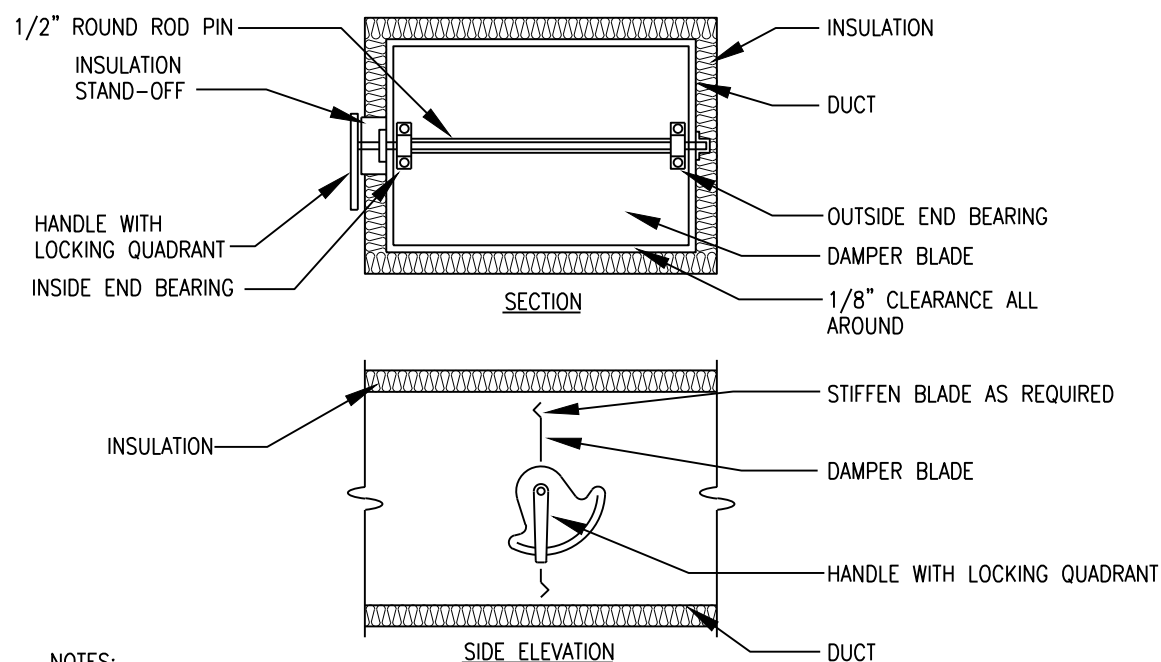
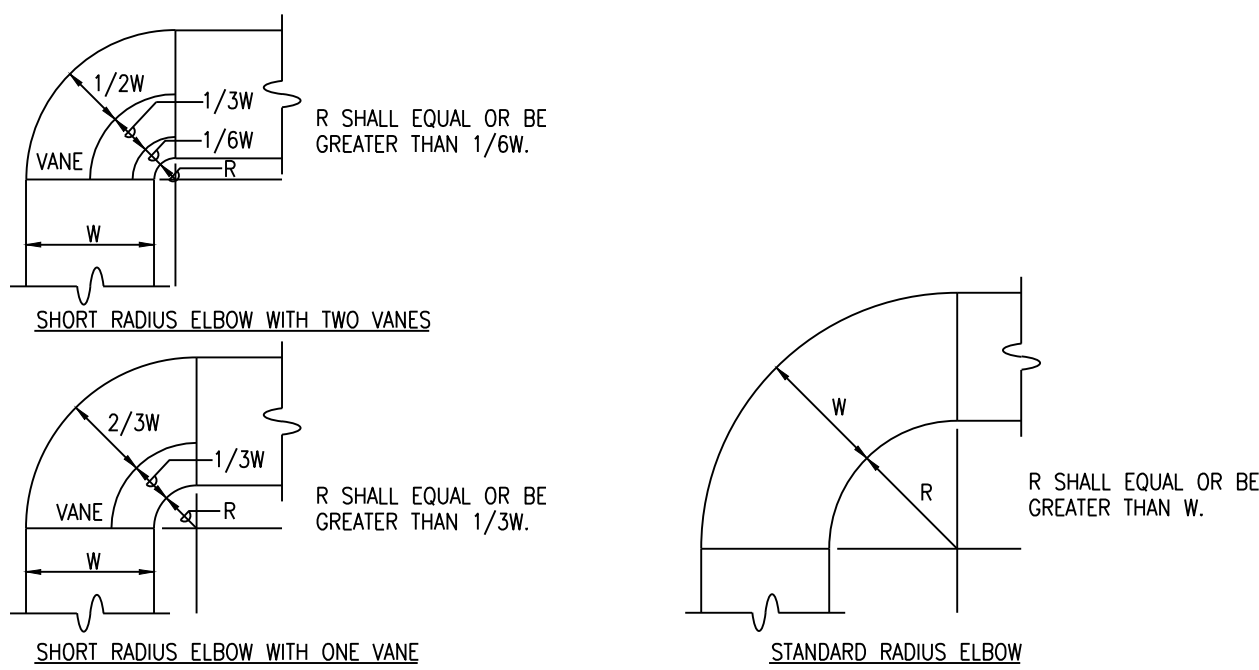


MECHANICAL SYMBOLS & ABBREVIATIONS LEGEND	
<p><b>ABBREVIATIONS</b></p> <p>AD ACCESS DOOR AFF ABOVE FINISHED FLOOR AFM AIR FLOW MEASURING DEVICE AHU AIR HANDLING UNIT C CONDENSER CCF CENTRIFUGAL CEILING FAN CD CEILING DIFFUSER CF CENTRIFUGAL FAN CG CEILING GRILLE COMP. COMPRESSOR CONV. CONNECTOR CR CEILING REGISTER CUH CABINET UNIT HEATER D DRY BULB TEMPERATURE, DEGREES F. DB DRY BULB TEMPERATURE, DEGREES F. DP DEWPOINT TEMPERATURE, DEGREES F. DX DIRECT EXPANSION EA ENERGY EFFICIENCY RATIO EF EXHAUST FAN EGLYCE GYLCO-WATER SOLUTION (% GYLCO BY VOLUME) END END OF MAIN DRIP (STEAM) ET EXPANSION TANK EXISTING EXISTING FC FLEXIBLE CONNECTION FLOOR FLOOR FDR. FIRE DAMPER FTR FAN TRIBE RADIATION GH GRAVITY HOOD HC HEATING COIL HorsePOWER HORSEPOWER HPR HIGH PRESSURE STEAM CONDENSATE RETURN HPS HIGH PRESSURE STEAM (60 PSIG &amp; ABOVE) ICF IN-LINE CENTRIFUGAL FAN LSD LINEAR SLOT DIFFUSER LPR LOW PRESSURE STEAM CONDENSATE RETURN LPS LOW PRESSURE STEAM (15 PSIG &amp; ABOVE) LTP LOCAL TEMPERATURE CONTROL PANEL LBS/HR POUNDS PER HOUR MPR MEDIUM PRESSURE STEAM CONDENSATE RETURN MPS MEDIUM PRESSURE STEAM (16 PSIG THRU 59 PSIG) MAX. MAXIMUM MIN. MINIMUM NOM. NOMINAL OA OUTSIDE AIR P PUMP PD PRESSURE DROP (FEET OF WATER) PTEF PROPELLER TYPE EXHAUST FAN PF PRE-FILTER POW PROPYLENE GYLCO-WATER SOLUTION (% GYLCO BY VOLUME) PH PREHEAT POD POWER OPERATED, OPPOSED BLADE DAMPER PPD POWER OPERATED, PARALLEL BLADE DAMPER PRV PRESSURE REDUCING VALVE RA RETURN AIR RF RETURN FAN RH REHEAT COIL RV POWER TYPE ROOF VENTILATOR SA SUPPLY AIR SA SOUND ATTENUATING UNIT SH STEAM HANDHELD SP. STATIC PRESSURE (INCHES OF WATER) SPS STATIC PRESSURE SENSOR UH UNIT HEATER V VALVE VARIABLE FREQUENCY DRIVE VOLUME DAMPER (MANUAL OPPOSED BLADE) VI VIBRATION ISOLATOR WB WET BULB TEMPERATURE, DEGREES F WM WATER FLOW MEASURING DEVICE ATC AUTOMATIC TEMPERATURE CONTROL EXISTING EXISTING</p> <p><b>PIPING SYMBOLS</b></p> <p>HEATING HPS HIGH PRESSURE STEAM (60 PSIG &amp; ABOVE) HPR HIGH PRESSURE STEAM CONDENSATE RETURN LPS LOW PRESSURE STEAM (15 PSIG AND BELOW) LPR LOW PRESSURE STEAM CONDENSATE RETURN MPS MEDIUM PRESSURE STEAM (16 PSIG THRU 59 PSIG) MPR MEDIUM PRESSURE STEAM CONDENSATE RETURN HWH HOT WATER HEATING SUPPLY HWHR HOT WATER HEATING RETURN GH HOT GYLCO-WATER HEATING SUPPLY GHR HOT GYLCO-WATER HEATING RETURN V VENT LINE HPR HIGH PRESSURE STEAM CONDENSATE RETURN</p> <p><b>AIR CONDITIONING</b></p> <p>CC CHILLED GYLCO-WATER SUPPLY GCR CHILLED GYLCO-WATER RETURN D DRAIN LINE</p> <p><b>AIR CONDITIONING</b></p> <p>CC CHILLED GYLCO-WATER SUPPLY GCR CHILLED GYLCO-WATER RETURN D DRAIN LINE</p> <p><b>GENERAL</b></p> <p>— DIRECTION OF PIPE PITCH (DOWN) — DIRECTION OF FLOW — 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 — POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK — INVERTED BUCKET TRAP SET INCLUDING PIPING ACCESSORIES (SEE STD. DETAIL) — FLOAT &amp; THERMOSTATIC TRAP SET INCLUDING PIPING ACCESSORIES (SEE STD. DETAIL) — STRAINER — THERMOMETER — PRESSURE GAUGE — WATER FLOW MEASURING DEVICE</p> <p><b>FIRE RATING LEGEND</b></p> <p>— 1 HR FIRE RATED — 2 HR FIRE RATED — COMBINED 1 HR RATED &amp; SMOKE BARRIER — COMBINED 2 HR RATED &amp; SMOKE BARRIER — SMOKE BARRIER</p> <p><b>DOMESTIC WATER</b></p> <p>— COLD WATER — HOT WATER — REDUCING HOT WATER — SANITARY VENT — SANITARY WASTE PIPING</p>	<p><b>DRAWING SYMBOLS</b></p> <p>— BUILDING NO. WHERE EQUIPMENT IS LOCATED. — EQUIPMENT ABBREVIATION (SUPPLY FAN) — SUPPLY FAN NO. 3 IN BUILDING NO. 26 — TYPICAL UNIT NO. — ITEM (TERMINAL UNIT SHOWN) — ITEM NUMBER (TERMINAL UNIT NO. 1) — SERVED BY SUPPLY FAN NO.1</p> <p>— DETAIL NUMBER — DRAWING NUMBER WHERE SHOWN</p> <p>— SECTION LETTER — DRAWING NUMBER WHERE SHOWN</p> <p>(UP) (DN) SUPPLY AIR DUCT (UP &amp; DOWN) (UP) (DN) RETURN AIR DUCT (UP &amp; DOWN)</p> <p>— CEILING DIFFUSERS</p> <p>— SUPPLY TOP REGISTER OR GRILLE (WALL TYPE)</p> <p>— EXHAUST OR RETURN CEILING REGISTER OR GRILLE</p> <p>— EXHAUST OR RETURN CEILING REGISTER OR GRILLE</p> <p>— EXHAUST OR RETURN REGISTER OR TOP GRILLE (WALL TYPE)</p> <p>— VANED ELBOW &amp; AIR SPLIT TYPE DUCT TAKEOFF</p> <p>— CONNECT NEW DUCT TO EXISTING DUCT</p> <p>— INCLINED RISE, IN DIRECTION OF AIR FLOW</p> <p>— INCLINED DROP, IN DIRECTION OF AIR FLOW</p> <p>— FLEXIBLE CONNECTION</p> <p>— VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)</p> <p>— VANED ELBOW (SHORT RADIUS)</p> <p>— STANDARD RADIUS ELBOW</p> <p>— NEW DUCT (WIDTH X DEPTH)</p> <p>— EXISTING DUCT TO BE REMOVED</p> <p>— LOUVER</p> <p>— FLEXIBLE DUCTWORK (INSULATED)</p> <p>— MANUAL VOLUME DAMPER</p> <p>— FIRE DAMPER</p> <p><b>VALVES</b></p> <p>— GATE VALVE — GLOBE VALVE — GATE VALVE w/ 3/4" HOSE ADAPTOR — CHECK VALVE — ANGLE GLOBE VALVE — BUTTERFLY VALVE — BALL VALVE — BALANCING COCK — STRAIGHT-THRU MODULATING CONTROL VALVE — THREE-WAY MODULATING CONTROL VALVE — SAFETY OR PRESSURE RELIEF VALVE — PRESSURE REDUCING VALVE — MANUAL AIR VENT — TEST PLUG (PRESSURE/TEMPERATURE)</p> <p><b>CONTROLS</b></p> <p>— ROOM CONTROL: THERMOSTAT, HUMIDISTAT — REMOTE BULB THERMOSTAT — DUCT OR PIPE THERMOSTAT WITH AVERAGING ELEMENT (NOTE 1: PROVIDE 12" MIN. LENGTH IN DUCT WHEN SPACE PERMITS) — DUCT THERMOSTAT WITH AVERAGING ELEMENT — ROOM SENSOR: TEMPERATURE, HUMIDITY — DUCT OR PIPE TEMPERATURE SENSOR (NOTE 1: PROVIDE 12" MIN. LENGTH IN DUCT WHEN SPACE PERMITS) — DUCT HUMIDITY SENSOR — DUCT STATIC PRESSURE SENSOR — DUCT TEMPERATURE SENSOR WITH AVERAGING ELEMENT — SMOKE DETECTOR (SEE ELECTRICAL SPEC.)</p>



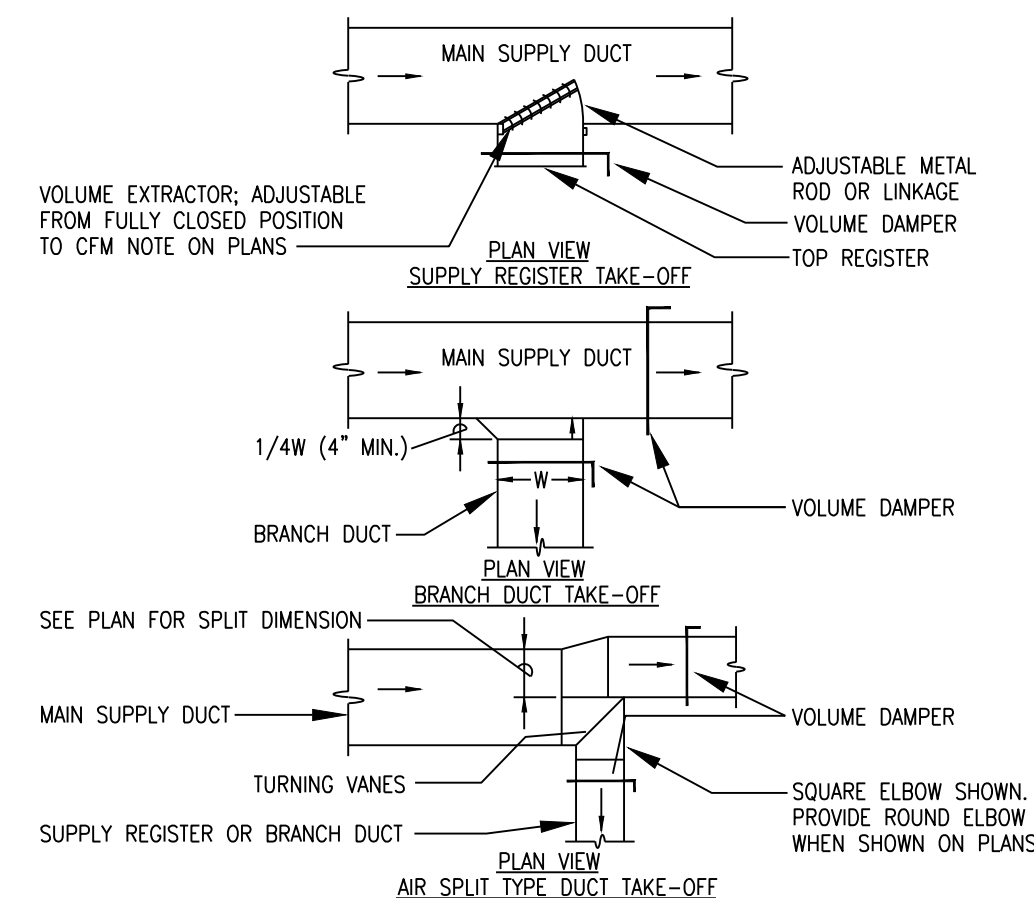
- NOTES:
- DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
  - DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

#### VOLUME DAMPER DETAIL NO SCALE

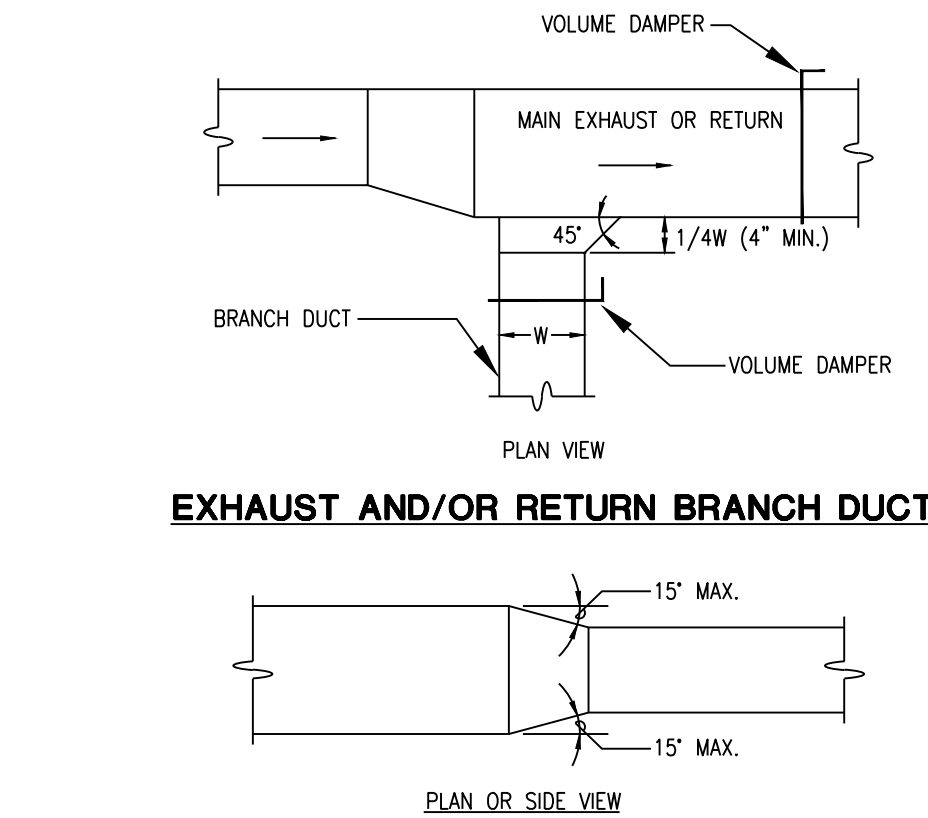


- NOTES:
- THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
  - ALL STANDARD RADIUS ELBOWS SHOWN ON PLANS MAY BE MADE SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

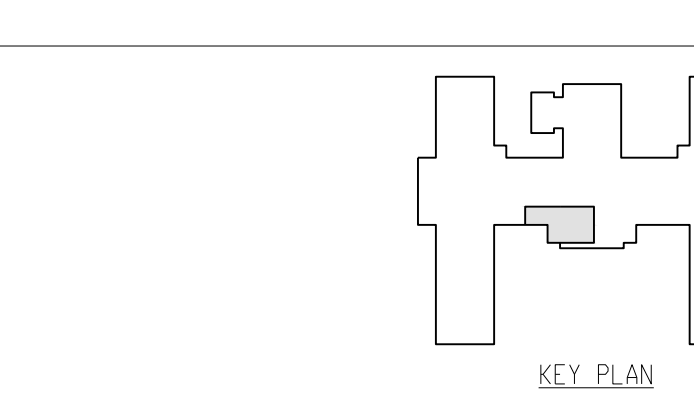
#### RADIUS ELBOWS NO SCALE



#### SUPPLY DUCT TAKE-OFFS NO SCALE



#### EXHAUST AND/OR RETURN BRANCH DUCT NO SCALE



#### DUCT TRANSITION NO SCALE



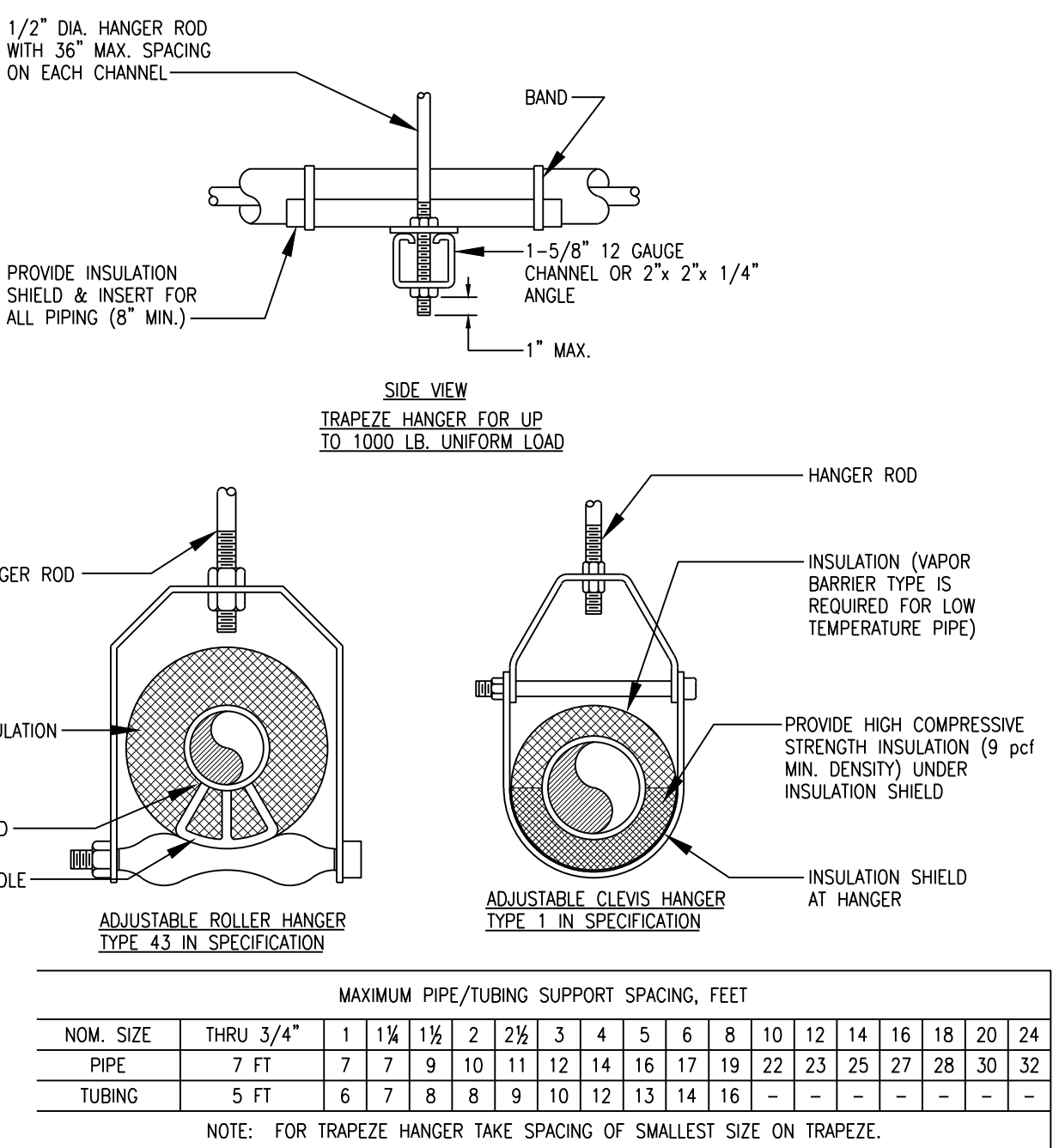
SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE																							
UNIT NO.	ROOM SERVED	FAN SECTION			ELECTRICAL			TOTAL CAPACITY			FILTER	FAN SELECTION			INDOOR CONDENSER			NOTES					
		CFM	FAN TYPE	ESP	HP	VOLTS	PH	WSA	MFS	DB		WB	RH	TOTAL MBH	TYPE	CFM	FAN TYPE		ESP	HP	VOLT	PH	WSA
48-AC-1/48-ACCU-1	ELEV. EQUIP.	800	C	0.3	0.5	NA	NA	NA	NA	75	63	50	22.1	TA	1000	1	0.5	.33	208	1	19.4	30	1, 2, 3
NOTES:																							
1. UNIT SHALL HAVE A SINGLE POINT POWER CONNECTION FOR CONNECTION BY OTHERS. UNIT TO BE CLOSE COUPLED CONFIGURATION WITH ALL INTERCONNECTIONS BY MANUFACTURER.																							
2. DISCONNECT FOR CONDENSING UNIT BY DIV. 26																							
3. WALL MOUNTED MICROPROCESSOR CONTROLLER WITH LCD DISPLAY BY UNIT MANUFACTURER. WIRING BETWEEN UNIT AND CONTROLLER BY THIS CONTRACTOR.																							
WSA	WIRE SIZING AMP																						
WSA	MAXIMUM FUSE SIZE																						
DX	DIRECT EXPANSION																						

GRAVITY HOOD - CURB MOUNTED							
UNIT NO.	THROAT SIZE, INCHES	SERVICE/UNIT	CFM	MAX S.P.	DAMPER		REMARKS
					TYPE	OPERATOR	
48-RH-1	30x20	INTAKE	1000	0.02	BDD	NA	1,3
48-RH-2	12x20	EXHAUST	1000	0.08	BDD	NA	2,3
BDD BACKDRAFT DAMPER				1 INSTALL 36" ABOVE ROOF. 2 INSTALL 24" ABOVE ROOF. 3 PROVIDE BIRD SCREEN			

DIFFUSER, REGISTER AND GRILLE SCHEDULE								
UNIT NO.	MATERIAL	TYPE	NECK SIZE	FRAME SIZE	MOUNTING	AIR	OBD	REMARKS
R-1	STEEL	GRILLE	22"x 10"	23-3/4"x 11-3/4"	L.I.T.	RA	N	-
E-1	STEEL	GRILLE	22"x 10"	23-3/4"x 11-3/4"	L.I.T.	EA	N	-
S-1	STEEL	LOUVERED FACE DIFFUSER	6"ø	23-3/4"x 23-3/4"	L.I.T.	SA	N	4-WAY

FAN SCHEDULE														
UNIT NO.	LOCATION	CFM	S.P.	FAN TYPE	ARRANGEMENT, ROTATION, & DISCHARGE	WHEEL		MAX. RPM	DRIVE	MAX. BHP	MOTOR			VARIABLE CONTROL TYPE
						TYPE	MIN. DIA.				HP	VOLT	PH	
48-EF1	ROOM 2	110	0.25	FC	INLINE	STEEL	NA	950	DIRECT	1/4	0.6 AMP	120	1	NO
NOTES:														
1. SCHEDULED MAXIMUM BHP IS FOR SCHEDULED SP PLUS TEN PERCENT. FORWARD CURVED WHEEL MAY BE SUBMITTED IN LIEU OF AIR FOIL WHEEL FOR AIR HANDLING UNITS IF SCHEDULED MAXIMUM BHP IS MET. IF UNIT COIL PRESSURE DROPS SUBMITTED ARE LESS THAN SCHEDULED, THE SP REQUIREMENT MAY BE REDUCED ACCORDINGLY. MAXIMUM BHP MAY BE BASED ON THE REVISED SP PLUS TEN PERCENT. SMALLER DIAMETER FAN MAY BE SUBMITTED PROVIDED IT MEETS SPECIFIED SOUND LEVEL.														
2. PROVIDE HOODED WALL CAP WITH BACKDRAFT DAMPER AT WALL TERMINATION AND WALL MOUNTED TIMER SWITCH.														
15822-2														

- NOTES:
- SCHEDULED MAXIMUM BHP IS FOR SCHEDULED SP PLUS TEN PERCENT. FORWARD CURBED WHEEL MAY BE SUBMITTED IN LIEU OF AIR FOL WHEEL FOR AIR HANDLING UNITS IF SCHEDULED MAXIMUM BHP IS MET. IF UNIT COIL PRESSURE DROPS SUBMITTED ARE LESS THAN SCHEDULED, THE SP REQUIREMENT MAY BE REDUCED ACCORDINGLY. MAXIMUM BHP MAY BE BASED ON THE REDUCED SP PLUS TEN PERCENT. SMALLER DIAMETER FAN MAY BE SUBMITTED PROVIDED IT MEETS SPECIFIED SOUND LEVEL.
  - PROVIDE HOODED WALL CAP WITH BACKDRAFT DAMPER AT WALL TERMINATION AND WALL MOUNTED TIMER SWITCH.

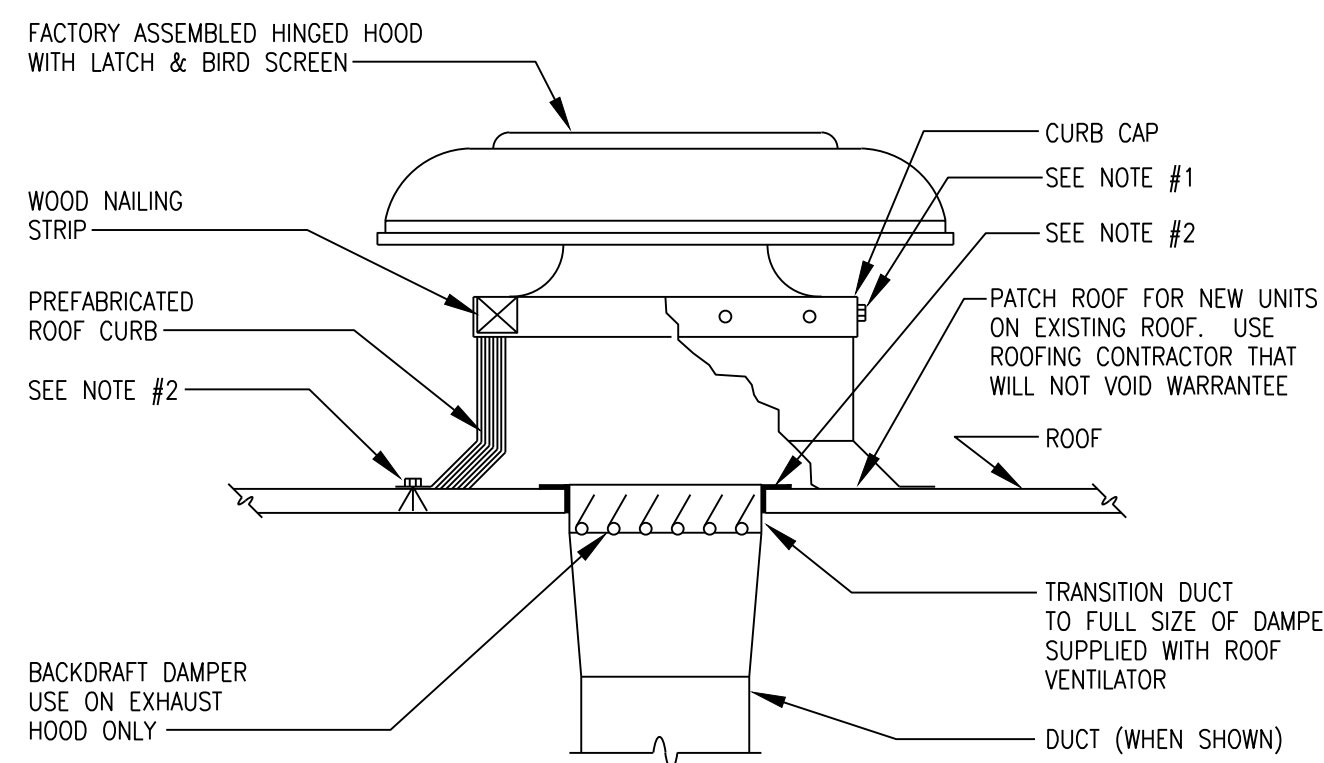


#### TYPICAL PIPE HANGERS NO SCALE

APPROVED SERVICE LINE DIRECTOR	DATE	APPROVED INFECTION CONTROL NURSE	DATE
APPROVED SERVICE LINE DIRECTOR	DATE	APPROVED PATIENT SAFETY	DATE
APPROVED PROJECTS SECTION MANAGER	DATE	APPROVED CHIEF OF POLICE	DATE
APPROVED DIRECTOR FMS	DATE	APPROVED SAFETY MANAGER	DATE

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Reg. No. 44065 Signature: Jeffery Spichal Date 02-24-2010 Printed Name: JEFFERY SPICHAL



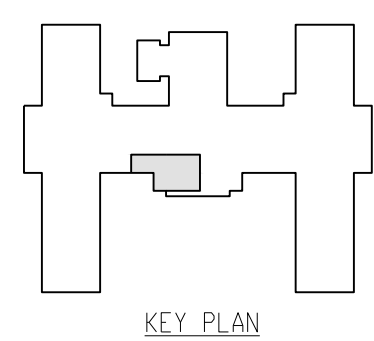
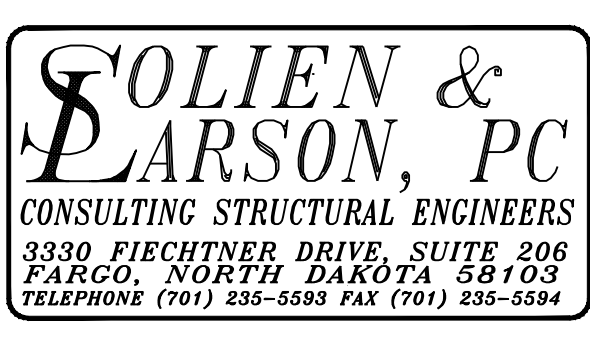
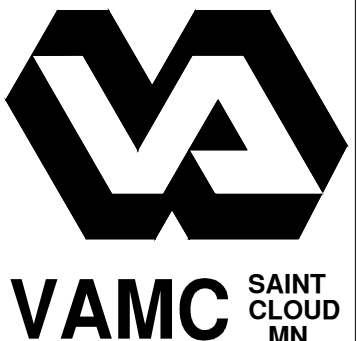
- NOTES:
- SECURE HOOD TO WOOD NAILING STRIP WITH 3/8" CADIUM PLATED LAG BOLTS NOT OVER 12" ON CENTER.
  - SECURE ROOF CURB, DUCTWORK, AND DAMPER TO ROOF WITH EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK & BAR JOIST ROOF).
  - SIZE OF DUCT THROUGH ROOF SHALL NOT BE LARGER THAN CURB SUPPLIED WITH HOOD.

#### LOW-SILHOUTTE EXHAUST OR INTAKE HOOD NO SCALE

DRAWING TITLE		PROJECT TITLE		DATE	
DETAILS, SCHEDULES, AND LEGEND		BUILDING 48 ELEVATOR		FEBRUARY, 28 2011	
APPROVED CHIEF OF STAFF		APPROVED CHIEF OF POLICE		APPROVED SAFETY MANAGER	
APPROVED MEDICAL CENTER DIRECTOR		APPROVED PATIENT SAFETY		APPROVED INFECTION CONTROL NURSE	

LOCATION: VAM MEDICAL CENTER ST. CLOUD, MN 56303

DRAWING NO. H3 ENG. 8 OF 12



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Reg. No. 44065 Signature: Jeffery Spichal Date 02-24-2010 Printed Name: JEFFERY SPICHAL