



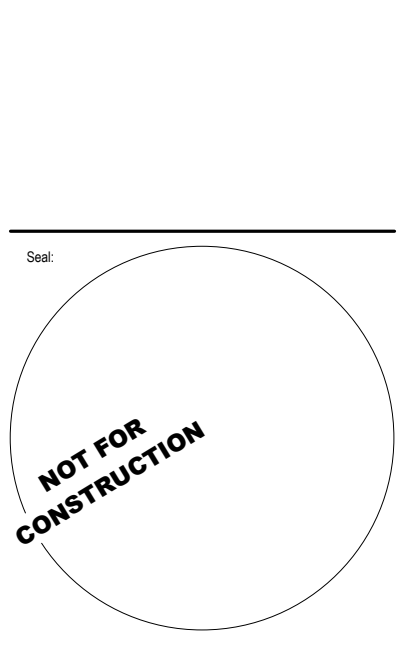
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MECHANICAL SYMBOLS, LEGEND, NOTES AND INDEX
M001

HVAC SYMBOL LEGEND				HVAC ABBREVIATIONS				HVAC GENERAL NOTES					
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CEILING DIFFUSER, ROUND NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)		FIRE DAMPER (WITH ACCESS PANEL)		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT	AFD	ADJUSTABLE FREQUENCY DRIVE	LD	LINEAR DIFFUSER	1.	CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.		
	ROUND DIFFUSER		FIRE & SMOKE DAMPER (WITH ACCESS PANEL)		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME WITH ELECTRIC HEAT	AFR	ABOVE FINISHED FLOOR	MBH	THOUSAND BTU'S PER HOUR	2.	DIMENSIONS SHALL BE FIELD-VERIFIED AND COORDINATED PRIOR TO PROCUREMENT OR FABRICATION. COORDINATE THE WORK WITH OTHER TRADES INVOLVED. FIELD MODIFICATIONS SUCH AS OFFSETS IN PIPING OR DUCTWORK (INCLUDING DIVIDED DUCTWORK) NEEDED DUE TO OBSTRUCTIONS OR INTERFERENCES SHALL BE PROVIDED AT NO ADDITIONAL COST. FOR PROJECTS INVOLVING RENOVATION, COORDINATE NEW WORK WITH EXISTING ELEMENTS SUCH AS THE BUILDING STRUCTURE AND ARCHITECTURAL FEATURES, SPRINKLER PIPING, LIGHTS, PLUMBING, AND ELECTRICAL CONDUIT.		
	CEILING RETURN		EXISTING FIRE DAMPER TO REMAIN		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED	AHU	AIR HANDLING UNIT	MCA	MINIMUM CIRCUIT AMPS	3.	DUCT CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARD.		
	CEILING EXHAUST		EXISTING FIRE & SMOKE DAMPER TO REMAIN		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED	AP	ACCESS PANEL	MCCP	MAXIMUM OVER CURRENT PROTECTION	4.	SEE SPECIFICATIONS FOR GAUGES, THICKNESS, BRACING, REQUIREMENTS, ETC., OF DUCTWORK.		
	CEILING DIFFUSER, RECTANGULAR OR SQUARE NECK (CEILING DIFFUSERS ARE 4-WAY THROW UNO)		SOUND ATTENUATOR		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	BOP	BOTTOM OF PIPE	NC	NORMALLY CLOSED	5.	PROVIDE AIR TURNING VANES IN ALL 90 DEGREE RECTANGULAR DUCT ELBOWS.		
	SUPPLY REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)		MOTOR OPERATED CONTROL DAMPER (MOD)		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	BHP	BRAKE HORSEPOWER	NO	NORMALLY OPEN	6.	DUCT SIZES AND ALL OPENINGS THROUGH BUILDING CONSTRUCTION SHALL SUIT EQUIPMENT FURNISHED.		
	RETURN/EXHAUST REGISTER OR GRILLE (VERTICAL MOUNT, SIDEWALL)		AIR FLOW MEASURING STATION		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	BTU	BRITISH THERMAL UNIT	NTS	NOT TO SCALE	7.	COORDINATE DIFFUSER, GRILLE AND REGISTER LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND EQUIPMENT OF ALL TRADES.		
	REVISION REFERENCE		MANUAL BALANCING DAMPER		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CL	CENTER LINE	OA	OUTSIDE AIR	8.	LOCATE THERMOSTATS, TEMPERATURE SENSORS, HUMIDISTATS, AND HUMIDITY SENSORS AT 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. COORDINATE LOCATIONS WITH OTHER EQUIPMENT, FURNITURE, AND DOOR SWINGS.		
	DETAIL REFERENCE, TOP-DETAIL#, BOTTOM-DRAWING# SHOWN ON		DOOR GRILLE		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CFM	CFM (CUBIC FEET PER MINUTE)	OAL	OUTSIDE AIR LOUVER	9.	ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED AND/OR SPECIFIED. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO PROVIDE A VIBRATION-FREE, RIGID INSTALLATION.		
	THERMOSTAT/TEMPERATURE SENSOR		UNDERCUT DOOR		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CD	CEILING DIFFUSER	PRV	PRESSURE REDUCING VALVE	10.	ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.		
	HUMIDISTAT/HUMIDITY SENSOR		ACCESS DOORS, VERTICAL OR HORIZONTAL		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CT	COOLING TOWER	PRS	PRESSURE REDUCING STATION	11.	DAMPERS AND INSIDES OF DUCTS VISIBLE THROUGH GRILLES, REGISTERS AND DIFFUSERS SHALL BE PAINTED FLAT BLACK.		
	DUCT SMOKE DETECTOR		STAINLESS STEEL DUCTWORK		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CV	CONSTANT AIR VOLUME	PSI	POUNDS PER SQUARE INCH	12.	REFER TO TYPICAL DETAILS FOR PIPING AND INSTALLATION OF EQUIPMENT.		
	CONNECT TO EXISTING		FLEXIBLE CONNECTION		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	ΔP	CHANGE IN PRESSURE	PSIG	PSI GAUGE	13.	TRAPPED CONDENSATE DRAINS FROM ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED FOR PROPER DRAINAGE TO SUIT EQUIPMENT FURNISHED.		
	DEMOLISH TO POINT INDICATED		NEW FLAT OVAL DUCT		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	ΔT	CHANGE IN TEMPERATURE	PTAC	PACKAGED TERMINAL AIR CONDITIONER	14.	ACCESS PANELS IN DUCTWORK AND CEILINGS SHALL BE PROVIDED WHERE REQUIRED FOR OPERATION, BALANCING OR MAINTENANCE OF ALL MECHANICAL EQUIPMENT.		
	MOTORIZED CONTROL DAMPER		NEW DUCTWORK, FIRST DIMENSION IS SIDE SHOWN		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CFM	CUBIC FEET PER MINUTE	RA	RETURN AIR	15.	ALL DUCTWORK AND PIPING IS SHOWN SCHEMATICALLY. PROVIDE ALL TRANSITIONS, TURNING VANES, ELBOWS, FITTINGS, ETC., TO ALLOW SMOOTH FLOWS. ALL SPLIT DUCT FITTINGS SHALL TRANSITION TO FULL SIZE OF THE SUM OF BOTH BRANCHES, UPSTREAM OF SPLIT.		
	TEMPERATURE SENSOR		EXISTING DUCTWORK TO REMAIN		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	CU	CONDENSING UNIT	RA	RETURN AIR	16.	PROVIDE CONCRETE HOUSEKEEPING PAD UNDER ALL FLOOR MOUNTED EQUIPMENT. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.		
	PRESSURE SENSOR		EXISTING DUCTWORK TO BE REMOVED		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	DDC	DIRECT DIGITAL CONTROLS	RHC	REHEAT COIL	17.	VERIFY FINISH WITH ARCHITECT PRIOR TO PURCHASING GRILLES, REGISTERS, DIFFUSERS, LOUVERS AND OTHER AIR DISTRIBUTION DEVICES.		
	BACKDRAFT DAMPER		DUCT ELBOW, POSITIVE PRESSURE (SUPPLY), FIRST DIMENSION INDICATES SIDE TO WHICH ARROW IS POINTING		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	DN	DOWN	RHP	ROOFTOP HEAT PUMP	18.	PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EACH FAN, AIR HANDLING UNITS, AND FAN COIL UNITS.		
	NEUTRAL RELATIVE PRESSURE		DUCT ELBOW, EXHAUST		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	EAT	ENTERING AIR TEMPERATURE	RPM	REVOLUTIONS PER MINUTE	19.	PROVIDE TRANSITIONS AT DIFFUSER NECKS AS REQUIRED TO MATCH SIZES OF FLEX DUCTS TO BE CONNECTED.		
	POSITIVE RELATIVE PRESSURE		DUCT ELBOW, NEGATIVE PRESSURE, RETURN		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	ESP	EXTERNAL STATIC PRESSURE	RTU	ROOFTOP AIR HANDLING UNIT	20.	INTERRUPTIONS TO EXISTING SERVICES SHALL BE SCHEDULED FOR TIMES OTHER THAN NORMAL OPERATING HOURS (SUCH AS NIGHTS AND WEEKENDS). SUCH INTERRUPTIONS TO SERVICES SHALL NOT BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE AND PROPER COORDINATION WITH OTHER TRADES. PRE-WORK SHALL BE PERFORMED TO MAKE THE SHUTDOWN PERIOD AS BRIEF AS POSSIBLE.		
	NEGATIVE RELATIVE PRESSURE		DUCT ELBOW UP THROUGH ROOF OR SLAB ABOVE		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR	21.	ALL EQUIPMENT, DUCTWORK, ETC., TO BE REMOVED SHALL REMAIN PROPERTY OF THE OWNER OR DISPOSED OF LEGALLY, AS DIRECTED BY OWNER.		
	SHEET NOTE CALLOUT		RECTANGULAR DUCT SECTION UP, POSITIVE PRESSURE, SUPPLY OR OUTSIDE AIR		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	FD	FAN DAMPER	SP	STATIC PRESSURE	22.	MAINTAIN CLEARANCE OF A MINIMUM OF 6" BETWEEN DUCTWORK, PIPING, EQUIPMENT, ETC., AND ALL FIRE RATED AND FIRE/SMOKE RATED PARTITIONS, TO ALLOW FOR INSPECTIONS OF RATED WALLS.		
	SHEET NOTE CALLOUT		RECTANGULAR DUCT SECTION UP, NEGATIVE PRESSURE, RETURN		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	FF	FILTRAL FILTERS	TSP	TOTAL STATIC PRESSURE	23.	LOCATE ALL OUTSIDE AIR INTAKES A MINIMUM OF 10' CLEAR FROM ALL PLUMBING VENTS AND EXHAUST AIR DISCHARGE LOCATIONS.		
	SHEET NOTE CALLOUT		RECTANGULAR DUCT SECTION UP, EXHAUST		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	FLA	FULL LOAD AMPS	UNO	UNLESS NOTED OTHERWISE	24.	DUCT RUNOUTS TO DIFFUSERS SHALL MATCH THE SIZE OF THE DIFFUSER NECK.		
	CEILING MOUNTED ACCESS DOOR		ROUND DUCT SECTION UP		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	FPM	FEET PER MINUTE	VPH	VOLTS/PHASE	25.	WATER PRESSURE DROPS THROUGH COIL CONTROL VALVES SHALL NOT EXCEED 5 PSI.		
	SQUARE THROAT ELBOW WITH TURNING VANES		FLAT OVAL DUCT SECTION UP		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	GPM	GALLONS PER MINUTE	VAV	VARIABLE AIR VOLUME	26.	UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND VALVE DRAINS SHALL BE INDEPENDENTLY PIPED FULL SIZE TO THE NEAREST PLUMBING DRAIN.		
	RADIUS ELBOW		THERMOMETER		TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	KW	KILOWATT	VFD	VARIABLE FREQUENCY DRIVE	27.	SLEEVE AND SEAL ALL PIPING PENETRATIONS THROUGH BUILDING PARTITIONS. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN CHILLED WATER AND HOT WATER PIPING.		
	RECTANGULAR ROUND BRANCH TAKE-OFF OR ROUND ROUND BRANCH TAKE-OFF				TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	LAT	LEAVING AIR TEMPERATURE			28.	PIPING, DUCTWORK, LEAK PROTECTION APPARATUS, OR OTHER EQUIPMENT FOREIGN TO ELECTRICAL SWITCHBOARDS, PANELBOARDS, DISTRIBUTION BOARDS, OR MOTOR CONTROL CENTERS SHALL NOT BE INSTALLED WITHIN THE REQUIRED SPACE FOR WORKING CLEARANCES OR DEDICATED SPACES OF THE ELECTRICAL EQUIPMENT, EXTENDING IN FRONT OF AND FROM FLOOR TO STRUCTURAL CEILING WITH A WIDTH AND DEPTH OF THE ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC-110.26.		
	EXHAUST DUCT UP THROUGH SLAB W/ FAN ON ROOF ABOVE				TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT	LWT	LEAVING WATER TEMPERATURE						
	EXHAUST FAN ON ROOF W/ DUCT DOWN THROUGH ROOF				TERMINAL UNIT, VARIABLE/CONSTANT AIR VOLUME, FAN POWERED, WITH ELECTRIC HEAT								

HVAC PIPING SYMBOL LEGEND				HVAC EQUIPMENT TAGS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONDENSATE		FLOW DIRECTION		P-TRAP		AIR DISTRIBUTION DEVICE
	HIGH PRESSURE STEAM SUPPLY		GATE VALVE		TWO-WAY CHECK VALVE		AIR HANDLING UNIT
	MEDIUM PRESSURE STEAM SUPPLY		BALL VALVE		MANUAL VENT		REHEAT COIL
	LOW PRESSURE STEAM SUPPLY		CALIBRATING BALANCING VALVE		PRESSURE GAUGE		VARIABLE/CONSTANT AIR VOLUME TERMINAL UNITS
	REFRIGERANT LIQUID		BUTTERFLY VALVE		RELIEF VALVE		TERMINAL UNIT TYPE
	REFRIGERANT SUCTION		GAS COCK		FLOW METER		VTU - VARIABLE TERMINAL UNIT
			STRAINER		WATER METER		CTU - CONSTANT TERMINAL UNIT
			CONTROL VALVE		IN-LINE PUMP		PTU - PARALLEL TERMINAL UNIT
			SOLENOID VALVE		IN-LINE PUMP		STU - SERIES TERMINAL UNIT
			PSI REG.		VALVE ON RISER		
			CHECK VALVE		CAP		
			FLOW SWITCH		CONNECTION, BOTTOM		
			SLOPE DIRECTION (DOWN)		CONNECTION, TOP		
			FLEX CONNECTION		COUPLING		
			O.S.&Y. GATE VALVE		ELBOW, 90°		
			STEAM TRAP		ELBOW, 45°		
			THREE-WAY CONTROL VALVE		ELBOW, TURNED DOWN		
			THERMOMETER		ELBOW, TURNED UP		

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT

