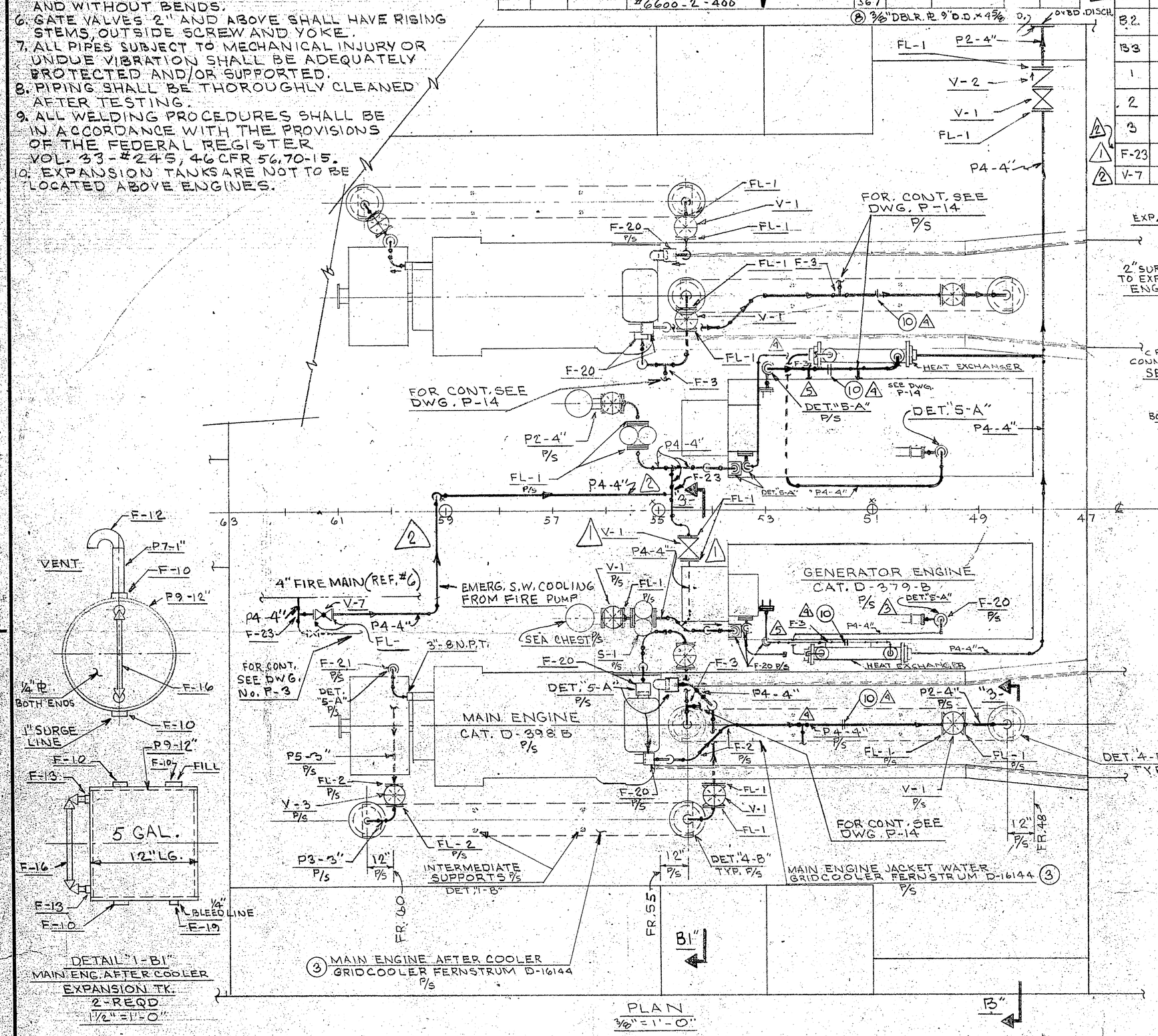
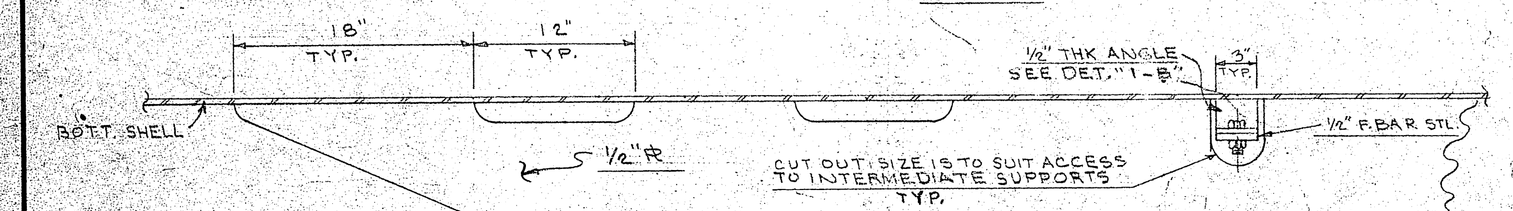
GENERAL NOTES

1. ALL PIPING AND VALVES SHALL BE MARKED SHOWING ITS SERVICE AND PARTICULAR LIQUID.
2. ALL PIPING SHALL BE COLOR CODED IN ACCORDANCE WITH NATIONAL COLOR CODE AND SHALL INDICATE DIRECTION OF FLOW.
3. ALL LABELLING SHALL BE EMBOSSED AND ATTACHED WITH SCREWS.
4. ALL OVERBOARD DISCHARGES LOCATED ON PORT SIDE.
5. OVERBOARD DISCHARGES TO BE KEPT STRAIGHT AND WITHOUT BENDS.
6. GATE VALVES 2" AND ABOVE SHALL HAVE RISING STEMS, OUTSIDE SCREW AND YOKE.
7. ALL PIPES SUBJECT TO MECHANICAL INJURY OR UNDUE VIBRATION SHALL BE ADEQUATELY PROTECTED AND/OR SUPPORTED.
8. PIPING SHALL BE THOROUGHLY CLEANED AFTER TESTING.
9. ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF THE FEDERAL REGISTER VOL. 33 - #245, 46 CFR 56.70-15.
10. EXPANSION TANKS ARE NOT TO BE LOCATED ABOVE ENGINES.

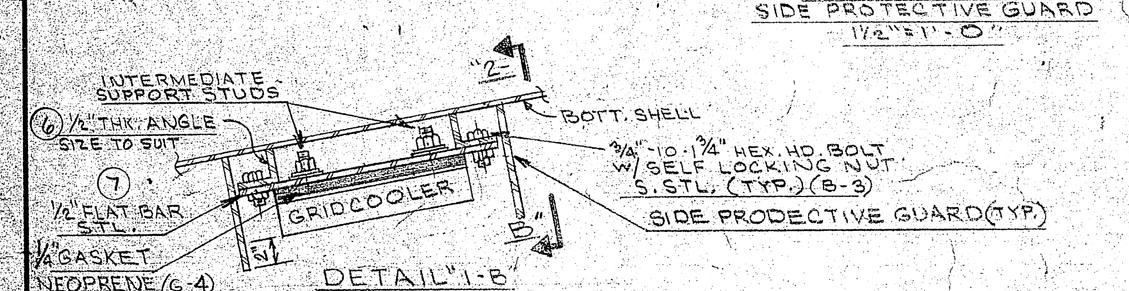


DETAIL "1-B1"
MAIN ENG. AFTER COOLER EXPANSION TK.
2-REQD.
1½" = 1'-0"

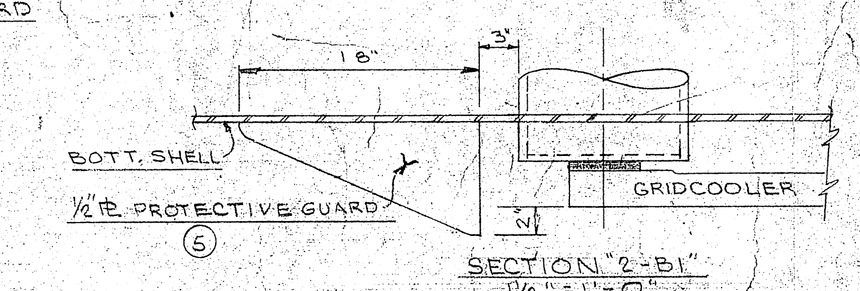
PLAN
⅜" = 1'-0"



SECTION "2-B"
SIDE PROTECTIVE GUARD
1½" = 1'-0"



DETAIL "1-B"
INTERMEDIATE SUPPORT
1½" = 1'-0"



SECTION "2-B1"
1½" = 1'-0"

	4	4 SQ.FT.	¼"	PLATE STL. (FOR EXP. TKS.)	356 367					
	5	70 SQ.FT.	½"	PLATE STL. (GRIDCOOLER GUARD)	356					
	6	50'	½" THK	ANGLE STL. (SIZE TO SUIT)	356					
	7	14'	½"	FLAT BAR STL. 3" WIDE	356					
	F-20	14	4"	FLEX. CONN. AEROQUIP SELF-RESTRAINED FLEXMASTER PIPE JOINT #6600-3-650 & #6600-2-400	356 367					
	F-21	2	3"	#6600-3-650	356					
	F-22	4	2"	#6600-2-400	356 367					
	FL-2	4	3"	FLANGE, F.F. S.O. GALV. STL. ASTM A-181 GR. I	356					
	S-1	2	4"	DUPLEX STRAINER FLGD GALV. STL.	367	KRAISSL OR EQ.				
△	G1	25	1/16" THK	GASKET GRANITE FOR PC. NO. FL1 AND PC. NO. S-1	356 367					
	G2	4	1/16" THK	GASKET GRANITE FOR PC. NO. FL-2	356					
	G3	8	1/16" THK	GASKET GRANITE FOR PC. NO. 1	356 367					
	G4	8	1/2" THK.	NEOPRENE GASKET.	356 367					
△	B1	216	⅝" x 3" LG.	MACH. BOLT SQ. HD. W/ HEX. HD. NUT. STL.	356 367					
	B2	64	⅝"x1 13/16"	MACH. BOLT SQ. HD. W/ NUT & LOCK WASHER STL.	356 367					
	B3	16	¾"-10-1¾"	MACH. BOLT, HEX. HD. W/ SELF-LOCKING NUT, S. STL.	356 367					
	1	8	⅜" THK.	PLATE FLG. 16 ¾" O.D. W/ 8-11/16" DIA. HOLES ON A 14⅝" DIA. B.C. EQ. SP.	356 367					
	2	8	⅜" THK.	PLATE FLG. 16 ¾" O.D. X 12 7/8" I.D. W/ 8-11/16" DIA. HOLES ON A 14⅝" DIA. B.C.	356 367					
△	3	4		GRID COOLER FERNSTRUM D-16144	356					
△	F-23	4	4"	TEE S.W. GALV. STL. SCH. 40 ASTM A234	356 367					
△	V-7	1	4"	GLOBE VALVE FLG'D, 150# BRZ., MONEL TRIM O.S.&Y. B-61 (MOD. TO STOP CHECK)	351	CRANE OR EQ.				

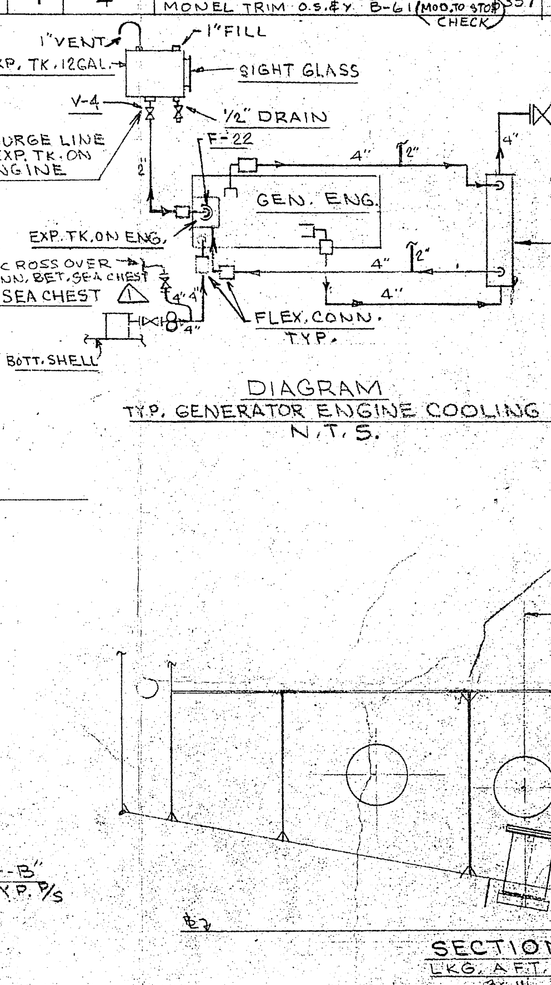
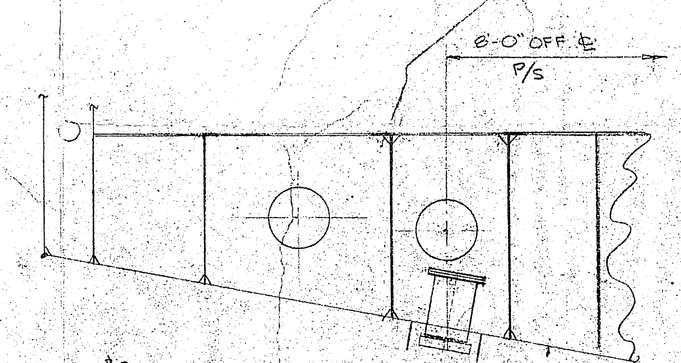
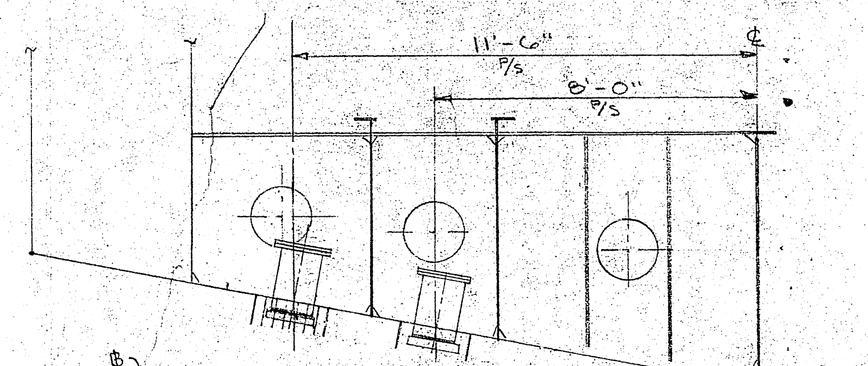


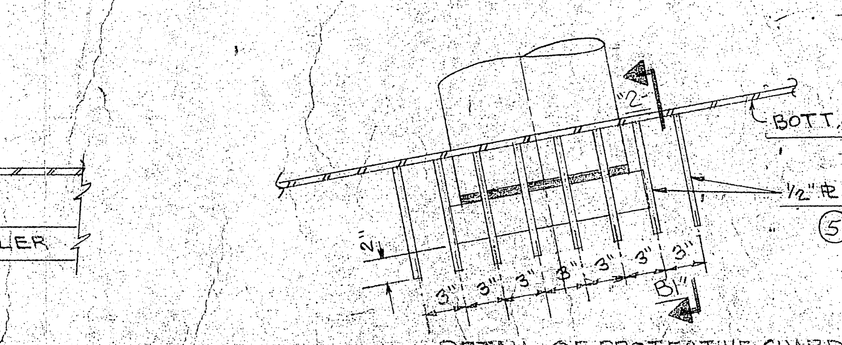
DIAGRAM
TYP. GENERATOR ENGINE COOLING
N.T.S.



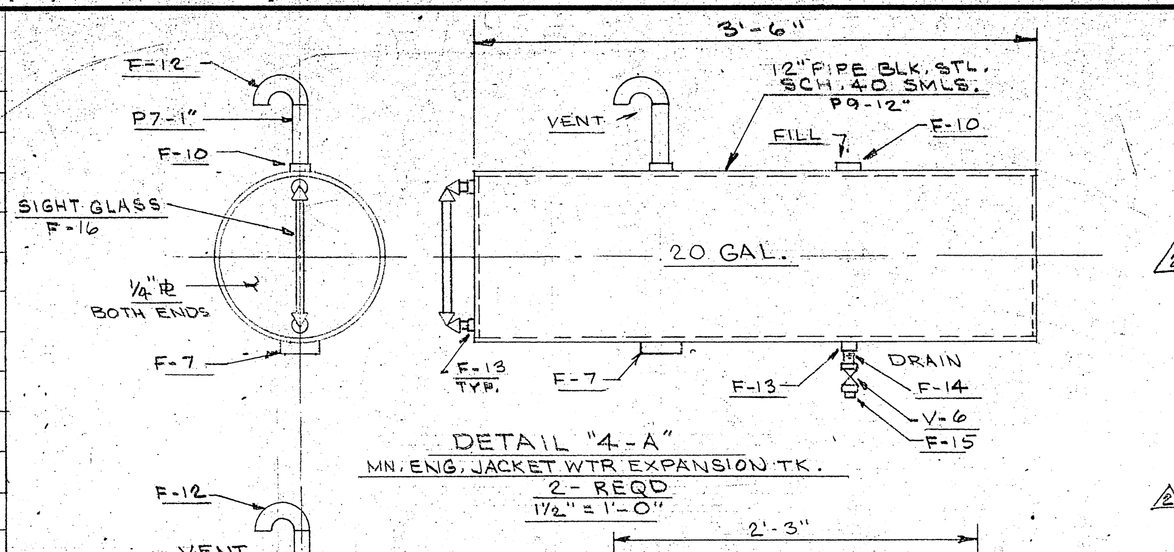
SECTION "3-B"
LKG. AFT. @ FR. 49
⅜" = 1'-0"



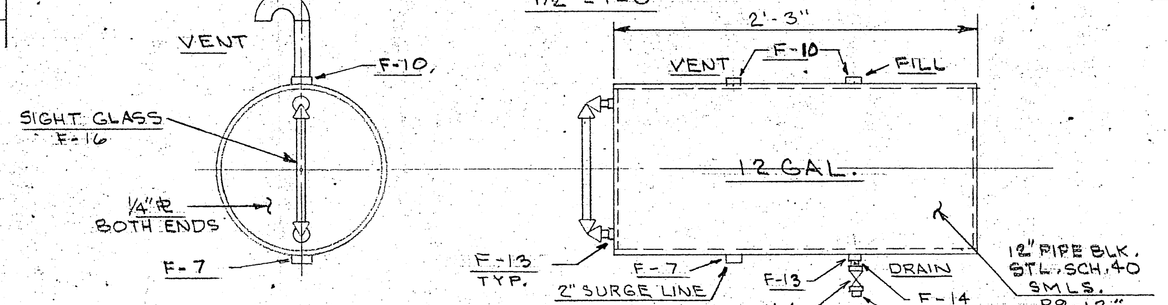
SECTION "3-B1"
LKG. AFT. @ FR. 55
⅜" = 1'-0"



DETAIL OF PROTECTIVE GUARDS
END VIEW
1½" = 1'-0"



DETAIL "4-A"
MN. ENG. JACKET WTR EXPANSION TK.
2-REQD.
1½" = 1'-0"



DETAIL "4-A1"
GEN. ENG. JACKET WTR. EXPANSION TK.
2-REQD.
1½" = 1'-0"

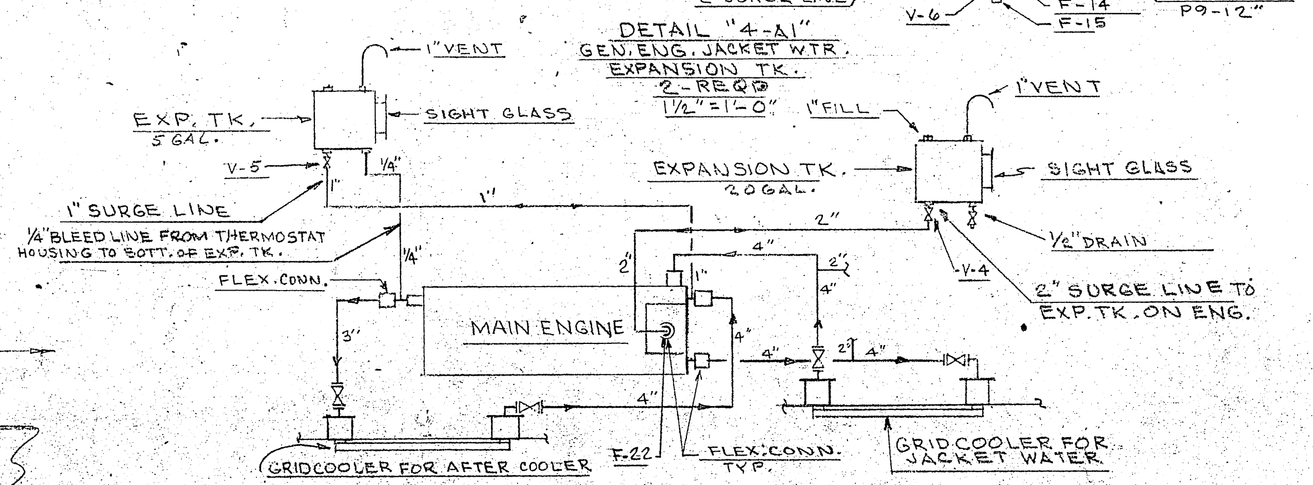
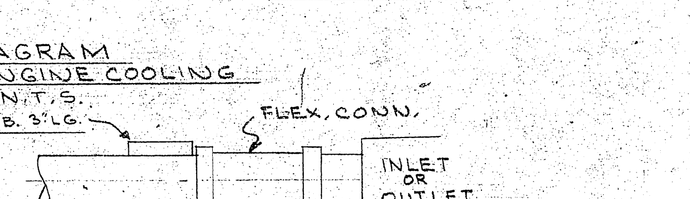
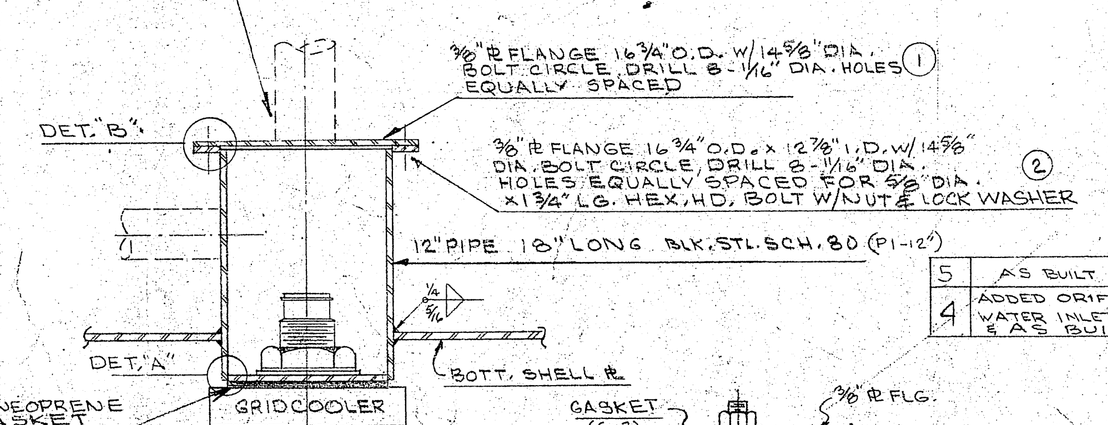


DIAGRAM
MAIN ENGINE COOLING
N.T.S.

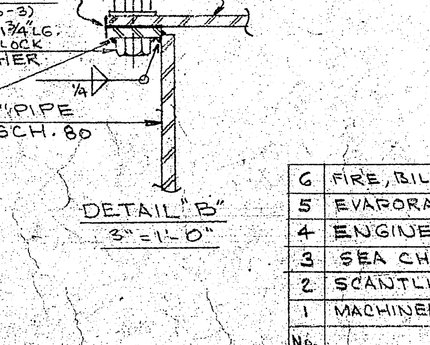


DET. "G-A"
TYP. ENG. COOLING CONNECTION
N.T.S.

CUT REQD SIDE HOLE & INSTALL PIPE IN FIELD. PIPE MAY BE INSTALLED ON TOP OR IN SIDE. PIPE TO BE BLK. STL. SCH. 80



DETAIL "4-B"
TYP. GRIDCOOLER INSTALLATION
1½" = 1'-0"



DETAIL "B"
3" = 1'-0"

DETAIL "A"
3" = 1'-0"

BILL OF MATERIAL

F.C. No.	QUAN.	SIZE	DESCRIPTION	COST ITEM	PO. No.	VENDOR	DATE REQD. YARD	DATE REQD
F-1	12'	12"	PIPE, BLK. STL. SCH. 80 SMLS. ASTM A53 GR. B	356				
F-2	16'	4"		356 367				
F-3	4'	3"		356				
△ F-4	215'	4"	PIPE, GALV. STL. SCH. 40 SMLS. ASTM A53 GR. B	356 367	351			
F-5	10'	3"		356				
F-6	A/R	2"		356 367				
F-7	A/R	1"		356				
F-8	A/R	¼" O.D	COPPER TUBING	356				
F-9	14'	12"	PIPE, BLK. STL. SCH. 40 SMLS. ASTM A53 GR. B	356 367				
△ F-1	55	4"	90° ELBOW L.R. B.W. GALV. STL. SCH. 40 ASTM A234	356 367	351			
△ F-2	15	4"	45° ELBOW L.R. B.W. GALV. STL. SCH. 40 ASTM A-234	356 367				
F-3	8	4"x4"x2"	TEE, REDUCING B.W. GALV. STL. SCH. 40 ASTM A234	367				
F-4	8	3"	90° ELBOW L.R. B.W. GALV. STL. SCH. 40 ASTM A234	356				
F-5	12	2"	90° ELBOW M.I. GALV. 150# SCRD ASTM A-47	356 367				
F-6	6	2"	UNION M.I. GALV. 150# SCRD ASTM A-47	356 367				
F-7	4	2"	COUPLING F.S. 2000# SCRD ASTM A-181 GR. I	356 367				
F-8	4	1"	90° ELBOW M.I. GALV. 150# SCRD ASTM A-47	356				
F-9	2	1"	UNION M.I. GALV. 150# SCRD ASTM A-47	356				
F-10	13	1"	COUPLING F.S. 2000# SCRD ASTM A-181 GR. I.	356 367				
F-11	2	1"	PIPE NIPPLE BLK. STL. SCRD ASTM A-120	356 367				
F-12	6	1"	180° RETURN M.I. GALV. 150# SCRD ASTM A-47	356 367				
F-13	16	½"	COUPLING F.S. 2000# SCRD ASTM A-181 GR. I.	356 367				
F-14	4	½"	PIPE NIPPLE BLK. STL. SCRD ASTM A-120	356 367				
F-15	4	½"	SQ. HD. PLUG F.S. SCRD ASTM A-181 GR. I	356 367				
F-16	6	½"	CONSOLIDATED BRASS SELF-CLEANING WTR. GAUGE, SERIES 30-1204 ⅝ x 12 GLASS	356 367				
F-17	2	¼"	MALE ELBOW BRASS PART NO. 400-2-4 SWAGELOK	356				
F-18	4	¼"	UNION ELBOW BRASS PART NO. 400-9 SWAGELOK	356				
F-19	2	¼"	COUPLING F.S. 2000# SCRD ASTM A-181 GR. I	356				
△ V-1	10	4"	GATE VALVE FLGD. 150# BRZ. MONEL TRIM O.S.&Y. B-61	356 367		CRANE OR EQ.		
V-2	1	4"	SWING CHECK FLGD 150# BRZ. MONEL TRIM B-61	367				
V-3	2	3"	GATE VALVE FLGD 150# BRZ. MONEL TRIM O.S.&Y. B-61	356				
V-4	4	2"	GATE VALVE SCRD 150# BRZ. MONEL TRIM O.S.&Y. B-61	356 367				
V-5	2	1"		356				
V-6	4	½"		356 367				
8	1	⅜"	DBLR. ℞ STL. 9" O.D. X 4 ⅝" I.D.	367				
△ FL-1	24	4"	FLANGE F.F. S.O. GALV. STL. ASTM A-181 GR. I	356 367				

CONT.

SYM	DESCRIPTION	DATE	BY
3	REV. PIPE CONNECTIONS TO HEAT EXCHANGER.	7/25/72	FBT
2	REV. PC. NO. 3 P4, P-1, F-23 & V-7 TO BILL OF MATL. ADDED S.W. COOLING LINE FROM 4" FIRE MAIN TO CROSSOVER CONN. BET. GEN. & SEA CHEST	2-22-73	PC
1	ADDED CROSSOVER CONN. BETWEEN GENERATOR & SEA CHEST. REV. THICKNESS OF NEOPRENE GASKET FOR GRIDCOOLER TO ¼". REV. BILL OF MAT'L. TO SUIT.	1-10-73	PC

REVISIONS

5	AS BUILT		
4	ADDED ORIFICE IN COOLING WATER INLET & OUTLET LINE & AS BUILT		

N.O. 12-13-72 △

APPROVALS

△ 10-6-73

ABS #2-26-73/4-5-73 △

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WASHINGTON D.C. 20360

OCEANOGRAPHIC RESEARCH SHIP
AGOR (UTILITY) CLASS

HALTER MARINE SERVICES, INC.
P.O. BOX 29266 NEW ORLEANS, LA. 70129

MAIN & AUXILIARY ENGINE COOLING

SCALE:	NOTED	DATE	11-11-72	HALTER DWG. NO.	P-8
DRAWN BY:	BERTUCCI	CK'D BY	JONES		
HALTER HULL NO.	375 376	HALTER JOB NO.	2187 2188		
NAVSHIPS NO.	AGOR 21-209-001			REV.	4

NO.	TITLE	DWG. No.
6	FIRE, BILGE & BALLAST PIPING	P-1
5	EVAPORATOR PIPING	P-14
4	ENGINE FOUNDATION	S-14
3	SEA CHESTS	S-21
2	SCANTLING PLAN	S-2
1	MACHINERY ARRANGEMENT	A-3

REFERENCES

00042

GYRE107