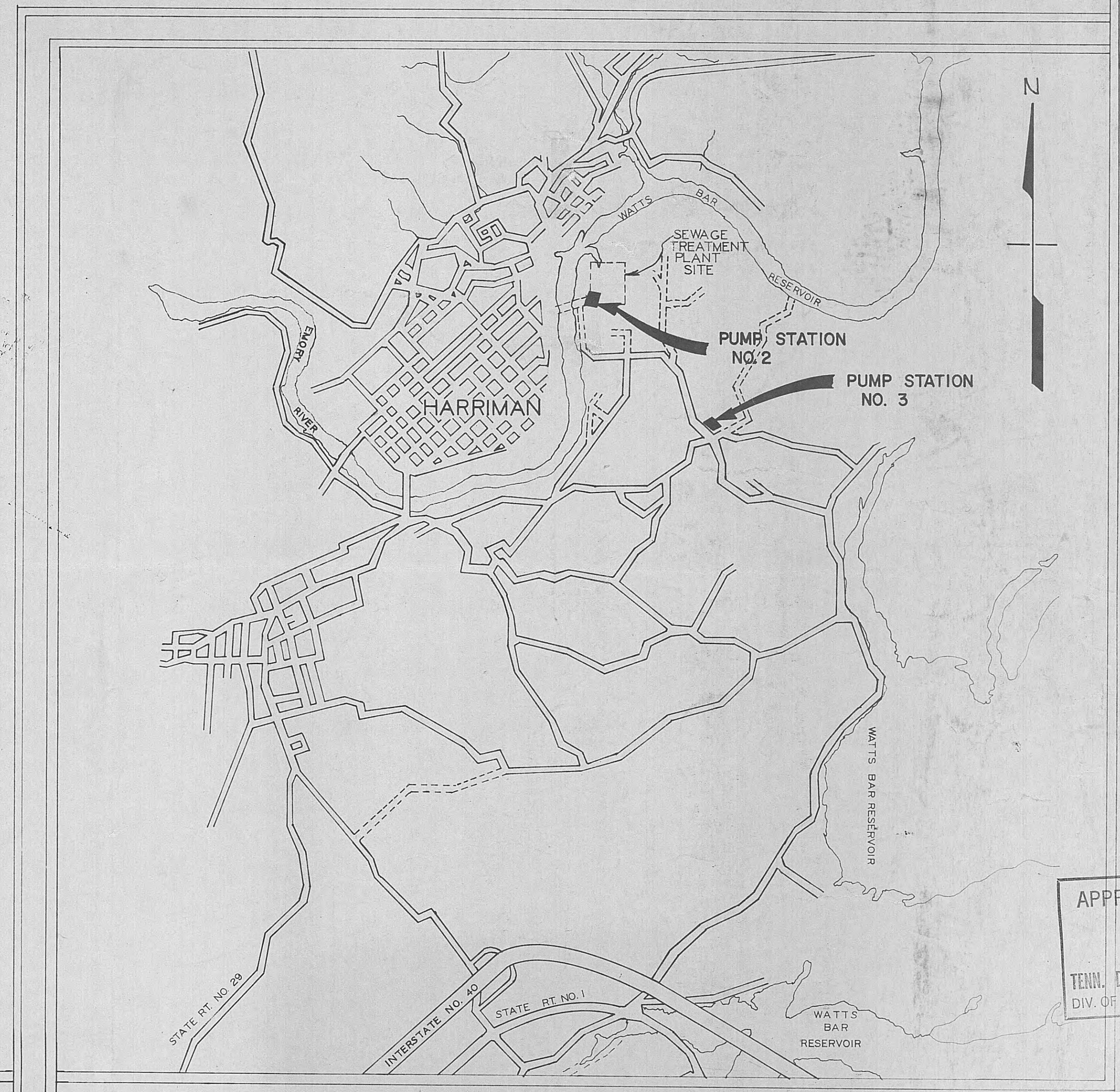


FWPCA

SANITARY SEWERAGE FACILITIES FOR CITY OF HARRIMAN, TENNESSEE



APPROVAL EXPIRES
JUL 16 1969
TENN. DEPT. OF PUBLIC HEALTH
DIV. OF SANITARY ENGINEERING

BLACK, CROW & EIDSNESS, INC.
ENGINEERS
ATLANTA, GEORGIA GAINESVILLE, FLORIDA

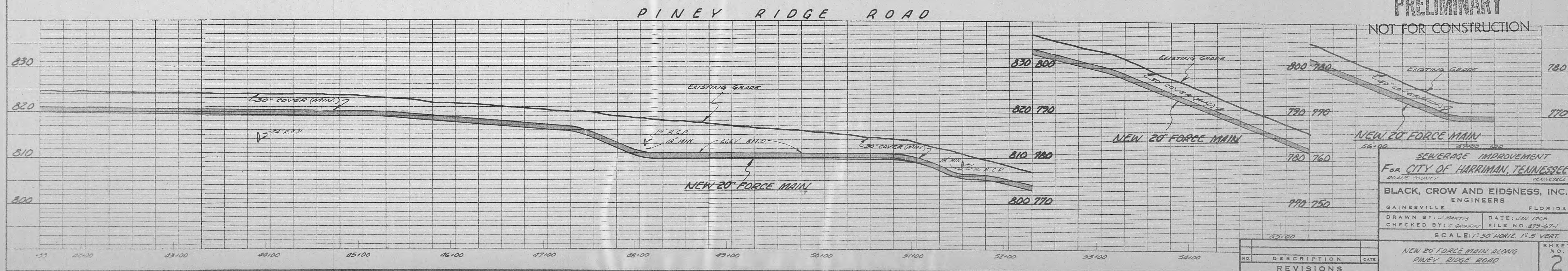
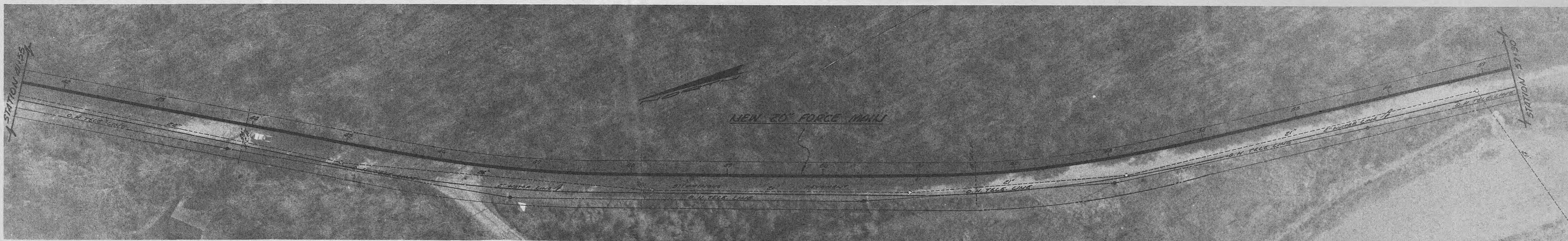
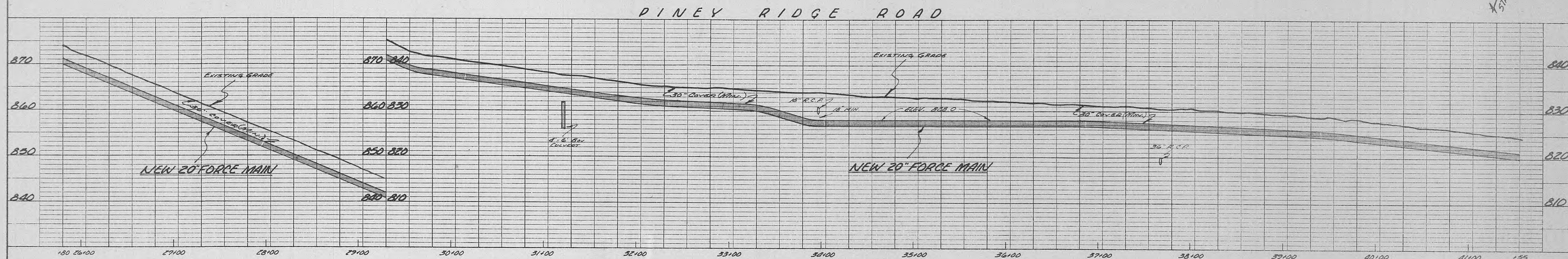
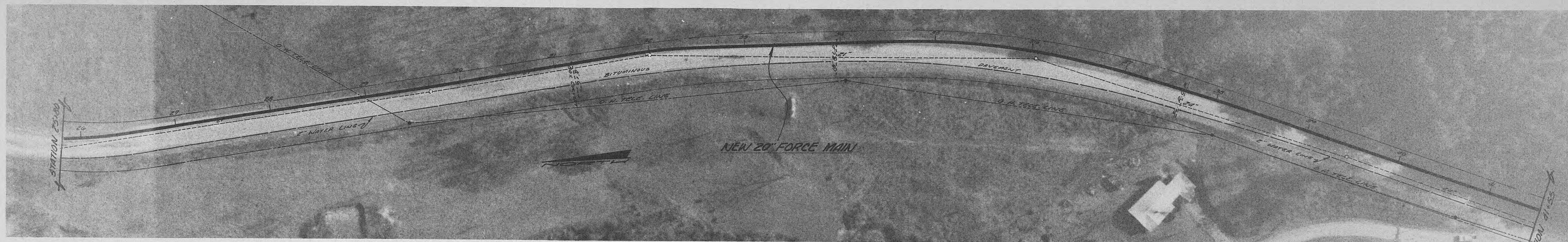
These Plans and Specifications submitted
in connection with the Application for a Federal
Grant for the construction of treatment works
under the provisions of the Federal Water Pollution
Control Act (23 USC 466 et seq.) and the regulations
promulgated thereunder have been reviewed.
Robert M. White III *Dec 3 1968*
(Registering Engineer) (Date)
and are herewith APPROVED:
Joe B. Foster *12/5/68*
Regional Construction Grants Program (Date)
Director, FWPCA, SE REGION, ATLANTA, GA.

PHASE II OF
MODIFICATIONS TO
EFFLUENT PUMPING SYSTEM
PROJECT NO. 479-68-2

APPROVED
JUL 16 1968
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
DIVISION OF SANITARY ENGINEERING
By *Julian R. Fleming* Director

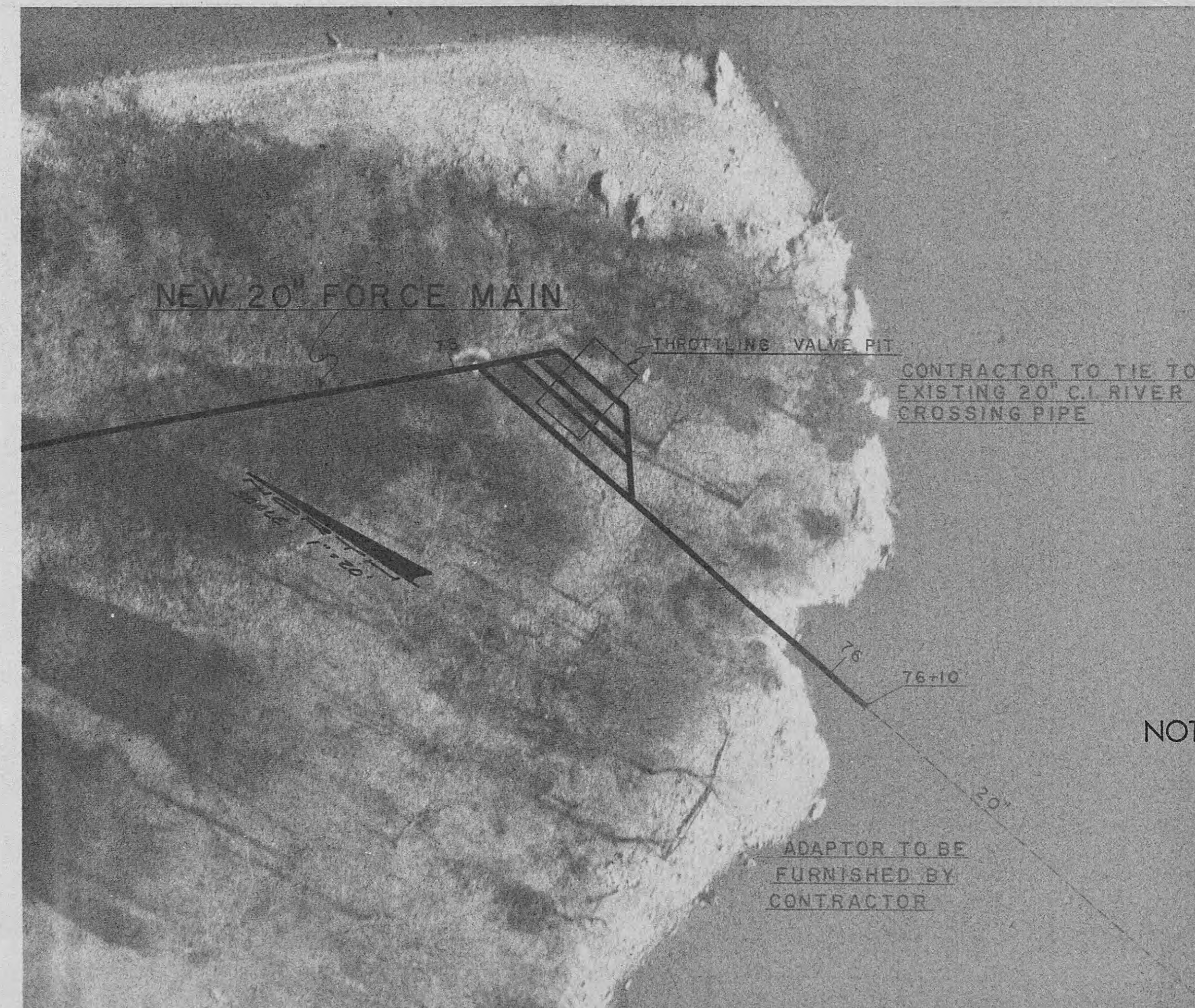
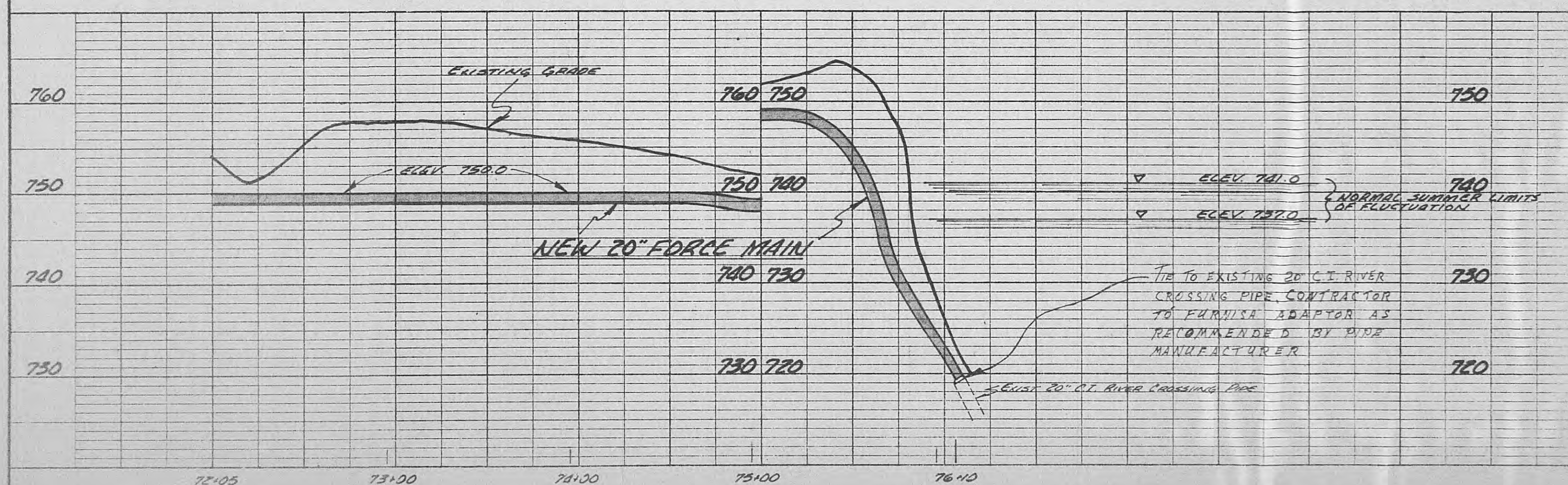
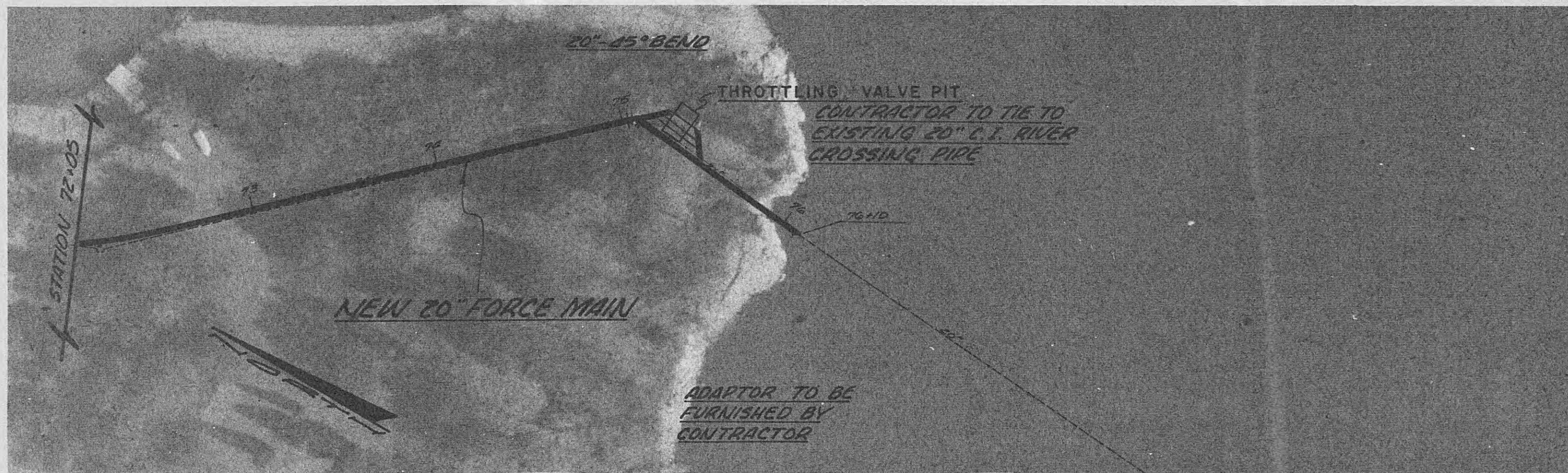
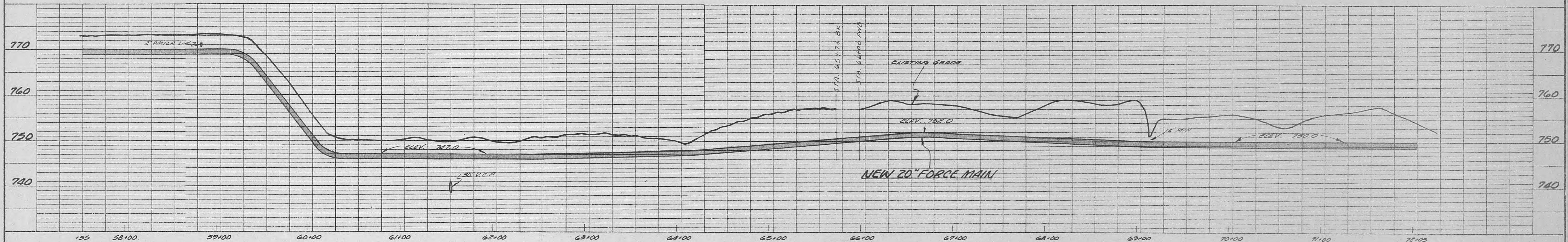
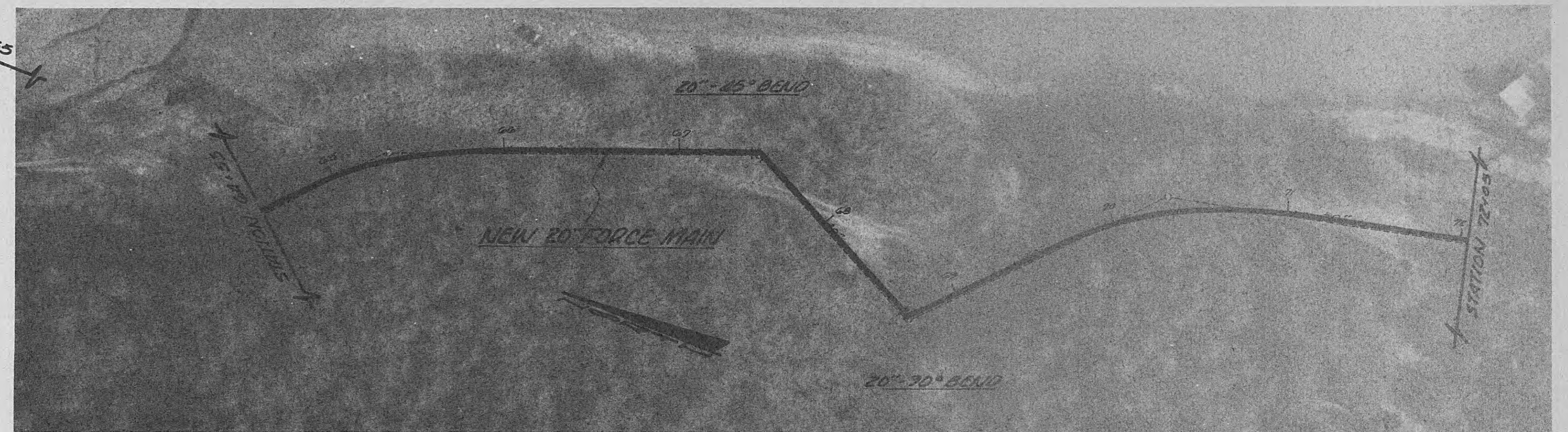
FOR APPROVAL

7/16/68 2-7



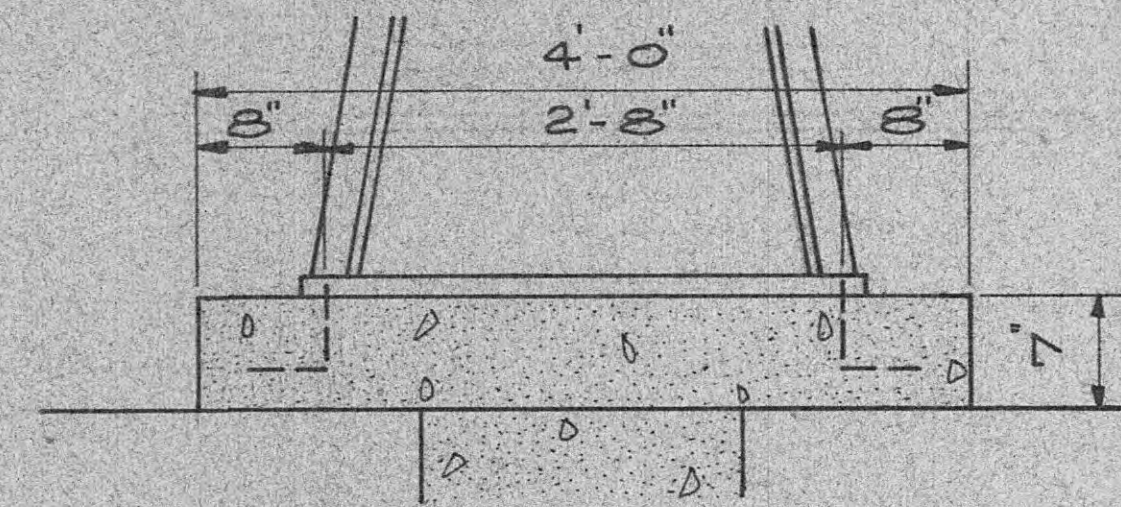
PRELIMINARY
NOT FOR CONSTRUCTION

SEWERAGE IMPROVEMENT FOR CITY OF HARRIMAN, TENNESSEE ROANE COUNTY, TENNESSEE	
BLACK, CROW AND EIDSNES, INC. ENGINEERS	
GAINESVILLE	FLORIDA
DRAWN BY: J. MOULTON	DATE: JAN 1968
CHECKED BY: C. GAFFIN	FILE NO. 879-67-1
SCALE: 1" = 50' HORIZ. 1" = 5' VERT.	
NEW 20" FORCE MAIN ALONG PINEY RIDGE ROAD	
NO.	DESCRIPTION
REVISIONS	
DATE	
SHEET NO. 2	

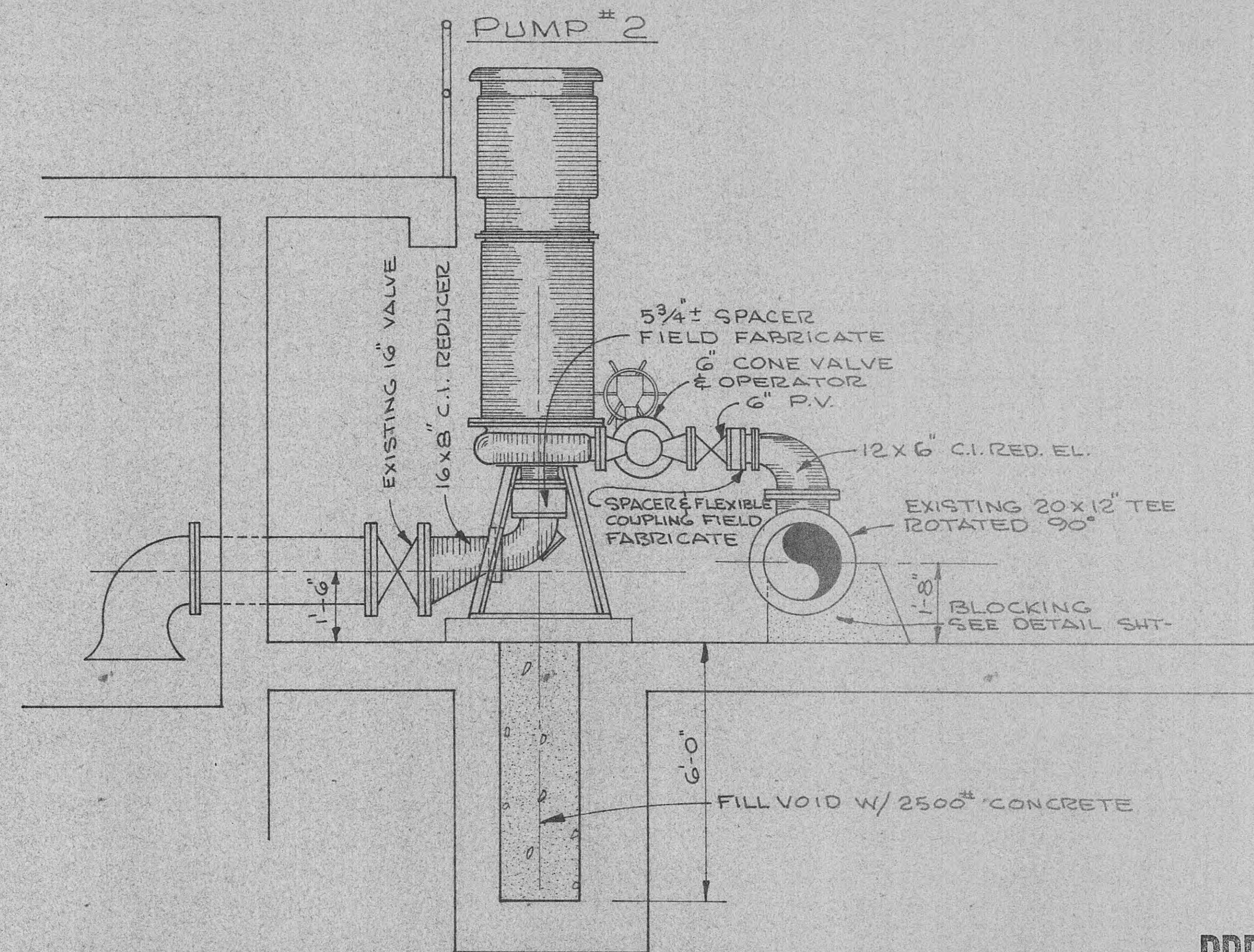


PRELIMINARY
NOT FOR CONSTRUCTION

SEWERAGE IMPROVEMENTS For CITY OF HARRIMAN, TENNESSEE	
HOME COUNTY	FLORIDA
BLACK, CROW AND EIDSNES, INC. ENGINEERS	
GAINESVILLE	FLORIDA
DRAWN BY: J. MARTIS	DATE: JAN. 1968
CHECKED BY: C. GREEN	FILE NO. 479-67-1
SCALE: 1" = 50' HORIZ. 1" = 10' VERT.	
NEW 20" FORCE MAIN ALONG DINEY RIDGE ROAD TO TENNESSEE RIVER	
SHEET NO. 3	

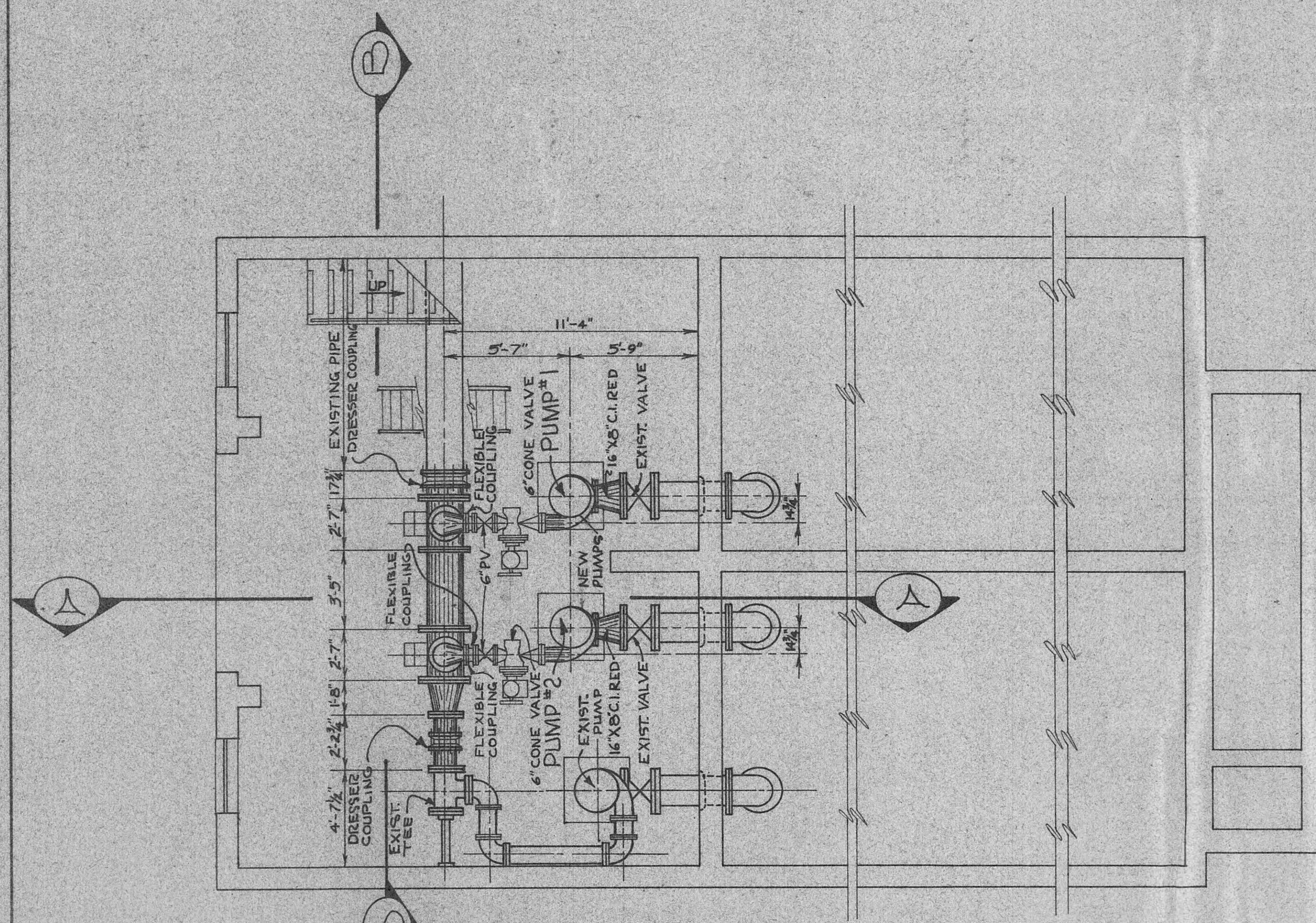


PUMP PAD DETAIL
SCALE 1"=1'-0"

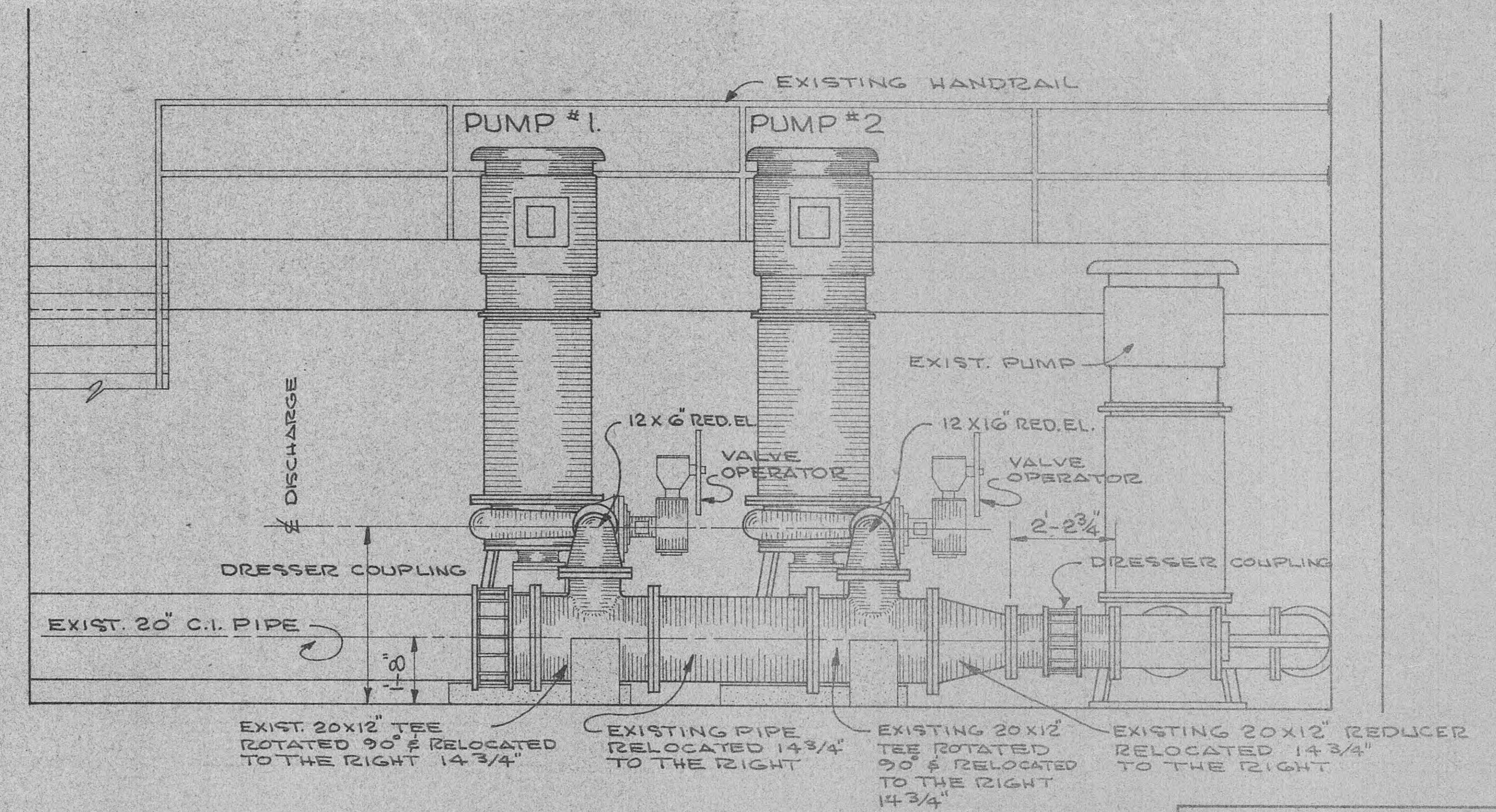


SECTION "A"-A"
SCALE 1/2"=1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION



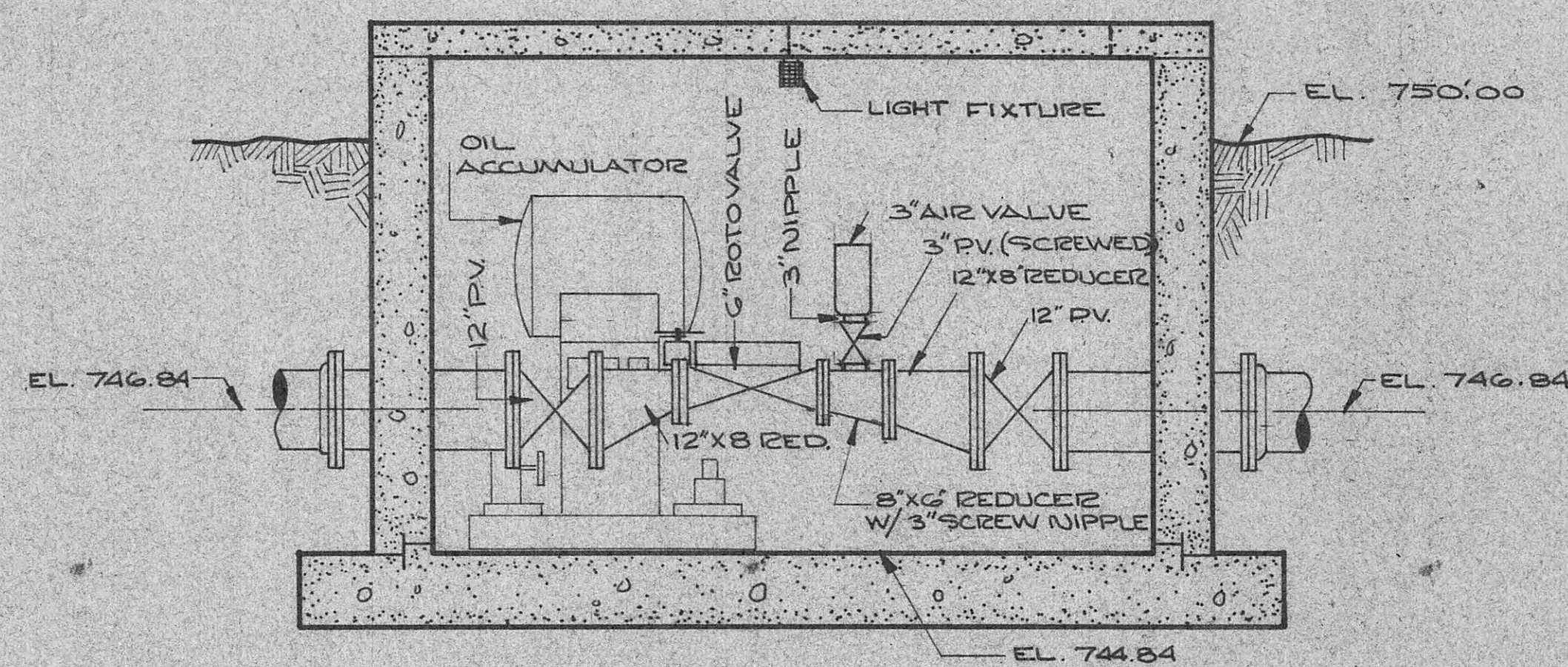
FLOOR PLAN
SCALE 1/4"=1'-0"



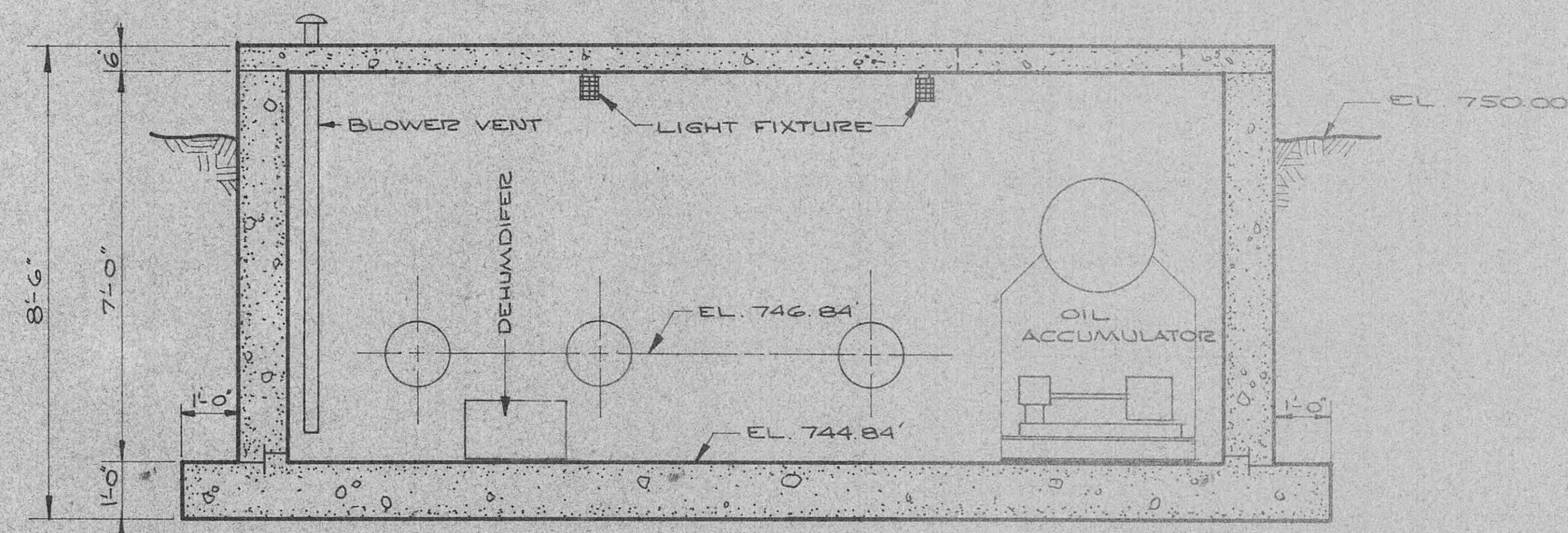
SECTION "B"-B"
SCALE 1/2"=1'-0"

MODIFICATIONS TO EXISTING PUMP STATION No. 3

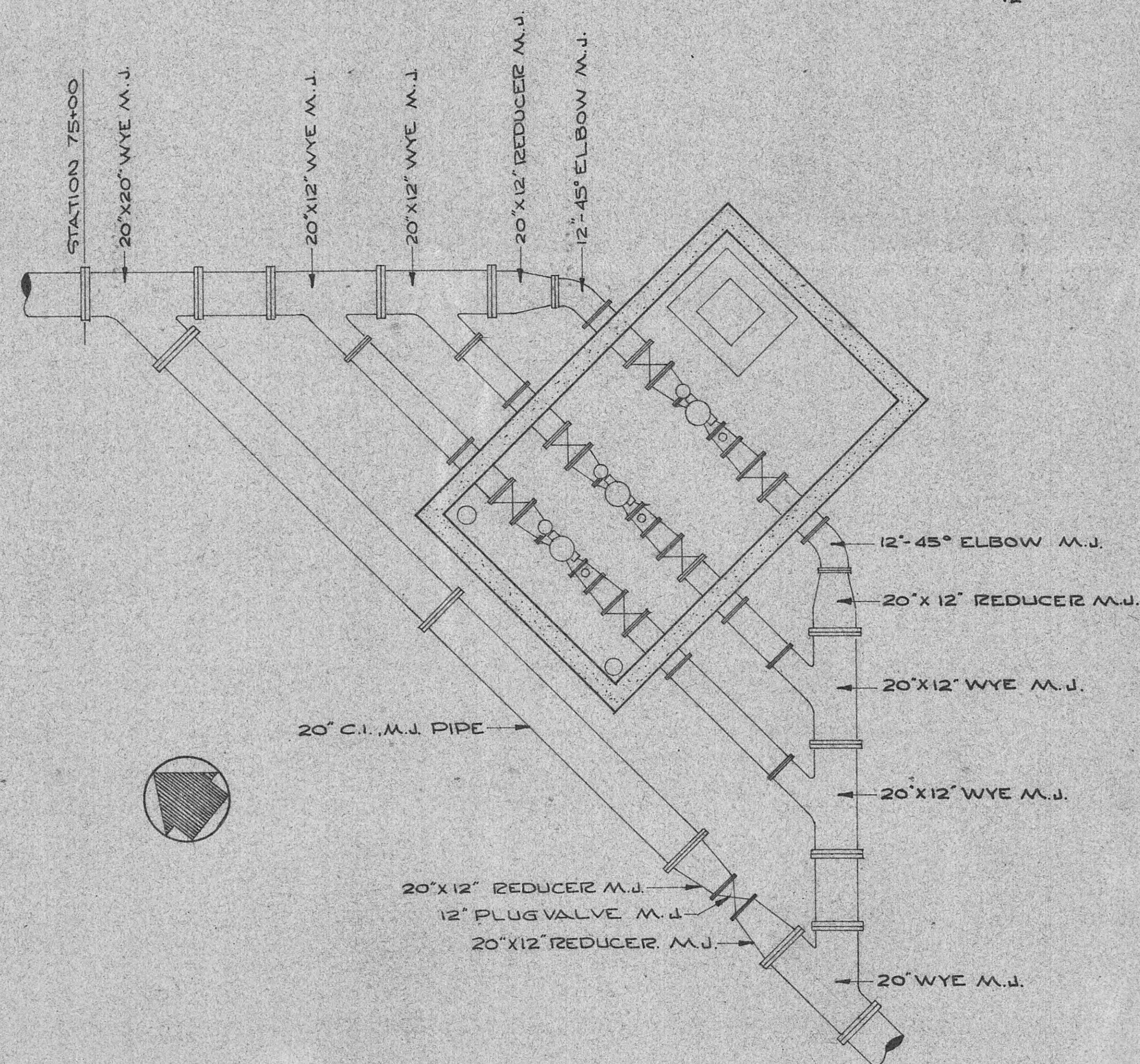
BLACK, CROW AND EIDSNES, INC. ENGINEERS		
GAINESVILLE	FLORIDA	
DRAWN BY: ROE	DATE:	
CHECKED BY:	FILE NO.:	
SCALE:		
NO.	DESCRIPTION	DATE
REVISIONS		
		SHEET NO.



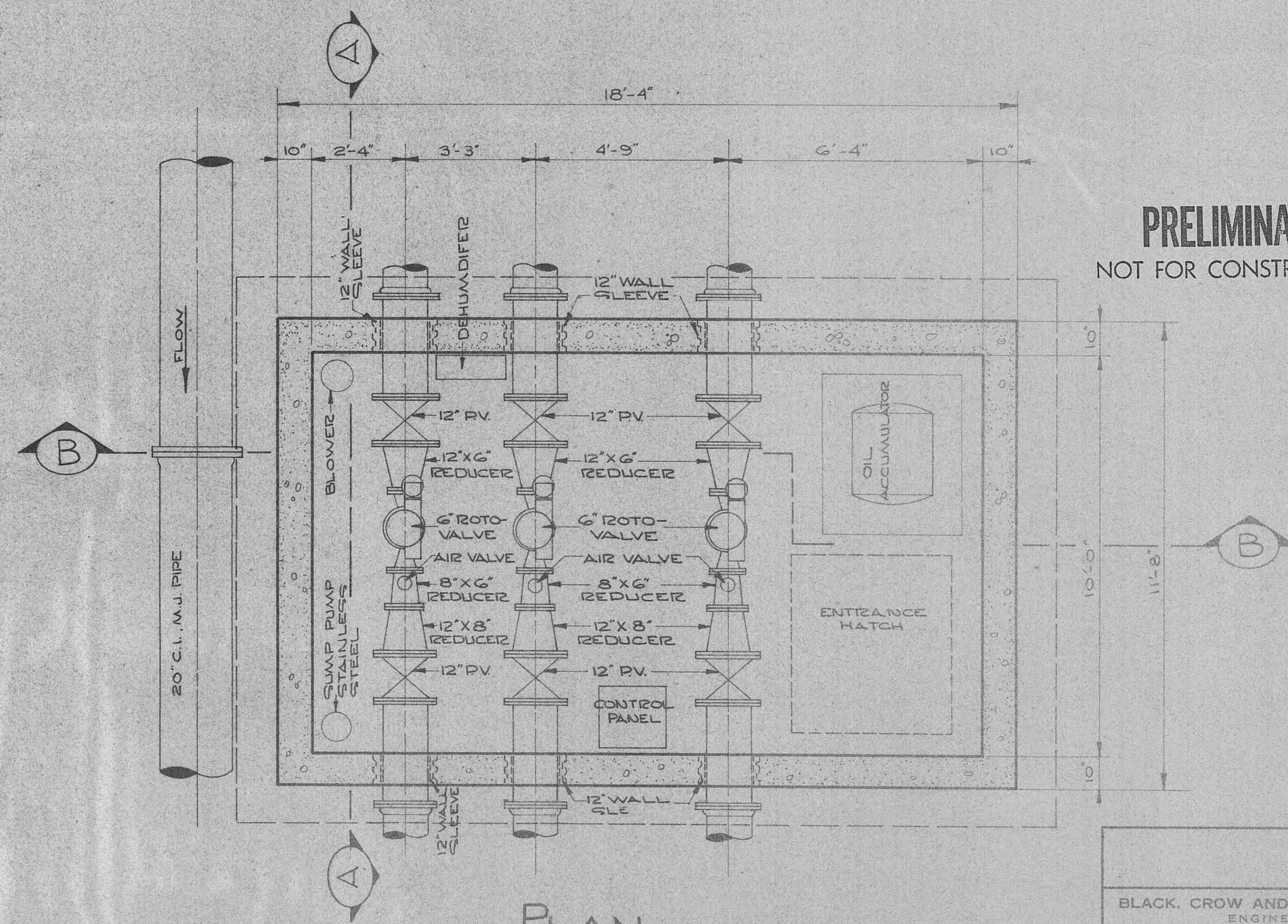
SECTION A-A
SCALE $\frac{1}{2}'' = 1'-0''$



SECTION B-B
SCALE $\frac{1}{2}'' = 1'-0''$



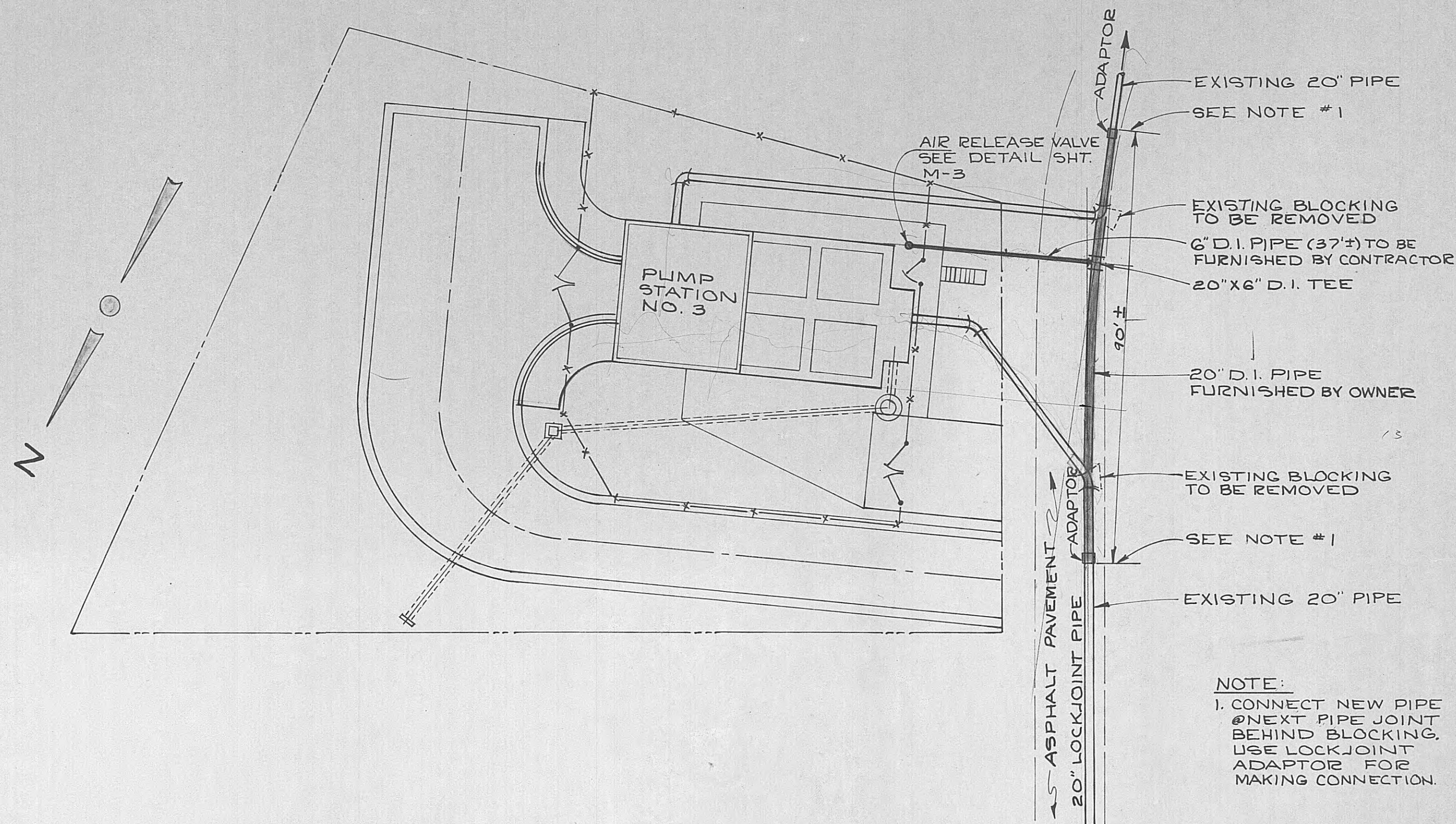
PIPING PLAN
SCALE $\frac{1}{4}'' = 1'-0''$



PLAN
SCALE $\frac{1}{2}'' = 1'-0''$

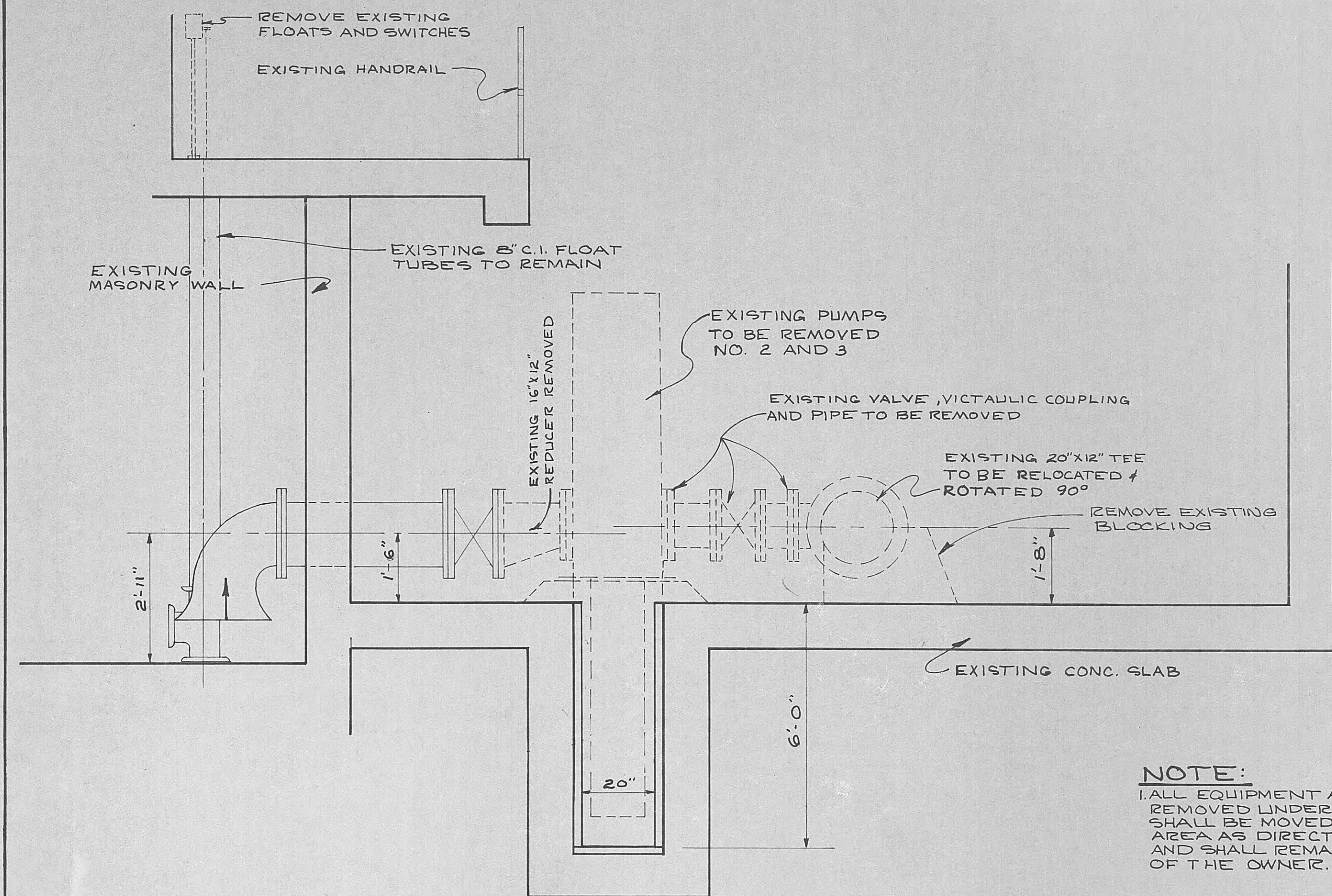
PRELIMINARY
NOT FOR CONSTRUCTION

BLACK, CROW AND EIDNESS, INC. ENGINEERS			
GAINESVILLE	FLORIDA	DATE:	
DRAWN BY: G.E.	CHECKED BY:	FILE NO.:	
SCALE:			
NO.	DESCRIPTION	DATE	SHEET NO.
REVISIONS			

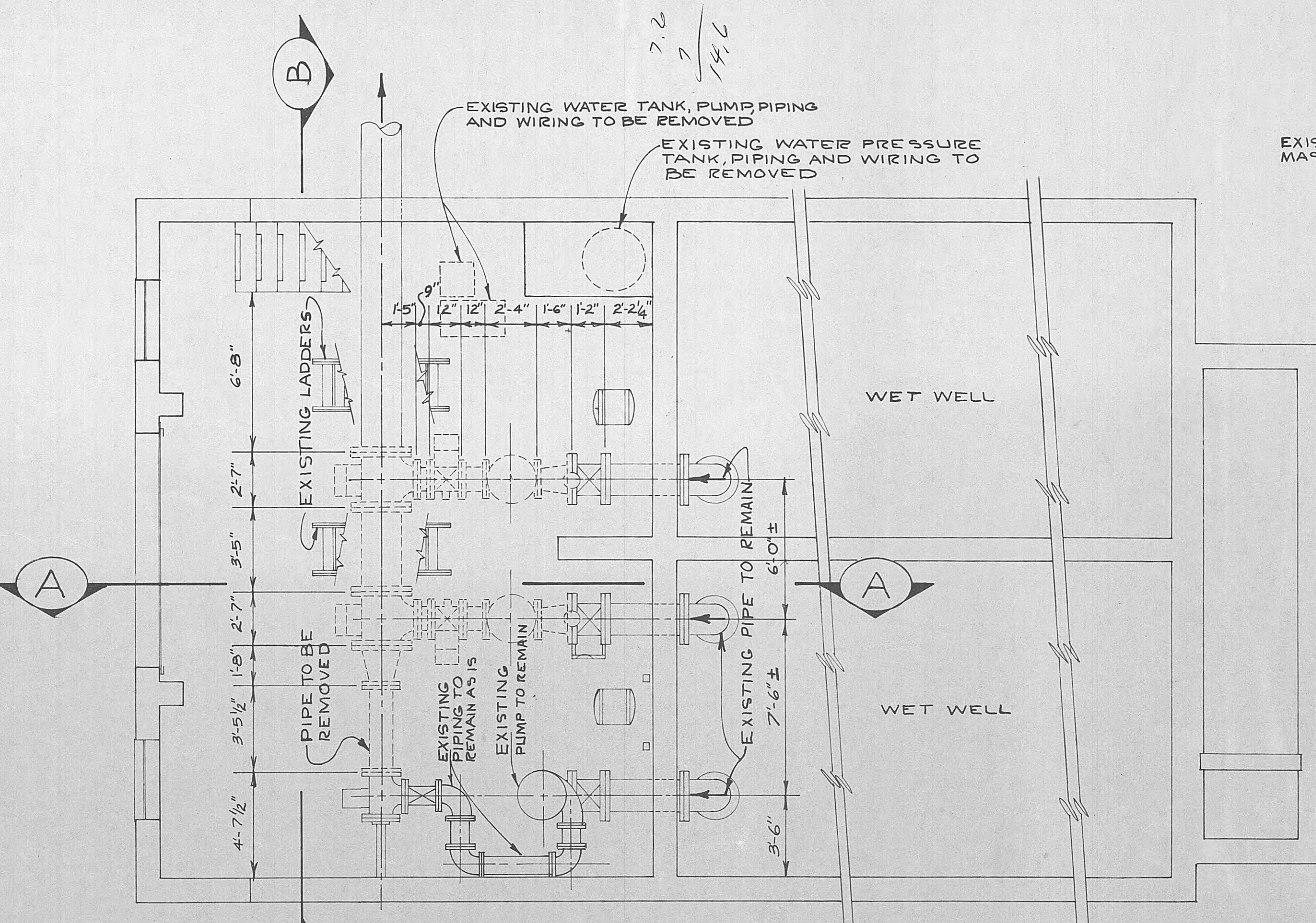


MODIFICATIONS TO PUMP STATION #3
SCALE 1"=20'-0"

NOTE:
1. CONNECT NEW PIPE @ NEXT PIPE JOINT BEHIND BLOCKING. USE LOCKJOINT ADAPTOR FOR MAKING CONNECTION.



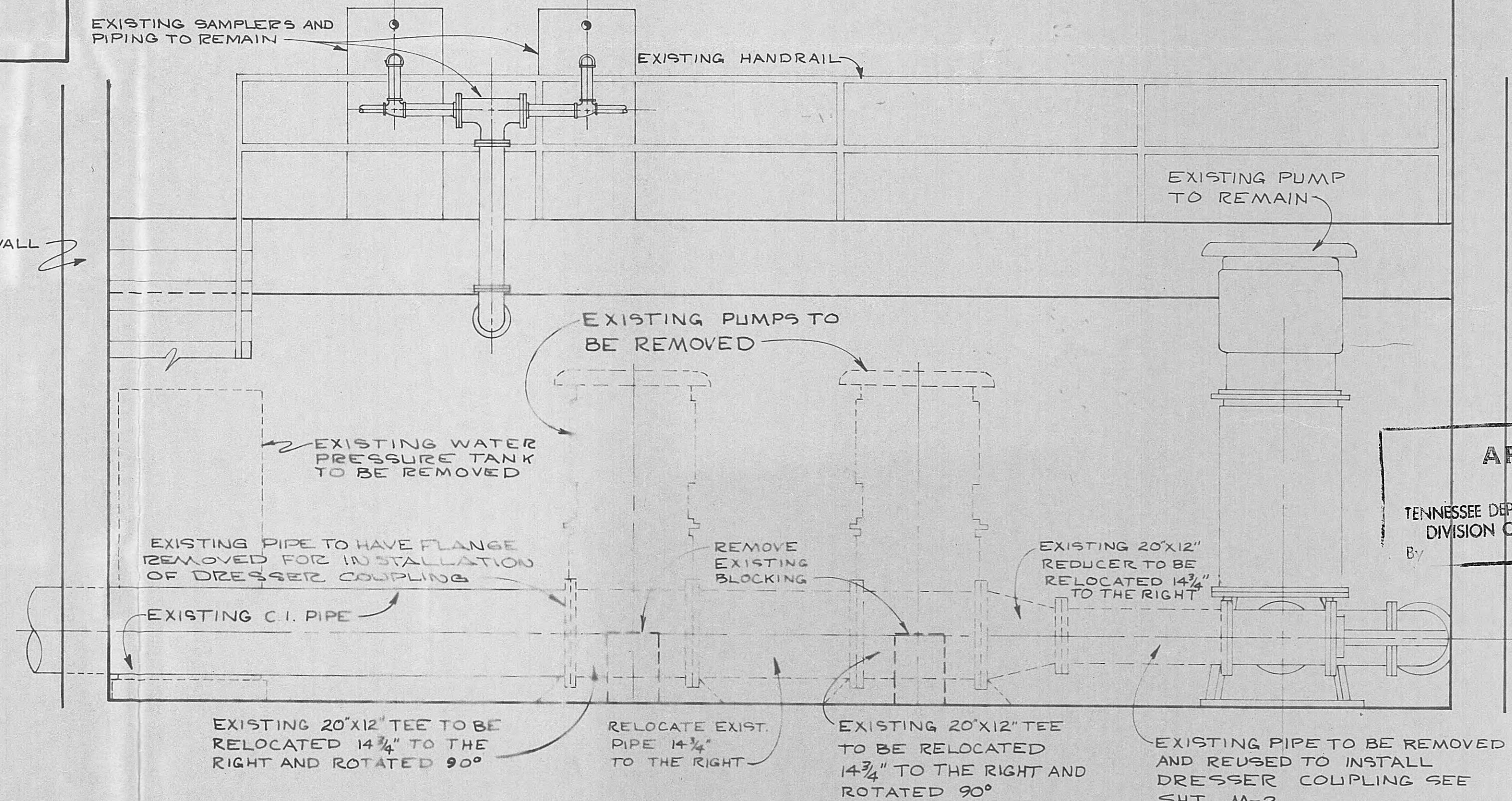
SECTION A-A
SCALE 1/2"=1'-0"



FLOOR PLAN
SCALE 1/4"=1'-0"

REMOVAL OF EXISTING EQUIPMENT FOR MODIFICATIONS TO EXISTING PUMP STATION #2

LEGEND
--- EXISTING EQUIPMENT TO BE REMOVED
— EXISTING EQUIPMENT TO REMAIN

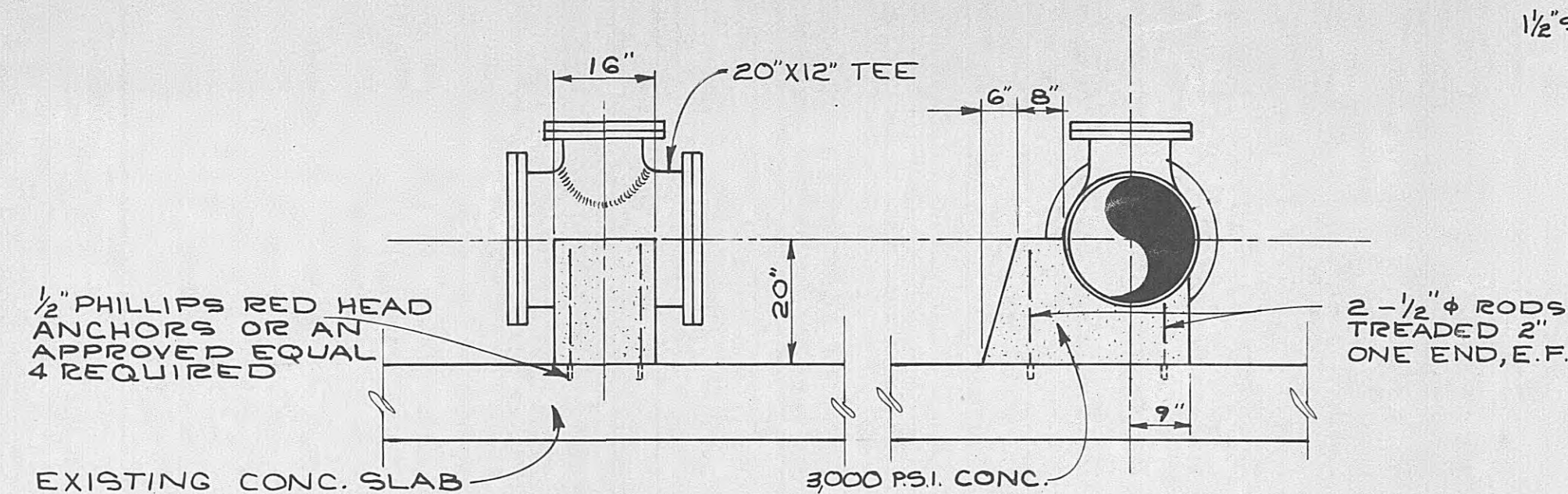


SECTION B-B
SCALE 1/2"=1'-0"

APPROVED
JUL 16 1968
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
DIVISION OF SANITARY ENGINEERING
Director

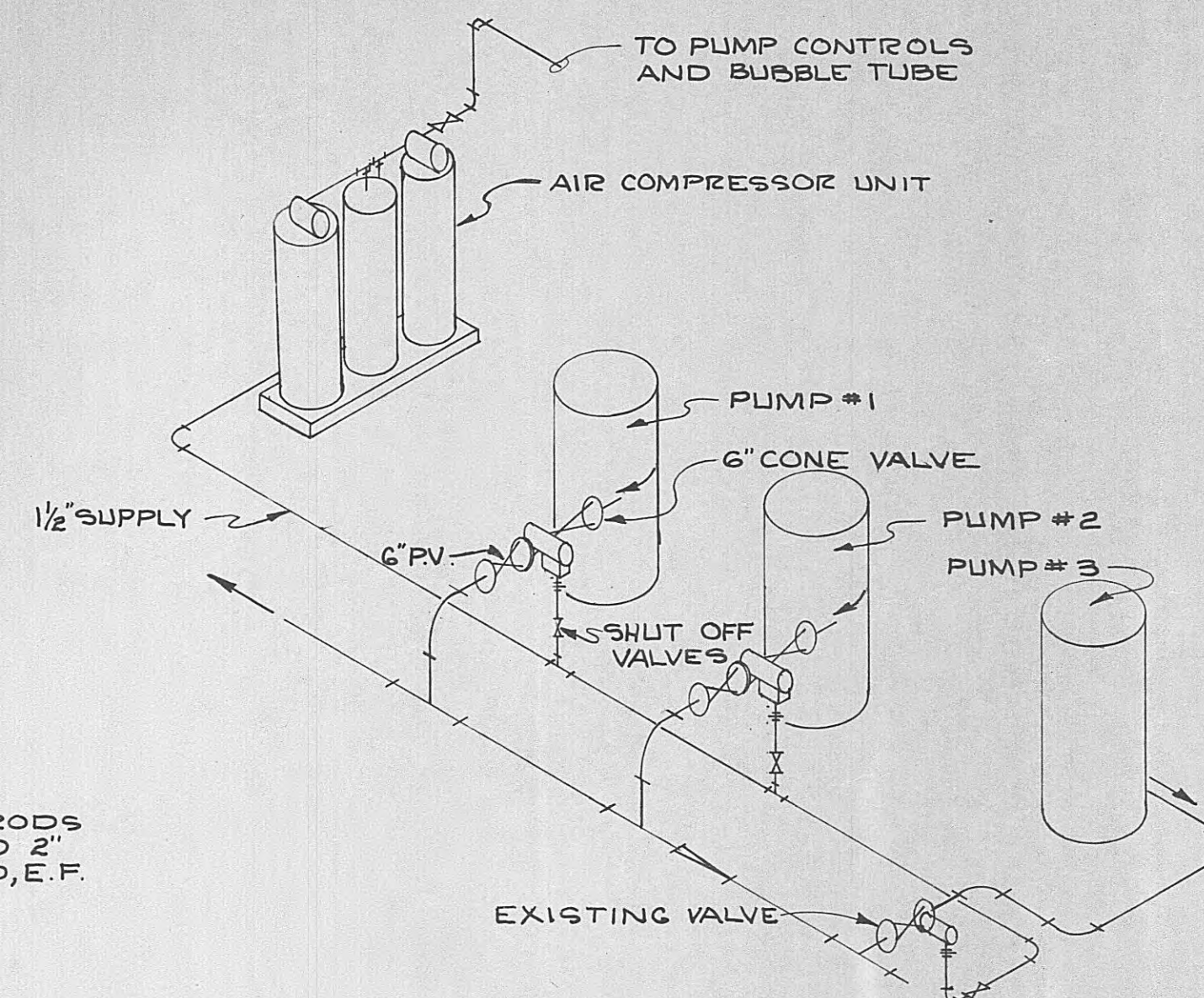
PHASE II OF	
MODIFICATIONS TO	
EFFLUENT PUMPING SYSTEM	
FOR CITY OF HARRIMAN TENNESSEE	
ROANE COUNTY	
BLACK, CROW AND EIDSNESS, INC.	
ENGINEERS	
GAINESVILLE	FLORIDA
DRAWN BY: ROE	DATE: JUNE 13, 1968
CHECKED BY:	FILE NO.: 427-68-2
SCALE: AS NOTED	
EXISTING EQUIPMENT REMOVAL	
FOR MODIFICATIONS TO	
EXISTING PUMP STATION #2	
NO.	DESCRIPTION
REVISIONS	

FOR APPROVAL



BLOCKING DETAIL

SCALE 1/2" = 1'-0"

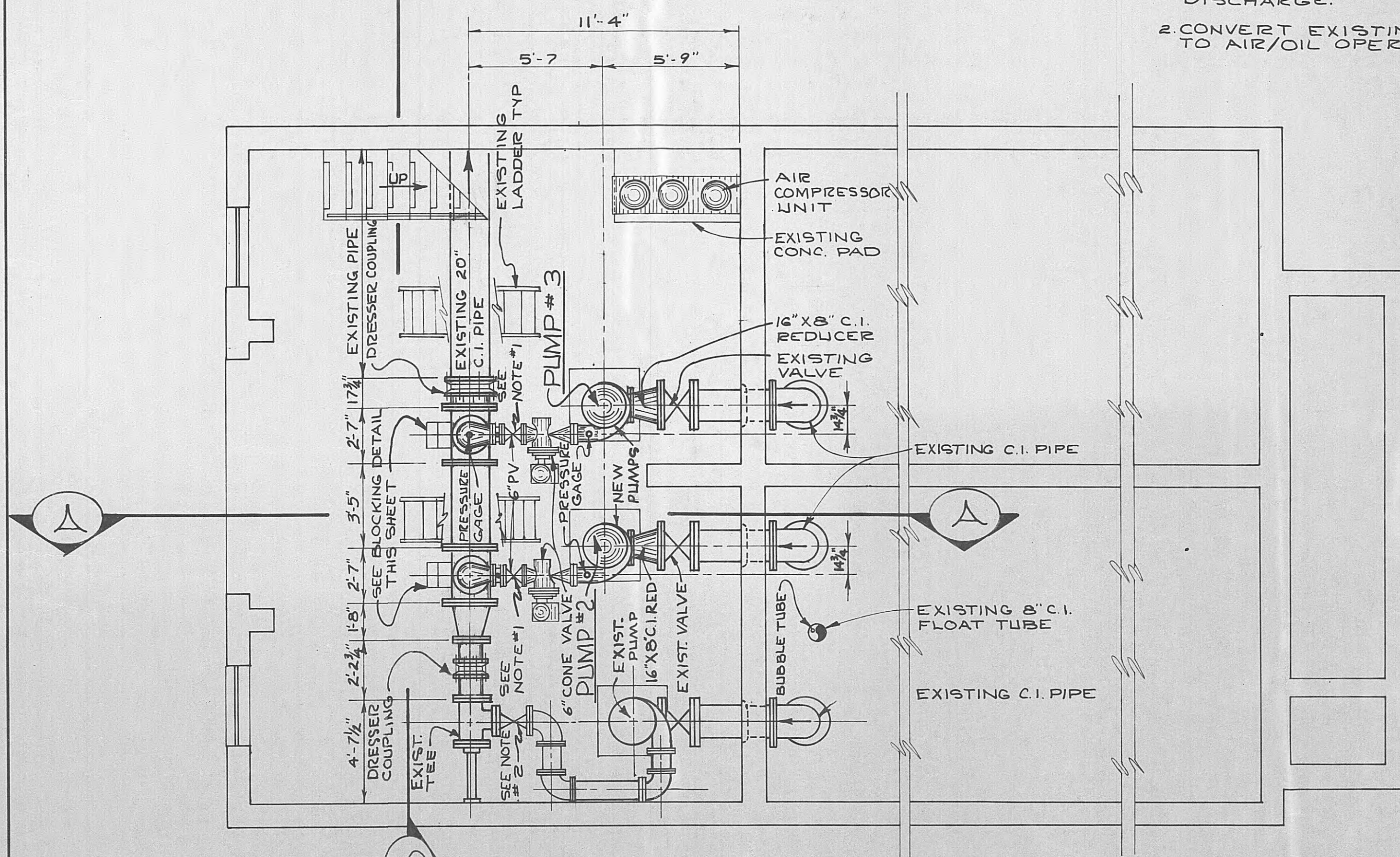


PIPING DIAGRAM FOR AIR COMPRESSOR UNIT

SCALE NONE

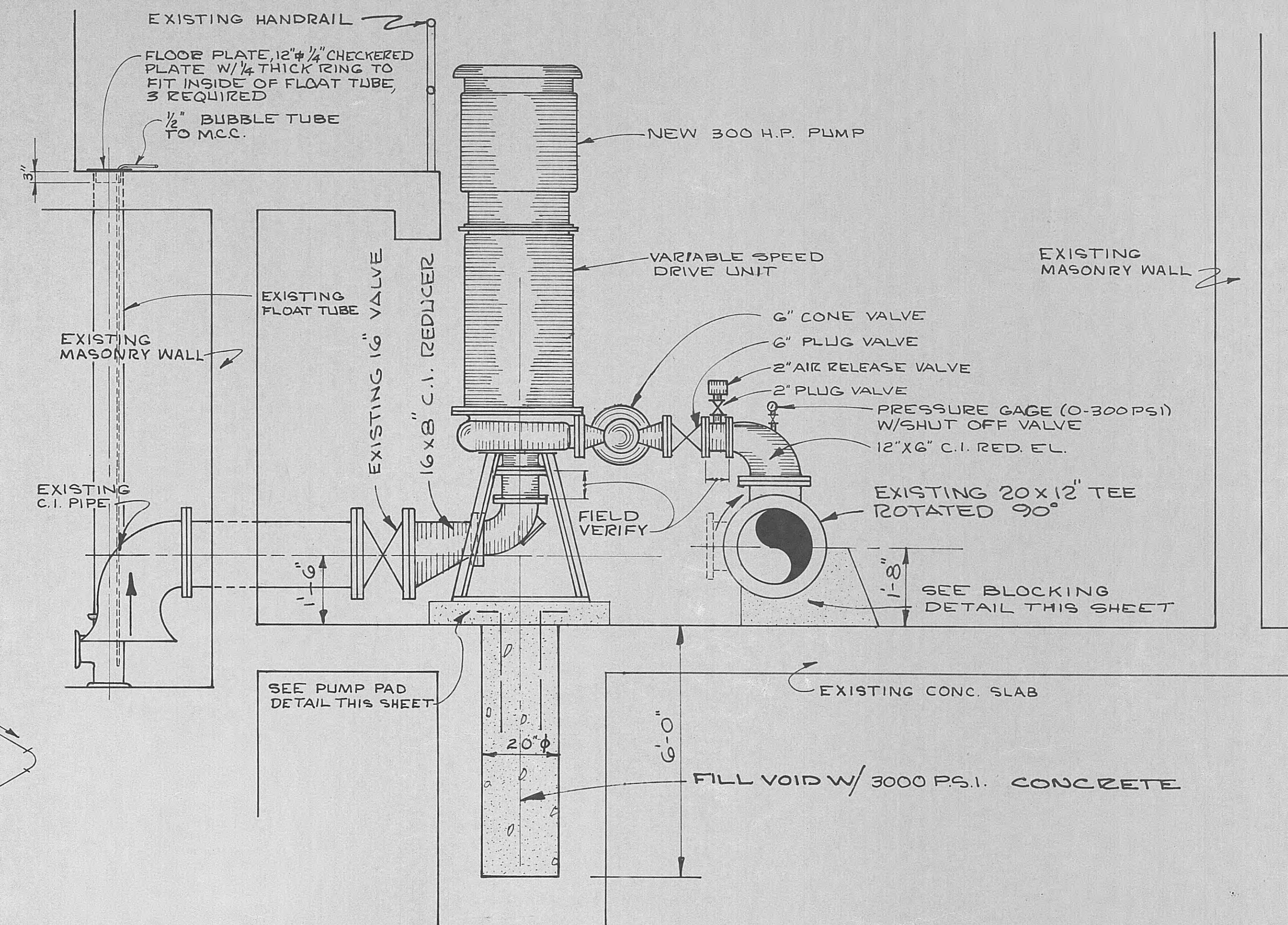
GENERAL NOTES

1. PROVIDE CHAINS AND LOCKS FOR PLUG VALVES ON PUMP DISCHARGE.
2. CONVERT EXISTING VALVE TO AIR/OIL OPERATION.



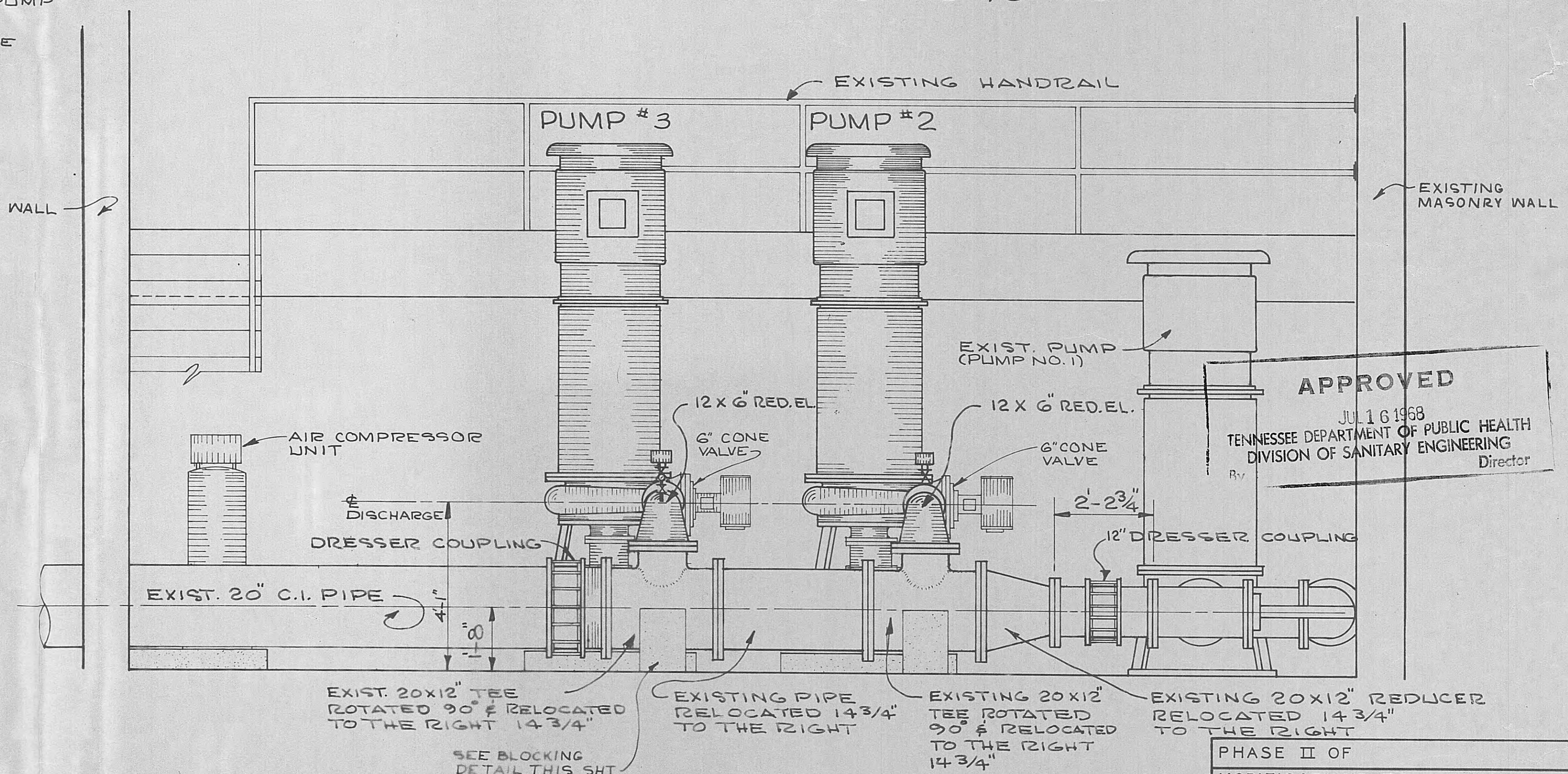
FLOOR PLAN

SCALE $\frac{1}{4}" = 1'-0"$



SECTION "A"- "A"

SCALE $\frac{1}{2}" = 1'-0"$



SECTION "B"-"B'

1/2" = 1'-0" FOR APPROVAL

FOR APPROVAL

LEGEND

=====	EXISTING EQUIPMENT TO REMAIN
	NEW EQUIPMENT TO BE INSTALLED. OWNER TO FURNISH TWO (2) 6" CONE VALVE.

APPROVED
JUL 16 1968
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
DIVISION OF SANITARY ENGINEERING
Director

PHASE II OF
MODIFICATIONS TO
EFFLUENT PUMPING SYSTEM
FOR CITY OF HARRIMAN TENNESSEE
ROANE COUNTY TENNESSEE

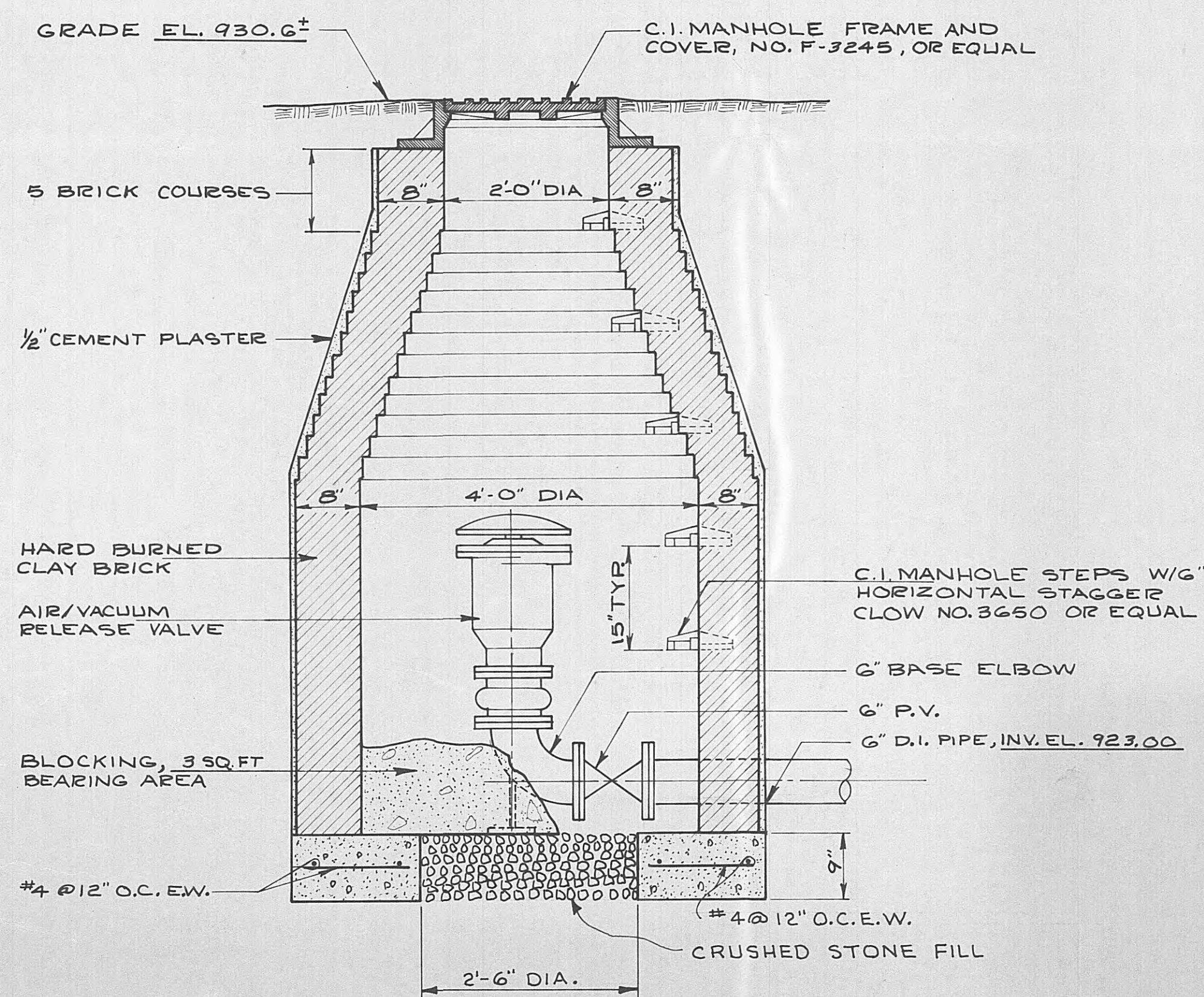
BLACK, CROW AND EIDSNESS, INC.
ENGINEERS

GAINESVILLE		FLORIDA	
DRAWN BY: R.O.E.		DATE: JUNE 14, 1968	
CHECKED BY:		FILE NO: 478-68-2	

SCALE: AS NOTED

MODIFICATIONS TO
EXISTING PUMP
STATION # 2

SHEET
NO.
M-2

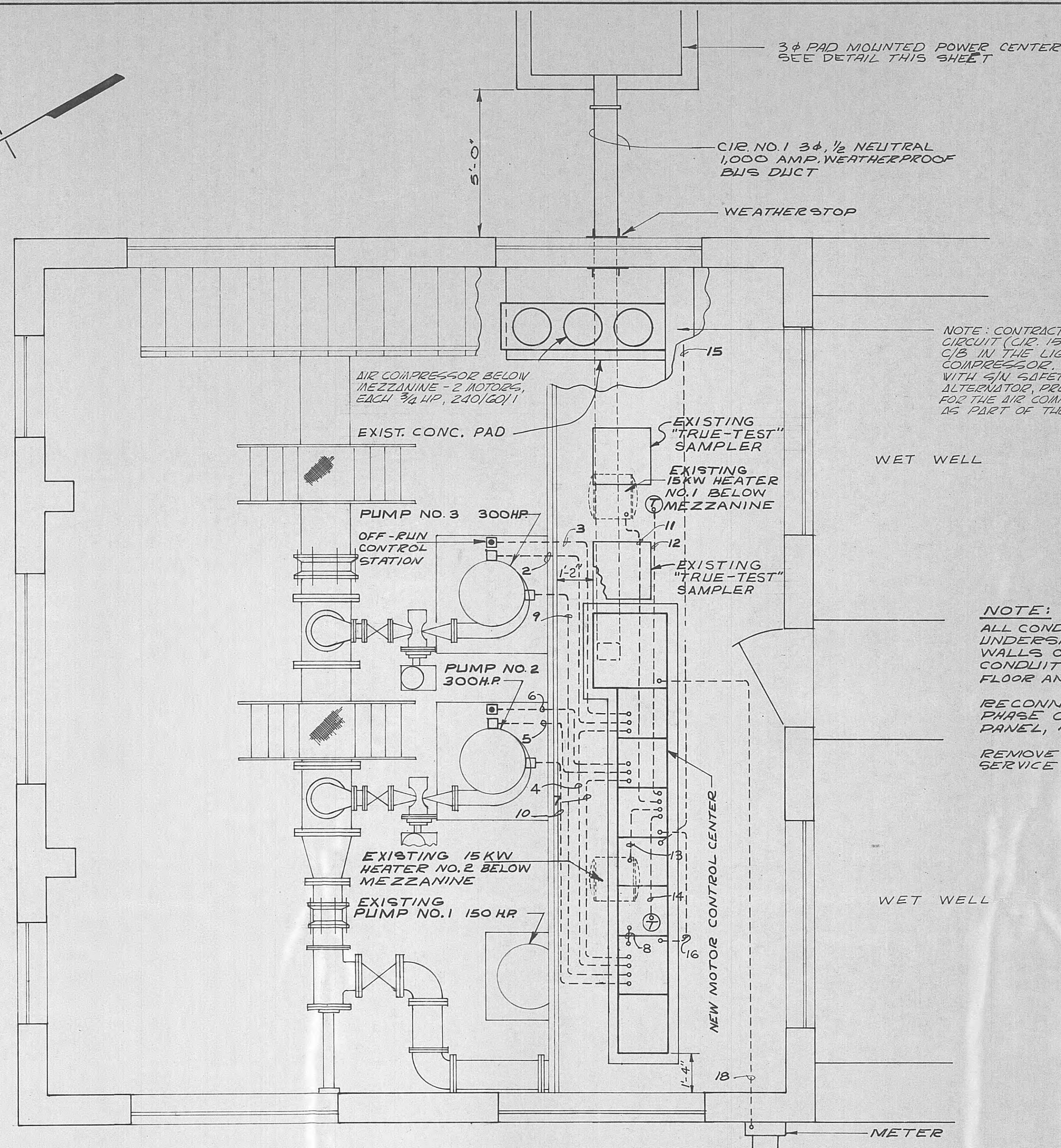
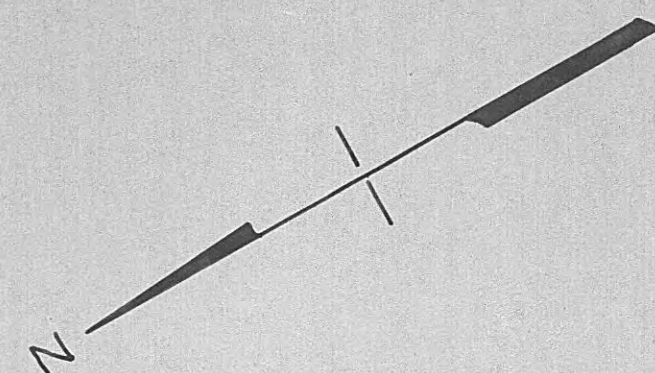


AIR RELEASE VALVE PIT
SCALE 3/4" = 1'-0"

APPROVED
JUL 16 1968
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
DIVISION OF SANITARY ENGINEERING
By: _____

FOR APPROVAL

PHASE II OF	
MODIFICATIONS TO EFFLUENT PUMPING SYSTEM FOR CITY OF HARRIMAN TENNESSEE ROANE COUNTY TENNESSEE	
BLACK, CROW AND EIDSNES, INC. ENGINEERS	
GAINESVILLE	FLORIDA
DRAWN BY: R.O.E.	DATE:
CHECKED BY:	FILE NO.: 470-68-2
SCALE: 3/4" = 1'-0"	
NO.	DESCRIPTION
REVISIONS	
AIR RELEASE VALVE PIT	
SHEET NO.	M-3



ELECTRICAL PLAN
SCALE 3/8" = 1'-0"

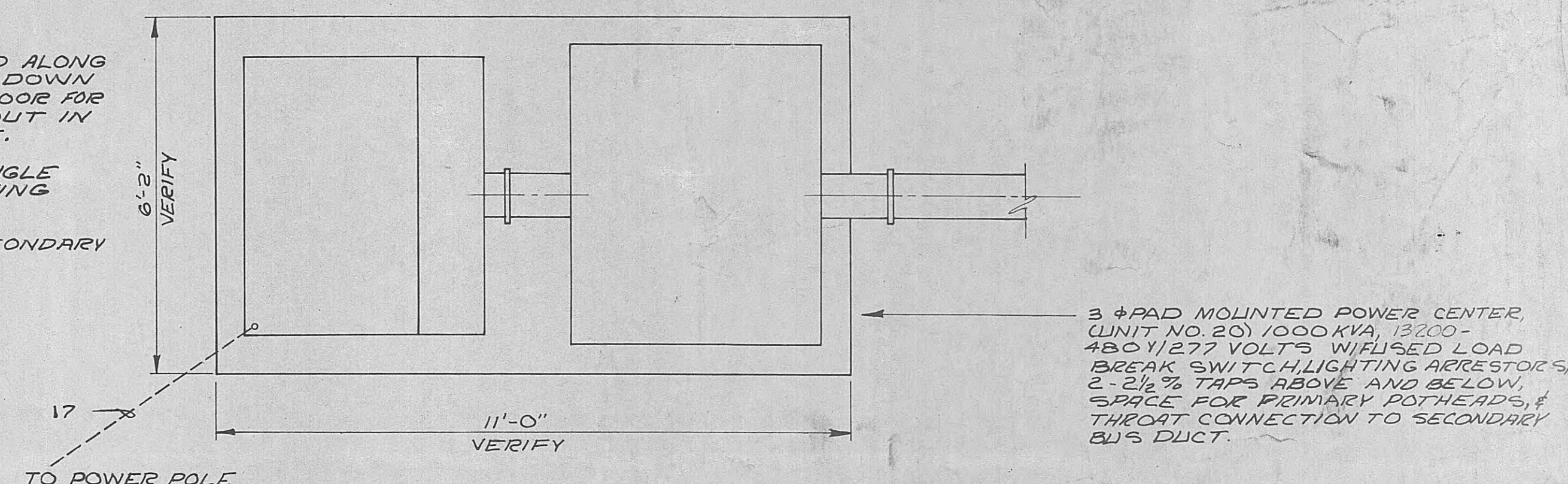
POWER AND CONTROL WIRING SCHEDULE									
CIRCUIT NO.	FROM	TO	NO. OF PHASES	VOLTS	AMPS	CABLE DATA	CONDUIT	REMARKS	
1	SERVICE TRANSFORMER	MCC. UNIT NO. 4	3	480	979	1000A BUS	DUCT	SECONDARY SERVICE	
2	M.C.C. UNIT NO. 6	PUMP NO. 3	3	480	370	6-1/2 350 MCM	20 3"	POWER	
3	M.C.C. UNIT NO. 6	PUMP NO. 3 C.B.	3	120	—	2-1/2 NO. 12	1/2"	CONTROL	
4	M.C.C. UNIT NO. 6	VARIABLE SPEED PANEL	3	120	—	6-1/2 NO. 12	1"	INTERLOCK, CONTROL, IND.	
5	M.C.C. UNIT NO. 7	PUMP NO. 2	3	480	370	6-1/2 350 MCM	20 3"	POWER	
6	M.C.C. UNIT NO. 7	PUMP NO. 2 C.B.	3	120	—	2-1/2 NO. 12	1/2"	CONTROL	
7	M.C.C. UNIT NO. 7	VARIABLE SPEED PANEL	3	120	—	6-1/2 NO. 12	1"	INTERLOCK, CONTROL, IND.	
8	VARIABLE SPEED PANEL	EXIST. PUMP NO. 1 M.S.	3	120	—	6-1/2 NO. 12	1"	INTERLOCK, CONTROL, IND.	
9	VARIABLE SPEED PANEL	PUMP NO. 2 MFG. DRIVE	3	—	—	BY DRIVE MFG.	3/4"	CONTROL, INDICATION	
10	VARIABLE SPEED PANEL	PUMP NO. 3 MFG. DRIVE	3	—	—	BY DRIVE MFG.	3/4"	CONTROL, INDICATION	
11	M.C.C. UNIT NO. 8	HEATER NO. 1 15 KW	3	480	23	3-1/2 NO. 10	3/4"	POWER	
12	M.C.C. UNIT NO. 8	HEATER NO. 1 THERMOSTAT	3	120	—	2-1/2 NO. 12	1/2"	CONTROL	
13	M.C.C. UNIT NO. 9	HEATER NO. 2 15 KW	3	480	23	3-1/2 NO. 10	3/4"	POWER	
14	M.C.C. UNIT NO. 9	HEATER NO. 2 THERMOSTAT	3	120	—	2-1/2 NO. 12	1/2"	CONTROL	
15	M.C.C. UNIT NO. 10	AIR COMPRESSOR	3	240	12	3-1/2 NO. 12	3/4"	POWER	
16	M.C.C. UNIT NO. 11	VARIABLE SPEED PANEL	3	480	5	2-1/2 NO. 12	1/2"	POWER	
17	POWER POLE	POWER CENTER, UNIT NO. 20	3	13200	43	BY POWER CO.	3-1/2"	PRIMARY SERVICE	
18	M.C.C. UNIT NO. 5	POWER COMPANY METER	3	—	—	BY POWER CO.	1"	METERING	

NOTE: CONTRACTOR SHALL RUN A 220/40/1 CIRCUIT (CIR. 15) FROM A 2-POLE, 20 AMP C.B. IN THE LIGHTING PANEL TO THE AIR COMPRESSOR. TERMINATE WITH 30 AMP 2 FUSE WITH 4 IN. SAFETY SWITCH. MOTOR STARTERS, ALTERNATOR, PRESSURE SWITCHES, AND INTERLOCKS FOR THE AIR COMPRESSOR SHALL BE SUPPLIED AS PART OF THE AIR COMPRESSOR PACKAGE.

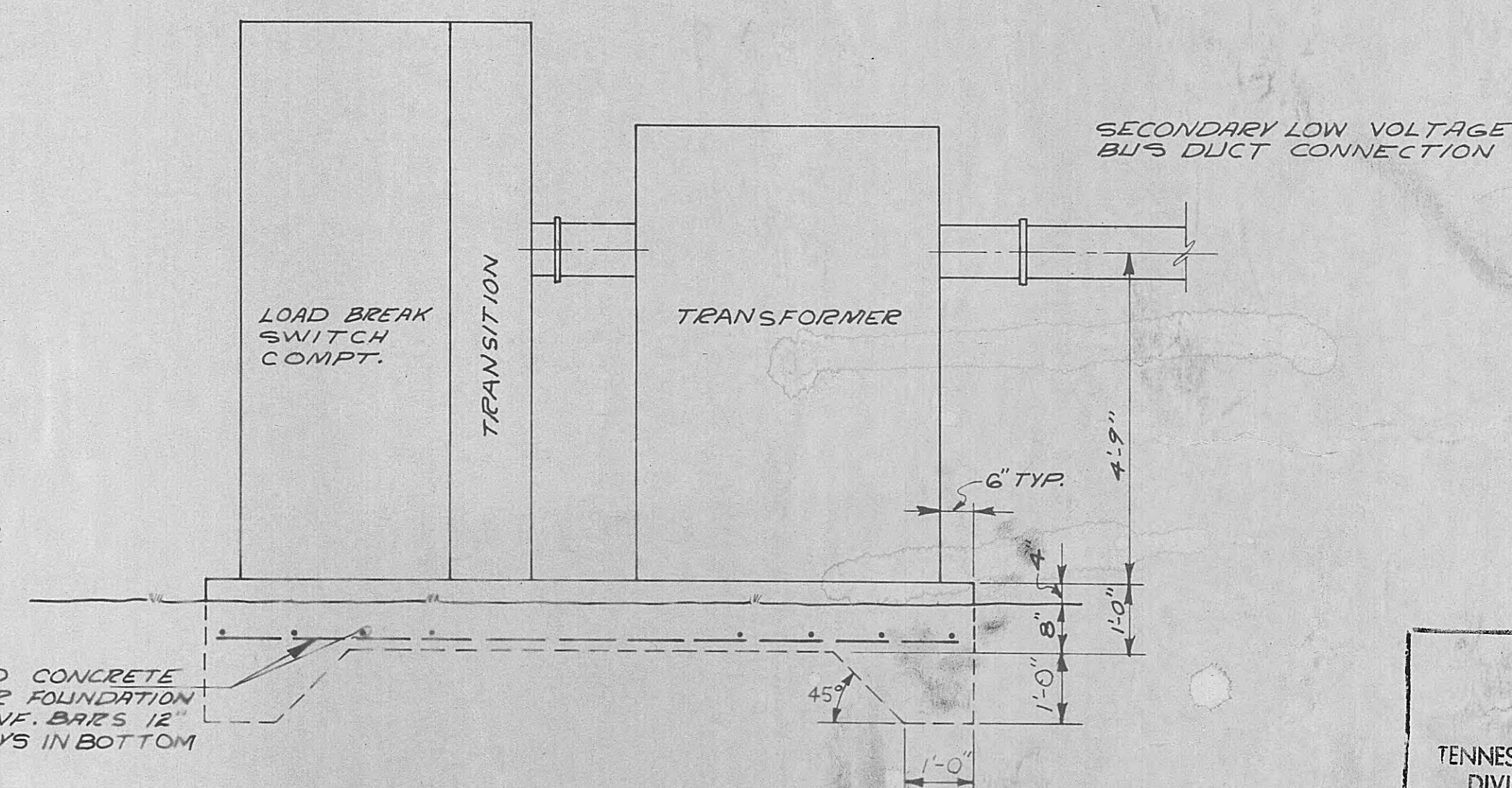
NOTE: ALL CONDUIT SHALL BE DRESSED ALONG UNDERSIDE OF MEZZANINE AND DOWN WALLS OR COLUMNS. SAW-CUT FLOOR FOR CONDUIT RUNS TO EQUIPMENT OUT IN FLOOR AND CONCEAL WITH GROUT.

RECONNECT ALL EXISTING SINGLE PHASE CIRCUITS TO NEW LIGHTING PANEL, M.C.C. UNIT NO. 18.

REMOVE EXISTING OVERHEAD SECONDARY SERVICE DROPS. (2)



REINFORCED CONCRETE TRANSFORMER FOUNDATION W/ NO. 5 REINF. BARS 12" O.C. BOTH WAYS IN BOTTOM



POWER CENTER DETAIL
SCALE NONE

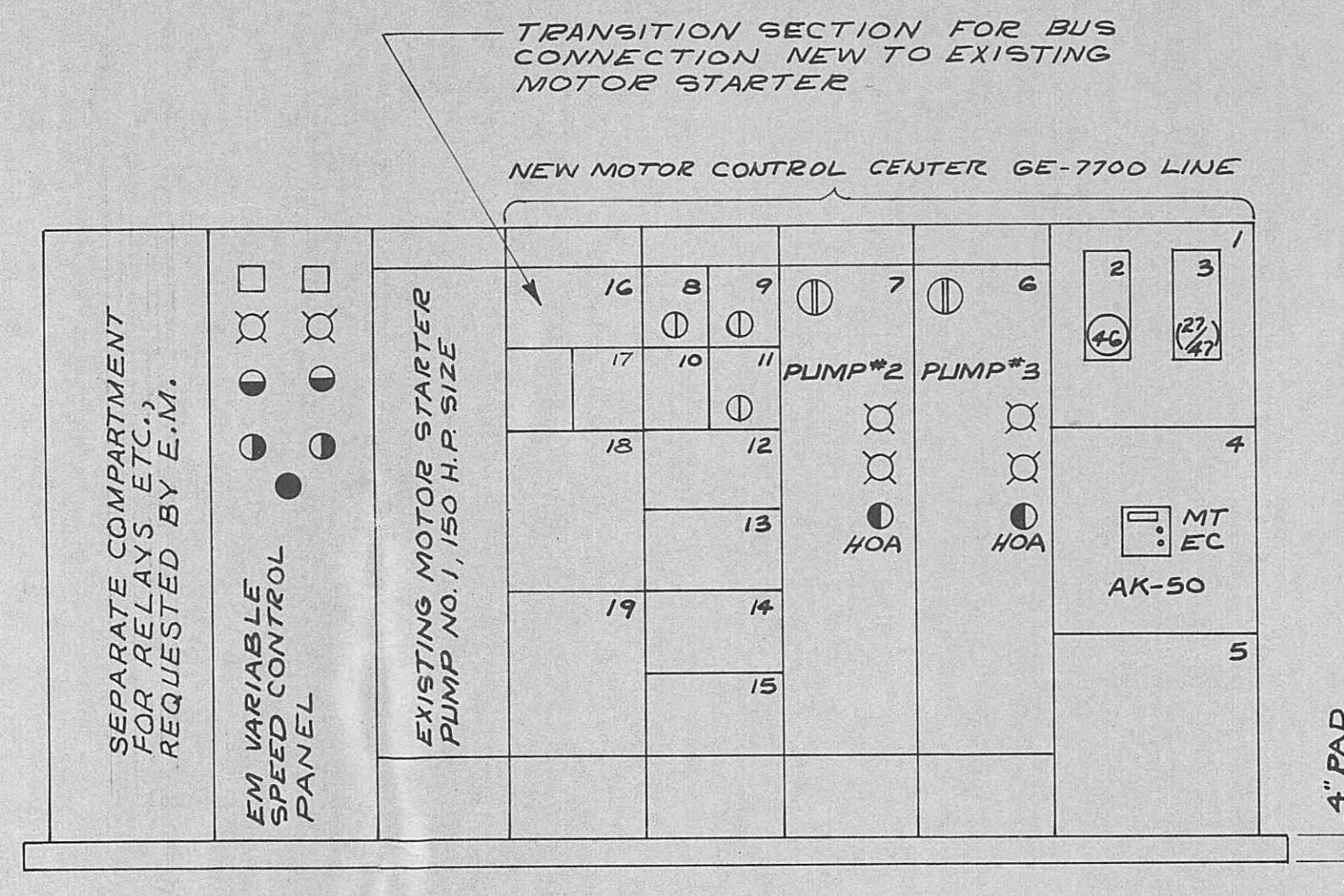
APPROVED
JUL 16 1968
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
DIVISION OF SANITARY ENGINEERING
By _____ Director

PHASE II OF	
MODIFICATIONS TO	
EFFLUENT PUMPING SYSTEM	
FOR CITY OF HARRISMAN TENNESSEE	
ROANE COUNTY, TENNESSEE	
BLACK, CROW AND EIDNESS, INC.	
ENGINEERS	
GAINESVILLE	FLORIDA
DRAWN BY: ROE	DATE:
CHECKED BY:	FILE NO. 429-6B-2
SCALE: 3/8" = 1'-0"	
ELECTRICAL PLAN	
SHEET NO. E-1	

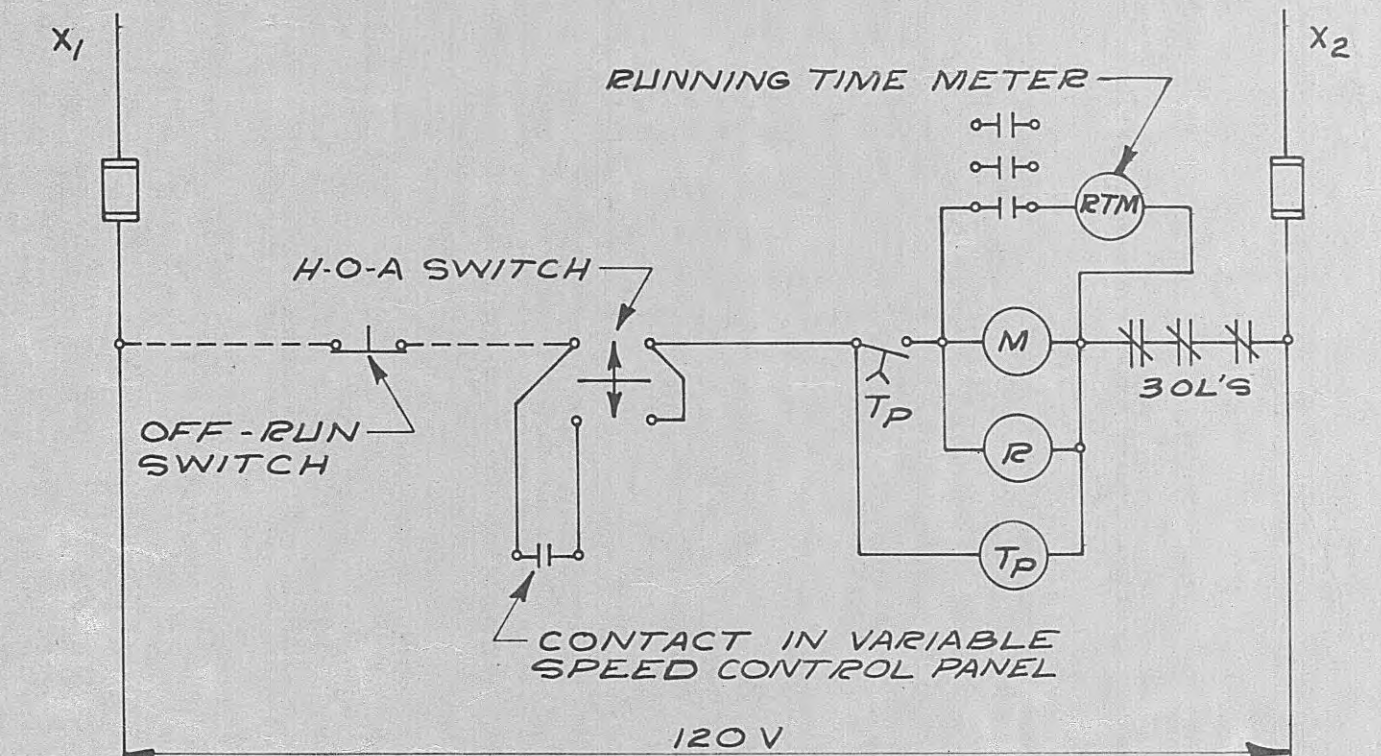
FOR APPROVAL



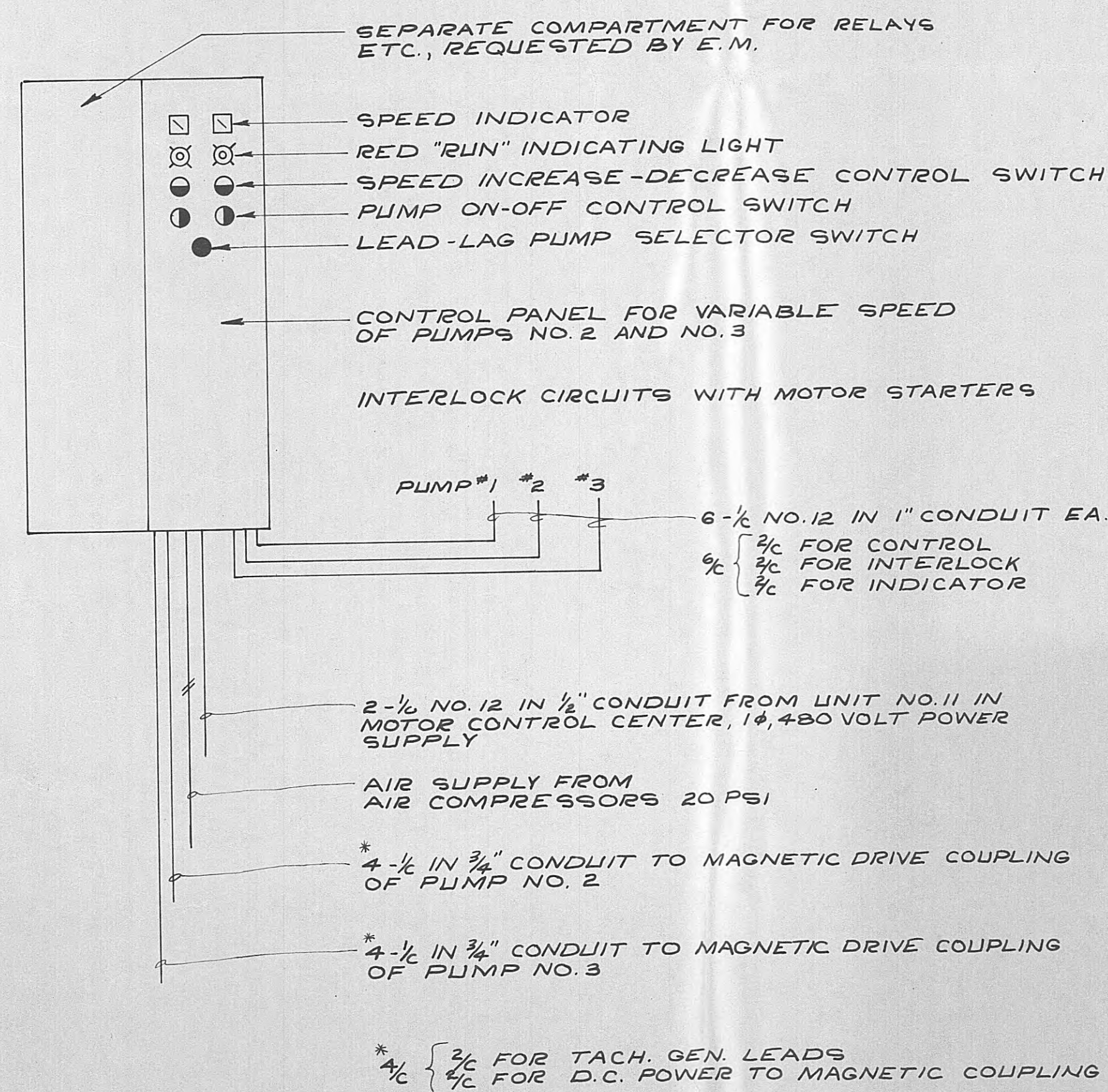
MOTOR CONTROL CENTER EQUIPMENT SCHEDULE														REMARKS
UNIT NO.	DESCRIPTION OF UNIT	VOLTAGE	HP	FRAME	AMP. CONT.	FUSE OR %	TRIP	BREAKER	TERMINAL FRAME	POLE	AMP. LOAD	NEW TYPE ENCLOSURE	NEW TYPE CONTROL	
1	RELAY PANEL	-	-	-	-	-	-	-	-	1	-	-	-	GE TYPE NBV
2	NEG. SEQUENCE RELAY	-	-	-	-	-	-	-	-	1	-	-	-	
3	PHASE REV. UNDERVOLTAGE RELAY	-	-	-	-	-	-	-	-	1	-	-	-	GE TYPE 1CR
4	CIRCUIT BREAKER	480	-	1600	1600	ET	AK-50	3	979	1	-	-	-	MAIN, SHUNT TRIP
5	METERING CT'S	-	-	-	-	-	-	-	-	-	-	-	-	AS REQUIRED BY POWER CO.
6	RVNR COMB. % MOTOR STARTER	480	300	1200	500	ET	TKM	3	370	1	5	A	-	PUMP NO. 2
7	RVNR COMB. % MOTOR STARTER	480	300	1200	500	ET	TKM	3	370	1	5	A	-	PUMP NO. 3
8	CIRCUIT BREAKER	480	-	100	30	ET	TEF	3	23	1	-	-	-	HEATER NO. 1, 15 KW
9	CIRCUIT BREAKER	480	-	100	30	ET	TEF	3	23	1	-	-	-	HEATER NO. 2, 15 KW
10	SPACE	-	-	-	-	-	-	-	-	-	-	-	-	
11	CIRCUIT BREAKER	480	-	100	20	ET	TEF	2	5	1	-	-	-	MAGNETIC DRIVE CONTROL PNL.
12	SPACE	-	-	-	-	-	-	-	-	-	-	-	-	
13	SPACE	-	-	-	-	-	-	-	-	-	-	-	-	
14	SPACE	-	-	-	-	-	-	-	-	-	-	-	-	
15	SPACE	-	-	-	-	-	-	-	-	-	-	-	-	
16	TRANSITION SECTION	480	-	-	-	-	-	-	-	-	-	-	-	BUS TRANSITION
17	CIRCUIT BREAKER	480	-	100	60	ET	TEF	2	32	1	-	-	-	LIGHTING TRANSFORMER
18	LIGHTING PANEL, 24 POLE	-	-	-	-	-	-	-	-	64	1	-	-	120/240, 1 ϕ , 3W
19	TRANSFORMER, 15 KVA	-	-	-	-	-	-	-	-	-	-	-	-	480-120/240, 1 ϕ
20	POWER CENTER, 1000 KVA	-	-	-	-	-	-	-	-	-	-	-	-	
21	FUSED SWITCH IN BUS	480	-	-	200	CLF	-	3	90	1	-	-	-	14,000 AMP MAX LET THROUGH



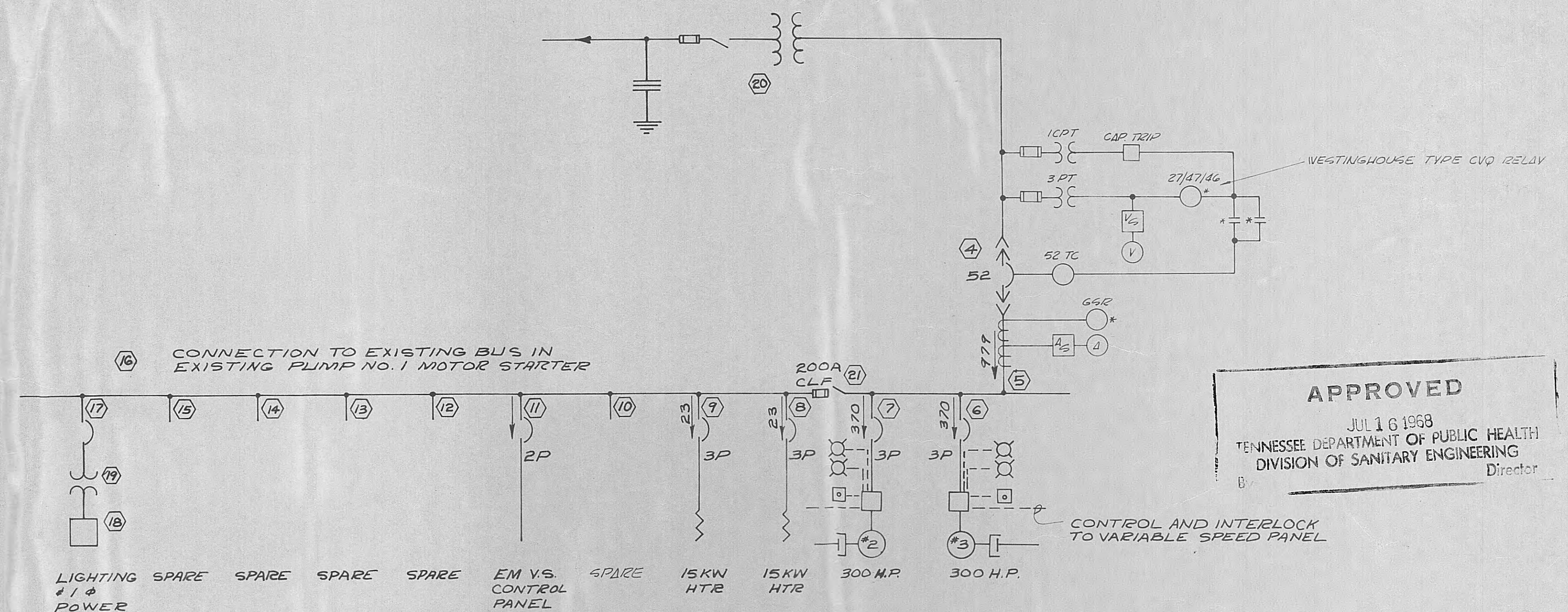
MOTOR CONTROL CENTER
SCALE NONE



MOTOR CONTROL SCHEME "A"
SCALE NONE



VARIABLE SPEED CONTROL PANEL DETAIL
SCALE NONE

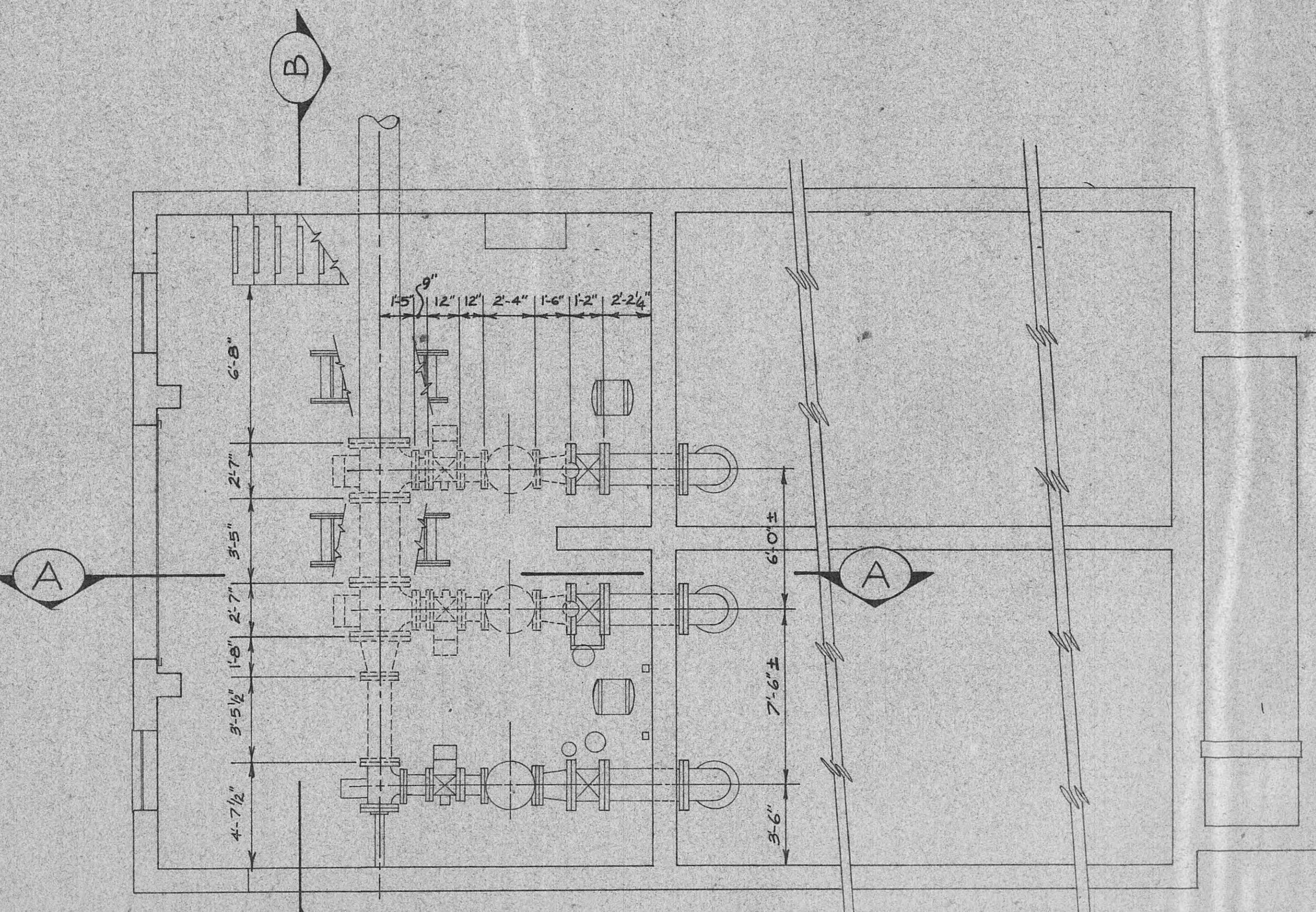


SCHEMATIC DIAGRAM
SCALE NONE

APPROVED
JUL 16 1968
TENNESSEE DEPARTMENT OF PUBLIC HEALTH
DIVISION OF SANITARY ENGINEERING
Director

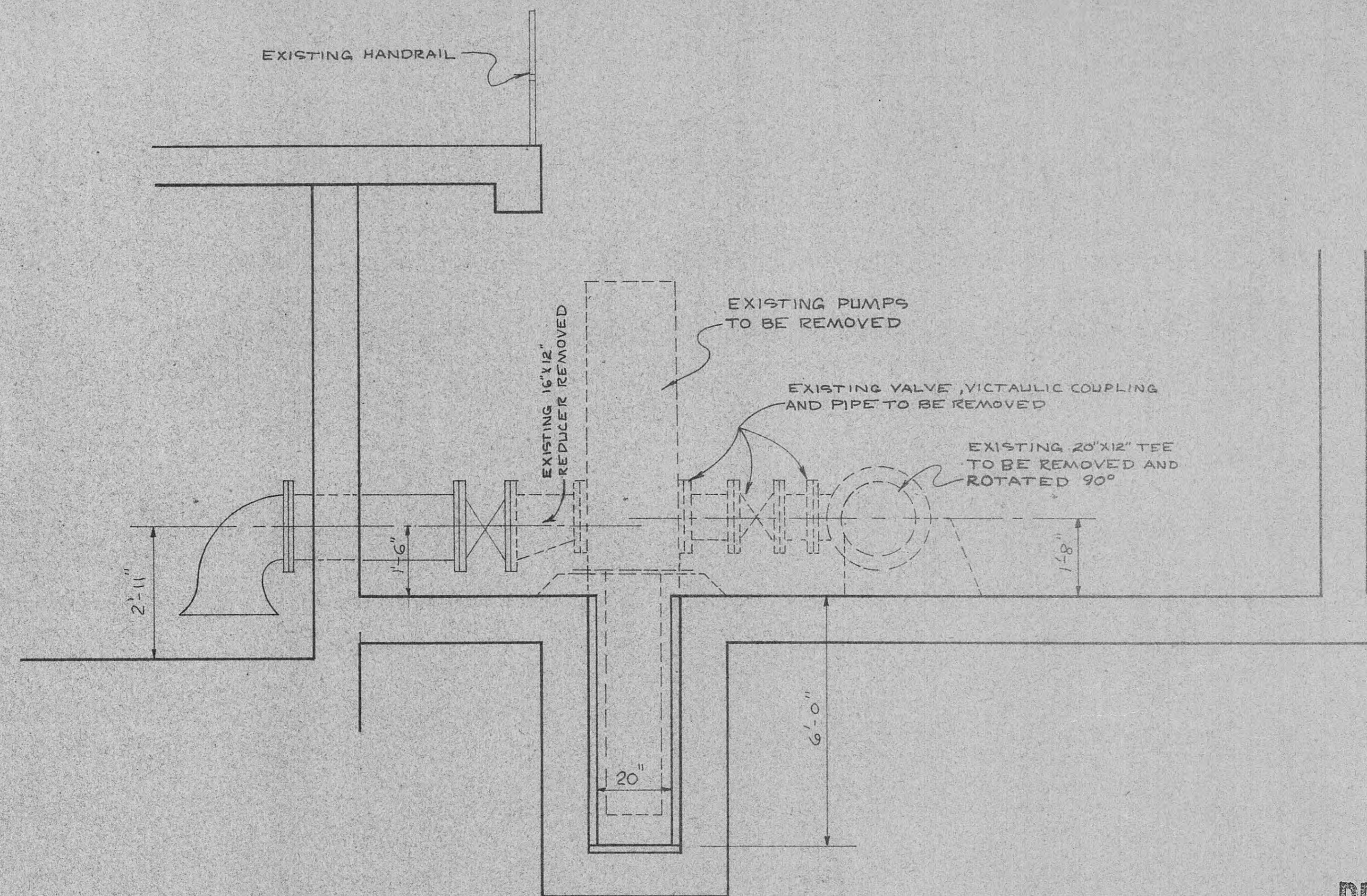
FOR APPROVAL

PHASE II OF	
MODIFICATIONS TO EFFLUENT PUMPING SYSTEM FOR CITY OF HARRIMAN TENNESSEE	
BLACK, CROW AND EIDSNES, INC. ENGINEERS	
GAINESVILLE FLORIDA	
DRAWN BY: ROE	DATE: 7/16/68
CHECKED BY: [Signature]	FILE NO. 479-68-2
SCALE: AS NOTED	
ELECTRICAL DETAILS	
SHEET NO. E-2	

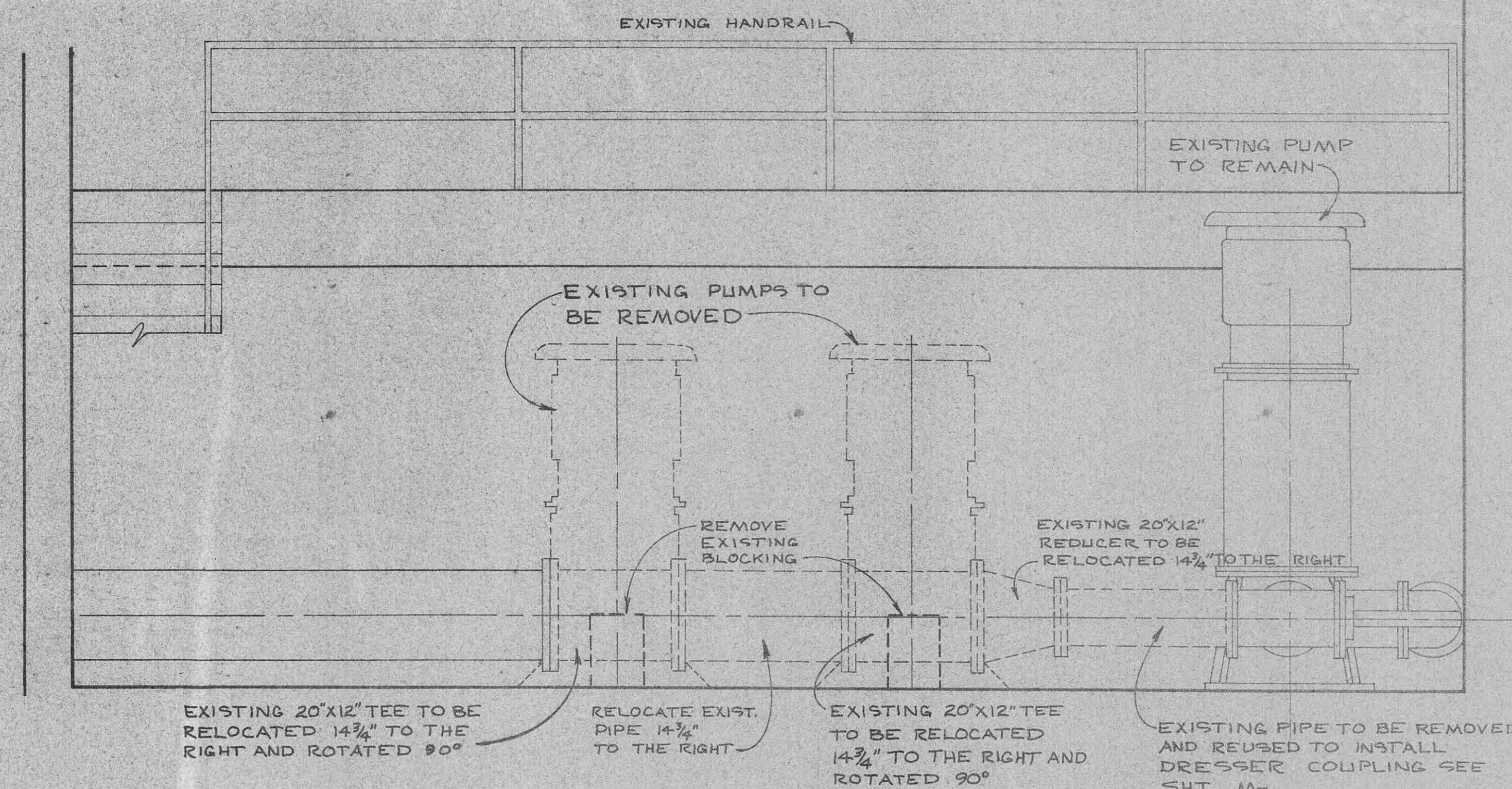


FLOOR PLAN
SCALE 1/4"=1'-0"

EXISTING EQUIPMENT REMOVAL FOR MODIFICATIONS TO EXISTING PUMP STATION #3



SECTION A-A
SCALE 1/2"=1'-0"



SECTION B-B
SCALE 1/2"=1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION

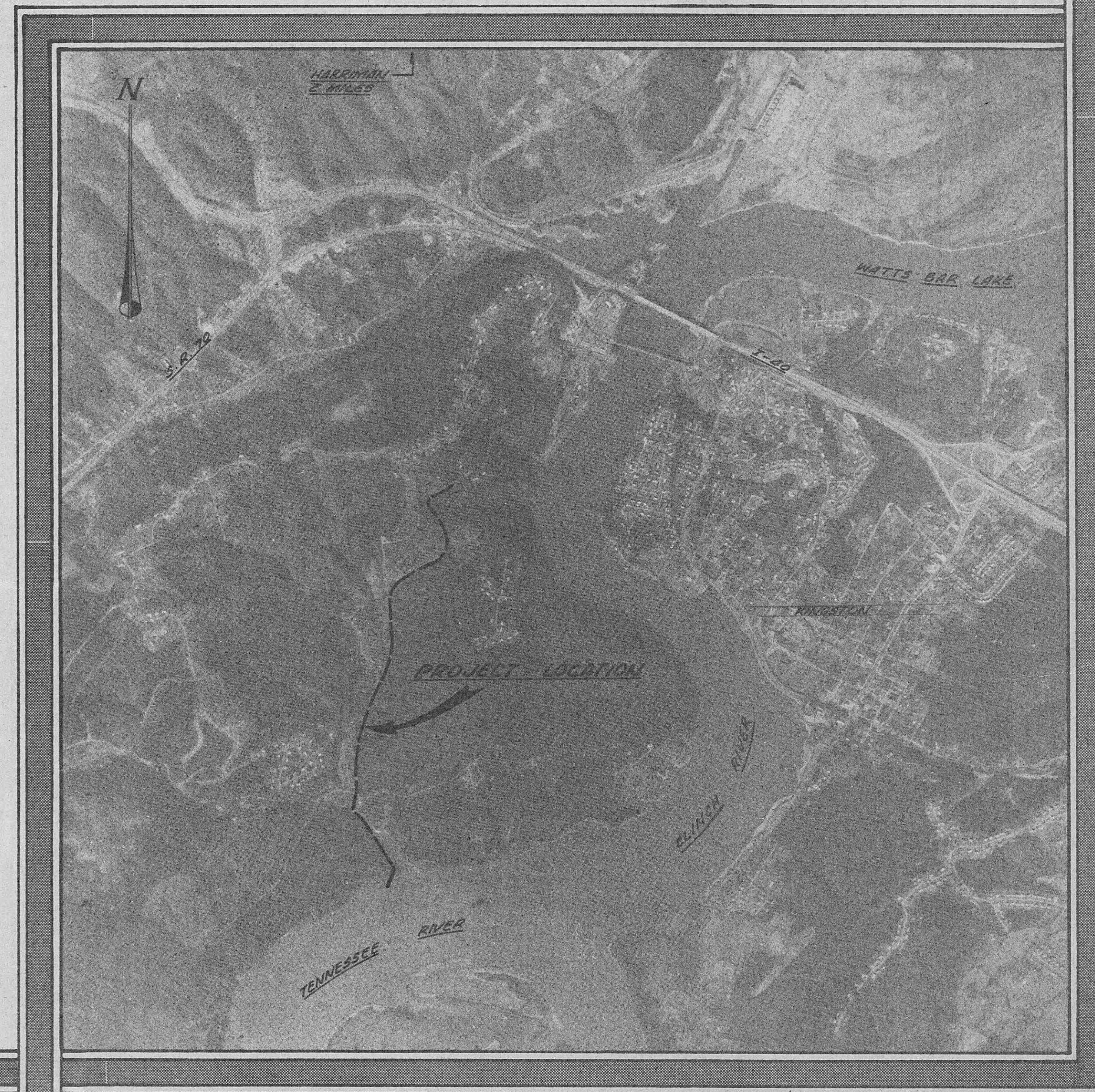
MODIFICATIONS TO EFFLUENT PUMPING SYSTEM FOR CITY OF HARRIMAN TENNESSEE ROANE COUNTY TENNESSEE			
BLACK, CROW AND EIDNESS, INC. ENGINEERS			
GAINESVILLE	FLORIDA	DATE:	
DRAWN BY:	CHECKED BY:	FILE NO.:	
SCALE:			
NO.	DESCRIPTION	DATE	SHEET NO.
	REVISIONS		

SANITARY SEWERAGE FACILITIES FOR CITY OF HARRIMAN, TENNESSEE

BLACK CROW AND EIDSNES. INC.

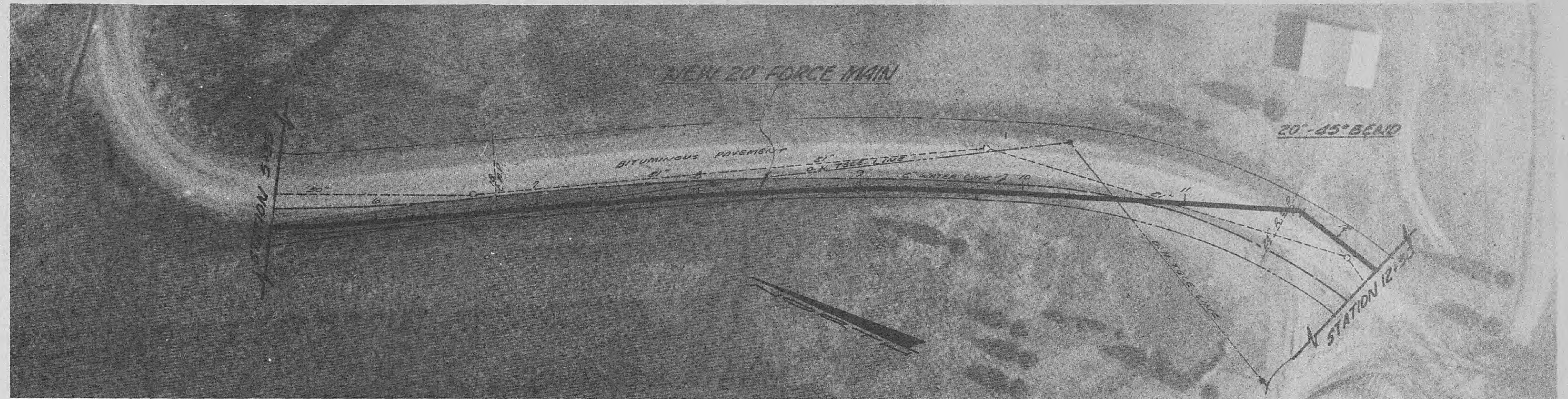
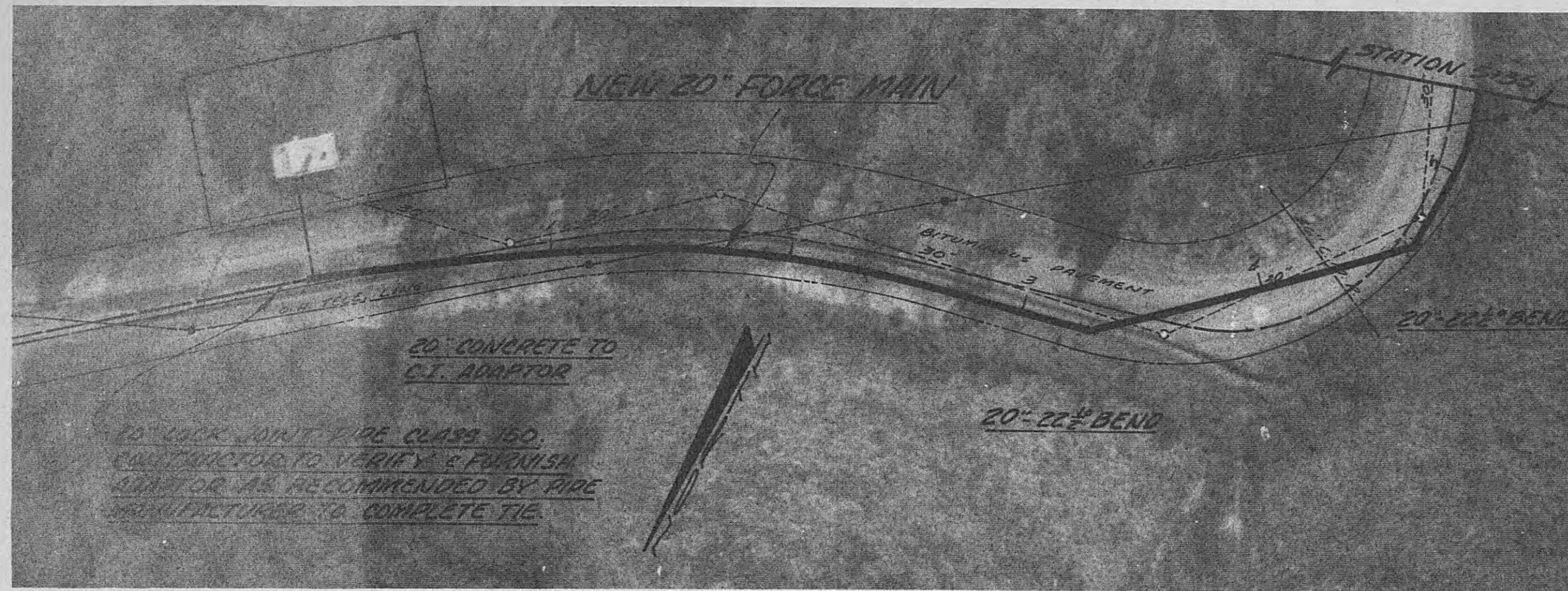
ENGINEERS

GAINESVILLE, FLORIDA
CLEARWATER, BOCA RATON, NAPLES, FLORIDA
ATLANTA, GEORGIA SAN JOSE, COSTA RICA



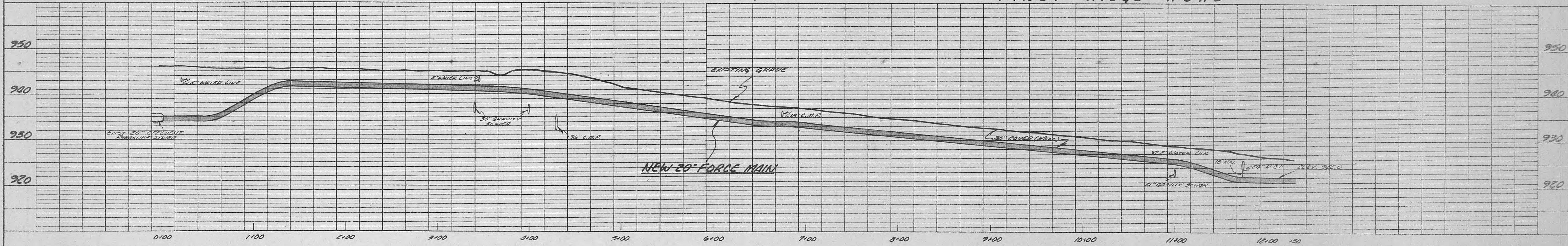
PRELIMINARY
NOT FOR CONSTRUCTION

MODIFICATIONS TO
EFFLUENT PUMPING SYSTEM
PROJECT NO. 479-67-1

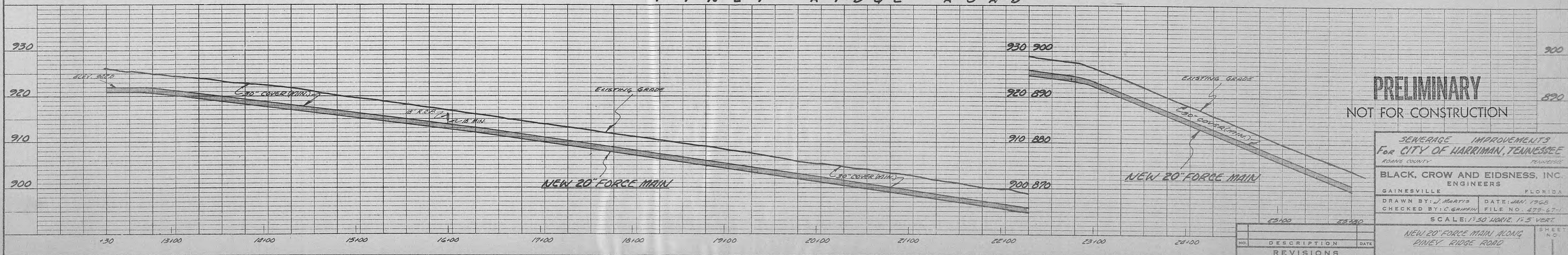


PINEY RIDGE ROAD

PINEY RIDGE ROAD



PINEY RIDGE ROAD



PRELIMINARY
NOT FOR CONSTRUCTION

SEWERAGE IMPROVEMENTS
For CITY OF HARRIMAN, TENNESSEE
ROANE COUNTY
BLACK, CROW AND EIDSNES, INC.
ENGINEERS
GAINESVILLE FLORIDA
DRAWN BY: J. MARTIN DATE: JAN. 1968
CHECKED BY: C. GARDEN FILE NO. 478-67-1
SCALE: 1"=30' HORIZ. 1"=5' VERT.

NEW 20" FORCE MAIN ALONG
PINEY RIDGE ROAD

NO.	DESCRIPTION	DATE