

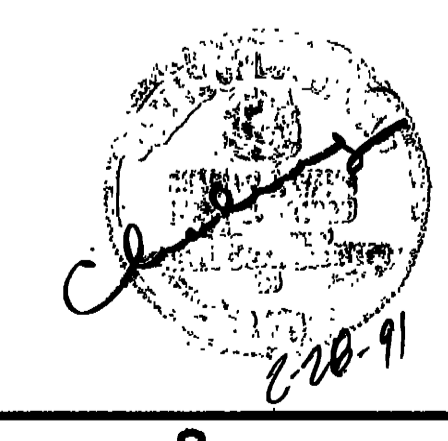
MECHANICAL LEGEND (ALL OF LEGEND MAY NOT BE APPLICABLE TO THIS PROJECT)			MECHANICAL LEGEND (ALL OF LEGEND MAY NOT BE APPLICABLE TO THIS PROJECT)			MECHANICAL LEGEND (ALL OF LEGEND MAY NOT BE APPLICABLE TO THIS PROJECT)		
SYMBOL	ABBR.	DESCRIPTION	SYMBOL	ABBR.	DESCRIPTION	SYMBOL	ABBR.	DESCRIPTION
		VENT			UNION (SCREWED)			ENERGY MONITORING CONTROL SYSTEM
		SEWER OR WASTE			CLEANOUT PLUG			ELECTRICAL TRANSFORMER
	G	GAS-LOW PRESSURE			FLOOR CLEANOUT <i>(FLOOR MTD C.O. W/O. WALL MTD C.O.)</i>			PILOT LIGHT
		DOMESTIC COLD WATER			FLEXIBLE CONNECTOR			RELAY COIL
		DOMESTIC HOT WATER			STRAINER - WYE TYPE W/ BLOW DOWN & HOSE CONN.			DISCONNECT SWITCH
		DOMESTIC HOT WATER RETURN			WATER HAMMER ARRESTOR (LETTER INDICATES PDI SIZE)			HUMIDISTAT
	VTR	WASTE VENT THROUGH ROOF		V12	MODULATING 3 - WAY VALVE & REFERENCE NO.			CHANGE IN ELEVATION RISE (R) OR DROP (D)
		BACKFLOW PREVENTER		V10	2 - POSITION 2 - WAY VALVE & REFERENCE NO.			ACCESS DOORS, VERTICAL OR HORIZONTAL
		BALANCING COCK, OR CIRCUIT SETTER		V8	2 - POSITION 3 - WAY VALVE & REFERENCE NO.			FIRE DAMPER AND SLEEVE, PROVIDE ACCESS DOOR
		SOLENOID VALVE		SD	SMOKE DETECTOR			MANUAL VOLUME DAMPER
		PRESSURE REDUCING VALVE		M	MOTOR			STANDARD BRANCH, SUPPLY OR RETURN, NO SPLITTER
		PRESSURE RELIEF VALVE			NORMALLY OPEN CONTACT			DUCT TRANSITION
		PRESSURE TEMPERATURE RELIEF VALVE			NORMALLY CLOSED CONTACT			TURNING VANES
	F.S.	FLOW SWITCH			PRESSURE GAUGE WITH GAUGE COCK			SUPPLY OUTLET (SIDE WALL WITH EXTRACTOR)
		BALL VALVE			THERMOMETER (STRAIGHT SCALE)			EXHAUST INLET OR RETURN (SIDE WALL)
	CD	CONDENSATE DRAIN			AUTOMATIC AIR VENT			GRILLE OR REGISTER, SIDEWALL
		GAS COCK			PRESSURE GAGE			LOUVER AND SCREEN
		EXPANSION VALVE		T <sub>C</sub>	THERMOSTAT (COOLING ONLY)			LOUVER, DOOR OR WALL
		THERMOSTATIC EXPANSION VALVE		T <sub>H</sub>	THERMOSTAT (HEATING ONLY)			DOOR GRILLE
		GATE VALVE		T	THERMOSTAT (COOLING & HEATING)			UNDERCUT DOOR
		SWING CHECK VALVE			THERMOSTAT REMOTE BULB			CEILING DIFFUSER, RECTANGULAR
		NON-SLAM CHECK VALVE			SENSING ELEMENT WELL			DIFFUSER, LINEAR
		BUTTERFLY VALVE			PUMP (INDICATE USE)			GRILLE OR REGISTER, CEILING
	PS	PRESSURE SWITCH		FD S 1,2	FIRESTAT			ROOM NUMBERS
		TURN DOWN			CENTRIFUGAL FAN			NOTES
		RISER UP (ELBOW)			PROPELLER FAN			GRILLES, REGISTERS & DIFFUSERS **
		BRANCH CONNECTION OUT OF TOP			DIRECTION OF FLOW			PLUMBING FIX, & EQUIP. ***
		BRANCH CONNECTION OUT OF BOTTOM			DUCT SIZE, FIRST FIGURE IS SIDE SHOWN			PLUMBING RISER
		BRANCH CONNECTION OUT OF SIDE			DUCT SECTION, POSITIVE PRESSURE, FIRST FIGURE IS TOP		FD	FIRE DAMPER
		CAP ON END OF PIPE			DUCT SECTION, NEGATIVE PRESSURE		T2	THERMOSTAT, AVERAGING & REFERENCE NO.
		PLUGGED TEE		CHWS	CHILLED WATER SUPPLY		FZ3	FREEZESTAT & REFERENCE NO.
	TE-3	TEMPERATURE SENSING ELEMENT & REFERENCE NO.		CHWR	CHILLED WATER RETURN		M	DAMPER MOTOR, 2-POSITION
	TS-5	THERMAL SWITCH & REFERENCE NO.		HWS	HEATING HOT WATER SUPPLY		RA	REVERSE ACTING
	C6	CONTROLLER & REFERENCE NO.		HWR	HEATING HOT WATER RETURN		DA	DIRECT ACTING
	HE12	HUMIDITY SENSING ELEMENT & REFERENCE NO.		CWS	CONDENSER WATER SUPPLY		NO	NORMALLY OPEN
	DPS8	DIFFERENTIAL PRESSURE SWITCH & REFERENCE NO.		CWR	CONDENSER WATER RETURN		NC	NORMALLY CLOSED
	PS2	PRESSURE SWITCH & REFERENCE NO.		DP7	DIFFERENTIAL PRESSURE TRANSDUCER & REFERENCE NO.	<p>LETTER INDICATES SECTION</p> <p>SHEET NUMBER WHERE SECTION IS DRAWN</p> <p>NUMBER INDICATES ELEVATION OR DETAIL</p> <p>SHEET NUMBER WHERE ELEVATION/DETAIL IS TAKEN</p>		
	R20	RELAY & REFERENCE NO.		H-O-A	HAND - OFF - AUTOMATIC			
	HP4	HIGH PRESSURE SWITCH & REFERENCE		A6	AQUASTAT & REFERENCE NO.	<p>RESISTANCE TEMPERATURE TRANSMITTER</p>		
	SP1	STATIC PRESSURE TRANSDUCER & REFERENCE NO.		DDC	DIRECT DIGITAL CONTROL			
	A.P.	ACCESS PANEL		C	COMMON	<p>DAMPERS, MODULATING</p>		
	AV	ACID VENT			SELECTOR SWITCH			
	AW	ACID WASTE			GROUND	<p>FUSE</p>		
	AAV	AUTOMATIC AIR VALVE			FUSE			
		TOGGLE SWITCH						

**GENERAL NOTES**

- WASTE OR SOIL HORIZONTAL PIPING SHALL BE SLOPED AS FOLLOWS:
  - PIPING 3" AND SMALLER 1/4" PER FOOT
  - PIPING 4" AND LARGER 1/8" PER FOOT
- PROVIDE ACCESS PANELS ON NON-ACCESSIBLE WALLS AND CEILING AT ALL WATER HAMMER ARRESTORS, ISOLATION VALVES AND HYDRONIC CONTROL VALVES.

\*\* = SEE SCHEDULE FOR SIZES  
 \*\*\* = SEE SCHEDULE FOR TYPE

APPROVED	4 JUN 92	REVISED TO REFLECT W.I. CHANGE
DESIGNED BY	E. ELBERT	
DRAWN BY	E. ELBERT	
REVIEWED BY	T. WAN	
SUBMITTED BY		
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
<b>FIRE TRAINING COMPLEX</b> <b>MECHANICAL LEGEND AND GENERAL NOTES</b>		
CONTR. NO. DACAGS-92-C-0155	DATED: JUN 1992	SEQUENCE NO.
DRAWING NUMBER	SHEET NO.	199
	M-1 OF 44	



P-NO.	DESCRIPTION	PIPE SIZE (ROUGH-IN)				REMARKS
		WASTE	VENT	CW	HW	
P-1	WATER CLOSET	4"	2"	1"		FLUSH VALVE (FL. MOUNTED)
P-1A	WATER CLOSET	4"		1"		W.C.A. FLUSH VALVE (FL. MOUNTED)
P-2	LAVATORY	2"		1/2"	1/2"	(COUNTERTOP)
P-2A	LAVATORY	2"		1/2"	1/2"	W.C.A. (COUNTERTOP)
P-3	LAVATORY	2"		1/2"	1/2"	
P-4	URINAL	2"		3/4"		(WALL HUNG)
P-4A	URINAL	2"		3/4"		(WALL HUNG) W.C.A.
P-5	MOP BASIN 32X32	3"		3/4"	3/4"	
P-5A	MOP BASIN 24X24	3"		3/4"	3/4"	
P-6	ELECTRIC WATER COOLER	2"		1/2"		
P-6A	ELECTRIC WATER COOLER	2"		1/2"		
P-6B	ELECTRIC WATER COOLER	2"	2"	1/2"		
P-7	SHOWER & EYEWASH			1 1/4"		(EMERGENCY)
P-8	SHOWER UNIT			1/2"	1/2"	
P-9	SINK (LAB)	2"	2"	1/2"	1/2"	
P-9A	SINK (KIT.) SINGLE COMPARTMENT	2"		1/2"	1/2"	
P-9B	SINK (BATTERY)	2"		1/2"		
P-9C	SINK (DOUBLE JANITOR'S)	2"		1/2"	1/2"	
P-10	WASHFOUNTAIN, CIRCULAR	2"		1"	1"	
P-10A	WASHFOUNTAIN, SEMI-CIRCULAR	2"		1/2"	1/2"	
FD-1	FLOOR DRAIN	2"	2"			
FD-2	NOT USED					
FD-3	FLOOR DRAIN (MECH. RM.)	4"	2"			
FD-4	FLOOR DRAIN	3"	2"			
FD-5	FLOOR DRAIN	4"	2"			(ACID RESISTANT)
FD-6	NOT USED					
FD-7	FLOOR DRAIN	2"	2"			GANG SHOWER
FD-8	FLOOR DRAIN	2"				SINGLE STALL SHOWER
FD-9	FLOOR DRAIN	4"				
OSD	OPEN SITE DRAIN	2"				
FD-P	FLOOR DRAIN	2"				W/ PRIMER
FD-P1	FLOOR DRAIN	2"				W/ PRIMER
FD-P2	FLOOR DRAIN (DARK ROOM)	2"				(ACID RESISTANT W/ PRIMER)
TD-1	TROUGH DRAIN 12" WIDE LENGTH VARIES, SEE PLAN	3"				
HB	HOSE BIBB			1/2"		
F.R.W.H.	WALL HYDRANT (FREEZE RESISTANT)			3/4"		

W.C.A. = WHEELCHAIR ACCESSIBLE

DOMESTIC HOT WATER BOILER SCHEDULE						
UNIT	BLDG.	INPUT BTUH	OUTPUT BTUH	OPERATING TEMPERATURE °F	FUEL	REMARKS
B-1	FIRE TRAINING FACILITY	715,000	579,000	140	N. GAS	

DOMESTIC GAS FIRED WATER HEATER SCHEDULE						
UNIT	BLDG.	RECOVERY G.P.H.	STOR. CAP. (GALS.)	INPUT (BTUH)	FUEL	REMARKS
GWH-1	VEHICLE MAINT. FACILITY	99	67	120,000	N. GAS	PLUMBING SHALL BE SCHEDULED AS FOLLOWS.
GWH-2	TRAINER SERVICES FACILITY	50	50	60,000	N. GAS	PLUMBING SHALL BE SCHEDULED AS FOLLOWS.

AIR COMPRESSOR SCHEDULE							
UNIT	BLDG.	CAPACITY (ACFM)	PRESSURE (PSI) NOM.	INTAKE TEMP. °F	UNIT ELEC. HP/VOLTS/PH.	STOR. TANK CAP. (GAL)	REMARKS
CMPR-1	FIRE TRAINING HIGH BAY	30	135	99	10/460/3	240	①
CMPR-2	VEHICLE MAINT. FACILITY	25	125	99	10/460/3	110	②
CMPR-3	TRAINER SERVICES FACILITY	30	125	99	10/460/3	110	①

① COMPRESSOR IS TO BE FACTORY MOUNTED TO TANK.  
 ② COMPRESSOR SHALL BE FULLY ENCLOSED SOUND LEVEL SHALL NOT EXCEED 15 DBA WITHIN 10' OF COMPRESSOR, MOUNT TANK SEPARATE FROM UNIT.

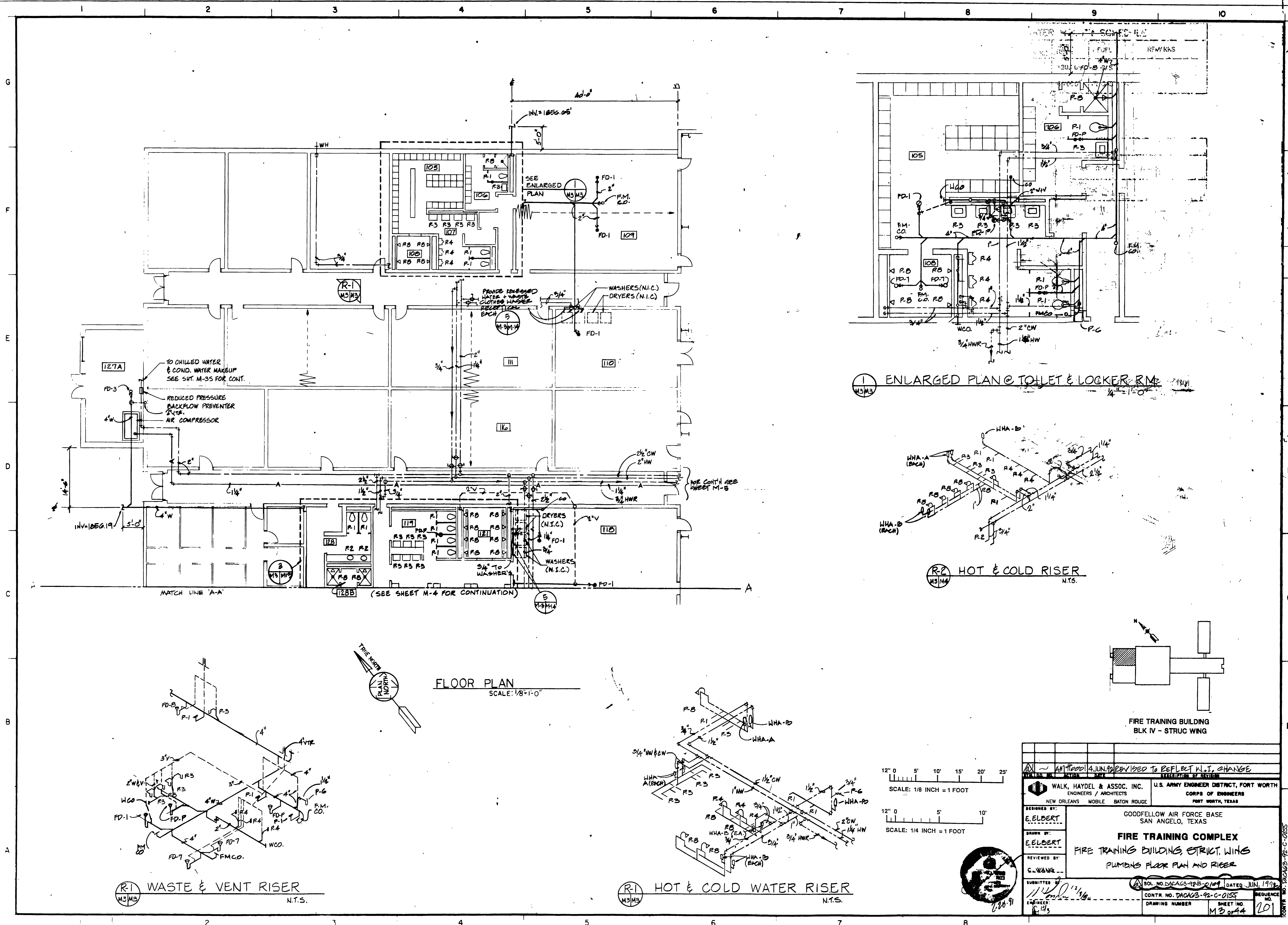
DOMESTIC CIRCULATING PUMP						
NO.	SERVING	GPM	TD HEAD IN FT.	HP/VOLTS/PH.	PUMP RPM	REMARKS
HWCP-1	FIRE TRAINING FACILITY	3	20	1/6 /115/1	1750	

WATER SOFTENER SCHEDULE						
EXCHANGE CAPACITY GRAIN	RESIN CU FT	CONTINUOUS SERVICE FLOW	TANK DIM. SOFTNER	TANK DIM. BRINE	SALT CAPACITY	SERVING
900,000	30	185	42X60	48X60	4500	FIRE TRAINING FACILITY

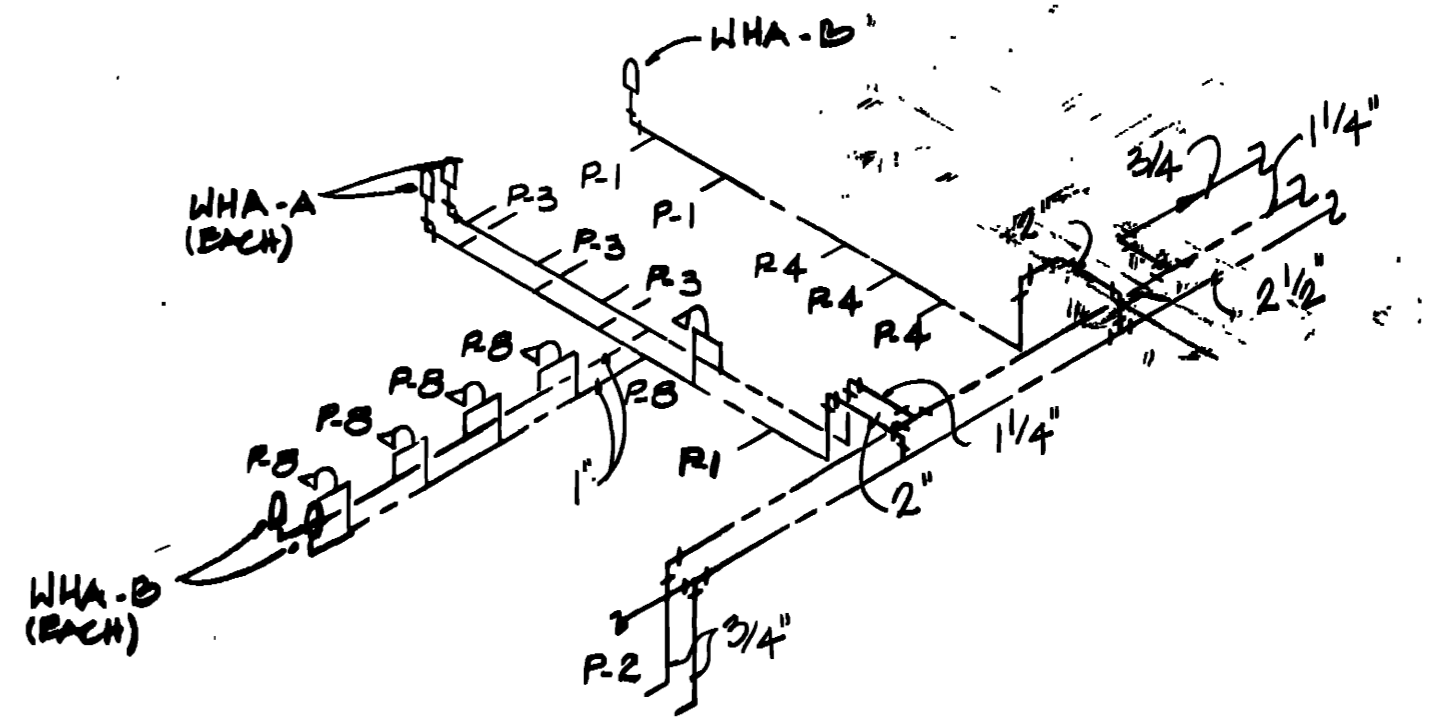
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS  
 NEW ORLEANS MOBILE BATON ROUGE  
 U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS  
**GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS**  
**FIRE TRAINING COMPLEX EQUIPMENT AND FIXTURE SCHEDULES PLUMBING**  
 DESIGNED BY: E. ELBERT  
 DRAWN BY: E. ELBERT  
 REVIEWED BY: C. WANG  
 SUBMITTED BY: [Signature]  
 8/10/92 12/1/91  
 SOL. NO. DACAG3-92-B-0117 DATED: JUN. 1992  
 CONTR. NO. DACAG3-92-C-0155 SEQUENCE NO. 200  
 DRAWING NUMBER SHEET NO. M-2 OF 44

CONTR. NO. DACAG3-92-C-0155

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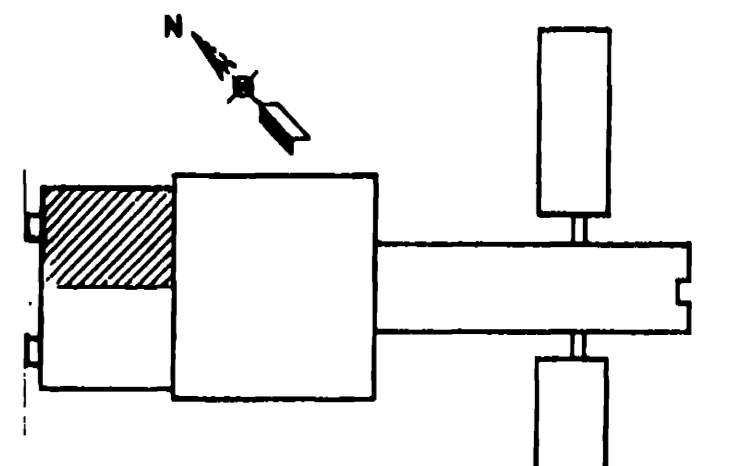


① ENLARGED PLAN @ TOILET & LOCKER RM  
 1/4" = 1'-0"



② HOT & COLD RISER  
 N.T.S.

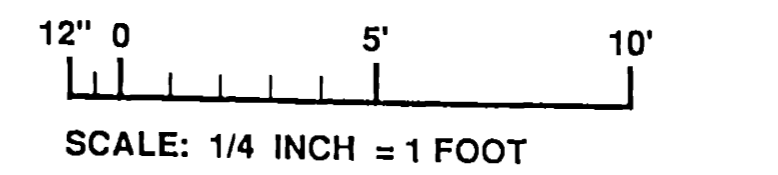
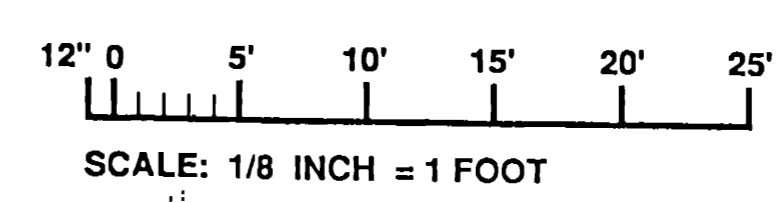
FLOOR PLAN  
 SCALE: 1/8" = 1'-0"



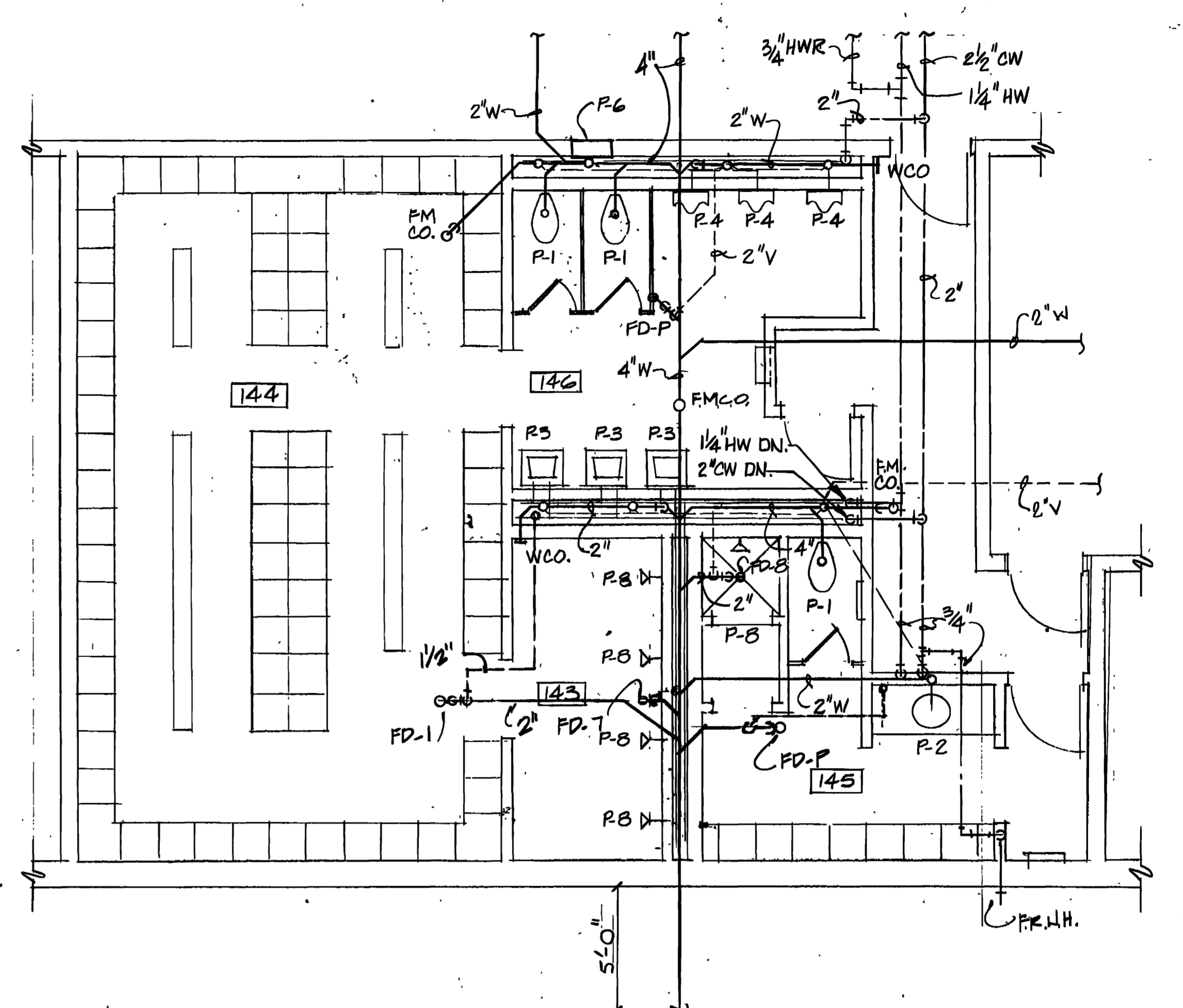
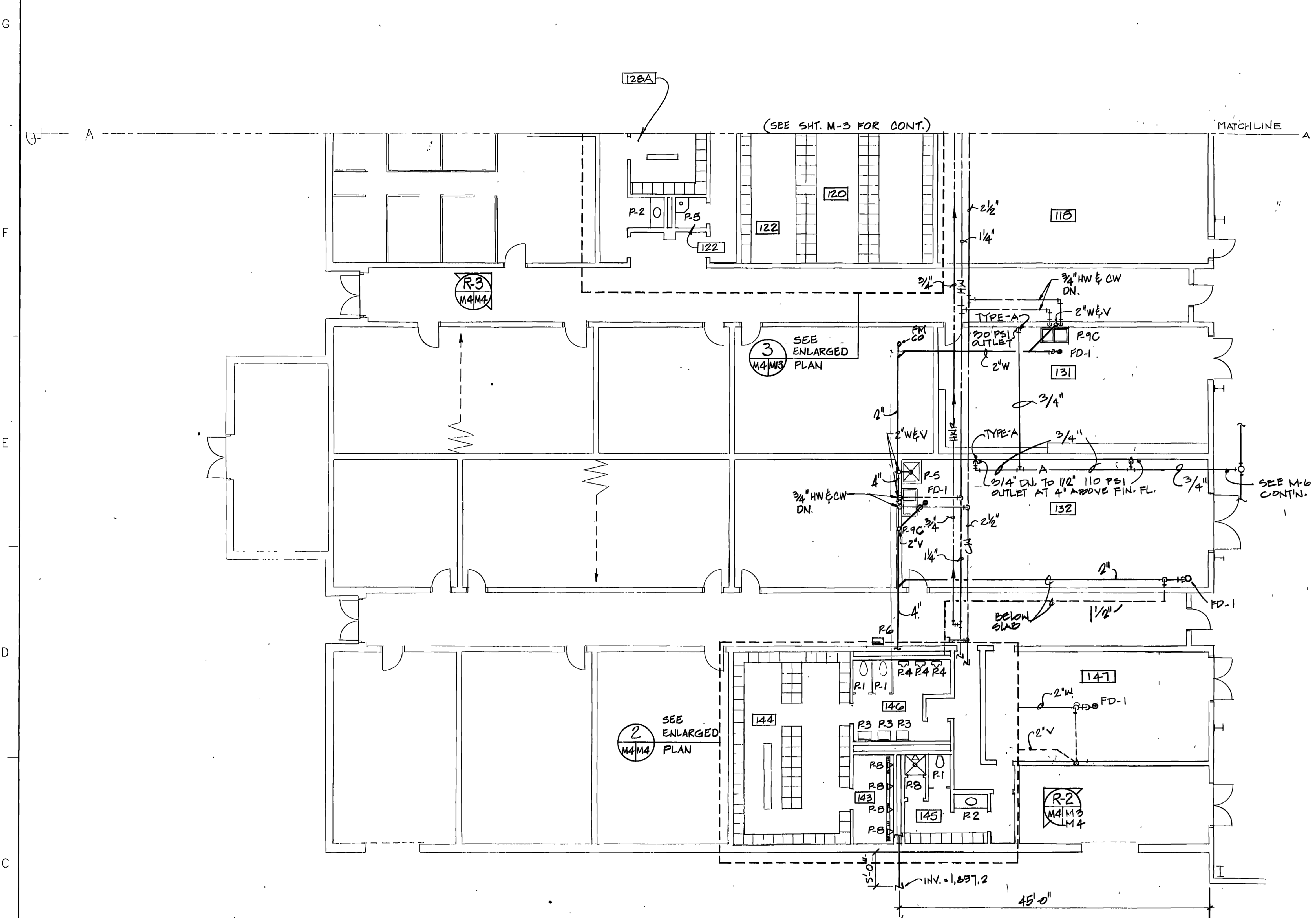
FIRE TRAINING BUILDING  
 BLK IV - STRUC WING

③ WASTE & VENT RISER  
 N.T.S.

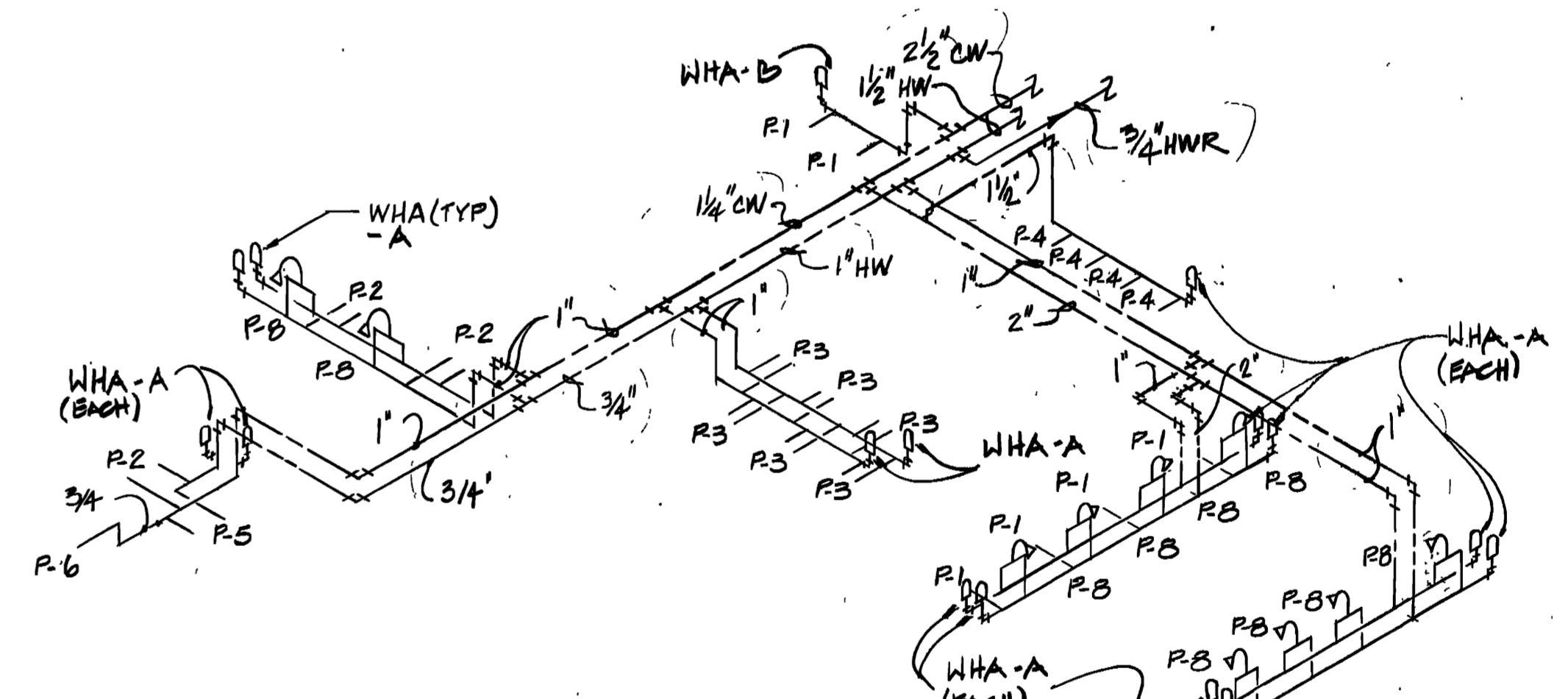
④ HOT & COLD WATER RISER  
 N.T.S.



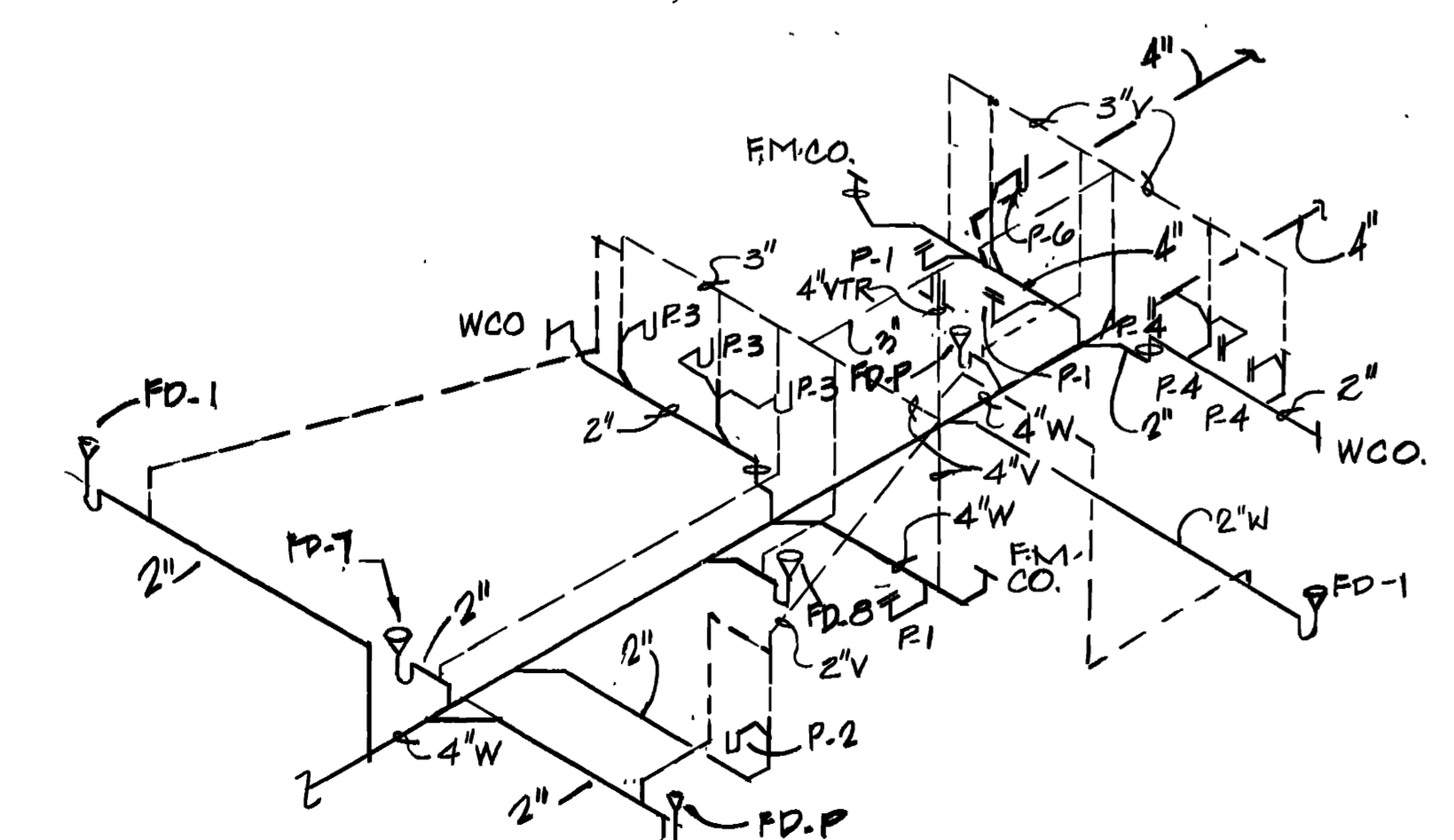
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: <b>E. ELBERT</b>		GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS	
DRAWN BY: <b>E. ELBERT</b>		<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDING, STRUCT. WING PLUMBING FLOOR PLAN AND RISER	
REVIEWED BY: <b>G. WANE</b>		SUBMITTED BY: <b>E. ELBERT</b>	
CONTRACT NO. DACAG3-92-C-0155 DRAWING NUMBER: M3 0244		DATED: JUN 1992 SHEET NO. 201	



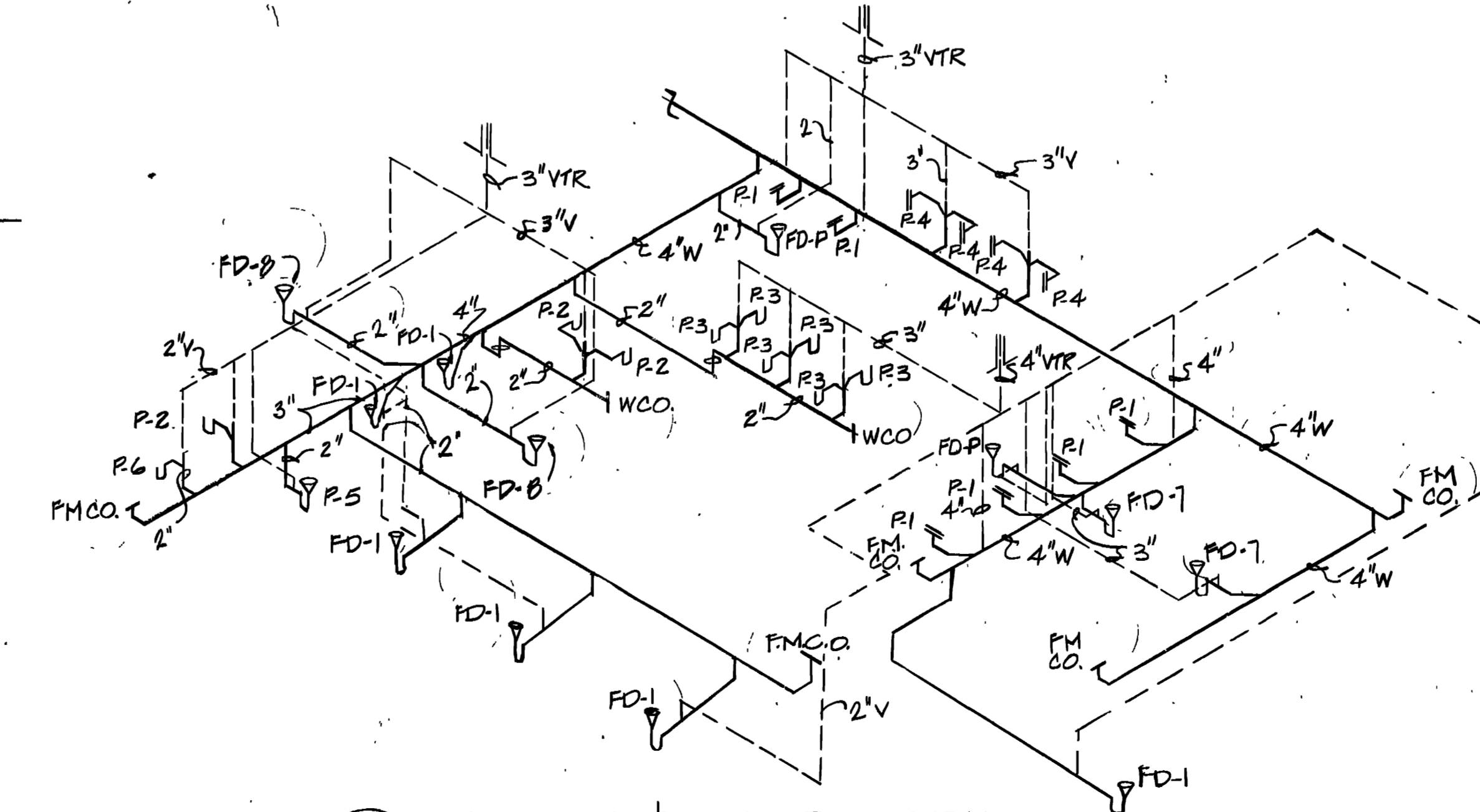
2 ENLARGED PLAN @ TOILET & LOCKER RM.  
1/4" = 1'-0"



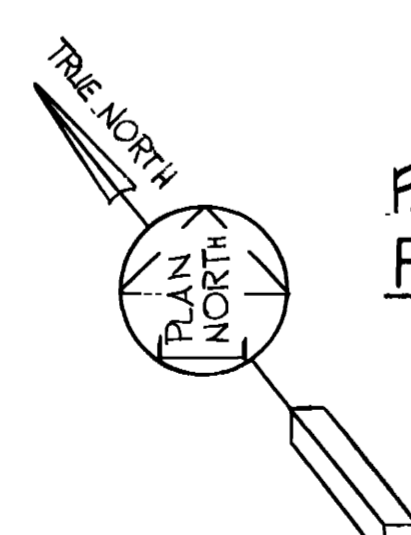
3 HOT AND COLD WATER RISER  
N.T.S.



2 WASTE & VENT RISER  
N.T.S.



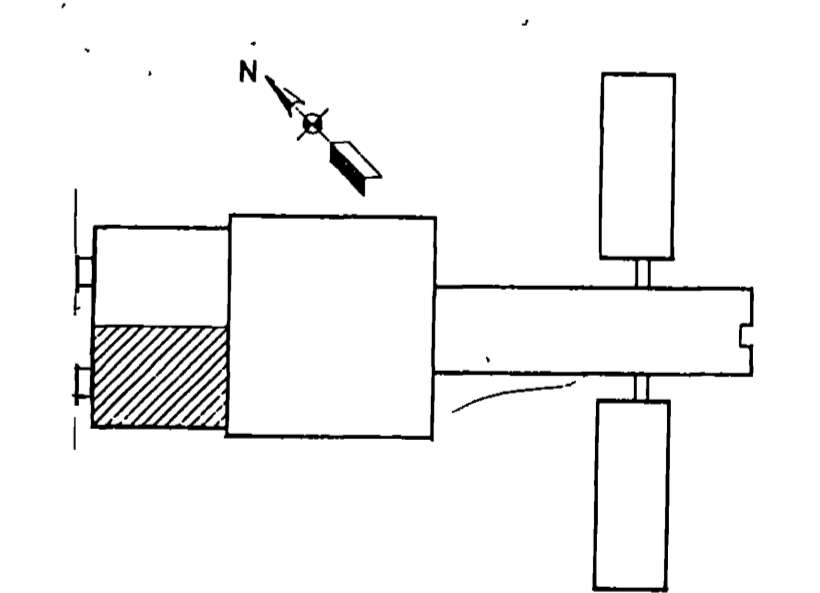
3 WASTE & VENT RISER  
N.T.S.



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

12" 0 5' 10' 15' 20' 25'  
SCALE: 1/8" INCH = 1 FOOT

12" 0 5' 10'  
SCALE: 1/4" INCH = 1 FOOT



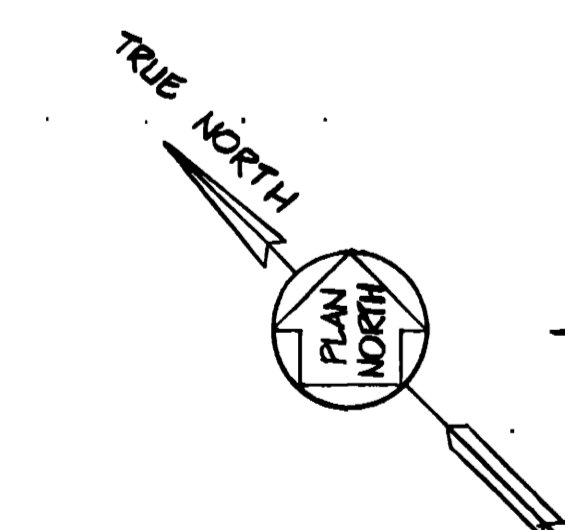
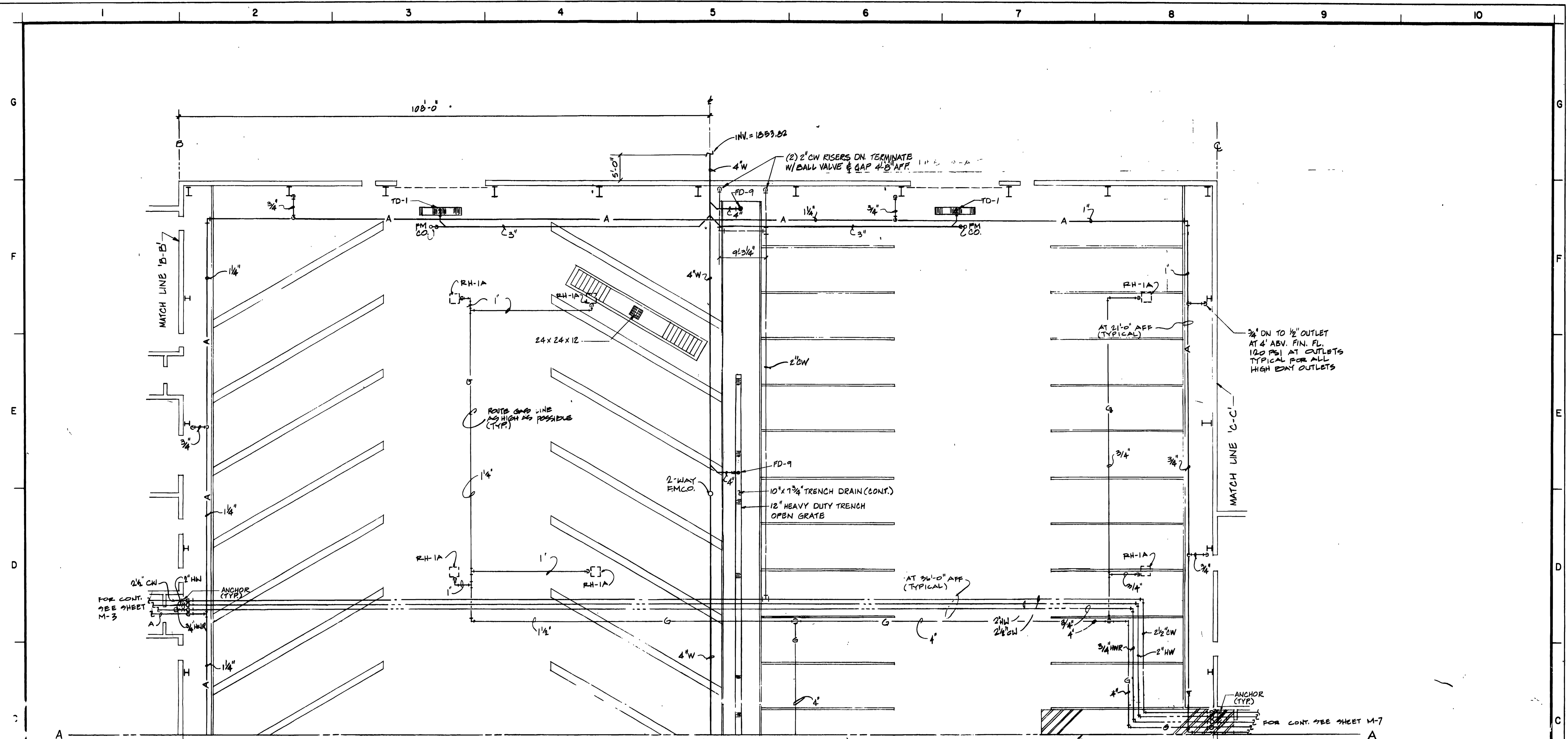
FIRE TRAINING BUILDING  
BLK III - CRASH WING

ANNOTATED JUN 12 REVISED TO REFLECT W.I. CHANGE ACTION DATE DESCRIPTION OF REVISION	
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY <b>E. ELBERT</b>	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY <b>E. ELBERT</b>	<b>FIRE TRAINING COMPLEX</b> <b>FIRE TRAINING BUILDING, BLK III, CRASH WING</b> <b>PUMING FLOOR PLAN AND RISERS</b>
REVIEWED BY <b>C. WANG</b>	SOL. NO. DACAG-92-029 DATED JUN 1992 CONTR. NO. DACAG-92-0-055 REQUIREMENT NO.
SUBMITTED BY <b>W. Mendenhall</b> 01/19/90 ENGINEER <b>RB</b> 1/13	DRAWING NUMBER <b>M4 OF 44</b> SHEET NO <b>102</b>

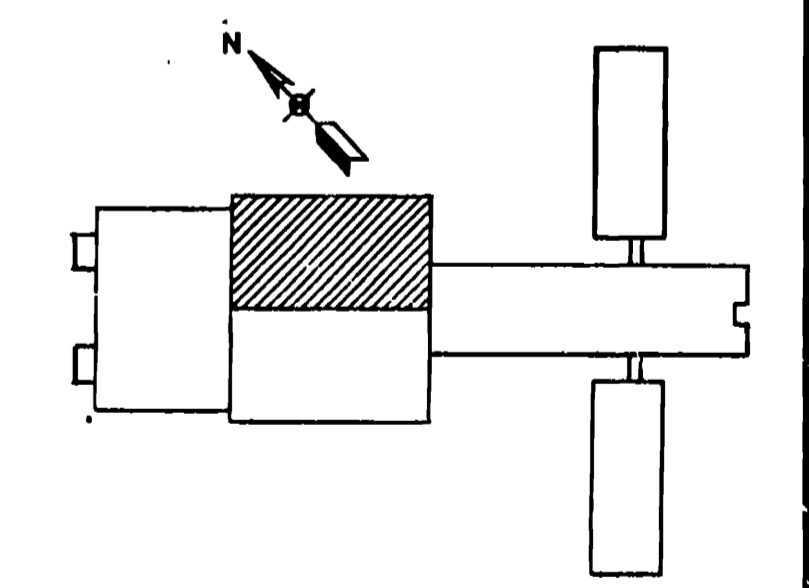
22891

CONTR. NO. DACAG-92-C-0155

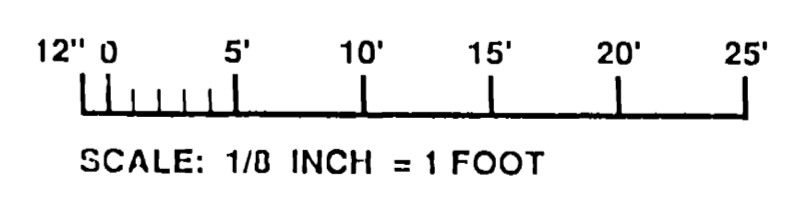
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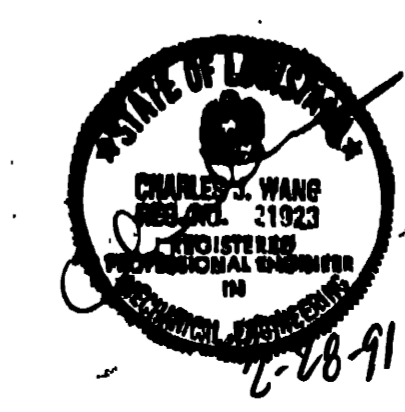
FLOOR PLAN (PLUMBING)  
1/8" = 1'-0"



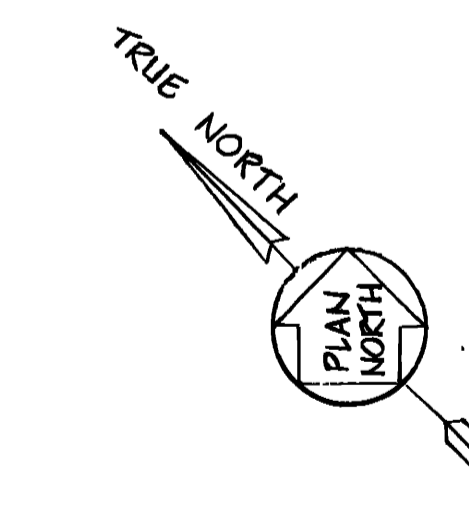
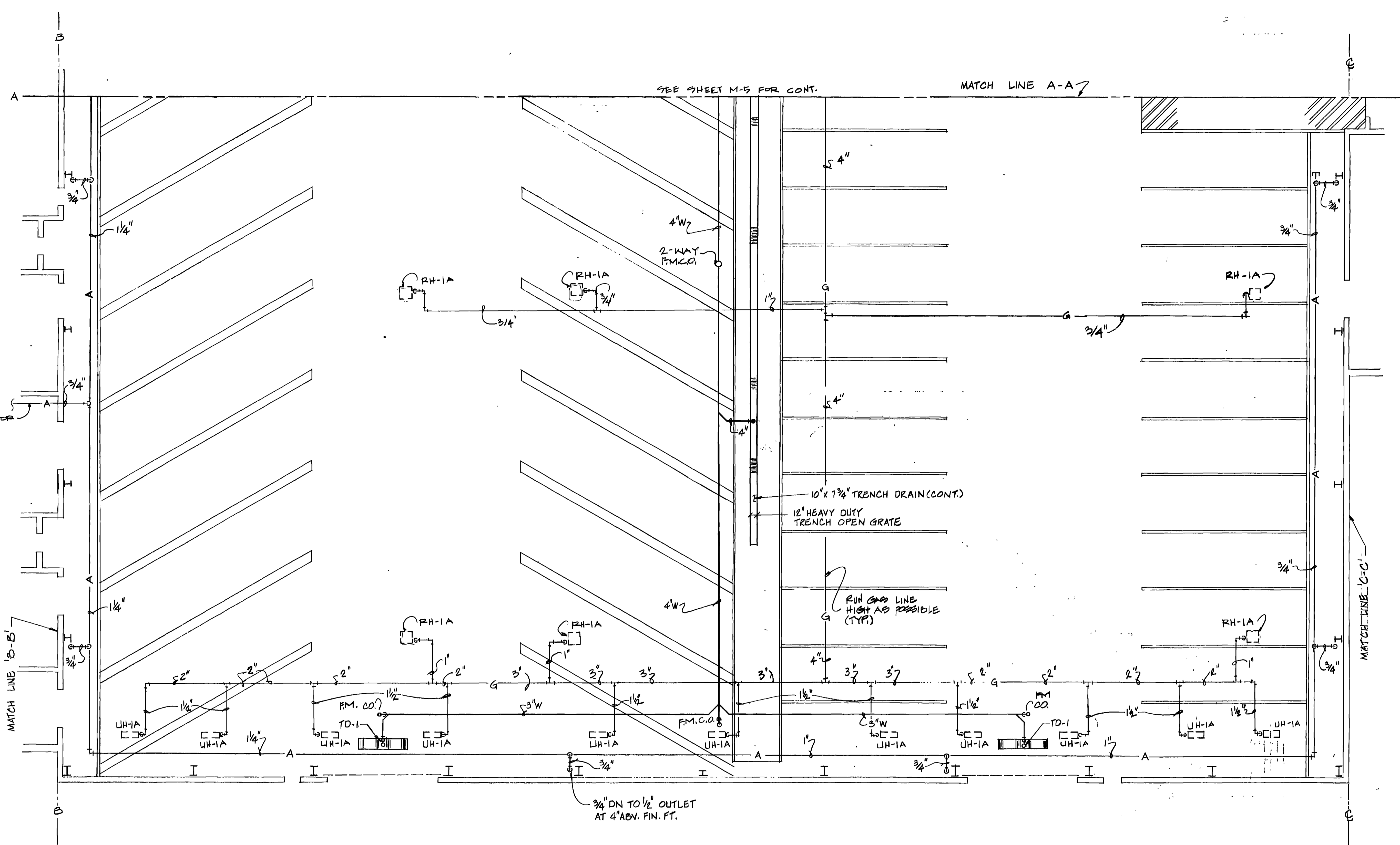
FIRE TRAINING BUILDING  
VEHICLE HIGH BAY AREA



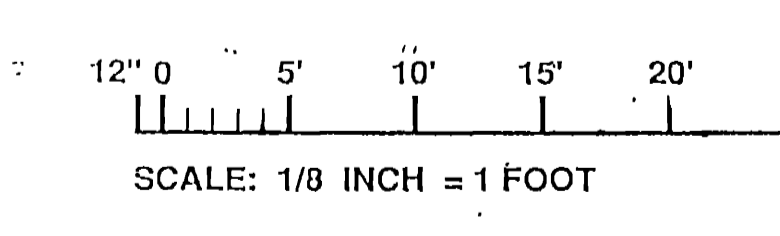
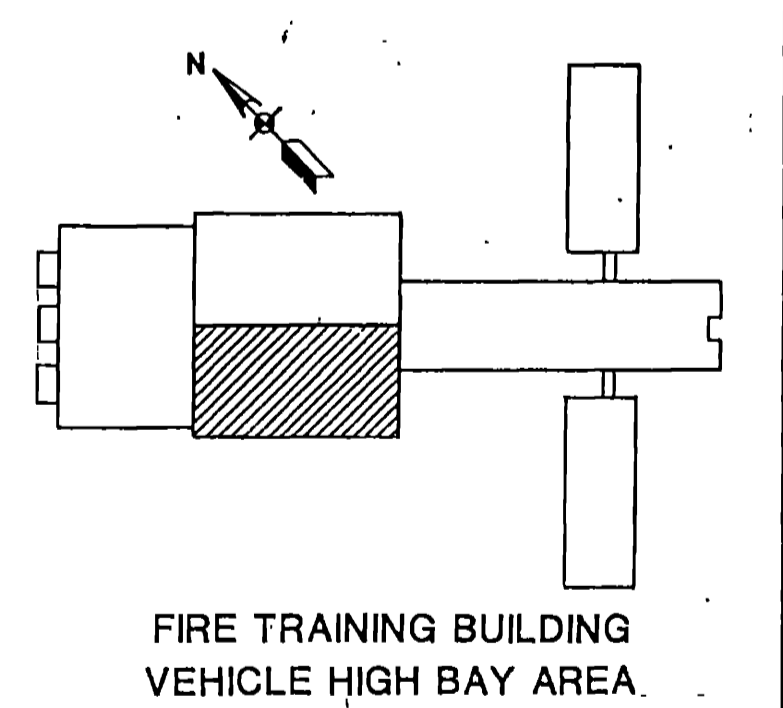
DESIGNED BY: E. ELBERT	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DRAWN BY: E. ELBERT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
REVIEWED BY: F. WANG	<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDING, VEH. HIGH BAY, NORTH PLUMBING FLOOR PLAN AND RISER
SUBMITTED BY: 1/18/92	SOL. NO. DACAG-92-B-0107 DATED: JUN. 1992
CONTR. NO. DACAG-92-C-0155	SEQUENCE NO. 203
DRAWING NUMBER 15	SHEET NO. of 4



917

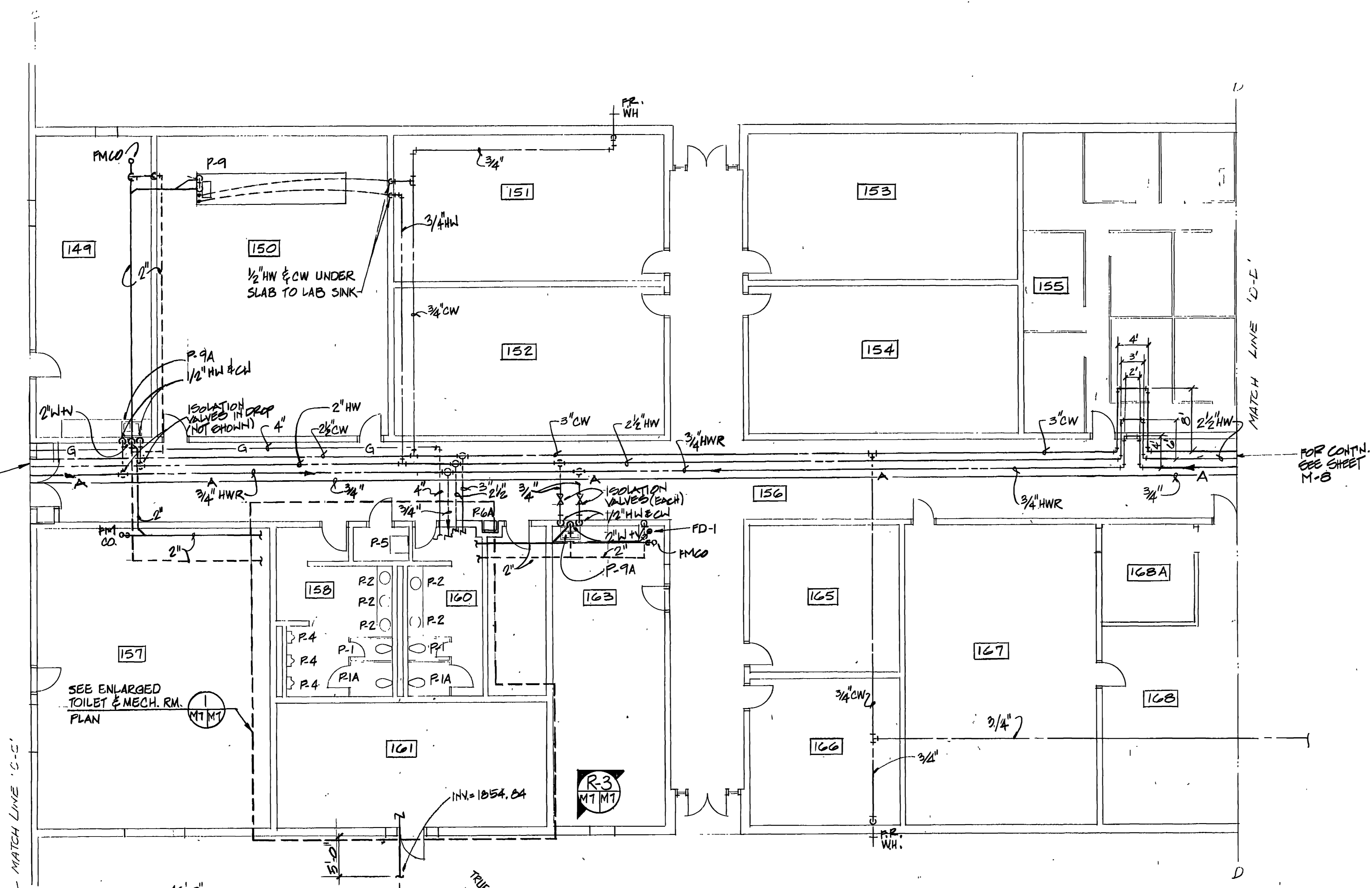


FLOOR PLAN (PLUMBING)  
1/8" = 1'-0"

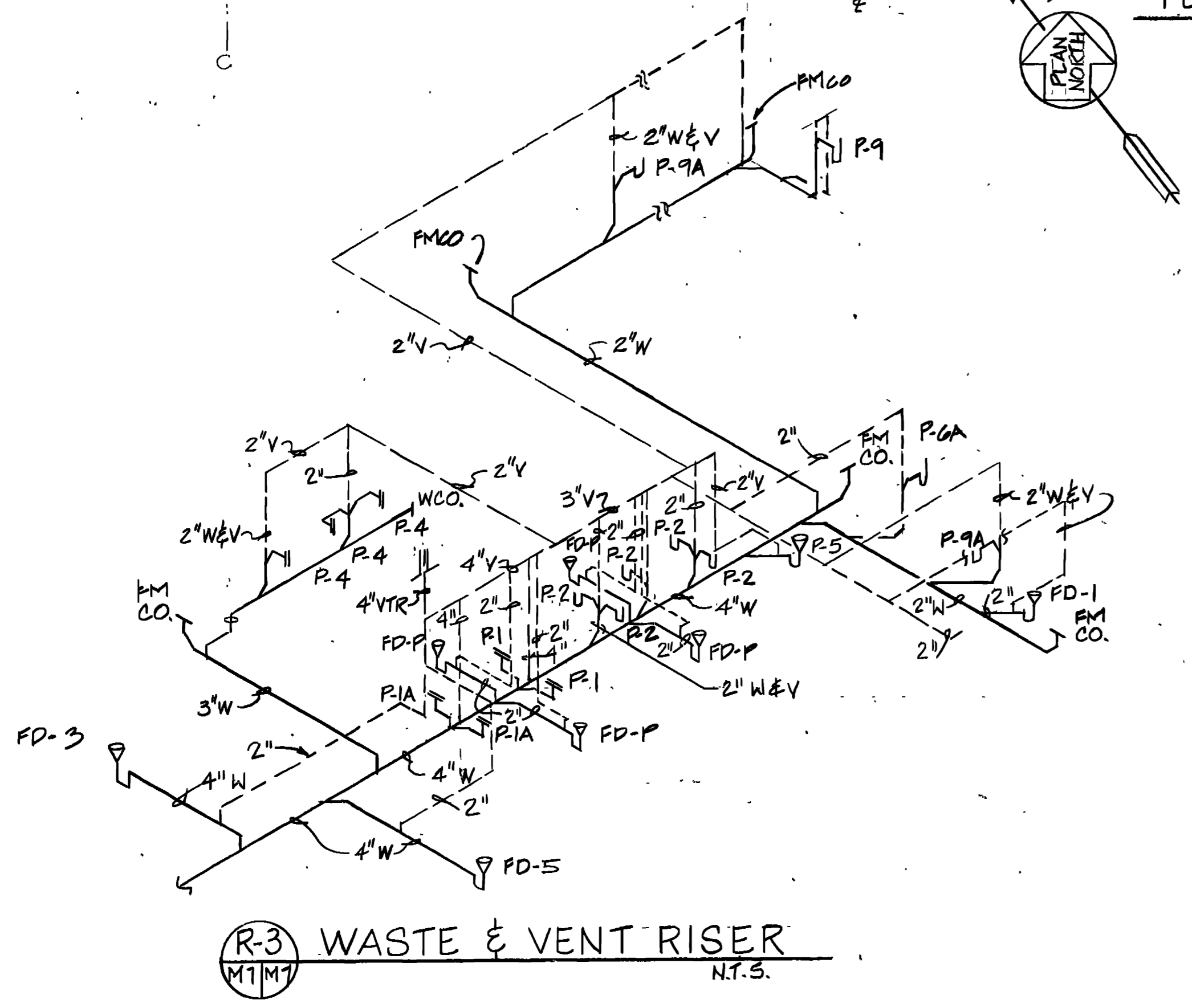


WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: <b>E. ELBERT</b>	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY: <b>E. ELBERT</b>	<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDING, VEH. HIGH BAY, SOUTH PLUMBING FLOOR PLAN AND RISERS		
REVIEWED BY: <b>C. YANCE</b>	SUBMITTED BY: <i>M. Ordway</i>		
DATE: JUN. 1992	SOL. NO. DACAGS-92-B-0109	CONTR. NO. DACAGS-92-C-0185	SHEET NO. 204

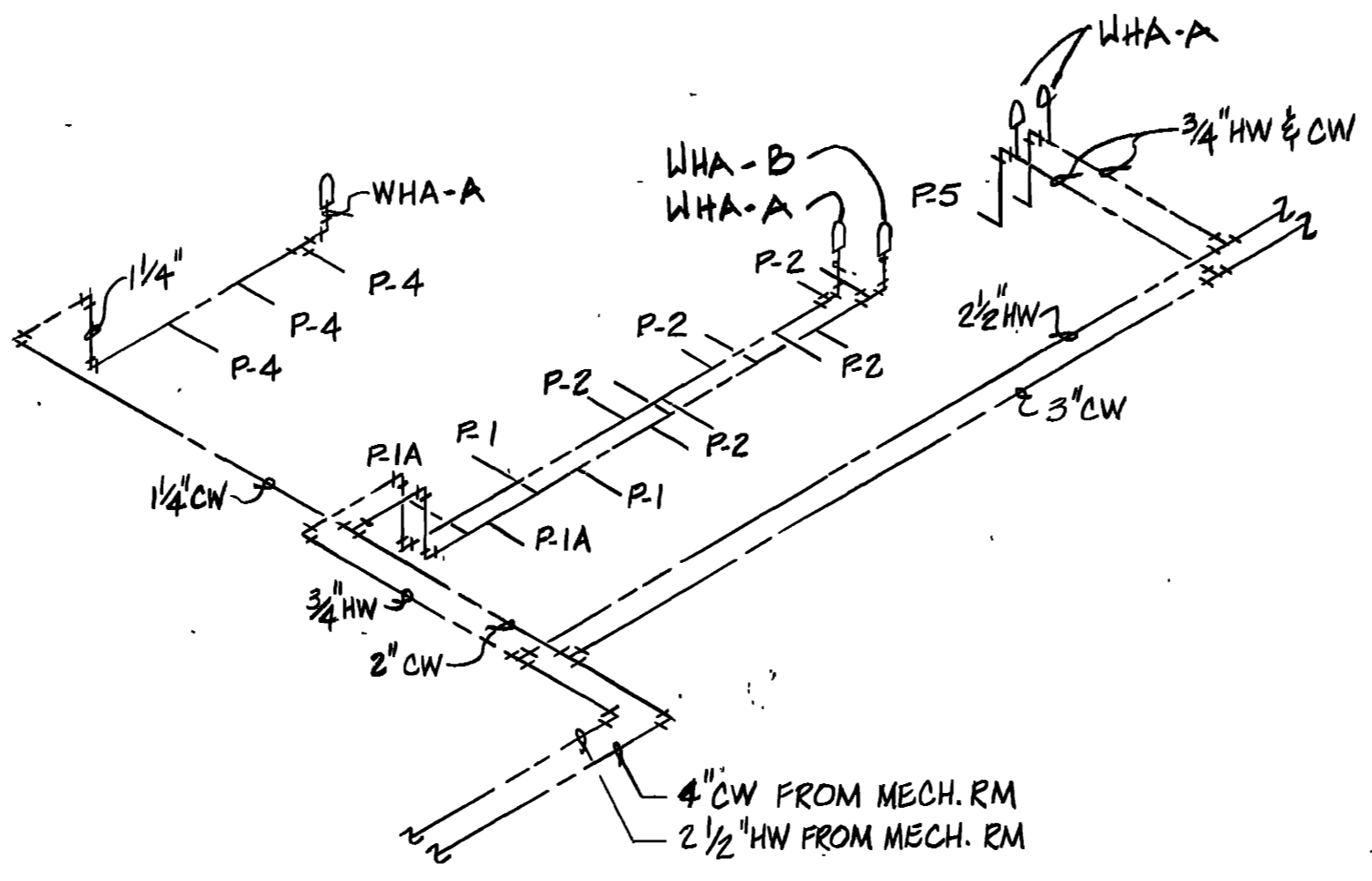
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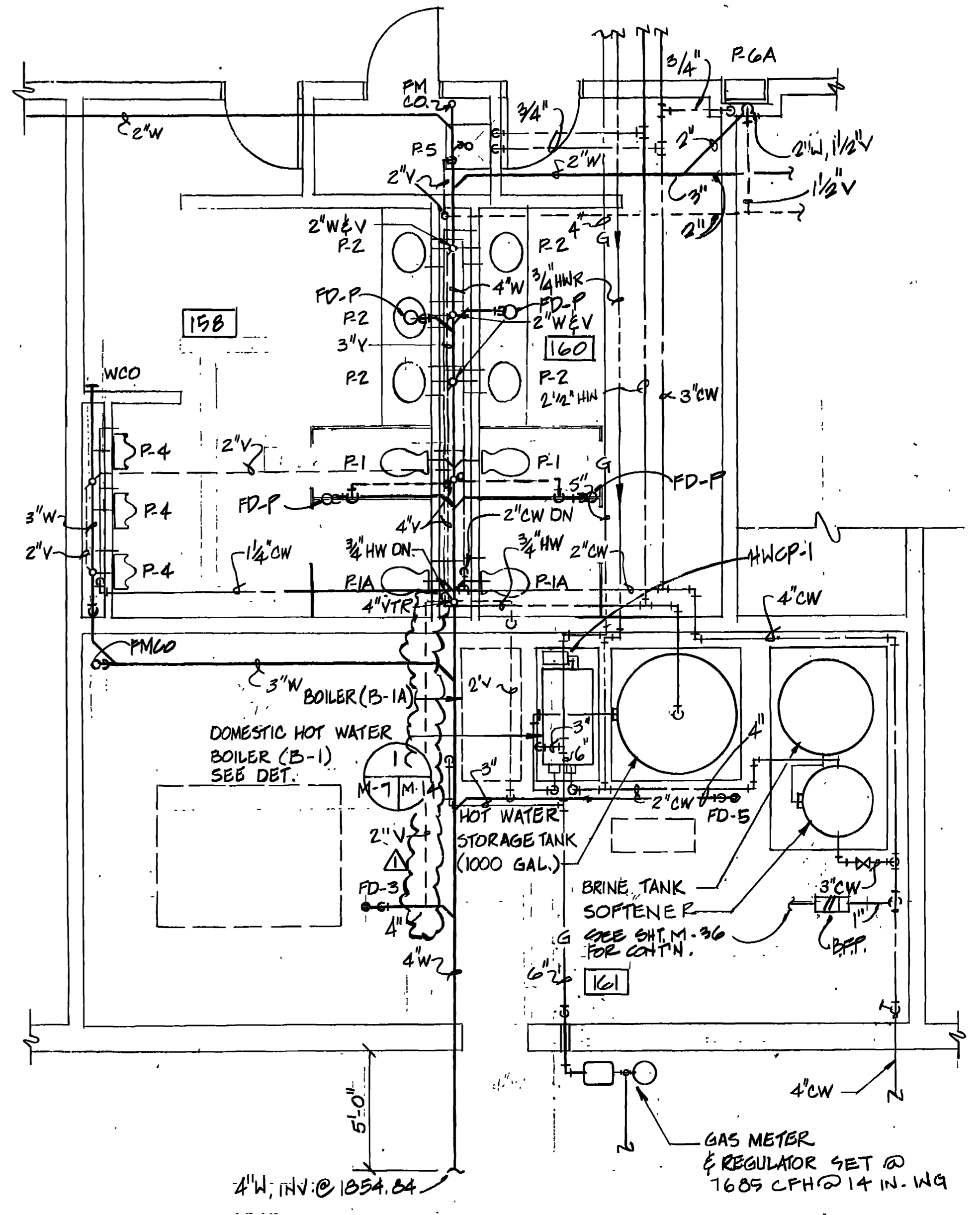
FLOOR PLAN (PLUMBING)  
1/8" = 1'-0"



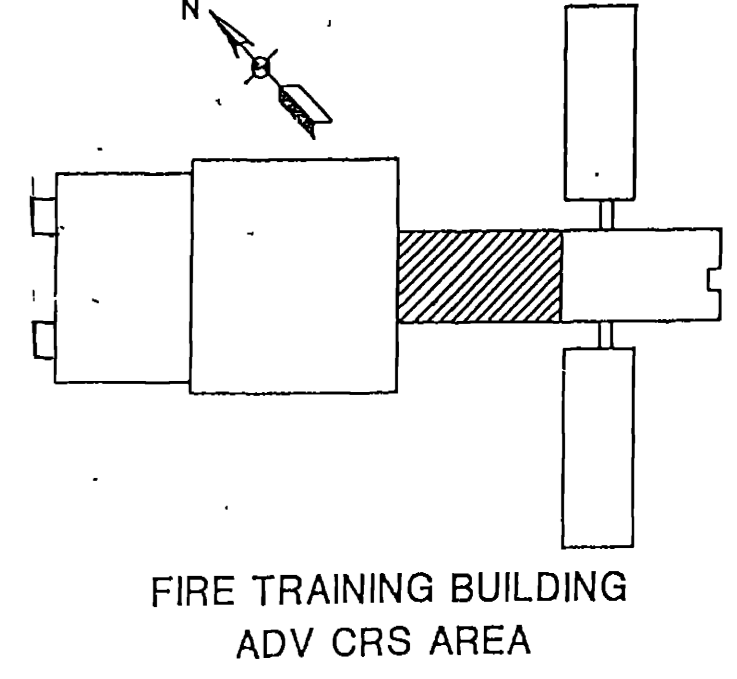
(R-3) WASTE & VENT RISER  
N.T.S.



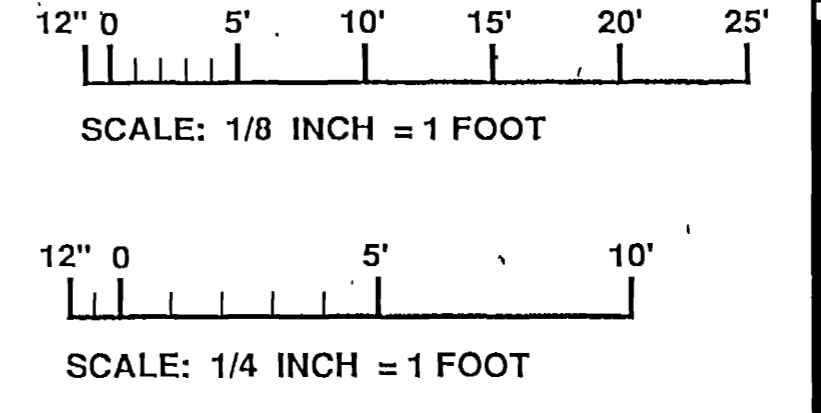
(R-3) HOT & COLD WATER RISER  
N.T.S.



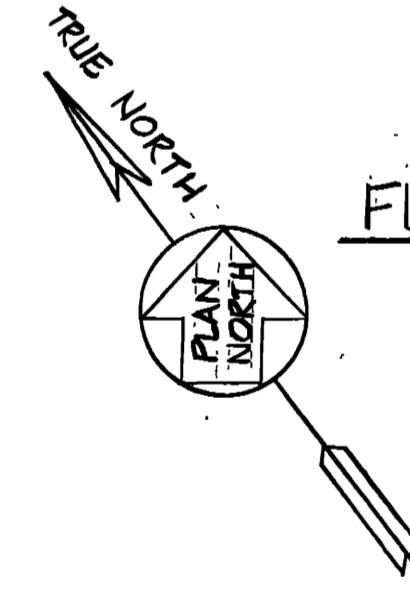
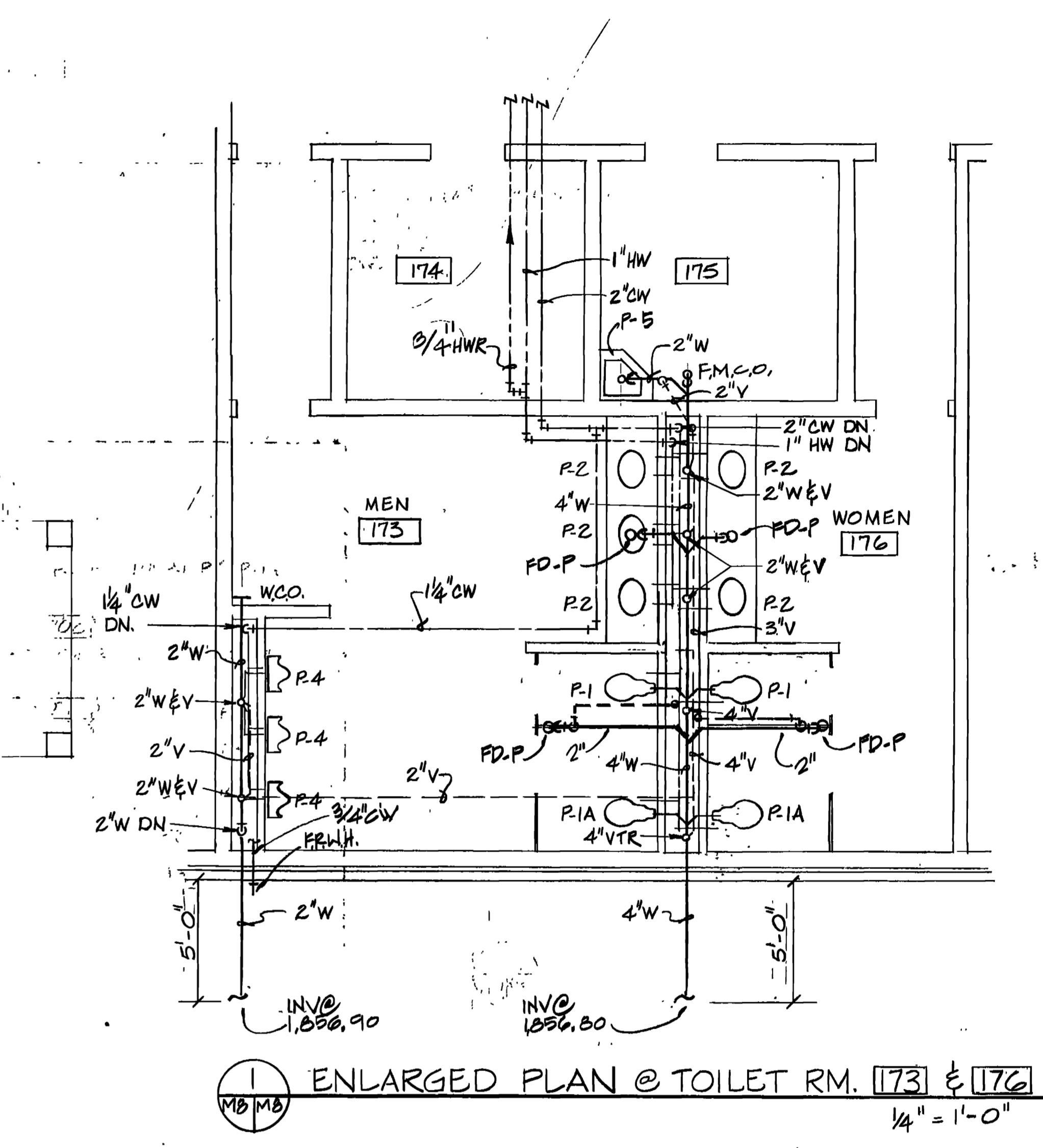
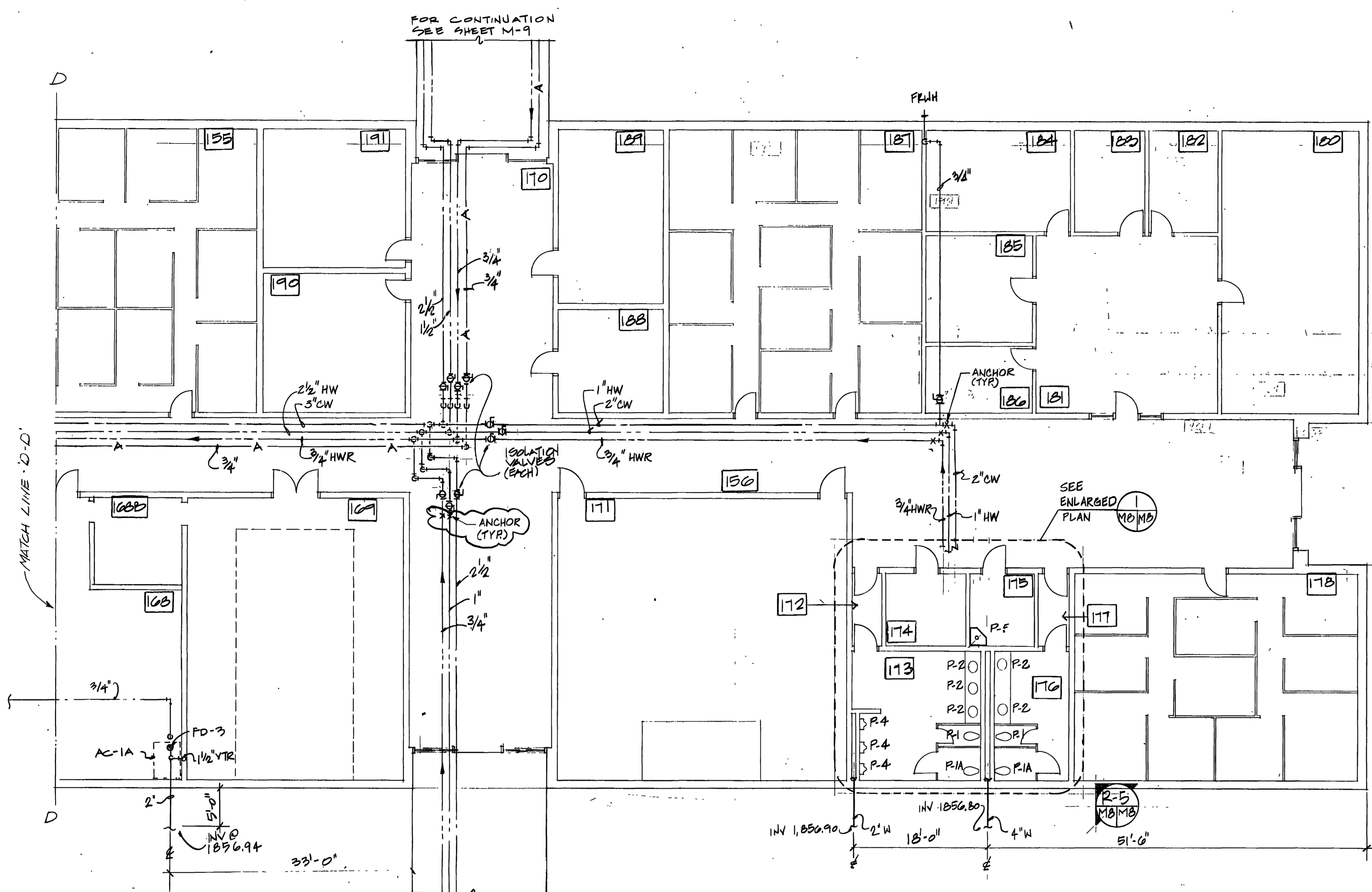
ENLARGED PLAN OF TOILET & MECH. RM  
1/4" = 1'-0"



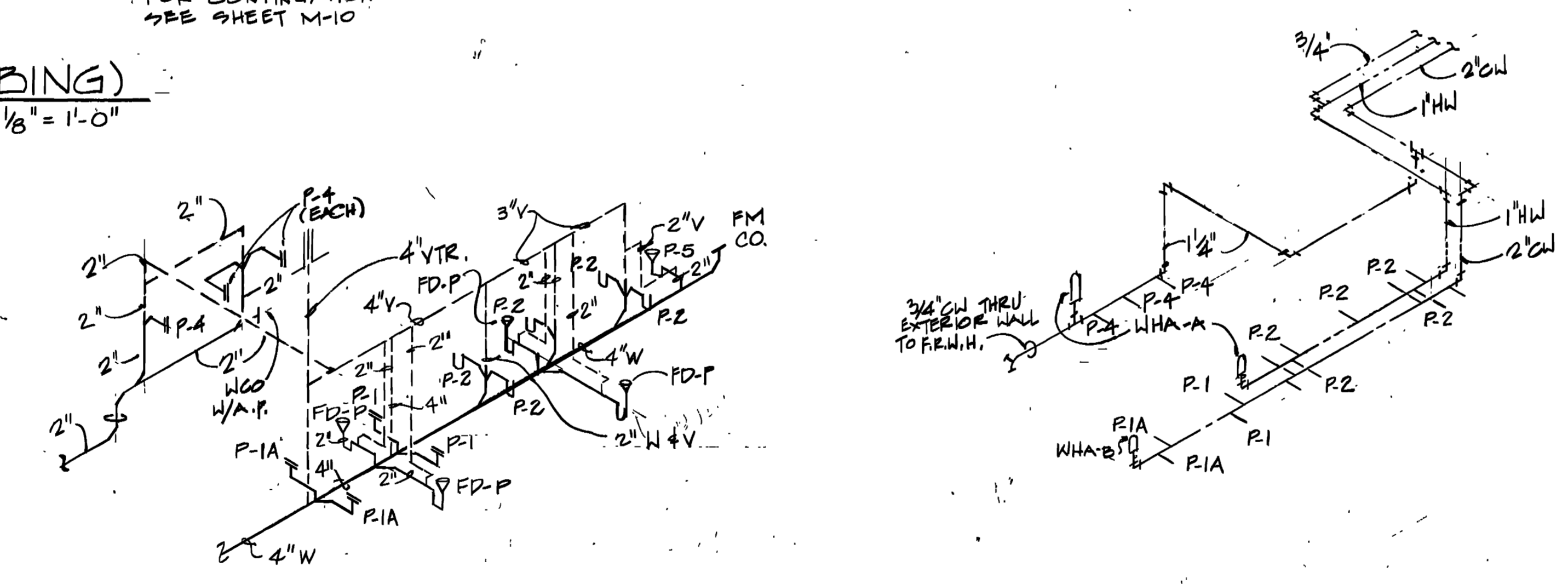
FIRE TRAINING BUILDING  
ADV CRS AREA



AM#0004 JUN. 92 REVISED TO REFLECT W-I CHANGE WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: E. ELBERT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY: E. ELBERT	<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDING, ADV. CRS. AREA PLUMBING FLOOR PLAN AND RISERS		
REVIEWED BY: C. WANG	SUBMITTED BY: [Signature] 6/12/92 [Signature] 6/15/92		
SO. NO. 02-023-92-B-009 DATED: JUN. 1992 CONTR. NO. 02-023-92-C-0155		SEQUENCE NO. DRAWING NUMBER M-7 OF 44 SHEET NO. 205	

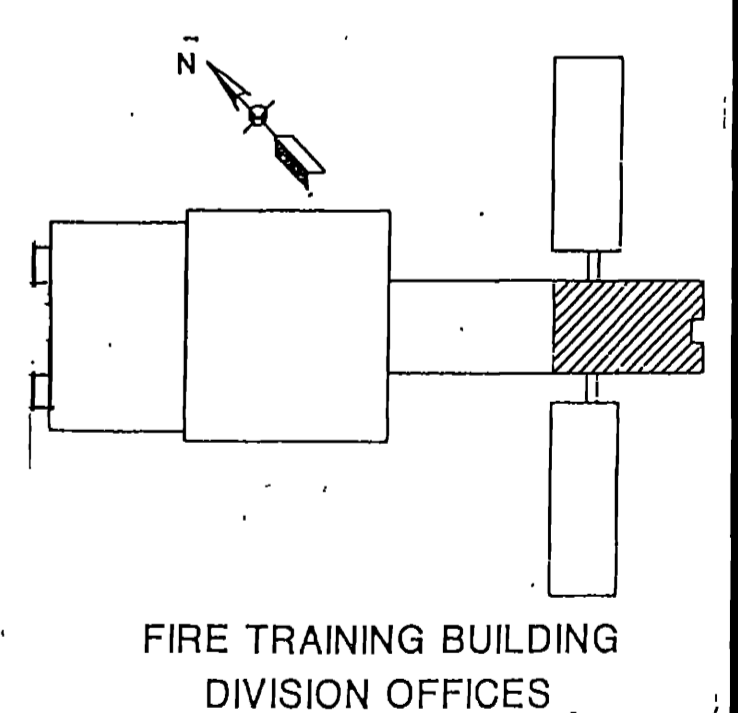
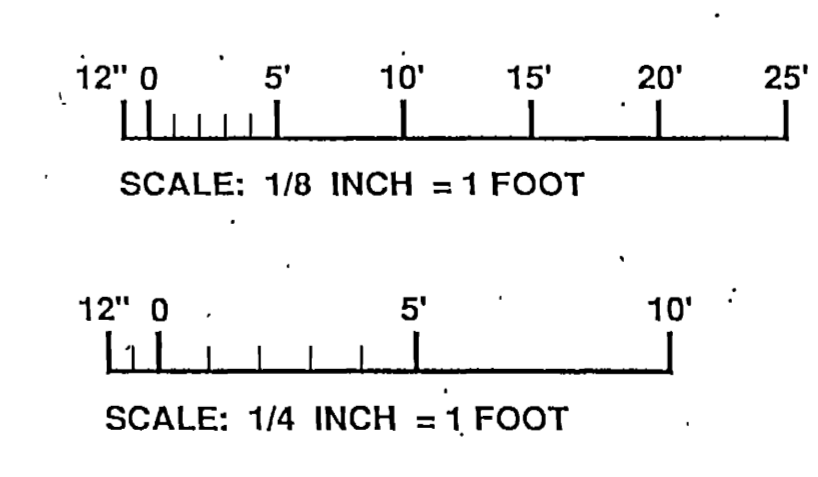


FLOOR PLAN (PLUMBING)  
1/8" = 1'-0"



(R-5) WASTE & VENT RISER

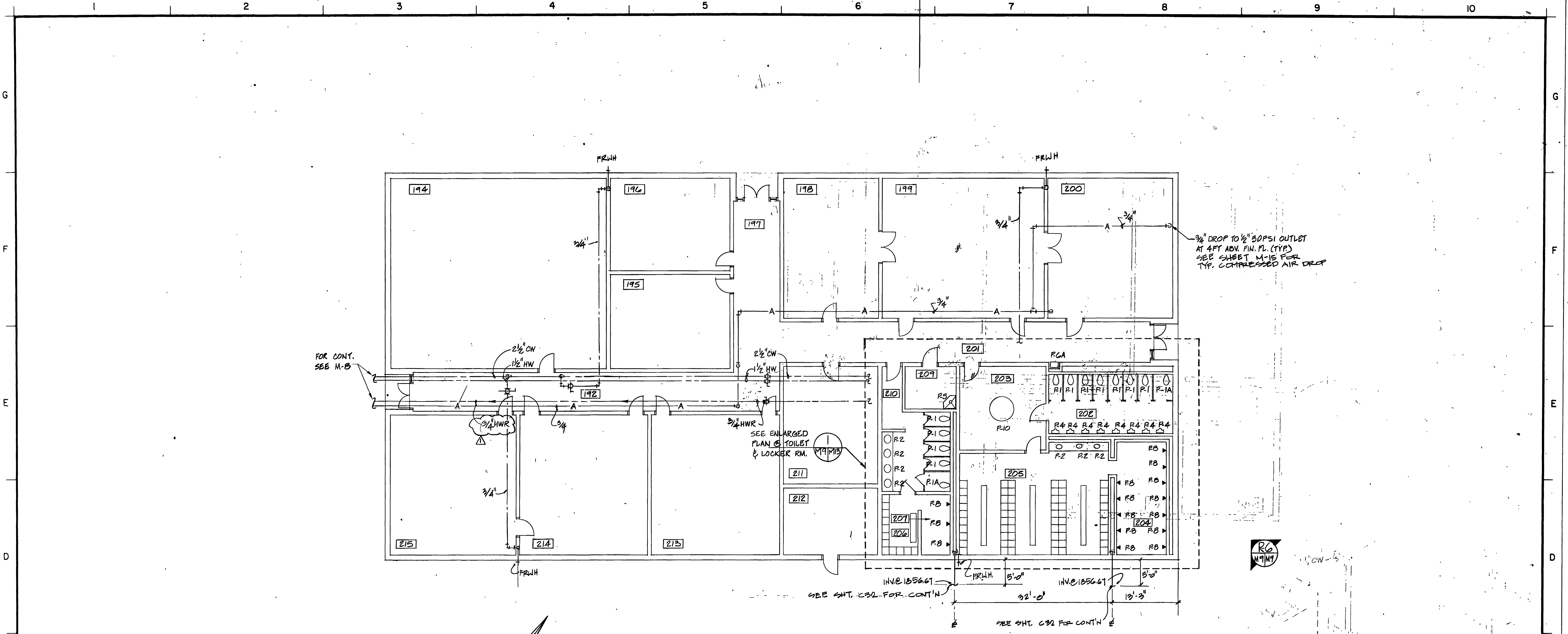
(R-5) HOT & COLD WATER RISER



4 JUN 92 REVISED TO REFLECT N.I. CHANGE WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: <b>E. ELBERT</b>	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY: <b>E. ELBERT</b>	<b>FIRE TRAINING COMPLEX</b>
REVIEWED BY: <b>C. YANG</b>	FIRE TRAINING BUILDING, DIV. OFFICES PLUMBING FLOOR PLAN AND RISERS
SUBMITTED BY: <b>M. Mendenhall</b>	SOL. NO. DACAG3-92B-0109 DATED: JUN 1992
ENGINEER NO. 123	CONTR. NO. DACAG3-92-C-0155 DRAWING NUMBER: M-80-44 SHEET NO. 206



67

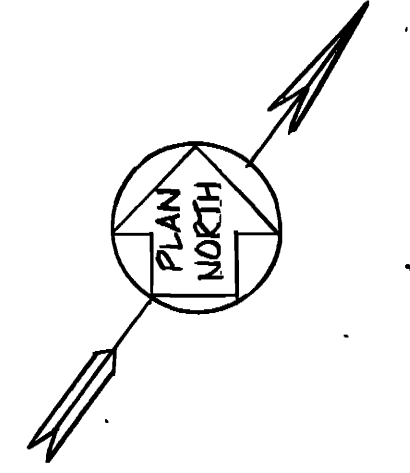


3/4" DROP TO 1/2" 30PSI OUTLET  
AT 4 FT ABN. FIN. FL. (TYP)  
SEE SHEET M-15 FOR  
TYP. COMPRESSED AIR DRAFT

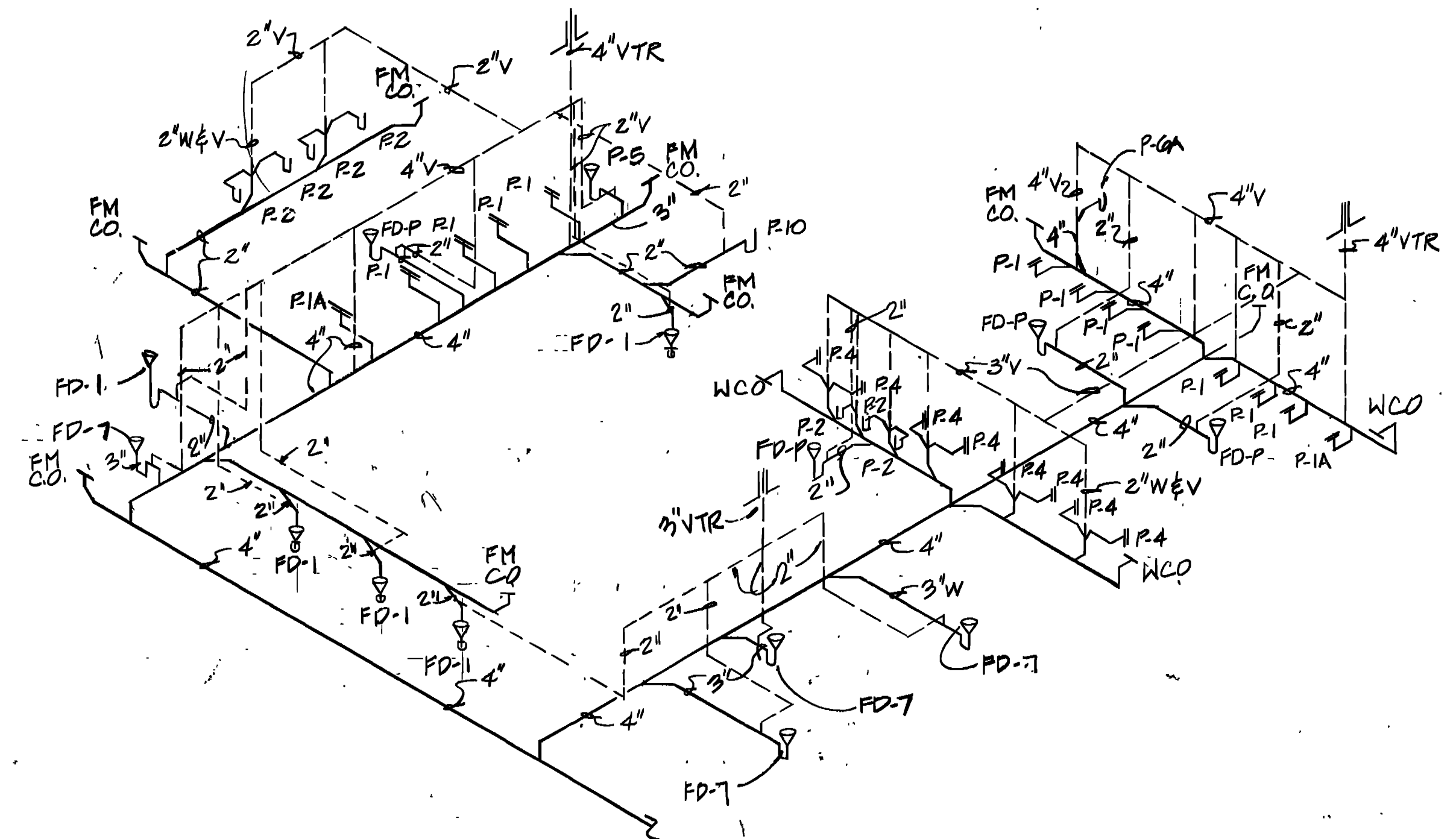
FOR CONT.  
SEE M-8

SEE ENLARGED  
PLAN OF TOILET  
& LOCKER RM.  
M-19

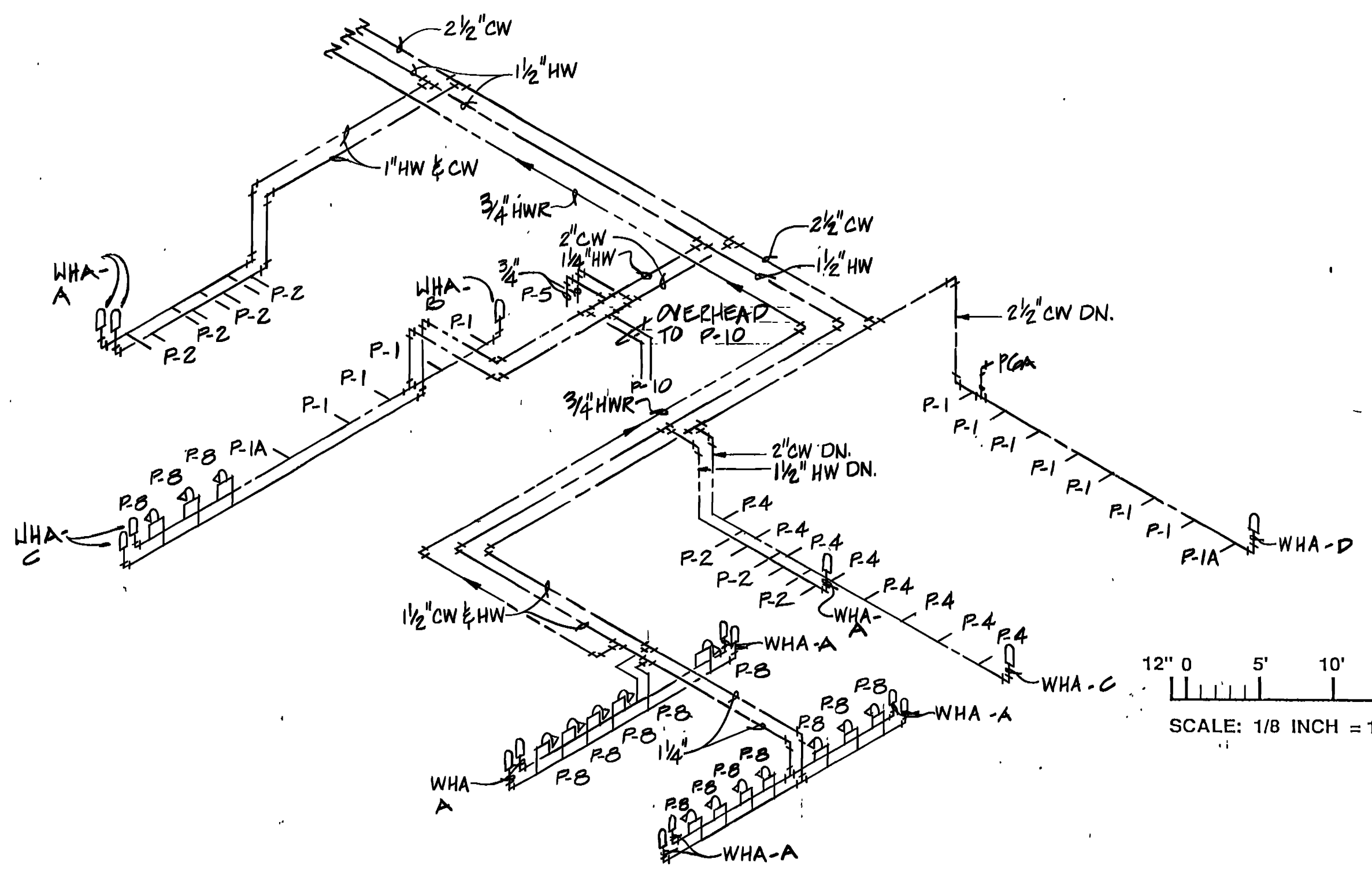
SEE SHT. C-32 FOR CONT'N



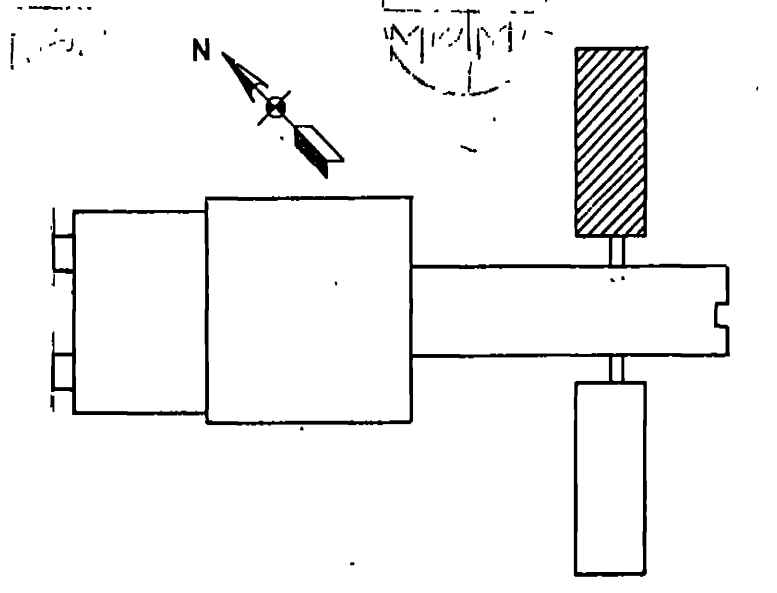
FLOOR PLAN (PLUMBING)  
1/8" = 1'-0"



RG WASTE & VENT RISER  
M-19 M-19 N.T.S.



RG HOT & COLD WATER RISER  
M-19 M-19 N.T.S.

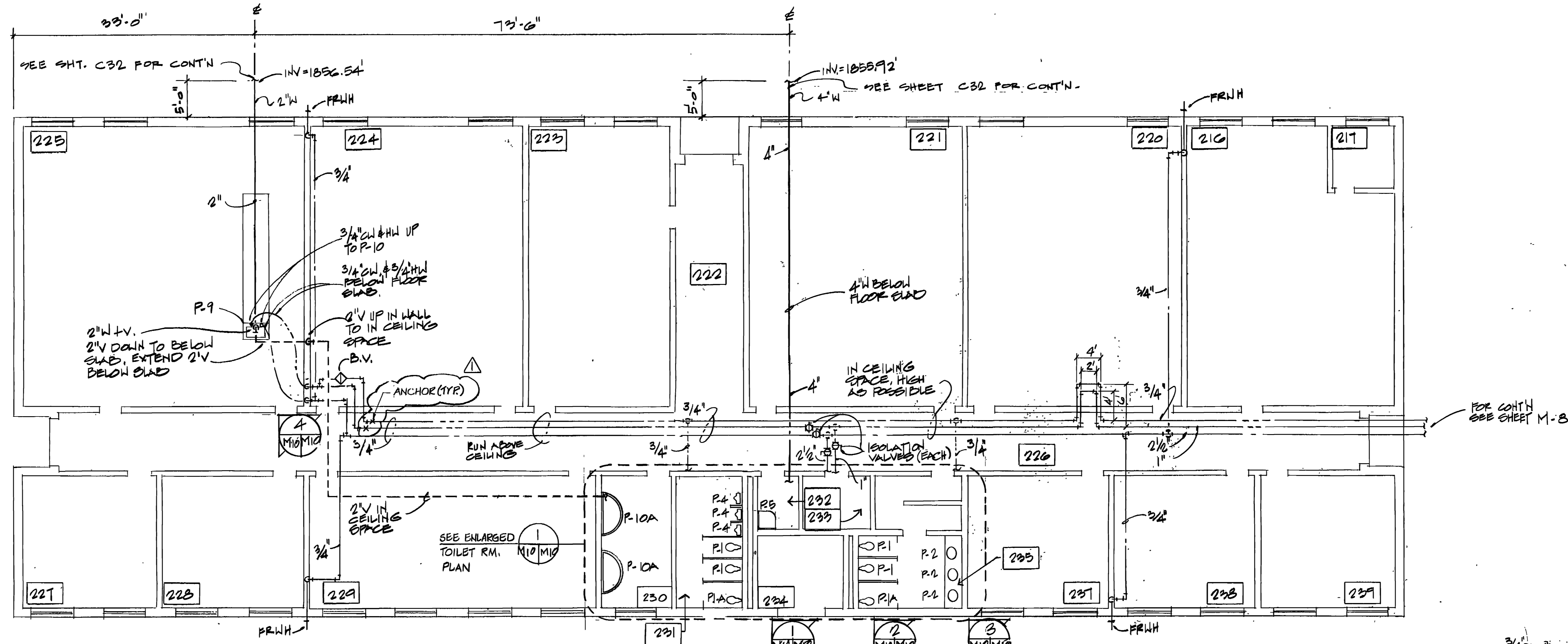


FIRE TRAINING BUILDING  
RESCUE / HAZ MAT WING

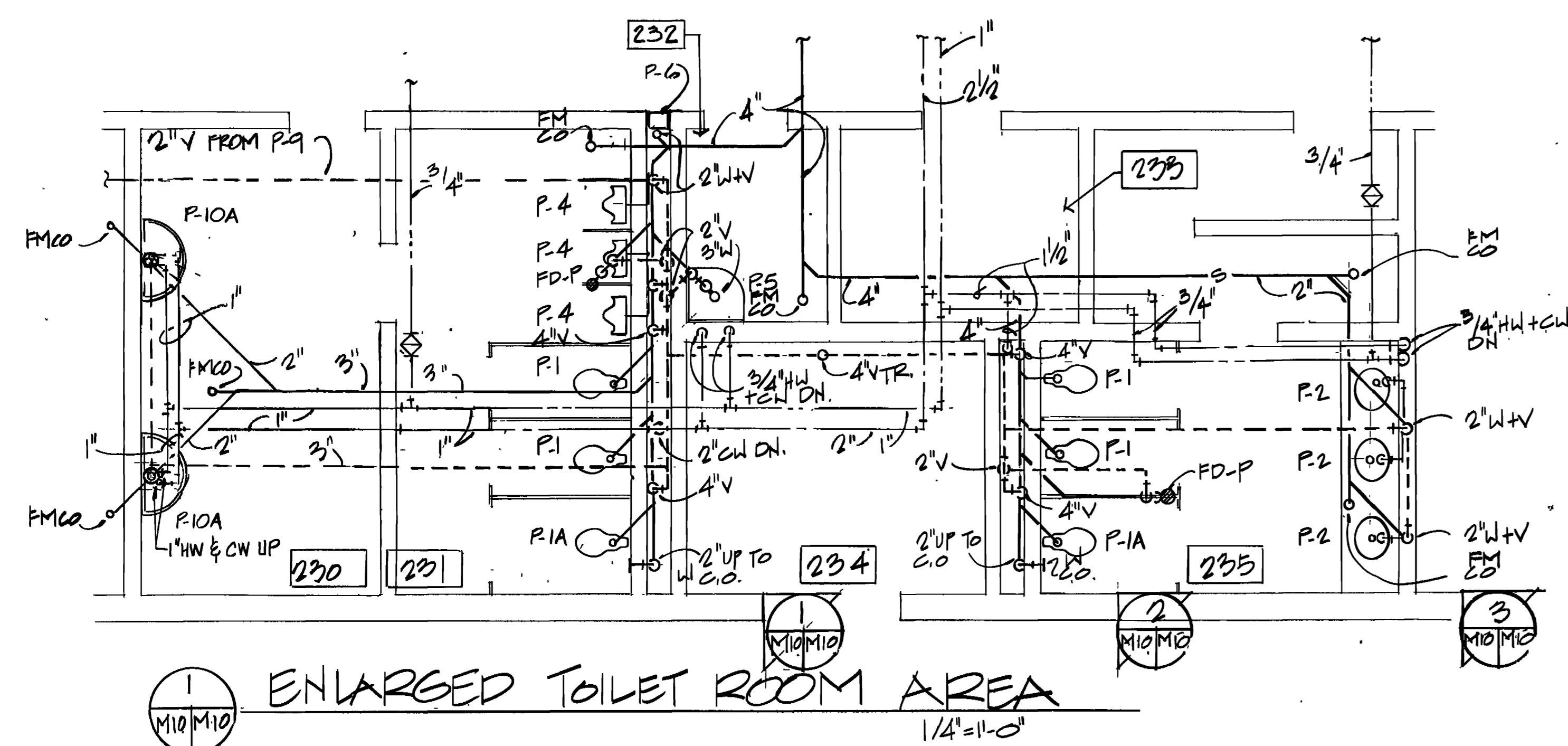
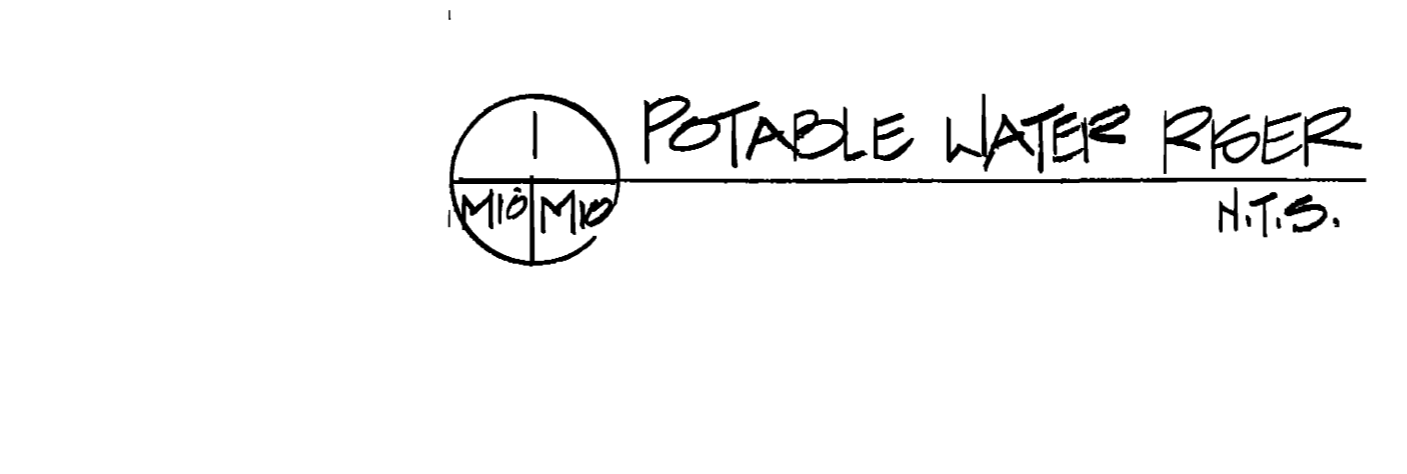
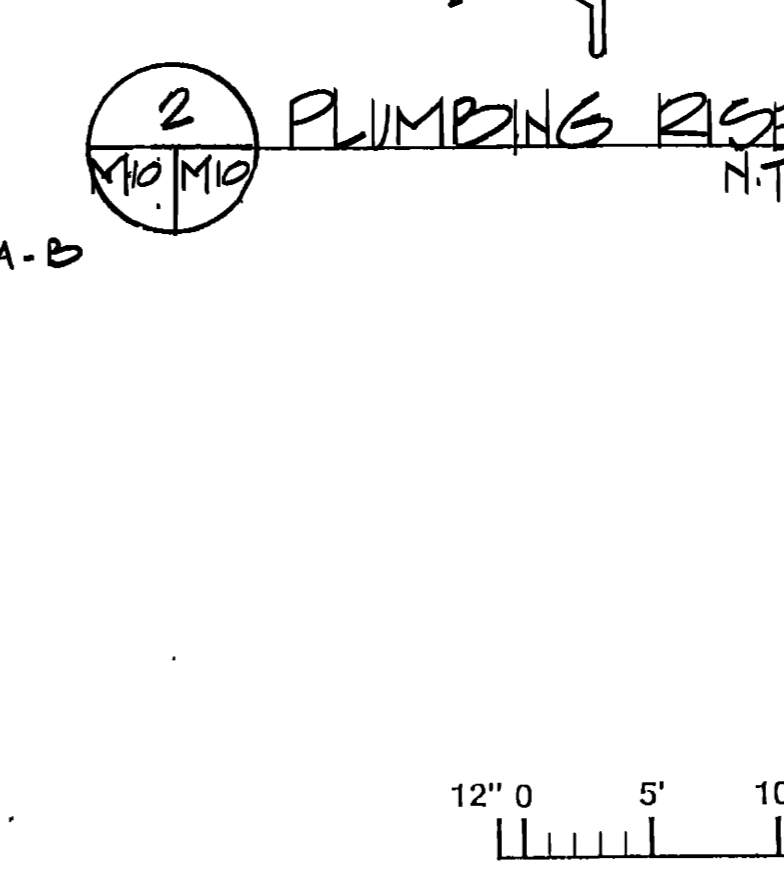
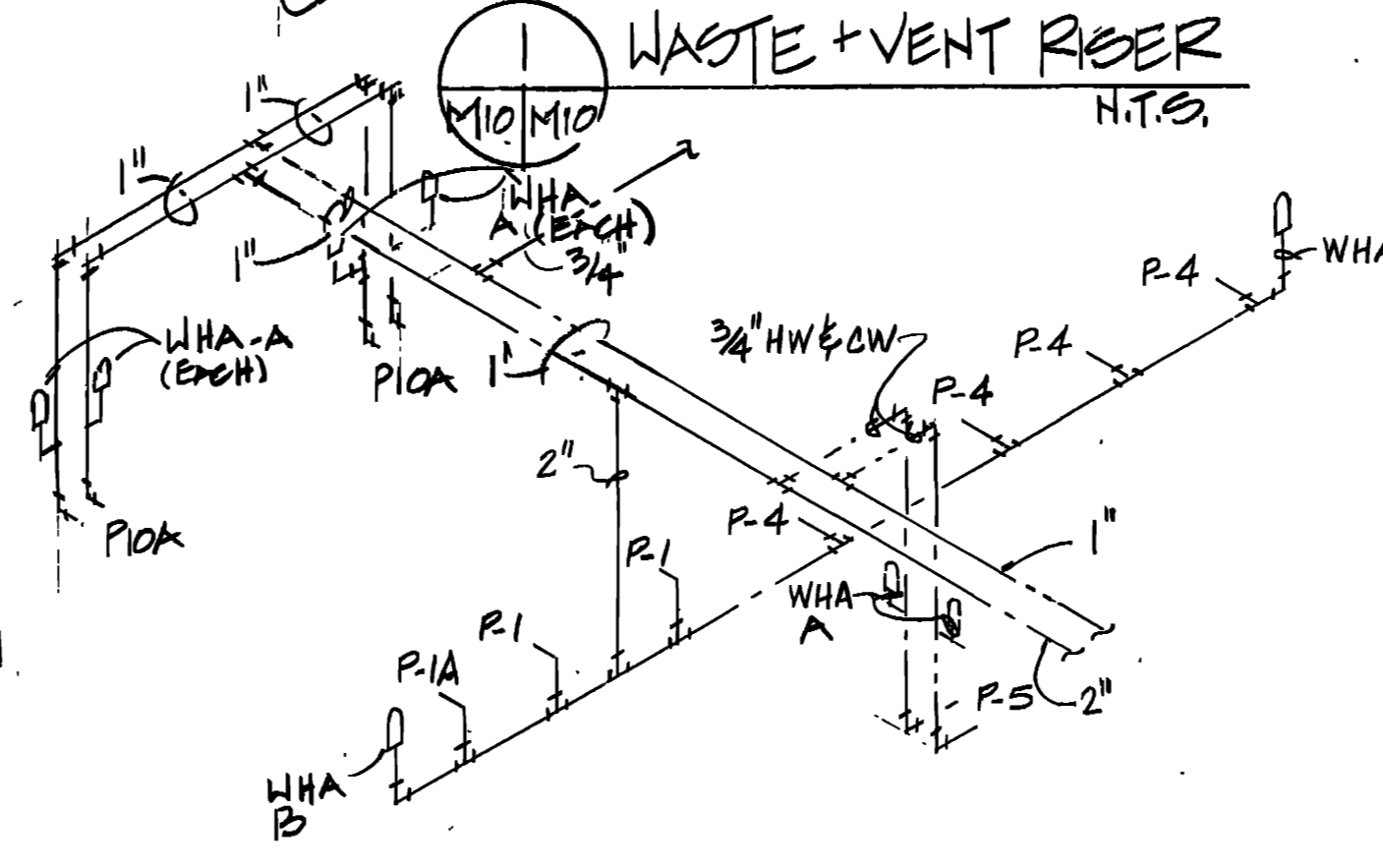
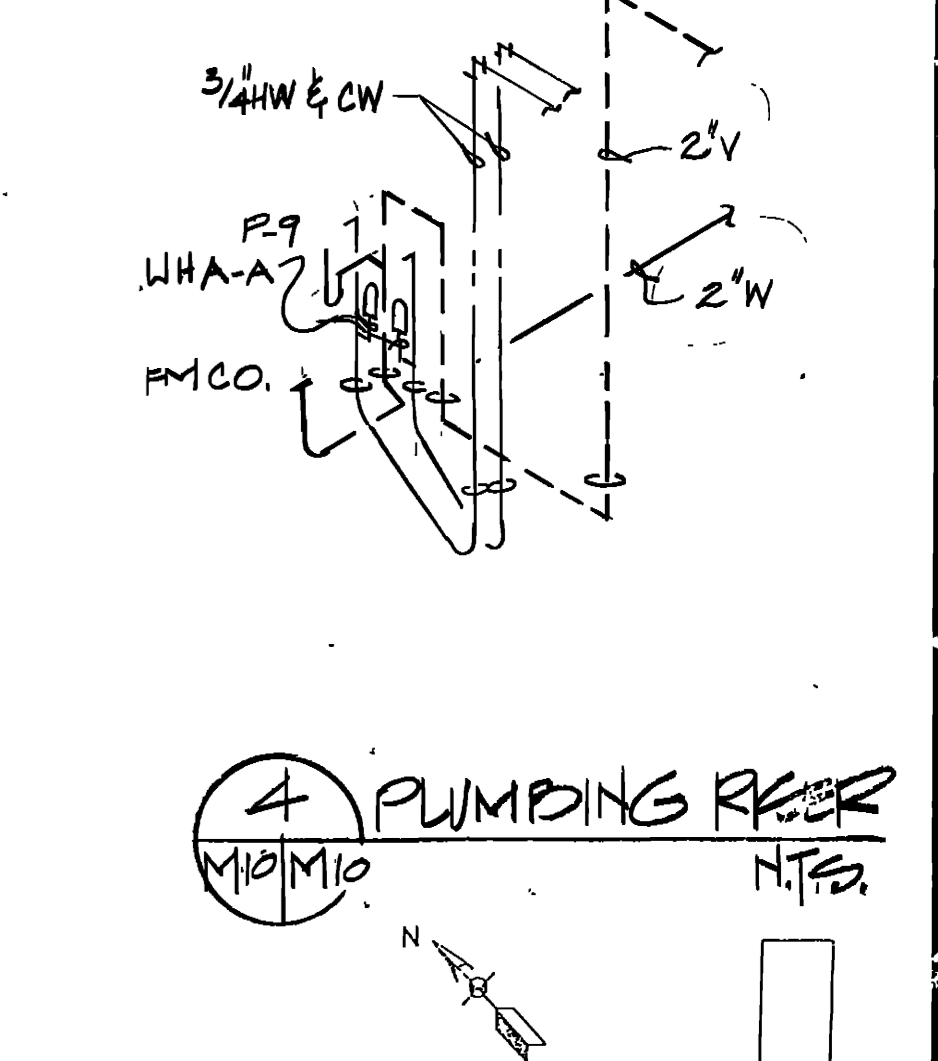
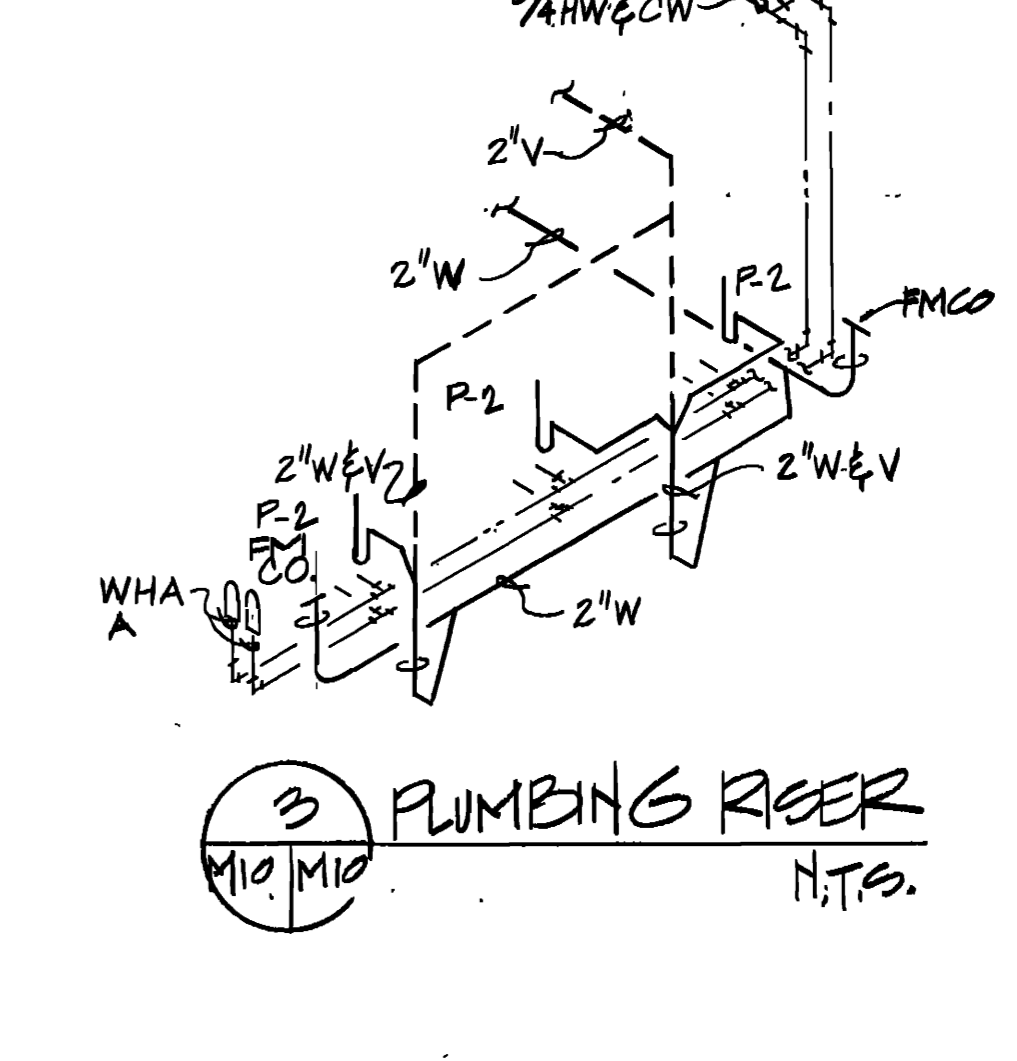
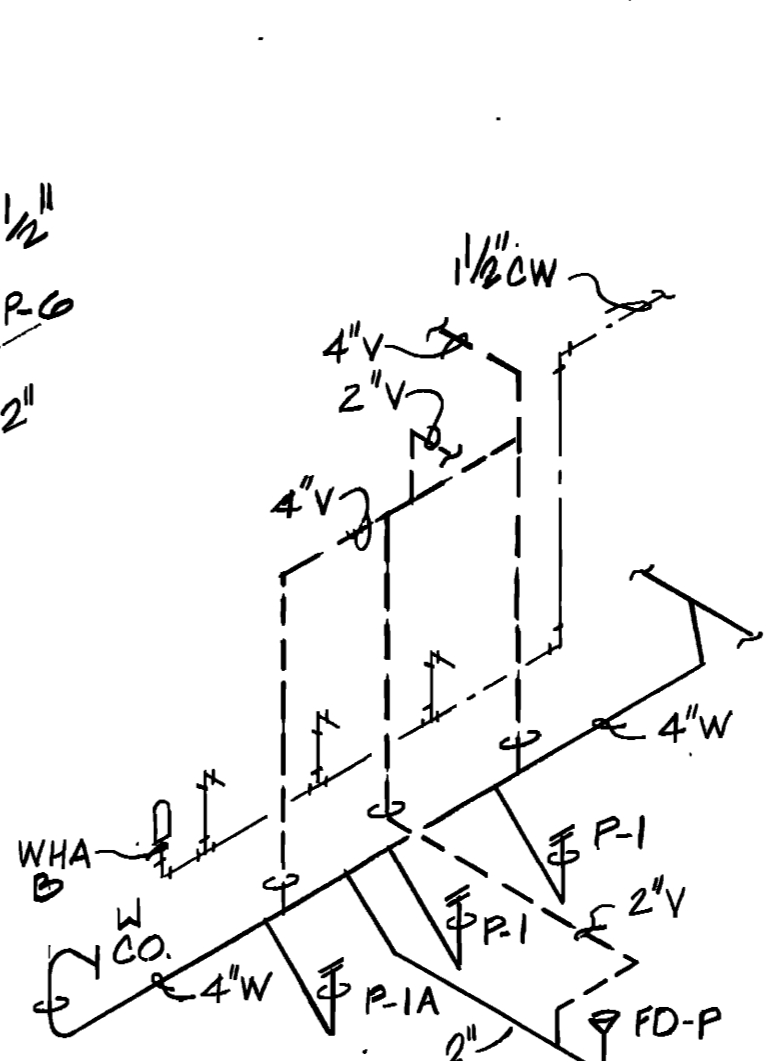
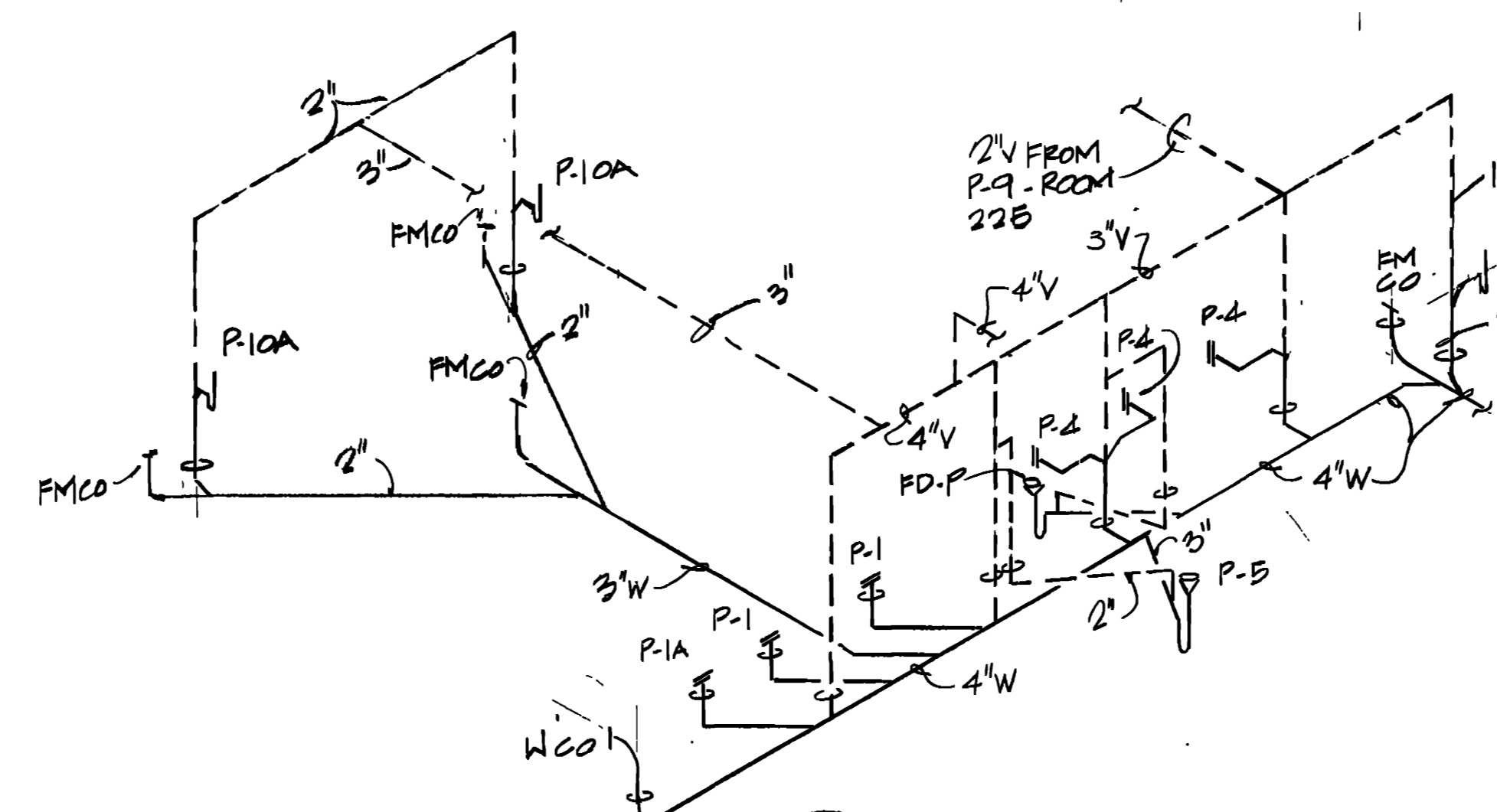
SCALE: 1/8" INCH = 1 FOOT

AM#001 JUN 92 REVISED TO REFLECT W. I. CHANGE WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: <b>E. ELBERT</b>	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY: <b>E. ELBERT</b>	<b>FIRE TRAINING COMPLEX</b>		
REVIEWED BY: <b>C. YANG</b>	FIRE TRAINING BUILDINGS RESCUE/HAZ MAT WING PLUMBING FLOOR PLAN AND RISERS		
SUBMITTED BY: <b>M. J. [Signature]</b>	CONR. NO. DAC63-92-C-0155 NO.	DATED: JUN 1992	SEQUENCE NO.
ENGINEER <b>[Signature]</b>	DRAWING NUMBER	SHEET NO. M-9 of 44	NO. 207

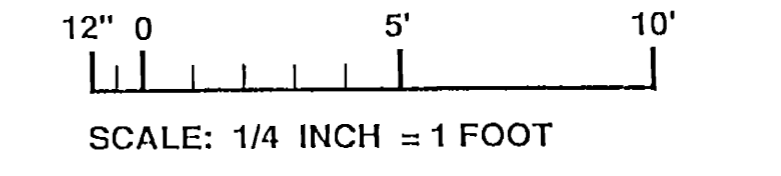
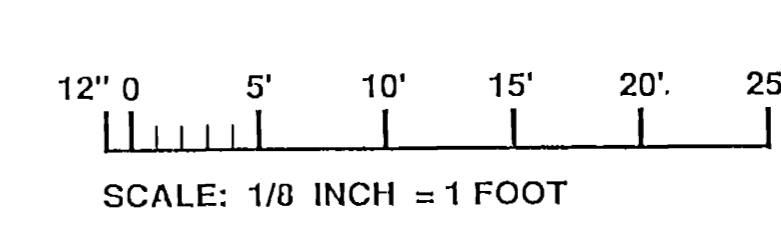
CONTRACT NO. DAC63-92-C-0155



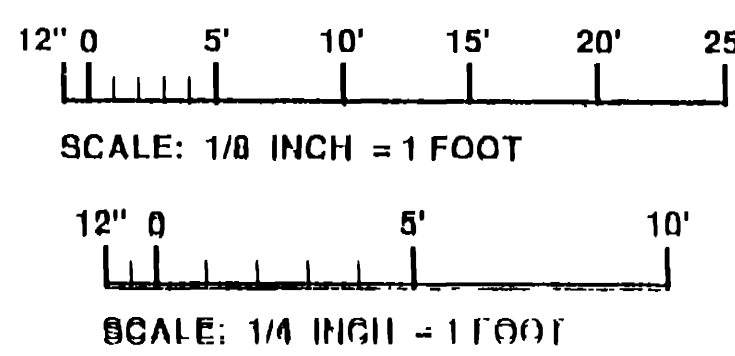
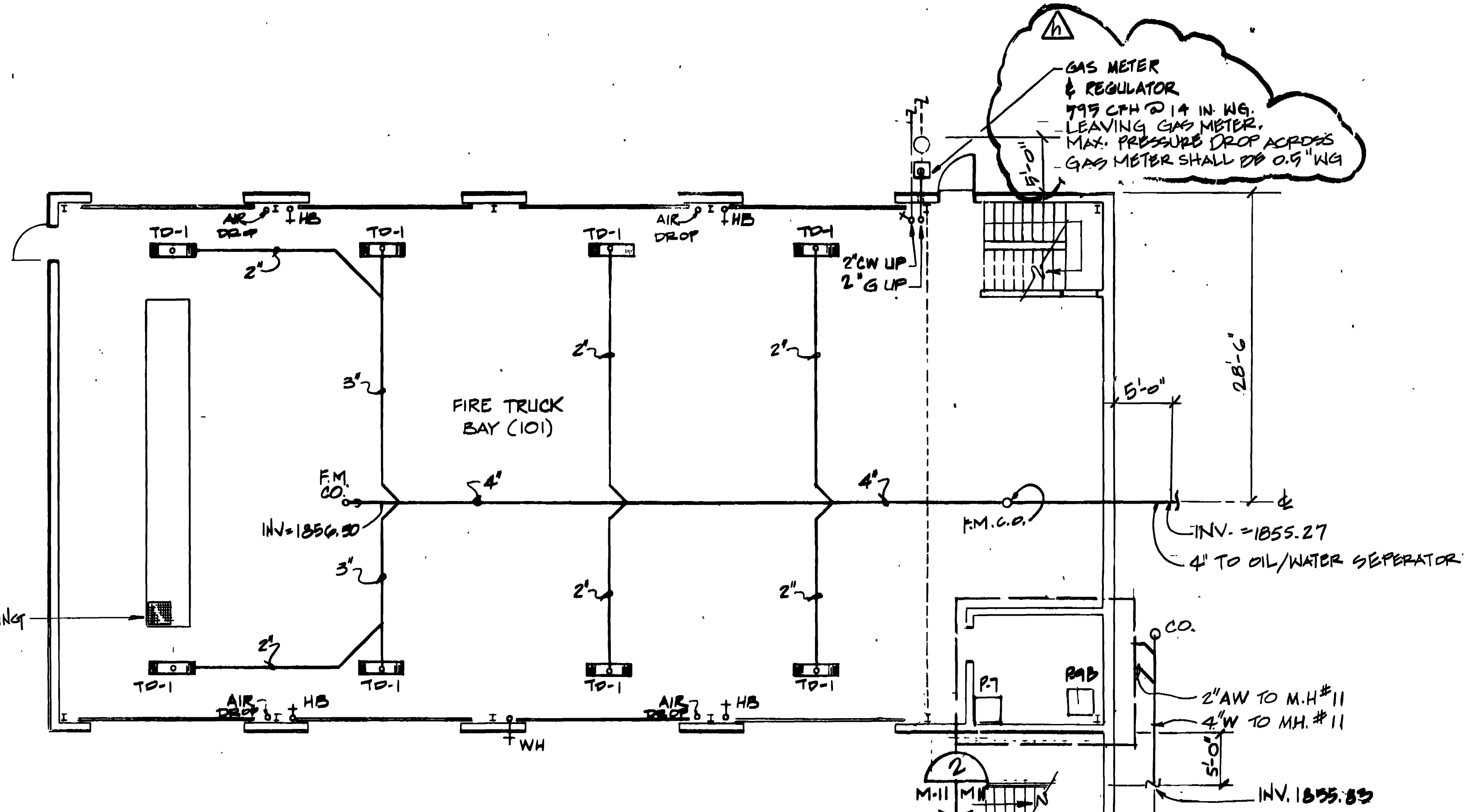
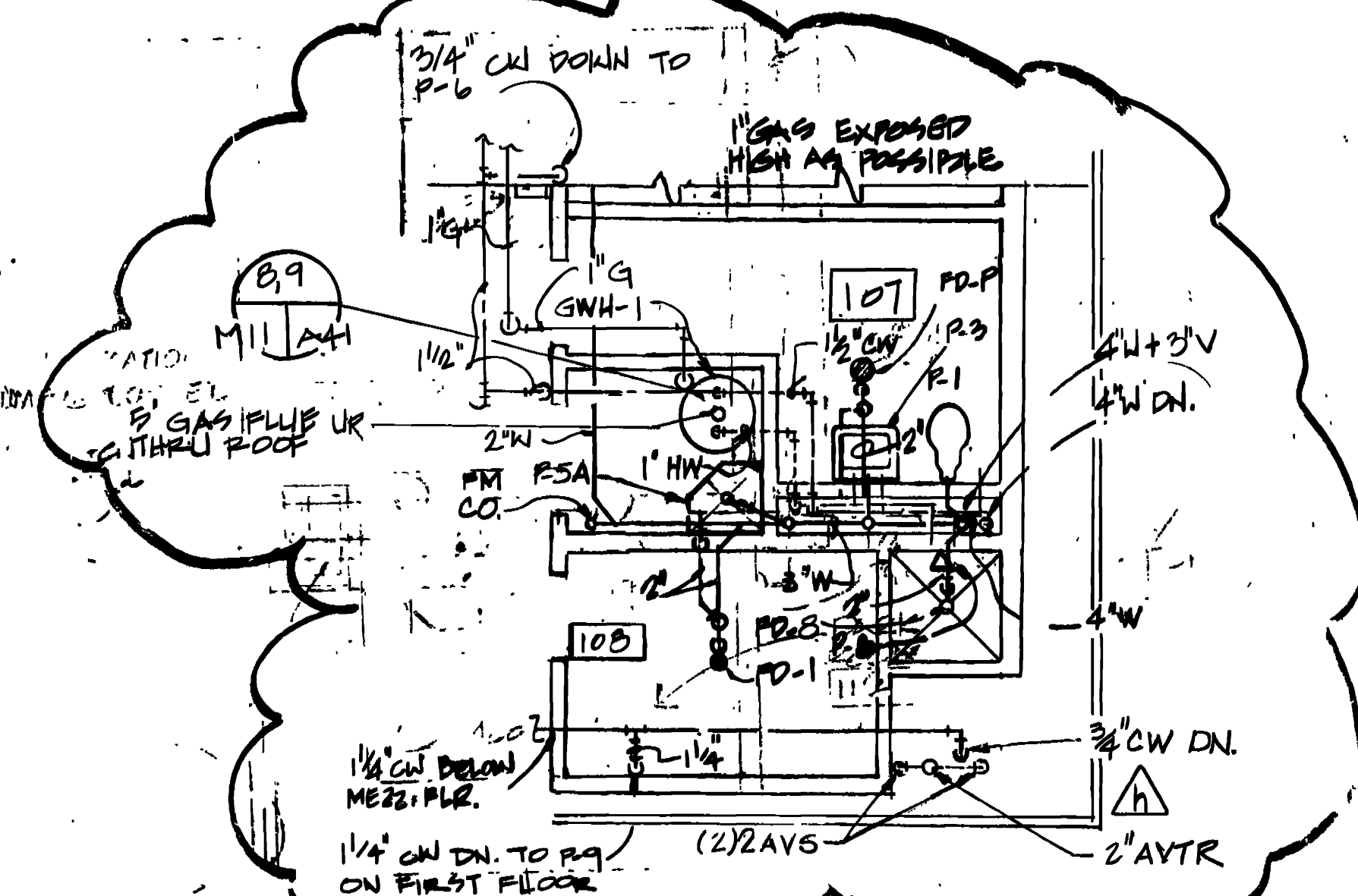
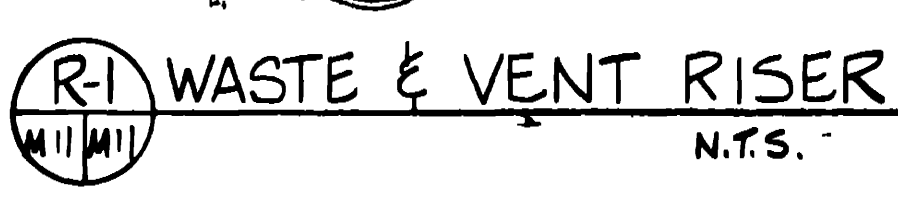
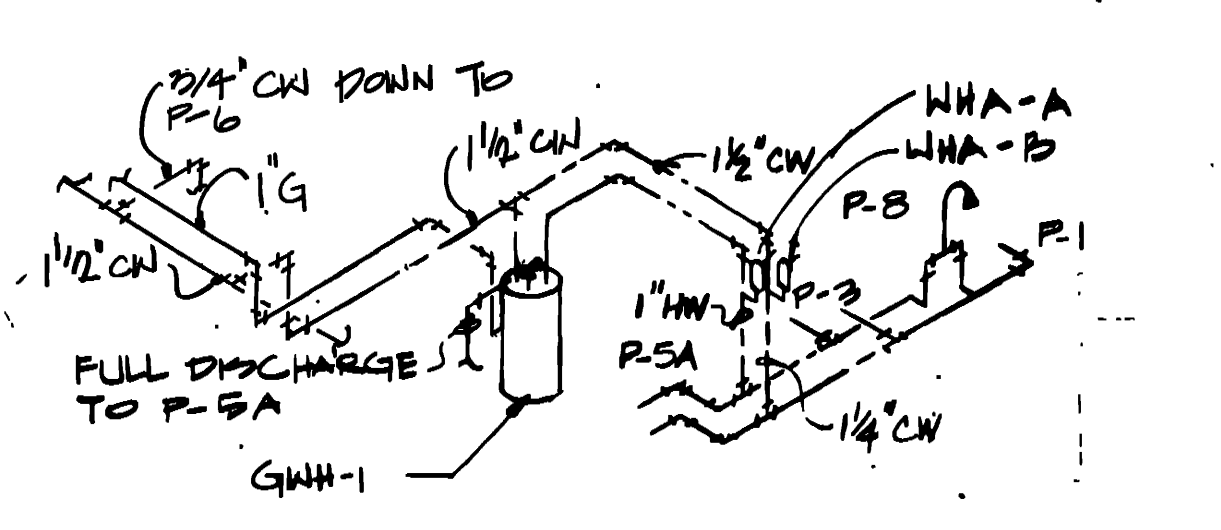
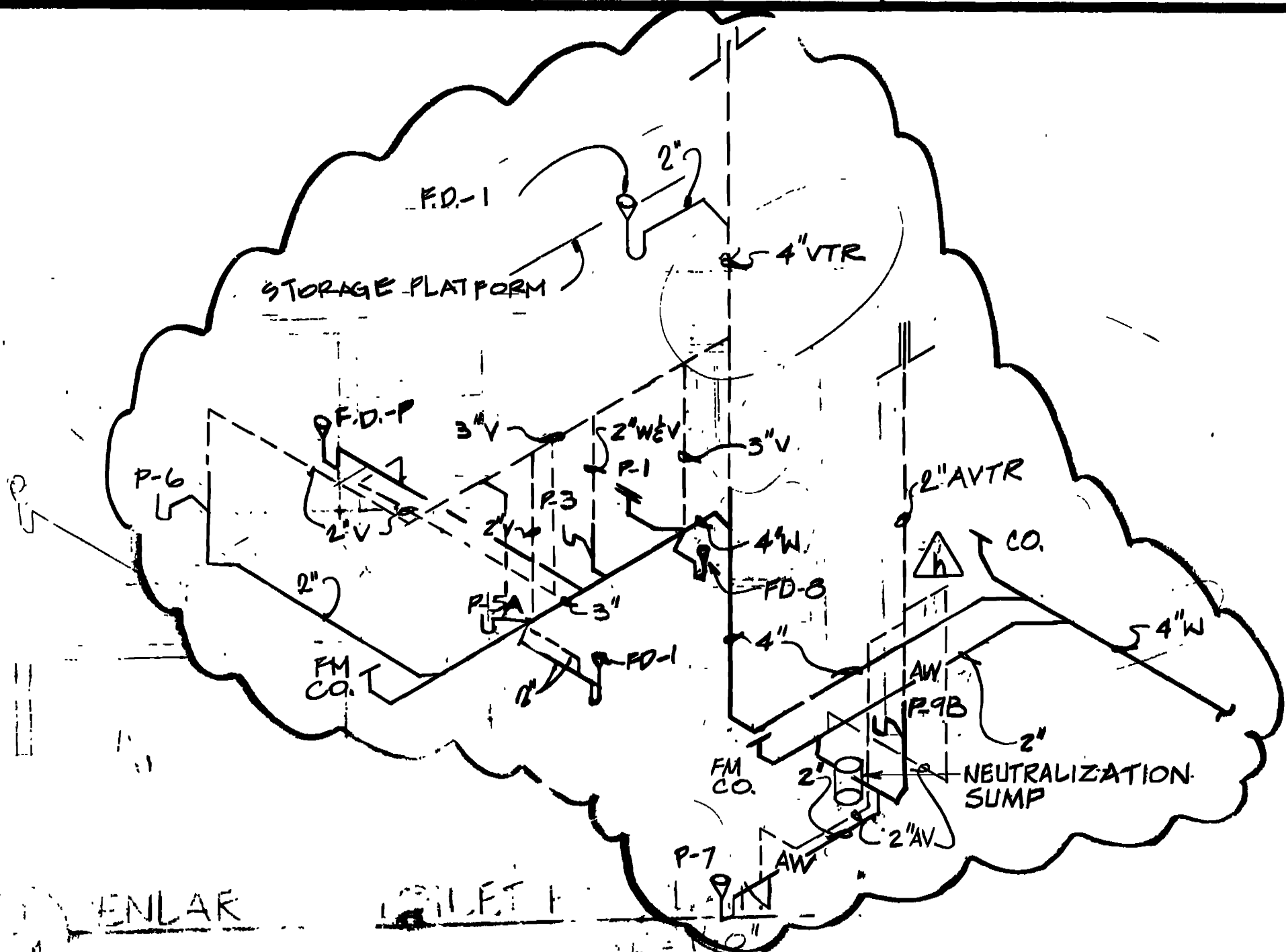
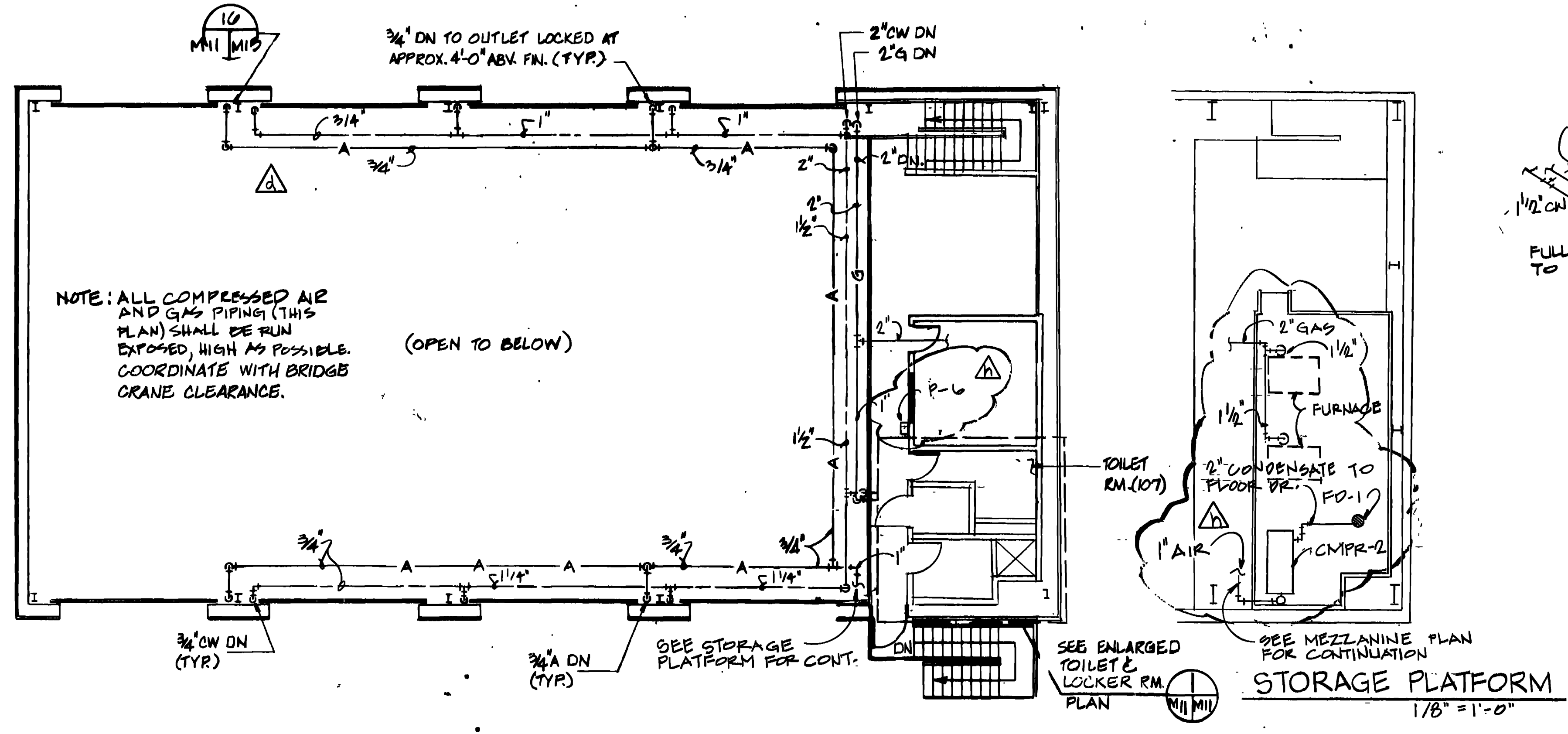
**FLOOR PLAN**  
SCALE: 1/8" = 1'-0"



**ENLARGED TOILET ROOM AREA**  
1/4" = 1'-0"



WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY:	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY:	<b>FIRE TRAINING COMPLEX</b>		
REVIEWED BY:	FIRE TRAINING BUILDING - BASIC COURSES WING		
ENGINEER:	PLUMBING FLOOR PLAN AND RISERS		
DATE:	JUN 1976		
CONTRACT NO.:	DAAG6-92-C-0155		SEQUENCE NO.
DRAWING NUMBER:	M-10 OF 44		208



REVISIONS:

AM#0002	SEP 27 1992	REVISIONS TO REFLECT MISC. PLUMBING CHANGES
AM#0003	BAG 27 1992	REVISIONS TO REFLECT MISC. PLUMBING CHANGES
AM#0001	JUN 92	REVISIONS TO REFLECT W.I. CHANGE

**WALK, HAYDEL & ASSOC. INC.**  
 ENGINEERS / ARCHITECTS  
 NEW ORLEANS / MOBILE / BATON ROUGE

**U.S. ARMY ENGINEER DISTRICT, FORT WORTH**  
 CORPS OF ENGINEERS  
 FORT WORTH, TEXAS

GOODFELLOW AIR FORCE BASE  
 SAN ANGELO, TEXAS

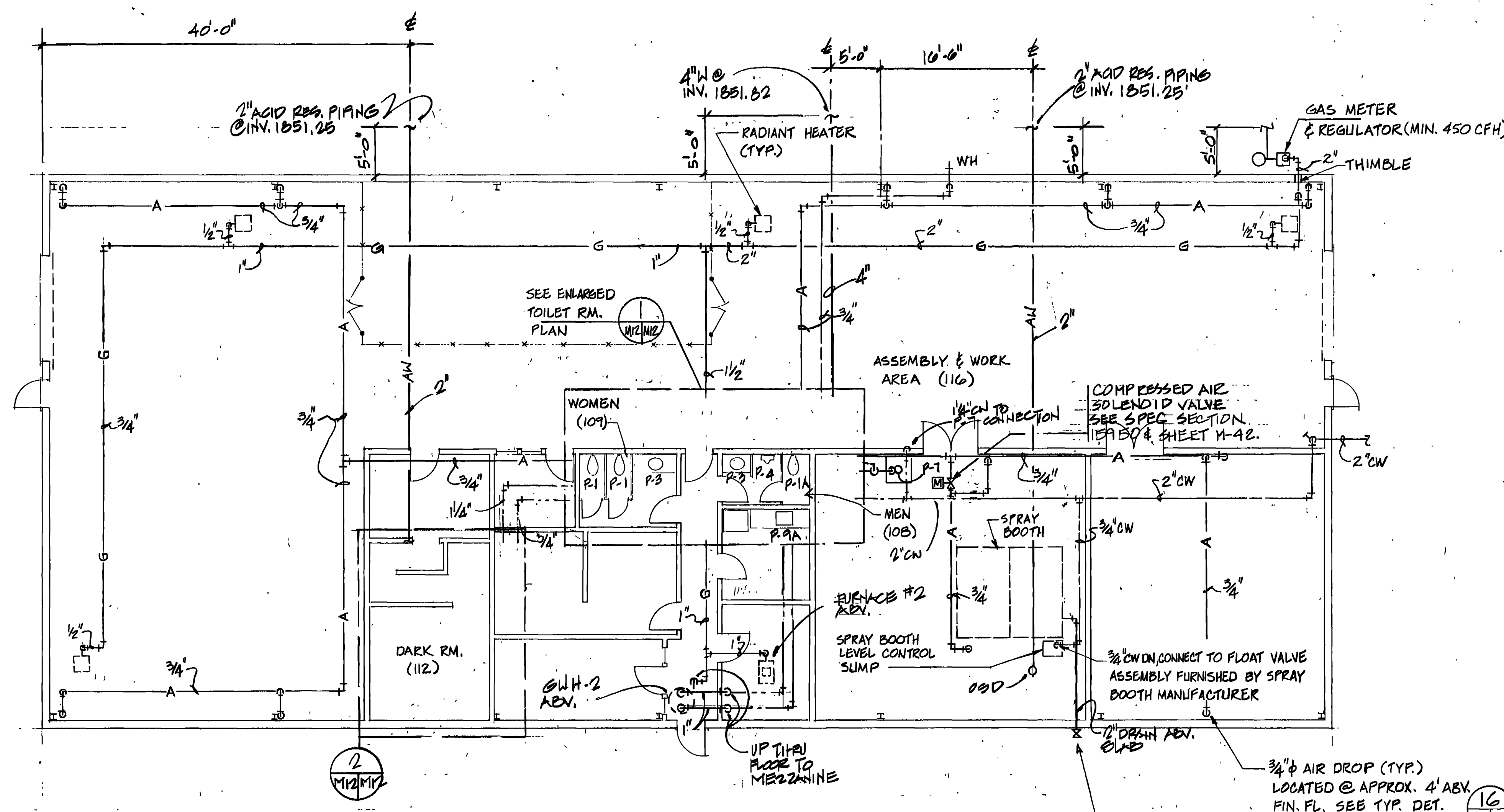
**FIRE TRAINING COMPLEX  
 VEHICLE MAINTENANCE FACILITY  
 PLUMBING FLOOR PLAN & DETAILS**

DESIGNED BY: **E. ELBERT**  
 DRAWN BY: **E. ELBERT**  
 REVIEWED BY: **S. WANG**

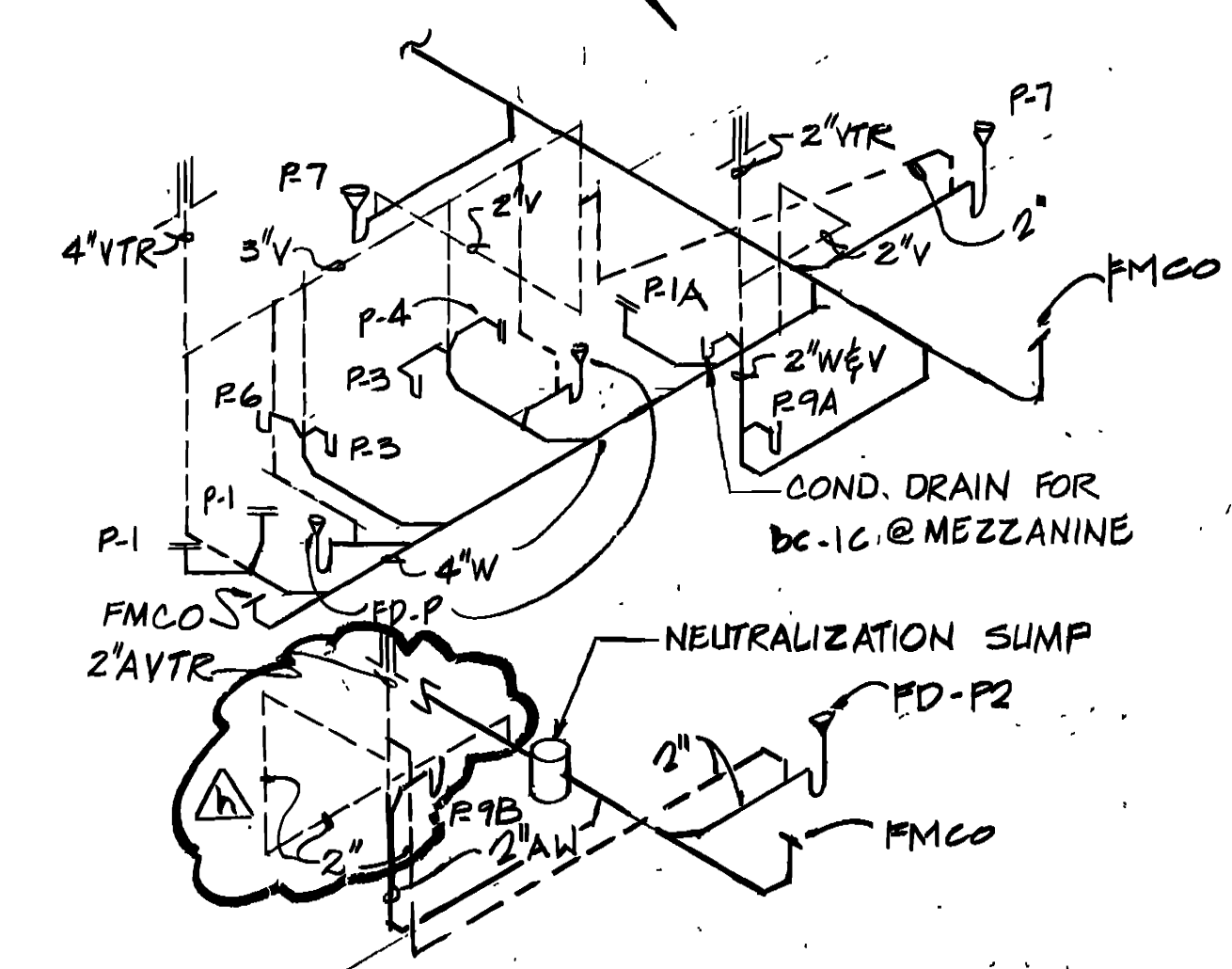
SUBMITTED BY: *[Signature]*

DATE: **7-28-92**

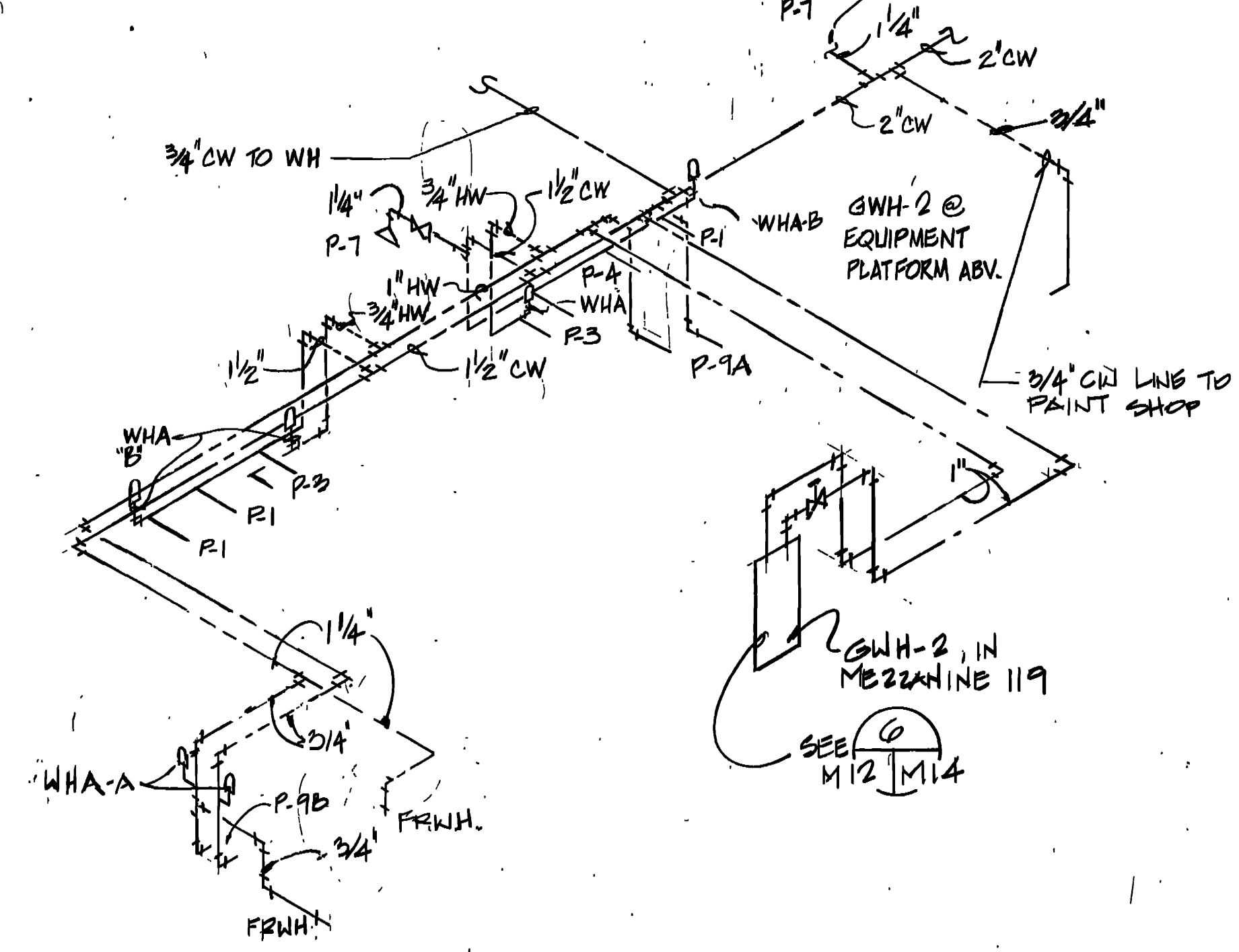
PROJECT NO. **DAACG8-92-B-0109** DATED **JUN. 1992**  
 CONTRACT NO. **DAACG8-92-C-0155**  
 DRAWING NUMBER **M-11** SHEET NO. **11 OF 11** QUANTITY **209**



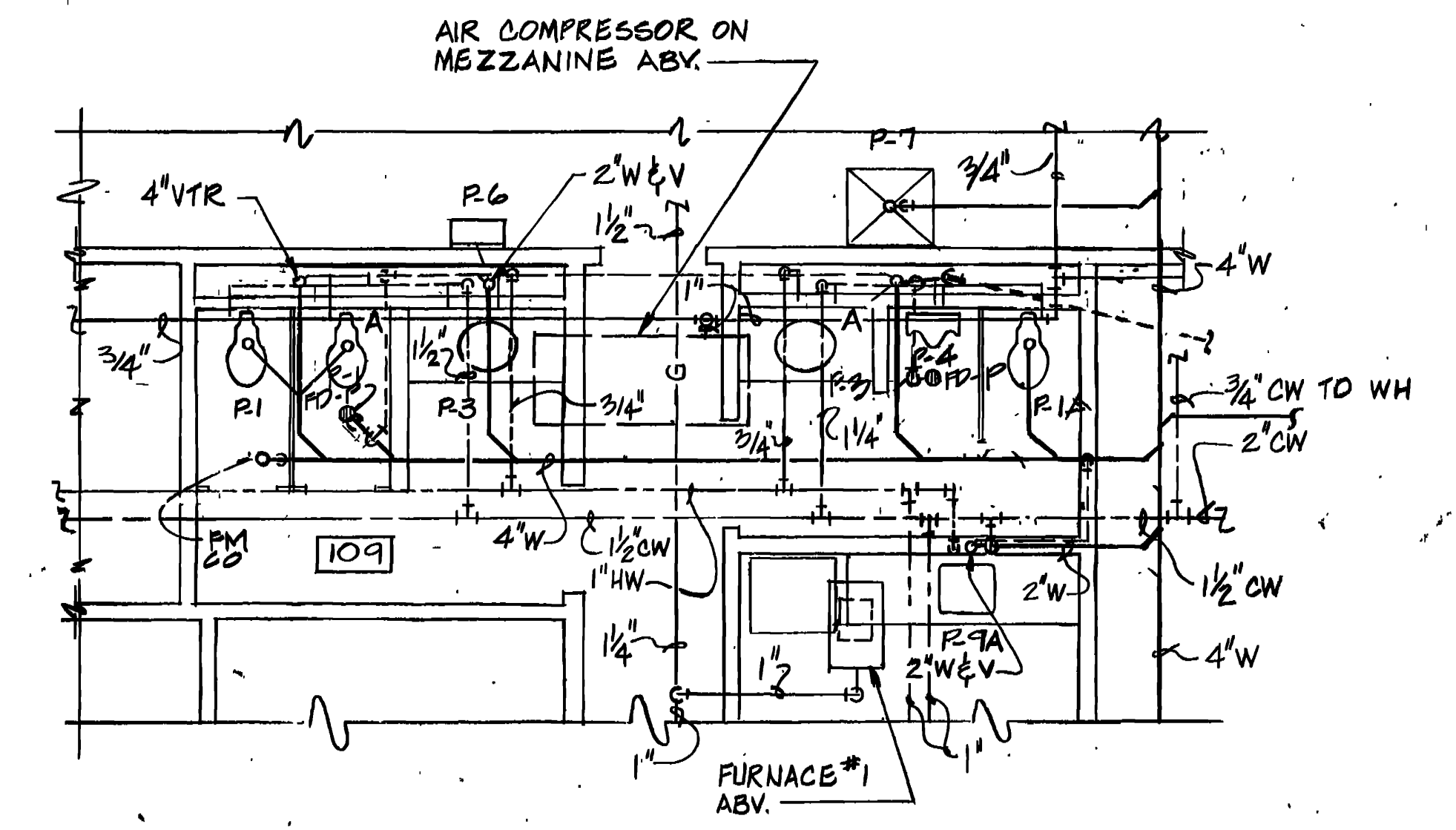
FLOOR PLAN (PLUMBING)  
1/8" = 1'-0"



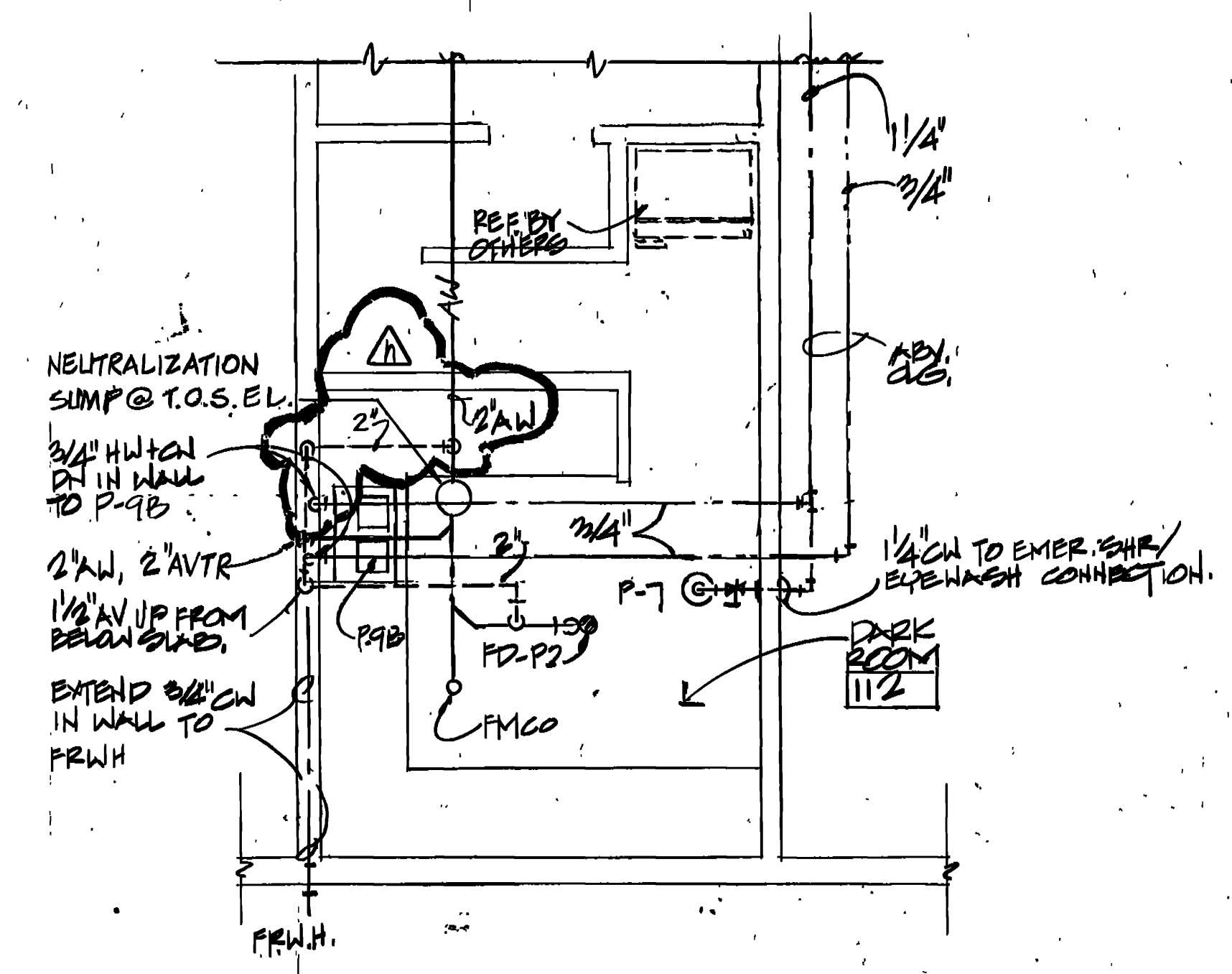
WASTE & VENT RISER  
NTS



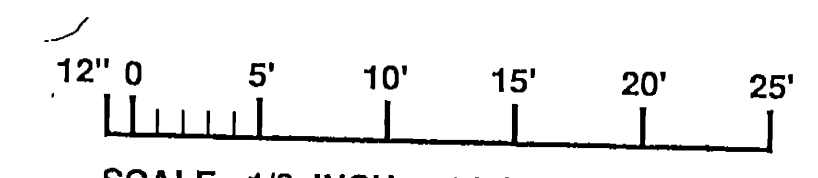
HOT & COLD WATER RISER  
NTS



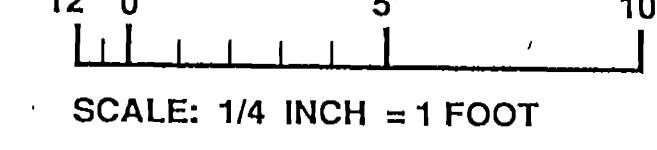
ENLARGED TOILET RM. PLAN  
1/4" = 1'-0"



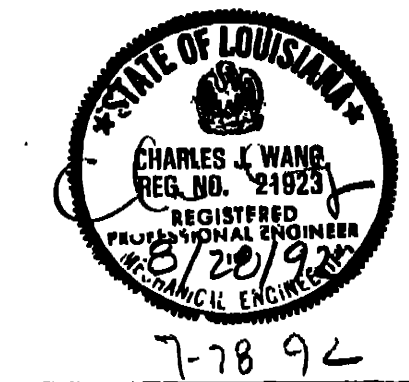
ENLARGED FLOOR PLAN - ROOM 112 (AREA)  
1/4" = 1'-0"



SCALE: 1/8 INCH = 1 FOOT



SCALE: 1/4 INCH = 1 FOOT



REVISIONS		DESCRIPTION OF REVISION	
AM#0008	2 SEP 92	REVISED ACID VENT TO ROOF	
AM#0004	3 AUG 92	ADDED NEUTRALIZATION SUMP	
AM#0001	4 JUN 90	REVISED TO REFLECT W.I. CHANGE	

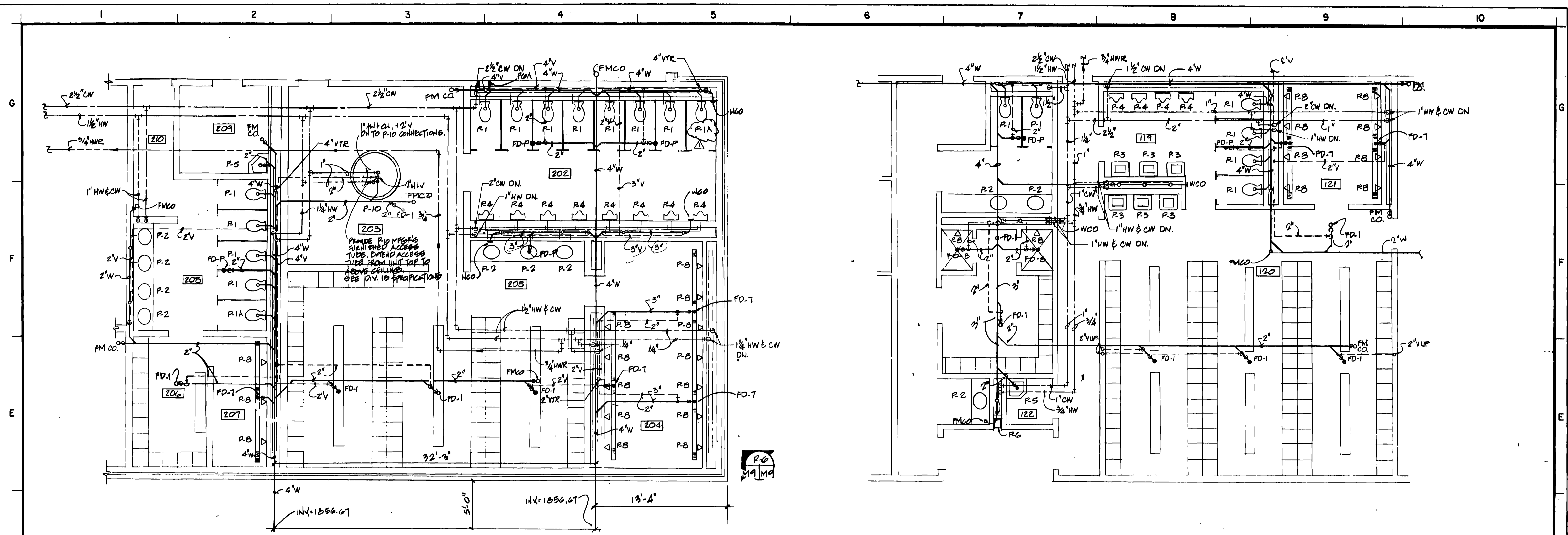
  

DESIGNED BY: E. ELBERT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY: E. ELBERT	
REVIEWED BY: S. WANG	<b>FIRE TRAINING COMPLEX</b> TRAINER SERVICES FACILITY PLUMBING FLOOR PLAN AND RISERS
SUBMITTED BY: DATE: 11/1/92 ENGINEER: [Signature]	

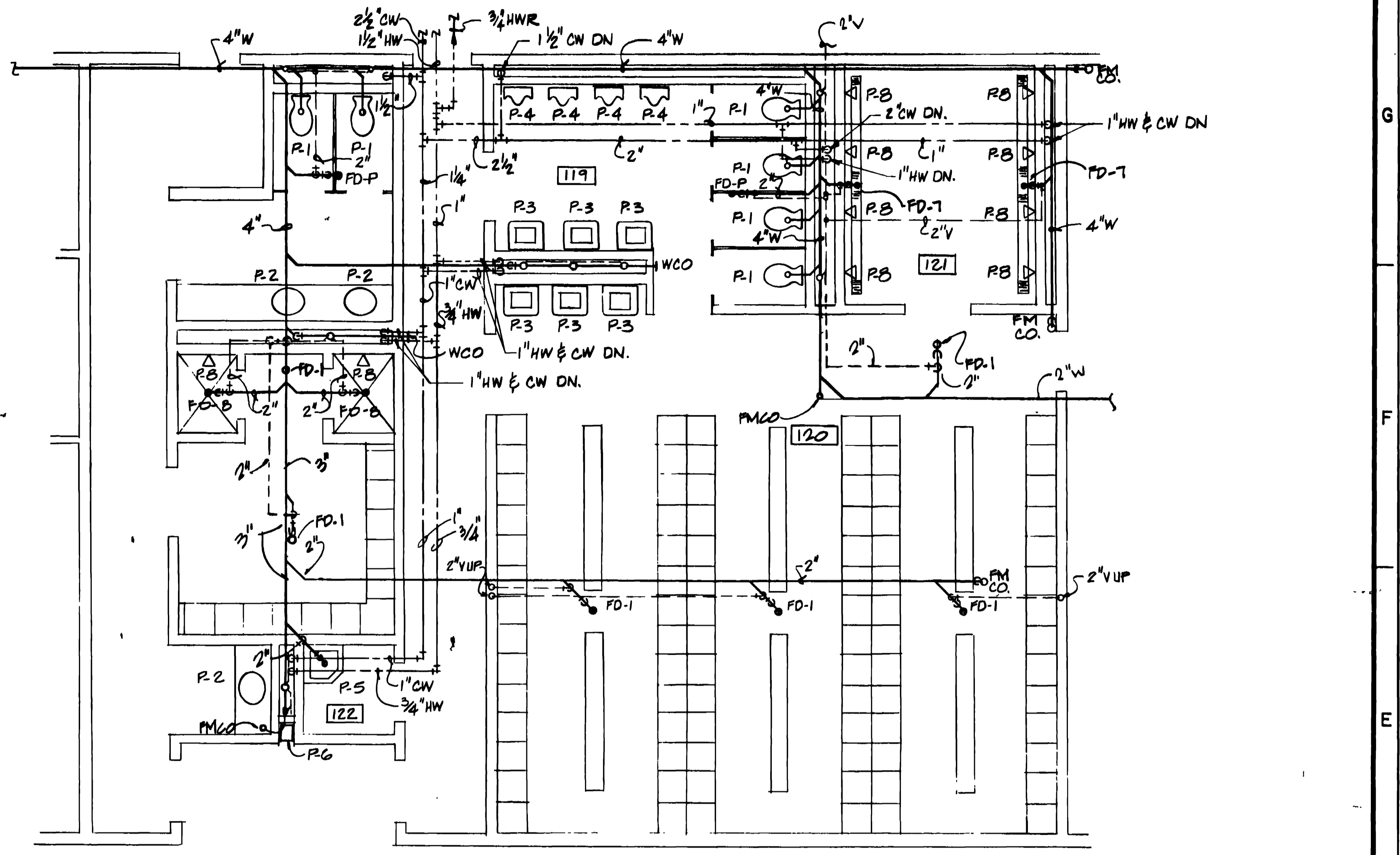
  

SOL. NO. DACAG3-92-B-0109		DATED: JUN. 1992	
CONTR. NO. DACAG3-92-C-0185		SEQUENCE NO.	
DRAWING NUMBER		SHEET NO. 210	
		M-12 OF 44	

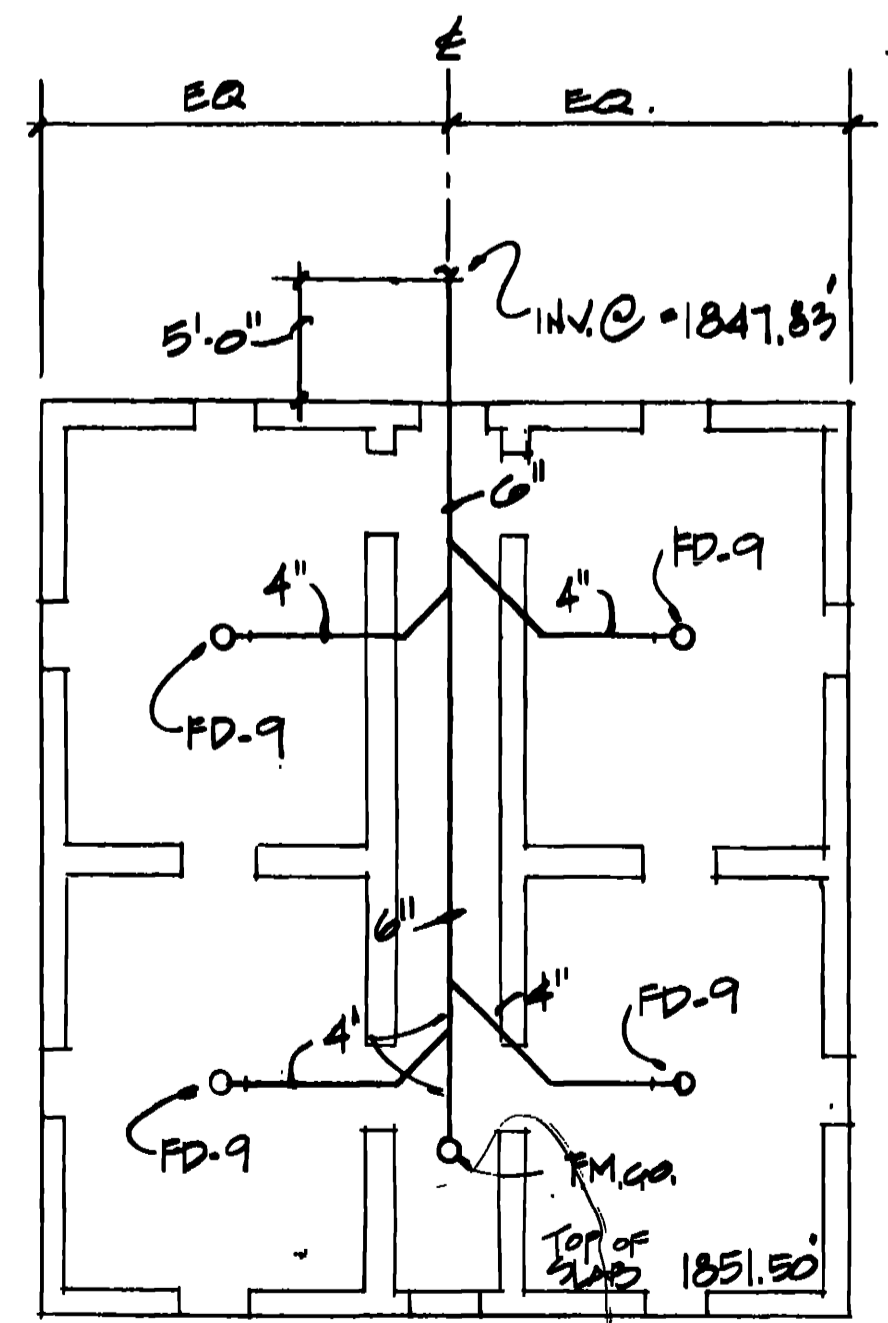
CONTR. NO. DACAG3-92-C-0185



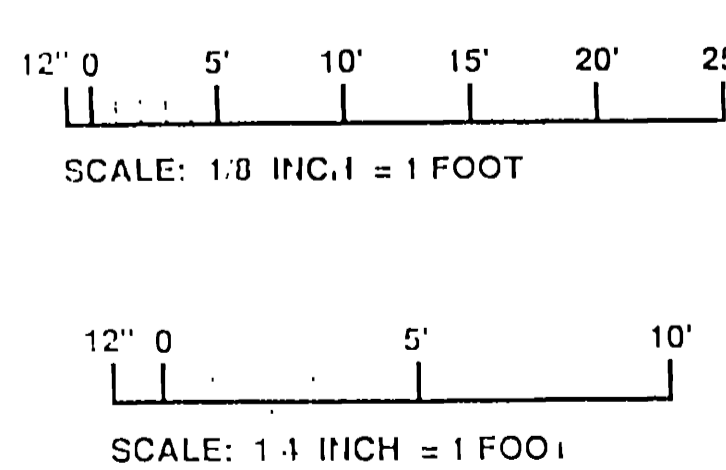
2 ENLARGED PLAN @ TOILET & LOCKER RM.  
1/4" = 1'-0"



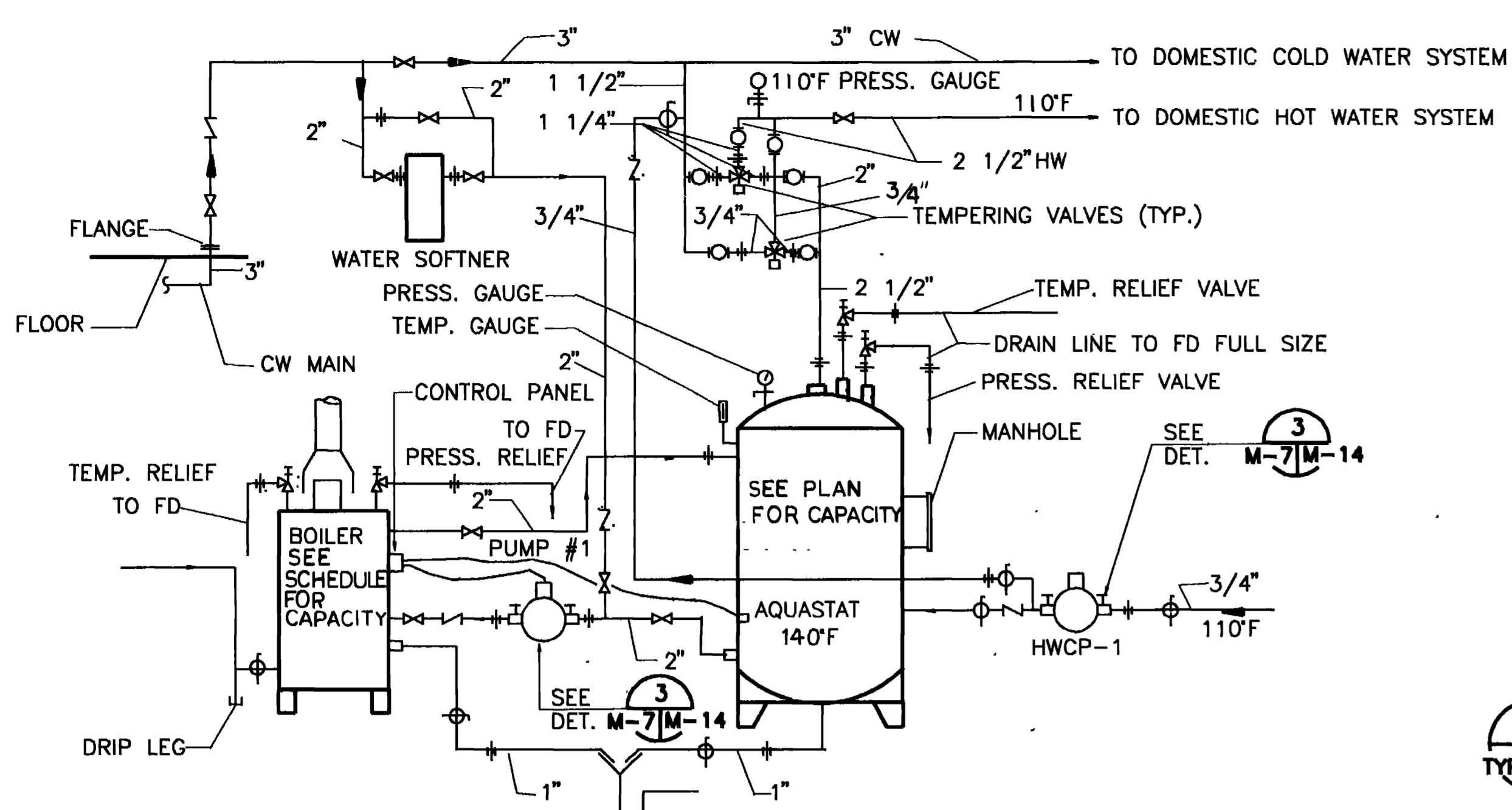
3 ENLARGED PLAN @ TOILET & LOCKER RM.  
1/4" = 1'-0"



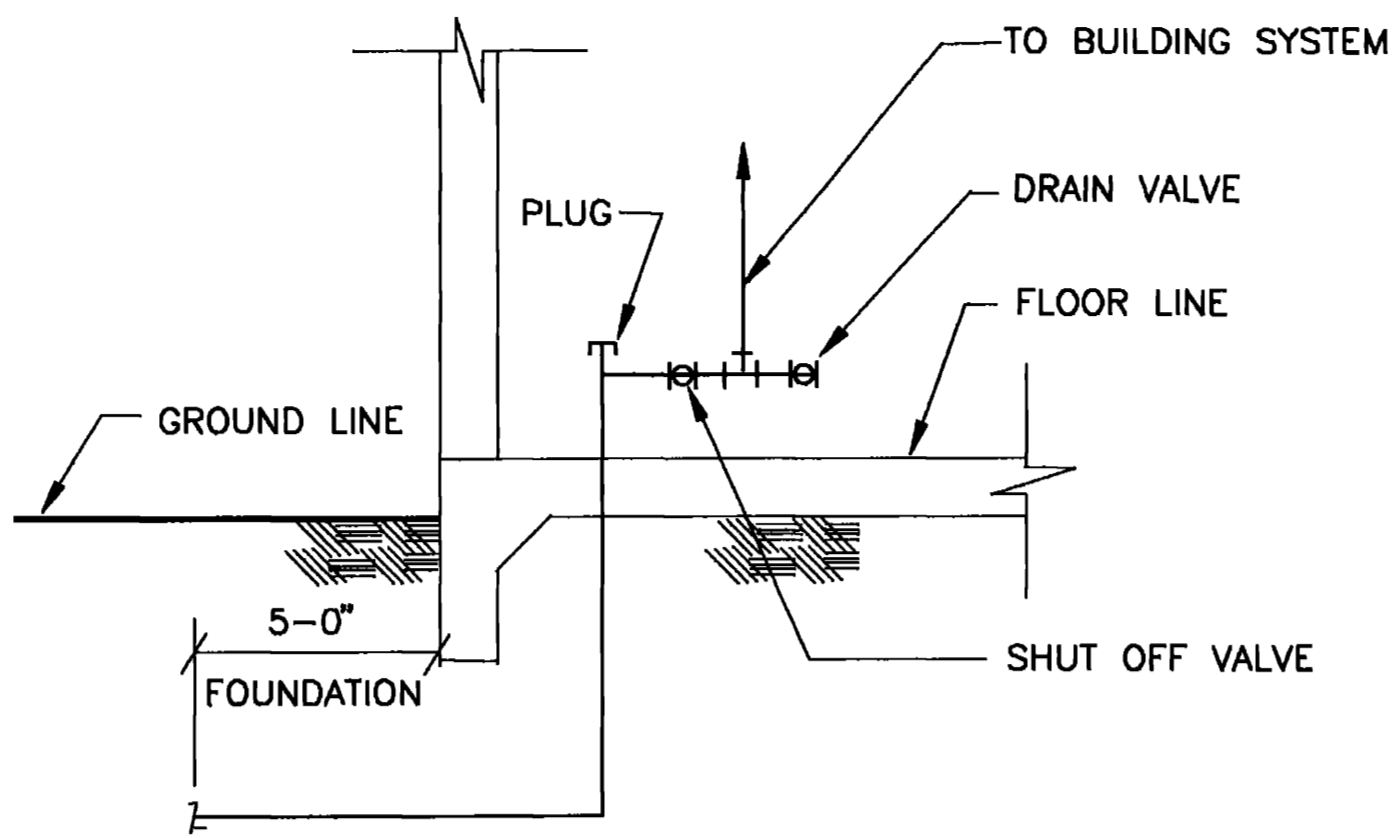
FLOOR PLAN (PLUMBING)  
STRUCTURAL BURN HOUSE  
1/8" = 1'-0"



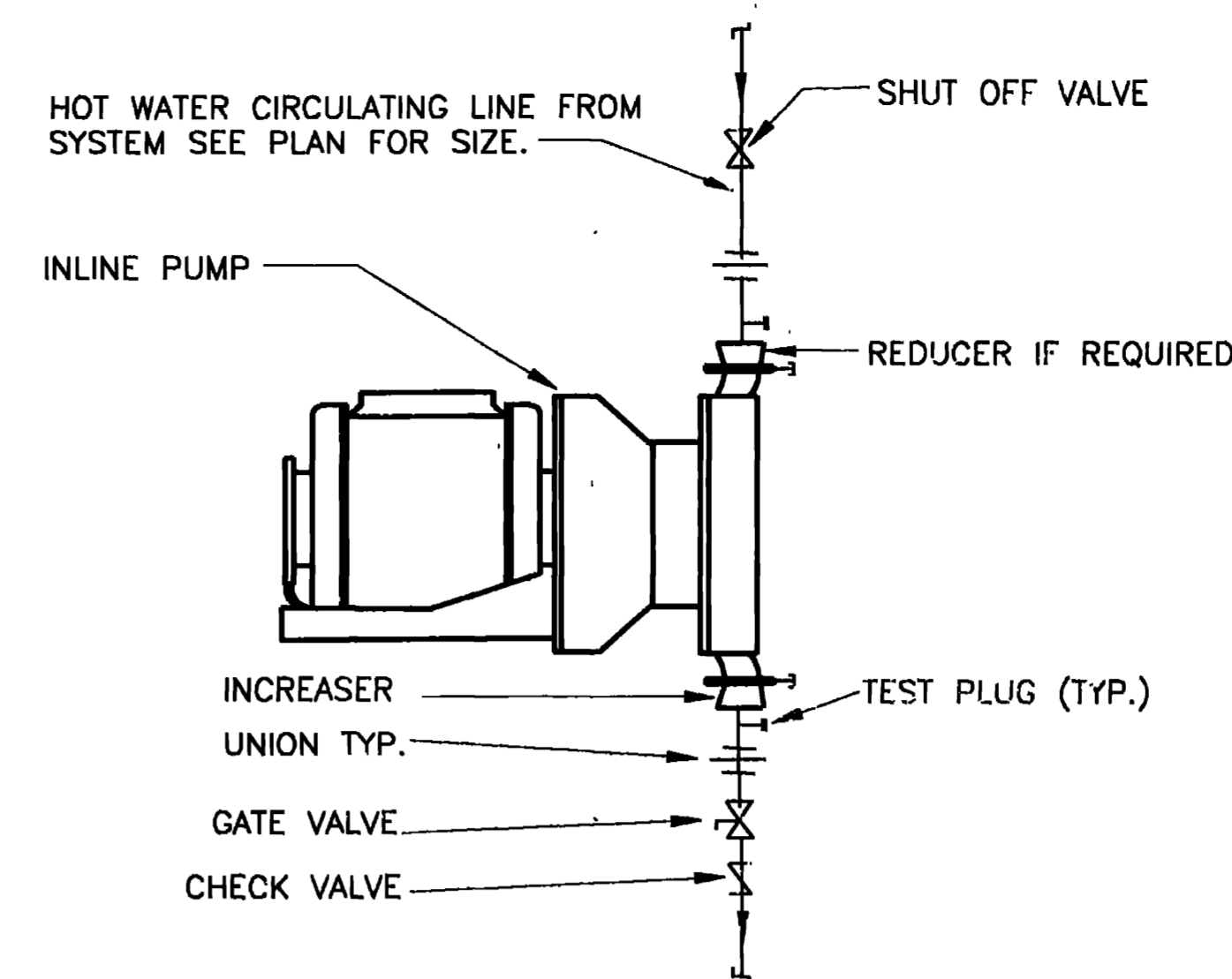
AM 10001 JUN 92 REVISED TO REFLECT W.I. CHANGE WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: <b>E. ELBERT</b>	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY: <b>E. ELBERT</b>	<b>FIRE TRAINING COMPLEX</b> <b>PLUMBING FLOOR PLAN-STRUCT. BURN HOUSE</b> & ENLARGED PLANS FIRE TRAINING BUILDING
REVIEWED BY: <b>C. WANG</b>	SUBMITTED BY: <b>[Signature]</b>
ENGINEER: <b>[Signature]</b>	SOL. NO. DACAG3-92B-0109 DATED: JUN. 1992 CONTR. NO. DACNS-92-C-0155 DRAWING NUMBER SHEET NO. M-13 OF 44 211



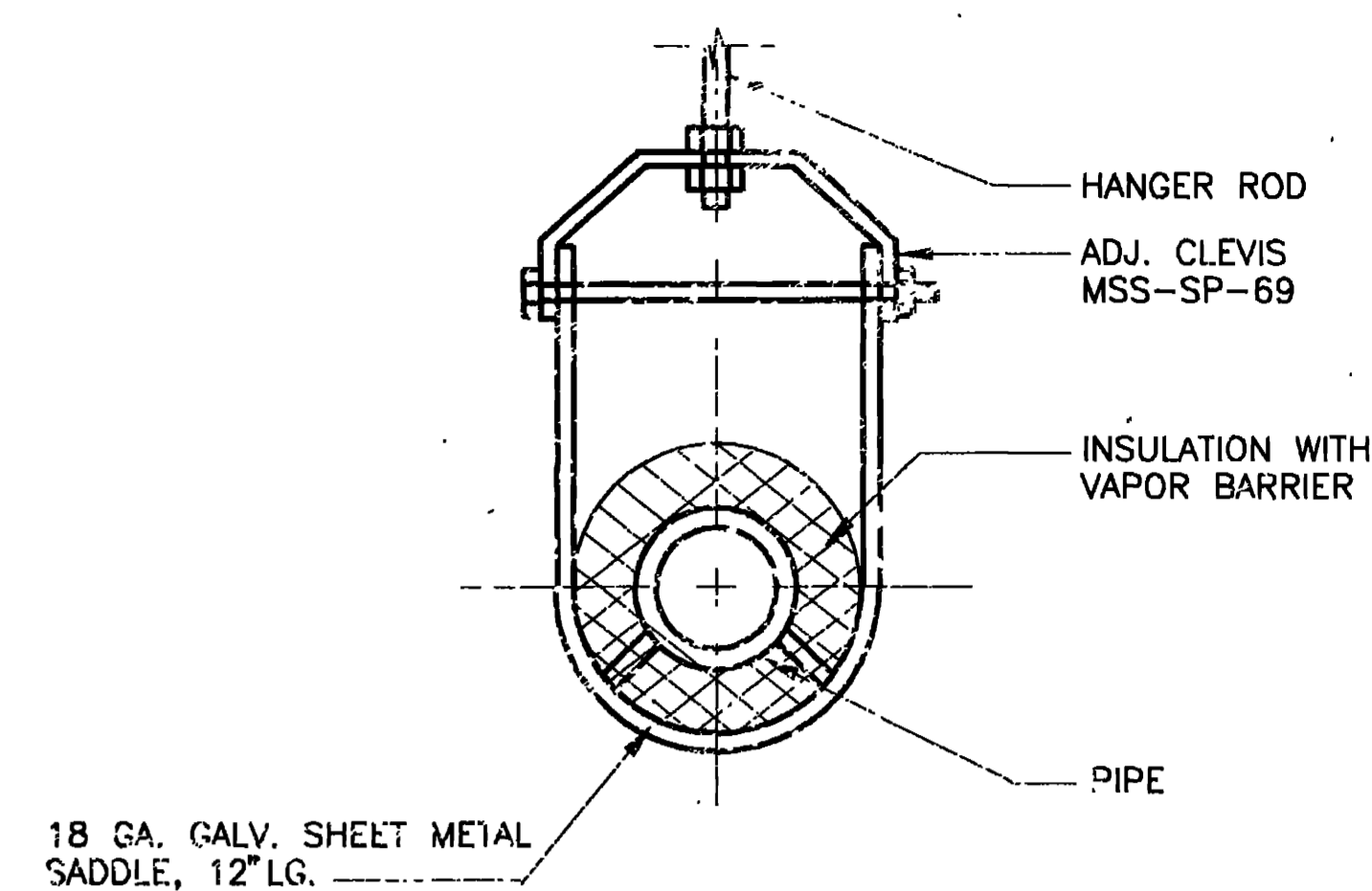
1 DOMESTIC HOT & COLD WATER PIPING SCHEMATIC  
M-7 M-14 SCALE: NTS



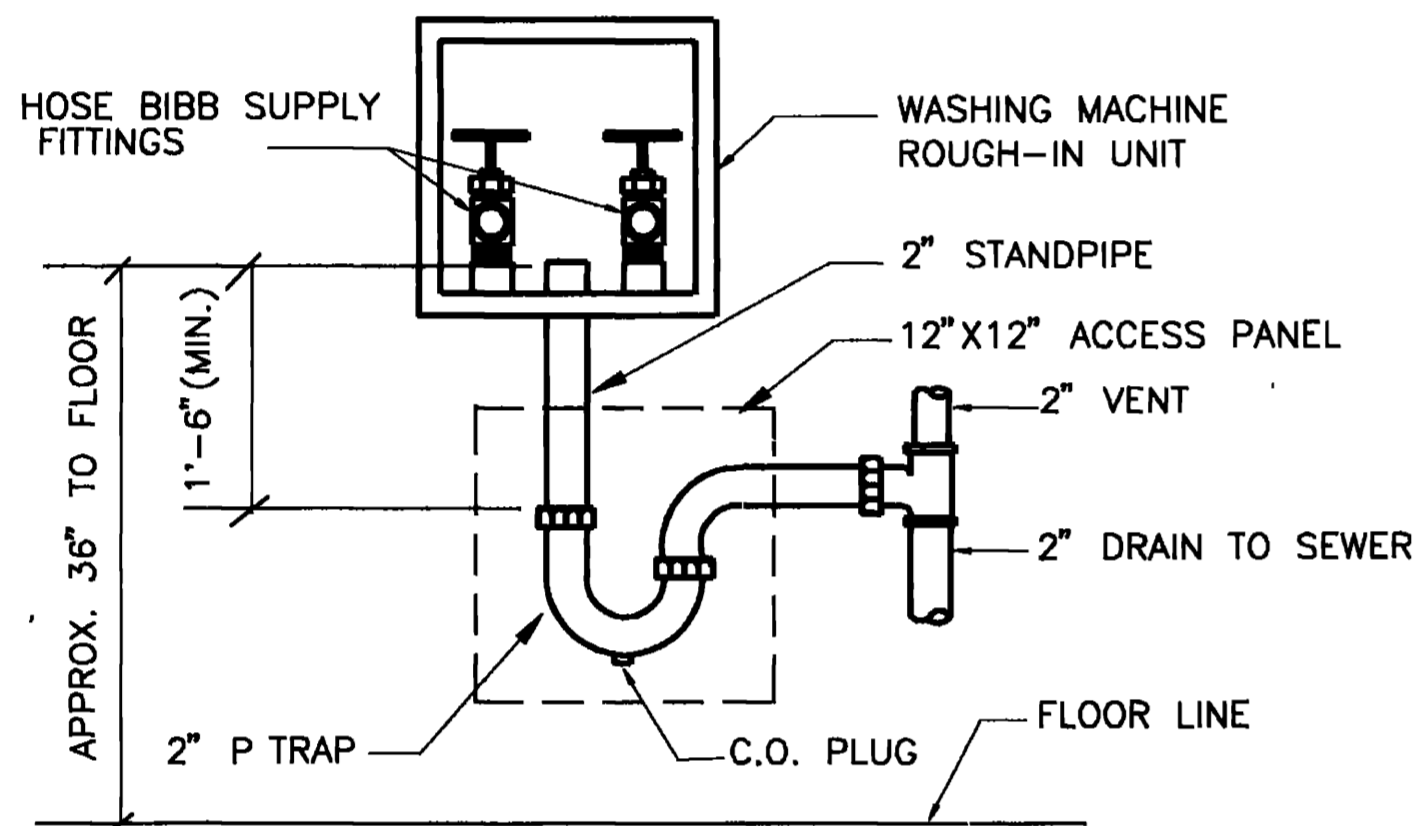
2 TYPICAL SERVICE ENTRANCE  
TYP. M-14 SCALE: NTS



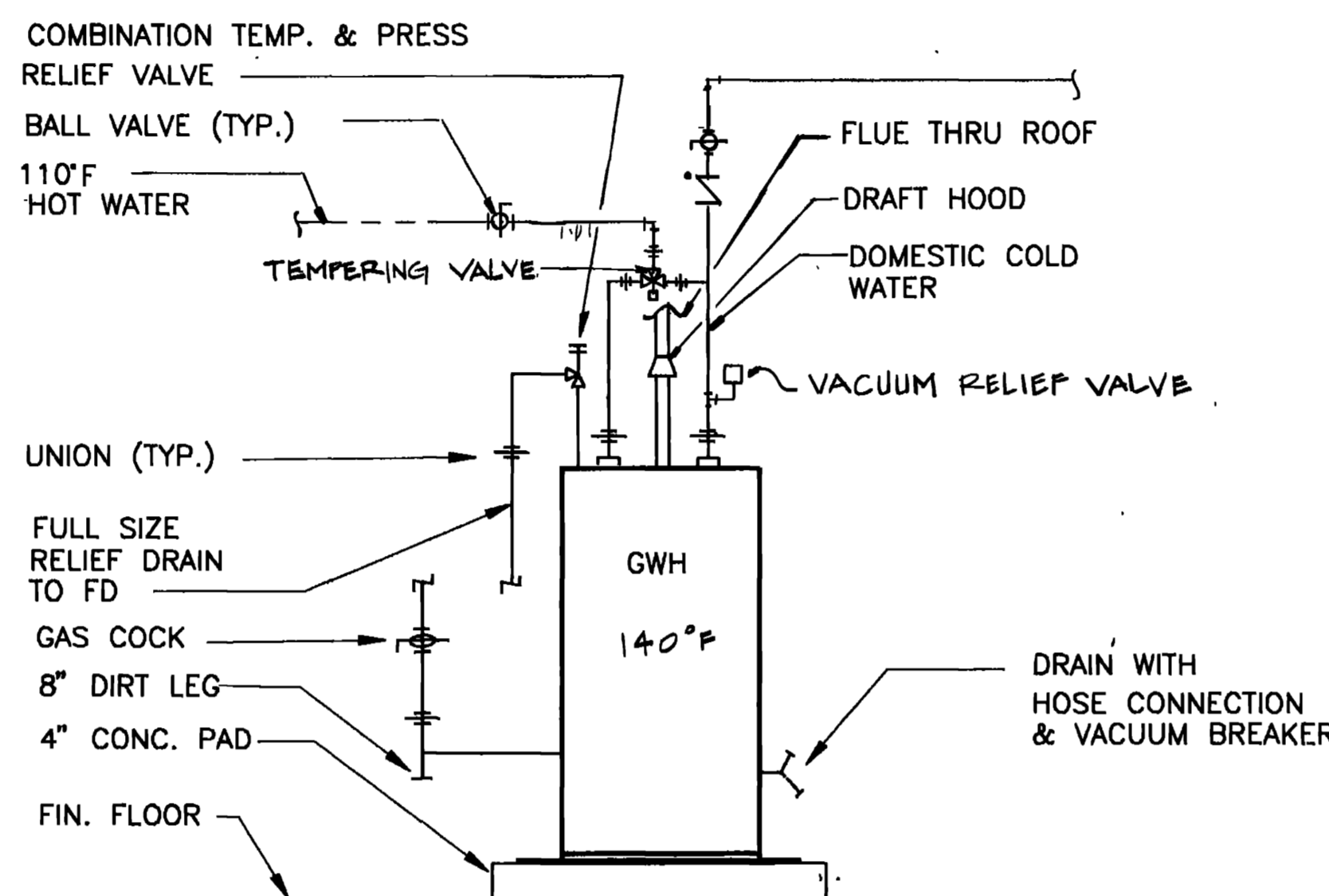
3 INLINE CIRCULATING PUMP DETAIL  
M-7 M-14 SCALE: NTS



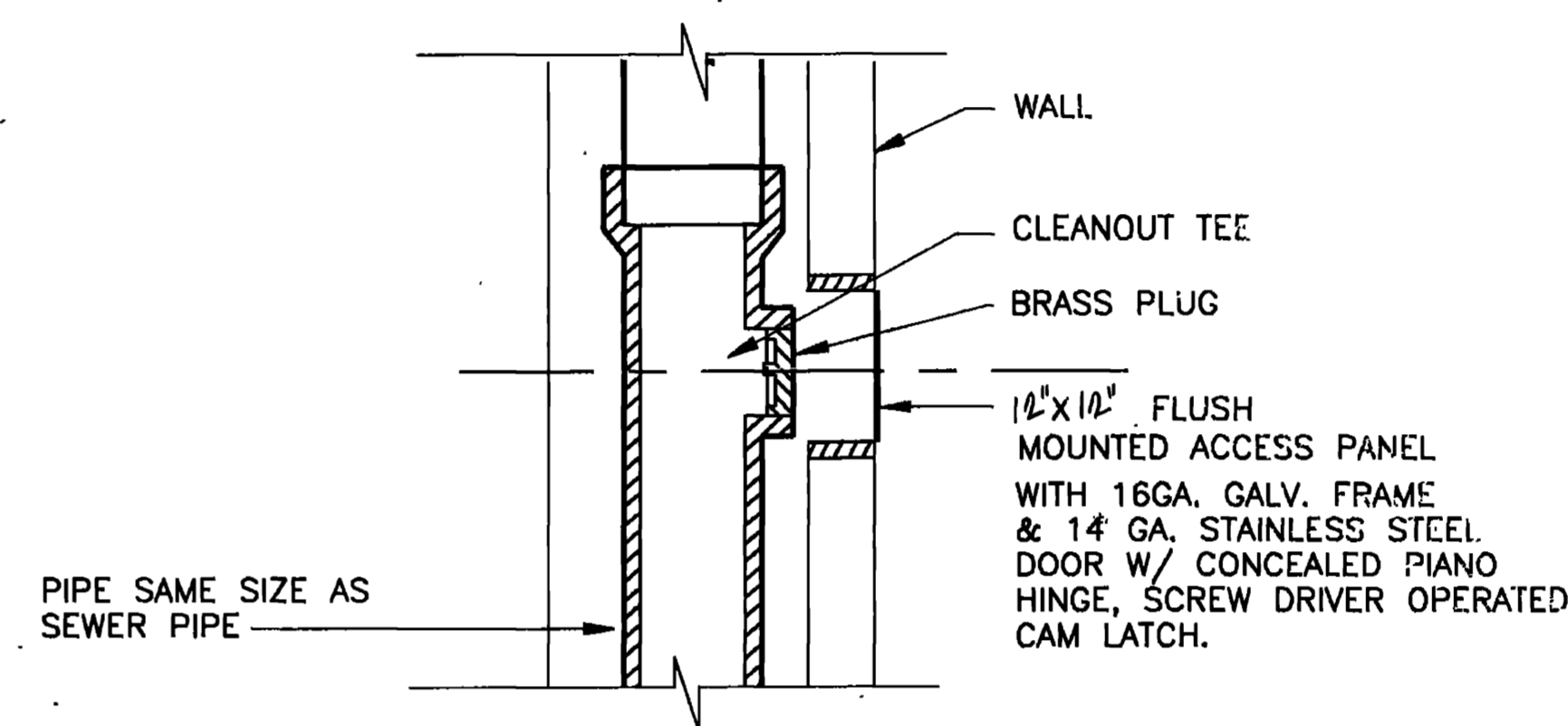
4 TYPICAL PIPE HANGER DETAIL  
TYP. M-14 SCALE: NTS



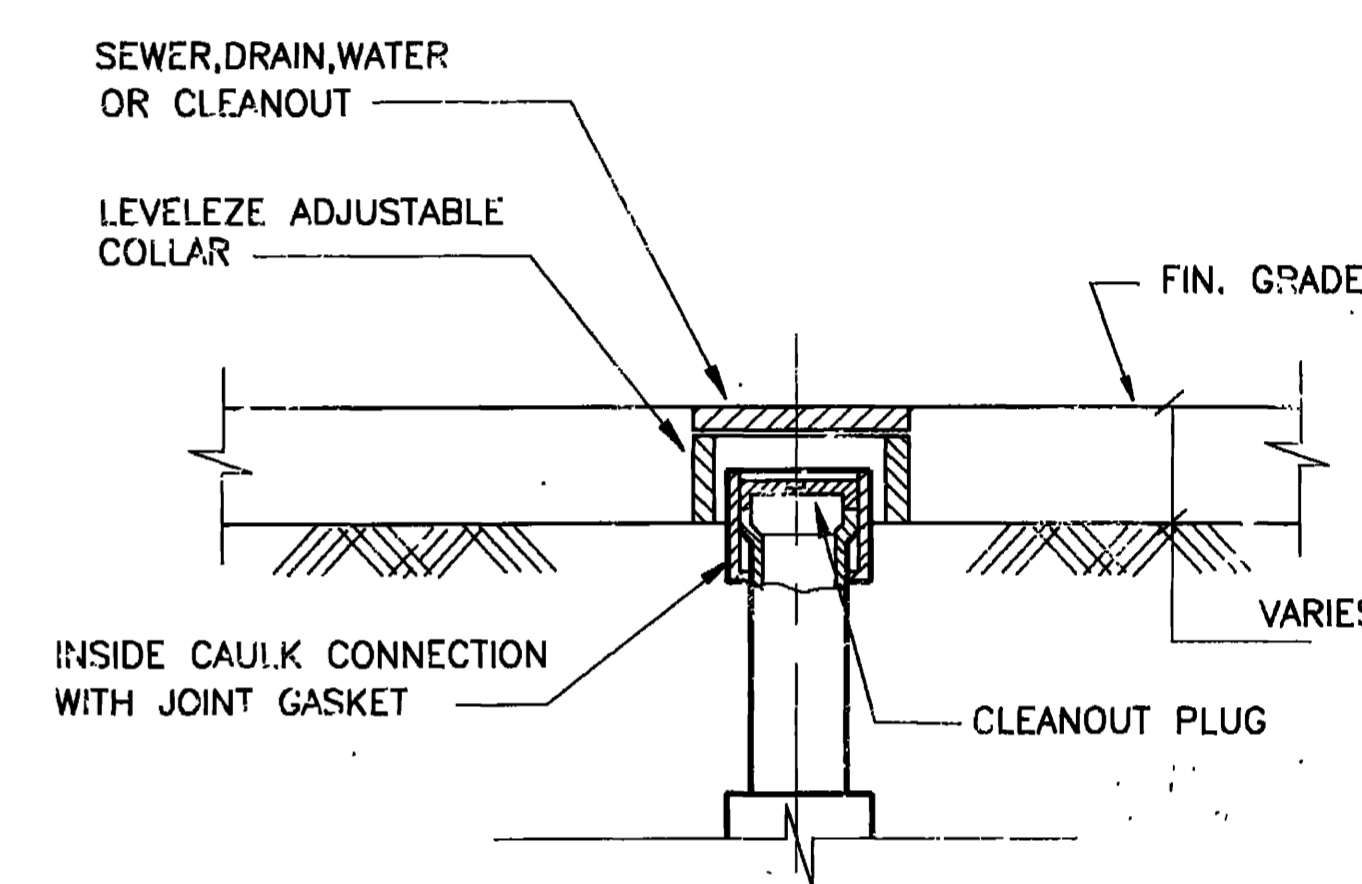
5 WASHING MACHINE ROUGH-IN UNIT DETAIL  
M-13 M-14 SCALE: NTS



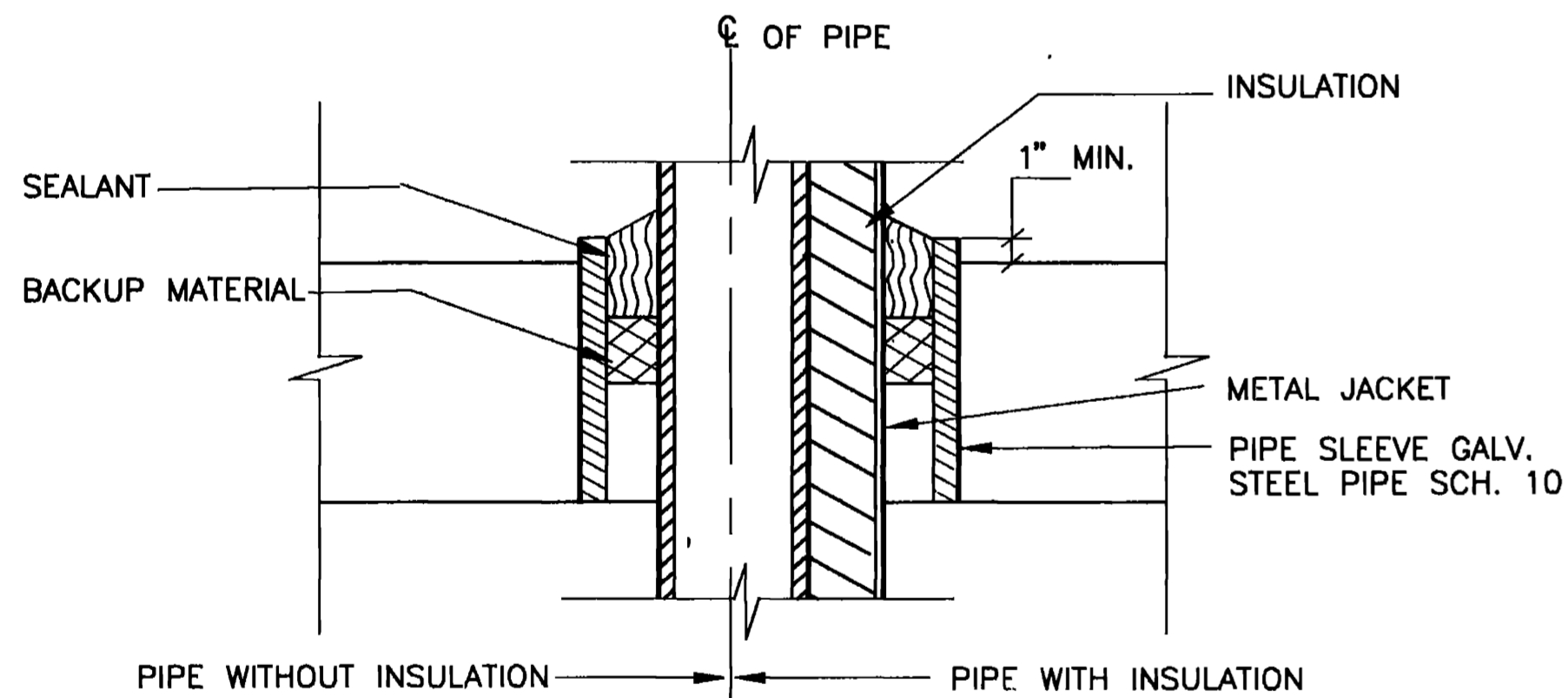
6 GAS FIRE WATER HEATER DETAIL  
M-11 M-12 M-14 SCALE: NTS



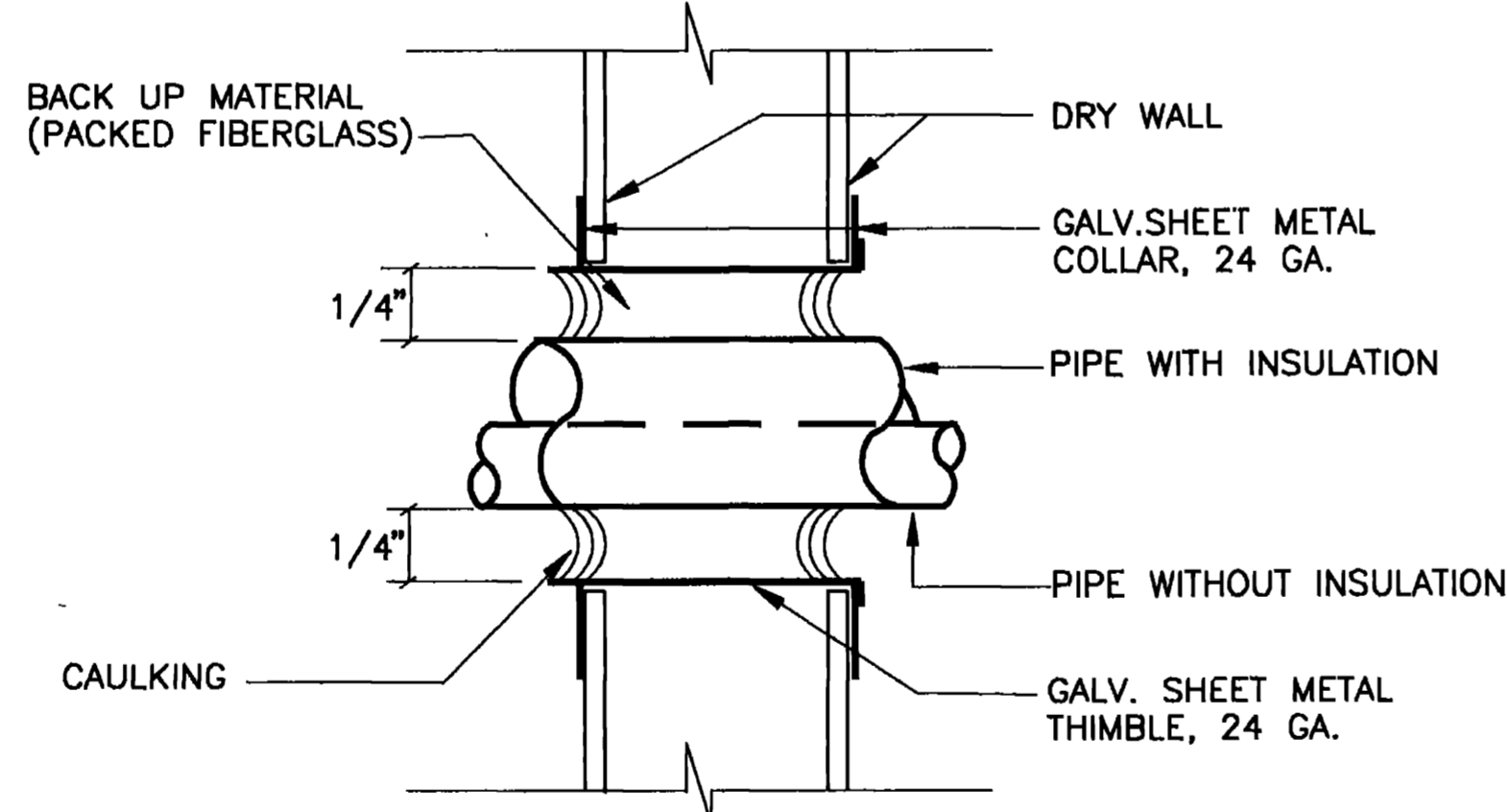
7 TYPICAL WALL CLEANOUT DETAIL  
TYP. M-14 SCALE: NTS



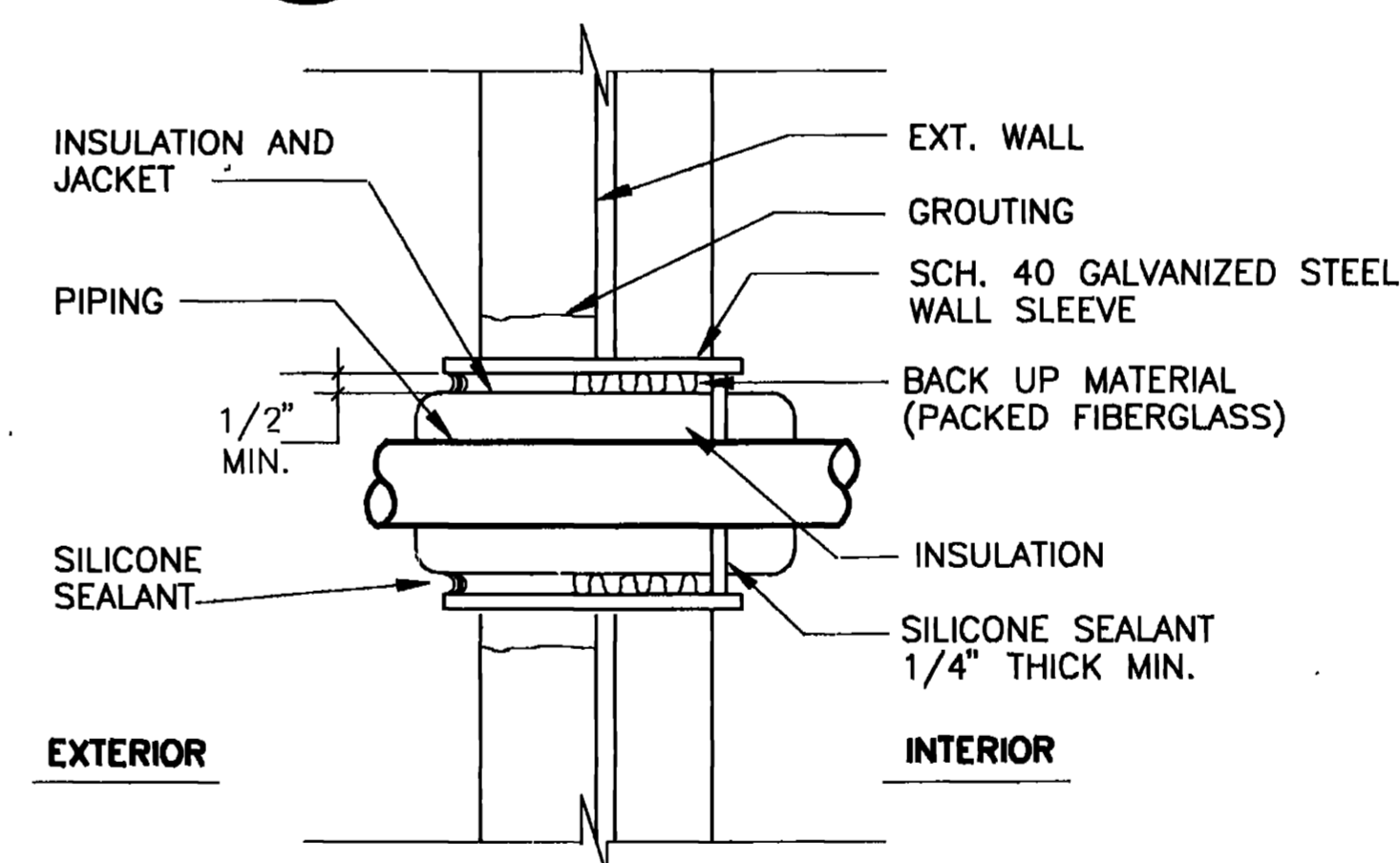
8 TYPICAL FLOOR CLEANOUT  
TYP. M-14 SCALE: NTS



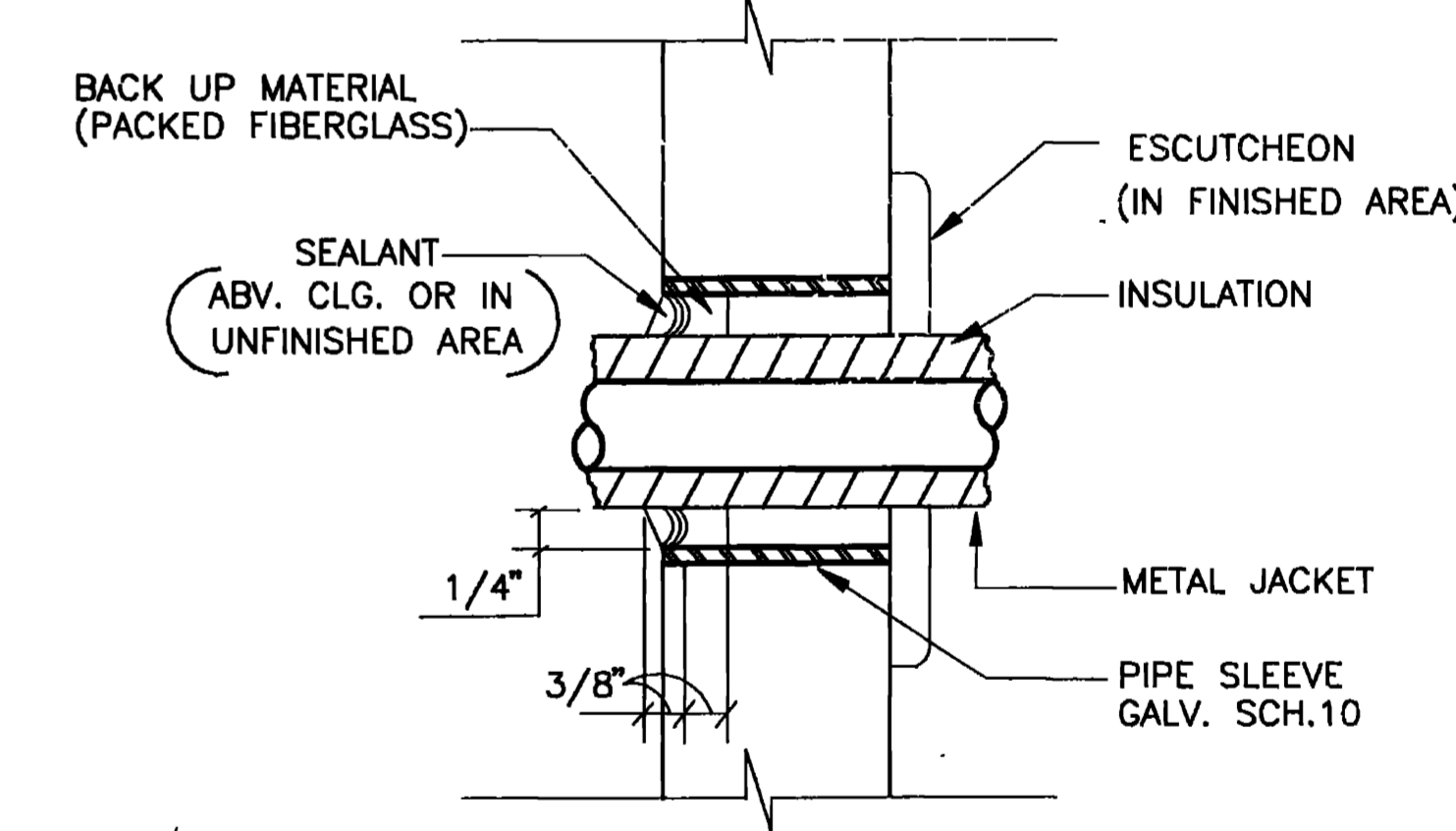
9 PIPE SLEEVE THRU FLOOR DETAIL  
TYP. M-14 SCALE: NTS



10 TYPICAL PIPE THRU DRY WALL  
TYP. M-14 SCALE: NTS

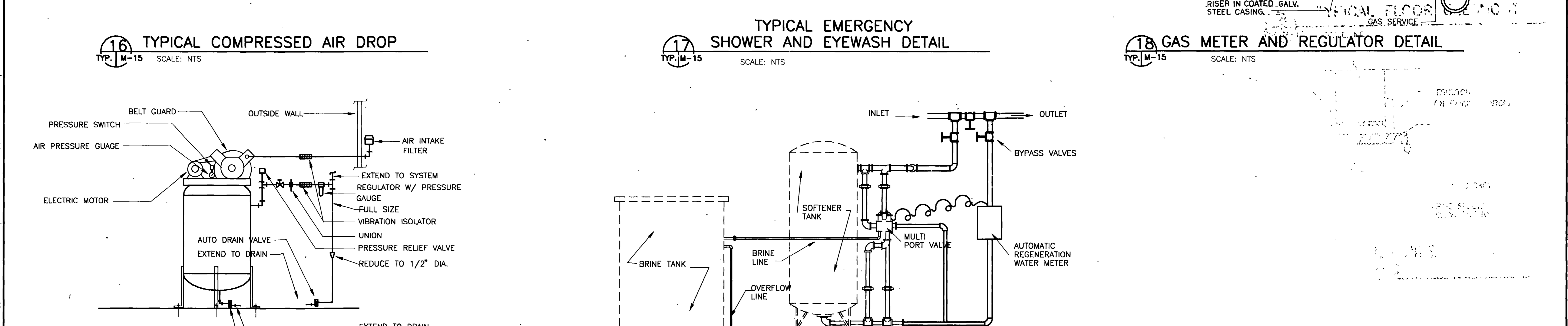
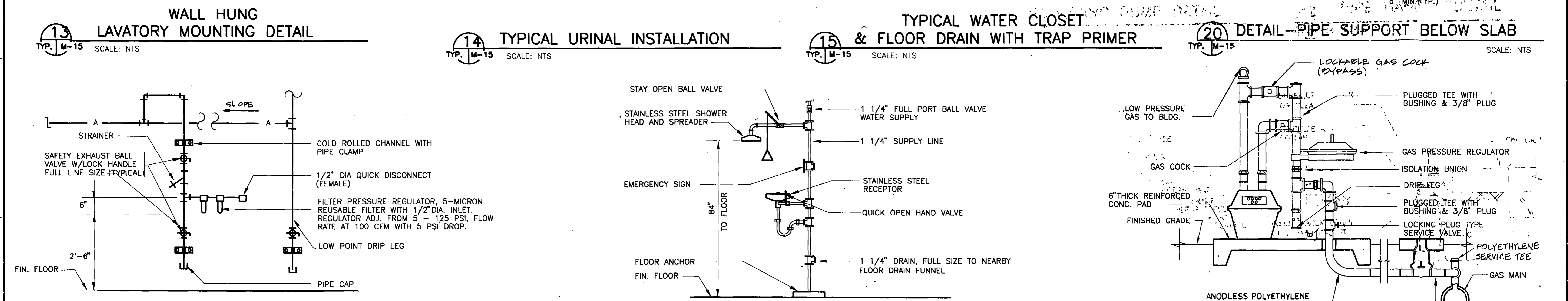
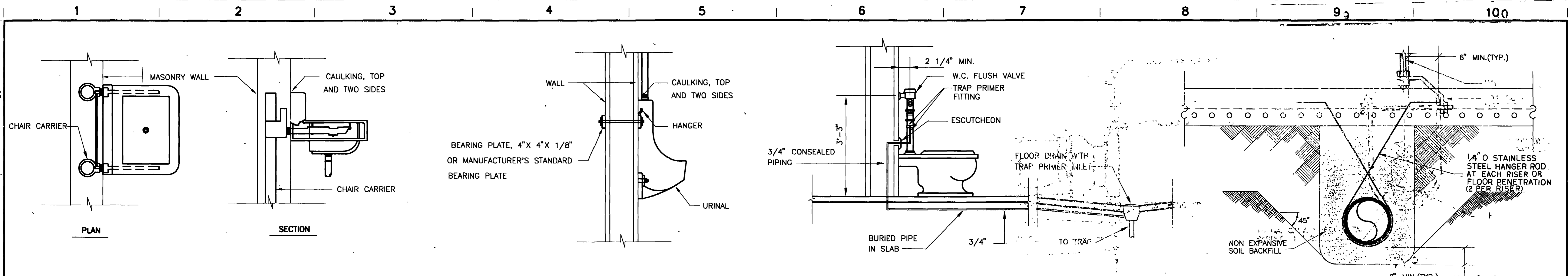


11 TYPICAL INSULATED PIPE PENETRATION THRU EXTERIOR WALL  
TYP. M-14 SCALE: NTS



12 INSULATED PIPE THRU INTERIOR MASONRY WALL  
TYP. M-14 SCALE: NTS

- AM# 2221 JUN 90 REVISED TO REFLECT W.I. CHANGE.			
SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION
COMPUTER FILE NAME:			
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: E. ELBERT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY: E. ELBERT	FIRE TRAINING COMPLEX PLUMBING DETAILS		
REVIEWED BY: T. WAN			
SUBMITTED BY: M. [Signature]	SOL. NO. DAC63-92-B-009 DATED: JUN. 1992		
ENGINEER: [Signature]	CONTR. NO. DAC63-92-C-015		SEQUENCE NO. 212
	DRAWING NUMBER	SHEET NO M-14 OF 44	



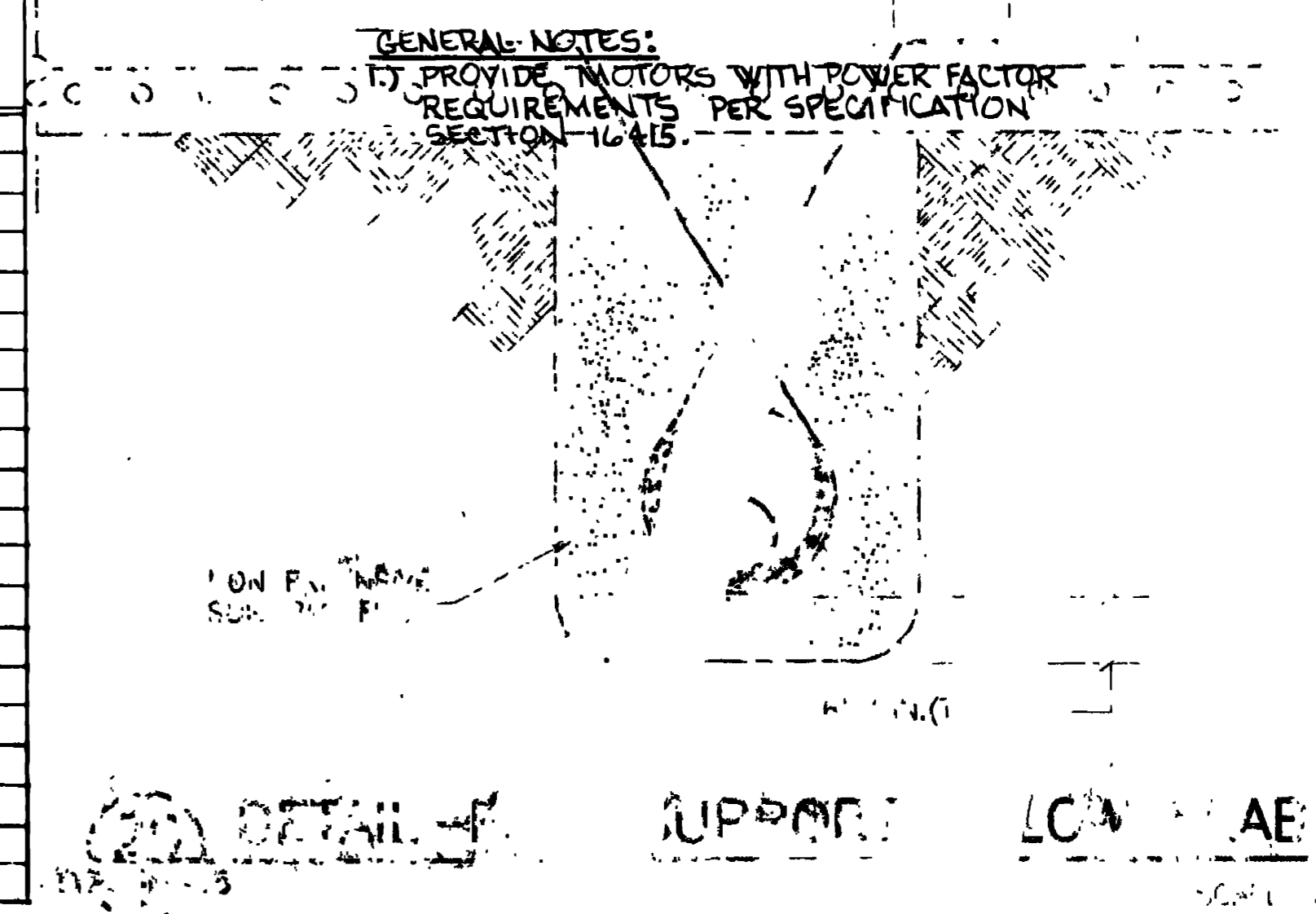
AM#022 4 JUN 92 REVISED TO REFLECT W.I. CHANGE			
SYN.D.O. NO.	ACTION	DATE	DESCRIPTION OF REVISION
COMPUTER FILE NAME:			
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: E. ELBERT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY: E. ELBERT	FIRE TRAINING COMPLEX PLUMBING DETAILS		
REVIEWED BY: T. WAN			
SUBMITTED BY: M. [Signature]	SOL. NO. DACAG3-92-B-990 DATED: JUN 19 1992		
ENGINEER: [Signature]	CONTR. NO. DACAG3-92-C-0155 SEQUENCE NO. 213		

2-28-91

CONTRACT NO. DACAG3-92-C-0155

### AIR HANDLING UNIT SCHEDULE

UNIT NO	BUILDING	UNIT LOCATION	SERVING	FAN SECTION				COOLING CAPACITY						HEATING CAPACITY				APPROX OP WT (LBS)	REMARKS		
				TOTAL FLOW CFM	MIN. Q.A. CFM	EXT. S.P. IN. W.G.	FAN MOTOR DATA HP/VOLTS/Φ	TOTAL M.B.H.	SENSE M.B.H.	ENT. AIR TEMP °F DB	WBS AIR TEMP °F WB	WAT. FLOW @ 45°F GPM	MAX. PD IN. W.G.	E.A. °F	WAT. FLOW @ 180°F GPM	MAX. PD IN. W.G.	MAX. FACE VEL.				
AHU-1A	FIRE TR. BLDG.	RM. 127A	SEE FL. PLAN	5400	3400	1.8	5/460/3	211.4	213.2	99.0	74.0	59.9	58.0	54	20	22	70	28.0	20	500	
AHU-2A		RM. 161	✓	9000	9000	1.8	15/460/3	444.4	348.6	98.3	73.0	59.9	58.0	89	20	22	70	47.0	20	500	
AHU-3A		RM. 171	✓	1575	1440	1.1	1.5/460/3	90.9	71.3	96.6	70.4	51.6	50.6	18	20	22	70	8.2	20	500	



① FAN DATA HAS BEEN CORRECTED WITH A DENSITY FACTOR OF 1.07 (0 70°F / 1077 FT. ELEV.)  
 ② FAN EXTERNAL STATIC PRESSURE (EXT. S.P.) INCLUDES RETURN AND SUPPLY AIR DUCT AND AIR DEVICES PRESSURE DROP ONLY.

### WATER COOLED WATER CHILLER SCHEDULE

UNIT NO	BUILDING	UNIT LOCATION	NOM. TONAGE	CHILLER DATA					CONDENSER DATA				UNIT ELECT. DATA		REMARKS
				GPM	ENT. WTR TEMP. (°F)	WBS WTR TEMP. (°F)	MAX. PRESS. DROP - FT.	EVAP. COEFF. FACTOR	GPM	ENT. WTR TEMP. °F	MAX. PRESS. DROP - FT.	COND. COEFF. FACTOR	MAX. KW	FLA/VOLTS/Φ	
C-1A	FIRE TR. BLDG.	RM-127A	198	475	45	55	20	.00025	594	85	20	.00025	166	136/460/3	

CHILLER SHALL BE SUITABLE FOR USE WITH REFRIGERANT R-22

### PUMP SCHEDULE

UNIT NO.	BUILDING	UNIT LOCATION	DUTY	WATER FLOW GPM	DIFF. HEAD FT. W.G.	PUMP EFFICIENCY (%)	MOTOR DATA		REMARKS	UNION
							HP	VOLTS/Φ		
P-1A	FIRE TR. BLDG.	RM. 127A	CHILLED W.	475	81	74	75	460/3	1750	
P-2A		RM. 127A	COND. W.	594	36	82	120	460/3		
P-3A		RM. 161	BOILER W.	126	48	60	5	460/3		
P-4A		RM. 127A	AHU CIRC.	27	20	45	1/2	115/1	700	
P-5A		RM. 161	AHU CIRC.	45	20	57	1/2	115/1		
P-6A		RM. 171	AHU CIRC.	9	20	30	1/4	115/1		

### COOLING TOWER SCHEDULE

UNIT NO	LOCATION	SERVING CHILLER NO.	GPM	ENT. WTR TEMP. (°F)	WBS WTR TEMP. (°F)	AMBIENT WET BULB TEMP. (°F)	FAN MOTOR DATA			REMARKS
							H.P.	VOLTS/Φ	R.P.M.	
CT-1A	WB COND. REFR. BLDG.	C-1A	594	95	85	74	7.5	460/3	1000	

① TWO SPEED / TWO WINDING MOTOR  
 ② PUSHIN DOWN HEATER @ 5 KW CAPACITY, 2-STAGE CONTROL

### HOT WATER BOILER SCHEDULE

UNIT NO	BUILDING	UNIT LOCATION	DESCRIPTION	MAX. INPUT M.B.H.	MIN. OUTPUT M.B.H.	GPM	MAX. PRESS. DROP. FT.	WBS WTR TEMP. (°F)	REMARKS

① PUSHIN BOILER WITH CIRCULATOR PUMP @ 180 TO MAINTAIN MINIMUM FLOW REQUIRED FOR PROPER BOILER OPERATION COMPLETE WITH CONTROLS.

### AIR SEPARATOR SCHEDULE

UNIT NO	CAPACITY GPM	SIZE OF TANGENTIAL SPINNING (IN.)	MIN. STRAINER FREE AREA (IN <sup>2</sup> )	REMARKS
AS-1A	475	5	140	
AS-2A	126	5	66	

### EXPANSION TANK SCHEDULE

UNIT NO.	TYPE	TANK VOL. GAL.	MIN. ACCEPTANCE VOLUME GAL.	MAX. OPERATING PRESSURE, PSIG.	MIN. FILL PRESSURE PSIG.	REMARKS
ET-1A	DIAPHRAGM	44	22.2	54	12	
ET-2A	DIAPHRAGM	100	44.7	54	12	

### HYDRONIC BASEBOARD (FINNED TUBE) HEATER SCHEDULE

UNIT NO	BUILDING	UNIT LOCATION	CAP. (BTU/HR) @ 160°F WATER	FINNED LENGTH (IN)	MAX. FIN SPACING (IN/FT)	GPM	REMARKS
BH-1A	FIRE TR. BLDG.	SEE FL. PLAN	1210	24	60	0.13	
BH-2A			1965	36		0.2	
BH-3A			2620	48		0.26	
BH-4A			3275	60		0.32	
BH-5A			3930	72		0.4	

### CONTROL VALVE SCHEDULE

MARK	TYPE	SIZE IN.	MAX. FLOW RATE, GPM	FLOW COEFF. Cv	MAX. PRESS. DROP, PSIG	REMARKS
V-1	DIAPHR.	1/2	0.35	0.3	2	
V-2			0.35	0.4		
V-3			0.35	0.7		
V-4			1.32	0.9		
V-5			1.70	1.2		
V-6			2.00	1.4		
V-7			2.50	1.8		
V-8		2	54.00	24.1	5	AHU-1A CHILLED WATER PIPING
V-9		2 1/2	89.00	34.8		AHU-2A
V-10			18.00	8.0		AHU-3A
V-11			26.00	12.5		AHU-1A HEATING WATER PIPING
V-12		1 1/2	47.00	21.0		AHU-2A
V-13		1 1/2	8.00	3.7		AHU-3A

APPROXIMATELY CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE  
 - AMTAD 4 JUN 92 REVISED TO REFLECT W.I. CHANGE

WALK, HAYDEL & ASSOC. INC.  
 ENGINEERS / ARCHITECTS  
 NEW ORLEANS MOBILE BATON ROUGE

U.S. ARMY ENGINEER DISTRICT, FORT WORTH  
 CORPS OF ENGINEERS  
 FORT WORTH, TEXAS

DESIGNED BY: D. KELLY  
 DRAWN BY: D. KELLY  
 REVIEWED BY: C. WANG

GOODFELLOW AIR FORCE BASE  
 SAN ANGELO, TEXAS

**FIRE TRAINING COMPLEX**  
 EQUIPMENT SCHEDULES, HVAC

DATE: JUN 1992  
 CONTR. NO. DACAG3-92-C-0155  
 DRAWING NUMBER: M16 0744  
 SHEET NO.: 214



FS

### FAN COIL SCHEDULE

UNIT NO.	BUILDING	LOCATION	FAN DATA				COOLING					HEATING				REMARKS		
			CFM	E.S.P. IN W.G.	FAN MOTOR WATT	VOLT/Φ	TOTAL		GEN. CAP. MBH	ENT. AIR TEMP. °F		CH. W. GPM @ 45°F ENT.	PRESS. (MAX) DROP. FT. H <sub>2</sub> O	CAP. MBH	ENT. AIR °F		HOT WATER FLOW GPM @ 180°F	PD FT. W.G.
							MBH	MBH		IN. DB	OUT. DB							
FC-1A	FIRE TR. BLDG	SEE PL. PLAN	875	.25	510	277/1	22.3	13.3	65	75	4.5	11.0	3.4	68	0.4	5.0		
FC-2A			920	.25	410		26.0	21.1			5.2		4.2	68	0.5			
FC-3A			550	.25	270		15.4	11.0			3.1		2.4	68	0.3			
FC-4A																NOT USED		
FC-5A			1215	.25	470		30.5	24.6			6.1		6.4	68	0.7			
FC-6A			300	.25	280		7.1	5.6			1.4		4.4	68	0.5			
FC-7A			640	.25	280		17.4	13.9			3.5		3.2	68	0.4			
FC-8A			220	.25	145		6.0	4.6			1.2		1.1	68	0.2			
FC-9A			150	.25	110		4.6	3.3			1.0		0.2	68	0.1			
FC-10A			650	.25	295		24.2	17.9			4.0		1.8	68	0.2			
FC-11A			345	.25	130		10.7	7.4			2.2		2.3	68	0.3			
FC-12A			125	.25	75		3.5	2.6			0.7		1.6	68	0.2			
FC-13A			480	.25	140		13.0	9.5			2.0		2.2	68	0.3			
FC-14A			200	.25	145								1.0	50	1.7	5.0		
FC-15A			300	.25	200								2.0	50	2.5	5.0		

① FAN EXTERNAL STATIC PRESSURE (E.S.P.) INCLUDES RETURN AND SUPPLY AIR DUCT AND AIR DEVICE PRESSURE DROP ONLY.

GENERAL NOTE:  
 ① PROVIDE MOTORS WITH POWER FACTOR REQUIREMENTS PER SPECIFICATION SECTION 16415.

### SPLIT SYSTEM AIR SOURCE HEAT PUMP SCHEDULE

SYSTEM LOCATION	UNIT NO.	INDOOR SECTION								OUTDOOR CONDENSER			REMARKS											
		ELECTRICAL DATA				FAN DATA		COOLING		HEATING		AUX. HEAT		UNIT NO.	ELECT. DATA									
		HP	MCA	VOLTS/Φ	TOTAL CAP. (CFM)	E.S.P. IN W.G.	ENT. AIR TEMP. °F DB	ENT. AIR TEMP. °F WB	TOTAL MBH	GEN. MBH	AIR FLOW (CFM)	ENT. AIR TEMP. °F		CAPACITY MBH	KW	VOLTS/Φ	NO. OF STEPS	COMP. RLA	FAN FLA	VOLT/Φ				
TRAINING BLDG	BC-1C	3/4	6.0	230/1	15.95	500	0.60			84.9	67.7	30.6	44.9	770	54.5	2.9	8.6	230/1		HP-1C	9.7	11.7	460/3	BID OPTION No. 1
CONTROL TWR	BC-1E	1/2	4.9	208/1	0.90	40	0.60			75.9	62.1	19.3	18.4	620	61.0	1.1	8.4	208/1		HP-1E	13.1	12.1	208/1	

### INFRA-RED HEATER SCHEDULE

UNIT NO.	BUILDING	LOCATION	TYPE	CAP. BTU/HR INPUT	ENT. AIR °F	MOTOR ELECT. RUN AMP	START AMP	VOLTS/Φ	REMARKS
FC-1A	FIRE TR. BLDG	VEH. HIGH BAY	CON. INTENSIFY GAS FRED	75,000	22	0.9	4.3	115/1	① UL REQ'D

① NOTE: TUBE LENGTH 40'-0"      BID OPTION No. 1

### HYDRONIC UNIT HEATER SCHEDULE

UNIT NO.	BUILDING	LOCATION	AIR FLOW (CFM)	FAN ELECT. DATA AMP	FAN ELECT. DATA VOLTS/Φ	FAN ELECT. DATA WATTS	HEATING CAP. (BTU/H)	GPM @ 180°F	REMARKS
UH-1A	FIRE TR. BLDG	RM. 140	320	7	115/1	5	8216	0.8	

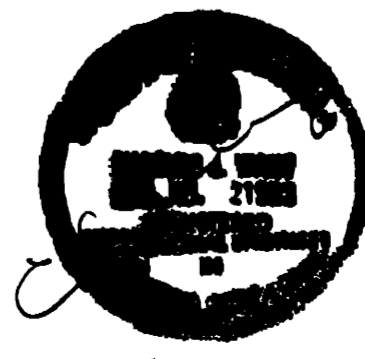
### SELF-CONTAINED THRU-WALL HEAT PUMP SCHEDULE

UNIT NO.	BUILDING	LOCATION	NOM. HI SPEED (CFM)	O.A. (CFM)	COOLING CAP. @ 99°F AMER				ELECTRICAL DATA						REMARKS				
					MIN. TOTAL BTU/HR	MIN. GEN. BTU/HR	DB	WB	COMPRESSOR CAP. MTR.	SWAMP. MTR.	COND. MTR.	HP	VOLTS/Φ	AMP					
HP-1E	VEH. MAIN. FAC.	SAME	260	40	7476	6348	80.8	66.3	2.5	208/1	12.4	208/1	3.5	1/8	208/1	0.5	1/2	208/1	0.7
HP-1D	FUEL DISP. STA.	SAME	275	60	10,477	9,168	81.0	66.4	3.0	208/1	14.2	208/1	3.6	1/8	208/1	0.5	1/2	208/1	0.7

### GAS FIRED UNIT HEATER SCHEDULE

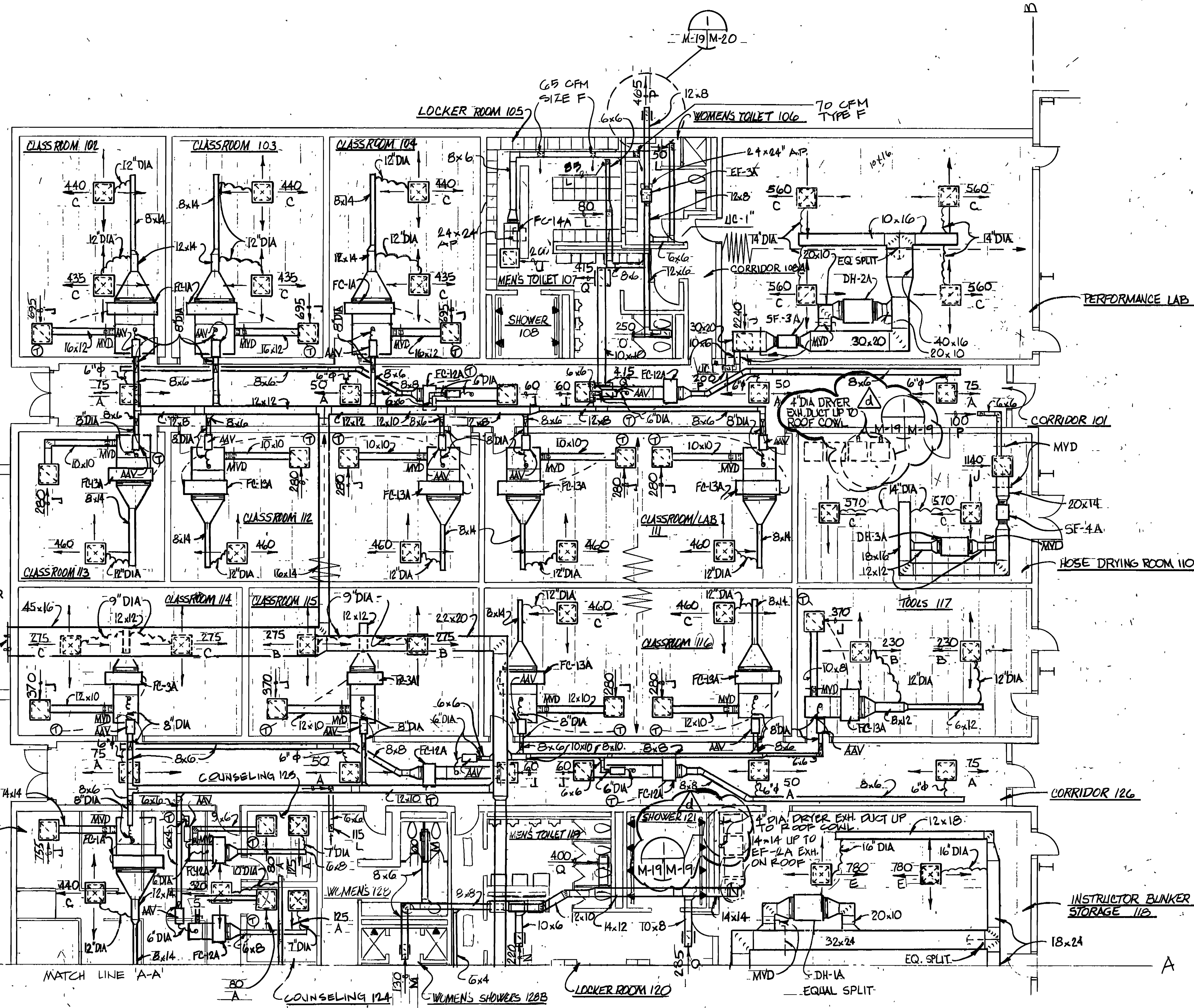
UNIT NO.	BUILDING	LOCATION	CFM @ 0.2" SP	FAN (HP)	FAN VOLTS/Φ	FLA	WATTS (FULL LOAD)	MAX. INPUT (MBH)	OUTPUT (MBH)	REMARKS
UH-1A	FIRE TR. BLDG	VEH. HIGH BAY	6580	1 1/2	460/3	4.8	172.5	400	308	

APPROVED: [Signature]	DATE: 12/1/92	REVISION: TO REFLECT REMOVAL OF I.R. HTRS
APPROVED: [Signature]	DATE: 6/1/92	REVISION: TO REFLECT W.I. CHANGE
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS    MOBILE    BATON ROUGE		
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
DRAWN BY: D. KELLY	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS <b>FIRE TRAINING COMPLEX</b>	
REVIEWED BY: S. XANG	<b>EQUIPMENT SCHEDULES, HVAC</b>	
SUBMITTED BY: [Signature]	SOL. NO. DACAG5-92B-0100	DATED: JUN. 1992
ENGINEER: [Signature]	CONTR. NO. DACAG3-92-C-0155	SEQUENCE NO. 215



CONT. NO. DACAG5-92-C-0155

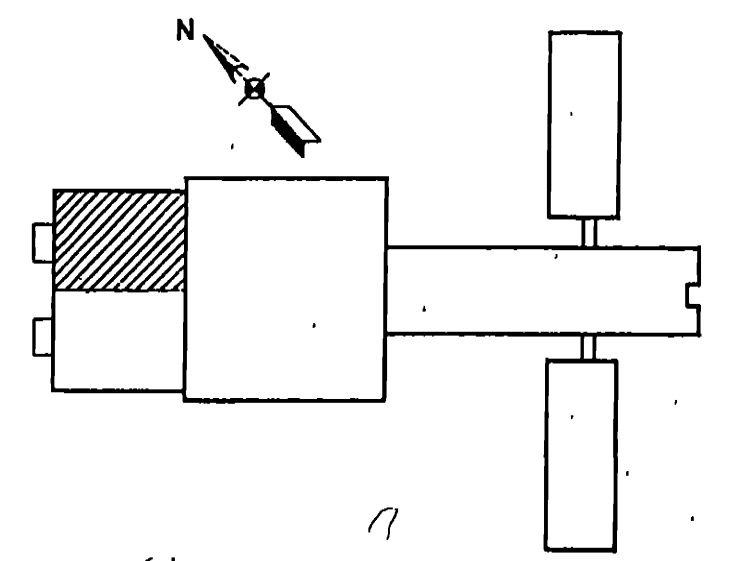
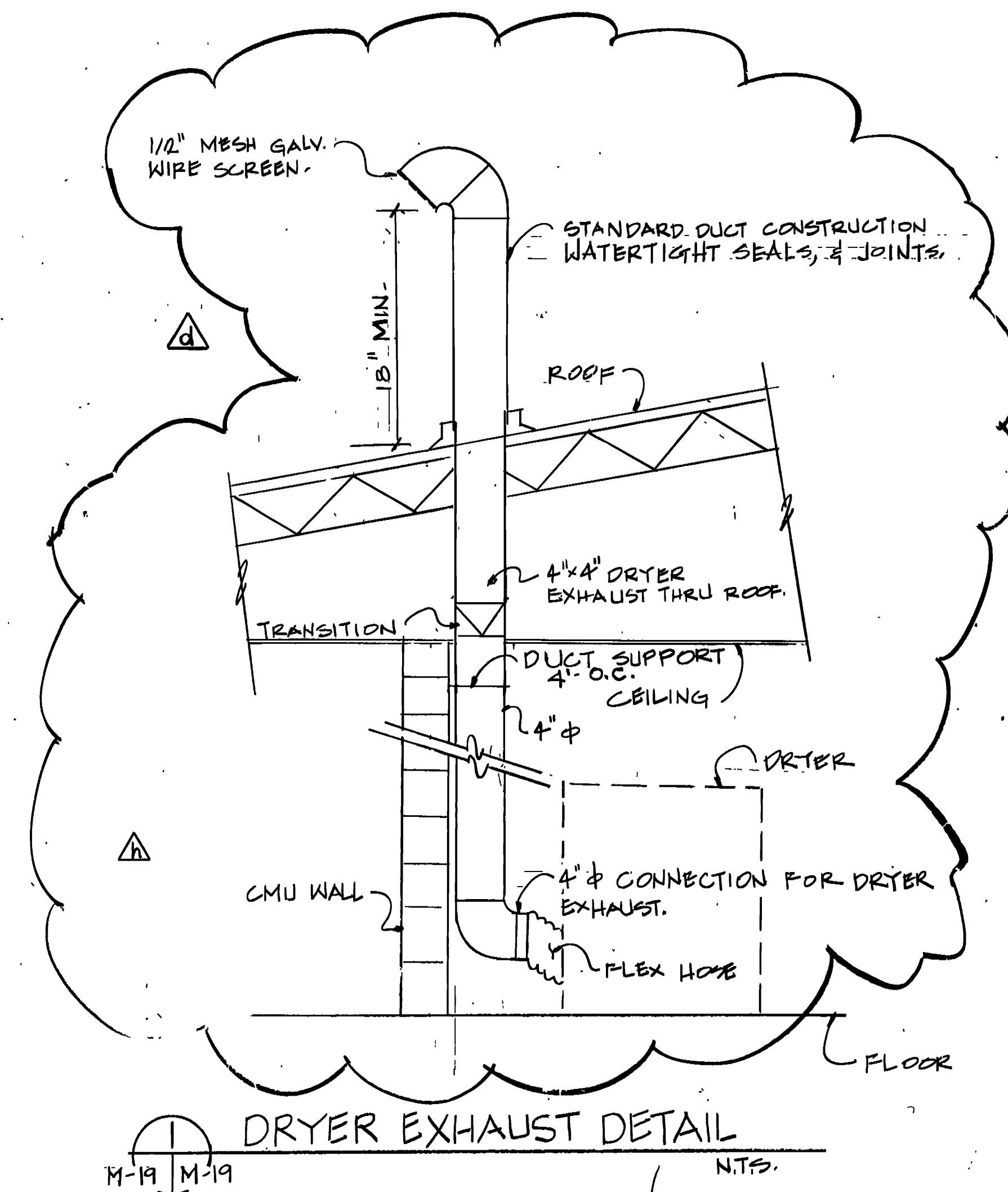
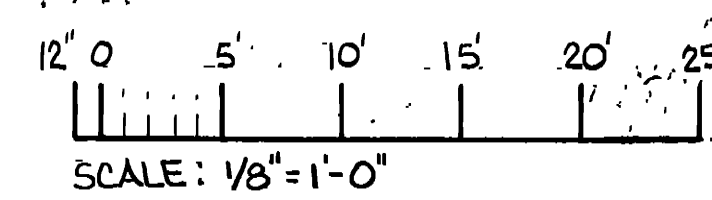




FLOOR PLAN (HVAC)  
SCALE: 1/8"=1'-0"

- NOTES:
- DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION.
  - ALL DUCT SHOWN ON THIS PLAN SHALL BE RATED AT -1-IN W.G. 2500 FPM CLASS FOR NEGATIVE PRESSURE AND +2-IN W.G. 2500 FPM CLASS FOR POSITIVE PRESSURE DUCTWORK.
  - SEE SHEET M-27 THRU M-32 FOR HEATING AND COOLING PIPING.

GRAPHIC SCALE:

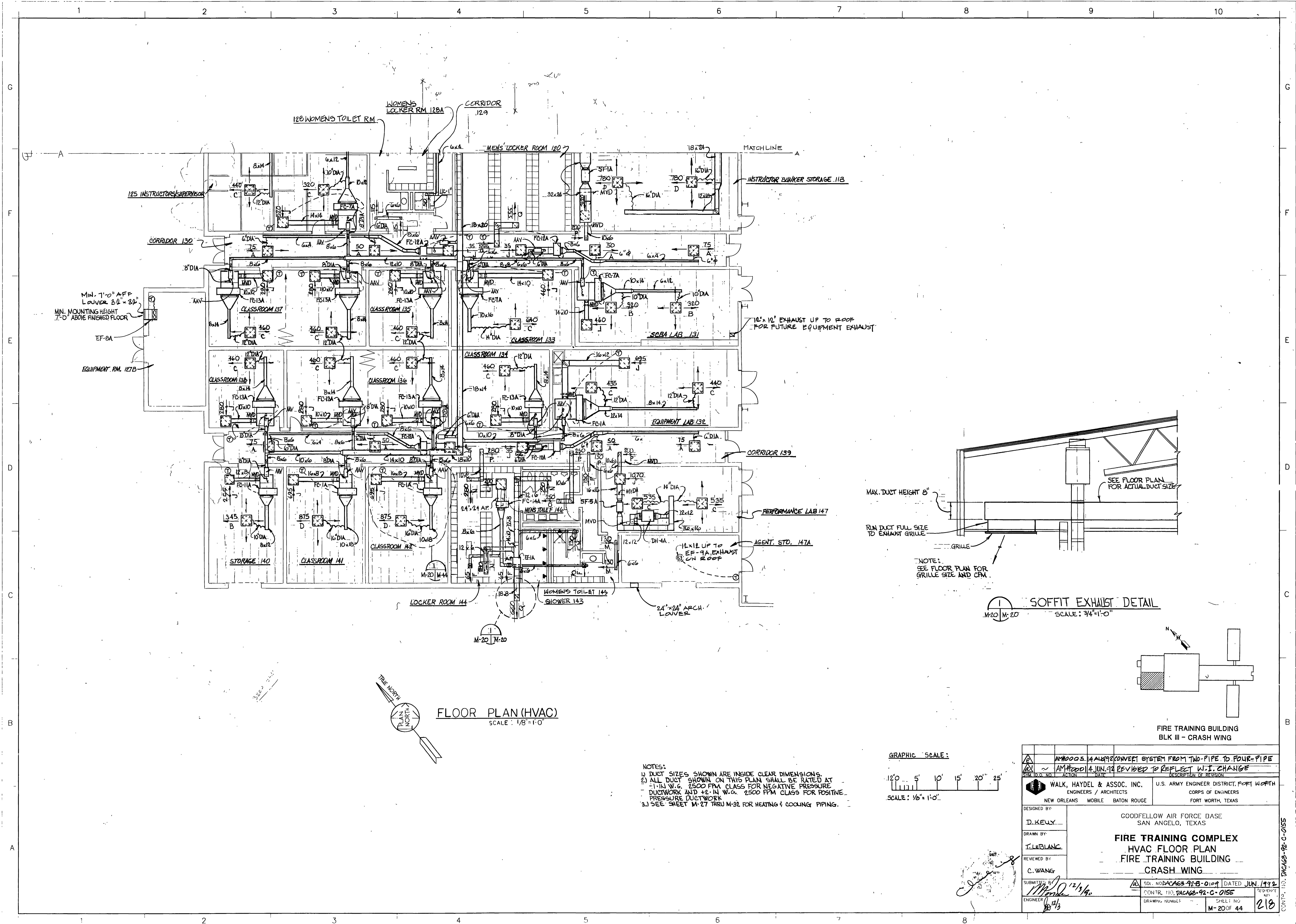


FIRE TRAINING BUILDING  
BLK IV - STRUC WING

AM#2008 25592	REVISED TO REFLECT CHAS TO DRYER DET.
AM#0004 18ANG.92	REVISED TO REFLECT DRYER EXHAUST DET.
AM#0001 4JUN.92	REVISED TO REFLECT W.I. CHANGE
DATE	DESCRIPTION OF REVISION
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: D. J. KELLY	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY: J. L. BLANK	<b>FIRE TRAINING COMPLEX HVAC FLOOR PLAN</b>
REVIEWED BY: C. WANG	<b>FIRE TRAINING BUILDING STRUCT WING</b>
SUBMITTED BY: M. D. [Signature]	SOL. NO. DACAG3-12-13-0109 DATED JUN. 1992
ENGINEER: M. D. [Signature]	CONTR. NO. DACAG3-92-C-0155
	DRAWING NUMBER SHEET NO. 217
	M-19 of 44

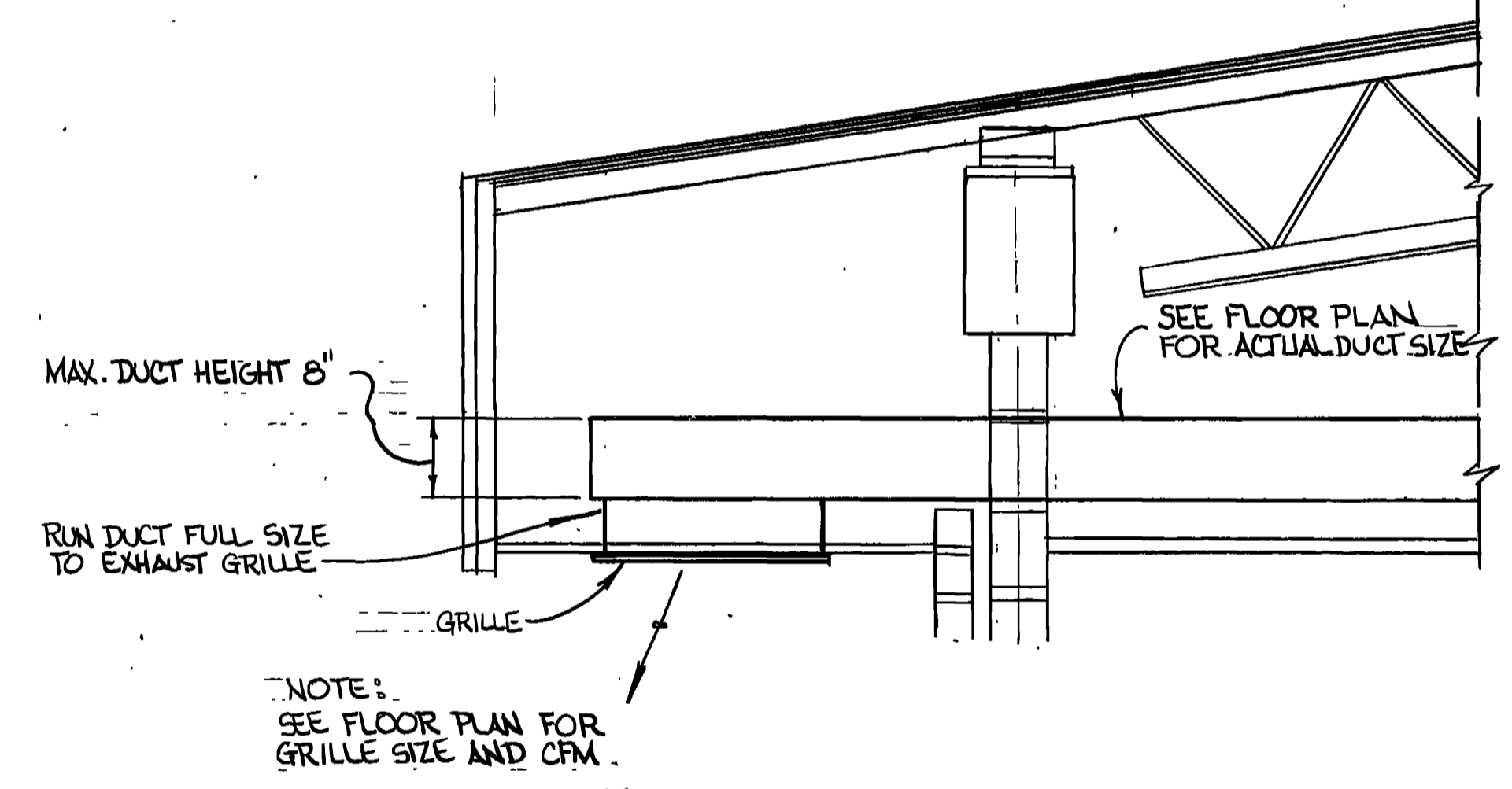
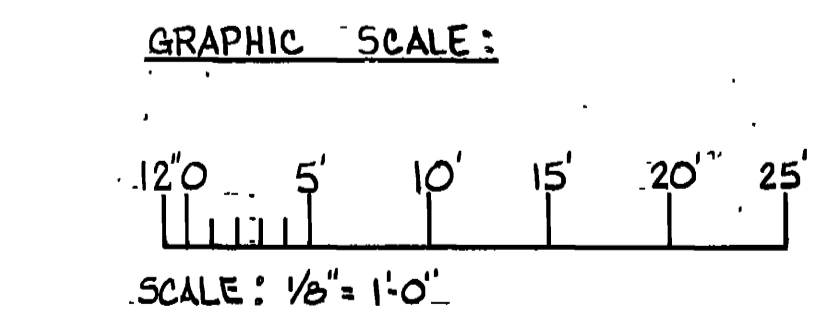
CONTR. NO. DACAG3-92-C-0155

27

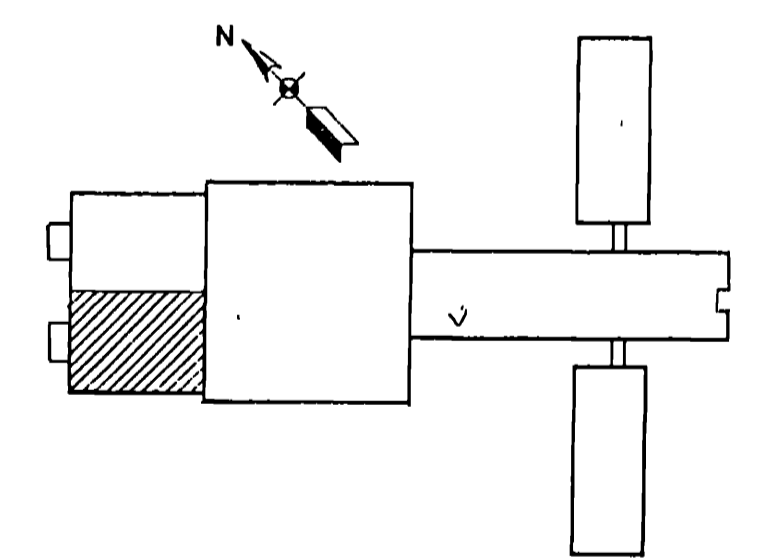


**FLOOR PLAN (HVAC)**  
SCALE: 1/8" = 1'-0"

- NOTES:
- 1) DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
  - 2) ALL DUCT SHOWN ON THIS PLAN SHALL BE RATED AT -1 IN. W.G. 2500 FPM CLASS FOR NEGATIVE PRESSURE DUCTWORK AND +2 IN. W.G. 2500 FPM CLASS FOR POSITIVE PRESSURE DUCTWORK.
  - 3) SEE SHEET M-27 THRU M-32 FOR HEATING & COOLING PIPING.

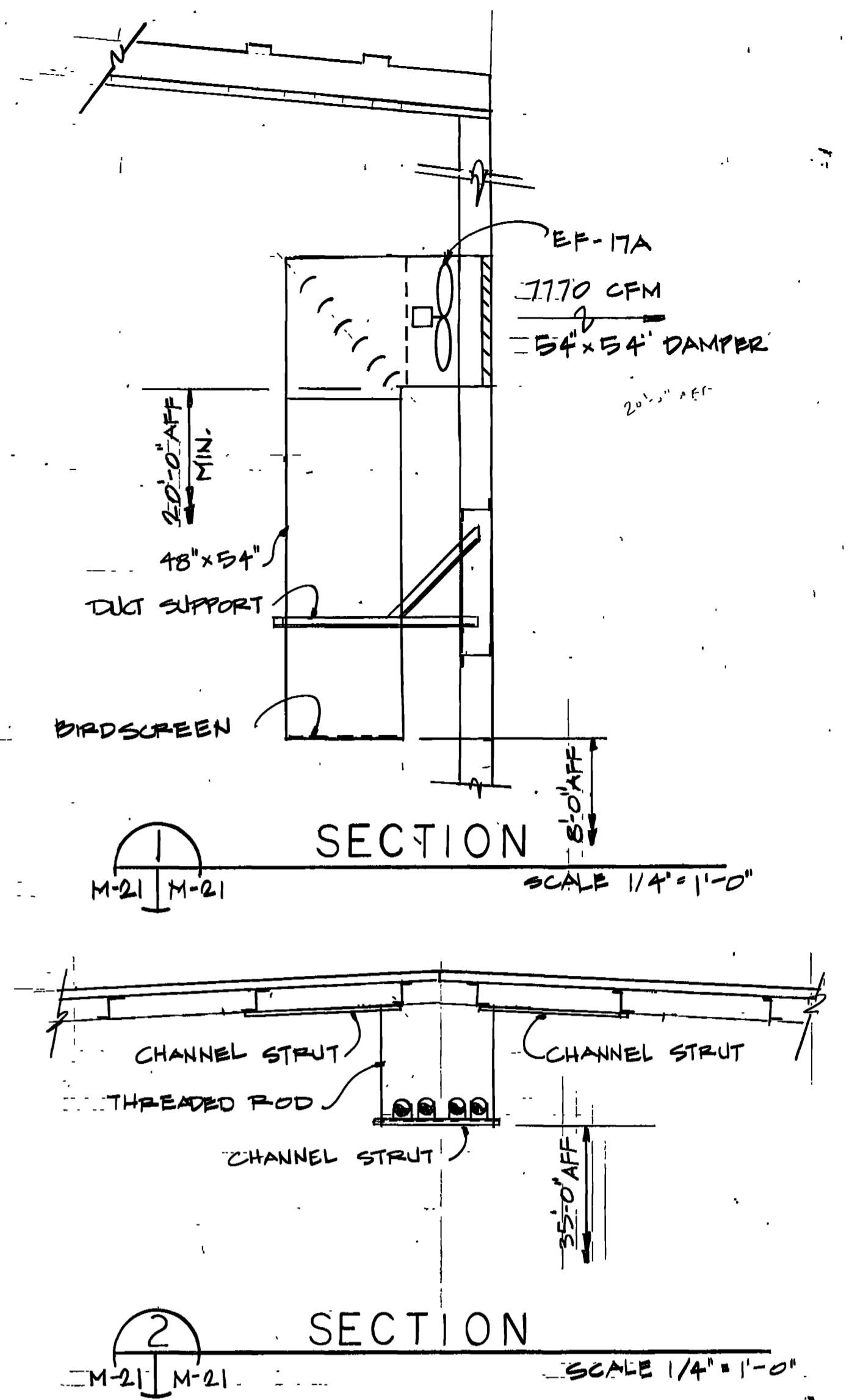
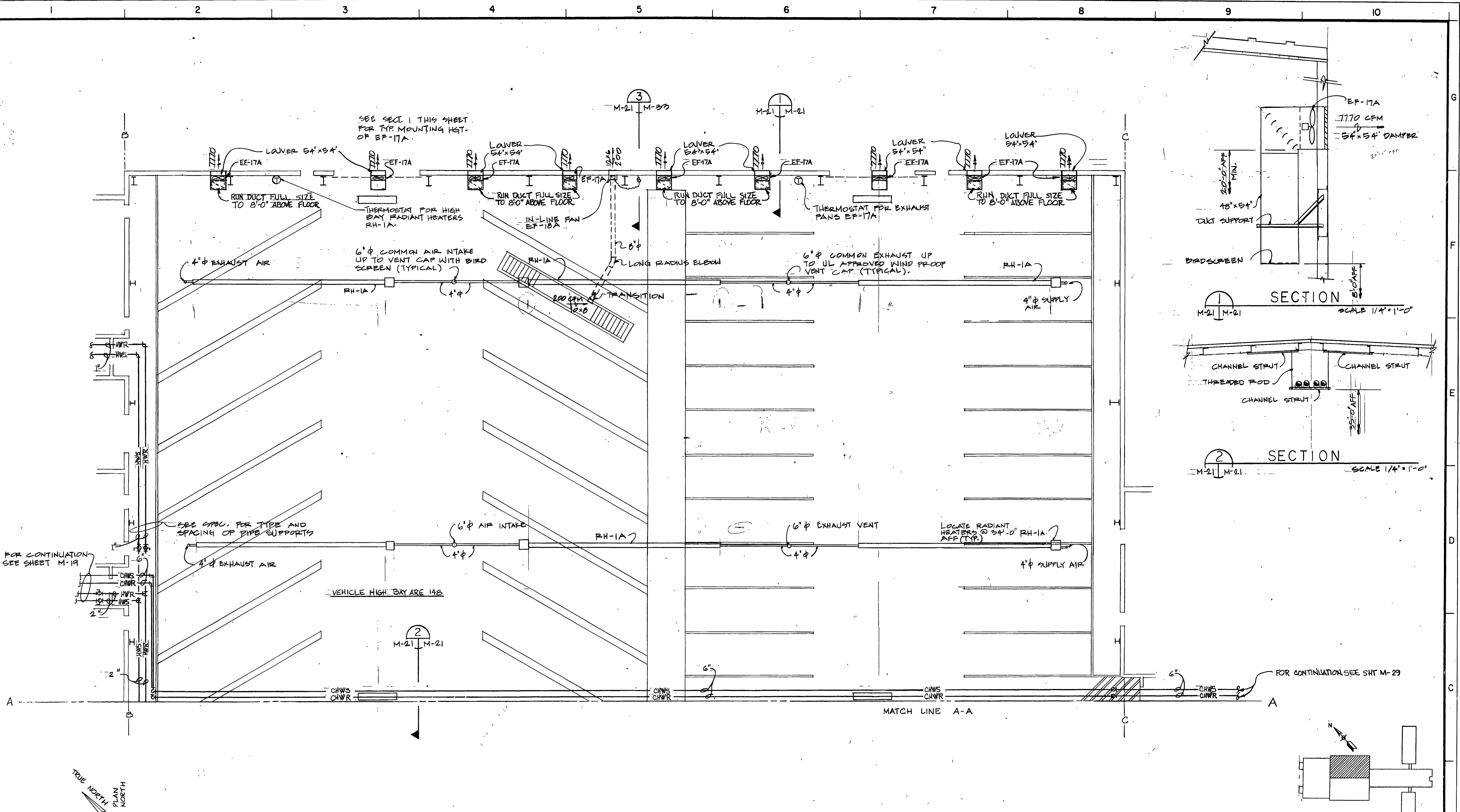


**SOFFIT EXHAUST DETAIL**  
SCALE: 3/4" = 1'-0"

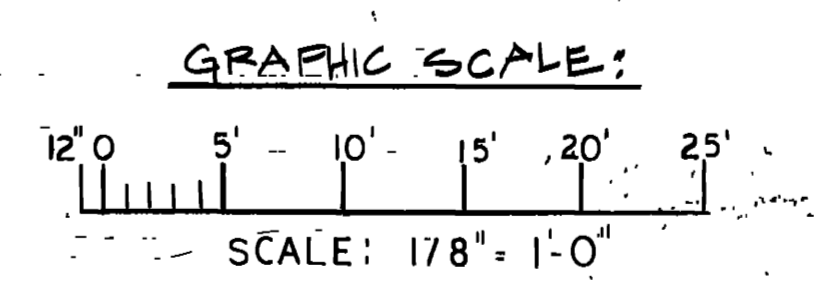


**FIRE TRAINING BUILDING  
BLK III - CRASH WING**

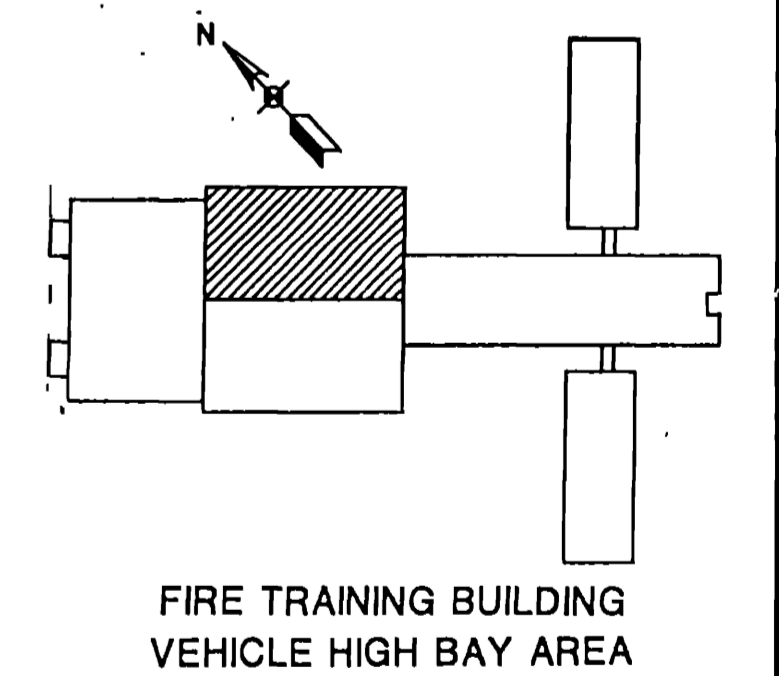
DESIGNED BY	D. KEELY	ENGINEERS / ARCHITECTS	U.S. ARMY ENGINEER DISTRICT, FORT WORTH
DRAWN BY	T. BLANK	NEW ORLEANS MOBILE BATON ROUGE	CORPS OF ENGINEERS FORT WORTH, TEXAS
REVIEWED BY	C. WANG		
DATE	12/1/90		
<b>FIRE TRAINING COMPLEX HVAC FLOOR PLAN FIRE TRAINING BUILDING CRASH WING</b>		SOI. NO. DACAG3-92-B-0109 DATED JUN. 1992 CONTR. NO. DACAG3-92-C-0155	SHEET NO. M-20 OF 44 218



**FLOOR PLAN (HVAC)**  
SCALE: 1/8" = 1'-0"



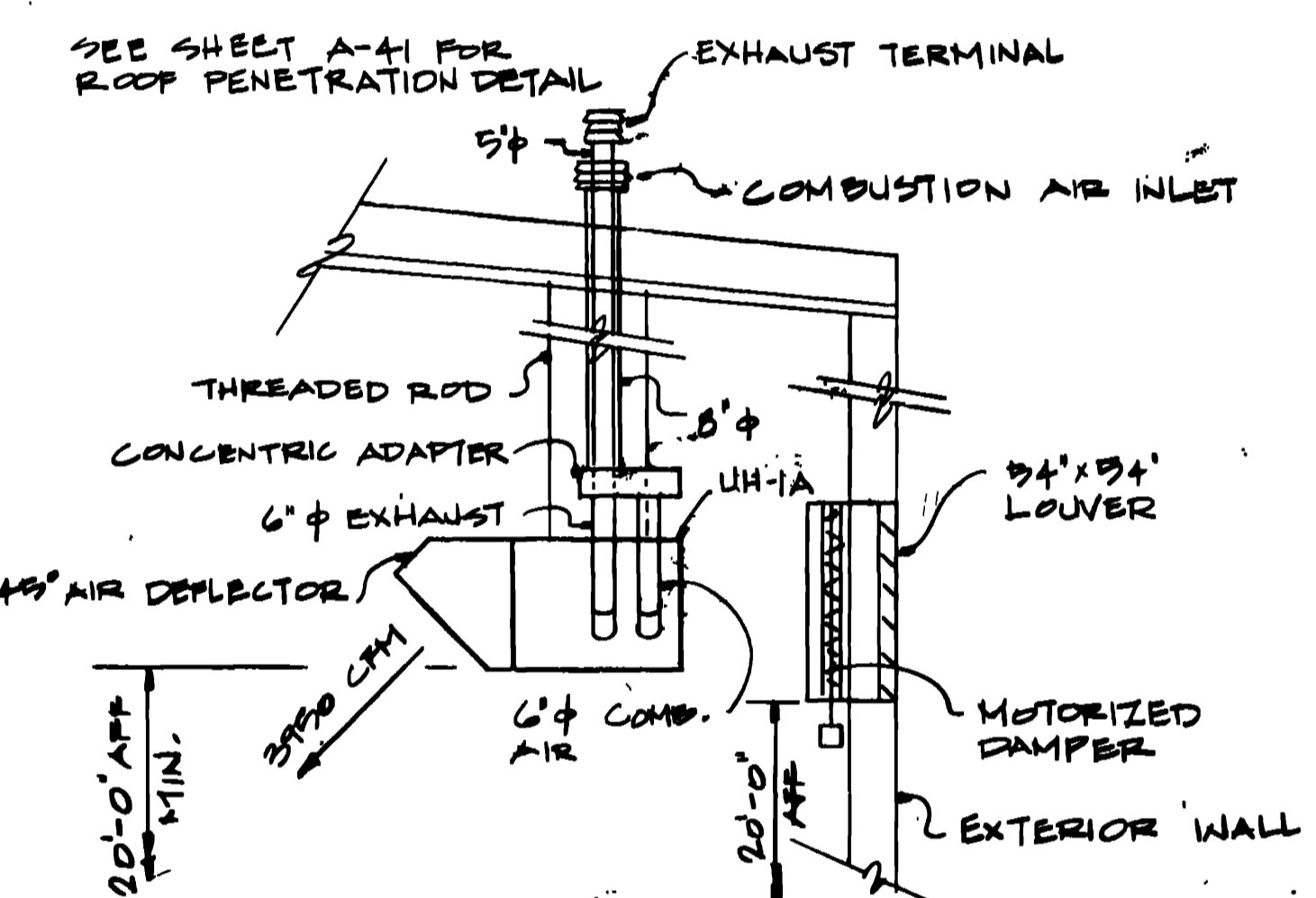
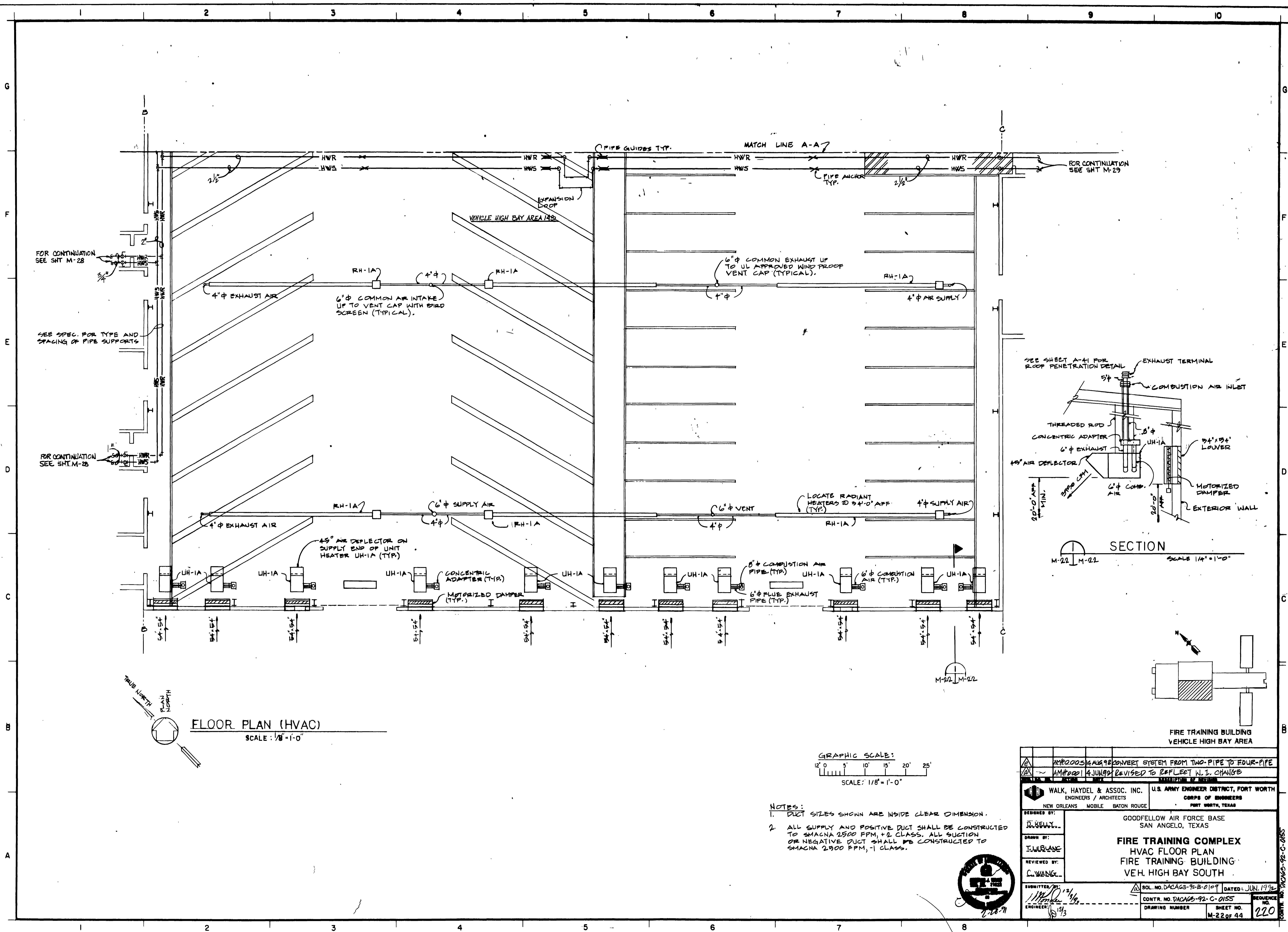
- NOTES:**
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION.
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, #2 CLASS. ALL SUCTION OR NEGATIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, #1 CLASS.



NO.	DATE	DESCRIPTION OF REVISION
1	AM#0005 1 AUG 78	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
2	AM#0000 4 JUN 90	REVISED TO REFLECT W.I. CHANGE

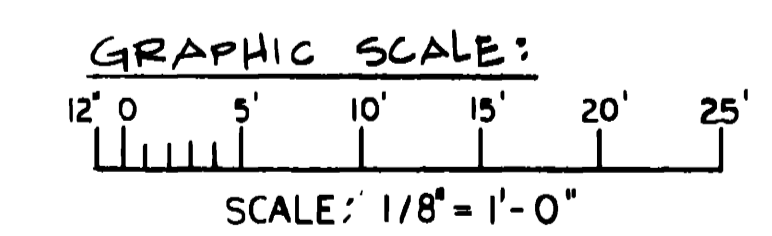
  

DESIGNED BY: R. KELLY	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DRAWN BY: J. BLANC	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
REVIEWED BY: L. WANG	<b>FIRE TRAINING COMPLEX</b> HVAC FLOOR PLAN FIRE TRAINING BUILDING VEH. HIGH BAY NORTH
SUBMITTED BY: M. J. [Signature]	SOL. NO. DACAGS-92-B-0169   DATED: JUN. 1978
ENGINEER: [Signature]	CONTR. NO. DACAGS-92-C-0155   SEQUENCE NO. 219



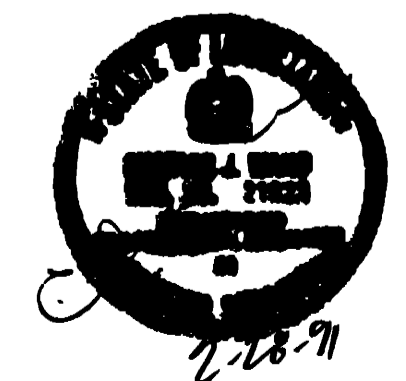
SECTION  
M-22 M-22  
SCALE: 1/4" = 1'-0"

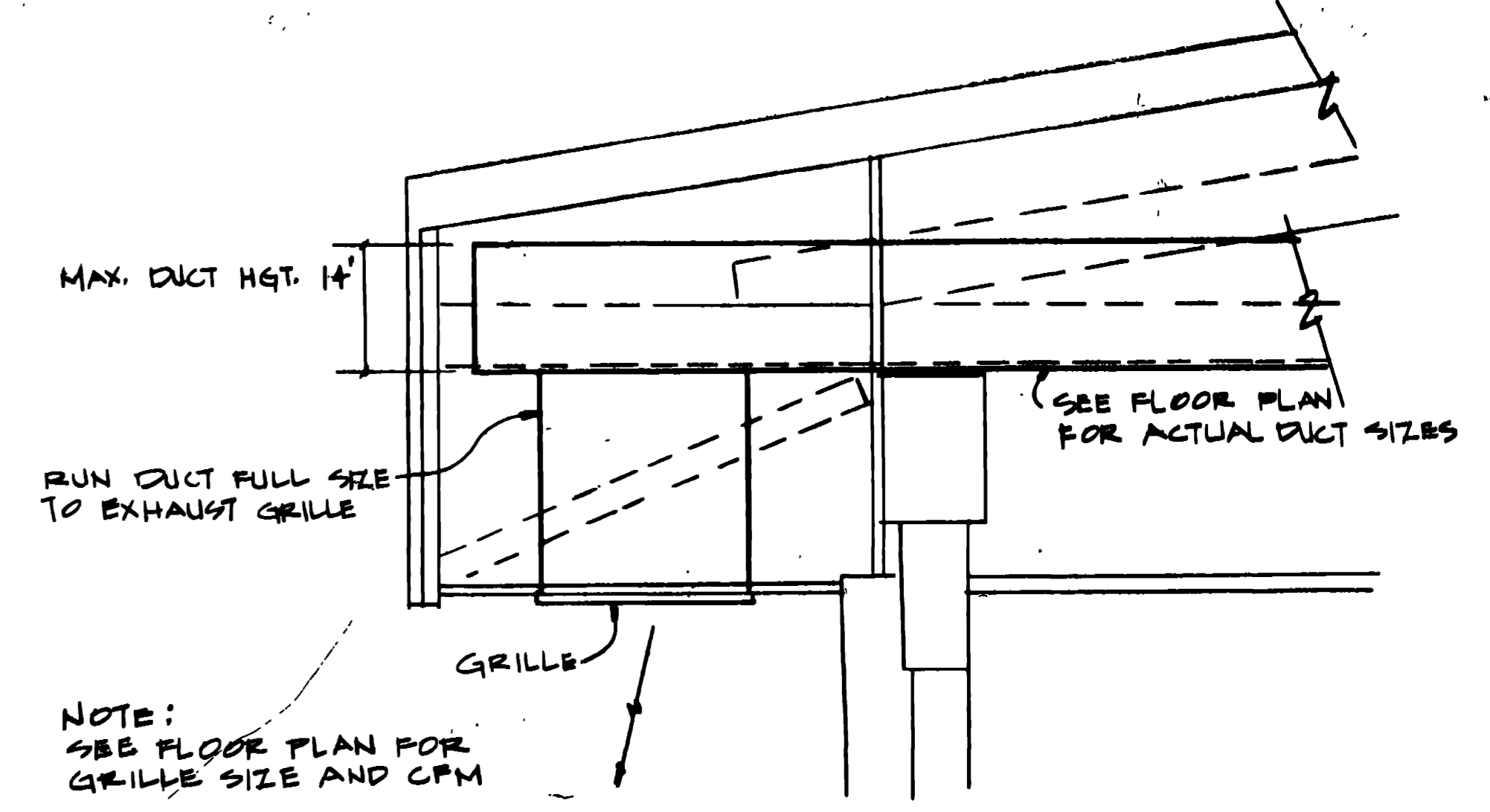
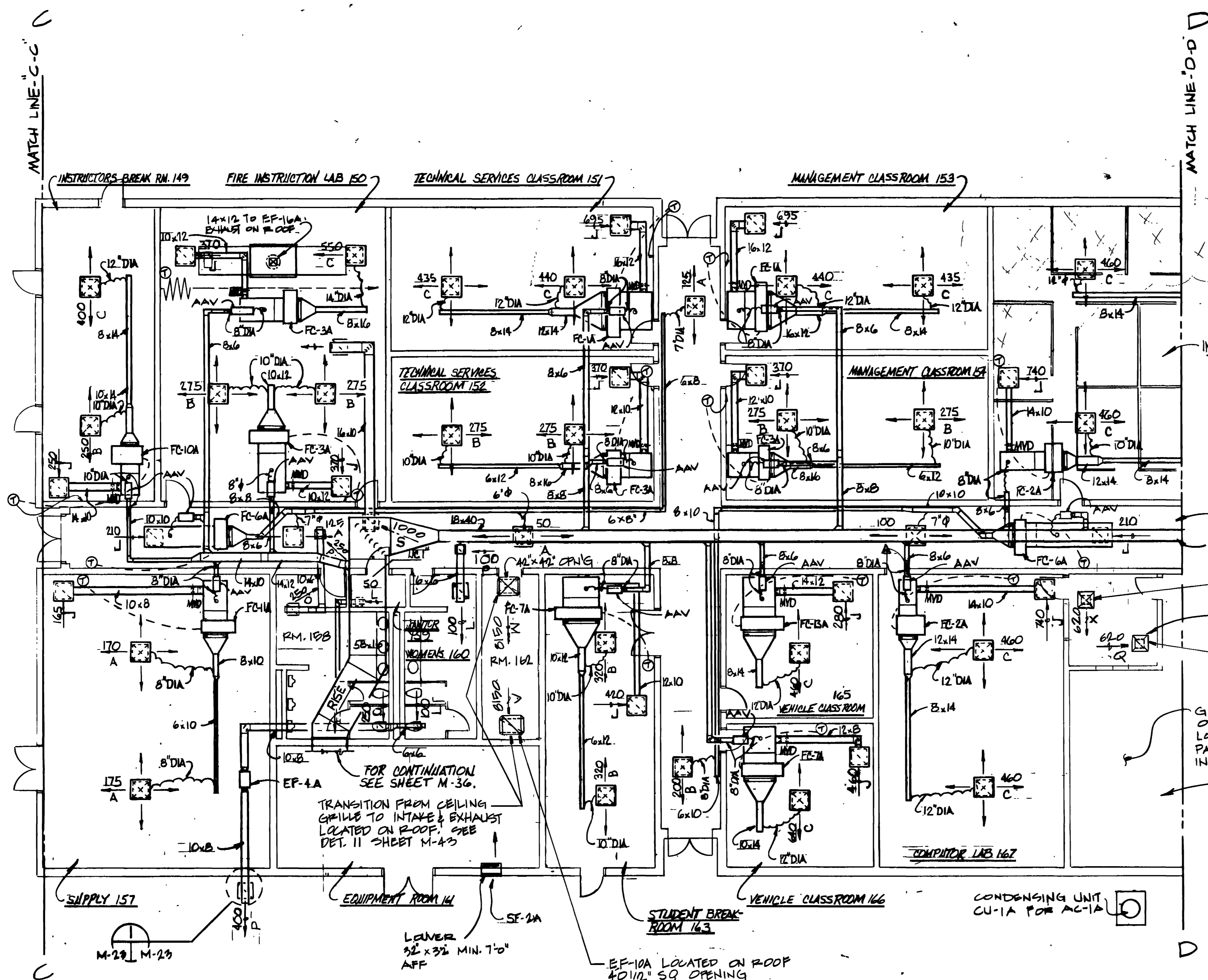
FLOOR PLAN (HVAC)  
SCALE: 1/8" = 1'-0"



- NOTES:
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION.
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, +2 CLASS. ALL SUCTION OR NEGATIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, -1 CLASS.

AMPCOOS 4/4/92 CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE AMPCOOS 4/JUN/94 REVISED TO REFLECT W.I. CHANGE	
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: R. SELLERS DRAWN BY: J. LEBLANC REVIEWED BY: C. WANG	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS <b>FIRE TRAINING COMPLEX</b> HVAC FLOOR PLAN FIRE TRAINING BUILDING VEH. HIGH BAY SOUTH
SUBMITTED BY: [Signature] ENGINEER: [Signature]	SOL. NO. DACAG3-92-B-0109 DATED: JUN 1992 CONTR. NO. DACAG3-92-C-0155 DRAWING NUMBER: M-22 OF 44 SHEET NO. 220

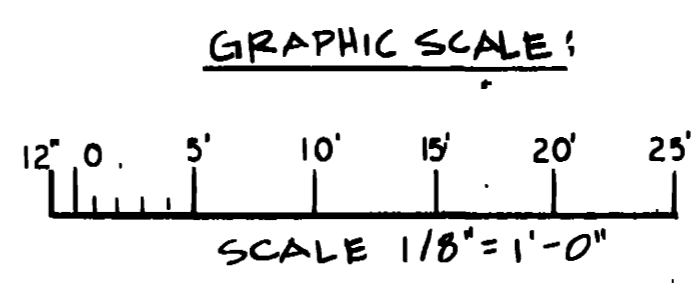
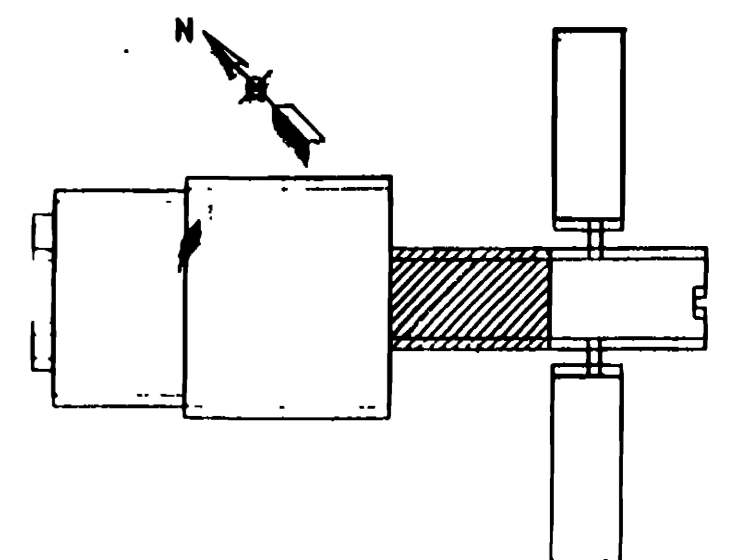




SOFFIT EXHAUST DETAIL  
SCALE 3/4" = 1'-0"

- NOTES:
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION.
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2900 FPM, +2' CLASS. ALL SUCTION OR NEGATIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2900 FPM, -1' CLASS.

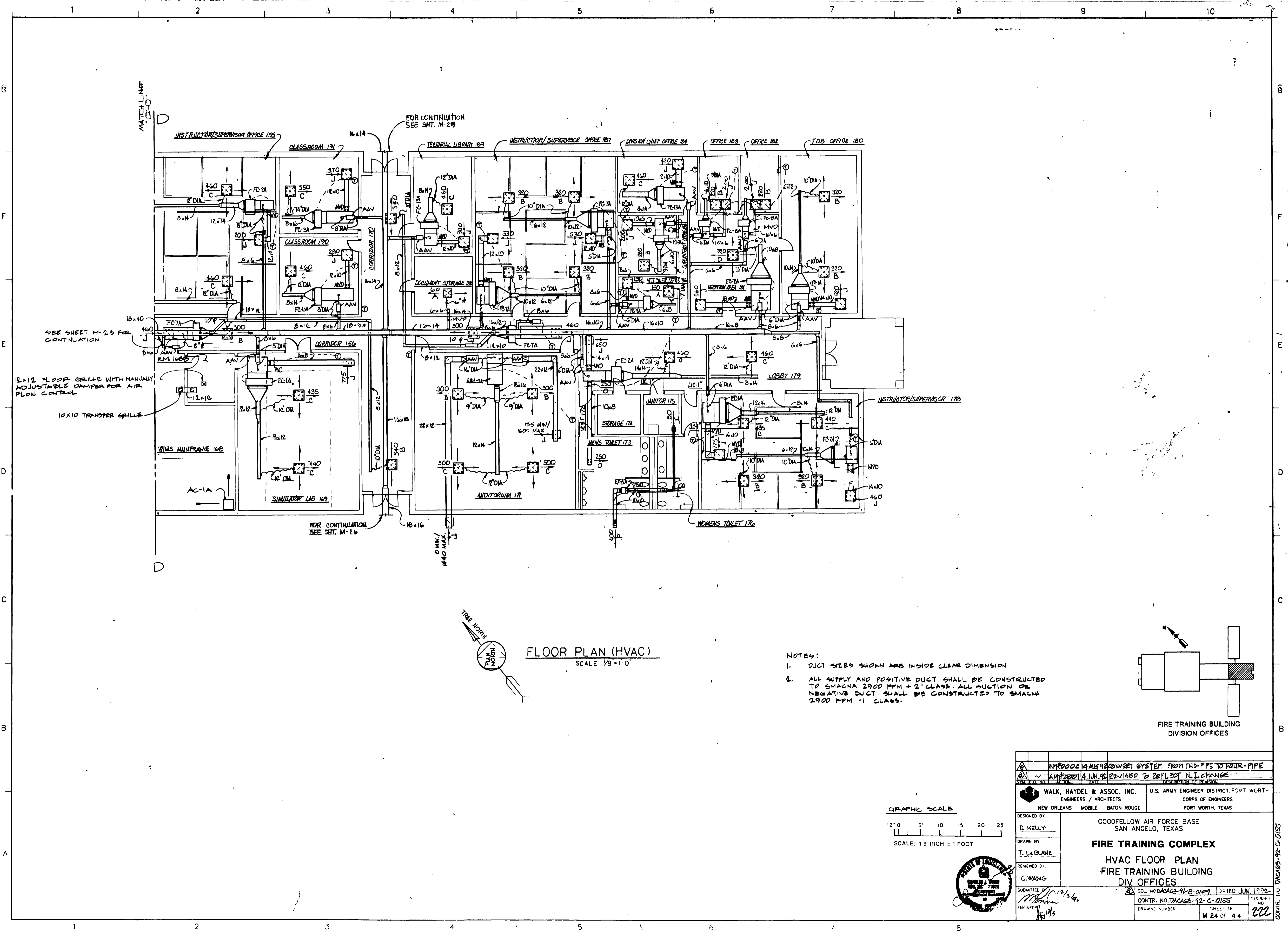
FLOOR PLAN  
SCALE 1/8" = 1'-0"



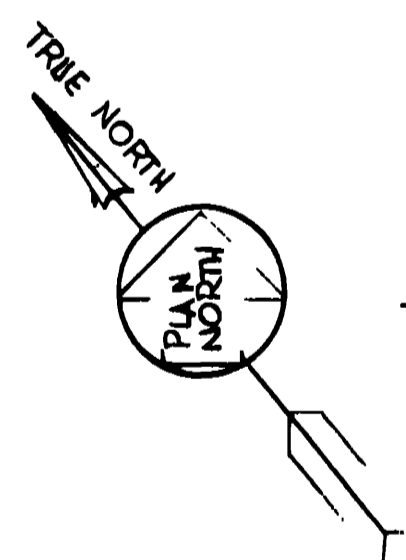
441692 92-B-0109 12/14/92	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE REVISOR: 92-B-0109 REVISION: REVISOR: 92-B-0109 DESCRIPTION OF REVISION:
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	U.S. ARMY ENGINEER DISTRICT, EDRT.WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: D. KELLY	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY: T. Le BLANC	<b>FIRE TRAINING COMPLEX</b> HVAC FLOOR PLAN FIRE TRAINING BUILDING ADV CRS AREA
REVIEWED BY: C. WANG	SUBMITTED BY: M. J. [Signature] ENGINEER: 12/14/92
STATE OF TEXAS CHANGING HANG 11823 LICENSED PROFESSIONAL ENGINEER IN MECHANICAL ENGINEERING 62891	SERIAL NO. DACAG8-92-B-0109 DATE JUN 19 1992 CONTR. NO. DACAG8-92-C-0155 DRAWING NUMBER: M-23 OF 44 SHEET NO. 221 CONTR. NO. DACAG8-92-C-0155

10

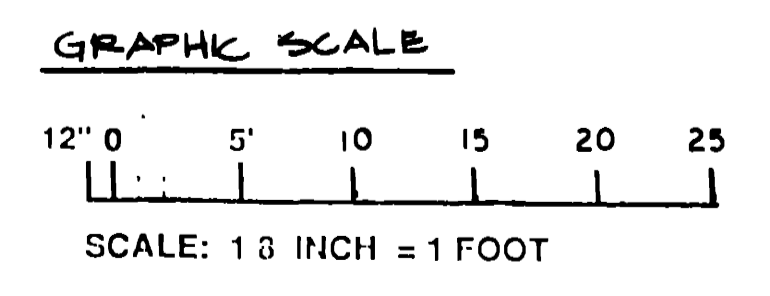
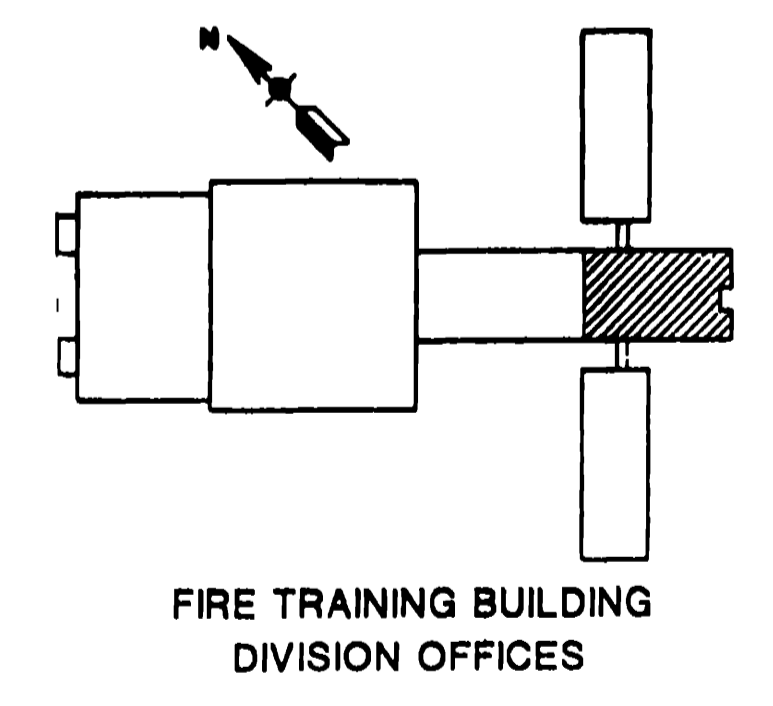
49



**FLOOR PLAN (HVAC)**  
SCALE 1/8"=1'-0"



- NOTES:**
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, +2" CLASS. ALL EXHAUST OR NEGATIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, -1" CLASS.



APPROVED 19 JUL 92 CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE	
APPROVED 4 JUN 92 REVISED TO REFLECT W.L. CHANGE	
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY D. KELLY	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY T. LeBLANC	<b>FIRE TRAINING COMPLEX</b> HVAC FLOOR PLAN FIRE TRAINING BUILDING DIV. OFFICES
REVIEWED BY C. WANG	SUBMITTED BY M. [Signature] 12/1/90
SOL. NO. DACAGB-92-B-0109 D-DATED JUN. 1992 CONTR. NO. DACAGB-92-C-0155 SHEET NO. 222 DRAWING NUMBER M 24 OF 44	



CONTR. NO. DACAGB-92-C-0155



97

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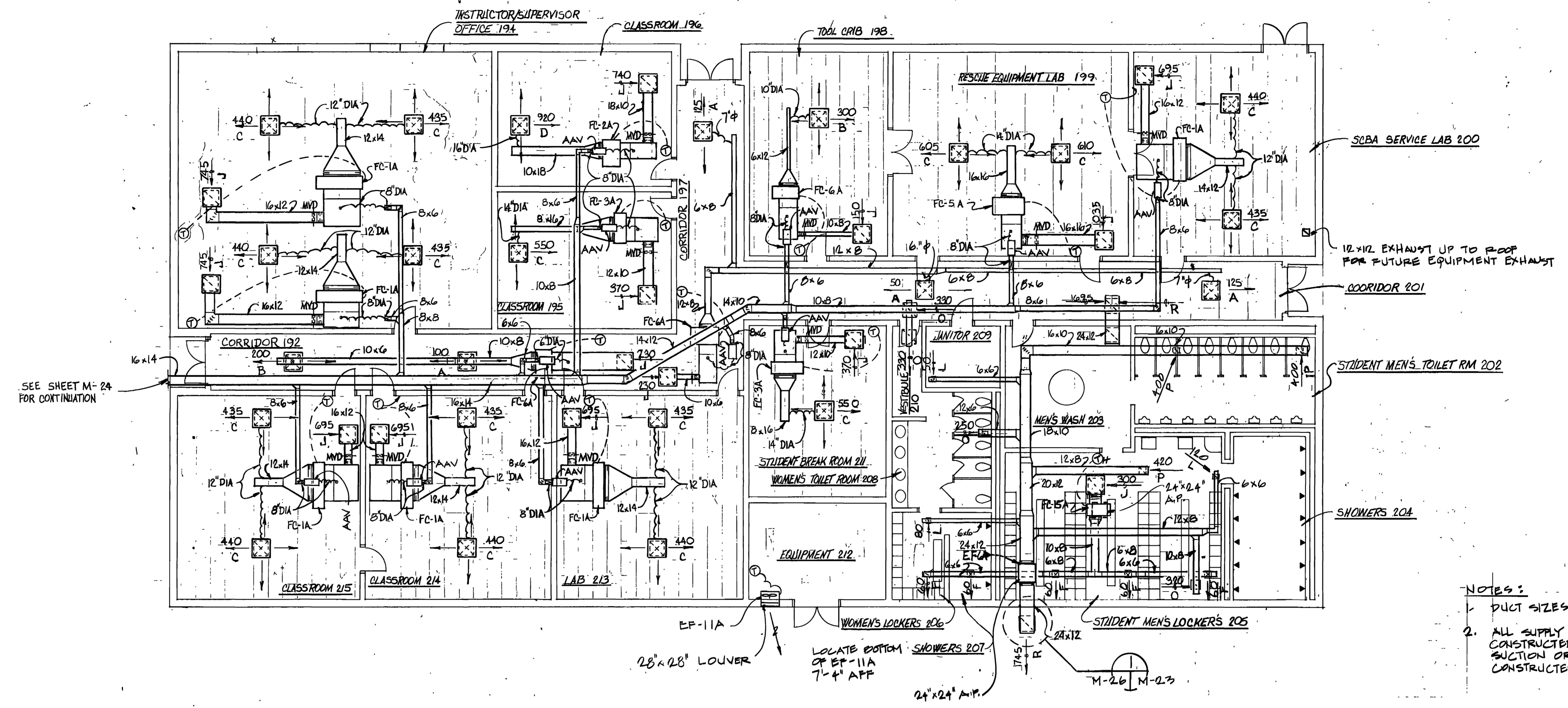
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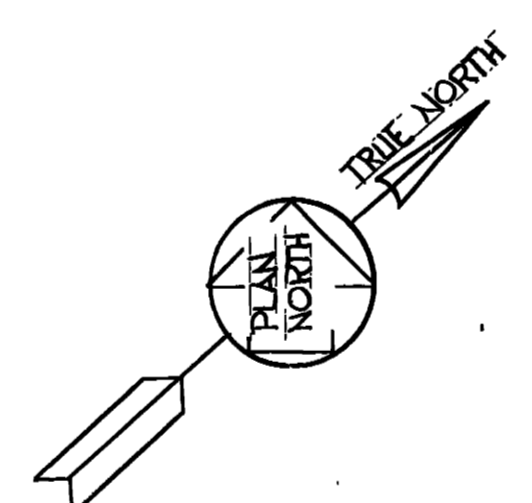
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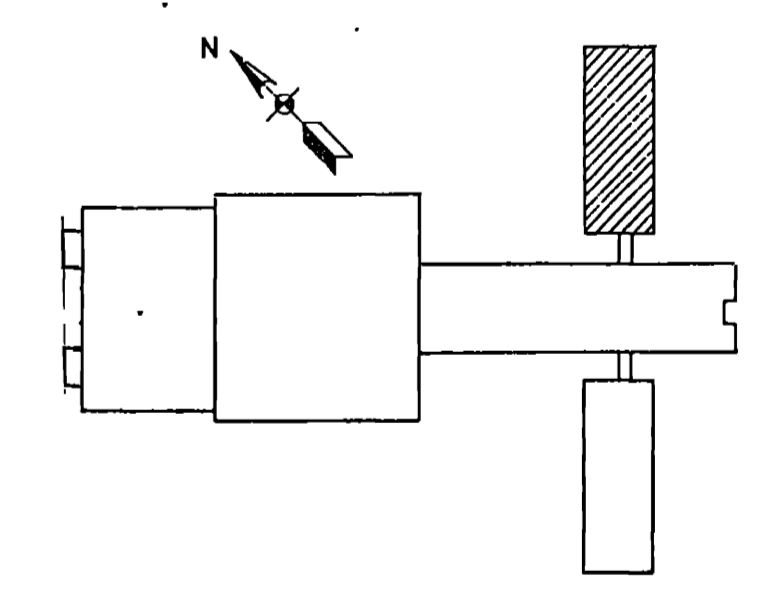
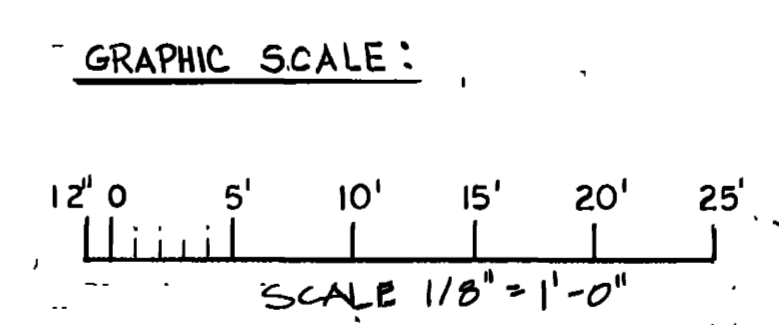
B



- NOTES:
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, 1/2" CLASS. ALL SUCTION OR NEGATIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, 1" CLASS.



FLOOR PLAN (HVAC)  
SCALE: 1/8" = 1'-0"



FIRE TRAINING BUILDING  
RESCUE / HAZ MAT WING

REV. NO.	DESCRIPTION	DATE	REVISION
A	AM#0005 GAIN RECONNECT SYSTEM FROM TWO-PIPE TO FOUR-PIPE...		
B	AM#0001 A JUN 92 REVISED TO REFLECT W.I. CHANGE		
DESIGNED BY: WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS	
DRAWN BY: T. J. BLANC		FORT WORTH, TEXAS	
REVIEWED BY: C. WANG		GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS	
SUBMITTED BY: [Signature]		SOL. NO. DACAG3-92B0109 DATED: JUN. 1992	
CONTR. NO. DACAG3-92-C-0155		CONTR. NO. DACAG3-92-C-0155	
DRAWING NUMBER: M-25 OF 44		SEQUENCE NO. 223	

2-28-91

12

2 3 4 5 6 7 8

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2 3 4 5 6 7 8 9 10

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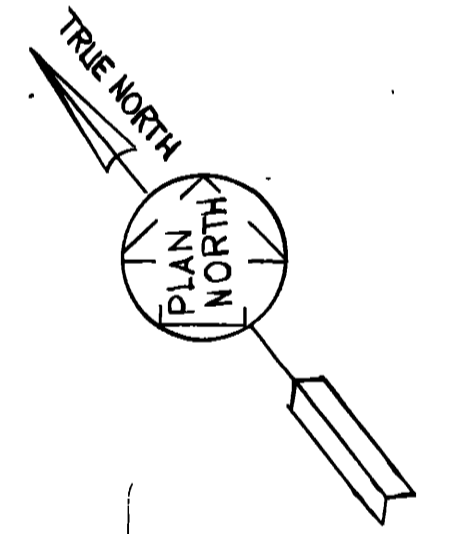
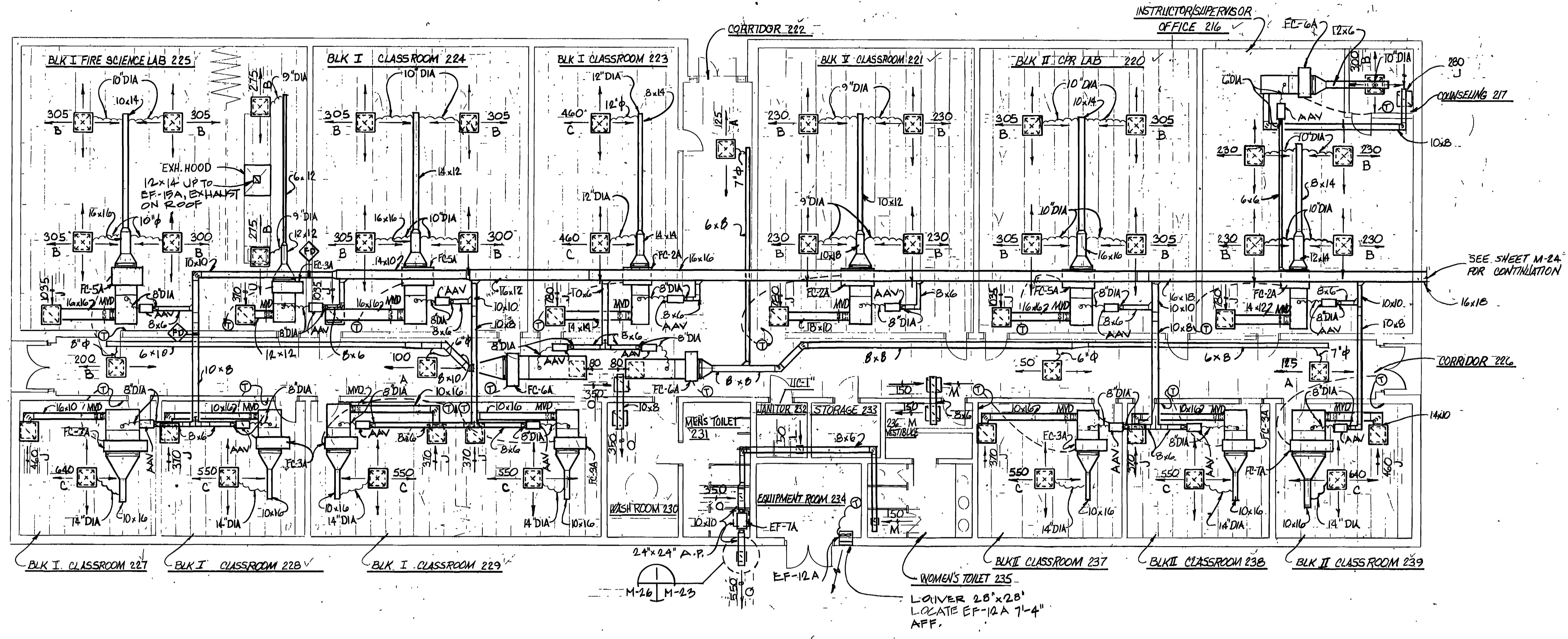
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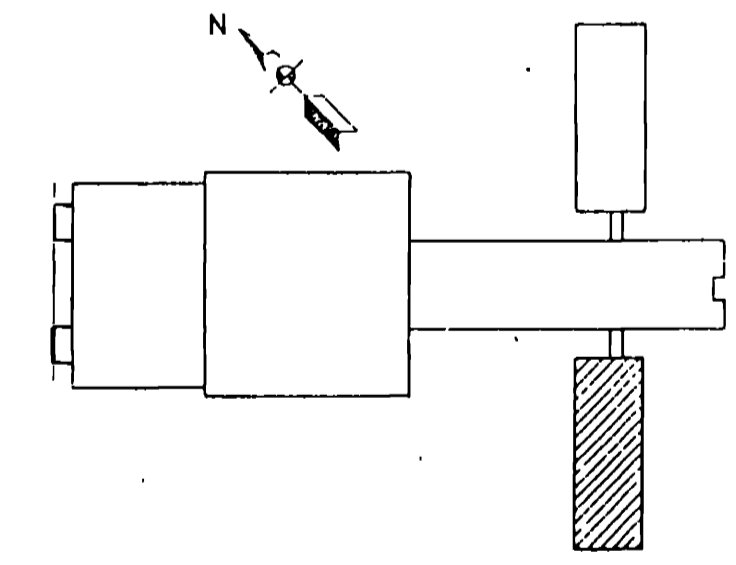
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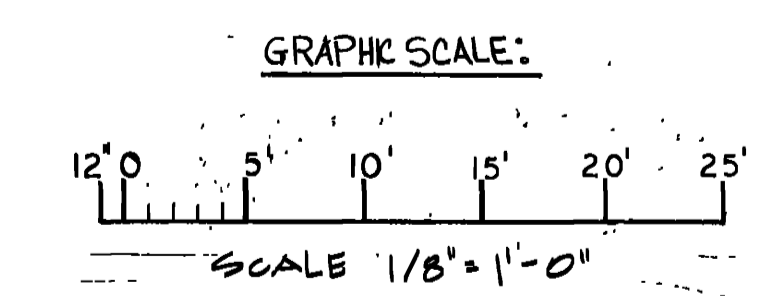


FLOOR PLAN (HVAC)  
 SCALE: 1/8" = 1'-0"

- NOTES:
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION.
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, +2" CLASS. ALL SUCTION OR NEGATIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM, -1" CLASS.



FIRE TRAINING BUILDING  
 BASIC COURSES WING



NO.	DATE	DESCRIPTION OF REVISION
1	11/19/92	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
2	4 JUN 94	REVISED TO REFLECT IN CHANGE

DESIGNED BY: WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH  
 ENGINEERS / ARCHITECTS  
 NEW ORLEANS MOBILE BATON ROUGE CORPS OF ENGINEERS  
 FORT WORTH, TEXAS

DESIGNED BY: GOODFELLOW AIR FORCE BASE  
 SAN ANGELO, TEXAS

DRAWN BY: T. LeBLANC  
 REVIEWED BY: C. SWANG

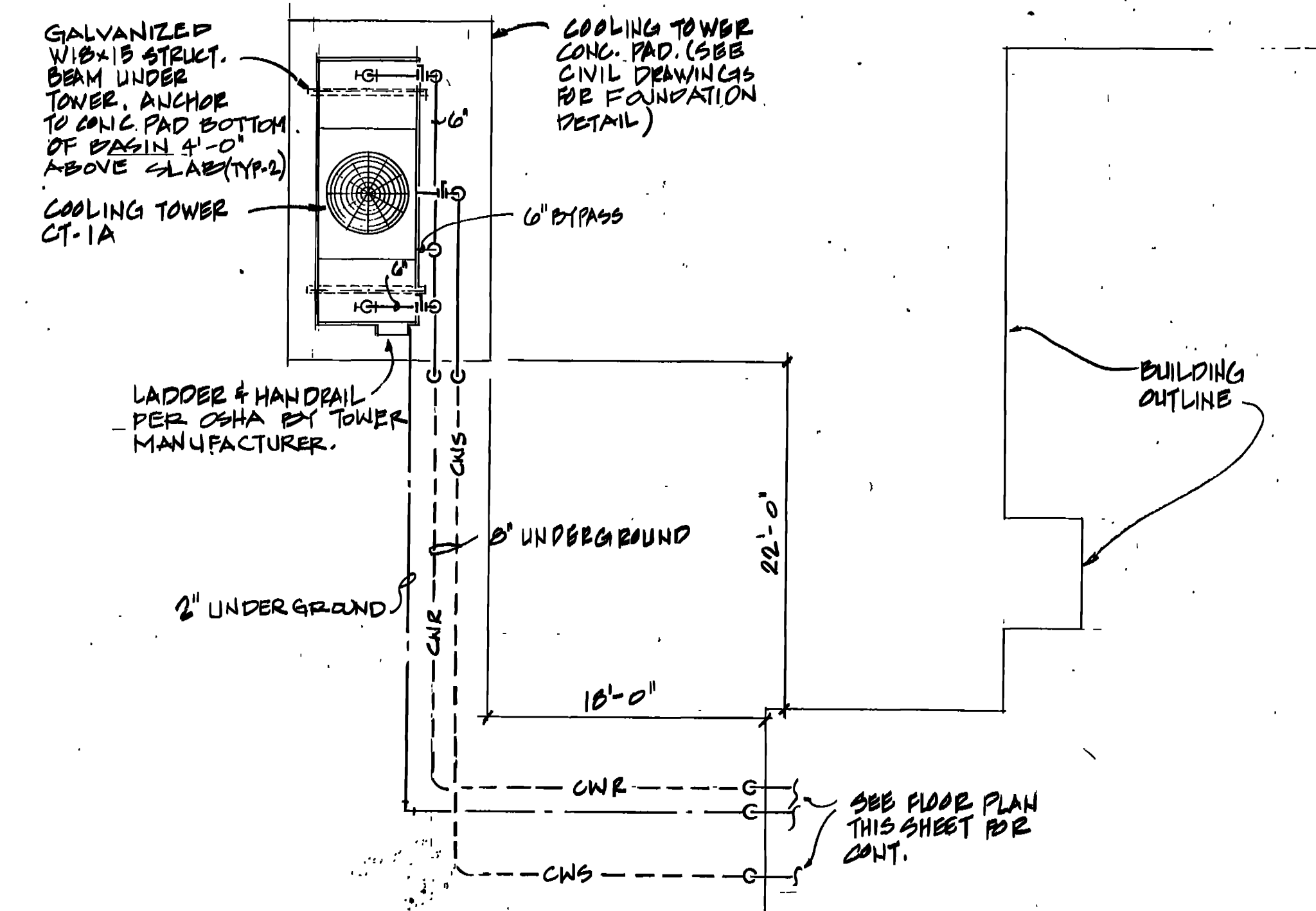
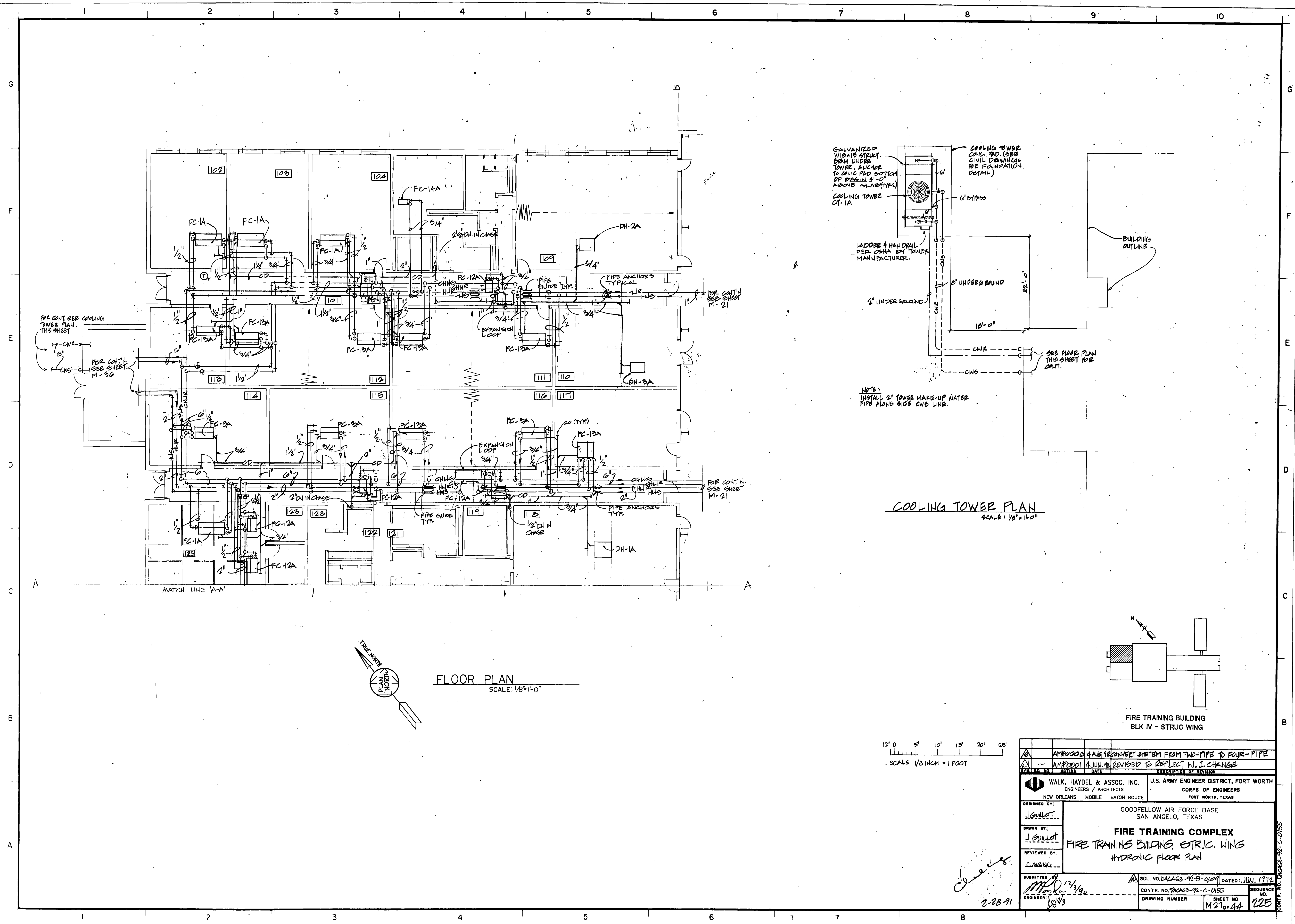
SUBMITTED: 12/1/92  
 2-28-91

SOL. NO. DACAG3-92-B-0109 DATED JUN 1992  
 CONTR. NO. DACAG3-92-C-0155 SEQUENCE NO. 224  
 DRAWING NUMBER SHEET NO. M-26 of 44

13

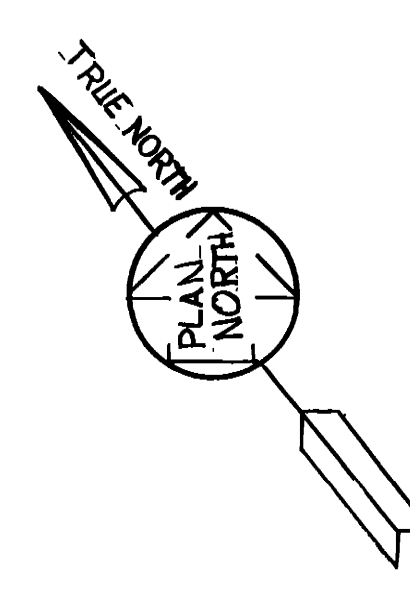
CONTR. NO. DACAG3-92-C-0155

19

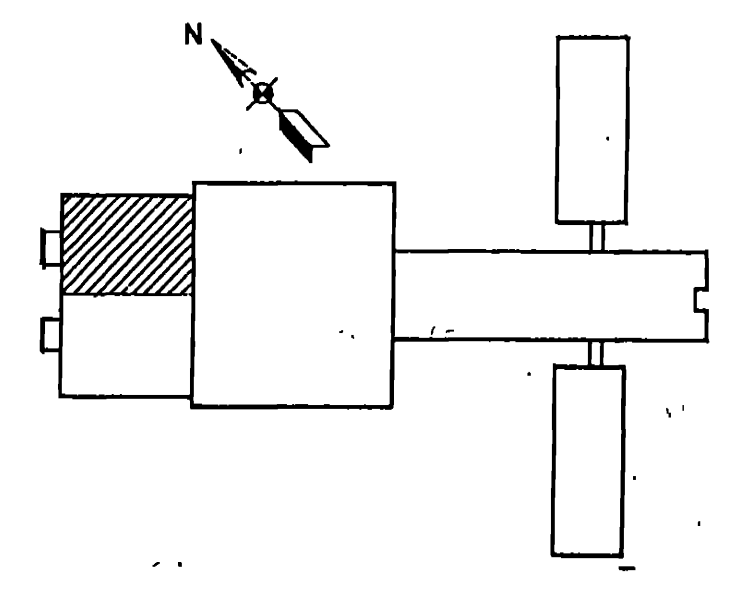


NOTES:  
INSTALL 2" TOWER MAKE-UP WATER PIPE ALONG SIDE CWS LINE.

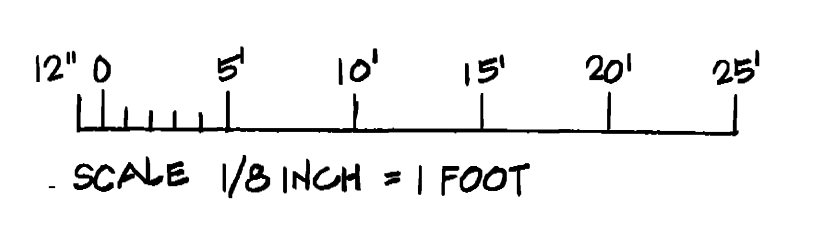
**COOLING TOWER PLAN**  
SCALE: 1/8" = 1'-0"



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



**FIRE TRAINING BUILDING  
BLK IV - STRUC WING**



NO.	DATE	DESCRIPTION OF REVISION
1	APPROX 02/14/92	CONNECT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
2	APPROX 04/JUN/92	REVISED TO REFLECT W.I. CHANGE

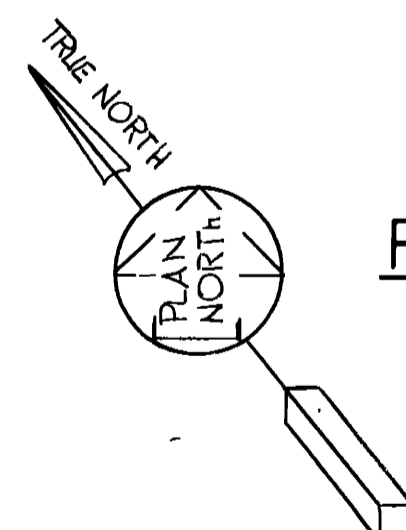
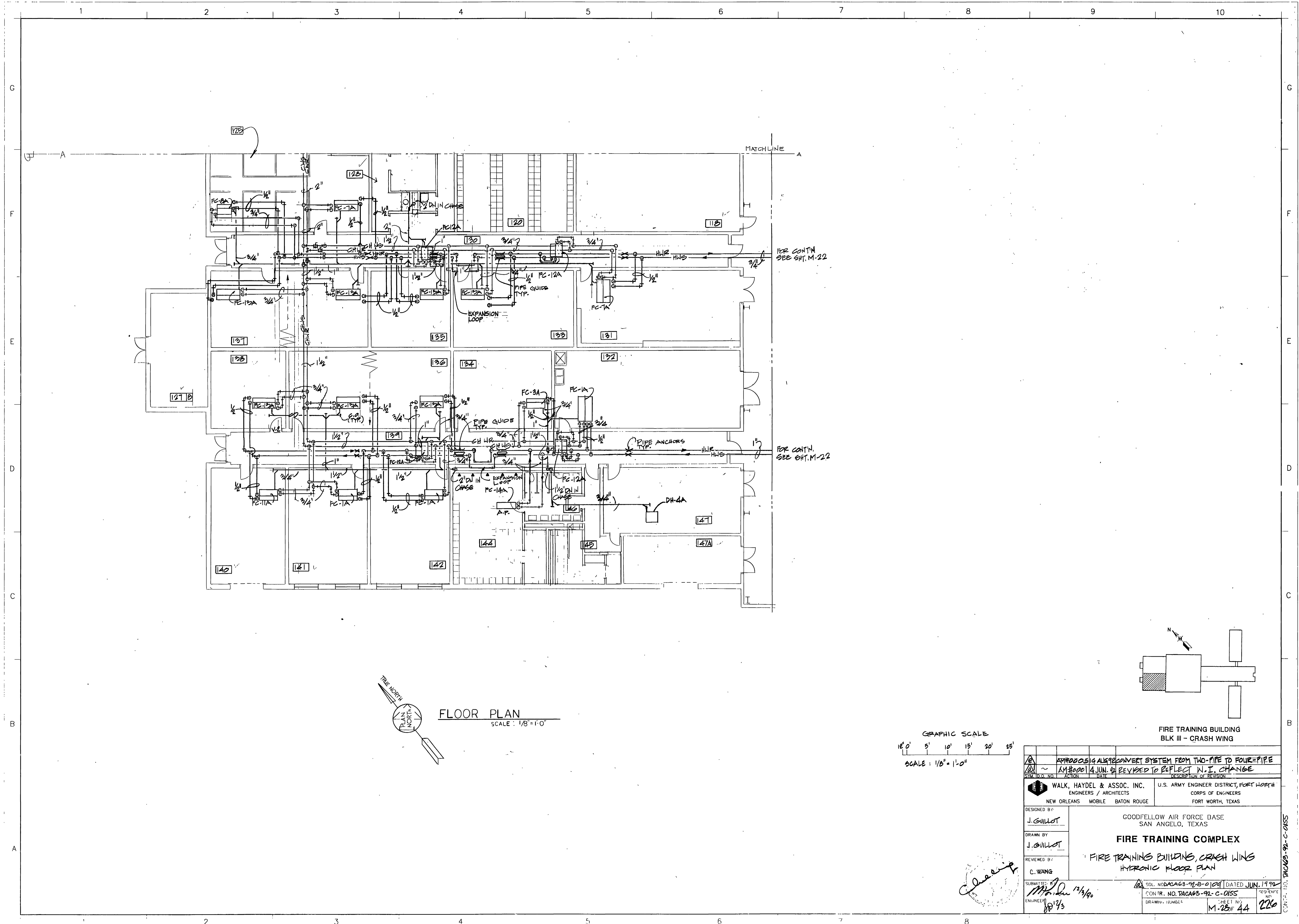
DESIGNED BY: J. GUILLOT	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DRAWN BY: J. GUILLOT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
REVIEWED BY: C. WANG	<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDINGS, STRUC. WING HYDRONIC FLOOR PLAN
ENGINEER: M. D. [Signature]	SUBMITTED: JUN 17/92 2-28-91

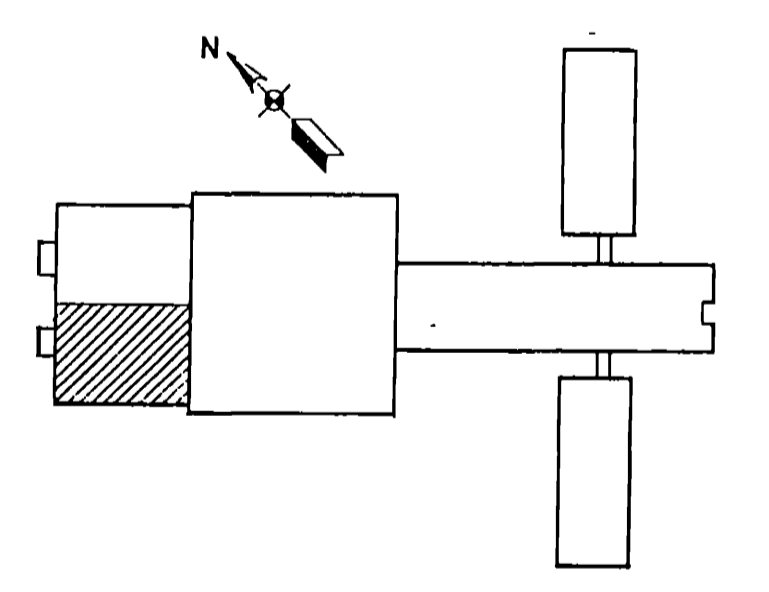
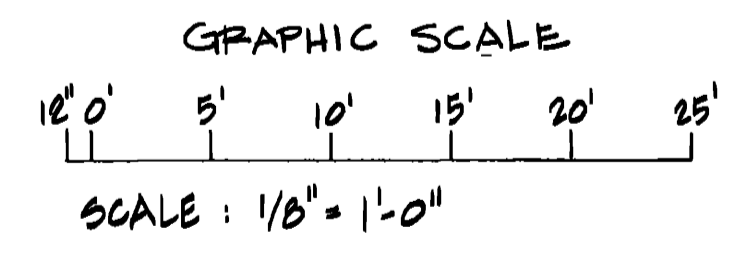
CONTRACT NO. DACAG2-92-C-0155	SEQUENCE NO. 225
DRAWING NUMBER M-21 OF 44	SHEET NO. 225

14

28



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



**FIRE TRAINING BUILDING**  
BLK III - CRASH WING

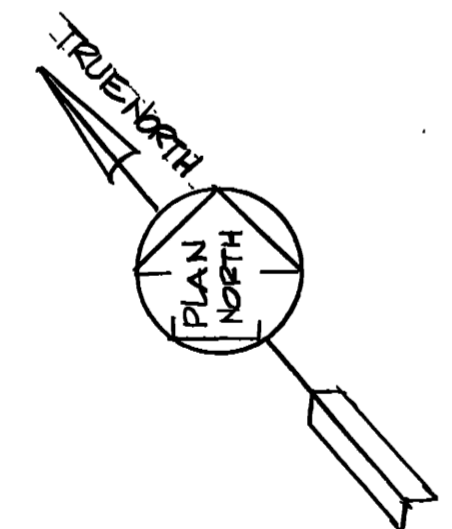
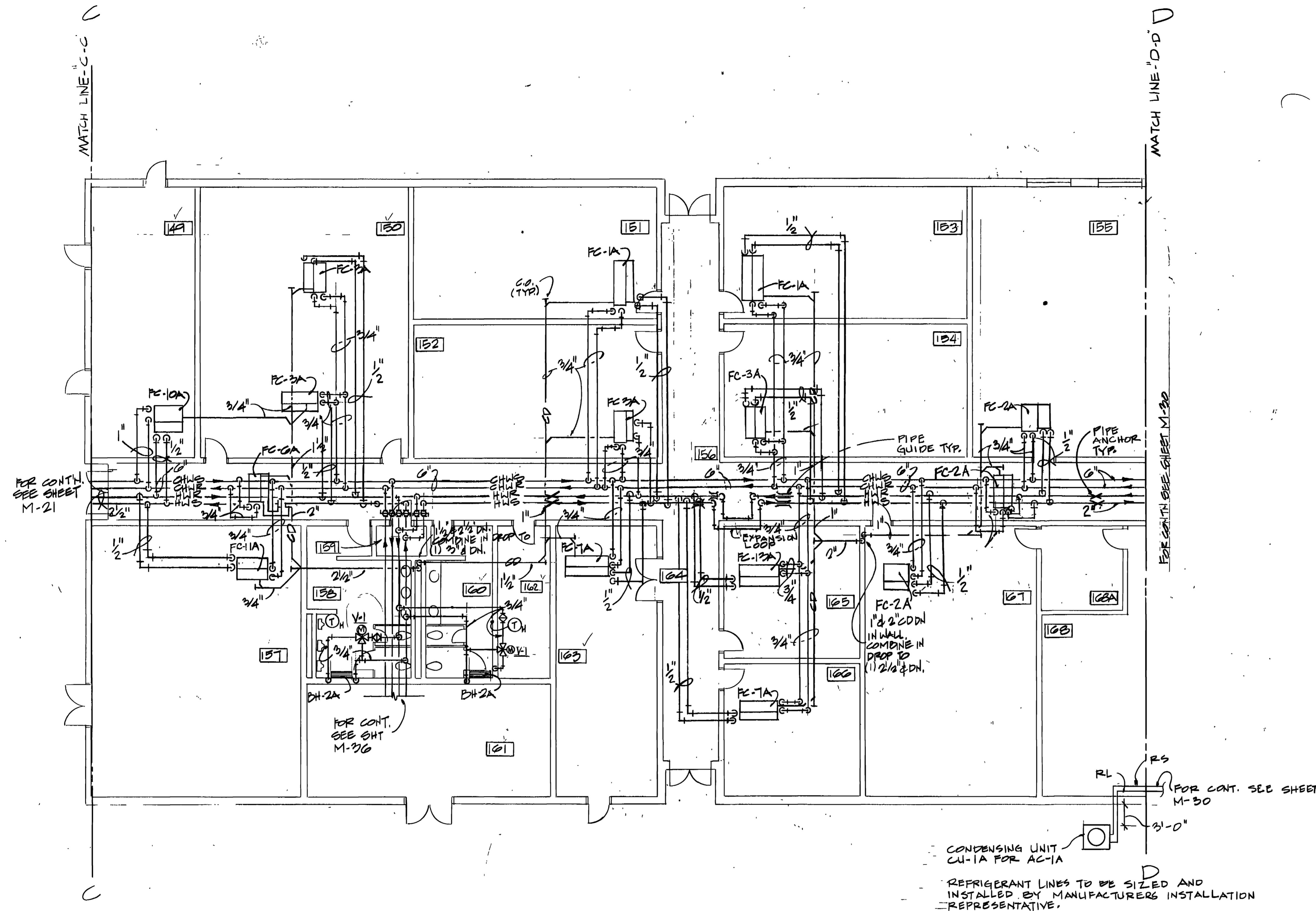
APPROVED	14 JUN 92	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
DESIGNED BY	J. GUILLOT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY	J. GUILLOT	<b>FIRE TRAINING COMPLEX</b>
REVIEWED BY	C. WANG	FIRE TRAINING BUILDING, CRASH WING HYDRONIC FLOOR PLAN
SUBMITTED	12/1/90	SOL. NO. DACAG3-92-B-0129 DATED JUN. 1992
ENGINEER	12/1/90	CONTR. NO. DACAG3-92-C-0155
		DRAWING NUMBER
		SHEET NO.
		M. 25 OF 44
		2260

*Cheney*

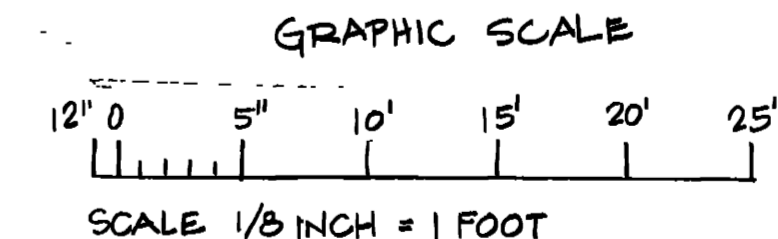
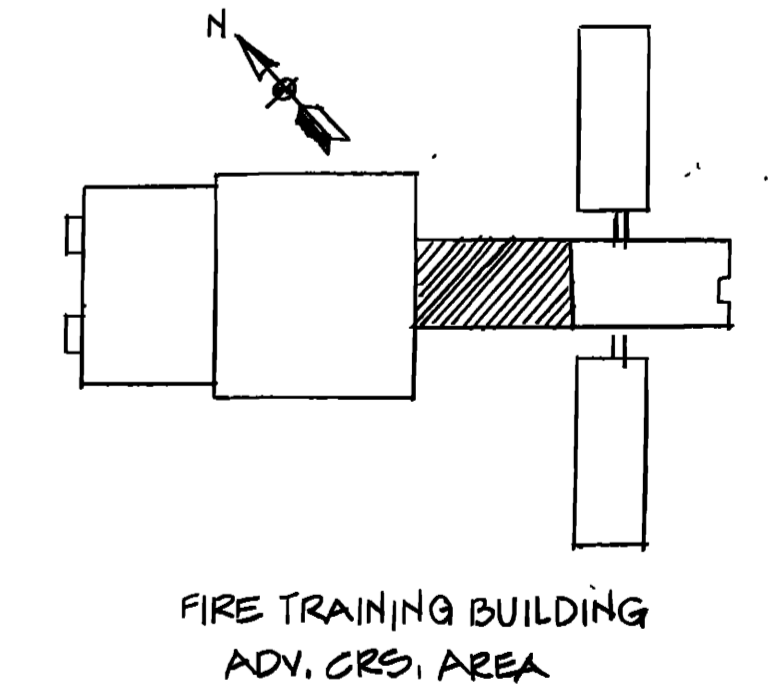
CONTR. NO. DACAG3-92-C-0155

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

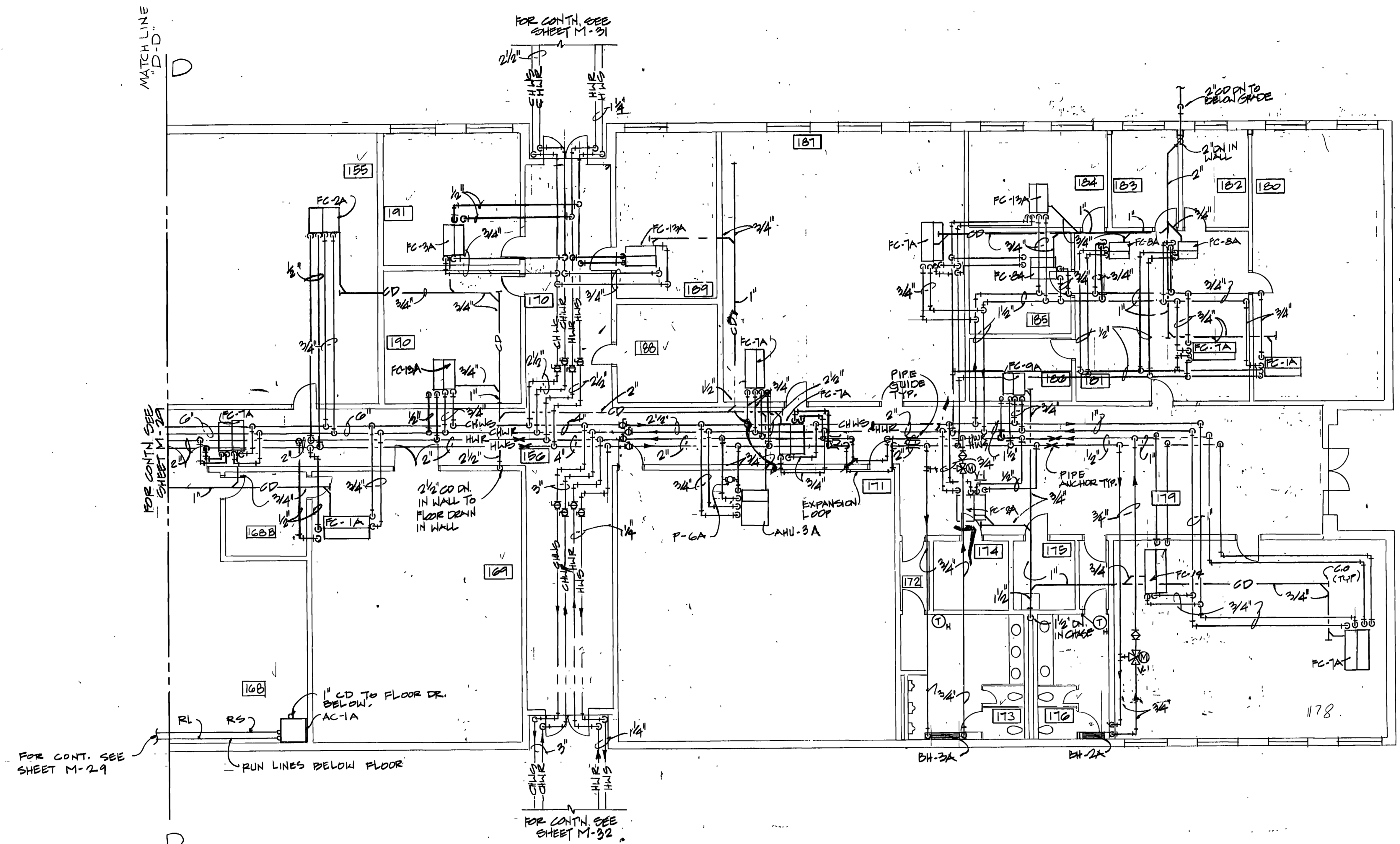


AM2005 M&A RECONNECT SYSTEM FROM TWO-PIPE TO FOUR-PIPE		REV. NO. 4 JUN 92 REVISED TO REFLECT W.I. CHANGE	
DESIGNED BY: <b>J. GUILLOT</b>	WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		
DRAWN BY: <b>J. GUILLOT</b>	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
REVIEWED BY: <b>C. WANG</b>	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS <b>FIRE TRAINING COMPLEX</b>		
SUBMITTED BY: <b>M. Wang 12/1/90</b>		SOL. NO. DACAG3-92-B-0109 DATED JUN. 1992	
CONTR. NO. DACAG3-92-C-0155		SEQUENCE NO.	
DRAWING NUMBER		SHEET NO.	
M-29014A		227	

CONTR. NO. DACAG3-92-C-0155

1 2 3 4 5 6 7 8 9 10

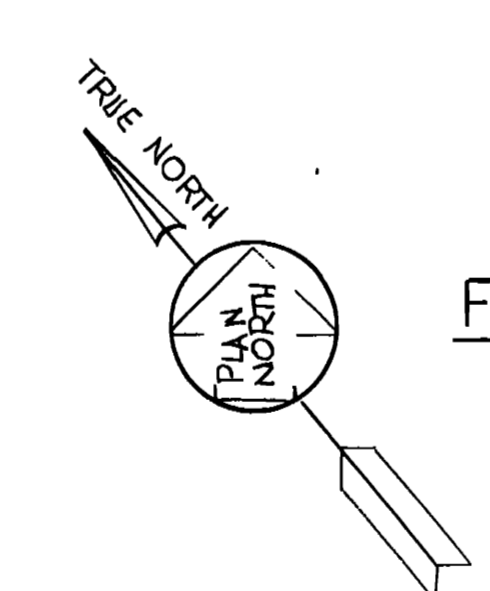
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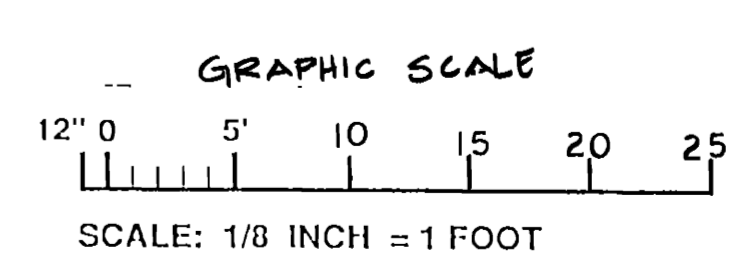
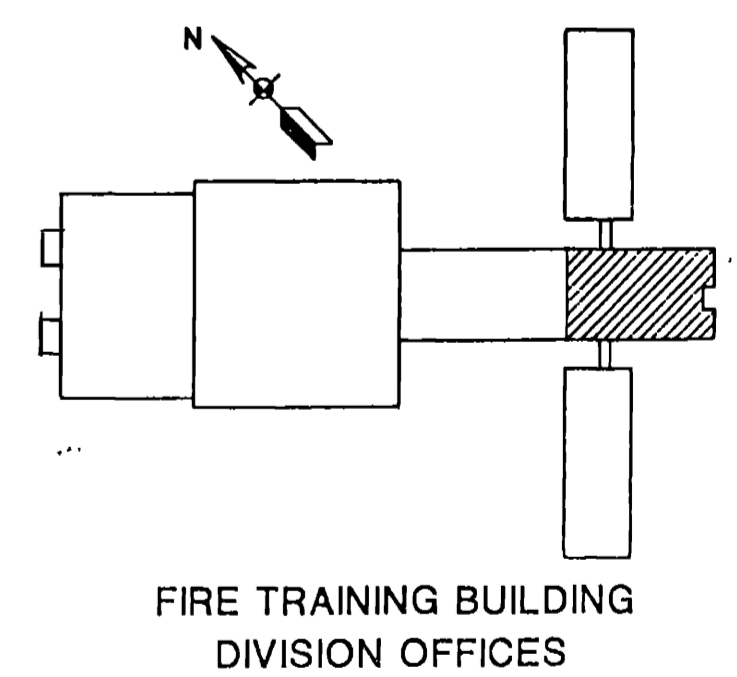
FOR CONT. SEE SHEET M-29  
 RUN LINES BELOW FLOOR

FOR CONT. SEE SHEET M-31

FOR CONT. SEE SHEET M-32

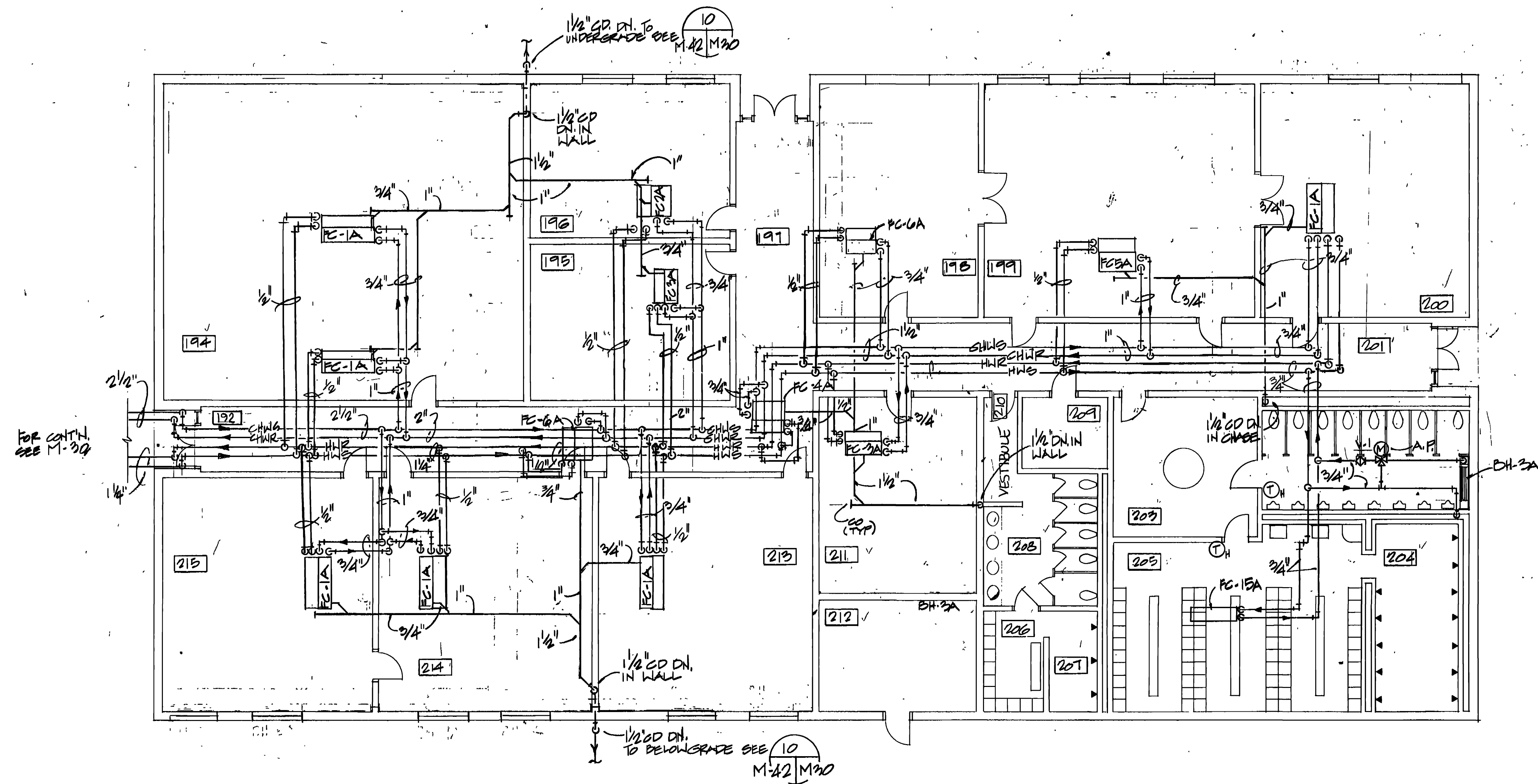


**FLOOR PLAN**  
 SCALE 1/8" = 1'-0"

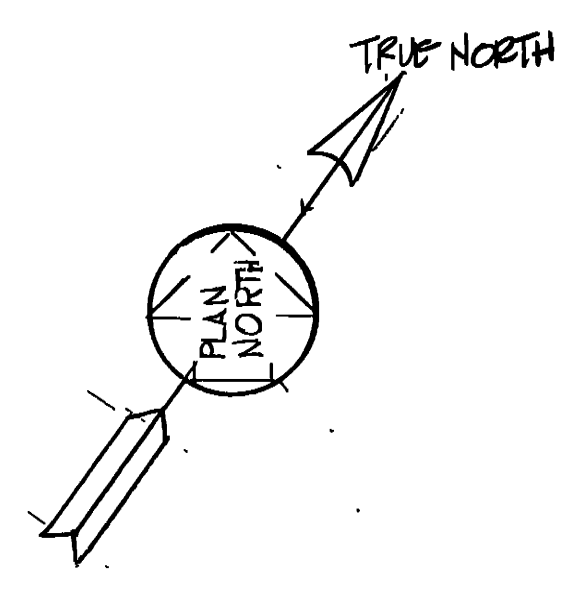


1. APPROVALS 2. AMENDED 14 JUN 92 REVISOR TO REFLECT W.I. CHANGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS	
DESIGNED BY: J. GUILLOT		<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDINGS, DIV. OFFICES HYDRAIC FLOOR PLAN	
DRAWN BY: J. GUILLOT		DATED JUN. 1992 CONTR. NO. DACAG-92-C-0155	
REVIEWED BY: C. WANG		SHEET NO. M 30 OF 44	
SUBMITTED BY: M. W. [Signature] 6/19/92		REGIMENT NO. 228	
ENGINEER: [Signature] 6/19/92		DRAWING NUMBER: M 30 OF 44	

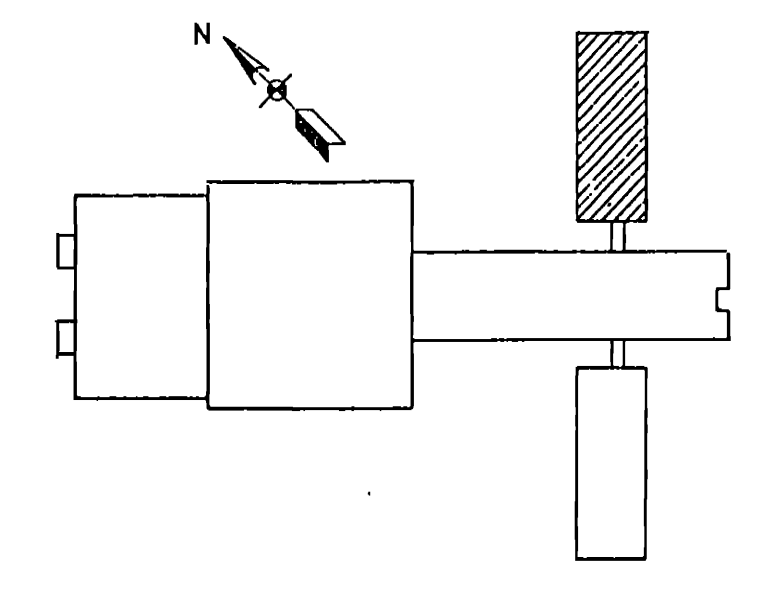
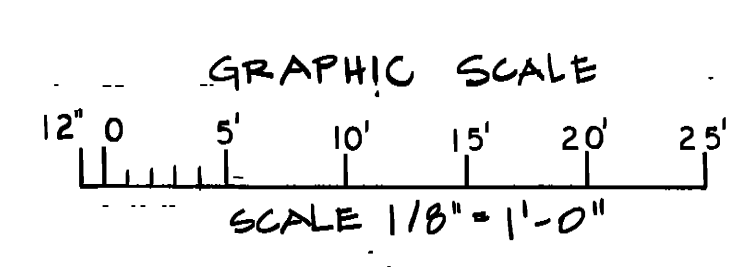
CONTR. NO. DACAG-92-C-0155



FOR CONTIN.  
SEE M-39



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



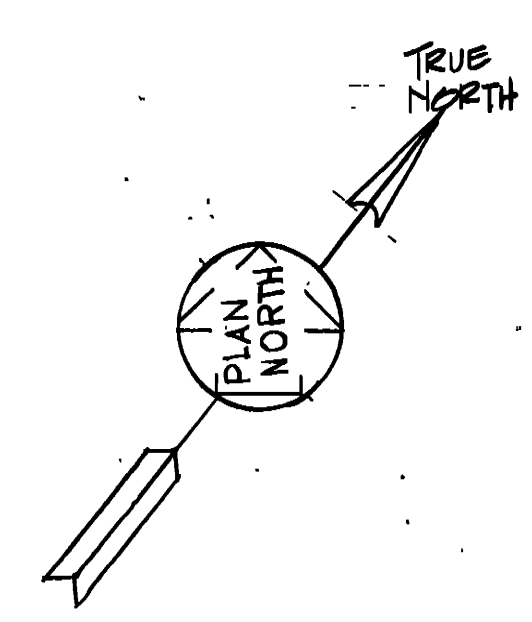
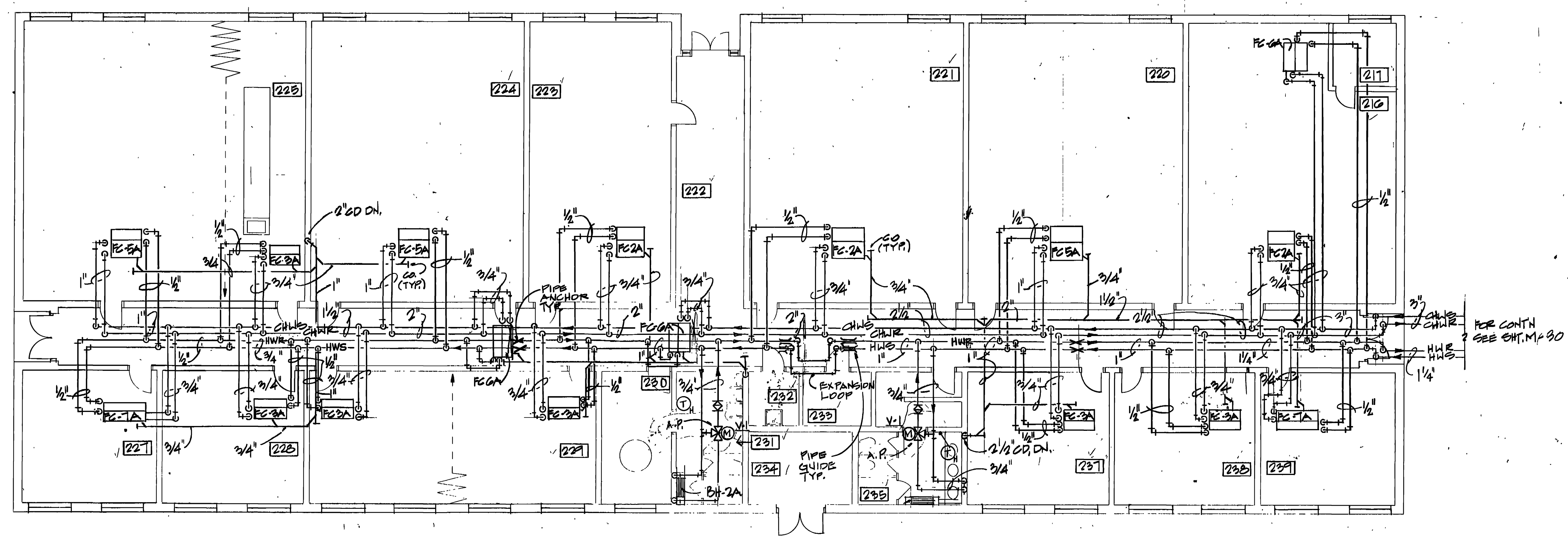
FIRE TRAINING BUILDING  
RESCUE / HAZ MAT WING

NO.	DATE	DESCRIPTION OF REVISION
AM#0003	4/14/92	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
AM#0001	4 JUN 92	REVISED TO REFLECT W.I. CHANGE
WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
DESIGNED BY:	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS	
DRAWN BY:	<b>FIRE TRAINING COMPLEX</b>	
REVIEWED BY:	FIRE TRAINING BUILDINGS, RESCUE / HAZ. MAT. WING HYDRONIC FLOOR PLAN	
SUBMITTED BY:	SOL. NO. DA CAGS-92-B-0109 DATED: JUN. 1992	
ENGINEER:	CONTR. NO. DACAGS-92-C-0155	SEQUENCE NO.
	DRAWING NUMBER	SHEET NO.
	M-310r 4-A	229

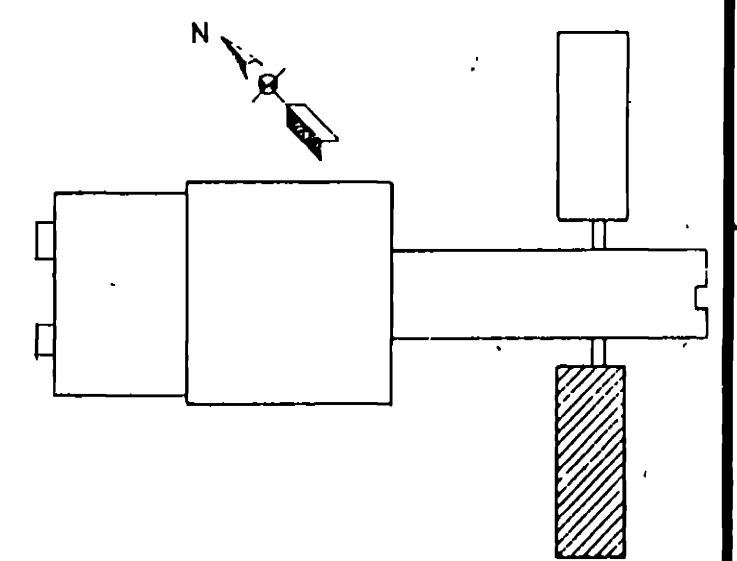
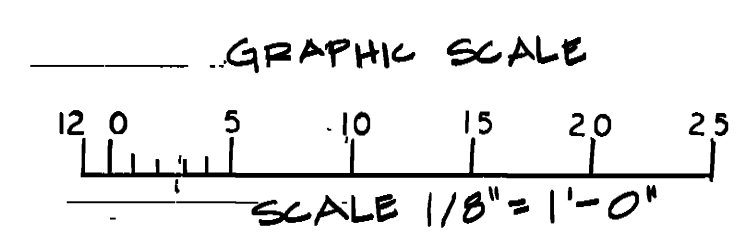
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FLOOR PLAN  
SCALE: 1/8" = 1'-0"



FIRE TRAINING BUILDING  
BASIC COURSES WING

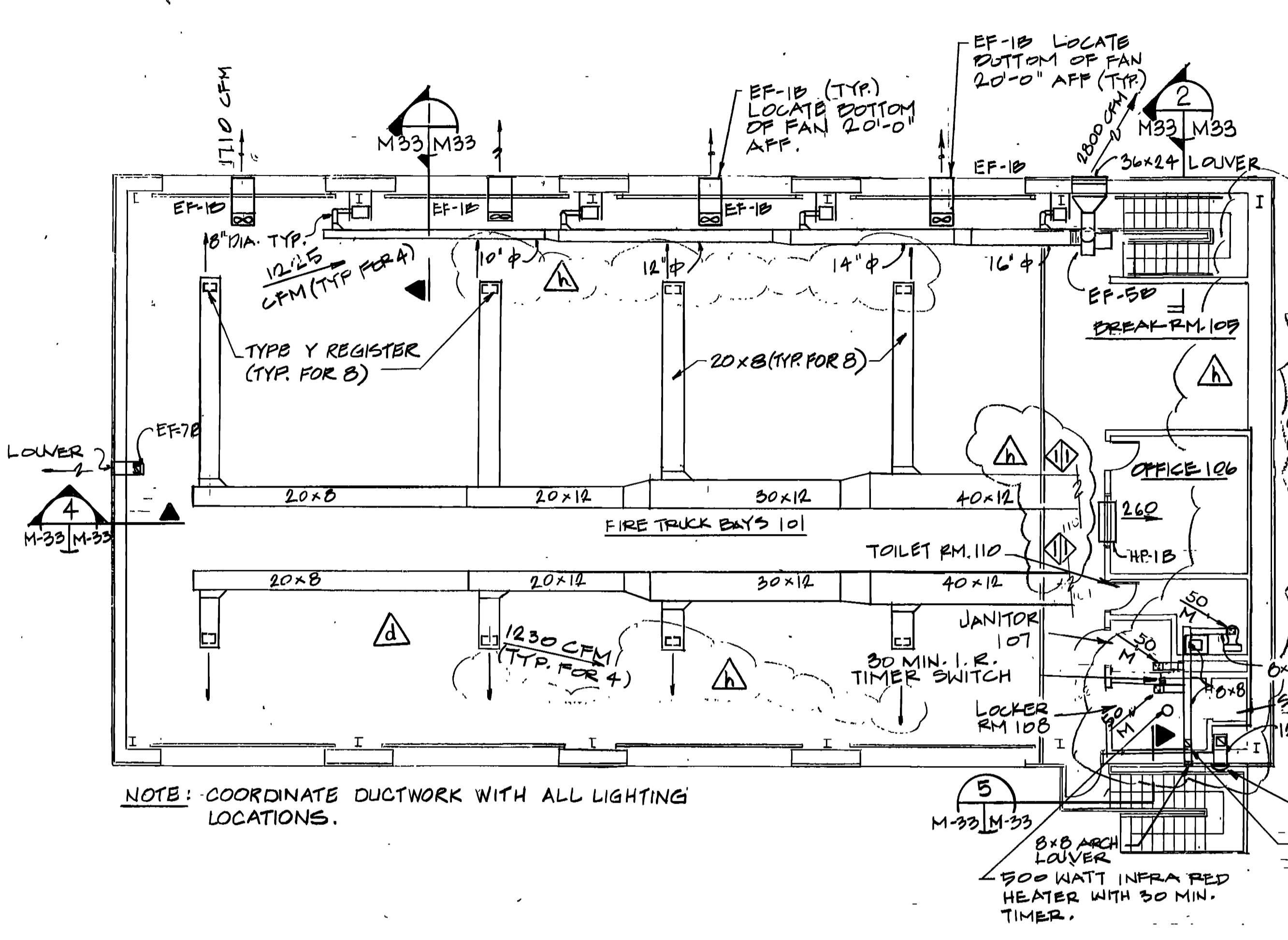
NO.	DATE	DESCRIPTION OF REVISION
1	AM 8/00	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
2	AM 8/00	REVISED TO REFLECT W. I. CHANGE

WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: J. GUILLOT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
DRAWN BY: J. GUILLOT	<b>FIRE TRAINING COMPLEX</b> FIRE TRAINING BUILDINGS, BASIC COURSES WING HYDRANTIC FLOOR PLAN
REVIEWED BY: SWANSON	SUBMITTED BY: M.D. 12/1/90 ENGINEER: J.R. 12/13
SOL. NO. DACAGS-92-B-0109 CONTR. NO. DACAGS-92-C-0155	DATED: JUN 1992 SEQUENCE NO. DRAWING NUMBER M-320-44 SHEET NO. 230

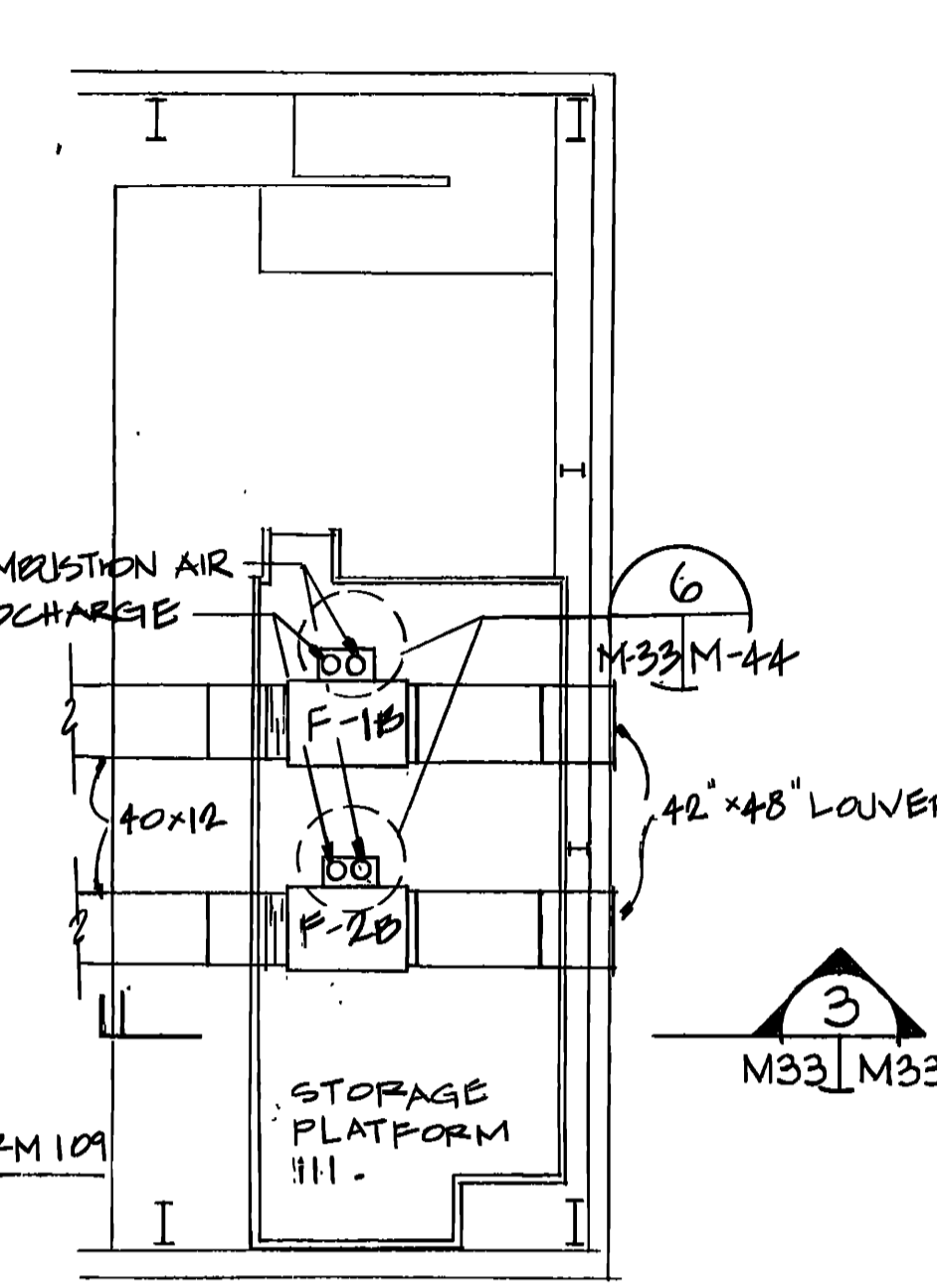
*Swanson*

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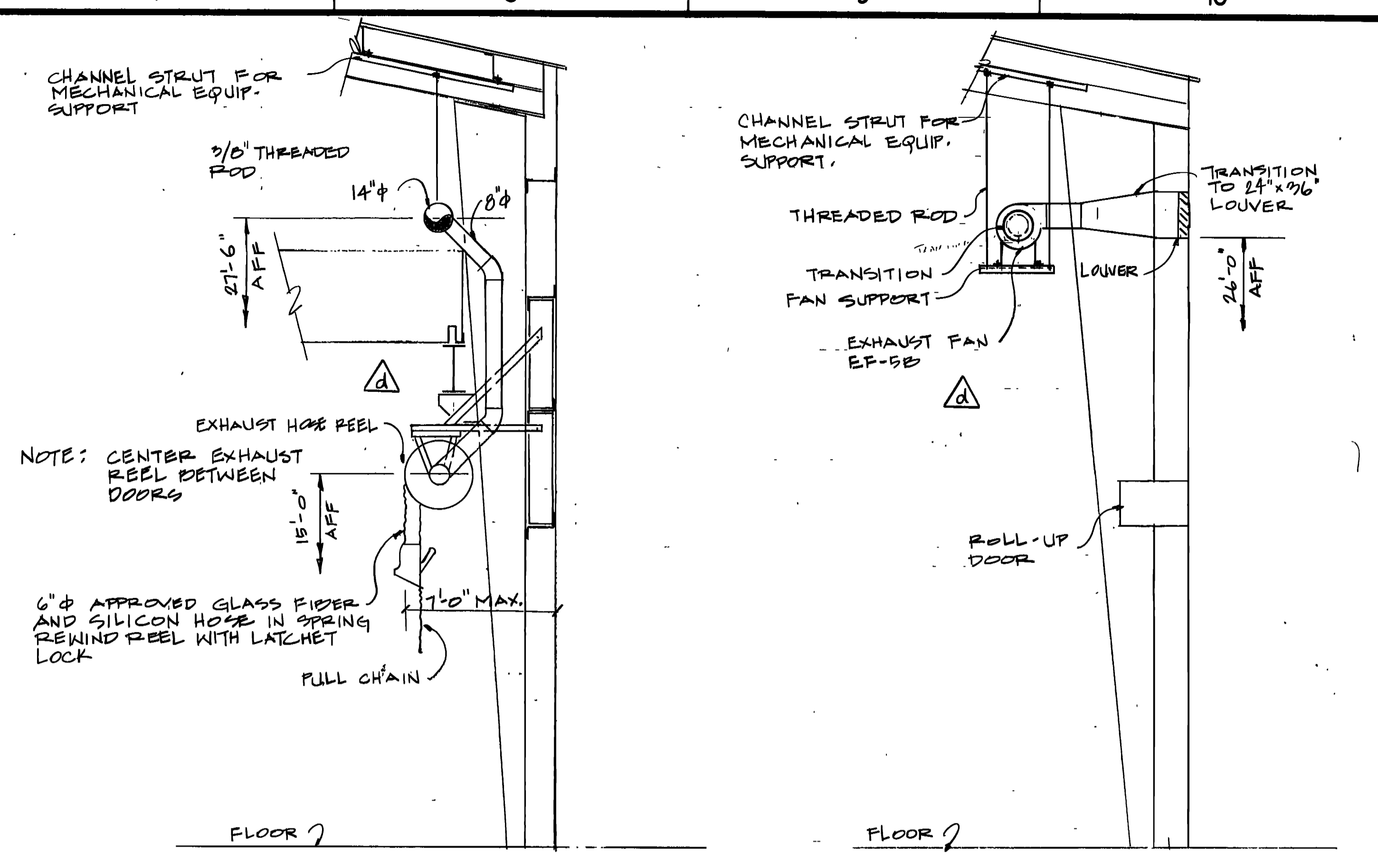




MEZZANINE LEVEL PLAN - HVAC  
SCALE: 1/8" = 1'-0"

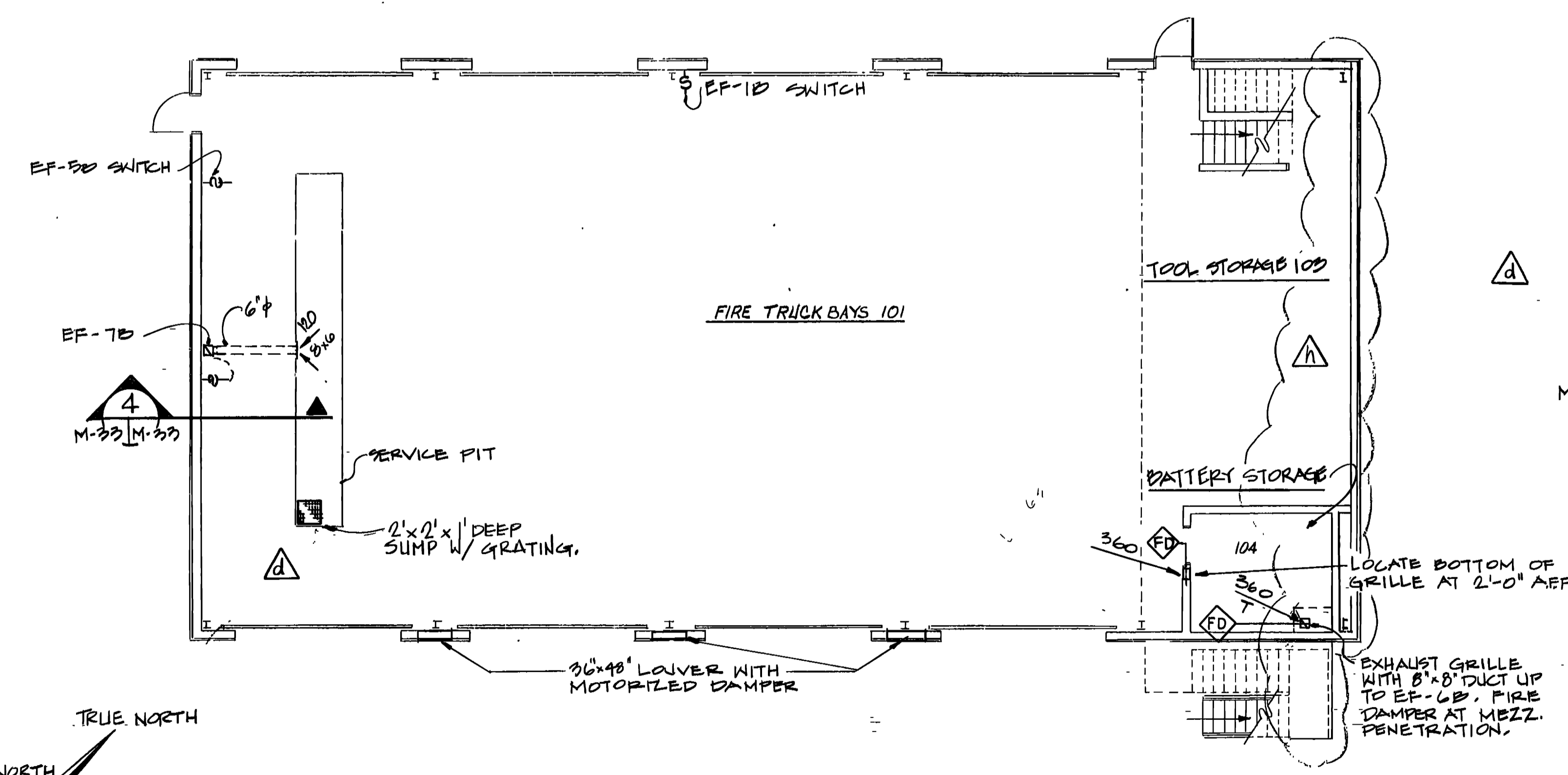


STORAGE PLATFORM  
SCALE: 1/8" = 1'-0"

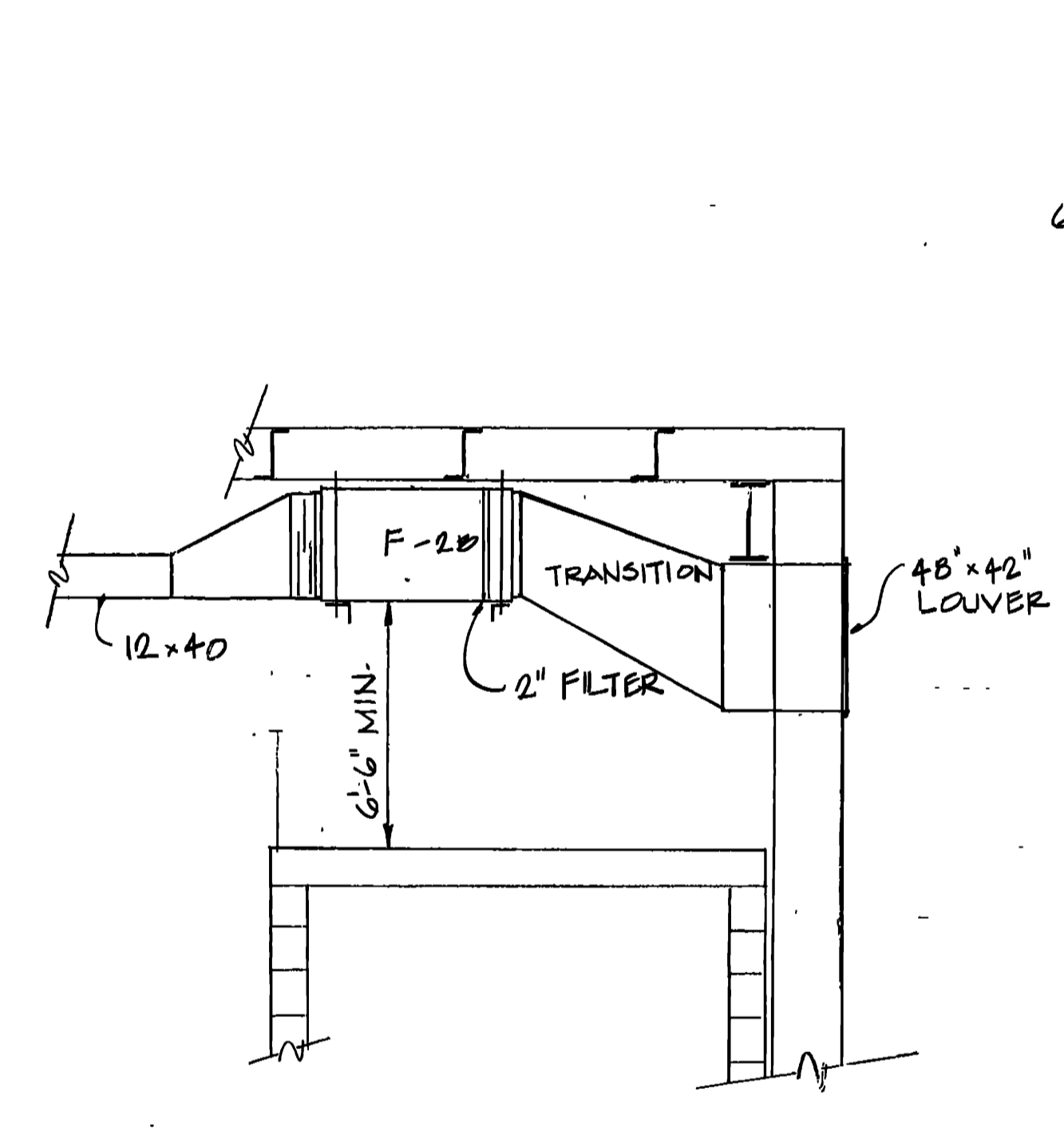


SECTION 1  
SCALE: 1/4" = 1'-0"

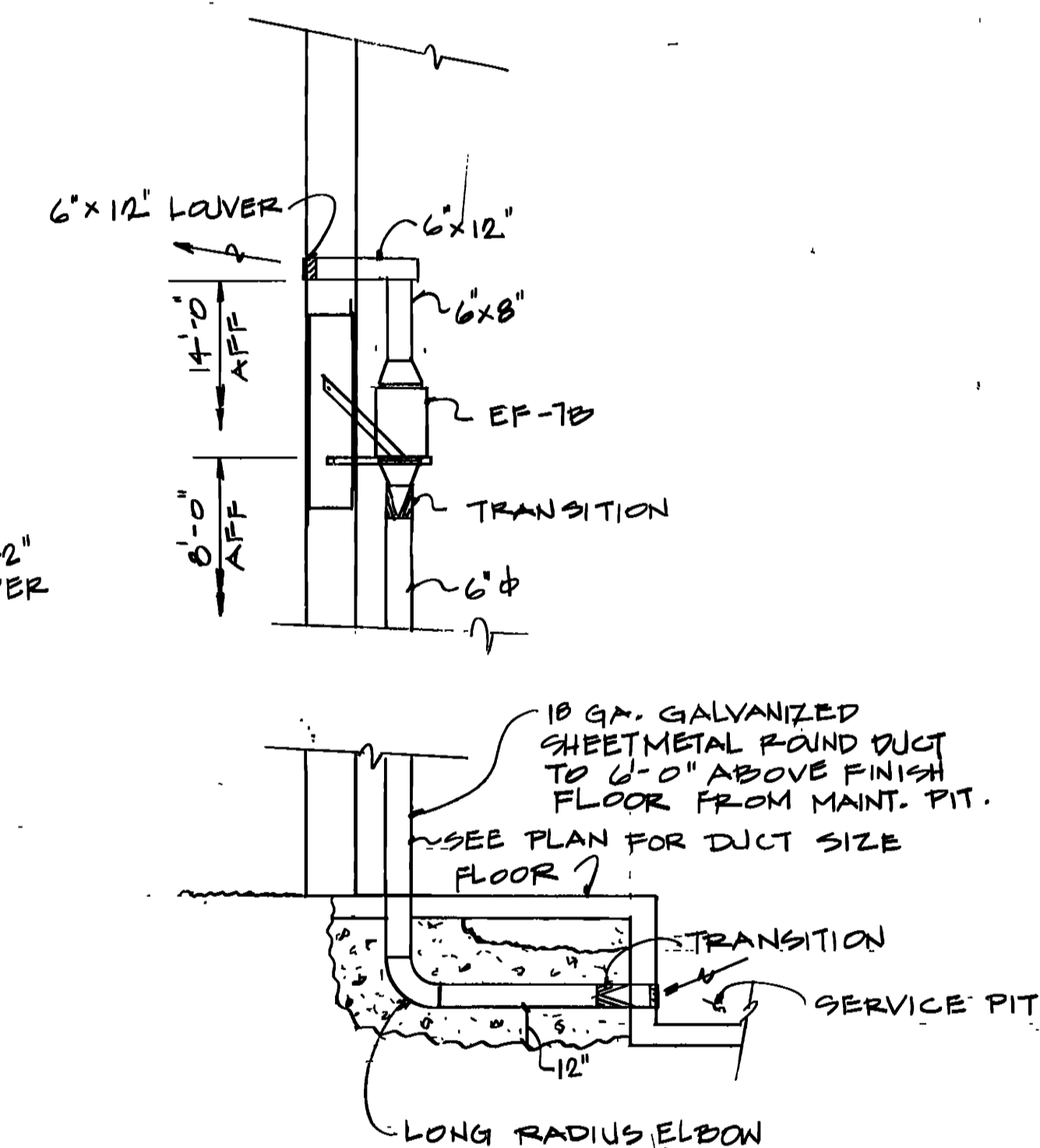
SECTION 2  
SCALE: 1/4" = 1'-0"



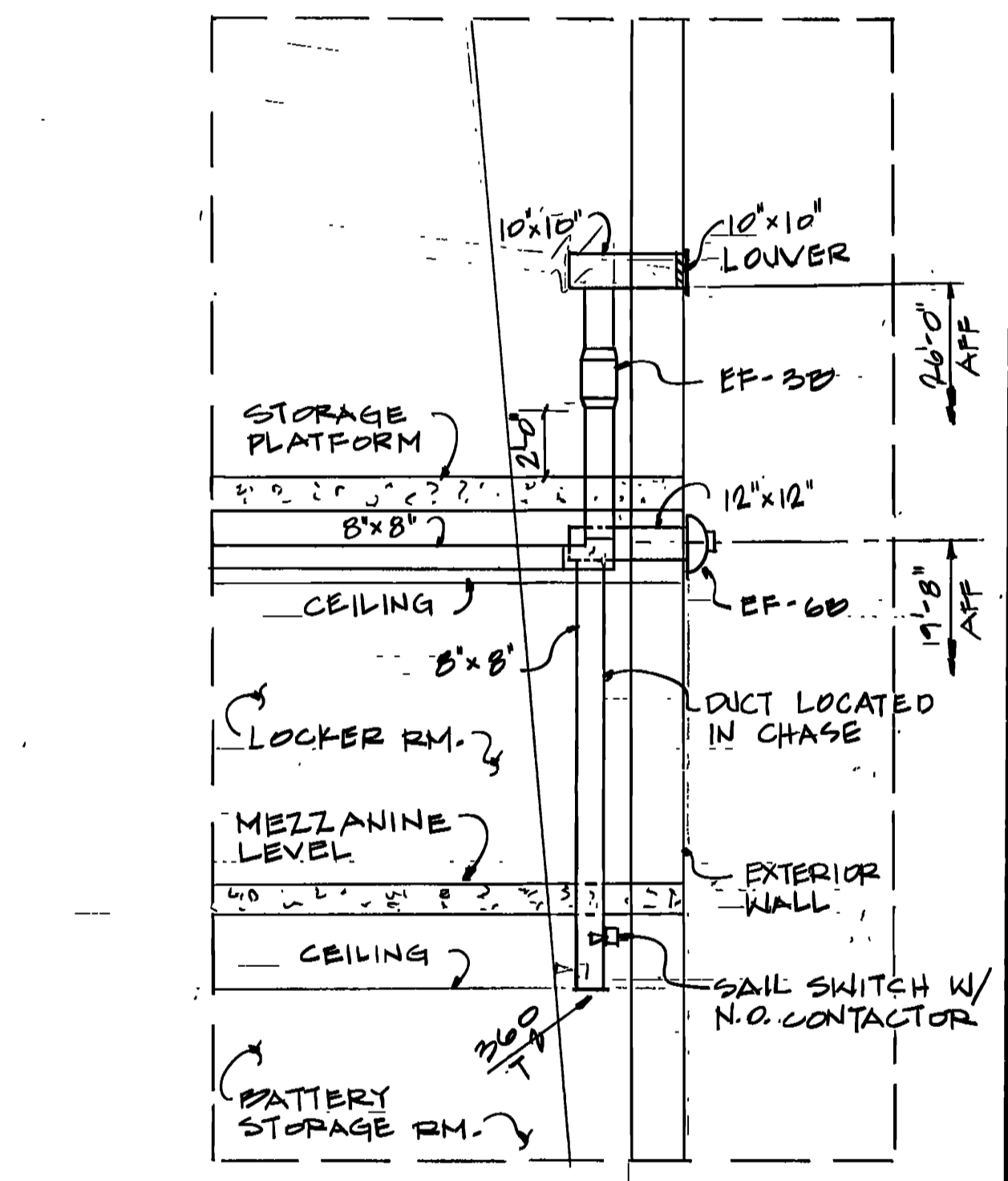
FIRST FLOOR PLAN - HVAC  
SCALE: 1/8" = 1'-0"



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

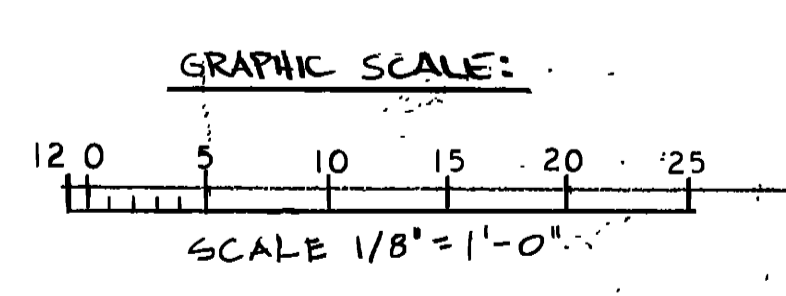


SECTION 4  
SCALE: 1/4" = 1'-0"

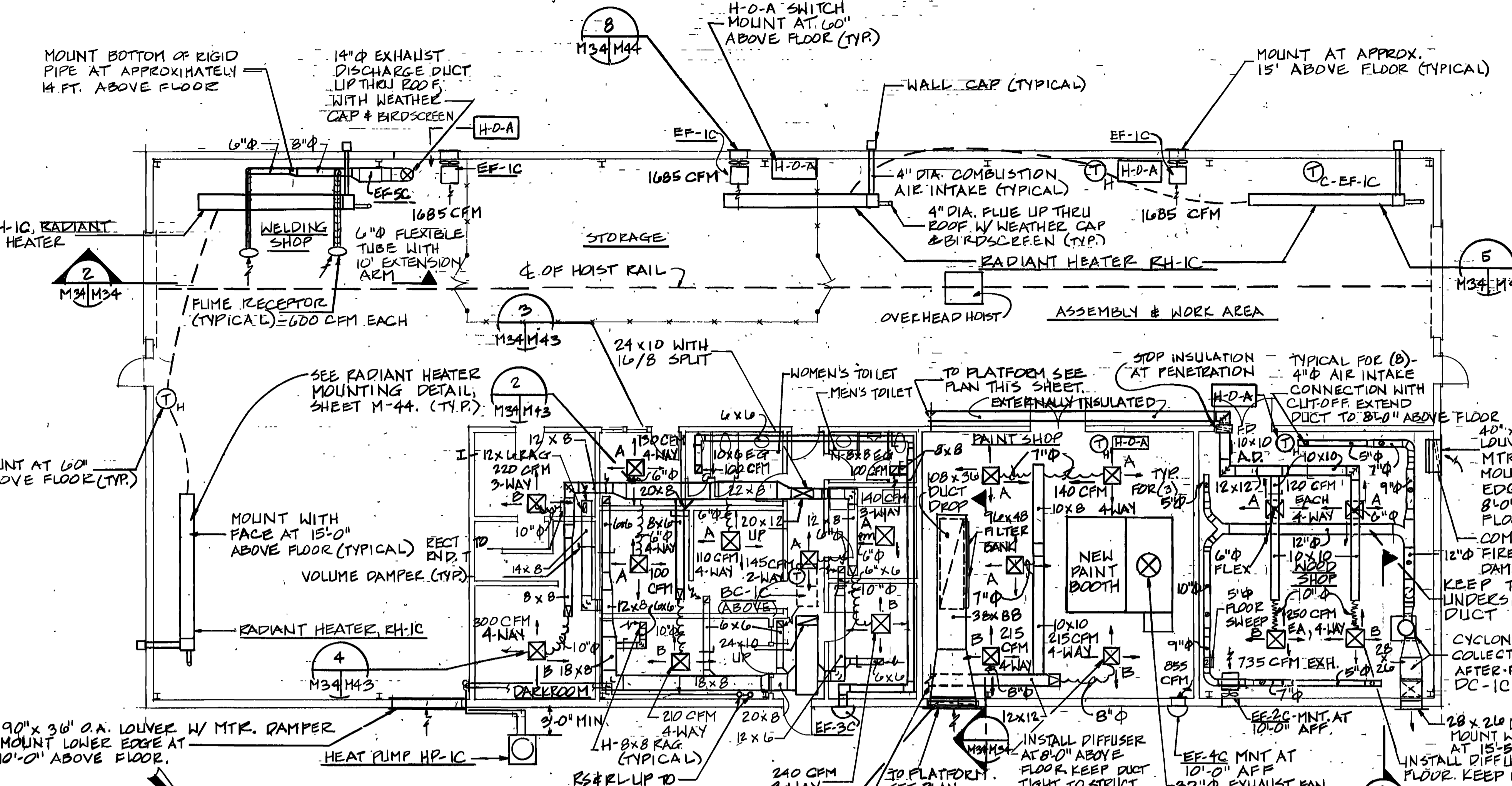


SECTION 5  
SCALE: 1/4" = 1'-0"

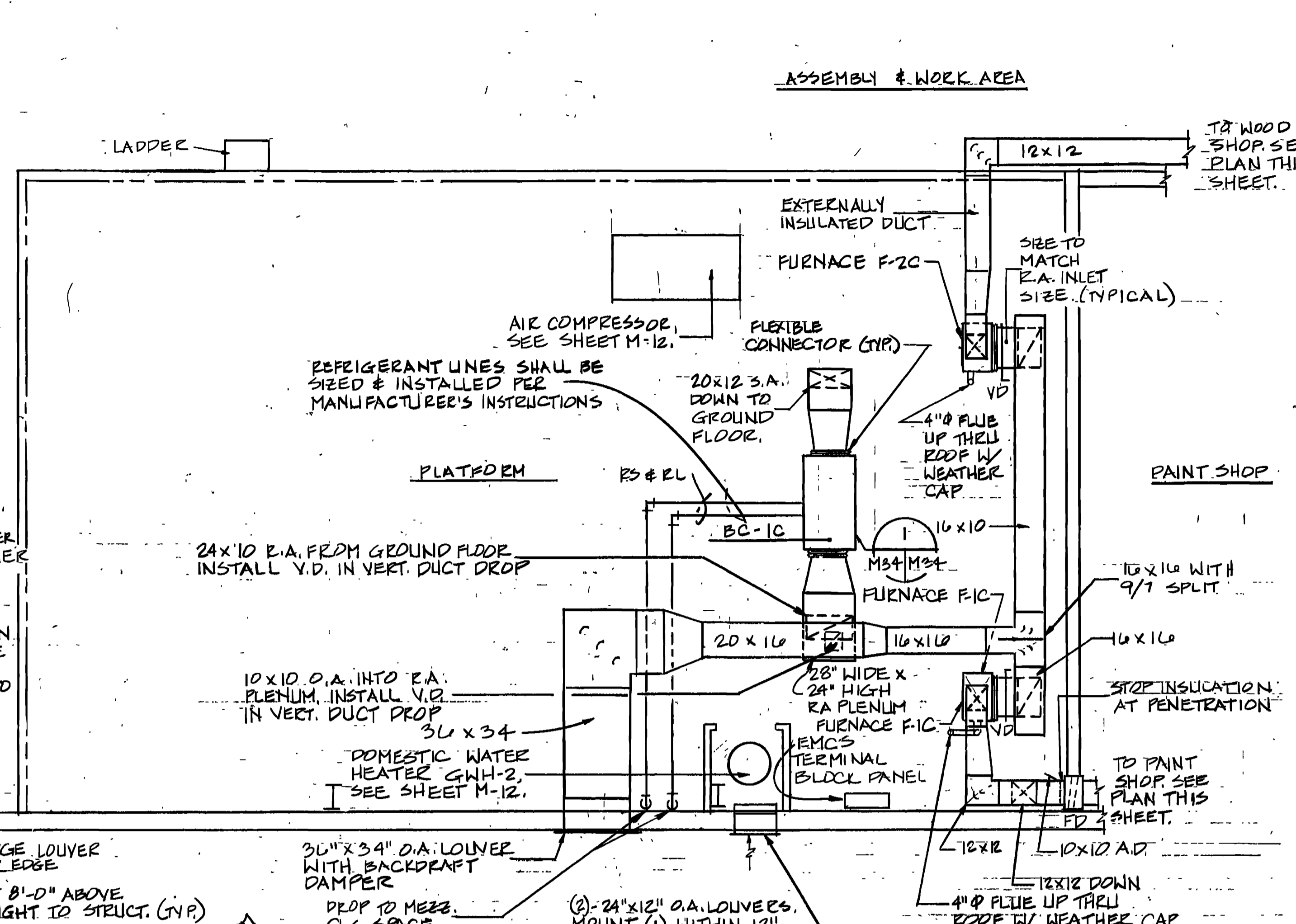
- NOTES:
1. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSION
  2. ALL SUPPLY AND POSITIVE DUCT SHALL BE CONSTRUCTED TO SMACNA 2500 FPM 70" CLASS. ALL SUCTION OR NEGATIVE DUCT SHALL BE 2500 FPM 1" CLASS.
  3. SEE ARCHITECTURAL SHEET A-41 FOR ROOF PENETRATION DETAILS.



AM#0002 SEP 92 REVISED TO REFLECT MISC. HVAC BACKGROUND CHANGES	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
AM#0004 13 AUG 92 REVISED TO REFLECT MISC. HVAC CHANGES	DESIGNED BY: D. KELLY
AM#0001 4 JUN 92 REVISED TO REFLECT W.I. CHANGE	DRAWN BY: I. LEBLANC
	REVIEWED BY: C. WANG
	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS
	<b>FIRE TRAINING COMPLEX</b> VEHICLE MAINTENANCE FACILITY HVAC FLOOR PLAN
SUBMITTED BY: 1/1/92	SOL. NO. DACAG3-92-B-0109 DATED JUN. 1992
ENGINEER: 1/1/92	CONTR. NO. DACAG2-92-C-0155
	DRAWING NUMBER M 33 OF 44
	SHEET NO. 231

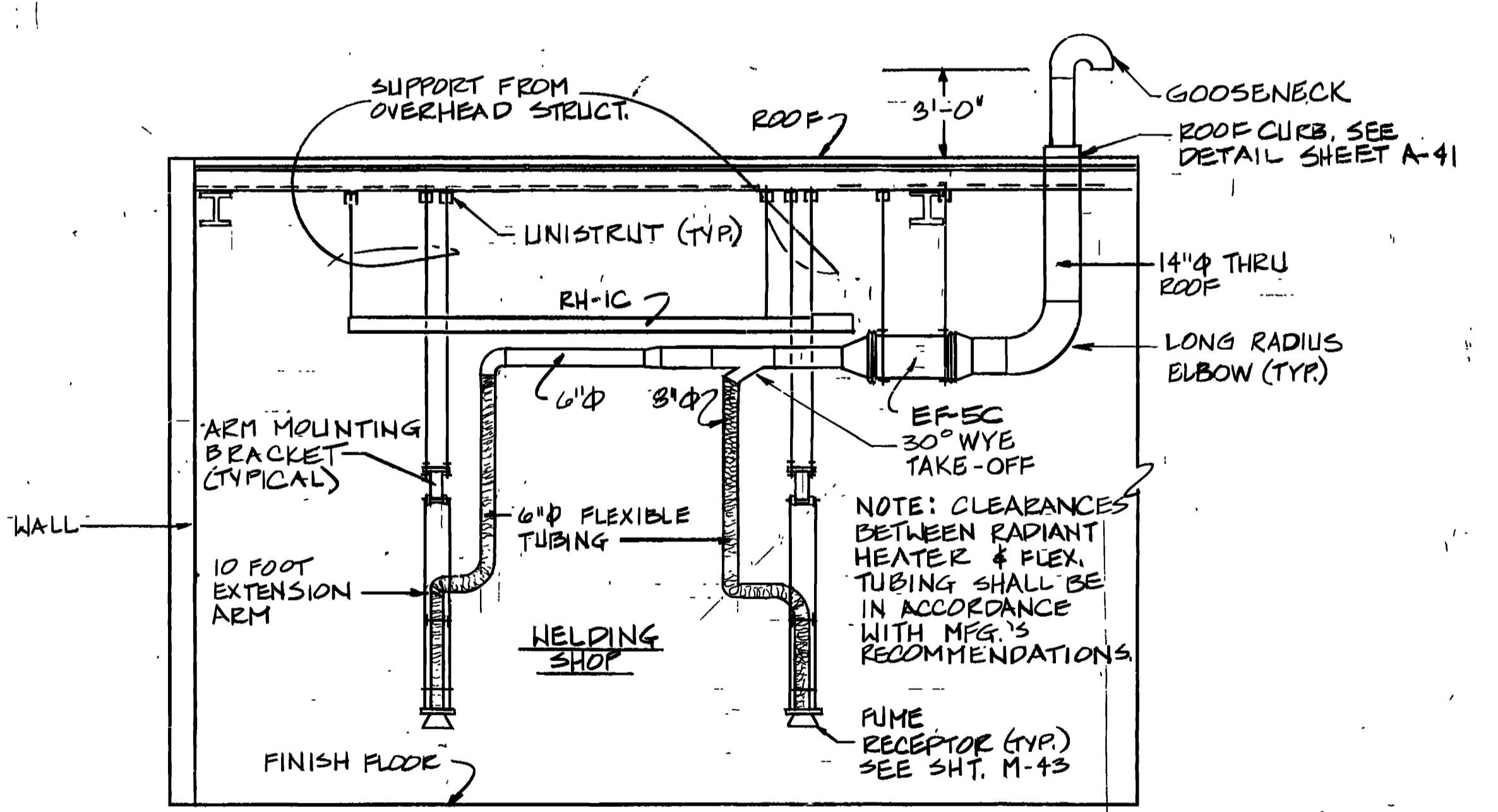


**FLOOR PLAN - HVAC**  
SCALE: 1/8" = 1'-0"

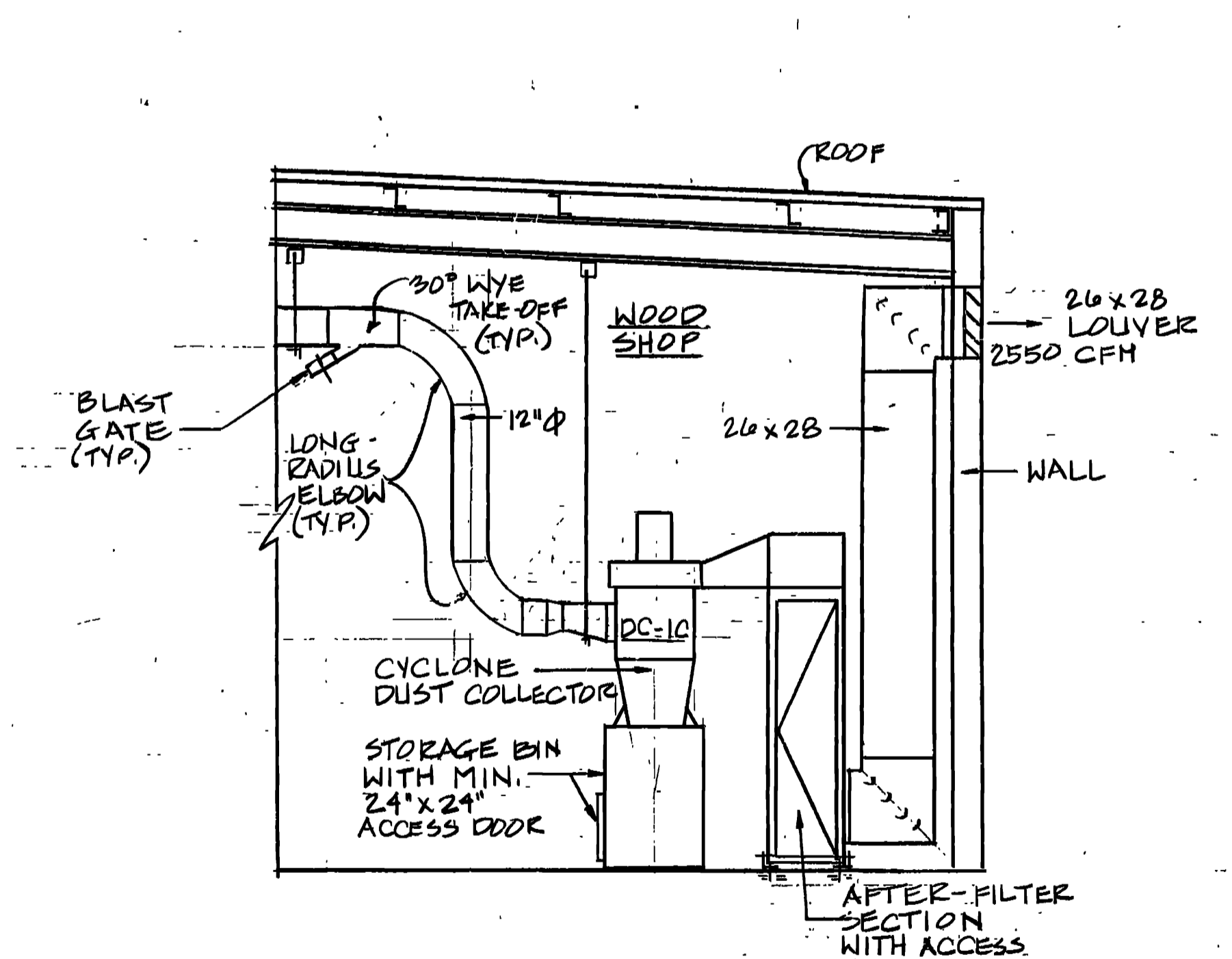


**EQUIPMENT PLATFORM - HVAC PLAN**  
SCALE: 1/4" = 1'-0"

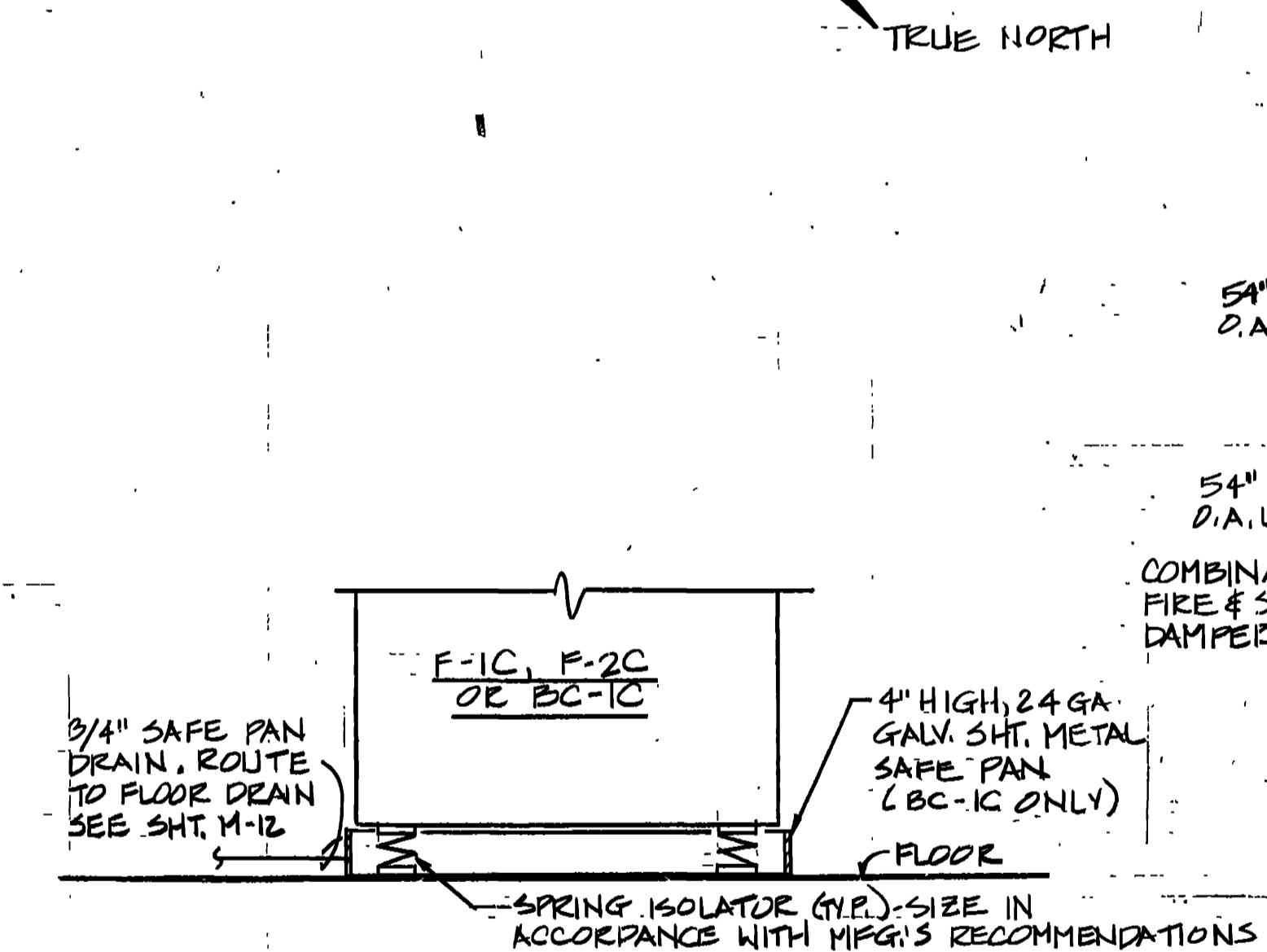
- NOTE:**
1. DUCT SIZES SHOWN ARE SHEET METAL DIMENSIONS.
  2. CLEARANCES FOR RADIANT HEATERS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  3. SEE AIR TERMINAL INSTALLATION DETAIL, SHEET M-43, (TYPICAL FOR ALL AIR SUPPLY TERMINALS).
  4. ALL ELBOWS SHALL HAVE TURNING VANES.



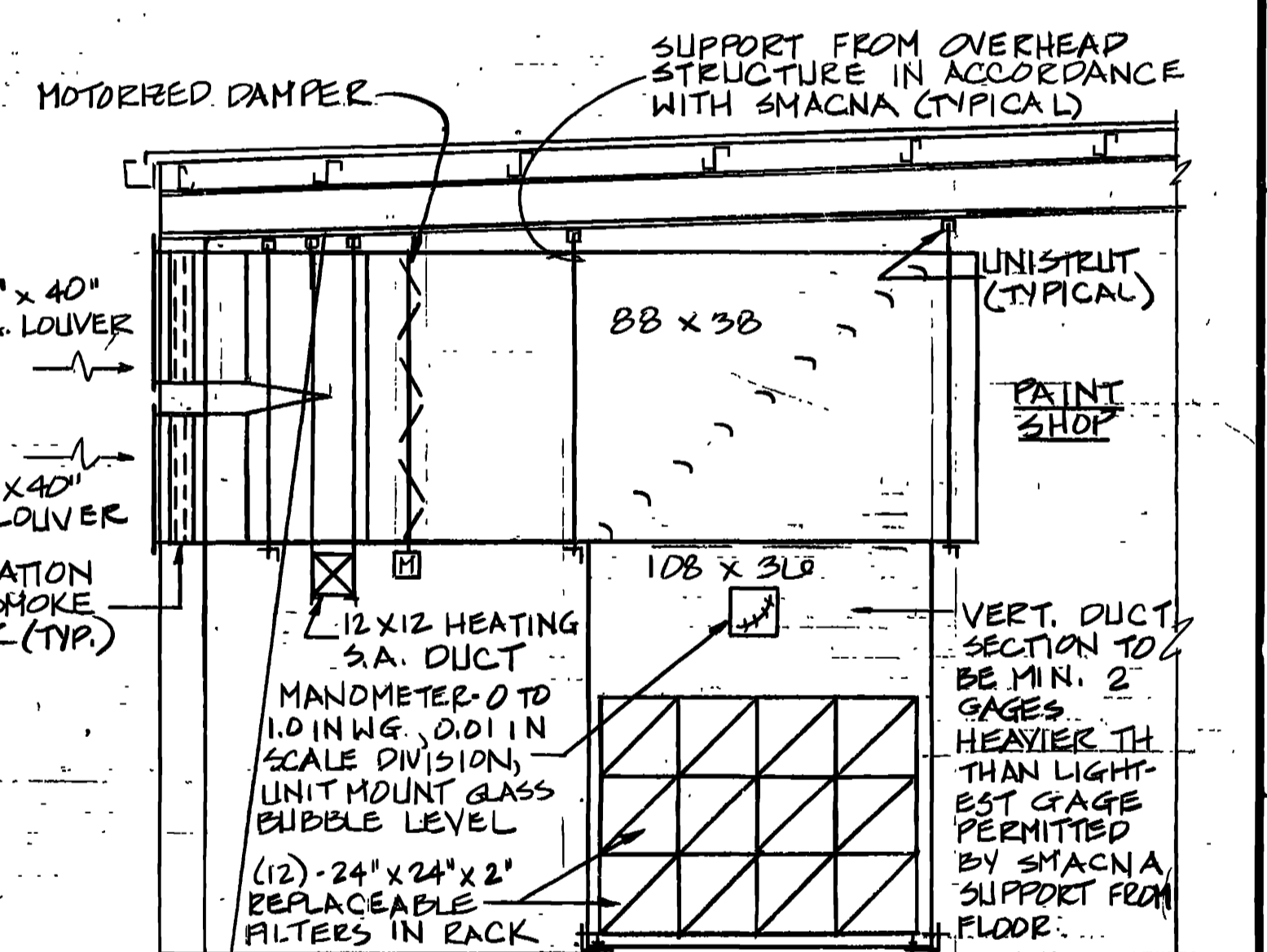
**ELEVATION - WELDING STATION**  
SCALE: 1/4" = 1'-0"



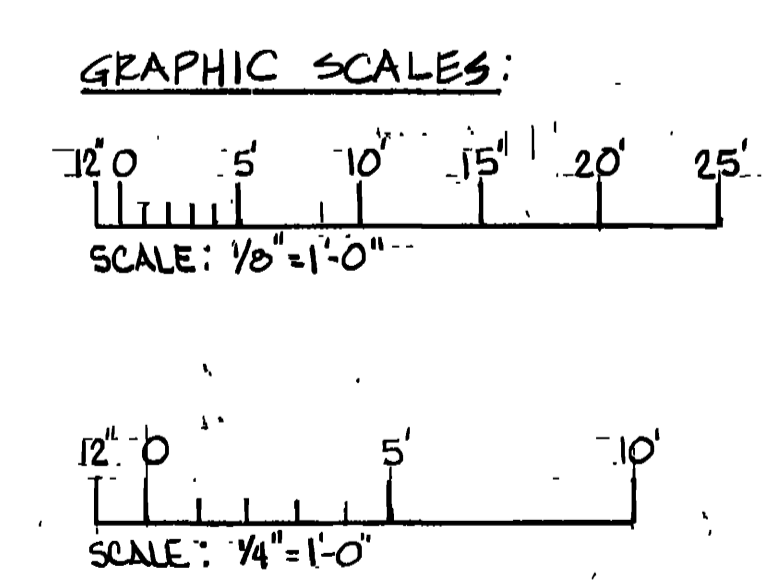
**ELEVATION - DUST COLLECTOR**  
SCALE: 1/4" = 1'-0"



**EQUIPMENT SUPPORT DETAIL**  
N.T.S.



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



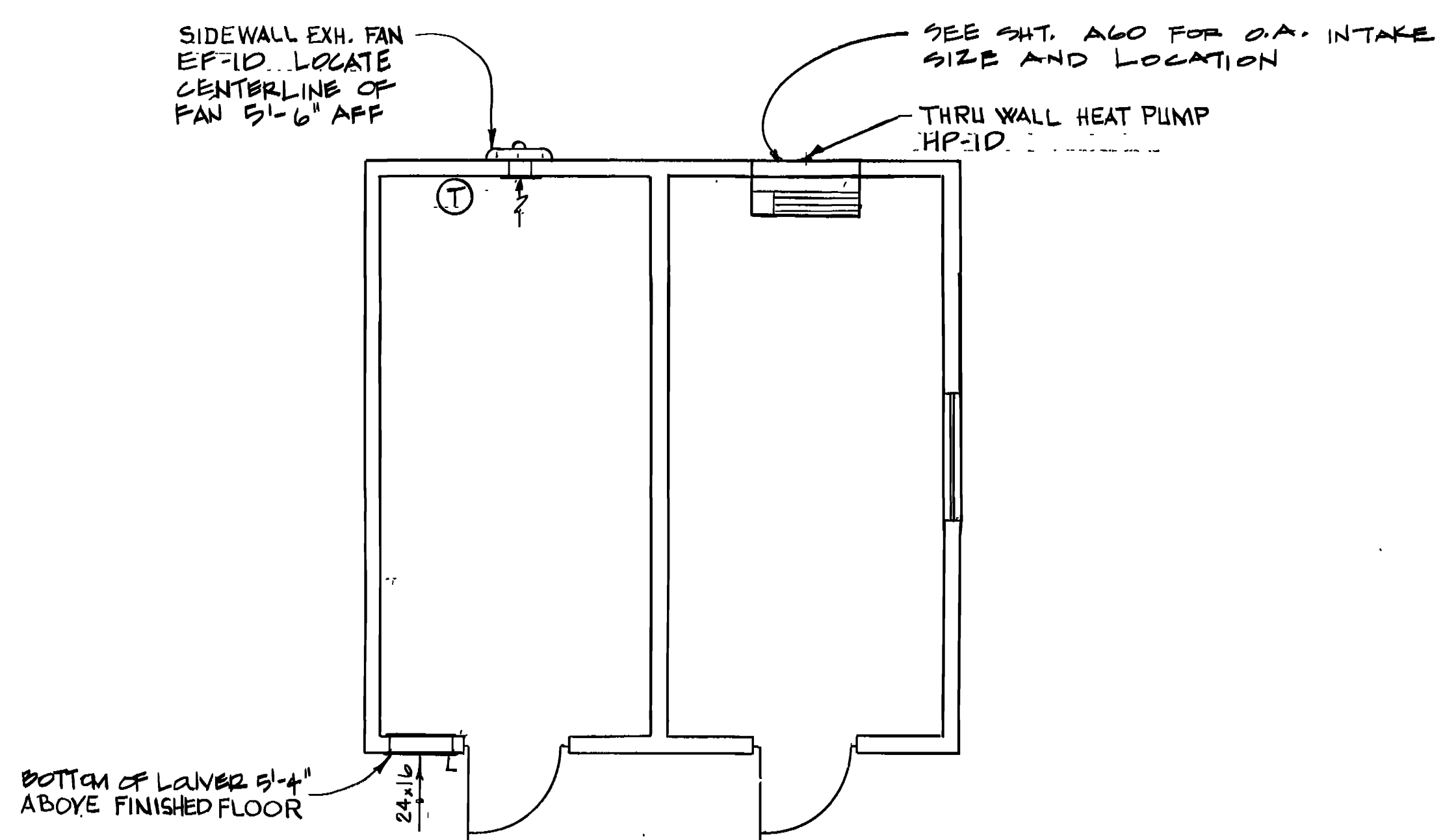
NOTE: MANOMETER SHALL INCLUDE INDICATOR AT 0.1 IN. W.G. FOR FILTER CHANGE.

<p>APPROX 14,000 CFM CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE</p> <p>AMENDED JUNE 1992 REVISED TO REFLECT N.I. CHANGE</p>	<p>DESCRIPTION OF REVISION</p>
<p>DESIGNED BY: M. JENKINS</p> <p>DRAWN BY: M. JENKINS</p> <p>REVIEWED BY: T. WAN</p>	<p>U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS</p> <p>GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS</p> <p><b>FIRE TRAINING COMPLEX</b> TRAINER SERVICES FACILITY HVAC FLOOR PLAN BID OPTION NO. 1</p>
<p>SUBMITTED: 12/1/90</p> <p>ENGINEER: M. JENKINS</p>	<p>SOL. NO. DACAG3-92-B-0109 DATED: JUN 1992</p> <p>CONTR. NO. DACAG3-92-C-0155</p> <p>DRAWING NUMBER: M-34 OF 34</p> <p>SEQUENCE NO: 232</p>

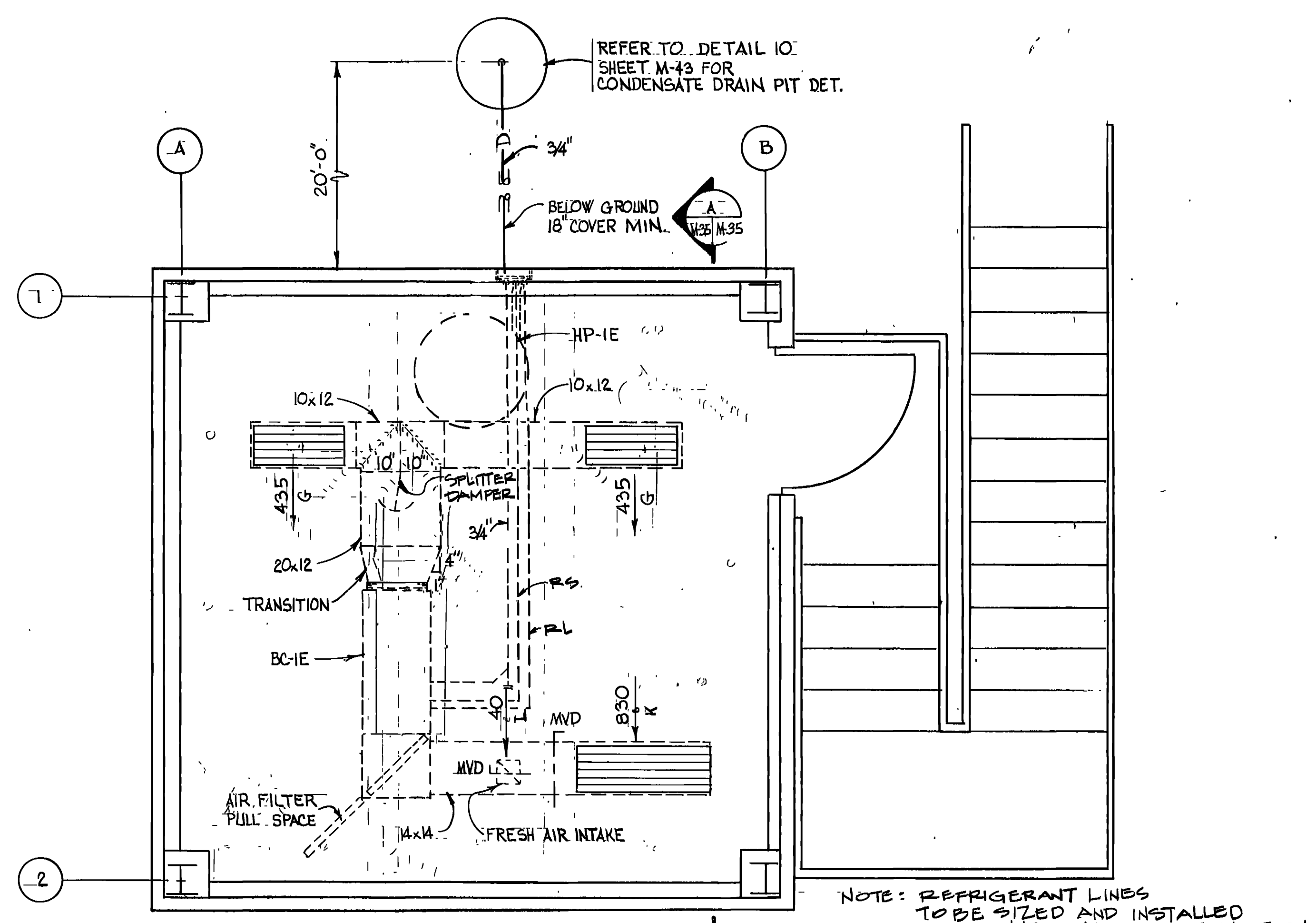
SL

2 3 4 5 6 7 8 9 10

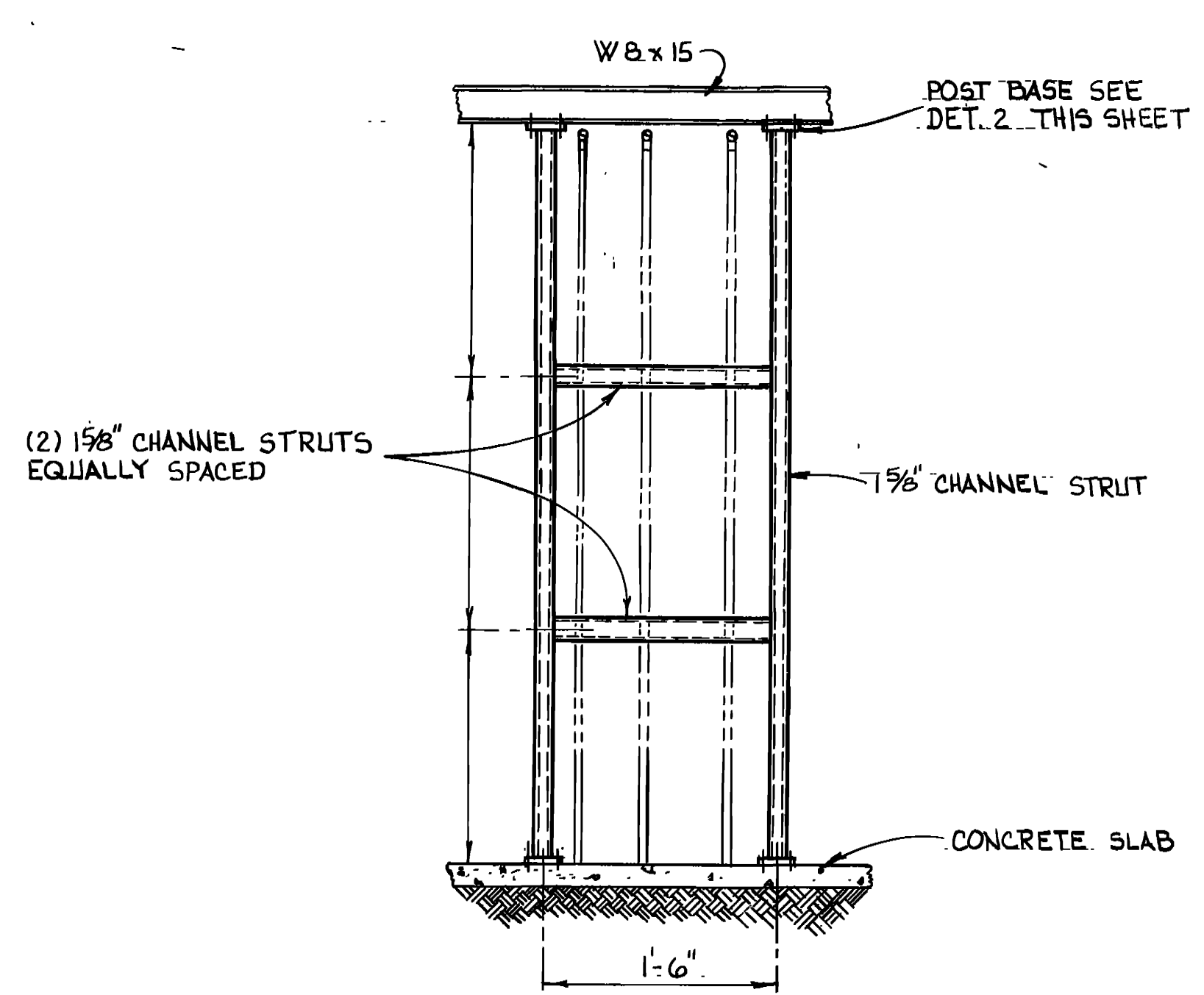
G  
F  
E  
D  
C  
B  
A



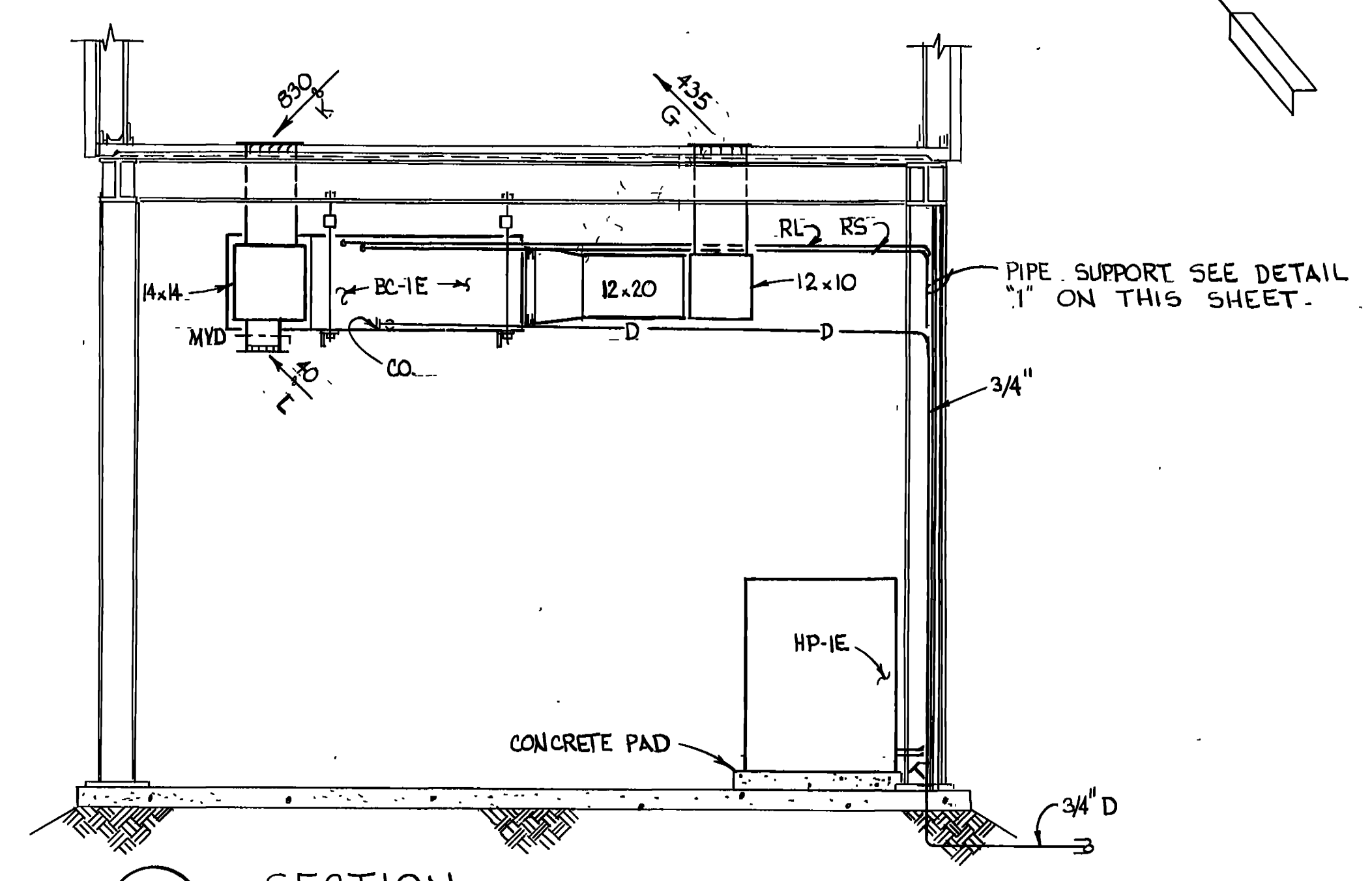
**FUEL DISPENSING STATION PLAN-HVAC**  
SCALE: 1/4" = 1'-0"



**CONTROL TOWER PLAN-HVAC**  
SCALE: 1/2" = 1'-0"

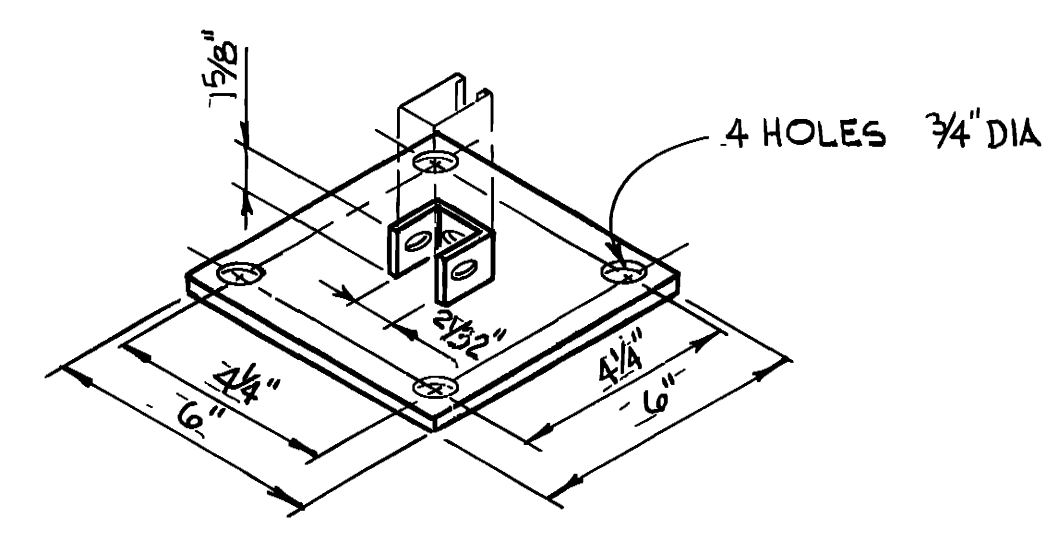
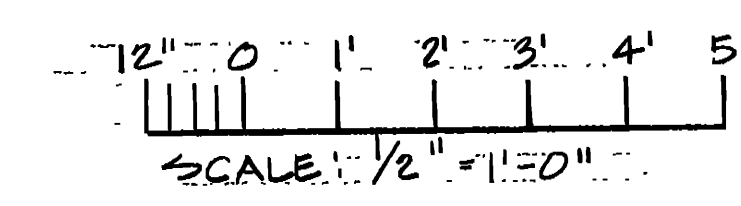
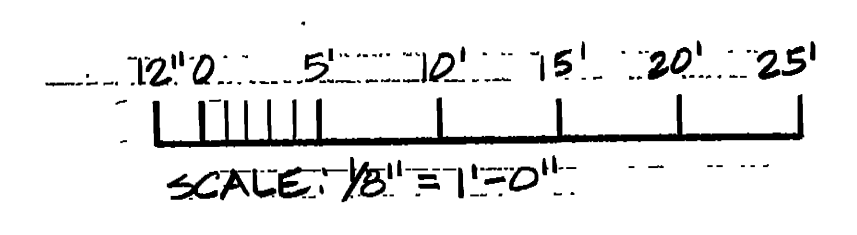


**DETAIL**  
M-35 M-35 NO SCALE



**SECTION**  
M-35 M-35 SCALE: 1/2" = 1'-0"

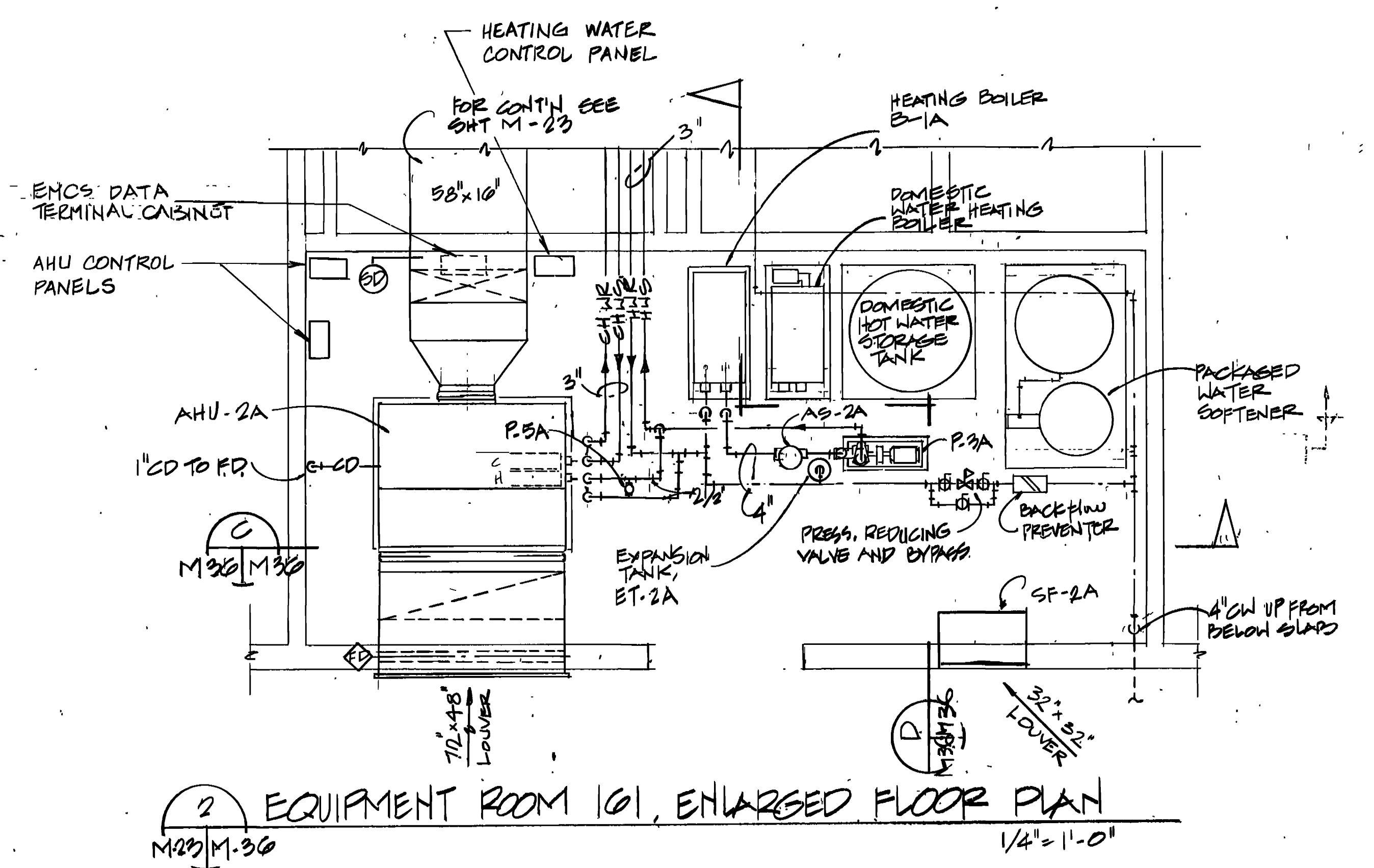
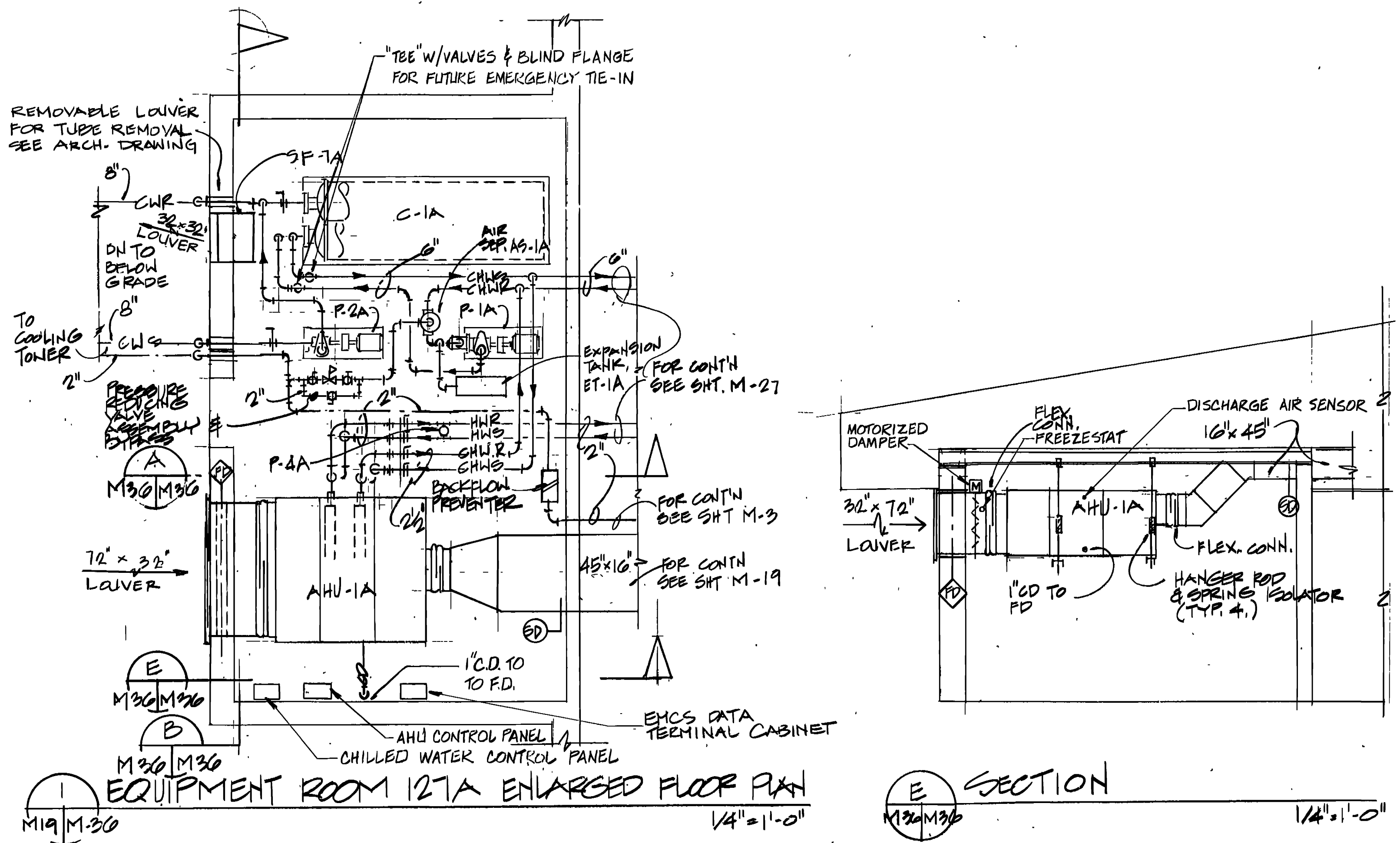
GRAPHIC SCALE:



**DETAIL**  
M-35 M-35 NO SCALE

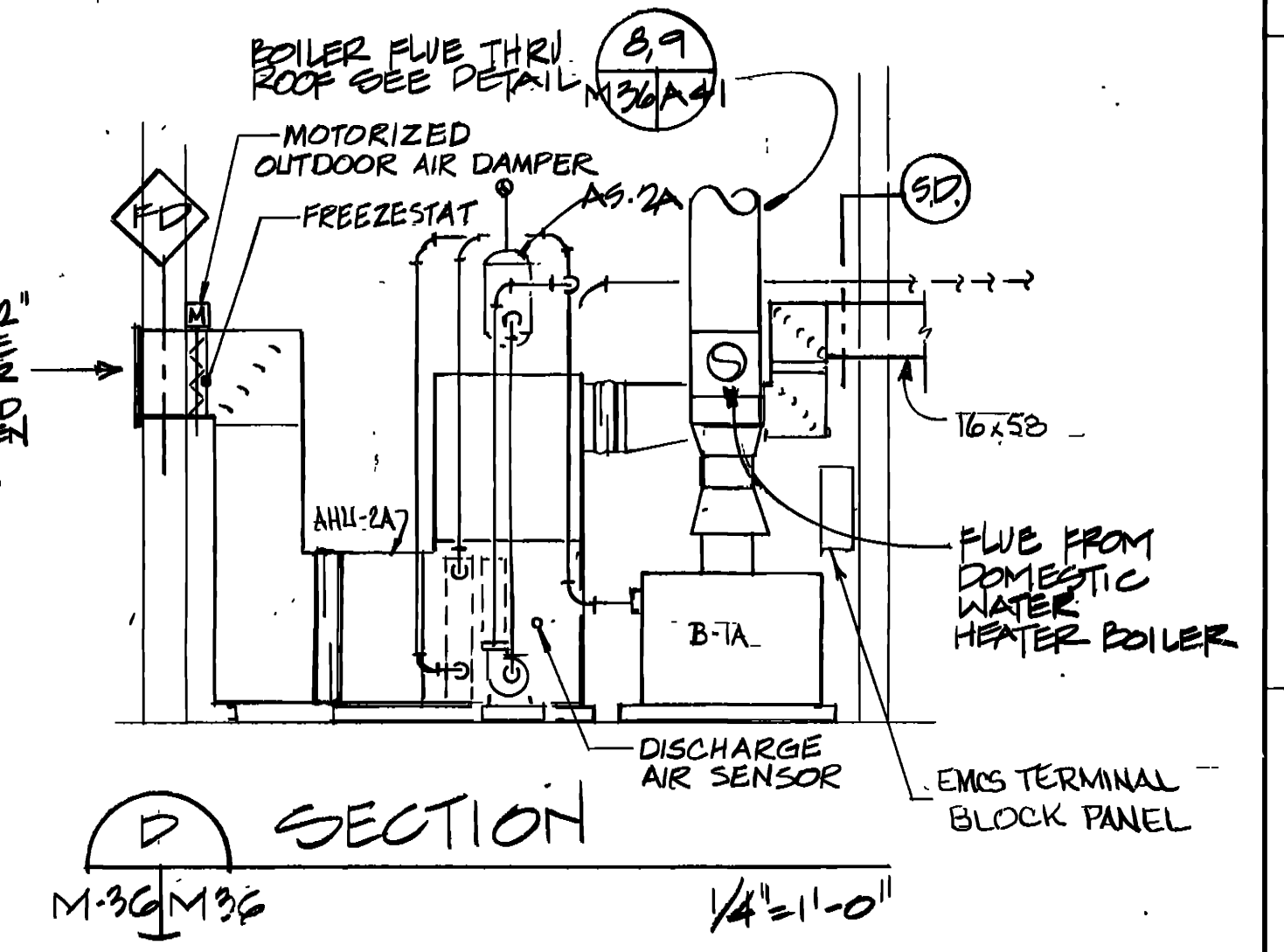
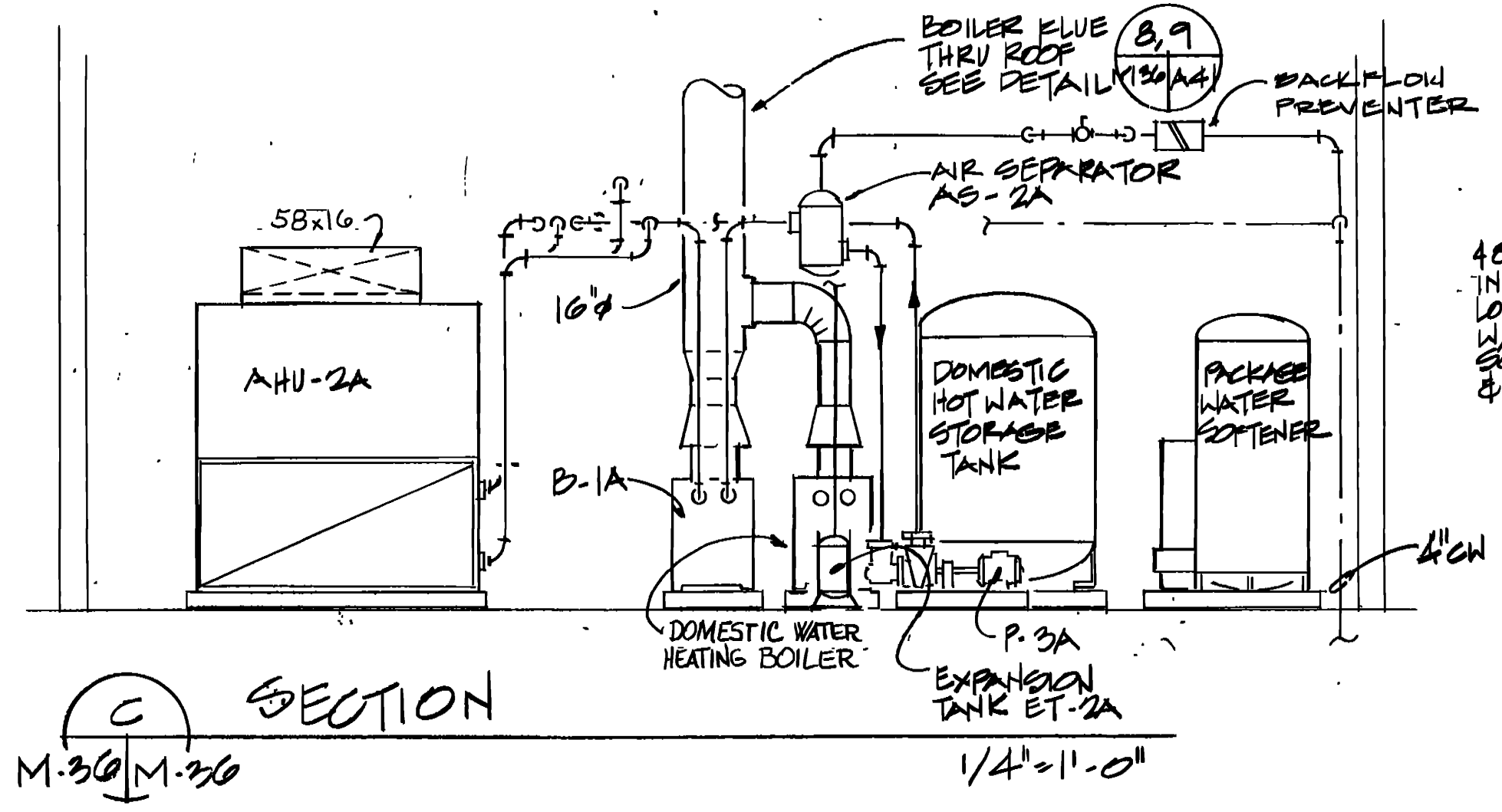
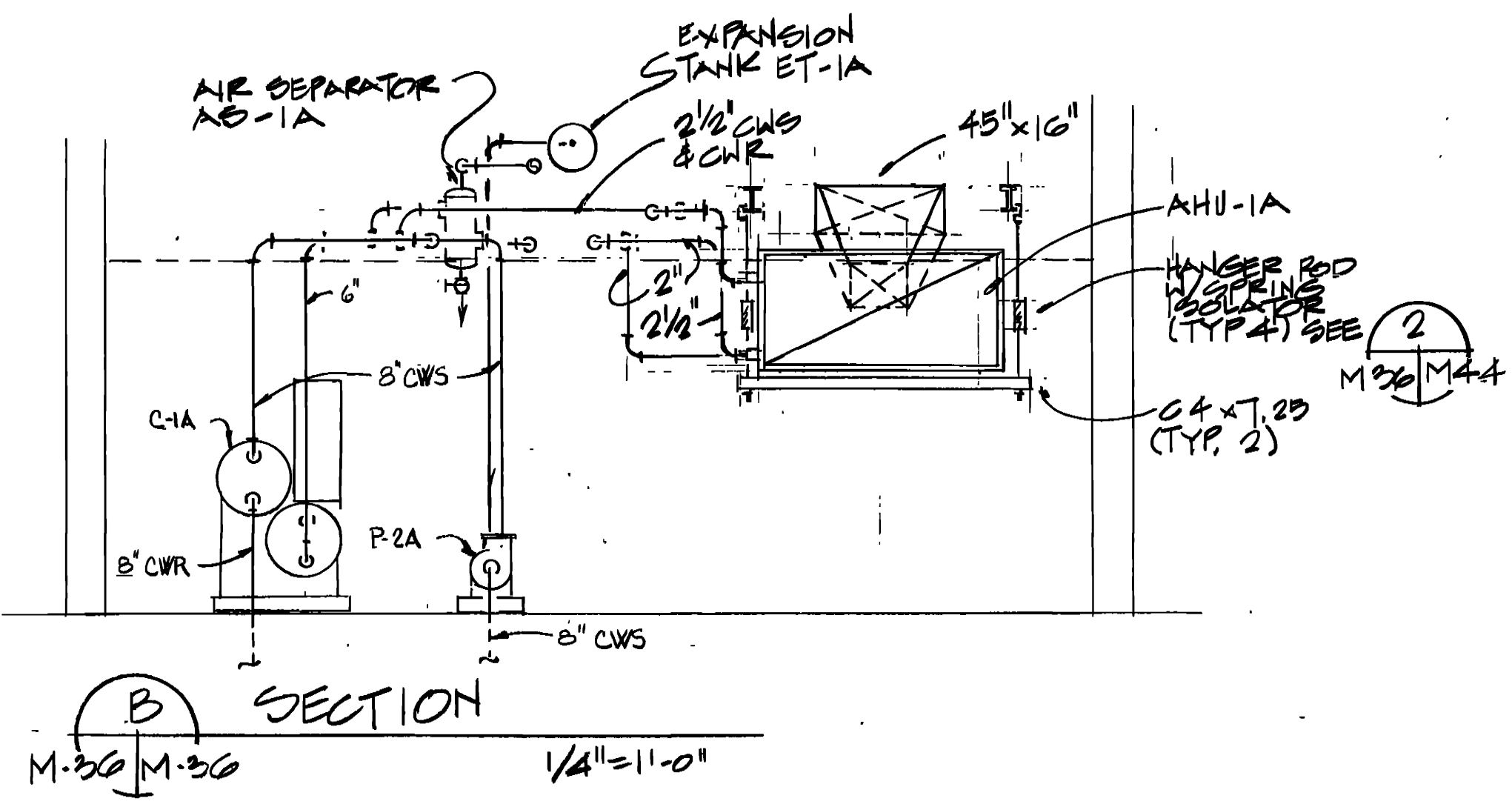
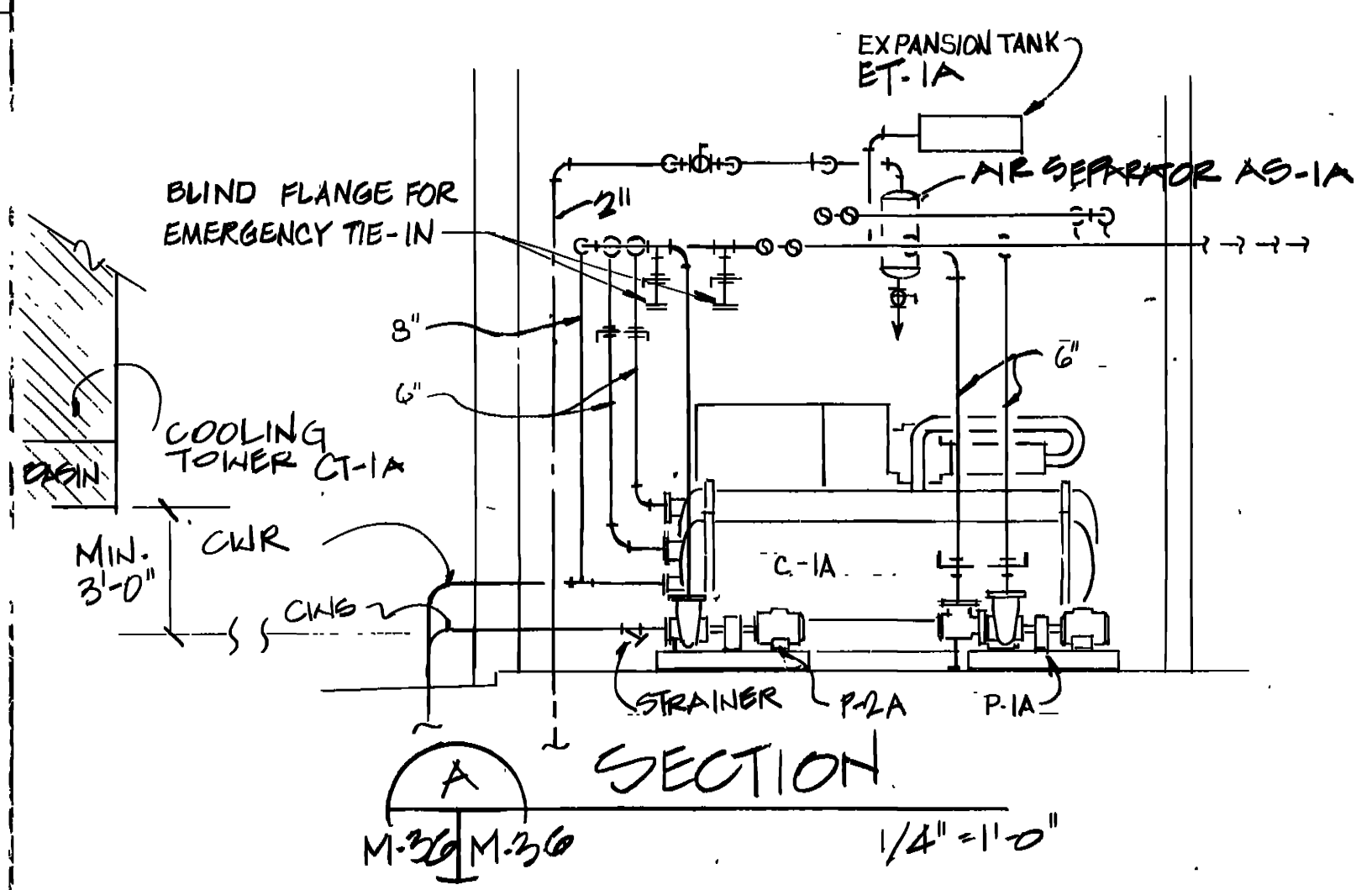
<p>AM#0005 4 AUG 92 CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE</p> <p>AM#2221 4 JUN 90 REVISED TO REFLECT N.I. CHANGE</p>	<p>U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS</p>
<p>DESIGNED BY: D.K.</p> <p>DRAWN BY: T.L.</p> <p>REVIEWED BY: C. WANG</p>	<p>GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS</p> <p><b>FIRE TRAINING COMPLEX</b></p> <p>FUEL DISPENSING STATION AND CONTROL TOWER HVAC FLOOR PLANS</p>
<p>SUBMITTED BY: MLO 12/1/90</p> <p>ENGINEER: MLO 11/3</p>	<p>SOL. NO. DACAG3-92B-0187 DATED: JUN. 1992</p> <p>CONTR. NO. DACAG3-92-C-0155 SEQUENCE NO. 233</p> <p>DRAWING NUMBER SHEET NO. M3504.44</p>

9L



E SECTION

1/4" = 1'-0"

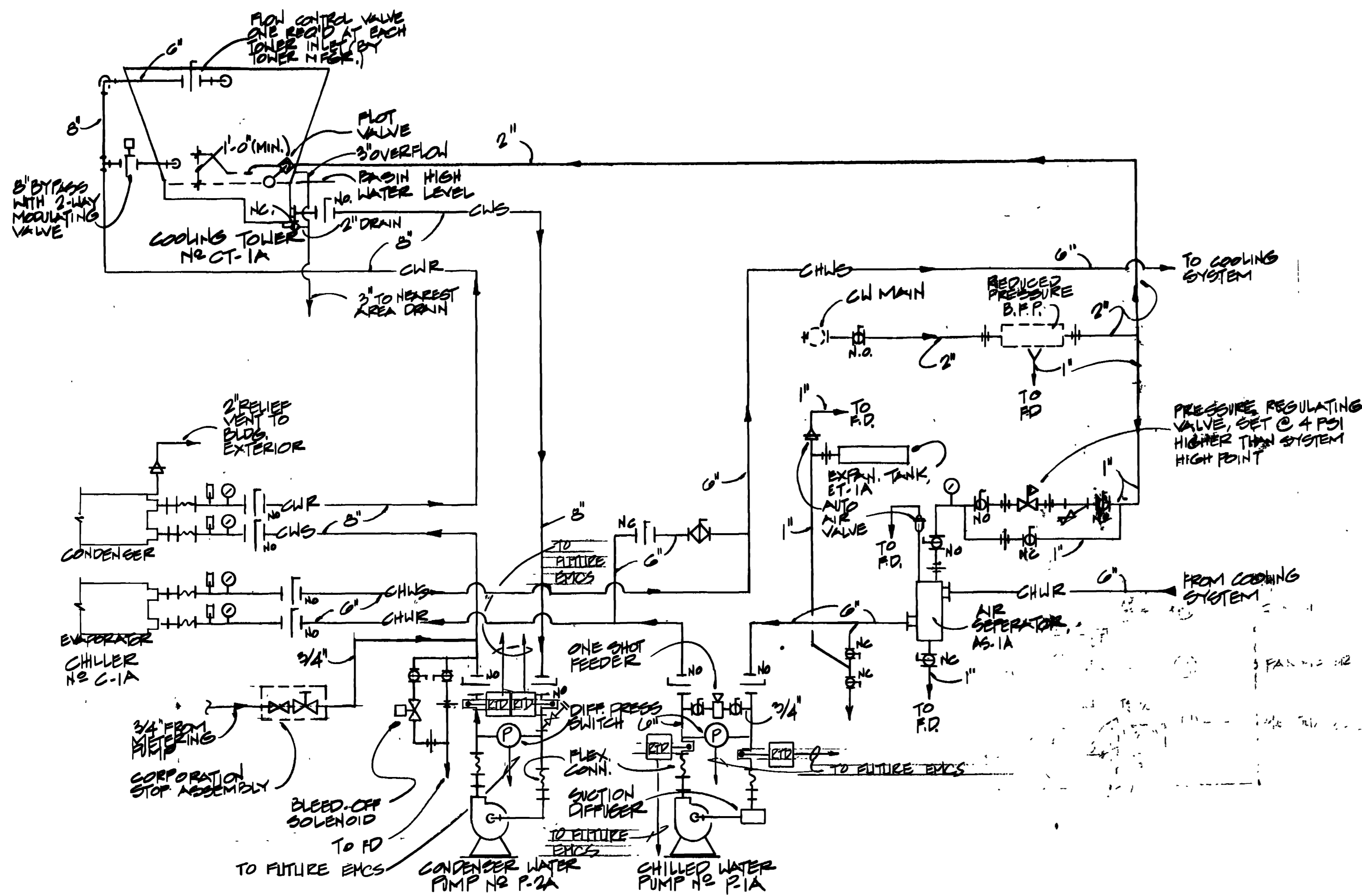


12" 0 5' 10'

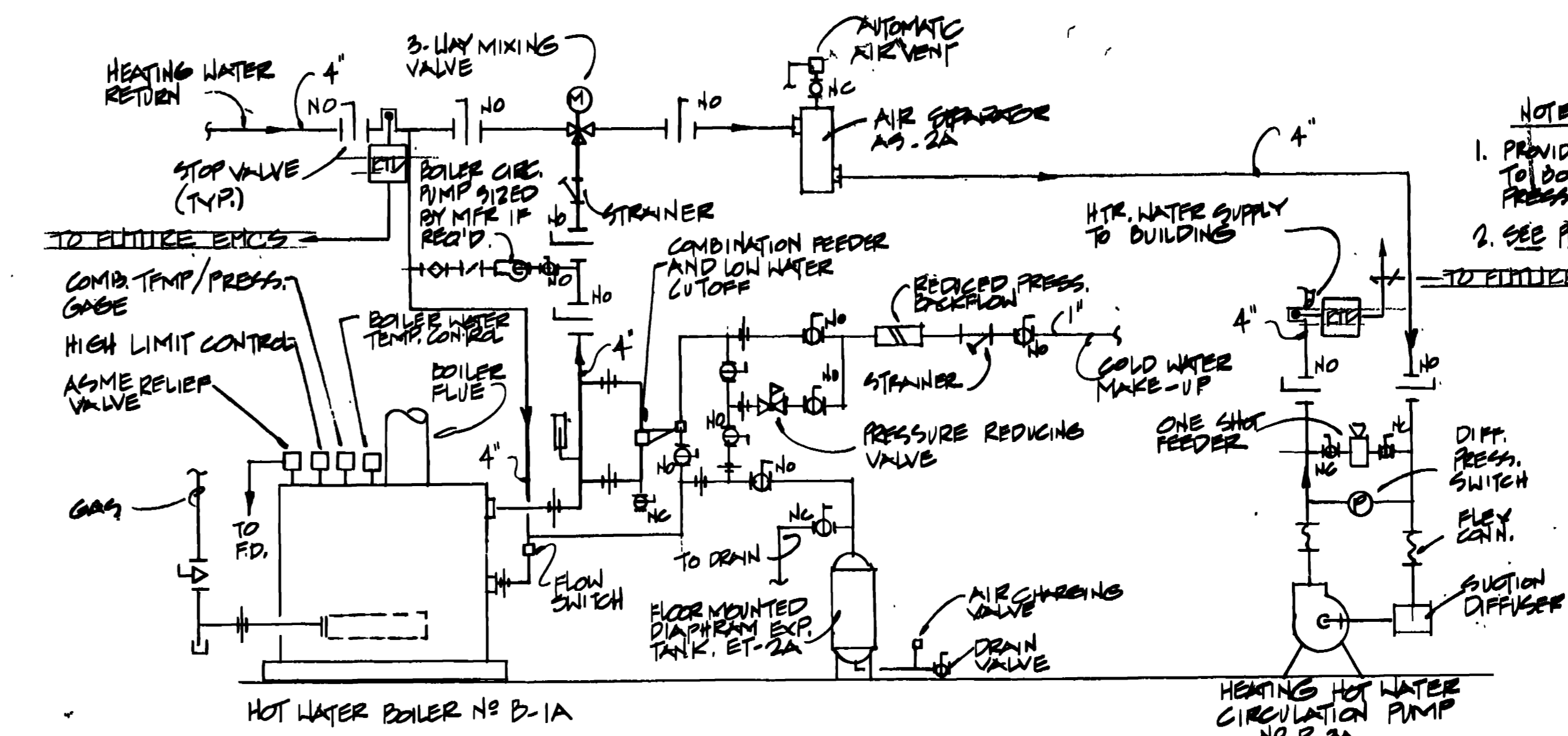
SCALE: 1/4 INCH = 1 FOOT

AMF000649AUG 92 CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE AMF000 REFUSED TO REFLECT W.I. CHANGE DATE: 12/1/90	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS
DESIGNED BY: J. GUILLOT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS <b>FIRE TRAINING COMPLEX</b> HVAC PARTIAL PLANS
DRAWN BY: J. GUILLOT	
REVIEWED BY: C. WANG	
SUBMITTED BY: M. 12/1/90 ENGINEER: 1/8/93	
SOL. NO. DACAG3-92B-0100 DATED JUN. 1992 CONTR. NO. DACAG3-92-C-0155 DRAWING NUMBER: M36 OF 44 SHEET NO.: 23A	SEQUENCE NO.: 23A CONTR. NO. DACAG-92-C-0155

20



COOLING WATER FLOW DIAGRAM  
N.T.S.

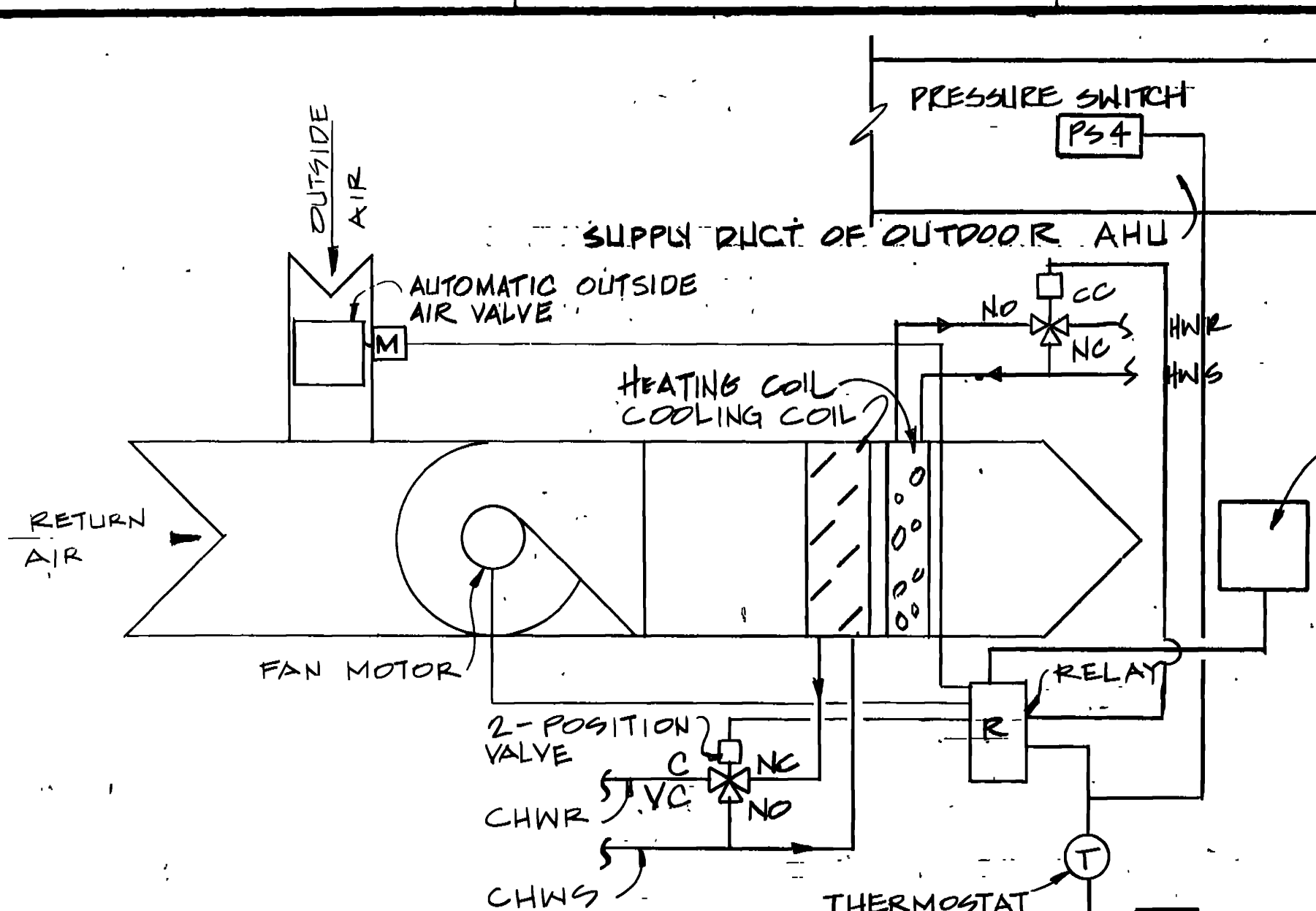


HEATING HOT WATER FLOW DIAGRAM  
N.T.S.

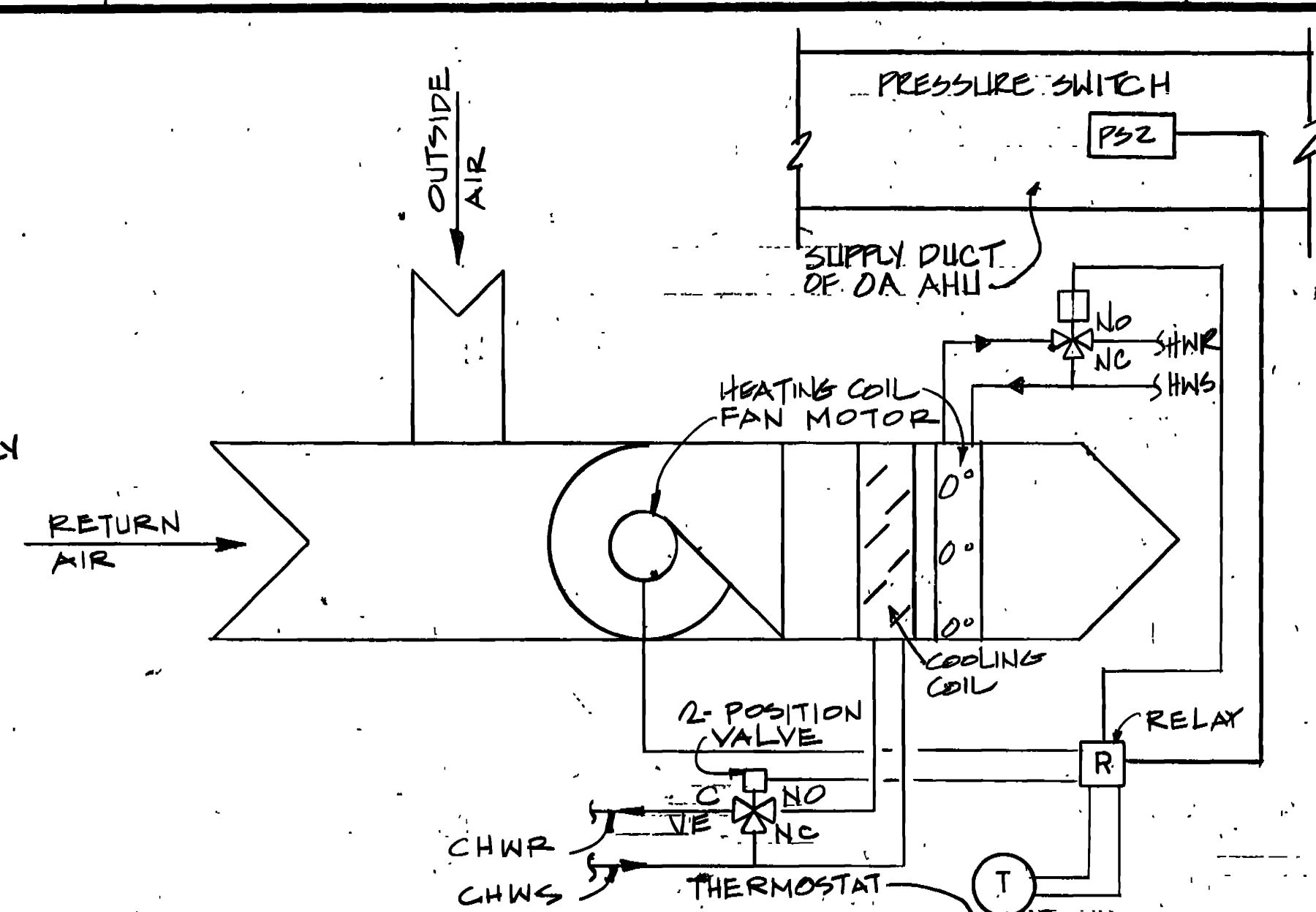
- NOTES:
1. PROVIDE UNIONS/FANGES AT CONNECTIONS TO BOILER, FEEDER/LOW WATER CUTOFF, PRESS. REDUCING VALVE, EXP. TANK ETC.
  2. SEE PUMP PIPING DETAIL ON SHEET M-27

NO.	DATE	DESCRIPTION OF REVISION
1	APR 2003	CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE
2	MAY 2003	4 JUN 03 DEVISED TO REFLECT W.I. CHANGE
WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH ENGINEERS / ARCHITECTS CORPS OF ENGINEERS NEW ORLEANS MOBILE BATON ROUGE FORT WORTH, TEXAS		
DESIGNED BY:	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS	
DRAWN BY:	FIRE TRAINING COMPLEX	
REVIEWED BY:	HVA C PIPING SCHEMATIC	
SUBMITTED BY:	SOL. NO. DACAGS-92-B-0109	DATED: JUN 19 92
ENGINEER:	CONTR. NO. DACAGS-92-C-0155	SEQUENCE NO. 235
	DRAWING NUMBER	SHEET NO. M27 OF 44

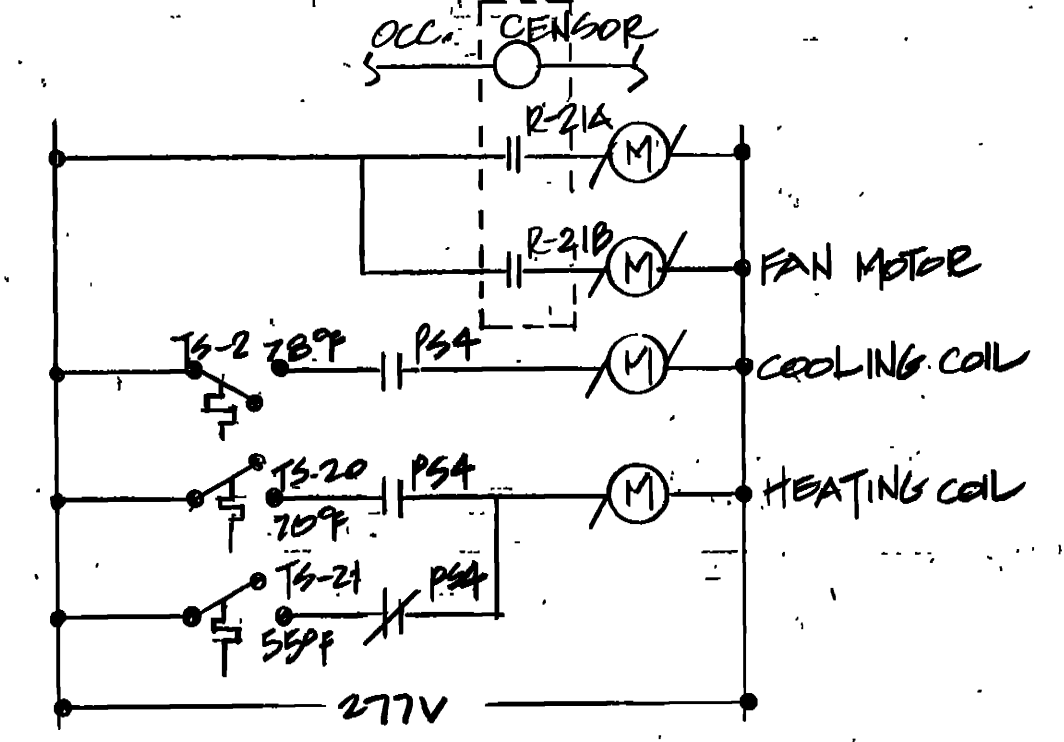




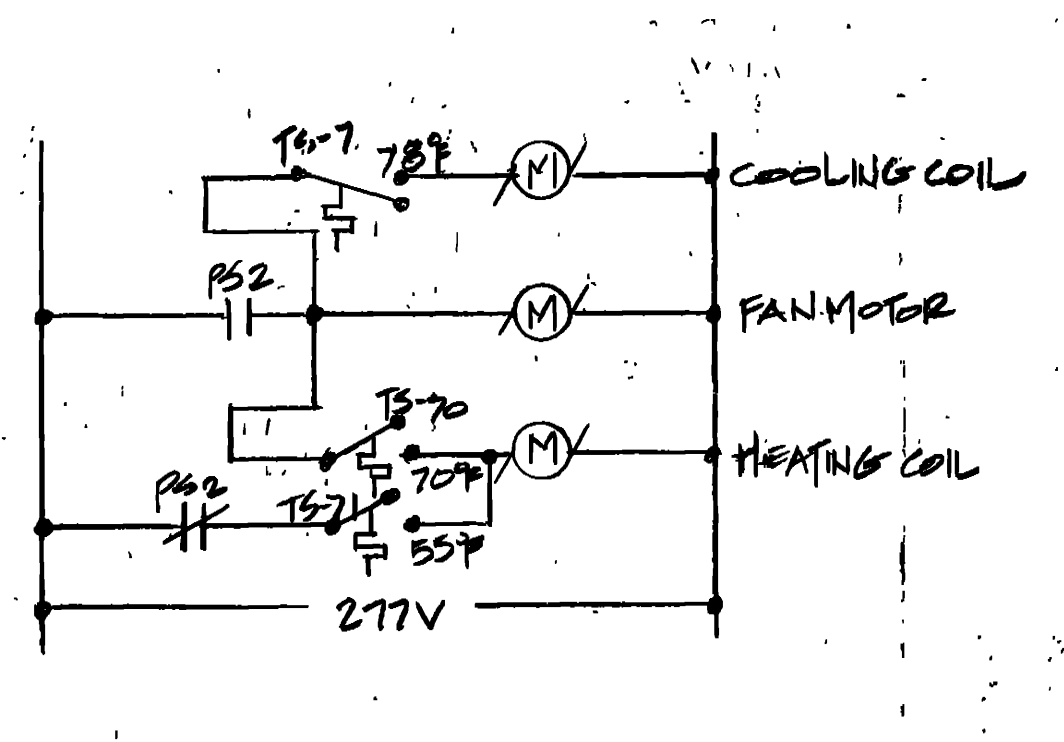
TYPICAL FAN COIL UNIT CONTROL SCHEMATIC  
NON-OFFICE UNITS N.T.S.



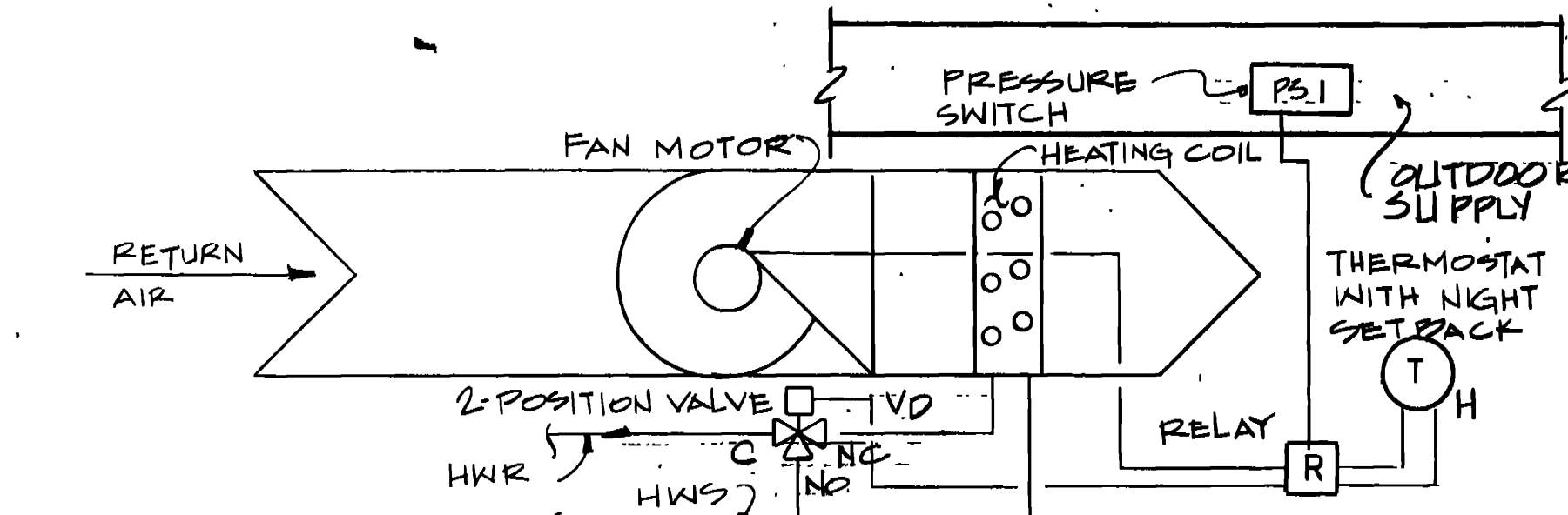
TYPICAL FAN COIL UNIT CONTROL SCHEMATIC  
OFFICE UNITS N.T.S.



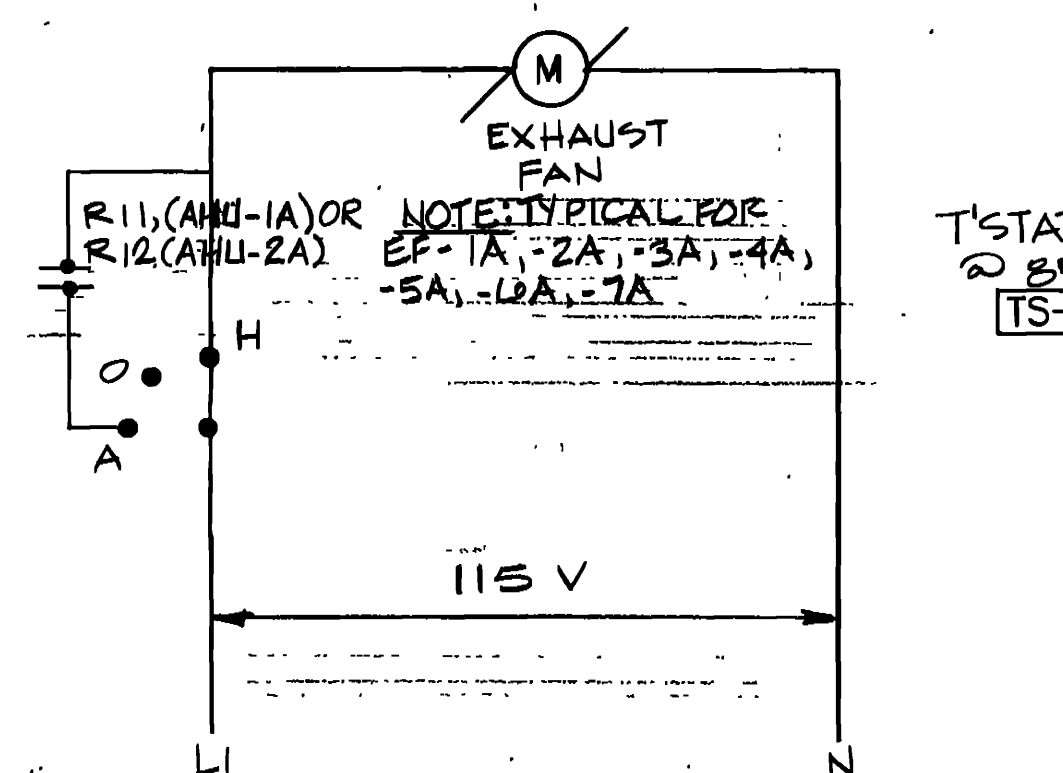
TYPICAL FAN COIL UNIT WIRING DIAGRAM  
NON-OFFICE UNITS N.T.S.



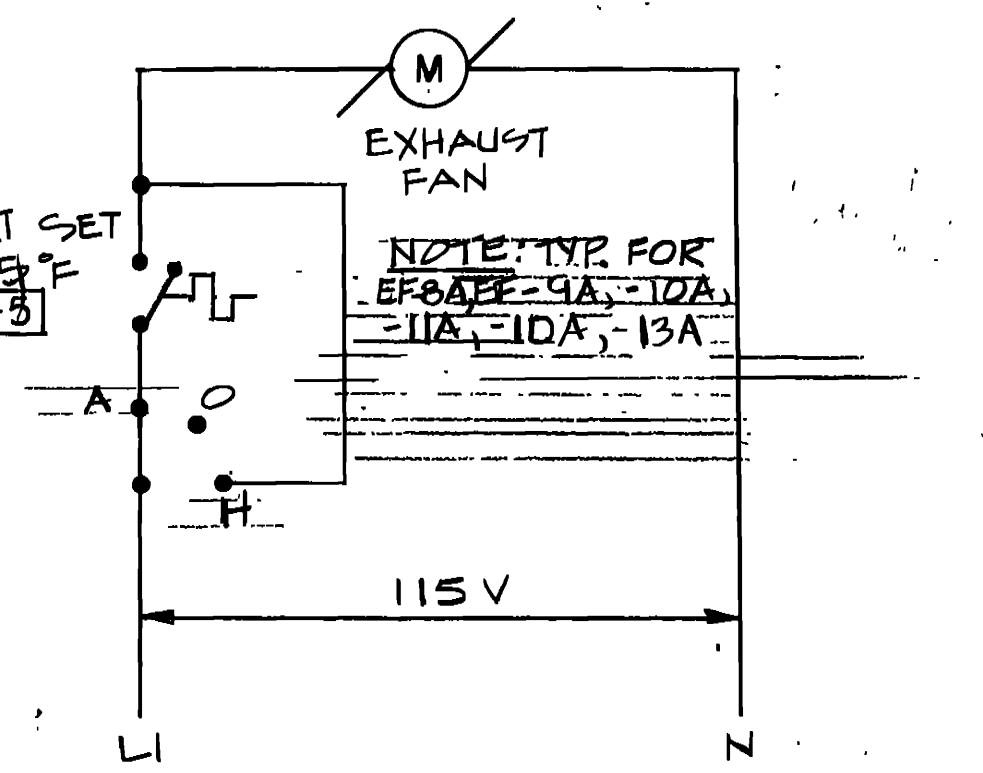
TYPICAL FAN COIL UNIT WIRING DIAGRAM  
OFFICE UNITS N.T.S.



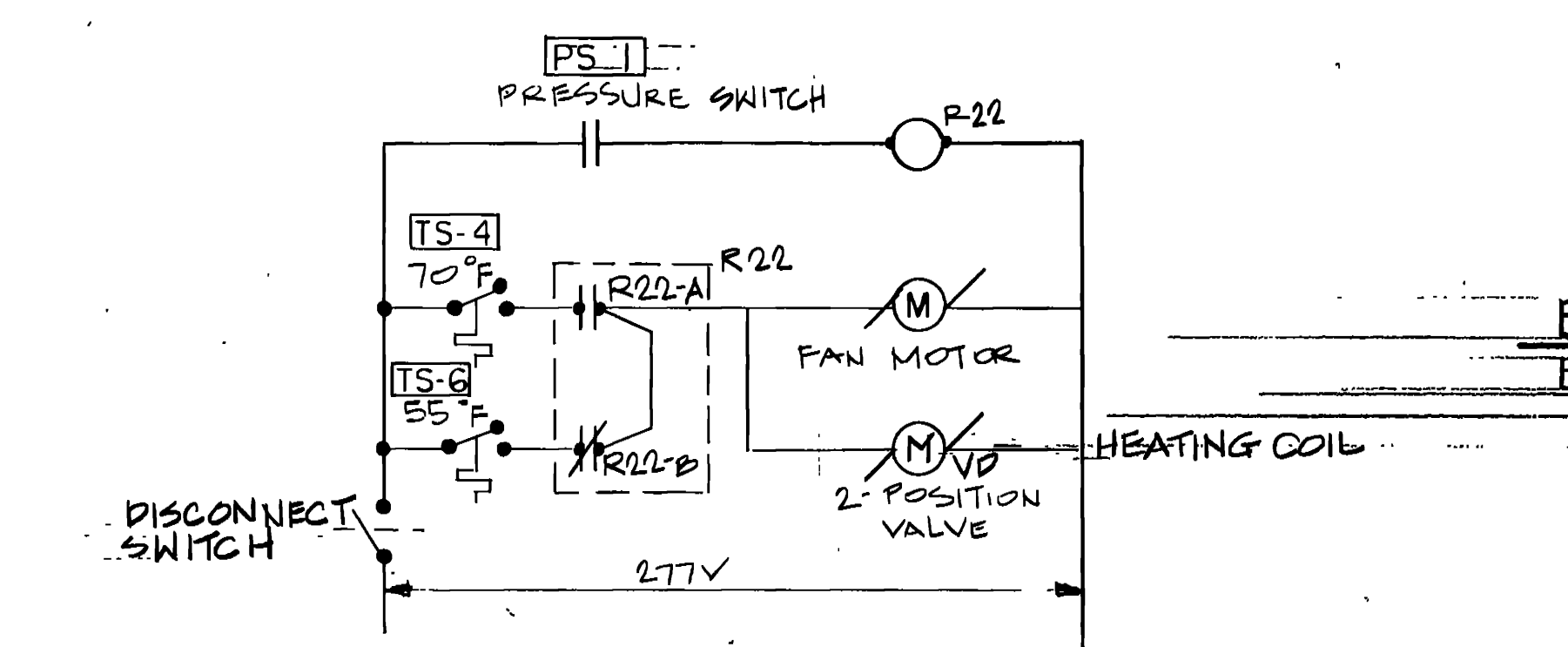
TYPICAL FAN COIL UNIT CONTROL SCHEMATIC  
HEATING UNITS, FC-14A - FC-15A N.T.S.



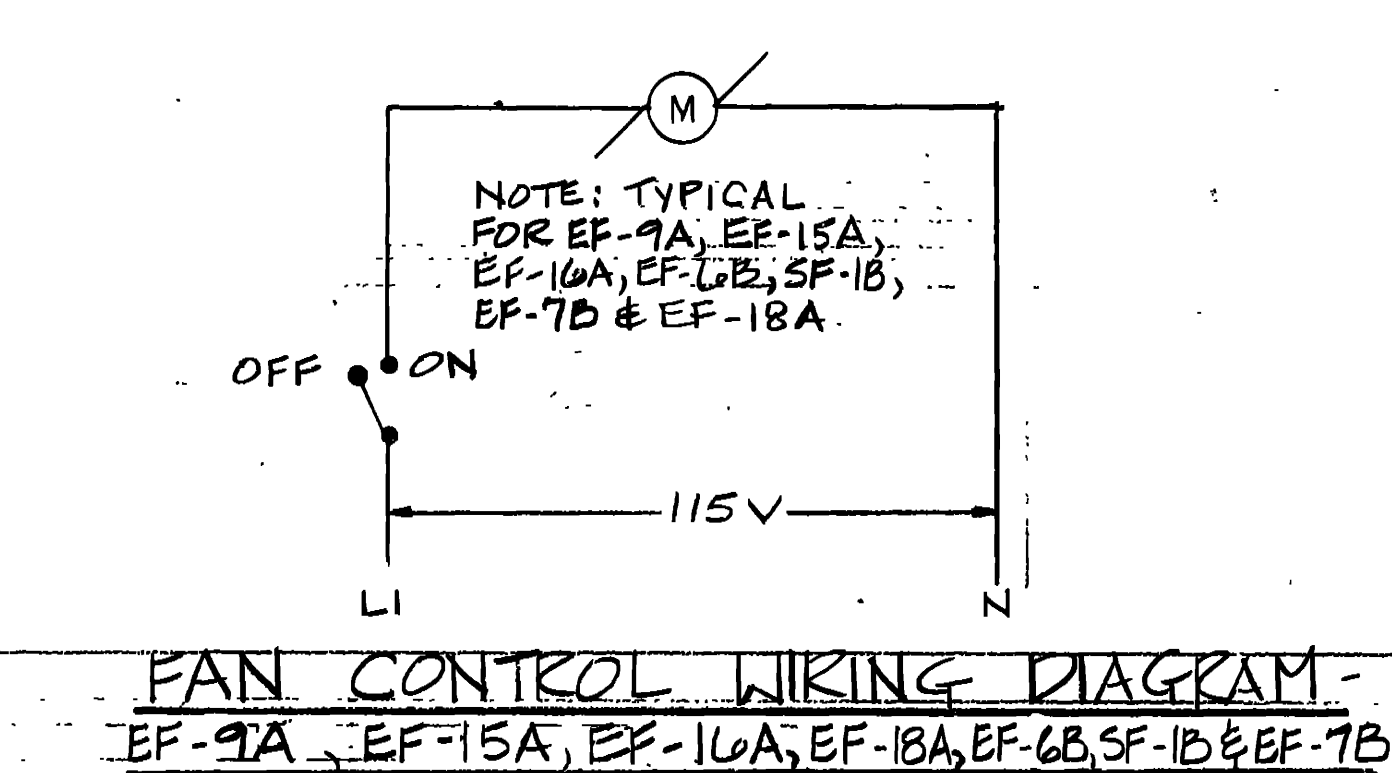
EXHAUST FAN CONTROL DIAGRAM  
EF-1A - EF-7A N.T.S.



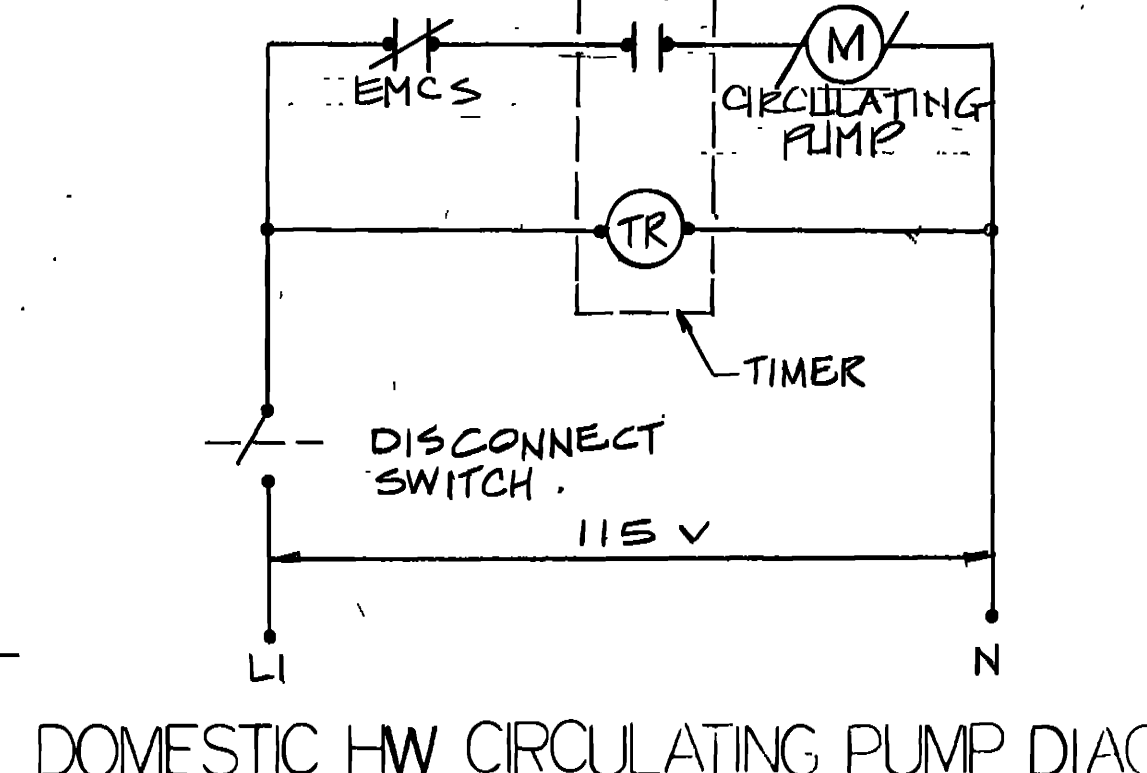
EXHAUST FAN CONTROL DIAGRAM  
EF-8A, 9A, 10A, 11A, 12A, 13A N.T.S.



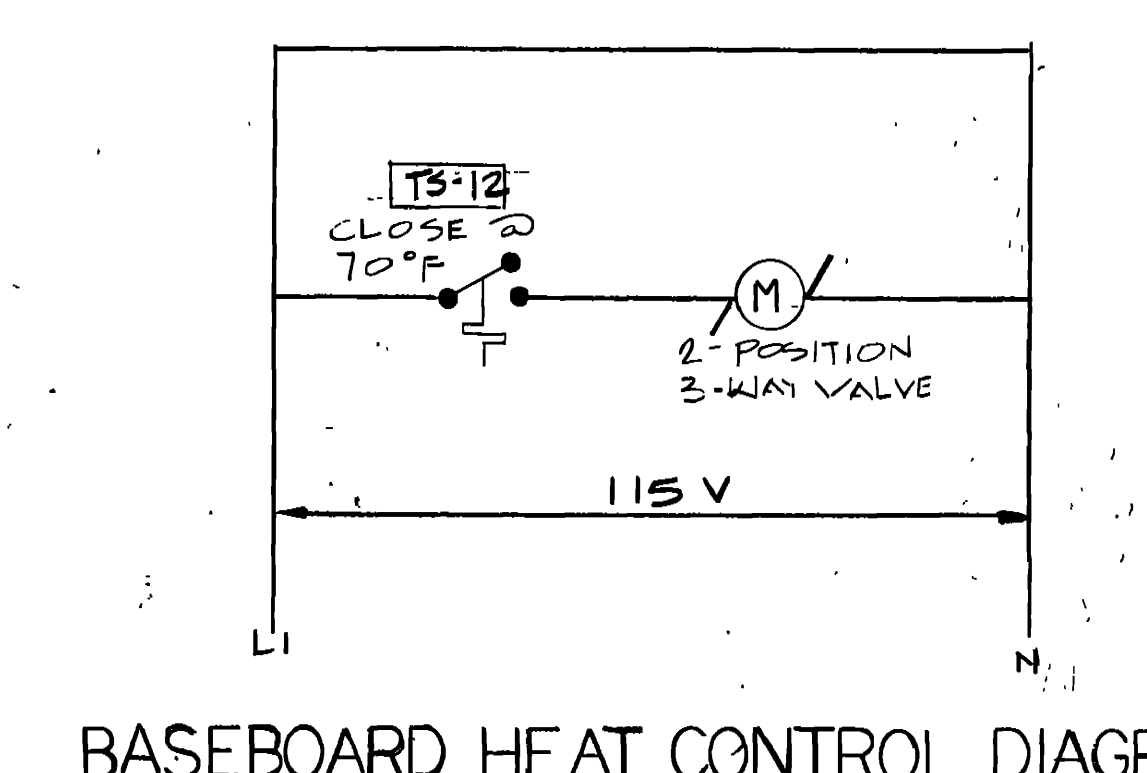
TYPICAL FAN COIL UNIT WIRING DIAGRAM  
HEATING UNITS, FC-14A - FC-16A N.T.S.



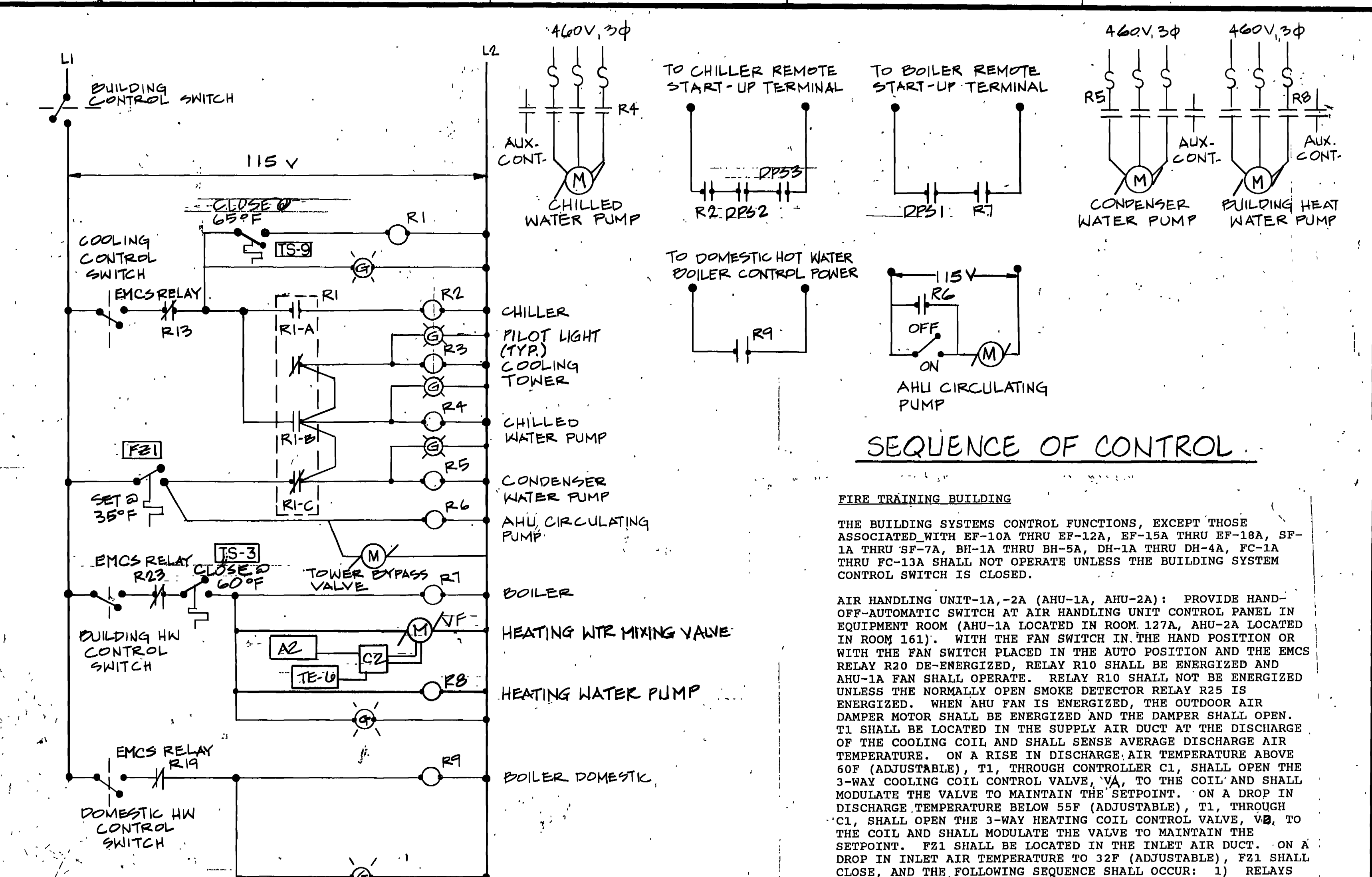
FAN CONTROL WIRING DIAGRAM  
EF-9A, EF-15A, EF-16A, EF-18A, EF-6B, SF-1B, EF-7B N.T.S.



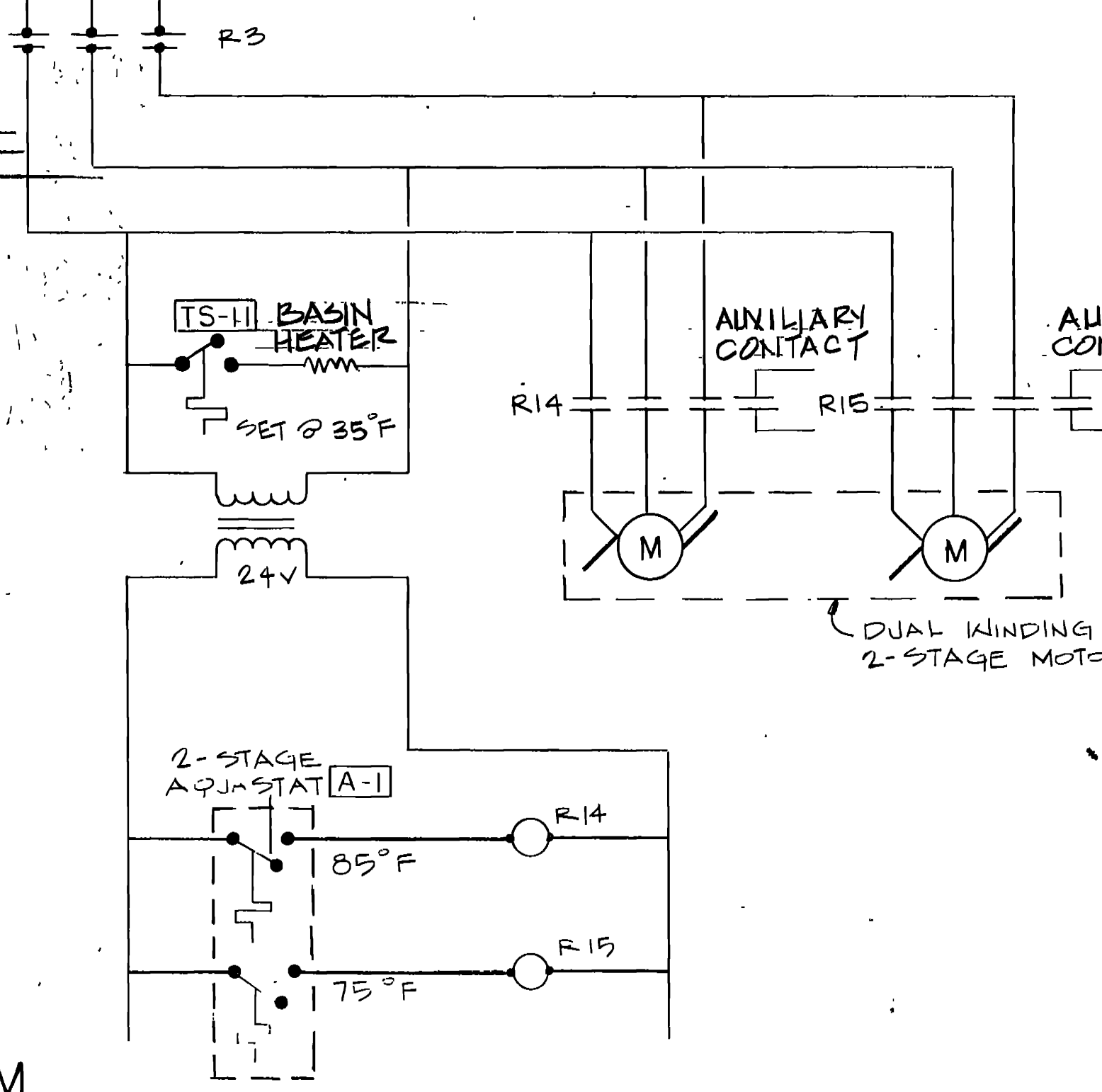
DOMESTIC HW CIRCULATING PUMP DIAG.  
N.T.S.



BASEBOARD HEAT CONTROL DIAGRAM  
N.T.S.



BUILDING CONTROL ELEMENTARY DIAGRAM  
N.T.S.



COOLING TOWER CONTROL DIAGRAM  
N.T.S.

SEQUENCE OF CONTROL

**FIRE TRAINING BUILDING**

THE BUILDING SYSTEMS CONTROL FUNCTIONS, EXCEPT THOSE ASSOCIATED WITH EF-10A THRU EF-12A, EF-15A THRU EF-18A, SF-1A THRU SF-7A, BH-1A THRU BH-5A, DH-1A THRU DH-4A, FC-1A THRU FC-13A SHALL NOT OPERATE UNLESS THE BUILDING SYSTEM CONTROL SWITCH IS CLOSED.

AIR HANDLING UNIT-1A, -2A (AHU-1A, AHU-2A): PROVIDE HAND-OFF-AUTOMATIC SWITCH AT AIR HANDLING UNIT CONTROL PANEL IN EQUIPMENT ROOM (AHU-1A LOCATED IN ROOM 127A, AHU-2A LOCATED IN ROOM 161). WITH THE FAN SWITCH IN THE HAND POSITION OR WITH THE FAN SWITCH PLACED IN THE AUTO POSITION AND THE EMCS RELAY R10 DE-ENERGIZED, RELAY R10 SHALL BE ENERGIZED AND AHU-1A FAN SHALL OPERATE. RELAY R10 SHALL NOT BE ENERGIZED UNLESS THE NORMALLY OPEN SMOKE DETECTOR RELAY R25 IS ENERGIZED. WHEN AHU FAN IS ENERGIZED, THE OUTDOOR AIR DAMPER MOTOR SHALL BE ENERGIZED AND THE DAMPER SHALL OPEN. T1 SHALL BE LOCATED IN THE SUPPLY AIR DUCT AT THE DISCHARGE OF THE COOLING COIL AND SHALL SENSE AVERAGE DISCHARGE AIR TEMPERATURE. ON A RISE IN DISCHARGE AIR TEMPERATURE ABOVE 60°F (ADJUSTABLE), T1, THROUGH CONTROLLER C1, SHALL OPEN THE 3-WAY COOLING COIL CONTROL VALVE, VA, TO THE COIL AND SHALL MODULATE THE VALVE TO MAINTAIN THE SETPOINT. ON A DROP IN DISCHARGE TEMPERATURE BELOW 55°F (ADJUSTABLE), T1, THROUGH C1, SHALL OPEN THE 3-WAY HEATING COIL CONTROL VALVE, VB, TO THE COIL AND SHALL MODULATE THE VALVE TO MAINTAIN THE SETPOINT. F21 SHALL BE LOCATED IN THE INLET AIR DUCT. ON A DROP IN INLET AIR TEMPERATURE TO 32°F (ADJUSTABLE), F21 SHALL CLOSE, AND THE FOLLOWING SEQUENCE SHALL OCCUR: 1) RELAYS R3, R4, R5, AND R6 SHALL BE ENERGIZED, ENERGIZING THE COOLING TOWER CONTROL, THE CHILLED WATER PUMP, THE CONDENSER WATER PUMP, AND THE AIR HANDLING UNIT CIRCULATING PUMP; 2) COOLING TOWER BYPASS VALVE SHALL BE ENERGIZED, DIVERTING CONDENSER WATER TO THE TOWER BASIN. STATIC PRESSURE SENSOR S1 SHALL BE LOCATED IN THE MAIN SUPPLY DUCT UPSTREAM OF ALL SUPPLY AIR TAKE-OFFS. S1 SHALL MODULATE THE VARIABLE AIR INLET VANES TO MAINTAIN CONSTANT 1.5-INCH WATER GAGE STATIC PRESSURE (ADJUSTABLE) IN SUPPLY DUCT. UPON DETECTION OF SMOKE IN SUPPLY AIR DISCHARGE DUCT, IONIZATION SMOKE DETECTOR, SD1, SHALL OPEN RELAY R25, STOPPING FAN OPERATION, AND SHALL SOUND AN AUDIBLE AND VISUAL ALARM. PROVIDE DIFFERENTIAL PRESSURE SWITCH, DPS4, ACROSS FILTER. SWITCH SHALL SIGNAL EMCS SYSTEM WHEN PRESSURE DROP ACROSS FILTER REACHES A PRESET, ADJUSTABLE LIMIT. PROVIDE HIGH PRESSURE LIMIT SWITCH HPI IN DISCHARGE AIR DUCT. TRANSDUCER SHALL STOP FAN OPERATION IF DUCT STATIC PRESSURE EXCEEDS 2.0 INCHES WATER GAGE (ADJUSTABLE).

VEHICLE MAINTENANCE FACILITY

FURNACE - 1B, -2B (F-1B, F-2B). PROVIDE WALL MOUNTED SPACE TEMPERATURE SENSOR TS-14. TS-14 SHALL CLOSE WHEN SPACE TEMPERATURE DROPS TO 70°F (ADJUSTABLE); ENERGIZING FURNACES F-1B & F-2B.

NOTE: ANY APPARENT SIMILARITY OR REFERENCE TO A PARTICULAR MANUFACTURER'S PRODUCTS IS NOT INTENDED AS AN ENDORSEMENT. ANY SYSTEMS OR PRODUCTS MEETING THE SPECIFICATIONS & PROVIDING THE INTENDED SEQUENCE OF OPERATION ARE ACCEPTABLE.

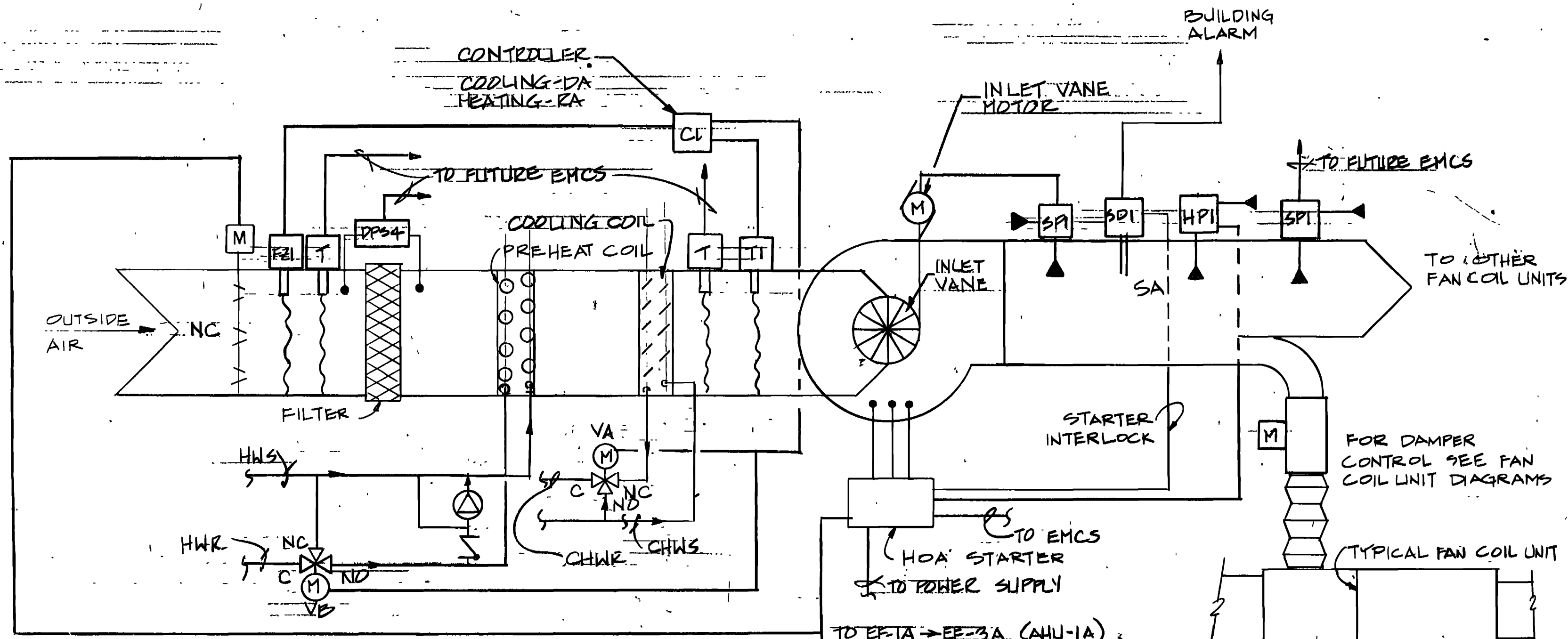
NO.	DATE	DESCRIPTION OF REVISION
1	10/16/91	REVISED TO REFLECT CONTROL CHANGES
2	11/14/91	REVISED TO REFLECT N.I. CHANGE

DESIGNED BY: WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH  
ENGINEERS / ARCHITECTS  
NEW ORLEANS MOBILE BATON ROUGE CORPS OF ENGINEERS FORT WORTH, TEXAS

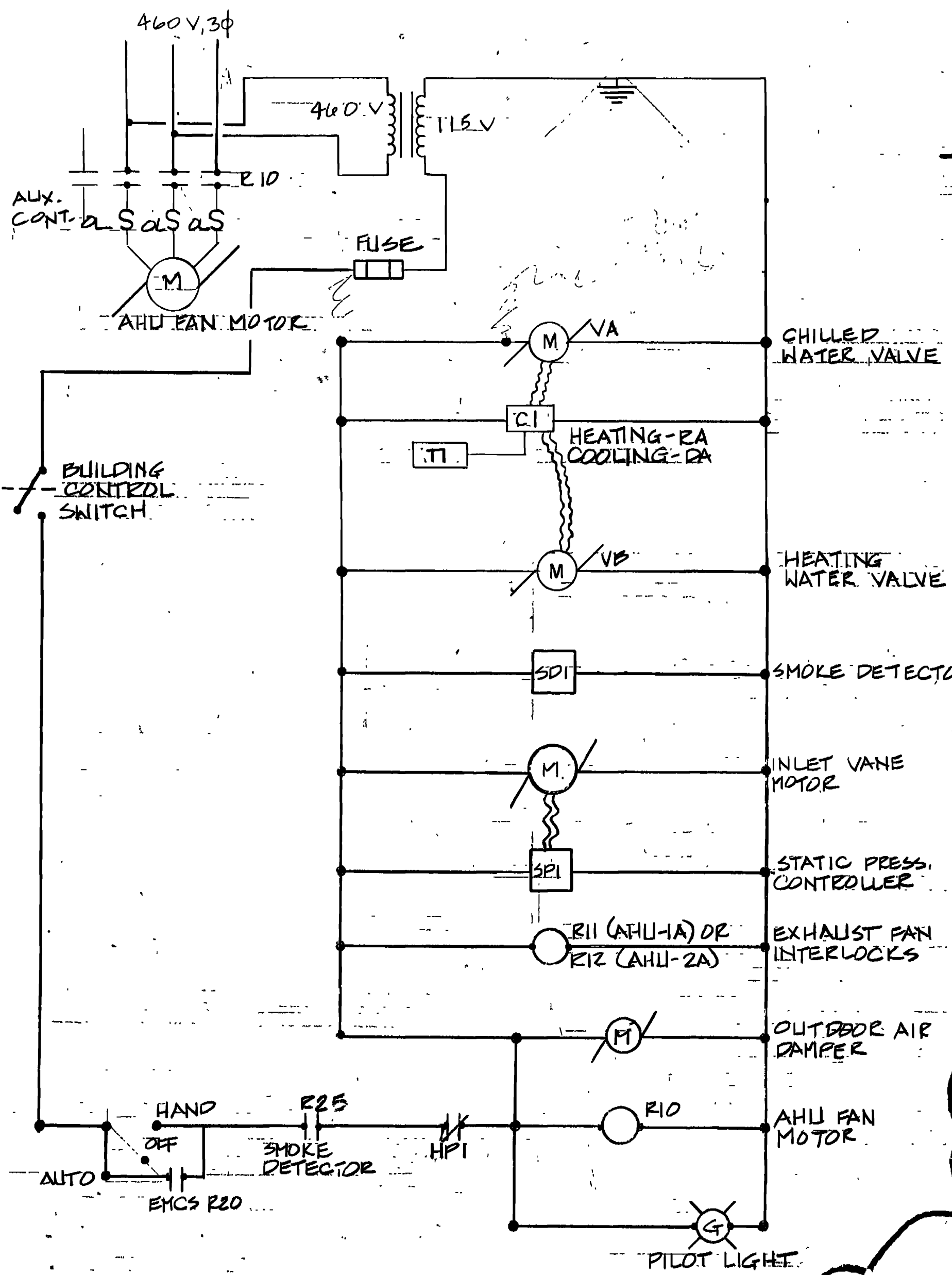
DRAWN BY: M. JENKINS  
REVIEWED BY: C. WANG

SUBMITTED BY: M. JENKINS  
ENGINEER

SOL. NO. DAC-63-2-B-919 DATED: JUN. 1992  
CONTR. NO. DAC-63-92-C-0155 SEQUENCE NO. 236  
DRAWING NUMBER SHEET NO. 44



NOTE: TYPICAL FOR AHU-1A & AHU-2A  
**AIR HANDLING UNIT(AHU-) CONTROL SCHEMATIC**  
 AHU-1A & AHU-2A  
 N.T.S.

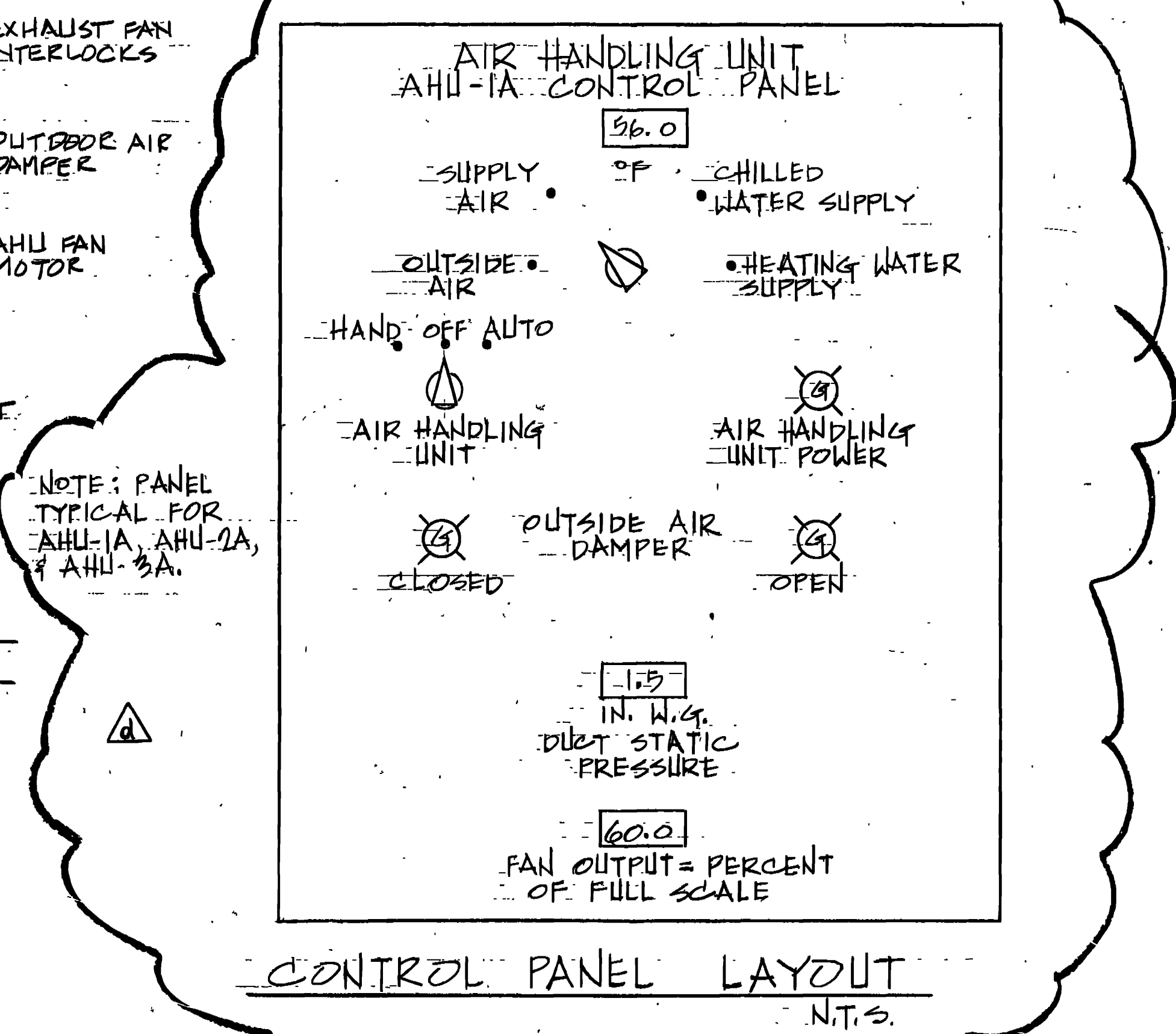


**AIR HANDLING UNIT CONTROL WIRING DIAGRAM**  
 AHU-1A & AHU-2A  
 N.T.S.

**SEQUENCE OF CONTROL**  
**PIPE TRAINING BLDES**

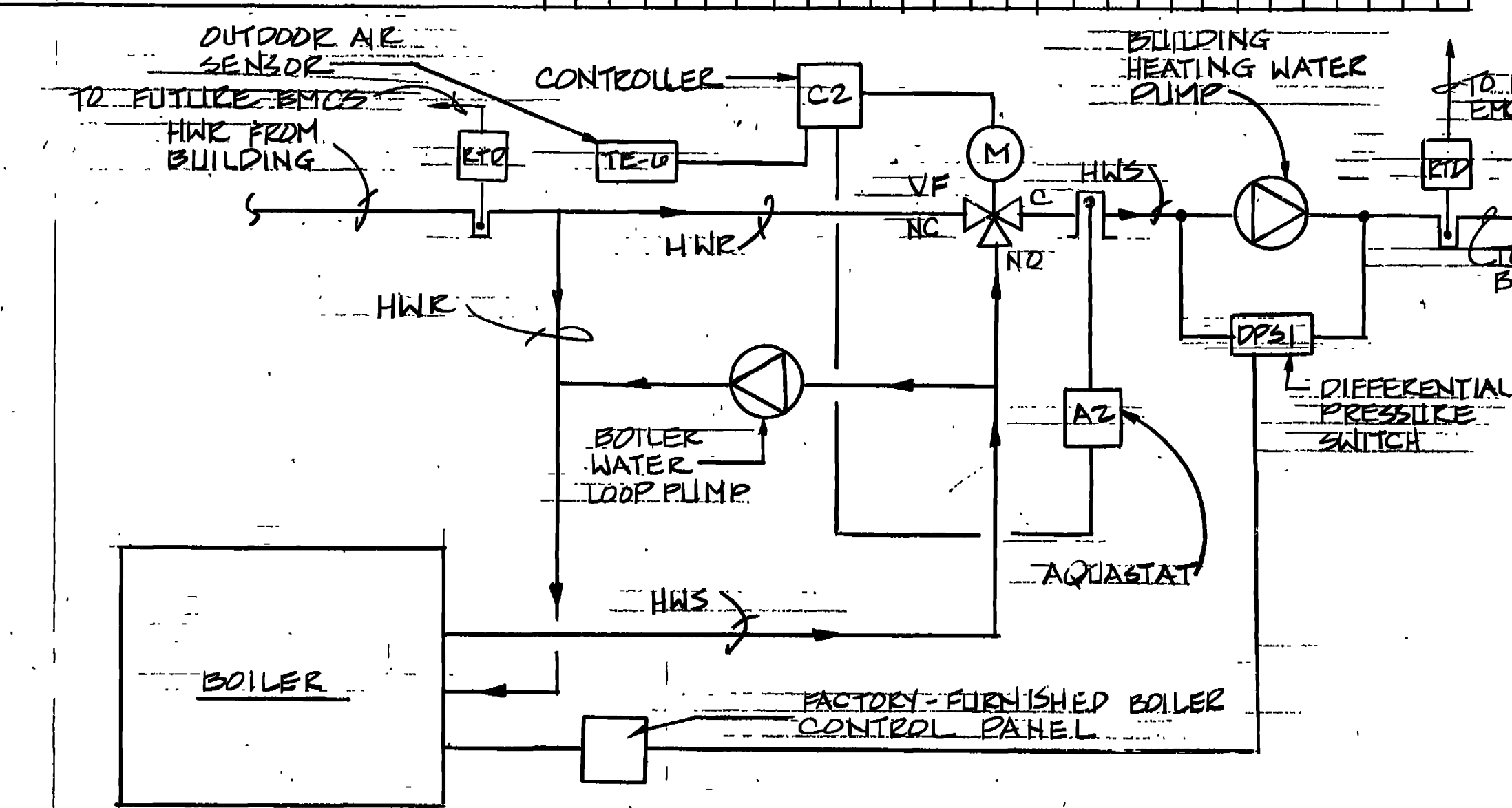
FAN COIL UNIT - NON-OFFICE AREAS: PROVIDE WALL MOUNTED OCCUPANCY SENSOR AND TEMPERATURE SWITCHES TS-2, TS-20, TS-21. ON A DETECTION OF OCCUPANCY IN THE ROOM, THE OCCUPANCY SENSOR SHALL ENERGIZE RELAY R21. UPON ENERGIZING RELAY R21, THE FOLLOWING SHALL OCCUR: 1) CONTACT R21-4 SHALL CLOSE, ENERGIZING THE TWO-POSITION, NORMALLY CLOSED, AUTOMATIC AIR VALVE, 2) CONTACT R21-5 SHALL CLOSE, ENERGIZING THE FAN MOTOR. PRESSURE SWITCH P24 SHALL BE LOCATED IN THE DISCHARGE DUCT OF THE OUTDOOR AIR HANDLING UNIT AND SHALL CLOSE AT A MAXIMUM STATIC PRESSURE OF 0.2 INCHES WATER GAGE. TEMPERATURE SWITCH TS-2 SHALL CLOSE ON A RISE IN SPACE TEMPERATURE TO 70°F. WITH P24 CLOSED AND TS-2 CLOSED, THE TWO-POSITION, 3-WAY COOLING COIL CONTROL VALVE SHALL OPEN THE COIL. ON A DROP IN SPACE TEMPERATURE TO 70°F, TS-20 SHALL CLOSE. WITH P24 CLOSED AND TS-20 CLOSED, THE TWO-POSITION, 3-WAY HEATING COIL CONTROL VALVE SHALL OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE TO 55°F, TS-21, SHALL CLOSE. WITH P24 OPEN AND TS-21 CLOSED, THE FAN MOTOR SHALL BE ENERGIZED AND THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE SHALL BE OPEN TO THE COIL.

FAN COIL UNIT-OFFICE AREAS: PROVIDE WALL MOUNTED TEMPERATURE SWITCHES TS-7, TS-70, TS-71. PRESSURE SWITCH P22 SHALL BE LOCATED IN THE DISCHARGE DUCT OF THE OUTDOOR AIR HANDLING UNIT. P22 SHALL CLOSE AT A MAXIMUM STATIC PRESSURE OF 0.2 INCHES WATER GAGE PRESSURE, ENERGIZING THE FAN MOTOR. ON A RISE IN SPACE TEMPERATURE TO 78°F, TS-7 SHALL CLOSE. WITH P22 CLOSED AND WITH TS-7 CLOSED, THE TWO-POSITION, 3-WAY, COOLING COIL CONTROL VALVE SHALL OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE TO 70°F, TS-70 SHALL CLOSE. WITH P22 CLOSED AND TS-70 CLOSED, THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE SHALL OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE TO 55°F, TS-71, SHALL CLOSE. WITH P22 OPEN AND TS-71 CLOSED, THE FAN MOTOR SHALL BE ENERGIZED AND THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE SHALL BE OPEN TO THE COIL.

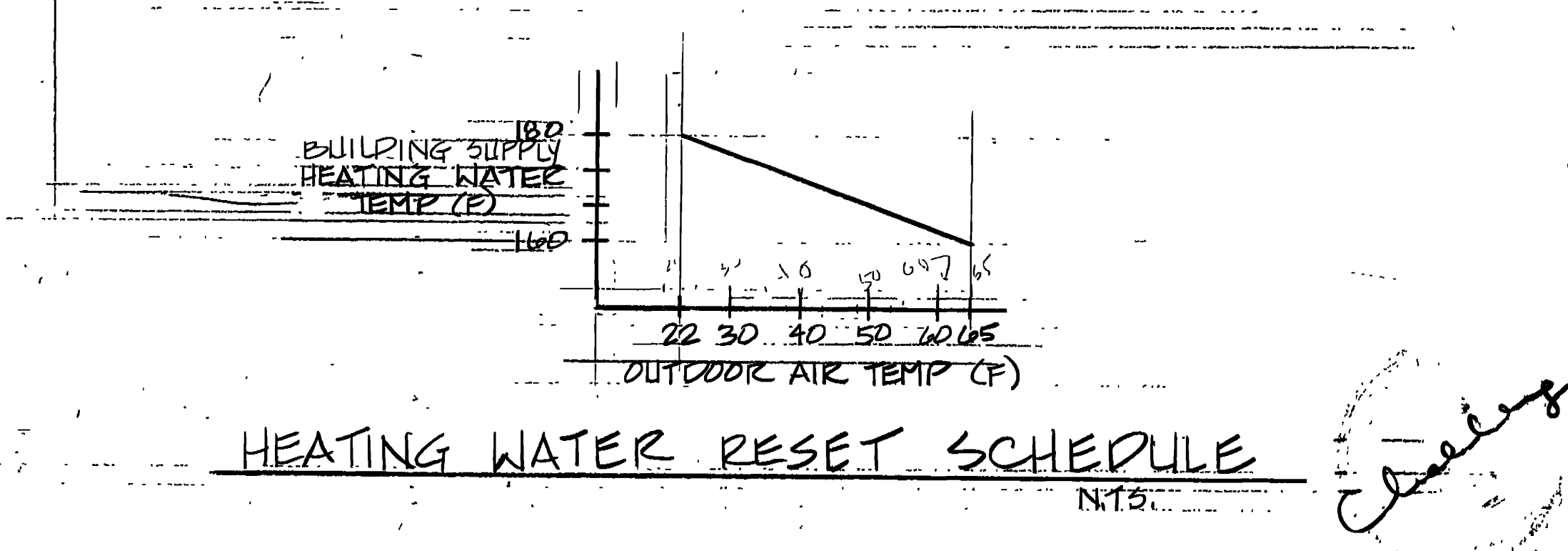


**CONTROL PANEL LAYOUT**  
 N.T.S.

EMCS INPUT/OUTPUT SUMMARY		HARDWARE			
POINT DESCRIPTION	EQUIPMENT POINT	OUTPUT		INPUT	
		DIGITAL	ANALOG	DIGITAL	ANALOG
COOLING SYSTEM	CHILLED WATER PUMP				
	CHILLED WATER SUPPLY				
	CHILLED WATER RETURN				
	COND WATER SUPPLY OF				
	COND WATER RETURN OF				
	COND WATER PUMP				
HEATING	BOILER				
	HOT WATER RETURN				
	HOT WATER SUPPLY				
	HEATING WATER PUMP				
AIR HANDLING UNIT-AHU-1A & AHU-2A	SUPPLY AIR				
	RETURN AIR				
	OUTSIDE AIR				
DOMESTIC WATER	DOM. WATER SUPPLY				
	DOM. WATER PUMP				
AIR HANDLING UNIT- AHU-3A	SUPPLY AIR				
	RETURN AIR				
	OUTSIDE AIR				
HEAT PUMP, B.C.T.C. & H.P.T.C.	SUPPLY AIR				
	RETURN AIR				
	OUTSIDE AIR				
FLUENCE, P.T.C. & P.T.C.	SUPPLY AIR				
	OUTSIDE AIR				



**HEATING WATER CONTROL SCHEMATIC**  
 N.T.S.



**HEATING WATER RESET SCHEDULE**  
 N.T.S.

**SEQUENCE OF CONTROL**  
**FIRE TRAINING BUILDING**

FAN-COIL UNIT - HEATING ONLY: PROVIDE WALL-MOUNTED TEMPERATURE SWITCH TS-4 AND TS-6. PRESSURE SWITCH P21 SHALL BE LOCATED IN THE DISCHARGE DUCT OF THE OUTDOOR AIR HANDLING UNIT AT A MAXIMUM STATIC PRESSURE OF 0.2 INCHES WATER GAGE PRESSURE AND SHALL ENERGIZE RELAY R22. UPON ENERGIZING RELAY R22, CONTACTOR R22-A SHALL CLOSE AND CONTACTOR R22-B SHALL OPEN. ON A DROP IN SPACE TEMPERATURE TO 70°F (ADJUSTABLE), TS-4 SHALL CLOSE. WITH P21 CLOSED AND TS-4 CLOSED, THE FAN MOTOR SHALL BE ENERGIZED AND THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE, VP, SHALL OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE TO 55°F (ADJUSTABLE), TS-6 SHALL CLOSE. WITH P21 OPENED AND WITH TS-6 CLOSED, THE FAN MOTOR SHALL BE ENERGIZED AND THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE, VP, SHALL BE OPENED TO THE COIL.

FAN-COIL UNIT - OFFICE AREAS, COOLING ONLY: PROVIDE WALL-MOUNTED TEMPERATURE SWITCHES TS-7, TS-70, TS-71. PRESSURE SWITCH P22 SHALL BE LOCATED IN THE DISCHARGE DUCT OF THE OUTDOOR AIR HANDLING UNIT. P22 SHALL CLOSE AT A MAXIMUM STATIC PRESSURE OF 0.2 INCHES WATER GAGE PRESSURE, ENERGIZING THE FAN MOTOR. ON A RISE IN SPACE TEMPERATURE TO 78°F (ADJUSTABLE), TS-7 SHALL CLOSE. WITH P22 CLOSED AND WITH TS-7 CLOSED, THE TWO-POSITION, 3-WAY, COOLING COIL CONTROL VALVE, VP, SHALL OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE TO 70°F (ADJUSTABLE), TS-70 SHALL CLOSE. WITH P22 CLOSED AND WITH TS-70 CLOSED, THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE, VP, SHALL OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE TO 55°F (ADJUSTABLE), TS-71 SHALL CLOSE. WITH P22 OPEN AND WITH TS-71 CLOSED, THE FAN MOTOR SHALL BE ENERGIZED AND THE TWO-POSITION, 3-WAY, HEATING COIL CONTROL VALVE, VP, SHALL BE OPENED TO THE COIL.

BASEBOARD HEATER-1A, -2A, -3A, -4A, -5A (BH-1A, BH-2A, BH-3A, BH-4A, BH-5A): PROVIDE WALL-MOUNTED SPACE TEMPERATURE SENSORS TS-12. ON A DROP IN SPACE TEMPERATURE TO 70°F (ADJUSTABLE), TS-12 SHALL CLOSE. WITH TS-12 CLOSED, RELAY R7 AND R8 SHALL BE ENERGIZED, ENERGIZING THE BOILER CONTROLS AND THE BUILDING HEATING WATER PUMP. PROVIDE FACTORY-FURNISHED BOILER CONTROLS. FACTORY-FURNISHED CONTROLS SHALL CYCLE BURNER ON-OFF IN RESPONSE TO DISCHARGE HEATING WATER TEMPERATURE AT THE BOILER, 140-180°F RANGE. PROVIDE MODULATING, 3-WAY, MIXING VALVE, VF, IN THE HEATING WATER SUPPLY LINE TO THE BUILDING. VALVE SHALL MIX HEATING WATER FROM THE BOILER FILING LOOP AND RETURN WATER FROM THE BUILDING. PROVIDE WATER TEMPERATURE SENSOR, A2, IN THE HEATING WATER SUPPLY LINE TO THE BUILDING, AT LEAST 10 PIPE DIAMETERS DOWNSTREAM FROM VF. ON A DROP IN THE TEMPERATURE HEATING WATER SUPPLY TO THE BUILDING, 160-180°F RANGE, ADJUSTABLE, A2, THROUGH CONTROLLER C2, SHALL OPEN THE VALVE TO THE BOILER PIPING LOOP AND SHALL CLOSE THE VALVE TO THE HEATING WATER RETURN LINE. TEMPERATURE SENSOR TS-6 SHALL SENSE OUTDOOR AIR TEMPERATURE AND, THROUGH C2, SHALL RESET THE BUILDING HEATING WATER SUPPLY TEMPERATURE IN ACCORDANCE WITH THE SPECIFIED RESET SCHEDULE.

HEATING WATER PUMP (P-3A): TS-3 SHALL CLOSE WHEN THE OUTDOOR AIR TEMPERATURE DROPS TO 65°F (ADJUSTABLE). PROVIDE HAND-OFF-AUTO SWITCH AT HEATING WATER CONTROL PANEL IN MECHANICAL ROOM (ROOM 161). IN THE HAND POSITION, RELAY R8 SHALL BE ENERGIZED AND THE PUMP SHALL CYCLE ON. IN THE AUTO POSITION, TS-3 CLOSED, THE BUILDING HEATING WATER CONTROL SWITCH CLOSURE WITH EMCS RELAY R23 DE-ENERGIZED, RELAY R8 SHALL BE ENERGIZED AND THE PUMP SHALL CYCLE ON. PROVIDE DIFFERENTIAL PRESSURE SWITCH DP21 ACROSS THE HEATING WATER PUMP. DP21 SHALL CLOSE WHEN WATER FLOW IS PROVEN ACROSS THE PUMP.

CHILLER-1A (C-1A): PROVIDE CHILLER HAND-OFF-AUTO SWITCH AT CHILLED WATER CONTROL PANEL IN MECHANICAL ROOM (ROOM 127A). PROVIDE FACTORY-FURNISHED CHILLER TEMPERATURE CONTROLS. FACTORY-FURNISHED CONTROLS SHALL UNLOAD CHILLER TO MAINTAIN CONSTANT 45°F (ADJUSTABLE) SUPPLY WATER TEMPERATURE AND SHALL RESET SUPPLY WATER TEMPERATURE IN RESPONSE TO BUILDING LOAD. TS-9 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE RISES TO 65°F (ADJUSTABLE). WHEN COOLING CONTROL SWITCH AND TS-9 ARE CLOSED, ENERGIZING RELAY R1, EMCS RELAY R13 IS NOT ENERGIZED AND DIFFERENTIAL PRESSURE SWITCHES DP22 AND DP23 ARE CLOSED, RELAY R2 SHALL BE ENERGIZED AND CHILLER FACTORY-FURNISHED START-UP CONTROLS SHALL BE ENERGIZED. WHEN CHILLER CONTROLS ARE DE-ENERGIZED BY THE RESET OF THIS SEQUENCE, THE CHILLER SHALL SHUTDOWN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ALL REQUIRED SHUTDOWN PROCEDURES, PROCESSES AND CONTROLS SHALL BE INTEGRAL WITH FACTORY-FURNISHED CHILLER CONTROLS.

CHILLED WATER PUMP-1A (P-1A): PROVIDE HAND-OFF-AUTOMATIC SWITCH AT CHILLED WATER CONTROL PANEL IN MECHANICAL ROOM (ROOM 127A). IN THE HAND POSITION, RELAY R4 SHALL BE ENERGIZED AND THE PUMP SHALL START. F21 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE DROPS TO 32°F (ADJUSTABLE). TS-9 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE RISES TO 65°F (ADJUSTABLE). IN THE AUTO POSITION, PUMP SHALL CYCLE ON WHEN RELAY R1 IS ENERGIZED. RELAY R1 IS ENERGIZED WHEN TS-9 IS CLOSED, EMCS RELAY R13 IS DE-ENERGIZED OR WHEN F21 IS CLOSED. PROVIDE DIFFERENTIAL PRESSURE SWITCH, DP22, ACROSS PUMP SWITCH SHALL CLOSE WHEN WATER FLOW IS PROVEN ACROSS THE PUMP.

CONDENSER WATER PUMP-2A (P-2A): PROVIDE HAND-OFF-AUTOMATIC SWITCH AT CHILLED WATER CONTROL PANEL IN MECHANICAL ROOM (ROOM 127A). IN THE HAND POSITION, RELAY R5 SHALL BE ENERGIZED AND PUMP SHALL CYCLE ON. F21 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE DROPS TO 32°F (ADJUSTABLE). TS-9 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE RISES TO 65°F (ADJUSTABLE). IN THE AUTO POSITION AND WHEN TS-9 IS CLOSED AND EMCS RELAY R13 IS DE-ENERGIZED, OR WHEN F21 IS CLOSED, RELAY R5 SHALL BE ENERGIZED AND PUMP SHALL CYCLE ON. PROVIDE DIFFERENTIAL PRESSURE SWITCH, DP23, ACROSS PUMP. SWITCH SHALL CLOSE WHEN WATER FLOW IS PROVEN ACROSS THE PUMP.

AM#0004 BAUG 90 REVISED CONTROL PANEL  
 AM#0004 JUN 92 REVISED TO REFLECT N.I. CHANGE

WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH  
 ENGINEERS / ARCHITECTS CORPS OF ENGINEERS  
 NEW ORLEANS MOBILE BATON ROUGE FORT WORTH, TEXAS

GOODFELLOW AIR FORCE BASE  
 SAN ANGELO, TEXAS

**FIRE TRAINING COMPLEX**  
**CONTROL DIAGRAM, SEQUENCE OF CONTROL**

DESIGNED BY: M. TENKINS  
 DRAWN BY: M. TENKINS  
 REVIEWED BY: C. WANG

SUBMITTED: 11/13/92  
 DATE: JUN. 1992  
 CONTR. NO. DAC463-92-C-0155  
 DRAWING NUMBER: 1390244  
 SHEET NO: 251

**SEQUENCE OF CONTROL**  
**FIRE TRAINING BUILDING**

COOLING TOWER-1A (CT-1A): TS-9 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE RISES TO 65F (ADJUSTABLE). T21 SHALL CLOSE WHEN OUTDOOR AIR TEMPERATURE DROPS TO 32F (ADJUSTABLE). WHEN TS-9 IS CLOSED AND EMCS RELAY R13 IS DE-ENERGIZED OR WHEN FZ1 IS CLOSED, RELAY R3 SHALL BE ENERGIZED, ENERGIZING COOLING TOWER CONTROL VALVE. RELAY R11 SHALL CLOSE WHEN BASIN WATER TEMPERATURE DROPS TO 35F (ADJUSTABLE). BASIN HEATER SHALL BE ENERGIZED WHEN TS-11 CLOSURE. WHEN FZ1 CLOSURE, TOWER BYPASS VALVE SHALL OPEN TO THE BASIN. TWO-STAGE AQUASTAT, A1, SHALL SENSE LEAVING WATER TEMPERATURE. WHEN THE LEAVING CONDENSER WATER TEMPERATURE RISES TO 75F (ADJUSTABLE), RELAY R14 SHALL CLOSE, ENERGIZING THE FIRST STAGE OF THE TWO-STAGE COOLING TOWER FAN MOTOR. WHEN THE LEAVING CONDENSER WATER TEMPERATURE RISES TO 85F (ADJUSTABLE), RELAY R15 SHALL CLOSE, ENERGIZING THE SECOND STAGE OF THE COOLING TOWER FAN MOTOR.

EXHAUST FAN-1A, -2A, -3A (EF-1A, EF-2A, EF-3A): PROVIDE HAND-OFF-AUTOMATIC SWITCH, MOUNTED AT THE FAN STARTER. IN THE HAND POSITION, FAN SHALL OPERATE CONTINUOUSLY. IN THE AUTO POSITION, FAN SHALL CYCLE ON WHEN RELAY R12 IS ENERGIZED BY THE OPERATION OF AHU-2A.

EXHAUST FAN-4A, -5A, -6A, -7A (EF-4A, EF-5A, EF-6A, EF-7A): PROVIDE HAND-OFF-AUTOMATIC SWITCH, MOUNTED AT THE FAN STARTER. IN THE HAND POSITION, FAN SHALL OPERATE CONTINUOUSLY. IN THE AUTO POSITION, FAN SHALL CYCLE ON WHEN RELAY R12 IS ENERGIZED BY THE OPERATION OF AHU-2A.

EXHAUST FAN-8A, -10A, -11A, -12A (EF-8A, EF-10A, EF-11A, EF-12A): PROVIDE HAND-OFF-AUTOMATIC FAN SWITCH, MOUNTED AT FAN STARTER, AND SPACE TEMPERATURE SWITCH, TS-5 SHALL CLOSE WHEN SPACE TEMPERATURE REACHES 85F (ADJUSTABLE). IN THE HAND POSITION, THE FAN SHALL RUN CONTINUOUSLY. IN THE AUTO POSITION AND WHEN TS-5 IS CLOSED, THE FAN SHALL CYCLE ON.

EXHAUST FAN-17A (EF-17A): PROVIDE WALL-MOUNTED ON-OFF FAN SWITCH (1) SWITCH FOR OPERATION OF ALL FANS LABELED EF-17A); SPACE-MOUNTED SWITCH (1) SWITCH FOR OPERATION OF ALL FANS LABELED EF-17A); MOTORIZED OUTDOOR AIR DAMPERS (TOTAL OF (1) DAMPERS ASSOCIATED WITH FANS LABELED EF-17A); AND SPACE-MOUNTED CARBON MONOXIDE DETECTION SYSTEM. SEE DIVISION 16 PLANS FOR WIRING DIAGRAM.

EXHAUST FAN-9A, -15A, -16A, -18A (EF-9A, EF-15A, EF-16A AND EF-18A): PROVIDE WALL-MOUNTED ON-OFF SWITCH.

DOMESTIC WATER BOILER: WHEN DOMESTIC HOT WATER CONTROL SWITCH IS CLOSED AND EMCS RELAY R19 IS DE-ENERGIZED, RELAY R9 SHALL BE ENERGIZED, ENERGIZING THE DOMESTIC WATER BOILER CONTROLS.

DOMESTIC HOT WATER CIRCULATING PUMP: DOMESTIC HOT WATER CIRCULATING PUMP SHALL BE ENERGIZED BY TIMER SWITCH.

AIR HANDLING UNIT-3A (AHU-3A): PROVIDE HAND-OFF-AUTOMATIC SWITCH MOUNTED AT AIR HANDLING UNIT CONTROL PANEL IN MECHANICAL ROOM (ROOM 161). PROVIDE OCCUPANCY SENSOR AND WALL-MOUNTED TEMPERATURE SENSOR T2. ON A DETECTION OF OCCUPANCY IN THE ROOM, RELAY R17 SHALL BE ENERGIZED. UPON ENERGIZING RELAY R17, THE FOLLOWING SHALL OCCUR: 1) CONTACTOR R17-A SHALL CLOSE, OPENING THE NORMALLY CLOSED, AUTOMATIC OUTDOOR AIR VALVE, THUS PERMITTING THE MAXIMUM QUANTITY OF OUTDOOR AIR TO AHU-3A; 2) CONTACTOR R17-B SHALL OPEN, CLOSING THE AUTOMATIC RETURN AIR VALVE TO A POSITION PERMITTING THE MINIMUM QUANTITY OF RETURN AIR TO AHU-3A. IN THE HAND POSITION, RELAY R40 SHALL BE ENERGIZED AND AHU-3A FAN SHALL CYCLE ON. IN THE AUTO POSITION AND WITH EMCS RELAY R39 DE-ENERGIZED, RELAY R40 SHALL BE ENERGIZED AND AHU-3A FAN SHALL CYCLE ON. TEMPERATURE SENSOR T2 SHALL SENSE SPACE TEMPERATURE. ON A RISE IN SPACE TEMPERATURE ABOVE 78F (ADJUSTABLE), T2, THROUGH C3, SHALL OPEN THE 3-WAY CHILLED WATER COIL CONTROL VALVE, V4, TO THE COIL AND MODULATE THE VALVE TO MAINTAIN THE SETPOINT. FREEZESTAT FZ1 SHALL BE LOCATED IN THE INLET AIR DUCT, UPSTREAM OF THE HEATING WATER COIL. FZ1 SHALL CLOSE WHEN THE AIR TEMPERATURE DROPS TO 32F (ADJUSTABLE). WITH THE HEATING WATER SYSTEM CONTROL SWITCH AND FZ1 CLOSED, RELAY R6 SHALL BE ENERGIZED, ENERGIZING THE AIR HANDLING UNIT CIRCULATING PUMP. PROVIDE DIFFERENTIAL PRESSURE SWITCH, DPS5, ACROSS FILTER. SWITCH SHALL SIGNAL EMCS SYSTEM WHEN PRESSURE DROP ACROSS FILTER REACHES PRESET, ADJUSTABLE LIMIT.

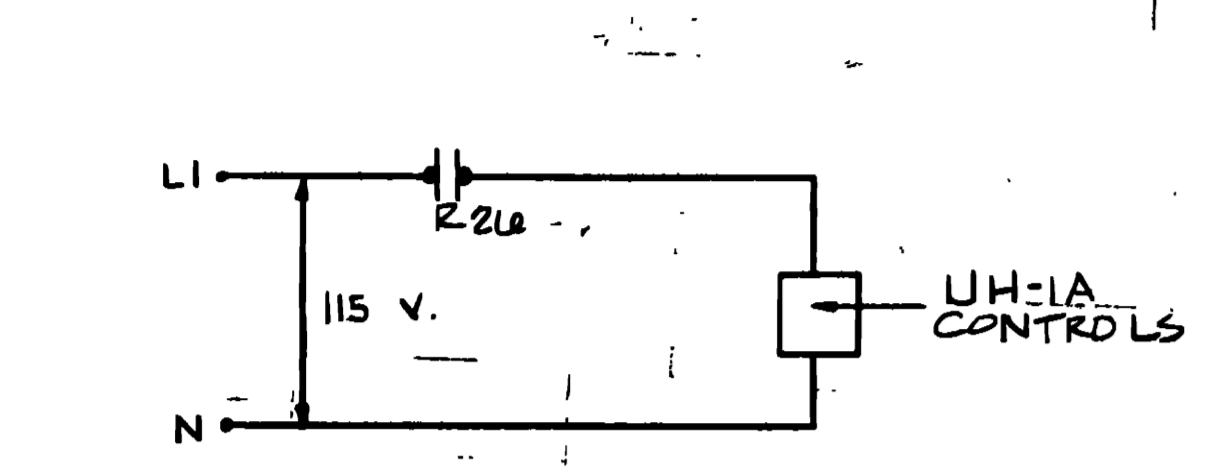
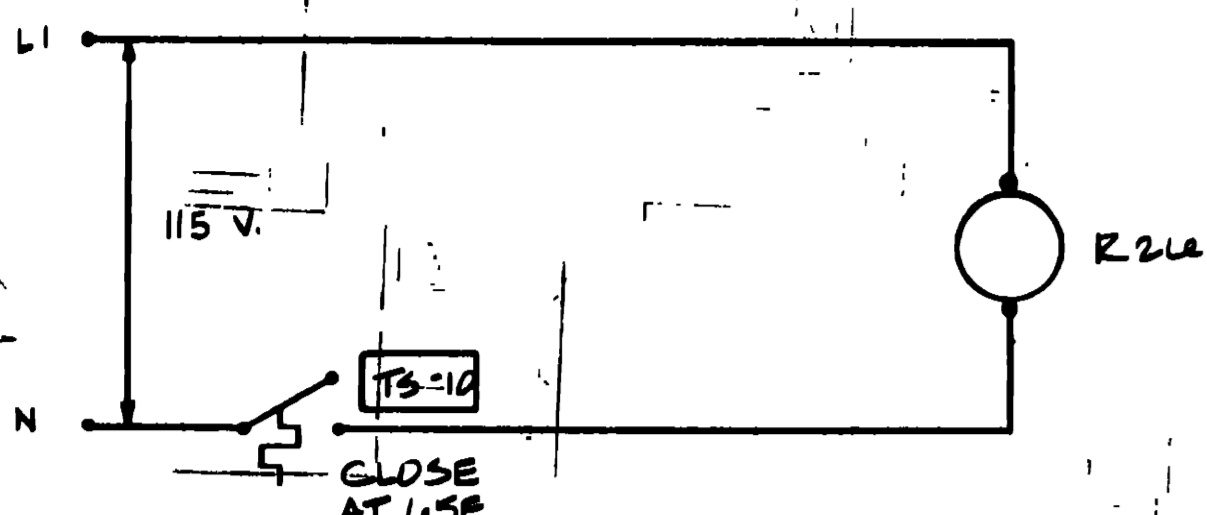
GAS-FIRED UNIT HEATER-1A (UH-1A): TEMPERATURE SENSOR, TS-10 SHALL BE LOCATED IN THE OUTDOOR AIR INTAKE TO UH-1A AND SHALL SENSE OUTDOOR AIR TEMPERATURE. ON A DROP IN OUTDOOR AIR TEMPERATURE TO 65F (ADJUSTABLE), TS-10 SHALL CLOSE AND RELAY R13 CLOSURE, RELAY R16 SHALL BE ENERGIZED AND THE UNIT HEATER FAN AND HEAT FUNCTION SHALL CYCLE ON.

RADIANT HEATER-1A (RH-1A): TS-1 SHALL CLOSE WHEN THE SPACE TEMPERATURE DROPS TO 70F (ADJUSTABLE), CYCLING THE RADIANT HEATER ON. TYPICAL FOR ALL HEATERS, RH-1A, SHOWN ON PLANS.

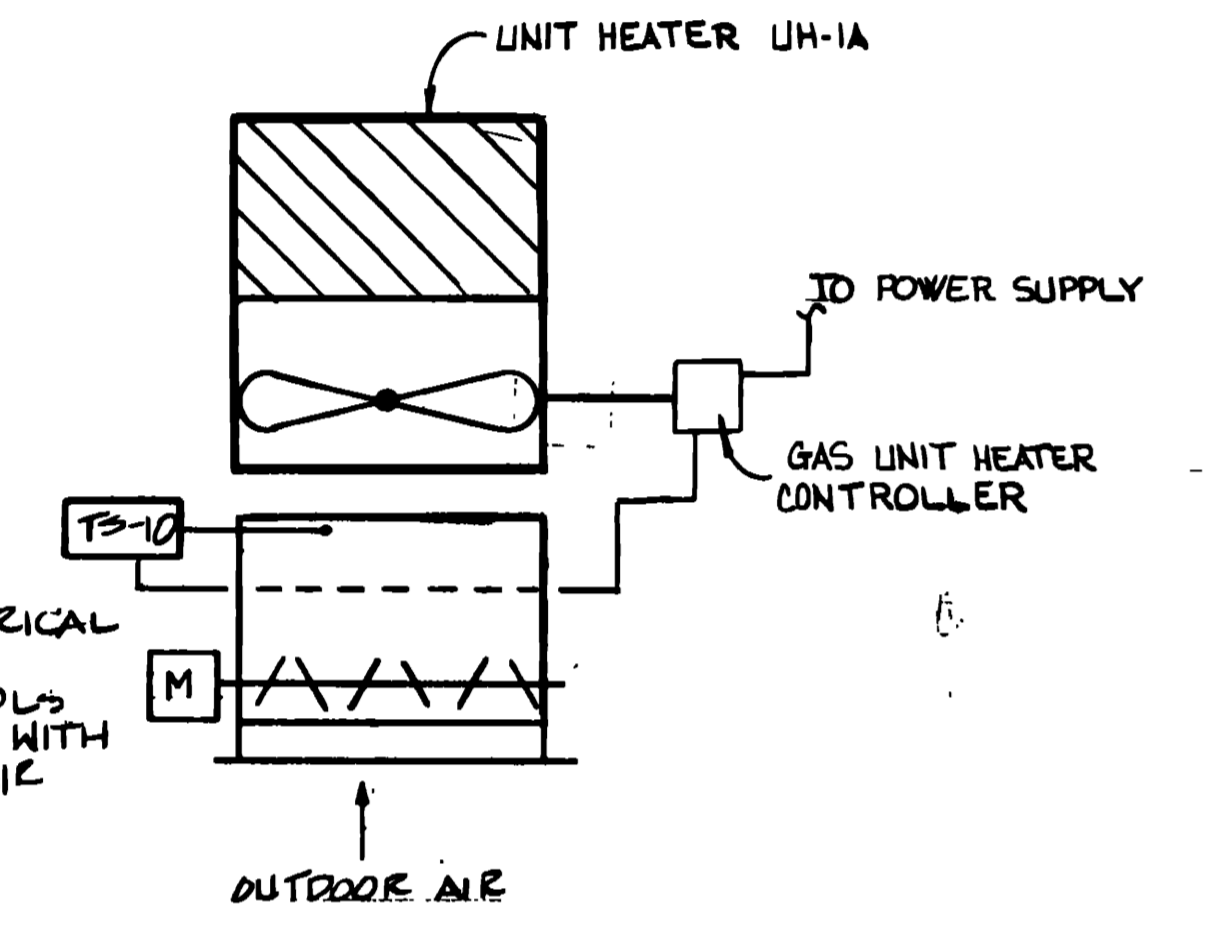
COMPUTER ROOM AIR CONDITIONING SYSTEM, AC-1A AND CU-1A: PROVIDE FACTORY-FURNISHED CONTROLS.

SUPPLY FAN-2A, -7A (SF-2A, SF-7A): PROVIDE WALL-MOUNTED SPACE TEMPERATURE SWITCH TS-8 AND AUTO-OFF-LOW-HIGH FAN SWITCH. WITH THE FAN SWITCH IN THE AUTO POSITION AND ON A RISE IN SPACE TEMPERATURE TO 85F (ADJUSTABLE), TS-8 SHALL CLOSE AND THE FAN SHALL CYCLE ON, OPERATING AT HIGH SPEED. WITH THE FAN SWITCH IN THE LOW POSITION, THE FAN MOTOR SHALL OPERATE CONTINUOUSLY AT LOW SPEED. WITH THE FAN SWITCH IN THE HIGH POSITION, THE FAN MOTOR SHALL OPERATE CONTINUOUSLY AT HIGH SPEED.

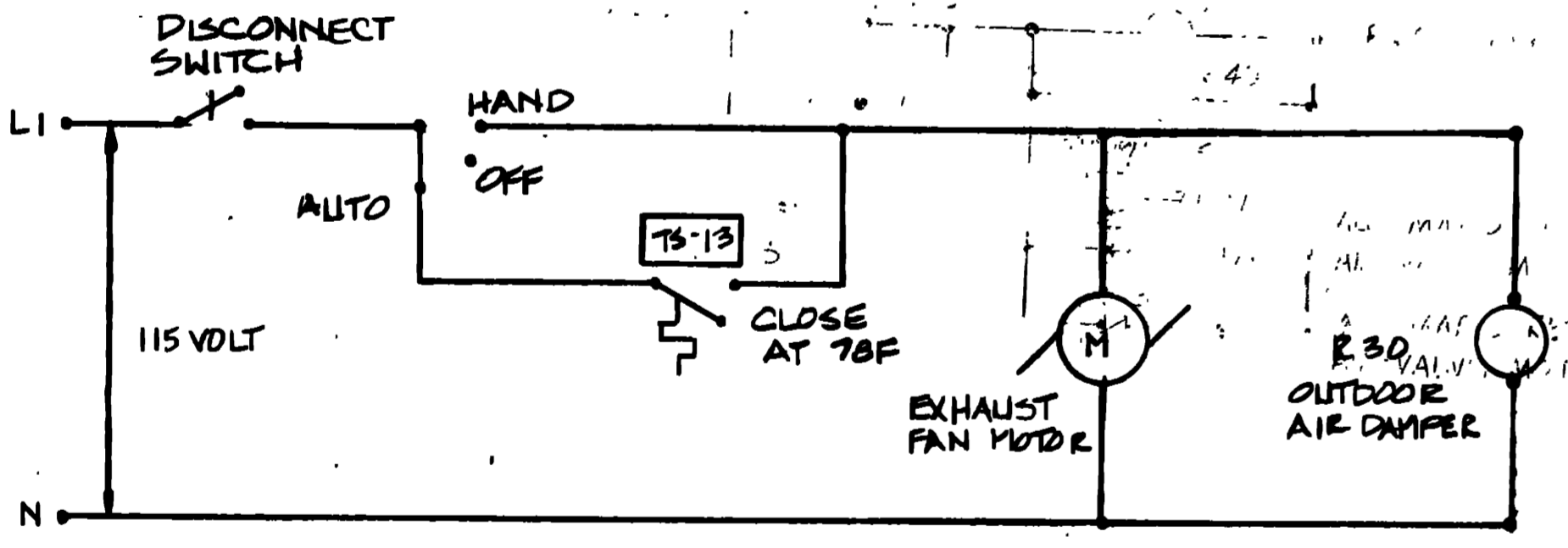
SEE SHEET M-42 FOR CONTINUATION OF SEQUENCE OF CONTROL FOR FIRE TRAINING BUILDING.



**GAS-FIRED UNIT HEATER UH-1A CONTROL WIRING DIAGRAM**  
N.T.S.

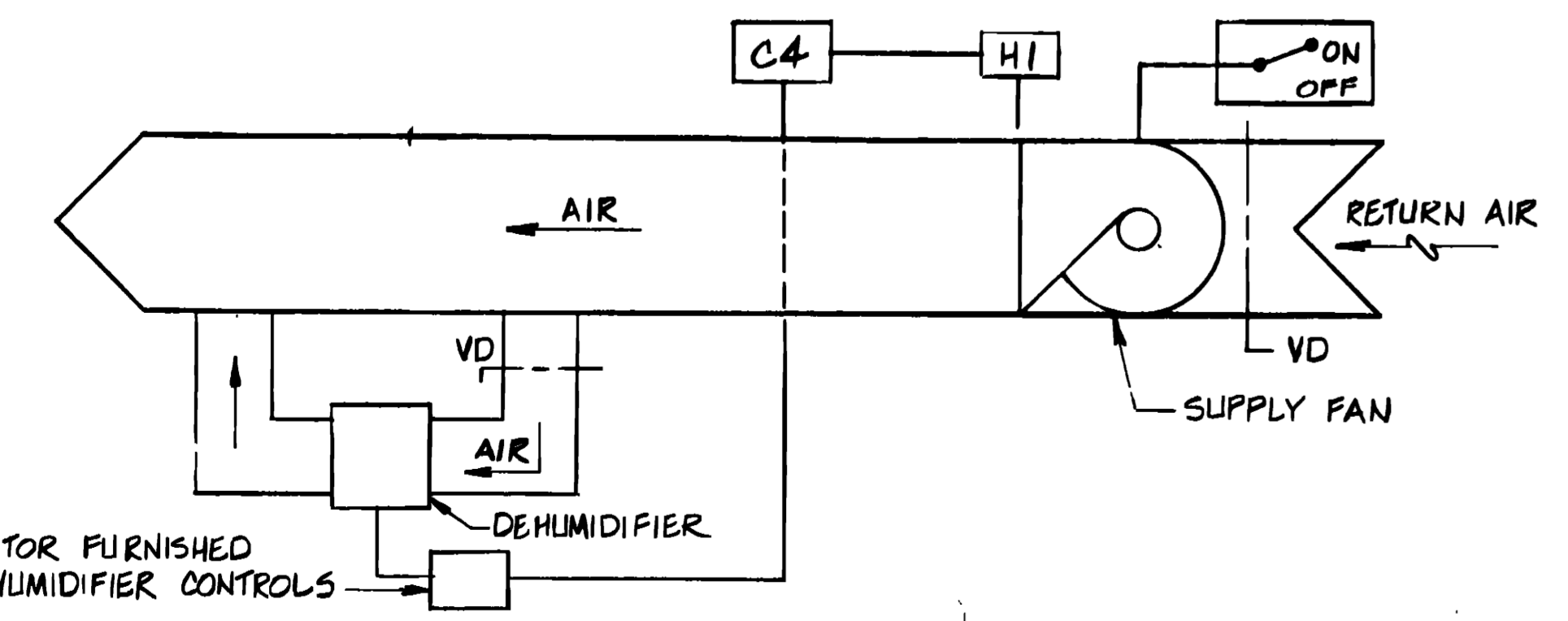


**GAS-FIRED UNIT HEATER UH-1A CONTROL SCHEMATIC**  
N.T.S.

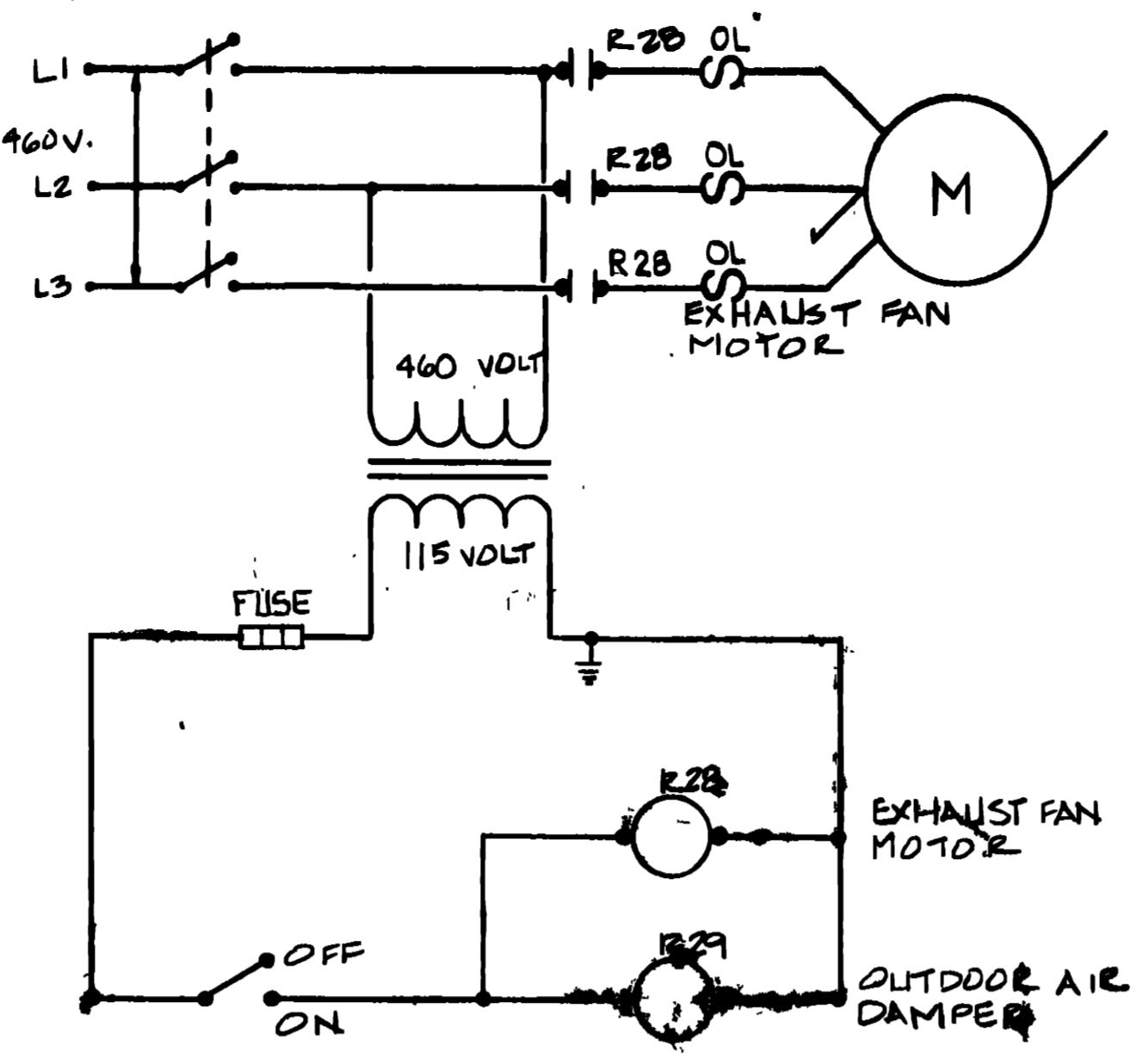


NOTE: TYPICAL FOR EXHAUST FANS EF-1B, EF-2B, EF-1C, EF-2C & EF-4C.

**EXHAUST FANS EF-1C, EF-2C & EF-4C CONTROL WIRING DIAGRAM**  
N.T.S.

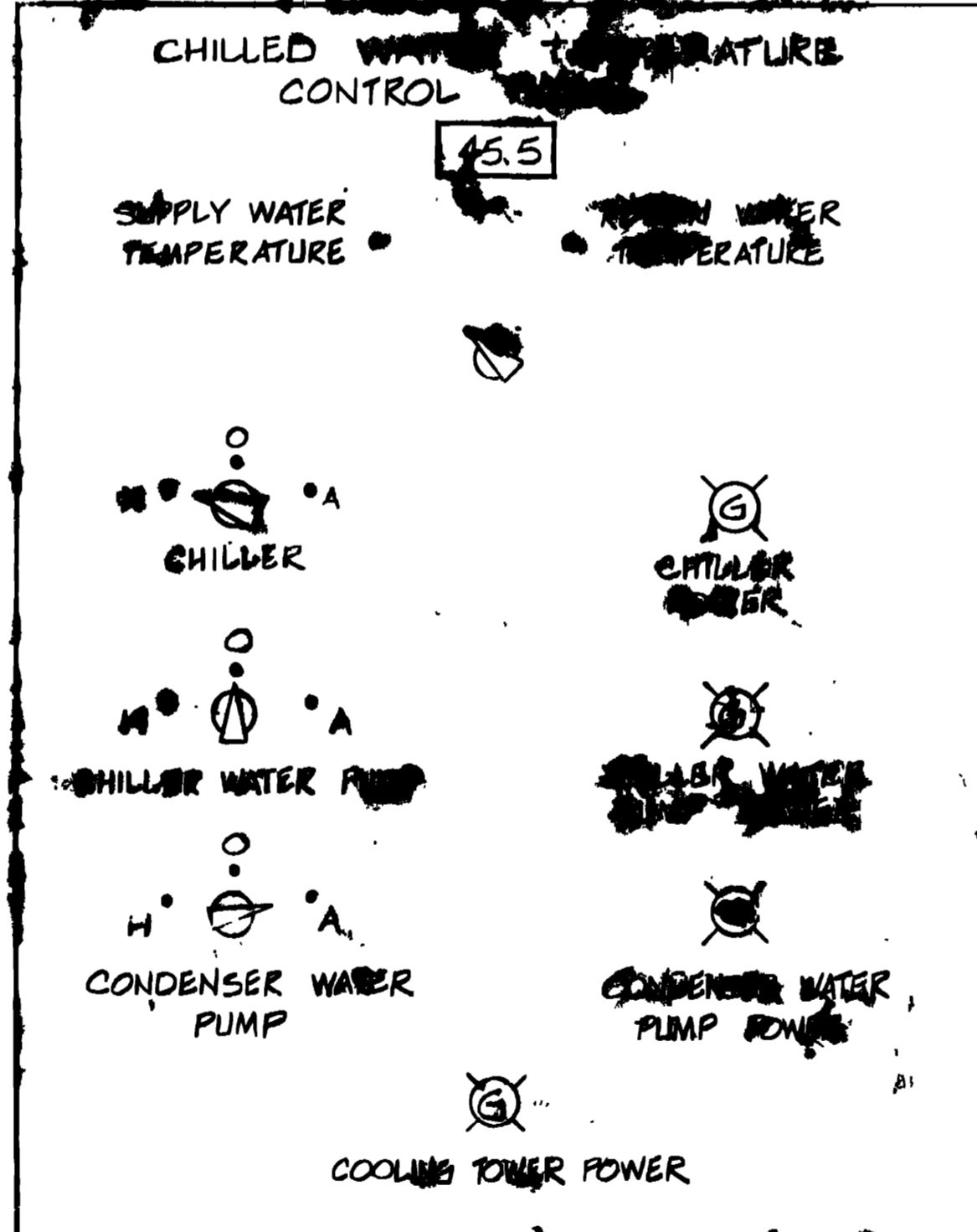


**SUPPLY FAN & DUCT DEHUMIDIFIER CONTROL SCHEMATIC**  
SF-1A & PHA, SF-3A & DH-2A, SF-4A & DH-3A, SF-5A & DH-4A  
N.T.S.

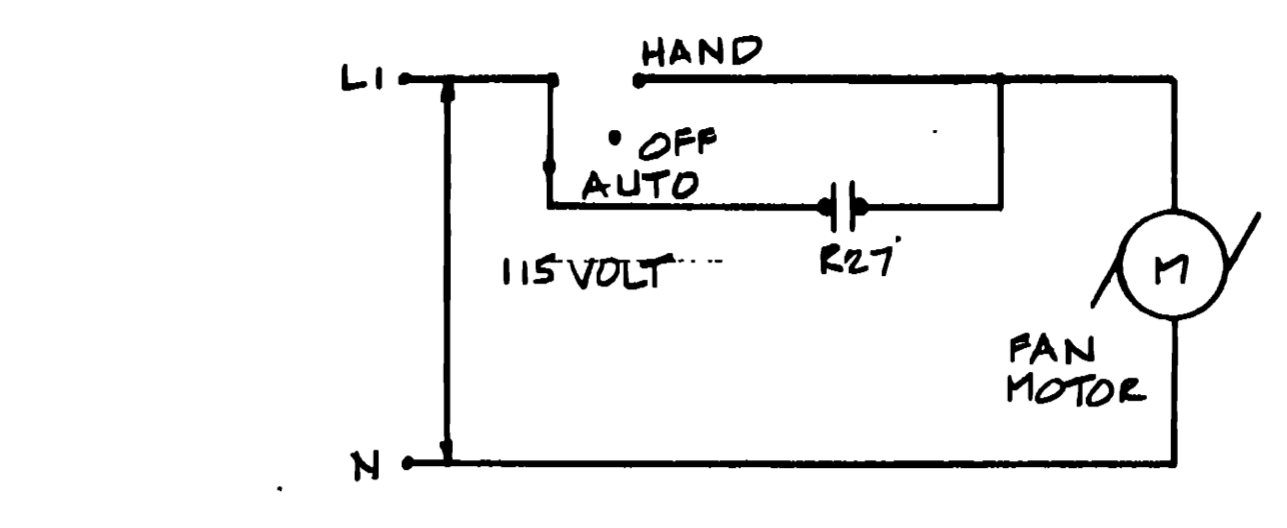


NOTE: TYPICAL FOR EXHAUST FANS EF-4B, EF-5B & EF-5C.

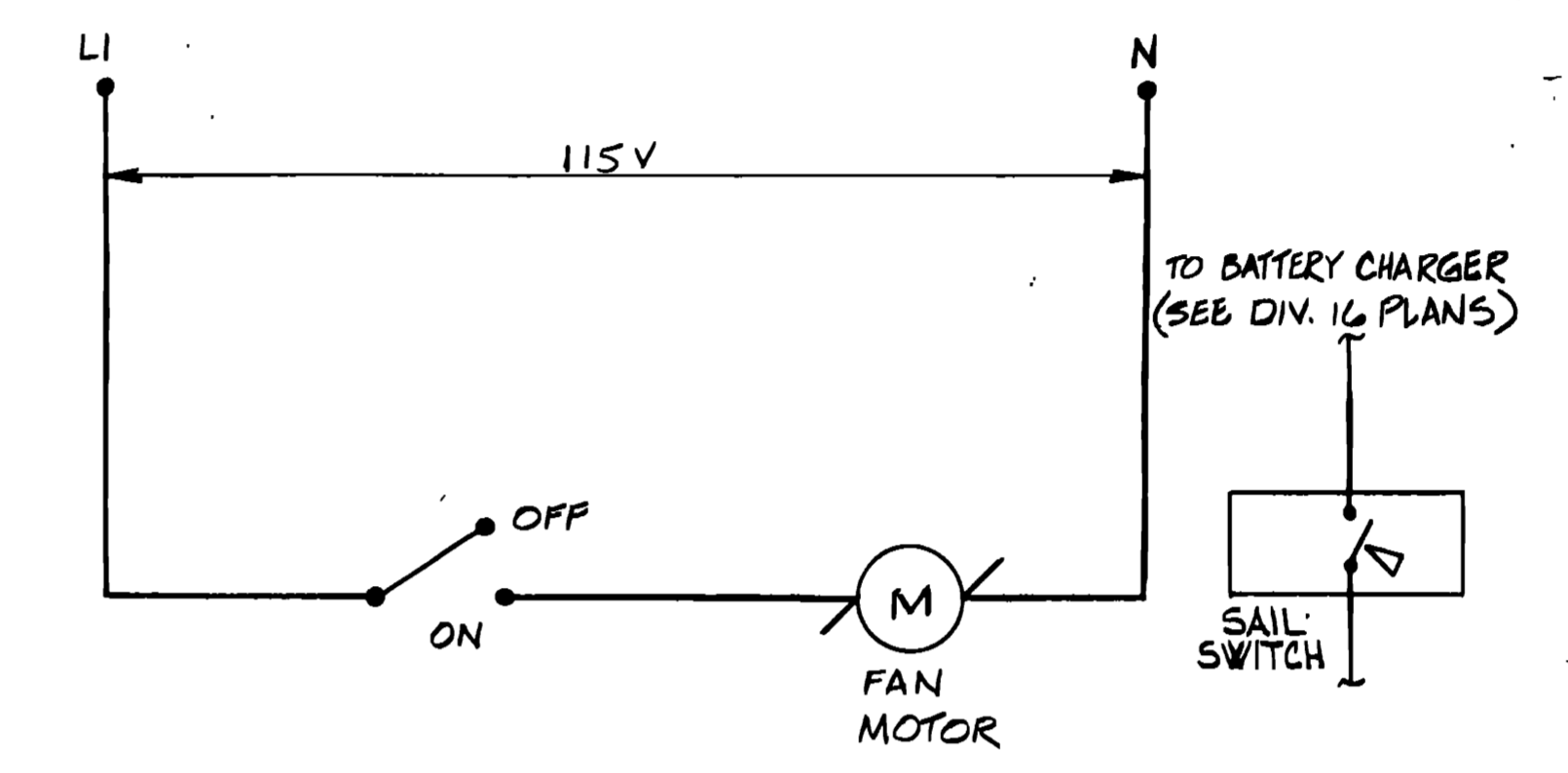
**EXHAUST FAN EF-3C CONTROL WIRING DIAGRAM**  
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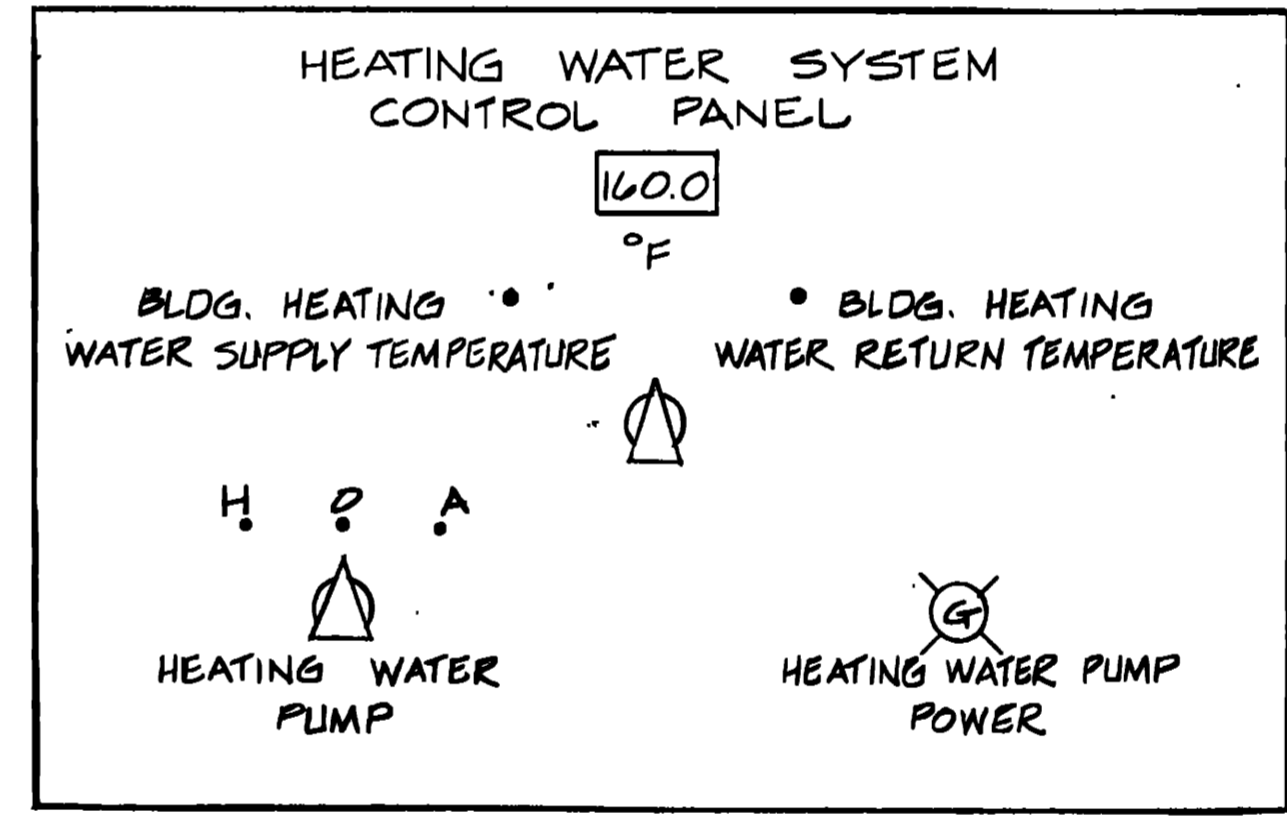
**CONTROL PANEL LAYOUT**  
N.T.S.



**EXHAUST FAN EF-3C CONTROL WIRING DIAGRAM**  
N.T.S.



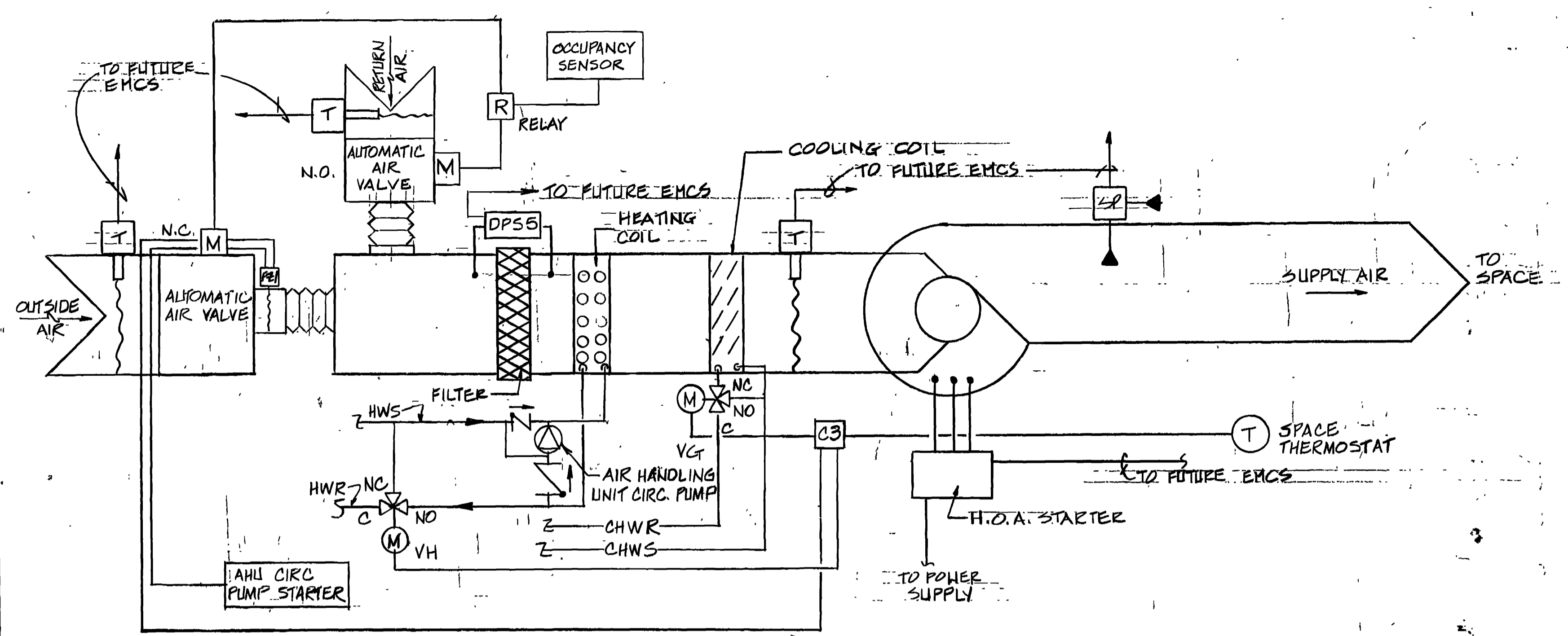
**EXHAUST FAN EF-6B CONTROL WIRING DIAGRAM**  
N.T.S.



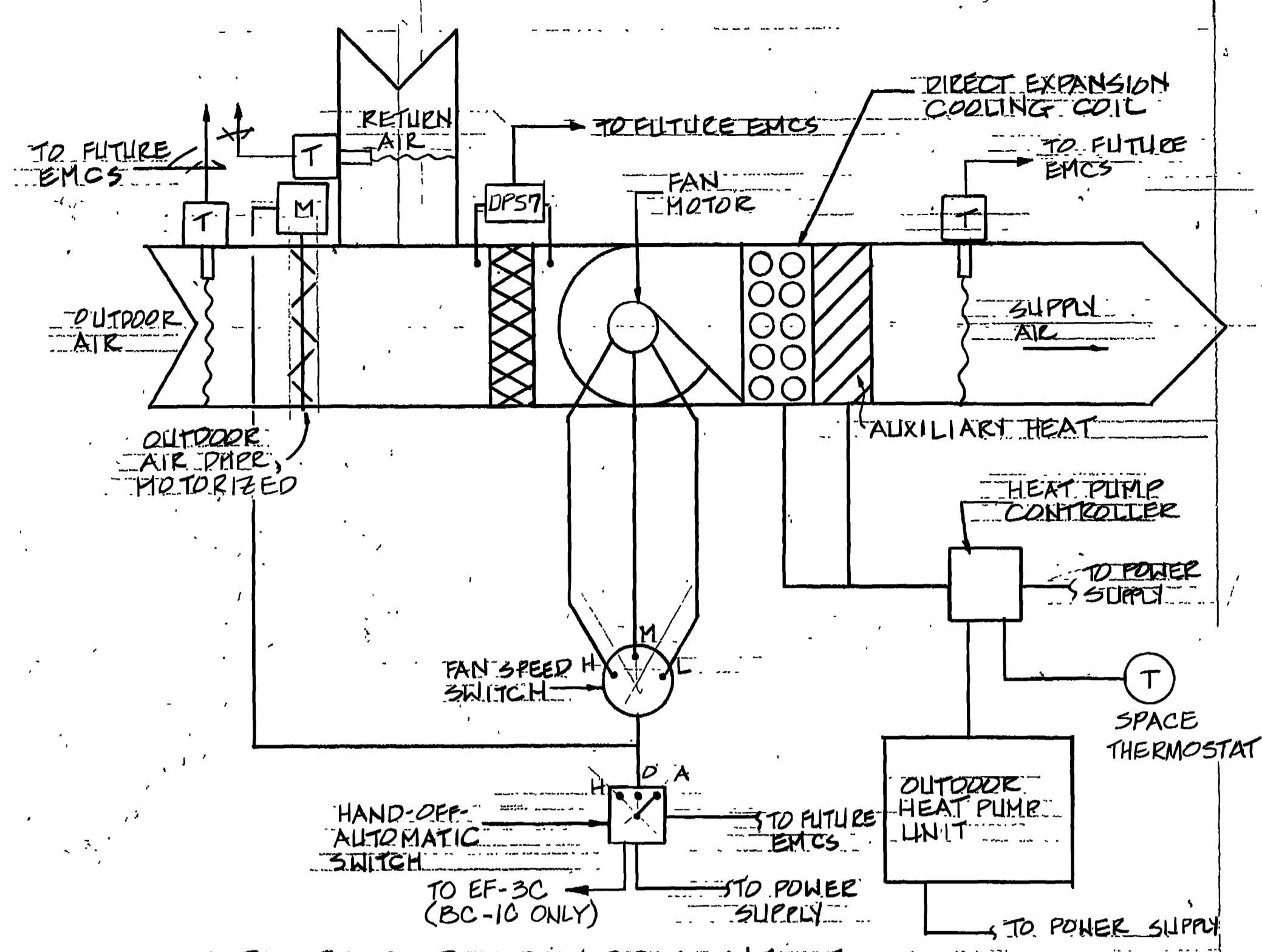
**CONTROL PANEL LAYOUT**  
N.T.S.

<p>AM1000B 14 AUG 90 CONVERT SYSTEM FROM TWO-PIPE TO FOUR-PIPE.</p> <p>AM1000 14 JUN 90 REVISED TO REFLECT W.J. CHANGE</p>	<p>U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS</p>
<p>DESIGNED BY: M. JENKINS</p> <p>DRAWN BY: M. JENKINS</p> <p>REVIEWED BY: C. YANG</p>	<p>GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS</p> <p><b>FIRE TRAINING COMPLEX</b> CONTROL DIAGRAM, SEQUENCE OF CONTROL</p>
<p>SUBMITTED BY: M. JENKINS</p> <p>ENGINEER:</p>	<p>SOL. NO. DACAG3-90-B-0109 DATED: JUN. 1992</p> <p>CONTR. NO. DACAG3-92-C-0155</p> <p>DRAWING NUMBER: M40 OF 44</p> <p>SHEET NO. 238</p>

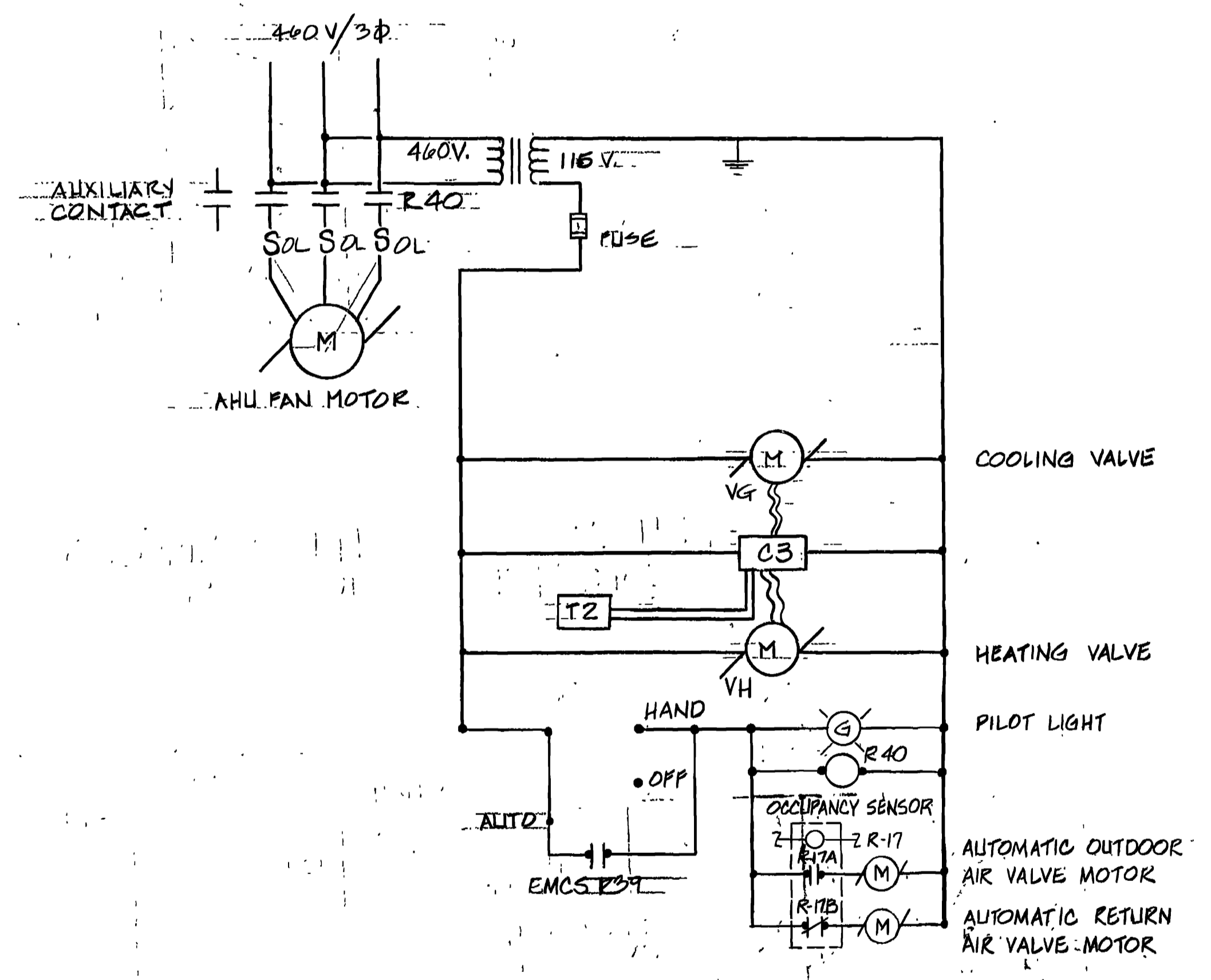




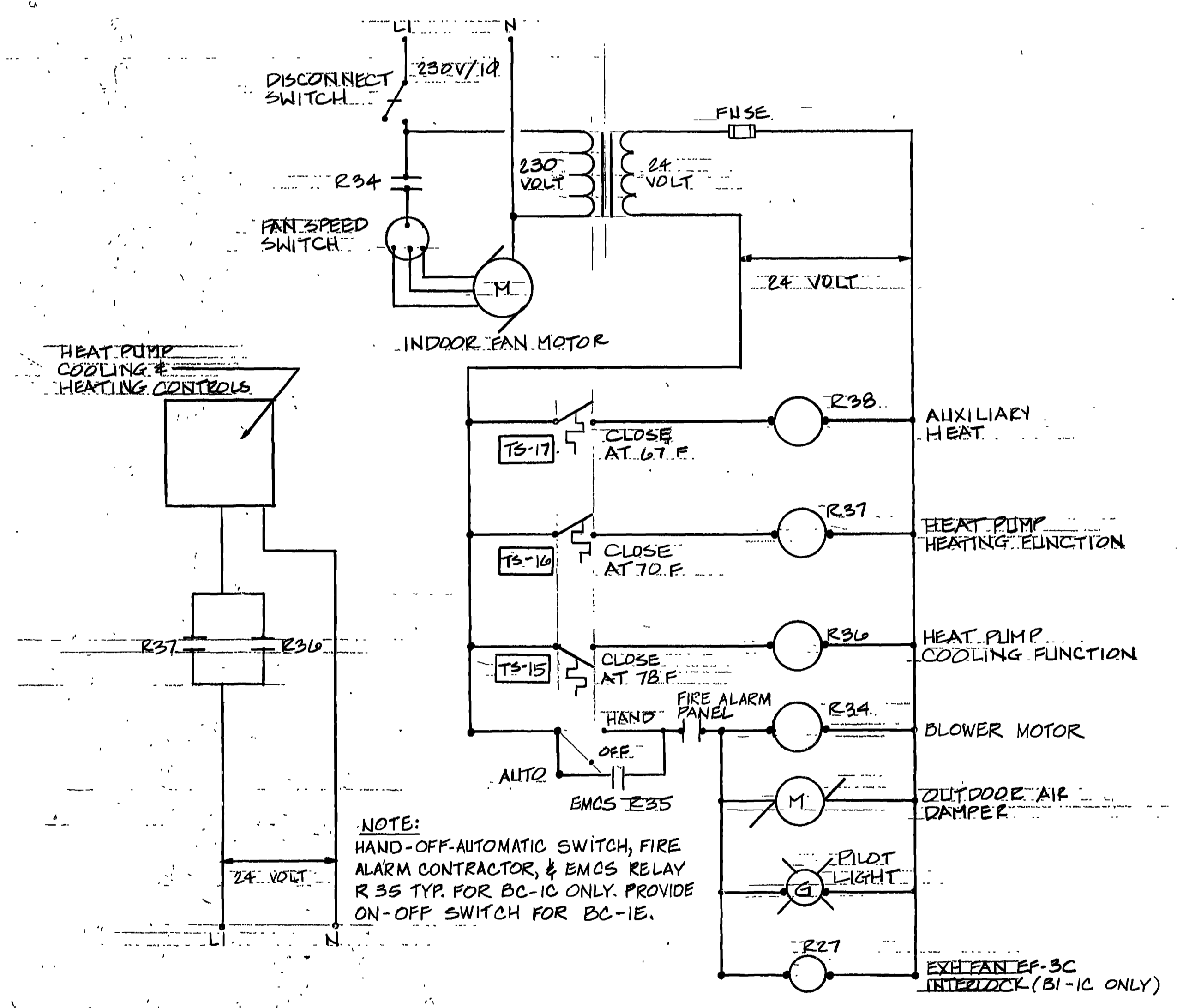
**AIR HANDLING UNIT AHU-3A CONTROL SCHEMATIC**  
N.T.S.



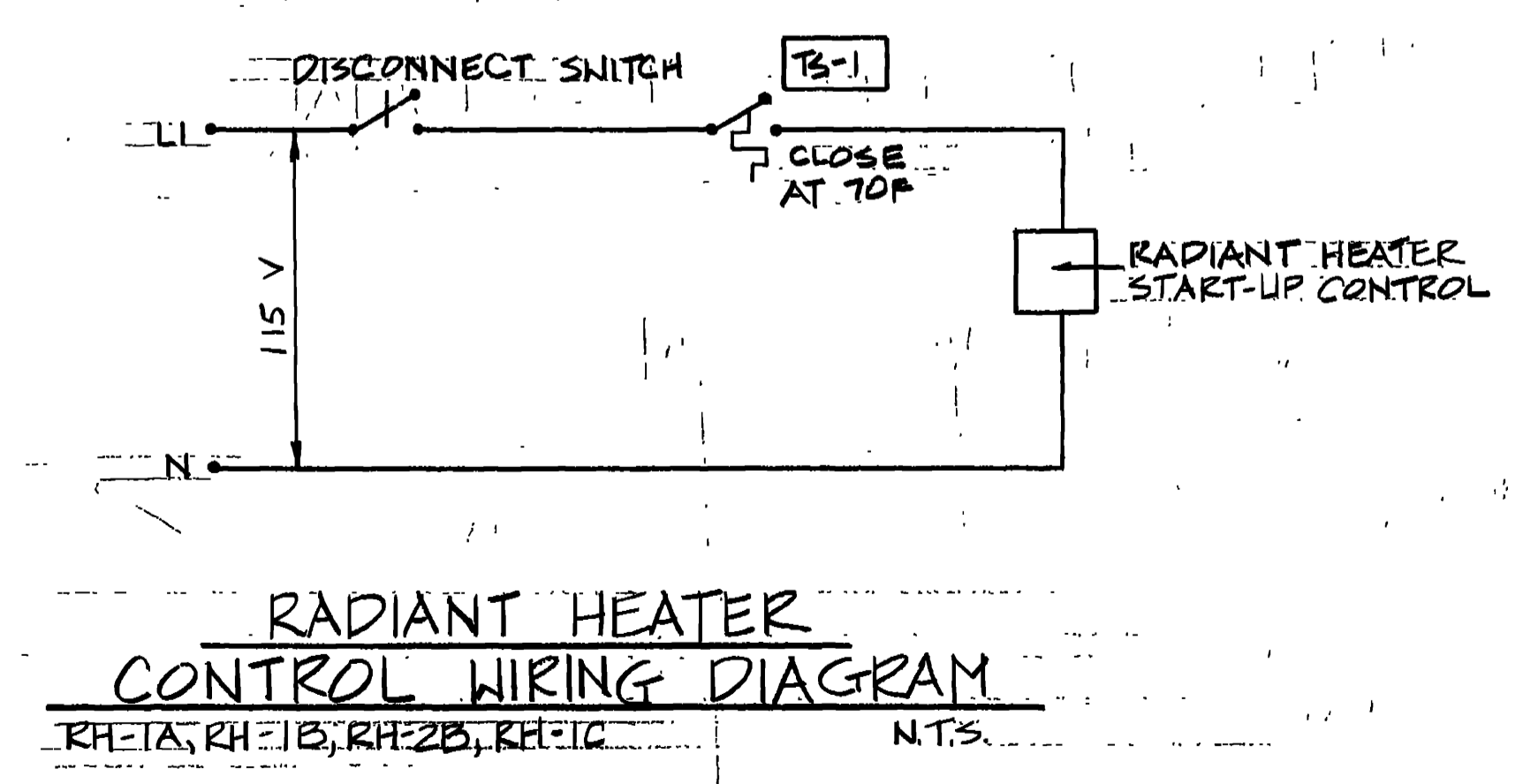
**SPLIT AIR-SOURCE HEAT PUMP CONTROL SCHEMATIC**  
BC-1C & HP-1C, BC-1E & HP-1E  
N.T.S.



**AIR HANDLING UNIT AHU-3A CONTROL WIRING DIAGRAM**  
N.T.S.



**SPLIT AIR-SOURCE HEAT PUMP CONTROL WIRING DIAGRAM**  
BC-1C & HP-1C, BC-1E & HP-1E  
N.T.S.



**RADIANT HEATER CONTROL WIRING DIAGRAM**  
RH-1A, RH-1B, RH-2B, RH-1C  
N.T.S.

**SEQUENCE OF CONTROL**

**HYDRONIC UNIT HEATER-1A, -2A (HUH-1A, HUH-2A):** PROVIDE WALL-MOUNTED ON-OFF SWITCH. WHEN SWITCH IS CLOSED, THE UNIT HEATER FAN SHALL CYCLE ON. TEMPERATURE SWITCH TS-18 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN TEMPERATURE DROPS TO 70F (ADJUSTABLE). WHEN TS-18 CLOSURE, THE TWO-POSITION, 3-WAY HEATING WATER CONTROL VALVE, VT, SHALL OPEN TO THE HEATING COIL.

**AIR HANDLING UNIT CIRCULATION PUMP-4A, -5A, -6A (P-4A, P-5A, P-6A):** PROVIDE HAND-OFF-AUTOMATIC SWITCH MOUNTED AT FAN STARTER. IN THE ON POSITION, PUMP SHALL OPERATE CONTINUOUSLY. FREEZE/STAT FZ1 SHALL SENSE OUTDOOR AIR TEMPERATURE AND SHALL CLOSE WHEN THE OUTDOOR AIR TEMPERATURE DROPS TO 35F. WITH THE PUMP SWITCH IN THE OFF POSITION AND WITH FZ1 CLOSED, RELAY R6 SHALL BE ENERGIZED, CYCLING ON THE PUMP.

**VEHICLE MAINTENANCE FACILITY**

**EXHAUST FAN-1B, -2B (EF-1B, EF-2B):** PROVIDE WALL-MOUNTED ON-OFF SWITCH ((1) SWITCH TO CONTROL EACH GROUP OF FANS LABELED EF-1B OR EF-2B), SPACE-MOUNTED TEMPERATURE SWITCH ((1) SWITCH TO CONTROL EACH GROUP OF FANS LABELED EF-1B OR EF-2B), MOTORIZED OUTDOOR AIR DAMPERS (TOTAL OF (3) DAMPERS ASSOCIATED WITH EF-1B AND TOTAL OF (1) DAMPER ASSOCIATED WITH EF-2B), AND SPACE-MOUNTED CARBON MONOXIDE DETECTION SYSTEM ((1) SYSTEM IN THE FIRE TRUCK BAY AND (1) SYSTEM IN THE FUEL TRUCK BAY). SEE DIVISION 16 PLANS FOR WIRING DIAGRAM.

**EXHAUST FAN-3B (EF-3B):** FAN SHALL BE CYCLED ON AND OFF WITH BREAKROOM LIGHT SWITCH. INTERLOCK WIRING PROVIDED BY DIVISION 16.

**EXHAUST FAN-4B, -5B (EF-4B, EF-5B):** PROVIDE WALL-MOUNTED ON-OFF SWITCH. WHEN SWITCH IS CLOSED, RELAYS R28 AND R29 SHALL BE ENERGIZED, THE FAN SHALL CYCLE ON AND THE OUTDOOR AIR DAMPER SHALL OPEN.

**EXHAUST FAN-6B (EF-6B):** PROVIDE WALL-MOUNTED ON-OFF SWITCH. IN THE ON POSITION, THE FAN SHALL RUN CONTINUOUSLY. PROVIDE SAIL SWITCH WITH FAN FOR BATTERY CHARGER INTERLOCK UNDER DIVISION 16.

**EXHAUST FAN-7B (EF-7B):** PROVIDE WALL-MOUNTED ON-OFF SWITCH. IN THE ON POSITION, FAN SHALL OPERATE CONTINUOUSLY. IN THE OFF POSITION, FAN SHALL NOT OPERATE.

**THROUGH-THE-WALL HEAT PUMP-1B (HP-1B):** PROVIDE FACTORY-FURNISHED CONTROLS.

**TRAINER SERVICES FACILITY**

**FURNACE-1C, -2C (F-1C, F-2C):** PROVIDE HAND-OFF-AUTOMATIC SWITCH AT THE FAN MOTOR. IN THE HAND POSITION, RELAY R32 SHALL BE ENERGIZED, ENERGIZING THE FURNACE FAN. IN THE AUTO POSITION AND WITH RELAY R31 ENERGIZED BY THE EMCS, RELAY R32 SHALL BE ENERGIZED, ENERGIZING THE FURNACE FAN. TS-14 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN SPACE TEMPERATURE DROPS TO 70F (ADJUSTABLE). WHEN TS-14 CLOSURE, RELAY R33 SHALL BE ENERGIZED, ENERGIZING FACTORY-FURNISHED FURNACE CONTROL. PROVIDE DIFFERENTIAL PRESSURE SWITCH, DP56, ACROSS FILTER. SWITCH SHALL SIGNAL EMCS WHEN PRESSURE DROP ACROSS FILTER REACHES A PRESET, ADJUSTABLE LIMIT.

**SPLIT AIR-SOURCE HEAT PUMP SYSTEM (BC-1C AND HP-1C):** PROVIDE HAND-OFF-AUTOMATIC SWITCH MOUNTED AT BLOWER COIL STARTER. PROVIDE NORMALLY OPEN CONTACTOR AT INDOOR BLOWER MOTOR STARTER FOR CONNECTION TO FIRE ALARM CONTROL PANEL BY FIRE ALARM CONTRACTOR. IN THE HAND POSITION, RELAY R34 SHALL BE ENERGIZED, ENERGIZING THE INDOOR BLOWER MOTOR. IN THE AUTO POSITION, WITH RELAY R35 ENERGIZED BY THE EMCS AND WITH FIRE ALARM SYSTEM CONTACTOR CLOSED, RELAY R34 SHALL BE ENERGIZED, ENERGIZING THE INDOOR BLOWER MOTOR. WHEN THE INDOOR FAN MOTOR IS ENERGIZED, THE OUTDOOR AIR DAMPER MOTOR SHALL BE ENERGIZED, OPENING THE OUTDOOR AIR DAMPER, AND RELAY R27 SHALL BE ENERGIZED. TEMPERATURE SENSOR, TS-15 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN THE SPACE TEMPERATURE RISES TO 78F (ADJUSTABLE). WHEN TS-15 CLOSURE, RELAY R36 SHALL BE ENERGIZED, ENERGIZING THE INTERNAL HEAT PUMP COOLING CONTROLS. TS-16 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN SPACE TEMPERATURE DROPS TO 70F (ADJUSTABLE). WHEN TS-16 CLOSURE, RELAY R37 SHALL BE ENERGIZED, ENERGIZING INTERNAL HEAT PUMP HEATING CONTROLS. TS-17 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN SPACE TEMPERATURE DROPS TO 67F (ADJUSTABLE). WHEN TS-17 CLOSURE, RELAY R38 SHALL BE ENERGIZED, ENERGIZING AUXILIARY ACROSS FILTER. SWITCH SHALL SIGNAL EMCS WHEN PRESSURE DROP ACROSS FILTER REACHES A PRESET, ADJUSTABLE LIMIT.

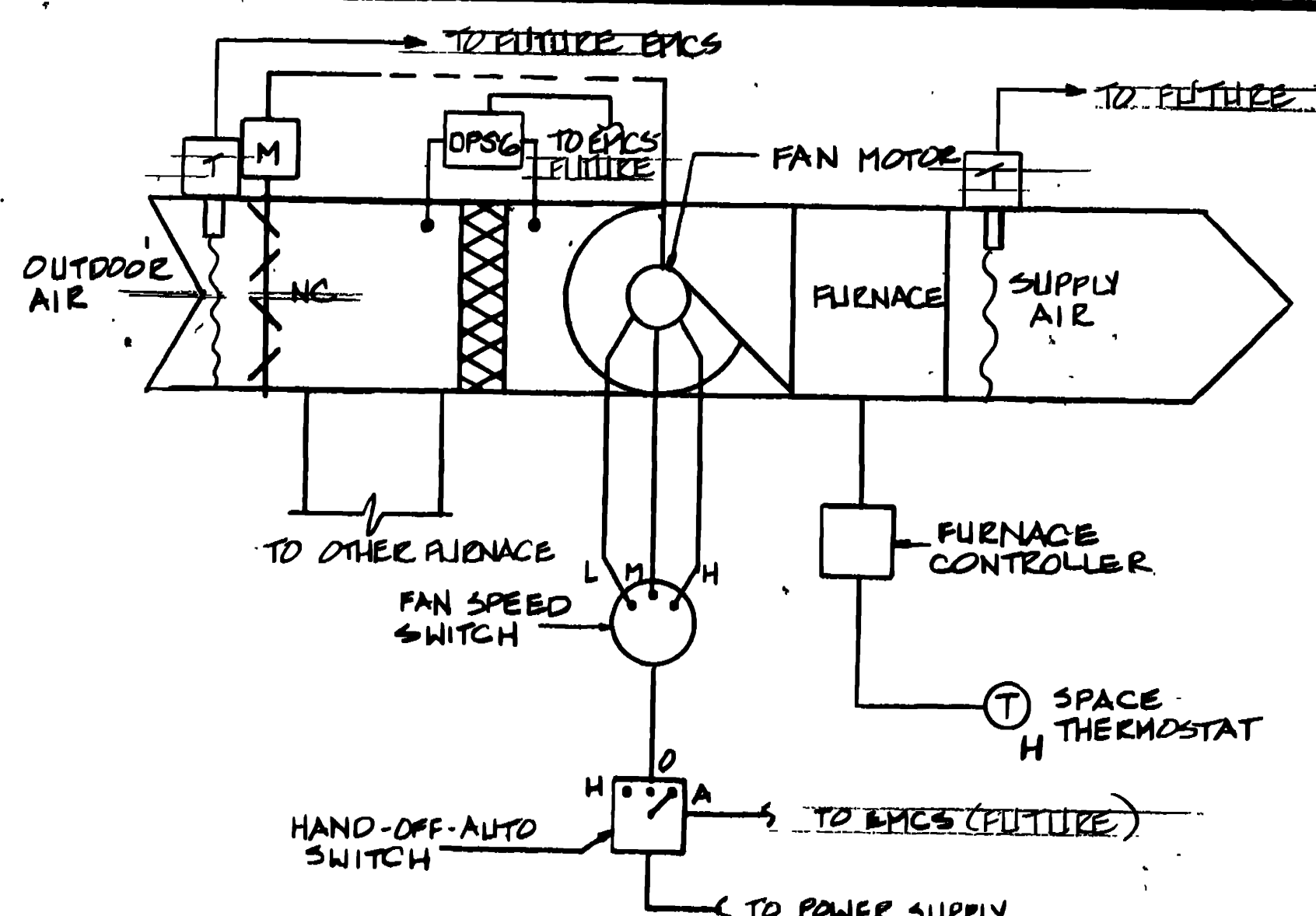
**RADIANT HEATER-1C (RH-1C):** PROVIDE WALL-MOUNTED SPACE TEMPERATURE SENSOR, TS-12. TS-12 SHALL CLOSE WHEN SPACE TEMPERATURE DROPS TO 70F (ADJUSTABLE), ENERGIZING RADIANT HEATER. TYPICAL FOR EACH ZONE OR GROUP OF HEATERS SHOWN ON PLANS.

**EXHAUST FAN-1C, -2C, -4C (EF-1C, EF-2C, EF-4C):** PROVIDE WALL-MOUNTED HAND-OFF-AUTOMATIC SWITCH AND TEMPERATURE SENSOR TS-13. IN THE HAND POSITION, THE FAN SHALL RUN CONTINUOUSLY. TS-13 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN SPACE TEMPERATURE RISES TO 78F (ADJUSTABLE). IN AUTO POSITION AND WITH TS-13 CLOSED, THE FAN SHALL CYCLE ON. WHEN THE FAN IS STARTED IN THE HAND OR AUTO POSITION, RELAY R30 SHALL BE ENERGIZED, ENERGIZING THE OUTDOOR AIR DAMPER MOTOR AND OPENING THE OUTDOOR AIR DAMPER. OPENING OF OUTDOOR AIR DAMPER SHALL OCCUR WHEN ANY ONE OR MORE OF THE THREE EXHAUST FANS LABELED EF-1C ARE STARTED.

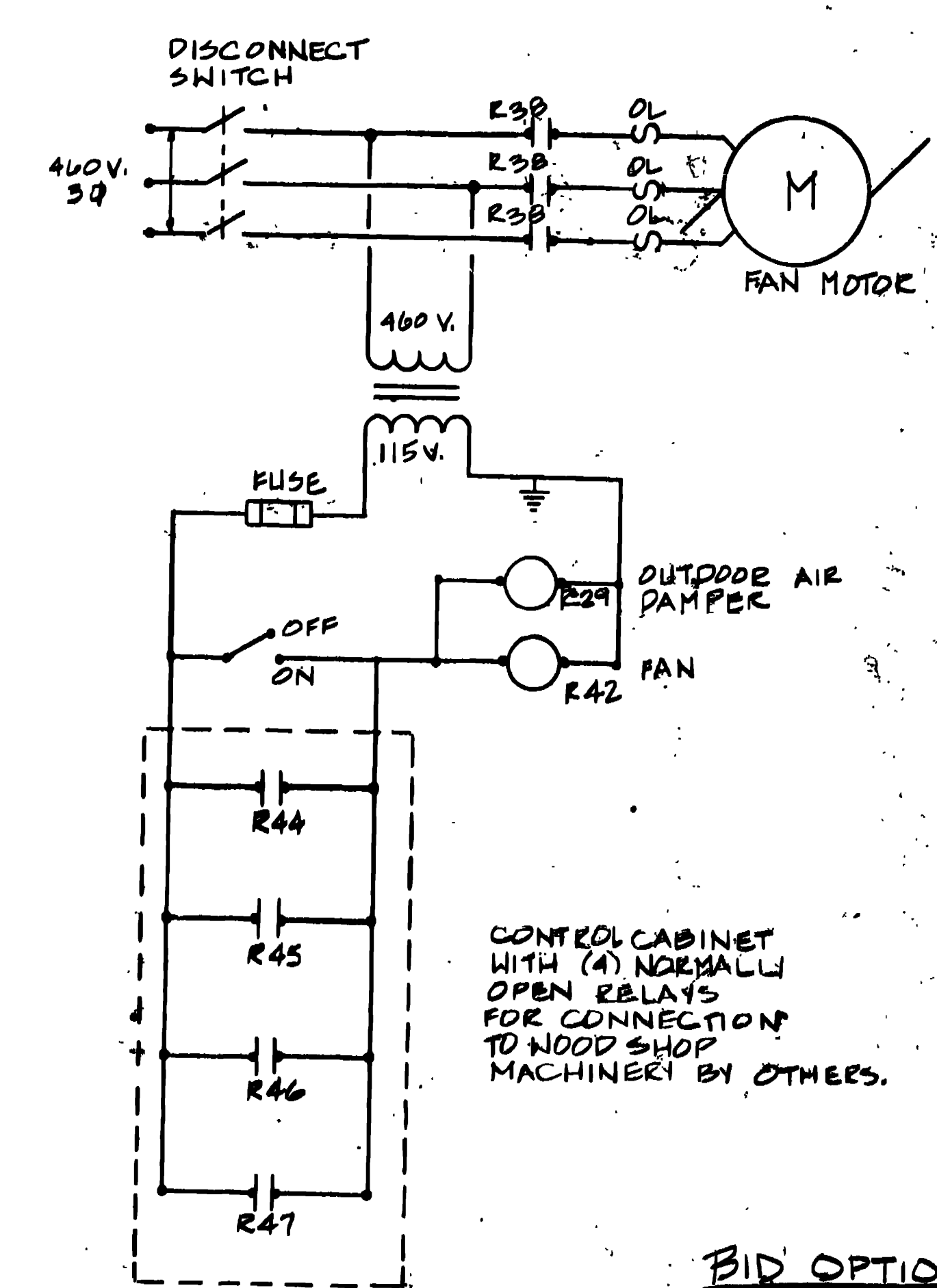
**EXHAUST FAN-3C (EF-3C):** PROVIDE HAND-OFF-AUTO SWITCH, MOUNTED AT FAN STARTER. IN THE HAND POSITION, THE FAN SHALL RUN CONTINUOUSLY. IN THE AUTO POSITION AND WITH RELAY R27 ENERGIZED BY BC-1C OPERATION, THE FAN SHALL CYCLE ON.

**EXHAUST FAN-5C (EF-5C):** PROVIDE WALL-MOUNTED ON-OFF SWITCH. WITH THE SWITCH CLOSED, RELAYS R28 AND R29 SHALL BE ENERGIZED, CYCLING ON THE FAN AND OPENING THE OUTDOOR AIR DAMPER, RESPECTIVELY.

REVISED CONTROL SEQUENCE	AM#0004	18 AUG 92
REVISED TO REFLECT W.I. CHANGE	AM#0007	4 JUN 92
<b>WALK, HAYDEL &amp; ASSOC. INC.</b> ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
DESIGNED BY: <b>M. JENKINS</b> DRAWN BY: <b>M. JENKINS</b> REVIEWED BY: <b>C. WANG</b>		
GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS <b>FIRE TRAINING COMPLEX</b> <b>CONTROL DIAGRAM, SEQUENCE OF CONTROL</b>		
SUBMITTED BY: <b>M. JENKINS</b> DATE: <b>12/1/90</b>	SOL. NO. <b>DACAG3-92-B-0101</b> DATED: <b>JUN. 1992</b>	CONTR. NO. <b>DACAG3-92-C-085</b> DRAWING NUMBER: <b>M41 OF 44</b> SHEET NO. <b>239</b>

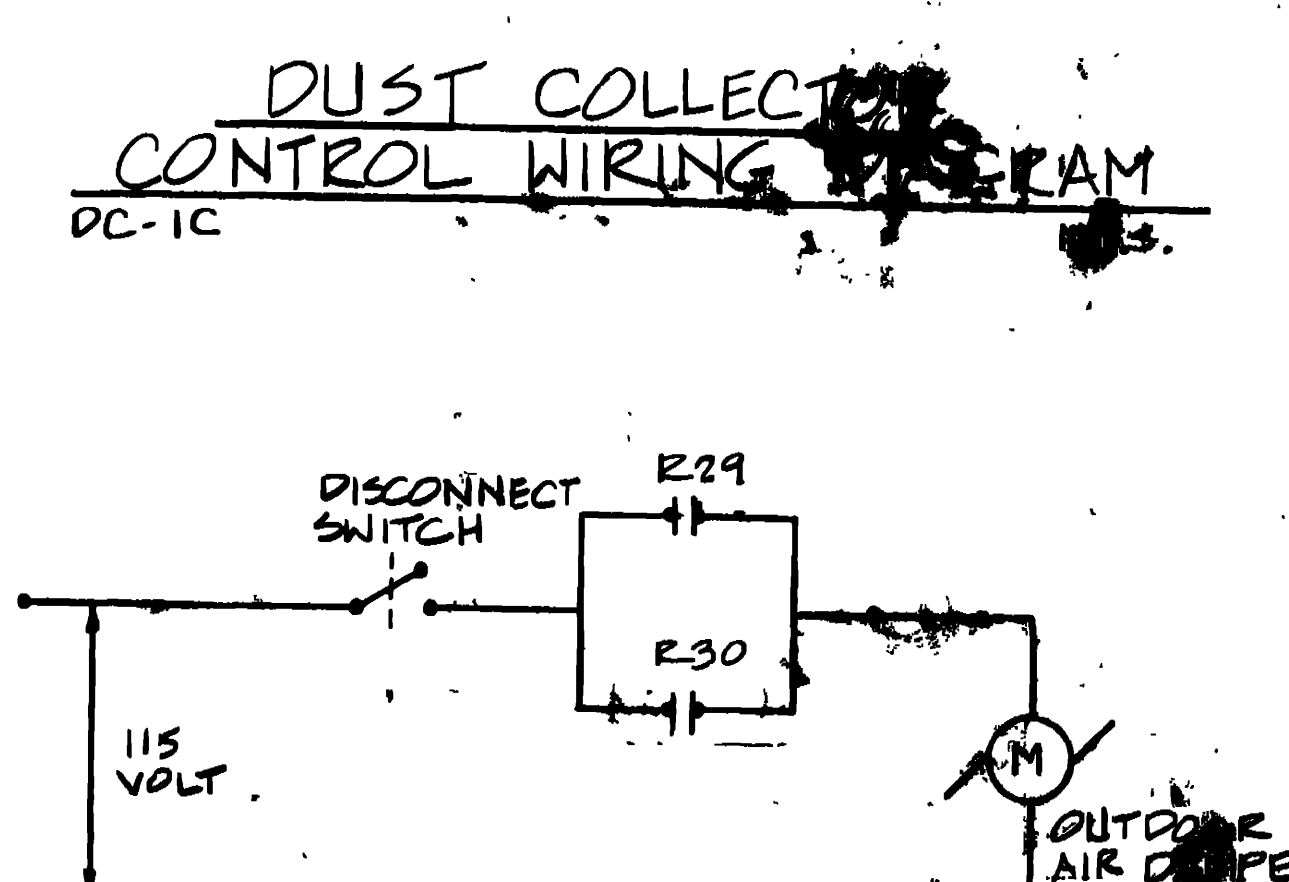


**FURNACE CONTROL SCHEMATIC**  
F-1C & F-2C N.T.S.

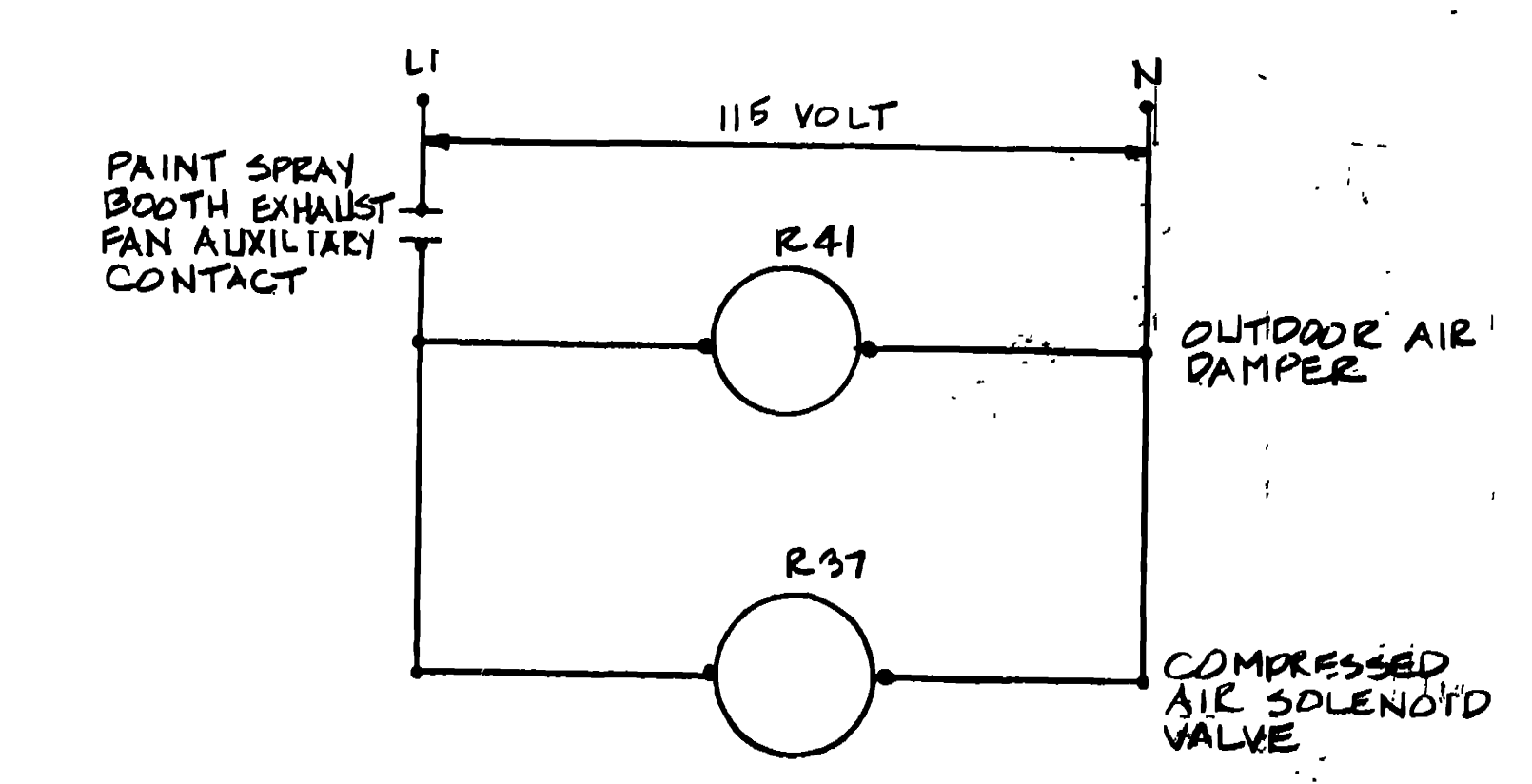


**CONTROL CABINET WITH (4) NORMALLY OPEN RELAYS FOR CONNECTION TO WOOD SHOP MACHINERY BY OTHERS.**

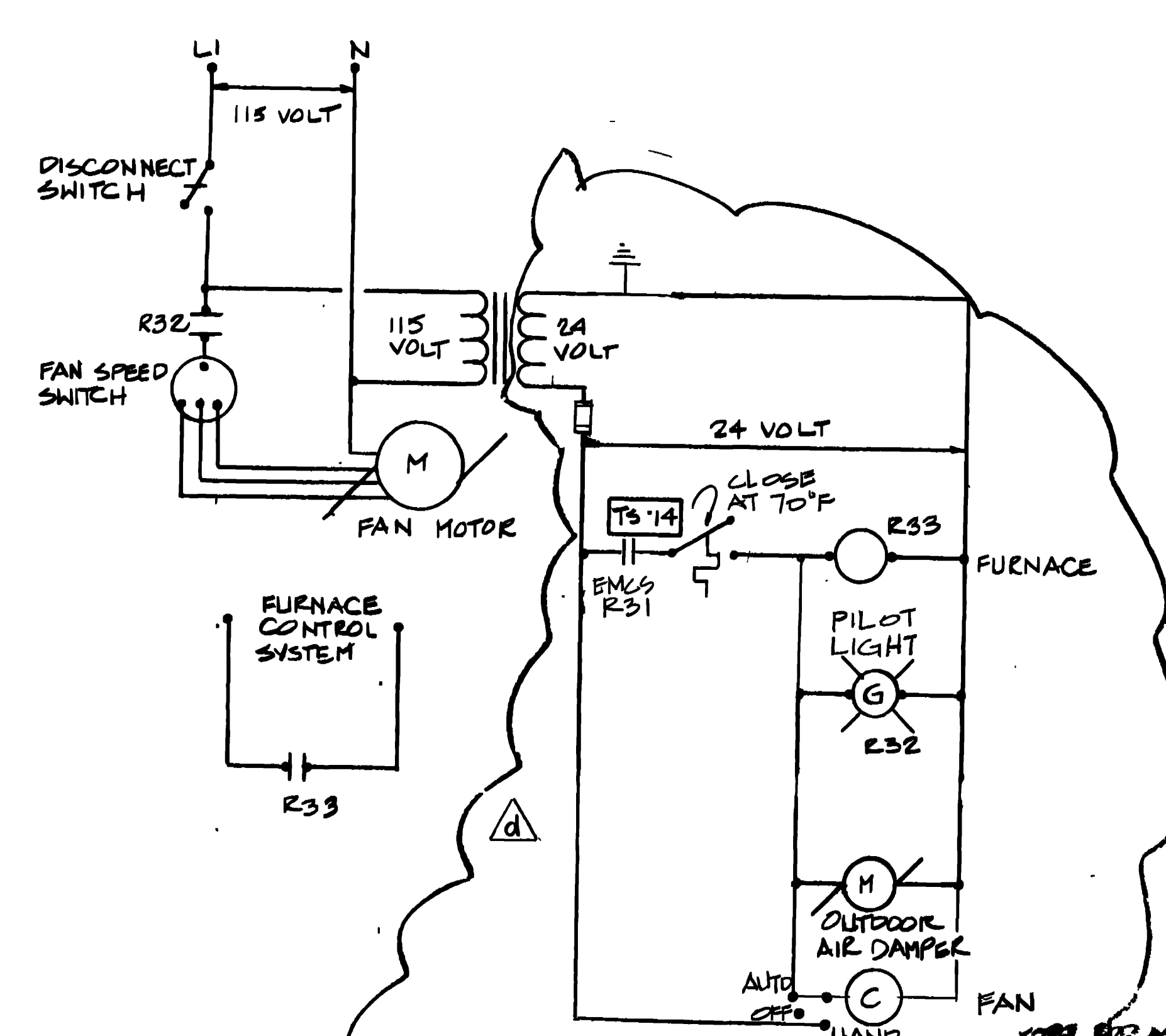
**BID OPTION NO. 1**



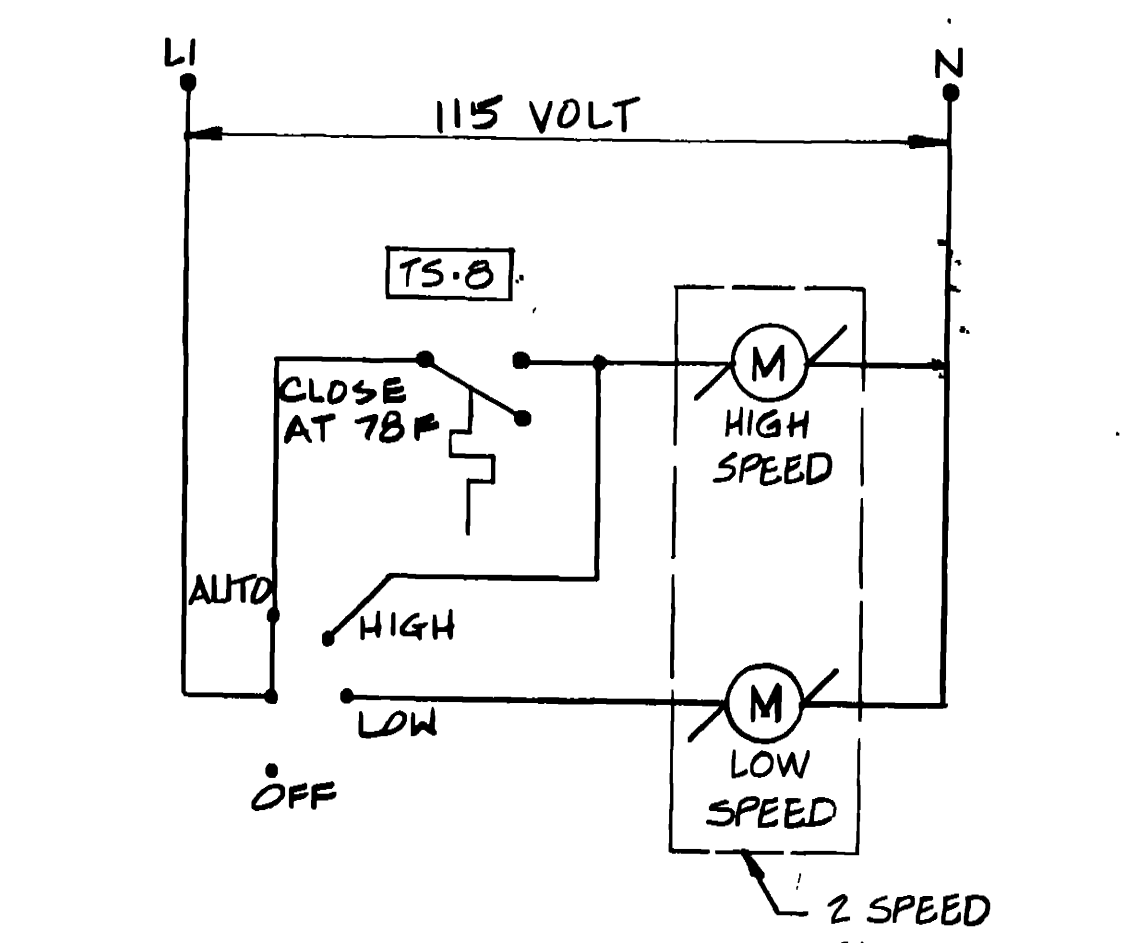
**DUST COLLECTOR CONTROL WIRING DIAGRAM DC-1C**



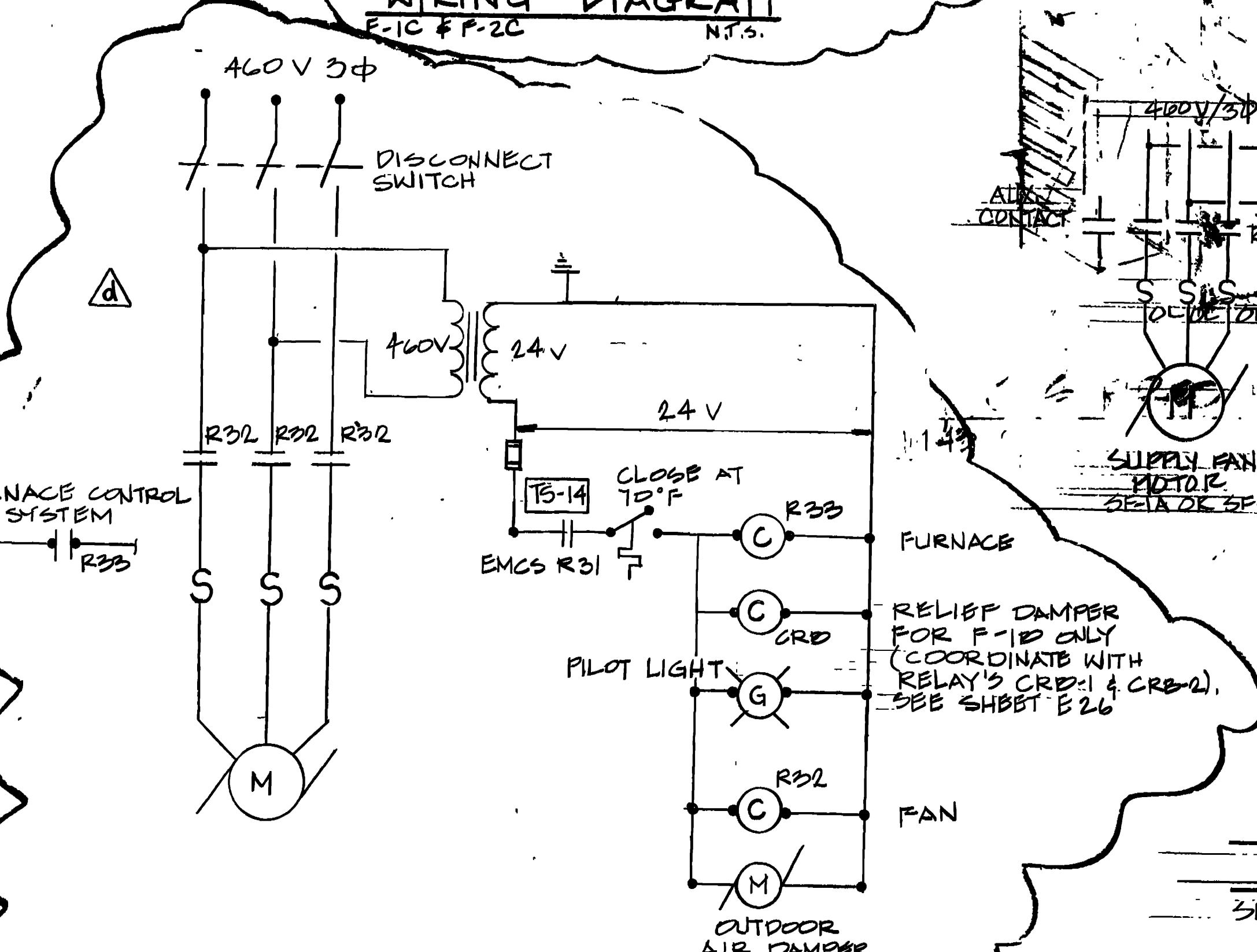
**CONTROL WIRING DIAGRAM DAMPER & SOLENOID VALVE ASSOC. WITH PAINT SPRAY BOOTH**  
N.T.S.



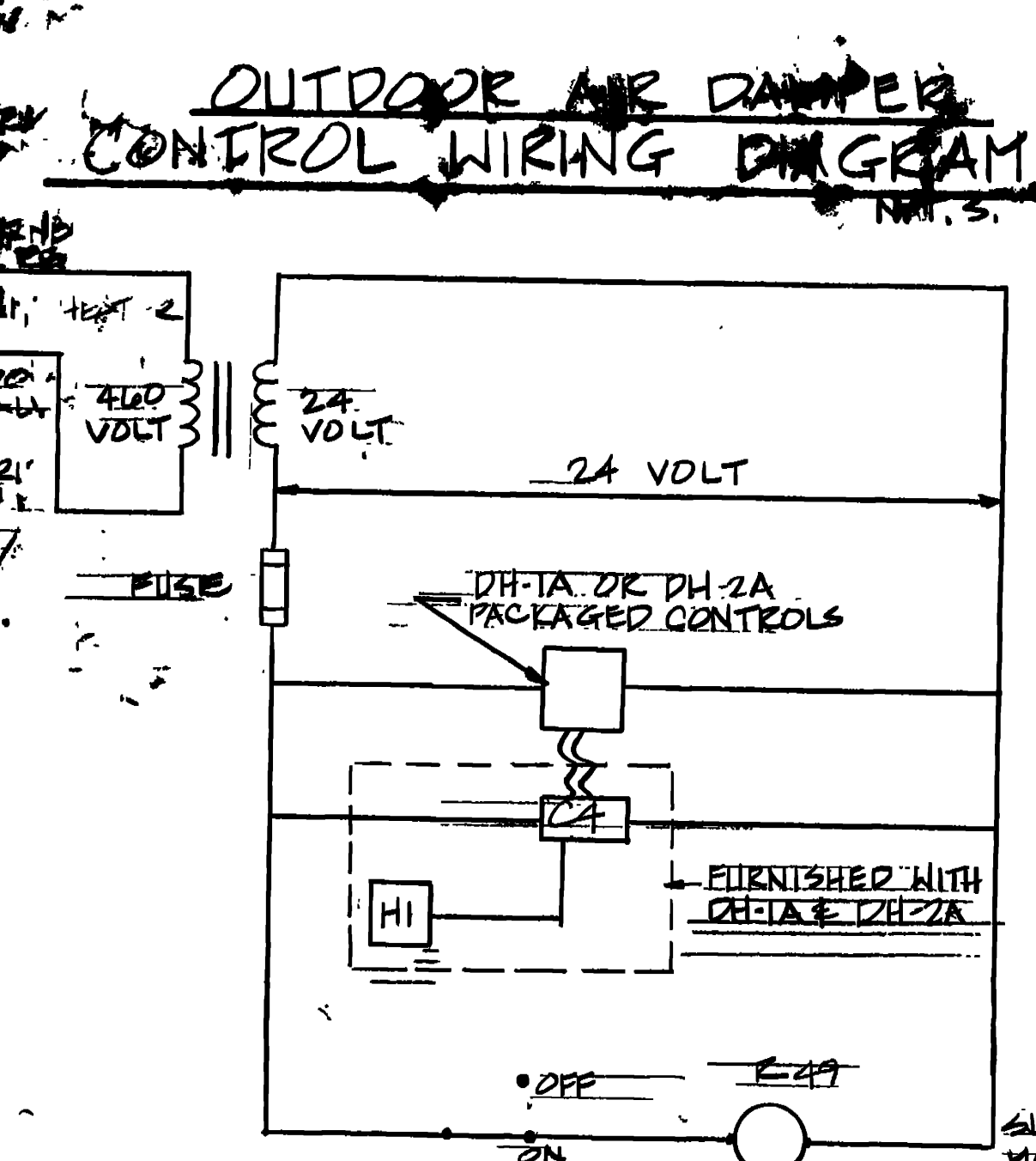
**FURNACE CONTROL WIRING DIAGRAM**  
F-1C & F-2C N.T.S.



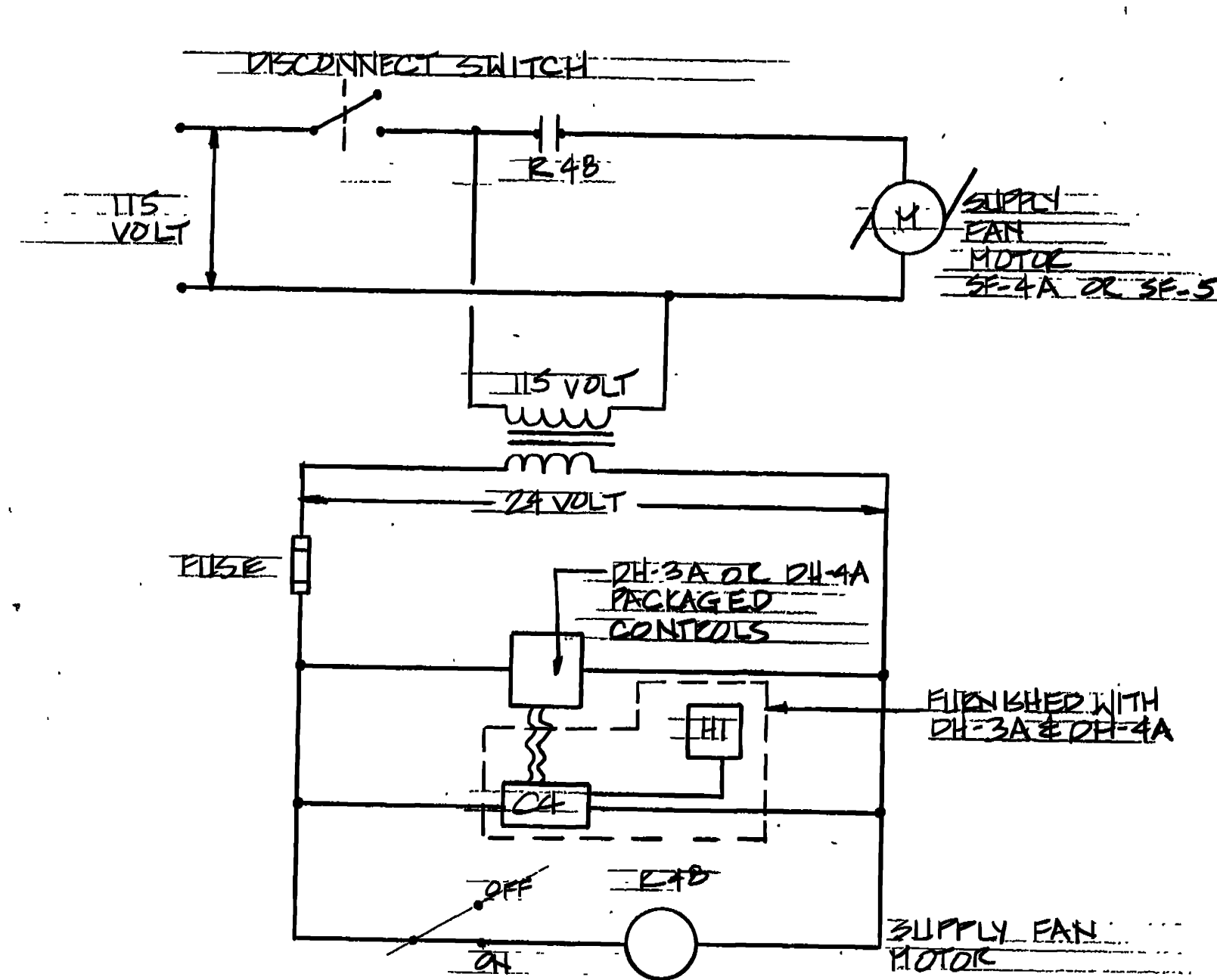
**SUPPLY FAN SF-2A, SF-7A CONTROL WIRING DIAGRAM**  
N.T.S.



**FURNACE CONTROL WIRING DIAGRAM**  
F-1D & F-2D N.T.S.



**OUTDOOR AIR DAMPER CONTROL WIRING DIAGRAM**  
N.T.S.



**SUPPLY FAN & DEHUMIDIFIER CONTROL WIRING DIAGRAM**  
SF-1A/DH-1A & SF-3A/DH-3A N.T.S.

**SEQUENCE OF CONTROL**

**TRAINER SERVICES FACILITY (CONTINUED)**

PAINT BOOTH EXHAUST FAN AND PUMP: PROVIDE FACTORY-FURNISHED CONTROLS PAINT BOOTH EXHAUST FAN AND PAINT BOOTH PUMP CONTROLS. INTERLOCK AIRFLOW SWITCH PROVIDED WITH PAINT BOOTH WITH SOLENOID VALVE IN COMPRESSED AIR PIPING SERVING PAINT ROOM. SOLENOID VALVE SHALL OPEN WHEN AIRFLOW SWITCH IS CLOSED, INDICATING THAT PAINT BOOTH EXHAUST SYSTEM IS OPERATING. OUTDOOR AIR DAMPER SHALL BE INTERLOCKED WITH AUXILIARY CONTACT PROVIDED WITH BOOTH EXHAUST FAN STARTER.

WHEN FAN IS STARTED, AUXILIARY CONTACT SHALL CLOSE, ENERGIZING RELAY R30 AND OPENING OUTDOOR AIR DAMPER.

DUST COLLECTOR: PROVIDE WALL-MOUNTED ON-OFF SWITCH. WITH WALL SWITCH CLOSED, RELAYS R42 AND R29 SHALL BE ENERGIZED, CYCLING ON THE FAN AND OPENING THE OUTDOOR AIR DAMPER, RESPECTIVELY. PROVIDE CABINET-MOUNTED PANEL WITH A MINIMUM OF FOUR (4) NORMALLY OPEN RELAYS R44, R45, R46, AND R47 FOR CONNECTION TO WOOD SHOP MACHINERY BY OTHERS. THE EXHAUST FAN SHALL CYCLE ON AND THE OUTDOOR AIR DAMPER SHALL OPEN IF ANY ONE OR MORE OF THE CONTACTORS IS ENERGIZED.

OUTDOOR AIR DAMPER (WELDING/ASSEMBLY AREA): OUTDOOR AIR DAMPER SHALL OPEN WHEN OUTDOOR AIR DAMPER MOTOR IS ENERGIZED. MOTOR SHALL BE ENERGIZED WHEN RELAY R29 OR R30 IS ENERGIZED BY OPERATION OF EXHAUST FANS-1C OR -5C, RESPECTIVELY.

OUTDOOR AIR DAMPER (PAINT SHOP): OUTDOOR AIR DAMPER SHALL OPEN WHEN OUTDOOR AIR DAMPER MOTOR IS ENERGIZED. MOTOR SHALL BE ENERGIZED WHEN RELAY R29 OR R30 IS ENERGIZED BY OPERATION OF PAINT SPRAY BOOTH EXHAUST FAN OR EXHAUST FAN EF-4C, RESPECTIVELY.

OUTDOOR AIR DAMPER (WOOD SHOP): OUTDOOR AIR DAMPER SHALL OPEN WHEN OUTDOOR AIR DAMPER MOTOR IS ENERGIZED. MOTOR SHALL BE ENERGIZED WHEN RELAY R29 OR R30 IS ENERGIZED BY OPERATION OF DUST COLLECTOR DC-1C OR EXHAUST FAN-2C, RESPECTIVELY.

FUEL DISPENSING STATION

THRU-THE-WALL HEAT PUMP-1D (HP-1D): PROVIDE FACTORY-FURNISHED CONTROLS.

EXHAUST FAN-1D (EF-1D): PROVIDE HAND-OFF-AUTO FAN SWITCH AND SPACE TEMPERATURE SENSOR TS-5. TS-5 SHALL CLOSE WHEN THE SPACE TEMPERATURE RISES TO 85°F (ADJUSTABLE). IN THE HAND POSITION, THE FAN SHALL RUN CONTINUOUSLY. IN THE AUTO POSITION AND WITH TS-5 CLOSED, THE FAN SHALL CYCLE ON.

CONTROL TOWER BUILDING

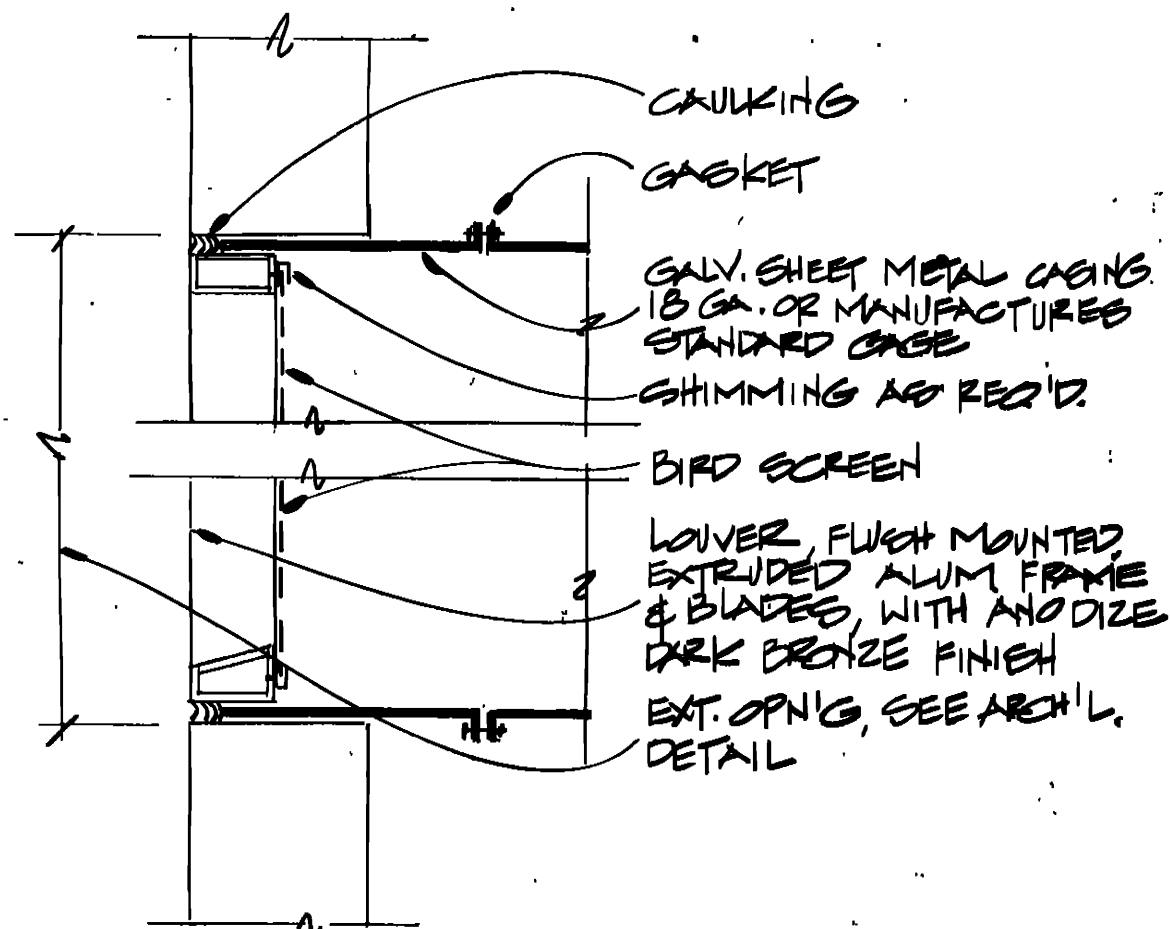
SPLIT AIR-SOURCE HEAT PUMP SYSTEM (SC-1B AND HP-1E): PROVIDE ON-OFF SWITCH MOUNTED AT THE BLOWER COIL STARTER. IN THE ON POSITION, RELAY R34, SHALL BE ENERGIZED, ENERGIZING THE INDOOR BLOWER MOTOR. WHEN THE INDOOR BLOWER MOTOR IS ENERGIZED, THE OUTDOOR AIR DAMPER MOTOR SHALL BE ENERGIZED, OPENING THE OUTDOOR AIR DAMPER. TEMPERATURE SENSOR TS-15 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN THE SPACE TEMPERATURE RISES TO 78°F (ADJUSTABLE). WHEN TS-15 CLOSURE, RELAY R36 SHALL BE ENERGIZED, ENERGIZING THE INTERNAL HEAT PUMP COOLING CONTROLS. TS-16 SHALL SENSE SPACE TEMPERATURE AND SHALL CLOSE WHEN SPACE TEMPERATURE

**FIRE TRAINING BUILDING (CONTINUED FROM SHEET 14-40)**

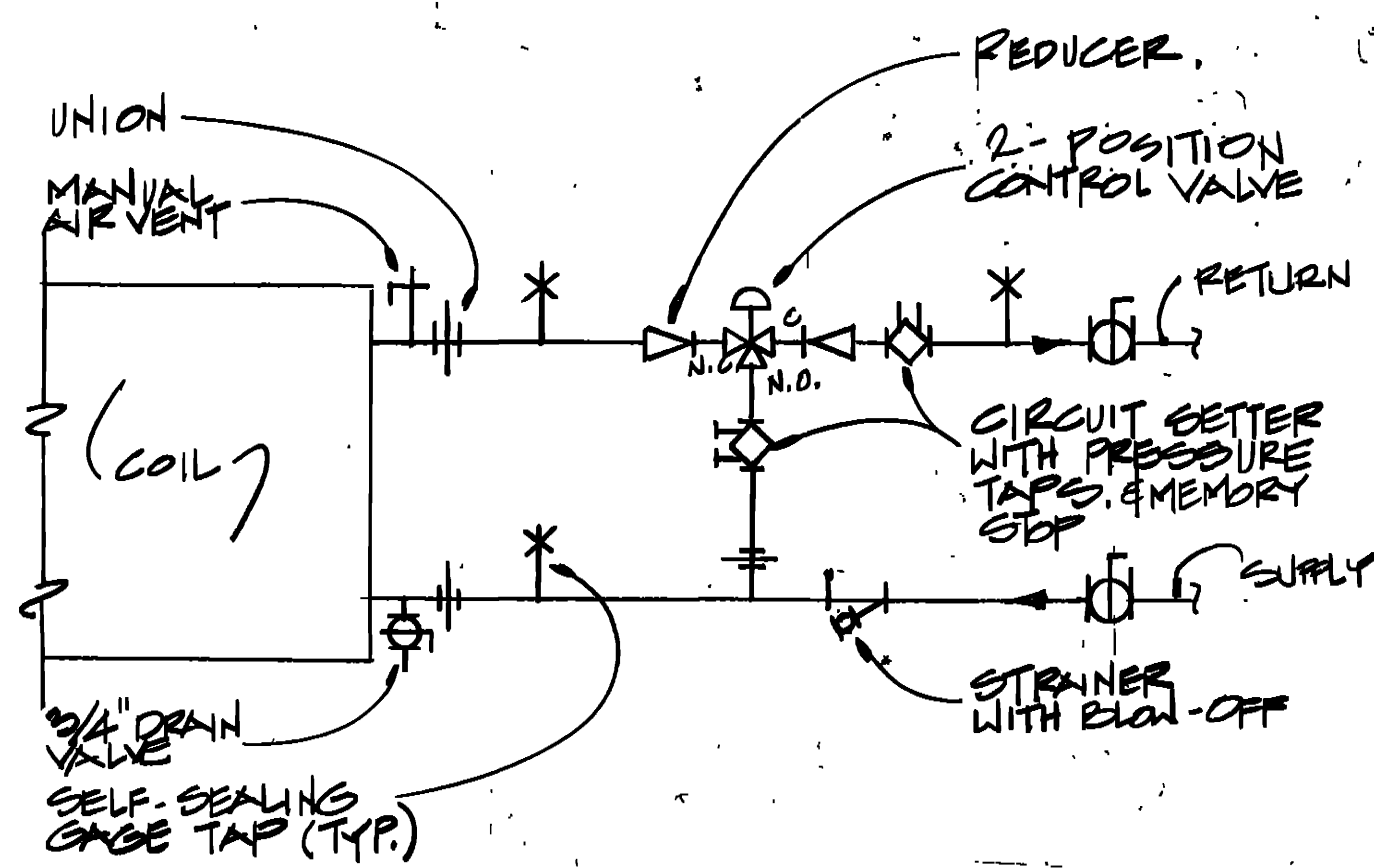
SUPPLY FAN-1A/DEHUMIDIFIER-1A ASSEMBLY (SF-1A/DH-1A) AND SUPPLY FAN-2A/DEHUMIDIFIER-2A ASSEMBLY (SF-2A/DH-2A): PROVIDE WALL-MOUNTED ON-OFF FAN SWITCH. IN THE ON POSITION, RELAY R49 SHALL BE ENERGIZED, ENERGIZING THE FAN MOTOR. WALL-MOUNTED HUMIDISTAT (HUMIDITY SENSOR H1 AND CONTROLLER C4) SHALL BE PROVIDED WITH DEHUMIDIFIER AND SHALL SENSE SPACE RELATIVE HUMIDITY. ON A RISE IN SPACE RELATIVE HUMIDITY ABOVE 70% (ADJUSTABLE), THE HUMIDISTAT SHALL ENERGIZE THE DEHUMIDIFIER CONTROLS, CYCLING ON THE DEHUMIDIFIER. DEHUMIDIFIER SHALL OPERATE UNTIL SPACE RELATIVE HUMIDITY DROPS TO 40% (ADJUSTABLE).

SUPPLY FAN-4A/DEHUMIDIFIER-3A ASSEMBLY (SF-4A/DH-3A) AND SUPPLY FAN-5A/DEHUMIDIFIER-4A ASSEMBLY (SF-5A/DH-4A): PROVIDE WALL-MOUNTED ON-OFF FAN SWITCH. IN THE ON POSITION, RELAY R48 SHALL BE ENERGIZED, ENERGIZING THE FAN MOTOR. WALL-MOUNTED HUMIDISTAT (HUMIDITY SENSOR H1 AND CONTROLLER C4) SHALL BE PROVIDED WITH DEHUMIDIFIER AND SHALL SENSE SPACE RELATIVE HUMIDITY. ON A RISE IN SPACE RELATIVE HUMIDITY ABOVE 70% (ADJUSTABLE), THE HUMIDISTAT SHALL ENERGIZE THE DEHUMIDIFIER CONTROLS, CYCLING ON THE DEHUMIDIFIER. DEHUMIDIFIER SHALL OPERATE UNTIL SPACE RELATIVE HUMIDITY DROPS TO 40% (ADJUSTABLE).

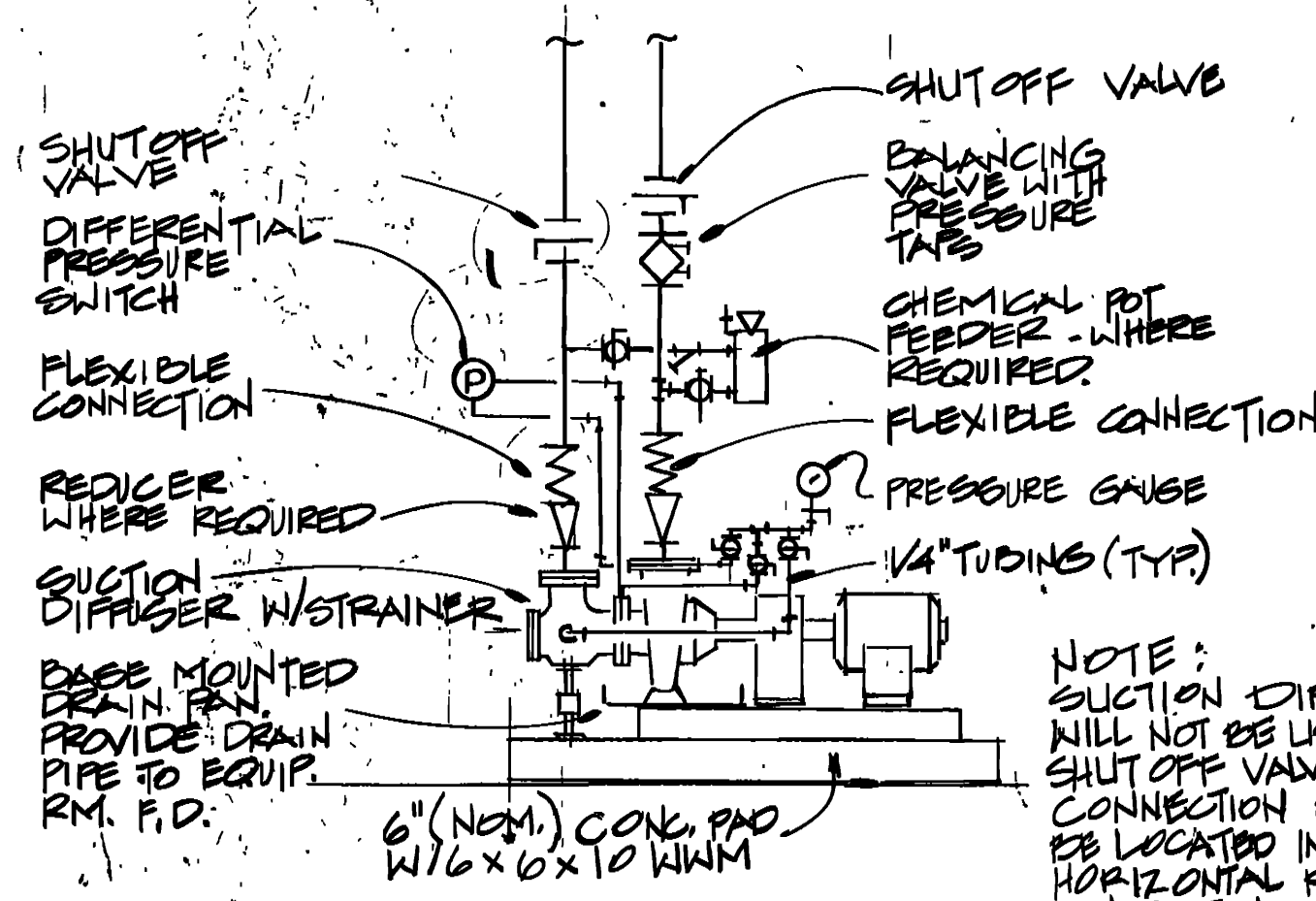
REVISED TO REFLECT CONTROL CHANGES	AM#0004 13 AUG 92
REVISED TO REFLECT N.I. CHANGE	AM#0001 4 JUN 99
<b>WALK, HAYDEL &amp; ASSOC. INC.</b> ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE	
<b>U.S. ARMY ENGINEER DISTRICT, FORT WORTH</b> CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: M. JENKINS DRAWN BY: M. JENKINS REVIEWED BY: C. WANG SUBMITTED BY: [Signature]	
GOODFELLOW AIR FORCE CASE SAN ANGELO, TEX <b>FIRE TRAINING COMPLEX</b> CONTROL DIAGRAM, SEQUENCE OF CONTROL	
SOL. NO. DACAGB-92B-0109 DATED: JUN. 1992 CONTR. NO. DACAGB-92-C-0155 DRAWING NUMBER: 142 OF 44 SHEET NO. 240	



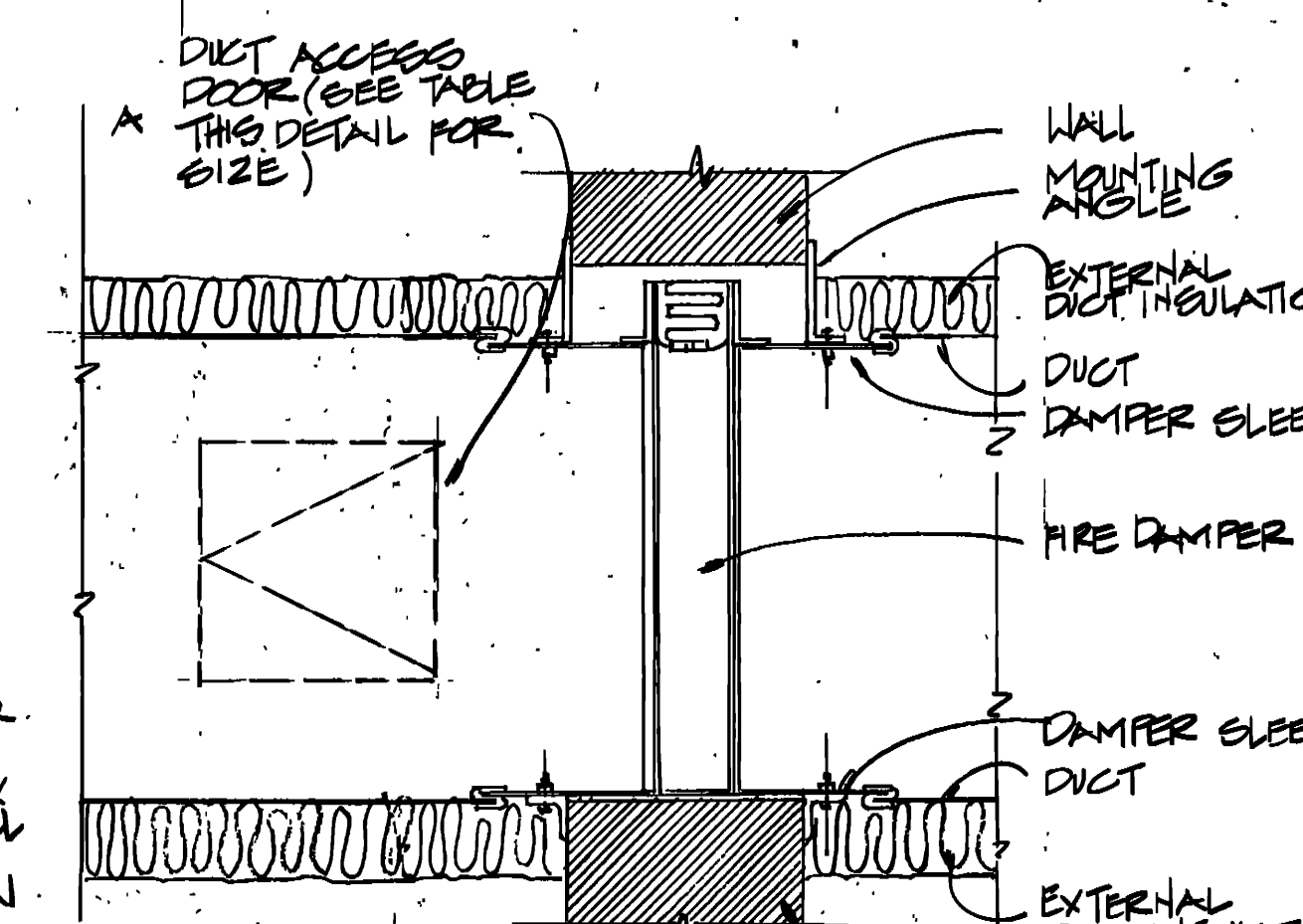
1 TYPICAL LOWER INSTALLATION  
M43 N.T.S.



5 TYPICAL FAN COIL PIPING  
M43 N.T.S.

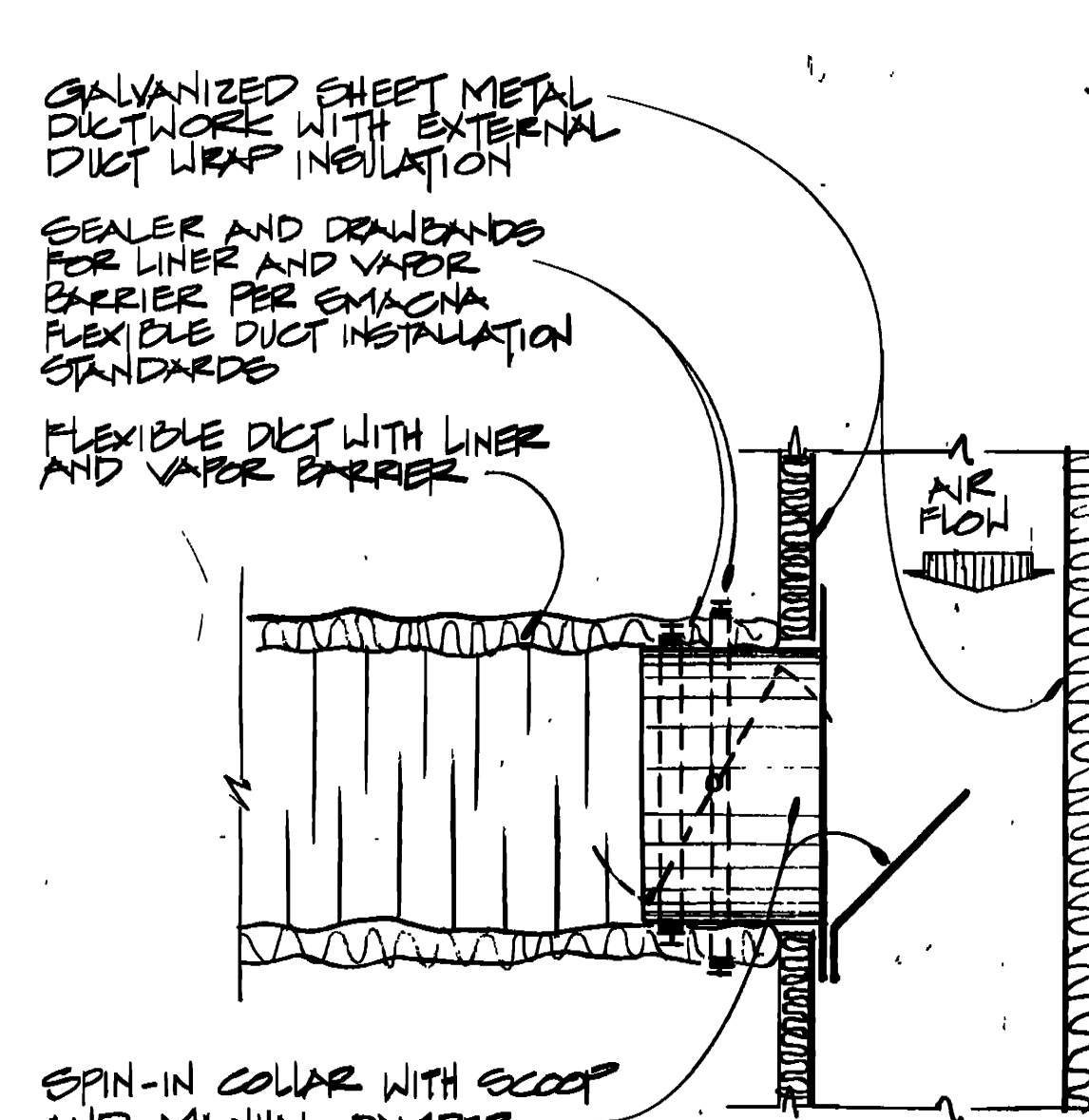


9 END SECTION BASE MOUNTED PUMP PIPING SCHEMATIC  
M43 N.T.S.

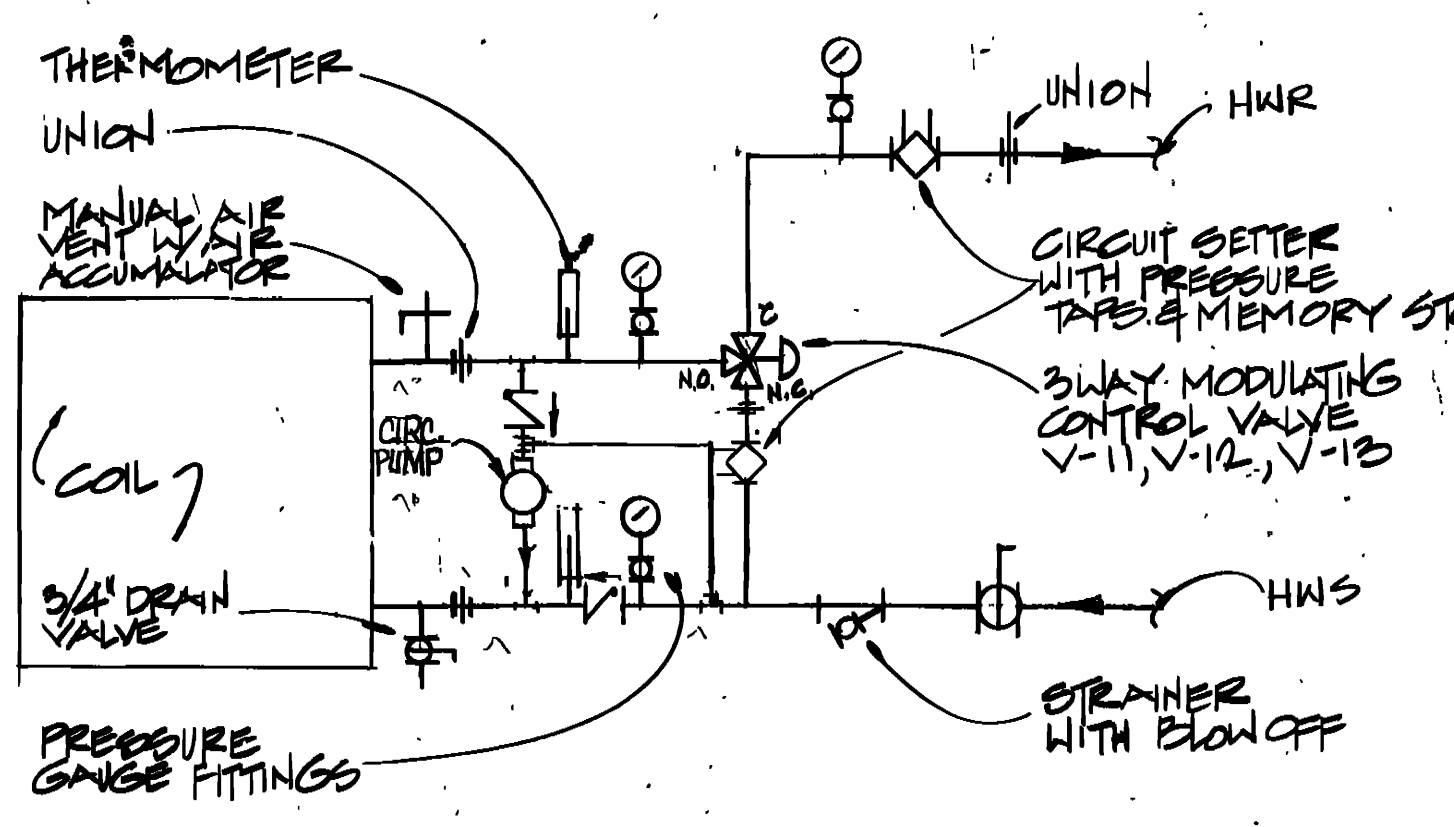


13 FIRE DAMPER DETAIL  
M43 N.T.S.

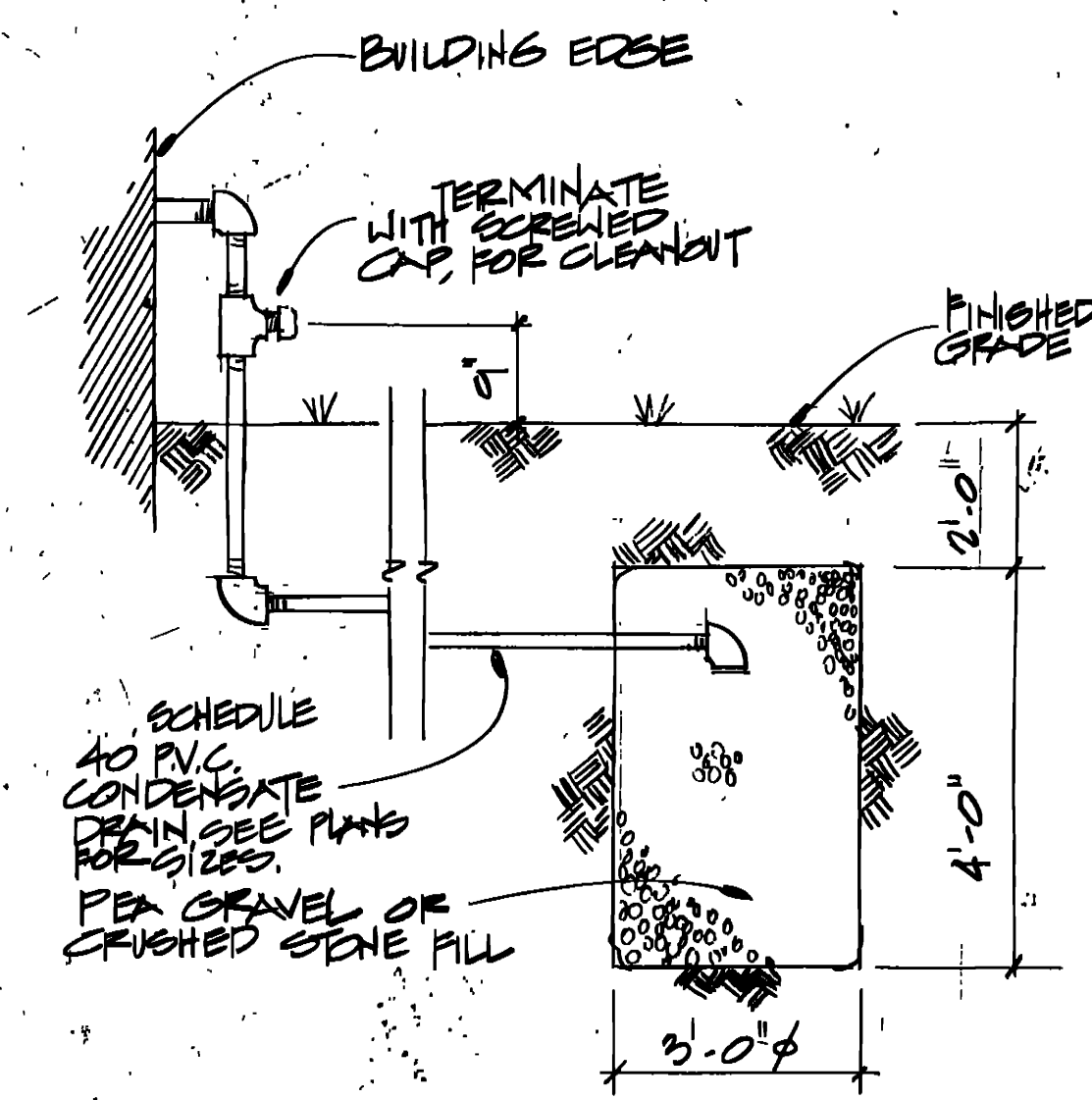
DUCT ACCESS DOOR TABLE	
DUCT WIDTH OR DEPTH (IN)	ACCESS DOOR SIZE (IN)
> 12	12 x 12
12	10 x 10
< 12	6 x 6
6	12 x 4



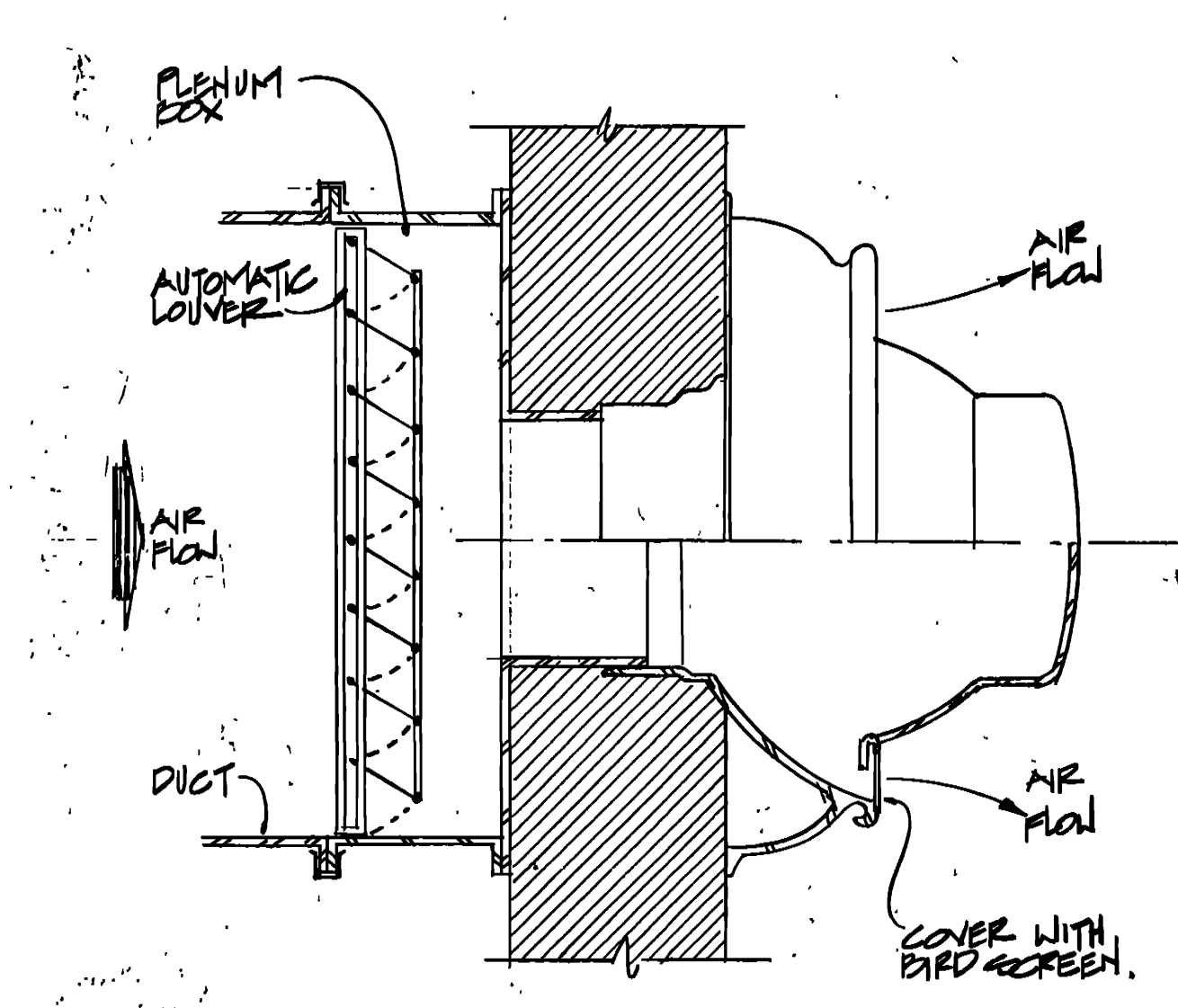
2 FLEX DUCT INSTALLATION DETAIL  
M43 N.T.S.



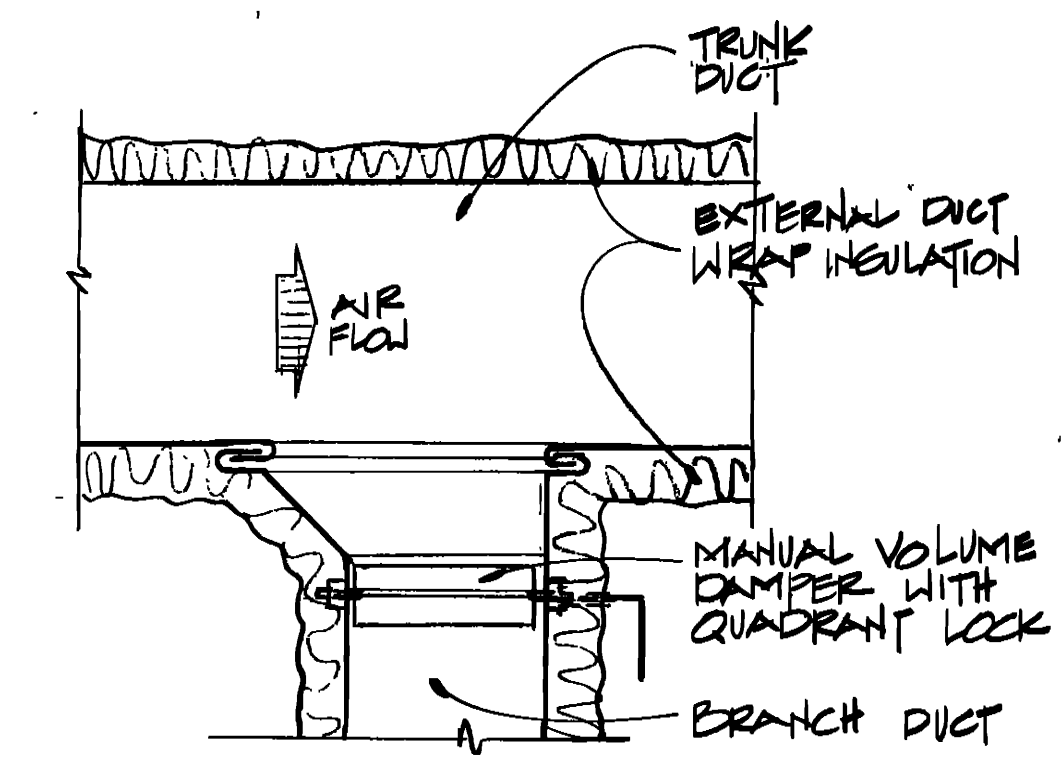
6 TYPICAL A.H.U. COIL PIPING (HEATING)  
M43 N.T.S.



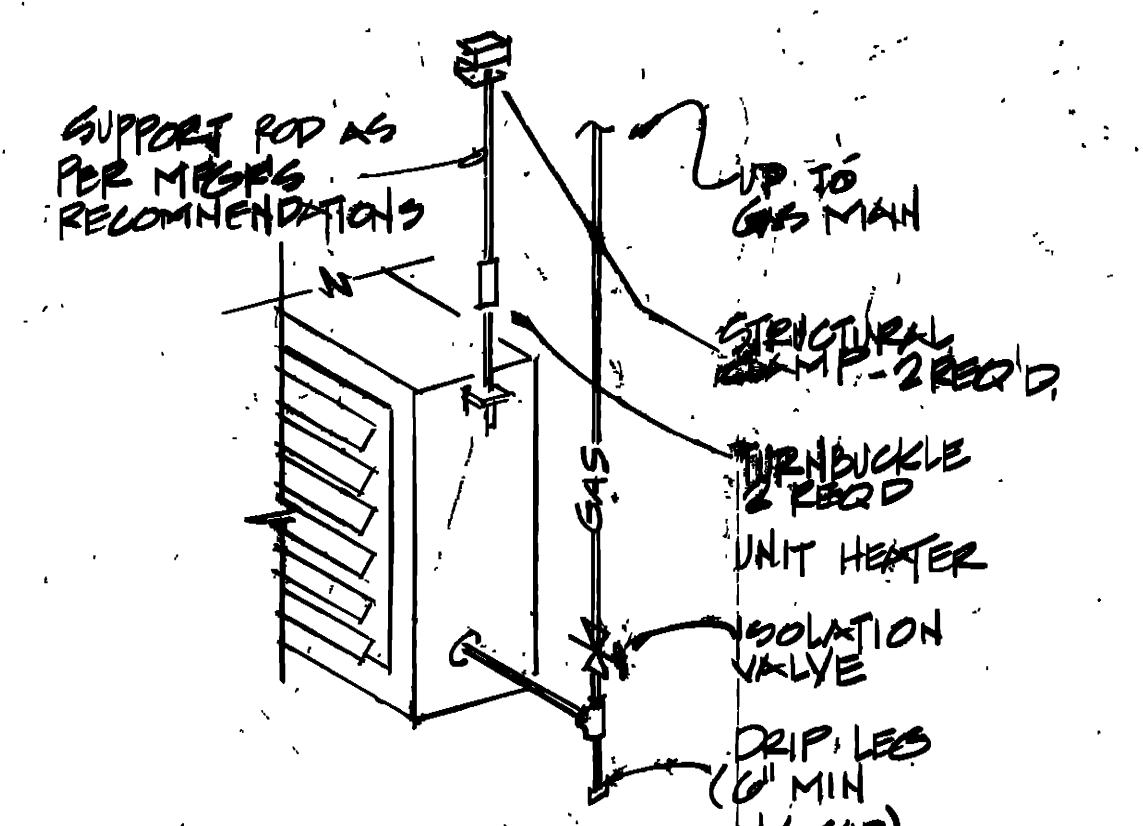
10 CONDENSATE DRAIN FIT  
M43 N.T.S.



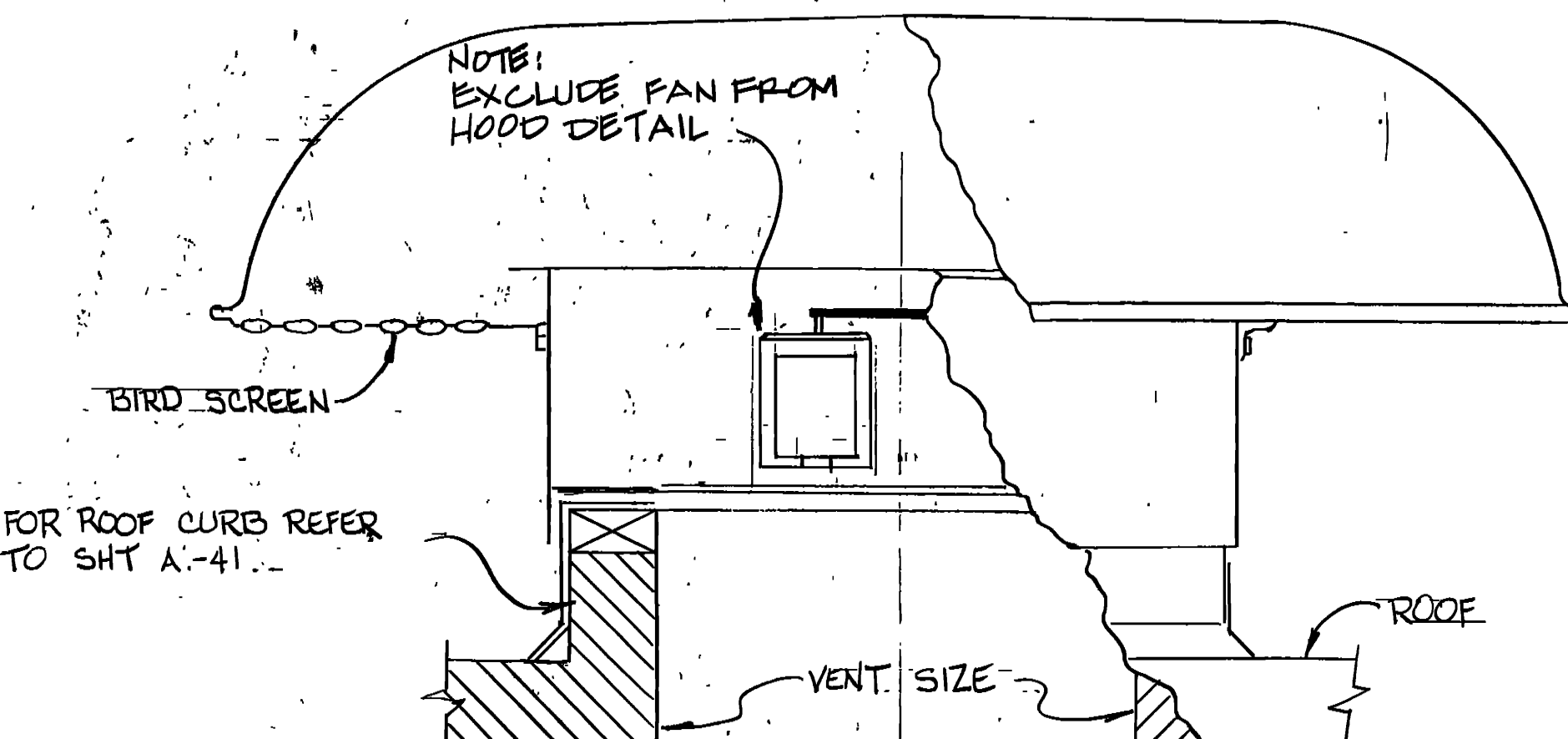
14 TYPICAL WALL CENTRIFUGAL EXHAUST FAN DETAIL  
M43 N.T.S.



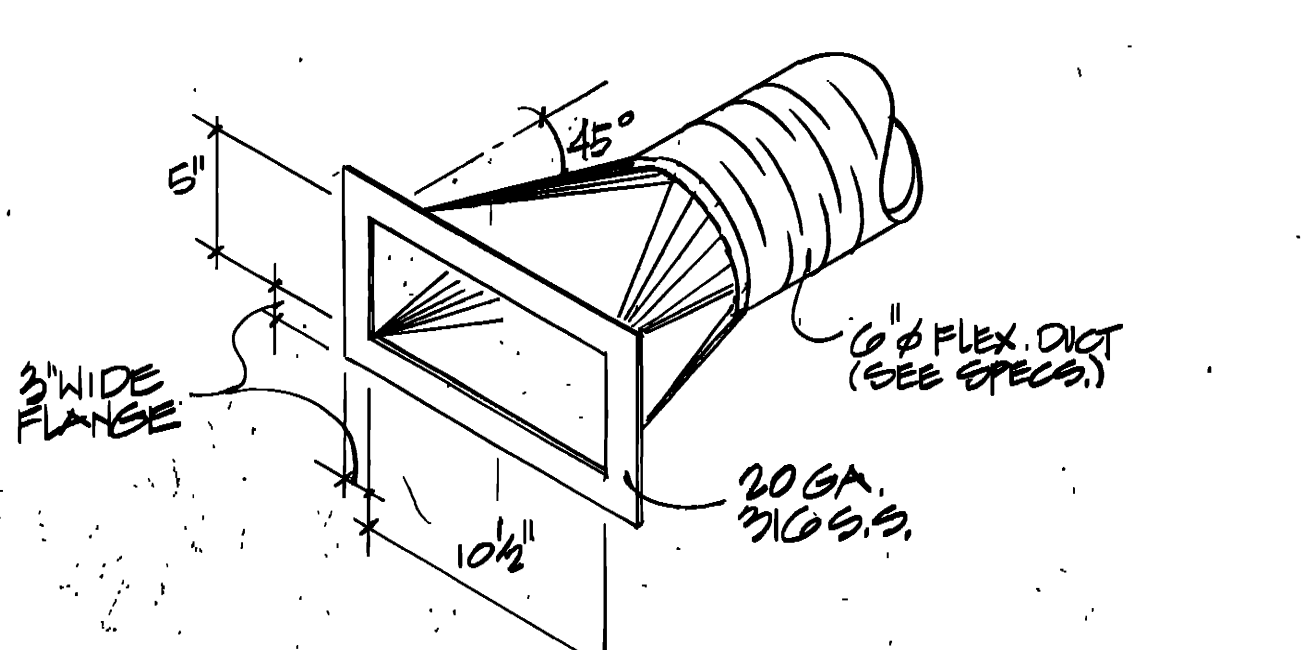
3 BRANCH DUCT CONNECTION DETAIL  
M43 N.T.S.



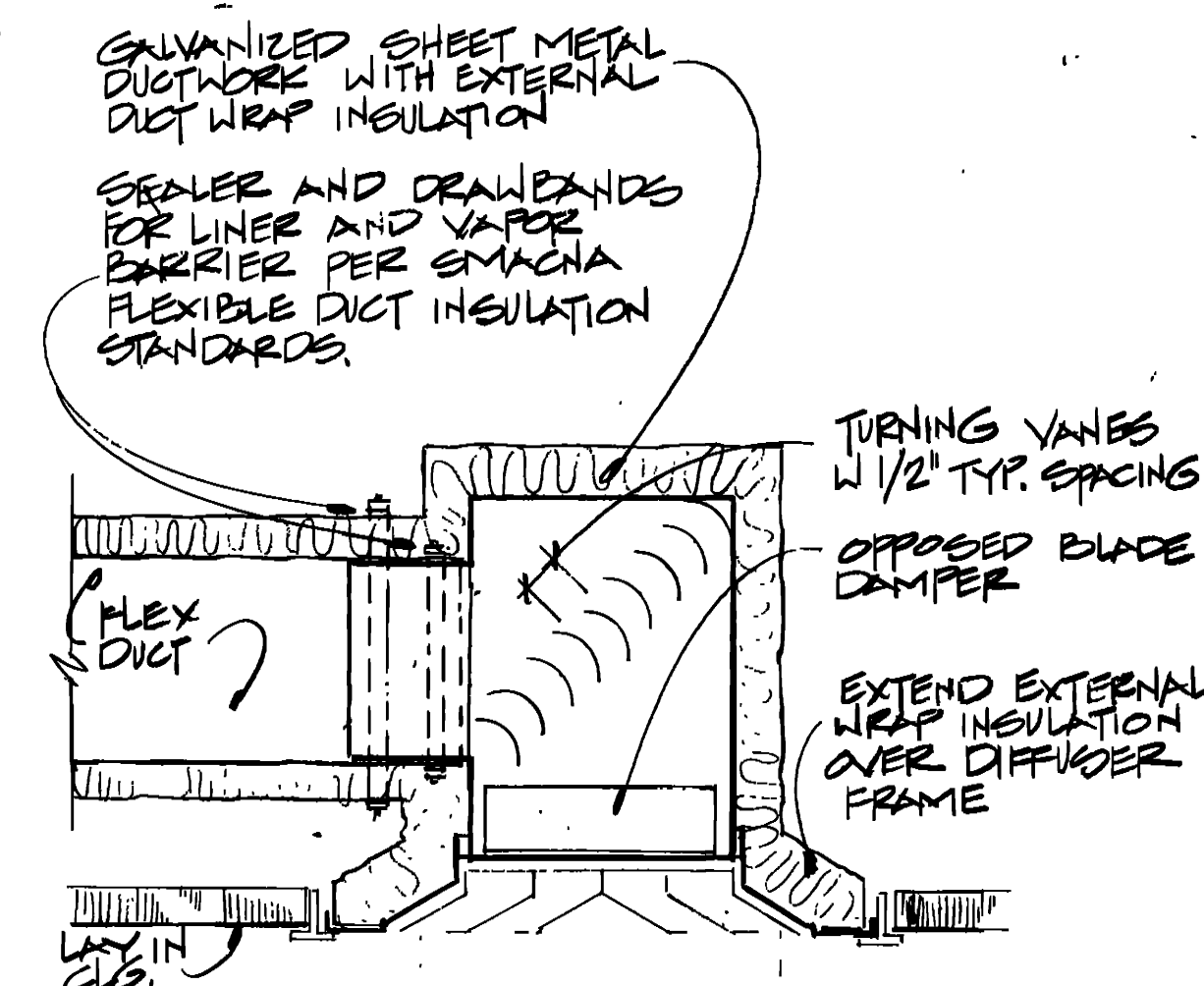
7 GAS FIRED UNIT HEATER  
M43 N.T.S.



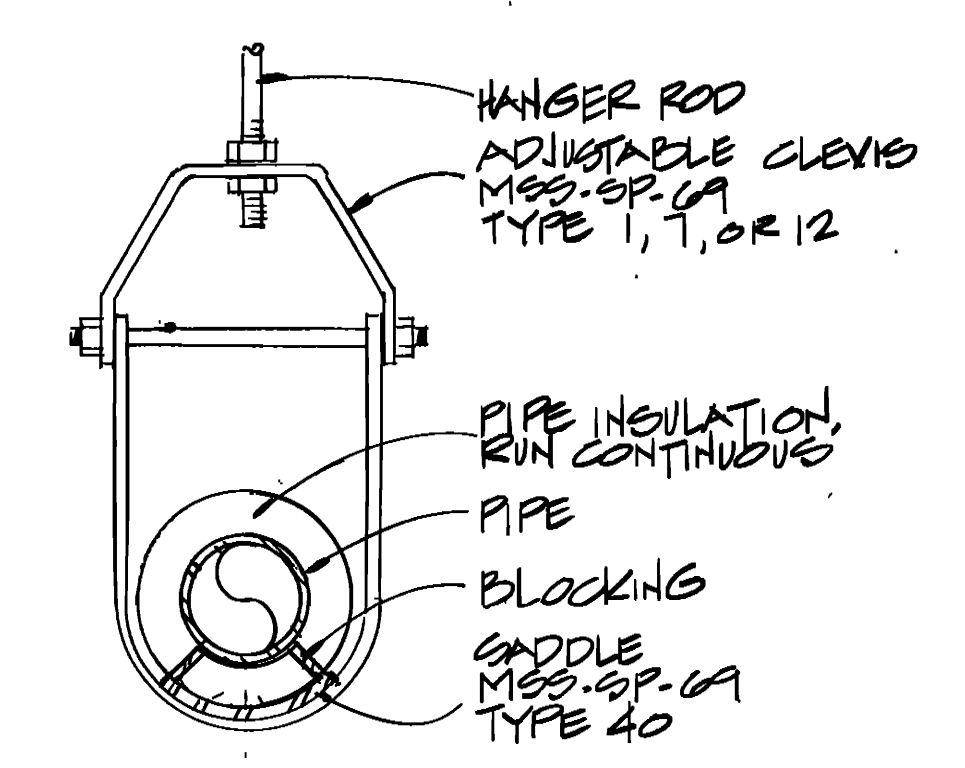
11 TYP. ROOF MOUNTED EXHAUST FAN DETAIL  
M43 ROOF HOOD DETAIL N.T.S.



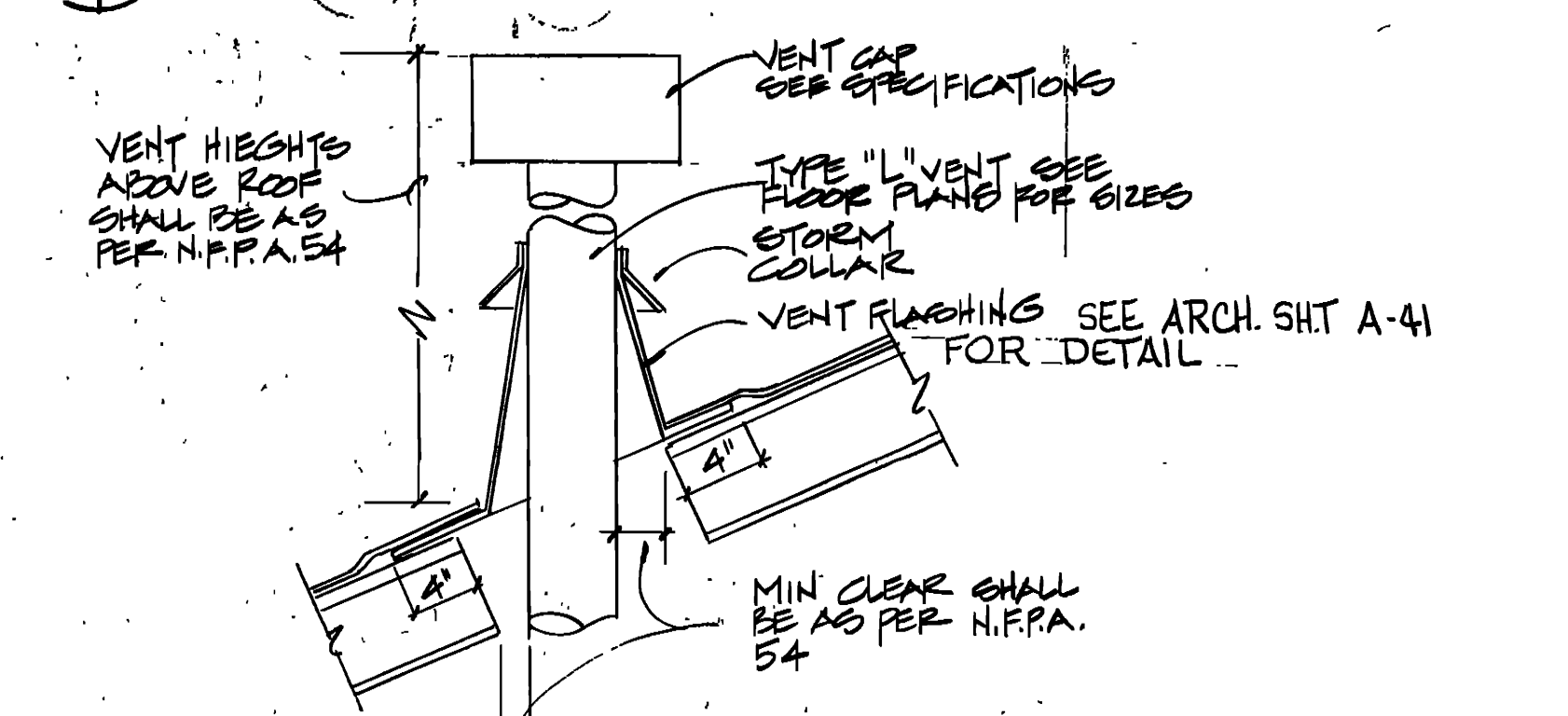
15 WELDING CAPTURE HOOD DETAIL  
M43 N.T.S.



4 AIR TERMINAL INSTALLATION DETAIL  
M43 N.T.S.

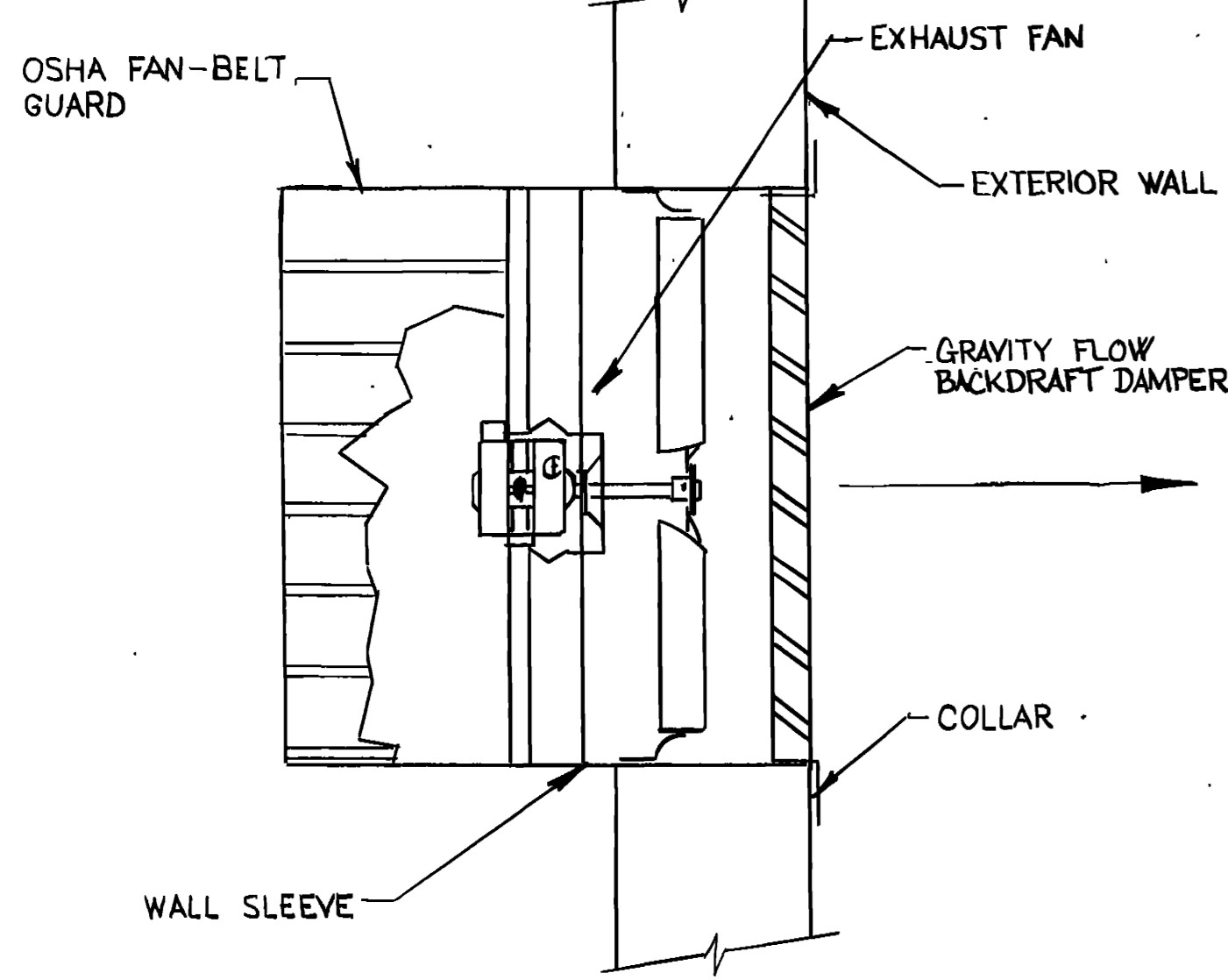


8 TYPICAL PIPE HANGER DETAIL  
M43 N.T.S.

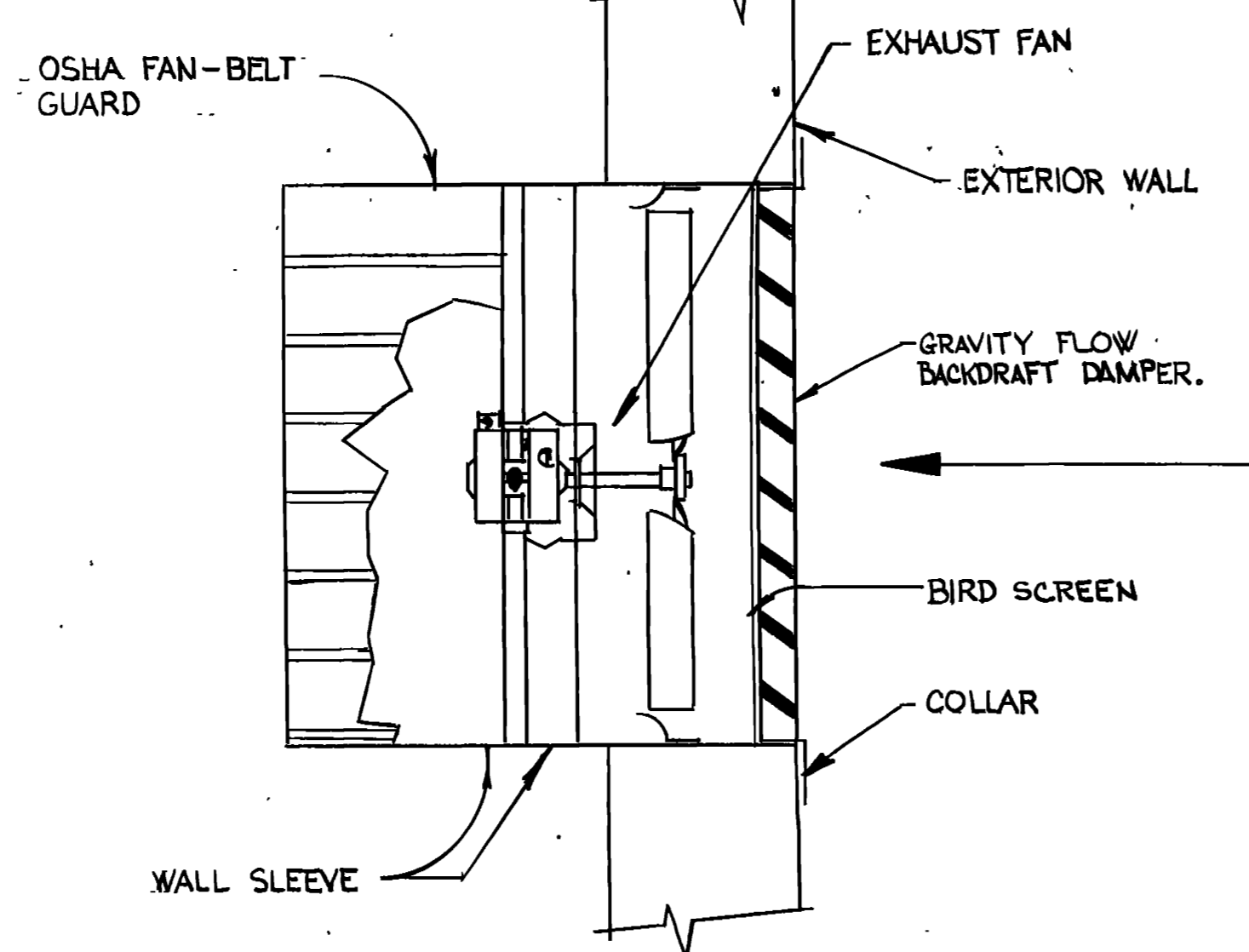


12 EXHAUST/COMBUSTION VENT DETAIL  
M43 N.T.S.

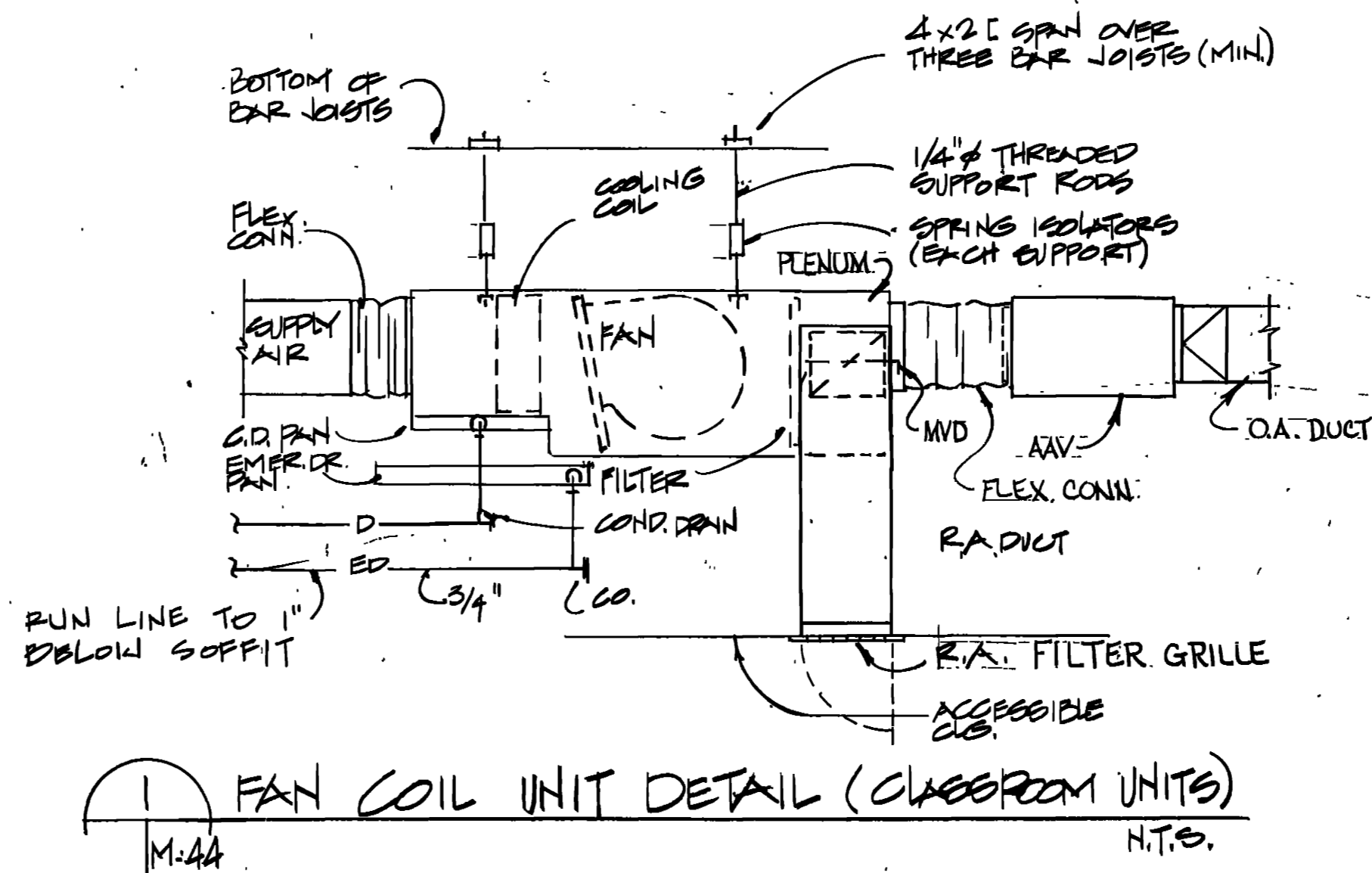
REVISED TO REFLECT W.I. CHANGE	DATE: JUN. 1992	DESCRIPTION OF REVISION
WALK, HAYDEL & ASSOC. INC. U.S. ARMY ENGINEER DISTRICT, FORT WORTH		
ENGINEERS / ARCHITECTS CORPS OF ENGINEERS		
NEW ORLEANS MOBILE BATON ROUGE FORT WORTH, TEXAS		
DESIGNED BY: J. GUILLOT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS	
<b>FIRE TRAINING COMPLEX</b>		
REVIEWED BY: J. WAIN	H.V.A.C. DETAILS	
SUBMITTED BY: [Signature]	DATE: JUN. 1992	SEQUENCE NO. 241
ENGINEER: [Signature]	DRAWING NUMBER: M43 OF 44	



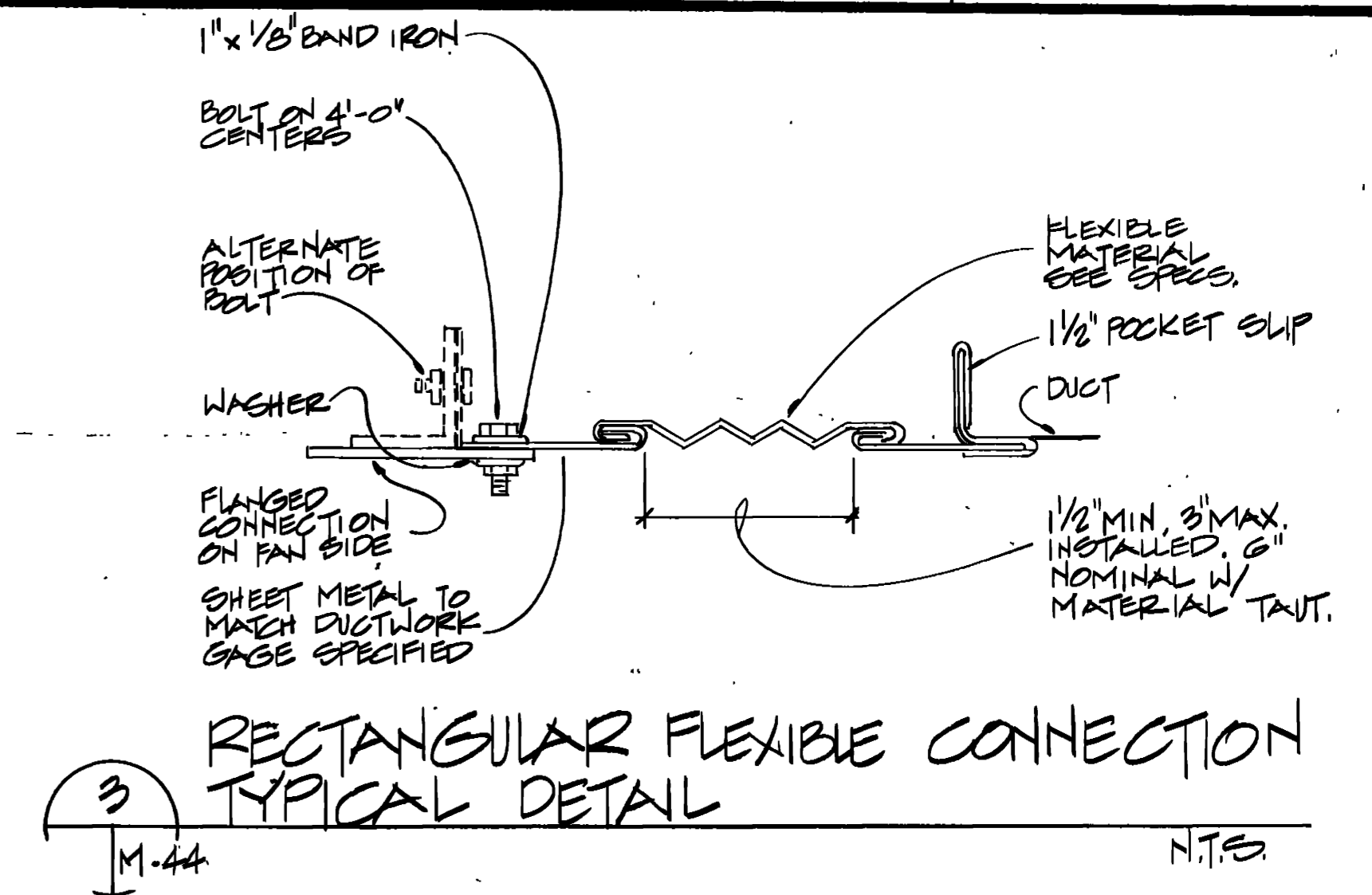
8 PROPPELLER EXHUST FAN (EF) DETAIL  
M-44 N.T.S.



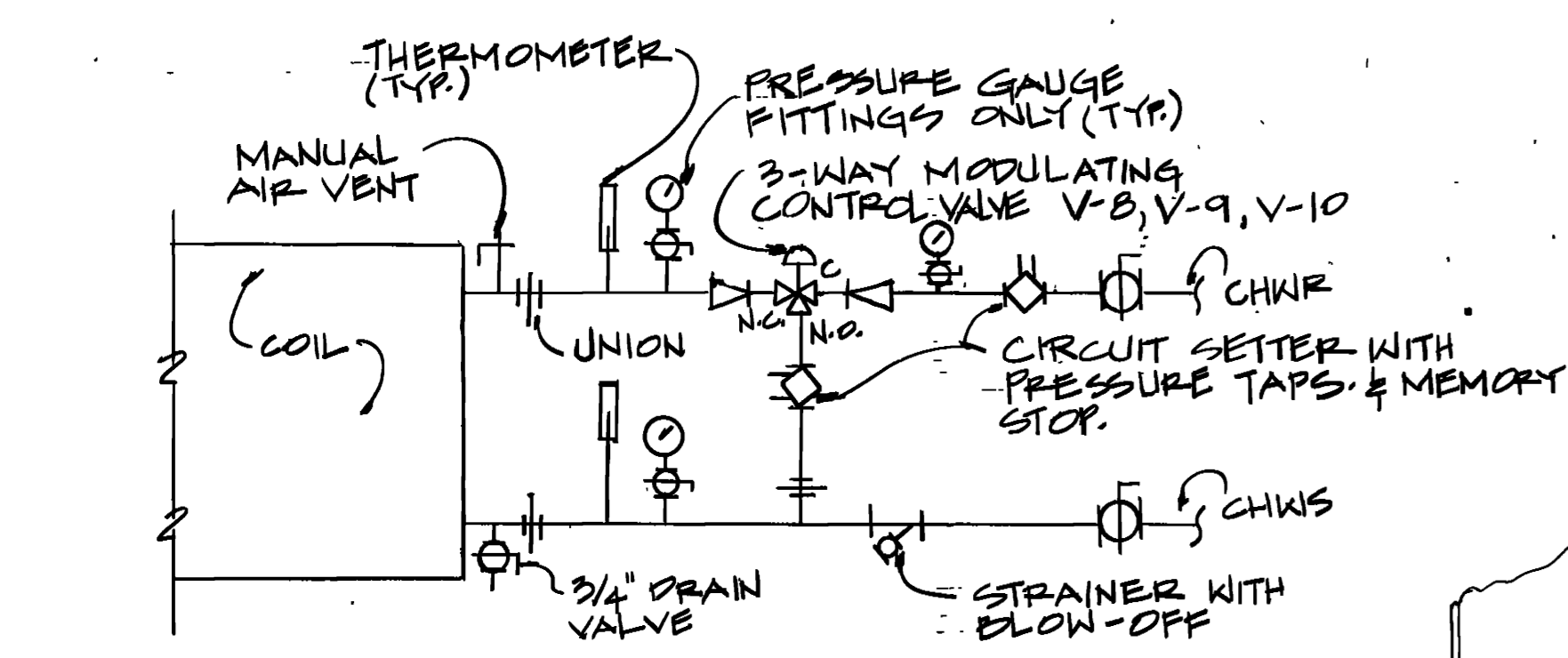
7 PROPPELLER SUPPLY FAN (SF) DETAIL  
M-44 N.T.S.



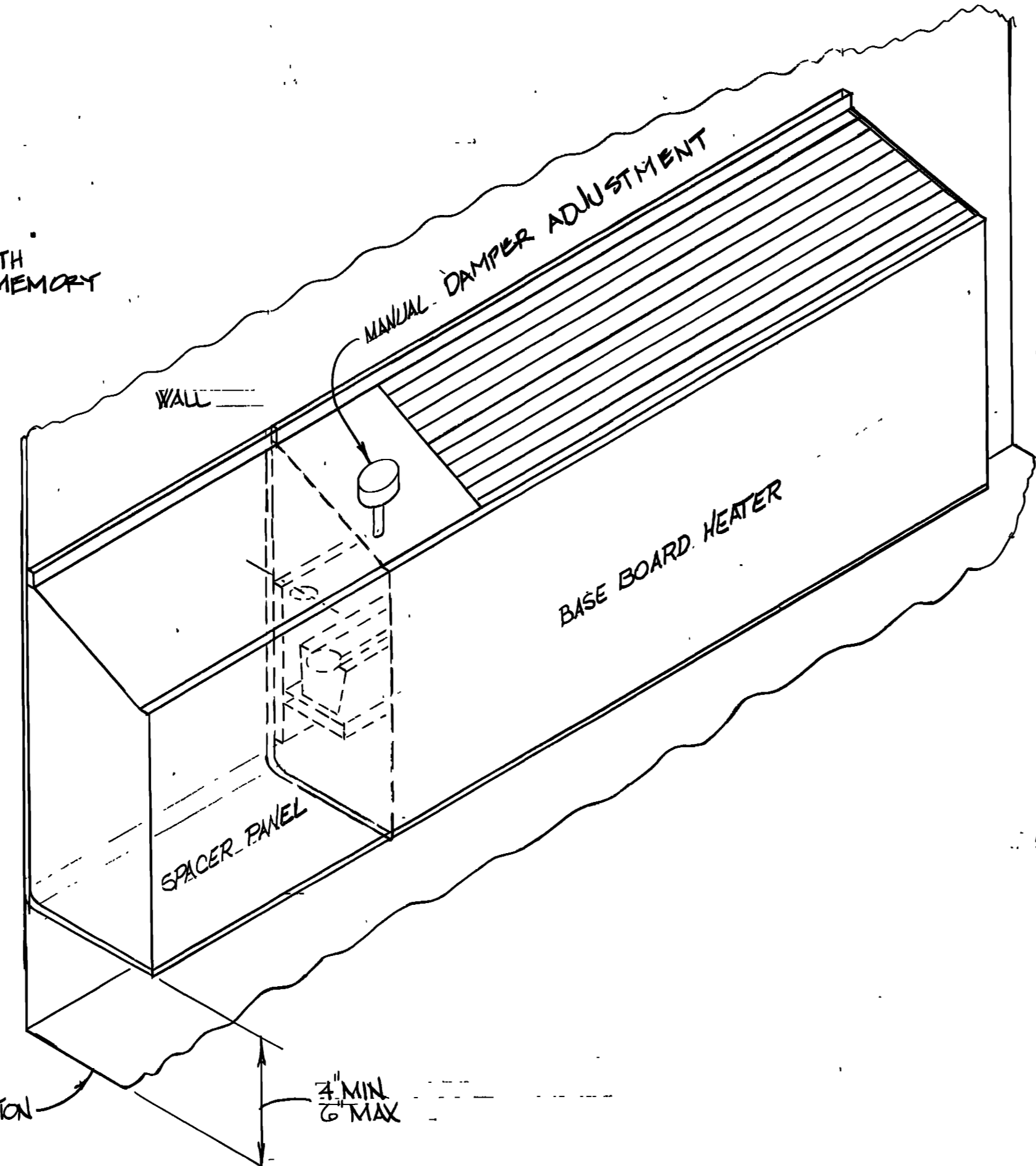
FAN COIL UNIT DETAIL (CLASSROOM UNITS)  
M-44 N.T.S.



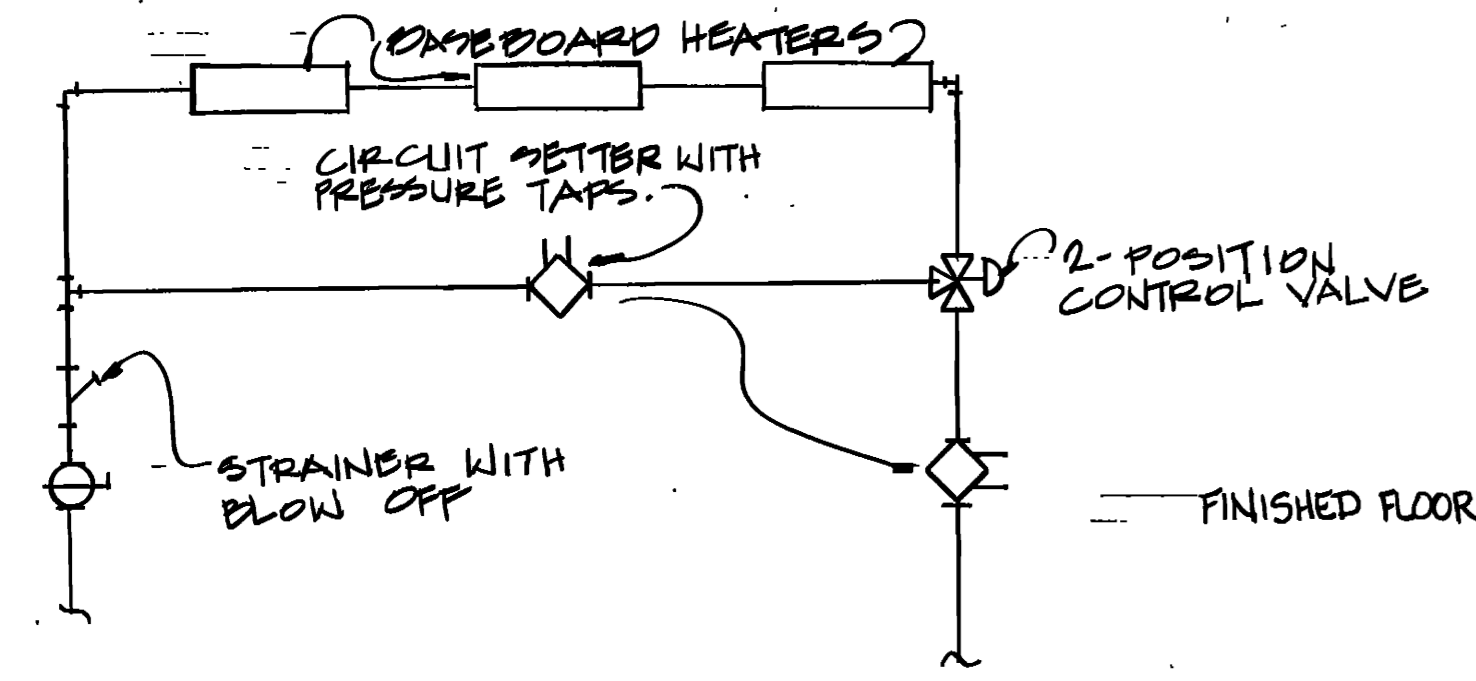
3 RECTANGULAR FLEXIBLE CONNECTION  
M-44 N.T.S.



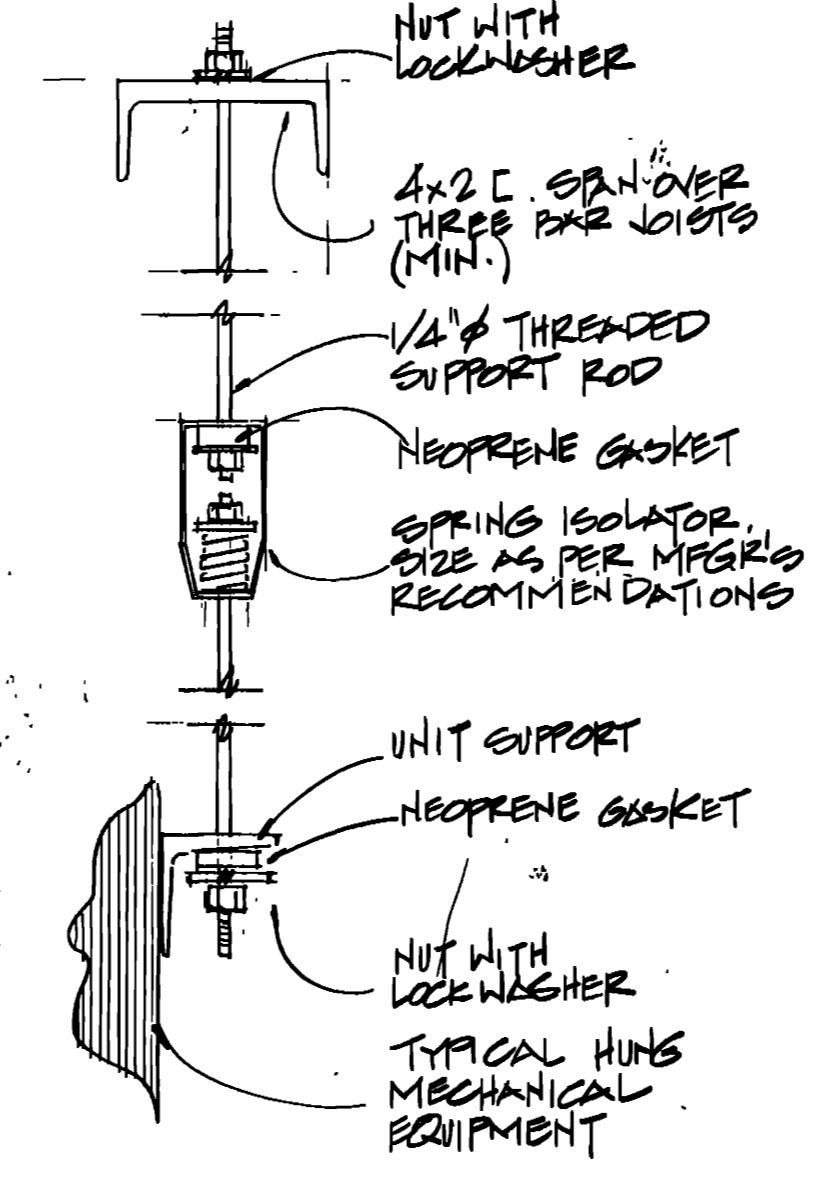
10 TYPICAL AHU COIL PIPING (COOLING)  
M-44 N.T.S.



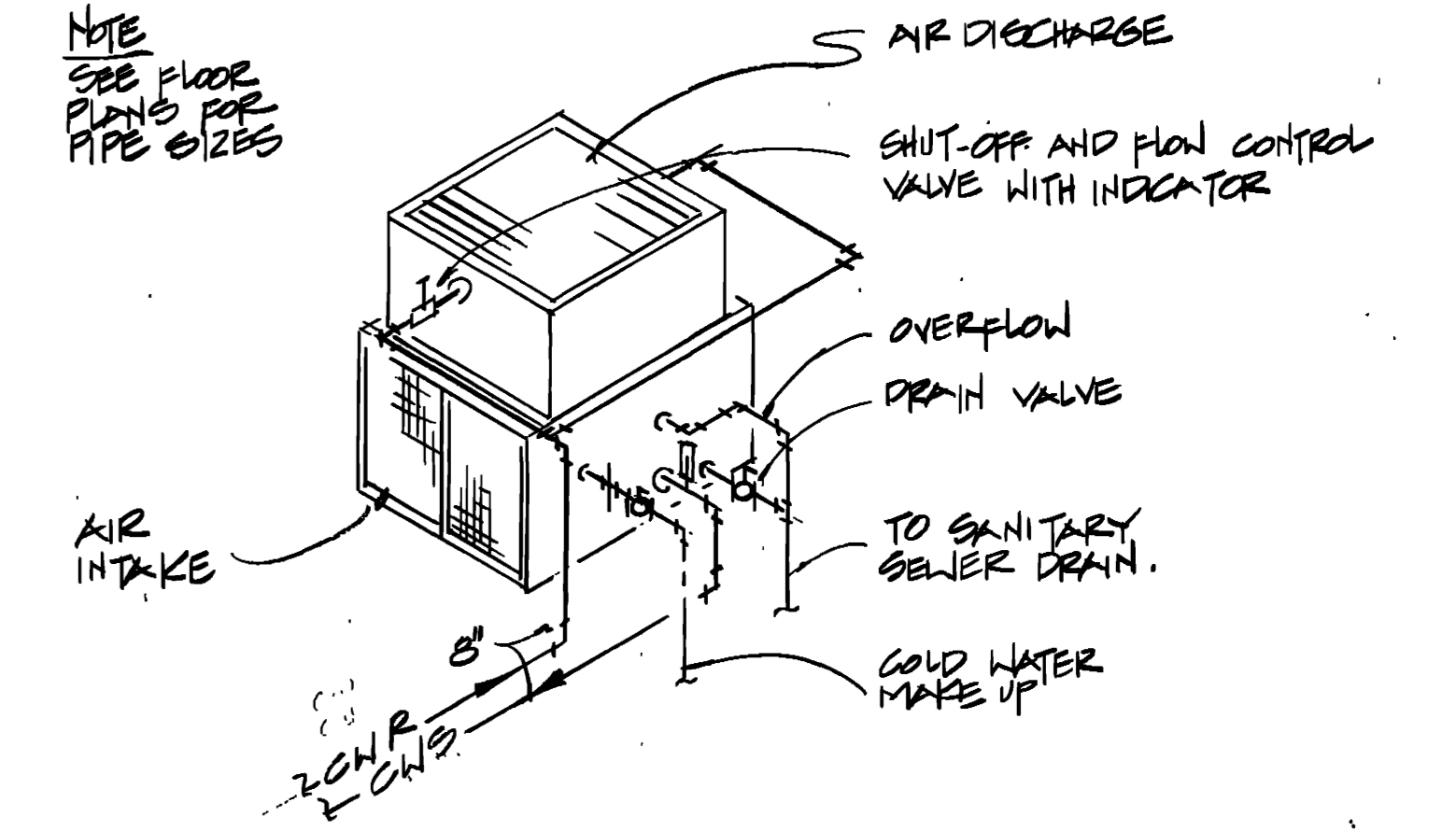
9 HYDRONIC BASE BOARD HEATER DETAIL  
M-44 N.T.S.



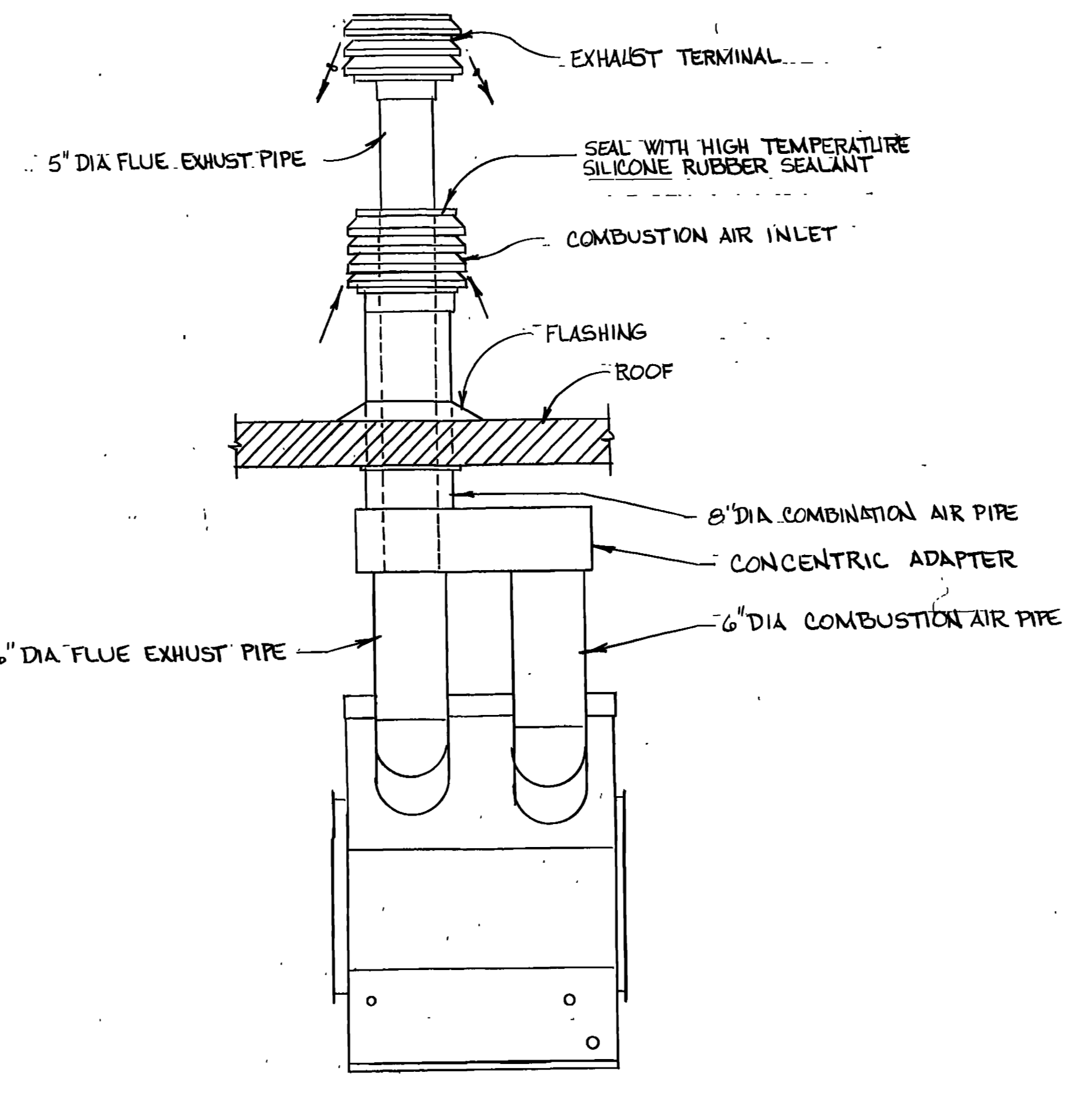
11 TYP. BASEBOARD HEATER PIPING  
M-44 N.T.S.



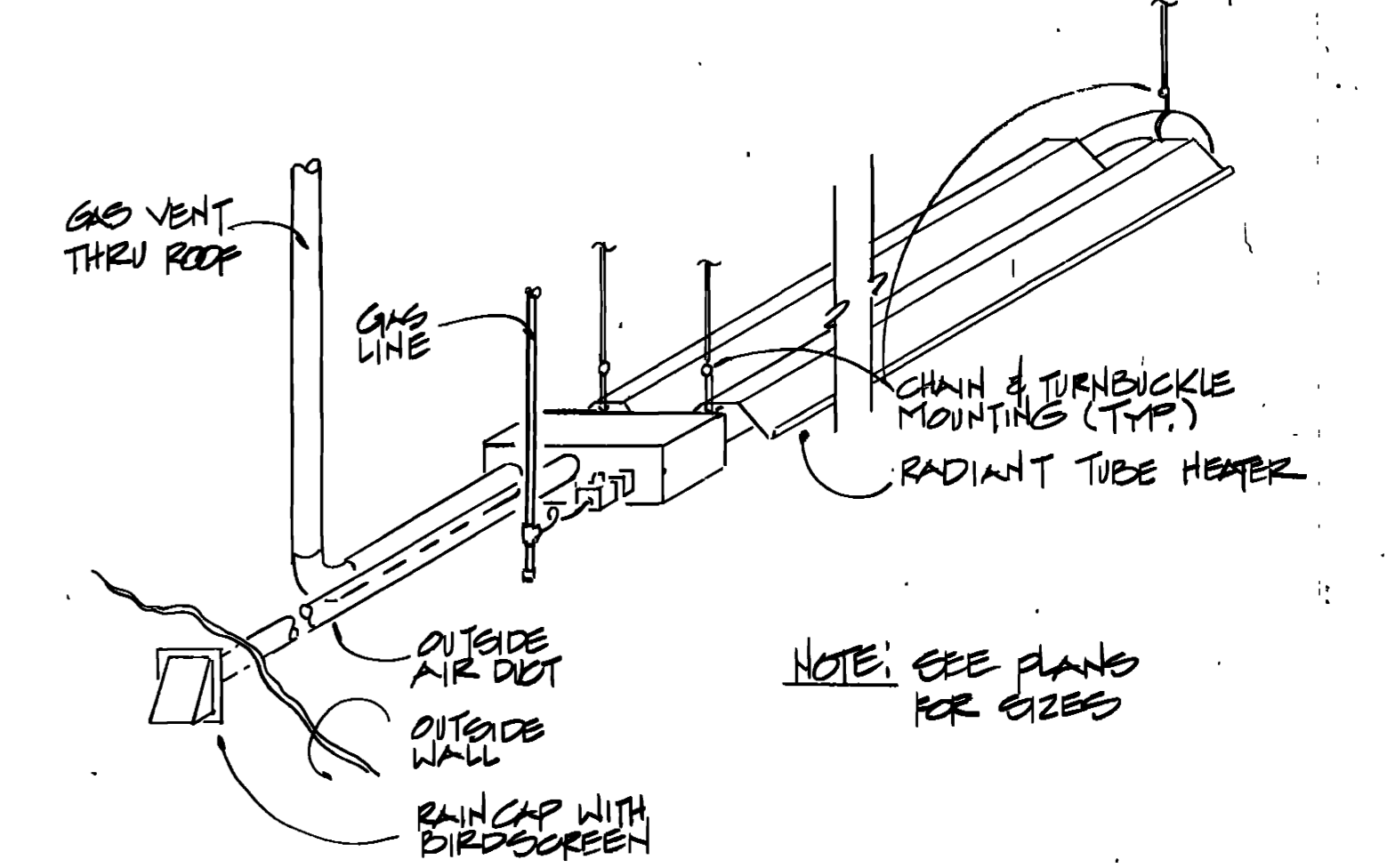
2 TYPICAL SUPPORT OF A.C. EQUIPMENT FROM BUILDING STRUCTURE  
M-44 N.T.S.



4 COOLING TOWER PIPING DETAIL  
M-44 N.T.S.



6 SEPARATED COMBUSTION VENTING DETAIL  
M-44 N.T.S.



5 GAS FIRED RADIANT TUBE HEATER DETAIL  
M-44 N.T.S.

WALK, HAYDEL & ASSOC. INC. ENGINEERS / ARCHITECTS NEW ORLEANS MOBILE BATON ROUGE		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: J. GILLIOT	GOODFELLOW AIR FORCE BASE SAN ANGELO, TEXAS		
DRAWN BY: J. GILLIOT	<b>FIRE TRAINING COMPLEX</b>		
REVIEWED BY: T. WAN	H.V.A.C. DETAILS		
SUBMITTED BY: M. [Signature] 12/1/92	SOL. NO. DACAG3-92B-0199	DATED: JUN. 1992	SEQUENCE NO.
ENGINEER: [Signature]	CONTR. NO. DACG3-92-C-0155	SHEET NO. M-44 OF 44	242