

# 08C - MECHANICAL (PAINT STORAGE)

## INDEX OF DRAWINGS

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THE DESIGN APPEARS TO CONFORM TO APPLICABLE CRITERIA. APPROVAL IS NOT TO BE CONSTRUED TO MEAN THAT ALL ASPECTS OF THE DESIGN HAVE BEEN PERSONALLY CHECKED BY THE UNDERSIGNED.

TRANSPORTATION PRINCIPAL ENGINEER

REV.	DATE	REVISION DESCRIPTION

**LEGEND**

**PIPING**

—BD—	BOILER BLOW DOWN
—CWR—	CHILLED WATER RETURN
—CWS—	CHILLED WATER SUPPLY
—CR—	CONDENSER WATER RETURN
—CS—	CONDENSER WATER SUPPLY
—D—	DRAIN LINE
—FR—	FUEL OIL RETURN
—FS—	FUEL OIL SUCTION
—G—	GAS
—HR—	HOT WATER RETURN
—HS—	HOT WATER SUPPLY
—H—	HUMIDIFICATION LINE
—LG—	LIQUID PETROLEUM GAS
—MU—	MAKEUP WATER
—RD—	REFRIGERANT DISCHARGE
—RL—	REFRIGERANT LIQUID
—RS—	REFRIGERANT SUCTION
—W—	WASTE
-----	UNDERGROUND STORAGE TANK - ELECTRICAL CONDUIT
-----	UNDERGROUND STORAGE TANK - GASOLINE OR DIESEL
-----	UNDERGROUND STORAGE TANK - STAGE II VAPOR RECOVERY
-----	VENT

**FITTINGS**

	BRANCH OFF TOP OF MAIN
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	PIPE RISER DOWN
	PIPE RISER UP
	UNION

**VALVES**

	AIR ELIMINATOR
	BALL
	CHECK
	FLOW CONTROL
	GAS
	HOT WATER CONTROL
	PLUG
	PRESSURE AND TEMPERATURE RELIEF
	PRESSURE REDUCING
	SAFETY
	SHOW
	SOLENOID
	THREE-WAY MIXING
	TRIPLE DUTY
	TWO-WAY MIXING

**PIPING SPECIALTIES**

	AIR SEPARATOR
	AIR VENT
	REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER
	CABINET UNIT HEATER
	CAP
	CIRCUIT SETTER WITH GAUGE CONNECTIONS
	CONVECTOR
	DIAL TYPE THERMOMETER
	DRAW OFF DRAIN
	EXPANSION JOINT
	FINNED TUBE RADIATION
	FLEXIBLE CONNECTOR
	FLOW SWITCH
	HORIZONTAL UNIT HEATER (UH), PLAN VIEW
	IMMERSION SENSOR IN SENSOR WELL

**LEGEND CONT.**

**PIPING SPECIALTIES CONT.**

	FLOWMETER, ORIFICE
	FLOWMETER, VENTURI
	OIL TRANSFER PUMP
	PRESSURE GAUGE WITH BRASS PETCOCK
	RUNNING TRAP
	STRAIGHT TYPE THERMOMETER
	STRAINER
	WATER HAMMER ARRESTOR (WITH ACCESS DOOR IF REQUIRED)
	ZONE CIRCULATING WATER PUMP

**AIR MOVING DEVICES**

	DETECTOR, CARBON DIOXIDE
	DETECTOR, CARBON MONOXIDE #X
	DETECTOR, NITROGEN DIOXIDE #X
	FAN, AXIAL FLOW (AF-X)
	FAN, AXIAL FLOW - PLAN VIEW (AF-X)
	FAN, CENTRIFUGAL (CF-X)
	FAN, PADDLE (PF-X)
	FAN, PADDLE - PLAN VIEW (PF-X)
	FAN SPEED CONTROL SWITCH
	ROOF VENTILATOR, EXHAUST
	ROOF VENTILATOR, INTAKE
	ROOF VENTILATOR, LOUVERED
	UNIT VENTILATOR, PLAN VIEW

**DUCTWORK**

	ACCESS DOOR
	DAMPENER, BACKDRAFT
	DAMPENER, ELECTRIC OPERATED
	DAMPENER, FIRE
	DAMPENER, PNEUMATIC
	DAMPENER, SMOKE
	DAMPENER, SPLITTER
	DAMPENER, VOLUME
	DUCT SECTION, RETURN OR EXHAUST
	DUCT SECTION, SUPPLY
	DUCT SIZE (WIDTH x DEPTH) - INCHES (DUCT SIZES ARE INSIDE DIMENSIONS)
	DUCT SMOKE DETECTOR
	FLEXIBLE CONNECTION
	FREEZESTAT
	LOW LIMIT THERMOSTAT
	MIXING BOX
	PRESSURE AIR FLOW, NEGATIVE
	PRESSURE AIR FLOW, POSITIVE
	TERMINAL UNIT, REHEAT VARIABLE VOLUME
	TERMINAL UNIT, VARIABLE VOLUME
	SENSOR, DUCT
	SENSOR, VELOCITY
	TERMINAL UNIT, REHEAT VARIABLE VOLUME
	TERMINAL UNIT, VARIABLE VOLUME

**LEGEND CONT.**

**GRILLES, REGISTERS, AND DIFFUSERS**

	2-WAY CEILING DIFFUSER (D)
	4-WAY CEILING DIFFUSER (D)
	DOOR GRILLE
	INTAKE LOUVERS ON SCREEN
	LINEAR DIFFUSER
	LOUVER OPENING
	RETURN GRILLE (RG)
	UNDERCUT DOOR

**MISCELLANEOUS**

	CENTER LINE
	COMPRESSOR SUCTION VALVE, PRESSURE LIMITING THROTTLING TYPE (COMPRESSOR SIDE)
	CONDENSING UNIT
	CONSTANT PRESSURE VALVE, SUCTION
	CURRENT SWITCH
	DOOR POSITION SWITCH
	DRYER
	EVAPORATOR PRESSURE REGULATING VALVE, SNAP-ACTION
	EVAPORATOR PRESSURE REGULATING VALVE, THERMOSTATIC, THROTTLING TYPE
	EVAPORATOR PRESSURE REGULATING VALVE, THROTTLING TYPE (EVAPORATOR SIDE)
	EXPANSION VALVE
	FILTER
	FILTER AND STRAINER
	FILTER DRYER
	OUTDOOR AIR TEMPERATURE SENSOR
	PRESSURE SWITCH
	SCALE TRAP
	SIGHT GLASS
	SPACE SENSOR
	SPACE SENSOR WITH EMERGENCY OVERRIDE
	SPACE SENSOR WITH TIMED OVERRIDE
	SPACE SENSOR-WEATHERPROOF
	THERMAL BULB

**GENERAL NOTES**

1. THE INSTALLER SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE TO NOTIFY THE ENGINEER WILL NOT RELIEVE THE INSTALLER OF RESPONSIBILITY. THE INSTALLER SHALL CORRECT ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
2. MECHANICAL INSTALLER SHALL BE REQUIRED TO COORDINATE WITH ALL NECESSARY CONTRACTORS TO PREVENT INSTALLATION CONFLICTS.
3. ALL DUCTWORK AND EQUIPMENT SHALL BE SUPPORTED TO SUIT FIELD CONDITIONS AS APPROVED BY THE DESIGNER.
4. USE FLEXIBLE CONNECTIONS ON ALL EQUIPMENT SUPPLY, RETURN, & EXHAUST OPENINGS.
5. METHOD OF SEALING HVAC WALL PENETRATIONS SHALL BE IN ACCORDANCE WITH NFPA STANDARDS.
6. HVAC EQUIPMENT CLEARANCES SHALL BE IN ACCORDANCE WITH NFPA STANDARDS, INCLUDING NFPA 90A AND NFPA 251.
  - a. ALL SPACE SENSORS IN THE OFFICE CORE SHALL BE MOUNTED 48" AFF MAX TO TOP OF SENSOR WHILE ALL SPACE SENSORS IN THE BAY AREAS SHALL BE MOUNTED 72" AFF MAX TO TOP OF SENSOR.
  - b. ALL CARBON DIOXIDE SENSORS IN THE OFFICE CORE SHALL BE MOUNTED 48" AFF MAX TO TOP OF SENSOR.
  - c. ALL REMOTE CARBON MONOXIDE SENSORS SHALL BE MOUNTED AT THE BOTTOM OF STEEL JOISTS.
  - d. ALL NITROGEN DIOXIDE SENSORS SHALL BE MOUNTED 18" AFF. PROVIDE GUARDS TO PROTECT SENSORS. PROVIDE RAINSHIELD FOR WASH BAY SENSOR.

**ABBREVIATIONS**

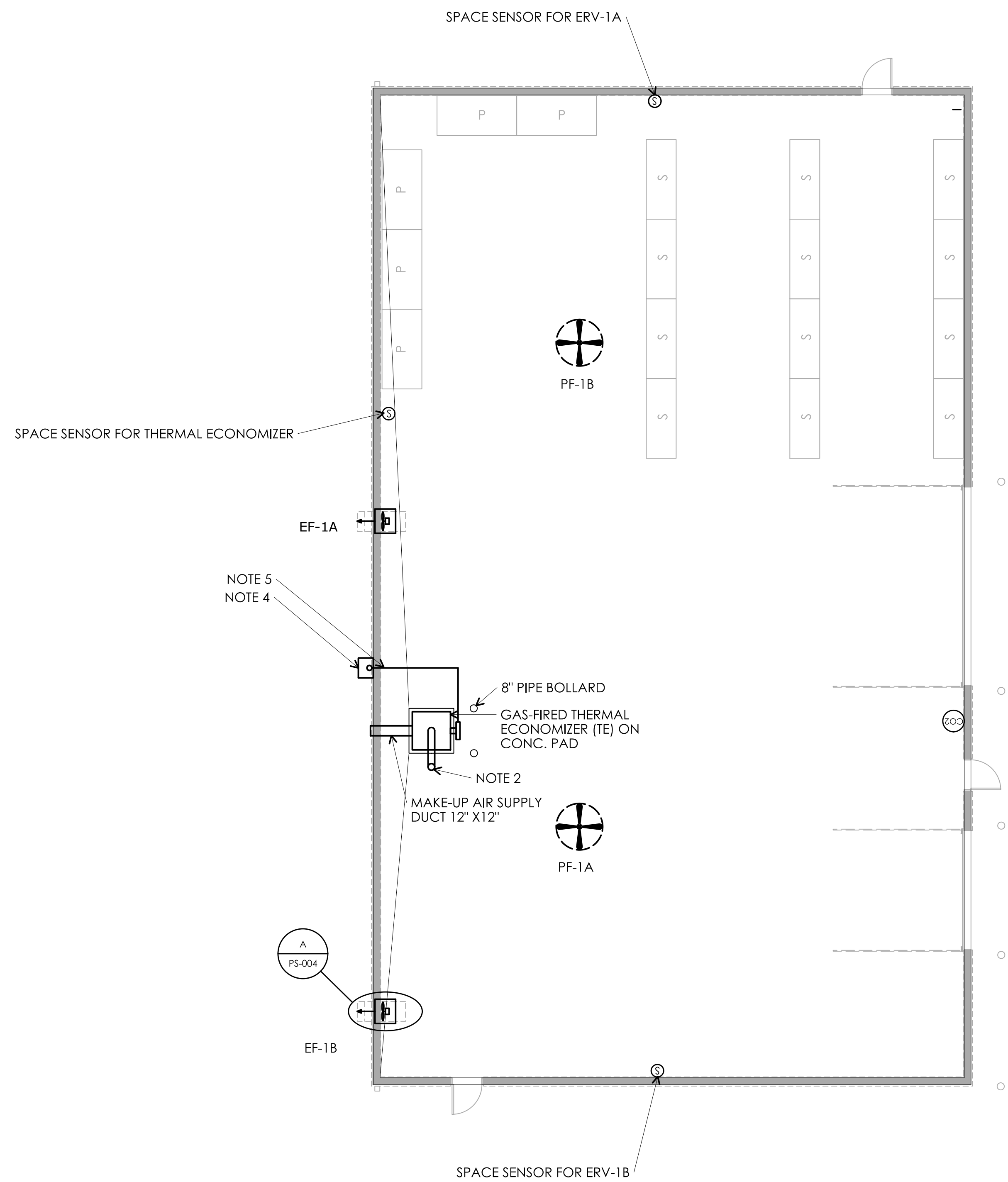
AC	AIR CONDITIONING
AD	ACCESS DOOR
AF	AXIAL FAN
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ACOUSTICAL LINING
AMB	AMBIENT
ATC	AUTOMATIC TEMPERATURE CONTROL
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACKDRAFT DAMPER
BO	BLANK OFF
BOD	BOTTOM OF DUCT
BOS	BOTTOM OF STEEL
BTUH	BRITISH THERMAL UNITS/HOUR
C	CONVECTOR
CA	COMBUSTION AIR
CAP	CAPACITY
CCH	CABINET CONVECTION HEATER
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CSBV	COMBINATION SHUTOFF & BALANCE
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	DIFFUSER
DBT	DRY BULB TEMPERATURE
DC	DOOR CONTACT
dia	DIAMETER
DN	DOWN
DOD	DRAW OFF DRAIN
DWG	DRAWING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC	ELECTRICAL
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
FA	FRESH AIR
FC	FLEXIBLE CONNECTION
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FO	FUEL OIL
PPM	FEET PER MINUTE
FRP	FIBERGLASS REINFORCED PIPE
FT	FOOT/FEET
FTR	FINNED TUBE RADIATION
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
H	HOT
HM	HOT WATER MAIN LOOP
HP	HORSEPOWER
HGT	HEIGHT
HV	HEATING AND VENTILATION
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
HWB	HOT WATER BOILER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
Hz	HERTZ

**ABBREVIATIONS CONT.**

id	INSIDE DIAMETER
JB	JUNCTION BOX
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAINT	MAINTENANCE
max	MAXIMUM
MBH	THOUSAND BTUH
min	MINIMUM
MOD	MOTOR OPERATED DAMPER
MTD	MOUNTED
N	NEUTRAL
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTDOOR AIR
oc	ON CENTER
od	OUTSIDE DIAMETER
OL	OVER LOAD
OPP	OPPOSITE
PD	PRESSURE DROP
PF	PADDLE FAN
PH	PHASE
PLCS	PLACES
PVC	POLY VINYL CHLORIDE CONDUIT
R	RETURN
rad	RADIUS
RA	RETURN AIR
REQ'D	REQUIRED
RG	RETURN GRILLE
RHC	REHEAT COIL
RMC	RIGID METAL CONDUIT
RPM	REVOLUTIONS PER MINUTE
RSC	RIGID STEEL CONDUIT
S	SUPPLY
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SP	STATIC PRESSURE
SQ	SQUARE
STD	STANDARD
TCM	THERMOSTAT CONTROL MODULE
TEMP	TEMPERATURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UST	UNDERGROUND STORAGE TANK
UV	UNIT VENTILATOR
V	VOLT
VAC	VOLTAGE ALTERNATING CURRENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VIF	VERIFY IN FIELD
W/	WITH
WG	WATER GAUGE
WBT	WET BULB TEMPERATURE
WPD	WATER PRESSURE DROP
WTD	WATER TEMPERATURE DROP

**GENERAL NOTES CONT.**

7. METHODS OF ATTACHMENT OF SEISMIC RESTRAINT CABLES SHALL COMPLY WITH THE FOLLOWING:
  - a. TO EQUIPMENT: BOLT ANGLE CLIPS TO SUSPENDED EQUIPMENT ADJACENT TO THE HANGER RODS. ORIENT THE FOUR SEISMIC CABLES 90° TO EACH OTHER. ATTACH SEISMIC CABLES TO ANGLE CLIPS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - b. TO STRUCTURE: ATTACH SEISMIC CABLE TO TOP CORD OF ROOF JOISTS WITH APPROPRIATE FASTENING DEVICES. WELDING, BURNING, OR DRILLING OF THE ROOF JOISTS SHALL NOT BE PERMITTED. THE SEISMIC CABLE SHALL BE DRAWN TAUT BUT SHALL NOT DISPLACE THE UNITS. ATTACHMENT TO BOTTOM CHORD OF ROOF JOISTS SHALL NOT BE PERMITTED! PROVIDE DESIGNER WITH METHOD OF ATTACHMENT TO ROOF JOISTS FOR APPROVAL.
8. UNLESS OTHERWISE INDICATED, ALL BRANCH PIPING SHALL BE OFF THE BOTTOM OF THE MAIN PIPING RUN.
9. REFER TO SUPPORTING DOCUMENTS SUBSET FOR PAY LIMITS FOR MAJOR LUMP SUM ITEM (MLSI). EXCAVATION FOR MECHANICAL SYSTEMS WITHIN THESE LIMITS IS INCLUDED FOR PAYMENT IN THE MLSI. THERE WILL BE NO SEPARATE PAYMENT FOR EXCAVATION FOR THESE SYSTEMS.




- NOTES:
1. SURFACE MOUNTED CONDUITS SHALL BE: RMC BELOW 10'-0" AFF, EMT ABOVE 10'-0". REFER TO CSI SECTION 260533 FOR ADDITIONAL INFORMATION.
  2. 8" i.d. BREECHING AND CHIMNEY THRU ROOF.
  3. CONTRACTOR SHALL INSULATE BEHIND SENSORS.
  4. METER-SET INSTALLED BY CNG REFER TO DRAWING C-005 FOR LOCATION OF GAS SERVICE LINE BY CNG. INSTALL METER-SET IN ACCORDANCE WITH CNG REQUIREMENTS.
  5. GAS PIPING PENETRATION THRU WALL AT APPROXIMATELY 3'-0" AFF. PROVIDE SLEEVE THRU WALL.
  6. REFER TO ELECTRICAL DRAWINGS FOR PADDLE FAN SPEED CONTROLLER LOCATIONS.
  7. REFER TO PLUMBING SUBSET FOR WALL SLEEVE DETAILS.

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: EAM  
 CHECKED BY: JAB

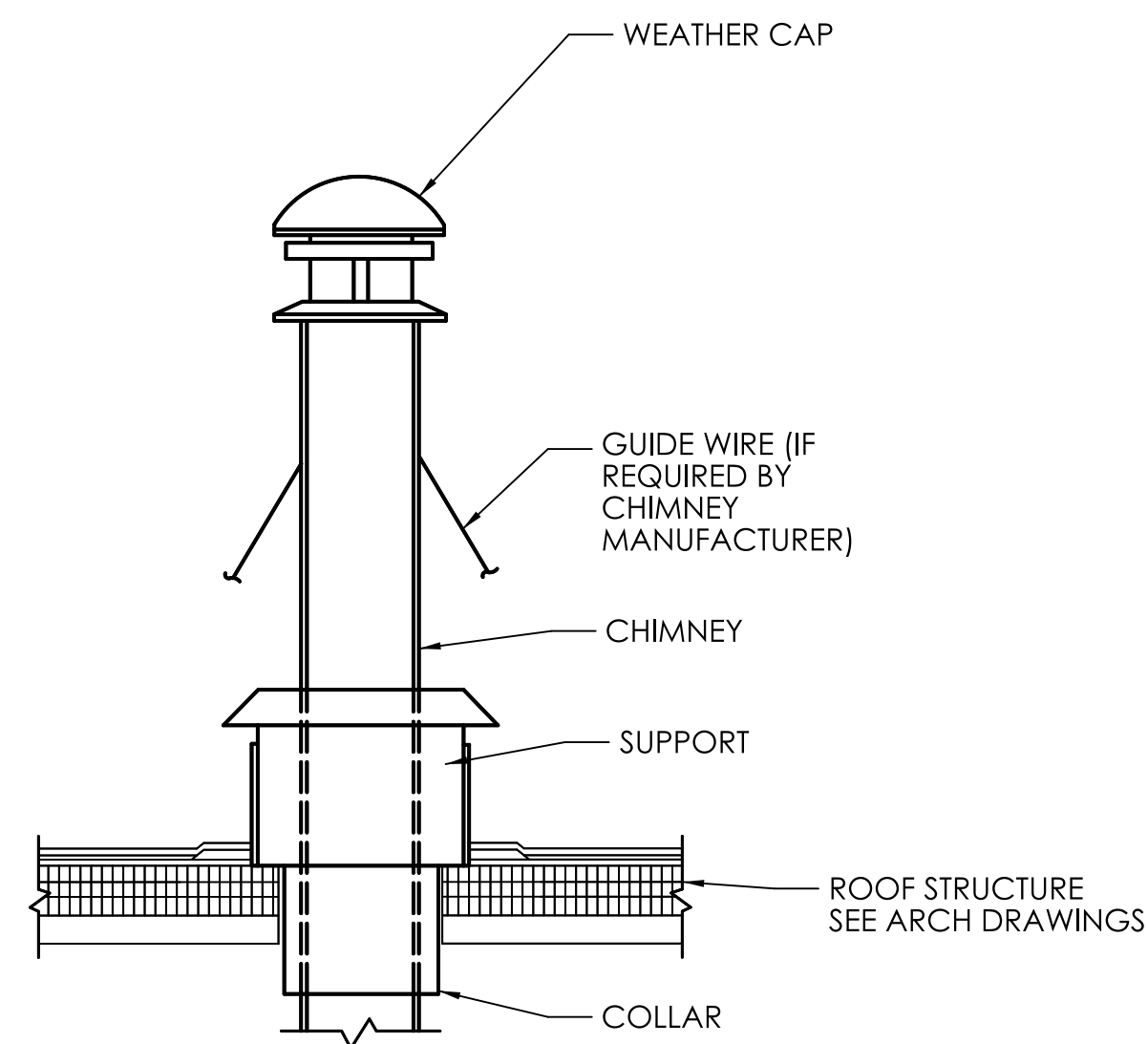
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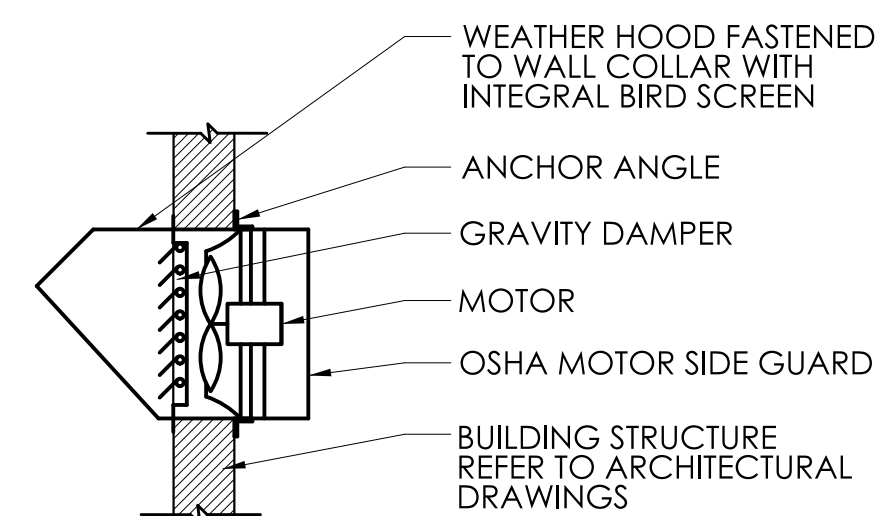



PROJECT NUMBER: 0042-0324  
 PROJECT DESCRIPTION: EAST HARTFORD MAINTENANCE FACILITY AND SIGNS AND MARKING FACILITY  
 TOWN(S): EAST HARTFORD  
 DRAWING TITLE: PAINT STORAGE MECHANICAL PLAN

DRAWING NO.  
 MPS-003  
 SHEET NO.  
**08C.03**



CHIMNEY PENETRATION DETAIL



NOTES:

1. PROVIDE ELECTRICAL CONNECTION TO MOTOR WITH FLEXIBLE METAL CONDUIT.
2. PROVIDE RUBBER-IN-SHEAR VIBRATION ELIMINATION PADS AT ALL CORNERS BETWEEN FAN FRAME AND BUILDING STRUCTURE.
3. RIGIDLY ATTACH FAN TO BUILDING STRUCTURE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

WALL MOUNTED EXHAUST FAN (EF) DETAIL

A  
PS-003

PADDLE FAN SCHEDULE

MARK	MODEL NO.	BLADE SWEEP	DOWN ROD LENGTH	CFM	RPM	MOTOR
PF-1 (A-B)	56301RPD	56"	24"	27,000	275	110W, 120V, 1PH, 60HZ

NOTES:  
 1. BASED ON LEADING EDGE INC.  
 2. COLOR: WHITE  
 3. PF-1 SHALL BE WATERPROOF  
 4. BOTTOM OF FAN SHALL BE 16' min ABOVE SLAB. CUT DOWN ROD AS REQUIRED

THERMAL ECONOMIZER

MARK	MODEL NO.	MBH	GAS INPUT (MBH)	CFM	MAKE-UP AIR (CFM)	MOUNTING	VOLT/PH/HZ
TE	TE-11	450	562	7,000	500	FLOOR MOUNTED	2HP, 208V, 3PH, 60HZ

NOTES:  
 1. BASED ON POWRMATIC

EXHAUST FAN SCHEDULE

MARK	AREA SERVED	TYPE & MODEL NO.	CFM	SP"	TIP SPEED	FAN RPM	MOTOR
EF-1 (A-B)	STORAGE AREA	WALL MOUNTED SE1-16-421-A3	2309	0.25	-	1750	1/3HP, 120V, 1PH, 60HZ

NOTES:  
 1. ERV'S BASED ON LOREN COOK  
 2. AF-1, AF-2 AND EF-1 BASED ON GREENHECK

REV.	DATE	REVISION DESCRIPTION