

CONTROLS LEGEND	
SYMBOL	DESCRIPTION
	CARBON DIOXIDE SENSOR
	TEMPERATURE SENSOR
	HUMIDITY SENSOR
	AIR FLOW MONITOR
	VARIABLE FREQUENCY DRIVE
	DIFFERENTIAL PRESSURE SENSOR
	FAN
	AIR DAMPER
	AIR DAMPER STATUS
	FILTER DIFFERENTIAL PRESSURE SENSOR
	OA AIR FLOW
	SMOKE DETECTOR
	HUMIDIFIER
	FREEZE STAT
	MIXED AIR TEMPERATURE SENSOR
	ELECTRIC DUCT HEATER
	INLINE FAN
	MOTORIZED DAMPER
	HEATING OR COOLING VALVE
	TEMPERATURE SENSOR PIPING
	HOT WATER FLOW STATUS SENSOR
	PUMP
	METER DEVICE
	CURRENT TRANSFORMER
	WATER FLOW DEVICE
	HIGH WATER LEVEL SWITCH
	LOW WATER LEVEL SWITCH
	BYPASS / 3-WAY VALVE
	VIBRATION MONITOR
	MAKEUP VALVE
	ISOLATION VALVE
	DIRECTION OF FLOW
	ELECTRICAL STARTER

MECHANICAL LEGEND			
PIPING		DUCTWORK	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	BOILER BLOWDOWN		RECTANGULAR DUCT SIZE - FIRST DIMENSION IS SIDE DRAWN
	BOILER FEEDWATER		DUCT WITH INTERNAL INSULATION
	CONDENSATE DRAIN		DUCT WITH ACOUSTICAL VINYL WRAP
	DOMESTIC COLD WATER		ROUND DUCT
	CHILLED WATER RETURN		OVAL DUCT
	CHILLED WATER SUPPLY		RECTANGULAR DUCT, SIZE BASED ON CLEAR INSIDE DIMENSIONS, FIRST FIGURE INDICATES PLAN SIZE
	CONDENSER WATER RETURN		ROUND DUCT, SIZE BASED ON CLEAR INSIDE DIMENSIONS
	CONDENSER WATER SUPPLY		FLAT OVAL DUCT, SIZE BASED ON CLEAR INSIDE DIMENSIONS, FIRST FIGURE INDICATES PLAN SIZE
	DRAIN LINE		DUCT WITH ACOUSTICAL INTERNAL LINING (SIZE NOTED INDICATES INSIDE CLEAR DIMENSIONS)
	DUAL-TEMPERATURE RETURN		RADIUS ELBOW, R/D = 1.5 UNLESS NOTED OTHERWISE
	DUAL-TEMPERATURE SUPPLY		SLOPING RISE OR DROP IN ROUND DUCTWORK
	HOT WATER RETURN		SUPPLY DUCT TURNING UP (IN ORDER SHOWN: RECTANGULAR, OVAL AND ROUND)
	HOT WATER SUPPLY		SUPPLY DUCT TURNING DOWN (IN ORDER SHOWN: RECTANGULAR, OVAL AND ROUND)
	LOW PRESSURE STEAM CONDENSATE		RETURN DUCT TURNING UP (IN ORDER SHOWN: RECTANGULAR AND ROUND)
	LOW PRESSURE STEAM RETURN		RETURN DUCT TURNING DOWN (IN ORDER SHOWN: RECTANGULAR AND ROUND)
	LOW PRESSURE STEAM SUPPLY		EXHAUST DUCT TURNING UP (IN ORDER SHOWN: RECTANGULAR AND ROUND)
	HIGH PRESSURE STEAM CONDENSATE		EXHAUST DUCT TURNING DOWN (IN ORDER SHOWN: RECTANGULAR AND ROUND)
	HIGH PRESSURE STEAM (MAX PRESS. INDICATED)		DUCT ACCESS DOOR
	HIGH PRESSURE STEAM (MAX PRESS. INDICATED)		RECTANGULAR TO ROUND DUCT TRANSITION
	PUMPED CONDENSATE DRAIN		FLEXIBLE ROUND DUCT
	REFRIGERANT DISCHARGE		FLEXIBLE DUCT CONNECTION
	REFRIGERANT LIQUID		MANUAL VOLUME DAMPER
	REFRIGERANT SUCTION		FIRE DAMPER IN DUCT THROUGH WALL
	PROCESS CHILLED WATER RETURN		FIRE/SMOKE DAMPER IN DUCT THROUGH WALL
	PROCESS CHILLED WATER SUPPLY		AUTOMATIC CONTROL DAMPER
	PROCESS COOLING WATER RETURN		ONE INCH THICK DUCT LINER
	PROCESS COOLING WATER SUPPLY		FIRE DAMPER IN DUCT THROUGH FLOOR SLAB
	STEAM		RADIANT FIRE DAMPER AT CEILING
	PIPE DROPPING DOWN		ROOM SENSOR OR THERMOSTAT WITH ZONE/EQUIPMENT LABEL
	PIPE TO OR FROM ABOVE		ROOM SENSOR OR THERMOSTAT WITH LEADER TO EQUIPMENT
	PIPE BRANCH OUT TOP OF MAN		HUMIDITY SENSOR WITH LEADER TO EQUIPMENT
	PIPE BRANCH OUT BOTTOM OF MAN		WALL MOUNTING FOR SWITCH
	PIPE SLOPE UP		CARBON DIOXIDE SENSOR
	PIPE SLOPE DOWN		CONCRETE PAD
	ISOLATING GATE OR BALL VALVE		CEILING SUPPLY DIFFUSER
	BALL OR GLOBE VALVE		CEILING RETURN REGISTER OR GRILLE
	CHECK VALVE		COLD WATER EXHAUST REGISTER OR GRILLE
	THREE-WAY VALVE		DIFFUSER REGISTER OR GRILLE THROW INDICATOR
	WYE TYPE STRAINER		SUPPLY DIFFUSER OR GRILLE
	WYE TYPE STRAINER WITH HOSE END BLOW-OFF VALVE		RETURN OR EXHAUST REGISTER OR GRILLE
	BALANCING VALVE		AIR OUTLET/INLET DEVICE DESIGNATION
	PRESSURE REDUCING VALVE		DEVICE DESIGNATION
	PIPE UNION		AIR FLOW (SEE SCHEDULE FOR SIZE)
	PUMP SYMBOL (DIAGRAMMATIC)		OPEN ENDED DUCT
	TEMPERATURE PRESSURE RELIEF VALVE - ELEVATION		POINT OF CONNECTION
	TEMPERATURE PRESSURE RELIEF VALVE - PLAN		POINT OF DISCONNECTION
	CAP END OF PIPE		MATCHLINE
	CONCENTRIC PIPE REDUCER		NEW WORK
	ECCENTRIC PIPE REDUCER		EXISTING TO REMAIN
	FLANGED FITTING		EXISTING TO BE REMOVED/DEMOLISHED
	PRESSURE GAUGE - HYDRONIC SYSTEM		EQUIPMENT MARK/TAG
	PRESSURE GAUGE - STEAM SYSTEM		SD-1 350
	THERMOMETER		SD-1 350
	THERMOSTATIC AIR VALVE		SD-1 350
	MOTORIZED (PNEUMATIC) ACTUATOR VALVE		SD-1 350
	MOTORIZED (ELECTRIC) ACTUATOR VALVE		SD-1 350
	MOTORIZED (ELECTRIC) ACTUATOR VALVE		SD-1 350
	TWO-WAY MODULATING CONTROL VALVE		SD-1 350
	THREE-WAY MODULATING CONTROL VALVE		SD-1 350
	TWO-WAY CONTROL VALVE		SD-1 350
	THREE-WAY CONTROL VALVE		SD-1 350
	VACUUM BREAKER		SD-1 350
	AUTOMATIC AIR VENT		SD-1 350
	PRESSURE TEMPERATURE TEST PLUG		SD-1 350
	THERMOMETER WELL		SD-1 350
	FLEXIBLE PIPE CONNECTOR		SD-1 350
	FLEXIBLE PIPE CONNECTOR		SD-1 350
	PIPE SLEEVE THROUGH WALL		SD-1 350
	PIPE GUIDE		SD-1 350
	PIPE ANCHOR		SD-1 350
	HIGH PRESSURE STEAM TRAP ASSEMBLY		SD-1 350

MECHANICAL ABBREVIATIONS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AAV	AUTOMATIC AIR VENT	(F)	FUTURE
ABSORB	ABSORPTION	FC	FLEXIBLE CONNECTION
ABV	ABOVE	FCU	FAN COIL UNIT
ACC	AIR COOLED CHILLER	FD	FIRE DAMPER OR FLOOR DRAIN
ACCU	AIR COOLED CONDENSING UNIT	F/F	FINISHED FLOOR
ACU	AIR CONDITIONING UNIT	FLR	FLOOR
AD	ACCESS DOOR	FM	FLOW METER (WATER OR STEAM)
AFF	ABOVE FINISHED FLOOR	FOB	FLAT ON BOTTOM
AFMS	AIR FLOW MEASURING STATION	FOT	FLAT ON TOP
AHU	AIR HANDLING UNIT	FPI	FNS PER INCH
AL	ACOUSTICAL LINING	PPM	FEET PER MINUTE
ALT	ALTITUDE	FPS	FEET PER SECOND
ALD	AUTOMATIC LOUVER DAMPER	FT	FEET
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FV	FACE VELOCITY
AP	ACCESS PANEL	G	GAS
APPROX	APPROXIMATE	GA	GAUGE
ARCH	ARCHITECTURAL	GAL	GALLONS
AS	AIR SEPARATOR	GALV	GALVANIZED
AVG	AVERAGE	GPH	GALLONS PER HOUR
B	BOILER	GPM	GALLONS PER MINUTE
BAS	BUILDING AUTOMATION SYSTEM	H	HEIGHT
BBD	BOILER BLOWDOWN	HC	HEATING COIL
BDD	BACK DRAFT DAMPER	HPWR	HEAT PUMP WATER RETURN
BF	BELOW FLOOR	HPWS	HEAT PUMP WATER SUPPLY
BFP	BACK FLOW PREVENTER	HTWR	HIGH TEMP. HOT WATER RETURN
BFW	BOILER FEEDWATER	HTWS	HIGH TEMP. HOT WATER SUPPLY
BG	BELOW GRADE	HOA	HOT OFF GAS
BHP	BRAKE HORSEPOWER	HOK	HORSEPOWER
BO	BLANK OFF	HPC	HIGH PRESSURE STEAM CONDENSATE
BOD	BOTTOM OF DUCT	HPS	HIGH PRESSURE STEAM
BOP	BOTTOM OF PIPE	HRS	HOURS
BOR	BOTTOM OF RACK	LOW TEMP. HOT WATER RETURN	LOW TEMP. HOT WATER RETURN
BTUH	BRITISH THERMAL UNITS PER HOUR	LOW TEMP. HOT WATER SUPPLY	LOW TEMP. HOT WATER SUPPLY
CA	COMPRESSED AIR	HK	HEAT EXCHANGER
CAV	CAPACITANCE	ID	INSIDE DIMENSION
CC	COOLING COIL	IN	INCHES
CD	CEILING DAMPER	INV	INVERT
CE	CEILING EXHAUST	IN WG	INCHES WATER GAUGE
CF	CUBIC FEET	KW	KILOWATT
CFM	CUBIC FEET PER MINUTE	KWH	KILOWATT HOUR
CFH	CUBIC FEET PER HOUR	L	LENGTH
CFM	CUBIC FEET PER MINUTE	LAT	LEAVING AIR TEMPERATURE
CG	CEILING GRILLE	LBS	POUNDS
CHWR	CHILLED WATER RETURN	LBSHR	POUNDS PER HOUR
CHWS	CHILLED WATER SUPPLY	LD	LINEAR DIFFUSER
CO	CLEAN OUT	LDB	LEAVING DRY BULB
CONC	CONCRETE	LPC	LOW PRESSURE STEAM CONDENSATE
COND	CONDENSATE	LPR	LOW PRESSURE STEAM RETURN
CONT	CONTINUATION	LPS	LOW PRESSURE STEAM SUPPLY
CONP	CONDENSATE PUMP	LWB	LEAVING WET BULB
CT	COOLING TOWER	LWT	LEAVING WATER TEMPERATURE
CW	COLD WATER	MA	MAKE UP AIR
CWR	CONDENSER WATER RETURN	MAX	MAXIMUM
CWS	CONDENSER WATER SUPPLY	MBD	MANUAL BALANCING DAMPER
D	DRAIN	MBH	THOUSAND BTU PER HOUR
DB	DEGREE DRY BULB TEMPERATURE	MCC	MOTOR CONTROL CENTER
DDC	DIRECT DIGITAL CONTROL	MD	MOTOR OPERATED DAMPER
DEG. F	DEGREES FAHRENHEIT	MFG	MANUFACTURER
DENS	DENSITY	MIN	MINIMUM
DIA	DIAMETER	MPC	MEDIUM PRESSURE STEAM CONDENSATE
DN	DOWN	MPS	MEDIUM PRESSURE STEAM
DPR	DAMPER	MTWR	MEDIUM TEMP. HOT WATER RETURN
DUAL TEMP	DUAL TEMPERATURE	MTWS	MEDIUM TEMP. HOT WATER SUPPLY
DWG	DRAWING	NA	NOT APPLICABLE
DX	DIRECT EXPANSION	NC	NORMALLY CLOSED
(E)	EXISTING	NIC	NOT IN CONTRACT
EA	EXHAUST AIR	NO	NORMALLY OPEN
EAT	ENTERING AIR TEMPERATURE	NOM	NOMINAL
EDB	ENTERING DRY BULB TEMPERATURE	NPSH	NET POSITIVE SUCTION HEAD
EEER	ENERGY EFFICIENCY RATING	NTS	NOT TO SCALE
EF	EXHAUST FAN	OA	OUTDOOR AIR
EFF	EFFICIENCY	OBD	OPPOSED BLADE DAMPER
ET	EXPANSION TANK	OC	ON CENTER
EVAP	EVAPORATOR	OD	ON CENTER
EWB	ENTERING WET BULB	OED	OPEN END DUCT
EWT	ENTERING WATER TEMPERATURE	OV	ON CENTER
EXH	EXHAUST	OS&Y	ON CENTER
EXP	EXPANSION	PA	PRIMARY AIR
*F	DEGREES FAHRENHEIT	PC	PRESSURE DROP
F	FILTER	PD	PRESSURE DROP
		PH	PHASE
		PHC	PRE-HEAT COIL
		PPM	PARTS PER MILLION
		PRV	PRESSURE REDUCING VALVE
		PSI	POUNDS PER SQUARE INCH
		PSIA	POUNDS PER SQUARE INCH ABSOLUTE
		PVC	POLYVINYL CHLORIDE
		PSIG	POUNDS PER SQUARE INCH GAUGE
		R	RISE
		RA	RETURN AIR
		RAD	RADIUS
		RADR	RADIATOR
		RCVR	RECOVER
		RD	REFRIGERANT DISCHARGE
		REL	RELATIVE HUMIDITY
		RF	REFRIGERANT FLOW
		RH	REFRIGERANT COIL
		RL	REFRIGERANT LIQUID
		RLA	REFRIGERANT LOAD AMPS
		RTRM	ROOM
		RPM	REVOLUTIONS PER MINUTE
		RS	REFRIGERANT SUCTION
		RTU	ROOF TOP UNIT
		S	SMOKE DAMPER
		SA	SUPPLY AIR
		SAD	SOUND ATTENUATOR DEVICE
		SAT	SATURATED
		SD	SMOKE DETECTOR
		SEC	SECONDARY
		SEER	SEASONAL ENERGY EFFICIENCY RATING
		SENS	SENSIBLE
		SF	SUPPLY FAN
		SH	SENSIBLE HEAT
		SP	STATIC PRESSURE
		SP HT	SPECIFIC HEAT
		SPEC	SPECIFICATION
		SP GR	SPECIFIC GRAVITY
		SQ. FT.	SQUARE FEET
		SS	STAINLESS STEEL
		STL	STEEL
		STM	STEAM
		SW	SWITCH
		SWR	SECONDARY WATER RETURN
		SWS	SECONDARY WATER SUPPLY
		TD	TEMPERATURE DIFFERENCE
		TDH	TOTAL DYNAMIC HEAD
		TE	TOP OF DUCT ELEVATION
		TEMP	TEMPERATURE
		THD	THERMO-DYNAMIC STEAM TRAP
		TSP	TOTAL STATIC PRESSURE
		TSTAT	THERMOSTAT
		TU	TERMINAL UNIT
		TYP	TYPICAL
		UH	UNIT HEATER
		V	VENT
		VAV	VARIABLE AIR VOLUME
		VD	VOLUME DAMPER
		VEL	VELOCITY
		VERT	VERTICAL
		VFD	VARIABLE FREQUENCY DRIVE
		W	WIDTH
		W/	WITH
		W/O	WITHOUT
		WB	WET BULB TEMPERATURE
		WC	WATER COLUMN
		WG	WATER GAUGE
		WMS	WIRE MESH SCREEN
		WP	WORKING PRESSURE
		WSP	WORKING STEAM PRESSURE
		WT	WT
		*F	DEGREES FAHRENHEIT
		A1	TEMPERATURE DIFFERENCE

- GENERAL NOTES**
- VERIFY ALL SIZES, MATERIALS, TEMPERATURES AND PRESSURES BEFORE ORDERING OR FABRICATION OF ANY MATERIALS.
 - MECHANICAL DRAWINGS DO NOT SPECIFY VOLTAGES OF MECHANICAL EQUIPMENT. REFER TO THE ELECTRICAL DRAWINGS FOR VOLTAGES AND MECHANICAL EQUIPMENT ELECTRICAL LOADS. VERIFY ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT BEFORE ORDERING EQUIPMENT.
 - REFER TO EACH DRAWING FOR NOTES SPECIFIC TO THAT DRAWING SHEET.
 - ALL PENETRATIONS THROUGH EXISTING FIRE RATED WALLS, PARTITIONS AND FLOOR SLABS SHALL BE FIRE STOPPED TO MAINTAIN THE FIRE RATING OF THE EXISTING WALL, PARTITION OR FLOOR SLAB.
 - ALL FRESH AIR INTAKES SHALL BE MINIMUM 10 FT AWAY FROM ANY BUILDING GENERAL EXHAUST AND PLUMBING VENTS, AND MINIMUM 15 FT AWAY FROM FLUES AND GREASE EXHAUST.
 - WHEN ROOF MOUNTED MECHANICAL EQUIPMENT DEVIATES FROM THE BASIS OF DESIGN, COORDINATE ORIENTATION AND LOCATION OF THE OUTDOOR AIR INTAKE OF THE EQUIPMENT WITH EXHAUST FANS, PLUMBING VENTS AND GAS VENTS. ALLOW CLEARANCES AS INDICATED ABOVE.
 - AREAS ABOVE THE CEILING ARE UTILIZED AS A RETURN AIR PLENUM UNLESS NOTED OTHERWISE. MATERIALS INSTALLED WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84 WIRING CABLE AND RACEWAYS INSTALLED IN PLENUMS SHALL BE LISTED AND LABELED AS PLENUM RATED.