

## FILE FOLDER

### DESCRIPTION ON TAB:

Courthouse Bay

Old Contracts

- 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**

A  
**SCHEDULE**  
**OF FINISH HARDWARE FOR**  
**WATER TREATMENT PLANT, COURTHOUSE BAY**  
**MARINE CORP AIR BASE, CAMP LEJEUNE, N. C.**

CONTRACTOR: Debnam-Hughes Corp.

OUR JOB NO. 68-272

DATE: June 21, 1968

KEYING: All Locks Keyed Alike. Furnish 1 Brass Tag 1 1/8" and Chain for all Keys.

\* \* \* \* \*

1 Sgl. Dr. 1 Ext. to Office RH  
1 Sgl. Dr. 1 Ext. to Chlorinating Rm. RH  
1 Sgl. Dr. 1 Ext. to Pump Room LH  
1 Sgl. Dr. 1 Ext. to Lime Storage LH  
1 Sgl. Dr. 5 Ext. to Processing Rm. LH  
3070 1 3/4 HxH

1.	7 1/2	Pr. Butts	T2127P	F179P 4 1/2 x 4 1/2	Stanley
2.	5	Locks	161B-4	X501 DLBG x ASA US10	Falcon
3.	5	Stops	1328E	276 US10	Rockwood
4 Screen Doors for Doors 1 and 5 None Chlorinating Rm. WxH					
4.	6	Pr. Butts	T2127	F179P 4 x 4	Stanley
5.	4	Closers	3010	570	Yale
6.	4	Pulls	1275	2360 US10	Safe
7.	8	Push Bars	472A	1505 US28	Rockwood
8.	8	Kick Plates	1226	6 x 34 US28	Rockwood

1108371

DOOR FINISHING CORP.  
P. O. BOX 8304  
NORFOLK, VA 23518



NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	...	...	...	...	...
2	...	...	...	...	...
3	...	...	...	...	...
4	...	...	...	...	...
5	...	...	...	...	...
6	...	...	...	...	...
7	...	...	...	...	...
8	...	...	...	...	...
9	...	...	...	...	...
10	...	...	...	...	...
11	...	...	...	...	...
12	...	...	...	...	...
13	...	...	...	...	...
14	...	...	...	...	...
15	...	...	...	...	...
16	...	...	...	...	...
17	...	...	...	...	...
18	...	...	...	...	...
19	...	...	...	...	...
20	...	...	...	...	...
21	...	...	...	...	...
22	...	...	...	...	...
23	...	...	...	...	...
24	...	...	...	...	...
25	...	...	...	...	...
26	...	...	...	...	...
27	...	...	...	...	...
28	...	...	...	...	...
29	...	...	...	...	...
30	...	...	...	...	...
31	...	...	...	...	...
32	...	...	...	...	...
33	...	...	...	...	...
34	...	...	...	...	...
35	...	...	...	...	...
36	...	...	...	...	...
37	...	...	...	...	...
38	...	...	...	...	...
39	...	...	...	...	...
40	...	...	...	...	...
41	...	...	...	...	...
42	...	...	...	...	...
43	...	...	...	...	...
44	...	...	...	...	...
45	...	...	...	...	...
46	...	...	...	...	...
47	...	...	...	...	...
48	...	...	...	...	...
49	...	...	...	...	...
50	...	...	...	...	...
51	...	...	...	...	...
52	...	...	...	...	...
53	...	...	...	...	...
54	...	...	...	...	...
55	...	...	...	...	...
56	...	...	...	...	...
57	...	...	...	...	...
58	...	...	...	...	...
59	...	...	...	...	...
60	...	...	...	...	...
61	...	...	...	...	...
62	...	...	...	...	...
63	...	...	...	...	...
64	...	...	...	...	...
65	...	...	...	...	...
66	...	...	...	...	...
67	...	...	...	...	...
68	...	...	...	...	...
69	...	...	...	...	...
70	...	...	...	...	...
71	...	...	...	...	...
72	...	...	...	...	...
73	...	...	...	...	...
74	...	...	...	...	...
75	...	...	...	...	...
76	...	...	...	...	...
77	...	...	...	...	...
78	...	...	...	...	...
79	...	...	...	...	...
80	...	...	...	...	...
81	...	...	...	...	...
82	...	...	...	...	...
83	...	...	...	...	...
84	...	...	...	...	...
85	...	...	...	...	...
86	...	...	...	...	...
87	...	...	...	...	...
88	...	...	...	...	...
89	...	...	...	...	...
90	...	...	...	...	...
91	...	...	...	...	...
92	...	...	...	...	...
93	...	...	...	...	...
94	...	...	...	...	...
95	...	...	...	...	...
96	...	...	...	...	...
97	...	...	...	...	...
98	...	...	...	...	...
99	...	...	...	...	...
100	...	...	...	...	...

1 Sgl. Dr. 2 Processing Rm. to Office  
1 Sgl. Dr. 3 Processing Rm. to Line Storage  
1 3/4 Wd1

9.	3	Pr. Butts	T2127	F179P 4 1/2 x 4 1/2	Stanley
10.	2	Latches	161H-4	X101 BG US10 x ASA	Falcon
11.	2	Stops	1328E	276 US10	Rockwood

1 Sgl. Dr. 4 Office to Toilet  
1 3/4 Wd1

12.	1 1/2	Pr. Butts	T2127P	F179P 4 1/2 x 4 1/2	Stanley
13.	1	Lock	161L	X301 x ASA US10 x 26	Falcon
14.	1	Stop	1328E	276 US26	Rockwood

CABINET HARDWARE

15.	2	Pr. Hinges		1535 US10	Stanley
16.	2	Pulls	13060	4420 US10	Stanley
17.	2	Catches	1074	38K	Stanley

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

88013

DATE 7-10-68

COMPLANTNAVFACBNGO

RADM CFC USN

E. N. WALKER

REVISION OF DRAWING ETC. AS REQUIRED

PHYSICAL DIMENSIONS & WEIGHTS

20.7.70

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUPPLEMENTARY REQUIREMENTS

88313

88313/67

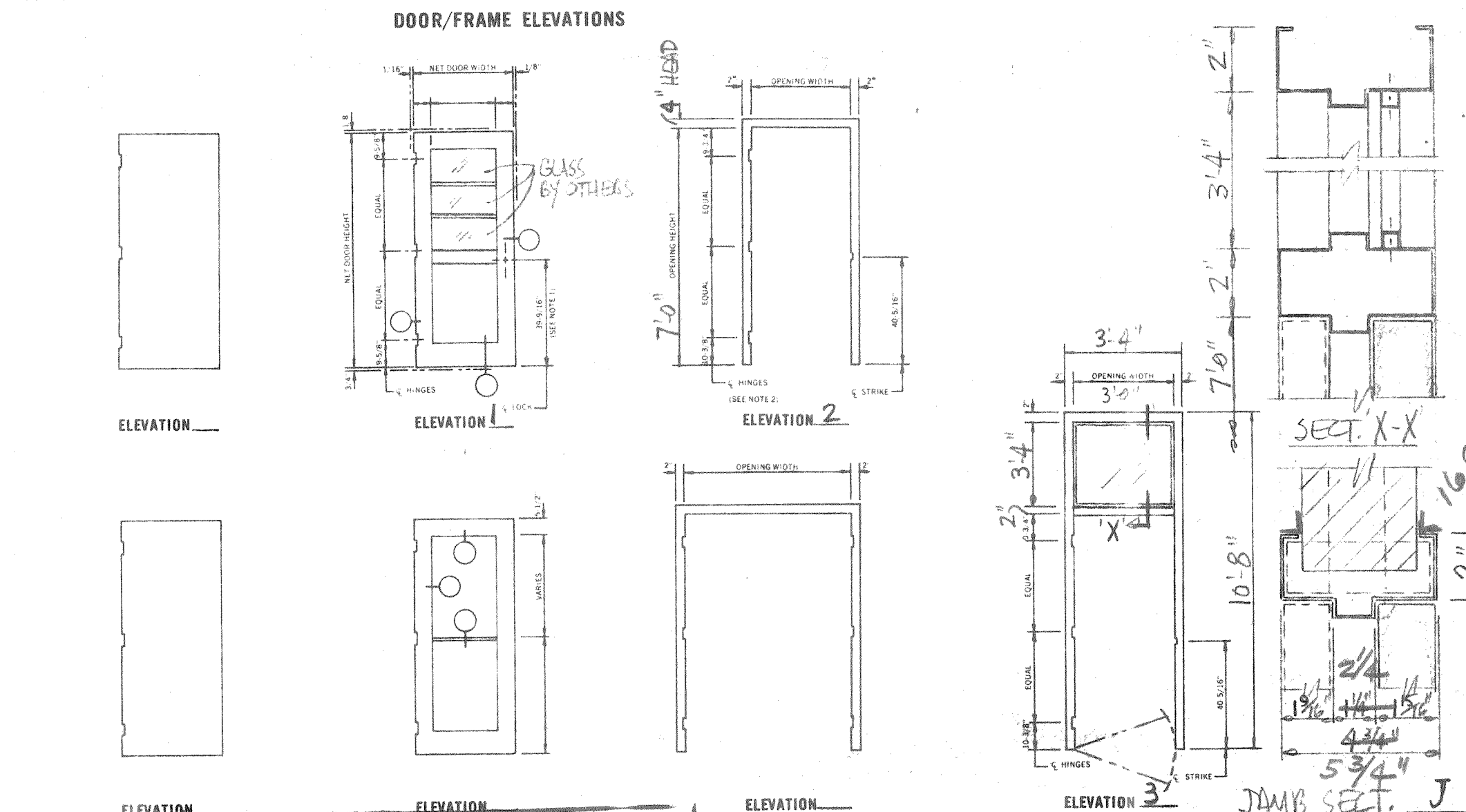
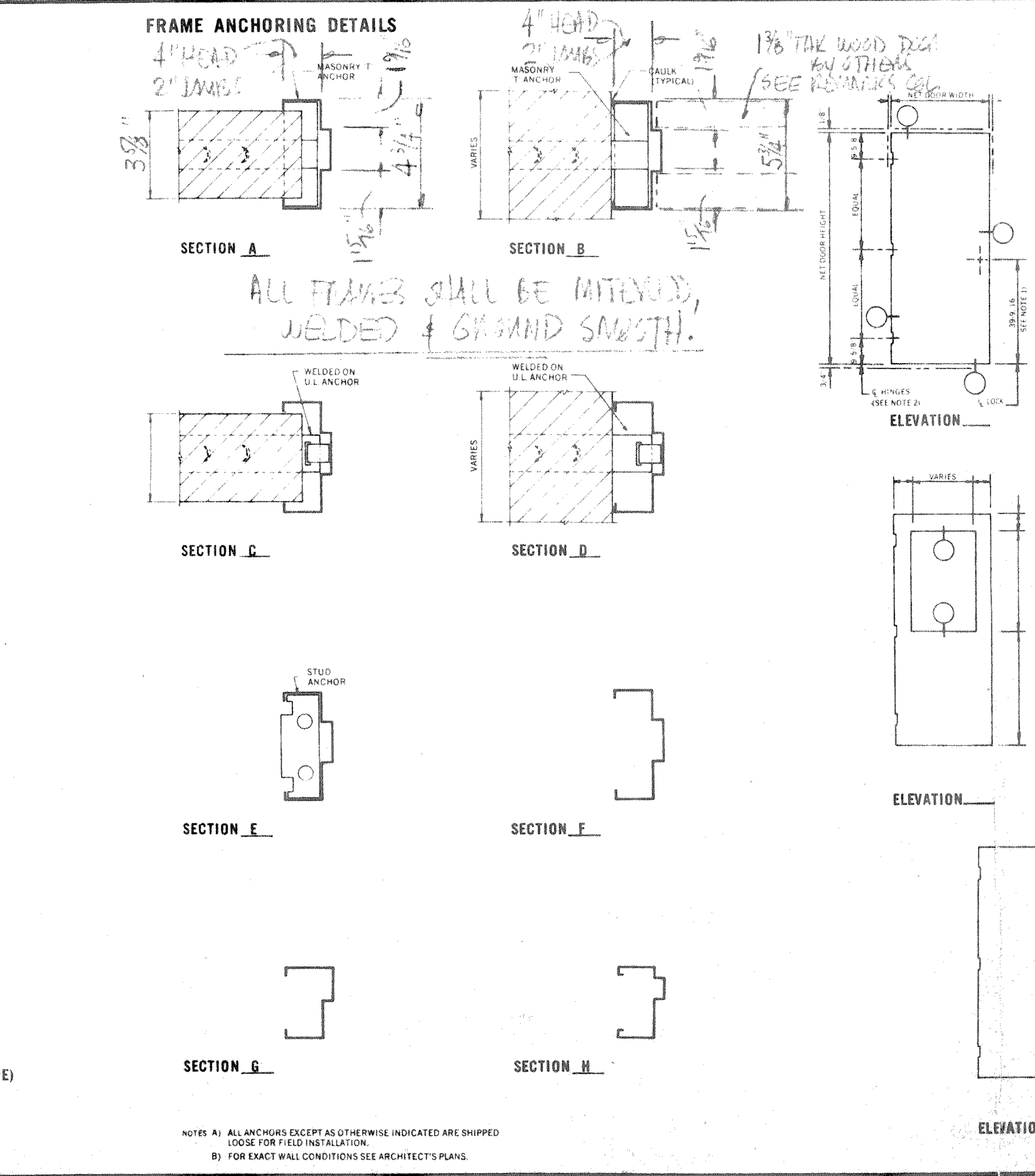
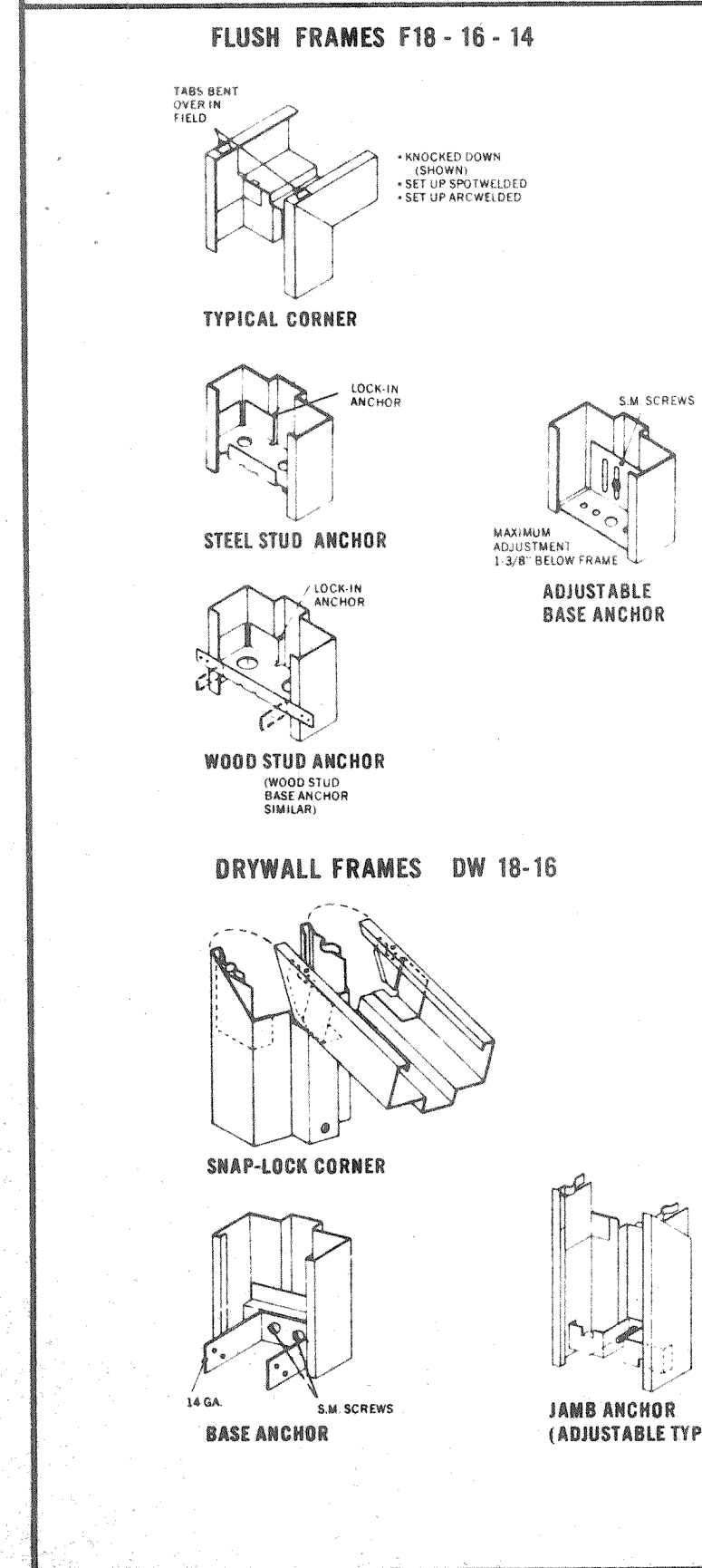
PHYSICAL DIMENSIONS & WEIGHTS  
COORDINATION OF TRADES, ETC. AS REQUIRED.

H. N. WALLIN

RADM, CEC, USN *POR*

DATE *7-10-68* COMLANTRAVFACENGCOM

FLUSH DOORS L20-18-16		STILE & PANEL DOORS S20 & S18		LINE NO. FLOOR NO.	LOCATION		ARCHITECT'S OPENING NO.	QUANTITY	FRAME DATA										DOOR DATA										REMARKS	HARDWARE HEADING	LINE NO.
					FROM	OR TO			SERIES	LABEL	THK	JAMB DEPTH	DOOR OPNG SIZE	HAND	STRIKE	CLOSER	CONST.	ELEV. SHEET	SECT. SHEET	SERIES	LABEL	TYPE	HAND	LOCK	CLOSER	LOUVER OR GRILLE	ELEV. SHEET				
A		H		1	1 <sup>ST</sup>	EXTERIOR TO OFFICE	1	1	FIG NO 1	5 3/4	3 0	7 0	RH			2	B	S16	NO	G3	RH			NO		4" HEAD	(1 3/8" WOOD SCREEN DOOR - OUTSIDE BY OTHERS)		1		
B		J		2		CHLORINATION ROOM							RH																2		
C		K		3		PUMP RM							LH																3		
D		L		4		EXTERIOR LIME STORAGE	1						LH					S16	NO	G3	LH			NO					4		
E		M		5		PROCESSING ROOM OFFICE	2						LH					WOOD	BY	OTHERS									5		
F		N		6		PROCESSING ROOM LIME STORAGE	3				5 3/4	3 0	7 0	RH			1	B	WOOD	BY	OTHERS								6		
G		O		7		OFFICE TOILET	4				4 3/4	2 4	7 0	RH			2	A	WOOD	BY	OTHERS				4" HEAD				7		
H		P		8	1 <sup>ST</sup>	EXTERIOR TO PROCESSING ROOM	5	1	FIG NO 1	4 3/4	3 0	7 0	LH			3	J	S16	NO	G3	LH			NO		TRANSOM ABOVE	(1 3/8" WOOD SCREEN DOOR - OUTSIDE BY OTHERS)		8		
I		Q		9																									9		
J		R		10																									10		
K		S		11																									11		
L		T		12																									12		
M		U		13																									13		
N		V		14																									14		
O		W		15																									15		
P		X		16																									16		
Q		Y		17																									17		
R		Z		18																									18		
S		AA		19																									19		
T		AB		20																									20		



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

APPROVED: *As Noted*

SUBJECT TO THE REQUIREMENTS OF CONTRACT NEY 88313 88313/69

APPROVAL OF MATERIALS AND WORK INDICATES COMPLIANCE WITH CONTRACT REQUIREMENTS ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS. COORDINATION OF TRADES, ETC., AS REQUIRED.

7-10-68 H.N. WALLIN  
ADM. SEC. USE

DATE

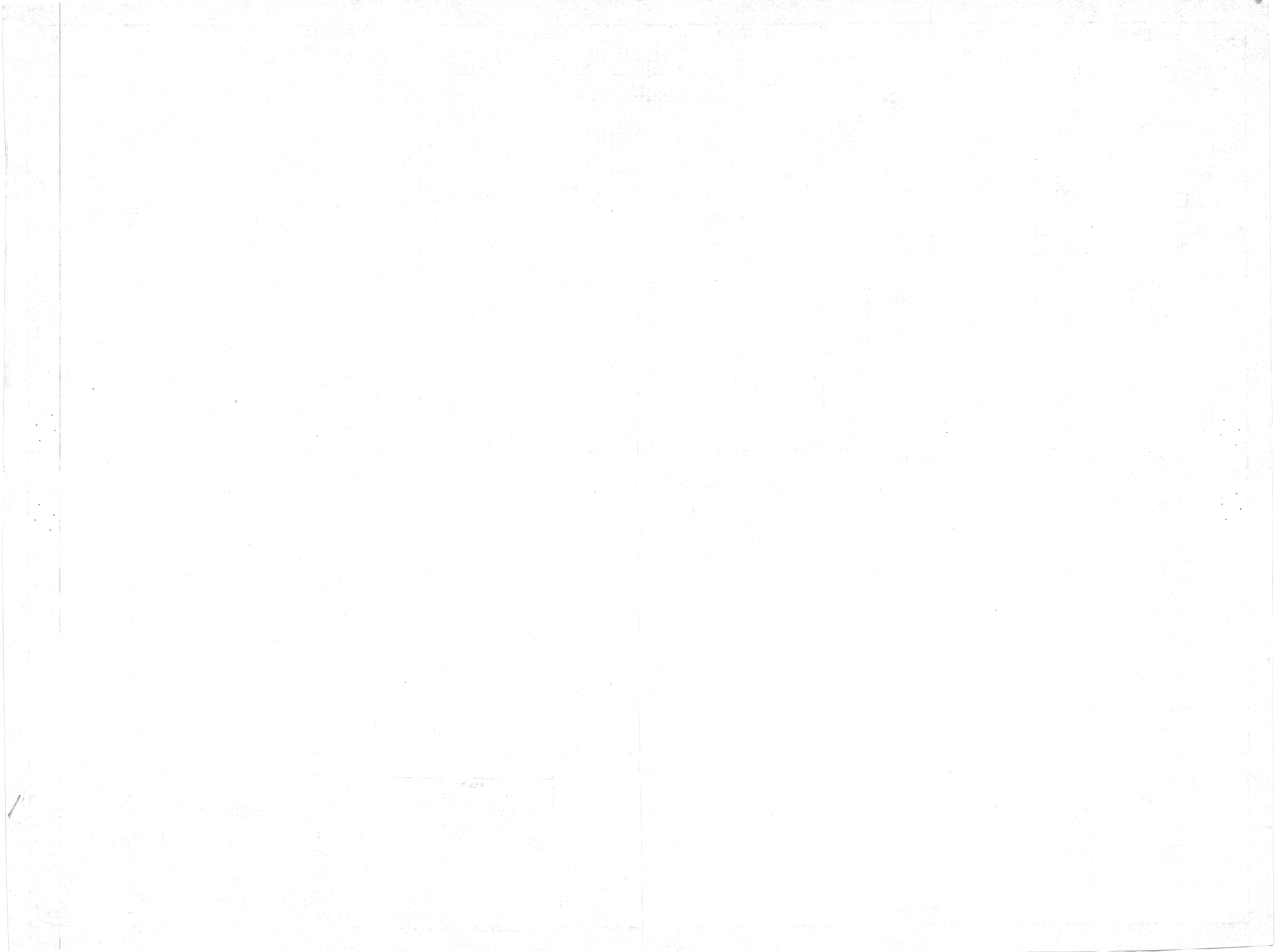
**STEELCRAFT MANUFACTURING COMPANY**  
9017 BLUE ASH ROAD  
CINCINNATI, OHIO 45242

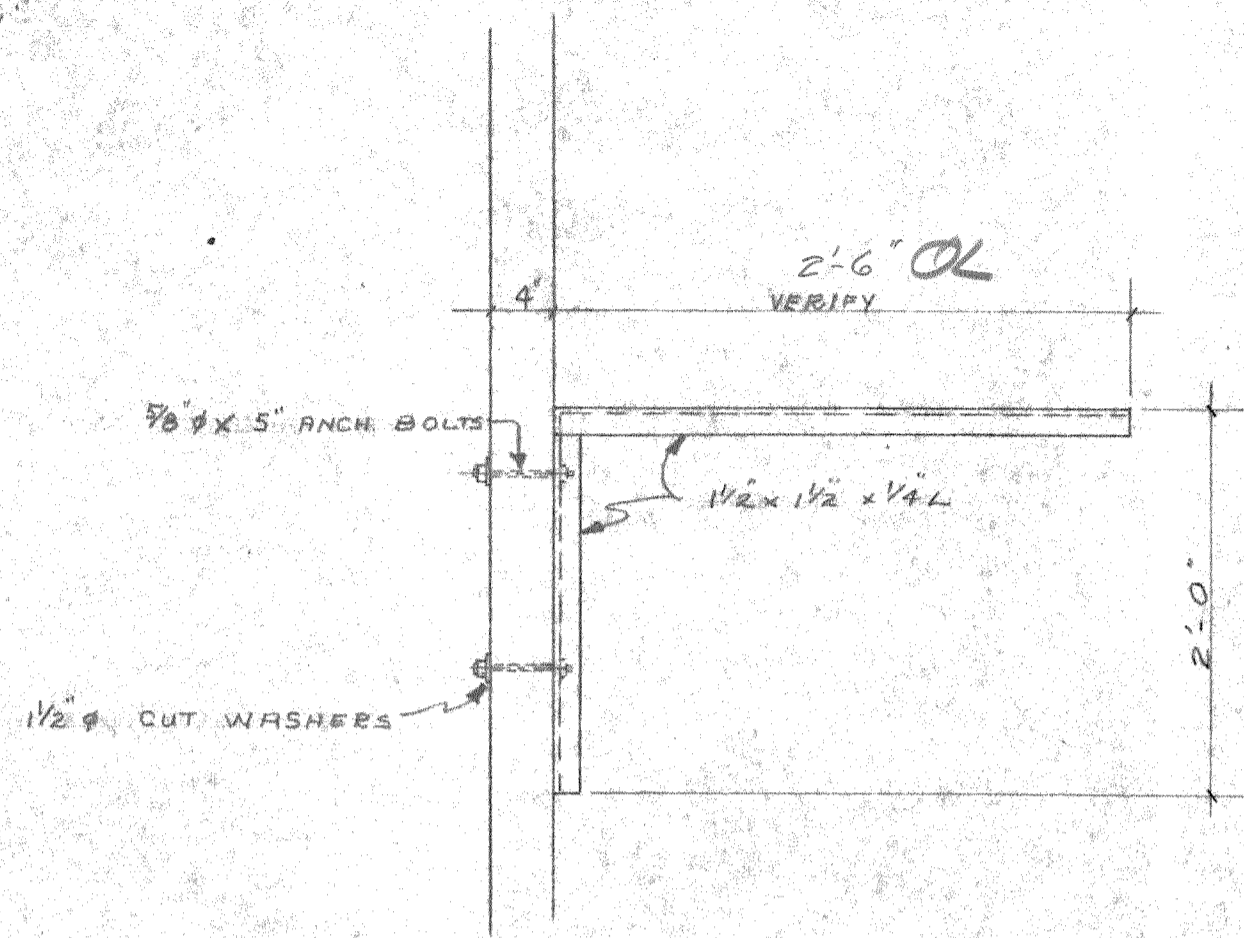
**DOOR AND FRAME SCHEDULE**

JOB NAME: WATER TREATMENT PLANT  
LOCATION: MARINE CORPS BASE, CAMP LEJEUNE, N.C.  
ARCHITECT: U.S. NAVY, MAR. ENG. COMMAND  
CONTRACTOR: DEBNAM-HUGHES CORP.  
DISTRIBUTOR: DOOL ENGR. CORP.

DRAWN BY: BGM  
DATE: 21 JUNE '68  
SHEET NO.: 1 of 1  
ORDER NO.: 68-272

LITHO U.S.A. FL. 12-66 TYPE EE





WATER HEATER SUPPORT BRACKETS

ONE REQD THIS  
ONE REQD OPP. HAND

PROVIDE:  
54 PCS. 1/2" x 3/2" BOLTS W/WASHERS  
82 PCS. 1/2" x 12" HOOK BOLTS

NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NO. 88313 SPEC. 88313/67  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY — THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.  
H. N. WALLIN  
RADM, CEC, USN POB  
DATE 7-10-68 COMLANTNAVFACENGCOM

<b>DEBWAM-HUGHES CORPORATION</b>		PROJECT: WATER TREATMENT PLANT	
ARCHITECTURAL METALS · P. O. BOX 9073 GREENSBORO, N. C.		CAMP LEJUNE, N. C.	
ERECTOR BY OTHERS		CONTRACTOR BROWN CONST. CO. CONCORD, N. C.	
PAINT RED LEAD		ARCHITECT BUREAU OF YARDS & DOCKS	
SPECIAL INSTRUCTIONS SPECIAL PRETREATMENT		MADE BY <u>HH</u> DATE <u>6-26-68</u> JOB NO.	SHEET NO.
		DETAILS OF MISC. IRON & STEEL <u>473</u>	<u>3</u>

NO.	DATE	DESCRIPTION
		REVISIONS



1000

1000

1000

NPF 219896

GENERAL ELECTRIC

N P 3101 X 0010 J 704

CONT ON SH SH NO

# NAMEPLATE

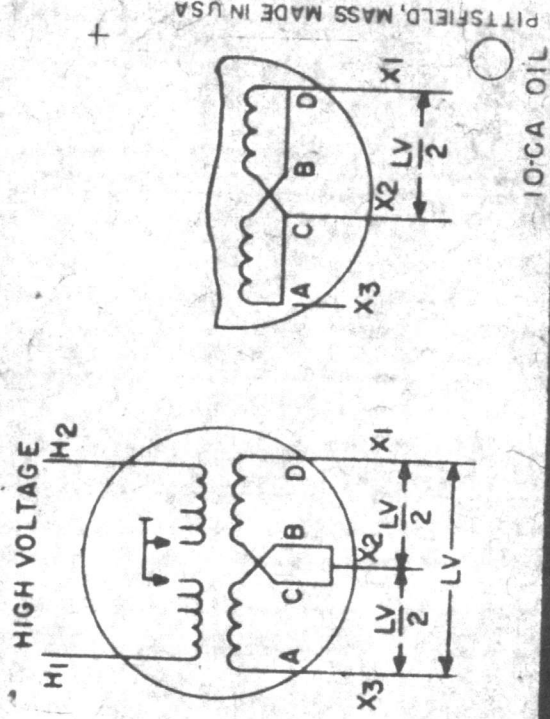
FIRST MADE FOR **DISTR. TRANS.**

0.05 ± 0.02 MUST BE MAINTAINED FROM EDGE OF BAND TO EDGE OF PLATE

REVISIONS

# GENERAL ELECTRIC

S/N	KVA <b>10, 15</b>	65C RISE	SINGLE PHASE 60 CYCLES CLASS OA	TYPE HS	WT LB	ADDITIVE POLARITY	% IMP 85C
VOLTAGE RATING		7200/12470Y		120/240			



% RATED VOLTS	TAP CHANGER POSITION	KVA
105	1	
102 1/2	2	
100	3	
97 1/2	4	
95	5	

APPROVED [Signature]

Subject To Meet Of Job Plans & Specifications

By [Signature] Quality Control Representative

By [Signature] Quality Control Representative

STN. STL. C59FIE2.020 THK. ETCHING FILLED WITH BLUE BAKING ENAMEL PITTSBURGH PLATE GLASS SPEC # N 39880 OR EQUAL

3.188 ± 0.007  
3.500 ± 0.007

REARRANGEMENT OF THE VARIOUS ITEMS, OR CHANGES IN DIMENSIONS, CANNOT BE PERMITTED SINCE FORM IS FOR USE WITH DIE STAMPING

E6D  
E  
B30  
26D

312
312E
112D
043
H1PM
OWVN

MADE BY [Signature] ISSUED

APPROVALS

PITTSFIELD

AREA - 10.50 SQ. IN.

3101X0010J704

Date: APPROVED

LOCATION CONT ON SH SH NO

PRINTS TO

NOT TO SCALE

USE THIS PRINT FOR  
RESIDENTIAL DISTRIBUTION  
TRANSFORMER DEPARTMENT  
PURCHASE ORDER  
OR QUOTATION

---

DO NOT USE FOR OTHER  
PURCHASE ORDERS OR QUOTATIONS  
UNLESS ADVISED BY OUR PURCHASING  
DEPARTMENT

---

PRINT IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS.

GENERAL ELECTRIC CO.  
HICKORY, N. C.  
28601  
U. S. A.

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:—

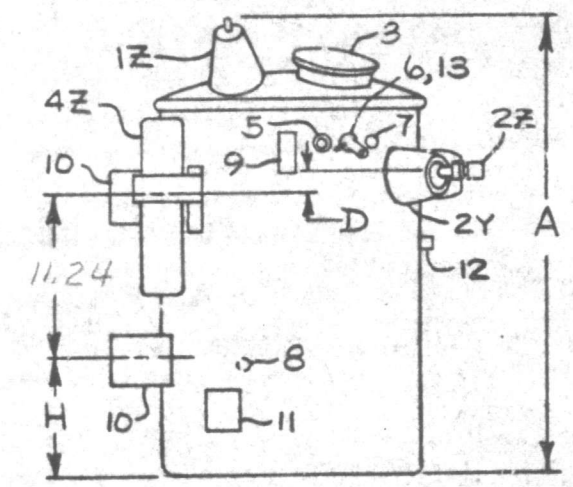
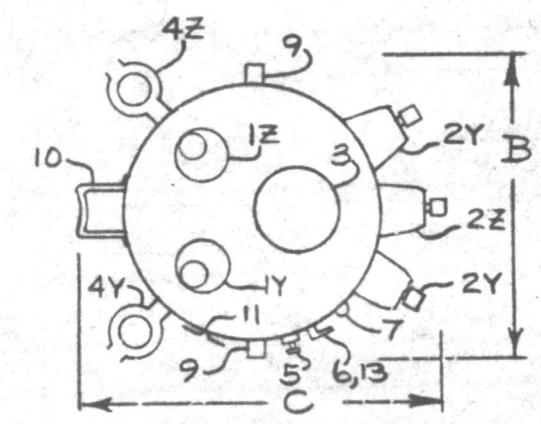
APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS		
		FRACTIONS	DECIMALS	ANGLES
	✓	+	+	+

TITLE  
**OUTLINE**

FIRST MADE FOR **RDT**

**10 KVA ABOVE 5000V. SINGLE MTG. POS.**

- 1Y. HIGH VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL FOR #8 MIN. TO #2 MAX CABLE.
- 1Z. HIGH VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL FOR #8 TO 2/0 MAX CABLE.
- 2Y. LOW VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL.
- 2Z. LOW VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL.
- 3. HANDHOLE
- 4Y. LIGHTNING ARRESTER
- 4Z. LIGHTNING ARRESTER
- 5. SERIES MULTIPLE SWITCH OPERATING HANDLE.
- 6. CIRCUIT BREAKER HANDLE WITH EMERGENCY OVERLOAD DEVICE.
- 7. SIGNAL LIGHT
- 8. GROUND PAD (.500-13 TAP x .4 DEEP)
- 9. LIFTING LUG
- 10. HANGER BRACKET (NEMA TYPE A)
- 11. NAMEPLATE
- 12. L.V. GROUND
- 13. OVERLOAD INDICATOR



IT. NO.	VOLT. CLASS	LOW VOLT.	L.V. BUSH. CABLE RANGE	FEATURE NUMBERS													SPECIAL FEATURE			
				A	B	C	D	H	1Y	1Z	2Y	2Z	3	4Y	4Z	5		6	7	13
44	15KV	120/240 240/480	#8 TO 4/0 MAX	33.50	17.50	20.00	2.24		X	X	X	X	—	—	—	—	—	—	—	18" CREEP H.V. BUSH
45	15KV		#8 TO 4/0 MAX	33.50	20.50	20.00	2.24		X	—	X	X	—	X	—	—	—	—	—	18" CREEP H.V. BUSH
46	18KV		#8 TO 4/0 MAX	39.00	17.50	20.00	2.24		X	X	X	X	—	—	—	—	—	—	—	
47	15KV		#2 TO #000000	44.50	24.50	23.00	2.24		X	X	X	X	—	X	X	—	—	—	—	16.00 TANK W/150 GAP
48	18KV		SPADE G	34.00	17.00	21.00	2.24		X	X	X	X	—	—	—	—	—	—	—	16" DIA. TANK
49	25KV		#8 TO 4/0 MAX	44.50	26.50	23.50	2.24		X	X	X	X	X	X	—	X	X	—	—	27 KV L.A. ON HI
50	15KV		#8 TO 4/0 MAX	30.50	22.00	20.00	2.24		X	X	X	X	X	X	X	—	—	—	—	
51	5KV		#8 TO 4/0 MAX	31.00	17.50	20.00	2.24		X	X	X	X	—	—	—	—	—	—	—	30-0-0 5000
52	15KV	120/240 240/480	#8 TO 4/0 MAX	30.50	17.50	20.00	2.24		X	X	X	X	X	—	—	—	—	—	—	
53	15KV	277/480V	#8 TO 4/0 MAX	37.00	24.00	20.00	2.24		X	X	X	—	—	X	X	X	X	X	—	
54	18KV	120/240 240/480	#8 TO 4/0 MAX	40.00	19.50	21.00	2.24		X	X	X	X	—	—	—	X	—	—	—	
55	18KV		#8 MIN TO 1/0 MAX	34.00	17.50	20.00	2.24		X	—	X	X	X	—	—	—	—	—	—	
56	18KV		#8 TO 4/0	43.00	21.00	21.00	2.24		X	—	X	X	X	X	—	X	X	—	—	
57	15KV	120/240 240/480	#8 TO 4/0 MAX	30.50	19.50	20.00	2.24		X	—	X	X	X	X	—	—	—	—	—	
58	15KV	277/480V	#8 TO 4/0	30.50	17.50	19.00	2.24		X	X	X	—	X	—	—	—	—	—	—	
59	18KV	120/240 240/480	#8 TO 4/0	36.50	17.00	20.00	2.24		X	X	X	X	X	—	—	—	—	—	X	
60	15KV		#8 TO 4/0 MAX	30.50	17.50	20.00	2.24		X	X	X	X	X	—	—	—	—	—	—	EXT. OPER. T.C.
61	15KV		#8 TO 4/0 MAX	30.50	24.00	20.00	2.24		X	X	X	X	X	X	—	X	X	—	—	
62	18KV		#8 TO 4/0	39.00	22.00	19.50	2.24		X	—	X	X	—	X	—	—	—	—	—	27 KV L.A.
63	18KV		#8 TO 4/0 MAX	38.00	24.00	20.00	2.24		X	X	X	X	X	X	—	X	X	—	—	
64	18KV		#8 TO 4/0	36.50	19.50	20.00	2.24		X	—	X	X	X	—	—	X	X	—	—	
65	15KV	120/240 240/480	#8 TO 4/0 MAX	35.00	17.50	20.00	2.24		X	X	X	X	—	—	—	X	—	—	—	

REVISIONS	PRINTS TO
10 SEPT 5, 69 SFD ERASE REV 1-9 ADD ITS 57 FOR GEOIAG0102A2	E&D
11 SEPT 12, 69 REPLACE RM ADD ITS 58-65 FOR REQ #0061 ADD CONT ON SH. NO. 3	P1
12 AUG 11, 1990 S. Smart B.S. ADD INFO. TO L.V. RATING	26D
	26C
	DIT
	OW

MADE BY: *[Signature]* DEC 18, 1968

ISSUED: *[Signature]* Dec 19, 1968

APPROVALS: *[Signature]*

DIV OR DEPT: **HICKORY**

LOCATION: **3101B2101J257**

CONT ON SHEET 3 SH NO. 2

NOT TO SCALE

USE THIS PRINT FOR  
RESIDENTIAL DISTRIBUTION  
TRANSFORMER DEPARTMENT  
PURCHASE ORDER  
OR QUOTATION

---

DO NOT USE FOR OTHER  
PURCHASE ORDERS OR QUOTATIONS  
UNLESS ADVISED BY OUR PURCHASING  
DEPARTMENT

---

PRINT IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS.

GENERAL ELECTRIC CO.  
HICKORY, N. C.

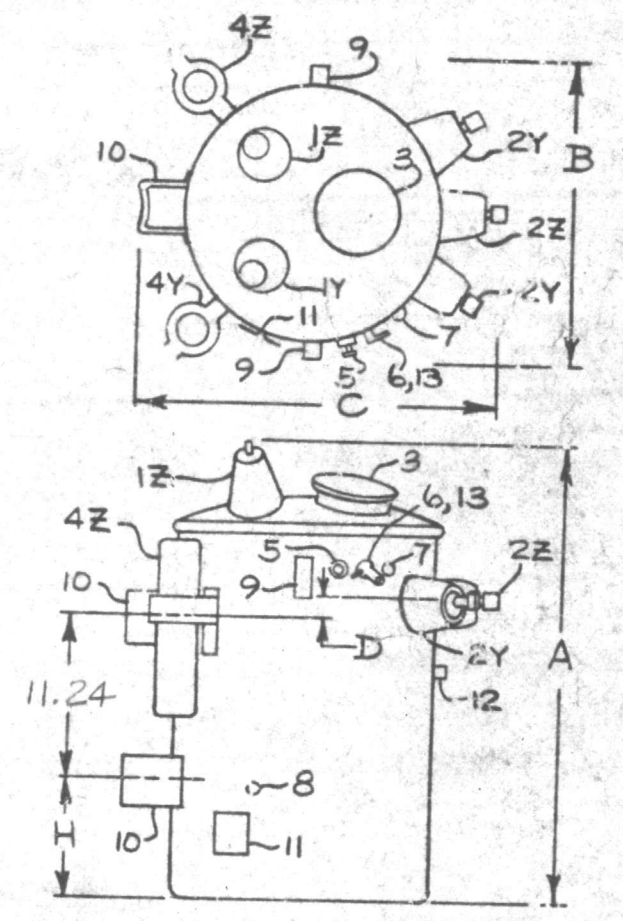
28511  
U. S. A.

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:

APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS		REV NO.
		FRACTIONS	DECIMALS	
	✓	+	+	

TITLE  
**OUTLINE**  
FIRST MADE FOR DIST. TRANS. 10 & 15KVA ABOVE 5000 V

- 1Y. HIGH VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL FOR #8 MIN. TO #2 MAX CABLE.
- 1Z. HIGH VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL FOR #8 TO 2/0 MAX CABLE.
- 2Y. LOW VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL.
- 2Z. LOW VOLTAGE BUSHING WITH CLAMP TYPE TERMINAL.
- 3. HANDHOLE \*(NORMALLY SUPPLIED WITH TAP & LOAD LIGHT)
- 4Y. LIGHTNING ARRESTER
- 4Z. LIGHTNING ARRESTER
- 5. SERIES MULTIPLE SWITCH OPERATING HANDLE.
- 6. CIRCUIT BREAKER HANDLE WITH EMERGENCY OVERLOAD DEVICE.
- 7. SIGNAL LIGHT
- 8. GROUND PAD (.500-10 TAP x .44 DEEP)
- 9. LIFTING LUG
- 10. HANGER BRACKET (NFMA TYPE A)
- 11. NAMEPLATE
- 12. L.V. GROUND
- 13. OVERLOAD INDICATOR



IT. NO.	VOLT. CLASS	L.V. BUSH.		FEATURE NUMBERS																SPECIAL FEATURE
		LOW VOLT.	CABLE RANGE	A	B	C	D	H	1Y	1Z	2Y	2Z	3	4Y	4Z	5	6	7	13	
21	8.7KV	120/240 240/480	#8 TO 4/0	33.50	21.00	21.00	2.24	8.00	X	X	X	X	X*	X	-	-	X	-	-	BELOW 5000 V
22	8.7KV		#8 TO 4/0	33.50	21.00	21.00	2.24	8.00	X	-	X	X	X*	X	-	-	X	X	-	BELOW 5000 V
23	15 KV		#8 TO 4/0	32.50	24.00	21.00	2.24	6.00	X	X	X	X	X*	X	X	-	X	X	-	
24	15 KV		#8 TO 4/0	32.50	24.00	21.00	2.24	6.00	X	X	X	X	X*	X	X	-	X	X	-	
25	15KV		#8 TO 4/0	32.50	21.00	21.00	2.24	6.00	X	-	X	X	X*	X	-	-	X	X	-	
26	15KV		#8 TO 4/0	32.50	21.00	21.00	2.24	6.00	X	-	X	X	X*	X	-	-	X	X	-	
27	15KV		#8 TO 4/0	32.00	18.50	21.00	2.24	5.50	X	X	X	X	X*	X	-	-	X	X	-	
28	15KV		#8 TO 4/0	32.00	18.50	21.00	2.24	5.50	X	X	X	X	X*	X	-	-	-	-	-	
29	15KV		#8 TO 4/0	32.50	18.50	21.00	2.24	6.00	X	X	X	X	X*	X	-	-	-	-	X	X
30	15KV		#8 TO 4/0	32.50	18.50	21.00	2.24	6.00	X	X	X	X	X*	X	-	-	-	-	-	
31	15KV		#8 TO 4/0	35.50	18.50	21.00	2.24	6.00	X	X	X	X	X*	X	-	-	-	-	X	X
32	15KV		#8 TO 4/0	32.50	18.50	21.00	2.24	6.00	X	-	X	X	X*	X	-	-	-	-	X	X
33	15KV		#8 TO 4/0	32.00	21.00	21.00	2.24	5.50	X	-	X	X	X*	X	-	-	X	X	-	
34	15KV		#8 TO 4/0	32.00	18.50	21.00	2.24	5.50	X	-	X	X	X*	X	-	-	-	-	-	
35	15KV		#8 TO 4/0	32.50	21.00	21.00	2.24	6.00	X	-	X	X	X*	X	-	-	X	-	-	
36	15KV		#8 TO 4/0	32.00	18.50	21.00	2.24	5.50	X	-	X	X	X*	X	-	-	-	-	-	
37	18KV		#8 TO 4/0	39.00	24.00	21.00	2.24	10.00	X	X	X	X	X*	X	X	-	X	X	-	
38	18KV		#8 TO 4/0	37.50	21.00	21.00	2.24	8.30	X	-	X	X	X*	X	-	-	X	X	-	
39	8.7KV		#8 TO 4/0	31.00	18.50	21.00	2.24	5.50	X	X	X	X	X*	X	-	-	-	-	-	
40	15KV	240/480	#8 TO 4/0	32.00	18.50	21.00	2.24	5.50	X	X	X	X	X*	X	-	-	-	-	-	
41	15KV	120/240 240/480	#8 TO 4/0	32.50	18.50	20.00	2.24	6.00	X	X	X	X	X*	X	-	-	-	-	-	
42	15KV	120/240 240/480	#8 TO 4/0	37.00	18.50	21.00	2.24	11.00	X	X	X	X	X*	X	X	-	-	-	-	

REVISIONS	PRINTS TO
1. 2/1/68 ADD IT 40 41 CHG DIM IN ITS. 28, 33, 34 WRS 540	E/D
2. 10/1/68 ADD 10 KVA TO TITLE BLOCK DR 0243	26D
3. 10/6/68 ADD NOTES # TO FEATURE #3 ADD # TO ALL ITEMS CALLING FOR FEATURE #3 DR #0254	PI
	OW
	DIT

MADE BY  
R. Matheson JULY 15-68  
ISSUED  
B. Johnson Sept 17, 68

APPROVALS

HICKORY  
DIV OR DEPT  
LOCATION  
3101B2101J278  
CONT ON SHEET 2 SH NO. 1  
REQ # 3528-C

**NOT TO SCALE**

**USE THIS PRINT FOR  
RESIDENTIAL DISTRIBUTION  
TRANSFORMER DEPARTMENT  
PURCHASE ORDER  
OR QUOTATION**

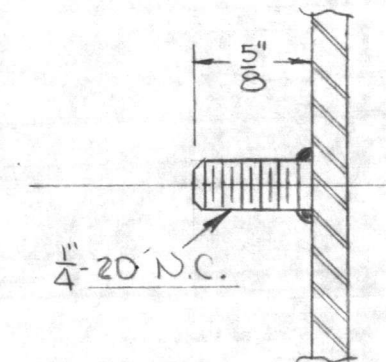
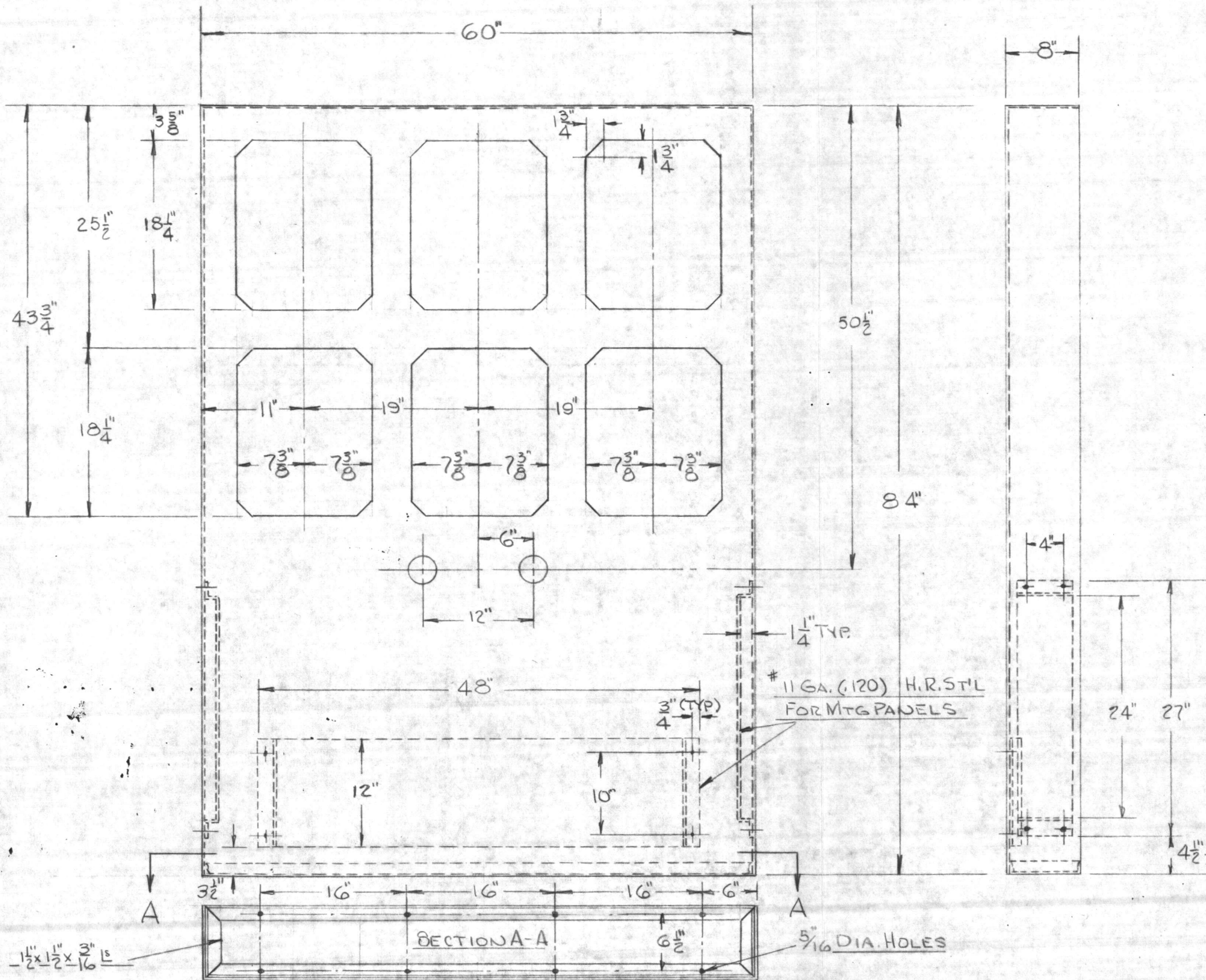
---

DO NOT USE FOR OTHER  
PURCHASE ORDERS OR QUOTATIONS  
UNLESS ADVISED BY OUR PURCHASING  
DEPARTMENT

---

PRINT IS LOANED SUBJECT TO RETURN UPON DE-  
MAND AND UPON THE EXPRESS CONDITION THAT  
IT IS NOT TO BE USED DIRECTLY OR INDIRECTLY  
IN ANY WAY DETRIMENTAL TO OUR INTERESTS.

**GENERAL ELECTRIC CO.  
HICKORY, N. C.  
28611  
U. S. A.**



MOUNTING DETAIL  
FOR TERMINAL BLOCK PANELS

MAT'L - #7 GA. (.180) STRETCHER LEVELLED  
STEEL EXCEPT AS NOTED.

AFTER WELDING, DE-BURR & SANDBLAST  
APPLY ONE COAT OF PRIMED DU PONT #

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NOFOLK, VIRGINIA 23511

**APPROVED:**  
SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NO. 88313 SPEC 88313/67  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY - THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC. AS REQUIRED.  
H. N. WALLIN  
RADM. CEC. USN  
DATE OCT 16 1968 COMLANAVFACENGCOM

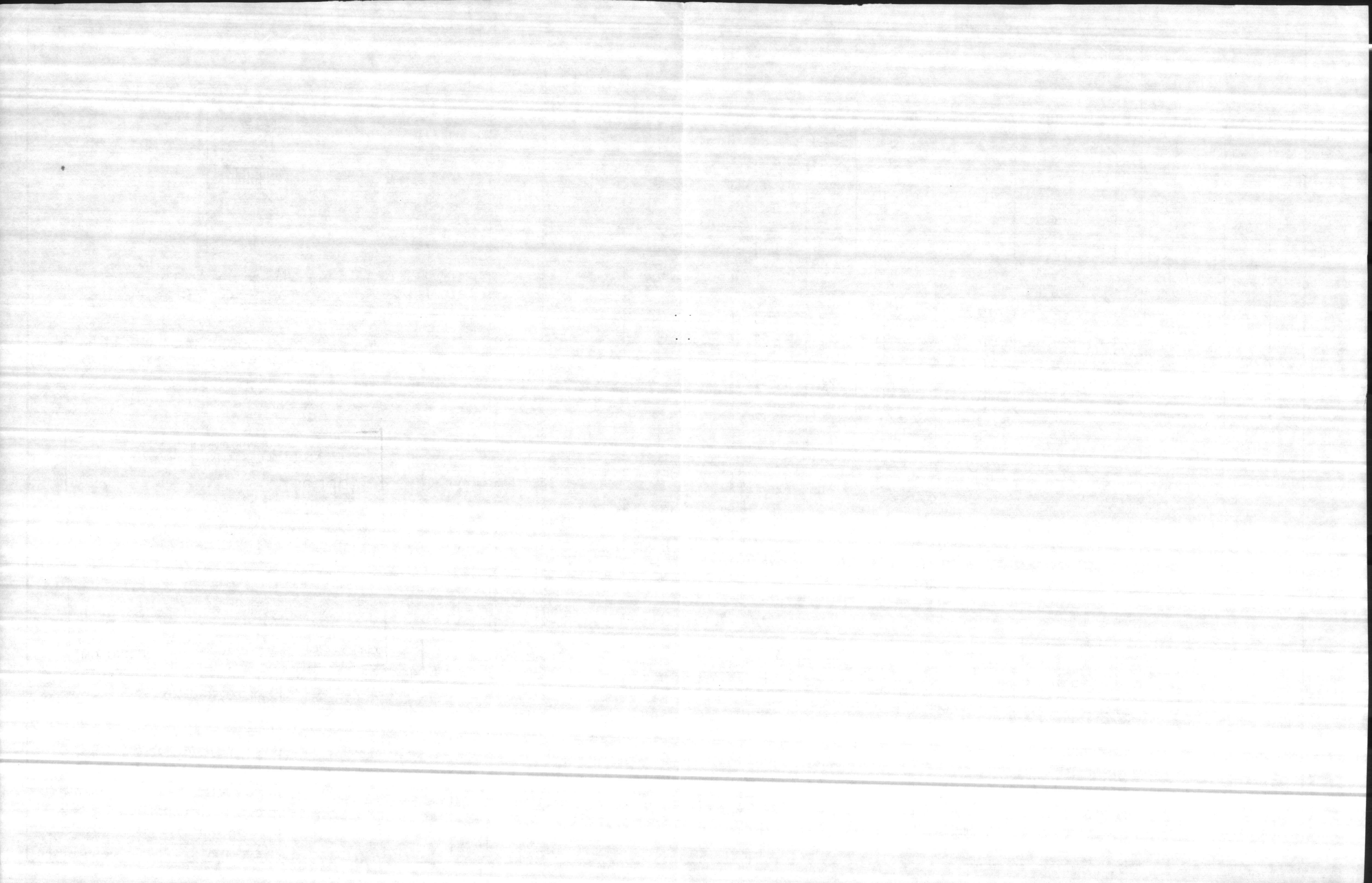
RAY STURAILL & ASSOCIATES, INC.  
CHARLOTTE N.C.

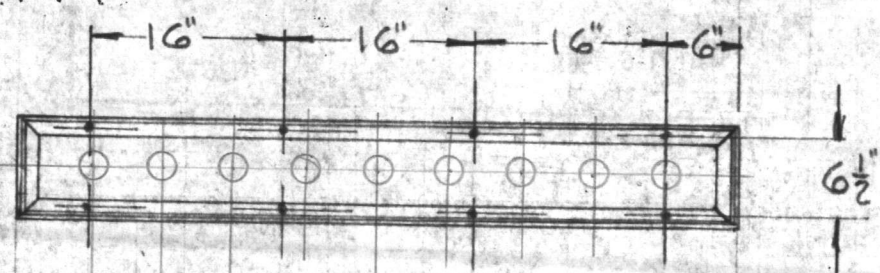
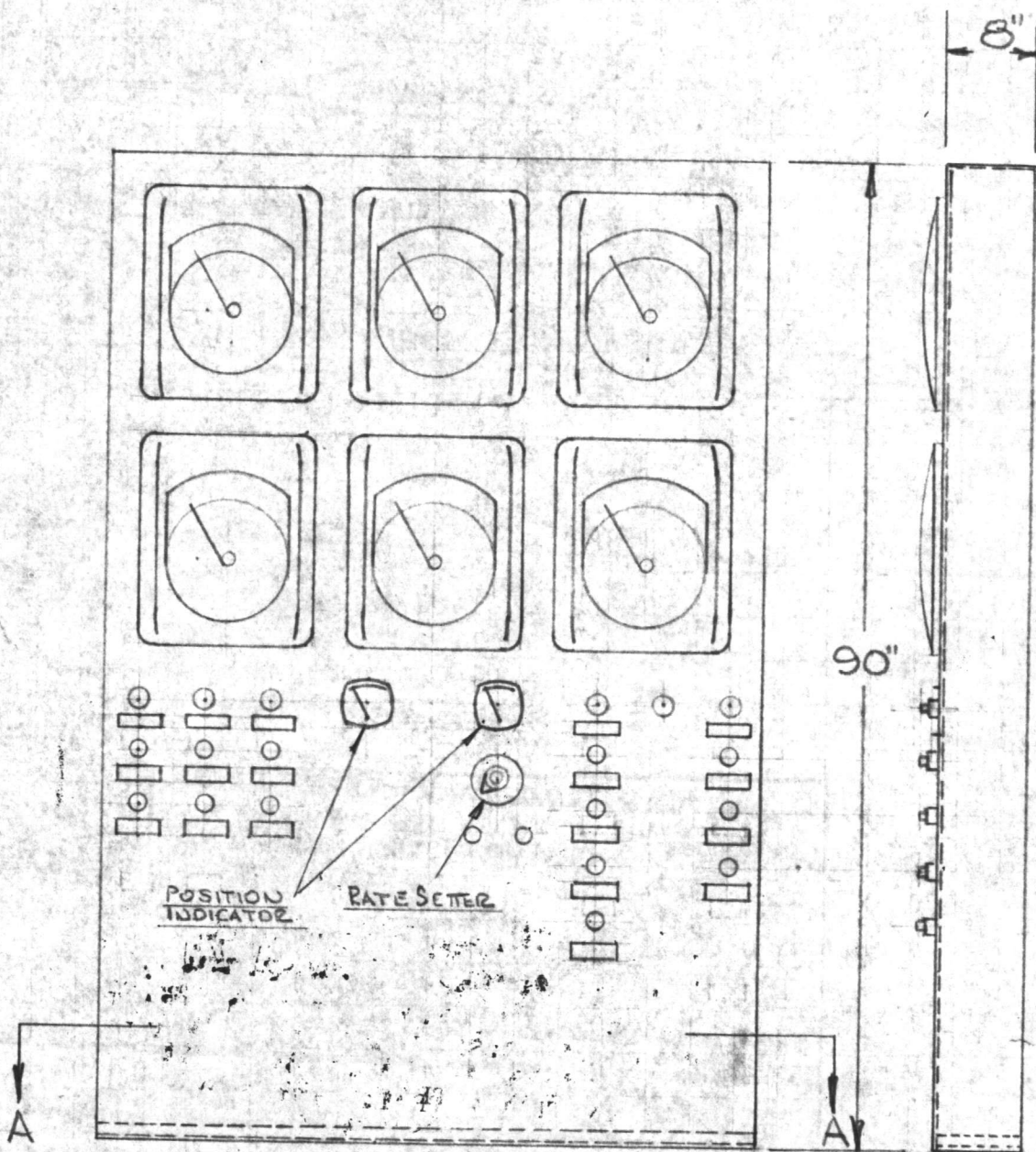
FABRICATION DETAILS  
FOR CONSOLE  
COURTHOUSE BAY COMPLEJEUNE

ISSUE NO.	DESCRIPTION	DATE	ISSUE NO.	DESCRIPTION	DATE	ISSUE NO.	DESCRIPTION	DATE	ISSUE NO.	DESCRIPTION	DATE
	DRAWN BY			DRAWN BY			DRAWN BY			DRAWN BY	
	CHECKED BY			CHECKED BY			CHECKED BY			CHECKED BY	
	REVIEWED FOR DRAFT			REVIEWED FOR DRAFT			REVIEWED FOR DRAFT			REVIEWED FOR DRAFT	
	REVIEWED FOR ENGR			REVIEWED FOR ENGR			REVIEWED FOR ENGR			REVIEWED FOR ENGR	
	APPROVED FOR ENGR			APPROVED FOR ENGR			APPROVED FOR ENGR			APPROVED FOR ENGR	

GOF 791 REV. 1-63 PRINTED U.S.A. 12-64







SECTION A-A

9-3/4" CONDUITS 6" HIGH

<b>TITLE:</b> CONSOLE ARRANGEMENT WATER TREATMENT PLANT COURT HOUSE SQUARE, CAMP LE JEUUNE, N.C.						<b>RAY STURGILL &amp; ASSOCIATES, INC.</b> CHARLOTTE N.C.		
<b>DRAWN</b>	<b>CHKD</b>	<b>APPVD.</b>	<b>APPVD.</b>	<b>APPVD.</b>	<b>APPVD.</b>	<b>BLDG.</b>	<b>SCALE</b>	<b>DWG. NO.</b>
KDH							3/4" = 1'-0"	NCWI-1114-2
<b>DATE</b>						<b>DEPT. NO.</b>		
7-22-68								

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

APPROVED:

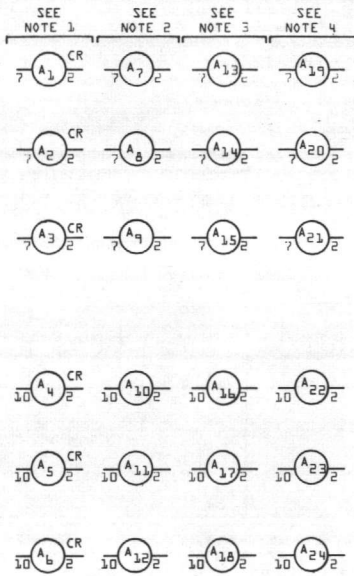
SUBJECT TO THE FOLLOWING CONDITIONS:  
CONTRACT NO. 88313 88313/67  
APPROVAL OF MATERIALS AND COMPONENTS  
INDICATES COMPLIANCE WITH ALL SPECIFICATION  
REQUIREMENTS ONLY. CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL PROTECTION AND MAINTAINING  
COORDINATION OF TESTS, ETC. AS REQUIRED.  
W. N. WALLIN  
RADM, CEC GEN  
COMLANTRAVFACENGCOM

DATE OCT 16 1968

## ELECTRICAL SYMBOLS

Supersedes 3-0061  
dated 6-1-68

### RELAY SYMBOLS



General Purpose enclosed plug-in relay, DPDT contact rating 10 amp 120 VAC, 5 amp 240 VAC. 1/6 horsepower at 120 VAC and 1/3 horsepower at 240 VAC.

General purpose enclosed plug-in relay DPDT. Gold cross bar contacts rated 5 amp 120 VAC, 3 amp 240 VAC. 1/10 horsepower at 120 VAC and 1/6 horsepower at 240 VAC.

General purpose enclosed plug-in relay DPDT. One pole silver button contacts rated 10 amp 120 VAC, 5 amp 240 VAC. 1/6 horsepower at 120 VAC and 1/3 horsepower at 240 VAC.

One pole gold cross bar contacts rated 5 amp 120 VAC, 3 amp 240 VAC. 1/10 horsepower at 120 VAC and 1/16 horsepower at 240 VAC.

General purpose enclosed plug-in relay, SPDT contact rating 10 amps 120 VAC, 5 amps 240 VAC. 1/6 horsepower at 120 VAC and 1/3 horsepower at 240 VAC.

General purpose enclosed plug-in relay, 3 PDT. Gold cross bar contacts rated 5 amp 120 VAC, 3 amp 240 VAC. 1/10 horsepower at 120 VAC and 1/6 horsepower at 240 VAC.

General purpose enclosed plug-in relay, 3 PDT. One pole silver button contacts rated 10 amp 120 VAC, 5 amp 240 VAC. 1/6 horsepower at 120 VAC and 1/3 horsepower at 240 VAC.

Two poles with gold cross bar contacts rated 5 amp 120 VAC, 3 amp 240 VAC. 1/10 horsepower at 120 VAC and 1/6 horsepower at 240 VAC.



General Purpose Relay-DPDT Contact rating-6 amp up to 250 VAC. Pilot duty 360 VA up to 250 VAC. 1/2 HP at 120 to 240 VAC single phase.



Industrial Contactor, 2P, 3P or 4PST. Contact Rating - 10A up to 600 VAC, 1/2 HP at 110 VAC, 3/4 HP at 208/220 VAC, single phase.



General Purpose Relay SPDT or DPDT. Contact Rating 15 amp up to 480 VAC, 5 amp to 600 VAC, Pilot Duty 360 VA up to 600 VAC, 1/4HP at 125 VAC, 1/2 HP VAC, single phase.



Direct Current Relay-SPDT. Contact Rating 1 amp 120 VAC.



Direct Current Relay (telephone type) SPDT. Contact Rating 15 amp to 600 VAC, Pilot Duty 360 VA up to 600 VAC, 1/4 HP at 125 VAC, 1/2 HP at 250 VAC, single phase.



Plug-in relay DPDT. Contact rating, 2 amps, 115 VAC resistive. Coil resistance 2500 ohms. Pull in current 10 milliamperes. Normal power 250 milliwatts.



General Purpose Relay with 2 DPDT and 2 SPST contacts. Contact rating, 6 amps up to 250 VAC. Pilot Duty, 360 VA up to 250 VAC.



General purpose Relay DPDT contact rating - 15 amp 115 VAC, 10 amp 230 VAC. Pilot Duty 760 VA up to 240 VAC. 1 HP at 120 or 240 VAC single phase.

**Note:**

- 1) Coil Voltage - 12 VAC, 12 VDC, 120 VAC, 208 to 240 VAC.
- 2) Coil Voltage - 24 VDC, relay includes diode across coil to suppress transient voltage.
- 3) Coil Voltage - 24 VAC.
- 4) Coil Voltage - 120 VAC, relay includes capacitor and resistor across coil to suppress transient voltage.

### TIMER SYMBOLS



Motor Driven Timer-SPDT or DPDT. Delay on energization (1 to 15 sec.). Contact Rating 10 amp, 250 VAC maximum.



Motor Driven Timer-SPDT or DPDT. Delay on energization (5 to 90 sec.). Contact Rating 10 amp 250 VAC maximum.



Motor Driven Timer-SPDT. Delay on energization (1/4 to 9-1/2 min.). Contact Rating 20 amp 480 VAC maximum.



Pneumatic Timer (Agastat)-DPDT. Delay on de-energization (0 to 5 min.). Contact Rating 5 amp 220V, 2.5 amp 480 VAC maximum.



Pneumatic Timer (Agastat)-DPDT. Delay on energization (0 to 5 min.). Contact Rating 5 amp 220V, 2.5 amp 480 VAC maximum.



Solid State Timer - DPDT. Delay on de-energization (5-300 Sec.). Contact Rating 5 amp 120 VAC, 3 amp 240 VAC maximum.



Solid State Timer - DPDT. Delay on energization (5-300 Sec.). Contact Rating 5 amp 120 VAC, 3 amp 240 VAC maximum.



Motor Driven Report Cycle Timer. SPDT 4 sec. time cycle, adjustable-1 to 3 sec. on and 3 to 1 sec. off. Contact Rating 20 amps to 480 VAC.



Motor Driven Time Clock

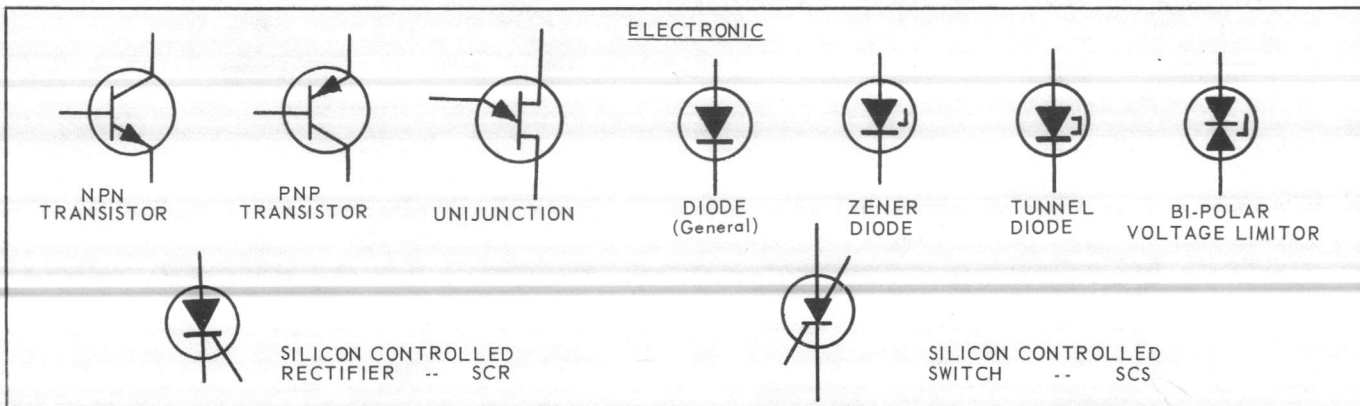
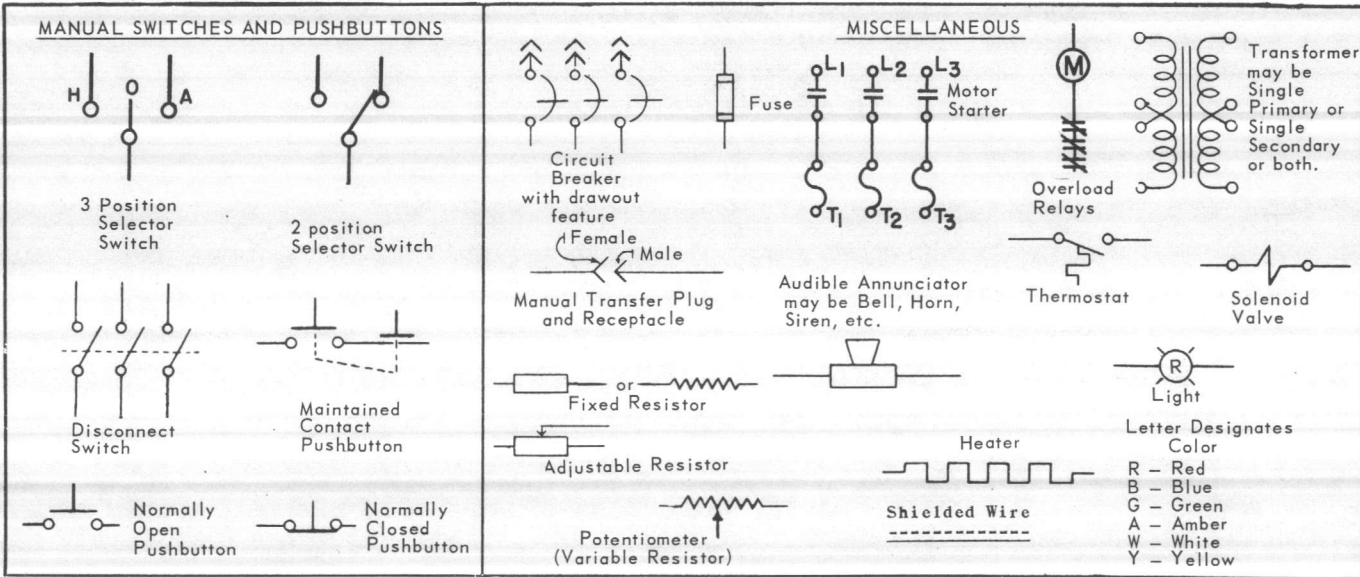
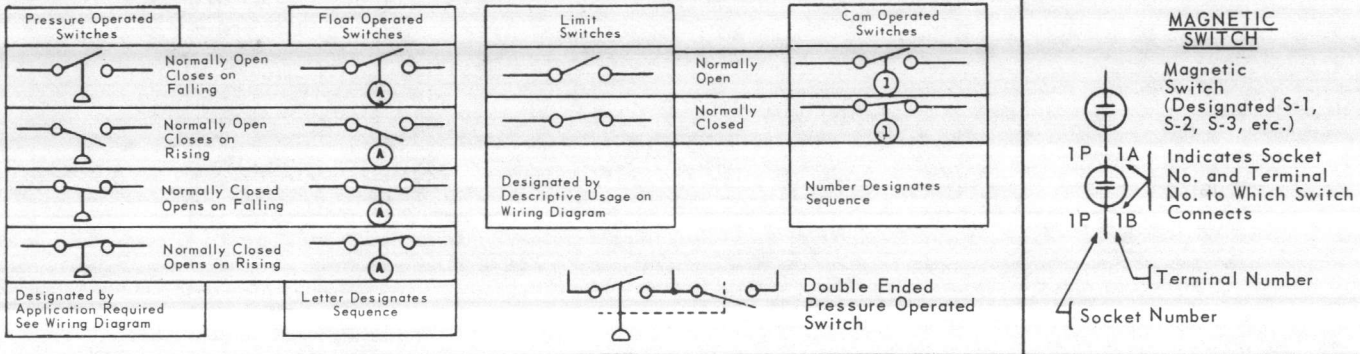
# AUTOCON ELECTRIC AND HYDRAULIC SYMBOLS

**CONTROL DATA**  
CORPORATION

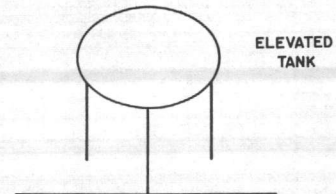
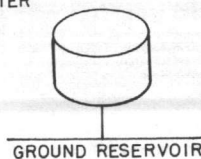
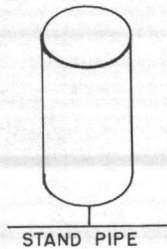
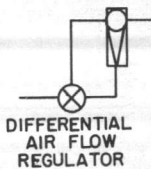
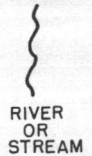
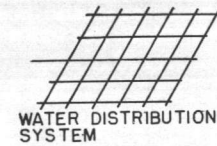
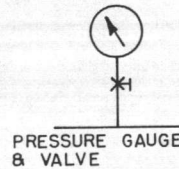
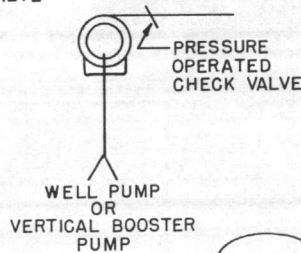
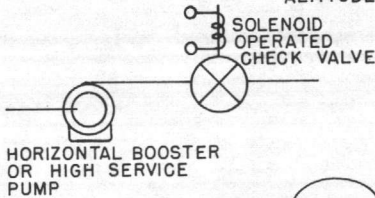
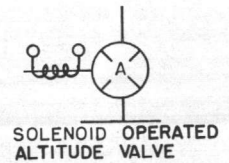
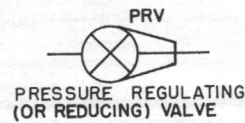
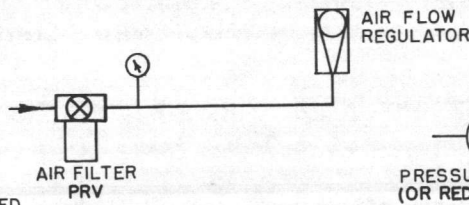
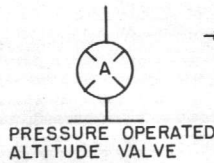
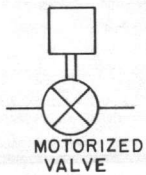
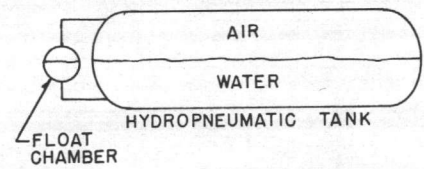
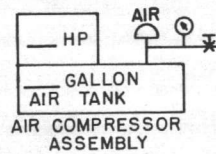
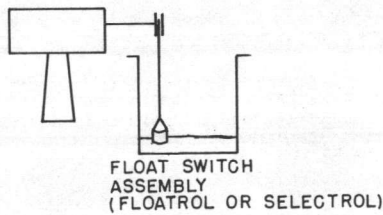
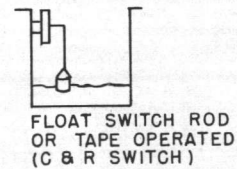
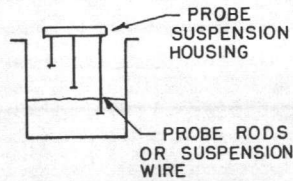
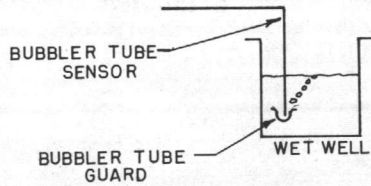
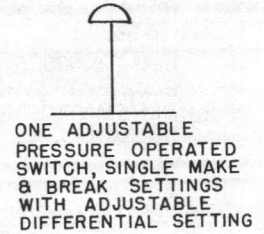
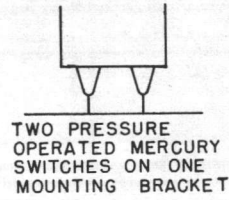
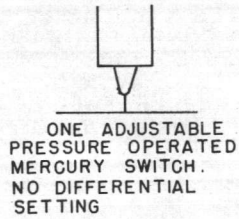
## ABBREVIATIONS

- |                                                               |                          |
|---------------------------------------------------------------|--------------------------|
| BFV - Full Voltage Non-Reversing Starter with Circuit Breaker | DS - Disconnect Switch   |
| BFVR - Full Voltage Reversing Starter with Circuit Breaker    | HA - Hand-Automatic      |
| BRVT - Autotrans. Starter with Circuit Breaker                | HOA - Hand-Off-Automatic |
| BRVR - Resistance Starter with Circuit Breaker                | MS - Motor Starter       |
| BPW - Part Winding Starter with Circuit Breaker               | NC - Normally Closed     |
| CR - Relay                                                    | NO - Normally Open       |
|                                                               | OL - Overload Relay      |
|                                                               | Sta# - Alarm Station     |
|                                                               | TC - Time Clock          |
|                                                               | TC - Time Close          |
|                                                               | TO - Time Open           |
|                                                               | TR - Timer Relay         |

## PRESSURE, FLOAT, OR CAM OPERATED SWITCHES



## HYDRAULIC SYMBOLS



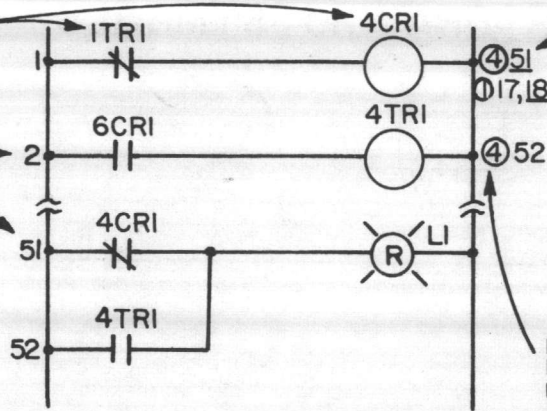
# AUTOCON ELECTRIC AND HYDRAULIC SYMBOLS

**CONTROL DATA**  
CORPORATION

RELAY PREFIX NUMBER IS THE DRAWING DASH NUMBER ON WHICH THE RELAY COIL APPEARS.

LINE NUMBER - EACH 1/2" LINE OF SCHEMATIC IS NUMBERED.

ALL CONTACTS ARE SHOWN WITH RELAYS IN DE-ENERGIZED POSITION.



NUMBERS AFTER CIRCLE INDICATE LINE NUMBER ON WHICH CONTACTS APPEAR. THE UNDERLINE INDICATES A NORMALLY CLOSED CONTACT. A DASH (-) BETWEEN CONTACT NUMBERS INDICATES COMMON CONTACTS. A COMMA (,) BETWEEN CONTACT NUMBERS INDICATES INDEPENDENT CONTACTS.

NUMBER IN CIRCLE INDICATES THE DRAWING DASH NUMBER ON WHICH CONTACTS APPEAR.

EACH PHYSICAL COMPARTMENT IS NUMBERED IN LOWER LEFT CORNER. INDICATES VERTICAL SECTION NUMBER 2 COMPARTMENT C. FOR LARGE AUTOSENSORY CONTROL DIAGRAMS, SPECIAL NOTES WILL BE USED TO DENOTE LOCATION.

2C

## TERMINAL SYMBOLS



TYPE "B" TERMINALS LOCATED IN EACH COMPARTMENT.



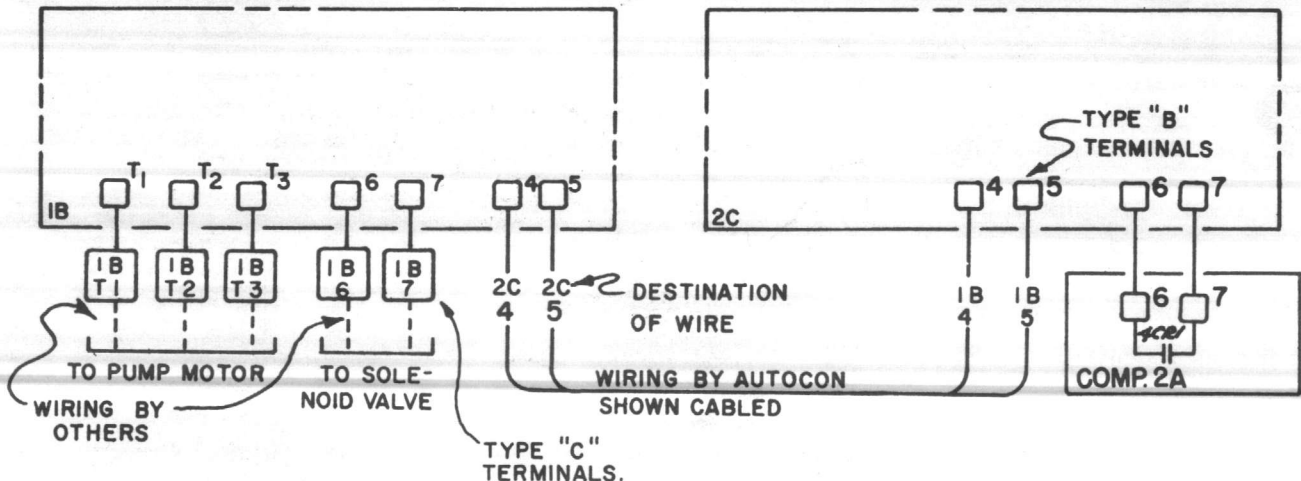
TYPE "C" MASTER TERMINALS, LOCATED TOP OR BOTTOM OF VERTICAL SECTION FOR CUSTOMER CONNECTION.

---DOTTED LINE INDICATES WIRING BY OTHERS.

## EXAMPLE - INTERCOMPARTMENT WIRING AND CUSTOMER CONNECTIONS

VERTICAL SECTION #1  
COMPARTMENT B

VERTICAL SECTION #2  
COMPARTMENT C





M & H VALVE AND FITTINGS

# M & H TAPPING SLEEVE AND VALVE

## A.W.W.A. CLASS C

IRON BODY, BRONZE MOUNTED, DOUBLE DISC, PARALLEL SEAT, N.R.S.  
2" TO 12"—200 LBS. WORKING PRESSURE, 400 LBS. HYDROSTATIC TEST  
14" TO 24"—150 LBS. WORKING PRESSURE, 300 LBS. HYDROSTATIC TEST

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED**

SUBJECT TO THE

CONTRACT NO. 88313  
APPROVAL 88313/167  
INDICATED  
REQUIREMENTS  
SHALL BE  
PROPERLY  
COORDINATED

JUL 16 1968

DATE COMPLANTNAVFACENG



For valve parts  
list, see page 18

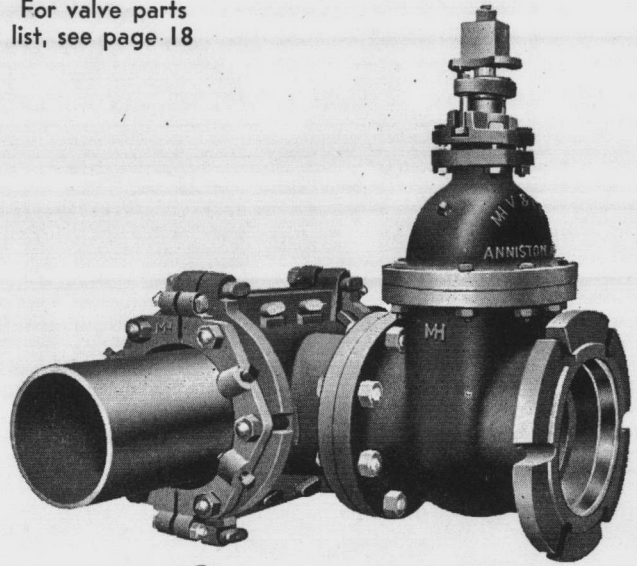


Figure 74-75—Tapping sleeve with hub end, with hub and flange tapping valve.  
Figure 74-75-M (not shown)—Tapping sleeve with hub end, with mechanical joint and flange tapping valve.  
Figure 74-M-75-RT (not shown)—  
Figure 74-M-75-FT (not shown)—  
Figure 74-C (not shown)—Tapping cross with hub ends.

Figure 74-M-75-M—Tapping sleeve with mechanical joints, with mechanical joint and flange tapping valve.  
Figure 74-M-75-FT (not shown)—  
Figure 74-M-75-RT (not shown)—  
Figure 74-M-C (not shown)—Tapping cross with mechanical joints.

The practice of tapping into a main under pressure for the purpose of taking off a branch (larger than a corporation cock size) can be handled either by using a Tapping Sleeve with hub ends (Figure 74) or mechanical joint ends (Figure 74-M). The throat flange of either style sleeve is adapted for centering the valve to the sleeve. Our standard practice follows M.S.S. specifications SP-60 in sizes 12" and smaller, larger sizes to manufacturers' standard. The valve outlet flange will fit any standard tapping machine. Both hub-end and mechanical joint Sleeves have centering rings in all sizes.

ber end gaskets thus effecting a totally enclosed rubber, water tight seal. Side and end-bolts are tee-head design made from Hi-Strength Cast Iron. Throat half of mechanical joint sleeves have pads to prevent bolts from turning.

**HUB-END TAPPING SLEEVES** are made to fit Class AB and CD cast iron pipe. When ordered for use with asbestos cement pipe, specify class of pipe tapping sleeves are intended to fit. Sleeves have lead gaskets. All bolts and nuts are cadmium plated.

**TAPPING VALVES** have a flange on one end for bolting to the tapping sleeve and can be supplied with hub, mechanical joint and asbestos-cement end connections on the outlet. Separate tapping machine adapters are needed for hub and mechanical joint outlets. Use hub end adapters with asbestos-cement valves.

**MECHANICAL JOINT TAPPING SLEEVES** are regularly supplied with split end gaskets and two-piece glands for either Classes AB or CD pit cast pipe, or Classes 100, 150, 200 and 250 Centrifugally cast pipe. When ordering, specify Class of pipe in use. Unless otherwise specified, we will supply end-gaskets for Classes CD pipe. The two-piece glands are designed with cup point set screws.

Larger size tapping valves can be supplied with rollers, tracks, and scrapers, also with gears and gear cases where desirable. Non-rising stem tapping valves may be furnished with o-ring seal plate instead of the conventional stuffing box. Tapping valves for fire protection service can be furnished for use with post indicators — see pages 70-71.

Mechanical joint sleeves also have longitudinal compound rubber gaskets which fit against the rub-

**MECHANICAL JOINT SIZES:** Tapping Sleeves and Tapping Crosses with mechanical joint end connections are available in sizes 4" x 2" thru 18" x 18".

Note: For Split Repair Sleeves, Tapped Split Sleeves and Tapped Split Crosses with mechanical joint ends, see page 85.

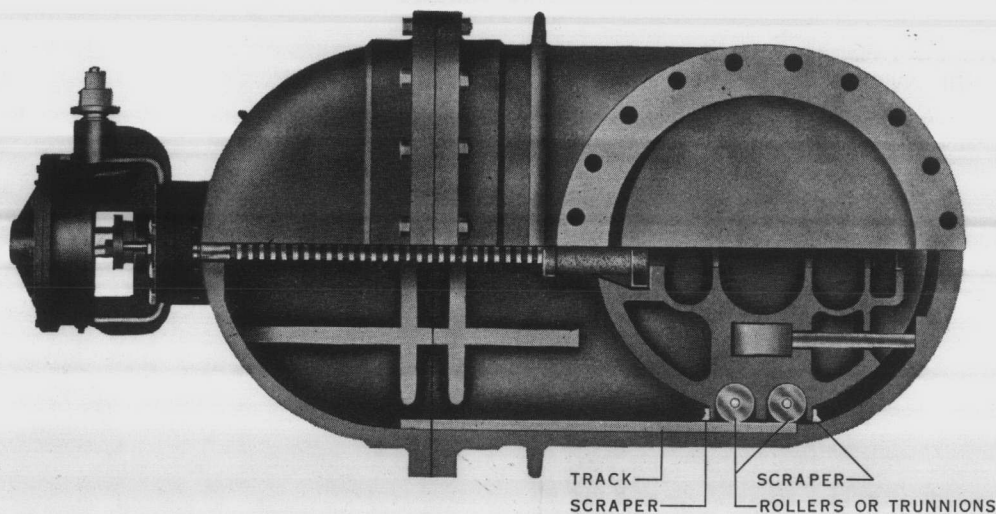
1108371



# M & H GATE VALVES

## WITH

### ROLLERS, TRACKS AND SCRAPERS



#### DOUBLE DISC

If large M & H double disc gate valves are installed in a horizontal position in a horizontal line, the use of rollers or rollers, tracks and scrapers is recommended. The heavy weight of the gate assembly creates a drag on the underside where it rests in the body thus making the discs difficult to move.

To relieve this difficulty, valves may be fitted with tracks on the inside of the body and bonnet. Discs are fitted with one or two rollers on the lower side in a position to bear on the track. Valves are regularly furnished with Babbitt tracks. Hard bronze tracks can be supplied when specified.

The rollers serve to carry the weight of the discs when the valve is opening or closing, and also make the operation much easier. The scrapers remove sediment and other accumulation on the tracks by traveling the track ahead of the rollers during both opening and closing operation. M&H double disc gate valves in the larger sizes may be fitted in this manner, including manual, cylinder or motor operated valves.

#### SOLID WEDGE

If large M & H solid wedge gate valves are installed in a horizontal position in a horizontal line, the tongue and grooved gate guides may be modified with rollers to carry the weight of the wedge throughout its entire length of travel on bronze or hard Babbitt tracks securely fastened in the body and bonnet. American Water Works Association specification C500 prescribes this refinement for solid wedge valves 16" and larger.

#### INSTALLATION

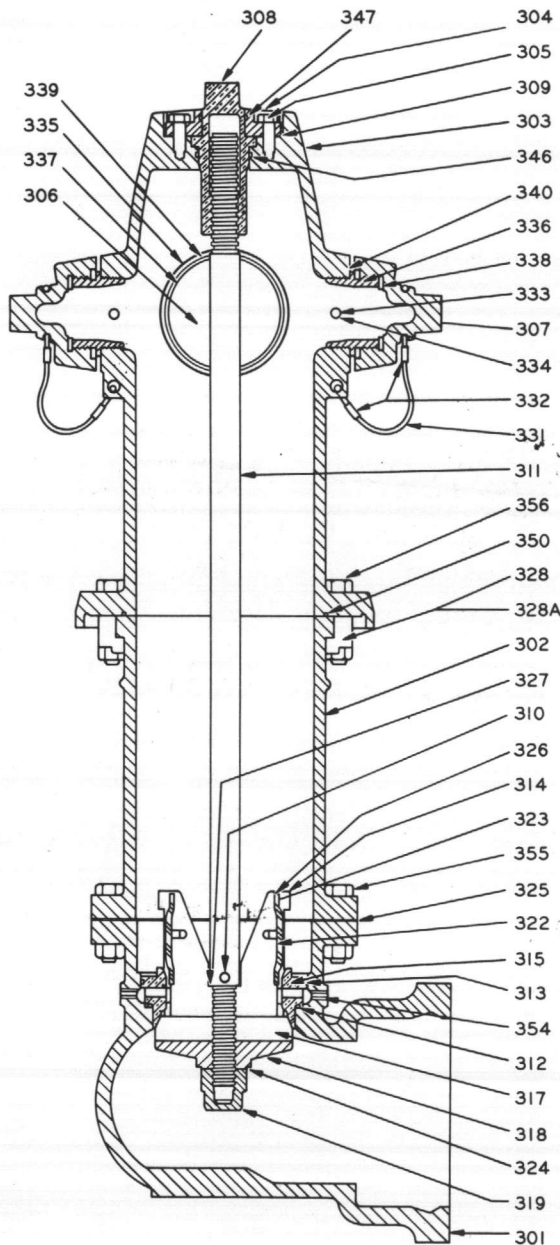
It is important to note that the location of rollers and/or rollers and tracks are always on the side opposite the test plug.





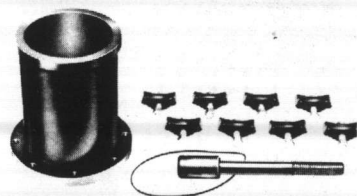
M&H VALVE AND FITTINGS

# The Dresser "300" Hydrant PARTS LIST



Item No.	Description	No. Req'd	Material
301	Hydrant Shoe	1	Cast Iron
302	Standpipe	1	Cast Iron
303	Nozzle Section	1	Cast Iron
304	Top Plate	1	Cast Iron
305	Top Plate Bolt	4	Steel-plated
306	Pumper Nozzle Cap	1	Cast Iron
307	Hose Nozzle Cap	*	Cast Iron
308	Operating Nut	1	Bronze
309	Top Plate Gasket	1	Fibre
310	Stem Lock Pin	1	Steel-plated
311	Stem	1	Steel
312	Seat Ring Gasket—Lower	1	Rubber
313	Seat Ring Gasket—Upper	1	Rubber
314	Main Valve Top Plate	1	Malleable
315	Seat Ring	1	Bronze
317	Main Valve	1	Rubber
318	Valve Bottom Plate	1	Cast Iron
319	Cap Nut	1	Cast Iron
320	Stem Extension	1	Steel Rod, Bronze coupling
322	Drain Valve Facing	2	Rubber
323	Rivets	8	Brass
324	Nut Seal	1	Copper Gasket
325	Standpipe Gasket	1	Rubber
326	Drain Valve Facing Plate	4	Brass
327	Lower Stem Seal Gasket	1	Copper-Asbestos
328	Non-Breakaway Lugs	8	Cast Iron
328A	Breakaway Lugs	8	Cast Iron
331	Nozzle Cap Cable	*	Galvanized Wire
332	Swaged Cable Sleeve	*	Copper
333	Nozzle Lock Pin	*	Steel-zinc plated
334	Nozzle Lock Pin—Ring Gasket	*	Rubber
335	Pumper Nozzle	1	Bronze
336	Hose Nozzle	*	Bronze
337	Pumper Cap Gasket	1	Rubber
338	Hose Cap Gasket	*	Rubber
339	Pumper Nozzle Gasket	1	Fibre
340	Hose Nozzle Gasket	*	Fibre
346	Operating Nut—Ring Gasket	1	Rubber
347	Top Plate Ring Gasket	1	Rubber
350	Standpipe Joint—Ring Gasket	1	Rubber
354	Drain Outlet Bushing	2	Brass
355	Shoe—Standpipe Bolts	8	Steel
356	Ground Flange Bolts	8	Steel
359	Conversion Kit—change from non-breakaway to breakaway in field. (Includes upper stem, lower stem, breakaway coupling assembly, 8 breakaway lugs with nuts and bolts.)		
360	Repair Kit—Traffic Model Only. (Includes breakaway coupling assembly, 8 breakaway lugs with bolts and nuts, and standpipe joint ring gaskets.)		
361	Standpipe Extension—in multiples of 6 inches.		
362	Extension Kit—non-breakaway type. (Includes stem extension with coupling attached, 8 non-breakaway lugs with nuts and bolts, standpipe joint ring gasket, standpipe extension.)		
363	Extension Kit—breakaway type. (Includes standpipe extension, stem, stem coupling assembly, 8 non-breakaway lugs with bolts and nuts, stand pipe joint ring gasket.)		
<b>FIELD TOOLS</b>			
373	Main Valve Disassembly Wrench, 4½" Hydrant		
374	Main Valve Disassembly Wrench, 5¼" Hydrant		
375	Hose Nozzle Wrench		
376	Pumper Nozzle Wrench		
377	Operating Wrench		

\* = as required



Extension Kit is available for extending the Dresser "300" Hydrant when ground level is changed. Included in this kit are one extension barrel section, extension of operating stem, one ring gasket, eight lugs and eight bolts. When ordering, please specify length of extension in multiples of 6" (such as 6", 12", 18", etc.) and size of hydrant. Kit Item Number 362 (Non-Traffic). Kit Item Number 363 (Traffic).

The Dresser "300" Repair Kit is used for the Traffic Model only. It consists of one breakaway coupling, two coupling bolts, eight breakaway lugs, eight flange bolts and one breakaway joint ring gasket. Kit Item No. 360.

Four Shoe Connections Available are Mechanical Joint, Flanged, Asbestos-Cement, and Hub.

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NOFOLK, VIRGINIA 23511

APPROVED

SUBJECT TO

88313

88313/67

CONTRACT NO. 88313  
APPROVAL  
INDICATED  
REQUIRE  
SHALL BE  
PROPER PAYMENT  
COORDINATION OF

OF  
MENT  
INATION  
RATOR  
FRAYING  
'S & WEIGHTS,  
ETC. AS REQUIRED.

DATE JUL 16 1968

WALLIN  
RADM, CEC, USN  
COMLANAVFACENGCOM

CERTIFIED PRINT

PRODUCT ENGINEERING

appv'l file no. 249

M & H VALVE & FITTINGS CO.  
DIVISION OF DRESSER INDUSTRIES INC.  
ANNISTON, ALABAMA

By S Date Issued 6-10-68



M & H VALVE AND FITTINGS

# M & H GATE VALVES

## A.W.W.A. CLASS C NRS

IRON BODY, BRONZE MOUNTED, DOUBLE DISC, PARALLEL SEAT, OR SOLID WEDGE  
 2" TO 12"—200 LBS. WORKING PRESSURE, 400 LBS. HYDROSTATIC TEST  
 14" TO 42"—150 LBS. WORKING PRESSURE, 300 LBS. HYDROSTATIC TEST

### Parts List

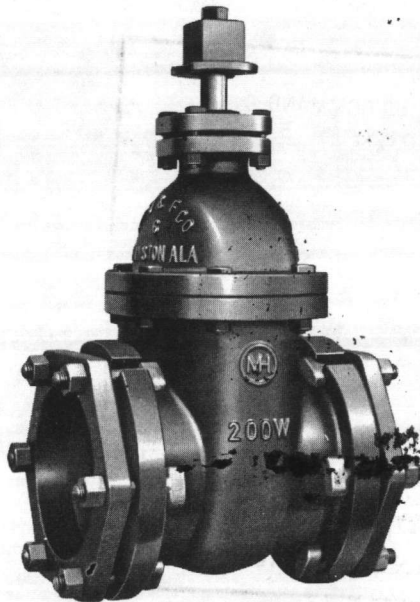


Figure 67-M  
 Non-Rising Stem, Mechanical Joint Ends

### END STYLES

Figure Numbers, NRS

Double Disc	Solid Wedge	
67	67W	Both ends Hub
67F	67FW	Both ends Flanged
67S	67SW	Both ends Screwed
67M	67MW	Both ends Mechanical Joint
67AC	xxx	Both ends Asbestos-Cement
67U	xxx	Both ends Universal
67FM	xxx	One end flanged, other end Mechanical Joint
67HF	xxx	One end Hub, other end Flanged
67HS	xxx	One end Hub, other end Spigot
67C	67CW	Both ends Hub for Concrete Pipe

Part No.	Part	No. Re- q'd	Material
For Double Disc or Solid Wedge			
1	Stem	1	Manganese Bronze
2	Body	1	Cast Iron
3	Gland Bolts and Nuts	2	Steel Bolts Bronze Nuts
4	Body Ring	2	Bronze
5	Operating Nut	1	Cast Iron
6	Bonnet	1	Cast Iron
7	Stuffing Box Bolts & Nuts	4	Steel
8	Packing		Lubricated Flax
9	Gland	1	2"-2 1/2" Iron; 3" 12" Bronze; 14" & Larger Cast Iron
10	Gland Follower	1	Bronze Bushed Cast Iron
11	Stuffing Box	1	14" and Under Cast Iron; Over 14", Cast Iron Bronze Bushed
12	Bonnet Gasket	1	Asbestos
13	Stuffing Box Gasket	1	Asbestos
14	Bonnet Bolts & Nuts		Steel
For Double Disc Only			
15	Stem Nut	1	Bronze
16	Spreader	2	Bronze
17	Disc	2	2 1/2" and Under, Bronze; Over 2 1/2", C. Iron w/ Bronze Rings
For Solid Wedge Only			
	Wedge	1	4" and Under, Bronze; Over 4", C. Iron w/ Bronze Rings

NOTE: Wedge for Solid Wedge Valves takes place of Parts Nos. 15, 16 and 17 as shown for Double Disc Valves.

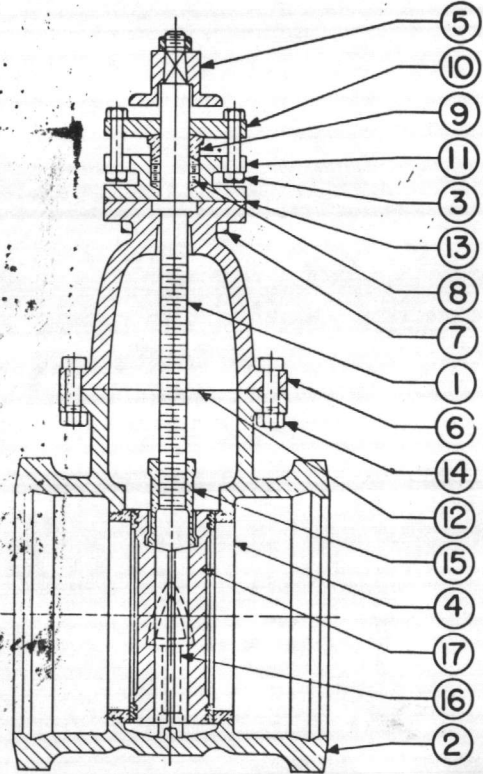


Figure 67, Hub Ends

### ACCESSORIES

	Page
Hydraulically Operated	47, 48, 49, 50
Gearing	21, 22
By-Passes	21, 22
Square Bottom	46
Motor Operated	51
Floor Stands	59, 60, 61
Extension Stems	59
Clean-outs	52
Chain Wheels	52
Rollers, Tracks and Scrapers	23
Indicators	52
Valve Boxes	26, 27, 28, 29
Socket Wrench	29

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NO FOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT NO. 88313 OF 88313/67  
APPROVAL OF MATERIAL AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY. THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC. AS REQUIRED.

DATE JUL 16 1968

H. N. WALLIN  
RADM, CEC, USN

COMLANTNAVFACENGCOM

**CERTIFIED PRINT**

PRODUCT ENGINEERING

appv'l file no.

249

M & H VALVE & FITTINGS CO.  
DIVISION OF DRESSER INDUSTRIES INC.  
ANNISTON, ALABAMA

By

S

Date Issued

6-10-68

# M & H GATE VALVES

## A.W.W.A. CLASS C

### DOUBLE DISC, PARALLEL SEAT OR SOLID WEDGE

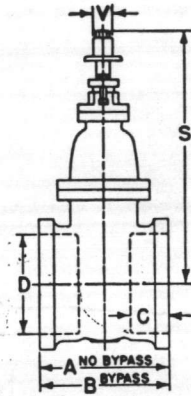


Figure 67  
NRS Hub

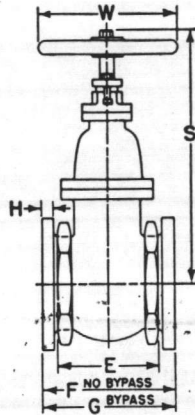


Figure 67-S NRS Screwed  
Figure 67-F NRS Flanged

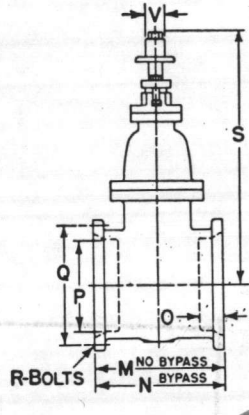


Figure 67-M  
NRS Mechanical  
Joint

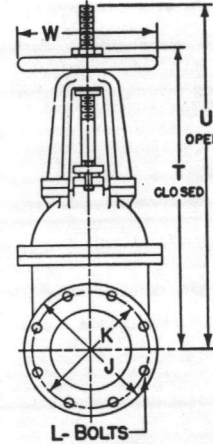


Figure 68-F  
OS&Y Flanged

TABLE 1—DIMENSIONS IN INCHES

Size of Valve		2	2½	3	4	5	6	8	10	12	14	16	18	20	24	30	36	42
Hub	A No By-Pass	7¾	—	10¾	12	12¾	12¾	13¼	14	14½	15¼	16⅞	16¾	17¼	25¼	28½	32½	36¾
	B With By-Pass	—	—	—	—	—	—	—	—	20½	19½	21⅞	22¾	22¾	25¼	28½	32½	36¾
	C Hub Depth	2½	—	3½	3¾	4	4	3¾	4	4	4	4	4	4	4	4½	4½	5
	D I. D. of Hub	3.50	—	4.76	5.80	6.70	7.90	10.10	12.20	14.80	16.45	18.80	20.92	23.06	27.32	33.75	40.00	46.58
	X Laying Length No By-Pass	2¾	—	3¾	4¼	4¾	4¾	5½	6	6½	7¼	8⅞	8¾	9¼	17¼	19½	23½	26¾
Scr'd	E End to End	5⅞	5⅞	6⅞	7¾	8½	8½	—	—	—	—	—	—	—	—	—	—	—
	F No By-Pass	7	7½	8	9	10	10½	11½	13	14	16	18½	20¼	20¼	24¼	28¾	33½	38½
Flanged	G With By-Pass	—	—	—	—	—	—	—	—	17	17	20¼	20¼	20¼	24¼	28¾	33½	38½
	H Flange Thickness	⅝	⅞	¾	⅞	⅞	1	1⅞	1⅞	1¾	1⅞	1⅞	1⅞	1⅞	1⅞	2⅞	2⅞	2⅞
	J Flange Diameter	6	7	7½	9	10	11	13½	16	19	21	23½	25	27½	32	38¾	46	53
	K Bolt Circle Diameter	4¾	5½	6	7½	8½	9½	11¾	14¼	17	18¾	21¼	22¾	25	29½	36	42¾	49½
	L Number and Diameter of Bolts	4-⅝	4-⅝	4-⅝	8-⅝	8-¾	8-¾	8-¾	12-⅞	12-⅞	12-1	16-1	16-1½	20-1½	20-1¼	28-1¼	32-1½	36-1½
	M No By-Pass	8	—	8¾	9¼	—	10½	11½	12½	13½	20	22	24	26	31	30½	39	41
Mech. Joint	N With By-Pass	—	—	—	—	—	—	—	—	20	25	25½	26	31	30½	39	41	
	O Hub Depth	2½	—	2½	2½	—	2¾	3	3½	3½	3½	3½	3½	3½	4	4	4	
	P I. D. of Hub	2.80	—	4.06	5.00	—	7.00	9.20	11.31	13.40	15.59	17.54	19.79	21.74	26.09	32.34	38.75	44.84
	Q Bolt Circle Diameter	4¾	—	6¾	7½	—	9½	11¾	14	16¼	18¾	21	23¼	25½	30	36½	43¼	50⅞
	R Number and Diameter of Bolts	2-⅝	—	4-⅝	4-¾	—	6-¾	6-¾	8-¾	8-¾	10-¾	12-¾	12-¾	14-¾	16-¾	20-1	24-1	28-1¼
	Y Laying Length No By-Pass	3	—	3¾	4¼	—	5	5½	6¾	6¾	13	18	18½	19	24	22½	31	33
Asbestos Cement	AA End to End	—	—	—	11¼	—	12	12⅞	13½	14½	16¼	17¾	—	—	—	—	—	—
	BB Bell Depth	—	—	—	3½	—	3½	3⅝	3⅝	4	4½	—	—	—	—	—	—	
	CC Laying Length	—	—	—	4¼	—	5	5⅝	6¼	6¼	7¼	8⅞	—	—	—	—	—	
All Styles	S Conv. Packing Double Disc	10⅞	12⅞	16⅞	17¾	19⅞	21⅞	24⅞	29½	33⅞	36⅞	43⅞	47⅞	50⅞	59¾	70⅞	81⅞	—
	S Conv. Packing Solid Wedge	10⅞	12⅞	16⅞	17¾	19⅞	21⅞	24⅞	29½	33⅞	36⅞	43⅞	47⅞	50⅞	59¾	74¼	84½	—
	S "O"-Ring Packing Double Disc	9⅞	11⅞	14⅞	16⅞	18⅞	19¾	22⅞	27⅞	30⅞	33⅞	39⅞	43⅞	47⅞	54	65⅞	—	—
	T *Center Valve—Top Stem (Closed)	11½	13½	15	18⅞	21⅞	24	30¾	37½	42¾	49¼	57½	64½	68½	82¾	100	116⅞	—
	U *Center Valve—Top Stem (Open)	13½	15½	18½	22½	27¼	30⅞	39¼	48	55¼	64¼	74½	83½	89½	107¾	131	153⅞	—
	V Operating Nut Square	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	W Wheel Diameter	6½	6½	7½	9	12	12	14	16	18	20	22	24	24	30	30	36	36
Turns to Open—NRS	6¾	8¼	10	12¾	10¾	19⅞	25½	31⅞	37¾	44	50¾	56	62½	49¾	62	74½	86¼	
Turns to Open—OS&Y	7	8	10	9	11	13	17	21	25	29	34	38	42	50	62½	74½	87	

NOTE—Gate valves for use with 2¼" mechanical joint pipe (not listed) can be supplied.  
\*Add 4¾" for 30", 3¼" to 36" solid wedge valves only.

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NO. 88313 88313/67  
APPROVAL OF MATERIALS AND EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY — THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC. AS REQUIRED.

H. N. WALLIN  
JUL 16 1960 RADM, CEC, USN *S.M.*  
DATE COMLANAVFACENGCOM

**CERTIFIED PRINT**

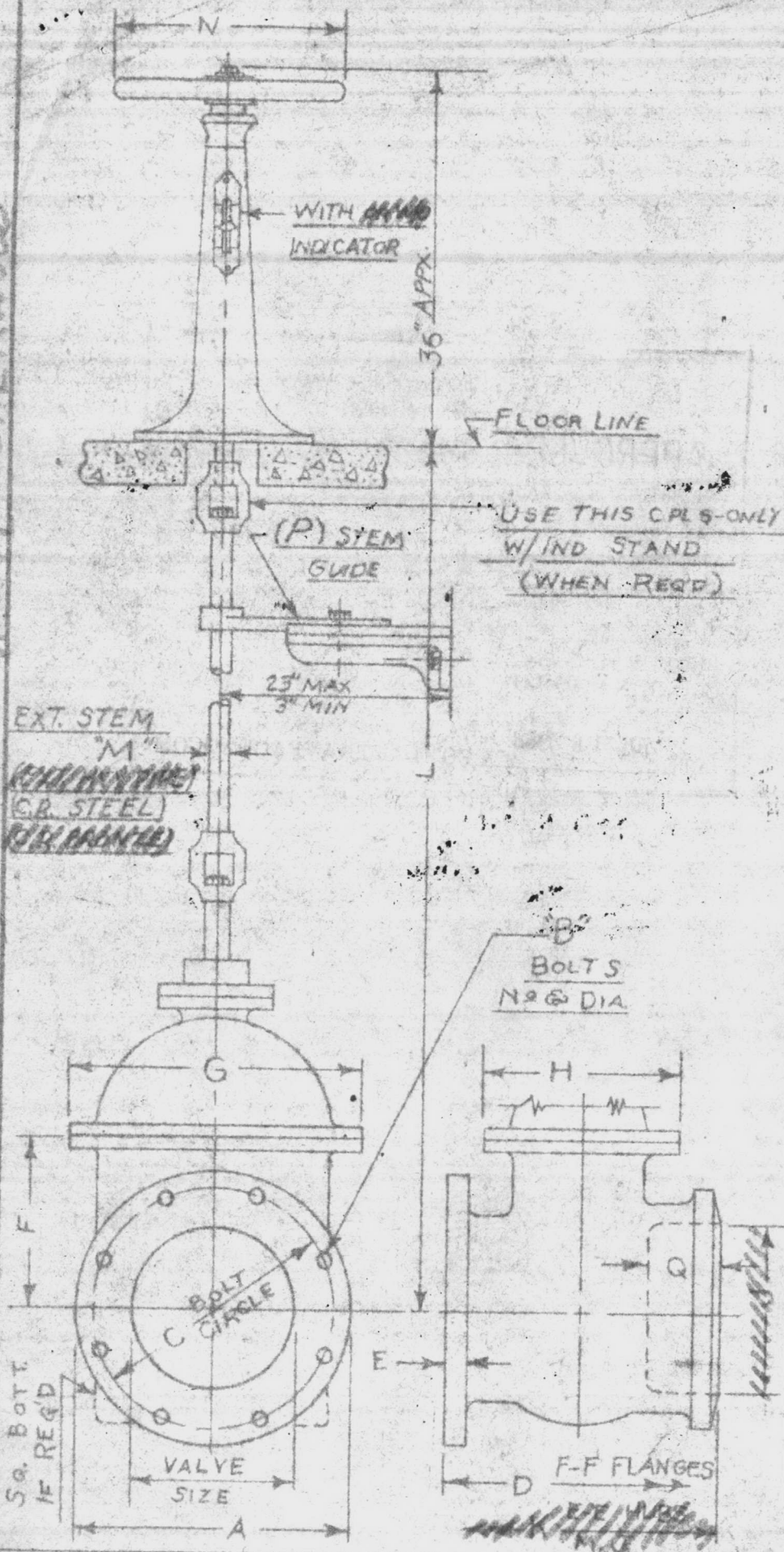
PRODUCT ENGINEERING

appv'l file no. 249

M & H VALVE & FITTINGS CO.  
DIVISION OF DRESSER INDUSTRIES INC.  
ANNISTON, ALABAMA

By 5 Date Issued 6-10-60

ATLANTIC DIV. NAVAL FC. 6-10-68 # 249 SHERWOOD



ITEM No.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
No. REGD	1	1													
VALVE SIZE	12"	10"													
	19" 12-3/8"	19" 12-3/8"	17" 14-1/4"	14" 13-1/2"	13" 11-1/2"	19" 11-1/2"	19" 11-1/2"	11" 11-1/2"			15'-8"	14" 18" No	14" 18" No		
												13'-2"	15" 15"		

M & H VALVE & FITTINGS COMPANY  
 DIVISION OF DRESSER INDUSTRIES, INC.  
 ANNISTON, ALABAMA

NRS. O-RING GATE VALVE W/ EXT  
 STEM & INDICATING OR NON IND. FL STD

DATE 6-26-63 DRAWN BY LAND  
 SCALE NONE TRACED BY TEH  
 DWG. No. X-9191 CHECKED BY

WORK TO DIMENSIONS & REPORT ANY ERRORS



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NBY 88313 SPEC 88313/67  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY — THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC. AS REQUIRED.

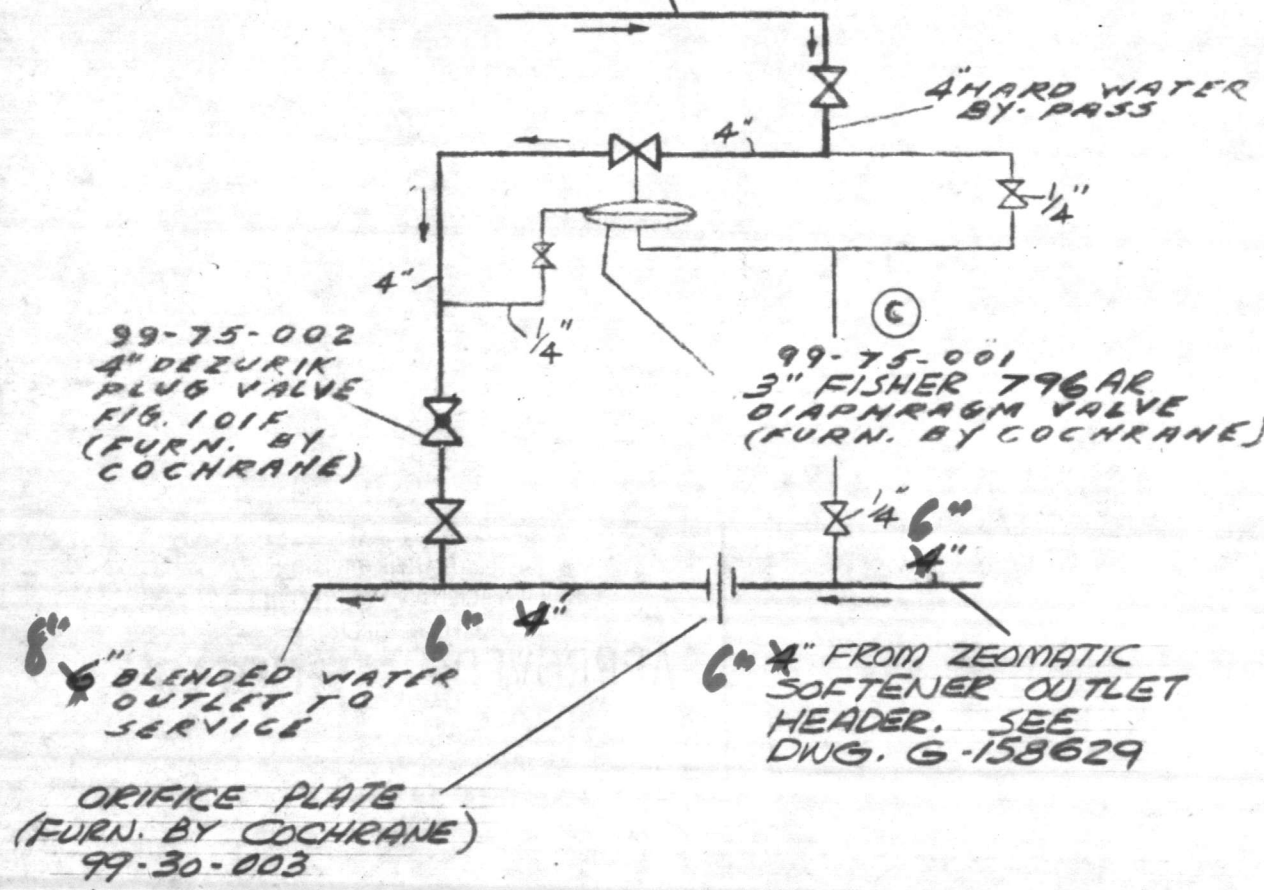
DATE JUL 16 1968 H. N. WALLIN  
RADM, CEC, USN *[Signature]*  
COMLANAVFACEENGCOM

SCALE ~	DRAWN WTM	DATE 7-23-68	CHKD. WTM	FIRST USED ON S.O. 1396-68	APPD. <i>[Signature]</i>	LTR.	DATE	REVISION	ENG. APP.
------------	--------------	-----------------	--------------	-------------------------------	-----------------------------	------	------	----------	-----------

This drawing, property of COCHRANE is conditionally loaned to the customer and/or his authorized engineers, who by receiving it agree not to reproduce or copy it, in whole or in part, or to make any use of it that is or may be injurious to COCHRANE and to return it upon request.

COCHRANE DIVISION - CRANE CO.

6" FROM FILTERED WATER  
OUTLET HEADER.  
SEE DWG. F-158550



NOTHING SHOWN ON THIS DRAWING IS TO BE CONSTRUED AS INCREASING THE MATERIAL TO BE SUPPLIED BY COCHRANE DIV. OVER THAT SPECIFIED IN THEIR CONTRACT. NO PIPING OR EQUIPMENT FURNISHED BY COCHRANE DIV. UNLESS OTHERWISE SPECIFIED ON DRAWING.

Ⓒ DENOTES CERTIFIED PRINTS WILL BE FURNISHED BY COCHRANE DIV., CRANE CO.

S.O. 1396-63	DATE JUL 24 1968
THIS DRAWING IS FOR APPROVAL RETURN ONE PRINT IMMEDIATELY TO AVOID DELAY IN FABRICATION	
CERTIFIED CONSTRUCTION DRAWING FOR YOUR ORDER NO.	
<i>J. J. Haussner Jr.</i>	
DESTROY PREVIOUS COPIES THIS PRINT DUPLICATES PRINTS PREVIOUSLY FORWARDED YOU EXCEPT FOR CHANGES AS SPECIFIED IN REVISION BLOCK	

COCHRANE DIVISION CRANE CO. PHILADELPHIA 32, PA.	ASSEMBLY HARDWATER BY-PASS	SIZE	NUMBER	CHG. LTR.
		C	158801	

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED: "AS NOTED"**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT NUMBER **88313** **88313/67**  
APPROVED FOR THE CONTRACTOR'S COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT  
INDICATED BY THE CONTRACTOR'S STATEMENT OF WORK AND THE CONTRACTOR'S  
REQUIREMENTS FOR THE CONTRACTOR'S STATEMENT OF WORK AND THE CONTRACTOR'S  
SHALL BE RESPONSIBLE FOR THE CONTRACTOR'S STATEMENT OF WORK AND THE CONTRACTOR'S  
PROPER PHYSICAL INSTALLATION OF WEIGHS,  
COORDINATION OF TRAFFIC, ETC. AS REQUIRED.

H. N. WALLIN

**AUG 15 1968**

RADM, CEC, USN

DATE

COMLANTRAVFACENGCOM *SM*



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED: "AS NOTED"**

SUBJECT TO THE REQUIREMENTS OF

CENTER NUMBER 88313

88313/67

APPROPRIATE EQUIPMENT  
INDICATION INFORMATION  
REQUIREMENTS FACTOR  
SHALL BE REVIEWED FOR LANDING  
PROPER PHYSICAL INSTALLATION OF WEIGHTS,  
COORDINATION OF TRAFFIC LIGHTS AS REQUIRED.

H. N. WALLIN

DATE **AUG 15 1968**

RADM, CEC, USN

COMLANTNAVFACENGCOM



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED: "AS NOTED"**

SUBJECT TO THE REQUIREMENTS OF

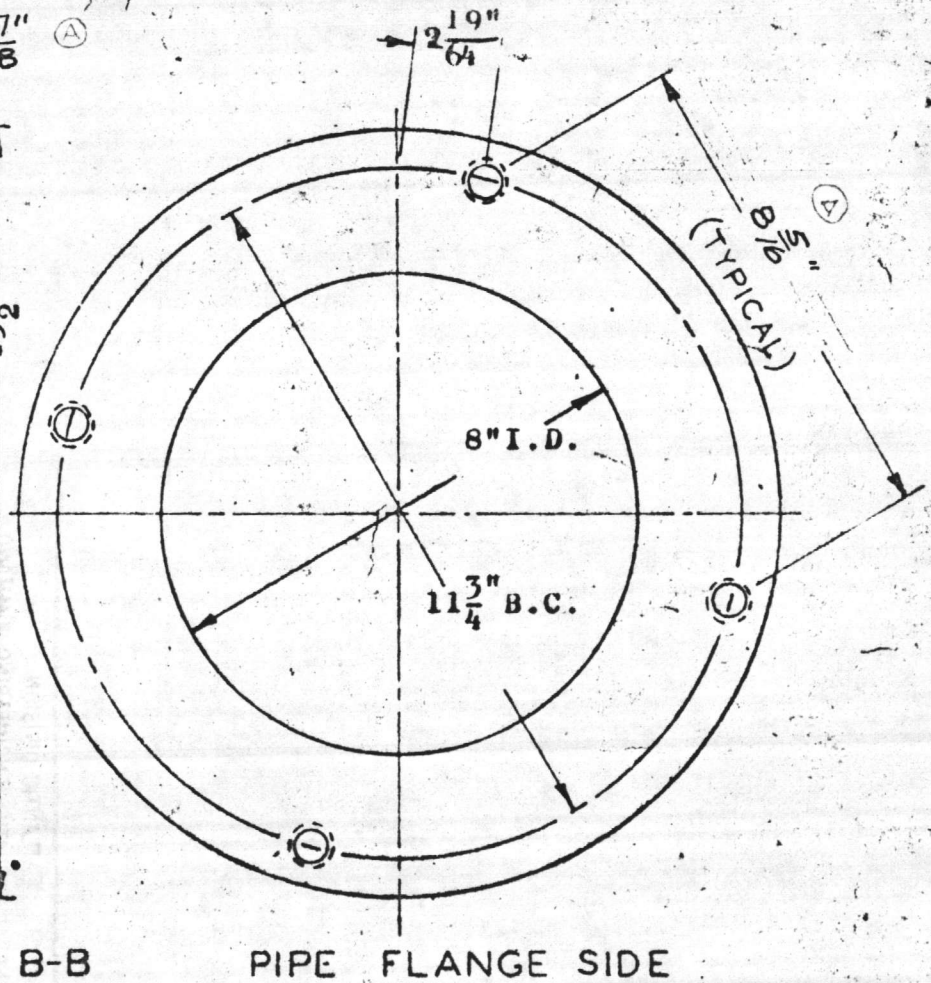
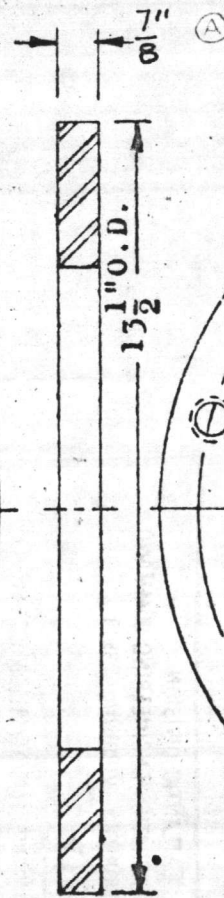
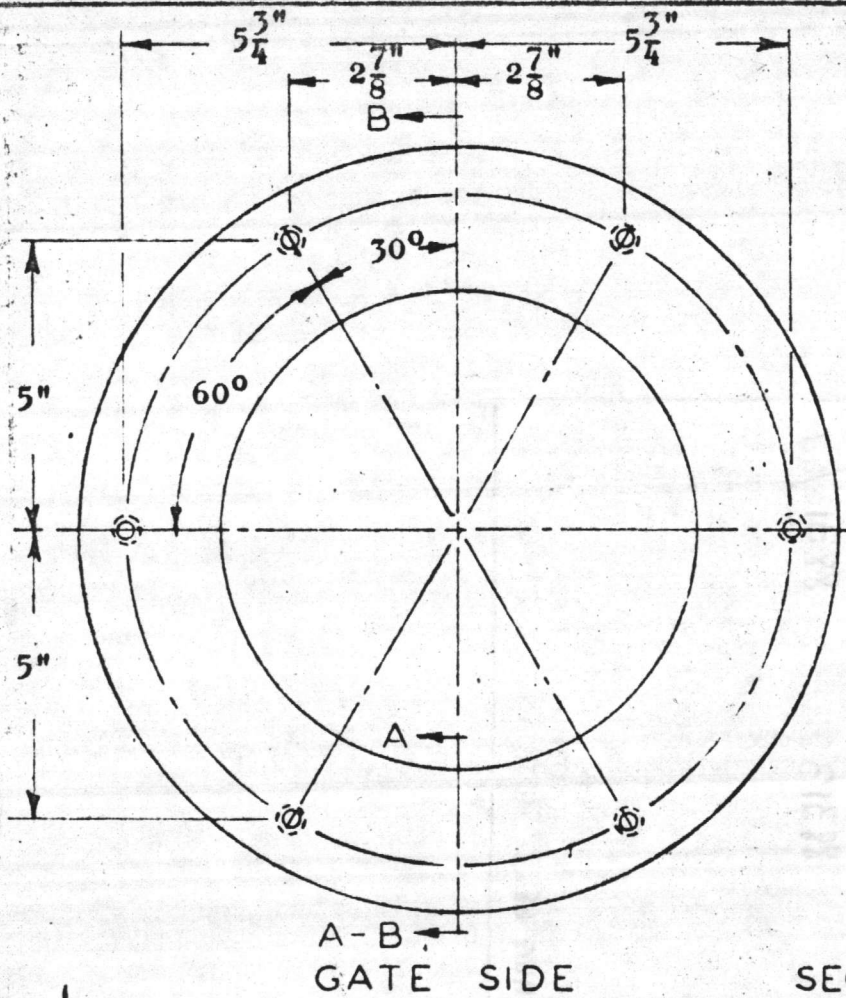
CONTRACT Nbv 88313 SPEC 88313/67

APPROVAL OF MATERIAL AND EQUIPMENT  
INDICATES COMPLIANCE WITH SECRETARIAT  
REQUIREMENTS ONLY — THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES ETC. AS REQUIRED.

H. N. WALLIN

RADM, CEC, USN *AGM*

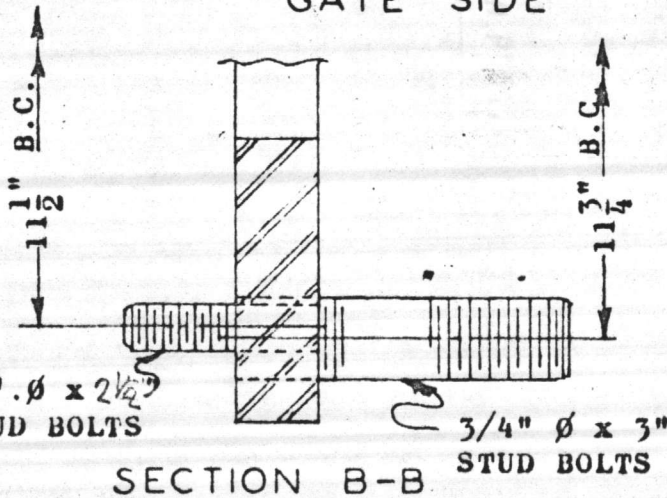
DATE 19 AUG 68 COMLANTNAVFACENGCOM



SECTION B-B

PIPE FLANGE SIDE

ONE REQ'D.



Metal Products Division  
Armco Steel Corporation  
P.O. Box 2170, Denver 1, Colorado

STEEL ADAPTING FLANGE FOR ATTACHING  
8" DIA. MODEL 20-10C GATE TO 125#  
STANDARD PIPE FLANGE

DIV. NO.  
13-8-0274

REVISED	DRAWN BY <i>ED</i>	TRACED BY	SCALE	ORDER NO. 48-62625
	CHECKED BY <i>RLC</i>	APPROVED	DATE 8-7-68	DWG. NO. 62625101



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT NO. 88313 SPEC 88313/67  
APPROVED FOR MATERIALS AND/OR EQUIPMENT  
INDICATED BY SPECIFICATION  
REQ. THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER DIMENSIONS & WEIGHTS  
COORDINATION OF TOLERANCES, ETC. AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN

DATE 19 AUG 68 COMLANTNAVFACENGCOM



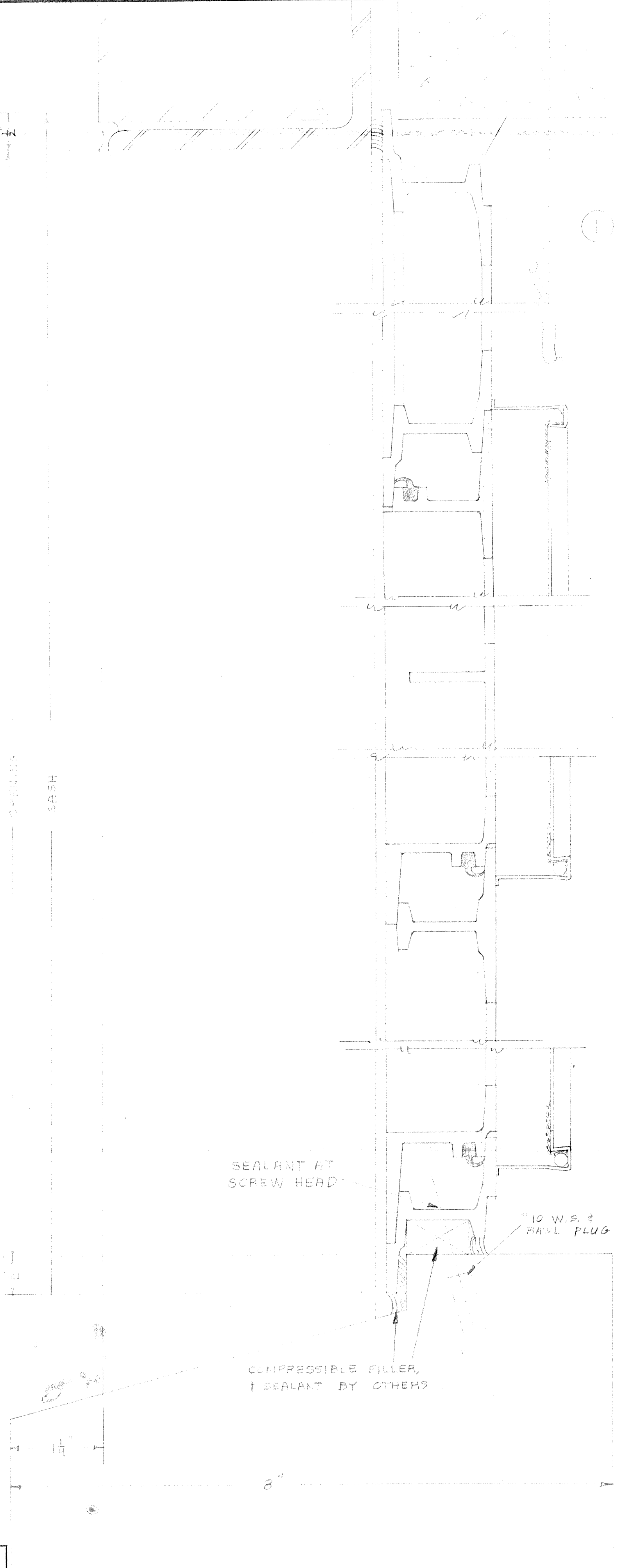


A

B

C

D



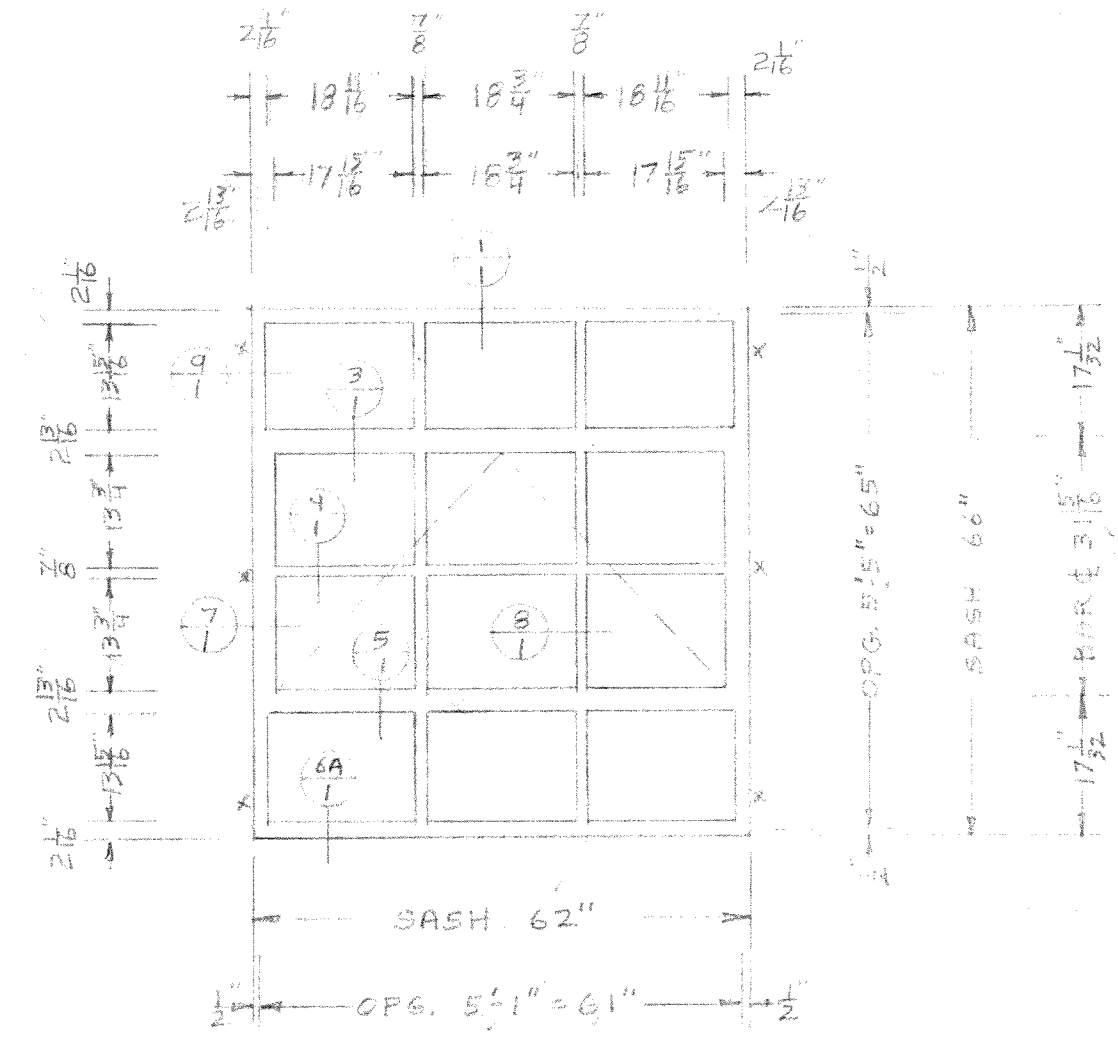
3

4

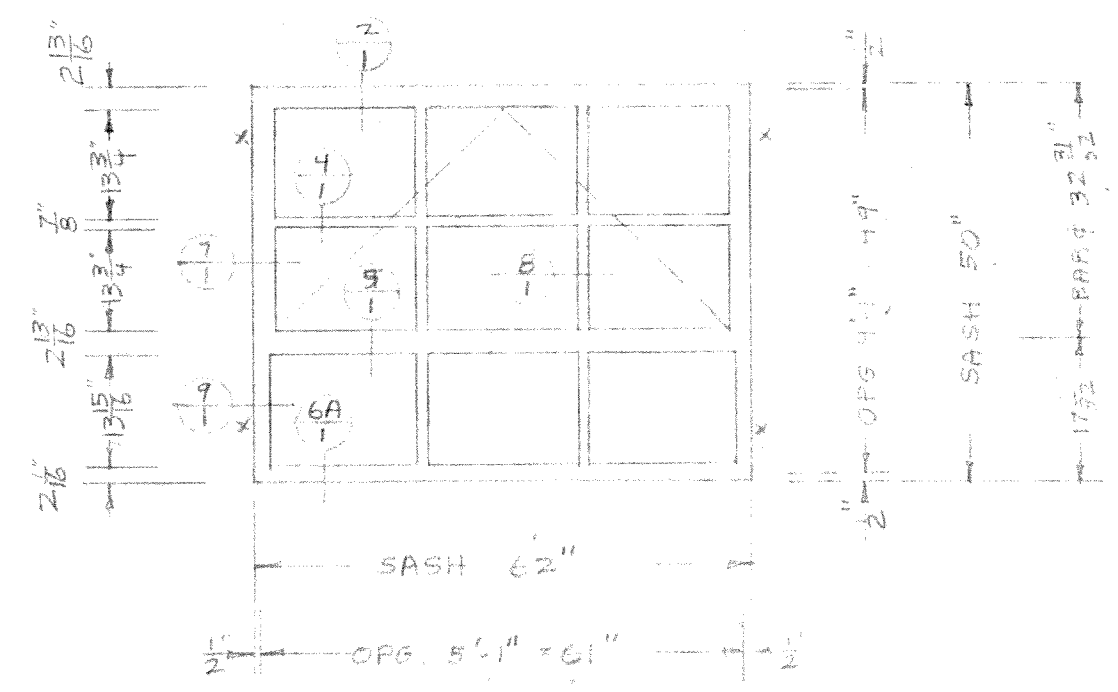
5

6

6A

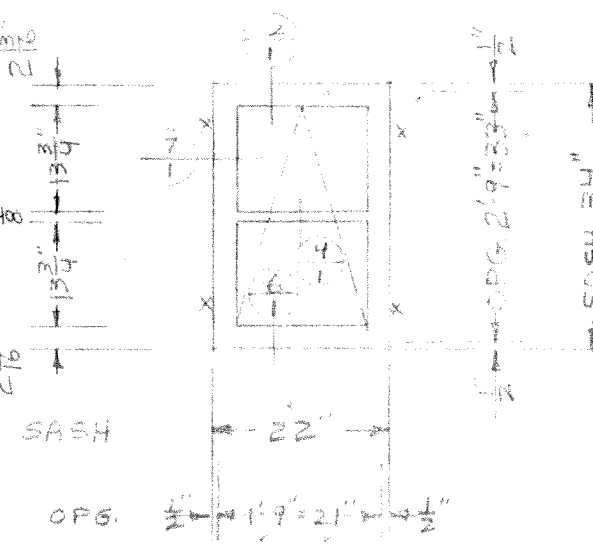


3 REQ'D (A)  
2 - FRONT  
1 - REAR ELEV.

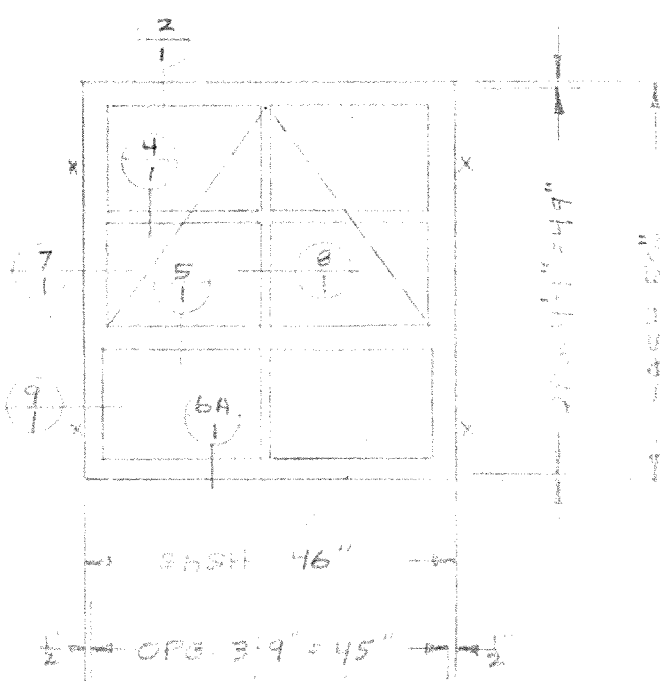


1 REQ'D (D)  
1 - REAR ELEV.

SEALANT BY OTHERS



1 REQ'D (C)  
FRONT EL.



3 REQ'D (B)  
1 - FRONT ELEV.  
1 - LEFT ELEV.  
1 - REAR ELEV.

REQ'D	REPORT OF PRINTS	DATE	SHEET
6			

DATE	BY	NO.	REVISIONS

**APPROVAL DELAY RESULTS IN FABRICATION DELAY**

**HARDWARE:**  
ALL VENTS  
#64 CAM FASTENER (POL. BRONZE)  
#10 W.S. PAWL PLUG  
SCREWS SHALL BE #10 OR HEAVY DUTY  
SIDEWAYS AND FITTED WITH SLIDING  
BRASS FRICTION WHEELS

ALL VENTS UNFINISHED  
STEEL FRAMED SCREENS SHALL HAVE  
ONE COAT PRIMER AND BE FILLED WITH  
18 X 18 MESH ALUMINUM WIRE SCREEN

**FINISH:**  
PAINTED AND PRIME ONE COAT  
DUPONT'S SPECIAL PRIMER BASED ON:

ERECTION: CHEEBS MASTIC: OTHERS  
CAULKING: CHEEBS

**IMPORTANT**  
THIS DRAWING COVERS ONLY THE WORK IN HOPE'S CONTRACT. HOPE'S DO NOT ASSUME OR ACCEPT ANY RESPONSIBILITY FOR MEASUREMENTS AFFECTING THE WORK OF OTHER CONTRACTORS. GLASS CONTRACTORS SHOULD MAKE TEMPLATES AND CHECK ALL MEASUREMENTS FROM COMPLETED WORK AND NOT FROM THIS DRAWING.

DETAILS OF STONE, STRUCTURAL STEEL AND OTHER MATERIALS RELATED TO OUR WORK, BUT NOT FURNISHED BY US, HAVE BEEN INDICATED ON OUR SHOP DRAWINGS TO THE BEST OF OUR ABILITY AND REFLECT OUR INTERPRETATION OF THE ARCHITECTURAL DRAWINGS AND OUR CONTRACT REQUIREMENTS.

TO ASSURE PROPER FITTING AND COORDINATION OF OUR WORK WITH OTHER TRADES, OUR SHOP DRAWINGS MUST BE CHECKED BY CONTRACTOR AND/OR ARCHITECT AGAINST DRAWINGS PROVIDED BY THE SUPPLIERS OF SUCH MATERIALS AS RELATE TO OUR WORK BUT WHICH ARE NOT TO BE FURNISHED BY US.

**HOPE'S WINDOWS, INC.**  
JAMESTOWN, NEW YORK

APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_  
FIRM \_\_\_\_\_  
FIRM \_\_\_\_\_

SCALE  
SECTIONS \_\_\_\_\_ ELEVATIONS \_\_\_\_\_  
ALL ELEVATIONS VIEWED FROM EXTERIOR UNLESS OTHERWISE SPECIFIED

DRAWN BY: WJE  
CHECKED BY: \_\_\_\_\_  
DATE \_\_\_\_\_

CONTRACT NO. 31100  
SHEET \_\_\_\_\_ R  
COMPLETE SET INCLUDES \_\_\_\_\_

BUILDING \_\_\_\_\_  
ARCHITECT \_\_\_\_\_

OFFICE OF THE  
OFFICER IN CHARGE OF CONSTRUCTION  
CAMP LEJEUNE, NORTH CAROLINA

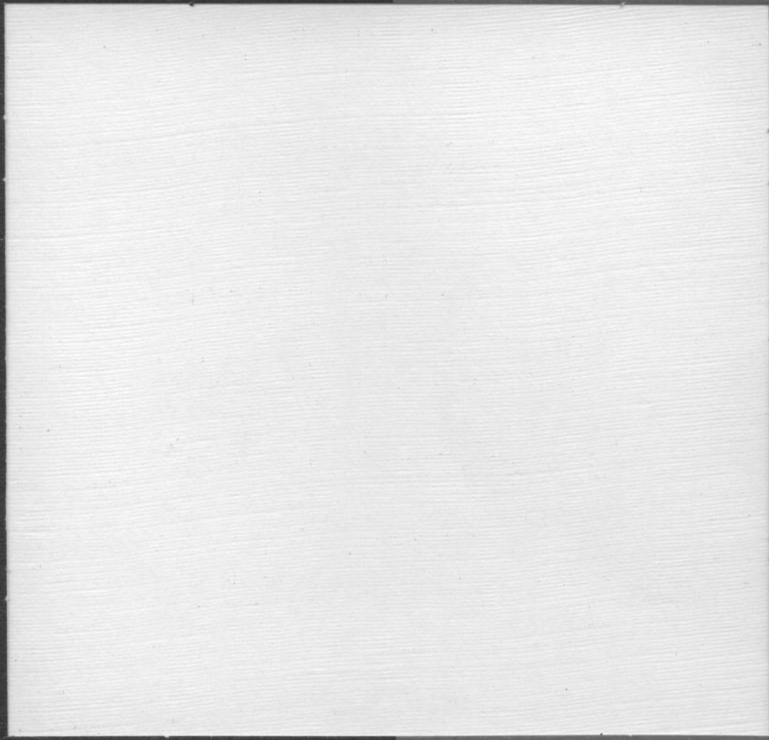
**APPROVED**

CONTRACT NBY 88313 SPEC. NO. 88313/17  
DATE: 10-15-68 *Bill*

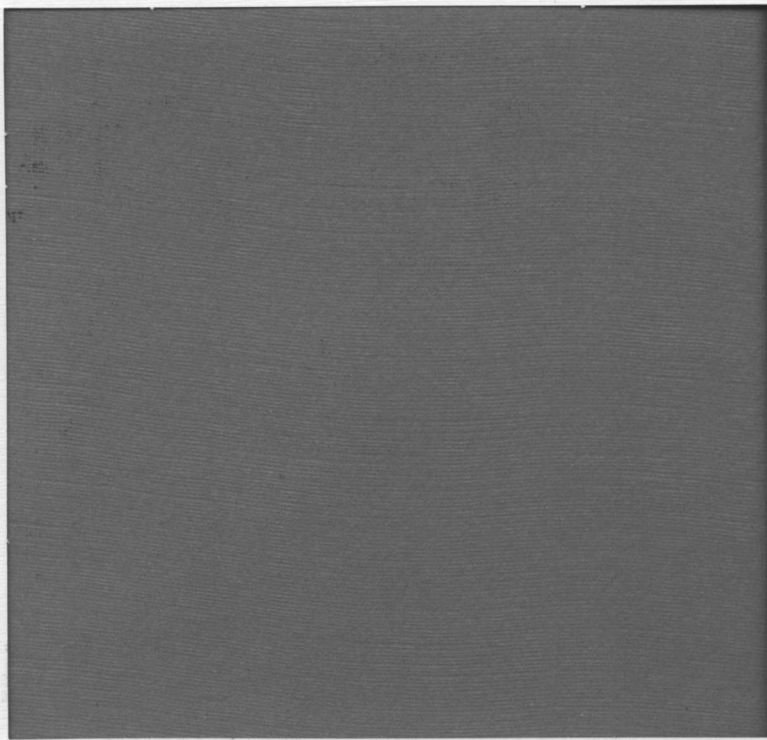
J. W. UPDEGROVE  
CAPT. CEC, USN  
Officer in Charge  
of Construction

1108371

 AMERICAN  
STANDARD



1108571



# specification for

OWNER Brown Construction Company

ADDRESS "Camp Lejune Job"

NAVAL DIVISION  
NAVAL ENGINEERING COMMAND  
FALLS CHURCH, VIRGINIA 22041

REQUIREMENTS OF  
SPEC 88313 SPEC 88313/67  
MATERIALS AND/OR EQUIPMENT  
CONFORMANCE WITH SPECIFICATION  
SPEC 88313/67 - THE CONTRACTOR  
IS RESPONSIBLE FOR PROVIDING  
DIMENSIONS & WEIGHTS,  
GRADES, ETC, AS REQUIRED.  
H. N. WALLIN *HW*  
RADM, CEG, USN  
COMLANTNAVFACENGCOM

submitted by

HAJOCA CORPORATION

NAVAL

**APPROVE**

SUBJECT TO

CONTRACT NUMBER  
APPROVAL OF  
INDICATES CO  
BIG EVENT  
SHOULD BE  
PROPER PHYS  
COORDINATION

DATE

7/18/68

date 7-15-68



# AMERICAN-Standard

PLUMBING AND HEATING DIVISION





# Luxaire

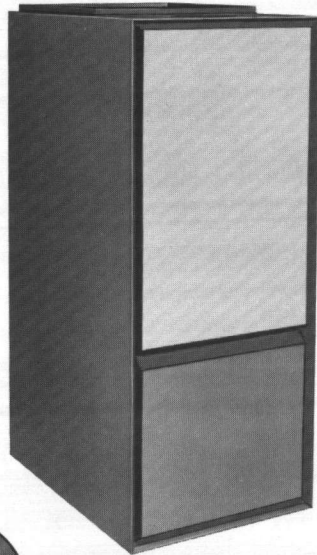
78,400 to 145,600 BTUH Bonnet Output

2000-A(REV. 2)

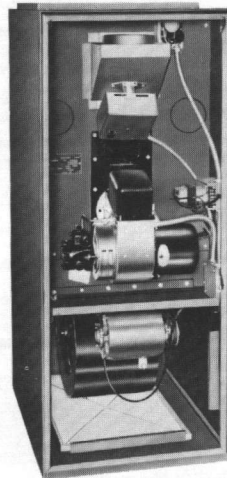
JUNE, 1966

Replaces 2000-A(REV. 1)  
(August, 1965)

## SERIES "OU" OIL FIRED UPFLOW FURNACE

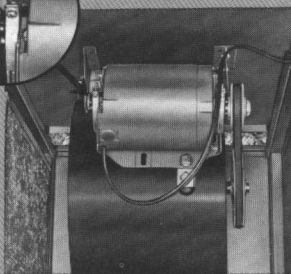
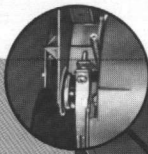


**NEW FEATURE!**  
HINGED  
UPPER PANEL  
OPENS WIDE AND  
IS REMOVABLE FOR  
COMPLETE  
ACCESSIBILITY

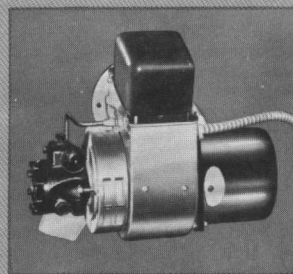


### PRODUCT FEATURES

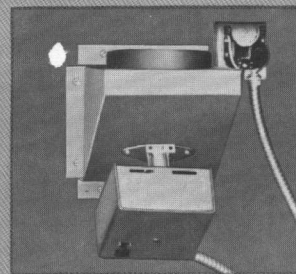
- **CABINET STYLING** presents a totally new innovation in warm air furnace design. Sturdily constructed of heavy gauge steel, the charcoal gray casing is handsomely accented with misty green enamel and insulated with aluminum foil faced fiberglass.
- **ALL MOTORS**, thermally protected against overload, are 115 Volt; single phase; 60 cycle.
- **FAN AND LIMIT CONTROL**, provides adjustable settings for varying system conditions.
- **PRIMARY CONTROL** all OU080 models use a burner-mounted cad. cell and relay as the primary control. All other models use a stack-mounted relay.
- **COOLING FAN RELAY** is factory mounted and wired on heating/cooling models, simplifying installation. OU080 Direct drive features automatic blower volume control.
- **SIDE OR BOTTOM AIR INLET** is facilitated with starting knockouts in the sides and bottom of cabinet.
- **WARRANTY** is extended on all components for one (1) year and an additional nineteen (19) years on the heat exchanger. Refer to Warranty Certificate for details.
- **FACTORY** assembled and wired.
- **U. L. LISTED** under Underwriters Laboratories Label Service.
- **RATINGS** are in accordance with U.S. Dept. of Commerce Commercial Standards No. CS-195.
- **SPECIFICATIONS** ARE SUBJECT TO CHANGE WITHOUT NOTICE.



Resilient Mount Belt Drive Blower Motor



Quiet Gun Type Oil Burner



Factory Installed Primary Control

### RATINGS AND SPECIFICATIONS

MODEL NUMBER	GPH INPUT	BTUH BONNET	TYPE MOTOR NO. SPEEDS	BLOWER DRIVE	FILTER(S)	APPROX. SHP. WGT. - LBS.
OU080AA	0.70	78,400	PSC-2	Direct	(1) 16x25x1	280
OU080FA	0.70	78,400	PSC-3	Direct	(1) 16x25x1*	283
OU080MA	0.70	78,400	FH-1	Belt	(1) 16x25x1	285
OU080RA	0.70	78,400	FH-1	Belt	(1) 16x25x1*	288
OU100MA	0.90	100,800	FH-1	Belt	(2) 16x16x1	312
OU100RA	0.90	100,800	FH-1	Belt	(2) 16x16x1	315
OU100TA	0.90	78,400	FH-1	Belt	(2) 16x16x1*	315
OU125MA	1.10	123,200	FH-1	Belt	(2) 16x16x1*	335
OU125TA	1.10	123,200	FH-1	Belt	(2) 16x16x1*	338
OU150MA	1.30	145,600	FH-1	Belt	(1) 16x20x1 (1) 20x20x1	357
OU150UA	1.30	145,600	FH-1	Belt	(1) 16x20x1* (1) 20x20x1*	360

PSC - Permanent Split Capacitor

FH - Split Phase

\*High Velocity (cleanable) Filter(s)

Luxaire

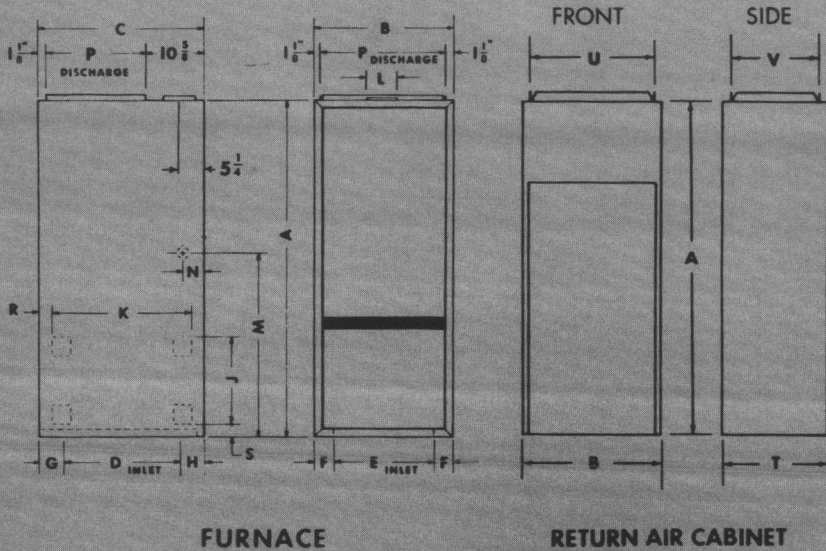
HEATING  
AND AIR CONDITIONING  
UNITS

Luxaire

LUXAIRE, INC.  
ELYRIA, OHIO

# DIMENSIONS - INCHES

MODEL NUMBER	A	B	C	BOTTOM INLET		F	G	H	SIDE INLET		DIA. L	M	N	DISCH.		R	S
				D	E				J	K				P			
OU080	54	22	31-1/2	22	14	4	1-3/4	7-3/4	14	22	6	20-3/4	4-1/4	19-3/4	1-3/4	2	
OU100	54	24	33-1/2	30	14	5	1-1/4	2-1/4	14	30	6	19-1/2	4-1/4	21-3/4	1-3/8	2	
OU125	54	28	37-1/2	30	14	7	1-1/4	6-1/4	14	30	7	19-1/2	4-1/4	25-3/4	1-1/4	2	
OU150	60	28	37-1/2	34	18	5	1-1/4	2-1/4	18	34	7	22-1/2	4-1/4	25-3/4	1-3/8	1	



## RETURN AIR CABINET

MODEL NO.	A	B	T	U	V
OU080	54	22	16-1/8	20	14
OU100	54	24	16-1/8	22	14
OU125	54	28	16-1/8	26	14
OU150	60	28	16-1/8	26	14

## CLEARANCES FROM COMBUSTIBLES

MODEL NO.	FRONT	REAR	SIDES	ABOVE PLENUM	FLUE	
					HORIZ.	VERT.
OU080	12	1	1	1	9	18
OU100	12	1	1	1	10	18
OU125	12	1	1	1	12	18
OU150	12	1	2	2	13	18

# PERFORMANCE

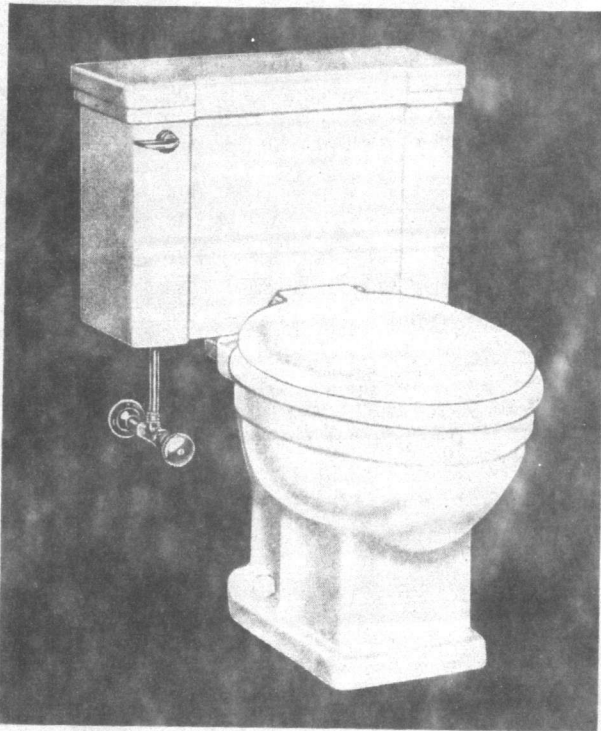
## BLOWER DATA - DIRECT DRIVE MODELS

MODEL NUMBER	BLOWER SIZE	MOTOR SIZE	AVAIL. EXT. STATIC PRESS. IN. W.C.	AIR RISE RANGE °F	HIGH SPEED TAP C. F. M.			MEDIUM SPEED TAP C. F. M.				LO-SPEED TAP C. F. M.		
					0.30	0.40	0.50	0.20	0.30	0.40	0.50	0.20	0.30	0.40
OU080AA	9-7 SW	1/6	0.15	70-105	--	--	--	780	790	790	745	690	690	690
OU080FA	10-8 SW	4/10	0.50	50-70	1220	1205	1180	805	800	800	780	690	690	665

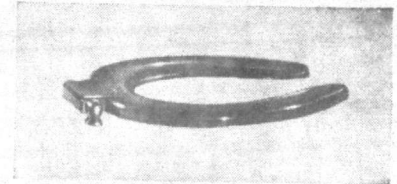
## BLOWER DATA - BELT DRIVE MODELS

MODEL NUMBER	BLOWER SIZE	BLOWER PULLEY DIA. x BORE	MOTOR H.P.	MOTOR PULLEY DIA. x BORE	U. L. EXT. STATIC PRESS.-IN. W.C.	AIR RISE RANGE °F	C. F. M. @ VAR. EXT. STAT. PRESS.			
							0.20	0.30	0.40	0.50
OU080MA	10- 8SW	7 x 3/4	1/6	3-1/4 x 1/2	0.15	70-105	895	830	760	--
OU080RA	10- 8SW	5 x 3/4	1/3	3-1/4 x 1/2	0.50	50- 70	1340	1300	1245	1200
OU100MA	10-10SW	7 x 3/4	1/6	3-1/4 x 1/2	0.20	70-105	1015	915	790	--
OU100RA	10-10SW	6 x 3/4	1/4	3-1/4 x 1/2	0.50	70-105	1390	1335	1275	1200
OU100TA	10-10SW	6 x 3/4	1/2	4-1/8 x 5/8	0.50	50- 70	--	--	--	1650
OU125MA	10-10SW	6 x 3/4	1/4	3-1/4 x 1/2	0.20	70-105	1465	1400	1330	1260
OU125TA	10-10SW	7 x 3/4	1/2	4-1/8 x 5/8	0.50	50- 70	1755	1710	1650	1585
OU150MA	12-12SW	8 x 3/4	1/4	3-1/4 x 1/2	0.20	70-105	1600	1515	1290	--
OU150UA	12-12SW	8 x 3/4	1/2	4-1/8 x 5/8	0.50	50- 70	2160	2100	2030	1960

# Elongated Compact closet



SOLID *Olsonite* SEATS



No. 10—SHOCK-PROOF SOLID OLSONITE  
FOR ELONGATED BOWL—Open front, less  
cover. Molded of solid Olsonite. One  
material, one color—all the way  
through.  
COLOR—Black.

- F 2050-11 (closed front seat, shown)  F 2050-31 (Moltex, closed front seat)  
 F 2050-21 (open front seat)  F 2050-51 (Moltex, open front seat)

**FIXTURE:**

Elongated Compact vitreous china free standing close-coupled closet combination—F 3050 elongated siphon jet bowl with extended rear shelf—F 4033 tank and cover—2 no. 19 bolt caps—size: 29 $\frac{3}{8}$ " high, 20 $\frac{5}{8}$ " wide, 29 $\frac{1}{2}$ " finished wall to front

**TANK FITTINGS:**

- N 3025-2 water control with backflow preventer  
 N 3055-2 flush valve  
 N 3071-2 trip lever (Chromard)  
 N 3072-2 trip lever (Solid Chrome)

**SUPPLY PIPE:**

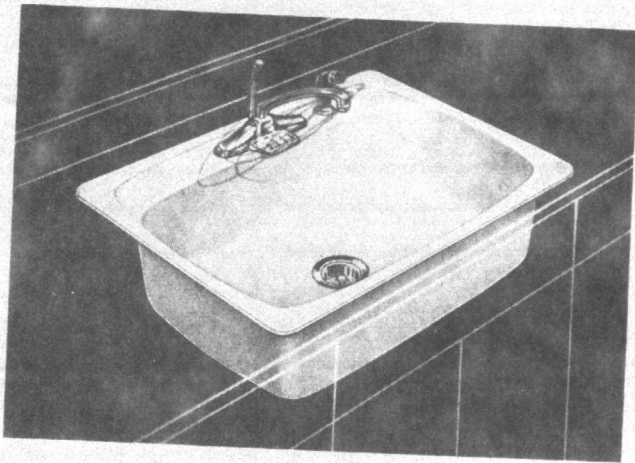
3/8 x 12" Brasscraft closet supply w/stop

**SEAT:** #10 Olsonite Seat Black

**COLOR:** White

**REMARKS:** With Setting Seal



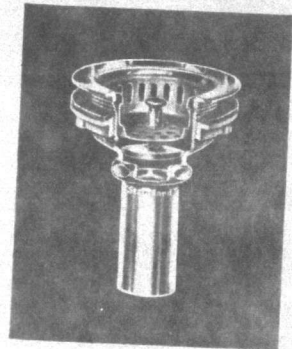


CUSTOM-LINE—P 7012-31

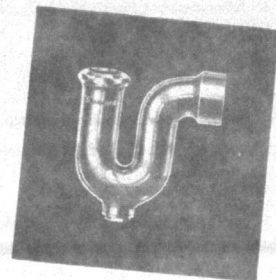


R 2200

P-7012 24 x 21" American Standard  
Sink with 3 hole drilling  
3 - R-2200 faucets  
1 - R-4510 strainer  
1 - R-7013-55 "P" trap



R 4510



R 7013-44  
R 7013-45



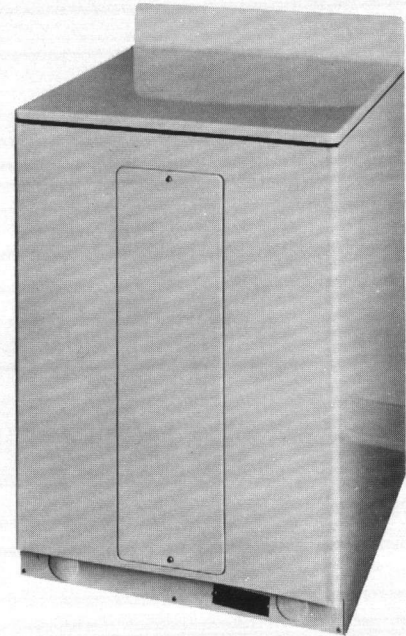
# Republic

## Thermo-Glas AUTOMATIC STORAGE ELECTRIC WATER HEATERS

### TABLE TOP SERIES - ETX - Residential Electric

#### FEATURES

IMMERSION HEATING ELEMENTS have been designed for long life and are inserted directly into the water for fast, economical heating. NEW HI-SIL GLASS LINED TANK—Extra-heavy steel tank is coated with highest quality glass lining obtainable for maximum resistance against corrosion. Tank is electrically welded and pressure tested. THERMOSTAT—Heavy-duty type. 100% automatic. Positive dial stops —120° to 170° F., with hair line control of water temperature. Reflective dial provides easy visibility. WIRING—Highest grade copper wire, UL Approved with moisture-proof insulation specially designed for use on heating devices. FIBREGLAS INSULATION—Extra-thick, fire-proof, moisture-proof fibreglas insulation between tank and outer jacket keeps water hot hours longer. EXTRUDED MAGNESIUM RODS for greater tank protection.



#### SPECIFICATIONS

TANK CAPACITY—GALLONS	Model No. 10 Year Warranty	A Height to Top of Back Splash	B Width	C Depth	D Height to Countertop	E Depth of Toe Recess	Approx. Shipping Weight	HEATING UNIT WATTAGES			
								NEMA STD. 236 V. AC		MAX UL APPR. 236 V.	
								Upper	Lower	Upper	Lower
	30 ETX	40"	24"	25"	36"	1 1/4"	167	1000	600	5000	5000
	40 ETX	40"	24"	25"	36"	1 1/4"	200	1250	750	5000	5000
	50 ETX	40"	24"	25"	36"	1 1/4"	219	1500	1000	5000	5000

Water Connections All 3/4"

#### 10-YEAR WARRANTY

Five year free replacement of complete heater should the inner tank leak, when installed according to applicable codes and ordinances, subject to conditions set forth on printed warranty card. Sixth through tenth year at the following percentage of the then current warranty base price . . . 6th year—50%; 7th year—60%; 8th year—70%; 9th year—80%; 10th year—80%.

### MERCURY MIDGET SERIES - EMX - Residential Electric

#### FEATURES

Designed for undercounter installation or tight space situation, the Republic Midget series provides a modern, attractive answer for mobile homes, or where compact heaters are required for smaller quantities of hot water. These small-sized but modern, efficient units are economical to buy, inexpensive to operate . . . fit into small space.

*Note: Not 208 V.*

#### SPECIFICATIONS

TANK CAPACITY—GALLONS	Model No. 10 Year Warranty	A Height of Heater	B Height to Water Connections	C Height to Junction Box	D Diameter of Jacket	Approx. Shipping Weight	HEATING UNIT WATTAGES			
							NEMA STD. 115 V. AC		MAX. UL APPR. 115 V.	
							Upper	Lower	Upper	Lower
	6 EMX	19"	Hot—18-3/16" Cold 2 1/4"	12 3/8"	16"	53	None	1250	None	1250
	15 EMX	26 3/4"	Hot 24" Cold 2 1/4"	13 1/16"	18"	77	None	1250	None	1250
	20 EMX	26 3/4"	Hot 31 5/8" Cold 2 1/4"	13 1/16"	20"	90	None	1500	None	1500

Water Connections All 3/4"

Dimensions and specifications are subject to change without notice in accordance with our policy of continuous product improvement.

# Republic

*15 gal. UNIT 748*

*10 gal. not available USE THESE following:*

DALLAS  
1400 W. Commerce St.  
Dallas, Texas 75208

ERIE  
324 W. 12th St.  
Erie, Pennsylvania 16502

LOS ANGELES  
4901 So. Boyle Ave.  
Los Angeles, California 90058

PORTLAND  
2545 S.E. Gladstone St.  
Portland, Oregon 97242



# Republic

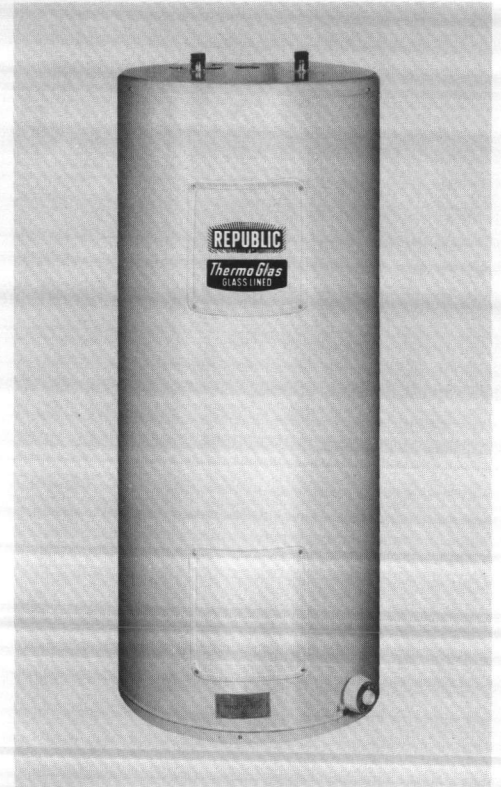
## Thermo-Glas AUTOMATIC STORAGE ELECTRIC WATER HEATERS

Republic electric water heaters provide all the features of electric water heating; safety, cleanliness, ease of installation—plus Republic's own features and history-proved quality. The inside surface is coated with an exclusive finish called Thermo-Glas. The result is a smooth glasslining that effectively resists corrosion, assuring long tank life, cleaner water and maximum efficiency. Extruded magnesium anode rods provide superior tank protection and long life.

### MARS SERIES - EX - Residential Electric

#### FEATURES

- PATENTED WATER HEATER NIPPLES
- ALL HEATERS are equipped with Masterflow drain valves.
- IMMERSION HEATING ELEMENTS—Long Life, immersion heating elements are inserted directly into the water for fast economical heating and are readily serviced.
- THERMOSTAT—Heavy-duty type. 100% automatic. Positive dial stops—120° to 170° F., with hair line control of water temperature. Reflective dial provides easy visibility.
- WIRING—Highest grade copper wire, UL approved with moisture-proof insulation specially designed for use on heating devices.
- FIBERGLAS INSULATION—Extra thick, fire-proof, moisture-proof fiberglass insulation between tank and outer jacket keeps water hot hours longer.
- NO ADDITIONAL CHARGE for Hi-Recovery elements—(4500/4500).
- All heaters are equipped with built-in safety designed energy cut-off devices to automatically prevent high temperature build up, as required. This complies with the current Underwriters Standards.



#### SPECIFICATIONS

TANK CAPACITY—GALS.		30*	30**	42	52	66	82	100	***20	***30	***40	
Model No.—10 Yr. Warranty		EX30	EX30	EX42	EX52	EX66	EX82	EX100	EXS20	EXS30	EXS40	
A—Height of Heater		37 $\frac{1}{2}$ "	50 $\frac{1}{4}$ "	50 $\frac{1}{4}$ "	50 $\frac{1}{4}$ "	52 $\frac{7}{8}$ "	64 $\frac{7}{8}$ "	65"	26 $\frac{15}{16}$ "	30 $\frac{1}{2}$ "	34"	
B—Height of Water Connection		38 $\frac{3}{4}$ "	51 $\frac{7}{8}$ "	51 $\frac{7}{8}$ "	51 $\frac{7}{8}$ "	54 $\frac{1}{2}$ "	66 $\frac{1}{2}$ "	66 $\frac{5}{8}$ "	34"	32"	35 $\frac{1}{2}$ "	
C—Height to Junction Box		ALL LOCATED ON TOP OF HEATER							26 $\frac{15}{16}$ "	30 $\frac{1}{2}$ "	35 $\frac{1}{2}$ "	
D—Diameter of Jacket		20"	18"	20"	22"	24"	24"	27"	20"	22"	24"	
Shipping Weight—Approx.		120	120	142	162	225	258	328	97"	119	133	
HEATING UNIT WATTAGES	N.E.M.A. STANDARDS 236V.-A.C.	Upper	1000	1000	1250	1500	2000	2500	3000	None	1000	1250
		Lower	600	600	750	1000	1250	1500	2000	1500	600	750
	MAX. U.L. APPROVED 236 V.	Upper	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
		Lower	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000

Water Connections All  $\frac{3}{4}$ "

Distance Between Water Connections 8"

\*Made in Dallas  
\*\*Made in Portland

\*\*\*Not available at all plant locations.



All Republic Electric Heaters are Underwriters Laboratory Listed.

#### NOTES:

Unless otherwise specified, standard 236 AC voltage will be furnished. 115 AC voltage supplied on special order at no additional cost. Specific request must be made for different wattage heating elements demanded by special zone requirements.

Double element heaters may be wired for simultaneous operation, non-simultaneous operation, non-simultaneous operation with off peak metering and simultaneous operation with off peak metering. When ordering please specify type of wiring required.

Dimensions and specifications are subject to change without notice in accordance with our policy of continuous product improvement.

#### 10-YEAR WARRANTY

Five year free replacement of complete heater should the inner tank leak, when installed according to applicable codes and ordinances, subject to conditions set forth on printed warranty card. Sixth through tenth year at the following percentage of the then current warranty base price . . . 6th year—50%; 7th year—60%; 8th year—70%; 9th year—80%; 10th year—80%.

Challenger series coolers are available in three capacities — 3, 5 and 10 gallons of 50° F. cold water per hour. Ruggedly built, yet handsomely styled, these models occupy only 1 square foot of floor space and are ideal for areas where space is at a premium.

Hot 'N Cold option, available on 3 gallon cooler (Model OCP3H) provides 45 six-ounce cups of hot water per hour to put the convenience of instant coffee, tea or chocolate in shop or office.

Satin finish stainless steel tops are easy to clean, have full anti-splash ridge. Unique Dial-A-Drink Bubbler, with built-in pressure regulator, furnishes a smooth, steady flow of water, without sudden spurts or dribbles, at line pressures from 20 to 125 p.s.i.

# OASIS®

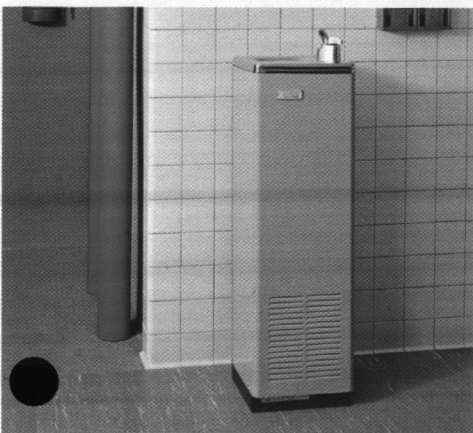
## WATER COOLERS

CHALLENGER  
FREE-STANDING

Models OCP3, OCP3H, OCP5 & OCP10



OASIS WATER COOLERS  
1968  
**B 15** PLUMBING FIXTURES & TRIM  
drinking fountains



**Challenger models** are right at home in shop or factory. Durable two-coat baked enamel finish and stainless top are easy to keep clean, stand up to heavy use and abuse.

**Visitors appreciate** convenient cold water refreshment. Compact Challenger models take a minimum of space, are so good looking they're right at home in the finest surroundings.

**Hot 'N Cold option (Model OCP3H)** puts instant hot beverages where the people are. Saves time and steps for coffee breaks and makes refreshment available to customers or guests.

OASIS . . . Quality you take for granted.

# OASIS®

## Models OCP3, OCP3H, OCP5 & OCP10

(Identical unless otherwise noted)

**DIAL-A-DRINK BUBBLER:** Built-in pressure regulator assures a smooth, steady flow at line pressures from 20 to 125 p.s.i. All metal parts of either stainless steel or brass.

**STAINLESS STEEL TOP:** One-piece 18-8 satin finish stainless steel with effective anti-splash ridge. Easy-to-clean integral strainer grid.

**CABINET:** Heavy gauge steel, one-piece wrap-around design, phosphatized after fabrication. Mocha Tan enamel finish; separate prime and color coats baked on. Easily removable front panel. Durable phosphatized steel base finished in black baked-on enamel.

### COOLING SYSTEM

**COST-CUTTING PRE-COOLER (Model OCP10 only):** Nearly doubles capacity without extra operating cost by cooling incoming water with cold waste water. Continuous helix inside drain tube causes cold waste water to flow against the side walls, exchanging heat with fresh water in tubing wrapped around outside of drain tube. Double wall construction meets codes. All copper construction.

**TANK AND COOLING COIL:** Tank-type storage system reduces starts and operating time of compressor. Has a cold water storage capacity of 2 quarts. Copper refrigerant coil, metal bonded to exterior of vented red brass tank; entire assembly is hot-tin dipped. Two metal walls between drinking water and refrigerant. All water tubing and connections are cold-tinned to prevent corrosion. Connection provided for remote fountain.

**COOLING TANK INSULATION:** Pre-fitted, molded plastic foam.

**COLD WATER THERMOSTAT:** Tamper-proof adjustable thermostat switch behind removable front panel controls cold water temperature.

**REFRIGERATION UNIT:** Fan cooled condenser. Internally spring mounted, hermetically sealed compressor with automatic overload protector. No lubrication needed. Refrigerant is controlled by accurately calibrated capillary tube. 3-wire service cord and polarized plug furnished. 115 volt, 60 cycle A.C. Compressor h.p.: Models OCP3 & OCP3H 1/8; OCP5 & OCP10 1/8.

### SUGGESTED SPECIFICATIONS

Contractor shall supply self-contained electric refrigerated water cooler(s) with cooling capacity of at least \_\_\_\_\_ gph from 80° F. inlet water to 50° F. drinking water in room temperature of 90° F.

Bubbler shall have lever handle and built-in pressure regulator to deliver smooth, steady flow at supply pressures from 20 to 125 p.s.i.

Cooling tank shall be vented, red brass with copper refrigerant coil bonded to exterior and hot-tin dipped after assembly. Refrigerant flow controlled by capillary tube. Temperature controlled by adjustable thermostat.

### HOT WATER SYSTEM (Model OCP3H)

**HOT TANK:** 85-15 red brass. Fiberglass insulated. 500 watt tubular copper sheathed heating unit.

**CAPACITY:** 45 cups of piping hot water per hour. 1½ quart storage tank.

**HOT WATER THERMOSTAT:** Adjustable to 185° F. Convenient on-off toggle switch on back of cabinet.

**HOT WATER VALVE:** Self-closing type, vented to atmosphere to eliminate need for pressure/temperature relief devices in hot water system. Highly polished, chrome plated faucet. Red plastic handle.

### ACCESSORIES

**GLASS FILLERS:** Adapter kits available for field installation only. Push-down (A550R), push-back (A525R), and push-button (A500R) type glass fillers available.

**5-YEAR WARRANTY:** Covers the entire water cooler against defects in materials and workmanship under normal use and service as detailed in the "5-Year Warranty Certificate" enclosed with each water cooler. Sample copy available upon request.

**SHIPPING WEIGHT (approx.):** Model OCP3, 75 lbs.; Model OCP3H, 80 lbs.; Model OCP5, 76 lbs.; Model OCP10, 80 lbs.

### EXPORT

**POWER SUPPLY:** Models OCP3-50, OCP3H-50 and OCP10-50 are operable on 230 volt, 50 cycle without transformers. Identical with models OCP3, OCP3H and OCP10 except for compressor h.p. ratings, which are 1/8, 1/8 and 1/4 respectively.

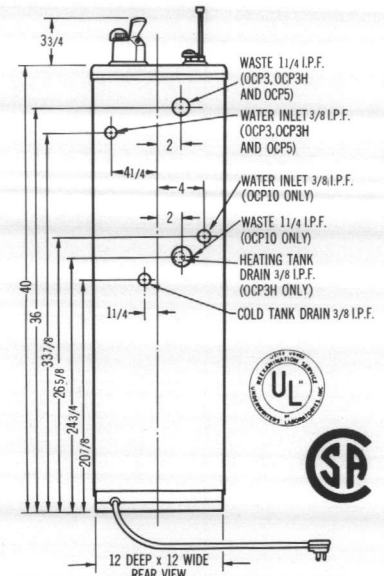
**WARRANTY:** Full 1-year warranty on entire cooler. 4-year replacement contract on sealed refrigeration system.

*Models covered by these specifications comply with all known Plumbing Codes. Tested and rated in accordance with Air Conditioning and Refrigeration Institute Standard 1010-62. Listed by Underwriters' Laboratories. Approved by Canadian Standards Association.*

All copper water tubing and connections shall be cold-tinned to prevent corrosion.

Entire water cooler shall be warranted for five years, including hermetically sealed refrigeration system, fan motor, relays, cold control and bubbler valve.

Cooler(s) shall meet specifications of U. S. Department of Commerce Bureau of Standards; Public Health, Sanitary, and Plumbing Codes; and be listed by Underwriters' Laboratories, or approved by C.S.A. Water cooler(s) shall be OASIS Model(s) \_\_\_\_\_.



### CAPACITY TABLE

Room Temperature	Inlet Water	GPH of 50° F. Water		
		Model OCP3-OCP3H	Model OCP5	Model OCP10
70	70	5.5	9.9	14.9
80	70	4.7	8.9	14.3
90	70	4.0	8.0	13.4
100	70	3.3	7.2	11.8
70	80	4.4	6.5	10.8
80	80	3.6	6.0	10.4
*90	*80	3.1	5.5	10.0
100	80	2.4	5.0	8.6
70	90	3.3	4.9	8.5
80	90	2.9	4.6	8.4
90	90	2.5	4.2	8.0
100	90	2.0	3.9	7.1
70	100	2.9	4.2	7.0
80	100	2.4	3.9	6.9
90	100	2.0	3.5	6.6
100	100	1.6	3.1	5.9

Cup service capacity (Base Rate) same as shown for Models OCP3, OCP3H and OCP5; 45% of above for OCP10.

\*Air Conditioning and Refrigeration Institute Rating Condition.

Model OCP3H delivers 45 six-ounce cups of hot water per hour in addition to cold water as shown on capacity chart.

### NUMBER OF PEOPLE SERVED AT A.R.I. RATING CONDITION

MODEL NO.	OCP3 OCP3H	OCP5	OCP10
Rated Capacity (GPH of 50° F. Water)	3.1	5.5	10.0

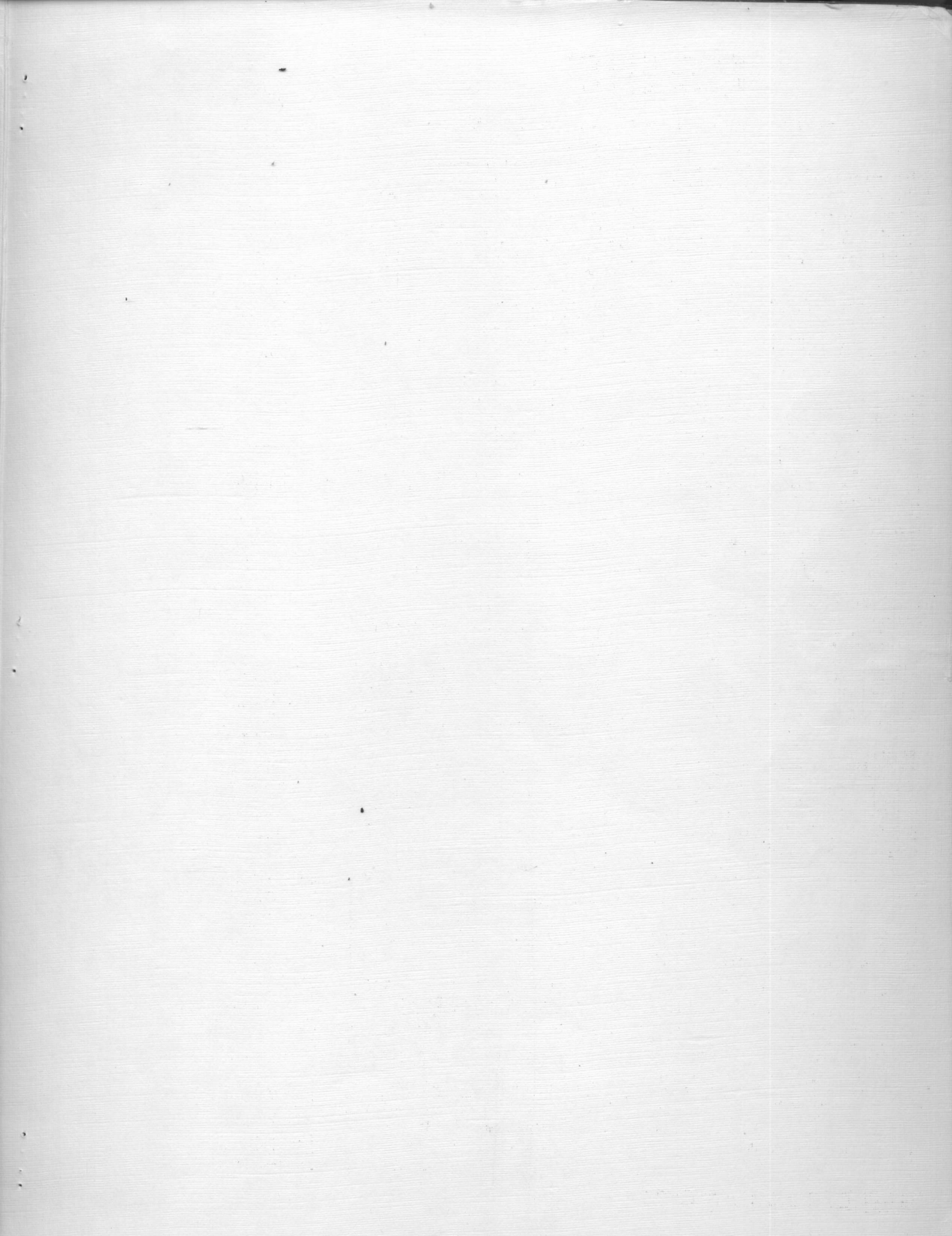
### NUMBER OF PEOPLE SERVED (BUBBLER)

Offices, Hospitals, Schools	37	66	120
Light Industry	21	38	70
Heavy Industry	15	27	50
Hot Heavy Industry	12	22	40
Retail Stores, Hotel & Office Building Lobbies	37	66	120

### NUMBER OF PEOPLE SERVED (CUP)

Offices, Schools	93	165	165
Restaurants, Hospitals	31	55	55

Ebco works constantly to improve product performance and dependability. Therefore, specifications may change without notice.





1,108,371

SHOP ORDER # 39306-01		REQUISITION 12-12233			DATE 11-16-68		WK. 46						
P.D.S. S.I. 58261-34		NUMBER OF CONDUCTORS 2		CONDUCTOR SIZE AS INDICATED ON PLANS									
CUSTOMER'S ORDER NO. MARK 1270-63118				SIZE # 14 AWG SOLID CTD.									
INSULATION .047" 1232			JACKET		LEAD		FINISH J.F.J						
TEMP. °C 1-		TEST STATION A		TANK DRY		RATED VOLTAGE 600V							
REEL NUMBER	LENGTH FEET	CONDUCTORS TESTED	MEG OHMS PER 1000 FT. @ 15.5 °C	VOLTAGE TEST	CONDUCTOR RESISTANCE OHMS/1000 FT. @ 25 °C	SHIELD RESISTANCE @ 25 °C/ 1000 FT.	CORONA LEVEL K.V.	TEST VOLTAGES - K.V.					
								APPLIED BETWEEN	A.C.	TIME M	D.C.	TIME M	
A 846206	2250	1x1	6000	OK	2.55			CONDUCTORS	2.4	5			
		1x1	5625		2.57			CONDUCTORS AND SHIELD					
CERTIFIED TO BE CORRECT CUSTOMER SERVICE REPR. <i>J.W. Funderburk</i>								CABLE TEST RECORD					
								GENERAL ELECTRIC WIRE, AND CABLE DEPT. QUALITY CONTROL BRIDGEPORT, CONN.					
SPECIFICATION REQUIREMENTS			785 MIN.	X	2.78 MAX.								

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

APPROVED: **"AS NOTED"**

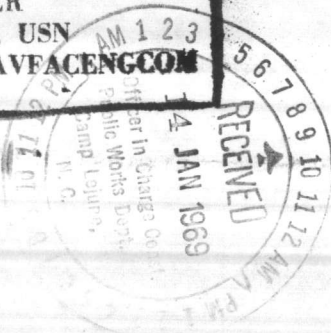
SUBJECT TO THE REQUIREMENTS OF

CONTRACT NO. 88313 SPEC. 88313/67

APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY — THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC., AS REQUIRED.

*LEN*  
P. E. SEUFER  
RADM, CEC, USN  
COMLANNAVFACENGCOM

JAN 20 1969





END SUCTION  
CENTRIFUGAL PUMPS

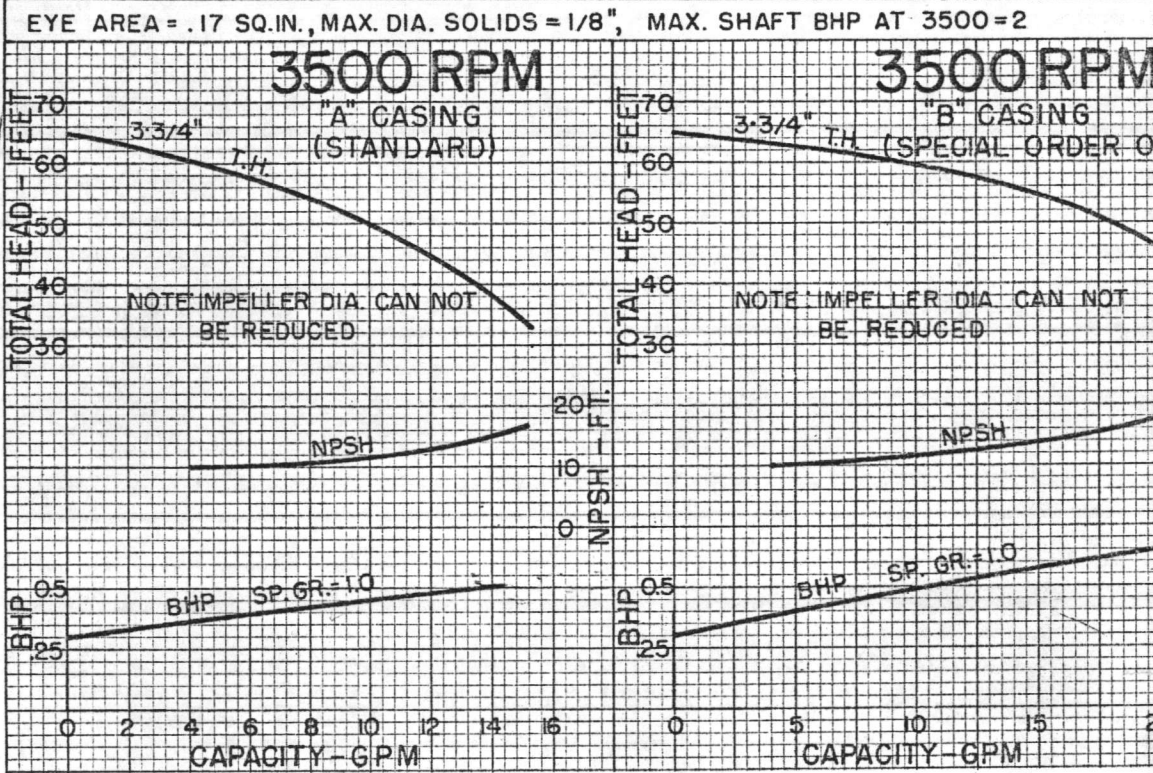
BAUT-253-68  
Proposal Number or District Office Number

ITEM NO. 4 BRINE Date

CAMP LE JEUNE, N.C.  
Customer Name and Reference

ORDER # 877-1

CUSTOMER BRINE SERVICE CO.  
SERVICE BRINE  
ITEM 4 DATE 5/14/68  
OFFICE CAROLINE BY [Signature]

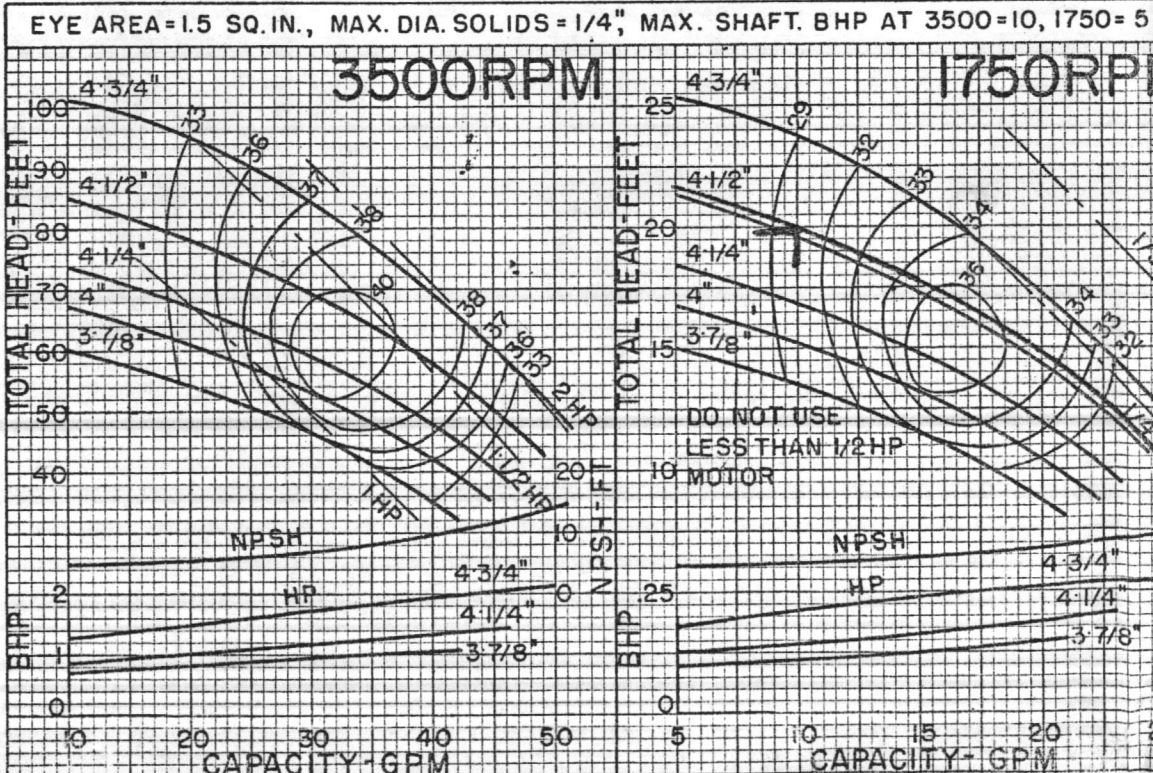


A-5944

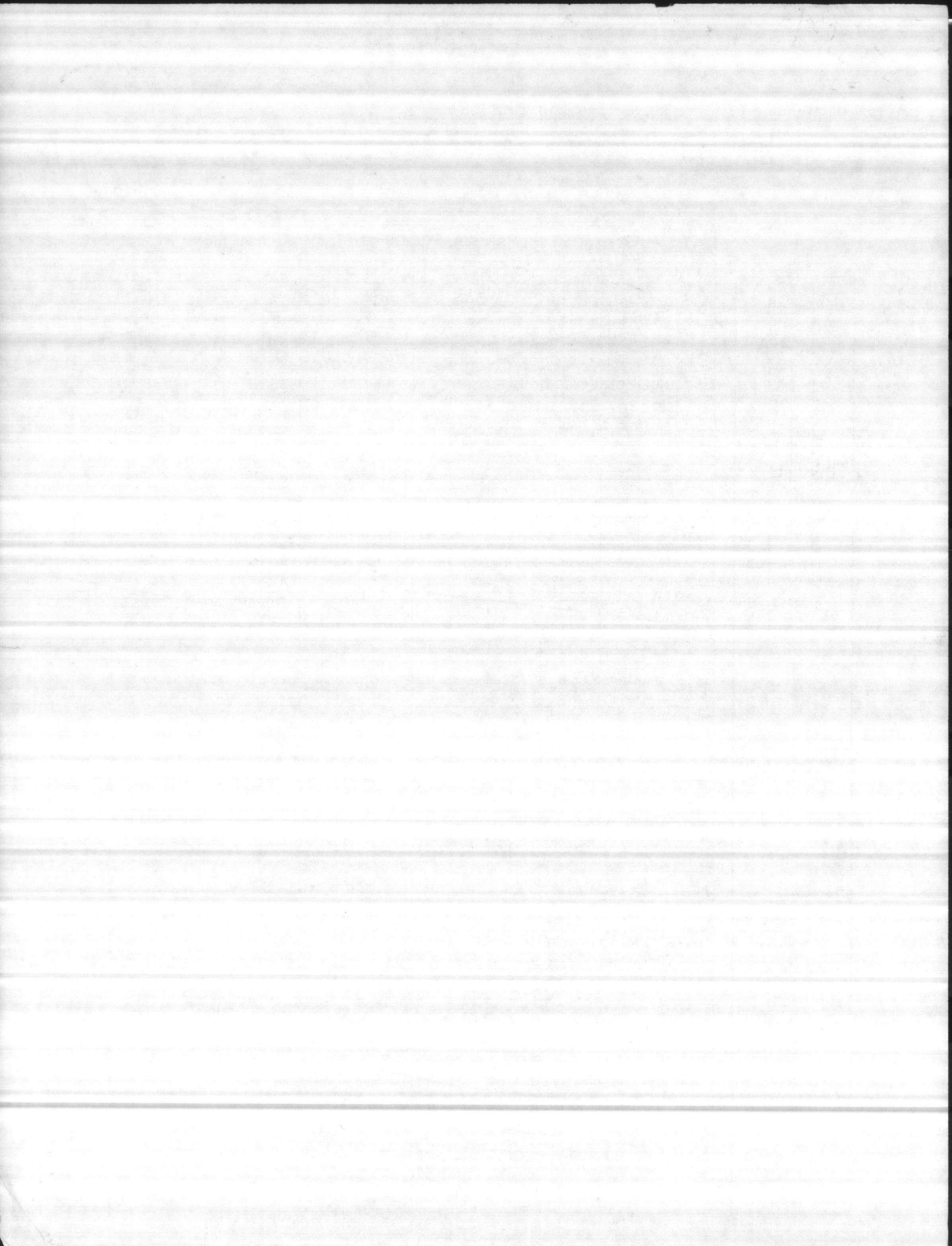
3/8 CNG, DNG-4

This pump is guaranteed for one set of design conditions. Other points shown on this curve are approximate and not guaranteed. The design capacity and head are based on shop tests when handling clear, cold water.

DESIGN CONDITIONS  
CAPACITY 60 GPM  
TOTAL HEAD 60 FT.



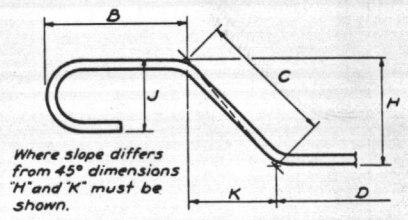
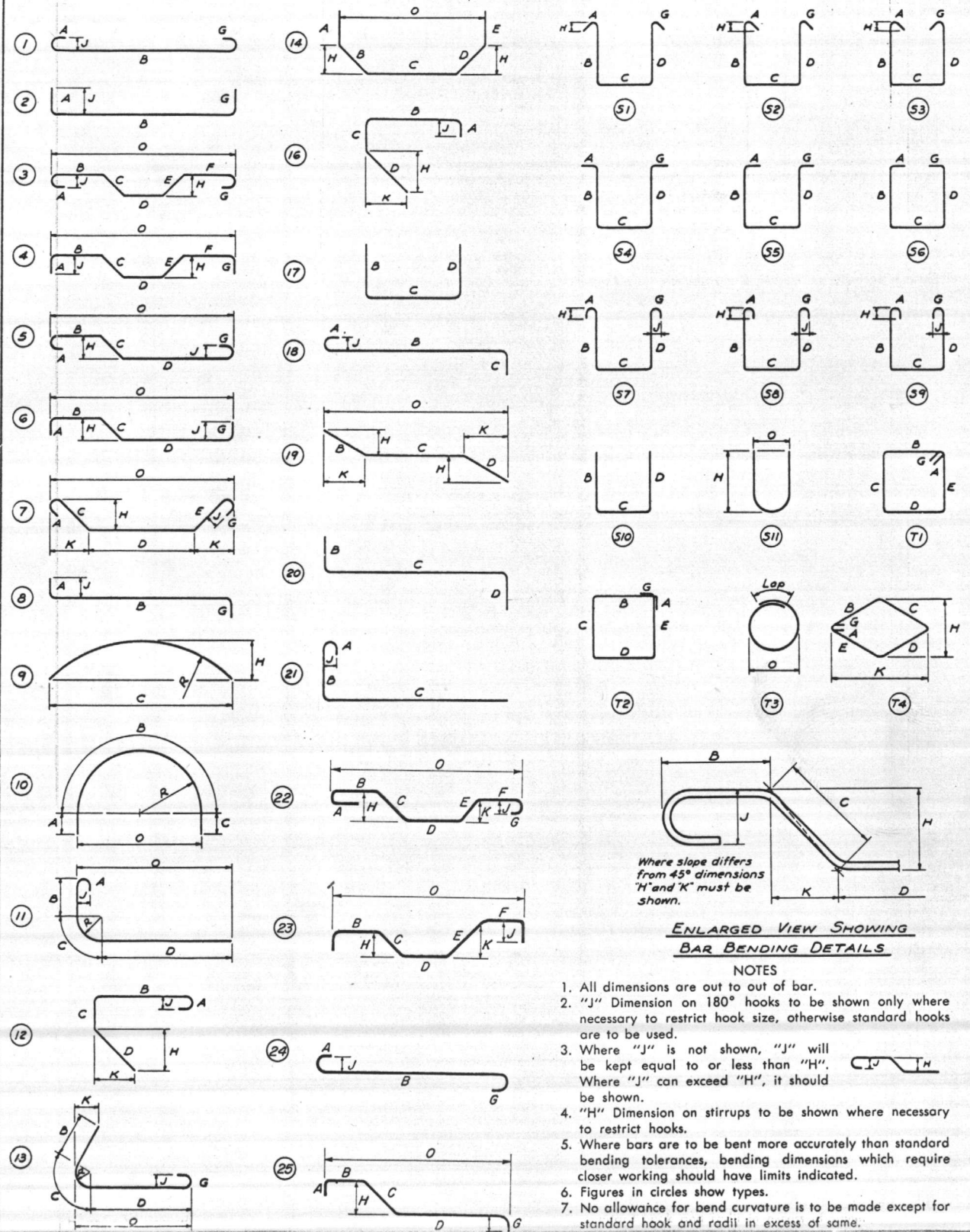






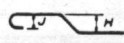


**FLORIDA STEEL CORPORATION**  
**STANDARD BAR BENDING TYPES**



**ENLARGED VIEW SHOWING BAR BENDING DETAILS**

**NOTES**

1. All dimensions are out to out of bar.
2. "J" Dimension on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where "J" is not shown, "J" will be kept equal to or less than "H". Where "J" can exceed "H", it should be shown. 
4. "H" Dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook and radii in excess of same.



FLORIDA STEEL CORPORATION

# FLORIDA STEEL CORPORATION

## BAR BENDING DETAILS

"Steel when you want it"



E & M DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. B1

ALL REINFORCING PREFIXED B

CUSTOMER BROWN CONST. CO.

PRODUCTION No. 10267

PROJECT WATER TRT & STORAGE FAC DWG No. 4, 5, 6, 7 SHEET 1 OF 6

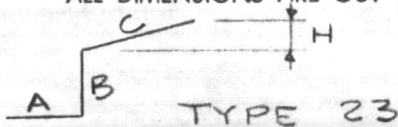
LOCATION CAMP LEJEUNE, N.C. DATE 3-25-64 REVISED \_\_\_\_\_

MAT'L. FOR TREATMENT PLANT DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	O	NO. BDL. PER	PCS. BDL.
1				HEAVY BENT													
2																	
3	4	#7	32-10	B700	1	0-10	31-2					0-10					
4	4	#7	2-6	B701	2	0-6	2-0										
5																	
6																	
7																	
8	10	#5	6-9	B500	23	1-3	1-4	4-2					0-4				
9	10		7-0	B501	23	1-3	1-4	4-5					0-4				
10	16		5-11	B502	23	1-3	1-4	3-4					0-4				
11	16		6-1	B503	23	1-3	1-4	3-6					0-4				
12	12		6-9	B504	2	2-9	4-0										
13	4		11-1	B505	2	3-0	8-1										
14	4		11-2	B506	2	3-0	8-2										
15	4		11-3	B507	2	3-0	8-3										
16	396		4-3	B508	2	1-6	2-9										
17	8		33-10	B509	2	1-6	32-4										
18	8		13-3	B510	1	0-7	12-8										
19	8		33-2	B511	2	1-6	31-8										
20	8		32-3	B512	1	0-7	31-8										
21	31		5-11	B513	2	2-9	3-2										
22	17		10-7	B514	2	2-6	8-1										
23	16		34-2	B515	8	1-0	31-8					1-6					
24	V010		6-1	B516	2	2-9	3-4										
25	30		10-10	B517	2	2-6	8-4										
26	10		36-4	B518	2	2-0	32-4					2-0					
27	30		7-1	B519	1	0-7	6-6										
28	13		18-6	B520	2	2-0	16-6										
29	7		19-4	B521	2	2-0	15-4					2-0					
30	13		17-1	B522	1	0-7	16-6										
31	7	#5	16-6	B523	1	0-7	15-4					0-7					

ALL DIMENSIONS ARE OUT TO OUT

SEE OUR STANDARD BAR TYPES

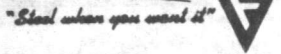




FLORIDA STEEL CORPORATION

FLORIDA STEEL CORPORATION

BAR BENDING DETAILS



E & M DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. B2

ALL REINFORCING PREFIXED B

CUSTOMER BROWN CONST. CO.

PRODUCTION No. 10267

PROJECT WATER TRT. & STORAGE FAC. DWG No. 4, 5, 6, 7 SHEET 2 OF 6

LOCATION CAMP LEJEUNE, N.C. DATE 3-16-64 REVISED \_\_\_\_\_

MAT'L. FOR TREATMENT PLANT DRAWN BY MR

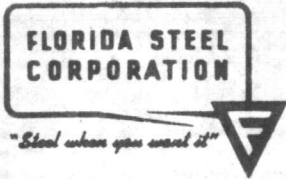
ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	O	NO. BDL. PCS.		
																PER	BDI	
1	30	#5	13-8	B524	2	1-0	12-8											
2	20		22-6	B525	2	1-0	21-6											
3	12		3-6	B526	3		1-10	1-8					1-2					
4	6		3-2	B527	3		1-10	1-4					0-10					
5	6		4-11	B528	3		3-3	1-8					1-2					
6	2		11-11	B529	3		0-10	0-8	8-8	0-8	1-0		0-6			11-6		
7	60		3-3	B530	2	1-0	2-3											
8	4		2-3	B531	3		1-0	1-3					0-10					
9	2		5-9	B532	21	0-7	3-8	1-6										
10	2		4-3	B533	1	0-7	3-8											
11	4		2-6	B534	3		1-0	1-6					0-11					
12	16		2-10	B535	2	1-0	1-10											
13	8		8-6	B536	2	0-9	7-0					0-9						
14	2		9-11	B537	2	0-6	7-11					1-6						
15	2	#5	5-0	B538	3		1-0	7	1-10	7	1-0		5			4-8		
16																		
17	16	#4	13-6	B400	2	1-0	11-6					1-0						
18	8		11-1	B401	2	3-0	8-1											
19	8		11-2	B402	2	3-0	8-2											
20	6		11-3	B403	2	3-0	8-3											
21	22		6-9	B404	2	2-9	4-0											
22	21		2-3	B405	2	0-6	1-9											
23	6		13-0	B406	2	0-6	12-6											
24	5		9-11	B407	2		5-3					1-6						
25	11		8-0	B408	2	0-6	7-0					0-6						
26	254		3-7	B409	2	1-0	2-7											
27	40		3-2	B410	2	1-0	2-2											
28	12		4-1	B411	2	1-0	3-1											
29	12		4-11	B412	2	1-0	3-11											
30	12		5-9	B413	2	1-0	4-9											
31	12	#4	6-7	B414	2	1-0	5-7											

ALL DIMENSIONS ARE OUT TO OUT

SEE OUR STANDARD BAR TYPES







# FLORIDA STEEL CORPORATION

## BAR BENDING DETAILS

E & M DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. 33

ALL REINFORCING PREFIXED \_\_\_\_\_

CUSTOMER BROWN CONST. CO.

PRODUCTION No. 10267

PROJECT WATER TRT. & STORAGE FAC. DWG No. 10267 SHEET 3 OF 6

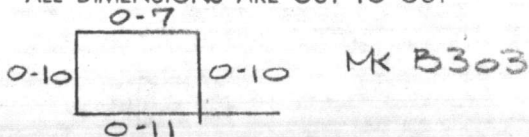
LOCATION CAMP LEJEUNE, N.C. DATE 3-25-64 REVISED \_\_\_\_\_

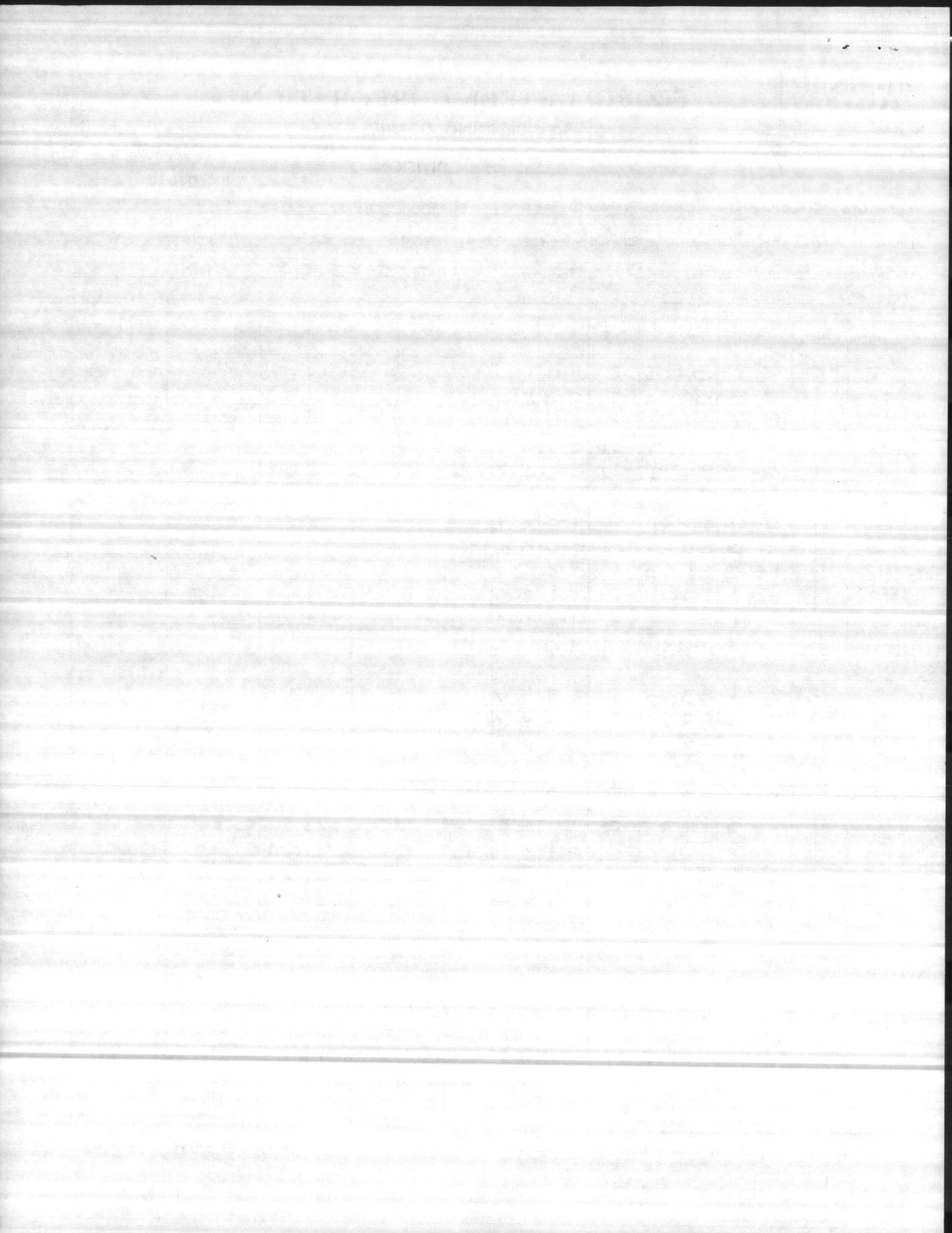
MAT'L. FOR TREATMENT PLANT DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	O	NO. BDL. PER PCS. BDI	
1	12	#4	2-0	B415	2	1-0	1-0										
2	12		2-3	B416	2	0-3	2-0										
3	22		8-5	B417	2	0-7	7-10										
4	6		6-0	B418	21	0-6	4-0	1-6									
5	21		6-2	B419	21	0-6	4-2	1-6									
6	30		2-6	B420	2	0-6	2-0										
7	4		5-7	B421	2	1-0	3-7					1-0					
8	15		5-8	B422	21	0-6	3-8	1-6									
9	62		13-2	B423	1	0-6	12-8										
10	12		7-7	B424	2	1-7	7-0										
11	7		13-1	B425	2	1-7	11-6										
12	5	#4	20-4	B426	5A	1-0	7-2	11-2	1-0								
13																	
14	5	#3	8-4	B300	2	2-8	3-0					2-8					
15	6	#3	4-4	B301	2	0-8	3-8										
16	3		9-5	B302	2	0-8	8-1					0-8					
17	4		3-2	B303	SEE DETAIL												
18	2		8-10	B304	T2	0-3	2-1	2-1	2-1	2-1		0-3					
19	2		3-8	B305	3		2-8	1-0					0-8 1/2				
20	6		14-8	B306	2	3-1	8-6					3-1					
21	18		8-8	B307	2	3-1	2-6					3-1					
22	15		4-6	B308	2	1-0	2-6					1-0					
23	6	#3	1-4	B309	2	0-6	0-10										
24																	
25																	
26																	
27	10	#2	2-10	B200	T2	0-3	0-5	0-9	0-5	0-9		0-3					
28																	
29																	
30																	
31																	

ALL DIMENSIONS ARE OUT TO OUT

SEE OUR STANDARD BAR TYPES







# FLORIDA STEEL CORPORATION

## BAR BENDING DETAILS

E & M DIVISION

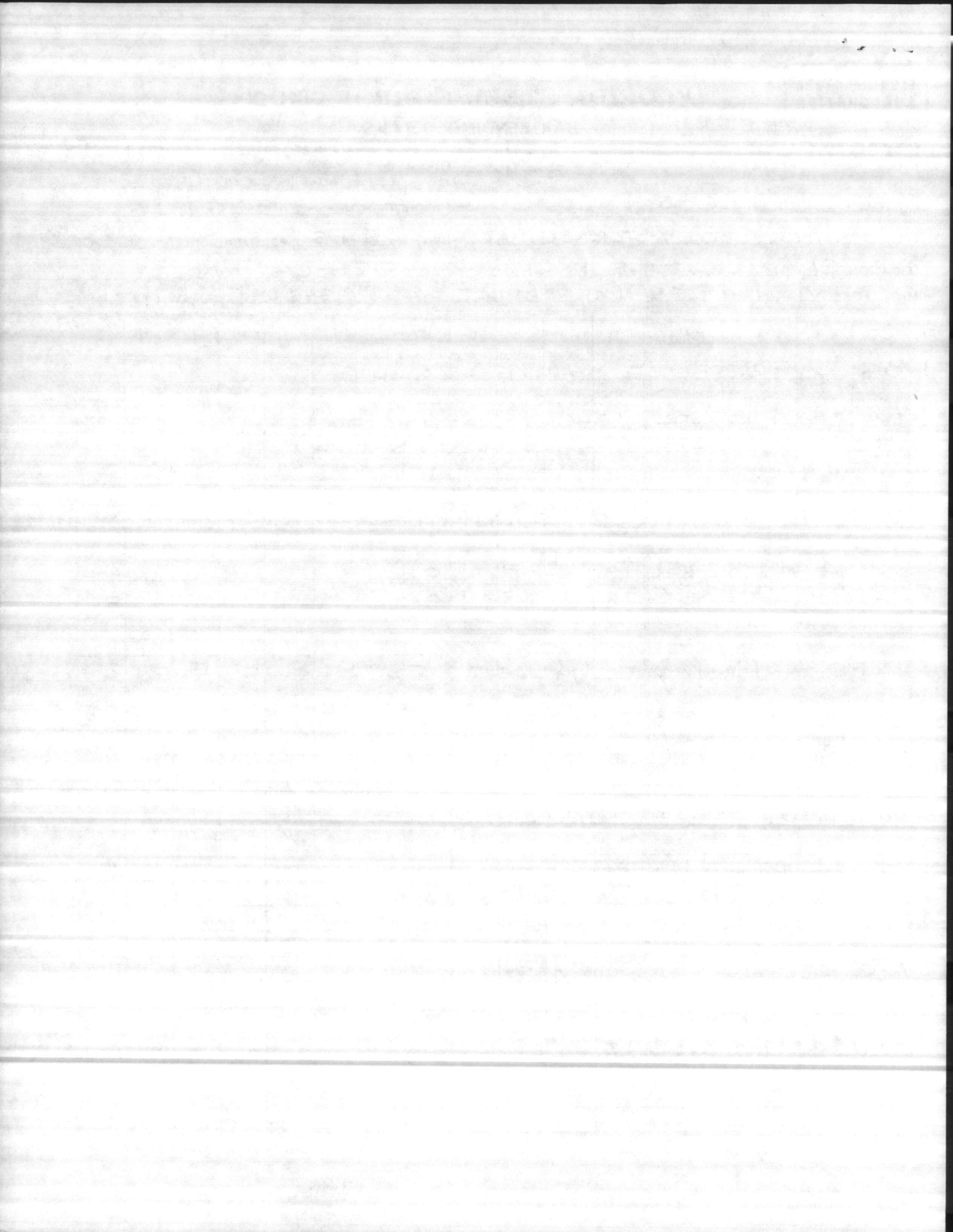
TICKET NO. \_\_\_\_\_ LIST NO. B4  
 ALL REINFORCING PREFIXED B

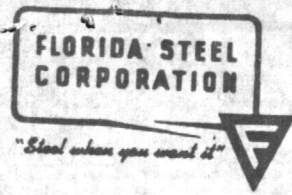
CUSTOMER BROWN CONST. CO. PRODUCTION No. 10267  
 PROJECT WATER TRT. & STORAGE FAC. DWG No. THIS SHEET SHEET 4 OF 6  
 LOCATION CAMP LEJEUNE, N.C. DATE 3-25-64 REVISED \_\_\_\_\_  
 MAT'L. FOR MANHOLES (REFERENCE DWG. #957513 & 16) DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	O	NO. BDL. PER	PCS. BDI.		
1																			
2																			
3	4	#4	4-10	STR.	(SHORT WAY IN FTG.)														
4	4	#4	5-10	STR.	(LONG WAY IN FTG.)														
5																			
6																			
7																			
8																			
9	2	#4	13-6	B451	T3	(LAP = 1-0)										4-0			
10	2	#4	17-9	B452	T3	(LAP = 1-0)										5-4			
11																			
12																			
13																			
14																			
15	2	#4	7-10	B453	T3	(LAP = 1-0)										2-2			
16	2	#4	12-0	B454	T3	(LAP = 1-0)										3-6			
17																			
18																			
19																			
20																			
21	1	#4	13-6	B451	T3	(LAP = 1-0)										4-0			
22	1	#4	17-9	B452	T3	(LAP = 1-0)										5-4			
23																			
24																			
25																			
26																			
27	1	#4	13-6	B451	T3	(LAP 1-0)										4-0			
28	1	#4	17-9	B452	T3	(LAP 1-0)										5-4			
29																			
30																			
31																			

ALL DIMENSIONS ARE OUT TO OUT

SEE OUR STANDARD BAR TYPES





# FLORIDA STEEL CORPORATION

## STRAIGHT BAR LIST

E & M DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. B5

ALL REINFORCING PREFIXED B

CUSTOMER BROWN CONST. CO.

PRODUCTION No. 10267

PROJECT WATER TRT. & STORAGE FAC.

DWG No. 4, 5, 6, 7 SHEET 5 OF 6

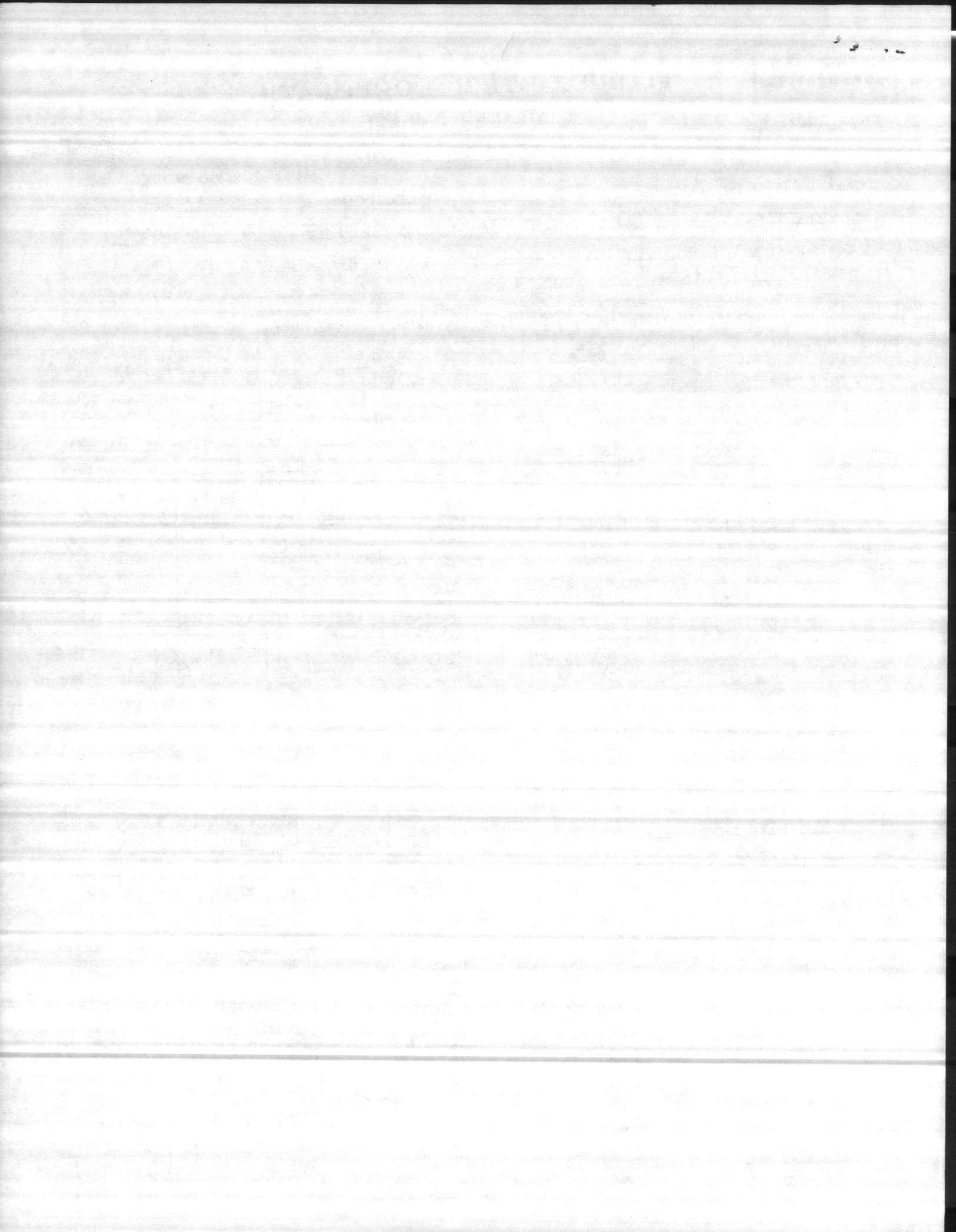
LOCATION CAMP LEJEUNE, N.C.

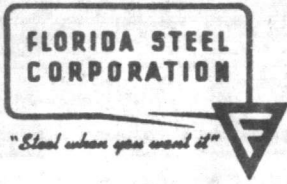
DATE 4-11-64 REVISED \_\_\_\_\_

MAT'L. FOR TREATMENT PLANT.

DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	ITEM	NO. PCS.	SIZE	LENGTH	MARK	ITEM	NO. PCS.	SIZE	LENGTH	MARK
1	24	#6	2-0		35	2	#5	3-3		69	10	#4	6-6	
2					36	4		2-10		70				
3					37	41	#5	2-9		71	6		5-10	
4					38					72	6		5-8	
5	6	#5	31-6		39					73	8		5-6	
6	31		30-0		40					74	12		4-8	
7	20		29-1		41	10	#4	30-0		75	8		4-4	
8	33		24-10		42	2		29-8		76	24		4-0	
9	10		22-4		43	2		25-10		77	6		3-10	
10	30		22-1		44	8		25-4		78	2		3-0	
11	8		21-6		45	2		23-6		79	10		2-0	
12	72		20-0		46	4		22-8		80	6		1-10	
13	33		17-2		47	22		20-0		81	2	#4	1-8	
14	4		16-2		48	4		14-10		82				
15	2		14-6		49	2		13-8		83				
16	2		13-9		50	4		12-8		84				
17	8		13-8		51	2		12-6		85	8	#3	31-0	
18	23		13-6		52	4		12-1		86	6		30-10	
19	2		13-4		53	4		12-0		87	11		29-8	
20	4		13-3		54	24		11-10		88	4		19-0	
21	16		11-4		55	36		11-8		89	11		17-6	
22	154		9-5		56	60		11-6		90	4		11-3	
23	31		8-8		57	15		11-2		91	1		11-0	
24	14		8-7		58	12		11-0		92	8		10-10	
25	12		8-6		59	4		10-9		93	12		8-6	
26	57		8-4		60	2		10-6		94	3		8-1	
27	30		8-1		61	2		10-5		95	10		6-6	
28	16		7-10		62	13		9-11		96	2		6-2	
29	11		7-9		63	4		8-2		97	2		5-6	
30	18		5-6		64	8		7-9		98	2		5-3	
31	31		5-5		65	26		7-8		99	2		4-10	
32	107		5-0		66	4		7-6		100	8		4-8	
33	57		4-3		67	2		7-4		101	8		4-4	
34	3	#5	3-8		68	2	#4	6-8		102	4	#3	4-3	





# FLORIDA STEEL CORPORATION

## STRAIGHT BAR LIST

E & M DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. B6

ALL REINFORCING PREFIXED B

CUSTOMER BROWN CONST. CO.

PRODUCTION No. 10267

PROJECT WATER TRT. & STORAGE FAC.

DWG No. 4, 5, 6, 7 SHEET 6 OF 6

LOCATION CAMP LEJEUNE, N.C.

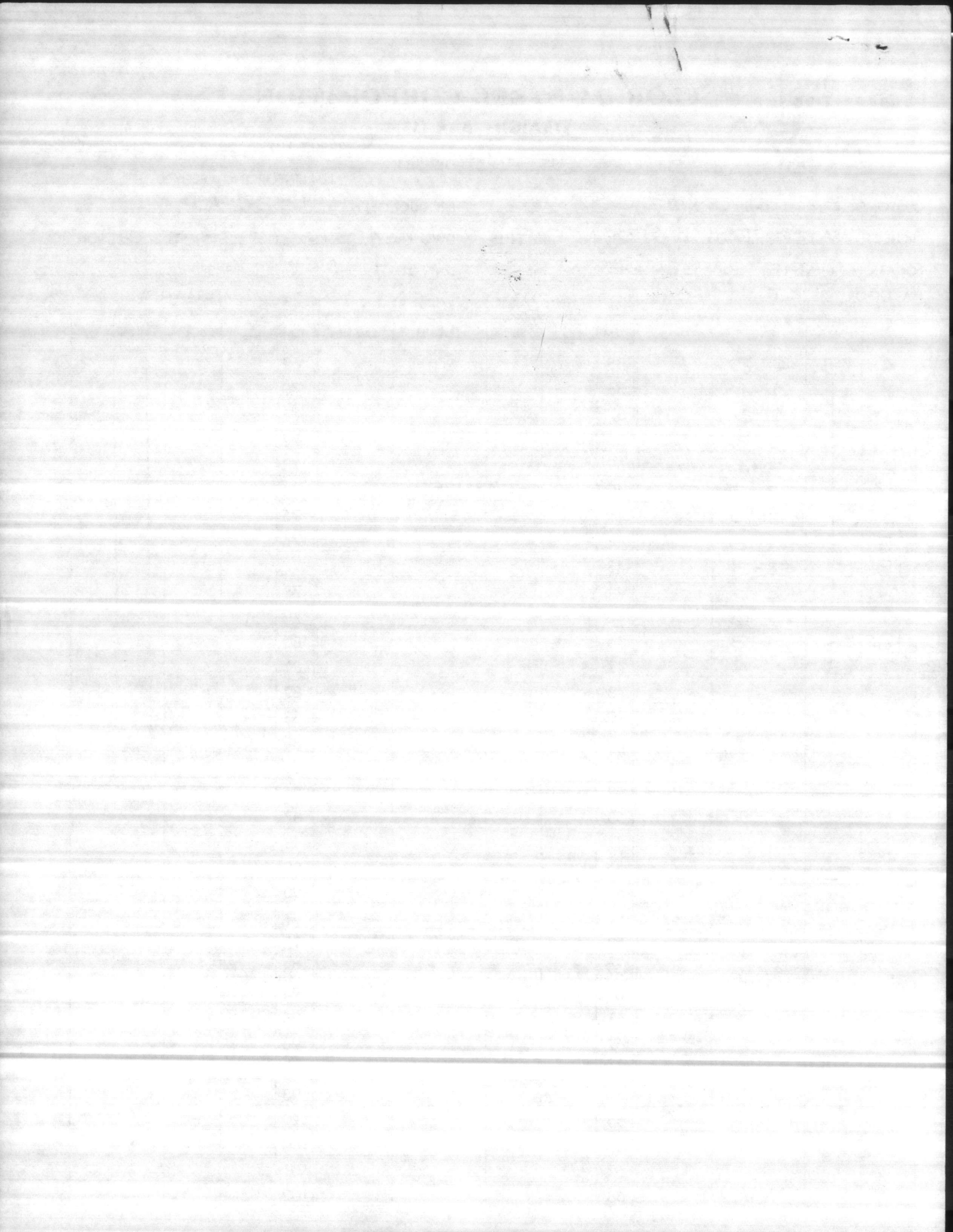
DATE 4-11-64 REVISED \_\_\_\_\_

MAT'L. FOR TRT. PLANT.

DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	ITEM	NO. PCS.	SIZE	LENGTH	MARK	ITEM	NO. PCS.	SIZE	LENGTH	MARK
1	4	#3	4-2		35					69				
2	2		4-1		36					70				
3	11		4-0		37					71				
4	8		3-8		38					72				
5	2		3-6		39					73				
6	24		3-3		40					74				
7	2		2-10		41					75				
8	17		2-8		42					76				
9	15		2-3		43					77				
10	6		2-0		44					78				
11	9		1-6		45					79				
12	16	#3	1-3		46					80				
13	7	#3	6-4		47					81				
14					48					82				
15					49					83				
16					50					84				
17					51					85				
18					52					86				
19					53					87				
20					54					88				
21					55					89				
22					56					90				
23					57					91				
24					58					92				
25					59					93				
26					60					94				
27					61					95				
28					62					96				
29					63					97				
30					64					98				
31					65					99				
32					66					100				
33					67					101				
34					68					102				









10/22/68  
DATE

PROJECT NO.	WESTINGHOUSE O.G. NO. CH-62304-L10	CUSTOMER REQUISITION NO.	CUSTOMER ORDER NO.
CUSTOMER WESCO - CHARLOTTE		ULTIMATE USER & LOCATION OR STATION	

PRINTS ARE:

FOR APPROVAL

FOR CONSTRUCTION OR INSTALLATION

FOR REFERENCE

Drawings are in compliance with your specified requirements. Drawings "Approved" or "Approved with Modifications" authorize Westinghouse to proceed with manufacture. Modifications not in the contract or modifications made during or after drawing approval may result in a price change and/or shipment delay. To maintain shipping schedule, approved drawings must be received by Westinghouse no later than \_\_\_\_\_

The equipment shown on these drawing(s) has been released for manufacture, any modification may result in a price change and shipment delay.

1,108,371

ITEM 2

QUANTITY 1

APPARATUS:

SIMILAR TO 11-600S4JNNB W/S.S. PUSHBUTTON AND HAND-OFF-AUTOMATIC SWITCH AND 50% AND 65% TAPS ON TRANSFORMER FOR 208 VOLT, 3 PHASE, 40 HP MOTOR, ~~XXXXXX~~

OUTLINE:

DIAGRAM:

} 34261 58 sub-1

10 COPIES:

WESCO  
BOX 1030  
CHARLOTTE, N.C. 28201  
ATTN: R.N. FOWLER

1 COPY

CHARLOTTE OFFICE  
B.G. PETERSON

1 COPY

APPROVED:

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

88313/67

88313

CONTROL NO. 88313

APPROVAL OF CONTRACTOR

INDICATED BY INITIALS

REQUIREMENTS

SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC. AS REQUIRED.

H. N. WALKER, P.E. SUPERVISOR

C.R. GOODMAN, RADM, CEC, USN

CHARTERED OFFICE OF COMPLAINTS

DATE 5 NOV 68

CC: BUFFALO GENERAL CONTROL ASSEMBLIES - R. DICKSON - 83250

SEND APPROVAL OR INQUIRIES TO WESTINGHOUSE  
DISTRICT ORDER CORRESPONDENT STREET ADDRESS CITY ZONE STATE



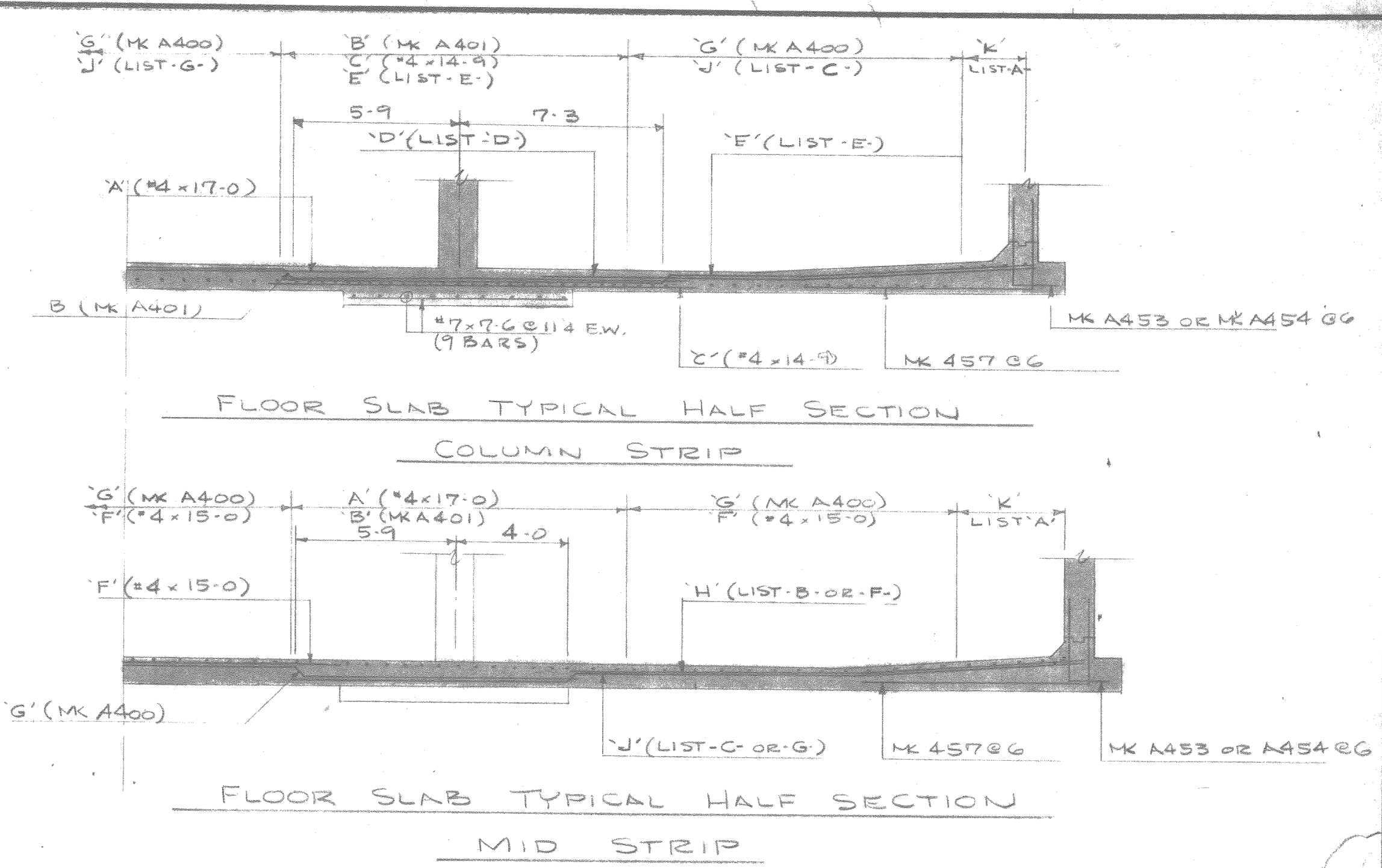
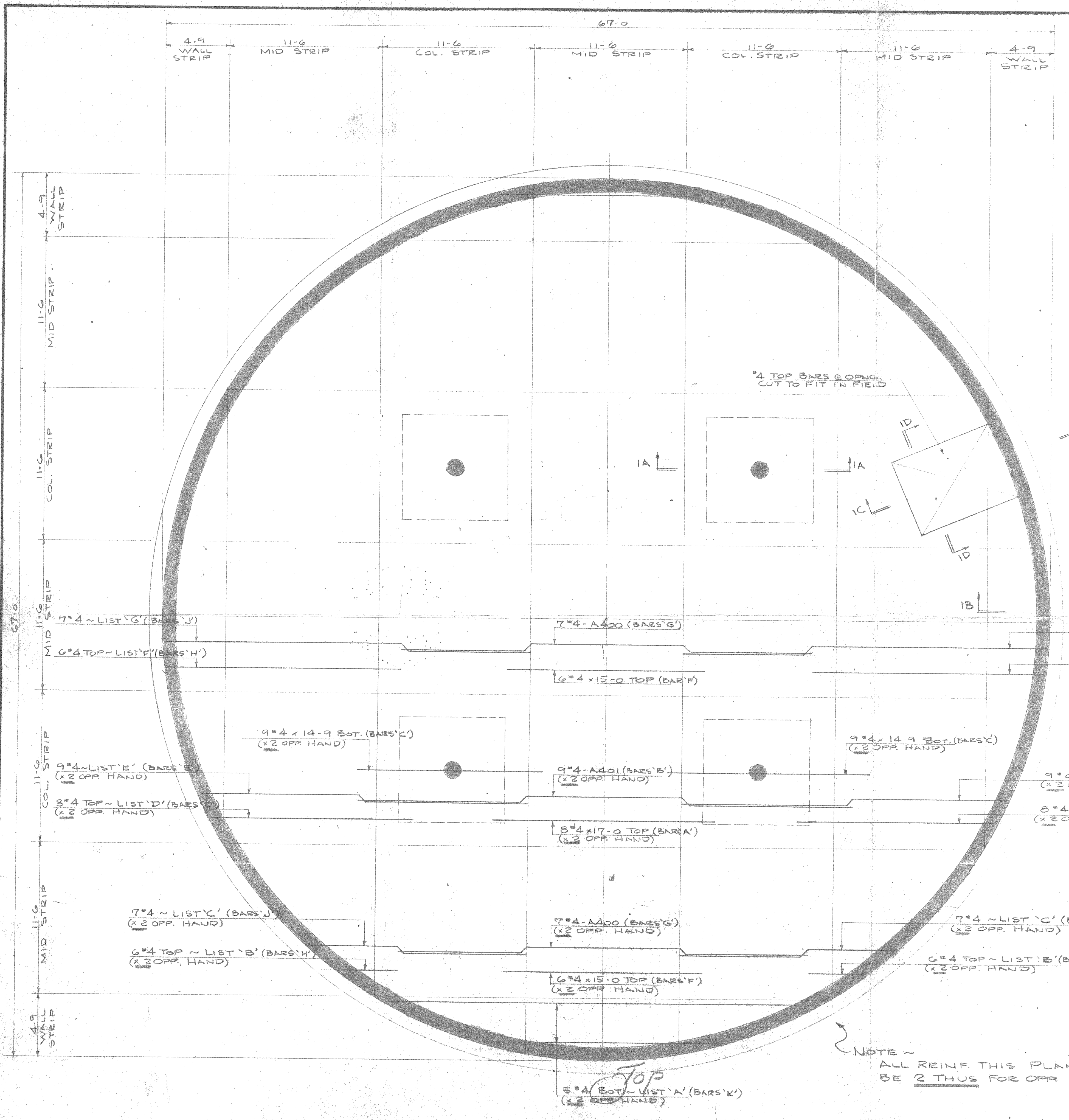
APPROVED FOR THE BOARD OF DIRECTORS  
DATE: \_\_\_\_\_  
BY: \_\_\_\_\_  
TITLE: \_\_\_\_\_  
NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY: \_\_\_\_\_  
STATE: \_\_\_\_\_  
ZIP: \_\_\_\_\_  
TELEPHONE: \_\_\_\_\_  
FACSIMILE: \_\_\_\_\_

ONLY

APPROVED FOR THE BOARD OF DIRECTORS	
DATE: _____	BY: _____
TITLE: _____	NAME: _____
ADDRESS: _____	CITY: _____
STATE: _____	ZIP: _____
TELEPHONE: _____	FACSIMILE: _____

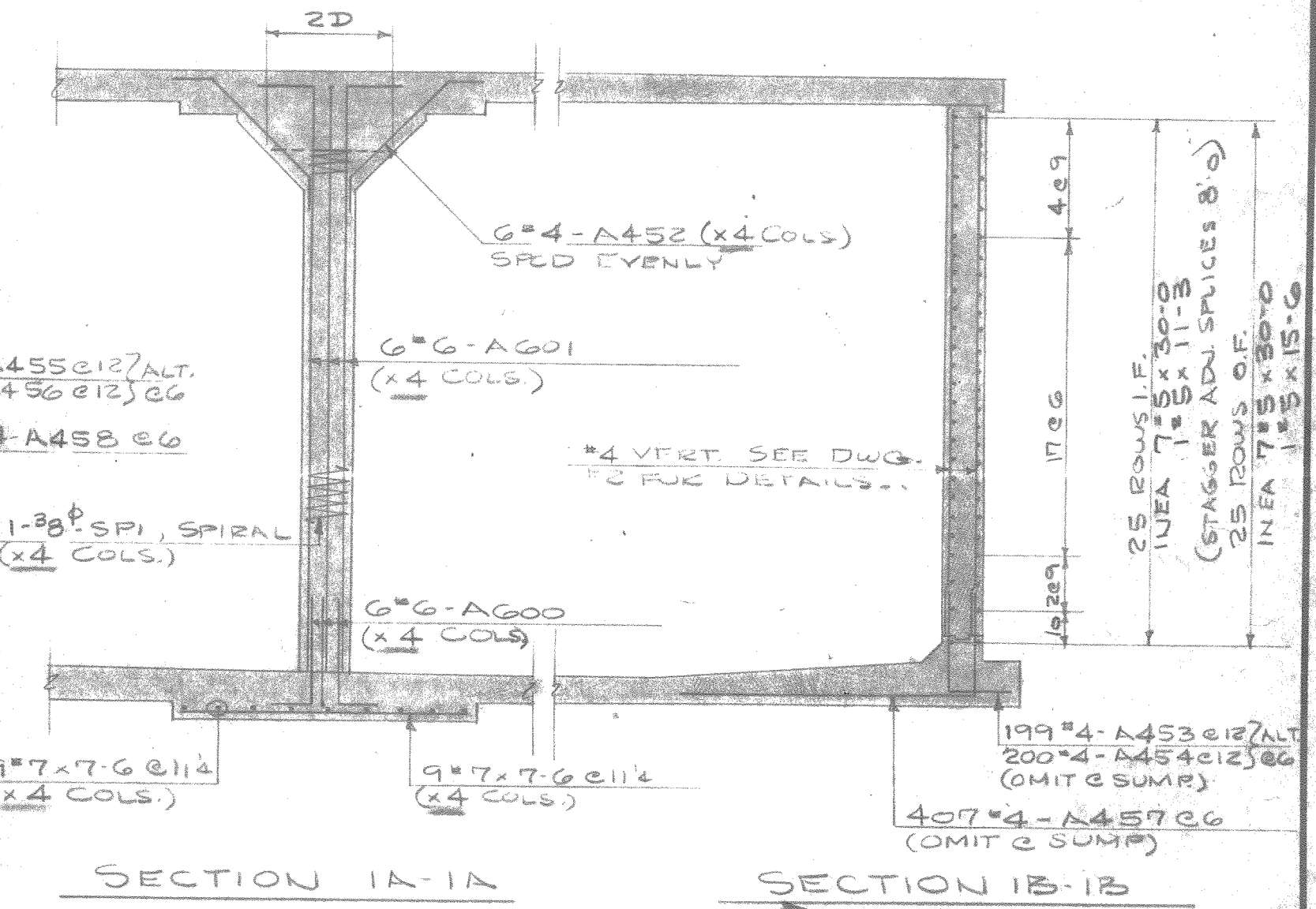
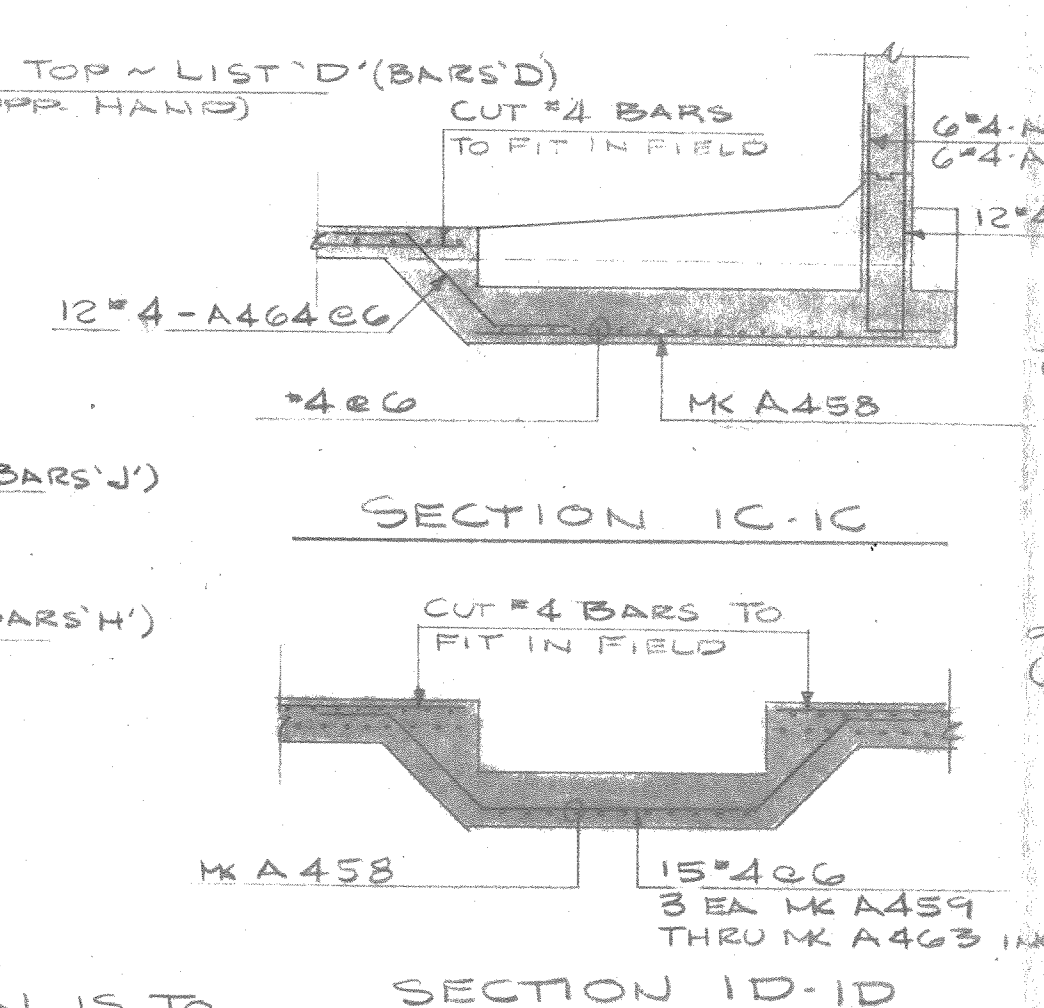






<b>LIST 'A'</b> (T. TO B.) 4 REQ'D	<b>LIST 'B'</b> (T. TO B.) 8 REQ'D	<b>LIST 'D'</b> (T. TO B.) 8 REQ'D	<b>LIST 'F'</b> (T. TO B.) 4 REQ'D
1 # 4 x 32.6	1 # 4 x 12.0	1 # 4 x 18.6	1 # 4 x 17.9
1 # 4 x 30.0	1 # 4 x 11.3	1 # 4 x 18.0	1 # 4 x 18.0
1 # 4 x 27.0	1 # 4 x 9.6	1 # 4 x 17.9	1 # 4 x 18.1
1 # 4 x 23.0	1 # 4 x 7.9	1 # 4 x 17.3	1 # 4 x 18.7
1 # 4 x 17.0	1 # 4 x 5.9	1 # 4 x 17.0	1 # 4 x 18.0
	1 # 4 x 3.6	1 # 4 x 16.3	1 # 4 x 17.9
		1 # 4 x 15.6	
		1 # 4 x 14.9	
	<b>LIST 'C'</b> (T. TO B.) 8 REQ'D	<b>LIST 'E'</b> (T. TO B.) 8 REQ'D	<b>LIST 'G'</b> (T. TO B.) 4 REQ'D
	1 EA. MK A402 THRU MK A408 INCL.	1 EA. MK A419 THRU MK A425 INCL.	1 # 4 - A429
			1 # 4 - A430
			1 # 4 - A431
			1 # 4 - A432
			1 # 4 - A433
			1 # 4 - A429

NOTE - ALL TRUSS BARS  
DETAILED FOR MIN.  
SLAB DEPTH OF 8"



NOTE - ALL REINF. THIS PLAN IS TO BE 2 THUS FOR OPP. DIRECTION.

FLOOR SLAB PLAN

FOR APPROVAL ONLY  
REINFORCING DETAIL  
RESERVOIR - FLOOR SLAB

PRINT RECORD		EASTERBY & MUMAW	
TO	DATE	DIVISION OF FLORIDA STEEL CORPORATION	
CONTR. NO.	DATE	P. O. BOX 10657 CHARLOTTE, N. C.	
51568 BA	3-12-68	WATER TREATMENT & STORAGE TRAINING FACILITIES	
REVISIONS		WEAPONS TRAINING FACILITIES	
		CAMP LEVUE, NORTH CAROLINA	
		CONTRACTOR BROWN CONST. CO.	
		ARCHITECT BUREAU OF YARDS & CO.	
DRAWN	CHECKED	DATE	CONT. NO.
MR		5-15-68	6-31-68
		DATE	SHEET

~ ALL BARS TO BE #5, INT. GRADE  
~ LAPES = 24 DIAMS (2'0 MIN. FOR RINGS)

1108371



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:** **AS NOTED**  
SUBJECT TO THE

CONTRACT NO. 88313 88313/67  
APPROVAL OF MATERIALS AND METHODS INDICATES COMPLIANCE WITH SPECIFICATION REQUIREMENTS ON THE PART OF THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC. AS REQUIRED.

*H.N. Wallin*  
H.N. WALLIN  
RADM, CEC, USN  
DATE 5-29-68 COMLANAVFACENGCOM

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

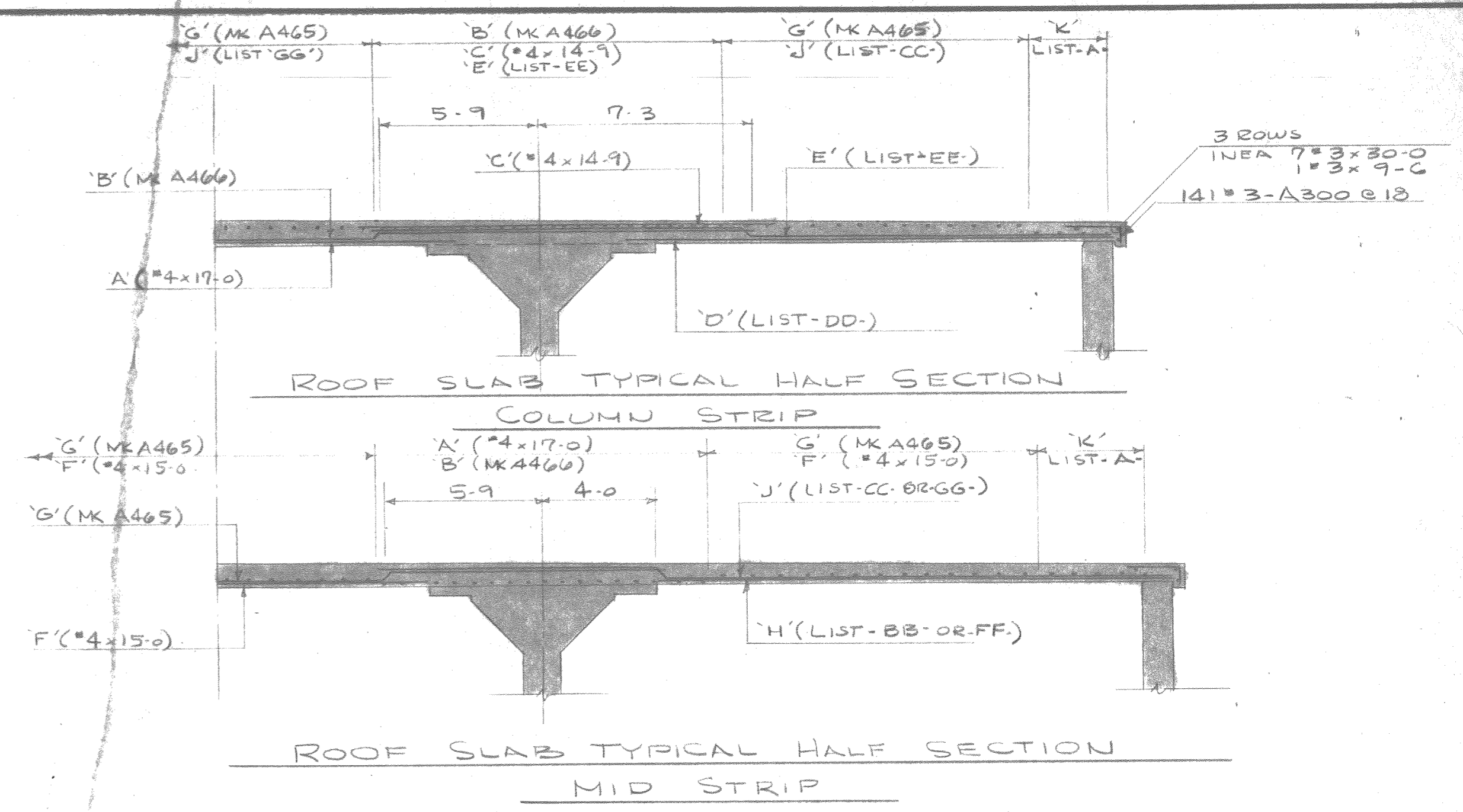
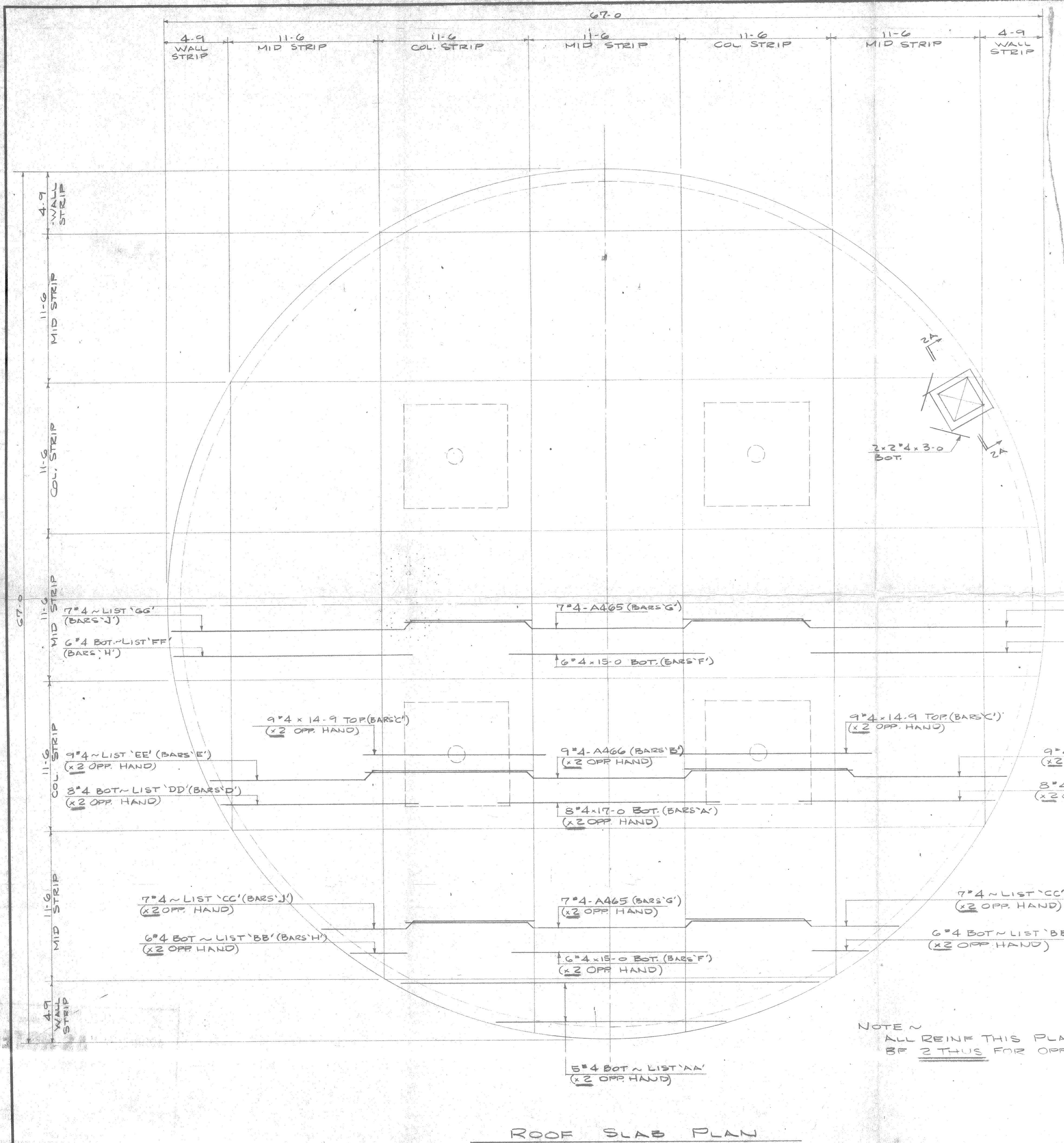
**APPROVED:**  
SUBJECT TO THE

CONTRACT NO. \_\_\_\_\_  
APPROVAL OF MATERIALS AND METHODS INDICATES COMPLIANCE WITH SPECIFICATION REQUIREMENTS ON THE PART OF THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC. AS REQUIRED.

H.N. WALLIN  
RADM, CEC, USN  
DATE \_\_\_\_\_ COMLANAVFACENGCOM

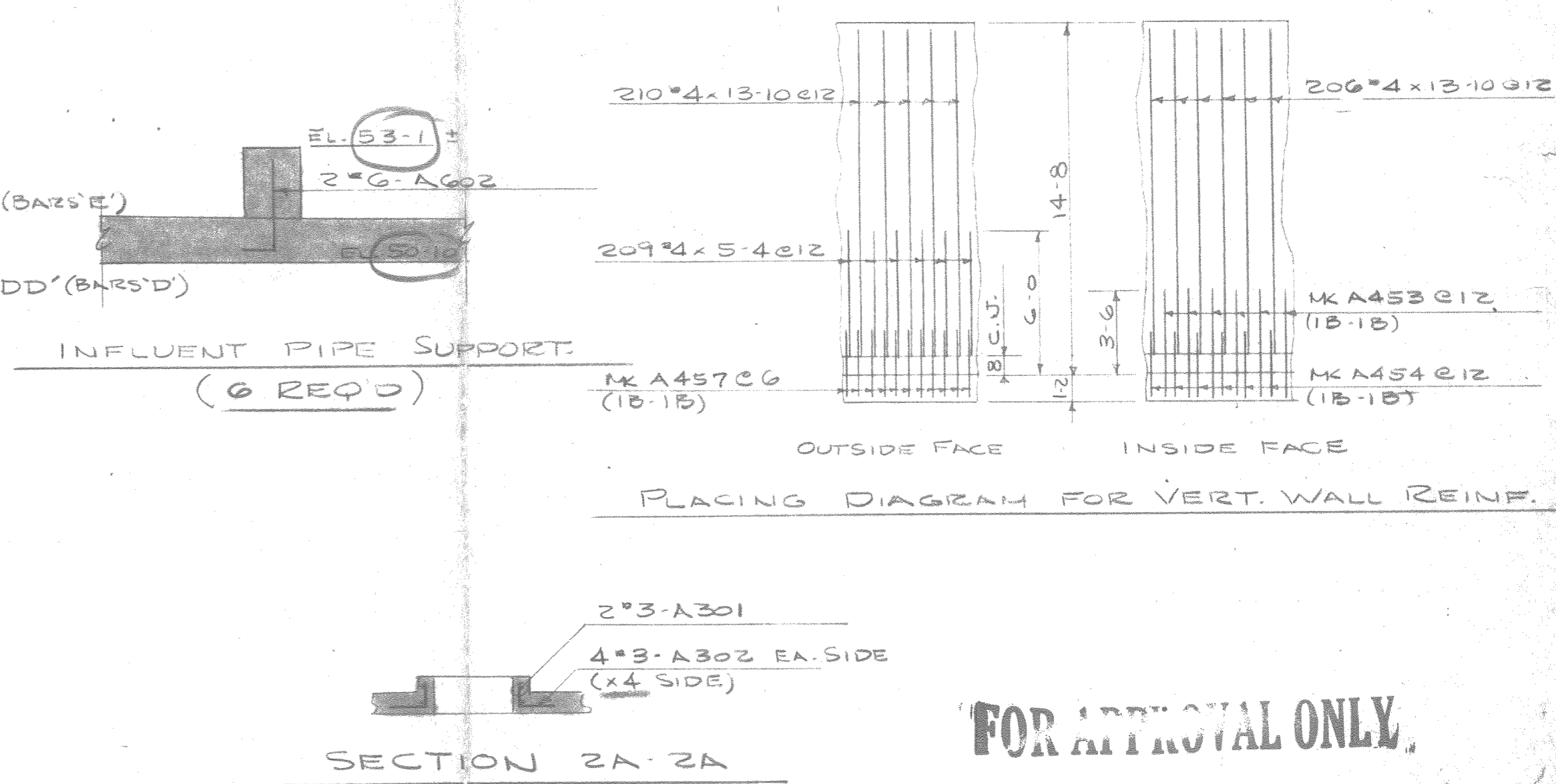






LIST 'AA' (T. TO B.) 4 REQ'D 1#4 x 33-0 1#4 x 30-0 1#4 x 27-0 1#4 x 23-0 1#4 x 19-0	LIST 'CC' (T. TO B.) 8 REQ'D 1EA MKA434 THRU MKA440 INCL. LIST 'DD' (T. TO B.) 8 REQ'D 1#4 x 18-9 1#4 x 18-3 1#4 x 18-0 1#4 x 17-6 1#4 x 17-0 1#4 x 16-3 1#4 x 15-9 1#4 x 15-0	LIST 'EE' (T. TO B.) 8 REQ'D 1EA MKA441 THRU MKA449 INCL. LIST 'FF' (T. TO B.) 4 REQ'D 1#4 x 17-9 1#4 x 18-0 1#4 x 18-0 1#4 x 18-0 1#4 x 18-0	LIST 'GG' (T. TO B.) 4 REQ'D 1#4-A450 5#4-A451 1#4-A450
----------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------

NOTE - ALL TRUSS BARS  
DETAINED FOR MIN.  
SLAB DEPTH OF  
7 1/2"



FOR APPROVAL ONLY.

REINFORCING DETAILS  
RESERVOIR - ROOF SLAB

PRINT RECORD		EASTERBY & MUMAW	
TO	DATE	DIVISION OF FLORIDA STEEL CORPORATION	
CONTR	5-15-68	P. O. BOX 10657 CHARLOTTE, N. C.	
WATER TREATMENT & STORAGE FACILITIES WEAPONS TRAINING FACILITIES			
CAMP LEJEUNE, NORTH CAROLINA			
CONTRACTOR - BROWN CONST. CO.			
ARCHITECT - BUREAU OF WARDS & BELL			
REVISIONS		DATE	CONT. NO.
DRAWN	CHECKED	DATE	CONT. NO.
MR		5-15-68	2-3432
			2

~ ALL BARS TO BE A15, INT. GRADE.  
~ LAPS - 24 DIAMS

ROOF SLAB PLAN

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED: "AS NOTED"**

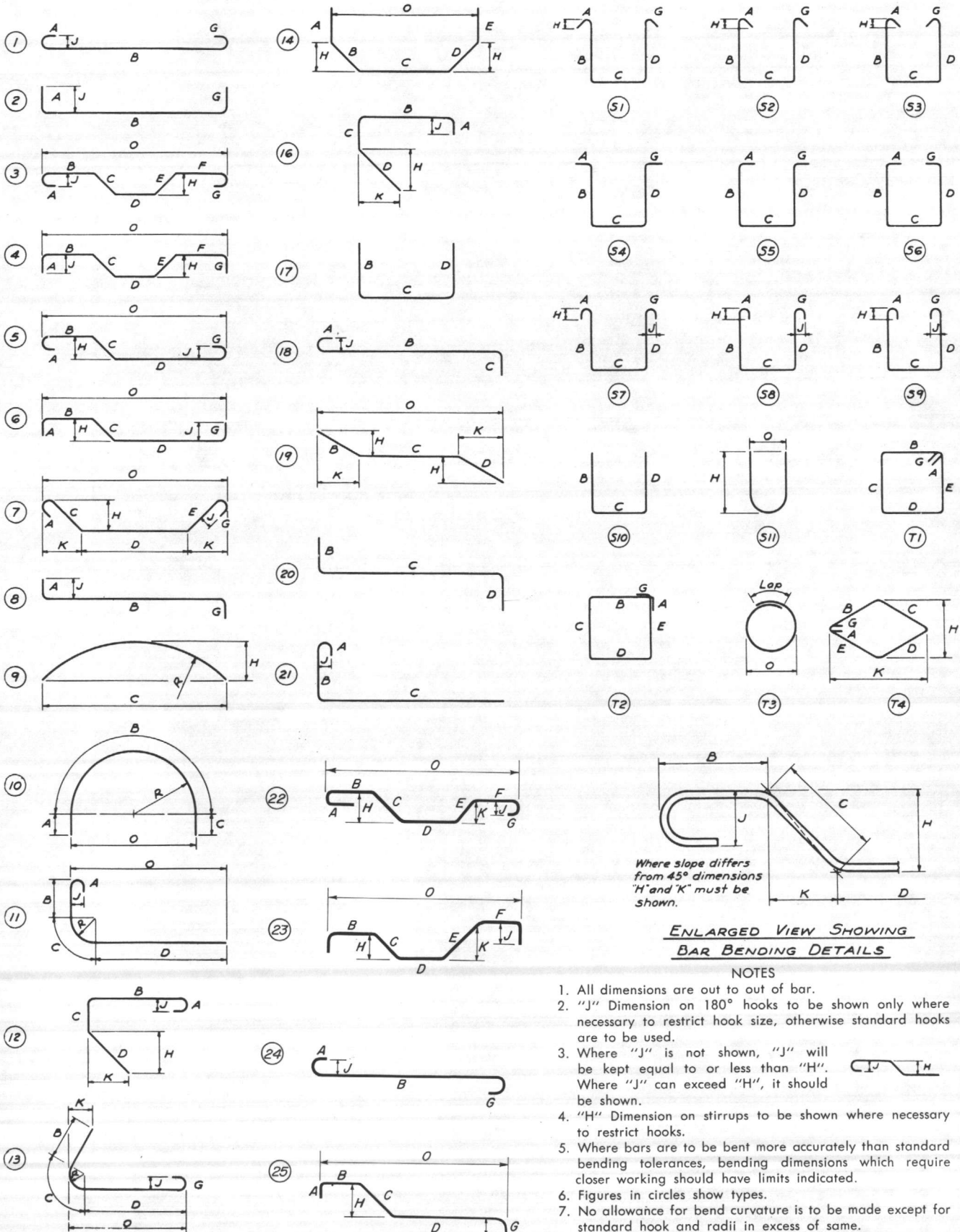
SUBJECT TO THE TERMS OF  
CONTRACT NO. 88313 OR 88313/67

APPROVAL OF THIS CONTRACTOR'S EQUIPMENT  
INDICATES THAT THE CONTRACTOR'S CONFIGURATION  
REQUIREMENTS HAVE BEEN MET. CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC. AS REQUIRED.

0075 H. N. WALLIN  
ADM. CEC, USN

DATE 5-29-68 COMLANTNAVFACENGCOM


"Steel when you want it"



Where slope differs from 45° dimensions "H" and "K" must be shown.

ENLARGED VIEW SHOWING BAR BENDING DETAILS

NOTES

1. All dimensions are out to out of bar.
2. "J" Dimension on 180° hooks to be shown only where necessary to restrict hook size, otherwise standard hooks are to be used.
3. Where "J" is not shown, "J" will be kept equal to or less than "H". Where "J" can exceed "H", it should be shown. 
4. "H" Dimension on stirrups to be shown where necessary to restrict hooks.
5. Where bars are to be bent more accurately than standard bending tolerances, bending dimensions which require closer working should have limits indicated.
6. Figures in circles show types.
7. No allowance for bend curvature is to be made except for standard hook and radii in excess of same.



FLORIDA STEEL CORPORATION

FLORIDA STEEL CORPORATION

BAR BENDING DETAILS

"Steel when you want it"



TICKET NO. \_\_\_\_\_ LIST NO. AI

RAL DIVISION

ALL REINFORCING PREFIXED A

CUSTOMER BROWN CONST. CO.

PRODUCTION No. R-3432

PROJECT WATER TRT & STORAGE FAC.

DWG No. 1, 2, 3 SHEET 1 OF 4

LOCATION CAMP LEJEUNE, N.C.

DATE 5-15-68 REVISED \_\_\_\_\_

MAT'L. FOR SPIRALS FOR RESERVOIR

DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	O	NO. BDL. PCS.		
																PER	BDI	
1	SPIRAL (ASSUMED GOLD DRAWN)																	
2																		
3																		
4	No.	SIZE	LGTH	MK		DIAM											NO. OF TURNS (INCL 3 EXTRA)	COILED LGTH
5						O. TO O.			PITCH									
6	4	3/8"	322-4	SPI		1'-1"			1 3/4"								95	13'-5"
7																		
8																		
9																		
10																		
11																		
12																		
13	SPACERS																	
14																		
15	3	x 13'-7"																
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		

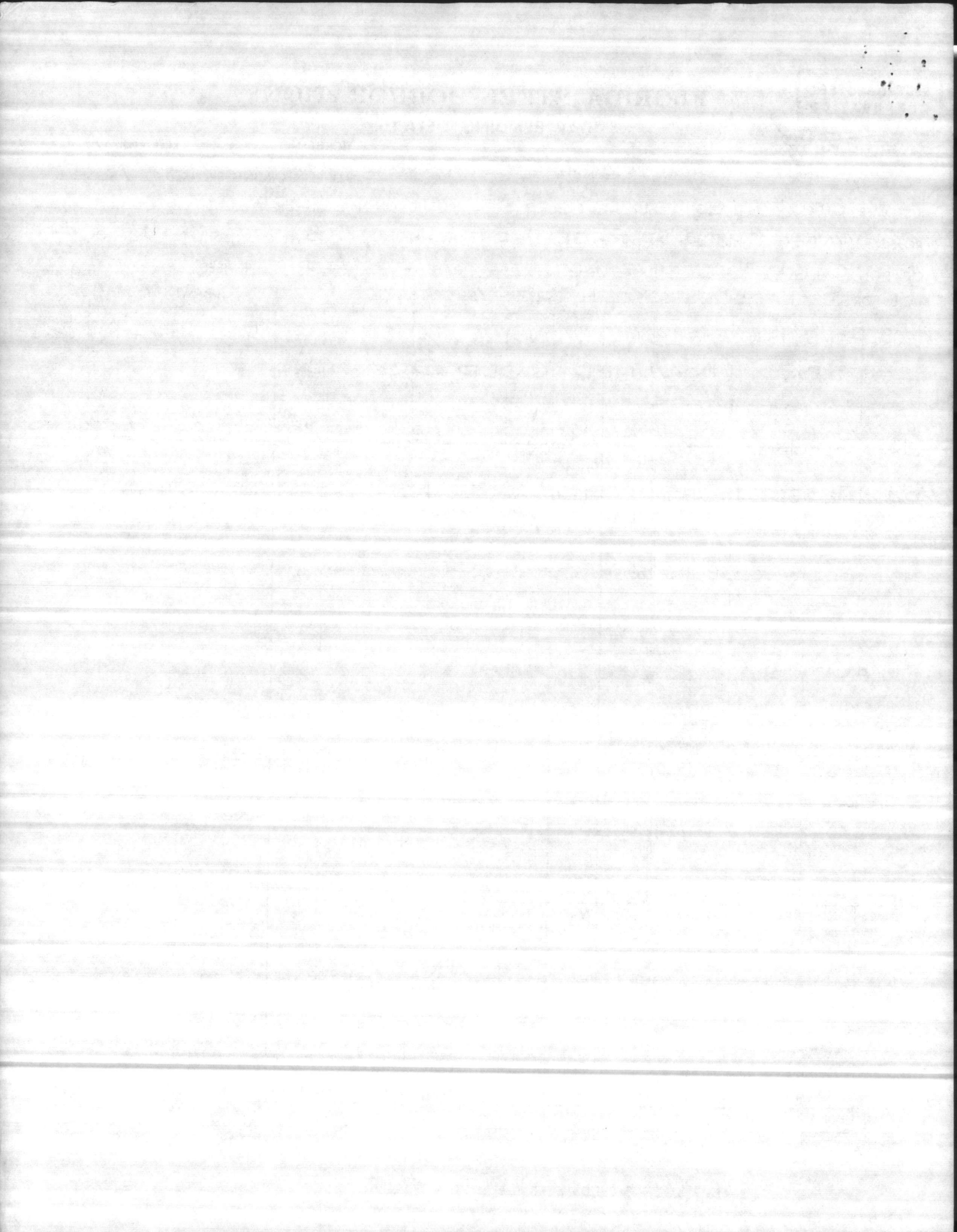
ALL DIMENSIONS ARE OUT TO OUT

SEE OUR STANDARD BAR TYPES

DOMESTIC STEEL ONLY

Theoretical Length





FLORIDA STEEL CORPORATION

FLORIDA STEEL CORPORATION

BAR BENDING DETAILS

"Steel when you want it"

RAL. DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. A 2

ALL REINFORCING PREFIXED A

CUSTOMER BROWN CONST. CO.

PRODUCTION No. R.3432

PROJECT WATER TRT. & STORAGE FAC.

DWG No. 1,2,3 SHEET 1 OF 4

LOCATION CAMP LEJEUNE, N.C.

DATE 5-15-68 REVISED \_\_\_\_\_

MAT'L. FOR RESERVOIR

DRAWN BY MR

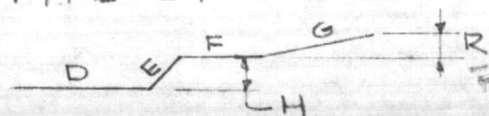
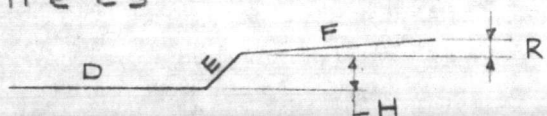
ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	R	O	NO. BDL. PER	PCS. BDI.
1	24	#6	3-10	A600	2	1-0	2-10											
2	24		16-9	A601	2	1-3	15-6											
3	12	#6	2-2	A602	2	0-4	1-10											
4																		
5	42	#4	35-2	A400	3		11-7	0-3 1/2	11-5	0-3 1/2	11-7		0-2 1/2				35-0	
6	36		38-2	A401	3		13-1	0-3 1/2	11-5	0-3 1/2	13-1		0-2 1/2				38-0	
7	8		22-6	A402	24				9-9	0-3 1/2	2-6	10-0	0-2 1/2		0-6			
8	8		21-3	A403	24				9-9	0-3 1/2	0-6	10-9	0-2 1/2		0-6			
9	18		20-0	A404	23				9-9	0-3 1/2	10-0		0-2 1/2		0-5			
10	8		18-6	A405	23				9-9	0-3 1/2	8-6		0-2 1/2		0-4			
11	8		16-8	A406	23				9-9	0-3 1/2	6-8		0-2 1/2		0-3			
12	8		14-6	A407	23				9-9	0-3 1/2	4-6		0-2 1/2		0-2			
13	8		12-6	A408	3				9-9	0-3 1/2	2-6		0-2 1/2					
14	-		18-6	A409	3		10-3	0-3 1/2	8-0				0-2 1/2					
15	-		18-0	A410	3		9-9	0-3 1/2	8-0				0-2 1/2					
16	-		17-9	A411	3		9-3	0-3 1/2	8-3				0-2 1/2					
17	-		17-3	A412	3		8-6	0-3 1/2	8-6				0-2 1/2					
18	-		17-0	A413	3		8-0	0-3 1/2	8-9				0-2 1/2					
19	-		16-3	A414	3		7-0	0-3 1/2	9-0				0-2 1/2					
20	-		15-6	A415	3		6-0	0-3 1/2	9-3				0-2 1/2					
21	-		14-9	A416	3		5-0	0-3 1/2	9-6				0-2 1/2					
22	8		27-3	A417	24				13-0	0-3 1/2	6-0	8-0	0-2 1/2		0-6			
23	8		26-9	A418	24				13-0	0-3 1/2	5-6	8-0	0-2 1/2		0-6			
24	8		26-9	A419	24				13-0	0-3 1/2	5-3	8-3	0-2 1/2		0-6			
25	8		26-0	A420	24				13-0	0-3 1/2	4-6	8-3	0-2 1/2		0-6			
26	8		25-9	A421	24				13-0	0-3 1/2	4-0	8-6	0-2 1/2		0-6			
27	8		25-3	A422	24				13-0	0-3 1/2	3-3	8-9	0-2 1/2		0-6			
28	8		24-9	A423	24				13-0	0-3 1/2	2-6	9-0	0-2 1/2		0-6			
29	8		24-3	A424	24				13-0	0-3 1/2	1-9	9-3	0-2 1/2		0-6			
30	8	#4	23-3	A425	24				13-0	0-3 1/2	0-9	9-3	0-2 1/2		0-6			
31			CONT'D															

DOMESTIC STEEL ONLY

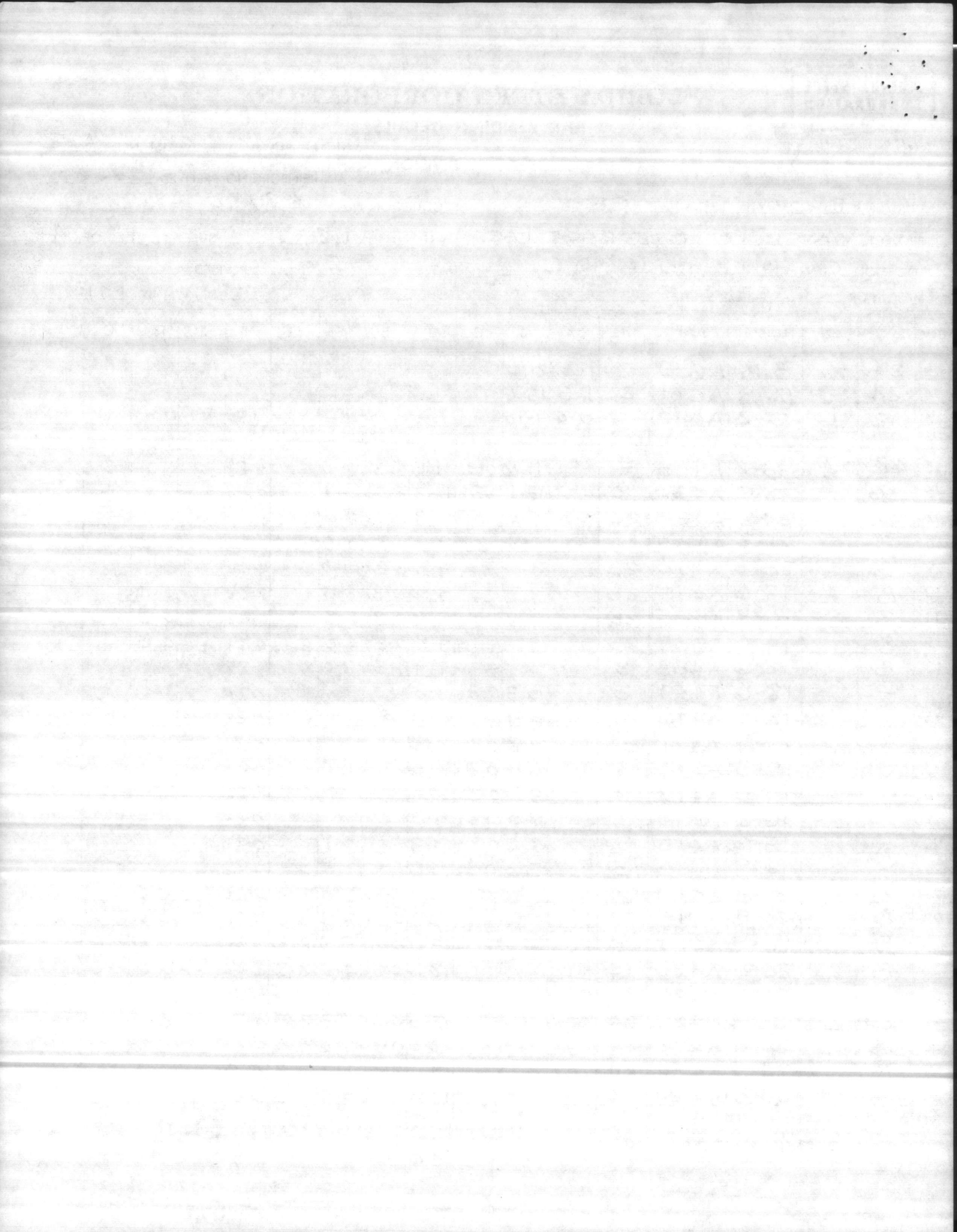
SEE OUR STANDARD BAR TYPES

ALL DIMENSIONS ARE OUT TO OUT  
TYPE 23

TYPE 24



Theoretical Length





# FLORIDA STEEL CORPORATION

## BAR BENDING DETAILS

RAL. DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. A3

ALL REINFORCING PREFIXED \_\_\_\_\_

CUSTOMER BROWN CONST. CO.

PRODUCTION No. 122432

PROJECT WATER TRT.

DWG No. 1, 2, 3 SHEET 2 OF 4

LOCATION CAMP LEJEUNE, N.C.

DATE 5-15-68 REVISED \_\_\_\_\_

MAT'L. FOR RESERVOIR

DRAWN BY MR

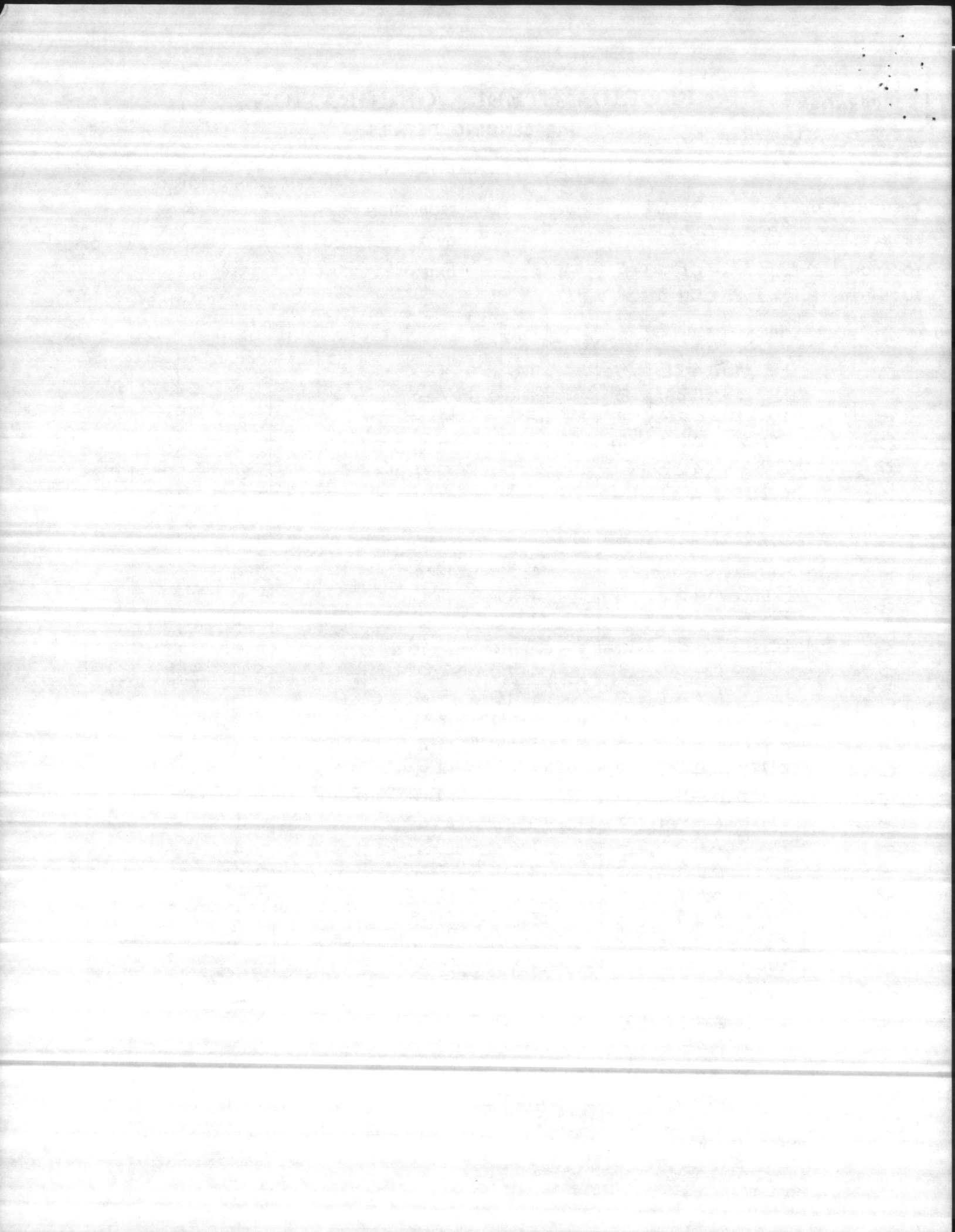
ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	R	O	NO. BDL. PER	PCS. BDI
1	-	#4	17-9	A426	3			9-6	0-3	8-0			0-2					
2	-		18-0	A427	3			9-10	0-3	7-10			0-2					
3	-		18-1	A428	3			10-0	0-3	7-10			0-2					
4	8		27-8	A429	24				9-9	0-3	9-8	8-0	0-2		0-6			
5	8		27-8	A430	24				9-9	0-3	7-10	7-10	0-2		0-6			
6	12		27-10	A431	24				9-9	0-3	10-0	7-10	0-2		0-6			
7	-		VOID	A432														
8	-		VOID	A433														
9	8		22-8	A434	3			9-9	0-5	12-6			0-4					
10	8		21-8	A435	3			9-9	0-5	11-6			0-4					
11	8		20-5	A436	3			9-9	0-5	10-3			0-4					
12	8		18-11	A437	3			9-9	0-5	8-9			0-4					
13	8		17-2	A438	3			9-9	0-5	7-0			0-4					
14	8		15-2	A439	3			9-9	0-5	5-0			0-4					
15	8		12-11	A440	3			9-9	0-5	2-9			0-4					
16	8		27-11	A441	3			13-0	0-5	14-6			0-4					
17	8		27-8	A442	3			13-0	0-5	14-3			0-4					
18	8		27-5	A443	3			13-0	0-5	14-0			0-4					
19	8		26-11	A444	3			13-0	0-5	13-6			0-4					
20	8		26-5	A445	3			13-0	0-5	13-0			0-4					
21	8		25-11	A446	3			13-0	0-5	12-6			0-4					
22	8		25-5	A447	3			13-0	0-5	12-0			0-4					
23	8		24-8	A448	3			13-0	0-5	11-3			0-4					
24	8		24-2	A449	3			13-0	0-5	10-9			0-4					
25	8		27-8	A450	3			9-9	0-5	17-6			0-4					
26	20		27-11	A451	3			9-9	0-5	17-9			0-4					
27	24		5-8	A452	3			1-0	3-8	1-0			0-8					
28	199		6-0	A453	2	1-7	4-5											
29	200		4-8	A454	2	1-7	3-1											
30	6		7-10	A455	2	1-7	6-3											
31	6	#4	6-6	A456	2	1-7	4-11											

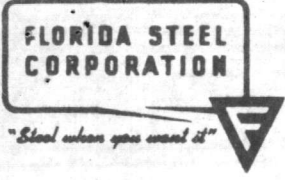
ALL DIMENSIONS ARE OUT TO OUT

SEE OUR STANDARD BAR TYPES

**DOMESTIC STEEL ONLY**

Theoretical Length





# FLORIDA STEEL CORPORATION

## BAR BENDING DETAILS

CUSTOMER BROWN CONST. CO.  
 PROJECT WATER TRT.  
 LOCATION CAMP LEJEUNE, N.C.  
 MAT'L. FOR RESERVOIR

KAL. DIVISION

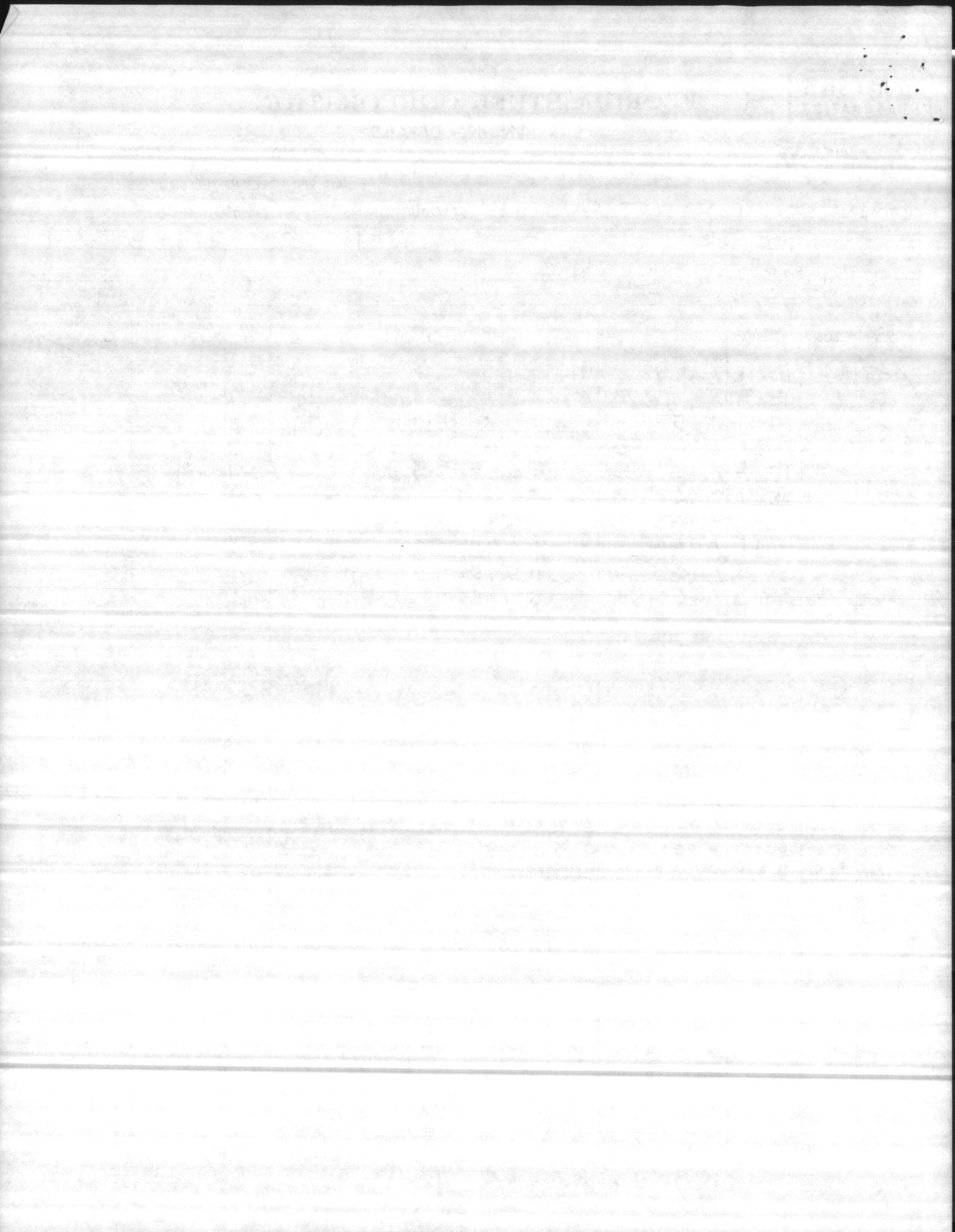
TICKET NO. \_\_\_\_\_ LIST NO. A4  
 ALL REINFORCING PREFIXED \_\_\_\_\_  
 PRODUCTION No. R-3432  
 DWG No. 1, 2, 3, SHEET 3 OF 4  
 DATE 5-15-68 REVISED \_\_\_\_\_  
 DRAWN BY MR.

ITEM	NO. PCS.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	O	NO. BDL. PER		
																PCS.	BDI	
1	407	#4	10-11	A457	2	7-10	3-1											
2	12		13-9	A458	2	8-10	4-11											
3	3		14-11	A459	3		1-6	3-1	5-9	3-1	1-6		2-2					
4	3		15-1	A460	3		1-6	3-2	5-9	3-2	1-6		2-3					
5	3		15-4	A461	3		1-6	3-3 $\frac{1}{2}$	5-9	3-3 $\frac{1}{2}$	1-6		2-4					
6	3		15-7	A462	3		1-6	3-5	5-9	3-5	1-6		2-5					
7	3		15-10	A463	3		1-6	3-6 $\frac{1}{2}$	5-9	3-6 $\frac{1}{2}$	1-6		2-6					
8	12		5-11	A464	3		1-6	2-11 $\frac{1}{2}$	1-6				2-1					
9	42		35-3	A465	3		11-5	0-5 $\frac{1}{2}$	11-6	0-5 $\frac{1}{2}$	11-5		0-4				35-0	
10	36	#4	38-3	A466	3		12-11	0-5 $\frac{1}{2}$	11-6	0-5 $\frac{1}{2}$	12-11		0-4				38-0	
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19	141	#3	2-6	A300	2	0-7	1-11											
20	2		12-6	A301	T2	0-3	3-0	3-0	3-0	3-0			0-3					
21	16	#3	1-9	A302	2	0-9	1-0											
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		

ALL DIMENSIONS ARE OUT TO OUT
SEE OUR STANDARD BAR TYPES

### DOMESTIC STEEL ONLY

Theoretical Length





# FLORIDA STEEL CORPORATION

## STRAIGHT BAR LIST

"Steel when you want it"

KAL DIVISION

TICKET NO. \_\_\_\_\_ LIST NO. A5

CUSTOMER BROWN CONST. CO.

ALL REINFORCING PREFIXED A  
PRODUCTION No. K-3432

PROJECT WATER TRT.

DWG No. 1,2,3 SHEET 4 OF 4

LOCATION CAMP LEJEUNE, N.C.

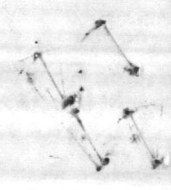
DATE 5/5/68 REVISED \_\_\_\_\_

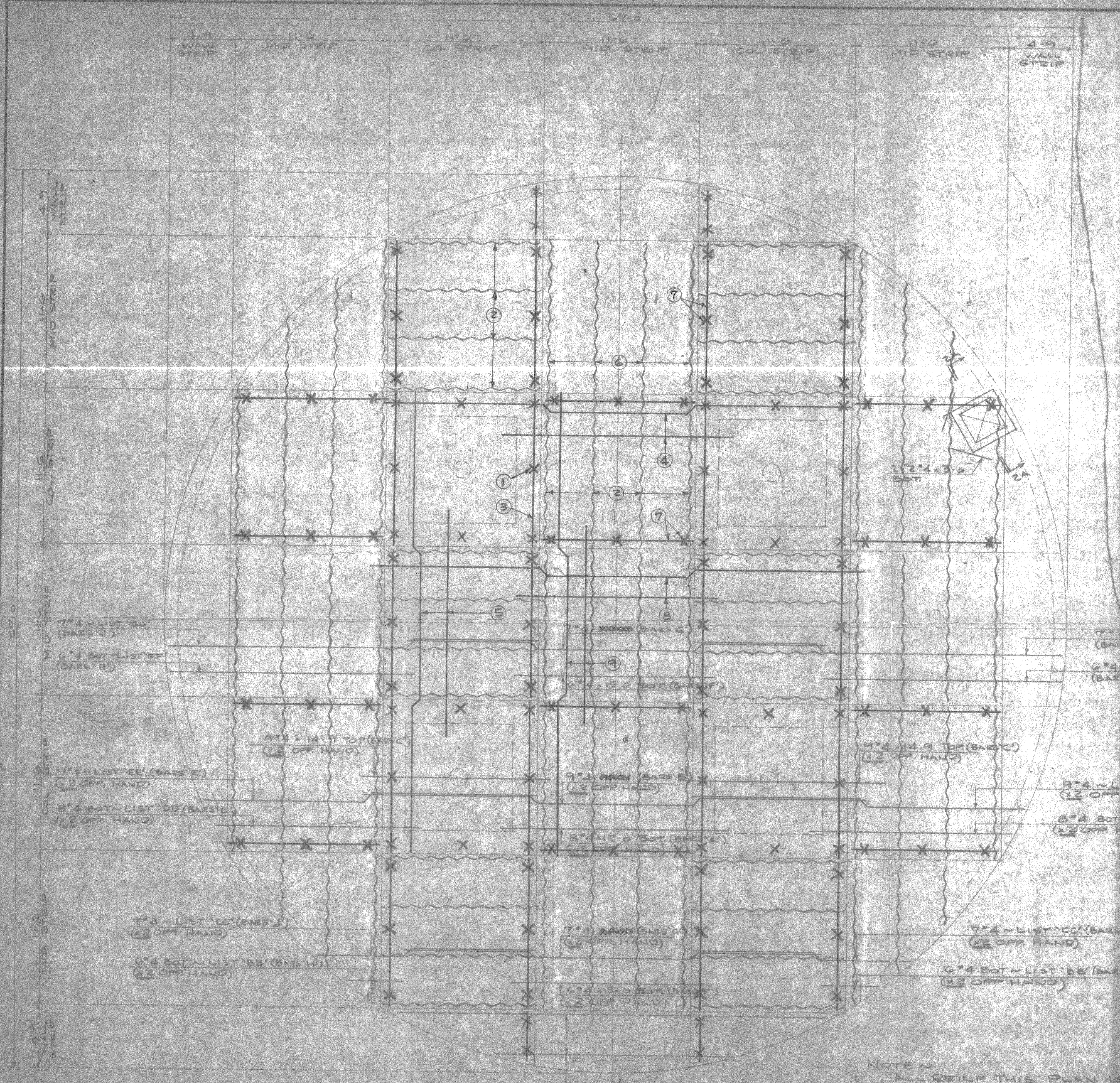
MAT'L. FOR RESERVOIR

DRAWN BY MR

ITEM	NO. PCS.	SIZE	LENGTH	MARK	ITEM	NO. PCS.	SIZE	LENGTH	MARK	ITEM	NO. PCS.	SIZE	LENGTH	MARK
1	72	#7	7-6		35	8	#4	12-9		69				
2					36	8		12-0		70				
3					37	8		11-6		71				
4	350	#5	30-0		38	8		11-3		72				
5	25		15-6		39	8		10-0		73				
6	32		11-6		40	8		9-6		74				
7	25		11-3		41	8		8-3		75				
8	8	#5	4-6		42	8		7-9		76				
9					43	8		6-0		77				
10	416	#4	13-10		44	8		5-9		78				
11	4	#4	33-0		45	209		5-4		79				
12	4		32-6		46	16		3-6		80				
13	4		30-6		47	4	#4	3-0		81				
14	4		30-0		48					82				
15	4		27-6		49					83				
16	4		27-0		50	21	#3	30-0		84				
17	4		23-6		51		1			85				
18	4		23-0		52	3	#3	9-6		86				
19	4		19-6		53					87				
20	4		19-0		54					88				
21	8		18-9		55					89				
22	8		18-6		56					90				
23	8		18-3		57					91				
24	8		18-1		58					92				
25	44		18-0		59					93				
26	20		17-9		60					94				
27	8		17-6		61					95				
28	8		17-3		62					96				
29	80		17-0		63					97				
30	16		16-3		64					98				
31	8		15-9		65					99				
32	8		15-6		66					100				
33	80		15-0		67					101				
34	152	#4	14-9		68					102				







SEQUENCE OF PLACING SUPPORTS & BARS IN SLAB.

- ① PLACE HIGH CHAIRS AT COLUMN HEADS PER PLAN.
- ② BETWEEN COL. HEADS, PLACE SLAB BOLSTERS CROSSWISE IN COL. STRIPS.
- ③ PLACE SUPPORT BARS ON HIGH CHAIRS IN EAST-WEST DIRECTION (COL. HEAD).
- ④ LAY COLUMN STRIP STRAIGHT & BENT NORTH-SOUTH BARS.
- ⑤ LAY COLUMN STRIP STRAIGHT & BENT EAST-WEST BARS.
- ⑥ PLACE SLAB BOLSTER CROSSWISE IN NORTH-SOUTH MID STRIP.
- ⑦ PLACE HIGH CHAIRS & SUPPORT BAR FOR MID STRIP BOTH DIRECTIONS.
- ⑧ LAY MID STRIP STRAIGHT & BENT NORTH-SOUTH BARS.
- ⑨ LAY MID STRIP STRAIGHT & BENT EAST-WEST BARS.

SUMMARY OF ACCESSORIES

- ~ 112 S.B. = 900 LF.
- ~ 32\*5 x 11-6 STE.
- ~ 8\*5 x 4-6 STE.
- ~ 5" H.C. = 8 PCS.
- ~ 4" H.C. = 112 PCS.

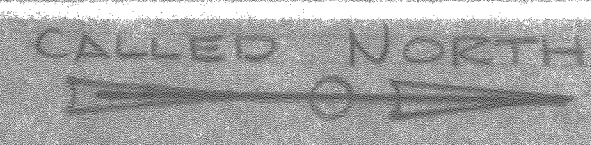
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NOFORK, VIRGINIA 23511

**APPROVED:**  
SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NO. 8873 SPEC 8873/6  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY - THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC. AS REQUIRED.

*H.N. Wallin*  
H. N. WALLIN  
ADM. CEC, USN  
DATE 5-29-68 COMLANAVFACENGCOM

FOR APPROVAL ONLY

ACCESSORY LAYOUT FOR ROOF SLAB RESERVOIR



ROOF SLAB PLAN

PRINT RECORD			EASTERBY & MUMAW		
TO	DATE	NO	DIVISION OF FLORIDA STEEL CORPORATION		
CONT	55-5	84	P. O. BOX 10657 CHARLOTTE, N. C.		
WATER TREATMENT & STORAGE FACILITIES					
WEAPONS TRAINING FACILITIES					
CAMP LEJUNE, NORTH CAROLINA					
CONTRACTOR BROWN CONST. CO.					
ARCHITECT BUREAU OF YNERS & BOGGS					
REVISIONS		DATE	CONT. NO.	SHEET	
MR		5/28/68	2342	3	





ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

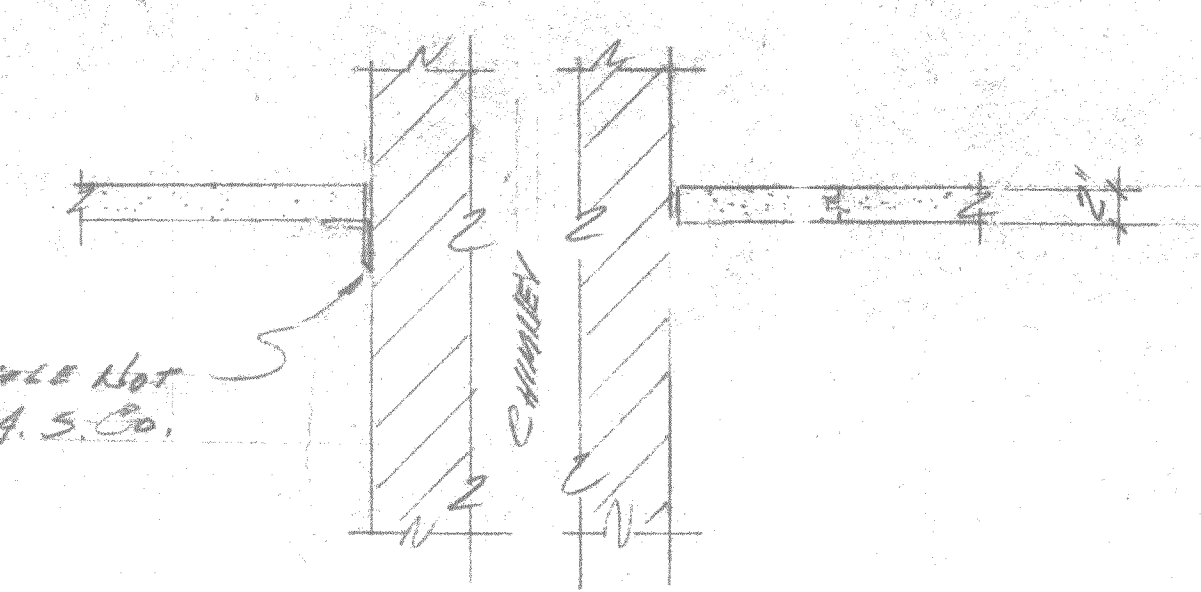
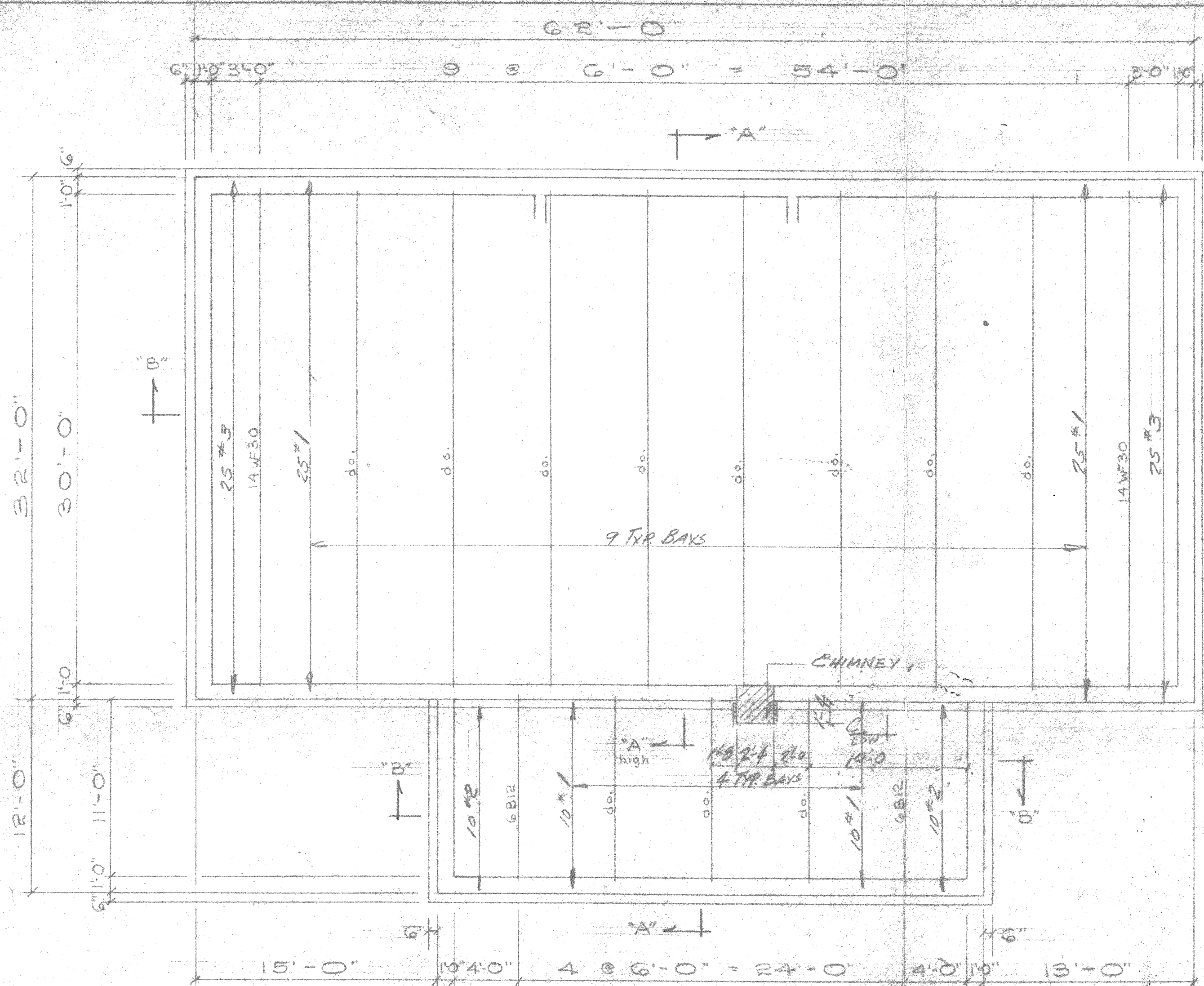
**APPROVED:**

SUBJECT: 88313 PARTS OF 88313/67

CONTRACT NO. \_\_\_\_\_  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATED HEREIN IS WITH RECOGNITION  
REQUIREMENTS OF THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

DATE 6-7-68 12 PM  
H. N. WALLIN  
RADM, CEC, USN  
COMLANTNAVFACENGCOM



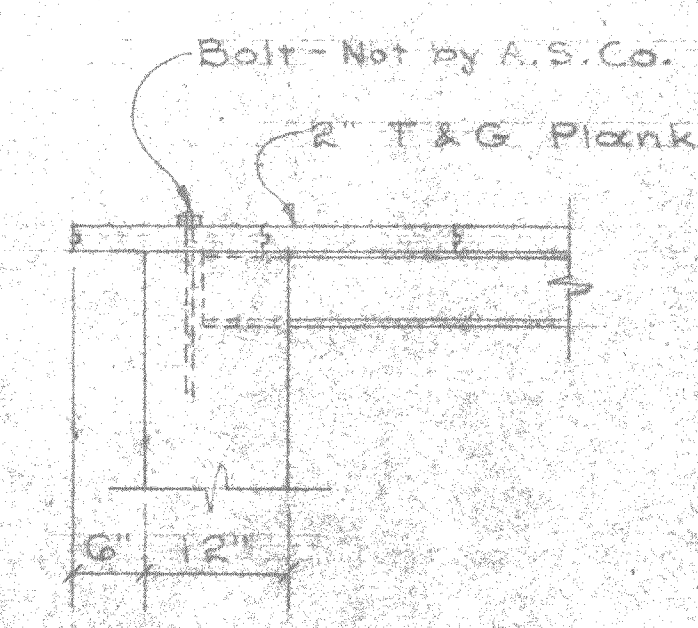


SECTION THRU CHIMNEY

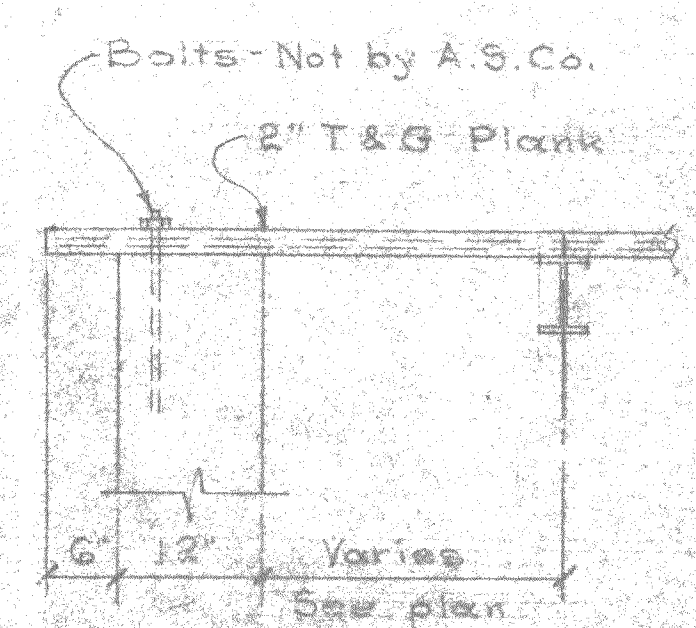
**CONTRACTORS NOTE**  
 Please check and verify all sections and dimensions. No material can be fabricated or delivered without your approval of these drawings.

**FOR APPROVAL ONLY**  
**NOT FOR FIELD USE**

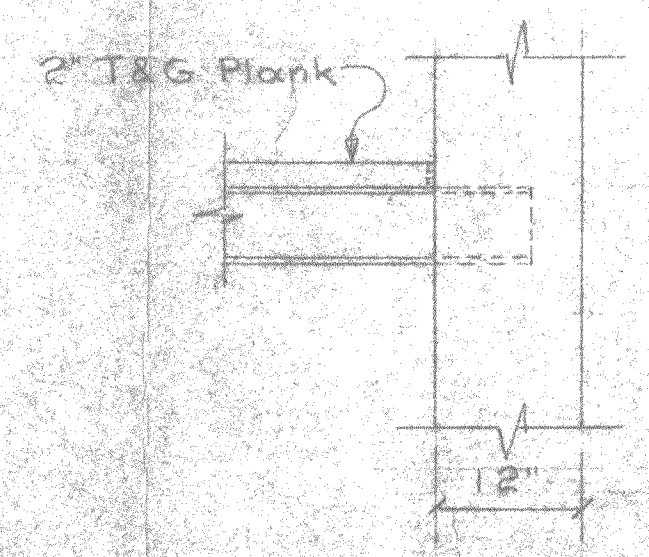
**ROOF FRAMING PLAN**



SECTION @ 'A'



SECTION @ 'B'



SECTION @ 'C'

ARLINGTON DIVISION  
 NAVAL FACILITIES ENGINEERING COMMAND  
 NORFOLK, VIRGINIA 23511

**APPROVED:**  
 SUBJECT TO THE REQUIREMENTS OF  
 CONTRACT NO. 88313 88313/6  
 APPROVAL OF MATERIALS AND/OR EQUIPMENT INDICATES COMPLIANCE WITH SPECIFICATION REQUIREMENTS ONLY - THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC., AS REQUIRED.

DATE 6-7-68  
 H. N. WALLIN  
 P. M. CEC, USN  
 COMPLAINT AFFAIRS ROOM

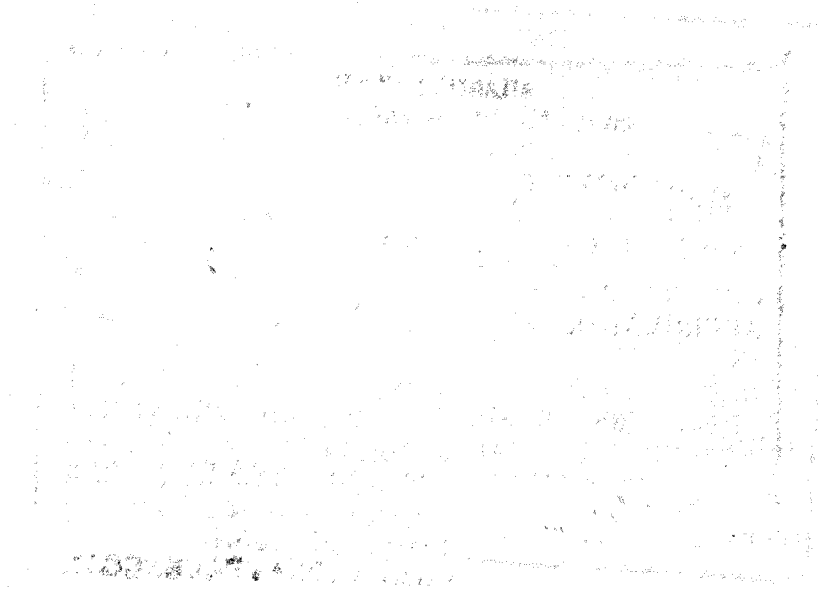
**ERECTION NOTE:**  
 All slabs are to be clipped to purlins with 2 galvanized clips. All slab joints are to be pointed from top with cement grout.

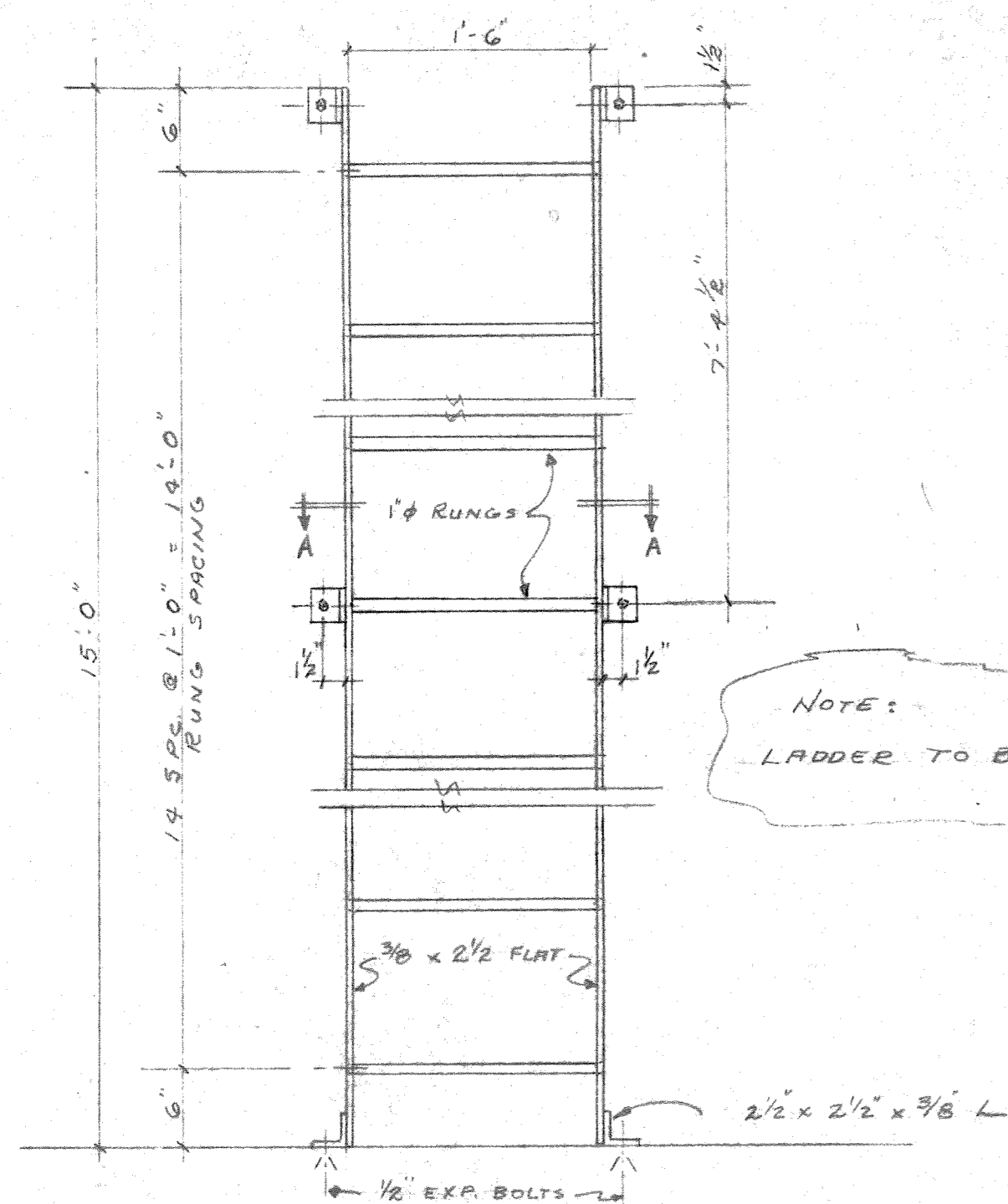
**CONTRACTORS NOTE:**  
 All surfaces on which A. S. Co. products bear are to be made level and true by contractor.

ARNOLD STONE COMPANY GREENSBORO, N. C.		JOB NO. <b>W-58</b>
LOCATION <b>Camp Lejeune, N.C.</b>	ARCHITECT <b>Private Plant</b>	PLAN NO. <b>E-1 OF 1</b>
ADDRESS _____	CONTRACTOR <b>Brown Construction Co.</b>	PART OF BLDG. <b>Roof</b>
ADDRESS <b>Charlotte, N.C.</b>	CONCRETE PRODUCTS WILL BE MARKED WITH JOB NO. & SHEET NO.	CONCRETE <b>T&amp;G Mix</b>
WORK INVOLVED <b>2" T&amp;G Plank</b>	WORK IS <input checked="" type="checkbox"/> EXPOSED <input type="checkbox"/> NOT EXPOSED <input type="checkbox"/> SEE PLAN	SCALE <b>1/4" = 1'-0"</b>
ERECTION BY <input type="checkbox"/> A. E. CO. <input checked="" type="checkbox"/> CONTR.	PRINT RECORD <b>WOC</b>	REV. <b>1/1</b>
DATE <b>6-7-68</b>	PRINT RECORD <b>A12</b>	REV. <b>1/1</b>

THE UNIVERSITY OF  
MICHIGAN LIBRARY

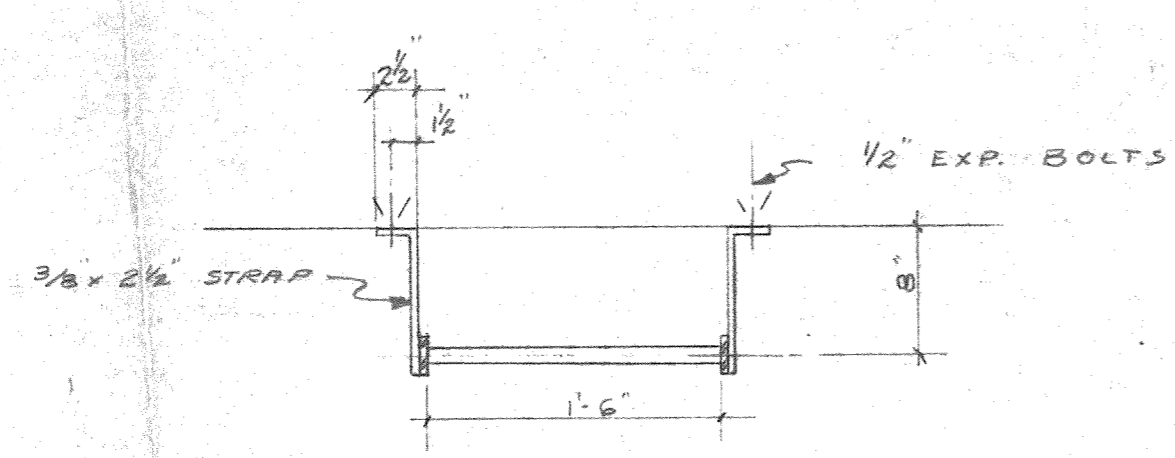
1000 S. ZEEB ROAD  
ANN ARBOR, MICH. 48106





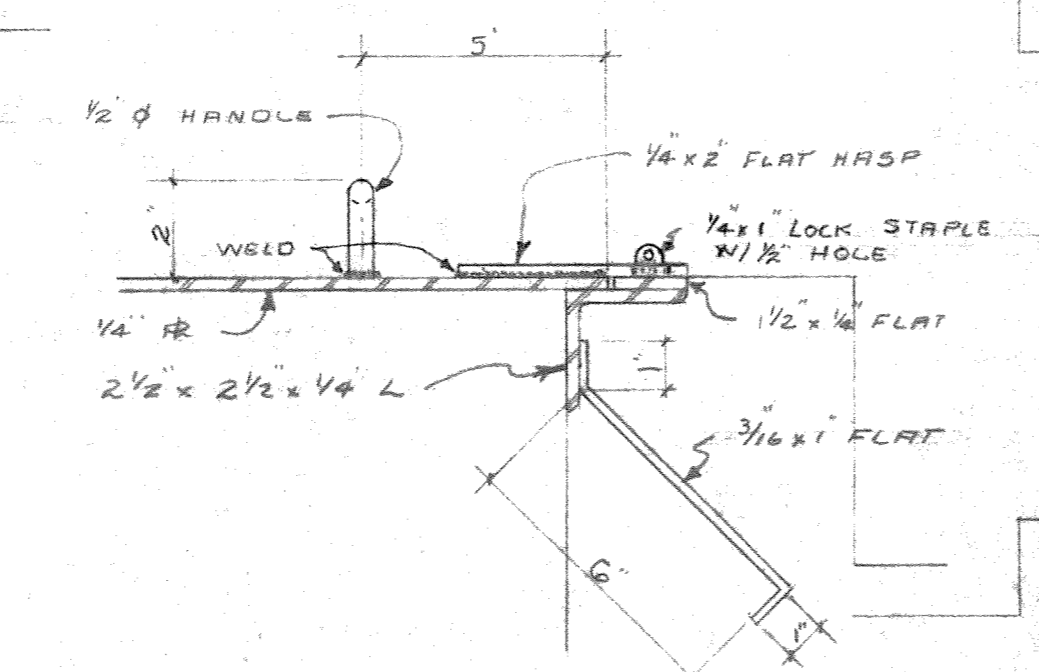
NOTE:  
LADDER TO BE H.D.G.

RESERVOIR LADDER  
ONE LAYOUT REQ'D.  
PART OF ITEM #22 DRWG. #82

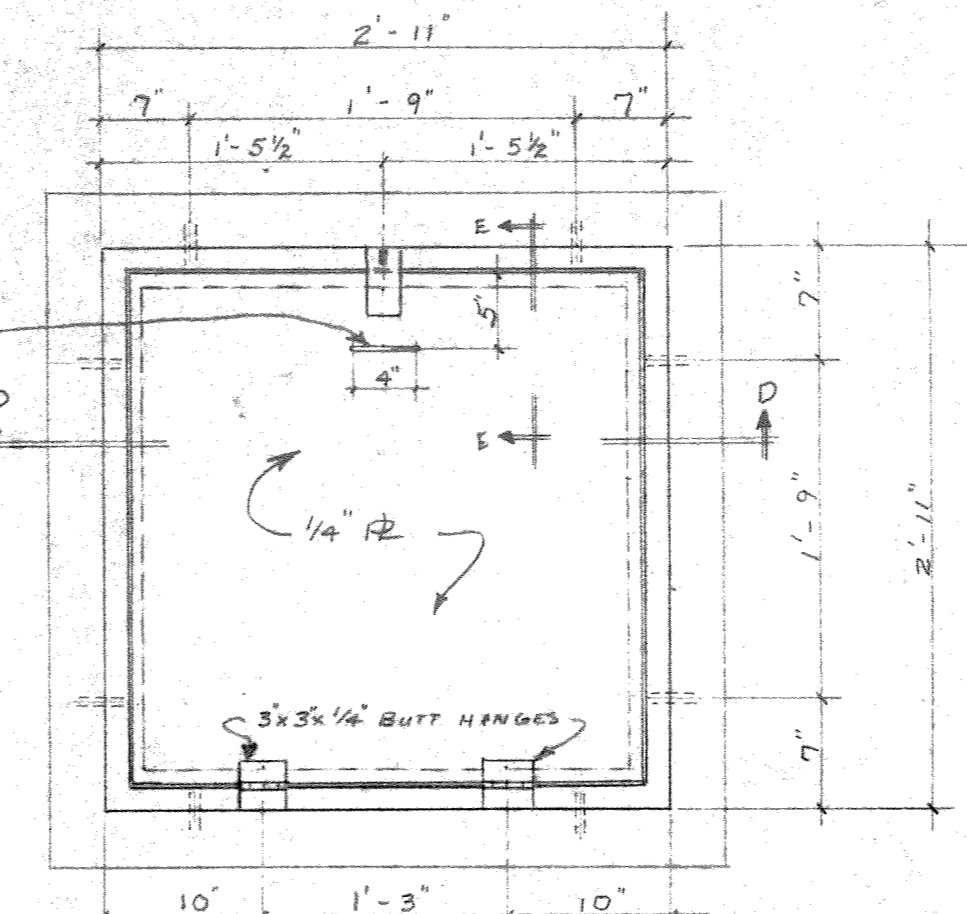


SECTION A-A

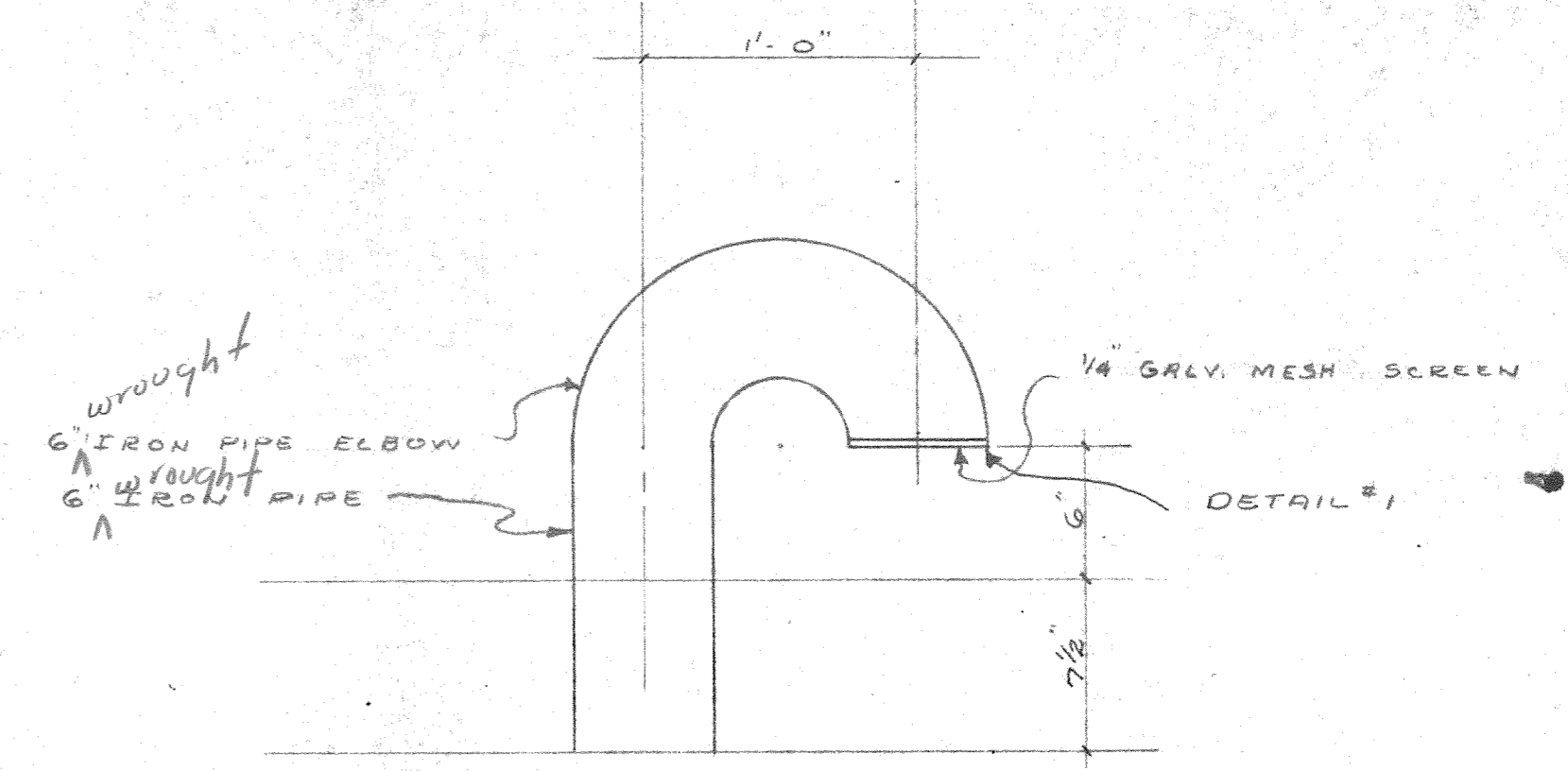
NOTE:  
TO BE H.D.G.



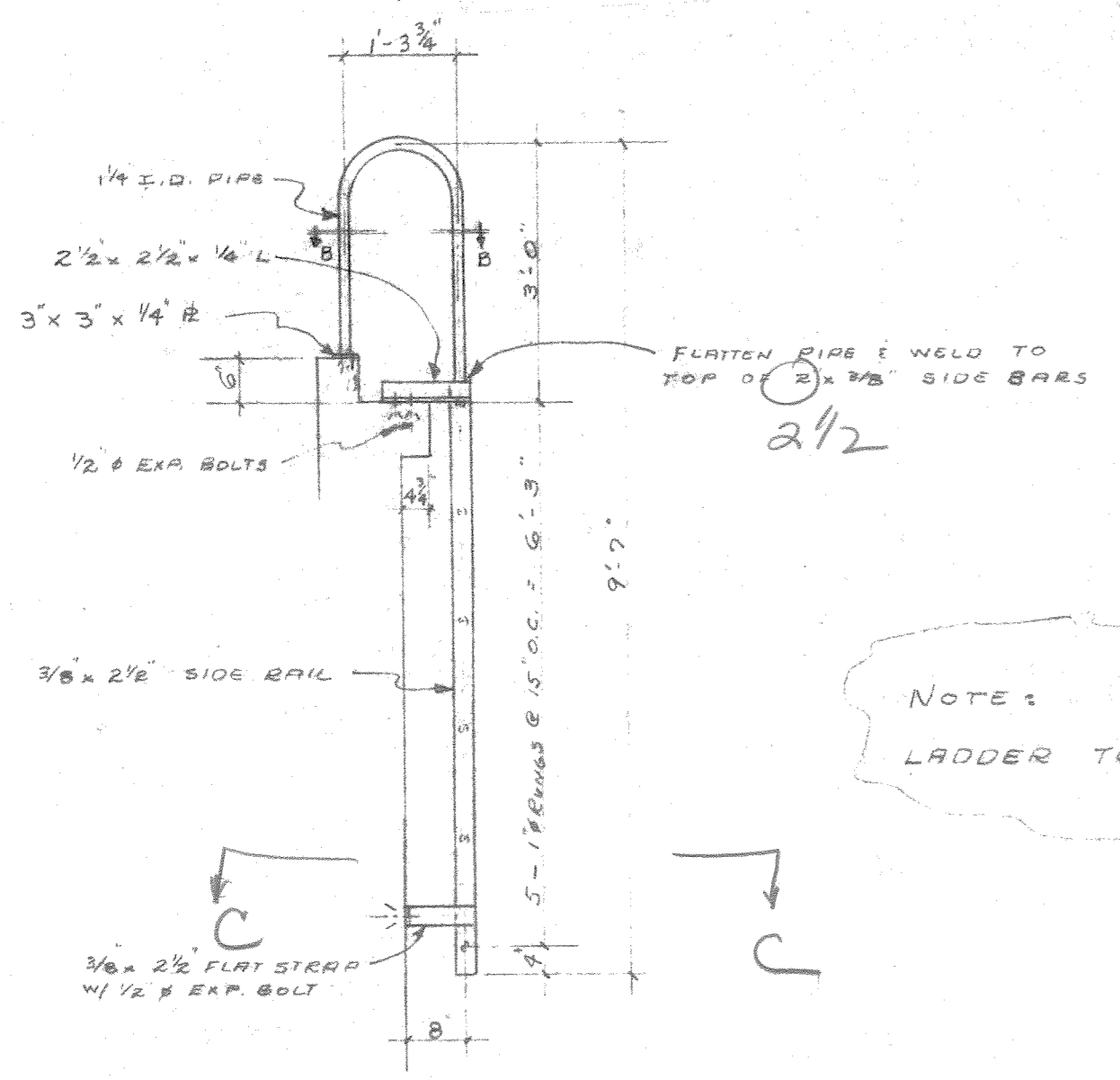
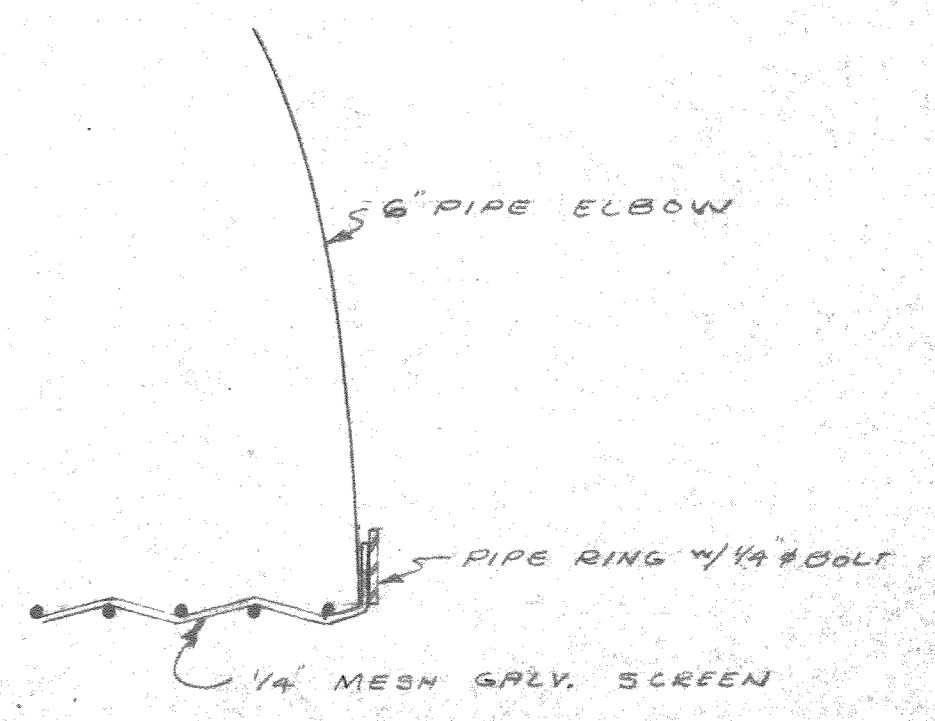
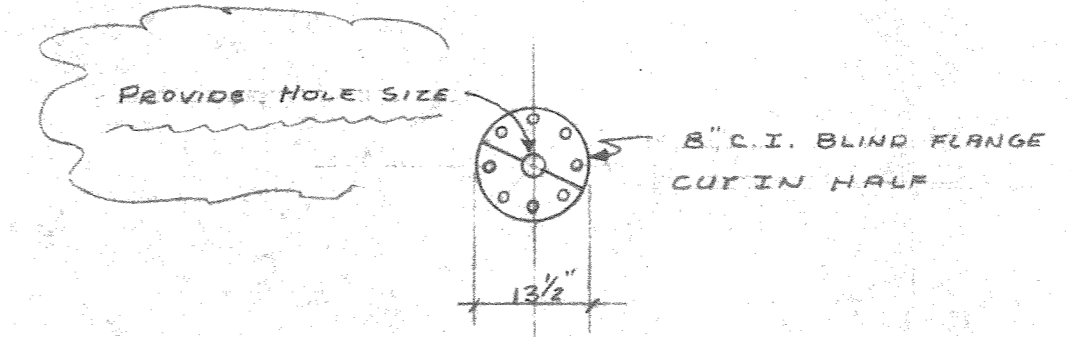
SECTION E-E



SECTION DD

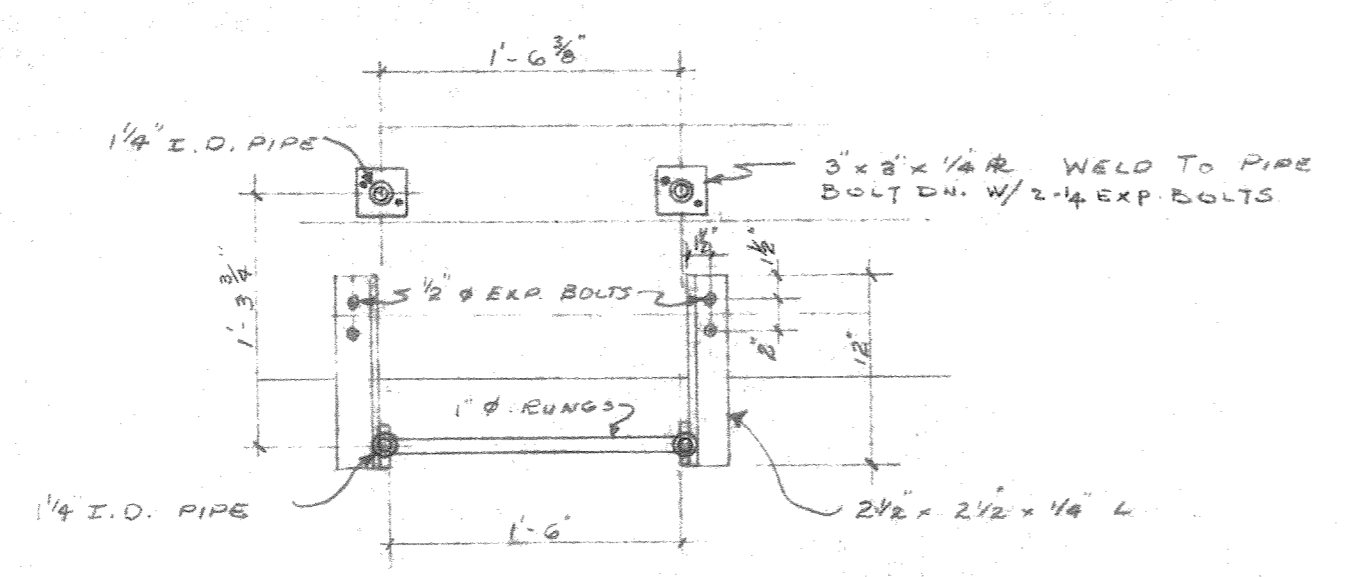


PIPE VENTS  
4 LAYOUTS REQ'D.  
ITEM #21 DRWG. 82

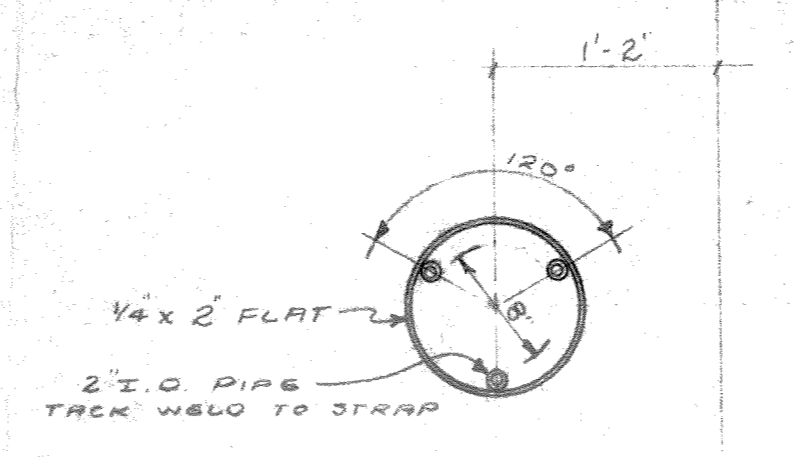


NOTE:  
LADDER TO BE H.D.G.

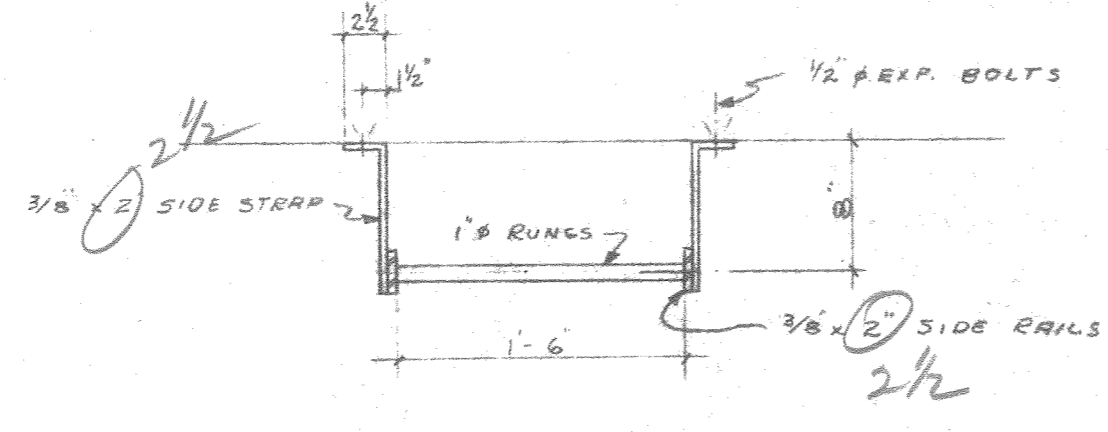
LADDER ON OUTSIDE OF RESERVOIR  
ONE LAYOUT REQ'D.  
PART OF ITEM #22 DRWG. 82



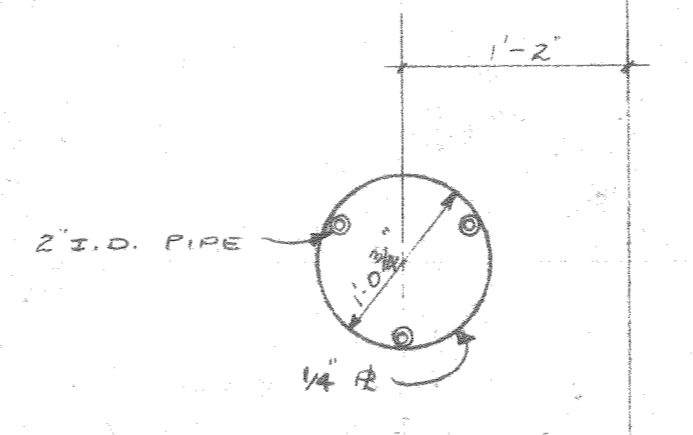
SECTION B-B



SECTION F-F

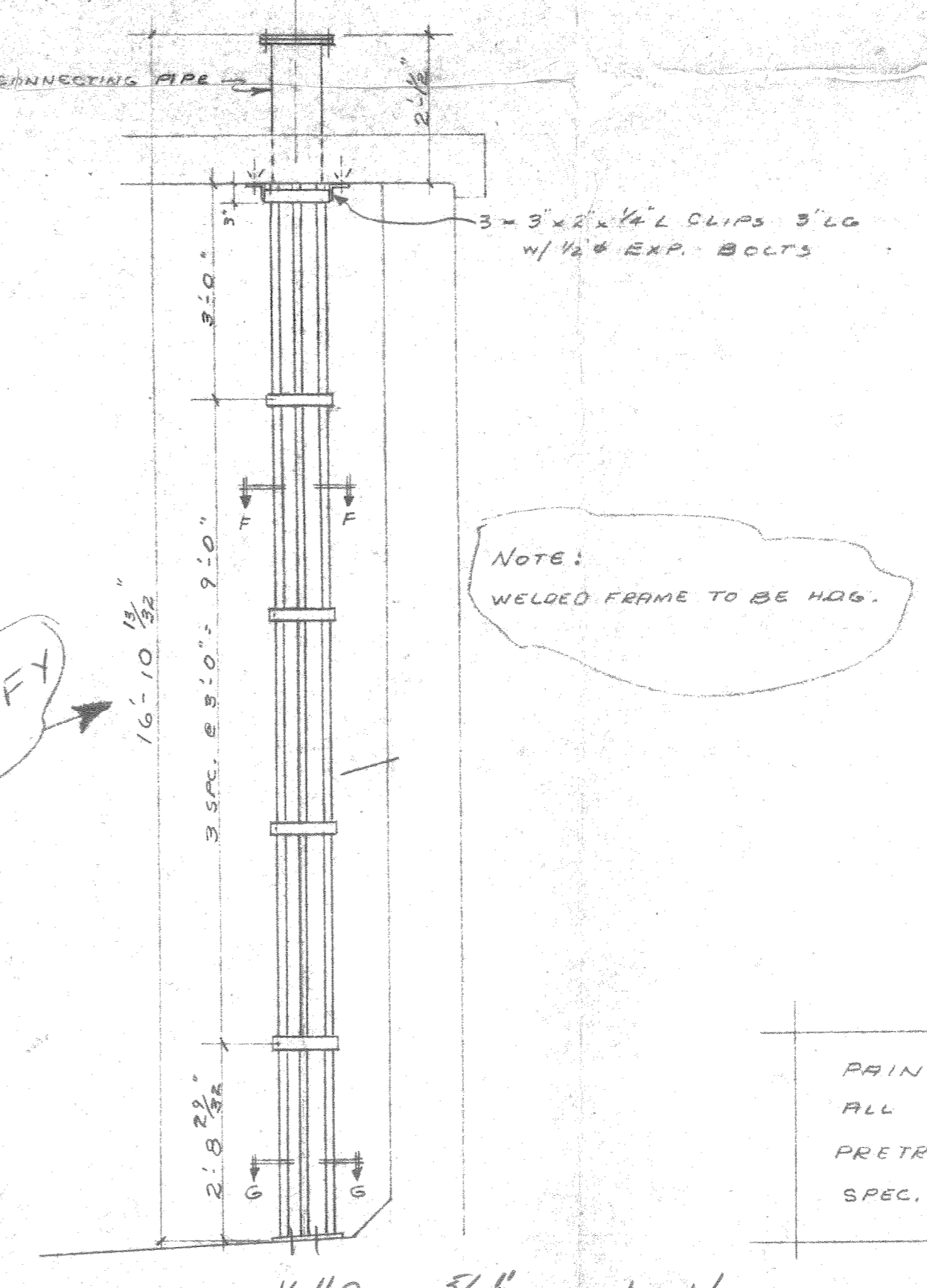


SECTION C-C



SECTION G-G

VERIFY



FLOAT GUIDE @ RESERVOIR  
ONE LAYOUT REQ'D.  
ITEM #24 DRWG. 82

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511  
**APPROVED: "AS NOTED"**  
SUBMIT TO THE SUPERVISOR  
CONTRACT NO. 883/3 SPEC. 883/3/6  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ONLY - THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC., AS REQUIRED.  
H.N. WALLIN  
ADM. CEC, USN  
DATE 7-5-68 COMPLANTNAVAERONGCOM

PRINT NOTE:  
ALL STEEL EXCEPT H.D.G. TO BE  
PRETREATED IN ACCORDANCE WITH  
SPEC. MIL - P - 15328

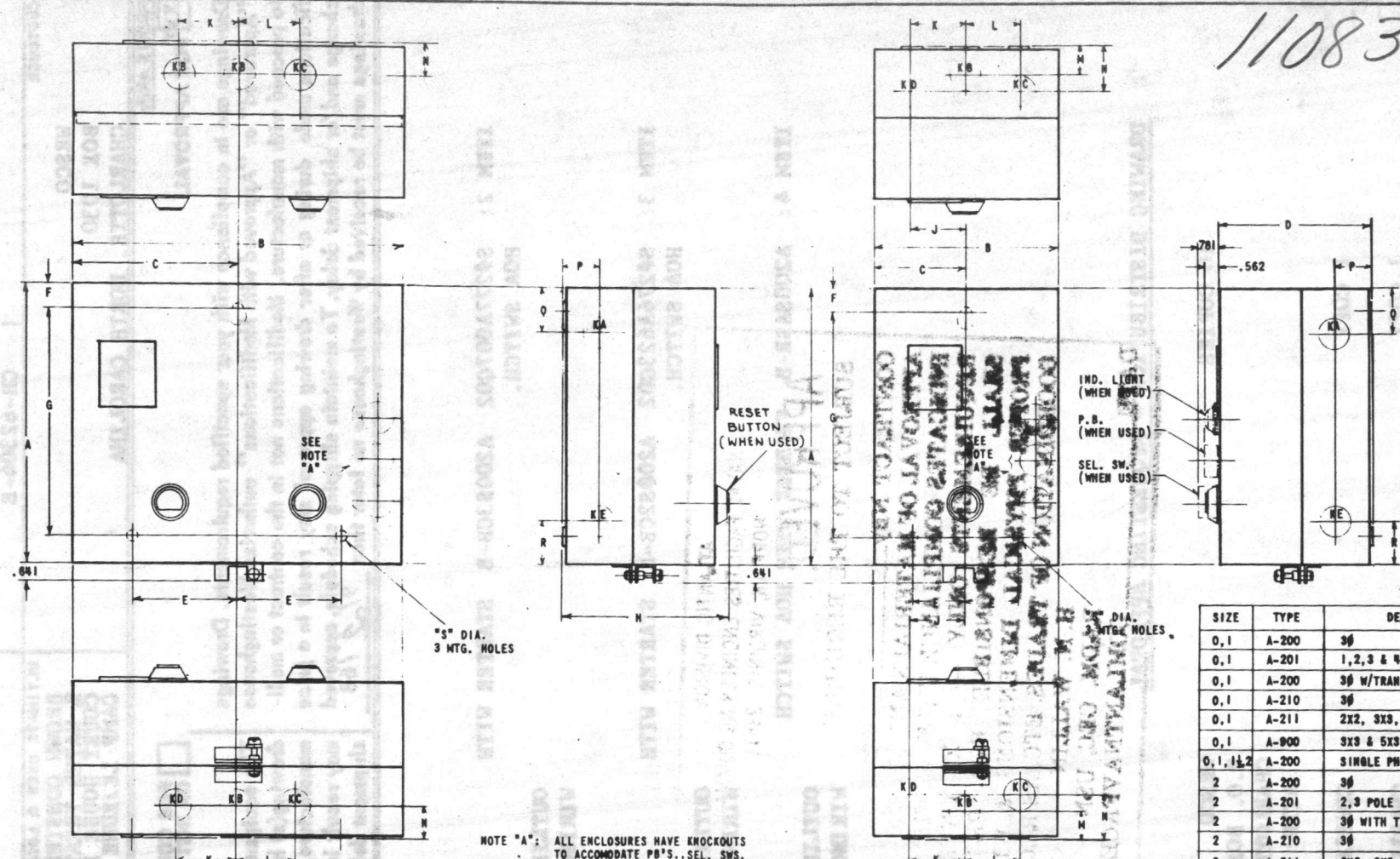
<b>DEBNAM-HUGHES CORPORATION</b>		PROJECT WATER TREATMENT PLANT CAMP LEJUNE, N. C.	
ARCHITECTURAL METALS - P. O. BOX 9073 GREENSBORO, N. C.		CONTRACTOR BROWN CONST. CO. (CONCORD), N. C.	
ERECTION BY OTHERS	ARCHITECT BUREAU OF YARDS & DOCKS	MADE BY	DATE 6-14-68
PAIN RED LEAD		JOB NO.	SHEET NO.
SPECIAL INSTRUCTIONS	DETAILS OF	MISC. MATERIALS	473 5

NO.	DATE	DESCRIPTION



FOR THE  
RECORDS OF THE  
UNITED STATES DEPARTMENT OF  
THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
WASHINGTON, D. C. 20250

1108371



3" DIA. 3 MTG. HOLES

IND. LIGHT (WHEN USED)  
P.B. (WHEN USED)  
SEL. SW. (WHEN USED)

NOTE "A": ALL ENCLOSURES HAVE KNOCKOUTS TO ACCOMMODATE P.B.'S., SEL. SMS. & IND. LIGHT KITS.

FIGURE NO. 2 OTHERWISE SAME AS FIG. 1

FIGURE NO. 1

SIZE	TYPE	DESCRIPTION	LINE
0,1	A-200	3Ø	1
0,1	A-201	1,2,3 & 4 POLE	1
0,1	A-200	3Ø W/TRANSFORMER	5
0,1	A-210	3Ø	5
0,1	A-211	2X2, 3X3, 4X4	5
0,1	A-900	3X3 & 5X3	5
0,1,1,2	A-200	SINGLE PHASE	2
2	A-200	3Ø	2
2	A-201	2,3 POLE	2
2	A-200	3Ø WITH TRANSFORMER	6
2	A-210	3Ø	6
2	A-211	2X2, 3X3	6
2	A-900	3X3 & 5X3	6
3	A-200	3Ø	3
3	A-201	2,3 POLE	3
3,4	A-200	3Ø WITH TRANSFORMER	7
3,4	A-210	3Ø	7
3,4	A-211	2X2, 3X3	7
3,4	A-900	3X3 & 5X3	7
4	A-200	3Ø	4
4	A-201	2,3 POLE	4
0,1,2	A-210	3Ø WITH TRANSFORMER	6
2	A-900	4 X 4, 2Ø 4W	8

DIM. FR. LINE	DIMENSIONS															CONDUIT SIZES							
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	KA	KB	KC	KD	KE	
1	9.141	6.250	3.125	5.078	1.750	.703	7.500	5.641	1.875	1.875	1.031	1.312	1.312	1.500		.218		1/2	1/2 X 3/4	3/4 X 1	3/4 X 1		
1	11.141	6.856	3.328	5.500	2.000	1.172	9.000	6.062	1.906	2.047	1.091	1.047	1.609	1.609	2.047		.281		1/2	1/2 X 3/4	1 X 1 1/4	1 1/4 X 1 1/2	
1	15.838	8.250	4.125	7.312	2.938	1.188	13.688	7.875	2.188	2.625	2.188	2.156	2.156	1.500	1.812	1.812	.281		1/2	1/2 X 3/4	1 X 1 1/4	1 1/2 X 2	1/2
1	18.062	9.250	4.625	7.312	3.438	1.188	15.438	7.875	2.438	2.875	2.406	2.156	2.188	1.500	1.812	1.812	.344		1/2	1/2 X 3/4	1 1/4 X 1 1/2	2 X 2 1/2	1/2
2	9.156	10.938	5.469	5.500	3.500	.719	7.750	6.078		1.875	1.875		1.312	1.562	1.500		.218		1/2	1/2 X 3/4	3/4 X 1	3/4 X 1	
2	11.188	12.250	6.125	5.938	4.000	1.188	9.000	6.500		2.000	2.188		1.625	2.000	2.078		.281		1/2	1/2 X 3/4	1 1/4 X 1 1/2	1 X 1 1/4	
2	18.062	17.000	8.500	7.812	6.438	1.188	15.438	8.875		3.000	2.500		2.156	1.500	1.828	1.828	.344		1/2	1/2 X 3/4	1 X 1 1/4 X 1 1/2	1 1/2 X 2 X 2 1/2	1/2
2	13.000	14.000	7.000	5.938	4.000	1.188	10.750	6.500		2.000	2.188		1.625	2.000	2.078		.281		1/2	1/2 X 3/4	1 1/4 X 1 1/2	1 X 1 1/4	

CHANGE  
1 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
2 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
3 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
4 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
5 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
6 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
7 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62  
8 D-749534-U SIZE 00 WAS NOT IN TABLE. GMIC 2/5/62

WESTINGHOUSE ELECTRIC CORPORATION

SIZE 00, 1, 2, 3 & 4 TYPE A NON COMBINATION (NEMA 1)

ENCLOSURES - OUTLINES

D SPEC. 709045-G	S.O. G.O.
DIMENSIONS IN INCHES	SCALE
DFTM. 1/2" = 1'-0"	APPD. [Signature]
CHKD. [Signature]	APPD. [Signature]
DIV. & PLANT LOCATION	STANDARD CONTROL SW.
SEAVER, PA. U.S.A.	ENG. DEPT. FORM NO. 88977-C

505C420



AUGUST / , 1968

DATE

PROJECT NO.	WESTINGHOUSE G.O. NO. CH-62304-E	CUSTOMER REQUISITION NO.	CUSTOMER ORDER NO. DS-2216-1727
CUSTOMER WESCO BOX 1030 CHARLOTTE, NORTH CAROLINA	ULTIMATE USER & LOCATION OR STATION BROWN CONSTRUCTION CO % WATER TREATMENT PLT. COURT HOUSE BAY CAMP LEJEUNE, NORTH CAROLINA 28542		

PRINTS ARE:

FOR APPROVAL

FOR CONSTRUCTION OR INSTALLATION

FOR REFERENCE

Drawings are in compliance with your specified requirements. Drawings "Approved" or "Approved with Modifications" authorize Westinghouse to proceed with manufacture. Modifications not in the contract or modifications made during or after drawing approval may result in a price change and/or shipment delay. To maintain shipping schedule, approved drawings must be received by Westinghouse no later than 9/2/68

The equipment shown on these drawing(s) has been released for manufacture, any modification may result in a price change and shipment delay.

ITEM 2: S#277A007G02 A200S3CB-B STARTER WITH HOA SWITCH.

OUTLINE DRAWING - 505C420 (LN 3) SUB 6  
WIRING DIAGRAM - 622B843 SUB 9

ITEM 3: S#276A623G02 A200S2CB-B STARTER WITH HOA SWITCH.

OUTLINE DRAWING - 505C420 (LN 2) SUB 6  
WIRING DIAGRAM - 622B843 SUB 9

ITEM 4: A200SABR-B STARTER WITH HOA SWITCH

OUTLINE DRAWING - 505C420 (LN 2) SUB 6  
WIRING DIAGRAM - 622B836 SUB 5

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NBY-88313 SPEC 88313/67

APPROVAL OF MATERIALS AND/OR EQUIPMENT INDICATES COMPLIANCE WITH SPECIFICATION REQUIREMENTS ONLY — THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN  
COMLANTNAVFACENGCOM

DATE 8/12/68

DRAWING DISTRIBUTION REQUESTING APPROVAL

10 COPIES

WESCO  
P.O. BOX 1030  
CHARLOTTE, NORTH CAROLINA 28201  
ATTN: R.N. FOWLER

1 COPY

CHARLOTTE OFC - B.G. PETERSON

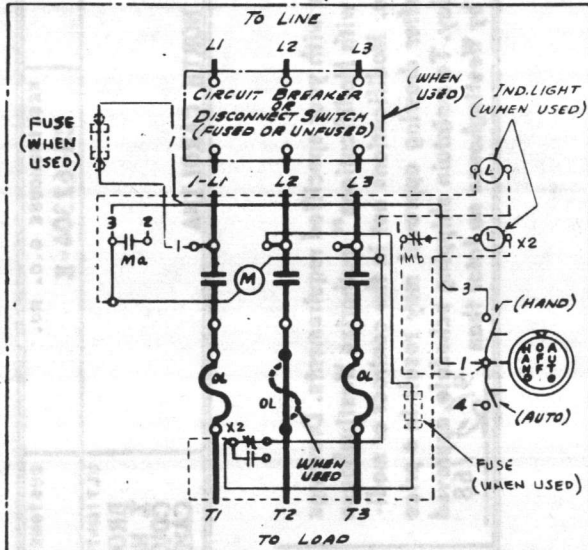
1 COPY

CHARLOTTE OFC - C.R. GOODMAN

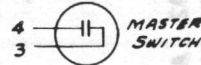
SEND APPROVAL OR INQUIRIES TO WESTINGHOUSE %  
DISTRICT ORDER CORRESPONDENT STREET ADDRESS CITY ZONE STATE

C.R. GOODMAN P.O. BOX 1399, CHARLOTTE, N.C. 28201

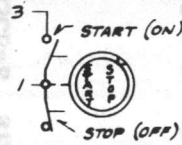
RECEIVED



SCHEME #1  
3 POS. SEL. SW.



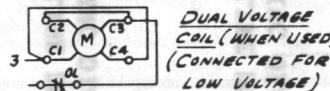
4-3 MASTER SWITCH



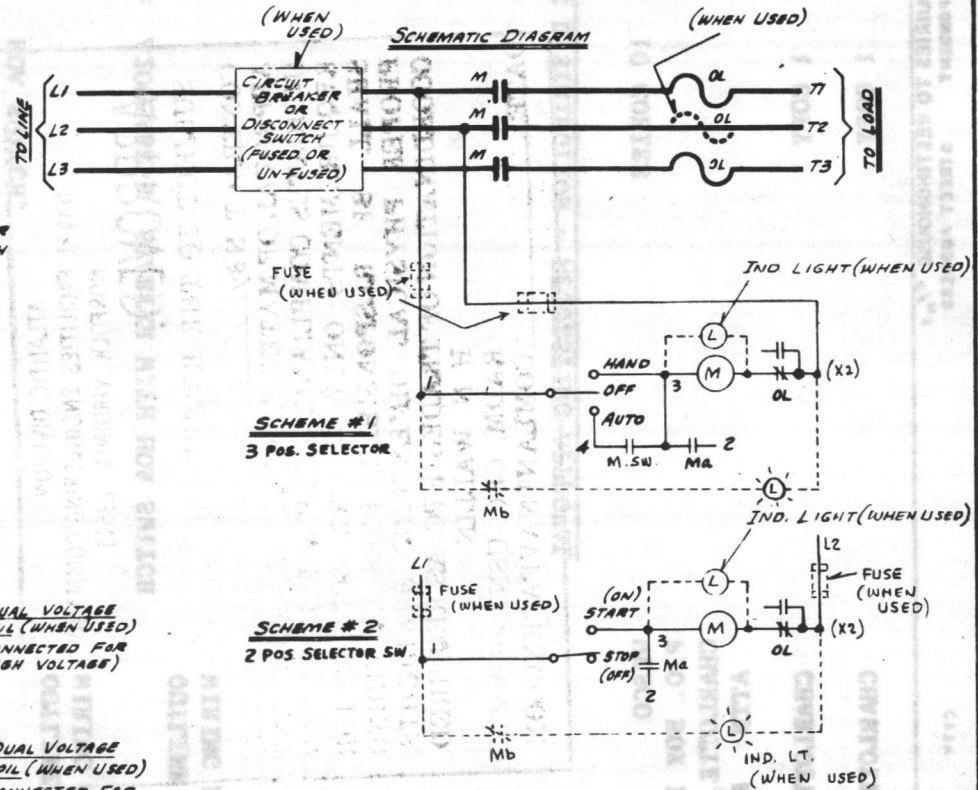
SCHEME #2  
2 POS. SEL. SW.



DUAL VOLTAGE COIL (WHEN USED)  
(CONNECTED FOR HIGH VOLTAGE)



DUAL VOLTAGE COIL (WHEN USED)  
(CONNECTED FOR LOW VOLTAGE)



SCHEME #1  
3 POS. SELECTOR

SCHEME #2  
2 POS. SELECTOR SW.

PROVISION FOR SEPARATE CONTROL WAS NOT REMOVED  
RGS 10-2-67  
1/16/67

1	CHARGE	10
2	N.O. CONTACTS ON OL RELAYS WERE SHOWN DOTTED.	11/16/65
3	NOTES 8 ALL REF. TO SEPARATE CONTROL WERE NOT REMOVED.	1/16/65
4	NOTES 8-8-65	1/16/65
5	NOTES 8-8-65	1/16/65
6	DOTTED IND. LT. WAS NOT ON	1/16/65
7	RGS 12-3-65	1/16/65
8	W.E. SPRINGER 12-2-65	1/16/65
9	FUSE (WHEN USED) WAS NOT ON	1/16/65
10	RGS 2-15-67	1/16/67
11	W. SPRINGER 2-15-67	1/16/67
12	DOTTED FUSE IN NOT SHOWN	1/16/67
13	RGS 5-23-67	1/16/67
14	W.E. SPRINGER 5-23-67	1/16/67
15	PROVISION FOR SEPARATE CONTROL WAS NOT ON	1/16/67
16	RGS 8-4-67	1/16/67
17	RGS 8-9-67	1/16/67
18	IND. LT. WITH A/C INTERLOCK WAS NOT ON	1/16/67
19	LEADS 'A' & 'B' LEAD 'A' WAS NOT SHOWN ON PUL	1/16/67
20	RGS 8-12-67	1/16/67
21	LEADS 'A' & 'B' LEAD 'A' WAS NOT SHOWN ON PUL	1/16/67

**WESTINGHOUSE ELECTRIC CORPORATION**

TITLE **SIZE 2-3-4 TYPE A 3 PHASE STARTER 2 & 3 POLE O.L. RELAY WITH BUILT-IN 2 POS.-3 POS. SELECTOR SW.**

D SPEC. 709099-G

DFTM R. SPRINGER 11/16/64	SCALE	622 B843
CHKD. APPD. N.S. QUINN	APPD. M. S. QUINN	
DIV. & PLANT LOCATION		STANDARD CONTROL DIV. DEVER, PA. U.S.A.

ENG. DEPT. FORM NO. 55000-B



AUGUST / , 1968

DATE

PROJECT NO.	WESTINGHOUSE G.O. NO. CH-62304-E	CUSTOMER REQUISITION NO.	CUSTOMER ORDER NO. DS-2216-1727
CUSTOMER WESCO BOX 1030 CHARLOTTE, NORTH CAROLINA	ULTIMATE USER & LOCATION OR STATION BROWN CONSTRUCTION CO % WATER TREATMENT PLT. COURT HOUSE BAY CAMP LEJEUNE, NORTH CAROLINA 28542		

PRINTS ARE:

FOR APPROVAL

FOR CONSTRUCTION OR INSTALLATION

FOR REFERENCE

Drawings are in compliance with your specified requirements. Drawings "Approved" or "Approved with Modifications" authorize Westinghouse to proceed with manufacture. Modifications not in the contract or modifications made during or after drawing approval may result in a price change and/or shipment delay. To maintain shipping schedule, approved drawings must be received by Westinghouse no later than 9/2/68

The equipment shown on these drawing(s) has been released for manufacture, any modification may result in a price change and shipment delay.

ITEM 2: S#277A007G02 A200S3CB-B STARTER WITH HOA SWITCH.

OUTLINE DRAWING - 505C420 (LN 3) SUB 6  
WIRING DIAGRAM - 622B843 SUB 9

ITEM 3: S#276A623G02 A200S2CB-B STARTER WITH HOA SWITCH.

OUTLINE DRAWING - 505C420 (LN 2) SUB 6  
WIRING DIAGRAM - 622B843 SUB 9

ITEM 4: A200S3CB-B STARTER WITH HOA SWITCH

OUTLINE DRAWING - 505C420 (LN 2) SUB 6  
WIRING DIAGRAM - 622B836 SUB 5

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF CONTRACT NBY-88313 SPEC 88313/67

APPROVAL OF MATERIALS AND/OR EQUIPMENT INDICATES COMPLIANCE WITH SPECIFICATION REQUIREMENTS ONLY — THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS. COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN *H.N.W.*

DATE 8/12/68 COMLANNAVFACENGCOM

DRAWING DISTRIBUTION - REQUESTING APPROVAL

10 COPIES

WESCO  
P.O. BOX 1030  
CHARLOTTE, NORTH CAROLINA 28201  
ATTN: R.N. FOWLER

1 COPY

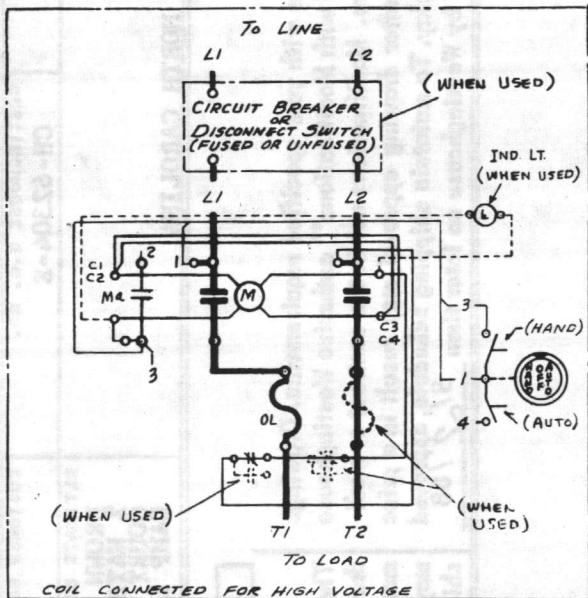
CHARLOTTE OFC - B.G. PETERSON

1 COPY

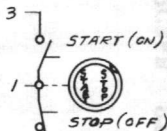
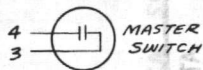
CHARLOTTE OFC - C.R. GOODMAN

SEND APPROVAL OR INQUIRIES TO WESTINGHOUSE %:  
DISTRICT ORDER CORRESPONDENT STREET ADDRESS CITY ZONE STATE

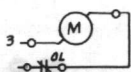
C.R. GOODMAN P.O. BOX 1399, CHARLOTTE, N.C. 28201



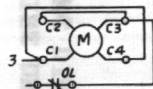
SCHEME #1  
3 POS SEL SW.



SCHEME #2  
2 POS. SEL SW.



SINGLE VOLTAGE  
COIL (WHEN USED)

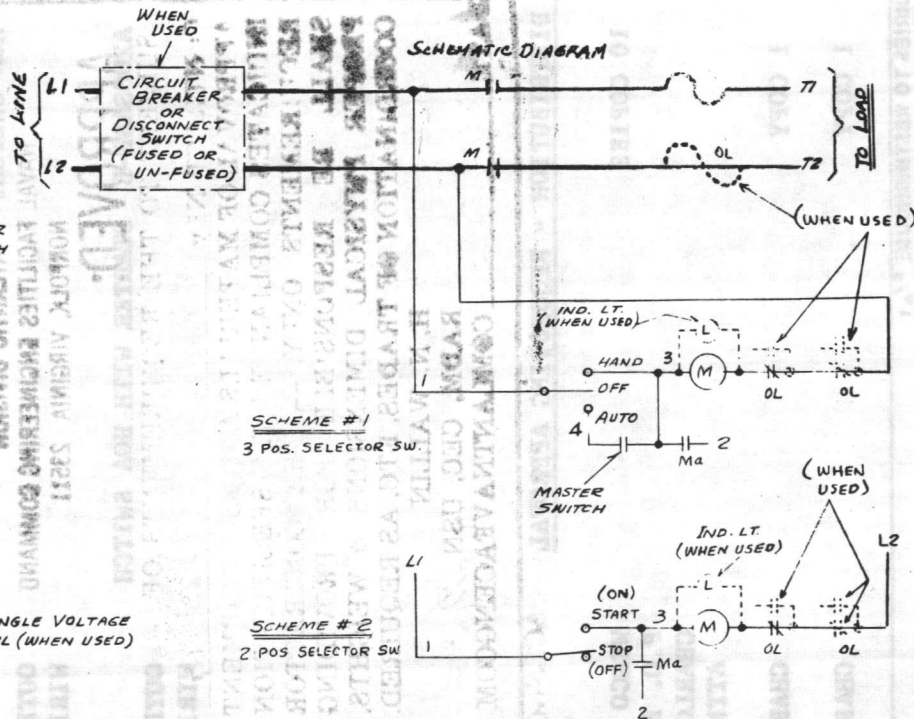


DUAL VOLTAGE  
COIL (WHEN USED)  
CONNECTED FOR  
LOW VOLTAGE

NOTE -

1- CUSTOMER SHOULD DISREGARD ALL SCHEMES EXCEPT THE ONE USED IN CONNECTING HIS EQUIPMENT.

SCHEMATIC DIAGRAM



SCHEME #1  
3 POS. SELECTOR SW.

SCHEME #2  
2 POS. SELECTOR SW.

1	2	3	4	5
CHARGE	NOTES & ALL REF. TO SEPARATE CONTROL WERE NOT REMOVED R65 6-8-66	DOTTED IND. LT. WAS NOT SHOWN R65 2-8-66	UNIVERSAL BRKR SYMBOL WAS NOT ON R65 4-28-66	2ND (DOTTED) OL RELAY (WHEN USED) WAS NOT ON R65 9-19-66
	W. STRICKLAND 1/16/66	W. STRICKLAND 2/1/66	W. STRICKLAND 4/1/66	W. STRICKLAND 4/1/66
	W. STRICKLAND 2/1/66	W. STRICKLAND 2/1/66	W. STRICKLAND 4/1/66	W. STRICKLAND 4/1/66
	W. STRICKLAND 2/1/66	W. STRICKLAND 2/1/66	W. STRICKLAND 4/1/66	W. STRICKLAND 4/1/66
	W. STRICKLAND 2/1/66	W. STRICKLAND 2/1/66	W. STRICKLAND 4/1/66	W. STRICKLAND 4/1/66

TOOL  
CHKD.  
DWG.  
ENGR. P. S. RICHARDSON  
DWG. NO. 3738320

WESTINGHOUSE ELECTRIC CORPORATION

TITLE	SIZE 0-1 TYPE A COMBINATION 1Ø STARTER WITH	
BUILT	BY 2 POS - 3 POS SELECTOR SW	
D SPEC.	769093-6	60
DIMENSIONS IN INCHES	SCALE	
DFTM. R. SPRINKER	NOV 2-64	APPD. M. S. RICHARDSON
CHKD.	APPD. H. S. RICHARDSON	11/15/64
DIV & PLANT LOCATION	STANDARD CONTROL DIV	BEAVER, PA USA

622B836



AUGUST / , 1968

PROJECT NO.	WESTINGHOUSE G.O. NO. CH-62304-E	CUSTOMER REQUISITION NO.	CUSTOMER ORDER NO. DS-2216-1727
CUSTOMER WESCO BOX 1030 CHARLOTTE, NORTH CAROLINA	ULTIMATE USER & LOCATION OR STATION BROWN CONSTRUCTION CO % WATER TREATMENT PLT. COURT HOUSE BAY CAMP LEJEUNE, NORTH CAROLINA 28542		

PRINTS ARE:

FOR APPROVAL

FOR CONSTRUCTION OR INSTALLATION

FOR REFERENCE

Drawings are in compliance with your specified requirements. Drawings "Approved" or "Approved with Modifications" authorize Westinghouse to proceed with manufacture. Modifications not in the contract or modifications made during or after drawing approval may result in a price change and/or shipment delay. To maintain shipping schedule, approved drawings must be received by Westinghouse no later than 9/2/68

The equipment shown on these drawing(s) has been released for manufacture, any modification may result in a price change and shipment delay.

ITEM 2: S#277A007G02 A200S3CB-B STARTER WITH HOA SWITCH.

OUTLINE DRAWING - 505C420 (LN 3) SUB 6  
WIRING DIAGRAM - 622B843 SUB 9

ITEM 3: S#276A623C02 A200S2CB-B STARTER WITH HOA SWITCH. ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

OUTLINE DRAWING - 505C420 (LN 2) SUB 6  
WIRING DIAGRAM - 622B843 SUB 9

ITEM 4: A200SAB-B STARTER WITH HOA SWITCH  
SUBJECT TO THE REQUIREMENTS OF

OUTLINE DRAWING - 505C420 (LN 2) SUB 6  
WIRING DIAGRAM - 622B836 SUB 5

APPROVED

CONTRACT NO. 88313 SPEC 88313/67

APPROVAL OF MATERIALS AND/OR EQUIPMENT INDICATES COMPLIANCE WITH SPECIFICATION REQUIREMENTS ONLY — THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PROPER PHYSICAL DIMENSIONS & WEIGHTS, COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN *HNC*  
COMLANTNAVFACENGCOM

*8/12/68*

DRAWING DISTRIBUTION - REQUESTING APPROVAL

10 COPIES

WESCO  
P.O. BOX 1030  
CHARLOTTE, NORTH CAROLINA 28201  
ATTN: R.N. FOWLER

1 COPY

CHARLOTTE OFC - B.G. PETERSON

1 COPY

CHARLOTTE OFC - C.R. GOODMAN

SEND APPROVAL OR INQUIRIES TO WESTINGHOUSE %:	DISTRICT ORDER CORRESPONDENT	STREET ADDRESS	CITY	ZONE	STATE
	C.R. GOODMAN	P.O. BOX 1399,	CHARLOTTE, N.C.	28201	

C. R. GOODMAN

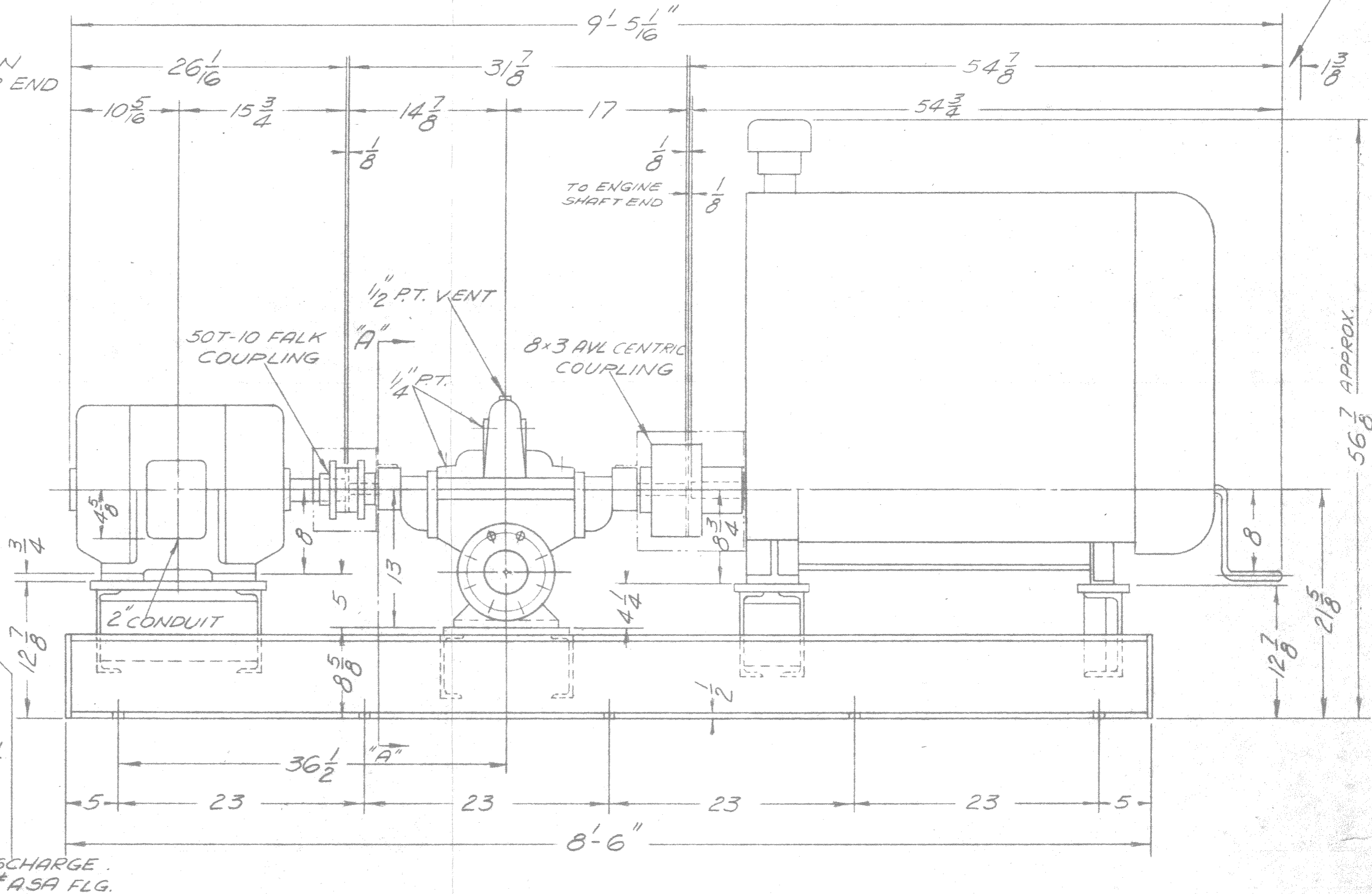
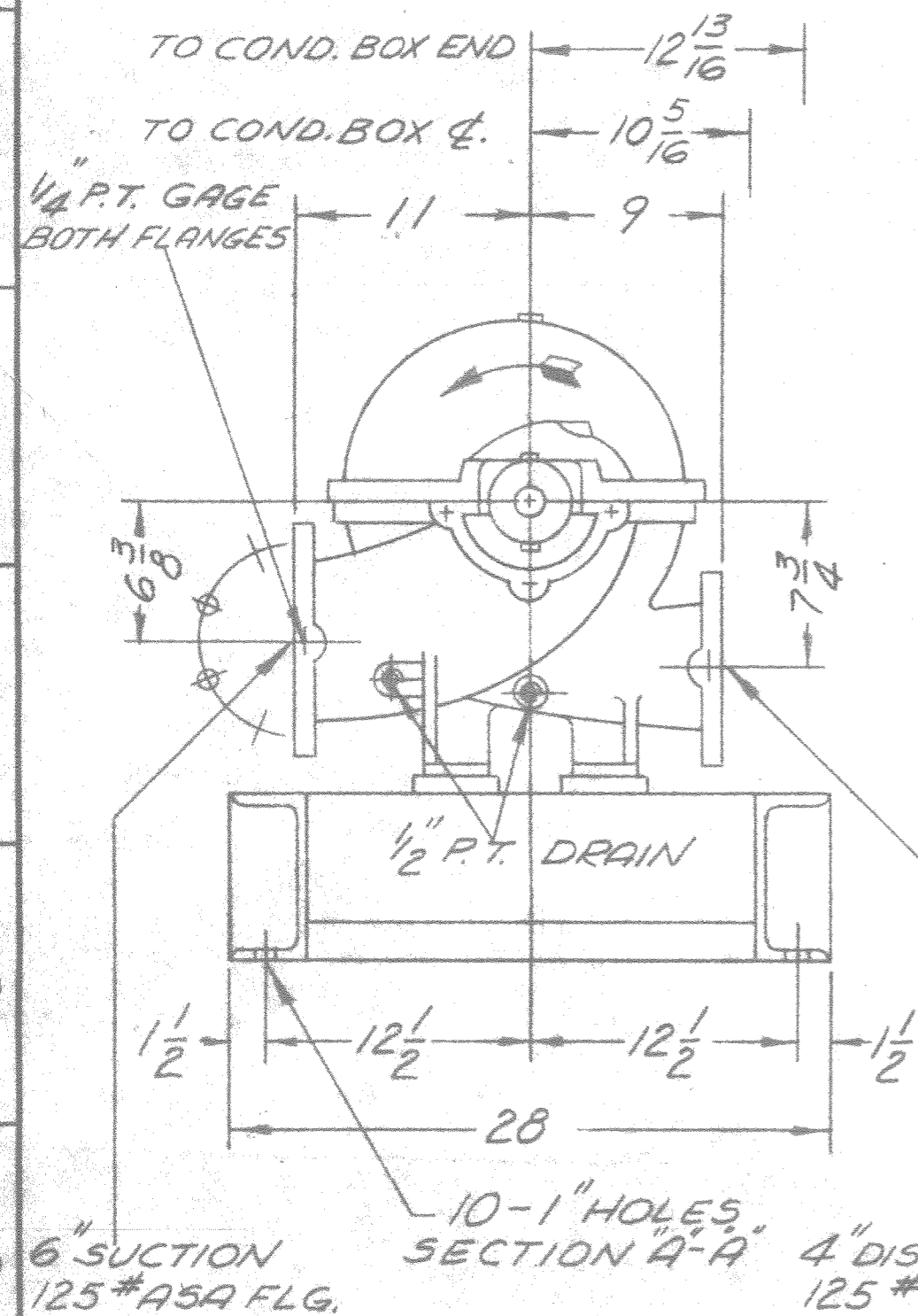
RX-151259

G.E. O.D.P. MOTOR FRAME 324T  
40 H.P. 1750 R.P.M. 3/60/208

CONTINENTAL ENGINE  
MODEL F-245

TO DISENGAGE  
CRANK

COUNTER-CLOCKWISE ROTATION  
WHEN VIEWED FROM PUMP MOTOR END



SER. WATER #3

CORRECT FOR CUSTOMER'S ORDER	877-1
CUSTOMER	BROWN CONSTRUCTION CO.
DISTRICT OFFICE ORDER	22-80068
WORKS ORDER	Y-397376
CERTIFIED BY	P. SORBER
DATE	8/27/68

ALT. DATES

Dimensions are from drawings, castings may vary slightly. Foundation bolts must not be fixed rigidly until machine is in place. This print is loaned subject to return on demand and under condition that it is not to be used in any way detrimental to our interests. Do not scale; additional dimensions will be furnished upon request.

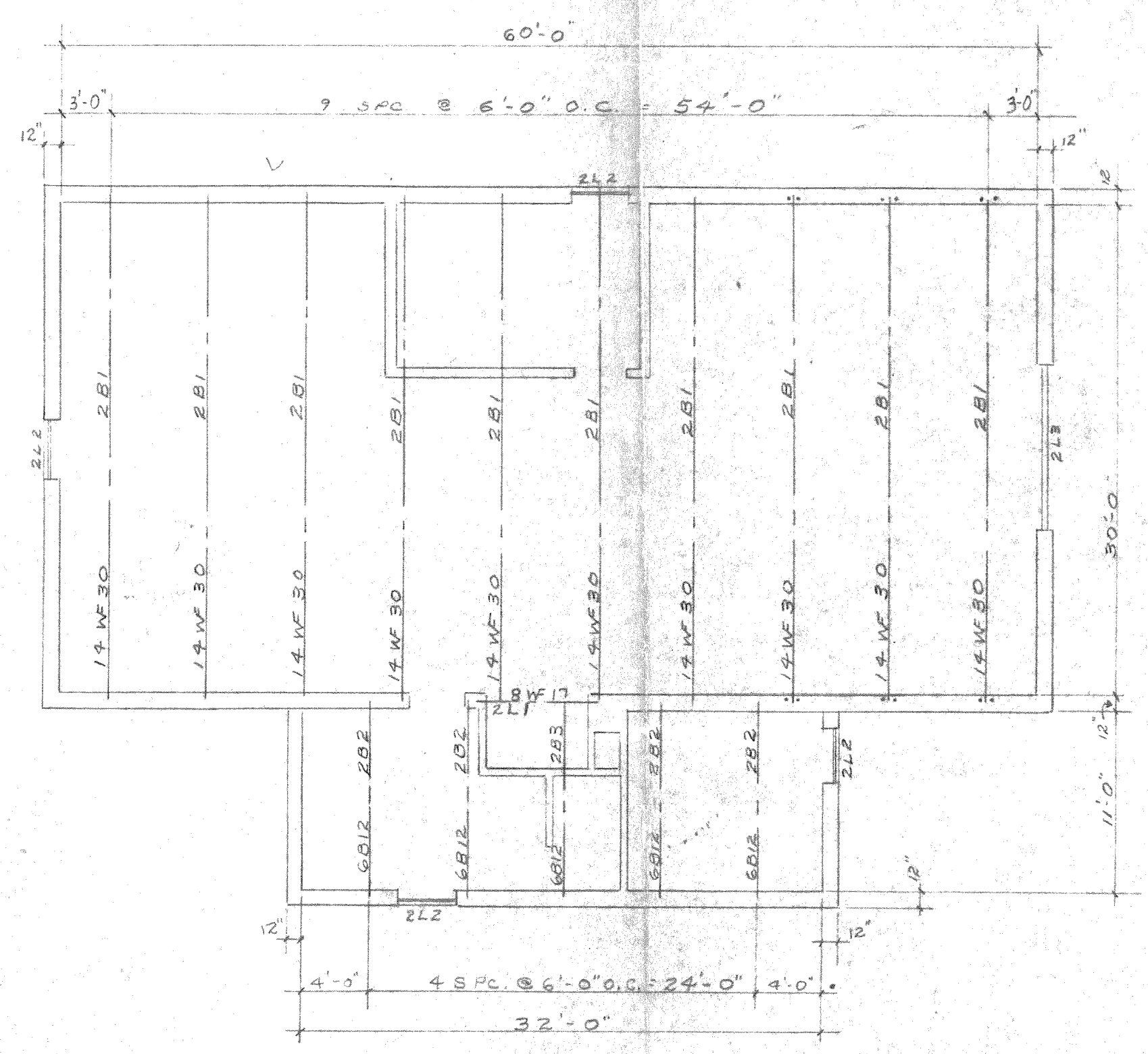
4 LR-12 VOLUTE PUMP ELEVATION			
WORTHINGTON CORPORATION EAST ORANGE, NEW JERSEY			
ORDER	Y-397374-7	DATE	8-27-68
SCALE	1/2"	INS.	= 1 FOOT
DRAWN	CHECKED	APPROVED	
V.K.	P.W.P.	R.P.	RX-151259



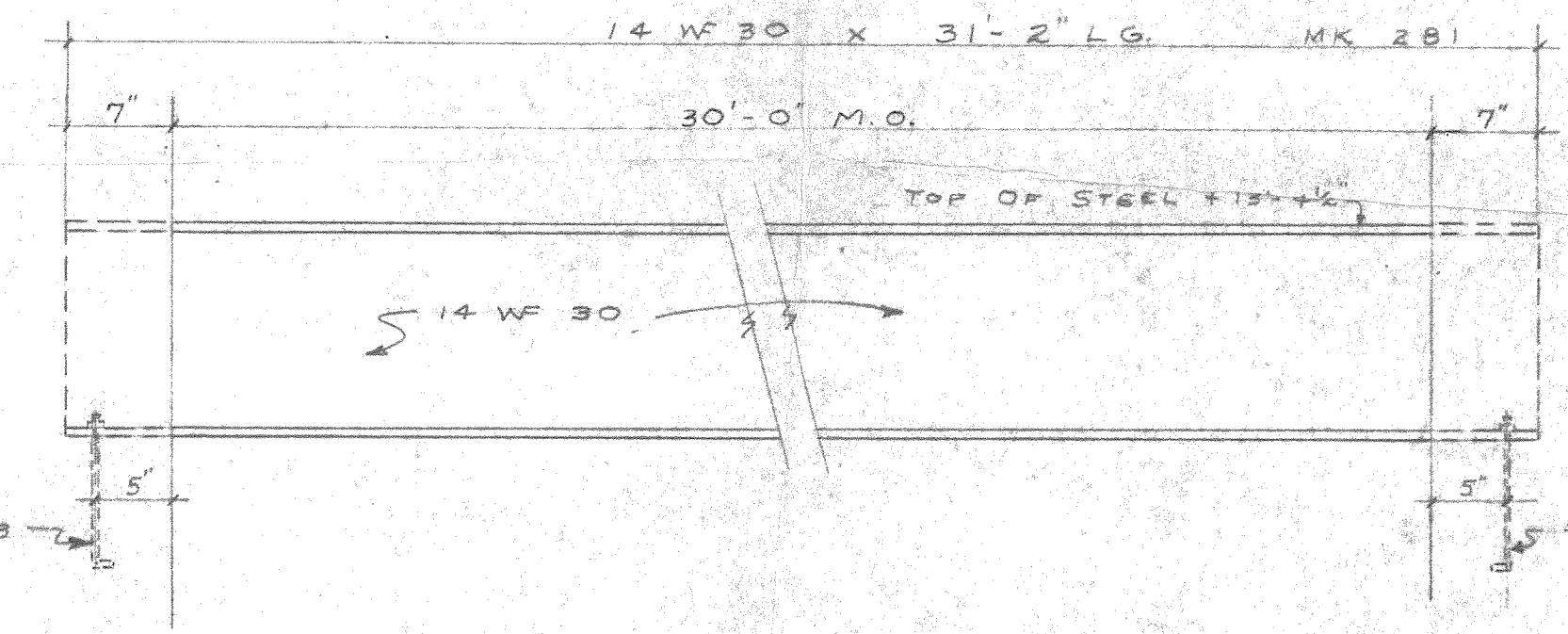
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

APPROVED:

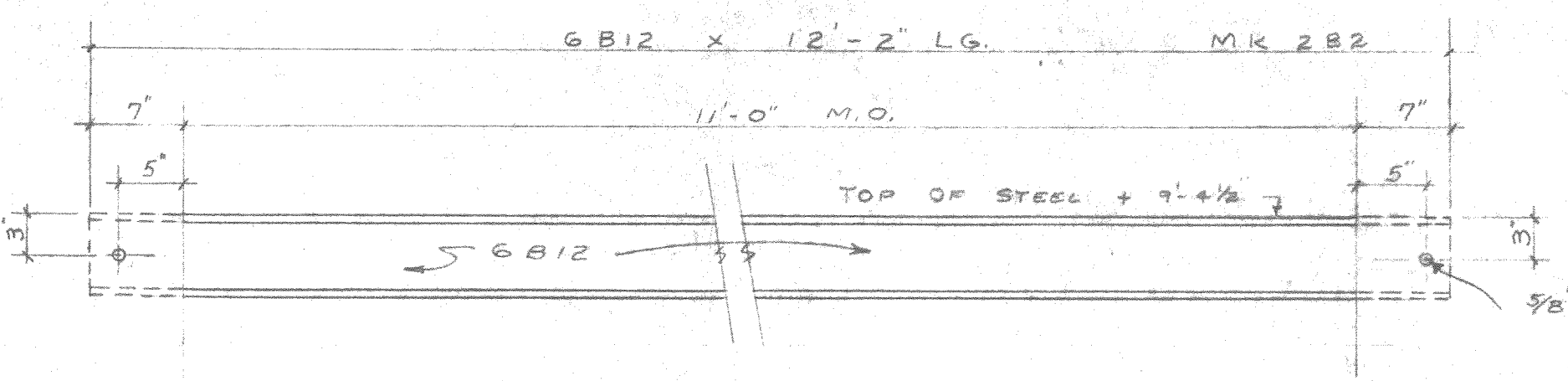
SUBJECT: THE REQUIREMENTS OF  
CONTINUED SERVICE OF THE  
APPROVED: 88313 88313/67  
ADDITIONAL COMMENTS: NONE  
RECOMMENDATION: FACTOR  
SHALL BE USED IN THE DESIGNING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS.  
COORDINATION OF TRADES ETC. AS REQUIRED.  
H. N. WALLIN  
RADM, CEC, USN  
DATE SEP 4 1968 COMLANAVFACENGCOM



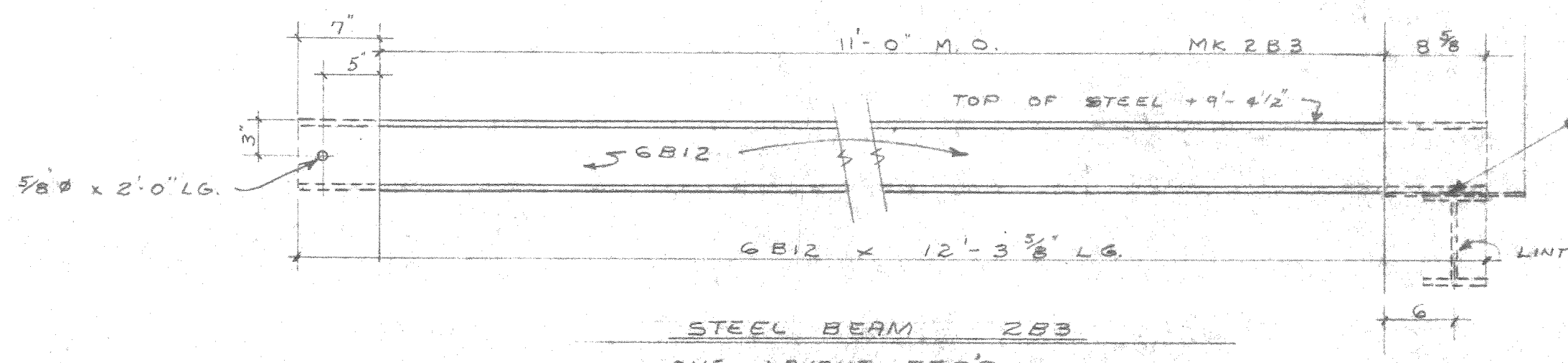
STEEL FRAMING PLAN



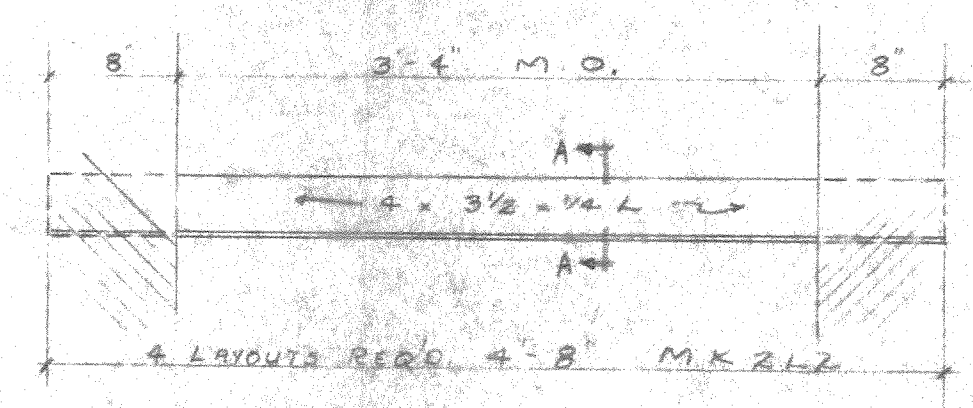
STEEL BEAM Z81  
10 LAYOUTS REQ'D.



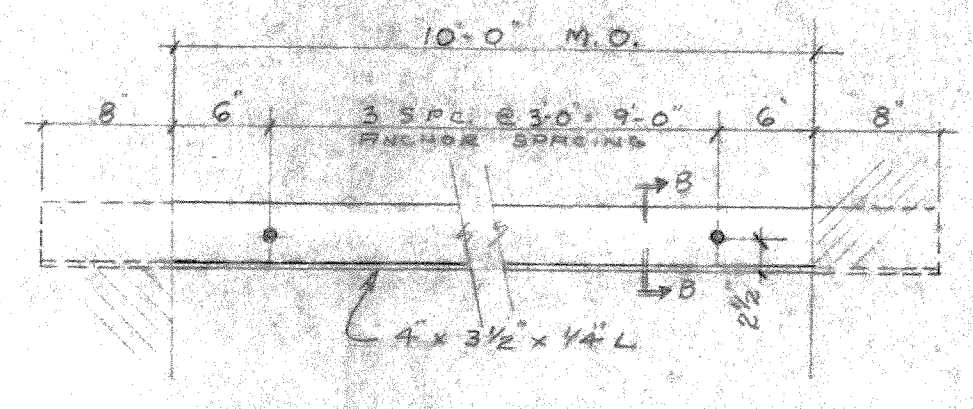
STEEL BEAM Z82  
4 LAYOUTS REQ'D.



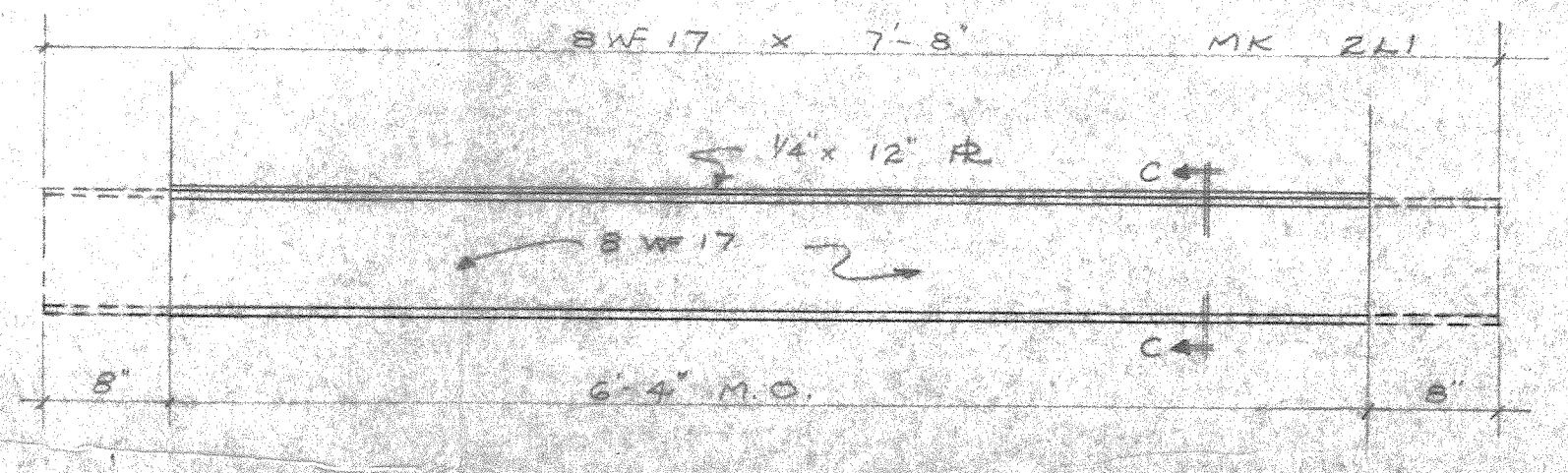
STEEL BEAM Z83  
ONE LAYOUT REQ'D.



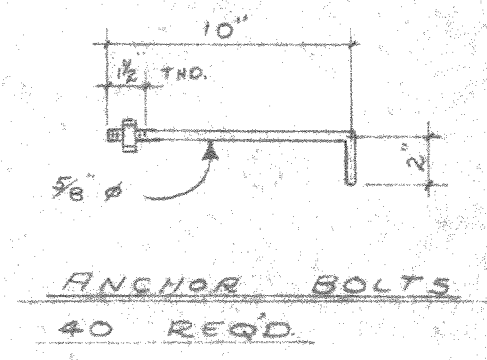
ANGLE LINTEL MK 211  
LAYOUT AS NOTED



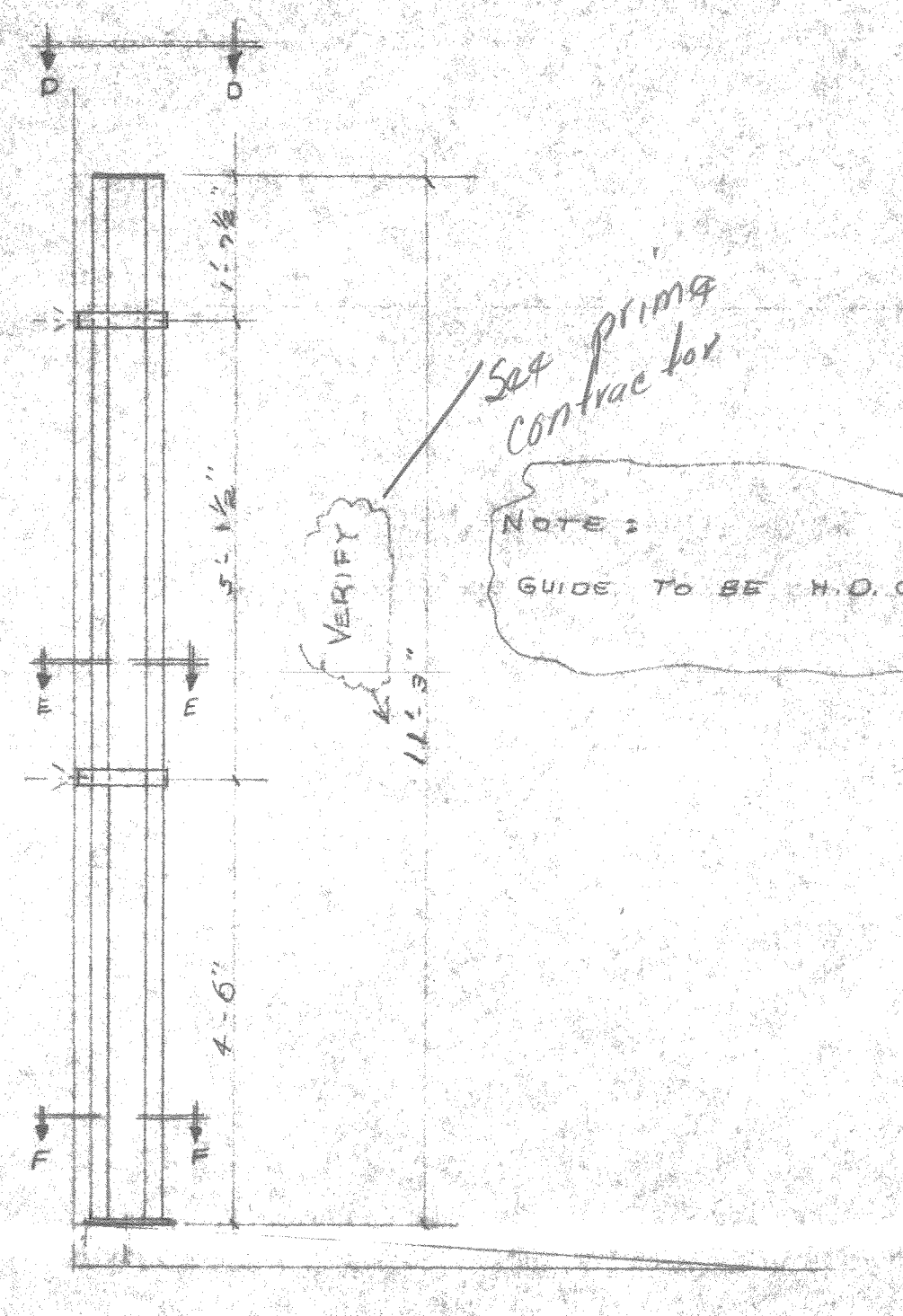
ANGLE LINTEL MK 212  
ONE LAYOUT REQ'D.



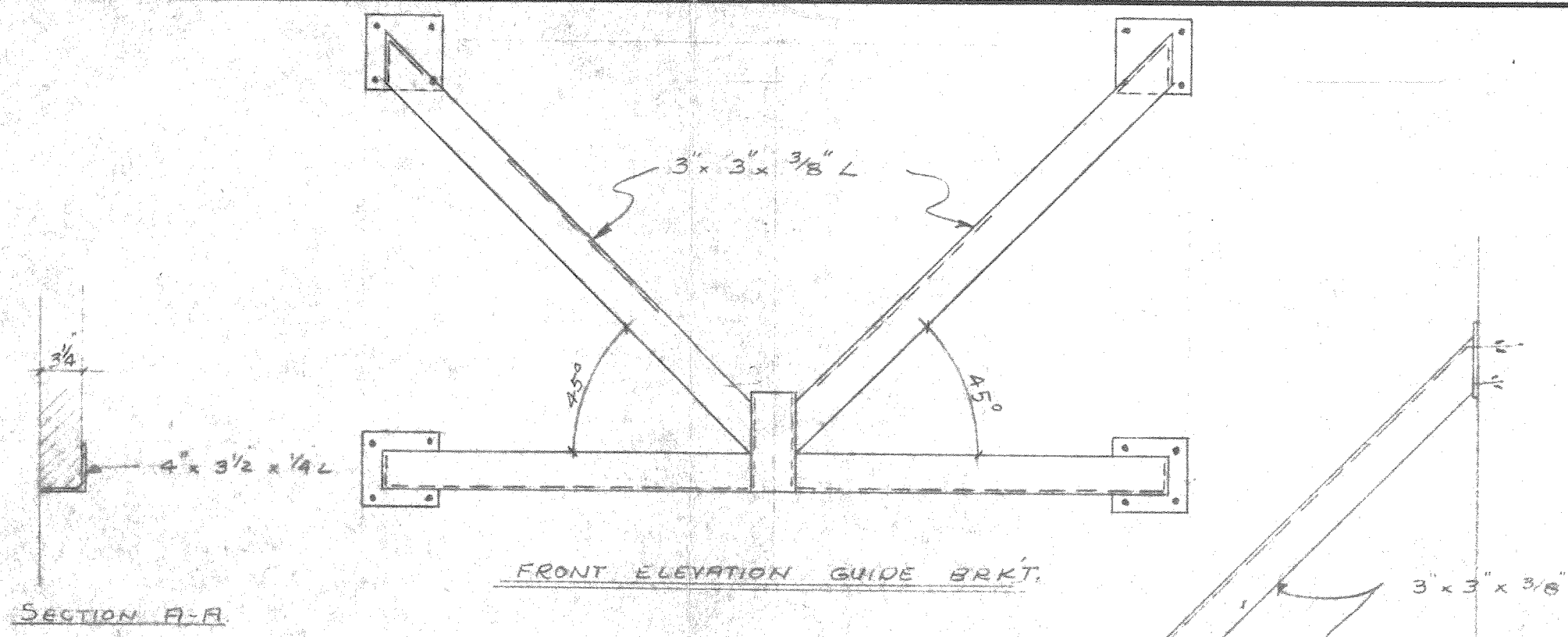
BEAM & LINTEL MK 213  
ONE LAYOUT REQ'D.



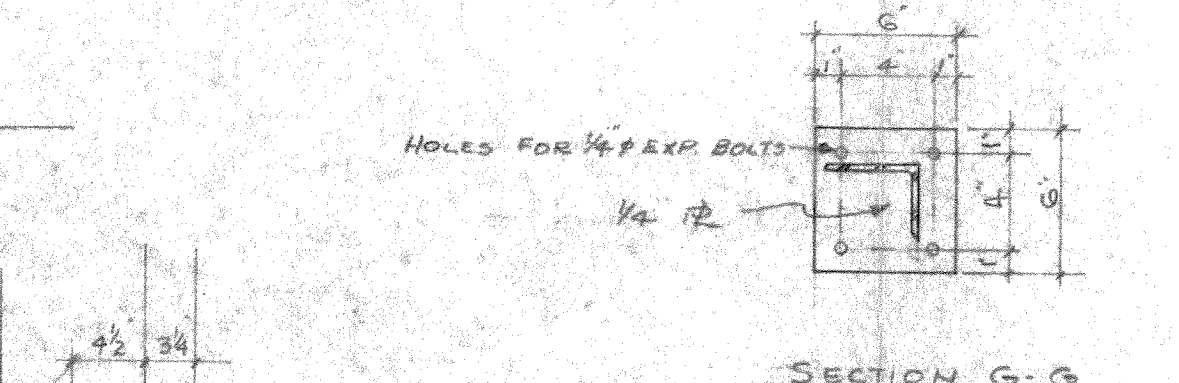
ANCHOR BOLTS  
40 REQ'D.



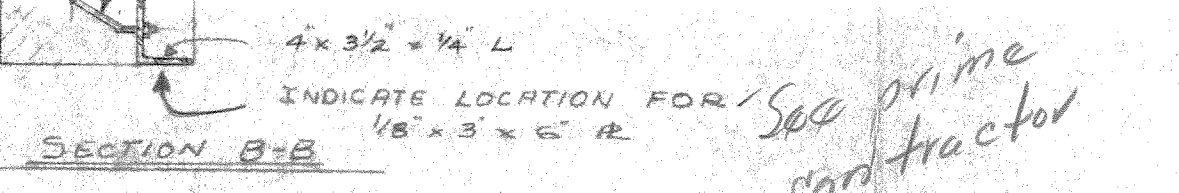
VERIFY CONTRACTOR  
NOTE:  
GUIDE TO BE H.D.G.



SECTION A-A

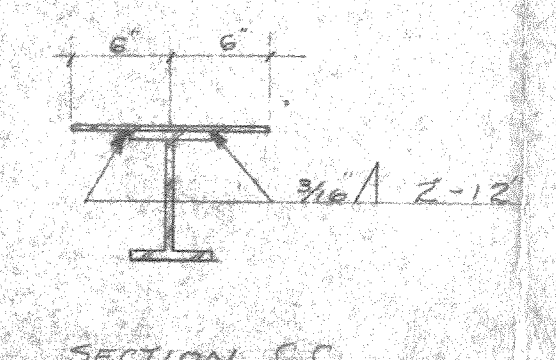


SECTION G-G

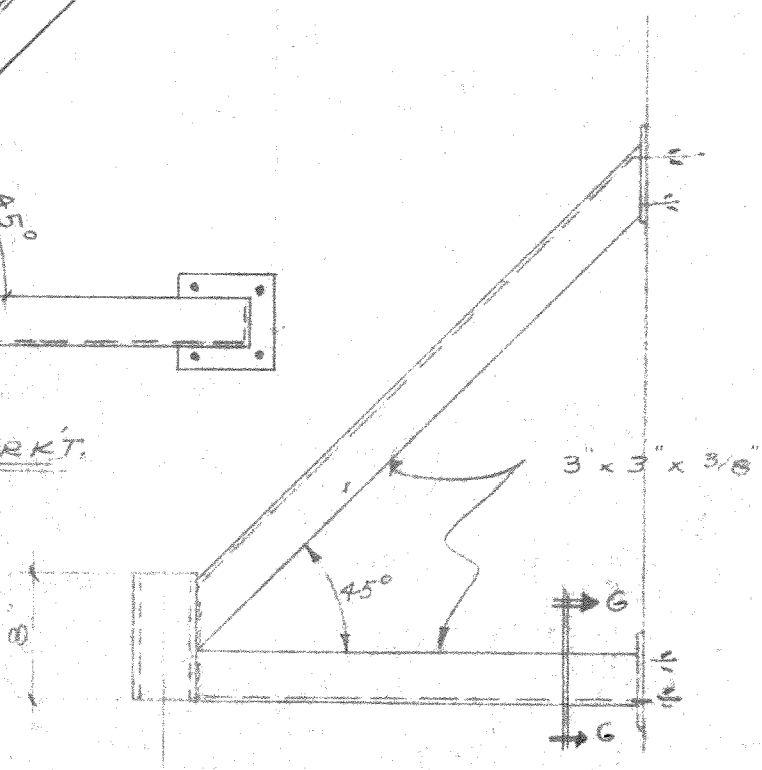


SECTION B-B

INDICATE LOCATION FOR 1/2" ANCHOR BOLTS  
SEE PRIME CONTRACTOR

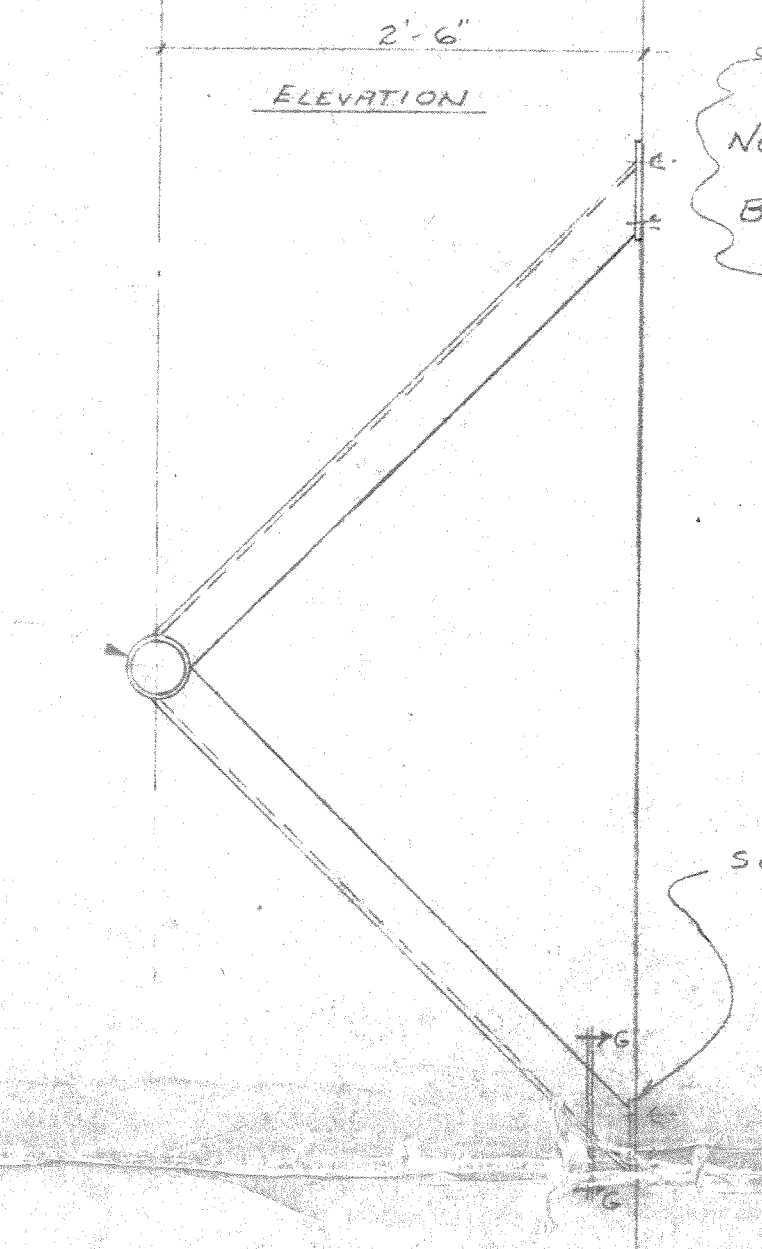


SECTION C-C

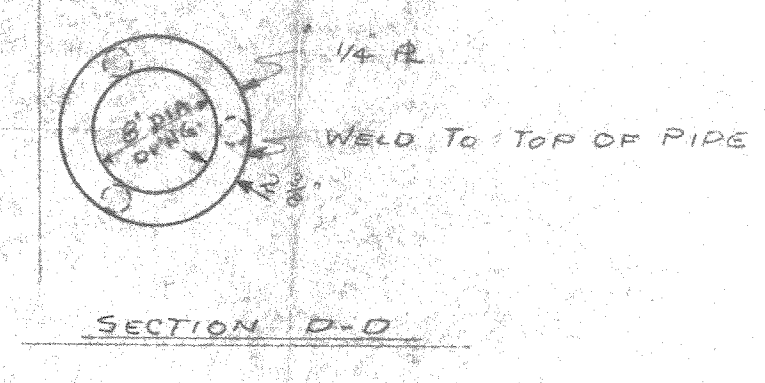


ELEVATION

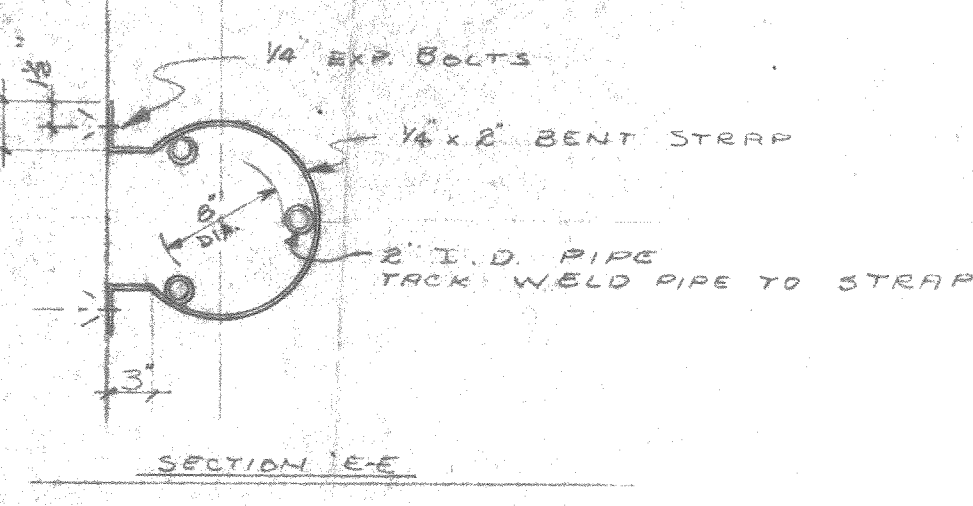
NOTE:  
BRKT. TO BE H.D.G.



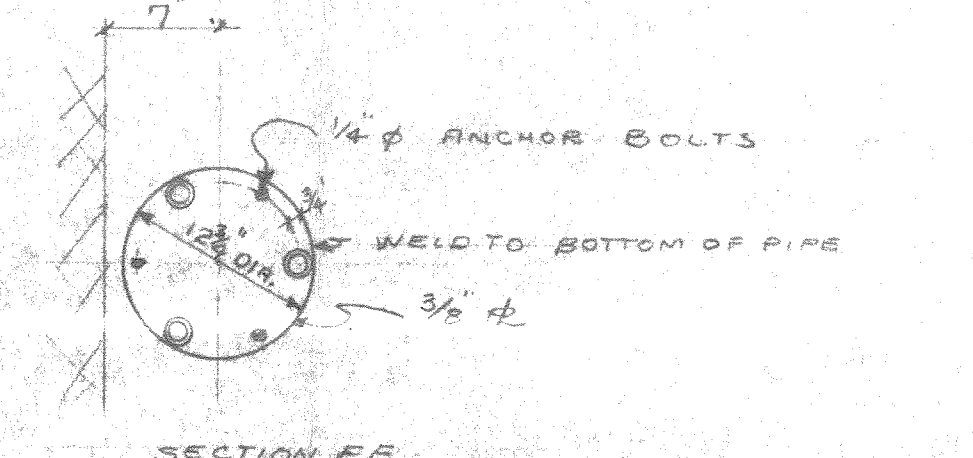
PLAN OF GUIDE BRACKETS  
ONE LAYOUT REQ'D.



SECTION D-D



SECTION E-E



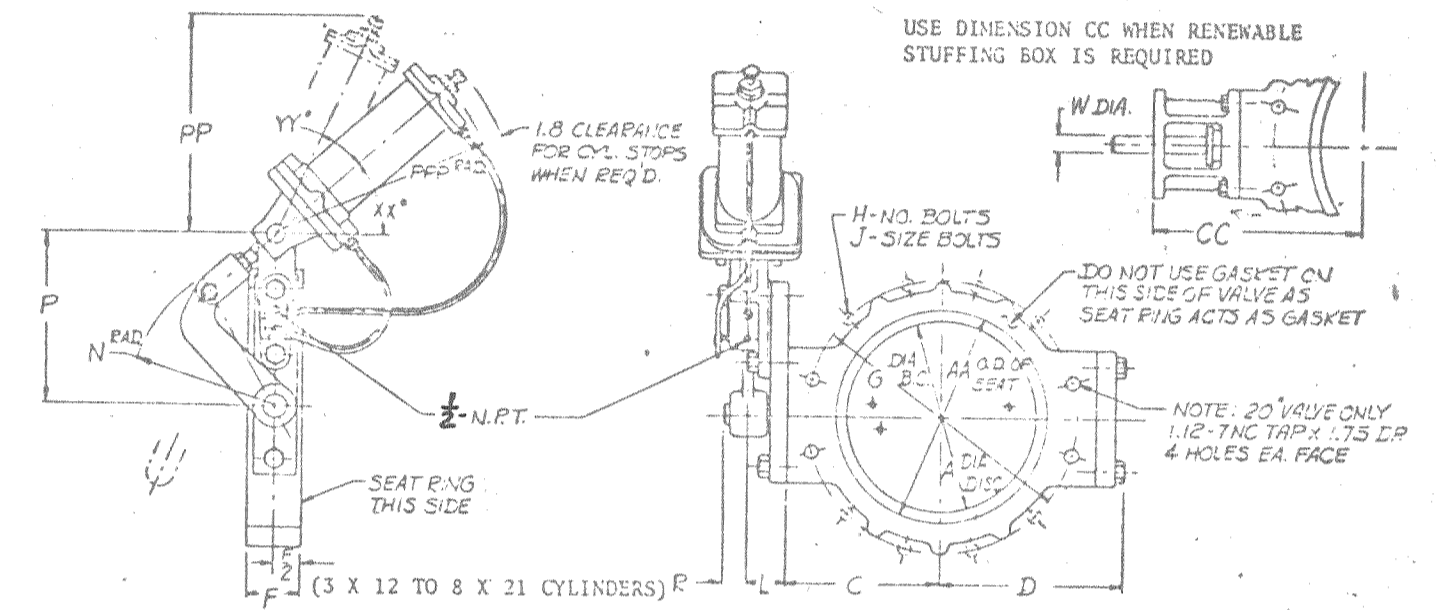
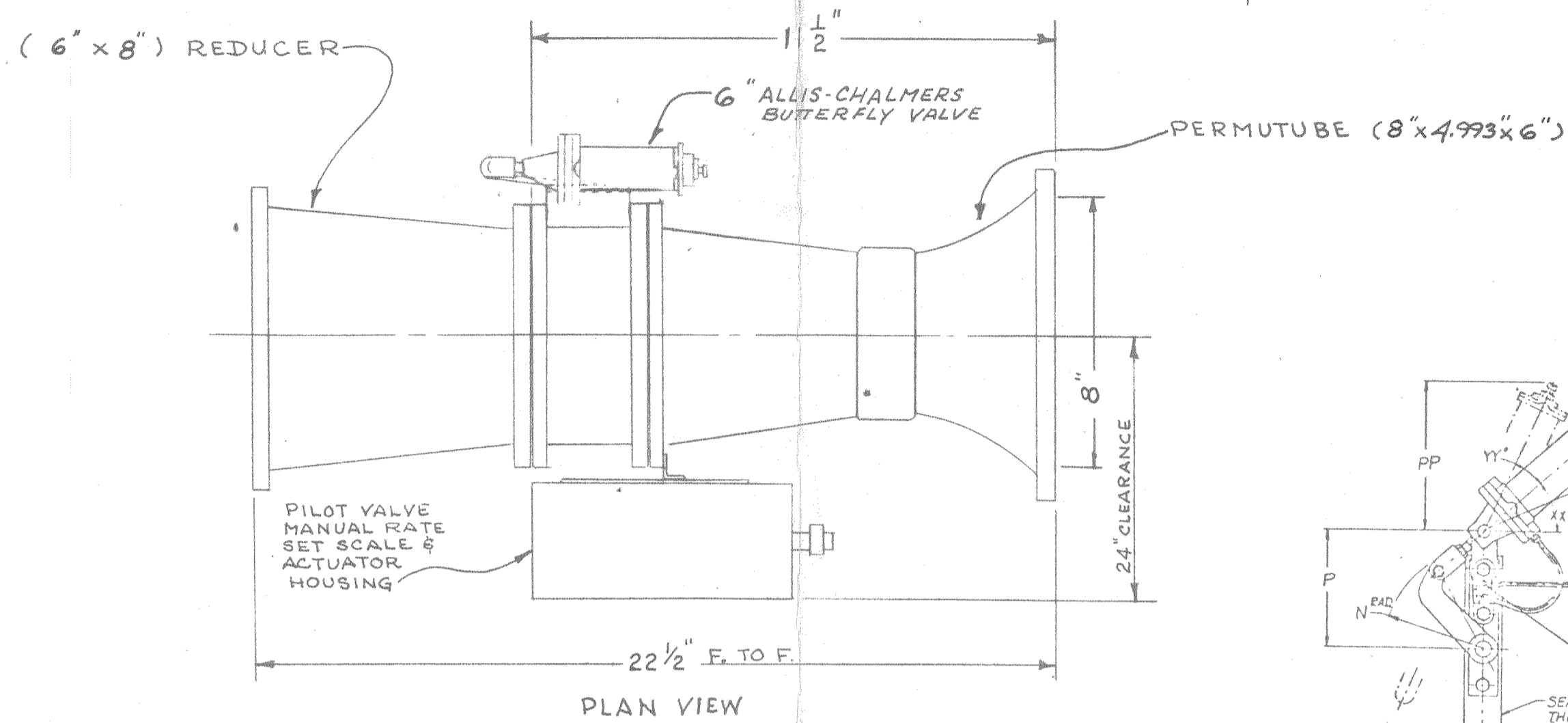
SECTION F-F

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NOFPOK VIRGINIA 23112  
**APPROVED AS NOTED**  
SUBJECT TO THE REQUIREMENTS OF  
SPEC. 88313  
CONTINGENT ON MATERIALS AND/OR EQUIPMENT  
COMPLYING WITH SPECIFICATION  
COMPLIANCE WITH THE CONTRACTOR  
IS RESPONSIBLE FOR PROVIDING  
SUFFICIENT PHYSICAL DIMENSIONS & WEIGHTS,  
BRIDGE SECTION OF TRADES, ETC. AS REQUIRED.  
DATE 2-5-68  
COMPLANTNAVFACENGCOM

<b>DEBHAM-HUGHES CORPORATION</b>		PROJECT WATER TREATMENT PLANT	
ARCHITECTURAL METALS - P. O. BOX 9073 GREENSBORO, N. C.		CAMP LEJUNE, N. C.	
ERECTOR BY OTHERS		CONTRACTOR BROWN CONST. CO.	
PAINT RED LEAD		GREENSBORO, N. C.	
SPECIAL INSTRUCTIONS		ARCHITECT BUREAU OF YARDS & DOCKS	
		MADE BY DATE 6-11-68 JOB NO. SHEET NO.	
		DETAILS OF BRASS METALS 473 2	

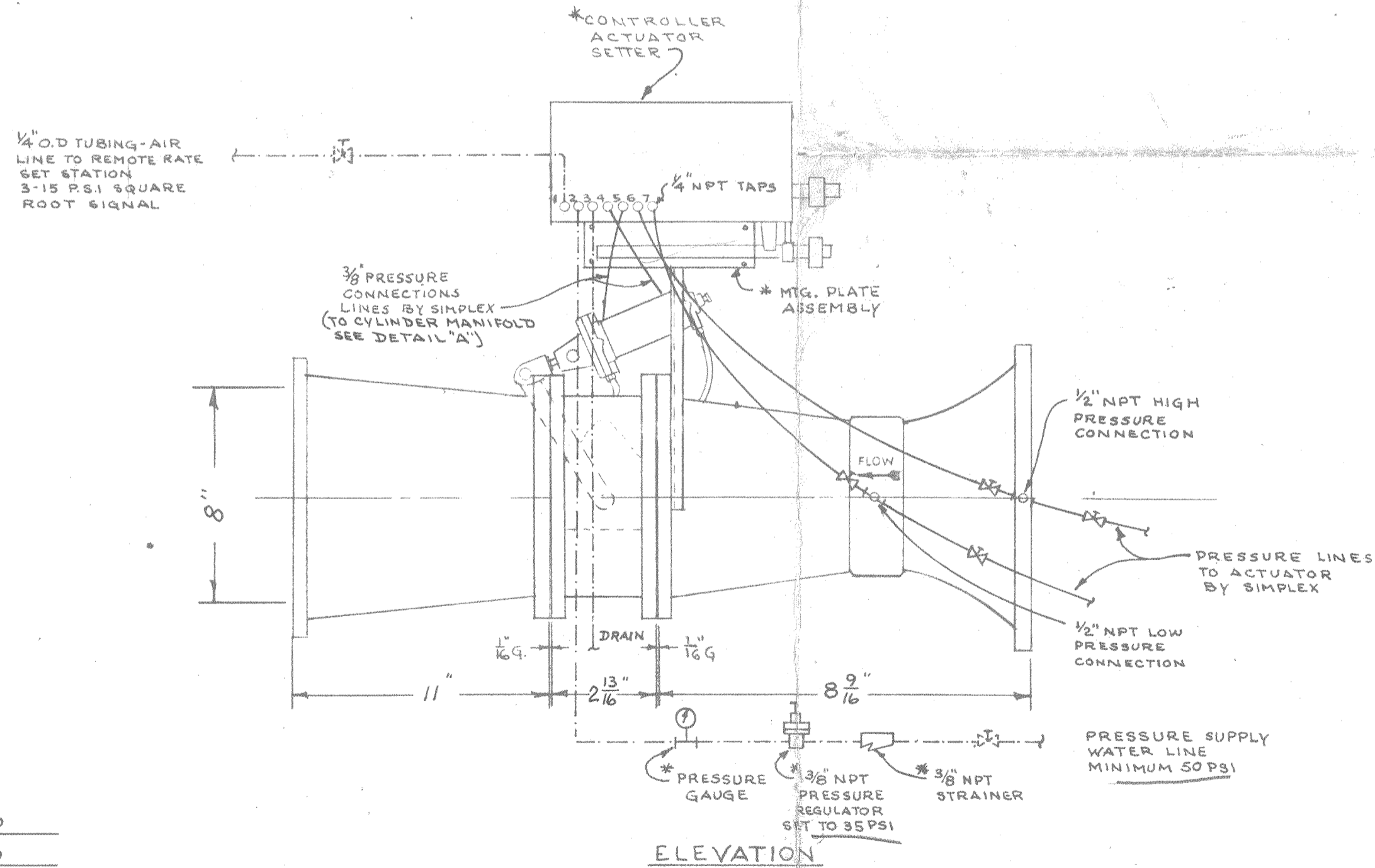
NO.	DATE	DESCRIPTION
		REVISIONS





DETAIL "A"  
ALLIS-CHALMERS BUTTERFLY VALVE

**NOTE:**  
AT LEAST ONE DIAMETER OF STRAIGHT PIPE PREFERABLE BETWEEN ANY FITTING AND INLET OF CONTROLLER TO REDUCE FLOW TURBULANCE.



- NOTES:**
1. END FLANGES 125# STD.
  2. ALL TUBING 1/2" O.D. UNLESS OTHERWISE SPECIFIED.
  3. ALL TUBING, PIPING, VALVES & FITTINGS SHOWN DOT & DASH, NOT BY SIMPLEX
  4. INTERIOR TO BE EPOXY LINED
  5. CONTROLLER TO BE FULLY ASSEMBLED BEFORE SHIPMENT
  6. \* ITEMS FURNISHED BY SIMPLEX

TWO REQ'D  
FOR  
CAMP LEJEUNE, N.C.

OUTLINE  
TYPE "BFH" CONTROLLER  
NO. 82

MAX. RATE: 1,312,000 GPD  
MIN. RATE: 250,000 GPD

DIFFERENTIAL = 5.372" H<sub>v</sub>. FT. 1,312,000 GPD

NOTE: CONTROLLER SHOWN WITH ACTUATOR VALVE & PRESSURE CONNECTION ON LEFT HAND

NOTE: DO NOT SCALE THIS DRAWING  
USE DIMENSIONS ONLY.

DRAWN BY	FxJ
CHECKED BY	
APPR'D. BY	

REV.	BY	DATE	REVISIONS

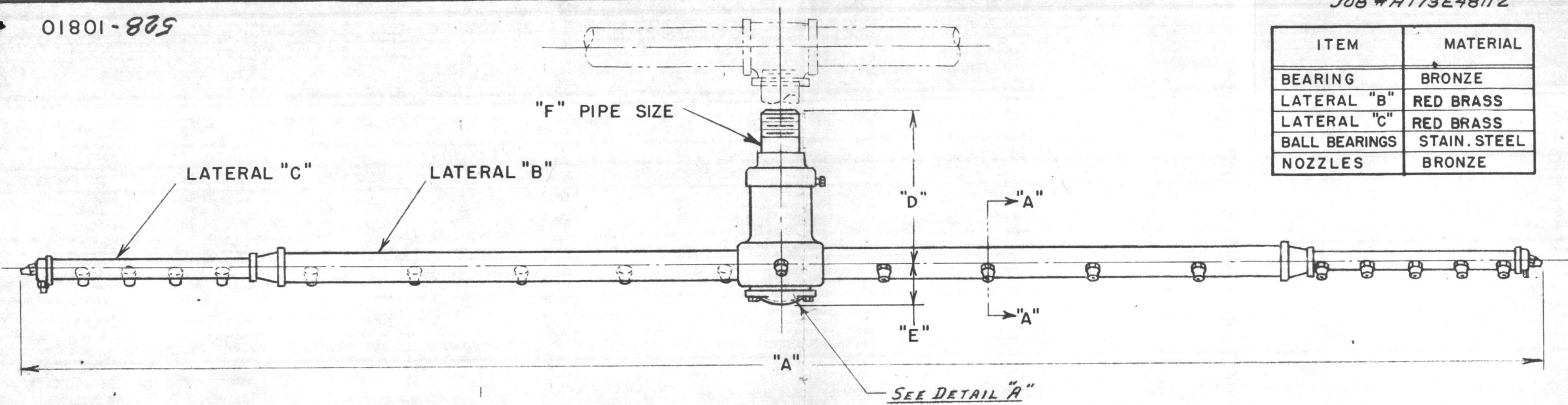
**PERMUTIT**  
DIVISION OF RITTER PFAUDLER CORPORATION  
SIMPLEX CONTROL SYSTEMS

SCALE: 1/4"

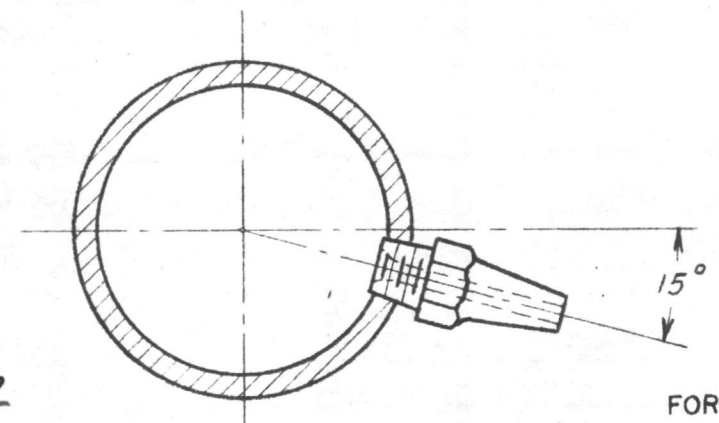
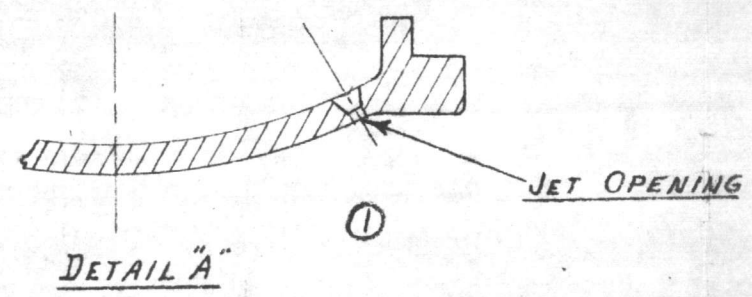
DATE: 11-30-70 **555-26590**



ITEM	MATERIAL
BEARING	BRONZE
LATERAL "B"	RED BRASS
LATERAL "C"	RED BRASS
BALL BEARINGS	STAIN. STEEL
NOZZLES	BRONZE



"OUR SHIPPING SCHEDULE IS BASED UPON THESE DRAWINGS BEING RETURNED APPROVED WITHOUT CHANGE WITHIN TWO WEEKS. ANY TIME TAKEN BEYOND THAT PERIOD WILL REQUIRE THAT SHIPMENT BE RESCHEDULED."



NOTE:  
PIPING SHOWN IN DOT AND DASH LINES NOT FURNISHED BY SIMPLEX V. & M. CO.

UNIT SIZE	DIM. "A"	LATERAL "B"		LATERAL "C"		"D"	"E"	"F"	NOZZLES NO. REQ'D.
		SIZE	LENGTH	SIZE	LENGTH				
12'-6"	12'-2"	3"	3'-8"	2"	22 1/2"	107/8"	3 5/8"	4"	16
13'-0"	12'-8"	3"	3'-11"	2"	22 1/2"	107/8"	3 5/8"	4"	18
13'-6"	13'-2"	3"	4'-0"	2"	2'-0 1/2"	107/8"	3 5/8"	4"	19
14'-0"	13'-8"	3"	4'-3"	2"	2'-0 1/2"	107/8"	3 5/8"	4"	20
14'-6"	14'-2"	3"	4'-6"	2"	2'-0 1/2"	107/8"	3 5/8"	4"	21
15'-0"	14'-8"	3"	4'-6"	2"	2'-3 1/2"	107/8"	3 5/8"	4"	22
15'-6"	15'-2"	3"	4'-6"	2"	2'-6 1/2"	107/8"	3 5/8"	4"	24
16'-0"	15'-8"	3"	4'-9"	2"	2'-6 1/2"	107/8"	3 5/8"	4"	25
16'-6"	16'-2"	3"	4'-9"	2"	2'-9 1/2"	107/8"	3 5/8"	4"	25
17'-0"	16'-8"	3"	5'-0"	2"	2'-9 1/2"	107/8"	3 5/8"	4"	26
17'-6"	17'-2"	3"	5'-3"	2"	2'-9 1/2"	107/8"	3 5/8"	4"	29
18'-0"	17'-8"	3"	5'-6"	2"	2'-9 1/2"	107/8"	3 5/8"	4"	31
18'-6"	18'-2"	3"	5'-9"	2"	2'-9 1/2"	107/8"	3 5/8"	4"	32
19'-0"	18'-8"	3"	5'-9"	2"	3'-0 1/2"	107/8"	3 5/8"	4"	34
19'-6"	19'-2"	3"	6'-0"	2"	3'-0 1/2"	107/8"	3 5/8"	4"	36
20'-0"	19'-8"	3"	6'-0"	2"	3'-3 1/2"	107/8"	3 5/8"	4"	37

2-REQ'D FOR CAMP LEJEUNE NORTH CAROLINA  
ITEM 11B.6.10

FOR SQUARE OR RECTANGULAR FILTERS ONLY

SECTION A-A (TYPICAL OF ALL NOZZLES)

#2	10-12-64	NOZZLES INCREASED PER ECN 3248A
Rev. # 1 5/5/59	Added detail "A" showing Jet Opening.	
REV.	DATE	E.C.N.
MACHINING TOLERANCE UNLESS OTHERWISE SPECIFIED		
DECIMAL DIM. ± .002		
FRACTIONAL DIM. ± .010		
ANGULAR DIM. ± 1°		
BREAK ALL EDGES APPROX. 1/64 R.		
DRAWN BY <i>CWS.</i>	DATE 7-15-58	
CHECKED BY	DATE	
APPROVED BY	DATE	

TITLE: **OUTLINE ROTARY SWEEPS**  
(12'-6" TO 20'-0")

PART NO.

MATL. SEE TABLE

APPROVED or APPROVED AS NOTED

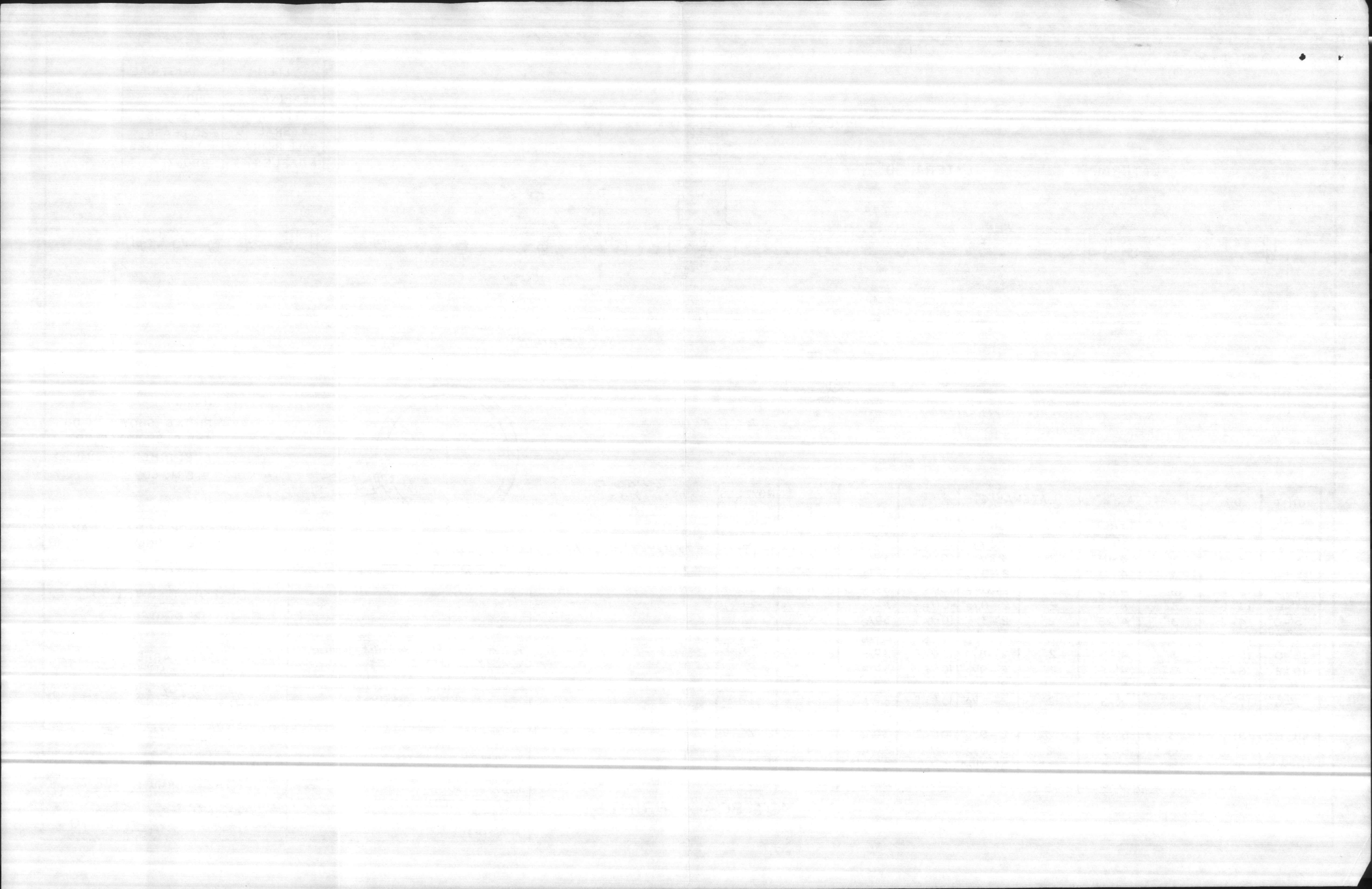
By: *[Signature]*  
Corbin Construction Company

INSTRUMENT Date: *17 Dec 70*

**SIMPLEX CONTROL SYSTEMS**  
THE PERMUTIT CO.

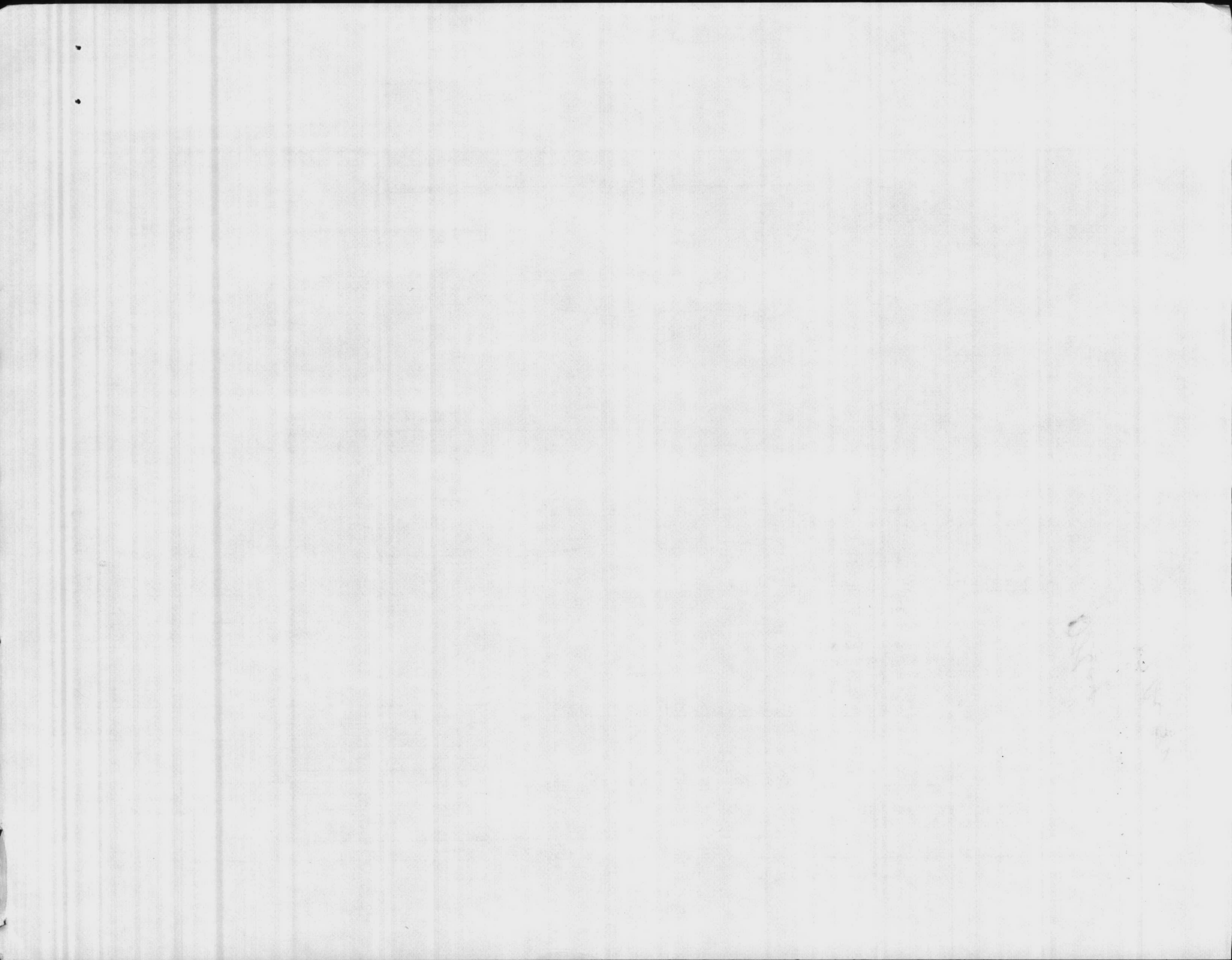
SCALE: *528-10810*

DO NOT SCALE PRINT

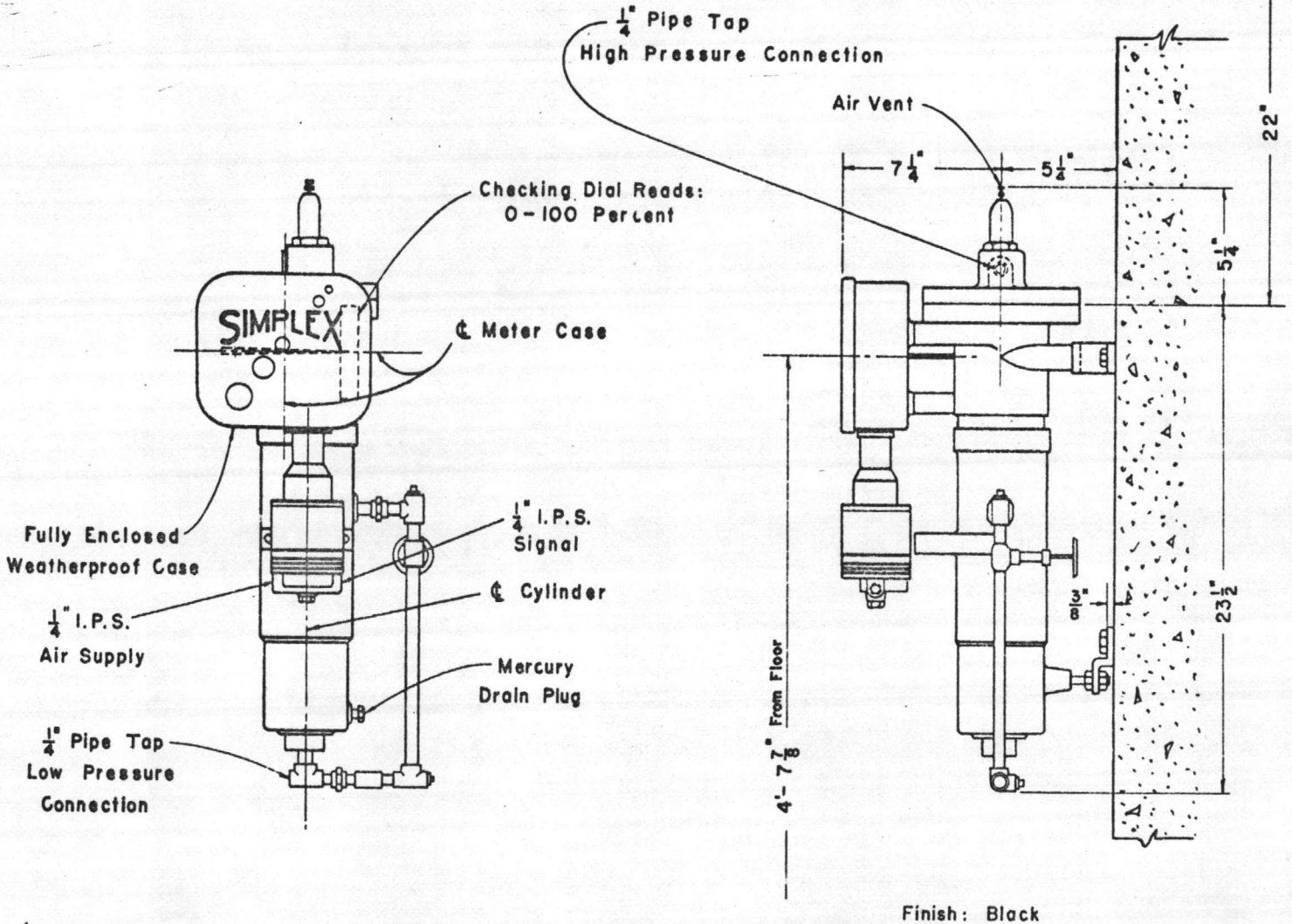




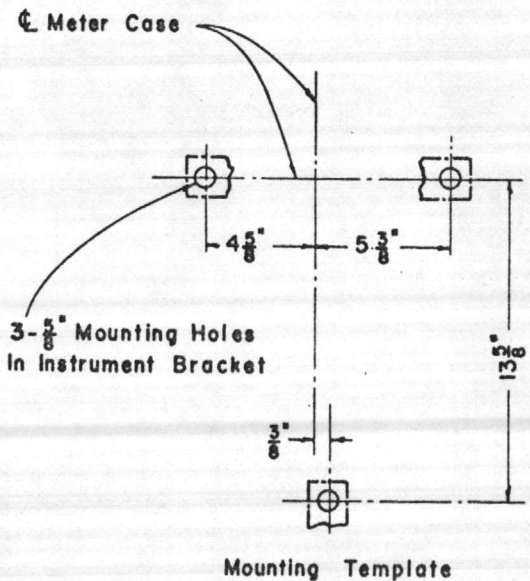




Overhead Clearance  
Required To Remove Float



ITEM 11B.9.1



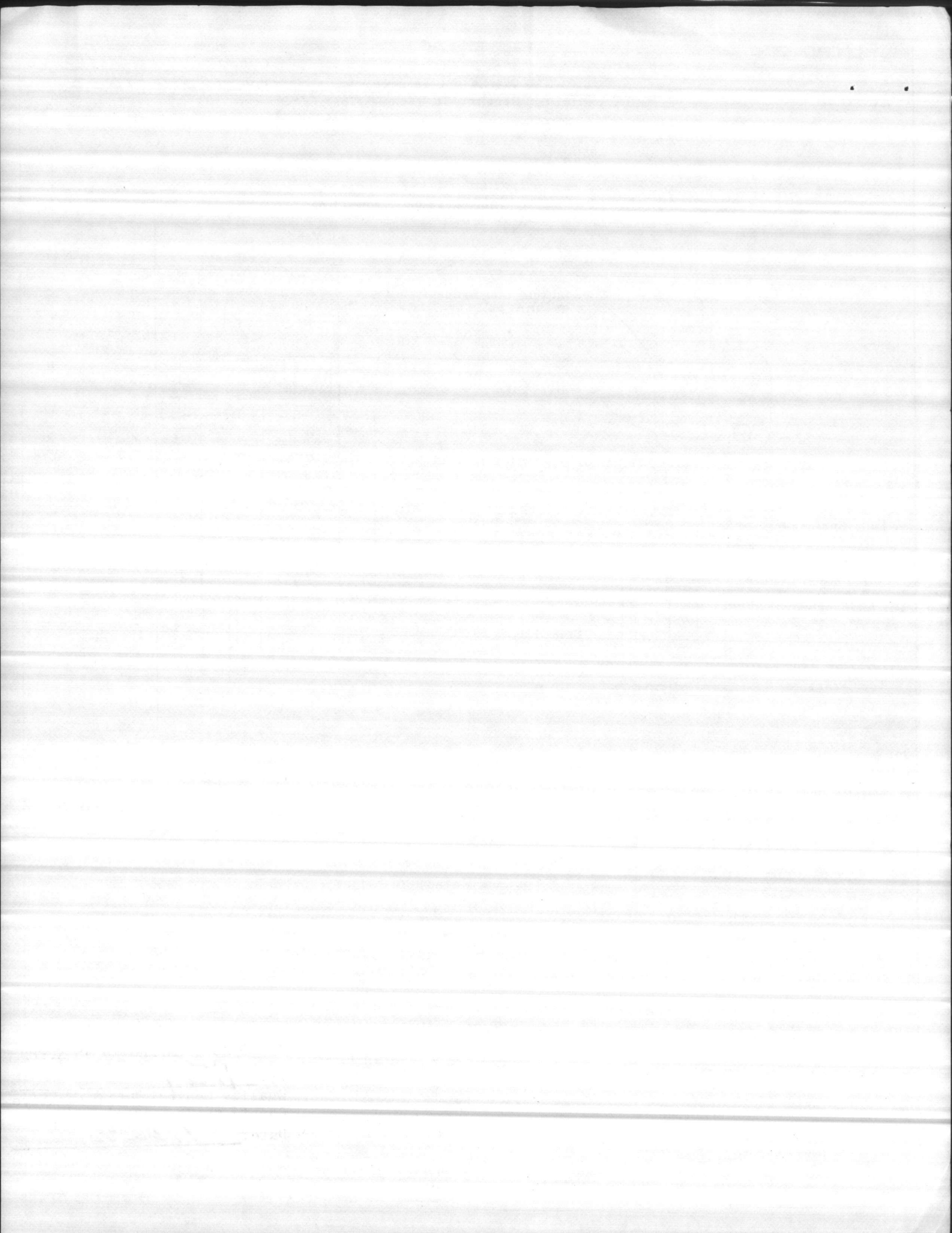
Maximum Working Pressure  
For This Meter 250 P.S.I.G.  
Unless Otherwise Specified

TYPE	DIFFERENTIAL
PNB	114.4"
PNW	128"
PNG	64.5"
PNR	30"
PMP	100"

2-REQ'D  
TAG 1 UNIT - RAW WATER  
TAG 1 UNIT - FINISHED WATER  
 SIMPLEX PNEUMATIC TYPE TRANSMITTER  
 HIGH HEAD METER  
 TYPE PNG By: *[Signature]*  
 WALL MOUNTED  
 CAMP LEJEUNE, N.C.  
 Date: 17 Dec 70  
 APPROVED or APPROVED AS NOTED  
 Quality Control Representative  
 Corbin Construction Company

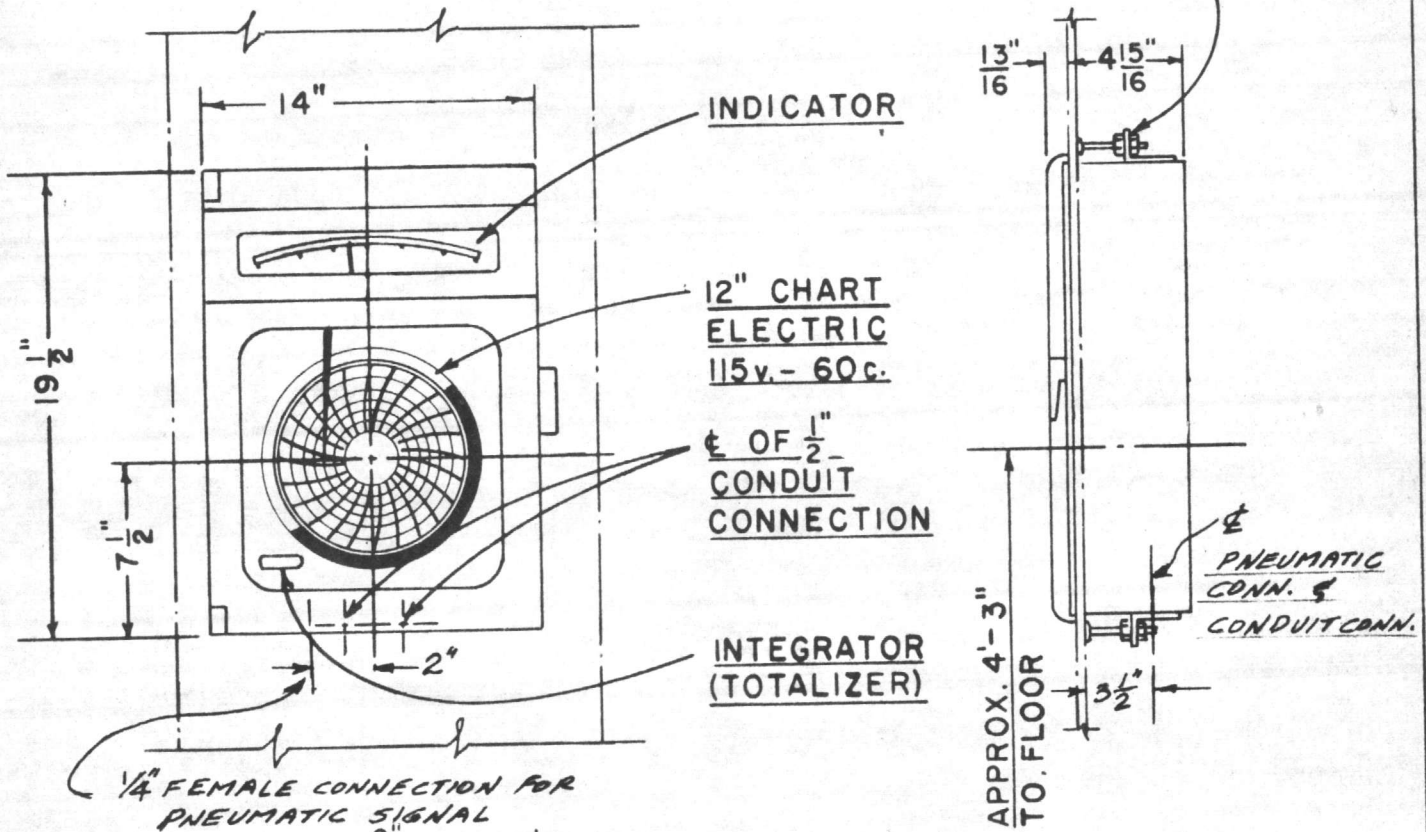
Primary Device:  
24" x 11.032" Permutube

**SIMPLEX CONTROL SYSTEMS**  
**THE PERMUTIT CO.**



FINISH ÷ BLACK

BRACKETS FOR PANEL MTD.



INDICATOR READS ÷  
0 - 6 Million Gallons  
Day

Weekly CHART READS ÷  
0 - 6 Million Gallons  
Day

ITEM 11B.9.1

OUTLINE  
SIMPLEX TYPE "K" PNEU. REC.  
INDICATING-RECORDING-TOTALIZING  
PANEL MTD.

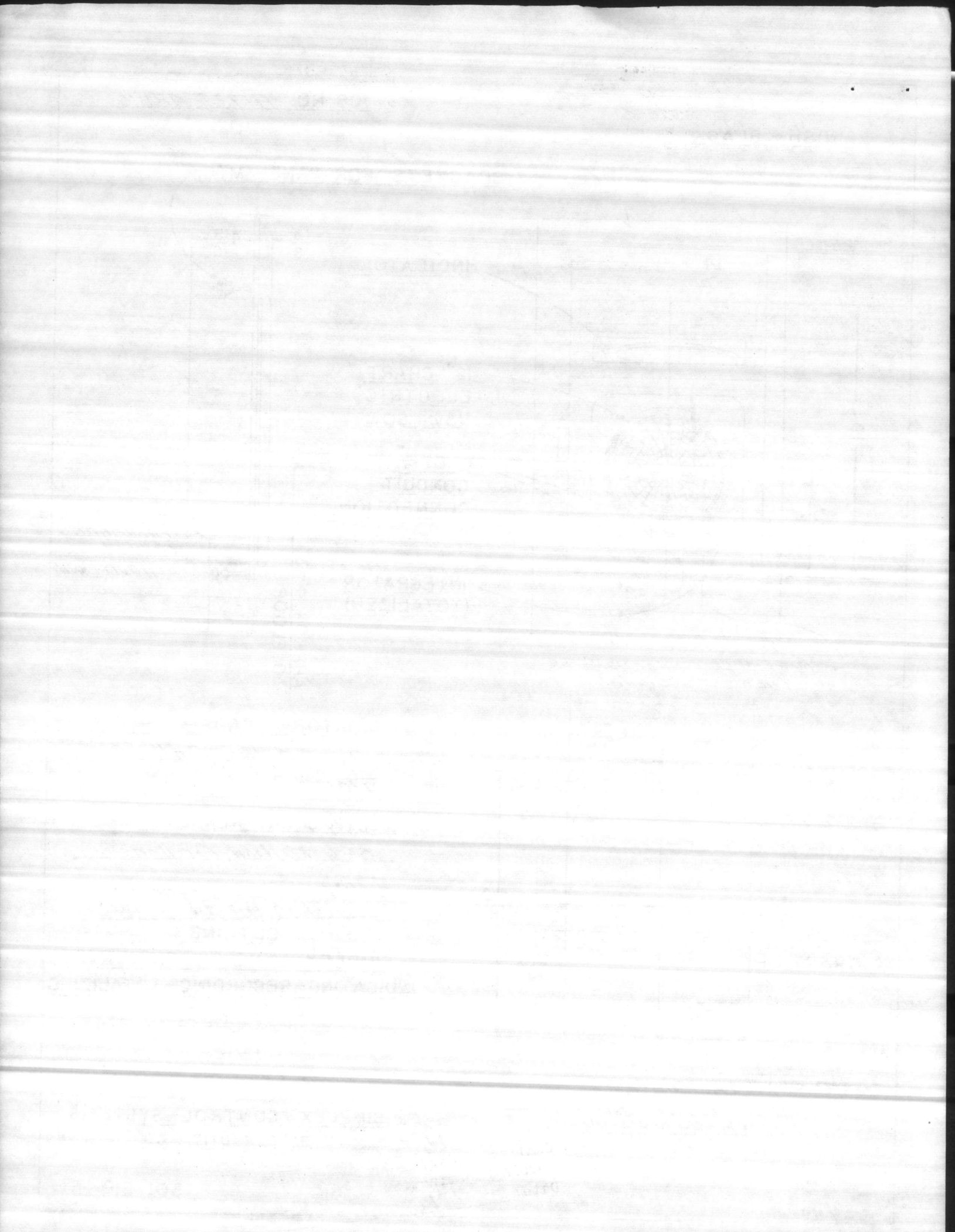
FOR

Camp Lejeune, N. C.

(2) REQ'D  
TAG (1) - RAW WATER  
TAG (1) - FINISHED WATER  
PANEL CUT OUT

APPR. OR APPROVED AS NOTED  
By: DBL  
Quality Control Representative  
Corbin Construction Company  
Date: 17 Dec 70  
THE PERMUTIT CO.

501-51945



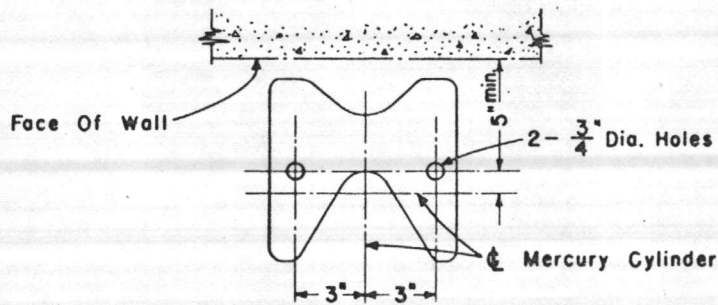
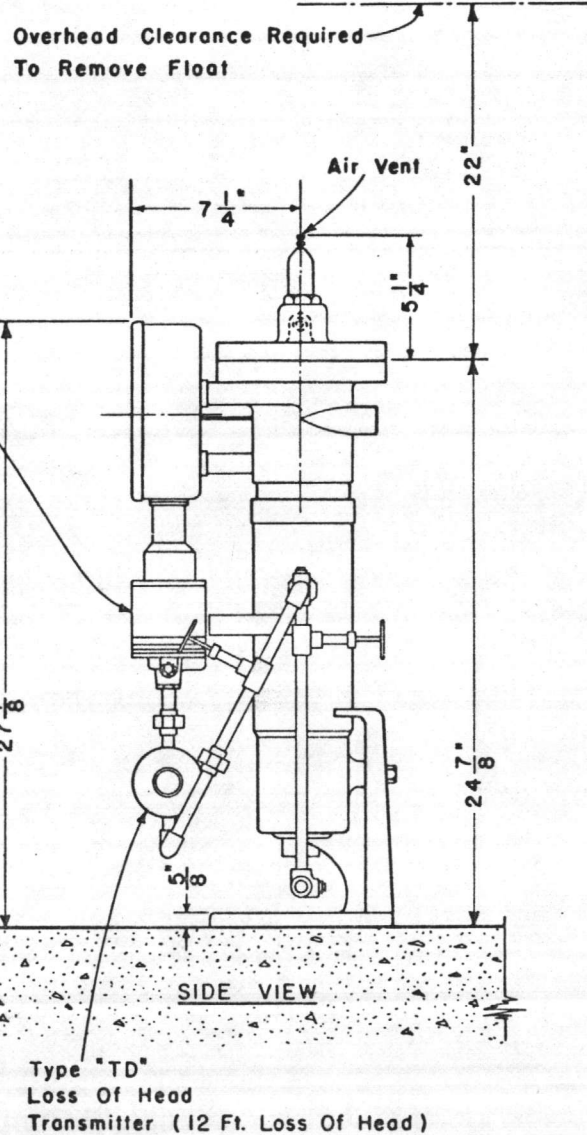
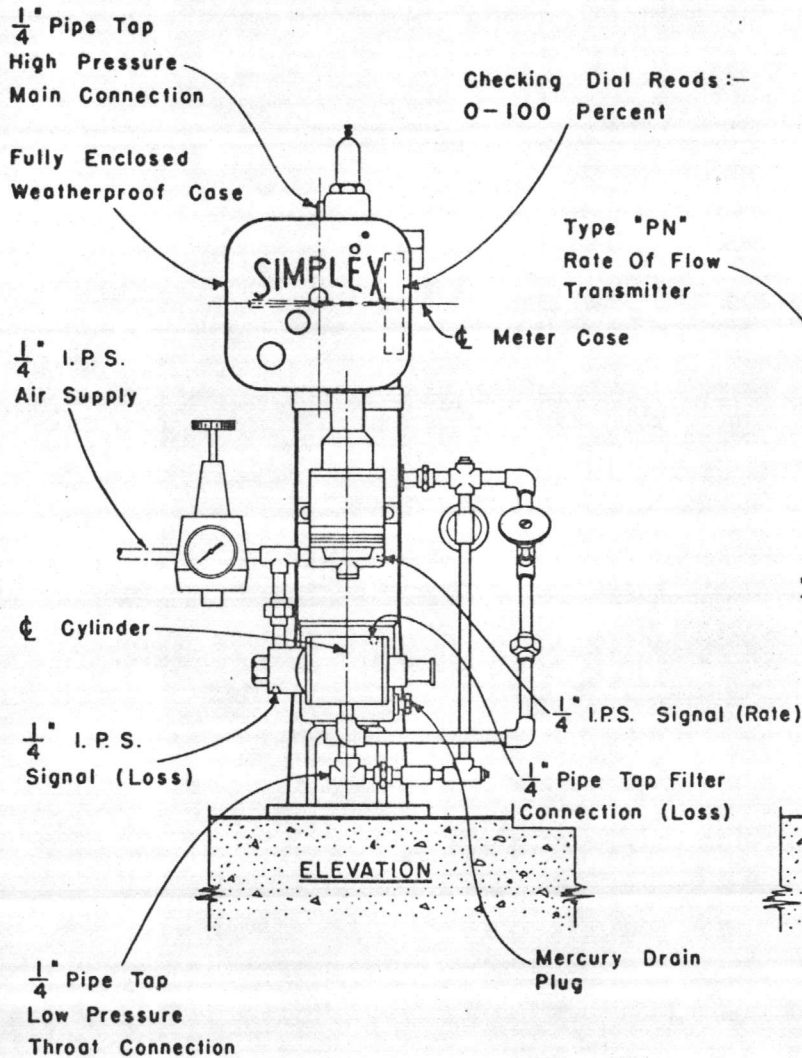
6E680-999

Primary Device :-  
#102 Type "BFH"  
Actuator

Maximum Working Pressure  
For This Meter 250 P.S.I.G.  
Unless Otherwise Specified

JOB NO. A173E48112

P.O. NO. 15376-1683



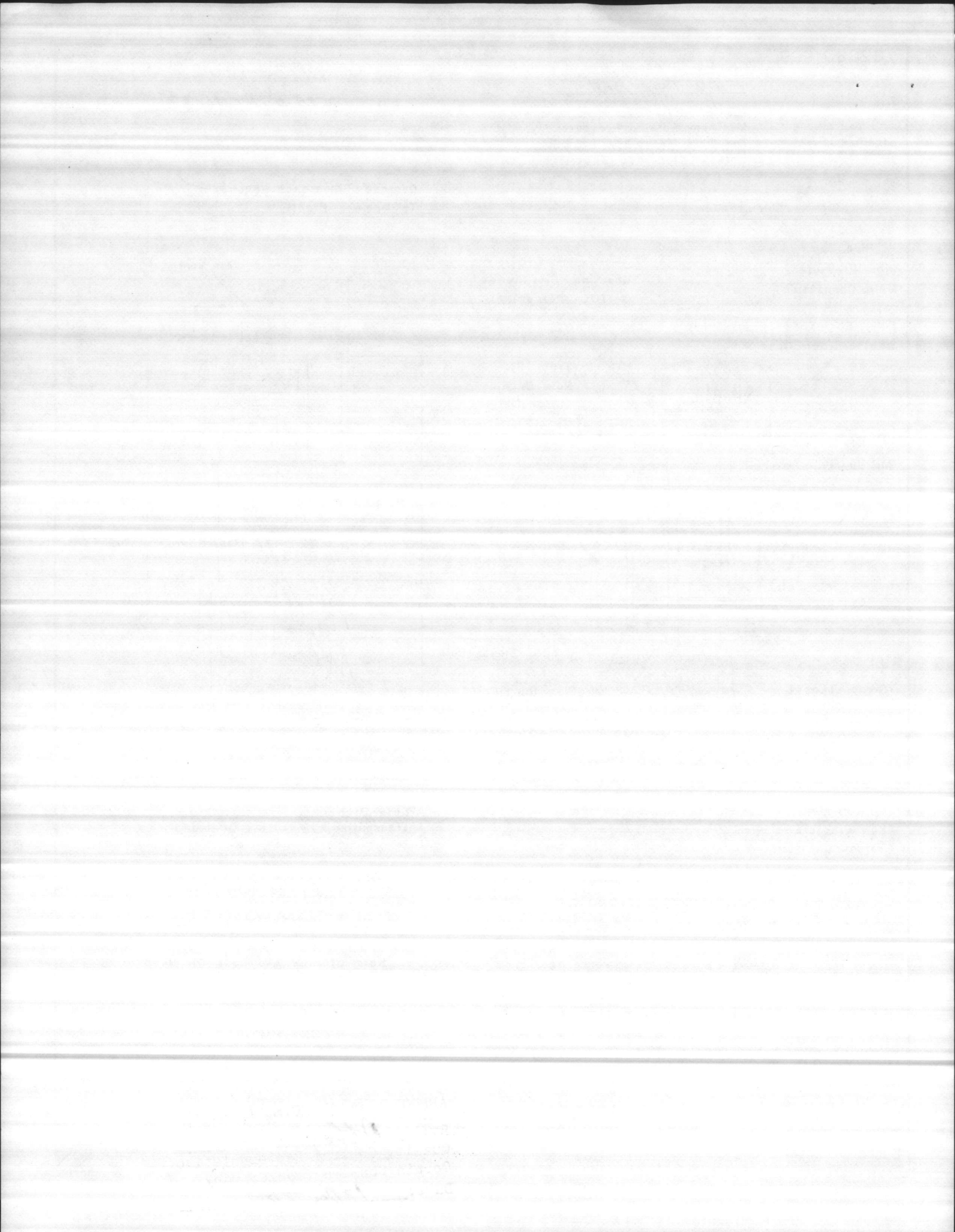
Mounting Template  
ITEM 11B.9.3  
TAG: FILTER EFFLUENT

~~"PNG" 64" Differential~~  
"PNG" - 64" Differential  
**2-REQ'D**  
Simplex Pneumatic Type Transmitter  
Rate Of Flow And Loss Of Head  
Type ~~"PNG"~~ "PNG"  
Pedestal Mounted  
Camp Lejeune, N.C

E.V.R. 3-27-61

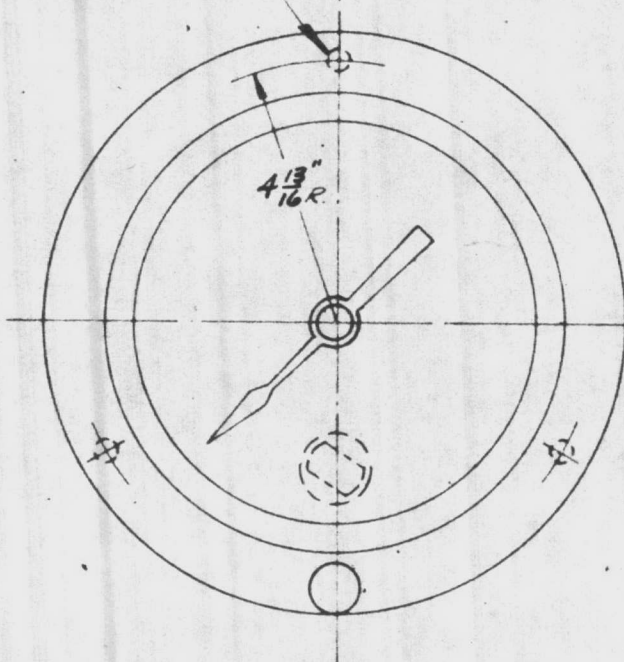
Black Finish

SIMPLEX CONTROL SYSTEMS  
THE PERMUTIT CO.  
APPROVED or APPROVED AS NOTED  
By: Ollof  
Quality Control Representative  
Corbin Construction Company  
Date: 17 Dec 70 555-08939

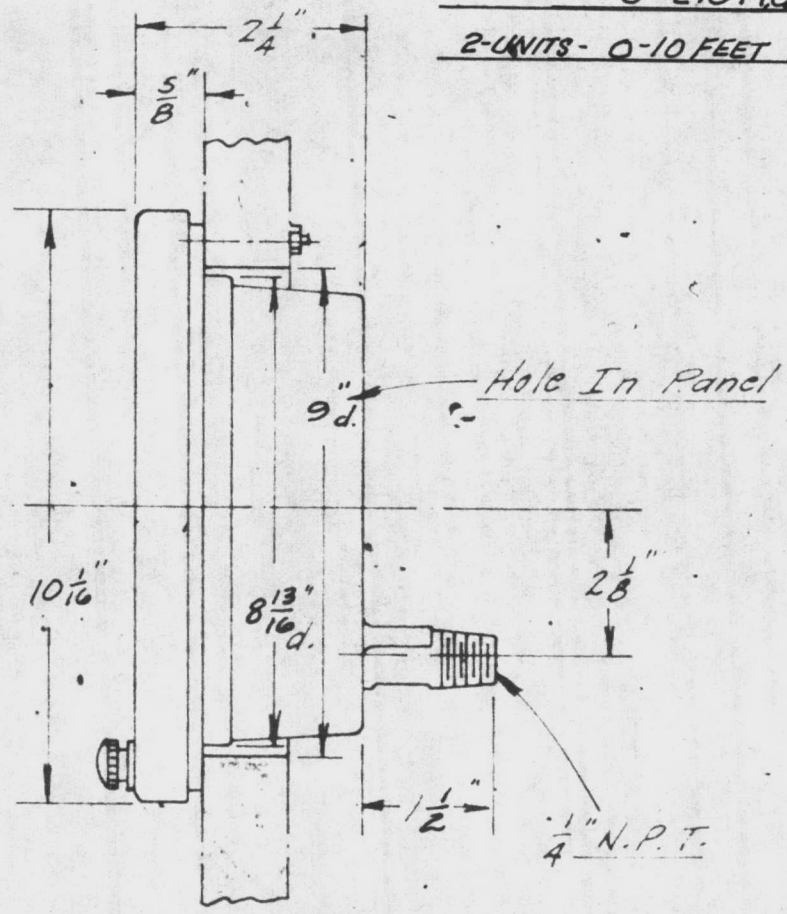


60615-105

3- $\frac{5}{16}$ " d. Mounting Holes  
120° Apart



Dial Reads:-  
2-UNITS - 0-2.0 M.G.D. RATE OF FLOW  
2-UNITS - 0-10 FEET LOSS OF HEAD



ITEM 11B.9.3  
TAG: "FILTER EFFLUENT"

APPROVED OR APPROVED AS NOTED

BY:

*[Signature]*

Quality Control Representative  
 Corbin Construction Company

DATE:

17 Dec 70

4-REQ'D

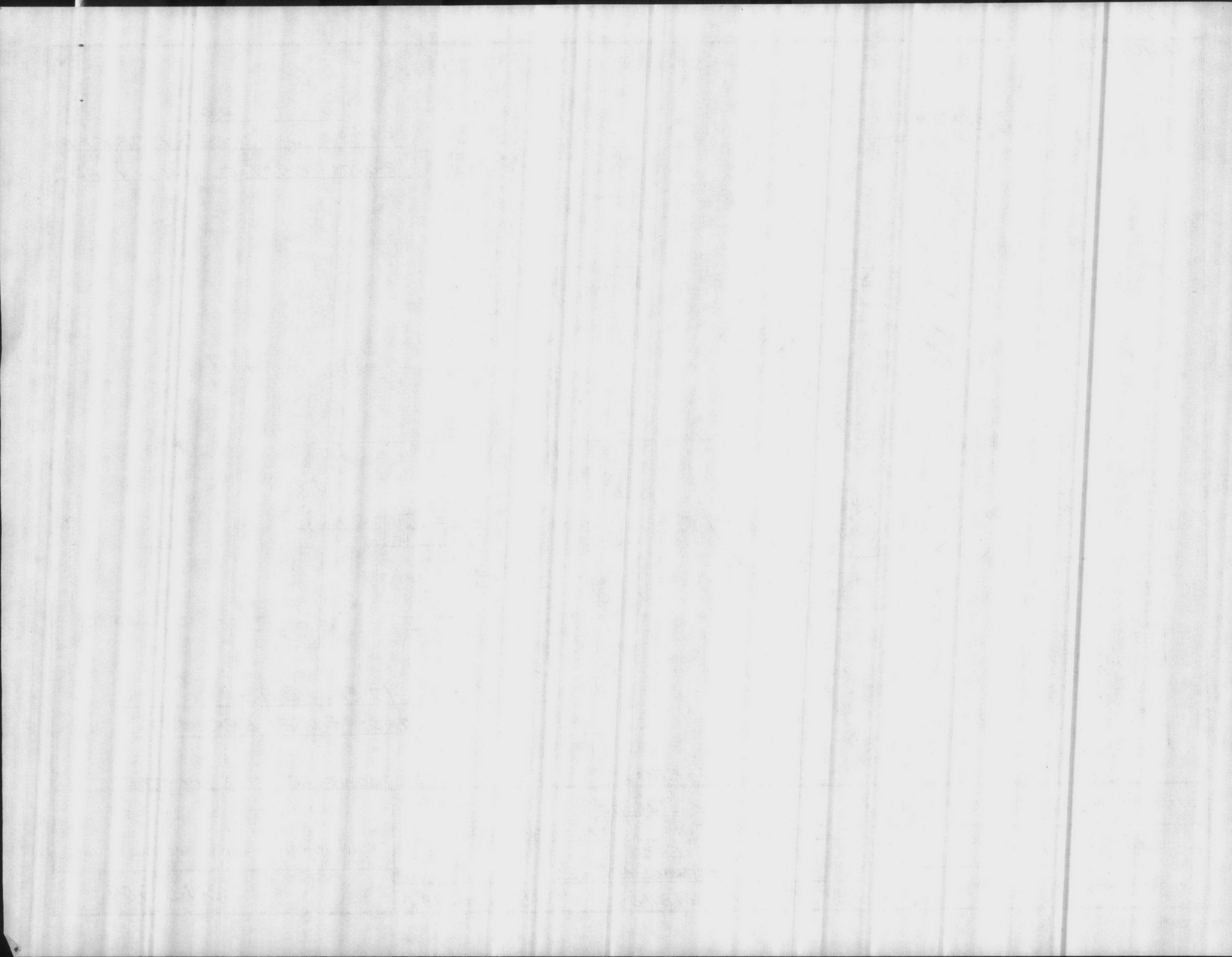
FILTER CONSOLE MTD. BY OTHERS

DRAWN BY <b>FXJ</b>	DATE <b>7-15-68</b>
CHECKED BY	DATE
APPROVED BY	DATE

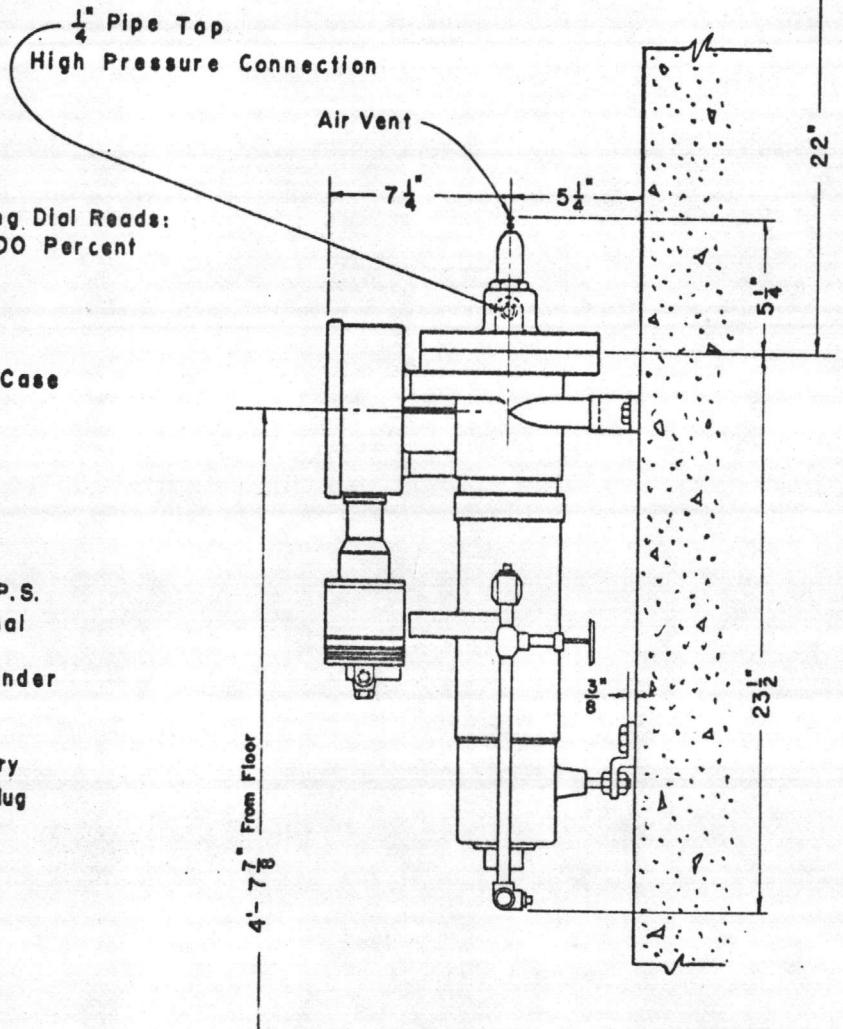
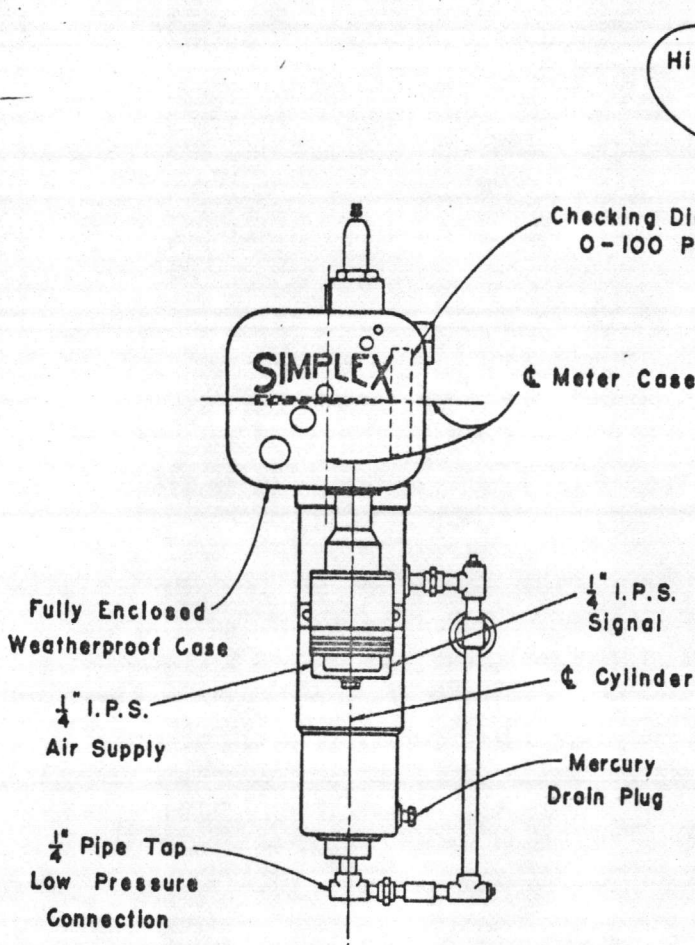
Outline  
Simplex 8 1/2" Single Ind. Pres. Gauge  
FOR  
Camp Lejeune, N.C.  
 CONTRACT NO. **A173E48112** P.O. NO. **15376-1683**

SIMPLEX CONTROL SYSTEMS THE PERMUTIT CO. A DIVISION OF PFAUDLER PERMUTIT INC.	
SCALE	<b>501-51909</b>



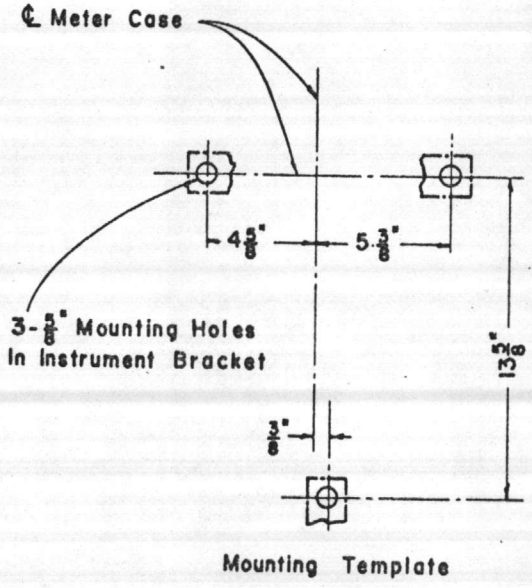


Overhead Clearance  
Required To Remove Float



Finish: Black

ITEM 11B.9.4



Maximum Working Pressure  
For This Meter 250 P.S.I.G.  
Unless Otherwise Specified

TYPE	DIFFERENTIAL
PNB	114.4"
RNE	257"
ENG	64.5"
PNB	50"
BMP	100"

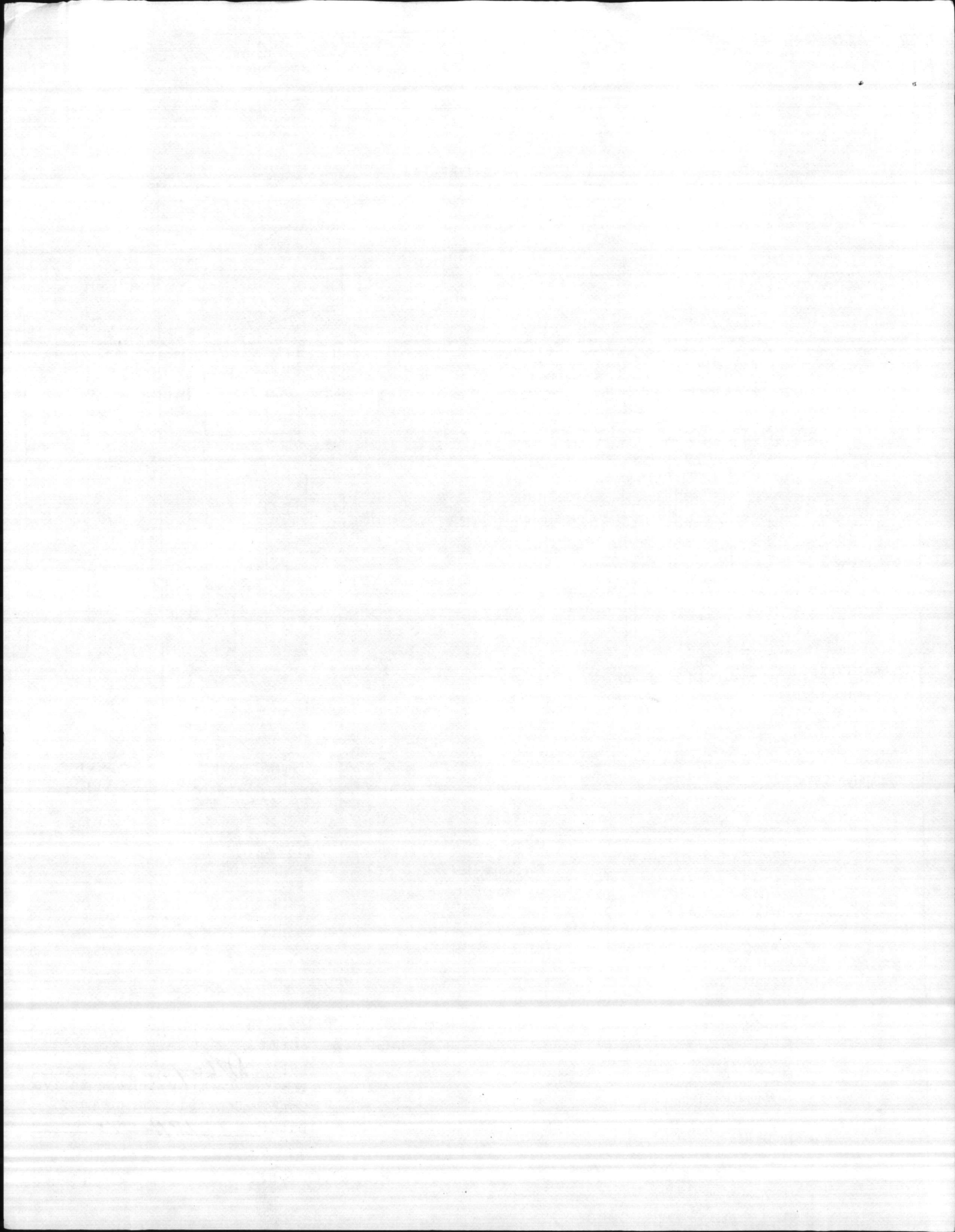
1-REQ'D  
TAG: WASH WATER

SIMPLEX PNEUMATIC TYPE TRANSMITTER  
HIGH HEAD METER APPROVED or APPROVED AS NOTED  
TYPE PNB  
By: [Signature]  
WALL MOUNTED Quality Control Representative  
CAMP LETOURNE, NC. Construction Company

Date: 17 Dec 70

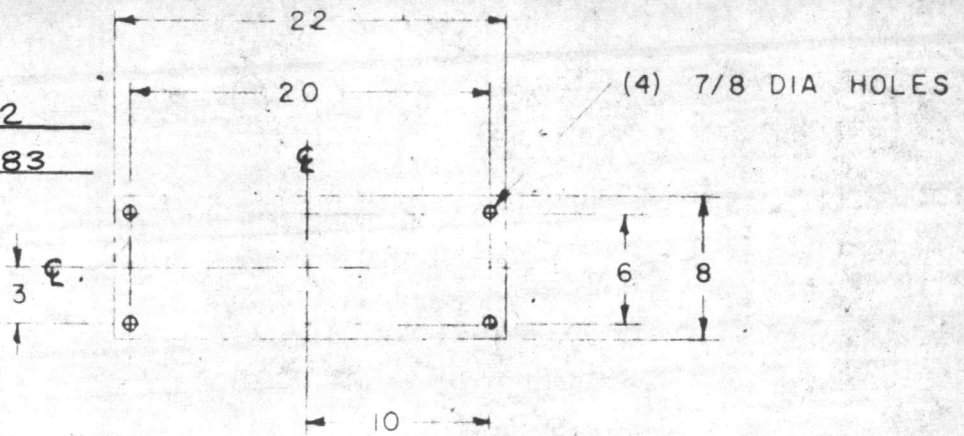
Primary Device:  
#183W TYPE BFH  
CONTROLLER

**SIMPLEX CONTROL SYSTEMS**  
**THE PERMUTIT CO.**

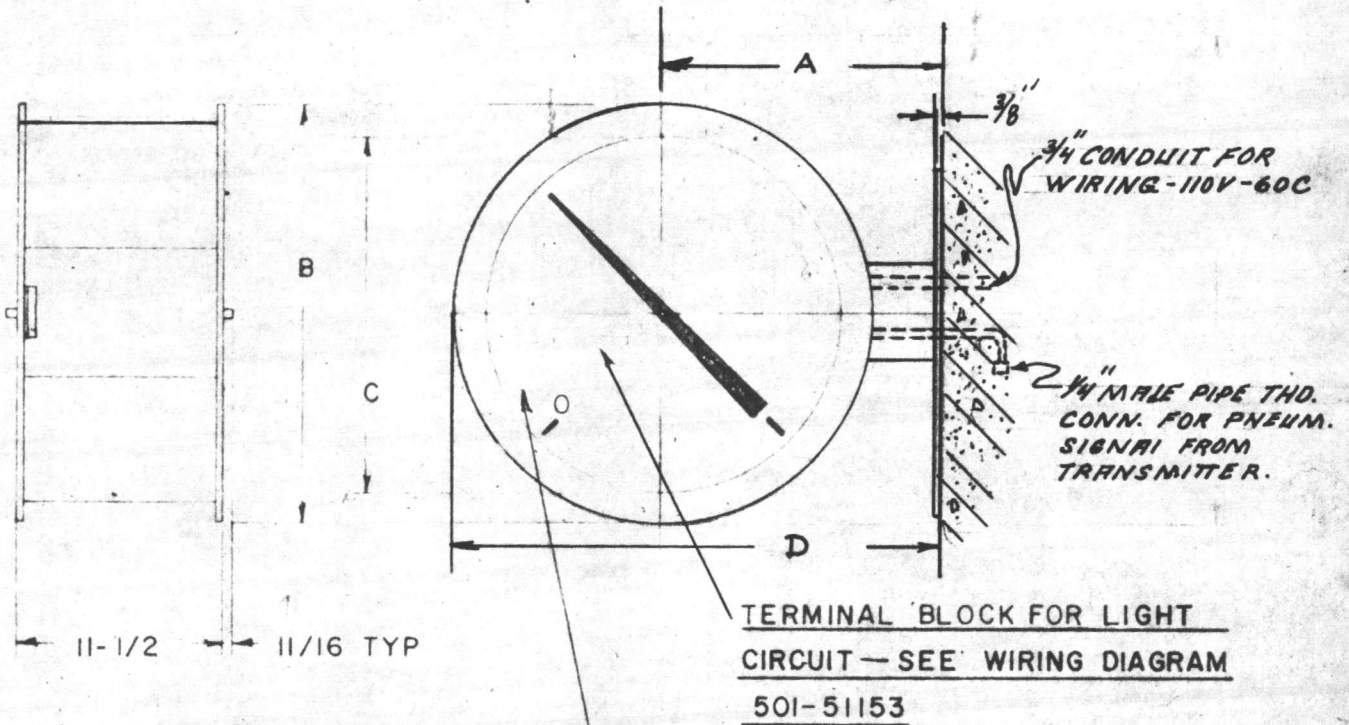


JOB NO. A173E48112

P.O. #15376-1683



VIEW MTG DIMENSIONS



DIAL READS:

0-11.0 M.G.D

DIAL - WHITE PLEXIGLASS  
MARKINGS - BLACK  
CASE - BLACK

DIM.	TYPE		
	PWD	PWB	PWA
A	15 1/2	18 1/2	21 1/2
B	23 1/2	29 1/2	35 1/2
C	18	24	30
D	27 1/4	33 1/4	39 1/4

ITEM 11B.9.4

WASH WATER

1-REQ'D

OUTLINE

ILLUMINATED DOUBLE FACE  
SINGLE POINTER - 270° IND.  
TYPE PW RECEIVER  
WALL MOUNTED

SIMPLEX CONTROL SYSTEM  
THE PERMUTIT COMPANY

APPROVED OR APPROVED AS NOTED

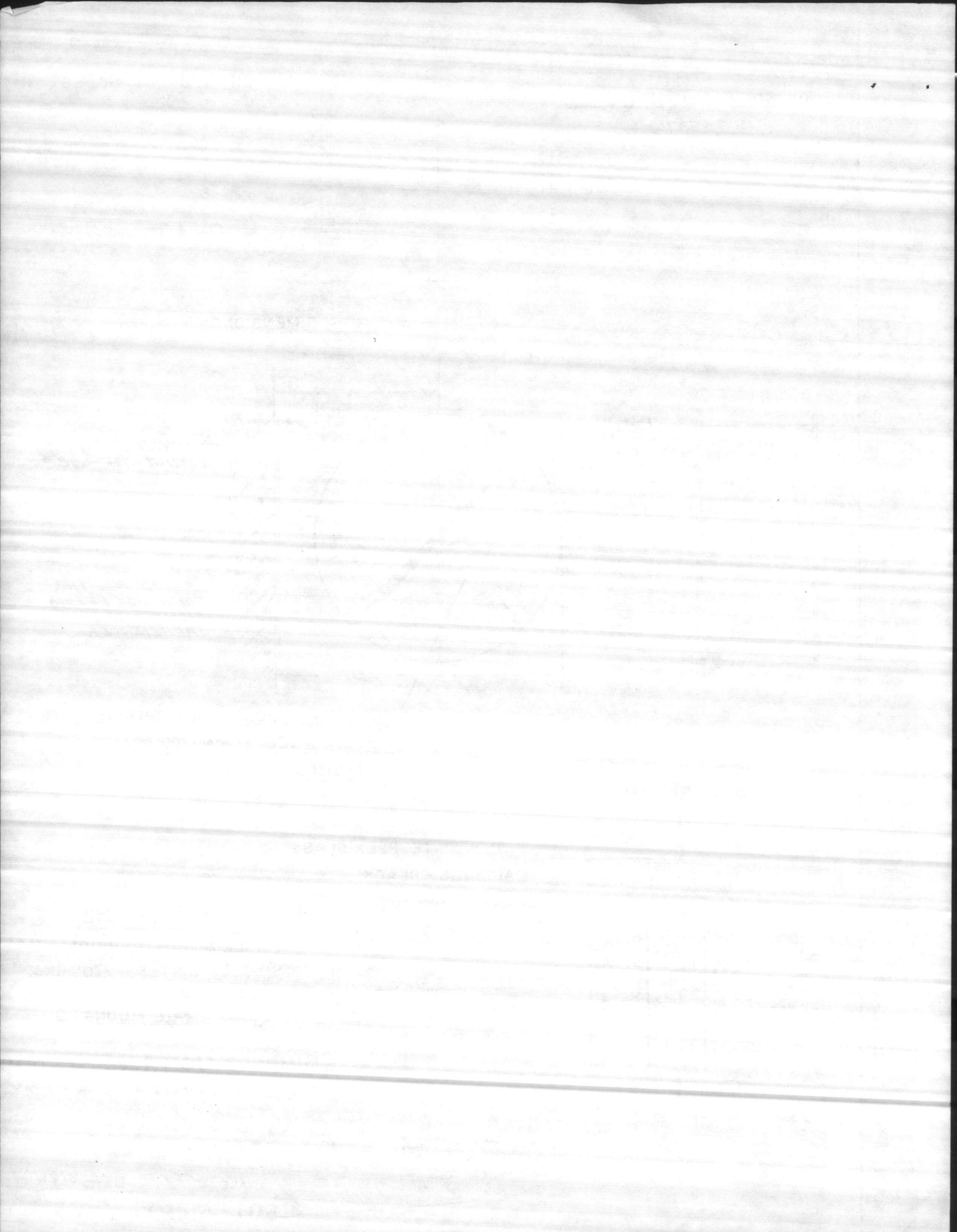
By: [Signature]  
Quality Control Representative  
Condon Construction Company

Date: 17 Dec 70

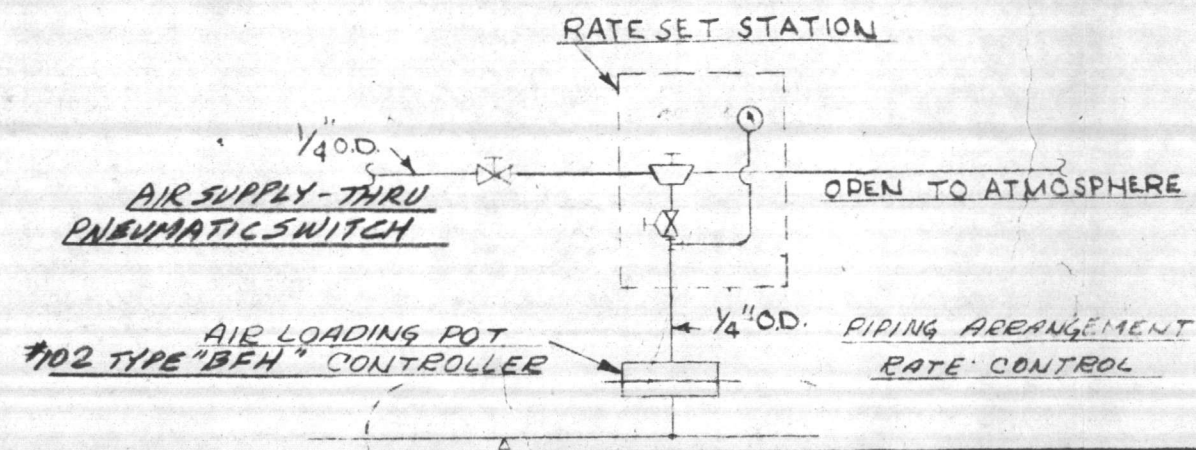
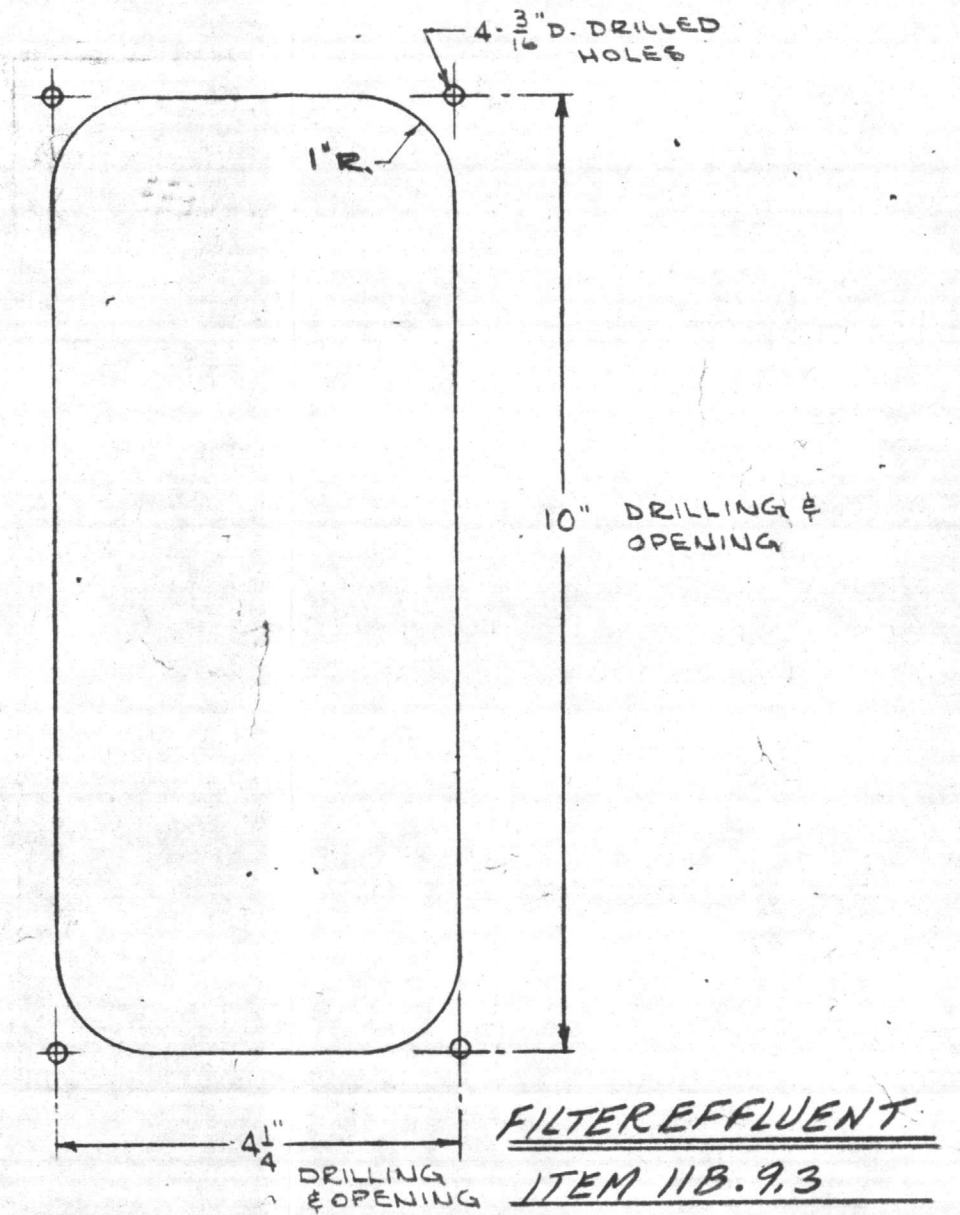
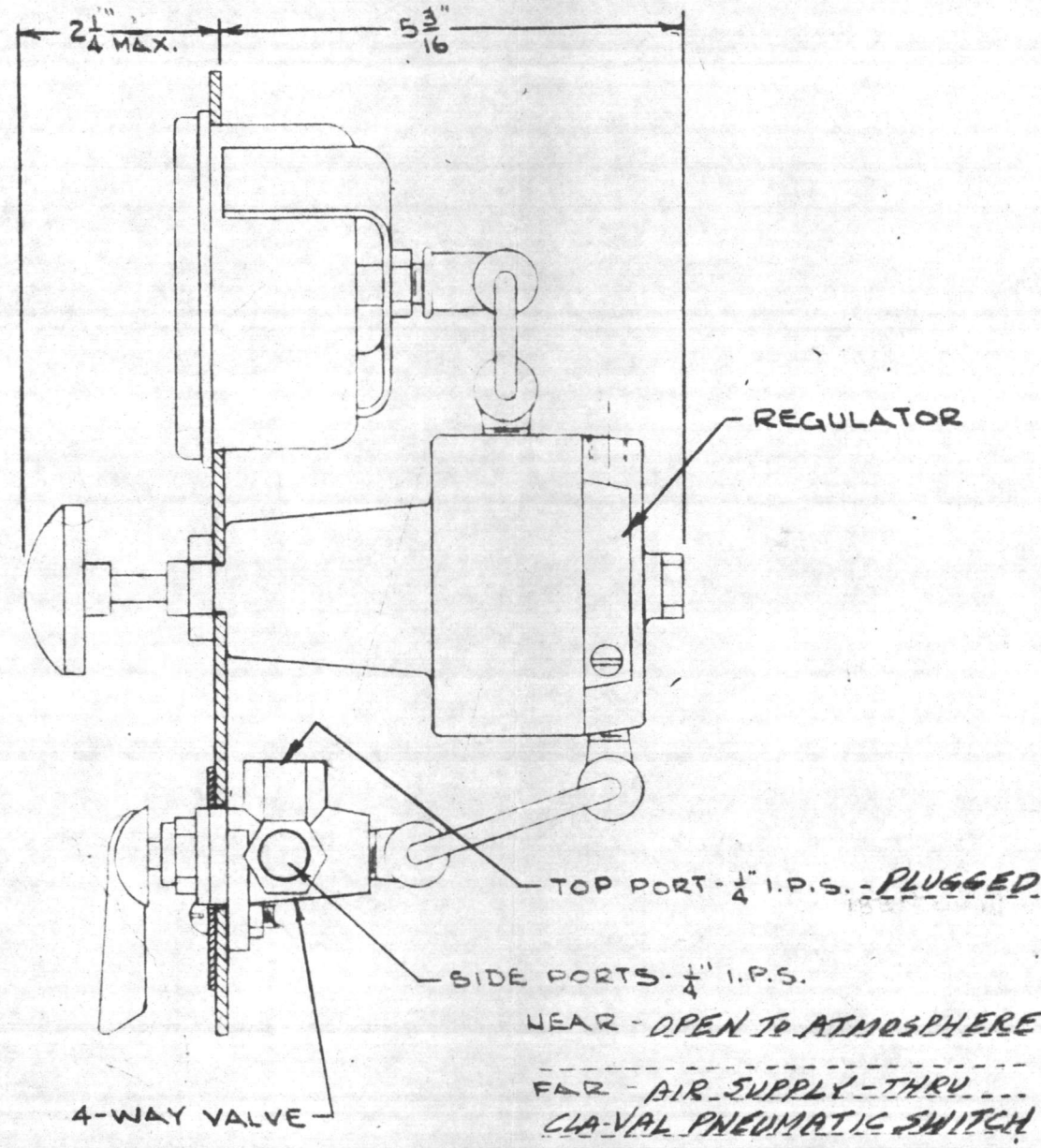
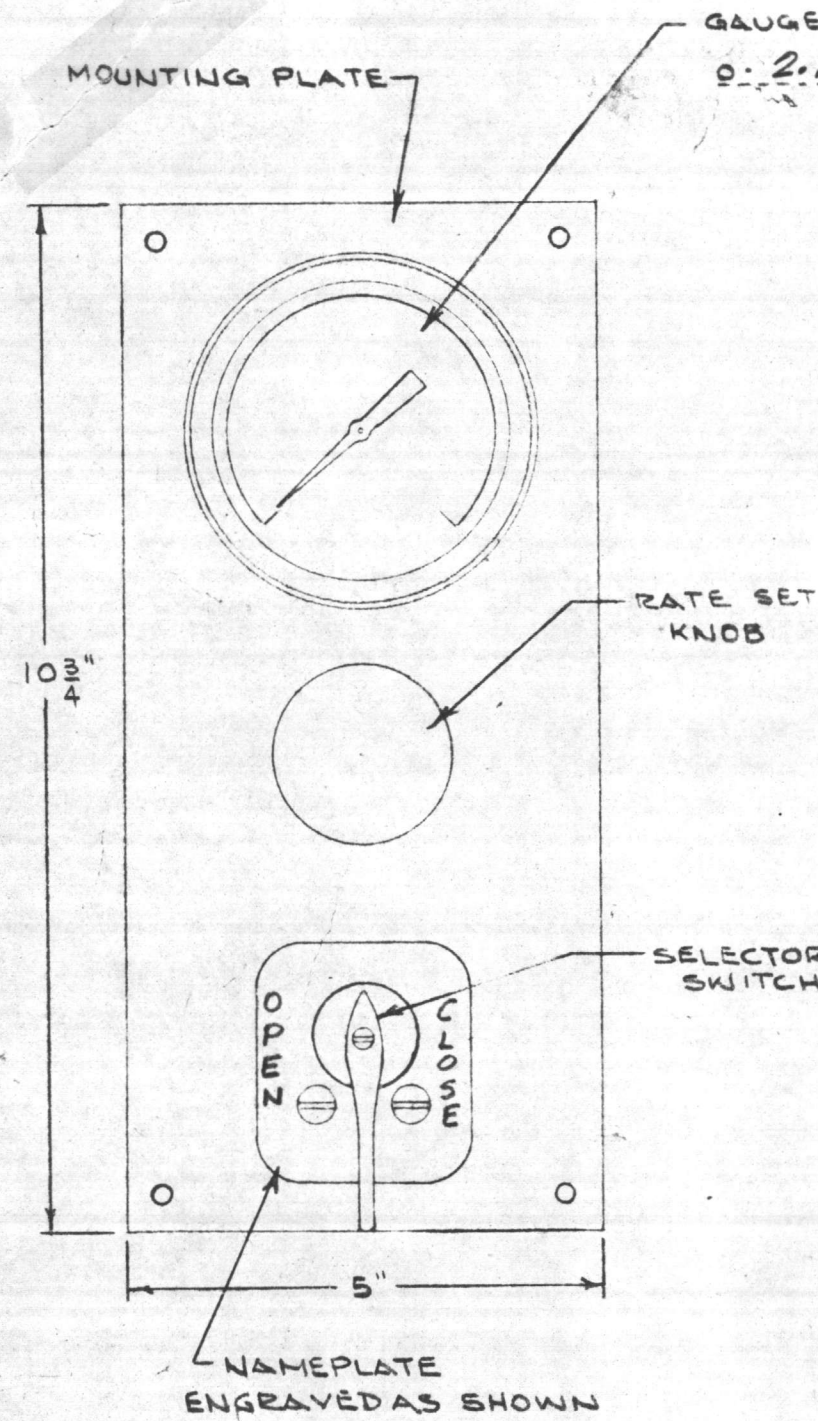
SCALE x DATE 8/21/67

501-51469

MADE IN U.S.A. CHECKED



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



OUTLINE  
INDIVIDUAL RATE SET STATIONS  
(2) REQ'D. - FOR MTS. ON FILTER CONSOLES BY OTHERS

DRAWN BY	FT.
CHECKED BY	GEH
APPR'D. BY	

REV.	BY	DATE	REVISIONS
-		4-25-66	ECN 5-1086
1	JWH	9-9-66	ADDED PIPING ARREST.

SIMPLEX CONTROL SYSTEMS  
THE PERMUTIT COMPANY

APPROVED OR APPROVED AS NOTED

By: *[Signature]*  
Quality Control Representative  
Corbin Construction Company

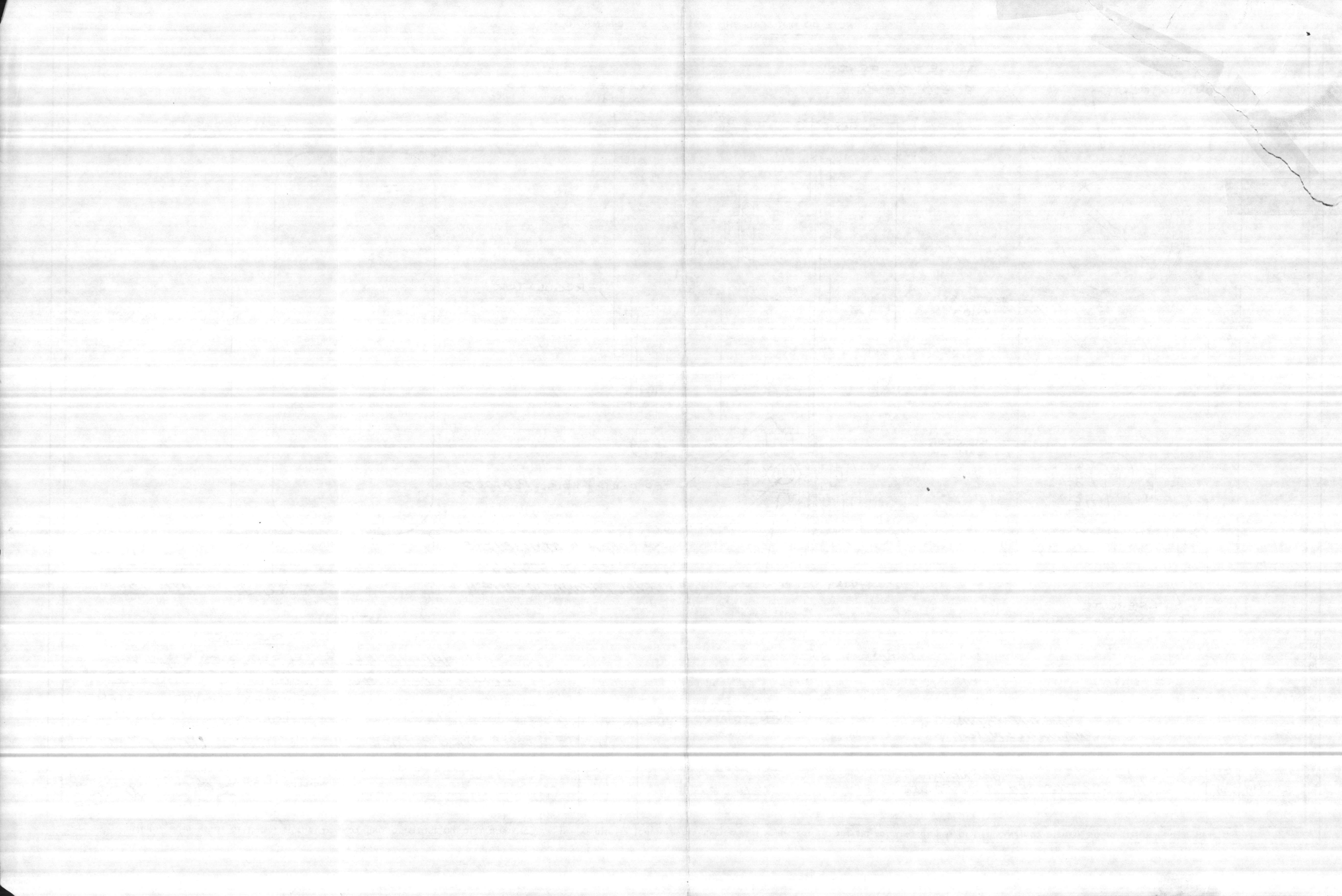
Date: *[Signature]*

SCALE 6" = 1'

Date: 4-15-66

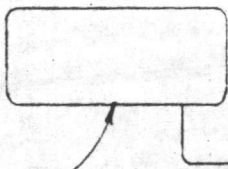
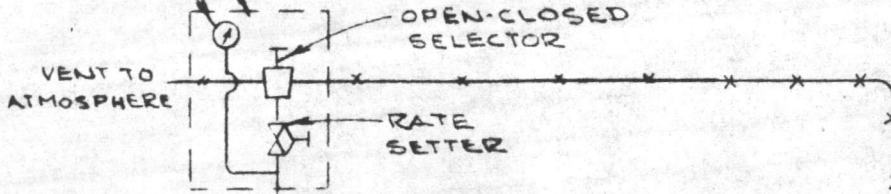
**528-50383**

282 528-50383



DIAL READS:  
0-2.1 MGD  
(SQUARE ROOT  
FUNCTION)

INDIVIDUAL  
RATE SET STATION  
CONSOLE MOUNTED BY OTHERS  
DWG 528-50383



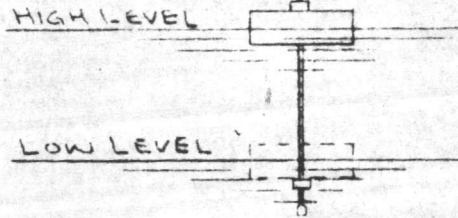
#102 TYPE "BFH"  
CONTROLLERS

ALL TUBING - 1/4" O.D. COPPER  
NOT BY SIMPLEX

AIR SET UNIT  
BY SIMPLEX  
SET TO 20 P.S.I.

AIR SUPPLY

FLOAT OPERATED  
PNEUMATIC SWITCH  
LOCATED IN  
FILTER INLET  
FLUME



ITEM 11B.9.3  
FILTER EFFLUENT  
(2) REQ'D

ARRANGEMENT  
LOW LEVEL SHUT-OFF  
FILTER EFFLUENT CONTROLLER  
SIMPLEX CONTROL SYSTEMS  
THE PERMUTIT COMPANY

MADE ..... CHECKED .....

NOTE:  
The quality of the  
material used in the  
construction of the  
lower than ambient temperature.

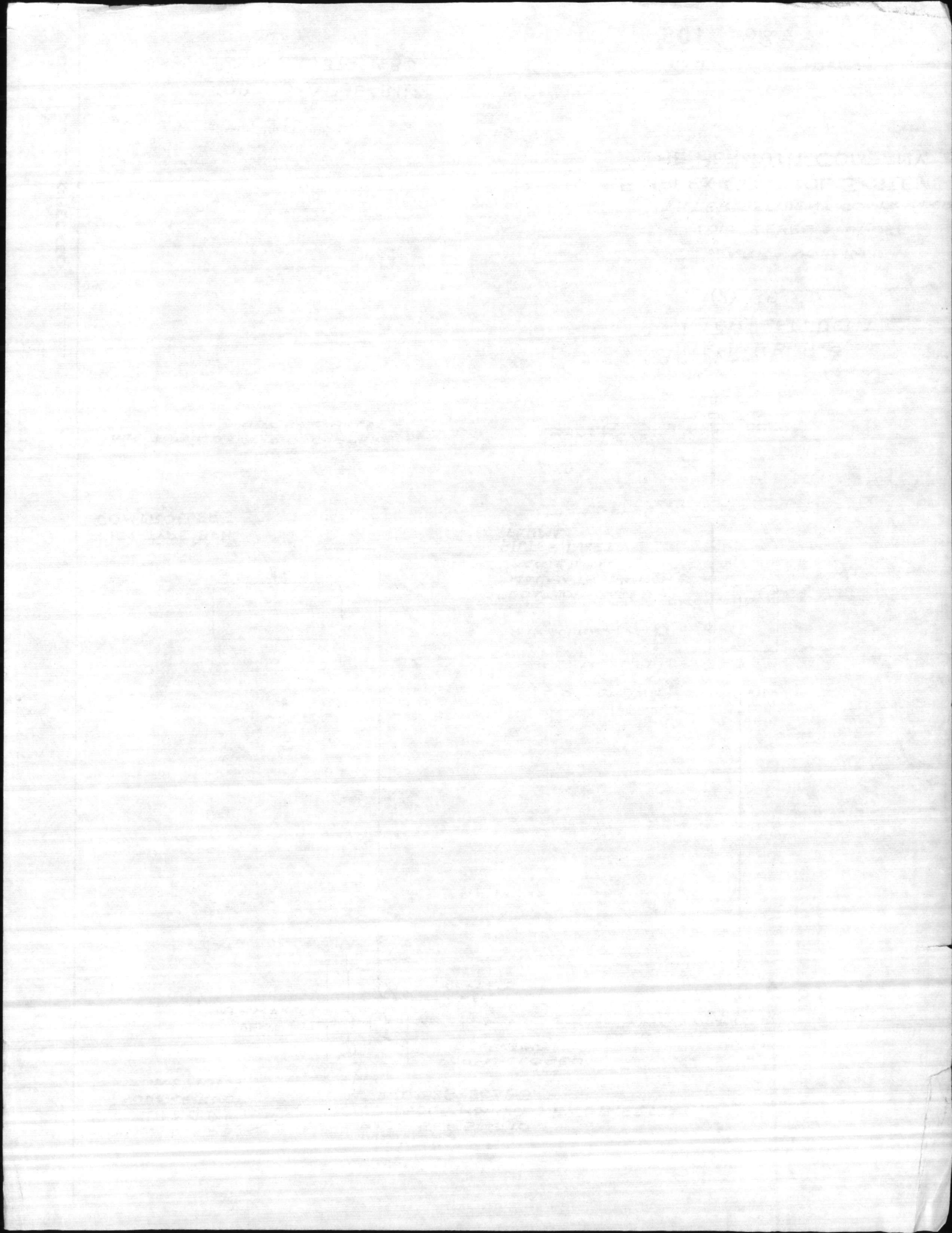
JOB NO. A173E48112

P.O. NO. 15376-1683

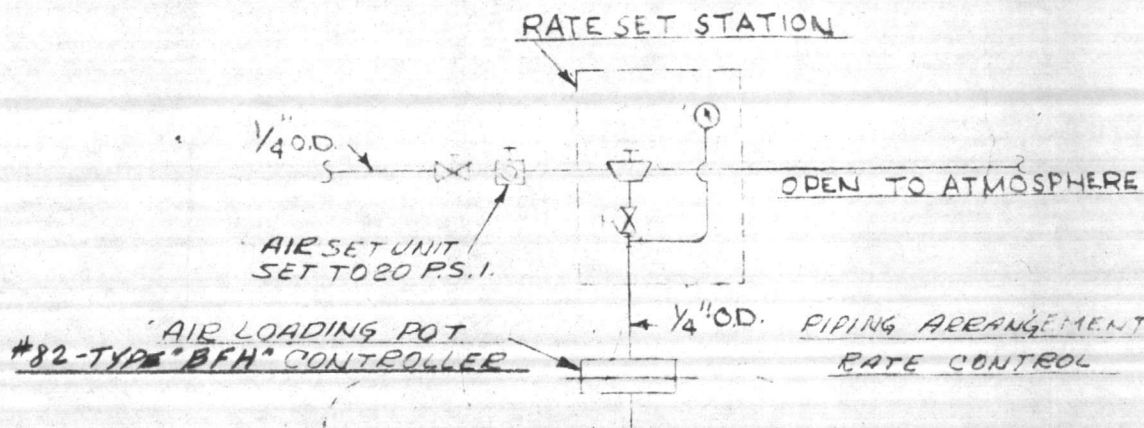
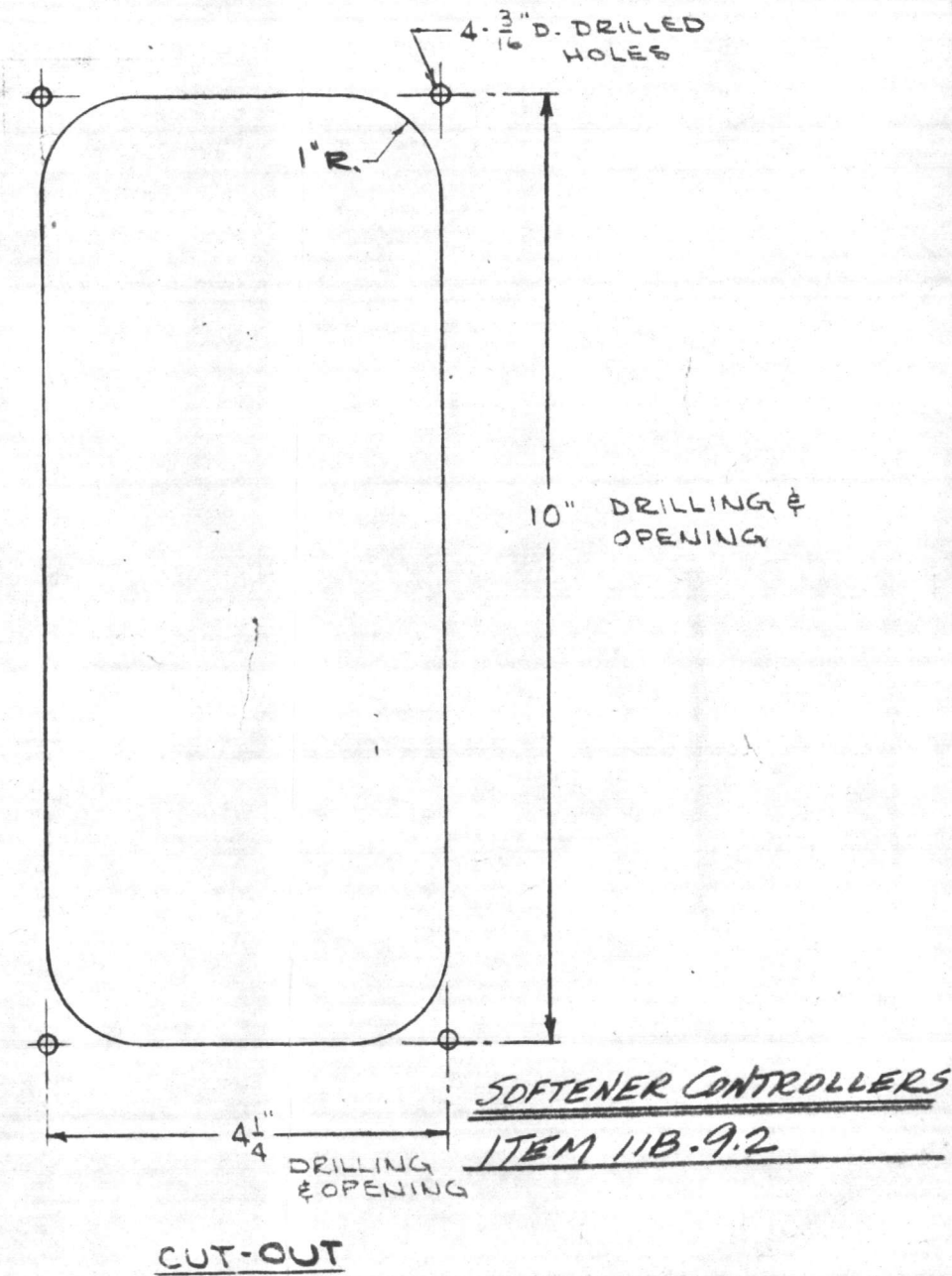
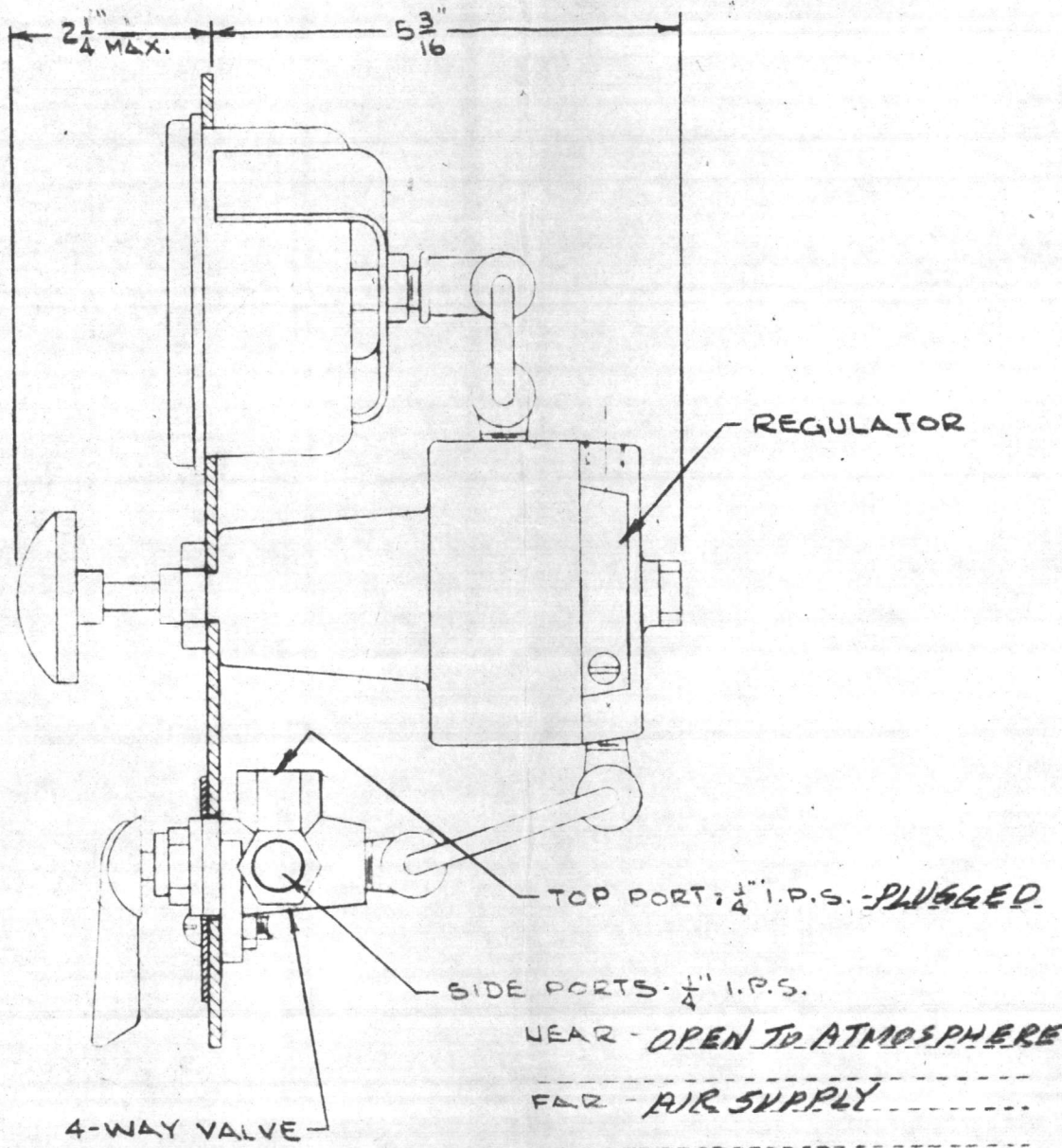
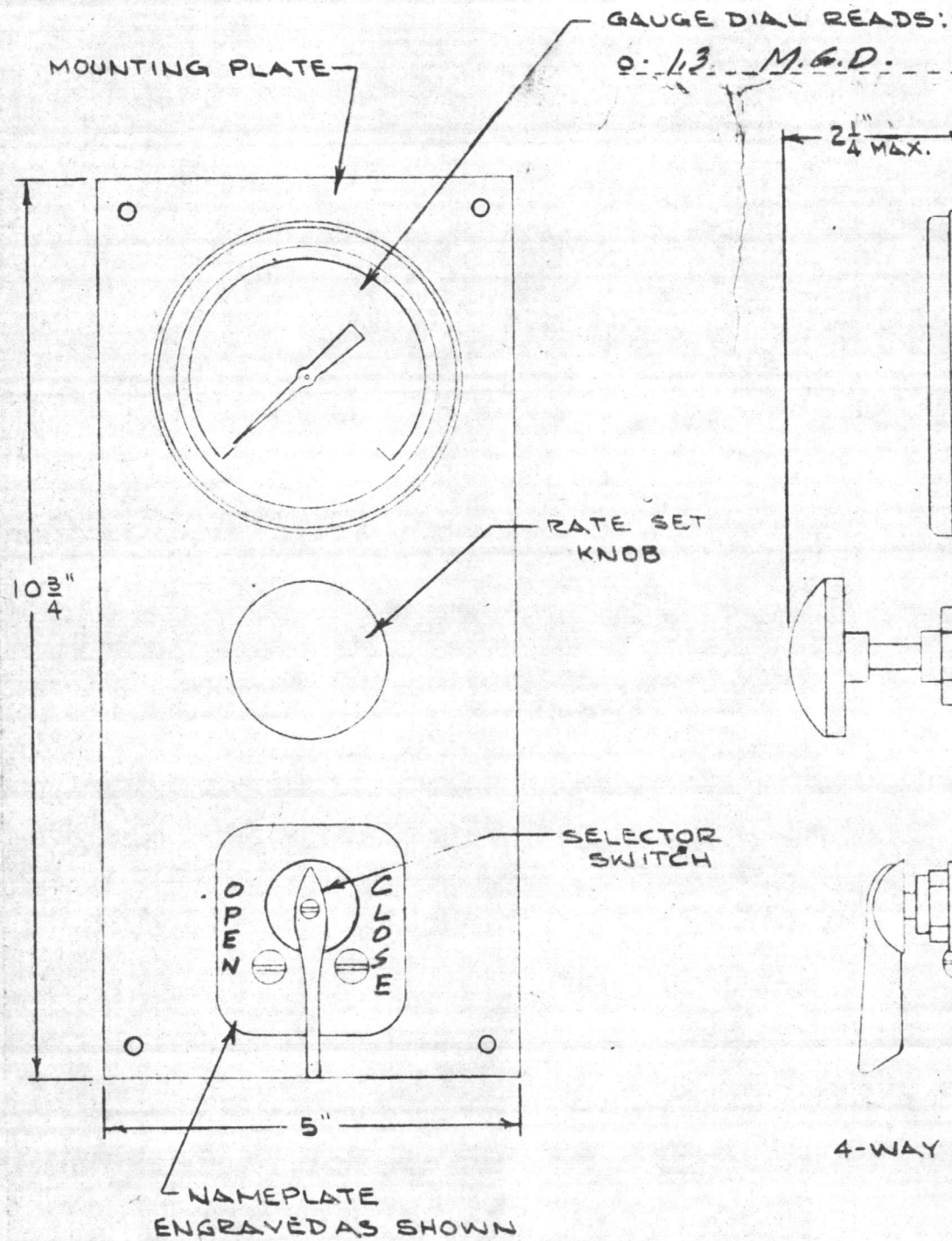
SCALE <sup>1/4"</sup> ..... DATE .....

501-52991





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



REV.	BY	DATE	REVISIONS
-		4-25-66	ECN S-1086
1		9-9-66	ADDED PIPING ARREST.

SIMPLEX CONTROL SYSTEMS  
THE PERMUTIT COMPANY

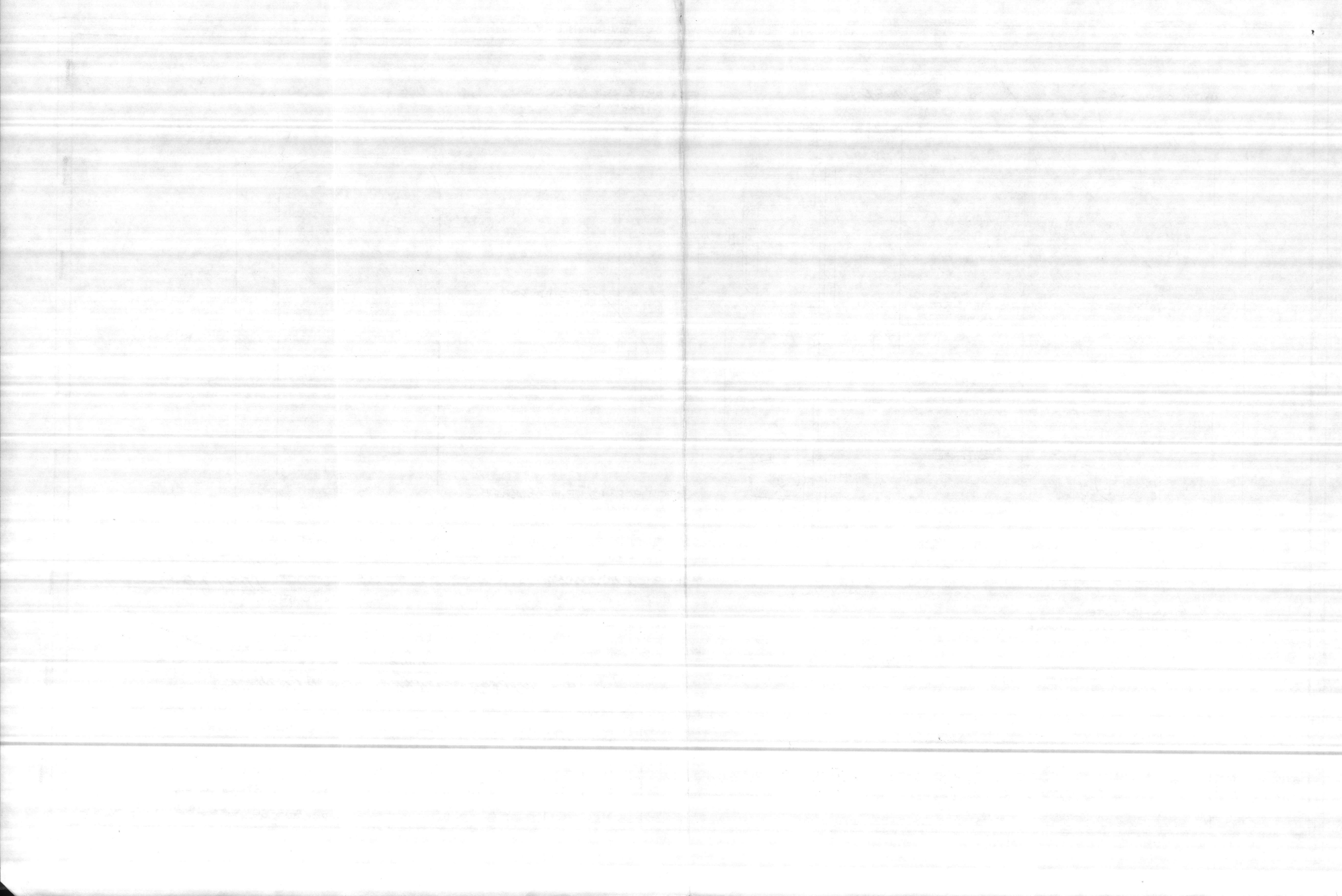
SCALE 6"=1'-0"

DATE 4-15-66

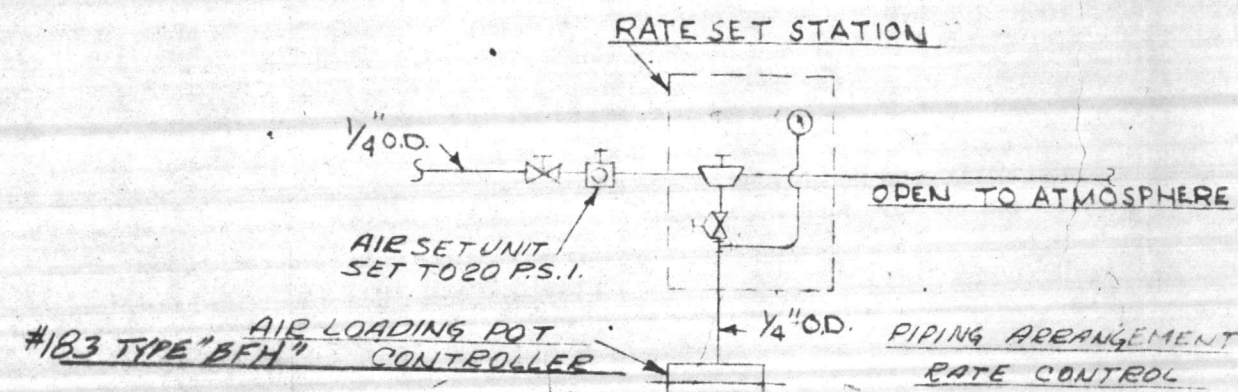
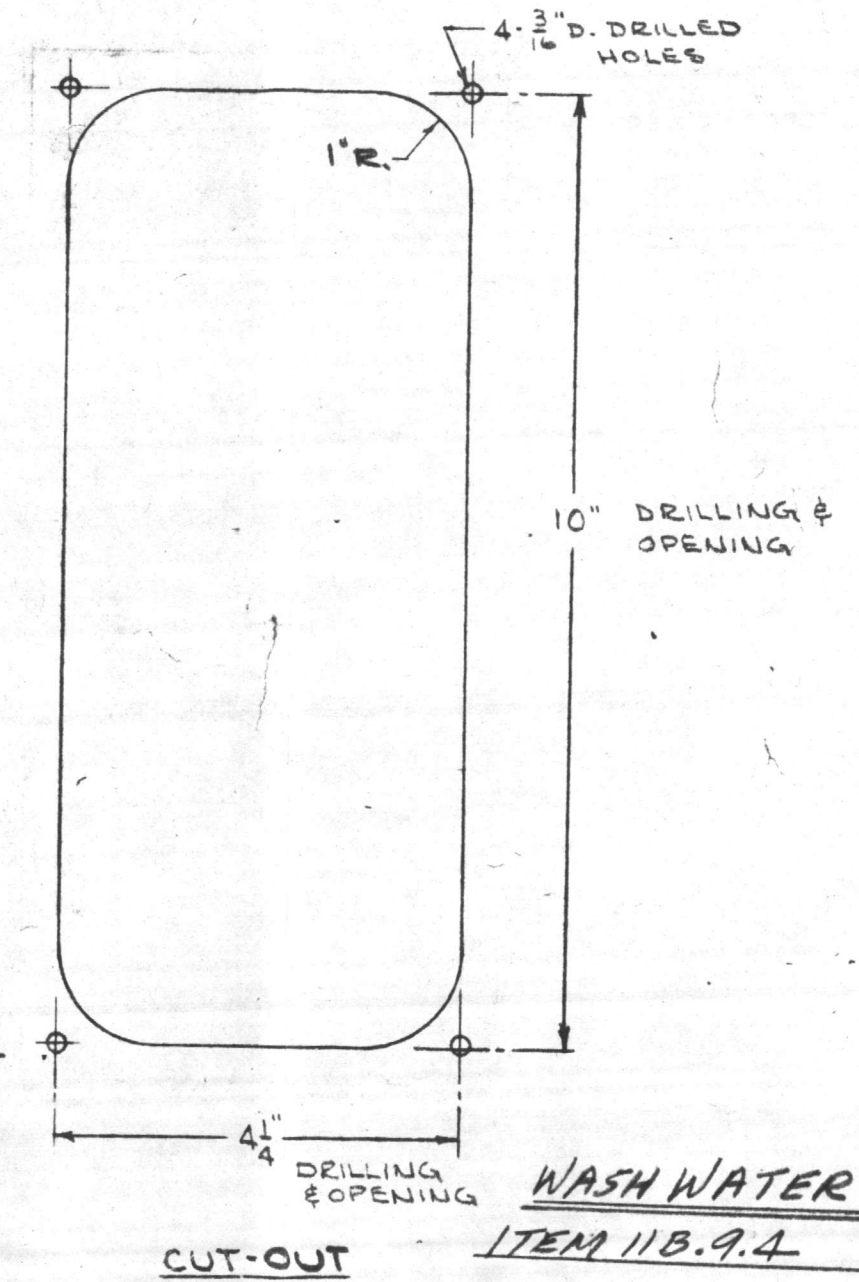
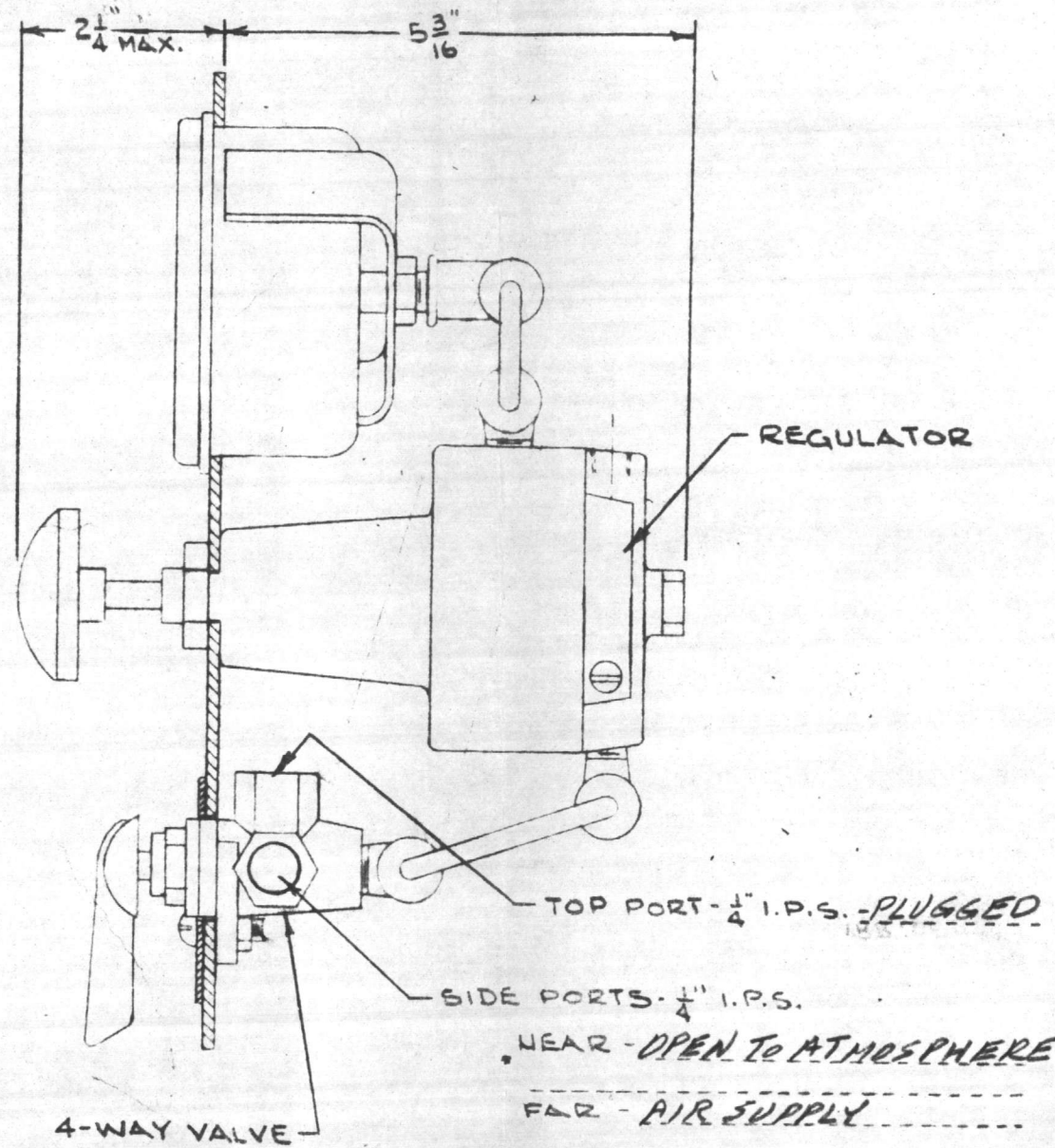
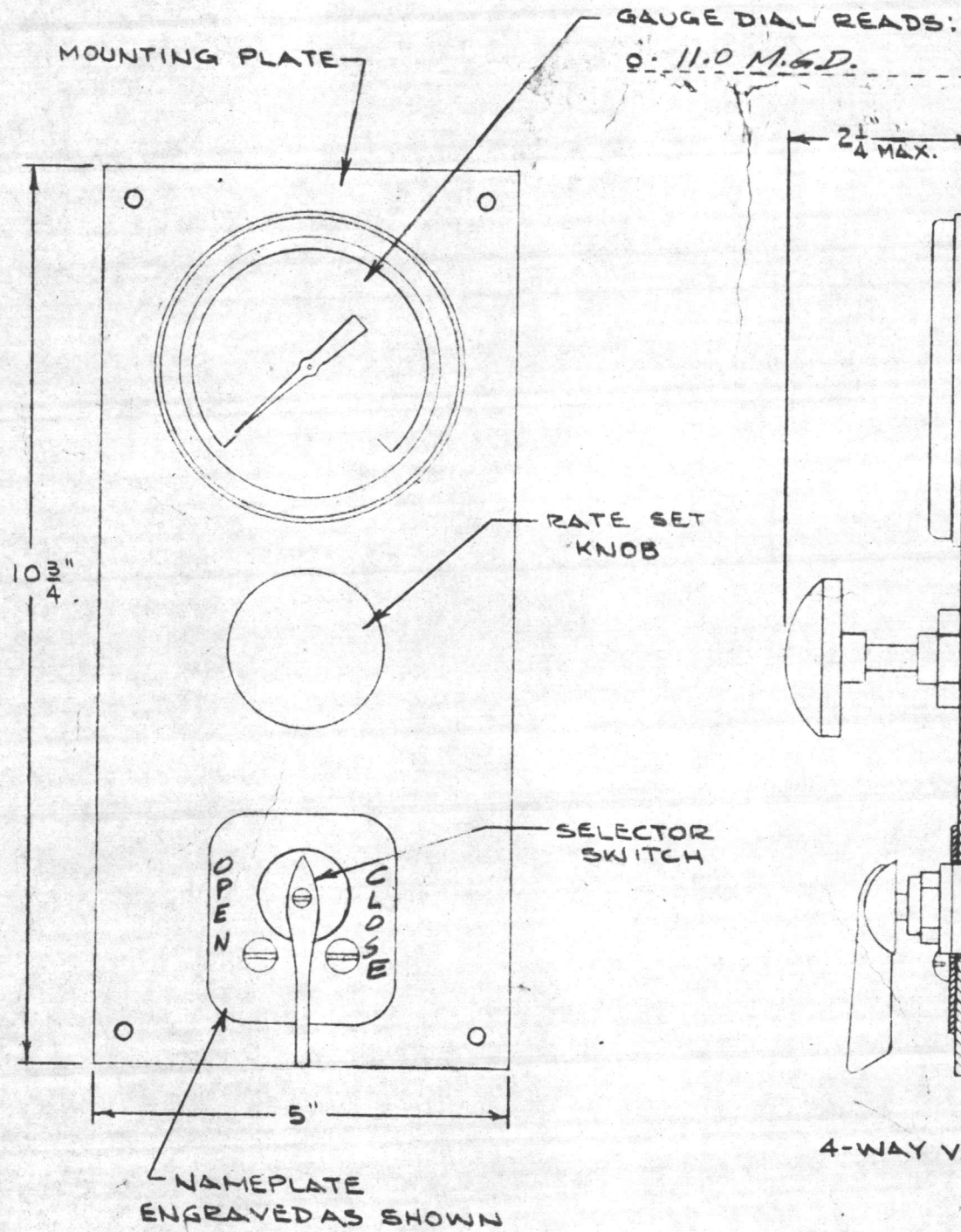
**528-50383**

REP'D 528-50382

DRAWN BY FT  
CHECKED BY GEH  
APPR'D BY



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



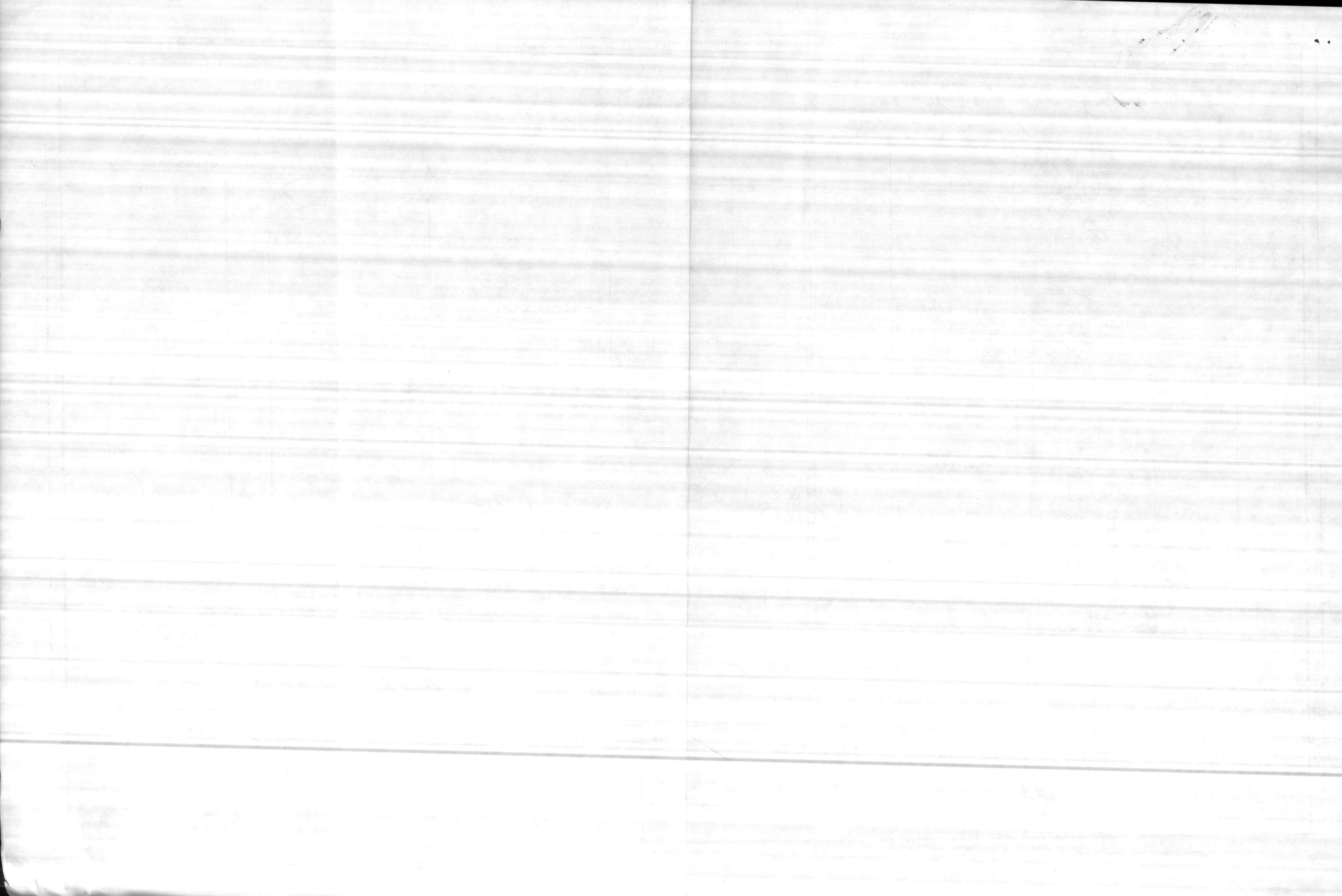
OUTLINE  
INDIVIDUAL RATE SET STATIONS  
(2) REQ'D. - FOR MFG. ON FILTER CONSOLES BY OTHERS

DRAWN BY	FT.
CHECKED BY	GEH
APPR'D. BY	

REV.	BY	DATE	REVISIONS
-		4-25-66	ECN S-1086
1		9-9-66	ADDED PIPING ARRST.

SIMPLEX CONTROL SYSTEMS  
THE PERMUTIT COMPANY  
APPROVED or APPROVED AS NOTED  
By: *Officer*  
Quality Control Representative  
Co. big Construction Company  
SCALE: *date*  
DATE: 4-15-66  
**528-50383**

REP'D 528-50383





# BILL OF MATERIAL

MADE 11-24-70 BY FXJ

CAMP LEJEUNE

JOB A173E48112

CHECKED BY EWM

NORTH CAROLINA

SHEET 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			<del>WIRING DIAGRAM</del>	
23	<del>501-52990</del>		<del>TYPE "K" PNEUMATIC RECEIVER WITH RELAY</del>	
24				
25				
26				
27				

1338, 889

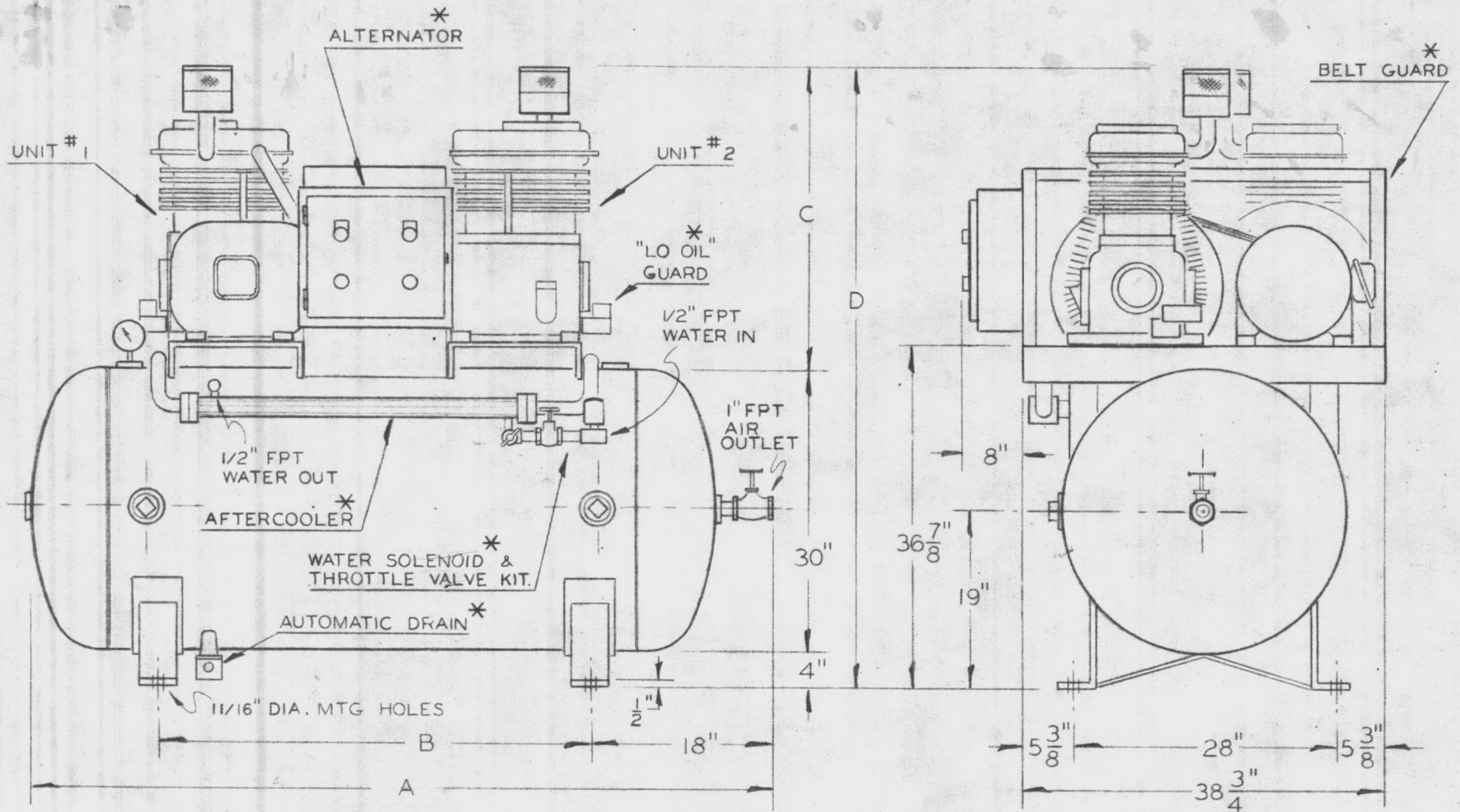
RECEIVED

DEC 4 1970

ROBERTS FILTER

STD CUTOUT PRESSURE 175 PSI

\* OPTIONAL ACCESSORIES



SPECIFICATIONS & DIMENSIONS NOT CERTIFIED UNLESS SIGNED BY

DATE

UNIT MODEL NUMBER	COMP SIZES	MOTOR SIZES	COMP SPEED (RPM)	CFM AT 175 PSI		ASME TANK		A	B	WITH AFTERCOOLER		LESS AFTERCOOLER	
				PISTON DISPL'T	FREE AIR DELIVERED	SIZE INCHES	CAP IN GALS			C	D	C	D
<del>CVD-9712-A</del>	<del>2-D-97</del>	<del>2-7.5 HP</del>	<del>515</del>	<del>68.6</del>	<del>54.4</del>	<del>30 X 73</del>	<del>200</del>	<del>77-1/2"</del>	<del>46"</del>	<del>36"</del>	<del>70"</del>	<del>28"</del>	<del>62"</del>
<del>CVD-9712-B</del>	<del>2-D-97</del>	<del>2-7.5 HP</del>	<del>515</del>	<del>68.6</del>	<del>54.4</del>	<del>30 X 87</del>	<del>240</del>	<del>91-1/2"</del>	<del>59-1/2"</del>	<del>36"</del>	<del>70"</del>	<del>28"</del>	<del>62"</del>
CVD-9713-A	2-D-97	2-10 HP	660	88.0	72.4	30 X 73	200	77-1/2"	46"	36"	70"	28"	62"
<del>CVD-9713-B</del>	<del>2-D-97</del>	<del>2-10 HP</del>	<del>660</del>	<del>88.0</del>	<del>70.4</del>	<del>30 X 87</del>	<del>240</del>	<del>91-1/2"</del>	<del>59-1/2"</del>	<del>36"</del>	<del>70"</del>	<del>28"</del>	<del>62"</del>

**Curtis** MFG. CO.  
ST LOUIS, MO.

DUAL COMPRESSOR  
TANK MOUNTED  
OUTFITS

GWB DWG  
5-1-69 A-CA-1708



RECEIVED  
FEB 10 1971  
ROBERTS FILTER

SOUTHERLAND ELECTRIC COMPANY

- 16A.11                    8-Brochures on Lighting Fixtures:
- Type A-Keene Corporation, #L2GT-240-ACR
- Type B-Keene Corporation, #L2GT-440-ACR
- Type C & K-Keene Corporation, #LP-240
- (Type C-277V & Type K-120V)
- Type D-Miller, #HG 412-1
- Type E-Prescolite, #WB-210
- Type G-Miller, #AE-4012
- Type H-Lightolier, #10234
- Type L-Moldcast, #M-502
- 16A.15                    10-GE Dry Type Transformers,  $7\frac{1}{2}$ , 15 & 145 KVA
- Sheet 46 & 47            8-Main Switchboard (MDP) by GE
- 16B.8.2                   8-GE Pole Mounted Transformers 10 & 15 KVA
- 16B.7.16                8-GE 9KV Lighting Arrestors & 15KV Fused
- Sheet 47                8-GE Panels
- 8-Drawings on Control Equipment by Autocon
- 11C                        8-Booklets on Controls by Autocon

THE  
MICHIGAN  
UNIVERSITY

Type HS  
Conventional

500 Kva and Below

Single Phase

19.9 Kv and Below

July 1, 1968

PRICES (Cont'd)

Kva (Cont 65 C Rise)	Cat. No.	List Price Each, GO-61
-------------------------	----------	------------------------------

4800/8230Y TO 120/240 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

250	4501AD8485	★\$1635
333	4501AD8487	★1951
500	4501AD8488	★2570

4800/8320Y TO 240/480 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

10	4508AD6510	\$172
15	4508AD6515	235
25	4508AD6525	295
37.5	4508AD6537	412
50	4508AD6550	465
75	4508AD6575	685
100	4508AD6580	810
167	4508AD6883	1145
250	4508AD8485	1565
333	4508AD8487	1868
500	4508AD8488	2460

7200/12,470Y TO 120/240  
NO TAPS (2) H-V BUSHINGS

5	5501AB2505	\$108
10	5501AB2510	154
15	5501AB2515	211
25	5501AB2525	265
37.5	5501AB2537	370
50	5501AB2550	418
75	5501AB2575	616
100	5501AB2580	729
167	5501AB3583	1091

7200/12,470Y TO 120/240  
TAPS: (4) 2 1/2% BELOW (2) H-V BUSHINGS

5	5501AC2505	\$120
10	5501AC2510	172
15	5501AC2515	235
25	5501AC2525	295
37.5	5501AC2537	412
50	5501AC2550	465
75	5501AC2575	685
100	5501AC2580	810
167	5501AC4083	1200

7200/12,470Y TO 120/240 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

250	5501AD4885	★\$1635
333	5501AD4887	★1951
500	5501AD4888	★2570

Kva (Cont 65 C Rise)	Cat. No.	List Price Each, GO-61
-------------------------	----------	------------------------------

7200/12,470Y TO 240/480 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

10	5508AD2510	\$172
15	5508AD2515	235
25	5508AD2525	295
37.5	5508AD2537	412
50	5508AD2550	465
75	5508AD2575	685
100	5508AD2580	810
167	5508AD4083	1145
250	5508AD4885	1565
333	5508AD4887	1868
500	5508AD4888	2460

7200/12,470Y TO 277/480Y (2) H-V BUSH.  
TAPS: (2) 2 1/2% ABOVE AND BELOW

10	5511AD1510	\$172
15	5511AD1515	235
25	5511AD1525	295
37.5	5511AD1537	412
50	5511AD1550	465
75	5511AD1575	685
100	5511AD1580	810
167	5511AD1583	1145
250	5511AD1585	1565
333	5511AD1587	1868
500	5511AD1588	2460

7200/12,470Y TO 2400/4160Y (2) H-V BUSH.  
TAPS: (2) 2 1/2% ABOVE AND BELOW

50	5525AD1550	\$465
100	5525AD1580	810
167	5525AD1583	1091
250	5525AD1585	★1398
333	5525AD1587	★1668
500	5525AD1588	★2197

7620/13,200Y TO 120/240  
NO TAPS (2) H-V BUSHINGS

5	5901AB2505	\$108
10	5901AB2510	154
15	5901AB2515	211
25	5901AB2525	265
37.5	5901AB2537	370
50	5901AB2550	418
75	5901AB2575	616
100	5901AB2580	729
167	5901AB3583	1091

7620/13,200Y TO 120/240 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

5	5901AD2505	\$120
10	5901AD2510	172
15	5901AD2515	235
25	5901AD2525	295
37.5	5901AD2537	412
50	5901AD2550	465
75	5901AD2575	685
100	5901AD2580	810
167	5901AD4083	1200
250	5901AD4885	★1635
333	5901AD4887	★1951
500	5901AD4888	★2570

Distribution Transformer\*

Kva (Cont 65 C Rise)	Cat. No.	List Price Each, GO-61
-------------------------	----------	------------------------------

7620/13,200Y TO 240/480 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

10	5908AD2510	\$172
15	5908AD2515	235
25	5908AD2525	295
37.5	5908AD2537	412
50	5908AD2550	465
75	5908AD2575	685
100	5908AD2580	810
167	5908AD4083	1145
250	5908AD4885	1565
333	5908AD4887	1868
500	5908AD4888	2460

12,000 TO 120/240  
NO TAPS (2) H-V BUSHINGS

5	6501AB2705	\$108
10	6501AB2710	154
15	6501AB2715	211
25	6501AB2725	265
37.5	6501AB2737	370
50	6501AB2750	418
75	6501AB2775	616
100	6501AB2780	729
167	6501AB4083	1091

12,000 TO 120/240  
TAPS: (4) 2 1/2% BELOW (2) H-V BUSHINGS

5	6501AC2605	\$120
10	6501AC2610	172
15	6501AC2615	235
25	6501AC2625	295
37.5	6501AC2637	412
50	6501AC2650	465
75	6501AC2675	685
100	6501AC2680	810
167	6501AC2683	1200

12,000 TO 120/240 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

5	6501AD2505	\$120
10	6501AD2510	172
15	6501AD2515	235
25	6501AD2525	295
37.5	6501AD2537	412
50	6501AD2550	465
75	6501AD2575	685
100	6501AD2580	810
167	6501AD4083	1200
250	6501AD4885	★1635
333	6501AD4887	★1951
500	6501AD4888	★2570

12,000 TO 240/480 (2) H-V BUSHINGS  
TAPS: (2) 2 1/2% ABOVE AND BELOW

10	6508AD2610	\$172
15	6508AD2615	235
25	6508AD2625	295
37.5	6508AD2637	412
50	6508AD2650	465
75	6508AD2675	685
100	6508AD2680	810
167	6508AD4183	1145
250	6508AD4885	1565
333	6508AD4887	1868
500	6508AD4888	2460

\* See page 1.

<b>WATSON ELECTRICAL CONSTRUCTION CO.</b>	
<input checked="" type="checkbox"/>	APPROVED SUBJECT TO PLANS & SPECIFICATIONS
<input type="checkbox"/>	APPROVED AS NOTED (RESUBMIT)
<input type="checkbox"/>	DISAPPROVED (RESUBMIT)
DATE <u>7/1/68</u>	BY <u>HLK</u>

\* Changed since Dec. 26, 1967 issue.

Prices subject to change without notice

1, 108, 371

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED: AS NOTED**

SUBJECT TO THE REQUIREMENTS OF:

88313 88313/67

CONTRACT NO. APPROVAL OF MATERIALS AND EQUIPMENT  
INDICATED BY SPECIFICATION  
REQUIREMENTS. THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN  
COMLANTNAVFACENGCOM

DATE NOV 8 1968

WATSON ELECTRICAL CONST. CO.	
APPROVED SUBJECT TO PLANS & SPECIFICATIONS	
DATE	
DISAPPROVED (REASON)	
DATE	

Types HS and HSBA  
Conventional and Self-protected

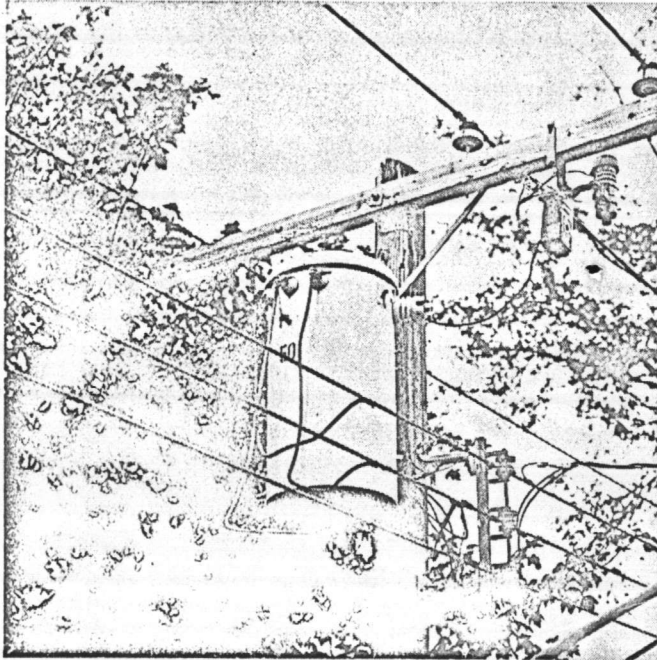
HS-500 Kva and Below  
HSBA-100 Kva and Below

Single Phase

19.9 Kv and Below

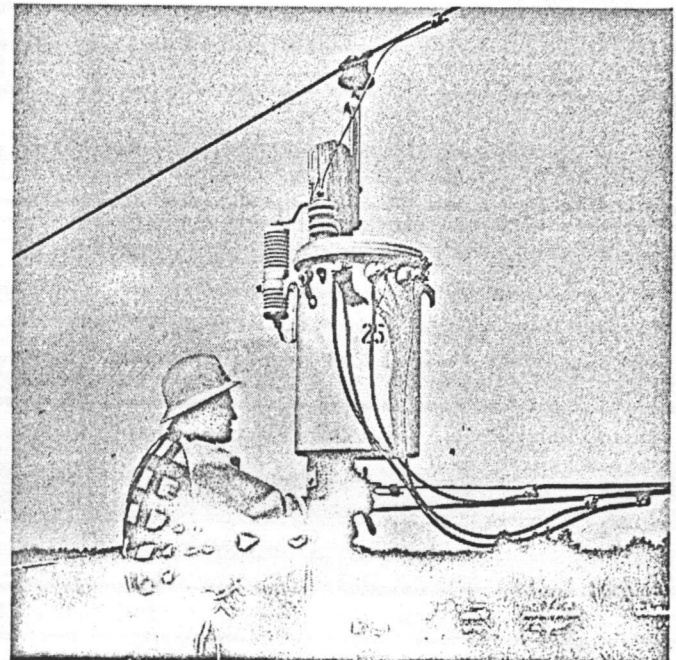
Dec. 26, 1967

DESCRIPTION



(Photo PL132825)

Fig. 1. Typical installation of Type HS conventional transformer



(Photo 1200680)

Fig. 2. Typical installation of Type HSBA self-protected transformer

This section describes the complete line of General Electric PERMALEX® II distribution transformers. They are small, light weight, efficient, low in total owning cost, and conform to the latest USASI and NEMA standards.

The conventional Type HS, single-phase, pole-mounted transformer is offered in ratings of 5 kva to 500 kva with voltages from 2400/4160Y volts to 34,500 GrdY/19,920 volts. One and two high-voltage-bushing designs are available.

A typical installation is shown in Fig. 1.

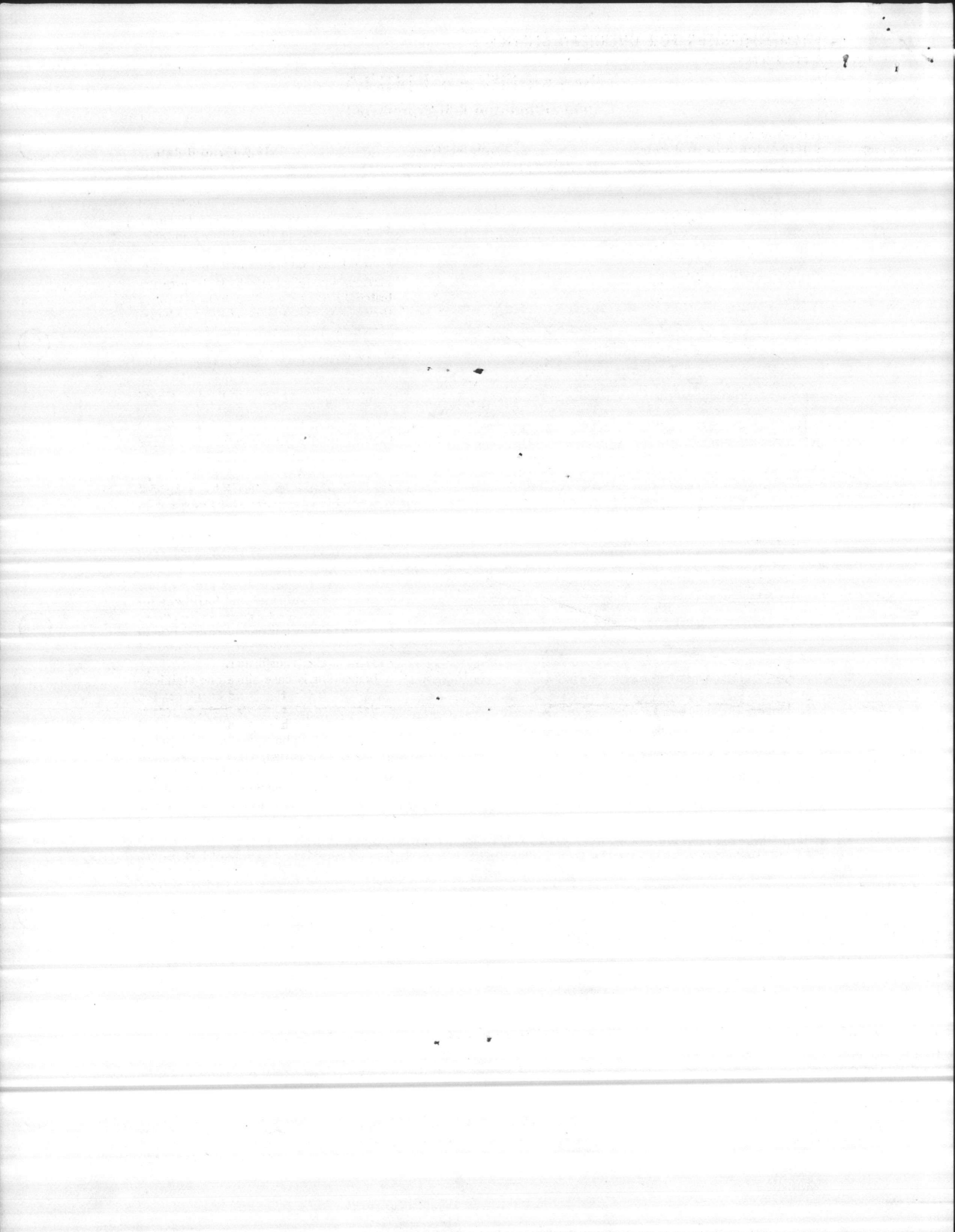
The self-protected Type HSBA, single-phase, pole-mounted transformer is offered in ratings of 5 kva to 100 kva with voltages from 2400/4160Y volts to 34,500 GrdY/19,920 volts. One and two high-voltage-bushing designs are available. A design is also available for operation on a delta system, however the normal operation is on solidly grounded, common-neutral distribution systems.

All protective devices for the Type HSBA transformer are contained in one complete unit. A high-voltage valve-type

distribution arrester provides overvoltage protection; an internal high-voltage oil-immersed expulsion fuse isolates the transformer from the system in the event of an internal failure; a low-voltage circuit breaker provides protection from system secondary faults and severe overloads.

Incorporation of all these protective devices in the transformer unit helps to improve pole-top appearance.

A typical installation is shown in Fig. 2.



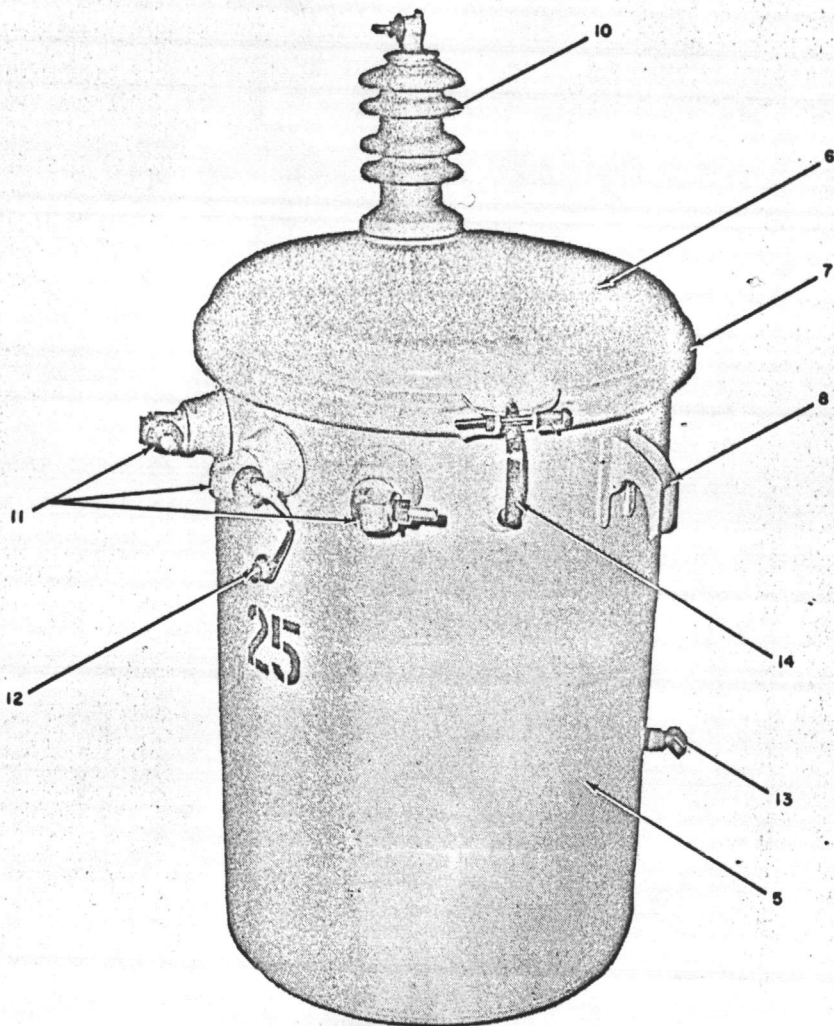
Types HS and HSBA  
Conventional and Self-protected

Dec. 26, 1967

HS-500 Kva and Below  
HSBA-100 Kva and Below

Single Phase

19.9 Kv and Below



(Photo 1198693)

Fig. 3. Typical exterior construction, Type HS, single bushing,  
100 kva and below, 34.5 kv and below

## FEATURES

All the following features are common to both Type HS conventional and type HSBA self-protected transformers, except items 15 through 20. These six features are provided on Type HSBA only and illustrate the difference between conventional and self-protected transformers.

1. Coils utilizing PERMALEX® II transformer insulation (see Section 5402) consisting of cyanoethylated kraft paper

and GE-MEL\* covered conductors are designed for efficient 65 C operation.

2. Cores of SPIRACORE® construction (see Section 5402) are held in a close fitting steel cradle. The core clamps are bolted securely to lugs welded to the tank wall.

3. Tap changer (see Section 5402) provides voltage ratio selection. It is designed for de-energized operation only.

4. Tap changer operating handle and dial are above oil level and can be easily read and operated through the handhole.

5. Tank is manufactured from shot-blasted, hot-rolled steel. It is pressure tested to assure freedom from oil leaks, then painted with General Electric Super Melaglyp paint (see Section 5402).

6. Melalast cover finish (see Section 5402) is an insulating material which prevents outages caused by birds and squirrels coming in contact with a line terminal and the cover. It is applied to the main and handhole covers and to the clamping band.

7. Tank rim is produced by a special beading operation. The rim forms a contoured gasket seat which, in combination with the drawn cover, allows the nitrile gasket to maintain a permanent, even seal.

One-piece clamping band prolongs the life of the transformer and facilitates inspection. Superior to cover bolt-clamps, the General Electric one-piece cover band maintains even gasket pressure all around the rim of the transformer.

Inspection is easy since one stainless-steel bolt holds the band in place; the maintenance man needs only a screwdriver or wrench to remove the band (see Fig. 7). The same nitrile rubber gasket can be reused. The one-piece band and nitrile gasket assembly provides a positive seal—prevents tank breathing—and therefore prolongs the life of the transformer.

8. Lifting lugs, welded to the tank, are strong enough to support many times the weight of the complete transformer and are designed to withstand "normal" impact loading associated with lifting operations.

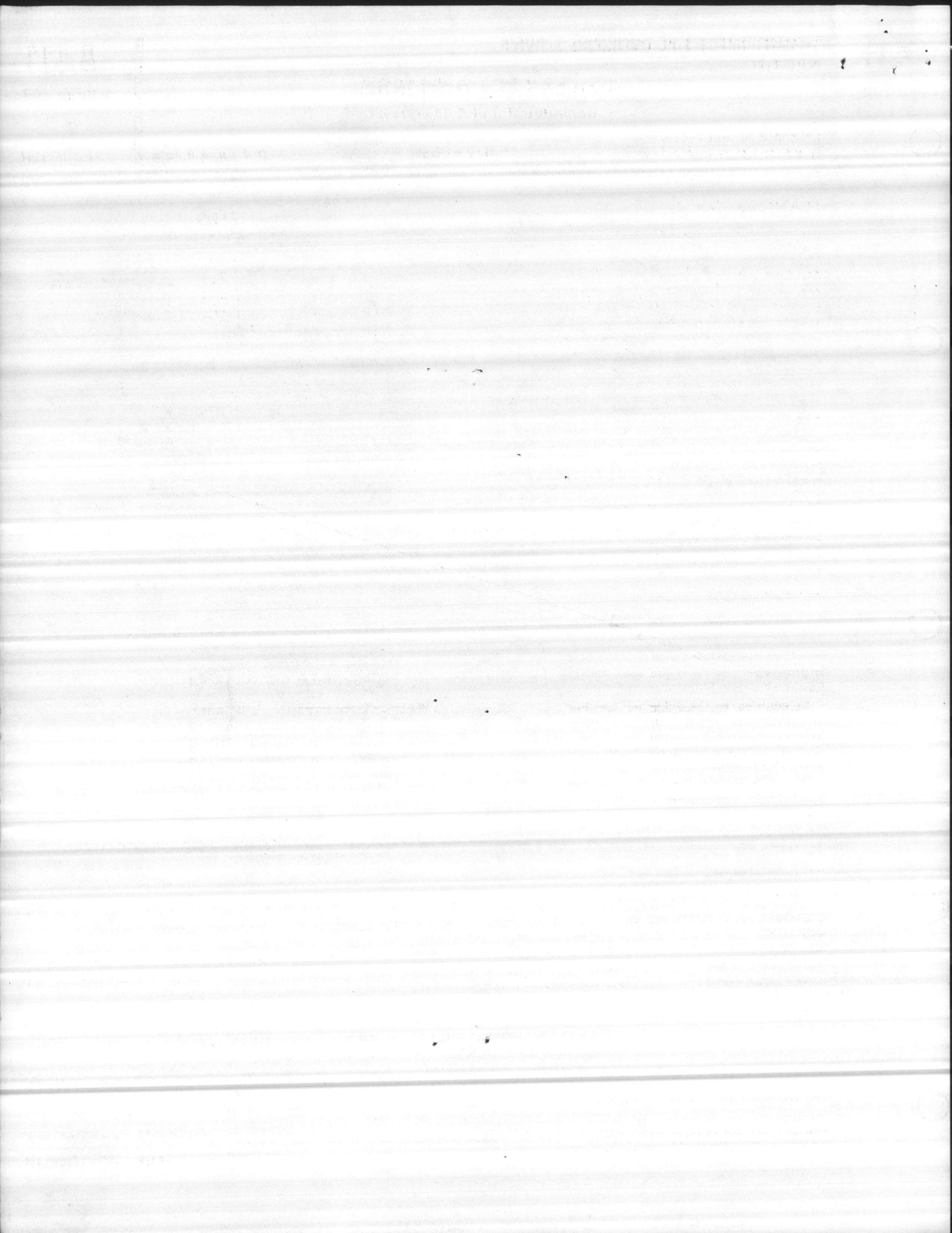
9. Rolled-under base minimizes floor and truck-bed scuffing.

10. High-voltage bushings are made of wet-process porcelain.

All terminals are tin-plated to minimize galvanic action and have spring follow-up in order to accommodate cop-

\*Trade-mark of General Electric Company.





Types HS and HSBA  
Conventional and Self-protected

HS-500 Kva and Below  
HSBA-100 Kva and Below

Single Phase

19.9 Kv and Below

Dec. 26, 1967

FEATURES (Cont'd)

per or aluminum conductors (see Figs. 5 and 6).

11. Low-voltage tank-wall bushings accommodate both copper and aluminum conductors. Tin-plated clamp-type terminals simplify connections to low-voltage leads on transformers rated 5 kva to 100 kva. The high-strength clamps are designed to practically eliminate breakage from stress corrosion. Two stainless-steel coned-disk washers maintain pressure on the conductor during heating and cooling cycles. Transformers rated 167 kva to 500 kva with 120-, 240-, or 480-volt secondaries are furnished with tin-plated spade terminals. (Refer to Section 5419.)

12. Low-voltage grounding pad has a tapped hole 7/16-inch deep, 1/2-inch-13 NC thread. The hole is designed so that a bolt cannot be forced through the tank wall.

13. Tank-grounding provision.

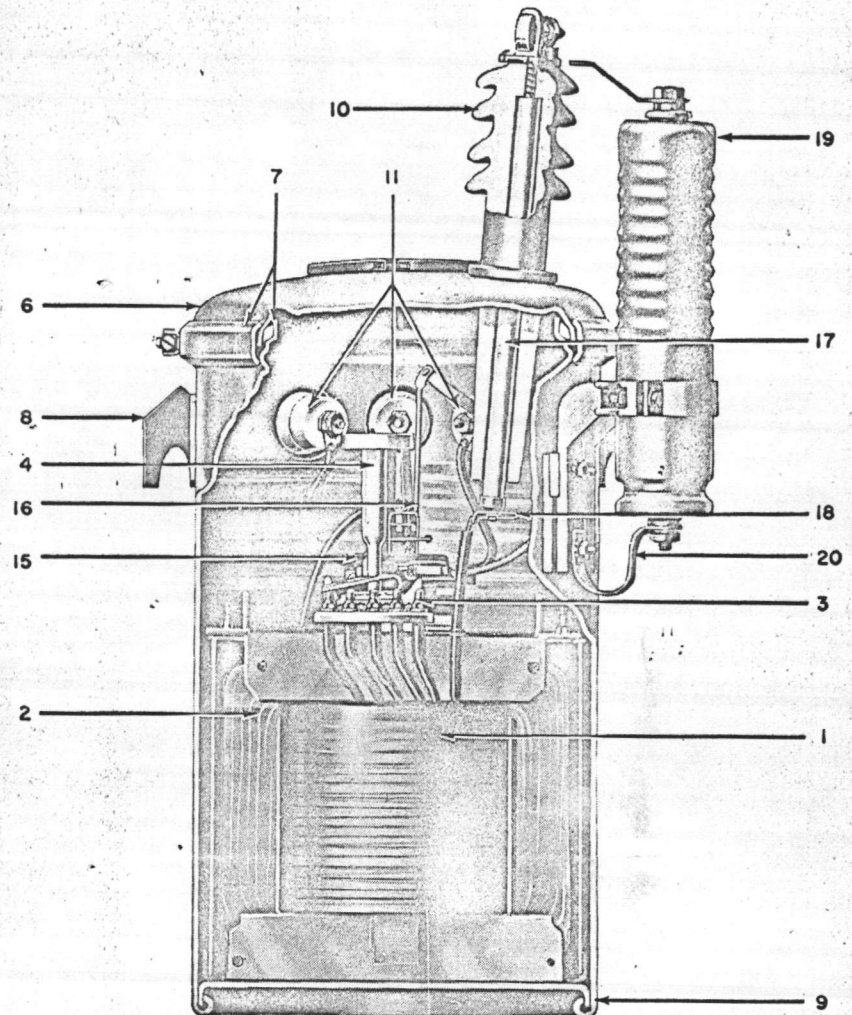
14. Pressure-vent plug (see Fig. 8) is included on transformers through 500 kva. This consists of a small flange which is projection welded to the tank and is furnished with a 1/4-inch brass pipe plug.

In addition to providing an opening into the tank, this pipe plug is also used to provide a visible external ground connection for the cover. A copper strap is fastened from the pipe plug to the cover with stainless-steel or silicon-bronze screws. This arrangement offers the dual advantages of a convenient means of pressure and vacuum relief and a visible cover ground.

15. Low-voltage circuit breaker (see Section 5402) helps protect the transformer from being damaged by heavy overloads or short-circuit currents on the secondary. The breaker, located below the oil level, is tripped by the deflection of bimetallic elements in series with the low-voltage leads. It is mounted on the clamping structure above the core and coils.

16. Operating linkage for low-voltage circuit breaker is brought out above the oil level through a sealed bearing gland.

17. High-voltage fuse (see Fig. 6) helps



(Photo 1161348)

Fig. 4. Cutaway of typical self-protected Type HSBA transformer, single bushing, 100 kva and below.

protect the primary line in the remote case of a failure in the transformer winding. The fuse is co-ordinated with the secondary internal breaker to prevent blowing of the fuse on secondary short circuits or overloads.

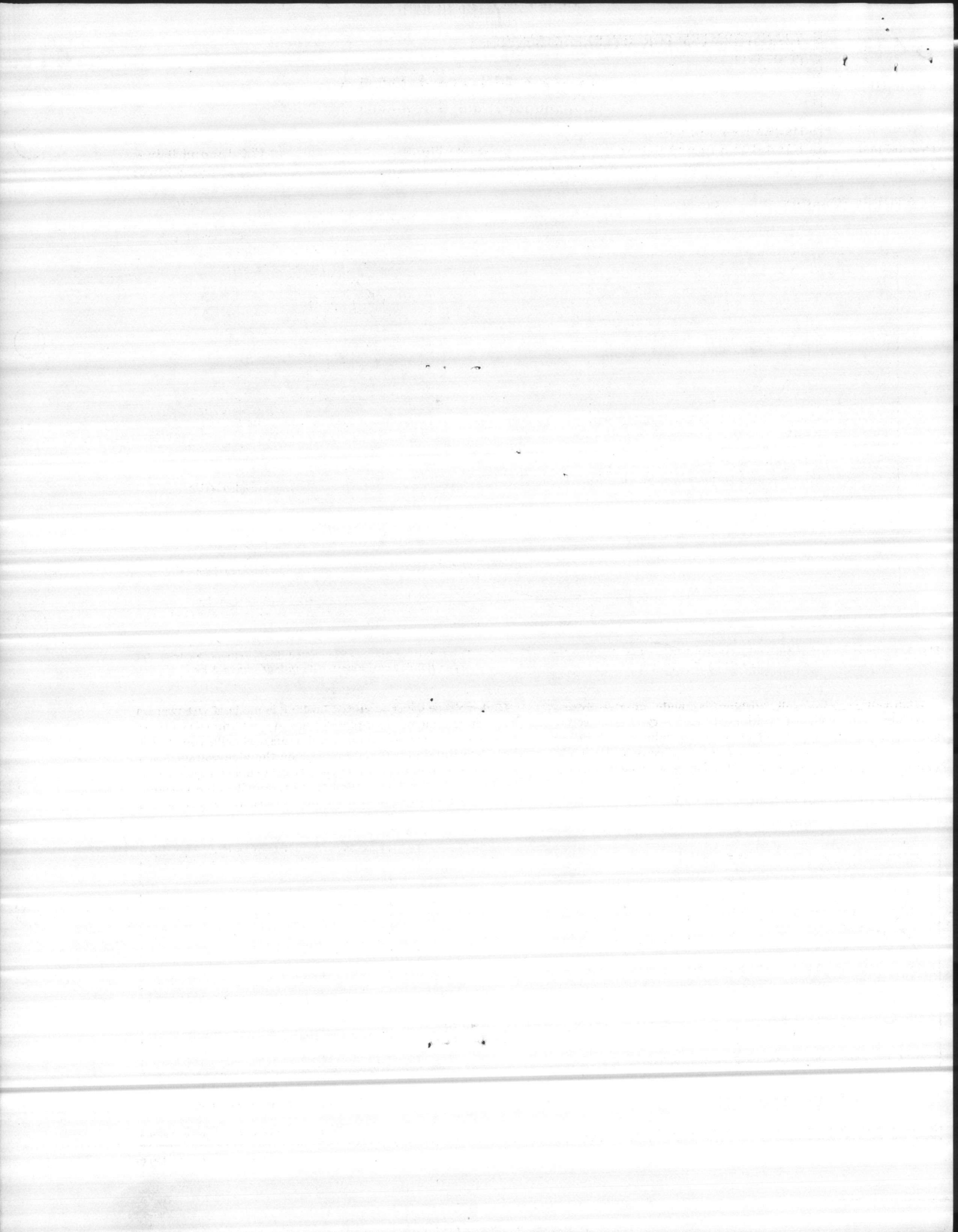
18. Spring clip permits quick and reliable connection of the high-voltage line lead to the oil-immersed fuse.

19. Valve-type arrester is externally gapped.

20. Arrester is solidly grounded to the tank directly through the stud.

Nameplate (not shown) is located in an easy-to-read position on a bracket on the transformer tank.

Support lugs (not shown) conform to EEI-NEMA Standards for interchangeability in mounting. Hot-rolled steel lugs are welded to the tank. (Refer to USASI C57.12.20.)



Types HS and HSBA  
Conventional and Self-protected

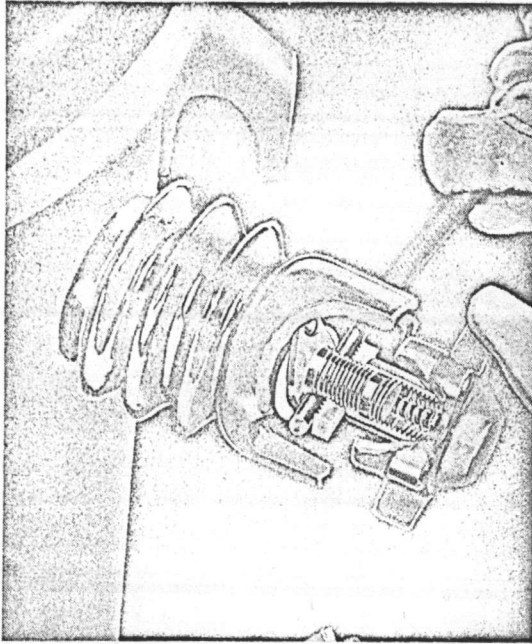
HS-500 Kva and Below  
HSBA-100 Kva and Below

Single Phase

19.9 Kv and Below

Dec. 26, 1967

FEATURES (Cont'd)



(Photo 1134349)

Fig. 5. Cutaway view of sidewall-mounted high-voltage bushing for Type HS transformers rated 5 kv and below

High-voltage tank-wall bushing is made of wet-process porcelain and includes tin-plated clamp-type connectors suitable for both copper and aluminum conductors. A heavy stainless-steel spring maintains constant pressure on the high-voltage lead during heating and cooling cycles. A captive insulated cap eliminates exposed live parts and permits safer and faster connections without special tools.

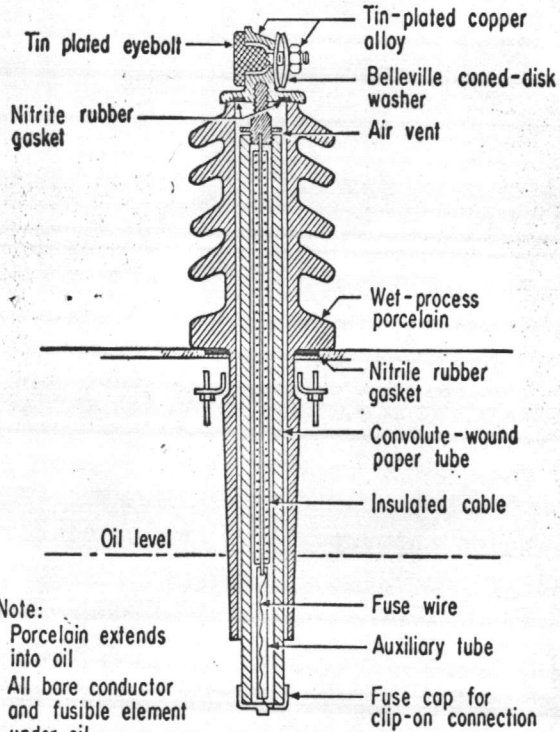
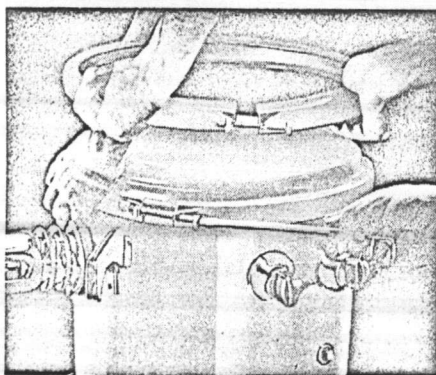


Fig. 6. Cross section of cover-mounted high-voltage bushing for Type HSBA transformers with ratings above 5 kv

High-voltage cover-mounted bushing is made of wet-process porcelain and includes tin-plated clamp-type terminals suitable for both copper and aluminum conductors. Belleville coned-disk washers maintain continual pressure on the high-voltage leads during heating and cooling cycles. Nitrile rubber gaskets seal the bushing to the tank cover and the terminal to the bushing. A bushing fuse commonly used on Type HSBA transformers is shown.

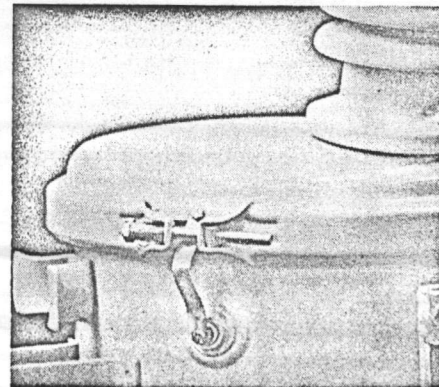


(Photo 1130296)

Fig. 7. Cover band

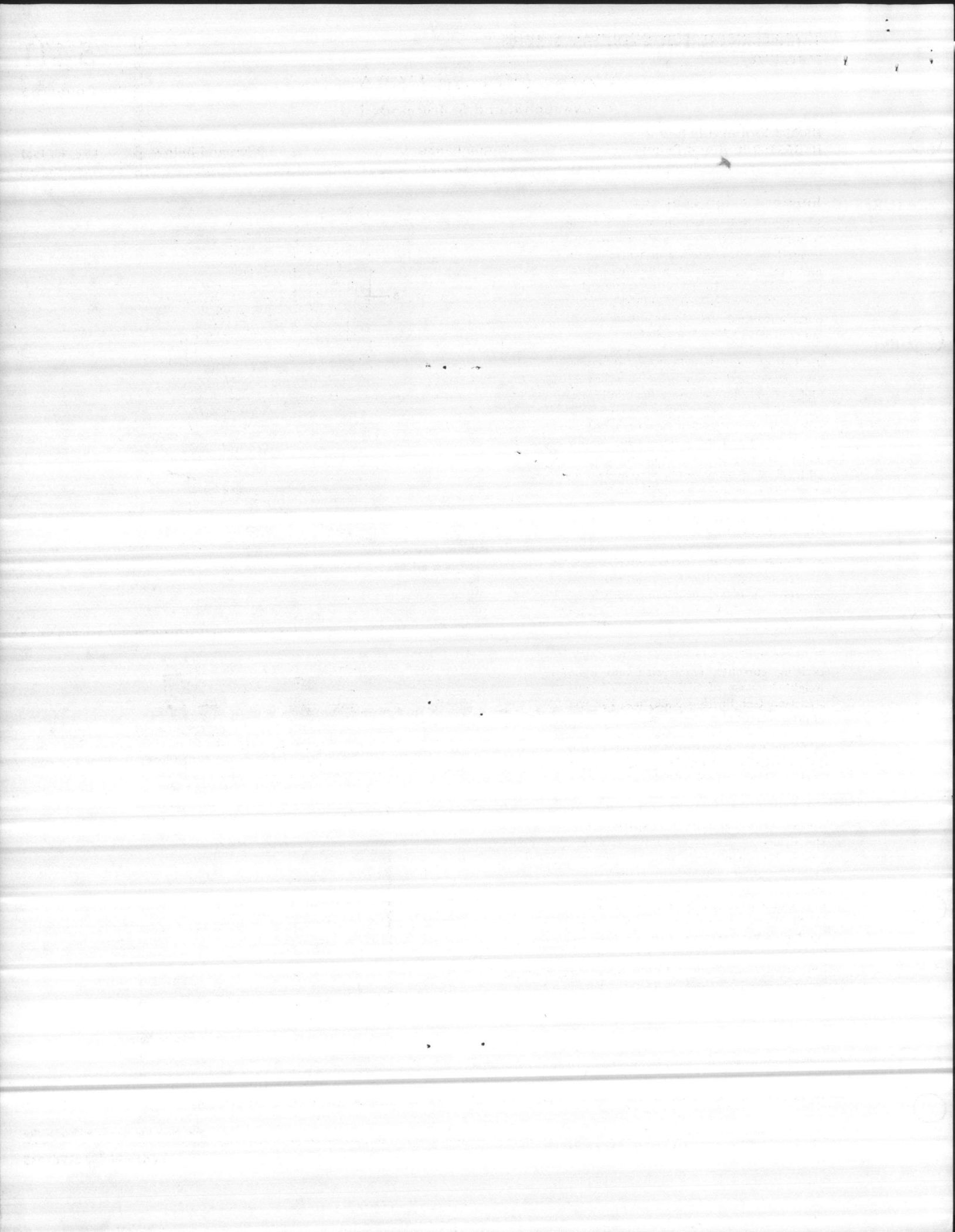
Figure 7 shows the ease with which the one-piece cover band can be removed from a General Electric transformer. The cover band also provides a superior seal.

Figure 8 shows the pressure vent plug which permits the release of any internal pressure or vacuum before removing the cover. It also provides a convenient and easily checked ground for insulated cover.



(Photo PL131513)

Fig. 8. Pressure vent plug



Types HS and HSBA  
Conventional and Self-protected

HS-500 Kva and Below  
HSBA-100 Kva and Below

Single Phase

19.9 Kv and Below

Dec. 26, 1967

Interior Design Features

1. High-voltage taps in single-bushing transformers, 25 kva and below, are located in the grounded end of the coil and are terminated at a molded-plastic terminal block. In all other ratings, the high-voltage taps are terminated at a porcelain terminal block. Leads are covered with Class A insulation.

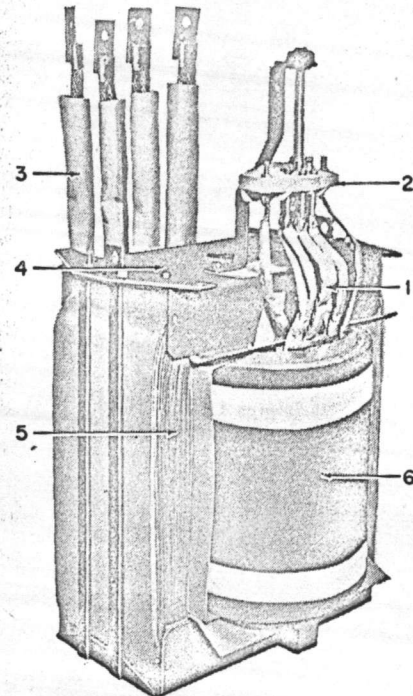
2. Tap changer (see Section 5402) permits rapid and convenient changing of high-voltage tap connections while de-energized, thus providing a choice of five voltage ratios. Contacts are tin plated for low contact resistance. Operating handle and position-indicating dial extend above oil level where they can be seen and easily reached through the handhole cover.

3. Low-voltage leads are covered with Class A insulation.

4. Sturdy welded and bolted clamping structure holds laminations and windings securely in place, providing additional strength against mechanical stresses caused by short circuits.

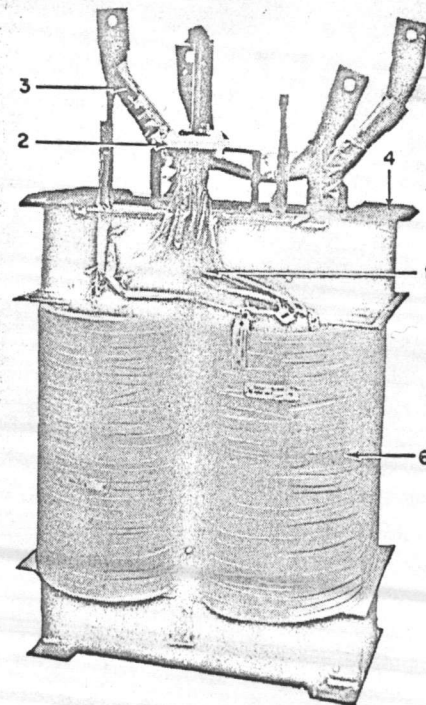
5. General Electric cores feature low exciting currents, small size and light weight because of SPIRAKORE® construction (see Section 5402) and the use of grain-oriented silicon steel.

6. Windings are insulated with the PERMALEX® II insulation system (see Section 5402). This system consists of GE-MEL\* wire enamel insulation and cyanoethylated kraft paper which is arranged between the concentric layers of the winding. The General Electric mechanical design and treating process greatly increases the short-circuit strength of primary and secondary windings. Compared with the USASI Standard of 25 times normal current, the rated short-circuit strength of General Electric transformers is 40 times normal current for units rated 25 kva and below, 35 times for units rated 37½-100 kva, and 25 times for all other units.



(Photo 1199799)

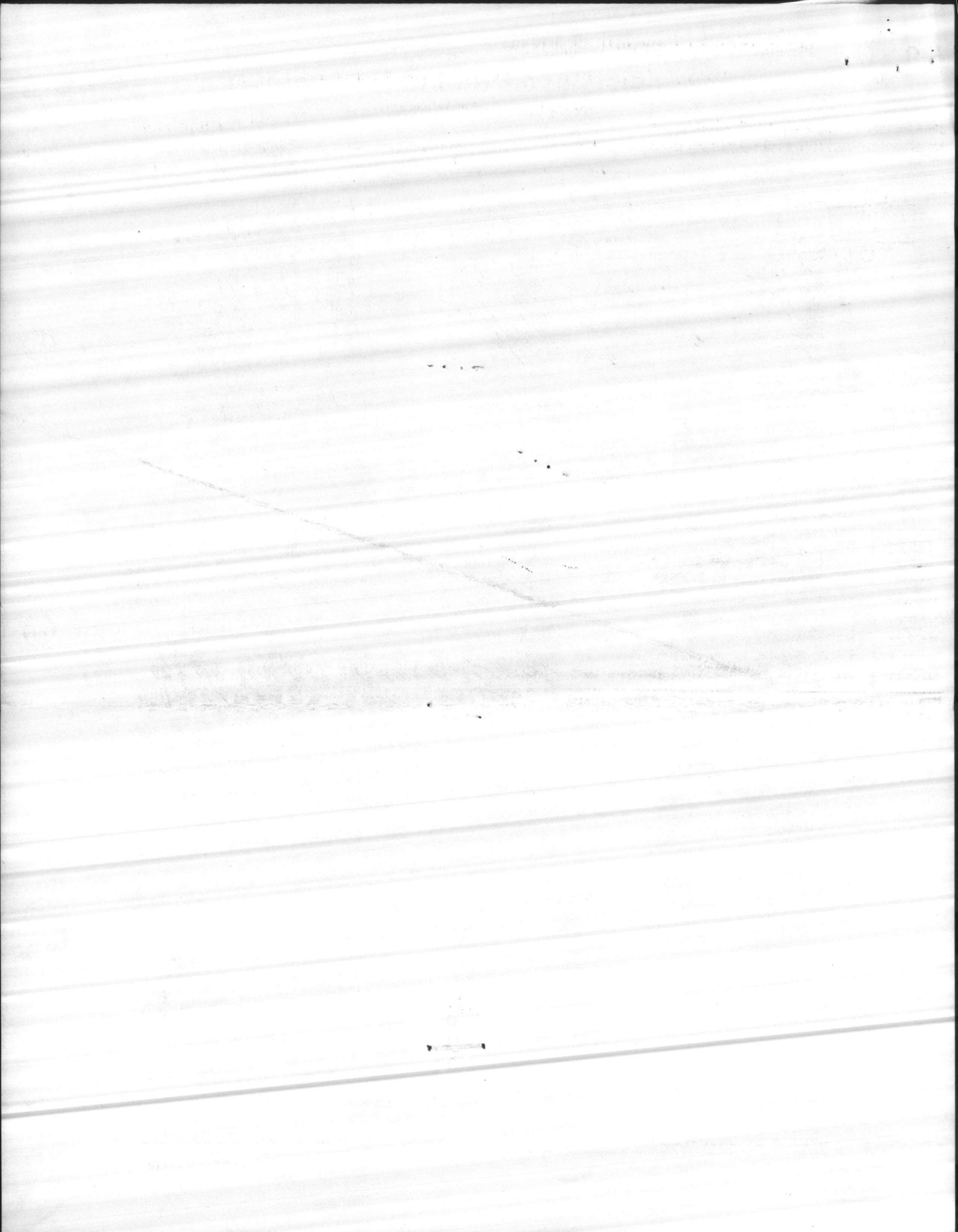
Fig. 9. Typical shell-type core-and-coil structure used in transformers rated 167 kva and below



(Photo 1199803)

Fig. 10. Typical core-type core-and-coil structure used in transformers rated 250 to 500 kva

\*Trade-mark of General Electric Company.



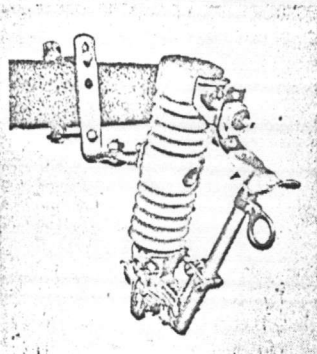
Porcelain Open Dropout Fuse Cutouts

(Fuse Links Listed in Section 5841)

June 19, 1967

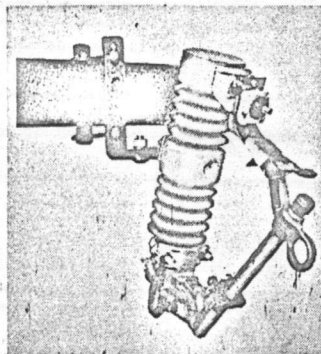
7.8 and 15 Kv

100 Amperes



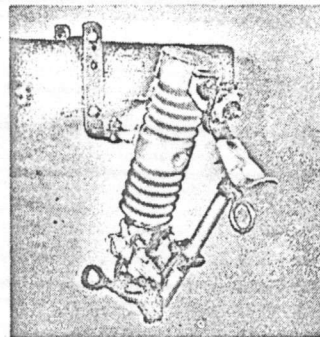
(Photo 3042549)

\*Fig. 1. Heavy-duty cutout



(Photo 3042553)

\*Fig. 2. Extra-heavy-duty cutout



(Photo 3041330)

\*Fig. 3. Heavy-duty cutout with mechanical load break\*

OPEN DROPOUT CUTOUTS

Distribution Protective Equipment-P(032)

Max Voltage Rating† Kv	Continuous Current Rating Amperes	Rated Int Capacity RMS Amp	Description	Model No.	Fig. No.	Quantity Per Pallet	List Price Each, GO-70 *	Net Wt in Lb	Conventional or Load-break Fuseholders and Blades	List Price Each, GO-70 *	Net Wt in Lb
7.8/13.5Y	100	5000	Heavy-duty	9F3K71	1	36	\$22.00	17½	108L355G1 †	\$13.00	1¾
7.8/13.5Y	100	5000	Heavy-duty, mechanical load break	9F3K72	3	36	23.50	18¾	108L355G5 †	15.50	2¾
7.8/13.5Y	300	.....	Blade	9F3K87	-	36	22.00	17¾	108L355G3 ¶	13.00	2¾
7.8/13.5Y	100	10000	Extra-heavy-duty	9F3K91 Δ	2	30	24.00	17¾	108L360G1 §	15.00	1¾
7.8/13.5Y	100	10000	Extra-heavy-duty, mechanical load break	9F3K91	-	30	25.50	18½	108L360G10 §	17.50	2¾
15.0/26.0Y	100	4000	Heavy-duty	9F3K81	1	30	27.00	18¾	108L355G2 †	13.50	1¾
15.0/26.0Y	100	4000	Heavy-duty, mechanical load break	9F3K81	3	30	28.50	19¾	108L355G6 †	16.00	2¾
15.0/26.0Y	300	.....	Blade	9F3K88	-	30	27.00	19¼	108L355G4 ¶	13.50	2¼
15.0/26.0Y	100	8000	Extra-heavy-duty	9F3K11 Δ	2	28	29.00	19	108L360G2 §	15.50	2
15.0/26.0Y	100	8000	Extra-heavy-duty, mechanical load break	9F3K11 Δ	-	28	31.00	19¾	108L360G9 §	17.00	2¾
15.0/26.0Y	100	10000	Ultra-extra-heavy-duty	9F3K17 Δ	-	28	30.00	19	108L360G24 §	16.50	2
15.0/26.0Y	100	10000	Ultra-extra-heavy-duty, mechanical load break	9F3K19 Δ	-	28	31.50	19¾	108L360G25 §	18.00	2¾

\* Open cutouts with hooks to accommodate Loadbuster are available for those utilities standardized on this device. Refer to company for model numbers.  
 † Suitable for application on single-phase circuits having maximum line-to-ground voltage not in excess of value shown to the left of diagonal line. For three-phase circuits the maximum line-to-line voltage should not exceed the value shown to the right of the diagonal line, EXCEPT the 7.8 kv cutouts can be used on three-phase circuits up to 14.4 kv line-to-line. Cutouts having single voltage ratings are suitable for application on circuits with line-to-line voltages not in excess of values shown.

‡ Mechanically and electrically interchangeable with 9F3H series cutouts. Mechanically interchangeable with 9F3F and 9F3G series cutouts but interrupting capacity will be that of the superseded cutout.  
 § Mechanically and electrically interchangeable with 9F3H series cutouts. Cannot be used with 9F3F, or 9F3G series cutouts.  
 ¶ Mechanically and electrically interchangeable with 9F3F, 9F3G and 9F3H series cutouts.  
 Δ Supply part expendable caps listed 5830, page 1.

ATLANTIC DIVISION  
 NAVAL FACILITIES ENGINEERING COMMAND  
 NORFOLK, VIRGINIA, 23511

**APPROVED "AS NOTED"**

SUBJECT: THE REQUIREMENTS OF  
 CONTRACT NO. 88313

APPROVAL DATE: 88313/67

INDICATED MATERIALS FOR EQUIPMENT  
 REQUIREMENTS FOR CONTRACTOR  
 SHALL BE PROVIDED FOR PROVIDING  
 PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
 COORDINATION OF TRADES, ETC. AS REQUIRED.

H. N. WALLIN  
 RADM, CEC, USN

DATE NOV 8 1968

COMPLANTNAVEACENCCOM

PUBLICATION: (Use latest issue.)  
 Description: ..... GEA-7081

\* Changed since Apr. 10, 1967 issue, Form Section 5830 page 4.

Prices subject to change without notice



NOTED

NOV 19 1988

NOV 8 1988

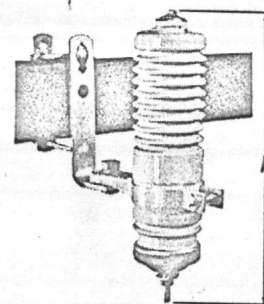
**THYRITE® Magne-valve Distribution Arresters**  
 0-12,000-ft Altitude Ratings 3000 to 21,000 Volts

NOTE: Type "A" systems are the usual 3-phase, 4-wire multigrounded-neutral distribution systems where neutrals of all transformers are directly grounded.

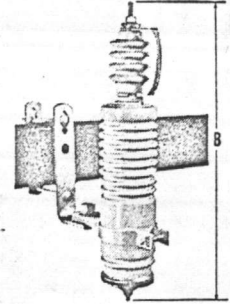
Type "B" systems are the "effectively grounded-neutral" 3-phase, 3-wire or 4-wire distribution systems where neutrals of all transformers are grounded, occasionally through impedance to limit ground-fault current.

Type "C" systems are grounded-neutral systems with higher sequence impedance ratios than for Type "B."

Type "D" systems are isolated-neutral or delta systems. System type designations are from USASI Standard C84.1-1954 "Preferred Voltage Ratings."



(Photo 1202917)  
 \*Fig. 1. Directly connected



(Photo 1202915)  
 \*Fig. 2. Externally gapped

**PRICES AND DATA**

Distribution Protective Equipment-P(032)

DISTRIBUTION ARRESTERS				WITH DISCONNECTOR (Fig. 1)					WITH EXTERNAL GAP (Fig. 2)				
Arrester Rating (Kv)	Maximum System Line-to-Line Voltage for Application of Designated Arrester Rating			With Standard EEI-NEMA Mounting Bracket*		Quan. Per Pallet	List Price Each, GO-75A	Approx Net Wt in Pounds	With Standard EEI-NEMA Mounting Bracket*		Quan. Per Pallet	List Price Each, GO-75A	Approx Net Wt in Pounds
	Type A	Type B	Types C & D	Model No. *	Superseded Model No. (Use for Reference Only)				Model No. *	Superseded Model No. (Use for Reference Only)			
3	4,500	3,750	3,000	9L22AAA101 9L22AAA601†	9LA22A21 9LA22AE21†	125 112	\$11.00	8	9L21BAA101 9L21BBA101†	9LA21B21 9LA21BA21†	96	\$11.50	8
6	9,000	7,500	6,000	9L22AAB101 9L22AAB601†	9LA22A41 9LA22AE41†	112 112	13.00	9	9L21BAB101 9L21BBB101†	9LA21B41 9LA21BA41†	80	13.50	10
9	12,800	11,250	9,000	9L22AAC101 9L22AAC601†	9LA22A51 9LA22AE51†	112 104	15.25	11	9L21BAC101 9L21BBC101†	9LA21B51 9LA21BA51†	56	16.00	12
10	14,500	12,500	10,000	9L22AAD101 9L22AAD601†	9LA22A61 9LA22AE61†	80 56	15.75	12	9L21BAD101 9L21BBD101†	9LA21B61 9LA21BA61†	56	16.50	13
12	17,100	15,000	12,000	9L22AAE101 9L22AAE601†	9LA22A71 9LA22AE71†	56 56	20.00	13	9L21BAE101 9L21BBE101†	9LA21B71 9LA21BA71†	56	21.00	14
15	21,400	18,000	15,000	9L22AAF101 9L22AAF601†	9LA22A81 9LA22AE81†	56 56	24.00	15	9L21BAF101 9L21BBF101†	9LA21B81 9LA21BA81†	48	25.00	17
18	25,000	22,500	18,000	9L22AAG101	9LA22A91	56	29.50	17	9L21BAG101 9L21BBG101†	9LA21B91 9LA21BA91†	48	31.00	19
21	27,500	25,000	20,000	9L22AAH101	9LA22A01	56	33.50	19	9L21BAH101 9L21BBH101†	9LA21B01 9LA21BA01†	48	35.00	21

\* For price and description of standard EEI-NEMA and special mounting brackets, refer to Section 5861.

† Standard arresters, except with insulated top terminals.  
 ‡ Model 9L21B Series for use on systems 6000-12,000 ft.

**DIMENSIONS (Inches)**

With standard EEI-NEMA mounting bracket

Arrester Rating (Kv) Max.	With Disconnector (Fig. 1)	With External Gap (Fig. 2)
	A Dimension	B Dimension
3	8.5	11.4
6	11.2	14.7
9	14.2	18.5
10	15.2	19.5
12	17.0	22.7
15	20.4	26.0
18	23.2	30.4
21	26.2	33.3

**PERFORMANCE CHARACTERISTICS**

Arrester Rating (Kv) Max.	Impulse Sparkover Kv Crest (Max.)				IR Drop in Kv Crest§ (Max.) (10 x 20 Microsecond Current Wave)				60-cycle Sparkover (Avg)	
	AIEE WAVE		1½ x 40 WAVE		At 1500 Amp	At 5000 Amp	At 10,000 Amp	At 20,000 Amp	Direct Connected	External Gap
	with Disconnector	with External Gap	with Disconnector	with External Gap						
3	16	31	14	28	9	11	13	15	7	14
6	31	51	24	41	17	22	26	30	13	18
9	46	64	36	43	26	32	39	45	19	20
10	46	64	36	43	29	38	45	53	19	20
12	61	77	49	62	34	43	51	60	25	32
15	76	91	57	67	42	53	63	74	30	35
18	91	114	68	77	50	63	75	90	34	40
21	106	142	78	89	58	73	87	104	38	45

§ Sparkover and IR drop values apply to both positive and negative polarity waves.

**ACCESSORIES**

Special features available at the following list prices, GO-75A

- Line lead ..... \$0.50
- Bottom cap ..... .20
- Insulation for bottom copper cap .. .30

PUBLICATION: (Use latest issue.)

Descriptive ..... GEA-6379  
 \*Instruction Sheet ..... GEH-2906

\*Changed or added, new model numbers assigned, material deleted since June 19, 1967 issue.

Prices and data subject to change without notice

PM 700, 701, 702, 711-713, 721-723, 731-737

GENERAL ELECTRIC

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

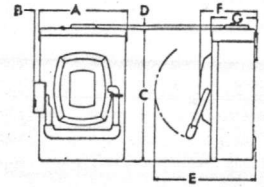
**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NO. 88313 88313 / 67  
APPROVAL OF MATERIALS AND/OR EQUIPMENT  
INDICATED COMPLY WITH THE SPECIFICATION  
REQUIREMENTS ONLY. THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS;  
COORDINATION OF TRADES, ETC. AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN *HNC*  
COMLANTNAVFACENGCOM

DATE NOV 8 1968

# HEAVY DUTY TYPE TH RAINTIGHT NEMA 3R ENCLOSURE



**Fig. 7**  
(See Note 1)

**FUSIBLE**

Schematic Diagram	Check Applicable Block	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						
					See Fig. 7						
					A	B	C	D	E	F	G

**2-POLE, 240 VOLTS A-c — 250 VOLTS D-c**

	TH3221RH	30	8	6 5/8	1/2	8 11/16	3/16	7 3/4	4 3/8	3 1/4
	TH3222RH	60	9	8 5/8	3/16	12 1/16	3/16	10	5 3/8	4 1/4
	TH3223RH	100	10	9 5/8	3/16	19 3/16	3/16	11 1/4	6 3/8	5
	TH3224RH	200	11	13 3/4	3/16	30 1/16	3/16	12 1/2	7 11/16	6 5/8
	TH2225R	400	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TH2226R	600	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TC2227R ②	800	..	23 1/2	2 1/2	44 7/8	47 1/4	18 3/8	11 5/8	10 3/4
	TC2228R ②	1200	..	26 3/8	2 1/2	54 3/8	57 1/2	18 7/8	12 5/8	11 13/16

**3-WIRE SN 120/240 VOLTS A-c — 250 VOLTS D-c**

	TH3221RH	30	8	6 5/8	1/2	8 11/16	3/16	7 3/4	4 3/8	3 1/4
	TH3222RH	60	9	8 5/8	3/16	12 1/16	3/16	10	5 3/8	4 1/4
	TH3223RH	100	10	9 5/8	3/16	19 3/16	3/16	11 1/4	6 3/8	5
	TH3224RH	200	11	13 3/4	3/16	30 1/16	3/16	12 1/2	7 11/16	6 5/8
	TH2225R Plus TN165	400	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TH2226R Plus TN166	600	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TC2327SNR ②	800	..	32 3/8	2 1/2	44 7/8	47 1/4	18 1/2	11 5/8	10 3/4
	TC2328SNR ②	1200	..	36 7/8	2 1/2	55	57 3/8	18 7/8	12 5/8	11 13/16

**3-POLE 240 VOLTS A-c**

	TH4321RH	30	8	6 5/8	1/2	8 11/16	3/16	7 3/4	4 3/8	3 1/4
	TH4322RH	60	9	8 5/8	3/16	12 1/16	3/16	10	5 3/8	4 1/4
	TH4323RH	100	10	9 5/8	3/16	19 3/16	3/16	11 1/4	6 3/8	5
	TH4324RH	200	11	13 3/4	3/16	30 1/16	3/16	12 1/2	7 11/16	6 5/8
	TH3325R	400	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TH3326R	600	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TC72327R ②	800	..	32 3/8	2 1/2	44 7/8	47 1/4	18 1/2	11 5/8	10 3/4
	TC72328R ②	1200	..	36 7/8	2 1/2	55	57 3/8	18 7/8	12 5/8	11 13/16

**4-WIRE SN 240 VOLTS A-c**

	TH4321RH	30	8	6 5/8	1/2	8 11/16	3/16	7 3/4	4 3/8	3 1/4
	TH4322RH	60	9	8 5/8	3/16	12 1/16	3/16	10	5 3/8	4 1/4
	TH4323RH	100	10	9 5/8	3/16	19 3/16	3/16	11 1/4	6 3/8	5
	TH4324RH	200	11	13 3/4	3/16	30 1/16	3/16	12 1/2	7 11/16	6 5/8
	TH3325R Plus TN165	400	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TH3336R Plus TN166	600	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TC72427SNR ②	800	..	42 3/8	2 1/2	44 3/4	47 3/8	18 1/2	11 3/8	10 3/4
	TC72428SNR ②	1200	..	47 7/8	2 1/2	55	57 3/8	18 7/8	12 5/8	11 13/16

**3-POLE 480 AND 600 VOLTS A-c**

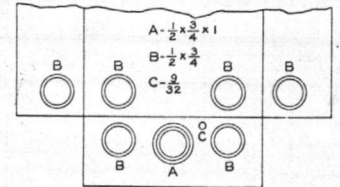
	TH3361RH	30	9	8 5/8	1/2	15 3/16	3/16	10	5 3/8	4 1/4
	TH3362RH	60	14	8 5/8	1/2	15 3/16	3/16	10	5 3/8	4 1/4
	TH3363RH	100	10	9 5/8	3/16	19 3/16	3/16	11 1/4	6 3/8	5
	TH3364RH	200	11	13 3/4	3/16	30 1/16	3/16	12 1/2	7 11/16	6 5/8
	TH3365R ①	400	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TH3366R ①	600	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TC72367R ① ②	800	..	32 3/8	2 1/2	49 3/4	52 3/8	18 1/2	11 5/8	10 3/4
	TC72368R ① ②	1200	..	36 7/8	2 1/2	58	60 3/8	18 7/8	12 5/8	11 13/16

**NO FUSE**

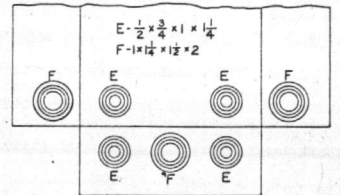
**3-POLE 480 AND 600 VOLTS A-c**

	X THN3361RH	30	9	8 5/8	1/2	12 3/16	3/16	10	5 3/8	4 1/4
	THN3362RH	60	9	8 5/8	1/2	12 3/16	3/16	10	5 3/8	4 1/4
	THN3363RH	100	10	9 5/8	3/16	19 3/16	3/16	11 1/4	6 3/8	5
	THN3364RH	200	11	13 3/4	3/16	30 1/16	3/16	12 1/2	7 11/16	6 5/8
	THN3365R ①	400	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	THN3366R ①	600	12	23 1/4	3/8	40 3/16	...	18 1/4	9 13/16	8 3/8
	TC36367R ① ②	800	..	32 3/8	2 1/2	37	40	18 1/2	11 5/8	10 3/4
	TC36368R ① ②	1200	..	37 1/8	2 1/2	43 3/4	46 1/2	18 7/8	12 5/8	11 13/16

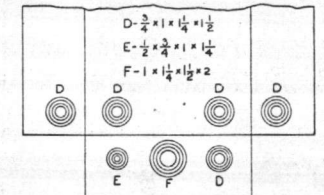
① "R" devices furnished with blank end-wall.  
 ② Knife-blade construction (Style A) 800 and 1200-amp fusible switches are furnished in parallel (2 fuses per pole).  
 NOTE: Horsepower rating, lug wire sizes and specifications on preceding Page are applicable to both NEMA 1 and NEMA 3R devices.



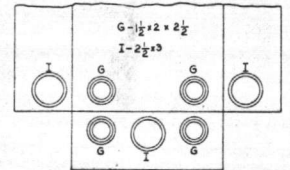
**Fig. 8**



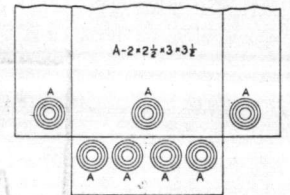
**Fig. 9**



**Fig. 10**



**Fig. 11**



**Fig. 12**

**UNIVERSAL RRAINTIGHT HUBS**  
For "RH" Raintight Devices

Nominal Conduit Diameter in Inches	Catalog Number
3/4	TC75
1	TC100
1 1/4	TC125
1 1/2	TC150
2	TC200
2 1/2	TC250
Closing Cap	TCCP

NOTE: Both top and bottom of enclosures have the same KO pattern.

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

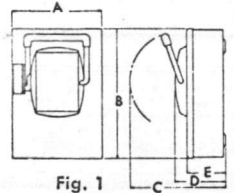
SUBJECT TO THE REQUIREMENTS OF  
CONTRACT **88373** **88213** **67**  
APPROVAL OF MATERIALS AND EQUIPMENT  
INDICATES COMPLIANCE WITH SPECIFICATION  
REQUIREMENTS ON THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN  
COMLANTNAVFACENGCOM

NOV 8 1968  
DATE

# HEAVY DUTY TYPE TH INDOOR NEMA 1 ENCLOSURE

GENERAL ELECTRIC'S Heavy Duty Safety Switches are designed for applications where safety, high-performance, and continuity of service are essential. These switches are UL approved, File E-4669, meet Federal Specifications WS-865C for Heavy Duty Switches. They meet NEMA Enclosed Switch Standard KS1-1957 for Type ND except with general enclosure. All ratings from 30 through 600 amperes have full cover interlocks and have Quick-Make, Quick-Break mechanisms.



**FUSIBLE**

Schematic Diagram	Check Applicable Block	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Horsepower Ratings A-c				Lug Wire Size	
					See Fig. 1						NEC Standard		Time Delay (max)		Copper	Aluminum
					A	B	C	D	E	F	240 Volts		240 Volts			

**2-POLE, 240 VOLTS A-c — 250 VOLTS D-c**

Schematic Diagram	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Horsepower Ratings A-c				Lug Wire Size	
				A	B	C	D	E	F	240 Volts		240 Volts		Copper	Aluminum
	TH3221	30	2	6 3/8	8 1/2	7 1/8	4 3/8	3 1/4	...	1 1/2	3	3	7 1/2	14-6	.....
	TH3222	60	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	3	...	10	14-2	12-2	
	TH3223	100	4	9 3/8	19 1/4	11 3/8	6 3/8	5	...	7 1/2	15	15	30	14-1/0	14-1/0
	TH3224	200	5	13 1/8	30 1/8	12 1/8	7 3/8	6 3/8	...	15	25	...	50	6-250	6-250
	TH2225	400	6	22 1/8	36 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 1/0-3/0, or (1) 4-600	(2) 1/0-250, or (1) 4-600
	TH2226	600	6	22 1/8	37 3/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 4-600	(2) 4-600
	TC72227 (1)	800	..	22 3/4	2 1/2	44 3/8	18 3/8	...	10 3/4	...	...	...	3 1/0-600 MCM	.....	
	TC72228 (1)	1200	..	25 3/4	2 1/2	55	18 3/4	...	11 3/4	...	...	...	4 1/0-500 MCM	.....	

**3-WIRE SN 120/240 VOLTS A-c — 250 VOLTS D-c**

Schematic Diagram	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Horsepower Ratings A-c				Lug Wire Size	
				A	B	C	D	E	F	240 Volts		240 Volts		Copper	Aluminum
	TH3221	30	2	6 3/8	8 1/2	7 1/8	4 3/8	3 1/4	...	1 1/2	3	3	7 1/2	14-6	.....
	TH3222	60	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	3	...	10	14-2	12-2	
	TH3223	100	4	9 3/8	19 1/4	11 3/8	6 3/8	5	...	7 1/2	15	15	30	14-1/0	14-1/0
	TH3224	200	5	13 1/8	30 1/8	12 1/8	7 3/8	6 3/8	...	15	25	...	50	6-250	6-250
	TH3225	400	6	22 1/8	36 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 1/0-3/0, or (1) 4-600	(2) 1/0-250, or (1) 4-600
	TH3226	600	6	22 1/8	37 3/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 4-600	(2) 4-600
	TC72327SN (1)	800	..	31 3/4	2 1/2	44 3/8	18 3/8	...	10 3/4	...	...	...	3 1/0-600 MCM	.....	
	TC72328SN (1)	1200	..	36	2 1/2	55	18 3/4	...	11 3/4	...	...	...	4 1/0-500 MCM	.....	

**3-POLE 240 VOLTS A-c**

Schematic Diagram	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Horsepower Ratings A-c				Lug Wire Size		
				A	B	C	D	E	F	240 Volts		240 Volts		Copper	Aluminum	
	TH4321	30	2	6 3/8	8 1/2	7 1/8	4 3/8	3 1/4	...	...	3	...	7 1/2	14-6	.....	
	TH4322	60	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	...	7 1/2	...	15	14-2	12-2	
	TH4323	100	4	9 3/8	19 1/4	11 3/8	6 3/8	5	...	...	15	...	30	14-1/0	14-1/0	
	TH4324	200	5	13 1/8	27 3/8	12 1/8	7 3/8	6 3/8	...	...	15	25	...	50	6-250	6-250
	TH3325	400	6	22 1/8	36 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 1/0-3/0, or (1) 4-600	(2) 1/0-250, or (1) 4-600	
	TH3326	600	6	22 1/8	37 3/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 4-600	(2) 4-600	
	TC72327 (1)	800	..	31 3/4	2 1/2	44 3/8	18 3/8	...	10 3/4	...	...	...	3 1/0-600 MCM	.....		
	TC72328 (1)	1200	..	36	2 1/2	55	18 3/4	...	11 3/4	...	...	...	4 1/0-500 MCM	.....		

**4-WIRE SN 240 VOLTS A-c**

Schematic Diagram	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Horsepower Ratings A-c				Lug Wire Size		
				A	B	C	D	E	F	240 Volts		240 Volts		Copper	Aluminum	
	TH4321	30	2	6 3/8	8 1/2	7 1/8	4 3/8	3 1/4	...	...	3	...	7 1/2	14-6	.....	
	TH4322	60	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	...	7 1/2	...	15	14-2	12-2	
	TH4323	100	4	9 3/8	19 1/4	11 3/8	6 3/8	5	...	...	15	...	30	14-1/0	14-1/0	
	TH4324	200	5	13 1/8	27 3/8	12 1/8	7 3/8	6 3/8	...	...	15	25	...	50	6-250	6-250
	TH4325	400	6	22 1/8	36 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 1/0-3/0, or (1) 4-600	(2) 1/0-250, or (1) 4-600	
	TH4326	600	6	22 1/8	37 3/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 4-600	(2) 4-600	
	TC72427SN (1)	800	..	41 1/4	2 1/2	44 3/8	18 3/8	...	10 3/4	...	...	...	3 1/0-600 MCM	.....		
	TC72428SN (1)	1200	..	47	2 1/2	55	18 3/4	...	11 3/4	...	...	...	4 1/0-500 MCM	.....		

**3-POLE 480 AND 600 VOLTS A-c**

Schematic Diagram	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Horsepower Ratings A-c				Lug Wire Size	
				A	B	C	D	E	F	480 V		600 V		Copper	Aluminum
	TH3361	30	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	5	7 1/2	15	20	14-2	12-2
	TH3362	60	3	8 3/8	15 3/8	9 7/8	5 3/8	4 1/4	...	15	15	30	30	14-2	12-2
	TH3363	100	4	9 3/8	19 1/4	11 3/8	6 3/8	5	...	25	30	50	50	14-1/0	12-1/0
	TH3364	200	5	13 1/8	30 1/8	12 1/8	7 3/8	6 3/8	...	50	50	100	100	6-250	6-250
	TH3365	400	6	22 1/8	39 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 1/0-3/0, or (1) 4-600	(2) 1/0-250, or (1) 4-600
	TH3366	600	6	22 1/8	40 3/8	17 1/8	9 3/4	8 1/8	...	(Std. HP)	(Max. HP)	(2) 4-600	(2) 4-600	(2) 4-600	(2) 4-600
	TC72367 (1)	800	..	31 3/4	2 1/2	49 3/4	18 3/8	...	10 3/4	...	...	...	3 1/0-600 MCM	.....	
	TC72368 (1)	1200	..	37	2 1/2	58	18 3/4	...	11 3/4	...	...	...	4 1/0-500 MCM	.....	

**NO FUSE**

**3-POLE 480 AND 600 VOLTS A-c (1)**

Schematic Diagram	Catalog Number	Amp Rating	KO Fig. No.	Enclosure Dimensions						Standard Horsepower				Lug Wire Size			
				See Fig. 1						240 V		240 V		480 V		600 V	
				A	B	C	D	E	F	1φ	3φ	3φ	3φ	Copper	Aluminum		
	THN3321	...	2	6 3/8	8 1/2	7 1/8	4 3/8	3 1/4	...	3	7 1/2	...	...	14-6	.....		
	THN3361	30	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	3	7 1/2	15	20	14-2	12-2		
	THN3362	60	3	8 3/8	12 3/8	9 7/8	5 3/8	4 1/4	...	10	15	30	30	14-2	12-2		
	THN3363	100	4	9 3/8	19 1/4	11 3/8	6 3/8	5	...	15	30	50	50	14-1/0	12-1/0		
	THN3364	200	5	13 1/8	21 3/4	12 1/8	7 3/8	6 3/8	...	15	60	50	50	6-250	6-250		
	THN3365	400	6	22 1/8	29 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 1/0-3/0, or (1) 4-600	(2) 1/0-250, or (1) 4-600		
	THN3366	600	6	22 1/8	29 1/8	17 1/8	9 3/4	8 1/8	...	...	...	...	...	(2) 4-600	(2) 4-600		
	TC36367 (1)	800	..	31 3/4	2 1/2	37 1/4	18 3/8	...	10 3/4	...	...	...	3 1/0-600 MCM	.....			
	TC36368 (1)	1200	..	37 1/8	2 1/2	44	18 3/4	...	11 3/8	...	...	...	4 1/0-500 MCM	.....			

(1) Knife-blade construction (Style A) 800 and 1200-amp fusible switches are furnished in parallel (2 fuses per pole).

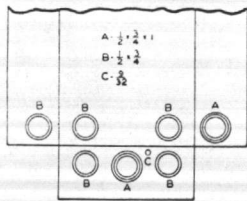


Fig. 2

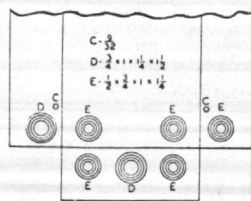


Fig. 3

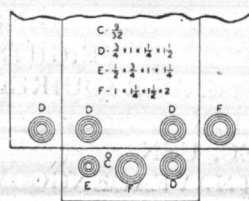


Fig. 4

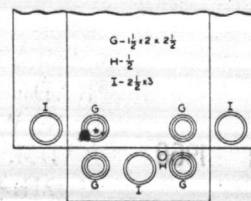


Fig. 5

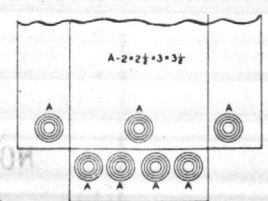


Fig. 6

NOTE: Both top and bottom of enclosures have the same KO pattern.

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT **88313**

**88313/67**

APPROVED FOR EQUIPMENT  
INDICATIONS AND SPECIFICATION  
REQUIREMENTS ON THE CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

NOV 8 1968  
DATE

H. N. WALLIN  
RADM, CEC, USN  
COMLANTNAVFACENGCOM



# Type V-65—Watthour Meters

The meters listed below are intended for the circuit obtained from a bank of three power transformers connected in Y and with the neutral brought out. The meters have two potential circuits (to be connected from "line" to "neutral") and three current circuits.

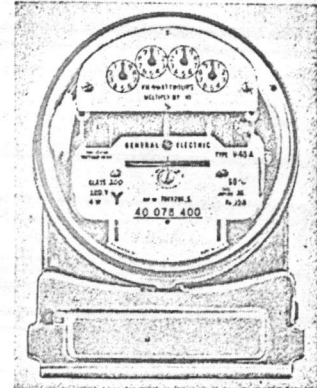
Extended-range current capacity in socket types of 15-ampere meters is 100 amperes (Class 100); of 30-ampere meters is 200 amperes (Class 200), when properly wired and mounted. Refer to Section 7870 for sockets.

A-base, bottom-connected meter terminals are limited to size No. 2 wire (100-amp.). A set of thimble adapters, Cat. No. 4124628G3 (set of eight adapters), may be ordered to accept No. 00 conductors (150-ampere capacity on 30-ampere meters).

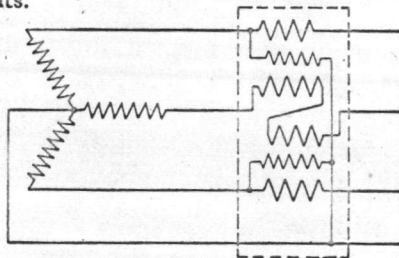
Improved voltage compensation permits the use of 240-volt stators on circuits rated up to 277/480 volts as well as 240/416 volts.



(Photo A185263)  
Type V-65-S  
Socket-connected



(Photo A185264)  
Type V-65-A  
Bottom-connected



### WEIGHTS

	Approx Weight in Lb	
	Shipping	Net
V-65-S	10	8
V-65-A	12½	10

### PRICES

#### Self-contained Meters—MSJ-10 Forms 14S and 14A

Meter-S(186)

Meter Class	Test Amperes	Watthour Constant	No. of Dials on Register	Register Ratio	Register Multiplier	With Pointer-type Register (for cyclometer types, see page 38)			
						Socket-connected Type V-65-S		Bottom-connected, Type V-65-A	
						Cat. No.	List Price, GO-82	Cat. No.	List Price, GO-82
<b>120 Y VOLTS (Line-to-neutral) for Use on 120/208 Volts, 4-wire Y, 3-phase Circuits</b>									
100	15	10.8	4	18 14/27	1	700X22G1	\$83.00	700X28G1	\$89.00
100	15	10.8	5	18 14/27	1	700X22G2	83.00	700X28G2	89.00
100	15	10.8	4	185 5/27	10	700X22G5	83.00	700X28G5	89.00
200	30	21.6	4	92 16/27	10	700X22G11	108.00	700X28G9	114.00
200	30	21.6	5	9 7/27	1	700X22G9	108.00	700X28G6	114.00
<b>240 Y † VOLTS (Line-to-neutral) for Use on 277/480 Volts, 4-wire Y, 3-phase Circuits</b>									
100	15	21.6	4	92 16/27	10	700X22G3	\$83.00	700X28G3	\$89.00
100	15	21.6	5	9 7/27	1	700X22G7	83.00	700X28G4	89.00
200	30	43.2	4	46 8/27	10	700X22G10	108.00	700X28G7	114.00
200	30	43.2	5	4 17/27	1	700X22G13	108.00	700X28G8	114.00

#### 2.5-ampere, Class 10 Meters for Use with Instrument Transformers, Secondary Reading

Meter-S(186)

Secondary Rating of Instrument Transformers		Meter Rating (60 Cycles)		Watthour Constant	No. of Dials on Register	Register Ratio	Register Multiplier *	Socket-connected Type V-65-S			Bottom-connected Type V-65-A		
Volts	Amperes	Volts Line-to-neutral †	Test Amperes					Internal Conn. MSJ-10 Form No.	Cat. No.	List Price, GO-82	Internal Conn. MSJ-10 Form No.	Cat. No.	List Price, GO-82
120	5	120Y	2.5	1.8	4	111 1/9	TF	65	700X23G1 ‡	\$93.00	6A	700X29G1 ‡	\$99.00
120	5	120Y	2.5	1.8	4	111 1/9	TF	75	700X23G9	93.00	..	..	..
No Pot. Transf	5	240Y	2.5	3.6	4	55 5/9	TF	65	700X23G4	93.00	6A	700X29G5	99.00
No Pot. Transf	5	240Y	2.5	3.6	4	55 5/9	TF	75	700X23G10	93.00	..	..	..

† Standard listed 240-volt models have nameplate marked "240V Y". An optional nameplate marked "277/480V Y" is available upon request.

\* Form 6S meters have 13-terminal construction, thereby providing separate terminals for all coils (10 terminals) plus contact device (3 terminals) when required. They must be used with 13-jaw polyphase sockets. Form 7S meters have 7-terminal construction. Use only with 7-jaw transformer-rated, circuit-closing, polyphase sockets. See Section 7872.

‡ These meters are for use with both CT's and PT's. If CT's only are used, specify "for CT only" on order.

\* TF = Transformer Factor = CT ratio X PT ratio.

### REFERENCES:

Ordering Directions and Special Ratings ..... See Page 3  
Sales Offices ..... Section 95, Back Cover  
Publications ..... See Page 3

Complete revision since Dec. 31, 1962 issue.

RY 700, 701, 702, 711-713, 721-723, 731-737  
CW67, SW67, CW67W, SW67W

Prices subject to change without notice

GENERAL ELECTRIC

4-wire Y,  
3-phase  
2-stator



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

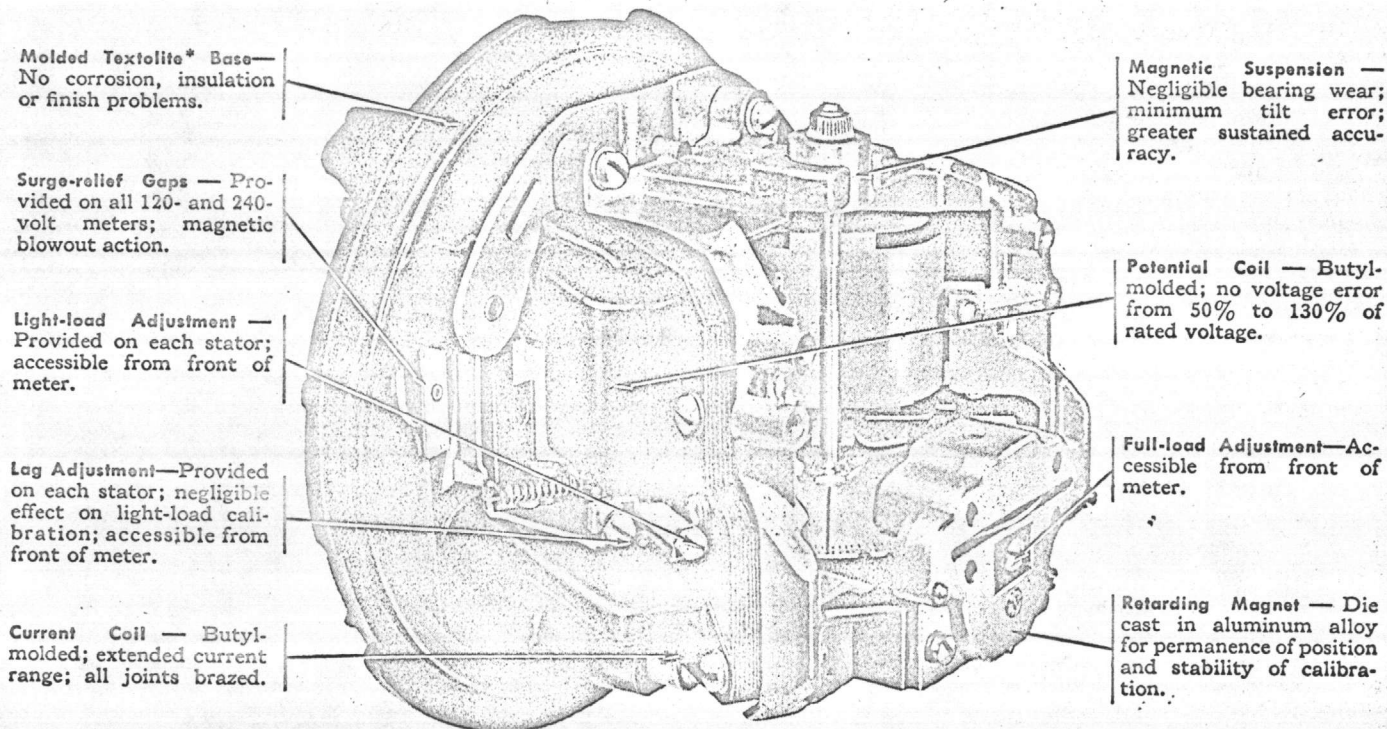
CONTRACT **88313** ~~88313~~ / 67  
APPROVED FOR THE EQUIPMENT  
INDICATIONS. THE CONTRACTOR  
REQUIREMENTS. CONTRACTOR  
SHALL BE RESPONSIBLE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN

DATE **NOV 8 1968** *HNC*  
COMLANTNAVFACENGCOM

## V-60 Family of Watthour Meters

## FEATURES



(Photo A175907)

Fig. 1. Type V-62-S, loss cover and register, showing improved features

The V-60 family of polyphase meters assures lower maintenance costs, minimum revenue loss due to tilt error, and greater sustained accuracy than ever before achieved in a polyphase watthour meter. The design incorporates the time-proven features of both the previous "V"-type polyphase watthour meters and the I-50 family of single-phase meters. A completely co-ordinated design has made possible these desirable features and has improved the high standards of accuracy for which General Electric meters are noted.

The metering assembly provides essentially flat load curves up to 666 $\frac{2}{3}$ % of rated current. Voltage compensation has been improved to permit operation of the meters from 50% to 130% of rated voltage. This new family of meters has been designed to measure precisely the loads of today and of the future.

## SOCKET-CONNECTED BASE

In these meters, a sturdy one-piece molded Textolite\* base similar to that used on the Type I-50 and Type I-55

\*Reg. Trade-mark of General Electric Company

New page.

RY 700, 701, 702, 711-713, 721-723, 731-737  
CW67, SW67

meters solves the problem of corrosion, finish and terminal insulation. In bottom-connected meters, a single aluminum alloy casting constitutes the base.

Surge-relief gaps of the blowout type are installed on all 120- and 240-volt meters. These gaps control the point of flashover to minimize and localize the arcing which might otherwise damage the meter or render it inoperative.

## FRAME

The precision die cast aluminum alloy frame maintains the "V" shape which mounts one stator on each side. The retarding-magnet mounting surfaces are an integral part of the frame, assuring permanent and precise location of the magnet. These features minimize the need for recalibration of the meter if a rotor is ever replaced. The frame is grounded on all meters.

## STATOR

The extended-range current and potential coils are molded directly to the core iron in long-life butyl rubber. The heat-dissipating and high dielectric qualities

of the butyl give assurance of reliable and accurate operation. The molding permanently aligns the current and potential coils, eliminating any relative movement which would affect calibration. All joints in the current circuit are brazed to give strong mechanical joints with low maintained resistance. The light-load and lag adjustments are accessible from the front of the meter and are provided on each stator. The positive lag adjustment has negligible effect on light-load adjustment.

## MAGNETIC SUSPENSION

Time-proven magnetic suspension has been incorporated in the V-60 meter family. Bearing wear is eliminated, keeping maintenance costs to a minimum. Accurate registration, even when the meter is installed out of plumb, minimizes revenue loss due to tilt error. Vibration encountered at extended-range operation in ball-bearing meters is dampened out by the magnetic suspension. Magnetic suspension helps the V-60 polyphase meter line provide greater sustained accuracy.



## V-60 Family of Watthour Meters

## ROTOR

The rotor disk is made of four identical laminations, each having five radial slots. The laminations are anodized to insulate them from each other and are bonded together to unite them in a single light-weight physical unit. This construction localizes disk currents under the stator that produces them, thereby minimizing interference between stators. Smooth, continuous torque is provided by overlapping slotted sections of the laminations. Each lamination has four anticreep holes, but because of overlapping there is only one hole through the disk for photoelectric testing purposes.

The rotor shaft is precision machined for accurate diameter and concentricity. A double-pitch worm is cut in the shaft so that at rated speed, the new meters will have the same register ratio as the present "V"-type meters of the same ratings. A standard I-55 meter lower guide pin is used in the rotor assembly.

## RETARDING MAGNET

Completely new design "U"-shaped Alnico V retarding magnets are die cast in aluminum alloy to assure permanence of position and stability of calibration. Class I temperature errors are compensated by applying a temperature-sensitive shunt to the magnets prior to die casting.

## REGISTER

The watthour-meter register is driven directly from a worm cut on the shaft of the rotor. No intermediate gearing or adapters are required for demand registers. The stainless steel pivots in the worm wheel shafts reduce friction to a negligible value.

## NAMEPLATE

The new nameplates have large, clear type providing increased legibility. The nameplate is notched to take a customer identification tag.

## COVER

The glass cover permits ready inspection. The "S" type meters are fitted with a stainless steel cover ring. On the socket-connected meters, the new gasket combined with the spring clips welded on the cover ring insures tight, moistureproof fit. The bayonet clips on the cover ring of the bottom-connected meter have been redesigned for easier assembly with the same positive seal.

## ADJUSTMENTS

All calibrating adjustments are of the micrometer type. They are readily accessible from the front of the meter. The new positive lag adjustment has a minimum effect on light-load adjustment. The full-load adjustment has a total range of 10% at rated load.

## PERFORMANCE

The long life of the V-60 meter family and the reduced maintenance costs are the products of its mechanical construction, its stability and its initial and sustained accuracy. All these factors are evident in the characteristics curves. Straight-line accuracy up to 666 $\frac{2}{3}$ % rated load is typical of the superiority of this modern extended range polyphase meter. The same superiority is obvious in the voltage and temperature curves.

## DEMAND-REGISTER APPLICATIONS

Meters of the V-60 family can be furnished, or equipped in the field, with Type M-30 or M-31 demand registers. No special register adapter is required.

The motor shield on the Type M-30 and M-31 demand registers has been modified slightly to provide clearance for the magnetic suspension. The old type M-30 and M-31 registers can be used on the V-60 line by simply replacing the motor shield. The demand register will then be interchangeable on all meters.

## TOTALIZING APPLICATIONS

The new line of meters can be equipped with Type D-20V, D-30V, or D-31V contact devices for totalizing applications.

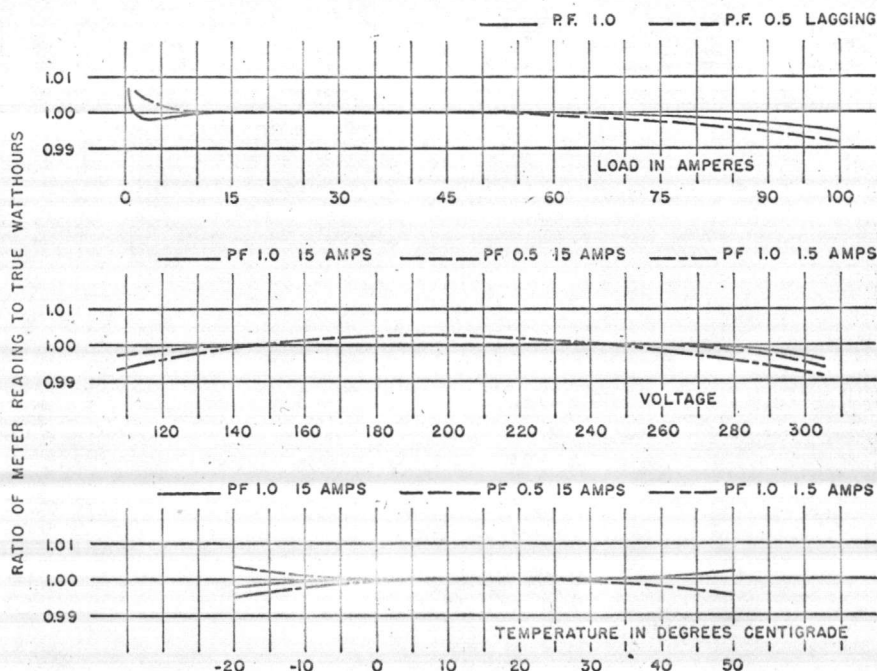
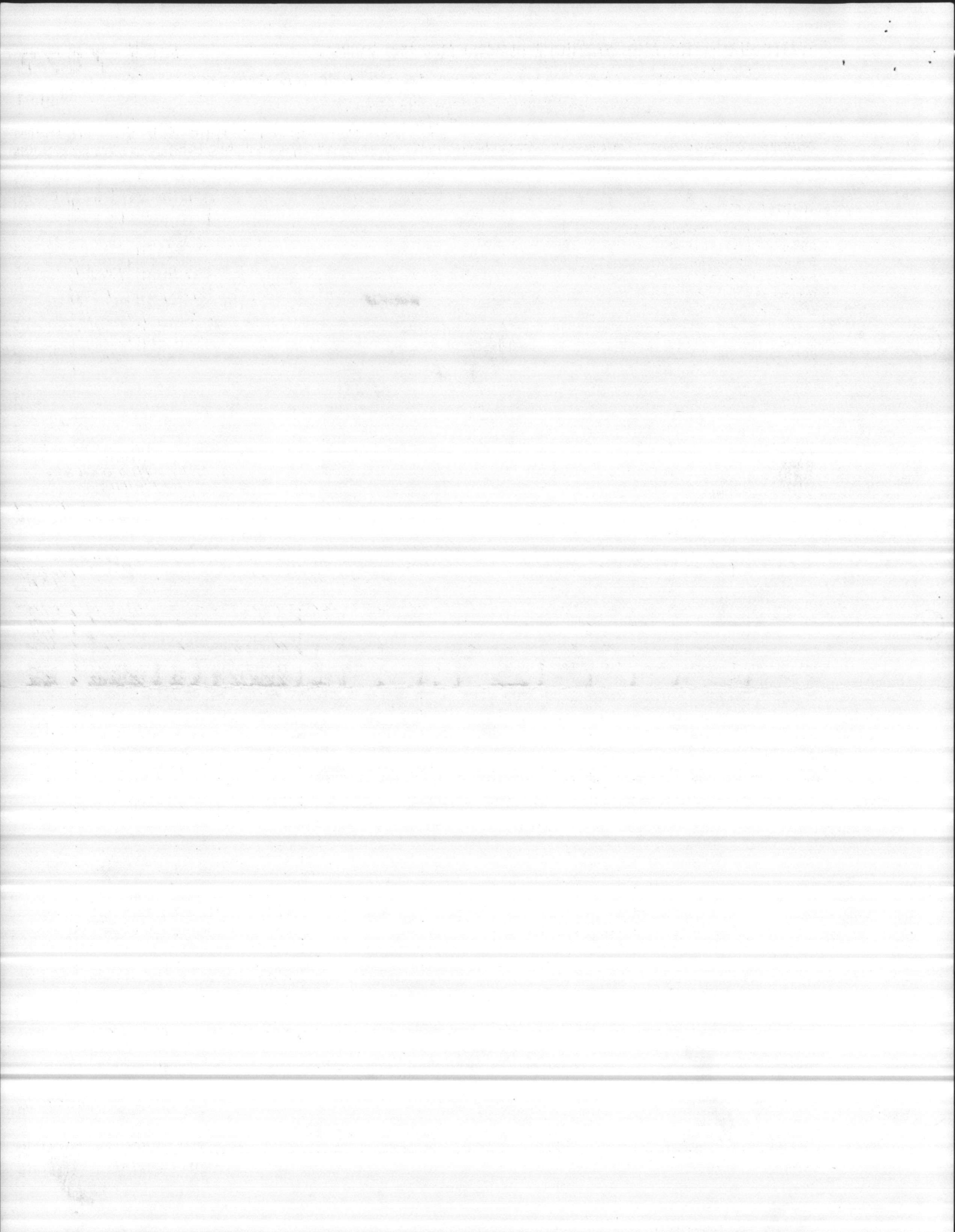


Fig. 2. Typical accuracy curves of a 240-volt, 15-amp, polyphase meter of the V-60 family



100-ampere Polyphase Ringless Sockets

With and Without Underwriters' Label

Type SV-60

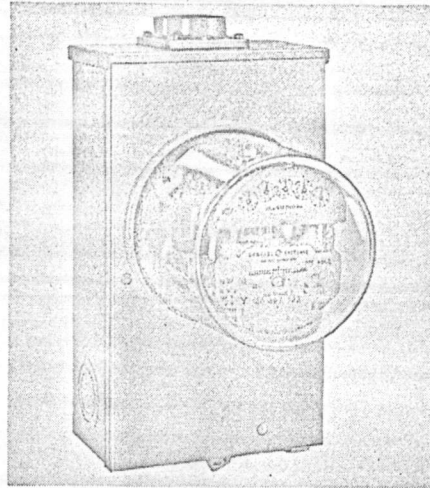
With Interchangeable-type Hub

Apr. 11, 1966

APPLICATION

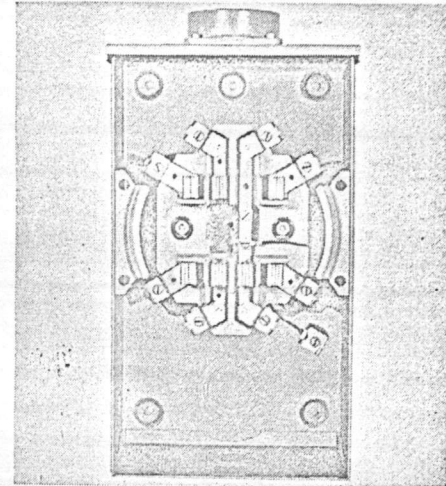
These outdoor Type SV-60 sockets are for use with self-contained and transformer-rated polyphase watt-hour meters having 7, 8, or 13 blades. The socket connectors are suitable for use with either copper or aluminum wire.

Note: For sockets suited for use with 5-blade polyphase meters, see Section 7871, page 7.



(Photo 1194158)

Fig. 1. Type SV-60 socket with Type V-64-S meter installed



(Photo 1194157)

Fig. 2. Type SV-60 socket with cover removed

PRICES AND SELECTION

Meter-S(186)

Type of Service		Meter Selection			Socket Selection							
Circuit	Application	MSJ-10 Form No.	Class	G-E Type	Screw-type By-pass or Automatic Circuit Closer	Jaws		Hub Size in Inches	Steel Case		Aluminum Case	
						No.	Arrangements (See Page 2)		Cat. No.	List Price, GO-81	Cat. No.	List Price, GO-81
<b>NON UL-LISTED</b>												
3-phase, 3-wire delta	Self-contained	13S	100	V-63	None	8	D	1 1/4	741X18G35	\$20.90	741X18G41	\$22.30
	Trans-rated	5S	10	V-63	Circuit closer	8	E	1 1/4	741X18G37	21.10	741X18G43	22.50
3-phase, 4-wire wye	Self-contained	16S	100	V-64	None	7	A	1 1/4	741X18G11	20.50	741X18G17	21.90
					By-pass	7	C	1 1/4	741X18G13	20.70	741X18G19	22.10
	Trans-rated	9S	10	V-64	Circuit closer	13	G	1 1/4	741X18G23	27.90	741X18G29	29.30
					None	7	A	1 1/4	741X18G25	28.10	741X18G31	29.50
	Self-contained	14S	100	V-65	None	7	A	1 1/4	741X18G94	44.50	741X18G100	45.90
					By-pass	7	C	1 1/4	741X18G11	20.50	741X18G17	21.90
					Circuit closer	13	G	1 1/4	741X18G13	20.70	741X18G19	22.10
					None	7	A	1 1/4	741X18G23	27.90	741X18G29	29.30
Trans-rated	7S	10	V-65	Circuit closer	7	B	1 1/4	741X18G25	28.10	741X18G31	45.90	
				Circuit closer	13	G	1 1/4	741X18G70	24.50	741X18G76	25.90	
3-phase, 4-wire delta	Self-contained	15S	100	V-66	None	7	A	1 1/4	741X18G94	44.50	741X18G100	45.90
					By-pass	7	C	1 1/4	741X18G11	20.50	741X18G17	21.90
3-phase, 4-wire delta	Trans-rated	8S	10	V-66	Circuit closer	13	G	1 1/4	741X18G13	20.70	741X18G19	22.10
					Circuit closer	13	G	1 1/4	741X18G23	27.90	741X18G29	29.30
3-phase, 4-wire delta	Self-contained	15S	100	V-66	None	7	A	1 1/4	741X18G25	28.10	741X18G31	29.50
					By-pass	7	C	1 1/4	741X18G23	27.90	741X18G29	29.30
3-phase, 4-wire delta	Trans-rated	8S	10	V-66	Circuit closer	13	G	1 1/4	741X18G25	28.10	741X18G31	29.50
					Circuit closer	13	G	1 1/4	741X18G94	44.50	741X18G100	45.90
<b>UL-LISTED</b>												
3-phase, 3-wire delta	Self-contained	13S	100	V-63	None	8	D	1 1/4	741X21G3	\$22.80	.....	.....
					By-pass	8	F	1 1/4	741X21G4	23.00	.....	.....
3-phase, 4-wire wye	Self-contained	16S	100	V-64	None	7	A	1 1/4	741X21G7	27.70	.....	.....
					By-pass	7	C	1 1/4	741X21G8	27.90	.....	.....
	Trans-rated	9S	10	V-64	Circuit closer	13	G	1 1/4	741X21G1	22.40	.....	.....
					None	7	A	1 1/4	741X21G2	22.60	.....	.....
	Self-contained	14S	100	V-65	None	7	A	1 1/4	741X21G5	29.80	.....	.....
					By-pass	7	C	1 1/4	741X21G6	30.00	.....	.....
					Circuit closer	13	G	1 1/4	741X21G13	46.40	.....	.....
					None	7	A	1 1/4	741X21G1	22.40	.....	.....
Trans-rated	6S	10	V-65	By-pass	7	C	1 1/4	741X21G2	22.60	.....	.....	
				Circuit closer	13	G	1 1/4	741X21G5	29.80	.....	.....	
3-phase, 4-wire delta	Self-contained	15S	100	V-66	None	7	A	1 1/4	741X21G6	30.00	.....	.....
					By-pass	7	C	1 1/4	741X21G13	46.40	.....	.....
3-phase, 4-wire delta	Trans-rated	8S	10	V-66	Circuit closer	13	G	1 1/4	741X21G1	22.40	.....	.....
					Circuit closer	13	G	1 1/4	741X21G2	22.60	.....	.....
3-phase, 4-wire delta	Self-contained	15S	100	V-66	None	7	A	1 1/4	741X21G5	29.80	.....	.....
					By-pass	7	C	1 1/4	741X21G6	30.00	.....	.....
3-phase, 4-wire delta	Trans-rated	8S	10	V-66	Circuit closer	13	G	1 1/4	741X21G13	46.40	.....	.....
					Circuit closer	13	G	1 1/4	741X21G13	46.40	.....	.....

ACCESSORIES

See Section 7879, page 1.

SHIPPING INFORMATION

Sockets per Carton	Weight in Lb	
	Steel	Aluminum
1	12.5	9

REFERENCES:

Descriptive Bulletin ..... GEA-7531  
Sales Offices ..... Section 95, Back Cover

Complete revision including price changes since July 6, 1964 issue. Formerly page 3.

Prices subject to change without notice

SA 700, 701, 702, 711-714, 721-723, 731, 733, 736, 737  
CW67, CW67W, SW67, SW67W

GENERAL ELECTRIC

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
**88313** **88313/67**  
CONTRACTOR EQUIPMENT  
APPROVED FOR THE SPECIFICATION  
INDICATED ABOVE CONTRACTOR  
REQUIREMENTS OF PROVIDING  
SHALL BE RESPONSIBLE FOR  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN *MH*  
COMLANTNAVFACENGCOM

DATE **NOV 8 1968**

100-ampere Polyphase Ringless Sockets

With and Without Underwriters' Label

With Interchangeable-type Hub

Type SV-60

SPECIFICATIONS

- Rating: Self-contained, rated 100 amperes, 600 volts.
- Screw-type by-pass: Rated 100 amperes, 600 volts.
- Automatic circuit closer: Rated 20 amperes, 600 volts.
- Performance: Exceeds requirements of AEIC—EEI—NEMA "Standards for watthour meter socket."
- \*Hubs: Interchangeable type.

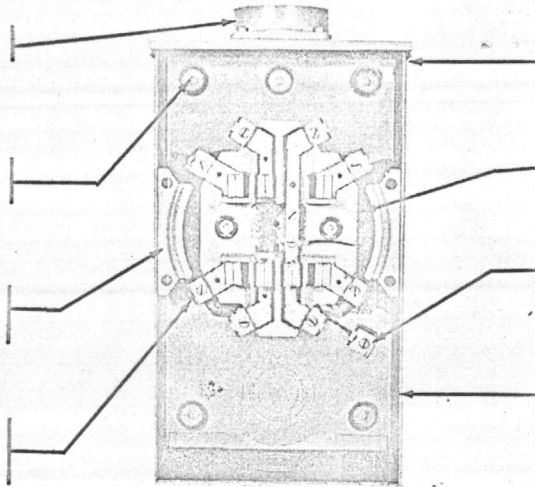
- Construction: Outdoor weatherproof "ringless design."
- Case size: 14 $\frac{1}{8}$  inches high by 8 $\frac{1}{8}$  inches wide by 4 $\frac{3}{4}$  inches deep.
- \*Maximum wire size: 2/0 in 7- and 8-jaw sockets and 1/0 in 13-jaw sockets. For copper or aluminum wire.
- Connections: Lay-in type in 7- and 8-jaw sockets. Setscrew type in 13-jaw model.

\*Interchangeable-type hub.

Five mounting holes with easily removed knockouts.

Plated steel meter seat positions meter in socket and provides ground connection for meter surge relief gaps.

Easy to wire lay-in connectors for use with either copper or aluminum wire. Maximum wire size is 2/0.



\*Case material—16-gage zinc coated steel or aluminum, painted gray. Paint is Electro-coated and oven-baked.

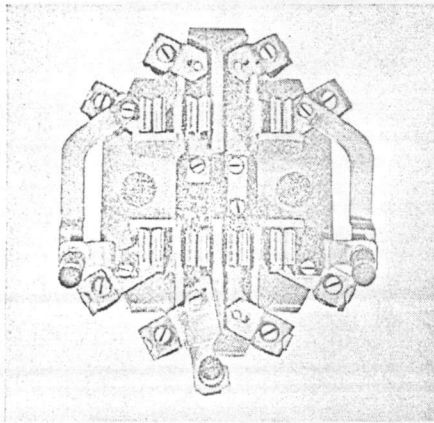
Heavy-duty, gray, porcelain terminal block

Alternate neutral connector for copper or aluminum wire. Maximum wire size: two pieces of 2/0.

Knockouts, concentric type:  
 Back—(1, 1 $\frac{1}{4}$ , 1 $\frac{1}{2}$ , 2 in.)  
 Sides—(1, 1 $\frac{1}{4}$ , 1 $\frac{1}{2}$ , 2 in.)  
 Bottom—(1, 1 $\frac{1}{4}$ , 1 $\frac{1}{2}$ , 2 in.)  
 (3/4 in.) (1/2-3/4 in.)  
 (3/4-1 in.)

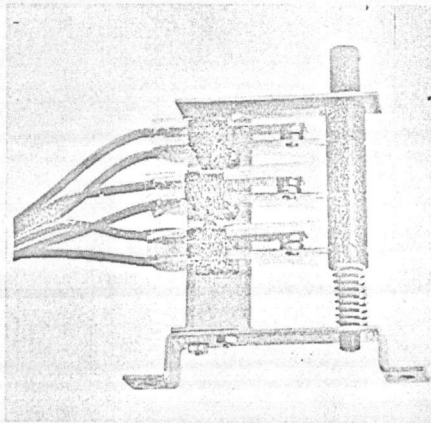
(Photo 1194157)

\*Fig. 3. Type SV-60 socket, Cat. No. 741X18G11, with cover removed



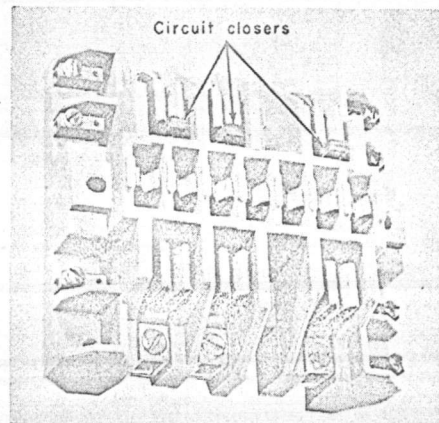
(Photo 1186318)

Fig. 4. Terminal block assembly showing screw-type by-pass. Requires only a few turns of a screwdriver to open or close. Rated 100 amperes.



(Photo 1186319)

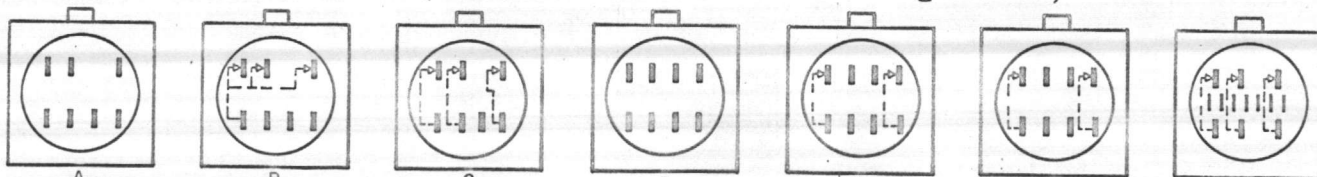
Fig. 5. Automatic circuit closer operated by removing or replacing the socket cover. Used in 7- and 8-jaw transformer-rated sockets. Unique design provides visual assurance of correct operation. Rated 20 amperes.



(Photo 1186355)

Fig. 6. 13-jaw terminal block assembly with automatic circuit closer. Operated by removing or installing the meter. Rated 20 amperes.

SOCKET JAW ARRANGEMENT (Dotted lines indicate circuit-closing devices.)



A 7-JAW; for self-contained applications.

B 7-JAW; with automatic circuit closer; for transformer-rated application.

C 7-JAW; with screw-type by-pass; for self-contained application.

D 8-JAW; for self-contained application.

E 8-JAW; with automatic circuit closer; for transformer-rated application.

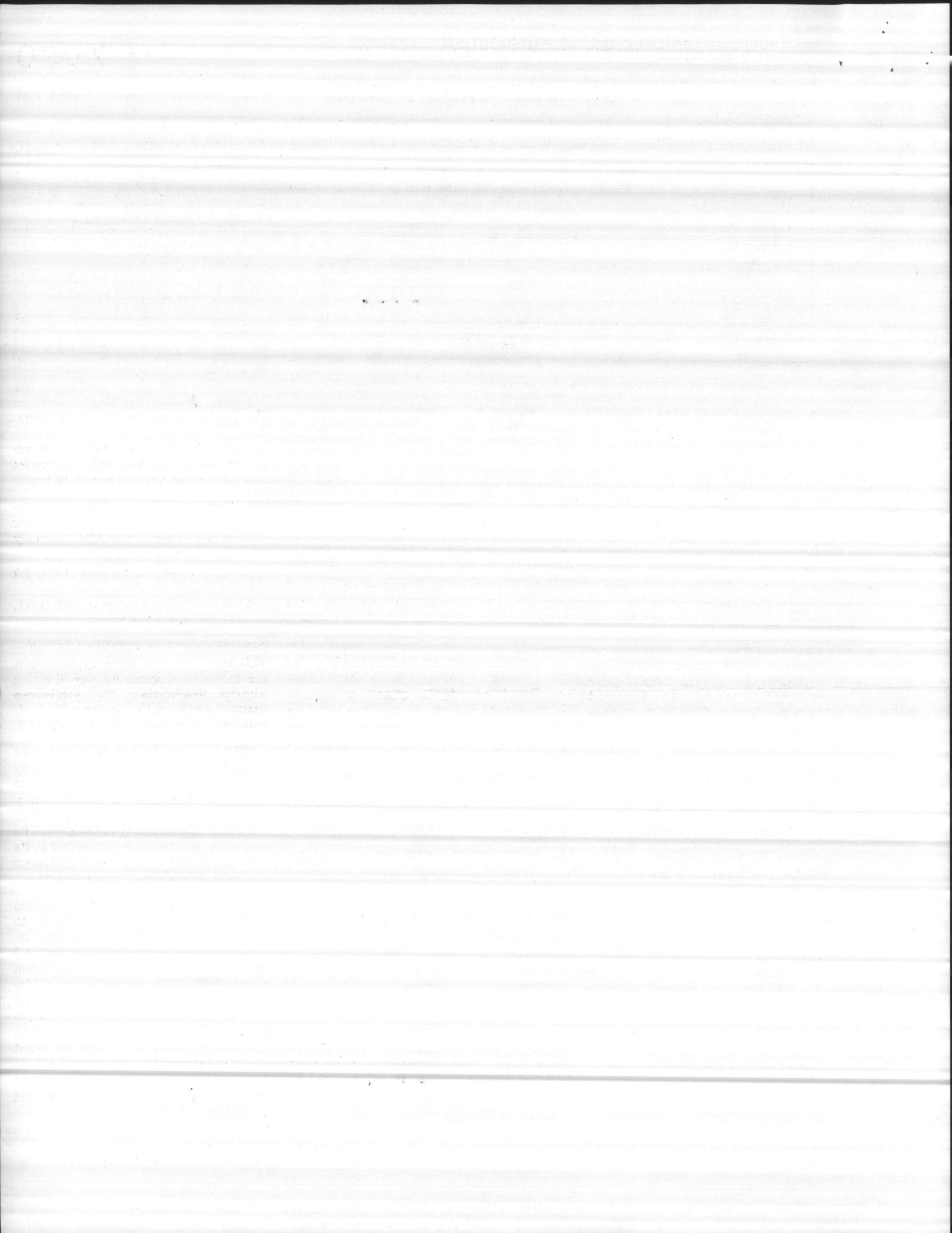
F 8-JAW; with screw-type by-pass; for self-contained application.

G 13-JAW; with automatic circuit closer; for transformer-rated application.

\*Changed since July 6, 1964 issue. Formerly page 4.

Data subject to change without notice





Type JKP-0, 600 Volts

25-400 Cycles • 200 to 800 Amperes • Impulse Level, Full-wave—10 Kv

Oct. 26, 1964

Nameplate Color Code	
200-ampere—	RED
400-ampere—	YELLOW
600-ampere—	BLUE
800-ampere—	GRAY
200, 400 amperes—	RED and YELLOW
300, 600 amperes—	ORANGE and BLUE
400, 800 amperes—	YELLOW and GRAY

**APPLICATION**—The Type JKP-0 current transformer is designed for both indoor and outdoor service. It is suitable for operating meters and instruments and can be used on single-phase, two-wire circuits and on polyphase circuits. The window-type transformer can also be used on three-wire, single-phase circuits.

**CONSTRUCTION**—The Type JKP-0 is constructed using Hy-bute  $\epsilon$  60 insulation for the transformer body. The Hy-Bute  $\epsilon$  60 insulation also serves both as support and casing. The basic transformer is window-type construction and has no primary winding. The line conductor which is passed through the window serves as a transformer primary. A removable primary bar is supplied for the bar-type transformers. A high base is provided, when required, to make the height of the bar primary conform to industry standards.

**D'ENTREMONT\*** Compensation is used on the 200 : 5-, 200, 400 : 5- and 300, 600 : 5-ampere ratings to obtain exceptionally high accuracy. For further information, see page 111.

**INDUSTRY STANDARDS** — Industry Standards for 600-volt metering current transformers are contained in Specification MS-2, 1940, of the Edison Electric Institute Meter and Service Committee. These specifications cover dimensions, accuracy, thermal rating, temperature rise, terminals, etc. The bar-type JKP-0 transformer with the high base conforms to these specifications.

The window-type JKP-0 conforms to NEMA Standards for Metering Current Transformers for Low-voltage Circuits, Type IV.

**CURRENT RATINGS**—Four single-ratio current ratings are available in both window and bar construction. These are

200 : 5, 400 : 5, 600 : 5, and 800 : 5 amperes. Three dual-ratio ratings in both window and bar construction are also available. These are 200, 400 : 5, 300, 600 : 5, and 400, 800 : 5 amperes.

In the window-type transformers these ratings are obtained by passing the line conductor once through the transformer window. Additional ratings can be obtained by looping the primary conductor two or more times through the transformer window.

When used as a three-wire transformer the two outside line conductors are both passed through the window, one conductor being in a reversed direction. The current ratios for two- and three-wire service are:

Catalog Number	Current Ratio, Amperes—Primary : Secondary			
	When used as a two-wire transformer		When used as a three-wire transformer	
	With One Turn of Primary Conductor	With Two Turns of Primary Conductor	With One Turn of Each Primary Conductor	With Two Turns of Each Primary Conductor
836X8	200 : 5	100 : 5	100-100 : 5	50-50 : 5
†	300 : 5	150 : 5	150-150 : 5	75-75 : 5
836X9	400 : 5	200 : 5	200-200 : 5	100-100 : 5
836X10	600 : 5	300 : 5	300-300 : 5	150-150 : 5
836X11	800 : 5	400 : 5	400-400 : 5	200-200 : 5

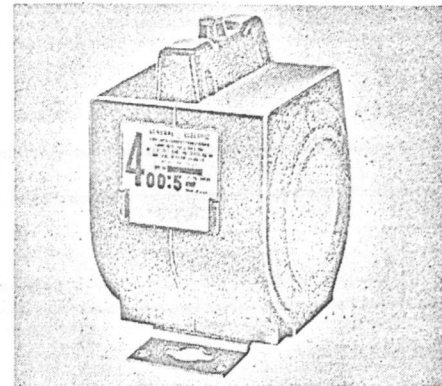
†300-ampere rating available only in dual-ratio 300, 600-ampere design.

**VOLTAGE RATING**—The Type JKP-0 current transformer is rated at 600 volts. It is suitable for use on circuits not exceeding 600 volts line-to-line. The window-type transformer can be used over bare conductors on circuits 600 volts and below and may be used on higher voltage circuits with an insulated conductor as follows:

Type of Conductor	Maximum Voltage (line-to-line)	
	Indoor	Outdoor
Bare	600	600
Insulated but not shielded	2500	....
Insulated and shielded with shield grounded in one place only	No voltage limit	

**FREQUENCY**—This transformer is rated for 25-400-cycle service.

**INSULATION CLASS**—The Type JKP-0 current transformer is designed to meet the test requirements of the 0.6-kv standard insulation class.



(Photo 1183066)

Fig. 1. Type JKP-0 window-type with base

The ASA Standards specify these requirements to be a 4-kv test at 60 cycles and a full-wave impulse test at 10 kv.

**ACCURACY**—This transformer is designed for high accuracy with the lower secondary burdens. The ASA accuracy classification at 60 cycles is:

200-ampere—0.3 B-0.1, 0.3 B-0.2, 1.2 B-0.5  
300-, 400-, 600-, 800-ampere—0.3 B-0.1, 0.3 B-0.2, 0.3 B-0.5

**THERMAL CURRENT-RATING FACTOR**—This transformer is designed so that it can be operated above its normal rating without overheating. The continuous thermal current-rating factor with 30 C ambient is 2.0; with 55 C ambient is 1.5.

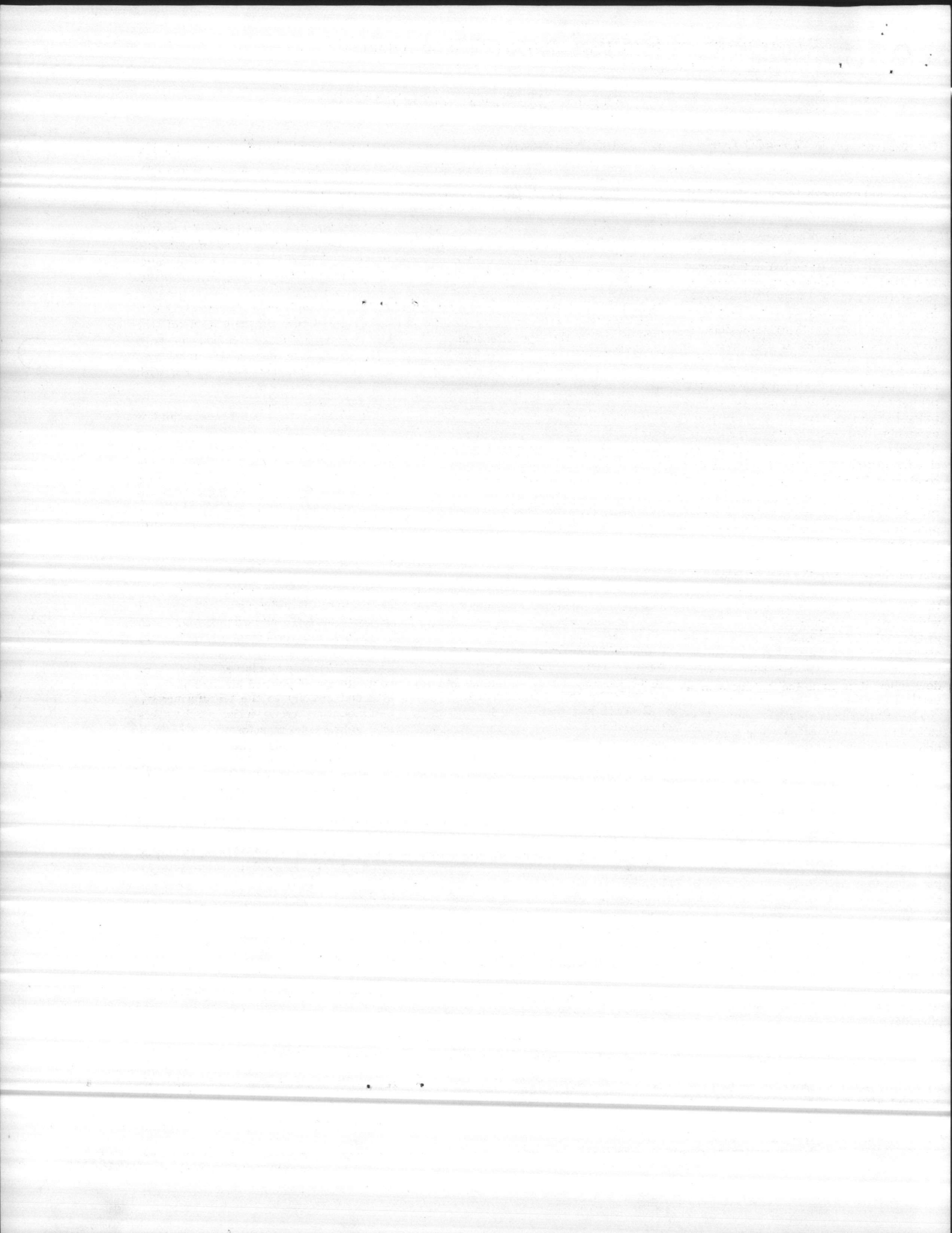
**CORE**—The core is wound in a continuous strip. The steel used is characterized by having highly directional properties; that is, low core losses and high permeability in the direction of rolling. Full advantage is taken of this property of the steel. The core is annealed after being wound in its final shape, thus relieving any stresses that are set up in the winding operation.

**INSULATION**—The Type JKP-0 is molded of Hy-Bute  $\epsilon$  60 insulation. (Refer to Section 7940, page 103, for further information on Hy-Bute  $\epsilon$  60 insulation.) This provides a homogeneous insulation that is tough, resilient, and resists oxidation, creep-tracking and moisture. It will not crack from coil expansion nor from changes over a wide range of ambient temperature. It has strength to resist damage from mechanical forces or from accidental rough handling. It gives an attractive appearance with a pleasing

\* Trade-mark of General Electric Company, patent pending on compensation method.

General revision since Mar. 2, 1959 issue.

SG 700, 701, 702, 711-713, 721-723, 731, 733-737  
CW35, SW35, CW67, SW67, CW67W, SW67W



## Type JKP-0, 600 Volts

Oct. 26, 1964

25-400 Cycles • 200 to 800 Amperes • Impulse Level, Full-wave—10 Kv

contour and a smooth, black-surface finish which requires no painting.

**WINDOW**—This is of ample size to accommodate one or more cables of current-carrying capacity equal to the transformer rating. The single-ratio, 200-ampere transformers have a window  $2\frac{3}{8}$  inches in diameter. The 400-, 600-, and 800-ampere, and all dual-ratio transformers have a  $2\frac{3}{4}$ -inch diameter window.

**PRIMARY BAR**—The Type JKP-0 current transformers are available with the primary bar mounted in place, or the primary bar can be supplied separately for assembly into the window-type units. The bar is flat copper with a hole and slot in each end for attaching to the line conductor. The bar is supported and held in place by two end plates. It can be rotated to bring the plane of the terminal pads in any desired position. One plate is permanently attached to the primary bar. The other plate has a slot so it can be slipped over the bar. It is held in position by two screws which go through the bar and engage two L shaped brackets which are attached to the plate. Holes in the end plate provide ventilation and also will drain off any water that might accumulate inside the transformer window when it is mounted outdoors in a vertical position.

The primary bars are silver-plated. The end plates are protected with a heavy, non-conducting coating.

**POTENTIAL CONNECTION**—A pressure-type connector for the primary potential connection is brazed to one end of the primary bar.

**SECONDARY WINDING**—The secondary winding is made of heavy Formex<sup>®</sup> copper wire. It is evenly distributed around the core which reduces the leakage flux and gives the best possible accuracy.

**SECONDARY TERMINALS**—The secondary terminals are mounted in a convenient location on top of the transformer. The terminals are fixed brass studs with  $\frac{1}{4}$ -inch-28 threads. A molded phenolic piece between the two terminals serves as a mounting block for the short-circuit device and as a base for the terminal cover. It also supports the sealing stud. The terminal cover is a molded phenolic. It is weather-resistant and will not warp or distort from exposure. The

cover is so designed that it cannot be put in place or sealed with load leads connected unless the short-circuit switch is open. The short-circuiting device is manually operated to give a positive action. The entire secondary-terminal structure is so designed that it can easily be removed and reassembled in a reverse position when it is desired to connect the load leads to the opposite side of the transformer.

Dual-ratio models are provided with two complete sets of secondary terminals (four  $\frac{1}{4}$ -inch-28 threaded studs) and two secondary terminal covers. The construction is similar to the single-ratio design except that one terminal cover has no lead openings and is intended to be placed over the unused pair of terminals. This cover can be placed over the unused terminals only if the short-circuiting device for these terminals is open to insure proper operation of the transformer. To provide complete isolation of the unused terminals and to eliminate errors in installation, this cover may be sealed, leaving only the desired terminals accessible for connection.

**SECONDARY-TERMINAL CONDUIT BOXES**—Two different secondary-terminal conduit boxes are available for use with the JKP-0 transformer.

Conduit box Cat. No. 8949398G1 is arranged to be easily assembled on any single-ratio JKP-0 transformer in place of the standard secondary terminal block. The conduit box, including cover, is made of aluminum with a black anodized finish. It is complete with bushings, gaskets, clamp terminals, polarity marker, short-circuit strip and cover with four captive thumb screws and one pipe plug. It is for use with JKP-0 transformers without threaded inserts in the transformer top for box mounting.

Conduit box Cat. No. 9689693G2 is for use only on single- or dual-ratio models of the JKP-0 transformer equipped with four threaded inserts in the transformer top for mounting this box. (See pages 13 and 16.)

**POLARITY**—The primary and secondary polarity markings are molded into the transformer. They are thus permanent, integral parts of the transformer and cannot be obliterated.

Ratio numerals are molded into the top of dual-ratio transformers.

**NAMEPLATE**—The nameplate is etched stainless steel. It is located on the side of the transformer and contains all essential information in easily read letters and numerals. Provision is made on the nameplate for attaching customer's number tag.

The nameplates have large numeral ratio digits and, in addition, are color-coded for easier identification of the transformer rating. (See box on page 151.) Dual-ratio nameplates have two sets of large numeral ratio digits, with appropriate color coding for each ratio.

**BASE**—Low bases are made of stainless steel and are available in two sizes. The standard base, Cat. No. 5466220P1, is  $2\frac{1}{2}$  inches by  $5\frac{5}{8}$  inches. The special wide base, Cat. No. 5466220P2, is  $2\frac{1}{2}$  inches by 8 inches. In this base, two double key holes are provided for mounting bolts or screws. Also, four  $\frac{1}{8}$ -inch diameter holes, one in each corner, provide an optional means of mounting.

Either base is attached to the transformer by two screws which are on a  $1\frac{1}{2}$ -inch square so the base can be turned 90 degrees from the standard position. These bases have a natural stainless steel finish.

A high mounting base Cat. No. 5466182P2 is also available. It is made of cold-rolled steel painted black. This base, attached directly to the transformer by two mounting screws, increases the overall height of the transformer by  $\frac{3}{4}$ -inch to provide interchangeability with transformers which meet the dimensions of the EEI Meter and Service Committee Specifications MS-2, 1940, for 600 volts.

**GANG MOUNTING**—The JKP-0 transformer is available mounted on the TMB-3 and TMB-3W brackets manufactured by the B & C Metal Stamping Company of Atlanta, Georgia. Either two or three transformers can be supplied mounted on a bracket.

**INSTALLATION**—The Type JKP-0 can be mounted in any position. When used indoors, it can be mounted on any flat surface. It is especially suitable for use in small boxes. Transformers can be mounted close together because the secondary terminals are on the top.

When used outdoors, this transformer can be readily installed on a pole without the use of cross arms or enclosing boxes. This simplifies wiring for both primary and secondary connections.

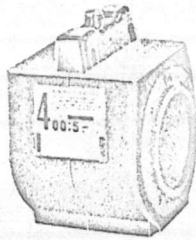


Type JKP-O, 600 Volts

25-400 Cycles • 200 to 800 Amperes • Impulse Level, Full-wave—10 Kv

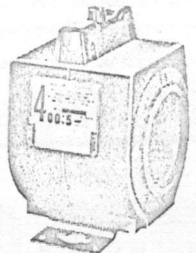
Oct. 26, 1964

AVAILABLE TRANSFORMER COMBINATIONS



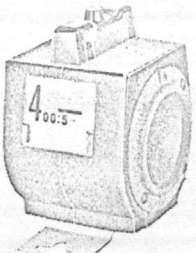
(Photo 1183065)

Fig. 2



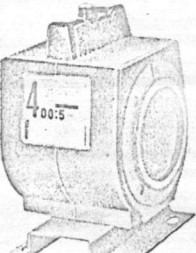
(Photo 1183066)

Fig. 3



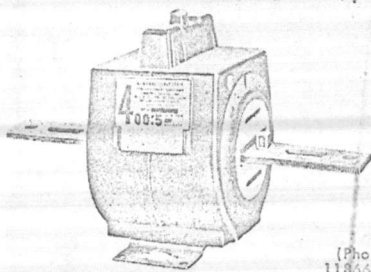
(Photo 1183067)

Fig. 4



(Photo 1183068)

Fig. 5



(Photo 1183069)

Fig. 6

Amperes	Cat. No. of Assembly	Includes	Approx Wt in Lb		Accuracy Curves, Fig. No.	Dimensions, Fig. No.
			Shipping	Net		
<b>WINDOW-TYPE</b>						
200 : 5	836X8	Transformer only	12	11	17	24
400 : 5	836X9	Transformer only	10	9	18	24
600 : 5	836X10	Transformer only	10	9	19	24
800 : 5	836X11	Transformer only	10	9	20	24

<b>WINDOW-TYPE WITH BASE</b>						
200 : 5	836X12	Transformer Cat. No. 836X8 Base Cat. No. 5466220P1	13	12	17	25
400 : 5	836X13	Transformer Cat. No. 836X9 Base Cat. No. 5466220P1	11	10	18	25
600 : 5	836X14	Transformer Cat. No. 836X10 Base Cat. No. 5466220P1	11	10	19	25
800 : 5	836X15	Transformer Cat. No. 836X11 Base Cat. No. 5466220P1	11	10	20	25

<b>WINDOW-TYPE WITH EXTRA-WIDTH BASE</b>						
200 : 5	837X1	Transformer Cat. No. 836X8 Base Cat. No. 5466220P2	14	13	17	25
400 : 5	837X2	Transformer Cat. No. 836X9 Base Cat. No. 5466220P2	12	11	18	25
600 : 5	837X3	Transformer Cat. No. 836X10 Base Cat. No. 5466220P2	12	11	19	25
800 : 5	837X4	Transformer Cat. No. 836X11 Base Cat. No. 5466220P2	12	11	20	25

<b>WINDOW-TYPE WITH HIGH BASE</b>						
200 : 5	836X16	Transformer Cat. No. 836X8 Base Cat. No. 5466182P2	14	13	17	.....
400 : 5	836X17	Transformer Cat. No. 836X9 Base Cat. No. 5466182P2	13	12	18	.....
600 : 5	836X18	Transformer Cat. No. 836X10 Base Cat. No. 5466182P2	13	12	19	.....
800 : 5	836X19	Transformer Cat. No. 836X11 Base Cat. No. 5466182P2	13	12	20	.....

<b>BAR-PRIMARY TYPE WITH BASE</b>						
200 : 5	836X20	Transformer Cat. No. 836X8 Primary bar Cat. No. 9926119G1 Base Cat. No. 5466220P1	16	15	17	26
400 : 5	836X21	Transformer Cat. No. 836X9 Primary bar Cat. No. 9926119G1 Base Cat. No. 5466220P1	15	14	18	26
600 : 5	836X22	Transformer Cat. No. 836X10 Primary bar Cat. No. 9926119G2 Base Cat. No. 5466220P1	15	14	19	26
800 : 5	836X23	Transformer Cat. No. 836X11 Primary bar Cat. No. 9926119G2 Base Cat. No. 5466220P1	15	14	20	26

General revision since Mar. 2, 1959 issue. Formerly page 154 and part of page 155.

SG 700, 701, 702, 711-713, 721-723, 731, 733-737  
CW35, SW35, CW67, SW67, CW67W, SW67W

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACTOR'S DRAWINGS AND SPECIFICATIONS  
APPROVAL OF MATERIALS AND EQUIPMENT  
INDICATED THEREON BY THE CONTRACTOR  
REQUIREMENTS OF THE CONTRACTOR  
SHALL BE RESPECTED BY THE CONTRACTOR  
PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN  
COMLANNAVFACENGCOM

DATE NOV 8 1968

88313

88313/67

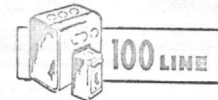
# Manual Motor-starting Switches

CR101

115 to 230 Volts }  
1 hp Max

Single- or Double-pole

60 to 25 Cycles



Aug. 19, 1963

## WHERE TO USE

The CR101 manually-operated motor-starting switch is used to start, stop, and protect single-phase fractional-horsepower motors. This switch incorporates positive overload protection and offers a large selection of overload heaters. Manually-operated motor-starting switches are available in a variety of open or enclosed forms to meet almost any application. This switch is ideal where space is at a premium and long trouble-free life is essential. The manual starter is the most economical choice if your application does not require undervoltage protection. Typical applications are on grinders, conveyors, hydraulic presses, blowers and mixers.

For direct-current switches see Section 2102.

For tumbler switches without overload protection see Section 7610.

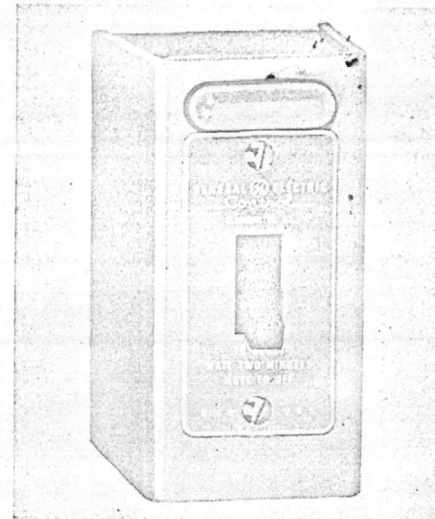
## FEATURES

### Convenient to install and easy to wire

Open-type switch fits standard tumbler-switch flush plate. Can be mounted in gem or handy box.

Only two screws required to mount starter. Is interchangeable with other standard manual-starter designs.

Knockouts available in top, bottom, and back.



(Photo 1175997)

Fig. 1. Manual motor-starting switch CR101 H11 with indicating light in cover

Wrap-around cover. Ample wiring space.

Straight-through wiring.

Clearly identified captive terminal screws readily accessible. Cannot be lost.

New pressure-type terminal design cuts wiring time. No looping wires around terminals.

### Long operating life and low maintenance

Rust-resisting metal parts

Simple, quick-break operating mechanism lengthens contact life and provides a positive force to break contact welds should they ever occur.

Double-break, fine-silver contacts.

Molded switch case of high-quality plastic insulating material mounts and encloses mechanism and contacts.

Sturdy operating handle.

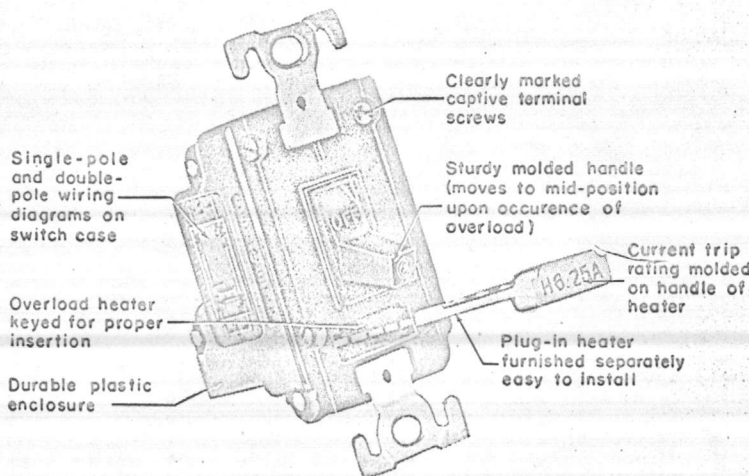
### Positive overload protection

Thermostatic bimetal overload device. Switch handle moves to mid-position on overload.

Mechanism is trip-free so contacts cannot be reclosed until bimetallic strip cools.

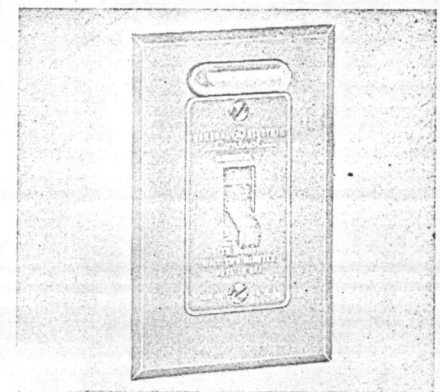
Interchangeable overload heaters plug in from the front and are molded with current trip rating visible from the front.

Wide range of heaters makes it possible to select a heater that follows the motor load closely to give positive protection.



(Photo 1165500)

Fig. 2. CR101 H showing construction features and method of installing overload heaters



(Photo 1165499)

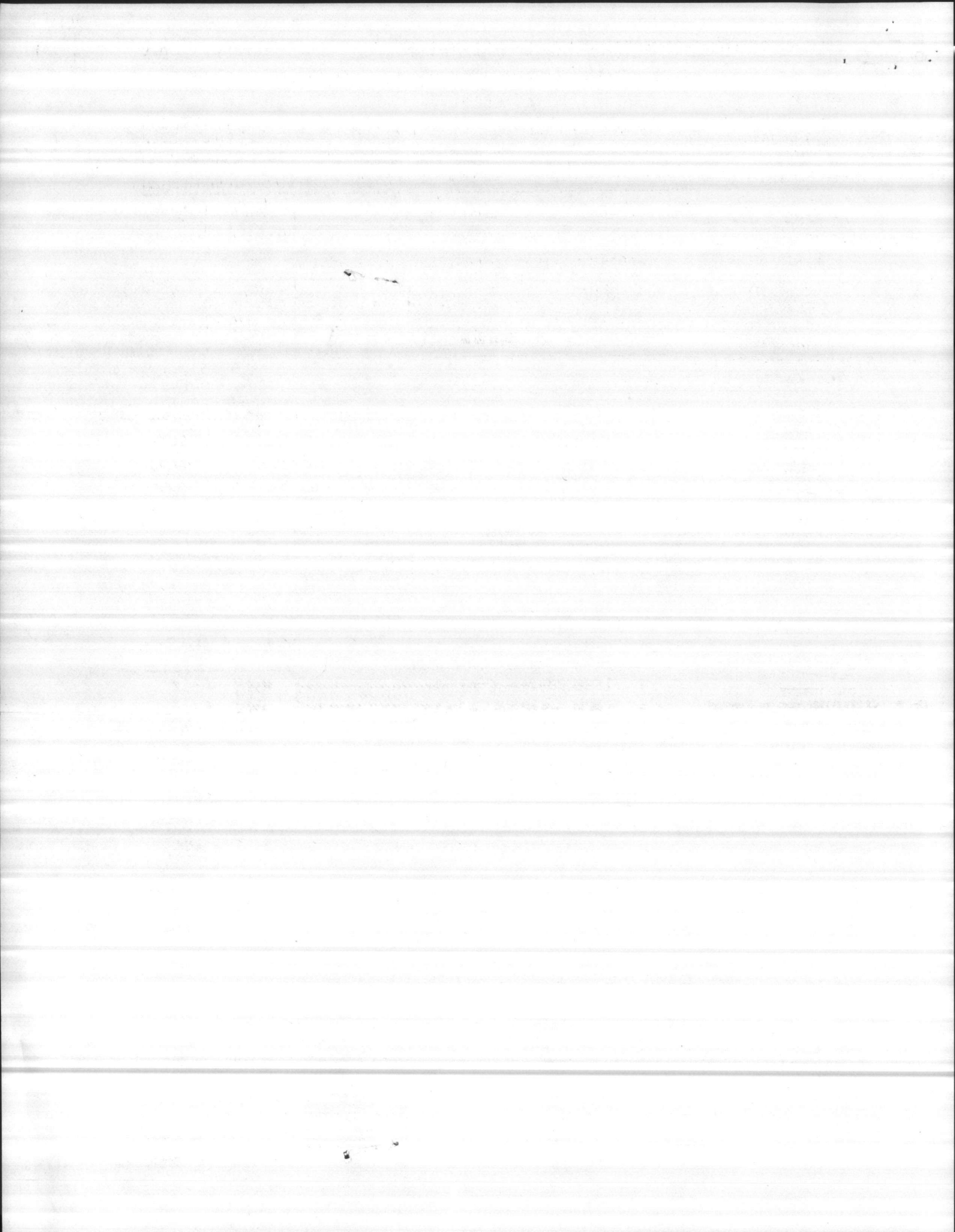
Fig. 3. CR101 H manual starter with flush plate and indicating-light accessory CR101 X1 attached

### REFERENCES: (Use latest issue.)

- Descriptive Publication . . . . . GEA-6358
- General Catalog . . . . . GEC-1260
- \* Heater Selection Guide . . . . . GET-2681
- \* Sales Offices . . . . . Section 95, Back Cover

\*New since Apr. 17, 1961.





Manual Motor-starting Switches

CR101

Aug. 19, 1963

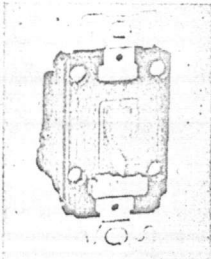
115 to 230 Volts  
1 hp Max

Single- or Double-pole

60 to 25 Cycles

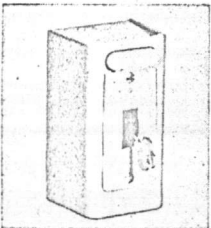


PRICING INFORMATION (A-c Power Supply Only—See Section 2102 for D-c) General Purpose Control-B(173)



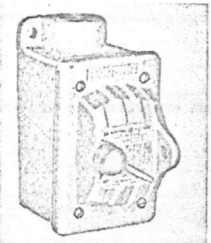
(Photo 1183457)

Fig. 4. CR101 H open manual starter



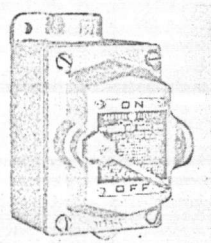
(Photo 1172830)

Fig. 5. CR101 H110K key-operated general-purpose manual starter



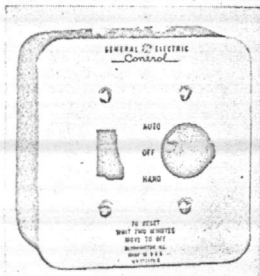
(Photo 1170207)

Fig. 6. CR101 H400H dust- and water-tight manual starter



(Photo 1175997)

Fig. 7. CR101 H700H explosion-proof manual starter



(Photo 1172829)

Fig. 8. CR101 H12 combination general-purpose manual starter. See page 2.1 for listing of components

No. of Poles	Nomenclature	List Price GO-10G *	Figure No.
--------------	--------------	---------------------	------------

GENERAL-PURPOSE OPEN TYPE—For Flush or Outlet-box Mounting

1	†CR101 Y.....	\$6.50*	4
1	†CR101 Y000K (Key Operated).....	8.50*	
2	†CR101 H.....	7.50*	4
2	†CR101 H000K (Key Operated)..... (Open starters include an unmounted nameplate)	9.50*	

GENERAL-PURPOSE, NEMA Type 1—For Surface Wall Mounting

1	†CR101 Y1.....	\$7.50*	1 less lamp
1	†CR101 Y11 (With 115/230 Volt Neon Lamp).....	13.00*	1
1	†CR101 Y100K (Key Operated).....	9.50*	5 less lamp
1	†CR101 Y110K (Key Operated with 115/230 Volt Neon Lamp).....	15.00*	5
2	†CR101 H1.....	8.50*	1 less lamp
2	†CR101 H11 (With 115/230 Volt Neon Lamp).....	14.00*	1
2	†CR101 H100K (Key Operated).....	10.50*	5 less lamp
2	†CR101 H110K (Key Operated with 115/230 Volt Neon Lamp).....	16.00*	5

DUST AND WATERTIGHT, NEMA Type 4—For Surface Mounting

1	CR101 Y400H (3/4 in. hub—one end).....	\$24.00*	6
1	CR101 Y400J (3/4 in. hub—both ends).....	26.00*	
2	CR101 H400H (3/4 in. hub—one end).....	25.00*	6
2	CR101 H400J (3/4 in. hub—both ends).....	27.00*	

EXPLOSION-PROOF CLASS I, GROUPS C AND D/CLASS II, GROUPS E, F AND G, NEMA Types 7 and 9—For Surface Mounting

1	CR101 Y700H (3/4 in. hub—one end).....	\$24.00*	7
1	CR101 Y700J (3/4 in. hub—both ends).....	26.00*	
2	CR101 H700H (3/4 in. hub—one end).....	25.00*	7
2	CR101 H700J (3/4 in. hub—both ends).....	27.00*	

COMBINATION DEVICE, NEMA Type 1—For Surface Mounting

Note: Do not use Selector Switch to interrupt motor power.			
2	CR101 H12 (CR101 H + HOA Sol. Sw.).....	\$18.00*	8
2	CR101 H13 (Two CR101 H).....	20.00*	

\* List prices include one overload-device heater which must be ordered separately (CR101 H13 includes two heaters). Heater may be omitted or additional heaters may be ordered, at \$1.00 each, GO-30-G.

† Underwriters' Laboratories listed with or without CR101 X1, X2, X7 or X8 for use where acceptability of the combination has been determined by Underwriter's Laboratories, Inc.

‡ Listed by Underwriters' Laboratories, Inc.

HOW TO ORDER

1. Order starter by complete CR nomenclature and specify overload heater by complete CR nomenclature.

switch is to break both lines. Motor to be started with this switch has a full-load current of 0.6 ampere.

EXAMPLE

A general-purpose enclosed switch for surface wall mounting is desired. The

Order as follows:

- 1—CR101 H1 manual motor starter
- 1—Cat. No. CR123 H0.74A heater

\*Complete price revision since Apr. 17, 1961 issue.

Prices subject to change without notice

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT **88313**

**88313/67**

APPROVAL INDICATION  
REQUIREMENTS  
SHALL BE FURNISHED TO THE CONTRACTOR  
PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN  
COMLANAVFACENGCOM

DATE NOV 8 1968

*MHC*

Magnetic Motor Starters

CR106, NEMA Sizes 00-5

200-hp Max, 600-volt Max

60 Cycles Max

Apr. 12, 1965

PRICING INFORMATION—CR106 Forms

General Purpose Control-B (173)

NEMA Size	List Price, GO-106 (Includes overload heater(s) and holding interlock) (Heaters may be omitted at \$1.50 each)													
	Max Horsepower (For logging ratings, see 1861, P 81.) (For 380 V, use 440 V rating, but over 50 Hp reduce Hp rating to 85% of 440 V value.)		OPEN STARTER	GENERAL PURPOSE			WATERTIGHT		FOR HAZARDOUS LOCATIONS				INDUSTRIAL USE—DUST-TIGHT	
	110 V	208/220 V	440-600 V	NEMA Type 1			NEMA Type 4		Class I, Groups C and D, NEMA Type 7		Class II, Groups E, F, and G, NEMA Type 9		NEMA Type 12	
	Without Push Button	Without Push Button	START-STOP Push Button in Cover	HAND-OFF-AUTO Selector Switch in Cover	Without Push Button	START-STOP Push Button in Cover	Without Push Button	START-STOP Push Button in Cover	Without Push Button	START-STOP Push Button in Cover	Without Push Button	START-STOP Push Button in Cover	Without Push Button	START-STOP Push Button in Cover

SINGLE-PHASE, 2-POLE (NEMA Size 1½ has two poles connected in parallel in each line) (Price includes 1 overload heater)

				CR106 FORMS											
				NEMA Size 00, Use 3-pole forms listed below and deduct for one heater											
00	½	1	..	\$32 J0**	\$34 J1**	\$42 J1**ABA	\$42 J1**ACA	\$69 J4**	\$91 J4**ABA	Use NEMA Size 1		\$69 J9**	\$91 J9**ABA	\$46 J2**	\$68 J2**ABA
0	1	2	..	37 K0**	39 K1**	47 K1**ABA	47 K1**ACA	75 K4**	97 K4**ABA	\$141 K7**	\$163 K7**ABA	75 K9**	97 K9**ABA	51 K2**	73 K2**ABA
1	2	3	..	48 K0**BMA	50 K1**BKA	58 K1**BLA	58 K1**BMA	86 K4**BKA	108 K4**BLA	152 K7**BKA	174 K7**BLA	86 K9....	108 K9....	62 K2....	84 K2....
1½	3	5	..	66 L0**	76 L1**	84 L1**ABA	84 L1**ACA	148 L4**	170 L4**ABA	226 L7**	246 L7**ABA	182 L9**	204 L9**ABA	98 L2**	120 L2**ABA
2	3	7½	..	NEMA Size 3, Use 3-pole forms listed below											
3	7½	15	..												

2- AND 3-PHASE, 3-POLE (Price includes 2 overload heaters)

				CR106 FORMS											
00	¾	1½	2	\$30 A0**	\$32 A1**	\$40 A1**ABA	\$40 A1**ACA	Use NEMA Size 0		Use NEMA Size 1		Use NEMA Size 0		Use NEMA Size 0	
* → 0	2	3	5	37 B0**	39 B1**	47 B1**ABA	47 B1**ACA	\$74 B4**	\$96 B4**ABA	Use NEMA Size 1		\$74 B9**	\$96 B9**ABA	\$51 B2**	\$73 B2**ABA
1	3	7½	10	42 C0**	44 C1**	52 C1**ABA	52 C1**ACA	80 C4**	102 C4**ABA	\$146 C7**	\$168 C7**ABA	80 C9**	102 C9**ABA	56 C2**	78 C2**ABA
* → 2	7½	15	25	74 D0**	84 D1**	92 D1**ABA	92 D1**ACA	156 D4**	178 D4**ABA	234 D7**	256 D7**ABA	190 D9**	212 D9**ABA	106 D2**	128 D2**ABA
* → 3	15	30	50	118 E0**	138 E1**	146 E1**ABA	146 E1**ACA	240 E4**	262 E4**ABA	350 E7**MAAA	372 E7**MABA	284 E9**	306 E9**ABA	164 E2**	186 E2**ABA
4	25	50	100	266 F0**	308 F1**	316 F1**ABA	316 F1**ACA	482 F4**	504 F4**ABA	563 F7**MAAA	585 F7**MABA	556 F9**	578 F9**ABA	394 F2**	416 F2**ABA
5 †	50	100	200	607 G0**	684 G1**	692 G1**ABA	692 G1**ACA	904 G4**	926 G4**ABA	.....	.....	.....	.....	904 G2**	926 G2**ABA

2-PHASE, 4-POLE (Price includes 2 overload heaters)

				CR106 FORMS											
0	2	3	5	\$47 R0**	\$50 R1**	\$58 R1**ABA	\$58 R1**ACA	\$89 R4**	\$111 R4**ABA	Use NEMA Size 1		\$89 R9**	\$111 R9**ABA	\$62 R2**	\$84 R2**ABA
1	3	7½	10	53 S0**	56 S1**	64 S1**ABA	64 S1**ACA	94 S4**	116 S4**ABA	\$158 S7**	\$180 S7**ABA	94 S9**	116 S9**ABA	68 S2**	90 S2**ABA
2	7½	15	25	93 T0**	103 T1**	111 T1**ABA	111 T1**ACA	207 T4**	229 T4**ABA	309 T7**	331 T7**ABA	241 T9**	263 T9**ABA	125 T2**	147 T2**ABA
3	15	30	50	150 U0**	168 U1**	176 U1**ABA	176 U1**ACA	298 U4**	320 U4**ABA	446 U7**MAAA	468 U7**MABA	342 U9**	364 U9**ABA	194 U2**	216 U2**ABA
4	25	50	100	364 W0**	404 W1**	412 W1**ABA	412 W1**ACA	650 W4**	672 W4**ABA	.....	.....	750 W9**	772 W9**ABA	520 W2**	542 W2**ABA
5 †	50	100	200	1045 Z0**	1200 Z1**	1208 Z1**ABA	1208 Z1**ACA	1442 Z4**	1464 Z4**ABA	.....	.....	.....	.....	1343 Z2**	1365 Z2**ABA

\*\*See 1861, page 71 for Ordering Directions, Coil Suffix Number and Heaters.

For coil holding and inrush currents, refer to page 81.

† Size 5 nomenclature shown applies to 60 or 50 cycle forms only.  
‡ Motor full load current should not exceed ampere rating of enclosed contactor listed by NEMA size on page 83.

†† External reset not included on standard listed forms. Enclosure also suitable for weather resistant applications. Refer nearest G-E Sales Office for applications involving sleet or freezing rain.

REFERENCES: (Use latest issue.)

Descriptive Publication.....GEA-7020  
General Catalog.....GEC-1260  
Others.....See 1861, page 401

General changes since Aug. 19, 1963 issue.

Prices subject to change without notice

GB 700, 701, 702, 711-713, 721-723, 731-737  
CW35, SW35 792

GENERAL ELECTRIC

\* TO HAVE 3RD OIL RELAY  
208V COILS

Magnetic  
Sizes 00-5

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT **88313**

**88313/67**

APPROVAL OF MATERIALS  
INDICATION OF EQUIPMENT  
REQUIREMENTS OF CONTRACTOR  
SHALL BE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN  
COMLANAVFACENGCOM

DATE NOV 8 1968

# Autotransformer-type Magnetic Motor Starters

## CR131 Closed-circuit Transition

3-phase, 3-wire, 200 Hp Max †2-phase 600 Volts, 60-25 Cycles

Aug. 19, 1963

### WHERE TO USE

These automatic, closed-circuit transition starters are for use with squirrel-cage motors where reduced-voltage starting currents or limited starting torques are required. Autotransformer starting provides greater torque per line ampere of current than other forms of reduced-voltage starters.

Common uses are for blowers, compressors, conveyors and pump motors.

### FEATURES

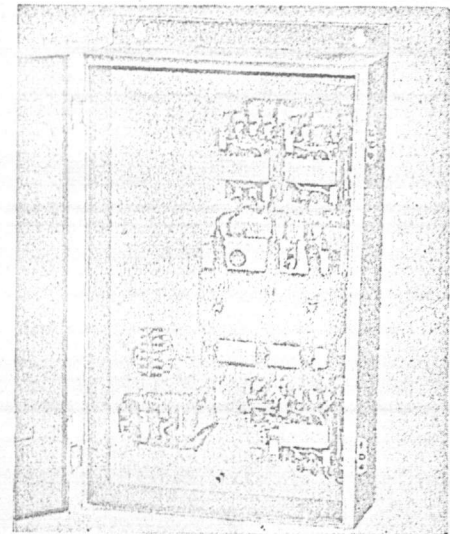
- Closed Transition—No interruption in line current during transition.
- Flexibility—Complete line of modification kits for easy field installation. Removable jumpers for separate control.
- Three-leg Autotransformer—For bal-

anced starting currents and minimum line disturbance. Protected from overheating by AUTOTRANSFORMER OVER-TEMPERATURE PROTECTION with external reset. Starting current and torque adjustment easily made with autotransformer taps.

● Maximum Motor Protection—Thermal-type overcurrent relays with external reset buttons.

● Accurate Adjustment—Pneumatic timing relay permits easy adjustment of starting time on reduced voltage.

● Variety of Enclosures—Available open or in NEMA Type 1, 4, 9, or 12 enclosures. Wall-mounted general-purpose enclosures have hinged lift-off doors and knockouts at top and bottom. Ample wiring space.



(Photo 1174520)

Fig. 1. CR131 general-purpose starter for wall mounting

### PRICING INFORMATION

(List price includes starter in NEMA Type 1 enclosure and necessary overload-relay heaters. Prices do not include push-button station.)

General Purpose Control-B (173)

Rating of Starter		NEMA Size	Nomenclature		List Price, GO-100
Hp	Voltage		60-cycle	50-cycle	
5-15	208/220	2	CR131 D103	CR131 D108	\$570
	380	2	CR131 D104	CR131 D104	570
	440	2	CR131 D104	CR131 D109	570
	550	2	CR131 D106	CR131 D111	570
20-25	208/220	3	CR131 E118	CR131 E119	670
	380	2	CR131 D105	CR131 D105	570
	440	2	CR131 D105	CR131 D110	570
	550	2	CR131 D107	CR131 D112	570
30	208/220	3	CR131 E103	CR131 E108	698
	380	3	CR131 E104	CR131 E104	698
	440	3	CR131 E104	CR131 E109	698
	550	3	CR131 E106	CR131 E111	698
* → 40-50	208/220	4	CR131 F103	CR131 F106	1296
	380	3	CR131 E105	CR131 E105	722
	440	3	CR131 E105	CR131 E110	722
	550	3	CR131 E107	CR131 E112	722
60-75	208/220	5	CR131 G103	CR131 G109	2022
	380	4	CR131 F104	CR131 F104	1320
	440	4	CR131 F104	CR131 F107	1320
	550	4	CR131 F105	CR131 F108	1320
100	208/220	5	CR131 G104	CR131 G110	2178
	380	4	CR131 F104	CR131 F104	1320
	440	4	CR131 F104	CR131 F107	1320
	550	4	CR131 F105	CR131 F108	1320
125-150	208/220	5	See Section 1935		2094
	380	5	CR131 G105	CR131 G105	2094
	440	5	CR131 G105	CR131 G111	2094
	550	5	CR131 G105	CR131 G112	2094
200	208/220	5	See Section 1935		2372
	380	5	CR131 G107	CR131 G107	2372
	440	5	CR131 G107	CR131 G113	2372
	550	5	CR131 G109	CR131 G114	2372

† 2-phase or 25-cycle forms available at additional cost. Refer to nearest General Electric Sales Office for information.

General changes since Jan. 14, 1963 issue.

GC 700, 701, 702, 711-713, 721-723, 731-737  
CW20, SW20, CW35, SW35, CW50, SW50 792

### KITS FOR FIELD INSTALLATION

For customer installation. Three knockouts are provided in cover of General Purpose, NEMA Type 1 enclosures.

General Purpose Control-B (173)

Operation	Nomenclature	List Price, GO-100	
START-STOP Push-button kit (For all sizes)	CR9909 D106A	\$33.00	
HOA Selector-switch kit (For all sizes)	CR9909 D107A	33.00	
3RD Overload-relay kit (Price includes heater)	CR131 X1	22.00	
	For NEMA Size 2	CR9909 E105A	27.00
	For NEMA Size 3 and 4	CR124 G024	64.00
Indicating-light (Red) kit	CR131 X20*	30.00	
	For NEMA Size 2	CR131 X60*	30.00
	For NEMA Size 3 and 4	CR131 X100*	30.00

\* 60/50-cycle forms. Use Suffix 2 for 110 v; Suffix 3 for 220 v; Suffix 4 for 440 v.

### ORDERING DIRECTIONS

See page 3.

### REFERENCES:

Descriptive Publication.....GEA-6860

### Instructions

CR131D.....GEH-2439  
CR131 E, F.....GEH-2478  
CR131G.....GEH-2489

Renewal Parts.....GEF-4217  
General Catalog.....GEC-1260  
Sales Offices.....Section 95, Back cover

Prices subject to change without notice

GENERAL ELECTRIC

\* TO HAVE 300 O/L ROLLY & S.S. PB.  
208V COILS

Magnetic  
Autotrans-

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF  
CONTRACT NO. **88313 88313/67**  
APPROVAL OF MATERIALS, EQUIPMENT  
INDICATED BY THE CONTRACTOR  
REQUIREMENTS FOR THE CONTRACTOR  
SHALL BE MET BY THE CONTRACTOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.  
H. N. WALLIN  
RADM, CEC, USN *HNC*  
DATE **NOV 8 1968** COMLANAVFACENGCOM

# Standard-duty Stations

CR2941, CR2943

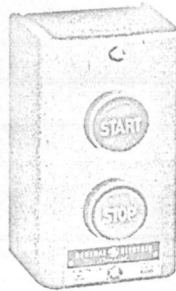
10 Amperes Continuous

600 Volts Max

Dec. 21, 1964

## WHERE TO USE

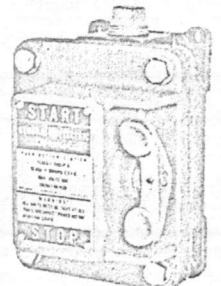
Standard-duty push buttons are for use in control circuits of magnetic devices through NEMA Size 4. Both surface- and flush-mounted forms are available. Surface-mounted forms may be in general-purpose, dust- and watertight or explosion-proof enclosures. Flush forms may have a gray or stainless steel flush plate and an optional wall box.



(Photo 1187928)



(Photo 1187929)



(Photo 1187930)

Fig. 1. CR2943 General-purpose surface-mounted station Fig. 2. CR2943 Dust- and water-tight station, NEMA Type 4 Fig. 3. CR2941 Explosion-proof station, NEMA Type 7

## PRICING INFORMATION—Surface-mounted Forms

General Purpose Control-B(173)

Description Button and/or Nameplate Color (Wiring Symbol)	Nameplate Markings	General-purpose		Dust- and Watertight		Explosion-proof, Class I, Groups C and D, Class II, Groups E, F and G	
		NEMA Type 1	List Price, GO-10G	NEMA Type 4	List Price, GO-10G	NEMA Types 7 and 9	List Price, GO-10G
<b>ONE-UNIT STATIONS (Momentary Contact—except Selector Switches)</b>							
Black (A)	START (As Specified)	CR2943 NA101E	\$6.00	CR2943 NJ101B	\$19.00	CR2941 NA101B	\$23.00
Black (A)	STOP (As Specified)	CR2943 AA101B	6.00*	CR2943 AJ101B	19.00*	CR2941 AA101T	23.00*
Red (B)	STOP (As Specified)	CR2943 NA101F	6.00	.....	.....	.....	.....
Red (B)	STOP (As Specified)	CR2943 AA101A	6.00*	.....	.....	.....	.....
Red (B) (Locking Means)	STOP (As Specified)	CR2943 NA101G	9.00	CR2943 NJ101A§	19.00	CR2941 NA101A§	23.00
Red (B) (Locking Means)	STOP (As Specified)	CR2943 AA101E	9.00*	CR2943 AJ101A§	19.00*	.....	.....
2 Pos. Sel. Sw. (C) SPDT	(As Specified)	CR2943 AA101S†	6.00†	.....	.....	.....	.....
3 Pos. Sel. Sw. (C) SPDT	(As Specified)	CR2943 AA101M‡	6.00‡	.....	.....	.....	.....
<b>TWO-UNIT STATIONS (Momentary Contact)</b>							
Black, Red (D)	START-STOP	CR2943 NA102A	\$6.00	.....	.....	.....	.....
Black, Red (D) (Locking Bar)	START-STOP (As Specified)	CR2943 NA102C	9.00	.....	.....	.....	.....
Black (A), Red (B)	START-STOP (As Specified)	CR2943 AA102H	6.00*	.....	.....	.....	.....
Black (A), Red (B) (Locking Means)	START-STOP (As Specified)	.....	.....	CR2943 NJ102A§	\$19.00	CR2941 NA102B§	\$23.00
Black (A), Red (B) (Locking Means)	START-STOP (As Specified)	CR2943 AA102AF	9.00*	CR2943 AJ102A§	19.00*	.....	.....
Black (A), Black (A)	RAISE-LOWER	CR2943 NA102B	7.50	CR2943 NJ102F	19.00	CR2941 NA102G	23.00
Black (A), Black (A)	FORWARD-REVERSE	CR2943 NA102D	7.50	CR2943 NJ102E	19.00	CR2941 NA102F	23.00
Black (A), Black (A)	UP-DOWN	CR2943 NA102E	7.50	CR2943 NJ102G	19.00	CR2941 NA102H	23.00
Black (A), Black (A)	OPEN-CLOSE	CR2943 NA102G	7.50	CR2943 NJ102H	19.00	CR2941 NA102J	23.00
Black (A), Black (A)	(As Specified)	CR2943 AA102A	7.50*	CR2943 AJ102B	19.00*	CR2941 AA102B§	23.00*
<b>THREE-UNIT STATIONS (Momentary Contact)</b>							
Black (E), Black (E), Red (B)	UP-DOWN-STOP	CR2943 NA103F	\$12.00	.....	.....	.....	.....
Black (E), Black (E), Red (B)	RAISE-LOWER-STOP	CR2943 NA103G	12.00	.....	.....	.....	.....
Black (E), Black (E), Red (B)	FAST-SLOW-STOP	CR2943 NA103H	12.00	.....	.....	.....	.....
Black (E), Black (E), Red (B)	FORWARD-REVERSE-STOP	CR2943 NA103J	12.00	.....	.....	.....	.....
Black (E), Black (E), Red (B)	OPEN-CLOSE-STOP	CR2943 NA103K	12.00	.....	.....	.....	.....
Black (E), Black (E), Red (B)	START-JOG-STOP	CR2943 NA103L	12.00	.....	.....	.....	.....
Black (E), Black (E), Red (B)	(As Specified)	CR2943 AA103AA	12.00*	.....	.....	.....	.....
Black (E), Black (E), Red (B) (Locking Bar)	(As Specified)	CR2943 AA103C	15.00*	.....	.....	.....	.....
115/230 Volt Light (F), Black (A), Red (B)	START-STOP	CR2943 NA103V	22.00	.....	.....	.....	.....

\* Add \$1.50 GO-10G per station for any nameplate markings or arrangements not shown above.

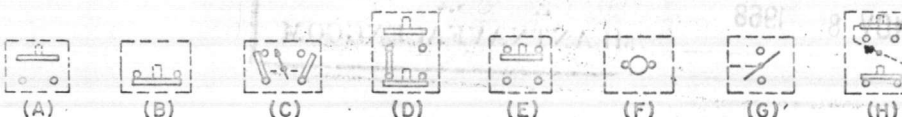
† Five N.P.'s included: OFF-ON, FORWARD-REVERSE, HAND-AUTO, SLOW-FAST and OPEN-CLOSE.

‡ Three N.P.'s included: HAND-OFF-AUTO, FORWARD-OFF-REVERSE and OPEN-OFF-CLOSE.

§ Includes hole for padlock on STOP.

## WIRING SYMBOLS

(As noted under Description in table)



## ORDERING DIRECTIONS

Order push-button station by complete CR nomenclature.

Example: CR2943 NJ102A.

For other than listed forms, order from heavy-duty stations listed in Section 2210.

## Publications:

- Descriptive.....GEA-7348
- General Catalog.....GEC-1260
- Renewal Parts.....GEF-4064
- Instructions.....GEH-1092

Complete revision since May 25, 1959 issue.

Prices subject to change without notice

GS 700, 701, 702, 711-713, 721-723, 731-737  
CW35, SW35 792

GENERAL ELECTRIC



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT NO. **88313 88313** / 67

APPROVAL OF MATERIALS & EQUIPMENT  
INDICATED BY THIS APPROVATION  
REQUIREMENTS OF CONTRACTOR  
SHALL BE FULFILLED BY PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN *HNC*  
DATE **NOV 8 1968** COMLANTNAVFACENGCOM

Enclosed Float Switches

CR2931

A-C or D-C

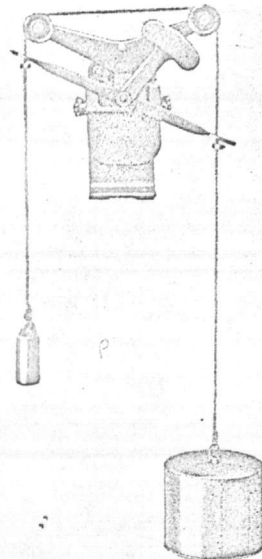
WHERE TO USE

CR2931 float switches are suitable for use in the control circuit of a-c or d-c automatic starters and, except for the form P, can directly handle the circuits of small motors.

PRICING INFORMATION

GPC-B(173)

Nomenclature	No. of Poles	List Price GO-10G §	Approx. Ship. Wt In Lb	Dimensions Page 2 Fig.	Remarks
CR2931 A2	D-p	\$105.00†	85	5	Rod-operated. For clamping to the inside top edge of a tank and is operated by a rod and float. Range, 10 in. to 5 ft.
CR2931 A4	4-p	115.00†	95	5	
CR2931 C2	D-p	115.00†	95	6	Rod-operated. For bolting to a tank cover. Range, 10 in. to 3½ ft.
CR2931 C4	4-p	125.00†	100	6	
CR2931 D2	D-p	115.00*	110	7	Chain-operated. For bolting to tank cover. Suitable for any depth of tank or any variation in water level not less than 10 inches. Deduct 3 ft. 6 in. from length of chain to obtain maximum operating range.
CR2931 D4	4-p	125.00*	120	7	
CR2931 L	D-p	85.00*	40	8	Chain-operated. Suitable for any variation in water level not less than 5 inches. Deduct 3 ft. 6 in. from length of chain to obtain maximum operating range.
CR2931 M	D-p	85.00†	70	9	Rod-operated. Range 2½ in. to 4 ft. 6 in.
CR2931 P	S-p	45.00†	10	10	Chain-operated. Suitable for any variation in water level not less than 2 in. Deduct 1 ft. 6 in. from length of chain to obtain maximum operating range.
CR2931 AW1	S-p	50.00†	10	10	Same as Form P, except with mercury-tube, heavy-duty "Konnectors."



(Photo 406807)  
Fig. 1. CR2931 Form D float switch

\* Book prices for Forms D and L switches include 15 ft of bronze chain. If more than this amount is required add \$0.45 GO-10G for each additional foot.

† Book prices for Forms P and AW1 switches include 15 ft of brass chain. If more than this amount is required add \$0.15 GO-10G for each additional foot. Where CR2931P is desired less float, chain, weight and collar order CR2931CT price \$30.90 each GO-10G. The CR2931AW switch less float,

chain, weight, and collar is form CR2931CV price \$37.50 ea. GO-10G.

‡ Two standard lengths (each 3 ft) of ½-in. brass rod (tubing) with necessary couplings are furnished with rod-operated switches. Additional 3-ft lengths with necessary couplings can be furnished at \$1.20 GO-10G per length.

§ When additional lengths of rod or chain are used, it may be necessary for purchaser to compensate for additional lengths by means of additional counterweight.

ORDERING DIRECTIONS

Order by complete CR nomenclature and give the form letter and number of poles of the switch. Specify the number of feet of chain required for Forms D, L, P, and AW1 switches, or the number of 3-ft lengths of rod required for Forms A, C, and M switches.

DESCRIPTION

These switches, as furnished, are arranged for tank operation, that is, the switch closes as the lower liquid level is reached, and opens as the top level is reached. This action may be easily changed for sump operation by interchanging the float and counterweight. Standard floats are made of spun copper, which is acid- and brine-resisting, and should not be subjected to pressure or to temperature above 100 C. Quotation on special floats will be furnished on request.

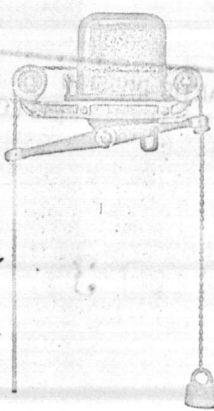
All switches are dripproof and splashproof, and suitable for outdoor installation where they are not subjected to snow or sleet. Where the liquid whose level is to be controlled is subject to freezing, a float switch should not be used.

All switches are quick acting when closing and opening, and this ensures the minimum of arcing and burning of the contacts.

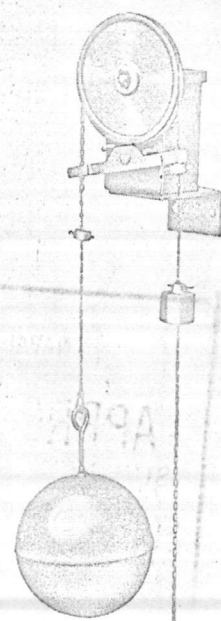
CR2931, FORMS A, C, D, L, AND M

These float switches can be used for throwing motors up to the following capacities directly on the line:

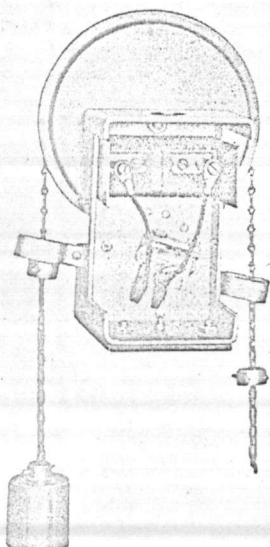
Circuit	HP of Motor	Volts	Amp Capacity of Switch
A-c Single-phase	2	110	15
		220, 440, 550	15
A-c Two- or three-phase	2	110 to 550 incl.	15
			15
D-c	½	115	15
		230	10
		550	3



(Photo 425365)  
Fig. 2. CR2931 Form L float switch



(Photo 439542)  
Fig. 3. CR2931 Form P float switch



(Photo 868799)  
Fig. 4. Close-up view of CR2931 Form AW switch mechanism. Otherwise same as Fig. 3

Publication: (See latest issue.)

Descriptive..... GEA-7302  
Renewal Parts..... GEF-4234

Prices subject to change without notice

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

Major revision since Feb. 5, 1951 issue.

GT 700, 701, 702, 711-713, 721-723, 731-737  
792

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT NUMBER **88313**

**88313/67**

APPROPRIATE  
INDICATE  
REQUIREMENTS  
SHALL BE  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.  
EQUIPMENT  
COMMUNICATION  
CONTRACTOR  
PROVIDING

DATE NOV 8 1968  
H. N. WALLIN  
RADM, CEC, USN  
COMLANFACENGCOM

*MHC*

Enclosed Float Switches

CR2931

Apr. 17, 1961

A-C or D-C

DESCRIPTION (Cont'd)

All electrical parts of Forms A, C, and D are enclosed in a heavy cast-iron case which is drilled and tapped at the top for 1/4-in. conduit. The lower half of the case is removable to facilitate inspection of the contacts and make connections. The contacts are of the knife-blade type.

Forms L and M switches are of lighter construction than the Forms A, C, and D, but are equally reliable in their operation. The bases of these switches are drilled and tapped for a 3/4-in. conduit. The top cover is of sheet metal and is enameled black. The contacts are of the butt type and are made of silver. Each pole is double-break.

CR2931, FORM P

This switch is suitable for interrupting the following currents:

On d-c, 0.6 amp at 125 volts; 0.2 amp at 250 volts; 0.04 amp at 600 volts.

On a-c, 15 amp at 110 volts; 10 amp at 220 volts; 5 amp at 440 or 550 volts.

The maximum horsepower ratings are 3/4 hp, 110 volts, and 1 hp, 220 volts, a-c, single-phase.

The switch is single-pole only, with double contact but single break.

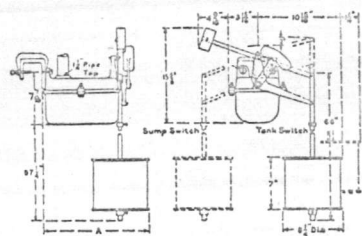
A knockout for 1/2-in. conduit is provided in the top of the case. The switch may be mounted on either a horizontal or a vertical surface, and is furnished chain-operated only. All steel punched parts are cadmium plated.

CR2931, FORM AW

This switch is the same as the Form P, except that it is equipped with mercury-tube, heavy-duty "Konnectors," and can be used for throwing motors up to the following capacities directly on the line.

Circuit	HP of Motor	Volts	Amp. Capacity of Switch
A-c Single-phase	1/2	110	10
	1/2	220	5
	1/2	440 to 550	2.5
A-c Split-phase	1/4	110	10
	1/4	220	5
	1/4	440 to 550	2.5
D-c	1/4	125	10
	1/4	250	5

DIMENSIONS (For Estimating Only)



No. of Poles	Dimensions in Inches	
	A	B
D-p	11 3/4	
4-p	15 1/2	

★Fig. 5 Form A2 and A4

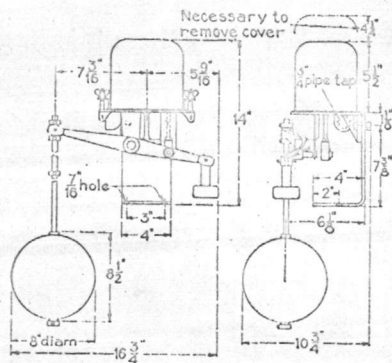
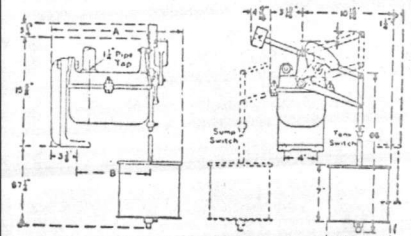


Fig. 9 Form M



No. of Poles	Dimensions in Inches	
	A	B
D-p	13 3/4	6 3/4
4-p	17 3/4	9 3/4

Fig. 6 Form C2 and C4

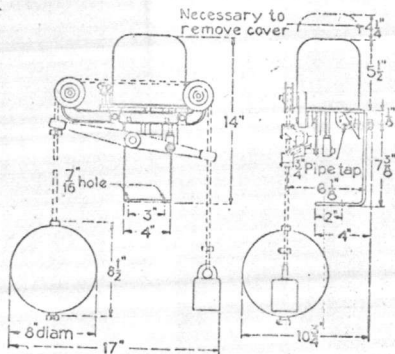


Fig. 8 Form L

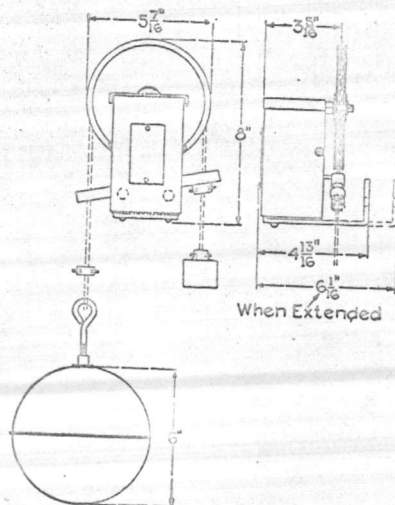


Fig. 10 Form P and AWI

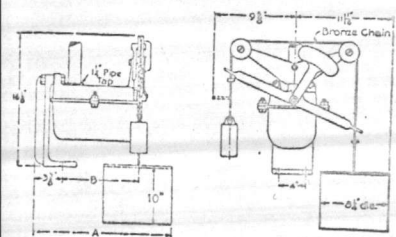
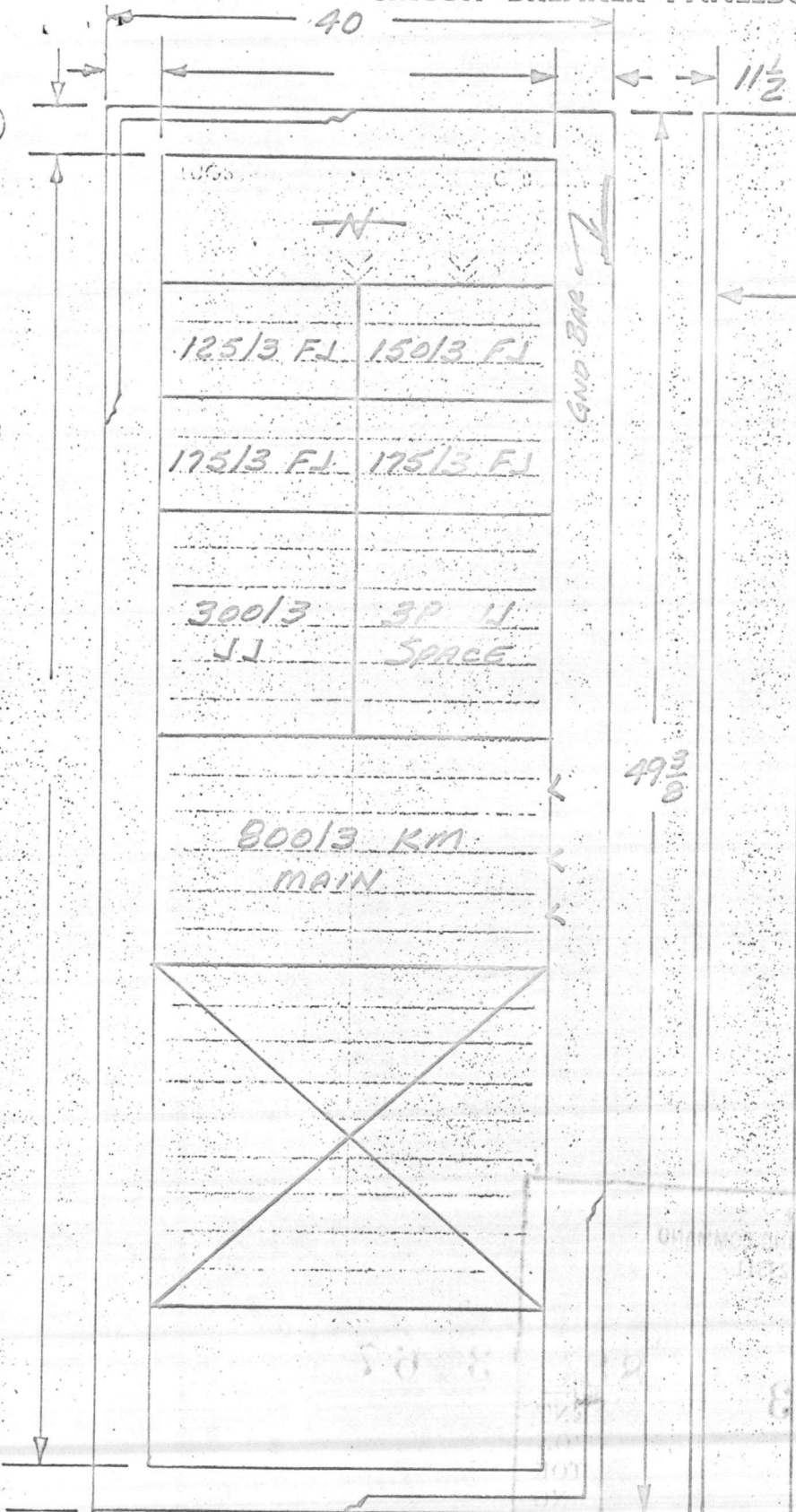


Fig. 7 Form D2 and D4

No. of Poles	Dimensions in Inches	
	A	B
D-p	13 3/4	6 3/4
4-p	17 3/4	9 3/4

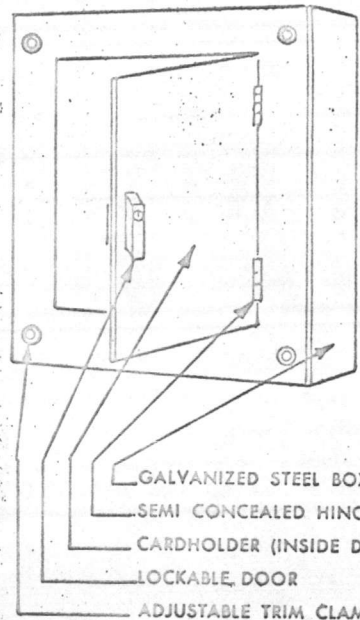


# CIRCUIT BREAKER PANELBOARD OUTLINE



TYPICAL FRONT

BOX  
FRONT



- GALVANIZED STEEL BOX
- SEMI CONCEALED HINGES
- CARDHOLDER (INSIDE DOOR)
- LOCKABLE DOOR
- ADJUSTABLE TRIM CLAMPS

ITEM No. 1

MARK PANEL PANEL A

TYPE CC/B

BREAKERS AS SHOWN

SERVICE 3Φ 4W 120/200V

MAINS 800A C/B

LUGS \_\_\_\_\_

FEED \_\_\_\_\_ TOP \_\_\_\_\_ BOTTOM X

MOUNTING \_\_\_\_\_ SURFACE X FLUSH \_\_\_\_\_

BOX CAT. No. DACB4021

FRONT CAT. No. DACB4021S

**GENERAL ELECTRIC**

DISTRIBUTION ASSEMBLIES DEPARTMENT

HOUSTON PLANT

JOB NAME WATER TREATMENT PLANT  
CAMP LEJEUNE

ARCHITECT \_\_\_\_\_

ENGINEER \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

CUSTOMER \_\_\_\_\_

MADE BY [Signature]

DATE 10/25

REV. \_\_\_\_\_

ORDER NO. \_\_\_\_\_ REQ. NO. \_\_\_\_\_ OF \_\_\_\_\_

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT BY **88313**

APPROVAL

INDICATE

REQUIREMENTS

SHALL

PROPER PHYSICAL DIMENSIONS & WEIGHTS,

COORDINATION OF TOLERANCES, ETC, AS REQUIRED.

H. N. WALLIN

RADM, CEC, USN

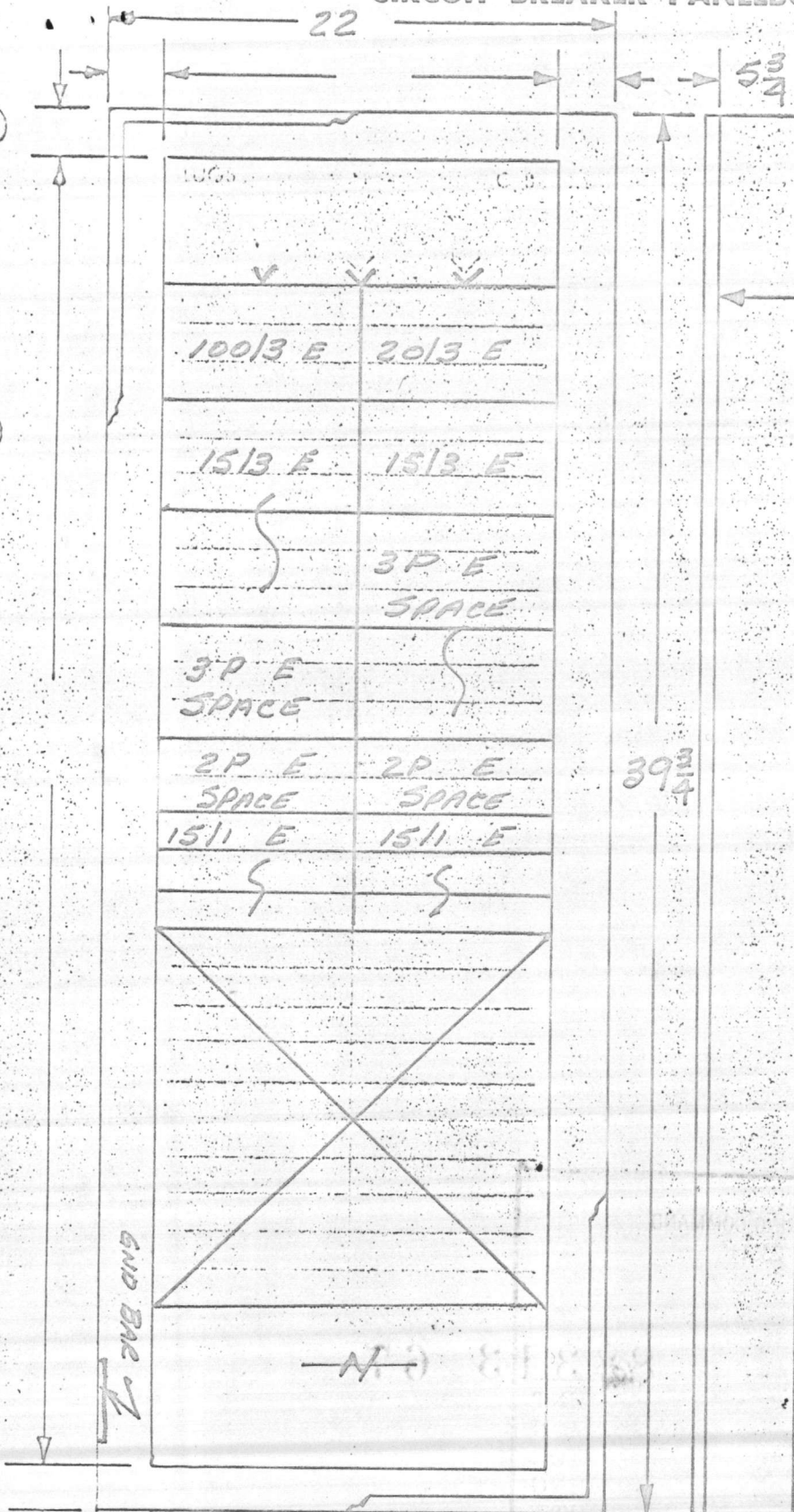
COMLANNAVFACENGCOM

DATE NOV 8 1968

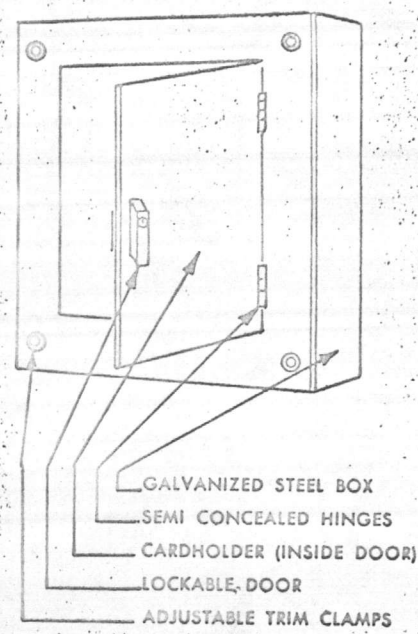
**883**

**3/67**

# CIRCUIT BREAKER PANELBOARD OUTLINE



TYPICAL FRONT



ITEM No. 2

MARK PANEL B

TYPE NAB

BREAKERS TE

SERVICE 3Ø 4W 120/208V

MAINS 225A LUGS

LUGS \_\_\_\_\_

FEED..... TOP... X... BOTTOM.....

MOUNTING..... SURFACE... X... FLUSH.....

BOX CAT. No. DA220539N

FRONT CAT. No. DA220539S

APPROVED \_\_\_\_\_

81888

**GENERAL ELECTRIC**

DISTRIBUTION ASSEMBLIES DEPARTMENT

JOB NAME  
WATER TREATMENT PLANT  
CAMP LEJEUNE

ARCHITECT \_\_\_\_\_

ENGINEER \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

CUSTOMER \_\_\_\_\_

ORDER NO. \_\_\_\_\_

PLANT  
HOUSTON

MADE BY [Signature] DATE 10/25

REV. \_\_\_\_\_

REQ. NO. \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_



ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

CONTRACT  
APPROVAL  
INDICATION  
REQUIREMENTS  
SHALL BE  
PROPER PHYSICAL  
COORDINATION OF TRADES, ETC, AS REQUIRED.

**88313**

**88313/67**

EQUIPMENT  
OPERATION  
TRACTOR  
PROVIDING

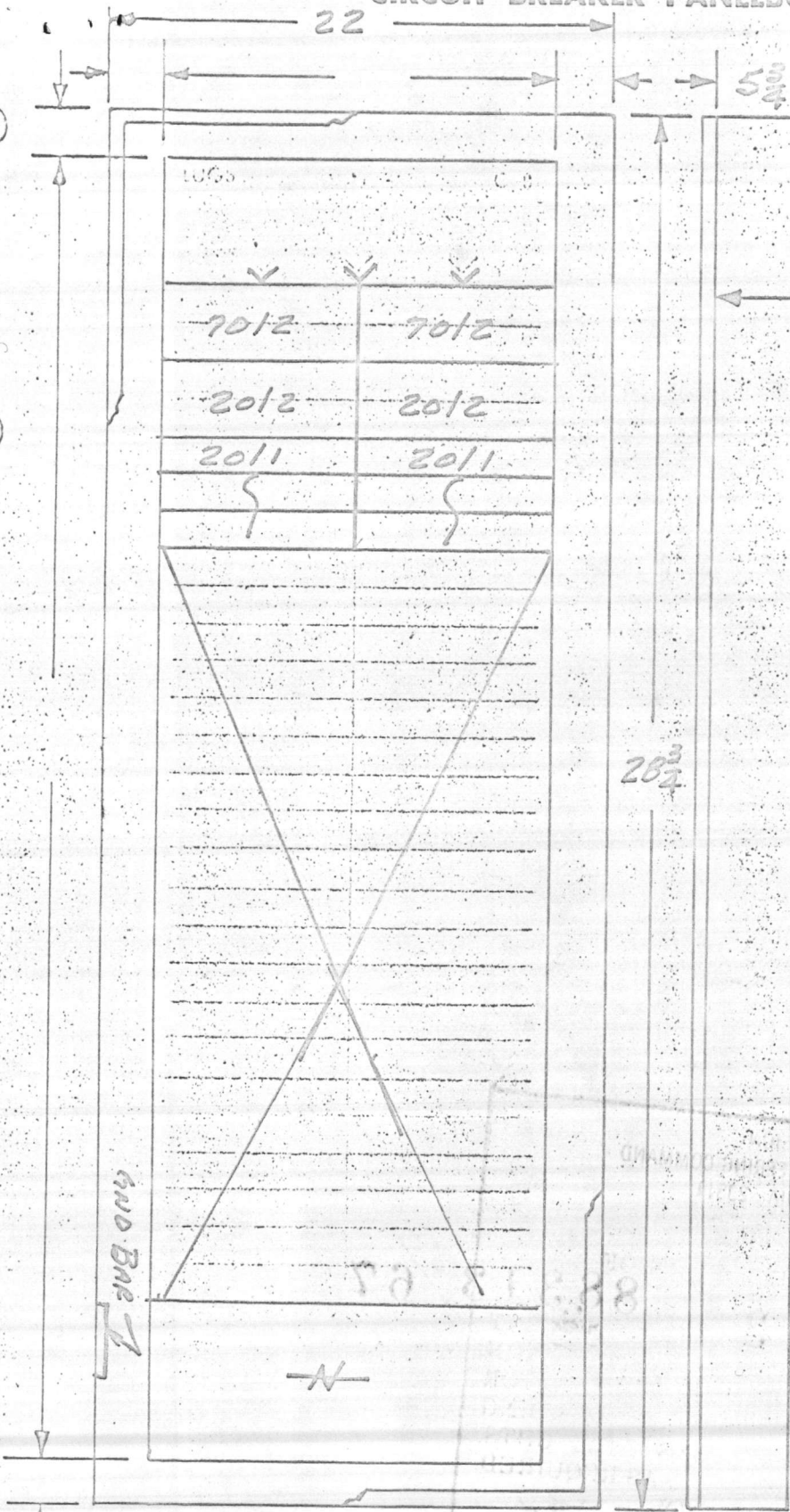
H. N. WALLIN  
RADM, CEC, USN



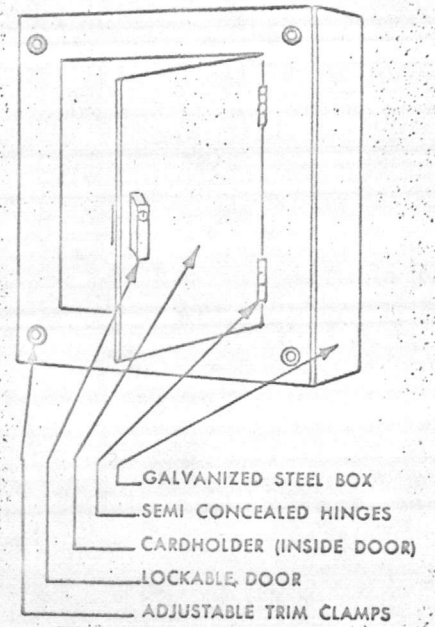
DATE NOV 8 1968

COMLANFNAVFACEGCOM

# CIRCUIT BREAKER PANELBOARD OUTLINE



TYPICAL FRONT



ITEM No. 3

MARK PANEL C

TYPE NAB

BREAKERS TE

SERVICE 364W 120/208V

MAINS 225A LUGS

LUGS

FEED..... TOP X BOTTOM.....

MOUNTING..... SURFACE X FLUSH.....

BOX CAT. No. DA22052BN

FRONT CAT. No. DA220528S

**GENERAL ELECTRIC**

DISTRIBUTION ASSEMBLIES DEPARTMENT

HOUSTON PLANT

JOB NAME <b>WATER TREATMENT PLANT CAMP LEJEUNE</b>	
ARCHITECT	
ENGINEER	
CONTRACTOR	
CUSTOMER	
ORDER NO.	REQ. NO.

MADE BY <u>[Signature]</u>	DATE <u>10/25</u>
REV. _____	
PAGE _____	OF _____

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

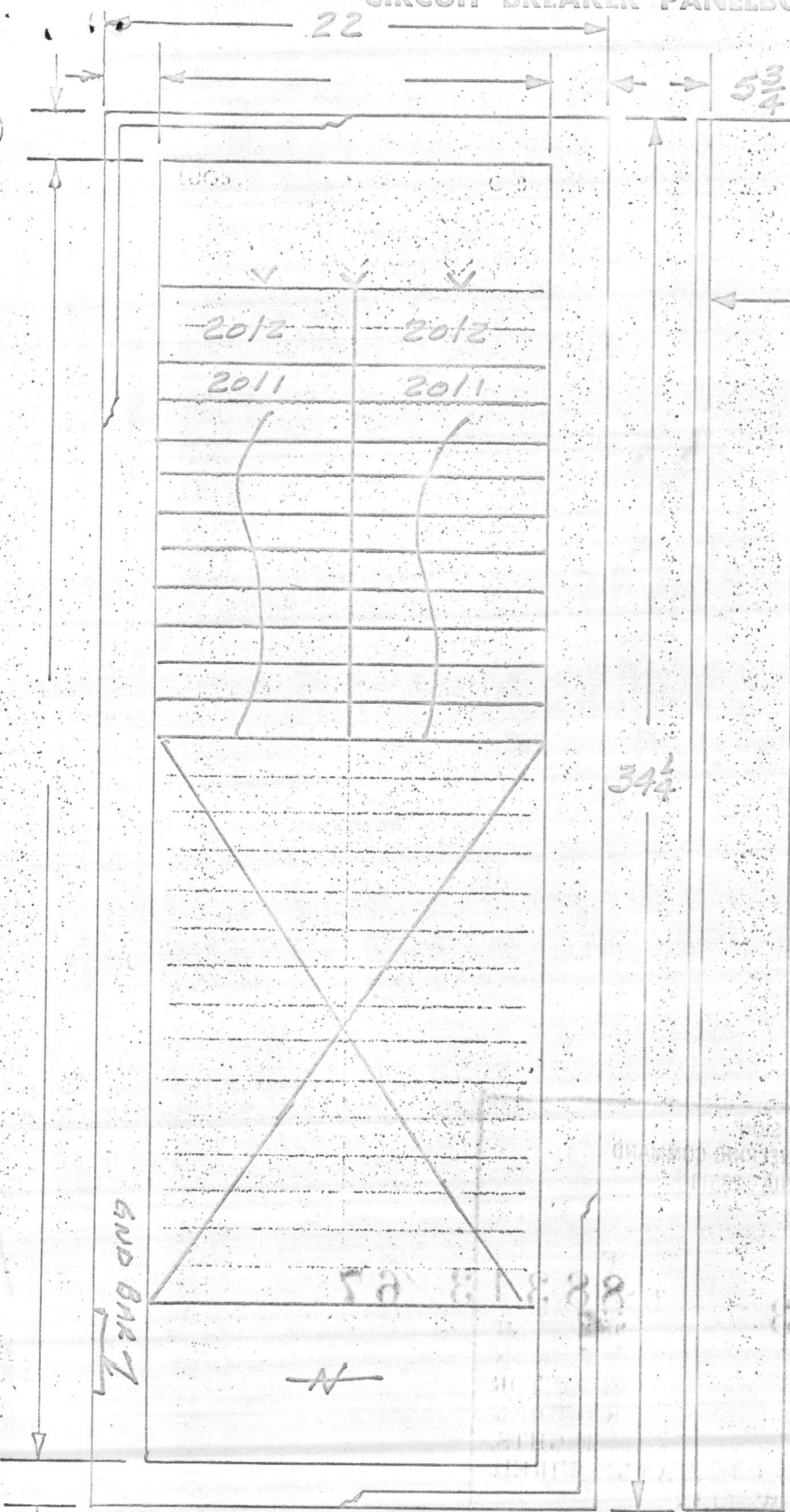
CONTRACT NO. 88313  
APPROVED FOR THE CONTRACTOR  
INDICATED BY THE CONTRACTOR  
REQUIREMENTS FOR PROVIDING  
SHALL BE IN ACCORDANCE WITH THE  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

88313/67

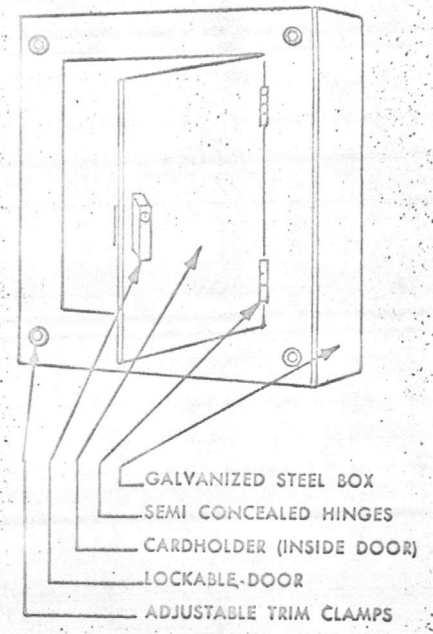
DATE NOV 8 1968

H. N. WALLIN  
RADM, CEC, USN  
COMLANTNAVFACENGCOM

# CIRCUIT BREAKER PANELBOARD OUTLINE



TYPICAL FRONT



ITEM No. 4

MARK PANEL L

TYPE NAB

BREAKERS TE

SERVICE 36 AW 120/208V

MAINS 100A LUGS

LUGS

FEED..... TOP X BOTTOM.....

MOUNTING..... SURFACE X FLUSH.....

BOX CAT. No. DA220534N

FRONT CAT. No. DA220534S

**GENERAL ELECTRIC**  
DISTRIBUTION ASSEMBLIES DEPARTMENT

HOUSTON PLANT

JOB NAME <i>Water Treatment Plant Camp Lejeune</i>	
ARCHITECT	
ENGINEER	
CONTRACTOR	
CUSTOMER	
ORDER NO.	REQ. NO.

MADE BY <i>[Signature]</i>	DATE <i>10/25</i>
REV. _____	
PAGE _____	OF _____

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

**APPROVED:**

SUBJECT TO THE REQUIREMENTS OF

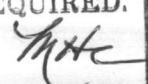
CONTRACT  
APPROVAL  
INDICATION

**88313**

**88313/67**

EQUIPMENT  
NOTIFICATION  
CONTRACTOR  
REQUIREMENTS FOR PROVIDING  
SHALL BE FOR PROVIDING  
PROPER PHYSICAL DIMENSIONS & WEIGHTS,  
COORDINATION OF TRADES, ETC, AS REQUIRED.

H. N. WALLIN  
RADM, CEC, USN



DATE NOV 8 1968

COMLANAVFACENGCOM

BASE MAINTENANCE DEPARTMENT  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

MAIN/WRP/dp  
11330  
16 Oct 1978

Mr. Tom Hucker  
J.E. Sirine Co.  
Station B  
Greenville, SC 29606

Dear Tom;

Enclosed you will find the curve for the three service pumps and two filter pumps at the Courthouse Bay Water Treatment Plant. I have also enclosed a copy of the complete data sheet for all pumps in this plant. If I can be of further assistance please advise.

Sincerely

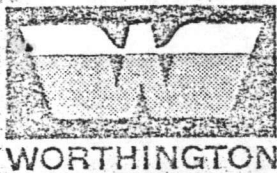
W. R. PRICE  
General Foreman

CONFIDENTIAL  
11/20/50  
NY 100-10000

CONFIDENTIAL  
11/20/50  
NY 100-10000

CONFIDENTIAL  
11/20/50  
NY 100-10000

CONFIDENTIAL  
11/20/50  
NY 100-10000



WORTHINGTON

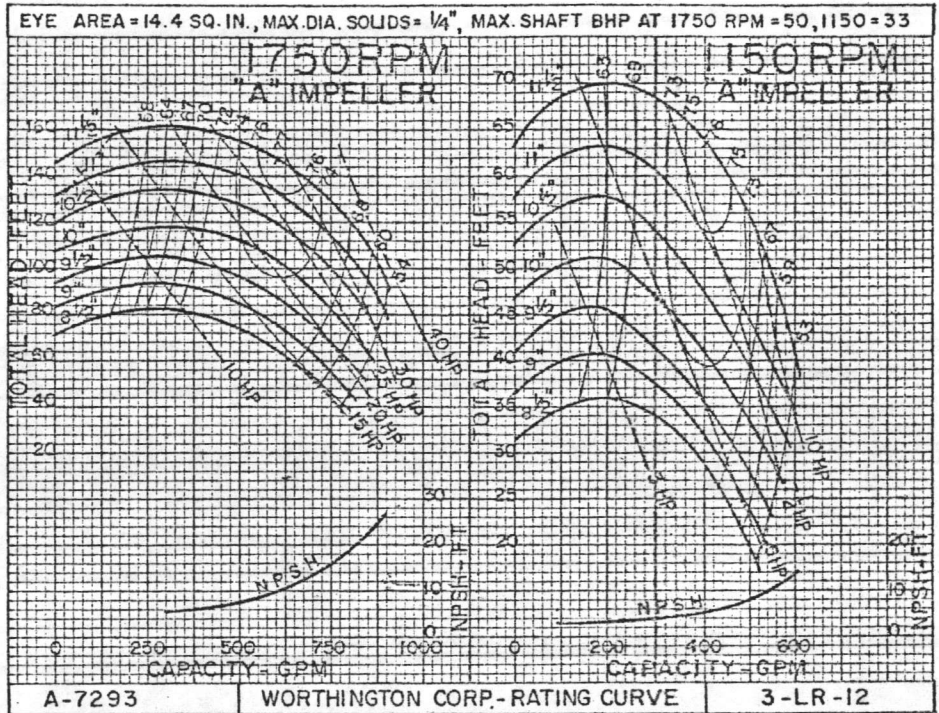
HORIZONTAL  
SPLIT CASE  
CENTRIFUGAL PUMPS

Proposal Number or District Office Number  
ITEM NO. 12-210911EWA  
Date  
Camp Levee # 1771  
Customer Name and Reference

CUSTOMER Worthington Corp.  
SERVICE Worthington Corp.  
ITEM 3 LR-12 DATE 1/20/64  
OFFICE Worthington BY [Signature]

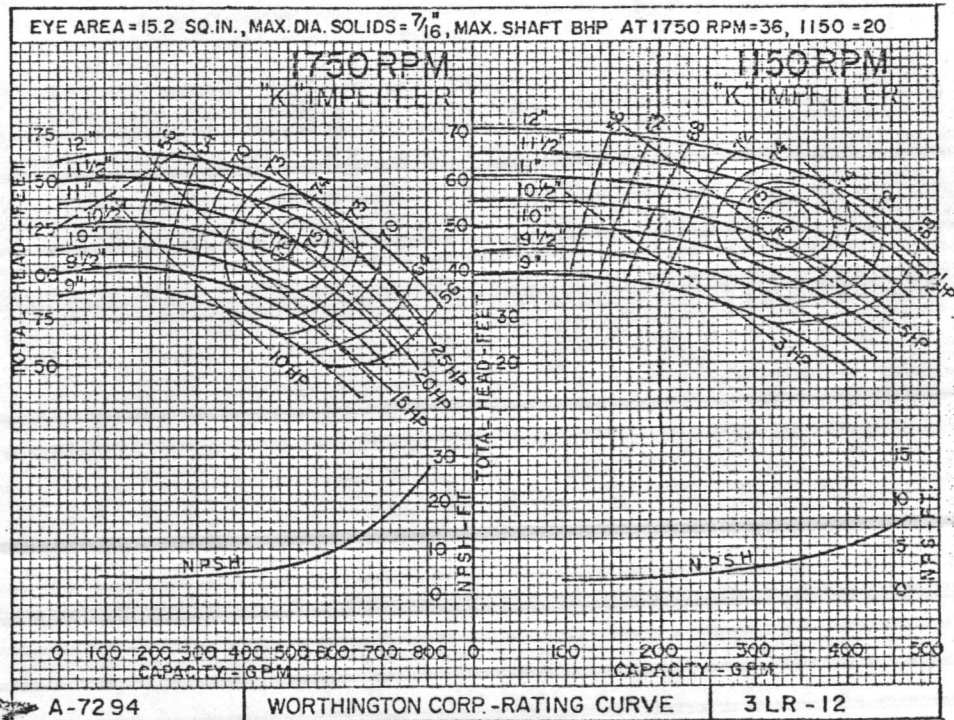
This pump is guaranteed for one set of design conditions. Other points shown on this curve are approximate and not guaranteed. The design capacity and head are based on shop tests when handling clear, cold water.

DESIGN CONDITIONS  
CAPACITY 400 GPM  
TOTAL HEAD 40 FT.



3 LR-12 "A"

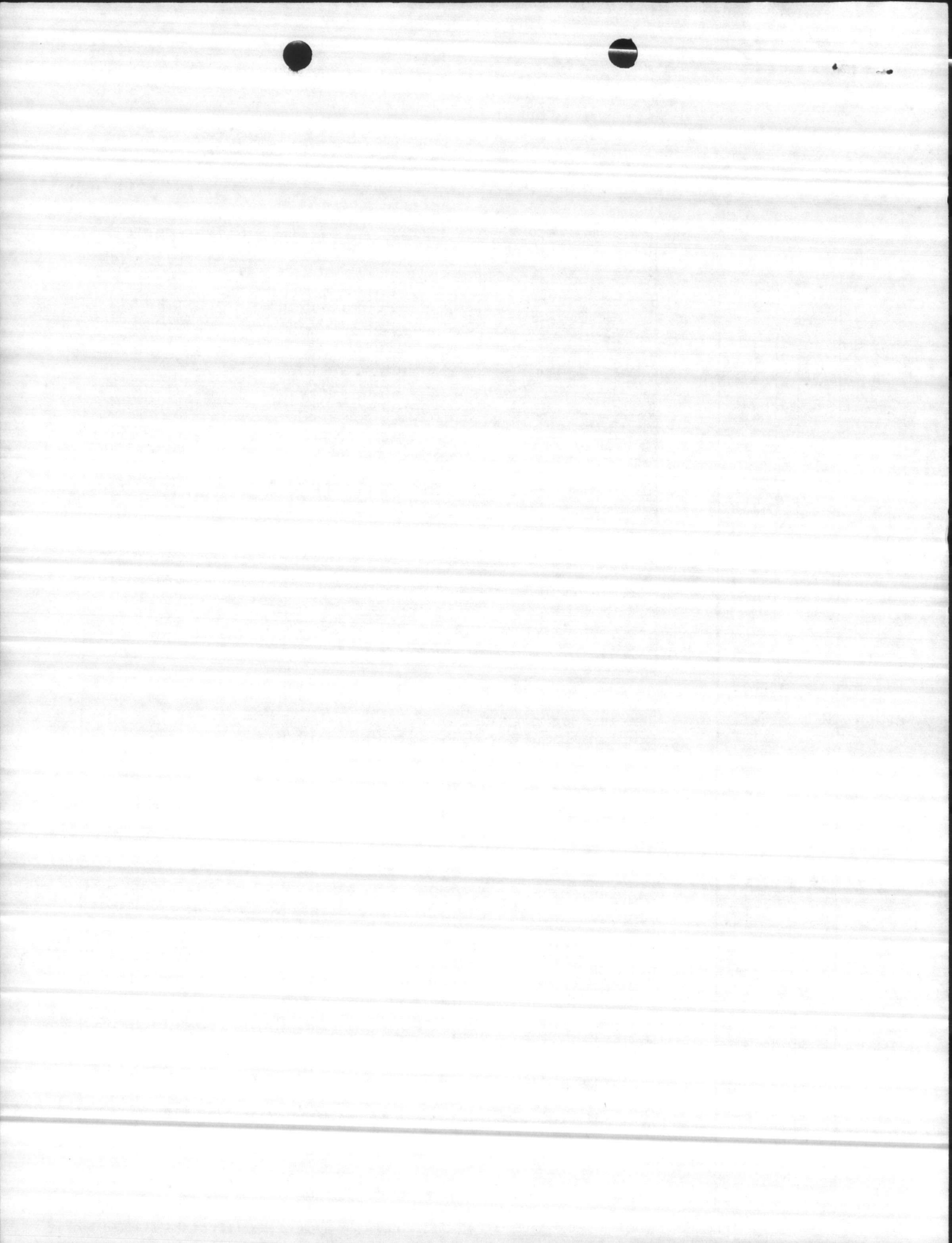
A-7293

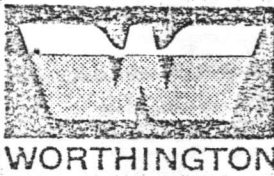


3 LR-12 "K"

A-7294







HORIZONTAL  
SPLIT CASE  
CENTRIFUGAL PUMPS

BAU 253-68

Proposal Number or District Office Number

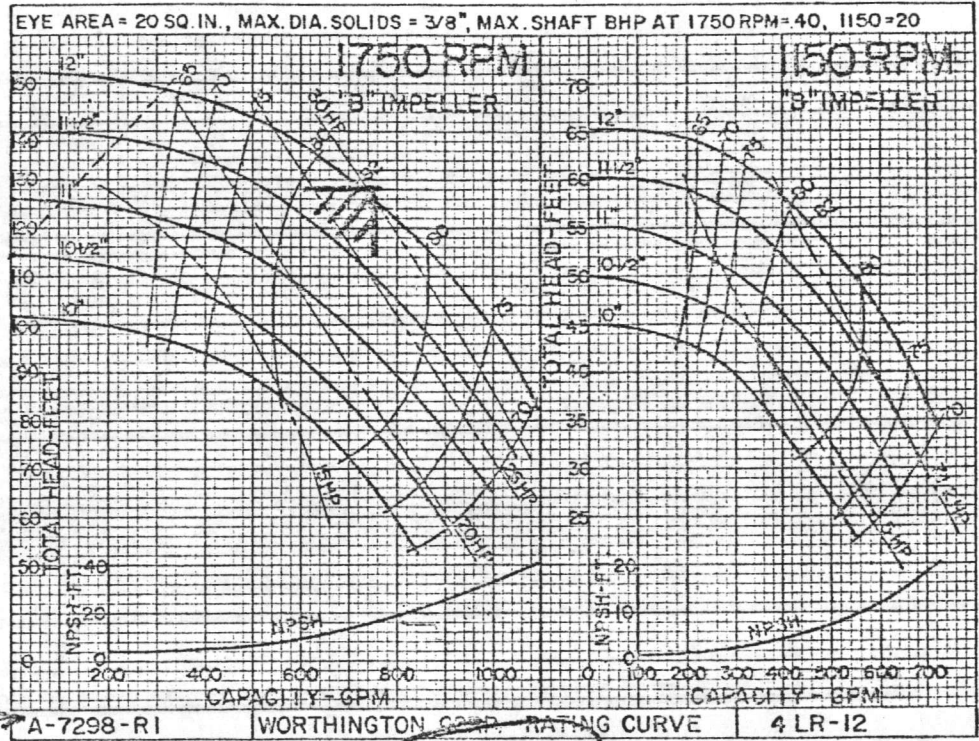
ITEM NO. 3 SERVICE 5/14/68

Date

BROWN CONSTR. Co.

Customer Reference

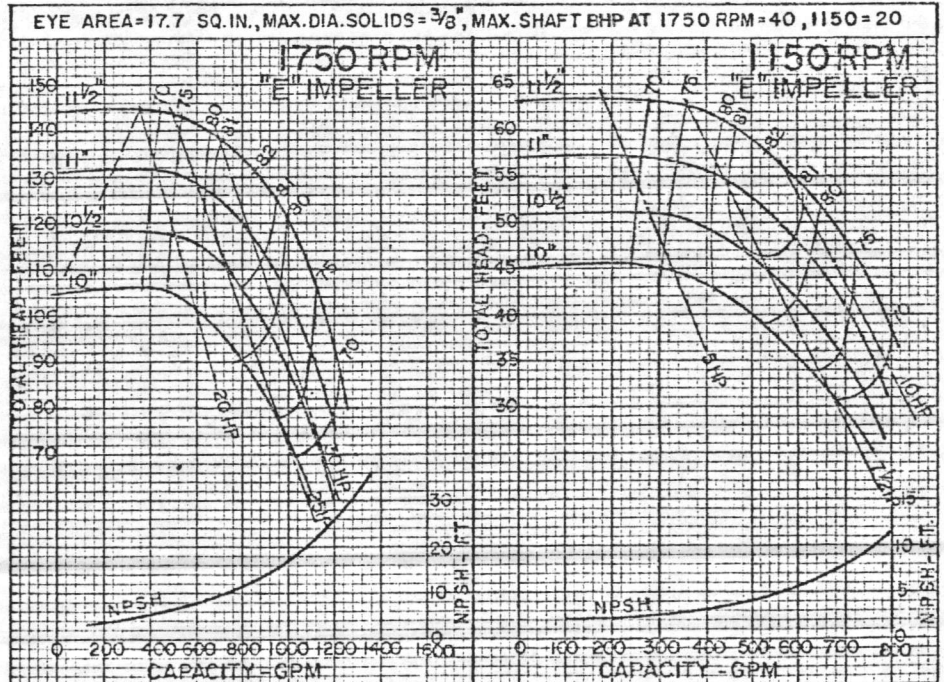
CUSTOMER Brown Constr. Co.  
SERVICE High Service #  
ITEM 3 DATE 5/14/68  
OFFICE CHARLOTTE BY [Signature]



A-7298-RI WORTHINGTON CORP. - RATING CURVE 4 LR-12  
4 LR-12 "B" A-7298

This pump is guaranteed for one set of design conditions. Other points shown on this curve are approximate and not guaranteed. The design capacity and head are based on shop tests when handling clear, cold water.

DESIGN CONDITIONS  
CAPACITY 750 GPM  
TOTAL HEAD 125 FT.  
EFF. 81%

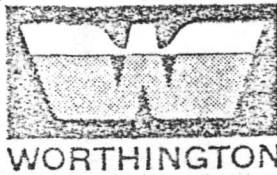


A-7299 WORTHINGTON CORP. - RATING CURVE 4 LR-12  
4 LR-12 "E" A-7299

Order Forms from Stationery & Printing Section, Harrison. Use Form No. DC-662-DR2

MINIMUM RECOMMENDED FLOW - Sustained operation to the left of the slanted broken line could possibly result in shaft breakage due to fatigue. Where no broken line is shown, pump can be operated with only sufficient by-pass to prevent overheating.





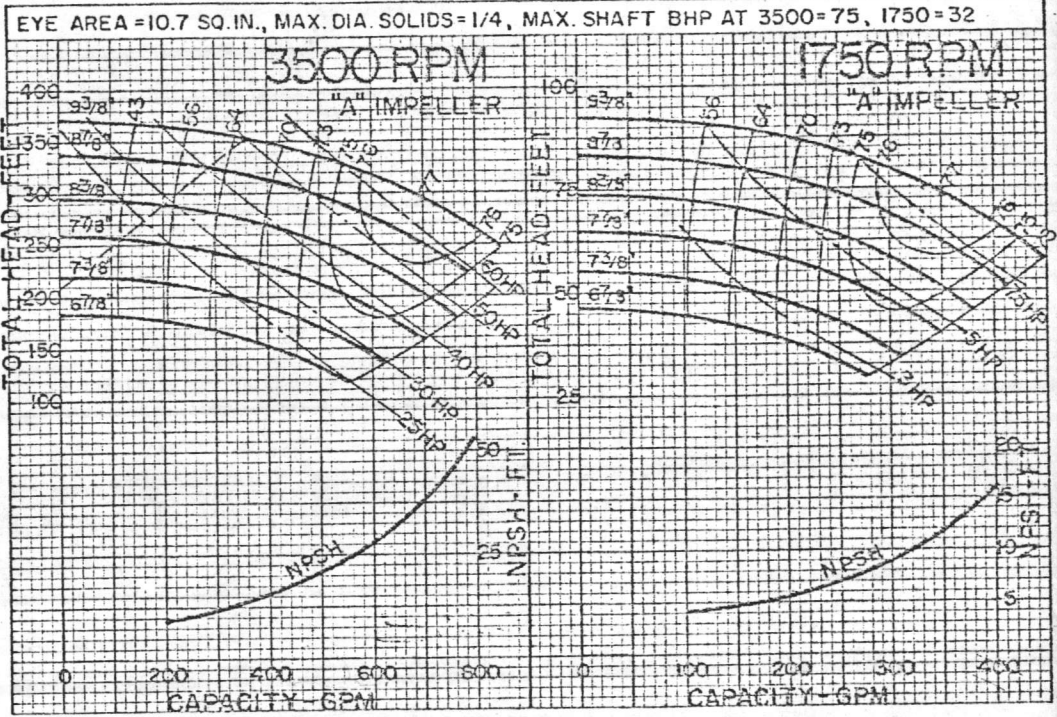
HORIZONTAL  
SPLIT CASE  
CENTRIFUGAL PUMPS

*BAIT 253-68*  
 Serial Number or District Office Number  
 ITEM NO. *142 FILTER WATER* Date  
*BROWN CONSTR. CO.*  
 Customer Name and Reference

CUSTOMER *Brown Construction Co.*  
 SERVICE *Filter Water*  
 ITEM *142* DATE *11/14/68*  
 OFFICE *CHARLOTTE*

This pump is guaranteed for one set of design conditions. Other points shown on this curve are approximate and not guaranteed. The design capacity and head are based on shop tests when handling clear, cold water.

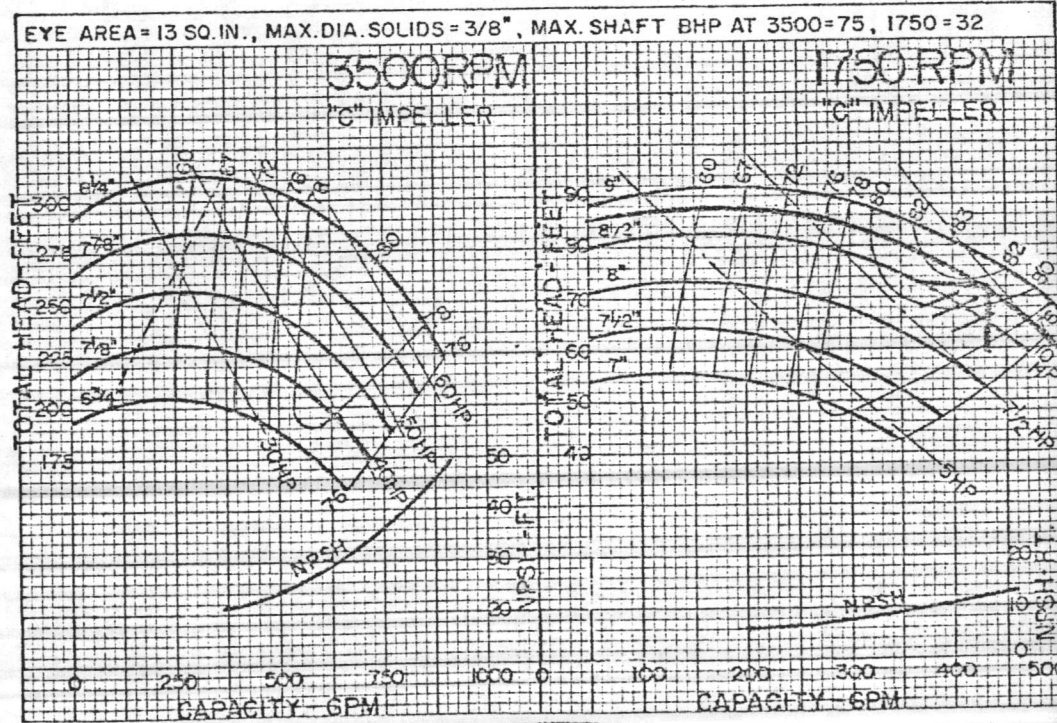
DESIGN CONDITIONS  
 CAPACITY *430* GPM  
 TOTAL HEAD *70* FT.  
 EFF. *81%*



3 LR-9 "A"

A-7227

Minimum recommended flow - sustained operation to the left of the slanted broken line could possibly result in shaft breakage due to fatigue.



3 LR-9 "C"

A-7228

Minimum recommended flow - sustained operation to the left of the slanted broken line could possibly result in shaft breakage due to fatigue.





# CENTRIFUGAL PUMP PROPOSAL

Brown Construction Company, Concord, N.  
Customer Name City - State

Order No. 577-1  
Customer Reference

SEE BELOW  
Item Number

Camp Lejeune, N. C.  
User Name

Division Quotation Number

Courthouse Bay NBY 88313

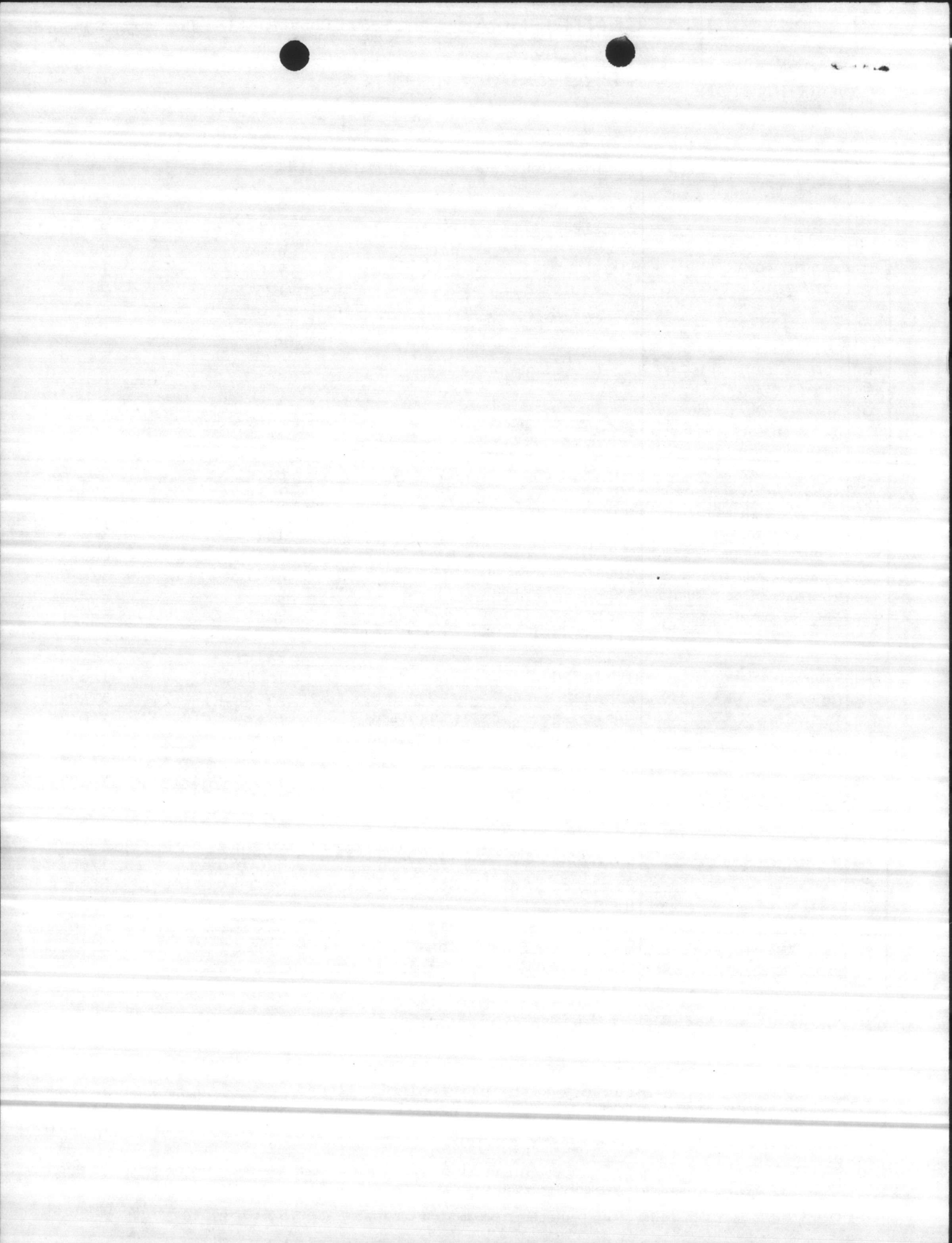
	ITEM NUMBER	1 & 2	1 & 2	3	4
CONDITIONS OF SERVICE	SERVICE	Service	Filter	Service	Brine
	LIQUID	Water	Water	Water	"
	CAPACITY—GPM	500	430	750	10
	TOTAL HEAD—FT.	120	70	125	20
	DISCHARGE PRESSURE—PSIG				
	SUCTION PRESSURE—PSIG				
	SUCTION LIFT—FT.				
	PUMPING TEMPERATURE—°F				
	SPECIFIC GRAVITY @ P.T.				
	VISCOSITY @ P.T.—SSU				
	VAPOR PRESSURE @ P.T.—PSIA				
	NPSH AVAILABLE—FT.				
PERFORM.	EFFICIENCY—%	76	81	81	30
	PUMP SPEED—RPM	1750	1750	1750	1750
	BHP @ DESIGN POINT/MAX.	20/22	9.4/10.0	29.2/34	.2/.25
	NPSH REQUIRED—FT.	7	12	16	3
PUMP DESCRIPTION & ACCESSORIES	NUMBER OF UNITS	Two	Two	One	One
	PUMP SIZE AND TYPE	3LR12	3LR9	4LR12	3/4 CNG-42
	MATERIALS OF CONSTRUCTION	Standard Fitted			Worthite
	PACKING OR MECH. SEAL	Packing	Packing	Packing	Packing
	BASEPLATE	Structural Steel			C. Steel
	COUPLING	Falk	Falk	Falk	Lovejoy
	COUPLING GUARD	Included	Included	Included	Included
	Curve No.	A7294-K	A7228-G	A7298-R1	A1406
	Print No.	W63577-R3	W63577-R3	Later	X60135R-3
	Bulletin	2036-PS2B	2036-PS2B	2036-PS2B	2004-PS1
Shop No.	Y-397374	Y-397375	Y-397376	Y-397377	
MOTOR	HP/RPM	25	10	40	1/2
	ENCLOSURE	Open Drip proof			
	PHASE/CYCLE/VOLTS	3/60/208	3/60/208	3/60/208	1/60/120
	TYPE	Standard Line			
	MAKE	U. S. Electric or equal			
	FRAME SIZE	284-T	215-T	324-T	M-56
STARTER	STARTER—NEMA		None		
	STARTER—HP/VOLTS				
	STARTER—MAKE				
NET PRICE EACH	PUMP and	\$			
	MOTOR	\$			
		\$			
		\$			
	F.O.B. POINT	Factory with full freight allowed			
SHIPPING WEIGHT—LBS. ea.	900	600	2500	150	
SHIPMENT—WEEKS*	8 to 10	8 to 10	8 to 10	8 to 10	

\*After receipt of complete manufacturing information, or after drawing approval when required.

PRICE ADJUSTMENT CLAUSE (FORM DO-531) APPLIES TO WORTHINGTON PRODUCTS. THE PRICES FOR THE FOLLOWING PURCHASED EQUIPMENT WILL BE ADJUSTED TO REFLECT THE VENDORS' PRICES IN EFFECT AT TIME OF SHIPMENT:

TERMS OF PAYMENT UNLESS OTHERWISE STATED BELOW THE STANDARD TERMS ON ATTACHED FORM DO-531 APPLY. I. W. Leggett

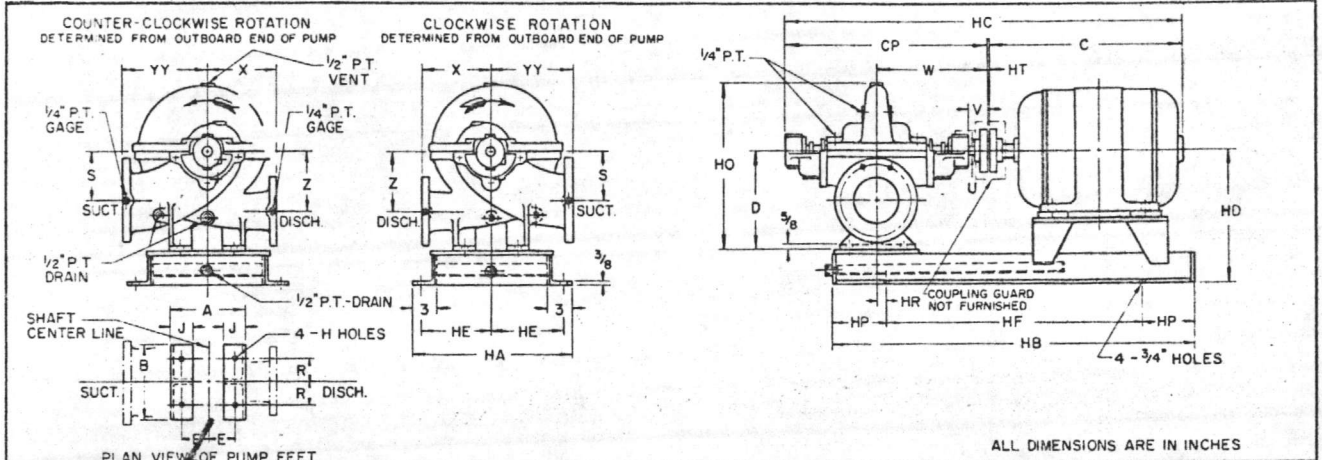
Net 30 days





TYPE LR  
VOLUTE PUMPS  
DOUBLE SUCTION

BALT-253-68-22-80068  
Proposal Number or District Office Number  
ITEM NO. 1 & 2 FILTER WATER  
Date  
ORDER NO. - 877-1  
Customer Name and Reference



PLAN VIEW OF PUMP FEET

ALL DIMENSIONS ARE IN INCHES

FRAME SIZE	3LR-9	3LR-12	4LR-10	4LR-12	4LR-14	5LR-10	5LR-13	5LR-15	6LR-10	6LR-13	6LR-16
	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD	LINE HD
184											
213											
215											
254 U											
256 U											
284 U											
286 U											
324 U											
324 S											
326 U											
326 S											
364 U											
364 US											
365 U											
365 US											
404 U											
404 US											
405 U											
405 US											
444 U											
444 US											
445 U											
445 US											
504											
504 S											
504 U											
505											
505 S											

STEEL BASE DIMENSIONS

LINE	WEIGHT #	HA	HB	HE	HF	HP	DWG. NO.
1	190	24	54 1/2	11	40 1/2	7	W-63497
2	185	24	54 1/2	11	40 1/2	7	W-63494
3	231 1/2	24	54 1/2	11	40 1/2	7	W-63492
4	244 1/2	24	64 1/4	11	50 1/4	7	W-63492
5	181	24	64 1/4	11	50 1/4	7	W-63479

PUMP	125# STD. FLG. SUCTION	125# STD. FLG. DISCHARGE	A	B	D	E	J	HR	R	S	U*0000-0009	KEYWAY	V	W	X	Z	CP	H	HO	YY	APPR. WT. OF PUMP
3LR-9	4	3	10	10	10 1/2	3 1/2	3	1 1/4	3 5/8	5 1/4	.9830	1/4 x 1/8	2 1/2	14 5/8	7 1/2	5 3/4	26 3/4	5/8	17 1/4	9	220 #
3LR-12	5	4	10	10	11 1/2	3 1/2	3	1 1/4	3 5/8	5 3/4	.9830	1/4 x 1/8	2 1/2	14 5/8	9	6 1/4	26 3/4	5/8	19 3/4	11	280 #
4LR-10	5	4	10	10	13	3 1/2	3	1 1/4	3 5/8	6 3/8	.9830	1/4 x 1/8	2 1/2	14 3/4	9	7 3/4	27	5/8	21 3/4	11	320 #
4LR-12	6	4	14	13	13	5 1/4	3 1/4	-	5 3/16	6 3/8	1.1250	1/4 x 1/8	4	17	12	7 5/8	30	3/4	22 3/4	12 1/2	400 #
4LR-14	6	4	14	13	13	5 1/4	3 1/4	-	5 3/16	6 1/2	1.1250	1/4 x 1/8	4	17	10 1/2	7 1/4	30	3/4	22 3/8	13	320 #
5LR-10	6	5	14	13	13	5 1/4	3 1/4	-	5 3/16	6 1/2	.9830	1/4 x 1/8	4 1/2	19 1/4	13	7 1/4	34	3/4	23 1/2	13 1/2	540 #
5LR-13	6	5	14	13	13	5 1/4	3 1/4	-	5 3/16	7 3/4	.9830	1/4 x 1/8	2 3/8	15 1/4	10	7 1/2	28 1/8	3/4	25 1/4	14	425 #
5LR-15	6	5	14	13	13	5 1/4	3 1/4	-	5 3/16	7 1/2	1.5000	3/8 x 3/16	4 1/2	19 1/4	11	9	34	3/4	25 3/4	14	580 #
6LR-10	8	6	14	13	15 1/2	5 1/4	3 1/4	-	5 3/16	7 3/4	.9830	1/4 x 1/8	2 3/8	15 1/4	10	7 1/2	28 1/8	3/4	25 1/4	14	425 #
6LR-13	8	6	14	13	15 1/2	5 1/4	3 1/4	-	5 3/16	7 1/2	1.5000	3/8 x 3/16	4 1/2	19 1/4	11	9	34	3/4	25 3/4	14	580 #
6LR-16	8	6	14	13	15 1/2	5 1/4	3 1/4	-	5 3/16	7 3/8	1.5000	3/8 x 3/16	4 1/2	19 1/4	14	8 1/2	34	3/4	27	15	650 #

C      HD      HT      HC #      COUPLING  
17 1/3      15      1/8      44      FALK

MOTOR DATA      TYPE BEEHIVE T      FRAME 215 T      H.P. 10  
R.P.M. 1750      PHASE 3      CYCLES 60      VOLTS 208

CERTIFIED BY [Signature]      DATE 5/14/68      OUR SHOP ORDER Y-39737S

THIS PRINT IS LOANED SUBJECT TO RETURN ON DEMAND AND UNDER CONDITION THAT IT IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO OUR INTEREST. DO NOT SCALE, ADDITIONAL DIMENSIONS WILL BE FURNISHED ON REQUEST. THIS PRINT IS FOR PRELIMINARY USE UNLESS ABOVE SPACES ARE FILLED. DIMENSIONS ARE FROM DRAWINGS, CASTINGS MAY VARY SLIGHTLY. FOUNDATION BOLTS MUST NOT BE FIXED RIGIDLY UNTIL MACHINE IS IN PLACE.



