

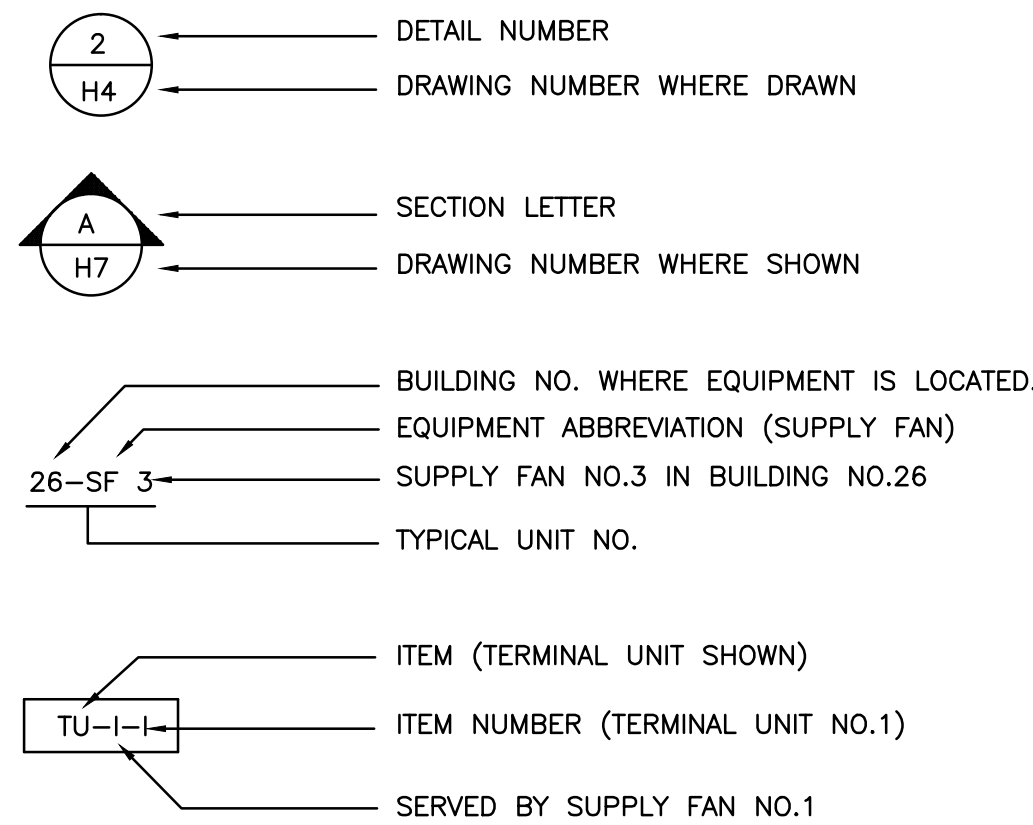
ABBREVIATIONS

AC	AIR CONDITIONING UNIT	MB	MIXING BOX
ACC	AIR COOLED CONDENSER	MER	MECHANICAL ROOM
ACCU	AIR COOLED RECIPROCATING CHILLER UNIT	MPS	MEDIUM PRESSURE STEAM
AD	ABSORPTION CHILLER UNIT	MAX.	MAXIMUM
AFCE	AFTER FILTER	NOM.	NOMINAL
AFM	AIR FLOW MEASURING DEVICE	O/A	OUTDOOR AIR
AFW	AIR FLOW MEASURING DEVICE		
AHU	AIR HANDLING UNIT	P	PUMP
AP	ACCESS PANEL	PC	PUMPED CONDENSATE
		PD	PRESSURE DROP
BIW	BACKWARD INCLINED WHEEL	PEF	PROPELLER TYPE EXHAUST FAN
BR	BOTTOM REGISTER (WALL TYPE)	PF	PRE-FILTER
		PFW	PUMPED FEED WATER
C	CONVERTOR	POD	PROPYLENE GLYCOL-WATER SOLUTION
CC	COOLING COIL	PH	POWER OPERATED, OPPOSED
CCU	CENTRIFUGAL OR HELICAL ROTARY SCREW CHILLER UNIT	PPD	POWER OPERATED, PARALLEL
CD	CENTRIFUGAL FAN	PRV	PRESSURE REDUCING VALVE
CF	CENTRIFUGAL FAN		
CG	CEILING GRILLE	R/A	RETURN AIR
COMP.	COMPRESSOR	RCU	RECIPROCATING CHILLER UNIT
CONV.	CONNECTOR	RF	RETURN FAN
CP	CONDENSATE PUMP	RH	REHEAT COIL
CR	CEILING DIFFUSER	Rh	RELATIVE HUMIDITY
CUH	CONDENSING UNIT	RV	POWER TYPE ROOF VENTILATOR
CUIH	CABINET UNIT HEATER		
CW	COLD WATER	S/A	SUPPLY AIR
		SA	SOUND ATTENUATING UNIT
D	AUTOMATIC DAMPER	SCD	SMOKE CONTROL DAMPER
Db	DRY BULB TEMPERATURE	SCR	SILICON CONTROLLED RECTIFIER
DB	DECELS	SH	STEAM HUMIDIFIER
DD	DISCHARGE DAMPERS	SP	STATIC PRESSURE
DE	DEWPOINT TEMPERATURE	SPS	STATIC PRESSURE SENSOR
DX	DIRECT EXPANSION	SP	STATIC PRESSURE
		TG	TOP GRILLE (WALL TYPE)
E/A	EXHAUST AIR	TH	THRU WALL UNIT
ECC	ENGINEERING CONTROL CENTER	TI	TOP REGISTER (WALL TYPE)
EDH	ELECTRIC COIL DUCT HEATER	TV	TOP REGISTER (WALL TYPE)
EER	ENERGY EFFICIENCY RATIO	UC	UNIT COOLER
EF	EXHAUST FAN	URV	UNIT VENTILATOR
EGW	ETHYLENE GLYCOL-WATER SOLUTION (5 GLYCOL BY VOLUME)	UV	UPBLAST POWER TYPE ROOF VENTILATOR
		V	VALVE
EMD	END OF MAIN DRIP (STEAM)	VAF	VANE AXIAL FAN
ERC	ENERGY RECOVERY COIL	VCC	VOLUME CONTROL CENTER
ERP	ELECTRIC RADIANT CEILING PANEL	VD	VOLUME DAMPER (MANUAL, OPPOSED BLADE)
ET	EXPANSION TANK	VFD	VARIABLE FREQUENCY DRIVE
EUH	ELECTRIC UNIT HEATER	VV	VARIABLE INLET VANES
EW	EVAPORATIVE WATER COOLER	VV	VACUUM PUMP
EX	EXISTING	VVR	VACUUM STEAM CONDENSATE RETURN
		VSMC	VARIABLE SPEED MOTOR CONTROLLER
FCU	FLEXIBLE CONNECTION	Wb	WET BULB TEMPERATURE
FCU	FAN COIL UNIT	WEF	WALL TYPE EXHAUST FAN
FD	FORWARD CURVED FAN	WF	WATER FILTER
FLR	FLOOR	WFMD	WATER FLOW MEASURING DEVICE
F.D.P.R.	FIRE DAMPER		
FS	FACTORY FABRICATED FAN SECTION		
FTR	FIN TUBE RADIATION		
GH	GRAVITY HOOD		
HC	HEATING COIL		
HOOD	HOOD		
HE	AIR TO AIR HEAT EXCHANGER		
HE	HEPA FILTER		
HP	HORSEPOWER		
HPR	HIGH PRESSURE STEAM		
HPS	HYDROIC RADIANT CEILING PANEL		
HVR	HEATING AND VENTILATING UNIT		
ICF	IN-LINE CENTRIFUGAL FAN		
IEF	INDUSTRIAL EXHAUST FAN		
IFB	INTEGRAL FACE AND BYPASS		
IU	INDUCTION UNIT		
IV	INLET VANES		
LCD	LINEAR CEILING DIFFUSER		
LPH	LOW PRESSURE STEAM		
LPS	LOW PRESSURE STEAM		
LTPC	LOCAL TEMPERATURE CONTROL		
	PANEL		
LBS/HR	POUNDS PER HOUR		

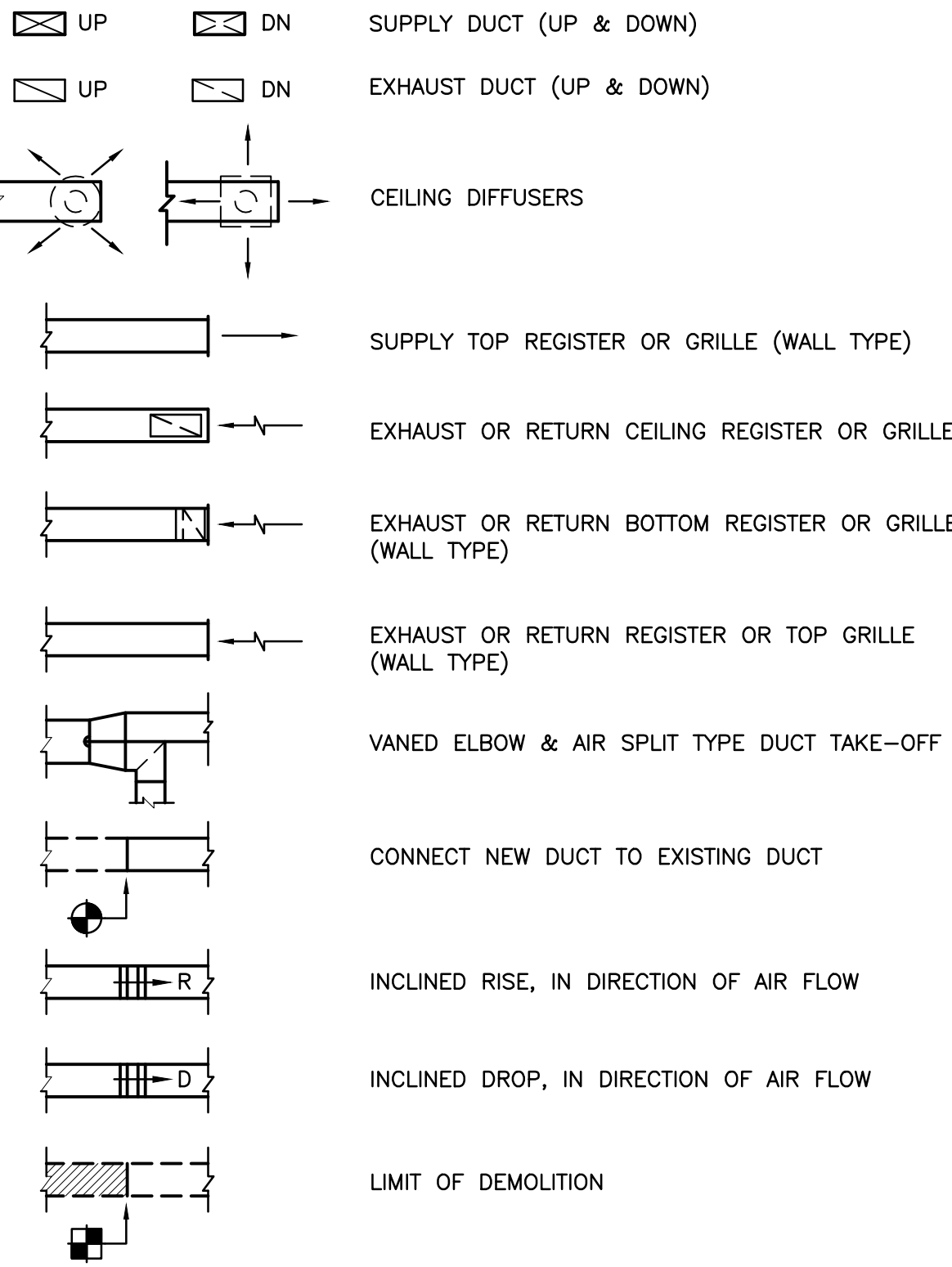
NOTE:  
REFER TO SECTION 16150, MOTORS SECTION OF THE SPECIFICATIONS.  
DESIGNER'S NOTE:  
1. USE ENERGY EFFICIENT MOTORS FOR 1 HP AND LARGER, WHERE (ENERGY COST/KW)(HOURS USE/YR.) > 50.  
2. ADD "E" NEXT TO THE MOTOR HP ON THE SCHEDULE TO INDICATE ENERGY EFFICIENT MOTORS. THIS INCLUDES VANDAXIAL FANS, COOLING TOWERS AND CIRCULATING PUMPS (NOT CONDENSATE PUMPS).  
3. COORDINATE PROJECT WITH ELECTRICAL SPECIFICATIONS FOR ENERGY EFFICIENT MOTORS.  
4. ABOVE VALUES ARE BASED ON NEMA 1993 EFFICIENCY VALUES THAT AN ENERGY EFFICIENT MOTOR MUST MEET OR EXCEED.

ENERGY EFFICIENT MOTOR SCHEDULE					
SCHEDULED HP [KW]	NOMINAL NEMA EFF.	SCHEDULED HP [KW]	NOMINAL NEMA EFF.	SCHEDULED HP [KW]	NOMINAL NEMA EFF.
1.0 E [0.75]	82.5	10 E [7.4]	89.5	50 E [37.3]	93.0
1.5 E [1.1]	84.0	15 E [11.1]	91.0	60 E [44.7]	93.6
2.0 E [1.5]	84.0	20 E [14.9]	91.0	75 E [55.9]	94.1
3.0 E [2.2]	86.5	25 E [18.6]	91.7	100 E [74.6]	94.1
5.0 E [3.7]	87.5	30 E [22.3]	92.4	125 E [93.2]	94.5
7.5 E [5.6]	88.5	40 E [29.8]	93.0	150 E [111.9]	95.0

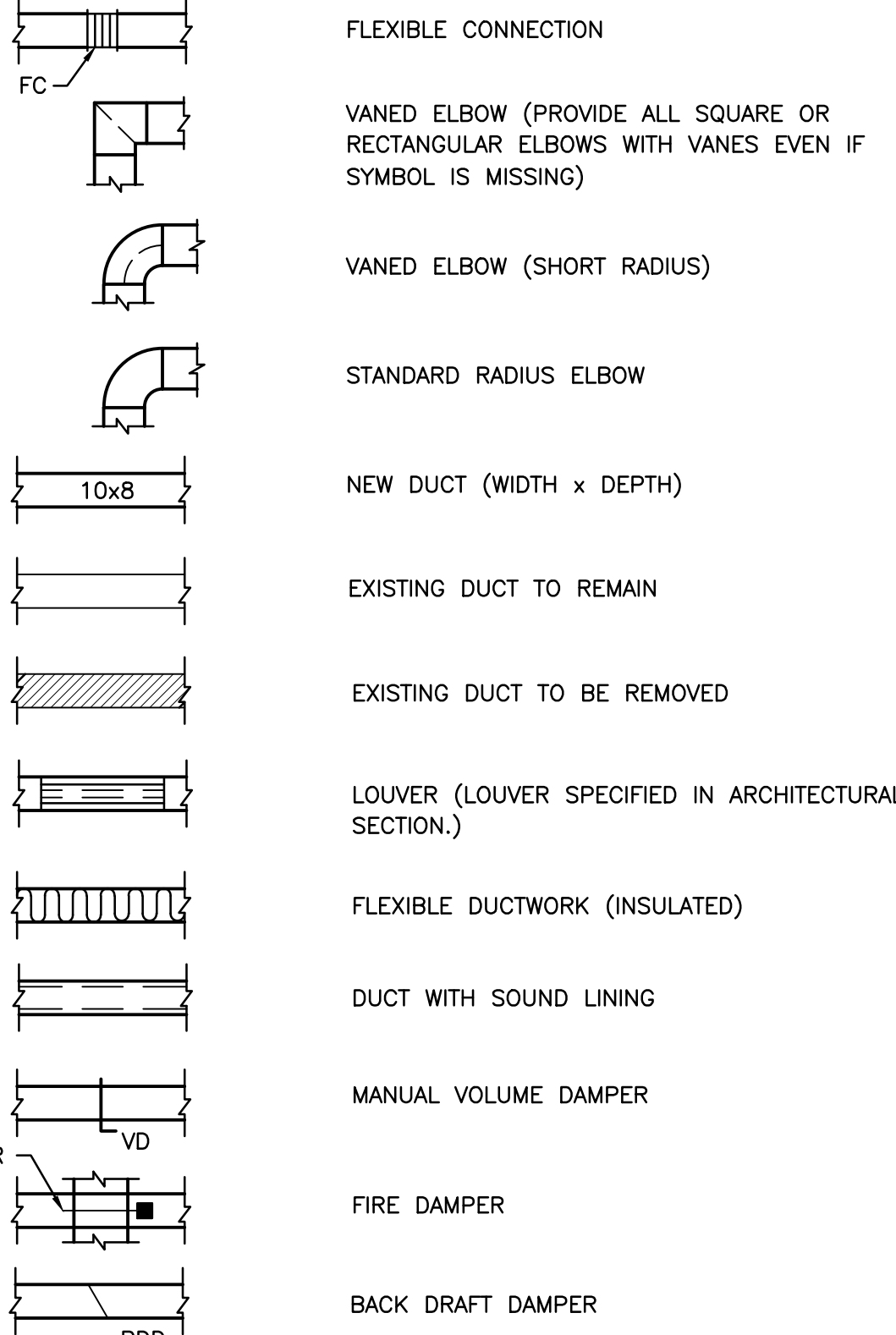
DRAWING SYMBOLS



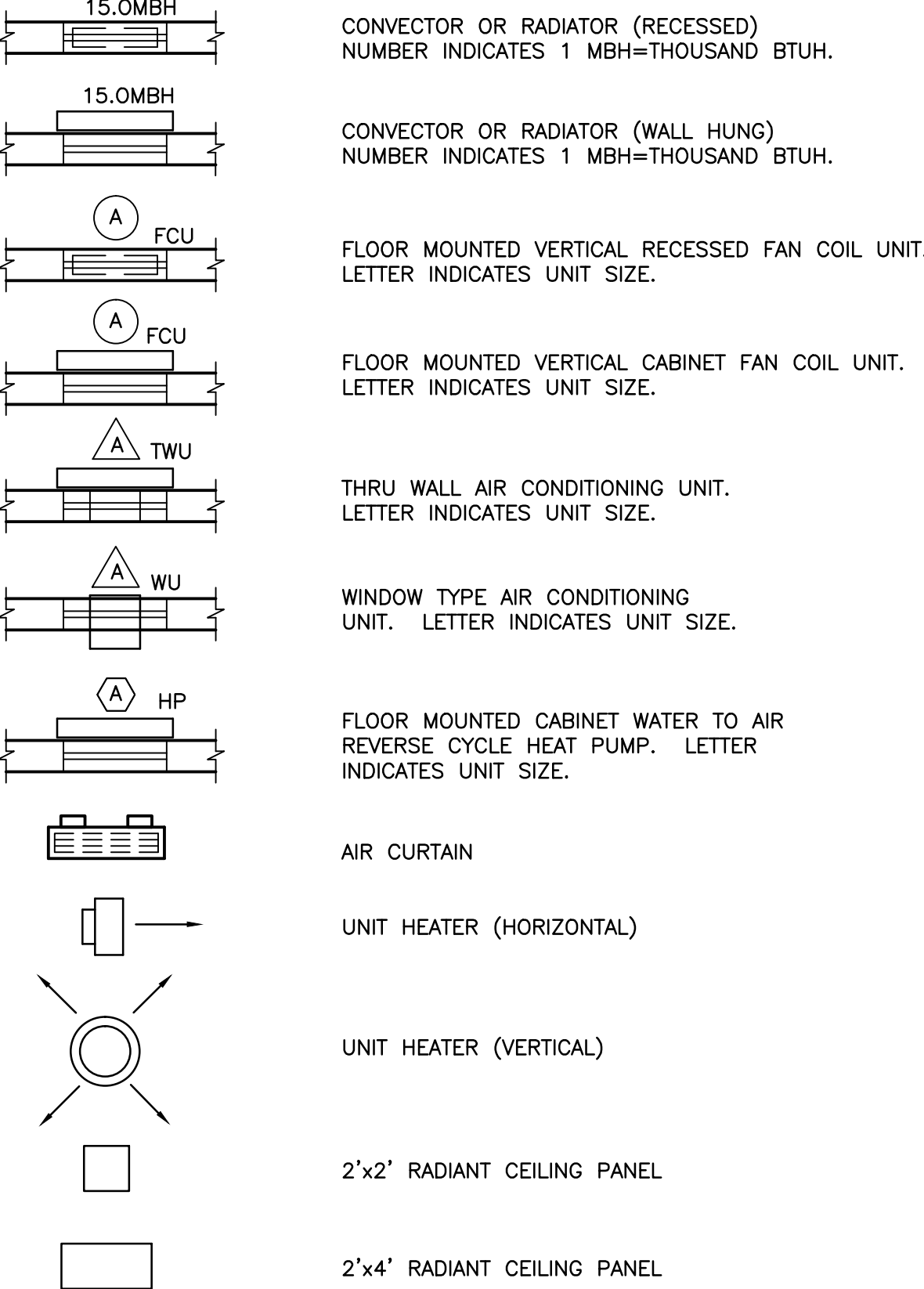
DUCTWORK SYMBOLS



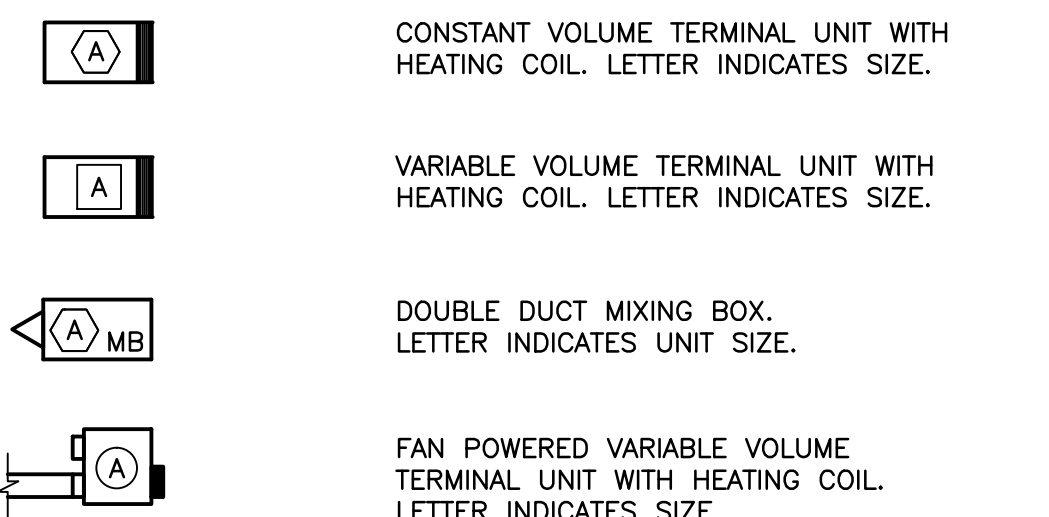
DUCTWORK SYMBOLS



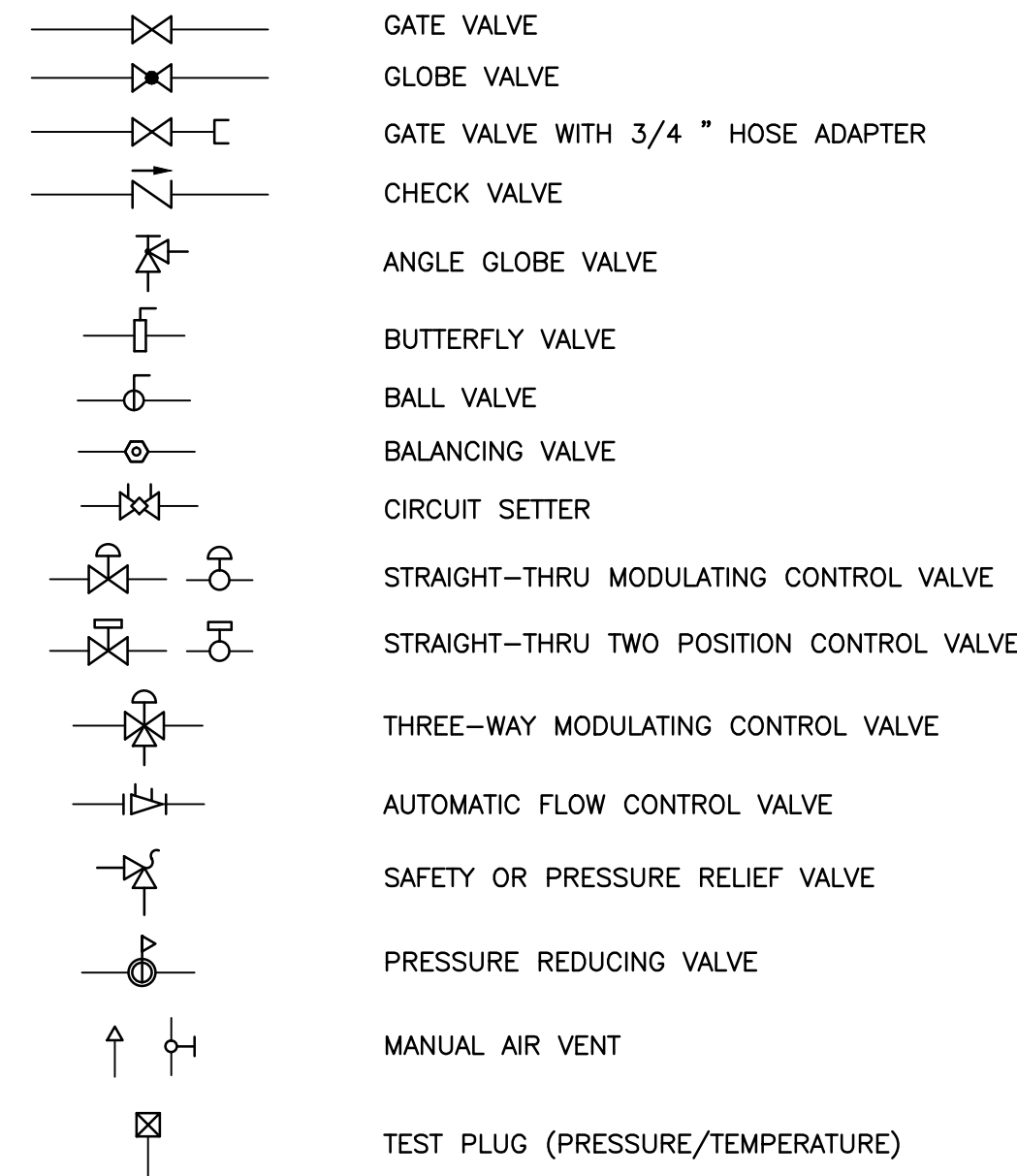
TERMINAL UNIT SYMBOLS



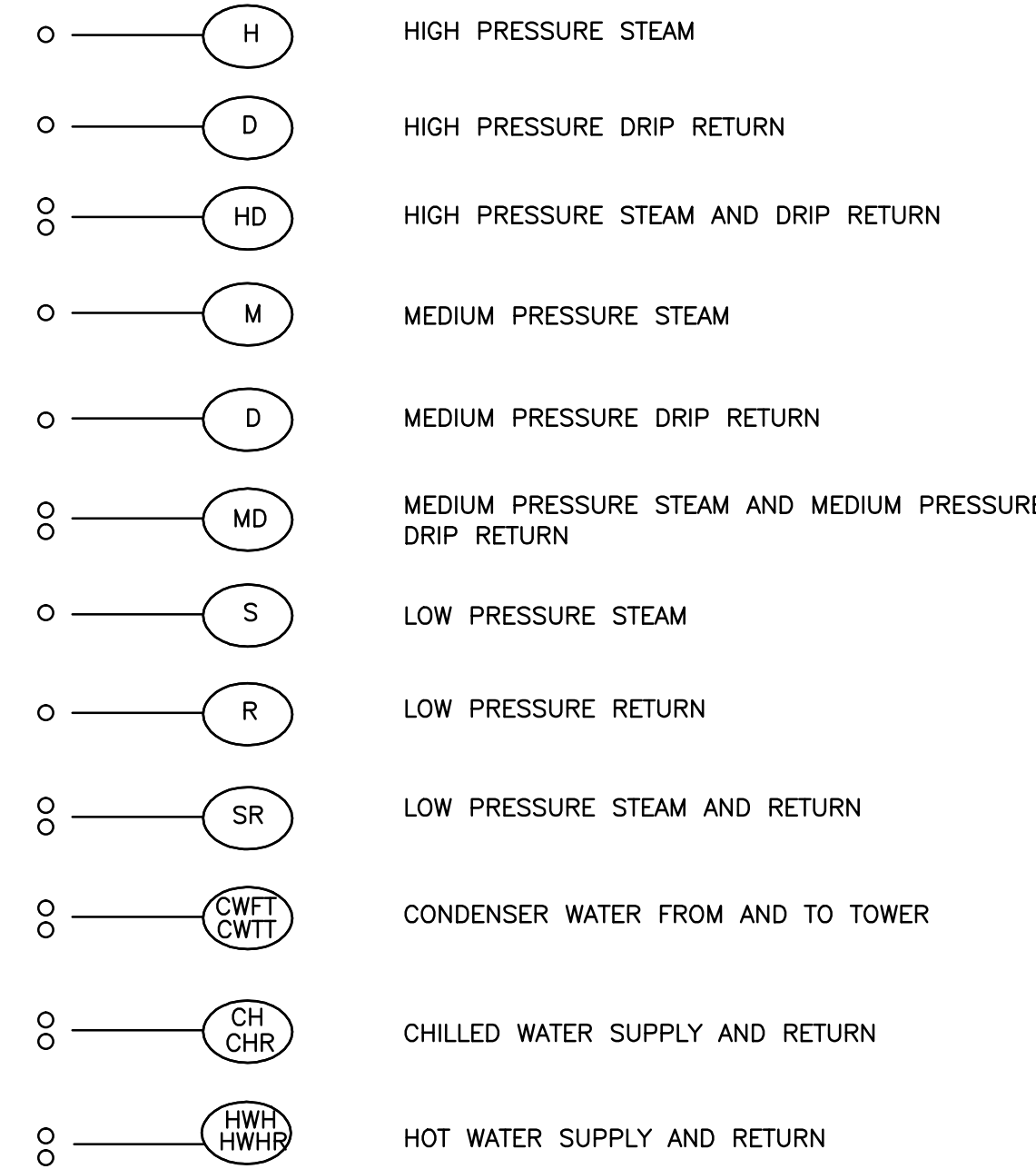
AIR TERMINAL SYMBOLS



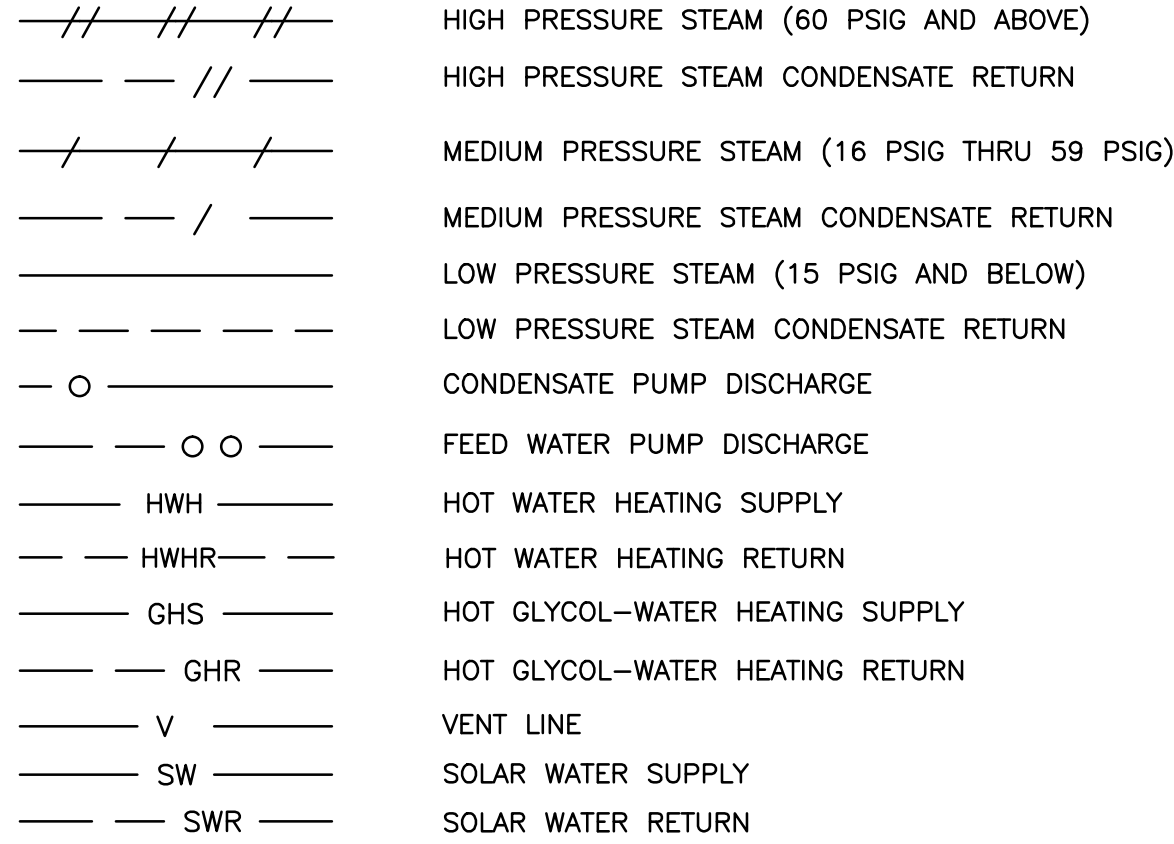
VALVE SYMBOLS



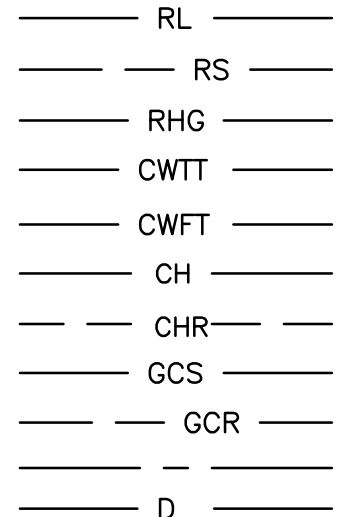
PIPING RISER SYMBOLS



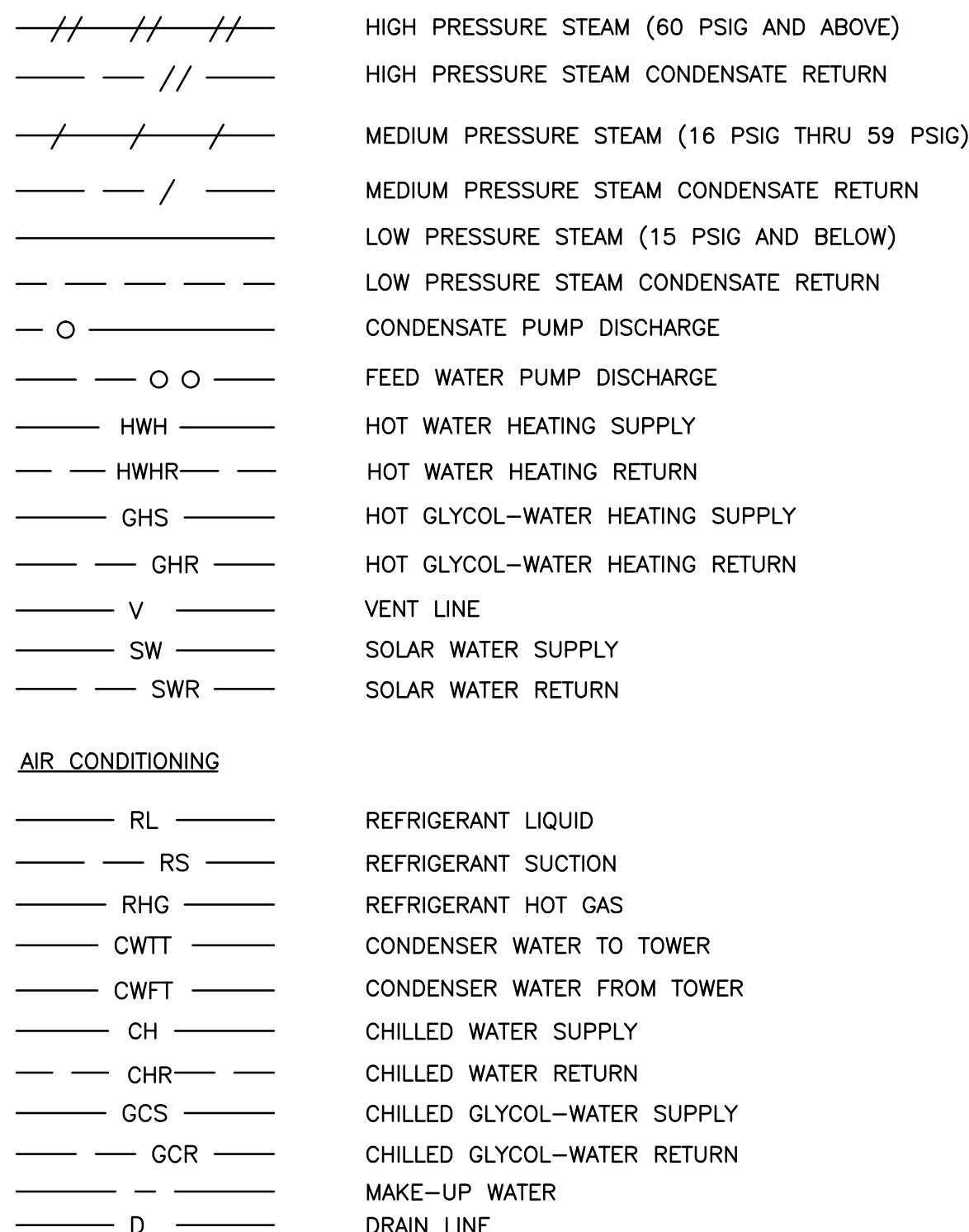
HEATING



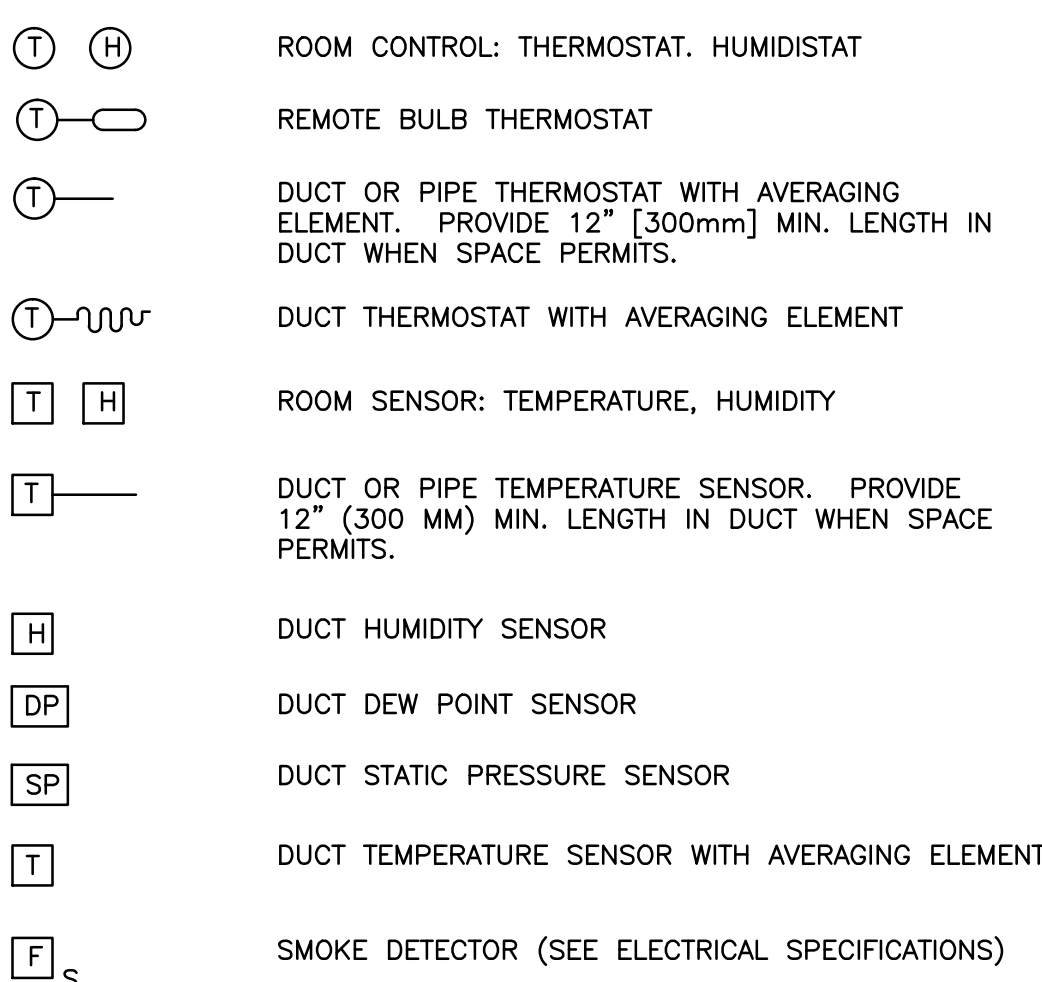
AIR CONDITIONING



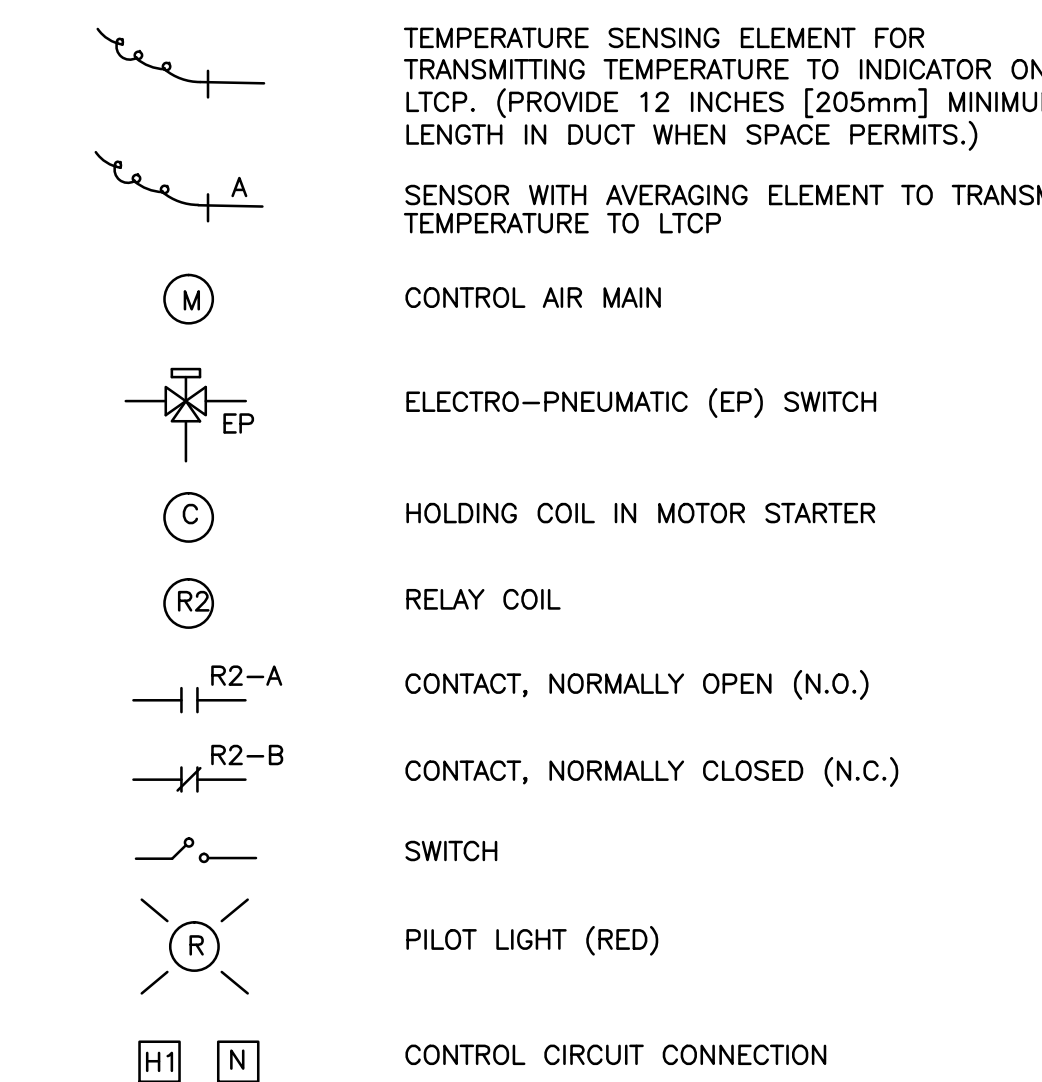
PIPING SYMBOLS



CONTROLS SYMBOLS



CONTROLS SYMBOLS



DESIGNER'S NOTE:  
WHEN TEMPERATURES ARE TRANSMITTED TO AN ENGINEERING CONTROL CENTER DELETE READOUT ON LOCAL TEMPERATURE CONTROL PANEL.

HVAC / ELECTRICAL EQUIPMENT CONNECTIONS SCHEDULE

EQUIPMENT / TAG	DISCONNECT		STARTER		POWER WIRING	NOTES
	FURN. BY	INST. BY	FURN. BY	INST. BY		
CV BOXES W/ ELECT. REHEAT	M.C.	E.C.	N/A	N/A	E.C.	①②③
AIR HANDLING UNIT	M.C. (W / VFD)	E.C. (W / VFD)	M.C. TO FURNISH VFD	VFD INSTALLED BY E.C.	E.C.	①②③④
ELECTRIC HUMIDIFIER	M.C.	E.C.	N/A	N/A	E.C.	①②③
ATC CONTROL PANEL	N/A	N/A	N/A	N/A	E.C.	①②③
HEPA FAN FILTER UNIT	M.C.	E.C.	N/A	N/A	E.C.	①②③
EXHAUST FAN	M.C.	E.C.	M.C. TO FURNISH VFD	VFD INSTALLED BY E.C.	E.C.	①②③
DUCT SMOKE DETECTORS	SEE NOTE #4 BELOW					

M/E EQUIPMENT CONNECTIONS SCHEDULE NOTES:

- THE MECHANICAL/ELECTRICAL EQUIPMENT CONNECTIONS SCHEDULE AND ACCOMPANYING NOTES ARE INTENDED TO CLEARLY DEFINE WHICH CONTRACTOR FURNISHES AND INSTALLS STARTERS AND DISCONNECTS AND SHALL BECOME PART OF THE SPECIFICATIONS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER WIRING AND FINAL POWER CONNECTIONS. ALL CONTROL WIRING SHALL BE FURNISHED, INSTALLED AND FINAL CONNECTION BY THE TRADE SUPPLYING THE EQUIPMENT.
- ELECTRICAL CONTRACTOR SHALL WIRE THROUGH DISCONNECT AND STARTER AND MAKE FINAL POWER CONNECTIONS TO EQUIPMENT/MOTOR.
- CONTROL WIRING 100V AND LESS, RELAYS, CONTACTS, AND TRANSFORMERS SHALL BE PROVIDED UNDER THE MECHANICAL CONTRACT.
- HVAC UNIT SMOKE DETECTORS FURNISHED BY E.C., INSTALLED IN DUCT BY M.C., WIRED TO AHU FAN MOTORS BY M.C. AND WIRED TO BLDG. FIRE ALARM BY E.C.
- PROVIDE INTEGRAL 120V-15A RECEPTACLE.

Revisions	Date

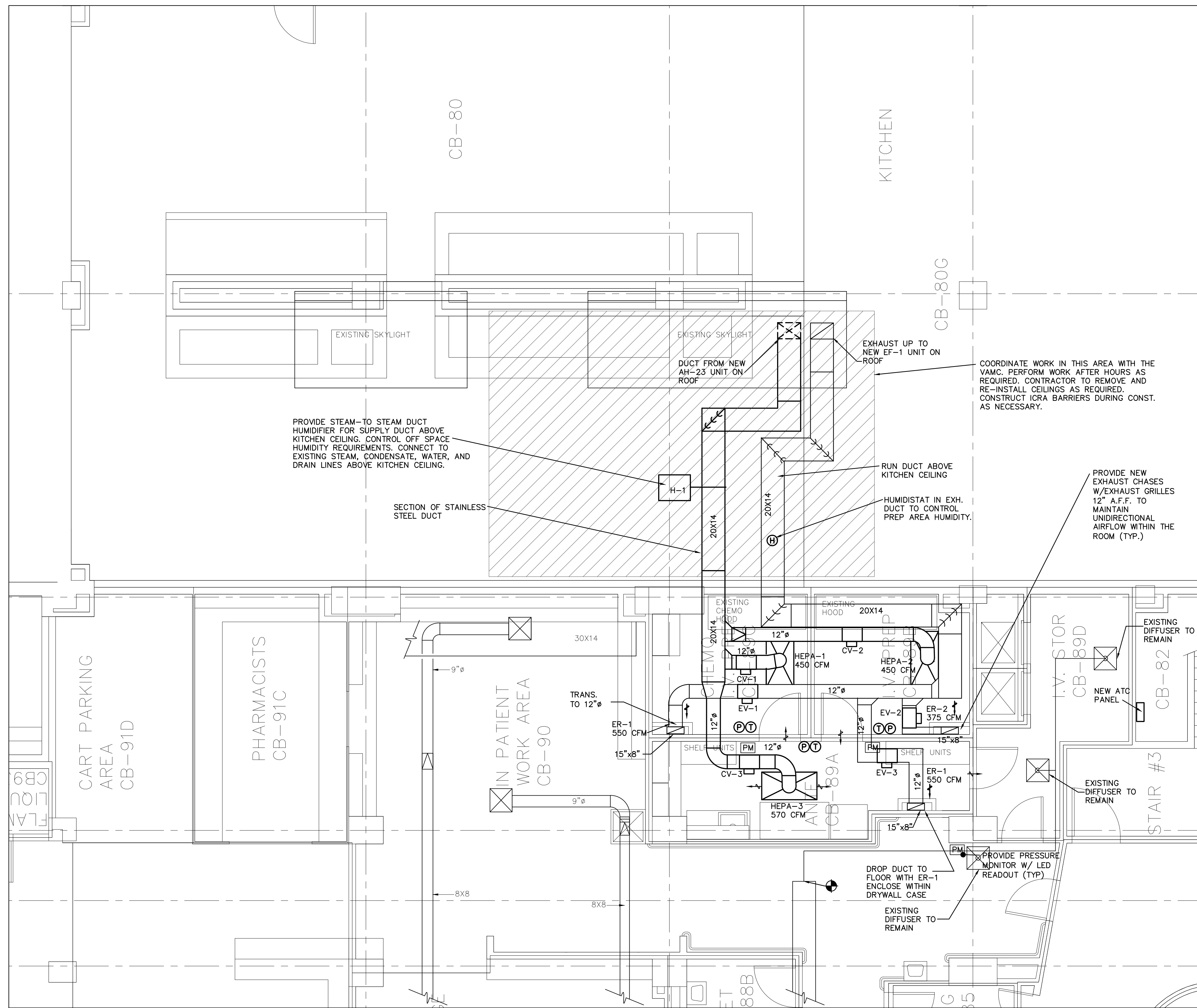
67 PUBLIC SQUARE  
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Drawing Title PHARMACY HVAC SYMBOLS, ABBREVIATIONS AND NOTES	
Facility Project Name 1ST FLOOR NORTH - PHARMACY USP IMPROVEMENTS	

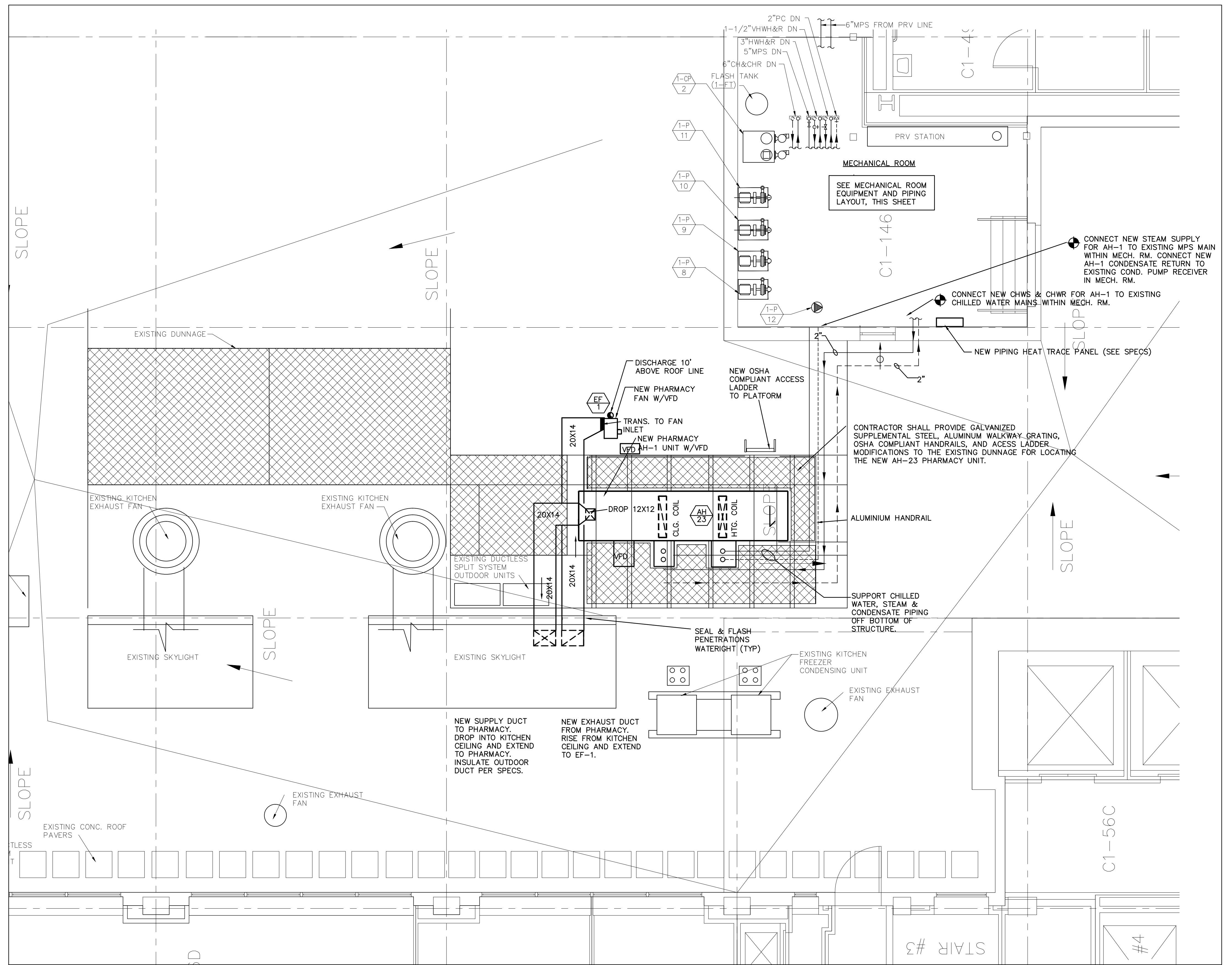
Project Title VAMC BUILDING 1 HVAC REPLACEMENT PHASE 1		
Building Number 1	Checked LJM	Drawn JFM
Location WILKES-BARRE, PENNSYLVANIA		

Date 05/14/10
Project No. 693-07-136
DRAWING NO. H-1 DWG. 21 OF 48

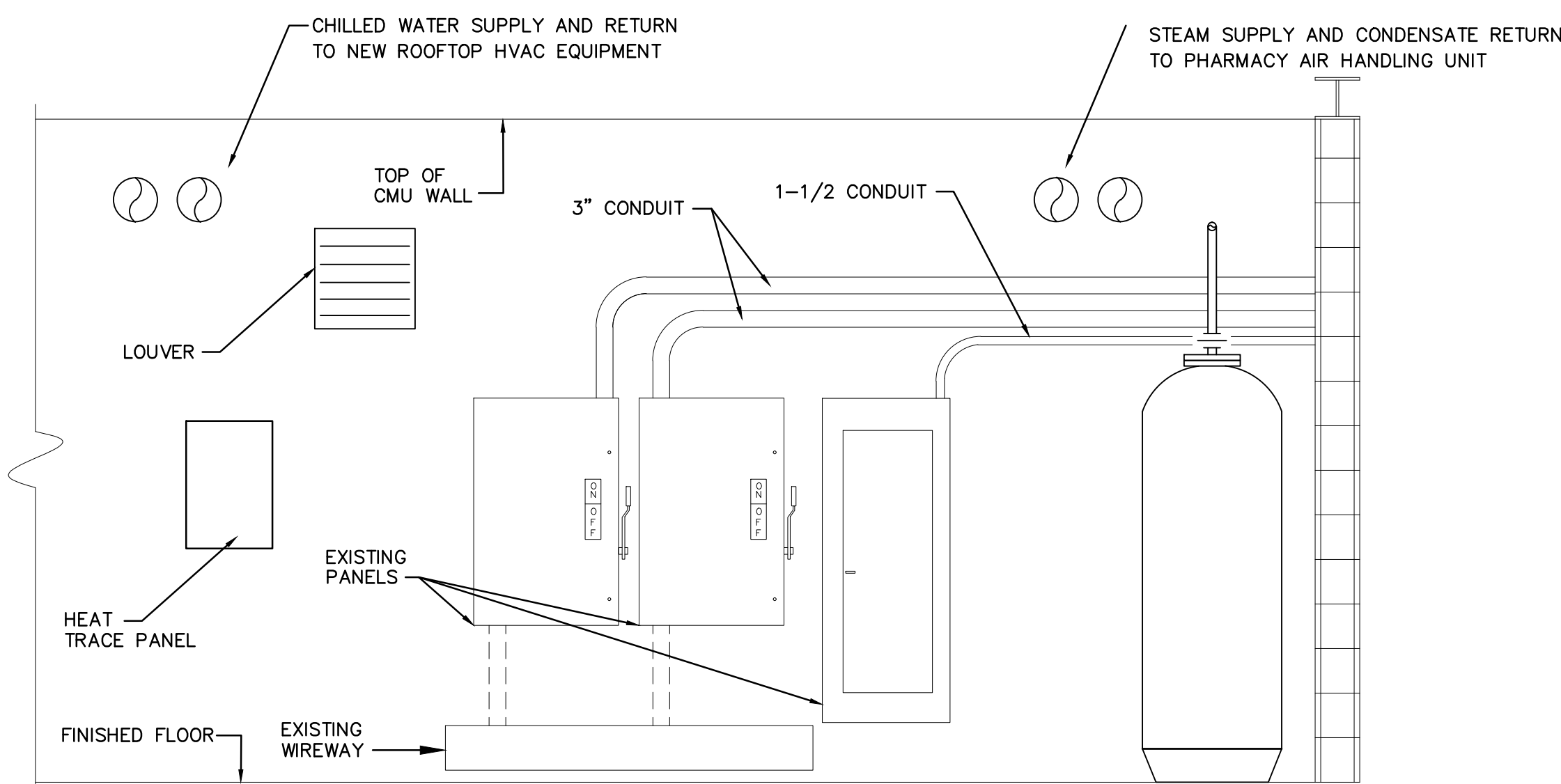
Vetereans Affairs



1 PARTIAL BASEMENT HVAC FLOOR PLAN-PHARMACY  
1-H2 SCALE: 1/4" = 1'-0"

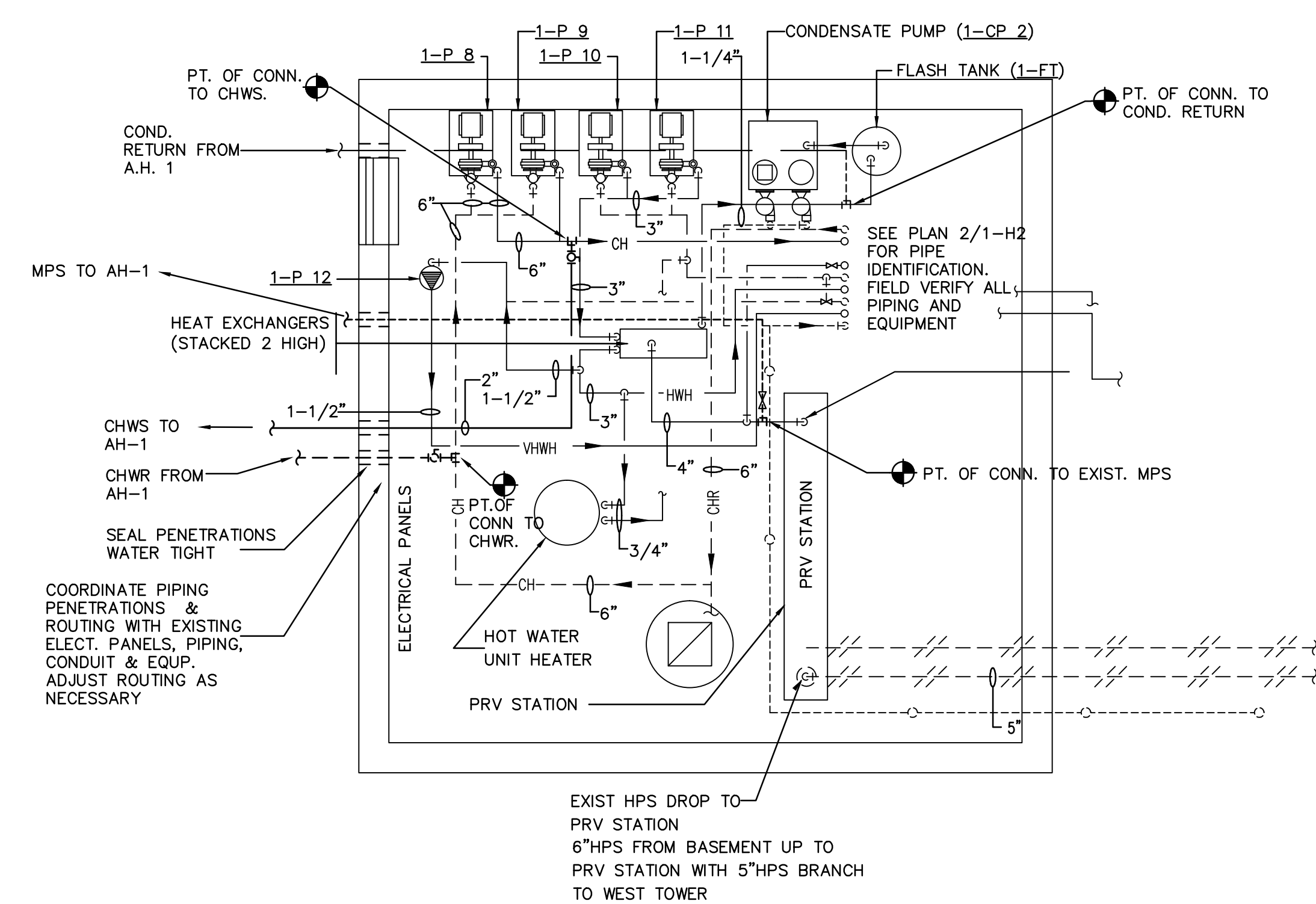


2 PARTIAL HVAC ROOF PLAN  
1-H2 SCALE: 1/4" = 1'-0"

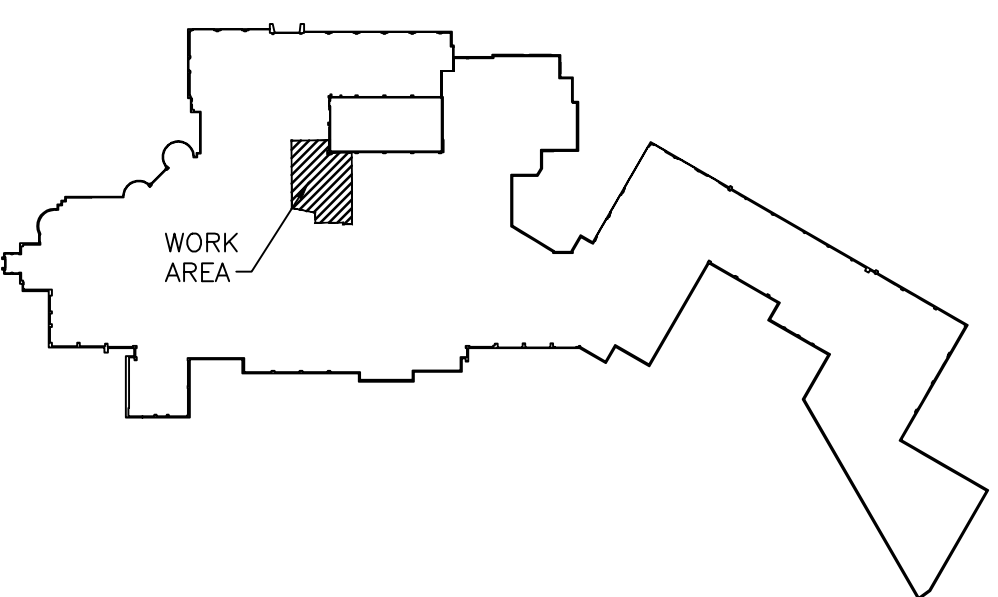


3 MECHANICAL ROOM SECTION  
1-H2 SCALE: 1/2" = 1'-0"

NOTE:  
THE SHEET METAL SUB-CONTRACTOR SHALL DEVELOP DETAILED DUCT SHOP DRAWINGS AND SUBMIT FOR REVIEW PRIOR TO FABRICATION OF DUCTWORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE DRAWINGS SHALL BE COMPLETE AND DEVELOPED IN SUFFICIENT DETAIL TO IDENTIFY ANY POTENTIAL CONFLICTS WITH PIPING, DUCTWORK, CONDUIT, AND SPRINKLER PIPING SCHEDULED TO REMAIN WHICH WILL BE REVIEWED AND WORKED OUT PRIOR TO FABRICATION. THE DRAWINGS SHALL BE SUBMITTED, REVIEWED, AND SIGNED OFF BY ALL TRADES (GENERAL CONTRACTOR, PLUMBING, ELECTRICAL, FIRE PROTECTION) PRIOR TO SUBMITTAL TO THE ENGINEER.



4 MECHANICAL ROOM LAYOUT  
H-2 SCALE: 1/4" = 1'-0"



Basement Floor Key Plan

Revisions	Date

**ARRIS** ENGINEERING GROUP LTD.

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Drawing Title	PHARMACY HVAC PLAN
Facility Project Name	1ST FLOOR NORTH - PHARMACY USP IMPROVEMENTS

Project Title	VAMC BUILDING 1 HVAC REPLACEMENT PHASE 1
Building Number	1
Checked	LJM
Drawn	JM
Location	WILKES-BARRE, PENNSYLVANIA

Date	05/14/10
Project No.	693-07-136
DRAWING NO.	H-2
DWG. 22 OF 48	

Veterans Affairs



