MECHANICAL LEGEND AND ABBREVIATIONS

ABBREVIATIONS - MECHANICAL

ABV	ABOVE
AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
ACD	AUTOMATIC CONTROL DAMPER
AD	ACCESS DOOR
AHU	AIR HANDLING UNIT
AL	ACOUSTICAL LINING
ARCH	ARCHITECTURAL
ATC	AUTOMATIC TEMPERATURE CONTROL
B	BOILER
BD	BALANCING DAMPER
BDD	BACK DRAFT DAMPER
BMS	BUILDING MANAGEMENT SYSTEM
BO	BLANK OFF
BHP	BRAKE HORSE POWER
BTU	BRITISH THERMAL UNIT
CC	COOLING COIL
CD	CEILING DIFFUSER
CFF	CAP FOR FUTURE
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CH	CHILLER
CO	CLEAN OUT
COMP	COMPRESSOR
CONV	CONVECTOR
CR	CEILING REGISTER
CT	COOLING TOWER
CU	CONDENSING UNIT
CW	CONDENSER WATER
DB	DRY BULB
DF	DUCT FURNACE
DIA	DIAMETER
DN	DOWN
DRX	CLOTHES DRYER EXHAUST
DX	DIRECT EXPANSION
(E)	EXISTING TO REMAIN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ECH	ELECTRIC CABINET HEATER
EC	EVAPORATIVE CONDENSER
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFF	EFFICIENCY
ELEV	ELEVATOR
EHC	ELECTRIC HEATING COIL
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
°F	DEGREES FAHRENHEIT
F	FILTER
FBO	FURNISHED BY OTHERS
FC	FLEXIBLE CONNECTION (DUCT OR PIPE)
FCC	FIRE CONTROL CENTER
FCU	FAN COIL UNIT
FD	FUSIBLE LINK FIRE DAMPER W/ DUCT ACCESS DOOR
FHX	FUME HOOD EXHAUST
FLR	FLOOR
FLA	FULL LOAD AMPS
FPB	FAN POWERED BOX
FPI	FINS PER INCH
FRE	FIRE RATED ENCLOSURE
FSD	COMBINATION FIRE AND SMOKE DAMPER
FT	FEET
FTR	FIN TUBE RADIATOR
GLY	GLYCOL
GPM	GALLONS PER MINUTE
GX	GENERAL EXHAUST
H	HUMIDIFIER
HC	HEATING COIL
HTP	HEAT PUMP
HP	HORSE POWER
HR	HOUR
HRU	HEAT RECOVERY UNIT
HTW	HEATWHEEL
HV	HEATING AND VENTILATING UNIT
HW	HOT WATER
HX	HEAT EXCHANGER
ID	INSIDE DIMENSION
IDEC	INDIRECT EVAPORATIVE COOLER
KW	KILOWATT
KWH	KILOWATT HOURS
KX	KITCHEN EXHAUST
KRX	KITCHEN RANGE HOOD EXHAUST (RESIDENTIAL)
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LD	LINEAR DIFFUSER (CEILING, WALL, SILL OR FLOOR)
LRA	LOCK ROTOR AMPS
LWS	LOUVER WITH WIRE SCREEN
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MCC	MOTOR CONTROL CENTER

ABBREVIATIONS - MECHANICAL

MFG	MANUFACTURER
MFS	MAXIMUM FUSE SIZE
MIN	MINIMUM
MUA	MAKE UP AIR UNIT
MOCP	MAXIMUM OVERCURRENT PROTECTION
(N)	NEW
NC	NORMALLY CLOSED
NFA	NET FREE AREA
NIC	NOT IN THIS CONTRACT
NK	NECK
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OAI	OUTSIDE AIR INTAKE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIMENSION
P	PUMP
PD	PRESSURE DROP
PHC	PRE-HEAT COIL
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH (GAUGE)
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
(R)	EXISTING TO BE RELOCATED
RA	RETURN AIR
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAD	SEE ARCHITECTURAL DRAWINGS
SD	SMOKE DAMPER
SF	SUPPLY FAN
SED	SEE ELECTRICAL DRAWINGS
SENS	SENSIBLE
SM	SHEET METAL
SP	STATIC PRESSURE
STP	STAIR PRESSURIZATION
SQFT	SQUARE FEET
ST	SOUND TRAP
SX	SMOKE EXHAUST
TF	TRANSFER FAN
TRD	TRANSFER DUCT
TRG	TRANSFER GRILLE
TX	TOILET EXHAUST
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
VAR	VARIABLE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VX	VAPOR HOOD EXHAUST
W/	WITH
WB	WET BULB
WG	WATER GAUGE
WMS	WIRE MESH SCREEN
WO-SIZE	WALL OPENING - (SIZE)
(X)	EXISTING TO BE DEMOLISHED
(300)	CUBIC FEET OR AIR PER MINUTE OR GALLONS PER MINUTE

PIPING LEGEND

CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
GS	GLYCOL SUPPLY
GR	GLYCOL RETURN
HTHS	HIGH TEMPERATURE HOT WATER SUPPLY (__°F)
HTHR	HIGH TEMPERATURE HOT WATER RETURN (__°F)
MTHS	MEDIUM TEMPERATURE HOT WATER SUPPLY (__°F)
MTHR	MEDIUM TEMPERATURE HOT WATER RETURN (__°F)
HWS	HOT WATER SUPPLY
HWR	HOT WATER RETURN
RL	REFRIGERANT LIQUID PIPING
RS	REFRIGERANT SUCTION PIPING
R-SV	REFRIGERANT-SAFETY VALVE RELIEF LINE
HG	HOT GAS PIPING
	ARROW INDICATES DIRECTION OF FLOW

PIPING LEGEND (CONTINUED)

	PITCH PIPE DOWN IN DIRECTION OF ARROW
	PIPE ANCHOR
	PIPE GUIDE
	EXPANSION COMPENSATOR
(3'-0"x6'-0") (3'-0"x6'-0") A B	EXPANSION LOOP (SIZE AxB)
	FLEXIBLE BALL JOINT EXPANSION COMPENSATOR
	CONCENTRIC REDUCER (INCREASER)
	ECCENTRIC REDUCER (INCREASER)
	UNION
	CAPPED PIPE WITH SHUT-OFF VALVE
	"Y" TYPE STRAINER WITH HOSE END BLOW OFF VALVE
	"Y" TYPE STRAINER
	BASKET TYPE STRAINER
	DUPLEX STRAINER
	ELBOW TURNED UP
	ELBOW TURNED DOWN
12	BOTTOM PIPE CONNECTION
12	TOP PIPE CONNECTION
C C 12	SLOPED CHANGE IN PIPE ELEVATION
	FLEXIBLE CONNECTION
	SHUT-OFF VALVE
40 40	AUTOMATIC FLOW CONTROL VALVE (NUMBERS INDICATES GPM)
40 40	CALIBRATED BALANCE VALVE (NUMBERS INDICATES GPM)
	GLOBE VALVE
	CHECK VALVE
	AUTOMATIC THREE-WAY CONTROL VALVE (PNEUMATIC OPERATOR SHOWN)
	AUTOMATIC TWO-WAY CONTROL VALVE (PNEUMATIC OPERATOR SHOWN)
M	AUTOMATIC THREE-WAY CONTROL VALVE (ELECTRIC OPERATOR SHOWN)
M	AUTOMATIC THREE-WAY CONTROL VALVE (ELECTRIC OPERATOR SHOWN)
	RELIEF VALVE
	ANGLE RELIEF VALVE
	PRESSURE REDUCING VALVE (PRV)
	LUBRICATED PLUG VALVE
	LOCKSHIELD GLOBE VALVE
S	SOLENOID VALVE
	BUTTERFLY VALVE (MANUAL)
	BUTTERFLY VALVE (MOTORIZED)
	BALL VALVE
	INLINE PUMP

PIPING LEGEND (CONTINUED)

	DIRT POCKET
	REFRIGERANT EXPANSION VALVE
	SIGHT GLASS
	VALVE IN VERTICAL
	MANUAL AIR VENT
A	AUTOMATIC AIR VENT
	THERMOMETER
	PIPE SENSOR WELL (THERMOMETER)
	PRESSURE GAUGE AND COCK
	PRESSURE GAUGE WITH LOOP
	TEMPERATURE-PRESSURE TEST FITTING
	CENTER LINE
	HEAT TRACED PIPING
	PIPE SLEEVE
	BEAM PENETRATION
	PIPE GUIDE
	PIPE CAP
	PIPE BLIND FLANGE

DUCTWORK LEGEND

16x6 8x6 16x6 8x6	DUCT SPLIT WITH SPLIT SIZE
	RADIUS ELBOW
	ELBOW WITH TURNING VANES
	RECTANGULAR BRANCH TAKEOFF WITH BALANCING DAMPER
	RECTANGULAR SUPPLY DUCT UP
	RECTANGULAR SUPPLY DUCT DOWN
	RECTANGULAR RETURN OR EXHAUST DUCT UP
	RECTANGULAR RETURN OR EXHAUST DUCT DOWN
	ROUND DUCT, UP
	ROUND DUCT, DOWN
	BEAM PENETRATION
R	SLOPING RISE IN DUCTWORK
D	SLOPING DROP IN DUCTWORK
18x12 18x12	DUCT SIZE (CLEAR INSIDE DIMENSION) FIRST FIGURE INDICATES PLAN SIZE
18ϕ 18ϕ	ROUND DUCT DIAMETER SIZE (CLEAR INSIDE DIMENSION)
18ϕ 18ϕ	OVAL DUCT SIZE
	SIDE, TOP OR BOTTOM DUCT ACCESS DOOR
	DUCT LINING (DUCT SIZE NOTED INDICATES INSIDE DIMENSIONS)
	RECTANGULAR OR SQUARE TO ROUND OR OVAL TRANSITION
	FLEXIBLE CONNECTION

DUCTWORK LEGEND (CONTINUED)

	DUCT END/CAP
	FLEXIBLE DUCT
	DUCT COIL WITH ACCESS DOOR
	VOLUME DAMPER IN DUCT
	AUTOMATIC CONTROL DAMPER
	FUSIBLE LINK FIRE DAMPER WITH DUCT ACCESS DOOR
	SMOKE DAMPER WITH DUCT ACCESS DOOR
	COMBINATION FIRE AND SMOKE DAMPER WITH DUCT ACCESS DOOR
	BACK DRAFT DAMPER WITH DUCT ACCESS DOOR
	LINEAR DIFFUSER
	LINEAR DIFFUSER WITH PLENUM
	CEILING DIFFUSER — 1-WAY BLOW, 2-WAY BLOW, 3-WAY BLOW, 4-WAY BLOW
	CEILING DIFFUSER WITH FLEXIBLE DUCT CONNECTION
	RETURN/EXHAUST REGISTER OR GRILLE
	RETURN/EXHAUST REGISTER OR GRILLE WITH FLEXIBLE DUCT CONNECTION
	FIRE RATED ENCASED DUCT
	TRANSFER GRILLES ON BOTH SIDES OF PARTITION OR WALL (SIZE)
WO-SIZE	WALL OPENING ABOVE HUNG CEILING (SIZE)
SR-A 12x8 (200) SR-A 12x8 (200)	SUPPLY REGISTER WITH AIR OUTLET DEVICE DESIGNATION
ER-C 12x6 (200) ER-C 12x8 (200)	RETURN OR EXHAUST REGISTER OR GRILLE WITH AIR INLET DEVICE DESIGNATION
ACCESS AREA	TERMINAL UNIT WITH/WITHOUT HEATING COIL
ACCESS AREA	FAN POWERED TERMINAL UNIT WITH/WITHOUT HEATING COIL
ACCESS AREA ACCESS AREA	UNDERFLOOR FAN TERMINAL UNIT WITH/WITHOUT HEATING COIL
	DOUBLE-SIDED AIR LIGHT FIXTURE TROFFER
	SINGLED-SIDED AIR LIGHT FIXTURE TROFFER

MISCELLANEOUS

3-24	TERMINAL DESIGNATION — 3-24: THE NUMBER ON THE FLOOR; FLOOR OR LEVEL
FSD-1-1	FIRE, SMOKE & FIRE SMOKE DAMPER DESIGNATION — 1-1: THE NUMBER ON THE FLOOR; FLOOR OR LEVEL
CD-1.12x12 (550)	AIR OUTLET/INLET DEVICE DESIGNATION — CD-1.12x12 (550): TYPE; NECK OR FACE SIZE; CFM
LD-A.48x1.8ø (300)	LINEAR DIFFUSER DEVICE DESIGNATION — LD-A.48x1.8ø (300): TYPE; LENGTH & SLOT SIZE; PLENUM INLET SIZE; CFM
	KEYNOTE
1	DRAWING REVISION DESIGNATION WITH NUMBERS

MISCELLANEOUS

P/T	DIFFERENTIAL PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE SENSOR
DP	DIFFERENTIAL PRESSURE SWITCH
	NEW WORK
	EXISTING WORK
	EXISTING WORK TO BE REMOVED
	POINT OF NEW CONNECTION TO EXISTING WORK
	OVAL
ø	DIAMETER
U	UNDERCUT DOOR
HW 1	RISER DESIGNATION — RISER SERVICE; RISER NUMBER
2 M3.1	SECTION DESIGNATION — SECTION NUMBER; DRAWING NUMBER
1 M2.1	DETAIL DESIGNATION — DETAIL NUMBER; DRAWING NUMBER
CT 1-1	EQUIPMENT DESIGNATION — EQUIPMENT TYPE; EQUIPMENT FLOOR AND NUMBER

MECHANICAL SHEET LIST

SHEET NUMBER	SHEET NAME
M0.01	MECHANICAL LEGENDS AND ABBREVIATIONS
M0.02	MECHANICAL GENERAL NOTES AND VENTILATION CALCULATION
M0.03	MECHANICAL SCHEDULES
M0.04	MECHANICAL SCHEDULES
M0.05	MECHANICAL SCHEDULES
M0.06	MECHANICAL SCHEDULES
M0.07	MECHANICAL SCHEDULES
M0.08	HVAC LOAD CALCULATION
M0.09	HVAC LOAD CALCULATION
M0.10	HVAC LOAD CALCULATION
M0.11	HVAC LOAD CALCULATION
M0.12	HVAC LOAD CALCULATION
M0.13	HVAC LOAD CALCULATION
M0.14	HVAC LOAD CALCULATION
M0.15	ENERGY CODE COMPLIANCE REPORT
M1.00	MECHANICAL SITE PLAN - SNOW MELT
M2.2A.01	TOWER A - LVL B MECHANICAL DUCT PLAN
M2.2A.02	TOWER A - LVL P2 MECHANICAL DUCT PLAN
M2.2A.11	TOWER A - LVL 1 MECHANICAL DUCT PLAN
M2.2A.12	TOWER A - LVL 2 MECHANICAL DUCT PLAN
M2.2A.13	TOWER A - LVL 3 MECHANICAL DUCT PLAN
M2.2A.14	TOWER A - LVL 4 MECHANICAL DUCT PLAN
M2.2A.15	TOWER A - LVL 5 MECHANICAL DUCT PLAN
M2.2A.16	TOWER A - LVL 6 MECHANICAL DUCT PLAN
M2.2A.R	TOWER A - ROOF MECHANICAL DUCT PLAN
M2.2AB.11	MECHANICAL PLANS TOWER AB LOBBY
M2.2B.01	TOWER B - LVL B MECHANICAL DUCT PLAN
M2.2B.02	TOWER B - LVL P2 MECHANICAL DUCT PLAN
M2.2B.03	TOWER B - LVL P1 MECHANICAL DUCT PLAN
M2.2B.11	TOWER B - LVL 1 MECHANICAL DUCT PLAN
M2.2B.12	TOWER B - LVL 2 MECHANICAL DUCT PLAN
M2.2B.13	TOWER B - LVL 3 MECHANICAL DUCT PLAN
M2.2B.14	TOWER B - LVL 4 MECHANICAL DUCT PLAN
M2.2B.15	TOWER B - LVL 5 MECHANICAL DUCT PLAN
M2.2B.16	TOWER B - LVL 6 MECHANICAL DUCT PLAN
M2.2B.17	TOWER B - LVL 7 MECHANICAL DUCT PLAN
M2.2B.R	TOWER B - ROOF MECHANICAL DUCT PLAN
M2.2C.01	TOWER C - LVL P1 MECHANICAL DUCT PLAN
M2.2C.11	TOWER C - LVL 1 MECHANICAL DUCT PLAN
M2.2C.12	TOWER C - LVL 2 MECHANICAL DUCT PLAN
M2.2C.13	TOWER C - LVL 3 MECHANICAL DUCT PLAN
M2.2C.14	TOWER C - LVL 4 MECHANICAL DUCT PLAN
M2.2C.15	TOWER C - LVL 5 MECHANICAL DUCT PLAN
M2.2C.16	TOWER C - LVL 6 MECHANICAL DUCT PLAN
M2.2C.17	TOWER C - LVL 7 MECHANICAL DUCT PLAN
M2.2C.18	TOWER C - LVL 8 MECHANICAL DUCT PLAN
M2.2C.R	TOWER C - ROOF MECHANICAL DUCT PLAN
M2.3BC.11	TOWER BC CONNECTOR - LVL 1 MECHANICAL PLAN
M2.4.A	ENLARGED MECHANICAL PLAN - UNIT A
M2.4.B	ENLARGED MECHANICAL PLAN - UNIT B
M2.4.C	ENLARGED MECHANICAL PLAN - UNIT C
M2.4.D	ENLARGED MECHANICAL PLAN - UNIT D
M2.4.E	ENLARGED MECHANICAL PLAN - UNIT E
M2.4.F	ENLARGED MECHANICAL PLAN - UNIT F
M2.4.G	ENLARGED MECHANICALPLAN - UNIT G
M2.4.H	ENLARGED MECHANICAL PLAN - UNIT H
M2.4.I	ENLARGED MECHANICAL PLAN - UNIT I
M2.4.J	ENLARGED MECHANICAL PLAN - UNIT J
M2.4.K	ENLARGED MECHANICAL PLAN - UNIT K
M2.4.L	ENLARGED MECHANICAL PLAN - UNIT L
M2.4.M	ENLARGED MECHANICAL PLAN - UNIT M
M2.4.N	ENLARGED MECHANICAL PLAN - UNIT N
M2.4.O	ENLARGED MECHANICAL PLAN - UNIT O
M2.4.P	ENLARGED MECHANICAL DUCT PLAN - UNIT P
M2.4.Q	ENLARGED MECHANICAL DUCT PLAN - UNIT Q
M2.4.R	ENLARGED MECHANICAL PLAN - UNIT R
M3.2A.01	TOWER A - LVL B MECHANICAL PIPING PLAN
M3.2A.02	TOWER A - LVL P2 MECHANICAL PIPING PLAN
M3.2A.11	TOWER A - LVL 1 MECHANICAL PIPING PLAN
M3.2A.12	TOWER A - LVL 2 MECHANICAL PIPING PLAN
M3.2A.13	TOWER A - LVL 3 MECHANICAL PIPING PLAN
M3.2A.14	TOWER A - LVL 4 MECHANICAL PIPING PLAN
M3.2A.15	TOWER A - LVL 5 MECHANICAL PIPING PLAN
M3.2A.16	TOWER A - LVL 6 MECHANICAL PIPING PLAN
M3.2A.R	TOWER A - ROOF MECHANICAL PIPING PLAN
M3.2B.01	TOWER B - LVL B MECHANICAL PIPING PLAN
M3.2B.02	TOWER B - LVL P2 MECHANICAL PIPING PLAN
M3.2B.03	TOWER B - LVL P1 MECHANICAL PIPING PLAN
M3.2B.11	TOWER B - LVL 1 MECHANICAL PIPING PLAN
M3.2B.12	TOWER B - LVL 2 MECHANICAL PIPING PLAN
M3.2B.13	TOWER B - LVL 3 MECHANICAL PIPING PLAN
M3.2B.14	TOWER B - LVL 4 MECHANICAL PIPING PLAN
M3.2B.15	TOWER B - LVL 5 MECHANICAL PIPING PLAN
M3.2B.16	TOWER B - LVL 6 MECHANICAL PIPING PLAN
M3.2B.17	TOWER B - LVL 7 MECHANICAL PIPING PLAN
M3.2B.R	TOWER B - ROOF MECHANICAL PIPING PLAN
M3.2C.01	TOWER C - LVL P1 MECHANICAL PIPING PLAN
M3.2C.11	TOWER C - LVL 1 MECHANICAL PIPING PLAN
M3.2C.12	TOWER C - LVL 2 MECHANICAL PIPING PLAN
M3.2C.13	TOWER C - LVL 3 MECHANICAL PIPING PLAN
M3.2C.14	TOWER C - LVL 4 MECHANICAL PIPING PLAN
M3.2C.15	TOWER C - LVL 5 MECHANICAL PIPING PLAN
M3.2C.16	TOWER C - LVL 6 MECHANICAL PIPING PLAN
M3.2C.17	TOWER C - LVL 7 MECHANICAL PIPING PLAN
M3.2C.18	TOWER C - LVL 8 MECHANICAL PIPING PLAN
M3.2C.R	TOWER C - ROOF MECHANICAL PIPING PLAN
M4.01	MECHANICAL ENLARGED PLANS
M4.02	MECHANICAL ENLARGED PLANS
M4.03	MECHANICAL SECTIONS
M4.04	MECHANICAL SECTIONS
M5.01	MECHANICAL DETAILS
M5.02	MECHANICAL DETAILS
M5.03	MECHANICAL DETAILS
M5.04	MECHANICAL DETAILS
M5.05	MECHANICAL DETAILS
M5.06	MECHANICAL CONTROL DIAGRAM
M5.07	MECHANICAL CONTROL DIAGRAM
M5.08	MECHANICAL CONTROL DIAGRAM
M5.09	MECHANICAL CONTROL DIAGRAM
M5.10	MECHANICAL CONTROL DIAGRAM
M5.11	MECHANICAL CONTROL DIAGRAM
M6.01A	MECHANICAL AIR RISER DIAGRAM - TOWER A
M6.01B	MECHANICAL AIR RISER DIAGRAM - TOWER B
M6.01C	MECHANICAL AIR RISER DIAGRAM - TOWER C
M6.02A	MECHANICAL HYDRONIC RISER DIAGRAM - TOWER A
M6.02B	MECHANICAL HYDRONIC RISER DIAGRAM - TOWER B
M6.02C	MECHANICAL HYDRONIC RISER DIAGRAM - TOWER C

Reserved for permit stamp

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MECHANICAL LEGENDS AND ABBREVIATIONS

M0.01

CONTROLS LEGEND

Symbol	Description
B / B	TOTALIZING BTU METER
E	EMERGENCY BREAK GLASS SWITCH FOR EQUIPMENT SHUT-DOWN
F / F	FLOW MEASURING STATION
	FLOW SWITCH
CM#	CARBON MONOXIDE SENSOR WITH ZONE DESIGNATION
CD#	CARBON DIOXIDE SENSOR WITH ZONE DESIGNATION
T#	TEMPERATURE SENSOR/THERMOSTAT WITH ZONE OR EQUIPMENT DESIGNATION
H#	HUMIDISTAT/HUMIDITY SENSOR WITH HUMIDIFIER DESIGNATION
TH#	COMBINATION TEMPERATURE/HUMIDITY SENSOR
S	DUCT SMOKE DETECTOR SUPPLIED BY ELECTRICAL TRADE, INSTALLED BY MECHANICAL TRADE
P#	STATIC PRESSURE SENSOR WITH DESIGNATION
R#	REFRIGERANT SENSOR WITH DESIGNATION
XX	DDC DEVICE
XX	LOCAL CONTROL DEVICE WITH DDC MONITORING
XX	PACKAGED UNIT CONTROLLED DEVICE
2P	TWO POSITION ACTUATOR
A	SUMMARY ALARM
AI	ANALOG INPUT
AMP	AMPERAGE TRANSMITTER
AMS	AIR FLOW MEASURING STATION
AO	ANALOG OUTPUT
AUX	AUXILARY INSTRUMENT OR CONTACT
C	CARBON DIOXIDE SENSOR/TRANSMITTER
CND	CONDUCTIVITY SENSOR
CR	CONTROL RELAY
CSR	CURRENT SENSING RELAY
CT	CURRENT SENSOR/TRANSMITTER
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER
ENB	ENABLE/DISABLE
ES	DAMPER END SWITCH
FPT	FREEZE PROTECTION THERMOSTAT
FS	FLOW SWITCH
FT	FLOW SENSOR/TRANSMITTER
H	ZONE HUMIDITY SENSOR/TRANSMITTER
HS	HUMIDITY SWITCH/HUMIDISTAT
HYD	ZONE HYDROGEN SENSOR/TRANSMITTER
KWH	POWER (KWH)
HT	HUMIDITY SENSOR/TRANSMITTER (DUCT)
LS	LEVEL SWITCH
LT	LEVEL SENSOR/TRANSMITTER
MOD	MODULATING ACTUATOR
OS	OCCUPANCY SENSOR/SWITCH
OR	OCCUPANT OVERRIDE
PM	PULSE METER OR INITIATOR
PS	PRESSURE SWITCH
PT	PRESSURE SENSOR/TRANSMITTER
RPM	REVOLUTIONS PER MINUTE TRANSMITTER
RRV	REFRIGERANT REVERSING VALVE
SD	SMOKE DETECTOR
S	SPEED COMMAND
SR	SET POINT RESET
SS	START/STOP
SW	SWITCH
T	ZONE TEMPERATURE SENSOR/TRANSMITTER
TH	ZONE TEMPERATURE/HUMIDITY SENSOR/TRANSMITTER
TT	TEMPERATURE SENSOR/TRANSMITTER (PIPE OR DUCT)
TS	TEMPERATURE SWITCH/THERMOSTAT

GENERAL NOTES:

1. THE FOLLOWING NOTES APPLY TO ALL MECHANICAL DRAWINGS. ADDITIONAL NOTES MAY BE INDICATED ON INDIVIDUAL DRAWINGS.

2. DRAWINGS INDICATE CONNECTIONS FOR EQUIPMENT TO BE FURNISHED BY THE OWNER OR AS THE WORK OF THE TRADES. VERIFY LOCATION OF EQUIPMENT, ROUGH-IN LOCATIONS, AND TYPE OF CONNECTIONS PRIOR TO PREPARATION OF SHOP DRAWINGS SUBMITTALS , AND PRIOR TO INSTALLATION OF SERVICE CONNECTIONS. DO NOT INTERFERE WITH ACCESS FOR MAINTENANCE AND REMOVAL OR REPLACEMENT OF EQUIPMENT.

3. COORDINATE THE PHASING AND INSTALLATION OF NEW WORK WITH THE WORK OF ALL OTHER TRADES. BEAR THE EXPENSE FOR ANY ADDITIONAL WORK WHICH MAY BE CAUSED BY IMPROPER SEQUENCING OF CONSTRUCTION ACTIVITIES.

4. REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATIONS OF DEVICES IN FINISHED AREAS AND AT HEIGHTS INDICATED ON ARCHITECTURAL ELEVATIONS. LOCATE MECHANICAL DEVICES (E.G. TEMPERATURE SENSORS, PANELS AND SWITCHES), SO THAT THEY DO NOT CONFLICT WITH GENERAL CONSTRUCTION (E.G. WAINSCOT, DOOR HARDWARE), ELECTRICAL DEVICES (E.G. LIGHT SWITCHES, SPEAKERS, OUTLETS), AND THE WORK OF OTHER TRADES.

5. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR GENERAL CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, EQUIPMENT HOUSEKEEPING PADS, PENETRATION DETAILS, FLASHING AND SEALING DETAILS, AND OTHER ELEMENTS OF GENERAL CONTRACTOR. COORDINATE THE SIZE AND LOCATION OF EQUIPMENT HOUSEKEEPING PADS WITH APPROVED EQUIPMENT SO THAT HOUSEKEEPING PADS ARE NOMINALLY 4" HIGH UNLESS INDICATED OTHERWISE, AND EXTEND 6" MINIMUM IN ALL DIRECTIONS FROM THE HORIZONTAL LIMITS OF THE EQUIPMENT WHICH THY SUPPORT.

6. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF CEILING MOUNTED ITEMS, INSTALL CEILING MOUNTED ITEMS IN THE CENTER OF CEILING TILES, IN THE CENTER OF ROOMS, OR WHERE INDICATED ON ARCHITECTURAL DRAWINGS. WHERE LOCATION OF ITEMS ARE NOT INDICATED ON ARCHITECTURAL DRAWINGS, OBTAIN DIRECTIONS FROM ARCHITECT PRIOR TO ROUGH-IN AND INSTALLATION.

7. COORDINATE EQUIPMENT POWER CONNECTION AND ELECTRICAL CHARACTERISTICS WITH ELECTRICAL DRAWINGS AND CONNECTION REQUIREMENTS. COORDINATE VARIATION IN ELECTRICAL CHARACTERISTICS FROM SCHEDULE VALUES. CHANGES TO ELECTRICAL CHARACTERISTICS (E.G. VOLTAGE, AMPS, HORSEPOWER ETC.) SHALL BE SUBJECT TO APPROVAL. BEAR THE TOTAL EXPENSE FOR REQUIRED REVISIONS TO THE ELECTRICAL SCOPE OF WORK CAUSED BY VARIATION FROM THE SCHEDULED REQUIREMENTS.

8. EQUIPMENT SHORT CIRCUIT RATINGS (SCCR) SHALL BE NO LESS THAN THE INTERRUPTING RATING OF THE BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE SUPPLYING POWER TO THE EQUIPMENT. REFER TO SCHEDULES FOR BRANCH CIRCUIT OVERCURRENT DEVICE INTERRUPTING RATINGS.

9. COORDINATE THE LOCATION OF WORK TO PROVIDE CLEARANCES OVER LIGHTING FIXTURES AND OTHER CEILING MOUNTED DEVICES AS REQUIRED TO ALLOW FOR REMOVAL AND MAINTENANCE ACCESS.

10. DO NOT RESTRICT ACCESS TO ELECTRICAL CABLE TRAYS. AT A MINIMUM, ALLOW 18" CLEAR ON ONE SIDE OF CABLE TRAYS UP TO AN ELEVATION OF 6" ABOVE THE TOP OF THE CABLE TRAY. MAINTAIN 12" MINIMUM CLEARANCE OVER TOP OF CABLE TRAYS EXCEPT WHERE DUCT, PIPING, OR CONDUIT CROSS PERPENDICULAR TO CABLE TRAY, THIS CLEARANCE MAY BE REDUCED TO 6" OVER A DISTANCE OF NO MORE THAN 36" ALONG THE CABLE TRAY. PROVIDE NO LESS THAN 36" BETWEEN AREAS OF REDUCED CLEARANCE AND MAINTAIN INDICATED ACCESS ON THE SAME SIDE OF THE CABLE TRAY EXCEPT WHERE OTHERWISE APPROVED. DO NOT CONNECT OTHER TRADE ITEMS TO CABLE TRAY, CABLE TRAY SUPPORTS OR CABLE TRAY SEISMIC RESTRAINTS.

11. PROVIDE SUPPORT AND SEISMIC RESTRAINTS FOR PIPES, AND EQUIPMENT AS SPECIFIED, AS REQUIRED, AND AS SHOWN ON THE DRAWINGS. IF REQUIRED FOR INSTALLATION OF PIPES, DUCTS, AND EQUIPMENT, DESIGN AND PROVIDE ADDITIONAL STRUCTURAL MEMBERS BETWEEN COLUMN, JOISTS, AND STRUCTURAL FRAME TO MEET SUPPORT AND SEISMIC RESTRAINT REACTIONS (FORCES, MOMENTS, DEFLECTIONS). STRUCTURAL MEMBERS AND ANCHORAGES SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED. REFER TO STRUCTURAL DRAWINGS FOR DESIGN CRITERIA. SUBMIT STRUCTURAL MEMBER SHOP DRAWINGS AND CALCULATIONS FOR REVIEW. STRUCTURAL MEMBERS, BOLTS, AND WELDS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS SHOWN ON THE STRUCTURAL DRAWINGS AND INDICATED IN THE SPECIFICATIONS. NO WELDING, BOLTING, OR OTHER MEANS OF ATTACHMENTS TO THE STRUCTURAL MEMBERS SHALL BE MADE ON PORTIONS OF STRUCTURAL MEMBERS AT OR NEAR CONNECTIONS BETWEEN STRUCTURAL MEMBERS ON ANY ELEMENTS DESIGNATED IN THE SEISMIC LOAD RESISTING SYSTEMS UNLESS APPROVED BY THE STRUCTURAL ENGINEER. SUPPORTS ALL NOT INDUCE TORSIONAL LOAD INTO SUPPORTING STRUCTURAL FRAMING.

12. DO NOT CORE DRILL OR DRILL THROUGH BEAMS, COLUMNS OR SHEAR WALL UNLESS INDICATED ON STRUCTURAL DRAWINGS OR AS APPROVED BY THE STRUCTURAL ENGINEER.

13. PROVIDE PIPE SLEEVES AND PENETRATION SEALS AS REQUIRED FOR THE INSTALLATION OF PIPING SYSTEMS. REFER TO SPECIFICATIONS FOR REQUIREMENTS.

14. COORDINATE THE LAYOUT OF EQUIPMENT, DUCTWORK, PIPING, AND APPURTENANCE SO THAT IT FITS INTO THE SPACE ALLOTTED. PROVIDE SERVICE ACCESS AND CLEARANCE AS INDICATED ON DRAWINGS, AS REQUIRED BY CODES, AND AS RECOMMENDED BY THE MANUFACTURER FOR THE INSTALLATION, REMOVAL, ENTRY, SERVICING, AND MAINTENANCE OF EQUIPMENT. PRIOR TO INSTALLATION, COORDINATE LAYOUT OF EQUIPMENT, DUCTWORK, PIPING, AND APPURTENANCES WITH ALL OTHER TRADES TO AVOID BLOCKING SERVICE OR REPLACEMENT ACCESS FOR NEW AND EXISTING EQUIPMENT AND EQUIPMENT INSTALLED BY OTHERS.

15. DRAWINGS ARE DIAGRAMMATIC AND SHOW APPROXIMATE LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, AND APPURTENANCES. DRAWINGS DO NOT SHOW REQUIRED TRANSITIONS, OFFSETS, FITTING, AND DEVICES. REFER TO DETAILS, DIAGRAMS, AND SPECIFICATIONS FOR REQUIRED SYSTEM APPURTENANCES, CONTROL DEVICES, ETC. INSTALL DEVICES IN ACCORDANCE WITH DEVICE MANUFACTURER RECOMMENDATIONS. CAREFULLY INVESTIGATE ELEMENTS OF CONSTRUCTION THAT COULD AFFECT THE WORK TO BE PERFORMED AND ARRANGE NEW WORK ACCORDINGLY. PREPARE COORDINATION DRAWINGS FOR NEW WORK, WHICH ARE COORDINATED WITH THE APPROVED AND INSTALLED WORK OF OTHER TRADES. PROVIDE REQUIRED OFFSETS, FITTING, TRANSITIONS, SUPPORTS AND OTHER APPURTENANCES AS REQUIRED. BEAR THE TOTAL EXPENSE OF RE-WORK THAT IS CAUSED BY FAILURE TO COORDINATE.

16. PROVIDE MAXIMUM HEADROOM AND CLEARANCE BELOW DUCTWORK, PIPING AND EQUIPMENT AND ASSOCIATED SUPPORTS AND RESTRAINTS. UNLESS OTHERWISE INDICATED, INSTALL TIGHT TO STRUCTURAL SYSTEMS ABOVE. WHERE WALL MOUNTED, INSTALL AS CLOSE TO WALL AS POSSIBLE. PROVIDE ADDITIONAL FITTINGS AND OFFSETS AS REQUIRED.

17. REFER TO EQUIPMENT SCHEDULE FOR DESIGN CAPACITIES. SCHEDULED VALUES SHALL BE CONSIDERED DESIGN CAPACITIES. PROVIDE EQUIPMENT WHICH MEET OR EXCEEDS THE SCHEDULED VALUES. MARK THE CONTRACT DRAWING EQUIPMENT SCHEDULES TO INDICATE THE MANUFACTURER, MODEL AND CAPACITY OF THE ACTUAL APPROVED EQUIPMENT PROVIDED AND SUBMIT THIS INFORMATION WITH RECORD DRAWINGS AS PAR OF PROJECT CLOSEOUT.

18. TO ENHANCE THE CLARITY OF PLAN DRAWINGS, AND WHERE NOT NECESSARY TO DESCRIBE THE REQUIRED SIZE, INDIVIDUAL SEGMENTS OF DUCT AND PIPE BETWEEN CONNECTIONS MAY BE SHOWN WITHOUT A SIZE INDICATED. WHERE SIZE IS NOT SHOWN ON PLANS, THAT SEGMENT SHALL BE THE SAME SIZE AS THE NEXT UPSTREAM SEGMENT WITH A SIZE INDICATED.

19. WHERE NOT INDICATED ON PLANS, REFER TO EQUIPMENT SCHEDULES AND DETAILS FOR INLET AND OUT DUCT AND/ OR PIPE SIZE. WHERE INDICATED ON PLANS, PLAN SIZES SHALL TAKE PRECEDENCE.

20. DUCTWORK SERVING INDIVIDUAL DIFFUSERS AND GRILLES IS GENERALLY NOT SIZED. WHERE NOT INDICATED ON PLAN DRAWINGS, REFER TO SCHEDULES AND DETAILS FOR NECK AND BRANCH DUCT SIZES BASED ON INDICATED AIRFLOW RATE ON NECK SIZE.

21. INSTALL DRAINS AT ALL LOW POINTS IN PIPING, INCLUDING ANY TRAPPED PORTIONS OF PIPING. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN CLOSED LOOP (MECHANICAL) PIPING SYSTEM. IN GENERAL, THESE DEVICES ARE NOT INDICATED ON DRAWINGS. WHERE AUTOMATIC AIR VENTS ARE INDICATED ON DRAWINGS, EXTEND AUTOMATIC AIR VENT (AAV) DISCHARGE TO NEAREST FLOOR DRAIN USING INDIRECT DRAIN PIPING OF SAME SIZE AS AAV DISCHARGE. INDICATED THE ACTUAL LOCATION ON FIELD-LOCATION DRAINS, VENTS AND DRAIN PIPING ON THE RECORD DRAWINGS.

22. PROVIDE A MANUAL VOLUME DAMPER FOR:
(1) EACH SUPPLY, RETURN, AND EXHAUST OPENING
(2) IN ALL BRANCH DUCTS WHERE THREE OR MORE OPENING ARE ASSOCIATED WITH BRANCH, AND ELSEWHERE AS NOTED ON DRAWINGS OR IN SPECIFICATIONS LOCATE VOLUME DAMPERS AS FAR AS POSSIBLE FROM OPENINGS. FOR THE PURPOSE OF THIS REQUIREMENT , TERMINAL UNIT PRIMARY AIR DAMPERS ARE CONSIDERED A VOLUME DAMPERS. VOLUME DAMPERS ARE NOT REQUIRED FOR CEILING RETURN GRILLES THAT TRANSFER AIR TO A RETURN AIR PLENUM UNLESS OTHERWISE NOTED.

23. PROVIDE CONICAL TAPS FOR 90 DEGREE ROUND DUCT BRANCHES FROM RECTANGULAR SUPPLY DUCTWORK. DO NOT USE STRAIGHT TEE FITTINGS UNLESS SPECIFICALLY INDICATED ON DRAWINGS.

24. DUCTWORK STATIC PRESSURE AND SEAL CLASS, BASED ON SMACNA HDCS:

DUCT SYSTEM	STATIC PRESSURE	SEAL CLASS
A. SUPPLY DUCTWORK UPSTREAM OF AIR HANDLING UNITS	PLUS 4	A
B. RETURN DUCTWORK UPSTREAM OF AIR HANDLING UNITS	MINUS 4	A
C. UPSTREAM OF AIR TERMINAL UNITS AND FAN COIL UNITS	PLUS 4	A
D. DONWISTREAM OF AIR TERMINAL UNITS AND FAN COIL UNITS	PLUS 2	B
E. UPSTREAM OF EXHAUST FANS	PLUS 2	B
F. DOWNSTREAM OF EXHAUST FANS	MINUS 2	B
G. OUTSIDE AIR INTAKE DUCTWORK	MINUS 4	A
H. TRANSFER DUCTWORK	MINUS 2	B
I. SUPPLY DUCTWORK UPSTREAM OF HEAT PUMP UNIT	PLUS 4	A
J. RETURN DUCTWORK UPSTREAM OF HEAT PUMP UNIT	MINUS 4	A

25. PROVIDE DUCT LINING FOR DUCTWORK AND PLENUMS AS SPECIFIED, WHERE INDICATED ON DRAWINGS AND AS INDICATED BELOW. DUCT SIZES INDICATED ON DRAWINGS ARE NET INSIDE DIMENSIONS REPRESENTING THE MINIMUM DUCT FREE AREA. THICKNESS OF DUCT LINING SHALL BE AS SPECIFIED UNLESS A GREATER THICKNESS IS INDICATED ON DRAWINGS. FOR CLARITY, DUCT LINING MAY NOT BE SHOWN IN ALL REQUIRED LOCATIONS ON DRAWINGS. PROVIDE DUCT LINING FOR THE FOLLOWING:
A. RECTANGULAR SUPPLY AIR DUCTWORK FROM TERMINAL UNITS TO SUPPLY GRILLES/DIFFUSER, AND AS INDICATED ON DRAWINGS.
B. MIXED AIR AND EXHAUST AIR PLENUMS.
C. PLENUMS UPSTREAM OF RETURN/EXHAUST FANS.
D. TOILET EXHAUST DUCTWORK FROM EACH EXHAUST GRILLE TO A POINT 10' DOWNSTREAM OF GRILLE.
E. ROUND SUPPLY AIR DUCTWORK.
F. ROUND RETURN AIR DUCTWORK.
G. ALL AIR TRANSFER DUCTS.

26. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTAL ITEMS. DO NOT INSTALL DEFERRED SUBMITTAL ITEMS UNTIL THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN SUBMITTED AND APPROVED BY THE BUILDING OFFICIAL. MECHANICAL WORK SHOWN WITHIN THESE DOCUMENTS RELATED TO THE DEFERRED SUBMITTAL ARE FOR INFORMATION ONLY UNTIL APPROVED.

A) SEISMIC RESTRAINTS
B) OXYGEN SYSTEMS

Building: Bldg A
System Tag/Name: AHU-A-B1-1
Operating Condition Description: heating
Units (select from pull-down list) IP

Inputs for System	Name	Units	System (w/o diversity)	Diversity	System (w/ diversity)		Check Figures
Floor area served by system	As	sf	11,279				
Population of area served by system	Ps	P	109	D 100%	109		9.7 P/1000 sf
Design primary supply fan airflow rate	Vpsd	cfm	2,240		2,240	Default entry has been overridden.	0.20 cfm/sf
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf	0.07				0.07 ave cfm/sf
OA req'd per person for system area (Weighted average)	Rps	cfm/p	7.2				7.25 ave cfm/p
Percent increase in Vbz over minimum required			0%				

Inputs for Potentially Critical zones (Zone title turns purple italic for critical zone(s)) — Potentially Critical Zones

	Name	Units	FPT A-B1-01	FPT A-B1-02	*FPT A-B1-03*	FPT A-B1-04	FPT A-B1-05	Totals/averages
Zone Tag			game lounge and arcade	maintenance and dry storage	bowling lounge sitting	bowling lane	employee break and toilets	
Occupancy Category		Select from pull-down list:	Break rooms (General)	Occupiable storage rooms for dry materials	Bowling alley (seating)	Corridors	Break rooms (General)	
Floor Area of zone	Az	sf	2,599	1,681	2,264	2,916	1,819	11,279 total sf
Design population of zone	Pz	P (default value listed; may be overridden)	46	8	49	0	6	109 total P
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	1,610	735	1,430	1,085	610	5,470 total cfm
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A:	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Terminal Unit	
Frac. of local recirc. air that is representative of system RA	Er		0.70	0.70	0.30	0.70	0.70	0.62 average
Inputs for Operating Condition Analyzed								
Percent of total design airflow rate at conditioned analyzed	Ds	% (May need to manually edit Ds: 99%)	100%	100%	100%	100%	100%	100% average
Air distribution type at conditioned analyzed		Select from pull-down list:	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	
Zone air distribution effectiveness at conditioned analyzed	Ez		0.80	0.80	0.80	0.80	0.80	0.80 average
Primary air fraction of supply air at conditioned analyzed	Ep		0.30	0.30	0.70	0.30	0.30	0.38 average

Results	Name	Units	Value
System Ventilation Efficiency	Ev		0.83
Outdoor air intake required for system	Vot	cfm	1921
Outdoor air per unit floor area	Vot/As	cfm/sf	0.17
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	17.6
Outdoor air as a % of design primary supply air	Ypd	%	86%

Building: bldg A
System Tag/Name: AHU-A-1-1 restaurant
Operating Condition Description: heating
Units (select from pull-down list) IP

Inputs for System	Name	Units	System (w/o diversity)	Diversity	System (w/ diversity)		Check Figures
Floor area served by system	As	sf	3438				
Population of area served by system	Ps	P	70	D 100%	70		20.4 P/1000 sf
Design primary supply fan airflow rate	Vpsd	cfm	1,783		1,783	Default entry has been overridden.	0.52 cfm/sf
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf	0.17				0.17 ave cfm/sf
OA req'd per person for system area (Weighted average)	Rps	cfm/p	7.5				7.50 ave cfm/p
Percent increase in Vbz over minimum required			0%				

Inputs for Potentially Critical zones (Zone title turns purple italic for critical zone(s)) — Potentially Critical Zones

	Name	Units	FPT A-1-K-1	FPT A-1-K-2	*FPT A-1-K-3*	FPT A-1-K-4	FPT A-1-K-5	Totals/averages
Zone Tag			kitchen	kitchen	restaurant - interior	restaurant - west	restaurant - south	
Occupancy Category		Select from pull-down list:	Kitchen (cooking)	Kitchen (cooking)	Restaurant dining rooms	Restaurant dining rooms	Restaurant dining rooms	
Floor Area of zone	Az	sf	408	408	1,649	441	532	3,438 total sf
Design population of zone	Pz	P (default value listed; may be overridden)	2	2	48	6	12	70 total P
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	910	910	1,315	835	995	4,965 total cfm
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A:	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Terminal Unit	
Frac. of local recirc. air that is representative of system RA	Er		0.90	0.90	0.20	0.70	0.70	0.68 average
Inputs for Operating Condition Analyzed								
Percent of total design airflow rate at conditioned analyzed	Ds	% (May need to manually edit Ds: 100%)	100%	100%	100%	100%	100%	100% average
Air distribution type at conditioned analyzed		Select from pull-down list:	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	
Zone air distribution effectiveness at conditioned analyzed	Ez		0.80	0.80	0.80	0.80	0.80	0.80 average
Primary air fraction of supply air at conditioned analyzed	Ep		0.10	0.10	0.80	0.30	0.30	0.32 average

Results	Name	Units	Value
System Ventilation Efficiency	Ev		0.87
Outdoor air intake required for system	Vot	cfm	1265
Outdoor air per unit floor area	Vot/As	cfm/sf	0.37
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	18.1
Outdoor air as a % of design primary supply air	Ypd	%	71%

Building: bldg B
System Tag/Name: AHU-A-1-2
Operating Condition Description: heating
Units (select from pull-down list) IP

Inputs for System	Name	Units	System (w/o diversity)	Diversity	System (w/ diversity)		Check Figures
Floor area served by system	As	sf	10,645				
Population of area served by system	Ps	P	83	D 100%	83		7.8 P/1000 sf
Design primary supply fan airflow rate	Vpsd	cfm	4,220		4,220	Default entry has been overridden.	0.40 cfm/sf
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf	0.08				0.08 ave cfm/sf
OA req'd per person for system area (Weighted average)	Rps	cfm/p	10.4				10.42 ave cfm/p
Percent increase in Vbz over minimum required			0%				

Inputs for Potentially Critical zones (Zone title turns purple italic for critical zone(s)) — Potentially Critical Zones

	Name	Units	FPT A-1-05	FPT A-1-06	FPT A-1-07	*FPT A-1-08*	FPT A-1-09	FPT A-1-01	FPT A-1-02	FPT A-1-03	FPT A-1-04	FPT-A-1-10	FPT-A-1-11	FPT-A-1-12	FPT-A-1-13	FPT-A-1-14	Totals/averages
Zone Tag			private dining	fitness	strength training	yoga	treatment - double	spa lounge	treatment single	locker room and corridor	locker room	entry lobby NE	lobby vest	entry lobby SW	elev lobb and package	corridor	
Occupancy Category		Select from pull-down list:	Restaurant dining rooms	Gym, sports arena (play area)	Gym, sports arena (play area)	Gym, sports arena (play area)	Break rooms (General)	Break rooms (General)	Break rooms (General)	Corridors	Corridors	Lobbies	Corridors	Lobbies	Lobbies	Corridors	
Floor Area of zone	Az	sf	314	637	324	688	513	637	185	2,809	1,069	1,396	280	688	894	211	10,645 total sf
Design population of zone	Pz	P (default value listed; may be overridden)	12	10	6	12	4	12	2	0	0	10	0	11	4	0	83 total P
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	995	1,675	865	775	260	585	125	810	530	1,120	740	1,692	760	815	11,747 total cfm
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A:	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Terminal Unit	
Frac. of local recirc. air that is representative of system RA	Er		0.70	0.70	0.70	0.25	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.67 average
Inputs for Operating Condition Analyzed																	
Percent of total design airflow rate at conditioned analyzed	Ds	% (May need to manually edit Ds: 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100% average
Air distribution type at conditioned analyzed		Select from pull-down list:	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	
Zone air distribution effectiveness at conditioned analyzed	Ez		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80 average
Primary air fraction of supply air at conditioned analyzed	Ep		0.30	0.30	0.30	0.75	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	1.00	1.00	0.43 average

Results	Name	Units	Value
System Ventilation Efficiency	Ev		0.69
Outdoor air intake required for system	Vot	cfm	2538
Outdoor air per unit floor area	Vot/As	cfm/sf	0.24
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	30.6
Outdoor air as a % of design primary supply air	Ypd	%	60%

Building:
System Tag/Name: AHU-B-1-1
Operating Condition Description: heating
Units (select from pull-down list) IP

Inputs for System	Name	Units	System (w/o diversity)	Diversity	System (w/ diversity)		Check Figures
Floor area served by system	As	sf	11,667				
Population of area served by system	Ps	P	108	D 100%	108		9.3 P/1000 sf
Design primary supply fan airflow rate	Vpsd	cfm	4,220		4,220	Default entry has been overridden.	0.36 cfm/sf
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf	0.06				0.06 ave cfm/sf
OA req'd per person for system area (Weighted average)	Rps	cfm/p	5.0				5.02 ave cfm/p
Percent increase in Vbz over minimum required			0%				

Inputs for Potentially Critical zones (Zone title turns purple italic for critical zone(s)) — Potentially Critical Zones

	Name	Units	FPT B-1-01	FPT B-1-02	FPT B-1-03	FPT B-1-04	FPT B-1-05	FPT B-1-06	FPT B-1-07	FPT B-1-08	FPT B-1-09	FPT B-1-10	*FPT B-1-11*	FPT B-1-12	FPT B-1-13	Totals/averages
Zone Tag			guest business center	offices	kitchen	SKI LOUNGE B108 W	SKI LOUNGE B108 NW	SKI LOUNGE B106 B107	ski lounge interior	kids room	ski valet BOH	ski valet	ski lockers	SKI LOUNGE B107 E	BC CONNECTOR	
Occupancy Category		Select from pull-down list:	Conference/meeting	Office space	Kitchen (cooking)	Break rooms (General)	Break rooms (General)	Break rooms (General)	Break rooms (General)	Dayroom	Office space	Office space	Corridors	Break rooms (General)	Corridors	
Floor Area of zone	Az	sf	518	1,021	253	536	808	2,778	958	430	495	1,482	1,392	529	467	11,667 total sf
Design population of zone	Pz	P (default value listed; may be overridden)	14	5	1	2	7	19	22	17	2	7	0	12	0	108 total P
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	1,300	1,095	540	1,015	1,700	1,080	645	520	600	1,410	370	1,310	1,290	12,875 total cfm
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A:	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Terminal Unit	
Frac. of local recirc. air that is representative of system RA	Er		0.70	0.70	0.70	0.70	0.70	0.30	0.30	0.70	0.70	0.70	0.70	0.70	0.70	0.64 average
Inputs for Operating Condition Analyzed																
Percent of total design airflow rate at conditioned analyzed	Ds	% (May need to manually edit Ds: 100%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100% average
Air distribution type at conditioned analyzed		Select from pull-down list:	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	
Zone air distribution effectiveness at conditioned analyzed	Ez		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80 average
Primary air fraction of supply air at conditioned analyzed	Ep		0.30	0.30	0.30	0.30	0.30	0.70	0.70	0.30	0.30	0.30	0.30	0.30	1.00	0.42 average

Results	Name	Units	Value
System Ventilation Efficiency	Ev		0.77
Outdoor air intake required for system	Vot	cfm	1631
Outdoor air per unit floor area	Vot/As	cfm/sf	0.14
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	15.1
Outdoor air as a % of design primary supply air	Ypd	%	39%

Building: bldg B
System Tag/Name: AHU-B-B-1
Operating Condition Description: heating
Units (select from pull-down list) IP

Inputs for System	Name	Units	System (w/o diversity)	Diversity	System (w/ diversity)	Check Figures
Floor area served by system	As	sf	3043			
Population of area served by system	Ps	P	8	D 100%	8	2.6 P/1000 sf
Design primary supply fan airflow rate	Vpsd	cfm	1,500	100%	1,500	0.49 cfm/sf
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf	0.06			0.06 ave cfm/sf
OA req'd per person for system area (Weighted average)	Rps	cfm/p	20.0			20.00 ave cfm/p
Percent increase in Vbz over minimum required			0%			

Inputs for Potentially Critical zones (Zone title turns purple italic for critical zone(s)) — Potentially Critical Zones

	Name	Units	*ahu-b-b-1*	ahu-b-b-1	Totals/averages
Zone Tag			golf simulator	corridor	
Occupancy Category		Select from pull-down list:	Health club/weight rooms	corridors	
Floor Area of zone	Az	sf	3,043	0	3,043 total sf
Design population of zone	Pz	P (default value listed; may be overridden)	8	0	8 total P
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	1,500	0	1,500 total cfm
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A:			
Frac. of local recirc. air that is representative of system RA	Er				1.00 average
Inputs for Operating Condition Analyzed					
Percent of total design airflow rate at conditioned analyzed	Ds	% (100%)	100%	100%	100% average
Air distribution type at conditioned analyzed		Select from pull-down list:	CSCRH	CSCRH	
Zone air distribution effectiveness at conditioned analyzed	Ez		0.80	0.80	0.80 average
Primary air fraction of supply air at conditioned analyzed	Ep		0.10	0.10	1.00 average

Results	Name	Units	Value
System Ventilation Efficiency	Ev		0.94
Outdoor air intake required for system	Vot	cfm	363
Outdoor air per unit floor area	Vot/As	cfm/sf	0.12
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	45.4
Outdoor air as a % of design primary supply air	Ypd	%	24%

Building: bldg C
System Tag/Name: AHU-C-1-1
Operating Condition Description: heating
Units (select from pull-down list) IP

Inputs for System	Name	Units	System (w/o diversity)	Diversity	System (w/ diversity)		Check Figures
Floor area served by system	As	sf	6,551				
Population of area served by system	Ps	P	49	D 100%	49		7.5 P/1000 sf
Design primary supply fan airflow rate	Vpsd	cfm	1,710		1,710	Default entry has been overridden.	0.26 cfm/sf
OA req'd per unit area for system (Weighted average)	Ras	cfm/sf	0.06				0.06 ave cfm/sf
OA req'd per person for system area (Weighted average)	Rps	cfm/p	7.4				7.45 ave cfm/p
Percent increase in Vbz over minimum required			0%				

Inputs for Potentially Critical zones (Zone title turns purple italic for critical zone(s)) — Potentially Critical Zones

	Name	Units	FPT C-1-01	FPT C-1-02	FPT C-1-03	*FPT C-1-04*	FPT C-1-05	FPT C-1-06	FPT C-1-07	Totals/averages
Zone Tag			Entry lobby perimeter	skier lounge	lounge - perimeter	golf simulation	golf simulation	lounge - interior	housekeeping and corridor	
Occupancy Category		Select from pull-down list:	Lobbies	Break rooms (General)	Break rooms (General)	Health club/weight rooms	Health club/weight rooms	Break rooms (General)	Office space	
Floor Area of zone	Az	sf	1,222	789	501	792	838	755	1,654	6,551 total sf
Design population of zone	Pz	P (default value listed; may be overridden)	6	10	14	4	4	10	1	49 total P
Design total supply to zone (primary plus local recirculated)	Vdzd	cfm	1,885	730	740	410	435	405	565	5,170 total cfm
Induction Terminal Unit, Dual Fan Dual Duct or Transfer Fan?		Select from pull-down list or leave blank if N/A:	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Termi	Induction Terminal Unit	
Frac. of local recirc. air that is representative of system RA	Er		0.70	0.70	0.70	0.55	0.55	0.70	0.70	0.66 average
Inputs for Operating Condition Analyzed										
Percent of total design airflow rate at conditioned analyzed	Ds	% (May need to manually edit Ds: 100%)	100%	100%	100%	100%	100%	100%	100%	100% average
Air distribution type at conditioned analyzed		Select from pull-down list:	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	CSCRH	
Zone air distribution effectiveness at conditioned analyzed	Ez		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80 average
Primary air fraction of supply air at conditioned analyzed	Ep		0.30	0.30	0.30	0.45	0.45	0.30	0.30	0.34 average

Results	Name	Units	Value
System Ventilation Efficiency	Ev		0.77
Outdoor air intake required for system	Vot	cfm	979
Outdoor air per unit floor area	Vot/As	cfm/sf	0.15
Outdoor air per person served by system (including diversity)	Vot/Ps	cfm/p	20.0
Outdoor air as a % of design primary supply air	Ypd	%	57%

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MECHANICAL GENERAL NOTES AND VENTILATION CALCULATION

M0.02