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HVAC PIPING AND INSTRUMENTATION LEGEND AND SYMBOLS

PIPING AND INSTRUMENTATION LEGEND AND SYMBOLS

- VENTURI TUBE OR FLOW NOZZLE
- PITOT TUBE OR PITOT VENTURI TUBE, ANNUBAR
- AVERAGING PITOT TUBE (ACAMS PORT)
- PRESSURE OR SAFETY VALVE
- VACUUM RELIEF VALVE
- BALANCING VALVE (FLOW CONTROL)
- FLOW CONTROL VALVE (SELF-REGULATING)
- BUTTERFLY VALVE (MOTOR OPERATOR SHOWN)
- ANGLE VALVE (SOLENOID OPERATOR SHOWN)
- 2-WAY VALVE (PNEUMATIC DIAPHRAGM OPERATOR SHOWN)
- 3-WAY VALVE (PNEUMATIC PISTON OPERATOR SHOWN)
- SOLENOID OPERATOR
- MOTOR OPERATOR
- PNEUMATIC DIAPHRAGM OPERATOR
- PNEUMATIC PISTON OPERATOR
- AIRTROL FITTING
- PRESSURE SENSOR

		FLOW DIRECTION
	GLV	GLOBE VALVE
	BFV	BUTTERFLY VALVE
	GV	GATE VALVE
	BV	BALL VALVE
	PV	PLUG VALVE / PLUG COCK
	CV	CHECK VALVE
		GATE VALVE WITH PLUG
	STR	STRAINER
	AAV	AUTOMATIC AIR VENT
	MAV	MANUAL AIR VENT
		THERMOMETER
		PRESSURE GAUGE WITH COCK AND SNUBBER
		PRESSURE DIFFERENTIAL GAUGE
		FLEX CONN (REFRIG)
	FD	FILTER DRIER
	SG	SIGHT GLASS
		FLEXIBLE HOSE (FLANGED ENDS)
		FLEXIBLE HOSE (SCREWED ENDS)
		UNION
		ANCHOR
		ALIGNMENT GUIDE
		FLEXIBLE CONNECTION

INSTRUMENT IDENTIFICATION

FIRST LETTER			SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	
D	USER'S CHOICE	DIFFERENTIAL			DETECTOR
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO(FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	RELATIVE HUMIDITY				HIGH
I	CURRENT(ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE		TIME RATE OF CHANGE	CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE(RESTRICTION)		
P	PRESSURE, VACUUM		POINT(TEST CONNECTION)		
Q	USER'S CHOICE	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY, SMOKE	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE,DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

GENERAL NOTES

1. BEFORE STARTING WORK, VERIFY LOCATIONS, ELEVATIONS AND SIZES OF ALL DUCTWORK AND EQUIPMENT REQUIRING CONNECTIONS.
2. COORDINATE ALL DUCTWORK AND PIPING WORK WITH ALL OTHER WORK TO AVOID CONFLICTS. RUN ALL DUCTS AND PIPES TO AVOID ARCHITECTURAL OPENINGS, STRUCTURAL MEMBERS, OR OTHER OBSTRUCTIONS. RUN DUCTS TIGHT TO BOTTOM OF STRUCTURAL MEMBERS UNLESS OTHERWISE NOTED. OFFSET DUCTS WHERE REQUIRED. INSTALL ALL DUCTWORK AND PIPING TO BEST SUIT FIELD CONDITIONS AND COORDINATE WITH THE INSTALLATION WORK OF OTHER TRADES. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION OF MECHANICAL WORK. REVISE ALL WORK AS NEEDED WITHOUT ANY ADDITIONAL CHARGE TO THE OWNER.
3. ALL EQUIPMENT SUPPORTS, FOUNDATIONS, PADS, WALL OPENINGS OR PENETRATIONS SHALL BE VERIFIED WITH ACTUAL PURCHASED EQUIPMENT FOR SIZE AND FIT. THE EQUIPMENT SIZES INDICATED ON THE DRAWINGS WERE SELECTED FOR ENGINEERING DESIGN AND SPACE ALLOCATION PURPOSES. THE ACTUAL SIZE MAY VARY DEPENDING ON THE PURCHASED EQUIPMENT TO BE INSTALLED. CONTRACTOR SHALL MAKE THE NECESSARY CHANGES, COORDINATE THE WORK AND REVISE THE CONSTRUCTION DOCUMENTS ACCORDING TO THE ACTUAL CONDITIONS WITHOUT ANY ADDITIONAL CHARGE TO THE OWNER.
4. ALL DIFFUSER SIZES AND DUCT SIZES SHOWN ARE NET DIMENSIONS UNLESS OTHERWISE INDICATED.
5. PROVIDE AND INSTALL ALL NECESSARY DAMPERS TO BALANCE THE AIR DISTRIBUTION SYSTEM TO WITHIN +/- 5% OF THE AIR QUANTITIES SHOWN ON CONSTRUCTION DOCUMENTS. ALL DUCT BRANCHES TO AIR OUTLETS SHALL BE PROVIDED WITH VOLUME DAMPERS EXCEPT HEPA FILTER OUTLETS (HF-1 & HF-2).
6. MOUNT ALL ROOM TEMPERATURE SENSORS AT A HEIGHT APPROVED BY APPLICABLE CODE OF REGULATIONS.
7. PROVIDE AND INSTALL ALL THREADOLETS AND OTHER NECESSARY FITTINGS IN PIPING AND DUCTWORK REQUIRED FOR CONTROL AND MEASURING DEVICES.
8. CONTRACTOR MAY USE AT MOST 6-FEET OF FLEXIBLE DUCT RUN TO THE AIR TERMINAL.
9. PROVIDE $\frac{1}{4}$" WIRE MESH SCREENS AT ALL INTAKE AND EXHAUST OPENINGS INSIDE. PROVIDE $\frac{1}{4}$" STAINLESS STEEL WIRE FOR OUTDOOR INSTALLATION.
10. ALL VISIBLE INTERIOR PORTIONS OF DUCTWORK AND AIR TERMINALS SHALL BE PAINTED FLAT BLACK UNLESS OTHERWISE NOTED.
11. COORDINATE WITH OTHER TRADES TO INSURE THAT PROPER ACCESS PANELS OR AS INDICATED ARE PROVIDED FOR ALL CONCEALED COILS, VAV BOXES, FIRE DAMPERS, CONTROL VALVES AND VOLUME DAMPERS.
12. ALL POWER AND INTERLOCK WIRING SHALL BE INSTALLED UNDER DIVISION 16. LINE VOLTAGE CONTROL WIRING AND LOW VOLTAGE (24 VOLT) CONTROL WIRING SHALL BE INSTALLED UNDER DIVISION 15, OR AS SPECIFIED.
13. ALL FLOOR MOUNTED EQUIPMENT SHALL BE INSTALLED ON 4" CONCRETE PADS UNLESS OTHERWISE INDICATED. PAD SHALL BE 3" WIDER (IN EACH DIRECTION) THAN EQUIPMENT FOOT PRINT.
14. IMMEDIATELY REPORT TO THE OWNER'S REPRESENTATIVE ANY OBSERVATIONS OF EXISTING CONDITIONS WHICH ARE DISCOVERED IN THE BUILDING AND WHICH MAY PREVENT THE CORRECT INSTALLATION OF THE HVAC SYSTEM.
15. ALL NOTED DUCT DIMENSIONS ARE CLEAR INSIDE DIMENSIONS UNLESS INDICATED OTHERWISE.
16. RECTANGULAR DUCTWORK ELEVATIONS ARE BOTTOM OF DUCT, ROUND DUCTWORK ELEVATIONS ARE CENTERLINE UNLESS NOTED OTHERWISE.
17. DIFFERENTIAL AIR PRESSURES INDICATED ON DRAWINGS ARE IN INCHES OF WATER.
18. AIR FLOWS SHOWN IN CUBIC FEET PER MINUTE (CFM) ARE ACTUAL FLOWS (ACFM) AT THE SITE ELEVATION ABOVE SEA LEVEL.
19. THE CONTROL SYSTEM DIAGRAMS SHOWN ON THE DRAWINGS ARE SCHEMATIC REPRESENTATIONS ONLY. ALL ADDITIONAL CONTROL ITEMS NECESSARY TO SATISFY THE FUNCTIONAL REQUIREMENTS OF THE SEQUENCE OF OPERATION AND SPECIFICATIONS SHALL BE PROVIDED AS PART OF THIS WORK. THE SYSTEM SHALL BE COMPLETE IN ALL RESPECTS, COMMISSIONED INTO OPERATION AND CALIBRATED UNDER OPERATING CONDITIONS.
20. THE DRAWINGS INDICATE THE OVERALL ARRANGEMENT OF THE BUILT-UP AIR HANDLING UNITS. THE CONTRACTOR SHALL SUBMIT THE SHOP DRAWING FOR APPROVAL. THE SHOP DRAWINGS SHALL INDICATE THE CONSTRUCTION DETAILS OF AIR FILTERS, COOLING COILS, HEATING COILS, HUMIDIFIERS, FANS AND DAMPERS. CONTRACTOR WILL REVIEW THE DRAWING PRIOR TO BIDDING AND ASSUME ALL THE NECESSARY ADJUSTMENTS AT NO ADDITIONAL COST TO THE OWNER.
21. ALL MATERIALS USED FOR FRAMING, EQUIPMENT SUPPORT AND BLANK OFF SHALL BE GALVANIZED STEEL. ALL CUT EDGES SHALL BE TREATED AND REGALVANIZED. ALL INSTALLATIONS INSIDE THE AIR HANDLING UNITS SHALL BE SEALED AND AIR TIGHT. ALL BLANK OFF SHEET METAL SHALL BE 14 GAUGE MINIMUM. ALL WELDED SURFACES SHALL BE SANDED, CLEANED AND REGALVANIZED.
22. FOR FIRE DAMPER, FLEXIBLE CONNECTION, RETURN REGISTER AND PIPING DETAILS SEE SHEET LA-H-411. FOR PIPE SUPPORT DETAILS SEE SHEET LA-H-412.

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SITE NO. 2 - LIVINGSTON, LOUISIANA

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