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CENTRAL MISSOURI PROFESSIONAL SERVICES, INC.  
MISSOURI STATE CERTIFICATE OF AUTHORITY #  
CIVIL ENGINEER  
SSC ENGINEERING, INC.  
MECHANICAL/ELECTRICAL/PLUMBING ENGINEER  
MISSOURI STATE CERTIFICATE OF AUTHORITY #001244  
09/12/18  
SSC ENGINEERING, INC.  
MISSOURI STATE CERTIFICATE OF AUTHORITY #001244

The Architects Alliance inc.  
Missouri State Certificate of Authority # 000143  
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MECHANICAL SYMBOLS & ABBREVIATIONS & GENERAL NOTES

MISSOURI SOYBEAN INNOVATION CENTER  
NEW OFFICE BUILDING  
734 S. COUNTRY CLUB DRIVE  
JEFFERSON CITY, MISSOURI

PROJECT NO. 1613  
DATE: Sept. 12, 2018

M0.1

MECHANICAL SYMBOLS LEGEND		
	AIR DEVICE TAG	S - SUPPLY R - RETURN E - EXHAUST
	EQUIPMENT IDENTIFICATION	
	DRAIN	
	REFRIGERANT HOT GAS	
	REFRIGERANT LIQUID	
	REFRIGERANT SUCTION	
	HOT WATER HEATING SUPPLY	
	HOT WATER HEATING RETURN	
	PIPE ANCHOR	
	COMPRESSED AIR	
	NATURAL GAS	
	LIQUID PROPANE GAS	
	CHILLED WATER SUPPLY	
	CHILLED WATER RETURN	
	CHILLED WATER SUPPLY	
	CHILLED WATER RETURN	
	CONDENSER WATER SUPPLY	
	CONDENSER WATER RETURN	
	LOW PRESSURE STEAM	
	MEDIUM PRESSURE STEAM	
	HIGH PRESSURE STEAM	
	LOW PRESSURE CONDENSATE	
	MEDIUM PRESSURE CONDENSATE	
	HIGH PRESSURE CONDENSATE	
	STEAM CONDENSATE PUMPED DISCHARGE	
	LOOP WATER SUPPLY	
	LOOP WATER RETURN	
	PNEUMATIC TUBING	
	ELECTRICAL WIRING	
	DEMO PIPE OR EQUIPMENT	
	POINT OF CONNECTION NEW TO EXISTING	
	OPPOSED BLADE DAMPER	
	HUMIDISTAT	
	THERMOSTAT	
	SMOKE DETECTOR (DUCT)	
	FLOW SWITCH	
	DIFFERENTIAL PRESSURE SWITCH	
	PRESSURE SWITCH	
	BOTTOM OF DUCT ELEVATION	
	RECTANGULAR DUCT (FIRST NUMBER IS SURFACE)	
	SHOWN-DIMENSIONS REPRESENT OUTSIDE SHEETMETAL	
	ROUND DUCT	
	RECTANGULAR TO ROUND TRANSITION	
	TRANSITION	
	DUCT WITH LINER	
	INCLINED RISE (R) OR DROP (D) ARROW IN DIRECTION OF CHANGE	
	FLEXIBLE DUCT CONNECTION	
	SUPPLY AIR UP OR IN SECTION	
	RETURN/EXHAUST OR OUTSIDE AIR UP OR IN SECTION	
	SUPPLY AIR DOWN OR AWAY	
	RETURN/EXHAUST OR OUTSIDE AIR DOWN OR AWAY	
	RECTANGULAR ELBOW WITH TURNING VANES	
	VOLUME DAMPER	
	MOTORIZED DAMPER	
	FIRE DAMPER/SMOKE DAMPER/COMB. FIRE SMOKE DAMPER	
	SPIN-IN FITTING WITH DAMPER (SIDE)	

MECHANICAL SYMBOLS LEGEND (CONT.)	
	ROUND TAP WITH DAMPER (BOTTOM)
	CEILING MOUNTED SQUARE SUPPLY AIR DIFFUSER 4-WAY UNLESS OTHERWISE INDICATED (ARROW INDICATES DIRECTION OF THROW)
	CEILING MOUNTED RETURN AIR GRILLE
	SIDEWALL RETURN GRILLE
	SIDEWALL SUPPLY DIFFUSER
	SUPPLY AIR SLOT DIFFUSER
	RECTANGULAR TAP WITH DAMPER (BOTTOM)
	ROUND DUCT SUPPLY UP, DN OR IN SECTION
	ROUND DUCT RETURN UP, DN OR IN SECTION
	PIPE DOWN
	PIPE UP
	TOP CONNECTION
	BOTTOM CONNECTION
	FLOW DIRECTION
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	THERMOWELL
	PRESSURE GAUGE
	MANIFOLD GAUGE
	THERMOMETER
	CAPPED OUTLET (UP)
	DIRT LEG (DN)
	UNION
	PIPE GUIDE
	STEAM TRAP
	EXPANSION JOINT
	REDUCER
	BASKET STRAINER
	SUCTION DIFFUSER
	STRAINER
	GATE VALVE
	BALL VALVE
	TRIPLE DUTY VALVE
	BUTTERFLY VALVE
	PRESSURE REDUCING VALVE
	CHECK VALVE
	GAS COCK
	BALANCING VALVE (FLOW CONTROL VALVE)
	RPBP - REDUCED PRESSURE BACKFLOW PREVENTER
	DRAIN VALVE WHOSE THREADED CONN.
	PRESSURE RELIEF VALVE
	3-WAY AUTOMATIC CONTROL VALVE
	2-WAY AUTOMATIC CONTROL VALVE
	MOTORIZED VALVE
	ANGLE VALVE
	SOLENOID VALVE
	THERMAL EXPANSION VALVE
	TEMPERATURE/PRESSURE TEST PLUG

### MECHANICAL ABBREVIATIONS

ACC	AIR COOLED CONDENSER	IE	INVERT ELEVATION
AC	AIR CONDITIONING UNIT	IN	INCHES
ADU	ADJUSTABLE	INST	INSTALLED
AFF	ABOVE FINISHED FLOOR	IRH	INFRARED HEATER
AHU	AIR HANDLING UNIT	LAT	LEAVING AIR TEMPERATURE
AP	ACCESS PANEL	LDB	LEAVING DRY BULB TEMPERATURE
APD	AIR PRESSURE DROP(IN W/C)	LWB	LEAVING WET BULB TEMPERATURE
AS	AIR SEPARATOR	LWT	LEAVING WATER TEMPERATURE
B	BOILER	LWR	LOCKED ROTOR AMPS
BB	AIR BLENDER	LPA	LIQUID PROPANE GAS
BBD	BACKDRAFT DAMPER	LWCO	LOW WATER CUT-OFF
BHP	BRAKE HORSEPOWER	MAU	MAKE-UP AIR UNIT
BTU	BRITISH THERMAL UNITS	MAX	MAXIMUM
BOD	BOTTOM OF DUCT	MBH	1000 BTU/H
BOP	BOTTOM OF PIPE	MC	MECHANICAL CONTRACTOR
BOS	BOTTOM OF STEEL	MCC	MOTOR CONTROL CENTER
BW	BACKWATER VALVE	MD	MOTORIZED DAMPER
CA	COMBUSTION AIR	MIN	MINIMUM
CAP	CAPACITY	MSB	MOP SERVICE BASIN
CC	CENTER TO CENTER	MV	MIXING VALVE
CFM	CUBIC FEET PER MINUTE	NO	NORMALLY OPEN
CH	CHILLER	NC	NORMALLY CLOSED
CWR	CHILLED WATER RETURN	NR	NUMBER
CWS	CHILLED WATER SUPPLY	NF	NON-FUSED
CI	CAST IRON	NTS	NOT TO SCALE
CL	CENTER LINE	OA	OUTSIDE AIR
CLG	CEILING	OED	OPEN END DUCT
CO	CLEANOUT	OV	OUTLET VELOCITY
CONN	CONNECTION	P	PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE	PC	PLUMBING CONTRACTOR
CWC	CONDENSER WATER RETURN	PCC	POINT OF CONNECTION
CS	CONDENSER WATER SUPPLY	PIB	POWER INDUCTION BOX
CU	CONDENSING UNIT	PD	PRESSURE DROP
CUB	CABINET UNIT HEATER	PVC	POLYVINYL CHLORIDE
CV	CONTROL VALVE	RA	RETURN AIR
D	DRAIN	R#	RETURN AIR DEVICE
DIA	DIAMETER	RD	ROOF DRAIN
DB	DRY BULB TEMPERATURE	RF	RELIEF FAN
DISC	DISCONNECT	RPM	REVOLUTIONS PER MINUTE
DN	DOWN	RP	RECIRCULATING PUMP
DS	DOWNSPOUT	RPBP	REDUCED PRESSURE BACK FLOW PREVENTER
DI	DISHWASHER	RTU	ROOF TOP UNIT
DSD	DUCT SMOKE DETECTOR SUPPLY	RV	RELIEF VALVE
DSR	DUCT SMOKE DETECTOR RETURN	S#	SUPPLY AIR DEVICE
E#	EXHAUST AIR DEVICE	SA	SUPPLY AIR
EA	EXHAUST AIR	SD	SMOKE DAMPER
EAT	ENTERING AIR TEMPERATURE	SF	SUPPLY FAN
EED	ENTERING DRY BULB TEMPERATURE	SW	SWITCH
EWT	ENTERING WATER TEMPERATURE	STL	STEEL
EFF	EFFICIENCY	SG	SIGHT GLASS
ET	EXPANSION TANK	SP	STATIC PRESSURE
ECH	ELECTRIC CABINET HEATER	SPC	SPRINKLER CONTRACTOR
EF	EXHAUST FAN	SV	SOLENOID VALVE
EC	ELECTRICAL CONTRACTOR	TC	TEMPERATURE CONTROLLER
EMS	ENERGY MANAGEMENT SYSTEM	TDV	TRIPLE DUTY VALVE
ESP	EXTERNAL STATIC PRESSURE	T	TRANSFER GRILLE
ESV	EMERGENCY SHUT-OFF VALVE	TF	TRANSFER FAN
EUH	ELECTRIC UNIT HEATER	TS	TAMPER SWITCH
EWH	ELECTRIC WATER HEATER	TSP	TOTAL STATIC PRESSURE
EX	EXISTING	TXV	THERMAL EXPANSION VALVE
EXH	EXHAUST	UH	UNIT HEATER (HYDRONIC)
FA	FRESH AIR	UR	URINAL
FCU	FAN COIL UNIT	V	VENT
FD	FLOOR DRAIN	VAV	VARIABLE AIR VOLUME BOX
FH	FLOOR HYDRANT	VD	VOLUME DAMPER
FDR	FILTER DRIER	VFD	VARIABLE FREQUENCY DRIVE
FN	FINISH	VTR	VENT THRU ROOF
FLR	FLOOR	WB	WET BULB TEMPERATURE
FM	FACTORY MOUNTED	WPD	WATER PRESSURE DROP(FIT H20)
FPM	FEET PER MINUTE	W/C	WATER COLUMN
FT	FEET	ZD	ZONE DAMPER
FURN	FURNISHED		
FLA	FULL LOAD AMPS		
FOB	FLAT ON BOTTOM		
FOT	FLAT ON TOP		
FPC	FIRE PROTECTION CONTRACTOR		
FS	FLOOR SINK		
FTU	FAN TERMINAL UNIT		
GAL	GALLONS		
GALV	GALVANIZED		
GI	GREASE INTERCEPTOR		
GC	GENERAL CONTRACTOR		
GHM	GAS UNIT HEATER		
GWH	GAS WATER HEATER		
OW	COLD WATER		
HB	HOSE BIBB		
HD	HUB DRAIN		
HR	HOUR		
HP	HORSEPOWER		

### MECHANICAL GENERAL RENOVATION NOTES:

- SEE SHEET M0.1 FOR SYMBOLS AND ABBREVIATIONS.
- THESE GENERAL NOTES APPLY TO ALL WORK.
- KEYED NOTES ON PLANS WITH MATCH LINES ARE THE SAME ON BOTH SIDES OF MATCH LINES. KEYED NOTES MAY NOT BE USED ON BOTH SIDE OF THE MATCH LINE.
- DUCT SIZES SHOWN ARE SHEET METAL SIZE AND INCLUDE THE DUCT LINER WHERE LINER IS REQUIRED.
- ALL SUPPLY, RETURN, EXHAUST, AND TRANSFER REGISTERS IN ROOMS WITHOUT CEILINGS SHALL BE 9'-0" AFF UNLESS NOTED OTHERWISE.
- REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF CEILING AIR DEVICES.
- PIPING ON PLANS IS SHOWN FOR GENERAL ARRANGEMENT. SEE DETAILS FOR CONNECTIONS TO UNITS.
- IF PIPE SIZES ON PLANS CONFLICT WITH SIZES SHOWN ON FLOW DIAGRAMS, SIZES ON FLOW DIAGRAMS SHALL TAKE PRECEDENCE.
- TRANSITION FROM DUCT SIZES SHOWN TO EQUIPMENT CONNECTION SIZE AS REQUIRED.
- MAINTAIN 10'-0" MINIMUM BETWEEN OUTSIDE AIR INTAKES AND ALL EXHAUST FANS, FLUES, PLUMBING VENTS, ETC.
- ALL DUCT RUN OUTS TO AIR DEVICES SHALL HAVE A DAMPER WITH A LOCKING QUADRANT IN ADDITION TO THE DAMPER IN THE NECK OF THE AIR DEVICE.
- CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO PREVENT THE INSTALLATION OF CONDUITS, PIPING, LIGHTING, OR OTHER OBSTRUCTIONS UNDER OR ADJACENT TO HVAC EQUIPMENT THAT OBSTRUCTS ACCESS TO COILS, MOTORS, VALVES, FILTERS, ETC., OR OTHER HVAC COMPONENTS NEEDING MAINTENANCE OR OPERATIONS ACCESS.
- FLEXIBLE DUCT LENGTH SHALL NOT EXCEED 8'-0".
- ALL EXPOSED DUCTS SHALL HAVE PAINT GRIP FINISH FOR PAINTING BY GC. COLOR PER ARCHITECT.
- THERMOSTATS AND ROOM TEMPERATURE SENSORS SHALL BE MOUNTED AT 4'-0" TO THE TOP OF THE JUNCTION BOX THAT THE DEVICE IS MOUNTED ON.
- COORDINATE DUCTWORK WITH ALL MECHANICAL, SPRINKLER AND PLUMBING PIPING BEFORE COMMENCEMENT OF WORK.
- MAINTAIN MINIMUM OF 4'-0" BETWEEN BRANCH TAKE OFFS.
- LOCATIONS OF NEW EQUIPMENT, DUCTWORK, PIPING, AND ASSOCIATED ITEMS SHOWN ON THE DRAWINGS ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND ELEVATION OF ALL WORK. PROVIDE OFFSETS, FITTINGS, TRANSITIONS, EXTENSIONS, ETC., REQUIRED FOR A COMPLETE SYSTEM.
- NO CHANGES IN CONTRACT PRICE WILL BE ALLOWED FOR MINOR CHANGES IN LAYOUT OR LOCATION REQUIRED TO AVOID INTERFERENCES, OBSTRUCTIONS, ETC. CONTRACT PRICE CHANGES WILL BE CONSIDERED ONLY FOR CHANGES IN THE SCOPE OF THE PROJECT REQUIREMENTS. ALL SUCH SCOPE CHANGES AND PRICE REVISIONS MUST BE AUTHORIZED IN WRITING. NOTIFY THE ENGINEER AT ONCE SHOULD A DISCREPANCY OR OMISSION BE FOUND.
- AIR DEVICES SHALL BE SIZED TO MATCH THE CEILING GRID. FURNISH AIR DEVICES FOR EITHER REGULAR GRID CEILINGS OR FOR NARROW GRID CEILINGS OR FOR BOTH TYPES OF GRID, COORDINATE WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
- PROVIDE SUPPLEMENTAL "TEES" FOR THE CEILING GRID WHERE DIFFUSERS ARE A DIFFERENT SIZE THAN THE CEILING TILES.
- PROVIDE AN ISOMETRIC DRAWING FOR ALL REFRIGERANT PIPING. SHOW PIPE SIZES AND LENGTHS. REFRIGERATION UNIT MANUFACTURER SHALL SIGN OFF ON THE PIPING CONFIGURATION AND SIZING.
- GENERALLY PROVIDE DUCT INSULATION FOR SUPPLY, RETURN AND OUTSIDE AIR DUCTS ABOVE CEILINGS. SEE DETAILS AND DUCT INSULATION SCHEDULE ON PLANS FOR ADDITIONAL REQUIREMENTS. SEE SPECS 230900 AND 230200 FOR A MORE DETAILED DESCRIPTION OF LINING AND INSULATION REQUIREMENTS.
- ALL DUCTS SHALL BE 2" WG PRESSURE CLASS.

MECHANICAL SHEET LIST	
Sheet Number	Sheet Name
M0.1	MECHANICAL SYMBOLS, ABBREVIATIONS & GENERAL NOTES
M0.2	MECHANICAL SCHEDULES
M0.3	MECHANICAL DETAILS
M0.4	MECHANICAL ENLARGED PLANS
M1.1	MECHANICAL DUCTWORK PLAN
M2.1	MECHANICAL PIPING PLAN

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