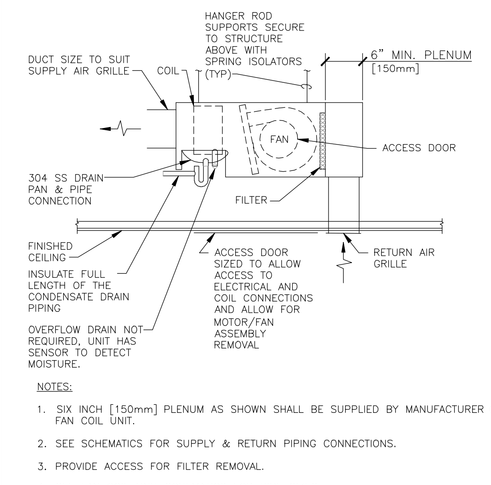


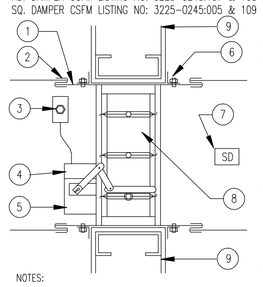
NOTES:

1. SIX INCH [150mm] PLENUM AS SHOWN SHALL BE SUPPLIED BY MANUFACTURER OF FAN COIL UNIT.
2. SEE SCHEMATICS FOR SUPPLY & RETURN PIPING CONNECTIONS.
3. PROVIDE ACCESS FOR FILTER REMOVAL.
4. SEE FAN COIL UNIT SCHEMATICS FOR PIPE SIZES.
5. SUPPLY & RETURN GRILLES SHALL BE SIZED TO SUIT CONNECTIONS ON FAN COIL UNIT. DUCTWORK SHALL SUIT GRILLES AND FAN COIL UNIT FURNISHED.

19 FAN COIL UNIT - HORIZONTAL CONCEALED

NTS

RD. DAMPER CSFM LISTING NO: 3225-0245:107 & 108
SQ. DAMPER CSFM LISTING NO: 3225-0245:005 & 109



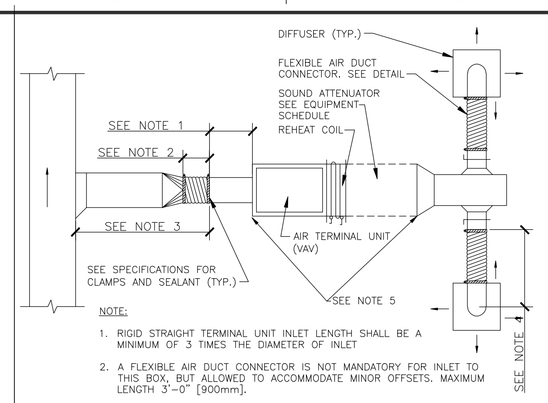
1. SLEEVE TO EXTEND 3" BEYOND WALL.
2. DUCT TO SLEEVE CONNECTION (S-LOCK).
3. EFL, ELECTRIC RESET LINK, RESET ON OUTSIDE OF DMP.
4. JUNCTION BOX.
5. 120 VOLT ELECTRIC ACTUATOR.
6. 16 GA. ANGLE FRAME, WELDED, BOLTED OR SCREWED TO ALL FOUR SIDES OF SLEEVE. ANGLE FRAME NOT LESS THAN 1-1/2" ANGLE. NET OPENING IN FRAMED WALLS SHALL EXCEED NET O.D. OF THE DAMPER ASSEMBLY BY 1/8" FOR EACH FOOT OF WIDTH AND HEIGHT OF DAMPER ASSEMBLY. USE SHEET METAL SCREWS OR FASTNERS AS REQUIRED TO SECURE ASSEMBLY.
7. DUCT SMOKE DETECTOR SHALL BE CONNECTED BY ELECTRICAL CONTRACTOR. DETECTOR TO BE INSTALLED IN DUCT BY MECH. CONTRACTOR.
8. 1-1/2 HOUR FIRE/SMOKE DAMPER SHALL BE U.L. 555 LISTED FOR FIRE AND U.L. 555S LEAKAGE RATED FOR NO LESS THAN CLASS II. RUSKIN MODEL FSDR25 FOR ROUND DAMPERS & RUSKIN MODEL FSD36 FOR SQUARE OR RECTANGULAR DUCTS. PROVIDE WITH RELAYS AS REQUIRED BY SMOKE DETECTORS.
9. FIRE RATED WALL, SEE ARCHITECTURAL DWGS.

NOTES:

1. FIRE DAMPER & INSTALLATION TO BE IN ACCORDANCE WITH CALIFORNIA STATE FIRE MARSHAL # LISTED ABOVE.
2. FIRE DAMPER SHALL BE STATE FIRE MARSHAL APPROVED & INSTALLED STRICTLY PER MFG'S PRINTED INSTRUCTIONS.
3. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE MADE AVAILABLE TO THE INSPECTING AUTHORITIES.
4. CEILING ACCESS PANELS SHALL BE PROVIDED IN ALL GYPSUM BOARD CEILINGS FOR FIRE DAMPER ACCESS.
5. DUCT SMOKE DETECTOR SHALL BE CONNECTED BY ELECTRICAL, MECHANICAL TO FURNISH AND INSTALL IN DUCT.
6. FIRE DAMPER DETAIL FOR REFERENCE ONLY.

20 COMBINATION FIRE/SMOKE DAMPER (WALL INSTALLATION)

NTS

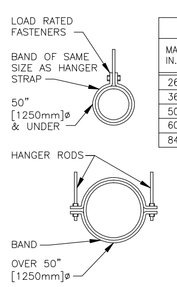


NOTE:

1. RIGID STRAIGHT TERMINAL UNIT INLET LENGTH SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET
2. A FLEXIBLE AIR DUCT CONNECTOR IS NOT MANDATORY FOR INLET TO THIS BOX, BUT ALLOWED TO ACCOMMODATE MINOR OFFSETS. MAXIMUM LENGTH 3'-0" [900mm].
3. A BRANCH DUCT SERVING AN INDIVIDUAL BOX MAY BE THE SAME SIZE AS THE BOX INLET, PROVIDED THE EQUIVALENT LENGTH OF THE BRANCH DUCT, AS SHOWN, DOES NOT EXCEED 10 FEET (3 METERS). FOR LONGER LENGTHS, INCREASE THE DUCT SIZE AND PROVIDE A DUCT TRANSITION TO MAINTAIN THE DUCT STATIC PRESSURE DROP AT OR BELOW 0.2"/100' [1.64Pa/m].
4. FLEXIBLE AIR DUCT CONNECTORS, WHEN USED FROM TERMINAL UNIT SUPPLY AIR DUCT TO DIFFUSER, SHALL NOT EXCEED 5'-0" [1500mm]. USE RIGID ELBOWS FOR CHANGE OF DIRECTION GREATER THAN 45°.
5. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION W/VAPOR BARRIER FOR CONNECTING DUCT SECTIONS.
6. USE OF THE FLEXIBLE AIR DUCT CONNECTORS ARE NOT PERMITTED FOR THE DEDICATED AHU SERVING THE SURGICAL SUITE.

15 DUCT CONNECTIONS - AIR TERMINAL UNITS

NTS



HANGER STRAPS OR RODS

MAX. DUCT ø IN. [mm]	QUANTITY/SIZE IN. [mm]	MAX. LOAD LBS. [kg]	MAX. SPACING IN. [mm]
26 [650]	ONE 1 [25] x 22 GA STRAP	260 [119]	144 [3600]
36 [900]	ONE 1 [25] x 18 GA STRAP	420 [190]	144 [3600]
50 [1250]	ONE 1 [25] x 16 GA STRAP	700 [317]	144 [3600]
60 [1500]	TWO 3/8 [10]ø RODS	1320 [598]	144 [3600]
84 [2100]	TWO 1/2 [13]ø RODS	2500 [1133]	144 [3600]

NOTE:
TABULATED DATA FROM SMACNA ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.

16 ROUND DUCT HANGERS

NTS

NOTES:
SEE SPECIFER FOR DETAILED HANGER REQUIREMENTS

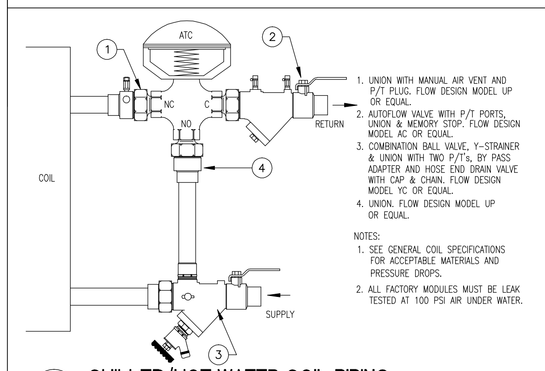
SIDE VIEW TRAPEZE HANGER FOR UP TO 1000 LB. [453KG] UNIFORM LOAD

NOM. SIZE		MAXIMUM PIPE/TUBING SUPPORT SPACING										
	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]
PIPE	FT. [mm]	7 [2100]	7 [2100]	7 [2100]	9 [2700]	10 [3000]	11 [3400]	12 [3700]	14 [4100]	16 [4900]	17 [5200]	19 [5800]
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.

17 PIPE HANGERS

NTS



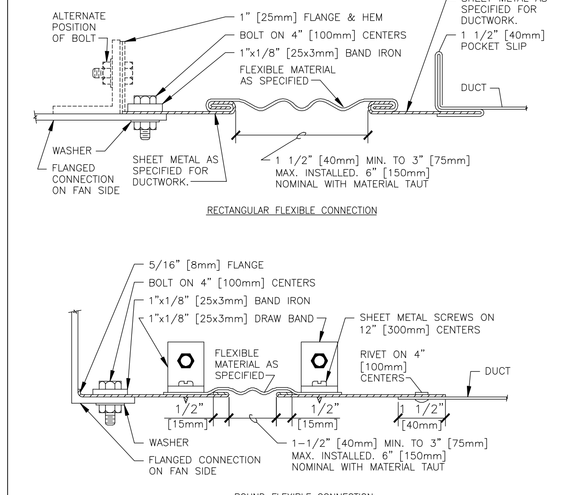
1. UNION WITH MANUAL AIR VENT AND P/T PLUG. FLOW DESIGN MODEL UP OR EQUAL.
2. AUTOFLOW VALVE WITH P/T PORTS, UNION & MEMORY STOP. FLOW DESIGN MODEL AC OR EQUAL.
3. COMBINATION BALL VALVE, Y-STRAINER & UNION WITH TWO P/T's, BY PASS ADAPTER AND HOSE END DRAIN VALVE WITH CAP & CHAIN. FLOW DESIGN MODEL YC OR EQUAL.
4. UNION. FLOW DESIGN MODEL UP OR EQUAL.

NOTES:

1. SEE GENERAL COIL SPECIFICATIONS FOR ACCEPTABLE MATERIALS AND PRESSURE DROPS.
2. ALL FACTORY MODULES MUST BE LEAK TESTED AT 100 PSI AIR UNDER WATER.

18 CHILLED/HOT WATER COIL PIPING

NTS

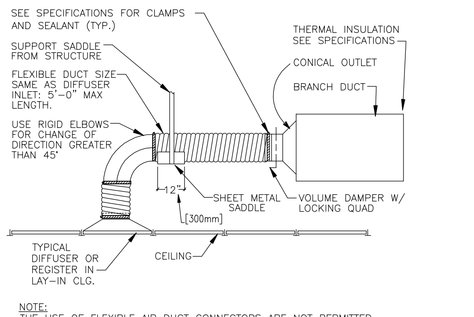


RECTANGULAR FLEXIBLE CONNECTION

ROUND FLEXIBLE CONNECTION

11 FLEXIBLE DUCT CONNECTIONS

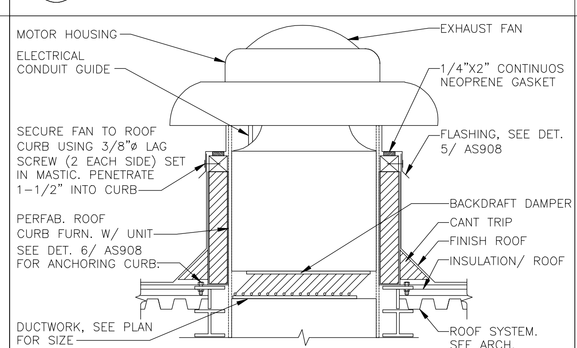
NTS



NOTE:
THE USE OF FLEXIBLE AIR DUCT CONNECTORS ARE NOT PERMITTED FOR THE DEDICATED AHU SERVING THE SURGICAL SUITE.

12 FLEXIBLE AIR DUCT CONNECTOR

NTS



NOTE:

1. SECURE CURB CAP TO WOOD NAILING STRIP WITH 3/8" [10mm] CADMIUM PLATED LAG BOLTS NOT OVER 12" [300mm] ON CENTER.
2. RUN ELECTRICAL LINES THROUGH CLEARANCE HOLE PROVIDED IN GRAVITY DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.

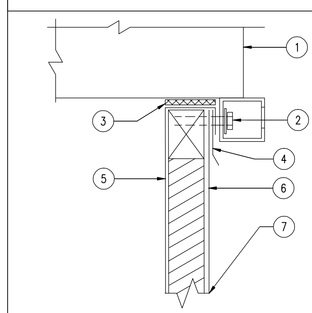
13 POWER ROOF VENTILATOR

NTS

DESIGNERS NOTES:
1.PROVIDE A MOTORIZED DAMPER, IF APPLICABLE.

2.PROVIDE DIRECT DRIVE FANS FOR LOCATIONS NOT EASILY ACCESSIBLE. AS ATTIC OR PIPE BASEMENT AND LESS THAN 2 HP.

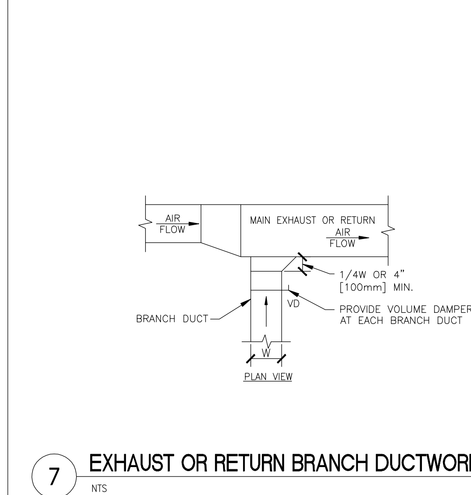
3.MINIMUM CURB HEIGHT SHALL BE 12 INCHES [300 mm]. INCREASE HEIGHT, IF REQUIRED, TO OVERCOME SNOW DRIFT.



1. ODU OR ERV ON ROOF.
2. 3/8" DIA. X 3" LAG BOLT. (2) PER SIDE MIN.
3. 2" x 1/4" CONTINUOUS DENSE NEOPRENE SPONGE GASKET.
4. GALV. SHEET METAL FLASHING.
5. PRE-FAB METAL ROOF CURB, SLOPE TO MATCH ROOF SLOPE. (FURNISHED W/ A.C. UNIT)
6. 1-1/2" RIGID INSULATION COMPATIBLE WITH ROOFING.
7. FOR CURB MOUNTING TO ROOF, SEE ARCHITECTURAL SHEET AS401 AND STRUCTURAL SHEET SF204.

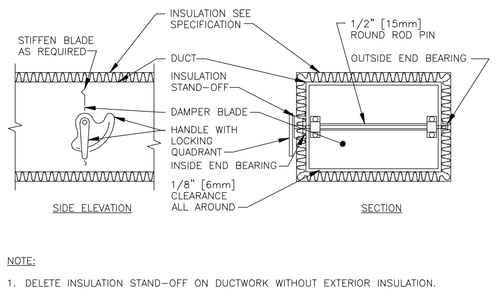
14 ODU/ ERV ROOF MOUNTING

NTS



7 EXHAUST OR RETURN BRANCH DUCTWORK

NTS

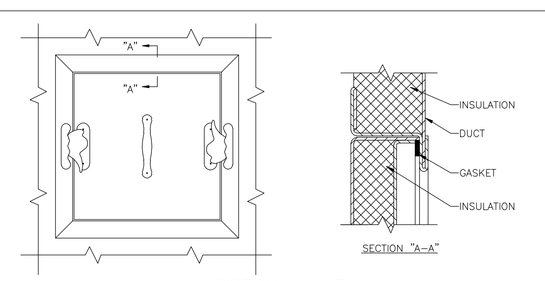


NOTE:

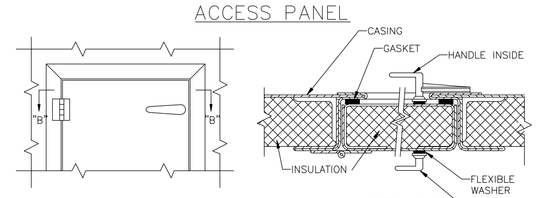
1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

8 VOLUME DAMPER DETAIL

NTS



ACCESS PANEL

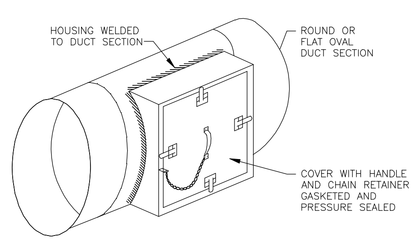


ACCESS DOOR

NOTES:
1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.
3. SEE SMACNA 2005, FIGURE 9-15

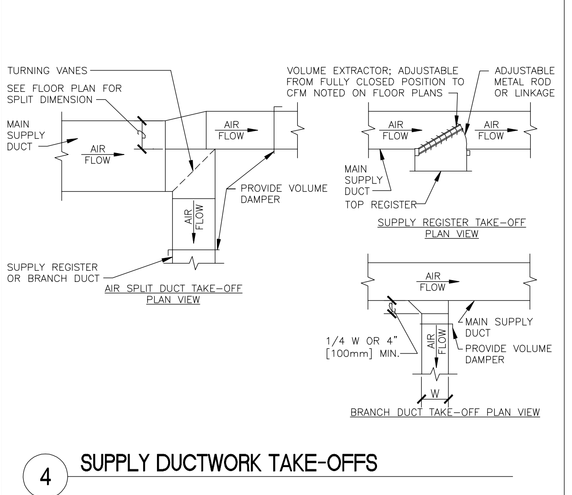
9 ACCESS PANEL AND DOOR DETAIL

NTS



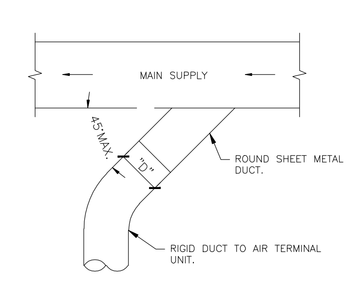
10 ACCESS SECTION FOR ROUND/OVAL DUCT

NTS



4 SUPPLY DUCTWORK TAKE-OFFS

NTS

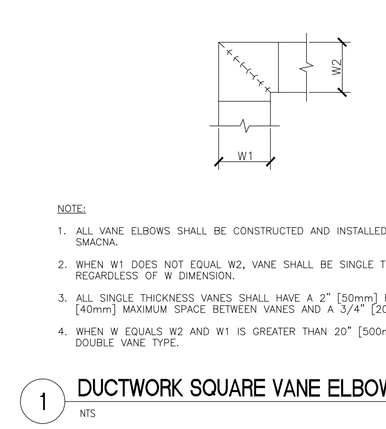


5 SUPPLY DUCT TAKEOFF - AIR TERMINAL UNIT

NTS

6 ALTERNATE SUPPLY DUCT TAKEOFF - AIR TERMINAL UNITS

NTS

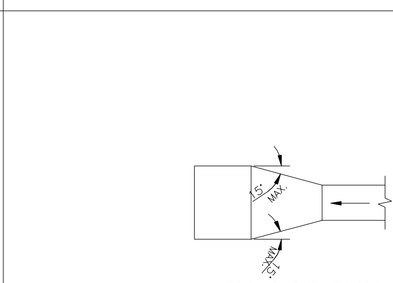


NOTE:

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.

1 DUCTWORK SQUARE VANE ELBOWS

NTS



6 ALTERNATE SUPPLY DUCT TAKEOFF - AIR TERMINAL UNITS

NTS

NOTE:
UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

3 DUCTWORK TRANSITIONS

NTS

Revisions:	Date

CONSULTANTS:

REGISTERED PROFESSIONAL ENGINEER, ROBERT M. LENGYEL, NO. 33380, MECHANICAL, STATE OF CALIFORNIA

LP Consulting Engineers, Inc.
895 W. Ashlan Ave, Suite 101 Clovis, CA 93612
p 559-348-2130 - f 559-348-2131
www.lpengineers.com
Job #: 10-1086

LICENSED ARCHITECT, JAMES M. GRAHAM, NO. C-24697, REN. 07-31-15, STATE OF CALIFORNIA

ARCHITECT/ENGINEERS:

HMC Architects
1827 E. Fir Avenue, Studio 103 / Fresno, CA 93720
T 559 322 2444 / www.hmcarchitects.com

Drawing Title	MECHANICAL DETAILS
Approved: Project Director	
Project Title	BUILDING 24 SEISMIC CORRECTION AND ADDITION
Location	VAMC FRESNO, CA
Date	March 12, 2013
Checked	K.K.
Drawn	D.N.
Project Number	570-215
Building Number	24
Drawing Number	MH501
Dwg. 141 of 180	

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

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