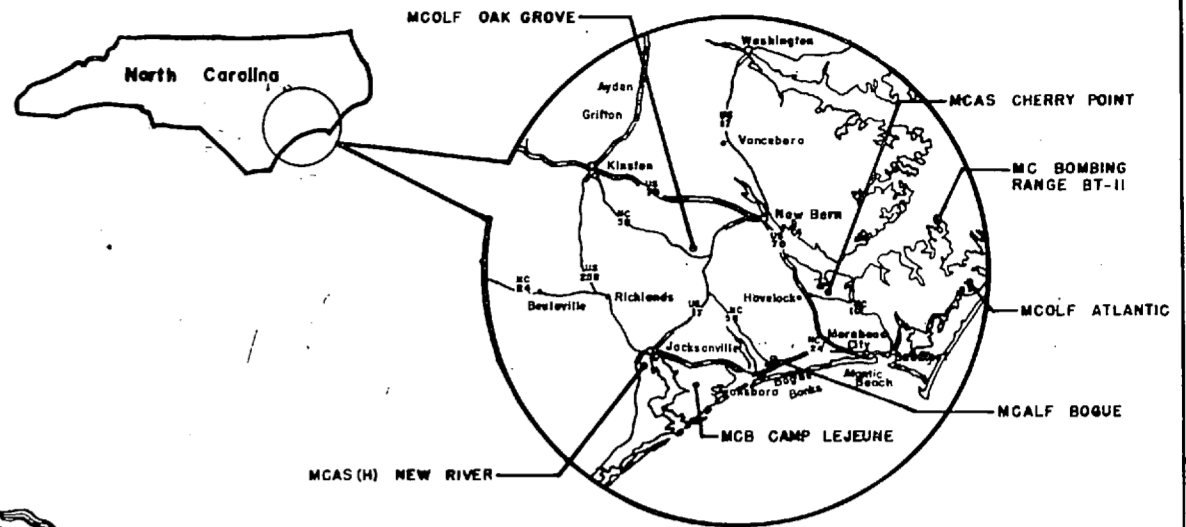
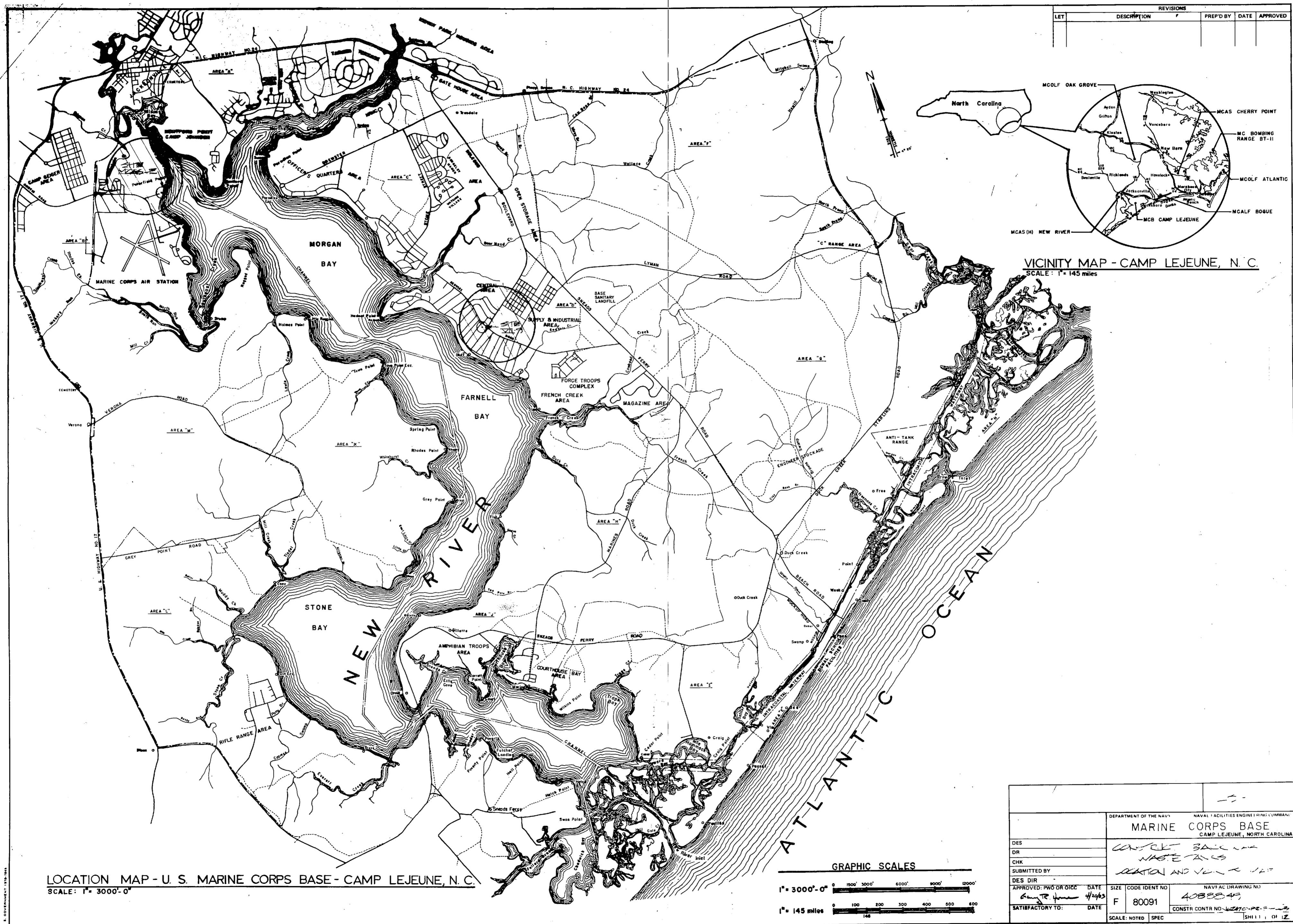
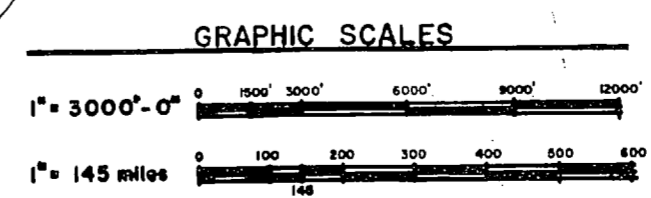


REVISIONS				
LET	DESCRIPTION	PREP'D BY	DATE	APPROVED



VICINITY MAP - CAMP LEJEUNE, N. C.
SCALE: 1" = 145 miles

LOCATION MAP - U. S. MARINE CORPS BASE - CAMP LEJEUNE, N. C.
SCALE: 1" = 3000'-0"

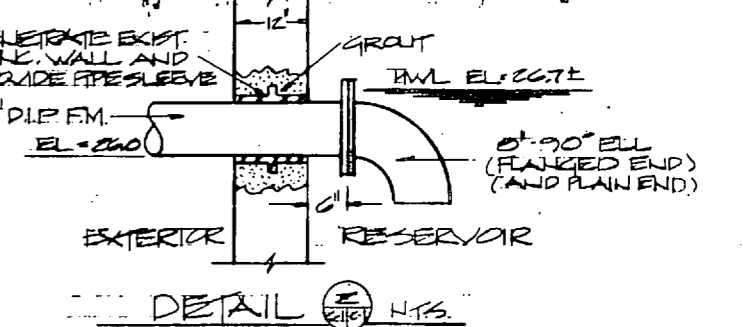
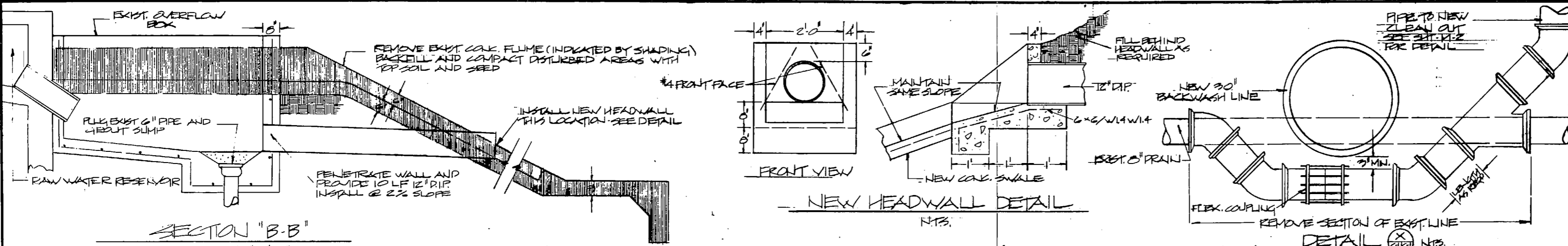


DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
DES	CONTRACT BAC 1111		
DR	NAVFAC 408849		
CHK	ARTIST AND VENDOR		
SUBMITTED BY			
DES DIR			
APPROVED: PWO OR OIC	DATE	SIZE	CODE IDENT NO
<i>[Signature]</i>	4/24/63	F	80091
SATISFACTORY TO:	DATE	CONSTR CONTR NO. 408849	
		SCALE: NOTED SPEC	

U. S. GOVERNMENT PRINTING OFFICE: 1963

$$\frac{162}{3} \sqrt[3]{150} \frac{81}{3}$$

NO.	DESCRIPTION	DATE	APPROVED



NOTES:

1. CONTRACTOR SHALL EXCAVATE AND UNCOVER ALL EXIST. UNDERGROUND UTILITIES AND VERIFY THEIR LOCATIONS BEFORE CONSTRUCTION. EXIST. STORM DRAINS, BUILDING DRAINS, AND SANITARY SEWERS AFFECTED BY THE TANK CONSTRUCTION SHALL BE MAINTAINED USABLE AT ALL TIMES. EXCAVATION AND UNDERCUTS SHALL BE PROTECTED. DRAIN LINES SHALL PROVIDE NECESSARY FITTINGS TO MAINTAIN THESE LINES TO NEW M.H.'S. INSTALL NEW PIPES AT 2% MIN. SLOPE. EXISTING LOCATION INDICATED ON PLAN IS APPROXIMATE. THESE EXISTING LINES TO BE FIELD ADJUSTED.

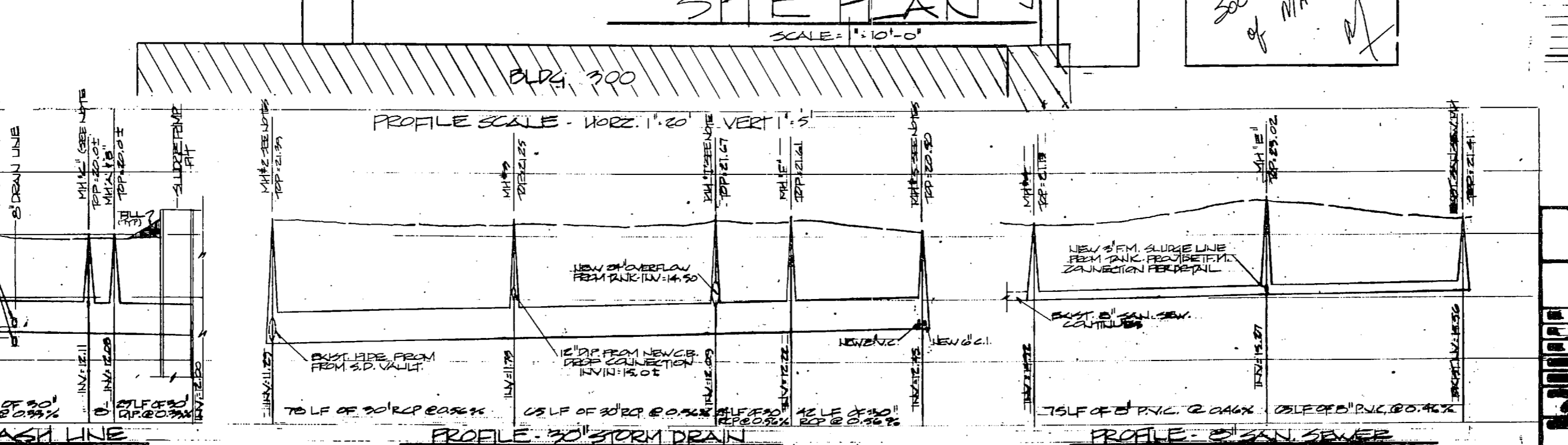
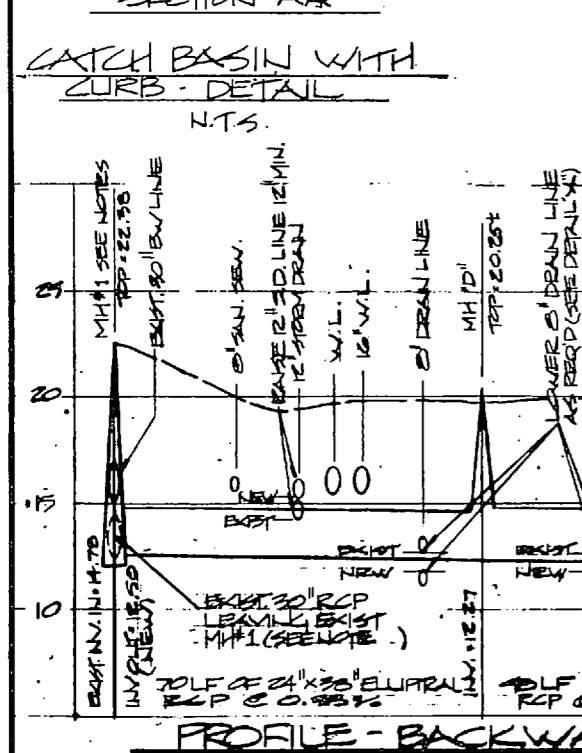
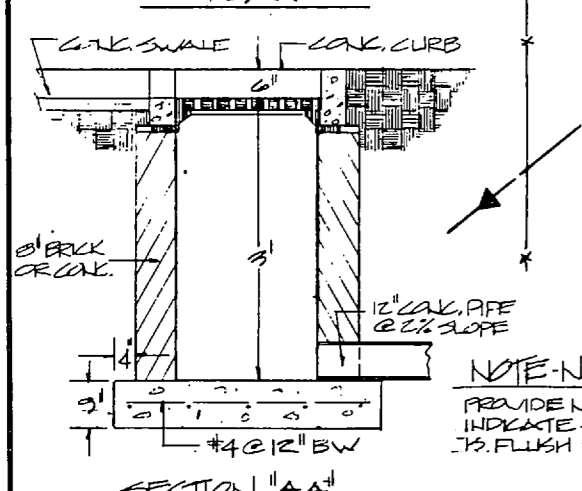
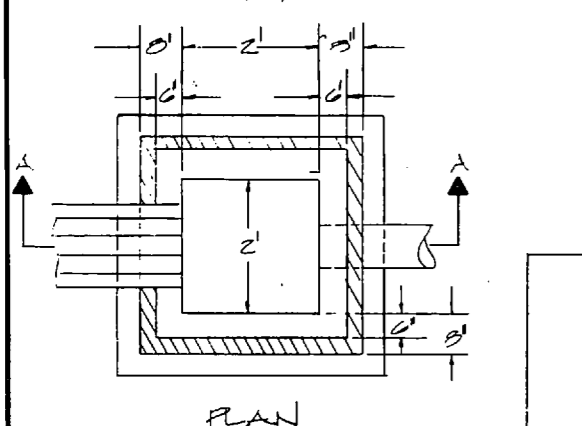
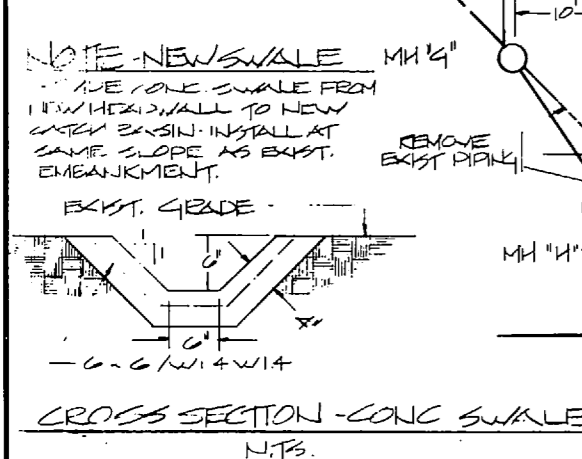
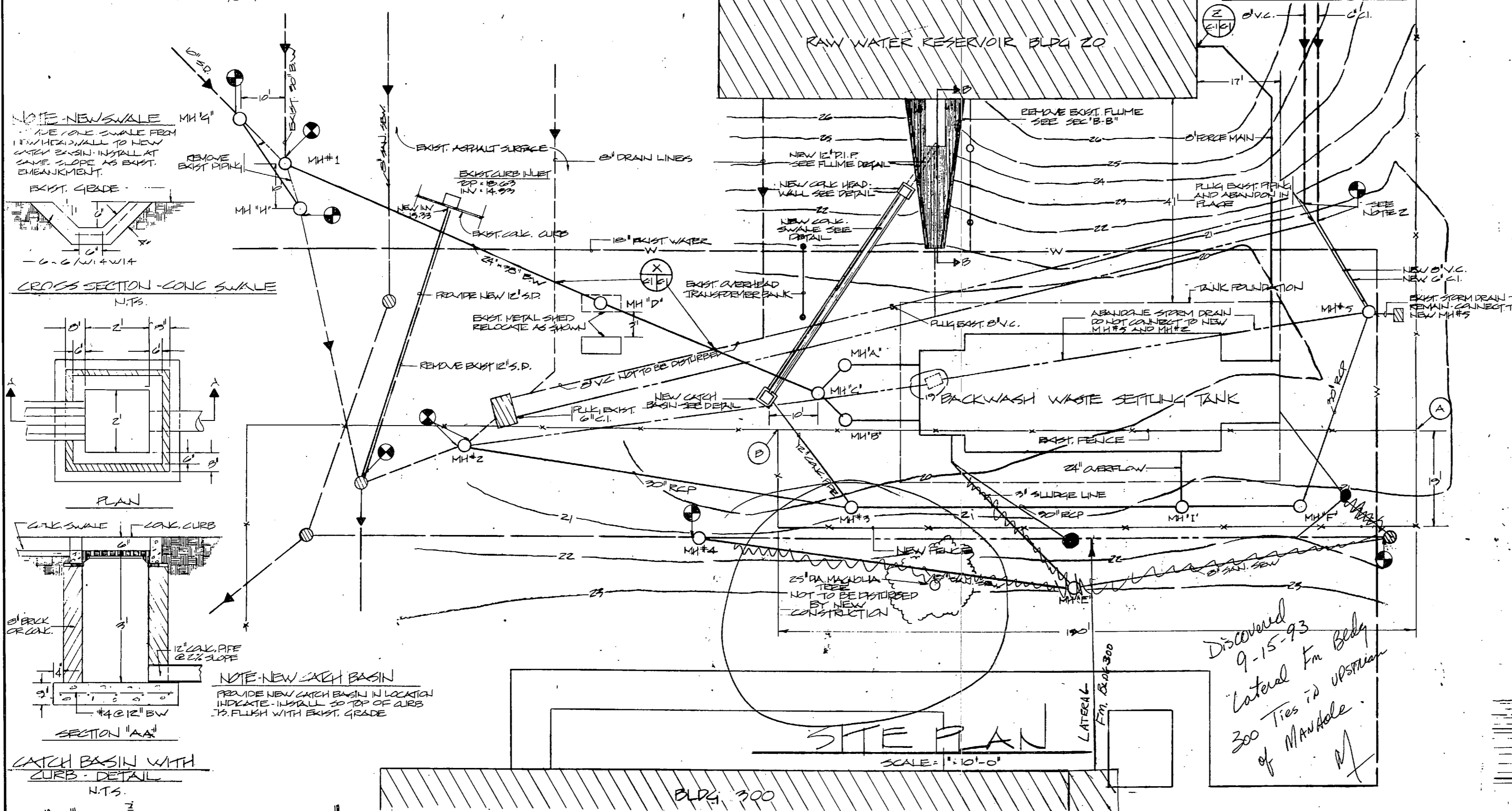
2. EXISTING NEW 30" x 90" ELLIPTICAL BACKWASH LINE TO NEW M.H.'S. REMOVE EXIST. 30" DUE LEAKING THE EXIST. MAIN PIPE AND EXIST. 12" DRAIN ENTERING EXIST. MANHOLE. RELOCATE NEW M.H.'S. DIRECTLY OVER THE EXISTING LINE ENTERING M.H.'S. AS SHOWN. REMOVE THE REMAINING PORTION BETWEEN M.H.'S. AND M.H.'S. LOCATED NEW M.H.'S. DIRECTLY OVER THE EXIST. LINES AS SHOWN. LOCATE NEW 12" DRAIN LINE BETWEEN M.H.'S. AND M.H.'S. TO APPROXIMATE ELEVATIONS SHOWN. ELEVATIONS MAY VARY SLIGHTLY FROM THOSE SHOWN IN ORDER TO SUIT FIELD CONDITIONS.

3. NEW MANHOLE "C" SHALL BE 6" DIA. MANHOLE. EXIST. EXIST. "C" AND "D" SHALL BE REMOVED AND NEW 6" DIA. MANHOLES LOCATED WITHIN AREA OF TANK CONSTRUCTION SHALL BE RELOCATED AS INDICATED TO CLEAR THE EXCAVATION AND SHEETING REQUIRED TO CONSTRUCT THE NEW TANK. REMOVE EXIST. 12" STORM DRAIN LOCATED BETWEEN EXIST. CURB INLET AND EXIST. M.H. PROVIDE NEW 12" STORM DRAIN TO THE INVERTS SHOWN AND RAISE THE INVERT OF THE CURB INLET 12" TO THE INVERT.

4. IN ORDER TO MAINTAIN THE EFFECTS OF GROUND WATER DRAWDOWN DURING EXIST. RAW WATER RESERVOIR PUMPING CONSTRUCTION OF THE SETTLING TANK, TWO GROUPS OF PRESSUREMETERS HAVE BEEN PROVIDED FOR THE CONTRACTOR. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN A DAILY LOG OF GROUND WATER LEVELS. IN ADDITION, THE CONTRACTOR SHALL SUBMIT A DAILY LOG OF PRESSUREMETER READINGS TO THE ENGINEER AND DIRECTED BY THE CONTRACTING OFFICER AND A LOG OF THEIR ELEVATIONS RECORDED OVER THE CONSTRUCTION PERIOD.

5. SECTIONS OF EIGHT (8) PRE-CAST MANHOLES WILL BE SUPPLIED TO THE CONTRACTOR FOR INSTALLATION. (SEE SPECIAL ORDER) EQUIPMENT FURNISHED FOR THE DETAIL LIST OF MANHOLES FURNISHED.

6. MANHOLE FRAMES AND COVERS ARE NOT DEFINED. REQUIREMENT OF ALL CAST IRON AND CONCRETE MANHOLES IS THE RESPONSIBILITY OF THE CONTRACTOR.



LEGEND

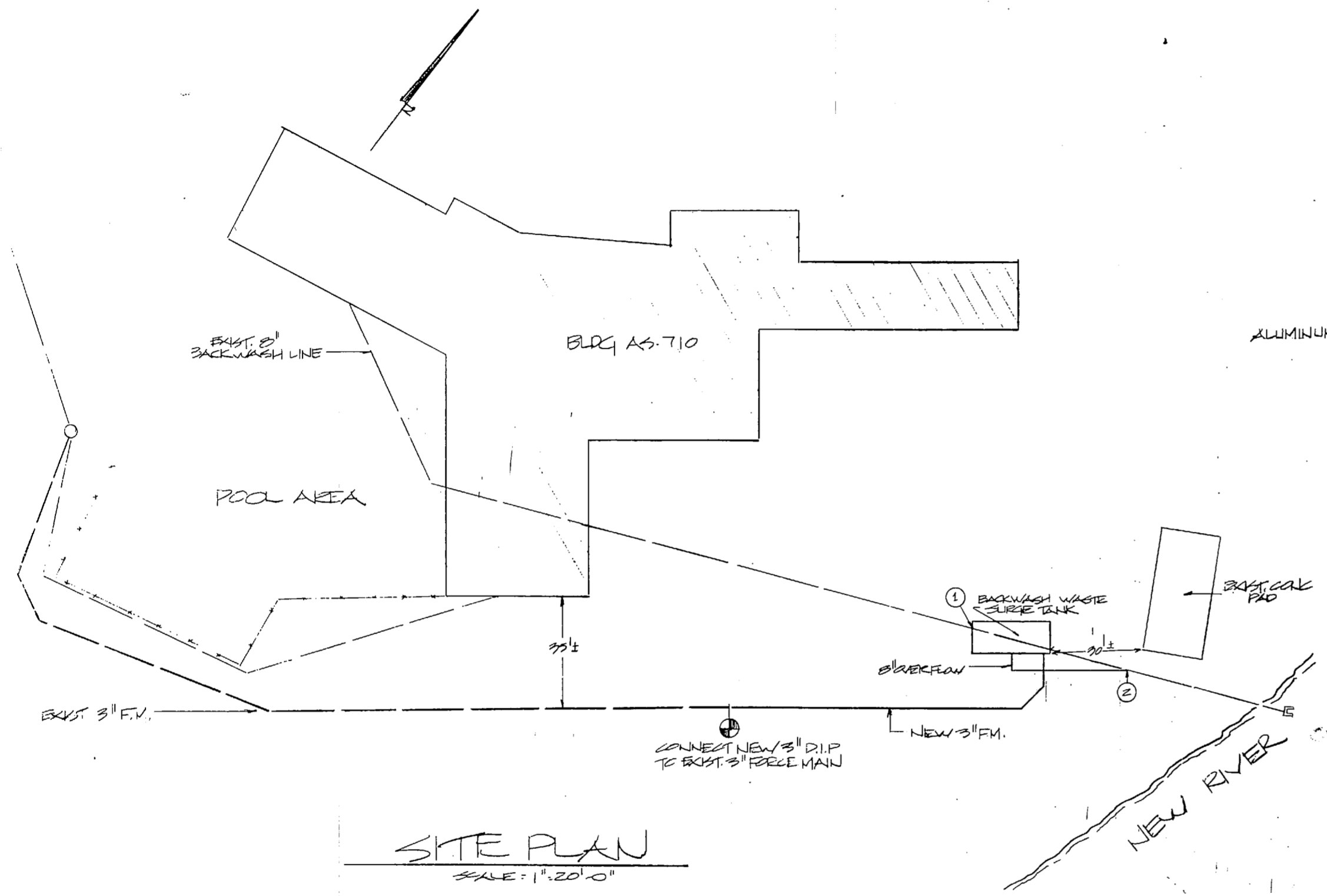
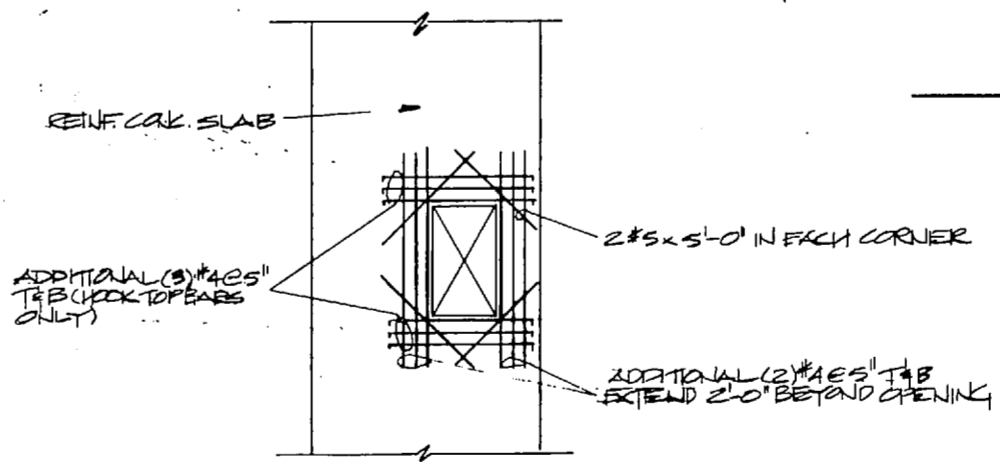
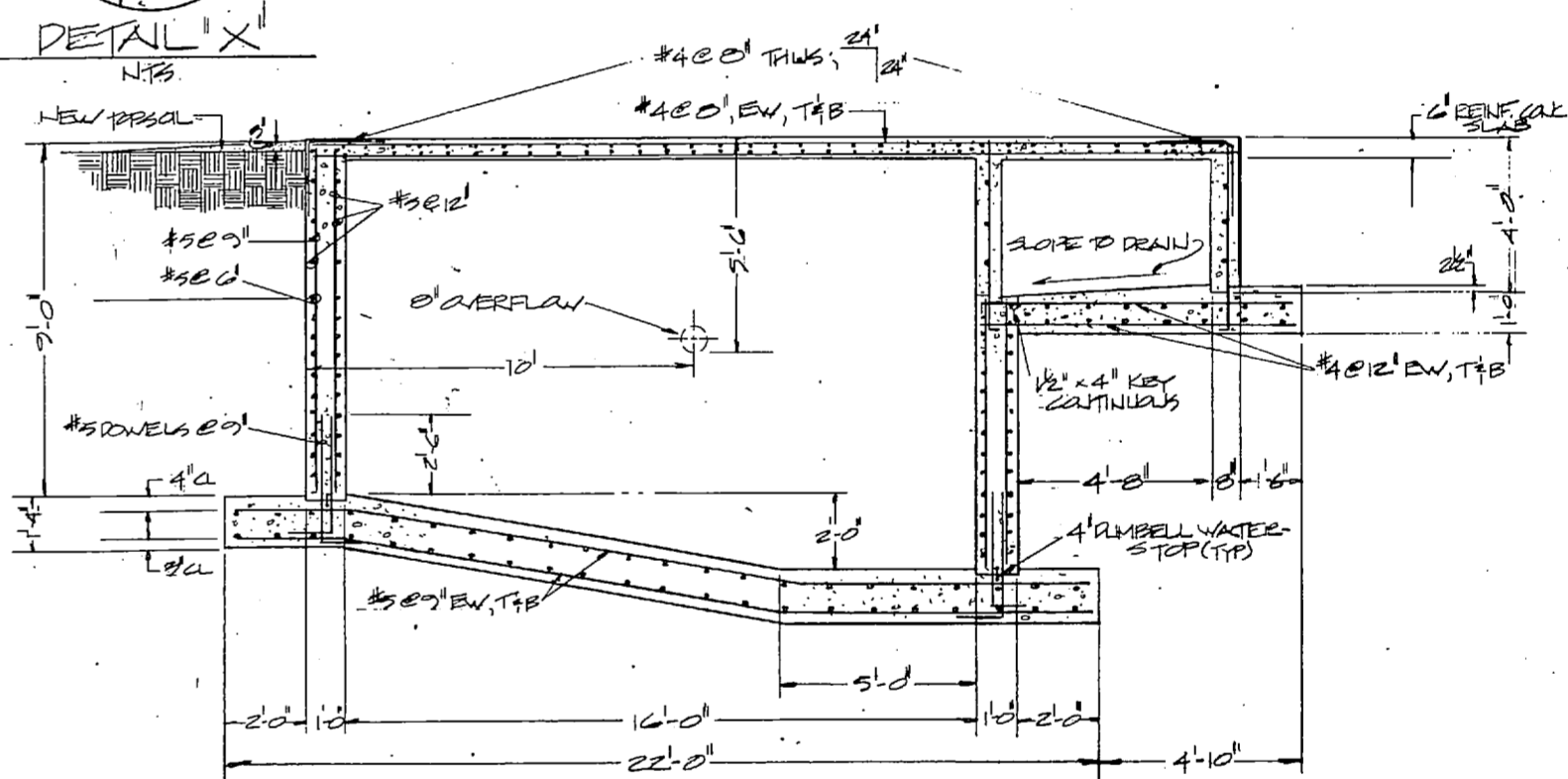
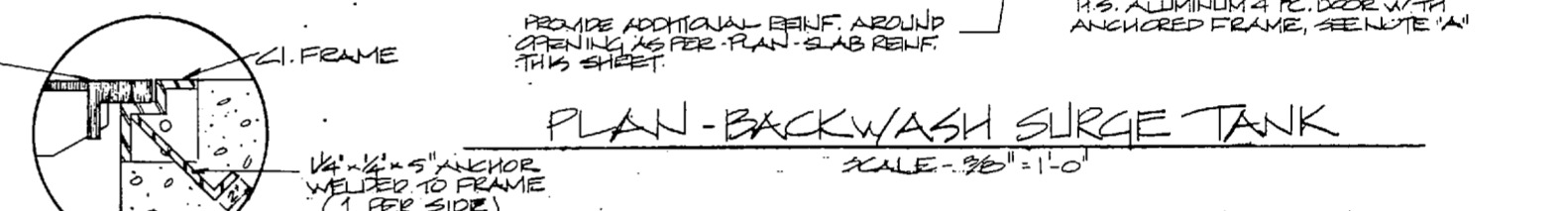
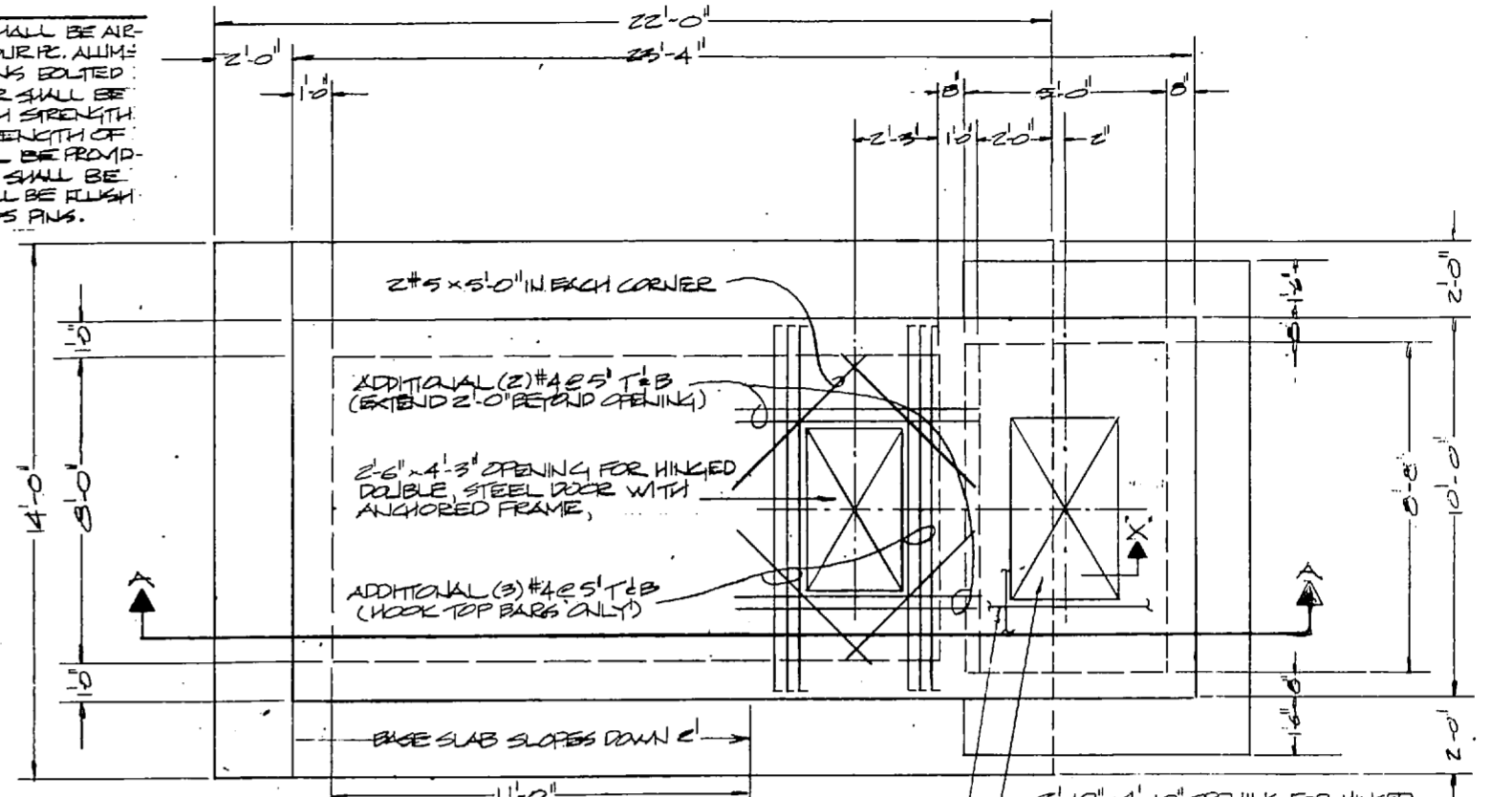
- EXIST. TOP LINE
- EXIST. PIPING TO REMAIN
- EXIST. PIPING TO BE REMOVED/ABANDONED
- EXIST. MANHOLE TO REMAIN
- NEW MANHOLE
- NEW PIPING
- INTERFACE NEW WORK WITH EXISTING

MARINE CORPS BASE	
CONSTRUCTION	
WASTE TANKS	
SITE PLAN	
DATE	
SCALE	



REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVED

NOTE "A"
 ALUMINUM ACCESS DOOR FOR VALVE PIT SHALL BE AIR-RETIGHT TYPE HINGED CAST IRON FRAME WITH FOUR (4) ALUMINUM LID. FRAME SHALL BE IN FOUR SECTIONS BOLTED TOGETHER. A D.I. REMOVABLE SUPPORT BAR SHALL BE PROVIDED IN MIDDLE OF FRAME. FOUR HIGH STRENGTH ALUMINUM LIDS SHALL HAVE DESIGN STRENGTH OF 225 P.S.I. D.I. HOLDING BATTEN SHALL BE PROVIDED ON 2' LIDS, AND LIPPS FOR EACH LID SHALL BE TYPE "H" WITH DEAN HOLE. HINGES SHALL BE FLUSH TYPE WITH REMOVABLE CAPS AND BRASS FINIS. TOTAL WEIGHT = 900 POUNDS.



SITE PLAN
 SCALE = 1" = 20'-0"

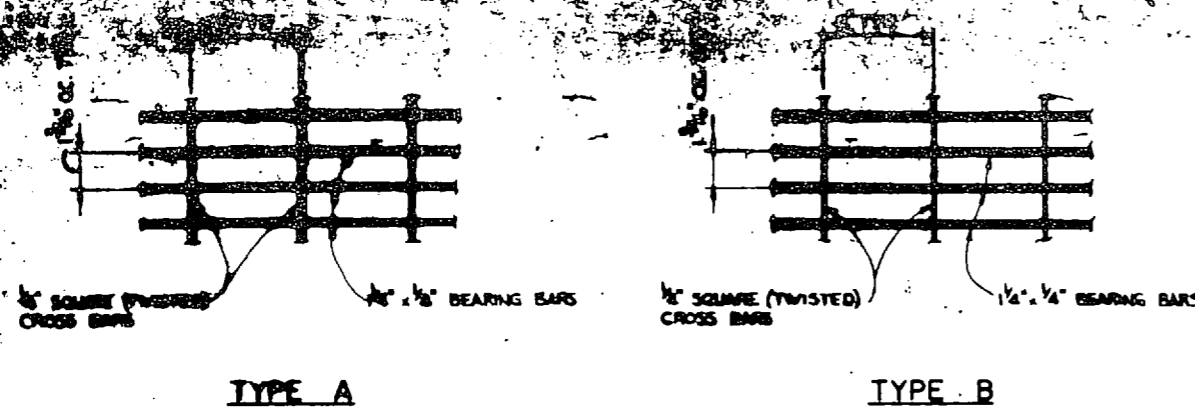
SECTION "A-A"
 SCALE = 3/8" = 1'-0"

PARTIAL PLAN - SLAB REINFORCING
 SCALE = 1/4" = 1'-0"

NOTES:
 1. THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE LOCATION OF EXIST. 8" BACKWASH LINE PRIOR TO FINAL LAYOUT. THE LOCATION OF THE B.W. LINE INDICATED ON THE PLAN IS APPROXIMATE AND THE CONTRACTOR MAY HAVE TO ADJUST THE TANK LOCATION SLIGHTLY TO MEET FIELD CONDITIONS.
 2. AGAINST EXIST. 8" B.W. LINE TO NEW TANK AT PT (1). CONNECT NEW 8" OVERFLOW LINE TO EXIST. B.W. LINE AT PT (2).
 3. PROVIDE NEW 3" D.I.P. FORCE MAIN AS INDICATED. INSTALL WITH 3" MIN. COVER.

C-2

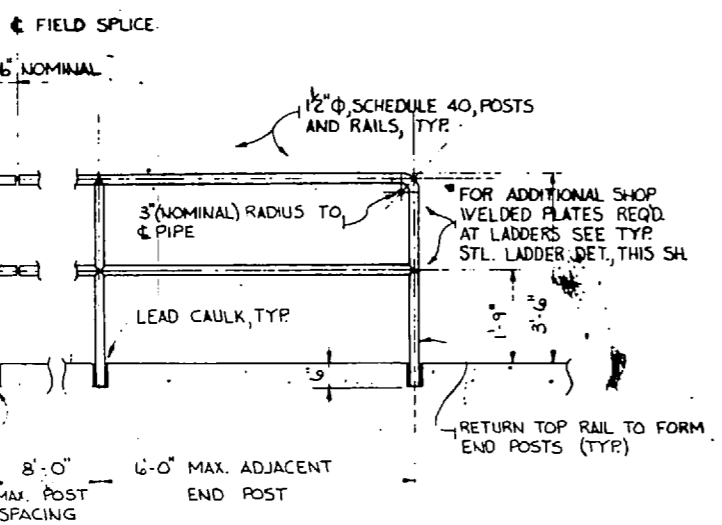
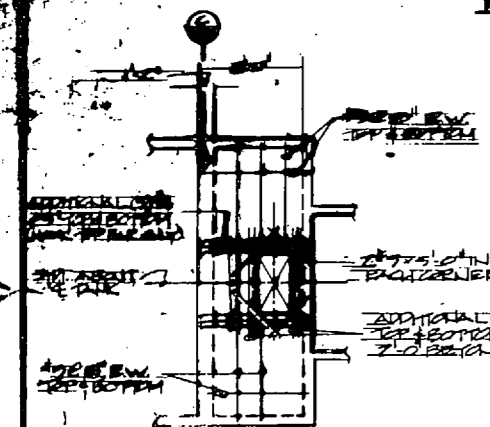
ENGINEER'S SEAL GEORGE COOPS, P.E. 22810111	
CONTRACTOR'S SEAL CONTRACTOR 22810111	
PROJECT NAME CONTRACTOR BACKWASH WASTE TANKS	
SITE PLAN - MEAS-E	
DATE 1/2/83	SCALE F 80001
PROJECT NO. 80001	DATE 1/2/83



TYPE A TYPE B

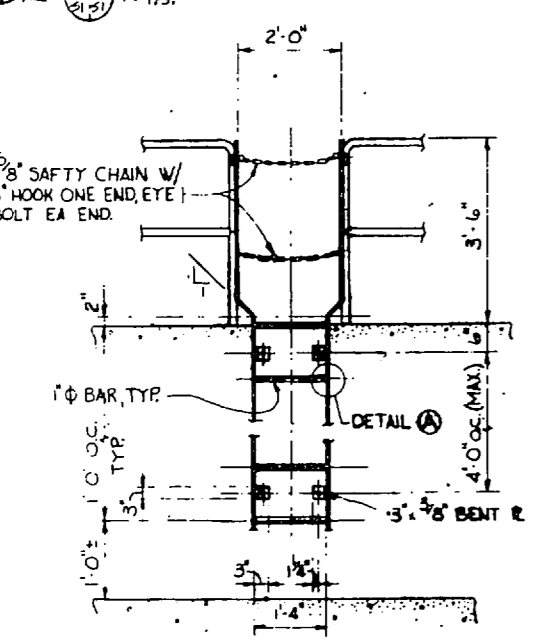
WELDED STEEL GRATING DETAIL
PERSONNEL LOADING ONLY

- NOTES
1. FURDASH IN SECTIONS OF 2'-0" NOMINAL WIDTH.
 2. GRATING AND PERIMETER SUPPORT ANGLES, HOT DIP GALVANIZED AFTER FABRICATION.
 3. END BANDING BARS NOT REQUIRED.
 4. DESIGN UNIFORM LIVE LOAD 100 PSF WITH MAXIMUM LIVE LOAD DEFLECTION 1/4".



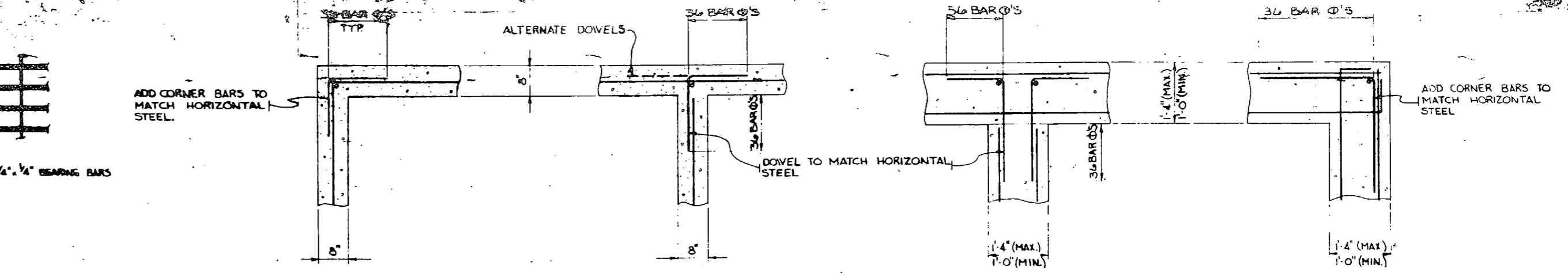
TYPICAL HANDRAIL DETAIL
SCALE 1/2" = 1'-0"

- NOTES
1. POSTS, RAILINGS AND SLEEVES SHALL BE FABRICATED FROM SCHEDULE 40 STEEL PIPE CONFORMING TO ASTM A 53.
 2. ALL SHOP CONNECTIONS SHALL BE WELDED; FIELD WELDING NOT PERMITTED.
 3. FIELD SPLICES SHALL BE USED ONLY WHERE REQUIRED FOR SHIPPING AND HANDLING; NO SPLICES PERMITTED WITHIN 10'-0" OF END POST.
 4. ALL HANDRAIL AND ACCESSORIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.



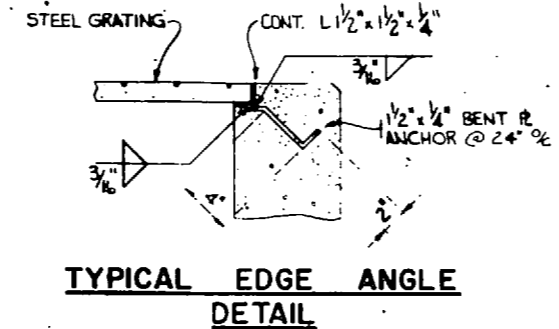
TYPICAL STEEL LADDER DETAILS
SCALE 1/2" = 1'-0"

NOTE
HOT DIP GALV ALL COMPONENTS AFTER FABRICATION.



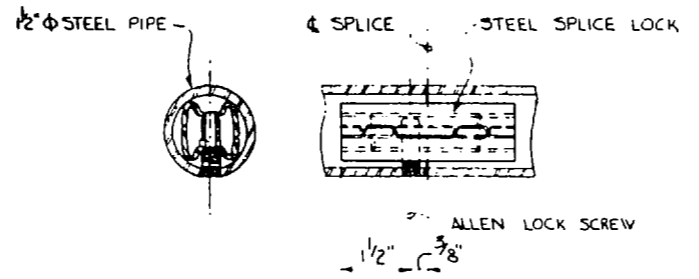
TYP WALL CORNER TYP WALL INTERSECTION TYP WALL CORNER
REINFORCING IN SINGLE LAYERS REINFORCING IN TWO LAYERS

TYPICAL WALL REINFORCING DETAILS
SCALE 3/4" = 1'-0"



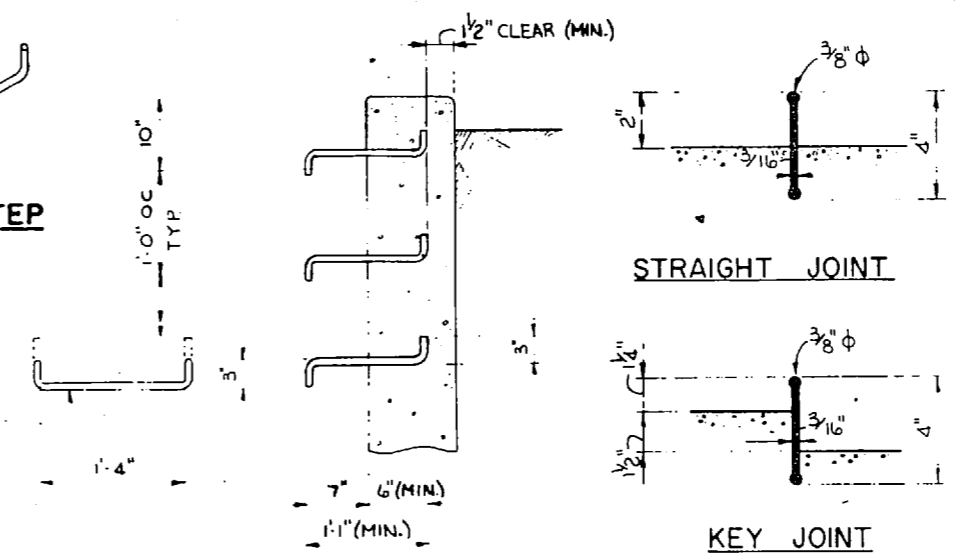
TYPICAL EDGE ANGLE DETAIL

ISOMETRIC OF STEP



HANDRAIL PIPE SPLICE LOCK DETAIL
NO SCALE

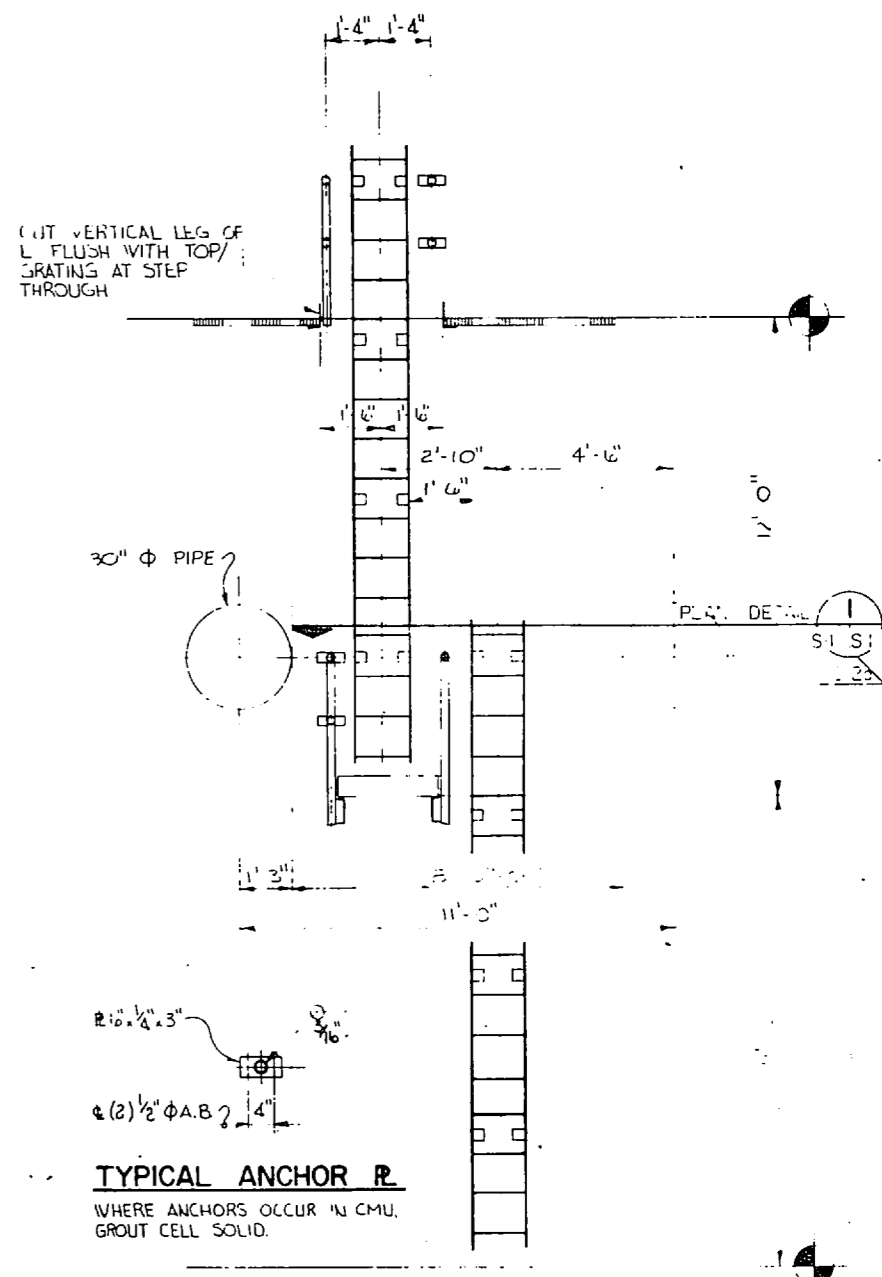
NOTE:
STEEL PIPE SPLICE LOCK SHALL BE OF STANDARD MANUFACTURE.



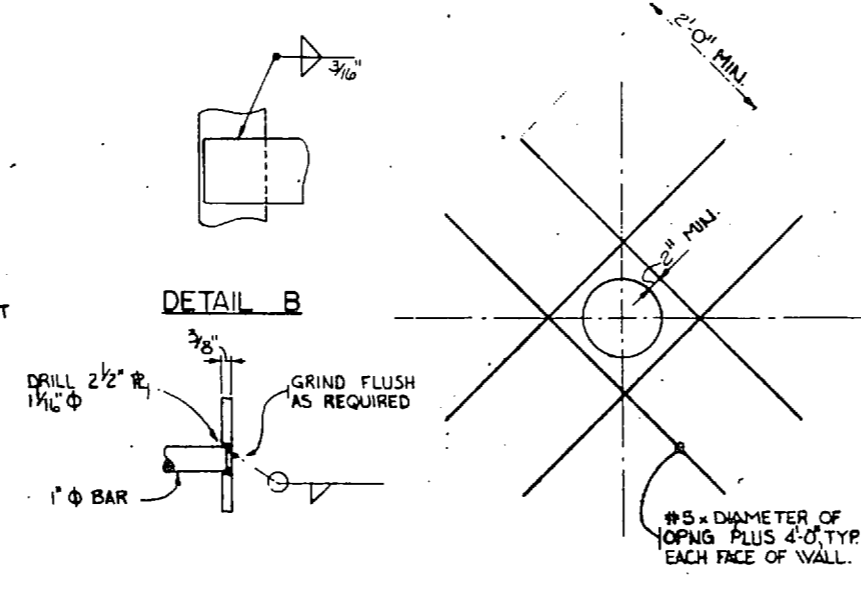
TYPICAL STEEL STEP DETAIL
SCALE 1" = 1'-0"

NOTE:
HOT DIP GALV AFTER FABRICATION.

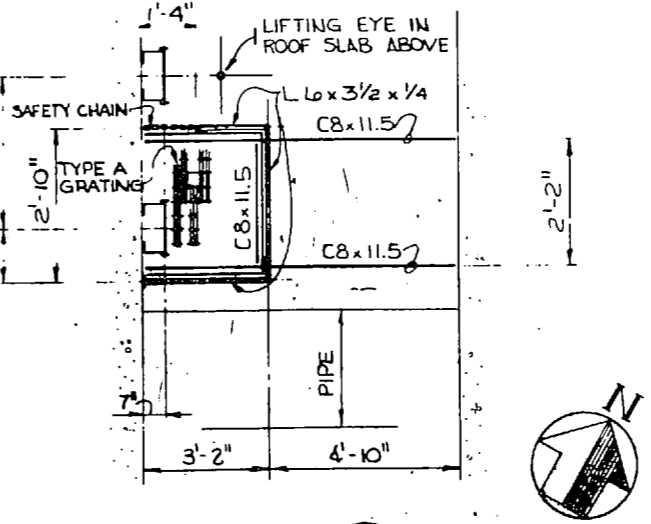
TYPICAL DUMBBELL WATERSTOP
NO SCALE



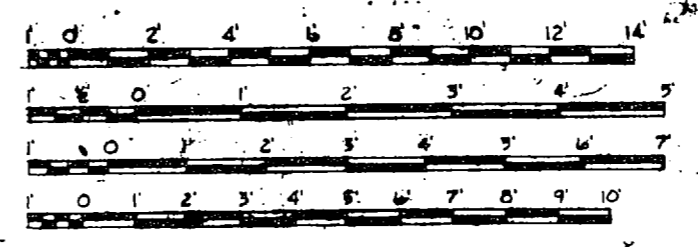
ELEVATION OFFSET LADDER
SCALE 3/8" = 1'-0"



ELEVATION WALL REINFORCING AT PIPE OPENING
NO SCALE



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



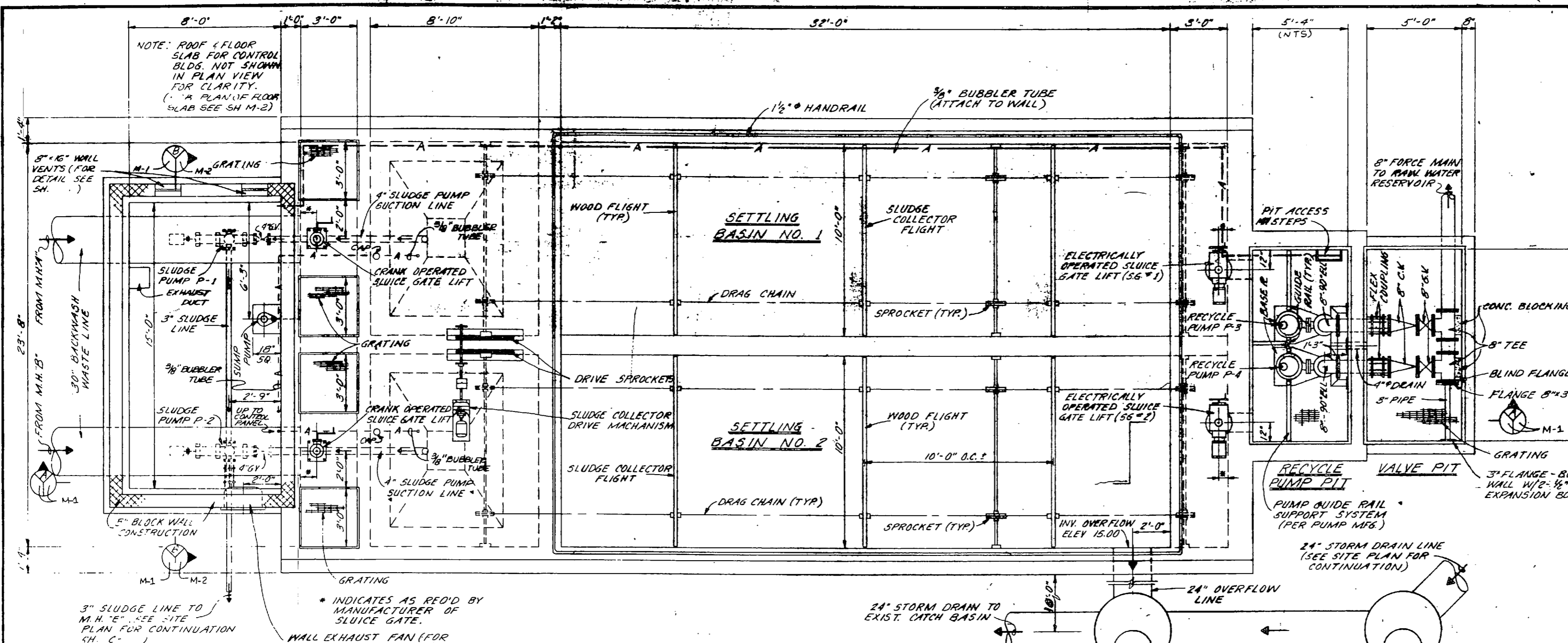
GRAPHIC SCALES

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND		MARINE CORPS BASE	
CAMP LEJEUNE, NORTH CAROLINA		CONCRETE BACKWASH WASTE TANKS	
TYPICAL DETAILS		NAVFAC DRAWING NO. 408852	
DESIGNER:	DATE: 4/20/03	SIZE: F	CODE IDENT. NO.: 80091
APPROVER: PWR, BR GIC	DATE: 4/20/03	SCALE: NOTED	SPEC:
SUBMITTED BY:	DATE:	CONSTR. CONTR. NO. 12870-02-0400	
DESIGN DIR.	DATE:	SHEET 4 OF 12	



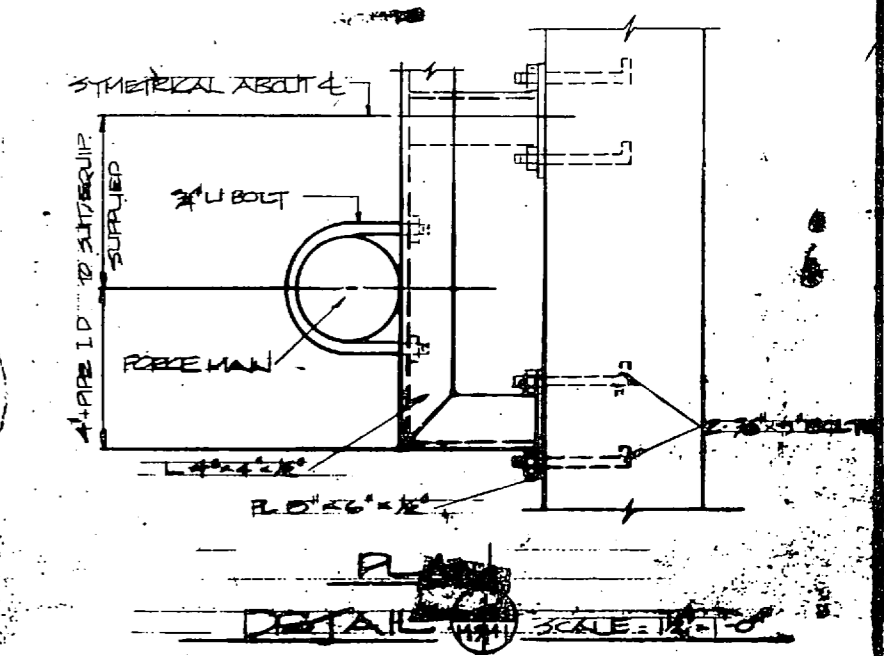
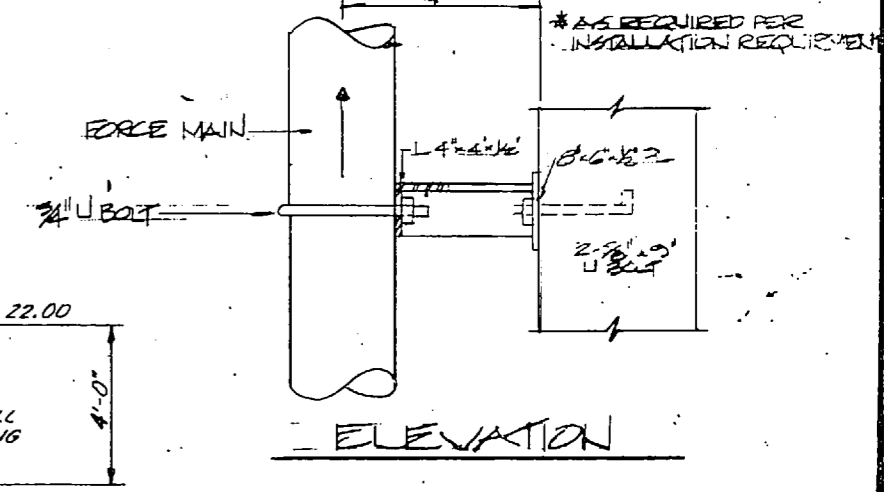
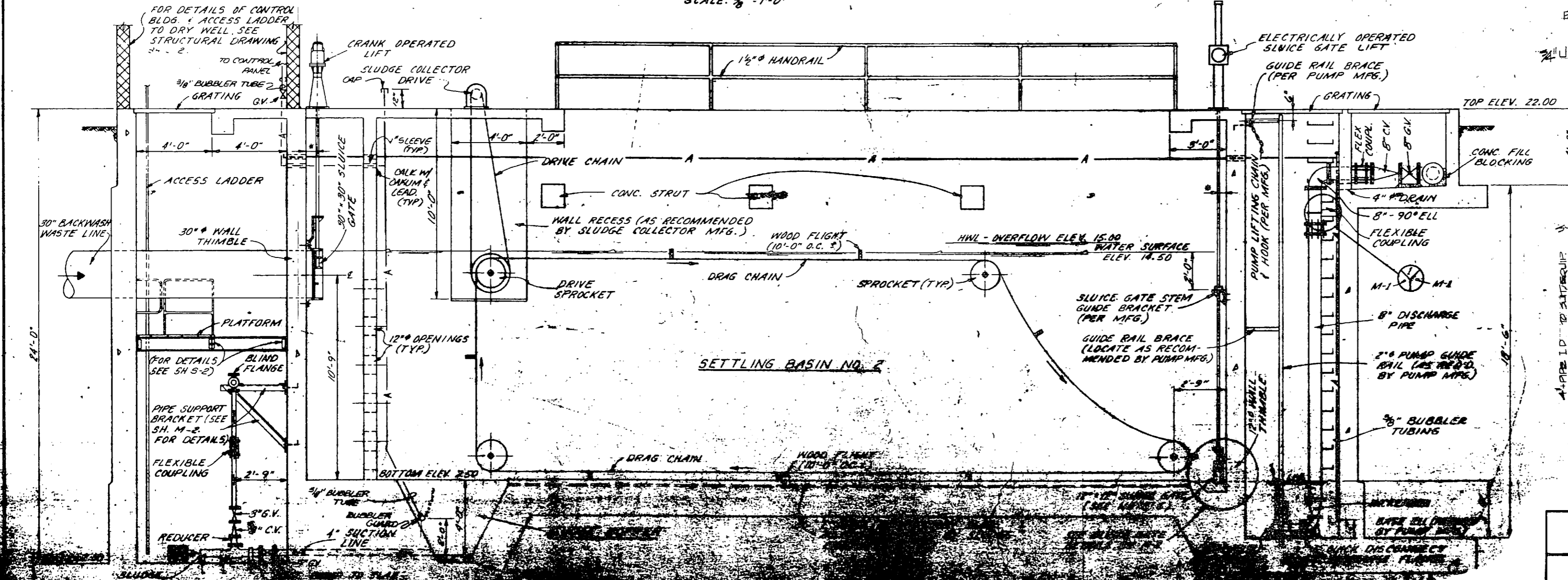


REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVED



- NOTES:**
- 1) SLUDGE COLLECTOR DRIVE UNIT, SPROCKETS, FLIGHTS, AND OTHER COMPONENTS SHALL BE ASSEMBLED ACCORDING TO SLUDGE COLLECTOR MANUFACTURER INSTRUCTIONS.
 - 2) RECYCLE PUMPS (P-3 & P-4) SHALL BE PROVIDED WITH THE FOLLOWING EQUIPMENT TO INSURE COMPATIBILITY OF EQUIPMENT AND EASE OF ASSEMBLY & OPERATION.
 - A) TWO SUBMERSIBLE PUMPS WITH HYDRAULIC SEALING FLANGES.
 - B) PUMP RAIL GUIDES.
 - C) PUMP BASE PLATES WITH DISCHARGE ELBOW AND RAIL SUPPORTS.
 - D) PUMP LIFTING CHAIN AND HOOKS.
 - 3) PUMPS, RAIL GUIDES AND SUPPORTS SHALL BE ASSEMBLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 - 4) SLUICE GATES, STEMS, STEM GUIDE BRACKETS, WALL THIMBLES AND OPERATOR LIFTS SHALL BE COMPATIBLE AND SUPPORTED AS RECOMMENDED BY THE SLUICE GATE MANUFACTURER.
 - 5) 12" x 12" SLUICE GATES FOR DRAINING THE SETTLING BASINS SHALL BE FLUSH BOTTOM, FLAT BACK TYPES.

PLAN - BACKWASH WASTE SETTLING TANK
SCALE: 3/8" = 1'-0"



DETAILS

SYMBOLICAL ABOUT & REVERSE

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

DEPARTMENT OF THE ARMY - ENGINEERING CENTER

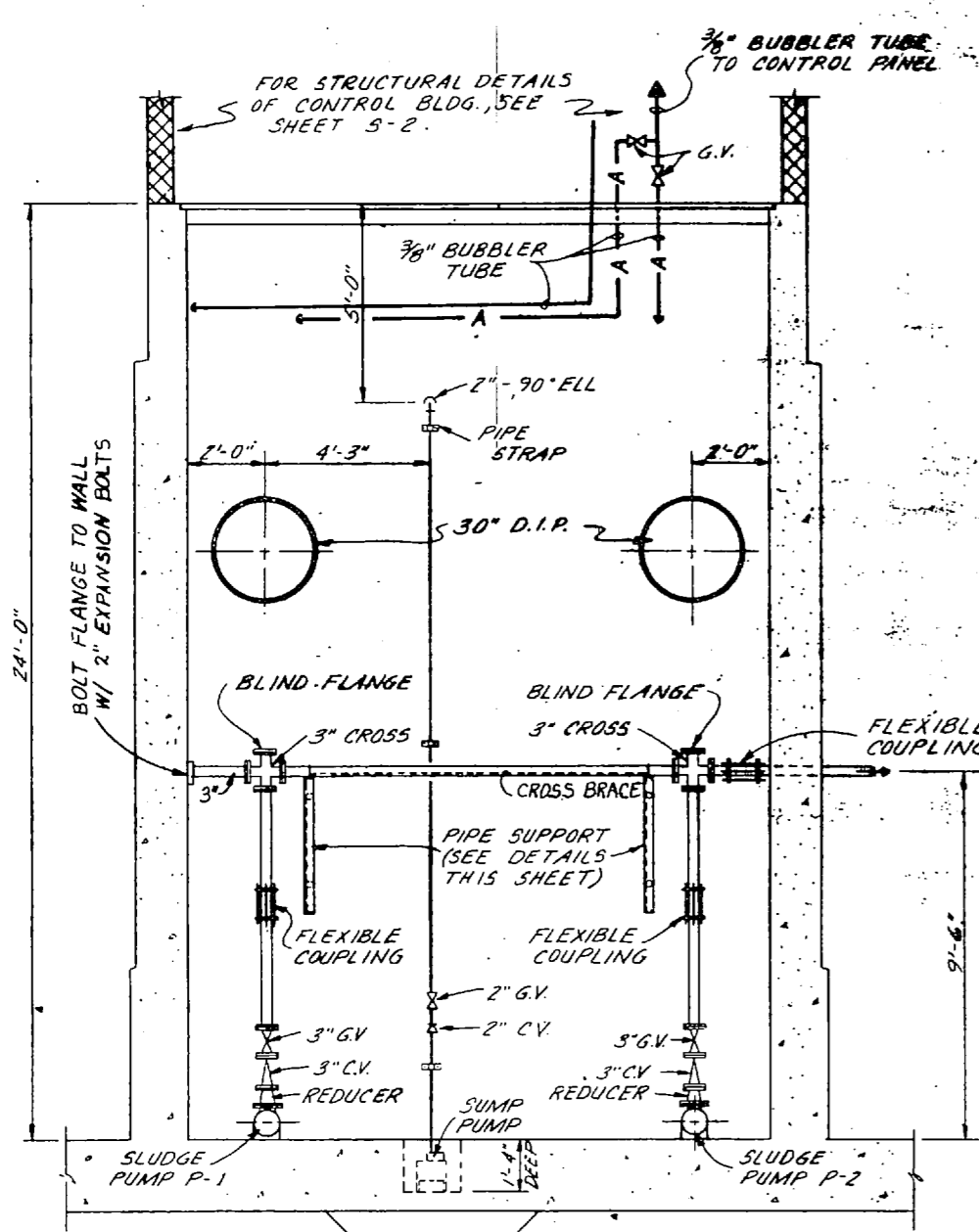
MARINE CORPS BASE

GENERAL DESIGN

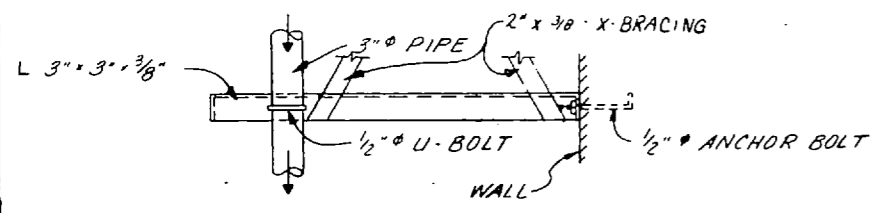
WORK SHEET



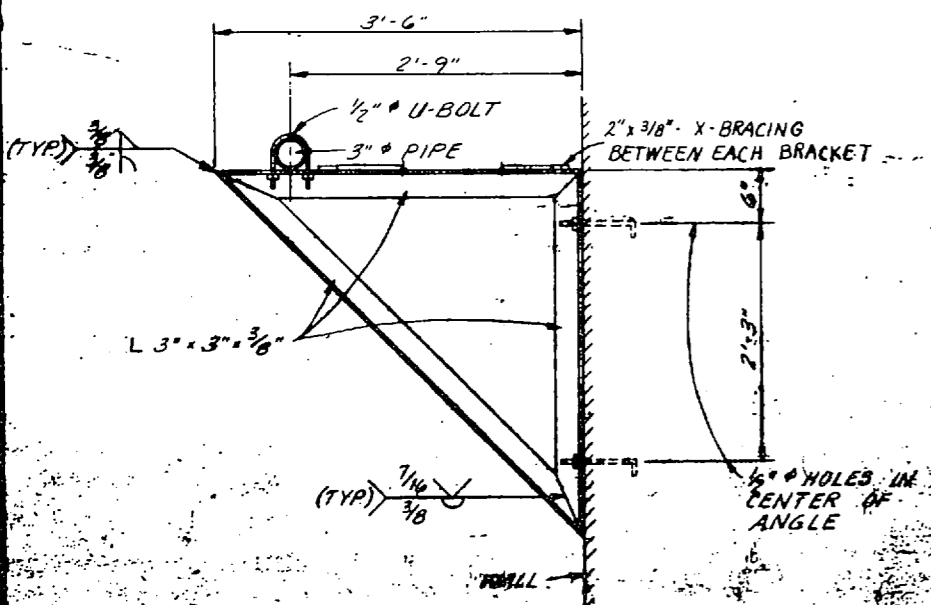
REVISIONS			
NO.	DESCRIPTION	DATE	APPROVED



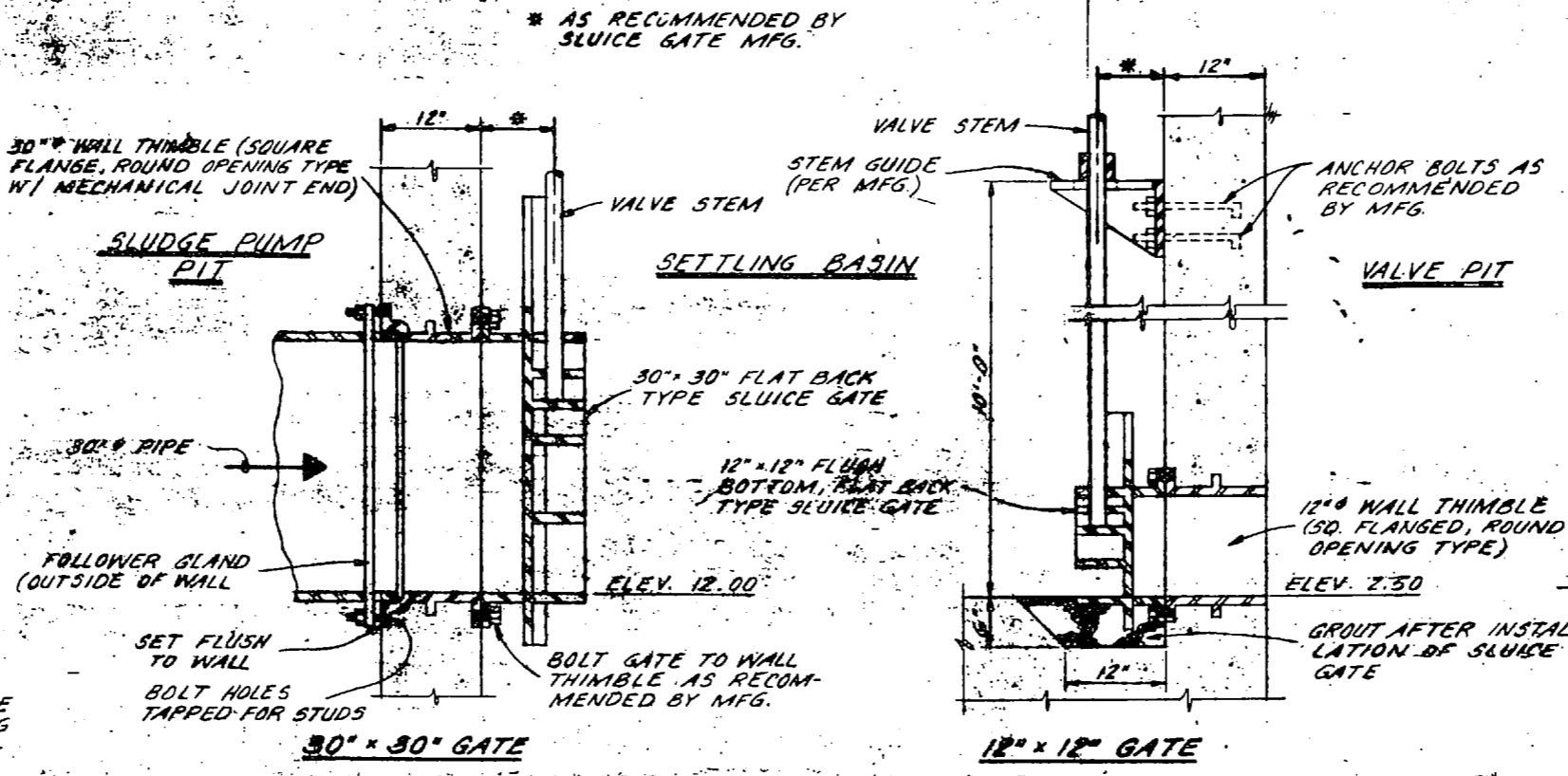
SECTION M-1 M-2
SCALE: 3/8" = 1'-0"



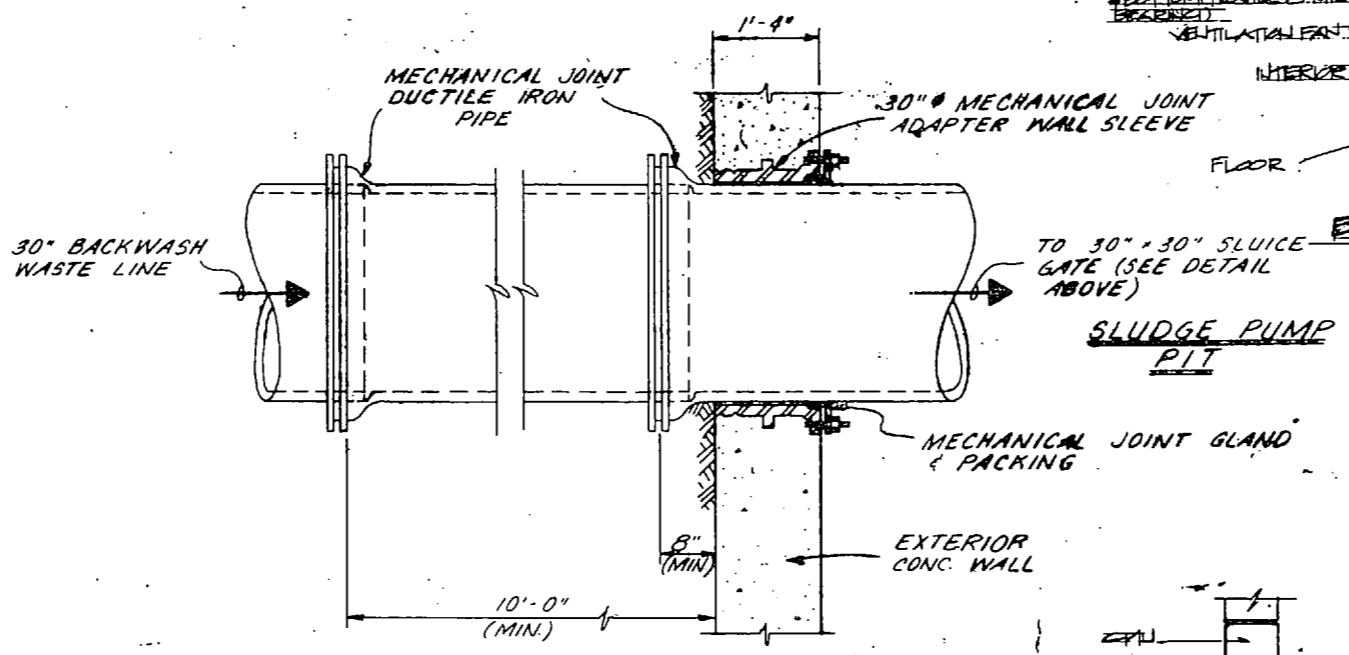
PLAN - PIPE SUPPORT BRACKET
SCALE: 1" = 1'-0"



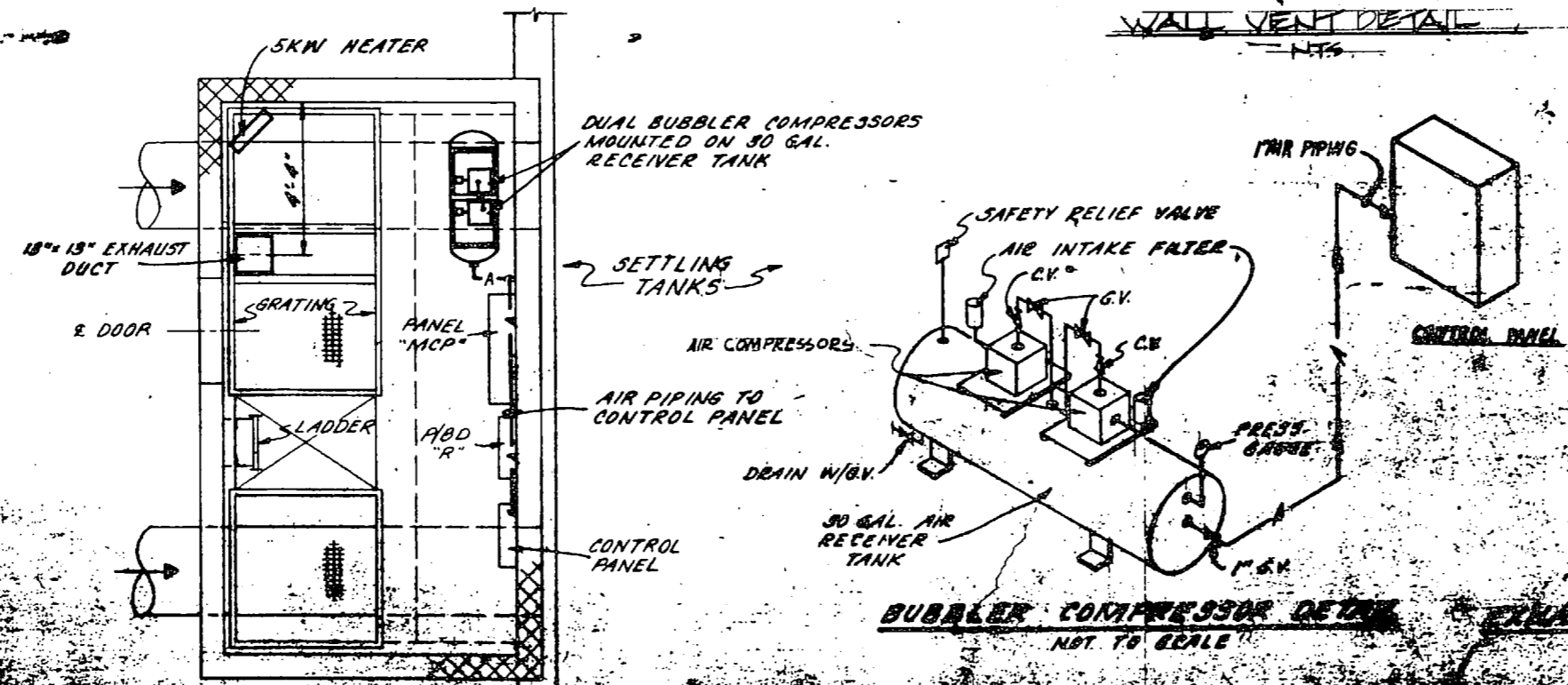
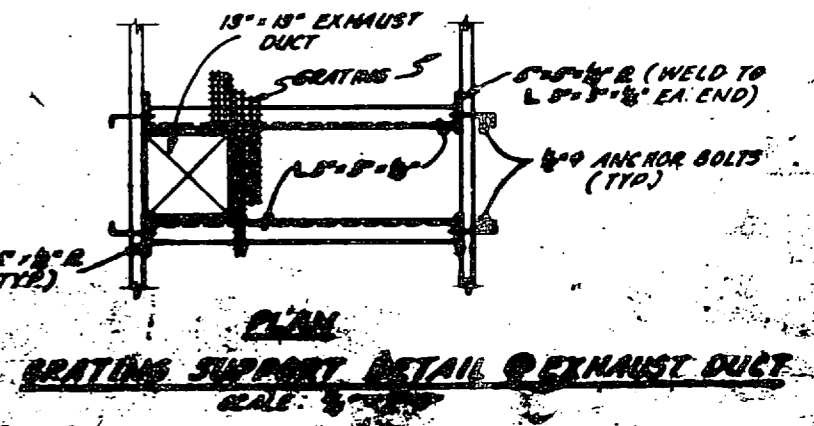
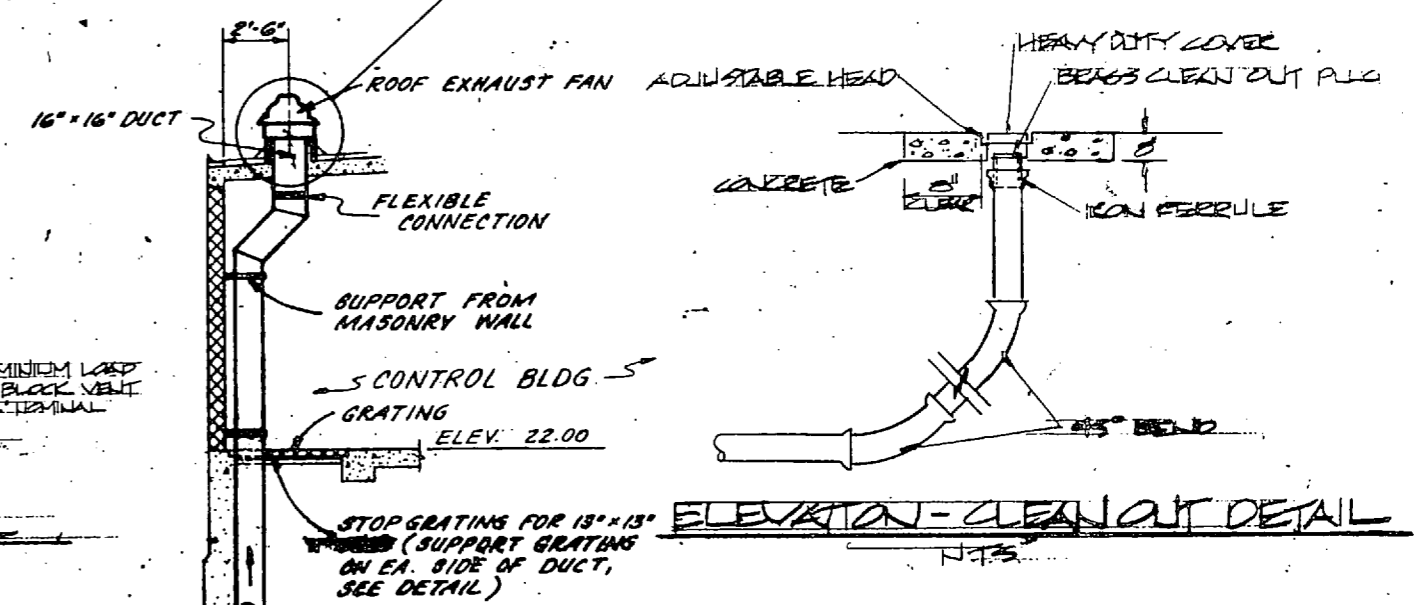
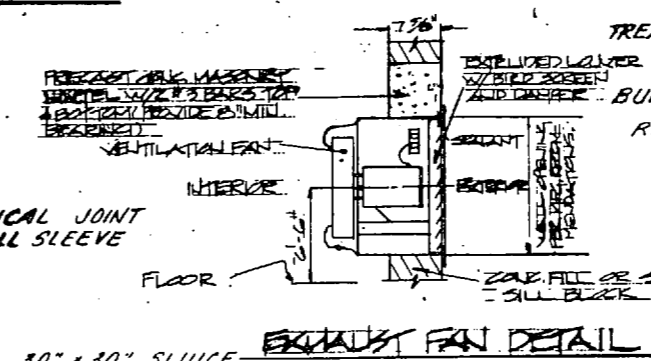
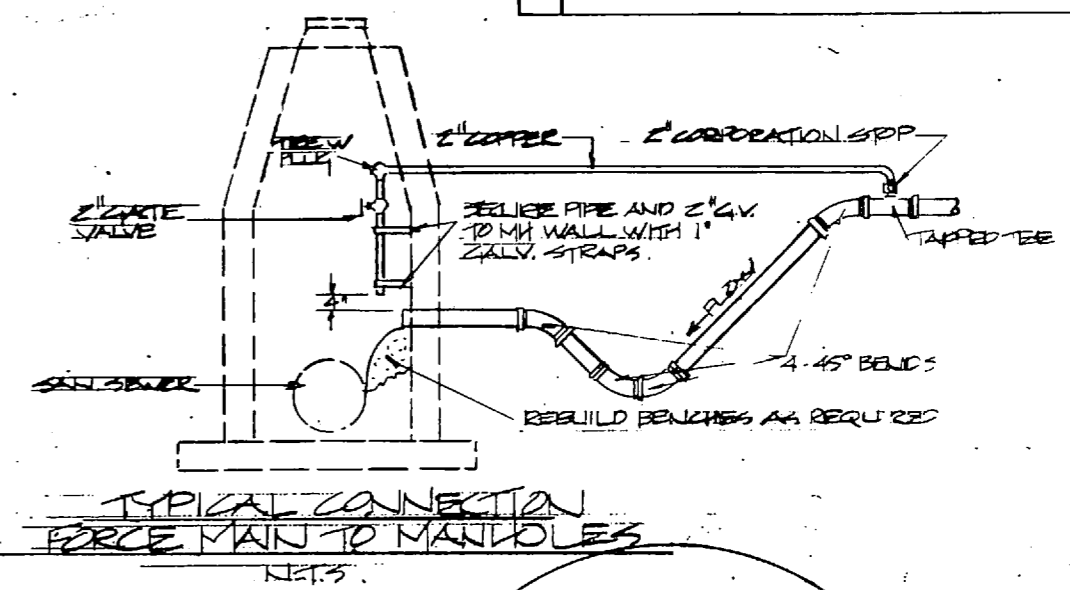
ELEVATION - PIPE SUPPORT BRACKET
SCALE: 3/4" = 1'-0"



SLUICE GATE DETAILS
SCALE: 1" = 1'-0"



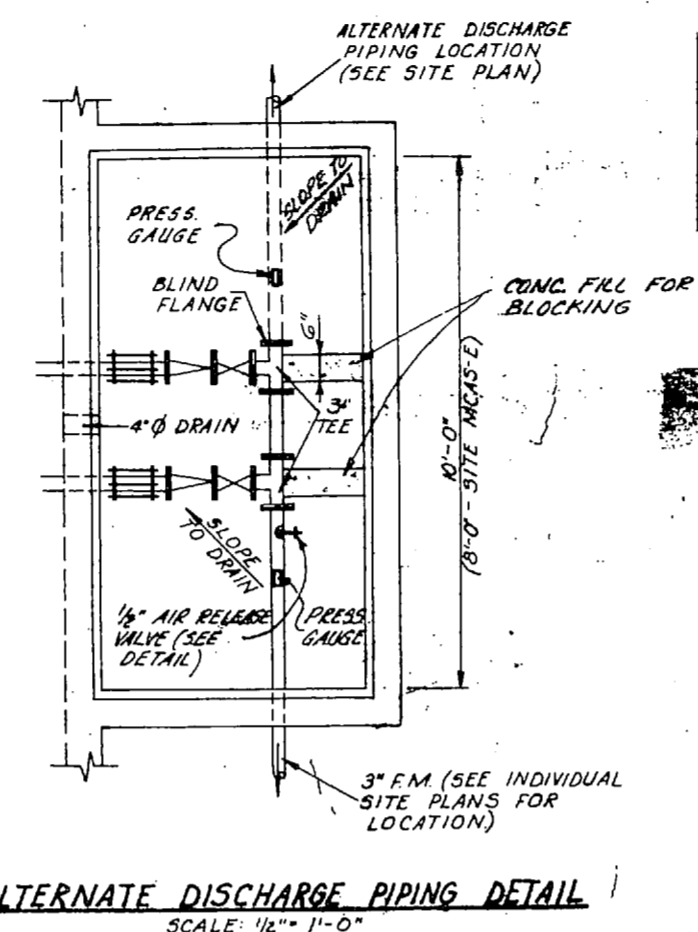
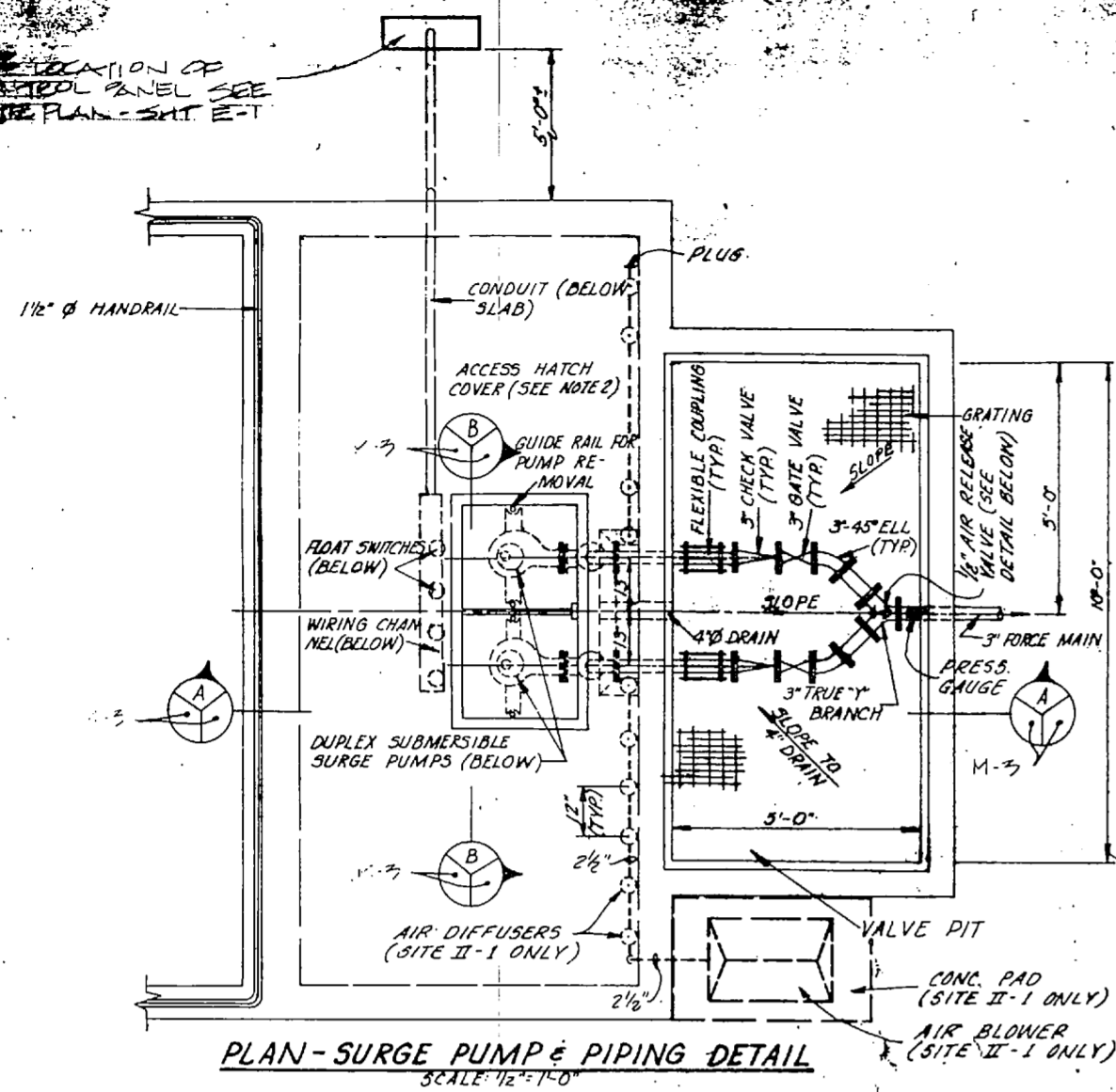
INFLUENT PIPE CONNECTION DETAIL (FOR BACKWASH WASTE SETTLING TANK)
SCALE: 3/4" = 1'-0"



BUBBLER COMPRESSOR DETAIL
NOT TO SCALE

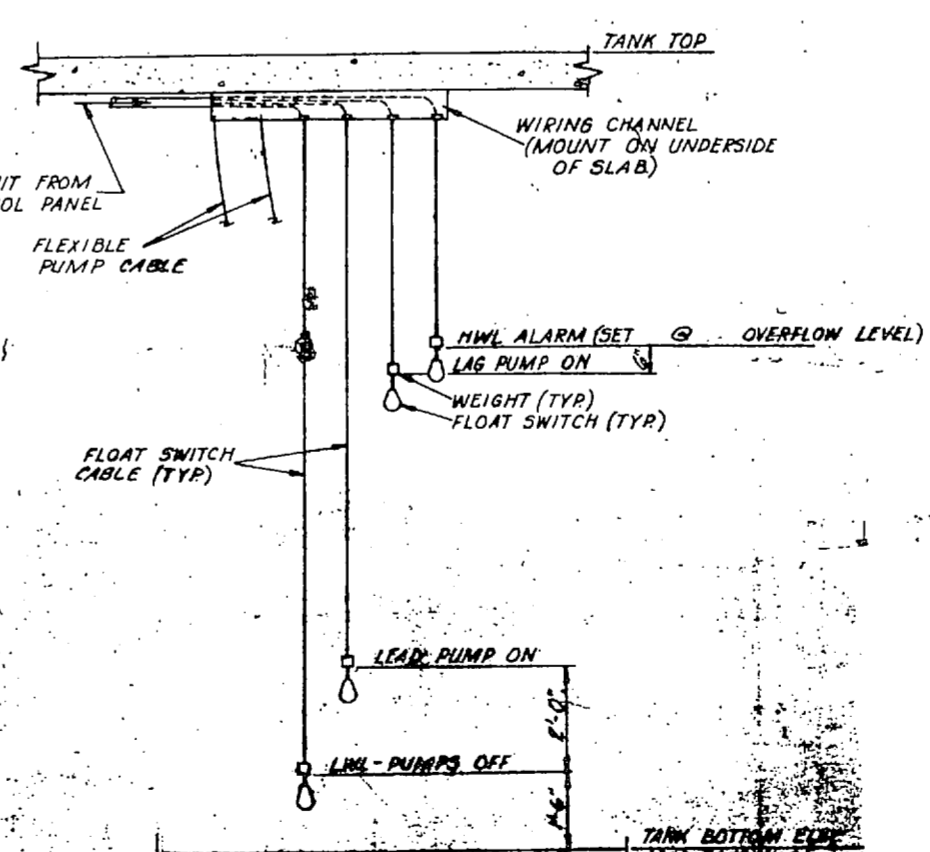
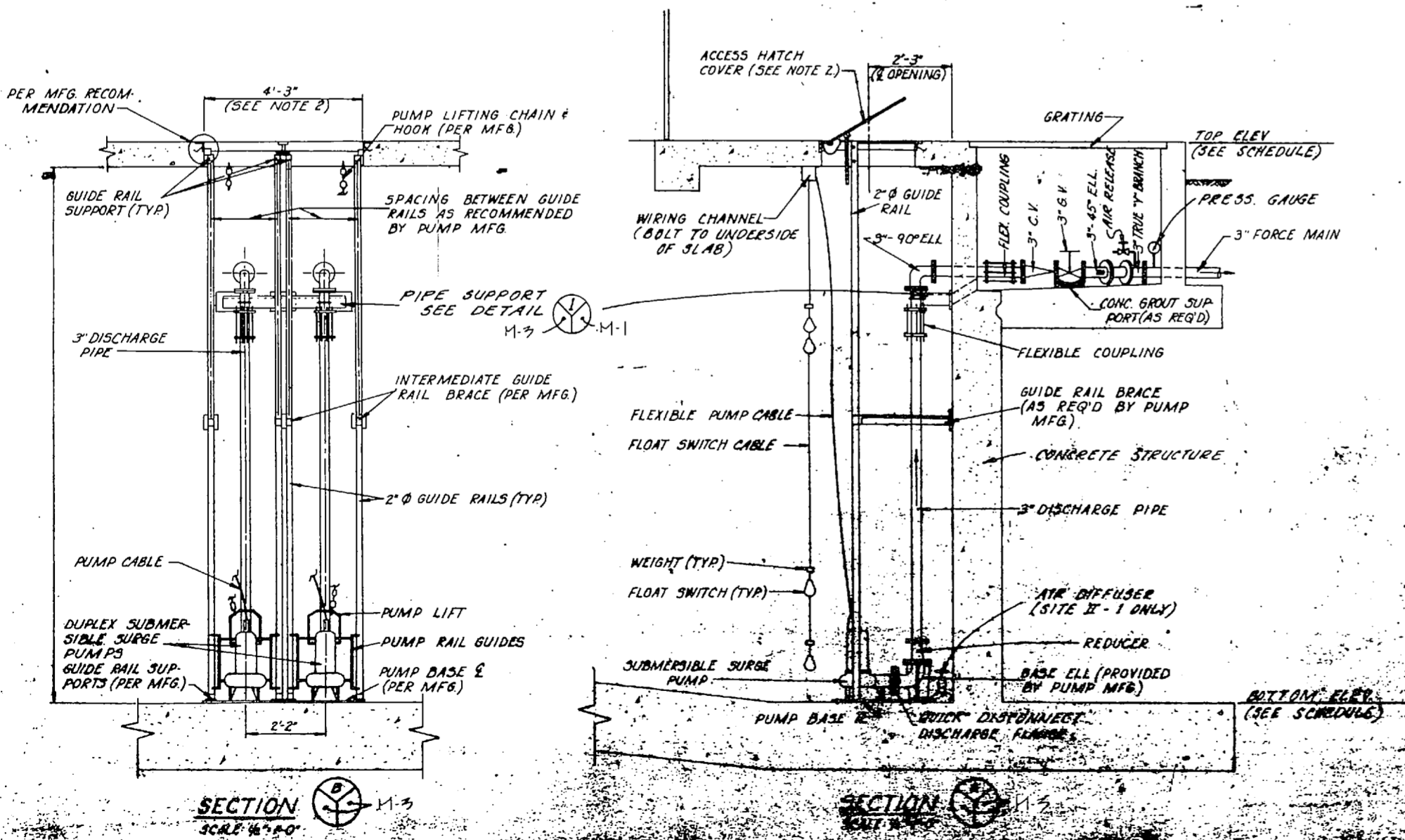
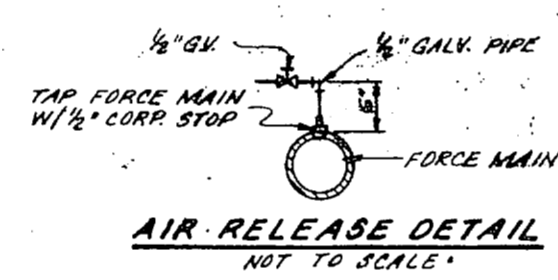
MARINE CORPS BASE	
[Signature]	

[The main body of the page contains extremely faint and illegible text, likely bleed-through from the reverse side of the paper. The text is too light to be transcribed accurately.]



PUMP SCHEDULE		PUMP SCHEDULE		PUMP SCHEDULE		PUMP SCHEDULE		PUMP SCHEDULE		PUMP SCHEDULE		PUMP SCHEDULE		PUMP SCHEDULE	
SITE	QUANTITY	RMP LOCATION	LIQUID SERVICE	RMP DESIGNATION	RMP TYPE	FLOW (GPM)	T.D.M. (FT.)	SHUT OFF HEAD (FT.)	EFF. (%)	W. (LBS.)	PER. (IN.)	PER. (IN.)	PER. (IN.)	PER. (IN.)	PER. (IN.)
VI-9	2	RECYCLE PUMP PIT	BACKWASH WASTE	RECYCLE PUMP	SUBMERSIBLE	400	30	45	60	3/4	2	50	4.60	3	60
II	2	SLUDGE PUMP PIT	LIME SLUDGE	SLUDGE PUMP	PROGRESSIVE CAVITY	50	20						4.50	3	60
II	1	SURGE PUMP PIT	WATER	SUMP PUMP	SUBMERSIBLE SUMP	25	20	29	97	2	1/2	7.00	4.60	3	60
HOUSE	2	BACKWASH SURGE TANK	FILTER BACKWASH	SURGE PUMP	SUBMERSIBLE	50	4	5.5	23	3	2	4.20	4.60	3	60

ALTERNATE DISCHARGE PIPING DETAIL
SCALE: 1/2" = 1'-0"



- NOTES**
- THE ENTIRE DUPLEX PUMP SYSTEM SHALL BE OBTAINED BY THE CONTRACTOR FROM ONE SOURCE TO INSURE COMPATIBILITY OF EQUIPMENT. THE PUMP SHALL INCLUDE THE FOLLOWING:
 - TWO SUBMERSIBLE SURGE PUMPS WITH QUICK DISCONNECT FLANGES.
 - PUMP RAIL GUIDES & INTERMEDIATE BRACES.
 - PUMP BASE PLATES WITH DISCHARGE ELBOW AND RAIL SUPPORTS.
 - ACCESS FRAME WITH CORNERS AND GUIDE RAIL SUPPORTS.
 - PUMP LIFTING CHAINS AND HOOKS.
 - CONTRACTOR SHALL VERIFY ALL PUMP DIMENSIONS AND SIZE OF OPENING IN CONCRETE SLAB FOR ACCESS HATCH COVER PRIOR TO CONSTRUCTION. DIMENSIONS MAY VARY FROM THOSE SHOWN DEPENDING PUMP MANUFACTURER SELECTED.
 - ON-OFF PUSH BUTTON CONTROL FOR AIR BLOWER SHALL BE PROVIDED IN THE WEATHERPROOF ENCLOSURE.
 - FOR DETAILS OF CONTROL SYSTEM AT THE BACKWASH SURGE TANKS, SEE SHEETS E-2 & E-3.
 - FOR STRUCTURAL DETAILS FOR THE BACKWASH SURGE TANKS, SEE SHEETS E-2 & E-2a (SEE-7) AND E-2 (N-4 & E).

VI-9

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING CENTER
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

PROJECT: **CONSTRUCT BACKWASH WASTE TANKS**

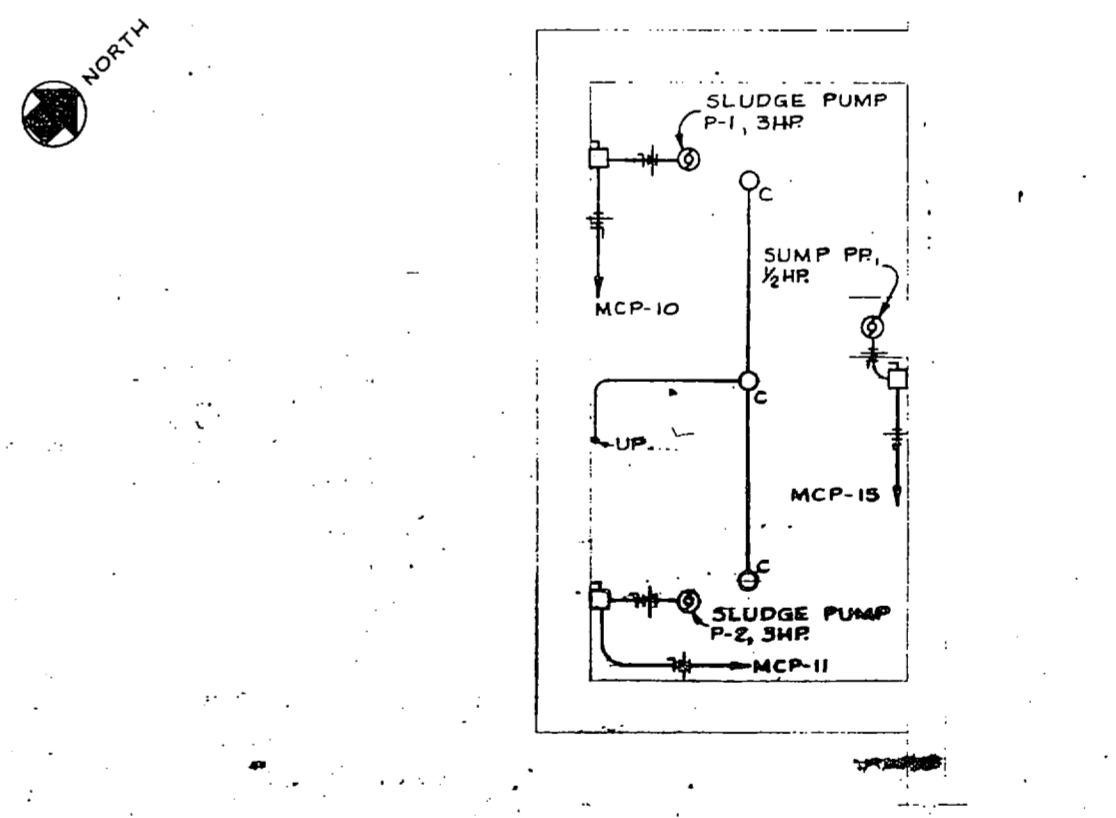
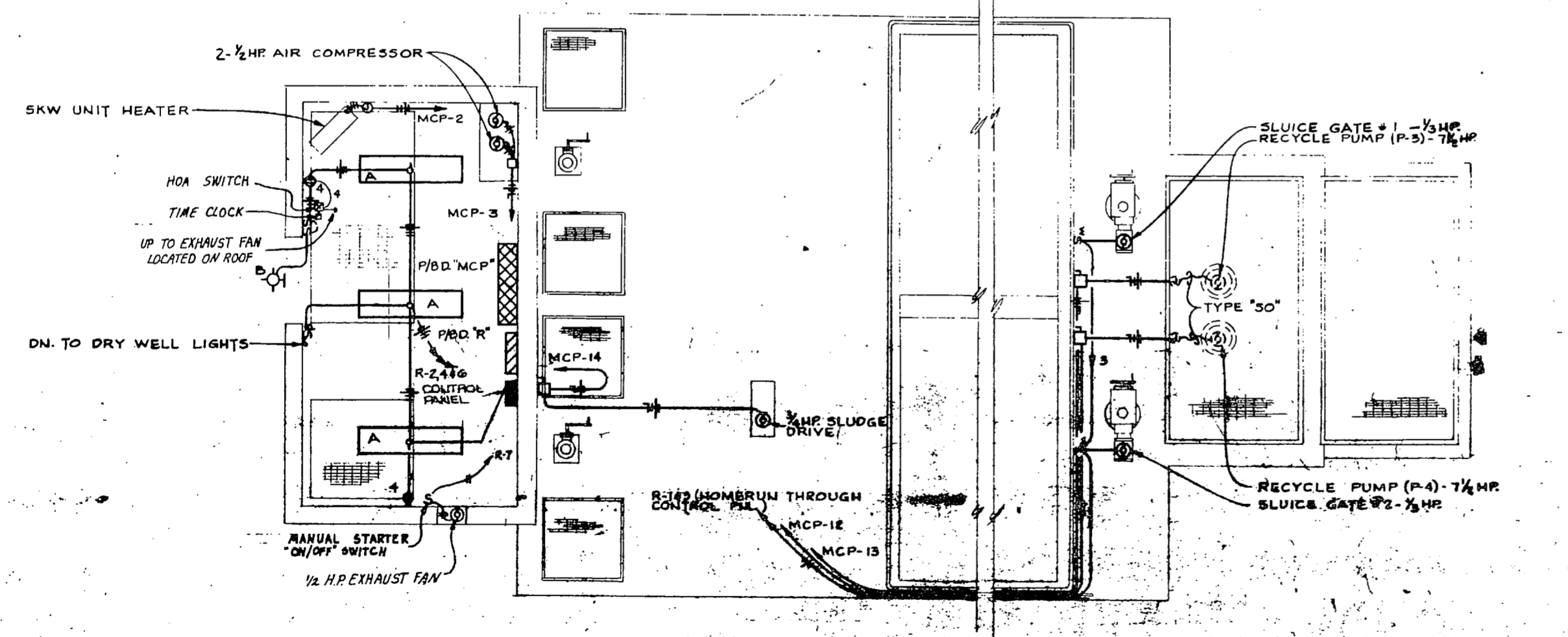
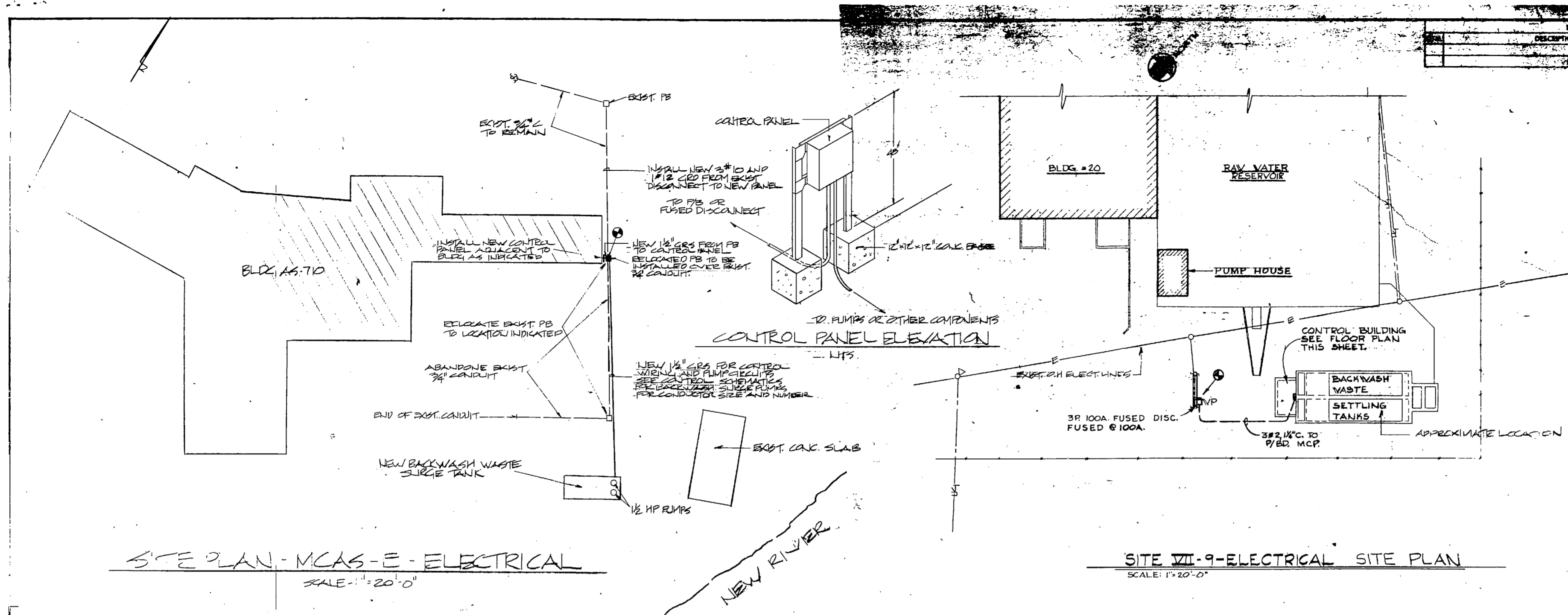
DATE: **11/10/68**

DESIGNED BY: **...**

CHECKED BY: **...**

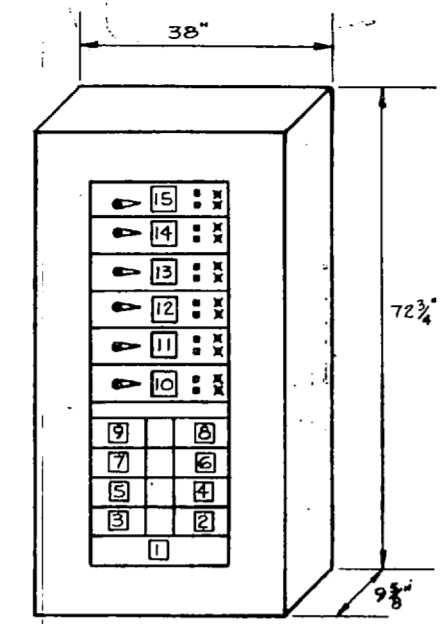
APPROVED BY: **...**

REVISION	DESCRIPTION	DATE	APPROVED

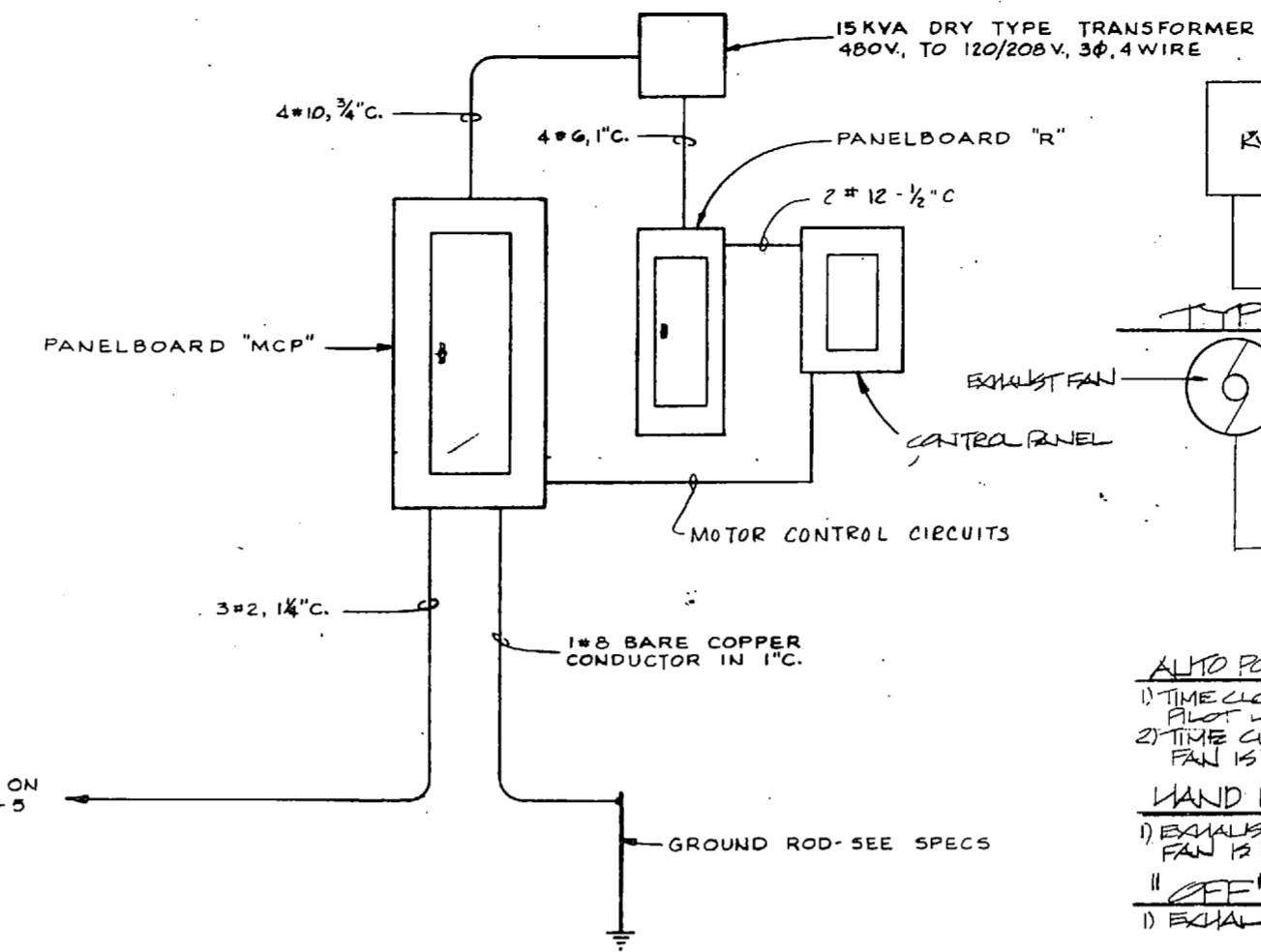


E-1	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE	
CONSTRUCTION	
WASTE TANKS	
SITE PLAN	

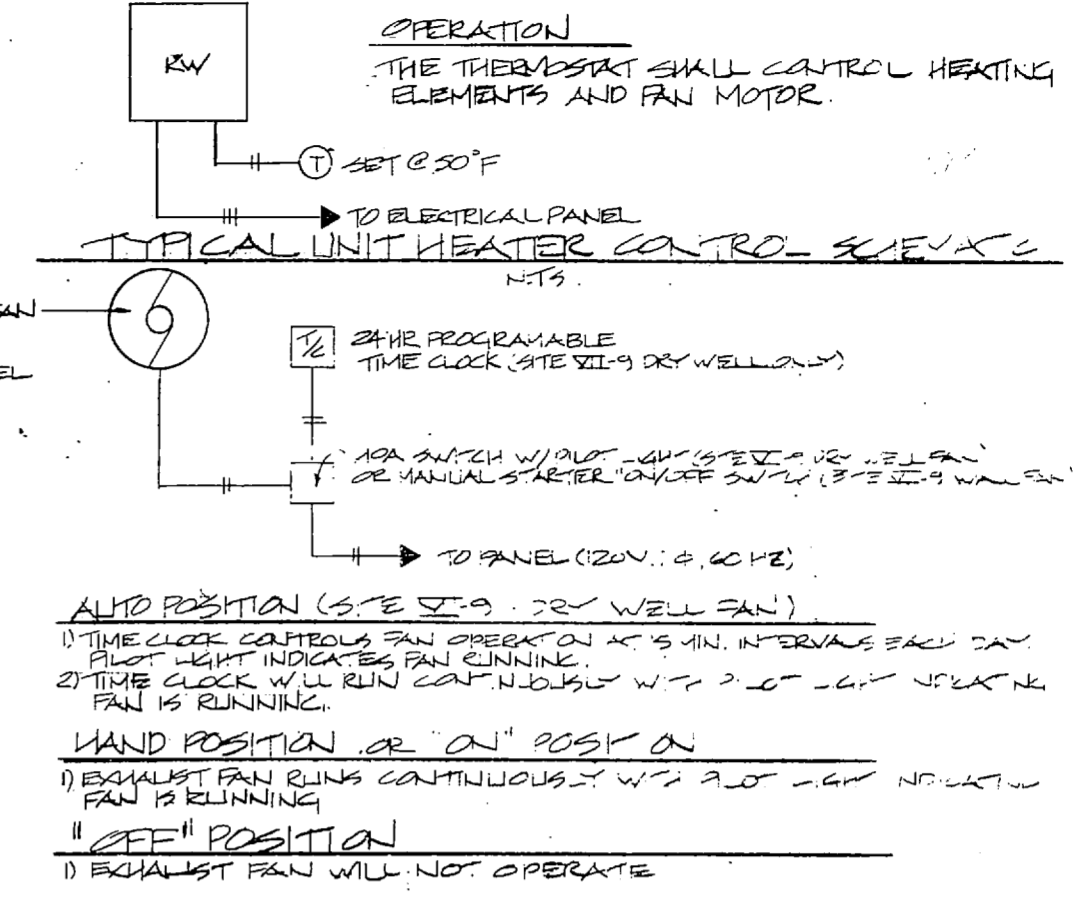
REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVED



DETAIL OF PANELBOARD "MCP"
NO SCALE



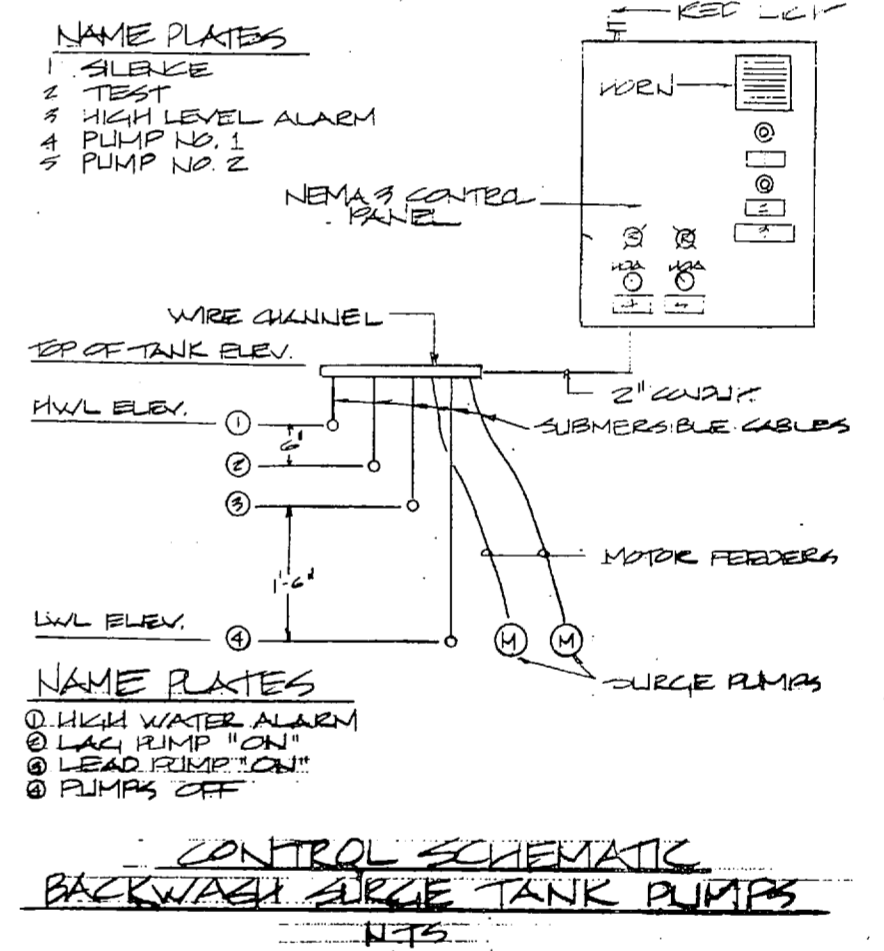
RISER DIAGRAM FOR SITE VII-9
NO SCALE



TYPICAL EXHAUST FAN CONTROL SCHEMATIC
NTS

MOTOR CONTROL PANELBOARD SCHEDULE																
HORIZ. BUS: NONE		VERT. BUS: 100		BRACING: 22,000		ENCLOSURE: NEMA 1		NEMA CLASS: I		TYPE: B						
UNIT	DRIVEN EQUIPMENT	WIRE NO.	WIRE SIZE	COND. SIZE	H.P.	F.L. AMPS	PHASES	VOLTS	DISC. DEVICES	POLES	TRIP	SIZE	MOTOR CONTROLLER	CONTROL DEVICES	NOTES	
1	MAIN BREAKER	3	2	1 1/4		63.5	3	460	3 CB	100						
2	UNIT HEATER	3	12	12	3/4	6.02	3	460	3 CB	15						
3	AIR COMPRESSOR	3	12	12	3/4	2-1/2	2.0	460	3 CB	15						
4	DRY TYPE XFMR.	3	12	12	3/4	18.1	3	460	3 CB	20						
5	SPACE	-	-	-	-	-	3	460								
6	SPACE	-	-	-	-	-	3	460								
7	SPACE	-	-	-	-	-	3	460								
8	SPACE	-	-	-	-	-	3	460								
9	SPACE	-	-	-	-	-	3	460								
10	PUMP P-1	3	12	12	3/4	4.8	3	460	3 CB	15	1	FVNR 120	2 2	YES YES HOA	DOOR PILOT LIGHTS	
11	PUMP P-2	3	12	12	3/4	4.8	3	460	3 CB	15	1	FVNR 120	2 2	YES YES HOA	DOOR PILOT LIGHTS	
12	PUMP P-3	3	12	12	3/4	7 1/2	11	3	460	3 CB	20	1	FVNR 120	2 2	YES YES HOA	DOOR PILOT LIGHTS
13	PUMP P-4	3	12	12	3/4	7 1/2	11	3	460	3 CB	20	1	FVNR 120	2 2	YES YES HOA	DOOR PILOT LIGHTS
14	SLUDGE DRIVE	3	12	12	3/4	1.4	3	460	3 CB	15	1	FVNR 120	2 2	YES YES HOA	DOOR PILOT LIGHTS	
15	SUMP PUMP	3	12	12	3/4	1.0	3	460	3 CB	15	1	FVNR 120	2 2	YES YES HOA	DOOR PILOT LIGHTS	

DIRECTORY	WATTS LOAD			CKT.	AMPS	L1	L2	L3	CKT.	AMPS	WATTS LOAD			DIRECTORY			
	L1	L2	L3								L1	L2	L3				
SLUICE GATE #1	300			1	1.2				20	2	700			LIGHTS			
SLUICE GATE #2	300	100		3	1.2				4	4	1200			RECEPTACLES			
SPARE				5					6	6	1200			CONTROL PNL.			
WALL EXHAUST FAN	100			7					8	8				SPARE			
SPARE				9					10	10							
				11					12	12							
				13					14	14							
				15					16	16							
				17					18	18							
				19					20	20							
				21					22	22							
				23					24	24							
				25					26	26							
				27					28	28							
				29					30	30							
				31					32	32							
				33					34	34							
				35					36	36							
				37					38	38							
				39					40	40							
				41					42	42							
SUB-TOTAL											SUB-TOTAL						
VOLTAGE: 120/208											MAIN BUS 100 A			TOTAL WATTS, L1	1600	PANEL NO.	R
MAIN BREAKER: 100											A. FRAME 50 A TRIP			TOTAL WATTS, L2	2100		
MOUNTING: SURFACE														TOTAL WATTS, L3	1200		
NOTE:														TOTAL WATTS	4900		



ELECTRICAL SERVICES - PUMP															
ITEM NO.	SITE DESIGN	VOLTS	PHASE	MOTORS		SOURCE	DETAIL #	FUSED SWITCH	CIRCUIT BREAKER		REMARKS	CONTROL PANEL			
				HP	W/SE				POLES	AMPS		POLES	AMPS	OPERATOR	TRIP
1	SU-9	460	3	1	1	YES	100	3	100						
2	W/SE	240	3	2	1/2	YES	250	3	22						

NOTE: SEE CONTROL SYSTEM SCHEMATIC DIAGRAM FOR CONTROL CIRCUITS, PANEL ARRANGEMENT, ELECTRICAL REQUIREMENTS AND ACCESSORY COMPONENTS. PANELS SHALL BE INSTALLED IN A DRY, WELL VENTILATED, AND PROTECTED FROM WEATHER. PANELS SHALL BE INSTALLED IN A DRY, WELL VENTILATED, AND PROTECTED FROM WEATHER. PANELS SHALL BE INSTALLED IN A DRY, WELL VENTILATED, AND PROTECTED FROM WEATHER.

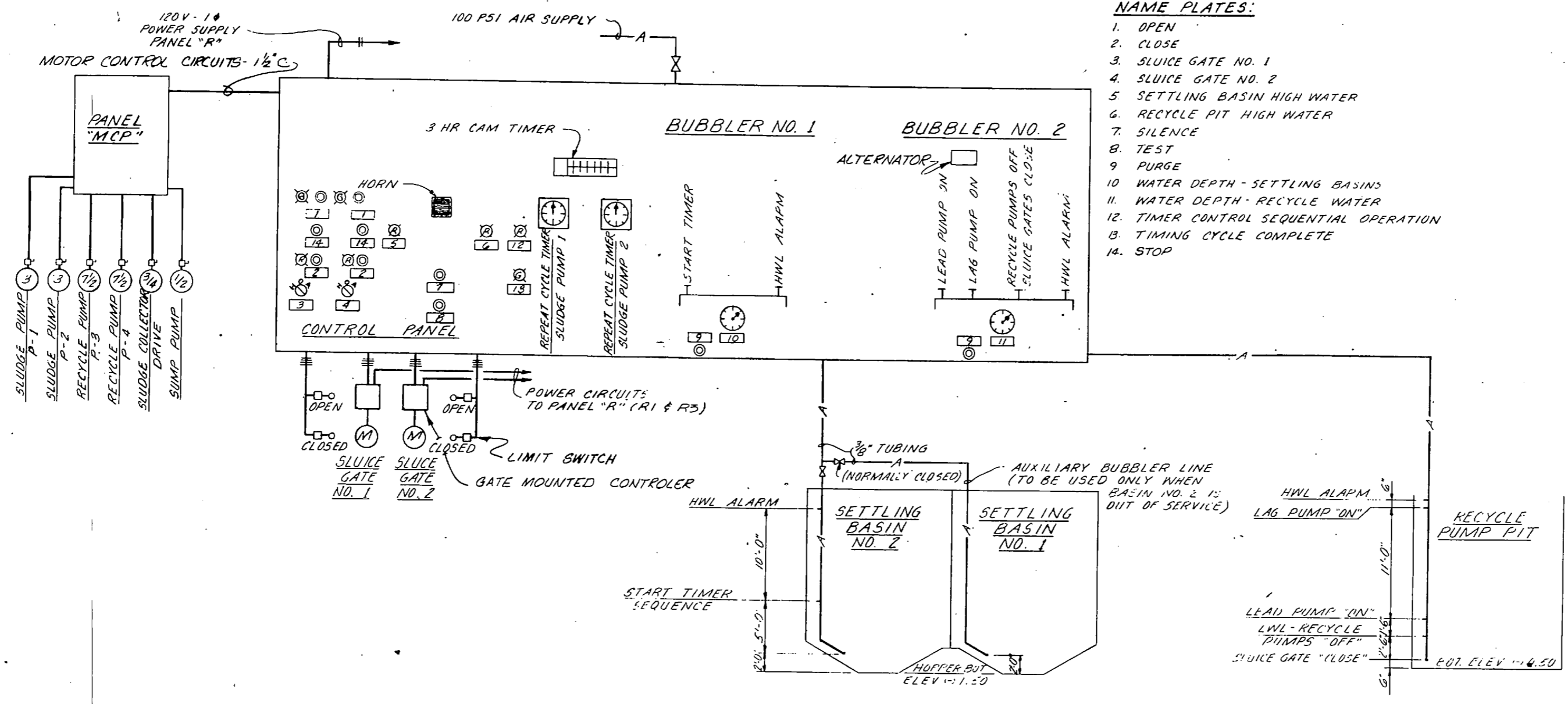
DEPARTMENT OF THE CORP MARINE FACILITIES ENGINEERING COMMAND

MARINE CORPS BASE
5052 LAMAR, QUETTA CAMP

CONSTRICT BACKWASH WASTE TANKS

DATE: 12/28/58
BY: [Signature]
CHECKED BY: [Signature]
APPROVED BY: [Signature]

PROJECT NO. 40000
DRAWING NO. 40000



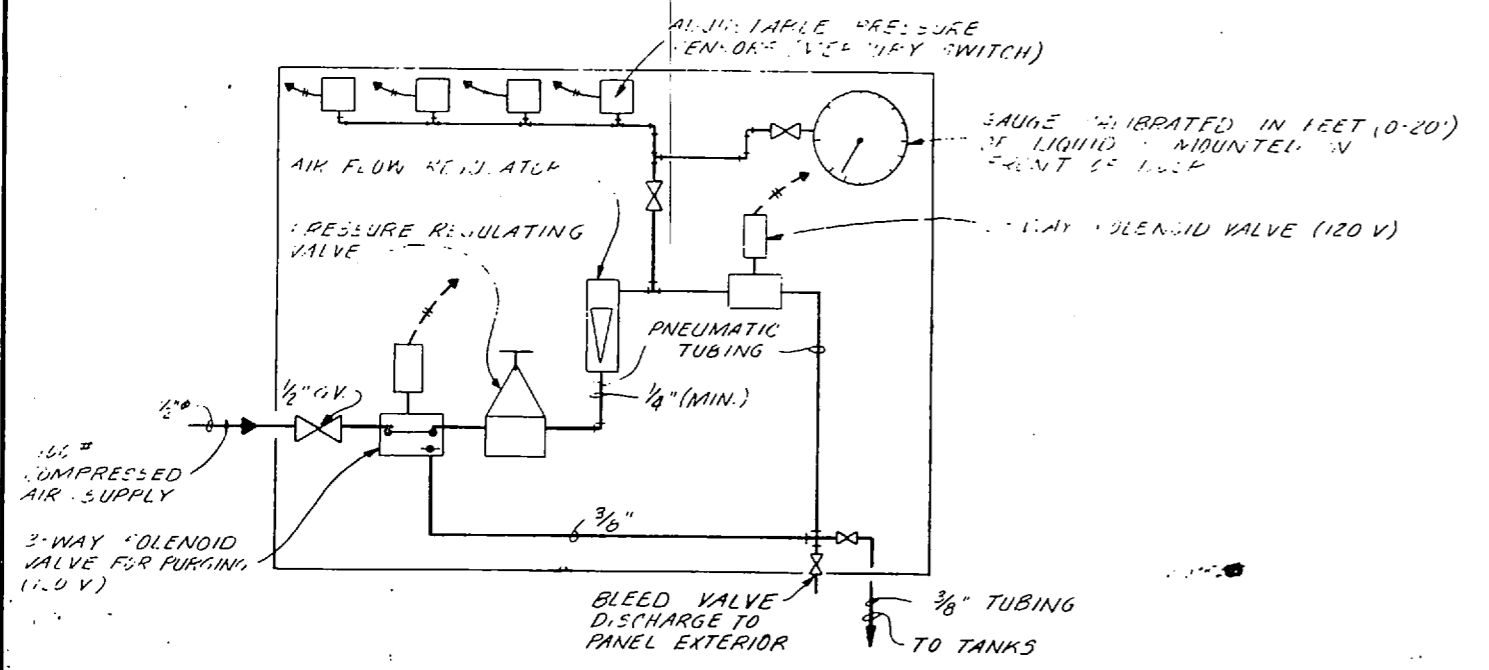
- NAME PLATES:**
1. OPEN
 2. CLOSE
 3. SLUICE GATE NO. 1
 4. SLUICE GATE NO. 2
 5. SETTLING BASIN HIGH WATER
 6. RECYCLE PIT HIGH WATER
 7. SILENCE
 8. TEST
 9. PURGE
 10. WATER DEPTH - SETTLING BASINS
 11. WATER DEPTH - RECYCLE WATER
 12. TIMER CONTROL SEQUENTIAL OPERATION
 13. TIMING CYCLE COMPLETE
 14. STOP

REVISIONS			
SYL	DESCRIPTION	DATE	APPROVED

CONTROL SCHEMATIC (SITE VII-9)
NO SCALE

DESCRIPTION OF OPERATION

1. CONTROL OBJECTIVE - BACKWASH WATER FLOWS INTO THE SETTLING BASINS AND IS ALLOWED TO SETTLE FOR A PERIOD OF TIME. DURING THIS INTERVAL SETTLING SLUDGE IS COLLECTED AND PUMPED OUT. UPON COMPLETION OF THE SETTLING PERIOD, THE WASTE WATER FLOWS INTO THE RECYCLE PUMP PIT AND IS PUMPED TO THE FILTER PLANT RAW WATER LINE. AFTER PUMPING IS COMPLETE, THE SYSTEM AUTOMATICALLY IS RESET TO BEGIN THE CYCLE OVER WITH THE NEXT BACKWASH PERIOD.
2. BASIC CONTROL COMPONENTS - BUBBLER LEVEL CONTROLS FOR TWO SEPARATE TANKS, CAM TYPE TIMER AND REPEAT CYCLE TIMER.
3. RISING WATER LEVEL IN THE SETTLING BASIN SHALL CLOSE A BUBBLER SYSTEM NUMBER 1 PRESSURE SWITCH TO START THE CAM TIMER.
4. CAM TIMER SHALL INITIATE THE FOLLOWING SEQUENCE OF EVENTS:
 - a) CAM NO. 1 INTERLOCKS WITH THE BUBBLER NUMBER 1 PRESSURE SWITCH SO THAT THE TIMER WILL COMPLETE ONE FULL CYCLE AND THEN STOP. START TIME - 0 MINUTES.
 - b) CAM NO. 2 STARTS AND STOPS SLUDGE COLLECTOR MECHANISM. SET START AT 10 MINUTES AND STOP AT 120 MINUTES.
 - c) CAM NO. 3 STARTS AND STOPS SLUDGE PUMP REPEAT CYCLE TIMER SET START AT 15 MINUTES AND STOP AT 120 MINUTES.
 - d) CAM NO. 4 OPENS SLUICE GATES.
 - e) CAM NO. 5 SPARE
 - f) CAM NO. 6 SPARE
 - g) CAM TIMER STOPS AT COMPLETION OF THREE HOUR CYCLE READY FOR START OF NEW CYCLE.
 - h) RED AND GREEN PANEL MOUNTED LIGHTS SHALL INDICATE WHEN A TIME CYCLE IS UNDERWAY AND WHEN THE CYCLE IS COMPLETE.
5. REPEAT CYCLE TIMER SHALL OPERATE WHEN ACTIVATED BY CAM TIMER. CYCLE TIMER SHALL HAVE TEN MINUTE CYCLE WITH ADJUSTABLE ON TIME OF 0% TO 90% OF CYCLE. SET EACH PUMP TO OPERATE 5 MINUTES OF THE 10 MINUTE CYCLE. SET ON TIMES SO THE PUMPS DO NOT RUN SIMULTANEOUSLY. SLUDGE PUMP CONTROLS SHALL BE INTERLOCKED WITH THE PUMP SHUT OFF SWITCH OF BUBBLER NUMBER 2 SO THAT PUMPS WILL NOT OPERATE IF THE WATER FALLS TO THE LOW LEVEL DURING THE PUMPING TIME INTERVAL.
6. BUBBLER SYSTEM NUMBER 1 SHALL START THE CAM TIMER ON RISING WATER LEVEL IN THE SETTLING BASIN AND SOUND AN ALARM AT THE HIGH WATER LEVEL.
7. BUBBLER SYSTEM NUMBER 2 SHALL START THE LEAD RECYCLE PUMP, START THE LAG RECYCLE PUMP AND SOUND AN ALARM AT THE INDICATED POINTS ON THE RISING WATER LEVEL. THE SYSTEM SHALL SHUT OFF BOTH PUMPS AT THE LOW WATER POINT AND THROUGH INTERLOCK WITH THE SLUDGE PUMP REPEAT CYCLE TIMER. BOTH RECYCLE PUMPS IF THE CAM TIMER HAS COMPLETED ITS CYCLE SHALL INTERLOCK WITH THE LEAD LAG PUMP MECHANISM.
8. THE ALARM SYSTEM SHALL BE ACTIVATED AT THE INDICATED ALARM POINTS. CONTROL SHALL INCLUDE PANEL DOOR MOUNTED RED LIGHTS FOR THE TWO HIGH WATER ALARM POINTS AND A PANEL MOUNTED AUDIBLE ALARM. HOWEVER, THE RED LIGHTS SHALL REMAIN ILLUMINATED UNTIL THE ALARM CONDITION IS ELIMINATED.
9. SLUICE GATES SHALL OPERATE AUTOMATICALLY WHEN SELECTOR SWITCH IS SET TO "AUTO". WHEN SET TO "HAND", THE SLUICE GATE SHALL OPERATE MANUALLY BY DEPRESSING THE APPROPRIATE PUSH BUTTON. PUSH BUTTON STATIONS SHALL BE LOCATED IN THE MAIN CONTROL PANEL AND IN THE GATE MOUNTED CONTROL ENCLOSURE.



TYPICAL AIR BUBBLER CONTROL SYSTEM
NOT TO SCALE

