

FILE FOLDER

DESCRIPTION ON TAB:

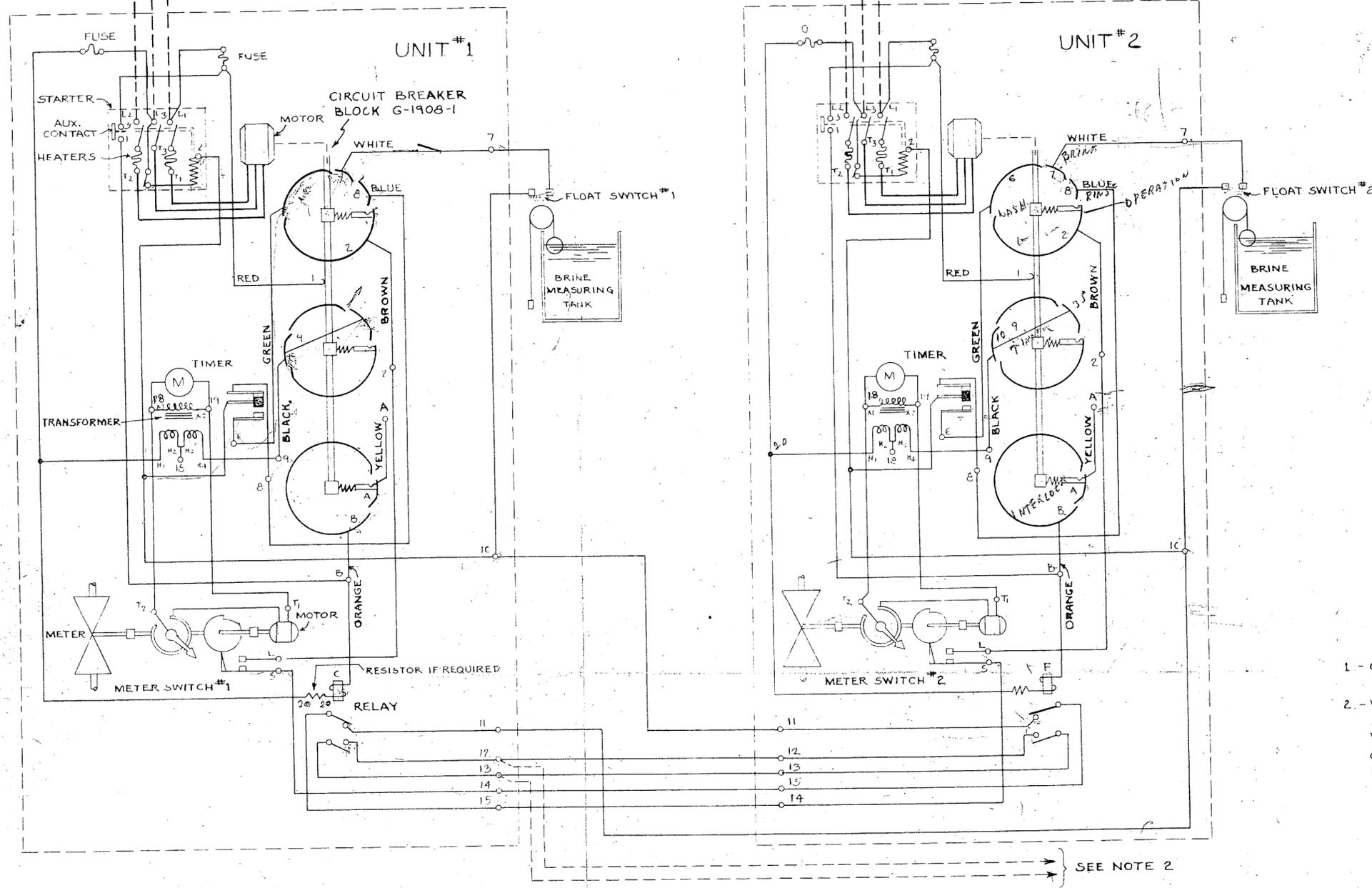
Superwinch Owner's Manual

Outside/inside of actual folder did not contain hand written information

Outside/inside of actual folder did contain hand written information

***Scanned as next image**

3 PHASE
POWER SUPPLY

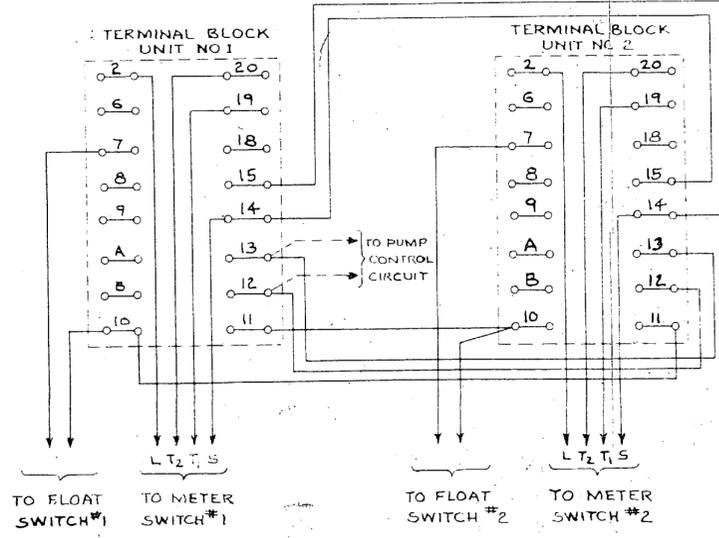


- 1 - 10 MIN WASH ON TIME CYCLE
- 2 - BRINE INJ. BY EJECTOR (10 MIN)
- 3 - 30 MIN RISE TO WASTE OPERATING FROM TIME CYCLE
- 4 - BACK TO SERVICE

NOTES

- 1 - CONNECTIONS AND APPARATUS SHOWN DOTTED TO BE FURNISHED BY PURCHASER.
- 2 - WHEN WATER IS DELIVERED TO SOFTENER BY AUTOMATICALLY CONTROLLED PUMP, THESE WIRES ARE TO BE CONNECTED TO SHUNT CONTROL DEVICE SO AS TO MAINTAIN PUMP IN OPERATION DURING REGENERATIONS, IF CIRCUIT IS OVER 250 VOLTS, INTERPOSE SUITABLE CONTACTOR TO PROTECT SOFTENER EQUIPMENT FROM THE HIGH POTENTIAL.

SEE NOTE 2



CONNECTIONS TO BE MADE BY INSTALLER

WIRING DIAGRAM

Permutit
Water Conditioning

THE PERMUTIT CO.
NEW YORK, N. Y.

REVISIONS	
A	
B	
C	
D	

SCALE: $\frac{1}{2}$
DATE: 8/28/41
(4-20-38)

C-2395-2

DRAWN BY: C.M.G.
CHECKED BY: G.L.G.
W.H.

Mr. Hill

180

55

THE PERMUTIT COMPANY

BILL OF MATERIAL

100-13726

MADE 10/22/80 BY MITCHELL

TDG 5 FT. - 26 DEGASIFIER

CHECKED BY _____

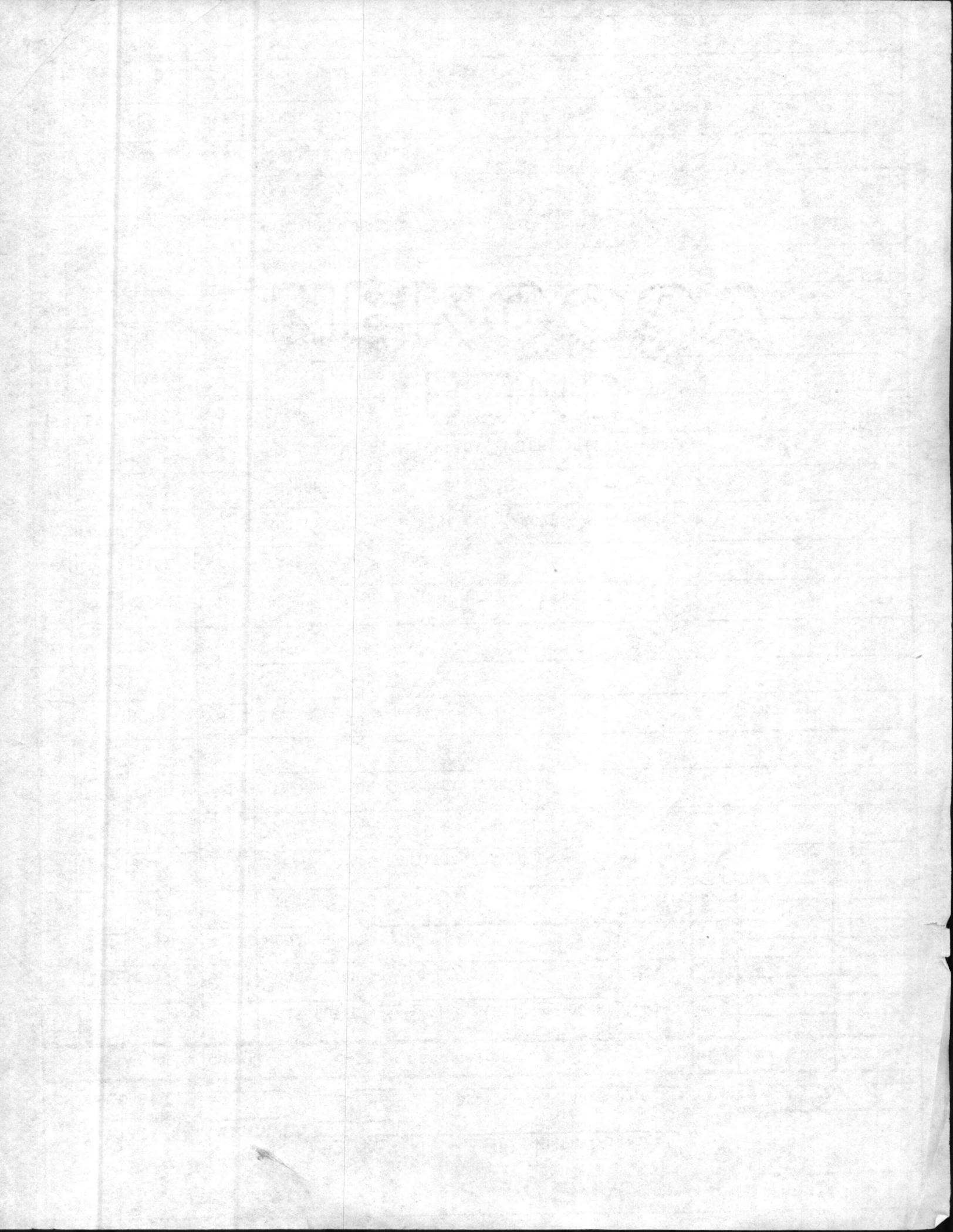
FORCED

DRAFT - VARIABLE B/M

JOB _____

SHEET 1 OF 1

	DRAWING	QUANT.	DESCRIPTION	REV.	DATE	E.C.N.
1			AIR OUTLET R.H. AIR INLET R.H. DOOR R.H.			
2	136 -25347	1	DOOR SUPPORT, LOWER			
3	136 -25348	1	DOOR SUPPORT, UPPER			
4	100-13414	1	TDG 5 FT. B/M (BASIC)			
5	100-13322	1	SEAL - WATER OUTLET (FORCED DRAFT ONLY)			
6	167 -31623	1	PANEL - DOOR			
7	167 -31860	2	TRIM - DOOR & GASKET (VERTICAL)			
8						
9	187-19313	26	FT. GASKET - DOOR			
10						
11						
12	167 -31626	2	PANEL - SIDE - RIGHT HAND & LEFT HAND			
13	167 -31629	1	PANEL - BACK			
14	167 -31844	1	SUPPORT W. A. - VERTICAL (FRONT - RIGHT HAND)			
15	167 -31847	1	SUPPORT W. A. - VERTICAL (FRONT - LEFT HAND)			
16	167 -31856	2	SUPPORT W. A. - VERTICAL (RIGHT & LEFT - BACK)			
17	167 -31866	2	CLAMP - DOOR			
18	129-25427	<input checked="" type="checkbox"/>	DEMISTER CURB - ASSEMBLY			
19	187-19292	<input checked="" type="checkbox"/>	DEMISTER			
20	187-19159	1	FAN - AIR (1635 CUBIC FT./MIN. @ 1.0" S.P.) (SHIP LOOSE)			
21	187-19161	1	RAIN CAP & SCREEN (SHIP LOOSE)			
22	187-19406	1	AIR INLET NOZZLE (SHIP LOOSE)			
23	150-25364	50	TRAY - ASSEMBLY			
24	156-17502	REF.	ASSEMBLY DETAILS			
25	156-17500	REF.	FINAL ASSEMBLY			
26	-17503	<input checked="" type="checkbox"/>	STRUCTURAL CHANNEL BASE			
27						



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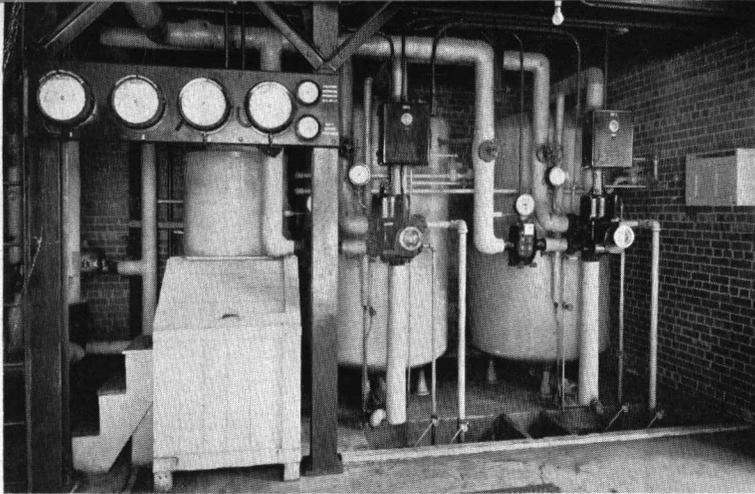
JOB _____

SHEET 1 OF 1

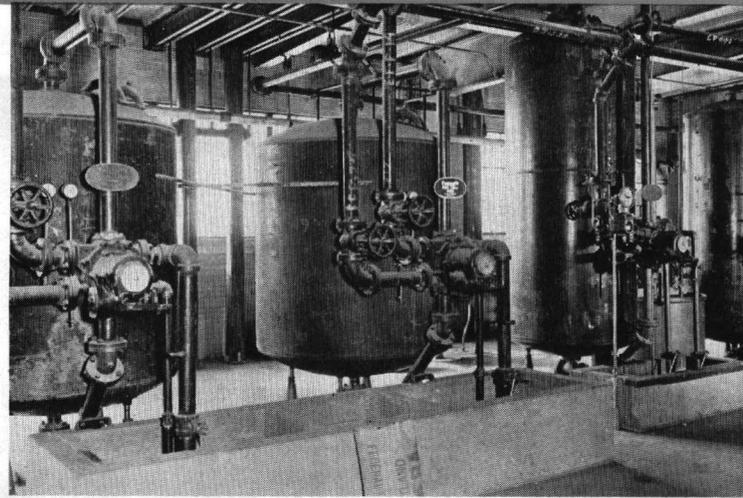
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MEMORANDUM
EDWARD

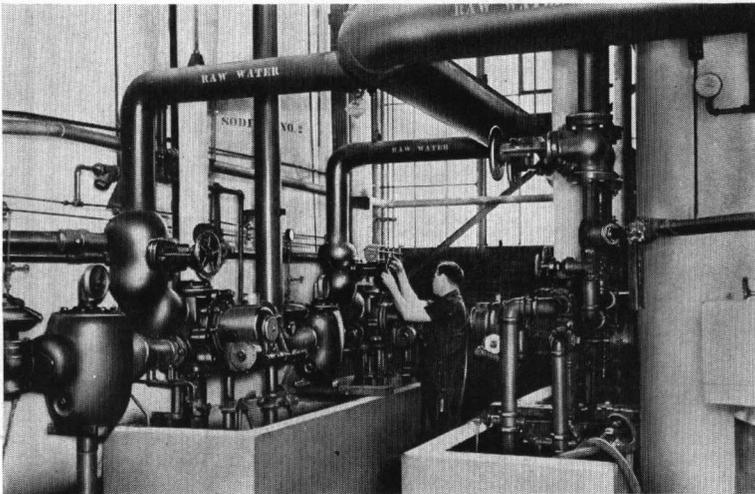
ACCLAIM ZEO-KARB



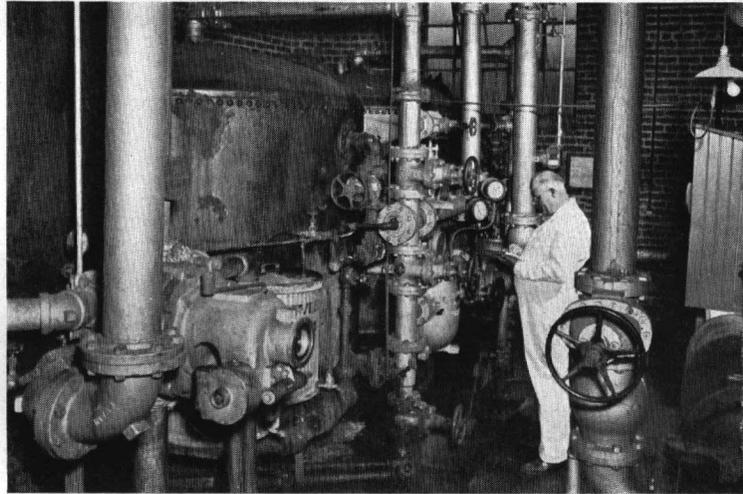
Zeo-Karb Na installation in Southern Tobacco Company.



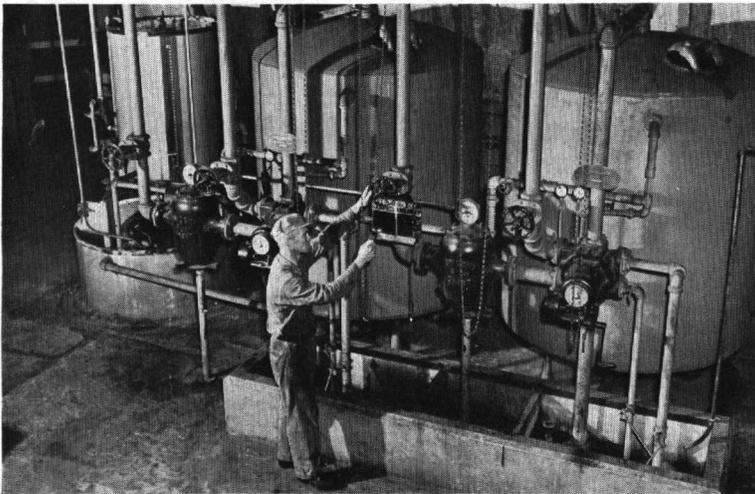
Zeo-Karb H and Na installation for treatment of evaporator make-up in an Eastern Public Utility Company.



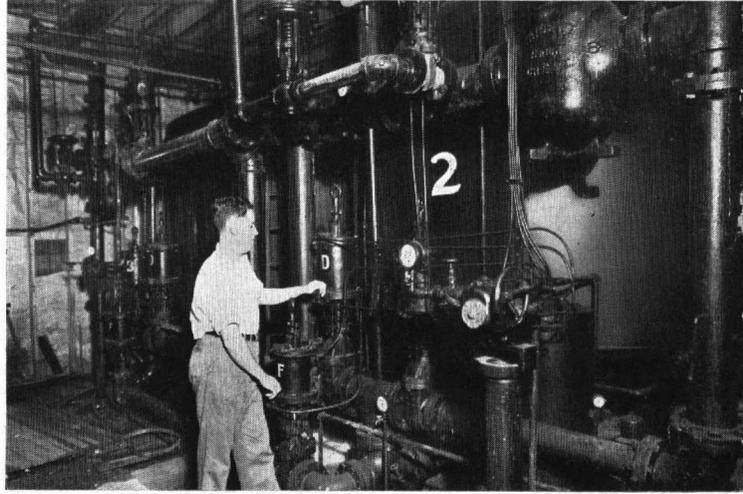
Zeo-Karb H and Na installation in Mid-west Power and Steam Heating Utility.



Zeo-Karb H installation in Southern Paper Mill.



Zeo-Karb Na installation in New York State Public Utility Company.



Zeo-Karb H installation in Southern Cotton Company.

PERMUTIT

Is Water Conditioning Headquarters

In the main office of The Permutit Company is maintained perhaps the largest water analysis file in the world, containing analyses of practically every city in the United States and many of the cities of Central and South America as well as Canada. These analyses are the basis of all water conditioning recommendations. If an up-to-date analysis of your city water is not available, it will be made entirely free of charge. A request will bring you a shipping carton complete with bottles, tags and wrapping for your convenience in sending a sample for analysis.

The Permutit Company, because of its long experience, has been able to study closely the performance of all types of ion exchange materials on great varieties of waters under a multitude of conditions. Permutit engineers, working with you and your consultants will recommend the treatment best suited for each application.

For detailed information contact the nearest local office listed below.

Write For Bulletins on these Products

Zeolite Softeners • Spaulding Precipitators • Spiractors • Hot Lime Soda Softeners • Automatic Softeners • Demineralizing Equipment • Deaerating Heaters • Vacuum Deaerators • Pressure and Gravity

Filters • Siliceous Filters • Non-Siliceous Filters • Iron Removal Filters • Oil Removal Filters • Color, Taste and Odor Removal Filters • Filter Operating Tables • Rate of Flow Indicators • Flocc-

formers • Continuous Blow-off Systems • Saline Hydrometers • Combustion Recorders • Internal Treatment Equipment • Degasifiers • Proportionating Feeds • Pressure Solution Feeds • Dry Feeders •

Call these Sales Offices for Information

THE PERMUTIT COMPANY, 330 West 42nd St., New York 18, N. Y.

BOSTON 16, MASS., 700 Statler Bldg.

CHARLOTTE 3, N. C., 831 E. Morehead St.

CHATTANOOGA 2, TENN., 517 Hamilton National Bank Bldg.

CHICAGO 5, ILL., 407 So. Dearborn St.

CINCINNATI 8, OHIO, 3119 Griest Ave.

CLEVELAND 15, OHIO, 1836 Euclid Ave.

DALLAS 6, TEXAS, 5804 Anita St.

DAYTON 9, OHIO, 931 Patterson Rd.

DETROIT 26, MICH., 502 Free Press Bldg.

JACKSONVILLE 2, FLA., 131 E. Bay St.

KANSAS CITY 8, MO., 215 Pershing Rd.

LOS ANGELES 13, CALIF., 909 Wright and Callender Bldg.

MINNEAPOLIS 2, MINN., 307 Essex Bldg.

PHILADELPHIA 3, PA., 34 So. 17th St.

PITTSBURGH 12, PA., 615 Dollar Savings and Trust Bldg.

ST. LOUIS 8, MO., 3903 Olive St.

SAN FRANCISCO 5, CALIF., 116 New Montgomery St.

SYRACUSE 6, N. Y., 111 Rugby Rd.

PERMUTIT COMPANY OF CANADA, Ltd.

AGENTS

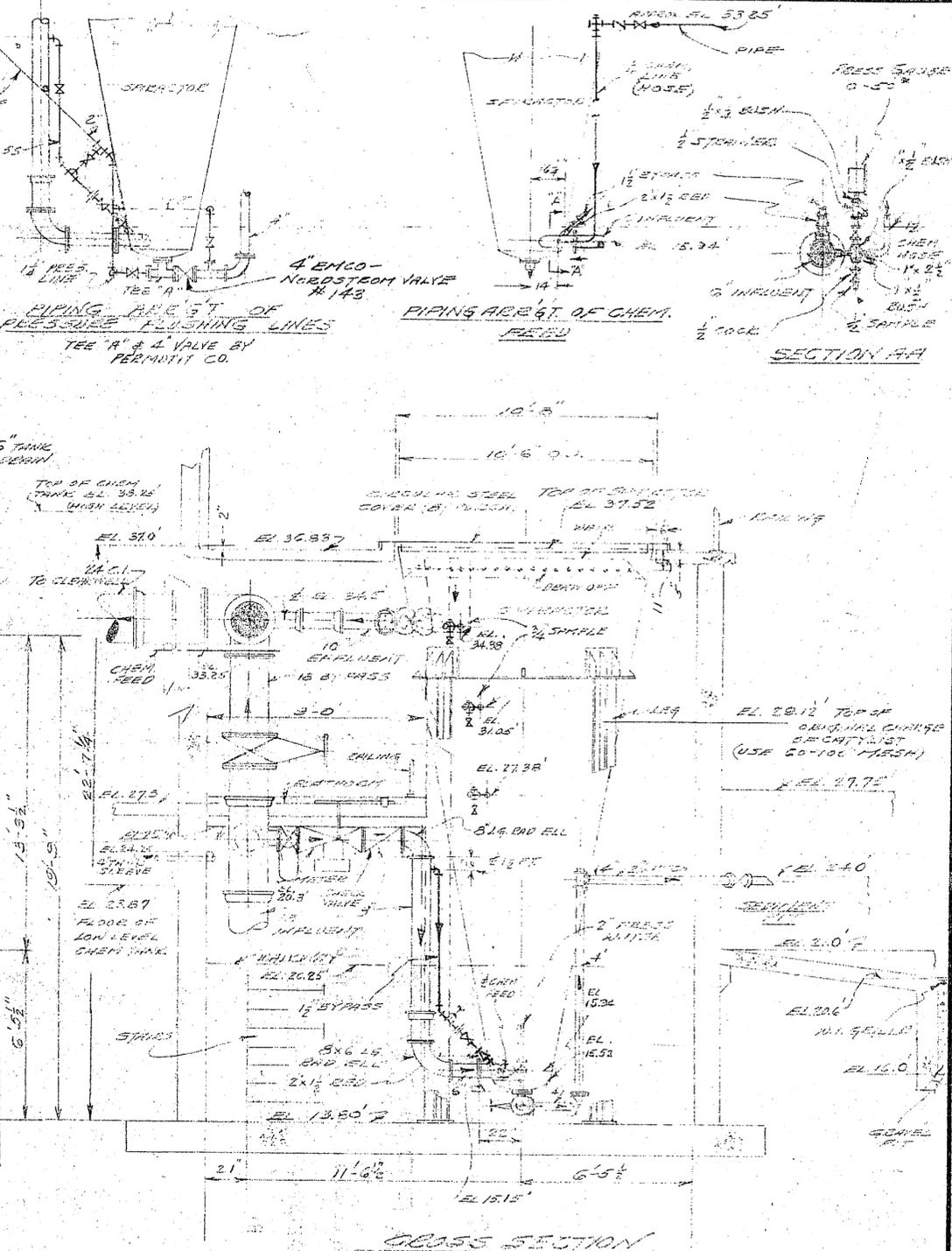
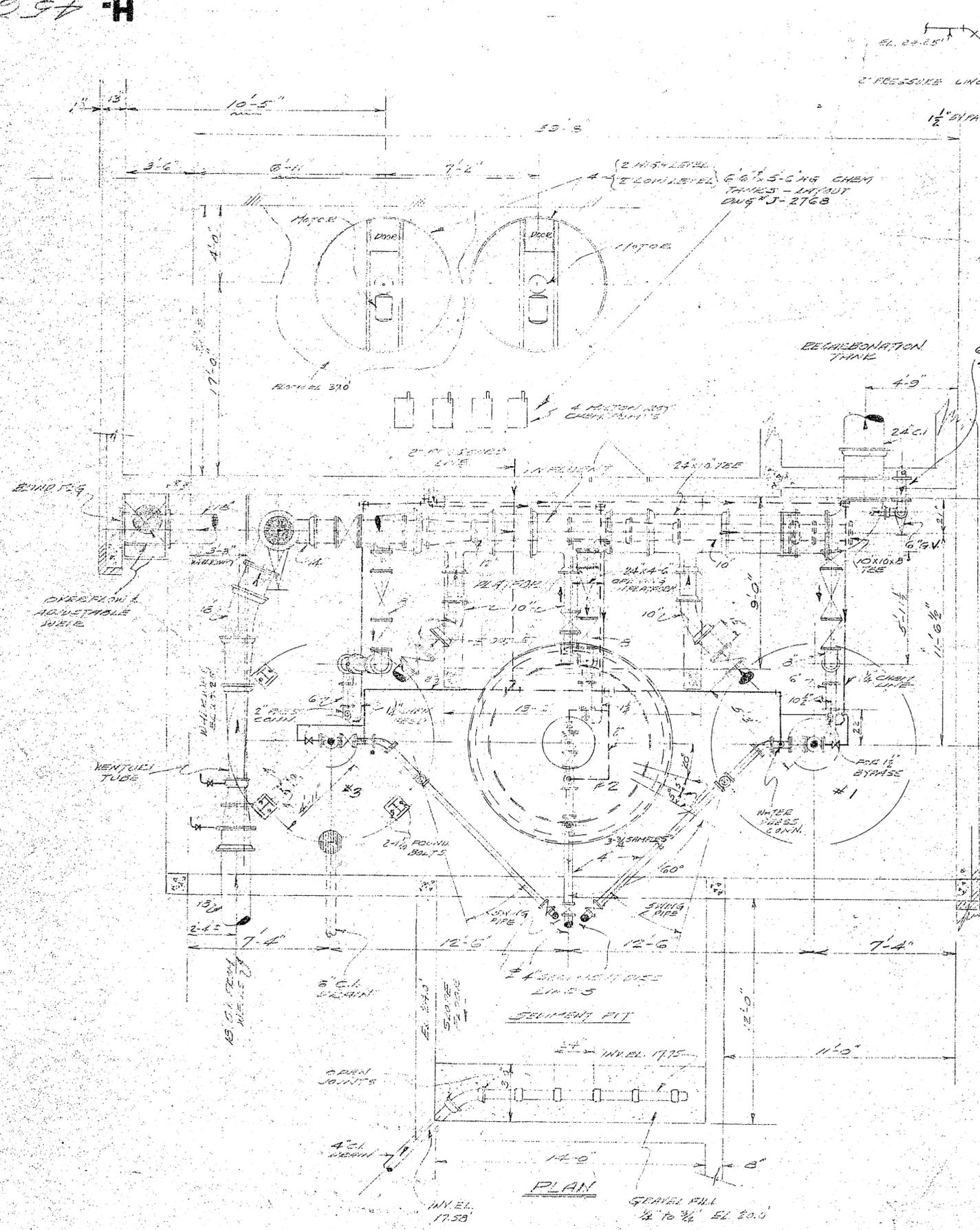
MONTREAL, QUE., C. Kirkland McLeod, 1449 Crescent St.

TORONTO, ONT., S. A. McWilliams, Ltd., 60 Front St. W.

WINNIPEG, MAN., Stanley Brock, Ltd., 145 Market Street, East

CALGARY, ALB., Stanley Brock, Ltd., 523 8th Avenue, West

H-4569-3



NOTE:
 ALL PIPING SHOWN TO BE FURNISHED BY FUSCHNER.

REFERENCE DNG.
 LAYOUT OF CHEM. FEED — DNG # J-2768
 SPIRATOR DETAILS — DNG # E-168-1-1
 PLANT LAYOUT — REFER TO
 DNG # 380 CHESTNUT GREENE CO.
 FLOW DIAGRAM — DNG # G-5943-1

OPERATING WT. = 110,000 LB. UNIT
 PLANT Q. = 700 GPM PER UNIT

NOTE:
 DO NOT SCALE THIS DRAWING
 USE DIMENSIONS ONLY.

Permutit
 Water Conditioning

THE PERMUTIT CO.
 NEW YORK, N. Y.

DRAWN BY	
TRACED BY	
CHECKED BY	

REVISIONS	
A	REV. 5-18-44
B	REV. 2-3-45
C	REV. 7-7-48

AUG 14 1960

704-535-0815

FOR Main Water Plant, P-108-4
Spec 502, Advance "C"

APPROVED
CARR & J. E. GREINER CO.

DEPARTMENT Water
BY F. A. [Signature]

MARINE BARRACKS
NEW RIVER
NORTH CAROLINA
Office of
Officer-in-Charge

Spec'n No. 502 Project No. 108-4
Approved subject to Contract
Requirements and Corrections noted
in red.

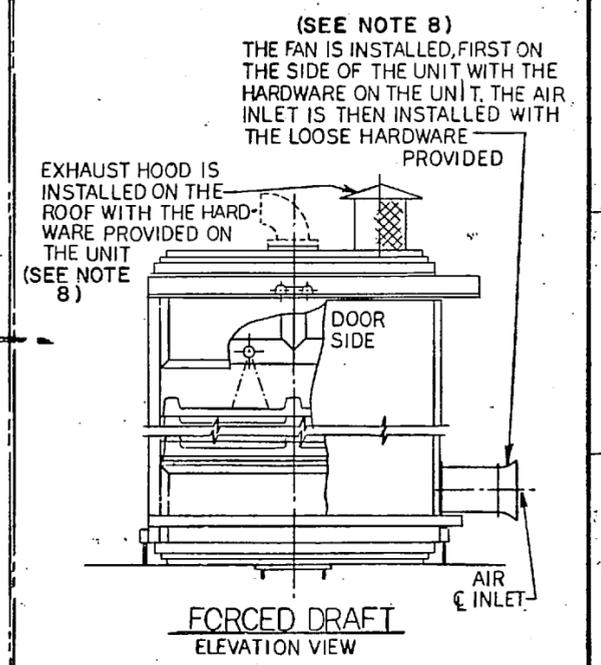
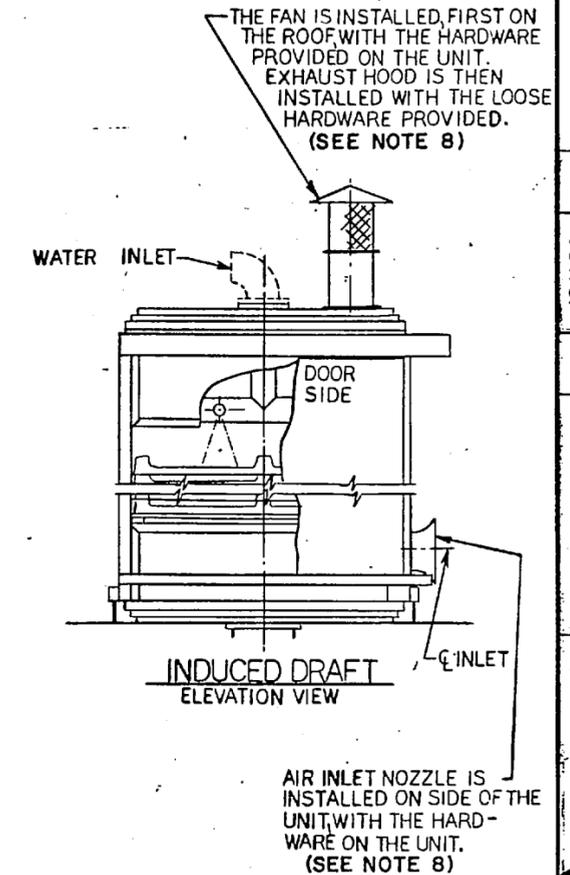
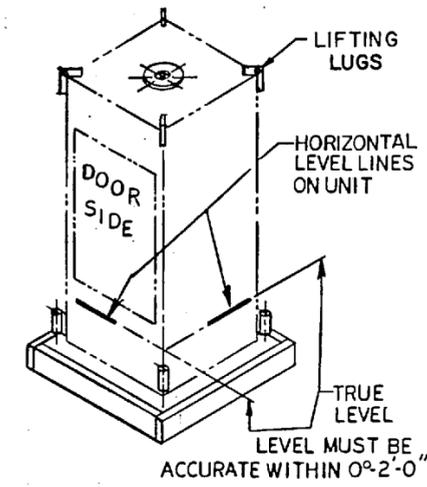
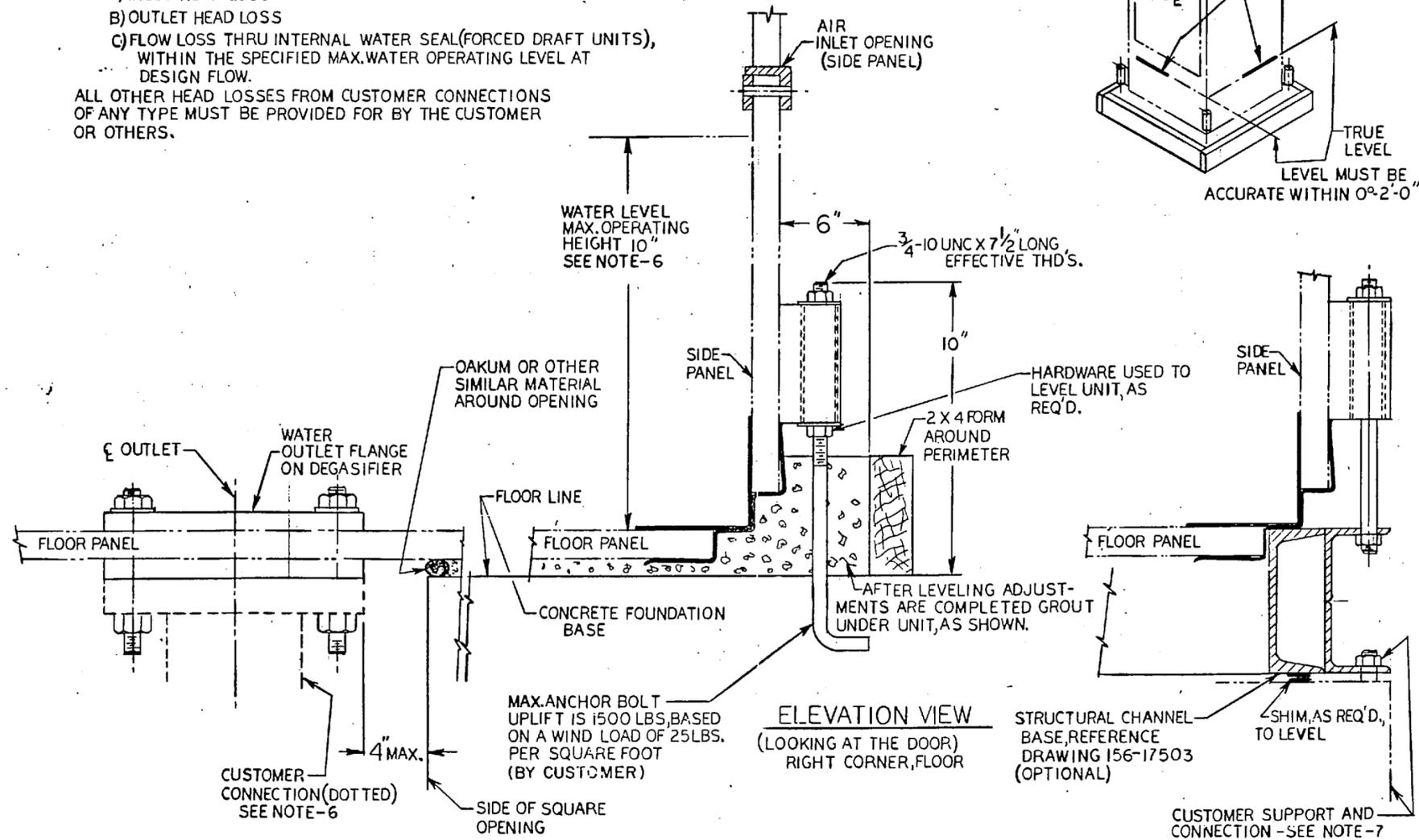
[Signature]
Officer-in-Charge

By Approval

8-20-60

NOTES:

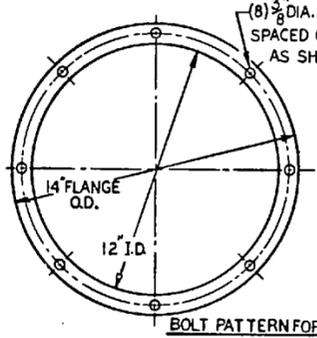
- 1- THIS UNIT IS COMPLETELY ASSEMBLED, THE TRAYS BEING FACTORY INSTALLED & RESTRAINED, THE UNIT IS TO BE INSTALLED PER THIS DRAWING WITHOUT REMOVING THE DOOR OR THE TRAY RESTRAINTS.
- 2- THE DIRECTION OF AIR FLOW AND THE DIRECTION OF PROPELLER ROTATION ARE INDICATED ON THE FAN HOUSING. THE FAN HOUSING SHOULD BE INSTALLED SUCH THAT THE MOTOR FEET POINT DOWNWARD. THE WIRING INFORMATION FOR CONNECTING THE MOTOR IS INSIDE THE FAN HOUSING, BY REMOVING THE QUICK RELEASE ACCESS DOOR.
- 3- WHEN BRINGING ELECTRICAL SERVICE TO THE FAN, THE CONTRACTOR SHOULD NOT PUT ANY SCREWS, HOLES, OR FASTENERS OF ANY TYPE INTO THE WHITE FIBERGLASS PANELS.
- 4- THE UNIT, WHEN INSTALLED, SHOULD BE LEFT INTACT AND NOT OPENED. IF IT IS NECESSARY FOR THE CONTRACTOR TO RUN WATER THROUGH THE UNIT TO TEST HIS CONNECTIONS, THIS IS PERMISSIBLE. IT IS INTENDED THAT THE TRAY RESTRAINTS BE REMOVED BY PERMUTIT SERVICE ENGINEER OR OTHERS DURING OR JUST PRIOR TO START UP.
- 5- MAX. PIPE REACTION ON THE INLET & OUTLET CONNECTIONS WILL BE 700 LBS.
- 6- THE WATER OUTLET IS DESIGNED TO PROVIDE
 - A) INLET HEAD LOSS
 - B) OUTLET HEAD LOSS
 - C) FLOW LOSS THRU INTERNAL WATER SEAL (FORCED DRAFT UNITS), WITHIN THE SPECIFIED MAX. WATER OPERATING LEVEL AT DESIGN FLOW.
 ALL OTHER HEAD LOSSES FROM CUSTOMER CONNECTIONS OF ANY TYPE MUST BE PROVIDED FOR BY THE CUSTOMER OR OTHERS.
- 7- STRUCTURAL CHANNEL BASE (OPTIONAL) IS DESIGNED TO SUPPORT THE DEGASIFIER WHEN THE CUSTOMER IS USING A FOUR POINT MOUNTING.
- 8- BEFORE MOUNTING AIR INLET, EXHAUST HOOD, OR FAN, APPLY GENERAL-PURPOSE CAULKING TO FLANGE SURFACES.



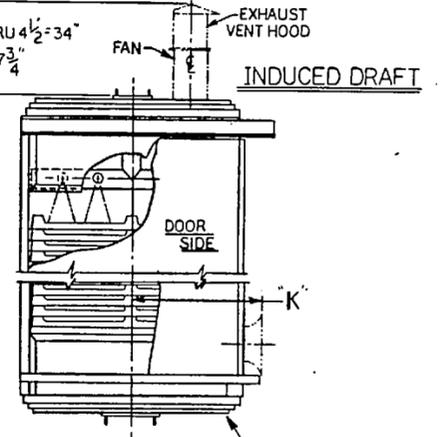
<p>DO NOT SCALE THIS DRAWING USE DIMENSIONS ONLY</p> <p><small>THIS PRINT IS THE PROPERTY OF THE PERMUTIT COMPANY. IT IS TO BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS LENT, AND MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY, AND IS SUBJECT TO RETURN UPON REQUEST.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV.</th> <th>BY</th> <th>DATE</th> <th>REVISIONS</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>RHH</td> <td>11-9-79</td> <td>ECN 3502-5</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REV.	BY	DATE	REVISIONS	-	RHH	11-9-79	ECN 3502-5													<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DRAWN RHH</td> <td rowspan="2">INSTALLATION DRAWING FOR TRAY-TYPE DEGASIFIER</td> <td rowspan="2" style="text-align: center; vertical-align: middle;"> <p>PERMUTIT®</p> <p>DRAWING NO. 129-25357</p> <p>SHEET 1 OF 1</p> </td> </tr> <tr> <td>CHECKED</td> </tr> <tr> <td>APPR'D</td> <td>DATE 11-9-79</td> <td>REV.</td> </tr> <tr> <td>SCALE NONE</td> <td>SCALE NONE</td> <td> </td> </tr> </table>	DRAWN RHH	INSTALLATION DRAWING FOR TRAY-TYPE DEGASIFIER	<p>PERMUTIT®</p> <p>DRAWING NO. 129-25357</p> <p>SHEET 1 OF 1</p>	CHECKED	APPR'D	DATE 11-9-79	REV.	SCALE NONE	SCALE NONE	
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MODEL NO.	G.P.M.	AREA SQ. FT.	FAN		WEIGHT IN LBS.		DIMENSIONS															
			VOLTS	H.P.	SHIPPING	OPERATING	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	"K"	"L"	"M"	"N"	"O"	"P"
TDG-3-6	270	9	3/4	1,000	1,600	3"	6"	4'-6 1/2"	6'-1 1/8"	15 1/16"	2 1/16"	3'-9 1/4"	7'-7 3/8"	1'-2 1/2"	1'-6 7/8"	2'-5 1/4"	3'-4 5/8"	1'-6"	7 1/8"	1'-5 1/8"	3'-10"	
-16				1,200	1,900				8'-1 1/8"				5'-7 1/8"									
-26				1,400	2,200				10'-1 1/8"				11'-7 1/8"									
-36				1,600	2,500				12'-1 1/8"				13'-7 1/8"									
-46				1,800	2,800				14'-1 1/8"				15'-7 1/8"									
-56				2,000	3,100				16'-1 1/8"				17'-7 1/8"									
-66				2,200	3,400				18'-1 1/8"				19'-7 1/8"									
TDG-3 1/2-6	367.5	12 1/4		1,100	1,900	4"	8"	5'-3 1/2"	6'-1 1/16"	1 1/8"	2 1/16"	4'-1 1/4"	7'-7 1/16"	1'-5"	1'-9 1/8"	2'-8 1/4"	3'-10 3/8"	1'-9"	9 1/8"	1'-8 1/8"	4'-4"	
-16				1,300	2,300				8'-1 1/16"				9'-7 1/16"									
-26				1,500	2,600				10'-1 1/16"				11'-7 1/16"									
-36				1,700	3,000				12'-1 1/16"				13'-7 1/16"									
-46				1,900	3,300				14'-1 1/16"				15'-7 1/16"									
-56				2,200	3,700				16'-1 1/16"				17'-7 1/16"									
-66				2,400	4,000				18'-1 1/16"				19'-7 1/16"									
TDG-4-6	480	16		1,200	2,300			6'-1 1/2"	6'-1 1/16"			4'-3 1/4"	7'-7 1/16"	1'-6"	2'-7 1/8"	2'-11 1/4"	4'-4 5/8"	2'-0"	11"	1'-11 1/8"	4'-10"	
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TDG-4 1/2-6	607.5	20 1/4		1,300	2,700	6"	10"	6'-9 1/2"	6'-2 3/4"			4'-6 1/4"	7'-8 3/4"	1'-7"	2'-3 7/8"	3'-2 1/4"	4'-10 5/8"	2'-3"	1'-0"	2'-2 1/8"	5'-4"	
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TDG-5-6	750	25		1,400	3,200			5'-6 1/2"	6'-2 3/4"	1 3/16"	3 3/16"	4'-9 1/4"	7'-2 1/2"	1'-9 5/16"	2'-6 3/4"	3'-5 1/4"	5'-4 5/8"	2'-5 1/16"	1'-4"	2'-4 1/16"	5'-10"	
-16				1,700	3,800				8'-2 1/2"				9'-2 1/2"									
-26				2,000	4,300				10'-2 3/4"				11'-2 1/2"									
-36				2,300	4,900				12'-2 3/4"				13'-2 1/2"									
-46				2,600	5,500				14'-2 3/4"				15'-2 1/2"									
-56				2,900	6,100				16'-2 3/4"				17'-2 1/2"									
-66				3,200	6,600				18'-2 3/4"				19'-2 1/2"									

208/230/460 VOLTS, 3PH, 60HZ



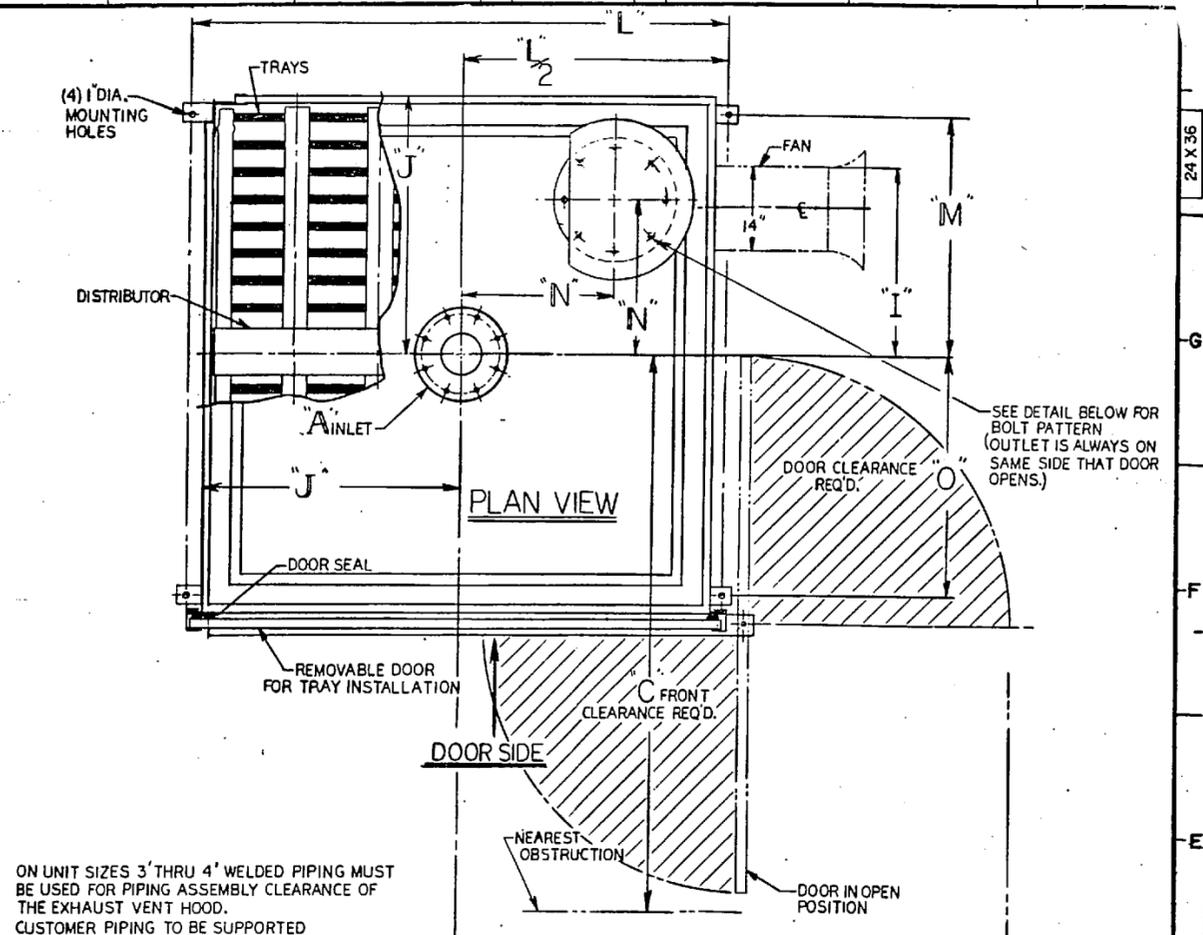
BOLT PATTERN FOR 3' THRU 5' UNITS



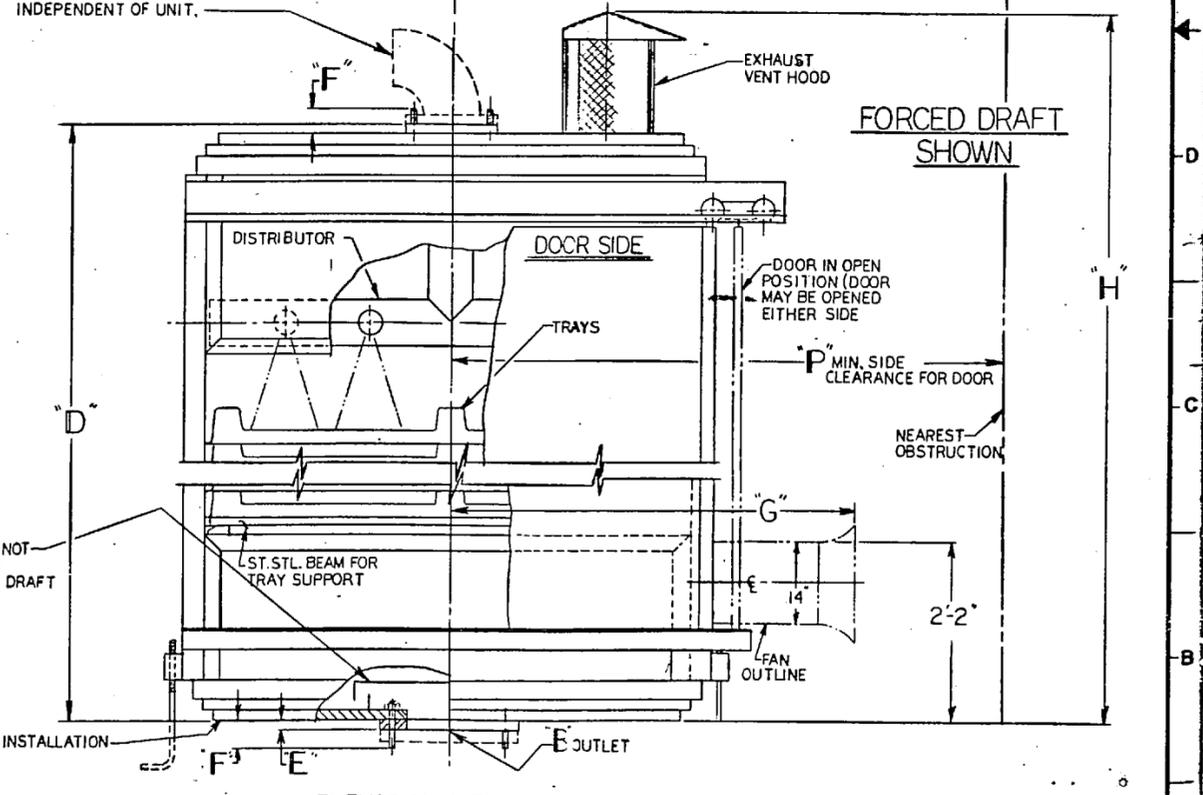
INDUCED DRAFT

MATERIALS OF CONSTRUCTION
 CORNER SUPPORTS - STAINLESS STEEL
 SIDE PANELS - PERMUTIT
 TRAYS - STYRENE
 DISTRIBUTOR - PVC
 FAN - COATED STEEL
 AIR HOODS & SCREENING - ALUMINUM

CONNECTIONS
 ST. STL. STUDS ARE PROVIDED TO SUIT STD. 125# FLANGES. BOLT HOLES STRADDLE CENTERLINE. STUDS ARE PERMANENTLY ATTACHED TO DEGASIFIER



PLAN VIEW



ELEVATION VIEW

FORCED DRAFT SHOWN

DO NOT SCALE THIS DRAWING USE DIMENSIONS ONLY

THIS PRINT IS THE PROPERTY OF THE PERMUTIT COMPANY. IT IS TO BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS LENT, AND MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY, AND IS SUBJECT TO RETURN UPON REQUEST.

REV.	BY	DATE	REVISIONS	REV.	BY	DATE	REVISIONS
A	FDX	5-1-79	ECN 3502-U				
B	RHH	5-10-79	ECN 3502-V				
C	RHH	10-23-79	ECN 3502-S				
D	RHH	3-27-80	ECN 3502-X				

TRAY-TYPE DEGASIFIER
 FORCED OR INDUCED DRAFT
 3 FT. THRU 5 FT. SQUARE

PERMUTIT

DRAWING NO. 185-15785
 REV. D

DATE 12-5-78
 SCALE NONE



BILL OF MATERIAL

MARINE CORPS BASE
CAMP LEJEUNE, N. C.

MADE 10/22/80 BY MITCHELL

(1) MODEL TDG-5-26 FORCED DRAFT
DEGASIFIER

JOB A141J-24366-98

CHECKED BY _____

SHEET 1 OF 1

	DRAWING	QUANT.	DESCRIPTION	ACCT.
				070-61-50
1				
2			DEGASIFIER	185-15785
3			INSTALLATION DWG.	129-25357
4				
5	100-13726	1	MODEL TDG-5-26 FORCED DRAFT DEGASIFIER	
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				

THE
WISCONSIN



BILL OF MATERIAL

MARINE CORPS BASE
CAMP LEJEUNE, N. C.

MADE 10/22/80 BY MITCHELL

(1) MODEL TDG-5-26 FORCED DRAFT
DEGASIFIER

JOB A141J-24366-98

CHECKED BY _____

SHEET 1 OF 1

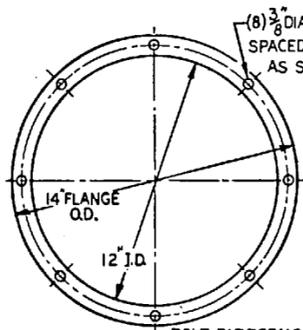
	DRAWING	QUANT.	DESCRIPTION	ACCT. 070-61-50
1				
2			DEGASIFIER	185-15785
3			INSTALLATION DWG.	129-25357
4				
5	100-13726	1	MODEL TDG-5-26 FORCED DRAFT DEGASIFIER	
6				
7				
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THE
WISCONSIN

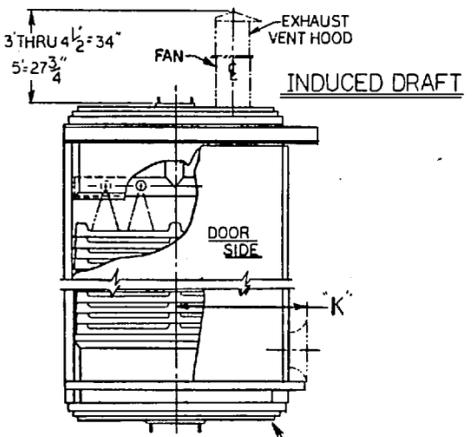
UNIVERSITY

MODEL NO.	G.P.M.	AREA SQ. FT.	FAN VOLTS	H.P.	SHIPPING WEIGHT	OPERATING WEIGHT	DIMENSIONS															
							A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
TDG-3-6	270	9	3/4	1,000	1,600	3"	6"	4'-6 1/2"	6'-1 1/8"	15 1/16"	2 7/16"	3'-9 1/4"	7'-7 1/2"	1'-2 1/2"	1'-6 7/8"	2'-5 1/4"	3'-4 5/8"	1'-6"	7 7/8"	1'-5 5/8"	3'-10"	
-16				1,200	1,900				8'-1 1/8"				9'-7 1/8"									
-26				1,400	2,200				10'-1 1/8"				11'-7 1/8"									
-36				1,600	2,500				12'-1 1/8"				13'-7 1/8"									
-46				1,800	2,800				14'-1 1/8"				15'-7 1/8"									
-56				2,000	3,100				16'-1 1/8"				17'-7 1/8"									
-66				2,200	3,400				18'-1 1/8"				19'-7 1/8"									
TDG-3 1/2-6	367.5	12 1/4		1,100	1,900	4"	8"	5'-3 1/2"	6'-1 9/16"	1 1/8"	2 15/16"	4'-4"	7'-7 9/16"	1'-5"	1'-9 7/8"	2'-8 1/4"	3'-10 3/8"	1'-9"	9 7/8"	1'-8 1/8"	4'-4"	
-16				1,300	2,300				8'-1 9/16"				9'-7 9/16"									
-26				1,500	2,600				10'-1 9/16"				11'-7 9/16"									
-36				1,700	3,000				12'-1 9/16"				13'-7 9/16"									
-46				1,900	3,300				14'-1 9/16"				15'-7 9/16"									
-56				2,200	3,700				16'-1 9/16"				17'-7 9/16"									
-66				2,400	4,000				18'-1 9/16"				19'-7 9/16"									
TDG-4-6	480	16		1,200	2,300			6'-1/2"	6'-1 1/16"			4'-3 1/4"	7'-7 1/16"	1'-6"	2'-7 7/8"	2'-11 1/4"	4'-4 5/8"	2'-0"	11"	1'-11 1/8"	4'-10"	
-16				1,400	2,700				8'-1 1/16"				9'-7 1/16"									
-26				1,700	3,100				10'-1 1/16"				11'-7 1/16"									
-36				1,900	3,500				12'-1 1/16"				13'-7 1/16"									
-46				2,200	4,000				14'-1 1/16"				15'-7 1/16"									
-56				2,400	4,400				16'-1 1/16"				17'-7 1/16"									
-66				2,500	4,800				18'-1 1/16"				19'-7 1/16"									
TDG-4 1/2-6	607.5	20 1/4		1,300	2,700	6"	10"	6'-9 1/2"	6'-2 3/4"			4'-6 1/4"	7'-8 3/4"	1'-7"	2'-3 7/8"	3'-2 1/4"	4'-10 5/8"	2'-3"	1'-0"	2'-2 1/8"	5'-4"	
-16				1,500	3,200				8'-2 3/4"				9'-8 3/4"									
-26				1,800	3,700				10'-2 3/4"				11'-8 3/4"									
-36				2,100	4,200				12'-2 3/4"				13'-8 3/4"									
-46				2,400	4,700				14'-2 3/4"				15'-8 3/4"									
-56				2,600	5,200				16'-2 3/4"				17'-8 3/4"									
-66				2,900	5,700				18'-2 3/4"				19'-8 3/4"									
TDG-5-6	750	25		1,400	3,200			5'-6 1/2"	6'-2 3/4"	1 3/16"	3 3/16"	4'-9 1/4"	7'-2 1/2"	1'-9 5/16"	2'-6 3/4"	3'-5 1/4"	5'-4 5/8"	2'-5 3/16"	1'-4"	2'-4 1/2"	5'-10"	
-16				1,700	3,800				8'-2 3/4"				9'-2 1/2"									
-26				2,000	4,300				10'-2 3/4"				11'-2 1/2"									
-36				2,300	4,900				12'-2 3/4"				13'-2 1/2"									
-46				2,600	5,500				14'-2 3/4"				15'-2 1/2"									
-56				2,900	6,100				16'-2 3/4"				17'-2 1/2"									
-66				3,200	6,600				18'-2 3/4"				19'-2 1/2"									

208/250/460 VOLTS, 3 PH, 60HZ.



BOLT PATTERN FOR 3' THRU 5' UNITS



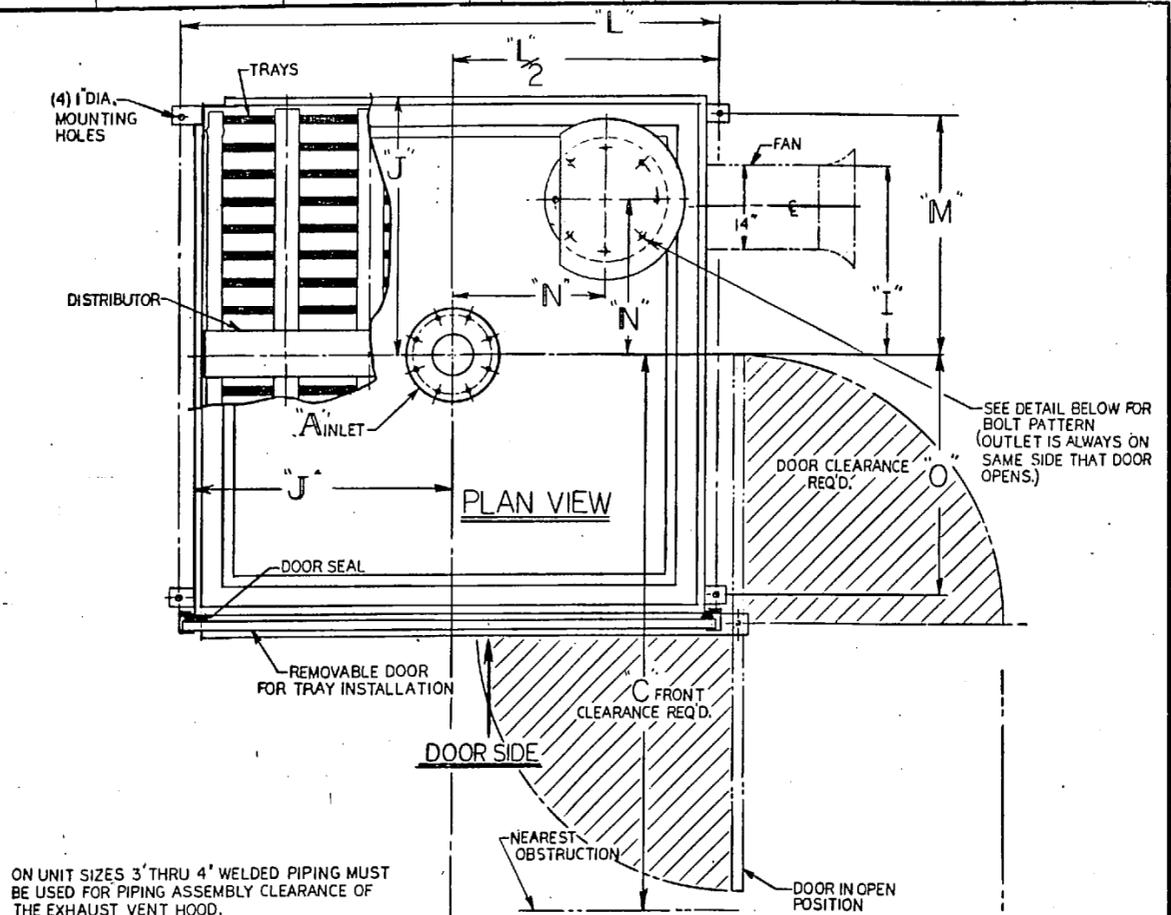
INDUCED DRAFT

MATERIALS OF CONSTRUCTION

- CORNER SUPPORTS-STAINLESS STEEL
- SIDE PANELS-PERMUCORE
- TRAYS-STYRENE
- DISTRIBUTOR-PVC
- FAN-COATED STEEL
- AIR HOODS & SCREENING-ALUMINUM

CONNECTIONS

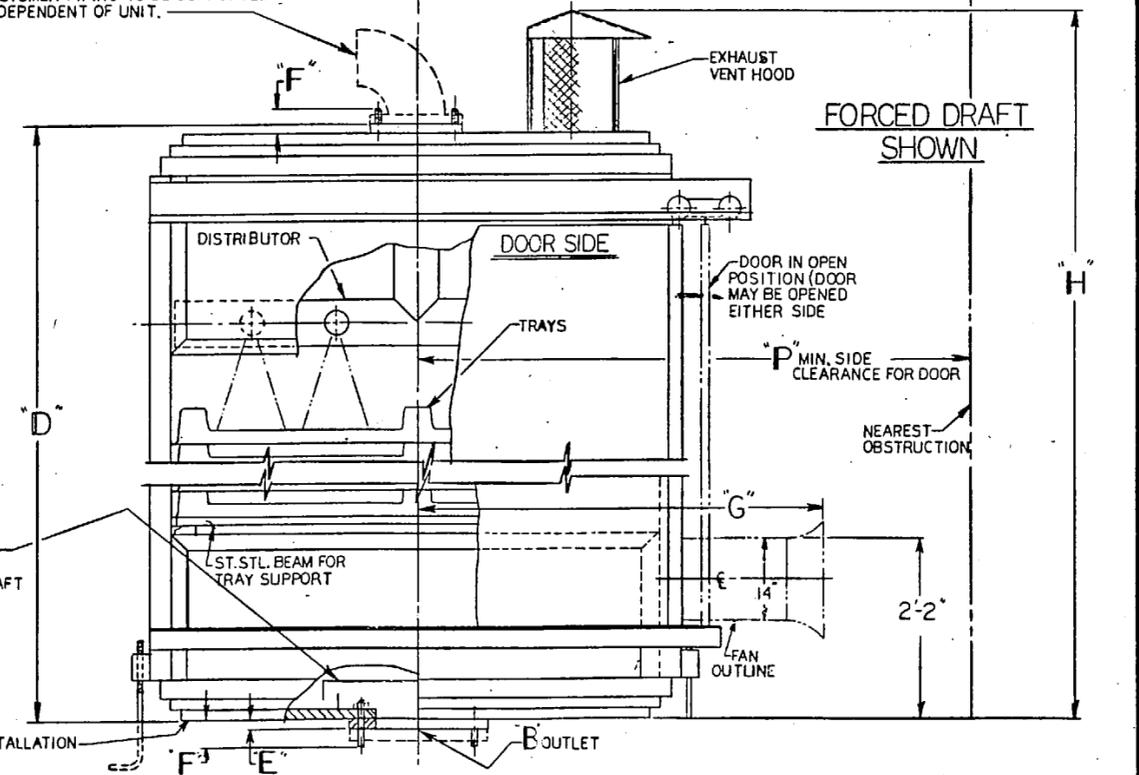
ST. STL. STUDS ARE PROVIDED TO SUIT STD. 125# FLANGES, BOLT HOLES STRADDLE CENTERLINE. STUDS ARE PERMANENTLY ATTACHED TO DEGASIFIER



PLAN VIEW

DOOR SIDE

ON UNIT SIZES 3' THRU 4' WELDED PIPING MUST BE USED FOR PIPING ASSEMBLY CLEARANCE OF THE EXHAUST VENT HOOD. CUSTOMER PIPING TO BE SUPPORTED INDEPENDENT OF UNIT.



ELEVATION VIEW

SUPPORTS FOR UNIT, PER INSTALLATION DRAWING 129-25357

DO NOT SCALE THIS DRAWING USE DIMENSIONS ONLY

REV	BY	DATE	REVISIONS	REV	BY	DATE	REVISIONS
A	FDC	3-1-79	ECN 3502-U				
B	RHH	5-18-79	ECN 3502-V				
C	RHH	10-23-79	ECN 3502-S				
D	RHH	3-27-80	ECN 3502-X				

TRAY-TYPE DEGASIFIER
FORCED OR INDUCED DRAFT
3 FT. THRU 5 FT. SQUARE

PERMUTIT

DRAWING NO. 185-15785

SHEET 1 OF 1

AUG 14 1947

FOR Main Water Plant P-108-4

Spec. 502, Advance "C"

APPROVED

CARR & J. E. GREINER CO.

DEPARTMENT Water

BY J. D. Koenig

J. D.

MARINE BARRACKS
NEW RIVER NORTH CAROLINA
Office of Officer-in-Charge

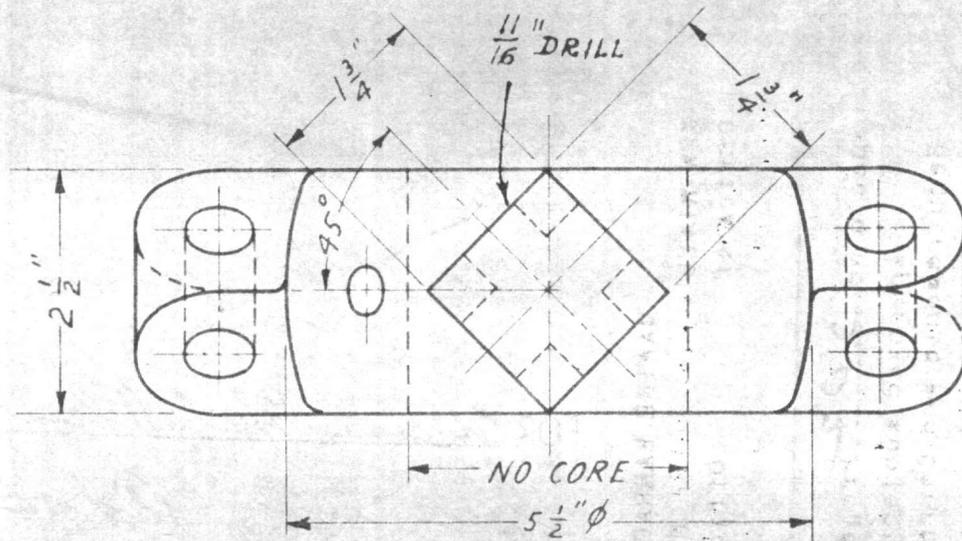
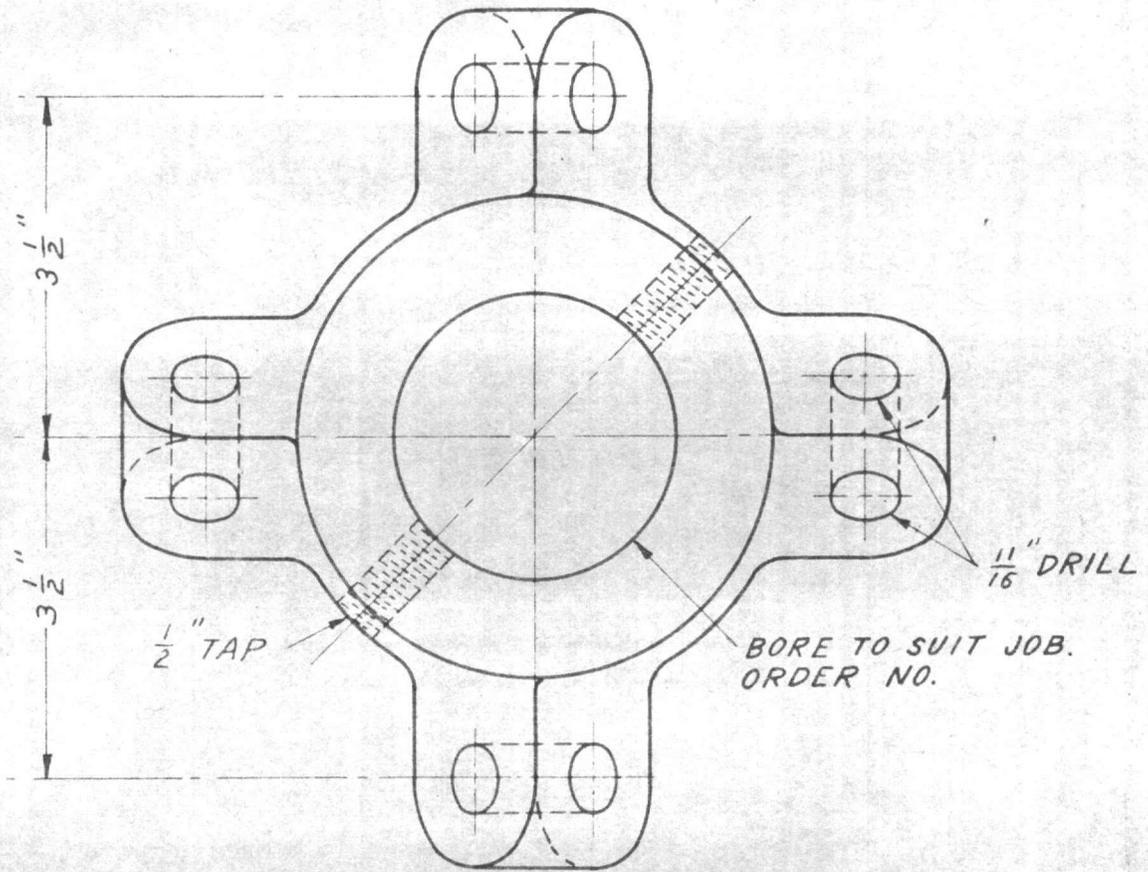
Spec'n No. 502 Project No. 108-4
Approved subject to Contract
Requirements and Corrections noted
in red.

G. E. Furr

Officer-in-Charge

By direction

8-20-47



2-HEX. CAP SCR. $\frac{1}{2}$ " X 2"

PATTERN L.S. 587
PART NO. - 100475

CAST IRON.

AGITATOR PADDLE
SUPPORT SPIDER.

THE PERMUTIT COMPANY
NEW YORK CITY

SCALE 6" = 1'-0" DATE 1-11-23

B-2756-2

MADE CHECKED

FOR Main Water Plant, P-188-X
Spec 502, Advance "C"

APPROVED
CARR & J. E. GREINER CO.

DEPARTMENT Water
BY F. D. Trimmer
MS.

AUG 14 1940

MARINE BARRACKS
NEW RIVER NORTH CAROLINA
Office of Officer-in-Charge

Spec'n No. 502 Project No. 108-4

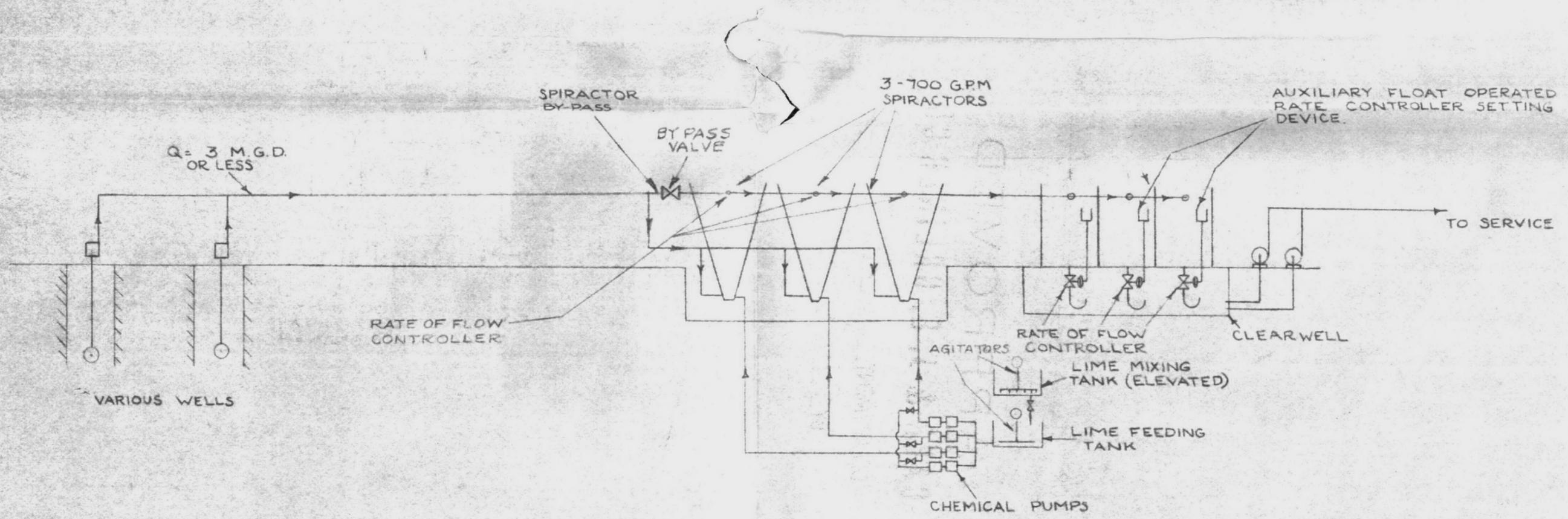
Approved subject to Contract
Requirements and Corrections noted
in red.

L. E. Frank
Officer-in-Charge

By direction

8-20-42

NOTE: DO NOT SCALE THIS DRAWING. USE DIMENSIONS ONLY.



FLOW DIAGRAM
SPIRACTOR TREATING PLANT

U.S. MARINE BASE
NEW RIVER, N.C.

Permutit
Water Conditioning

THE PERMUTIT CO.
NEW YORK, N. Y.

UNLESS OTHERWISE SPECIFIED all pressure vessels in this plant are designed for maximum working pressure of 50 lbs. per square inch

JOB # PERCE-12680

DRAWN BY	R.K.S.
TRACED BY	
CHECKED BY	F.P.

THE PERMUTIT COMPANY SUPPLIES, UNLESS OTHERWISE SPECIFIED, only water purification units proper and does not furnish any labor, material for erection, masonry, steel or wood construction, or alterations to existing structures.

THE PURCHASER SUPPLIES, UNLESS OTHERWISE SPECIFIED, labor, materials for all foundations, supports, platforms, ladders, etc., storage tanks, water pumps, motors, electrical connections, piping to inlet and from outlet of the water purification plant proper, by-pass connections, sumps, drains, and all piping shown shaded on this drawing.

OPERATING WEIGHTS:

Softener	Lbs.
Filter	"
Salt Storage Tank	"
Brine Measuring Tank	"

REVISIONS	
A	WEN 5-13-42
B	NEH 8-3-42
C	
D	

SCALE $\frac{1}{2}$
DATE 1-13-42

G-5943-2

NEW RIVER
Office of

MARINE BARRACKS
NORTH CAROLINA
Officer-in-Charge

Spec'n No. 5-20 Project No. 108-4
Approved subject to Contract
Requirements and Corrections noted
in red.

C. E. Furb
Officer-in-Charge
By direction
8-20-42

FOR Main Water Plant, P-108-K

Spec 502, Advance "C"

APPROVED
CARR & J. E. GREINER CO.

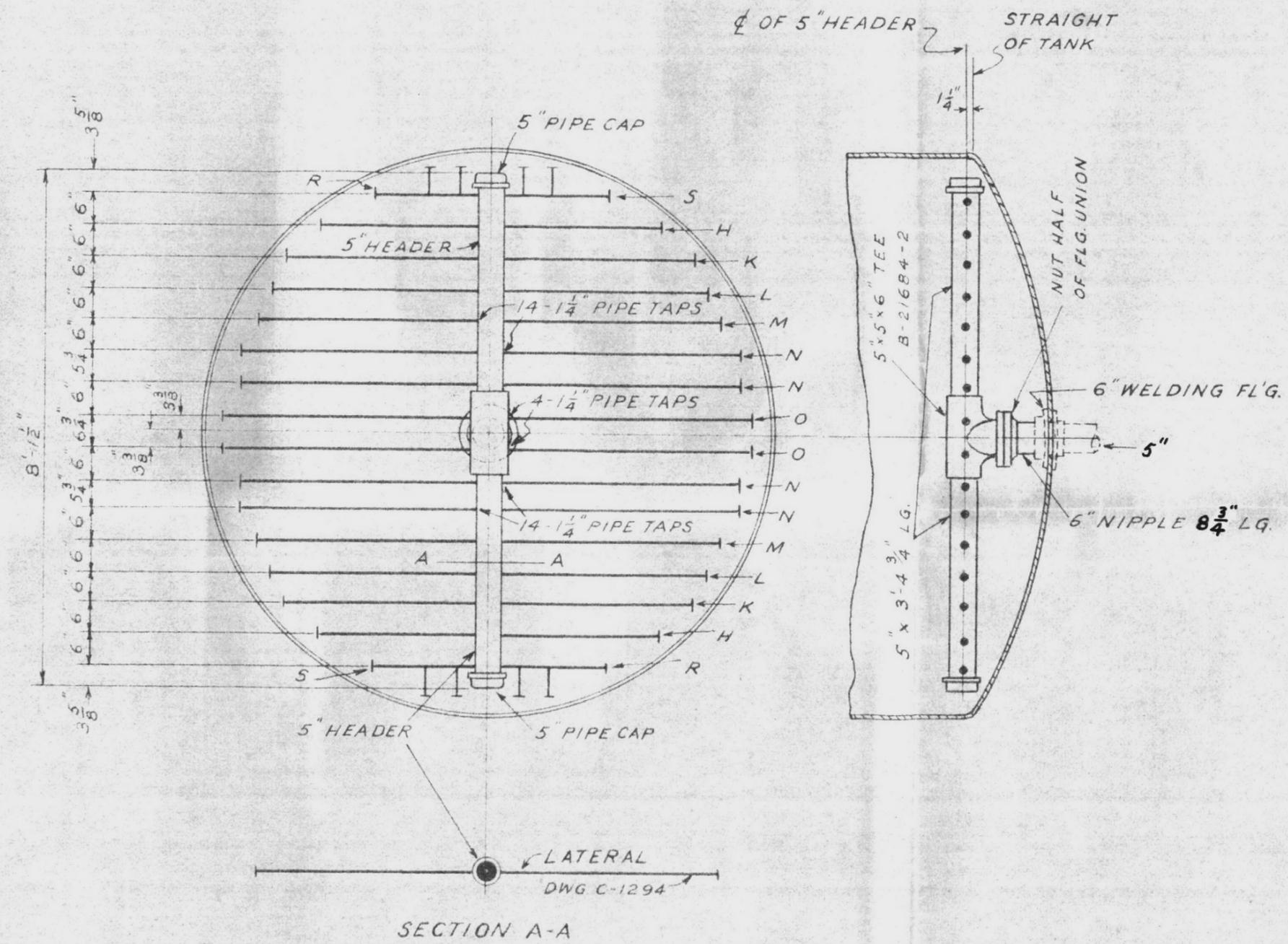
DEPARTMENT Water

BY F. D. Kramer
M.S.

AUG 14 1942

NOTE: DO NOT SCALE THIS DRAWING. USE DIMENSIONS ONLY

REQ'D	CLASSIFICATION	SIZE	LENGTH	REMARKS	MAT'L	DWG. NO
2	STRAINER HEADERS TBE	5"	3'-4 3/4"	TAP AS SHOWN	W.I.	
2	PIPE CAPS	5"			C.I.	
2	LATERALS	"S"	1 1/4"		X H.	C-1294-5
2	"	"R"	1 1/4"		"	"
4	"	"H"	1 1/4"		"	"
4	"	"K"	1 1/4"		"	"
4	"	"L"	1 1/4"		"	"
4	"	"M"	1 1/4"		"	"
8	"	"N"	1 1/4"		"	"
4	"	"O"	1 1/4"		"	"
1	DOUBLE SWEEP TEE	5x5x6"		TAP AS SHOWN	C.I.	B-21684-2
1	NIPPLE	T.B.E.	6"	8 3/4"	W.I.	
1	NUT HALF OF FLG. UNION	6"			C.I.	
1	RING GASKET	6" x 8 3/16" x 1/8" THK.			RUB.	
6	TAP BOLTS - HEX. HD.	5/8"	2 1/4"		ST.	
240	STRAINERS TYPE 'F'	3/8"			BR.	B-2830-1
255	STRAINER PROTECTOR CAPS				TIN	B-2830-4



9'-0" ϕ VERT. SOFTENER
STRAINER SYSTEM

Permutit
Water Conditioning

THE PERMUTIT COMPANY
NEW YORK, N. Y.

JOB #BKE-14179A

DRAWN BY	
TRACED BY	M.P.
CHECKED BY	J.P.

UNLESS OTHERWISE SPECIFIED, all pressure vessels in this plant are designed for maximum working pressure of _____ lbs. per square inch.

THE PERMUTIT COMPANY SUPPLIES, UNLESS OTHERWISE SPECIFIED, labor, materials for all foundations, supports, platforms, ladders, etc., storage tanks, water pumps, motors, electrical connections, piping to inlet and from outlet of the water purification plant proper, by-pass connections, sumps, drains, and all piping shown shaded on this drawing.

THE PURCHASER SUPPLIES, UNLESS OTHERWISE SPECIFIED, labor, materials for all foundations, supports, platforms, ladders, etc., storage tanks, water pumps, motors, electrical connections, piping to inlet and from outlet of the water purification plant proper, by-pass connections, sumps, drains, and all piping shown shaded on this drawing.

OPERATING WEIGHTS:

Softener	Lbs.
Filter	"
Salt Storage Tank	"
Brine Measuring Tank	"

REVISIONS	
A	
B	
C	
D	

SCALE 1/2" = 1'-0"
DATE 4-27-42

G-2633-X

NEW RIVER MARINE BARRACKS
NORTH CAROLINA
Office of Resident Officer-in-Charge

Spec'n No. 815 Project No. 1073

Approved subject to Contract
Requirements and Corrections noted
in red.

W. H. Paly
Resident Officer-in-Charge

By direction
3-20-42

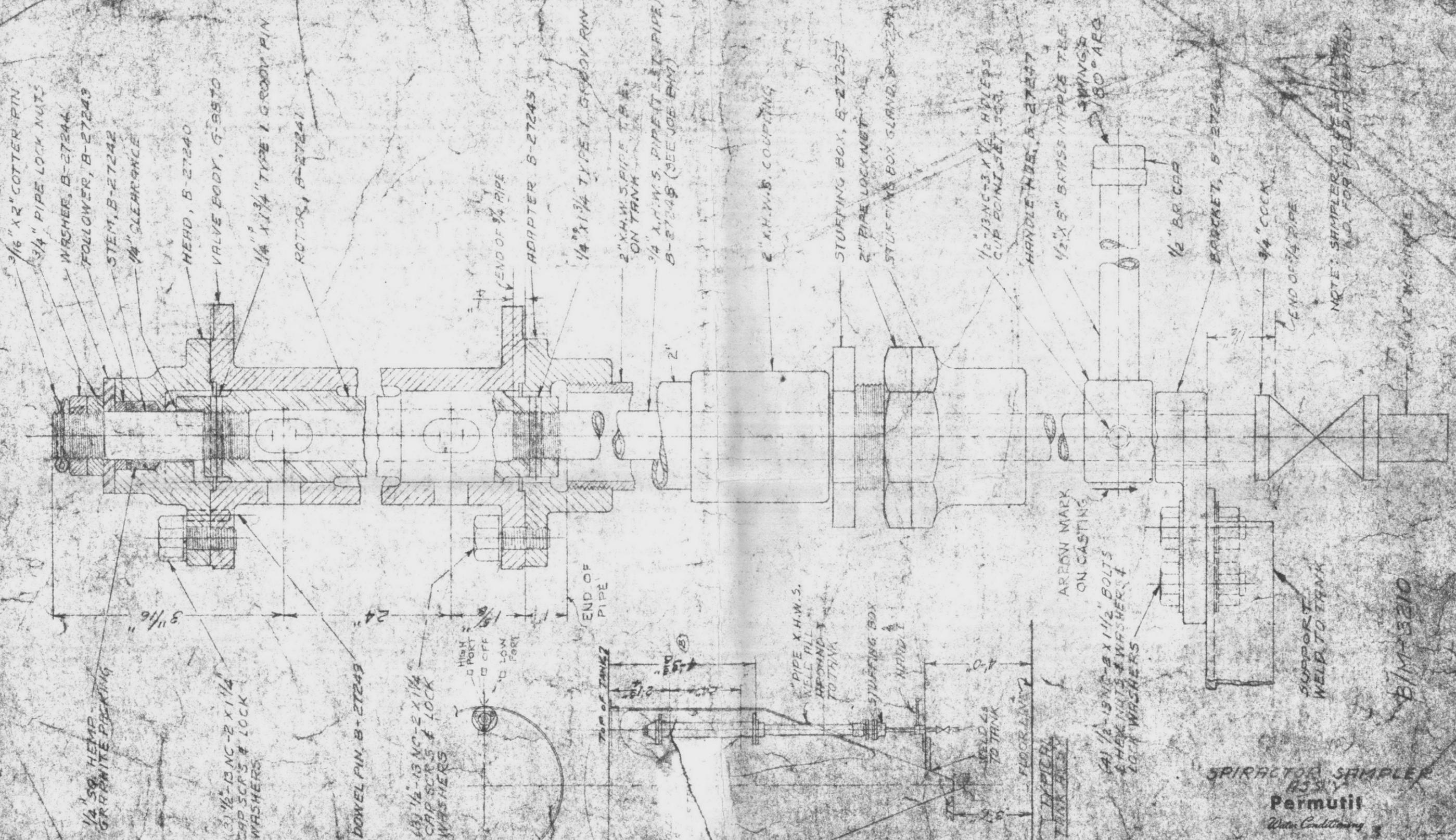
FOR Laundry
P-107-25

APPROVED
CARR & J. E. GREINER CO.

DEPARTMENT MTC

BY asw

NOTE: DO NOT SCALE THIS DRAWING. USE DIMENSIONS ONLY.



NOTE: SAMPLER TO BE SHIPPED IN ORIGINAL CASE.

BIM-3210

SPIRACTOR SAMPLER
8351
Permutit
Water Conditioning

THE PERMUTIT COMPANY
NEW YORK, N. Y.

G-8871-1

UNLESS OTHERWISE SPECIFIED all pressure vessels in this plant are designed for maximum working pressure of 50 lbs. per square inch

DRAWN BY	DB
TRACED BY	RS
CHECKED BY	MS

THE PERMUTIT COMPANY SUPPLIES, UNLESS OTHERWISE SPECIFIED, only water purification units proper and does not furnish any labor, material for erection, masonry, steel or wood construction, or alterations to existing structures.

THE PURCHASER SUPPLIES, UNLESS OTHERWISE SPECIFIED, labor, materials for all foundations, supports, platforms, ladders, etc., storage tanks, water pumps, motors, electrical connections, piping to inlet and from outlet of the water purification plant proper, pipe connections, sumps, drains, and all piping shown shaded on this drawing.

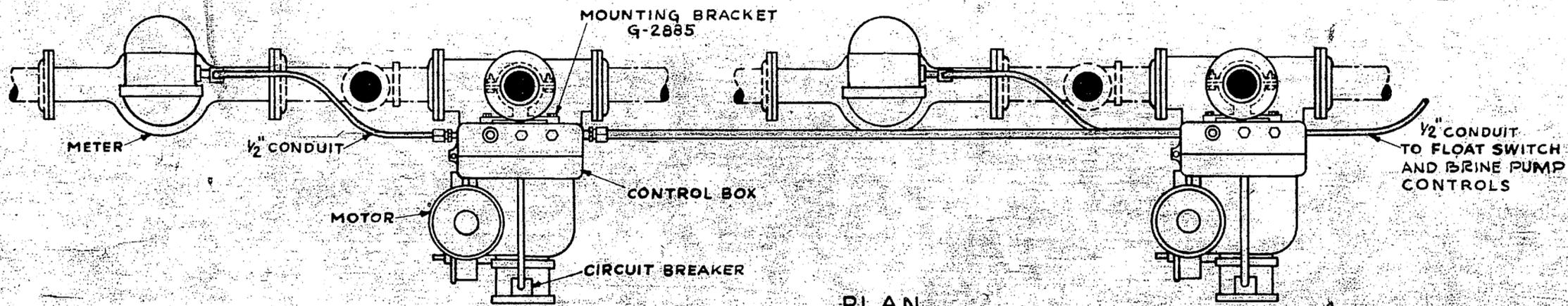
OPERATING WEIGHTS:
Softener
Filter
Salt Storage Tank
Brine Measuring Tank

REVISIONS	
1	313 8-12-46
2	9-30-46

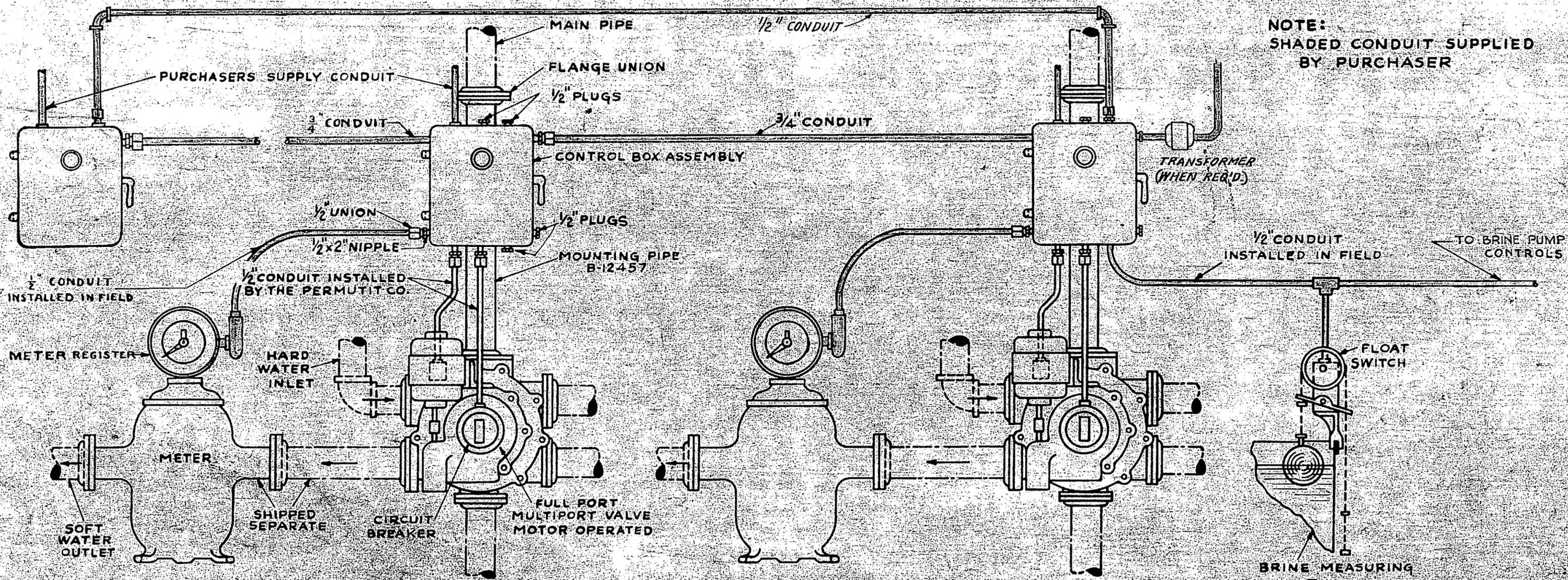
Scale HALF
DATE 8-25-46

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PLAN



ELEVATION

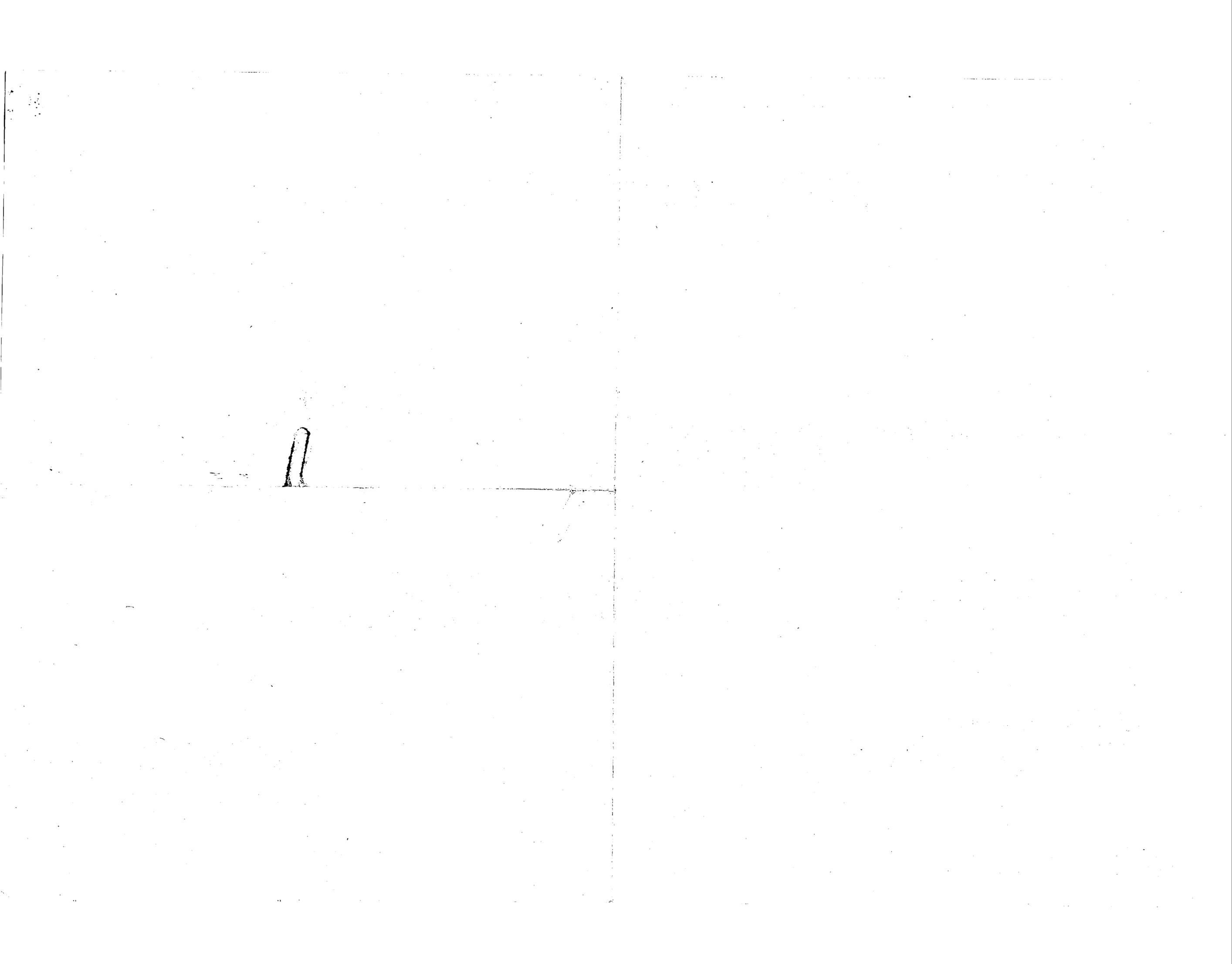
TRIPLE UNIT ARRANGEMENT
OF ELECTRICAL CONTROLS FOR
AUTOMATIC SOFTENERS

THE PERMUTIT CO.
NEW YORK CITY

G-5235-1

DRAWN BY	RJK
CHECKED	CMG

SCALE 1/2" = 1'-0" 12-10-40



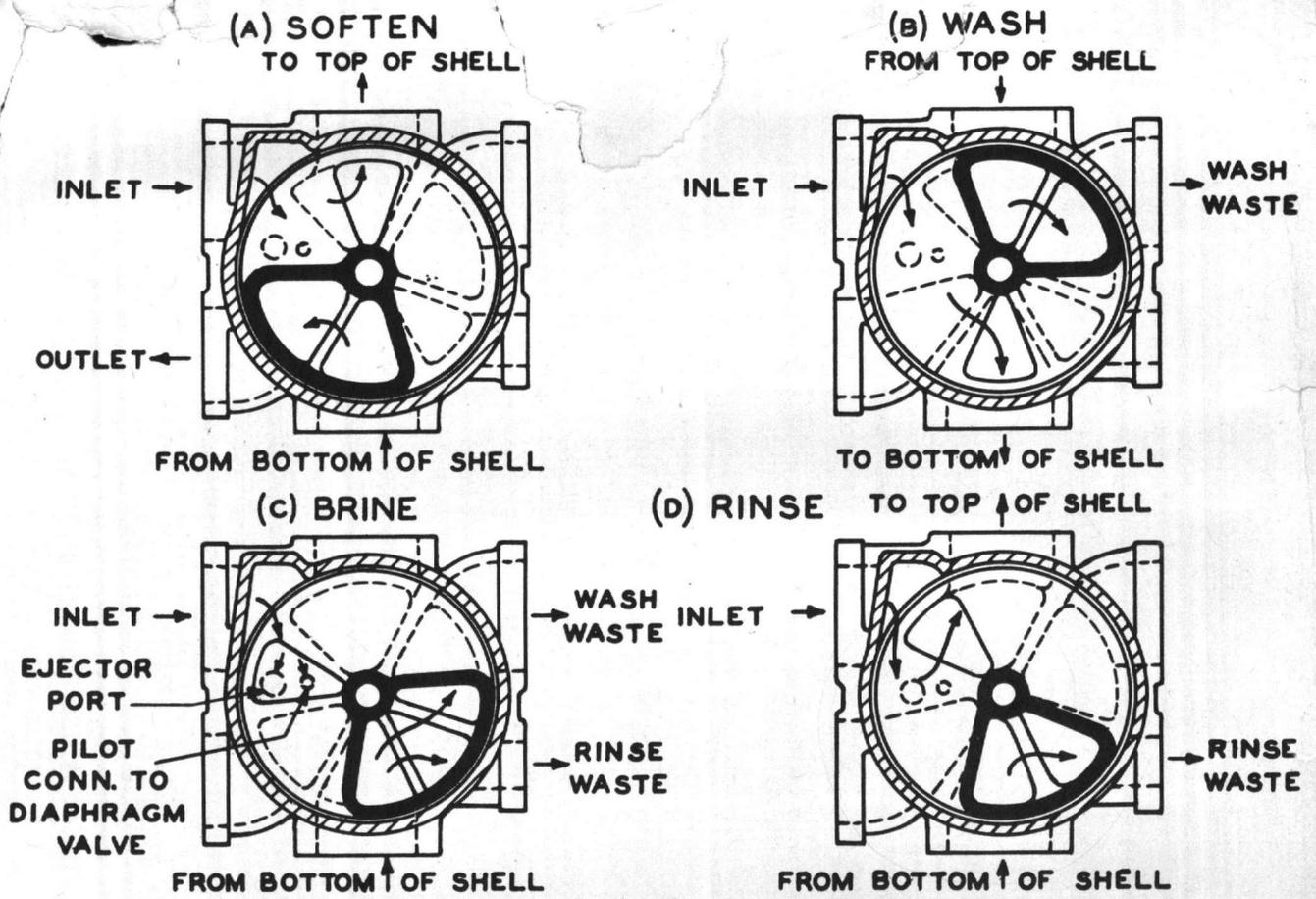


FIG. 2-DIAGRAMS SHOWING FLOW THROUGH MULTIPOINT VALVE

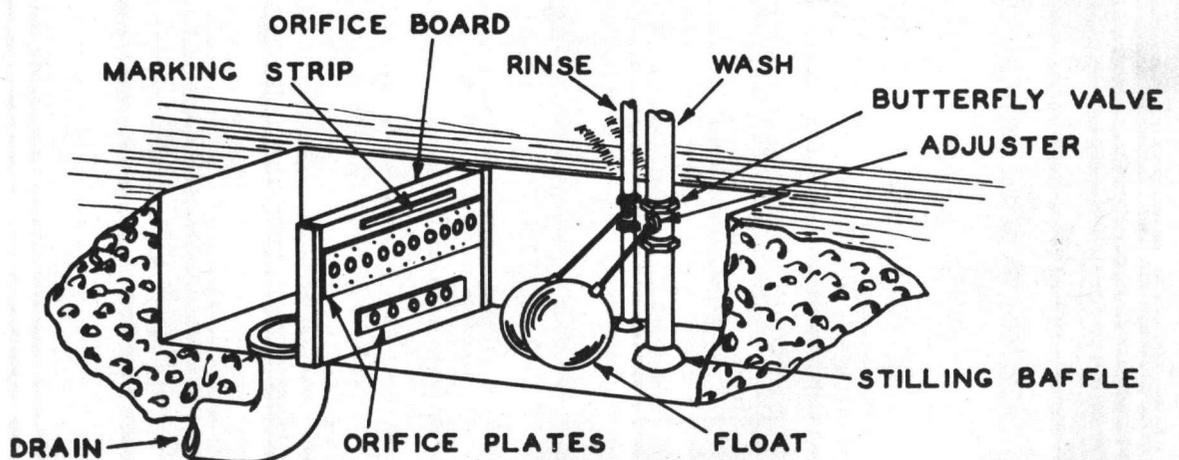


FIG. 3 VIEW OF TYPICAL SUMP SHOWING BUTTERFLY CONTROLLERS AND ORIFICE BOARD

BATTERY VALVE

DISCHARGE

STRIKING BARREL

FLOAT

ORRICE BLADES

DRAIN

FIG. 3. VIEW OF TYPICAL SLUMP SHOWING BUTTERFLY CONTROLLERS AND ORRICE BOARD

Automatic Switch Co.

Manufacturers of

FOUNDED 1888

"ASCO VALVES"

SOLENOID OPERATED VALVES
AUTOMATIC TRANSFER SWITCHES
MAGNETIC SWITCHES AND RELAYS

41 EAST 11TH STREET
NEW YORK 3, N. Y.

December 18, 1946

Contractors-Contract NOY-4132

P.O. Drawer 1859

Jacksonville, Florida *North Carolina*

Attention of Mr. J. T. Brown

Gentlemen:

We have your wire of December 16th requesting installation instructions for the Type P4SB solenoid valve. The construction of this valve is same as shown on Drawing CV 10-51; except the solenoid is of a slightly larger size.

This valve must be mounted in the same position as shown on the drawing, with the solenoid vertical and pointing upwards. The pressure must be connected to pipe connection Q, the exhaust at R and the cylinder connections at S and T.

The proper cylinder connections to S and T will depend upon the position of the piston when the valve is energized and de-energized. With the solenoid de-energized, pressure will be applied to cylinder connection T, and S will be open to exhaust. When solenoid is energized, pressure will be applied to S, and T will be connected to exhaust.

We trust this information will be satisfactory for your needs.

Yours very truly,

AUTOMATIC SWITCH CO.

R. McCormick
R. McCormick

RMC:efs

Encl.

cc: Industrial & Communications Equip. Co.

TERMS AND CONDITIONS OF SALE

The Automatic Switch Company agrees to sell the equipment covered herein on the following terms and conditions which are attached to and hereby expressly made a part of the agreement of sale. Additional terms and conditions not covered herein will be accepted only upon mutual agreement in writing.

ORDERS: Contracts and orders are subject to acceptance by home office of the seller.

PRICES AND DISCOUNTS: All prices and discounts are in accordance with the established price and discount schedules of the seller as filed with the Office of Price Administration. No other certification statement or representation, express or implied, can be made in regard to the prices and discounts regardless of any other term or condition requested by the buyer.

The list prices in seller's catalogs and prices quoted are F.O.B. seller's factory, New York City.

Minimum billing charge \$1.00 net.

Terms are strictly net cash, thirty days from date of invoice payable in New York funds, less 2% on invoices dated the 1st to the 15th inclusive, if paid on or before the 25th of the month, or on invoices dated the 16th to and including the last day of the month if paid on or before the 10th of the following month.

DESIGNS: All designs and specifications shown in seller's catalogs are subject to change without notice.

LIABILITY: The buyer shall remain primarily liable for the agreed purchase price and the seller shall not be obliged to accept any term or condition of payment which will shift said liability to a third person not a party to the contract of sale, whether or not such third person is the United States Government, its agents or instrumentalities.

SHIPPING DATE: Seller shall not be liable in any way for any default or delay in shipping due to contingencies beyond its control, or the control of its suppliers or sub-contractors, which prevents or interferes with the seller making delivery on the date specified, including but not limited to war, or restraints affecting shipping, delivery of materials or credit as a result of war or war restrictions, non-arrival, delay or failure to procure materials as a result of war or war restrictions, rationing of fuel, strikes, lockouts, fires, bombings, accidents, floods, droughts and any other contingency affecting the seller, its suppliers, or sub-contractors; and the seller shall have the right to cancel a contract of sale or to extend the shipping date in the event that one or more of such contingencies prevent or delay shipments. In the event of delayed or extended shipping dates due to the above causes, and the buyer changes shipping instructions, any additional shipping charges shall be paid by the buyer as a part of the purchase price.

WEIGHTS AND DIMENSIONS: Shipping weights and dimensions given in seller's catalog are as close to actual as practicable but are not guaranteed. No claims will be allowed because of any discrepancy between actual weight or dimensions of material shipped and listed data.

SHIPPING AND PACKING: All material is carefully packed for shipment and seller will not be responsible for loss, delay or breakage after having received "in good order" receipts from the transportation company. All claims for breakage, loss, delay and damage should be made to carriers, but seller will render buyer all possible assistance in securing satisfactory adjustment of such claims.

In the absence of directions, goods will be shipped by the method and via carrier seller believes dependable.

Goods held in factory beyond delivery date for convenience of buyer will be invoiced on date of completion and terms of payment will apply as from invoice date. Such goods will be subject to charges for warehousing and other expenses incident to such delay.

CANCELLATION: Orders are not subject to cancellation or change in specifications, shipping schedules or other conditions orig-

inally agreed upon without seller's written consent and then only upon agreement to compensate seller for loss caused by such cancellation or changes.

COST ANALYSIS: A cost analysis of the manufacture of equipment sold will be supplied or an examination of the seller's books and records will be permitted only where said cost analysis or examination is required under Section 403 of the Sixth Supplemental National Defense Appropriation Act of 1942, approved April 28, 1942, as amended, and then only upon a written demand served upon it by the proper Governmental authority.

GUARANTEE: The seller guarantees its products to be free from defects in material or workmanship over a period of one year from date of shipment from its factory. The seller is not responsible for damage to apparatus through improper installation or attempts to operate it above its rated capacity or voltage, intentionally or otherwise.

If any device is found unsatisfactory under the guarantee the buyer should notify the seller in writing and after receipt of shipping advice, buyer may return it direct to the Automatic Switch Company, Receiving Department, 85 University Place, New York, N. Y., carrying charges prepaid. Such equipment will be replaced or put in perfect operating condition, free of all charges except transportation, and the correction of any defects by repair or replacement by the seller shall constitute fulfillment of all obligations to the purchaser. Seller does not assume responsibility for unauthorized repairs to apparatus, even though defective.

Seller shall not be liable for consequential damage in case of any failure to meet the conditions of any Guarantee or Shipping Schedule, nor will claims for labor loss of profits, repairs or other expenses incidental to replacement be allowed.

No other representations, guarantees or warranties, expressed or implied, are made by the seller in connection with the manufacture and sale of equipment.

RETURNS FOR REPAIR: When equipment is returned for repair due to causes not covered by seller's guarantee, the buyer should notify the seller in writing and, after receipt of shipping advice, the buyer may return it to the Automatic Switch Company, Receiving Department, 85 University Place, New York, N. Y. for prompt attention. Seller's Service Department will put such equipment in operating condition at the lowest possible cost. Repairs or adjustments should not be attempted in the field unless circumstances absolutely prohibit the return of the entire equipment to seller. When necessary to make a return give all possible information regarding the trouble experienced and complete details of the installation with which the device was used.

RETURNS FOR CREDIT: No returns for credit will be accepted unless seller's permission has been obtained in each case in advance. Only sizes and designs taken from seller's regular line which are in active demand can be accepted for credit. Credit will be based on prices prevailing at the time of return, or invoiced price, whichever is lower, subject to deduction of 10 per cent for handling and an additional deduction for expenses incurred in restoring goods to saleable condition. Obsolete or specially manufactured goods can be accepted for return or credit only to the extent of value to seller in each case.

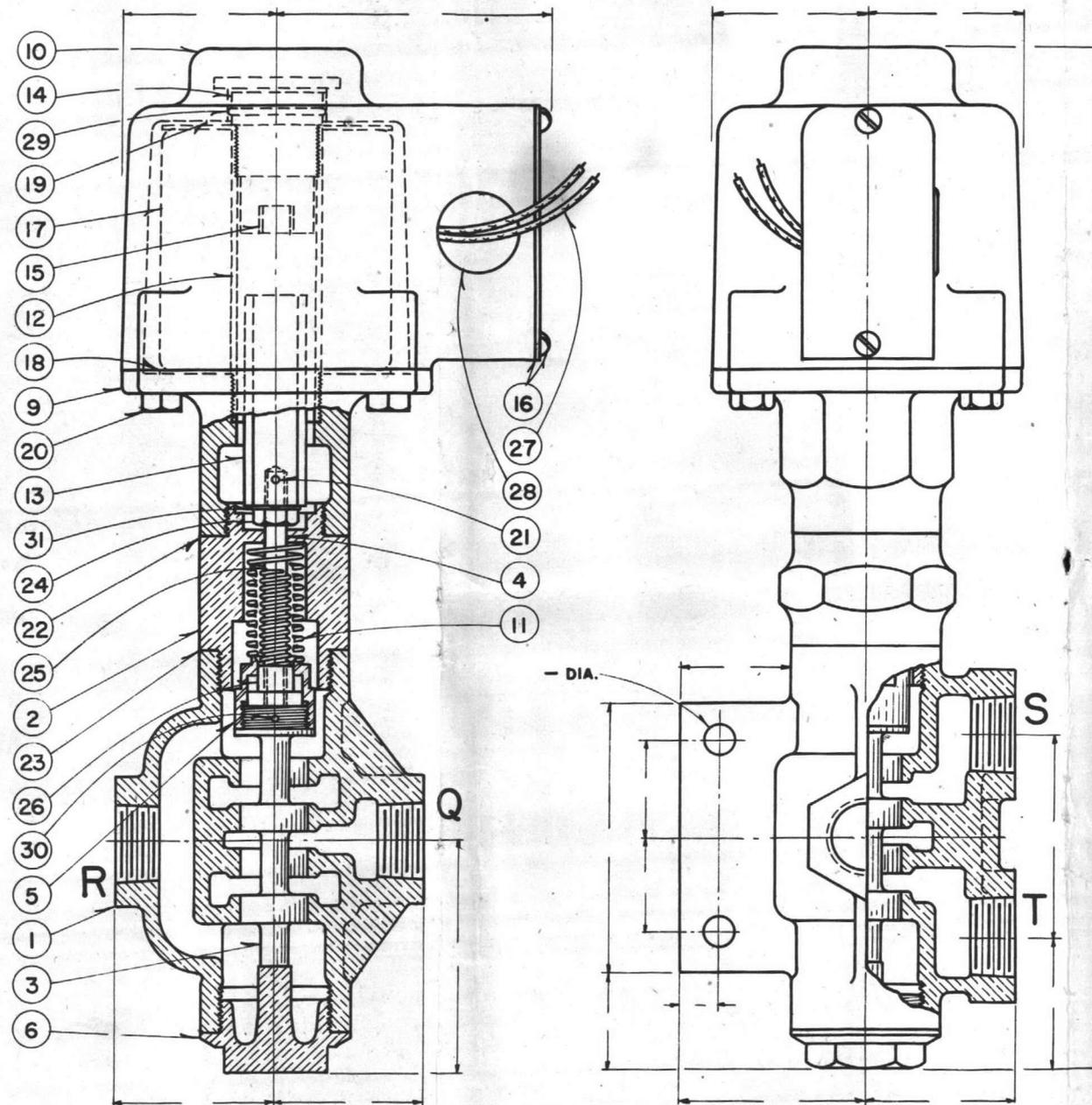
JIGS, FIXTURES, DIES, ETC.: Any jigs, fixtures, dies, tools or patterns required shall be the property of the seller, regardless of whether the costs of the same are paid by the buyer or not.

BOND PREMIUMS: In the event the seller shall be required as a condition of the manufacture and sale of equipment to furnish a performance bond, the buyer shall pay as a part of the purchase price of said equipment all bond premiums and expense in connection therewith.

LAWS AND REGULATIONS: Seller has complied with all applicable Federal, State and local laws and regulations in connection with the manufacture and sale of all equipment. No responsibility or liability will be taken for import duties, laws, regulations or taxes imposed by any foreign country.

PARTS LIST FOR $\frac{3}{8}$ & $\frac{1}{2}$ TYPE P4A VALVE

NO.	NAME	DWG. NO.
1.	VALVE BODY	CV10-47
2.	CONNECTING BUSHING	EV10-48
3.	PISTON	EV10-49
4.	VALVE STEM	EV10-50-3
5.	PISTON NUT	EV10-50-1
6.	BOTTOM PLUG NUT	EV10-136
9.	SOLENOID BASE	7316-D
10.	SOLENOID CUP	6605-D
11.	PISTON SPRING	
12.	CORE TUBE	7696-E
13.	CORE	6693-E
14.	PLUG NUT	7695-E
15.	SHADING COIL	EV-14-177
16.	NAMEPLATE & SCREWS (2)	8078-E
17.	COIL	9831-E
18.	COIL INSULATING WASHERS(2)	EV-14-548-2
19.	COIL CLAMPING WASHER	EV-10-17-2
20.	SOLENOID MOUNTING BOLTS(4)	$\frac{1}{4}$ -20- $\frac{5}{8}$
21.	CORE PIN	$\frac{1}{16}$ DIA. - $\frac{1}{16}$
22.	SOLENOID JOINT	
23.	BODY JOINT	
24.	STEM LOCKNUT	$\frac{1}{4}$ -24
25.	STEM SPRING	
26.	STEM END	EV10-50-2
27.	COIL LEADS	
28.	SNAP-IN BLANK	COMM'L
29.	PLUG NUT RING	EV-14-549
30.	PISTON LOCK-PIN	
31.	LOCKWASHER ($\frac{1}{4}$ DIA.)	COMM'L



Q	PRESSURE
R	EXHAUST
S	CYLINDER
T	CYLINDER

DIMENSIONS FOR P4 VALVE

AUTOMATIC SWITCH CO.
41 EAST 11 ST., NEW YORK.

ASSEMBLY
TYPE 'P4A' SOLENOID VALVE
RIGHT HAND PIPE CONNECTIONS

MADE BY R.M.C. SCALE $1\frac{1}{2}$ "
CHECKED DATE 8-17-33 SHEET
No. CV10-51

REVISED - 1-29-46 PARTS LIST BROUGHT UP TO DATE (L.M.B.)
REDRAWN FROM CV10-51 DATED 10-5-37 WITH SLIGHT CHANGES

RECEIVED

DEC 30 1946

AUTOMATIC SWITCH CO.

$4 \times 4 = 64 \times P \times 4.5$

64
3.14

256
192

100.96
4.5

100480
60384

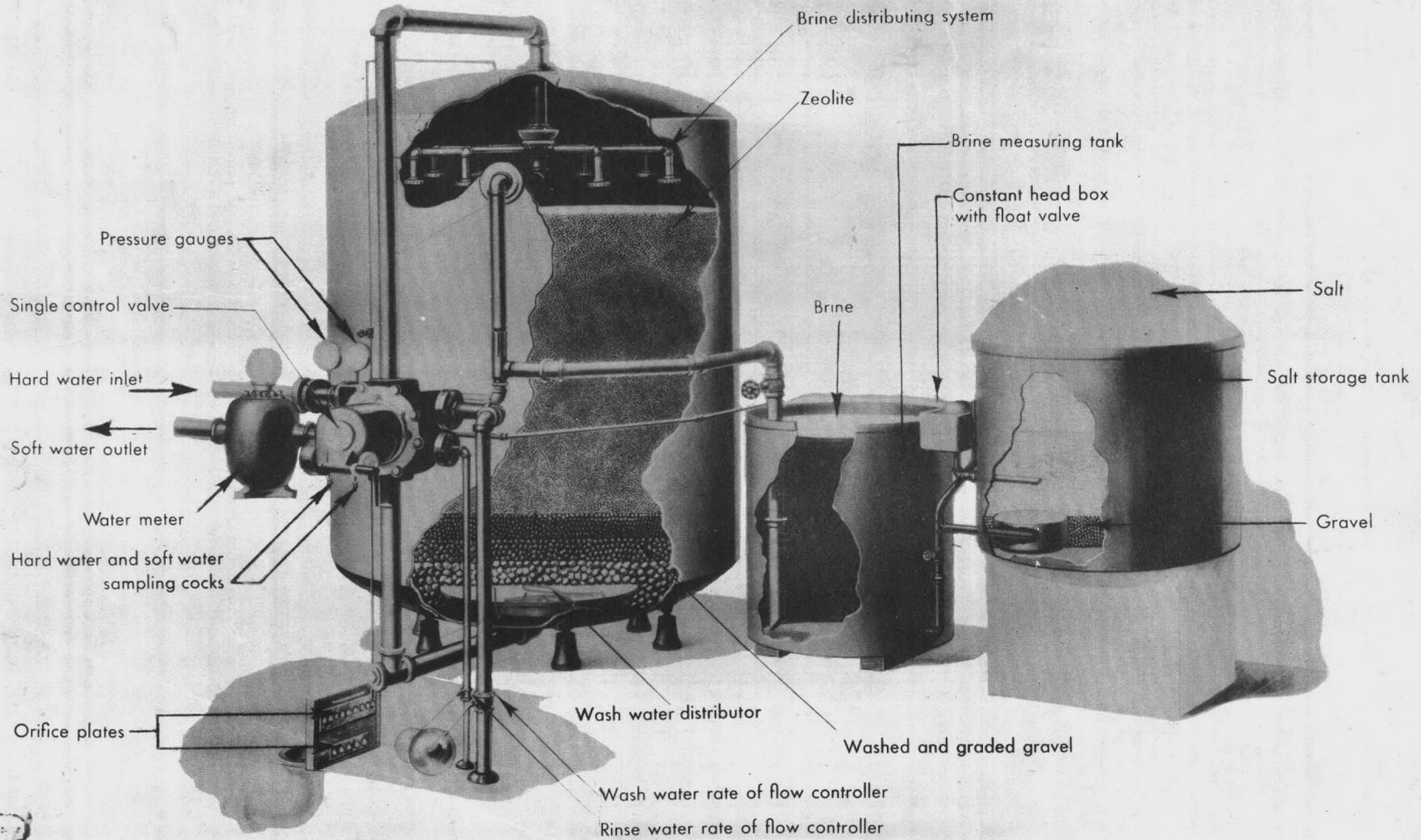
396320

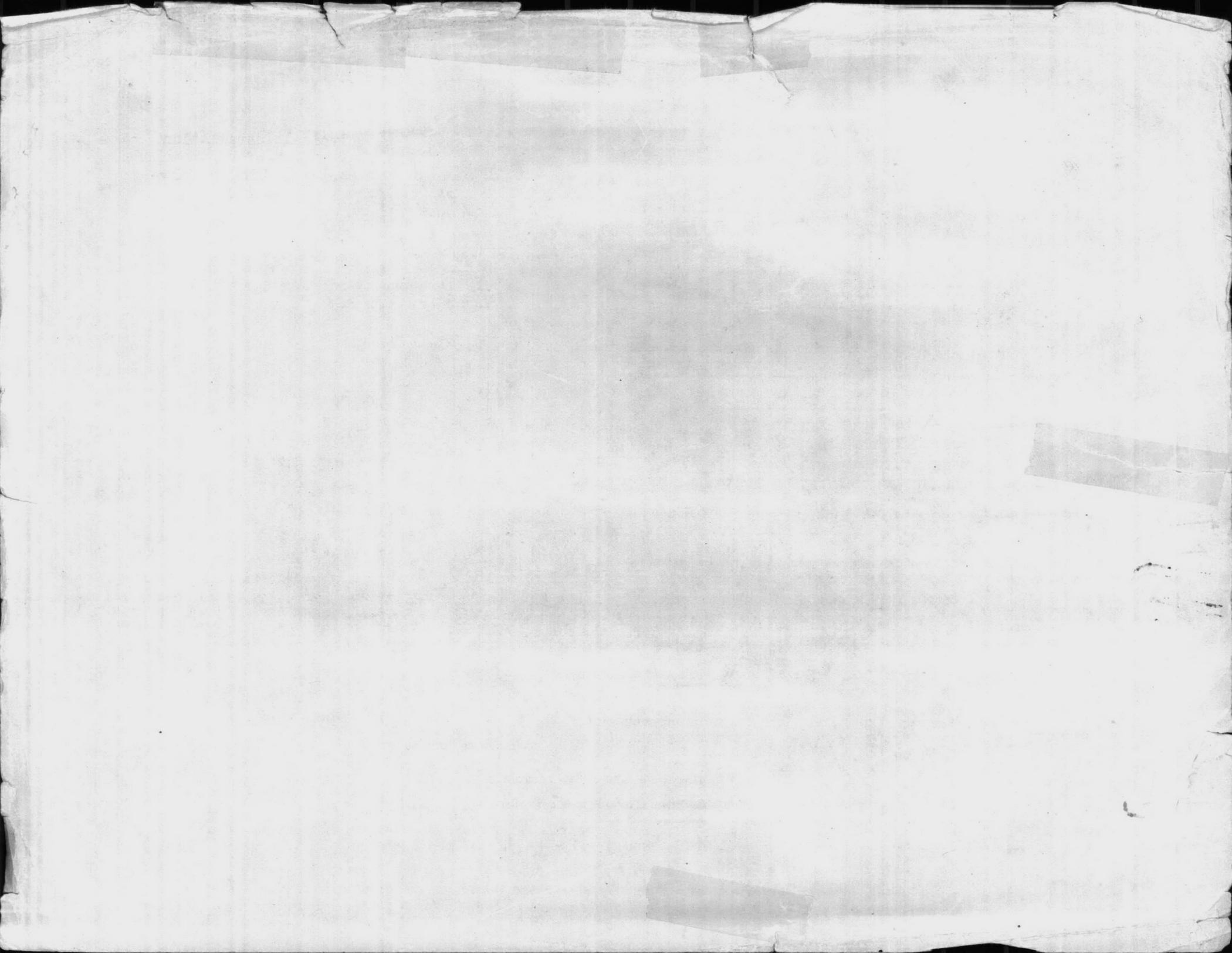
70432
8

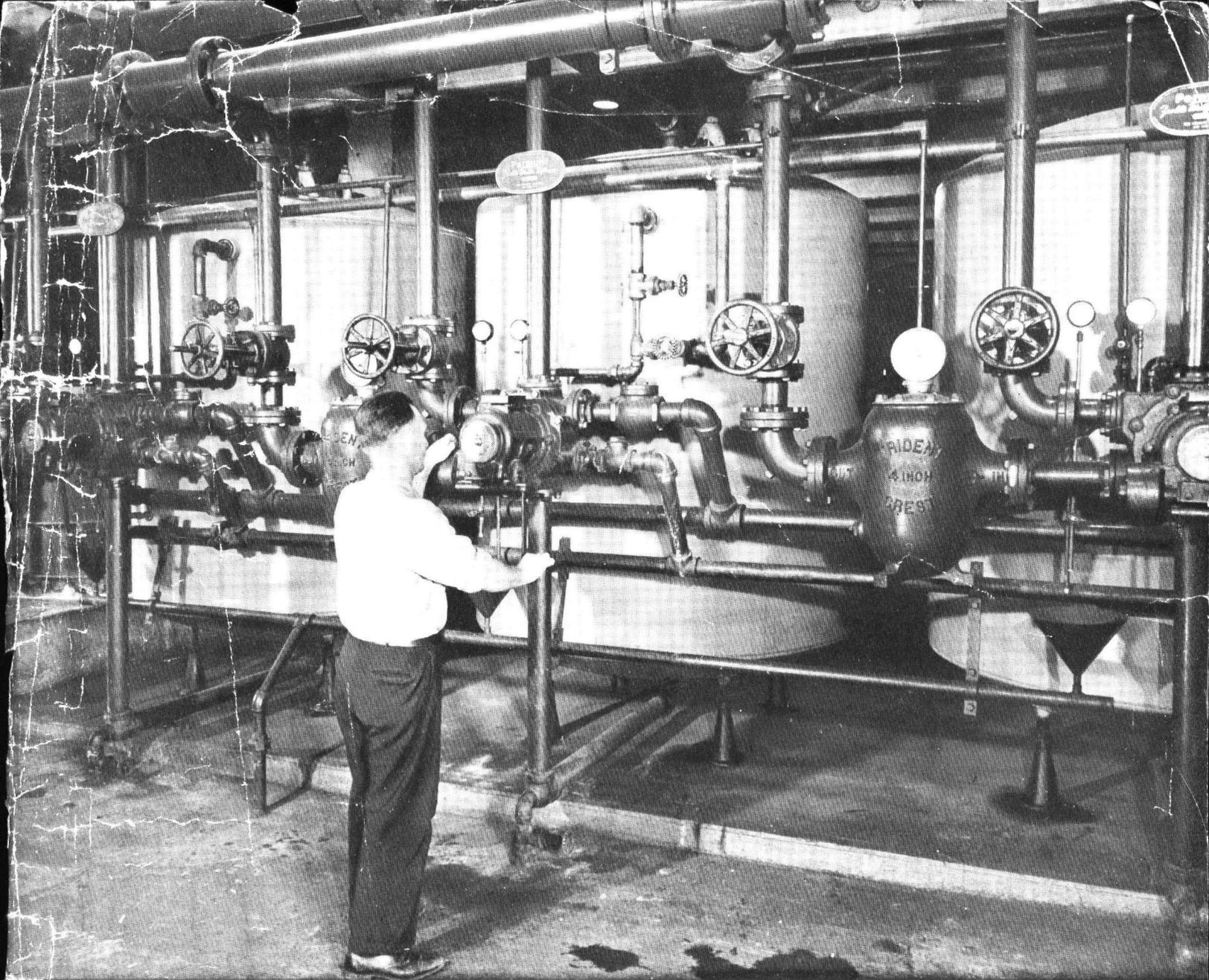
563456

Mr. Barker

Typical Installation
of
Permutit Single Valve
Control







PERMUTIT

Zeo-Karb

Water Softeners and Dealcalizers

Zeo-Karb[†]

THE DOUBLE-DUTY

Water Softener and Dealkalizer

Zeo-Karb is one of a group of several zeolites, or ion exchanger materials, pioneered by The Permutit Company. Each of these groups have special chemical and physical characteristics which, checked against the particular set of operating conditions prevailing and the final results to be obtained, determine the selection. Zeo-Karb was produced, after years of intensive research, to meet the needs of many industries, where it has found particularly successful application.

In appearance, Zeo-Karb is a hard, black granular substance. Obtained by a special treatment of coal, it is *non-siliceous* (having a carbon base) and *acid resistant*. Therefore, it can be regenerated* either by acid or salt. This property permits its serving double duty, and hence greatly broadens its scope of usefulness.

Zeo-Karb Na (Na_2Z)—When regenerated with salt (as all previous zeolites) it operates on the sodium cycle, releasing sodium ion to water in exchange for calcium and magnesium ions. In this role, it is known as Zeo-Karb Na.

Zeo-Karb H (H_2Z)—When regenerated with acid, it operates on what is known as the hydrogen cycle, because it releases hydrogen ion to water and removes calcium, magnesium, sodium and other metal ions. All carbonates and bicarbonates are converted to carbonic acid. Chlorides and sulfates are transformed into hy-

drochloric and sulfuric acids. In this role it is known as Zeo-Karb H.

De-Acidite[†] Demineralizing Process

The Permutit Demineralizing process produces, by chemical means, the equivalent of distilled water at less than 5% of the cost of distillation. The process consists of two steps, the first being the use of Zeo-Karb H which converts all salts of sodium, calcium and magnesium to corresponding acids. In the second step, effluent flows to a "De-Acidite" unit, where the acids are absorbed. Carbon dioxide is removed by a simple degasifier. (See Bulletin 2684 for further description.)

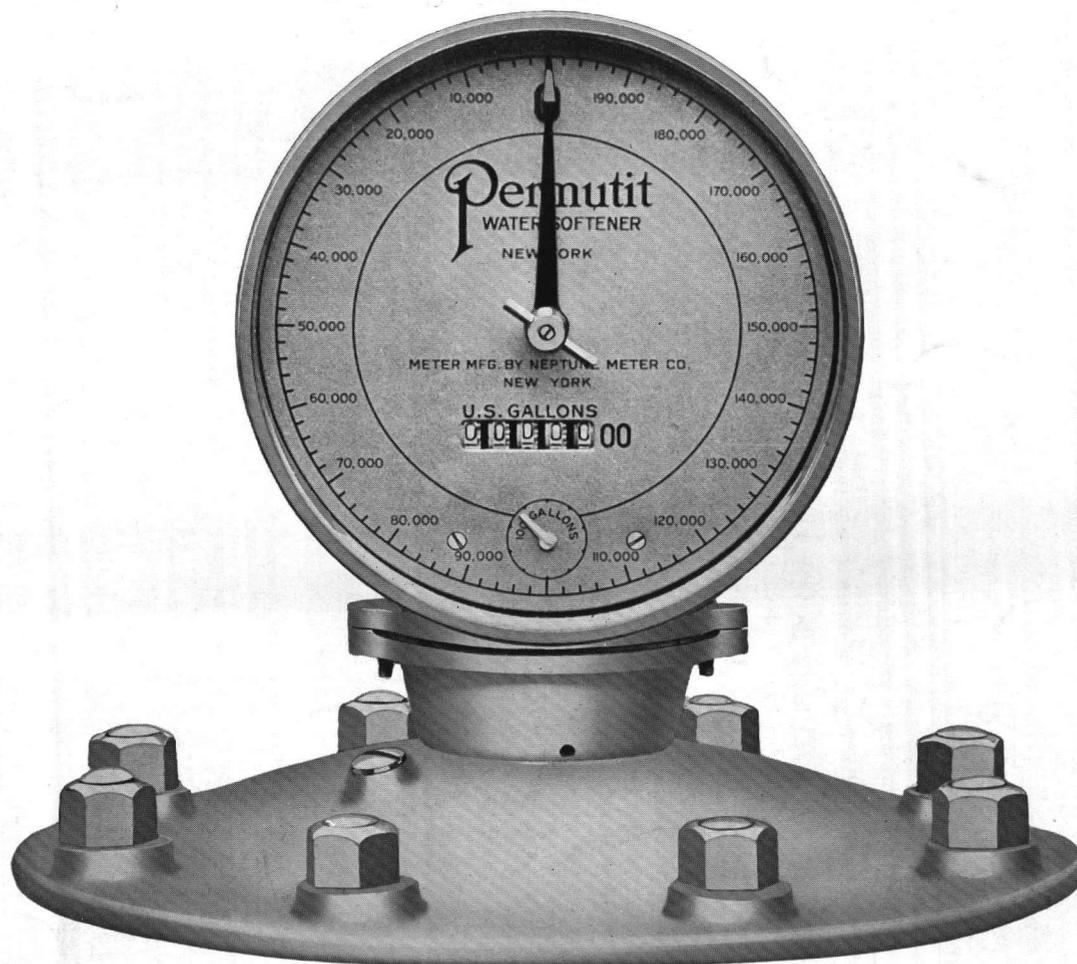
Zeo-Karb H and Zeo-Karb Na Parallel Treatment

After the chlorides and sulfates of calcium and magnesium have been changed to the corresponding acids, these acids may be converted to sodium chloride and sodium sulfate by mixing with an effluent from a sodium cycle zeolite water softener, or by the addition of an alkali. If desired, a water of zero hardness and zero alkalinity may be delivered. Figure 2 (page 4) shows typical results obtained by treating an average water

*Regeneration—All zeolites, after completing a definite period of softening, must be regenerated, i.e., they must have removed from them the ions they have absorbed from the water they have conditioned. To accomplish this for sodium cycle zeolites, a solution of salt (NaCl) or, in the case of Zeo-Karb H, acid (H_2SO_4) is passed through the zeolite bed. After a water rinse, it is then ready to resume the softening cycle.

[†]Trademark Reg. U. S. Pat. Off.

Proposal No.



Giant Dial Signal Meter

The Permutit electric signal meter has been developed especially for zeolite water softener use, and possesses many unique advantages in addition to the usual registration of the total quantity of water metered.

Zeolite Water Softeners are designed to deliver a definite quantity of water between regenerations. Since they are automatic in their operation and require no attention during the softening run, it is often possible to save time and labor if the operator can be automatically signaled of the end of the softening run, when regeneration is required.

To satisfy this need a meter has been developed to indicate and signal the termination of the passage of a chosen quantity of softened water. This is accomplished by the mechanism within the giant dial which closes an electric circuit (of 6 to 8 volts) to operate some suitable signal device.

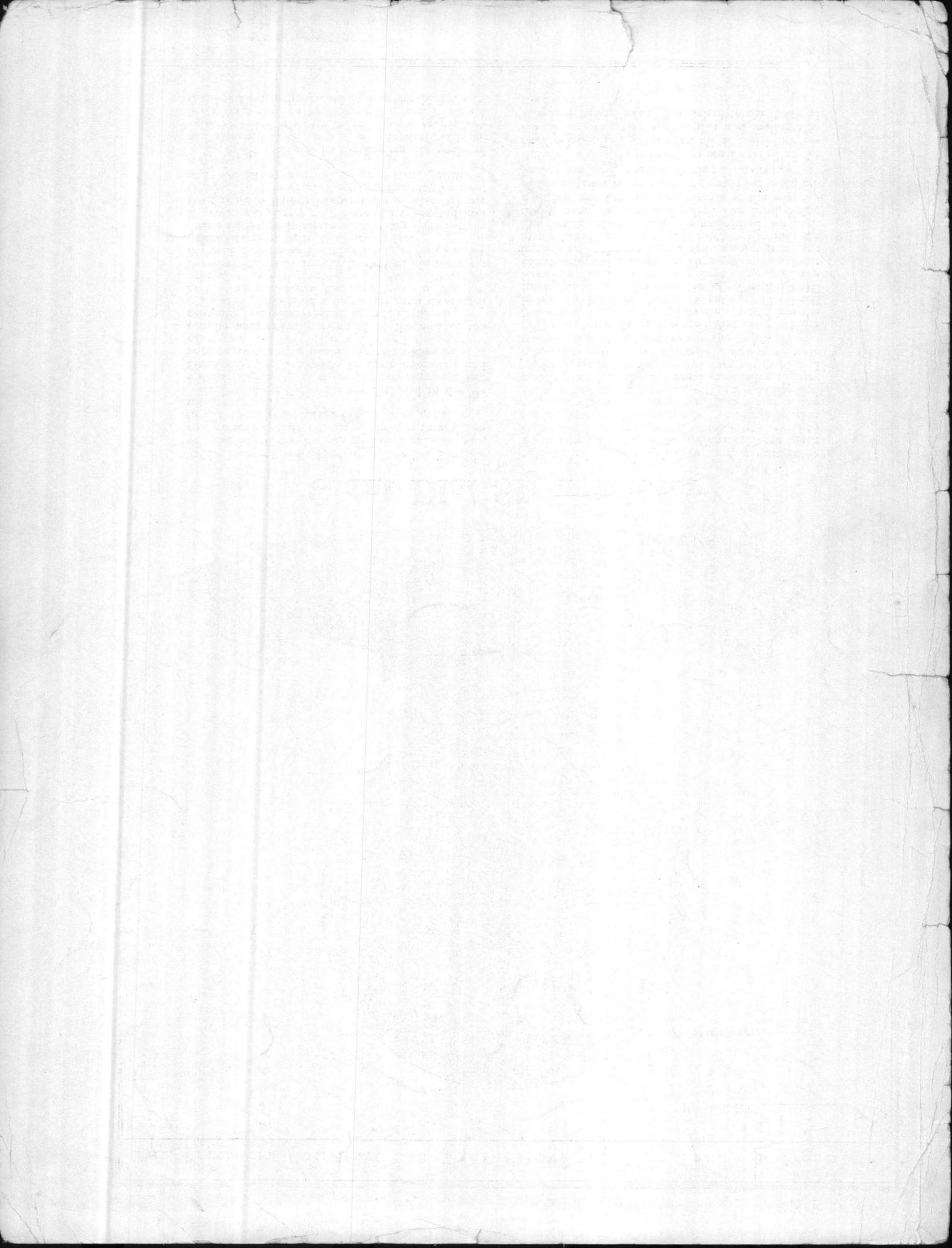
The signal used may be an ordinary door bell or, if preferred, a relay switch may be connected into the circuit to light a lamp on the regular lighting circuit. Multiple or combined signals may be used and located at convenient or distant points, if needed.

The giant dial and its mechanism are enclosed and attached to the meter in a vertical position, fully protected within a rugged bronze casing having a heavy glass cover over the dial face. The giant dial has a six inch silvered face upon which a suit-

able scale has been etched in sharply contrasting black numerals reading in gallons. A large black indicating hand is provided which is connected to the mechanism of the meter by a movable friction nut, and which projects through the center of the glass cover to permit setting of the hand. The dial also is provided with the usual cumulative register which shows the total quantity of water passed, and a test dial reading in gallons to facilitate accurate and periodic calibration tests of the meter.

The indicator is so arranged that the platinum iridium electric contact points are closed when the indicating hand reaches zero gallons. The hand travels in a clockwise direction whereas the gradations on the scale increase from the zero in a counter-clockwise direction. Thus, when the pointer hand is set at the predetermined capacity in gallons at the beginning of a run, it continues to indicate the amount of gallons of the unfinished run as it moves over the face of the dial. The hand, being movable, any increase or decrease in the capacity of the softener is automatically cared for when adjusting the hand at the beginning of the run.

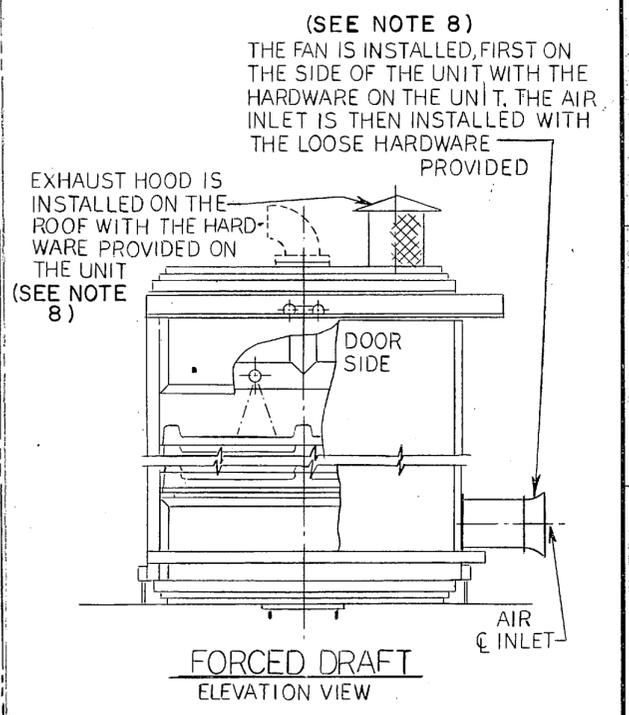
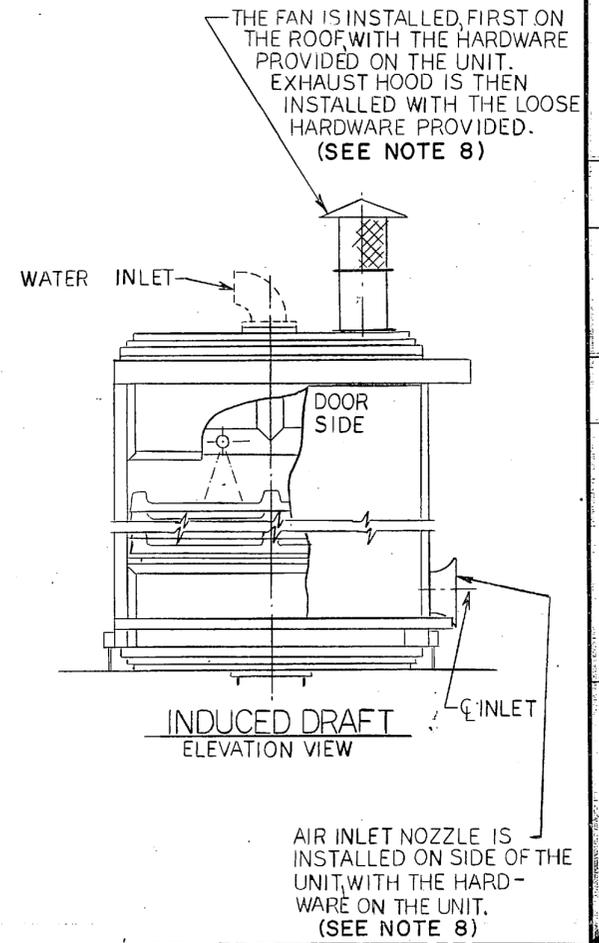
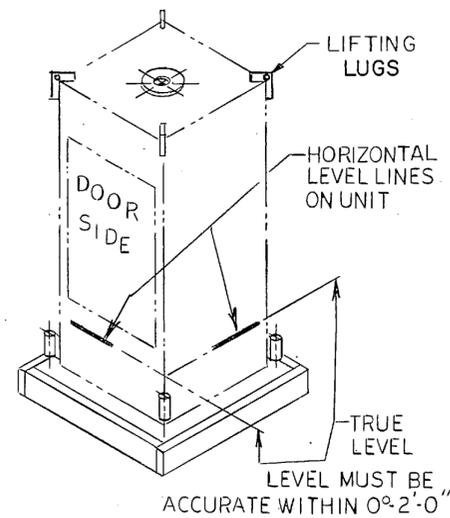
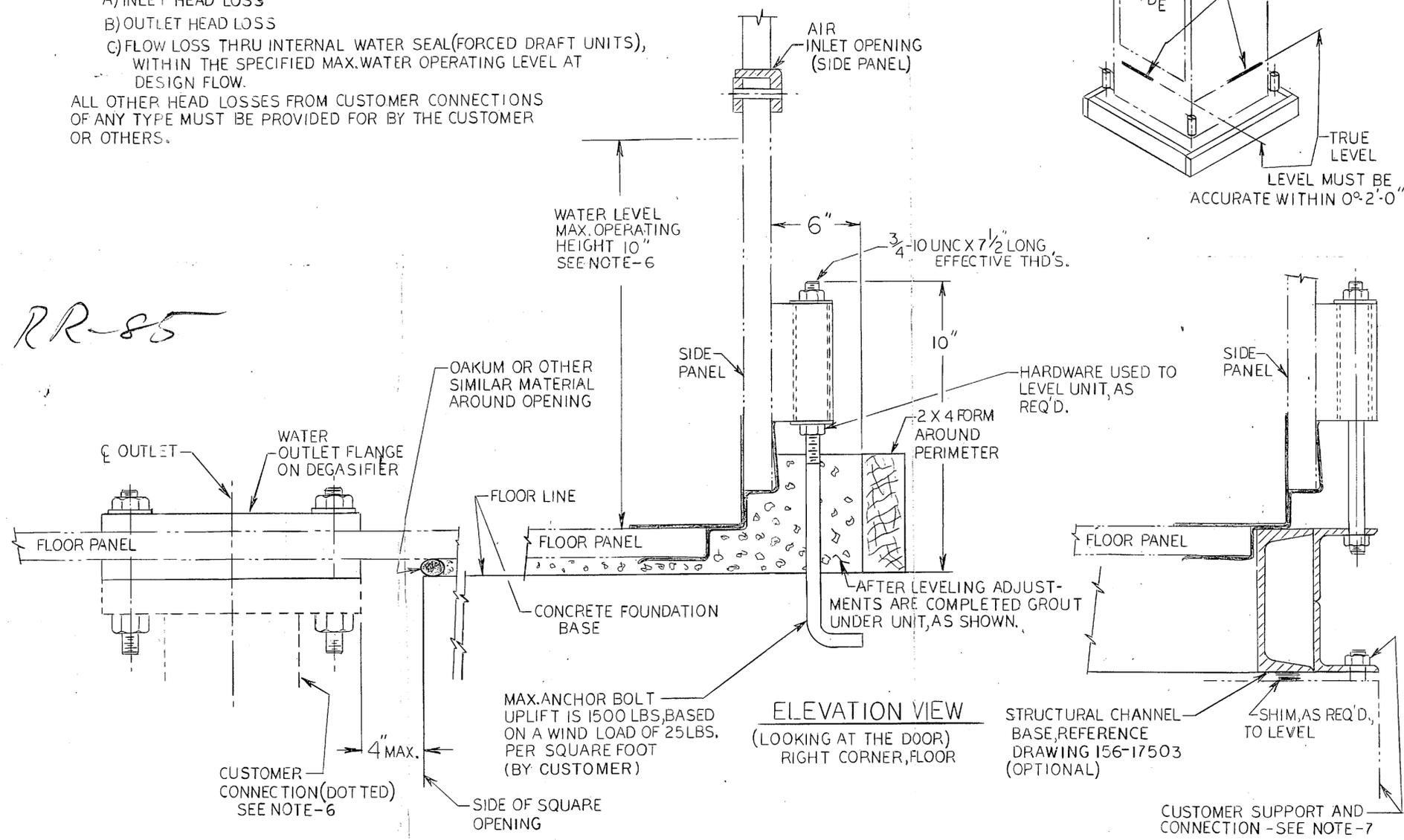
Suitable electric connections are installed at the back of the mechanism case, all of which are enclosed for protection against dirt and moisture in a bronze casing securely attached to the body of the meter.



NOTES:

- 1-THE UNIT IS COMPLETELY ASSEMBLED, THE TRAYS BEING FACTORY INSTALLED & RESTRAINED. THE UNIT IS TO BE INSTALLED PER THIS DRAWING WITHOUT REMOVING THE DOOR OR THE TRAY RESTRAINTS.
- 2-THE DIRECTION OF AIR FLOW AND THE DIRECTION OF PROPELLER ROTATION ARE INDICATED ON THE FAN HOUSING. THE FAN HOUSING SHOULD BE INSTALLED SUCH THAT THE MOTOR FEET POINT DOWNWARD. THE WIRING INFORMATION FOR CONNECTING THE MOTOR IS INSIDE THE FAN HOUSING, BY REMOVING THE QUICK RELEASE ACCESS DOOR.
- 3-WHEN BRINGING ELECTRICAL SERVICE TO THE FAN, THE CONTRACTOR SHOULD NOT PUT ANY SCREWS, HOLES, OR FASTENERS OF ANY TYPE INTO THE WHITE FIBERGLASS PANELS.
- 4-THE UNIT, WHEN INSTALLED, SHOULD BE LEFT INTACT AND NOT OPENED. IF IT IS NECESSARY FOR THE CONTRACTOR TO RUN WATER THROUGH THE UNIT TO TEST HIS CONNECTIONS, THIS IS PERMISSIBLE. IT IS INTENDED THAT THE TRAY RESTRAINTS BE REMOVED BY PERMUTIT SERVICE ENGINEER OR OTHERS DURING OR JUST PRIOR TO START UP.
- 5-MAX. PIPE REACTION ON THE INLET & OUTLET CONNECTIONS WILL BE 700 LBS.
- 6-THE WATER OUTLET IS DESIGNED TO PROVIDE
 - A) INLET HEAD LOSS
 - B) OUTLET HEAD LOSS
 - C) FLOW LOSS THRU INTERNAL WATER SEAL (FORCED DRAFT UNITS), WITHIN THE SPECIFIED MAX. WATER OPERATING LEVEL AT DESIGN FLOW.
 ALL OTHER HEAD LOSSES FROM CUSTOMER CONNECTIONS OF ANY TYPE MUST BE PROVIDED FOR BY THE CUSTOMER OR OTHERS.

- 7-STRUCTURAL CHANNEL BASE (OPTIONAL) IS DESIGNED TO SUPPORT THE DEGASIFIER WHEN THE CUSTOMER IS USING A FOUR POINT MOUNTING.
- 8-BEFORE MOUNTING AIR INLET, EXHAUST HOOD, OR FAN; APPLY GENERAL-PURPOSE CAULKING TO FLANGE SURFACES.



RR-85

**DO NOT SCALE THIS DRAWING
USE DIMENSIONS ONLY.**

THIS PRINT IS THE PROPERTY OF THE PERMUTIT COMPANY. IT IS TO BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS LENT, AND MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY, AND IS SUBJECT TO RETURN UPON REQUEST.

REV.	BY	DATE	REVISIONS
1	RH	11-9-79	ECN 3502-S

DRAWN RHH
CHECKED
APPR'D
DATE 11-9-79
SCALE NONE

INSTALLATION DRAWING
FOR TRAY-TYPE DEGASIFIER

PERMUTIT®	
DRAWING NO.	REV.
129-25357	-
SHEET 1	OF 1



Permutit Cation Exchange Resin Cleaner No. 1112

What it is

Permutit Cation Exchange Resin Cleaner #1112 is a blend of selected inorganic chemical agents with high dissolving and dispersing properties. It is particularly effective in cleaning fouled resin beds and restoring exchange capacity to an efficient level in any softener requiring salt regeneration.

Technical Characteristics

Effective for use on cation exchange resins. Highly dissolving and dispersing properties, removes contaminating coatings from resins.

Loosens silt from resin beds.

Powder form, free-flowing — stable indefinitely in dry state.

Dissolves rapidly in cold water.

How it works

Solution of Permutit Resin Cleaner #1112 reacts with iron, aluminum, carbonates and similar coatings to form soluble complexes which are easily removed from the bed by backwashing and rinsing. At the same time the cleaner, through loosening of the caked resin, permits removal of entrapped silt.

Preparation and Use

How to Prepare the Solution

Add cleaner in appropriate quantity to the required

amount of water while stirring. (See Dosage table for standard ion exchange units to determine proper quantities of cleaner and water). Continue agitation until all the cleaner is in solution.

How to Prepare the Unit for Cleaning

Regenerate the unit in the normal fashion but use twice the regular salt dosage per cubic foot of resin.

Drain the unit.

How to Introduce the Solution

Slowly add the solution of cleaner over the top of the bed until bed is completely submerged. Stir or air mix. If the brine tank is used to make up the solution, the cleaner can be introduced into the top of the bed by the existing brine distribution system.

How to Use the Cleaner

Keep the bed soaking in cleaner solution for a minimum of 16 hours. Continue to air lance or stir occasionally.

After cleaning period has elapsed backwash the unit for about half an hour then rinse for about half an hour.

The bed should then be clean. Regenerate it in a normal manner.

Permutit Cation Exchange Resin Cleaner No. 1112

The Dosage

The dosage of cleaner is $1\frac{1}{4}$ pounds dissolved in $3\frac{3}{4}$ gallons of water per cubic foot of resin. The following

chart gives the proper quantities of cleaner and a total volume of solution for standard size ion exchange units.

Amount of Cleaner Required

Diam. of Unit	Lbs. of #1112 req'd per ft. of bed depth	Gal. of H ₂ O req'd per ft. of bed depth
20"	$2\frac{3}{4}$	$8\frac{1}{4}$
24"	4	12
28"	$5\frac{1}{2}$	$16\frac{1}{2}$
30"	6	18
36"	9	27
42"	12	36
48"	16	32
54"	20	60
60"	25	75
72"	35	105
84"	48	144
96"	63	189
108"	80	240
120"	98	294

Packaging

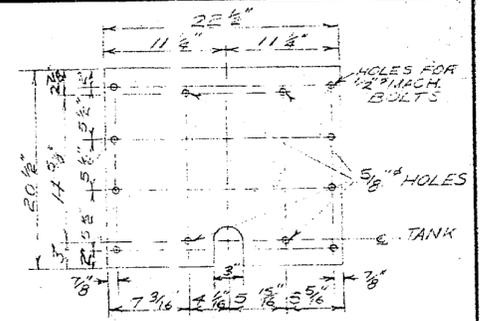
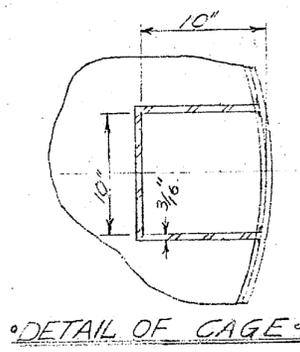
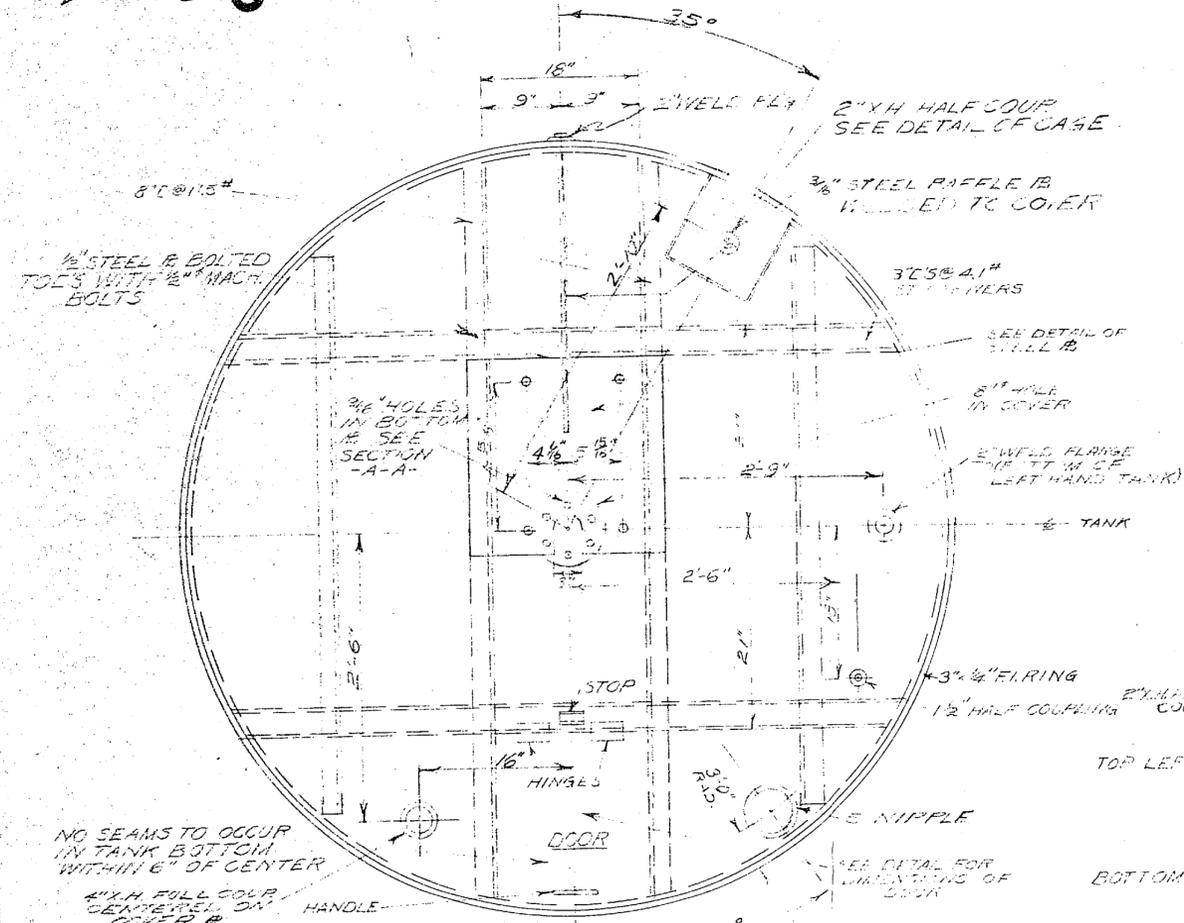
Permutit Cation Exchange Resin Cleaner No. 1112 is packaged in 10 lb. and 100 lb. containers.

Specialists in FLUIDICS



the science of fluid processes

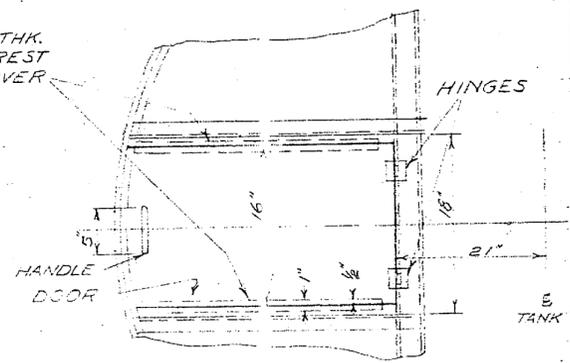
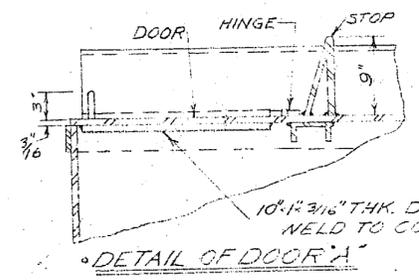
7-2684



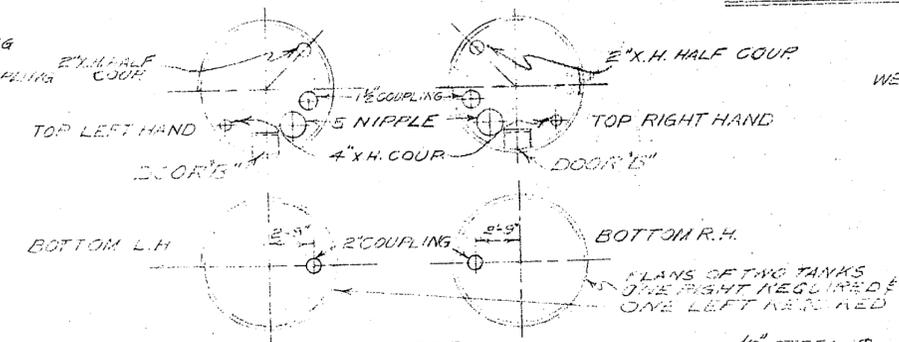
DETAIL OF 1/2" STEEL #1

NOTES

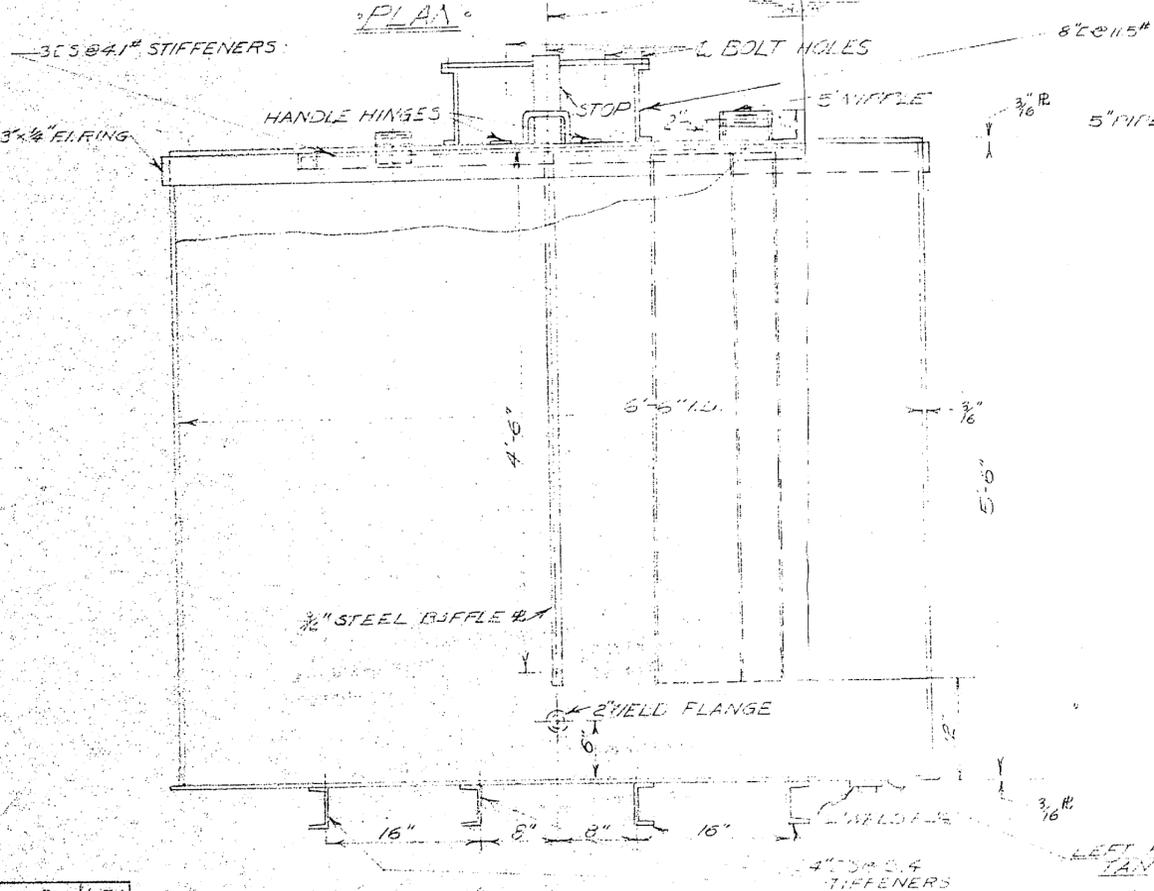
1. TANK TO BE WATERTIGHT WELDED.
2. ALL CONNECTIONS TO BE FITTED WITH THREAD PROTECTORS.
3. SEAL WELL COVER, DUST TIGHT.
4. PAINT OUTSIDE ONLY ONE COAT OF HALF HALF PURE RAVI BOILED LINSEED OIL.
5. COVER WELDED TO SUPPORTING MEMBERS UNIFORM.
6. ALL WELDS CONTINUOUS & UNIFORM.



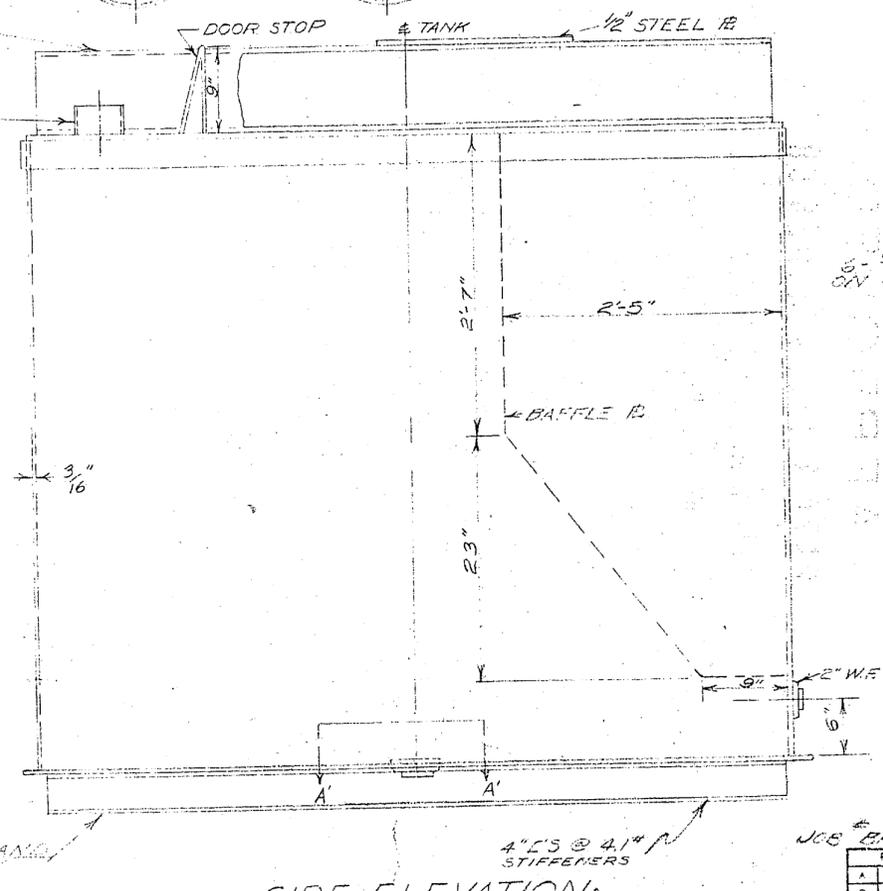
PLAN of DOOR #1



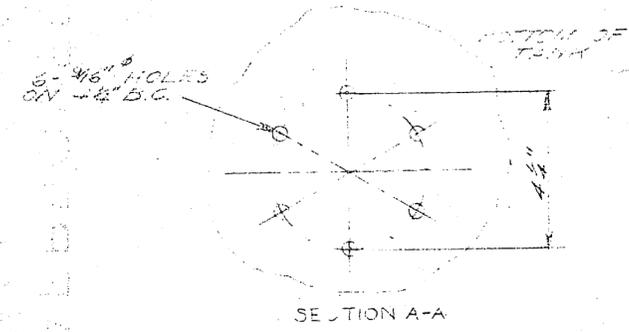
PLANS OF TWO TANKS



SECTIONAL ELEVATION



SIDE ELEVATION



SECTION A-A

Permutit
 Water Conditioning
 6'-6" X 5'-6" HG. WELDED STEEL
 LIME SOLUTION TANK
 2 REG. 1/2" DIA. TAIL LEFT HAND
 TANKS
 THE PERMUTIT CO.
 NEW YORK, N. Y.

JOB # BHE-1280

REVISIONS	
A	LEN 7-10-42
B	LEN 8-2-42
C	LEN 8-2-42
D	

SCALE 1/2" = 1'
 DATE 7-10-42

C-3849-4

DRAWN BY W.E.M.
 TRACED BY
 CHECKED BY F.P.

AUG 14 RECD

RECEIVED
31 JUL 1942
NAVY

FOR Main Water Plant, P-108-4

Spec 502, Advance "C"

APPROVED
CARR & J. E. GREINER CO.

DEPARTMENT Water

BY F. D. Kramer
MS.

NEW RIVER
OFFICE OF
MARINE BARRACKS
NORTH CAROLINA
Officer-in-Charge

Spec'n No. 502 Project No. 108-4
Approved subject to Contract
Requirements and Corrections noted
in Fed.

G. P. Falk
Officer-in-Charge
By direction

8-20-42

Date 22 July 1968

From: **Water Treatment**
To: Property Control Section, Base Maintenance, MCB, Camp Lejeune,
North Carolina

STOCK NO.	ITEM NAME	CLASS	REQUIRED	UNIT	UNIT PRICE	EXT'D PRICE
	<p>Sand, filter, effective size of 0.45 mm to 0.50mm ✓ Uniformity coefficient of not more than 1.5 ✓ Packed in 1 cu. ft. bags</p>					
	<p>Justification: The above item is needed for use in water filters at Tarawa Terrace Water Plant.</p>					
	<p>It is requested that this item be ordered on emergency requisition</p>					
	<p>Estimated cost \$200.00</p>					

Job Order # _____

Received above items on _____

jm

REQUISITION					SHEET NO.	NO. OF SHEETS	5. REQUISITION DATE	6. REQUISITION NUMBER		
SECTION 1)	1. FROM MAINTENANCE SHOP STORES (93110)						30 July 1958	OPR 2822-59		
	2. TO AO BASE MATERIEL BN, 2d FOR SER REGT, FMF, MCB, CLNC, SA 1002				7. DATE MATERIAL REQUIRED 15 August 1958			11. SHIPPER'S VOUCHER NUMBER		
	3. MARK SHIP P K T F O C R				8. PRIORITY EMERGENCY					
					9. AUTHORITY OR PURPOSE Water Treatment Plant					
4. APPROPRIATION SYMBOL AND SUB-HEAD				OBJECT CLASS	EXPENDITURE ACCOUNT		CHARGEABLE ACTIVITY	BUREAU CONTROL ACTIVITY NO.	BUREAU CONTROL NO.	AMOUNT OBLIGATED
1791106.11 NCT&F 59				089	(From) 57000	(To) 45462.2	92-60-4970	67001	12002	\$275.00
SECTION 11)	ITEM NO.	STOCK NUMBER AND DESCRIPTION OF MATERIAL AND/OR SERVICES					UNIT OF ISSUE	QUANTITY REQUESTED	SUPPLY ACTION	
	(24)	SAND, filter, effective size of 0.⁴⁵5 mm to 0.50 mm. Uniformity of not more than 1.5, in cu. ft. bags						cu ft. 256		
<p>Justification: Material required for use in water filters at TF water plant.</p> <p>Note: No known source of supply.</p>										
<p>Approved: H. G. Bozarth, Lt. Col., USMC</p>										

SECTION 1

SECTION 2

NO. 1	DATE	TIME	PLACE	OBJECT	DESCRIPTION
NO. 2	DATE	TIME	PLACE	OBJECT	DESCRIPTION
NO. 3	DATE	TIME	PLACE	OBJECT	DESCRIPTION
NO. 4	DATE	TIME	PLACE	OBJECT	DESCRIPTION
NO. 5	DATE	TIME	PLACE	OBJECT	DESCRIPTION

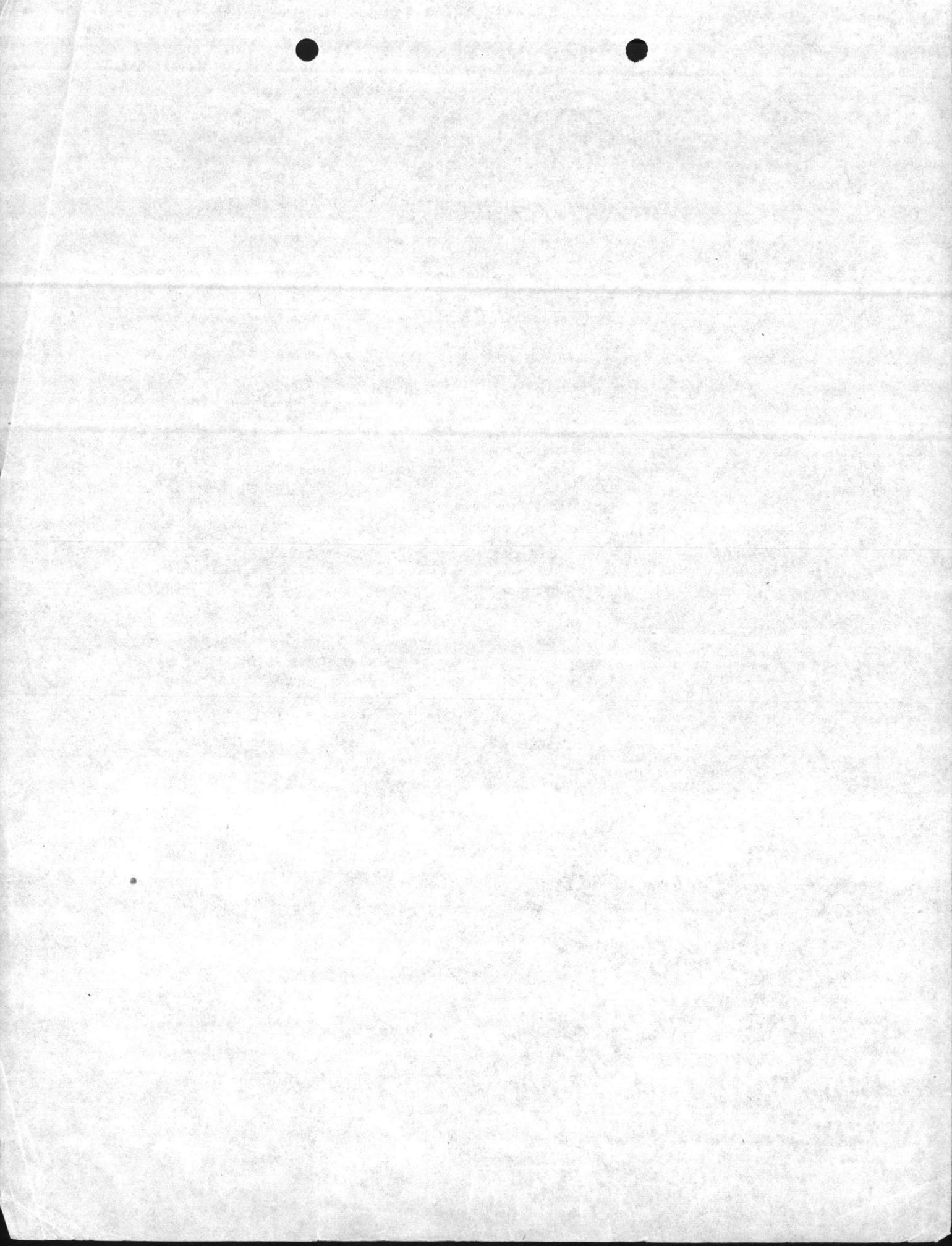
NO. 6	DATE	TIME	PLACE	OBJECT	DESCRIPTION
NO. 7	DATE	TIME	PLACE	OBJECT	DESCRIPTION

This report was prepared by the U.S. Geological Survey, Washington, D.C., under the direction of the Chief Geologist, and is published as a part of the Bulletin of the U.S. Geological Survey. The data were collected by the U.S. Geological Survey, Washington, D.C., and are published as a part of the Bulletin of the U.S. Geological Survey. The data were collected by the U.S. Geological Survey, Washington, D.C., and are published as a part of the Bulletin of the U.S. Geological Survey.

Sitters at Water Plant.

size. $20 \times 17\frac{1}{2}$ -

Sond - 27 in sond. $29\frac{1}{10}$ cu yd.



FOR 3 FILTERS

	Sand		2400	cu ft	
	Gravel - $\frac{1}{4}$ " - $\frac{1}{8}$ "	_____	270	cu ft	
4 ✓	$\frac{1}{2}$ " - $\frac{1}{4}$ "	_____	220	cu ft	
3	$\frac{3}{4}$ " - $\frac{1}{2}$ "	_____	220	cu ft	
2	$1\frac{1}{2}$ " - $\frac{3}{4}$ "	_____	350	cu ft	
1 ✓	2" - $1\frac{1}{2}$ "	_____	525	cu ft.	
			1585		

1600
 $\frac{24}{1600}$

350
 $\frac{24}{350}$
 $\frac{24}{350}$

CHO

- other 2 H

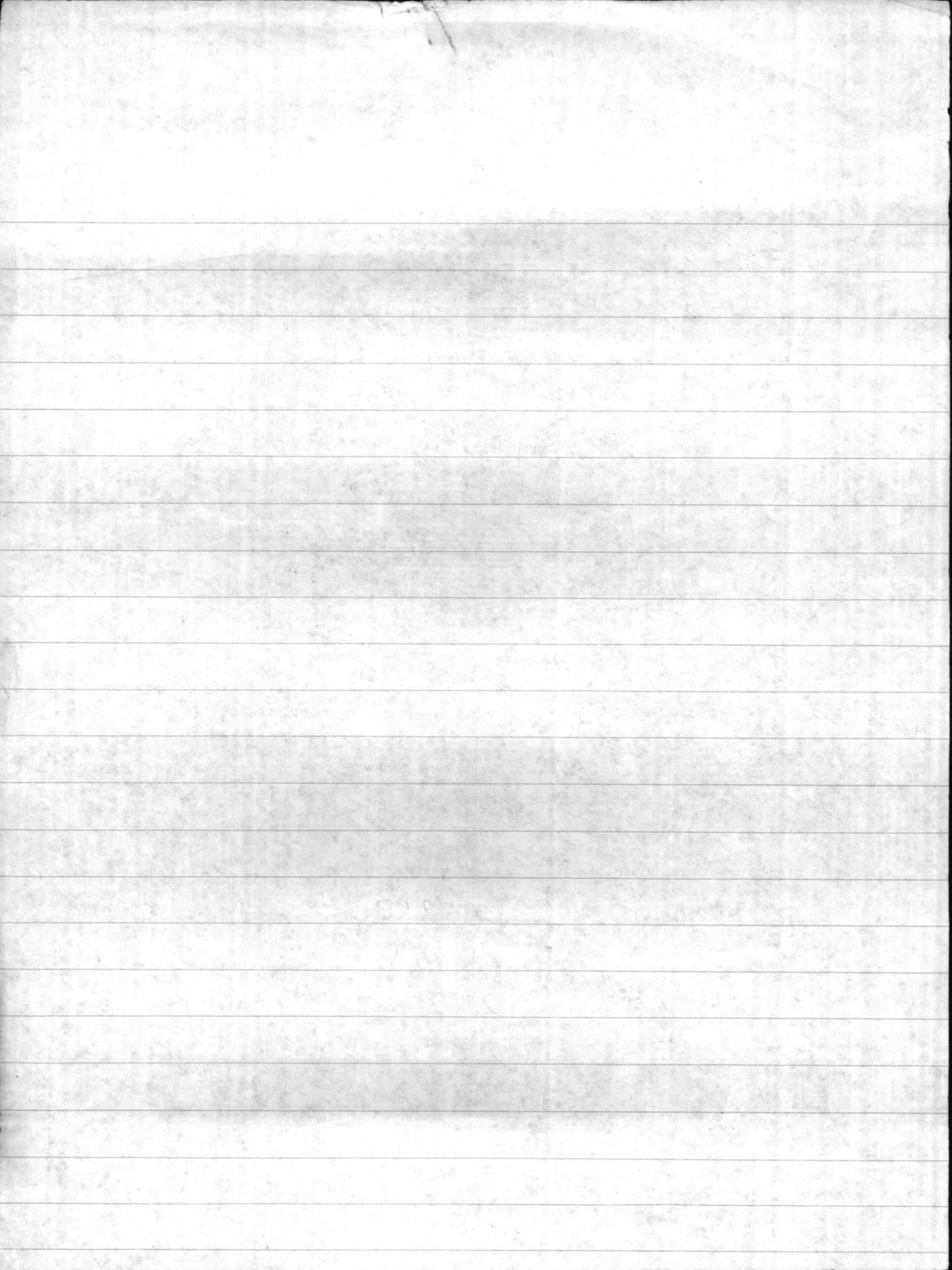
- P 1982

PR

SCH

B.P.F.A.L

B 12713.1A



17 November 1952

"AO" (PS507) CAMP MAINTENANCE SUPPLY, OSD, NB, CAMP LEJUNE, N. C.
 CAMP PURCHASING OFFICER, NB, CAMP LEJUNE, N. C.
 COMMANDING GENERAL, NB

See Justification Below

Water Treatment Plant

"AO" (PS507) CAMP MAINTENANCE SUPPLY, OSD, NB, CAMP LEJUNE, N. C.

PRIORITY

1. SAND, filter, ranging from effect sizes of 0.45
 m. m. or more than 0.50 m. m., with a uniformity
 coefficient of not more than 1.5, (in 100 lb.
 bags), lbs. 0 0 140,000
 (To be as shown on page 15 of the Permutit Co.
 Bulletin #2225-A, or equal)

X JUSTIFICATION: The above item is needed in con-
 junction with the anthracite #1 in water filters
 at the Water Treatment Plant.

Above quantity to be drawn in part upon arrival;
 balance to be placed in stock and issued as
 needed.

The quantity shown above represents an estimated
 six (6) months requirements.

May be purchased from: The Permutit Co.
 571 E. Morehead St.
 Charlotte 3, N. C.

Subject item not listed in any Marine Corps
 Supply Catalog.

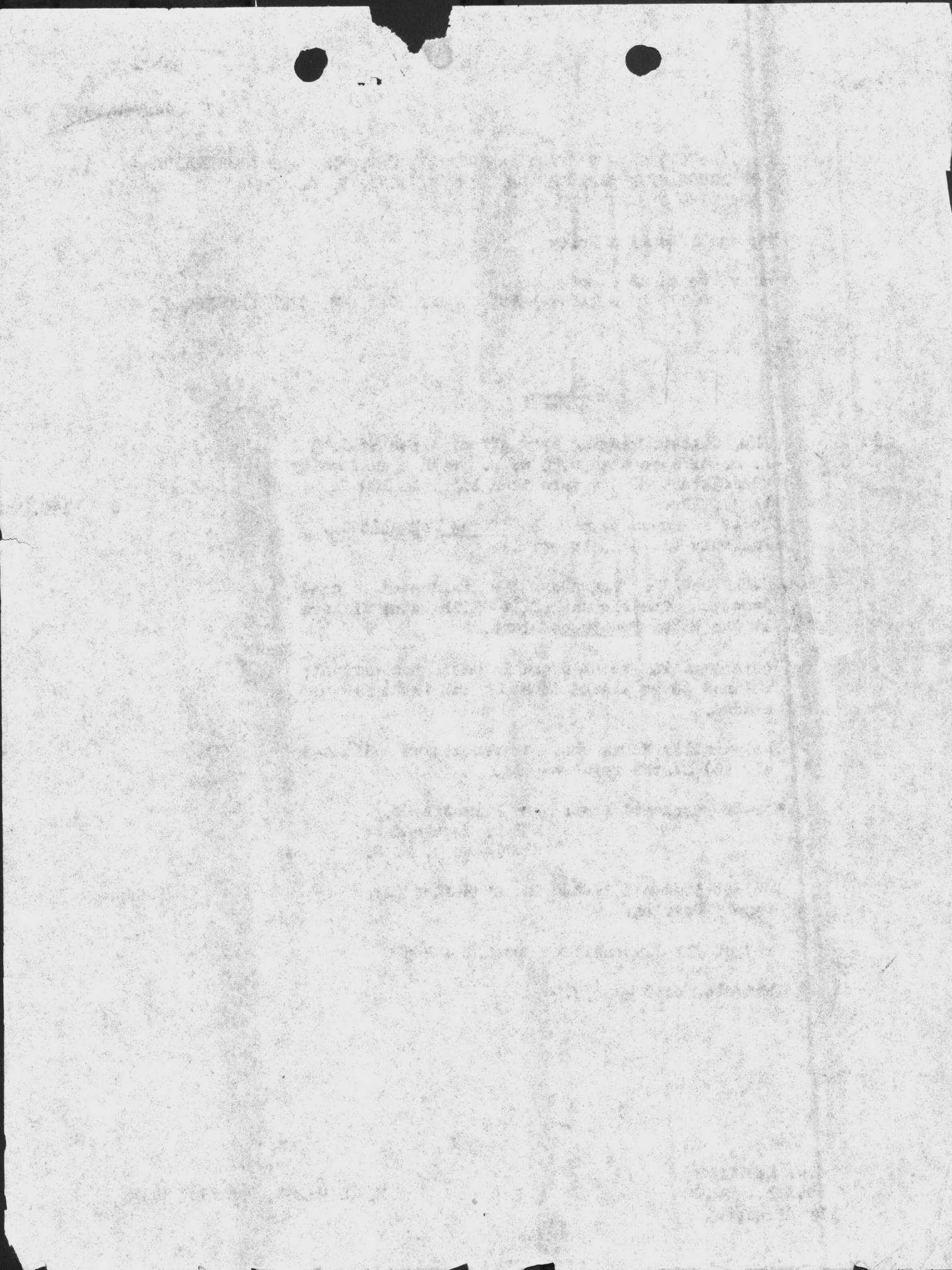
Project #11 Expenditure Account - 44570

Estimated Cost - \$650.00

1 1

J.F. McCULLUM
 Lt. Col., USMC
 By direction

M. C. AARON, 2nd Lt., USMC





BILL OF MATERIAL

MADE 11-24-70 BY FXJCAMP LEJEUNEJOB A173E48112CHECKED BY EWMNORTH CAROLINASHEET 1 OF

	DRAWING	QUANT.	DESCRIPTION	ACCT.
1			SIMPLEX OUTLINES	
2				
3	528-10810		SIZE 18" ROTARY SURFACE WASHER	
4	528-50072		SIZE 24" X 11.032" CAST IRON PERMUTUBE	
5	555-26590		SIZE No 82 TYPE "BFH" CONTROLLER	
6	555-26589		SIZE No 102 TYPE "BFH" CONTROLLER	
7	555-26591		SIZE No 183W TYPE "BFH" CONTROLLER	
8	555-08777		TYPE "PNG" PNEUMATIC TRANSMITTER	
9	501-51945		TYPE "K-IRT" PNEUMATIC RECEIVER	
10	555-08939		TYPE "PNG-TD" PNEU RATE OF FLOW AND LOSS OF HEAD	
11			TRANSMITTER	
12	501-51909		TYPE "XPR" PNEUMATIC RECEIVER	
13	555-08777		TYPE "PNB" PNEUMATIC TRANSMITTER	
14	501-51469		TYPE PWB-D1 DOUBLE FACED INDICATING RECEIVER	
15				
16	528-50383		RATE SET STATION (FILTER CONTROLLERS)	
17	501-52991		LOW LEVEL SHUT-OFF ARRANGEMENT (FILTER CONTROLLER)	
18	528-50383		RATE SET STATION (SOFTENER CONTROLLERS)	
19	528-50383		RATE SET STATION (WASH WATER CONTROLLERS)	
20				
21				
22			WIRING DIAGRAM	
23	501-52990		TYPE "K" PNEUMATIC RECEIVER WITH RELAY	
24				
25				
26				
27				

RECEIVED
DEC 4 1970
ROBERTS FILTER



MERCER ASSOCIATES, INC.

P.O. Box 2082, 360 Carmel Commons Office Park
Charlotte, North Carolina 28211
(704) 542-5588

PRINCIPALS REPRESENTED

ANDCO ENVIRONMENTAL PROCESSES
Buffalo, New York
Heavy metals removal systems

JAECO PUMP COMPANY
W. Conshohocken, Pennsylvania
Chemical proportioning feed equipment

B. & L. SYSTEMS LIMITED
Uniontown, Pennsylvania
Storage and handling of
dry/liquid chemicals

PANELEX
North Aurora, Illinois
Control panels/programmable controllers
and graphic display

BROOKS INSTRUMENT DIVISION
Hatfield, Pennsylvania
Complete liquid metering
and instrumentation

THE PERMUTIT COMPANY
Paramus, New Jersey
Complete water and wastewater treatment
systems. Clarifiers, filters, iron
removal, softeners, demineralizers, etc.

BURRELL CORPORATION
Pittsburgh, Pennsylvania
Laboratory furniture
and instruments

PLAS-TANKS INDUSTRIES
Fairfield, Ohio
Bulk brine fiberglass
delivery systems

CROLL-REYNOLDS ENGINEERING
Trumbull, Connecticut
Stainless steel filters
and strainers

ROEDIGER PITTSBURGH
Pittsburgh, Pennsylvania
Belt filter presses and
lime-post treatment

ENVIRONMENT ONE
Schenectady, New York -
Grinder pumps for pressure
waste collection systems

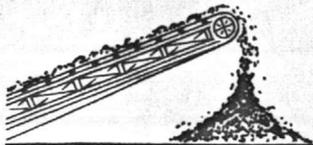
WARNER FIBERGLASS PRODUCTS
Belding, Michigan
Complete line of fiberglass
tanks and hoppers

HACH COMPANY
Loveland, Colorado
Analytical instrumentation

Treatment Media
(Various suppliers)
Sand, anthrafil, manganese zeolite,
carbon and all ion exchange resins.

NOTE: As appropriate, we can provide most of the above skid mounted
with vessels, valving, piping and instrumentation in place.
Or, we can erect and install all equipment in the field.

Robert J. Mercer, P.E.



SOUTHERN PRODUCTS & SILICA COMPANY

Incorporated 1933

Post Office Box 38 • Hoffman, N. C. 28347

Telephone:

(919) 281-3664 or (919) 281-3189

PRICE LIST EFFECTIVE NOVEMBER 1, 1975.

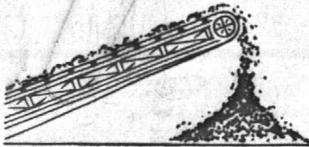
MINIMUM ORDER \$20.00

MATERIAL	PRICE PER TON	DISCOUNT PER TON
*****	*****	*****
I. FILTER GRAVEL		
Less than 1 1/2" in size	\$30.00	\$ 5.00
Over 1 1/2" in size	\$60.00	\$10.00
II. FILTER SAND	\$30.00	\$ 5.00
III. BLASTING SAND	\$20.00	\$ 3.00
IV. DECORATIVE GRAVEL	\$30.00	\$ 5.00
V. CHEMICAL GRADE GRAVEL		
Less than 1 1/2" in size	\$42.00	\$ 7.00
Over 1 1/2" in size	\$60.00	\$10.00
VI. MILLED CHEMICAL PEBBLES	\$90.00	\$15.00

TERMS: Discounts are allowed for payment in cash or within fifteen (15) days of the invoice date. Sales other than cash are by prior approval only. All open accounts are due and payable, thirty (30) days from invoice date.

NOTE: The above prices are bagged in 100 lb. bags, F.O.B. Hoffman, N. C. For bulk shipments, deduct \$8.50 per ton. For palletized material (1 1/2 tons per Pallet) add \$5.00 per ton.

11



SOUTHERN PRODUCTS & SILICA COMPANY

Incorporated 1933

Post Office Box 38 • Hoffman, N. C. 28347

Telephone:

(919) 281-3664 or (919) 281-3189

OCTOBER 10, 1975

ATTENTION CUSTOMERS OF SOUTHERN PRODUCTS:

DUE TO THE NUMBER OF CUSTOMERS WHO FAIL TO COMPLY WITH OUR NET 30 DAY TERMS, AND RISING COST OF OPERATIONS- WE FIND AN INCREASE IN PRICE NECESSARY. HOWEVER, TO AVOID PASSING THE TOTAL INCREASE ON TO THOSE WHO PAY PROMPTLY, WE ARE INITIATING A NEW POLICY AND OFFERING A DISCOUNT. THE DISCOUNT IS LISTED AFTER THE NEW PRICE ON THE ATTACHED PRICE LIST AND APPLIES TO ALL INVOICES PAID WITHIN 15 DAYS OF THE INVOICE DATE. THERE IS NO DISCOUNT ON A MINIMUM ORDER.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL OUR OFFICE.

THANK YOU FOR YOUR BUSINESS.

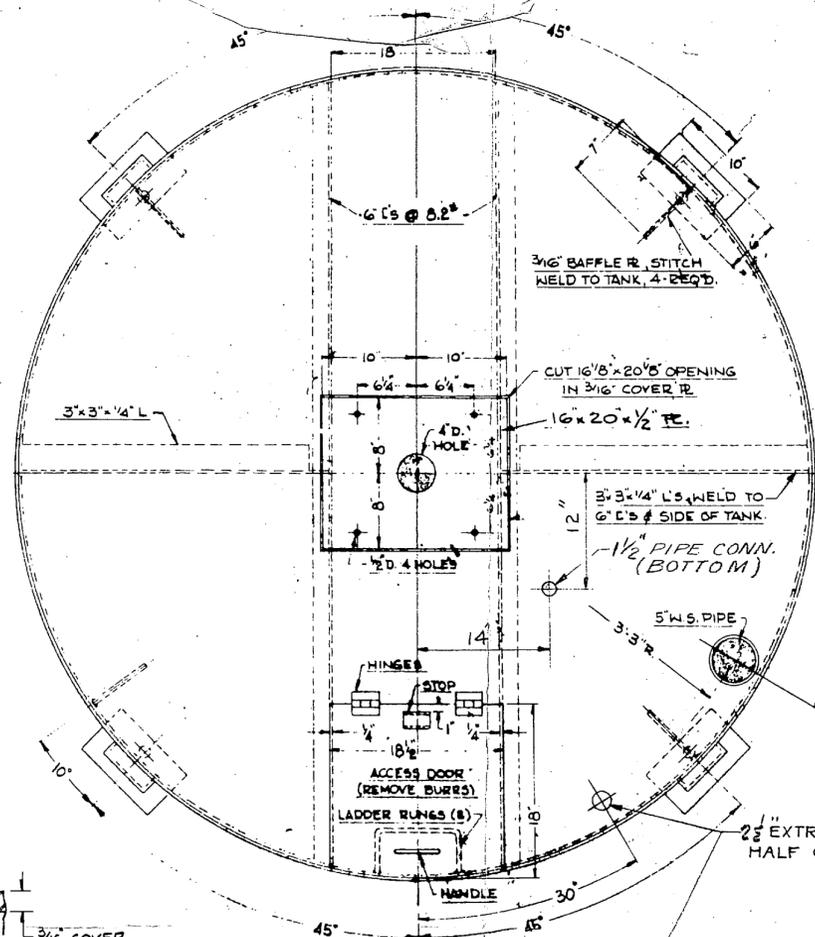
SOUTHERN PRODUCTS & SILICA COMPANY, INC.

John Currie
Office Manager

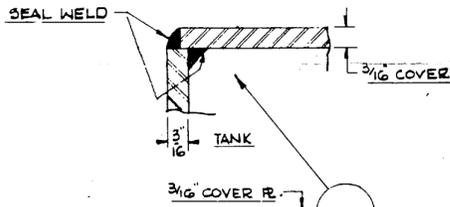
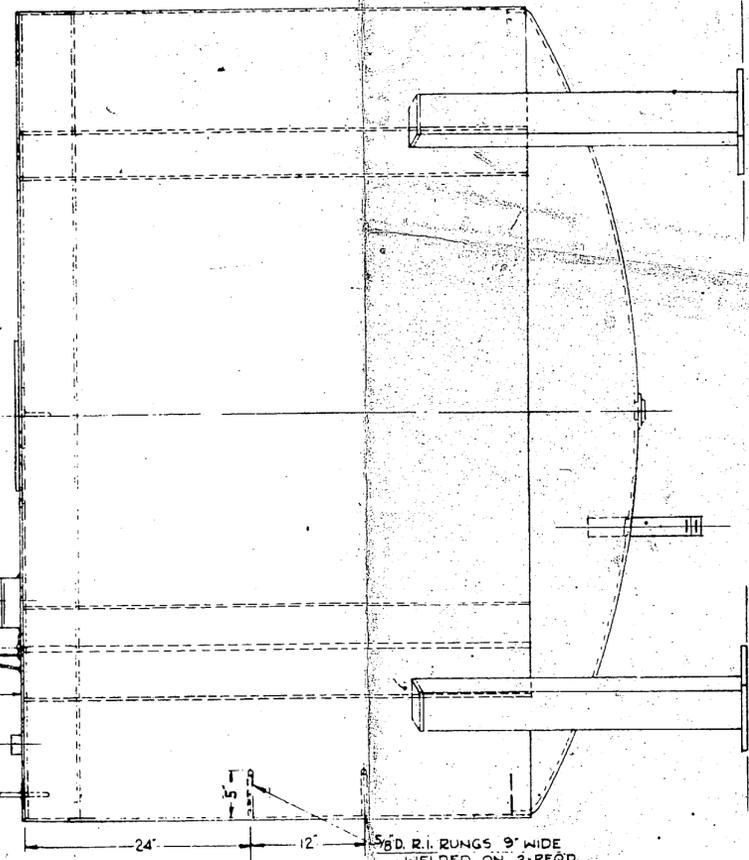
JC:mcb

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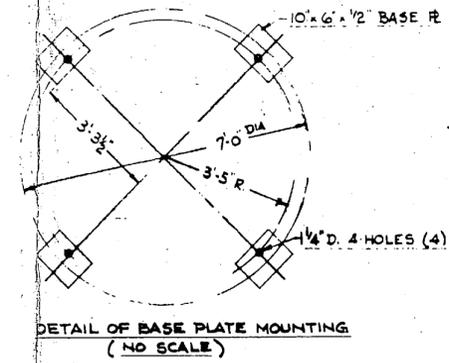
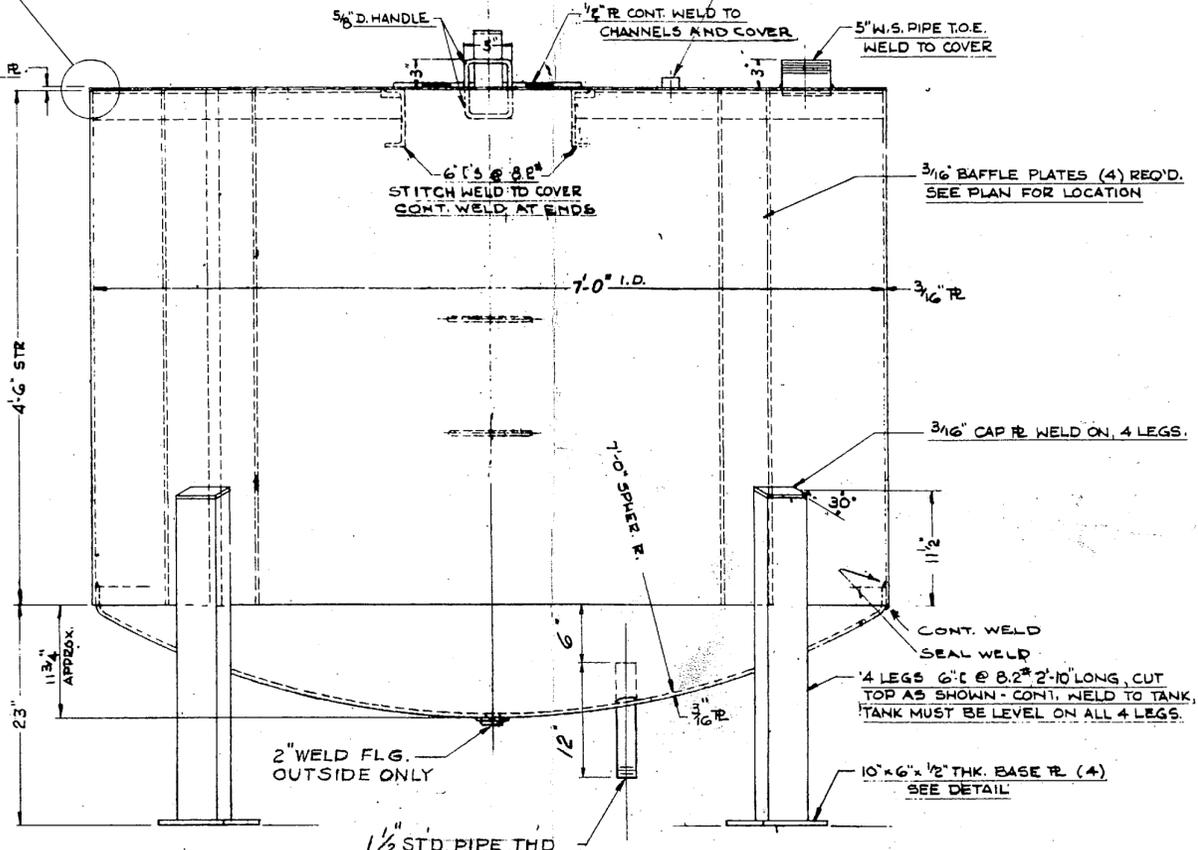
PLAN



SIDE ELEVATION



ELEVATION



[Handwritten signature and date: 11/22/52]

- NOTES:-
- 1-TANK TO BE WELDED WATER TIGHT.
 - 2-ALL CONNECTIONS TO BE FITTED WITH CAPS OR PLUGS BEFORE WELDING TO PROTECT THREADS. (LEAVE ON FOR SHIPPING)
 - 3- SEAL WELD COVER DUST TIGHT.
 - 4-COVER WELDED TO SUPPORTING MEMBERS AND BAFFLES WELDED TO TANK WITH STITCH WELD 2\"/>
 - 5-PAINT OUTSIDE ONLY PER PERMUTIT CO. SPEC. #110.
 - 6-TANK- OPEN HEARTH STEEL.

Permutit
Water Conditioning

7'-0" DIA. x 4'-6" STR. WELDED STEEL
CHEMICAL TANK DETAIL
LEFT HAND
THE PERMUTIT COMPANY
NEW YORK, N. Y.

BLE-144569

REVISIONS	
A	
B	
C	
D	

SCALE 1"=1'-0"
DATE

C-7997-1

DRAWN BY	
TRACED BY	
CHECKED BY	7DB



FILTERS/DEZURIK
BLDG. BB190



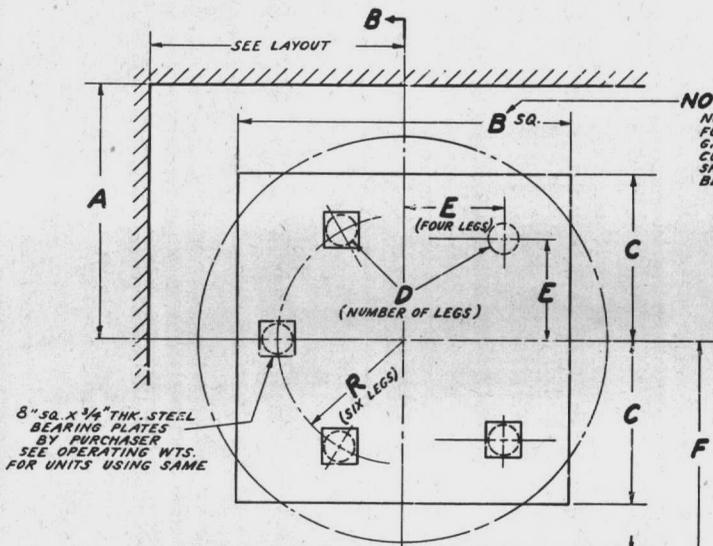
DIMENSION TABLE

DIA. OF SOFT.	DIMENSION TABLE																WASH WATER LEGS	WASH WATER LEGS
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P		
3'-6"	2'-3"	3'-0"	18"	4	9 3/4"	2'-4"	20"	10"	14"	21"	4'-0"	14"	2"	3 3/8"	5"	4"	60	70
4'-0"	2'-6"	3'-6"	21"	4	11 1/4"	2'-7"	2'-0"	10"	13"	2'-6"	4'-8"	14"	2"	3 3/4"	5"	4"	75	90
4'-6"	2'-9"	3'-6"	21"	4	12 3/4"	2'-10"	2'-0"	12"	13"	2'-6"	4'-10"	14"	1"	3 3/4"	6"	6"	95	110
5'-0"	3'-0"	4'-0"	2'-0"	4	14 1/8"	3'-1"	2'-0"	12"	13"	2'-6"	4'-10"	15"	2"	3 3/4"	6"	6"	120	140
6'-0"	3'-6"	5'-0"	2'-6"	4	17	3'-7"	2'-2"	12"	12"	2'-8"	4'-11"	16"	2"	3 3/8"	6"	6"	170	200
7'-0"	4'-0"	6'-0"	3'-0"	4	19 3/4"	4'-1"	2'-2"	12"	12"	2'-8"	4'-11"	18"	3"	3 3/8"	6"	6"	230	270
8'-0"	4'-6"	7'-0"	3'-6"	6	4'-7"	2'-7"	14"	10"	3'-2"	5'-5"	18"	2"	5"	7"	8"	300	350	2'-8"
9'-0"	5'-0"	8'-0"	4'-0"	6	5'-1"	2'-7"	14"	10"	3'-2"	5'-5"	18"	3"	5"	7"	8"	380	450	3'-0"
10'-0"	5'-6"	9'-0"	4'-6"	6	5'-7"	2'-11"	14"	14"	4'-3"	6'-10"	21"	4"	6"	8"	8"	470	550	3'-4"

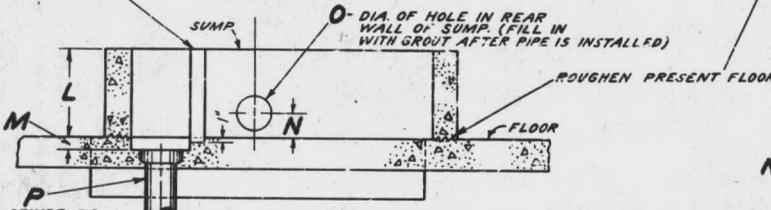
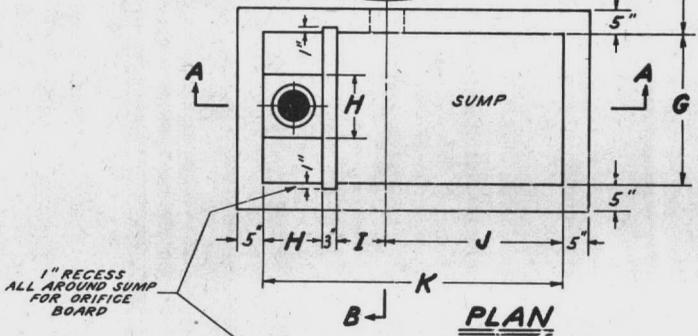
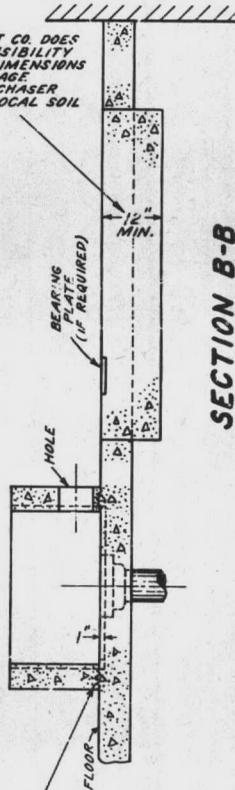
OPERATING WEIGHT

DIA. OF SOFT.	STRAIGHT OF SHELL							
	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-9"	
3'-6"	7,000	8,100	9,300	10,400	11,500	12,500	14,400	
4'-0"	8,900	10,500	12,000	13,400	14,900	16,200	18,700	
4'-6"	11,200	13,200	15,000	16,800	18,600	20,400	23,900	
5'-0"	13,800	16,100	18,300	20,500	22,800	25,600	28,900	
6'-0"	20,100	23,500	26,700	29,800	33,100	36,000	41,700	
7'-0"	28,000	32,800	37,000	41,500	46,000	49,800	57,300	
8'-0"	36,500	42,500	48,800	54,300	60,400	66,100	76,100	
9'-0"	46,300	54,200	62,100	68,900	76,600	83,700	96,400	
10'-0"	55,900	65,200	75,000	83,700	92,500	102,000	117,700	

NOTE:
UNITS BELOW THE HEAVY LINE REQUIRE 8" SQ X 3/4" THK. STEEL BEARING PLATES (BY PURCHASER).



NOTE: THE PERMUTIT CO. DOES NOT ASSUME RESPONSIBILITY FOR FOUNDATIONS. DIMENSIONS GIVEN ARE FOR AVERAGE CONDITIONS AND PURCHASER SHALL INVESTIGATE LOCAL SOIL BEARING VALUES.



NOTE: THE PURCHASER SUPPLIES LABOR AND ALL MATERIALS FOR FOUNDATION, SUMP AND DRAIN.

FOUNDATION FOR SINGLE UNIT SOFTENERS WITH MULTI-PORT VALVES FOR LAYOUT FORM NUMBERS 2001 & 2002

□-□ DIA. SOFT. X □-□" STRAIGHT USING □-□

THE PERMUTIT COMPANY
330 West 42nd Street - New York 18, N.Y.

Water Conditioning

November 5, 1947

U.S. Marine Corps,
Purchasing and Vouchering Division
Marine Corps Supply Depot,
Camp Lejeune, N.C.

Attn: Mr. J.L. Knott
CWO Officer in Charge

Gentlemen:

Our representative, Mr. N.D. Doane, has wired us requesting that we quote you on Decalso mineral for the three 10' diameter x 7' in the straight water softening units which you have.

A minimum bed for each of these 10' units would consist of 177 Cu. ft. of Decalso making a total of 531 cu. ft. required for the three units. The price of the material would be as follows:

531 Cu. ft. of Decalso,
240 cu. ft. of Gravel,
Price, freight allowed to Camp Lejeune, N.C...\$5,935.00

The suitability of Decalso for this particular water supply will have to be checked by making a complete analysis of the water as it is delivered to the point where the softeners will treat it. We are requesting our Mr. Doane to forward you one of our standard water sample cartons for your use in submitting the necessary samples directly to our laboratory. Please note that these samples are to be submitted directly to the Permutit Company, Birmingham, N.J. Please indicate on the shipping tag the complete description of the pre-treatment this water receives.

We will be pleased to forward complete recommendations to you through our representative as soon as we have completed this analysis.

Very truly yours,

THE PERMUTIT COMPANY

/s/ R. J. Niznan
Sales Department

RJN:L

*Samples Submitted
to Reg'l Purveyor
11/21/47
(Signature)*

THE PERMUTIT COMPANY

330 WEST 42nd STREET — NEW YORK 18, N. Y.

CABLE ADDRESS "PERMUTIT"

AUTOMATIC AND MANUALLY CONTROLLED
EQUIPMENT FOR REMOVAL OF HARDNESS,
DIRT, IRON, OIL, TASTE, ODOR AND OTHER
TROUBLESOME IMPURITIES FROM WATER.
FOR INDUSTRY, MUNICIPALITIES, RESIDENCES

Water Conditioning

ZEOLITES, ION EXCHANGERS, DEMINERALIZERS,
DEAERATORS, FILTERS, CHEMICAL FEEDS,
PRECIPITATION EQUIPMENT, DEGASIFIERS,
CO₂ METERS, SWIMMING POOL PURIFICATION,
INTERNAL BOILER FEEDWATER TREATMENT.

March 29, 1948

Chief Chemist
Camp Le Jeune
New River, North Carolina

Dear Sir:

Our Chief Field Engineer, Mr. A. E. Johnson, will be in the vicinity of your plant soon and we have asked him to stop in and check how your Permutit Spiractor plant is operating. There will be no charge for this inspection and Mr. Johnson will be pleased to answer any questions your operators may have at the time of his visit.

Under separate cover, we have sent a small sample of trisodium phosphate to Mr. Johnson in your care and trust this will be delivered to Mr. Johnson when he arrives.

Assuring you of our continued interest in the successful operation of your plant, we remain

Very truly yours,

THE PERMUTIT COMPANY

H. L. Beohner
H. L. Beohner
Vice President

HLB:iw

THE PERMUTIT COMPANY

230 WEST 42ND STREET - NEW YORK 36 N.Y.

CABLE ADDRESS: PERMUTIT

Handwritten: Mr. J. J. Johnson

March 29, 1943

Handwritten:
26,030.00

78,000.00

Chief Chemist
Camp Lejeune
New River, North Carolina

Our Chief Field Engineer, Mr. A. E. Johnson, will be in the vicinity of your plant soon and we have asked him to stop in and check on your Permutox 2000 plant is operating. There will be no charge for this inspection and Mr. Johnson will be pleased to answer any questions your operators may have at the time of his visit.

Under separate cover, we have sent a copy of the operating instructions to Mr. Johnson in your care and trust this will be delivered to Mr. Johnson when he arrives.

Assuring you of our continued interest in the successful operation of your plant, we remain

Very truly yours,

THE PERMUTIT COMPANY

H. I. Roegner
Vice President

PERMUTIT COMPANY
230 WEST 42ND STREET
NEW YORK 36, N.Y.

PERMUTIT COMPANY
230 WEST 42ND STREET
NEW YORK 36, N.Y.

THE PERMUTIT COMPANY

330 WEST 42nd STREET — NEW YORK 18, N.Y.

CABLE ADDRESS "PERMUTIT"

Water Conditioning

April 6, 1948

AUTOMATIC AND MANUALLY CONTROLLED
EQUIPMENT FOR REMOVAL OF HARDNESS,
DIRT, IRON, OIL, TASTE, ODOR AND OTHER
TROUBLESOME IMPURITIES FROM WATER.
FOR INDUSTRY, MUNICIPALITIES, RESIDENCES

ZEOLITES, ION EXCHANGERS, DEMINERALIZERS,
DEAERATORS, FILTERS, CHEMICAL FEEDS,
PRECIPITATION EQUIPMENT, DEGASIFIERS,
CO₂ METERS, SWIMMING POOL PURIFICATION,
INTERNAL BOILER FEEDWATER TREATMENT.

U. S. Marine Barracks
Camp Lejeune, North Carolina

Att: Captain O. J. Myer
Officer in Charge of Maintenance

Gentlemen:

Our field engineer, Mr. A. E. Johnson, has requested that we furnish you with operating instructions for two 10' diameter x 7' straight automatic softeners. According to our present information, these are two of three softeners originally furnished to the Wilmington Anti-Aircraft Firing Center, Holly Ridge, North Carolina (later known as Camp Davis). We enclose the layout, wiring diagram and detail drawings of the Camp Davis installation.

many same softeners from Camp Davis

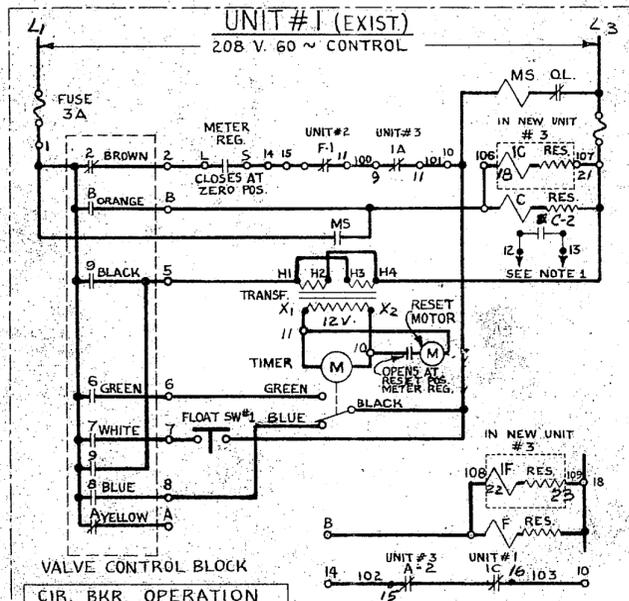
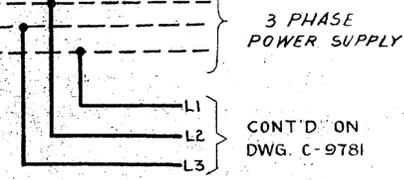
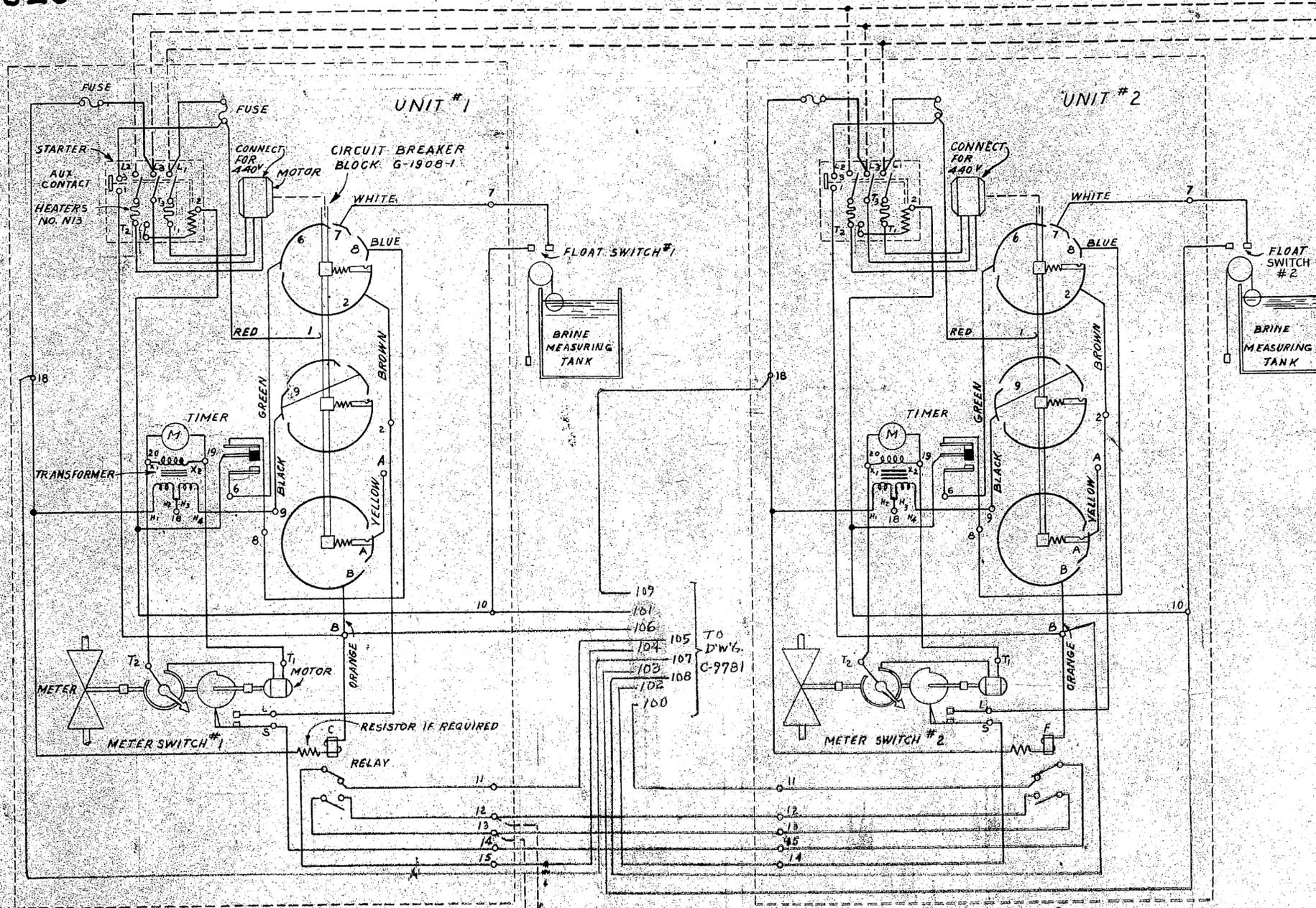
The operating instructions enclosed are based on a bed of "Super-Zeo-Dur" 46" deep (300 cu. ft.). Our files show that some correspondence and discussion has taken place regarding the use of some other mineral. We no longer manufacture Super-Zeo-Dur. The record is not clear as to whether the original fill is now being used. These operating instructions are based on Super-Zeo-Dur in the quantity shown above. The following items would have to be investigated for possible changes if any other mineral is to be used:

(See page 1 of operating instructions)

- Item 3 - Capacity in gallons
- Item 4 - Maximum rate
- Item 5 - Wash Rate
- Item 6 - Rinse Rate and Time
- Item 7 - Salt charge

Changes in the above would necessitate changes in the equipment as follows:

1. Capacity - A large change in capacity may require that the meter register be replaced or remodeled



UNIT #1 (EXIST)
208 V. 60 ~ CONTROL

IN NEW UNIT #3
106 / F RES. 109 / 18
107 / C RES. 107 / 21
108 / C RES. 107 / 21
109 / F RES. 109 / 18
110 / E RES. 109 / 18

UNIT #2
102 / A 2
103 / 10

UNIT #3
101 / 10
104 / 10
105 / 10

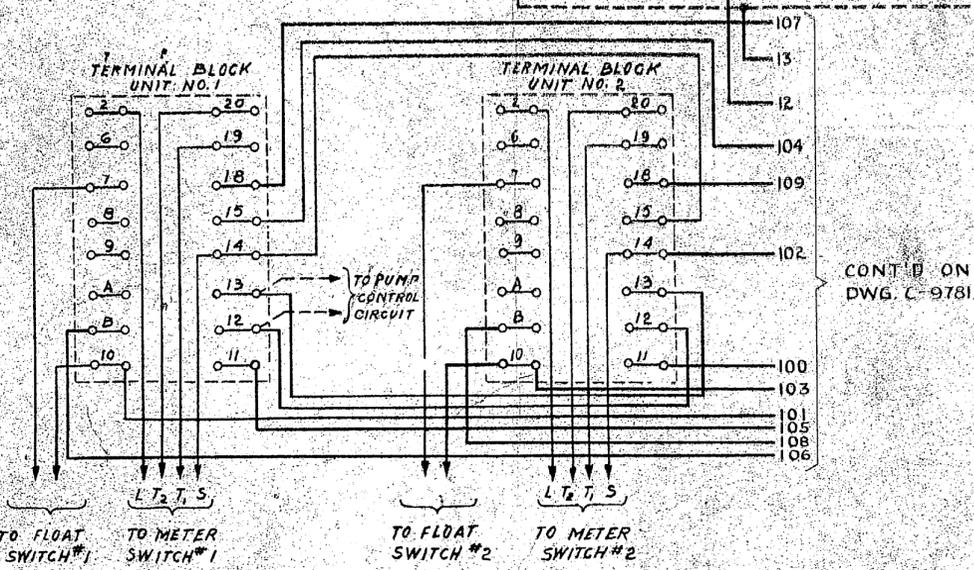
RESISTOR IF REQUIRED

RELAY

TO DWG. C-9781

SEE NOTE 2

- NOTES**
- CONNECTIONS AND APPARATUS SHOWN DOTTED TO BE FURNISHED BY PURCHASER.
 - WHEN WATER IS DELIVERED TO SOFTENER BY AUTOMATICALLY CONTROLLED PUMP, THESE WIRES ARE TO BE CONNECTED TO SHUNT CONTROL DEVICE SO AS TO MAINTAIN PUMP IN OPERATION DURING REGENERATIONS, IF CIRCUIT IS OVER 250 VOLTS, INTERPOSE SUITABLE CONTACTOR TO PROTECT SOFTENER EQUIPMENT FROM THE HIGH POTENTIAL.
 - ALL EQUIP. SHOWN IS EXIST. - EXTERNAL WIRING TO BE ALTERED TO CONFORM WITH THIS DWG. INTERNAL WIRING REQUIRES WIRING TO TERM. BLOCK PT. NO 18 AS SHOWN



REFERENCE DWG.
C-9781 - NEW UNIT #3 WITH INTERLOCKING FOR EXIST. UNITS #1 & #2.

CONT'D ON DWG. C-9781

CONNECTIONS TO BE MADE BY INSTALLER

DRAWN BY: PFS
TRACED BY: [Signature]
CHECKED BY: AMY

MARINE CORPS SUPPLY DEPOT
CAMP LEJEUNE
NORTH CAROLINA

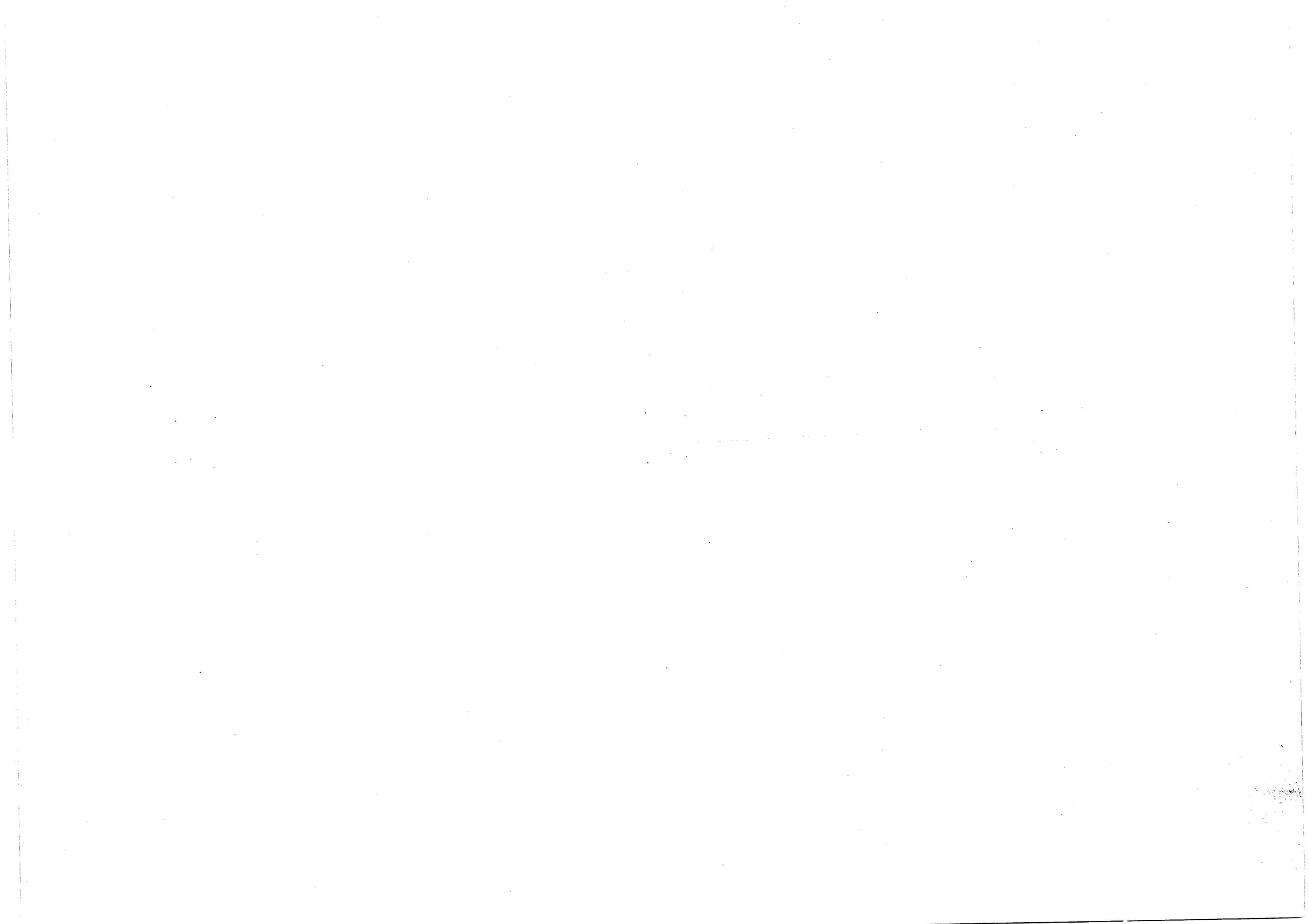
BKGE-172825

REVISIONS
A
B
C
D

THE PERMUTIT CO.
NEW YORK, N. Y.

SCALE: 1/2"

DATE: 4-16-54 **C-9780**



THE PERMUTIT COMPANY

MAIN OFFICE ... NEW YORK, N. Y.

Water Conditioning

WATER CONDITIONING OF EVERY TYPE
FOR INDUSTRY, FOR MUNICIPALITIES,
FOR RESIDENCES. SWIMMING POOL
EQUIPMENT. CHEMICAL FEEDS.
POWER PLANT SPECIALTIES, ETC.

AUTOMATIC AND MANUAL EQUIPMENT FOR
REMOVAL OF HARDNESS, DIRT, IRON, OIL,
TASTE AND ODOR, OTHER TROUBLESOME
IMPURITIES FROM WATER. CO₂ METERS.
INTERNAL BOILER FEEDWATER TREATMENT.

October 21, 1944.

N. D. DOANE
831 E. MOREHEAD STREET
CHARLOTTE, N. C.
(Zone 3)

Capt. H. G. Bozarth,
Utilities & Maintenance Dept.,
Camp Lejeune,
New River, N. C.

Re: Tent Camp Area.

Dear Capt. Bozarth:

It was eleven o'clock this morning before I got through with my appointment in Jacksonville, and I did not have much time to come out to the camp, so I telephoned your office, but you were out. I telephoned the water plant and Kellum was at the sewage plant, and I didn't have any luck reaching him there, so I decided to drop you a note.

The three zeolite softeners at Camp Davis are 10' diameter x 7' ss. The main piping and automatic valves are 5" and the tanks are designed for 100# working pressure. Original capacity of each unit was 100,000 gallons per regeneration on 14 grain water. This relatively high capacity is due to the fact that the tanks contained high capacity greensand zeolite. This zeolite would also be suitable for the type of water you want to treat.

The iron removal unit at Camp Davis is 10' diameter x 8' shell height with 5" automatically operated hydraulic valves. The manganese zeolite contained in this unit is only good for iron removal and can not be used for softening. If this unit were to be used for a softener, it would have to be provided with water softening zeolite, and, of course, with a brine tank. The other units would also require additional brine tanks.

The 10' diameter greensand softeners can be conservatively rated at 4 gallons per square foot per minute, or about 320 g.p.m. A maximum peak load rating would be 400 g.p.m. Your large handbook will give you the floor space and headroom requirements, operating weights, etc., for these softeners.

If you need further information, please let us know.

Yours very truly,

N. D. Doane

THE PERMUTIT COMPANY

MAIN OFFICE - NEW YORK N.Y.

Water Conditioning

INTERNAL WATER CONDITIONING
FOR ALL TYPES OF WATER
TREATMENT PLANTS
AND INDUSTRIAL
WATER SUPPLY SYSTEMS

POWER PLANT CONDENSERS
FOR ALL TYPES OF
STEAM BOILERS
AND CONDENSERS
FOR ALL TYPES OF
STEAM ENGINE DRIVEN
MACHINERY

W. D. DOANE
200 WEST 42ND STREET
NEW YORK 36, N.Y.

Dr. Johnson

October 27, 1944

C-441-W-1

Lt. Commander G. W. Battey,
Public Works Officer,
Camp Lejeune, North Carolina

Dear Sir:

Captain Bozarth called and stated that he has an opportunity to secure from Camp Davis at no cost except hauling, three -350 G.P.M. Permutit Zeolite softeners and one - 350 G.P.M. iron removal tank which could be converted to a softener, and two small, manually controlled horizontal softeners. He asked our advice. The writer and Mr. W. C. Munroe discussed the situation and advised Captain Bozarth by phone to secure the apparatus which may be used at the Rifle Range or Tent Camp, or both.

We advised him further that with the Zeolite softener, the present water conditioning equipment in the Central Heating Plant would require some change.

Our report covering the Rifle Range water treatment problem is nearing completion and will include a discussion of the use of this equipment. We therefore request that you furnish us an exact list of the equipment which Captain Bozarth secures, giving capacities, sizes, serial numbers, and any other descriptive matter that may be obtainable.

Thank you very much.

Yours very truly,

CARR AND J. E. GREINER COMPANY


B. Everett Beavin

BEB: em
cc: CF
TF
RF
W.C. Munroe
G.W. Carr
✓ Capt. Bozarth
B.W. LeSueur

CARR AND J. E. GREINER COMPANY
ARCHITECT ENGINEERS
DURHAM, N. C. BALTIMORE, MD.

GEO. WATTS CARR, A. I. A.
JOHN E. GREINER, HON. M. AM. SOC. C. E.
HERSCHEL H. ALLEN, M. AM. SOC. C. E.

REPLY TO
1201 ST. PAUL STREET
BALTIMORE, MD.

October 27, 1944

C-441-A-1

Captain H. G. Bozarth, U.S.M.C.
Camp Engineer's Office,
Camp Lejeune, North Carolina

Dear Captain Bozarth:

In response to your inquiry as to what used equipment might usefully be secured from other activities now being dismantled, we wish to advise as follows:

(a) In addition to the Zeolite softener equipment which you have secured from Camp Davis, the Rifle Range softening plant will require two - 350 G.P.M. pumps to work against 25 ft. total discharge head.

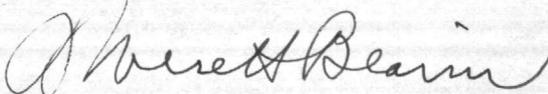
(b) You may be able to secure sewage and sludge pumps and compressor equipment suitable for an activated sludge plant for the Main Area.

(c) Our preliminary analysis of the well pumps and transmission system indicates that the Worthington pumps in Wells 17 to 21, inclusive, are deficient in output although the Worthington Pump Company is reported to have re-visited New River and installed equipment meeting the original specifications.

If deep well pumps, discharge columns, etc. of characteristics equal to or slightly in excess of those originally specified should become available as surplus equipment, please get in touch with us through Commander Battey. It may thereby be possible to bring the well water system up to design capacity without purchasing new equipment.

Yours very truly,

CARR AND J. E. GREINER CO.


B. Everett Beavin

BEB: mm
cc: CF
TF
RF

B.W. Carr
Comdr. Battey
LeSueur

October 27, 1944

1-1-1-1

Dear Mr. [Name],

I received your letter of the 23rd and am glad to hear that you are still in the hospital. I hope you will be able to return home soon.

(1) I am sorry to hear that you are still in the hospital. I hope you will be able to return home soon.

(2) I am sorry to hear that you are still in the hospital. I hope you will be able to return home soon.

(3) I am sorry to hear that you are still in the hospital. I hope you will be able to return home soon.

I am sorry to hear that you are still in the hospital. I hope you will be able to return home soon.

Yours very truly,

[Signature]

[Address]

[Postmark]

PURCHASING & CONTRACTING BRANCH
 BASE MATERIEL BATTALION
 SECOND FORCE SERVICE REGIMENT
 CAMP LEJEUNE, NORTH CAROLINA

*Water Treatment
 Bldg # 20*
 SCHEDULE NO. 93110-
 22180-61

P B-1
 CONTRACT MODIFICATION ORDER
 MCBCL 311 LOG

#1

LAC

TO:
 PERMUTIT CO., DIV. OF PFAULDER PERMUTIT INC., 431½ WALKER AVE., GREENSBORO, N. C.

REFERENCE	ORDER NO.	DATE	JOB ORDER NO.	OCN NO.	ACCOUNT AND ALLOTMENT NO.
	67001-5672-61	14 Apr 61	02 1 03198 426000	089	67001/12002/45250

The above referenced order is hereby modified:

ITEM NO.	SUPPLIES OR SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	<p>CHANGE NAME OF COMPANY TO READ:</p> <p>IONAC CHEMICAL CO. DIV. OF PFAUDLER PERMUTIT INC. 431½ WALKER AVE. GREENSBORO, N. C.</p> <p>Ref: Co. ltr dtd 9 May 1961</p> <p>ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME</p> <p>Order complete</p>				

TOTAL	INCREASE ---	DECREASE ---
SIGNATURE R. T. GEDDES, W.O., USMC	TITLE CONTRACTING OFFICER	DATE 12 May 1961
Complete section below and return to: Base Purchasing Office, Marine Corps Base, Camp Lejeune, North Carolina		
SIGNATURE (Firm Representative)	TITLE	DATE

100-100000

PURCHASING & CONTRACTING BRANCH
STATE PATRIOTIC ATTACHE
SECOND BOYCE SERVICE REGIMENT
CAMP LEHNER, NORTH CAROLINA

UNITED STATES GOVERNMENT

OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY

WASHINGTON, D. C.

DATE OF ORDER

QUANTITY

UNIT PRICE

TOTAL PRICE

AMOUNT PAID

BALANCE DUE

DATE OF PAYMENT

NAME OF CONTRACTOR

ADDRESS

CITY

STATE

ZIP CODE

TELEPHONE NUMBER

TYPE OF CONTRACT

TERMS OF CONTRACT

CONDITIONS OF CONTRACT

REMARKS

SIGNATURE OF CONTRACTOR

DATE OF SIGNATURE

NAME OF OFFICIAL

POSITION

OFFICE

DATE OF ORDER

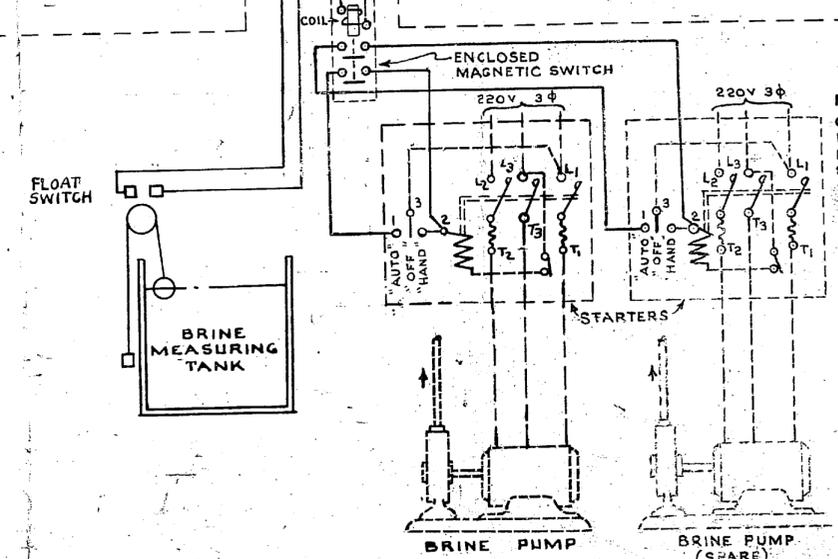
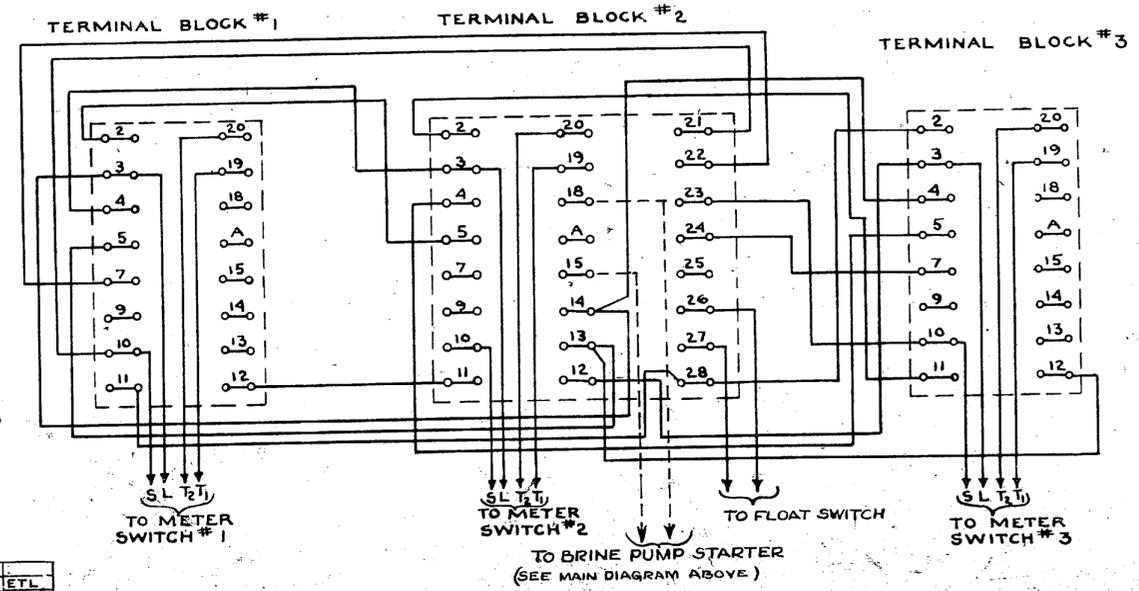
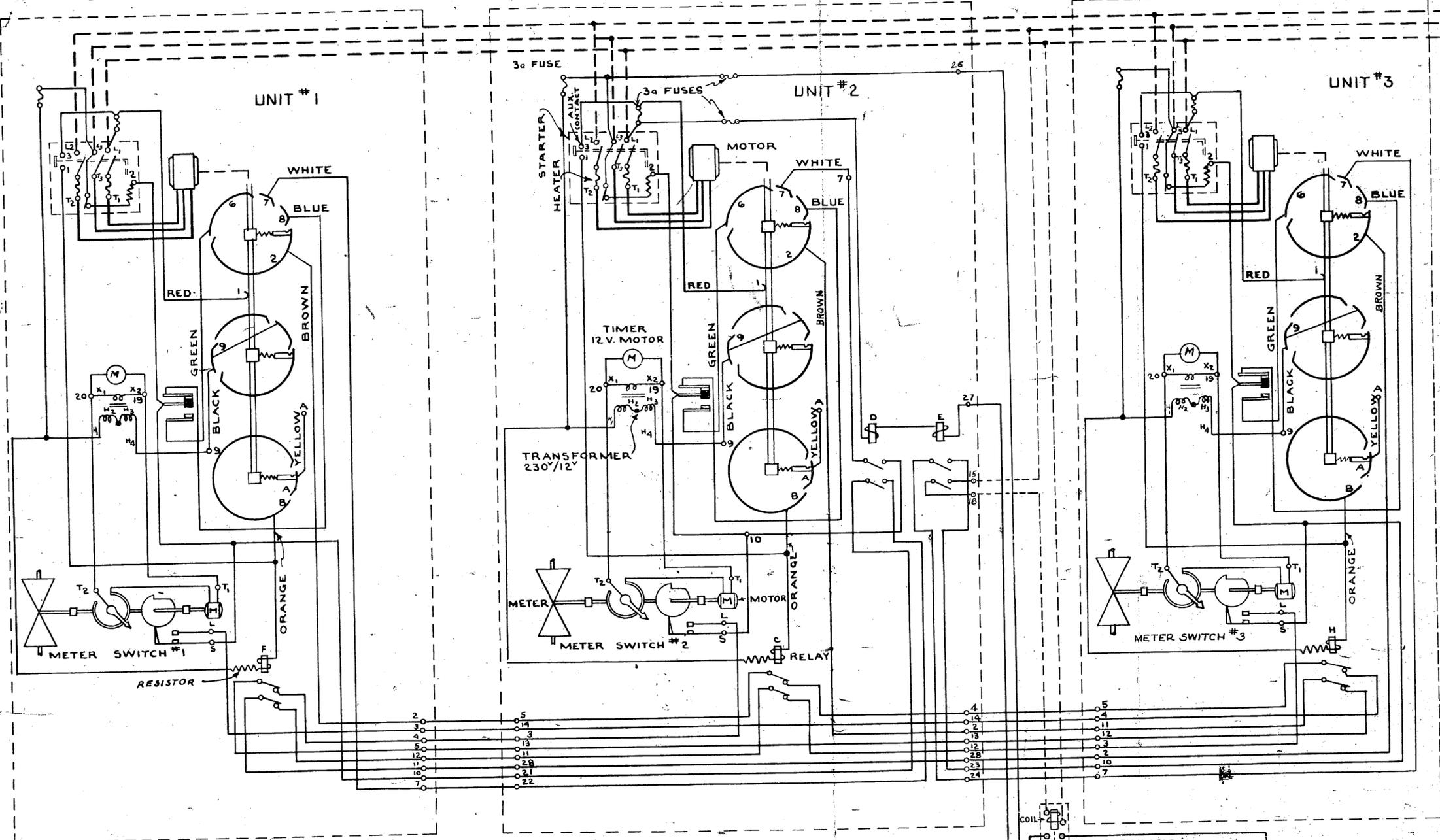
QUANTITY

UNIT PRICE

TOTAL PRICE

AMOUNT PAID

BALANCE DUE



NOTE:- CONNECTIONS AND APPARATUS SHOWN DOTTED TO BE FURNISHED BY THE PURCHASER UNLESS OTHERWISE SPECIFIED.

WIRING DIAGRAM
Permutit
Water Conditioning

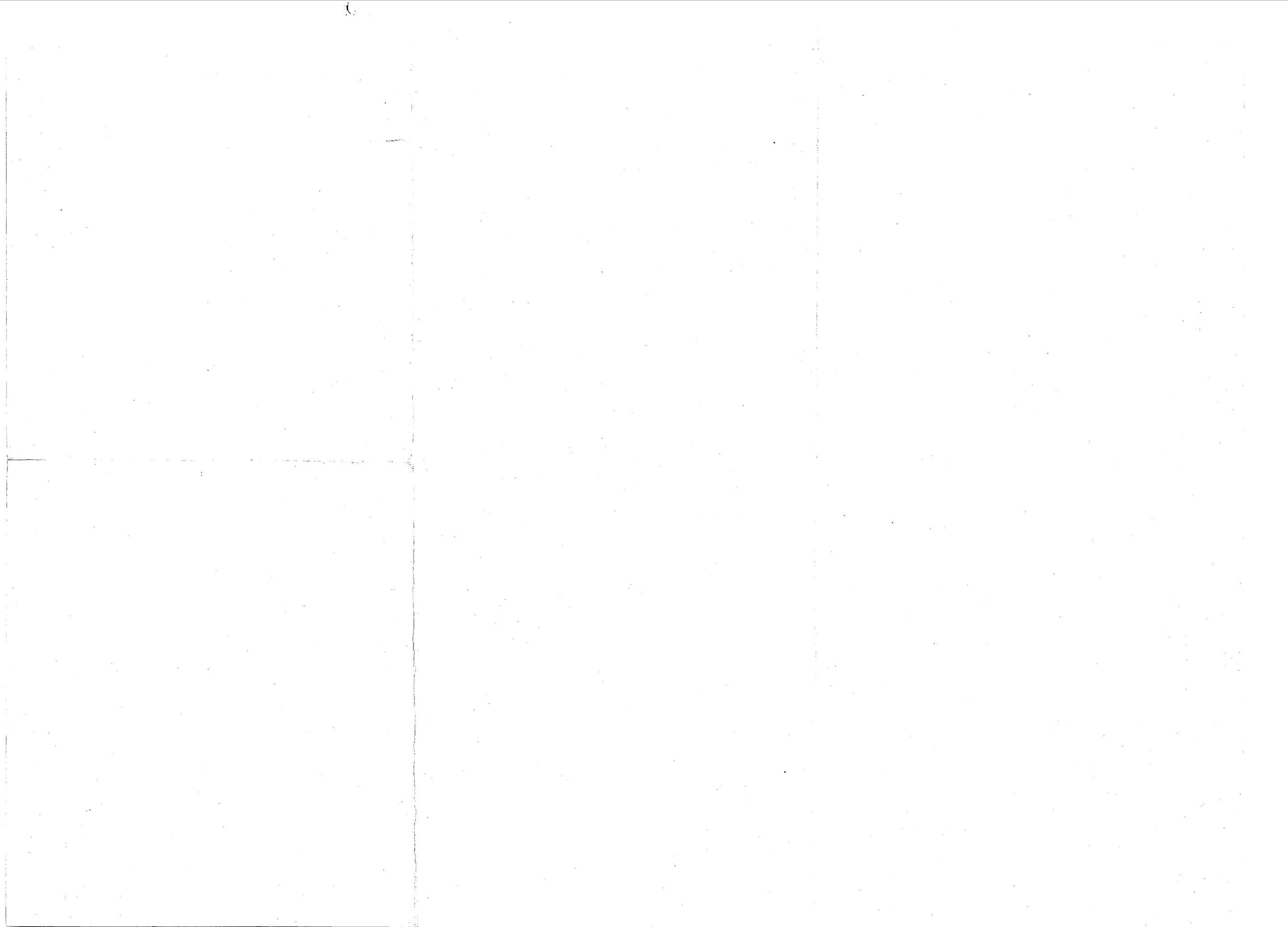
THE PERMUTIT CO.
NEW YORK, N. Y.

SCALE #

REVISIONS	
A	
B	
C	
D	

DATE 1-29-41. **C-3471-2**

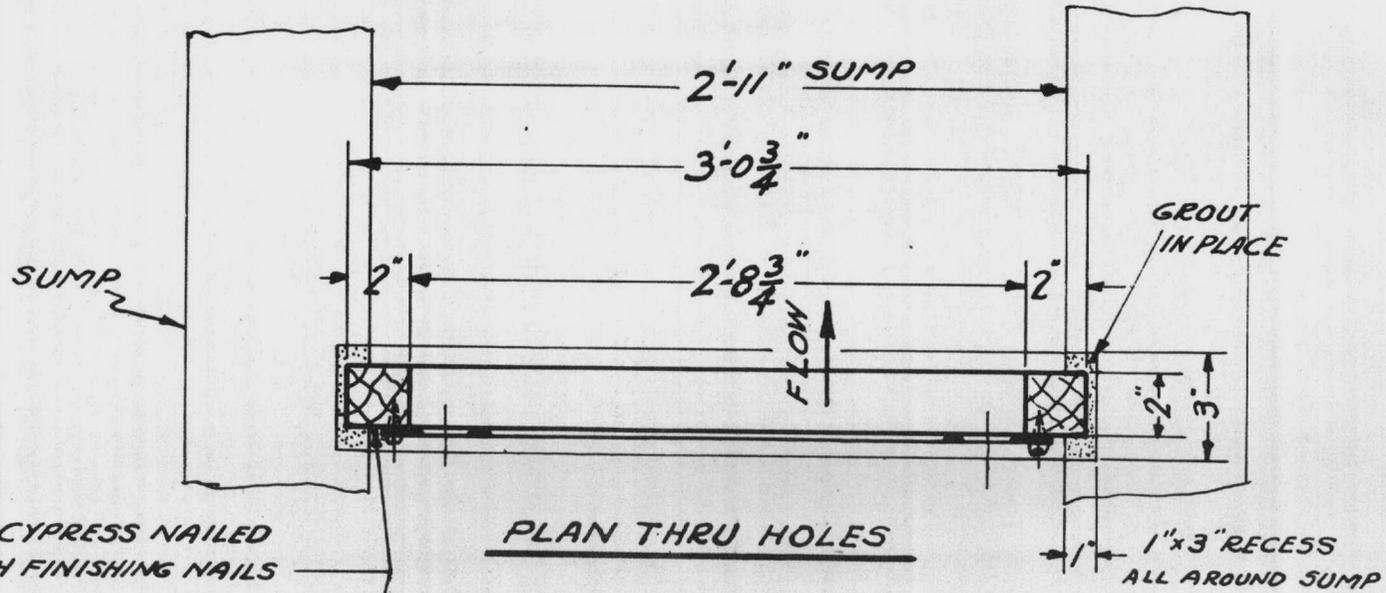
DRAWN BY
TRACED BY
CHECKED BY



MADE *D.U.*

CHECKED *R.T.P.*

TYPE "B"
DECALSO & ZEODURE

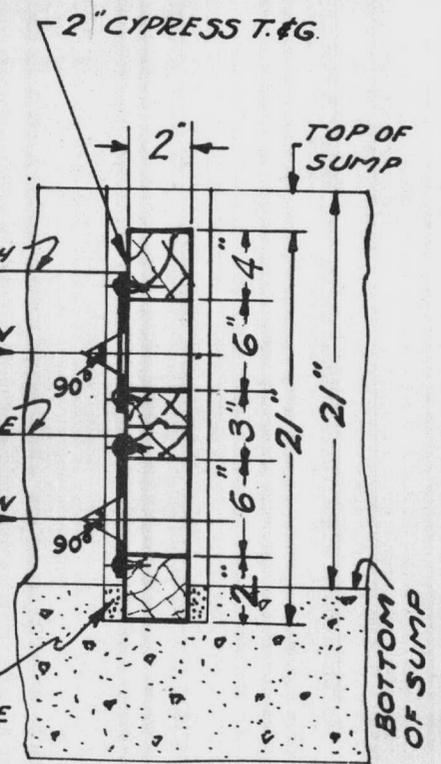
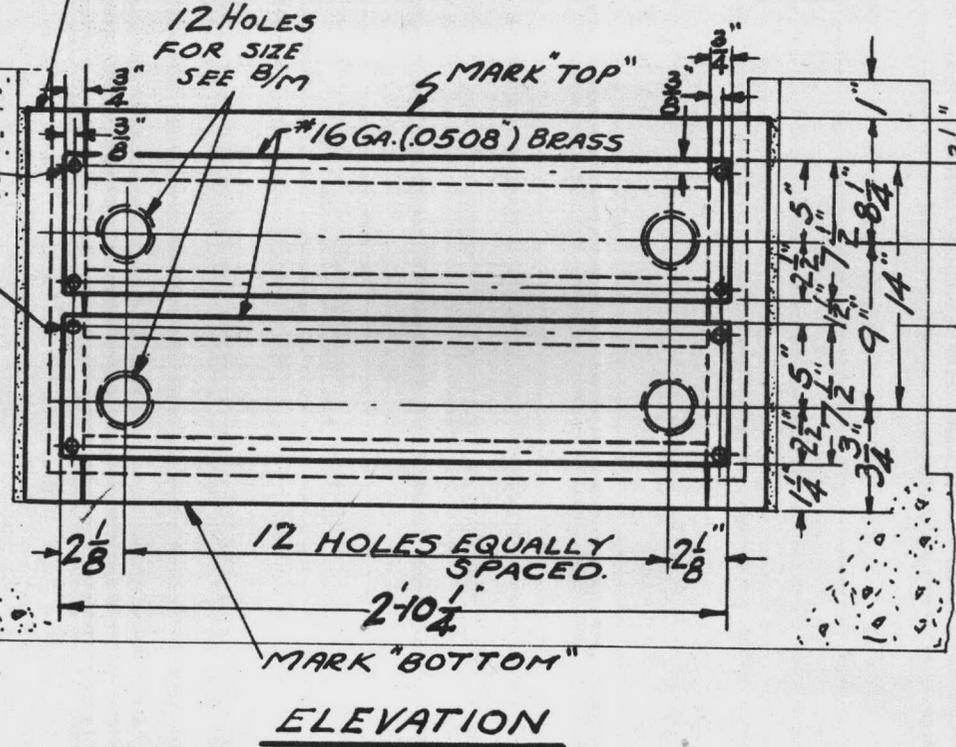


UPPER HOLES 1 1/16"
 LOWER HOLES 1 3/16"
 15
 3 0 0
 4 5 0 0

DRILL 3/16" HOLES FOR
 #9 BRASS ROUND
 HEAD WOOD SCREWS
 5/8" LONG. SPACE
 APPROX 4 3/4" APART

ASSEMBLY & DETAILS OF OFFICE
 PLATES & BOARD 10:0" SOFTENER
 THE PERMUTIT COMPANY
 NEW YORK CITY

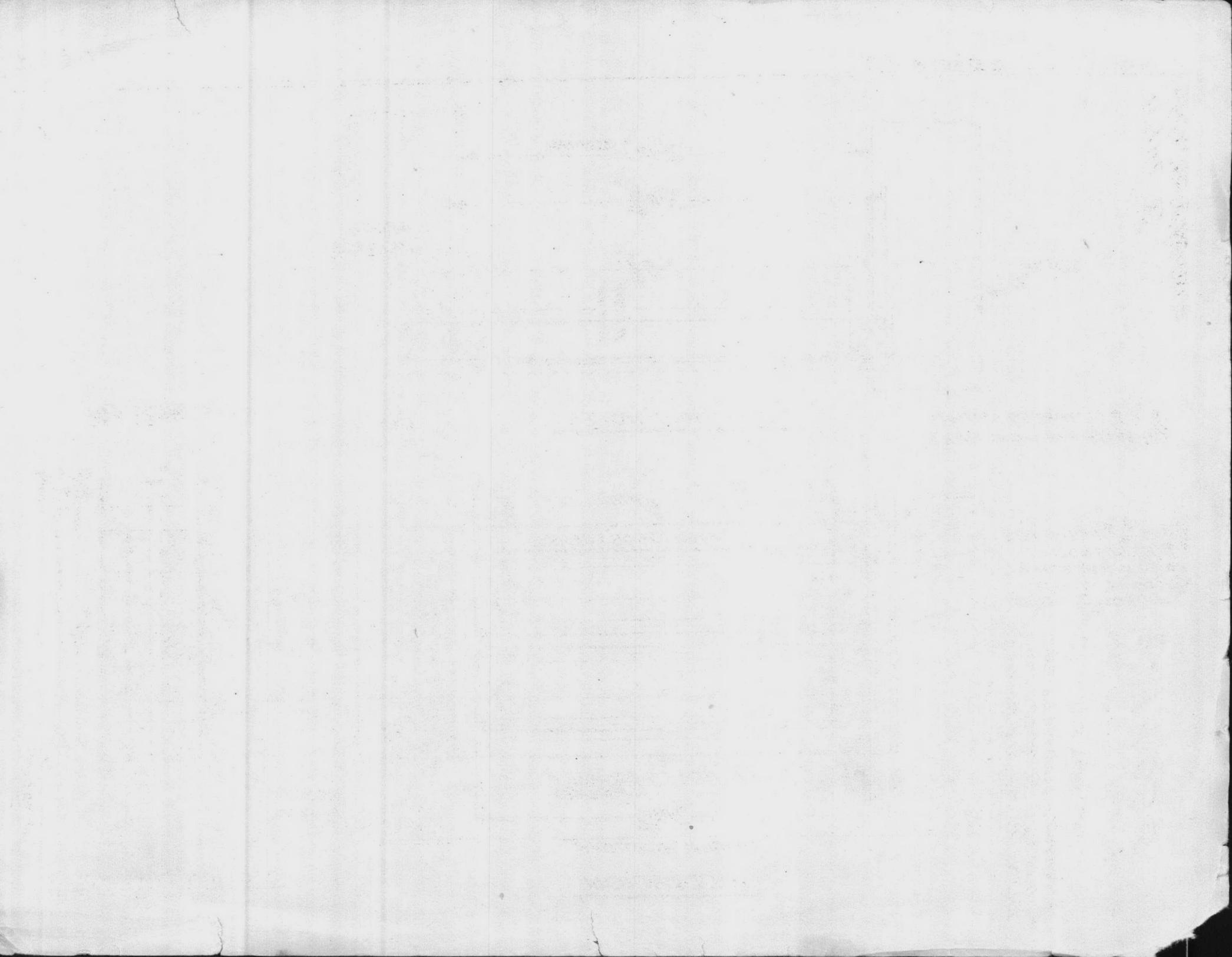
B-14095
 SCALE _____ DATE 11-25-36



PLAN THRU HOLES

ELEVATION

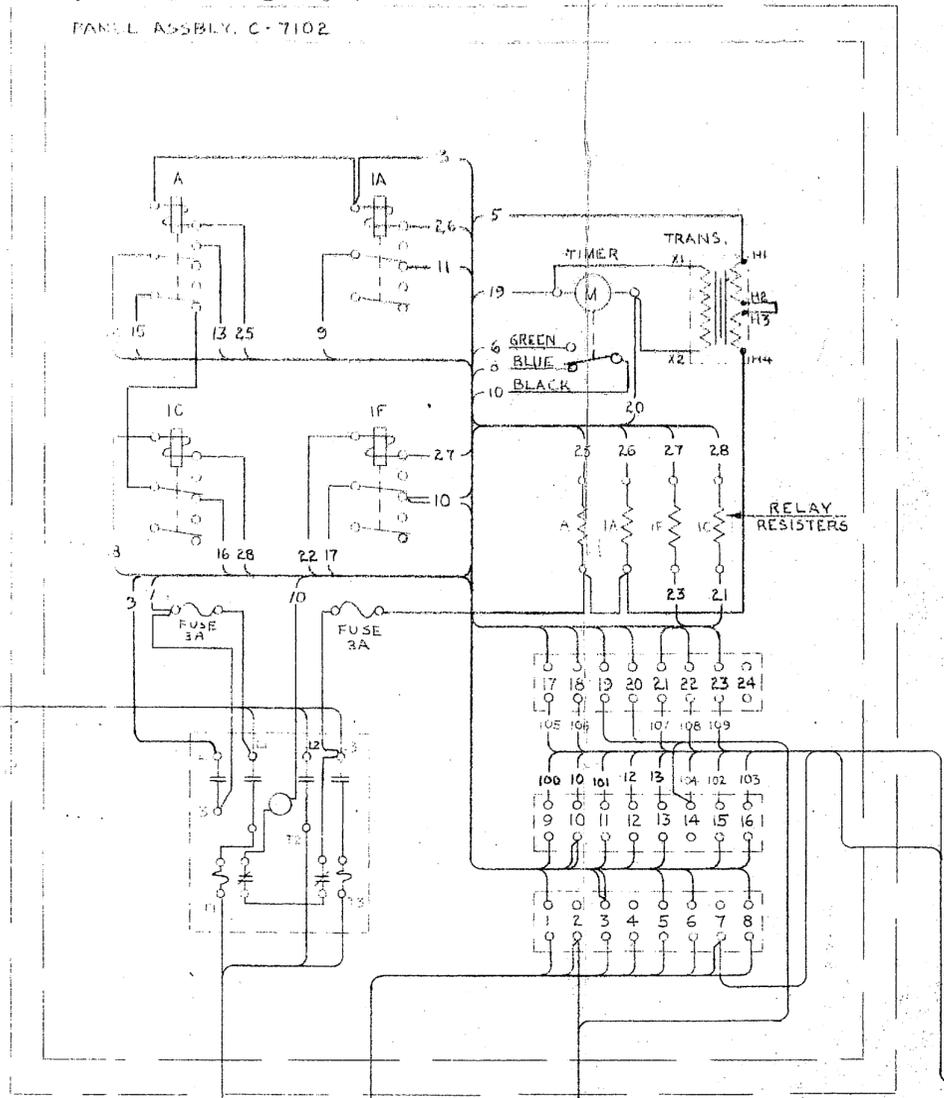
SECTION THRU HOLES



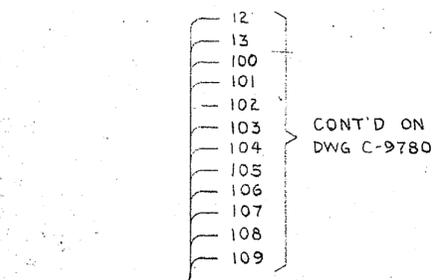
1876-C

UNIT # 3

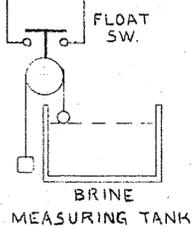
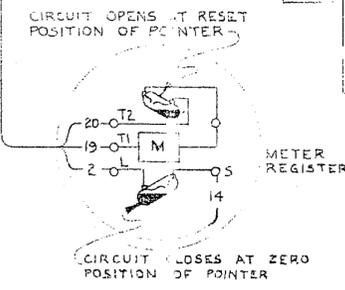
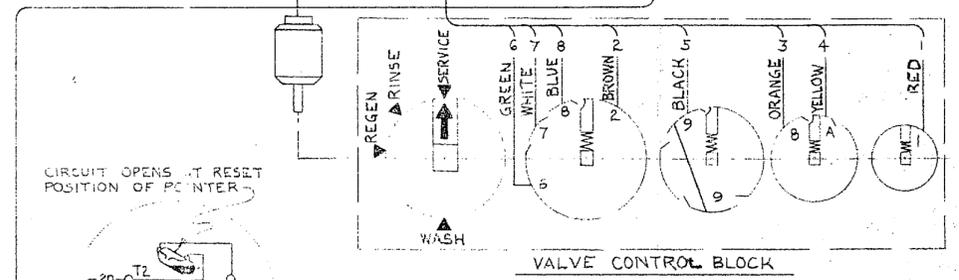
CONTROL BOX CA-1541
PANEL ASSEMBLY C-7102



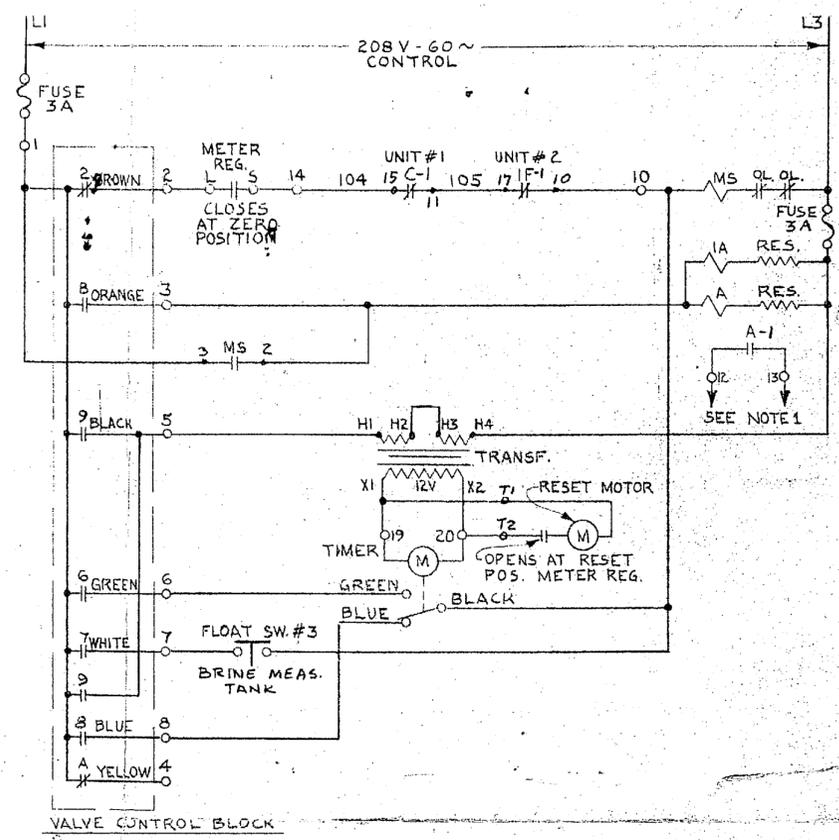
CONT'D ON
DWG C-9780



CONT'D ON
DWG C-9780



UNIT # 3
(NEW)



VALVE CONTROL BLOCK

CIR. BKR OPERATION		
POSITION	CIR. CLOSED	CIR. OPEN
SERVICE	2, A	B, 6, 7, 8
WASH	B, 6, 9	A, 2, 7, 8
REGEN	B, 7	2, A, 6, 9, 8
RINSE	B, 8, 9	2, A, 6, 7

NOTES

1- WHEN WATER IS DELIVERED TO SOFTENER AUTOMATICALLY BY A PUMP, WIRES (12, 13) ARE TO BE CONNECTED TO SHUNT CONTROL DEVICE SO AS TO MAINTAIN PUMP IN OPERATION DURING REGENERATION. IF CIRCUIT IS OVER 250 VOLTS INTERPOSE SUITABLE CONTACTOR TO PROTECT SOFTENER EQUIP. FROM HIGH POTENTIAL.

REFERENCE DWG

C-9780 - EXISTING UNITS # 1 & 2
WITH INTERLOCKING TO NEW UNIT # 3

Permutit
Water Conditioning

SCHEMATIC & WIRING DIAGRAM
AUTO. SOFTENER-NEW UNIT # 3

THE PERMUTIT COMPANY
NEW YORK, N. Y.

MARINE CORPS SUPPLY DEPOT
CAMP LEJEUNE
NORTH CAROLINA

BAGE-172825

REVISIONS	
A	
B	
C	
D	

SCALE _____
DATE 4-22-54

C-9781

DRAWN BY	R.F.S.
TRACED BY	
CHECKED BY	Amk

Howard Sutton Co., Inc. N. Y.

WATER ANALYSIS

THE PERMUTIT COMPANY, 330 West 42nd Street, New York 18, N.Y.

NAME U. S. Marine Corps DATE 12-9-47 LAB. NO. P-219022
Camp Maintenance Division
 ADDRESS Camp Lejuene, N.C. DATE SAMPLE COLLECTED 11-20-47
 COPIES SENT TO _____ ANALYZED 12-3-47

Raw water from artesian well. Clear when drawn. No H₂S odor.

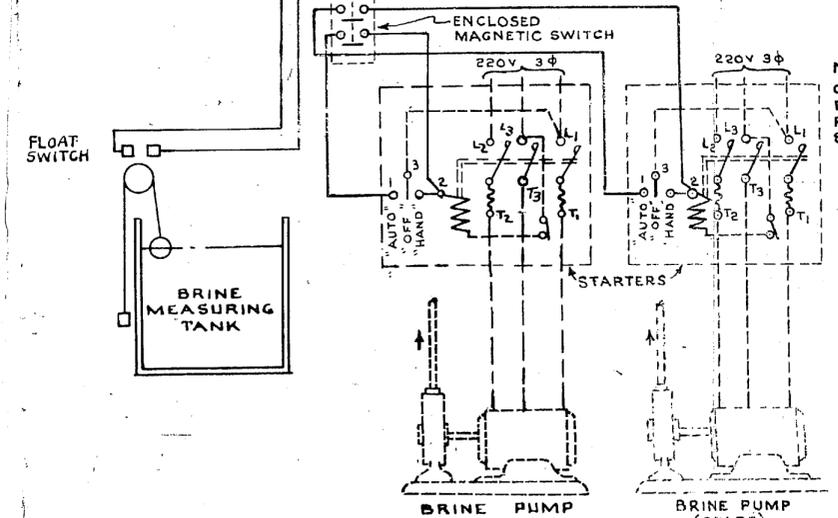
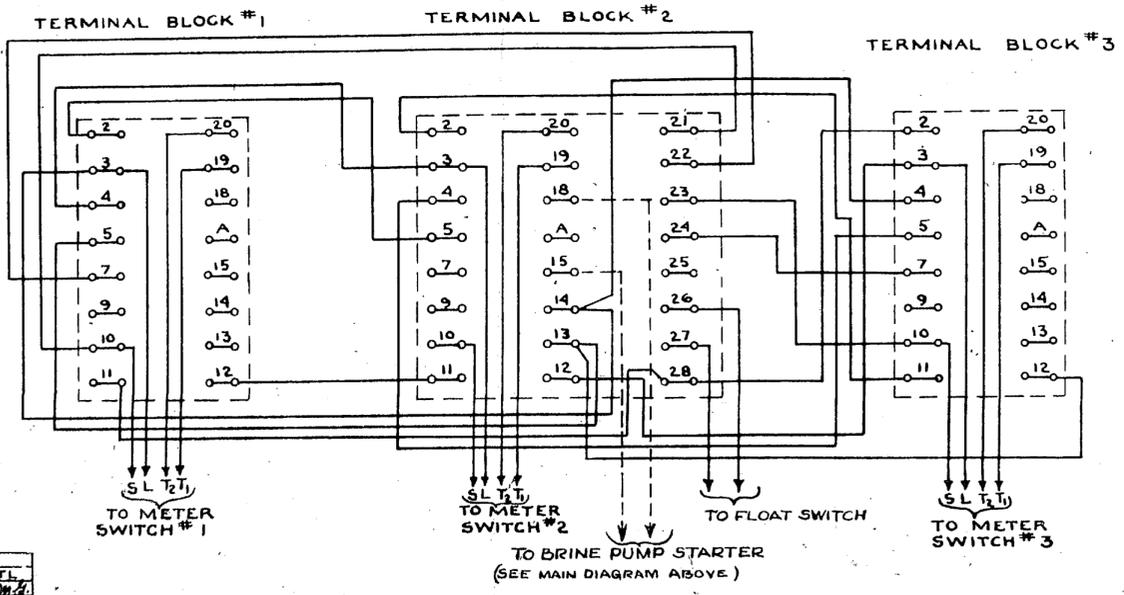
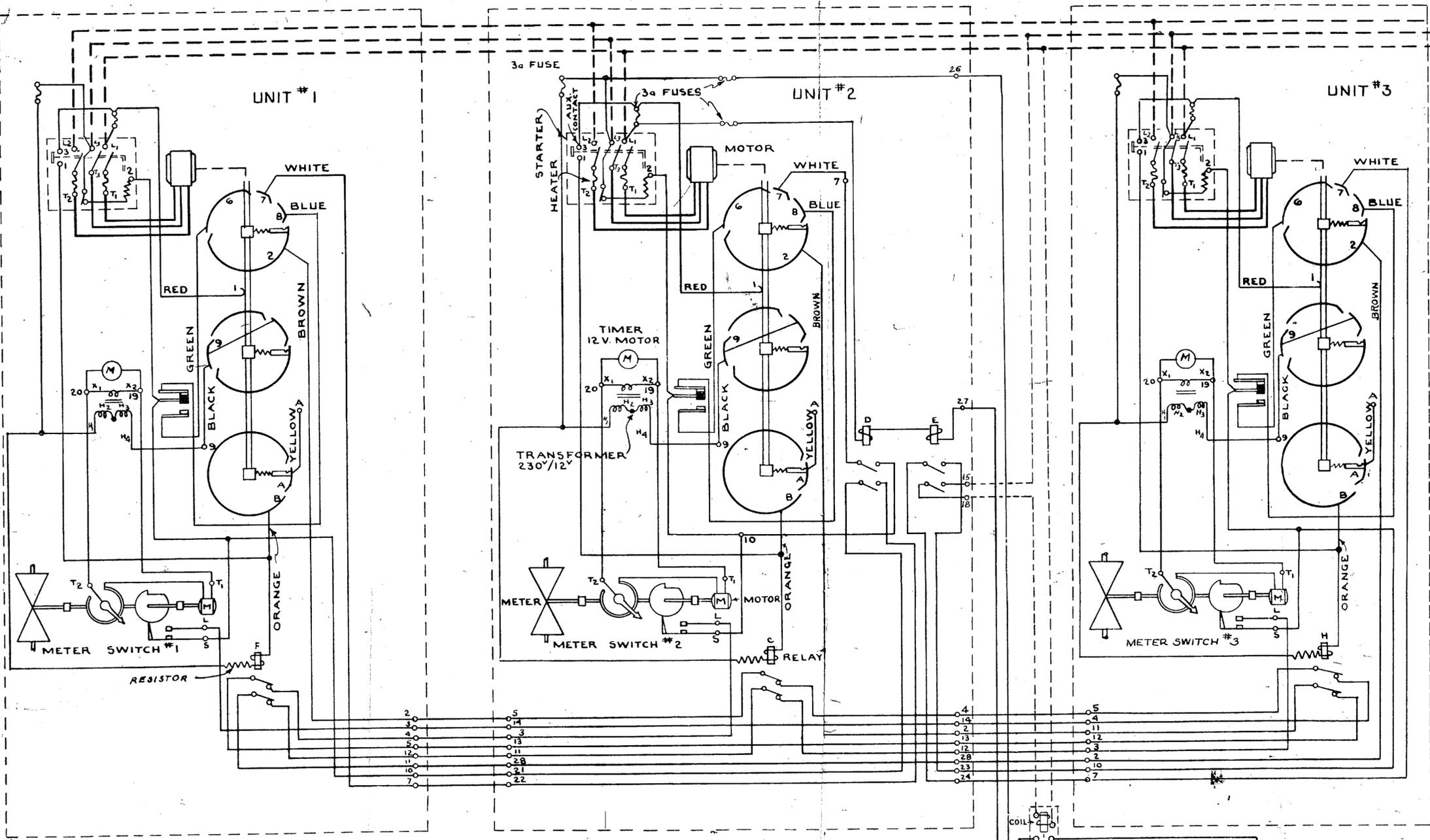
Sent in by _____

		PPM as	
CATIONS	Calcium (Ca ⁺⁺)	CaCO ₃	182
	Magnesium (Mg ⁺⁺)	CaCO ₃	20
	Sodium (Na ⁺)	CaCO ₃	
	CaCO ₃	
ANIONS	Bicarbonate (HCO ₃ ⁻)	CaCO ₃	172
	Carbonate (CO ₃ ⁻⁻)	CaCO ₃	16
	Hydroxide (OH ⁻)	CaCO ₃	
	Chloride (Cl ⁻)	CaCO ₃	14
	Sulfate (SO ₄ ⁻⁻)	CaCO ₃	14
	CaCO ₃	
Total Hardness		CaCO ₃	202
Alkalinity A (Methyl Orange)		CaCO ₃	188
Alkalinity B (Phenolphthalein)		CaCO ₃	8
Free Carbon Dioxide		CO ₂	0
Iron		Fe	1.3
Silica		SiO ₂	
Turbidity			15
Color			15
pH			8.9
Manganese		Mn	0.0
Actual Hardness (as CaCO ₃)		Results in grains per U.S. Gal.	12
Compensated* Hardness (as CaCO ₃)			12

(*) Compensated Hardness includes addition for Sodium Salts, and is used for calculating zeolite softener capacities.

17.1 parts per million = 1 grain per U. S. Gallon.

THREE PHASE
POWER SUPPLY
220 VOLTS



NOTE:-
CONNECTIONS AND APPARATUS SHOWN
DOTTED TO BE FURNISHED BY THE
PURCHASER UNLESS OTHERWISE
SPECIFIED.

WIRING DIAGRAM
Permutit
Water Conditioning

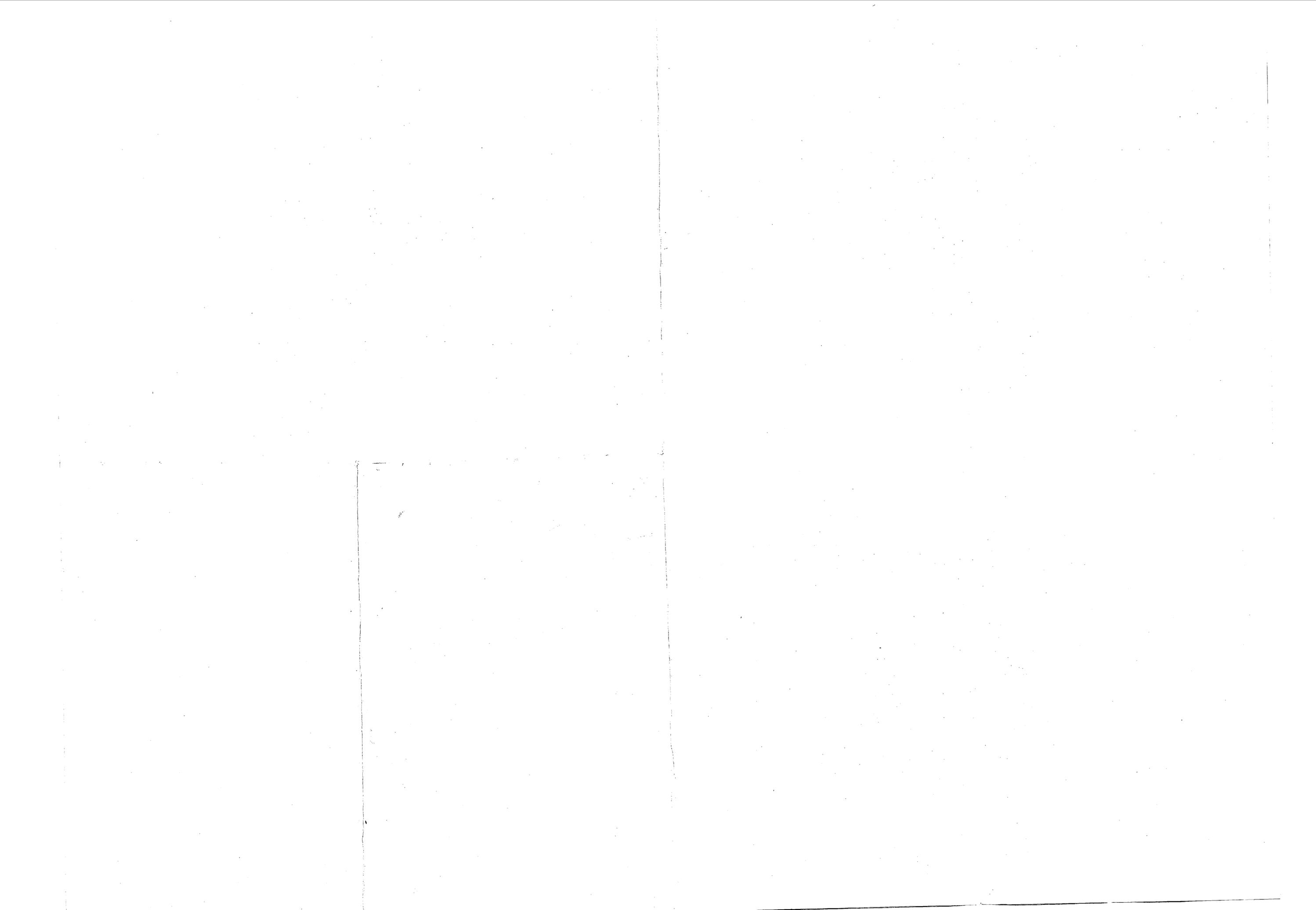
THE PERMUTIT CO.
NEW YORK, N. Y.

SCALE #

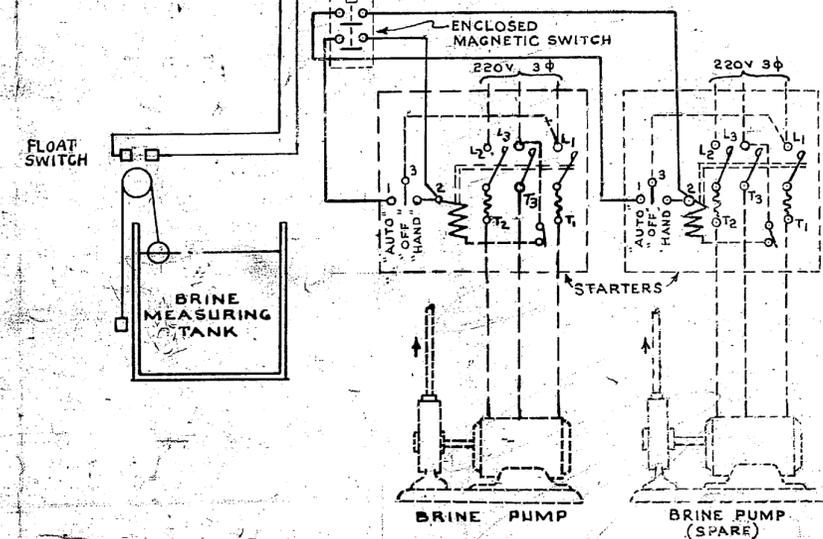
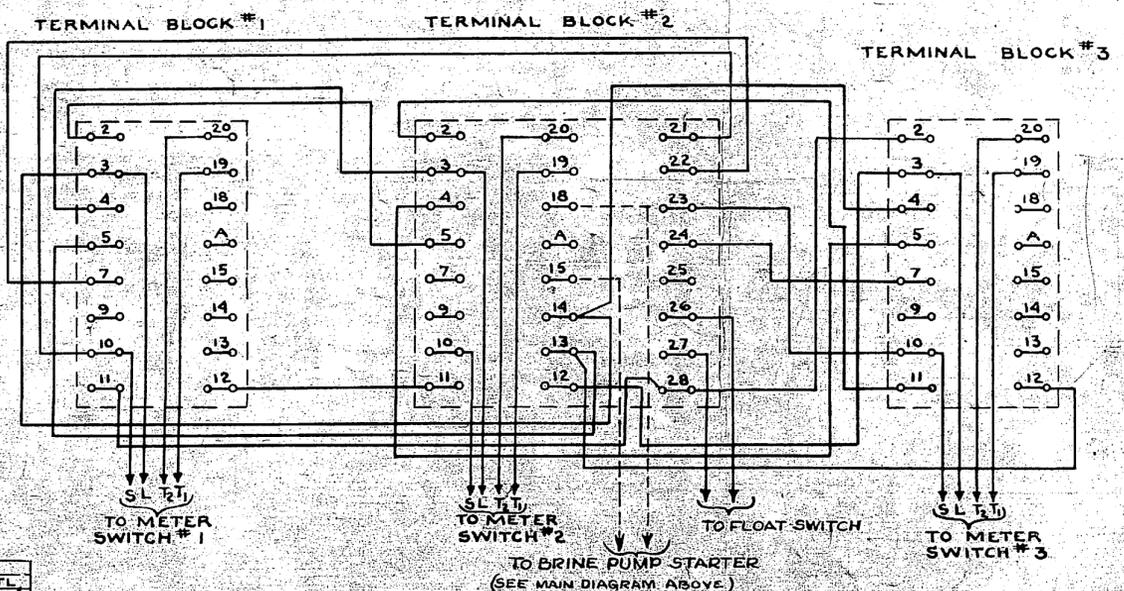
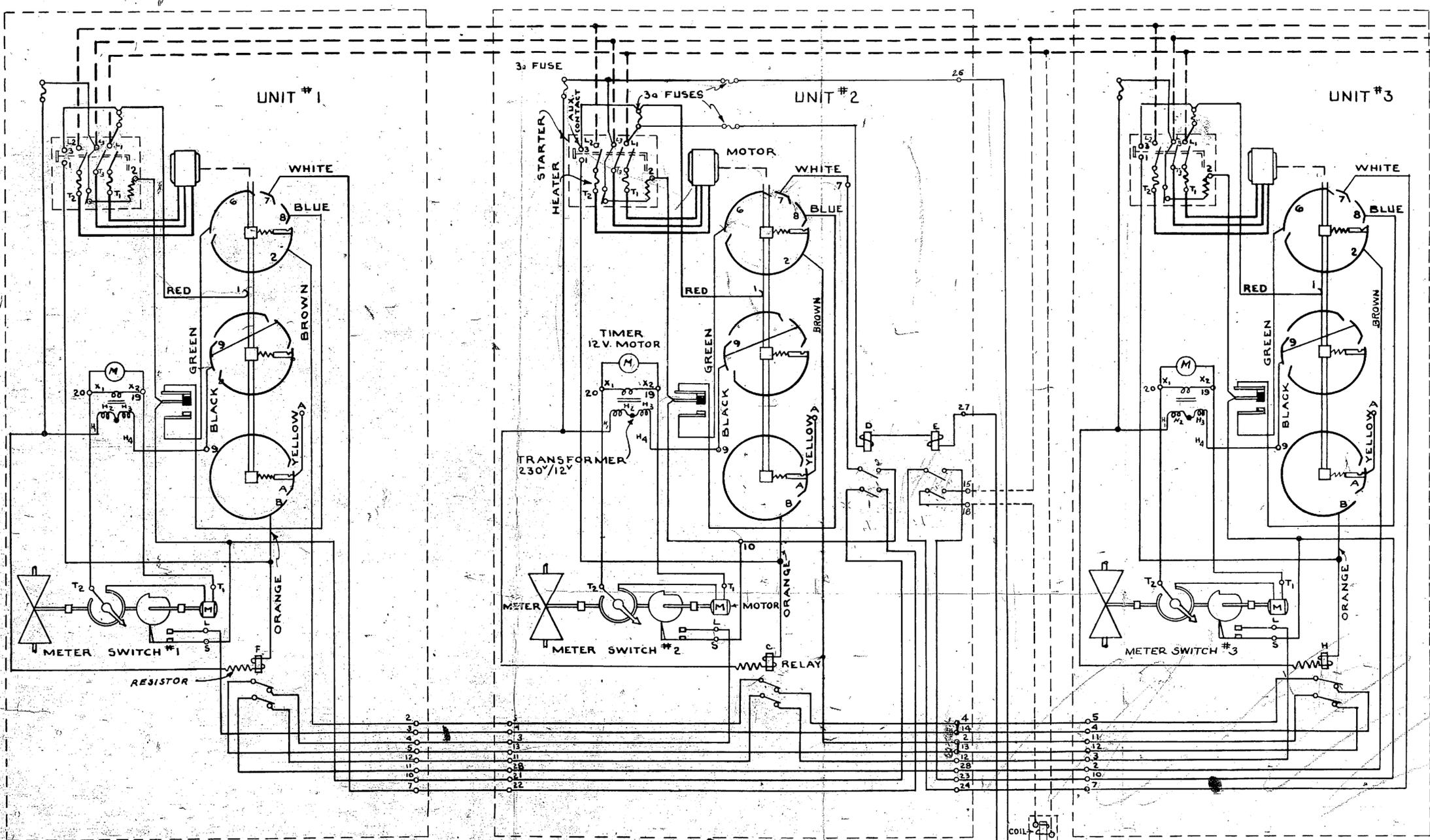
REVISIONS	
A	
B	
C	
D	

DATE 1-29-41 **C. 3471-2**

Drawn By
Checked By



THREE PHASE
POWER SUPPLY
220 VOLTS



NOTE:-
CONNECTIONS AND APPARATUS SHOWN
DOTTED TO BE FURNISHED BY THE
PURCHASER UNLESS OTHERWISE
SPECIFIED.

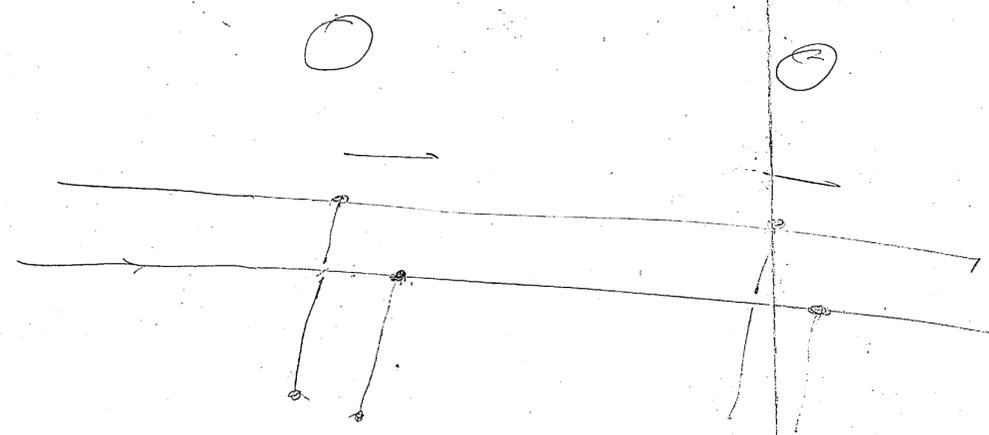
WIRING DIAGRAM
Permutit
Water Conditioning

THE PERMUTIT CO.
NEW YORK, N. Y.

REVISIONS	
A	
B	
C	
D	

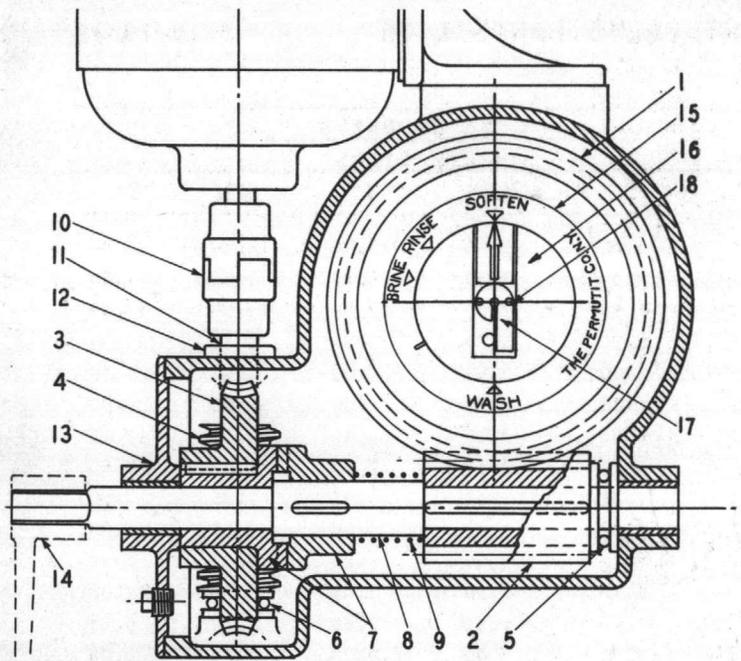
SCALE 4
DATE 1-29-41.

DRAWN BY: ETL
TRACED BY: ETL
CHECKED BY: ETL



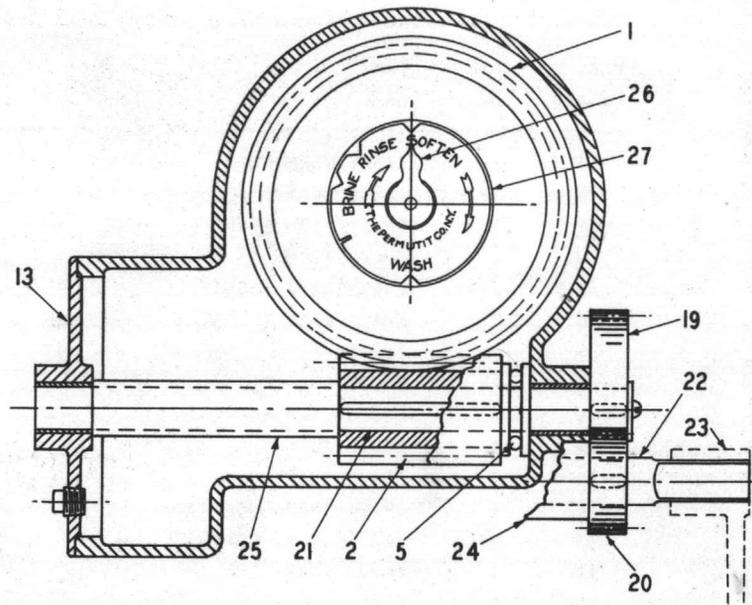
**PARTS LIST
FOR
PERMUTIT MULTIPOINT VALVES
AUTOMATIC AND MANUAL**

**T H E P E R M U T I T C O M P A N Y
3 3 0 W E S T 4 2 N D S T R E E T , N E W Y O R K , N . Y .**



- | | |
|---------------------|-------------------------------|
| 1-LARGE WORM GEAR | 10-COUPLING |
| 2-LARGE WORM | 11-DRIVE SHAFT |
| 3-SMALL WORM GEAR | 12-DRIVE SHAFT BEARING |
| 4-SMALL WORM | 13-END BEARING |
| 5-LARGE BALL THRUST | 14-HAND CRANK |
| 6-SMALL BALL THRUST | 15-DIAL |
| 7-CLUTCH | 16-CIRCUIT BREAKER ASSEMBLY |
| 8-CROSS SHAFT | 17-CIRCUIT BREAKER CLUTCH |
| 9-CLUTCH SPRING | 18-CIRCUIT BREAKER CLUTCH PIN |

FIG-1 AUTOMATIC



- | | |
|--------------------|------------------------|
| 1-WORM GEAR | 22-CRANK SHAFT |
| 2-WORM | 23-HAND CRANK |
| 5-BALL THRUST | 24-CRANK SHAFT BRACKET |
| 13-END BEARING | 25-CROSS SHAFT SLEEVE |
| 19-LARGE SPUR GEAR | 26-POINTER |
| 20-SMALL SPUR GEAR | 27-DIAL |
| 21-CROSS SHAFT | |

FIG-2 MANUAL

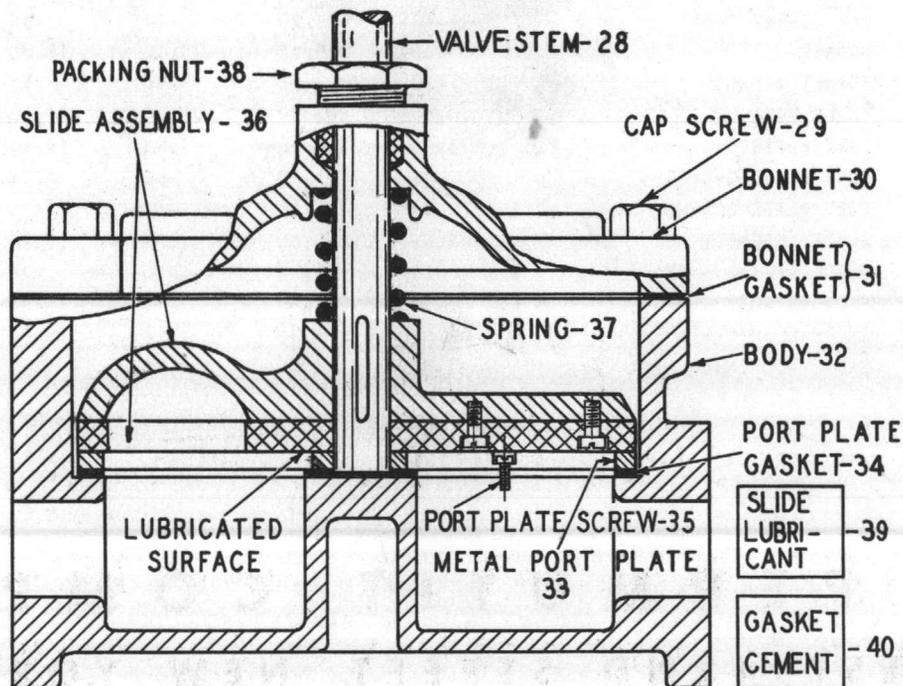


FIG-3 CROSS SECTION VALVE ASSEMBLY

INDUSTRIAL MULTI-PORT VALVE PARTS LIST

10-13-39

#8143

PART NUMBER	FIG. NO.	PART NAME	COST OF PARTS					
			VALVE SIZES					
			1½"	2"	2½"	3"	4"	5"
1	1-2	LARGE WORM GEAR	7.20 ¹	5.00 ²	5.50	7.05	12.70	15.40
2	1-2	LARGE WORM	3.30 ¹	3.65 ²	3.30	4.40	8.80	7.70
3	1	SMALL WORM GEAR	5.00	7.70	7.20	13.00	13.00	13.45
4	1	SMALL WORM	7.20	5.00	3.30	3.30	3.30	3.30
5	1-2	LARGE BALL THRUST	.75	.80	.80	.80	1.50	1.10
6	1	SMALL BALL THRUST	.60	.60	.75	.80	.80	.80
7	1	CLUTCH	5.45	4.90	4.10	5.15	8.90	12.15
8	1	CROSS SHAFT	2.35	3.15	2.50	2.20	3.30	4.80
9	1	CLUTCH SPRING	.40	.40	.30	.35	.45	.50
10	1	COUPLING	2.35	2.20	1.80	2.50	2.50	2.50
11	1	DRIVE SHAFT	-	-	.40	.80	1.30	1.70
12	1	DRIVE SHAFT BEARING	.55	1.20	1.20	1.05	1.05	1.05
13	1-2	END BEARING COMPLETE	2.00	1.90	1.55 ²	2.25	2.30	3.45
14	1	HAND CRANK	3.30	3.30	3.05	3.70	3.70	5.00
15	1	DIAL	.15	.15	.15	.15	.15	.15
16	1	CIRCUIT BREAKER ASSEMBLY	27.00	27.00	27.00	27.00	27.00	27.00
17	1	CIRCUIT BREAKER CLUTCH	.40	.40	.40	.40	.40	.40
18	1	CIRCUIT BREAKER CLUTCH PINS	.30	.30	.30	.30	.30	.30
19	2	LARGE SPUR GEAR	-	-	3.50	3.55	3.55	5.50
20	2	SMALL SPUR GEAR	-	-	2.65	2.50	2.50	5.20
21	2	CROSS SHAFT COMPLETE	2.35 ¹	3.15 ³	2.50 ³	2.20	3.30	2.30 ²
22	2	CRANK SHAFT	-	-	1.20 ³	1.20	1.50	1.20
23	2	HAND CRANK	3.30	3.30	3.70	5.00	5.00	5.00
24	2	CRANK SHAFT BRACKET	-	-	2.80	4.25	3.50	3.95
25	2	CROSS SHAFT SLEEVE	.45	-	.40	.60	.60	.60
26	2	POINTER	.30	.30	.30	.30	.30	.30
27	2	DIAL	1.55	1.55	1.55	1.55	1.55	1.55
28	3	VALVE STEM	4.35 ¹	5.55	6.85	8.70	11.20	13.25
29	3	CAP SCREWS (Set)	.18	.40	.20 ³	.30	.35	.35
30	3	BONNET	13.15 ¹	15.45 ³	17.10 ³	18.95	24.65	27.20
31	3	BONNET GASKET	.20	.35	.40	.50	.70	.90
32	3	VALVE BODY	10.40	14.20	23.50	27.70	49.65	76.75
33	3	PORT PLATE	3.90	6.10	7.75	11.40	14.20	18.25
34	3	PORT PLATE GASKET	.40	.70	.80	1.15	3.10	4.40
35	3	PORT PLATE SCREWS	.15	.30	.30	.35	.35	.35
36	3	SLIDE ASSEMBLY	4.70	5.65	7.85	12.20	17.40	24.75
37	3	SLIDE SPRING	.55	.55	.70	.90	1.60	1.60
38	3	PACKING NUT	.50	.90	.90	.90	1.10	1.10
39	3	SLIDE LUBRICANT	1.00	1.00	1.00	1.00	1.00	1.00
40	3	GASKET CEMENT	1.50	1.50	1.50	1.50	1.50	1.50

1. Price 50% less if part is for design 1 Manual Valve.
2. " 50% more " " " " " 3 " "
3. " 50% less " " " " " 3 " "

WHEN ORDERING PARTS ALWAYS SUPPLY VALVE SIZE AND FOLLOW INSTRUCTION NEXT PAGE.

INSTRUCTIONS FOR ORDERING PARTS

CORRESPONDENCE:

Should be addressed to the Permutit Company, 330 West 42nd Street, New York, N.Y., attention Service Department.

Do not send any parts whatever to the above address. A minimum delivery charge of \$1.00 will be made for parts received at the above address.

ORDERS:

Should be sent to The Permutit Co., 330 West 42nd St., New York, N.Y., attention Order Department.

Parts for repair should not be returned until you have received instructions from the Service Department of The Permutit Co.

Parts must be returned to The Permutit Co. 5401 First Avenue, Brooklyn, N.Y., accompanied by a letter of notification to the Order Dept.

TO AVOID ERROR:

Always give VALVE SIZE, PART NUMBER, NAME of PART and whether automatic or manual.

Be sure to give current characteristics when ordering electrical parts.

MULTI-PORT VALVE MAINTENANCE

To lubricate multiport valve, the need for which is indicated when a hand-operated valve no longer turns easily or a motor-driven valve chatters; remove the cap screws (29), lift off the bonnet (30) and the slide and facing (36) will be removed with the bonnet.

Clean the flat face of the hard rubber faced casting with a clean dry cloth. Do not use any abrasive or scrape the surface with any hard instrument.

Clean the surface of the bronze port plate (33) in the same manner.

Spread a thin coating of lubricant over the flat face of the rubber facing and over the face of the bronze port plate and reassemble the valve.

REPLACEMENT OF SLIDE AND PORT PLATE:

Lubrication of the valve will frequently stop a small amount of leakage. If it does not, the leakage is caused either by the port plate gasket (34) having been damaged or the rubber faced slide and bronze port plate having been scored.

To replace these parts, disassemble the valve in the same manner as for lubrication. The rubber faced casting may easily be slipped off the valve stem and a new part substituted. The casting and rubber facing must be substituted as a unit.

To remove the bronze port plate, take out the fillister head screws and lift the port plate out of the casting. If the port plate gasket needs replacement, clean off the surfaces of the bronze port plate and valve casting, apply a 50:50 mixture of the rubber cements furnished to the cleaned metal surfaces and to both sides of the new gasket before inserting.

When the port plate is replaced, the fillister head screws must be drawn up tightly but without straining the port plate which might cause warpage.

After the valve has been reassembled it should be permitted to stand for one hour before admitting water.

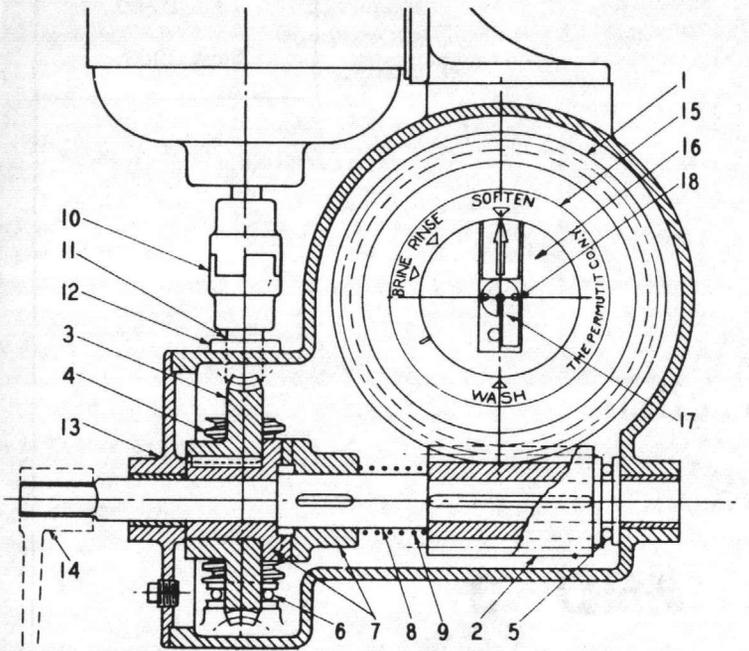
**PARTS LIST
FOR
DESIGN 2 AND 3
PERMUTIT MULTIPOINT VALVES
AUTOMATIC AND MANUAL**

Note: Complete Valves, Design 2 & 3, are no longer available. Parts listed are still available for these Valves, but when major repairs are required it will be advisable to consider complete replacement with the Design 5 Valve.

T H E P E R M U T I T C O M P A N Y

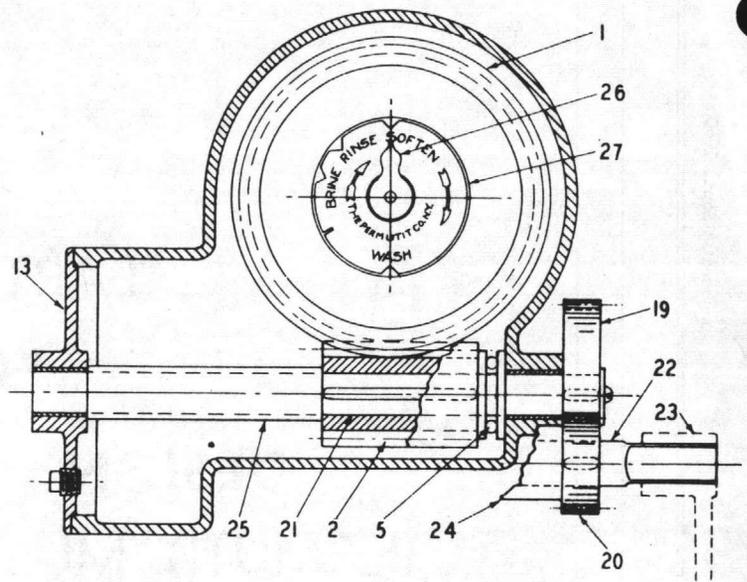
a division of PFAUDLER PERMUTIT INC.

50 WEST 44th STREET, NEW YORK 36, N.Y.



- | | |
|---------------------|-------------------------------|
| 1-LARGE WORM GEAR | 10-COUPLING |
| 2-LARGE WORM | 11-DRIVE SHAFT |
| 3-SMALL WORM GEAR | 12-DRIVE SHAFT BEARING |
| 4-SMALL WORM | 13-END BEARING |
| 5-LARGE BALL THRUST | 14-HAND CRANK |
| 6-SMALL BALL THRUST | 15-DIAL |
| 7-CLUTCH | 16-CIRCUIT BREAKER ASSEMBLY |
| 8-CROSS SHAFT | 17-CIRCUIT BREAKER CLUTCH |
| 9-CLUTCH SPRING | 18-CIRCUIT BREAKER CLUTCH PIN |

FIG-1 AUTOMATIC



- | | |
|--------------------|------------------------|
| 1-WORM GEAR | 22-CRANK SHAFT |
| 2-WORM | 23-HAND CRANK |
| 5-BALL THRUST | 24-CRANK SHAFT BRACKET |
| 13-END BEARING | 25-CROSS SHAFT SLEEVE |
| 19-LARGE SPUR GEAR | 26-POINTER |
| 20-SMALL SPUR GEAR | 27-DIAL |

FIG-2 MANUAL

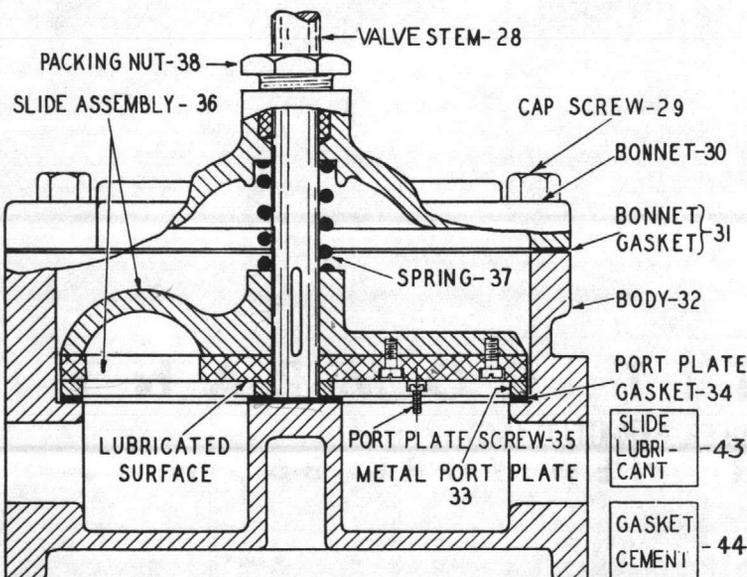


FIG-3 CROSS SECTION VALVE ASSEMBLY

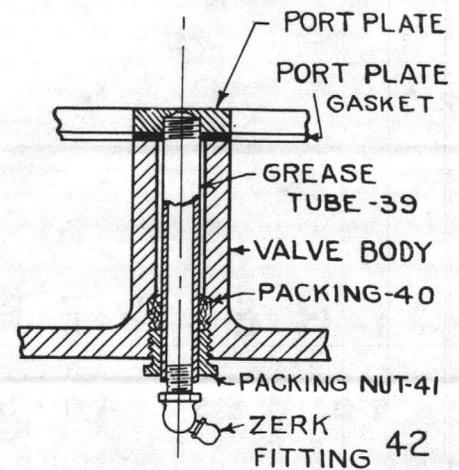


FIG-4 GREASE TUBE INSTALLATION

INDUSTRIAL MULTIVALVE PARTS LIST

DESIGN 2 & 3

Revised Sept. 1960

PART NO.	FIG NO.	PART NAME	COST OF PARTS											
			VALVE SIZES											
			1½"	2"	2½"	3"	4"	5"						
1	1-2	LARGE WORM GEAR	B-12564	19.45	B-12567	21.60	B-12569	32.44	B-10844	27.00	B-10901	54.00	B-12577	66.00
16	1	CIRCUIT BREAKER ASSEMBLY	(BM-1289) G-2081	122.00										
28	3	VALVE STEM	B-10972	57.25	B-10993	27.00	B-10922	70.20	B-10864	32.40	B-10907	48.60	B-11061	37.80
31	3	BONNET GASKET	QN-3882	1.10	QN-2980	1.10	QN-2981	2.20	QN-2984	2.00	QN-2977	4.35	QN-4628	4.90
33A	3	*PORT PLATE AND GASKET	B-28998	21.60	B-28999	32.40	G-11054	43.20	G-11053	54.00	C-6547	60.50	C-6557	84.25 <i>82.50</i>
33B	3	*PORT PLATE AND GASKET, STAINLESS STEEL (FA-20) FOR ZEO-KARB H AND DE-ACIDITE UNITS	B-28185	70.60	B-28186	129.60	G-10115	100.50	G-10116	154.50	C-5927	261.50	C-5928	185.75
34	3	PORT PLATE GASKET	B-28597	1.35	G-10622	1.50	G-10624	2.20	C-6208	3.25	C-6210	3.80	C-6212	6.75
35	3	PORT PLATE SCREWS (per set)	QN-1710	No charge	QN-1710	No charge	QN-1055	No charge	QN-1860	No charge	QN-1860	No charge	QN-1860	No charge <i>27</i>
36A	3	SLIDE ASSEMBLY	G-8193	32.40	G-8201	48.60	G-8207	60.50	G-8213	68.00	G-8219	108.00	G-8223	140.40 <i>154.10</i>
36B		SLIDE ASSEMBLY, PARTIALLY RUBBER LINED FOR ZEO-KARB H UNITS	G-8230	54.00	G-8231	70.20	G-8232	77.80	G-8233	89.65	G-8234	136.00	G-8235	168.50
36C		SLIDE ASSEMBLY, COMPLETELY RUBBER LINED FOR DE-ACIDITE UNITS	G-8236	54.00	G-8237	70.20	(G-11050) G-8238	77.80	(C-6560) G-8239	89.65	(Spec.#312) G-8219	136.00	G-8241	168.50
37	3	SLIDE SPRING	B-28749	8.65	B-10584	6.50	B-10926	7.95	B-10868	12.00	B-10910	13.00	B-10910	13.00
39-42	4	GREASE TUBE ASSEMBLY	#39 B-19157) #40 QN-1486) #41 B-13851) #42 QN-1485)	4.60	#39 B-19158) #40 QN-1486) #41 B-13851) #42 QN-1485)	4.60	#39 B-19158) #40 QN-1486) #41 B-13851) #42 QN-1485)	4.60	#39 B-19159) #40 QN-1486) #41 B-13851) #42 QN-1485)	4.60	#39 B-19160) #40 QN-1486) #41 B-13851) #42 QN-1485)	4.60	#39 B-19161) #40 QN-1486) #41 B-13851) #42 QN-1485)	4.60
44		**GASKET CEMENT 4 oz. can	Q-7426	1.10		1.10		1.10		1.10		1.10		1.10
Q2738		SILICONE LUBRICANT 8 oz.		6.50										

- The above valve parts are currently manufactured for stock. Certain other parts that are interchangeable with des 5 valves are available but not for all sizes. Bodies and Bonnets for design 2 & 3 valves are not available for any sizes.
- All prices F.O.B. shipping point.
- When ordering parts always supply valve size and Permutit Job Number of original installation.
- Use only Silicone Lubricant, Q2738. This is a special water insoluble lubricant of the correct consistency. It will not attack the rubber facing on slide assembly.

* All port plates are shipped with gasket attached.

** Furnished no charge, only with orders for gaskets.
Follow instructions next page.

INSTRUCTIONS FOR ORDERING PARTS

CORRESPONDENCE:

Should be addressed to The Permutit Company, a division of PFAUDLER PERMUTIT INC., 50 West 44th Street, New York 36, N. Y., attention Service Department.

Do not send any parts whatever to the above address. A minimum delivery charge of \$1.00 will be made for parts received at the above address.

ORDERS:

Should be sent to The Permutit Company, a division of PFAUDLER PERMUTIT INC., 50 West 44th Street New York 36, N. Y., attention Order Department.

Parts for repair should not be returned until you have received instructions from the Service Department of The Permutit Company. Do not return any parts to the New York Office.

TO AVOID ERROR:

Always give VALVE SIZE, PART NUMBER, NAME of PART and whether automatic or manual. Also note whether valve is partially or completely rubber lined. Be sure to give current characteristics when ordering electrical parts.

MULTIPOINT VALVE MAINTENANCE AND LUBRICATION

The need for lubrication of a multiport valve is indicated when a hand operated valve no longer turns easily or a motor driven valve chatters. For best operation valves with grease fittings should be lubricated once a week or more frequently if necessary.

To lubricate multiport valves equipped with grease fittings, the valve should be in either SERVICE or WASH position. When so placed, the grease openings are covered by sections of the valve body, and the grease is spread between the surface of the two plates. It is obvious that if the grease openings are not covered by the valve face, the lubricant, instead of being spread between the plates, will form a blob in the open port and will be washed away when water flow is resumed.

Recommended procedure is to set valve in either SERVICE or WASH position, and inject a small quantity of lubricant through each fitting with a pressure gun. The Permutit Company recommends only silicone lubricant for this purpose which does not attack the rubber facing in the valve, does not wash off, and does not get thin in warm water. The valve should then be given a half turn from SERVICE to WASH, and more lubricant introduced. Complete distribution of the lubricant may be insured by giving the valve several full turns. While removing the softener from service is not necessary during this operation, there would be less likelihood of getting grease into the water if the flow is stopped while the job is being done.

Any standard pressure gun may be used.

To lubricate older type multiport valves which do not have grease fittings, remove the cap screw (29) and lift off the bonnet (30). The slide and facing (36) will be removed with the bonnet.

Clean the flat face of the hard rubber faced casting with a clean dry cloth. Do not use any abrasive nor scrape the surface with any hard instrument.

Clean the surface on the bronze port plate (33) in the same manner.

Spread a thin coating of lubricant over the flat face of the rubber facing and over the face of the bronze port plate and reassemble the valve.

Valves shipped prior to 1940 cannot be lubricated externally but can be lubricated through backwash port.

REPLACEMENT OF SLIDE AND PORT PLATE:

Lubrication of the valve will frequently stop a small amount of leakage. If it does not, the leakage is caused either by the port plate gasket (34) having been damaged or the rubber-faced slide and bronze port plate having been scored.

To replace these parts, first remove the packing nut (41) and the grease fitting. Then remove the cap screws (29), and lift off the bonnet (30). The slide and facing (36) will be removed with the bonnet. The rubber-faced casting forming the slide assembly may easily be slipped off the valve stem and a new part substituted. The casting and rubber-facing must be substituted as a unit. To remove the bronze port plate (33), take out the fillister head screws (35) and lift the port plate out of the casting. If the port plate gasket alone needs replacement, clean off the surfaces of the bronze port plate and valve casting and apply the rubber cement furnished to the cleaned metal surfaces and to both sides of the new gasket before inserting it.

When the port plate is replaced, the fillister head screws must be drawn up tightly and then backed off 1/4 turn. This is important, otherwise the port plate may become warped.

The valve stem should be lubricated with silicone lubricant where it enters the slide. Also, on fully rubber-lined valves it is extremely important that the valve packing ring and retainer be installed before the slide is placed on the valve stem.

After the valve has been reassembled, it should be permitted to stand for one hour before admitting water.

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