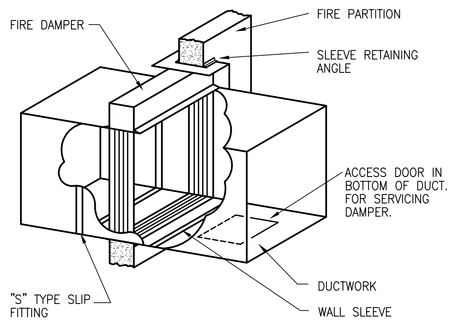
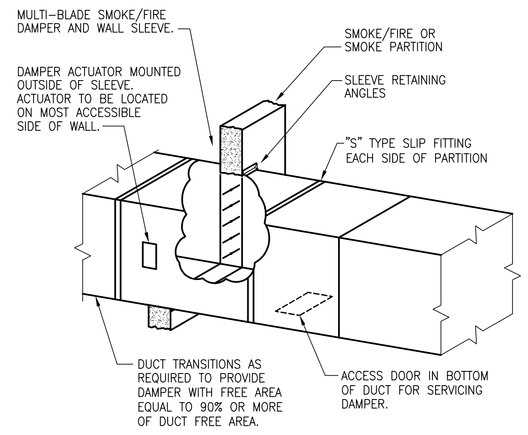


TYPE "C" NOMINAL 100% FREE AREA FIRE DAMPER DETAIL

NOT TO SCALE

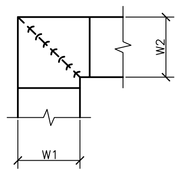
Sm-2



SMOKE / FIRE DAMPER (MOTOR OPERATED)

NOT TO SCALE

SM-11

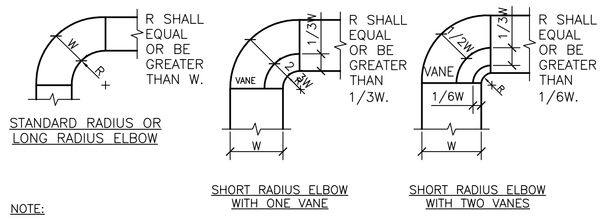


NOTE:

1. ALL VANE ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W1 DOES NOT EQUAL W2, VANE SHALL BE SINGLE THICKNESS VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE THICKNESS VANES SHALL HAVE A 2" [50mm] RADIUS, 1 1/2" [40mm] MAXIMUM SPACE BETWEEN VANES AND A 3/4" [20mm] TRAILING EDGE.
4. WHEN W EQUALS W2 AND W1 IS GREATER THAN 20" [500mm] VANES SHALL BE DOUBLE VANE TYPE.

DUCTWORK SQUARE VANE ELBOWS

NTS

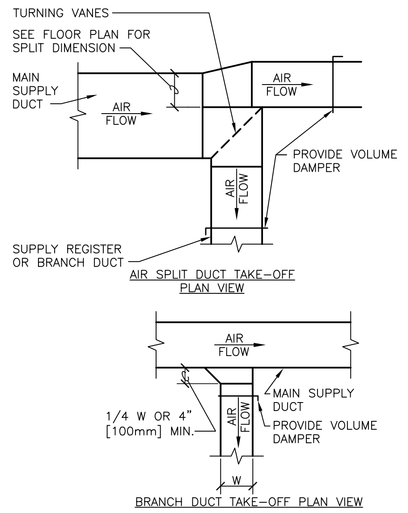


NOTE:

1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS CAN BE SUBSTITUTED WITH SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

DUCTWORK RADIUS ELBOWS

NTS



SUPPLY DUCTWORK TAKE-OFFS

NTS

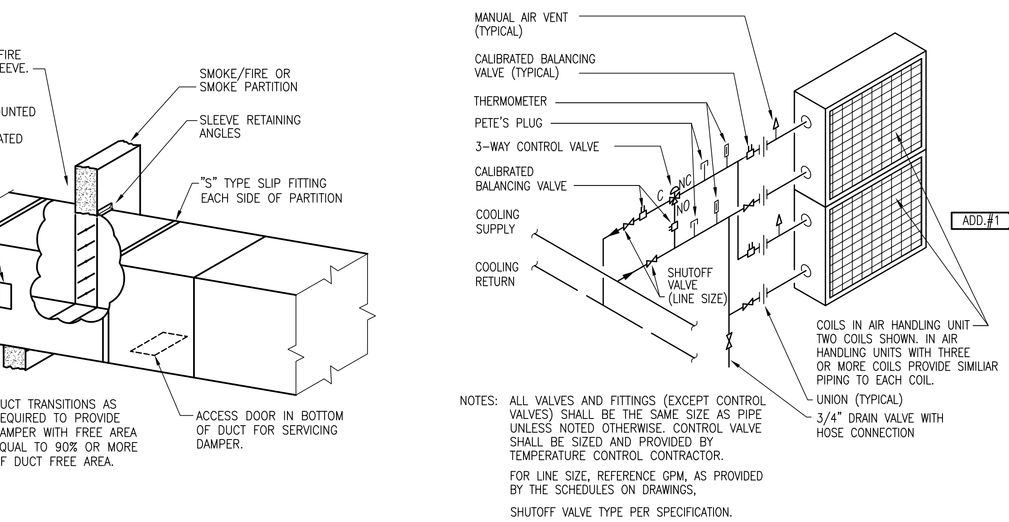
SIDE VIEW TRAPEZE HANGER FOR UP TO 1000 LB. [453KG] UNIFORM LOAD

MAXIMUM PIPE/TUBING SUPPORT SPACING																	
NOM. SIZE	IN. [mm]	THRU 3/4 [20]	1 [25]	1 1/4 [32]	1 1/2 [40]	2 [50]	2 1/2 [65]	3 [75]	4 [100]	5 [125]	6 [150]	8 [200]	10 [250]	12 [300]	14 [350]	16 [400]	18 [450]	20 [500]	24 [600]
PIPE	FT. [mm]	8 [2100]	7 [2100]	7 [2100]	9 [2700]	10 [3000]	11 [3400]	12 [3700]	14 [4100]	16 [4900]	17 [5200]	19 [5800]	22 [6700]	23 [7000]	25 [7600]	27 [8200]	28 [8500]	30 [9100]	32 [9600]
TUBING	FT. [mm]	5 FT [1500]	6 [1800]	7 [2100]	8 [2400]	8 [2400]	9 [2700]	10 [3000]	12 [3700]	13 [4000]	14 [4100]	16 [4900]	–	–	–	–	–	–	–
NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.																			

PIPE HANGERS

NTS

S0230511-21



NOTES: ALL VALVES AND FITTINGS (EXCEPT CONTROL VALVES) SHALL BE THE SAME SIZE AS PIPE UNLESS NOTED OTHERWISE. CONTROL VALVE SHALL BE SIZED AND PROVIDED BY TEMPERATURE CONTROL CONTRACTOR.

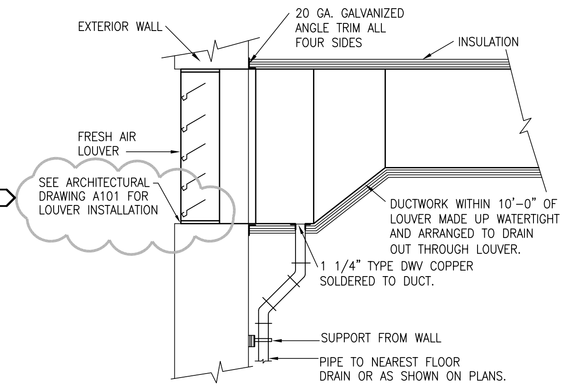
FOR LINE SIZE, REFERENCE GPM, AS PROVIDED BY THE SCHEDULES ON DRAWINGS,

SHUTOFF VALVE TYPE PER SPECIFICATION.

MULTIPLE COOLING COIL PIPING

NOT TO SCALE

Cp-2

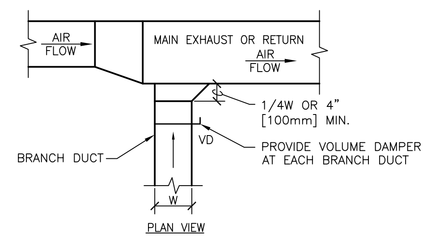


NOTE: PROVIDE AT ALL WALL LOUVERS FOR OUTDOOR AIR, EXHAUST AIR, RELIEF AIR, ETC.

WALL LOUVER AND DUCT DRAIN

NOT TO SCALE

Sm-15



EXHAUST OR RETURN BRANCH DUCTWORK

NTS

HVAC SYMBOLS

PIPING SYMBOLS

- AIR VENT
- ANCHOR
- EXPANSION JOINT
- FLEXIBLE JOINT
- GUIDE
- PRESSURE GAUGE
- PS — STEAM PRESSURE SENSOR
- SUPPLY PIPING
- RETURN PIPING
- STRAINER
- PETE'S PLUG
- THERMOMETER
- UNION
- M — METER (TYPE, SEE PLANS)
- STEAM TRAP (TYPE, SEE PLANS)
- CONNECT NEW TO EXISTING

VALVE SYMBOLS

- BALANCING COCK OR PLUG VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CIRCUIT SETTER OR CALIBRATED BALANCING VALVE
- CHECK VALVE
- CONTROL VALVE
- GATE VALVE
- GLOBE VALVE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- 3-WAY CONTROL VALVE
- MV — MOTORIZED BUTTERFLY CONTROL VALVE

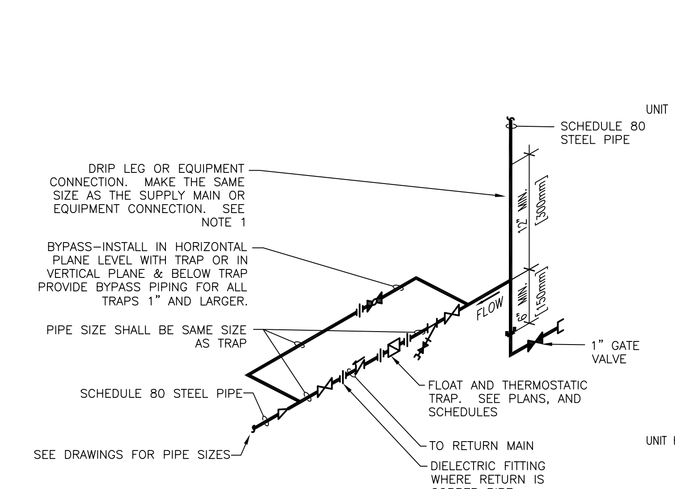
NOTE:
DUCTWORK SHOWN ON DRAWINGS MAY BE DRAWN SINGLE LINE IN LIEU OF DOUBLE LINE.
obv_sym

DUCT SYMBOLS

- EXHAUST FAN ON ROOF
- OAH OR RAH ON ROOF
- CEILING MOUNT EXHAUST FAN
- ACOUSTICALLY LINED DUCT (ALSO SEE SPECIFICATIONS)
- FLEXIBLE CONNECTION
- EXHAUST OR RETURN DUCT SECTION
- SUPPLY DUCT SECTION
- TURNING VANES
- MD — MOTORIZED CONTROL DAMPER
- VOLUME CONTROL DAMPER
- BACKDRAFT DAMPER
- FIRE DAMPER IN HORIZONTAL DUCT
- FIRE DAMPER IN VERTICAL DUCT
- F/S — COMBINATION FIRE/SMOKE DAMPER IN HORIZ. DUCT
- F/S — COMBINATION FIRE/SMOKE DAMPER IN VERTICAL DUCT
- SD — SMOKE DAMPER IN HORIZONTAL DUCT
- SD — SMOKE DAMPER IN VERTICAL DUCT

CONTROL SYMBOLS

- AFMS — AIR FLOW MEASURING STATION
- CO2 — CARBON DIOXIDE SENSOR
- H — HUMIDISTAT
- S — TEMPERATURE SENSOR (ELECTRONIC)
- T — THERMOSTAT (ELECTRIC)
- T_R — REVERSE-ACTING THERMOSTAT (ELECTRIC)
- T — THERMOSTAT (PNEUMATIC)
- V — VOC SENSOR
- $ — SWITCH – WALL MOUNT
- DP — DIFFERENTIAL PRESSURE SENSOR
- MD — MOTORIZED DAMPER
- VP — VELOCITY PROBE
- 6 — DUCT SMOKE DETECTOR BY OTHERS
- TCP — TCP – JUCTION BOX
- TCP — TCP – PANEL
- PHONE JACK FOR BMS COMMUNICATION
- "LAN/WAN" JACK FOR BMS COMMUNICATION
- STATIC PRESSURE PROBE



NOTE:

1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.

FLOAT AND THERMOSTATIC STEAM TRAP ASSEMBLY

NTS

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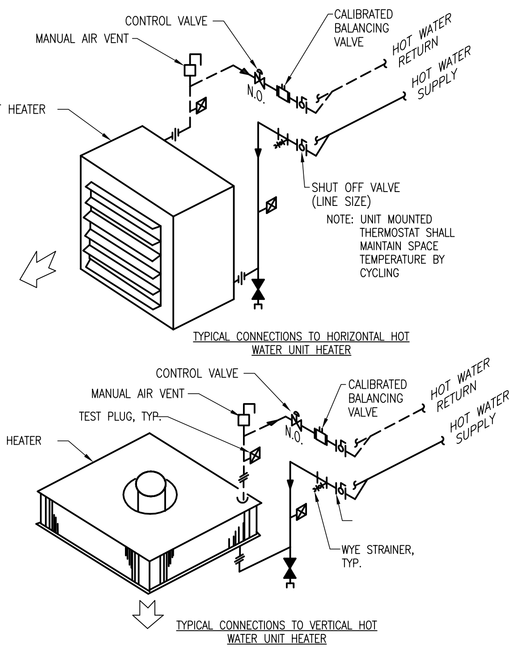
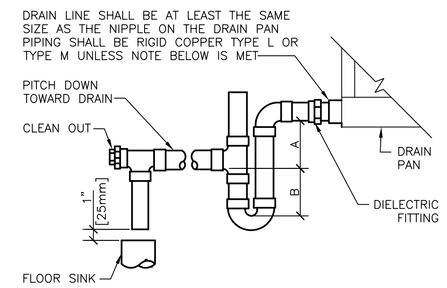


UNIT HEATERS (HOT WATER) – PIPING CONNECTIONS

NTS

S0232113-08



NOTE: 1. CPVC PIPE MAY BE USED ONLY IF APPROVED BY LOCAL VA AND IS INDOORS AND DOES NOT PASS THROUGH RATED BARRIERS.
2. DIELECTRIC FITTING TO BE USED WHEN TWO DISSIMILAR METALS ARE TO BE CONNECTED.

UNIT TYPE	A	B
DRAW THRU	2" [50mm] PLUS X	X
BLOW THRU	1" [25mm] MINIMUM	2X

WHERE X = STATIC PRESSURE IN PAN

AIR HANDLING UNIT DRAIN TRAP DETAIL

NTS

Revisions	Date
ADDENDUM #1	06/28/2013
100% DOCUMNETS	11/30/2011

URS — 3950 SPARKS DRIVE SE GRAND RAPIDS, MI 616-574-8500 PROJ. NO. 12942721

Architect — URS PROJECT NO. – 12942721 — stamp

	DATE	ENGINEERING MANAGER	DATE
INFECTION CONTROL	DATE	CARELINE MANAGER	DATE
SAFETY OFFICER	DATE	CHIEF OF STAFF	DATE

MEDICAL CENTER DIRECTOR DATE

ASSOCIATE MEDICAL CENTER DIRECTOR DATE

Drawing Title: HVAC STANDARD DETAILS

Project Title: FCA – REPLACE HVAC SYSTEM
PROJ. NO. 515-10-109
CONTRACT NO. VA251-P-0592

Building Number: 82 | Checked: CBD | Drawn: JAE

Location: V.A.M.C. BATTLE CREEK, MICHIGAN

Date: 05/04/2012

Station No.: 515

MH500

Office of Facilities — Department of Veterans Affairs