07E - MECHANICAL (SIGNS & MARKINGS)
INDEX OF DRAWINGS

DRAWING NUMBER	DRAWING TITLE	DRAWING NUMBER	DRAWING TITLE
MSM-001	INDEX OF DRAWINGS		
MSM-002	LEGEND & GENERAL NOTES		
MSM-003	OFFICE AREA MECHANICAL PLAN		
MSM-004	BAY AREA MECHANICAL PLAN		
MSM-005	TYPICAL MECHANICAL DETAILS		
MSM-006	TYPICAL HVAC DETAILS		
MSM-007	GAS PIPING & MISC. MECHANICAL DETAILS		
MSM-008	MECHANICAL SCHEDULES		

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.

Adam Fox
2022.03.08
08:31:16-05'00'

TRANSPORTATION PRINCIPAL ENGINEER

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0042-0324
PROJECT DESCRIPTION: EAST HARTFORD MAINTENANCE FACILITY AND SIGNS AND MARKING FACILITY
TOWN(S): EAST HARTFORD
DRAWING TITLE: INDEX OF DRAWINGS

DRAWING NO. MSM-001
SHEET NO. **07E.01**

LASTED SAVED BY: RichardEH **FILE NAME:** D:\Users\MittoE\Connecticut Department of Transportation\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0043_0192_MSM001.dgn
PLOTTED DATE: 2/17/2022

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 GUAGE 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
- DAMPER, BACKDRAFT
- DAMPER, ELECTRIC OPERATED
- DAMPER, FIRE
- DAMPER, PNEUMATIC
- DAMPER, SMOKE
- DAMPER, SPLITTER
- DAMPER, 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
- FLEXIBLE DUCT
- 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
FPM	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.

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

NOT TO SCALE

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

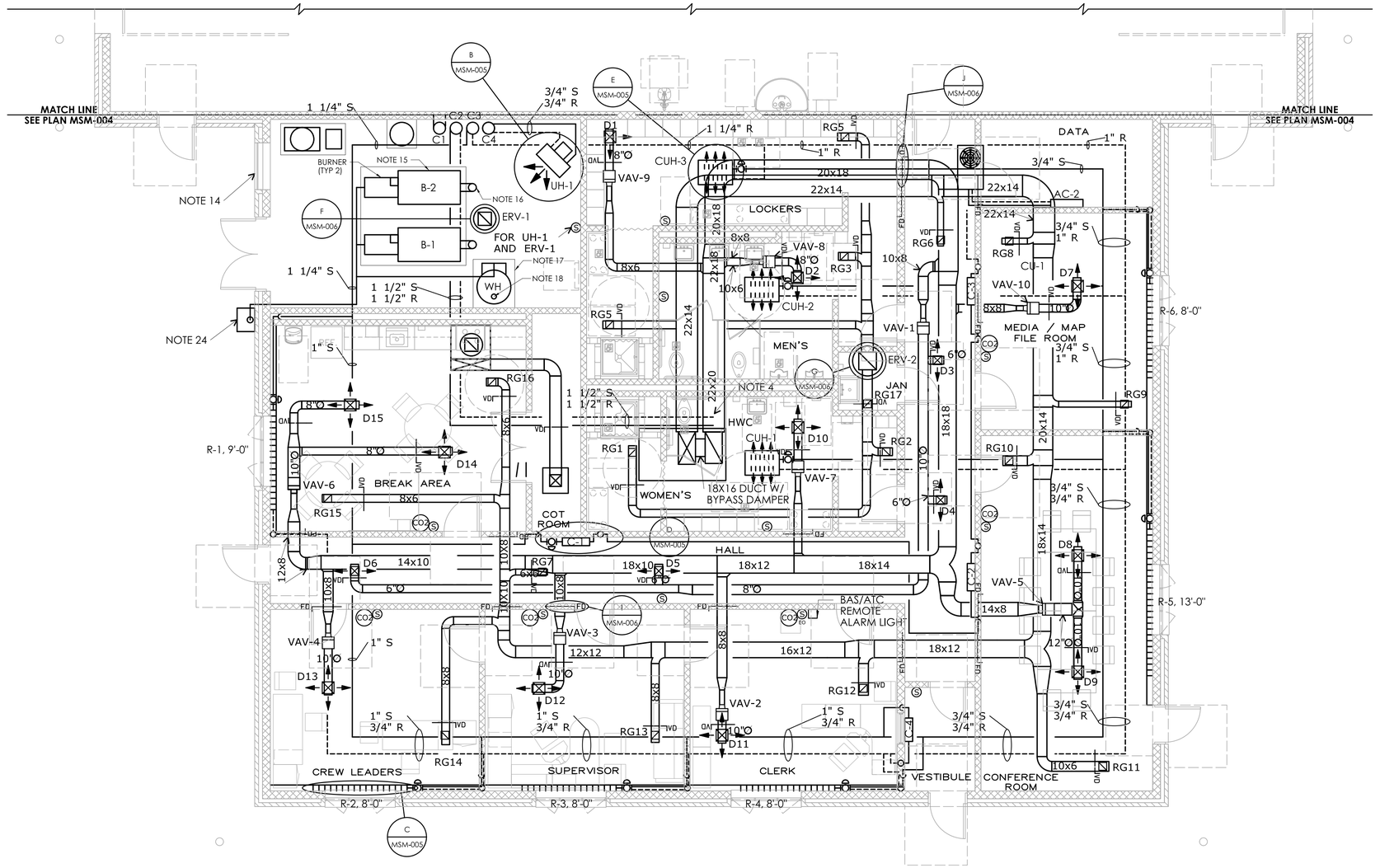
PROJECT NUMBER: 0042-0324
PROJECT DESCRIPTION: EAST HARTFORD MAINTENANCE FACILITY AND SIGNS AND MARKING FACILITY
TOWN(S): EAST HARTFORD
DRAWING TITLE: LEGEND & GENERAL NOTES

DRAWING NO. MSM-002
SHEET NO. 07E.02

LASTED SAVED BY: RichardEH FILE NAME: D:\Users\MittoE\Connecticut Department of Transportation\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0043_0192_MSM002.dgn
PLOTTED DATE: 2/17/2022

NOTES:

1. DUCT MOUNTED SMOKE DETECTOR TO BE FURNISHED IN SUPPLY AND RETURN PLENUM, WIRED, AND CONNECTED BY THE ELECTRICAL INSTALLER. TO BE INSTALLED BY THE MECHANICAL INSTALLER. REFER TO ELECTRICAL DRAWINGS.
2. OPENING THRU ROOF FOR AC-1. FIELD VERIFY SIZE WITH APPROVED AC UNIT BASED UPON AS SPECIFIED.
3. [L],[S],[V], IN SUPPLY DUCTWORK UP THROUGH ROOF TO ROOFTOP UNIT.
4. TO HYDRONIC HEATING COIL (HWC-1) IN SUPPLY DUCTWORK. REFER TO DRAWING NO. MSM-005 FOR HWC PIPING DIAGRAM.
5. PROVIDE RECTANGULAR TO ROUND DUCT TRANSITIONS AT VAV DAMPER LOCATIONS.
6. EXHAUST DUCTWORK IN BATHROOMS AND JANITOR'S CLOSET SHALL BE ALUMINUM IN ACCORDANCE WITH CSI SECTION 233113.
7. REFER TO DRAWING NO. ASM-104 FOR THE REFLECTED CEILING PLAN.
8. REFER TO DRAWING NO. MSM-006 FOR DUCT DETAILS.
9. INSTALL CONVECTOR AND FIN TUBE RADIATION PIPING IN ACCORDANCE WITH THE DETAILS ON DRAWING NO. M-005. ALL PIPING DROPS AND RISES SHALL BE IN THE ENCLOSURE AND WALLS, SOME LOCATIONS SHOWN ARE FOR CLARITY ONLY. TWO POSITION HOT WATER CONTROL VALVES SHALL BE WITHIN THE ENCLOSURES, LOCATIONS SHOWN ARE FOR CLARITY ONLY.
10. REFER TO PLAN MSM-005 FOR HYDRONIC PIPING DIAGRAM.
11. REFER TO DRAWING NO. PSM-010 FOR EXTERIOR WALL, FLOOR, AND FIRE WALL PIPE SLEEVE DETAILS.
12. SURFACE MOUNTED CONDUITS IN THE MECHANICAL, ELECTRICAL, DATA, AND BAY AREAS SHALL BE: RMC BELOW 10'-0" AFF, EMT ABOVE 10'-0". REFER TO CSI SECTION 260533 FOR ADDITIONAL INFORMATION.
13. EQUIPMENT IS TO BE INSTALLED ON 6" THICK CONCRETE PADS, SIZED 4" LARGER ON EACH SIDE THAN THE EQUIPMENT BASE INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
    a. BOILERS 1 & 2 - ONE PAD
    b. WATER HEATER - ONE PAD
    c. EXPANSION TANK - ONE PAD
    d. AIR COMPRESSOR AND AIR DRYER - ONE PAD
14. COMBUSTION AIR LOUVER WITH MOTORIZED ACTUATOR, WITH A MINIMUM OF 5.21 SQUARE FEET OF FREE AREA. INSTALL 12" BELOW CEILING. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND SIZE. INTERLOCK WITH BURNERS FOR BOILERS (BY BAS/INSTALLER).
15. BOILER OVERRIDE (AUTO/MANUAL) SWITCH TO BE INSTALLED BY BAS/ATC INSTALLER (TYP 2 PLCS).
16. 10" i.d. BREECHING AND CHIMNEY (TYP 2 PLCS), REFER TO DETAIL ON DRAWING NO. MSM-007.
17. WATER HEATER, REFER TO DETAIL ON DRAWING NO. PSM-008.
18. 6" i.d. BREECHING AND CHIMNEY WITH BAROMETRIC DAMPER.
19. AC-2 MOUNTED 7'-6" AFF TO BOTTOM OF UNIT, CU-1 IS ROOF MOUNTED. PROVIDE REFRIGERANT PIPING FROM CU-1 TO AC-2. SIZE REFRIGERANT PIPING PER MANUFACTURERS REQUIREMENTS.
20. PIPE CONDENSATE DRAIN FOR AC-1 AND CU-1 A MINIMUM OF 1'-0" AWAY TOWARDS ROOF DRAIN.
21. 80 GALLON (FULL ACCEPTANCE) BLADDER-TYPE EXPANSION TANK, FLOOR MOUNTED.
22. CONTRACTOR SHALL INSULATE BEHIND SENSORS.
23. TYPE II COMMERCIAL KITCHEN EXHAUST HOOD WITH FRONT SUPPLY PLENUM. REFER TO DETAIL ON MSM-007 AND CSI SECTION 233813 FOR MORE INFORMATION.
24. METER-SET INSTALLED BY CNG REFER TO DRAWING C-005 FOR LOCATION OF GAS SERVICE LINE BY CNG. REFER TO DRAWING M-007 FOR GAS PIPING RISER DIAGRAM. INSTALL METER-SET IN ACCORDANCE WITH CNG REQUIREMENTS.
25. GAS PIPING PENETRATION THRU WALL AT APPROXIMATELY 5'-0" AFF, PROVIDE SLEEVE THRU WALL.



REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

SCALE: 3/16" = 1'-0"

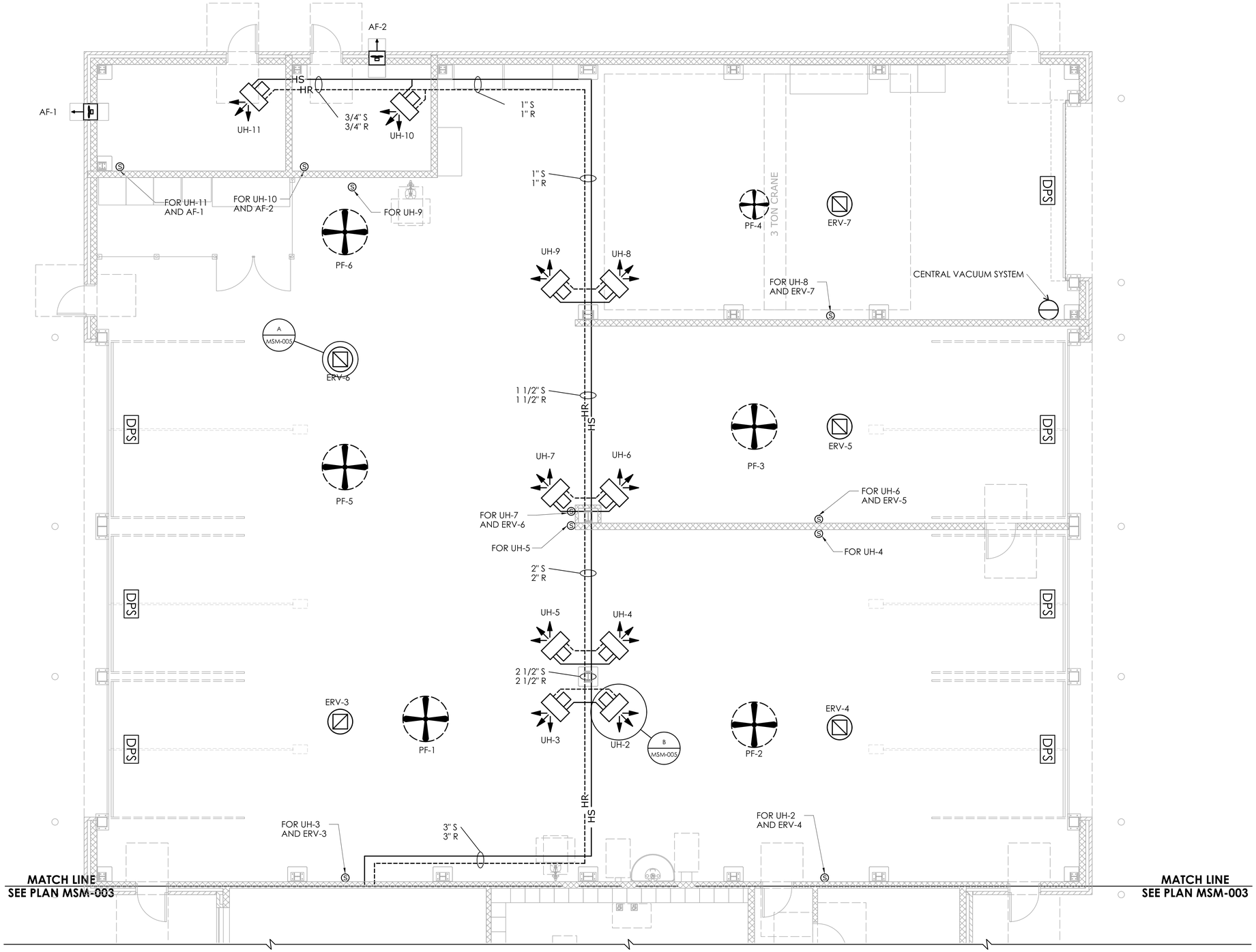
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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

DRAWING NO. MSM-003
SHEET NO: 07E.03

LASTED SAVED BY: MittoE FILE NAME: C:\Users\MittoE\State of Connecticut\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0042_0324_MSM003.dgn
PLOTTED DATE: 2/17/2022



NOTES:

1. CONTRACTOR SHALL INSULATE BEHIND SENSORS.
2. REFER TO PLUMBING SUBSET FOR WALL SLEEVE DETAILS.
3. THE FOLLOWING TYPES OF SURFACE MOUNTED CONDUIT SHALL BE INSTALLED IN THE BAY AREAS: RMC BELOW 10'-0" AFF, EMT ABOVE 10'-0". REFER TO CSI SECTION 260533 FOR ADDITIONAL INFORMATION.
4. REFER TO ELECTRICAL DRAWINGS FOR PADDLE FAN SPEEDCONTROLLER LOCATIONS.
5. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF HVAC EQUIPMENT AND PIPING WITH CRANE SYSTEM AND TOOL CRIB FENCE.

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

SCALE: 3/16" = 1'-0"

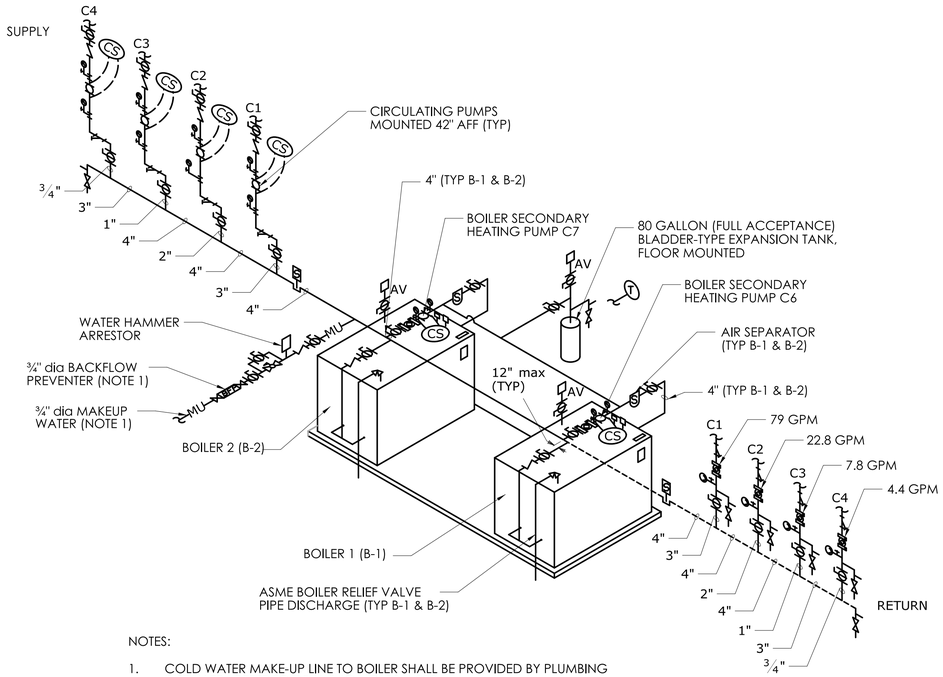
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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

DRAWING NO. MSM-004
SHEET NO. **07E.04**

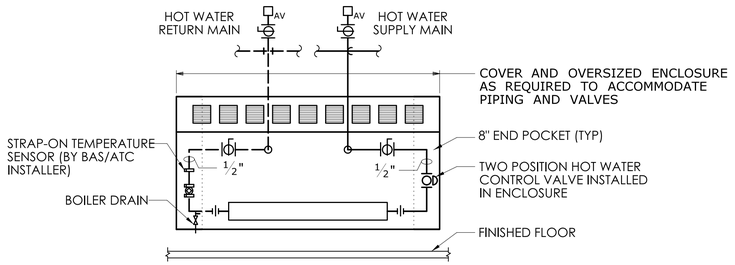
LASTED SAVED BY: mittoe **FILE NAME:** D:\Users\MittoE\Connecticut Department of Transportation\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0043_0192_MSM004.dgn
PLOTTED DATE: 2/17/2022



NOTES:

1. COLD WATER MAKE-UP LINE TO BOILER SHALL BE PROVIDED BY PLUMBING INSTALLER. REFER TO DRAWING NO. PSM-008.
2. INSTALL AUTOMATIC AIR VENTS IN ACCORDANCE WITH SPECIFICATIONS.

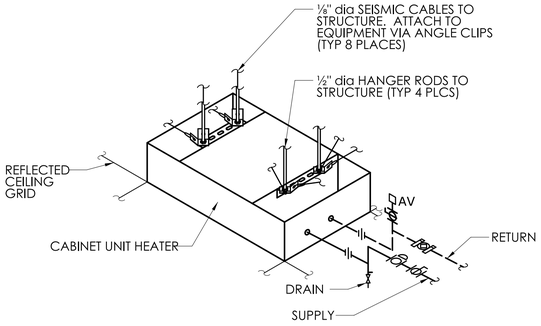
HYDRONIC PIPING DIAGRAM



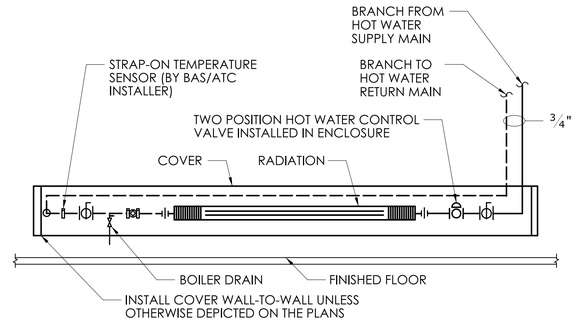
NOTES:

1. GC TO COORDINATE THE INSTALLATION OF THE CONVECTORS WITH THE INSTALLATION OF THE FINISHED FLOOR TO PREVENT DAMAGE TO THE EXPOSED PIPING, HEATING ELEMENT, PIPING SPECIALTIES, AND ENCLOSURE (INCLUDING BACK PANEL). DAMAGED WORK DEEMED TO BE UNACCEPTABLE TO THE ENGINEER SHALL BE REMOVED AND REPLACED.
2. GC TO COORDINATE THE INSTALLATION OF THE CONVECTORS WITH THE INSTALLATION OF TERRAZZO BASE. REFER TO DRAWING NO. ASM-503 FOR DETAIL.
3. PROVIDE AIR VENTS WITH BALL VALVE AT HIGH POINTS IN PIPING.

TYPICAL CONVECTOR PIPING DETAIL — D / MSM-003



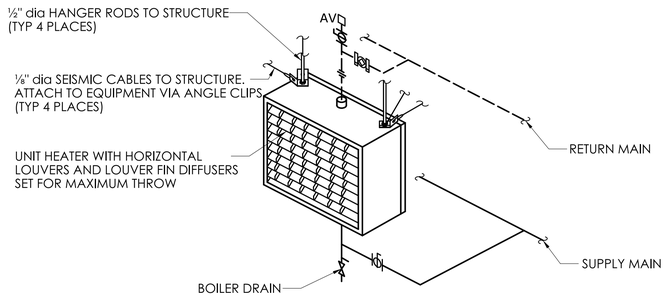
TYPICAL CABINET UNIT HEATER PIPING DETAIL — E / MSM-003



NOTES:

1. GC TO COORDINATE THE INSTALLATION OF THE FINNED TUBE RADIATION WITH THE INSTALLATION OF THE FINISHED FLOOR TO PREVENT DAMAGE TO THE EXPOSED PIPING, FINS, PIPING SPECIALTIES, AND ENCLOSURE (INCLUDING BACK PANEL). DAMAGED WORK DEEMED TO BE UNACCEPTABLE TO THE ENGINEER SHALL BE REMOVED AND REPLACED.
2. GC TO COORDINATE THE INSTALLATION OF THE FINNED TUBE RADIATION WITH THE INSTALLATION OF TERRAZZO BASE. REFER TO DRAWING NO. ASM-503 FOR DETAIL.
3. PROVIDE AIR VENTS WITH BALL VALVE AT HIGH POINTS IN PIPING.

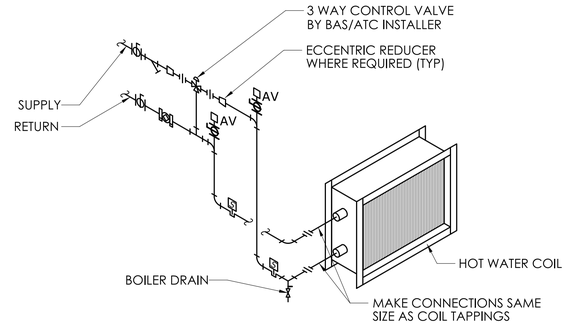
TYPICAL FIN TUBE RADIATION PIPING DETAIL — C / MSM-003



NOTE:

1. PROVIDE OSHA FAN GUARD

TYPICAL HORIZONTAL UNIT HEATER PIPING DETAIL — B / MSM-003, A / MSM-004



NOTE:

1. CONNECTIONS TO COIL INLET AND OUTLET SHALL BE FULL SIZE OF COIL TAPPINGS AND SHALL BE PROVIDED WITH UNIONS OR FLANGES TO FACILITATE COIL REMOVALS AND CONNECTIONS TO ADDED COILS.
2. MAKE BRANCH PIPING CONNECTIONS TO COIL HEADERS TO ACHIEVE AIR-WATER COUNTER-CROSSFLOW. PLUG COIL HEADER TAPPINGS WITH NO CONNECTIONS.
3. REFER TO SPECIFICATION SECTION 230993, "SEQUENCE OF OPERATIONS" FOR ADDITIONAL INFORMATION.

DUCT MOUNTED HOT WATER COIL (HWC) PIPING DETAIL

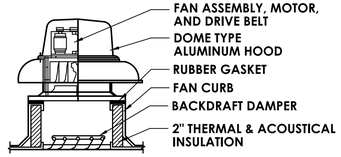
DESIGNER/DRAFTER: EAM | CHECKED BY: JAB | NOT TO SCALE | SIGNATURE/BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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

DRAWING NO. MSM-005
SHEET NO. 07E.05

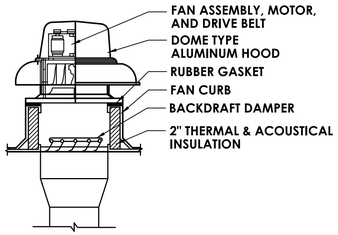
LASTED SAVED BY: MittoE **FILE NAME:** C:\Users\MittoE\State of Connecticut\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0042_0324_MSM005.dgn
PLOTTED DATE: 2/17/2022



NOTE:

1. OPENING THROUGH ROOF AS SPECIFIED IN SCHEDULE. FIELD VERIFY SIZE WITH EXHAUST FAN AND ROOF CURB.

ROOF MOUNTED EXHAUST FAN (ERV) DETAIL — F / MSM-003 — F / MSM-004

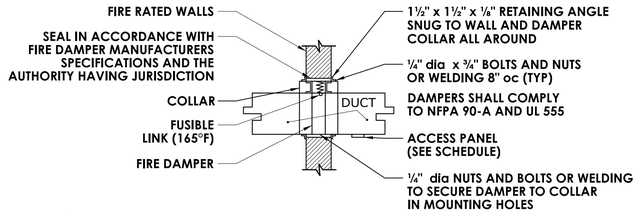


NOTE:

1. OPENING THROUGH ROOF AS SPECIFIED IN SCHEDULE. FIELD VERIFY SIZE WITH EXHAUST FAN AND ROOF CURB.

DUCTED ROOF MOUNTED EXHAUST FAN (ERV) DETAIL — G / MSM-003

ACCESS PANEL SCHEDULE	
DUCT WIDTH	MINIMUM PANEL SIZE
UP TO 12"	6" x 12"

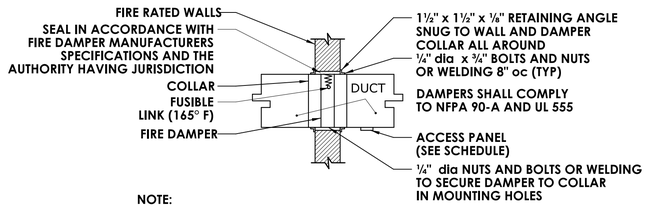


NOTE:

1. FOR USE IN HIGH AND MEDIUM PRESSURE DUCTWORK AND LOW PRESSURE DUCTWORK WITH SIDE DIMENSION LESS THAN 12".

FIRE DAMPER DETAIL FOR DUCTWORK WITH SIDE DIMENSION UP TO 12" — I / MSM-003

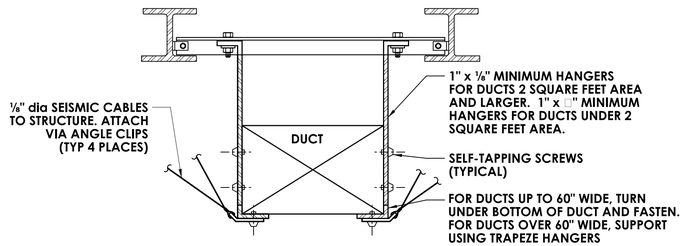
ACCESS PANEL SCHEDULE	
DUCT WIDTH	MINIMUM PANEL SIZE
UP TO 12"	6" x 12"
13" TO 24"	12" x 12"
25" AND UP	18" x 18"



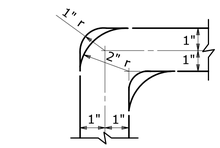
NOTE:

1. FOR USE IN LOW PRESSURE DUCTWORK.

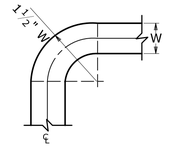
FIRE DAMPER DETAIL FOR DUCTWORK WITH SIDE DIMENSION 12" AND GREATER — J / MSM-003



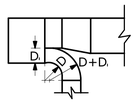
METHOD OF HANGING DUCTWORK



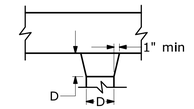
TURNING VANES
SUPPLY & RETURN DUCTS



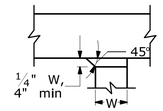
FULL RADIUS ELBOW
SUPPLY & RETURN DUCTS



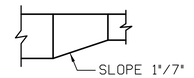
TAKE - OFF
SUPPLY DUCTS ONLY



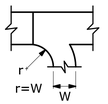
TAKE - OFF
SUPPLY DUCTS ONLY



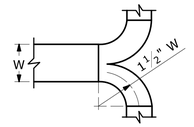
TAKE - OFF
SUPPLY DUCTS ONLY



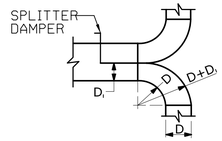
TRANSITION
SUPPLY & RETURN DUCTS



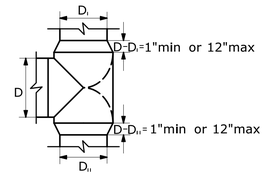
CONVERGING WYE
RETURN DUCTS ONLY



LONG RADIUS TEE
RETURN DUCTS ONLY

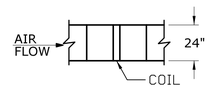


LONG RADIUS TEE
SUPPLY DUCTS ONLY

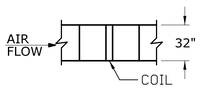


BULLHEAD TEE WITH VANES
ROUND SUPPLY DUCTS ONLY

TYPICAL DUCT DETAILS



FRONT VIEW



PLAN VIEW

HEATING COIL DUCT TRANSITIONS

NOTES:

1. REFER TO A-504 FOR FLASHING DETAILS.
2. REFER TO P-010 FOR PIPING SUPPORT AND SLEEVE DETAILS.

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

NOT TO SCALE

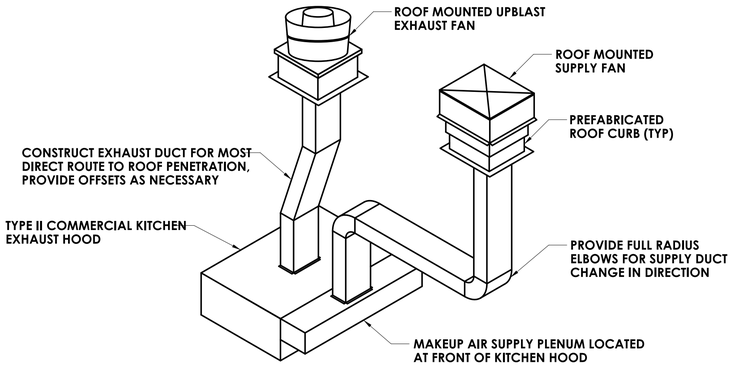
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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

DRAWING NO. MSM-006
SHEET NO. 07E.06

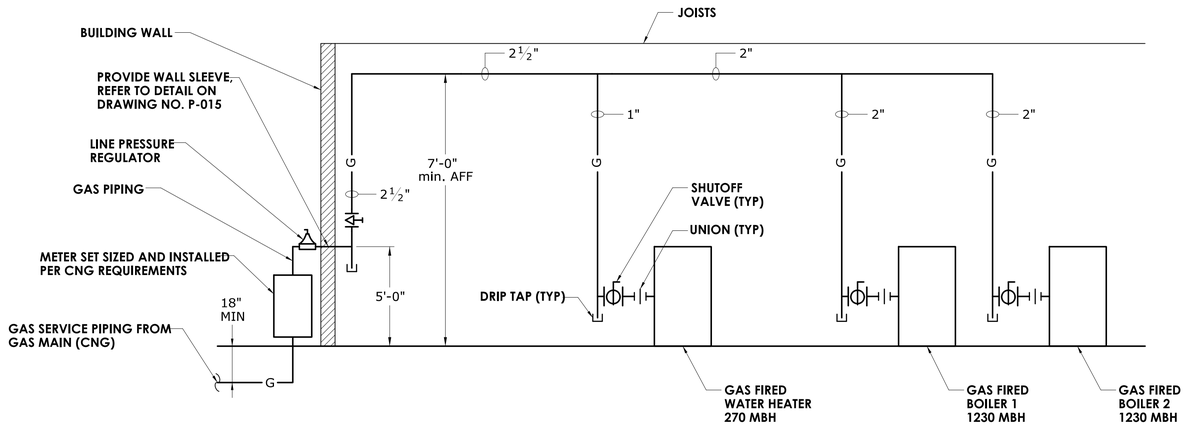
LASTED SAVED BY: MittoE FILE NAME: C:\Users\MittoE\State of Connecticut\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0042_0324_MSM006.dgn
PLOTTED DATE: 2/17/2022



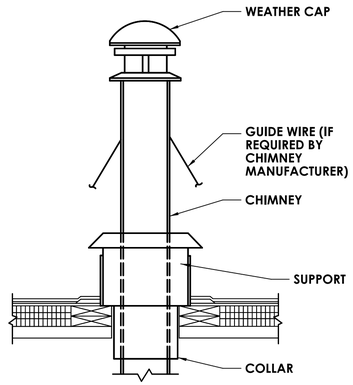
NOTES:

1. PROVIDE 10' MINIMUM HORIZONTAL CLEARANCE BETWEEN SUPPLY & EXHAUST FANS
2. DUCT ORIENTATION MAY DEVIATE FROM DETAIL BASED ON SUPPLY & EXHAUST FAN LOCATIONS SPECIFIED IN MECHANICAL PLANS

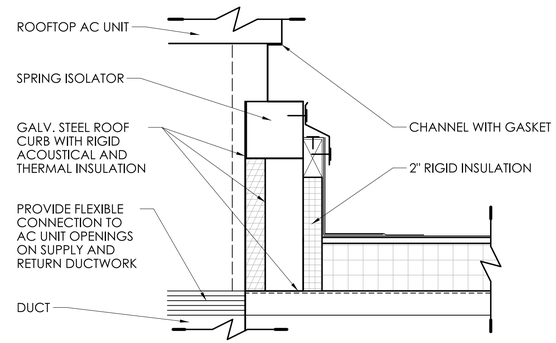
TYPICAL COMMERCIAL KITCHEN HOOD SYSTEM



NATURAL GAS PIPING RISER DIAGRAM



BOILER CHIMNEY PENETRATION DETAIL



ROOFTOP AIR CONDITIONER CURB DETAIL

NOTE: REFER TO AM-502 FOR FLASHING DETAILS.

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

NOT TO SCALE

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0042-0324
PROJECT DESCRIPTION: EAST HARTFORD MAINTENANCE FACILITY AND SIGNS AND MARKING FACILITY
TOWN(S): EAST HARTFORD
DRAWING TITLE: GAS PIPING & MISC. MECHANICAL DETAILS

DRAWING NO. MSM-007
SHEET NO. **07E.07**

LASTED SAVED BY: MittoE **FILE NAME:** C:\Users\MittoE\State of Connecticut\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0042_0324_MSM007.dgn
PLOTTED DATE: 2/17/2022

UNIT HEATER SCHEDULE

MARK	TYPE & MODEL NO.	MBH	GPM	CFM	EWT	LWT	WPD	MOUNTING HGT	MOTOR
UH-1	HORIZONTAL - 060 - S	43.6	4.4	900	200	180	0.17'	10'	1/20HP, 120V, 1PH, 60HZ
UH-(2-5)	HORIZONTAL - 132 - S	95.8	9.6	2000	200	180	0.41'	13'	1/3HP, 120V, 1PH, 60HZ
UH-(6, 7, 9)	HORIZONTAL - 120 - S	87.1	8.8	1900	200	180	0.39'	12'	1/3HP, 120V, 1PH, 60HZ
UH-8	HORIZONTAL - 144 - S	104.0	10.4	2200	200	180	0.43'	13'	1/3 HP, 120V, 1PH, 60HZ
UH-(10, 11)	HORIZONTAL - A18 - S	15.7	1.9	420	200	180	2.2'	8'	16W HP, 120V, 1PH, 60HZ

NOTES:
1. BASED ON TRANE CO.
2. MOUNTING HEIGHT IS THE DISTANCE FROM THE FLOOR TO THE BOTTOM OF THE HEATER
3. TEMPERATURES ARE IN DEGREES - FAHRENHEIT

PADDLE FAN SCHEDULE

MARK	MODEL NO.	BLADE SWEEP	DOWN ROD LENGTH	CFM	RPM	MOTOR
PF-1,2	56301RPD	56"	24"	27,500	265	110W, 120V, 1PH, 60HZ
PF-3	56101	56"	24"	25,500	265	110W, 120V, 1PH, 60HZ
PF-4	36201	36"	24"	12,500	395	75W, 120V, 1PH, 60HZ
PF-5,6	56101	56"	24"	25,500	265	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

CONDENSING UNIT SCHEDULE

MARK	AREA SERVED	EQUIPMENT SERVED	MODEL NO.	TONS	REFRIG.	NO. OF CIRCUITS	SEER	MOTOR	VOLT/PH/HZ
CU-1	COMM. ROOM	AC-2	CU-S9NKUA	0.75	R-410A	1	21.0	-	208V, 1PH, 60 HZ

NOTES: 1. BASED ON SANYO CO. 2. PROVIDE WITH LOW AMBIENT CONTROLS

EXHAUST FAN SCHEDULE

MARK	AREA SERVED	TYPE & MODEL NO.	CFM	SP"	TIP SPEED	FAN RPM	MOTOR
ERV-1	MECHANICAL ROOM	ROOF MOUNTED 80C2B	327	0.125	2371	906	1/6HP, 120V, 1PH, 60HZ
ERV-2	RESTROOMS, LOCKER, JANITORS	ROOF MOUNTED 100C2B	800	0.5	4586	1752	1/6HP, 120V, 1PH, 60HZ
ERV-(3,4)	BAY AREA	ROOF MOUNTED 135C2B	1416	0.125	3541	1002	1/6HP, 120V, 1PH, 60HZ
ERV-5	WASH BAY	ROOF MOUNTED 80C3B	796	0.125	4728	1806	1/4HP, 120PV, 1PH, 60HZ
ERV-6	BAY AREA W/ TOOL CRIB	ROOF MOUNTED 135C3B	1541	0.125	3813	1079	1/6HP, 120V, 1PH, 60HZ
ERV-7	CRANE BAY	ROOF MOUNTED 100C3B	1056	0.125	5105	950	1/4HP, 120V, 1PH, 60HZ
SF-1	BREAK AREA	ROOF MOUNTED RSF-90	700	0.250	-	575	1/4HP, 120V, 1PH, 60HZ
AF-1	ELECTRICAL ROOM	WALL MOUNTED S1-8-426-D	190	0.125	-	1550	1/80HP, 120V, 1PH, 60HZ
AF-2	SPRIKLER ROOM	WALL MOUNTED S1-8-426-D	190	0.125	-	1550	1/80HP, 120V, 1PH, 60HZ
EF-1	BREAK AREA	ROOF MOUNTED CUBE-99	674	.500	-	1336	1/6HP, 120V, 1PH, 60HZ

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

SUPPLY FAN SCHEDULE

MARK	AREA SERVED	TYPE	CFM	SP"	FAN RPM	MOTOR
SF-1	BREAK ROOM	ROOF MOUNTED RSF-90	679	.250	1180	1/4HP, 120V, 1PH, 60HZ

NOTE: BASED ON GREENHECK

VARIABLE AIR VOLUME BOX SCHEDULE

MARK	MOUNTING LOCATION	AREA SERVED	REQUIRED CFM	ELECTRICAL	MODEL NO.	REMARKS
VAV-1	CORRIDOR	CORRIDOR	350	24 VAC	VCCF05	5" INLET
VAV-2	CLERKS	CLERKS	275	24 VAC	VCCF05	5" INLET
VAV-3	SUPERVISOR	SUPERVISOR	300	24 VAC	VCCF05	5" INLET
VAV-4	CREW LEADER	CREW LEADER	300	24 VAC	VCCF05	5" INLET
VAV-5	CONFERENCE ROOM	CONFERENCE ROOM	550	24 VAC	VCCF08	8" INLET
VAV-6	BREAK ROOM	BREAK ROOM	417	24 VAC	VCCF06	6" INLET
VAV-7	WOMENS ROOM	WOMENS ROOM	200	24 VAC	VCCF05	5" INLET
VAV-8	MENS ROOM	MENS ROOM	200	24 VAC	VCCF04	4" INLET
VAV-9	LOCKER ROOM	LOCKER ROOM	158	24 VAC	VCCF04	4" INLET
VAV-10	MEDIA/MAP FILE ROOM	MEDIA/MAP FILE ROOM	275	24 VAC	VCCF05	5" INLET
BYPASS	CEILING PLENUM - BYPASS DUCT			24 VAC	VADA-14x12	14"x12" INLET

NOTE: BASED ON VARITRAC DAMPERS BY TRANE CO. -

ROOFTOP AIR CONDITIONER SCHEDULE

MARK	AREA SERVED	MODEL NO.	CFM	OA CFM	COOLING LOAD		EDB	EWB	LDB	LWB	ESP	EER	SEER	COMP MOTOR	IND FAN MOTOR	OUT FAN MOTOR	VOLT/PH/HZ
					SENSIBLE	LATENT											
AC-1	OFFICE	THC092F3R0A	3063	-	74.28	8.09	78.90	61.17	56.97	51.63	1.3	12.6	----	6.02 kW	1.06 kW	0.71 kW	208V, 3PH, 60HZ
AC-2	COMM ROOM	CS-S9NKUA	230-395	0	8.5	-	-	-	-	-	-	13.1	21.0	-	-	-	208V, 1PH, 60HZ

NOTES:
1. AC-1 BASED ON TRANE CO. , AC-2 BASED ON PANASONIC
2. WITH ECONOMIZERS
3. TEMPERATURES IN DEGREES - FAHRENHEIT
4. AMBIENT TEMPERATURE = 90 DEGREES

HYDRONIC COIL SCHEDULE

MARK	LOCATION	TYPE & MODEL NO.	FINS/FT	MBH	GPM	CFM	EAT	EWT	LAT	WTD	WPD	APD	FACE VELOCITY (FPM)
HWC-1	DUCT MOUNTED, AC-1	24"x32" TYPE 5W - 2 ROW	130	229.73	22.89	3070	51.00	200	120	20	0.55	0.217	576

NOTES:
1. BASED ON TRANE CO.
2. TEMPERATURES ARE IN DEGREES - FAHRENHEIT

PUMP SCHEDULE

PUMP	AREA SERVED	TYPE & MODEL NO.	GPM	HEAD (FT)	MOTOR
C1	MECHANICAL ROOM	IL0010	5	8	1/8HP, 120V, 1PH, 60HZ
C2	BAYS/ELECTRICAL/SPRINKLER	KV2007D	79	33	1HP, 208V, 3PH, 60HZ
C3	OFFICE - HEATING COIL	1915	23	26	1/3HP, 120V, 1PH, 60HZ
C4	OFFICE - FTR & CONV.	IL122	10	19	1/6HP, 120V, 1PH, 60HZ
C5	BOILER SECONDARY	KS2007D	87	20	3/4HP, 208V, 3PH, 60HZ
C6	BOILER SECONDARY	KS2007D	87	20	3/4HP, 208V, 3PH, 60HZ

NOTE: BASED ON TACO.

CONVECTOR/CABINET UNIT HEATER SCHEDULE

MARK	LOCATION	MODEL NO.	GPM	MBH	H x D x L	EWT	LWT	EAT	TYPE
C-1A, C-1B, C-1C, C-2	HALLWAY/VESTIBULE	SW-A	0.47	4.6	14" x 4" x 40"	200	180	65	SLOPETOP
CUH-1, CUH-2, CUH-3	MENS, WOMENS, LOCKERS	RC-1200	0.84	12.9	25" x 9½" x 35"	200	180	65	CIELING

NOTES:
1. BASED ON VULCAN RADIATOR
2. TEMPERATURES ARE IN DEGREES - FAHRENHEIT
3. H x D x L DIMENSIONS DO NOT INCLUDE END POCKETS
4. CUH-1 THRU 3 MOTOR: 1/15HP, 115V, 1PH, 60HZ

FINNED TUBE RADIATION SCHEDULE

MARK	AREA SERVED	BTU PER FT @ 190°F AVG. WT. TEMP	TUBE SIZE	TUBE TYPE	FIN SPACING	FIN SIZE	COVER STYLE	ENCLOSURE HEIGHT	MOUNTING
R-(1-6)	OFFICE	900	1-1/4"	CU - AL	32 FINS/FT	**3¼" x 3¼"**	FS5	14"	WALL

NOTE: BASED ON RITTLING

DIFFUSER SCHEDULE

MARK	LOCATION	FACE	DIMENSION	MOUNTING	MODEL	CFM	PATTERN
D1	LOCKERS	SQ	9" x 9"	FL	G2	158	2 - W
D2	MENS ROOM	SQ	9" x 9"	FL	A4	200	4 - W
D3, D4, D5, D6	CORRIDOR	SQ	6" x 6"	FL	S2	88	2 - W
D7	MEDIA/MAP FILE ROOM	SQ	12" x 12"	FL	A4	275	4 - W
D8, D9	CONFERENCE	SQ	12" x 12"	FL	A4	275	4 - W
D10	WOMENS ROOM	SQ	9" x 9"	FL	A4	200	4 - W
D11	CLERKS	SQ	12" x 12"	FL	A4	275	4 - W
D12	SUPERVISOR	SQ	12" x 12"	FL	A4	300	4 - W
D13	CREW LEADER	SQ	12" x 12"	FL	A4	300	4 - W
D14, D15	BREAK/COT ROOM	SQ	9" x 9"	FL	A4	209	4 - W

NOTES:
1. BASED ON TITUS.
2. DIMENSIONS ARE BASED ON NECK AREA

RETURN GRILLE SCHEDULE

MARK	LOCATION	DIMENSION	CFM
RG1, RG2	WOMENS ROOM	6" x 6"	110
RG3	MENS ROOM	10" x 10"	220
RG4, RG5	LOCKER ROOM	8" x 8"	131
RG6, RG7	CORRIDOR	8" x 8"	137
RG8, RG9	MEDIA/MAP FILE ROOM	8" x 8"	131
RG10, RG11	CONFERENCE ROOM	10" x 10"	261
RG12	CLERK	10" x 10"	261
RG13	SUPERVISOR	10" x 10"	285
RG14	CREW LEADER	10" x 10"	285
RG16, RG15	BREAK/COT ROOM	10" x 10"	198
RG17	JANITORS	6" x 6"	5

NOTES:
1. BASED ON TITUS.
2. DIMENSIONS ARE BASED ON CORE AREA.

DESIGNER/DRAFTER: EAM CHECKED BY: JAB

NOT TO SCALE

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

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

DRAWING NO. MSM-008
SHEET NO. **07E.08**

LASTED SAVED BY: ThompsonJero **FILE NAME:** D:\Users\MittoE\State of Connecticut\0042-0324 - Design\F_Mech\Signs & Markings\FD_MST_MEC_0042_0324_MSM008.dgn
PLOTTED DATE: 2/17/2022