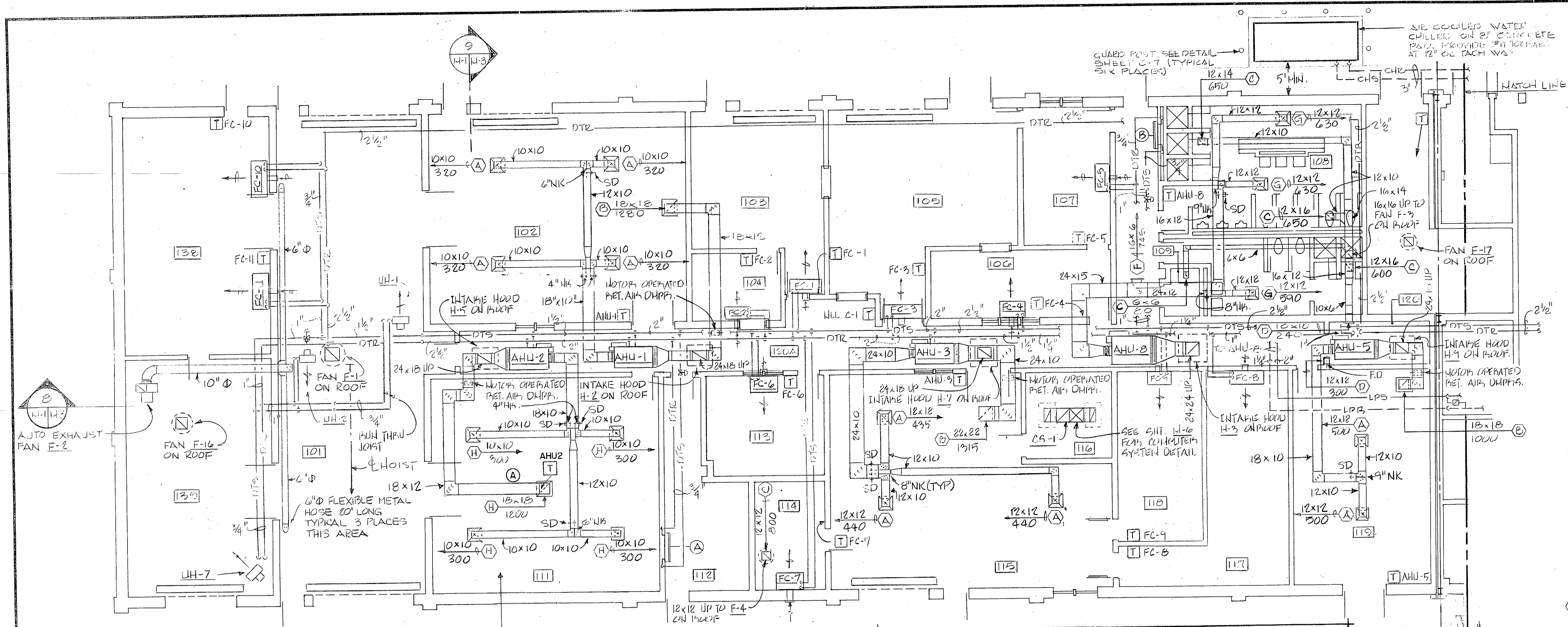


REVISIONS		
SYM	DESCRIPTION	DATE
(A)	REVISED AS-BUILT	7/24/94

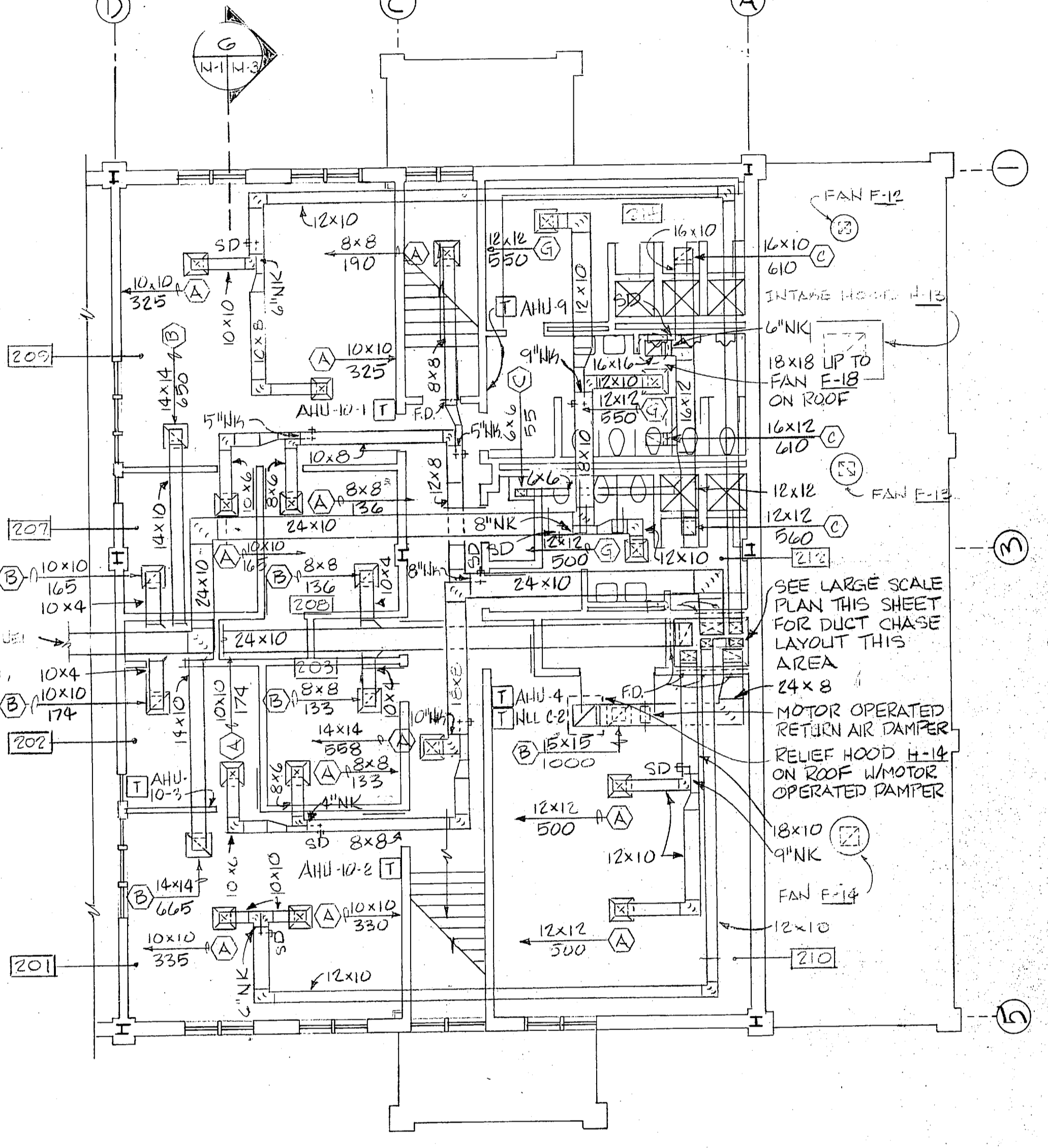


**PART FIRST FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

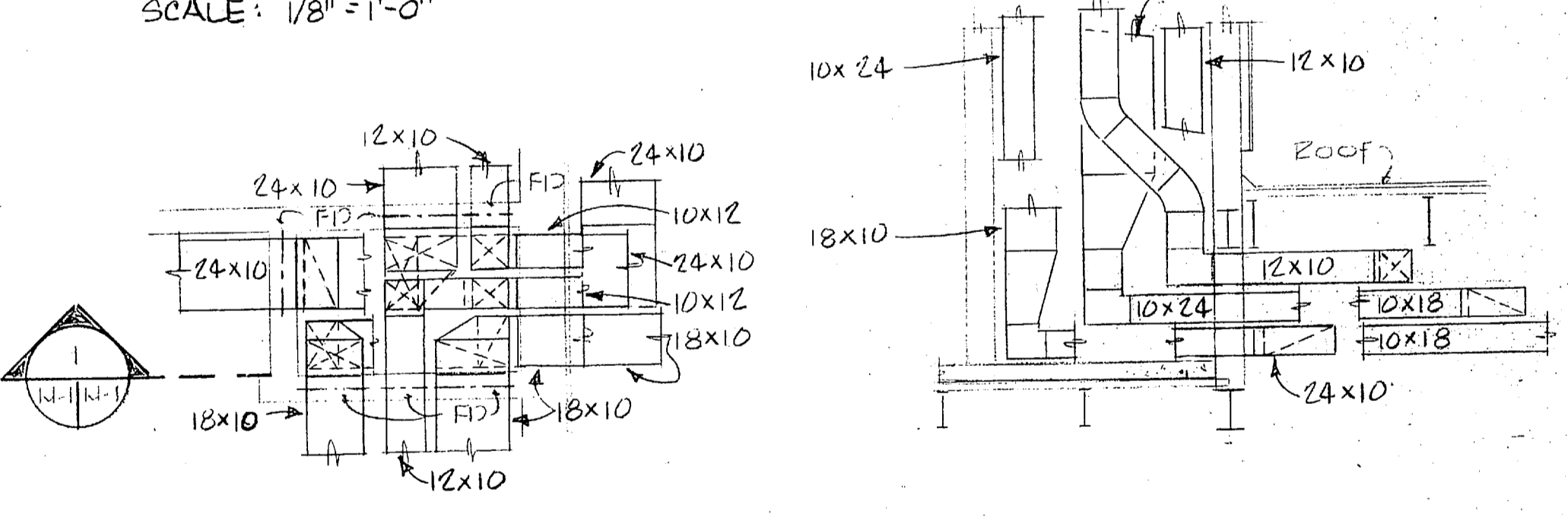
NOTE:  
SEE SHEET A-21 FOR EXACT DIFFUSER & GRILLE LOCATIONS

HP-15:  
1. PROVIDE CONDENSATE DRAINS WITH DEEP SEAL TRAPS ON ALL COOLING AIR HANDLING UNITS & FAN COIL UNITS. DRAIN SIZE SHALL BE 3/4" OR THE UNIT CONNECTION SIZE WHICHEVER IS LARGER. DRAINS IN EQUIPMENT SHALL RUN TO THE NEAREST FLEXIBLE DRAIN. DRAINS OUTSIDE EQUIPMENT SHALL RUN TO THE NEAREST DRAIN POINT PROVIDED. SEE SHEET P-1 FOR ALL DRAIN LOCATIONS. INSULATE LINES IN ACCORDANCE WITH THIS SPEC. 2. ALL FAN COIL UNITS ARE 3/4" UNLESS NOTED OTHERWISE.

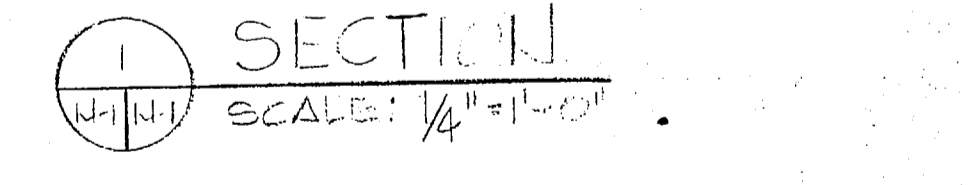
NOTES:  
1. ROOF PENETRATIONS FOR FANS HOODS, ETC. SHALL BE LOCATED 18" MINIMUM FROM PARAPET WALLS AND FROM EACH OTHER.  
2. ALL EQUIPMENT SHALL BE INSTALLED BEYOND EQUIPMENT OR ALL OTHERS.



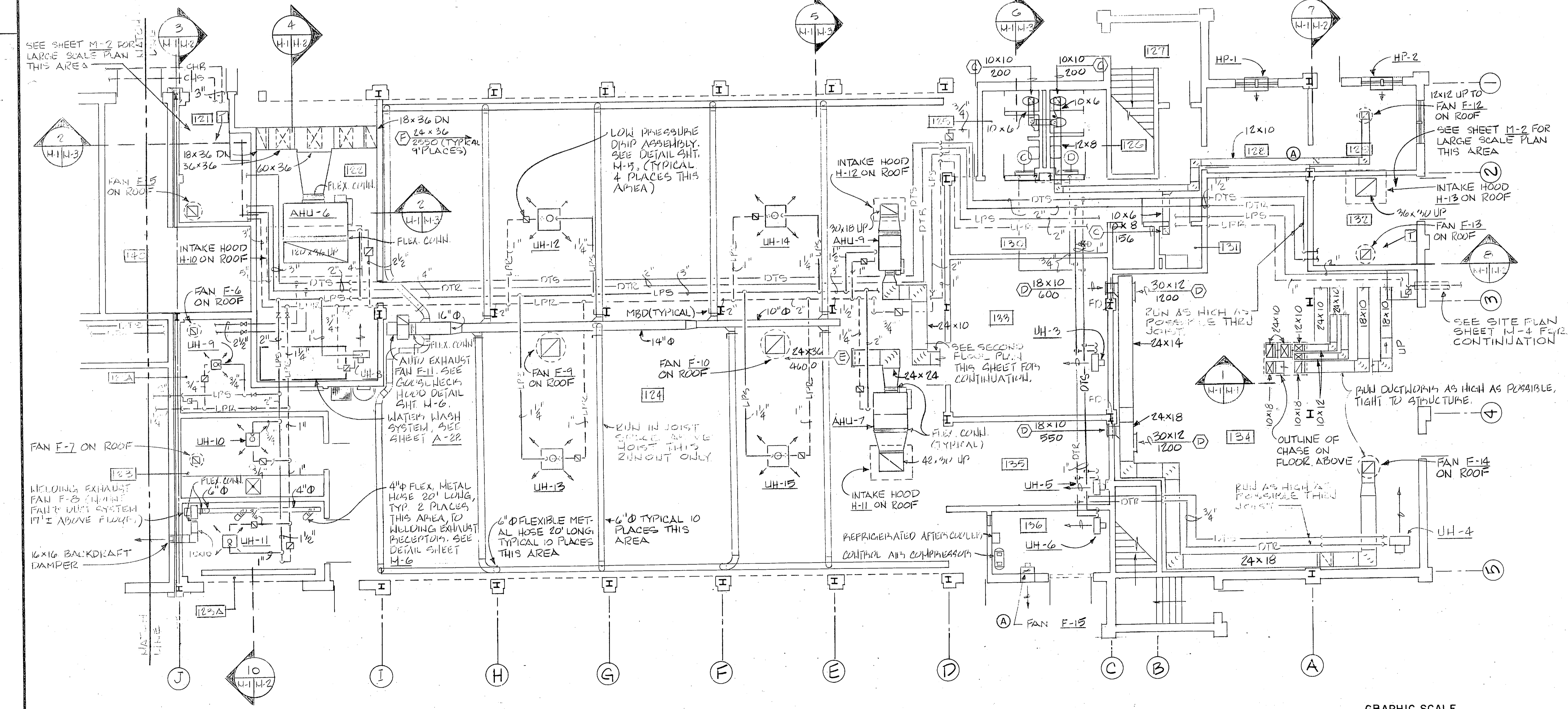
**SECOND FLOOR PLAN**  
SCALE: 1/8" = 1'-0"



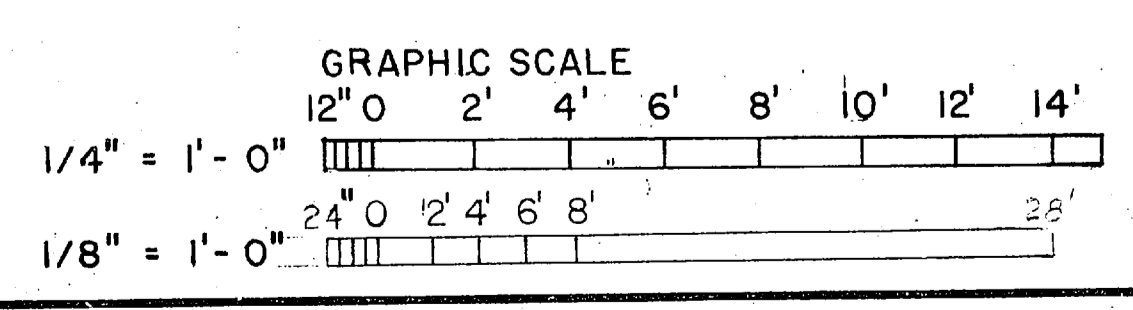
**DUCT CHASE PLAN**  
SCALE: 1/4" = 1'-0"



**SECTION**  
SCALE: 1/4" = 1'-0"



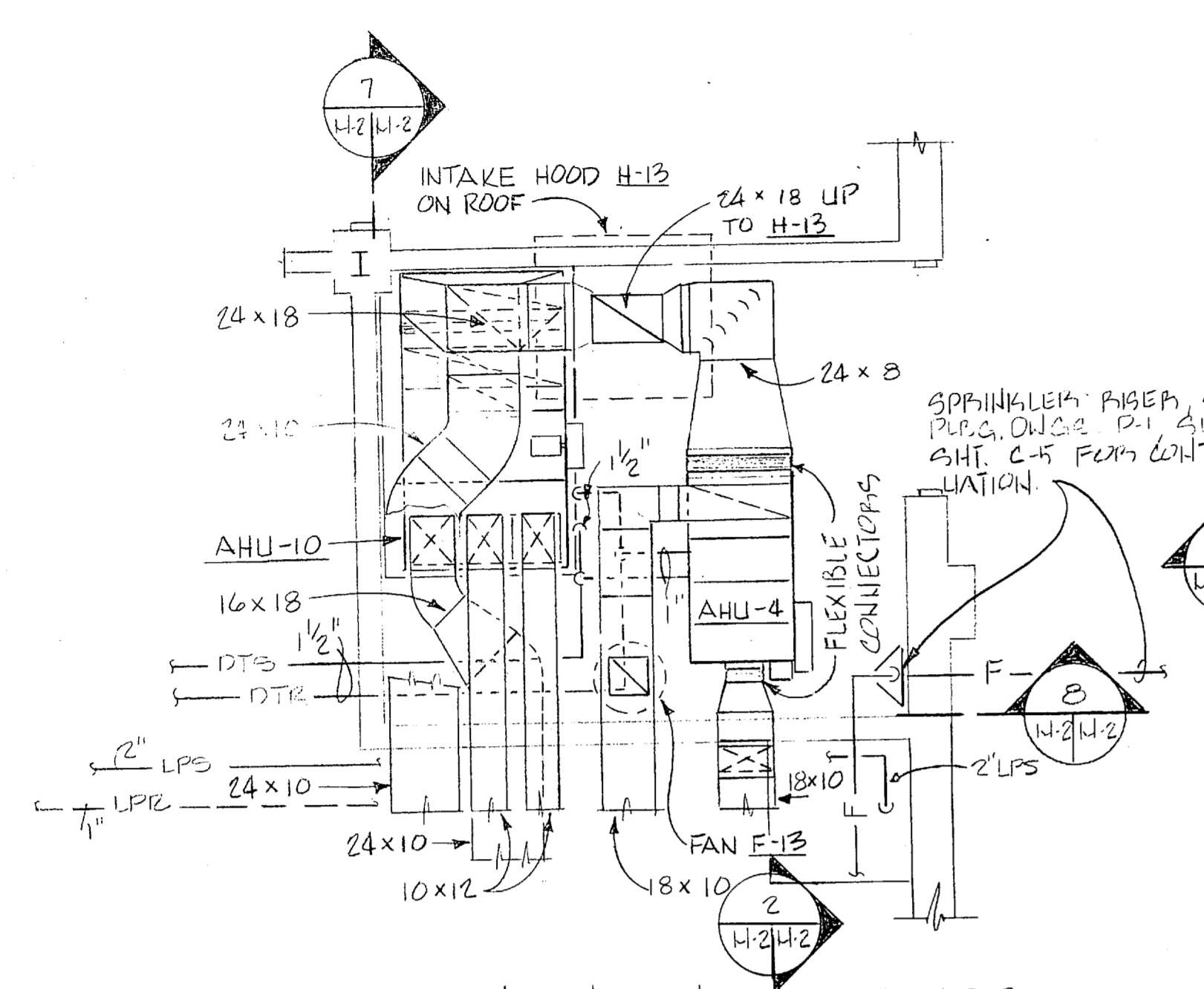
**PART FIRST FLOOR PLAN**  
SCALE: 1/8" = 1'-0"



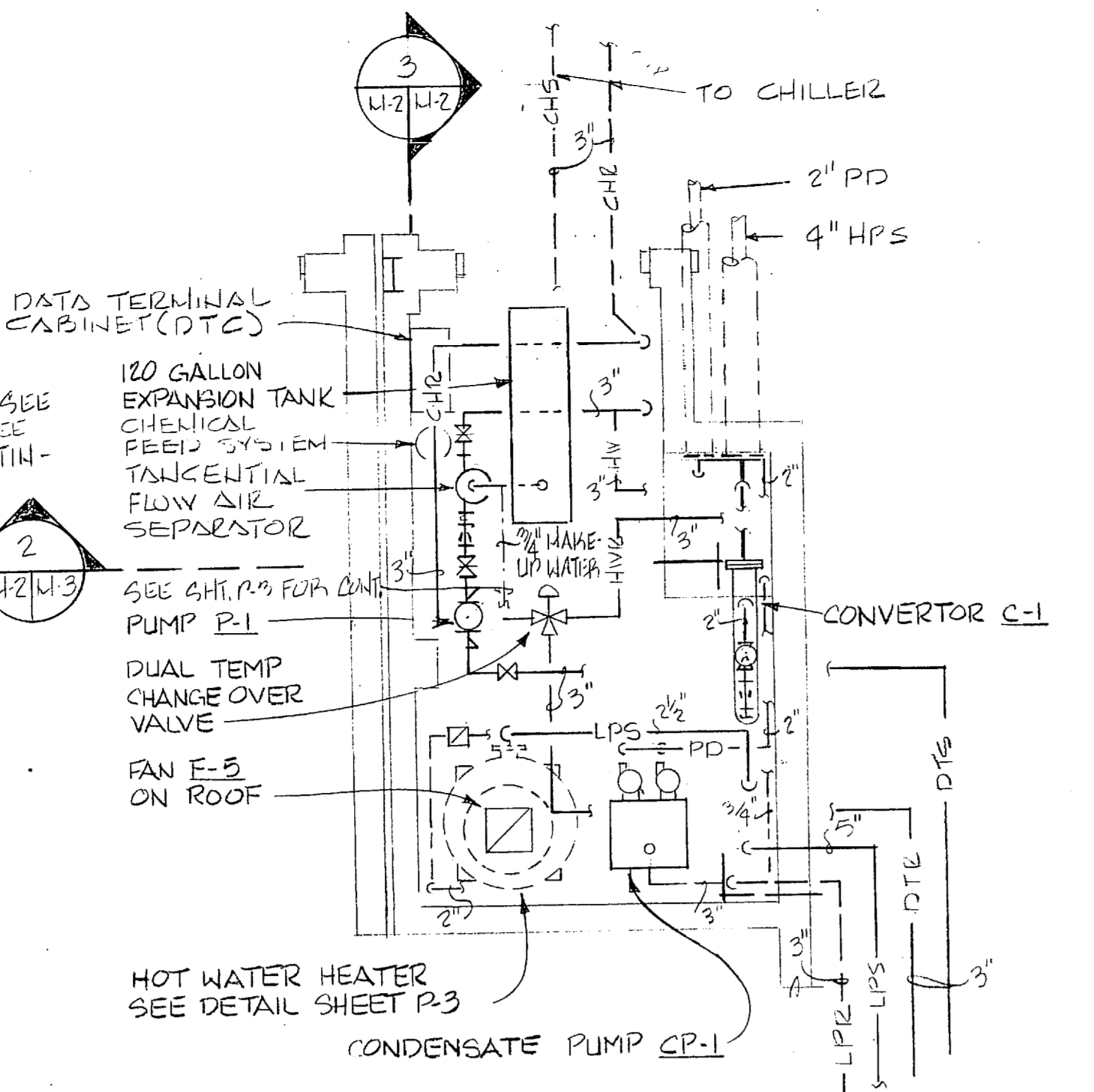
<b>RECORD DRAWING</b>		<b>FC 230</b>	<b>M-1</b>
DATE: OCT 3 1990			
CROCKFORD AND ASSOCIATES, INC. ARCHITECTS CHARLOTTE, NC 28236		NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
A DEP ARCHITECTS CHARLOTTE, NORTH CAROLINA		COMBAT VEHICLE MAINTENANCE SHOP	
EFD DWG NO: 230110 JOB ORDER NO: SEP1490 STA. PROJ. NO: PO27		NAVFAC DRAWING NO: 4148910	
DES: RHC PROJ MGR: RHC CH. ARCH/ENGR: RHC		CONSTR. CONTR. NO: N62470-86-D-5146	
EFD RVD: [Signature] DR. MGR: [Signature] DES. DIR: [Signature]		SCALE: AS NOTED SPEC. 09-85-5146	
APPROVED: [Signature] DATE: [Date]		SHEET 47 OF 65	



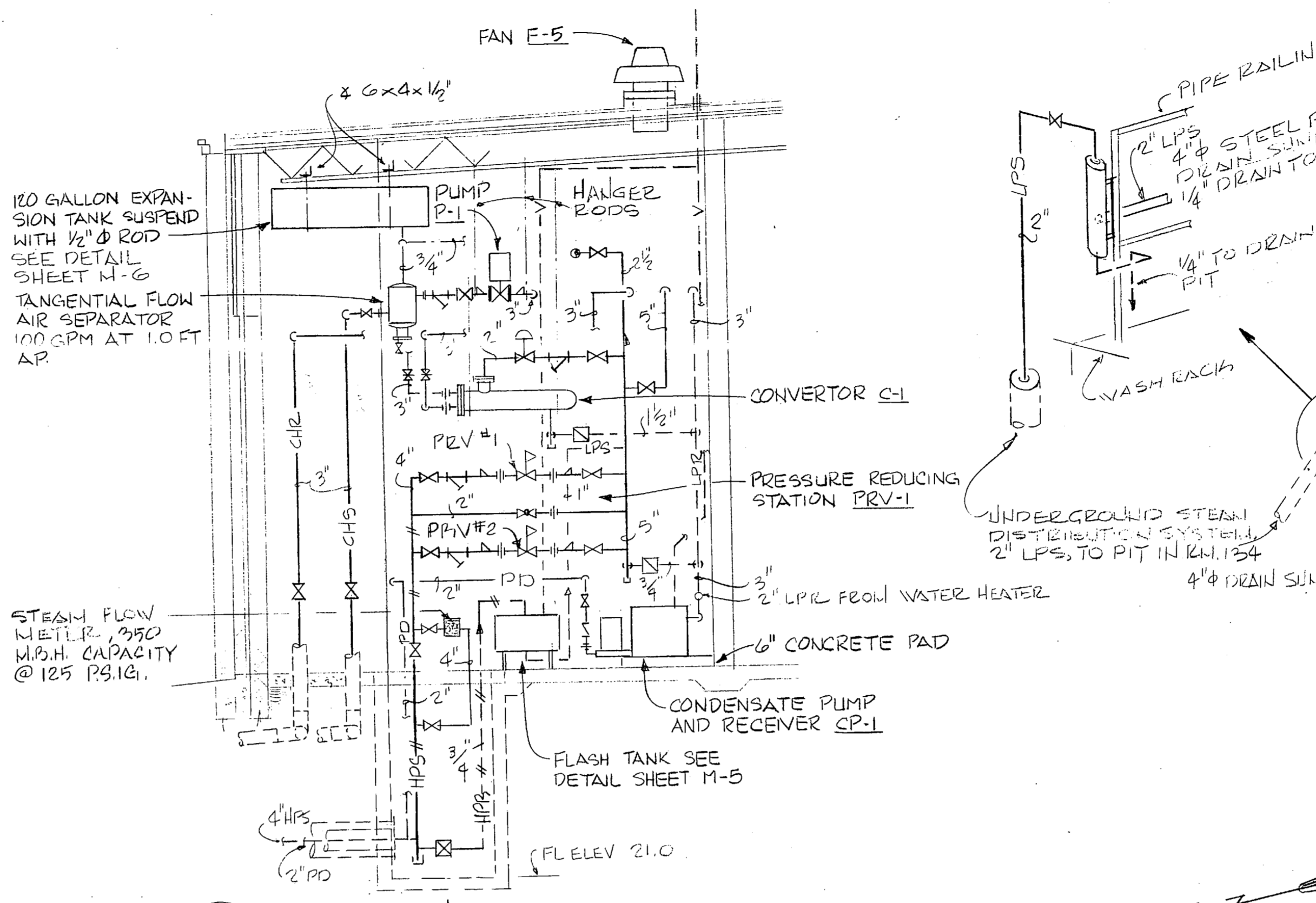
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
(A)	REVISED AS-BUILT	1/19/91	ABT



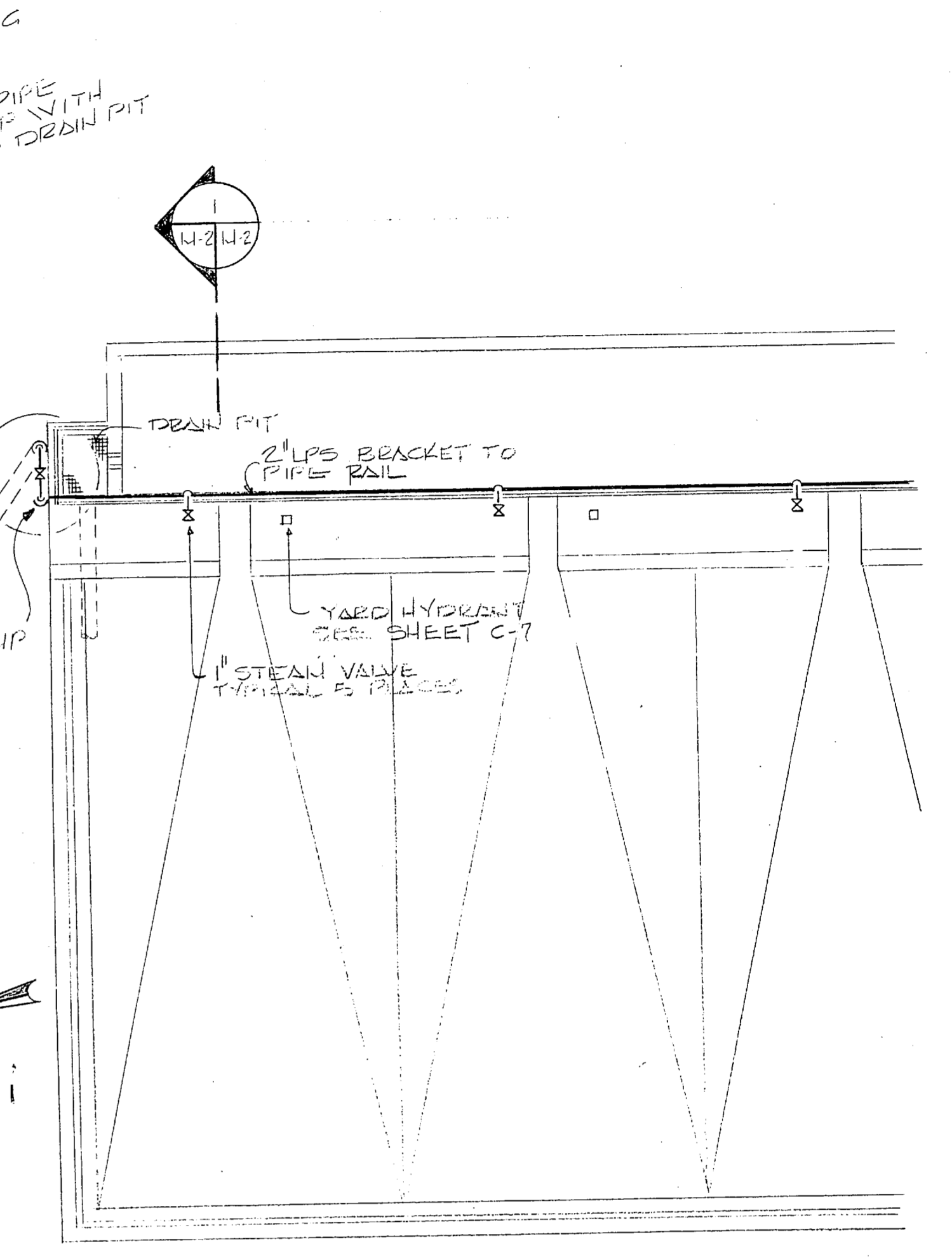
PLAN-MECHANICAL 132  
SCALE: 1/4" = 1'-0"



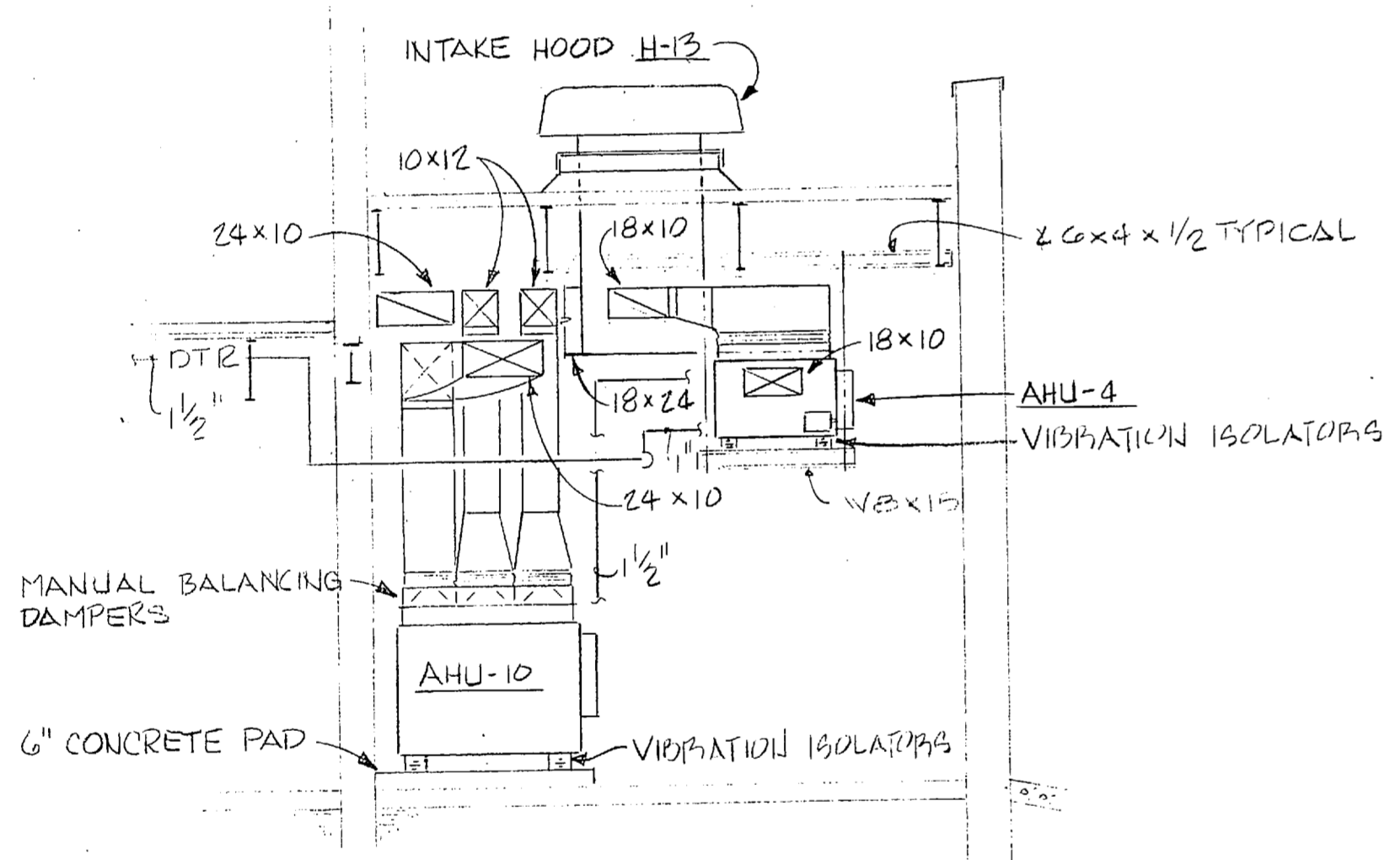
PLAN-MECHANICAL 121  
SCALE: 1/4" = 1'-0"



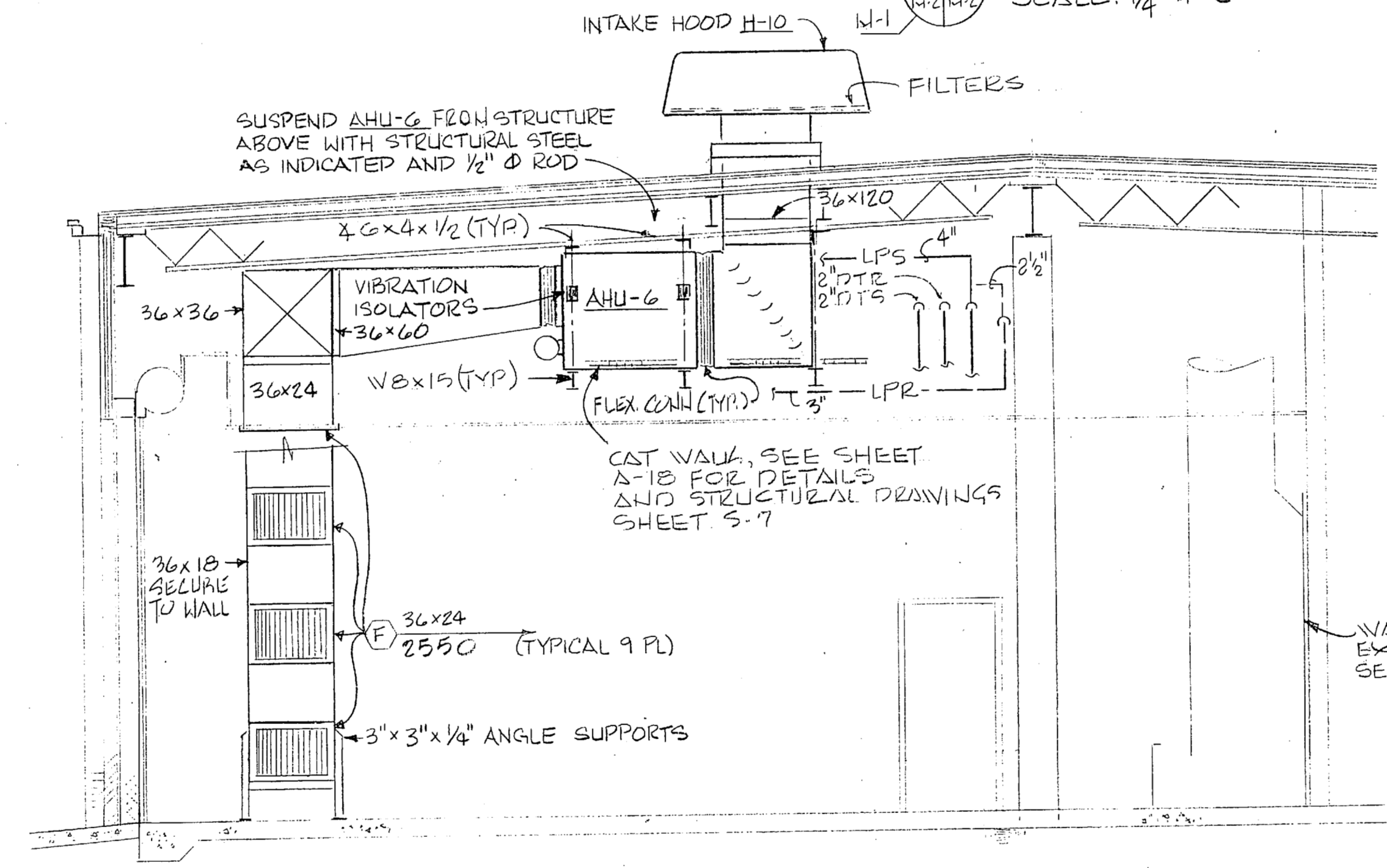
SECTION 3  
SCALE: 1/4" = 1'-0"



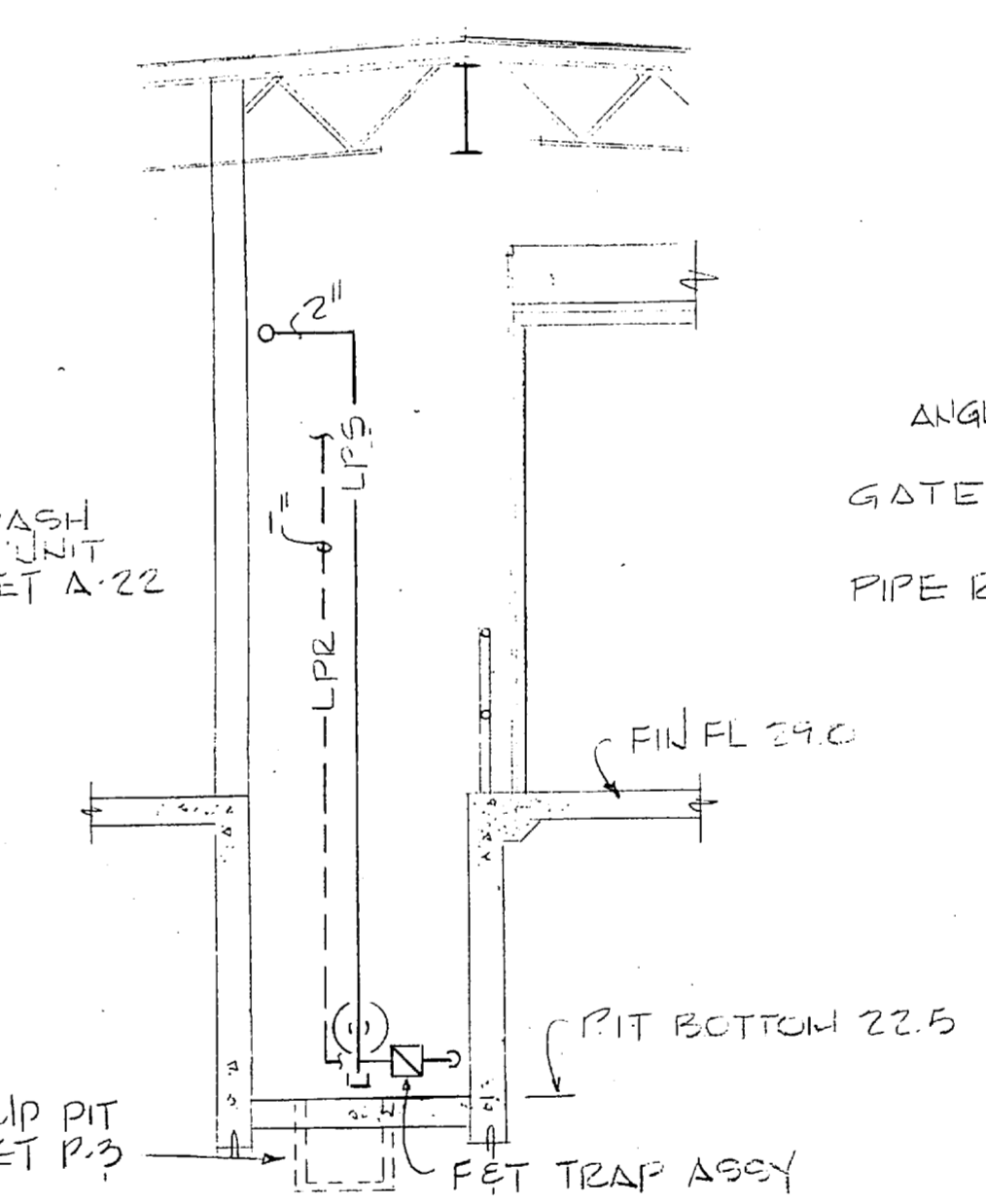
PART PLAN-5 STALL WASH RACK  
SCALE: 1/8" = 1'-0"



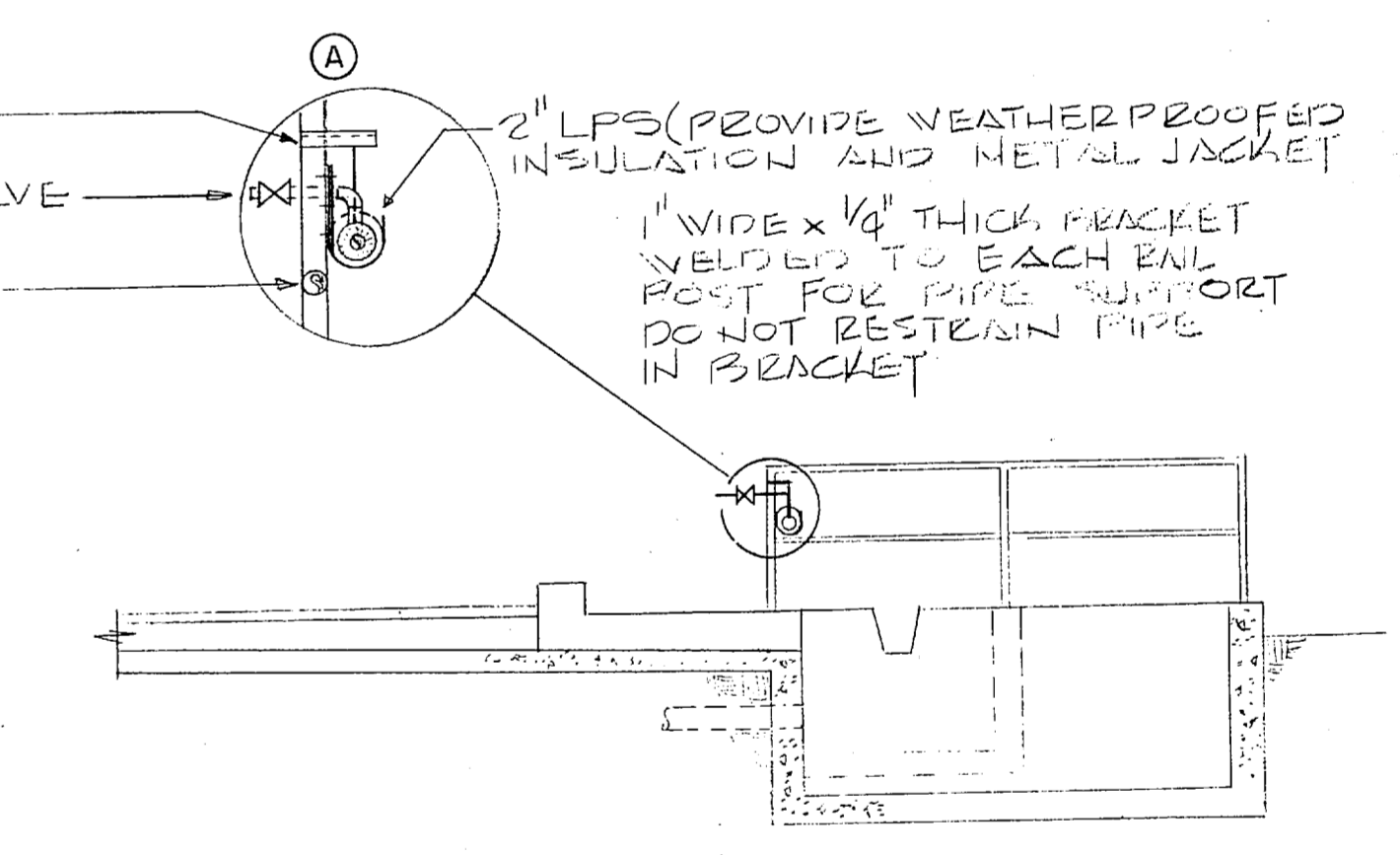
SECTION 2  
SCALE: 1/4" = 1'-0"



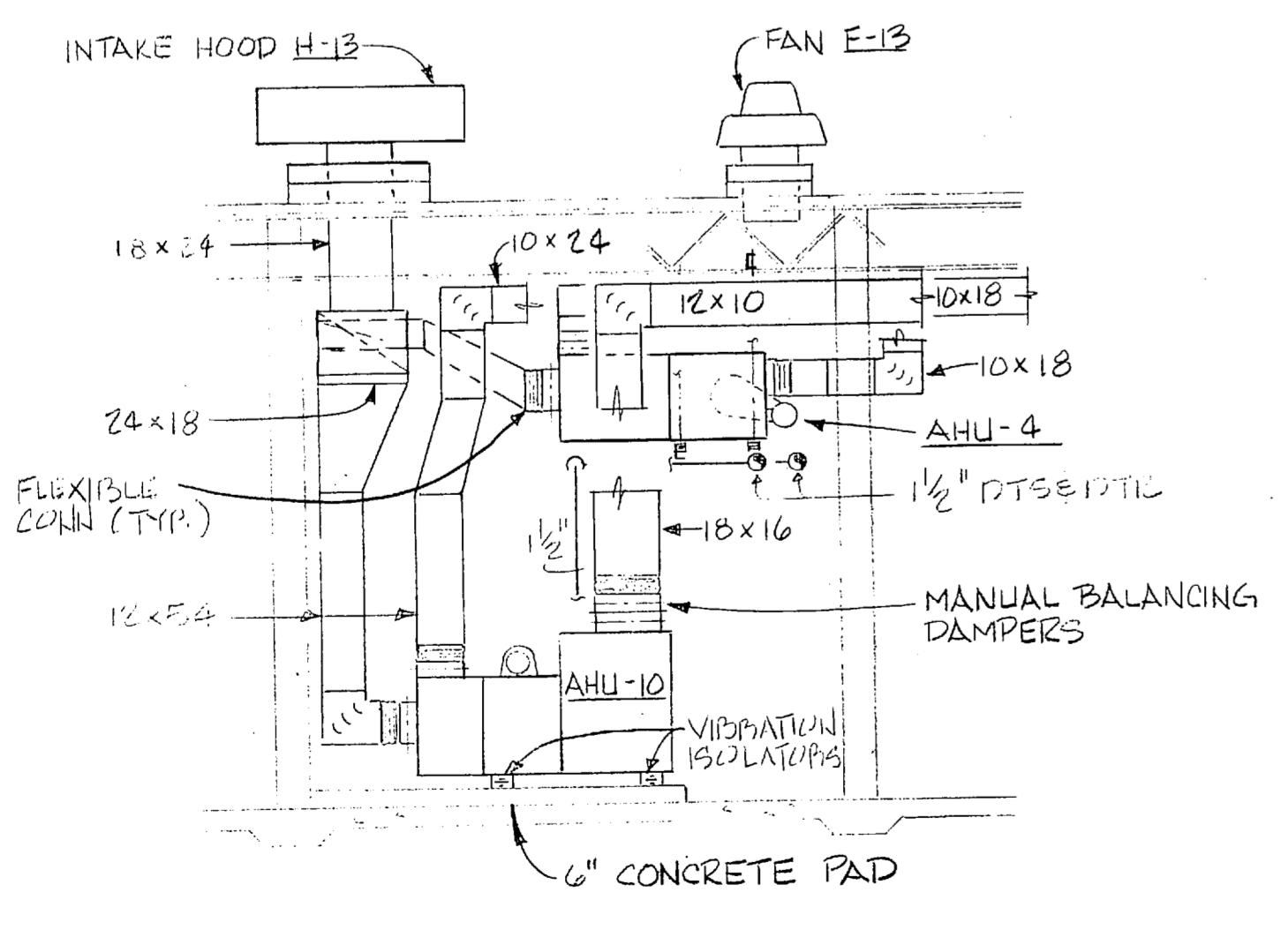
SECTION 4  
SCALE: 1/4" = 1'-0"



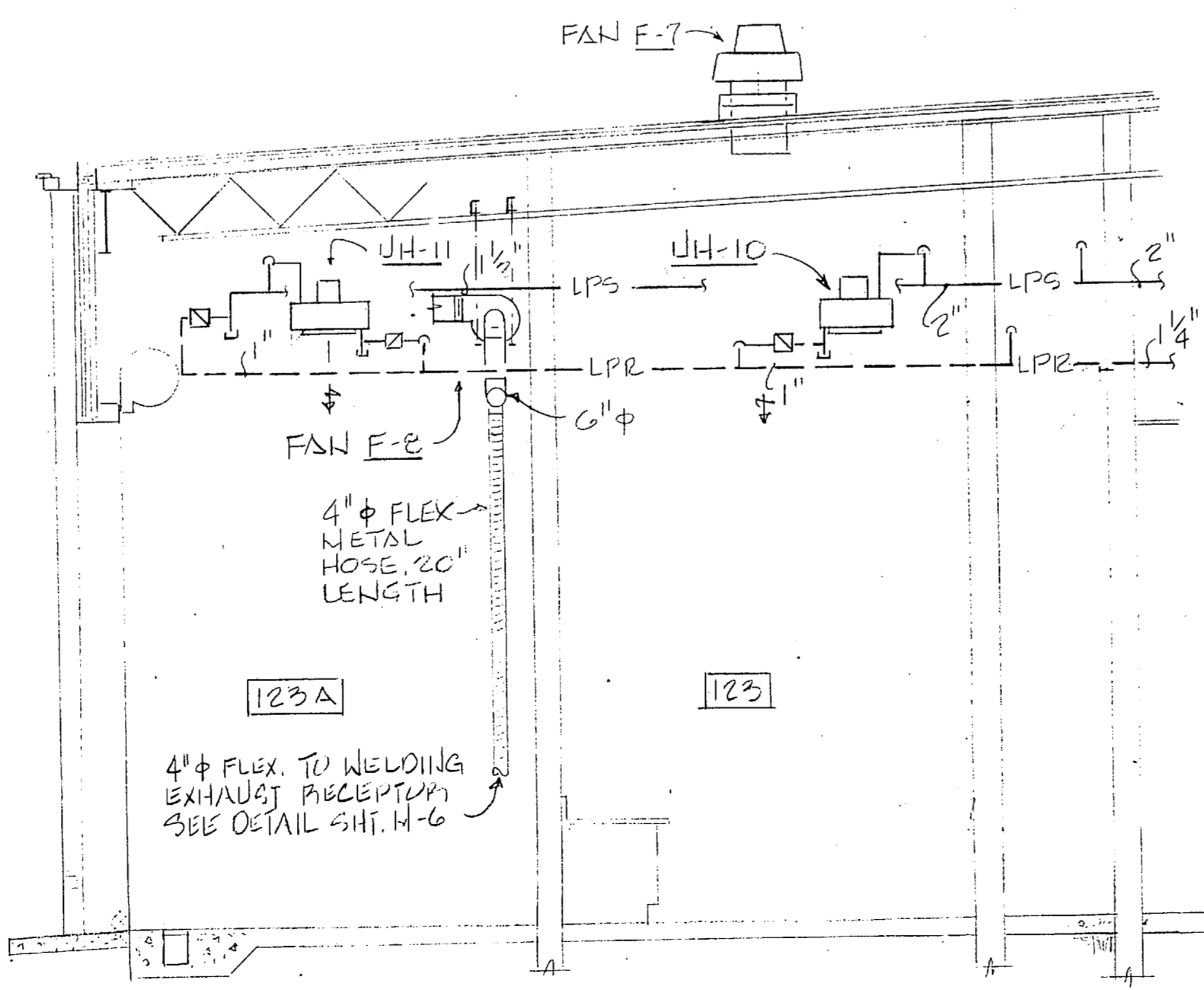
SECTION 2  
SCALE: 1/4" = 1'-0"



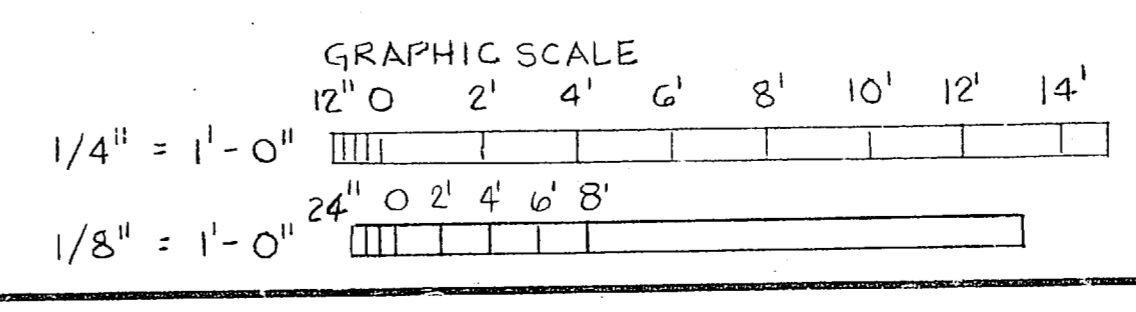
SECTION 1  
SCALE: 1/4" = 1'-0"



SECTION 7  
SCALE: 1/4" = 1'-0"



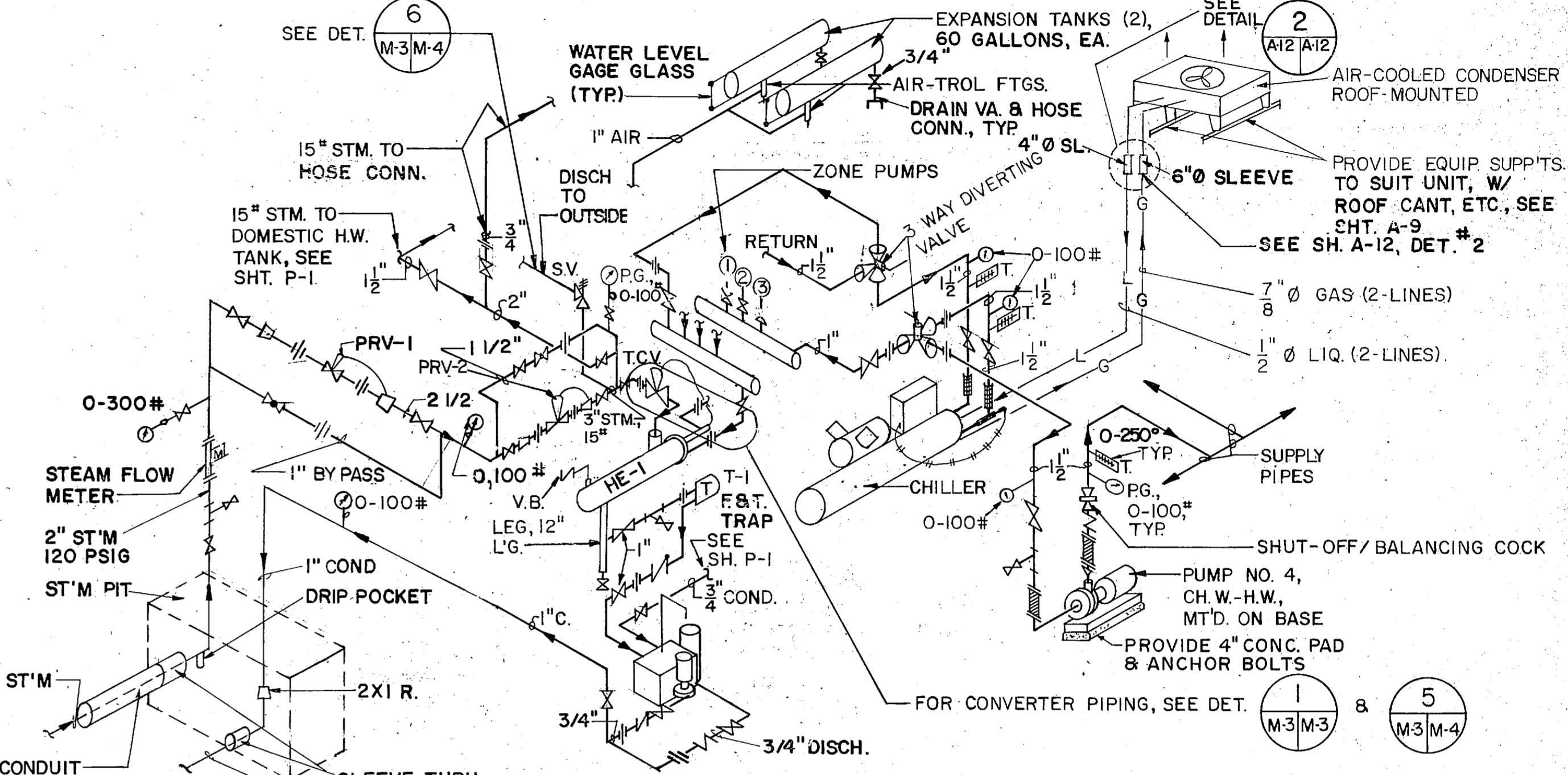
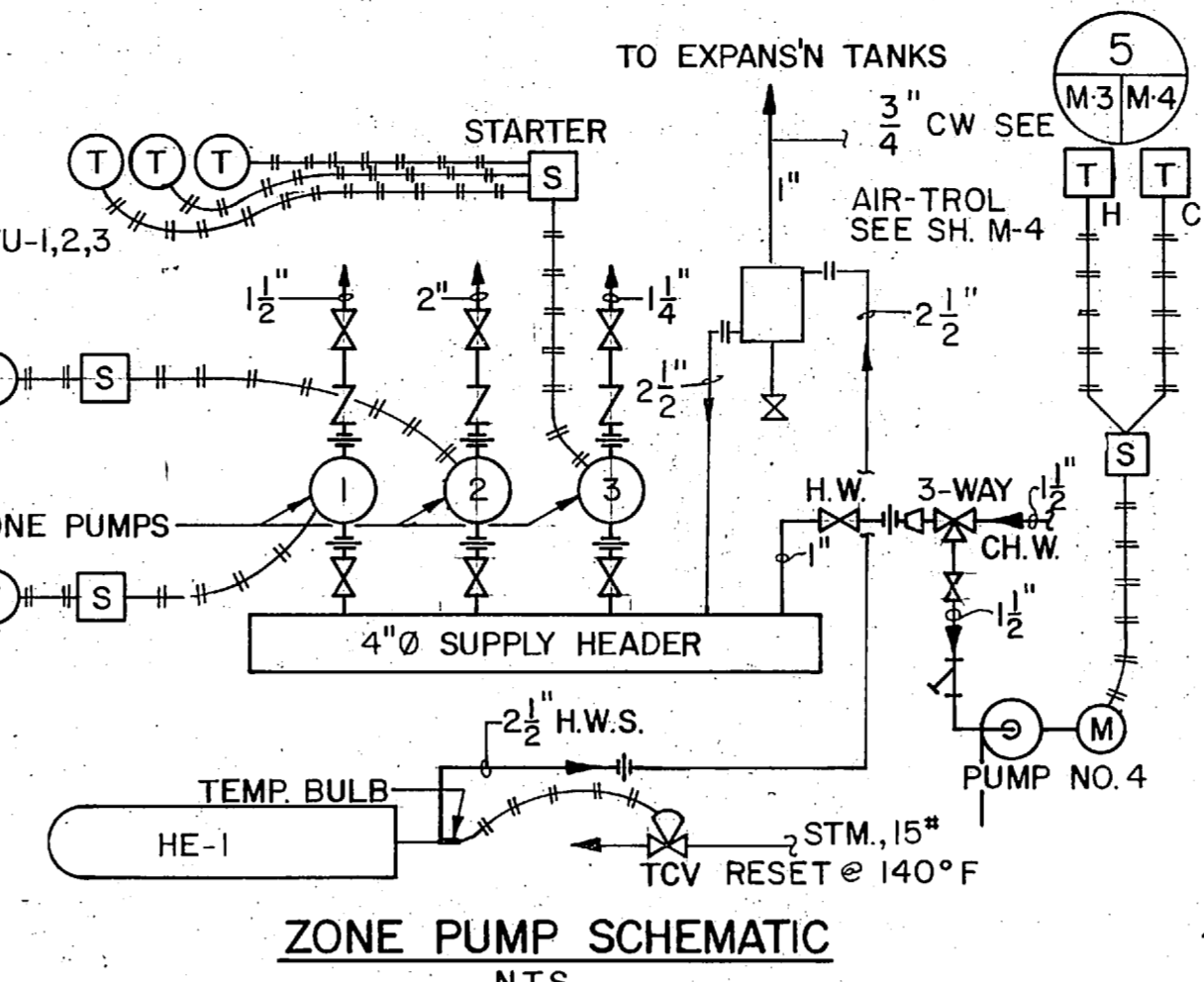
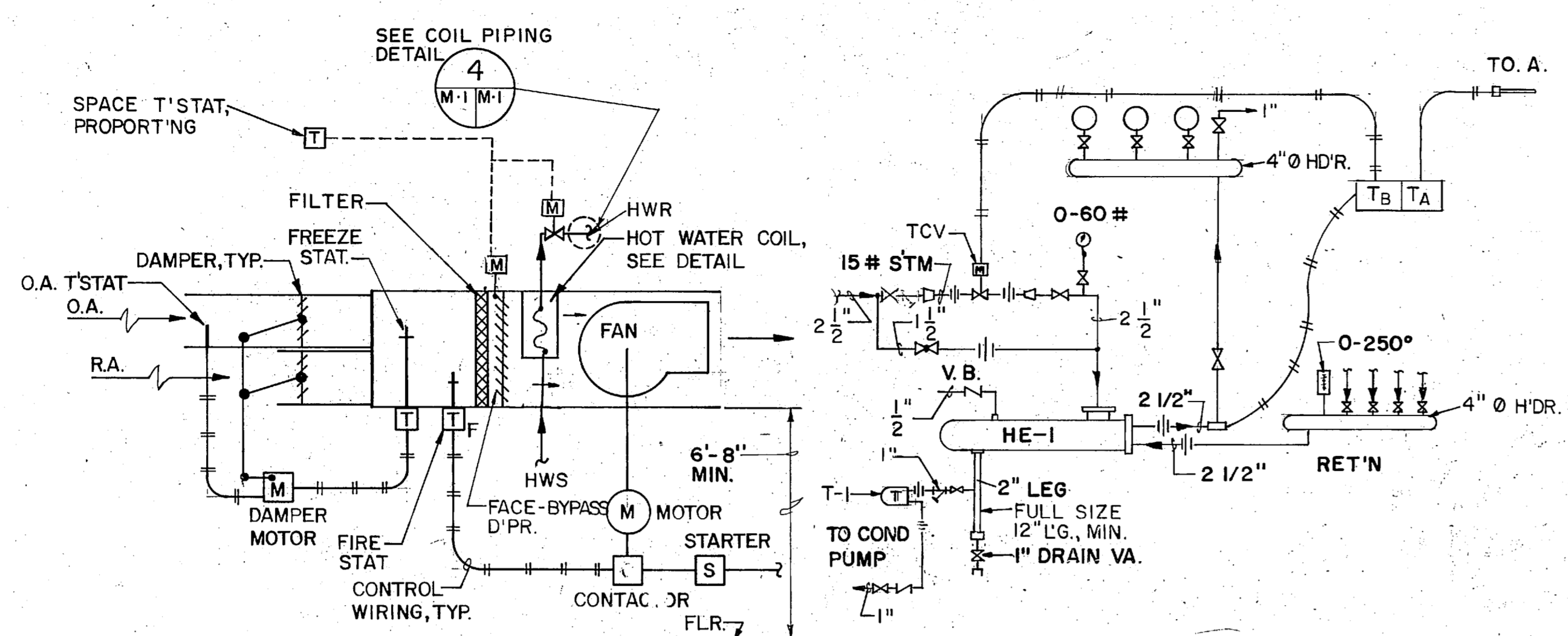
SECTION 10  
SCALE: 1/4" = 1'-0"



<b>RECORD DRAWING</b> DATE: OCT 3 1990 <b>FC 230</b>		<b>M-2</b>	
GROCROFT AND ASSOCIATES, INC. PO BOX 3263 CHARLOTTE, NC 28238		ADEP ARCHITECTS CHARLOTTE, NORTH CAROLINA	
DEPARTMENT OF THE NAVY NAVAL STATION MARINE CORPS BASE COMBAT VEHICLE MAINTENANCE SHOP		NAVAL FACILITIES ENGINEERING COMMAND NORFOLK, VIRGINIA CAMP LEJEUNE, NORTH CAROLINA	
APPROVED: [Signature] DATE: 8-2-90 ACTIVITY: SATISFACTORY TO [Signature] DATE: 8-2-90		SIZE: F CODE IDENT NO: 80091 NAVFAC DRAWING NO: 4148911 CONSTR CONTR NO: N12470-85-B-5146 SHEET 42 OF 65	

000001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



**AIR TEMPERING UNIT DIAGRAM**  
N.T.S.  
TYP. OF ATU-1,2, & 3

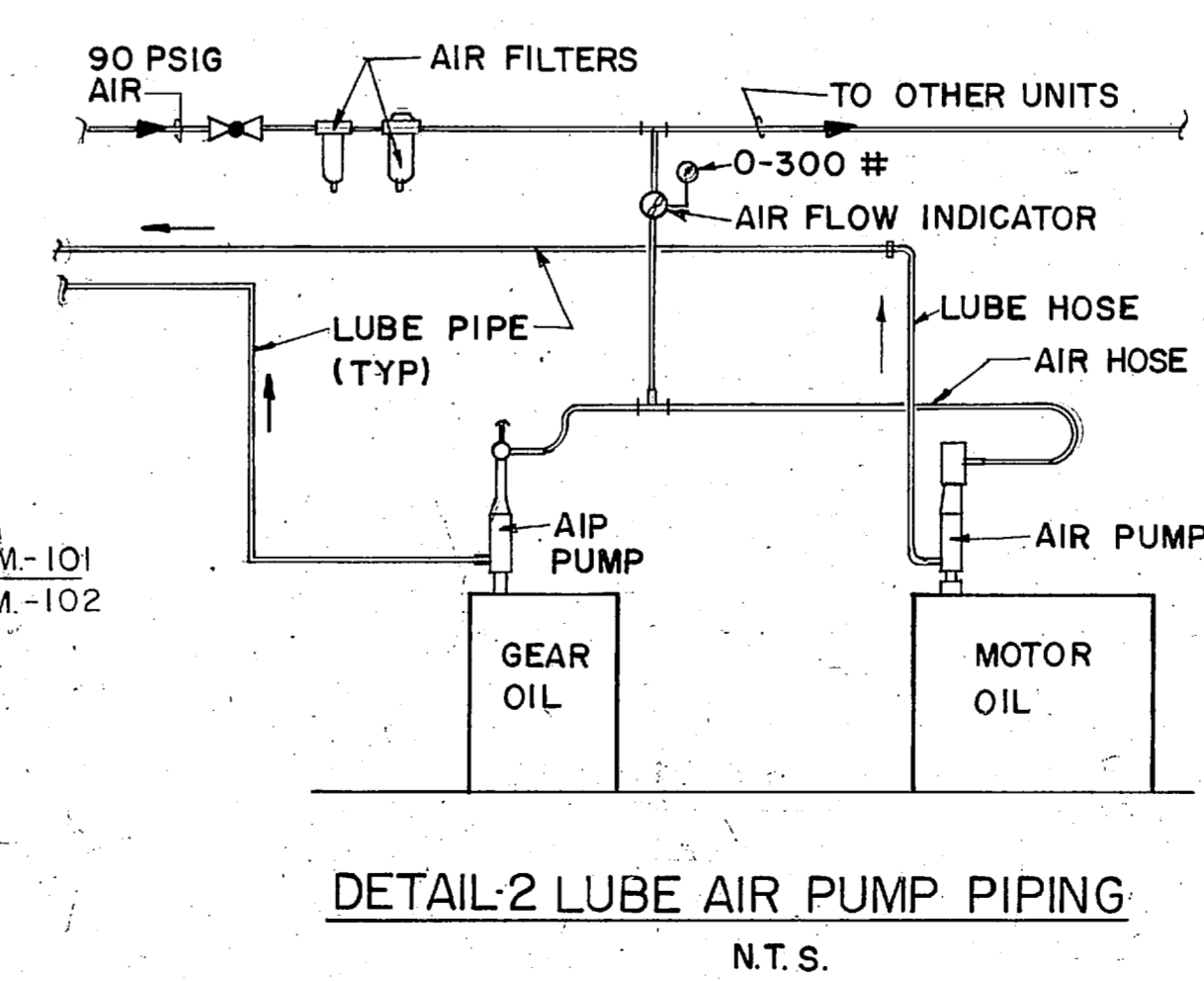
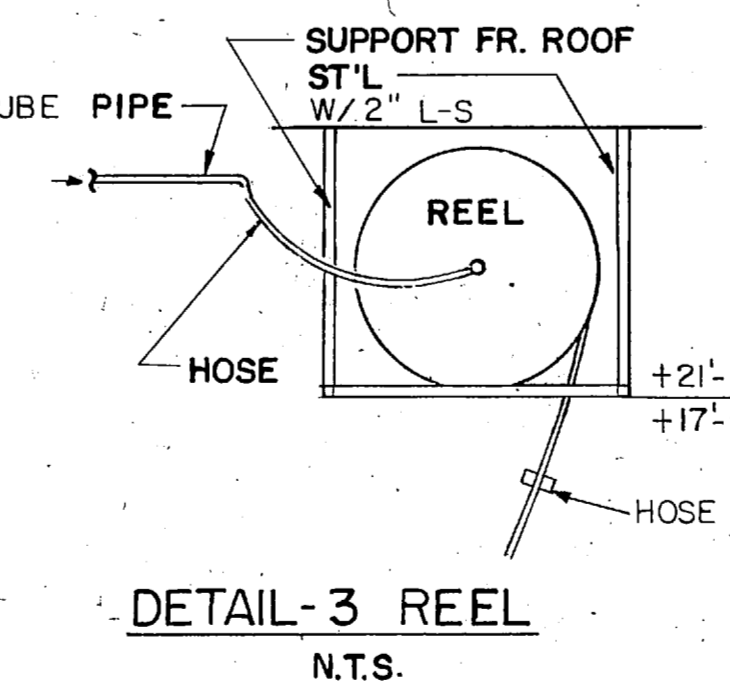
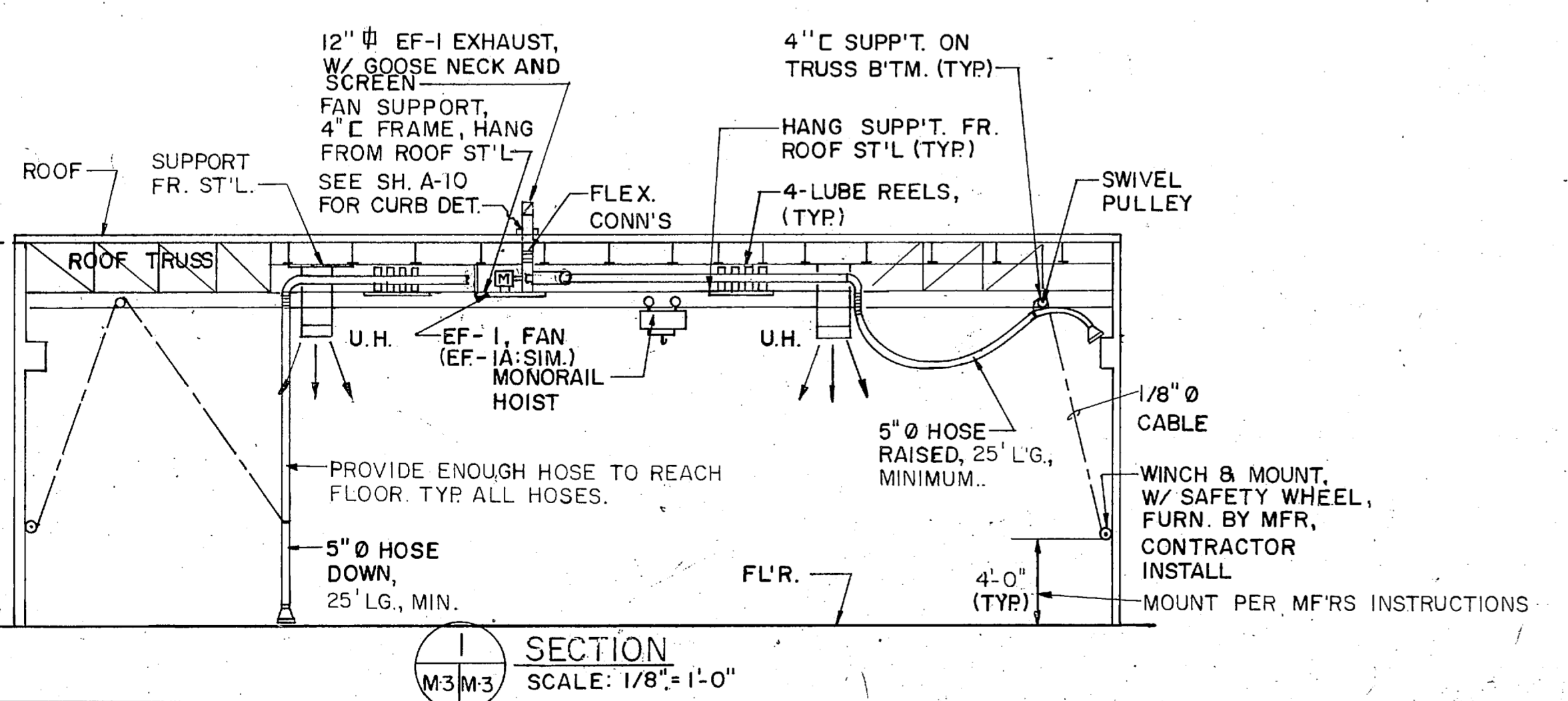
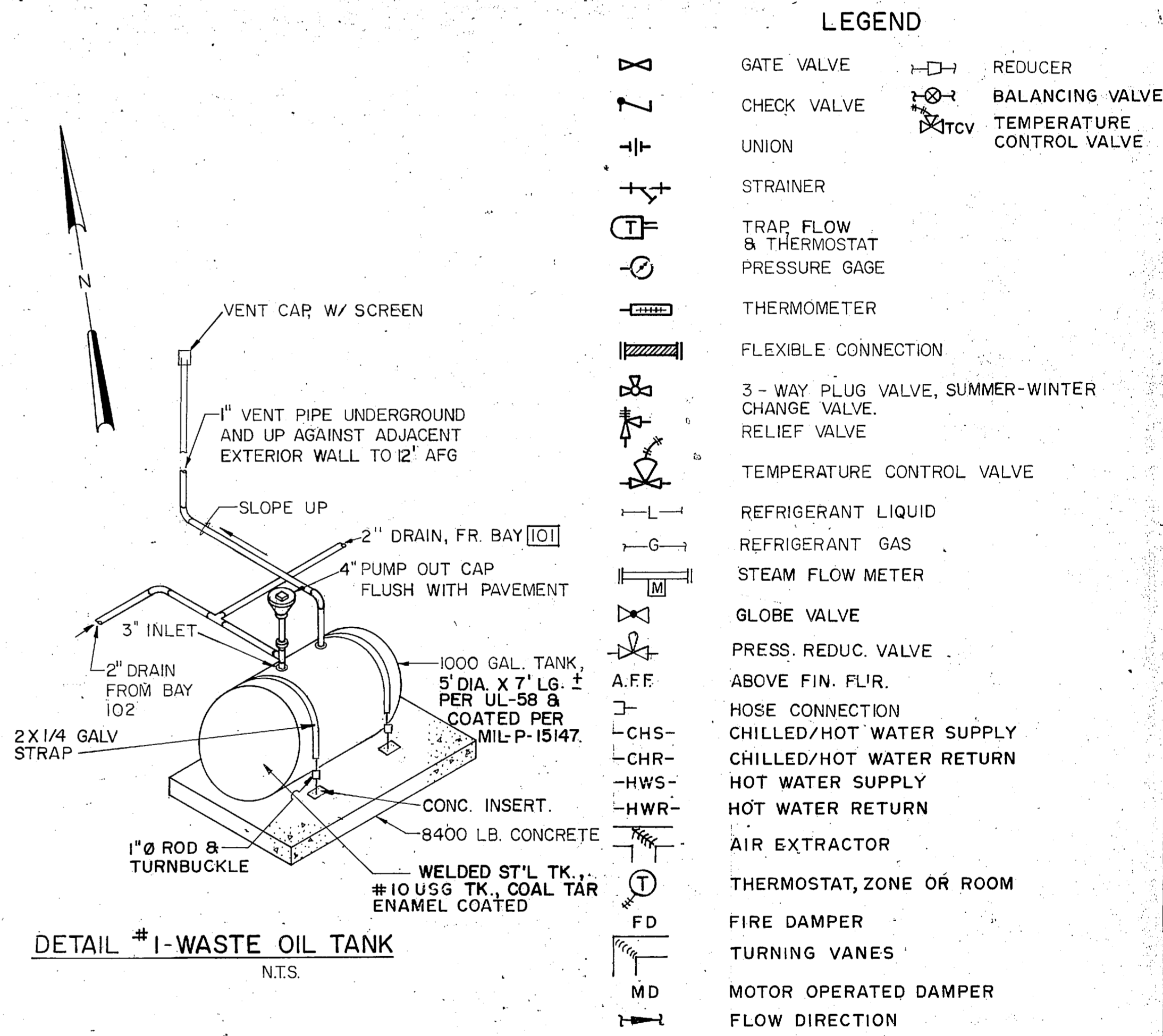
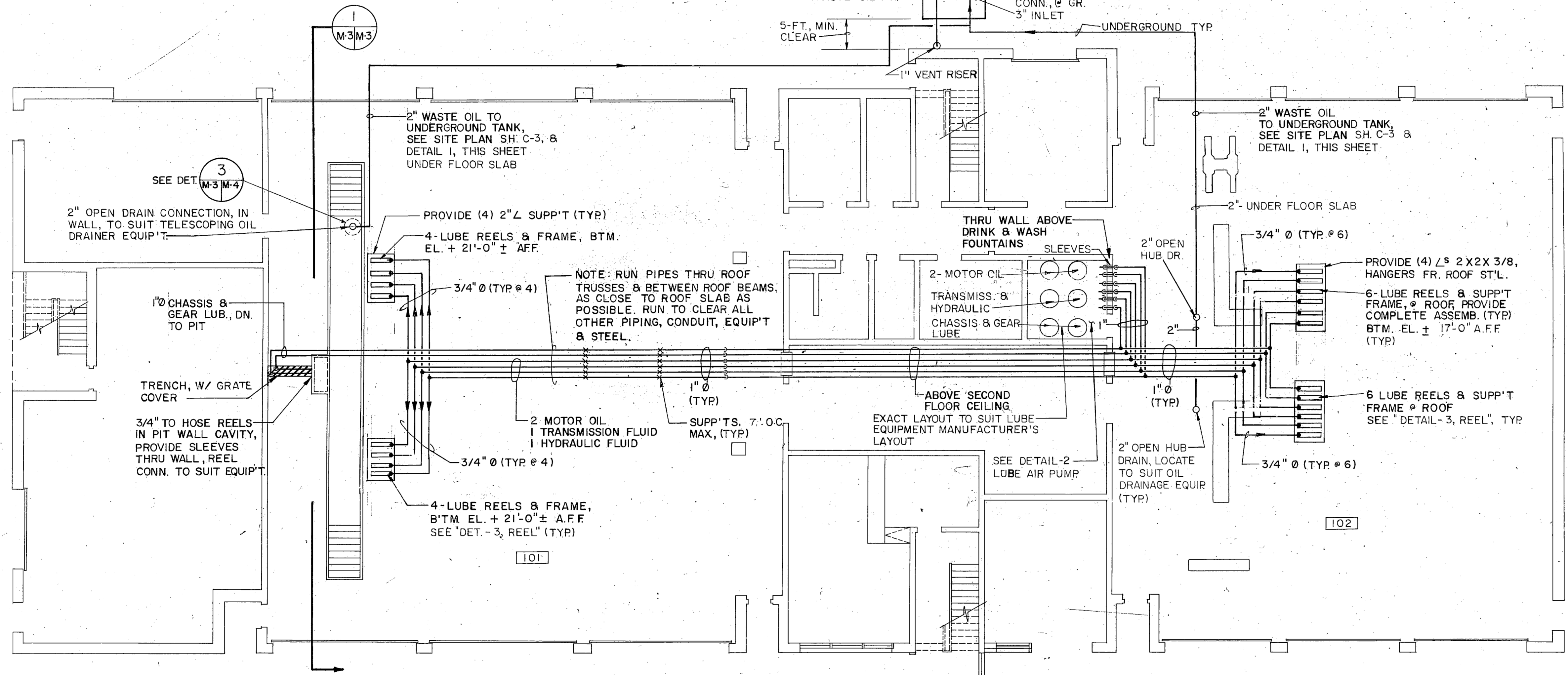
**SCHEMATIC CONVERTER DETAIL  
STEAM & COND PIPING**  
N.T.S.

**ZONE PUMP SCHEMATIC**  
N.T.S.

**STEAM, CHILLED & HOT WATER PIPING SCHEMATIC**  
N.T.S.

- SEQUENCE:**
- 1- FAN STARTED MANUALLY BY STARTER "S".
  - 2- MOTOR OPENS DAMPERS FOR MAX. O.A.
  - 3- ROOM THERMOSTAT CONTROLS H.W. CONTR. VALVE & FACE BYPASS DAMPER
  - 4- CONTROL VALVE OPEN TO COIL, IF CONTROL FAIL.
  - 5- IF MIXED AIR TEMP < 35°F, FREEZE STAT CLOSES O.A. D'PR. TO MINIMUM O.A.
  - 6- FIRE STAT SHUTS OFF FAN MOTOR ON HIGH TEMP.

- SEQUENCE:**
- 1- OUTSIDE T'STAT TA, WHEN O.A. TEMP. < 60°F, ACTIVATES SUBMASTER TB, TO OPEN VALVE TCV
  - 2- BASED ON HOT WATER TEMP OF 200° F, & O.A. TEMP OF 30° F, T'STAT TA RESETS SUBMASTER T'STAT TB, TO MODULATE TCV FOR SUITABLE HOT W. TEMP
  - 3- IN EVENT OF CONTROL POWER FAILURE, VALVE TCV SHALL CLOSE
  - 4- WHEN OUTS. AIR < 55°F, SUBMASTER TB RESETS TCV FOR HOT WATER SUPPLY TEMP OF 140° F MAX.
  - 5- WHEN HEAT DEMAND IS SATISFIED OR O.A. = 60°F TCV CLOS.



GRAPHIC SCALES  
SCALE: 1/8" = 1'-0"

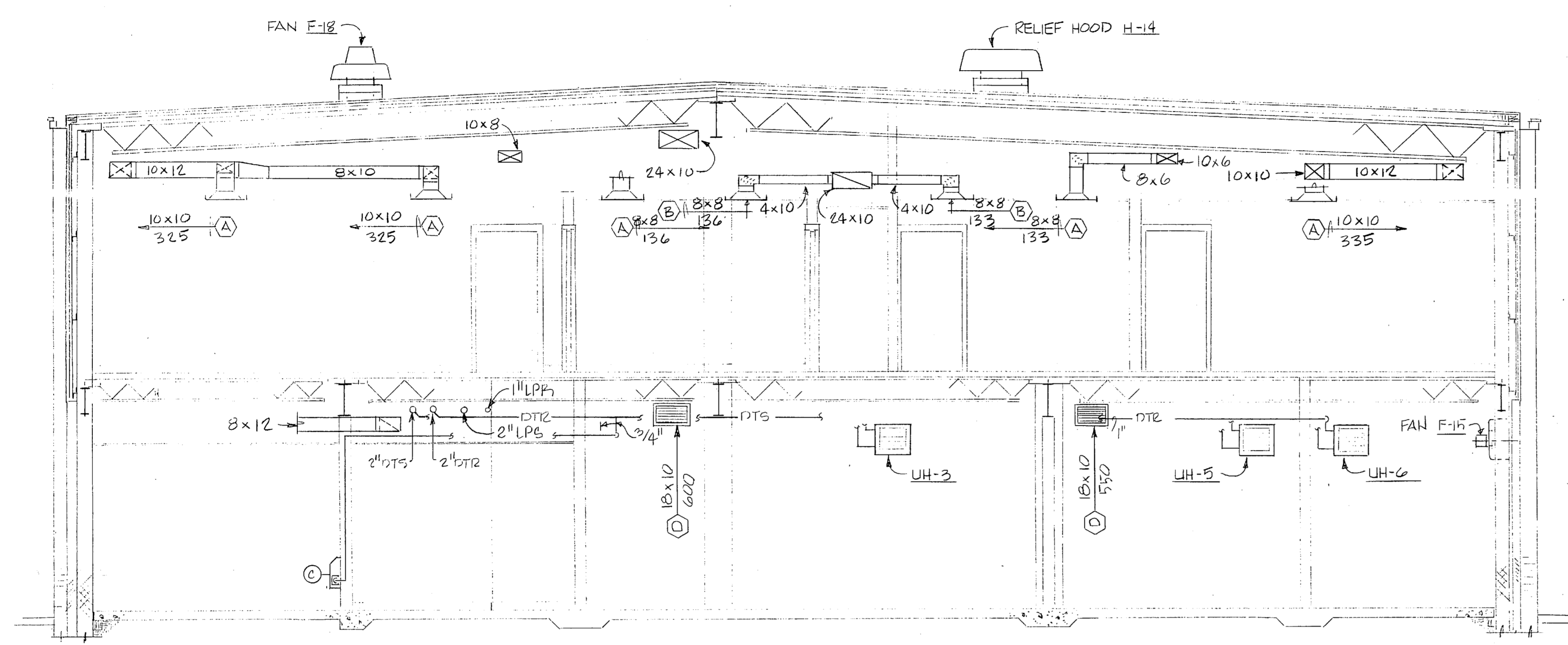
**LEGEND**

	GATE VALVE		REDUCER
	CHECK VALVE		BALANCING VALVE
	UNION		TEMPERATURE CONTROL VALVE
	STRAINER		TRAP FLOW
	B. THERMOSTAT		PRESSURE GAGE
	THERMOMETER		FLEXIBLE CONNECTION
	3-WAY PLUS VALVE, SUMMER-WINTER CHANGE VALVE		RELIEF VALVE
	TEMPERATURE CONTROL VALVE		REFRIGERANT LIQUID
	REFRIGERANT GAS		STEAM FLOW METER
	GLOBE VALVE		PRESS. REDUC. VALVE
	ABOVE FIN. FLUR.		HOSE CONNECTION
	CHILLED/HOT WATER SUPPLY		CHILLED/HOT WATER RETURN
	HOT WATER SUPPLY		HOT WATER RETURN
	AIR EXTRACTOR		THERMOSTAT, ZONE OR ROOM
	FIRE DAMPER		TURNING VANES
	MOTOR OPERATED DAMPER		FLOW DIRECTION

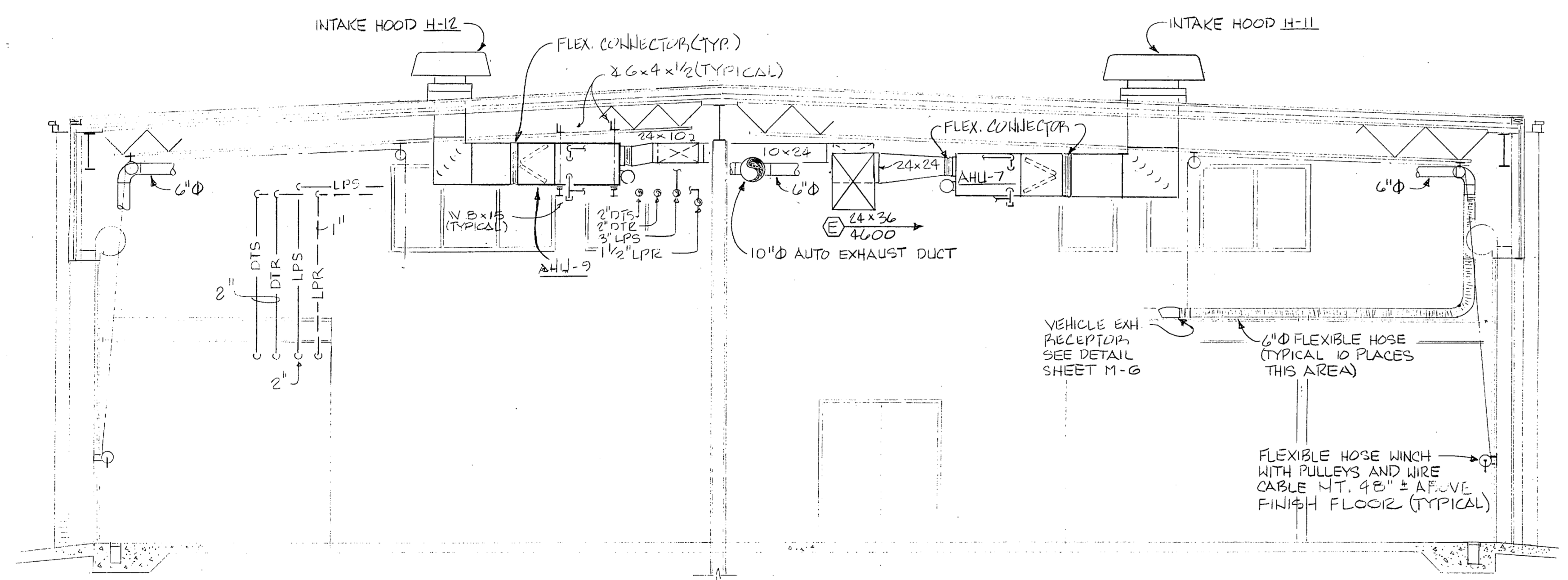
<b>FC 230</b>		<b>M-3</b>	
SOUTHEASTERN ARCHITECTS: ENGINEERS-PLANNERS, INC. ASHEVILLE, NORTH CAROLINA		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION	
DES. J.W.F. DR. B.V.B. CHK. J.W.F.		MARINE CORPS BASE CAMP LEJEUNE, N.C.	
SUBMITTED BY: J. ANDSON DATE: 10 MAR 65		MAINTENANCE SHOP LUBRICATION DISPENSING FLOOR PLAN, HVAC SCHEMATIC AND DETAILS	
EFD: J.P. C. RVD		SIZE: CODE IDENT. NO. NAVFAC DRAWING NO. 4088999	
APPROVED: DATE: 12/64		CONSTR. CONTR. NO. N62470-BL-B-1132	
OFFICER IN CHARGE		SCALE: NOTED SPEC. 05-BL-1132 SHEET 34 OF 43	
FOR EFD FOR COMMANDER NAVFAC		EFD: EWS: NO. 189999	

30 34

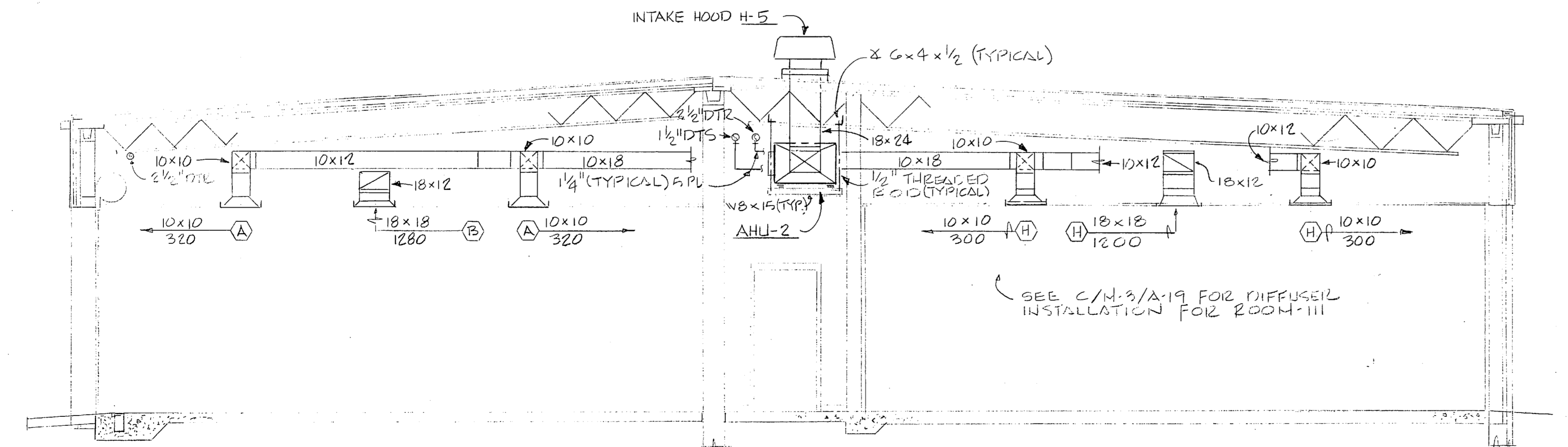
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



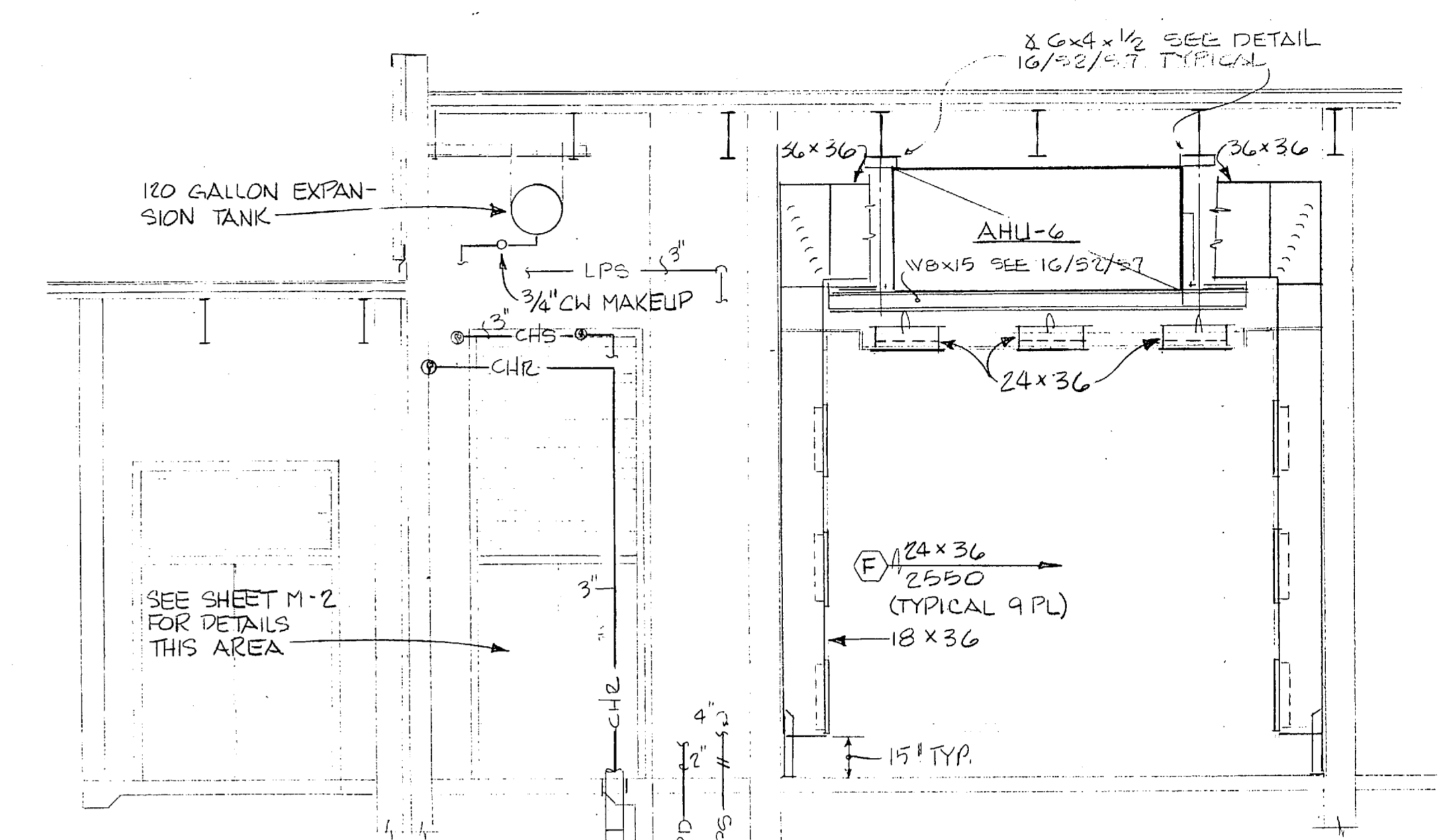
6 SECTION  
SCALE: 1/4" = 1'-0"



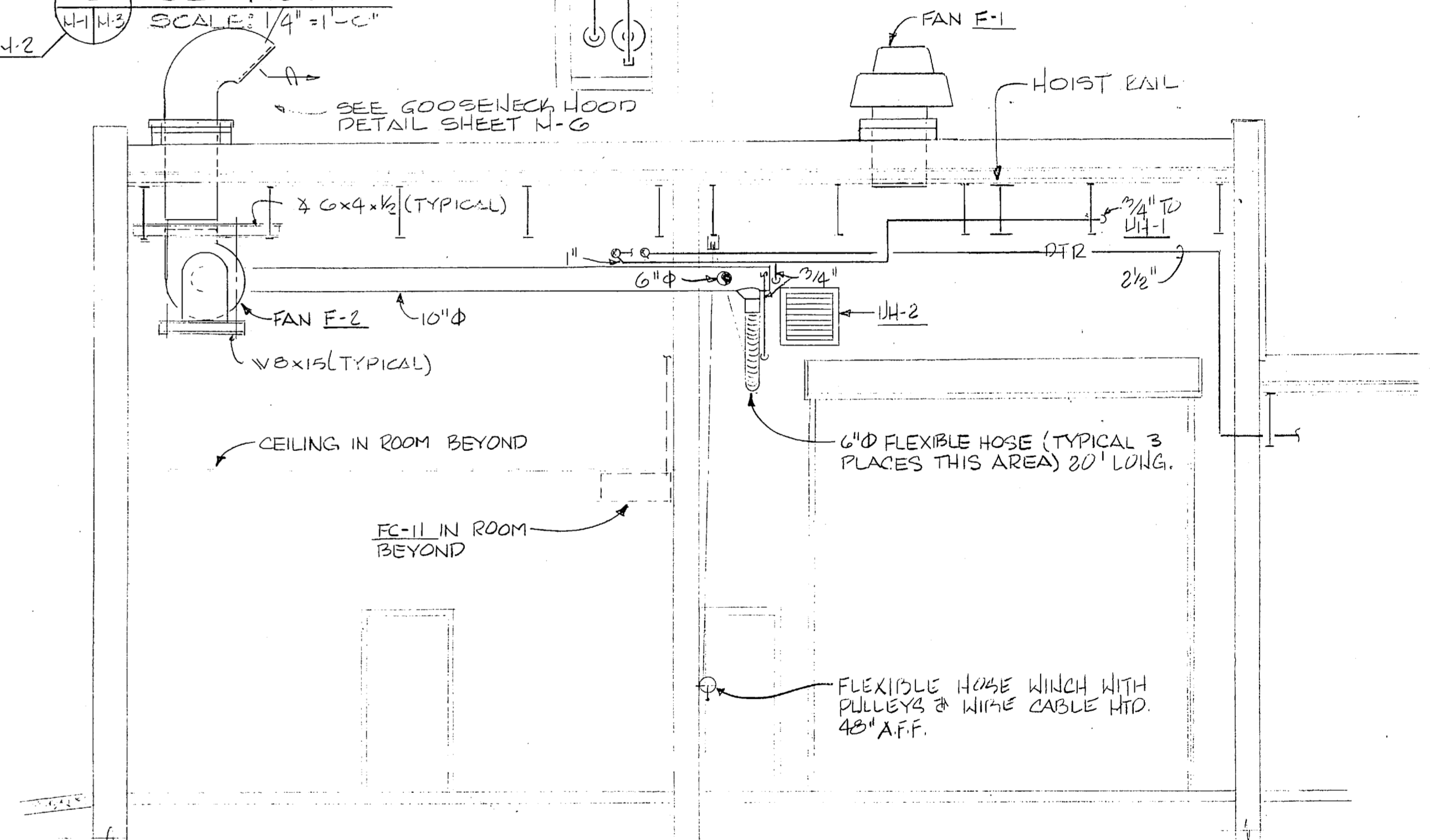
5 SECTION  
SCALE: 1/4" = 1'-0"



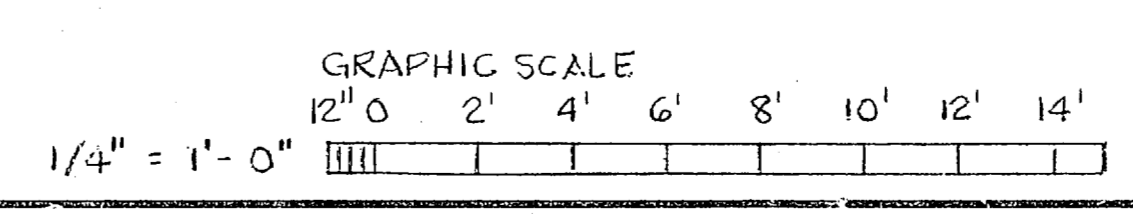
9 SECTION  
SCALE: 1/4" = 1'-0"



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



8 SECTION  
SCALE: 1/4" = 1'-0"



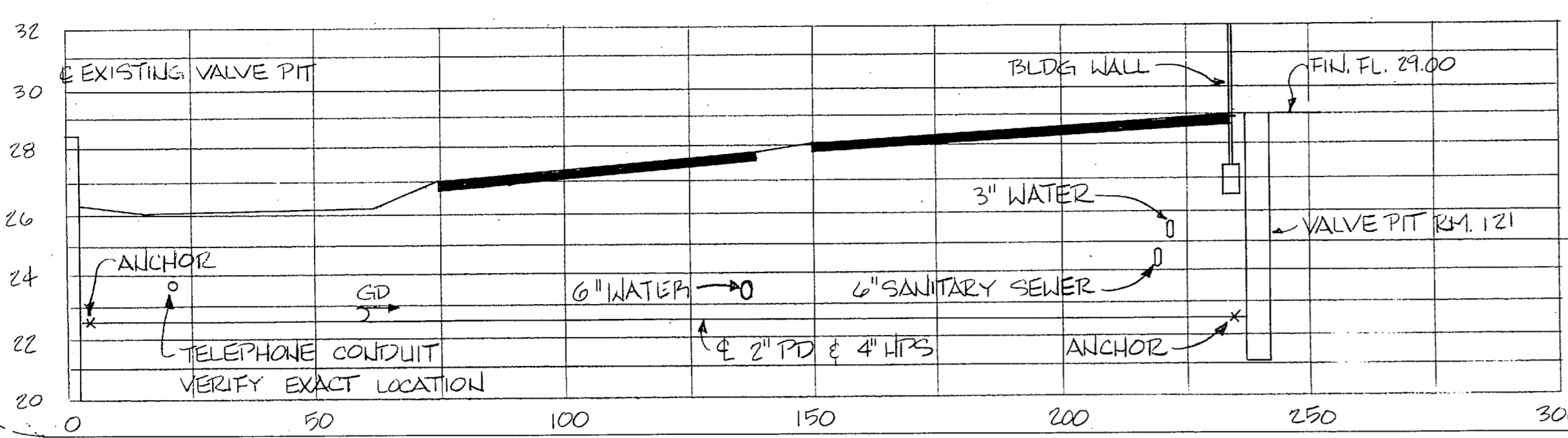
**RECORD DRAWING** FC 230 M-3  
DATE: OCT 1957

CROCKFORD AND ASSOCIATES, INC. CHARLOTTE, N.C. 28236	A DEP ARCHITECTS CHARLOTTE, NORTH CAROLINA	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
	ATLANTIC DIVISION	NAVAL STATION NORFOLK, VIRGINIA
EPD DWG. NO. 248712	JOB ORDER NO. 55146	MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA
STA. PROJ. NO. PG27	DES. RHC	DRWN. RHC
PROJ. MGR. RHC	CH. ARCH/ENGR. RHC	COMBAT VEHICLE MAINTENANCE SHOP
EPD. RVD. [Signature]	FP. [Signature]	BUILDING SECTIONS
APPROVED [Signature]	DATE [Signature]	SIZE: F
ACTIVITY - SATISFACTORY TO [Signature]	DATE [Signature]	CODE IDENT. NO. 80091
FOR ETD FOR COMMANDER NAVFAC	SCALE AS NOTED SPEC.	NAVFAC DRAWING NO. 4148912
		CONSTR. CONTR. NO. 462470-85-B, 6146
		SHEET 29 OF 65

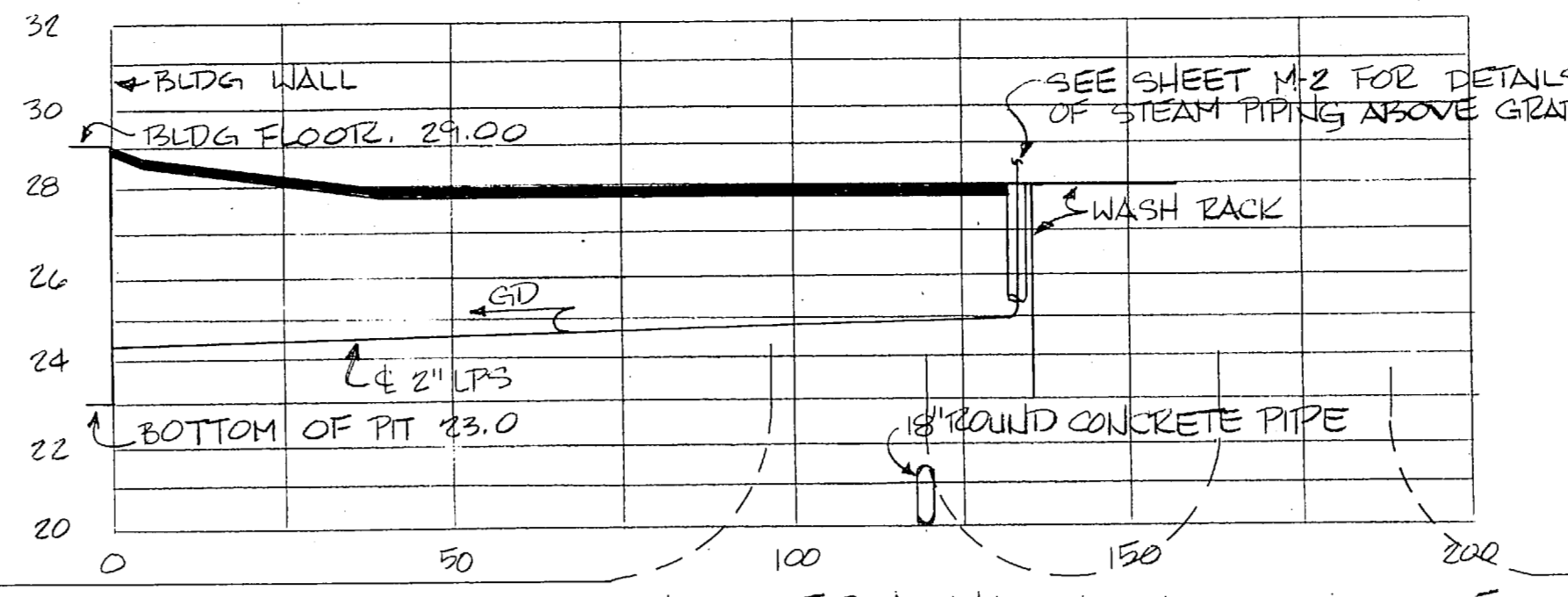




REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

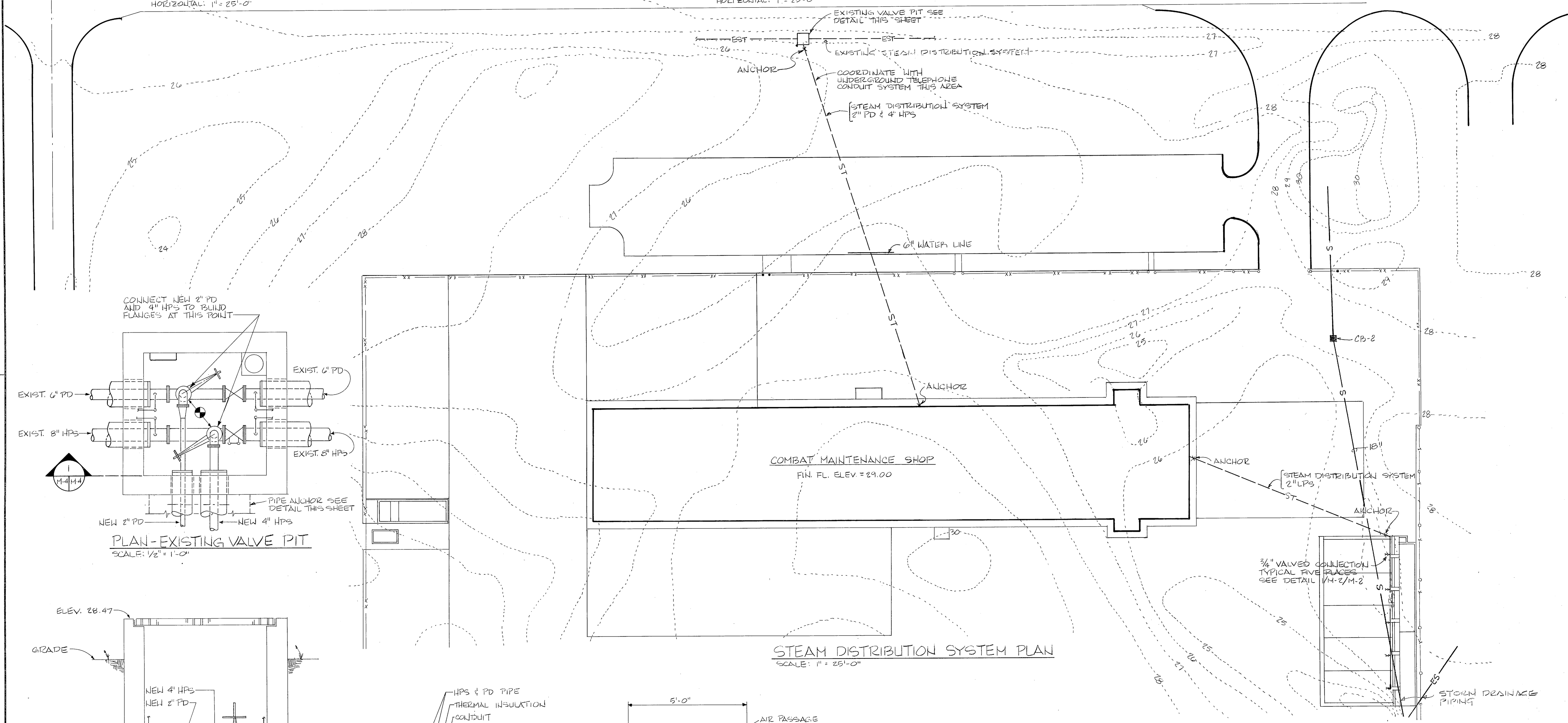


STEAM DISTRIBUTION SYSTEM PROFILE-BLDG SERVICE  
 SCALE: VERTICAL: 1/4" = 1'-0"  
 HORIZONTAL: 1" = 25'-0"

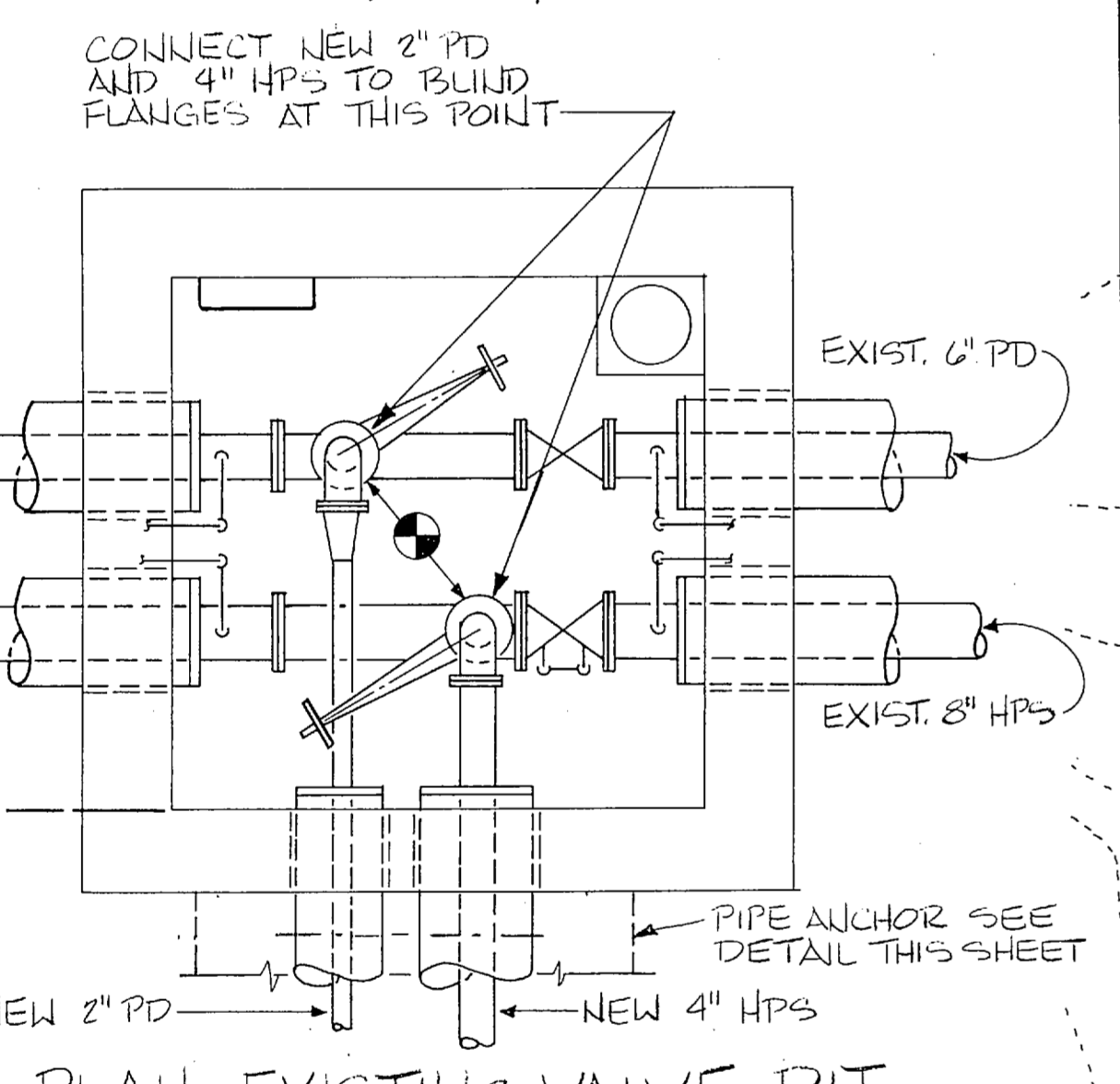


STEAM DISTRIBUTION SYSTEM PROFILE-WASH RACK SERVICE  
 SCALE: VERTICAL: 1/4" = 1'-0"  
 HORIZONTAL: 1" = 25'-0"

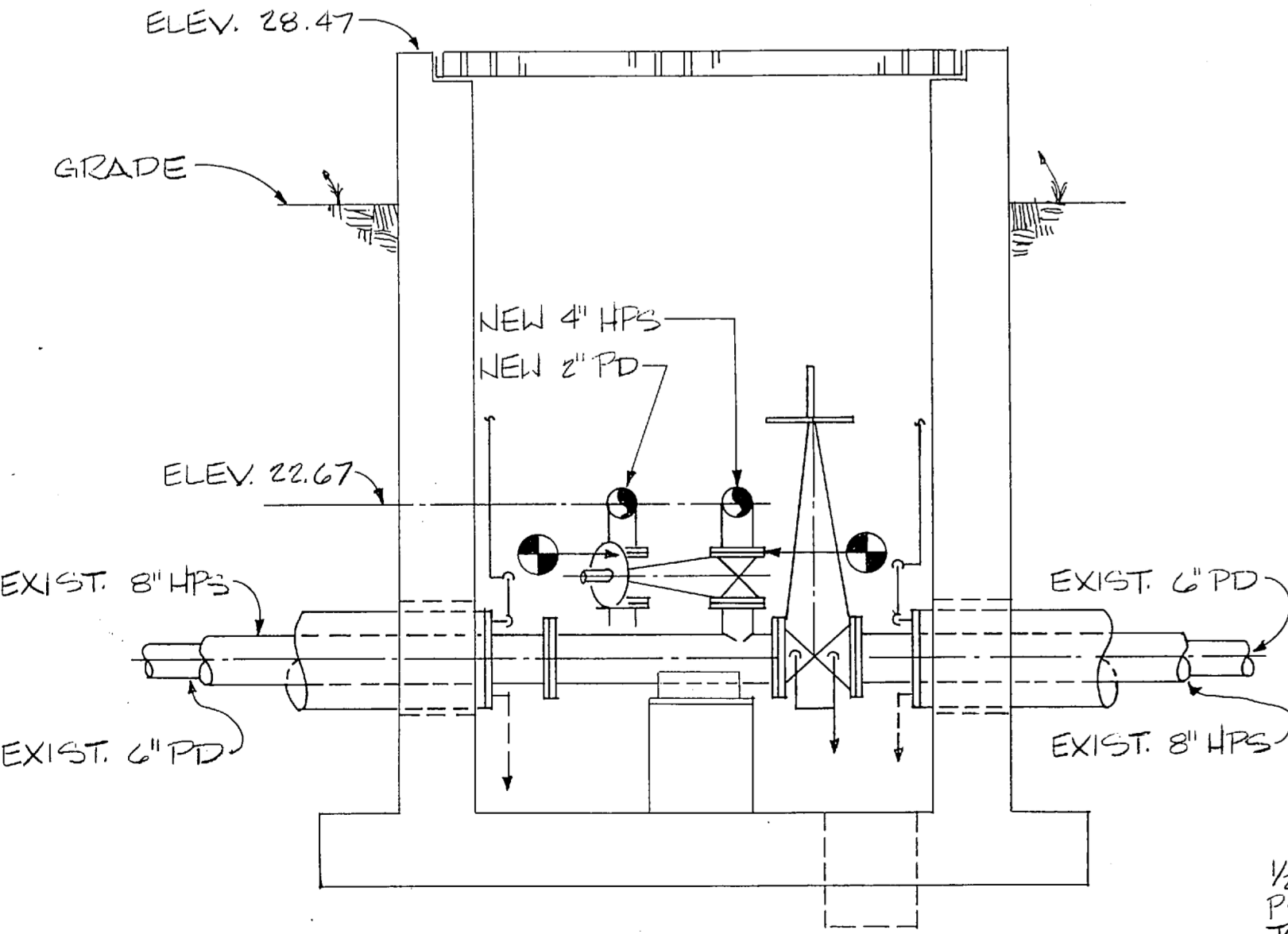
MAIN SERVICE ROAD



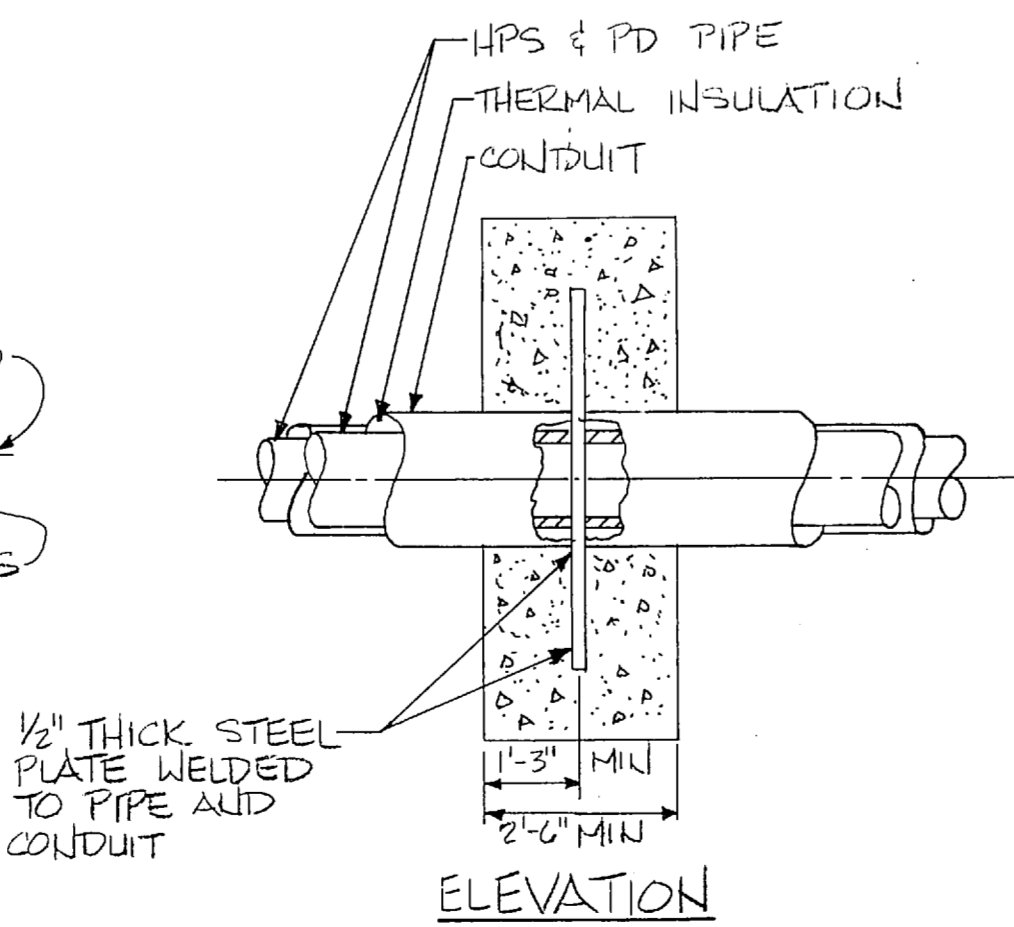
STEAM DISTRIBUTION SYSTEM PLAN  
 SCALE: 1" = 25'-0"



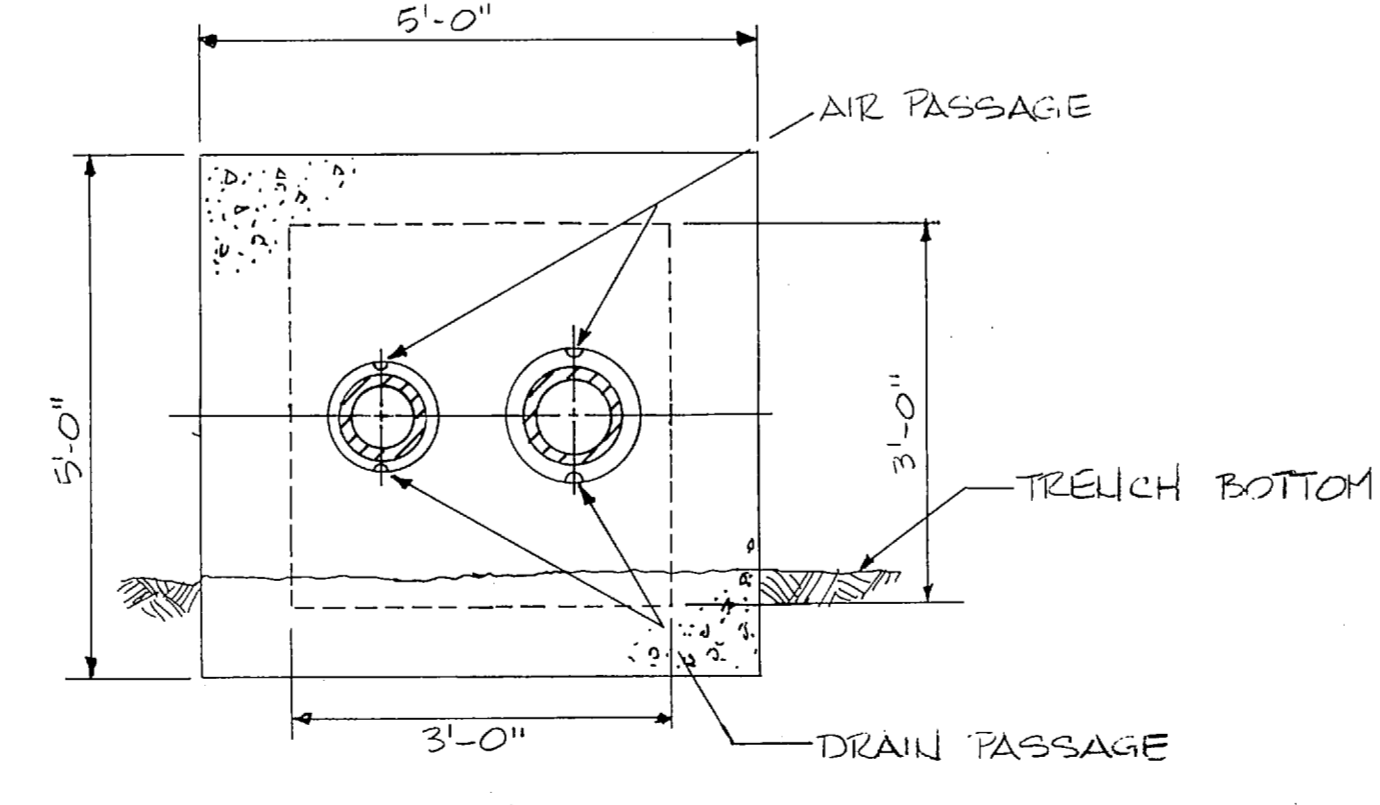
PLAN-EXISTING VALVE PIT  
 SCALE: 1/2" = 1'-0"



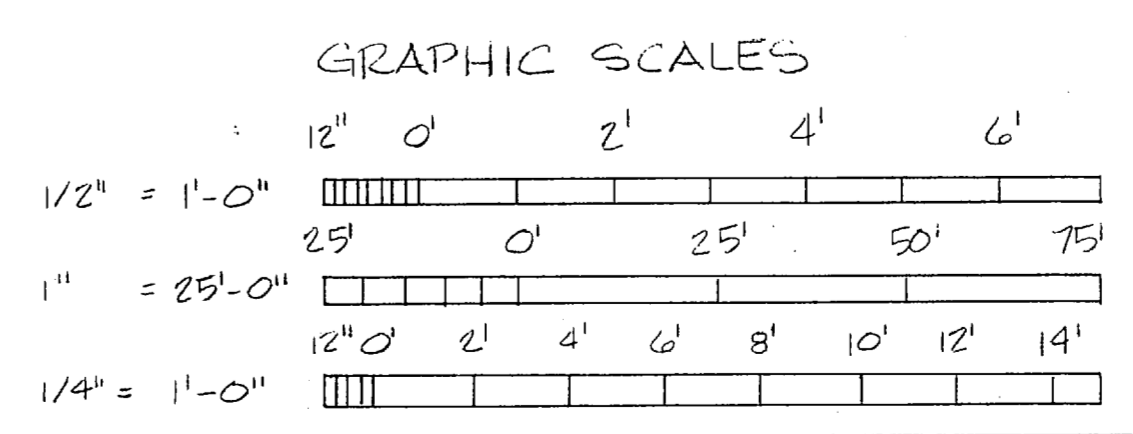
SECTION  
 SCALE: 1/2" = 1'-0"



PIPE ANCHOR-STRAIGHT THROUGH PIPE  
 NO SCALE  
 NOTE: SINGLE CONDUIT SYSTEMS ANCHORED SIMILAR



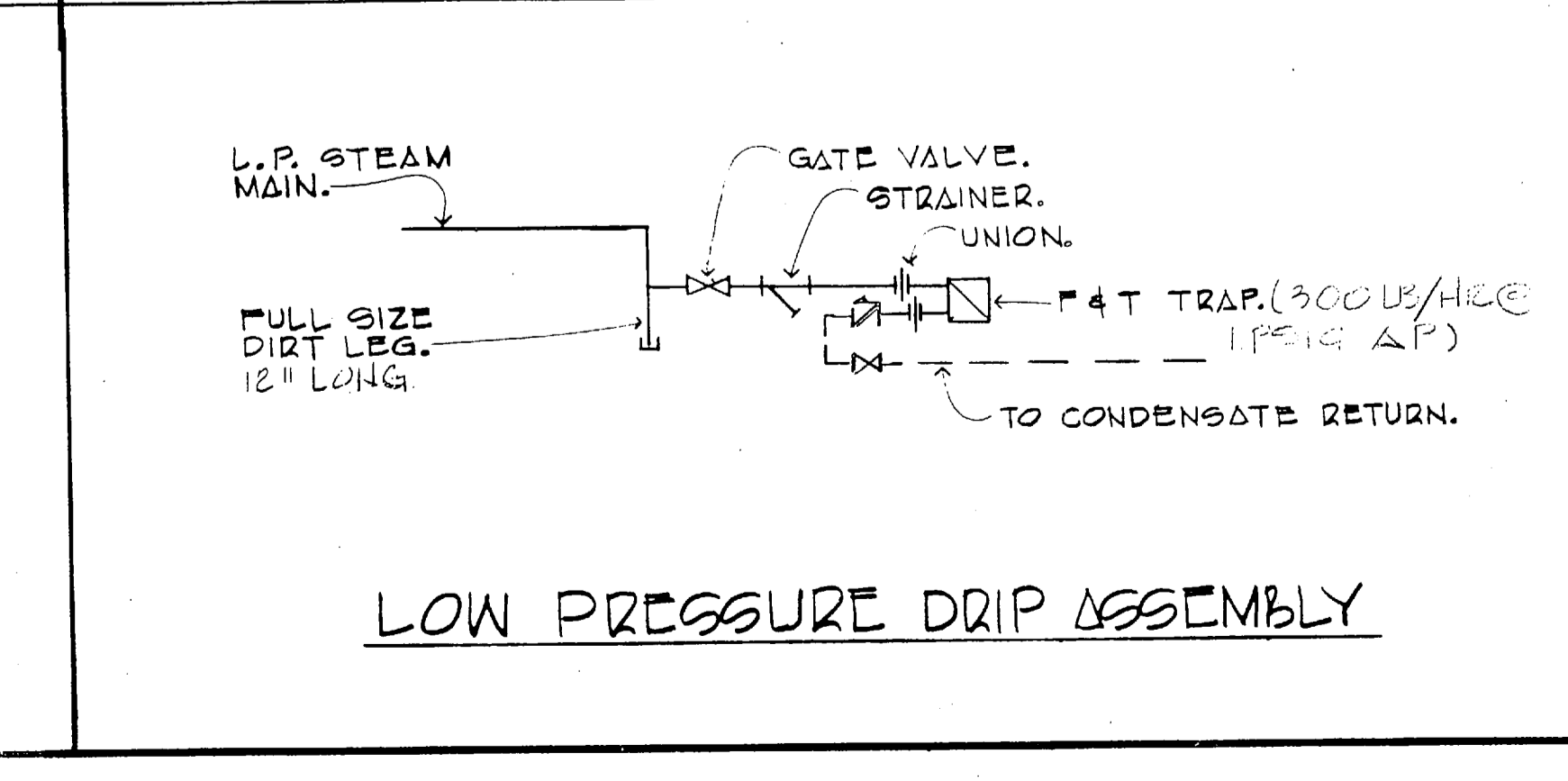
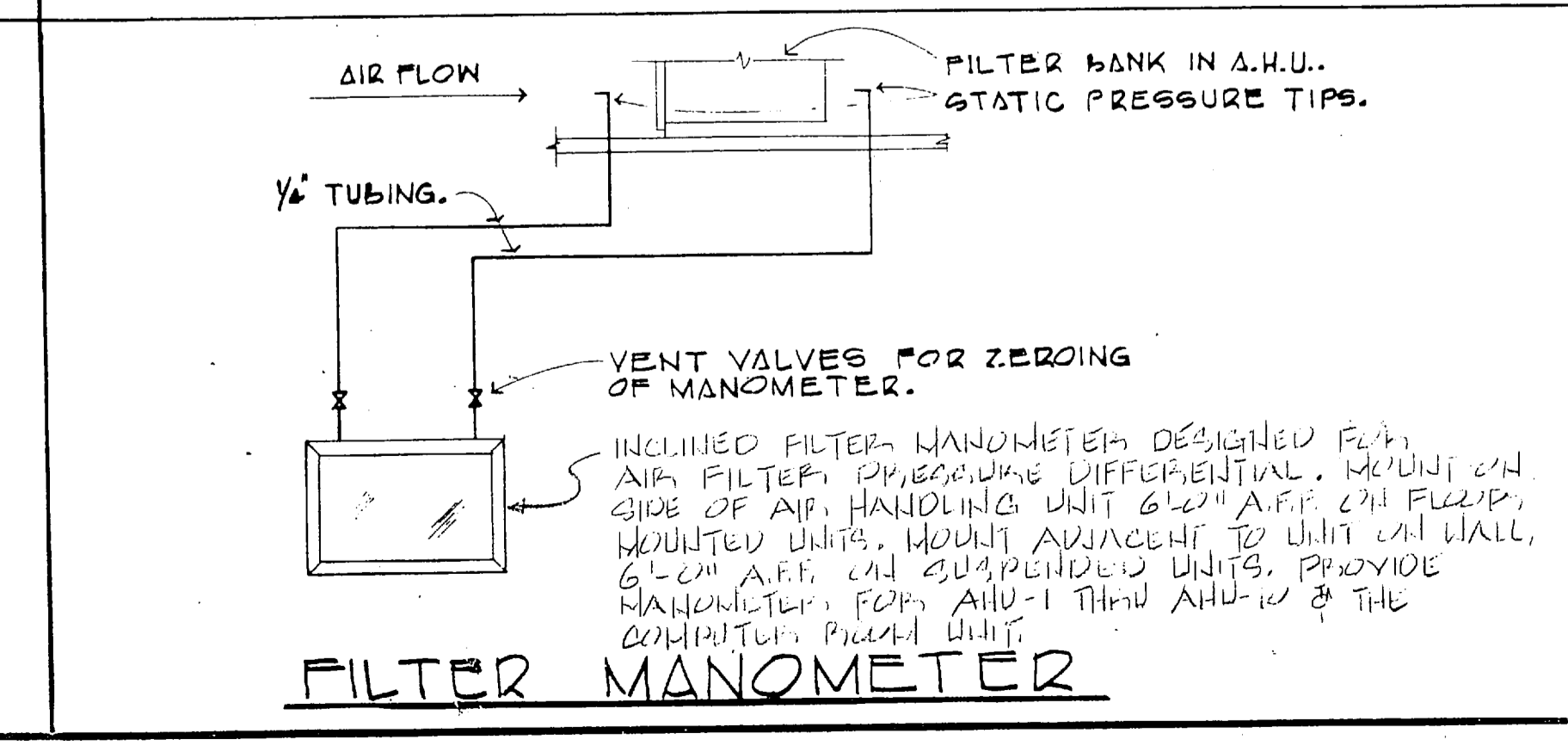
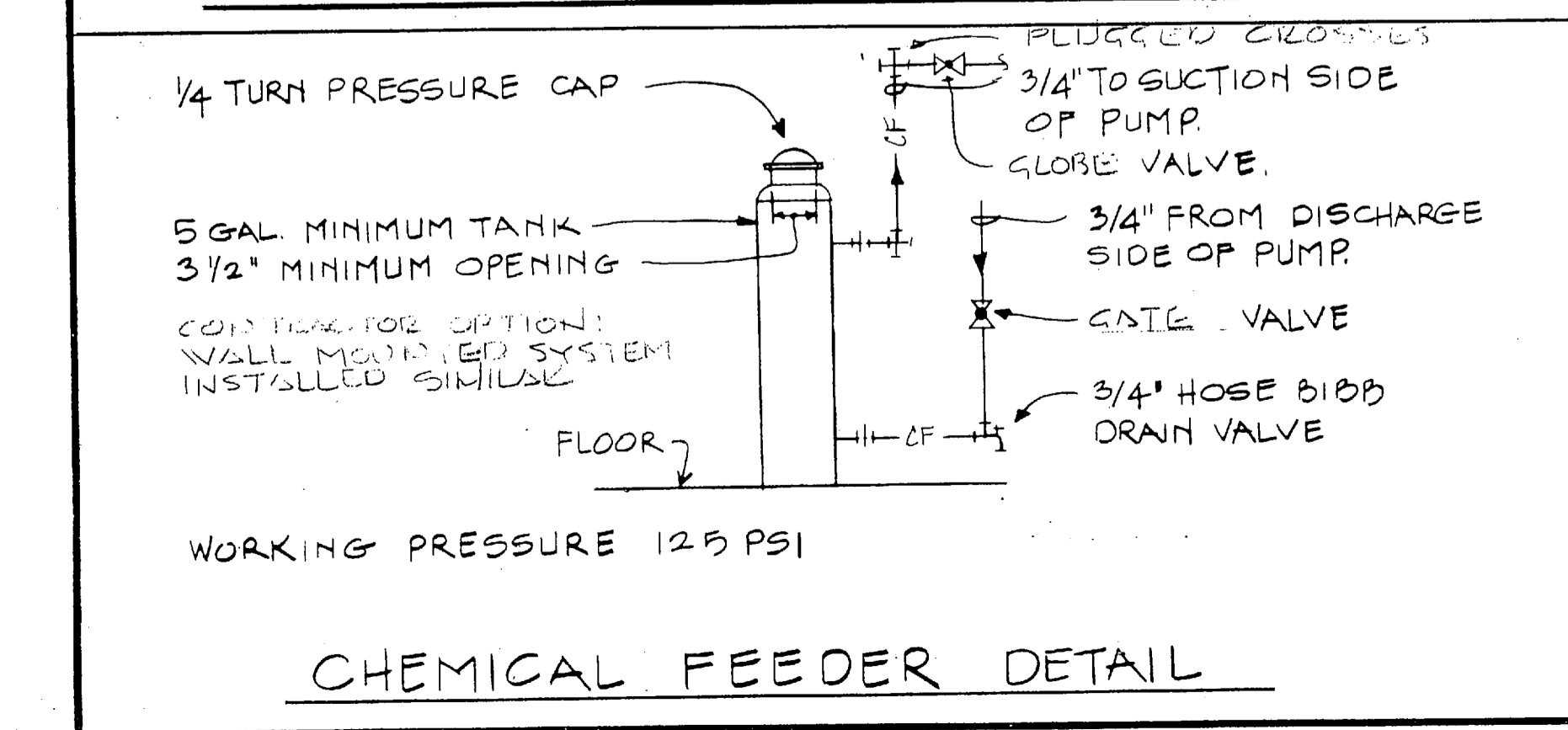
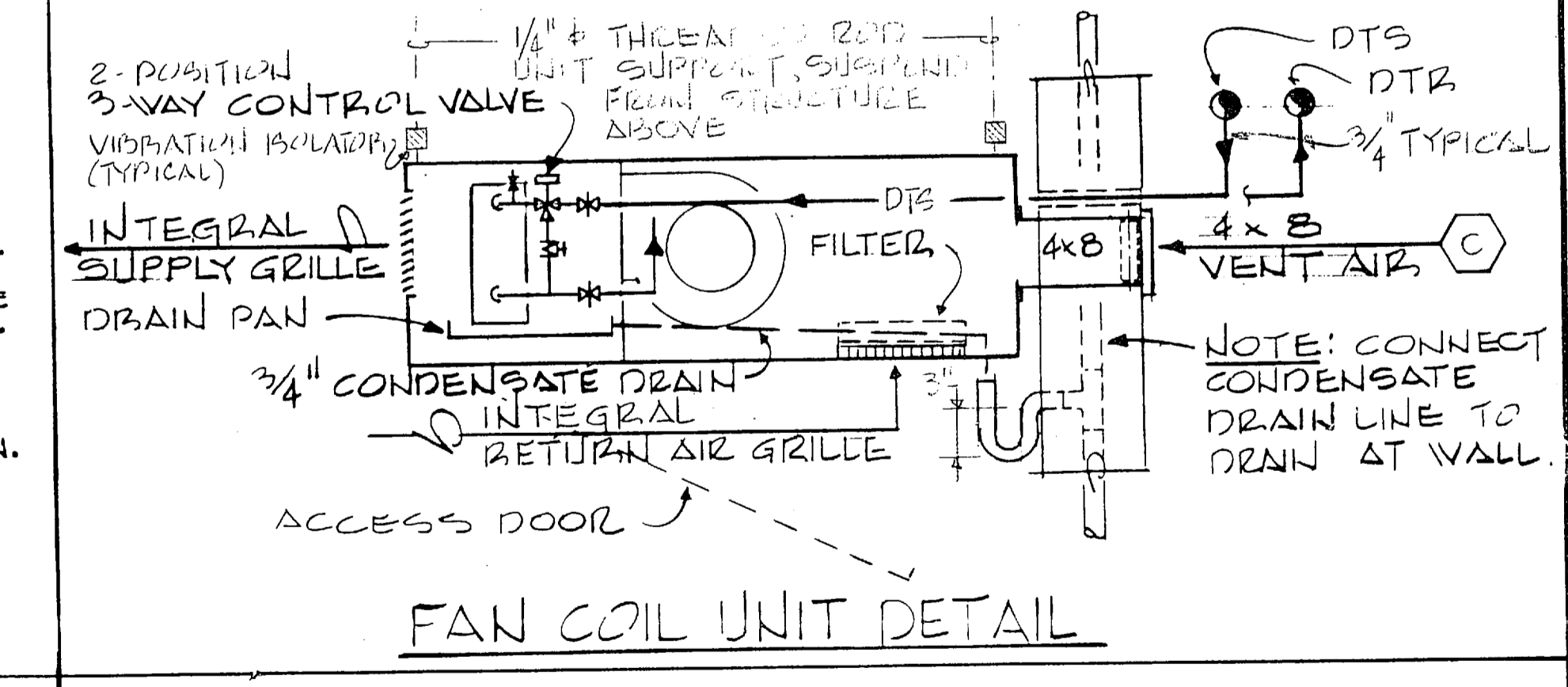
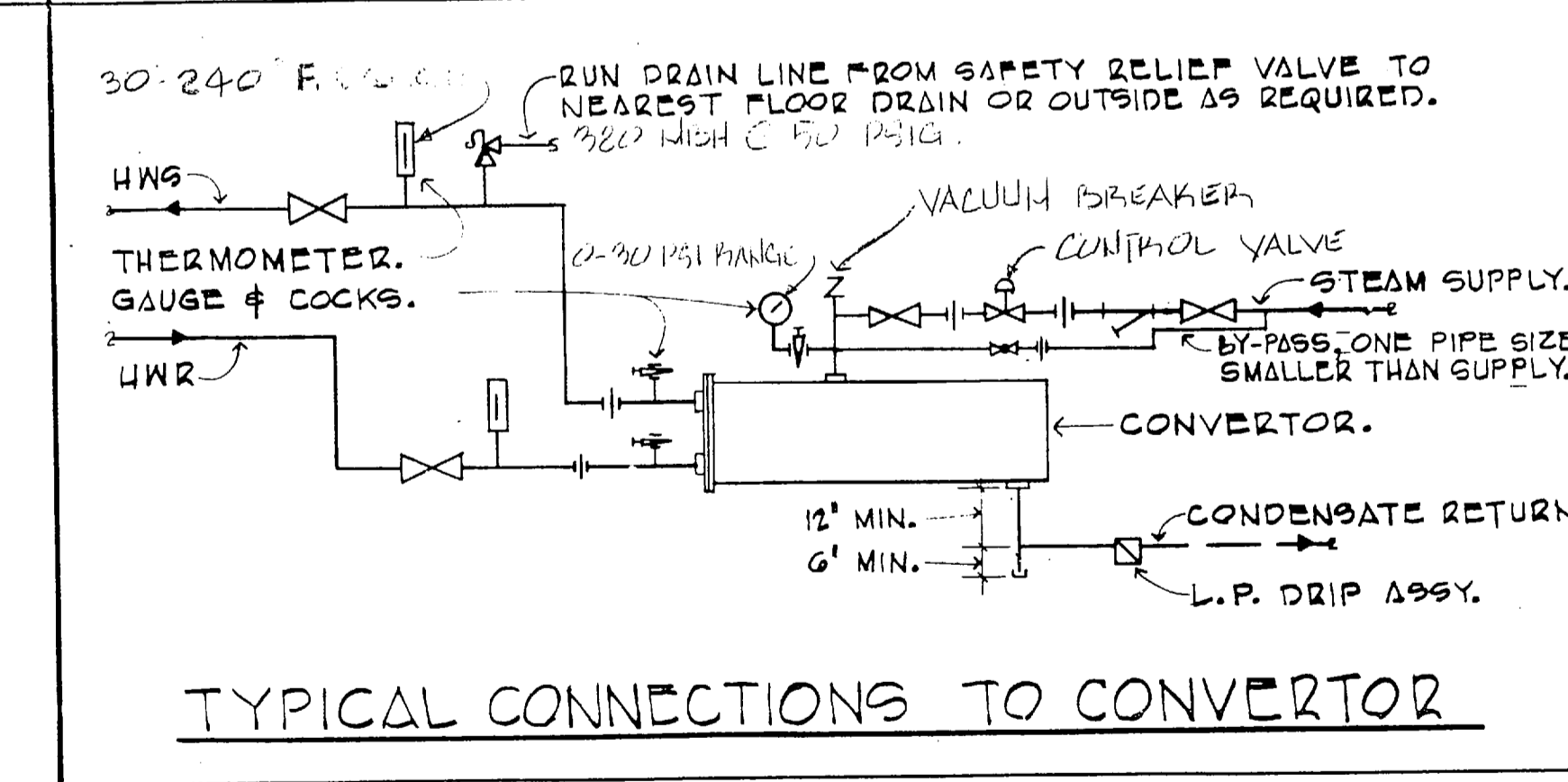
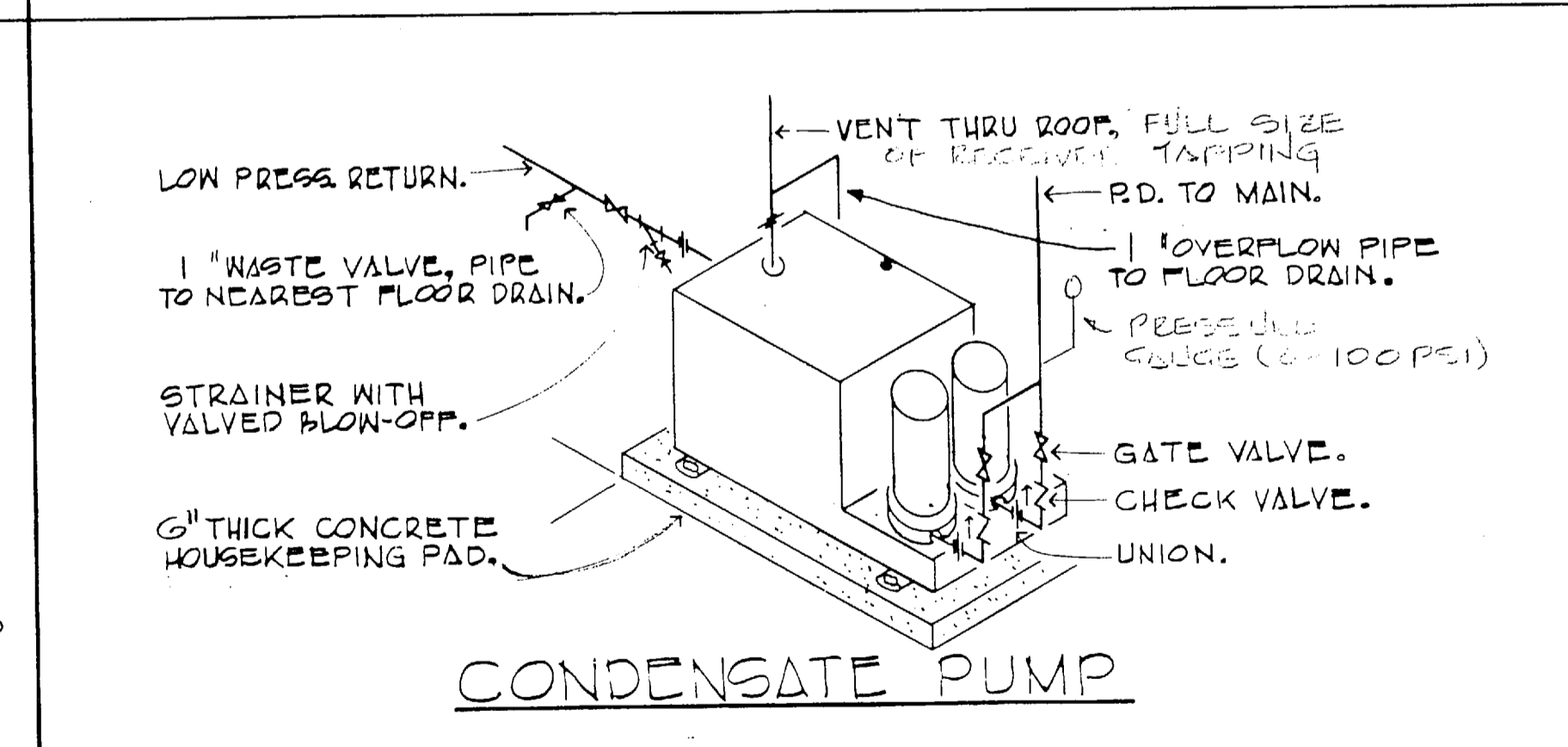
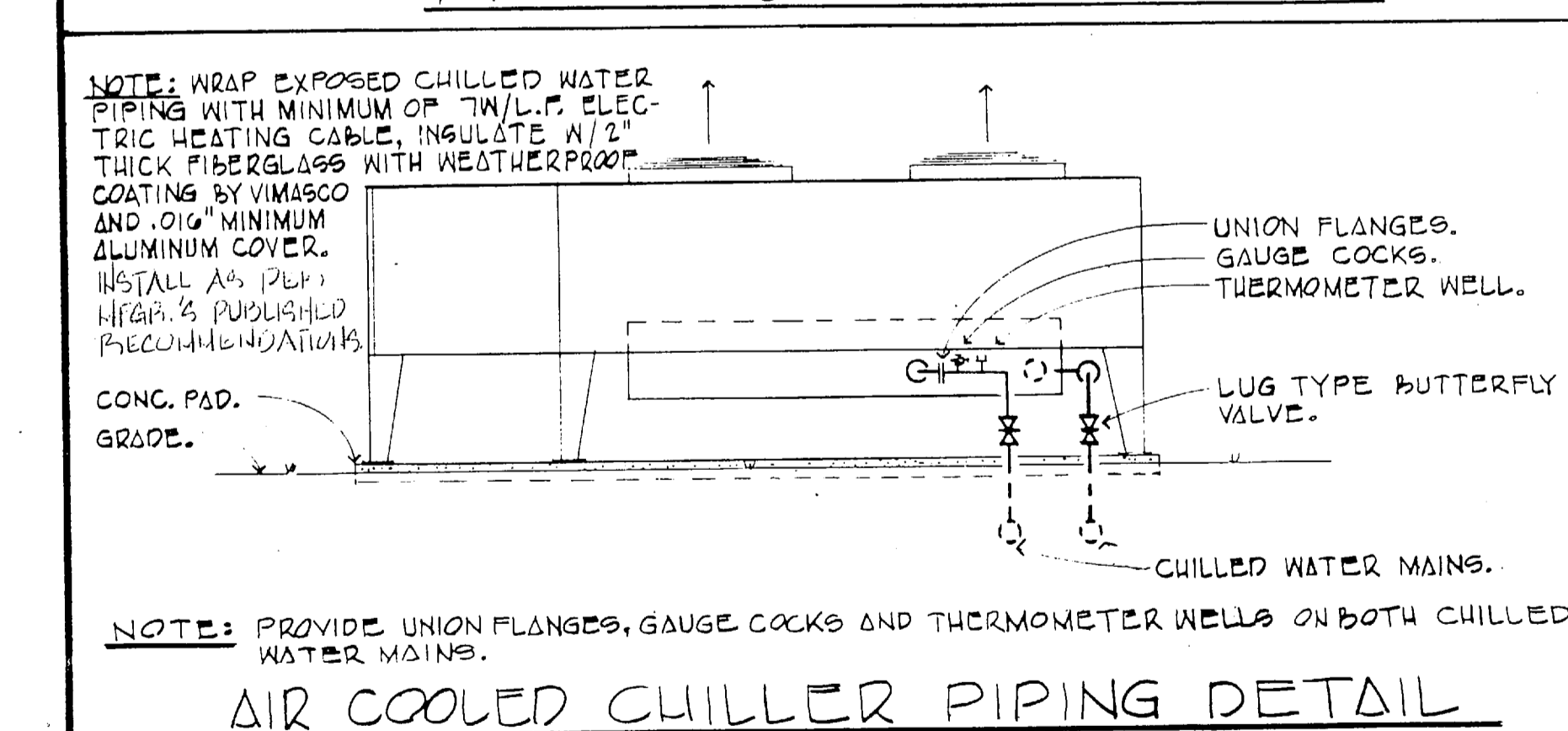
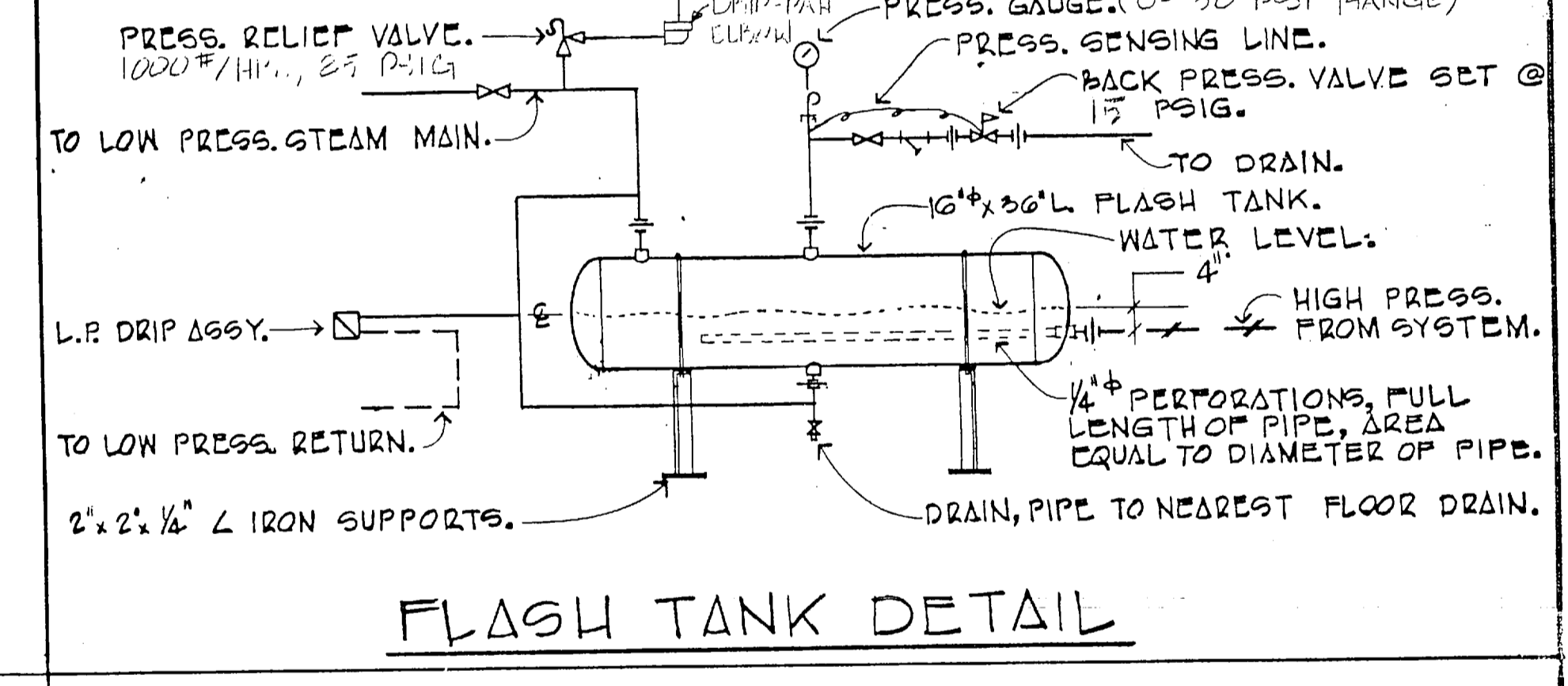
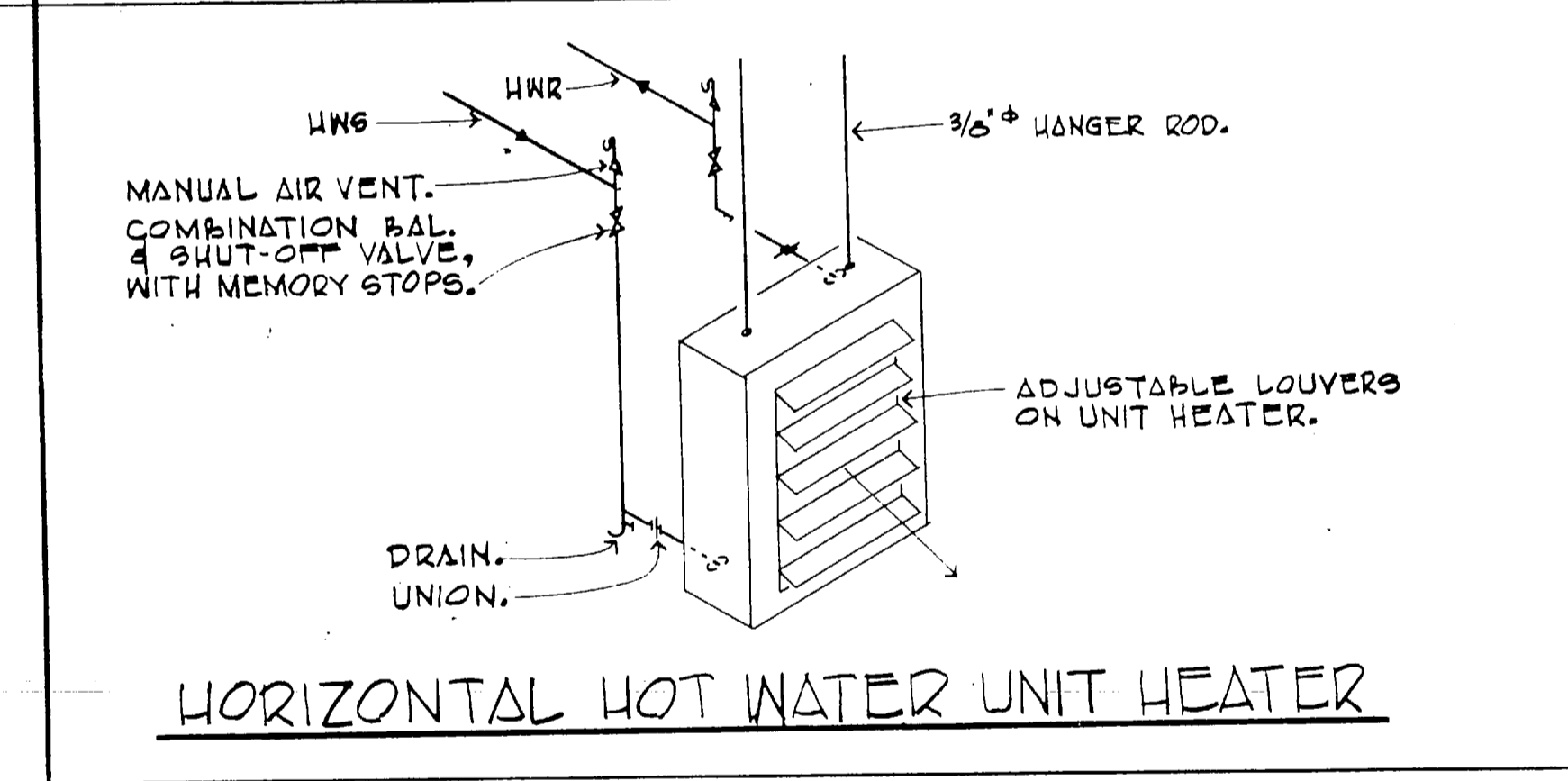
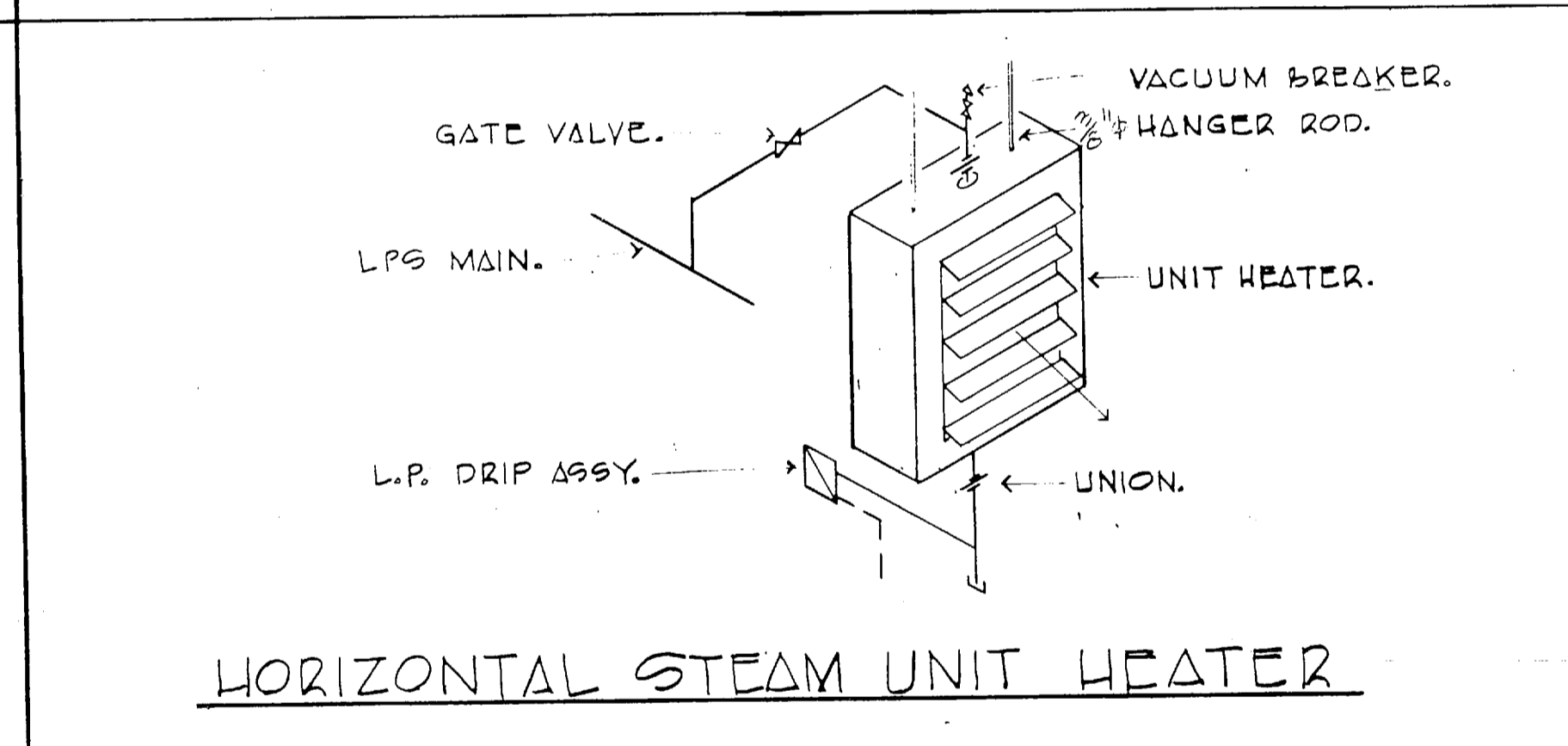
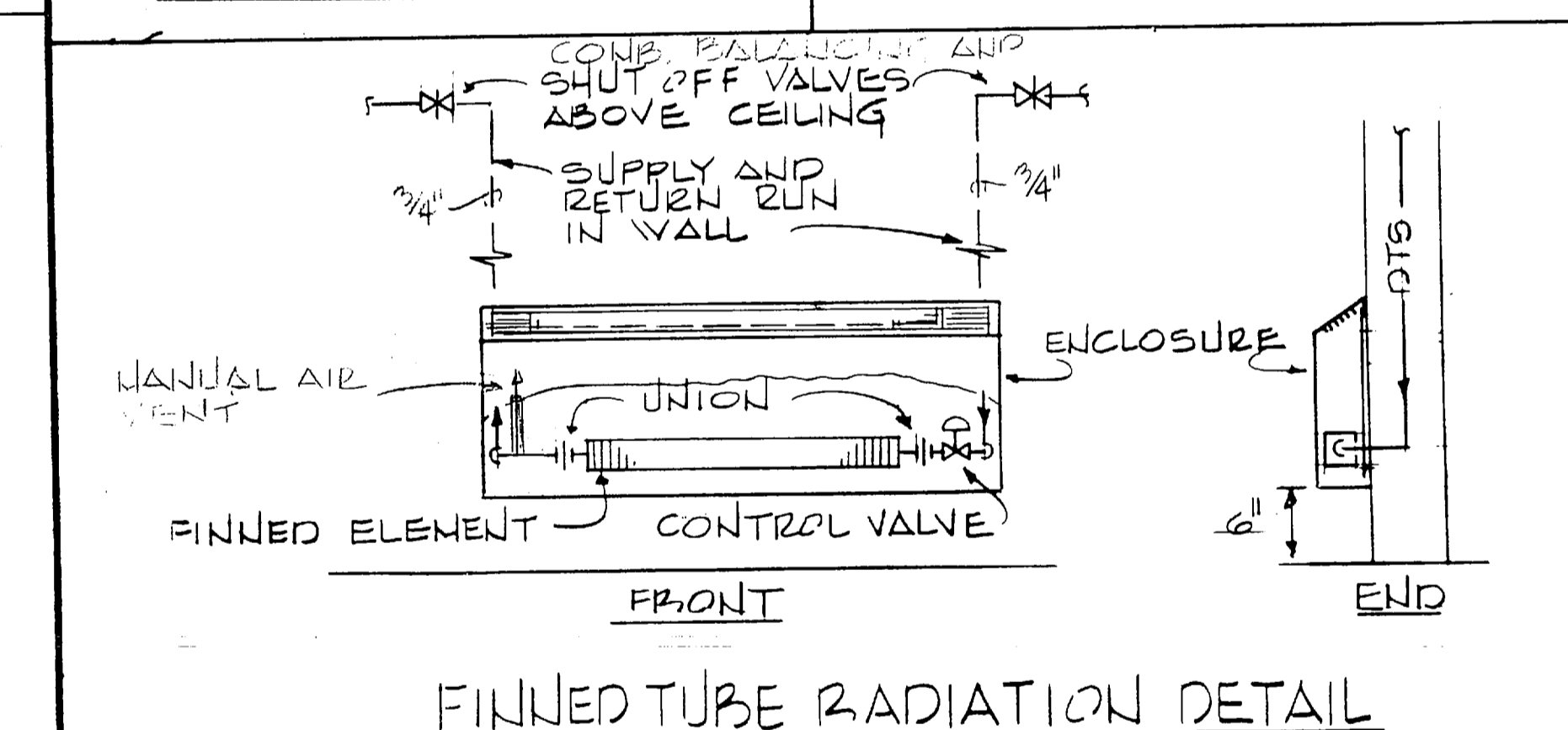
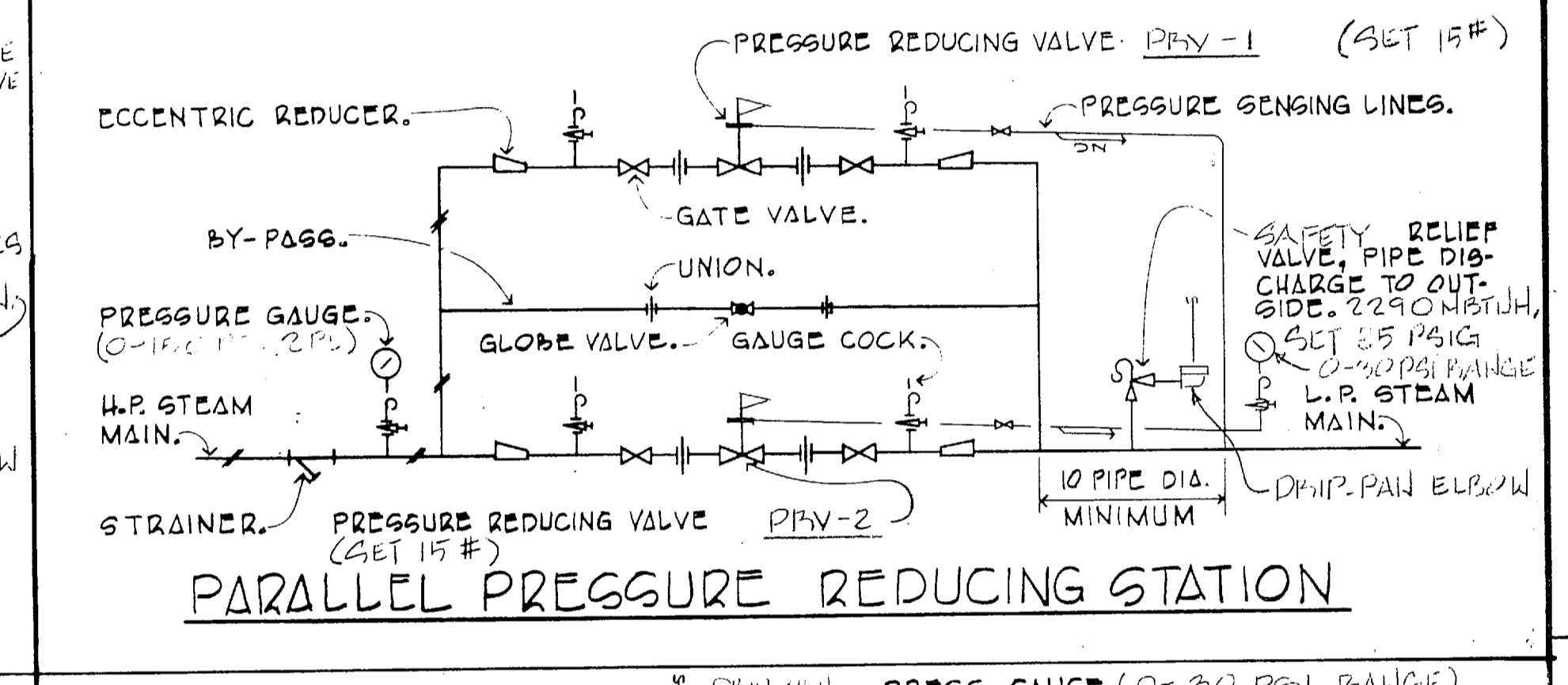
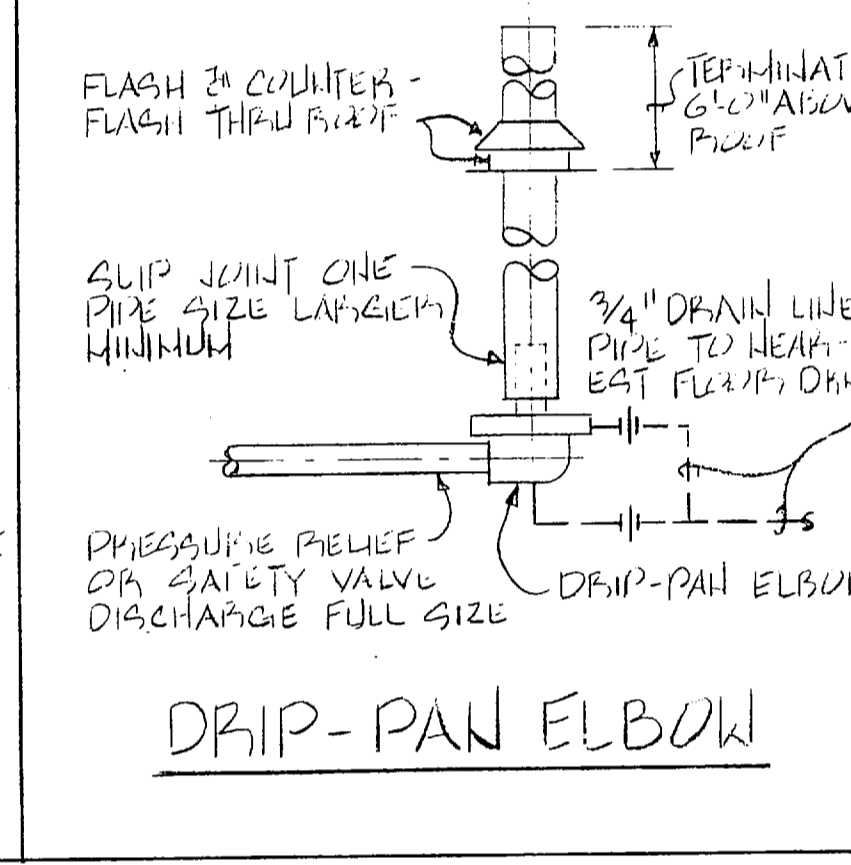
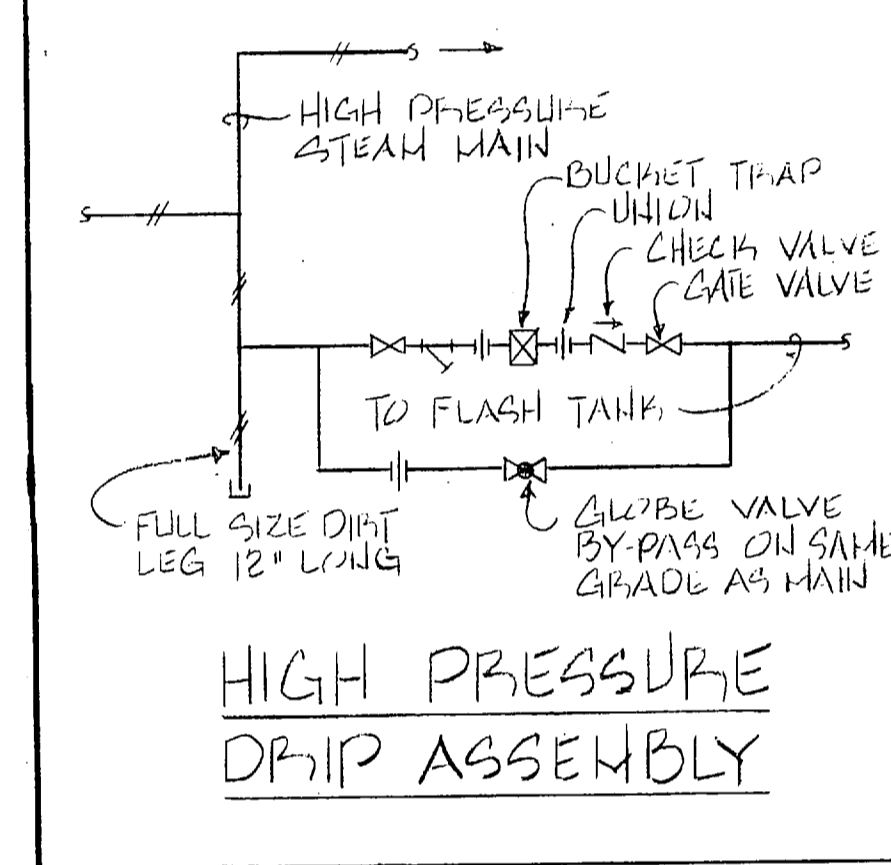
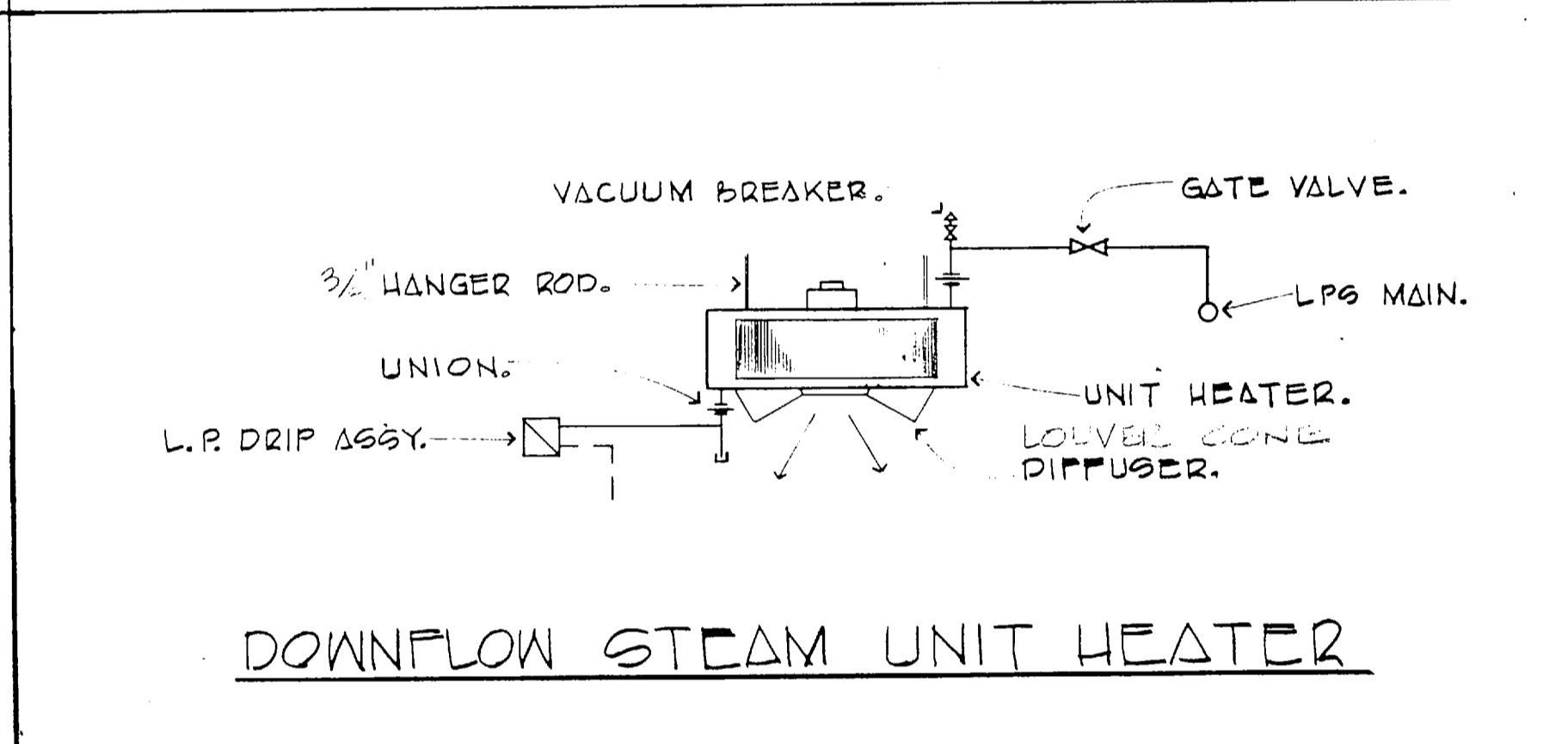
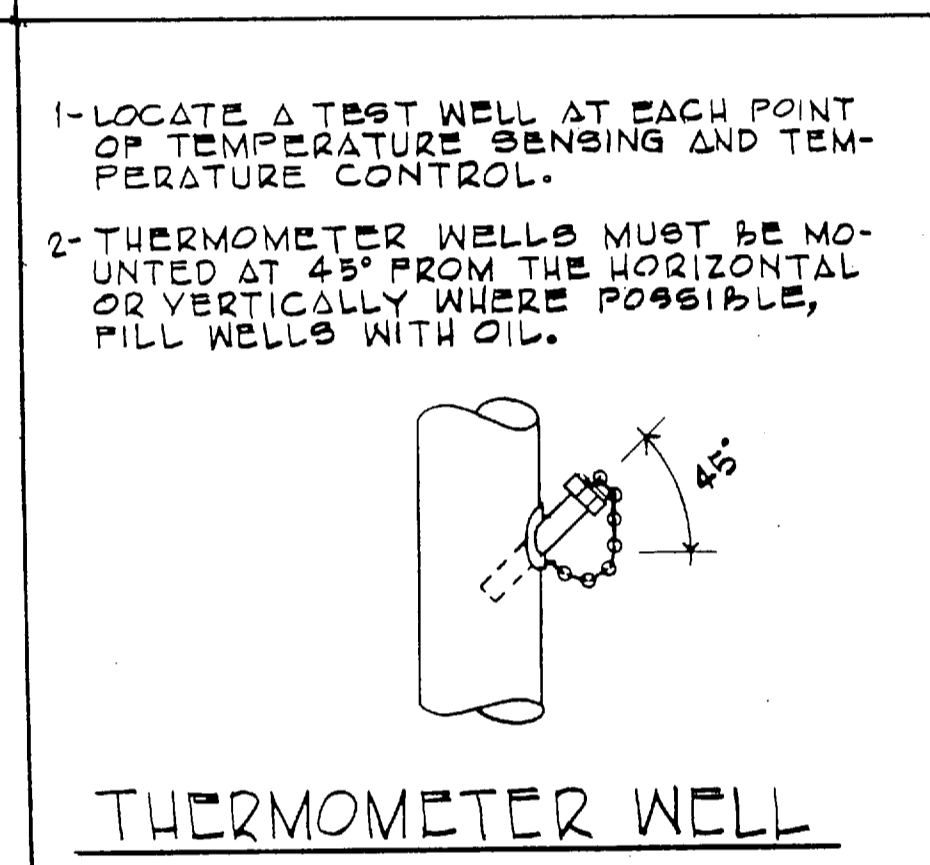
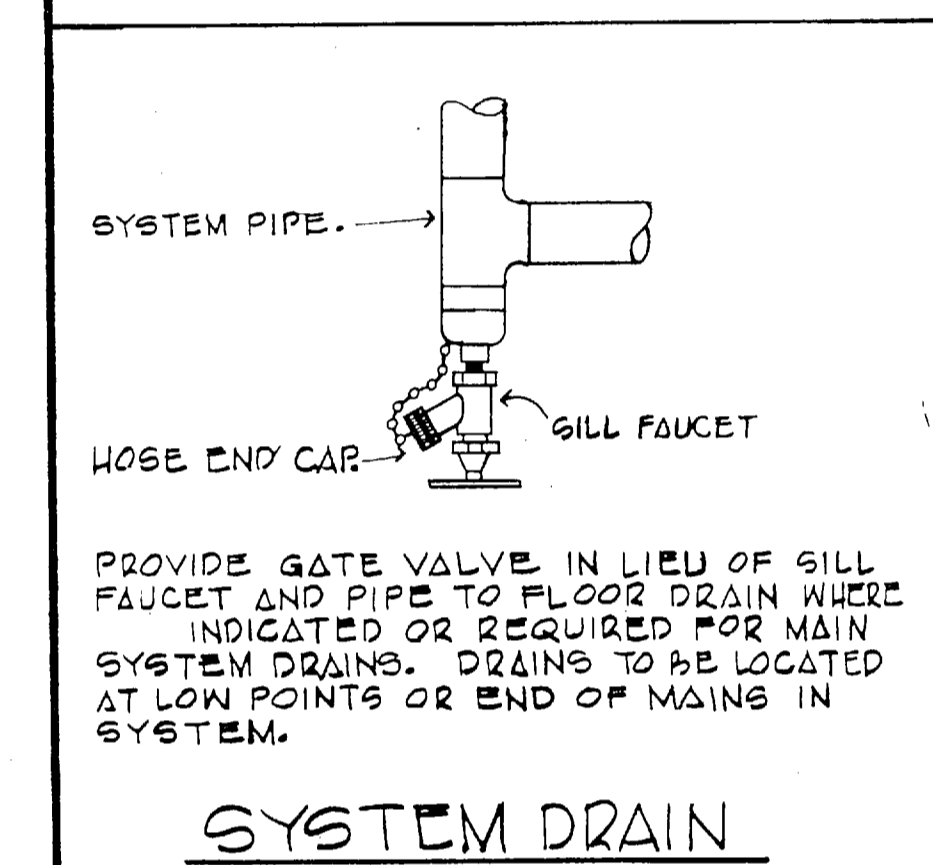
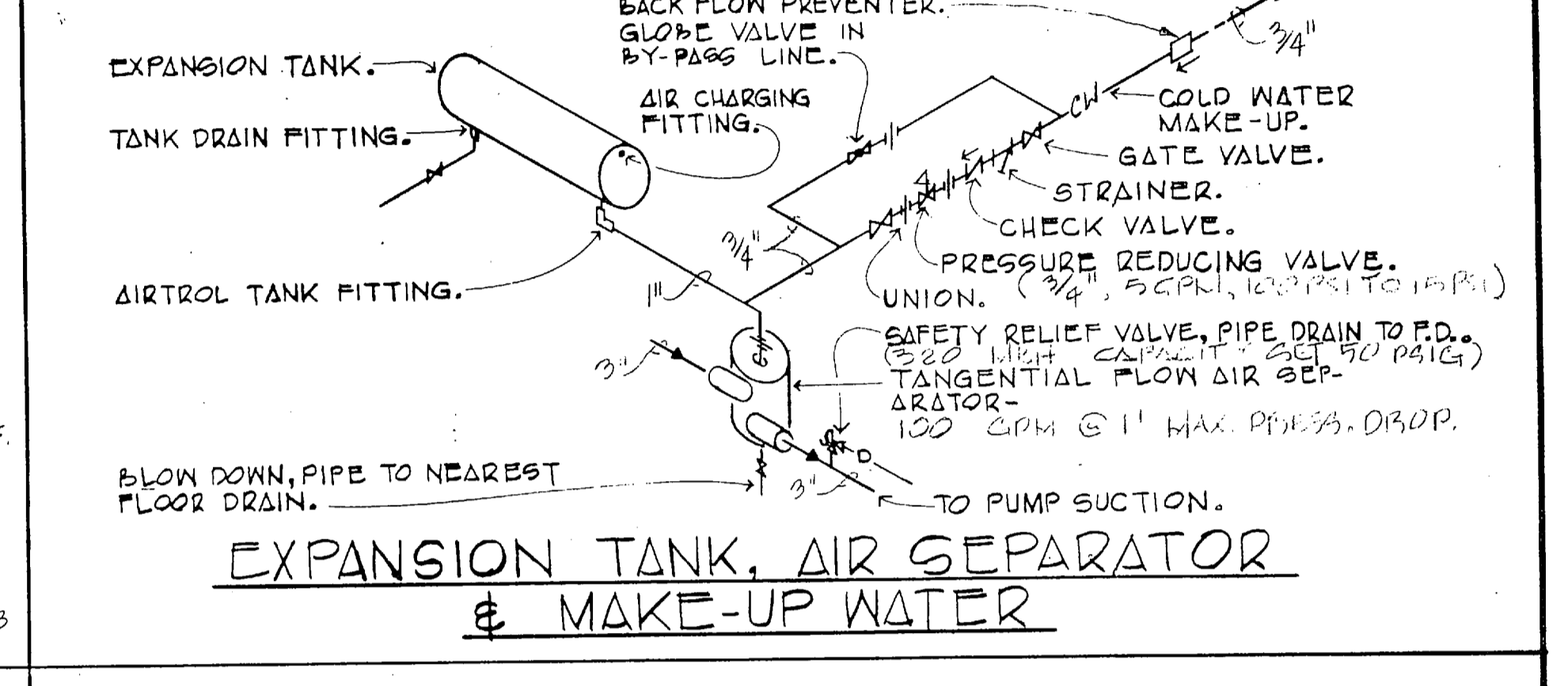
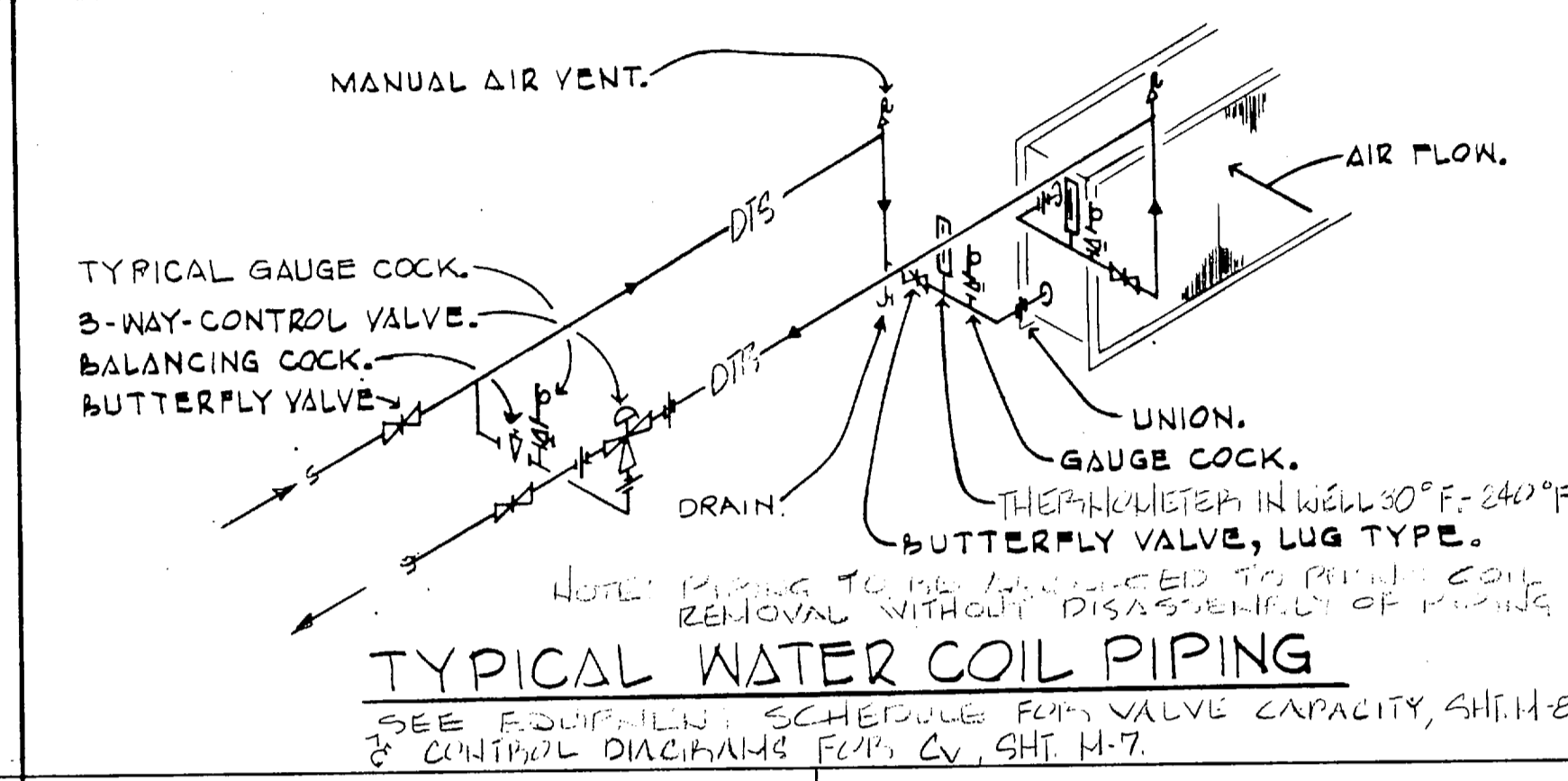
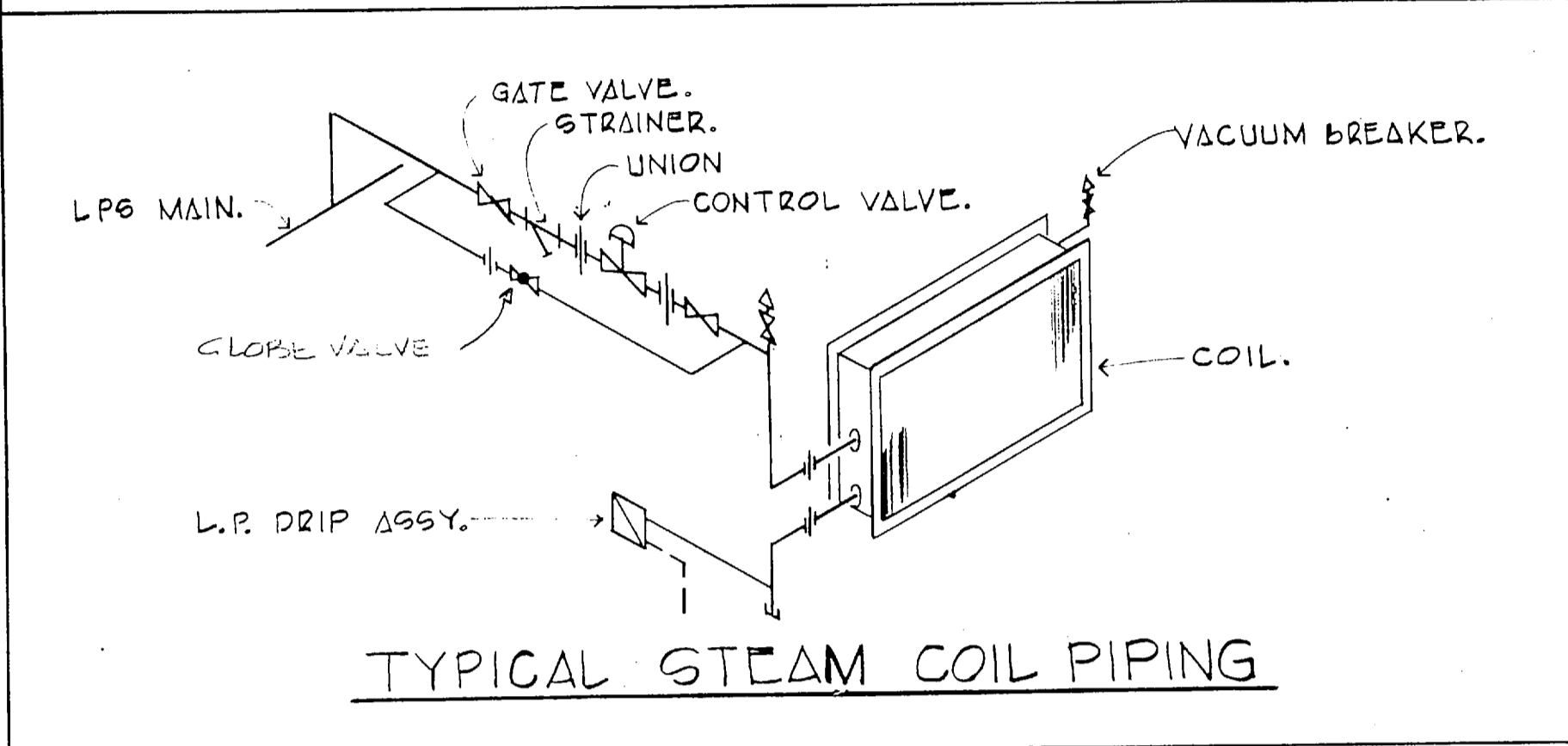
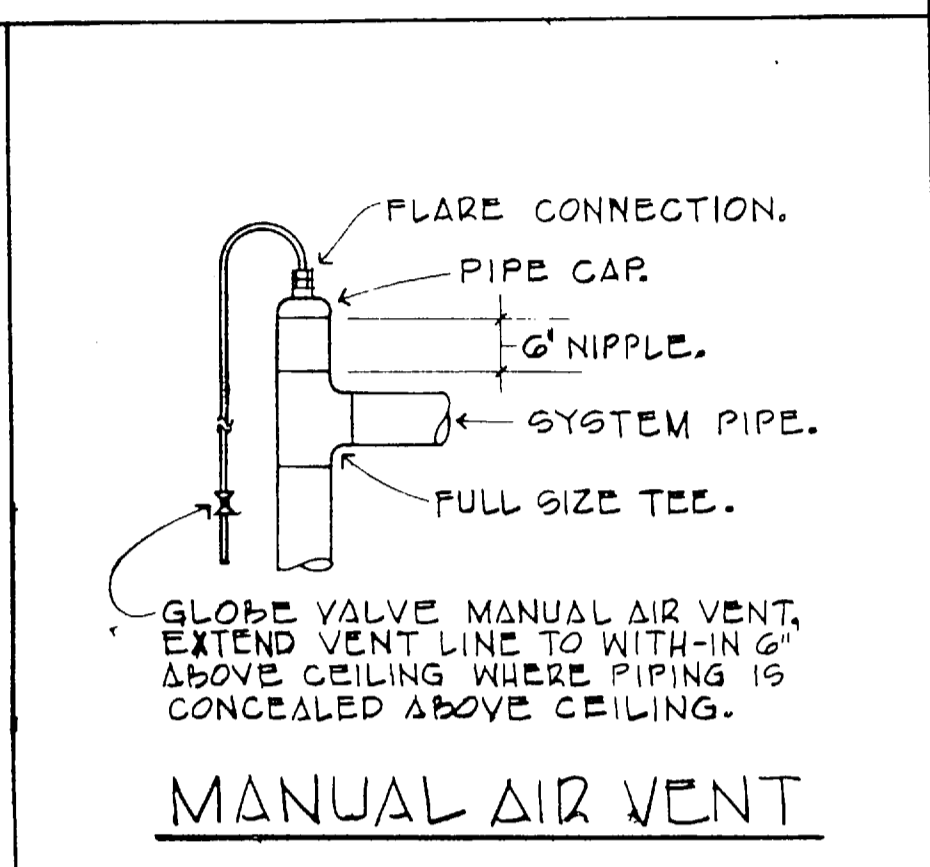
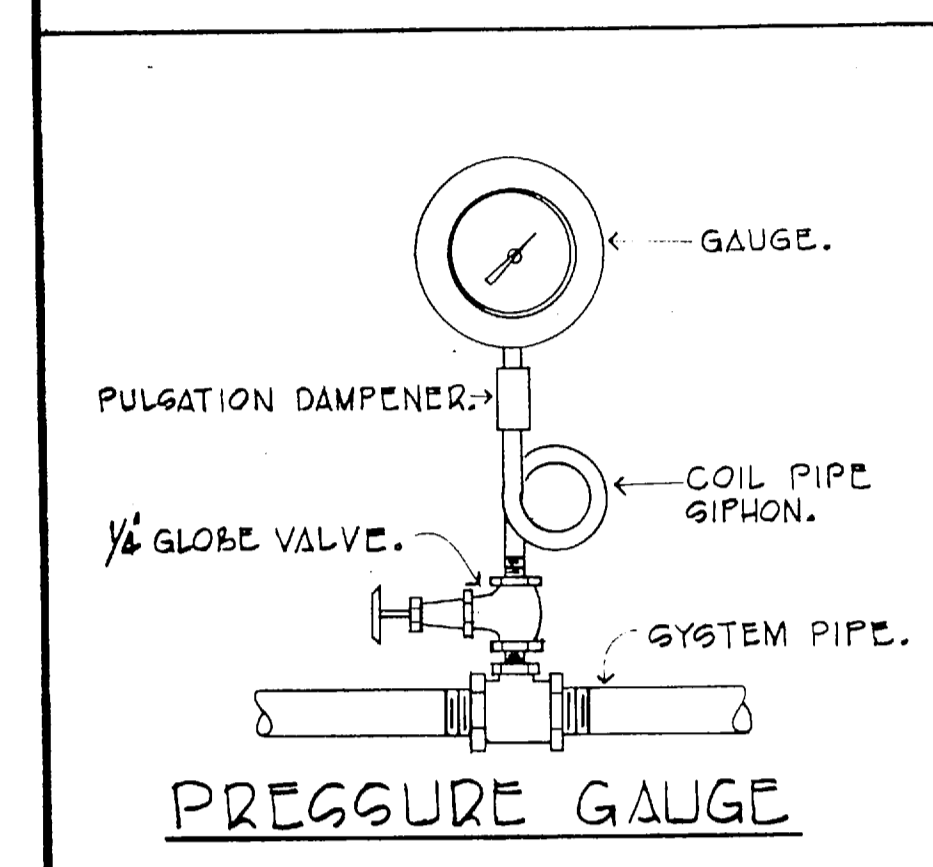
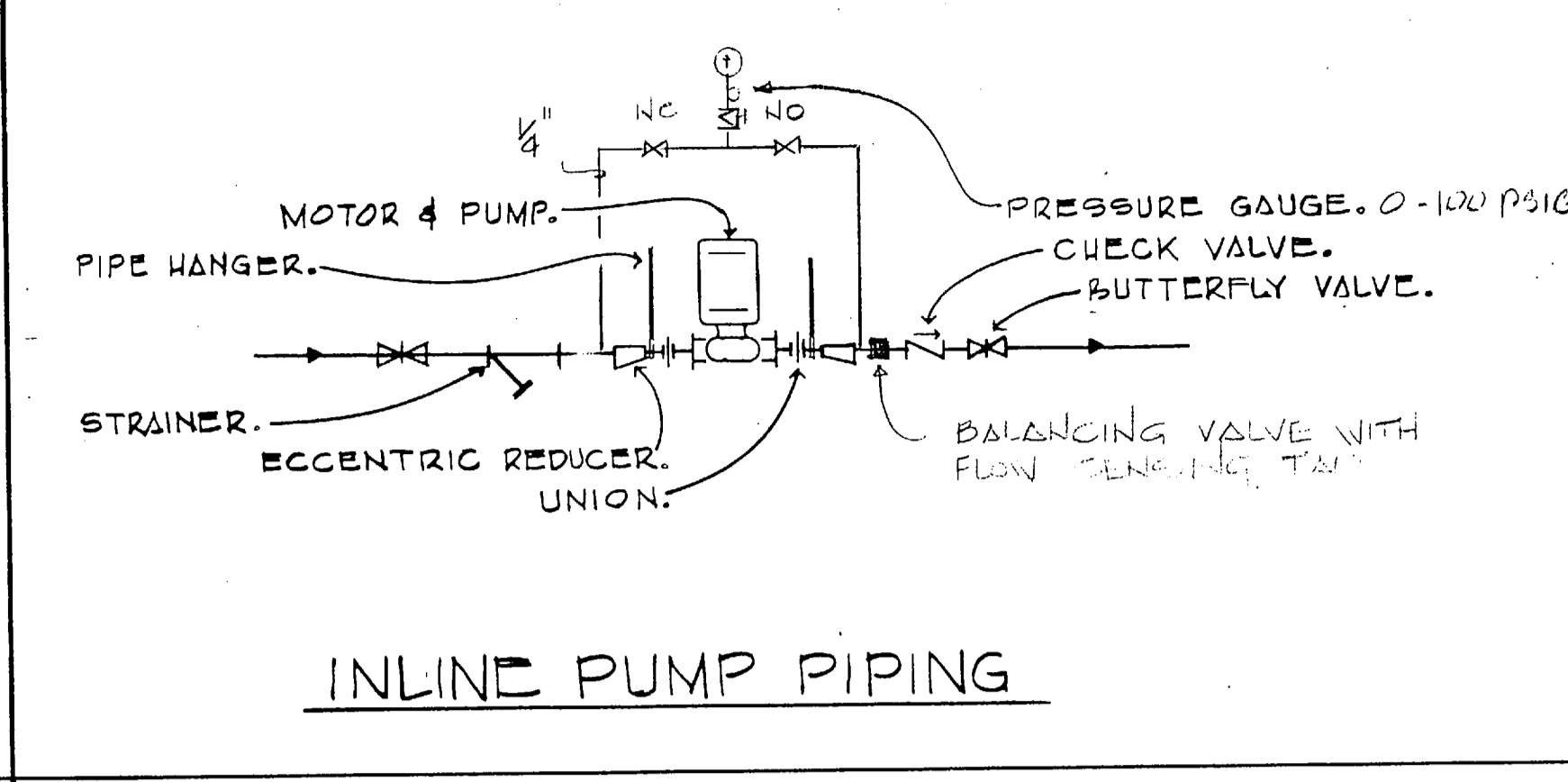
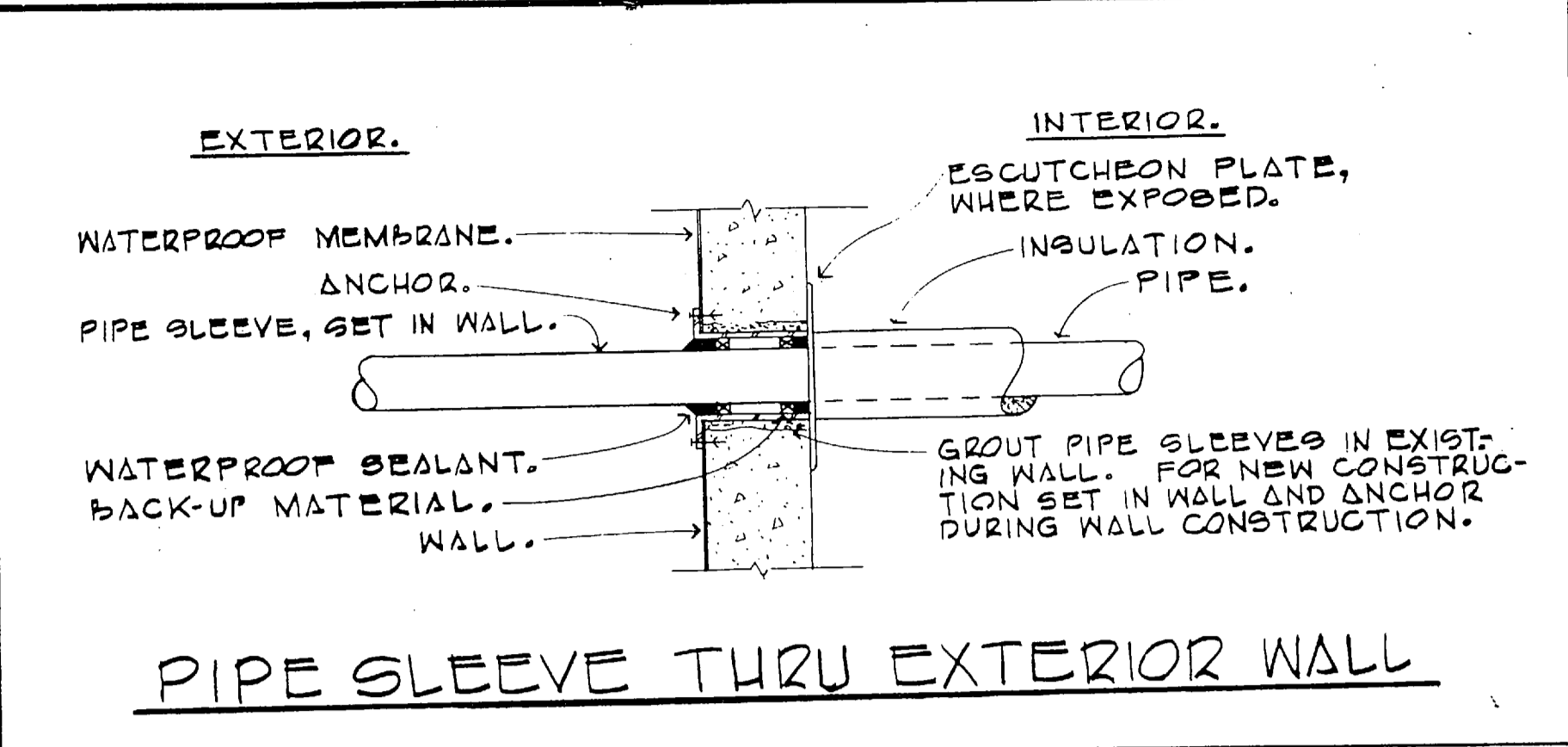
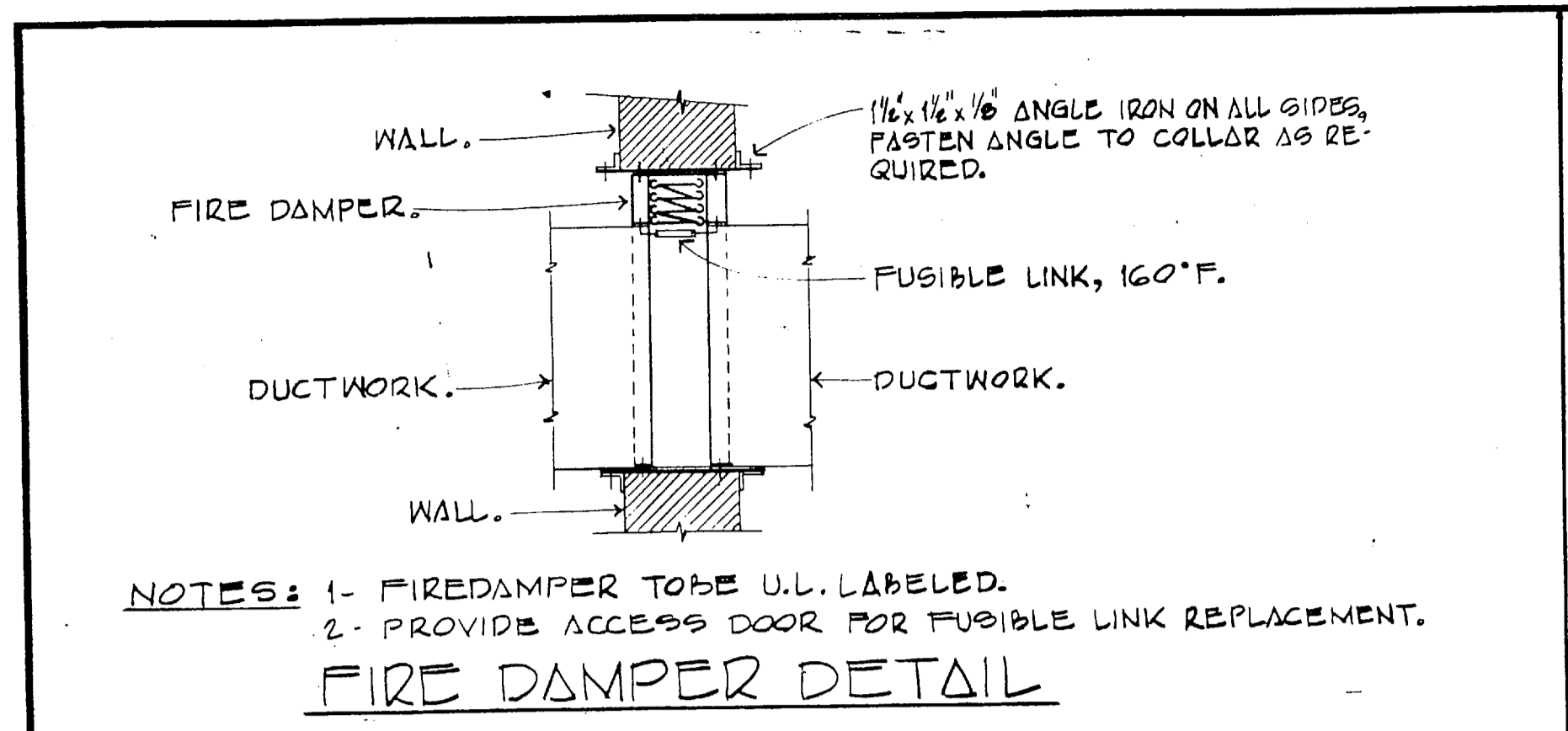
SECTION



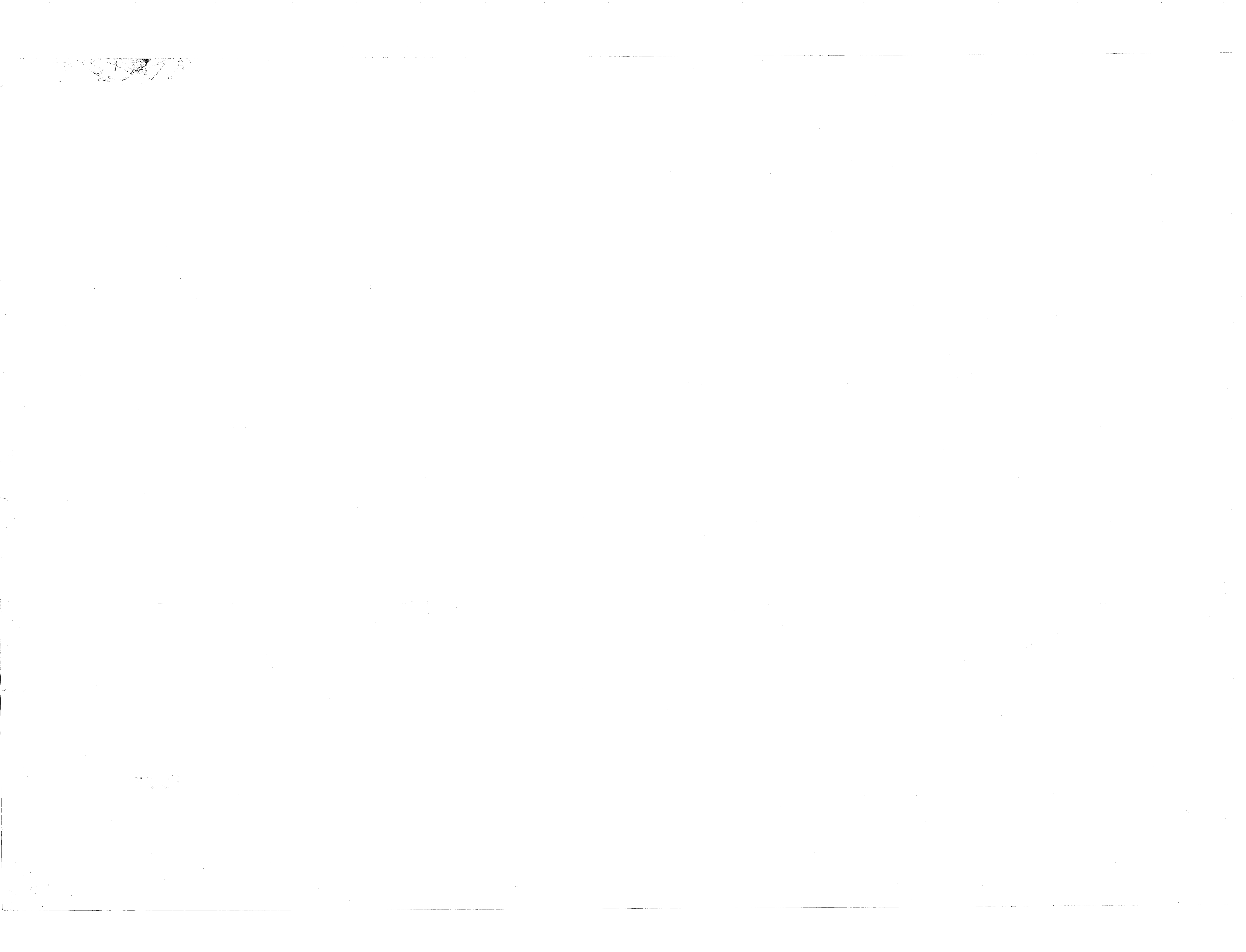
<b>RECORD DRAWING</b> DATE: OCT 2 1980 <b>FC 230</b>		<b>M-4</b>	
CROCKFORD AND ASSOCIATES, INC. PO BOX 36761 CHARLOTTE, NC 28236		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND <b>ATLANTIC DIVISION</b> NAVAL STATION MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
EFD DWG NO. 248912 JOB ORDER NO. 855146 STA. PROJ. NO. 8527 DES. 2110 PROJ. MGR. RHC EFD. RVD BR. MGR. HSW		ON. ARCH/ENGR. RHC DES. DR. HSW	
APPROVED: [Signature] DATE: 10/2/80 ACTIVITY: SATISFACTORY TO [Signature]		NAVFAC DRAWING NO. 4148913 CONSTR. CONTR. NO. N62470-85-B-5146 SCALE AS NOTED SPEC. 05-85-5146	
FOR EFD FOR COMMANDER NAVFAC		SHEET 50 OF 65	



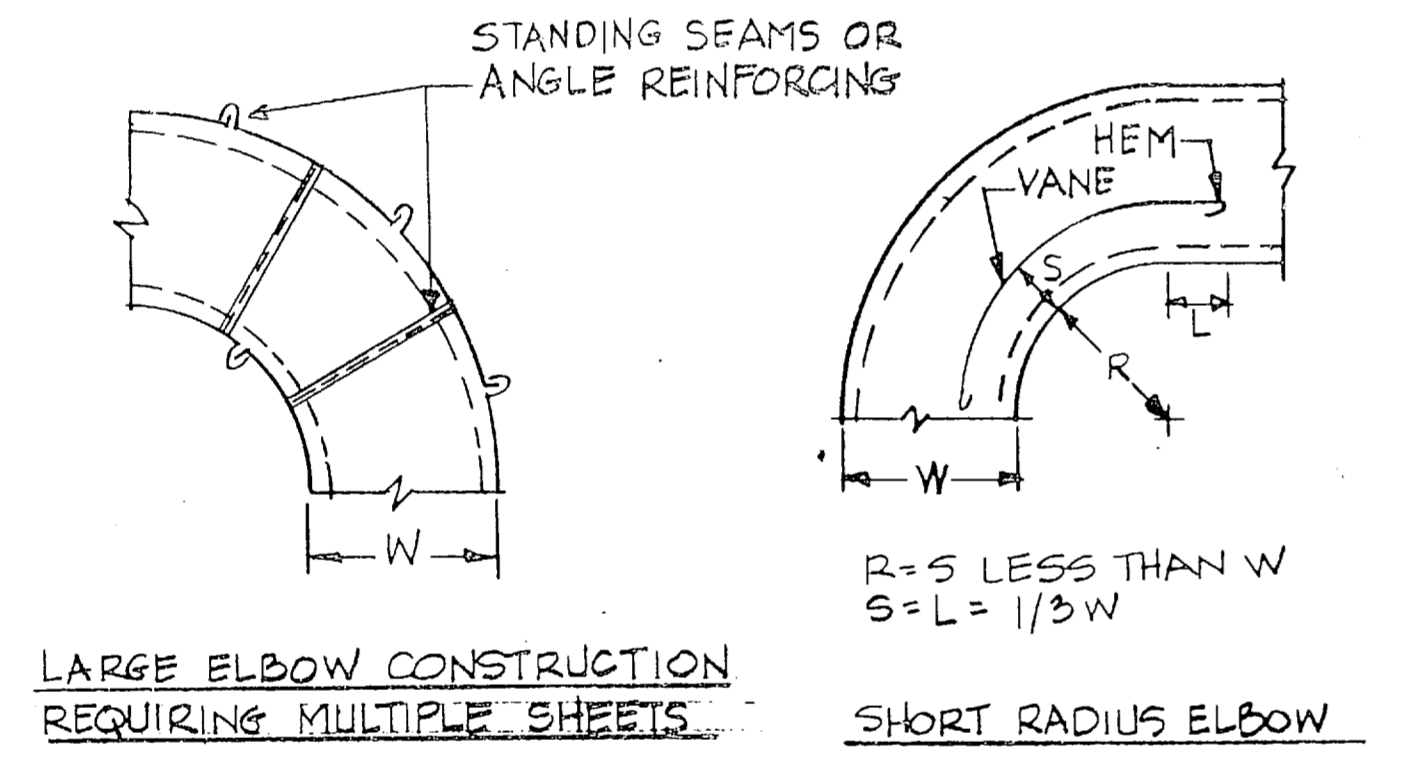
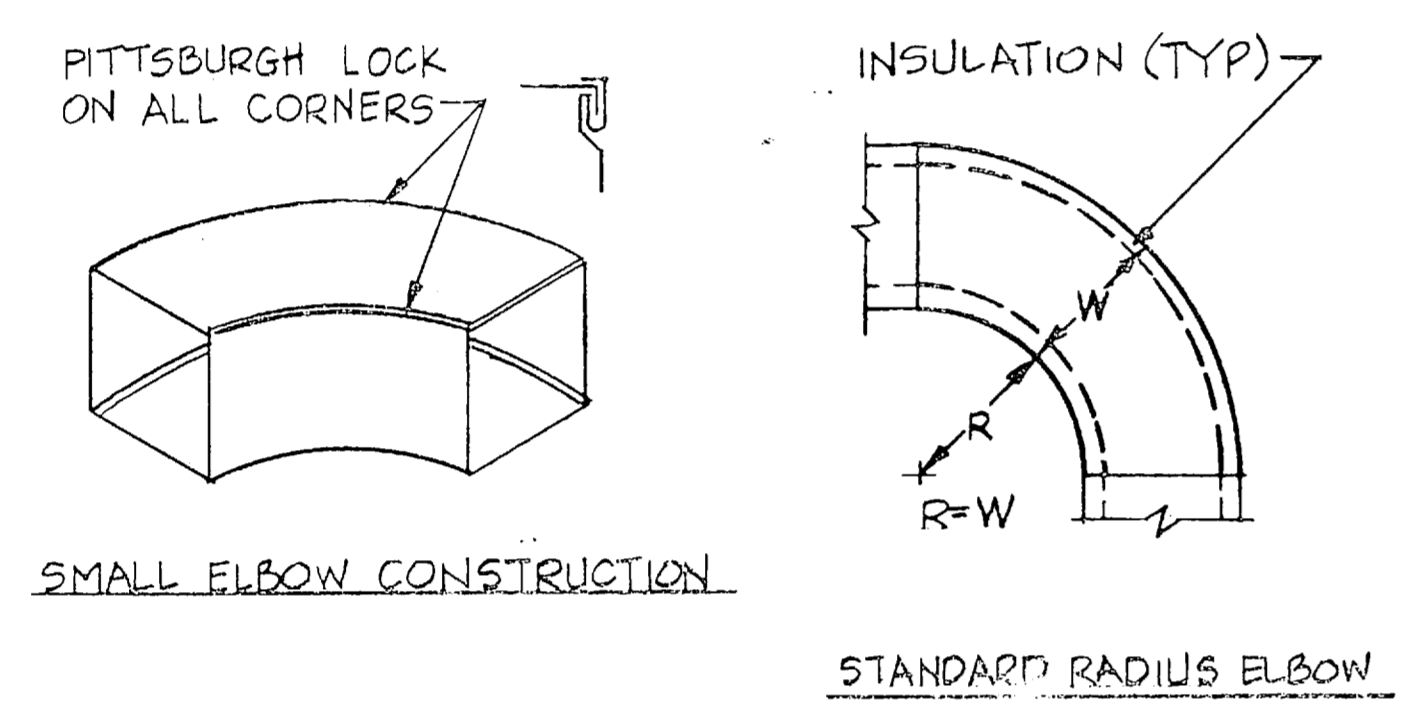
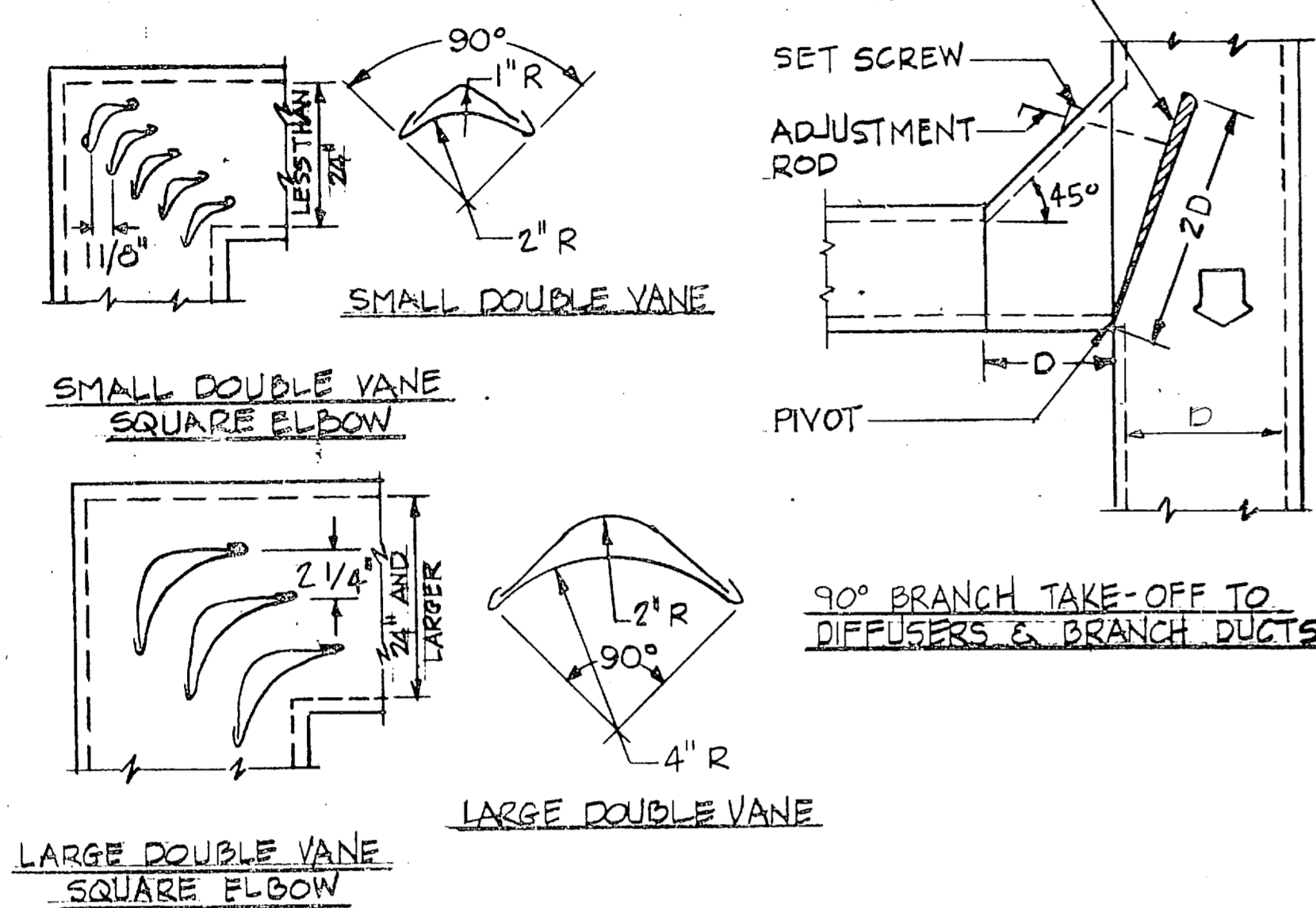
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



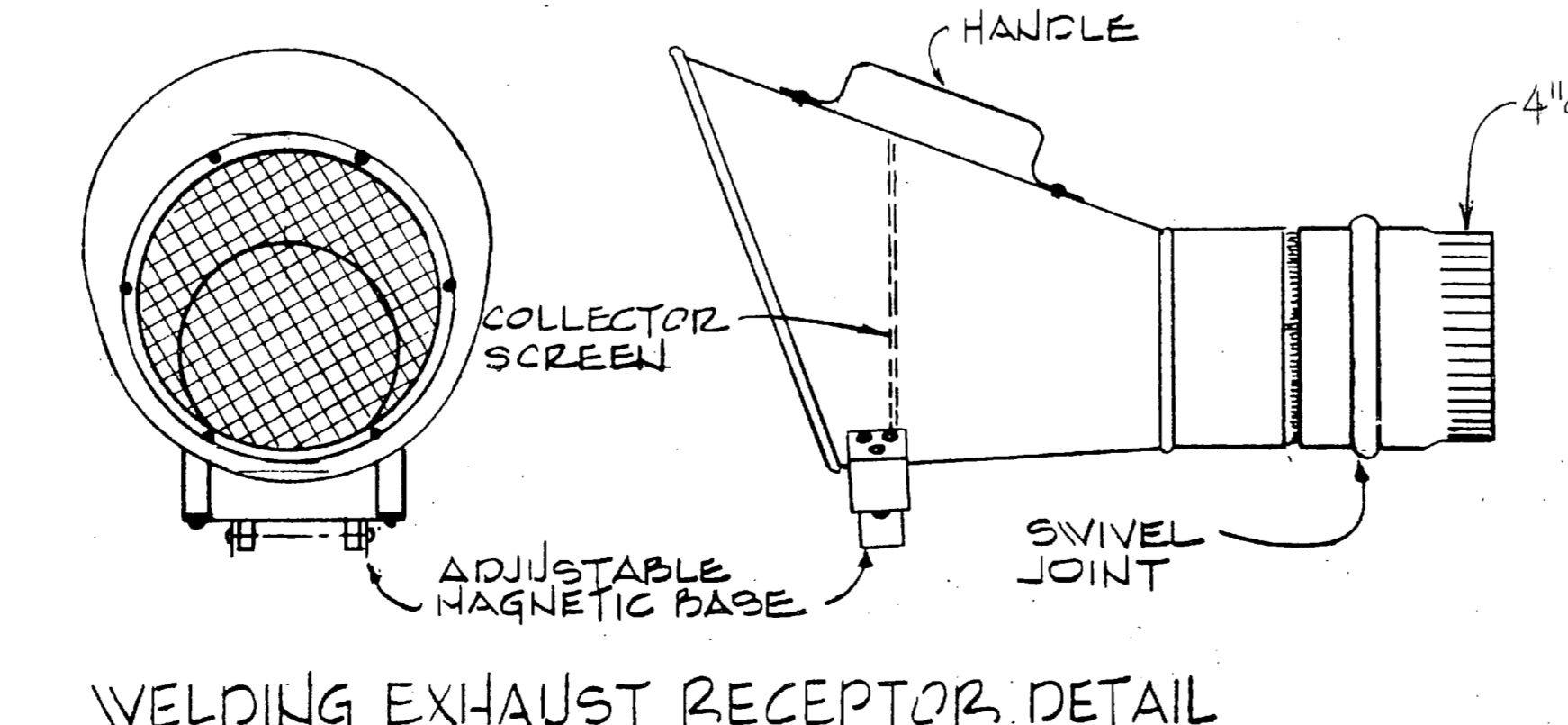
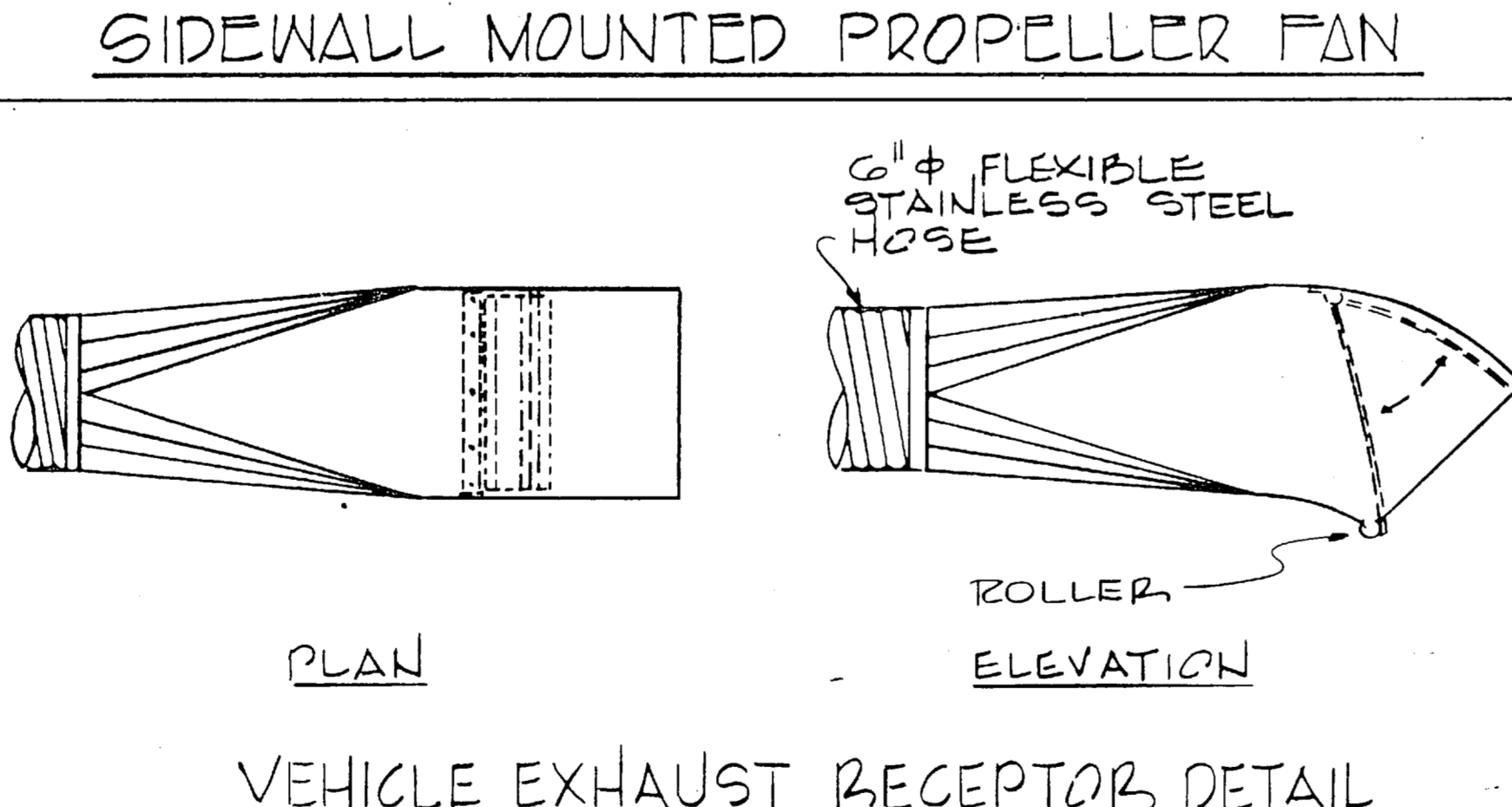
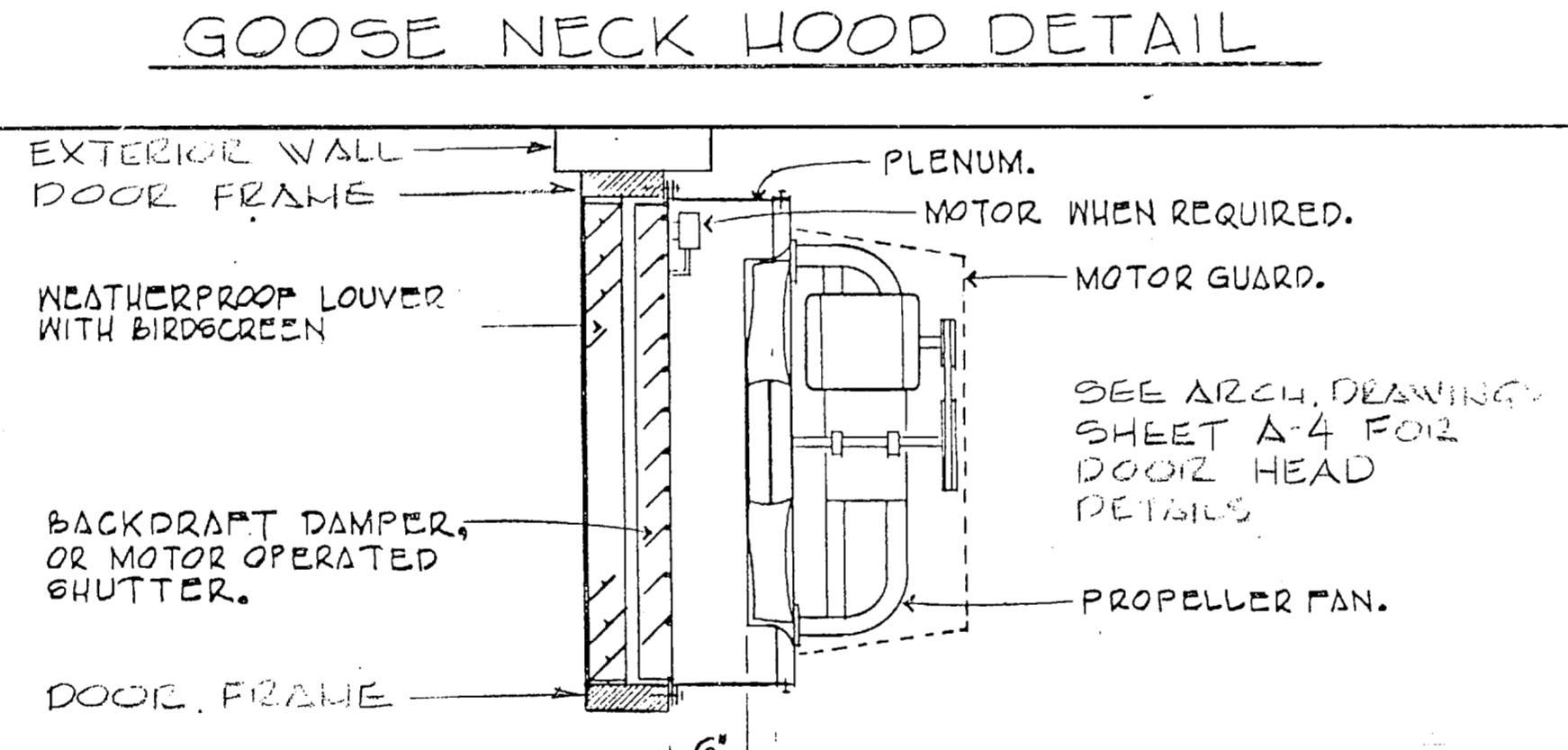
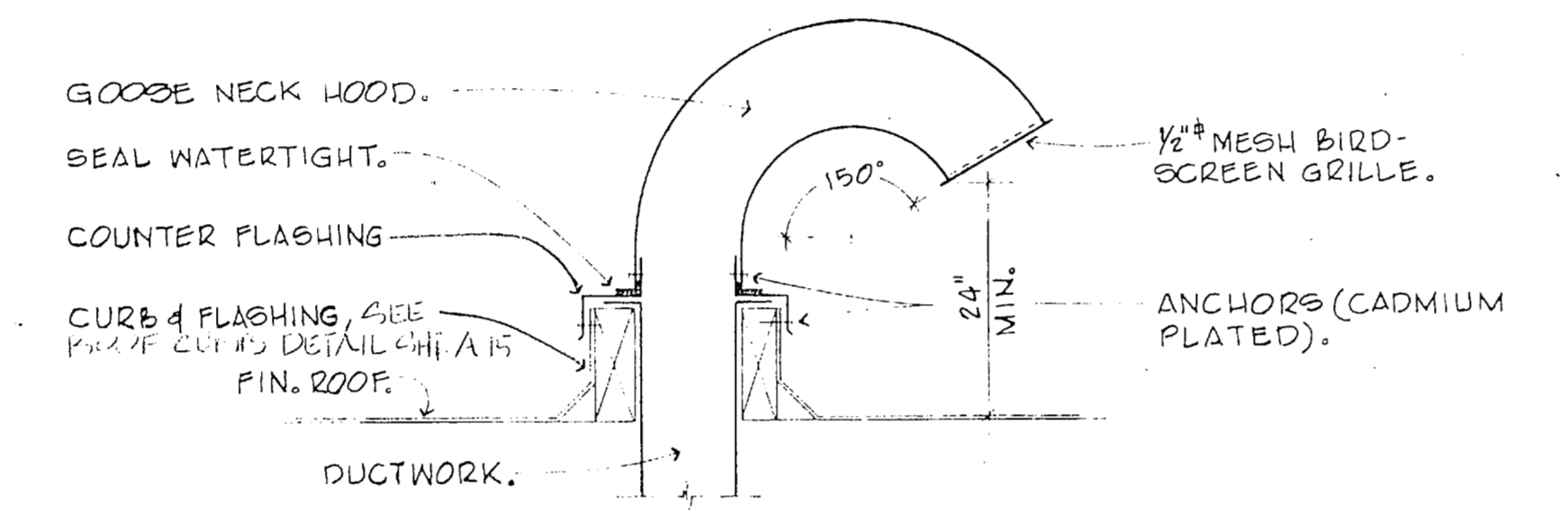
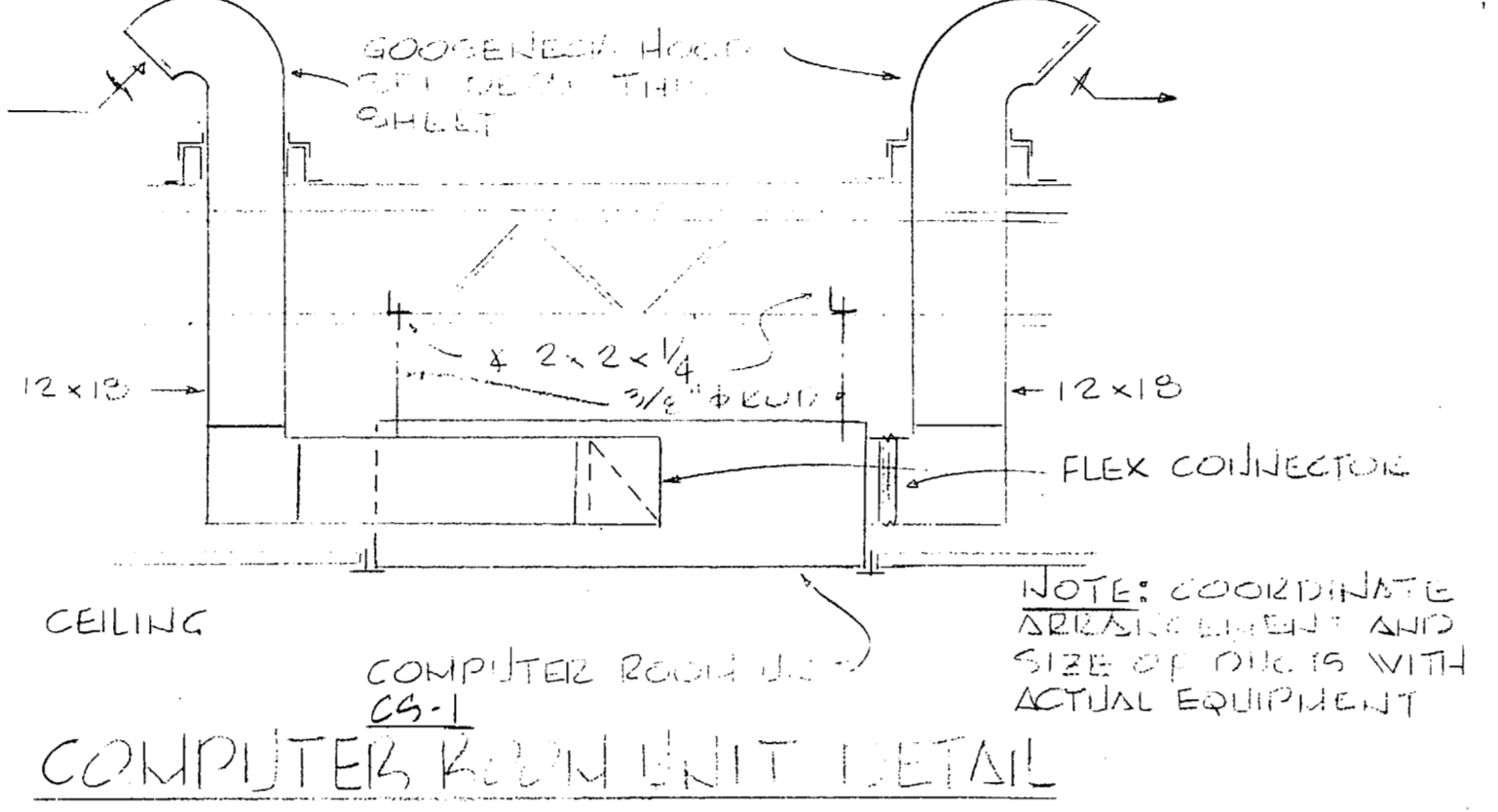
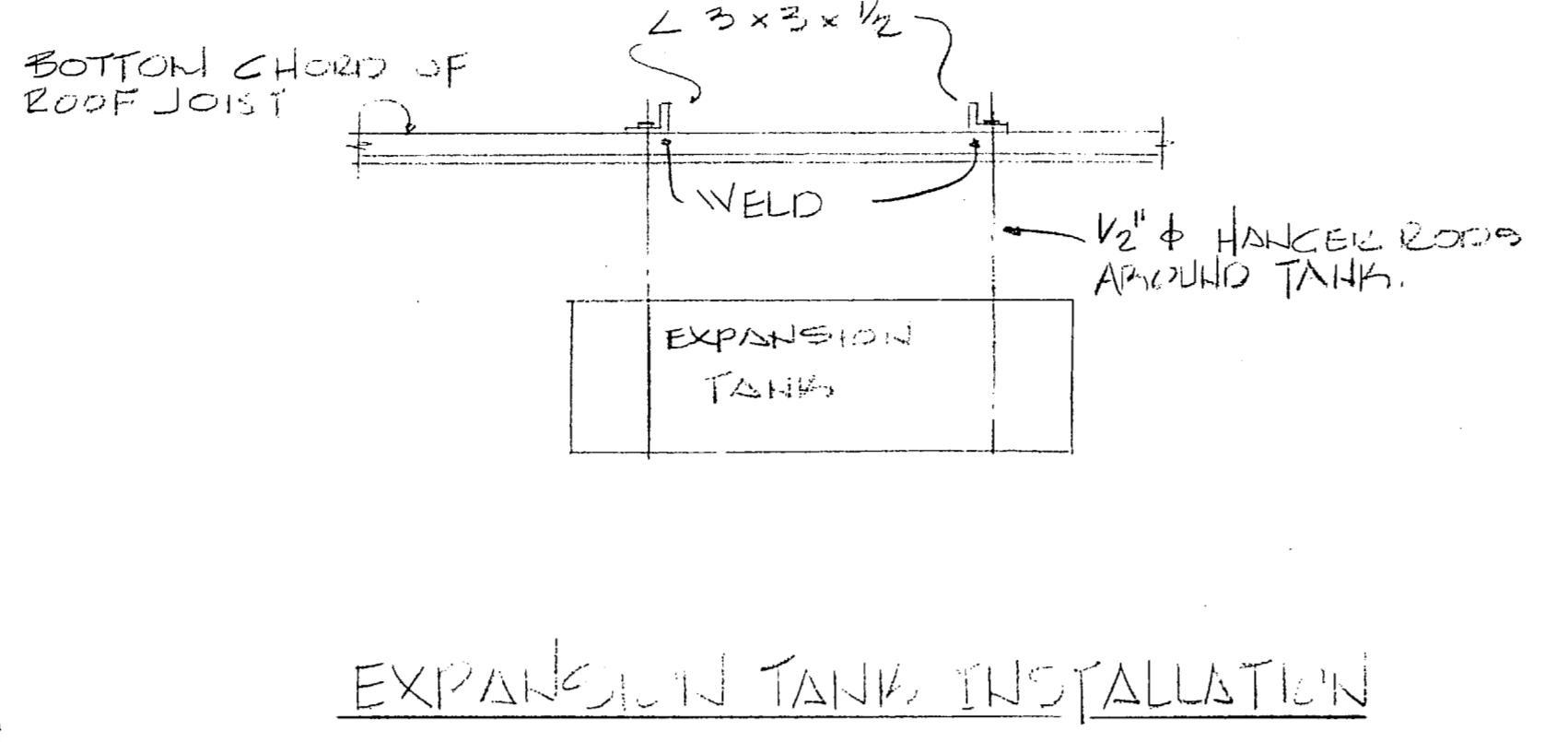
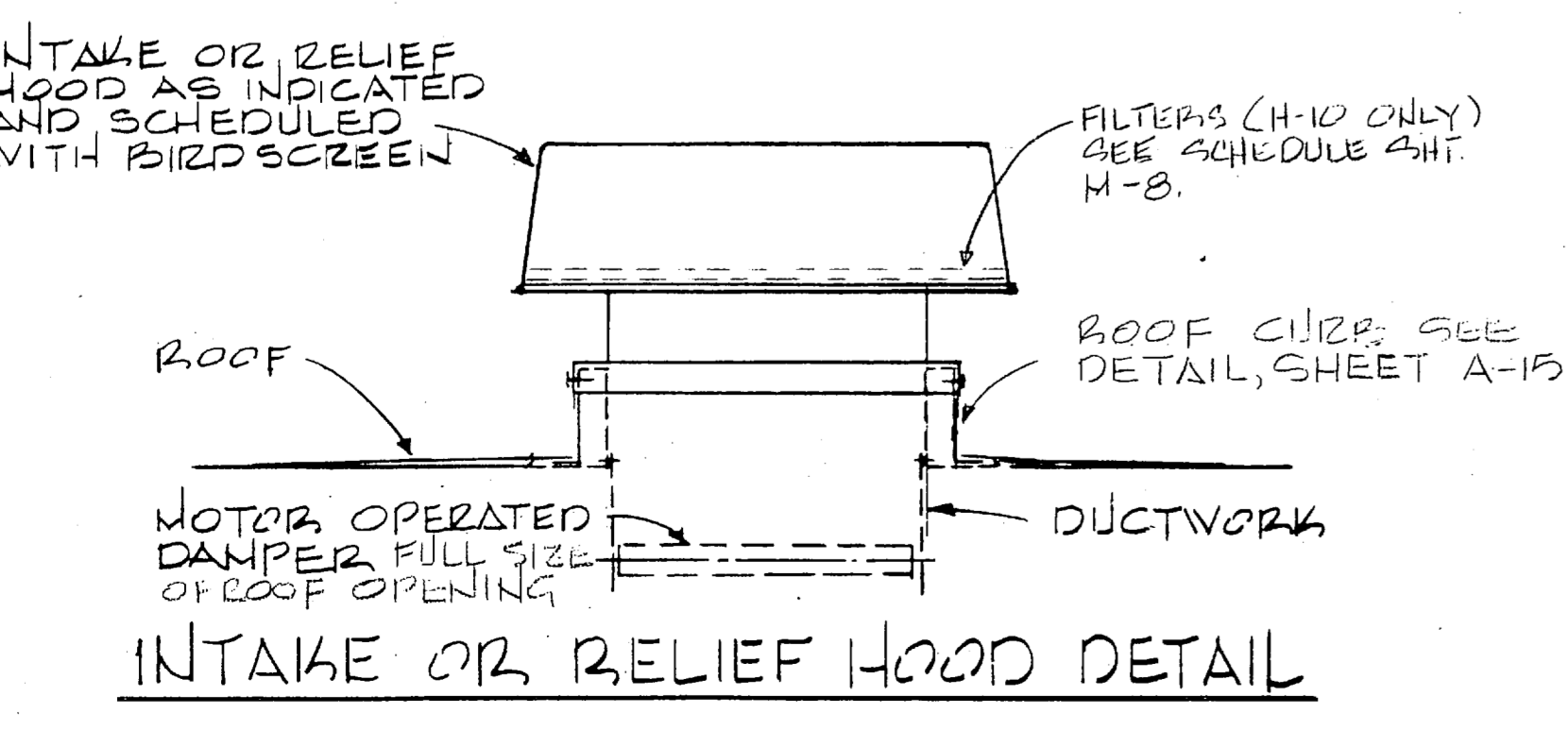
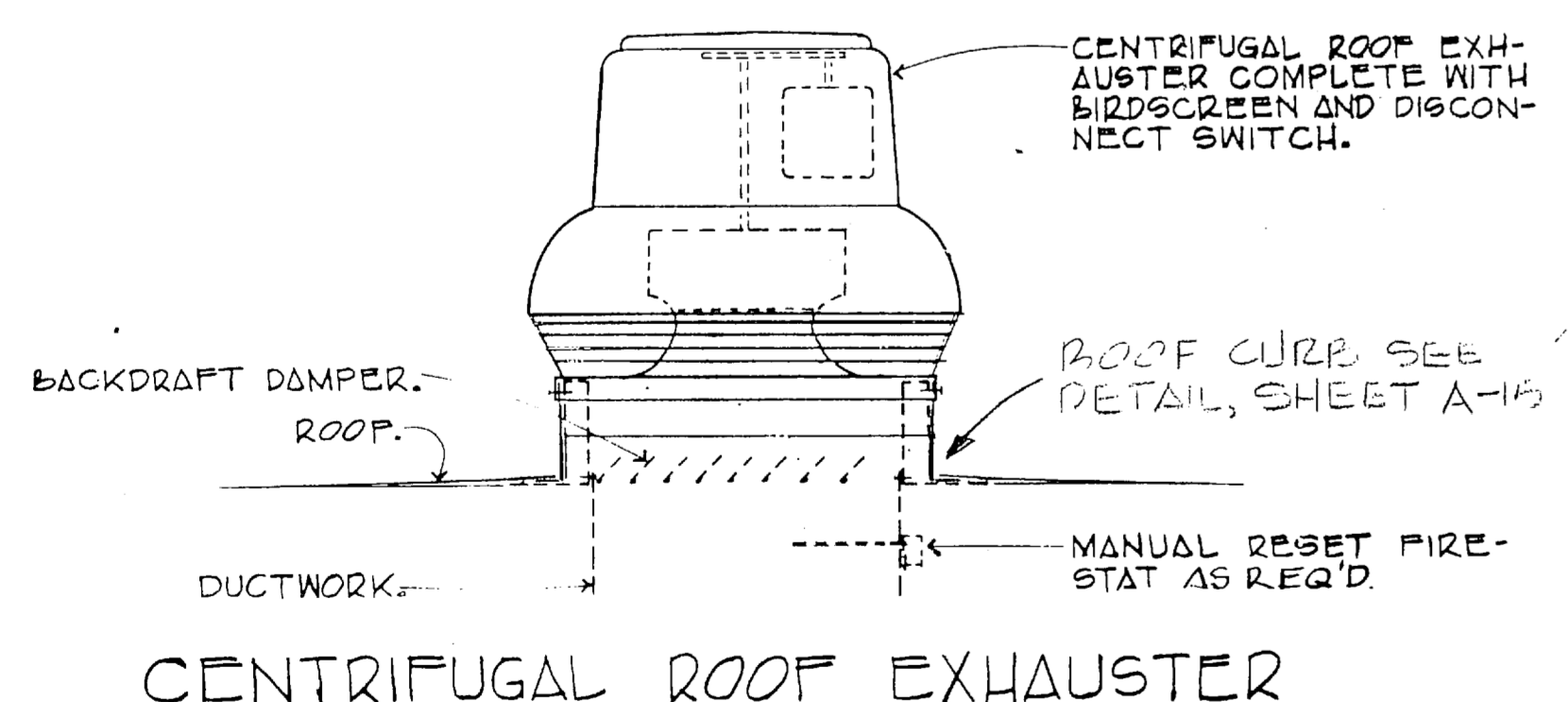
<b>RECORD DRAWING</b>		<b>FC 230</b>		<b>M-5</b>	
DATE: OCT 1 1966		A DEP ARCHITECTS CHARLOTTE, NORTH CAROLINA		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
CROCKFORD AND ASSOCIATES, INC. PO BOX 36761 CHARLOTTE, NC 28236		JOB ORDER NO. 5 E 5146		NAVAL STATION ATLANTIC DIVISION	
STA. PROJ. NO. PO 27		DES. RHC		MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
PROJ. MGR. RHC		CH. ARCH/ENGR. RHC		COMBAT VEHICLE MAINTENANCE SHOP	
APPROVED: [Signature]		DATE: [Date]		DETAILS	
ACTIVITY - SATISFACTORY TO [Date]		SIZE: 80091		NAVFAC DRAWING NO. 4148914	
FOR EFD FOR COMMANDER NAVFAC		SCALE AS NOTED SPEC. OS-85-5146		CONSTR. CONTR. NO. N62470-85-B-5146	
				SHEET 1 OF 65	



NOTE: ALL 90° TURNS IN SUPPLY AND RETURN DUCTWORK SHALL BE STANDARD LONG RADIUS. USE SHORT RADIUS WITH VANE OR SQUARE WITH VANES AS SHOWN ONLY WITH APPROVAL OF ENGINEER.



DUCTWORK DETAILS



SEQUENCE OF OPERATION

THE SEVEN-DAY TIME CLOCK C-1 INITIATES THE START SEQUENCE BY MAKING ITS CONTACTS AND ENERGIZING RELAY R-1, WHICH IN TURN THROUGH THE "AUTO" POSITION OF THE H.O.A. SWITCH STARTS THE FANS ON AHU-1, AHU-2, AHU-3, AHU-5, AND AHU-8.

THE SEVEN-DAY TIME CLOCK C-2 INITIATES THE START SEQUENCE BY MAKING ITS CONTACTS AND ENERGIZING RELAY R-2, WHICH IN TURN THROUGH THE "AUTO" POSITION OF THE H.O.A. SWITCH STARTS THE FANS ON AHU-4, AHU-9, AND AHU-10.

R-1 OR R-2 CAN ENERGIZE THE ENTHALPY CONTROLLER AND THE PUMP P-1. AUXILIARY CONTACTS M1A1 IN PUMP P-1 STARTER PREVENTS CHILLER OPERATION WITHOUT PUMP OPERATION. PE-1 AND PE-2 ENERGIZE THE CHILLER AND ENTHALPY CONTROLLER.

TOS'S (TIMED OVERRIDE SWITCH) ARE PROVIDED TO OPERATE THE SYSTEM IN THE "ON" MODE WHEN THE CLOCK IS IN THE "OFF" MODE.

NIGHT LOW LIMIT THERMOSTATS WILL OVERRIDE THE TIME CLOCKS WHEN THE TEMPERATURE FALLS BELOW THE SETPOINT. THE LOW NIGHT SETBACK THERMOSTAT FOR C-1 WILL BE LOCATED IN ROOM 102. THERMOSTAT FOR C-2 WILL BE LOCATED IN ROOM 201. THE THERMOSTAT WILL OPERATE THE SYSTEM IN THE "ON" MODE WHEN THE CLOCK IS IN THE "OFF" MODE. WHEN THE THERMOSTATS ARE SATISFIED THE SYSTEM WILL STOP.

A TWO-POSITION MANUAL HEATING/COOLING SWITCH ALLOWS CHANGEOVER FROM COOLING TO HEATING. IN THE HEATING POSITION, A REVERSING RELAY ACTIVATES A THREE-WAY VALVE TO THE HEATING POSITION TO PROVIDE FLOW TO UH-1 THROUGH UH-7 AND RADIATION C AND D. A TWO-WAY VALVE OPENS TO PROVIDE FLOW FOR RADIATION A AND B.

THE PNEUMATIC DUAL ACTION THERMOSTAT SENSES THE SPACE TEMPERATURES FOR AHU-1 THROUGH AHU-5 AND AHU-10. ON A RISE IN TEMPERATURE ABOVE THE SETPOINT IN THE COOLING MODE THERMOSTAT "INCREASES" THE BRANCH LINE PRESSURE (SATISFIED AT 7.5#). THE DUAL TEMPERATURE VALVE WILL OPEN. IF THE ENTHALPY CONTROLLER IS ABOVE ITS SWITCH POINT, THE EP SWITCH WILL DIVERT THE BRANCH SIGNAL TO THE "OUTSIDE AIR CYCLE." THE O.A. DAMPERS BEGIN TO OPEN AT 8# AND ARE FULLY OPEN AT 12#. THE R.A. DAMPER BEGINS

TO CLOSE AT 8# AND ARE FULLY CLOSED AT 12#. AHU-10 HAS AN EXHAUST FAN E-19 WHICH IS ENERGIZED BY RELAY R-4 AND IS CONTROLLED BY PE #3. IN THE HEATING MODE, A FALL IN TEMPERATURE BELOW THE SETPOINT "INCREASES" THE BRANCH LINE PRESSURE. THE DUAL TEMPERATURE VALVE WILL OPEN. AH-1 AND AH-3 HAVE END SWITCHES ON ROLL-UP DOORS IN THE AREA TO STOP FANS WHEN THE DOORS ARE UP.

THE FAN COIL UNIT THERMOSTAT SENSES RETURN AIR TEMPERATURE. THE DUAL ACTION THERMOSTAT SWITCHES ACTION (DIRECT/REVERSE) THROUGH THE PNEUMATIC SWITCHING RELAY ACTIVATED BY THE MANUAL SUMMER-WINTER CHANGEOVER SWITCH, ALLOWING THE VALVE TO OPEN TO THE COIL ON A DROP IN TEMPERATURE FOR HEATING AND ALSO OPEN TO THE COIL ON A RISE IN TEMPERATURE FOR COOLING. FC-1 AND FC-3 HAVE END SWITCHES ON THE ROLL-UP DOORS IN THE AREA TO STOP FANS WHEN DOORS ARE UP.

UH-1 THROUGH UH-15 ARE CONTROLLED BY A LINE VOLTAGE THERMOSTAT. THE FAN WILL NOT OPERATE UNLESS THE AQUASTAT SENSES THE WATER TEMPERATURE IS UP AND HEATING IS AVAILABLE. UH-8 THROUGH UH-15 HAVE NIGHT SETBACK.

EXHAUST FANS F-1, F-4, F-6, F-7, F-15, AND F-16 OPERATE WITH MANUAL MOTOR STARTERS.

EXHAUST FANS F-2, F-8, F-9, F-10, AND F-14 OPERATE MANUALLY WITH A START/STOP PUSHBUTTON.

EXHAUST FANS F-3 AND F-12 ARE CONTROLLED BY TIME CLOCK C-1 AND OPERATE CONTINUOUSLY IN THE "ON" POSITION. EXHAUST FAN F-18 IS CONTROLLED BY TIME CLOCK C-2 AND OPERATES CONTINUOUSLY IN THE "ON" POSITION.

EXHAUST FANS F-5, F-13, AND F-17 INCORPORATE A "LINE VOLTAGE ROOM THERMOSTAT" TO CYCLE THE FANS ON A RISE IN TEMPERATURE TO THE THERMOSTAT SETPOINT, AND CYCLE THE FANS OFF ON A FALL IN TEMPERATURE BELOW THE SETPOINT.

AHU-6 OPERATES MANUALLY WITH A START/STOP PUSHBUTTON. A PNEUMATIC ROOM THERMOSTAT CONTROLS THE STEAM VALVE.

EXHAUST FAN F-11 OPERATES MANUALLY WITH A START/STOP PUSHBUTTON. AUXILIARY CONTACTS M12A1 ON F-11 STARTER ENERGIZES AHU-7. EP #7 CONTROLS THE STEAM VALVE.

SYSTEM:	HARDWARE														
	OUTPUT FROM ENCS						INPUT TO ENCS								
	DIGITAL			ANALOG			DIGITAL			ANALOG					
CONTROL RELAY															
SOLENOID															
HAND/OFF/AUTO															
OFF/AUTO															
CONTROL POINT ADJUSTMENT															
POSITION ADJUSTMENT															
PRESSURE SWITCH															
DIFFERENTIAL PRESSURE SWITCH															
FLOW SWITCH															
AUXILIARY CONTACT															
FUSE															
ZERO SPEED SWITCH															
TEMPERATURE SENSORS															
% RELATIVE HUMIDITY															
PSIC, PSIA, PSD															
POSITION															
GRAPHIC DISPLAY															
POINT DESCRIPTION															
AHU-1 THRU AHU-5															
AHU-6 THRU AHU-9															
AHU-10															
PUMP P-1															
STEAM SUPPLY															
HOT WATER SUPPLY															
CONTROL AIR SUPPLY															
DUAL PRESS. CONT. AIR															
VENTILATION AIR															

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

SYMBOL LEGEND

- HPS — HIGH PRESSURE STEAM SUPPLY.
- HPR — " " " " RETURN.
- ST — STEAM SUPPLY TO RETURN IN UNDERGROUND CONDUIT
- LPS — LOW PRESSURE STEAM SUPPLY.
- LPR — " " " " RETURN.
- PD — PUMPED DISCHARGE.
- D — DRAIN LINE.
- V — VENT " "
- HWS — HOT WATER SUPPLY.
- HWR — " " " " RETURN.
- CHS — CHILLED WATER SUPPLY.
- CHR — " " " " RETURN.
- FOS — FUEL OIL SUPPLY.
- FOR — " " " " RETURN.
- CW — COLD WATER.
- CF — CHEMICAL FEED.
- DTS — DUAL TEMPERATURE SUPPLY.
- DTR — DUAL TEMPERATURE RETURN.
- S — STEAM SUPPLY (HEW)
- ES — STEAM SUPPLY (EXISTING)

- GATE VALVE.
- BUTTERFLY VALVE.
- GLOBE VALVE.
- CHECK " "
- BALANCING OR PLUG COCK.
- CONTROL VALVE (2-WAY).
- " " (3-WAY).
- HOSE END GATE VALVE.
- PRESSURE REDUCING VALVE.
- CAPPED CONNECTION.
- FLANGED " "
- STRAINER (Y-TYPE).
- ECCENTRIC REDUCER.
- CONCENTRIC " "
- UNION.
- PIPE TURNED DOWN.
- " " UP.
- THERMOMETER WELL.
- GAUGE COCK.
- THERMOMETER & WELL.
- PRESSURE GAUGE.
- SLEEVE THRU WALL.
- PIPE ANCHOR.
- MANUAL BALANCING DAMPERS.
- FLEXIBLE DUCT CONNECTION.
- LOW PRESSURE DRIP ASSEMBLY.
- HIGH " " " "
- THERMOSTAT.
- CONNECTION POINT-NOW TO EXISTING
- FIRE DAMPER (FD)
- NECA
- SPLITTER BATTER
- DIRECTION OF GRADE DOWN
- PRESSURE INDICATION (EHCS).
- ON-OFF STATUS SIGNAL (EHCS)
- DIFFERENTIAL PRESSURE SWITCH(ENCS)
- TEMPERATURE INDICATION (ENCS)
- HUMIDITY INDICATION (ENCS)
- POSITION (EHCS)

RECORD DRAWING **FC 230** **M-6**

DATE: OCT 3 1980

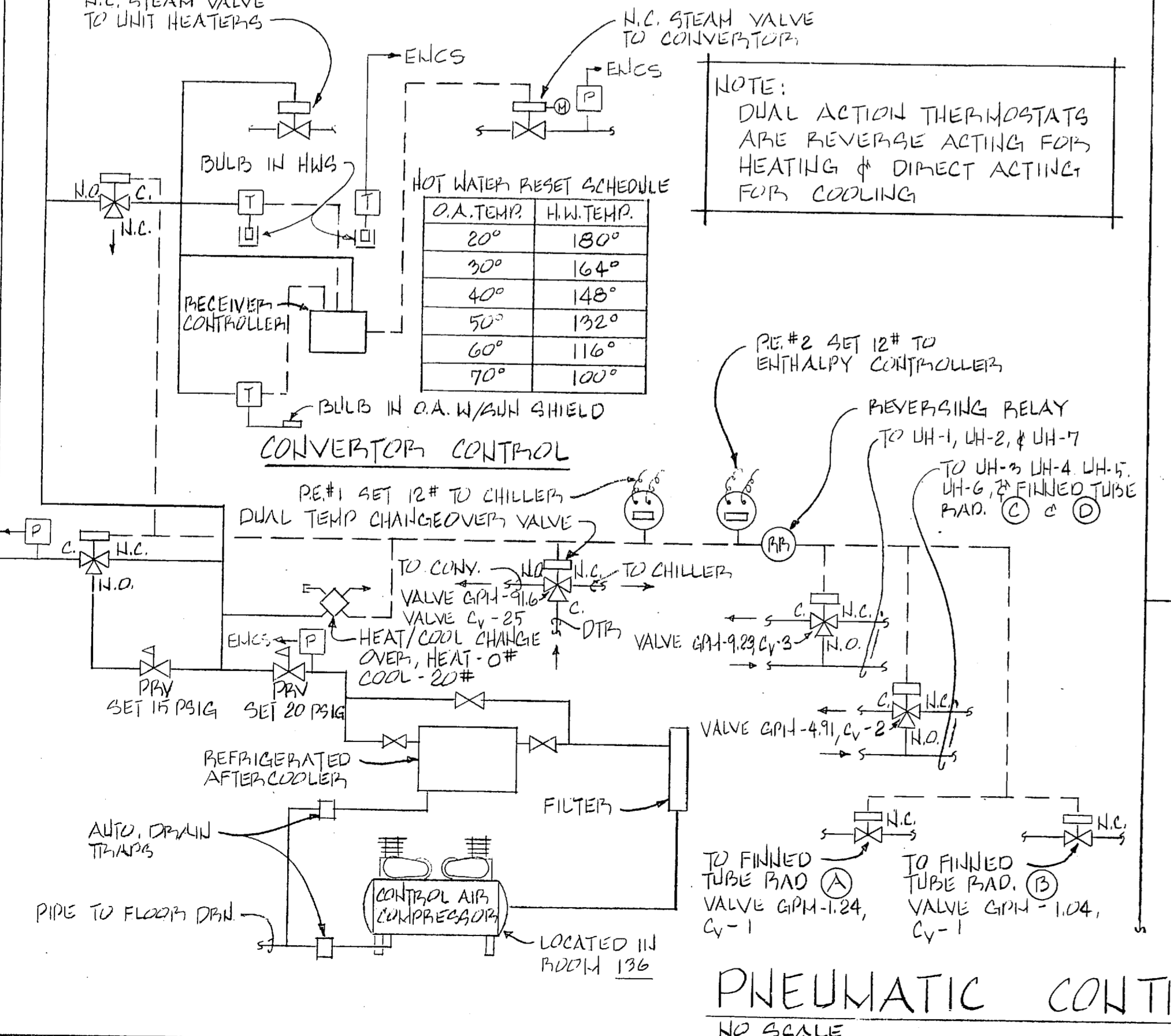
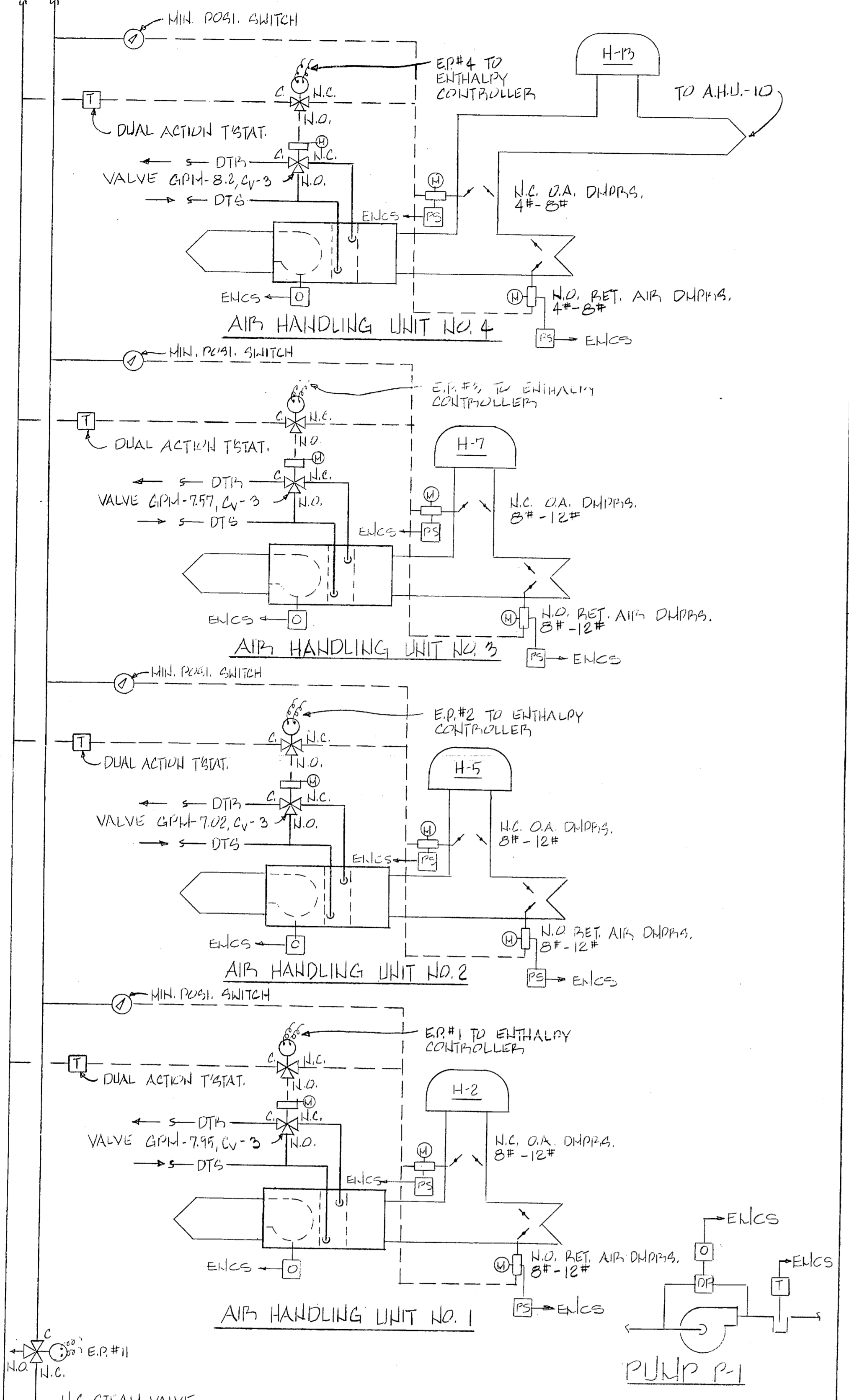
CROCKFORD AND ASSOCIATES, INC. PO BOX 36761 CHARLOTTE, NC 28236	<b>A DEP ARCHITECTS</b> CHARLOTTE, NORTH CAROLINA EFD DWS NO. 7289 15 JOB ORDER NO. 5 E 5 146 STA. PROJ. NO. 8 3 2 7 DES. EHC PROJ. MGR. LHC EFD. RVD BR. MGR. LHC	DEPARTMENT OF THE NAVY <b>ATLANTIC DIVISION</b> NAVAL STATION MARINE CORPS BASE <b>COMBAT VEHICLE MAINTENANCE SHOP</b>
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SCALE AS NOTED SPEC. 05-20-1914

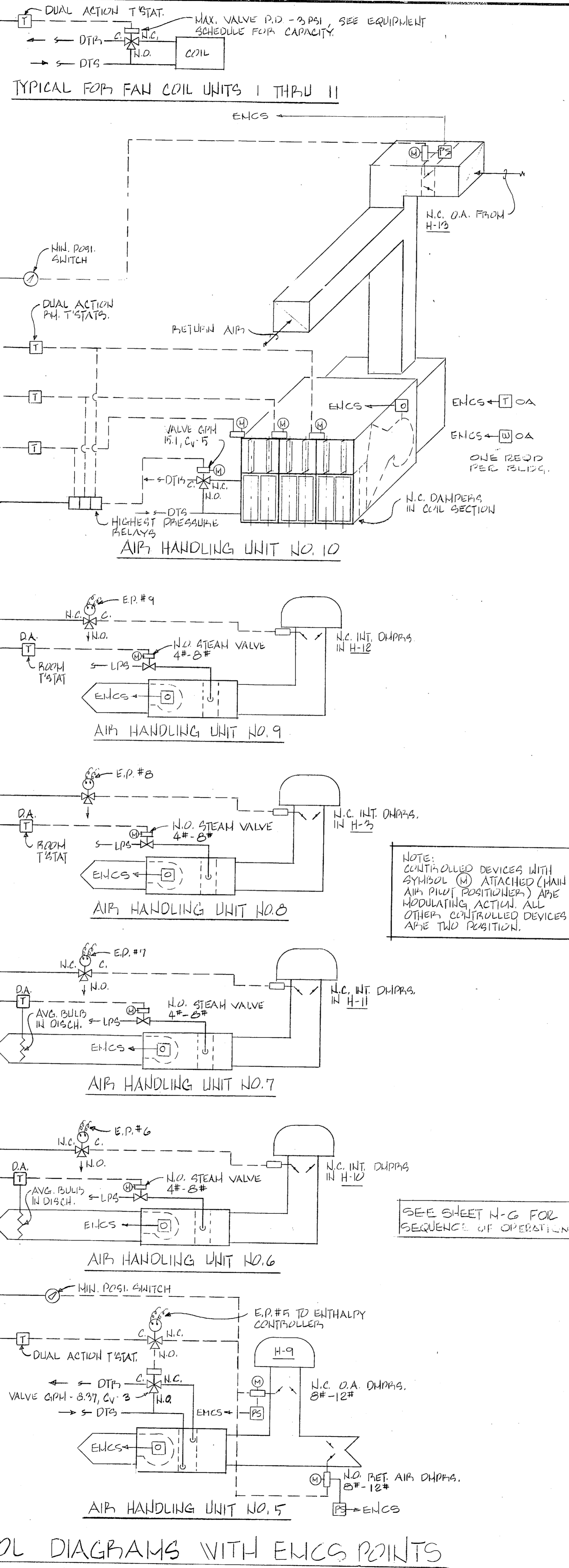
100-11

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

NOTE: START-STOP P.B. & H.O.A. SWITCHES (HAND-OFF-AUTOMATIC) ARE TO BE MOUNTED IN THE MOTOR STARTER COVERS.

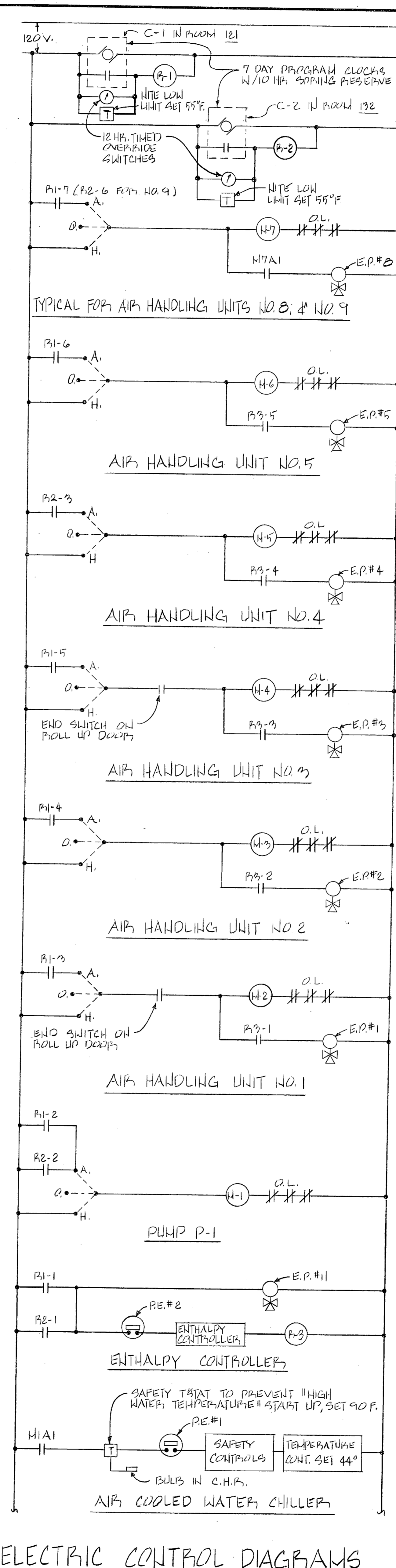


PNEUMATIC CONTROL DIAGRAMS WITH ENCS POINTS  
NO SCALE

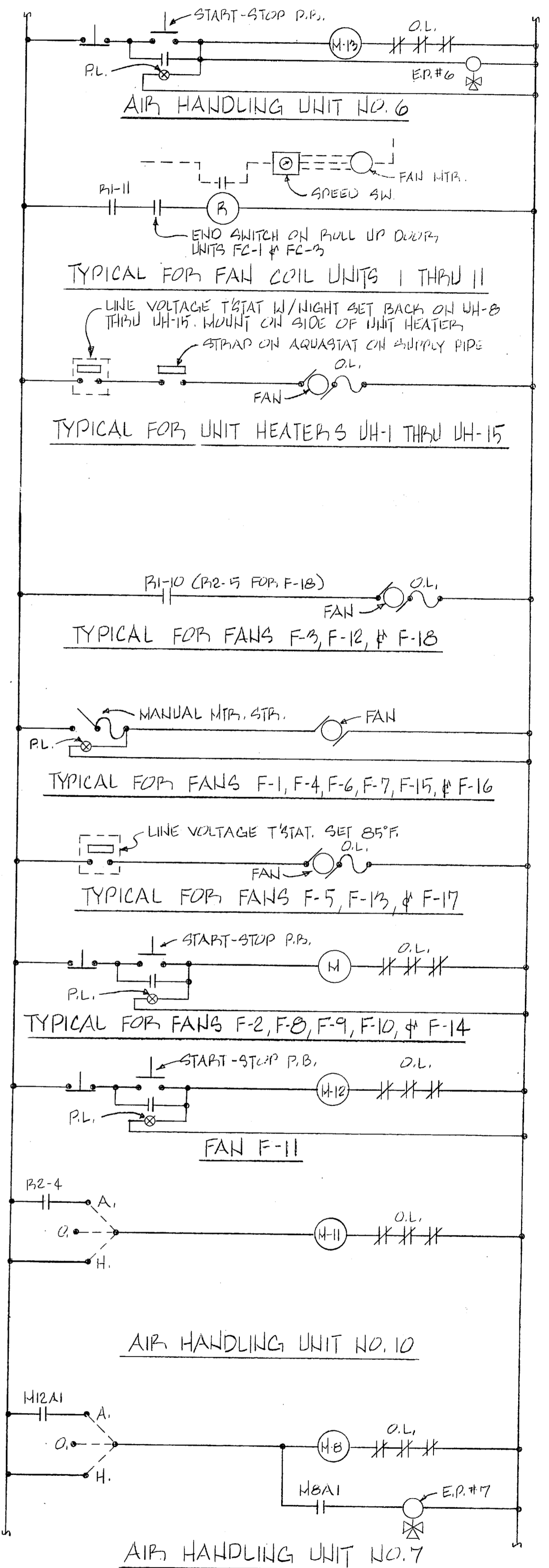


NOTE: CONTROLLED DEVICES WITH SYMBOL (M) ATTACHED (HAND AIR PIVOT POSITIONER) ARE MODULATING ACTION. ALL OTHER CONTROLLED DEVICES ARE TWO POSITION.

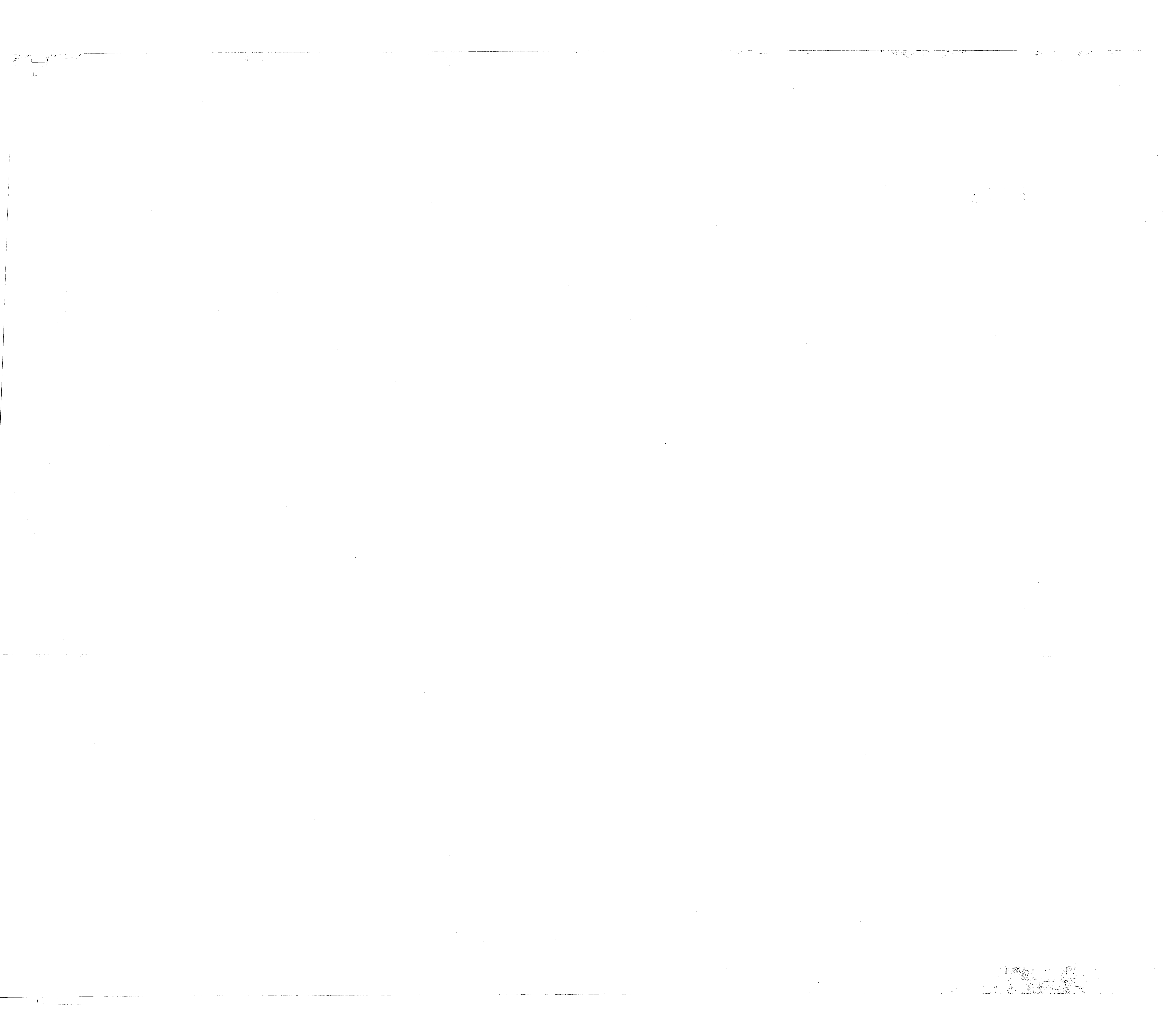
SEE SHEET N-6 FOR SEQUENCE OF OPERATION



ELECTRIC CONTROL DIAGRAMS  
NO SCALE



<b>RECORD DRAWING</b>		<b>FC 230</b>		<b>M-7</b>	
DATE OCT 3 1990		A DEP ARCHITECTS CHARLOTTE, NORTH CAROLINA		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
CROCKFORD AND ASSOCIATES, INC. PO BOX 36701 CHARLOTTE, NC 28236		JOB ORDER NO. 5 F 51 4 2		NAVAL STATION ATLANTIC DIVISION	
EFD DWG. NO. 248916		SIL. PROJ. NO. 27		MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
DES. EHC		PROJ. MGR. RHC		COMBAT VEHICLE MAINTENANCE SHOP	
EFD. REV. 1/14		E.P. 3/22		NORFOLK, VIRGINIA	
BR. MGR. H/W		DES. DIR. H/W		CAMP LEJEUNE, NORTH CAROLINA	
APPROVED [Signature]		DATE 10/3/90		NAVYAC DRAWING NO. 4148916	
ACTIVITY - SATISFACTORY		DATE 10/3/90		CONSTR. CONTR. NO. 162470-85-B-5146	
FOR EFD FOR COMMANDER NAVFAC		SCALE AS NOTED SPEC.		SHEET 3 OF 65	





REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

AIR HANDLING UNITS										
A.H. UNIT NO	AHU-1	AHU-2	AHU-3	AHU-4	AHU-5	AHU-6	AHU-7	AHU-8	AHU-9	AHU-10
SERVICE/LOCATION	RM 102	RM 111	RM 119	RM 210	RM 119	PAINT BOOTH	AUTO EXH.	TOILET VENT	TOILET VENT	2ND FL.
SYSTEM TYPE	DRAIN THRU	DRAIN THRU	DRAIN THRU	DRAIN THRU	DRAIN THRU	H 4 V	H 4 V	H 4 V	H 4 V	MULTI-ZONE
TOTAL CFM	1280	1200	1315	1000	1000	22950	4600	2595	1600	2675
O.A. CFM (MIN)	135	125	140	130	150	22950	4600	2595	1600	2675
TOTAL S.P.	1.20"	1.20"	1.20"	1.25"	1.20"	1.00"	1.00"	1.00"	1.00"	1.05"
FAN RPM/BHP	1200/1.5	1200/1.4	1200/1.5	1200/1.4	1200/1.4	490/11.0	689/1.5	633/1.2	1200/3.0	1020/1.1
HP, VOLTS, &	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P	3/4, 400V 3P
STARTER	MAG.	MAG.	MAG.	MAG.	MAG.	MAG.	MAG.	MAG.	MAG.	MAG.
FAN TYPE	9" FC	9" FC	9" FC	9" FC	9" FC	27" FC	15" FC	12" FC	9" FC	12" FC
TOTAL LOAD	712 HDB	36 WDB	389 HDB	413 HDB	413 HDB					770 HDB
AIR OVER COIL	1280	1200	1315	1000	1000					2210
EAT (DB/WB)	79.3/67.7	79.2/67.6	79.3/67.5	79.8/67.2	79.8/67.2					80.7/67.8
LAT (DB/WB)	58/57	58/57	58/57	58/57	58/57					58/57
EWT/LWT	44/54	44/54	44/54	44/54	44/54					44/54
GPM	7.95	7.02	7.57	8.20	8.37					181
MAX AIR PD	3.5"	3.5"	3.5"	3.5"	3.5"					3.5"
MAX WATER PD	1.0'	1.0'	1.0'	1.0'	1.0'					1.5'
MAX FACE VEL.	500	500	500	500	500					500
TOTAL LOAD	1181 HDB	1097 HDB	1192 HDB	1096 HDB	1096 HDB	1045 HDB	2095 HDB	1799 HDB	1097 HDB	2018 HDB
AIR OVER COIL	1280	1200	1315	1000	1000	22950	4600	2595	1600	2210
EAT-LAT	60.6/76.4	60.6/76.3	60.5/76.3	61.3/75.7	61.3/75.7	23/65	23/65	23/65.7	23/65.8	63.4/74.6
EWT-LWT	180/113.8	180/114.6	180/115.7	180/116.3	180/116.3					180/116.5
GPM	7.95	7.02	7.57	8.20	8.37					151
MAX AIR PD	3.5"	3.5"	3.5"	3.5"	3.5"					3.5"
MAX WATER PD	1.0'	1.0'	1.0'	1.0'	1.0'					1.5'
MAX FACE VEL	500	500	500	500	500					500
TYPE	THROWAWAY	THROWAWAY	THROWAWAY	THROWAWAY	THROWAWAY					THROWAWAY
MIN EFF. (NRS)	35%	35%	35%	35%	35%					35%
MAX P.D. (INITIAL)	20"	20"	20"	20"	20"					20"
MAX P.D. (FINAL)	50"	50"	50"	50"	50"					50"
REMARKS										

\*\* PROVIDE PRESSURE BALANCING PERFORATED PLATE IN COIL BY-PASS POSITION. (AHU-10 ONLY)

AIR DISTRIBUTION					
SYMBOL	SERVICE	TYPE	DAMPERS	FINISH	REMARKS
(A)	SUPPLY	LAY-IN	YES	BOW	.05
(B)	RETURN	LAY-IN	YES	BOW	.05
(C)	EXHAUST	ESGACRATE	YES	BOW	.05
(D)	EXHAUST	SINGLE DEFLECTION	YES	BOW	.05
(E)	SUPPLY	DOUBLE DEFLECTION	NO	BOW	.05
(F)	SUPPLY	DOUBLE DEFLECTION	YES	BOW	.05
(G)	SUPPLY	SURFACE MOUNT	YES	BOW	.05
(H)	*	SURFACE MOUNT	YES	-	

BOW = BAKED ON WHITE  
NOTE: SEE PLANS FOR NECK SIZES.

PRESSURE REDUCING VALVE					
NO	SERVICE	LOCATION	PRESSURE (PSIG)	CAPACITY (LBS/HR)	REMARKS

PUMPS							
NO	SERVICE	GPM	HEAD	HP	EFF.	ELECT. DATA	STARTER

CONDENSATE PUMP							
NO	TYPE	GPM	EA	DISCH. PRESSURE	RECEIVER CAPACITY	HP	VOLTS & PH

UNIT HEATERS @ 60° EAT, 180° EWT @ 2 PSIG STEAM										
NO	SERVICE	BTUH	CFM	GPM	TD	LAT	WPD	HP	RPM	VOLTS, &

\* MOUNT ALL UNITS AS HIGH AS POSSIBLE WITH CLEARANCE FOR SERVICE. PROVIDE UNIT MOUNTED DISC SWITCHES.

FAN COIL UNITS, ENTERING AIR - 80° DB / 67° WB										
NO	CFM	GPM	COOLING	HEATING	ELECT. DATA	REMARKS				

COMPUTER ROOM SYSTEM 80° DB / 67° WB ENT. AIR TEMP.							
NO.	CFM	COOLING	HEATING	MULTIPLIER	ELECTRICAL DATA	REMARKS	

AIR COOLED WATER CHILLER @ 95° F AMBIENT, .0005 FOULING FACTOR							
NO	CAPACITY	GPM	EWT	LWT	V.P.D.	ELECTRICAL DATA @ 400 V, 3P, 60 HZ.	REMARKS

CONVERTERS (2 P.S.I.G. STEAM @ 0.0005 FOULING FACTOR)							
NO	SERVICE	LOCATION	CAPACITY	HT SURFACE	GPM	EWT	LWT

FANS							
NO	SERVICE	CFM	S.P.	RPM	HP	ELECT. DATA	STARTER

NOTE: ALL TEMPERATURE INDICATIONS THIS SHEET ARE IN DEGREES (°) FAHRENHEIT. ALL WATER PRESSURE DROPS (WPD) ARE IN FEET OF WATER ('). ALL AIR PRESSURE DROPS (APD) ARE IN INCHES OF WATER (").

THRU-WALL HEAT PUMP							
NO	COOLING	HEATING @ 47°	SUPP. HEAT	ELECTRICAL DATA	REMARKS		

FINNED TUBE RADIATION @ 180° EWT, 60° EAT							
NO	BTUH	LENGTH	HEIGHT	DEPTH	GPM	TD	REMARKS

HOODS							
NO	SERVICE	CFM	THROAT SIZE	APD	REMARKS		

\*\*\* THROWAWAY, 35% MIN. NRS, EFF., 2" MAX. A.P. DROP INITIAL, .5" S.P. DROP FINAL. FILTERS SHALL BE REPLACEABLE FROM PUFF WITHOUT SPECIAL TOOLS. MAX. FILTER FACE VEL. 570 FPM.

SCHEDULE LEGEND			
AH	AIR HANDLING	LBS	POUNDS
OA	OUTSIDE AIR	HR	HOURS
SP	STATIC PRESSURE (".WG.)	EWT	ENTERING WATER TEMPERATURE (°F)
HP	HORSEPOWER	LWT	LEAVING WATER TEMPERATURE (°F)
PD	PRESSURE DROP	FLA	FULL LOAD AMPS
NRS	NATIONAL BUREAU OF STANDARDS	LRA	LOCKED ROTOR AMPS
BTUH	BRIEF THERMAL UNITS PER HOUR	KVA	KILOWATTS
GPM	GALLONS PER MINUTE	ELECT.	ELECTRICAL
CFM	CUBIC FEET PER MINUTE	EFF.	EFFICIENCY
RPM	REVOLUTIONS PER MINUTE	PSI	POUNDS PER SQUARE INCH
BHP	BRAKE HORSEPOWER	MAG.	MAGNETIC
MIN	MINIMUM		
MAX	MAXIMUM		
DB	DRY BULB		
WDB	WET BULB		
TD	TEMPERATURE DIFFERENCE (°F)		
APD	AIR PRESSURE DROP (".WG.)		
WPD	WATER PRESSURE DROP (FT. HD)		
VEL	VELOCITY		
EAT	ENTERING AIR TEMPERATURE (°F)		
LAT	LEAVING AIR TEMPERATURE (°F)		

RECORD DRAWING		FC 230		M-8	
DATE					
CROCKFORD AND ASSOCIATES, INC. CHARLOTTE, NC 28236		A DEP ARCHITECTS CHARLOTTE, NORTH CAROLINA		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
JOB ORDER NO. 555142		NAVAL STATION		ATLANTIC DIVISION	
DES. RHC		MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
PROJ. MGR. RHC		COMBAT VEHICLE MAINTENANCE SHOP			
ELECT. RHC					
APP. RHC					
				EQUIPMENT SCHEDULES	

