

MYRTLE BEACH S. C.

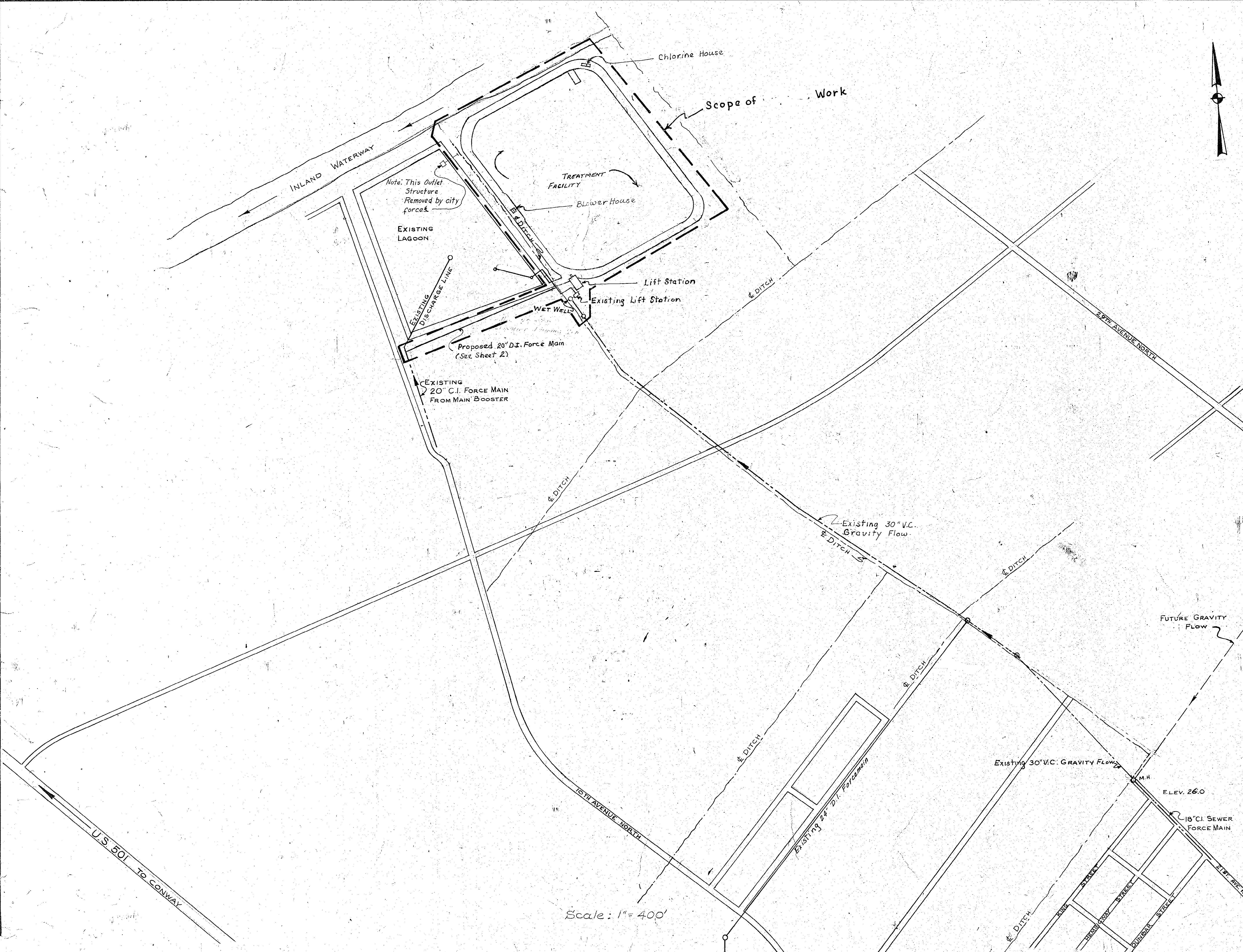
E.P.A. PROJECT NO. W.P.C.-SC-252

SEWAGE TREATMENT FACILITIES

RECORD DRAWINGS

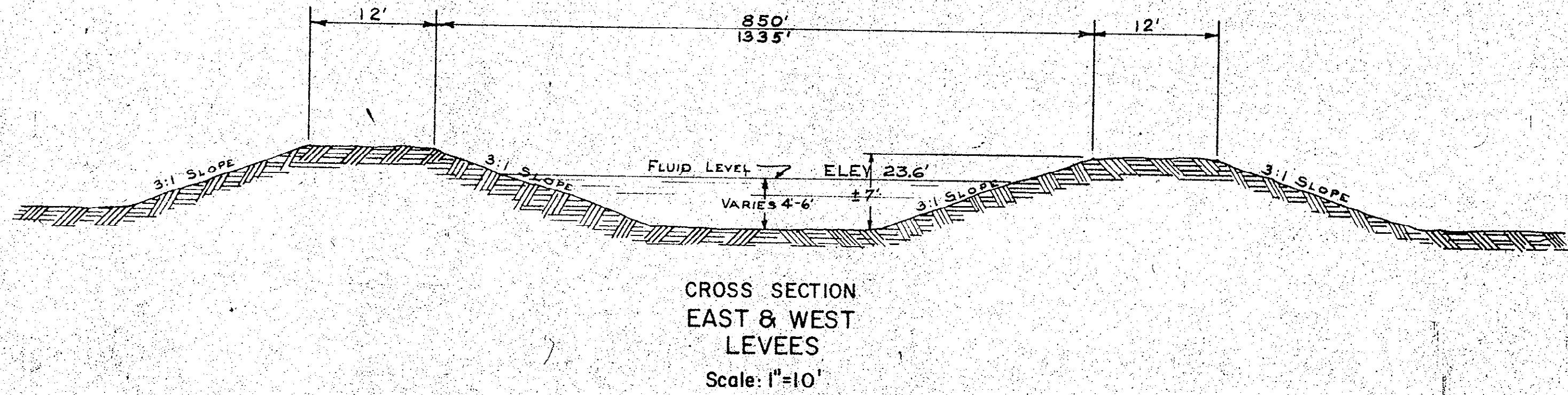
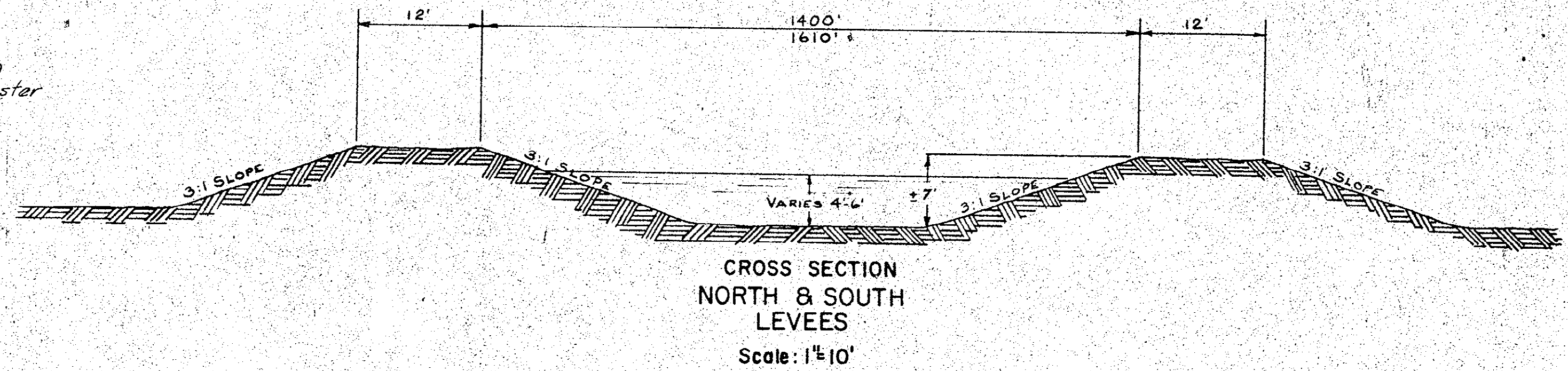
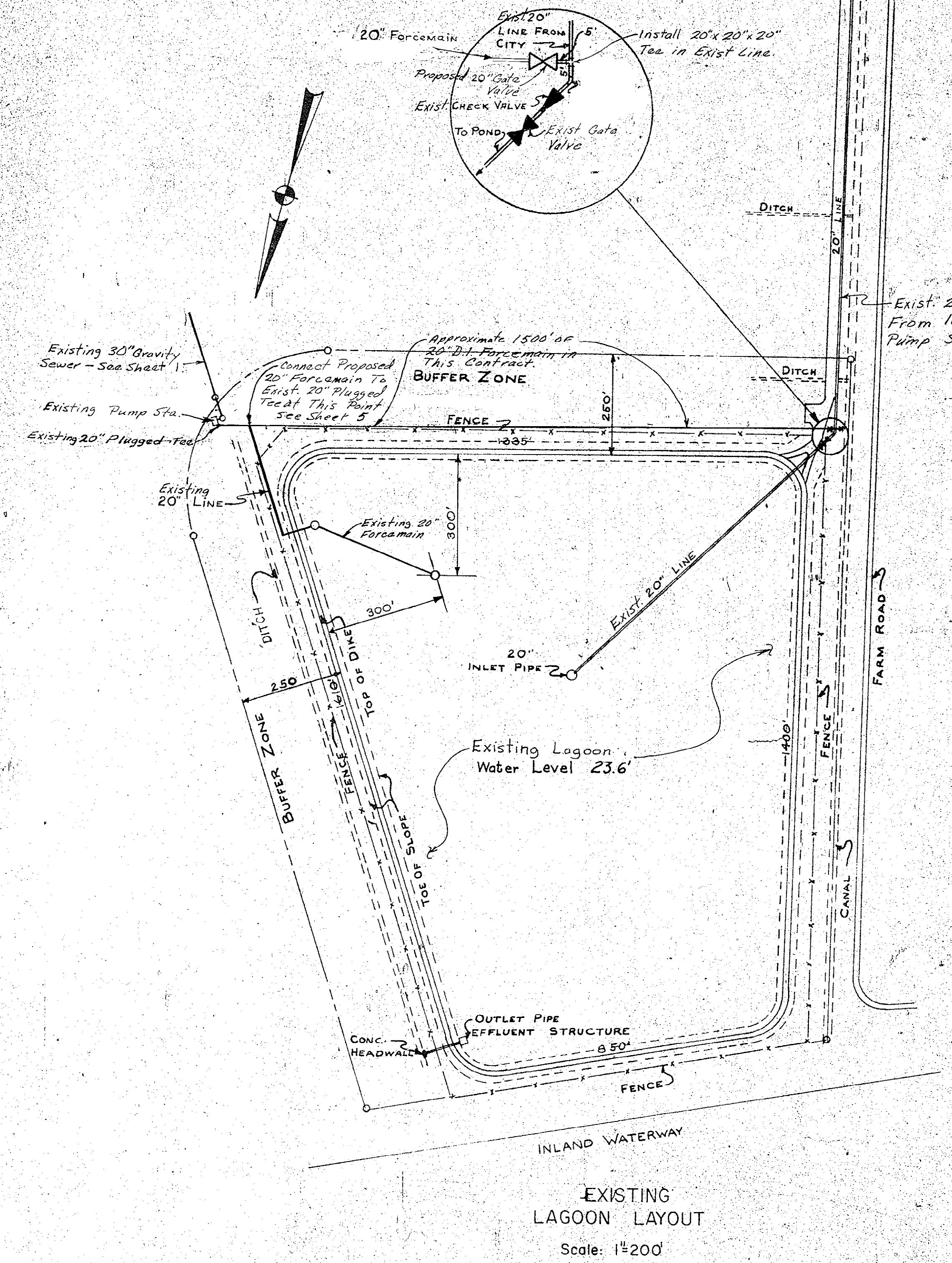
WILBUR SMITH & ASSOCIATES
CONSULTING ENGINEERS
COLUMBIA, SOUTH CAROLINA

RECORD DRAWINGS



REVISION	DATE	DESCRIPTION	BY
1	7/79	RECORD DRAWING	DATA
SEWAGE TREATMENT LOCATION PLAN			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGNED	DWN	CHK	DATE
4/8/81	2/81	Cut	11-6-79
DWG NO. 1			

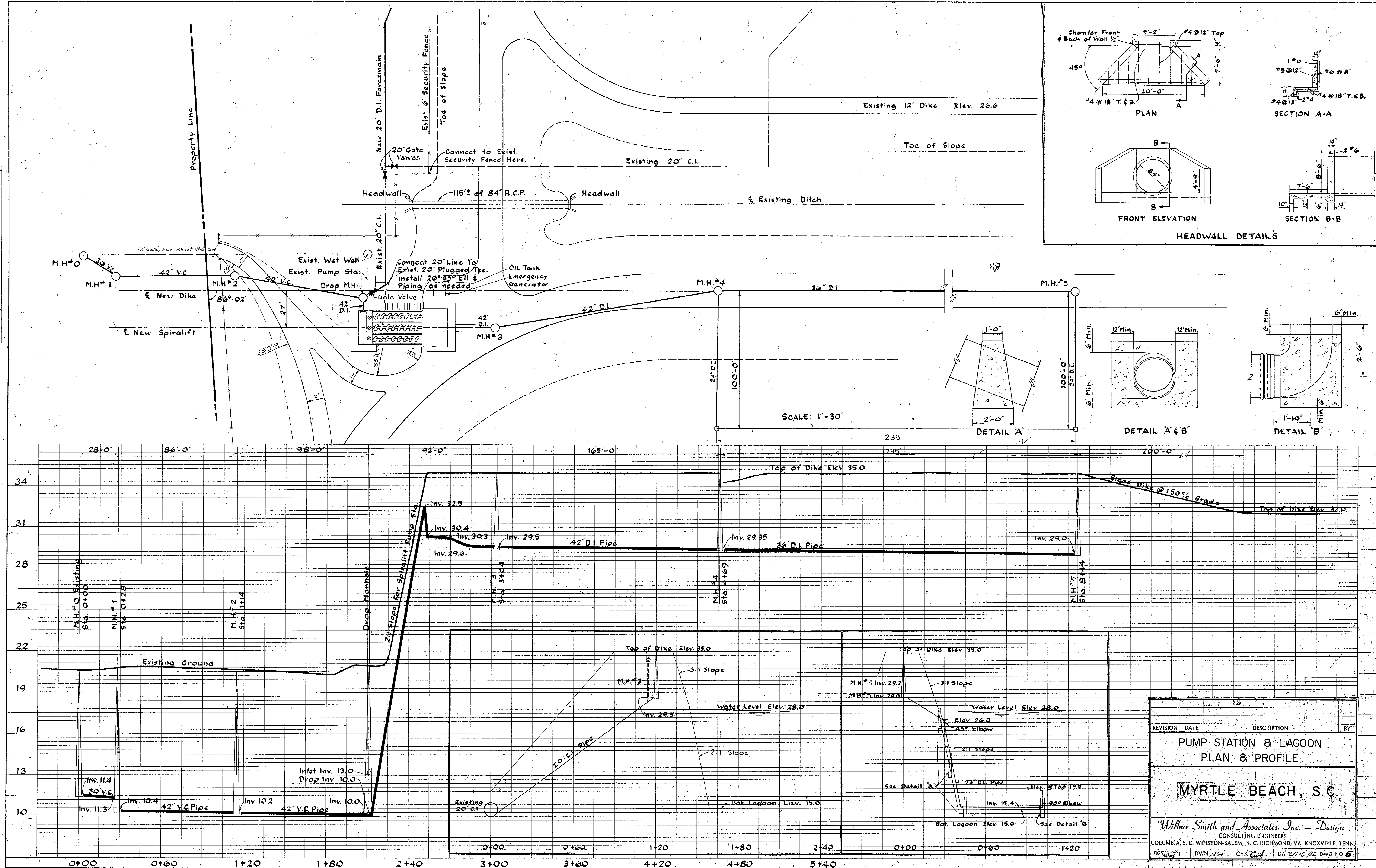
51-001-002/23



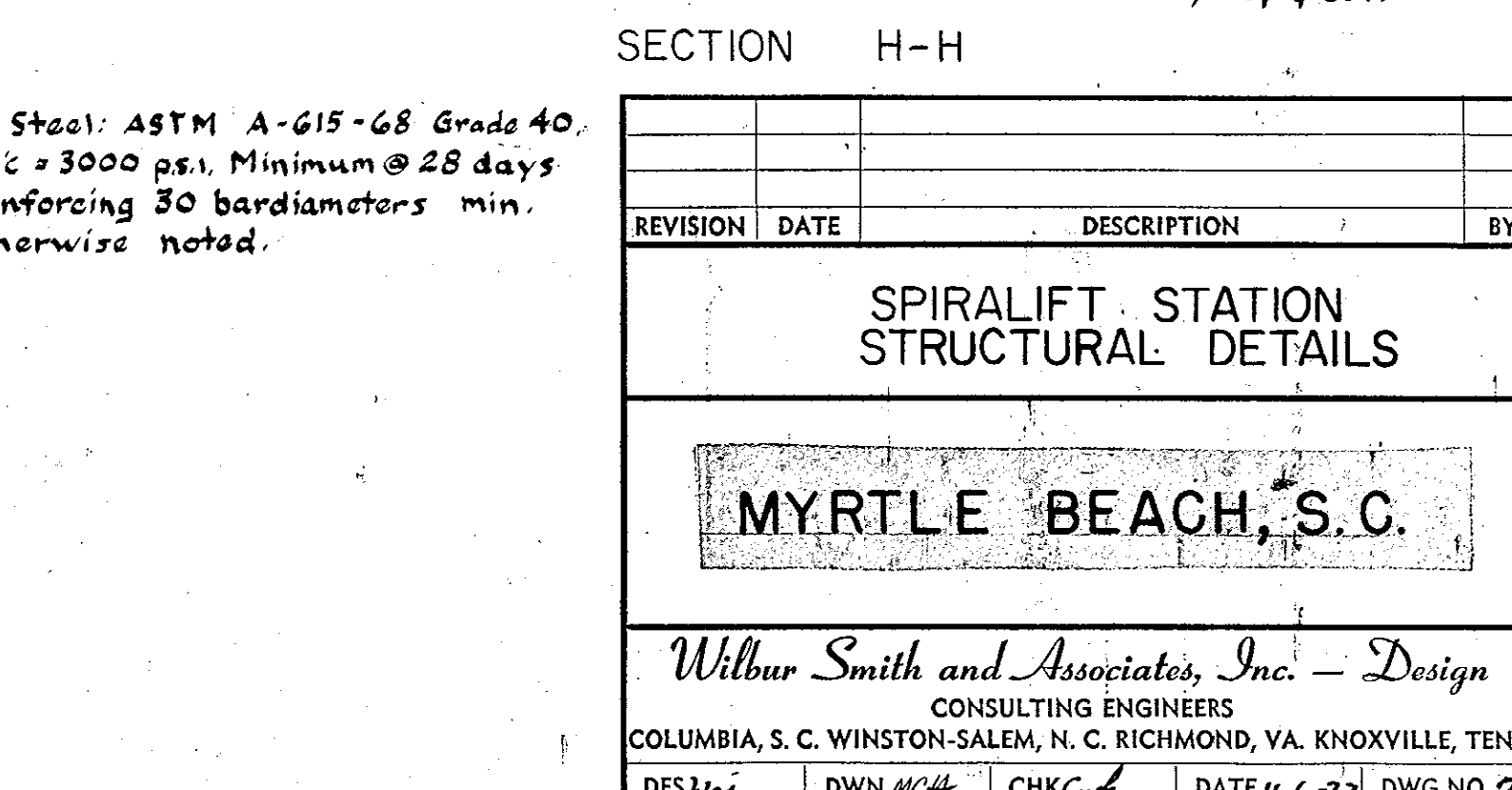
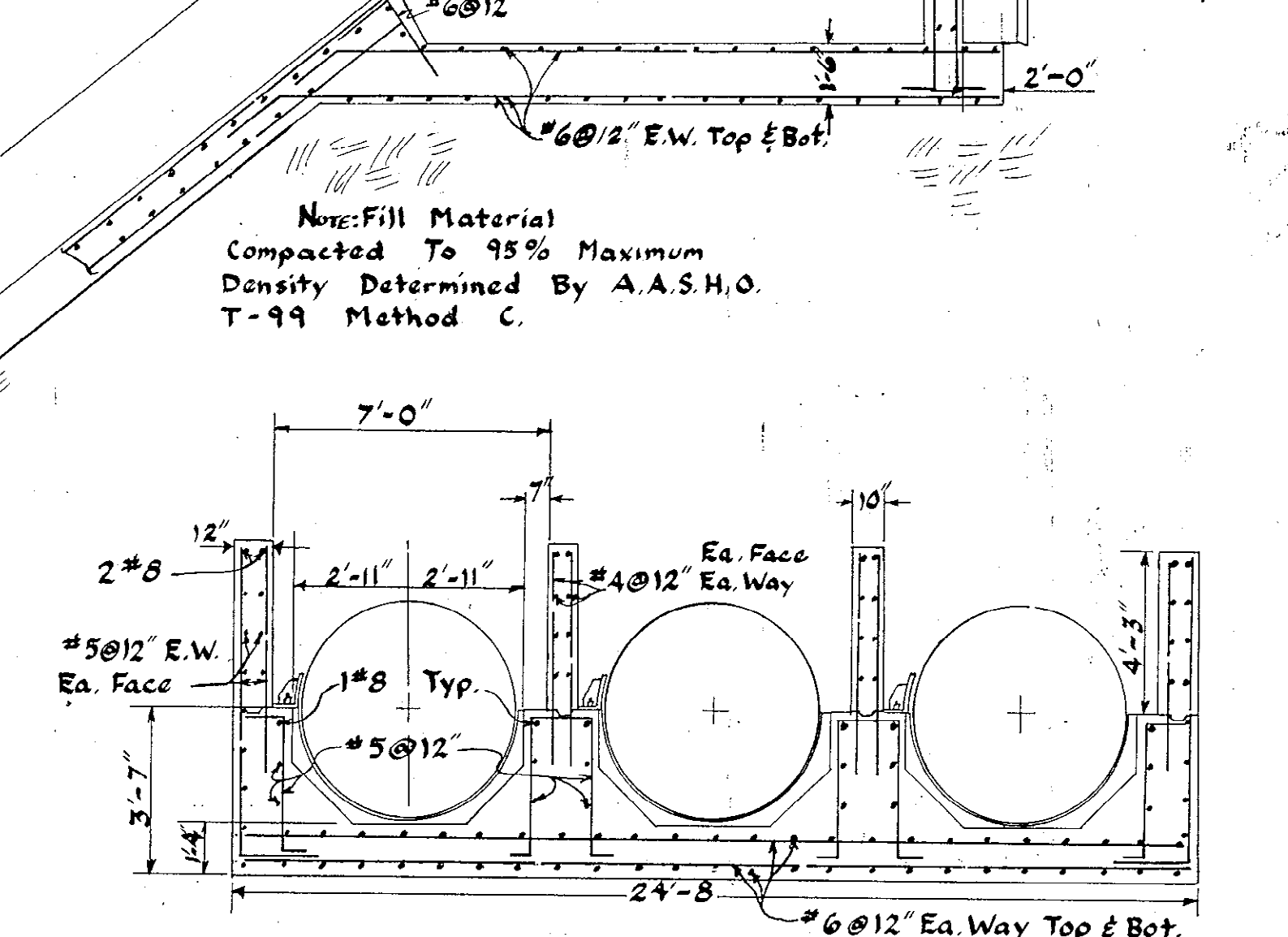
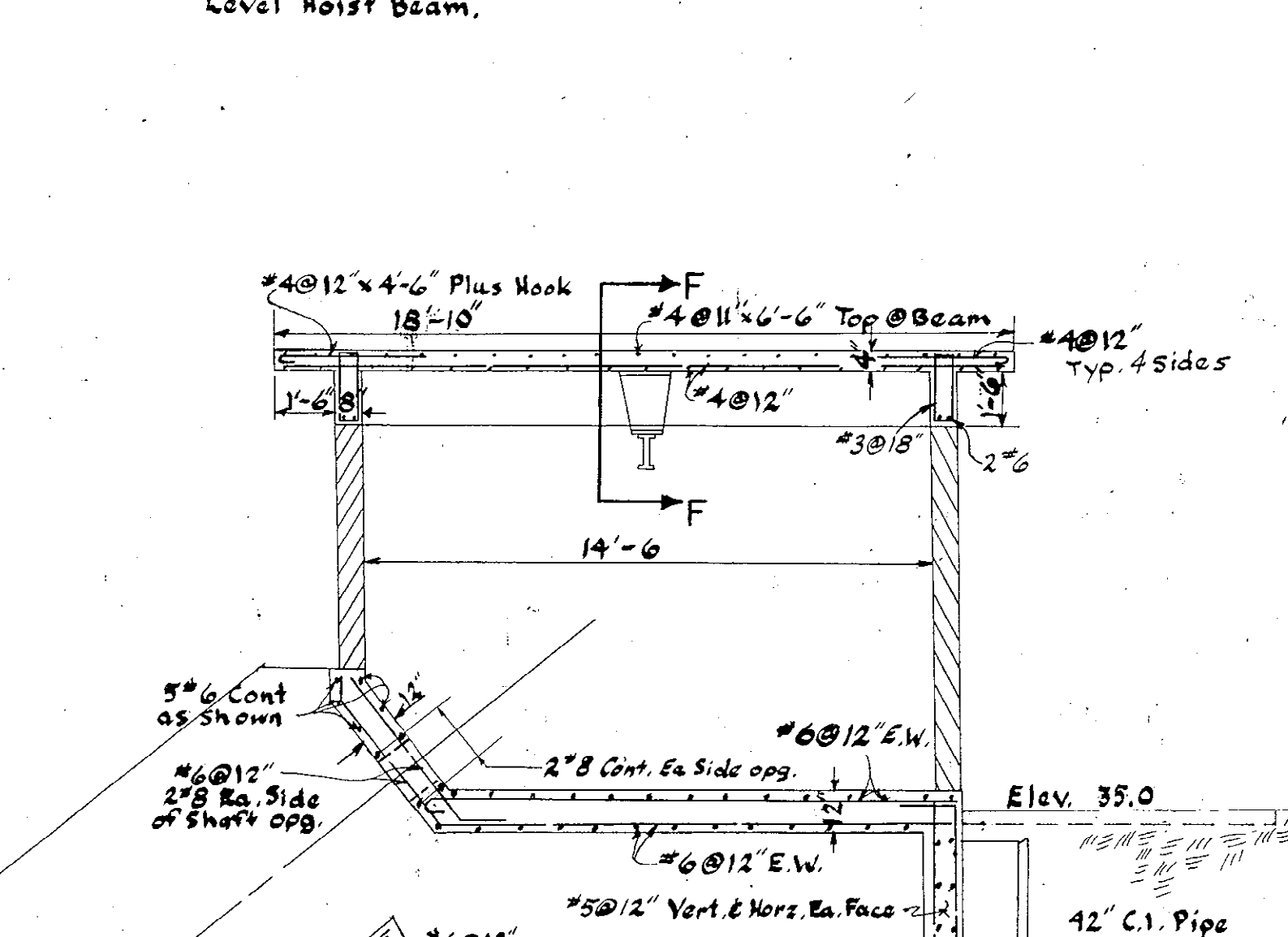
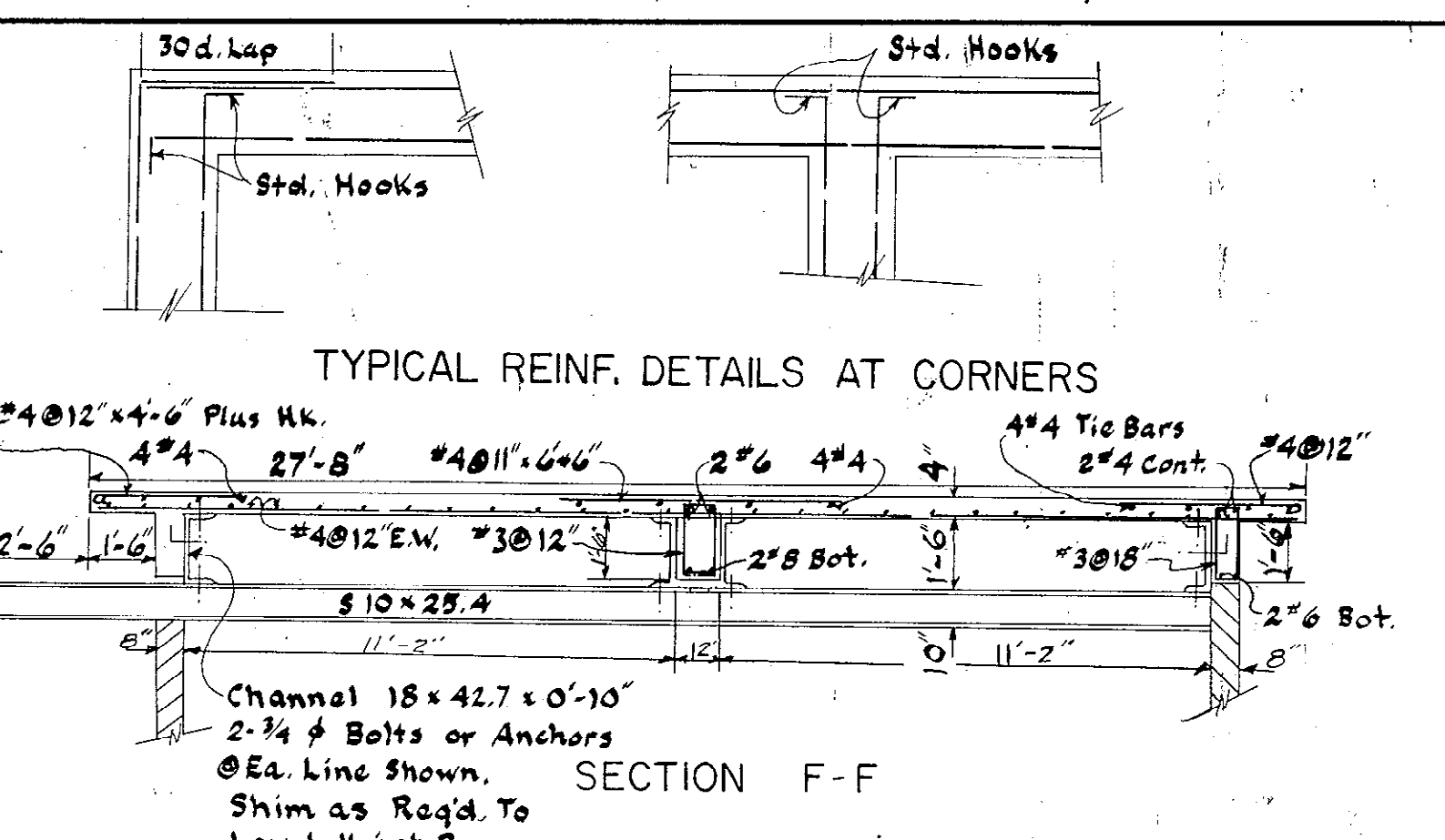
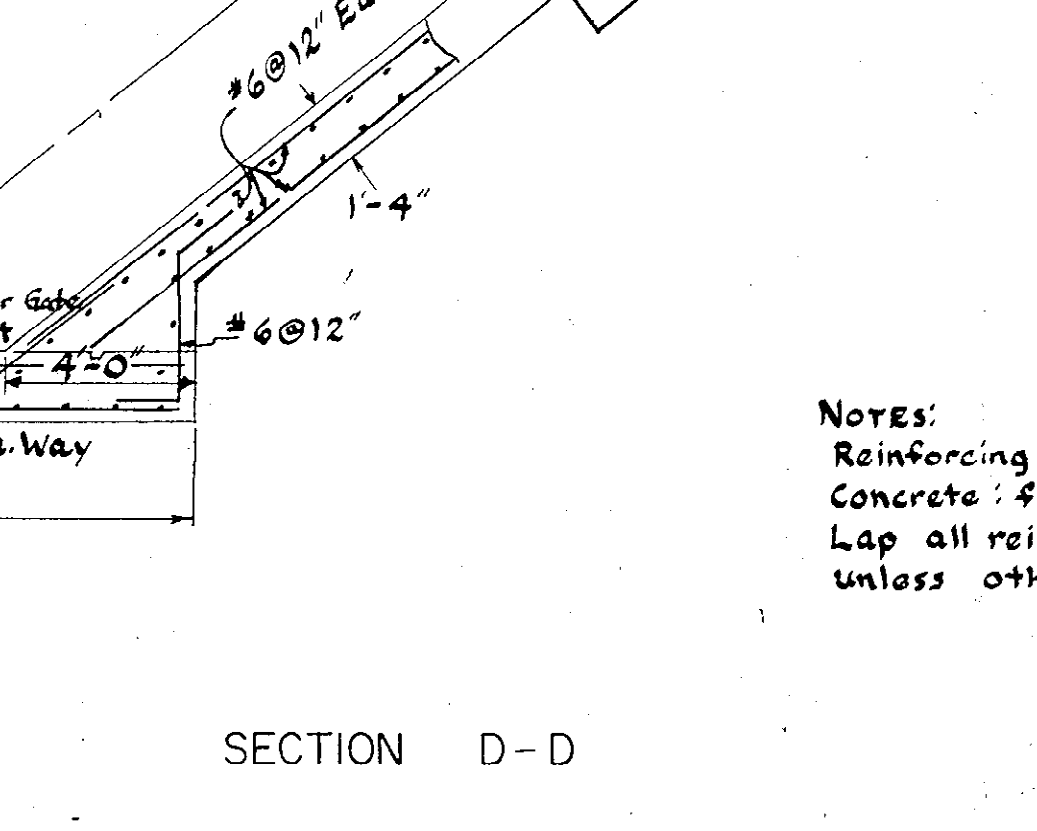
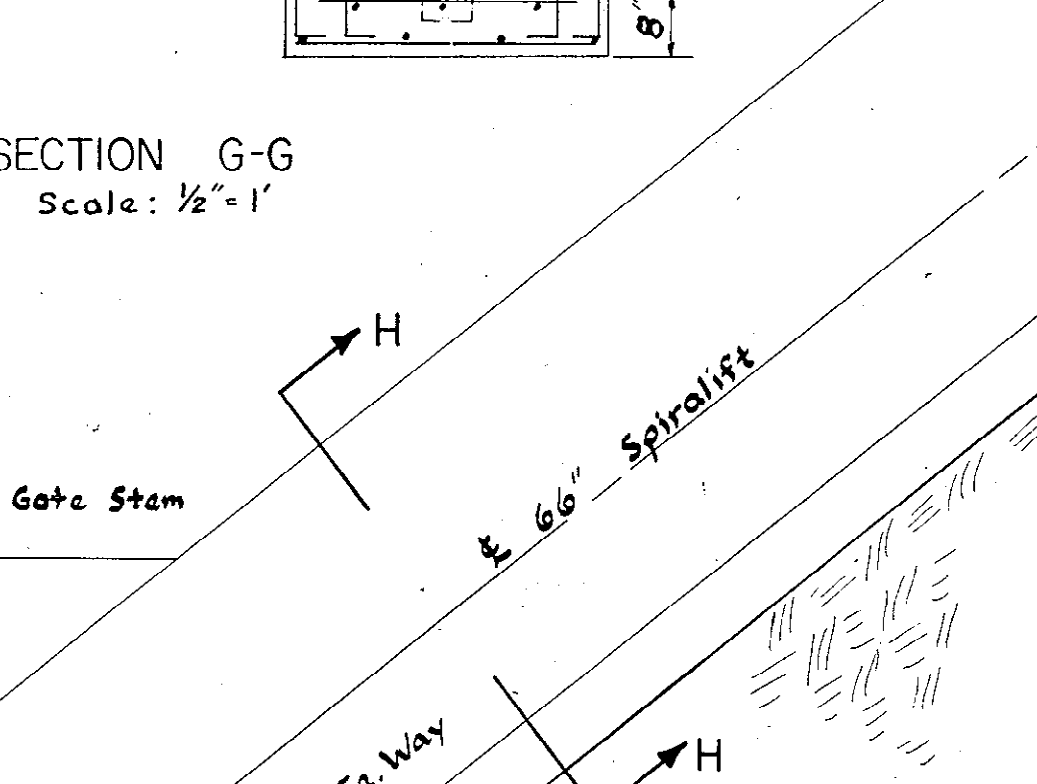
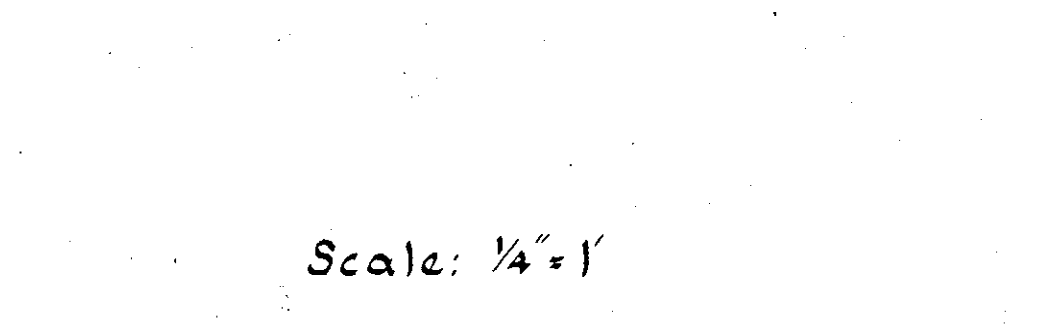
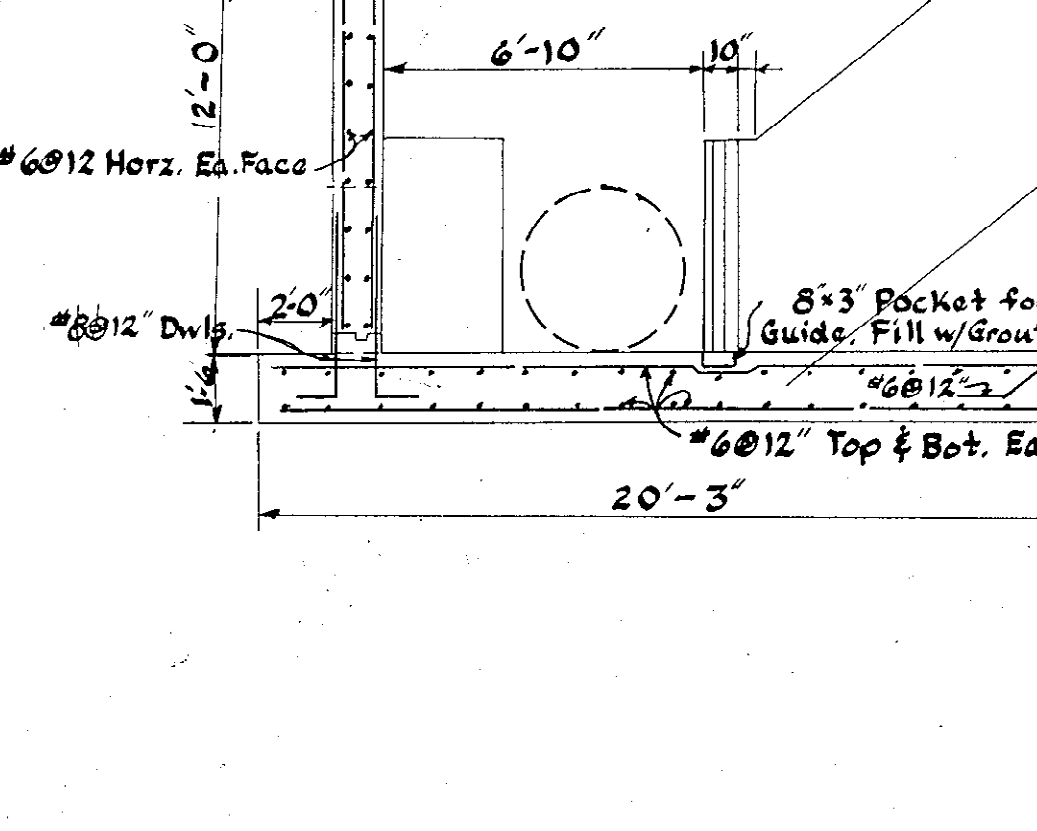
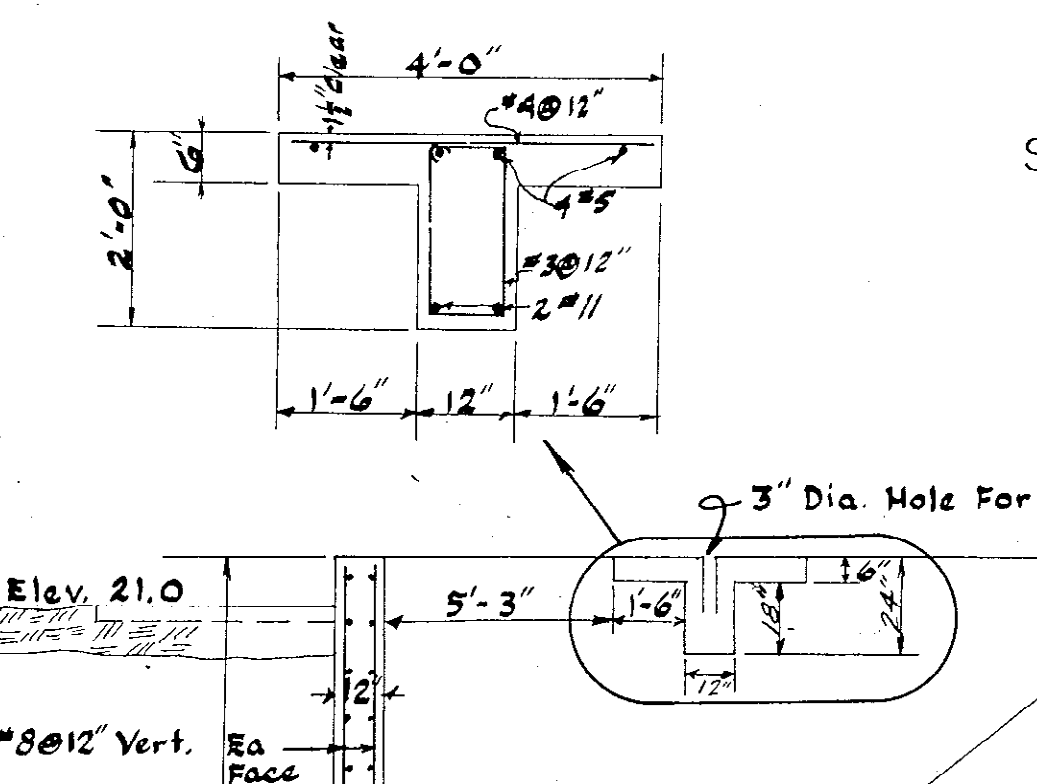
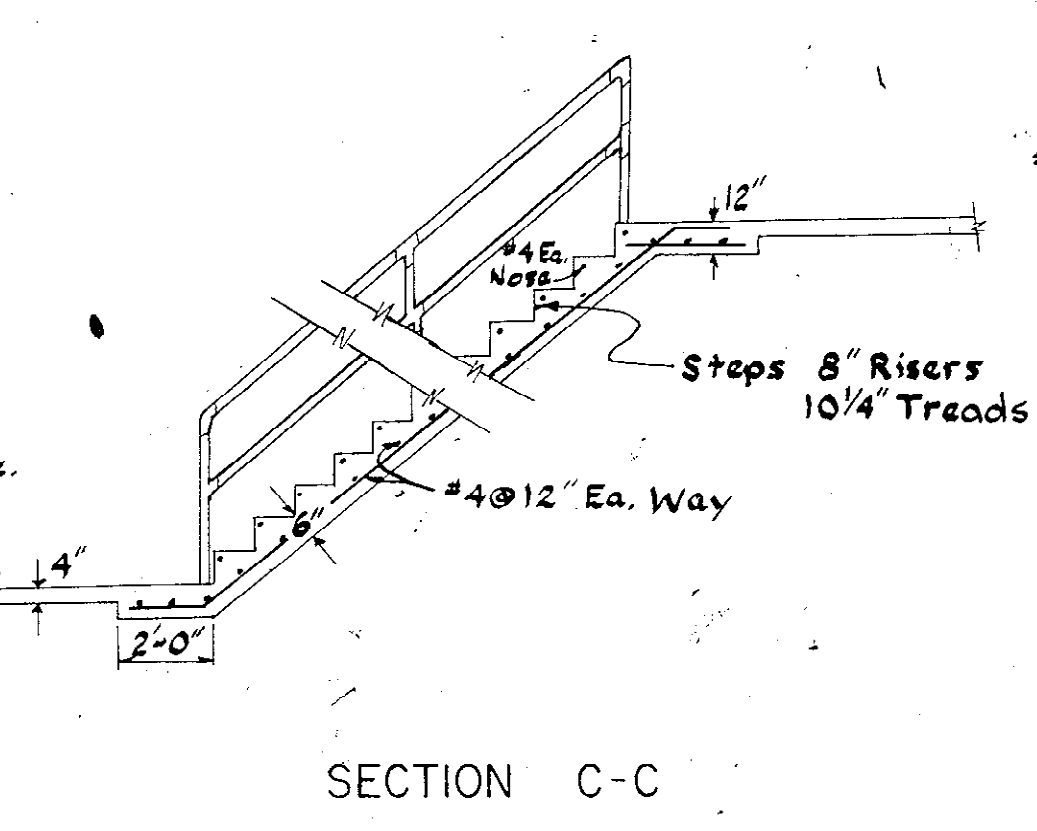
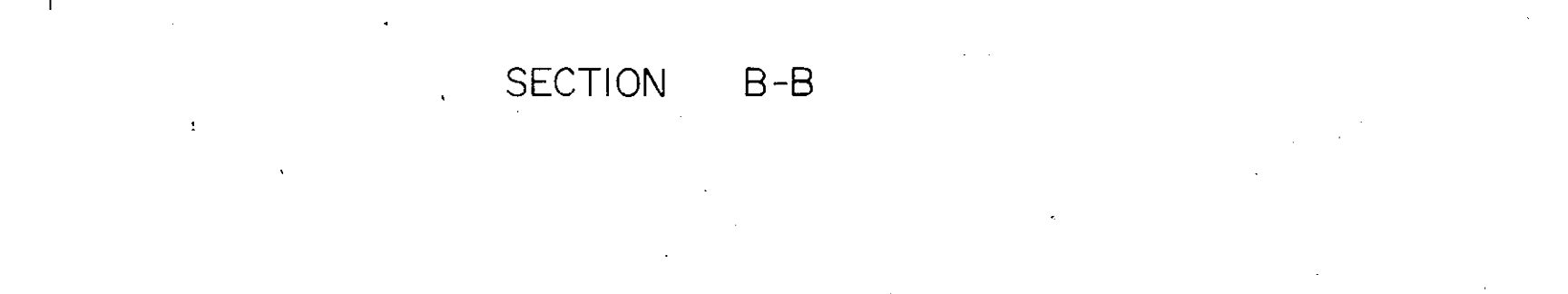
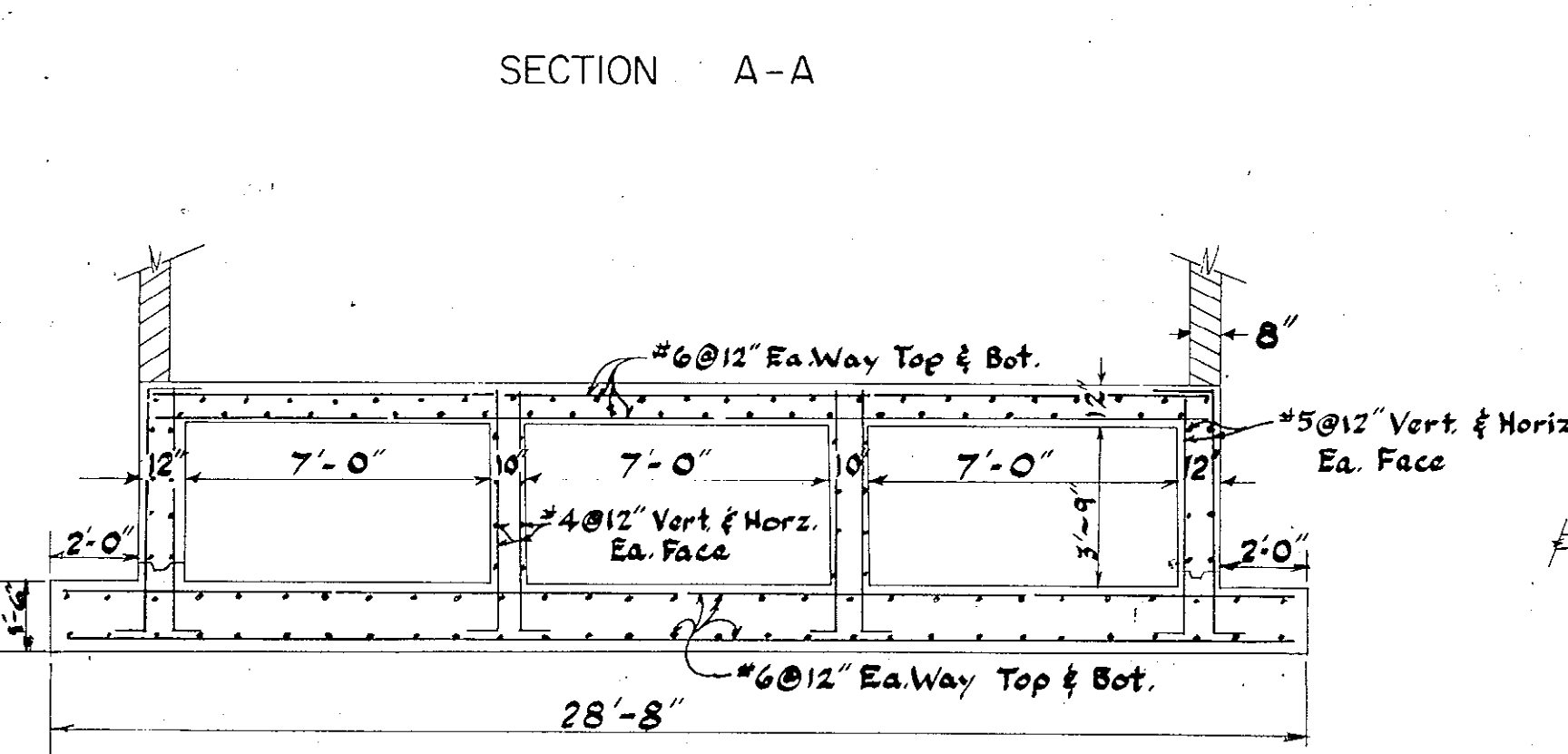
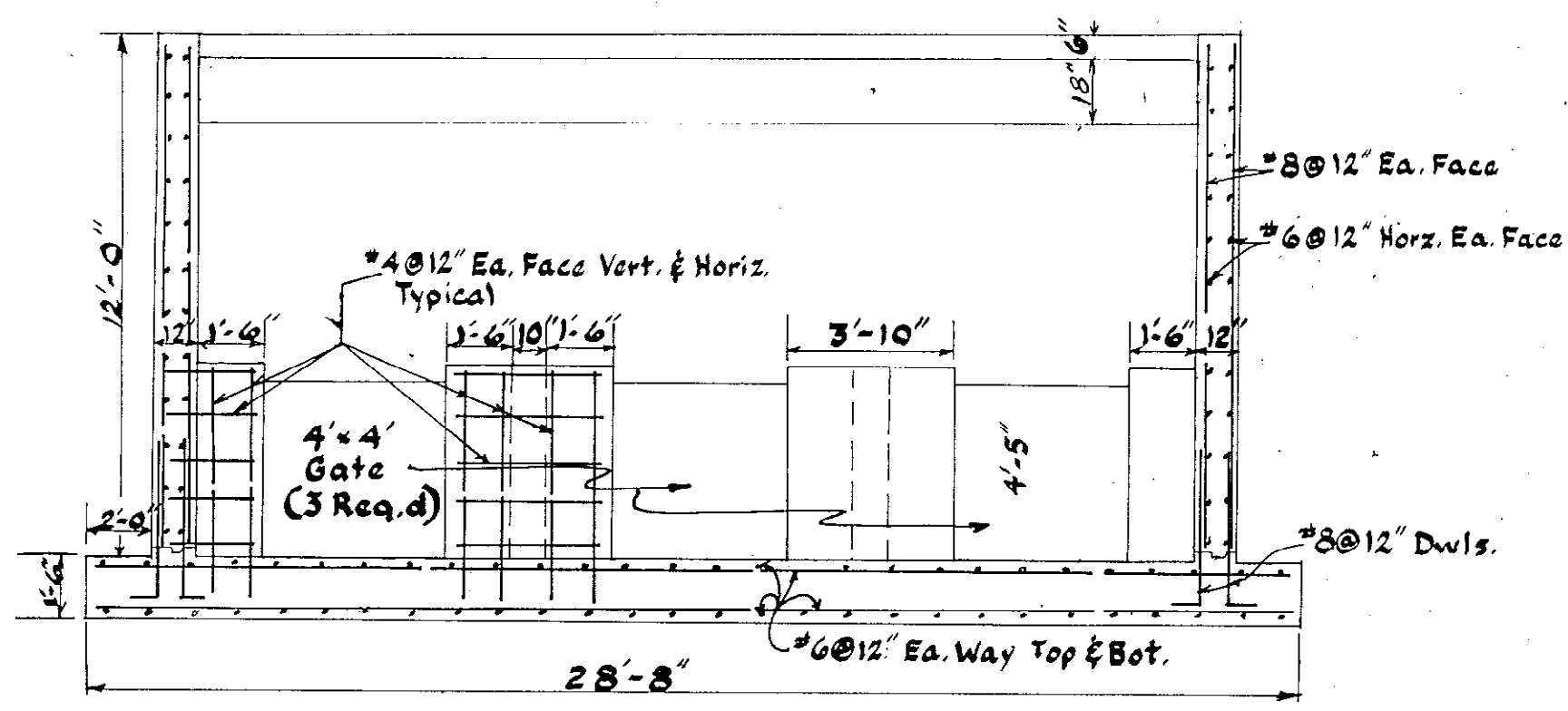
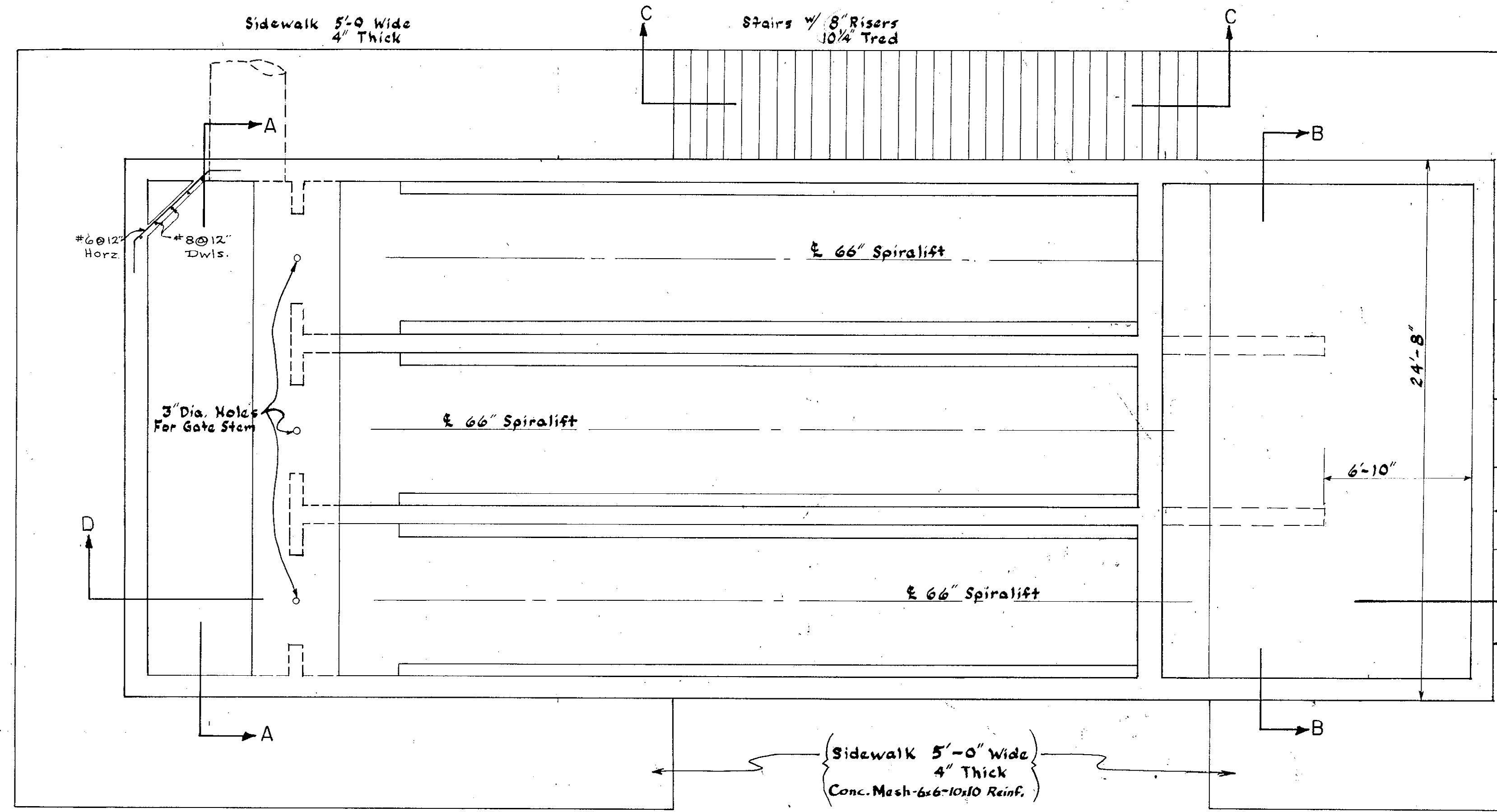
1	7/79	RECORD DRAWING DATA B.M.
REVISION	DATE	DESCRIPTION
EXISTING LAGOON PLAN AND CROSS SECTION		
MYRTLE BEACH, S.C.		
Wilbur Smith and Associates, Inc. - Design		
CONSULTING ENGINEERS		
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.		
DESIGNED	DRAWN	CHECKED
DATE 11-6-12	DWG NO 2	

PLAN	DATE	BY	DATE	BY
SURVEYED				
NOTED				
PLOTTED				
CHECKED				
NO.				

PROFILE	DATE	BY	DATE	BY
SURVEYED				
NOTED				
PLOTTED				
CHECKED				
NO.				



REVISION	DATE	DESCRIPTION	BY
PUMP STATION & LAGOON PLAN & PROFILE			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design CONSULTING ENGINEERS COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN. DESIGNED BY: [Signature] DWN: [Signature] CHK: [Signature] DATE: 11-6-72 DWG NO: 5			

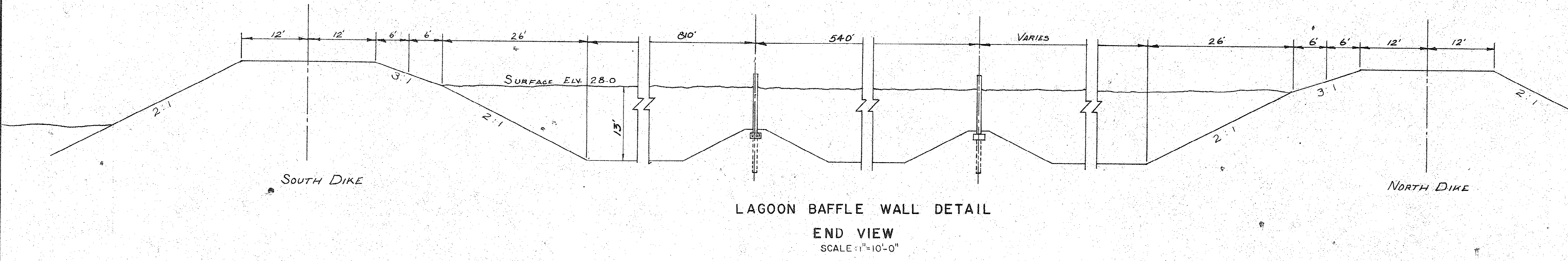
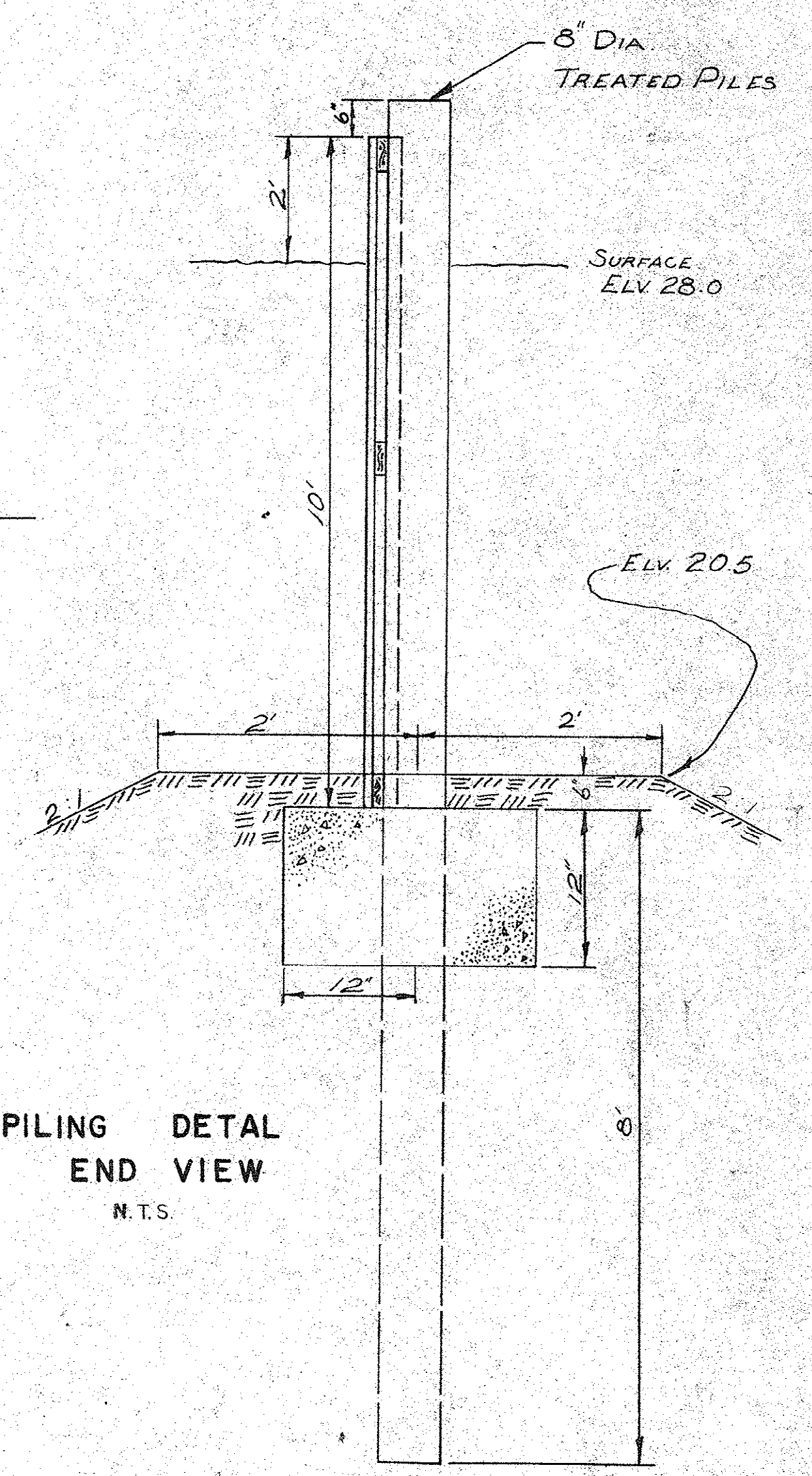
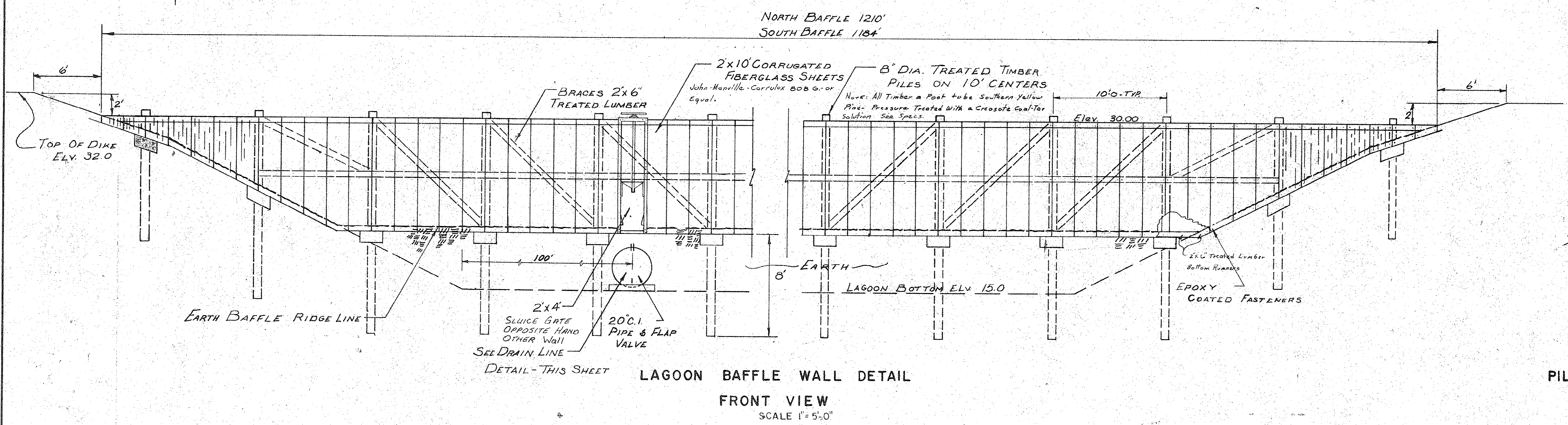
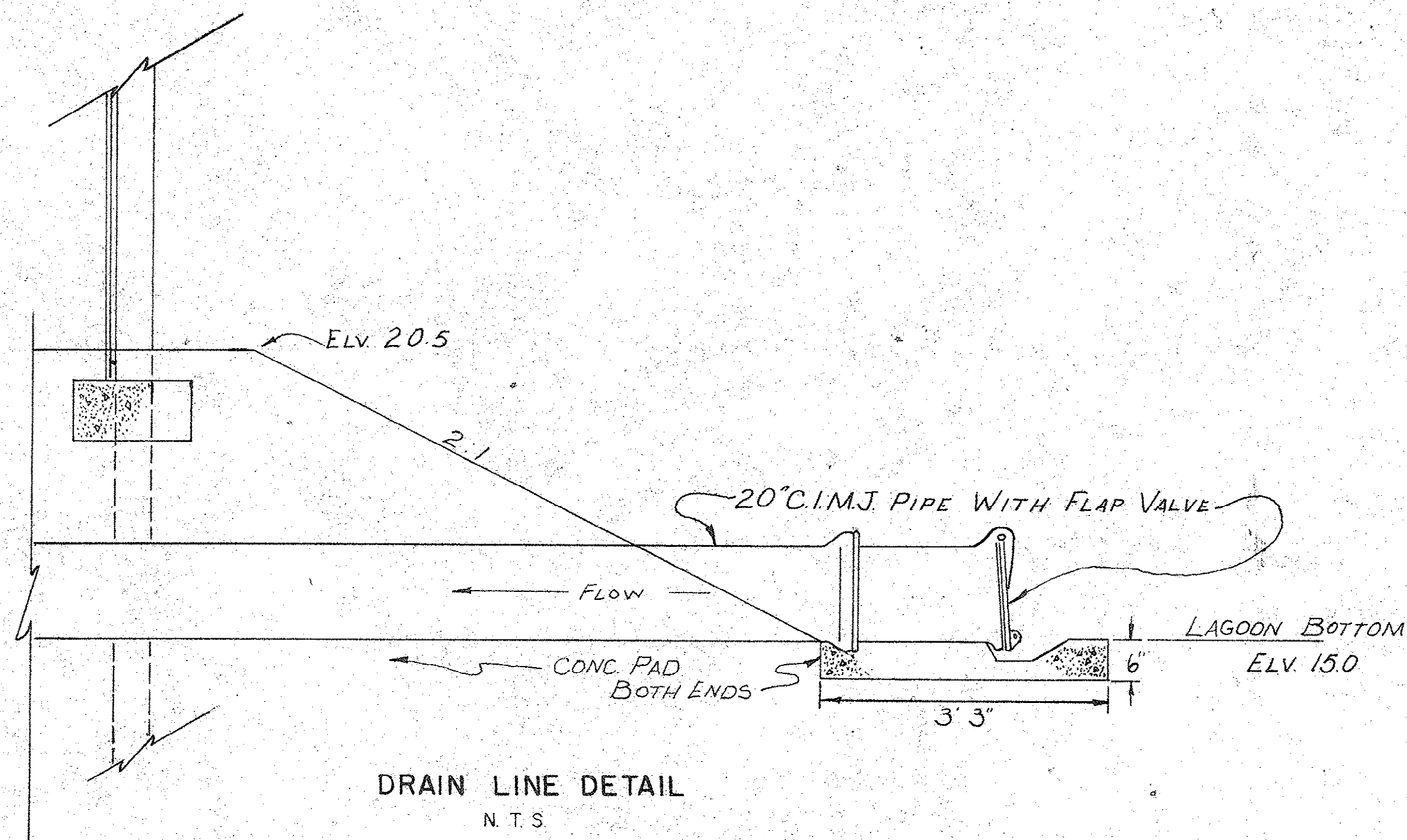


NOTES:
Reinforcing Steel: ASTM A-615-68 Grade 40.
Concrete: f'c = 3000 psi. Minimum @ 28 days.
Lap all reinforcing 30 bar diameters min.
unless otherwise noted.

REVISION	DATE	DESCRIPTION	BY
SPIRALIFT STATION STRUCTURAL DETAILS			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design CONSULTING ENGINEERS COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGN	DWN	CHK	DATE 11-6-72 DWG NO 7

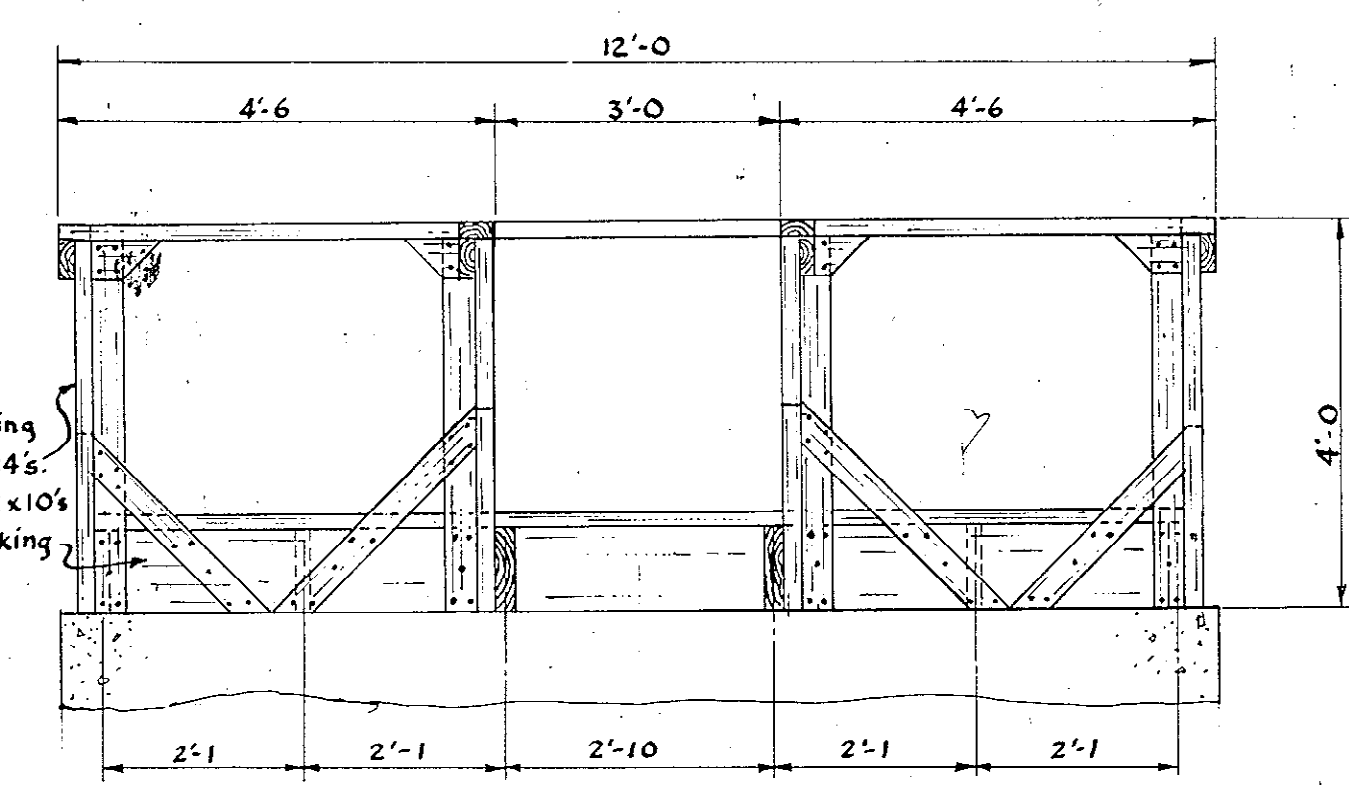
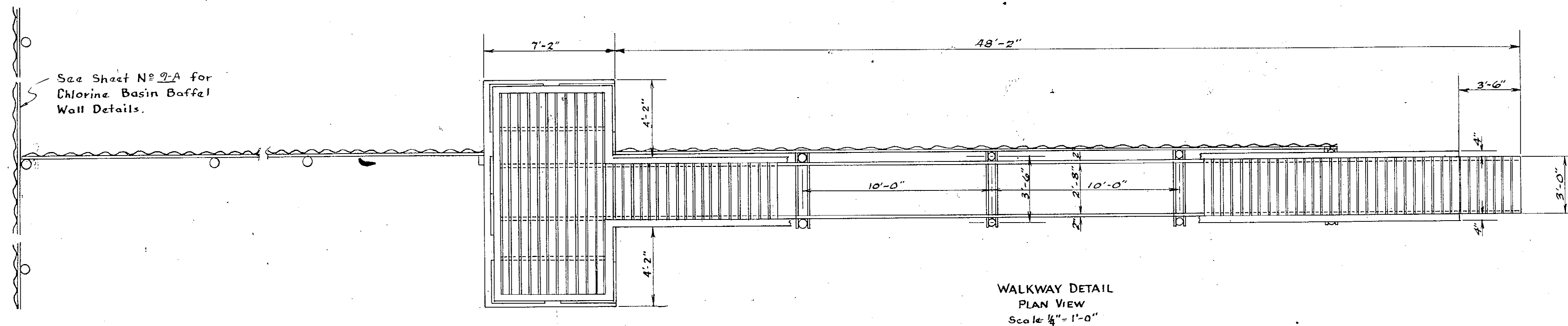
51-001-008/23 430500

From Original
Construction
Plans. Not
Record Drawings
This Sheet.

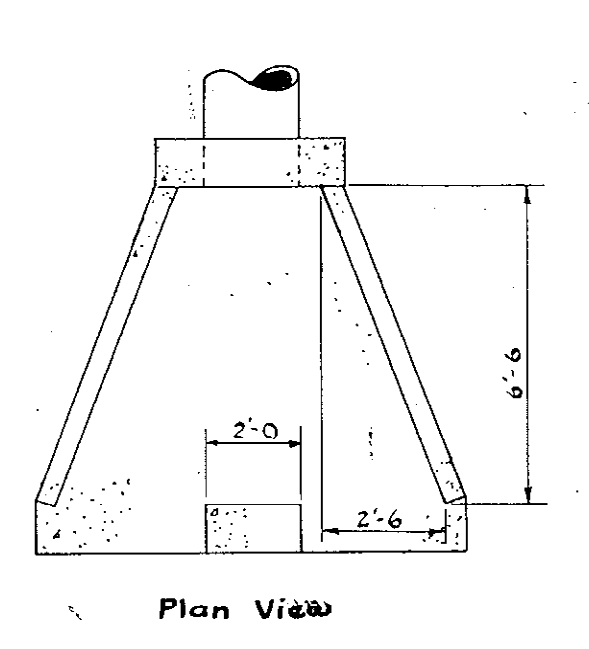
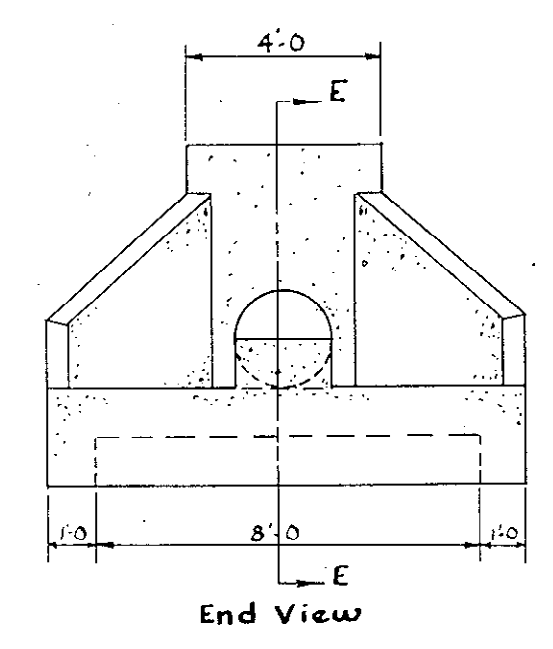
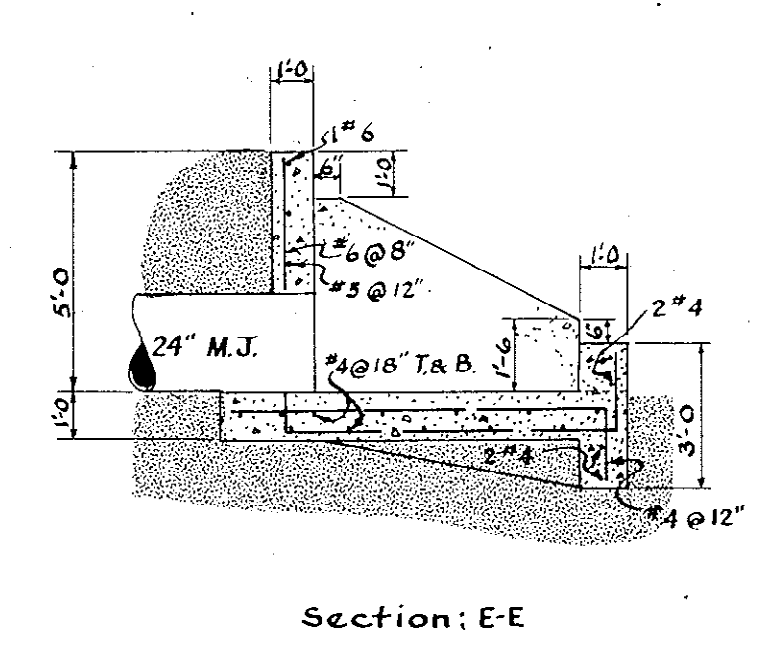
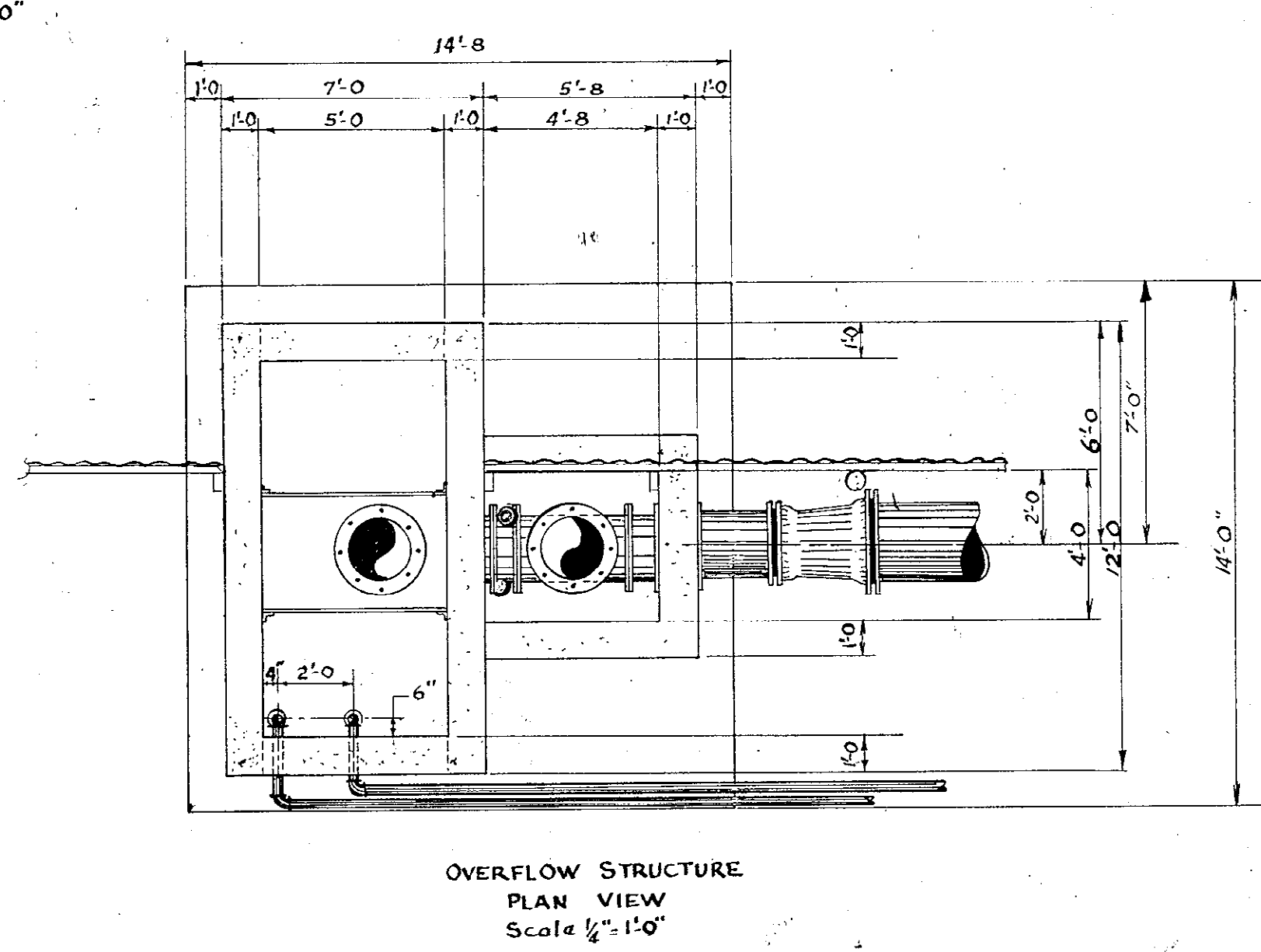
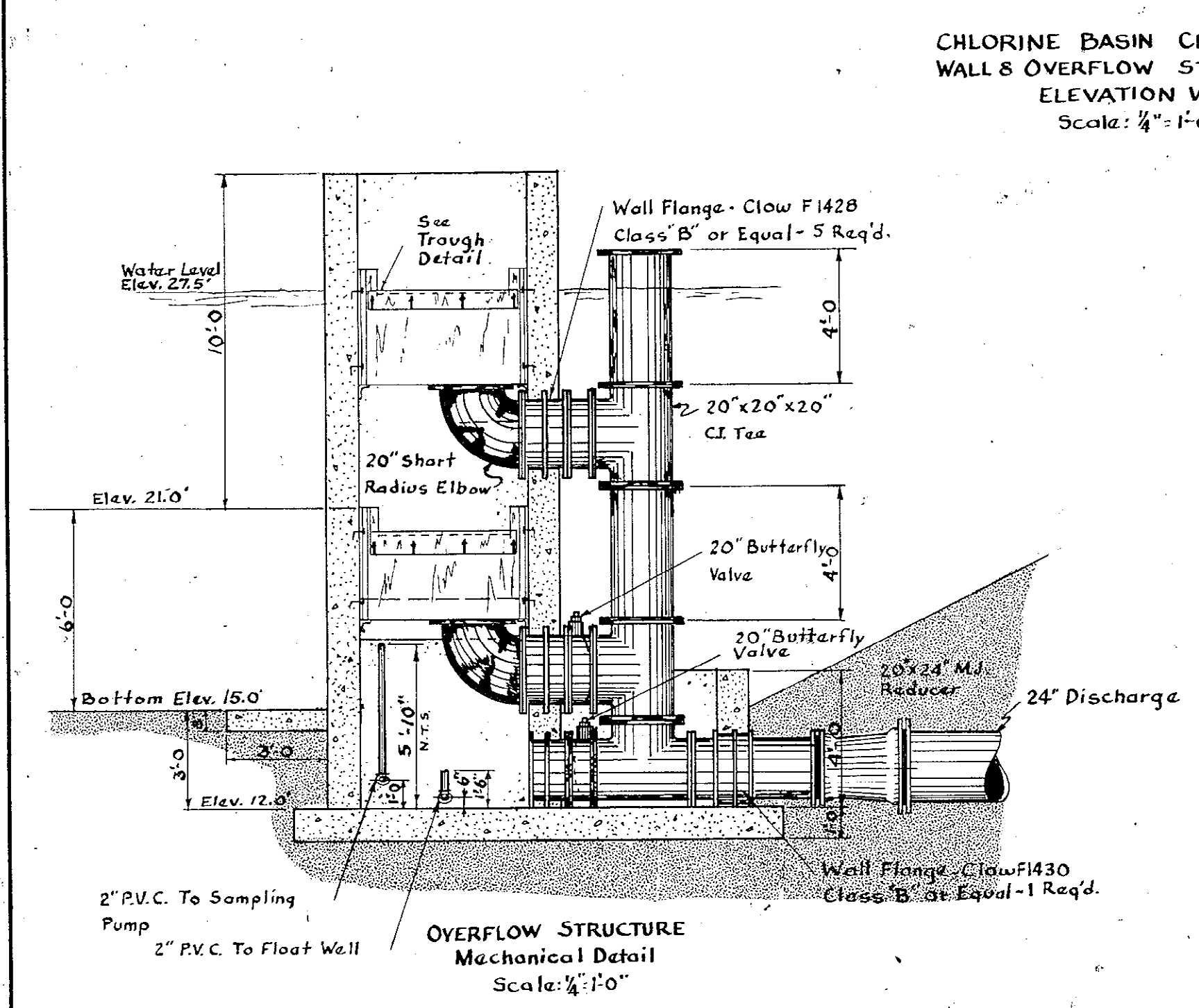
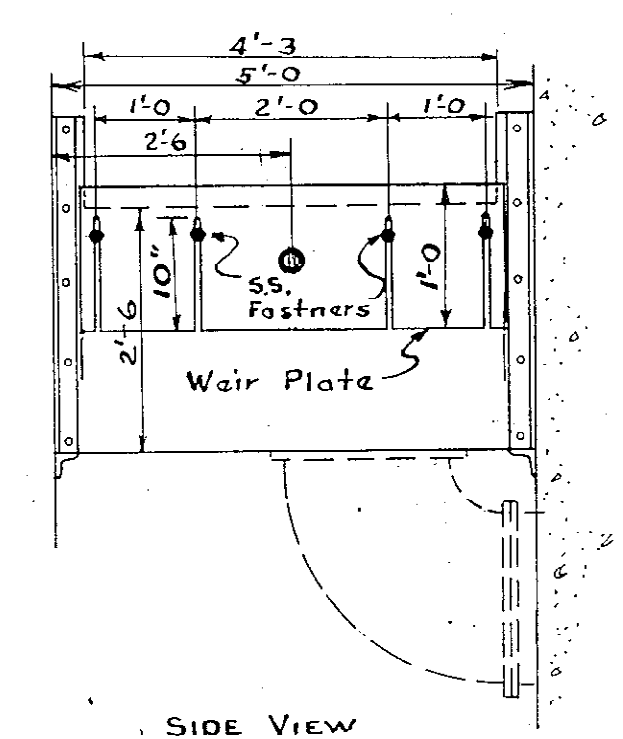
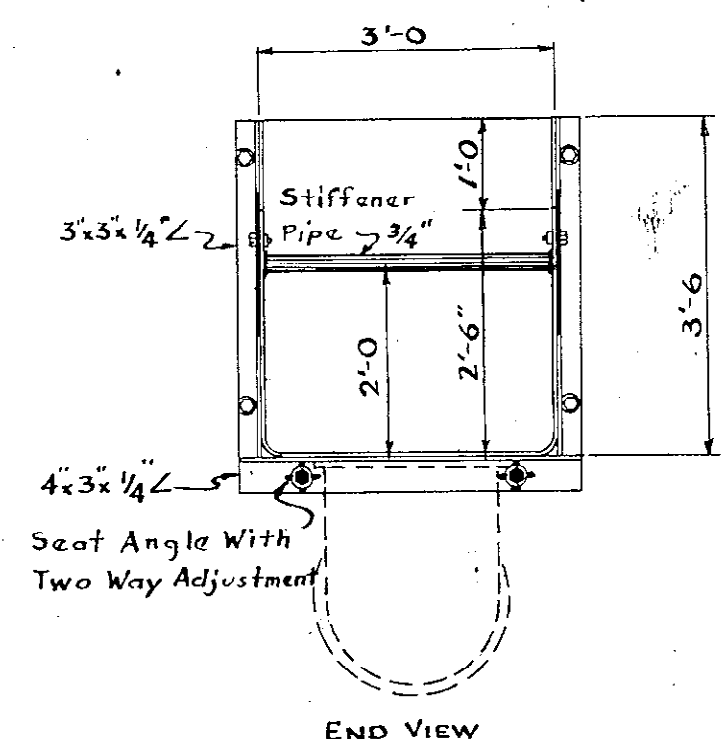
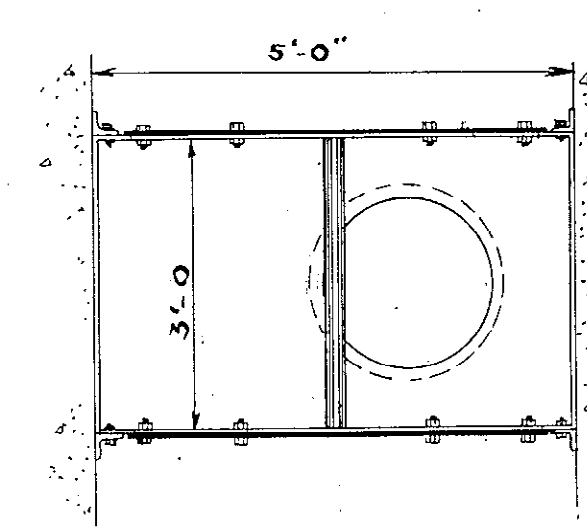
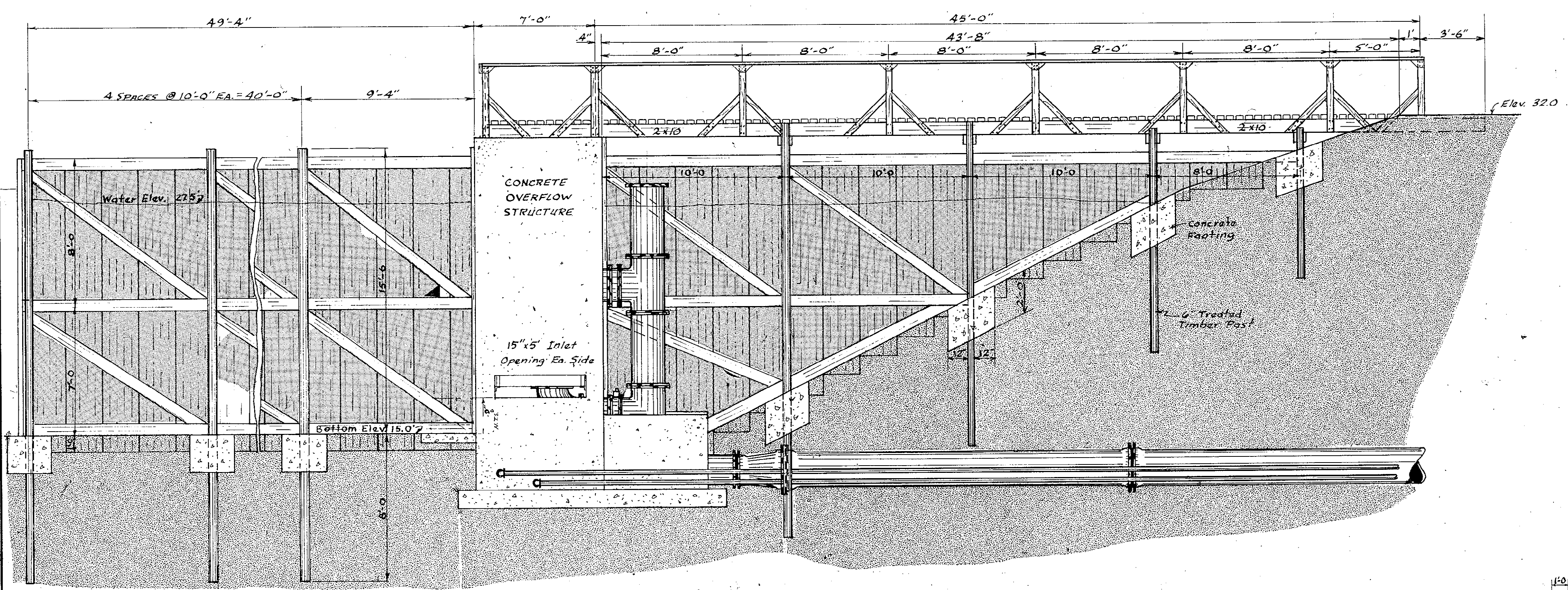


REVISION	DATE	DESCRIPTION	BY
BAFFLE WALL SECTIONS			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design CONSULTING ENGINEERS COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.			
DES. W.S.	DWN. P.L.	CHK. C.H.	DATE 11-6-72 DWG NO. 8

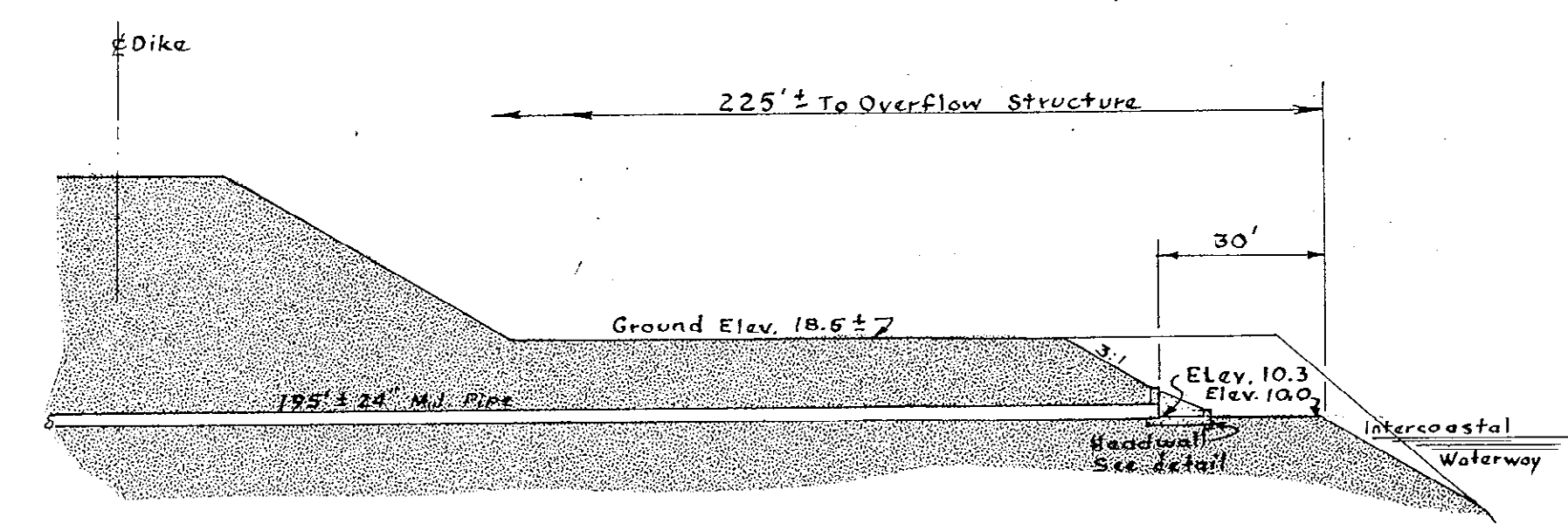
51-001-009/23



NOTE: All railing
Const. with 2x4s.
Framing is 2x10's
with 2x4 Decking



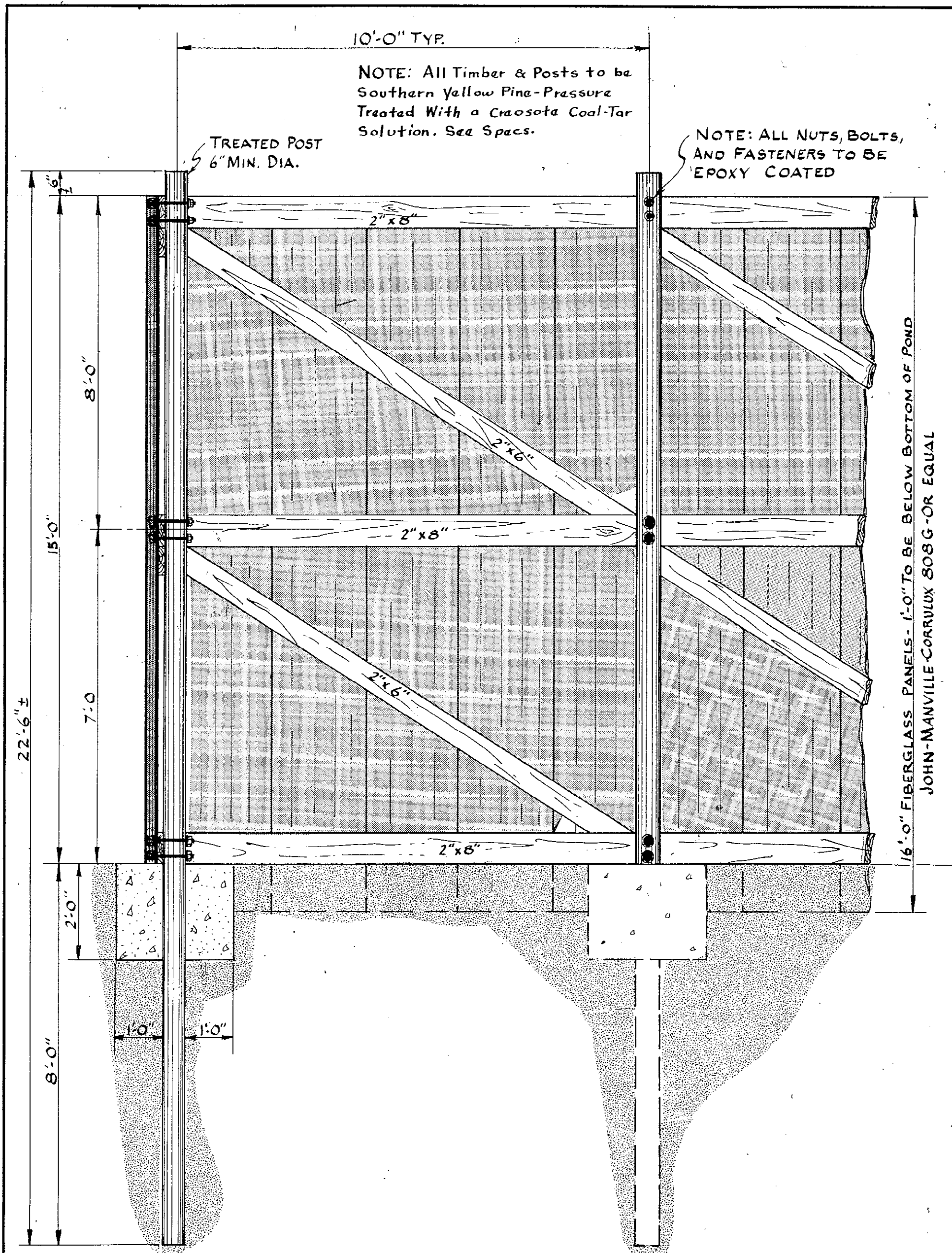
HEADWALL DETAILS
Scale: 1/4" = 1'-0"



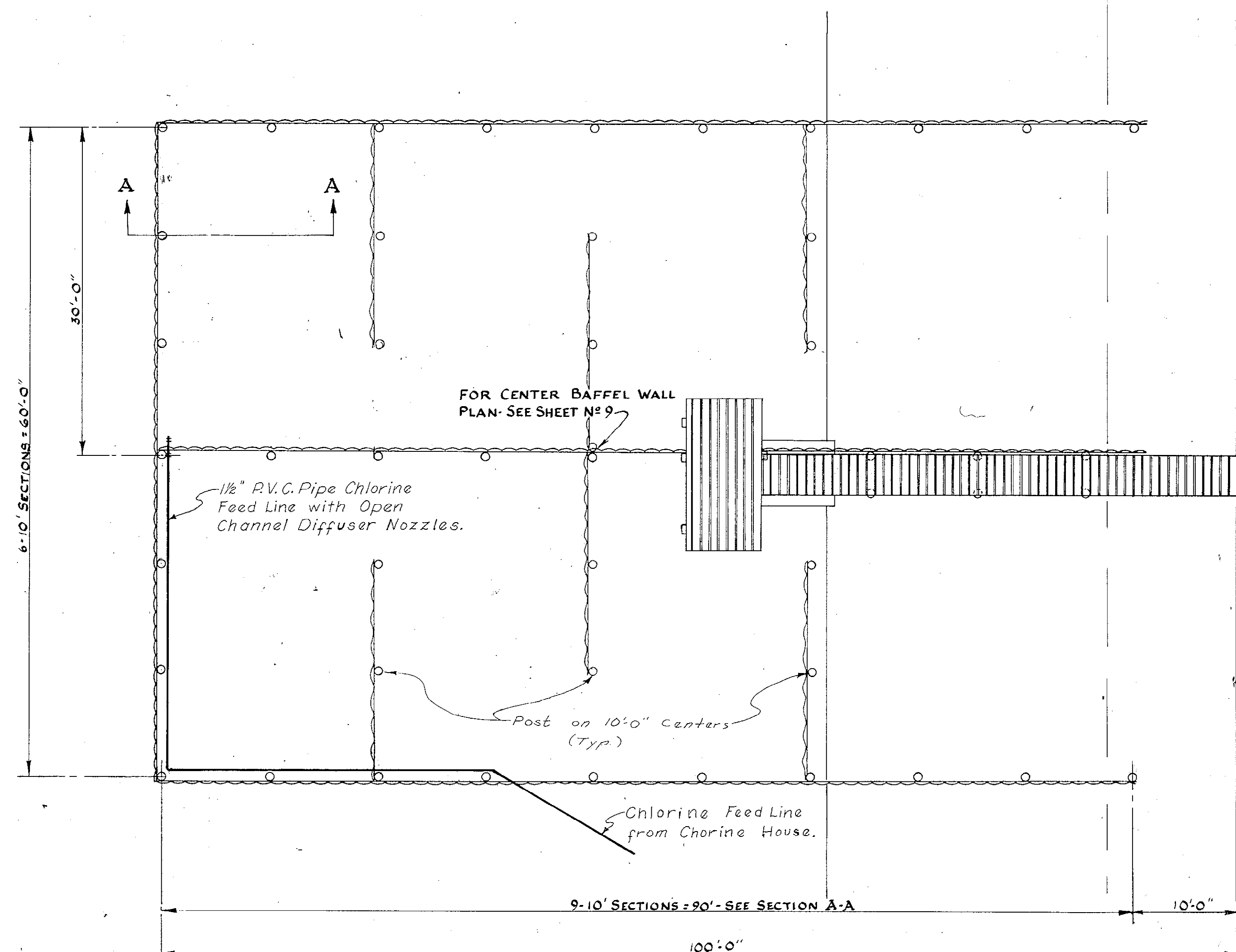
REVISION	DATE	DESCRIPTION	BY
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MYRTLE BEACH, S.C.			
CHLORINE BASIN CENTER BAFEL WALL, WALKWAY & OVERFLOW STRUCTURE			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.			
DES BY	DWNRKL	CHK CML	DATE 11-6-72 DWG NO 9

51-001-010/23

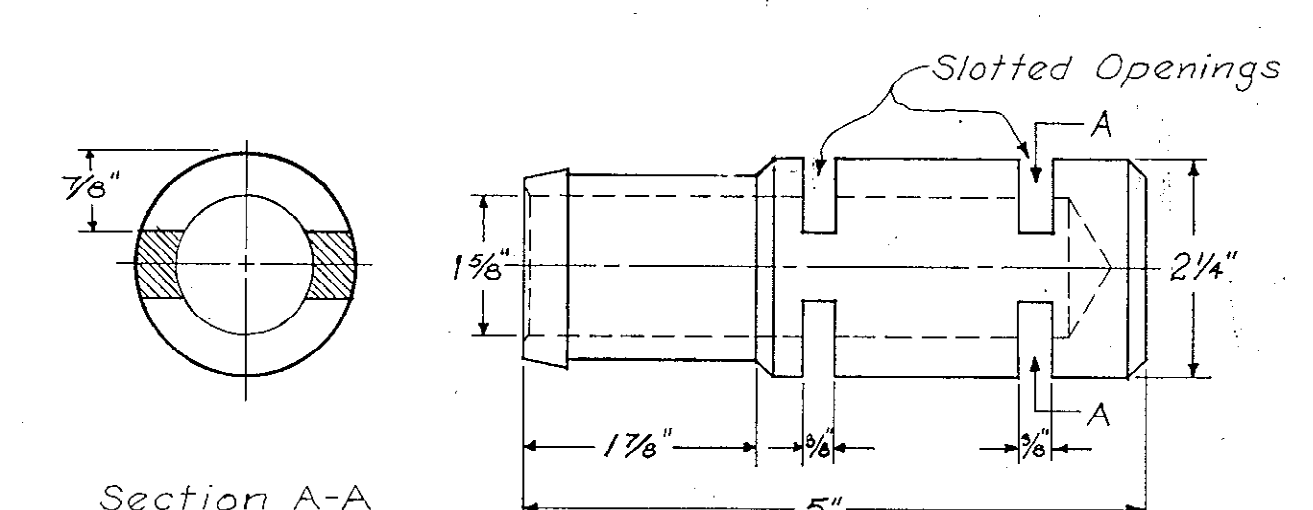
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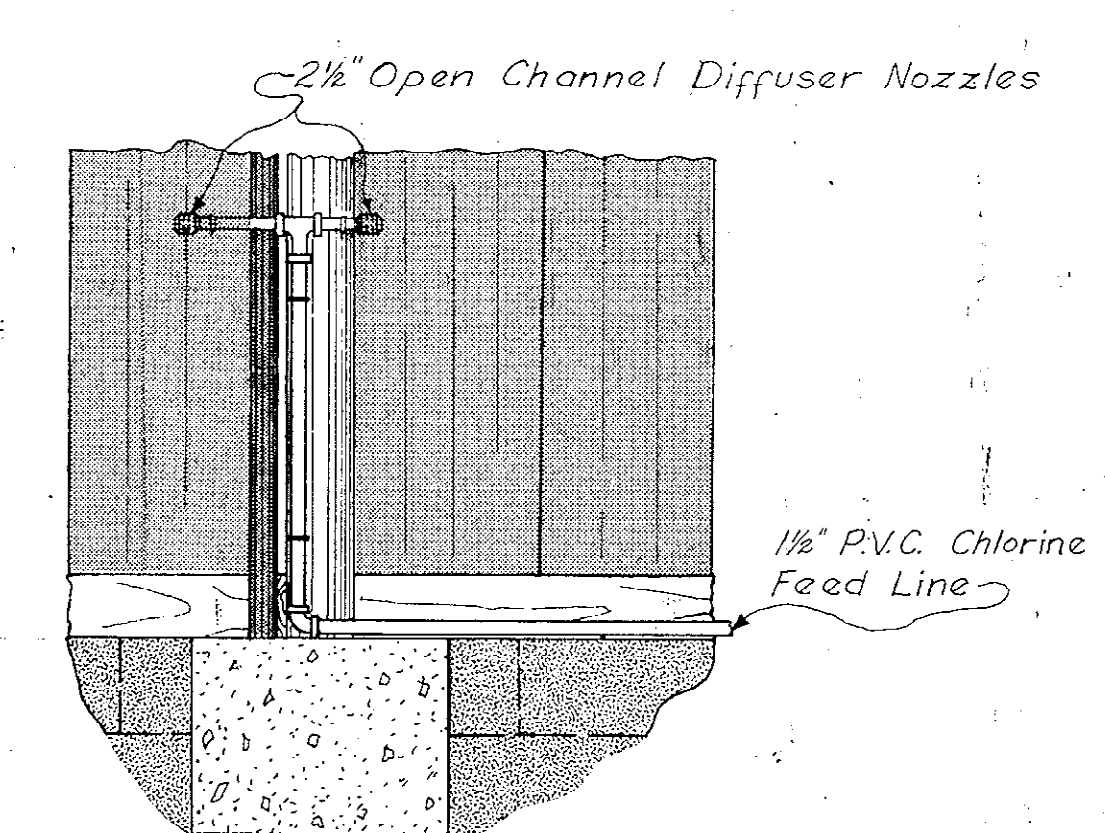
SECTION A-A
BAFFEL WALL - TYP. 10' SECTION



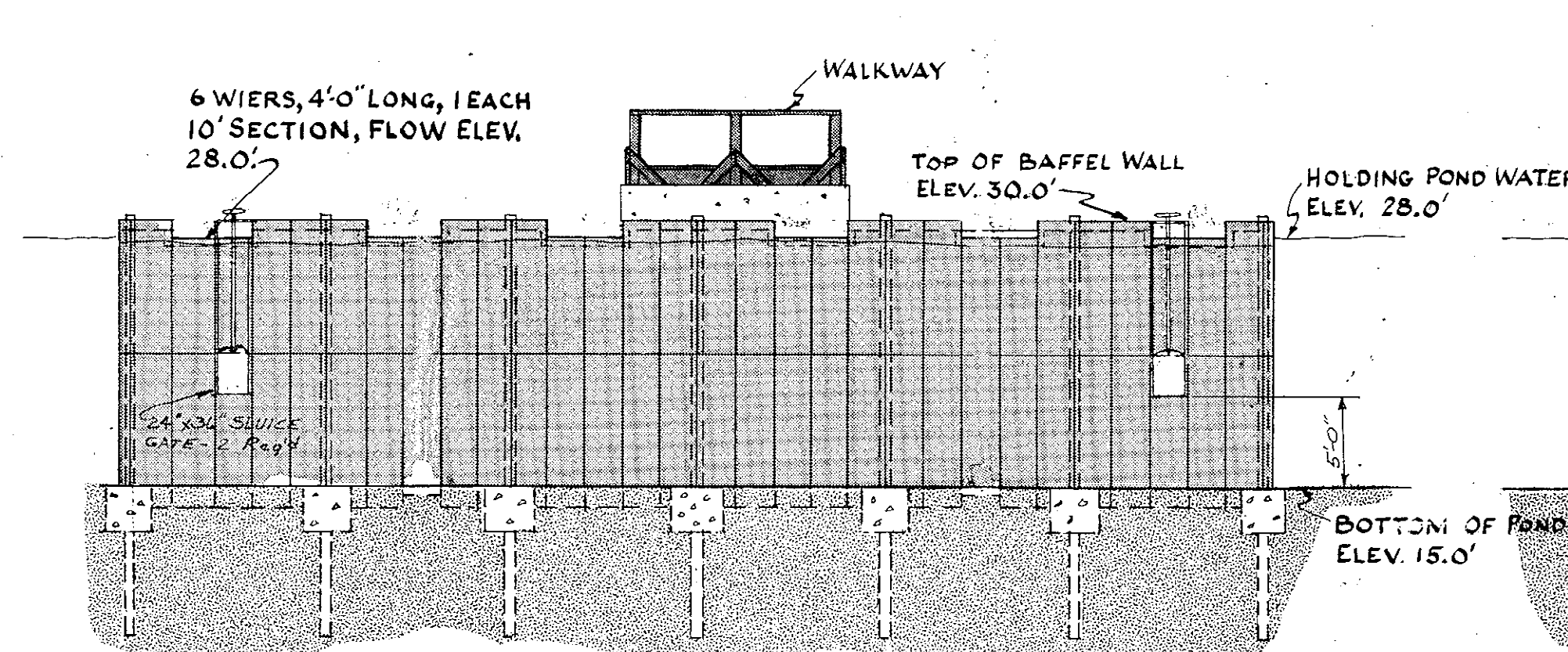
CHLORINE BASIN BAFTEL WALL
PLAN
Scale: 1/8" = 1'-0"



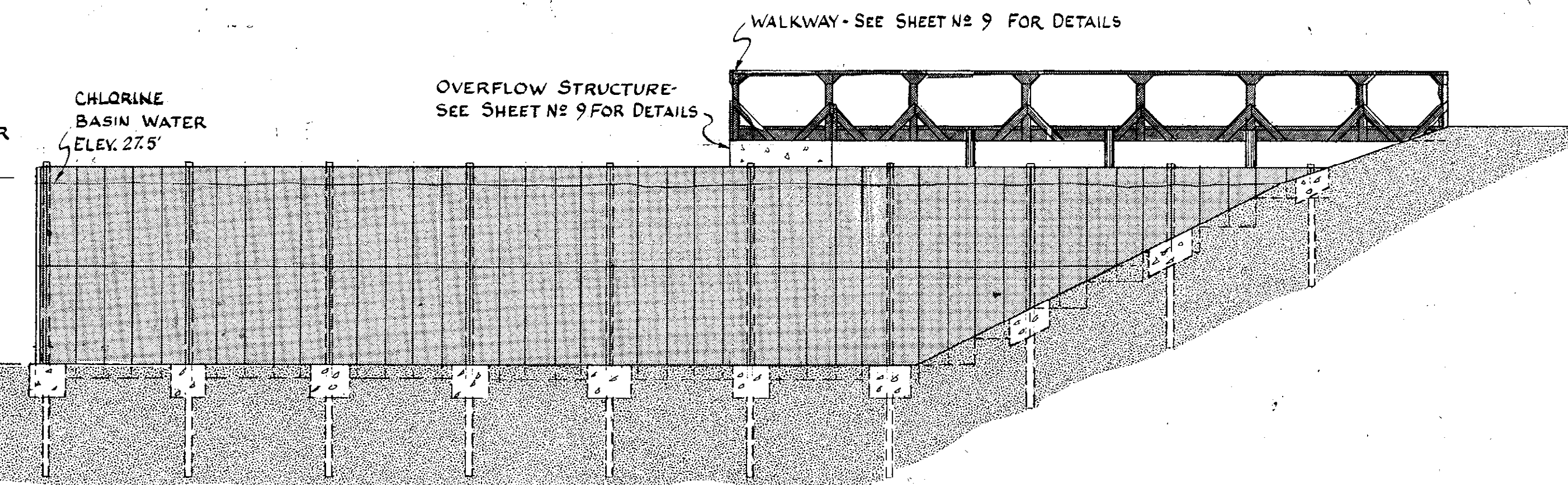
CHLORINE SOLUTION
OPEN CHANNEL DIFFUSER NOZZLER
Outline Dimensions



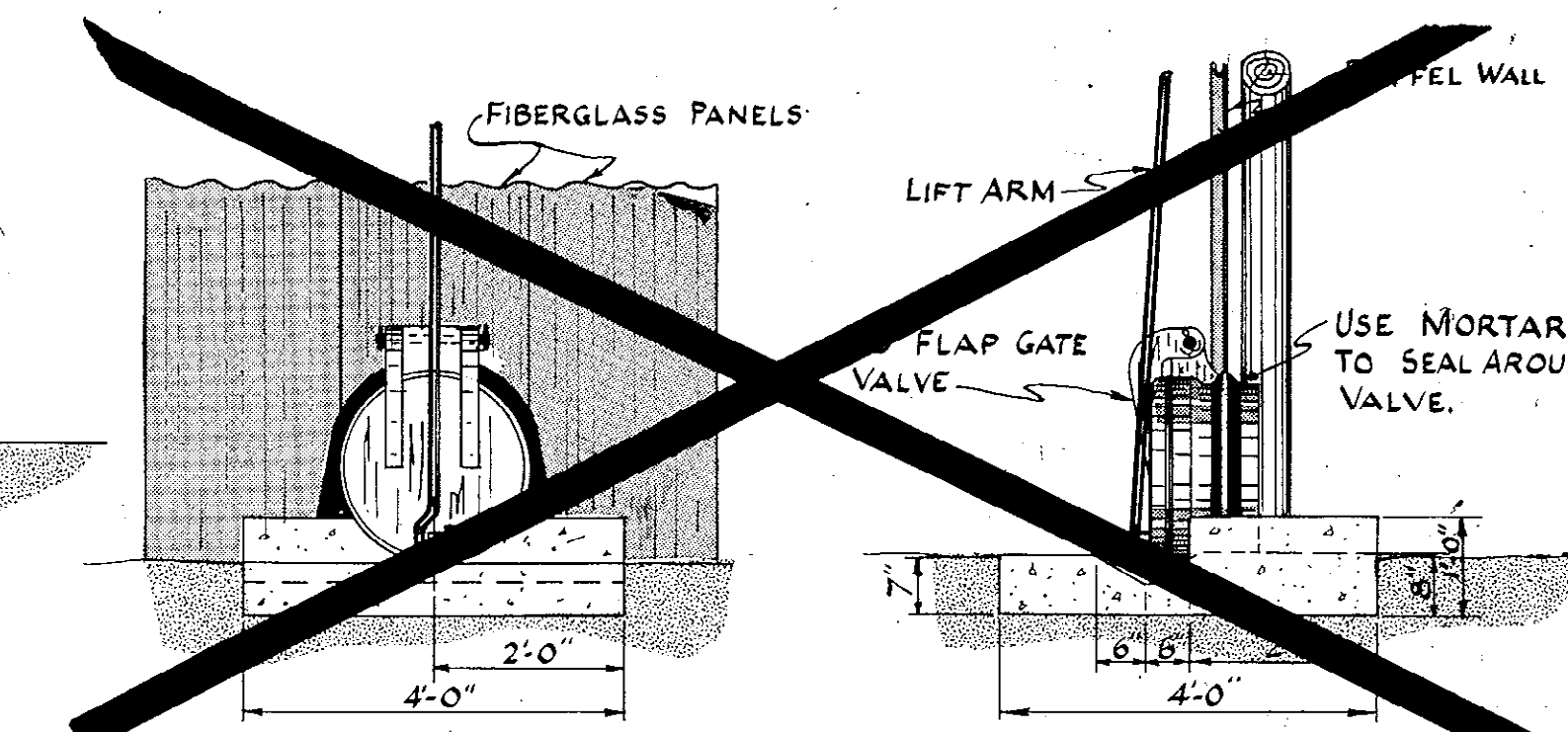
CHLORINE FEED LINE WITH DIFFUSER NOZZLES
PROFILE
Scale: 1/2" = 1'-0"



CHLORINE BASIN BAFTEL WALL
END ELEVATION
Scale: 1/8" = 1'-0"



CHLORINE BASIN BAFTEL WALL
SIDE ELEVATION
Scale: 1/8" = 1'-0"



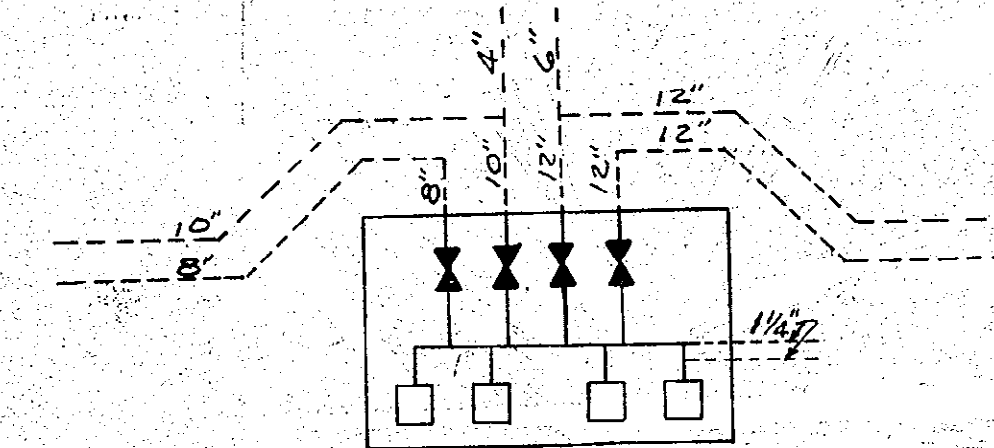
BOTTOM DRAIN DETAIL
Scale: 1/2" = 1'-0"

REVISION	DATE	DESCRIPTION	BY
MYRTLE BEACH, S.C.			
CHLORINE BASIN BAFTEL WALLS 8 DETAILS			
Wilbur Smith and Associates, Inc. - Design CONSULTING ENGINEERS COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGN	DWN RKL	CHKD	DATE 11-2-72 DWG NO 8A

LAGOON #3
57 LINES OF AIR-AQUA TUBE

LAGOON #2
35 LINES OF AIR-AQUA TUBE
BAFFLES

LAGOON #1
135 LINES OF AIR-AQUA TUBE



BLOWER HOUSE
DETAIL
See Sheet #2 for Mechanical

CHLORINE CONTACT BASIN
& OVERFLOW STRUCTURE
SEE SHEETS 2 & 3A FOR
DETAILS

PLASTIC HEADRED
FEEDER PIPE
(75 REQ.)

GAS CLEANING CONNECTIONS
SEE DETAIL SHEET #11

OVERFLOW
WATER TANK
2' FROM
BOTTOM SEE
DETAIL SHEET #8

OVERFLOW WATER
TANK 2' FROM
BOTTOM SEE
DETAIL SHEET #8

800' OF 6"
SUCTION PIPE
(2 REQ.)

8" AIRLIFT
(2 REQ.)

GATE VALVE
VALVE BOX
(12 REQ.)

NOTES:

LAGOON #1 150,660' #1581.5-13 WEIGHTED AIR-AQUA
TUBE INSTALLED 13' DEEP ± 6"

LAGOON #2 46,440' #1581.5-13 WEIGHTED AIR-AQUA
TUBE INSTALLED 13' DEEP ± 6"

LAGOON #3 15,390' #1581.5-13 WEIGHTED AIR-AQUA
TUBE INSTALLED 13' DEEP ± 6"

15,000' #15 WEIGHTED FEEDER TUBE
— CI — CEMENT LINED CAST IRON
— G — GALV. STEEL PIPE
— GC — GAS CLEANING LINES (Air Aqua Feeder Tubing)
— EJ — EXPANSION JOINT

DIKES: 2 TO 1 SLOPE

(EJ) EXPANSION JOINT

GALV. PIPE TO AIRLIFT

EXISTING LAGOON

WATER ELEVATION

SECTION THRU A-A
N.T.S.

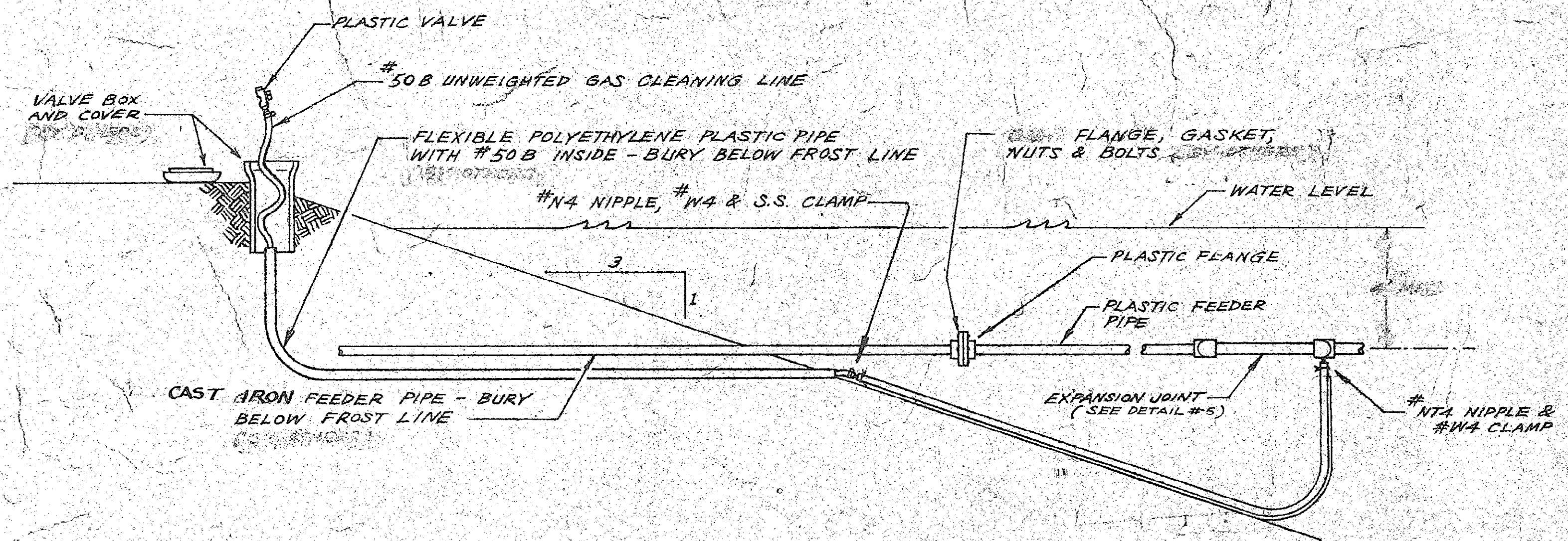
SEWAGE TREATMENT
FACILITIES

MYRTLE BEACH
SOUTH CAROLINA

Wilbur Smith and Associates, Inc. - Design
CONSULTING ENGINEERS
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.
DESIGN: J.W.N. CHECK: J.A. DATE: 11-14 DWG NO: 12

51-001-012/23

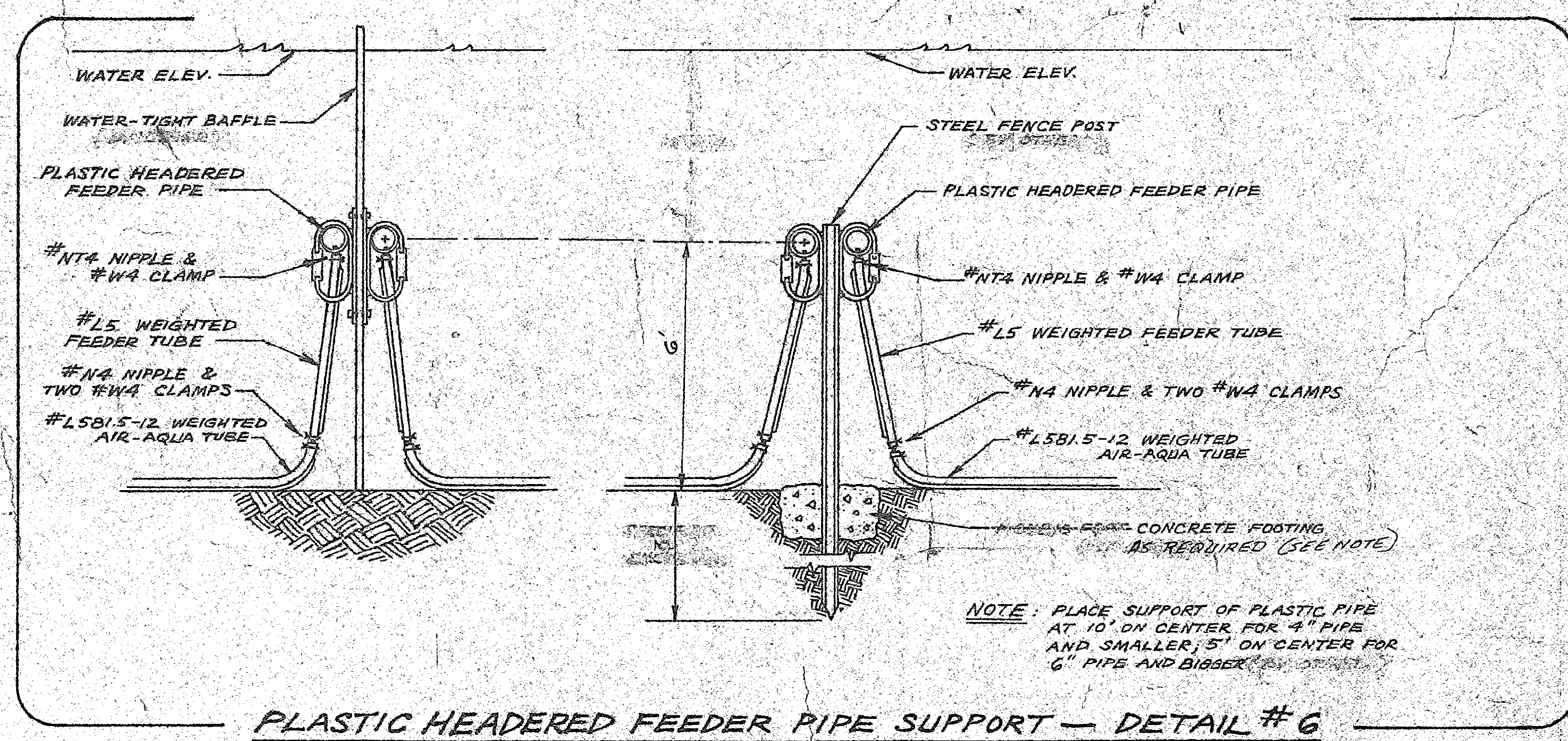
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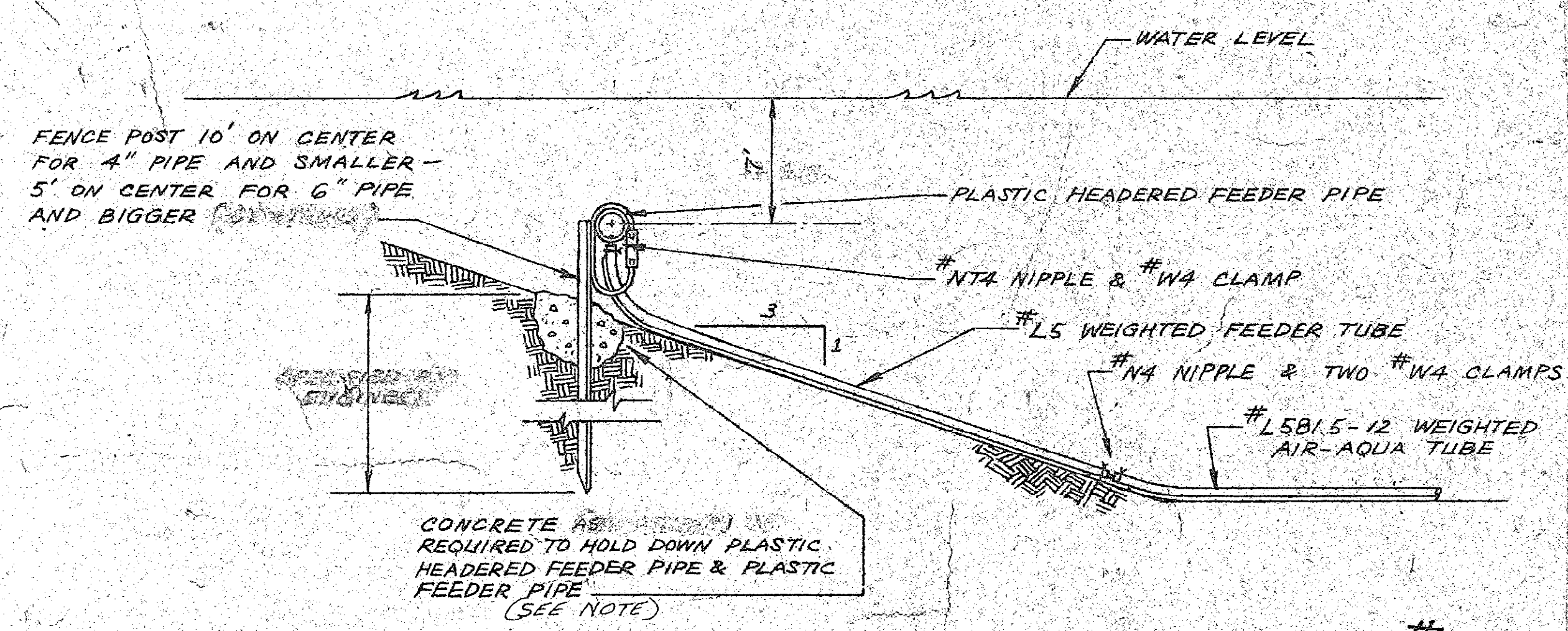
CAST IRON TO-PLASTIC PIPE CONNECTION AND GAS CLEANING LINE - DETAIL #4
N.T.S.

NOTE: CONCRETE FOR SUPPORTS

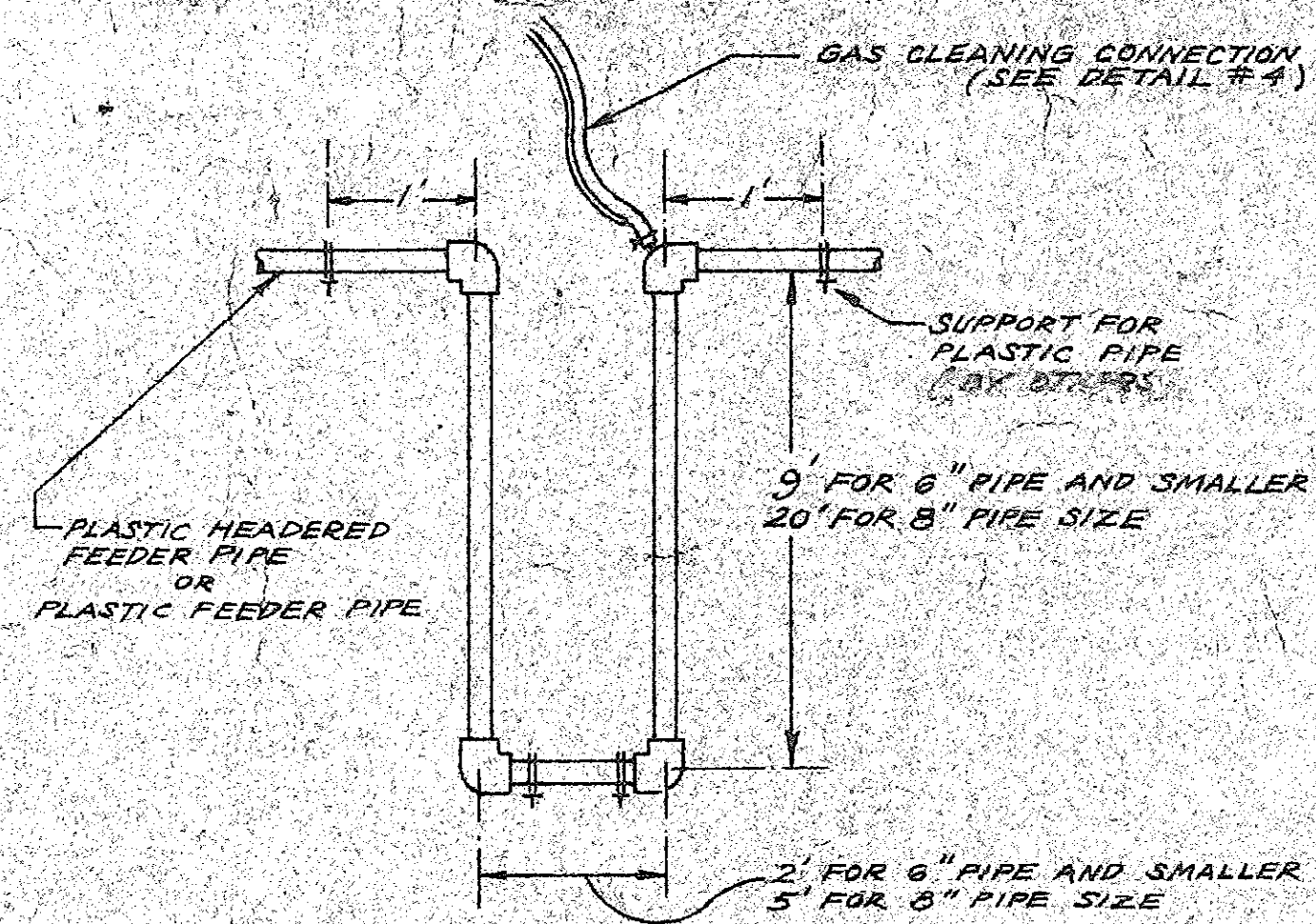
1. MUST HAVE DENSITY OF 145 LBS OR MORE PER CUBIC FT.
2. SINGLE HUNG HEADERS & PVC FEEDER PIPES REQUIRE:
A. 1 1/2" TO 4" PIPE - 1 CU. FT. OF CONCRETE PER STAKE ON 10' &
B. 6" - 1 CU. FT. OF CONCRETE PER STAKE ON 5' &
3. DOUBLE HUNG HEADERS & PVC FEEDER PIPES REQUIRE:
A. 1 1/2" TO 4" PIPE - 2 CU. FT. OF CONCRETE PER STAKE ON 10' &
B. 6" PIPE - 2 CU. FT. OF CONCRETE PER STAKE ON 5' &



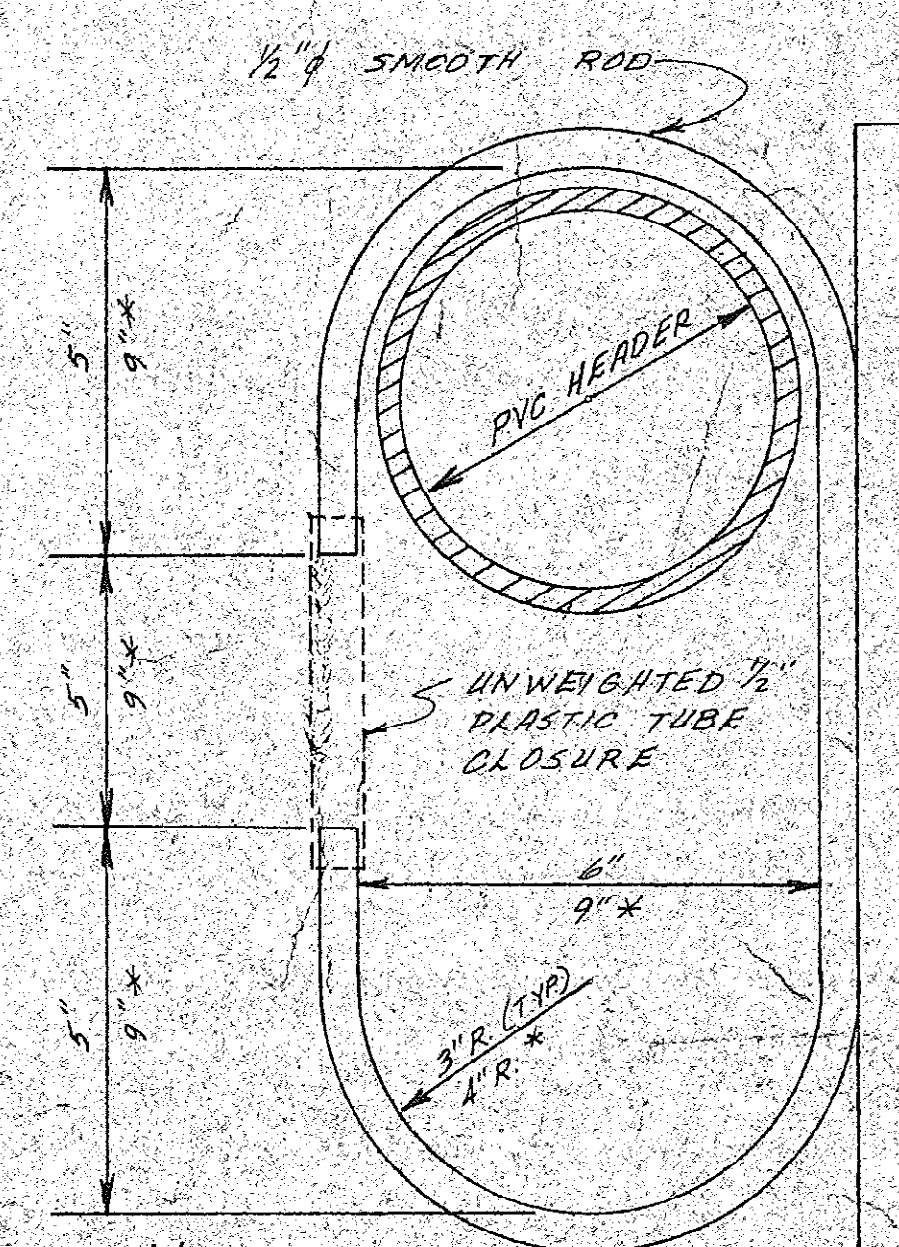
PLASTIC HEADERED FEEDER PIPE SUPPORT - DETAIL #6
N.T.S.



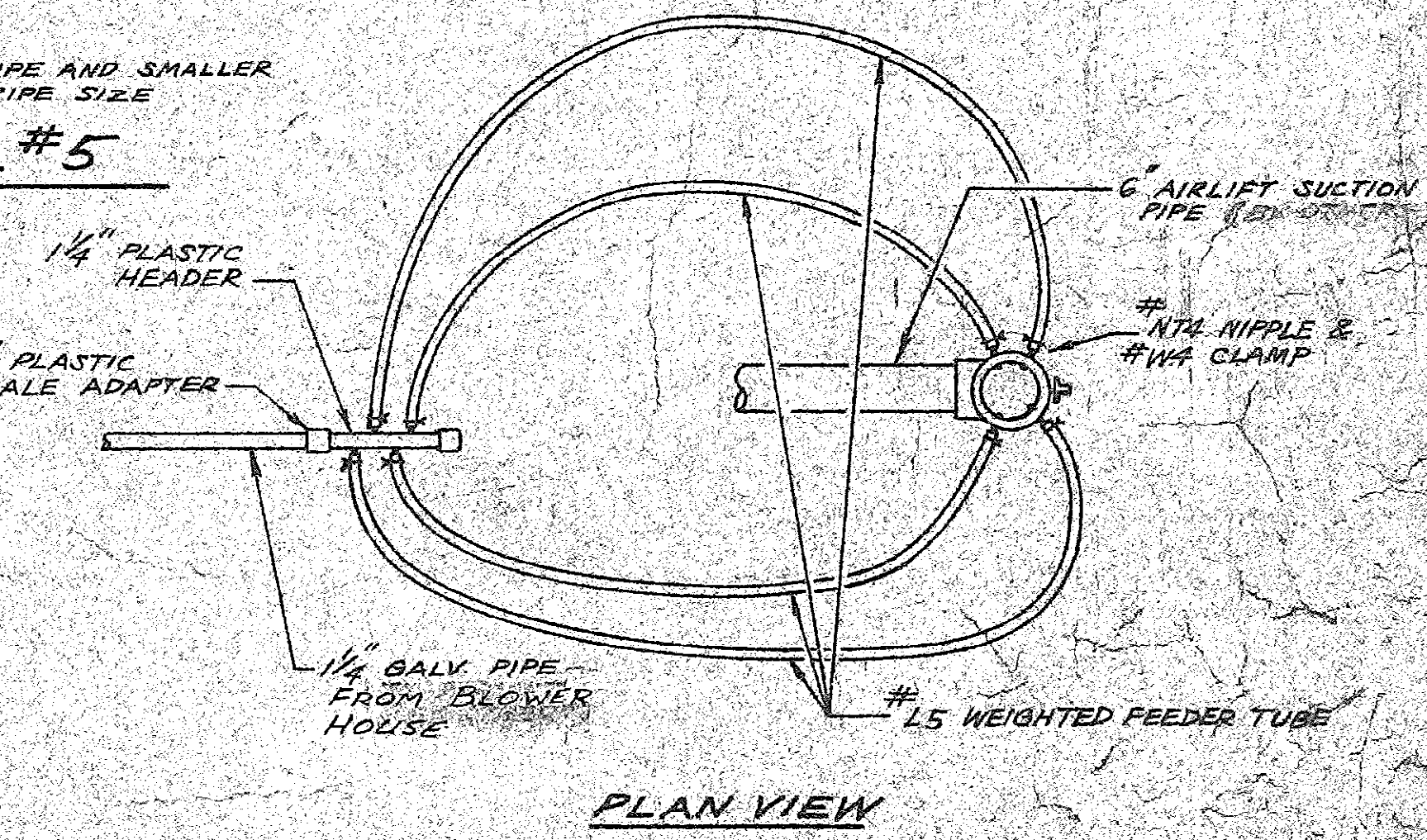
PLASTIC HEADERED FEEDER PIPE SUPPORT - DETAIL #7
N.T.S.



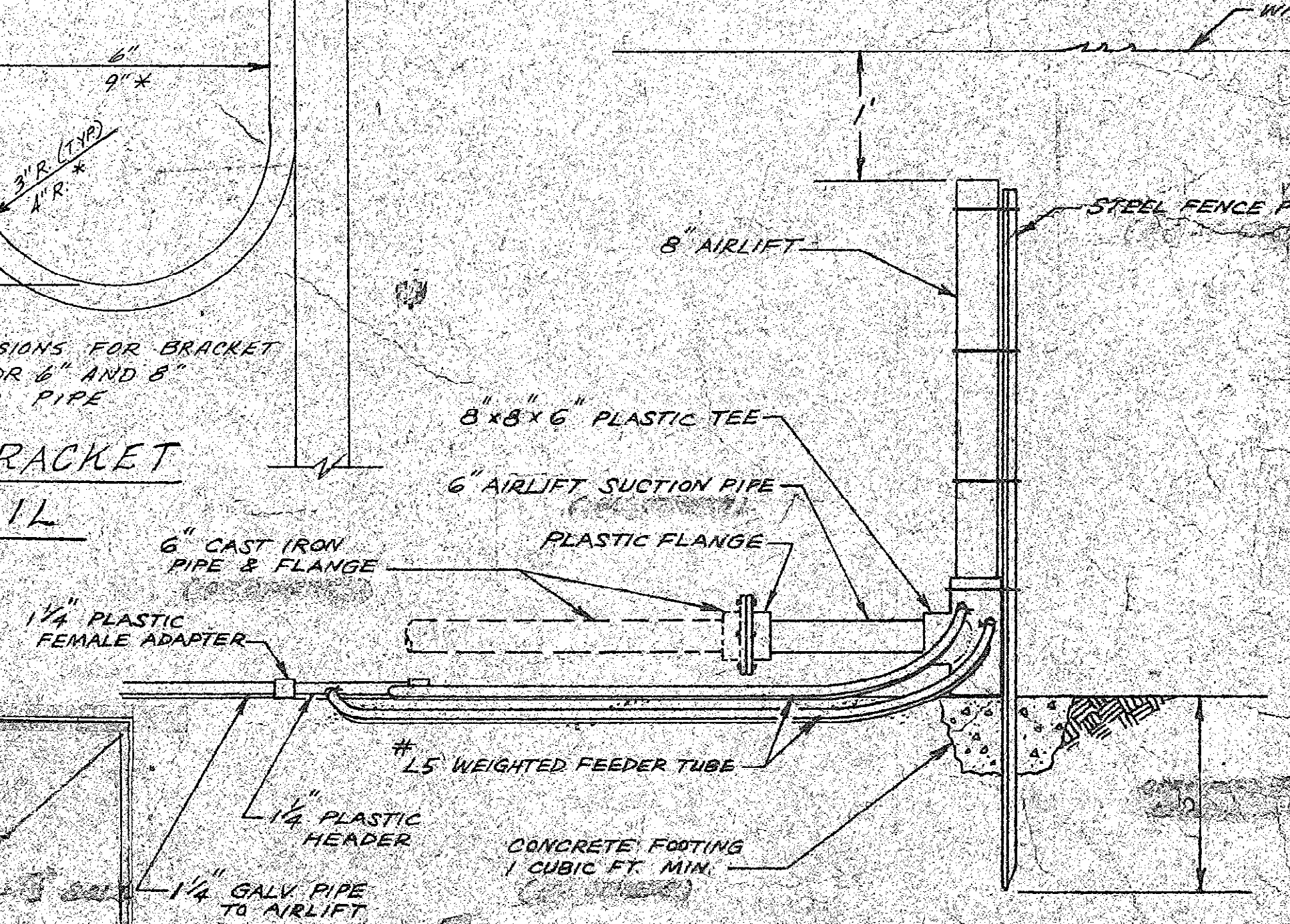
EJ-EXPANSION JOINT - DETAIL #5
N.T.S.



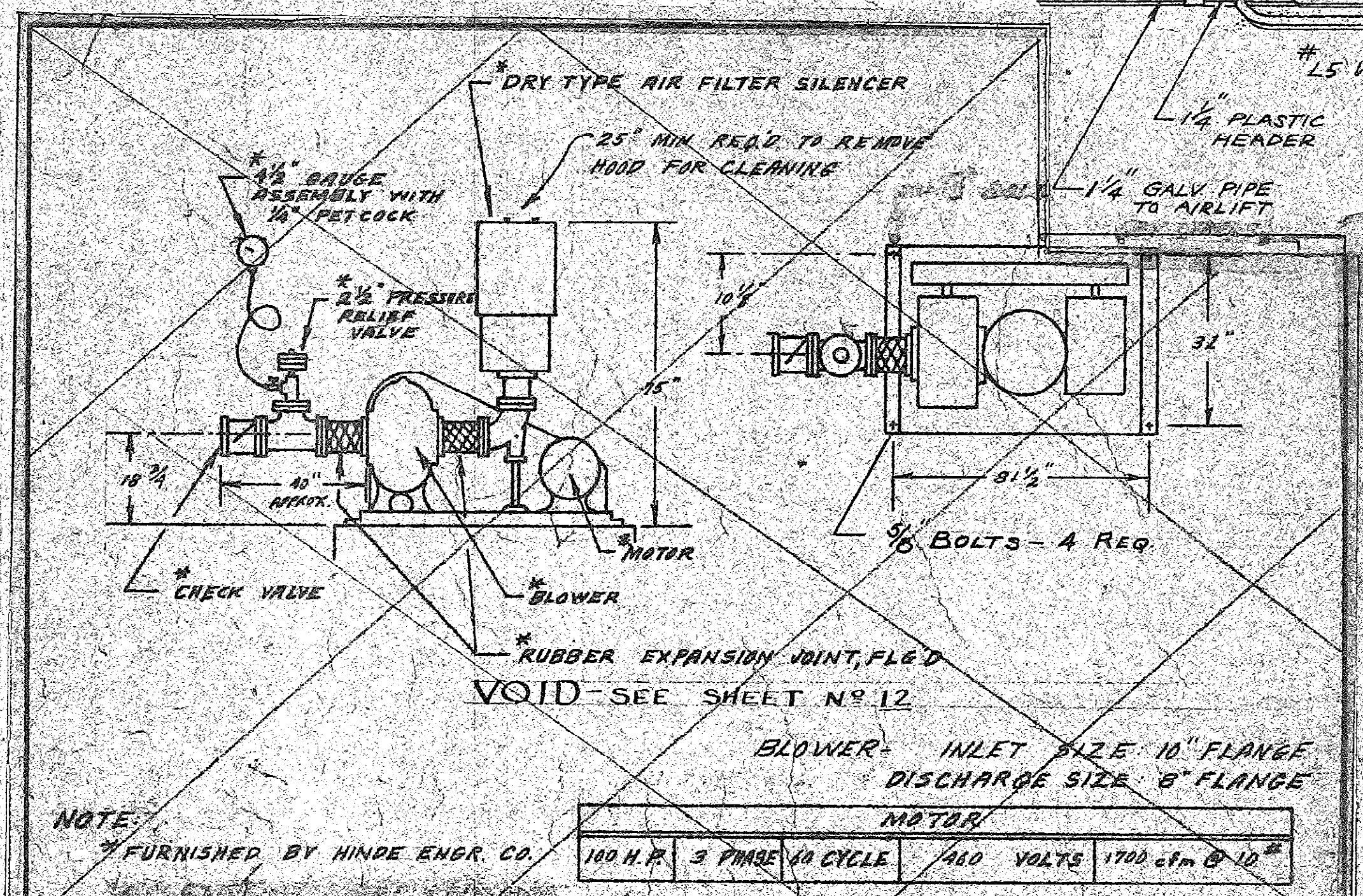
HEADER BRACKET
DETAIL



PLAN VIEW



SIDE VIEW
AIRLIFT-DETAIL #9
N.T.S.

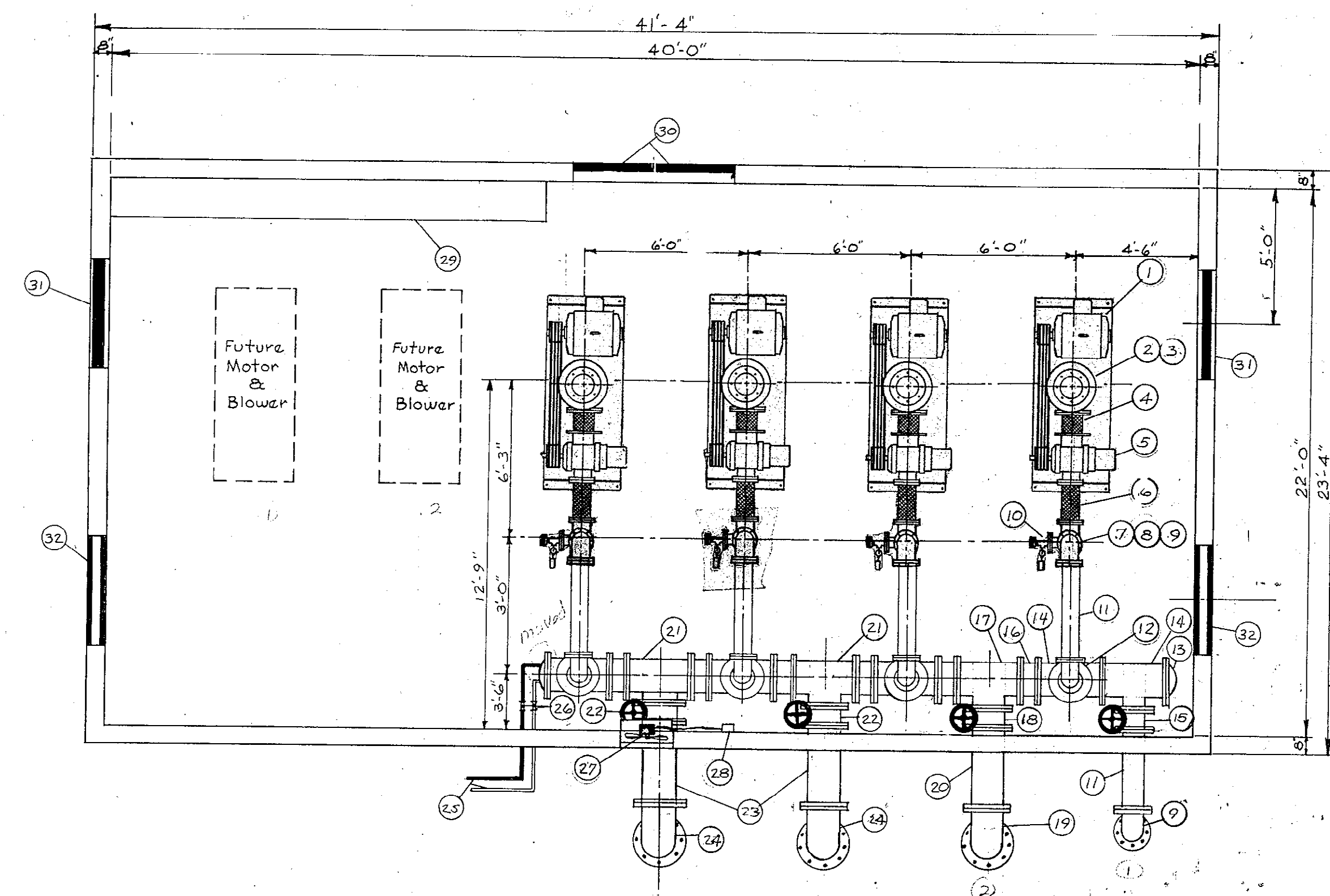


NOTE:

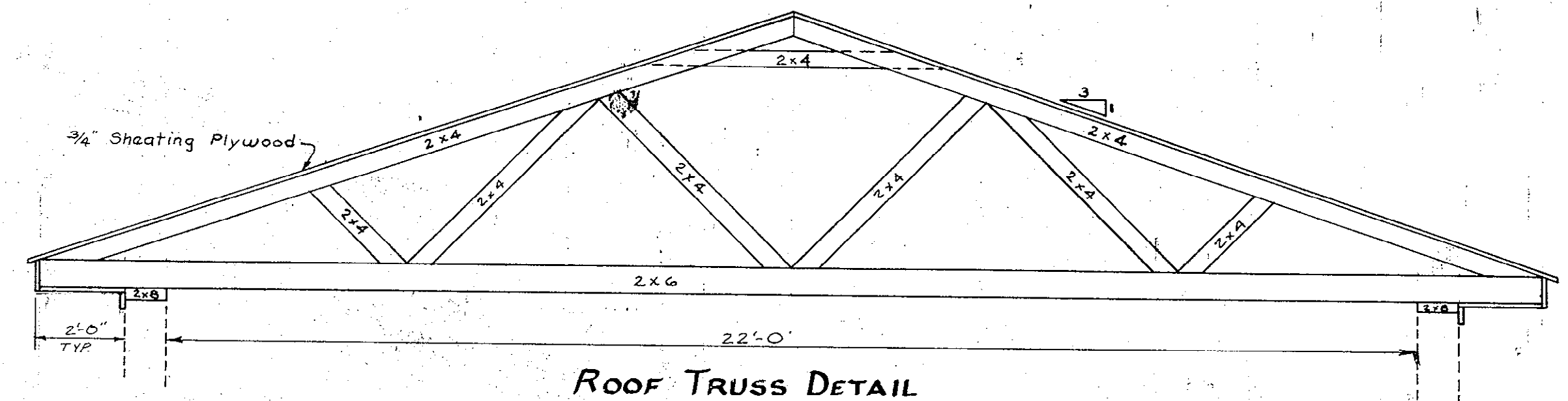
FURNISHED BY HINDE ENGR. CO.

MOTOR			
100 H.P.	3 PHASE	480 VOLTS	1700 cfm @ 10"

REVISION	DATE	DESCRIPTION	BY
SEWAGE TREATMENT FACILITIES			
MYRTLE BEACH, S.C.			
51-001-013/23 430500			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGNED	DWN	CHKD	DATE 1/16/72 DWG NO. 11



BLOWER HOUSE DETAIL
Scale: 1/4" = 1'-0"



ROOF TRUSS DETAIL

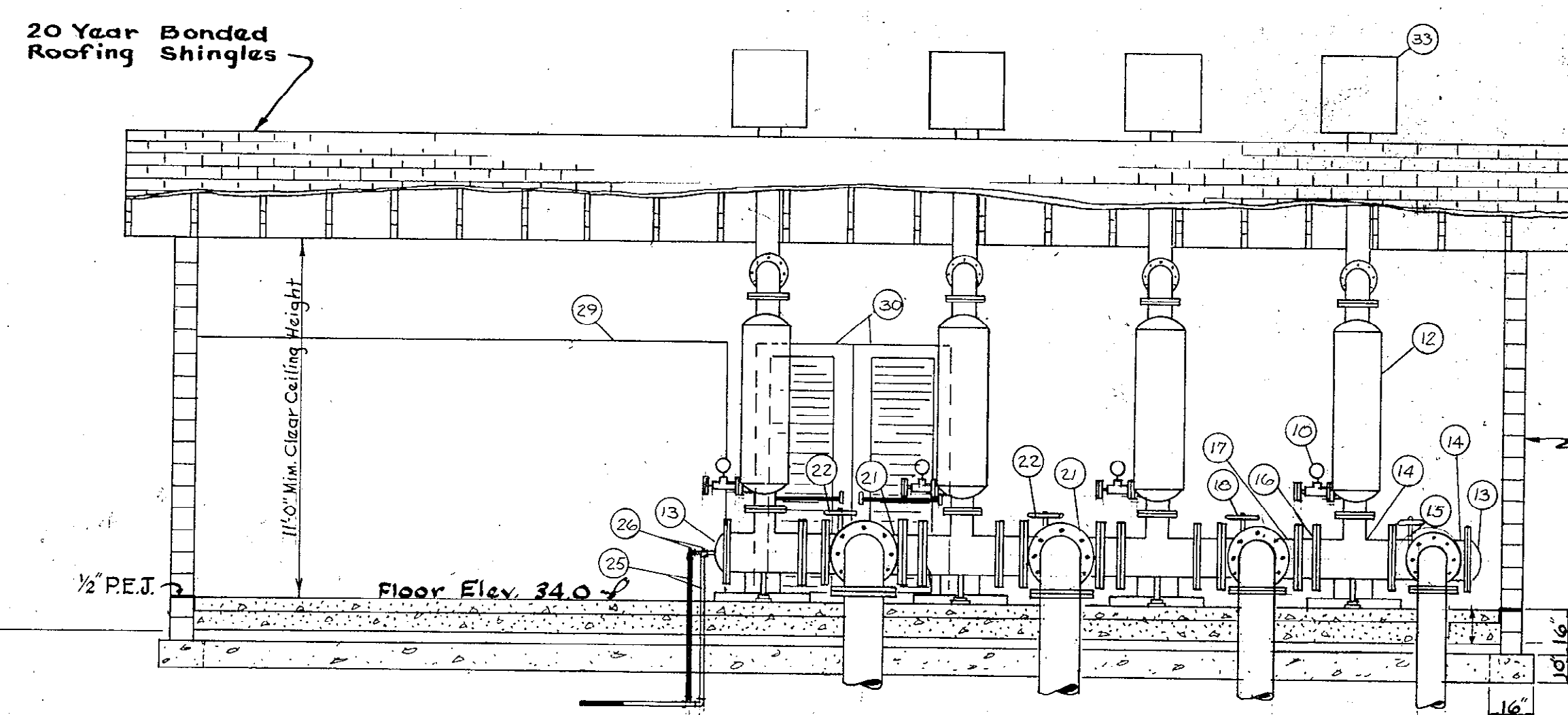
ITEM	NO.	REQ.	DESCRIPTION
1	4		Motors - 125 H.P., C.E. 1780 RPM 460/160 3 PHASE 151 AMP
2	4		Snubber - 10" dia.
3	5		10" Short Radius Elbow - 90°
4	4		Rubber Expansion Joint - 10"
5	4		Blower - KUMERS ROTARY LOBE, FRAME SIZE 80 J, 2180 RPM
6	4		Rubber Expansion Joint - 8"
7	4		Cast Iron Tee - 8" x 4" x 8"
8	4		Check Valve - 8", Style B - Mission Duo-Check or equal
9	13		8" Short Radius Elbow - 90°
10	4		2-1/2" Pressure Relief Valve - KUNKLE
11	4		8" C.I. Pipe
12	4		Snubber - 8" dia.
13	2		Blind Flange - One (1) to be drilled and tapped two (2) pieces for 1-1/4" Gal. Pipe
14	5		Cast Iron Tee - 14" x 8" x 14"
15	1		Butterfly Valve - 8"
16	1		14" C.I. Pipe
17	1		Cast Iron Tee - 14" x 10" x 14"
18	1		Butterfly Valve - 10"
19			
20			10" C.I. Pipe
21	2		Cast Iron Tee - 14" x 12" x 14"
22	2		Butterfly Valves - 12"
23			12" C.I. Pipe
24	2		12" Short Radius Elbow - 90°
25			1-1/4" Gal. Pipe
26	2		Square Stem Gas Cock Valves
27	1		Fan - See Electrical Drawings
28	1		Thermostat - See Electrical Drawings
29			Space for Electrical - See Electrical Drawings
30	2		3' x 7' ~~metal louver~~ RAT SCREEN
31	2		48" x 32" Extruded Aluminum Louver mount 16" above floor - See Specifications
32	2		4' x 4' Aluminum Awning Window - Miami Model M.B. 22, or equal with 77-161-02 Operator Mount 40" above floor
33	4		Dry Type Filter - See Specifications

SPECIFICATIONS

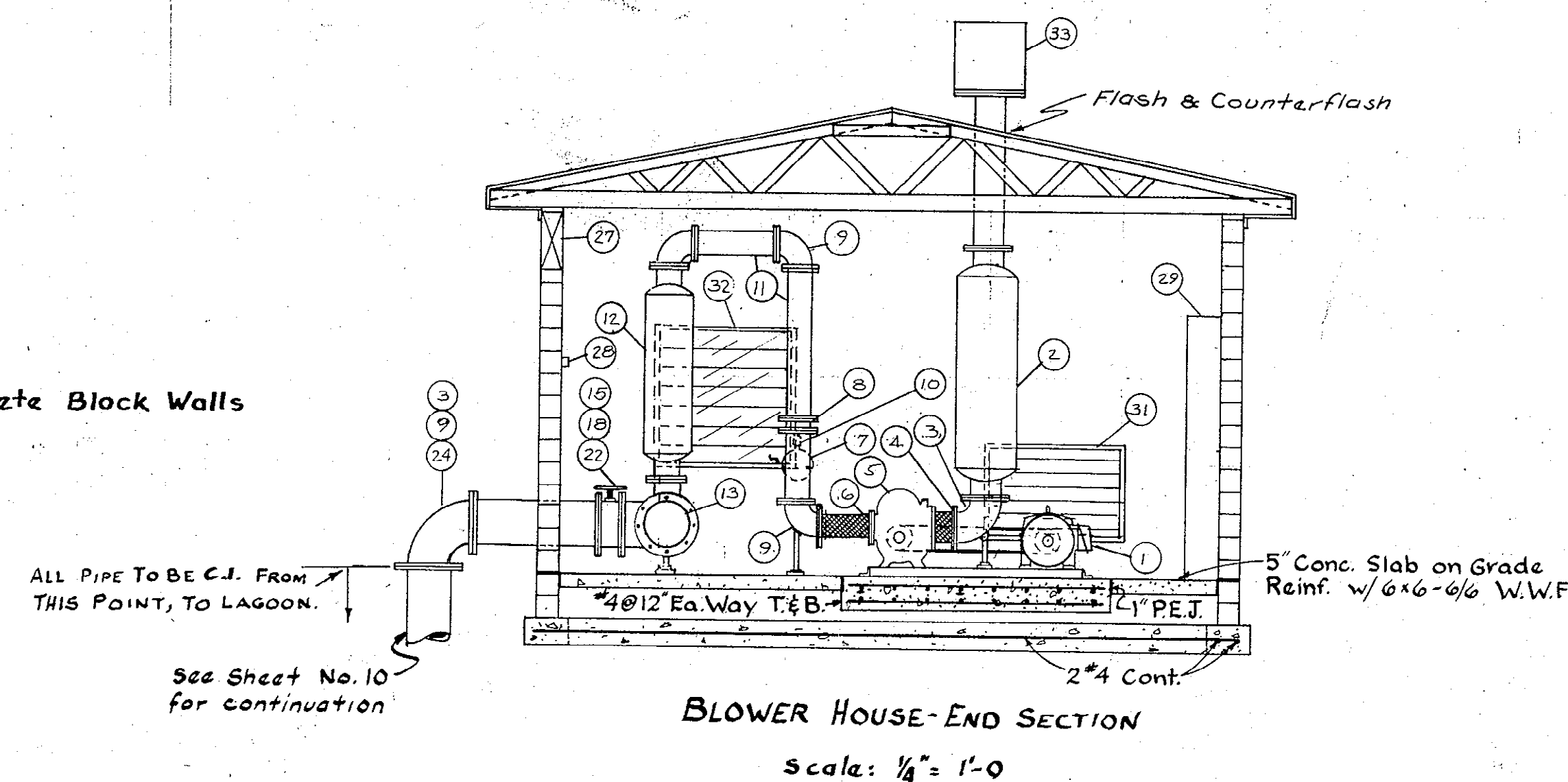
All wood trusses shall meet "National Design Specifications For Stress - Grade Lumber And Fastenings" - National Forest Products Association; "Timber Construction Standards" - American Institute of Timber Construction; "Design Specifications For Light Metal Plate Connected Wood Trusses" - Truss Plate Institute.

Masonry reinforcing every third course (24"). Duowall - Truss Type, or equal. Top course to be beam block with two #4's grouted (filled) with mortar.

Roofing to be 20-year bonded asphalt shingles. Color as selected by owner.



BLOWER HOUSE - SIDE SECTION
Scale: 1/4" = 1'-0"



BLOWER HOUSE - END SECTION
Scale: 1/4" = 1'-0"

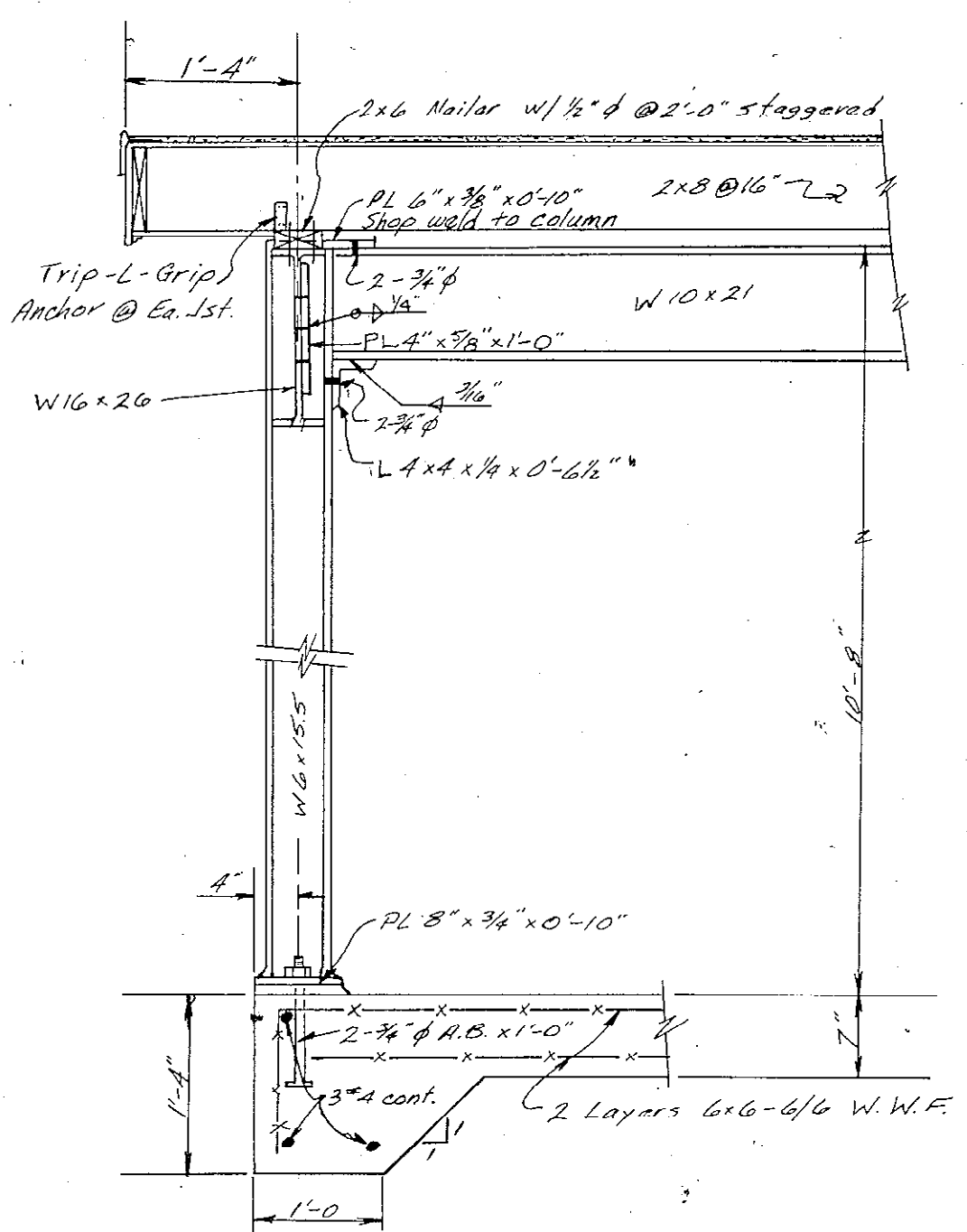
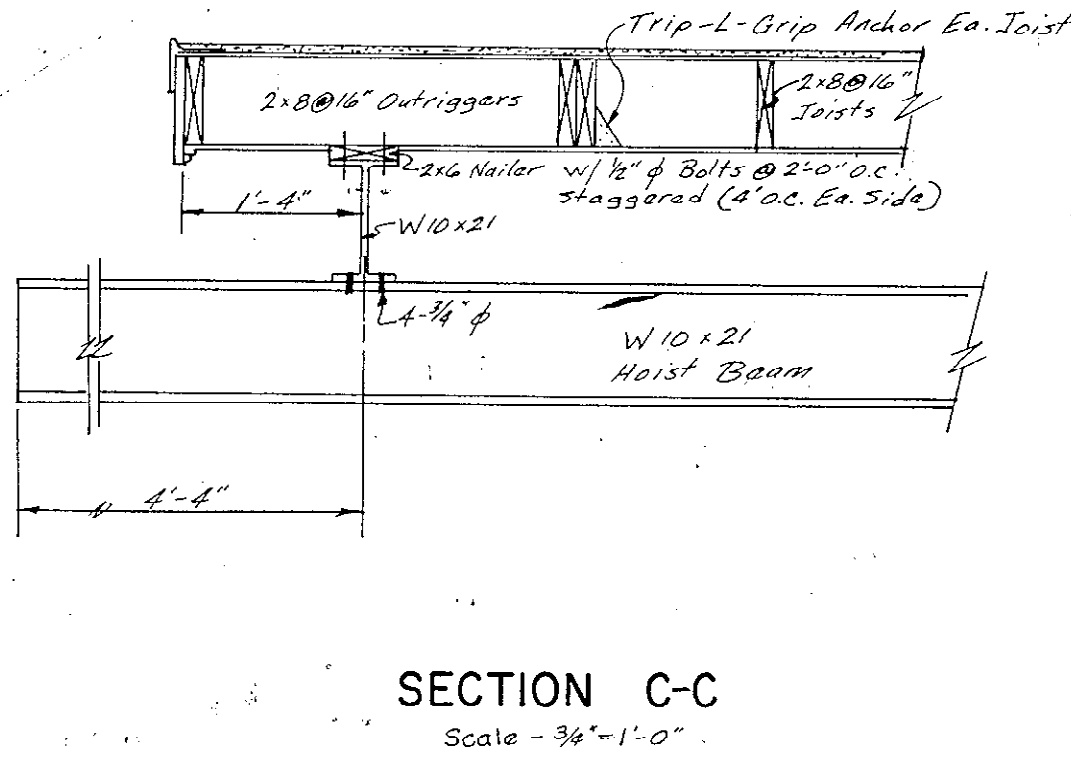
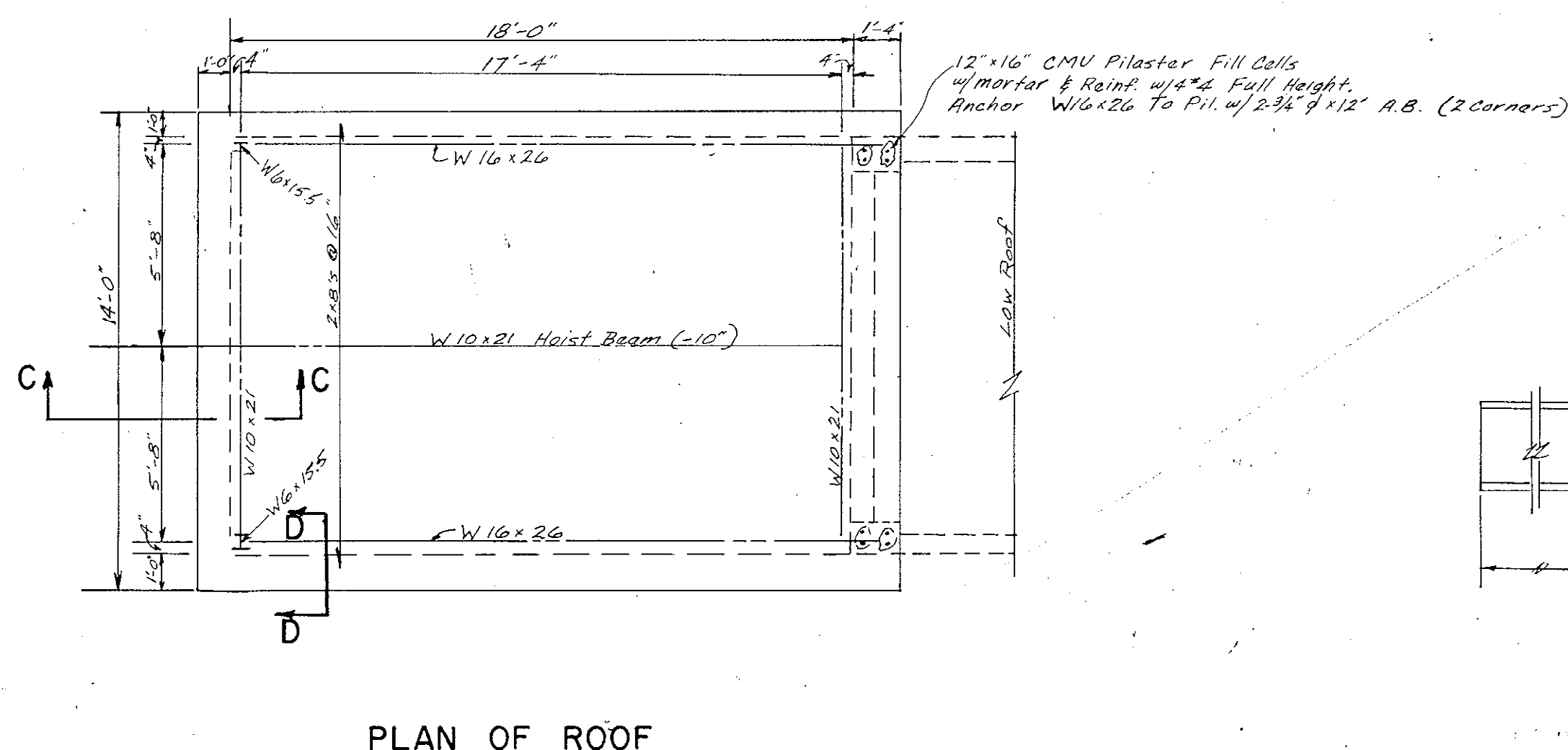
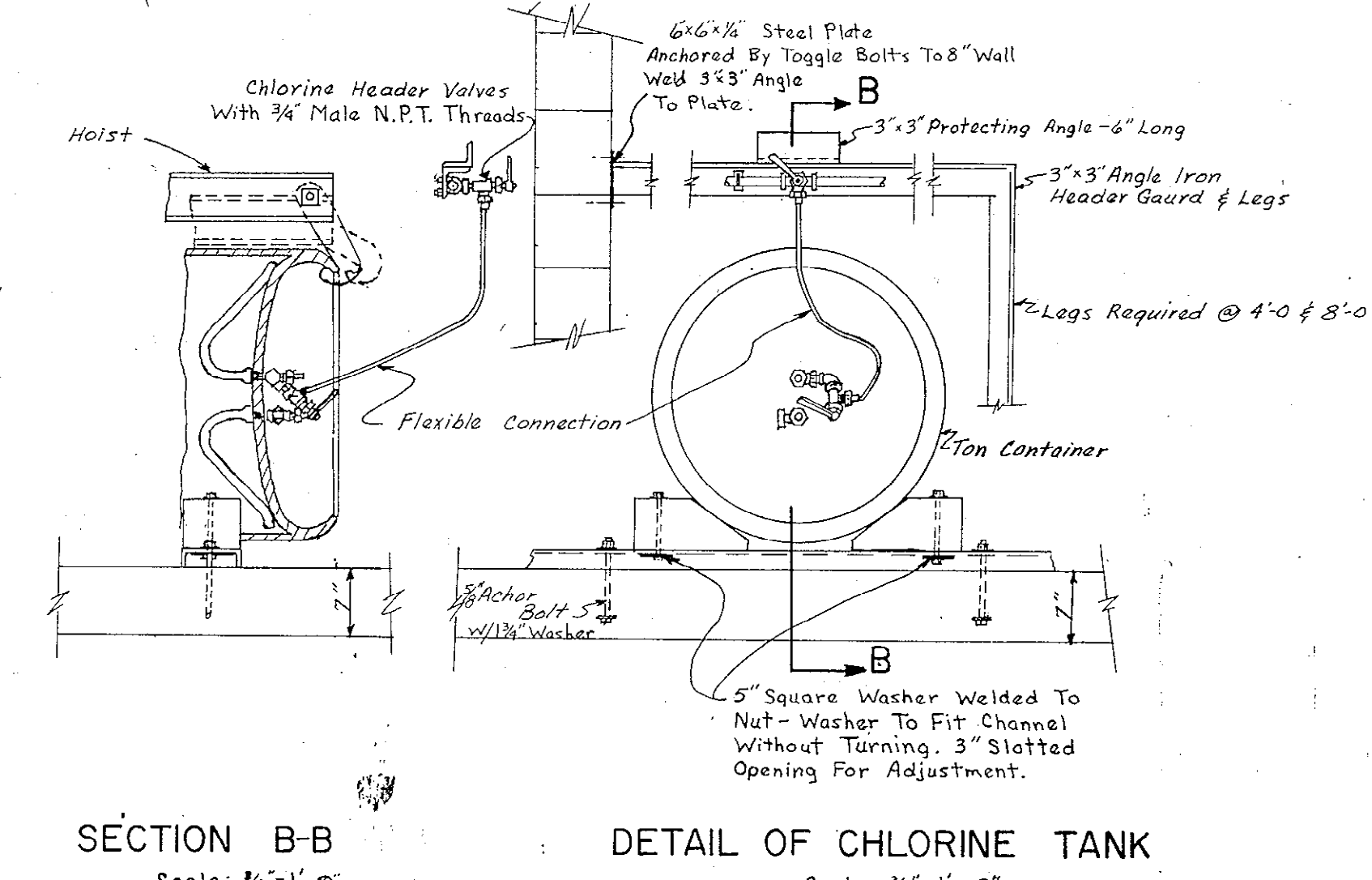
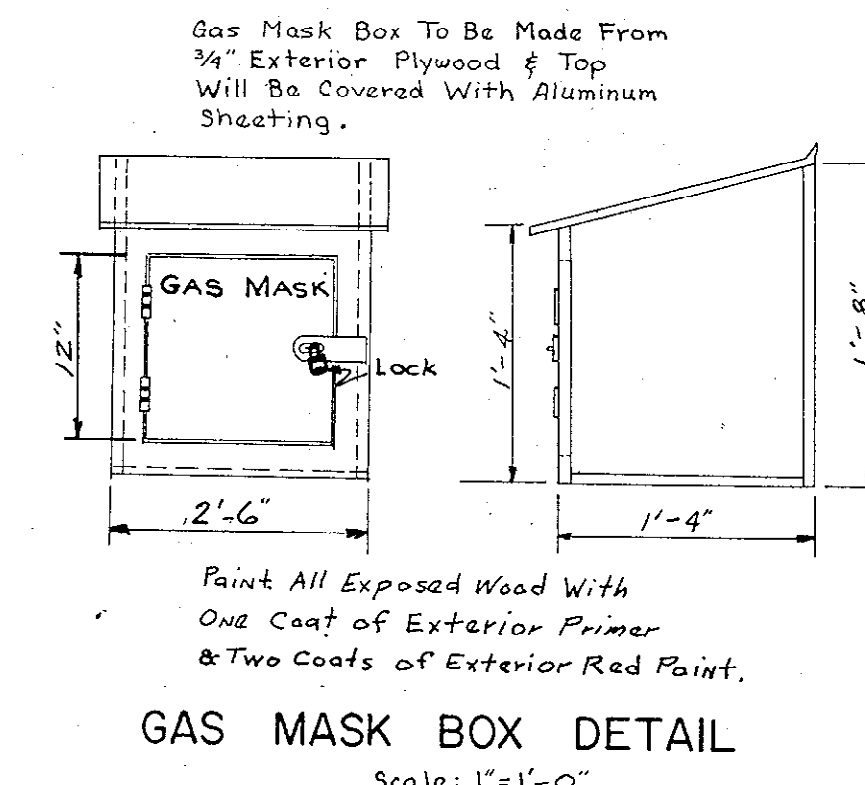
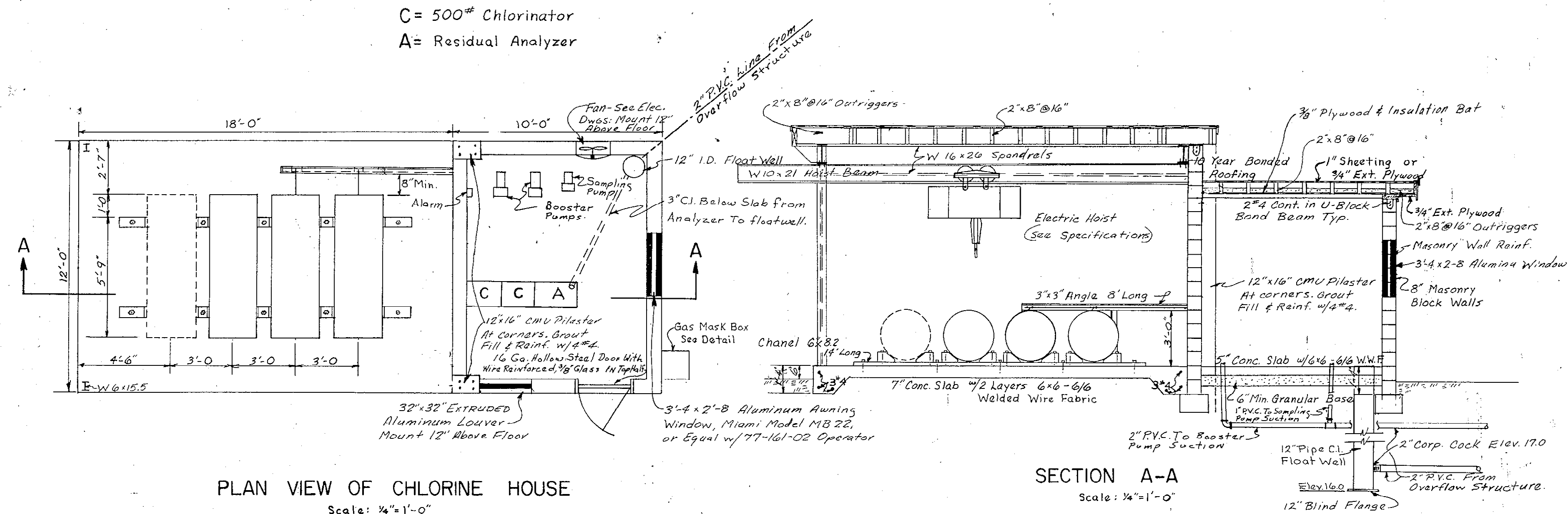
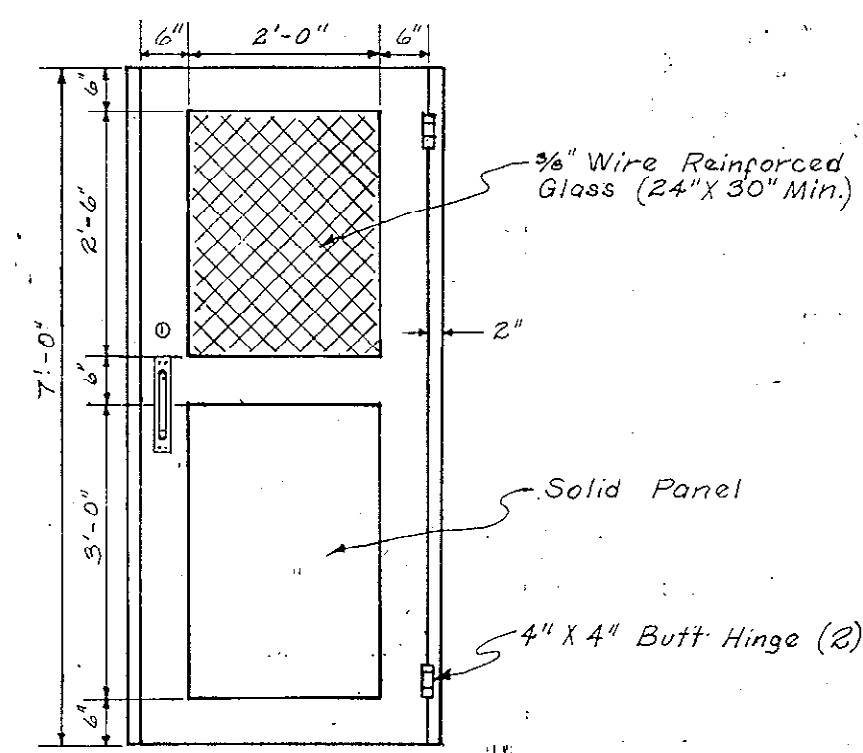
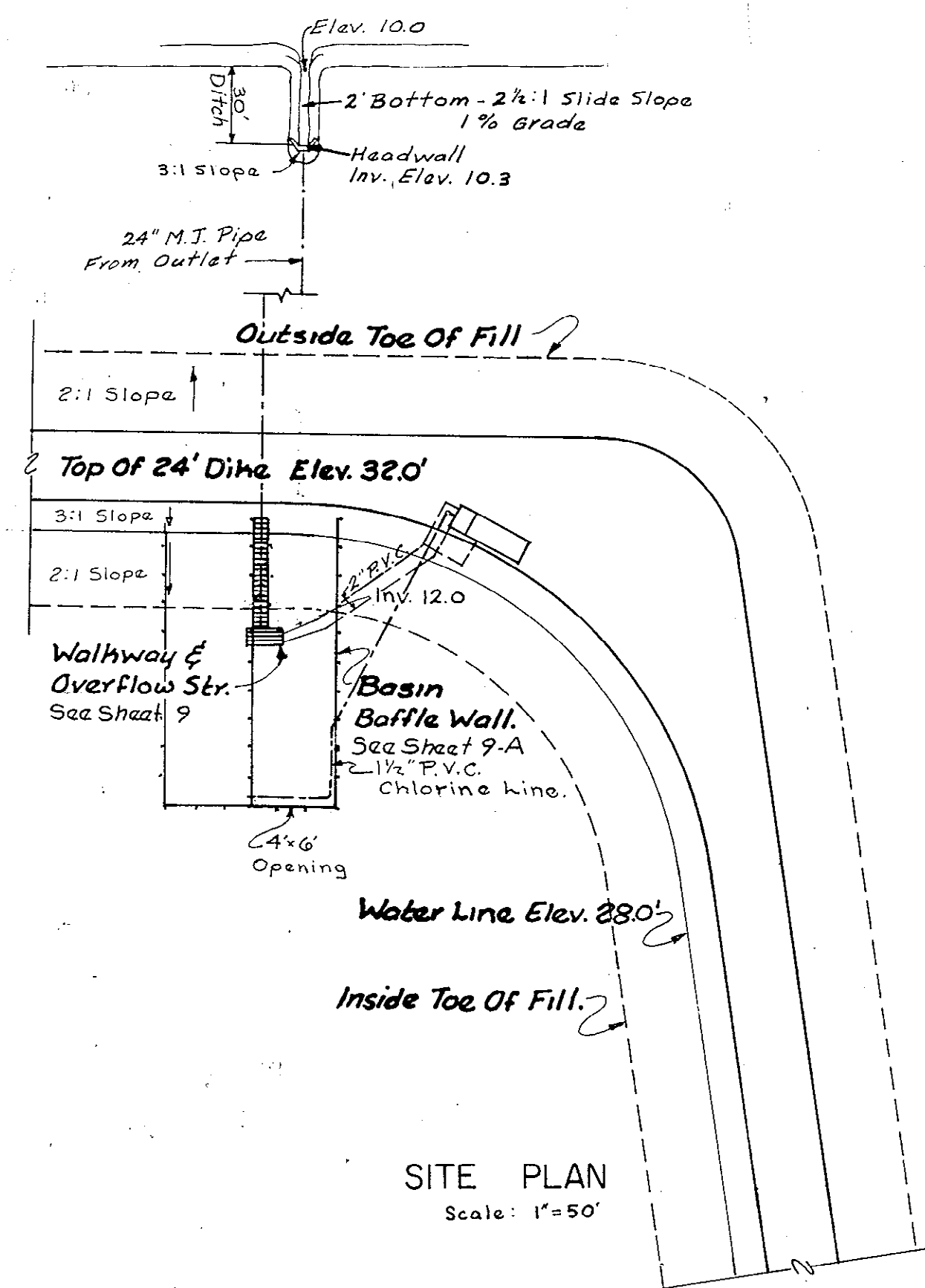
ALL PIPE TO BE C.I. FROM THIS POINT, TO LAGOON.

See Sheet No. 10 for continuation

REVISION	DATE	DESCRIPTION	BY
1	7/79	RECORD DRAWING DATA	B.M.
BLOWER HOUSE DETAILS			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design CONSULTING ENGINEERS COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGNED BY	DWN/RKL	CHECKED BY	DATE 6-72 DWG NO 12

51-001-014/23 930500

Intercoastal Waterway

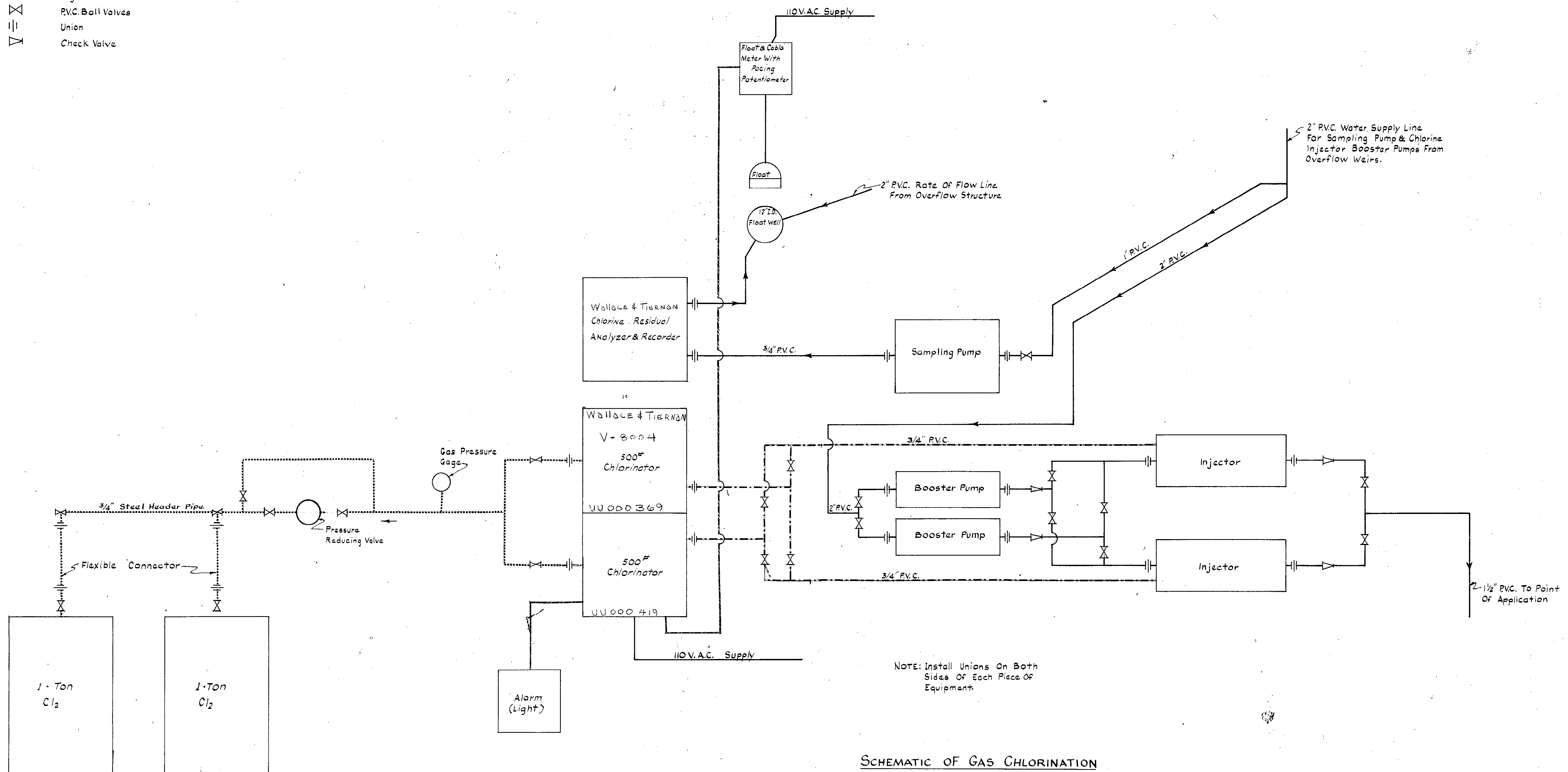


Note:
All roof Joists shall be anchored to plates with Type 'L' Trip-L-Grip Anchors (Timber Engineering Co.) or Equal.

REVISION	DATE	DESCRIPTION	BY
CHLORINE HOUSE DETAILS			
MYRTLE BEACH, S.C.			
Willbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGNED	DWN MCA	CHKD	DATE 11-6-72 DWG NO 13

51-001-015/23

- LEGEND
- High Pressure Gas
 - Low Pressure Gas
 - Solution Lines
 - Signal Circuits
 - ⊗ P.V.C. Ball Valves
 - ⊕ Union
 - ▽ Check Valve



SCHEMATIC OF GAS CHLORINATION

REVISION	DATE	DESCRIPTION	BY
1	7/79	RECORD DRAWING DATA	BA
CHLORINATION SYSTEM			
MYRTLE BEACH, S. C.			
430500			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.			
DESIGNED	DWN	CHK'd	DATE 4-6-78 DWG NO. 4

51-001-016/23

STANDARD DESIGN FOR CHAIN LINK FENCE

FED. ROAD DIV. NO.	STATE	COUNTY	FILE NO.	PROJ. NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.						

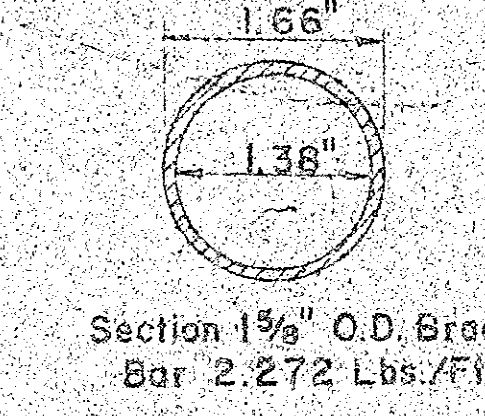
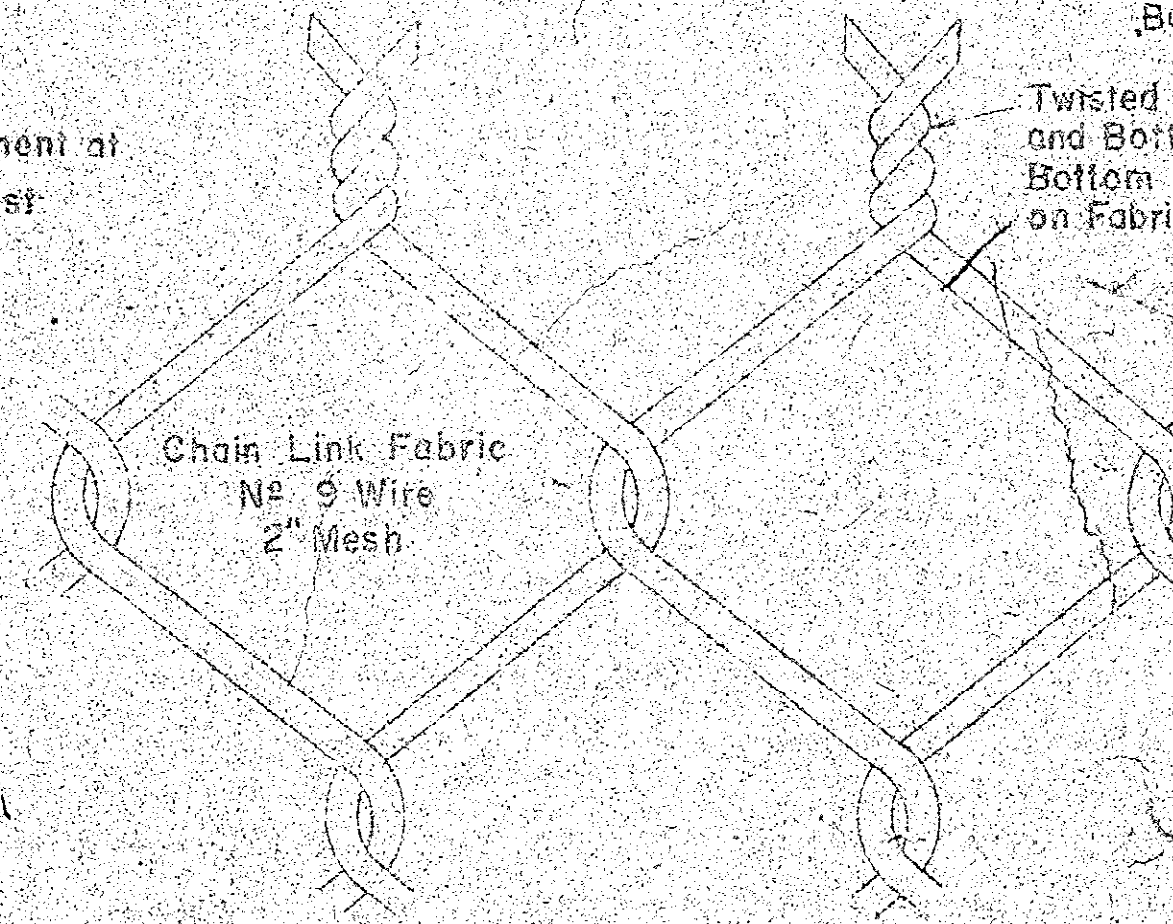
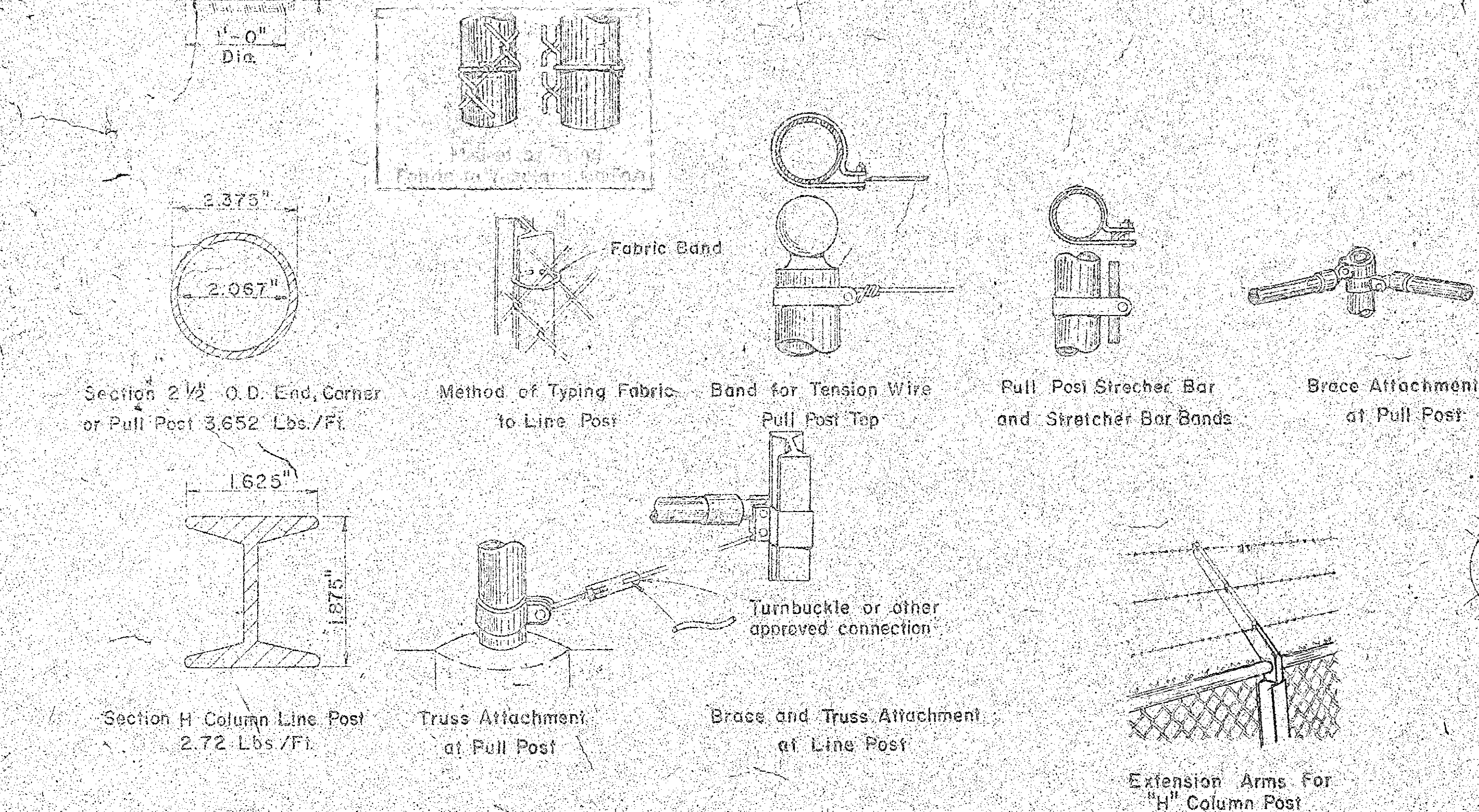
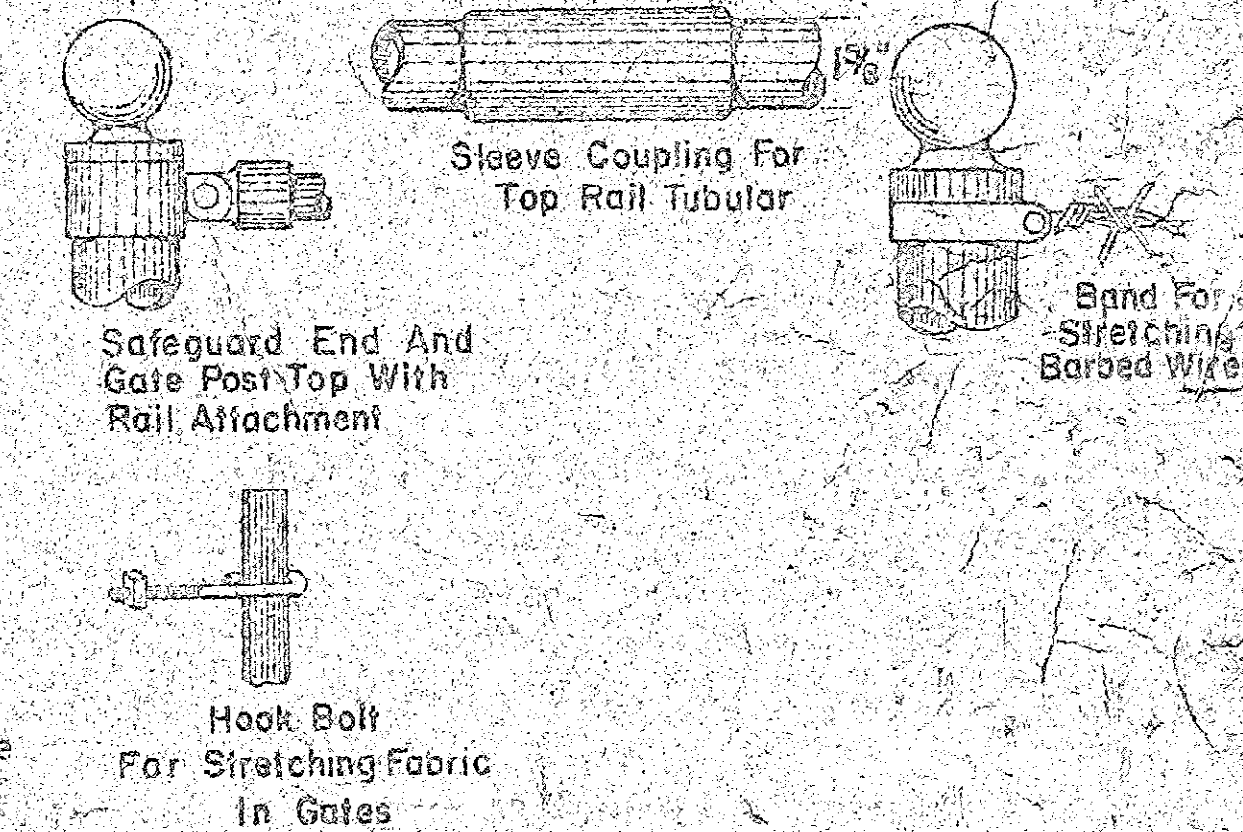
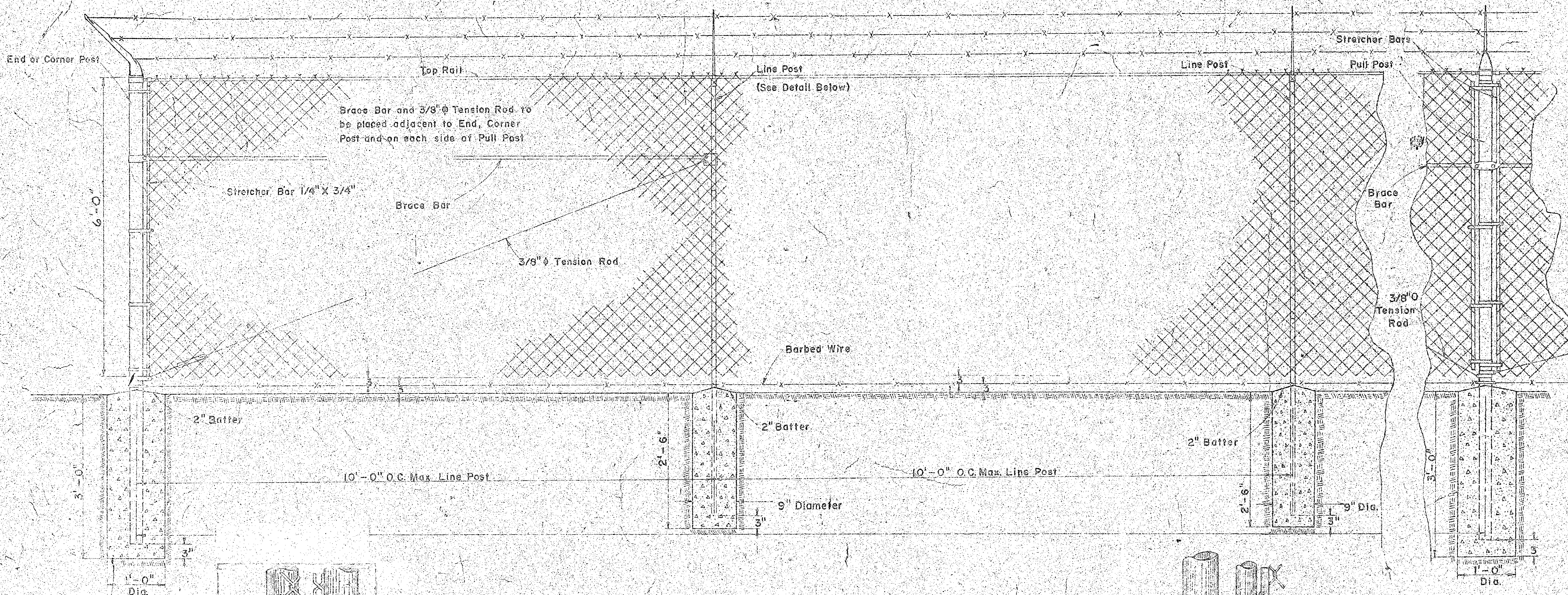
FABRICATION DESIGN

As indicated hereon, Chain Link Fabric shall be No. 9 Gage Aluminum coated in accordance with AASHO M181 (0.40 oz. Aluminum per Sq. Ft. min.). All End, Corner, or Pull Posts shall be galvanized in accordance with A.S.T.M. Specification No. A-120. (2.0 oz. of Zinc per Sq. Ft.). All H Section Posts, Brace Bars, Tension Bars, Stretcher Bars, Fittings, Connection Devices, Etc., shall be galvanized (2.0 oz. of Zinc per Sq. Ft.) in accordance with AASHO M111. Brace, Tension, and Stretcher Bars, complete with all assemblies are required on all End, Corner, or Pull Post.

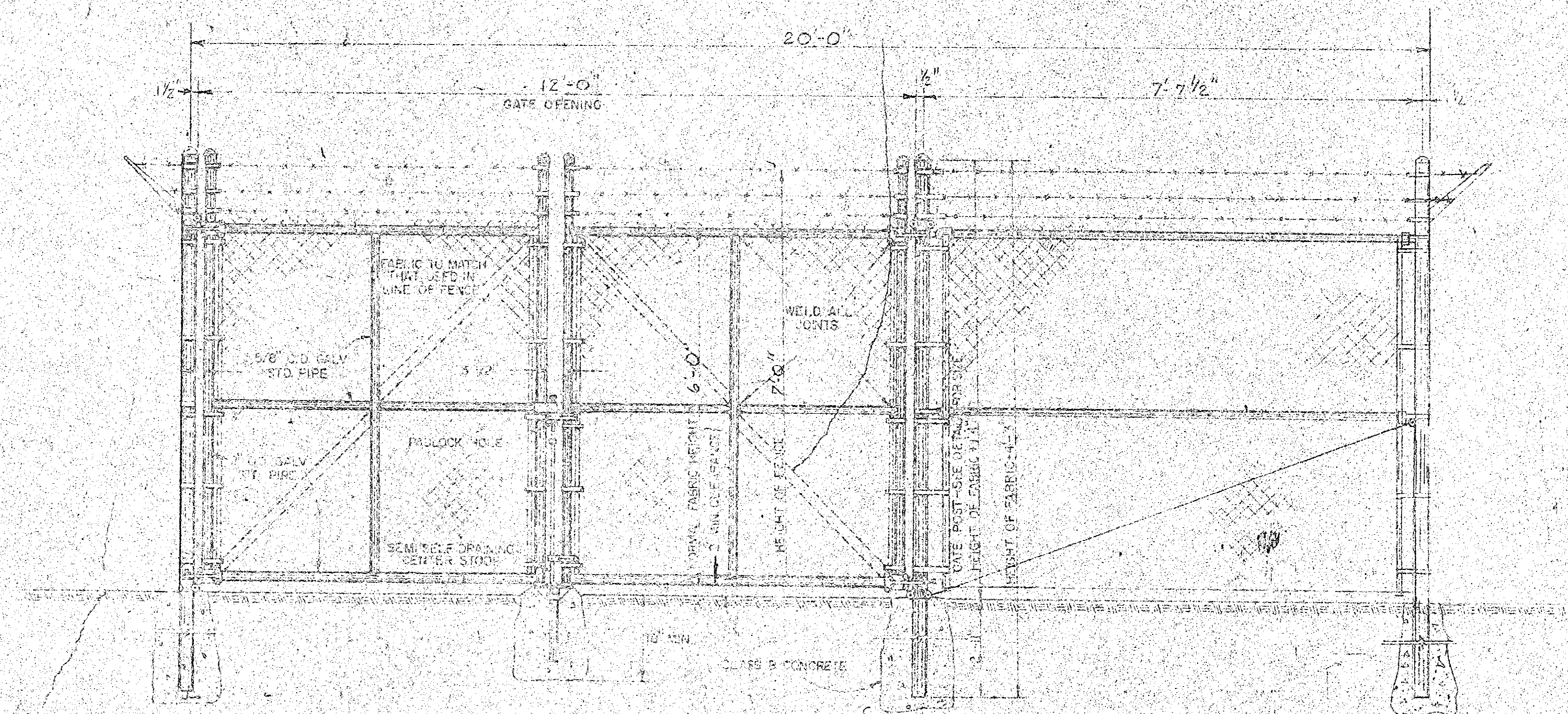
Concrete for post holes shall be Class "B" in accordance with Sections 71 & 125 D of the Standard Specification and of size and dimension as shown hereon.

The cost of performing any grading operations which may be necessary to install the fence on a uniform grade will be included in the Unit Price Bid per linear foot per fence and no additional payment will be made for this work.

SECTION	OUTSIDE DIAMETER TOLERANCES	WEIGHT PER FOOT, TOLERANCE
TUBULAR DIAMETER TO 1 1/2" INCLUSIVE	+1/64" - 1/32"	5
2" AND OVER	+1% - 1%	5
	DIMENSIONAL TOLERANCES	
H-SECTION	INCHES	
1.5 X 1.3125	± .0625	5
1.875 X 1.625	± .0625	5
2.25 X 1.95	± .0937	5



REVISION	DATE	DESCRIPTION	BY
		MYRTLE BEACH, SC	
		FENCING DETAILS	
		430522	
		Willbur Smith and Associates, Inc. - Design	
		CONSULTING ENGINEERS	
		COLUMBIA, S. C. WINSTON-SALEM, N. C. RICHMOND, VA. KNOXVILLE, TENN.	
		DES: WJS DWN: REL CHK: CLK DATE: 4-2-72 DWG NO: 15	



NOTE: 1 1/2" O.D. DIAGONAL BRACE REQUIRED ON GATES WITH OPENING GREATER THAN 20'-0" AS SHOWN ABOVE BY DASHED LINES

GATE POST SCHEDULE	
GATE OPENING	PIPE SIZE
TO 6' INC.	5" O.D.
6' TO 12' INC.	6" O.D.
12' TO 25' INC.	8" O.D.
25' TO 36' INC.	8 1/2" O.D.

REVISION	DATE	DESCRIPTION	BY
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MYRTLE BEACH, SC

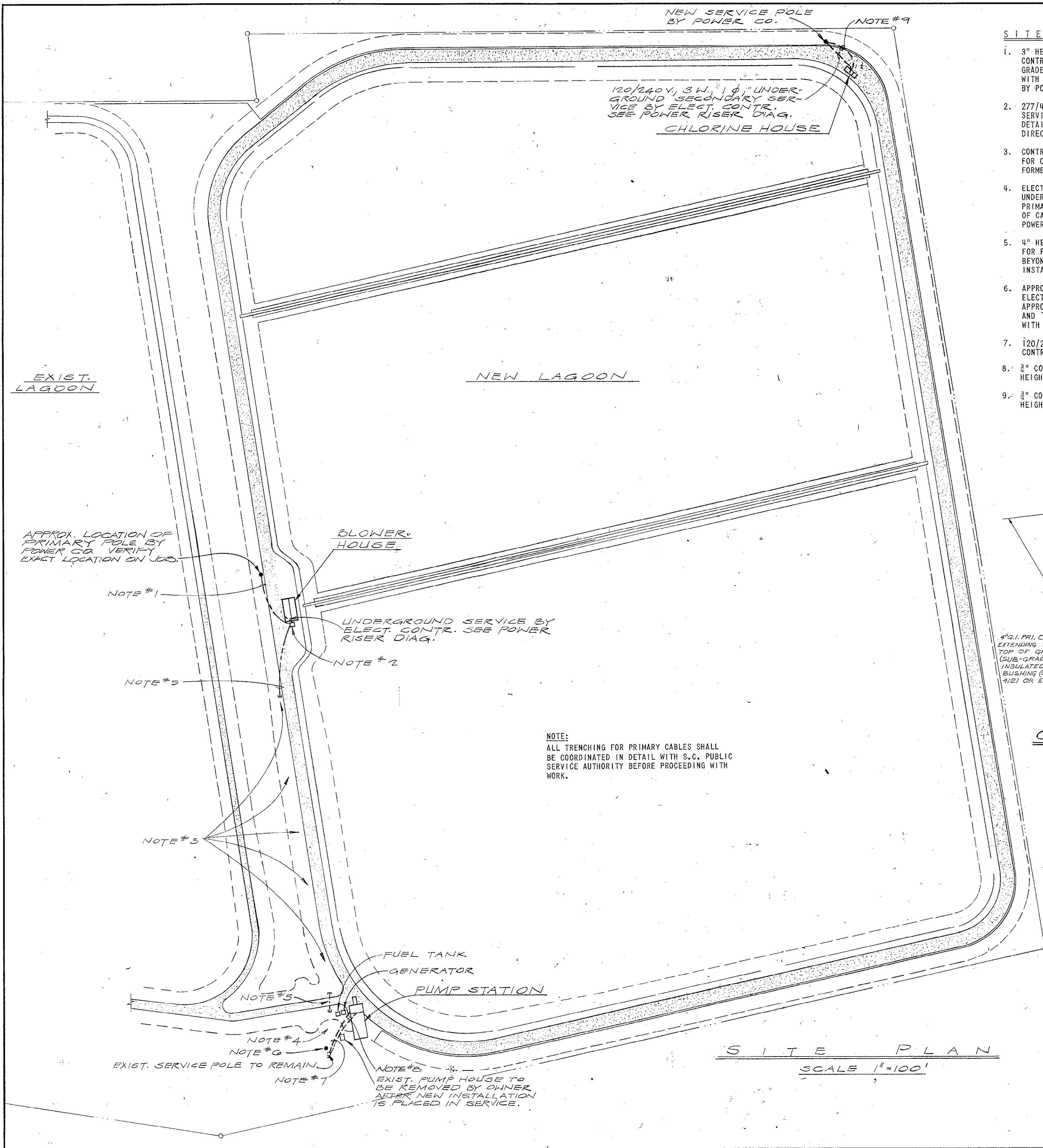
GATE DETAIL

Willbur Smith and Associates, Inc. Design
CONSULTING ENGINEERS
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.

CK-8 DATE 5-17-72 DWG. 016

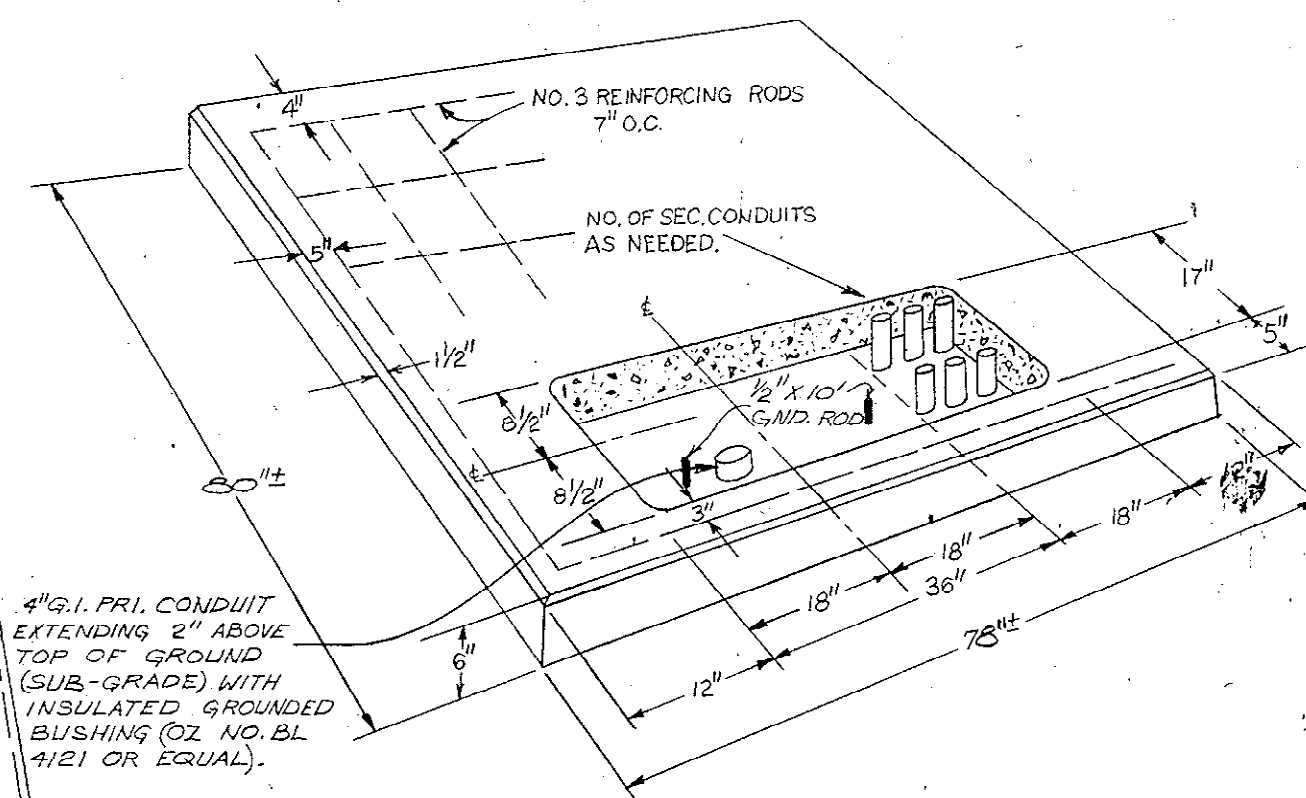
430500

51-001-018/23



SITE PLAN NOTES:

- 3" HEAVY WALL DIRECT BURIAL P.V.C. TYPE CONDUIT BY ELECTRICAL CONTRACTOR FOR PRIMARY CABLES. CONVERT TO 3" RIGID CONDUIT BELOW GRADE APPROX. 48" FROM POLE, RUN UP POLE APPROX. 25' AND TERMINATE WITH BUSHING AS DIRECTED. PRIMARY CABLES FURNISHED AND INSTALLED BY POWER CO. INSTALL CONDUIT MIN. OF 48" BELOW GRADE.
- 277/480 VOLT, 4 WIRE WYE, 3Ø PAD MOUNTED TRANSFORMER BY S.C. PUBLIC SERVICE AUTHORITY. CONCRETE PAD BY ELECTRICAL CONTRACTOR. SEE DETAIL. TERMINATE SECONDARY AND PRIMARY CONDUITS IN MANNER AS DIRECTED BY POWER CO.
- CONTRACTOR SHALL PROVIDE TRENCH WITH FILL AND TAMPING SAME AS BELOW FOR CABLES BETWEEN SLEEVE UNDER PAVING AND SLEEVE TO PAD MTD. TRANSFORMER. TRENCH SHALL RUN PARALLEL TO PAVING.
- ELECTRICAL CONTRACTOR SHALL PROVIDE FROM NEW PRIMARY POLE TO SLEEVE UNDER PAVING A 52" DEEP TRENCH APPROX. 6" WIDE FOR INSTALLATION OF PRIMARY CABLES BY S.C. PUBLIC SERVICE AUTHORITY. AFTER INSTALLATION OF CABLES CONTRACTOR SHALL FILL AND TAMP TRENCH IN ACCORDANCE WITH POWER CO.'S. INSTRUCTIONS.
- 4" HEAVY WALL DIRECT BURIAL P.V.C. TYPE CONDUIT SLEEVE UNDER PAVING FOR PRIMARY CABLES. INSTALL MIN. OF 48" BELOW GRADE AND EXTEND BEYOND PAVING AS DIRECTED BY POWER CO. PRIMARY CABLES FURNISHED AND INSTALLED BY POWER CO.
- APPROX. LOCATION OF NEW PRIMARY POLE BY S.C. PUBLIC SERVICE AUTHORITY. ELECTRICAL CONTRACTOR SHALL INSTALL A 4" RIGID CONDUIT ON POLE UP APPROX. 25' AND OUT APPROX. 48" FROM POLE A MIN. OF 48" BELOW GRADE AND TERMINATE BOTH ENDS WITH BUSHINGS AS DIRECTED. VERIFY ON-JOB WITH POWER CO.
- 120/240 VOLT, 4 WIRE DELTA, 3Ø UNDERGROUND SECONDARY SERVICE BY ELECT. CONTRACTOR. SEE POWER RISER DIAGRAM.
- 3" CONDUIT FOR TELEPHONE FROM TELEPHONE CABINET #1. STUB UP POLE TO HEIGHT AS DIRECTED BY TELEPHONE COMPANY.
- 3" CONDUIT FOR TELEPHONE FROM TELEPHONE CABINET #2. STUB UP POLE TO HEIGHT AS DIRECTED BY TELEPHONE COMPANY.



CONCRETE PAD DETAIL FOR PAD MOUNTED TRANSFORMER

NO SCALE

NOTES:

- FINAL LOCATION OF CONCRETE PAD TO BE SPOTTED IN FIELD BY POWER COMPANY.
- CONCRETE SPECIFICATIONS: MIN. 28 DAY COMPRESSED STRENGTH - 3000 PSI MAX. SIZE AG- GREGATE - 1".
- EXACT INSTALLATION DETAILS SHALL BE VERIFIED WITH POWER CO. BEFORE INSTALLATION.
- ALL DIMENSIONS SHALL BE VERIFIED WITH POWER CO.

ELECTRICAL SYMBOLS

- CEILING OUTLET WITH INCANDESCENT FIXTURE.
- CEILING OUTLET WITH FLUORESCENT FIXTURE.
- WALL OUTLET WITH BRACKET FIXTURE.
- WALL OUTLET WITH DOUBLE FLOODLIGHT.
- DUPLEX RECEPTACLE, 18" UP
- WEATHERPROOF DUPLEX RECEPTACLE
- SINGLE POLE SWITCH, 50" UP TO CENTERLINE, AH&H NO. 1991 OR EQUAL, SUBSCRIPT DENOTES OUTLETS CONTROLLED.
- THREE WAY SWITCH, 50" UP TO CENTERLINE, AH&H NO. 1993 OR EQUAL.
- SINGLE POLE WEATHERPROOF KEYED SWITCH, 50" UP TO CENTERLINE, AH&H NO. 1181-WP OR EQUAL.
- SINGLE POLE WEATHERPROOF KEYED SWITCH WITH PILOT LIGHT, 50" UP TO CENTERLINE, AH&H NO. 1181-WP & NO. 7809 OR EQUALS, (SWITCH)
- BRANCH CIRCUIT RACEWAY RUN CONCEALED IN WALLS OR DECKING, CROSS-LINES DENOTE NUMBER OF #12 CONDUCTORS WHERE MORE THAN 2 REQUIRED, ARROWHEADS DENOTE HOMERUNS TO PANELBOARD, SUBSCRIPT DENOTES CIRCUIT NUMBER.
- BRANCH CIRCUIT RACEWAY RUN UNDERFLOOR, NOTATIONS SAME AS ABOVE.
- BRANCH CIRCUIT RACEWAY RUN EXPOSED, NOTATIONS SAME AS ABOVE.
- CEILING MOUNTED JUNCTION BOX WITH COVER PLATE.
- MOTOR DESIGNATION, SEE DESCRIPTION ON DRAWINGS.
- FLUSH MANUAL MOTOR STARTER WITH PILOT LIGHT, 5'-6" UP, GENERAL ELECTRIC NO. CR-101-H WITH PROPER SIZE HEATERS TO PROTECT FAN MOTOR AND NO. X7 PLATE & LIGHT.
- OUTLET BOX WITH THERMOSTAT, 5'-6" UP, HONEYWELL MODEL T451B 1024 LINE VOLTAGE THERMOSTAT, OR EQUAL, 56°- 94° RANGE.
- PANELBOARD.
- ELECTRIC WALL HEATER, CHROMALOX NO. RSF-W20 (2KW, 230 VOLT, 1Ø) WITH BUILT-IN DISCONNECT SWITCH AND THERMOSTAT AND SURFACE WALL BOX, INSTALL 18" UP TO BOTTOM.

REVISION	DATE	DESCRIPTION	BY
ELECTRICAL SITE PLAN & SYMBOLS			
SEWAGE TREATMENT FACILITIES MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design CONSULTING ENGINEERS COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DES DB	DWN ME	CHK RH	DATE 10/72 DWG 5

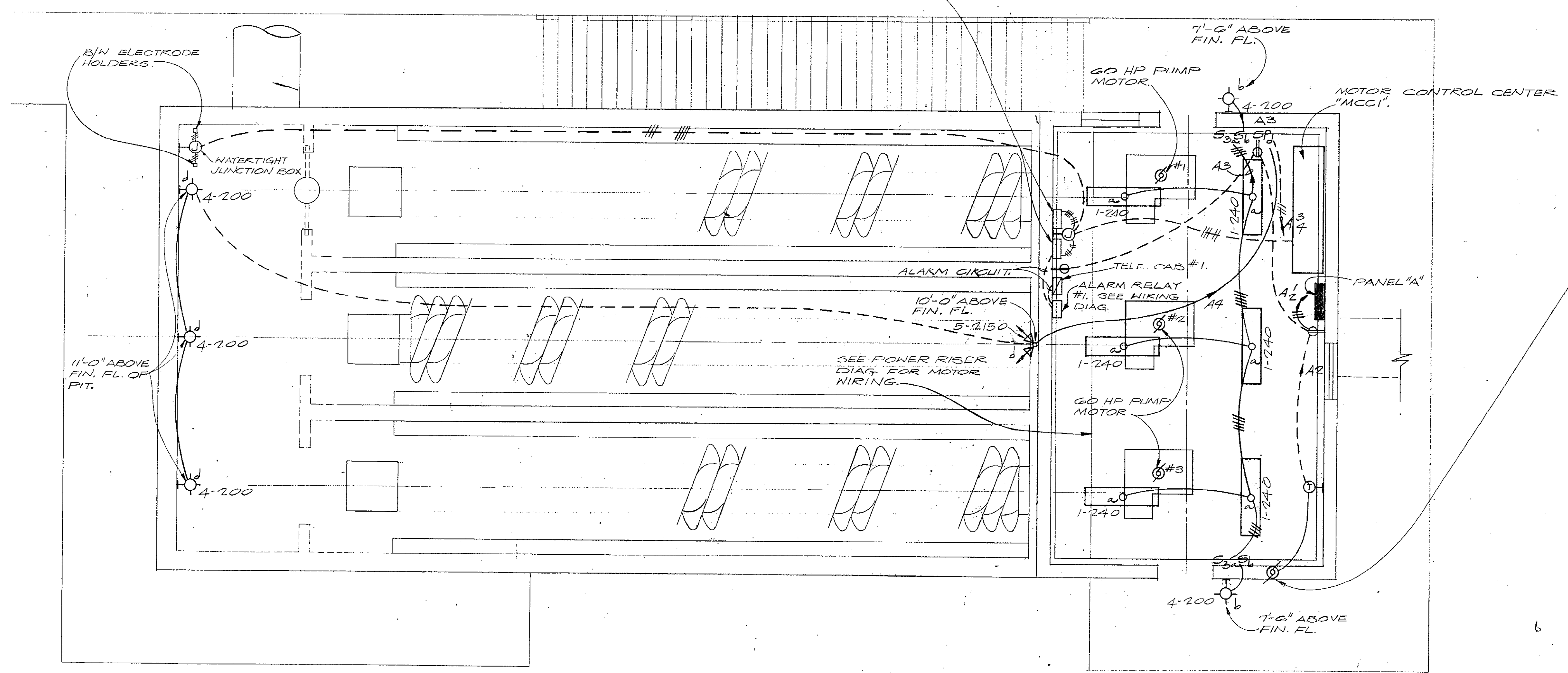
51-001-019/23

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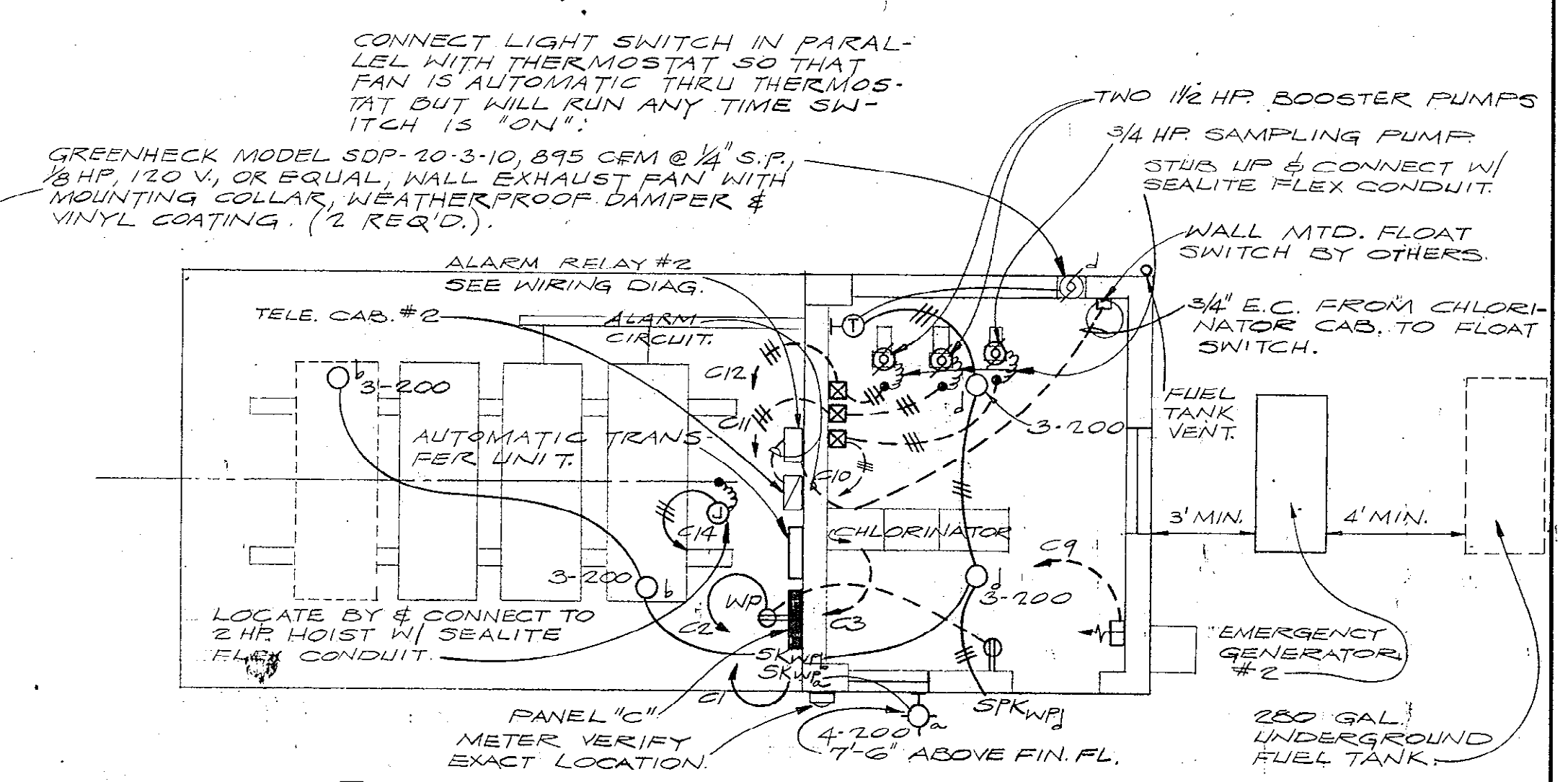
EMERGENCY GENERATOR #1.

NOTE: SEE PARTIAL PLAN LOWER RIGHT FOR FUEL TANK LOCATION & REQUIREMENTS.

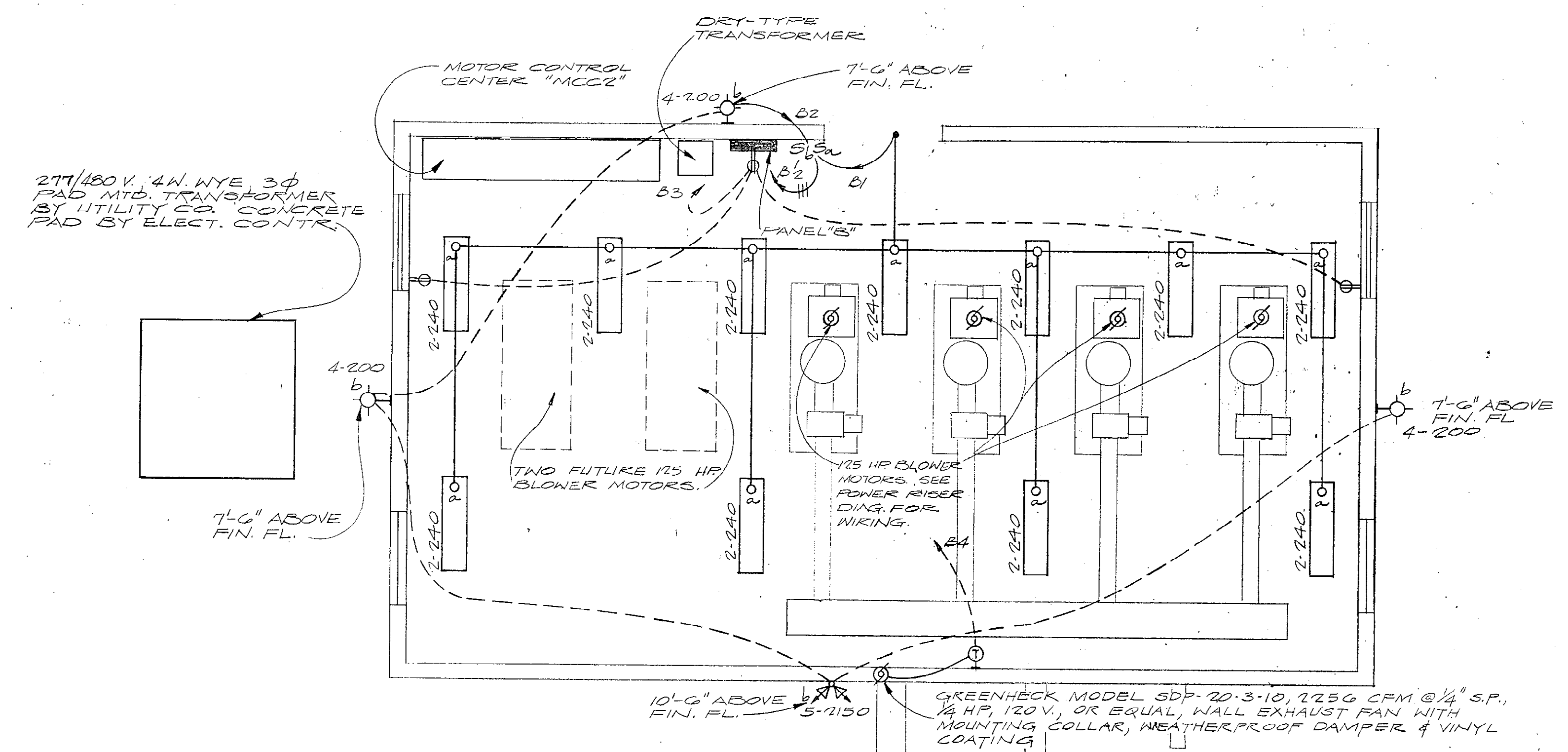
B/N TYPE 2LH RELAYS. SEE CONTROL WIRING DIAG.



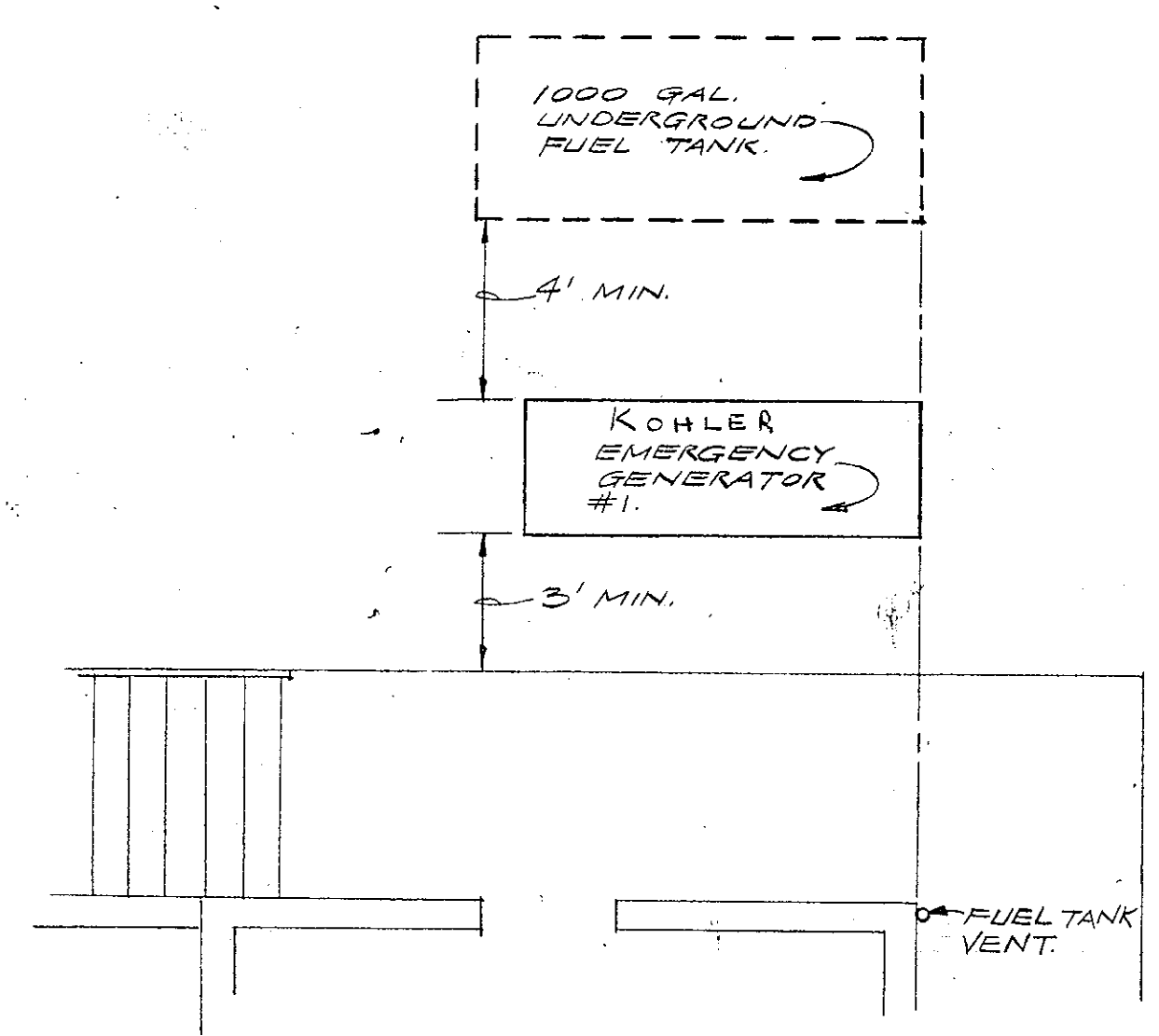
ELECTRICAL PLAN - SPIRALIFT PUMP STATION
SCALE 1/4" = 1'-0"



ELECTRICAL PLAN - CHLORINE HOUSE
SCALE 1/4" = 1'-0"

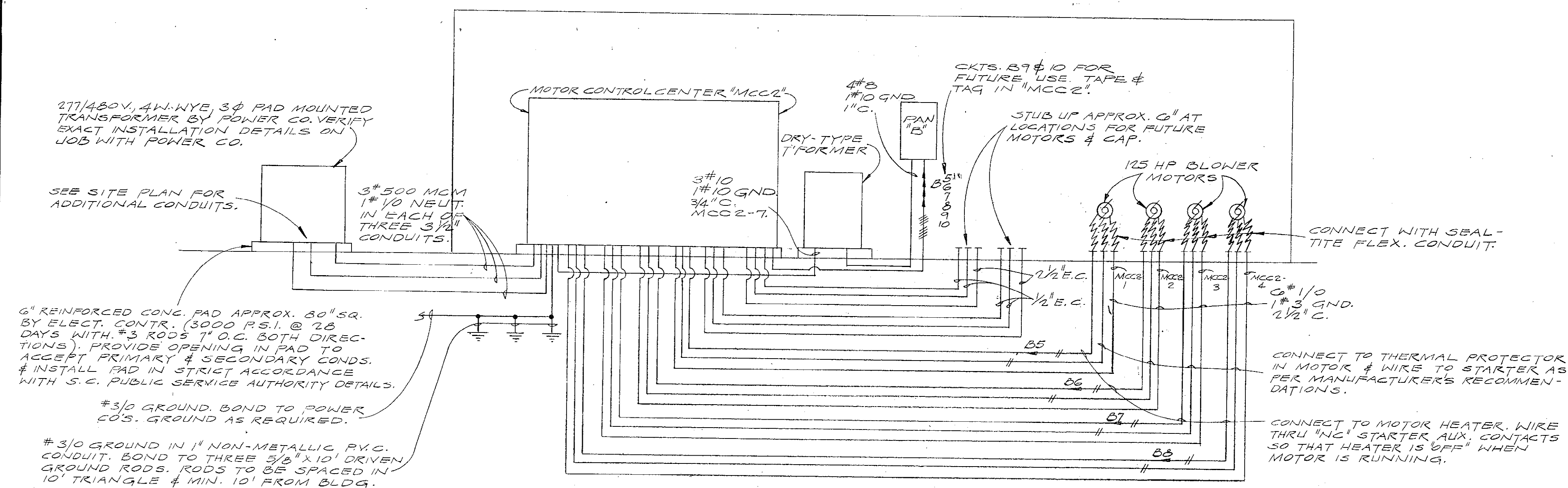
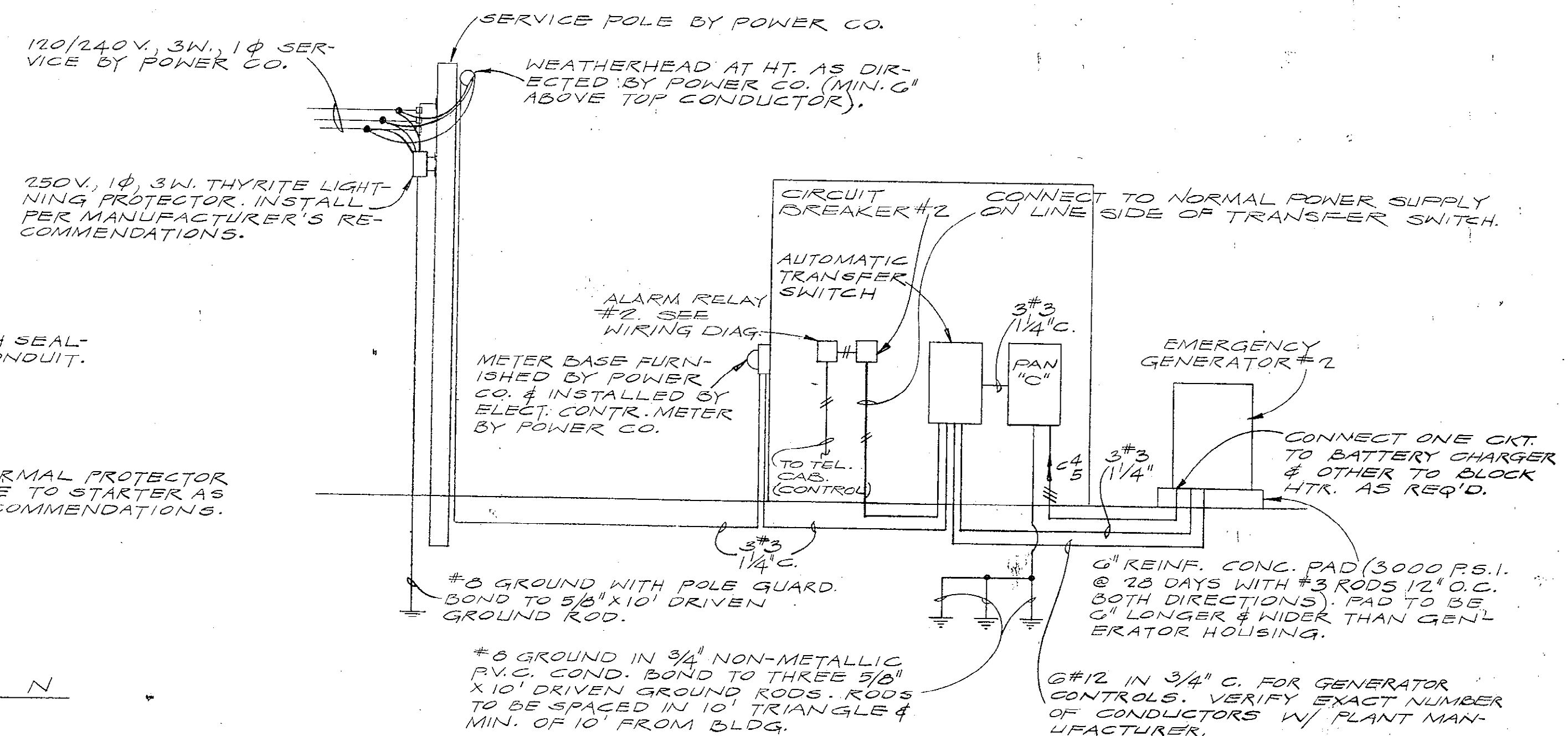
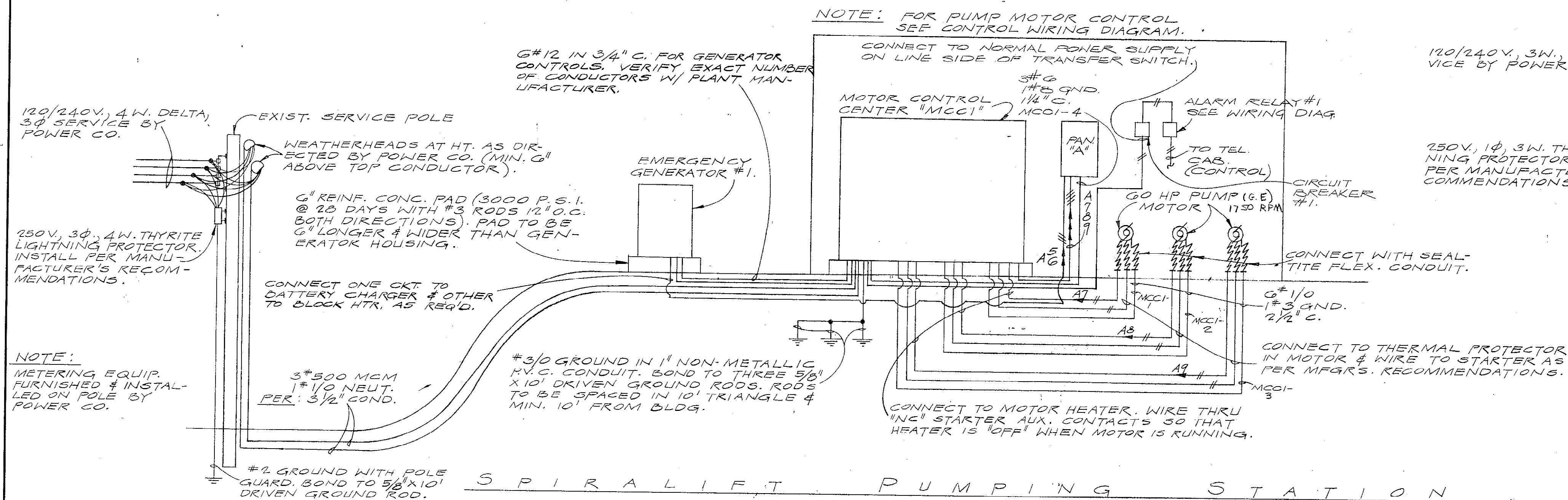


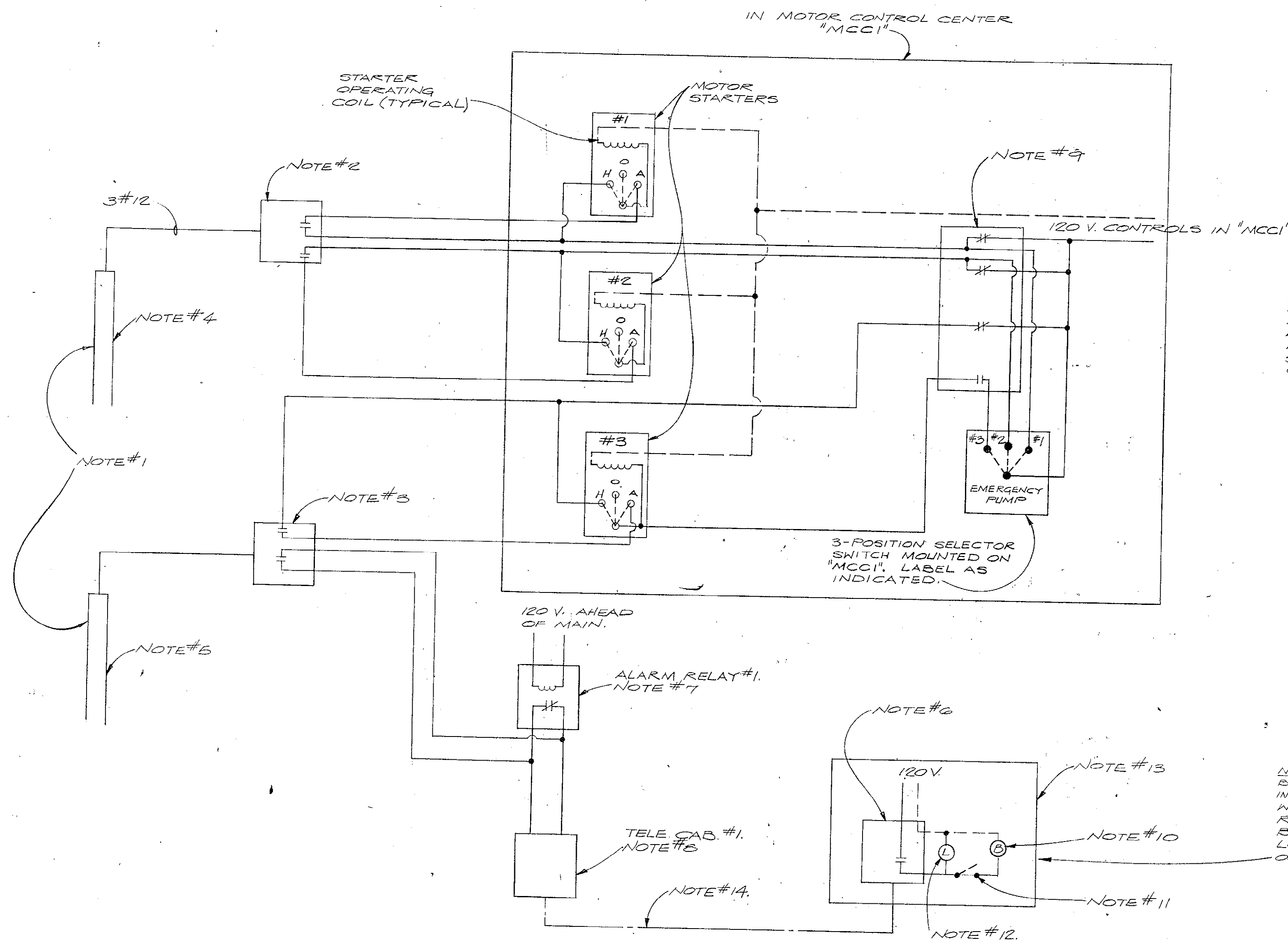
ELECTRICAL PLAN - BLOWER HOUSE
SCALE 1/4" = 1'-0"



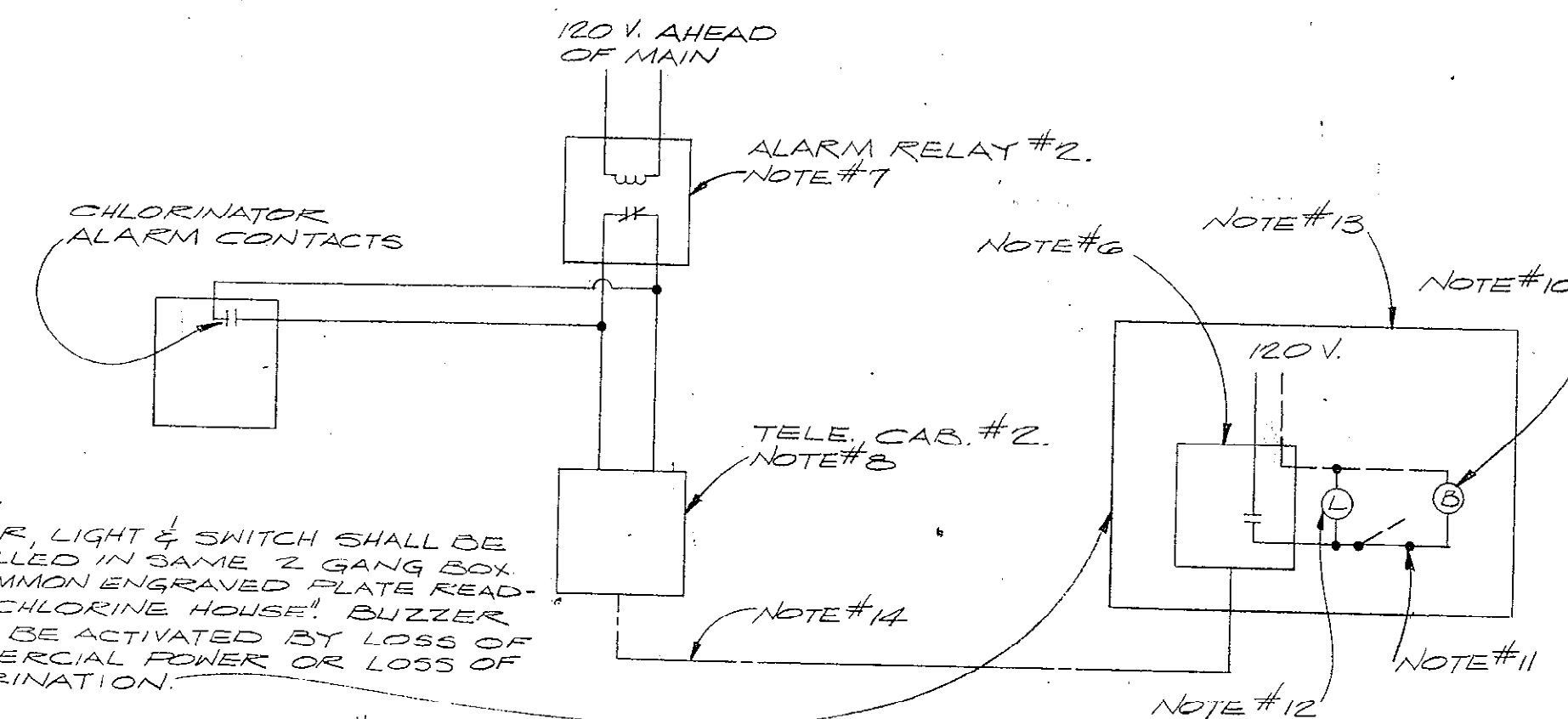
PARTIAL ELECTRICAL PLAN
SPIRALIFT PUMP STATION
SCALE 1/4" = 1'-0"

REVISION	DATE	DESCRIPTION	BY
1	7/79	RECORD DRAWING DATA	RM
ELECTRICAL FLOOR PLANS			
SEWAGE TREATMENT FACILITIES			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DES DB	DWN ME/DJ	CHK RH	DATE 10/72 DWG 5-2 OF 5





CONTROL & ALARM WIRING DIAGRAM
FOR SPIRALIFT PUMPING STATION
NO SCALE



ALARM WIRING DIAGRAM
FOR CHLORINE HOUSE
NO SCALE

EQUIPMENT SCHEDULE

PANEL "A":

SURFACE MOUNTED 120/240 VOLT, 3 WIRE, 1Ø TYPE "NLB" WITH 100 AMP BUSSES, "MLO" IN BOTTOM, AND:
12-20 AMP, 1P, 125 VOLT BREAKERS. A1 THRU A12 (3 SPARES).
6-20 AMP, 1P, 125 VOLT BREAKERS. SPACE ONLY.

PANEL "B":

SURFACE MOUNTED 120/208 VOLT, 4 WIRE WYE, 3Ø TYPE "NLB" WITH 100 AMP BUSSES, "MLO" IN BOTTOM, AND:
14-20 AMP, 1P, 125 VOLT BREAKERS. B1 THRU B14 (4 SPARES).
4-20 AMP, 1P, 125 VOLT BREAKERS. SPACE ONLY.

PANEL "C":

SURFACE MOUNTED 120/240 VOLT, 3 WIRE, 1Ø TYPE "NLB" WITH 100 AMP BUSSES, AND:
1-100 AMP, 2P, 250 VOLT MAIN BREAKER IN BOTTOM.
1-30 AMP, 2P, 250 VOLT BREAKER. C14.
1-20 AMP, 2P, 250 VOLT BREAKER. SPACE ONLY.
5-20 AMP, 2P, 250 VOLT BREAKERS. C9 THRU 13 (1 SPARE).
8-20 AMP, 1P, 125 VOLT BREAKERS. C1 THRU C8 (3 SPARES).
2-20 AMP, 1P, 125 VOLT BREAKERS. SPACE ONLY.

CIRCUIT BREAKERS #1 & #2:

20 AMP, 1P, WITH SOLID NEUTRAL, 125 VOLT TYPE "BA" BREAKER IN NEMA I ENCLOSURE.

DRY-TYPE TRANSFORMER:

15 KVA, 480 VOLT, 3Ø PRIMARY TO 120/208 VOLTS, 4 WIRE WYE, 3Ø SECONDARY WITH 2-2½% TAPS ABOVE AND BELOW NORMAL.

WIRING DIAGRAM NOTES:

- B/W ELECTRODE HOLDERS TYPE E-2 MADE OF #316 STAINLESS STEEL WITH TWO #316 STAINLESS STEEL TEFLOX INSULATED ELECTRODES OF PROPER LENGTH TO GIVE OPERATION AS DESCRIBED BELOW AND MAINTAIN HOLDER 18" ABOVE HIGHEST LEVEL. (TOTAL OF TWO HOLDERS REQUIRED EACH WITH TWO ELECTRODES). HOLDERS SHALL BE FITTED INTO STAINLESS STEEL ANGLE (OF LENGTH REQUIRED) HAVING TWO 2" HOLDS TO EXCEPT HOLDERS. ATTACH ANGLE SECURELY TO WALL WITH STAINLESS STEEL BOLTS. LOCK HOLDERS INTO ANGLE WITH STAINLESS STEEL LOCK NUTS. CONNECT TO HOLDERS FROM JUNCTION BOX WITH SEALTITE FLEXIBLE CONDUIT.
- B/W TYPE 2LH RELAY IN NEMA I ENCLOSURE (FOR CONTROL OF TWO PUMP MOTORS #1 AND/OR #2) AND FOR 120 VOLT OPERATION.
- B/W TYPE 2LH RELAY IN NEMA I ENCLOSURE (FOR CONTROL OF ONE PUMP MOTOR #3 AND ONE SIGNAL CIRCUIT) AND FOR 120 VOLT OPERATION.
- ELECTRODES TO ONE B/W 2LH RELAY SHALL BE SO INSTALLED TO ENERGIZE STARTERS FOR PUMP MOTORS #1 AND #2 36" ABOVE FINISH FLOOR OF PIT AND DE-ENERGIZE 18" ABOVE FINISH FLOOR.
- ELECTRODES TO OTHER B/W 2LH RELAY SHALL BE SO INSTALLED TO ENERGIZE STARTER FOR PUMP MOTOR #3 AND SEND ALARM SIGNAL 48" ABOVE FINISH FLOOR OF PIT AND DE-ENERGIZE 41" ABOVE FINISH FLOOR.
- B/W F-750 TELEPHONE RELAY IN NEMA I ENCLOSURE AND FOR 120 VOLT OPERATION (2 REQUIRED).
- GENERAL PURPOSE RELAY WITH "NC" CONTACTS RATED MINIMUM 18 MA AT 57 VOLTS D.C., IN NEMA I ENCLOSURE AND WITH 120 VOLT HOLDING COIL.
- 12" HIGH X 8" WIDE X 6" DEEP SURFACE CABINET WITH HINGED DOOR AND ½" PLYWOOD BACKBOARD (2 REQUIRED).
- AUX. CONTACTS IN AUTOMATIC TRANSFER UNIT SHOWN WITH UNIT IN NORMAL POSITION (COMMERCIAL POWER). WHEN UNIT IN EMERGENCY POSITION STARTERS #1 AND #2 SHALL BE DE-ENERGIZED.
- EDWARDS NO. 1063 BUZZER.
- BUZZER SILENCE SWITCH. AH&H NO. QST-9J-1.
- INDICATOR LIGHT. AH&H NO. T-1720.
- AT POLICE STATION AT LOCATION AS DIRECTED.
- LEASED TELEPHONE LINE (N.I.C.). SEPARATE AGREEMENT BETWEEN OWNER AND TELEPHONE CO.

REVISION	DATE	DESCRIPTION	BY
ELECTRICAL			
WIRING DIAGRAMS & EQUIPMENT			
SEWAGE TREATMENT FACILITIES			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DES DB	DWN DJ	CHK RH	DATE 10/72 DWG E-4 OF 5

51-001-022/23 430500

EQUIPMENT SCHEDULE

110 KW EMERGENCY GENERATOR #1

GENERAL: THE STANDBY ELECTRIC PLANT SHALL BE INSTALLED BY THE CONTRACTOR AT THE LOCATION SHOWN ON THE DRAWINGS, AND AS SPECIFIED HEREIN, COMPLETE WITH ALL NECESSARY ACCESSORIES.

ALL EQUIPMENT SHALL BE NEW AND OF CURRENT PRODUCTION OF A NATIONAL FIRM, WHO MANUFACTURES THE ALTERNATOR AND CONTROL PANEL AND ASSEMBLES THE STANDBY ELECTRIC PLANT AS A MATCHED UNIT, HAVING A SERVICE AND PARTS ORGANIZATION WITHIN A REASONABLE DISTANCE OF THIS PROJECT, BACKED UP BY A NATIONAL SALES AND SERVICE ORGANIZATION.

THE STANDBY ELECTRIC PLANT SHALL BE RATED 110 KW, 137.5 KVA, .8 P.F., 120/240 VOLTS, 3 PHASE, 4 WIRE DELTA, 831 AMPS, 60 HERTZ, A.C., AS KOHLER MODEL 110R0 SERIES, WITH A DIRECT INJECTION DIESEL FUEL SYSTEM. ONAN, MODEL 125DYD ACCEPTABLE EQUIVALENT.

ALTERNATOR: THE ALTERNATOR SHALL BE FOUR POLE, REVOLVING FIELD, 12 LEAD, RECONNECTABLE, OF DRIP PROOF CONSTRUCTION WITH AMORTISSEUR WINDINGS, INCLUDING SOLID STATE EXCITER AND TEMPERATURE COMPENSATED SOLID STATE VOLTAGE REGULATOR. MAGNETIC-AMPLIFIER VOLTAGE REGULATORS SHALL NOT BE CONSIDERED.

A RELAY SHALL BE PROVIDED TO AUTOMATICALLY FLASH THE FIELD ON EVERY START.

RADIO INTERFERENCE SUPPRESSION MEETING COMMERCIAL STANDARDS SHALL BE SUPPLIED. VOLTAGE REGULATION SHALL BE WITHIN PLUS OR MINUS 2 PERCENT OF RATED VOLTAGE, FROM NO LOAD TO FULL LOAD.

UPON APPLICATION OF FULL RATED CONTINUOUS LOAD IN ONE STEP, RECOVERY TO STABLE VOLTAGE SHALL OCCUR WITHIN ONE (1) SECOND. STABLE OR STEADY STATE OPERATION IS DEFINED AS OPERATION WITH TERMINAL VOLTAGE REMAINING CONSTANT WITHIN PLUS OR MINUS 1 OF ONE (1) PERCENT OF RATED VOLTAGE. VOLTAGE ADJUSTMENT RANGE SHALL BE WITHIN PLUS OR MINUS 5 PERCENT OF RATED VOLTAGE. TEMPERATURE RISE SHALL BE WITHIN NEMA, IEEE, AND ANSI STANDARDS FOR CONTINUOUS DUTY TEMPERATURE RISE LIMITS AT ALL OUTPUT RATINGS.

THE ALTERNATOR, HAVING A SINGLE, MAINTENANCE FREE BEARING, SHALL BE DIRECTLY CONNECTED TO THE FLYWHEEL HOUSING, WITH THE ROTOR CONNECTED TO THE FLYWHEEL BY AN ELASTOMERIC COUPLING.

CONTROLLER AND INSTRUMENT PANEL: PLANT MOUNTED CONTROLLER SHALL BE VIBRATION ISOLATED ON THE ALTERNATOR FRAME. IT SHALL INCLUDE THE FOLLOWING FACTORY INSTALLED, WIRED AND TESTED BY THE MANUFACTURER:

COMPLETE STANDBY 2 WIRE START/STOP CONTROL WHICH SHALL OPERATE ON ACTIVATION OF A REMOTE CONTACT.

OVERCRANKING PROTECTION DESIGNED TO OPEN THE CRANKING CIRCUIT IF ENGINE DOES NOT START AFTER 30-90 SECONDS, WITH CRANKING RESET BUTTON.

2 MINUTE TIME DELAY TO PERMIT UNLOADED RUNNING OF THE STANDBY PLANT AFTER TRANSFER OF LOAD TO NORMAL.

EMERGENCY SHUTDOWN SWITCH FOR IMMEDIATE STOPPING.

LINE SENSING FIELD CIRCUIT BREAKER WHICH DE-ENERGIZES ALTERNATOR WHEN ANY LINE IS OVERLOADED.

DIRECT READING, POINTER TYPE, FREQUENCY METER.

PANEL LIGHT - ALARM CIRCUIT.

VOLTMETER AND AMMETER WITH SELECTOR SWITCHES AND CURRENT TRANSFORMERS.

INDICATING LIGHTS, (INDIVIDUAL) TO SHOW CONDITIONS OF HIGH WATER TEMPERATURE, LOW OIL PRESSURE, OVERSPEED AND OVERCRANK, WITH ALARM TERMINALS AND MANUAL RESET SWITCHES.

CONTROLLER MOUNTED ENGINE INSTRUMENTS SHALL INCLUDE: SOLID STATE CRANKING CYCLER WITH INDIVIDUALLY ADJUSTABLE "ON" AND "OFF" CRANKING PERIODS, 2 TO 20 SECONDS; RUNNING TIME METER; BATTERY CHARGING AMMETER; OIL PRESSURE GAUGE; WATER TEMPERATURE GAUGE; AND ENGINE TEST SWITCH TO PERMIT OPERATING ENGINE WITHOUT INTERRUPTING THE NORMAL POWER SUPPLY.

ENGINE: THE NATURALLY ASPIRATED ENGINE SHALL BE DIESEL FUELED, 6 CYLINDER, 4 CYCLE, LIQUID COOLED, WITH NOT LESS THAN 743 CUBIC INCH DISPLACEMENT AND DELIVER A MINIMUM OF 182 H.P., AT A GOVERNED SPEED OF 1800 RPM.

THE ENGINE SHALL BE FURNISHED WITH AN INTEGRALLY MOUNTED RADIATOR COOLING SYSTEM HAVING SUFFICIENT CAPACITY FOR COOLING THE ENGINE WHEN THE PLANT IS DELIVERING FULL RATED LOAD IN AN AMBIENT TEMPERATURE UP TO 110 DEGREES F. THE SYSTEM SHALL INCLUDE A WATER CIRCULATING PUMP, RADIATOR DUCT ADAPTOR, FAN GUARD, BLOWER TYPE FAN, AND BYPASS TYPE THERMOSTAT (10 KW AND LARGER) TO ASSIST IN FAST WARM-UP AND MAINTAINING EVEN JACKET TEMPERATURES.

ENGINE SPEED SHALL BE GOVERNED BY A GEAR DRIVEN HYDRAULIC GOVERNOR TO MAINTAIN ALTERNATOR FREQUENCY WITHIN 3 CYCLES FROM NO LOAD TO FULL LOAD ALTERNATOR OUTPUT. BELT DRIVEN GOVERNORS WILL NOT BE CONSIDERED.

STARTING SHALL BE ACCOMPLISHED BY A 24 VOLT, POSITIVE ENGAGEMENT, SOLENOID SHIFT STARTING MOTOR. THE STARTING SYSTEM SHALL BE DESIGNED FOR RESTARTING IN THE EVENT OF A FALSE ENGINE START, BY PERMITTING THE ENGINE TO COMPLETELY STOP AND THEN RE-ENGAGE THE STARTER. WHERE THE BATTERY CHARGING ALTERNATOR VOLTAGE IS USED TO DISCONNECT CRANKING, A SECONDARY MEANS OF OPENING THE STARTER CIRCUIT MUST BE PROVIDED IN THE EVENT OF FAN BELT BREAKAGE.

ENGINE SHALL BE EQUIPPED WITH THE FOLLOWING:

LUBE OIL FILTER - OIL BATH AIR CLEANER - OVERSPEED CUTOFF - RADIO SUPPRESSION.

HIGH WATER TEMPERATURE AND LOW OIL PRESSURE CUTOFFS.

ENGINE BLOCK HEATER WITH THERMOSTAT, 120 VOLT.

CRITICAL SILENCER.

ELECTRIC SOLENOID FUEL SHUT-OFF VALVE.

GAS PROOF SEAMLESS, STAINLESS STEEL, FLEXIBLE EXHAUST CONNECTION.

FLEXIBLE FUEL CONNECTION - OIL DRAIN EXTENSION - LUBRICATING OIL COOLER.

PERMANENT TYPE ANTI-FREEZE.

PLANT MOUNTING: THE STANDBY PLANT SHALL BE EQUIPPED WITH FACTORY INSTALLED VIBRATION ISOLATORS MOUNTED BETWEEN THE PLANT AND FABRICATED STEEL SKID BASE TO PREVENT DISTORTION OF ALIGNMENT BETWEEN ALTERNATOR AND ENGINE WHEN INSTALLED. MOUNT ON I-BEAMS OR CONCRETE PEDESTALS AS SHOWN ON PLANS AND DRAWINGS.

ACCESSORIES: FOUR 6 VOLT, 160 AMPERE HOUR BATTERIES, BATTERY RACK AND BATTERY CABLES. KOHLER 10 AMPERE AUTOMATIC FLOAT BATTERY CHARGER MODEL A284624 WITH THE FOLLOWING FEATURES: CONSTANT VOLTAGE REGULATION; CURRENT LIMITING; TEMPERATURE COMPENSATED; VOLTMETER AND AMMETER; EQUALIZER TIMER (0-12 HOURS); FOR CONDUIT INSTALLATION.

INFORMATION REQUIRED FOR SPECIFIED STANDBY SYSTEMS:

CERTIFIED FINAL FACTORY TEST REPORT SHALL BE PROVIDED TO THE ENGINEER, CERTIFYING THIS UNITS FULL POWER RATING, STABILITY, VOLTAGE AND FREQUENCY REGULATION.

DETAILED SPECIFICATION SHEETS.

COMPLETE OPERATING INSTRUCTION AND MAINTENANCE MANUAL WITH PARTS LIST.

A FACTORY TRAINED REPRESENTATIVE SHALL CONSULT WITH THE CONTRACTOR DURING INSTALLATION AND START-UP. HE SHALL FULLY INSTRUCT THE OWNER'S PERSONNEL AS TO CORRECT OPERATING AND TESTING PROCEDURES.

WEATHER PROTECTIVE HOUSING:

THE COMPLETE ELECTRIC PLANT SHALL BE ENCLOSED IN A WEATHER PROTECTIVE SHEET METAL HOUSING WITH REMOVABLE SIDE PANELS AND HINGED DOOR FOR EASY ACCESS TO THE ELECTRIC PLANT CONTROLLER. THE HOUSING SHALL PROVIDE ADEQUATE COOLING AND COMBUSTION AIR TO ALLOW THE UNIT TO OPERATE WITH THE DOOR CLOSED AND ALL PANELS ASSEMBLED. HOUSING SHALL BE FINISHED IN MANUFACTURER'S STANDARD COLOR OF EPOXY BAKED ENAMEL.

VERIFICATION:

MANUFACTURER SHALL VERIFY SIZE OF EMERGENCY GENERATOR SPECIFIED WITH RESPECT TO MOTOR STARTING REQUIREMENTS AND SHALL PROVIDE IN WRITING SUBSTANTIAL INFORMATION INDICATING UNIT IS OF SUFFICIENT SIZE. UNIT SPECIFIED IS THE MINIMUM ACCEPTABLE, BUT IF NECESSARY DUE TO MOTOR STARTING, UNIT MAY BE INCREASED IN SIZE UPON APPROVAL FROM THE ENGINEER.

FUEL SYSTEM:

FUEL TANK SHALL HAVE A CAPACITY OF 1000 GALLONS AND BE CONSTRUCTED OF 7 GAUGE STEEL. TANK SHALL BE FINISHED WITH TWO COATS OF RED LEAD AND ONE COAT OF ASPHALTUM AND BE UNDERWRITER'S LABELED FOR UNDERGROUND INSTALLATION. TANK SHALL BE INSTALLED WITH TOP MINIMUM OF 24" BELOW GRADE AND WITH 6" REINFORCED CONCRETE SLAB (#3 RODS IN 12" O.C. BOTH DIRECTIONS) BELOW TANK. SLAB SHALL EXTEND MINIMUM OF 6" BEYOND TANK ON ALL SIDES AND BE COMPLETE WITH THREE CONCRETE SADDLES TO SEAT TANK. PROVIDE THREE 2" X 1/2" FLAT STEEL BENDS BENT TO CONTOUR OF TANK AND LOOPED OVER TANK AT EACH END AND IN CENTER. ATTACH BANDS TO TURNBUCKLES SECURED TO ANCHOR RODS THRU SADDLES AND EMBEDDED IN SLAB. COAT ROADS AND STRAPS WITH HEAVY LAYER OF ASPHALTUM MASTIC. PROVIDE NECESSARY FUEL LINES OF SIZE RECOMMENDED BY GENERATOR MANUFACTURER. LINES SHALL BE TYPE "L" COPPER AND SLEEVED WHERE INSTALLED IN MASONRY OR CONCRETE.

VENT, WATER DRAW-OFF AND FILL LINES SHALL BE PROVIDED AND BE SCHEDULE, 80 YOLOU. SEPARATE TAPPINGS IN TANK FOR 3" FILL LINE, 2" VENT LINE, 1" WATER DRAW-OFF, SUCTION AND RETURN LINES SIZED AS REQUIRED SHALL BE PROVIDED IN TANK. TANK FILL CAP SHALL BE FLAGG NO. S-700 OR OPW NO. 122 (3") FLUSH FILL BOX WITH DRAIN HOLE AND RAISED LETTERS "DIESEL FUEL". INSTALL FILL CAP IN 18" SQUARE X 8" DEEP CONCRETE SLAB ABOVE TANK AS REQUIRED AND DIRECTED. TANK BUSHINGS SHALL BE FLAGG NO. S-804 FOR EACH LINE. VENT CAP SHALL BE 2" TYPE INSTALLED 12" BELOW BUILDING ROOF EAVE. FOOT VALVE SHALL BE OPW NO. 92, 1/2" ALL BRONZE.

COMPLETE INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH NFPA STANDARD NO. 31 AND WITH ALL LOCAL, STATE AND NATIONAL CODES AND MANUFACTURER'S RECOMMENDATIONS.

A GAUGE STICK CALIBRATED WITH TANK SHALL BE FURNISHED. TANK SHALL BE FILLED WITH 250 GALLONS OF #1 DIESEL OIL FOR RUN-IN AND TESTING.

SUBMIT COMPLETE AND DETAILED SHOP DRAWINGS OF INSTALLATION BEFORE PROCEEDING WITH WORK.

12.5 KW EMERGENCY GENERATOR #2

GENERAL: THE STANDBY ELECTRIC PLANT SHALL BE INSTALLED BY THE CONTRACTOR AT THE LOCATION SHOWN ON THE DRAWINGS, AND AS SPECIFIED HEREIN, COMPLETE WITH ALL ACCESSORIES AND TRANSFER SWITCH.

ALL EQUIPMENT SHALL BE NEW AND OF CURRENT PRODUCTION OF A NATIONAL FIRM, WHO MANUFACTURES THE ALTERNATOR AND CONTROL PANEL AND ASSEMBLES THE STANDBY ELECTRIC PLANT AS A MATCHED UNIT, HAVING A SERVICE AND PARTS ORGANIZATION WITHIN A REASONABLE DISTANCE OF THIS PROJECT, BACKED UP BY A NATIONAL SALES AND SERVICE ORGANIZATION.

THE STANDBY ELECTRIC PLANT SHALL BE RATED 12.5 KW, 12.5 KVA, UNITY P.F., 120/240 VOLTS, 1 PHASE, 3 WIRE, 52 AMPS, 60 HERTZ, A.C., AS KOHLER MODEL 12-5R0CP SERIES, WITH A DIRECT INJECTION DIESEL FUEL SYSTEM. ONAN MODEL 15-0R0JC ACCEPTABLE EQUIVALENT.

ALTERNATOR: THE ALTERNATOR SHALL BE FOUR POLE, ROTATING ARMATURE, OF DRIP PROOF CONSTRUCTION, WITH BUILT-IN EXCITER. IT SHALL BE SELF-VENTILATED, WITH CONSTANT TENSION BRUSH SPRINGS.

RADIO INTERFERENCE SUPPRESSION MEETING COMMERCIAL STANDARDS SHALL BE SUPPLIED. VOLTAGE REGULATION SHALL BE WITHIN PLUS OR MINUS 5 PERCENT OF RATED VOLTAGE, FROM NO LOAD TO FULL LOAD.

TEMPERATURE RISE SHALL BE WITHIN NEMA, IEEE, AND ANSI STANDARDS FOR CONTINUOUS DUTY TEMPERATURE RISE LIMITS AT ALL OUTPUT RATINGS.

THE ALTERNATOR, HAVING A SINGLE, MAINTENANCE FREE, BEARING, SHALL BE DIRECTLY CONNECTED TO THE ENGINE.

CONTROLLER AND INSTRUMENT PANEL: PLANT MOUNTED CONTROLLER SHALL BE VIBRATION ISOLATED ON THE ALTERNATOR FRAME. IT SHALL INCLUDE THE FOLLOWING, FACTORY INSTALLED, WIRED AND TESTED BY THE MANUFACTURER:

COMPLETE STANDBY 2 WIRE START/STOP CONTROL WHICH SHALL OPERATE ON ACTIVATION OF A REMOTE CONTACT.

OVERCRANKING PROTECTION DESIGNED TO OPEN THE CRANKING CIRCUIT IF ENGINE DOES NOT START AFTER 30-90 SECONDS, WITH CRANKING RESET BUTTON.

2 MINUTE TIME DELAY TO PERMIT UNLOADED RUNNING OF THE STANDBY PLANT AFTER TRANSFER OF LOAD TO NORMAL.

EMERGENCY SHUTDOWN SWITCH FOR IMMEDIATE STOPPING.

DIRECT READING, POINTER TYPE, FREQUENCY METER.

LINE CIRCUIT BREAKER - PANEL LIGHT - ALARM CIRCUIT - DUPLEX RECEPTACLE.

VOLTMETER AND AMMETER WITH SELECTOR SWITCHES AND CURRENT TRANSFORMERS.

INDICATING LIGHTS, (INDIVIDUAL) TO SHOW CONDITIONS OF HIGH WATER TEMPERATURE, LOW OIL PRESSURE, OVERSPEED AND OVERCRANK, WITH ALARM TERMINALS AND MANUAL RESET SWITCHES.

CONTROLLER MOUNTED ENGINE FEATURES SHALL INCLUDE: SOLID STATE CRANKING CYCLER WITH INDIVIDUALLY ADJUSTABLE "ON" AND "OFF" CRANKING PERIODS, 2 TO 20 SECONDS; RUNNING TIME METER; BATTERY CHARGING AMMETER; ENGINE TEST SWITCH TO PERMIT OPERATING ENGINE WITHOUT INTERRUPTING THE NORMAL POWER SUPPLY; OIL PRESSURE GAUGE; AND WATER TEMPERATURE GAUGE.

ENGINE: THE NATURALLY ASPIRATED ENGINE SHALL BE DIESEL FUELED, 4 CYLINDER, 4 CYCLE, LIQUID COOLED, WITH NOT LESS THAN 107.4 CUBIC INCH DISPLACEMENT AND DELIVER A MINIMUM OF 27 H.P., AT A GOVERNED SPEED OF 1800 RPM.

THE ENGINE SHALL BE FURNISHED WITH AN INTEGRALLY MOUNTED RADIATOR COOLING SYSTEM HAVING SUFFICIENT CAPACITY FOR COOLING THE ENGINE WHEN THE PLANT IS DELIVERING FULL RATED LOAD IN AN AMBIENT TEMPERATURE UP TO 110 DEGREES F. THE SYSTEM SHALL INCLUDE A WATER CIRCULATING PUMP, RADIATOR DUCT ADAPTOR, FAN GUARD, BLOWER TYPE FAN, AND BYPASS TYPE THERMOSTAT (10 KW AND LARGER) TO ASSIST IN FAST WARM-UP AND MAINTAINING EVEN JACKET TEMPERATURES.

ENGINE SPEED SHALL BE GOVERNED BY A GEAR DRIVEN CENTRIFUGAL GOVERNOR TO MAINTAIN ALTERNATOR FREQUENCY WITHIN 3 CYCLES FROM NO LOAD TO FULL LOAD ALTERNATOR OUTPUT. BELT DRIVEN GOVERNORS WILL NOT BE CONSIDERED.

STARTING SHALL BE ACCOMPLISHED BY A 12 VOLT, POSITIVE ENGAGEMENT, SOLENOID SHIFT STARTING MOTOR.

ENGINE SHALL BE EQUIPPED WITH THE FOLLOWING:

LUBE OIL FILTER - OIL BATH AIR CLEANER - OVERSPEED CUTOFF - RADIO SUPPRESSION.

ENGINE BLOCK HEATER WITH THERMOSTAT, 120 VOLT.

CRITICAL SILENCER.

ELECTRIC SOLENOID FUEL SHUT-OFF VALVE.

GAS PROOF SEAMLESS, STAINLESS STEEL, FLEXIBLE EXHAUST CONNECTION.

FLEXIBLE FUEL CONNECTION.

HIGH WATER TEMPERATURE AND LOW OIL PRESSURE CUTOFFS.

PERMANENT TYPE ANTI-FREEZE.

PLANT MOUNTING: THE STANDBY PLANT SHALL BE EQUIPPED WITH FACTORY INSTALLED VIBRATION ISOLATORS MOUNTED BETWEEN THE PLANT AND FABRICATED STEEL SKID BASE TO PREVENT DISTORTION OF ALIGNMENT BETWEEN ALTERNATOR AND ENGINE WHEN INSTALLED. MOUNT ON I-BEAMS OR CONCRETE PEDESTALS AS SHOWN ON PLANS AND DRAWINGS.

ACCESSORIES: TWO 6 VOLT, 120 AMPERE HOUR BATTERIES AND BATTERY CABLES. KOHLER 15 AMPERE AUTOMATIC FLOAT BATTERY CHARGER MODEL A284623 WITH THE FOLLOWING FEATURES: CONSTANT VOLTAGE REGULATION; CURRENT LIMITING; TEMPERATURE COMPENSATED; VOLTMETER AND AMMETER; EQUALIZER TIMER (0-12 HOURS); FOR CONDUIT INSTALLATION.

INFORMATION REQUIRED FOR SPECIFIED STANDBY SYSTEMS:

CERTIFIED FINAL FACTORY TEST REPORT SHALL BE PROVIDED TO THE ENGINEER, CERTIFYING THIS UNITS FULL POWER RATING, STABILITY, VOLTAGE AND FREQUENCY REGULATION.

DETAILED SPECIFICATION SHEETS.

COMPLETE OPERATING INSTRUCTION AND MAINTENANCE MANUAL WITH PARTS LIST.

A FACTORY TRAINED REPRESENTATIVE SHALL CONSULT WITH THE CONTRACTOR DURING INSTALLATION AND START-UP. HE SHALL FULLY INSTRUCT THE OWNER'S PERSONNEL AS TO CORRECT OPERATING AND TESTING PROCEDURES.

WEATHER PROTECTIVE HOUSING:

THE COMPLETE ELECTRIC PLANT SHALL BE ENCLOSED IN A WEATHER PROTECTIVE SHEET METAL HOUSING WITH REMOVABLE SIDE PANELS AND HINGED DOOR FOR EASY ACCESS TO THE ELECTRIC PLANT CONTROLLER. THE HOUSING SHALL PROVIDE ADEQUATE COOLING AND COMBUSTION AIR TO ALLOW THE UNIT TO OPERATE WITH THE DOOR CLOSED AND ALL PANELS ASSEMBLED. HOUSING SHALL BE FINISHED IN MANUFACTURER'S STANDARD COLOR OF EPOXY BAKED ENAMEL.

AUTOMATIC TRANSFER SWITCH:

THE LOAD TRANSFER CONTROL SHALL BE RATED FOR CONTINUOUS DUTY AND FOR ALL CLASSES OF LOAD. THE TRANSFER SWITCH SHALL BE WESTINGHOUSE TYPE ATS, 100 AMPERE, 2 POLE, 250 VOLTS IN NEMA 3R ENCLOSURE. THE CONTROL COMPONENTS SHALL BE COMPATIBLE WITH THE ELECTRICAL REQUIREMENTS OF THE STANDBY SET AND PROVIDE THE FOLLOWING FUNCTIONS:

1. UPON POWER LINE OUTAGE, AUTOMATICALLY START THE GENERATING SET AND WHEN THE SET COMES UP TO SPEED AND VOLTAGE DISCONNECT THE LOAD CIRCUITS FROM THE POWER LINE AND TRANSFER THEM TO THE STANDBY SET'S OUTPUT.

2. UPON POWER LINE RETURN, TRANSFER THE LOAD BACK TO THE LINE AND STOP THE STANDBY SET.

SWITCH SHALL HAVE THE FOLLOWING FEATURES IN ADDITION TO THE STANDARD ITEMS:

1. TIME DELAY ON TRANSFER FROM NORMAL TO EMERGENCY.

2. TIME DELAY ON ENGINE STARTING.

3. FOUR-POSITION SELECTOR SWITCH "OFF", "TEST", "AUTO" AND "START".

4. PILOT LIGHTS TO INDICATE BREAKER POSITIONS.

5. PLANT EXERCISER TO AUTOMATICALLY START GENERATOR AT PRESELECTED INTERVALS WITHOUT INTERRUPTING NORMAL SUPPLY. UNIT SHALL BE IN NEMA 3R ENCLOSURE.

VERIFICATION:

MANUFACTURER SHALL VERIFY SIZE OF EMERGENCY GENERATOR SPECIFIED WITH RESPECT TO MOTOR STARTING REQUIREMENTS AND SHALL PROVIDE IN WRITING SUBSTANTIAL INFORMATION INDICATING UNIT IS OF SUFFICIENT SIZE. UNIT SPECIFIED IS THE MINIMUM ACCEPTABLE, BUT IF NECESSARY DUE TO MOTOR STARTING, UNIT MAY BE INCREASED IN SIZE UPON APPROVAL FROM ENGINEER.

FUEL SYSTEM:

FUEL TANK SHALL HAVE A CAPACITY OF 280 GALLONS AND BE CONSTRUCTED OF 7 GAUGE STEEL. TANK SHALL BE FINISHED WITH TWO COATS OF RED LEAD AND ONE COAT OF ASPHALTUM AND BE UNDERWRITER'S LABELED FOR UNDERGROUND INSTALLATION. TANK SHALL BE INSTALLED WITH TOP MINIMUM OF 24" BELOW GRADE AND WITH 6" REINFORCED CONCRETE SLAB (#3 RODS AT 12" O.C. BOTH DIRECTIONS) BELOW TANK. SLAB SHALL EXTEND MINIMUM OF 6" BEYOND TANK ON ALL SIDES AND BE COMPLETE WITH THREE CONCRETE SADDLES TO SEAT TANK. PROVIDE THREE 2" X 1/2" FLAT STEEL BANDS BENT TO CONTOUR OF TANK AND LOOPED OVER TANK AT EACH END AND IN CENTER. ATTACH BANDS TO TURNBUCKLES SECURED TO ANCHOR RODS THRU SADDLES AND EMBEDDED IN SLAB. COAT RODS AND STRAPS WITH HEAVY LAYER OF ASPHALT MASTIC. PROVIDE NECESSARY FUEL LINES OF SIZE RECOMMENDED BY GENERATOR MANUFACTURER. LINES SHALL BE TYPE "L" COPPER AND SLEEVED WHERE INSTALLED IN MASONRY OR CONCRETE.

VENT, WATER DRAW-OFF AND FILL LINES SHALL BE PROVIDED AND BE SCHEDULE, 80 YOLOU. SEPARATE TAPPINGS IN TANK FOR 3" FILL LINE, 2" VENT LINE, 1" WATER DRAW-OFF, SUCTION AND RETURN LINES SIZED AS REQUIRED SHALL BE PROVIDED IN TANK. TANK FILL CAP SHALL BE FLAGG NO. S-700 OR OPW NO. 122 (3") FLUSH FILL BOX WITH DRAIN HOLE AND RAISED LETTERS "DIESEL FUEL". INSTALL FILL CAP IN 18" SQUARE X 8" DEEP CONCRETE SLAB ABOVE TANK AS REQUIRED AND DIRECTED. TANK BUSHINGS SHALL BE FLAGG NO. S-804 FOR EACH LINE. VENT CAP SHALL BE 2" TYPE INSTALLED 12" BELOW BUILDING ROOF EAVE. FOOT VALVE SHALL BE OPW NO. 92, 1/2" ALL BRONZE.

A GAUGE STICK CALIBRATED WITH TANK SHALL BE FURNISHED. TANK SHALL BE FILLED WITH 50 GALLONS OF #1 DIESEL OIL FOR RUN-IN AND TESTING.

COMPLETE INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH NFPA STANDARD NO. 31 AND WITH ALL LOCAL, STATE AND NATIONAL CODES AND MANUFACTURER'S RECOMMENDATIONS. SUBMIT COMPLETE AND DETAILED SHOP DRAWINGS OF INSTALLATION BEFORE PROCEEDING WITH WORK.

MOTOR CONTROL CENTER "MCCI":

UNIT SHALL BE FOR 250 VOLT OPERATION AND HAVE 600 AMP HORIZONTAL BUSSES, MINIMUM 300 AMP VERTICAL BUSSES AND BE APPROX. 20" IN DEPTH AND MAXIMUM OF 96" IN WIDTH.

UNIT SHALL CONTAIN AN AUTOMATIC TRANSFER SWITCH TO OPERATE IN CONJUNCTION WITH AND BE COMPATIBLE TO THE 110 KW EMERGENCY GENERATOR AS SPECIFIED, AND UPON POWER LINE OUTAGE, AUTOMATICALLY START THE GENERATOR AND WHEN SET COMES UP TO SPEED AND VOLTAGE, DISCONNECT THE LOAD CIRCUITS FROM THE POWER LINE AND TRANSFER THEM TO THE STANDBY SETS OUTPUT. UPON POWER LINE RETURN, THE TRANSFER SWITCH SHALL TRANSFER THE LOAD BACK TO THE LINE AND STOP THE STANDBY SET. TRANSFER SWITCH SHALL BE 800 AMPS, 250 VOLTS, 3 POLE PLUS NEUTRAL. NORMAL BREAKER SHALL HAVE 400 AMP THERMAL MAGNETIC TRIP UNIT WITH EMERGENCY BREAKER HAVING 400 AMP THERMAL MAGNETIC TRIP UNIT. BREAKERS SHALL BE MECHANICALLY AND ELECTRICALLY INTERLOCKED TO PREVENT BOTH BREAKERS BEING CLOSED AT THE SAME TIME. THREE POSITION SELECTOR SWITCH AND ALL NECESSARY AUXILIARY CONTACTS AND/OR RELAYS SHALL BE PROVIDED TO LOCK OUT PRESELECTED STARTERS AS INDICATED ON "CONTROL AND ALARM WIRING DIAGRAM FOR SPIRALIFT PUMP STATION". SWITCH SHALL BE ATS TYPE WITH THE FOLLOWING OPTIONS:

1. TIME DELAY ON TRANSFER FROM NORMAL TO EMERGENCY.

2. TIME DELAY ON ENGINE STARTING.

3. FOUR-POSITION SELECTOR SWITCH "OFF", "TEST", "AUTO" AND "START".

4. PILOT LIGHTS TO INDICATE BREAKER POSITIONS.

5. PLANT EXERCISER TO AUTOMATICALLY START GENERATOR AT PRESELECTED INTERVALS WITHOUT INTERRUPTING NORMAL SUPPLY.

PROVIDE ON THE LOAD BUSS OF MOTOR CONTROL CENTER A 0-800 AMP AMMETER WITH 3-POSITION SELECTOR SWITCH AND A 0-300 VOLT VOLTMETER WITH 6-POSITION SELECTOR SWITCH FOR READING PHASE TO PHASE AND PHASE TO NEUTRAL VOLTAGES. ALL NECESSARY TRANSFORMERS, FUSES AND WIRING AS NECESSARY FOR INTERNAL 120 VOLT CONTROL VOLTAGE AND METERS SHALL BE FACTORY INSTALLED.

UNIT SHALL CONTAIN THE FOLLOWING BREAKERS AND COMBINATION MOTOR STARTERS:

1-70 AMP, 2P, 250 VOLT BREAKER, BRANCH TO PANEL "A", MCC1-4.

2-30 AMP, 3P, 250 VOLT BREAKERS. SPACE ONLY.

0-250 VOLT COMBINATION MOTOR CONTROL UNITS CONSISTING OF NEMA SIZE 3PW REDUCED VOLTAGE, NON-REVERSING, PART-WINDING TYPE STARTER AND 250 AMP TYPE "LA" BREAKER. STARTERS SHALL HAVE ADJUSTABLE 0-60 SECOND TIME DELAY. PROVIDE INDIVIDUAL 0-200 AMP AMMETERS FOR STARTERS COMPLETE WITH ALL NECESSARY CURRENT TRANSFORMERS, FUSES AND ACCESSORIES. MCC-1, 2 & 3. STARTERS SHALL BE COMPATIBLE WITH 60 HP MOTORS FURNISHED AND HAVE NECESSARY AUXILIARY CONTACTS FOR MOTOR HEATERS AND THERMAL CUTOFFS IN WINDINGS.

MOTOR CONTROL CENTER "MCC2":

UNIT SHALL BE FOR 480 VOLT OPERATION AND HAVE 1200 AMP HORIZONTAL BUSSES, MINIMUM 300 AMP VERTICAL BUSSES WITH 600 AMP WHERE REQUIRED AND BE APPROX. 20" IN DEPTH AND MAXIMUM OF 156" IN WIDTH.

UNIT SHALL CONTAIN A 1000 AMP, 3P, 480 VOLT THERMAL MAGNETIC TYPE "NB" MAIN BREAKER AND BE COMPLETE WITH A GROUND FAULT PROTECTION SYSTEM CONSISTING OF CURRENT SENSOR, SOLID STATE GROUND FAULT RELAY, POWER SUPPLY, RESET BUTTON WITH BLUE-FAULT TRIP INDICATING LIGHT ON COVER AND ALL NECESSARY WIRING AND CONNECTIONS. SYSTEM SHALL BE ADJUSTABLE FROM 200 TO 1200 AMPERES AND TIME CURRENT CHARACTERISTICS SHALL PROVIDE 6 CYCLE OPERATION AT ABOUT 10 TIMES SETTING. RELAY SHALL OPERATE FROM 120 VOLT A.C. INTERNAL CONTROL SOURCE. ALL NECESSARY CONTACTS, RELAYS, SHUNT TRIPS AND ACCESSORIES AS REQUIRED SHALL BE PROVIDED FOR A COMPLETE SYSTEM.

PROVIDE ON THE LOAD BUSS OF THE MOTOR CONTROL CENTER A 0-1200 AMP AMMETER WITH 3-POSITION SELECTOR SWITCH AND A 0-600 VOLT VOLTMETER WITH 6-POSITION SELECTOR SWITCH FOR READING PHASE TO PHASE AND PHASE TO NEUTRAL VOLTAGES. ALL NECESSARY TRANSFORMERS, FUSES AND WIRING AS NECESSARY FOR INTERNAL 120 VOLT CONTROL VOLTAGE AND METERS SHALL BE FACTORY INSTALLED.

UNIT SHALL CONTAIN THE FOLLOWING BREAKERS AND COMBINATION MOTOR STARTERS:

1-30 AMP, 3P, 480 VOLT BREAKER, BRANCH TO DRY-TYPE TRANSFORMER.

MCC2-7.

2-30 AMP, 3P, 480 VOLT BREAKERS. SPACE ONLY.

6-480 VOLT COMBINATION MOTOR CONTROL UNITS CONSISTING OF NEMA SIZE 4PW REDUCED VOLTAGE, NON-REVERSING, PART-WINDING TYPE STARTER AND 250 AMP TYPE "LA" BREAKER. PROVIDE INDIVIDUAL 0-200 AMP AMMETERS FOR STARTERS COMPLETE WITH ALL NECESSARY CURRENT TRANSFORMERS, FUSES AND ACCESSORIES. MCC2-1 THRU 6 (2 FOR FUTURE USE). STARTERS SHALL BE COMPATIBLE WITH 125 HP MOTORS FURNISHED AND HAVE NECESSARY AUXILIARY CONTACTS FOR MOTOR HEATERS AND THERMAL CUTOFFS IN WINDINGS.

RECORD DRAWING

REVISION	DATE	DESCRIPTION	BY
ELECTRICAL EQUIPMENT			
SEWAGE TREATMENT FACILITIES			
MYRTLE BEACH, S.C.			
Wilbur Smith and Associates, Inc. - Design			
CONSULTING ENGINEERS			
COLUMBIA, S.C. WINSTON-SALEM, N.C. RICHMOND, VA. KNOXVILLE, TENN.			
DES DB	DWN JB	CHK RH	DATE 10/72 DWG NO. 51-001-023/23

51-001-023/23

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