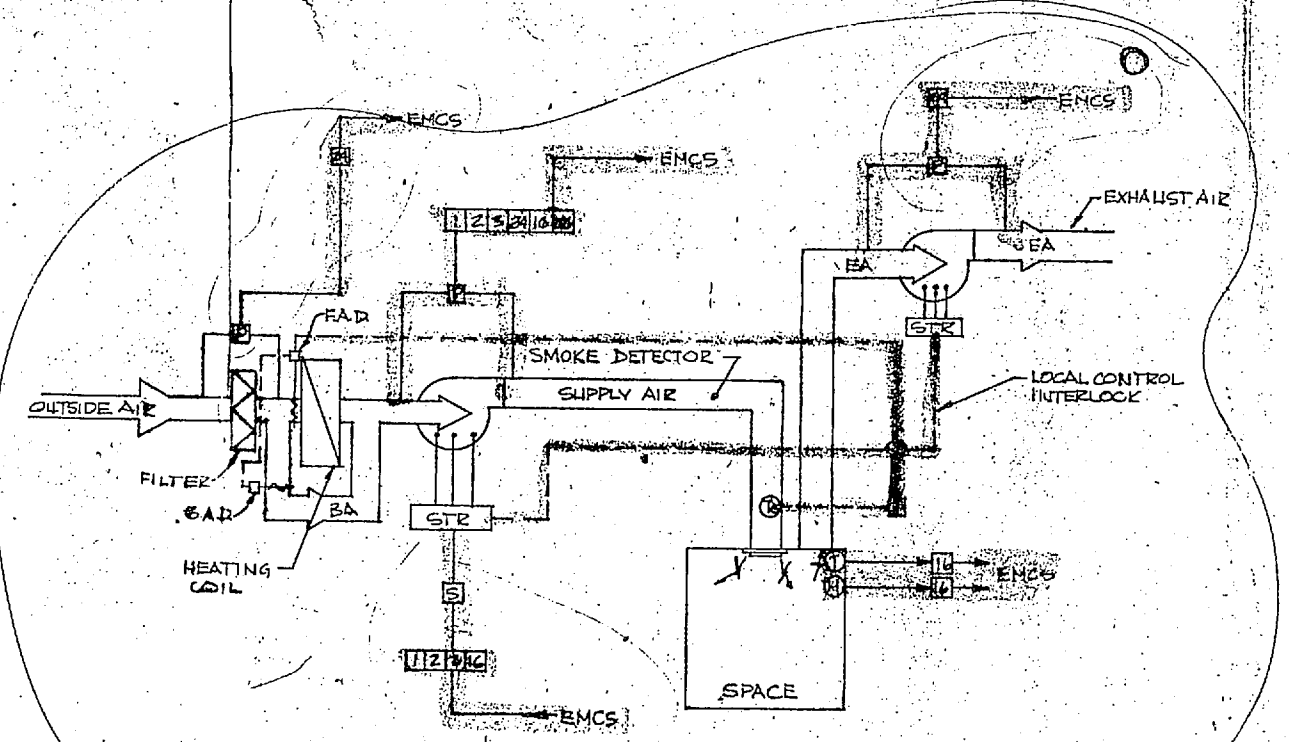


A/C UNITS 2 & 3 MECHANICAL DIAGRAM NO SCALE
(NOT APPLICABLE FOR A/C NO. 4)

	MONITORING		EQUIPMENT OPTIMIZATION DURING OPERATION								EQUIPMENT ON/OFF											
	28	27	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
HEATING & VENTILATING UNIT																						
STEAM SUPPLY METERING																						
A/C UNIT AIR SIDE																						
A/C UNIT REF. SIDE																						
UNIT TESTS																						

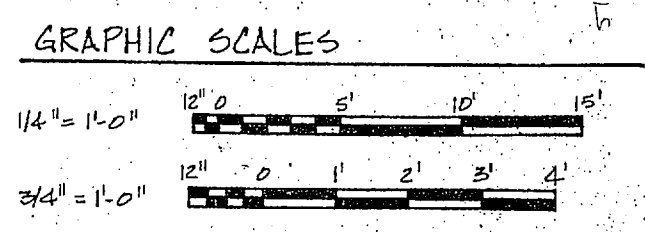
BLANK SPACES INDICATE NO FUNCTION ACTIVITY



HEATING & VENTILATING UNIT MECHANICAL DIAGRAM, NO SCALE

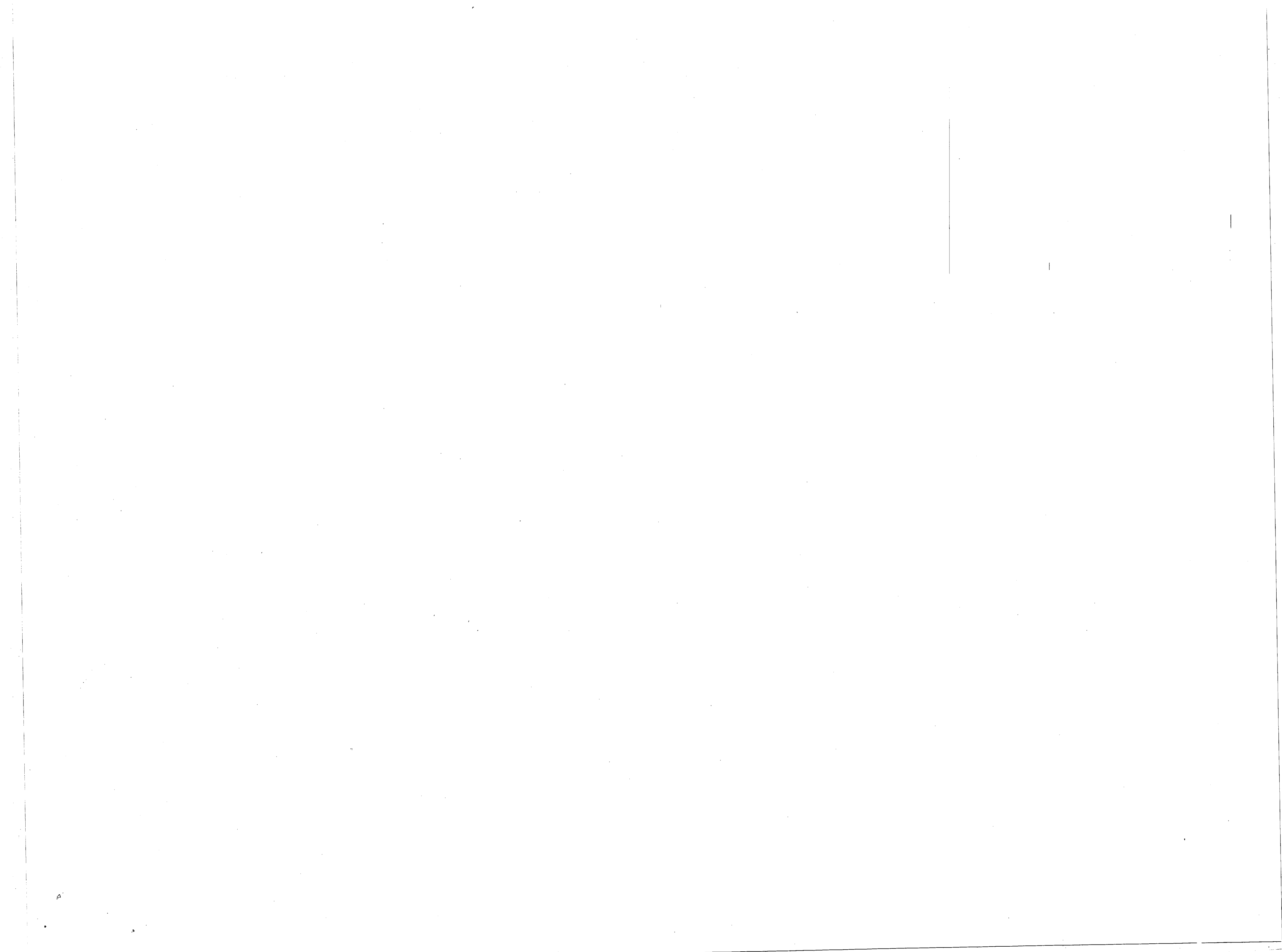
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

EMCS LEGEND	
SYMBOL	DESCRIPTION
→ EMCS	SIGNAL TRANSMITTED TO EMCS
← EMCS	SIGNAL RECEIVED FROM EMCS
[A]	ALARM CONTACT SIGNAL
[I]	LOCAL CONTROL INTERRUPTION INTERFACE
[O]	ON/OFF STATUS SIGNAL
[P]	DIFFERENTIAL PRESS SW STATUS SIG.
[S]	START/STOP INTERFACE
[T]	TEMPERATURE INDICATION
[R]	FUNCTION NO WHICH REQUIRES SIGNAL
[C]	TEMPERATURE CONTROLLER
[ST]	MOTOR STARTER
[CW]	CHILLED WATER
[EA]	EXHAUST AIR
[EAD]	EXHAUST AIR DAMPER
[HW]	HOT WATER
[MA]	MIXED AIR
[OAD]	OUTSIDE AIR DAMPER
[EAD]	RETURN AIR DAMPER
[SA]	SUPPLY AIR
[H]	HUMIDITY CONTROLLER
[L]	LOCAL CONTROL SIGNAL
[M]	METER SIGNAL
[FAD]	FACE AIR DAMPER
[B.A.D.]	BY-PASS AIR DAMPER
[R]	CONTROLLER RESET INTERFACE
[E]	ENERGY METER
[BA]	BY-PASS AIR
[FS]	FIRE STAT



MBTB ARCHITECTS ENGINEERS P.O. BOX 1158 GREENVILLE, S.C. 29310		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK, VIRGINIA	
DESIGNED BY: J. W. MATHIAS, JR. DRAWN BY: J. W. MATHIAS, JR. CHECKED BY: J. W. MATHIAS, JR. DATE: 12-15-64		M-3 CAMP LEJEUNE, N. C.	
FIELD MAINTENANCE SHOP MECHANICAL SECTIONS & EMCS DIAGRAMS		NAVFAC DRAWING NO. 4075864	
OFFICER IN CHARGE: J. W. MATHIAS, JR. DATE: 12-15-64		NAVFAC CONTR. NO. NRE470-60-B-0269	
APPROVED: J. W. MATHIAS, JR. DATE: 12-15-64		SIZE: F CODE IDENT. NO. 80091	
SCALE: AS SHOWN (SPEC.)		SHEET 42 OF 54	

EFD. DWG. NO. 175864



EXHAUST FAN SCHEDULE										
MARK	APPROX. CFM (SUMMER)	APPROX. CFM (WINTER)	HAX. TIP SPEED	APPROX. HP	ELECT. CHARACT.	TYPE	STATIC PRESS.	ROOM NO.	NO. REQ'D	REMARKS
200	—	—	3850	1/25	120/1/60	PRV.	.250	109	1	
756	—	—	3486	1/6	120/1/60	PRV.	.375	114, 111, 112	2	2-SPEED MOTOR
27,150	15,010	4,655	5	440/3/60	PRV.	.250	114, 115, 117	2	2	2-SPEED MOTOR
1,360	680	3,520	1/4	120/1/60	PRV.	.250	116	1	1	
22,100	—	4,025	5	440/3/60	PRV.	.250	118	1	1	
870	—	3,480	1/6	120/1/60	PRV.	.250	121	1	1	
870	—	3,480	1/6	120/1/60	PRV.	.250	122	1	1	
500	—	2,655	1/6	120/1/60	PRV.	.250	123	1	1	
1,285	645	3,850	1/6	120/1/60	PRV.	.250	124	1	1	2-SPEED MOTOR
3,765	—	3,500	1/2	440/3/60	PRV.	.250	125	1	1	
3,765	—	3,500	1/2	440/3/60	PRV.	.250	126	1	1	
3,015	1,512	3,510	1/3	120/1/60	PRV.	.250	127	1	1	2-SPEED MOTOR
500	—	2,655	1/6	120/1/60	PRV.	.250	128	1	1	
2,848	—	3,245	3/4	440/3/60	PRV.	.250	129	1	1	
144	—	3,245	1/2	120/1/60	PRV.	.250	130	1	1	

FINNED TUBE RADIATION SCHEDULE									
MARK	BTU/FT.	TOTAL BTU	ELEMENT LENGTH	ENCLOSURE LENGTH	ENCLOSURE HEIGHT	ENCLOSURE TYPE	ELEM. TYPE (COPPER ALUM)	CFM	REMARKS
FT-1	914	5,585	7'-0"	4'-0"	18"	SLD. TOP	1 1/2-3/4-60	164	
FT-2	914	3,225	4'-0"	2'-0"	18"	SLD. TOP	1 1/2-3/4-60	59	
FT-3	914	1,828	2'-0"	4'-0"	18"	SLD. TOP	1 1/2-3/4-60	18	
FT-4	914	2,117	3'-0"	5'-0"	18"	SLD. TOP	1 1/2-3/4-60	27	

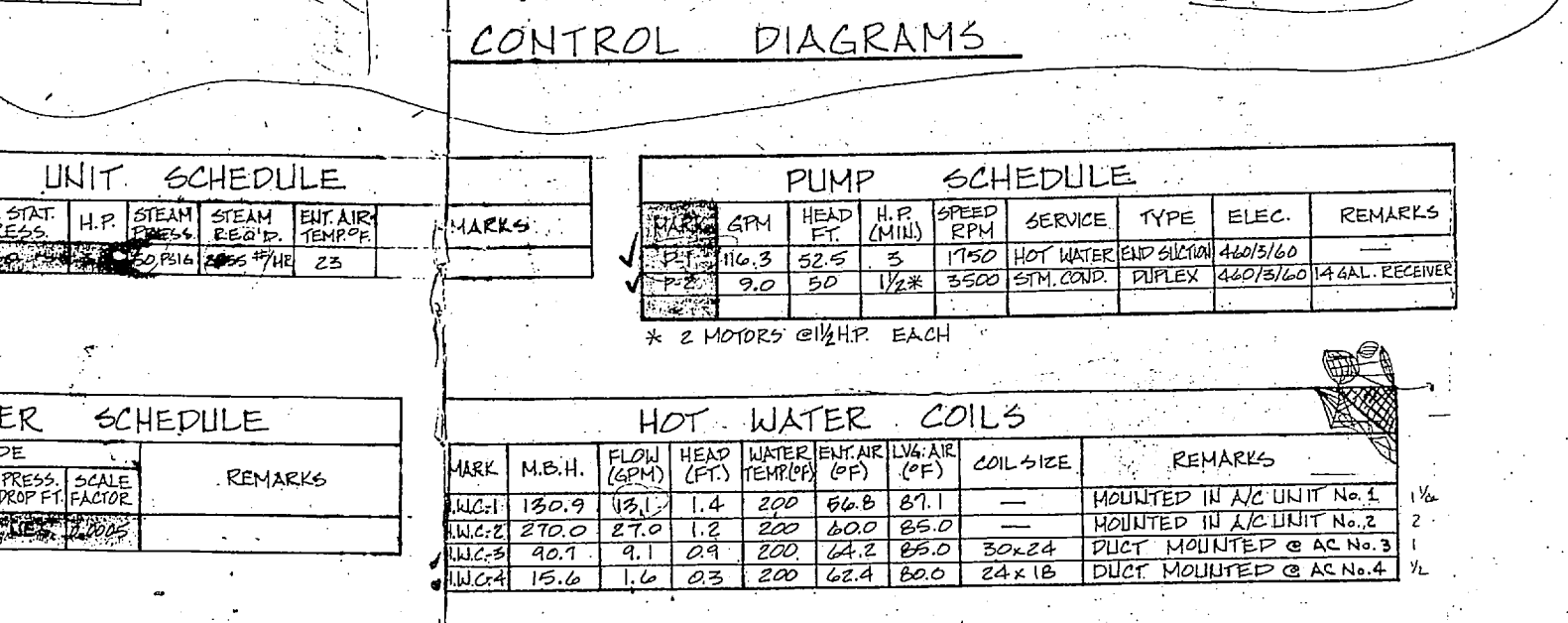
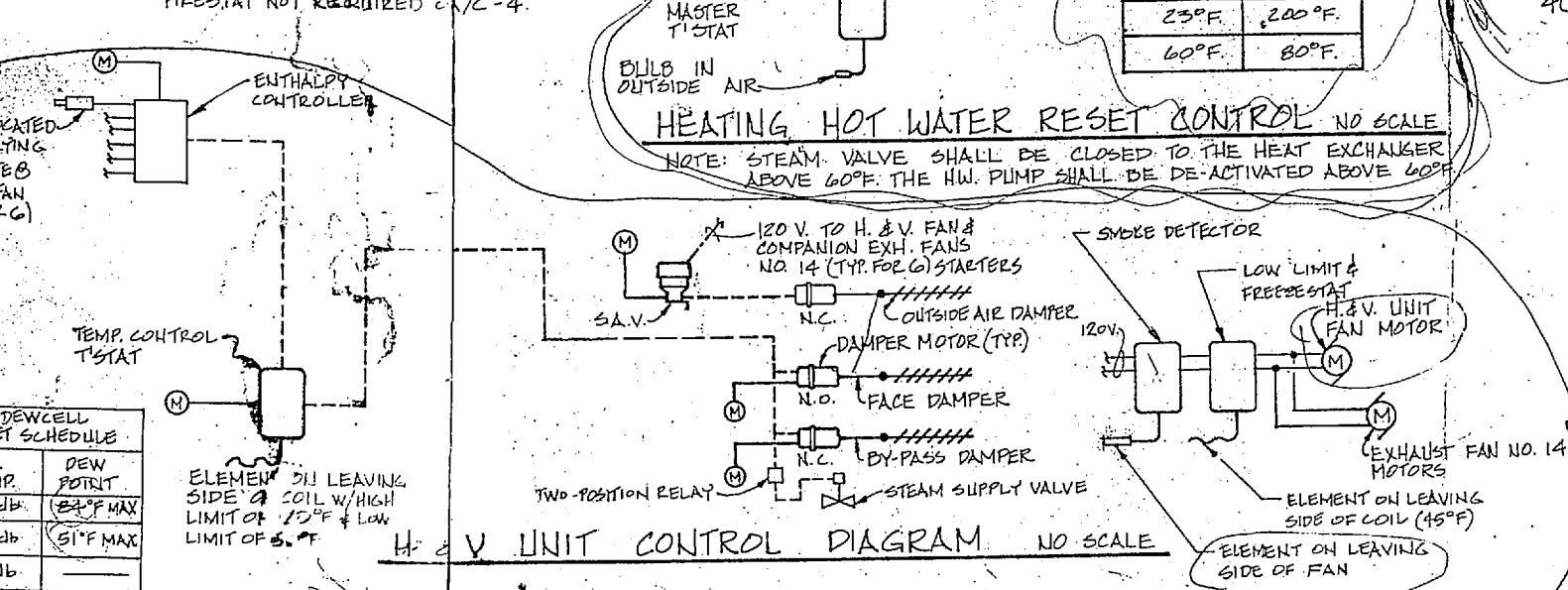
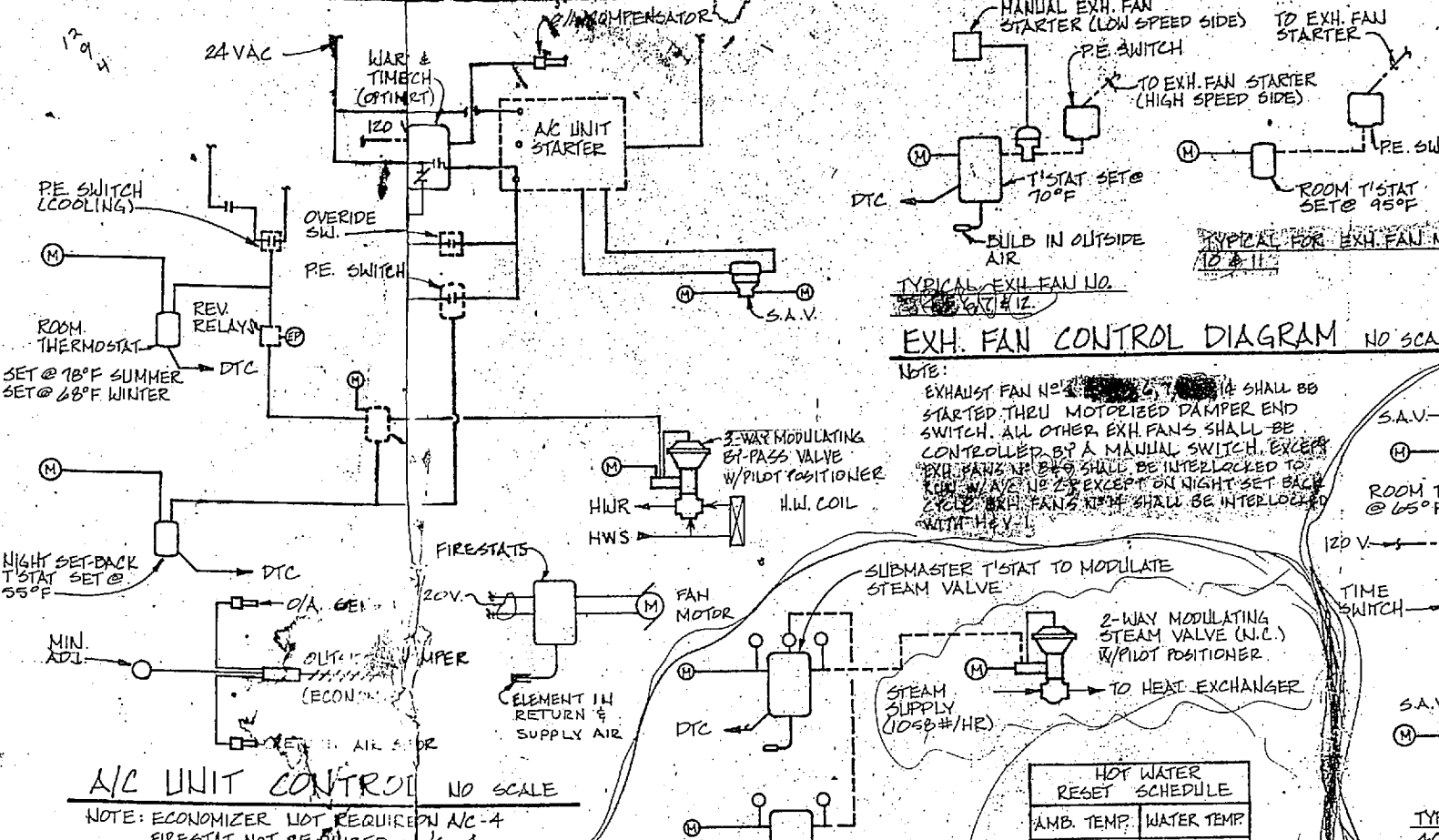
NOTES:
 1. ENCLOSURE MOUNTING HEIGHT SHALL BE 22 INCHES ABOVE FLOOR TO BOTTOM OF ENCLOSURE.
 2. PROVIDE END CAPS FOR ALL FINNED TUBE RADIATION CHRS.
 3. PROVIDE ELEMENT LENGTH & ENCLOSURES AS REQUIRED TO PROVIDE THE MINIMUM TOTAL BTU/UNIT, AND TO ENCLOSE THERMOSTATIC VALVES, SHUT-OFF VALVES, FLOW CONTROL VALVES AND FITTINGS.

UNIT HEATER SCHEDULE										
MARK	MBH	CFM	BTU	WATER TEMP.	H.P.	ENT. AIR TEMP. (°F)	TYPE	MOUNTING HEIGHT	NO. REQ'D	REMARKS
UH-1	16.25	1.6	310	101	1/25	40	HORIZ.	3	3	
UH-2	13.55	1.4	1,715	110	1/16	65	HORIZ.	2	2	
UH-3	30.72	3.1	950	90	1/50	40	VERT.	2	2	SEE NOTE 2
UH-4	85.74	8.6	2,660	10	1/20	65	VERT.	4	4	SEE NOTE 2
UH-5	38.40	3.8	1,120	101	1/12	65	HORIZ.	1	1	

NOTES:
 1. HEATER SELECTION BASED ON 200°F ENT. WATER TEMP AND 20°F WATER ΔT.
 2. PROVIDE WITH LOUVER CONE DIFFUSERS.

AIR DIFFUSER SCHEDULE					
MARK	CFM	NECK SIZE	TYPE OF THROW	TYPE	REMARKS
A	120	6"	4-WAY	SUPPLY	
B	192	8"	4-WAY		
C	160	8"	4-WAY		
D	345	10"	4-WAY		
E	232	8"	2-WAY		
F	356	10"	4-WAY		
G	258	10"	4-WAY		
H	320	10"	4-WAY	SUPPLY	
J	—	22" x 22"	—	RETURN	
K	400	10" x 10"	—	EXHAUST	
L	500	12" x 12"	—	EXHAUST	
M	240	10"	4-WAY	SUPPLY	
N	201	10"	4-WAY		
O	500	12"	4-WAY		
P	400	10"	4-WAY	SUPPLY	
Q	870	14" x 14"	—	EXHAUST	
R	500	10" x 10"	—		
S	1285	14" x 14"	—		
T	3015	22" x 22"	—	EXHAUST	
U	144	8" x 8"	—	EXHAUST	

NOTE: 1. ALL PANELS SHALL BE 24" x 24".
 2. SUMMER = S WINTER = W



H AND V UNIT SCHEDULE									
MARK	CFM	BTU	EXT. STAT. PRESS.	H.P.	STEAM PRESS.	STEAM RELO.	ENT. AIR TEMP.	REMARKS	
H-1	16.25	1.6	310	1/25	40	101	40		
H-2	13.55	1.4	1,715	1/16	65	110	65		
H-3	30.72	3.1	950	1/50	40	90	40	SEE NOTE 2	
H-4	85.74	8.6	2,660	1/20	65	10	65	SEE NOTE 2	
H-5	38.40	3.8	1,120	1/12	65	101	65		

PUMP SCHEDULE									
MARK	CFM	HEAD FT.	H.P.	SPEED RPM	SERVICE TYPE	ELEC.	REMARKS		
P-1	16.3	22.5	3	1750	HOT WATER END SUCTN	440/3/60	4 GAL. RECEIVER		
P-2	9.0	50	1/2	3500	SYM. COND.	440/3/60			

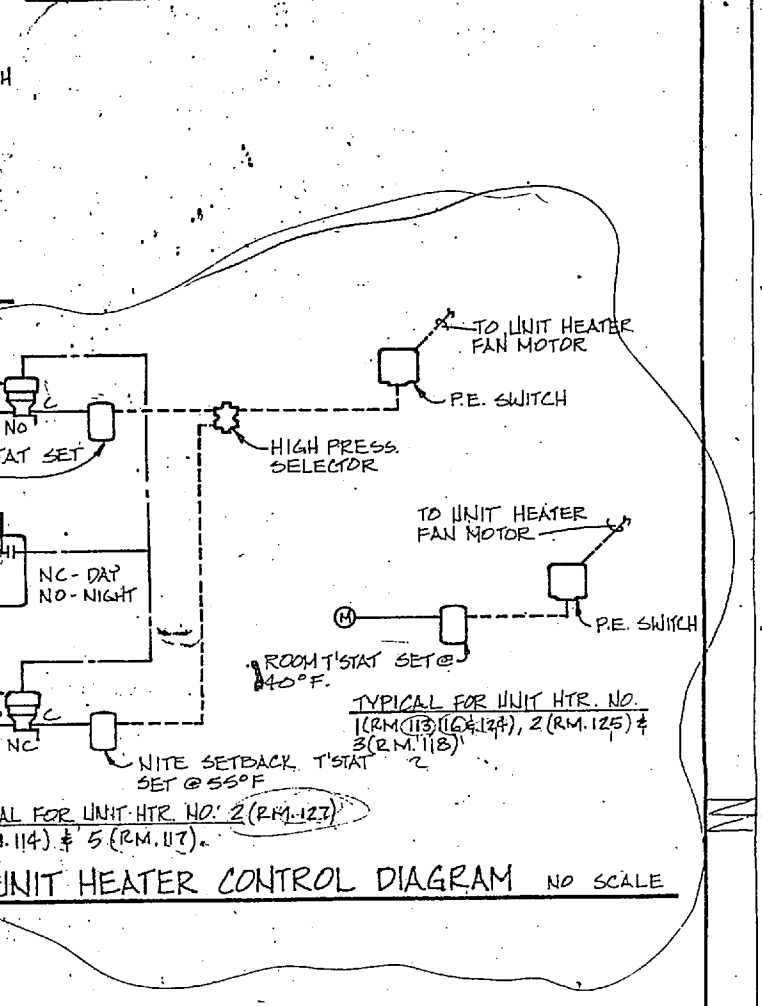
HEAT EXCHANGER SCHEDULE									
MARK	STEAM SIDE	WATER SIDE	REMARKS						
H-1	16.25	1.6	310						
H-2	13.55	1.4	1,715						
H-3	30.72	3.1	950						
H-4	85.74	8.6	2,660						
H-5	38.40	3.8	1,120						

HOT WATER COILS									
MARK	M.B.H.	FLOW (GPM)	HEAD (FT)	WATER ENT. AIR TEMP. (°F)	L.W. AIR (°F)	COIL SIZE	REMARKS		
H-1	16.25	1.6	1.4	200	86.8	87.1	— MOUNTED IN A/C UNIT NO. 1		
H-2	13.55	1.4	1.2	200	80.0	85.0	— MOUNTED IN A/C UNIT NO. 2		
H-3	30.72	3.1	0.9	200	64.2	66.0	DUCT MOUNTED @ AC NO. 3		
H-4	85.74	8.6	0.3	200	62.4	60.0	DUCT MOUNTED @ AC NO. 4		

AIR CONDITIONING UNIT SCHEDULE									
MARK	AIR HANDLING DATA			COOLING DATA			ELECTRICAL	REMARKS	
	S/A CFM	O/A CFM	E.V.A.P. FAN H.P.	TOTAL EXT. STAT. PRESS. I.W.G.	ENTERING AIR DBH	COND. MINIMUM			HEAT MBH TOTAL
1	4,000	1,107	3	1.0	84.7°Fdb / 70.0°Fwb	90	93,176	480/3/60	ROOF TOP W/ CURB
2	10,000	1,705	10	1.5	84.3°Fdb / 69.4°Fwb	90	188,414	480/3/60	ROOF TOP W/ CURB
3	4,000	340	4	0.9	82.6°Fdb / 68.1°Fwb	90	71,682	480/3/60	ROOF TOP W/ CURB
4	800	100	1/3	0.5	85.7°Fdb / 68.5°Fwb	90	12,231	10A47	ROOF TOP W/ PIPE SUPPORT

NOTE: COND. DRAINS ON ALL ROOF TOP UNITS SHALL BE TRAPPED WITH A MIN. OF 6" COND. SHALL BE DISCHARGED ONTO ROOF.

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVED



NOTES:
 1. OUTSIDE AIR DAMPERS SHALL CYCLE TO THE CLOSED POSITION WHEN THE A/C UNITS ARE OFF.
 2. OUTSIDE AIR DAMPERS AND BY-PASS DAMPERS SHALL CYCLE TO THE CLOSED POSITION WHEN THE H & V UNIT IS OFF.
 3. INTERLOCK H & V UNIT AND A/C UNITS WITH THE FIRE ALARM SYSTEM.

DESIGN TEMPERATURES	
A. OUTSIDE:	WINTER - 28°Fdb SUMMER - 90°Fdb; 79°Fwb
B. INSIDE:	OFFICE & CLASSROOMS - SUMMER - 78°Fdb; 50°Fdb WINTER - 68°Fdb
STORAGE AREAS -	SUMMER - MECH. VENTILATION WINTER - 40°Fdb
PERSONNEL WORK AREAS -	SUMMER - MECH. VENTILATION WINTER - 65°Fdb

M-5

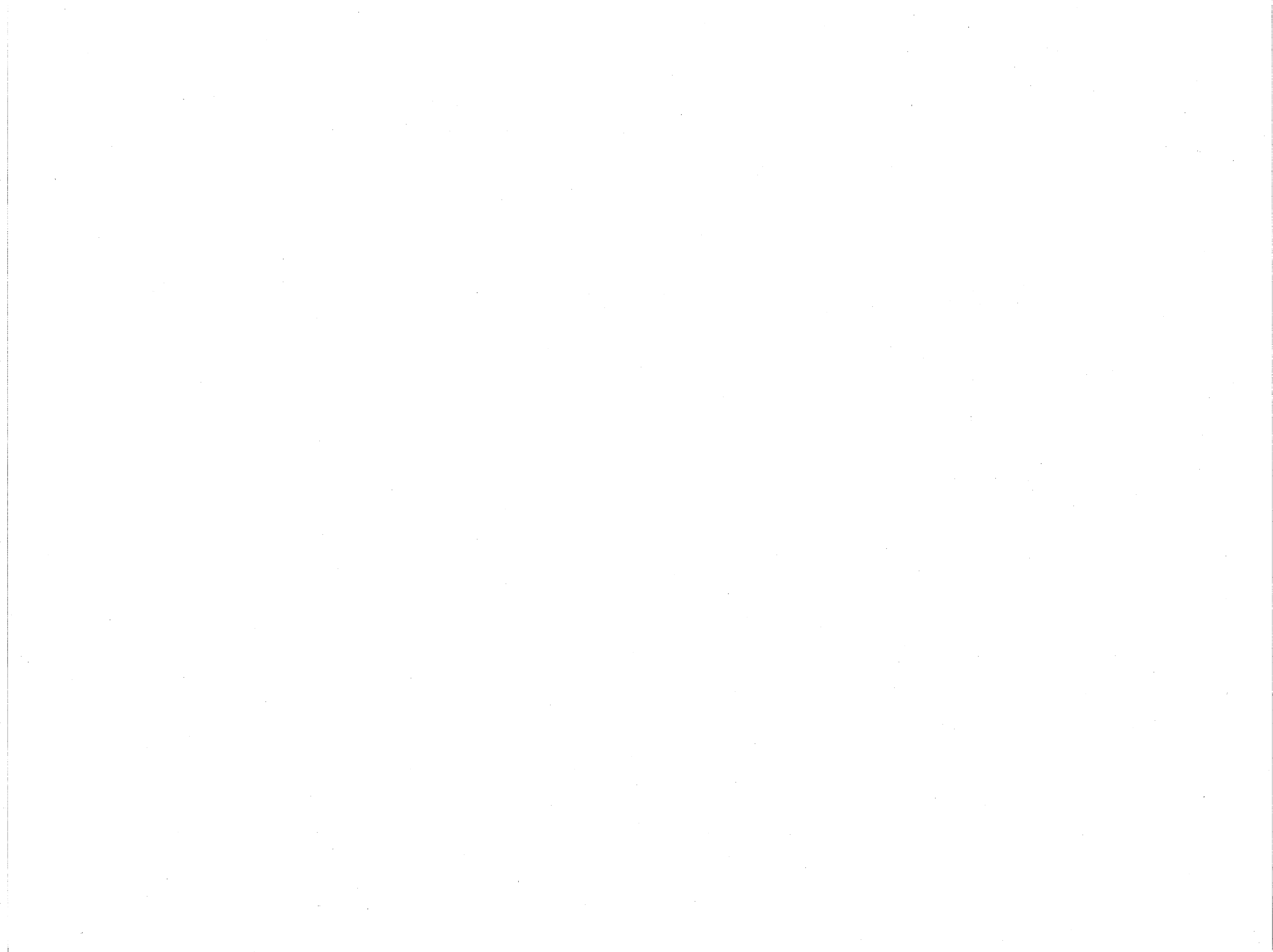
MBTB ARCHITECTS ENGINEERS
 100 W. 11th Street, Norfolk, VA 23510

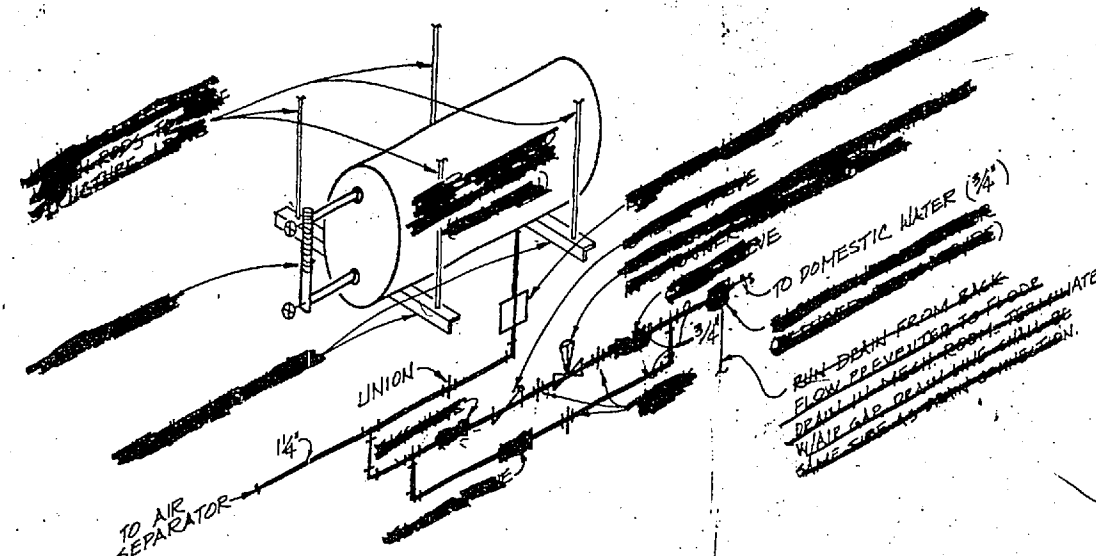
DEPARTMENT OF THE NAVY - NAVAL FACILITIES ENGINEERING COMMAND
 ATLANTIC DIVISION - NORFOLK VIRGINIA

NAVAL STATION - CAMP LEJEUNE, N. C.

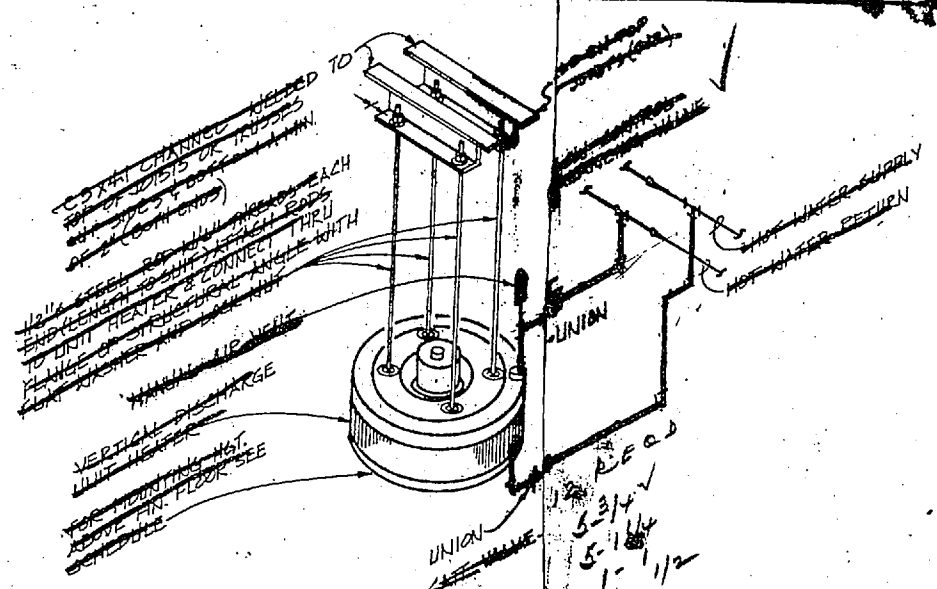
FIELD MAINTENANCE SHOP
 MECHANICAL SCHEDULES & CONTROL DIAGRAMS

SIZE: 8 1/2" x 11" DATE: 1/25/68
 SHEET NO. 4075866
 CONSTR. CONTR. NO. N62470-80-B-0269
 SCALE: AS SHOWN (SEE SHEET 44 OF 54)
 ETD. Dwg. NO. 175866

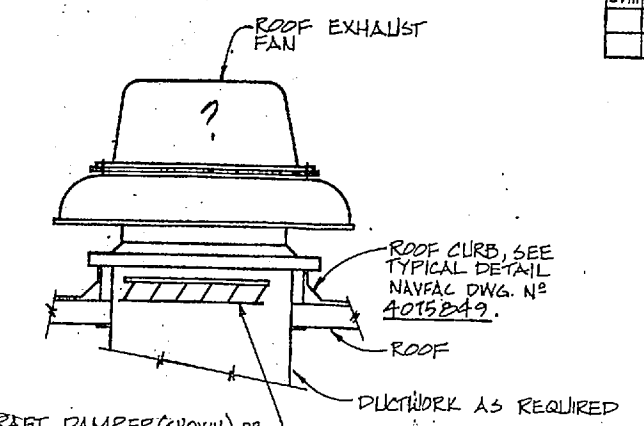




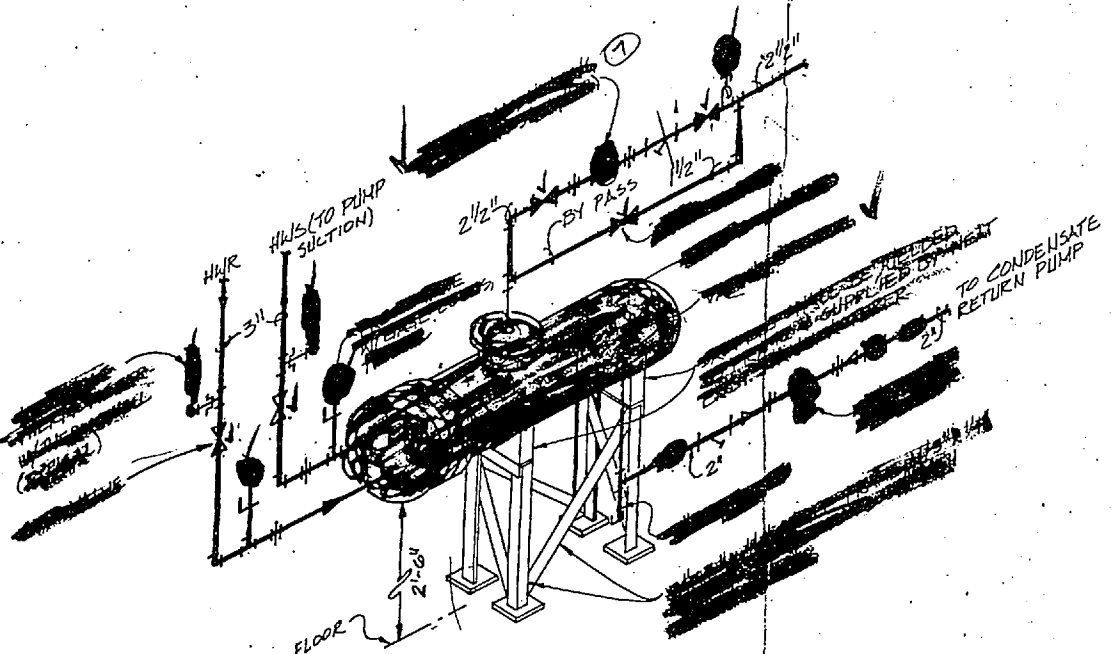
EXPANSION TANK & REDUCING VALVE ASSEMBLY DETAIL NO SCALE



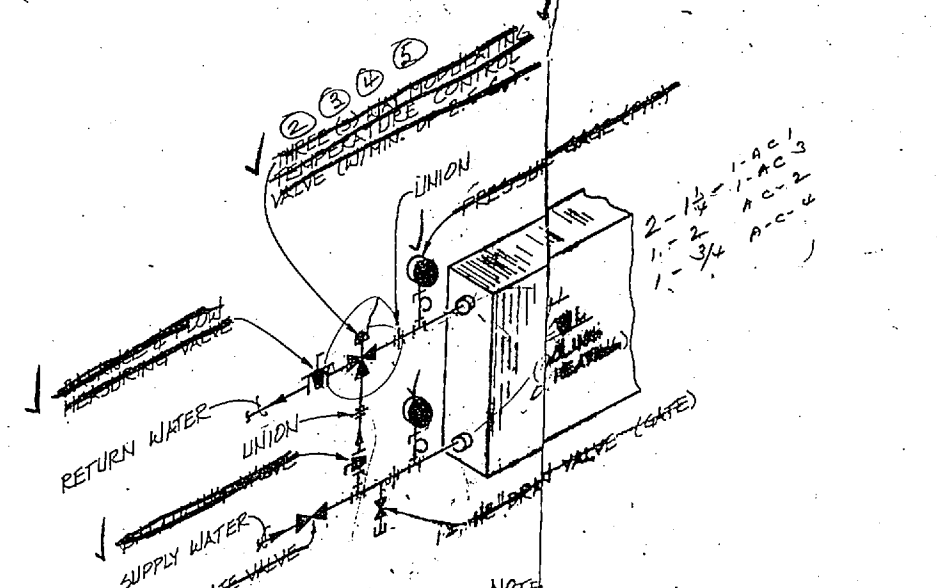
TYPICAL VERTICAL HOT WATER UNIT HEATER DETAIL NO SCALE



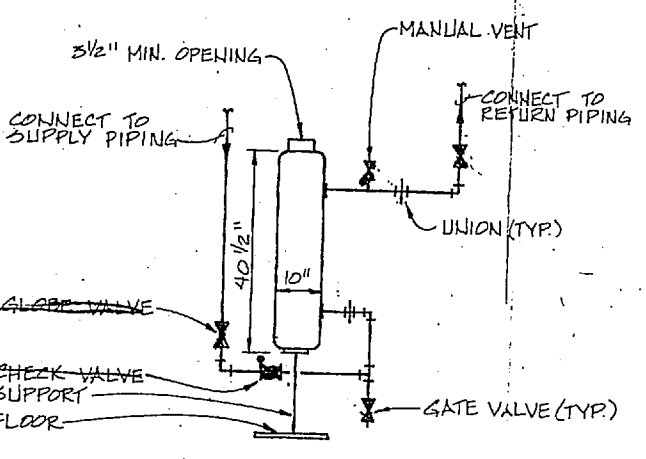
EXHAUST FAN DETAIL NO SCALE



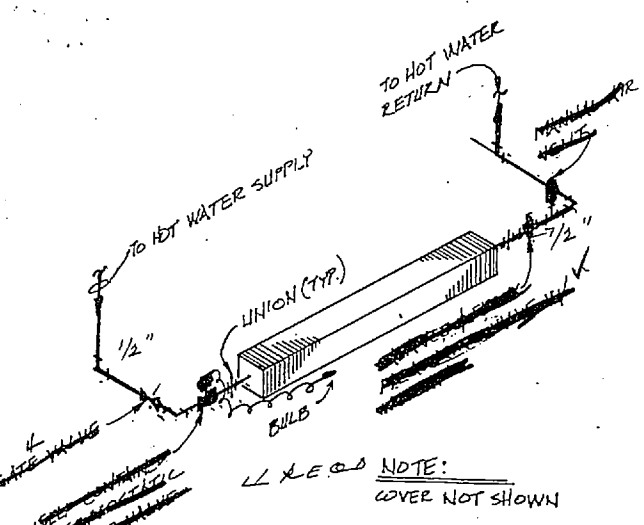
HEAT EXCHANGER DETAIL NO SCALE



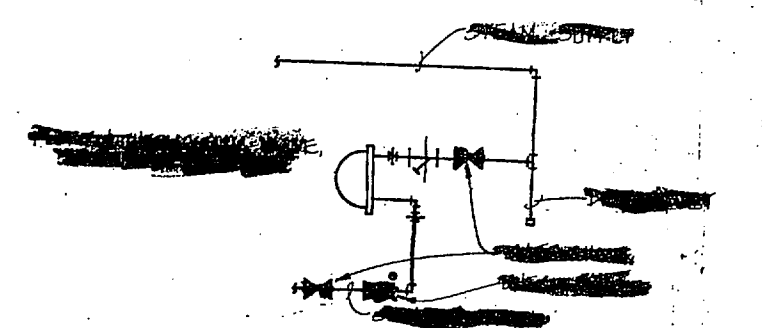
HOT & CHILLED WATER COIL PIPING DETAIL NO SCALE



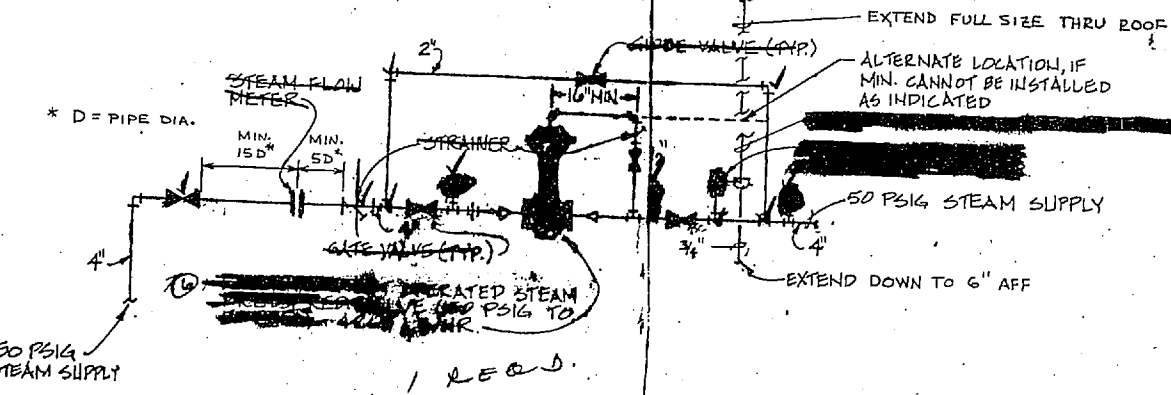
SHOT FEEDER DETAIL NO SCALE



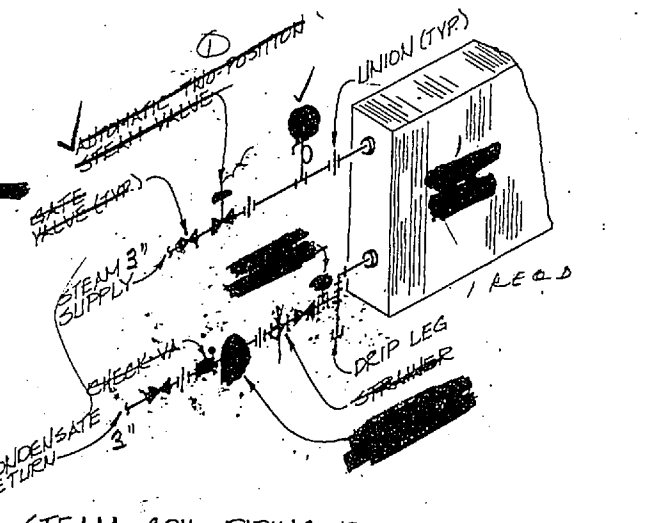
FIN TUBE RADIATOR DETAIL NO SCALE



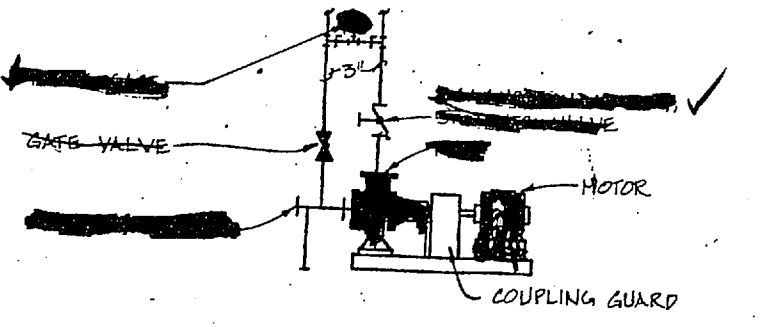
END OF MAIN TRAP ASSEMBLY NO SCALE



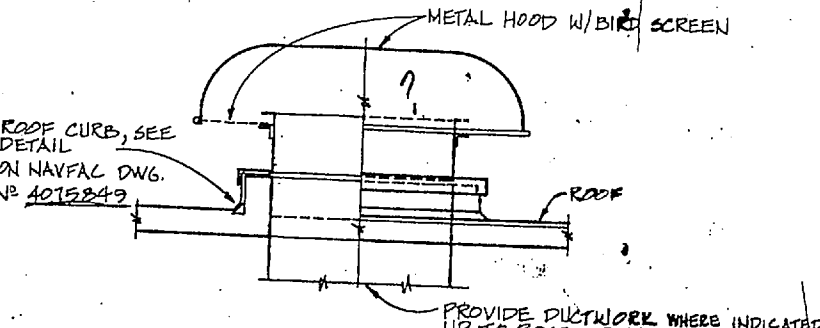
STEAM PRESSURE REDUCING STATION DETAIL NO SCALE



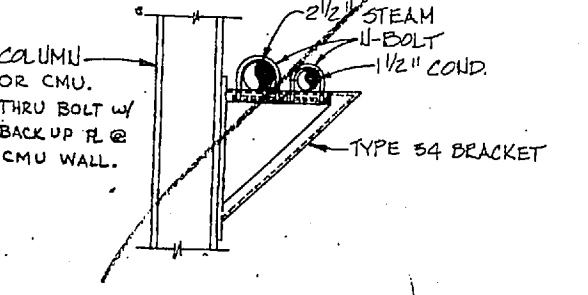
STEAM COIL PIPING DETAIL NO SCALE



BASE MOUNTED PUMP DETAIL NO SCALE

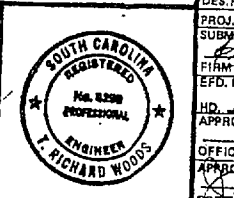


ROOF MOUNTED INTAKE & EXHAUST HOOD NO SCALE



PIPE ANCHOR DETAIL NO SCALE

REVISIONS		DATE	APPROVED
SYM	DESCRIPTION		



M-4	
MBTB ARCHITECTS ENGINEERS P.O. BOX 128 GREENVILLE, S.C. 29637-0128	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION
DES. MATHS. DR. CAJAN CHIK WOODS PROJ. MGR. PAGE CH ENGR. RINGS SUPERVISOR DATE EPC. EX. DIR. NVD. PRINCIPAL APPROVED DATE	NAVAL STATION NORFOLK, VIRGINIA CAMP LEJEUNE, N. C.
OFFICER IN CHARGE DATE	FIELD MAINTENANCE SHOP MECHANICAL DETAILS
SIZE CODE INT. NO. F P0091	NAVFAC DRAWING NO. 4075865
CONTRA. CONTR. NO. N82470-80-B-0289	SCALE: 1/8"=1'-0" (REG. 05-80-0289)
REVISION FOR COMMANDER, NAVFAC	SHEET 43 OF 54 EPC. DWG. NO. 175865

