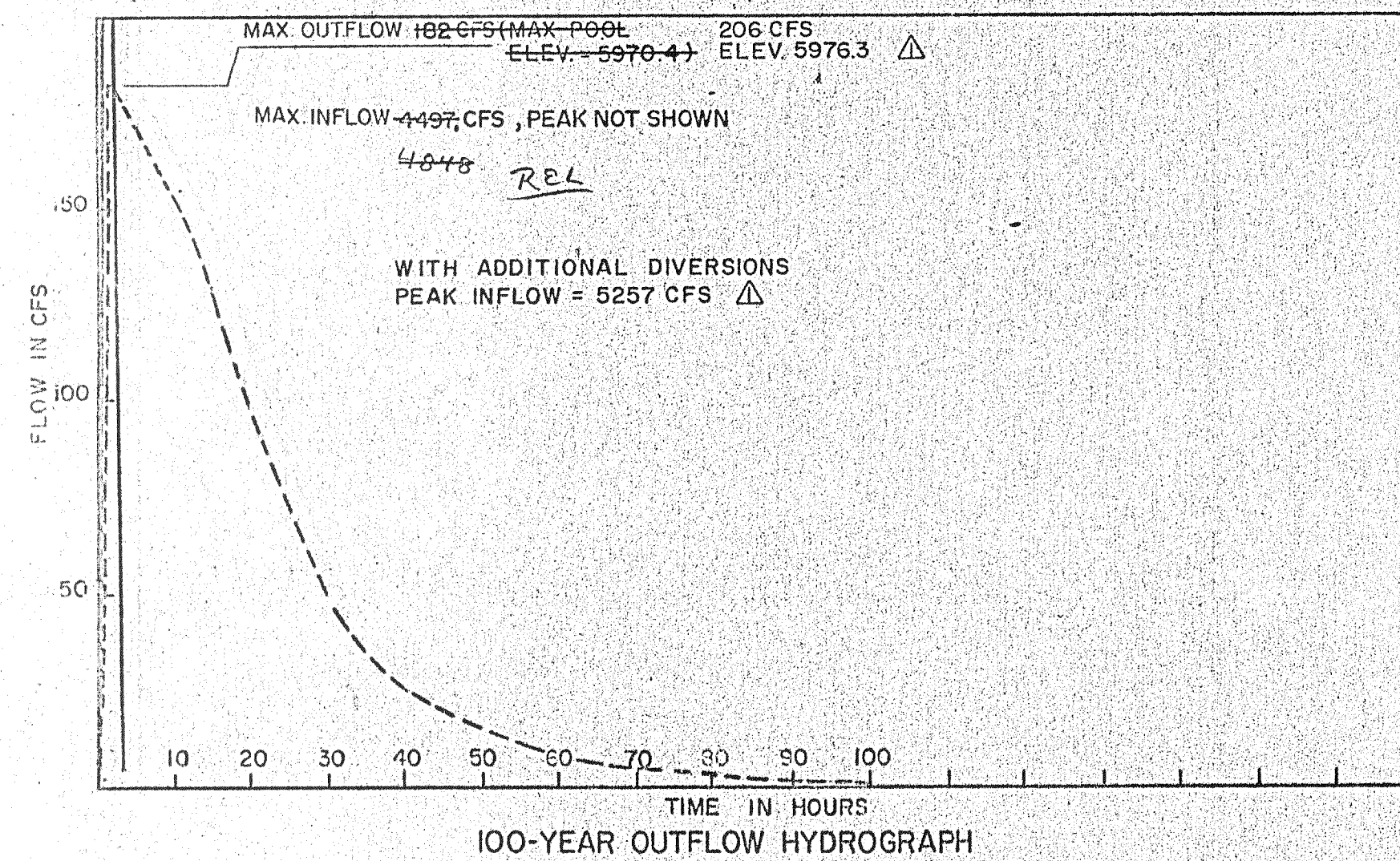
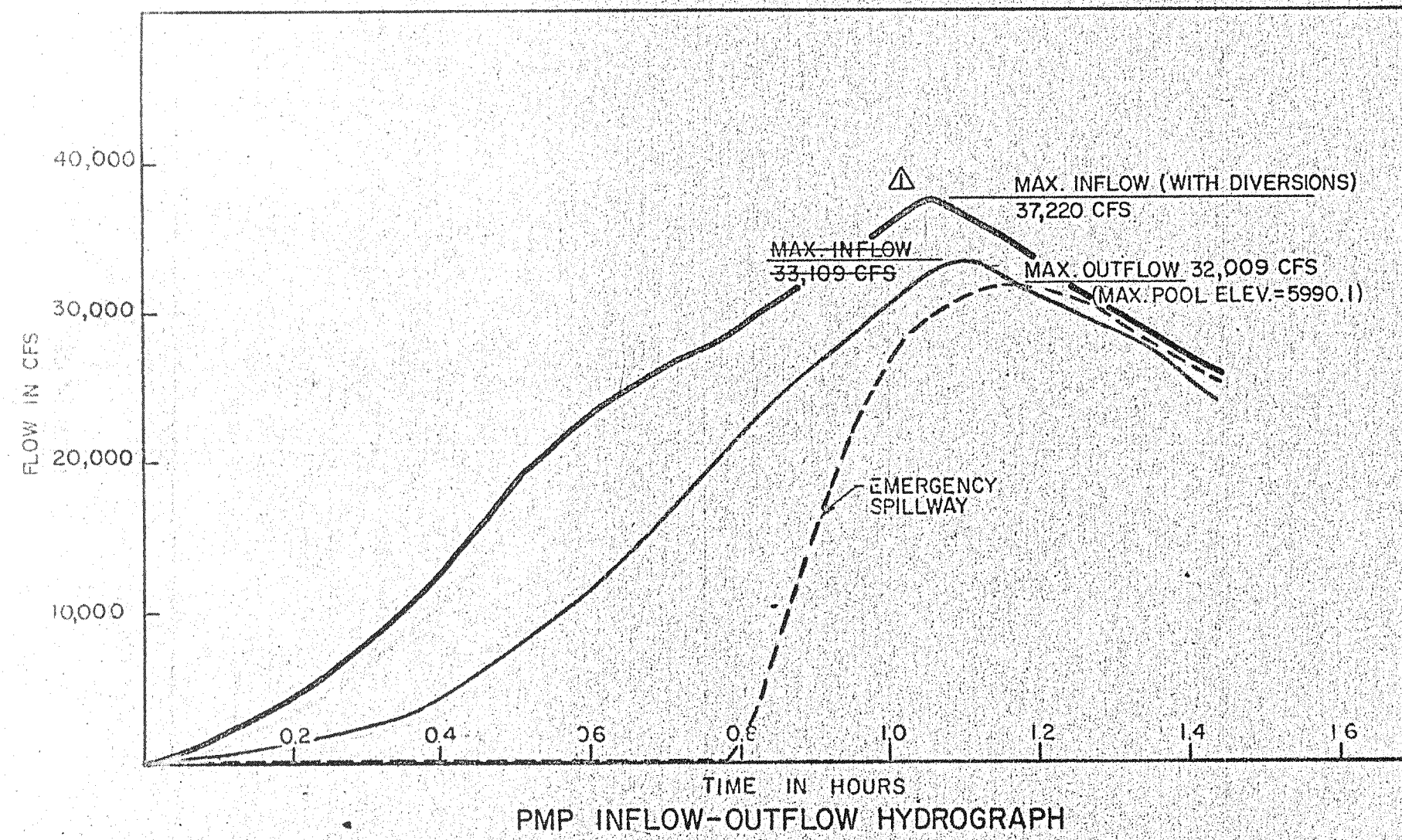
NO.	INDEX	DATE	REVISION	CHK'D

BOVAY ENGINEERS, INC.
HOUSTON • SPOKANE • BATON ROUGE
AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.

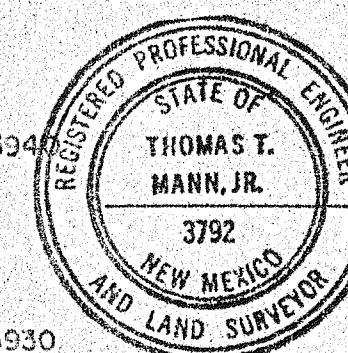
**TRAMWAY FLOODWATER
RETAINING STRUCTURE**

LOCATION MAP

DESIGNED: GFC	SCALE: 1" = 100' / 2" C.I.
DRAWN: DLW	PROJECT NUMBER: 6017-000
CHECKED: D.L.	DRAWING NUMBER: 2
APPROVED: EGA	
DATE: 12/77	



6-HR. PMP EFFECTIVE RAINFALL 17.32 INCHES.
 6-HR. PMP PEAK FLOW 15,700 CFS.
 1-HR. PMP EFFECTIVE RAINFALL 11.7 INCHES
 1-HR. PMP PEAK FLOW 33,109 CFS.
 HAZARD CLASS, 345, SYSTEM, CLASS C



REVISION NO. 1 ONLY

NO.	INDEX	DATE	REVISION	APP.
1		2/23/0	ADDITIONAL DRAINAGE AREAS SHOWN AS A RESULT OF THE DIVERSION OF THE BEAR TRIBUTARY.	

BOVAY ENGINEERS, INC.
 HOUSTON • SPOKANE • BATON ROUGE
 AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.

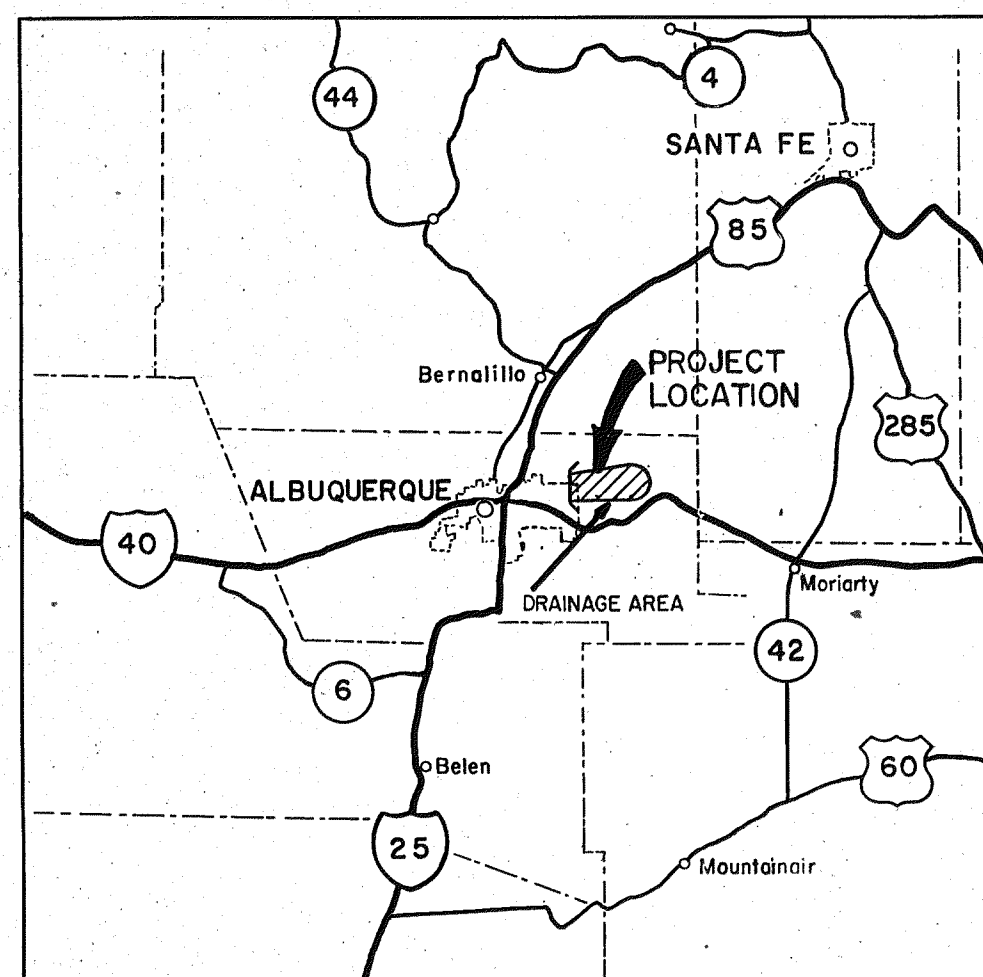
TRAMWAY FLOODWATER
 RETAINING STRUCTURE

HYDROLOGY DESIGN
 INFORMATION

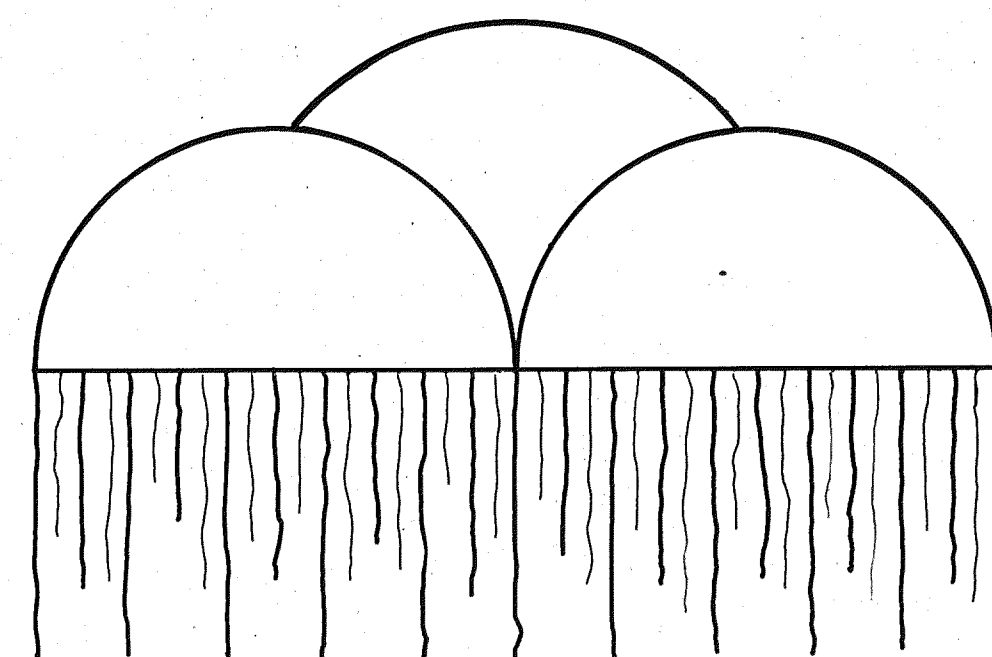
DESIGNED: GFC	SCALE: AS SHOWN
DRAWN: DLW	PROJECT NUMBER: 6017-000
CHECKED: P.J.L.	DRAWING NUMBER:
APPROVED: G.A.V.	
DATE: 1/11	

As BUILT

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY



VICINITY MAP
SCALE 1"=22 MILES

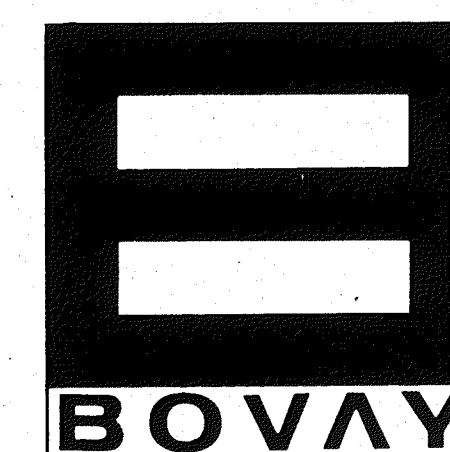


TRAMWAY FLOODWATER RETAINING STRUCTURE

DRAWING INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	DRAINAGE AREA
3	LOCATION MAP
4	HYDROLOGY DESIGN INFORMATION
5	MAXIMUM SECTION
6	PRIMARY SPILLWAY OUTLET PIPE
7	SPILLWAY EROSION CHECK
8	STILLING BASIN & RIP RAP DETAILS
9	INLET STRUCTURE

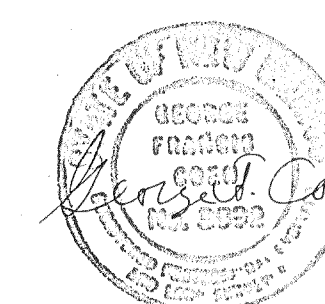
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08 09 10 11 12

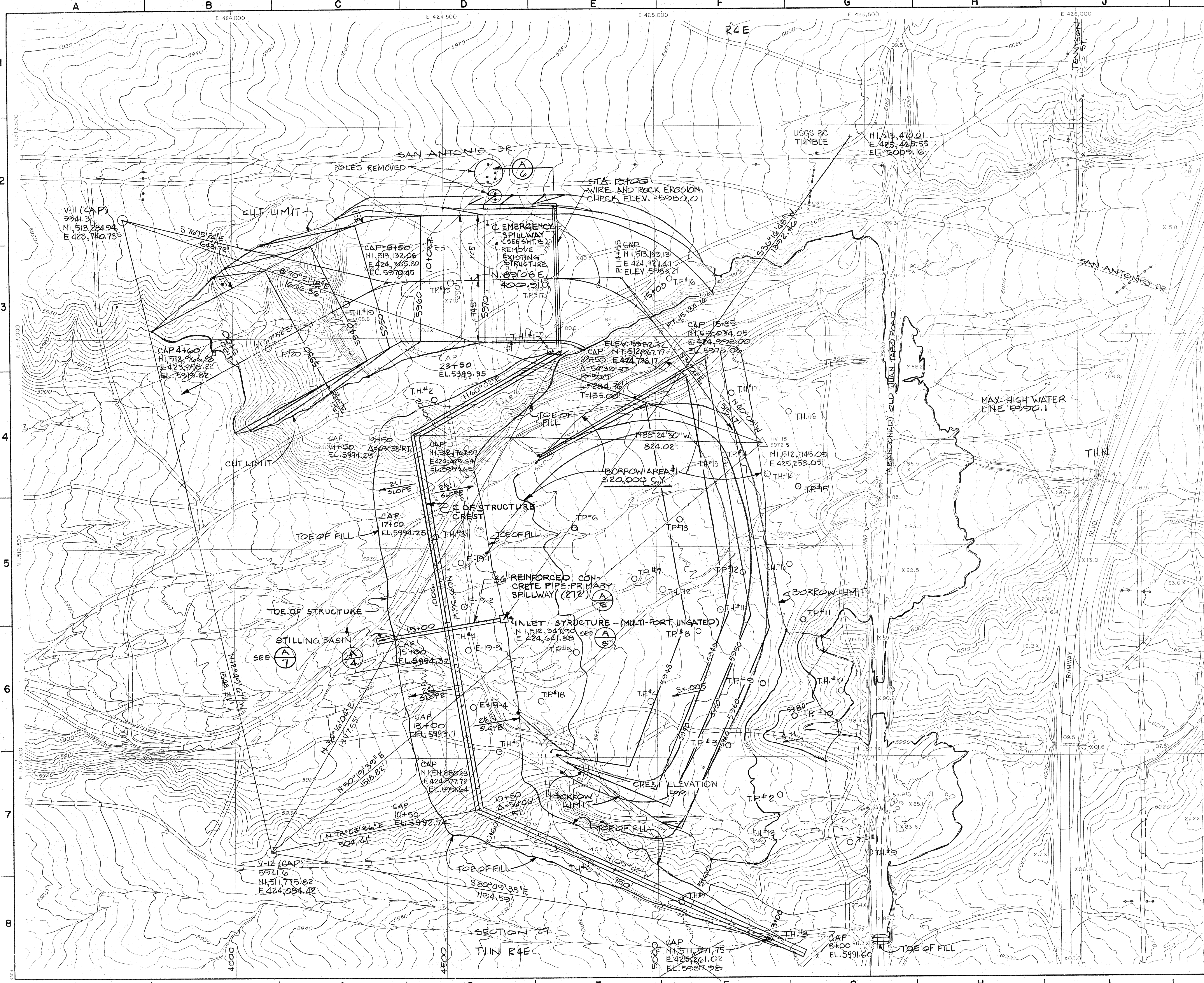
AS BUILT



BOVAY ENGINEERS, INC.

HOUSTON-SPOKANE
BATON ROUGE-AUSTIN
ALBUQUERQUE



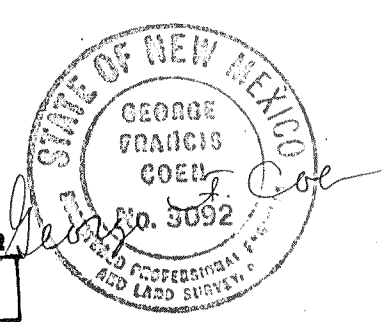


LEGEND

- T.H. TEST HOLE
V. VERTICAL CONTROL
H.V. HORIZ. & VERT. CONTROL
T.P. TEST PIT

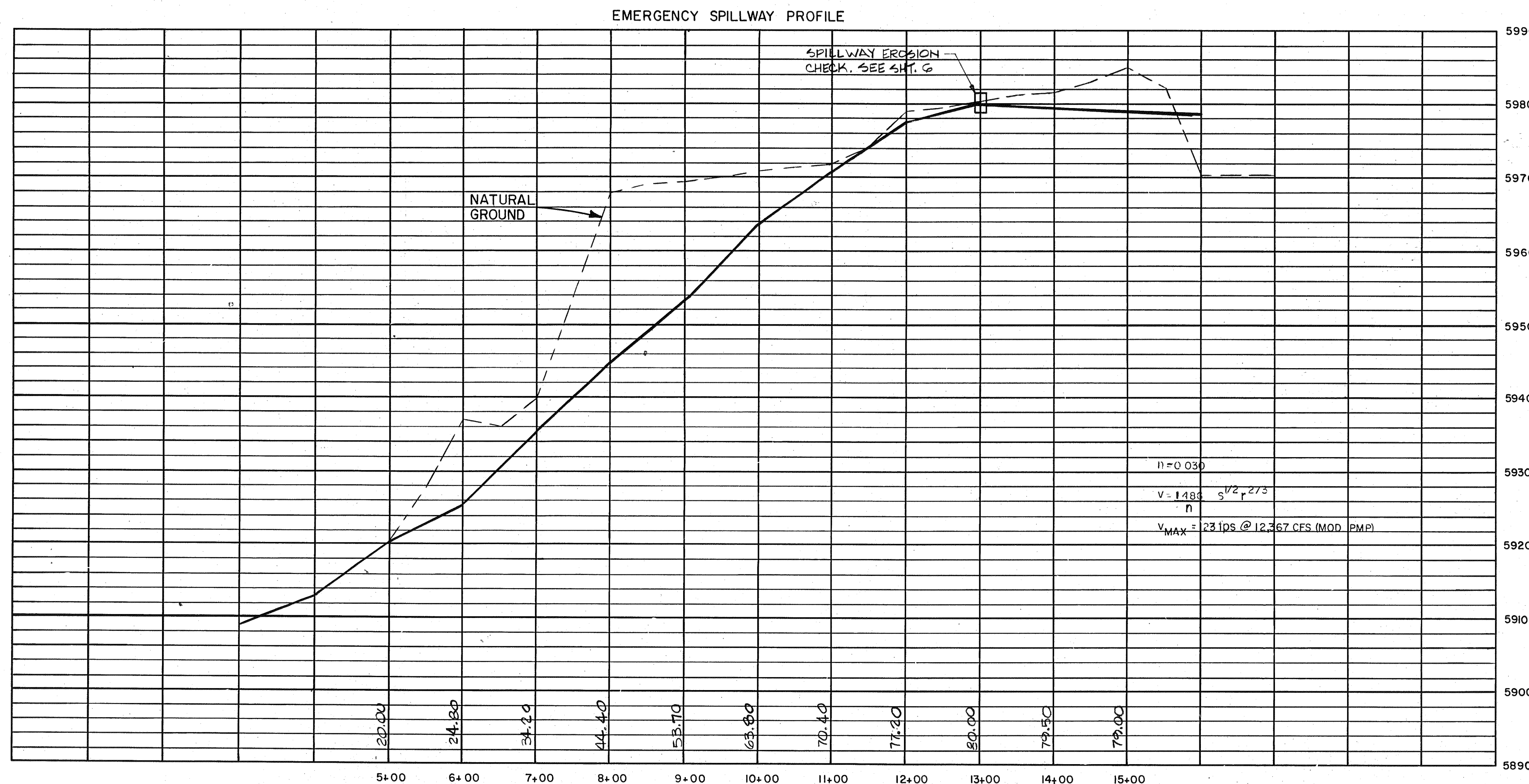
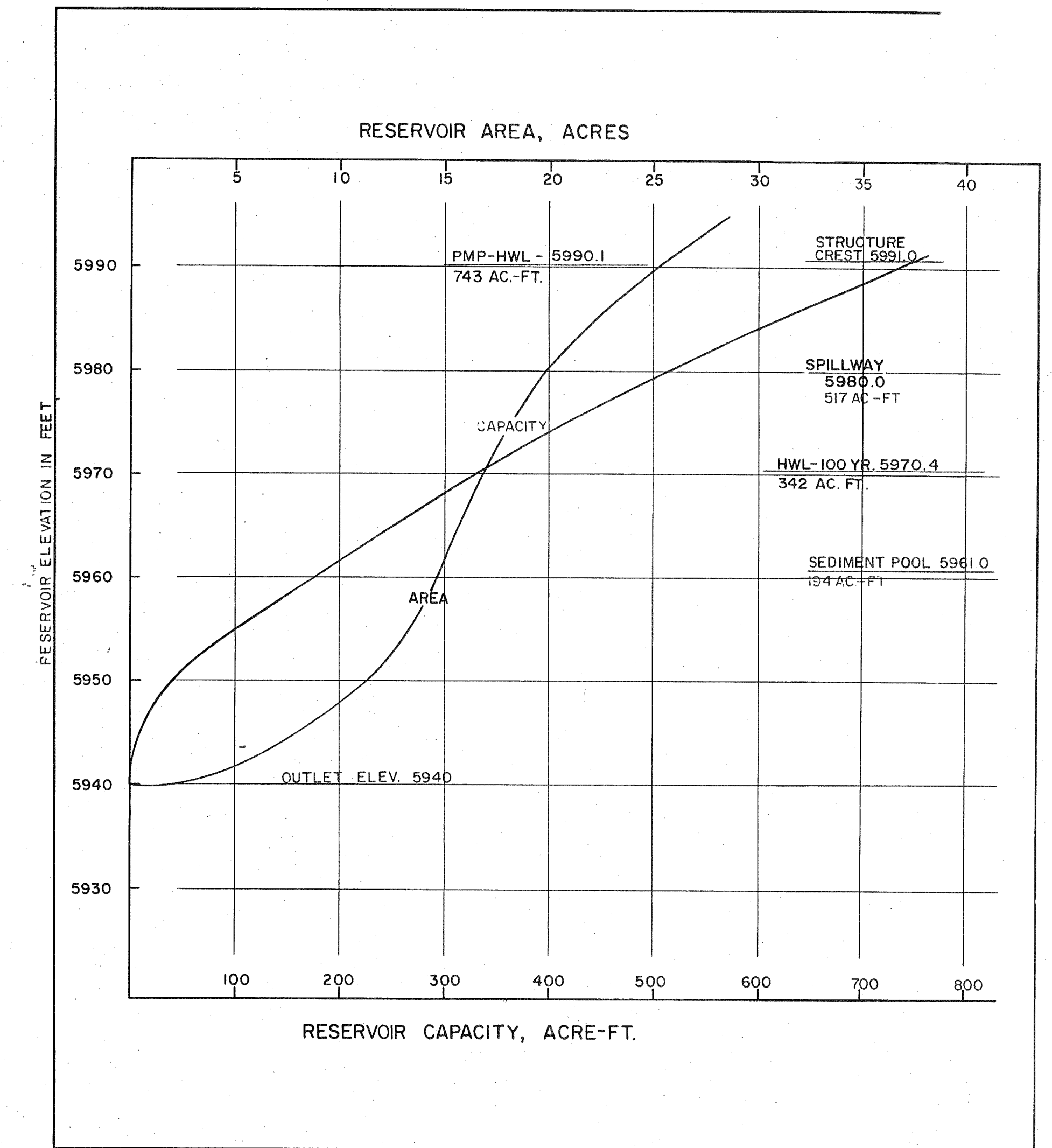
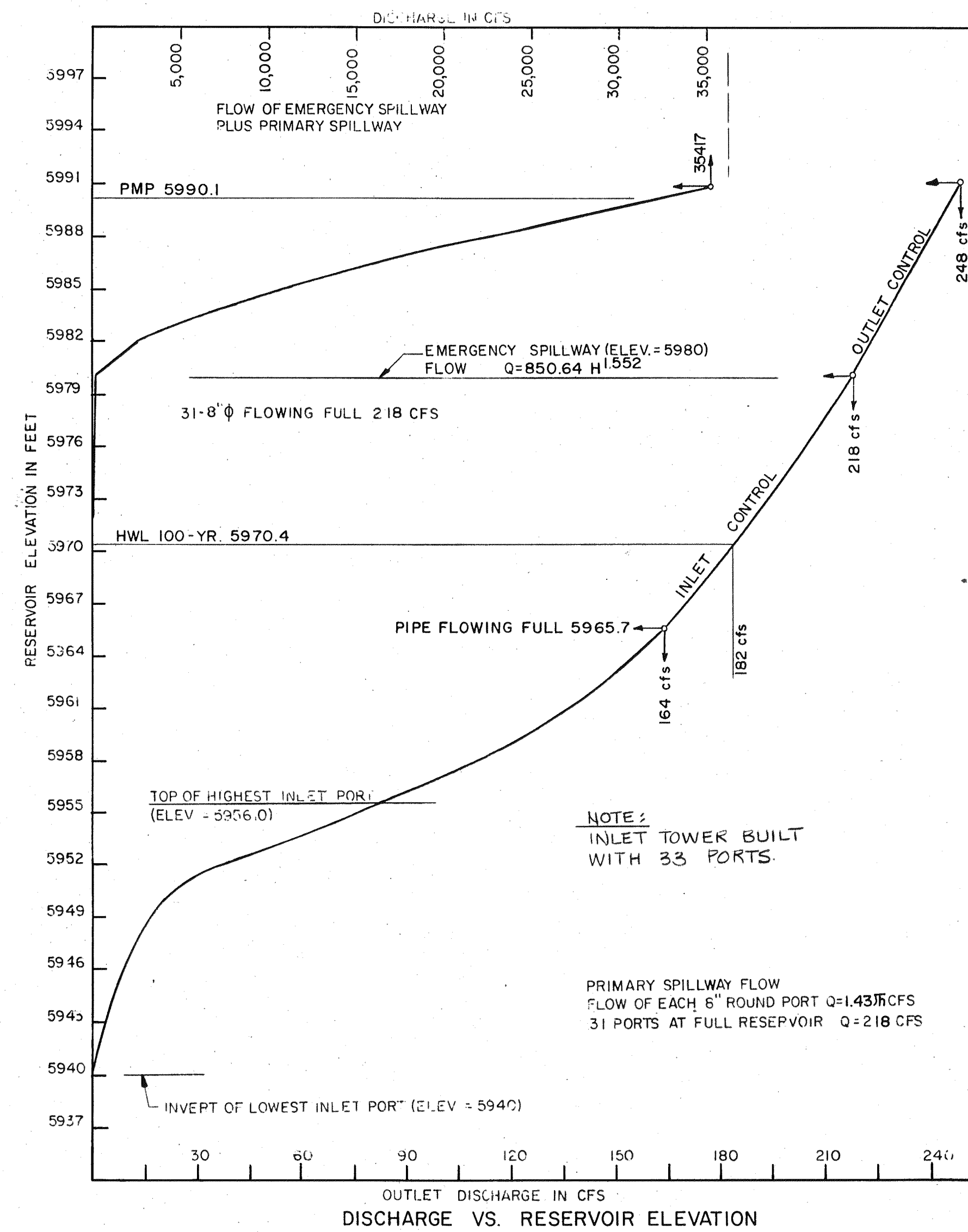
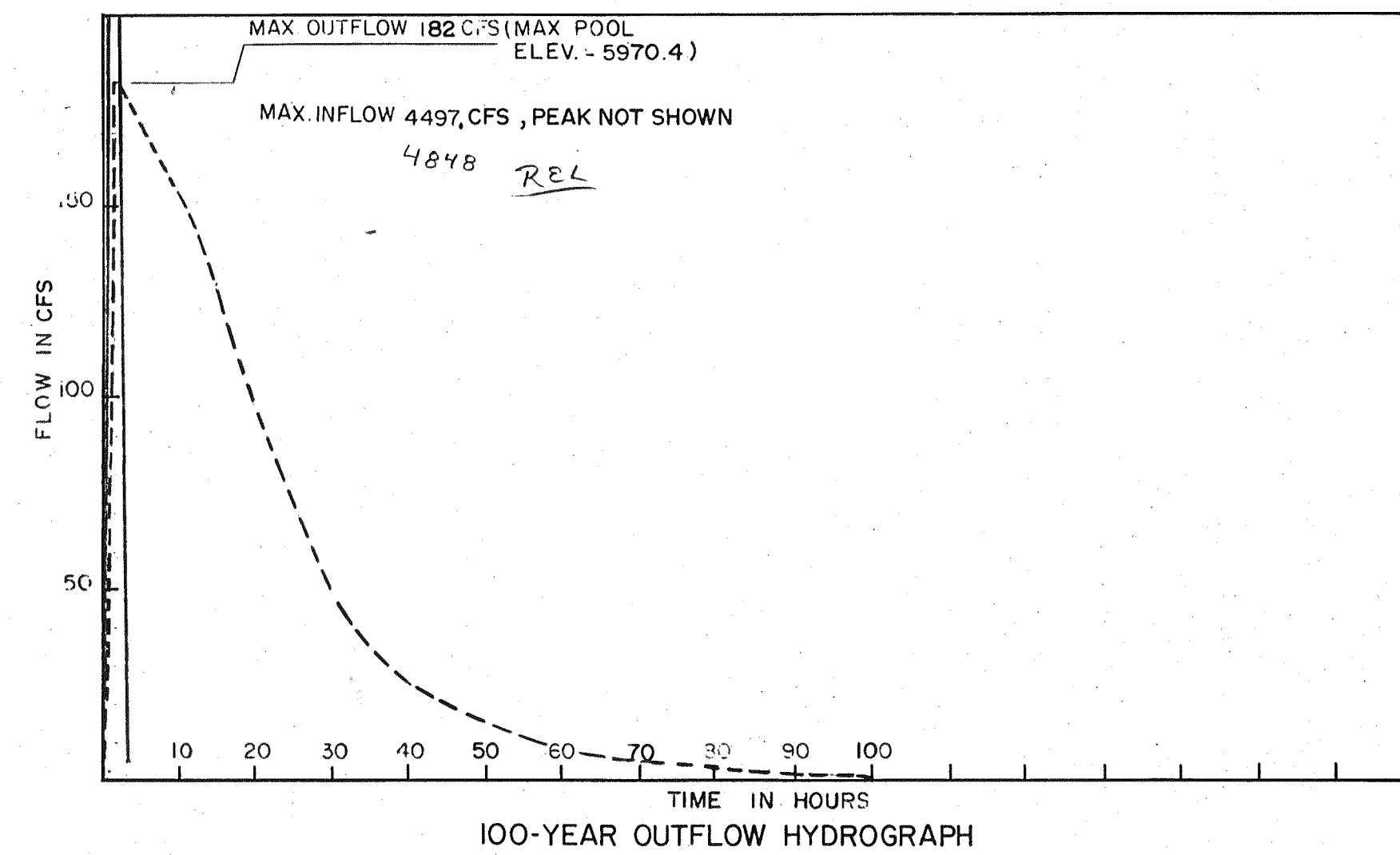
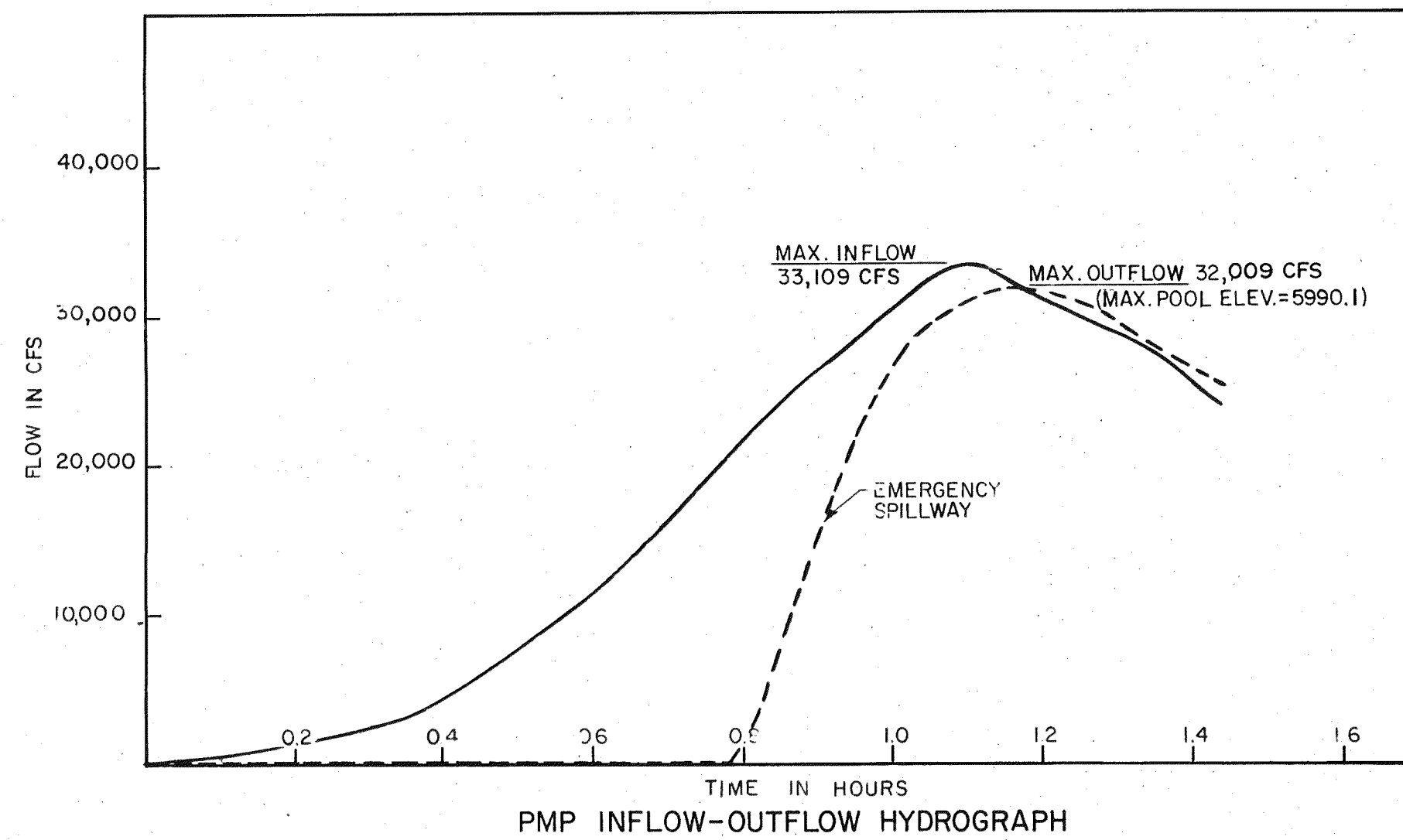
NOTES:

- 1) ALL BEARINGS SHOWN ARE WITH REFERENCE TO THE NEW MEXICO STATE PLANE GRID SYSTEM (CENTRAL ZONE). $\Delta = -0^{\circ}09'40''$.
- 2) ALL DISTANCES HEREON ARE WITH REFERENCE TO GROUND DATUM.
GROUND TO GRID
CONVERSION FACTOR:
0.9999646
- 3) ALL COORDINATE VALUES INDICATED HEREON REFER TO THE NEW MEXICO STATE PLANE COORDINATE GRID SYSTEM (CENTRAL ZONE).

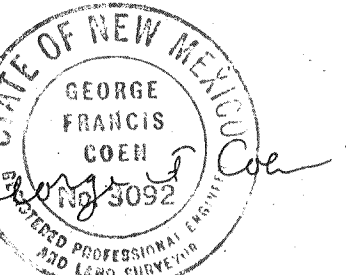


09 099 0678

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NO.	INDEX	DATE	REVISION			CK'D	
						APP	
 BOVAY ENGINEERS, INC. HOUSTON • SPOKANE • BATON ROUGE AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.							
TRAMWAY FLOODWATER RETAINING STRUCTURE							
LOCATION MAP							
			DESIGNED: GFC	SCALE:		1" = 100' / 2" C.I.	
			DRAWN: DLW	PROJECT NUMBER:		8	
			CHECKED: <i>P.L.</i>	6017-000		DRAWING NUMBER:	
			APPROVED: <i>E.G.A.</i>	2			
			APPROVED:				
			DATE: <i>12/77</i>				



6-HR. PMP EFFECTIVE RAINFALL 17.32 INCHES.
6-HR. PMP PEAK FLOW 15,700 C.F.S.
1-HR. PMP EFFECTIVE RAINFALL 11.7 INCHES
1-HR. PMP PEAK FLOW 33,109 C.F.S.
HAZARD CLASS, SCS, SYSTEM, CLASS C



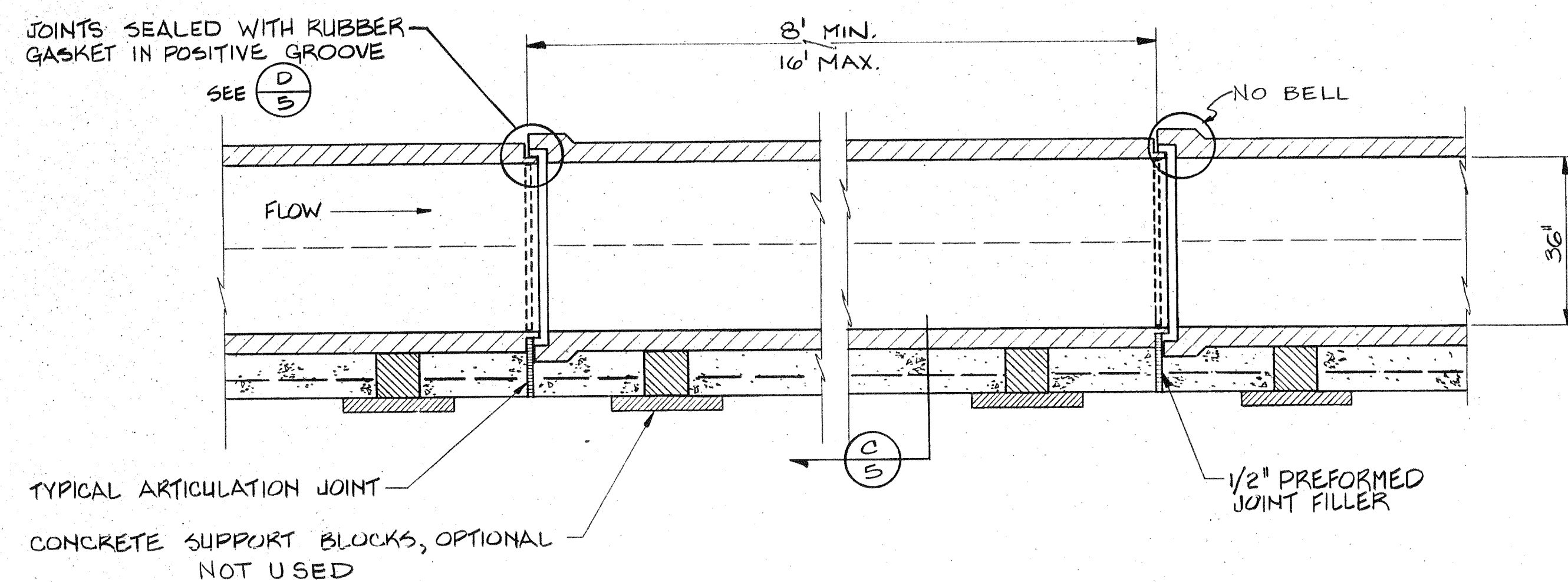
NO.	INDEX	DATE	REVISION	CK'D	APP

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HOUSTON • SPOKANE • BATON ROUGE
AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.

**TRAMWAY FLOODWATER
RETAINING STRUCTURE**

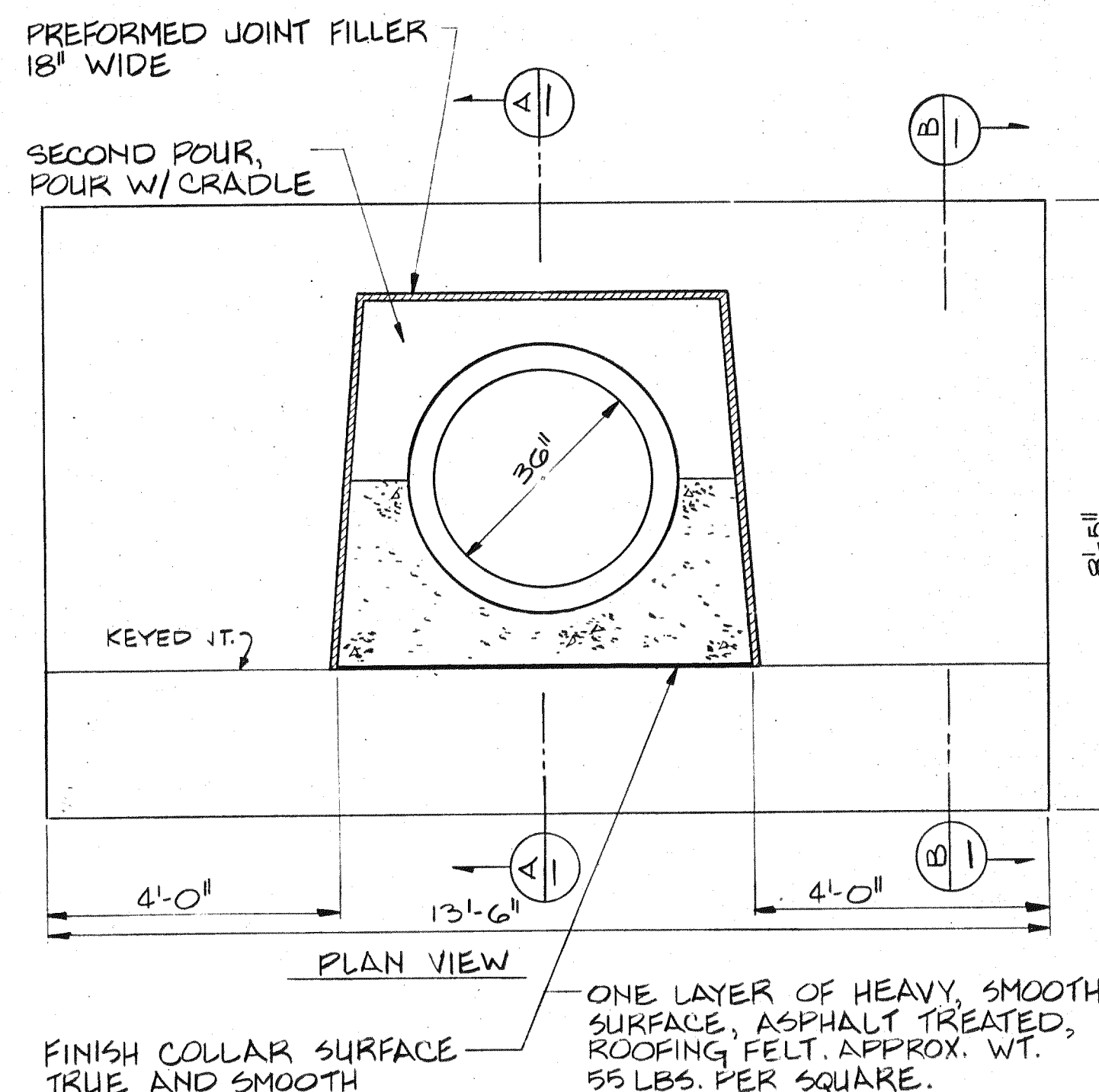
**HYDROLOGY DESIGN
INFORMATION**

DESIGNED: GFC	SCALE: AS SHOWN
DRAWN: DLW	PROJECT NUMBER: 6017-000
CHECKED: P.J.L.	DRAWING NUMBER: 3
APPROVED: EGA	
DATE: 12/77	



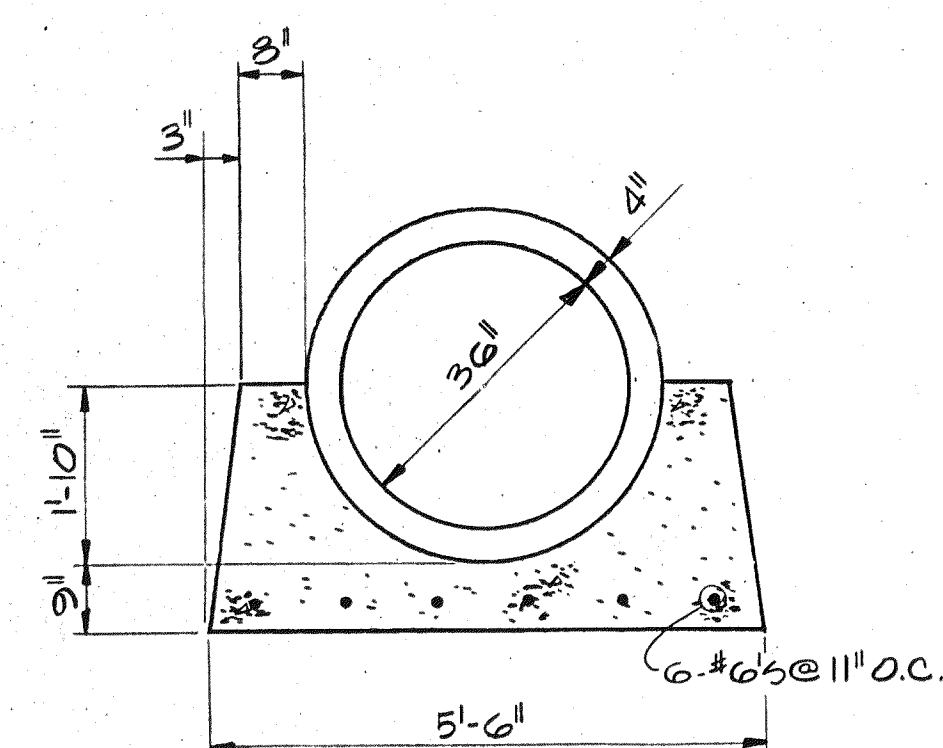
DETAIL OF PRIMARY SPILLWAY PIPE CONDUIT (A/5)

SCALE: 1/2" = 1'-0"



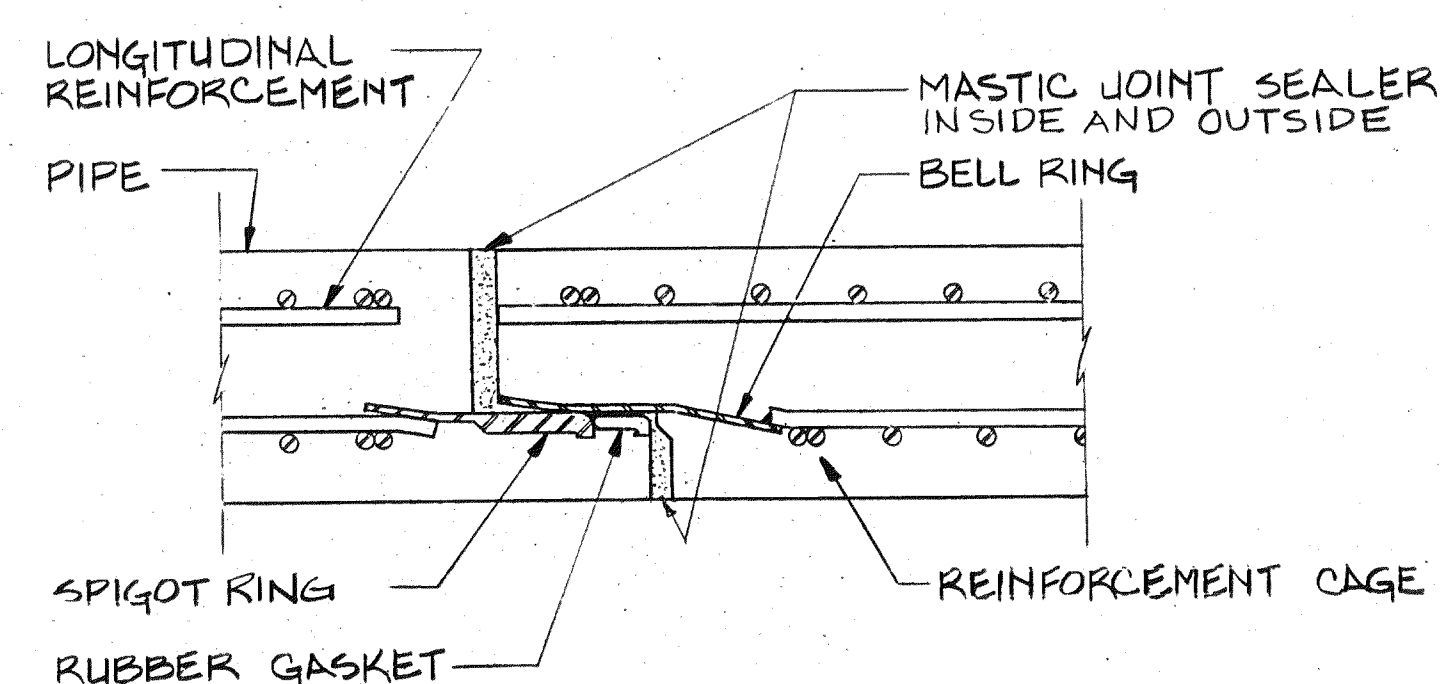
DETAIL OF ANTI-SEEP COLLAR (B/5)

SCALE: 1/2" = 1'-0"



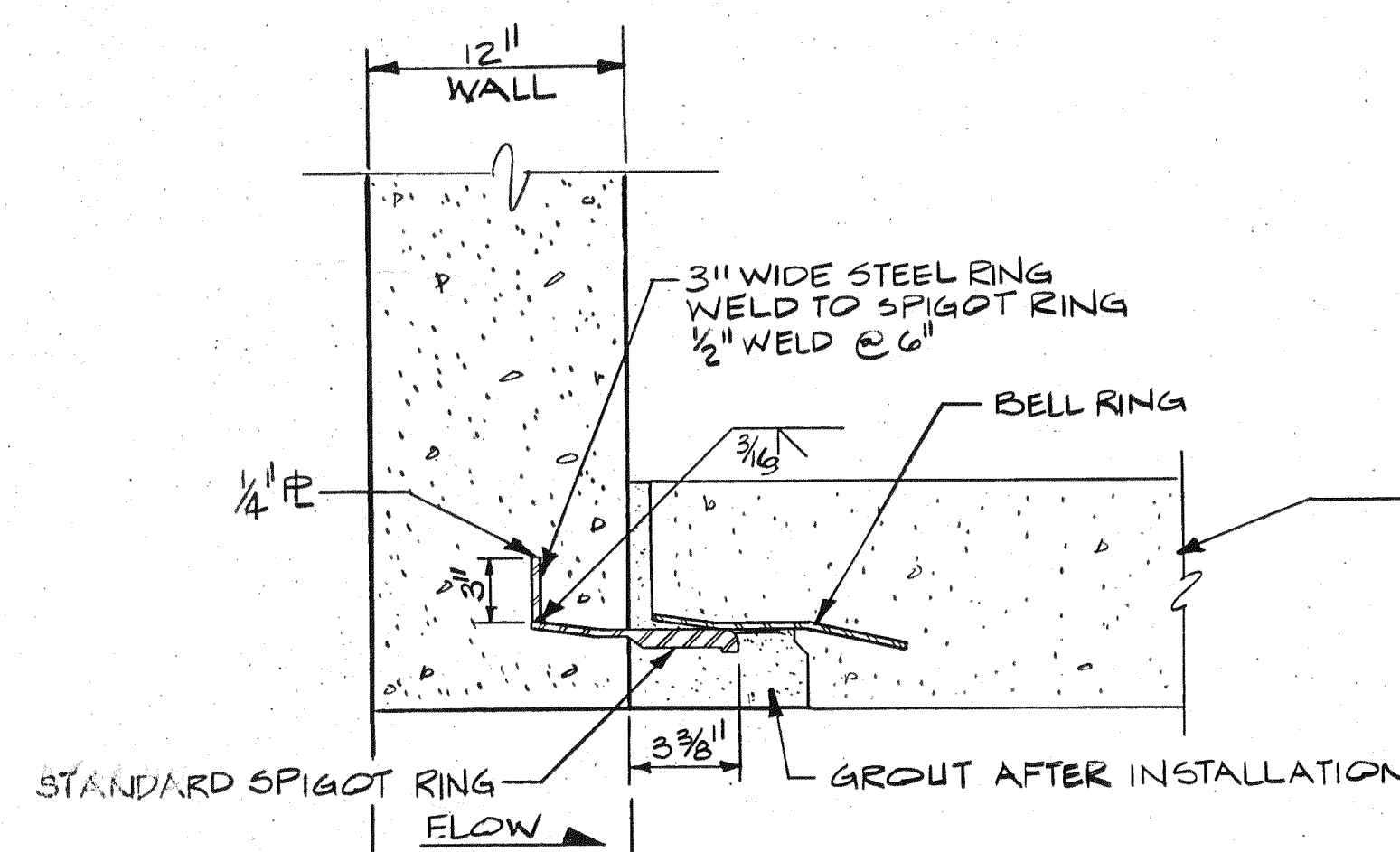
CONCRETE CRADLE (C/5)

SCALE: 1/2" = 1'-0"



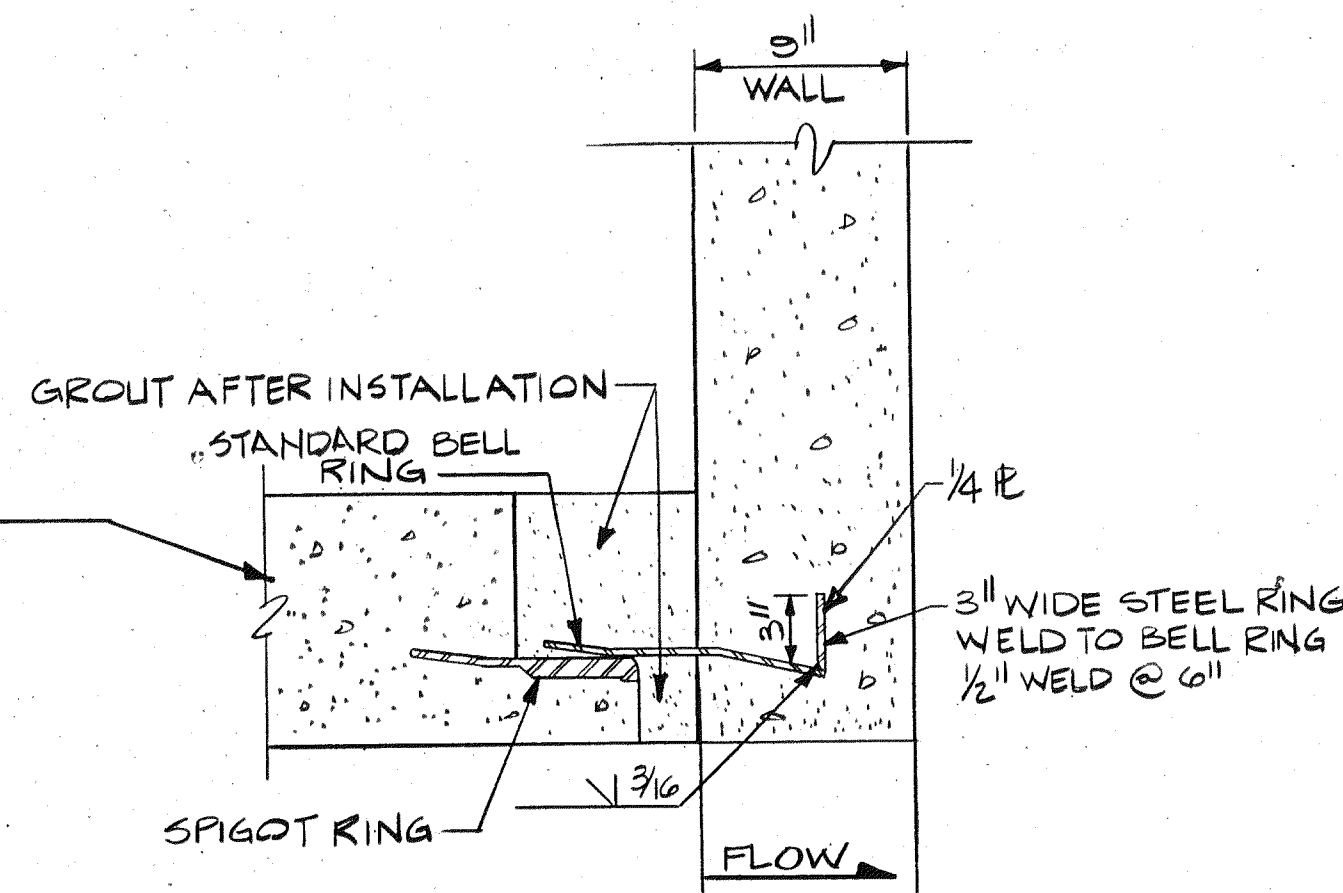
CONDUIT JOINT DETAIL (D/5)

SCALE: NONE



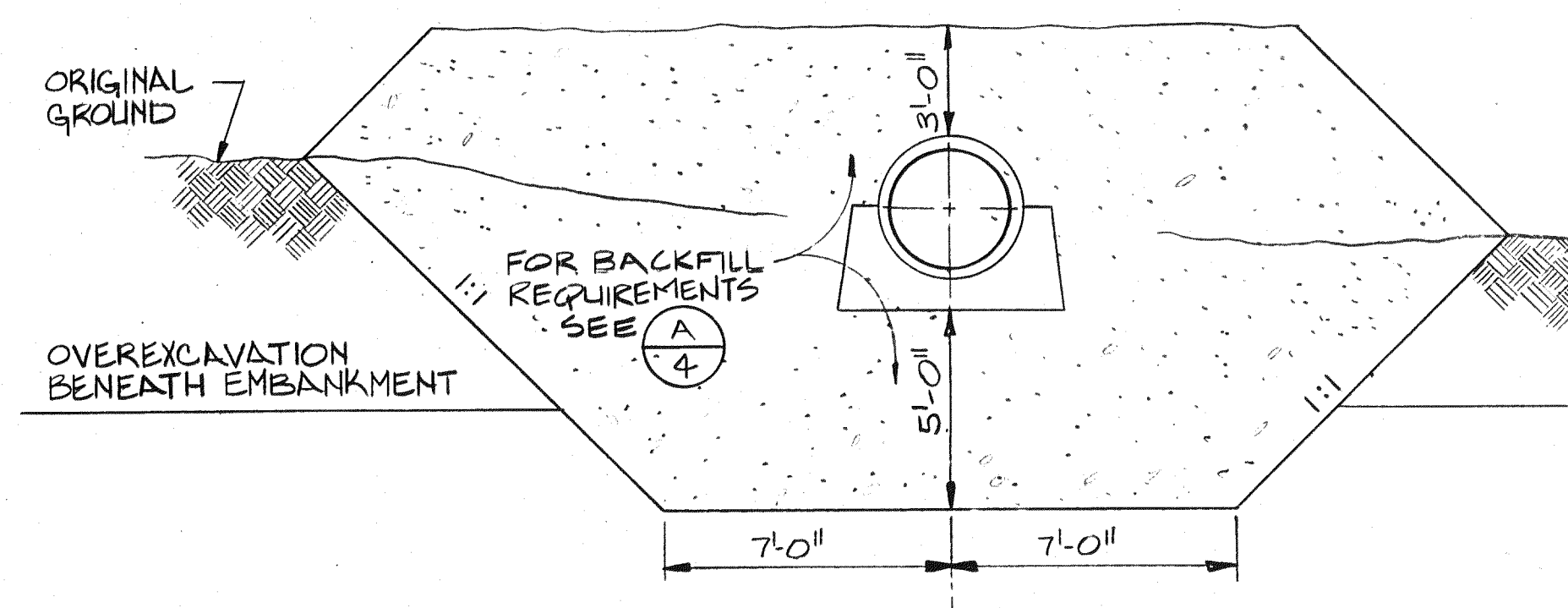
CONNECTION TO INLET TOWER (E/5)

SCALE: NONE



CONNECTION TO STILLING BASIN (F/5)

SCALE: NONE

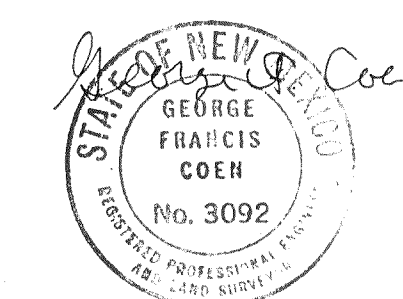


TYPICAL OVEREXCAVATION BENEATH CONDUIT AND CRADLE (G/5)

SCALE: 1/4" = 1'-0"

NOTE:

- PIPE CONDUIT SHALL BE CLASS V WALL B, AASHTO M-170.



08 002 0978

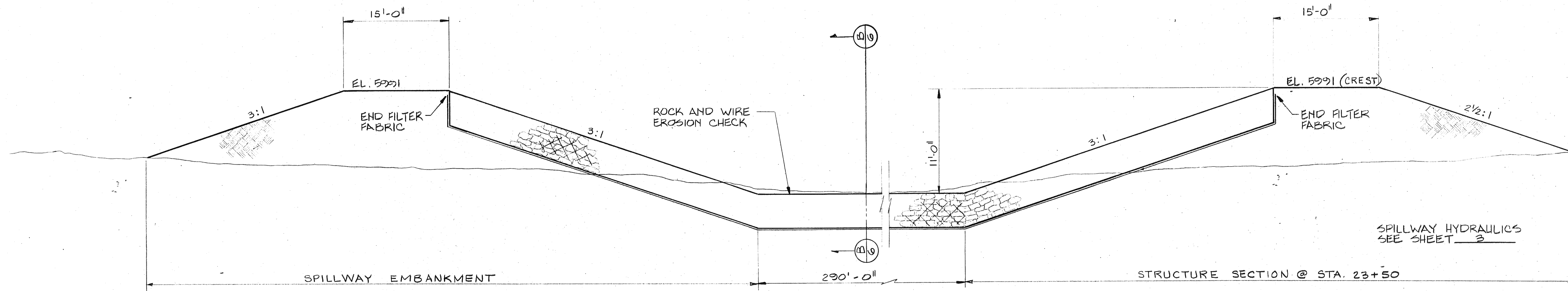
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NO.	INDEX	DATE	REVISION		
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TRAMWAY FLOODWATER RETAINING STRUCTURE	
PRIMARY SPILLWAY OUTLET PIPE	

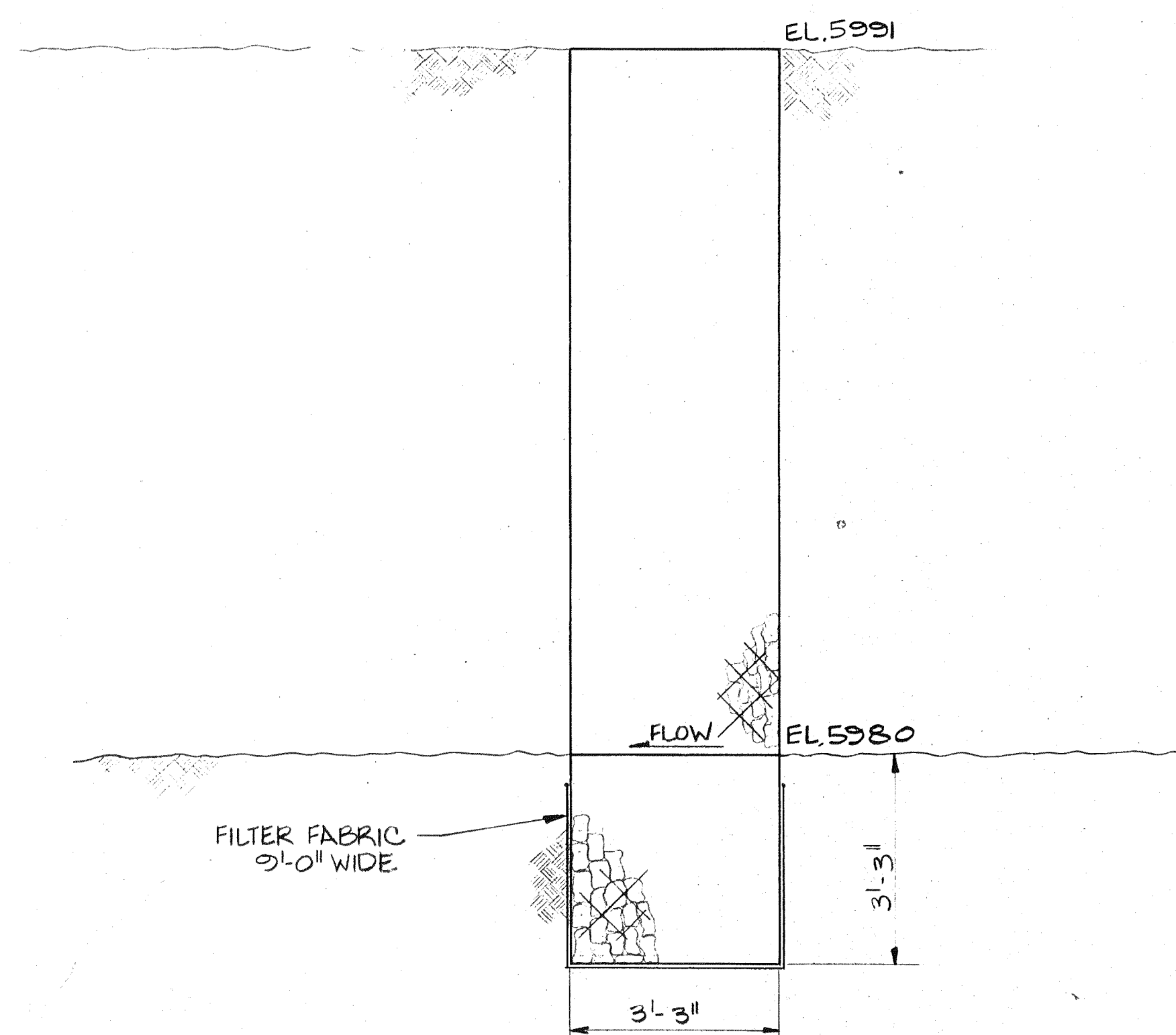
DESIGNED: GFC	SCALE: AS SHOWN
DRAWN: PSM	PROJECT NUMBER: 6017-000
CHECKED: DJL	DRAWING NUMBER: 5
APPROVED: EGA	
APPROVED:	
DATE: 12/77	



STA. 13+00
LOOKING AHEAD (UPSTREAM)

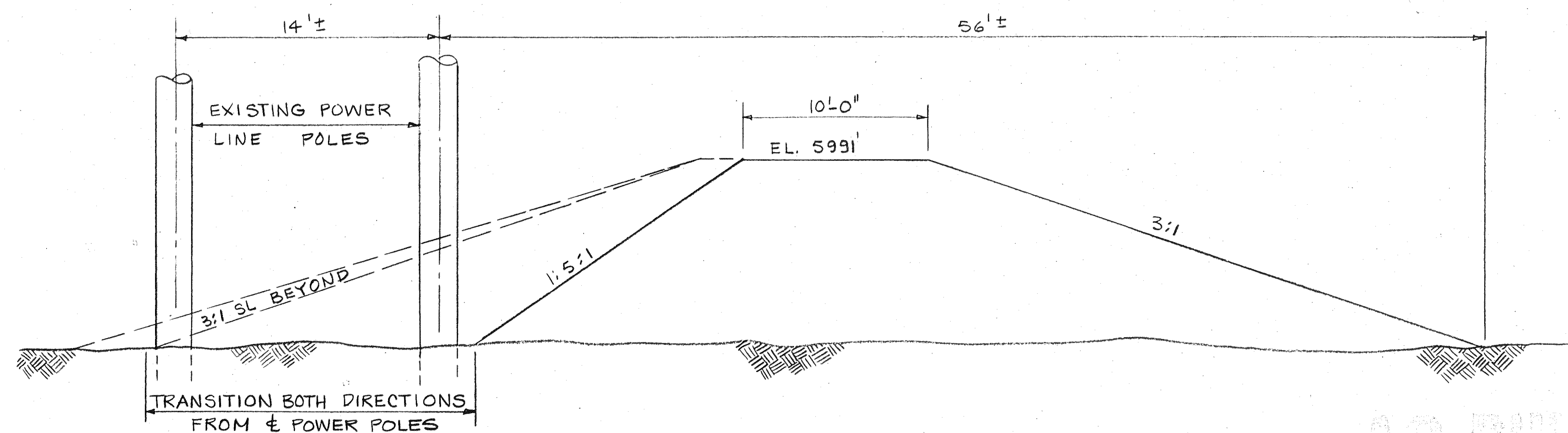
SPILLWAY CONTROL ROCK AND WIRE EROSION CHECK
SCALE: NTS

A
6



ROCK AND WIRE EROSION CHECK
SCALE: 1/2" = 1'-0"

B
6



SPILLWAY EMBANKMENT SECTION AT POWER POLES
STA 11+60 (APPROX.)
SCALE: 1" = 5'-0"

1 2 3 4 5 6 7 8 9 10 11 12
08 002 1078



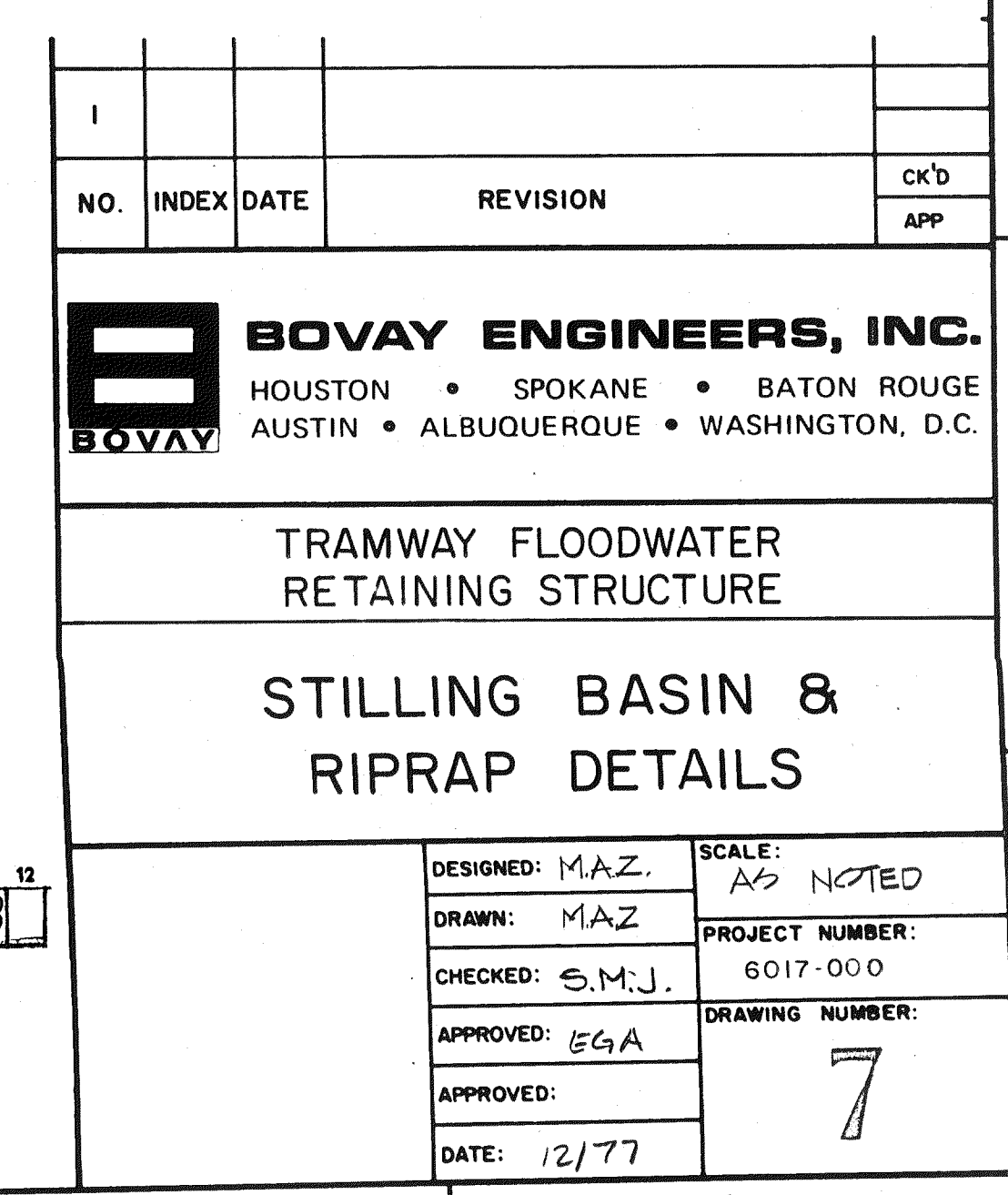
NO.	INDEX	DATE	REVISION	CK'D	APP

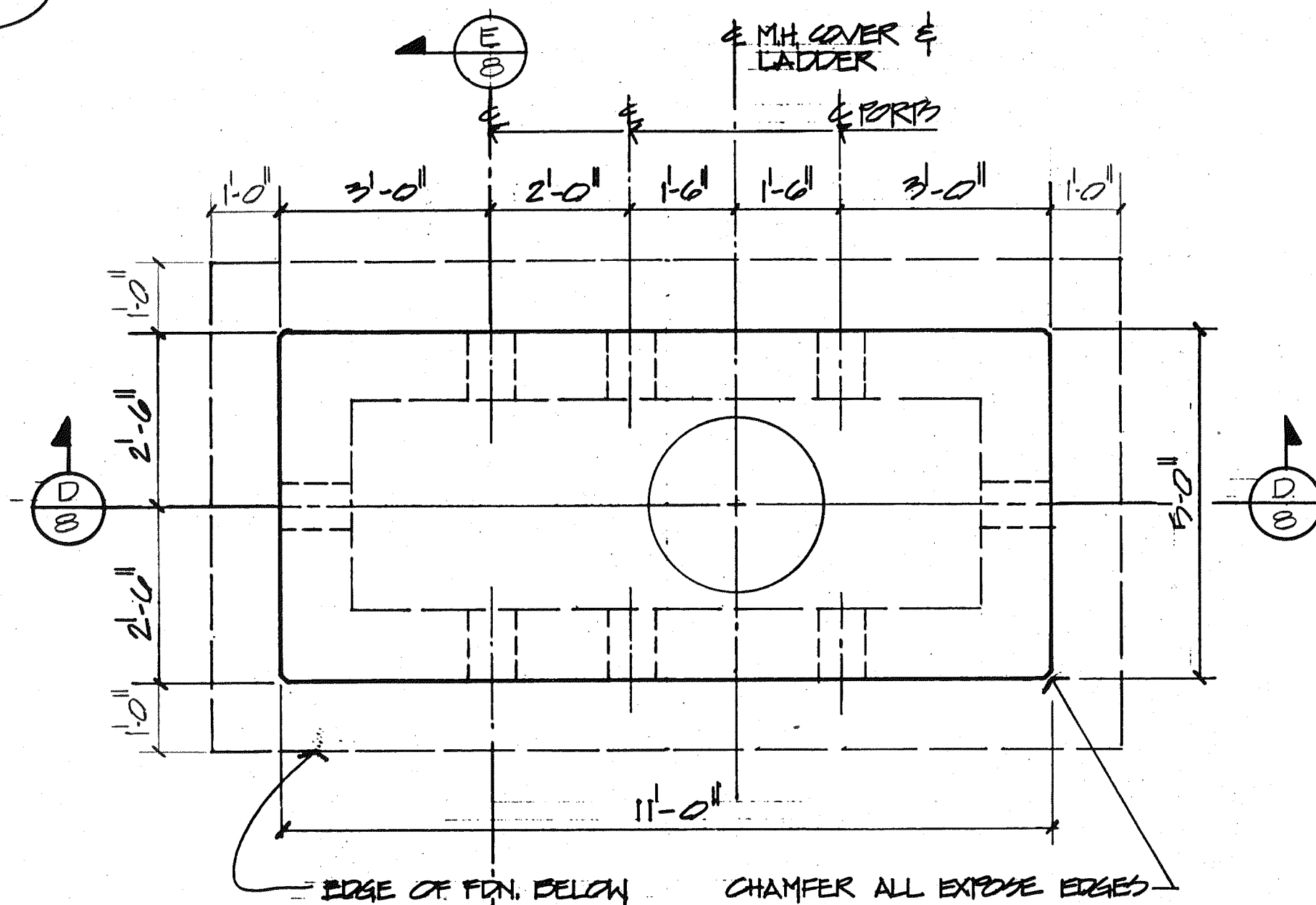
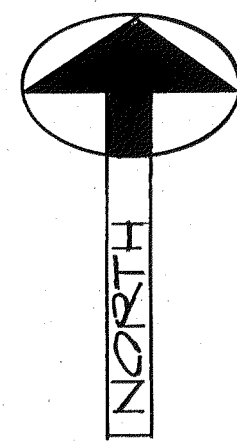
BOVAY ENGINEERS, INC.
HOUSTON • SPOKANE • BATON ROUGE
AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.

**TRAMWAY FLOODWATER
RETAINING STRUCTURE**

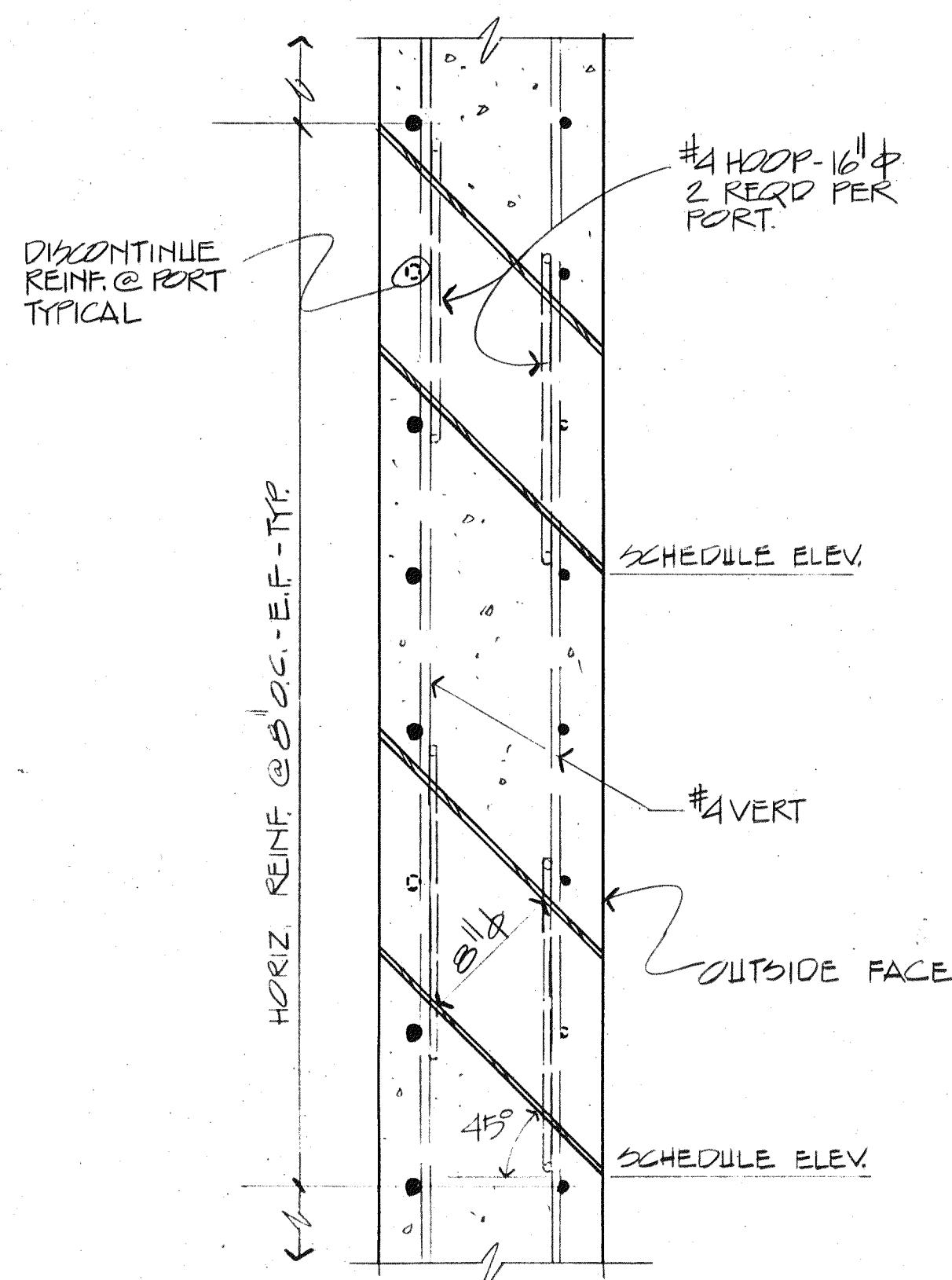
SPILLWAY EROSION CHECK

DESIGNED: GFC	SCALE: AS SHOWN
DRAWN: PSM	PROJECT NUMBER: 6017-000
CHECKED: DJL	DRAWING NUMBER: 6
APPROVED: EGA	
APPROVED:	
DATE: 12/77	





PLAN
SCALE: 1/2" = 1'-0"



TYPICAL SECTION @ PORT B
SCALE: 1/2" = 1'-0"

NO.	WALL LOCATION	ELEVATION
1.	EAST	5942'-0"
2.	SOUTH	5942'-0"
3.	WEST	5942'-0"
4.	NORTH	5943'-4"
5.	NORTH	5943'-4"
6.	NORTH	5943'-4"
7.	EAST	5946'-0"
8.	SOUTH	5946'-8"
9.	SOUTH	5946'-8"
10.	SOUTH	5946'-8"
11.	WEST	5947'-4"
12.	NORTH	5948'-0"
13.	NORTH	5948'-0"
14.	NORTH	5948'-0"
15.	EAST	5948'-8"
16.	SOUTH	5949'-4"
17.	SOUTH	5949'-4"
18.	SOUTH	5949'-4"
19.	WEST	5950'-0"
20.	NORTH	5950'-8"
21.	NORTH	5950'-8"
22.	NORTH	5950'-8"
23.	EAST	5951'-4"
24.	SOUTH	5952'-0"
25.	SOUTH	5952'-0"
26.	SOUTH	5952'-0"
27.	WEST	5952'-8"
28.	NORTH	5953'-4"
29.	NORTH	5953'-4"
30.	NORTH	5953'-4"
31.	EAST	5954'-0"

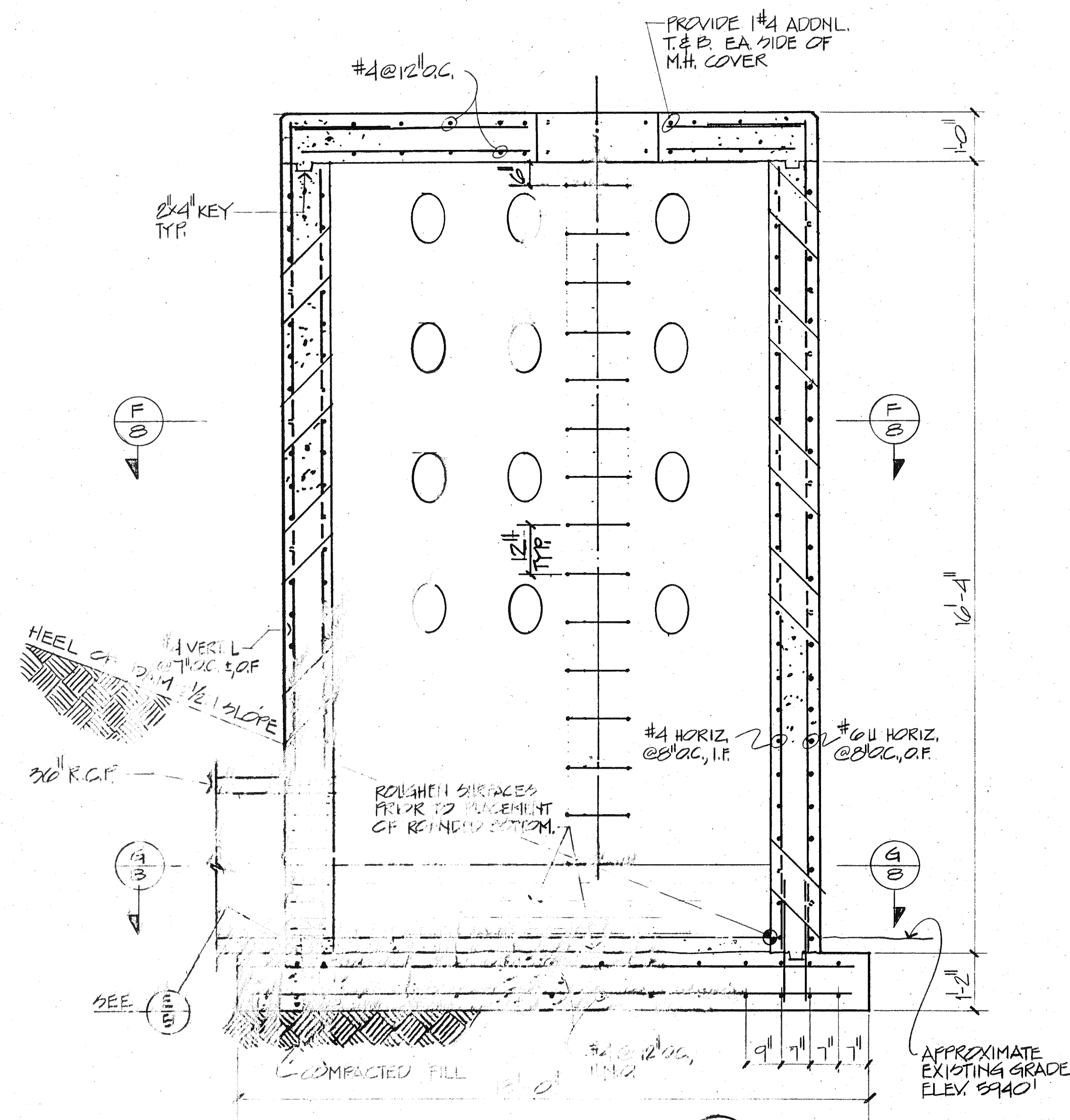
PORT SCHEDULE C
NO SCALE

NOTE:
3 PORTS @ 5942' SOUTH.
TOTAL 33 PORTS

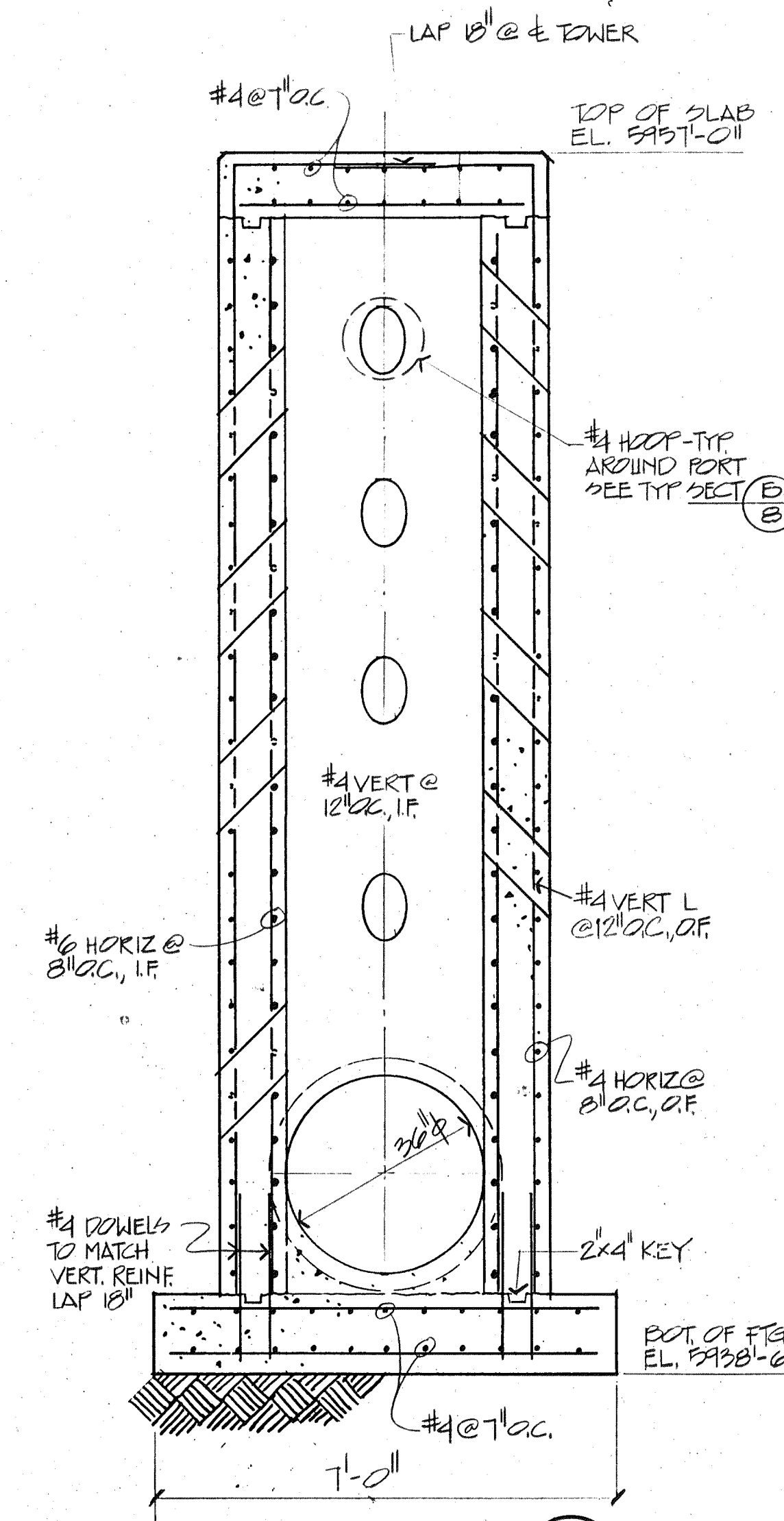
NOTES:

1. NATIVE SOIL SHALL BE OVEREXCAVATED TO 5'-0" BELOW BOTTOM OF FOUNDATION AND CARRIED OUT TO 50' BEYOND THE PERIMETER OF THE FOUNDATION. REPLACE WITH SELECTED SILTY FILL BELOW THE INLET STRUCTURE AND WITH GRANULAR FILL BELOW THE STILLING BASIN AND PERFORM DEEP VIBRATORY COMPACTION.
2. ALLOWABLE BEARING CAPACITY = 5000 PSF.
3. CONCRETE SHALL BE CLASS A; SIZE OF COARSE AGGREGATE (1" - #4).
4. ALL EXPOSED CONCRETE SLABS SHALL RECEIVE A CLASS 1 FINISH. SEE SPEC. 509.037(C). CHAMFER ALL EXPOSED CORNERS AND EDGES 3/4".
5. REINFORCEMENT SHALL CONFORM TO A.S.T.M. A615, GRADE 60.
6. PORTS SHALL BE CONSTRUCTED BY EMBEDDING 8" Ø NOMINAL R.V.C. PIPE OR 'SONOTUBE' IN CONCRETE. A TOTAL OF 31 PORTS ARE REQ'D.
7. ABBREVIATIONS:
E.F.: EACH FACE
I.F.: INSIDE FACE
O.F.: OUTSIDE FACE
U.N.O.: UNLESS NOTED OTHERWISE.
O.C.: ON CENTER
8. MANHOLE COVER & RING SHALL BE A CITY OF ALBUQUERQUE STANDARD LOCKABLE CAST IRON TYPE HAVING A TOTAL WT. EQUAL TO 325 LBS.
9. LADDER RUNGS SHALL BE DUCTILE IRON, CATALOG NO. R-1982-J AS MANUFACTURED BY THE NEENAH FOUNDRY CO. OR APPROVED EQUAL.

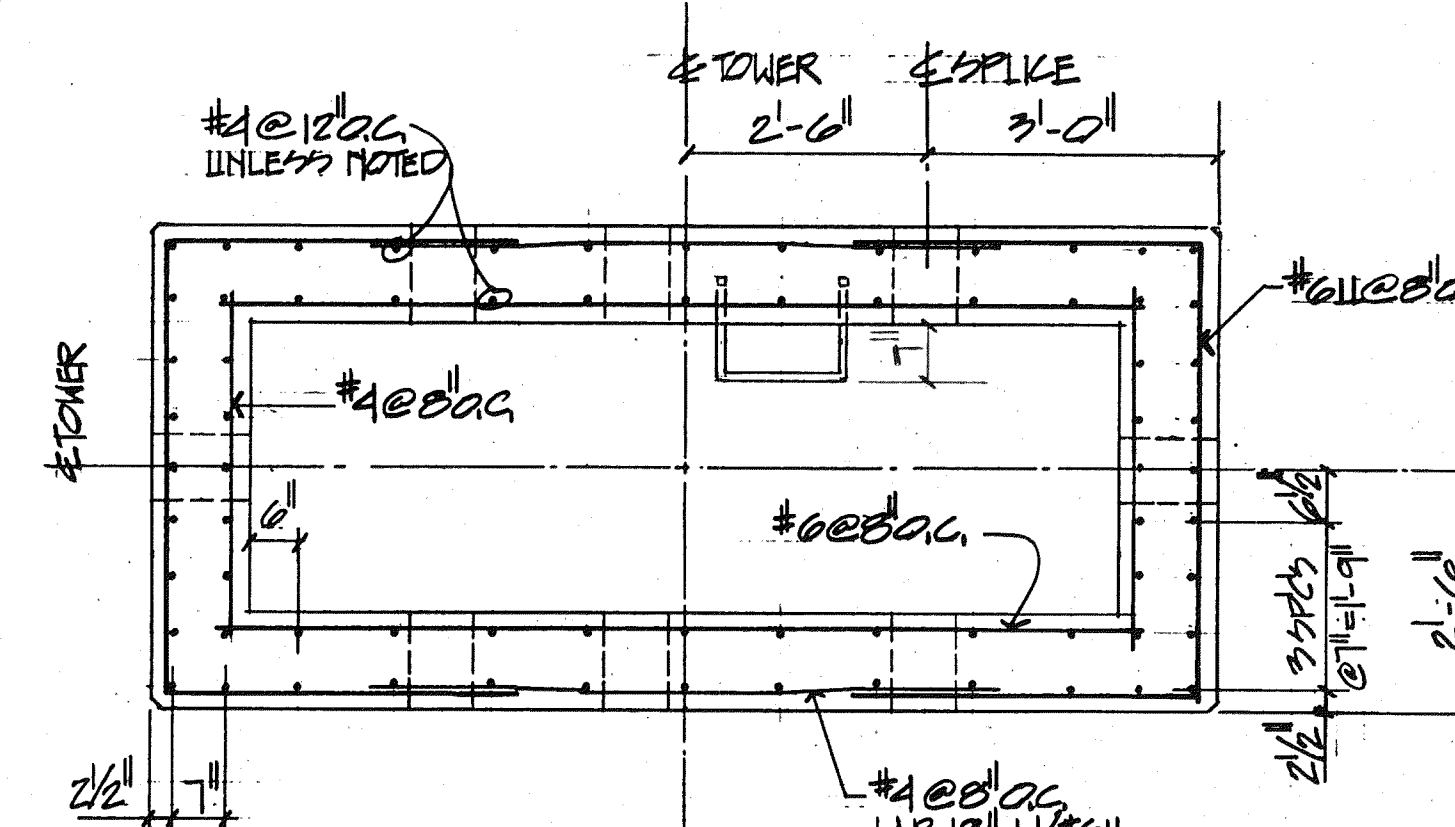
NOTE:
STRAP WITH
PADLOCK USED.



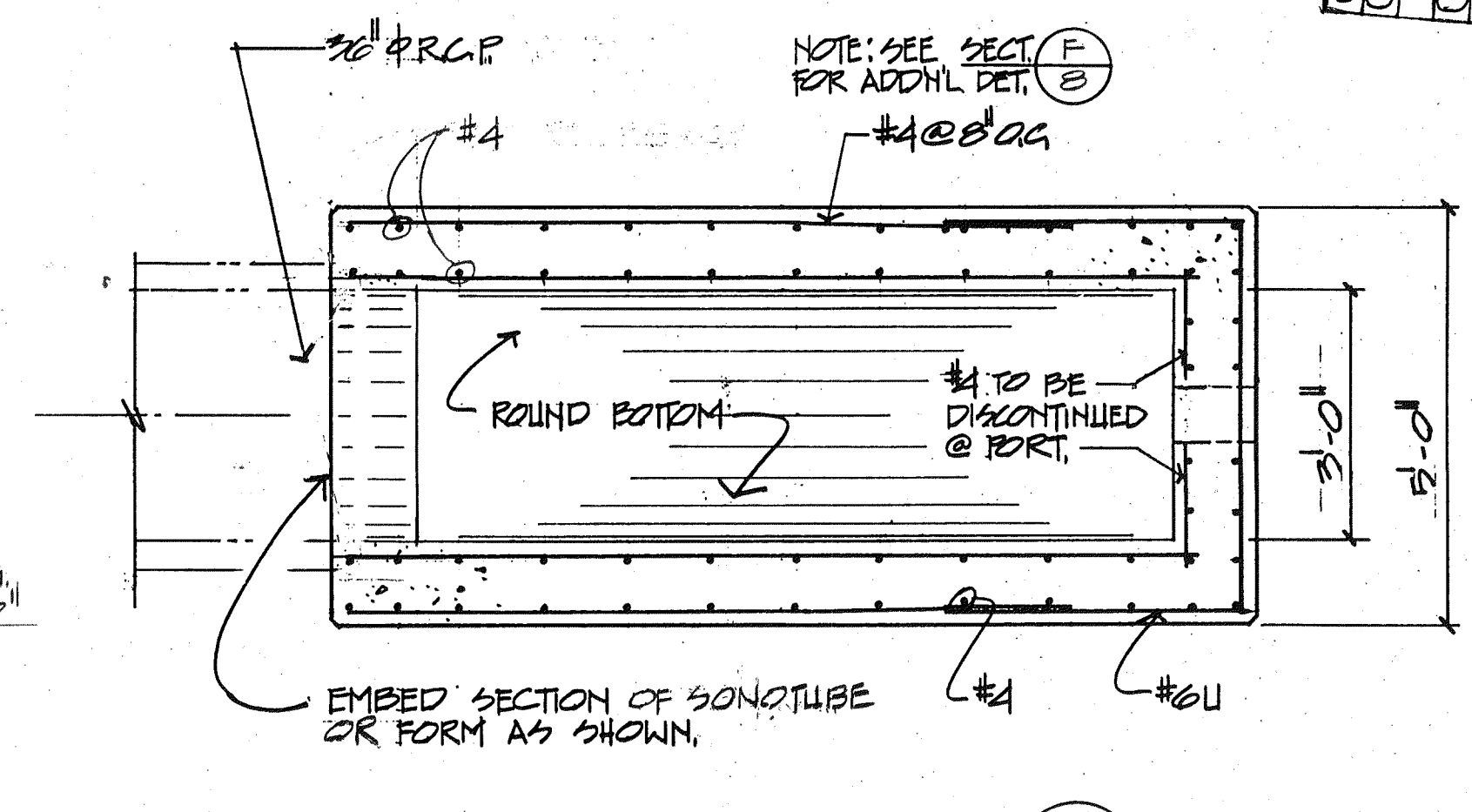
SECTION D
SCALE: 1/2" = 1'-0"



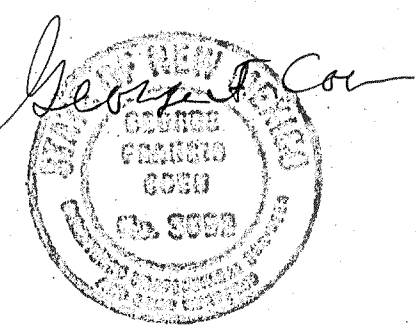
SECTION E
SCALE: 1/2" = 1'-0"



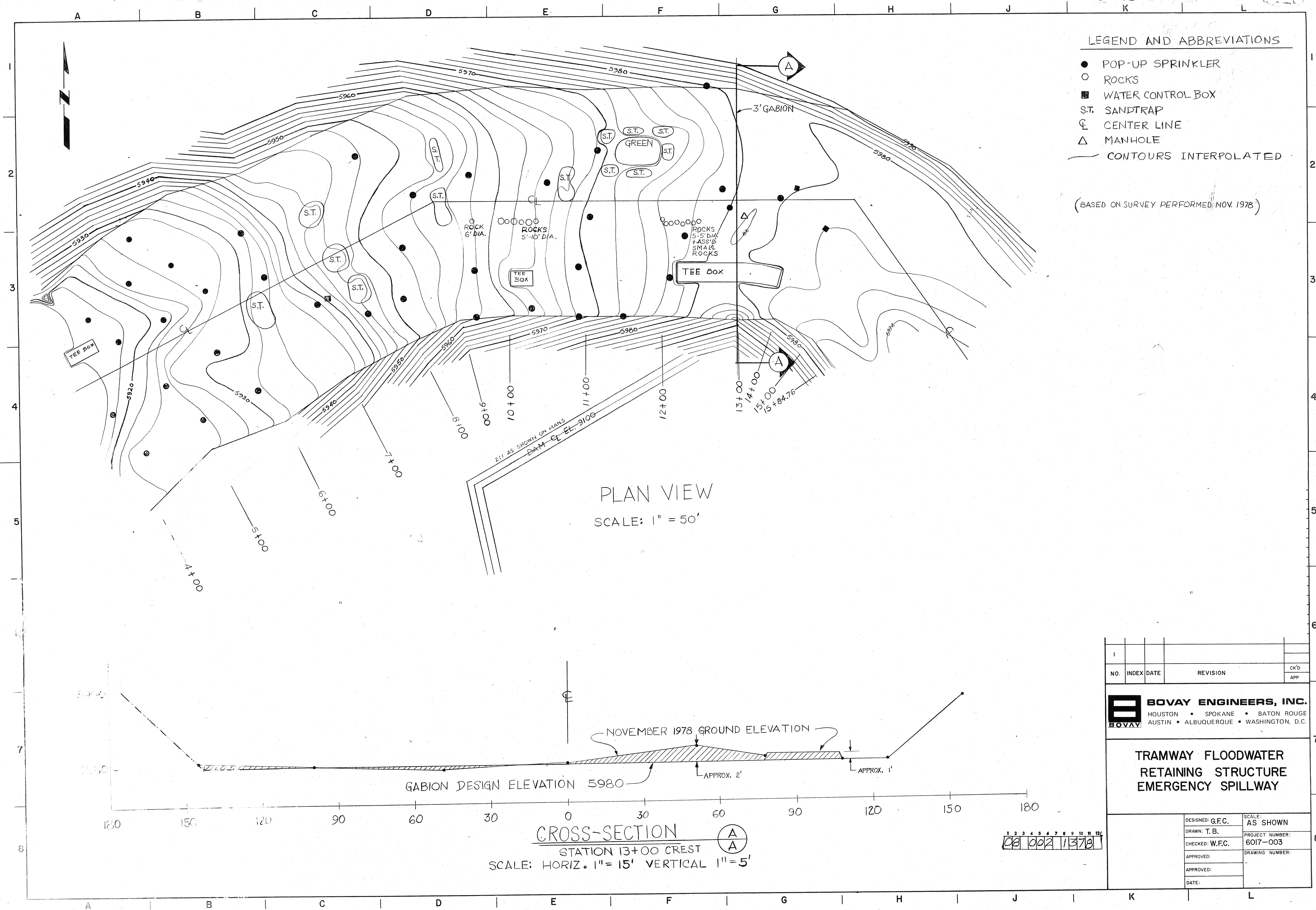
SECTION F
SCALE: 1/2" = 1'-0"

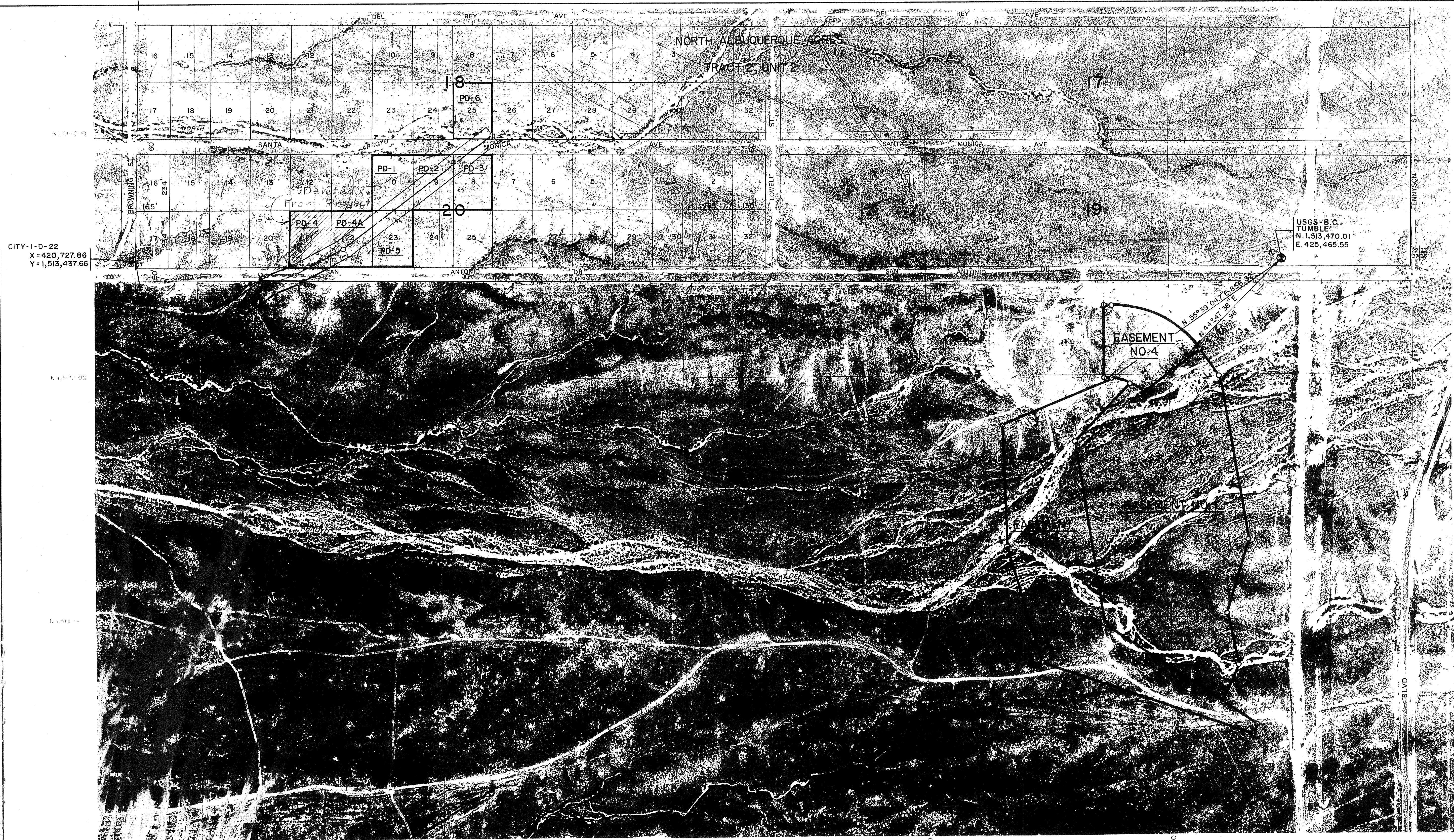


SECTION G
SCALE: 1/2" = 1'-0"



NO.	INDEX	DATE	REVISION	CK'D	APP
1					
BOVAY ENGINEERS, INC. HOUSTON • SPOKANE • BATON ROUGE AUSTIN • ALBUQUERQUE • WASHINGTON, D.C.					
TRAMWAY FLOODWATER RETAINING STRUCTURE					
INLET STRUCTURE					
DESIGNED: MAZ.			SCALE: AS NOTED		
DRAWN: MAZ.			PROJECT NUMBER: 6017-000		
CHECKED: SM.J.			APPROVED: EGA		
APPROVED: EGA			DRAWING NUMBER: 8		
DATE: 12/77					





- NOTES:
1. ALL BEARINGS SHOWN ARE WITH REFERENCE TO THE NEW MEXICO STATE PLANE GRID SYSTEM (CENTRAL ZONE) $\Delta \alpha = 0^{\circ}08'40''$
 2. ALL DISTANCES INDICATED HEREON ARE WITH REFERENCE TO GROUND DATUM. GROUND TO GRID CONVERSION FACTOR: 0.999646.
 3. ALL COORDINATE VALUES INDICATED HEREON REFER TO THE NEW MEXICO STATE PLANE COORDINATE GRID SYSTEM (CENTRAL ZONE).
 4. PHOTOGRAPHY PROVIDED BY AMAFCA.
 5. SEE CERTIFICATES OF SURVEY FOR METES AND BOUNDS DESCRIPTION OF EASEMENTS 1, 2 AND 4.

TIIN

BOUNDS OF TRACT PD-7									
POINT	BEARING	DISTANCE	Y	X	POINT	BEARING	DISTANCE	Y	X
1	N 35°13'21"W	40.00'	1,513,058.57	420,827.79	6	S 70°28'42"W	98.56'	1,513,360.31	421,323.39
2	N 54°46'39"E	577.15'	1,513,091.75	421,037.72	7	S 54°46'39"W	579.64'	1,513,026.00	420,849.87
3	N 35°13'21"W	40.00'	1,513,425.22	421,275.19	1	N 35°13'21"W	40.00'	1,513,058.67	420,826.79
4	S 86°53'59"E	181.73'	1,513,111.35	421,456.65					
5	S 62°21'59"W	45.52'	1,513,351.24	421,416.28					

PARCEL NOS.	LOT NOS.	BLK. NOS.	OWNERSHIP
PD-1	10	20	JAMES T. THOMPSON
PD-2	9	20	E. F. BRIDGEMAN
PD-3	8	20	J. PIERCE HEREFORD
PD-4	21	20	FLOYD D. WYMAN
PD-4A	22	20	FLOYD D. WYMAN
PD-5	23	20	RUTH M. BURNS
PD-6	25	18	ESTATE OF EDNA MONAHAN
PD-7			AMDEC
EASEMENT 1, 4 & 5			AMDEC

08 002 1173

ALBUQUERQUE METROPOLITAN
ARROYO FLOOD CONTROL AUTHORITY

PINO ARROYO DIVERSION CHANNEL
AND
TRAMWAY FLOODWATER RETAINING STRUCTURE
RIGHT OF WAY MAP

BOVAY ENGINEERS, INC.
ALBUQUERQUE, NEW MEXICO

ENGRS. FILE NO. A-4232

DRAWN F.A.V.
TRACED C.E.G.

CHECKED G.F.C.
APPROVED

DATE 3/78
SCALE 1" = 200'

SHEET 1