

ABBREVIATIONS

A/EH ARCHITECT / ENGINEER	FCUJ FAN COIL UNIT COOLING ONLY	NOM NOMINAL
A/EX AIR TO AIR HEAT EXCHANGER	FCUH FAN COIL UNIT HEATING ONLY	NPLV NON-STANDARD PART LOAD VALUE
ABV AIR BLENDER	FCW FORWARD CURVED WHEEL (FAN)	NPSH NET POSITIVE SUCTION HEAD
AAV AUTOMATIC AIR VENT	FD FLOOR DRAIN	NTS NOT TO SCALE
ACC AIR COOLED CONDENSER	FD FIRE DAMPER	OAO OUTSIDE AIR
ACCH AIR COOLED CHILLER	FF FINAL FILTER	OAG OUTSIDE AIR GRILLE
ACCU AIR-COOLED CONDENSING UNIT	FXK FLEX GAS/STEAM/HEAT EXCHANGER	OD OUTSIDE AIR TAKE
ACU AIR CONDITIONING UNIT	FM FLOW METER	OD OUTSIDE DIAMETER
ACD AUTOMATIC CONTROL	FOP FUEL OIL PUMP	OFM OIL FLOWMETER
ACD-TIP AUTOMATIC CONTROL DAMPER, TWO POSITION	FOT FUEL OIL TANK	OR OPERATING ROOM
AD ACCESS DOOR	FOHX FUEL OIL HEAT EXCHANGER	P PASCAL
AF AFTER FILTER	FPS FEET PER SECOND	PC PUMPED CONDENSATE
AFV AIR FLOW CONTROL VALVE	FPT FAN POWERED TERMINAL UNIT	PCF POUNDS PER CUBIC FOOT (FEET)
AFI ABOVE FINISHED FLOOR	FR FLOOR REGISTER	PD PRESSURE DROP
AFM AIR FLOW MEASURING DEVICE	FRP FIBER REINFORCED POLYESTER	PEF PROPELLER (TYPE) EXHAUST FAN
AFW AIR FLOW WHEEL (FAN)	FS FLOW SWITCH	PF PRE-FILTER
AHU AIR-HANDLING UNIT	FSAT FREEZE/STAT	PG PRESSURE GAGE
AMP AMPERE	FT FEET	PGW PROPYLENE GLYCOL-WATER (SOLUTION)
AP ACCESS PANEL	FTLB FOOT-POUND	PHC PREHEAT COIL
APD AIR PRESSURE DROP	FTR FIBER TUBE RADIATION	PPM PARTS PER MILLION
ARI AIR CONDITIONING AND REFRIGERATION INSTITUTE	FV FACE VELOCITY	PRS PRESSURE REGULATING (VALVE) STATION
AS AIR SEPARATOR	GA GAUGE	PSI POUNDS PER SQUARE INCH
ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS	GD GRAVITY HOOD	PSIA POUNDS PER SQUARE INCH - ABSOLUTE
AW AIR WASHER	GDH GALLONS PER DAY	PSIG POUNDS PER SQUARE INCH - GAGE
AXF AXIAL FLOW	GPM GALLONS PER MINUTE	PSS PRIMARY SECONDARY SYSTEM
B BOILER	GPR GAS PRESSURE REGULATOR	PSV PRESSURE SAFETY VALVE
BDR BACKDRAFT DAMPER	GT GALVANIZED STEEL	PTAC PACKAGED TERMINAL AIR CONDITIONER
BDR BACKDRAFT DAMPER	H HUMIDIFIER	RE RETURN OR EXHAUST
BFP BACKFLOW PREVENTER	H&CW HOT & COLD WATER	RA RETURN AIR
BFT BOILER PLANT FIRE TUBE	HAC HOUSEKEEPING AIR CLOSET	RAD REFRIGERANT AIR DRYER
BGM BOTTOM GRILLE	HB HOSE BIBB	RAF RADIO FREQUENCY
BHW BOILER HEATING WATER	HC HEATING COIL	RAK ROTARY AIR HEAT EXCHANGER
BW BACKWARD INCLINED WHEEL (FAN)	HD HOOD	RAT RETURN AIR TEMPERATURE
BMT BONE MARROW TRANSPLANT	HOA HAND/OFF/AUTOMATIC	ROCH REMOTE CONDENSER CHILLER
BW BACKWARD INCLINED WHEEL (FAN)	HP HEAT PUMP	RCU RECIPROCATING CHILLER UNIT
BMT BOTTOM REGISTER	HP HORSEPOWER	RD REFRIGERANT DISCHARGE
BSC BIOLOGICAL SAFETY CABINETS	HPDT HIGH PRESSURE DRAIN TRAP	RDS ROOM DATA SHEETS
BT BLowOFF TANK CONTROL VALVE	HPR HIGH PRESSURE RETURN (STEAM CONDENSATE)	REA RELIEF AIR
BTU BRITISH THERMAL UNIT	HPS HIGH PRESSURE SUPPLY (STEAM CONDENSATE)	RF RETURN FAN
BTWH BRITISH THERMAL UNIT PER HOUR	HRC HEAT RECOVERY COIL	RG RETURN GRILLE
BTW BOILER PLANT WATER TUBE	HRD HEAT RECOVERY DEVICE	RH RELATIVE HUMIDITY
C CENTIGRADE (CELCIUS)	HRD HEAT RECOVERY DEVICE (CEILING PANEL)	RHO REHEAT HOT GAS
CC COOLING COIL	HRW HEAT RECOVERY WHEEL	RHO REHEAT HOT GAS
CD CEILING DIFFUSER	HSTAT HUMIDISTAT	RHO REHEAT HOT GAS
CD-1 CONSTRUCTION DOCUMENTS (SUBMISSION)	HTM HUMIDIFIER TERMINAL	RHO REHEAT HOT GAS
CD-2 CONSTRUCTION DOCUMENTS (SUBMISSION)	HUM HUMIDIFIER UNIT MOUNTED	RHO REHEAT HOT GAS
CENT CENTRIFUGAL	HVU HEATING AND VENTILATING UNIT	RHO REHEAT HOT GAS
CFH CUBIC FEET PER HOUR	HWC HOT WATER COIL	RHO REHEAT HOT GAS
CFM CUBIC FEET PER MINUTE	HWH HOT WATER HEATING COIL	RHO REHEAT HOT GAS
CFT CUBIC FEET	HWP HEATING HOT WATER PUMP	RHO REHEAT HOT GAS
CFT CUBIC FEET	HWR HEATING HOT WATER RETURN	RHO REHEAT HOT GAS
CFT CUBIC FEET	HWS HEATING HOT WATER SUPPLY	RHO REHEAT HOT GAS
CH CHILLER	HWHU HOT WATER UNIT HEATER	RHO REHEAT HOT GAS
CHP CHILLED WATER PUMP	HO HOISTWAY VENT DAMPER	RHO REHEAT HOT GAS
CHW CHILLER WATER	HK HEAT EXCHANGER	RHO REHEAT HOT GAS
CHR CHILLED WATER RETURN	HZ HERTZ	RHO REHEAT HOT GAS
CHS CHILLED WATER SUPPLY	IO INPUT/OUTPUT	RHO REHEAT HOT GAS
CI CAST IRON	IAQ INDOOR AIR QUALITY	RHO REHEAT HOT GAS
CM CARBON MONOXIDE	IBT INVERTED BUCKET TRAP	RHO REHEAT HOT GAS
CM CUBIC METER	ICF IN-LINE CENTRIFUGAL FAN	RHO REHEAT HOT GAS
CM CUBIC METER PER SECOND	ICI INTENSIVE CARE UNIT	RHO REHEAT HOT GAS
COMP COMPRESSOR UNIT	ID INSIDE DIAMETER	RHO REHEAT HOT GAS
COMP COEFFICIENT OF PERFORMANCE	IFB INTEGRAL FACE AND BYPASS	RHO REHEAT HOT GAS
CP CONDENSATE PUMP	IN INCHES	RHO REHEAT HOT GAS
CR CEILING REGISTER	IN HG INCHES OF MERCURY	RHO REHEAT HOT GAS
CS CONDENSATE STORAGE TANK	IN WC INCH WATER COLUMN	RHO REHEAT HOT GAS
CSG CLEAN STEAM GENERATOR	IN WG INCH WATER GAUGE	RHO REHEAT HOT GAS
CT COOLING TOWER	IN-LB INCH-POUND	RHO REHEAT HOT GAS
CU CONDENSING UNIT	IPV INTEGRATED PART LOAD VALVE	RHO REHEAT HOT GAS
CU CABINET UNIT HEATER	IS INTEGRATED HEATER	RHO REHEAT HOT GAS
CU CONSTANT VOLUME	IS INSECT SCREEN	RHO REHEAT HOT GAS
CU COLD WATER (PORTABLE)	IS INJECTION UNIT	RHO REHEAT HOT GAS
CWC CHILLED WATER COOLING COIL	IV INLET VANES	RHO REHEAT HOT GAS
CW CONDENSER WATER PUMP	J JINTERNALLY LEFT BLANK	RHO REHEAT HOT GAS
CW CONDENSER WATER RETURN	kg KILOGRAM	RHO REHEAT HOT GAS
CWS CONDENSER WATER SUPPLY	kg/hr KILOGRAM PER HOUR	RHO REHEAT HOT GAS
D DAMPER - AUTOMATIC	kg/kwh KILOWATT HOUR	RHO REHEAT HOT GAS
D-1 OUTDOOR AIR DAMPER	L LITER	RHO REHEAT HOT GAS
D-2 RETURN AIR DAMPER	L/LITERS PER HOUR (OR LITERS/HOUR)	RHO REHEAT HOT GAS
D-3 RELIEF AIR DAMPER	L/m LITERS PER MINUTE (OR LITERS/MINUTE)	RHO REHEAT HOT GAS
DB DECELBELS	L/s LITERS PER SECOND (OR LITERS/SECOND)	RHO REHEAT HOT GAS
DB DRY-BULB TEMPERATURE	LAT LEAVING AIR TEMPERATURE	RHO REHEAT HOT GAS
DD-1 DESIGN DEVELOPMENT (SUBMISSION)	LB/HR POUNDS PER HOUR	RHO REHEAT HOT GAS
DD-2 DESIGN DEVELOPMENT (SUBMISSION)	LG LINEAR FOOT (FEET)	RHO REHEAT HOT GAS
DDC DIRECT DIGITAL CONTROLS	LGT LEAVING GLYCOL TEMPERATURE	RHO REHEAT HOT GAS
DEG DEGREE	LG LATENT HEAT	RHO REHEAT HOT GAS
DF DIFFUSER	LPG LIQUID PROPANE GAS	RHO REHEAT HOT GAS
DIA DIAMETER	LPR LOW PRESSURE RETURN (STEAM CONDENSATE)	RHO REHEAT HOT GAS
DW DEIONIZED WATER	LPRC LOW PRESSURE STEAM RETURN (CLEAN)	RHO REHEAT HOT GAS
DP DEW POINT TEMPERATURE	LLHX LIQUID TO LIQUID HEAT EXCHANGER	RHO REHEAT HOT GAS
DPA DIFFUSER PLATE	LPS LOW PRESSURE STEAM	RHO REHEAT HOT GAS
DPS DIFFERENTIAL PRESSURE ASSEMBLY	LPSD LOW PRESSURE STEAM (CLEAN)	RHO REHEAT HOT GAS
DPS DIFFERENTIAL PRESSURE SENSOR	LSO LINEAR SLOT DIFFUSER	RHO REHEAT HOT GAS
DX DIRECT EXPANSION	LTOP LOCAL TEMPERATURE CONTROL PANEL	RHO REHEAT HOT GAS
DXCC DIRECT EXPANSION COOLING COIL	LVB LEAVING	RHO REHEAT HOT GAS
E EXHAUST AIR	LVR LOUVER	RHO REHEAT HOT GAS
EAT ENTERING AIR TEMPERATURE	LWT LEAVING WATER TEMPERATURE	RHO REHEAT HOT GAS
EC EVAPORATIVE COOLER	M METER, SI UNIT	RHO REHEAT HOT GAS
ECG ENGINEERING CONTROL CENTER	M/s METERS PER SECOND (OR METERS/SECOND)	RHO REHEAT HOT GAS
ECU EVAPORATIVE CONDENSER UNIT	MAT MIXED AIR	RHO REHEAT HOT GAS
EDR ELECTRIC DUCT HEATER	MAU MAKE-UP AIR UNIT	RHO REHEAT HOT GAS
EER ENERGY EFFICIENCY RATIO	MAV MANUAL AIR VENT	RHO REHEAT HOT GAS
EF EXHAUST FAN	MAX MAXIMUM	RHO REHEAT HOT GAS
EGS EXHAUST GRILLE	MB MIXING BOX	RHO REHEAT HOT GAS
EGS EMERGENCY GAS SHUTOFF	MBH 1000 BTUH	RHO REHEAT HOT GAS
EGT ENTERING GLYCOL TEMPERATURE	MCA MINIMUM BRANCH CIRCUIT AMPACITY	RHO REHEAT HOT GAS
EJ EXHAUST HOOD	MER MECHANICAL EQUIPMENT ROOM	RHO REHEAT HOT GAS
EJ EXPANSION JOINT	MERV MINIMUM EFFICIENCY REPORTING VALUE	RHO REHEAT HOT GAS
EMD END OF MAIN DRAIN (STEAM)	MH MANHOLE	RHO REHEAT HOT GAS
ENT ENTERING	MHP MOTOR HORSEPOWER	RHO REHEAT HOT GAS
ER EXHAUST REGISTER	MIN MINIMUM	RHO REHEAT HOT GAS
ERC ELECTRIC REHEAT COIL	MM MILLIMETER	RHO REHEAT HOT GAS
ESP ELECTRIC RADIANT PANEL	MOV MOTOR OPERATED VALVE	RHO REHEAT HOT GAS
ET EXTERNAL STATIC PRESSURE	MFR MOTOR OPERATED RETURN (STEAM CONDENSATE)	RHO REHEAT HOT GAS
ET EXPANSION TANK	MPS MEDIUM PRESSURE STEAM	RHO REHEAT HOT GAS
ETH ETHYLENE OXIDE	MRI MAGNETIC RESONANCE IMAGING	RHO REHEAT HOT GAS
EUI ELECTRIC UNIT HEATER	MTD MEAN TEMPERATURE DIFFERENCE	RHO REHEAT HOT GAS
EVC EVAPORATIVE WATER COOLER	MVD MANUAL VOLUME DAMPER	RHO REHEAT HOT GAS
EW ENTERING WATER TEMPERATURE	MZ MULTI-ZONE	RHO REHEAT HOT GAS
EX EXISTING	NA NOT APPLICABLE	RHO REHEAT HOT GAS
F FAHRENHEIT	NC NOISE CRITERIA	RHO REHEAT HOT GAS
FAT FLOAT AND THERMOSTATIC	NC NORMALLY CLOSED	RHO REHEAT HOT GAS
FSD/PR COMBINATION FIRE SMOKE DAMPER	NGF NATURAL GAS	RHO REHEAT HOT GAS
FA FREE AREA	NGFM NATURAL GAS FLOWMETER	RHO REHEAT HOT GAS
FC FLEXIBLE CONNECTION	NO NORMALLY OPEN	RHO REHEAT HOT GAS
FCU FAN COIL UNIT (4 PIPE)		RHO REHEAT HOT GAS

SYMBOL LEGEND

SECTION DESIGNATION	DETAIL NUMBER DRAWING NUMBER WHERE SHOWN
BUILDING NO. WHERE EQUIPMENT IS LOCATED.	EQUIPMENT ABBREVIATION (SUPPLY FAN)
SUPPLY FAN NO. 3 IN BUILDING NO. 26	TYPICAL UNIT NO.
BUILDING NO. WHERE EQUIPMENT IS LOCATED	ITEM (TERMINAL UNIT SHOWN)
ITEM NUMBER (TERMINAL UNIT NO. 1)	SERVED BY AIR HANDLER UNIT NO. 1
SUPPLY DUCT (UP & DOWN)	EXHAUST DUCT (UP & DOWN)
RETURN DUCT (UP & DOWN)	RETURN DUCT (UP & DOWN)
ROUND AND SQUARE 4-WAY CEILING DIFFUSERS	SQUARE 3-WAY CEILING DIFFUSERS
SQUARE 2-WAY CEILING DIFFUSERS	SQUARE 1-WAY CEILING DIFFUSERS
LINEAR SLOT DIFFUSER	SUPPLY TOP REGISTER OR GRILLE (WALL TYPE)
EXHAUST OR RETURN CEILING REGISTER OR GRILLE	EXHAUST OR RETURN BOTTOM REGISTER OR GRILLE (WALL TYPE)
EXHAUST OR RETURN REGISTER OR TOP GRILLE (WALL TYPE)	VANED ELBOW & AIR SPLIT TYPE DUCT TAKE-OFF
CONNECT NEW DUCT TO EXISTING DUCT	INCLINED RISE, IN DIRECTION OF AIR FLOW
INCLINED DROP, IN DIRECTION OF AIR FLOW	LIMIT OF DEMOLITION
FLEXIBLE CONNECTION, EQUIPMENT, VIBRATION, OR SEISMIC	VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANS EVEN IF SYMBOL IS MISSING)
VANED ELBOW (SHORT RADIUS)	STANDARD RADIUS ELBOW (LONG RADIUS)
NEW DUCT (INSIDE DIM. WIDTH x DEPTH)	EXISTING DUCT TO REMAIN
EXISTING DUCT TO BE REMOVED	LOUVER (LOUVER SPECIFIED IN ARCHITECTURAL SECTION)
FLEXIBLE DUCTWORK (INSULATED)	DUCT WITH SOUND LINING
MANUAL VOLUME DAMPER	FIRE DAMPER
BACK DRAFT DAMPER	COMBINATION FIRE/SMOKE DAMPER
POINT OF CHANGE IN DUCT CONSTRUCTION BY STATIC PRESSURE CLASS. THE NUMBER ASSIGNS THE ASSIGNMENT UNTIL THE DUCT TERMINATES OR ANOTHER SYMBOL APPEARS. A "N" SUPERScript INDICATES NEGATIVE PRESSURE.	AUTOMATIC CONTROL DAMPER MODULATING
AUTOMATIC CONTROL DAMPER TWO POSITION	STAINLESS STEEL DUCT
MANUAL SPLITTER DAMPER	

SYMBOL LEGEND

STANDARD BRANCH SUPPLY OR RETURN, NO SPLITTER (45° TAP)	DUCT MOUNTED COIL (HOT WATER OR STEAM COIL)
DUCT MOUNTED COIL (ELECTRIC)	CONVECTOR OR RADIATOR (RECESSED)
CONVECTOR OR RADIATOR (WALL HUNG)	FLOOR MOUNTED VERTICAL RECESSED FAN COIL UNIT. LETTER INDICATES UNIT SIZE.
FLOOR MOUNTED VERTICAL CABINET FAN COIL UNIT. LETTER INDICATES UNIT SIZE.	THRU WALL AIR CONDITIONING UNIT. LETTER INDICATES UNIT SIZE.
WINDOW TYPE AIR CONDITIONING UNIT. LETTER INDICATES UNIT SIZE.	FLOOR MOUNTED HEAT PUMP. LETTER INDICATES UNIT SIZE.
AIR CURTAIN	UNIT HEATER (HORIZONTAL)
UNIT HEATER (VERTICAL)	2'x2' RADIANT CEILING PANEL
2'x4' RADIANT CEILING PANEL	TERMINAL UNIT WITH REHEAT COIL
DOUBLE DUCT MIXING BOX	FAN POWERED VARIABLE VOLUME TERMINAL UNIT WITH HEATING COIL
HPS HIGH PRESSURE STEAM (60 PSIG AND ABOVE)	HPR HIGH PRESSURE STEAM CONDENSATE RETURN
MPS MEDIUM PRESSURE STEAM (16 PSIG TO 59 PSIG)	LPS LOW PRESSURE STEAM (15 PSIG AND BELOW)
LPR LOW PRESSURE STEAM CONDENSATE RETURN	PC CONDENSATE PUMP DISCHARGE
HWS HOT WATER HEATING SUPPLY	HWR HOT WATER HEATING RETURN
GHS GLYCOL-WATER HEATING SUPPLY	GHR GLYCOL-WATER HEATING RETURN
SWS SOLAR WATER SUPPLY	SWR SOLAR WATER RETURN
RL REFRIGERANT LIQUID	RS REFRIGERANT SUCTON
RHO REFRIGERANT HOT GAS	RHS REFRIGERANT HOT GAS (FROM TOWER)
CWS CONDENSER WATER SUPPLY (TO TOWER)	CHS CHILLED WATER SUPPLY
CHW CHILLED WATER RETURN	GCS CHILLED GLYCOL-WATER SUPPLY
CHRW CHILLED GLYCOL-WATER RETURN	GRS GLYCOL-WATER RUN AROUND SUPPLY
GRR GLYCOL-WATER RUN AROUND RETURN	X EXISTING PIPE TO BE REMOVED
FWD FEEDWATER PUMP DISCHARGE	FWR FEEDWATER PUMP SUCTON
CTPD CONDENSATE TRANSFER PUMP DISCHARGE	CTPS CONDENSATE TRANSFER PUMP SUCTON
VR VACUUM CONDENSATE RETURN	TC TUBE CLEANER WATER SUPPLY
BO BOILER BLOWOFF	CBD CONTINUOUS BLOWDOWN
BWS BOILER WATER SAMPLE	FWS FEEDWATER SAMPLE (FROM DEAERATOR)
CF CHEMICAL FEED	OFL OVERFLOW
A COMPRESSED AIR	G NATURAL GAS MAIN FUEL
GI NATURAL GAS IGNITER FUEL	LPG(I) LIQUEFIED PETROLEUM GAS IGNITER FUEL
FOS FUEL OIL SUPPLY	FOR FUEL OIL RETURN
OW COLD WATER (CITY WATER)	SW SOFTENED WATER
HW HOT WATER	

SYMBOL LEGEND

RH ROLLER-TYPE HANGER	VS VARIABLE SPRING-TYPE HANGER (TYPE 51')
SCH SPRING CUSHION-TYPE HANGER (TYPE 48 OR 49')	TH TRAPEZE HANGER (PROVIDE U-BOLT PIPE ATTACHMENT TO TRAPEZE EXCEPT WHERE RH ARE INDICATED)
PS FLOOR-SUPPORTED PIPE STAND	RC RISER CLAMP (TYPE 42')
WB WALL BRACKET (TYPE 31, 32, 33')	CSH CONSTANT SUPPORT HANGER (TYPE 54, 55, 56')
SS SLIDING SUPPORTS (TYPE 35')	
DIRECTION OF PIPE PITCH (DOWN)	DIRECTION OF FLOW
ANCHOR	REDUCER OR INCREASER
ECCENTRIC REDUCER	TOP CONNECTION, 45° OR 90°
BOTTOM CONNECTION, 45° OR 90°	SIDE CONNECTION
CAPPED OUTLET	RISE OR DROP IN PIPE
UNION	PIPE UP
PIPE DOWN	INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
FLOAT & THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL	THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES SEE DETAIL
THERMOMETER	PRESSURE GAGE
FLOW ELEMENT	REFRIGERANT SIGHT GLASS
TEST PIP (PRESSURE/TEMPERATURE)	AUTOMATIC AIR VENT
MANUAL AIR VENT	QUICK-COUPLE HOSE CONNECTOR GATE VALVE - THREADED/FLANGED
GLOBE VALVE - THREADED/FLANGED	GATE VALVE WITH 3/4" HOSE ADAPTER
CHECK VALVE	WYE STRAINER (WITH BALL VALVE & HOSE CONN.)
WYE STRAINER (WITH BALL VALVE & HOSE CONN.)	WYE STRAINER WITH VALVED DRAIN AND QUICK-COUPLE HOSE CONNECTOR
FLEXIBLE CONNECTION	ANGLE GLOBE VALVE
BUTTERFLY VALVE	BALL VALVE
MODULATING CONTROL VALVE	MODULATING CONTROL BUTTERFLY VALVE
TWO POSITION CONTROL VALVE	THREE-WAY MODULATING CONTROL VALVE
THREE-WAY TWO POSITION CONTROL VALVE	PRESSURE REGULATING VALVE
PRESSURE SAFETY VALVE	AUTOMATIC BALANCING CONTROL VALVE
WATER BALANCE DEVICE	CIRCUIT SETTER VALVE
GATE VALVE WITH GLOBE-VALVED BYPASS	PLUG VALVE
CONTROL VALVE (CV) - FLOAT-OPERATED	PRESSURE REDUCING VALVE (PRV)
WATER LEVEL CONTROLLER	FLOW METER
ROOM THERMOSTAT/TRANSMITTER - WALL MOUNT	ROOM HUMIDISTAT/TRANSMITTER - WALL MOUNT
TEMPERATURE TRANSMITTER	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT
MOISTURE (HUMIDITY) TRANSMITTER	PRESSURE TRANSMITTER
STATIC PRESSURE SENSOR	FLOW TRANSMITTER
CURRENT TRANSMITTER	CONDUCTIVITY TRANSMITTER
SMOKE DETECTOR	

SYMBOL LEGEND

POT PRESSURE DIFFERENTIAL TRANSMITTER	PDS PRESSURE DIFFERENTIAL SWITCH
HS HAND SWITCH (HAND-OFF-AUTO SWITCH)	ZC VALVE OR DAMPER POSITION CONTROLLER
TSR LOCAL RECORDING TIME CLOCK (RUNTIME)	TSR TEMPERATURE SWITCH, LOW (FREEZE/STAT)
TSR TEMPERATURE SWITCH, HIGH (FREEZE/STAT)	LC LEVEL CONTROLLER
LT LEVEL TRANSMITTER	PSH PRESSURE SWITCH HIGH
PSL PRESSURE SWITCH LOW	EPT ELECTRONIC TO PNEUMATIC TRANSDUCER
AT CO2 CARBON DIOXIDE TRANSMITTER	AT CO CARBON MONOXIDE TRANSMITTER
AT OC OCCUPANCY SENSOR	LTCP LOCAL TEMPERATURE CONTROL PANEL
HVAC HVAC CONTROL PANEL	VSMC VARIABLE SPEED MOTOR CONTROLLER
ECC INTEGRATE CONTROL POINT ON REMOTE GRAPHICS WORKSTATION AT ENERGY CONTROL CENTER	TC TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
PC PRESSURE CONTROLLER. SEE SEQUENCE OF OPERATION	SC SPEED CONTROLLER. SEE SEQUENCE OF OPERATION
FC FLOW CONTROLLER. SEE SEQUENCE OF OPERATION	FSH FLOW SWITCH HIGH
FSL FLOW SWITCH LOW	KC TIME CLOCK CONTROLLING EQUIPMENT ON A SCHEDULE
TEMPERATURE SENSING ELEMENT FOR TRANSMITTING TEMPERATURE TO EMS (PROVIDE 12 INCHES (300mm) MINIMUM LENGTH IN DUCT WHEN SPACE PERMITS)	SENSOR WITH AVERAGING ELEMENT TO TRANSMIT TEMPERATURE TO EMS
MOTOR STARTER	ELECTRIC OPERATED CONTROL DAMPER/OR VALVE

GENERAL NOTES

- SEE ARCHITECTURAL DOCUMENTS FOR PAINTING OF ALL EXPOSED DUCTWORK. PIPING, AIR OUTLET AND FIXTURE TRIM. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES, AND REGISTERS.
- INSTALL SHUT-OFF VALVES AT EACH BRANCH PIPE LINE.
- UNLESS SPECIFICALLY SPECIFIED OR SHOWN OTHERWISE ALL CONSTRUCTION IS TO CONFORM TO SMACNA HVAC CONSTRUCTION STANDARDS, TWO INCH PRESSURE CLASSIFICATION.
- REFER TO ARCHITECTURAL SPECIFICATION FOR APPROVED FIRESTOPPING SYSTEM.
- MOUNT ROOM THERMOSTATS AND OTHER CONTROL DEVICES AT 48-INCHES ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED.
- ALL PLENUM BOXES, DUCTWORK ETC. TO BE LOCATED INSIDE WALL CAVITIES OR INACCESSIBLE SPACES SHALL BE TESTED FOR AIRTIGHT CONSTRUCTION BEFORE INSTALLATION (TYPICAL).
- ALL PIPING TO BE LOCATED INSIDE WALL CAVITIES OR INACCESSIBLE SPACES SHALL BE LEAK TESTED AND INSULATED WITH VAPOR BARRIER SEAL BEFORE INSTALLATION (TYPICAL).
- INSTALL AUTOMATIC AIR VENTS AT ALL HIGH POINTS OF HYDRONIC PIPING.
- PROVIDE ALL REQUIRED PERMITS, INSPECTIONS AND COORDINATION WITH GOVERNING AUTHORITIES. INSTALLATION TO CONFORM WITH CURRENT APPLICABLE PROVISIONS OF:
 - 2012 INTERNATIONAL BUILDING CODE
 - 2012 INTERNATIONAL MECHANICAL CODE
 - 2012 INTERNATIONAL PLUMBING CODE
- NOT ALL PIPING TO BE FLEXIBLE CONNECTED TO EQUIPMENT.
- NOT ALL SYMBOLS, ABBREVIATIONS AND NOTES MAY BE USED FOR THIS PROJECT.
- INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
- PROVIDE ACCESS DOORS OR PANELS FOR ALL EQUIPMENT, VALVES, AND ALL OTHER ITEMS LOCATED IN OTHERWISE INACCESSIBLE LOCATION WHICH REQUIRED ROUTINE ADJUSTMENT OR SERVICING. PROVIDE ACCESS LARGE ENOUGH TO ADEQUATELY PERMIT MAINTENANCE AND INSPECTION OF THE DEVICE.
- CONTRACTOR TO INCLUDE ALL OFFSETS AND TRANSITIONS OF DUCTWORK AND PIPING FOR PROPER FUNCTION OF THESE SYSTEMS WHETHER OR NOT SHOWN IN DRAWINGS.
- VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. PROVIDE TRANSITION FOR FINAL CONNECTION TO EQUIPMENT.
- FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF WORK.
- PAINT INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES, AND REGISTERS FLAT BLACK.
- DUCT SYSTEMS SHALL BE BALANCED TO QUANTITIES SHOWN ON THE DRAWINGS.

GENERAL CONDITION

- ALL WORK TO BE IN ACCORDANCE WITH REQUIREMENTS OF GOVERNING LOCAL FIRE CODES AND BUILDING CODES.
- VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS. NOTIFY ARCHITECT OF ANY DISCREPANCIES FOUND. VERIFY DIMENSIONS OF ALL OWNER FURNISHED OPERATING EQUIPMENT TO ENSURE PROPER COORDINATION WITH CONSTRUCTION.
- SCHEDULE ALL WORK ACCESS AND STORAGE WITH THE FACILITY ADMINISTRATOR.
- CONTRACTOR SHALL PROVIDE DUST COVERS AS REQUIRED TO CONTAIN DUST AND DEBRIS WITHIN CONSTRUCTION AREA AND KEEP DIRT AND DUST TO A MINIMUM.
- ALL REMOVED ITEMS DEEMED TO HAVE VALUE BY THE OWNER SHALL BE DELIVERED TO A PLACE OF STORAGE AT THE SITE AS DIRECTED. ALL OTHER ITEMS MUST BE DISPOSED OF OFF SITE IN A LEGAL MANNER.
- WHERE EXISTING CONSTRUCTION IS CUT, DAMAGED, OR REMODELED, PATCH WITH MATERIALS TO MATCH IN KIND, QUALITY AND PERFORMANCE.
- CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR SAFETY OF ALL PERSONS ON OR ABOUT THE CONSTRUCTION SITE IN ACCORDANCE WITH APPLICABLE LAWS AND CODES. GUARD ALL HAZARDS IN ACCORDANCE WITH THE SAFETY PROVISIONS OF THE LATEST EDITION OF THE OSHA SAFETY AND HEALTH REGULATIONS PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA.
- CLEAN ALL EXPOSED SURFACES AND NEW EQUIPMENT AFTER COMPLETION.
- WHEN INSTALLING DRILLED-IN ANCHORS AND/OR POWDER DRIVEN PINS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. MAINTAIN A MINIMUM CLEARANCE OF ONE INCH BETWEEN THE REINFORCEMENT AND THE DRILLED-IN ANCHOR AND/OR PIN.

MECHANICAL SHEET INDEX - PHARMACY

VV	Sheet Name	Scale
360-J MH001	MECHANICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES	NTS
360-J MH002	MECHANICAL SCHEDULES - PHARMACY	NTS
360-J MH003	MECHANICAL SCHEDULES - PHARMACY	NTS
360-J MH004	MECHANICAL ZONING PLAN - PHARMACY	1/4" = 1' - 0"
360-J MH005	MECHANICAL FLOOR PLAN & SECTIONS - PHARMACY	1/4" = 1' - 0"
360-J MH006	MECHANICAL ROOF PLAN - PHARMACY	1/4" = 1' - 0"
360-J MH007	MECHANICAL PIPING FLOOR PLAN - PHARMACY	1/4" = 1' - 0"
360-J MH008	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH009	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH010	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH011	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH012	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH013	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH014	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH015	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH016	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH017	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH018	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH019	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH020	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH021	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH022	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH023	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH024	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH025	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH026	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH027	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH028	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH029	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH030	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH031	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH032	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH033	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH034	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH035	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH036	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH037	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH038	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH039	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH040	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH041	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS
360-J MH042	MECHANICAL PIPING FLOOR PLAN - PHARMACY	NTS

A

B

C

D

E

F

A

B

C

D

E

F

three inches = one foot
6"

one and one half inches = one foot
6"

one inch = one foot
6"

three quarters inch = one foot
6"

one half inch = one foot
6"

one quarter inch = one foot
6"

three eighths inch = one foot
6"

one eighth inch = one foot
6"

one quarter inch = one foot
6"

one eighth inch = one foot
6"

one eighth inch = one foot
6"

one eighth inch = one foot
6"

one eighth inch = one foot
6"

one eighth inch = one foot
6"

one eighth inch = one foot
6"

ROOM AIR BALANCE SCHEDULE-PHARMACY																						
ROOM NO	ROOM NAME	AIR HANDLING UNIT NO	UNIT	INDIVIDUAL ROOM TEMP CONTROL	SUPPLY				RETURN OR EXHAUST				ROOM AIR FLOW		ROOM AIR BALANCE	NET INFILTRATION		NET EXFILTRATION		REMARKS		
					ROOM AIR FLOW		# OF AIR DEVICES	AIR DEVICE MARK	OUTSIDE AIR SUPPLY FAN	RETURN OR EXHAUST (R/E)	ROOM AIR FLOW					# OF AIR DEVICES	AIR DEVICE MARK	RETURN OR EXHAUST FAN	CFM		[L/s]	CFM
					CFM	L/S					CFM	L/S	CFM	L/S								
101B	OUTPATIENT PROCESSING/DISPENSING	AHU-1	VAV-1	Y	780	[370]	2	SD-23		R	905	[430]	-		R	X	NR	[]	125	[59]		
101C	INPATIENT PROCESSING	AHU-1	VAV-2	Y	1110	N/A	4	SD-23		R	1110	[520]	5	RG-24	R	X	NR	[]		[]		
101D	PACKAGING	AHU-1	VAV-3	Y	710	N/A	2	SD-23		R	835	[390]	-		R	X	NR	[]	125	[59]		
102	VAULT	AHU-1	VAV-4	Y	170	[80]	1	SD-22		R	170	[80]	1	RG-22	R	X	NR	[]		[]		
103	BREAKROOM	AHU-1	VAV-5	Y	175	[83]	1	SD-22		R	175	[83]	1	RG-22	R	X	NR	[]		[]		
105	OFFICE	AHU-1	VAV-6	Y	90	[42]	1	SD-21		R	90	[42]	1	RG-21	R	X	NR	[]		[]		
104	STORAGE	AHU-1	VAV-6	N	35	[17]	1	SD-21		R	35	[17]	1	RG-21	R	X	NR	[]		[]		
101C	CORRIDOR	AHU-1	VAV-6	N	50	[24]	1	SD-21		R	0	[]		R		X	NR	200	[94]	250	[120]	
106B	IV ROOM	FCU-1	-	Y	1000	[470]	3	SD-101	1000	E	800	[380]		E	X		P	0	[]	200	[94]	
106A	ANTE ROOM	FCU-2	-	Y	600	[280]	2	SD-101	600	E	600	[280]	2	RR-53	E	X		P	200	[94]	200	[94]
108	MECHANICAL	AHU-1	VAV-7	N	100	[47]	1	SD-52		E	100	[47]	1	ER-56	E		X	NR	[]		[]	
107	ELECTRICAL	AHU-1	VAV-7	Y	150	[71]	1	SD-53		E	150	[71]	1	ER-57	E		X	NR	[]		[]	
NOTES: 1. EXHAUST ROOM THROUGH GLOVE BOX HOODS.																						

AIR FILTER SCHEDULE - PHARMACY																	
MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	SYSTEM AND/OR SERVICE	MERV RATING	AIR FLOW		APD				HOUSING TYPE	CARTRIDGES				REMARKS
						CFM	[L/s]	INITIAL		CHANGEOVER			#	SIZE		ARRANGEMENT	
								IN	[mm]	IN	[mm]			IN	[mm]		
PF-1	ROOF	BLDG. 360-J	PRE-FILTER	AHU-1	8	3365	[1600]	0.36	[9]	1	[25]	SIDE	2	24 x 20 x 2	[610 x 508 x 51]		-----
													1	24 x 12 x 2	[610 x 610 x 51]		
AF-1	ROOF	BLDG. 360-J	PRIMARY	AHU-1	13	3365	[1600]	0.51	[13]	1	[25]	SIDE	2	24 x 20 x 2	[610 x 508 x 51]		----
													1	24 x 12 x12	[610 x 305 x 305]		
PF-2	ROOF	BLDG. 360-J	PRE-FILTER	FCU-1	13	1000	[470]	0.12	[3]	1	[25]	SIDE	1	20 x 24 x 4	[508 x 610 x 102]		-----
FF-1	ROOF	BLDG. 360-J	FINAL	FCU-1	17	1000	[470]	0.3	[8]	1	[25]	SIDE	1	20 x 24 x 12	[508 x 610 x 305]		----
PF-3	ROOF	BLDG. 360-J	PRE-FILTER	FCU-2	13	610	[290]	0.06	[2]	1	[25]	SIDE	1	20 x 24 x 4	[508 x 610 x 102]		-----
FF-2	ROOF	BLDG. 360-J	FINAL	FCU-2	17	610	[290]	0.13	[3]	1	[25]	SIDE	1	20 x 24 x 12	[508 x 610 x 305]		----
NOTES:																	

SINGLE DUCT AIR TERMINAL UNIT SCHEDULE - PHARMACY																
MARK	LOCATION	AREA AND/OR ROOM SERVED	SYSTEM AIR HANDLING	SIZE	AIR FLOW				ADDITIONAL SOUND ATTENUATION REQUIRED	CONTROL TYPE	CONTROL SEQUENCE	REHEAT			PERIMETER SUPPLEMENTAL HEAT LINK	REMARKS
					MAX		MIN					HW	ELEC	NONE		
					CFM	[L/s]	CFM	[L/s]								
VAV-1	CEILING	OUTPATIENT PROCESSING/DISPENSING	AHU-1		780	[370]	390	[180]	----			X			----	----
VAV-2	CEILING	INPATIENT PROCESSING	AHU-1		1110	[520]	555	[260]	----			X			----	----
VAV-3	CEILING	PACKAGING	AHU-1		710	[340]	355	[170]	----			X			----	----
VAV-4	CEILING	VAULT	AHU-1		170	[80]	85	[40]	----			X			----	----
VAV-5	CEILING	BREAKROOM	AHU-1		175	[83]	90	[42]	----			X			----	----
VAV-6	CEILING	OFFICE/STORAGE	AHU-1		170	[80]	85	[40]	----			X			----	----
VAV-7	CEILING	ELECTRICAL/MECHANICAL	AHU-1		250	[120]	250	[120]	----			X			----	----
NOTES:																

HOT WATER HEATING COIL SCHEDULE - PHARMACY																										
MARK	LOCATION	AREA AND/OR ROOM SERVED	SYSTEM AND/OR SERVICE	APPLICATION	AIR FLOW		MAX FACE VELOCITY		APD		TEMPERATURES				TOTAL MIN CAPACITY		HOT WATER								% GLYCOL	REMARKS
											EAT		LAT				FLOW		EWT		LWT		WPD			
					CFM	[L/s]	FPM	[M/s]	IN WG	[Pa]	°F	[°C]	°F	[°C]	MBH	[kW]	GPM	[L/s]	°F	[°C]	°F	[°C]	FT	[kPa]		
VAV-1	CEILING	OUTPATIENT PROCESSING/ DISPENSING	AHU-1	REHEAT	390	[180]	700	[4]	0.2	[50]	55	[13]	79	[26]	10.2	[35]	1.0	[]	130	[54]	110	[43]	0.1	[]	N/A	---
VAV-2	CEILING	INPATIENT PROCESSING	AHU-1	REHEAT	555	[260]	700	[4]	0.2	[50]	55	[13]	78	[26]	13.9	[47]	1.4	[]	130	[54]	110	[43]	0.1	[]	N/A	---
VAV-3	CEILING	PACKAGING	AHU-1	REHEAT	355	[170]	700	[4]	0.2	[50]	55	[13]	79	[26]	9.2	[32]	0.9	[]	130	[54]	110	[43]	0.1	[]	N/A	---
VAV-4	CEILING	VAULT	AHU-1	REHEAT	85	[40]	700	[4]	0.2	[50]	55	[13]	82	[28]	2.5	[9]	0.5	[]	130	[54]	110	[43]	0.1	[]	N/A	---
VAV-5	CEILING	BREAKROOM	AHU-1	REHEAT	90	[42]	700	[4]	0.2	[50]	55	[13]	78	[26]	2.2	[8]	0.5	[]	130	[54]	110	[43]	0.1	[]	N/A	---
VAV-6	CEILING	OFFICE/STORAGE	AHU-1	REHEAT	85	[40]	700	[4]	0.2	[50]	55	[13]	82	[28]	2.5	[9]	0.5	[]	130	[54]	110	[43]	0.1	[]	N/A	---
VAV-7	CEILING	ELECTRICAL/MECHANICAL	AHU-1	REHEAT	125	[59]	700	[4]	0.2	[50]	55	[13]	85	[29]	4.1	[14]	0.5	[]	130	[54]	110	[43]	0.1	[]	N/A	---
PHC-1	ROOF	BLDG. 360-J	AHU-1	PRE-HEAT	3,800	[1800]	543	[3]	0.08	[20]	51	[11]	60	[16]	38.7	[130]	2.5	[]	130	[54]	110	[43]	0.2	[1]	N/A	---
HC-1	ROOF	IV ROOM	FCU-1	HEATING	1000	[470]	500	[3]	0.13	[33]	31.9	[-]	76	[24]	31.9	[110]	3.2	[]	130	[54]	110	[43]	0.1	[]	N/A	---
HC-2	ROOF	ANTE ROOM	FCU-2	HEATING	600	[280]	700	[4]	0.1	[25]	31.9	[-]	76	[24]	28.7	[98]	2.9	[]	130	[54]	110	[43]	0.1	[]	N/A	---
NOTES																										

FAN SCHEDULE - PHARMACY																									
MARK	LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	AIR FLOW		TSP		FAN								MOTOR ELECTRICAL								CONTROL SEQUENCE	REMARKS
				CFM	[L/s]	IN	[Pa]	TYPE	WHEEL	CLASS	ARRANGEMENT, ROTATION, AND DISCHARGE	DIAMETER		MIN % EFF	DRIVE	FAN MAX RPM	NOMINAL POWER			PHASE	VOLT	RPM	SPEED CONTROL		
												IN	[mm]				BHP	HP	[kW]						
SF-1	ROOF	360-J	AHU-1	3800	[1800]	3.92	[980]	Centrifugal DWDI	AF	2	10/CW/TH	13.22	[330]	56%	BELT	3113	3.99	5	[4]	3	460	1750	VFD		Daikin OAH008GDAC
RF-1	ROOF	360-J	AHU-1	3800	[1800]	1.07	[270]	Centrifugal DWDI	FC	1	10/CW/TH	12.62	[320]	56%	BELT	915	0.95	1.5	[1]	3	460	1750	VFD		Daikin OAH008GDAC
SF-2	ROOF	360-I	FCU-1	1000	[470]	2.83	[710]	Centrifugal DWDI	FC	2	10/CW/TH	9.5	[240]	56%	BELT	1937	0.86	1	[1]	3	460	1750	VFD		DAIKIN OAH003GDAC
SF-3	ROOF	360-I	FCU-2	600	[280]	1	[250]	Centrifugal DWDI	FC	2	10/CW/TH	9.5	[240]	56%	BELT	1881	0.51	1	[1]	3	460	1750	VFD		DAIKIN OAH003GDAC
EF-1	ROOF	360-I	GENERAL EXHAUST	250	[120]	1	[250]	Centrifugal Utility	BI		10/CW/TH	12	[300]	56%	BELT	1634	0.37	0.5	[]	3	460	1750	None		Greenheck SWB-107-10-BI-4
EF-2	ROOF	IV ROOM / ANTE ROOM	GLOVE BOXES & ROOM EXHAUST	1600	[760]	2	[500]	Centrifugal Utility	BI		10/CW/TH	13	[330]	60%	BELT	1911	0.89	1	[1]	3	460	1750	None		Greenheck SWB-113-10-BI-10
NOTE																									
ALL SELECTIONS ARE BASED ON AN ALTITUDE OF 195 FT.																									

AIR DEVICE SCHEDULE (SUPPLY)																
MARK	TYPE	AIR FLOW				MAX APD		MOUNTING	PANEL/FRAME SIZE		NECK SIZE		NC	DAMPER	FINISH	REMARKS
		MIN	MAX		IN x IN				[mm x mm]	IN	[mm]					
		CFM	[L/s]	CFM	[L/s]	IN WG	[Pa]									
SD-11	LOUVERED FACE	40	[19]	160	[76]	0.080	[20]	CEILING	24 x 24	[600 x 600]	6 ø	[152 ø]	19	NONE	WHITE	1.2
SD-21	PERFORATED	60	[28]	180	[85]	0.100	[25]	CEILING	24 x 24	[600 x 600]	6 ø	[152 ø]	25	NONE	WHITE	1.2
SD-22	PERFORATED	110	[52]	320	[150]	0.100	[25]	CEILING	24 x 24	[600 x 600]	8 ø	[203 ø]	30	NONE	WHITE	1.2
SD-23	PERFORATED	160	[76]	450	[210]	0.100	[25]	CEILING	24 x 24	[600 x 600]	10 ø	[254 ø]	33	NONE	WHITE	1.2
SD-24	PERFORATED	240	[110]	700	[330]	0.100	[25]	CEILING	24 x 24	[600 x 600]	12 ø	[305 ø]	36	NONE	WHITE	1.2
SD-51	SUPPLY REGISTER	80	[38]	120	[57]	0.100	[25]	WALL	8 x 8	[203 x 203]	6 x 6	[152 x 152]	25	OBD	WHITE	1.2
SD-52	SUPPLY REGISTER	80	[38]	160	[76]	0.090	[23]	WALL	12 x 8	[305 x 203]	10 x 6	[254 x 152]	25	OBD	WHITE	1.2
SD-53	SUPPLY REGISTER	130	[61]	350	[170]	0.080	[20]	WALL	14 x 10	[356 x 254]	12 x 8	[305 x 203]	26	OBD	WHITE	1.2
SD-62	DRUM LOUVER	80	[38]	150	[71]	0.090	[23]	DUCT MOUNTED	14 x 6	[356 x 152]	12 x 4	[305 x 102]	15	NONE	WHITE	1
SD-63	DRUM LOUVER	150	[71]	300	[140]	0.090	[23]	DUCT MOUNTED	16 x 8	[406 x 203]	14 x 6	[356 x 152]	18	NONE	WHITE	1
SD-64	DRUM LOUVER	290	[140]	600	[280]	0.090	[23]	DUCT MOUNTED	22 x 10	[560 x 254]	20 x 8	[508 x 203]	21	NONE	WHITE	1
SP-101	LAMINAR FLOW	335	[160]	335	[160]	0.150	[38]	CEILING	24x48	[560 x 254]	10 ø	[254 ø]	40	NONE	WHITE	3
NOTES																
1. SEE DETAIL FOR DAMPER IN BRANCH DUCT SERVING EACH DIFFUSER.																
2. PROVIDE SQUARE TO ROUND ADAPTER.																
3. NON-ASPIRATING LAMINAR FLOW STAINLESS STEEL. PRESSURE AIR PAT B LAMI-VENT.																

MARK	TYPE	AIR FLOW				MAX APD	MOUNTING	PANEL/FRAME SIZE		NECK SIZE		NC	DAMPER	FINISH	REMARKS	
		MIN		MAX				IN x IN	[mm x mm]	IN x IN	[mm x mm]					
		CFM	[L/s]	CFM	[L/s]											
EG-21	PERFORATED	30	[14]	100	[47]	0.090	23,000	CEILING	24 x 24	[600 x 600]	6 ø	[152 ø]	-	NONE	WHITE	1,2
EG-22	PERFORATED	175	[83]	275	[130]	0.090	23,000	CEILING	24 x 24	[600 x 600]	8 ø	[254 ø]	16	NONE	WHITE	1,2
EG-23	PERFORATED	175	[83]	275	[130]	0.090	23,000	CEILING	24 x 24	[600 x 600]	10ø	[254 ø]	16	NONE	WHITE	1,2
EG-24	PERFORATED	240	[110]	400	[190]	0.088	22,000	CEILING	24 x 24	[600 x 600]	12 DIAM	[305 DIAM]	12	NONE	WHITE	1,2
EG-25	PERFORATED	320	[150]	500	[240]	0.087	22,000	CEILING	24 x 24	[600 x 600]	14 DIAM	[356 DIAM]	14	NONE	WHITE	1,2
EP-101	PERFORATED	200	[110]	430	[190]	0.088	22,000	CEILING	12 x 12	[300 x 300]	10 x 10	[254 x 254]	33	NONE	WHITE	1,2,3
ER-53	EXHAUST REGISTER	270	[130]	440	[210]	0.078	20,000	WALL	14 x 14	[356 x 356]	12 x 12	[305 x 305]	17	OBD	WHITE	3
ER-56	EXHAUST REGISTER	90	[42]	160	[78]	0.078	20,000	WALL	10 x 8	[254 x 203]	8 x 6	[203 x 152]	12	OBD	WHITE	-----
ER-57	EXHAUST REGISTER	140	[66]	240	[110]	0.078	20,000	WALL	14 x 8	[356 x 203]	12 x 6	[305 x 152]	14	OBD	WHITE	-----
NOTE																
1. PROVIDE SQUARE TO ROUND ADAPTER AS NECESSARY.																
2. SEE DETAIL FOR DAMPER IN BRANCH DUCT SERVING EACH DIFFUSER.																

EXPANSION & BUFFER TANK SCHEDULE - PHARMACY																										
MARK	LOCATION	SYSTEM AND/OR SERVICE	TYPE	APPROX SYSTEM VOLUME		SYSTEM TEMPERATURE RANGE				INITIAL PRESSURE IN TANK		MAX OPERATING PRESSURE		FILL PRESSURE AT TANK				MIN VOLUME TANK		MIN BLADDER VOLUME		PIPE SIZE TO TANK		COLD WATER FILL SIZE		REMARKS
						MIN		MAX						RELIEF VALVE		AT TANK										
				GAL	[L]	°F	[°C]	°F	[°C]	PSIG	[kPa]	PSIG	[kPa]	PSIG	[kPa]	PSIG	[kPa]	GAL	[L]	GAL	[L]	IN	[mm]	IN	[mm]	
ET-1	MECH. RM.	CHILLED WATER	VERT DIAPHRAGM	102	[390]	40	[4]	90	[32]	12	[83]	125	[860]	80	[550]	70	[480]	0.5	[2]	0.4	[2]	1	[25]	0.75	[19]	With Seismic Restraints
BT-1	MECH. RM.	CHILLED WATER	VERT BUFFER TANK	102	[390]	40	[4]	90	[32]		[]	125	[860]		[]		[]		[]		[]	2	[50]	0.75	[19]	With Seismic Legs
NOTES:																										

MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	AIR FLOW	AIR FLOW						SUPPLY FAN MARK	RETURN OR RELIEF FAN MARK	EXHAUST FAN MARK	PREFILTER MARK	AFTER FILTER MARK	FINAL FILTER MARK	HEAT RECOVERY MARK	PREHEAT COIL MARK	COOLING COIL MARK	REHEAT COIL	HUMIDIFIER MARK	REMARKS
					SUPPLY		MIN OA		RETURN													
					CFM	[L/s]	CFM	[L/s]	CFM	[L/s]												
AHU-1	BLDG. 360-J	PHARMACY	Centrifugal	VAV	3800	[1800]	990	[470]	3800	[1800]	SF-1	RF-1	EF-1	PF-1	AF-1		N/A	1-PHC-1	CC-1	AT TU	-	1
FCU-1	BLDG. 360-J	PHARMACY	Centrifugal	CV	1000	[470]	1000	[470]	0	[]	SF-2	-	EF-2	PF-2	AF-2	FF-1	N/A	1-PHC-2	CC-2	AT TU	-	1
FCU-2	BLDG. 360-J	PHARMACY	Centrifugal	CV	600	[280]	600	[280]	0	[]	SF-3	-	EF-2	PF-3	AF-3	FF-2	N/A	1-PHC-3	CC-3	AT TU	-	1
NOTES:																						
1. EMERGENCY POWER																						

AIR COOLED CHILLER SCHEDULE - PHARMACY																															
MARK	LOCATION	AREA AND/OR BLDG SERVED	TYPE	CAPACITY		# OF COMP	MAX KW/TON	EER	MAX IPLV	EVAPORATOR								CONDENSER		ELECTRICAL							REMARKS				
				FLOW						EWT		LWT		MAX WPD		FOULING FACTOR	AMBIENT OA TEMP	COMPRESSOR MOTOR				CONDENSER FAN MOTORS									
				GPM	[L/s]					°F	[°C]	°F	[°C]	FT	[kPa]			# COMP	HP	[KW]	PHASE	VOLT	# FANS	NOMINAL POWER	PHASE	VOLT					
CH-1	BLDG 360-J	PHARMACY	SCROLL	15.8	[56]	2	1.3	9.2	13.4	33.7	[2]	55	[13]	45	[7]	4.3	[13]	0.0001	95	[35]	2	9	[7]	3	460	2	1	[750]	3	460	1.2
NOTES																															
1. EMERGENCY POWER.																															
2. SINGLE POINT 41 MCA.																															

[illegible]

CONSULTANTS:


MAZZETTI

220 Montgomery Street, Suite 650
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PROJECT NUMBER: 130-085

PROJECT NUMBER: 130-085



ARCHITECT

POLYTECH ASSOCIATES INC.
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San Francisco, CA 94104
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Drawing Title
MECHANICAL SCHEDULES - PHARMACY

Approved: Project Director

Project Title
POST TRAUMATIC STRESS DIAGNOSIS (PTSD)
EXPANSION AND RENOVATION

Location
795 WILLOW ROAD, MENLO PARK, CA

Date
01/13/15Checked
MT

Draw	NS
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100% CD/BID SUBMISSION
FEBRUARY 2, 2016

Project Number
612-125

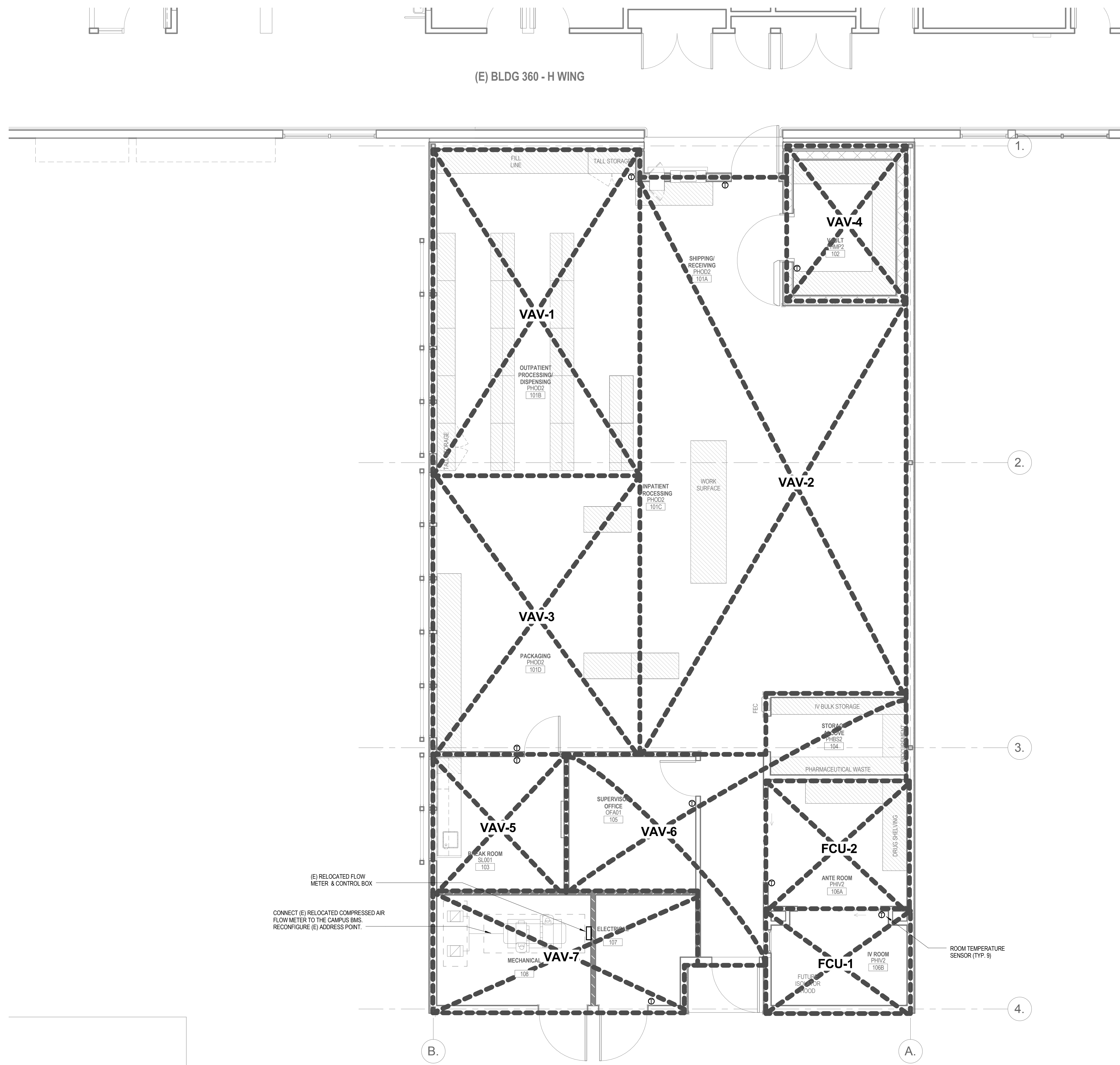
Building Number
Building 360

Drawing Number

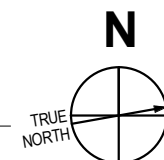
360-J MH003

Office of
Construction
and Facilities
Management





1 PHARMACY MECHANICAL ZONING PLAN
1/4" = 1'-0"

[illegible]

CONSULTANTS:

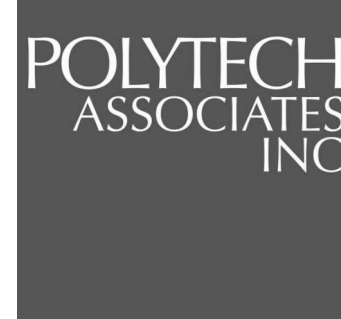


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ARCHITECT



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Drawing Title	MECHANICAL ZONING PLAN - PHARMACY
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Approved: Project Director

Project Title	POST TRAUMATIC STRESS DIAGNOSIS (PTSD) EXPANSION AND RENOVATION
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Location	795 WILLOW ROAD, MENLO PARK, CA
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Date
01/13/15

Checked
MT

	Draw
	NS

Project Number	612-125
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Building Number
Building 360

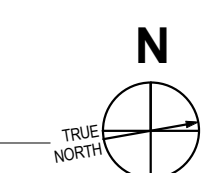
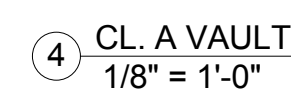
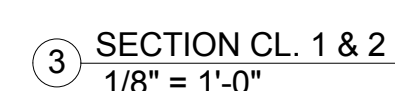
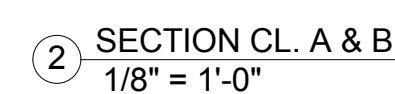
Drawing Number

360-J MH004

100% CD/BID SUBMISSION
FEBRUARY 2, 2016

Office of
Construction
and Facilities
Management





PHARMACY MECHANICAL FIRST FLOOR
MECHANICAL PLAN
1/4" = 1'-0"

CONSULTANTS:



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PROJECT NUMBER: 130-085



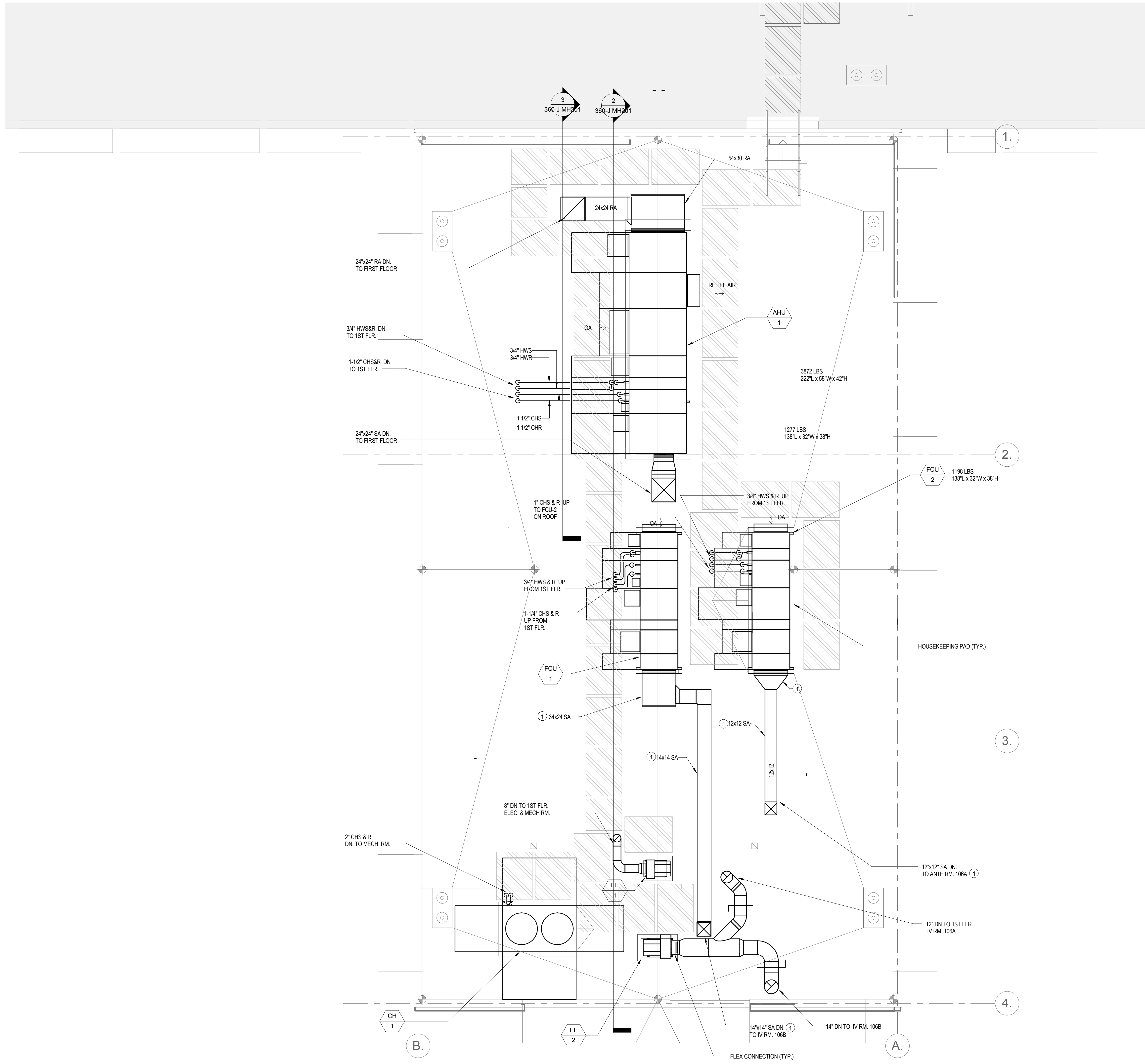
POLYTECH ASSOCIATES INC.
235 Pine Street, 17th Floor
San Francisco, CA 94104
TEL (415) 397-3117
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360-J MH201

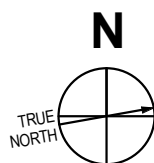
 Department of
Veterans Affairs

A
B
C
D
E
F

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot



PHARMACY MECHANICAL ROOF
MECHANICAL PLAN
1/4" = 1'-0"



65% CD SUBMISSION	03/16/15
100% CD/BID SUBMISSION	02/02/16
Revisions:	Date

CONSULTANTS:

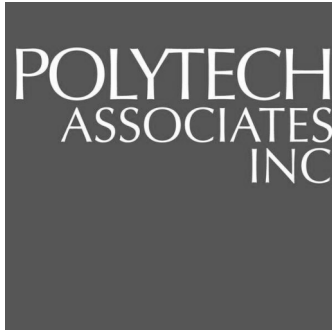


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PROJECT NUMBER: 130-085



ARCHITECT



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Drawing Title
MECHANICAL ROOF PLAN - PHARMACY

Approved: Project Director

Project Title
POST TRAUMATIC STRESS DIAGNOSIS (PTSD)
EXPANSION AND RENOVATION

Location
795 WILLOW ROAD, MENLO PARK, CA

Date
01/13/15

Checked
MT

Drawn
NS

Project Number
612-125

Building Number
Building 360

Drawing Number

360-J MH202

Office of
Construction
and Facilities
Management



Department of
Veterans Affairs

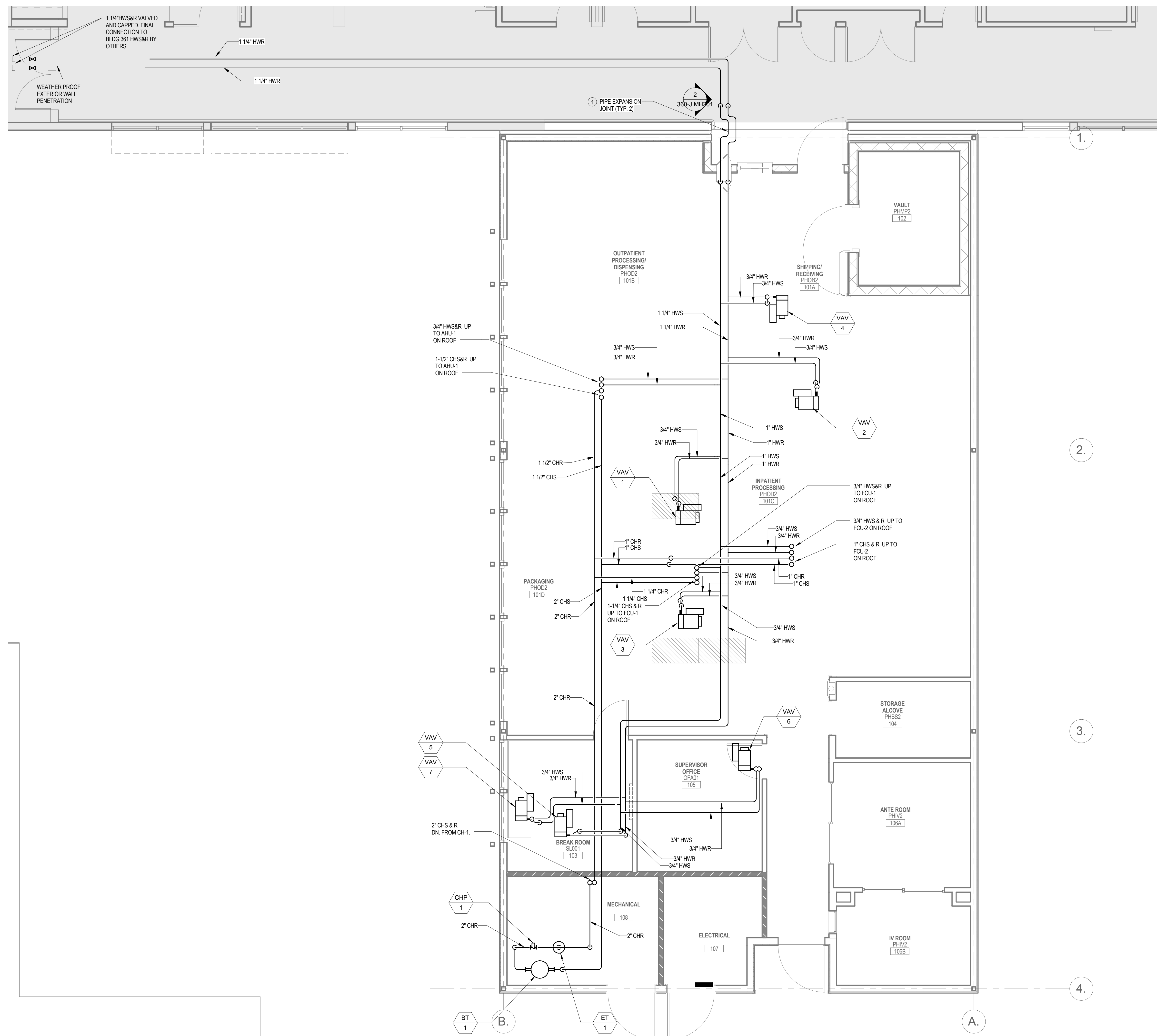
SHEET NOTES

- REFER TO 4 / 360-J MH601 FOR DUCT DETAILS.
- FOR ALL DUCTWORK & PIPING SHOWN GOING UP DN TO PHARMACY, COORDINATE PENETRATION LOCATIONS WITH STRUCTURAL.

KEY NOTES

- STAINLESS STEEL DUCT

100% CD/BID SUBMISSION
FEBRUARY 2, 2016



1 PHARMACY MECHANICAL FIRST FLOOR
MECHANICAL PIPING PLAN
1/4" = 1'-0"

[illegible]

CONSULTANTS:


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PROJECT NUMBER: 130-085



ARCHITECT

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San Francisco, CA 94104
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FAX (415) 397-1517

Drawing Title	MECHANICAL PIPING FLOOR PLAN - PHARMACY
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Approved: Project Director

Project Title	POST TRAUMATIC STRESS DIAGNOSIS (PTSD) EXPANSION AND RENOVATION
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Location	795 WILLOW ROAD, MENLO PARK, CA
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Date
01/13/15

Checked	MT
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Drawn
NS

Project Number	612-125
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Building Number
Building 360

	Drawing Number

360-J MP201

Office of
Construction
and Facilities
Management



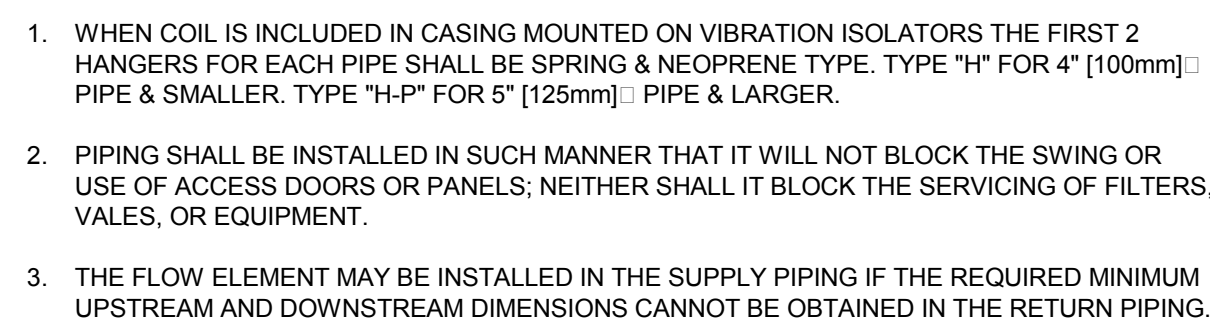
SHEET NOTES

1. REFER TO 360-J MH601 FOR PIPE HANGER DETAIL.
2. REFER TO ZONING PLAN 360-J MH004 FOR THERMOSTAT LOCATIONS.
3. PIPING OFFSETS INTO BEAMSPACE SHALL BE PROVIDED AS NECESSARY. SOME OFFSETS HAVE BEEN SHOWN ON THE DRAWINGS. IF ADDITIONS ARE NEEDED FOR COORDINATION PURPOSES, THESE SHALL BE PROVIDED.
4. REFER TO 360-J MH401 FOR CHILLER PIPING DIAGRAMS.

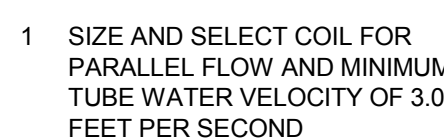
KEY NOTES

1. PROVIDE EXPANSION JOINT TO ALLOW 4" MOVEMENT APART AND 4" MOVEMENT TOGETHER FOR A TOTAL OF 8" MOVEMENT. SUBMIT CALCULATIONS AND SHOP DRAWING SIGNED BY A CALIFORNIA STATE REGISTERED STRUCTURAL ENGINEER FOR APPROVAL.

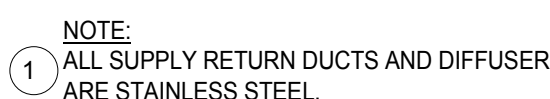
100% CD/BID SUBMISSION
FEBRUARY 2, 2016



360-J MH401 NT5



360-J MH401 NT5



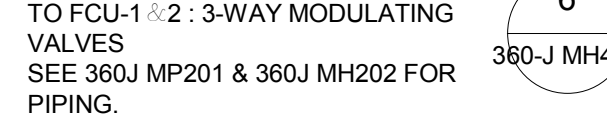
360-J MH401 NT



360-J MH401 NT



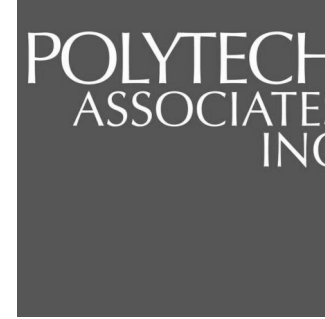
360-J MH401



360-1 MH401 NTS

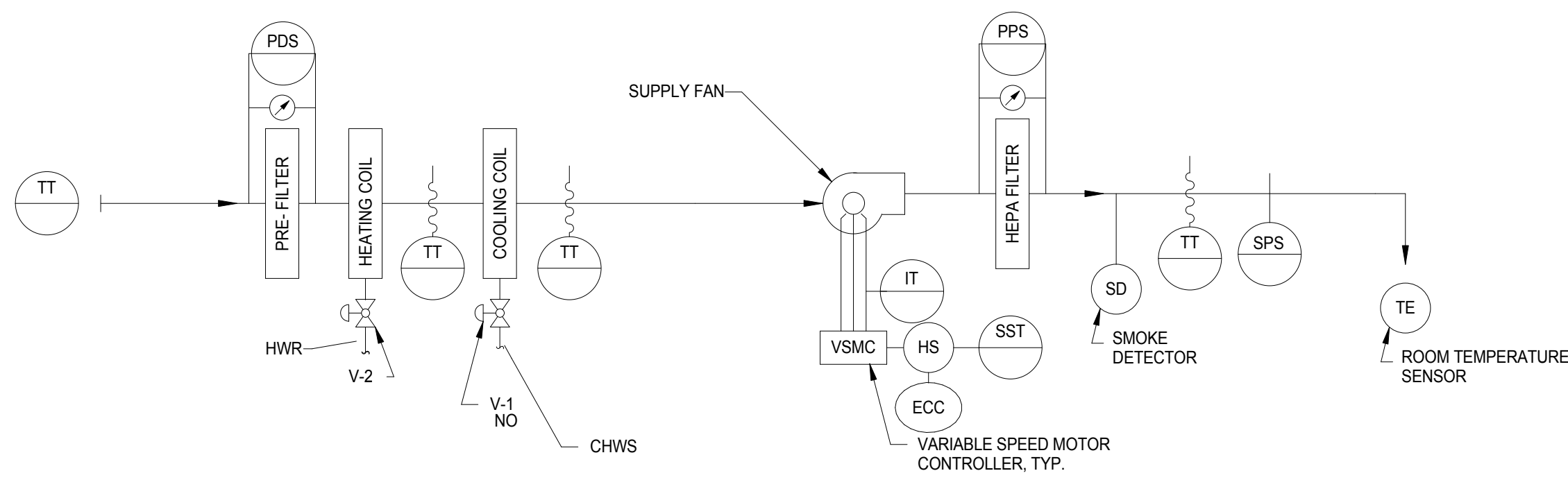

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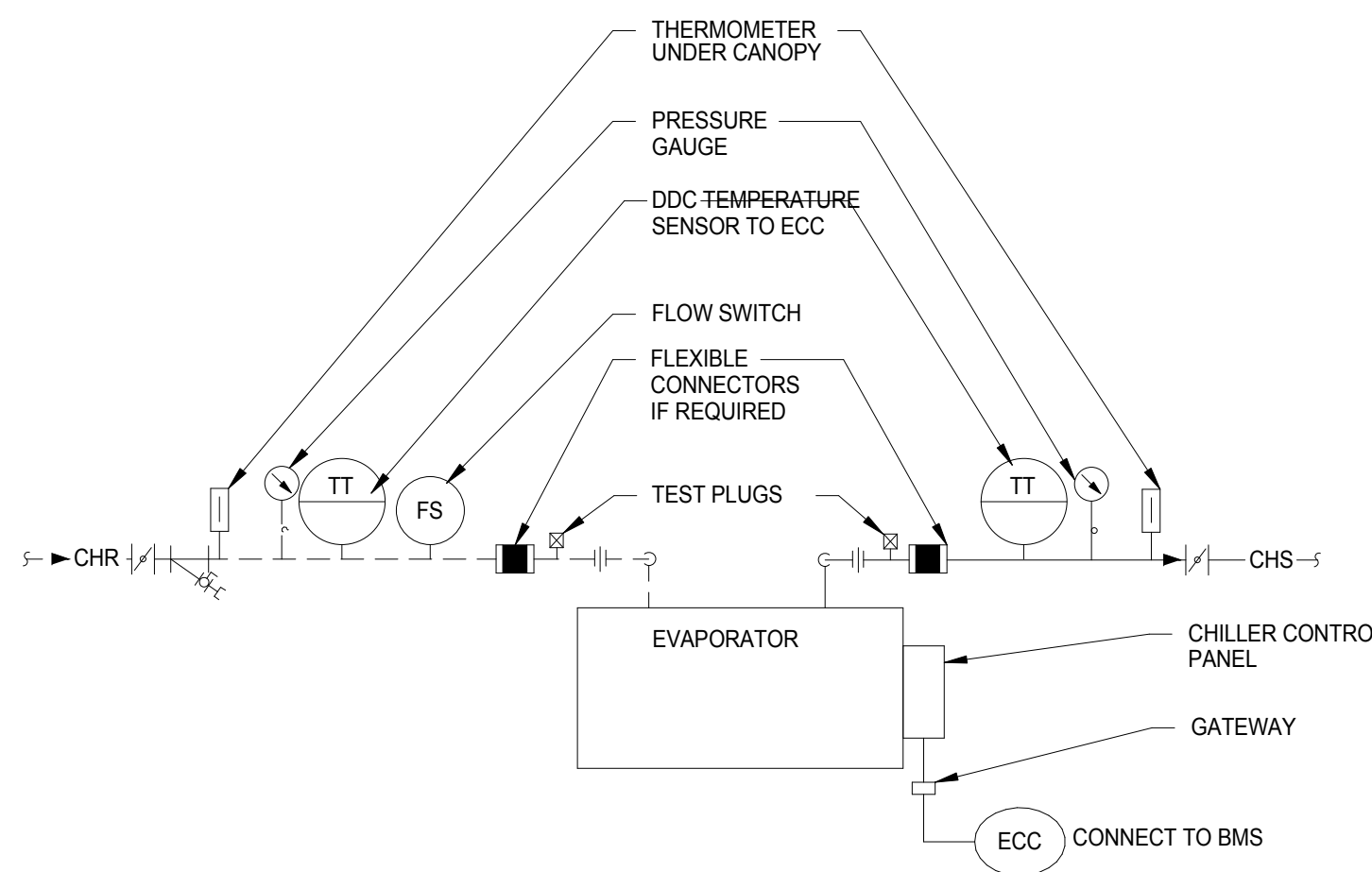
360-J MH401

Department of
Veterans Affairs



SEQUENCE OF OPERATION FOR VARIABLE AIR VOLUME AIR HANDLING UNIT WITH 100% OUTSIDE AIR

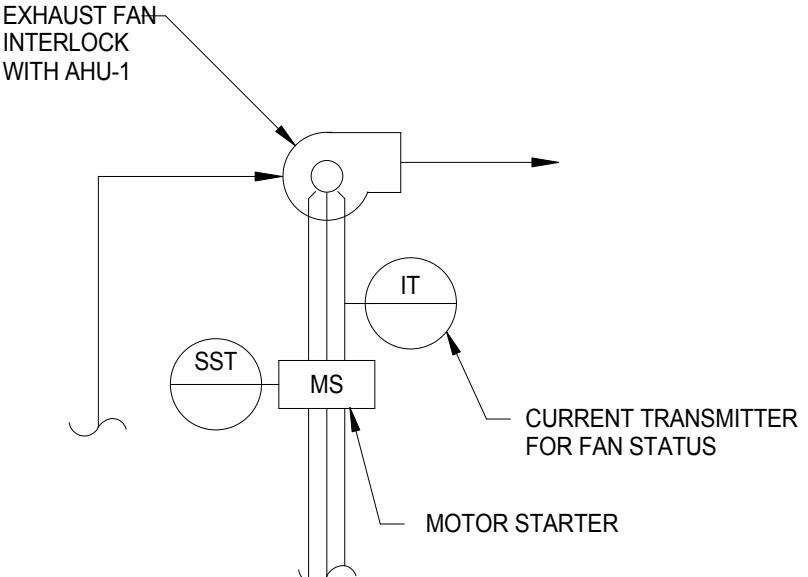
1. GENERAL
1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1, D-3, SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" D-1, SD-1 AND SD-2 SHALL BE FULLY OPEN. D-2 AND D-3 SHALL MODULATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:
2. TEMPERATURE CONTROL
2.1 SUPPLY AIR TEMPERATURE, SENSED BY TT-1, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING V-1 OR D-2 AND D-3 OR V-2 IN SEQUENCE.
3. EMERGENCY CONSTANT SPEED OPERATION
3.1 UPON FAILURE OF THE VSMC, THE SUPPLY AND RETURN FANS SHALL BE STARTED/STOPPED MANUALLY AT THE DIGITAL CONTROL PANEL OR THE ECC THROUGH THE BY-PASS STARTER. FANS SHALL THEN BE OPERATED AT CONSTANT SPEED.
4. AIR FLOW CONTROL
4.1 THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 1.0" (25mm) OF DUCT STATIC PRESSURE (FIELD ADJUSTABLE), SENSED BY SPS-1. RESET STATIC PRESSURE BASED ON ACTUAL BUILDING LOAD BY POLLING ALL ATU
- 4.2 USING HIGH PRESSURE SENSOR SPS-2 LOCATED AT THE SUPPLY FAN DISCHARGE, SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 3" (75mm) OF STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT SPS-2 DOES EXCEED 3" (75mm) THE SUPPLY AIR FAN SHALL STOP. SPS-2 SHALL BE HARDWIRED TO THE SUPPLY FAN VSMC AND UNIT SHALL BE SHUTDOWN IN HAND/AUTO OR BYPASS MODE. SPS-2 WILL REQUIRE MANUAL RESET AT THE DEVICE.
5. FREEZE PROTECTION
5.1 IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 45°F (7°C), AN ALARM SIGNAL SHALL INDICATE AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F (4.4°C), AS SENSED BY THE TSL, THE SUPPLY AND RETURN FANS SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND ECC. TSL SHALL BE HARDWIRED TO THE SUPPLY FAN UFD AND UNIT SHALL BE SHUTDOWN IN HAND/AUTO OR BYPASS MODE. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.
- 6.1 WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, SD, THE SUPPLY AND RETURN FANS SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. ALL SMOKE DAMPERS IN THE SUPPLY AND RETURN DUCTS SHALL CLOSE.
- 6.2 EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.



- NOTE:
1. PROVIDE HEAT TRACING WHEN THE EXPOSED PIPING CARRYING CHILLED WATER IS NOT MIXED WITH PROPYLENE GLYCOL. ALL VALVES, STRAINER, FLOW SWITCH, FLEXIBLE CONNECTORS, ETC., SHALL BE WRAPPED WITH ELECTRIC HEAT TRACE CABLE UNDER INSULATION.
 2. VERIFY NEED FOR FLEXIBLE CONNECTOR.
 3. PROVIDE ALUMINUM JACKETING ON ALL EXPOSED, INSULATED PIPING.

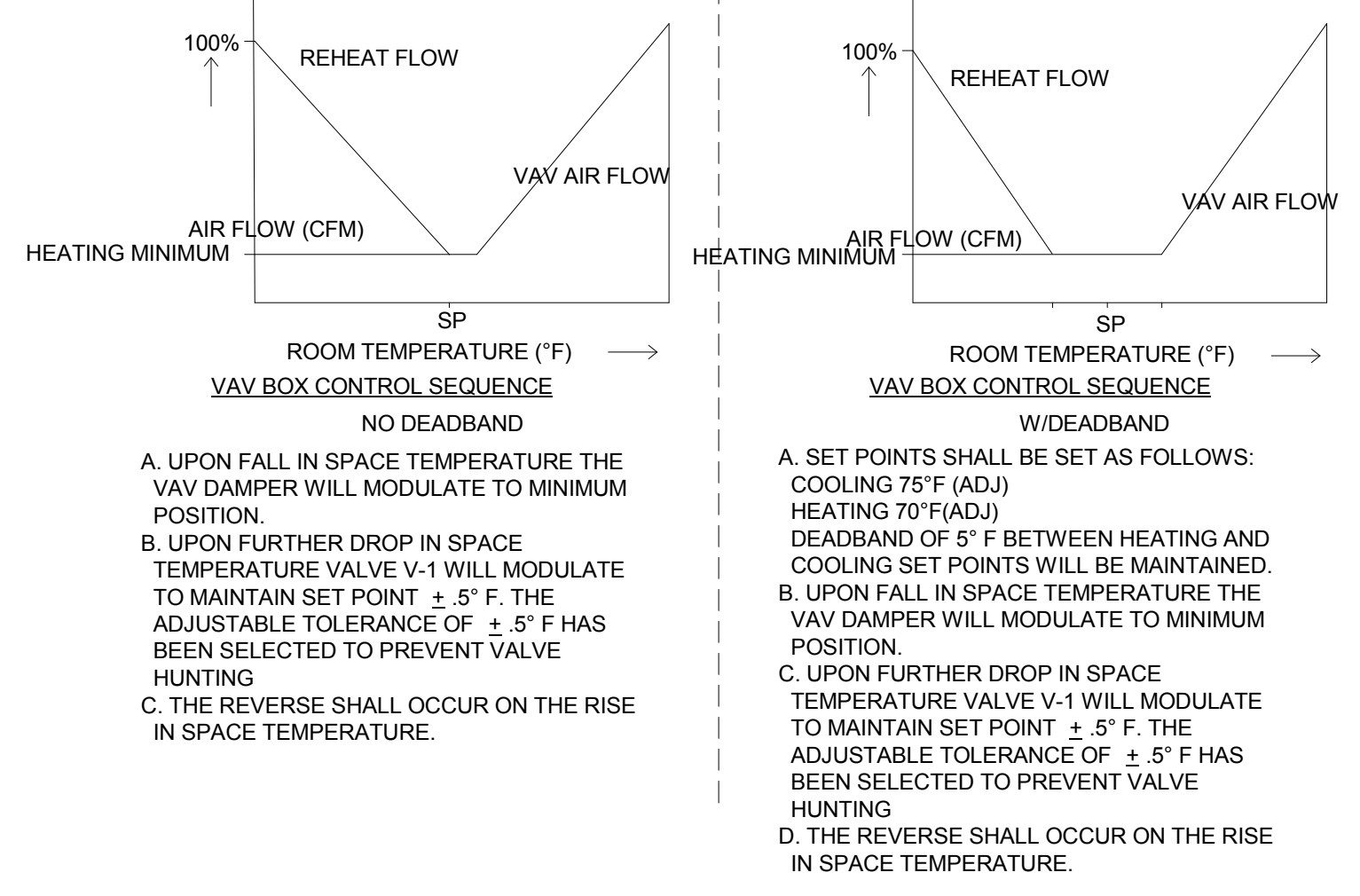
5 FAN COIL UNIT (FCU-1 & 2) AIR CONTROL DIAGRAM

NTS

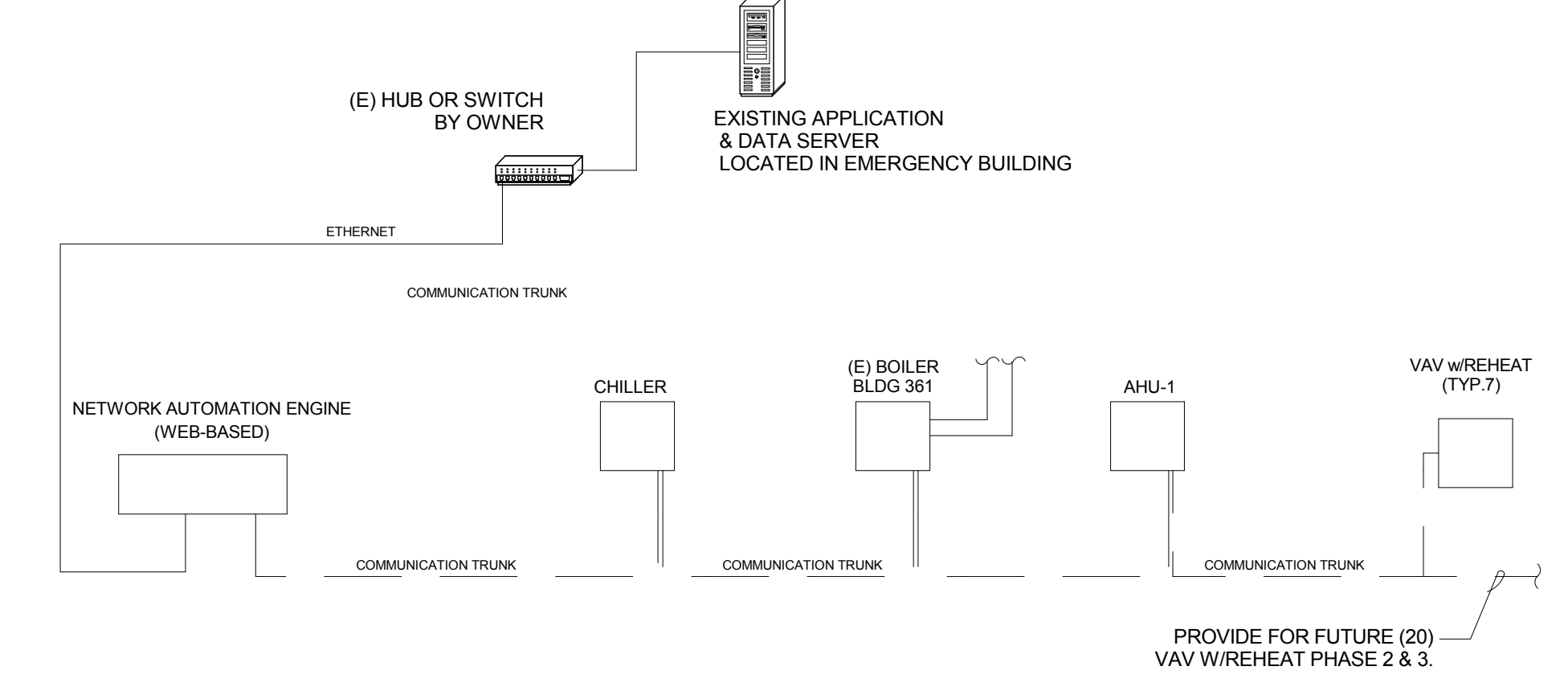


6 EXHAUST FAN (EF-1 & 2) CONTROL DIAGRAM

NTS



- A. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
B. UPON FURTHER DROP IN SPACE TEMPERATURE SET POINTS WILL BE MAINTAINED TO MAINTAIN SET POINT $\pm 5^\circ\text{F}$. THE ADJUSTABLE TOLERANCE OF $\pm 5^\circ\text{F}$ HAS BEEN SELECTED TO PREVENT VALVE HUNTING.
C. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.
- A. SET POINTS SHALL BE SET AS FOLLOWS:
COOLING 75°F (ADJ.)
HEATING 70°F (ADJ.)
DEADBAND OF 5°F BETWEEN HEATING AND COOLING SET POINTS WILL BE MAINTAINED.
B. UPON FALL IN SPACE TEMPERATURE THE VAV DAMPER WILL MODULATE TO MINIMUM POSITION.
C. UPON FURTHER DROP IN SPACE TEMPERATURE SET POINTS WILL BE MAINTAINED TO MAINTAIN SET POINT $\pm 5^\circ\text{F}$. THE ADJUSTABLE TOLERANCE OF $\pm 5^\circ\text{F}$ HAS BEEN SELECTED TO PREVENT VALVE HUNTING.
D. THE REVERSE SHALL OCCUR ON THE RISE IN SPACE TEMPERATURE.



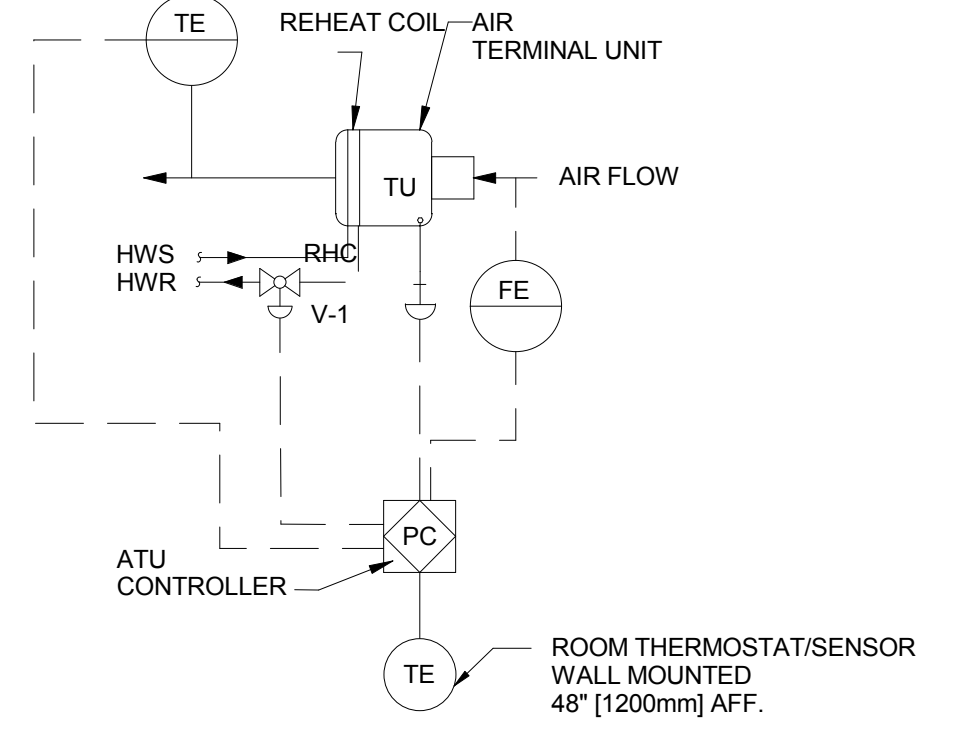
7 BMC DIAGRAM

NTS

4 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM

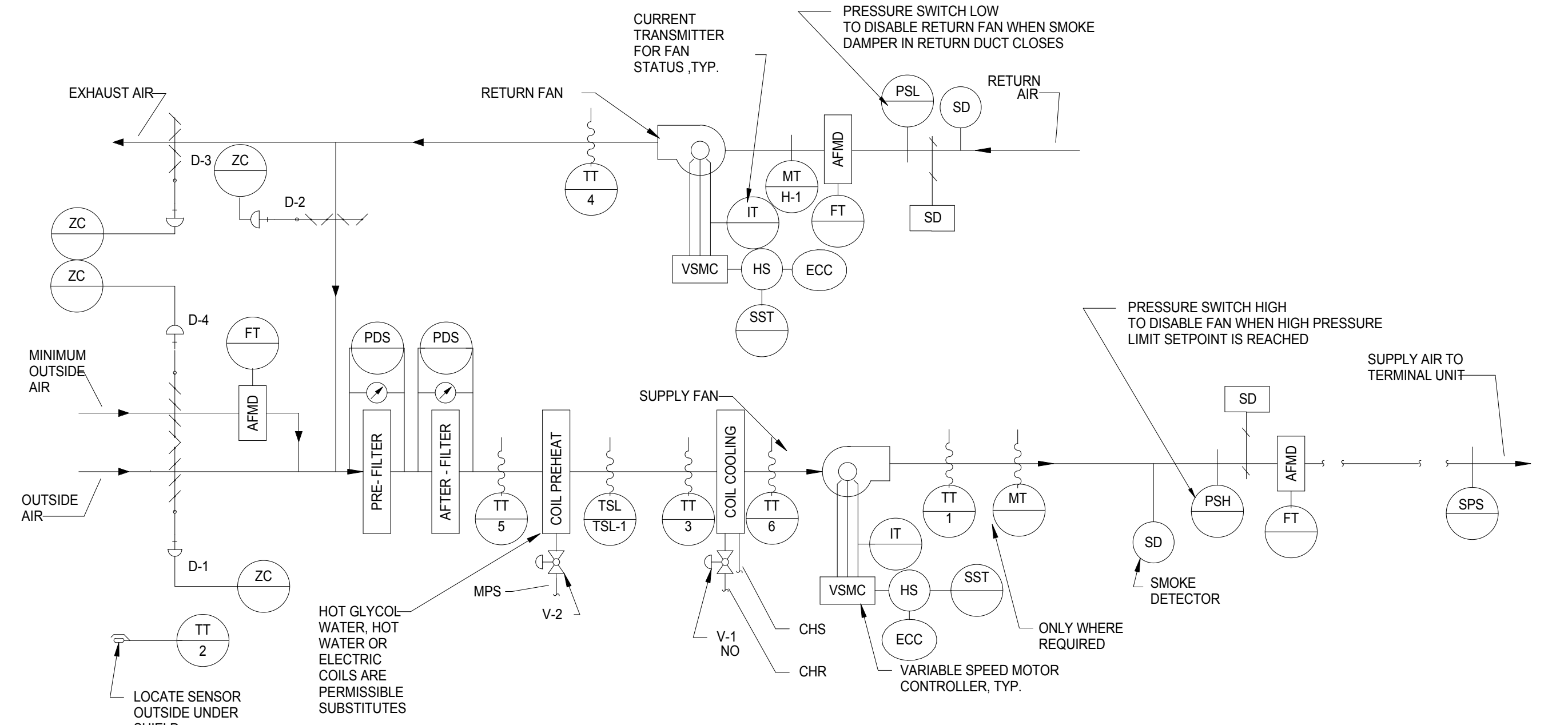
NTS

NO SUPPLEMENTAL HEATING



POINTS LIST FOR VAV AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR

NTS



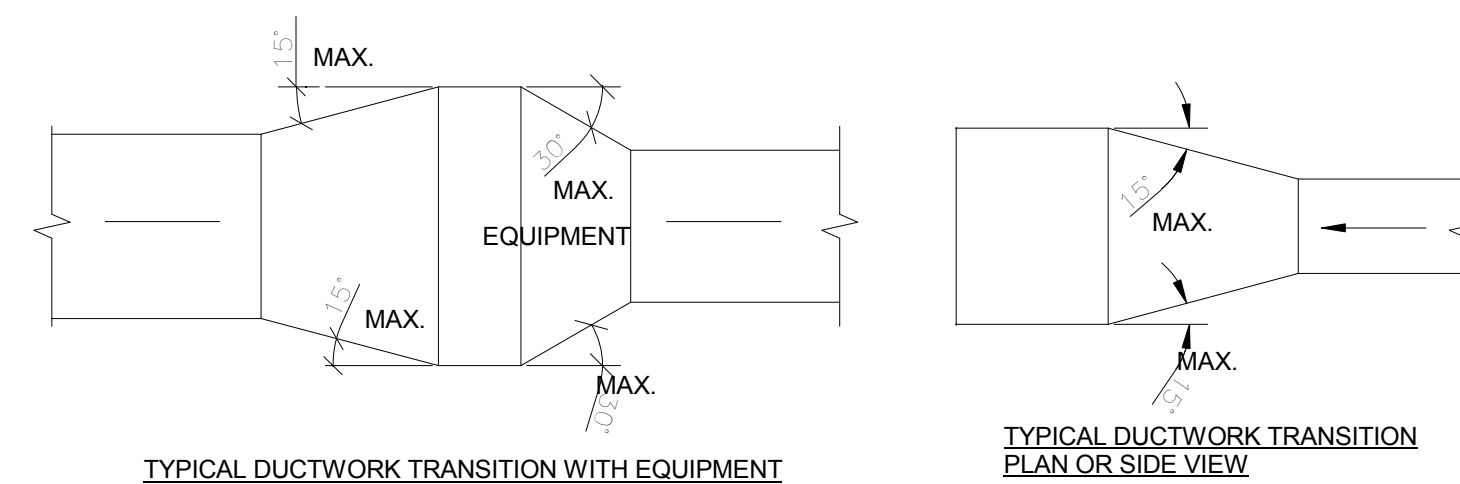
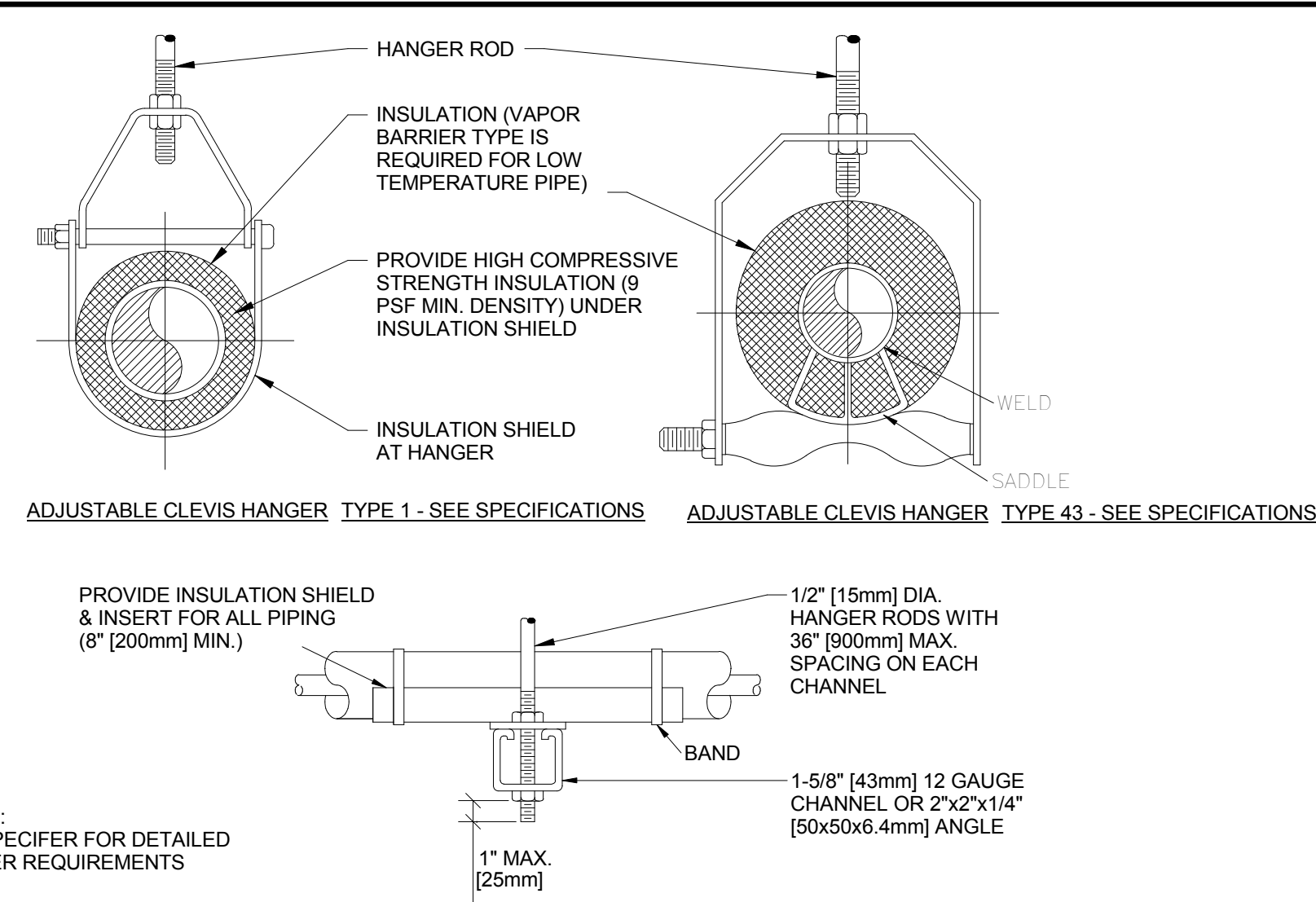
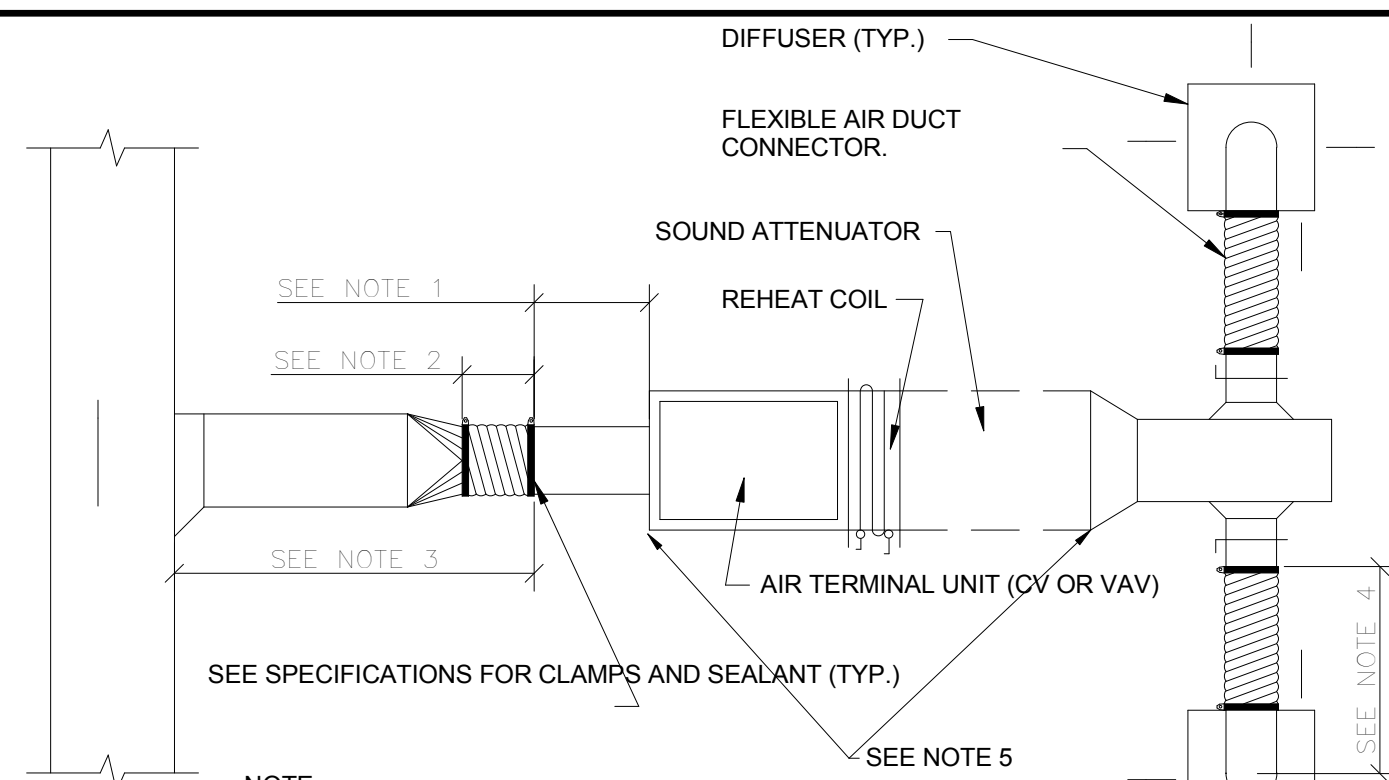
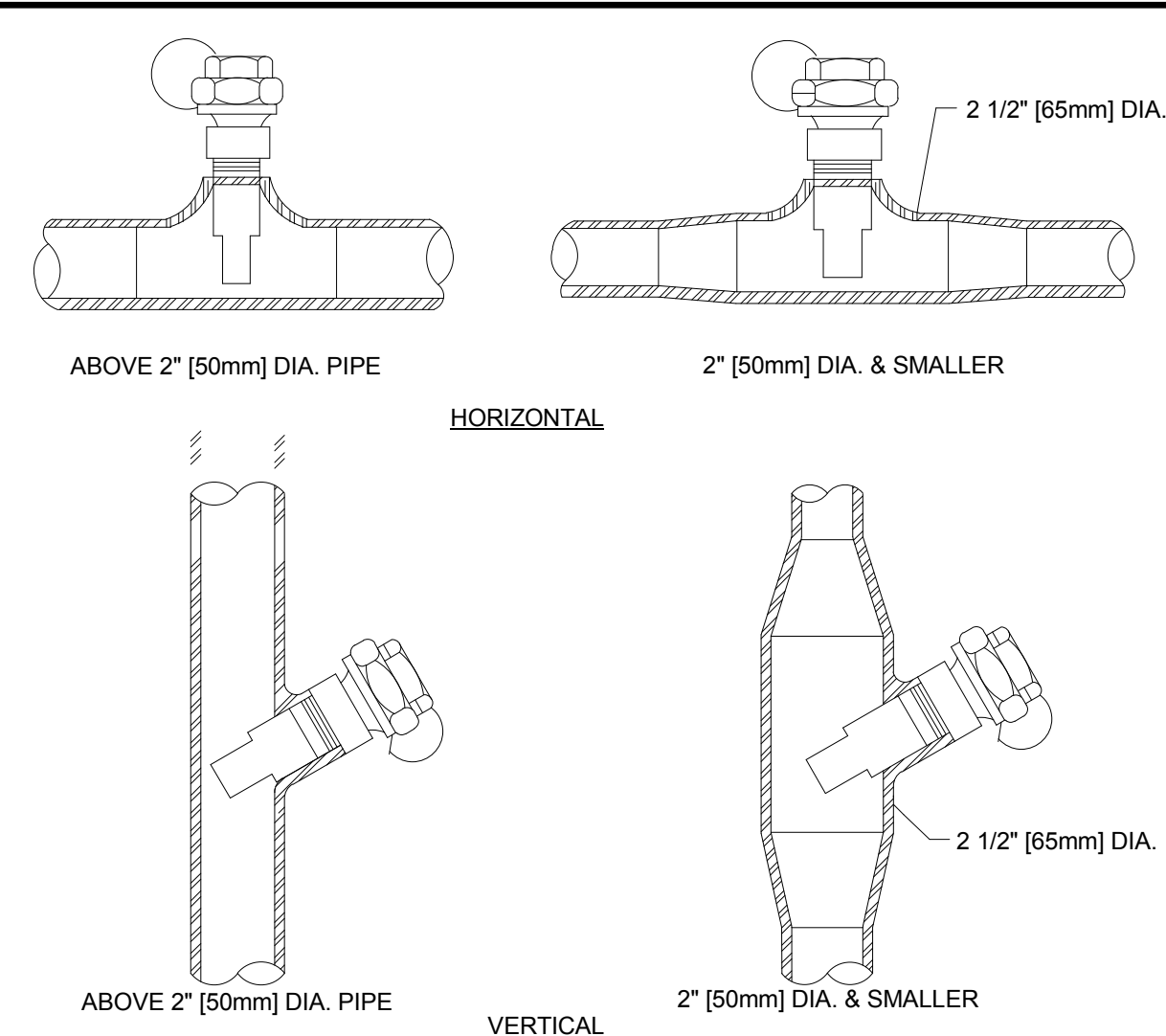
SEQUENCE OF OPERATION FOR VARIABLE AIR VOLUME AIR HANDLING UNIT WITH MINIMUM OUTSIDE AIR

1. GENERAL
1.1 UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1, D-3, SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" D-1, SD-1 AND SD-2 SHALL BE FULLY OPEN. D-2 AND D-3 SHALL MODULATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:
2. TEMPERATURE CONTROL
2.1 SUPPLY AIR TEMPERATURE, SENSED BY TT-1, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING V-1 OR D-2 AND D-3 OR V-2 IN SEQUENCE.
2.2 WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS ABOVE 75°F (ADJ.) [23.8°C], THE DIGITAL CONTROL PANEL SHALL PREVENT THE MODULATION OF D-2 AND D-3 AND SHALL ASSUME THE MINIMUM OUTSIDE AIR POSITION (D-2 FULLY OPENED AND D-3 FULLY CLOSED). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
2.3 WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BETWEEN 65°F (19.3°C) AND THE SUPPLY AIR TEMPERATURE SENSED BY TT-1, DAMPER D-2 SHALL FULLY CLOSE AND D-1 AND D-3 SHALL BE FULLY OPEN (MAXIMUM OUTSIDE AIR POSITION). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
2.4 WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BELOW THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1, DAMPERS D-1, D-2 AND D-3 SHALL MODULATE TO MAINTAIN THE SCHEDULED SUPPLY AIR TEMPERATURE. IF D-2 IS OPEN AND D-3 IS CLOSED TO MINIMUM OUTSIDE AIR, V-2 SHALL MODULATE OPEN TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
3. EMERGENCY CONSTANT SPEED OPERATION
3.1 UPON FAILURE OF THE VSMC, THE SUPPLY AND RETURN FANS SHALL BE STARTED/STOPPED MANUALLY AT THE DIGITAL CONTROL PANEL OR THE ECC THROUGH THE BY-PASS STARTER. FANS SHALL THEN BE OPERATED AT CONSTANT SPEED.
4. AIR FLOW CONTROL
4.1 THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 1.0" (25mm) OF DUCT STATIC PRESSURE (FIELD ADJUSTABLE), SENSED BY SPS-1. RESET STATIC PRESSURE BASED ON ACTUAL BUILDING LOAD BY POLLING ALL ATU
4.2 THE DIGITAL CONTROL PANEL USING TOTAL SUPPLY AIR AND RETURN AIR FLOW SIGNALS, SHALL RESET THE RETURN AIR FAN VSMC TO MAINTAIN A CONSTANT AIR FLOW DIFFERENCE BETWEEN THE SUPPLY AIR AND THE RETURN AIR EQUAL TO MINIMUM OUTSIDE AIR.
4.3 USING HIGH PRESSURE SENSOR SPS-2 LOCATED AT THE SUPPLY FAN DISCHARGE, SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 3" (75mm) OF STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT SPS-2 DOES EXCEED 3" (75mm) THE SUPPLY AIR FAN SHALL STOP. SPS-2 SHALL BE HARDWIRED TO THE SUPPLY FAN VSMC AND UNIT SHALL BE SHUTDOWN IN HAND/AUTO OR BYPASS MODE. SPS-2 WILL REQUIRE MANUAL RESET AT THE DEVICE.
5. FREEZE PROTECTION
5.1 IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 45°F (7°C), AN ALARM SIGNAL SHALL INDICATE AT THE DCP AND ECC. IF THIS TEMPERATURE FALLS BELOW 40°F (4.4°C), AS SENSED BY THE TSL, THE SUPPLY AND RETURN FANS SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND ECC. TSL SHALL BE HARDWIRED TO THE SUPPLY FAN UFD AND UNIT SHALL BE SHUTDOWN IN HAND/AUTO OR BYPASS MODE. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.
6. AUTOMATIC SHUTDOWN/RESTART
6.1 WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, SD, THE SUPPLY AND RETURN FANS SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. ALL SMOKE DAMPERS IN THE SUPPLY AND RETURN DUCTS SHALL CLOSE.
6.2 EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.

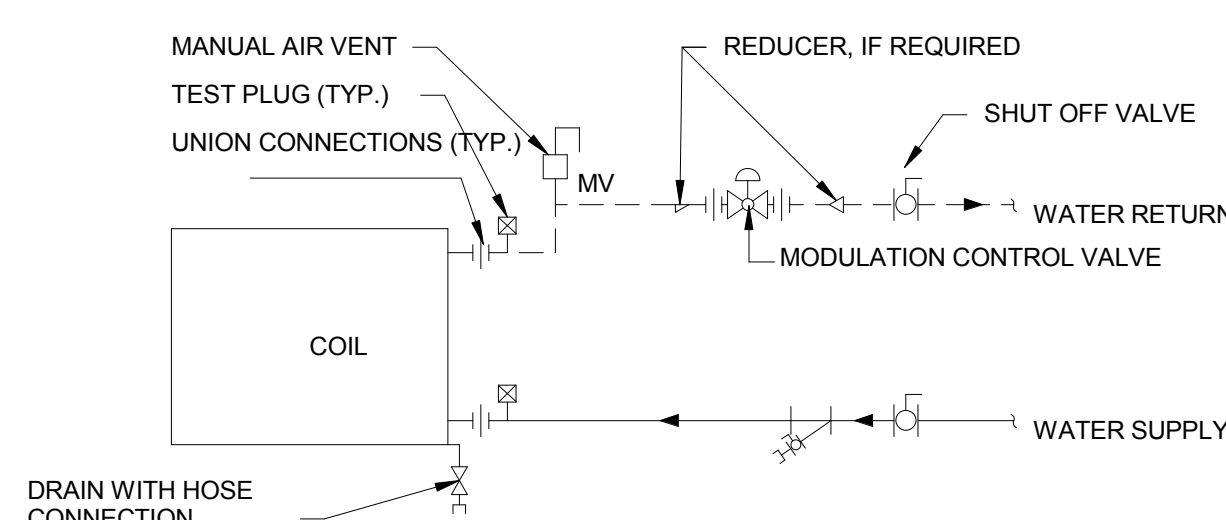
2 VARIABLE AIR VOLUME AIR HANDLING UNIT (AHU-1) WITH MINIMUM OUTSIDE AIR CONTROL DIAGRAM

NTS

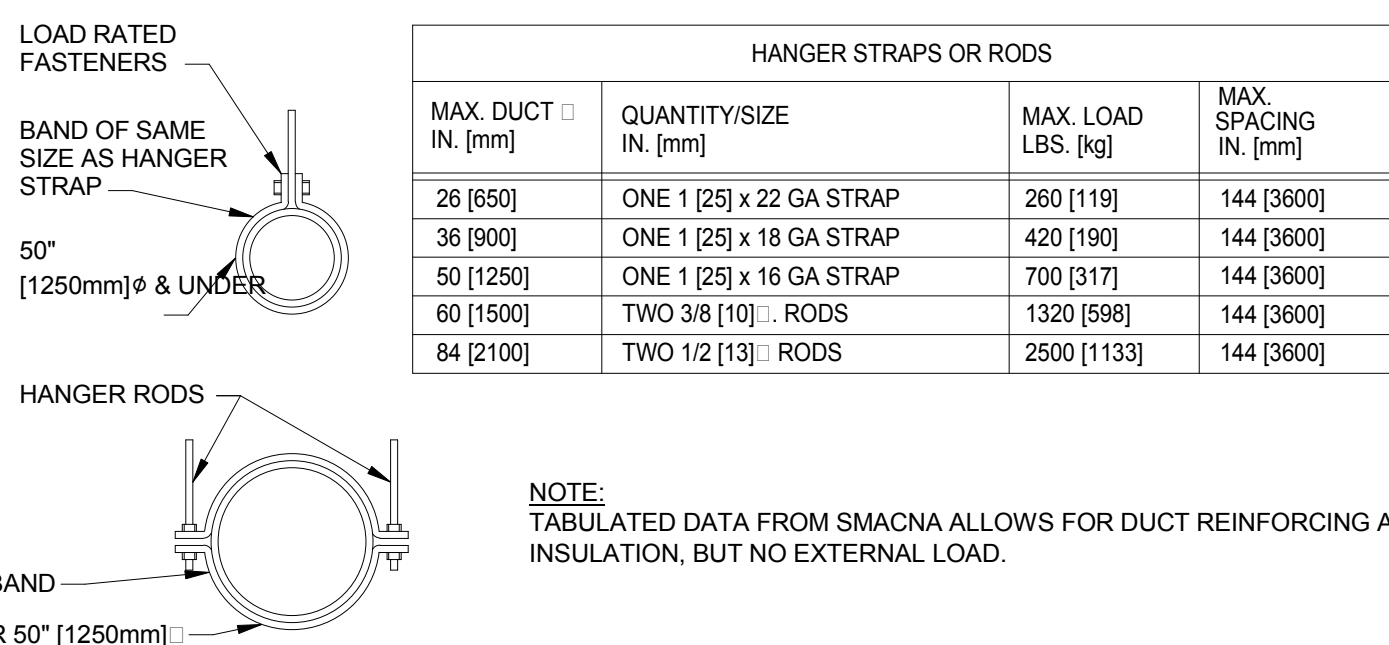
65% CD SUBMISSION 100% CD/BID SUBMISSION	03/16/15 02/02/16	CONSULTANTS: MAZZETTI 220 Montgomery Street, Suite 650 San Francisco, CA 94104 TEL: 415.632.3266 www.mazzetti.com PROJECT NUMBER: 130-085	ARCHITECT POLYTECH ASSOCIATES INC. 235 Pine Street, 17th Floor San Francisco, CA 94104 TEL: (415) 397-3117 FAX: (415) 397-1517	Drawing Title CONTROL DIAGRAMS Approved: Project Director	Project Title POST TRAUMATIC STRESS DIAGNOSIS (PTSD) EXPANSION AND RENOVATION Location 795 WILLOW ROAD, MENLO PARK, CA Date 01/13/15 Checked MT Drawn NS	Project Number 612-125 Building Number Building 360 Drawing Number 360-J MH501	Office of Construction and Facilities Management Department of Veterans Affairs
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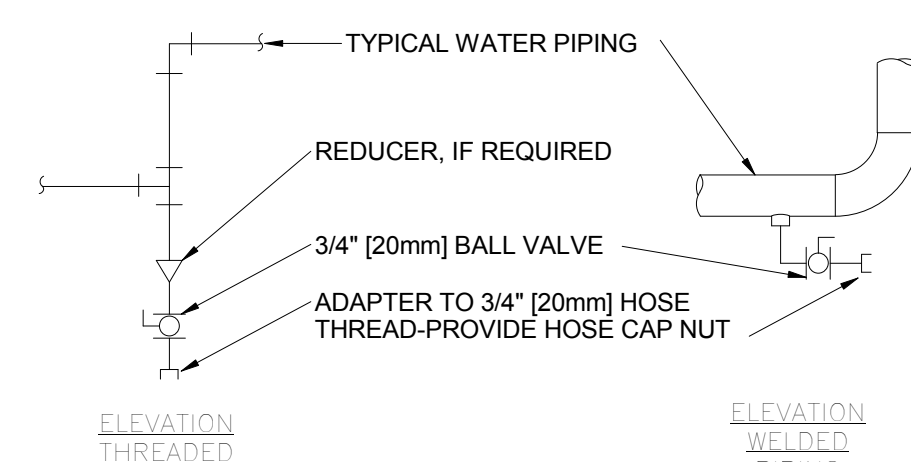
2 INSTALLATION OF THERMOMETER WELLS



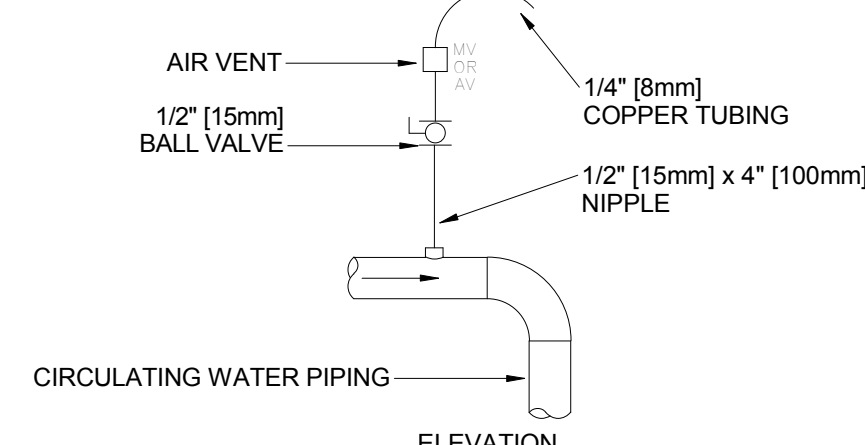
12 TERMINAL UNIT WATER COILS - PIPING CONNECTIONS



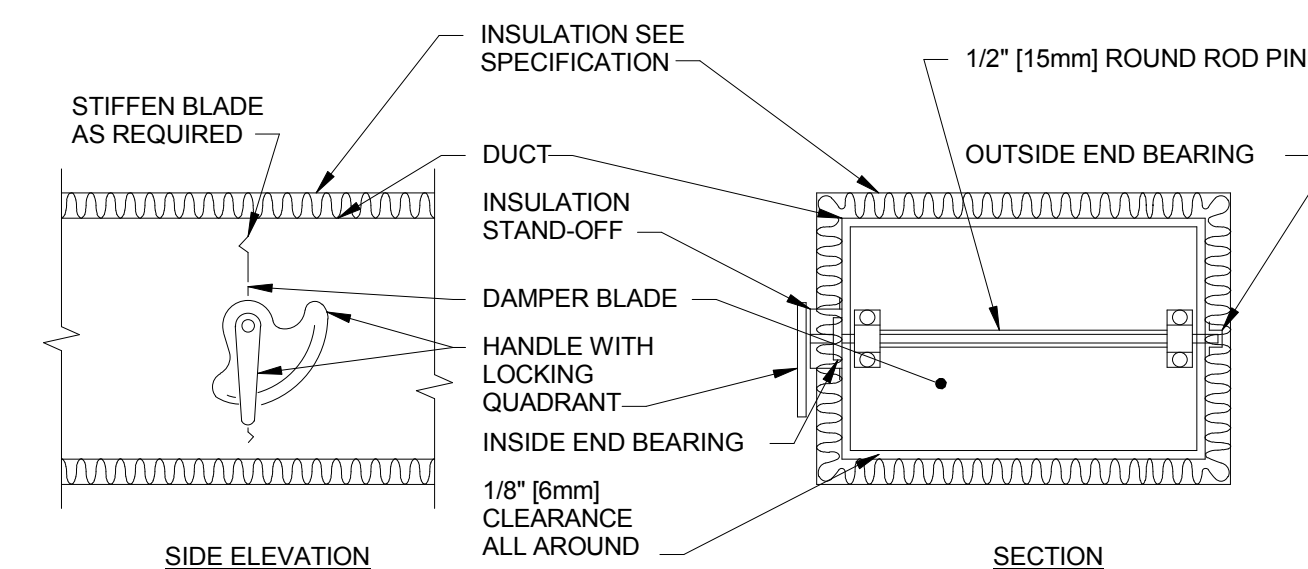
14 ROUND DUCT HANGERS



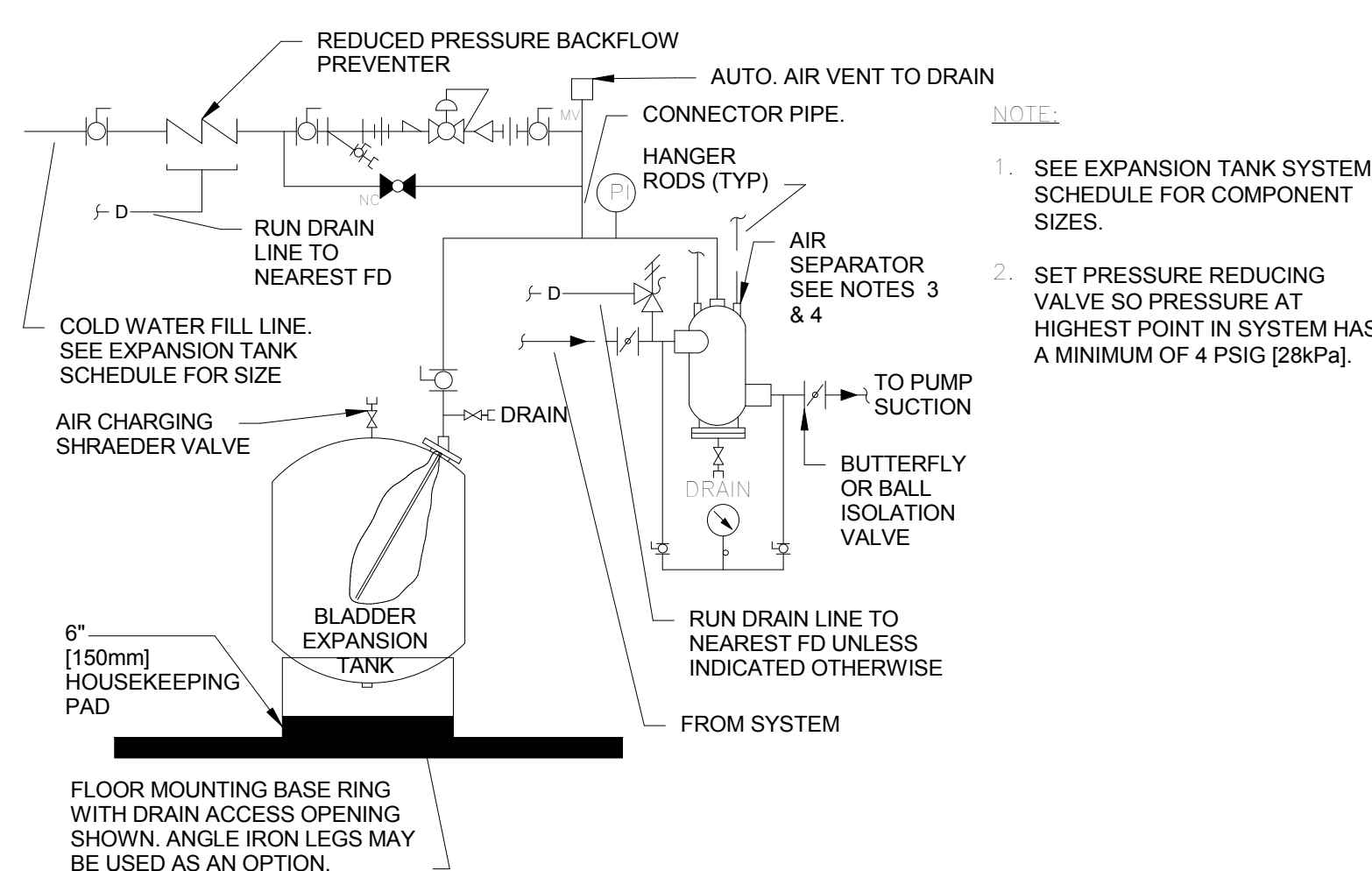
TYPICAL CHILLED AND HOT WATER PIPING DRAIN VALVE CONNECTIONS



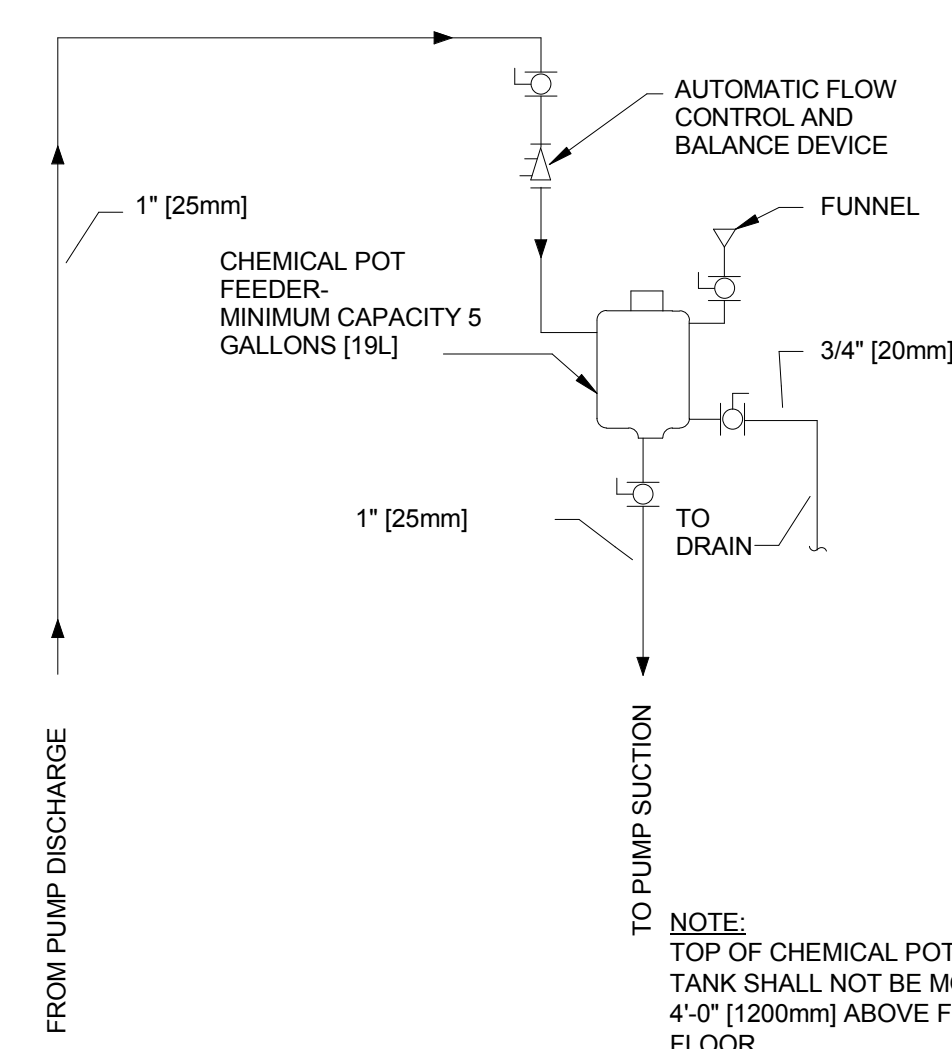
DRAIN VALVE AND AIR VENT CONNECTIONS (HYDRONIC SYSTEMS)



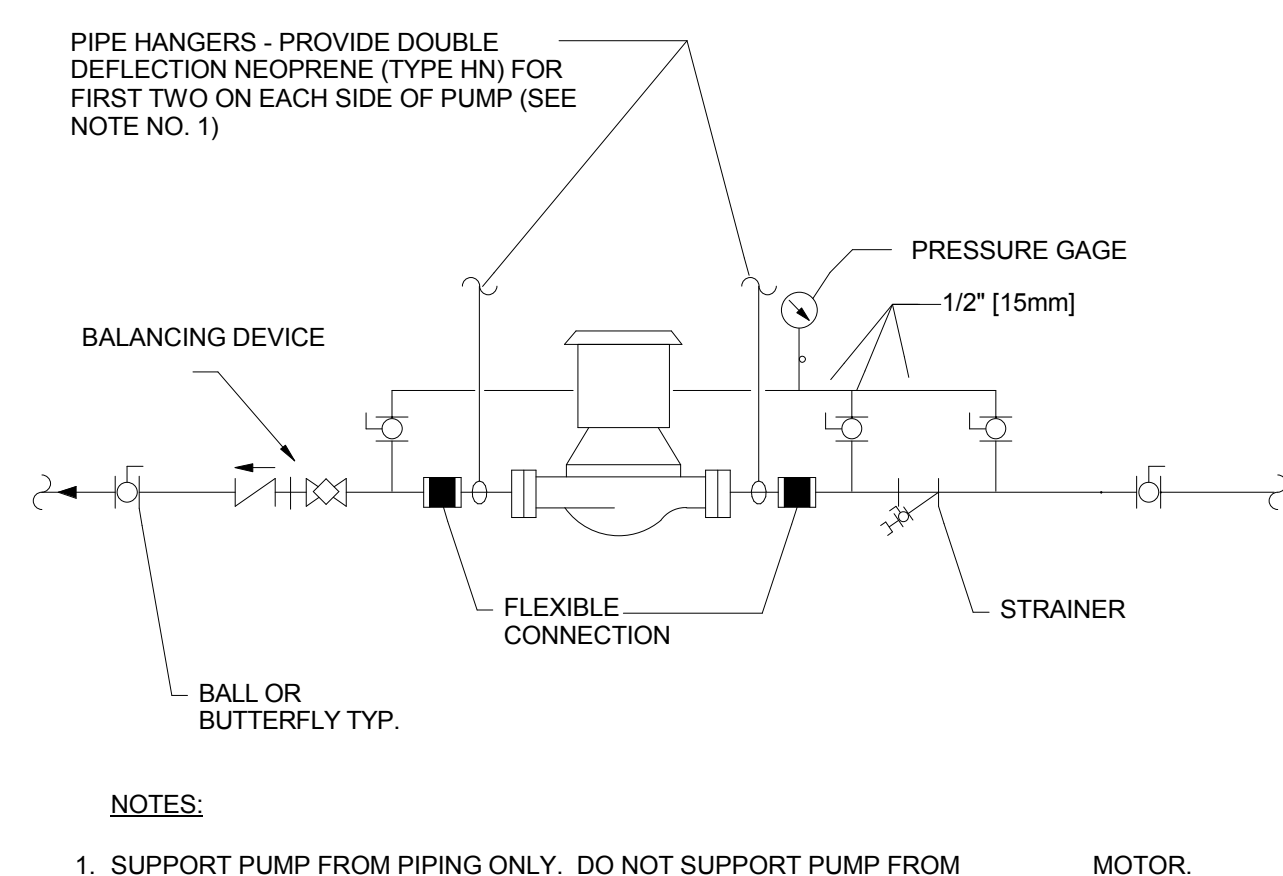
VOLUME DAMPER DETAIL



FLOOR MOUNTED EXPANSION TANK - PIPING CONNECTIONS

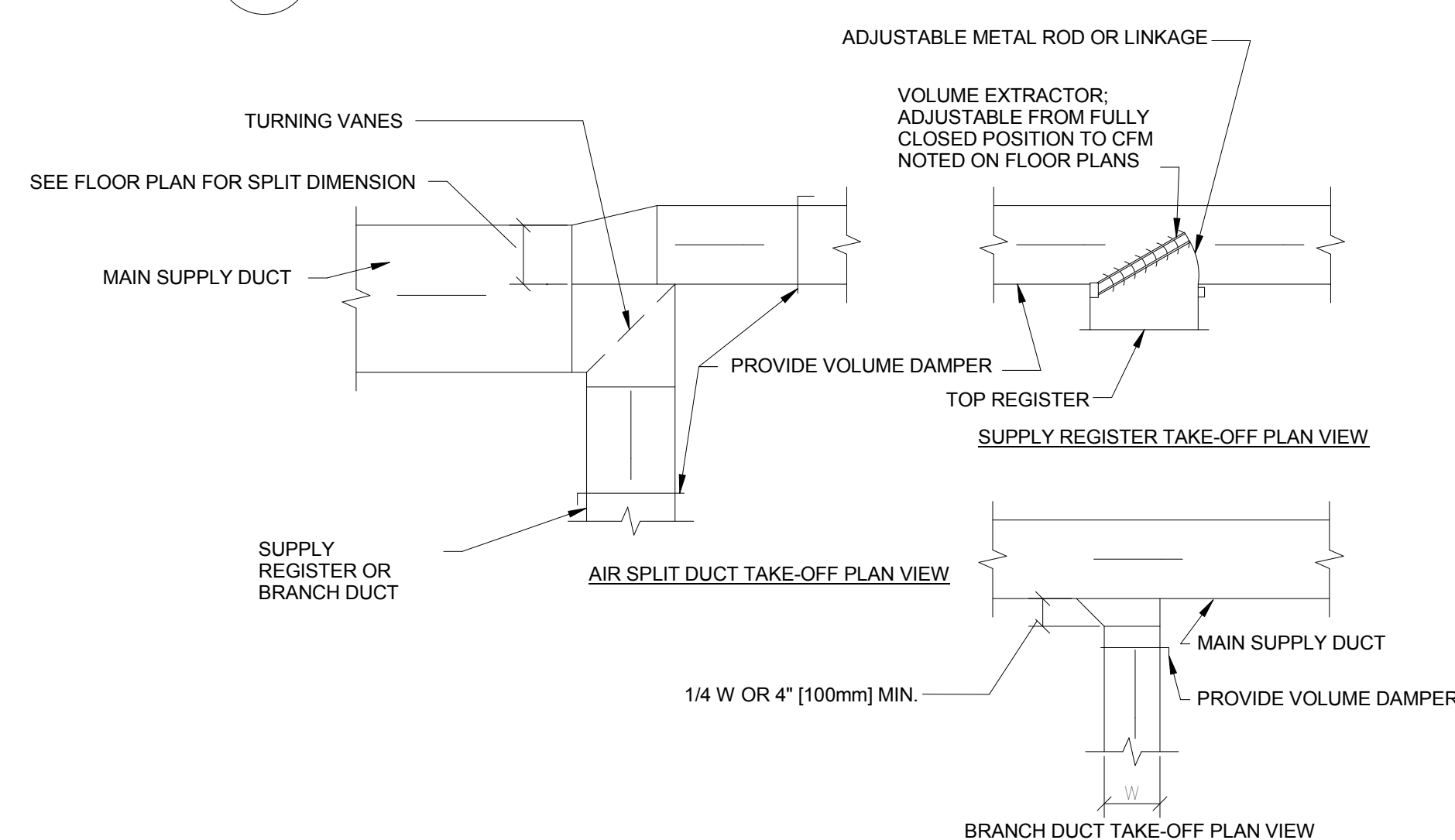


WATER TREATMENT - CLOSED SYSTEMS

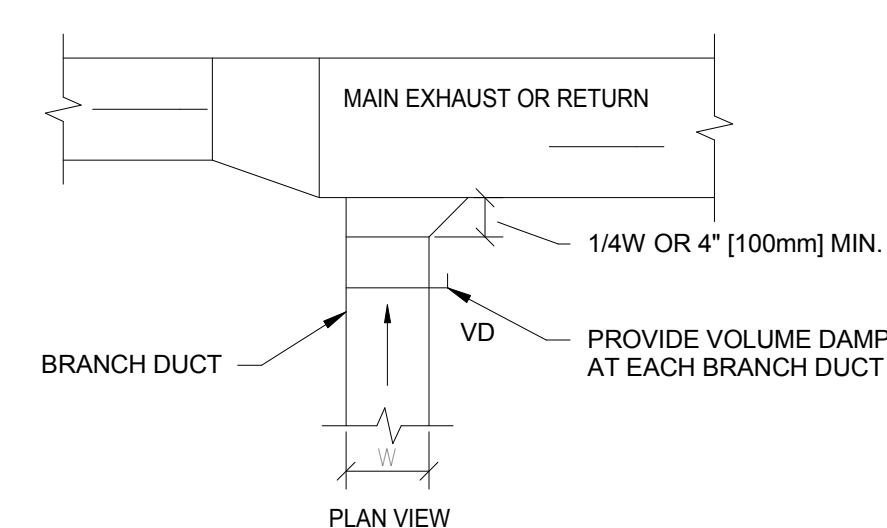


IN-LINE PUMPS - CONNECTIONS

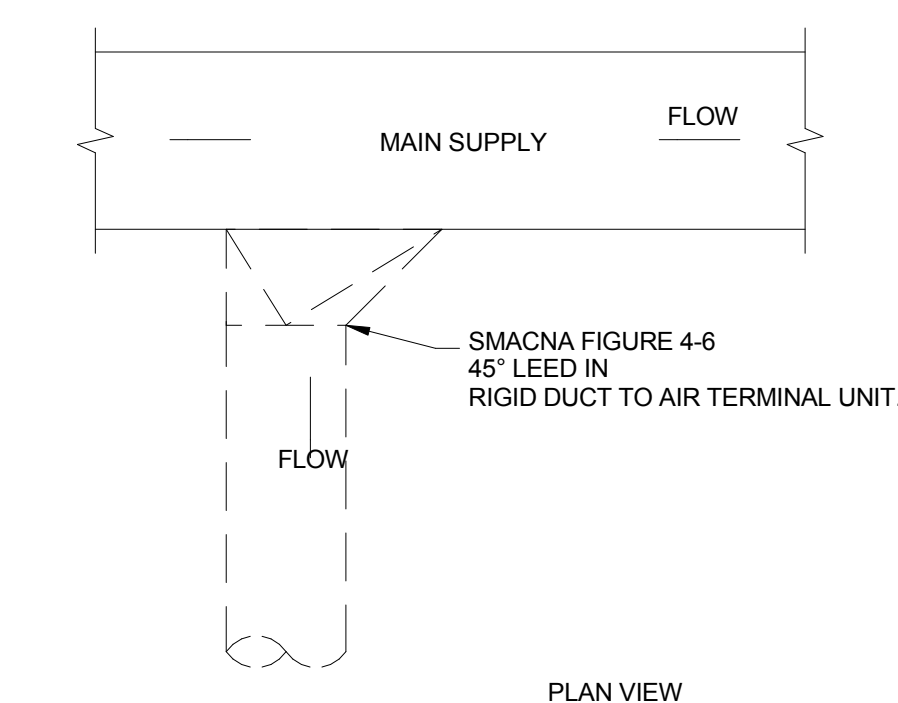
DUCTWORK TRANSITIONS (WITH EQUIPMENT MOUNTED IN DUCT)



6 SUPPLY DUCTWORK TAKE-OFFS



EXHAUST OR RETURN BRANCH DUCTWORK



ALTERNATE SUPPLY DUCT TAKEOFF - AIR TERMINAL UNITS

[illegible]

CONSULTANTS:



ARCHITECT

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TEL (415) 397-3117
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Drawing Title	DETAILS - PHARMACY
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Approved: Project Director

Project Title	POST TRAUMATIC STRESS DIAGNOSIS (PTSD) EXPANSION AND RENOVATION
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	Location

Date
01/13/15

Checked
MT

Draw	NE
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Project Number	612-125
Building Number	Building 360
Drawing Number	

360-J MH601

Office of
Construction
and Facilities
Management





Department of
Veterans Affairs

100% CD/BID SUBMISSION
FEBRUARY 2, 2016