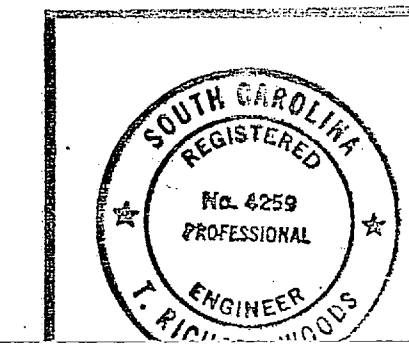
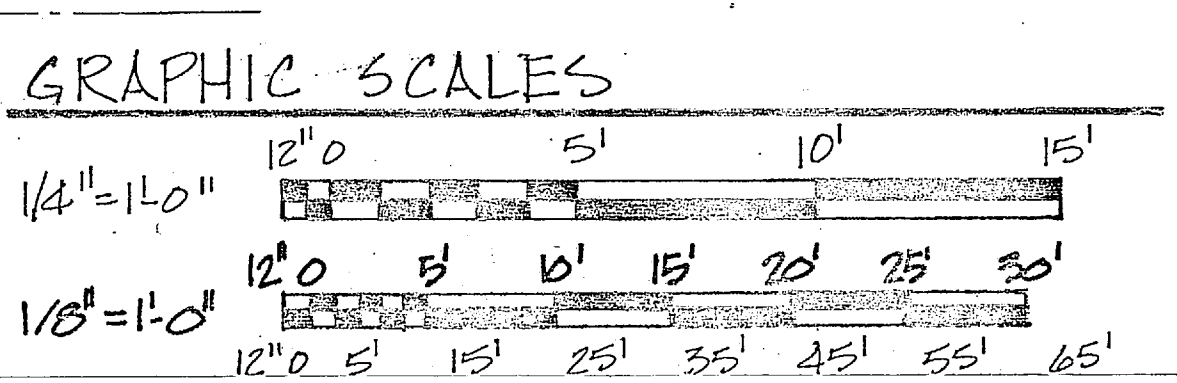
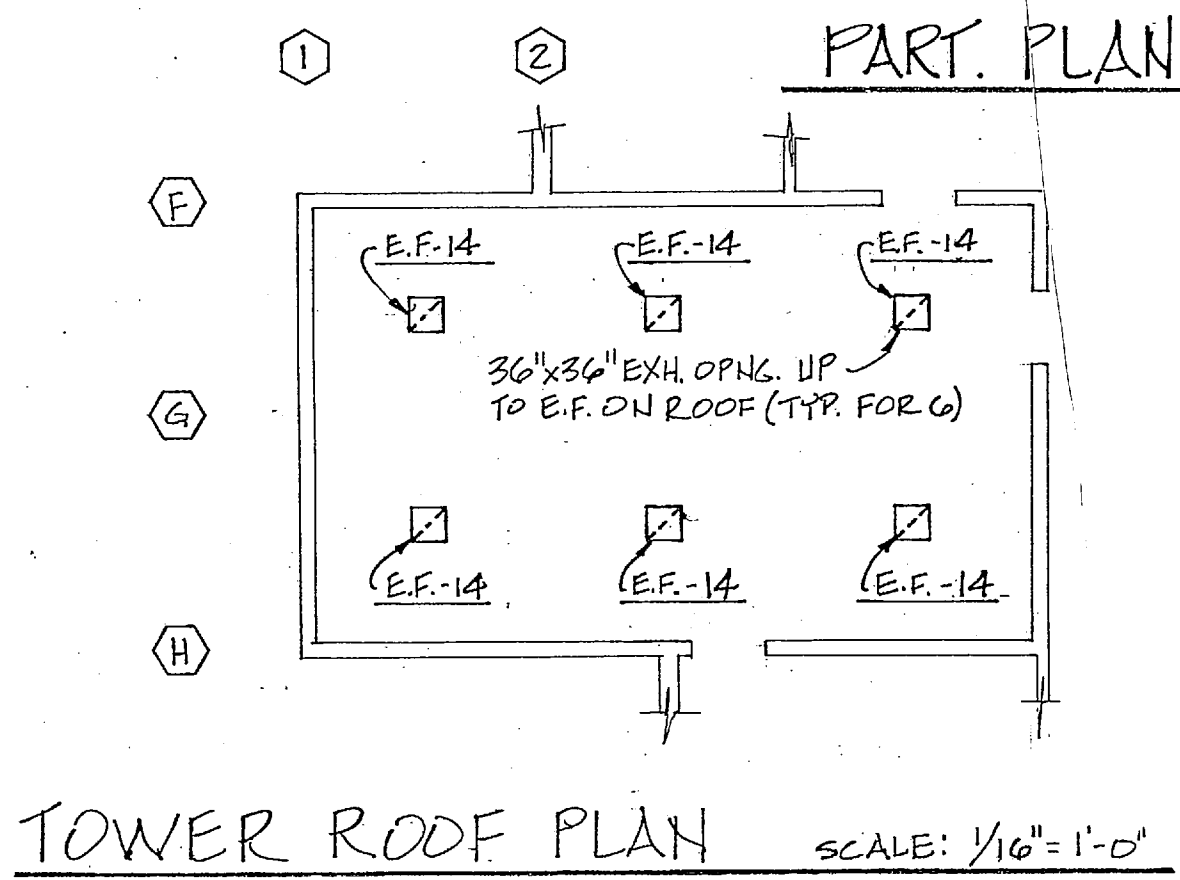
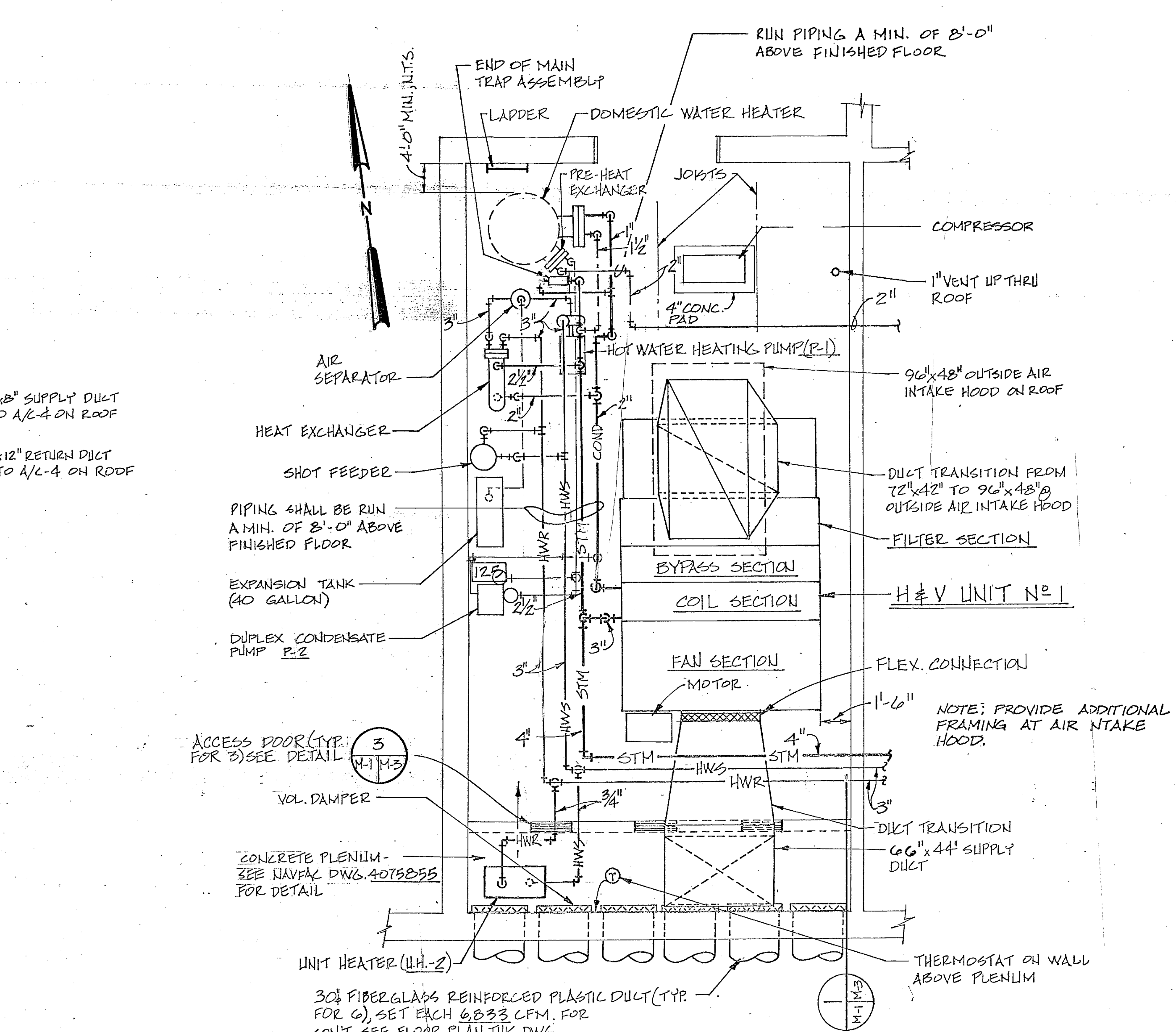
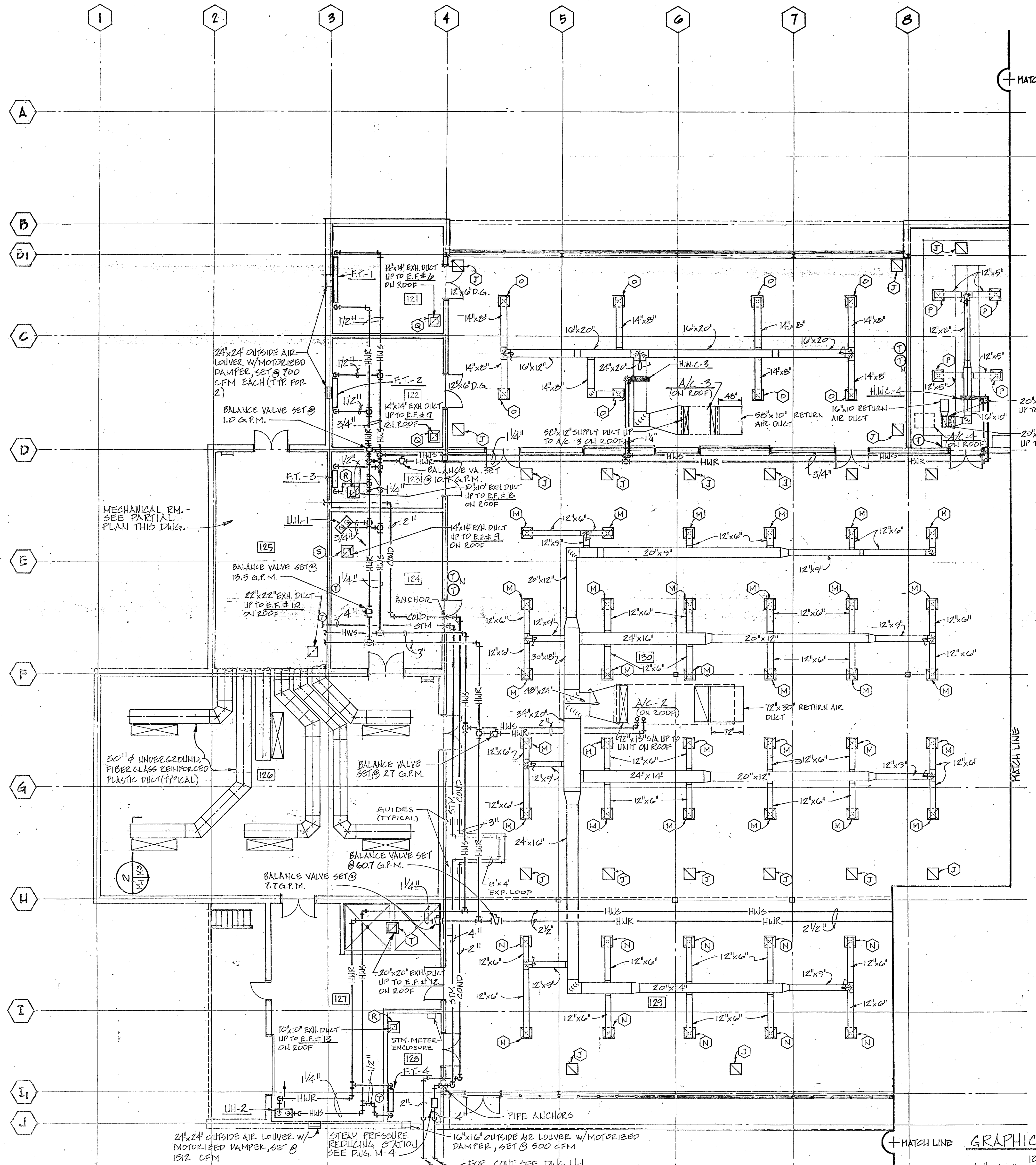


REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
(A)	REVISED AS-BUILT	11/20/84	R.F.



NOTES:
1. FOR L.F. SEE DWG. M-2.
FC 115

RECORD DRAWING
LETTER DATED 24 OCT 1984

MBTB ARCHITECTS
150 GREENVILLE, S.C. 29230

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
NORFOLK, VIRGINIA
CAMP LEJEUNE, N. C.

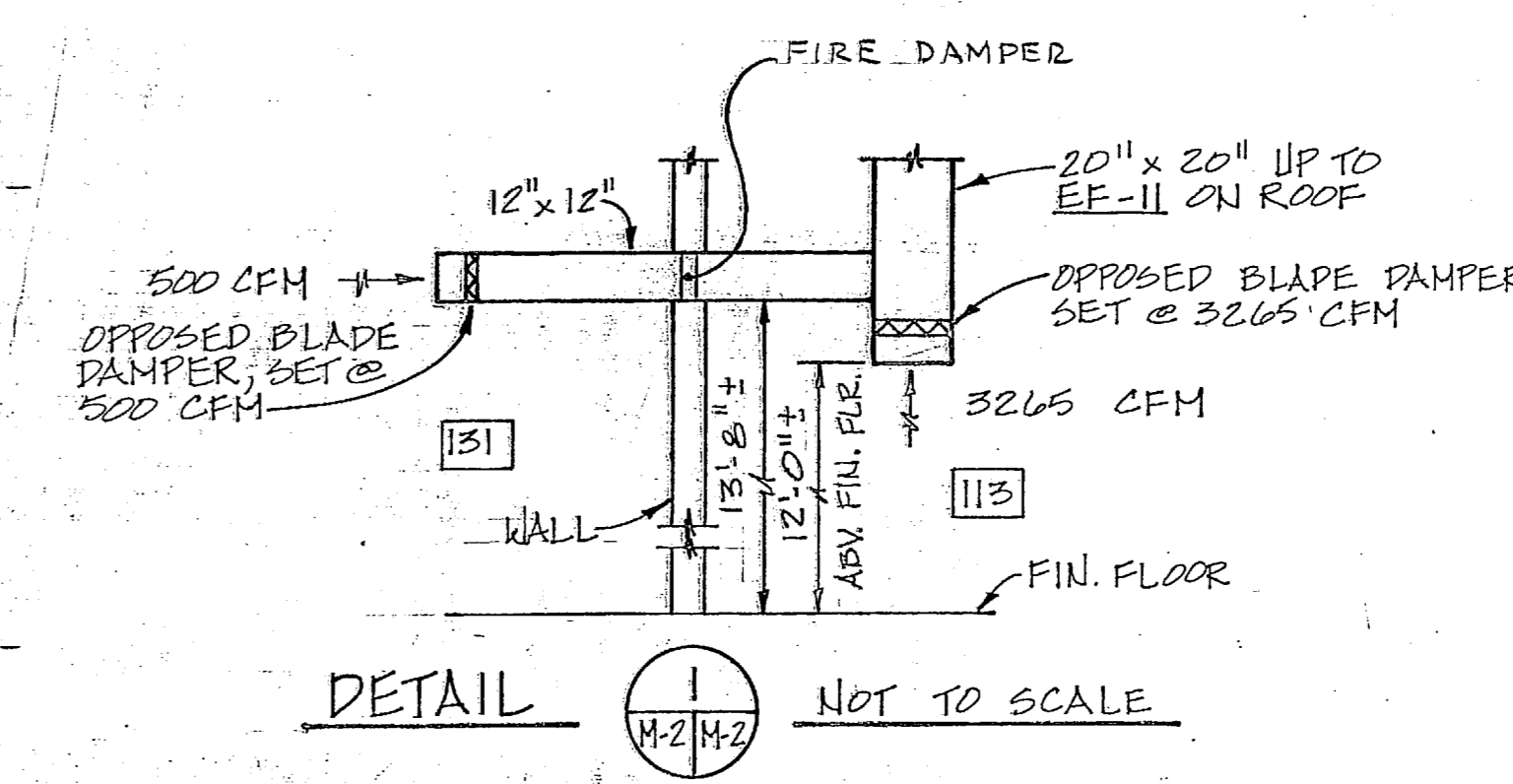
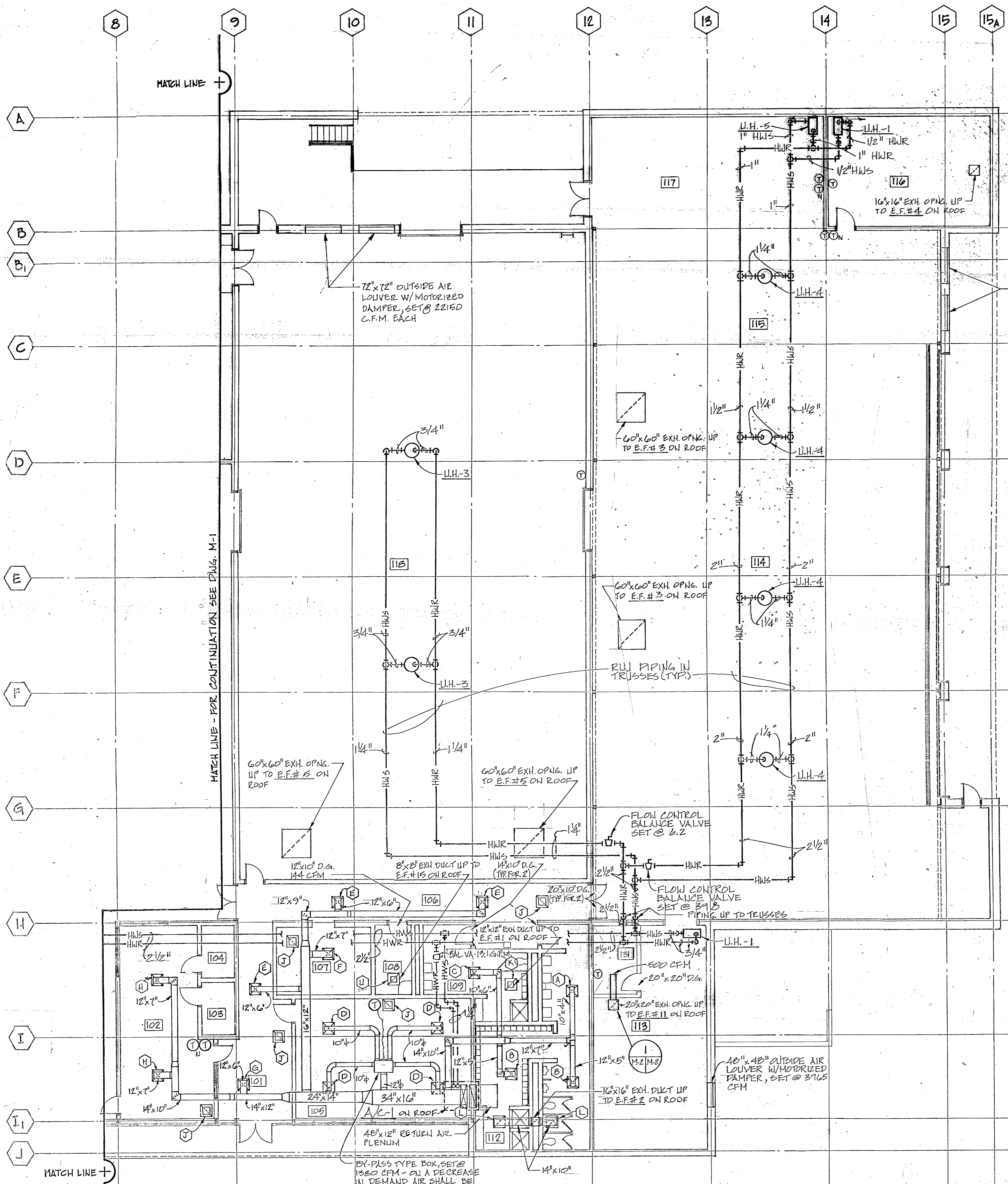
FIELD MAINTENANCE SHOP
PART. FLOOR / MECHANICAL PLAN

NAVFAC DRAWING NO.
4075862

CONSTR. CONTR. NO. N62470-80-B-0289



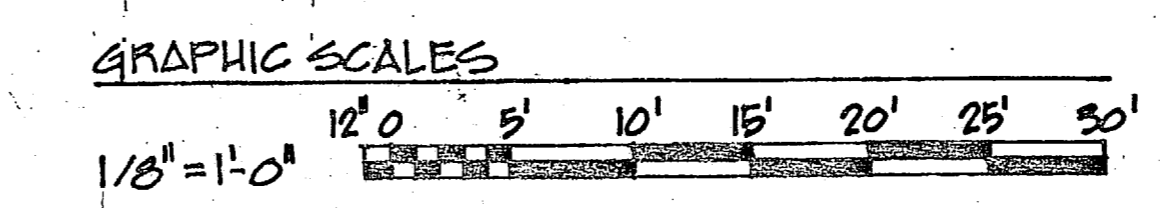
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



EFD. DTG. NO.
175863

MECHANICAL LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—HWS—	HOT WATER SUPPLY	⊙	THERMOSTAT
—HWR—	HOT WATER RETURN	—○—	PIPING TURNED UP
—G—	GATE VALVE	—○—	PIPING TURNED DOWN
—C—	CHECK VALVE	⊙	WIRE SET-BACK T-STAT
—G—	GLOBE VALVE	F.D.	FIRE DAMPER
—S—	STRAINER	—R—	PIPE REDUCER
—U—	UNION	U.H.	UNIT HEATER
—P—	PRESSURE GAGE	PRV	POWER ROOF VENTILATOR
—T—	THERMOMETER	F.T.	FIN TUBE RADIATION
—F—	FLOW CONTROL VALVE	—>—	DIRECTION OF FLOW
—S—	STEAM PIPING	PE SWITCH	PNEUMATIC-ELECTRONIC SWITCH
—C—	LOW PRESSURE STEAM CONDENSATE	S.A.V.	SOLENOID AIR VALVE
—P—	PUMPED CONDENSATE	E.P. SWITCH	ELECTRONIC-PNEUMATIC SWITCH
—D—	SUPPLY AIR DIFFUSER (W/VOL. DPR.)	—	SECONDARY AIR PIPING
—R—	RETURN OR EXHAUST GRILLE (W/VOL. DPR.)	—M—	MAIN AIR PIPING
—S—	SPLITTER DAMPER	—X—	PIPE ANCHOR
—T—	TURNING VANES		

PART. FLOOR / MECHANICAL PLAN 1/8"=1'-0"



RECORD DRAWING
LETTER DATED 24 OCT 1984

M-2

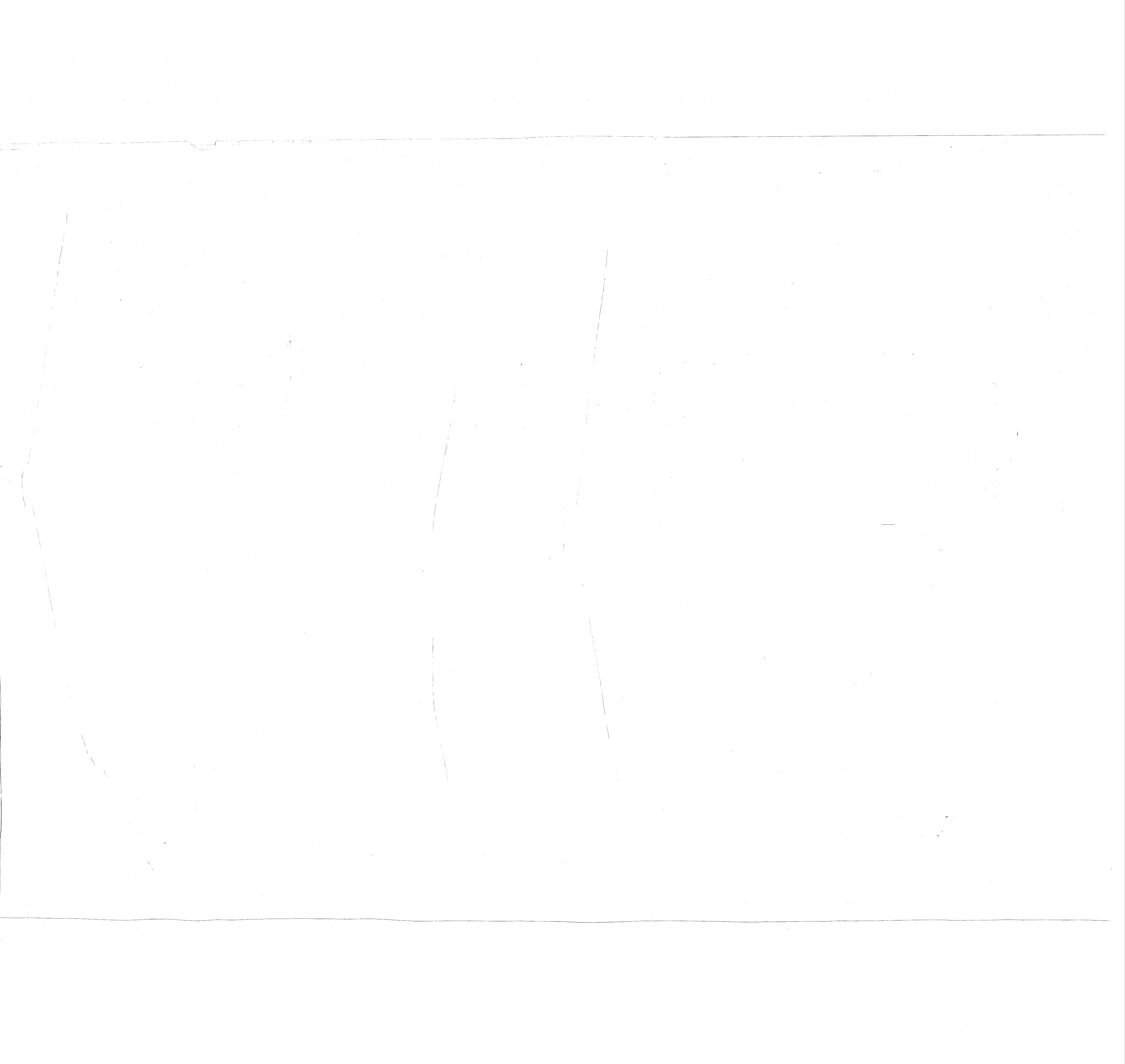
MBTB ARCHITECTS ENGINEERS
P.O. BOX 188 GREENVILLE, S.C. 29610

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION
CAMP LEJEUNE, N. C.

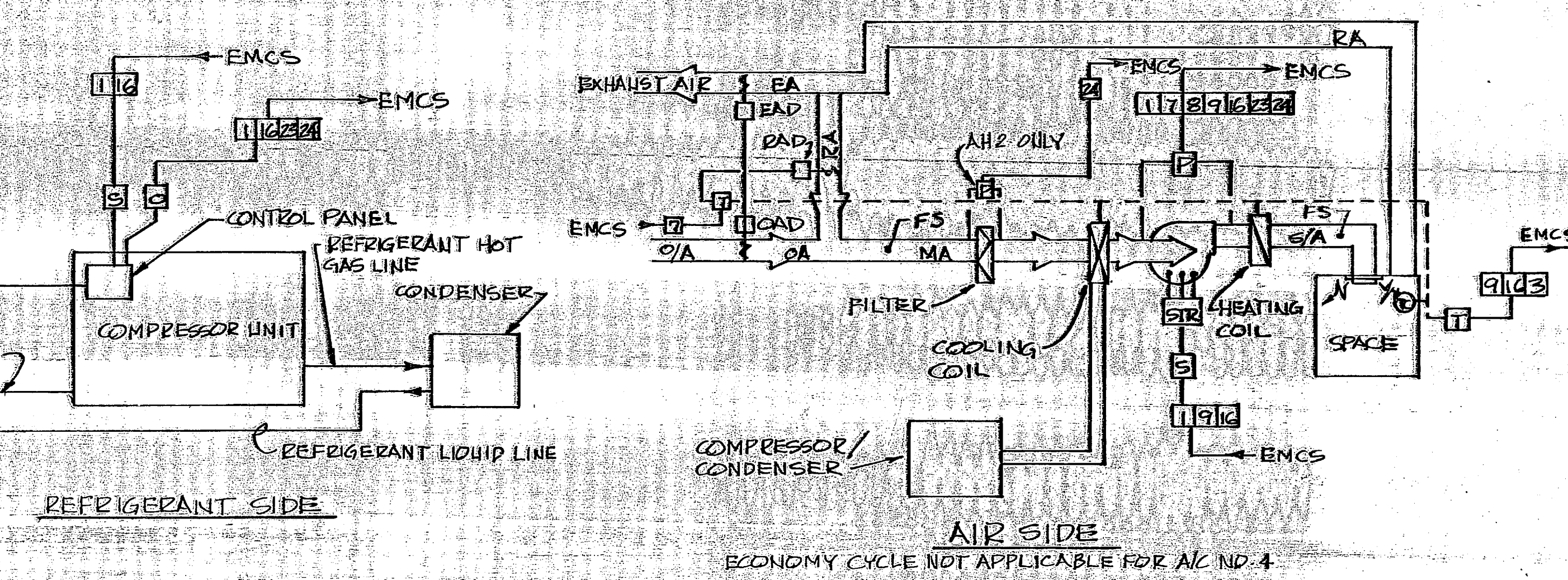
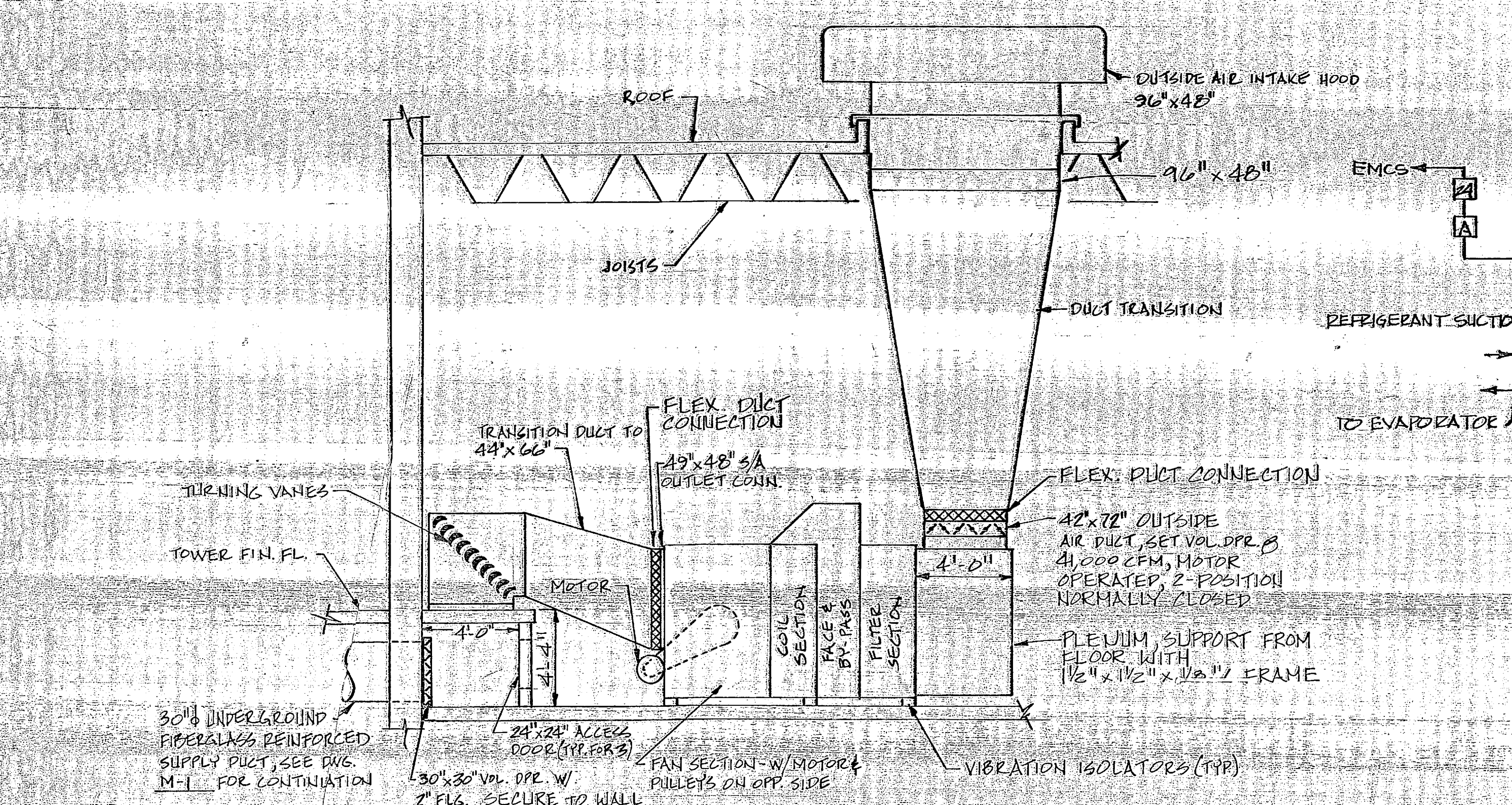
FIELD MAINTENANCE SHOP
PART FLOOR / MECHANICAL PLAN

NAVAFAC DRAWING NO.
4075863

CONSTR. CONTR. NO. NS2470-80-B-0289



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

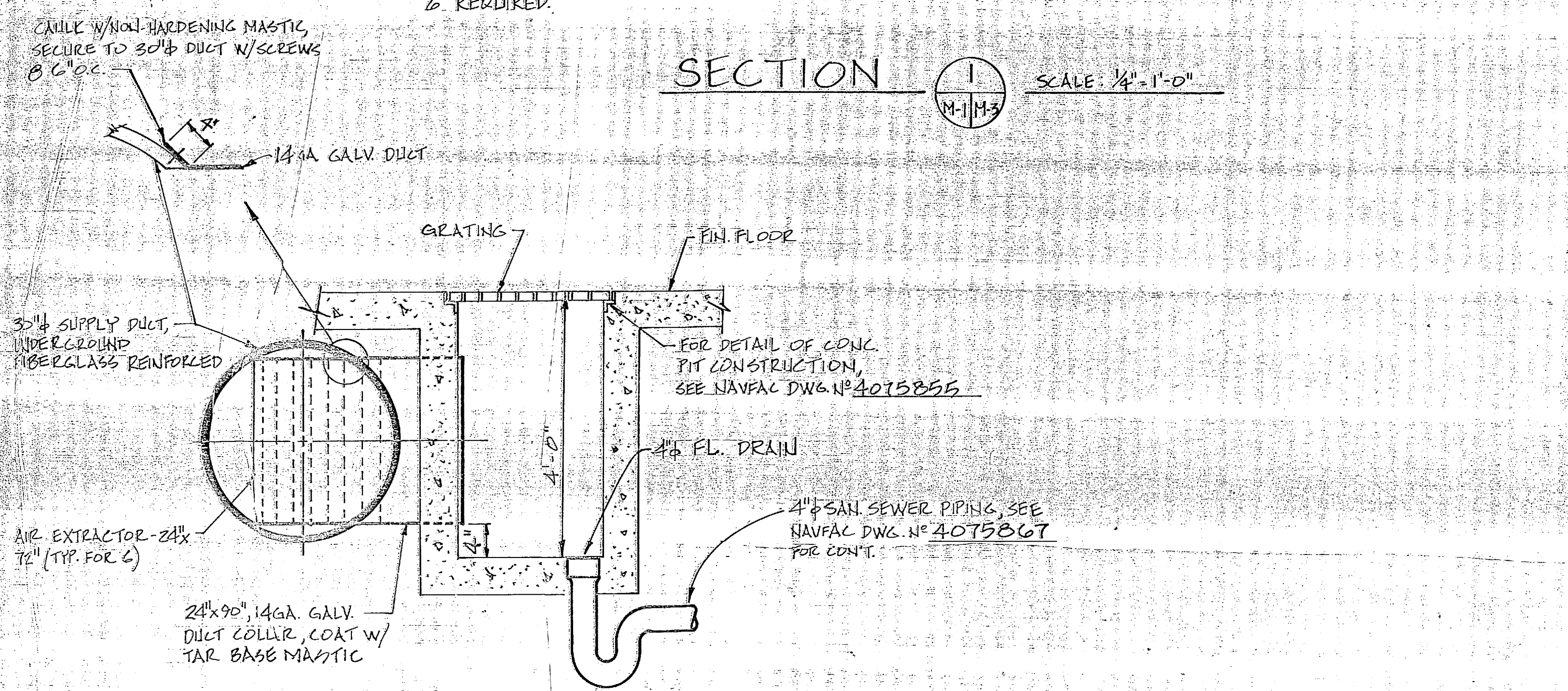


A/C UNITS 1, 2, & 3 MECHANICAL DIAGRAM NO SCALE
(NOT APPLICABLE FOR A/C #4)

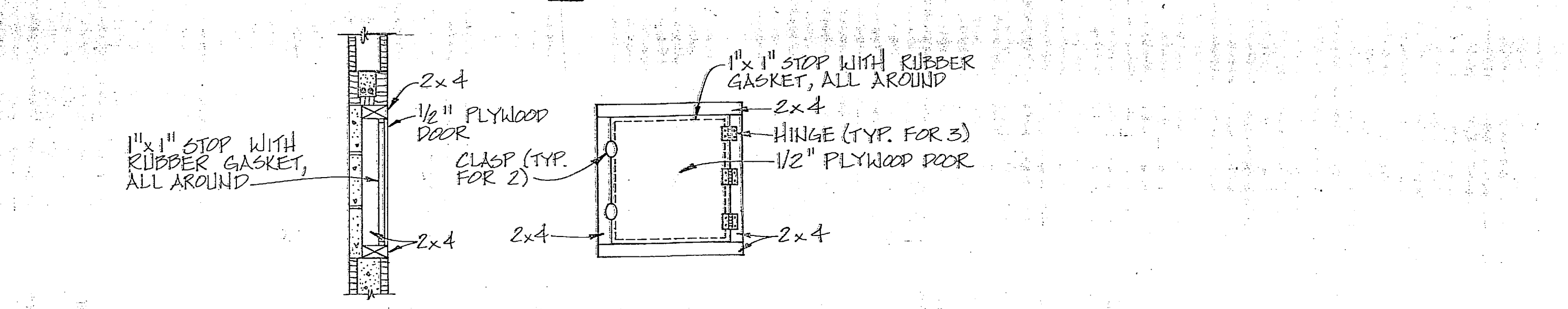
	MONITORING				EQUIPMENT OPTIMIZATION DURING OPERATION										EQUIPMENT ON/OFF												
	28	27	26	25	24	23	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
HEATING & VENTILATING UNIT																											
STEAM SUPPLY METERING																											
A/C UNIT AIR SIDE																											
A/C UNIT REF. SIDE																											
UNIT HEATERS																											

BLANK SPACES INDICATE NO FUNCTION ACTIVITY

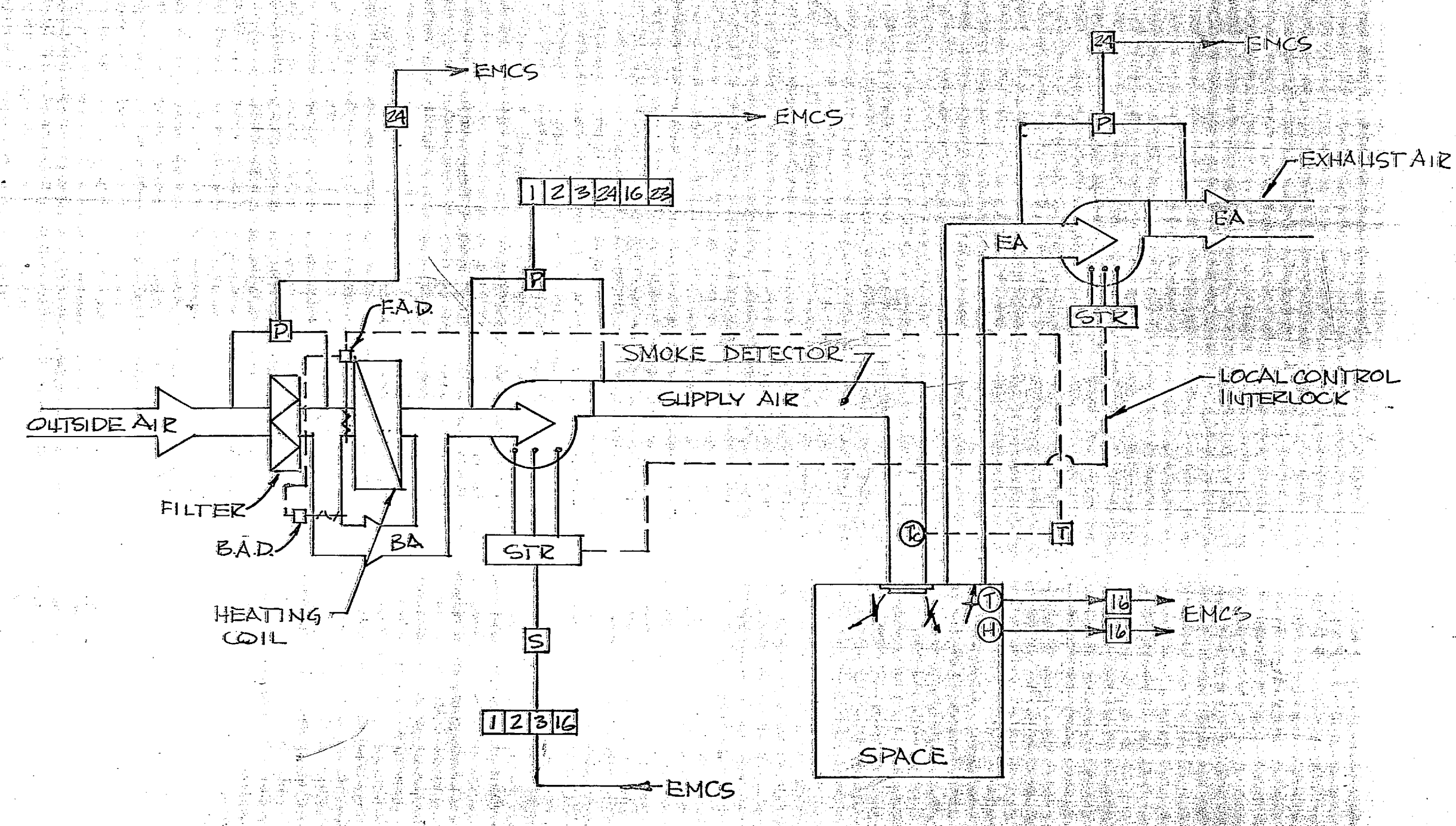
EMCS LEGEND	
SYMBOL	DESCRIPTION
→ EMCS	SIGNAL TRANSMITTED TO EMCS
← EMCS	SIGNAL RECEIVED FROM EMCS
[A]	ALARM CONTACT SIGNAL
[I]	LOCAL CONTROL INTERRUPTION INTERFACE
[O]	ON/OFF STATUS SIGNAL
[P]	DIFFERENTIAL PRESS. SW STATUS SIG.
[S]	START/STOP INTERFACE
[T]	TEMPERATURE INDICATION
[F]	FUNCTION NO WHICH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



SECTION 2 SCALE: 3/4" = 1'-0"

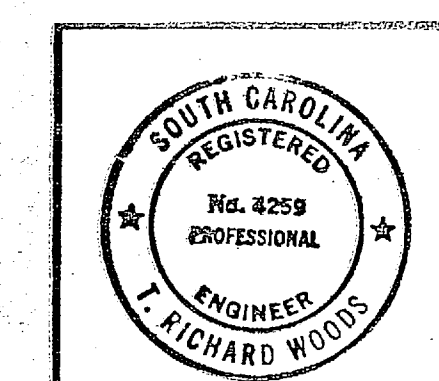
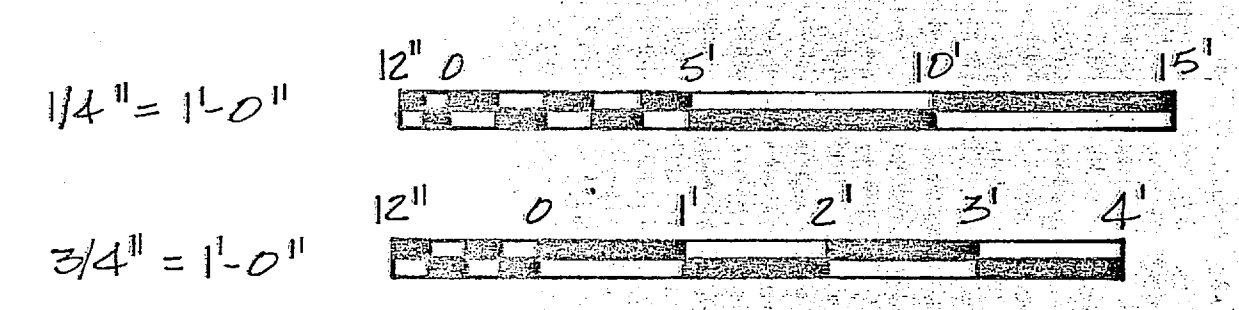


DETAIL - ACCESS DOOR NOT TO SCALE



HEATING & VENTILATING UNIT MECHANICAL DIAGRAM NO SCALE

GRAPHIC SCALES



RECORD DRAWING LETTER DATED 24 OCT 1984

M-3

MBTB ARCHITECTS ENGINEERS
P.O. BOX 1508 GREENVILLE, S.C. 212-3700

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION

NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE, N.C.

DESIGNED BY: DR. MATHIS, CHK. WOODS
PROJ. MGR. PACE, CH. ENGR. BUNES
SUBMITTED BY: [Signature], DATE: 10-82
FIRM MEMBER: [Signature], PRINCIPAL
EPD. P.P. [Signature], H.V.D. [Signature]
APPROVED: [Signature], DATE: [Signature]

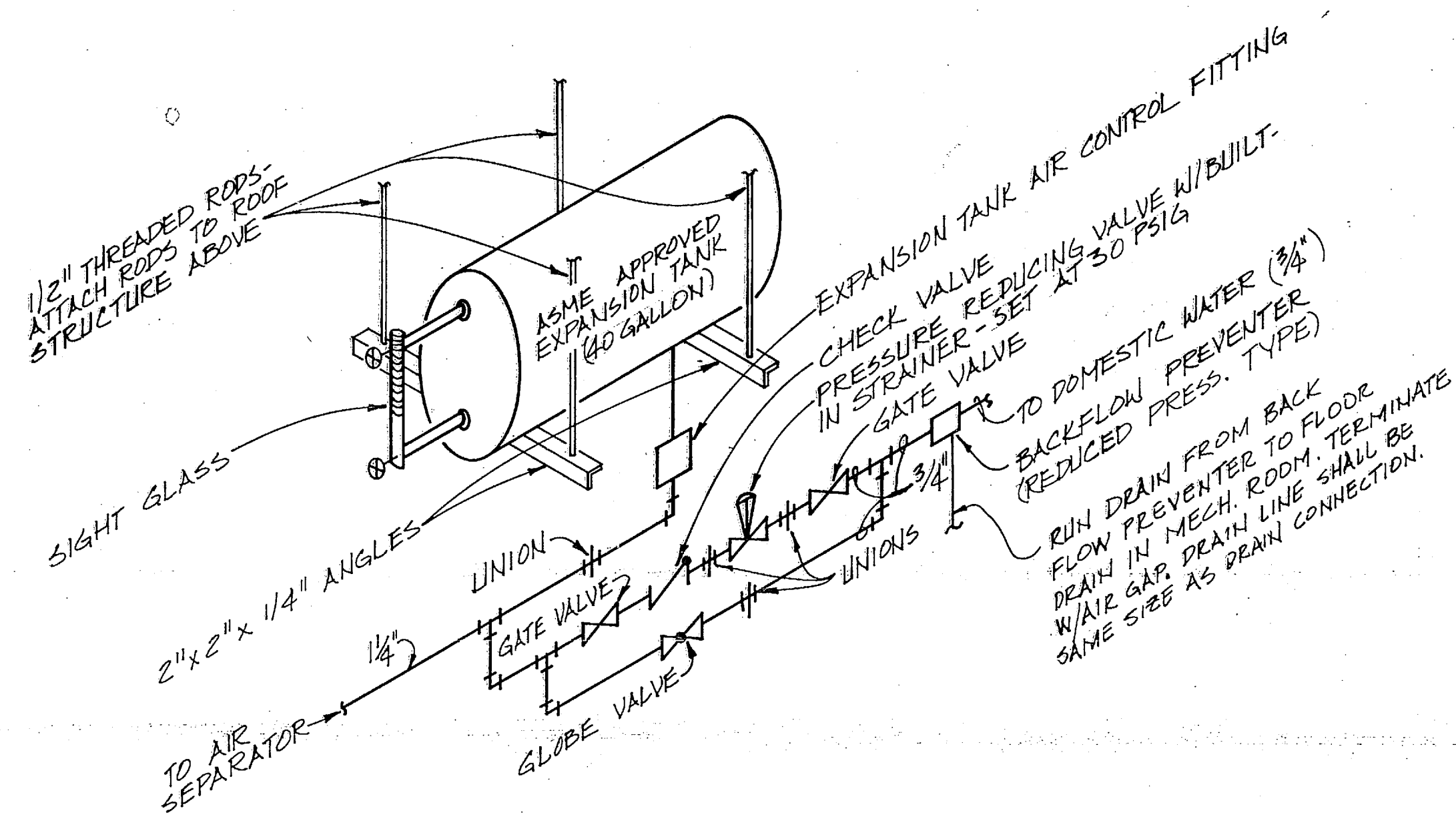
OFFICER IN CHARGE: [Signature]
APPROVED: [Signature], DATE: [Signature]

SIZE: CODE IDENT. NO. NAVFAC DRAWING NO.
F 80091 4075864
CONSTR. CONTR. NO. N62470-80-B-0289

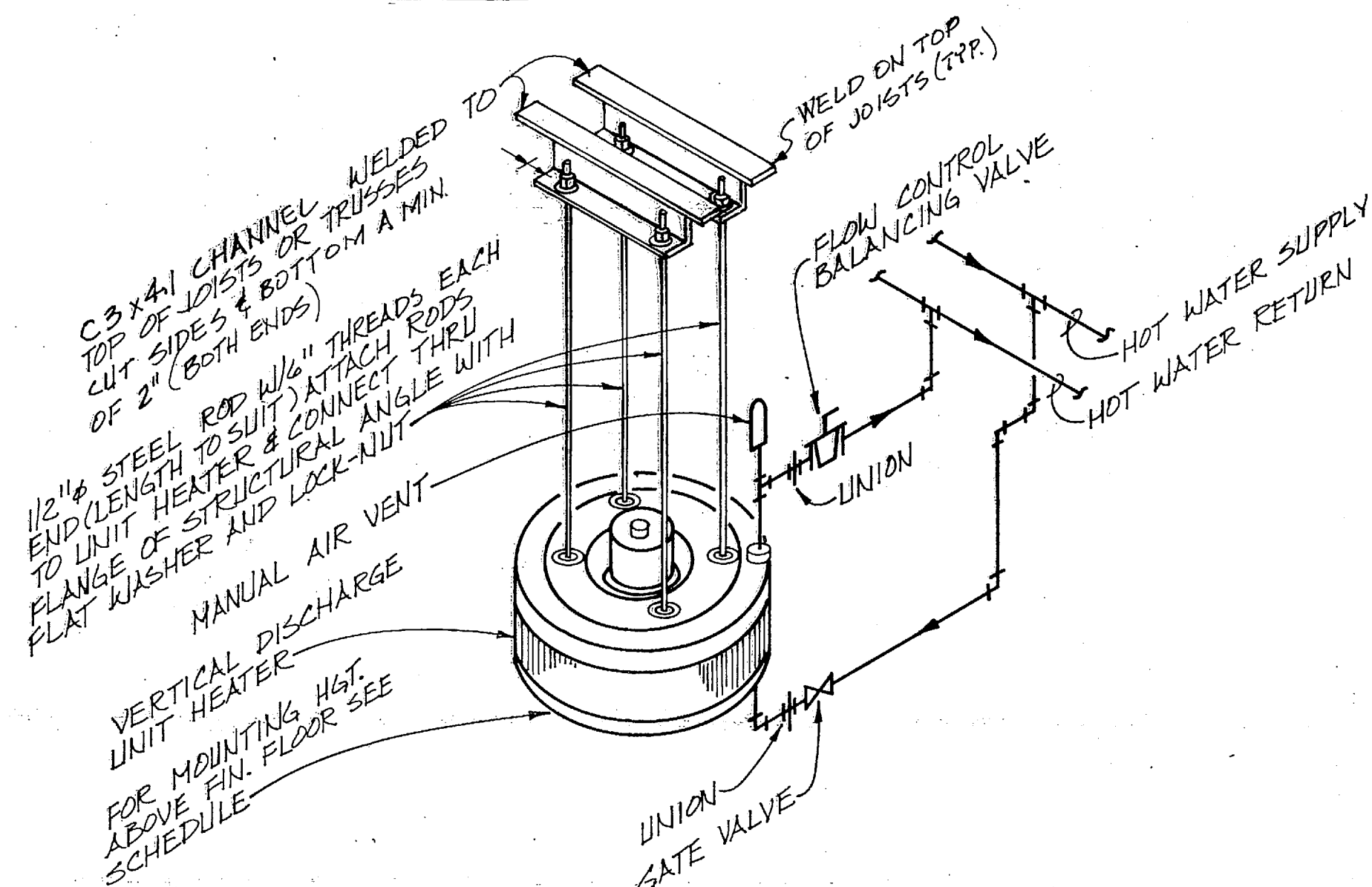
FC 115

EFD. DWG. NO. 175864

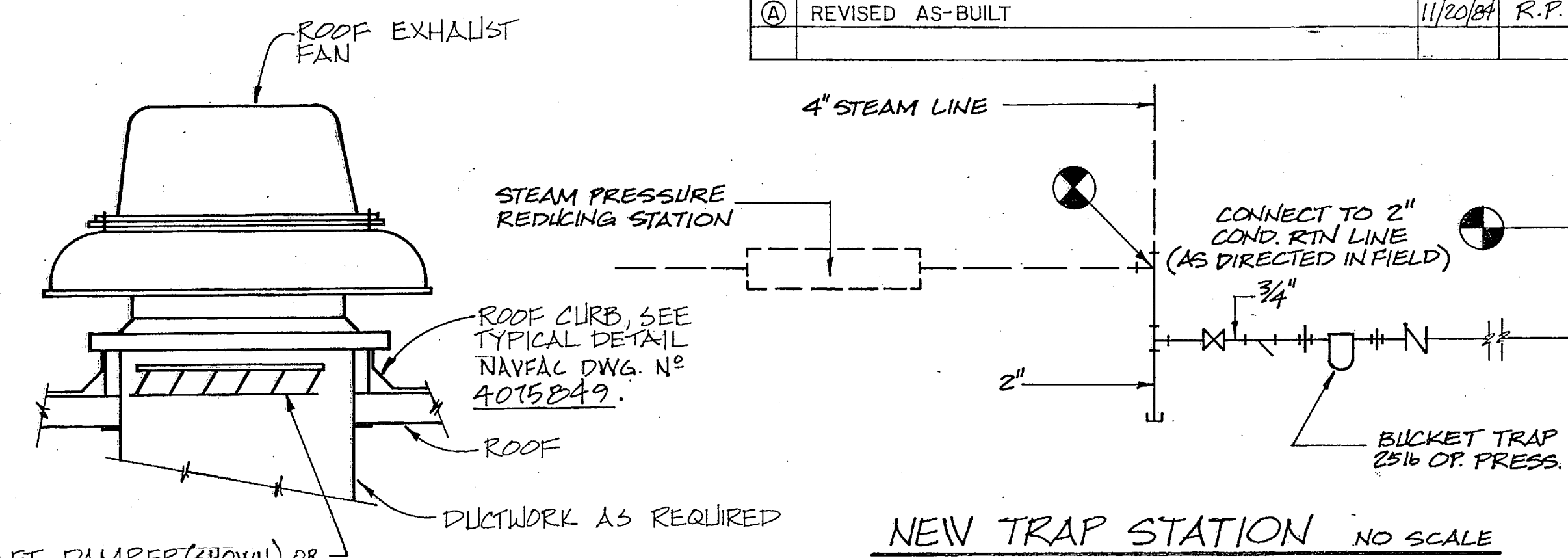




EXPANSION TANK & REDUCING VALVE ASSEMBLY DETAIL NO SCALE



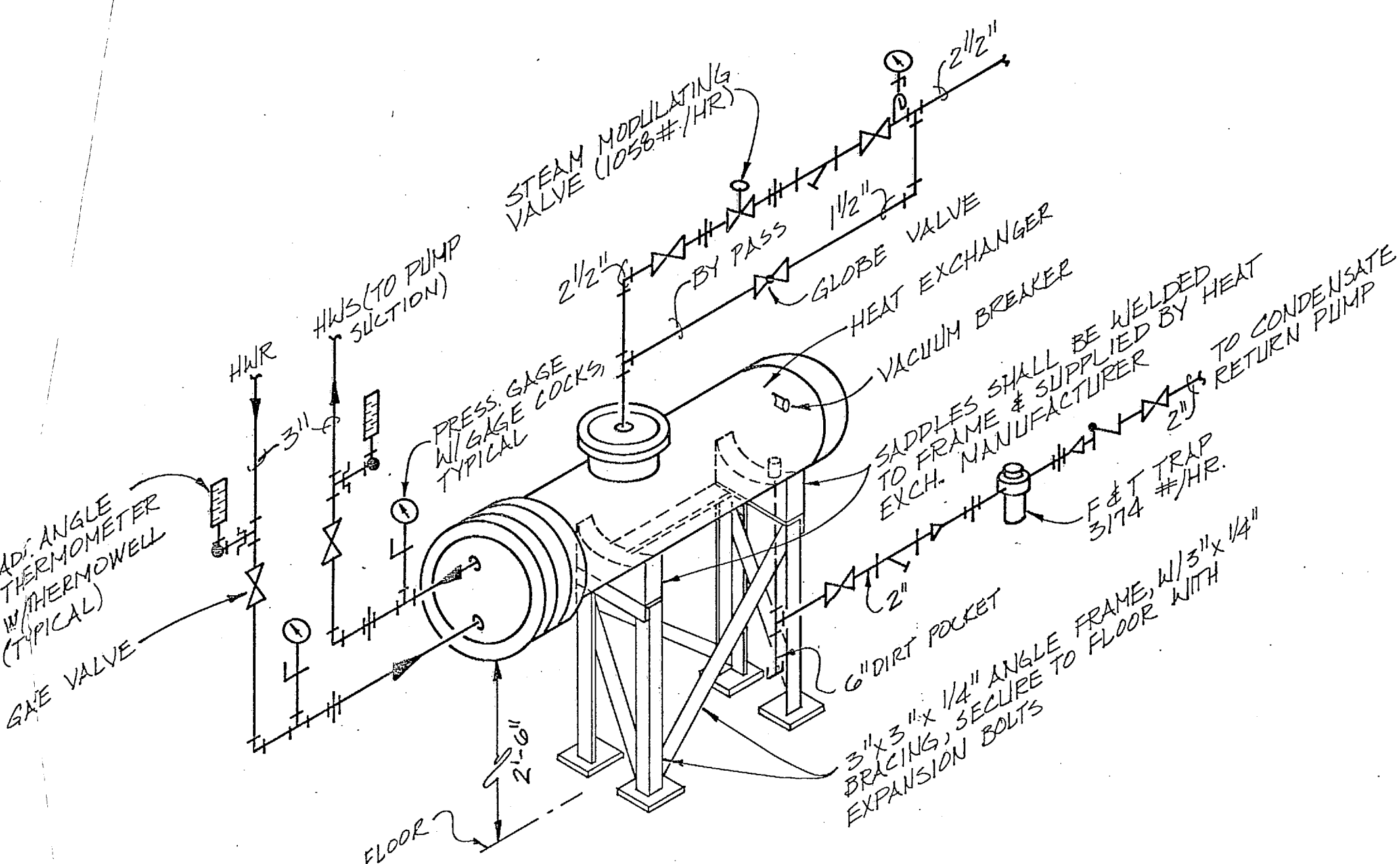
TYPICAL VERTICAL HOT WATER UNIT HEATER DETAIL NO SCALE



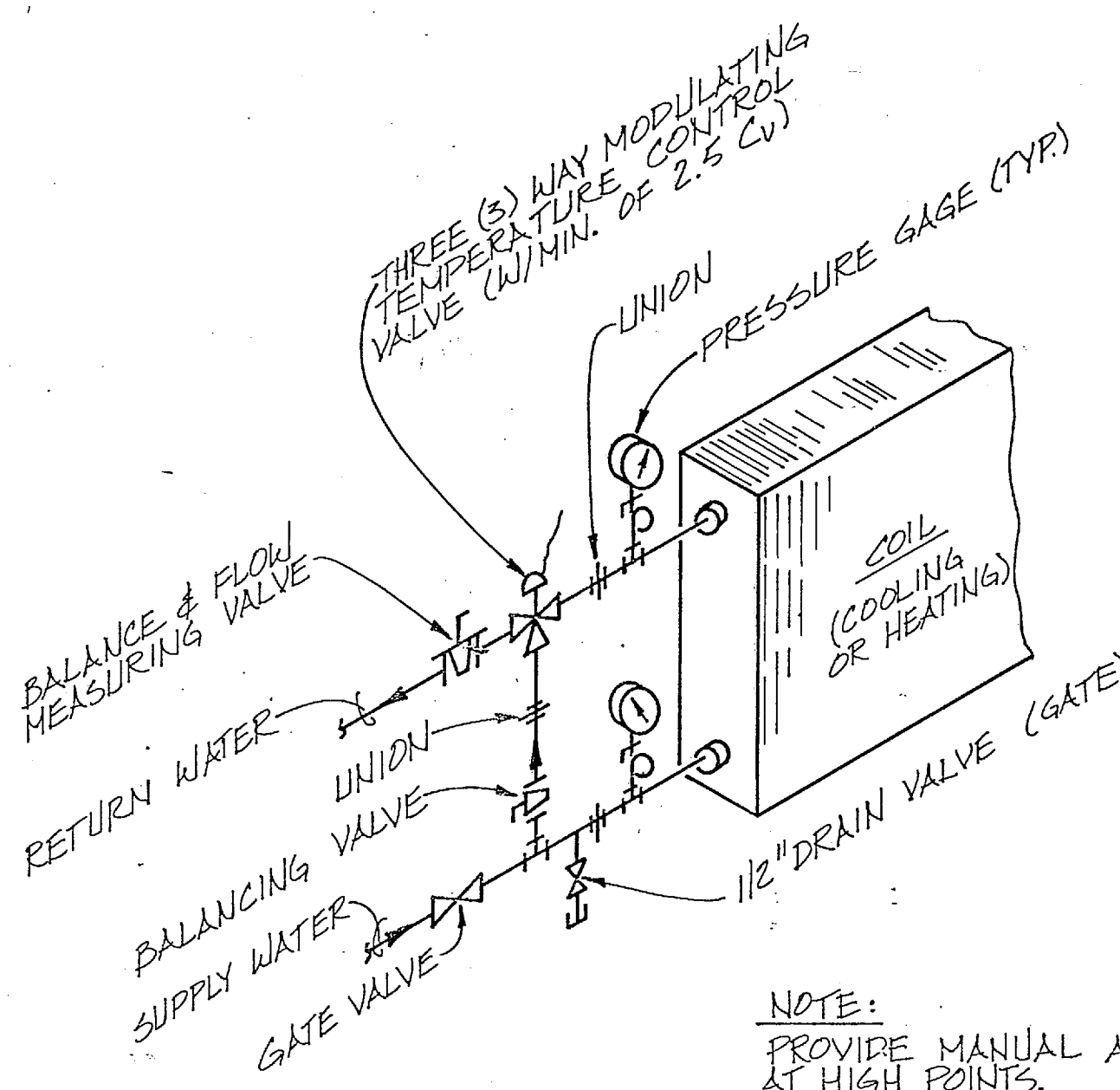
BACKDRAFT DAMPER (SHOWN) OR OPPOSED BLADE DAMPER (SEE NOTE 2)

NOTES:
 1. CONTRACTOR SHALL PROVIDE EXHAUST DUCTWORK UP TO OPENINGS WHERE INDICATED.
 2. BACKDRAFT DAMPER REQ'D FOR E.F. #'S 1, 2, 13, & 15.
 MOTOR REQ'D, OPPOSED BLADE, TWO POSITION DAMPER REQ'D FOR E.F. #'S 3, 4, 5, 10, 11, 12 & 14, 6, 7, 8, & 9.

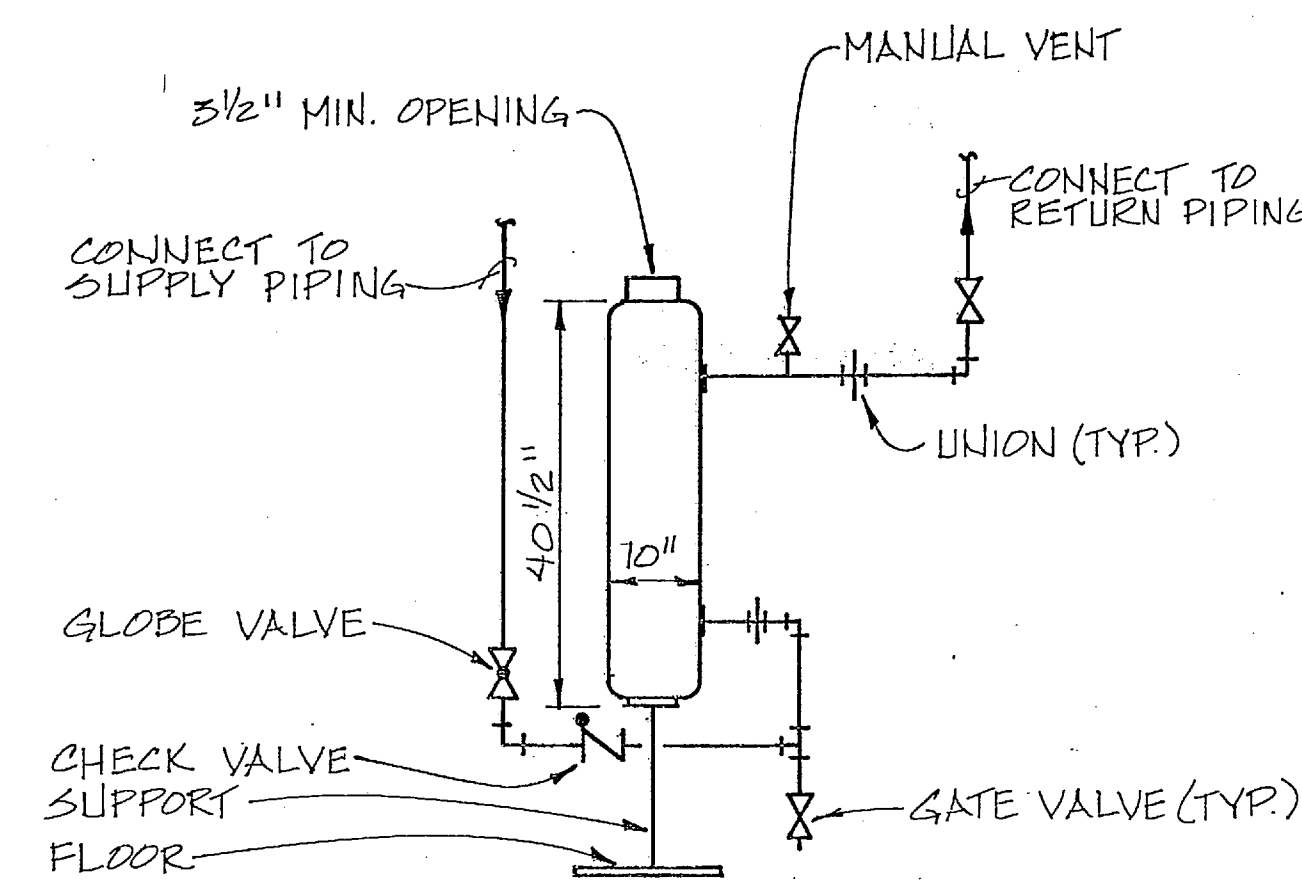
EXHAUST FAN DETAIL NO SCALE



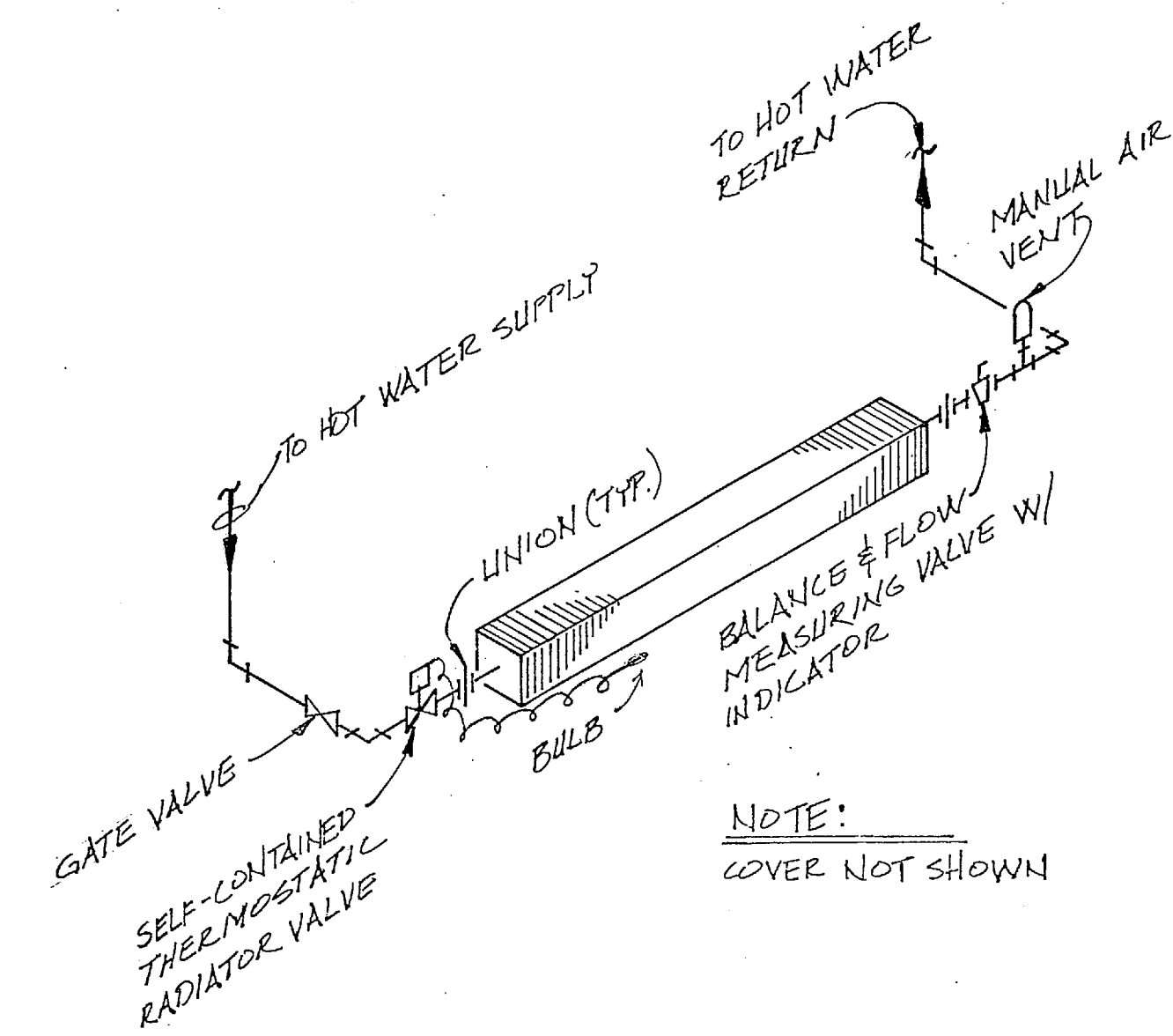
HEAT EXCHANGER DETAIL NO SCALE



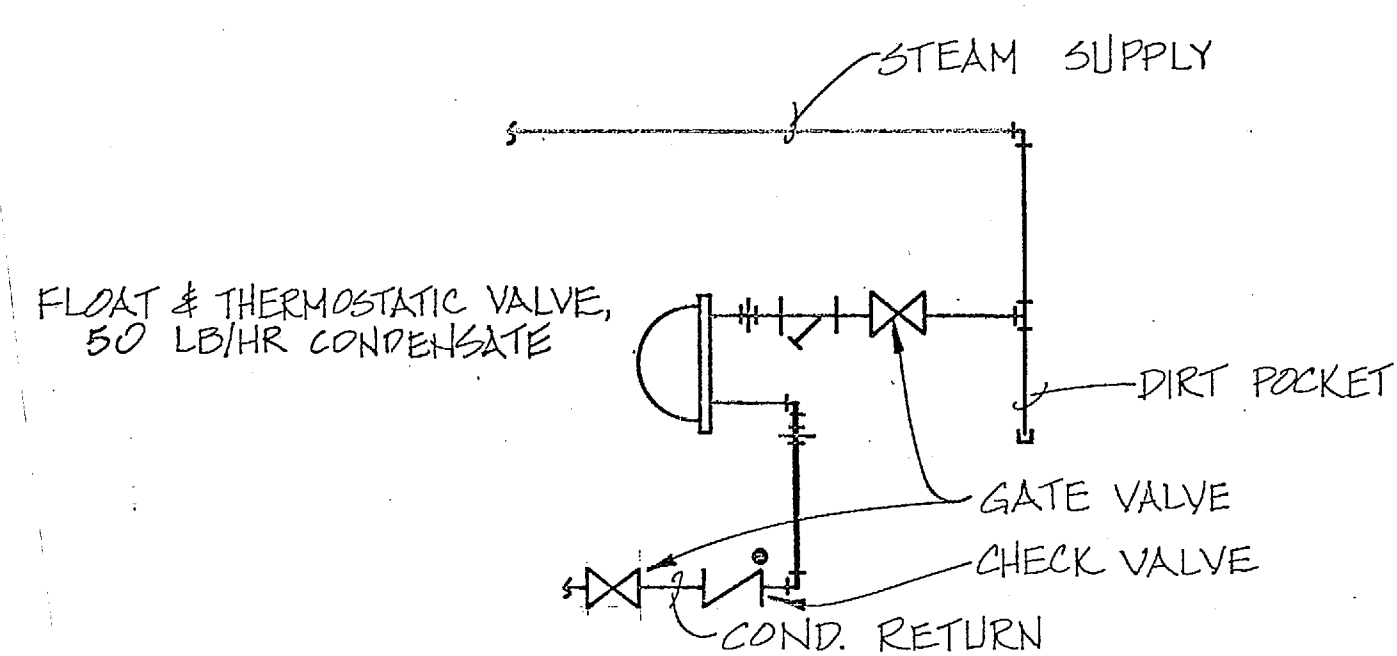
HOT & CHILLED WATER COIL PIPING DETAIL NO SCALE



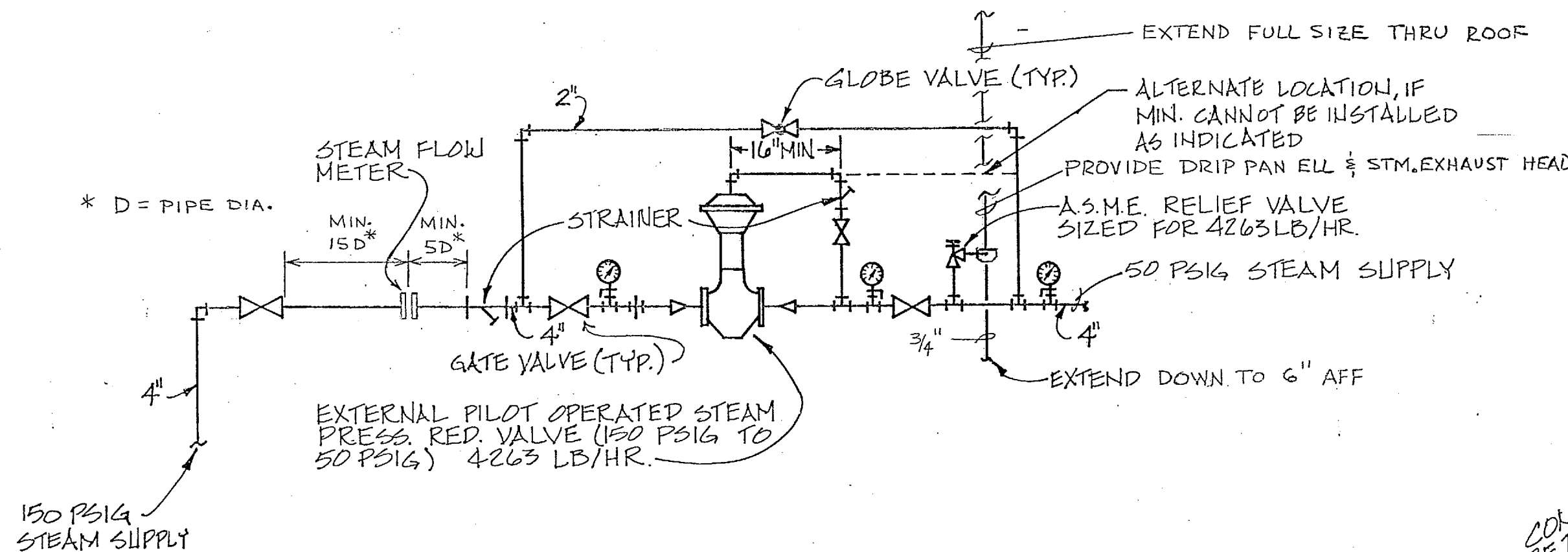
SHOT FEEDER DETAIL NO SCALE



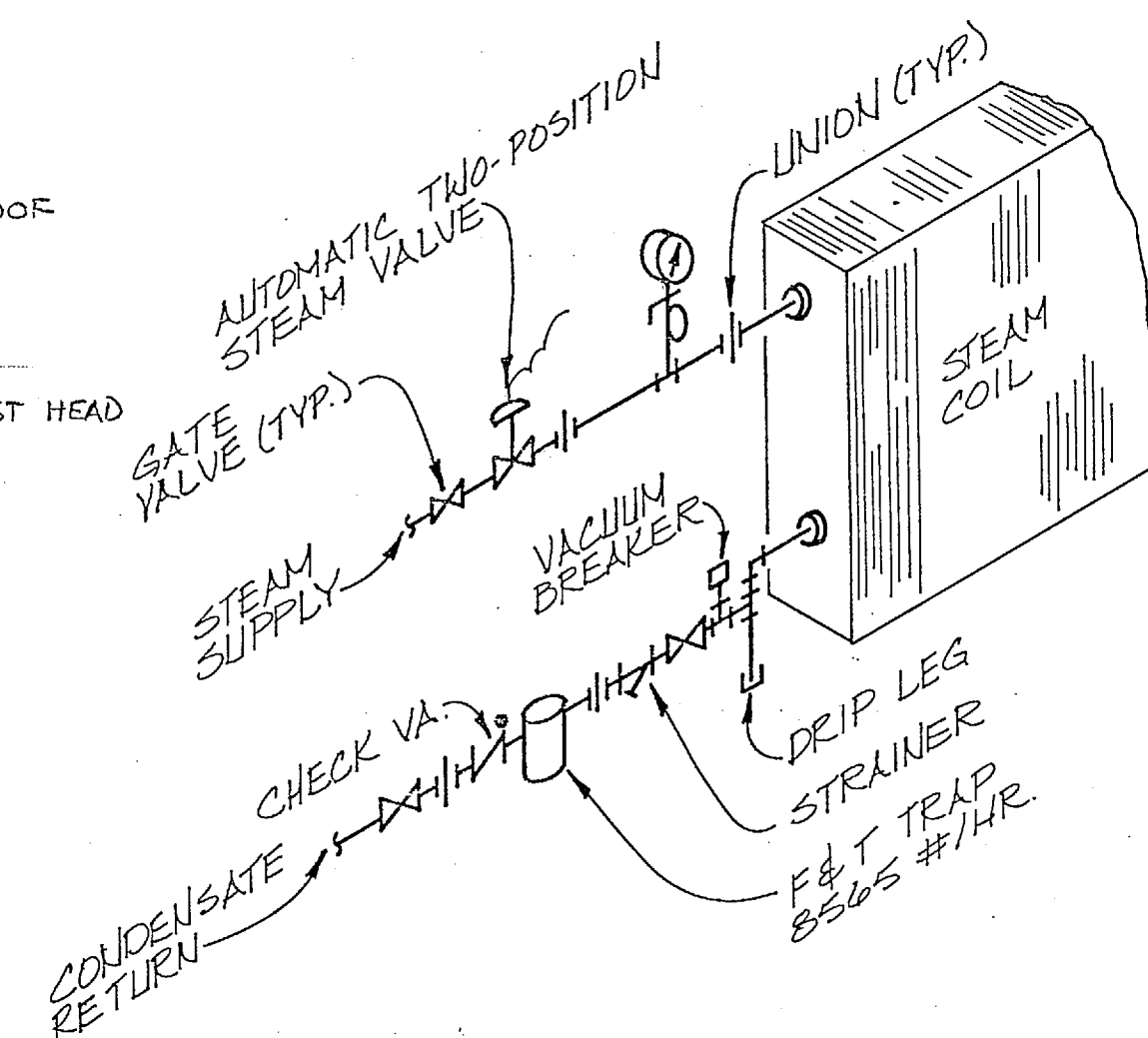
FIN TUBE RADIATOR DETAIL NO SCALE



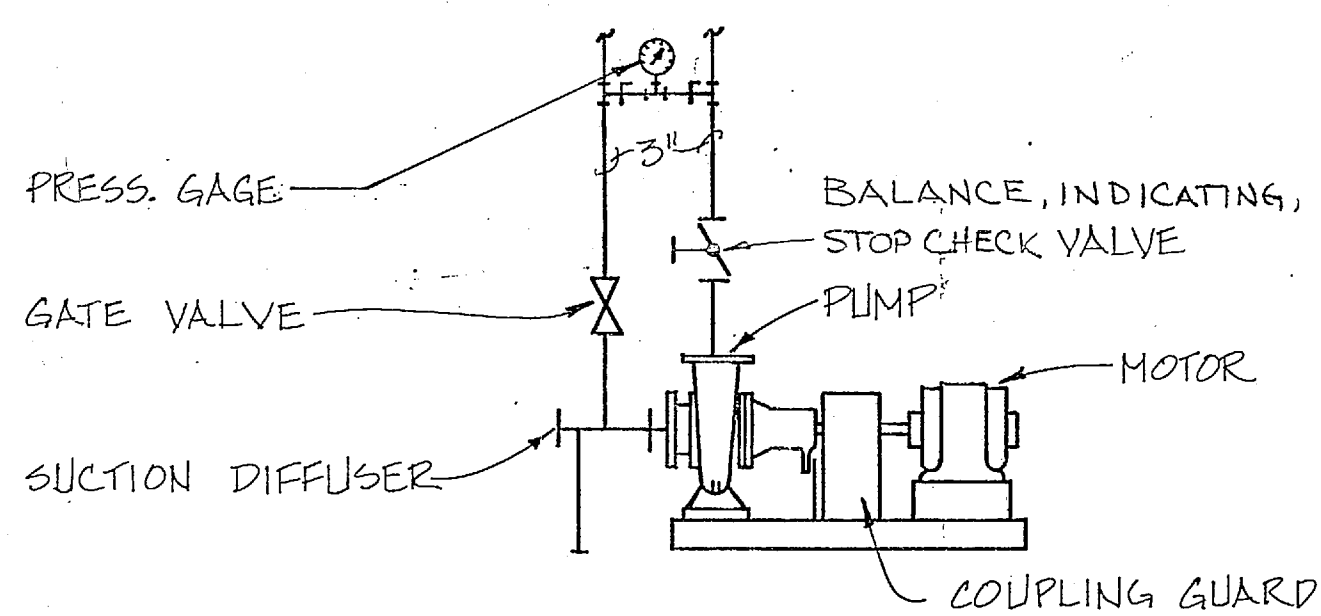
END OF MAIN TRAP ASSEMBLY NO SCALE



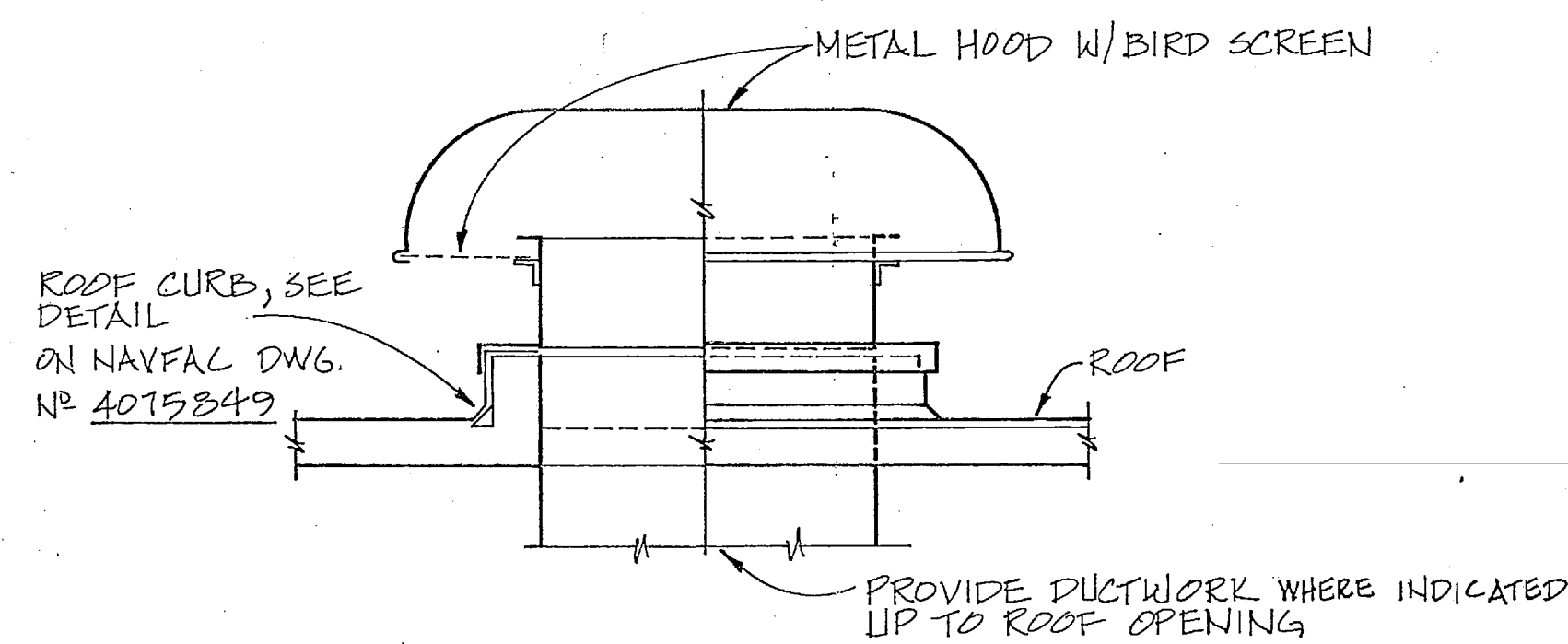
STEAM PRESSURE REDUCING STATION DETAIL NO SCALE



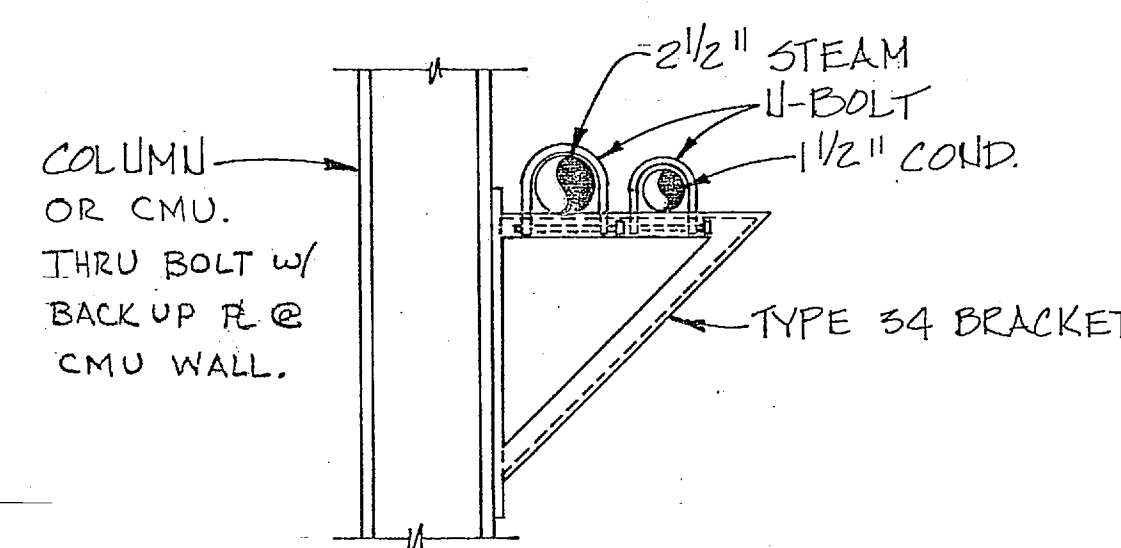
STEAM COIL PIPING DETAIL NO SCALE



BASE MOUNTED PUMP DETAIL NO SCALE



ROOF MOUNTED INTAKE & EXHAUST HOOD NO SCALE



PIPE ANCHOR DETAIL NO SCALE

SYM	DESCRIPTION	DATE	APPROV
(A)	REVISED AS-BUILT	11/20/84	R.P.

RECORD DRAWING
 LETTER DATED 24 OCT 1984

MBTB ARCHITECTS ENGINEERS
 P.O. BOX 1588 GREENVILLE, S.C. 29237-0002

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

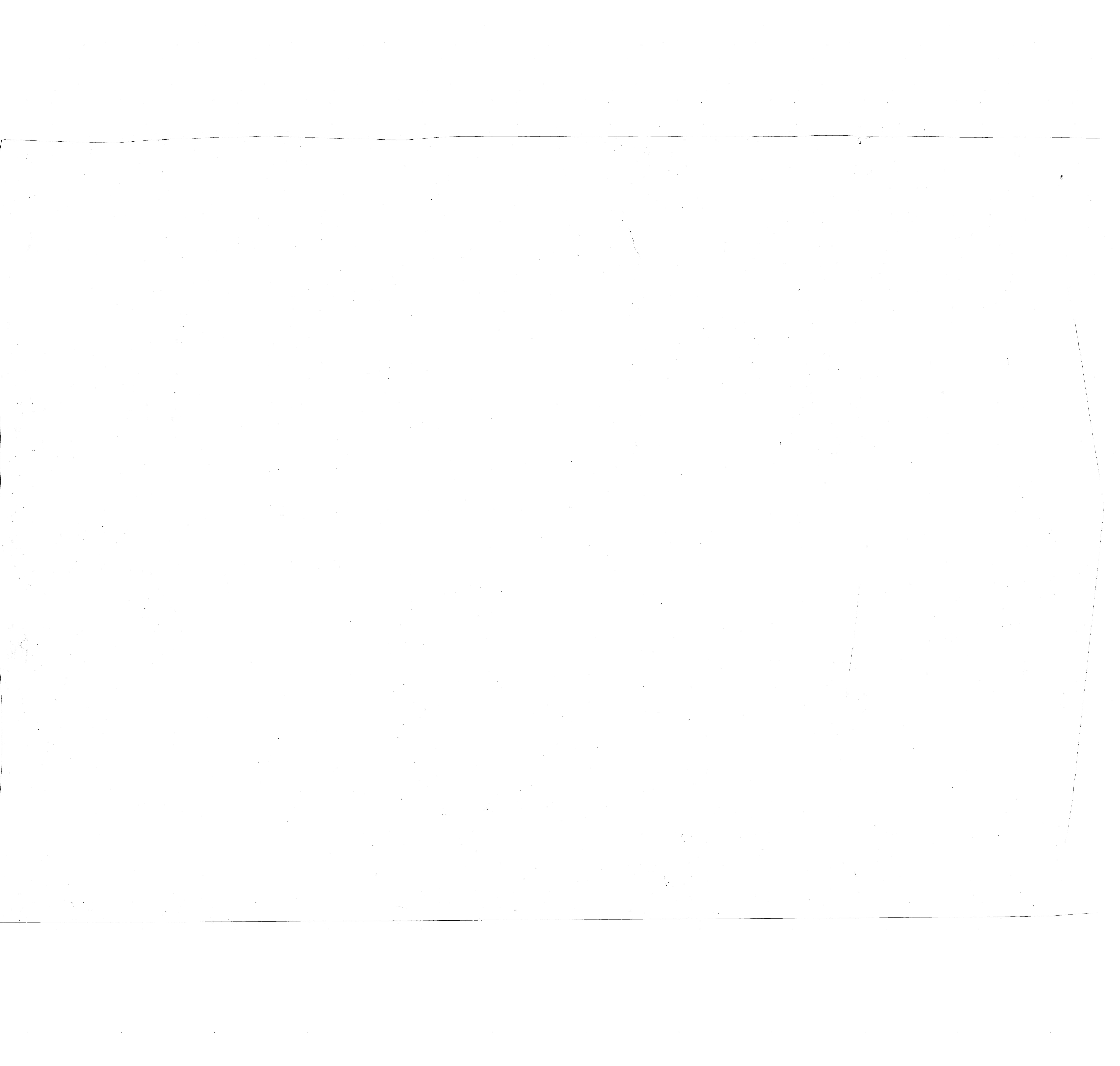
NAVAL STATION
 MCB
 CAMP LEJEUNE, N.C.

FIELD MAINTENANCE SHOP
 MECHANICAL DETAILS

NAVAC DRAWING NO.
 4075865

SIZE
 F
 CODE IDENT. NO.
 80091

CONSTR. CONTR. NO. N62470-80-B-0289



EXHAUST FAN SCHEDULE										
MARK	APPROX. CFM (SUMMER)	APPROX. CFM (WINTER)	MAX. TIP SPEED	APPROX. HP.	ELECT. CHARACT.	TYPE	STATIC PRESS.	ROOM NO.	NO. REQ'D	REMARKS
EF-1	220	—	3950	1/25	120/1/60	PRV	.250	109	1	
EF-2	750	—	3480	1/6	120/1/60	PRV	.375	110, 111, 112	1	
EF-3	27,150	15,010	4,635	5	460/3/60	PRV	.250	114, 115, 117	2	2-SPEED MOTOR
EF-4	1,360	680	3,500	1/4	120/1/60	PRV	.250	116	1	2-SPEED MOTOR
EF-5	22,150	—	4,025	5	460/3/60	PRV	.250	118	2	
EF-6	870	—	3,480	1/6	120/1/60	PRV	.250	121	1	
EF-7	870	—	3,480	1/6	120/1/60	PRV	.250	122	1	
EF-8	500	—	2,655	1/6	120/1/60	PRV	.250	123	1	
EF-9	1,285	645	3,850	1/6	120/1/60	PRV	.250	124	1	2-SPEED MOTOR
EF-10	3,765	—	3,500	1/2	460/3/60	PRV	.250	125	1	
EF-11	3,765	—	3,500	1/2	460/3/60	PRV	.250	113	1	
EF-12	3,015	1,512	3,510	1/3	120/1/60	PRV	.250	127	1	2-SPEED MOTOR
EF-13	500	—	2,655	1/6	120/1/60	PRV	.250	128	1	
EF-14	6,850	—	3,295	3/4	460/3/60	PRV	.250	126	6	
EF-15	144	—	2,840	1/25	120/1/60	PRV	.250	108	1	

NOTE: 1. ALL FANS SCHEDULED ARE BELT DRIVEN.

FINNED TUBE RADIATION SCHEDULE									
MARK	BTU/FT.	TOTAL BTU	ELEMENT LENGTH	ENCLOSURE LENGTH	ENCLOSURE HEIGHT	ENCLOSURE TYPE	ELEM. TYPE (COPPER-ALUM)	GPM	REMARKS
FT-1	414	5585	7'-0"	9'-0"	18"	SLOPE TOP	1 1/2" C-3/4-60	.64	
FT-2	414	3,225	4'-0"	6'-0"	18"	SLOPE TOP	1 1/2" C-3/4-60	.37	
FT-3	414	1,828	2'-0"	4'-0"	18"	SLOPE TOP	1 1/2" C-3/4-60	.18	
FT-4	414	2,117	3'-0"	5'-0"	18"	SLOPE TOP	1 1/2" C-3/4-60	.27	

- NOTES:
- ENCLOSURE MOUNTING HEIGHT SHALL BE 22 INCHES ABOVE FLOOR TO BOTTOM OF ENCLOSURE.
 - PROVIDE END CAPS FOR ALL FINNED TUBE RADIATION COVERS.
 - 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	GPM	CFM	LVG. AIR TEMP (°F)	H.P.	ENT. AIR TEMP (°F)	TYPE	MOUNTING HEIGHT	NO. REQ'D	REMARKS
U.H.-1	16.06	1.6	310	121	1/25	40	HORIZ.		3	
U.H.-2	13.63	1.4	1,775	110	1/6	65	HORIZ.		2	
U.H.-3	30.12	3.1	950	90	1/30	40	VERT.		2	SEE NOTE 2
U.H.-4	65.19	6.6	2,660	98	1/6	65	VERT.		4	SEE NOTE 2
U.H.-5	38.40	3.8	1,120	101	1/12	65	HORIZ.		1	

- NOTES:
- HEATER SELECTION BASED ON 200°F ENT. WATER TEMP AND 20°F WATER AT.
 - PROVIDE WITH LOWER CONE DIFFUSERS

AIR DIFFUSER SCHEDULE					
MARK	CFM	NECK SIZE	TYPE OF THROW	TYPE	REMARKS
A	120	6"φ	4-WAY	SUPPLY	
B	192	8"φ	4-WAY		
C	160	8"φ	4-WAY		
D	345	10"φ	4-WAY		
E	232	8"φ	2-WAY		
F	336	10"φ	4-WAY		
G	258	10"φ	4-WAY		
H	320	10"φ	4-WAY	SUPPLY	
J	—	22" x 22"	—	RETURN	
K	400	10" x 10"	—	EXHAUST	
L	500	12" x 12"	—	EXHAUST	
M	240	10"φ	4-WAY	SUPPLY	
N	281	10"φ	4-WAY		
O	500	12"φ	4-WAY		
P	400	10"φ	4-WAY	SUPPLY	
Q	270	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 REQ'D.	ENT. AIR TEMP (°F)	REMARKS
H&V-1	4,100	2,012,520	1.0	30	50 PSIG	2855 #/HR	23	

PUMP SCHEDULE								
MARK	GPM	HEAD FT.	H.P. (MIN)	SPEED RPM	SERVICE	TYPE	ELEC.	REMARKS
P-1	116.3	52.5	3	1750	HOT WATER	END SUCTION	460/3/60	
P-2	9.0	50	1 1/2	3500	STW. COND.	PULEX	460/3/60	14 GAL. RECEIVER

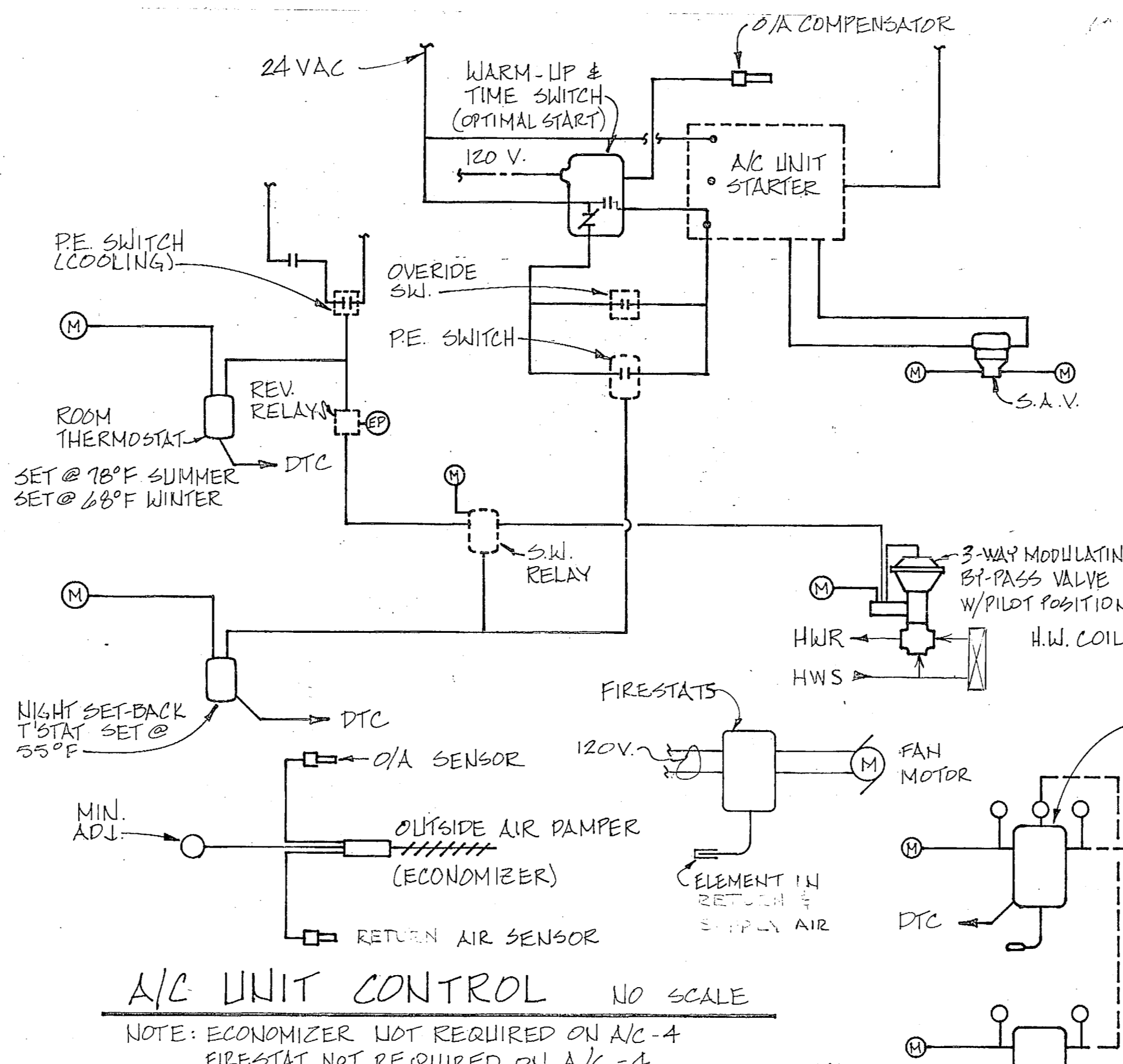
* 2 MOTORS @ 1/2 H.P. EACH

HEAT EXCHANGER SCHEDULE							
MARK	STEAM SIDE			WATER SIDE			REMARKS
	STW. PRESS. / HR	TEMP. ENT. WATER (°F)	TEMP. LVG. WATER (°F)	GPM	PRESS. DROP FT.	SCALE FACTOR	
HE-1	50	1058	180	200	116.3	NEG.	2.0005

HOT WATER COILS								
MARK	M.B.H.	FLOW (GPM)	HEAD (FT.)	WATER TEMP (°F)	ENT. AIR (°F)	LVG. AIR (°F)	COIL SIZE	REMARKS
H.W.C-1	130.9	13.1	1.4	200	56.8	87.1	—	MOUNTED IN A/C UNIT No. 1
H.W.C-2	270.0	27.0	1.2	200	60.0	85.0	—	MOUNTED IN A/C UNIT No. 2
H.W.C-3	40.7	4.1	0.9	200	64.2	85.0	30x24	DUCT MOUNTED @ AC No. 3
H.W.C-4	15.6	1.6	0.3	200	62.4	80.0	24x18	DUCT MOUNTED @ AC No. 4

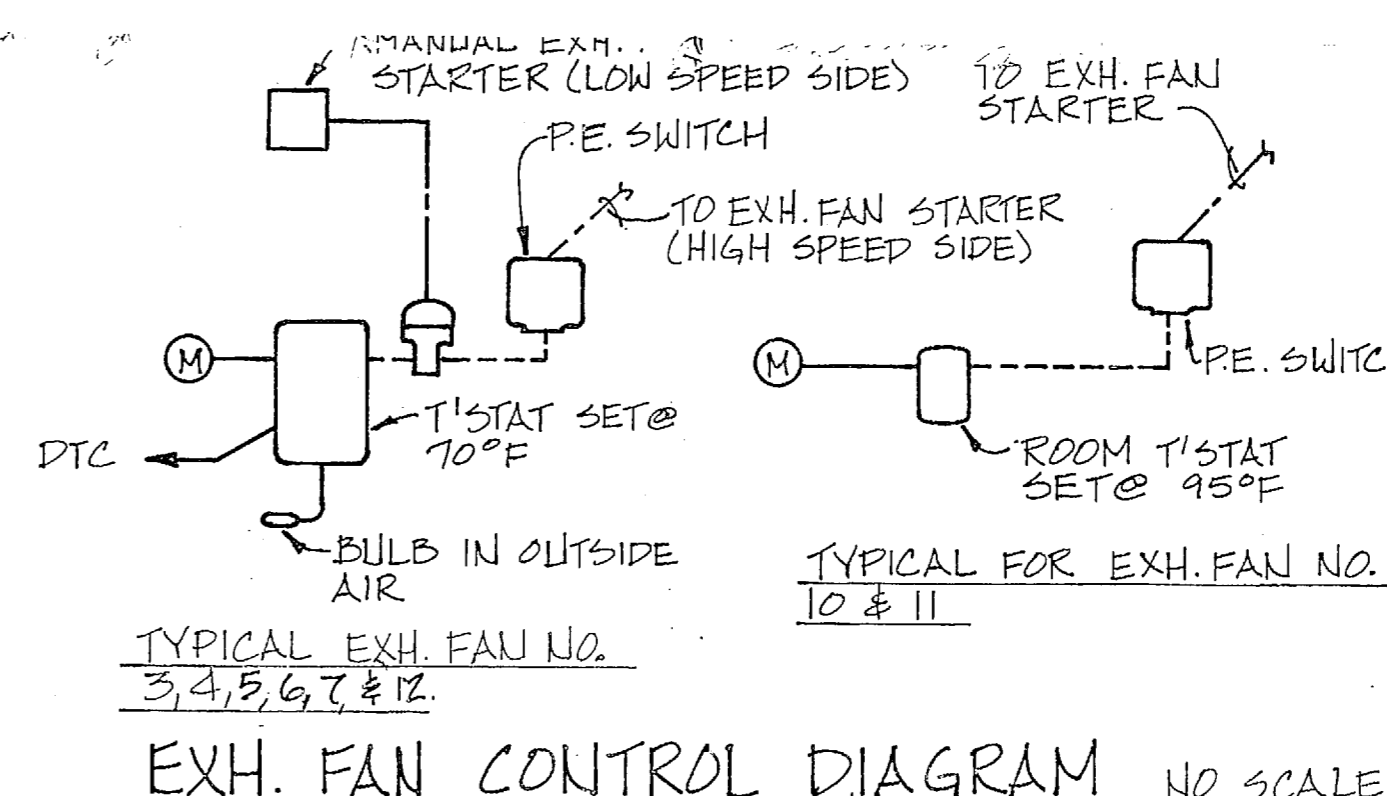
AIR CONDITIONING UNIT SCHEDULE										
MARK	AIR HANDLING DATA				COOLING DATA				ELECTRICAL	REMARKS
	S/A CFM	O/A CFM	EVAP. FAN H.P.	TOTAL EXT. STAT. PRESS. I.W.G.	EVAP.	COND.	MINIMUM HEAT	HEAT TOTAL		
					MBH	SENSIBLE	MBH	TOTAL		
A/C-1	4,000	1,107	3	1.0	84.9°Fdb / 70.0°Fwb	90	93,170	151,832	480/3/60	ROOF TOP W/CURB
A/C-2	10,000	1,785	10	1.5	84.3°Fdb / 69.4°Fwb	90	188,414	272,595	480/3/60	ROOF TOP W/CURB
A/C-3	4,000	340	4	0.9	83.6°Fdb / 68.1°Fwb	90	71,652	88,536	480/3/60	ROOF TOP W/CURB
A/C-4	800	100	1/3	0.5	83.9°Fdb / 68.5°Fwb	90	12,231	16,447	308/3/60	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 ON TO ROOF.



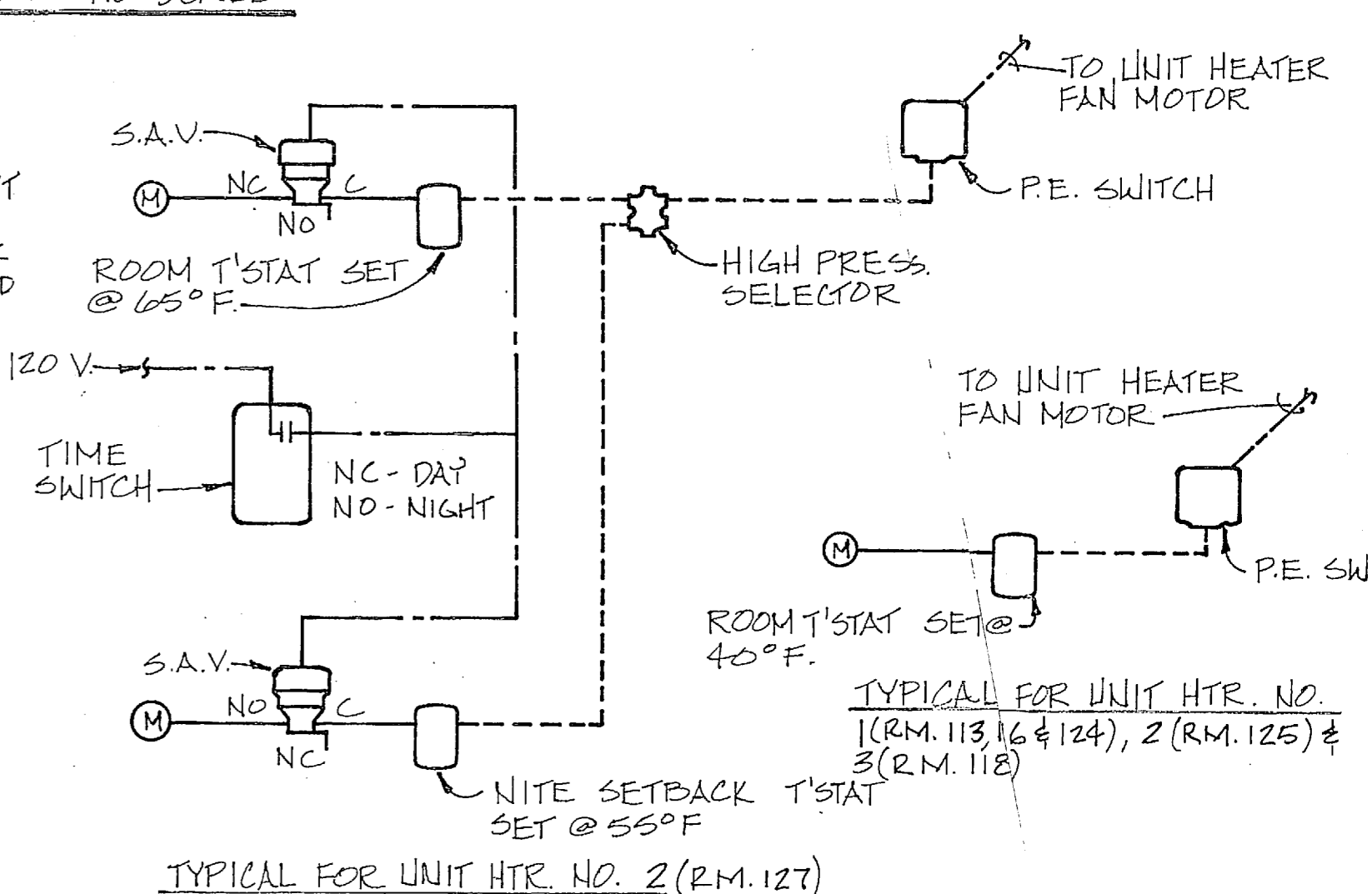
A/C UNIT CONTROL NO SCALE

NOTE: ECONOMIZER NOT REQUIRED ON A/C-4
FIRESTAT NOT REQUIRED ON A/C-4.



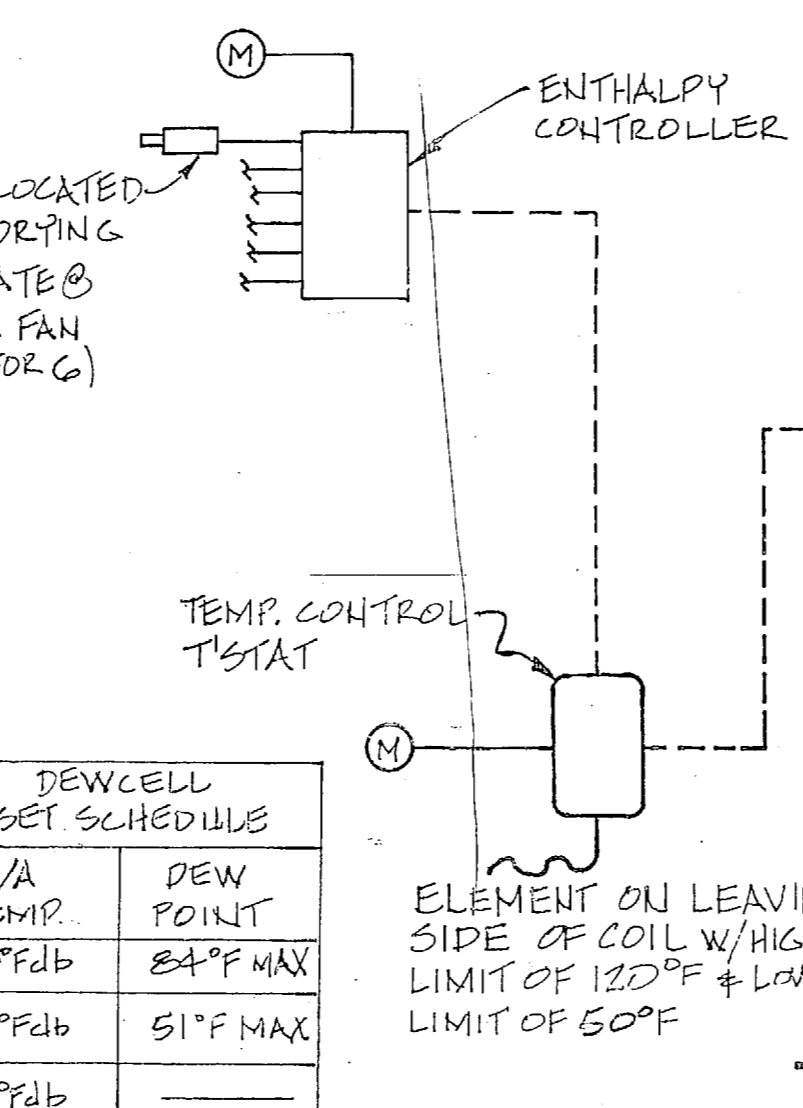
EXH. FAN CONTROL DIAGRAM NO SCALE

NOTE: EXHAUST FAN NO'S 3, 4, 5, 6, 7, 10, 11 & 14 SHALL BE STARTED THEN MOTORIZED DAMPER END SWITCH. ALL OTHER EXH FANS SHALL BE CONTROLLED BY A MANUAL SWITCH. EXCEPT EXH. FAN NO. 8 & 9 SHALL BE INTERLOCKED TO RUN W/A/C NO. 2, EXCEPT ON NIGHT SET BACK CYCLE. EXH. FAN NO. 14 SHALL BE INTERLOCKED WITH H&V-1.



UNIT HEATER CONTROL DIAGRAM NO SCALE

NOTE: STEAM VALVE SHALL BE CLOSED TO THE HEAT EXCHANGER ABOVE 60°F. THE H.W. PUMP SHALL BE RE-ACTIVATED ABOVE 60°F.



HEATING HOT WATER RESET CONTROL NO SCALE

NOTE: STEAM VALVE SHALL BE CLOSED TO THE HEAT EXCHANGER ABOVE 60°F. THE H.W. PUMP SHALL BE RE-ACTIVATED ABOVE 60°F.

DEWCELL RESET SCHEDULE			
S/A TEMP.	DEW POINT	84°F MAX	51°F MAX
125°Fdb	—	—	—
88°Fdb	—	—	—
50°Fdb	—	—	—

H & V UNIT CONTROL DIAGRAM NO SCALE

CONTROL DIAGRAMS

DESIGN TEMPERATURES

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

RECORD DRAWING
LETTER DATED 24 OCT 1984

M-5

MBTB ARCHITECTS ENGINEERS
DEPARTMENT OF THE NAVY - NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION

FIELD MAINTENANCE SHOP
MECHANICAL SCHEDULES & CONTROL DIAGRAMS

SIZE: F CODE IDENT. NO.: 80091
CONSTR. CONTR. NO.: N62470-80-B-0289
SHEET 44 OF 54

