

**Revisions:**

No:	Date:
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MECH. SYMBOLS	
SYMBOL	DESCRIPTION
	RECTANGULAR TAKE-OFF (SINGLE LINE)
	RECTANGULAR TAKE-OFF (DOUBLE LINE)
	ROUND TAKE-OFF (SINGLE LINE)
	ROUND TAKE-OFF (DOUBLE LINE)
	SPIN-IN FITTING (WITH VOLUME DAMPER)
	RECTANGULAR ELBOW (WITH TURNING VANES)
	RADIUS RECTANGULAR ELBOW
	RADIUS ROUND ELBOW
	RECTANGULAR ELBOW UP
	ROUND ELBOW UP
	RECTANGULAR ELBOW DOWN
	ROUND ELBOW DOWN
	CONCENTRIC TRANSITION (SINGLE LINE)
	CONCENTRIC TRANSITION (DOUBLE LINE)
	ECCENTRIC TRANSITION (SINGLE LINE)
	ECCENTRIC TRANSITION (DOUBLE LINE)
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER
	SUPPLY DIFFUSER
	LINEAR SLOT DIFFUSER
	RETURN OR EXHAUST GRILLE
	SIDEWALL GRILLE OR REGISTER
	TRANSFER GRILLE
	CROSS SECTION OF SUPPLY AIR DUCT
	CROSS SECTION OF RETURN AIR DUCT
	CROSS SECTION OF EXHAUST AIR DUCT
	CROSS SECTION OF OUTDOOR AIR DUCT
	FIRE DAMPER
	VOLUME DAMPER
	SMOKE DAMPER
	COMBINATION FIRE AND SMOKE DAMPER
	COMBINATION FIRE AND SMOKE ADJUSTABLE DAMPER
	BALANCING DAMPER (MANUALLY ADJUSTABLE)
	MOTORIZED DAMPER
	BACK DRAFT DAMPER - GRAVITY DAMPER
	CEILING RADIANT HEAT DAMPER
	THERMOSTAT
	HUMIDISTAT
	DEHUMIDISTAT
	TEMPERATURE SENSOR

MECH. ABBREVIATIONS	
ABBREV.	DEFINITION
A	COMPRESSED AIR
AAV	AUTOMATIC AIR VENT
AB	ABSORPTION
AMP	AMPERE
APD	AIR PRESSURE DROP
BD	BALANCING DAMPER
BDD	BACK DRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
C	COMMON
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CO	CLEAN OUT
COND	CONDENSATE
CONV	CONVECTOR
CRD	CEILING RADIANT HEAT DAMPER
CTF	COOLING TOWER FAN
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
CW	DOMESTIC COLD WATER
(D)	DEMOLISH
DB	DRY BULB TEMPERATURE
DEG	DEGREES
DDC	DIRECT DIGITAL CONTROL
DPR	DAMPEN
(E)	EXISTING
E	EXHAUST GRILLE OR REGISTER
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EXH	EXHAUST
F	DEGREES FAHRENHEIT
FA	FACE AREA
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEAN OUT
FCW	FORWARD CURVED WHEEL
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FOS	FUEL OIL SUPPLY
PFM	FEET PER MINUTE
FSA	FIRE AND SMOKE DAMPER W/ ADJUSTABLE LIMITS
FSD	FIRE AND SMOKE DAMPER
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
G	NATURAL GAS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HO	HUB OUTLET
HP	HORSEPOWER
HTG	HEATING
HW	DOMESTIC HOT WATER
HYD	DOMESTIC HOT WATER RETURN
	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IFAB	INTEGRAL FACE AND BYPASS DAMPER
INL	INLET
ISP	INTERNAL STATIC PRESSURE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MH	MANHOLE
MOD	MOTOR OPERATED DAMPER
MV	MANUAL AIR VENT
N	NITROGEN
NPCW	NON POTABLE COLD WATER
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OS&Y	OUTSIDE SCREW AND YOKE
OV	OUTLET VELOCITY
PA	PIPE ANCHOR
PC	PUMPED CONDENSATE
PD	PRESSURE DROP (FEET OF WATER)
PG	PIPE GUIDE
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSI	POUNDS PER SQUARE INCH - GAUGE
R	RETURN GRILLE OR REGISTER
RA	RETURN AIR
RH	RELATIVE HUMIDITY
RL	REFRIGERANT LIQUID
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
R.S.	ROOF SUMP
RS	REFRIGERANT SUCTION
S	SUPPLY AIR DIFFUSER OR GRILLE
SA	SUPPLY AIR
SD	SMOKE DAMPER
SP	STATIC PRESSURE
SpGr	SPECIFIC GRAVITY
SPP	SMOKE PRESSURIZATION FAN
SPS	STATIC PRESSURE SENSOR
STK	STACK
TC	TEMPERATURE CONTROL
TSP	TOTAL STATIC PRESSURE
TV	TURNING VANES
UG	UNDER GROUND
VAC	VACUUM
VE	VOLUME EXTRACTOR
VI	VIBRATION ISOLATOR
WB	WET BULB TEMPERATURE
WG	WATER GAUGE

MECH. PIPING SYMBOLS	
SYMBOL	DESCRIPTION
	BOILER BLOW DOWN
	BOILER FEED WATER
	CONDENSATE DRAIN
	CHILLED WATER RETURN
	CHILLED WATER SUPPLY
	COOLING TOWER WATER RETURN
	COOLING TOWER WATER SUPPLY
	DOMESTIC COLD WATER PIPING
	HYDRONIC HOT WATER SUPPLY
	HYDRONIC HOT WATER RETURN
	REFRIGERANT LINE SETS
	FUEL OIL FILL
	FUEL OIL RETURN
	FUEL OIL SUPPLY
	FUEL OIL VENT
	STEAM PUMPED CONDENSATE
	STEAM LOW PRESSURE
	STEAM MEDIUM PRESSURE
	VACUUM PUMP DISCHARGE
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE DOWN
	CIRCULATING PUMP
	DIRECTION OF FLOW
	DIRECTION OF PIPE PITCH
	BACKFLOW PREVENTER
	FLOW SWITCH
	TAMPER SWITCH
	PRESSURE REGULATOR
	ANGLE VALVE
	AUTOMATIC GAS SHUT-OFF VALVE
	BALANCING AND MEASURING VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE (SPRING)
	CHECK VALVE (SWING)
	GATE VALVE
	GLOBE VALVE
	NEEDLE VALVE
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)
	PLUG VALVE
	TRIPLE DUTY VALVE
	PIPE ANCHOR
	PIPE CAP OR PLUG
	PIPE CONCENTRIC REDUCER
	PIPE ECCENTRIC REDUCER
	PIPE EXPANSION JOINT
	PIPE FLEXIBLE CONNECTION
	PIPE GUIDE
	PIPE UNION
	FLOOR DRAIN (PLAN VIEW)
	FLOOR DRAIN (ELEVATION)
	FUNNEL FLOOR DRAIN (PLAN VIEW)
	FUNNEL FLOOR DRAIN (ELEVATION)

MECH. DRAWING SYMBOLS	
SYMBOL	DESCRIPTION
	CONSTRUCTION KEY NOTE
	DEMOLITION KEY NOTE
	EQUIPMENT DESIGNATION
	LINE OF DEVICES OR EQUIPMENT BEYOND OR BELOW THE FLOOR
	LINE OF EXISTING DEVICES OR EQUIPMENT
	LINE OF NEW OR MODIFIED DEVICES OR EQUIPMENT
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	RETURN GRILLE WITH SCHEDULE TAG #R-2* 500 CFM TYPICAL FOR 3 RETURN GRILLES
	SUPPLY DIFFUSER WITH SCHEDULE TAG #S-2* 270 CFM TYPICAL FOR 4 DIFFUSERS

MECH. GENERAL NOTES	
1	THESE DRAWINGS ARE DIAGRAMMATIC & INDICATE THE GENERAL INTENT OF THE WORK. PROVIDE SHEET METAL SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADII OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
2	CONTRACTOR SHALL COORDINATE HIS WORK WITH THE WORK OF ALL OTHER TRADES. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3	DUCTWORK OR MECHANICAL PIPING SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4	THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
5	COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS ETC. WITH ARCHITECTURAL TRADES.
6	THE CONTRACTOR SHALL REFER TO ARCHITECTURAL FINISH SCHEDULE REGARDING CEILING TYPES FOR SELECTION OF GRILLE, REGISTER, AND DIFFUSER FRAME TYPES.
7	COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILING AREAS FOR ACCESS TO BALANCING DAMPERS, ETC. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
8	PAINT ALL VISIBLE INSIDE SURFACES OF GRILLES, REGISTERS AND DIFFUSERS FLAT BLACK.
9	BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE WHERE NO DUCT SIZE IS INDICATED ON PLAN.
10	MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
11	DETAIL CALL OUTS ARE GIVEN AS A REFERENCING AID. DETAILS SHALL BE APPLIED BOTH WHERE CALLED OUT AND AS APPLICABLE.
12	FOR EQUIPMENT VALVES, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
13	ON THIS SHEET ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON PROJECT DRAWING FILES. WHENEVER THE SYMBOL OCCURS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.
14	THESE MECHANICAL GENERAL NOTES APPLY TO ALL SHEETS THAT FOLLOW IN THE MECHANICAL SHEET SET.
15	DO NOT ROUTE PIPING OR DUCTWORK THROUGH STRUCTURAL MEMBERS REQUIRING FIELD OPENINGS LARGER THAN 1/4" WITHOUT WRITTEN CONSENT FROM ENGINEER. STRUCTURAL MEMBERS TO INCLUDE BUT ARE NOT LIMITED TO BEAMS, COLUMNS, JOIST, AND STRUCTURAL WALL ELEMENTS CALLED OUT ON STRUCTURAL DRAWINGS.

MECH. DESIGN VARIABLES	
HEATING CONDITIONS:	
1	HEATING DRY-BULB (98.6%): 0 DEGREES FAHRENHEIT
OUTDOOR DESIGN COOLING CONDITIONS:	
2	COOLING DRY-BULB (0.4%): 85 DEGREES FAHRENHEIT
	COOLING WET-BULB (0.4%): 76 DEGREES FAHRENHEIT
INDOOR DESIGN TEMPERATURE SETPOINTS:	
TYPICAL COMMON AREAS:	
	HEATING-OCCUPIED 70.0 DEGREES FAHRENHEIT
	HEATING-UNOCCUPIED 65.0 DEGREES FAHRENHEIT
3	COOLING-OCCUPIED 75.0 DEGREES FAHRENHEIT
	COOLING-UNOCCUPIED 80.0 DEGREES FAHRENHEIT
	RELATIVE HUMIDITY-OCCUPIED 55.0 % (SEE NOTE #1)
	RELATIVE HUMIDITY-UNOCCUPIED 60.0 % (SEE NOTE #1)

NOTES:  
 1. SPACE % RELATIVE HUMIDITY MAY NOT BE CONTROLLED IF HUMIDISTAT IS NOT SPECIFIED.

MOUNTING HEIGHTS	
STANDARD MOUNTING HEIGHTS	
5'-0"	THERMOSTATS LOCATED IN NON-ADA GUESTROOMS, AND NON-ADJUSTABLE AND NON-REPORTING TEMPERATURE, HUMIDITY AND CO2 SENSORS.
4'-0"	THERMOSTATS, HUMIDISTATS, HVAC CONTROLS.
0'-0"	FINISHED FLOOR
CUSTOM MOUNTING HEIGHTS (APPLIES TO OTHER DEVICES NOT SHOWN HERE)	
SCHEDULE NOTES: 1. MOUNTING HEIGHTS TO TOP OF DEVICES UNLESS OTHERWISE NOTED. IN MASONRY CONSTRUCTION THE ABOVE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE TO NEAREST BLOCK OR BRICK COURSING. 2. THE ABOVE MOUNTING HEIGHTS SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED OTHERWISE ON THE DRAWINGS OR SPECIFICATIONS.	

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**Drawing Title:**  
 MECHANICAL ABBREVIATIONS AND SYMBOLS