

**AUTOMATIC TEMPERATURE CONTROL NOTES:**

**GENERAL ATC NOTES:**

- A. OCCUPIED/UNOCCUPIED CONTROL SHALL BE DETERMINED BY THE ENERGY MANAGEMENT SYSTEM, EMS. EACH PIECE OF EQUIPMENT SHALL HAVE AN INDEPENDENT OCCUPIED/UNOCCUPIED MODE SCHEDULE.
- B. EMS SHALL PROVIDE TRENDS LOGS, DEMAND HISTORY AND EQUIPMENT RUN TIME FOR THE SYSTEMS SERVED THROUGH A WEB BASED INTERFACE.
- C. EMS SHALL PROVIDE A GRAPHICAL INTERFACE THAT INCLUDES SCHEMATICS OF THE EQUIPMENT AND FLOOR PLANS OF THE BUILDING. THE SCHEMATICS AND FLOOR PLANS SHALL INDICATE SYSTEM SETPOINTS AND MONITORING POINTS, WITH THE ABILITY TO ADJUST THE SETPOINTS DIRECTLY THROUGH THE WEB BASED INTERFACE.
- D. THE EMS SHALL HAVE THE ABILITY TO SEND TEXT MESSAGES AND EMAIL NOTIFICATIONS REGARDING ALARM CONDITIONS TO THE OWNER'S OFFICE THROUGH THE WEB BASED INTERFACE.
- E. WIRING ABOVE CEILINGS CONCEALED IN OPEN AREAS SHALL BE PLENUM RATED. WIRING IN MECHANICAL SPACES SHALL BE RUN IN EMT. WIRING RUN OUTSIDE OF THE BUILDING ENVELOPE SHALL BE RUN IN RIGID CONDUIT.
- F. PROVIDE FULL INTEGRATION FOR EACH PIECE OF EQUIPMENT (OAU, CT, ETC) WITH THE EMS. THE INDICATED CONTROL SEQUENCES ARE NOT BASED ON SIMPLY USING FACTORY FURNISHED UNITARY CONTROLS. ADDITIONAL PROGRAMMING AND SOFTWARE/HARDWARE, AS REQUIRED TO IMPLEMENT THE INDICATED SEQUENCES SHALL BE PROVIDED THROUGH THE EMS DURING CONSTRUCTION. ALLOW FOR 12 HOURS OF TIME TO MEET WITH THE BUILDING OWNER'S REPRESENTATIVES TO COORDINATE OPERATING SCHEDULES AND SYSTEM SET POINTS. IN ADDITION, PROVIDE ON SITE TRAINING TO THE OWNER'S REPRESENTATIVES FOR THE EMS SYSTEM. THE TRAINING SHALL INCLUDE PROVISIONS FOR THE OWNER'S REPRESENTATIVES TO MAKE CHANGES TO THE GRAPHICAL INTERFACES. THIS TRAINING SHALL BE REQUIRED FOR COMMISSIONING. TO THE TIME REQUIRED FOR COMMISSIONING.
- G. THE EMS CONTROL DEVICES SHALL BE CHECKED AND RECALIBRATED AS NECESSARY AT (2) THREE MONTH INTERVALS FROM THE DATE OF BUILDING TURN OVER.
- H. PROVIDE A FISHROOM OPPE. PUSH OFF. PULL ON SWITCH LOCATED AT THE MAIN LOBBY DOOR. LOCATION SHALL BE COORDINATED WITH THE AUTHORITY HAVING JURISDICTION. SWITCH SHALL STOP EACH AIR HANDLING UNIT AND EXHAUST FAN AND CLOSE THE ASSOCIATED UNIT OUTSIDE AIR DAMPER.

**COMMON AREAS (HRU / FCU / BS)**

- A. VAV INDOOR UNIT SHALL BE PROVIDED WITH A 7-DAY WALL MOUNTED THERMOSTAT.
- B. THE FAN SHALL CYCLE BASED ON CALL FOR COOLING OR HEATING.
- C. UPON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT OF THE THERMOSTAT, THE COOLING CYCLE SHALL BE ENERGIZED.
- D. UPON A DROP IN SPACE TEMPERATURE BELOW THE HEATING SETPOINT OF THE THERMOSTAT, THE HEATING CYCLE SHALL BE ENERGIZED.
- E. A WATER LEVEL DETECTOR SHALL BE LOCATED IN THE SECONDARY DRAIN PAN AS INDICATED ON THE DRAWINGS. IT SHALL SEND A SIGNAL TO INITIATE AN ALARM UPON SENSING IMPROPER CONDITIONS TO SHUT DOWN THE SYSTEM.

**ELECTRIC WALL HEATER CONTROLS (EWH-1 THRU EWH-3)**

- A. ELECTRIC HEATER SHALL OPERATE OFF OF BUILT-IN THERMOSTAT.
- B. ELECTRIC UNIT HEATER SHALL ENERGIZE ONCE THERMOSTAT FALLS BELOW 50°F (ADJUSTABLE). ELECTRIC UNIT HEATER SHALL DEENERGIZE ONCE THERMOSTAT FALLS ABOVE 50°F (ADJUSTABLE).

**SPLIT SYSTEM AIR CONDITIONERS (AC-1/UCU-1)**

- A. HEAT PUMP SHALL BE PROVIDED WITH AN INTEGRAL THERMOSTAT.
- B. THE FAN SHALL CYCLE BASED ON CALL FOR COOLING OR HEATING.
- C. UPON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT OF THE THERMOSTAT, THE COOLING CYCLE SHALL BE ENERGIZED.
- D. UPON A DROP IN SPACE TEMPERATURE BELOW THE HEATING SETPOINT OF THE THERMOSTAT, THE HEATING CYCLE SHALL BE ENERGIZED.
- E. AN INTERNAL WATER LEVEL DETECTOR SHALL SEND A SIGNAL TO INITIATE AN ALARM UPON SENSING IMPROPER CONDITIONS TO SHUT DOWN THE SYSTEM.

**DEDICATED OUTSIDE AIR SYSTEM W/ ENERGY RECOVERY (DOAS-1)**

- A. COMMON AREA DEDICATED OUTSIDE AIR UNIT SHALL BE PROVIDED WITH DUCT-MOUNTED THERMOSTAT, DUCT-MOUNT HUMIDISTAT, DUCT-MOUNTED THERMOSTAT AND HUMIDISTAT SHALL BE LOCATED WITHIN THE SUPPLY AIR DUCT.
- B. THE FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE.
- C. UPON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT OF THE DUCT-MOUNTED THERMOSTAT, THE COOLING CYCLE SHALL BE ENERGIZED.
- D. UPON A DROP IN DISCHARGE AIR TEMPERATURE BELOW THE HEATING SETPOINT OF THE DUCT-MOUNTED THERMOSTAT, THE HEATING CYCLE SHALL BE ENERGIZED.
- E. UNIT SHALL BE PROVIDED WITH MODULATING GAS HEATER SECTIONS AND DIGITAL SCROLL COMPRESSORS TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINTS (70°F-75°F).
- F. THE UNIT'S HOT GAS REHEAT SECTION SHALL ALSO ALLOW THE UNIT TO RUN IN A DEHUMIDIFICATION MODE IN TWO STAGES.
  - a. ON A RISE IN LEAVING AIR RELATIVE HUMIDITY, AS SENSED BY THE DUCT-MOUNTED HUMIDITY SENSOR, THE UNIT SHALL ENERGIZE AND MODULATE THE UNITS DX COOLING CYCLE TO MAINTAIN RELATIVE HUMIDITY. IF THE DUCT TEMPERATURE DROPS BELOW THE COOLING SET POINT AS SENSED BY THE DUCT-MOUNTED TEMPERATURE SENSOR, WHILE THE RELATIVE HUMIDITY SET POINT REMAINS UNSATISFIED, THE UNITS HOT GAS REHEAT CYCLE SHALL BE ENERGIZED AND MODULATE TO MAINTAIN THE COOLING SET POINT.
  - b. ON A RISE IN SPACE RELATIVE HUMIDITY, AS SENSED BY ANY OF THE SPACE HUMIDITY SENSORS, THE COOLING COIL SHALL BE BROUGHT DOWN TO 48°F (ADJUSTABLE) AND THE HOT GAS REHEAT SECTION SHALL MODULATE TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINTS (70°F-75°F).
- G. THE ENERGY RECOVERY WHEEL SHALL MODULATE BY VFD BASED ON ITS FACTORY BUILT-IN CONTROLS TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT (ADJUSTABLE).
- H. THE EMS SHALL MONITOR THE PRESSURE DROP ACROSS THE FILTERS IN THE UNIT. UPON REACHING A PRESSURE DIFFERENTIAL SET POINT (ADJUSTABLE), THE EMS SHALL GENERATE AN ALARM CONDITION INDICATING THE FILTERS NEED TO BE REPLACED.
- I. PROVIDE SYSTEM WITH DUCT SMOKE DETECTORS AND ASSOCIATED CONTROLS FURNISHED BY DIVISION 26 AND INSTALLED BY DIVISION 23.

**ENGINE EXHAUST REMOVAL / AIR FILTRATION AND PURIFICATION (AF-1 THRU AF-10)**

- A. UNITS SHALL RUN IN AUTOMATIC MODE.
- B. IN AUTOMATIC MODE THE UNIT SHALL BE ENERGIZED BY CORRESPONDING PHOTOELECTRIC SENSOR.
- C. THE SYSTEMS CONTROL PANEL SHALL SEQUENCE ADDITIONAL UNITS TO ENERGIZE. UNITS SHALL RUN CONTINUOUSLY FOR 20 MINUTES.
- D. CO2 SENSORS SHALL MONITOR CO2 CONCENTRATION WITHIN THE APPARATUS BAY. UPON SENSING IMPROPER CONDITIONS, THE EMS SHALL INITIATE AN ALARM CONDITION.

**DEHUMIDIFIER UNIT (DH-1)**

- A. UNIT SHALL BE CONTINUOUSLY BE IN OCCUPIED MODE.
- B. UNIT SHALL ENERGIZE ON A CALL FOR DEHUMIDIFICATION AS SENSED BY THE REMOTE HUMIDISTAT.
- C. A WATER LEVEL DETECTOR SHALL BE LOCATED IN THE SECONDARY DRAIN PAN AS INDICATED ON THE DRAWINGS. IT SHALL SEND A SIGNAL TO INITIATE AN ALARM UPON SENSING IMPROPER CONDITIONS TO SHUT DOWN THE SYSTEM.

**KITCHEN EXHAUST FAN (KEF-1) AND MAKE UP AIR UNIT (MUA-1) CONTROL**

- A. HEAT SENSOR ON EXHAUST COLLAR OF KITCHEN HOOD SHALL ENERGIZE THE KITCHEN EXHAUST FAN, KEF-1, WHENEVER COOKING OPERATION OCCURS, MAKE UP AIR FAN MUA-1 SHALL BE INTERLOCKED TO OPEN WHEN EXHAUST FAN IS ENERGIZED AND OUTDOOR AIR DAMPER IS OPEN.
- B. WHEN THE RANGE HOOD FIRE SUPPRESSION SYSTEM IS ACTIVATED, THE FIRE ALARM SYSTEM SHALL TURN OFF THE EXHAUST FAN, RANGE HOOD MAKE UP, AND CLOSE OUTSIDE AIR DAMPER.

**HOT WATER UNIT HEATER CONTROL (UH-1 THRU UH-5)**

- A. UNIT SHALL CONTINUOUSLY BE IN OCCUPIED MODE.
- B. ON A DROP IN SPACE TEMPERATURE, AS SENSED BY THE BUILT IN TEMPERATURE SENSOR, TS THE EMS SHALL MODULATE OPEN THE HEATING WATER VALVE TO ALLOW FLOW TO THE COIL TO MAINTAIN SET POINT.

**RADIANT UNDERSLAB HEATING CONTROL**

- A. ON A DROP IN SPACE TEMPERATURE AS SENSED BY A SPACE MOUNTED TEMPERATURE SENSOR, BELOW THE ASSOCIATED SET POINT, THE ASSOCIATED ZONE CIRCULATOR PUMP SHALL BE ENERGIZED TO PROVIDE HEATING WATER FLOW TO THE RADIANT ZONE TO MAINTAIN SPACE TEMPERATURE.

**ROOFTOP UNIT W/ ENERGY RECOVERY (RTU-1)**

- A. UNIT SHALL BE PROVIDED WITH VENTILATION MODE AND EVENT MODE OCCUPANCY SETTINGS.

**VENTILATION MODE**

- A. UNIT SHALL OPERATE IN OCCUPIED MODE WITH SUPPLY FAN ENERGIZED AND RELIEF AND OUTSIDE AIR DAMPERS OPEN.
- B. SUPPLY FAN SHALL SUPPLY OUTSIDE AIR AT THE RATE 950 CFM CONTINUOUSLY TO THE SPACE.
- C. THE UNITS COOLING AND HEATING CYCLES SHALL BE DE-ENERGIZED IN VENTILATION MODE. THE RETURN AIR DAMPER SHALL BE CLOSED AND THE RELIEF AIR DAMPER SHALL BE OPEN.
- D. THE ENERGY RECOVERY WHEEL SHALL BE DE-ENERGIZED AND BYPASSED IN VENTILATION MODE.
- E. UPON SENSING IMPROPER CONDITIONS, DUCT SMOKE DETECTORS, FURNISHED BY DIVISION 20 AND INSTALLED BY DIVISION 26 SHALL DE-ENERGIZE THE SUPPLY AND RELIEF FANS, AND CLOSE THE OUTSIDE AIR AND RELIEF AIR DAMPERS.

**EVENT MODE**

- A. OCCUPIED/UNOCCUPIED MODE SHALL BE AS DESCRIBED IN THE GENERAL SECTION.
- B. WHEN IN UNOCCUPIED MODE, THE SUPPLY FAN SHALL BE DE-ENERGIZED AND THE OUTSIDE AIR RELIEF AIR DAMPERS SHALL BE CLOSED.
- C. WHEN IN UNOCCUPIED MODE, ON A RISE IN SPACE TEMPERATURE, AS SENSED BY A SPACE TEMPERATURE SENSOR, ABOVE THE UNOCCUPIED MODE SET POINT (ADJUSTABLE), THE UNIT SUPPLY FAN AND DX COOLING CYCLE SHALL BE ENERGIZED. THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL REMAIN CLOSED.
- D. WHEN IN UNOCCUPIED MODE, ON A DROP IN SPACE TEMPERATURE, AS SENSED BY A SPACE TEMPERATURE SENSOR, BELOW THE UNOCCUPIED MODE SET POINT (ADJUSTABLE), THE UNIT SUPPLY FAN AND GAS FIRED HEATING CYCLE SHALL BE ENERGIZED. THE OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL REMAIN CLOSED.
- E. WHEN IN MORNING WARM UP/Cool DOWN MODE, THE SUPPLY FAN SHALL BE ENERGIZED, WITH THE OUTSIDE AIR AND RELIEF AIR DAMPERS CLOSED. CHANGE OVER TO OCCUPIED MODE SHALL BE CONTROLLED VIA THE TIMELOCK SCHEDULE.
- F. WHEN IN OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY WITH THE OUTSIDE AIR AND RELIEF AIR DAMPERS OPEN.
- G. WHEN IN OCCUPIED MODE, ON A RISE IN SPACE TEMPERATURE, AS SENSED BY A SPACE TEMPERATURE SENSOR, ABOVE THE OCCUPIED MODE SET POINT (ADJUSTABLE), THE UNITS DX COOLING CYCLE SHALL BE ENERGIZED.
- H. WHEN IN OCCUPIED MODE, ON A DROP IN SPACE TEMPERATURE, AS SENSED BY A SPACE TEMPERATURE SENSOR, BELOW THE OCCUPIED MODE SET POINT (ADJUSTABLE), THE UNITS GAS FIRED HEATING CYCLE SHALL BE ENERGIZED.
- I. ON A RISE IN SPACE RELATIVE HUMIDITY, AS SENSED BY A SPACE HUMIDITY SENSOR, THE EMS SHALL ENERGIZE THE UNITS DX COOLING CYCLE TO MAINTAIN RELATIVE HUMIDITY SET POINT (ADJUSTABLE). IF THE SUPPLY AIR TEMPERATURE DROPS BELOW THE COOLING SET POINT, AS SENSED BY A DUCT MOUNTED TEMPERATURE SENSOR, WHILE THE RELATIVE HUMIDITY REMAINS UNSATISFIED, THE EMS SHALL ENERGIZE AND MODULATE THE UNITS HOT GAS REHEAT CYCLE TO MAINTAIN THE COOLING SET POINT (ADJUSTABLE).
- J. THE ENERGY RECOVERY WHEEL SHALL MODULATE VIA A VFD BASED ON ITS BUILT IN CONTROLS TO MAINTAIN DISCHARGE AIR TEMPERATURE SET POINT (ADJUSTABLE).
- K. WHEN OUTSIDE AIR CONDITIONS ALLOW, AS DETERMINED BY THE UNITS ENTHALPY SENSOR, THE EMS SHALL DE-ENERGIZE THE ENERGY RECOVERY WHEEL, MODULATE OPEN THE OUTSIDE AIR AND RELIEF AIR DAMPERS TO ALLOW ECONOMIZER FREE COOLING.
- L. THE EMS SHALL MONITOR THE PRESSURE DROP ACROSS A FILTERS IN THE UNIT. UPON REACHING A PRESSURE DIFFERENTIAL SET POINT (ADJUSTABLE), THE EMS SHALL GENERATE AN ALARM CONDITION INDICATING THE FILTERS NEED TO BE REPLACED.
- M. CO2 SENSORS SHALL BE PROVIDED FOR CONTROL OF OUTSIDE AIR DAMPER. IF THE CO2 LEVELS RISE ABOVE THE SENSOR SETPOINT REQUIRED BY THE AUTHORITY HAVING JURISDICTION THE EMS SHALL MODULATE THE ENERGY RECOVERY WHEEL AND OUTDOOR AIR INTAKE TO ITS MINIMUM AND MAXIMUM POSITION (TO MAINTAIN A VALUE EQUAL OR LOWER THAN THE SETPOINT).
- N. UPON SENSING IMPROPER CONDITIONS, DUCT SMOKE DETECTORS, FURNISHED BY DIVISION 20 AND INSTALLED BY DIVISION 26 SHALL DE-ENERGIZE THE SUPPLY FAN AND CLOSE THE OUTSIDE AIR AND RELIEF AIR DAMPERS.

**DESTRATIFICATION FAN (DF-1 THRU DF-8)**

- A. FANS SHALL BE CONTROLLED AUTOMATICALLY BASED ON TEMPERATURE DIFFERENCE BETWEEN SENSORS LOCATED ON THE FLOOR AND CEILING.

**DRYER BOOSTER FAN (BF-1)**

- A. DRYER BOOSTER FAN SHALL BE INTERLOCKED WITH THE ASSOCIATED DRYER.

**EXHAUST FAN (EF-1)**

- A. OCCUPIED/UNOCCUPIED MODE SHALL BE AS DESCRIBED IN THE GENERAL SECTION.
- B. WHEN IN THE UNOCCUPIED MODE, THE EXHAUST FAN SHALL BE DE-ENERGIZED.
- C. IN THE OCCUPIED MODE, THE EXHAUST FAN SHALL BE ENERGIZED.

**EXHAUST FAN (EF-2)**

- A. OCCUPIED/UNOCCUPIED MODE SHALL BE AS DESCRIBED IN THE GENERAL SECTION.
- B. WHEN IN THE UNOCCUPIED MODE, THE EXHAUST FAN SHALL BE DE-ENERGIZED, AND THE OUTSIDE AIR MOTOR OPERATED DAMPER SHALL BE CLOSED.
- C. IN THE OCCUPIED MODE, THE EXHAUST FAN SHALL BE ENERGIZED, AND THE OUTSIDE AIR MOTOR OPERATED DAMPER SHALL BE OPEN.

**MECHANICAL LEGEND**

SYMBOL	ABBREV	DESCRIPTION
	RS	REFRIGERANT SUCTION
	RL	REFRIGERANT LIQUID
	FMF	FLOW METER FITTING
	RPPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
	TP	TRAP PRIMER
	RV	RELIEF VALVE
	MAV	MANUAL AIR VALVE
	AAV	AUTOMATIC AIR VALVE
	SW	STRAINER W/V VALVE
	U	UNION
	SA	SHOCK ABSORBER
	FS	FLOW SWITCH
	TM	THERMOMETER
	TW	THERMOMETER WELL
	PG	PRESSURE GAUGE W/ SYPHON & NEEDLE VALVE
	PGT	PRESSURE GAUGE W/ NEEDLE VALVE
	PGT	PRESSURE GAUGE TAPPING
	PGU	PIPE GUIDE
	AN	ANCHOR
	TCV	TEMPERATURE CONTROL VALVE (2-WAY)
	TCV	TEMPERATURE CONTROL VALVE (3-WAY)
	FPC	FLEXIBLE PIPE CONNECTION
	OS&V	OS&Y VALVE W/ TAMPER SWITCH
	SV	SHUTOFF VALVE
	CV	CHECK VALVE
	BVV	BACK WATER VALVE
	PRV	PRESSURE REDUCING VALVE
	PTU	PIPE TURNING UP
	PTD	PIPE TURNING DOWN
	TTU	TEE TURNING UP
	TTD	TEE TURNING DOWN
	T	THERMOSTAT
	SUD	SUPPLY DUCT TURNED UP
	SDD	SUPPLY DUCT TURNED DOWN
	ROD	RETURN OR OUTSIDE AIR DUCT TURNED UP
	RDD	RETURN OR OUTSIDE AIR DUCT TURNED DOWN
	EOD	EXHAUST AIR DUCT TURNED UP
	EDD	EXHAUST AIR DUCT TURNED DOWN
	FDC	FLEXIBLE DUCT CONNECTION
	DD	DUCT SMOKE DETECTOR
	MVD	MANUAL VOLUME DAMPER
	MOD	MOTOR OPERATED DAMPER
	SD	SMOKE DAMPER
	FD	FIRE DAMPER
	BDD	BAROMETRIC RELIEF DAMPER (ADJUSTABLE)
	OBD	OPPOSED BLADE DAMPER
	ID	INCLINED DUCT RISE
	ID	INCLINED DUCT DOWN
	TAG-CFM	SUPPLY AIR DEVICE
	TAG-CFM	RETURN AIR DEVICE
	1	SECTION DESIGNATION
	AFF	ABOVE FINISHED FLOOR
	BTU	BRITISH THERMAL UNIT
	CB	CATCH BASIN
	CFH	CUBIC FEET HOUR
	CFM	CUBIC FEET MINUTE
	DIF	DIFFUSER
	DB	DRY BULB
	EAT	ENTERING AIR TEMPERATURE
	ESP	EXTERNAL STATIC PRESSURE
	EXH	EXHAUST
	GR	GRILLE
	GPM	GALLONS PER MINUTE
	KW	KILOWATTS
	LAT	LEAVING AIR TEMPERATURE
	MBH	THOUSAND BTUHR
	OA	OUTSIDE AIR
	PD	PRESSURE DROP
	RA	RETURN AIR
	REG	REGISTER
	SA	SUPPLY AIR
	TSP	TOTAL STATIC PRESSURE
	V-PHASE	VOLT-PHASE
	VTR	VENT THROUGH ROOF

**GENERAL NOTES (APPLY TO WORK PROVIDED UNDER DIV. 20):**

- GENERAL: FURNISH LABOR, EQUIPMENT AND MATERIALS NECESSARY FOR THE INSTALLATION OF THE COMPLETE MECHANICAL SYSTEM AS SPECIFIED HEREIN AND INDICATED IN THE CONTRACT DOCUMENTS. OUTLINE DESCRIPTION AND DIAGRAMMATIC REPRESENTATION OF SYSTEM OPERATION AND EQUIPMENT DOES NOT LIMIT CONTRACTOR LIABILITY FOR FURNISHING AND INSTALLING COMPLETE AND OPERABLE SYSTEMS.
- APPLICABLE CODES: THE INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF THE CODE OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- NOTE DEFINITIONS: "DRAWING NOTES" APPLY TO THE ENTIRE DRAWING ON WHICH THEY APPEAR. WHERE RELEVANT "SPECIFIC NOTES" APPLY ONLY WHERE INDICATED WITH THE "SPECIFIC NOTE" SYMBOL. REFER TO LEGEND.
- DUCTWORK TO BE SHEET METAL UNLESS NOTED OTHERWISE.
- PROVIDE REQUIRED CLEARANCE FOR MAINTENANCE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS OR AS REQUIRED BY CODE FOR MECHANICAL EQUIPMENT.
- PERMITS: INCLUDE IN THE BID PRICE THE PAYMENT OF NECESSARY PERMITS. FURNISH THE OWNER PRIOR TO THE FINAL PAYMENT A CERTIFICATE FROM THE INSPECTION DEPARTMENT HAVING JURISDICTION CERTIFYING THAT THE WORK MEETS THE REQUIREMENTS OF THE LOCAL INSPECTION AUTHORITIES AND/OR THE NATIONAL BOARD OF FIRE UNDERWRITERS.
- SCHEDULING: COORDINATE WITH THE OWNER FOR SCHEDULING OF WORK.
- WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
- KEEP THE WORK SITE AND SURROUNDING AREA FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH GENERATED BY WORK FROM THIS CONTRACT. PROPERLY AND LEGALLY DISPOSE OF MATERIALS.
- SAFETY: JOB SITE SAFETY SHALL BE IN STRICT ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
- PROVIDE SUBMITTALS (SHOP DRAWINGS) FOR REVIEW FOR NEW MATERIALS AND EQUIPMENT. PRIOR TO SUBMITTING, REVIEW SUBMITTALS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, CONFLICTS WITH OTHER TRADES, AND CONSTRUCTION VARIATION. IDENTIFY ANY DEVIATIONS IN SUBMITTALS FROM CONTRACT DOCUMENTS. ENGINEER'S REVIEW OF SUBMITTALS DOES NOT INCLUDE REVIEW OF DIMENSIONS, DETAILS, OR QUANTITIES. REVIEW DOES NOT WAIVE ANY REQUIREMENTS OF CONTRACT DOCUMENTS, INCLUDING REQUIREMENT TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
- WHEN MOUNTING MECHANICAL WORK IN AREAS SUBJECT TO PEDESTRIAN TRAFFIC, MAINTAIN REQUIRED HEADROOM CLEARANCES.
- MECHANICAL MATERIALS AND EQUIPMENT SHALL BE INSTALLED AS TO MAINTAIN THEIR RESPECTIVE UL RATING AND SHALL CONFORM TO FACTORY MUTUAL STANDARDS AS APPLICABLE.
- MECHANICAL WORK SHALL BE CONCEALED IN FINISHED AREAS SHOWN ON THE ARCHITECTURAL DRAWINGS UNLESS NOTED OTHERWISE.
- EQUIPMENT LOCATIONS: REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIFFUSER LOCATIONS AND THE ELECTRICAL DRAWINGS FOR EXACT ELECTRICAL EQUIPMENT LOCATIONS. LOCATIONS OF MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING ARE SHOWN DIAGRAMMATICALLY. DETERMINE EXACT LOCATIONS IN THE FIELD.
- SEALING FITTINGS AND APPROVED SEALING COMPOUND SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE CODE. SEAL AROUND PENETRATIONS OF FIRE-RATED WALLS WITH AN APPROVED SEALANT.
- LOCATIONS OF DUCTWORK, AIR DEVICES, TEMPERATURE CONTROLS, AND EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL LAYOUTS, EQUIPMENT CUTS AND PLUMBING/ELECTRICAL/STRUCTURAL PLANS. NO WORK SHALL BE INSTALLED UNTIL THE LOCATIONS HAVE BEEN VERIFIED. BRING ANY DISCREPANCY TO THE ARCHITECTS ATTENTION PRIOR TO MANUFACTURING OF DUCTWORK OR INSTALLATION.
- NORTH ARROWS ON THESE DRAWINGS INDICATE PLAN NORTH ONLY.
- INSTALL A MANUAL VOLUME DAMPER IN EACH BRANCH DUCT THAT RUNS TO (1) AIR DEVICE.
- PROVIDE PIPE SLEEVE FOR PIPING PENETRATIONS THROUGH RATED SLABS OR WALLS.
- "BDD" INDICATES WEIGHTED BAROMETRIC RELIEF DAMPER (ADJUSTABLE).
- DUCT JOINTS SHALL BE SEALED USING 3M MODEL 900 DUCT SEALER. EXCESS SEALER SHALL BE REMOVED FROM DUCTWORK AND JOINTS. PAINT SEALED JOINTS TO MATCH FINISH OF DUCTWORK.
- IN AREAS WHERE WORK IS INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES OR WITHIN TRADES COVERED BY THIS DIVISION OF THE SPECIFICATIONS, PREPARE LARGER SCALE DRAWINGS CONSISTING OF PLANS AND SECTIONS TO SHOW HOW WORK IS TO BE INSTALLED IN RELATION TO WORK OF OTHER TRADES.
- AFTER PIPING HAS BEEN INSTALLED, TESTED, AND INSULATED, IT SHALL BE IDENTIFIED WITH ADHESIVE TYPE LABELS AT LEAST 2 INCHES HIGH. LABELS INDICATING DIRECTION OF FLOW SHALL BE APPLIED ADJACENT TO THE NAME IDENTIFICATION AND SHALL POINT AWAY FROM THE NAME IN THE DIRECTION OF FLOW. LABELS SHALL IDENTIFY THE PIPING SYSTEM. LABELS SHALL BE LOCATED WHERE PIPE ENTERS AND LEAVES A SPACE AND AT 30 FOOT CENTERS ON NORMAL RUNS. DUCT SYSTEMS SHALL BE SIMILARLY IDENTIFIED BY NOTING THE SYSTEM AND DIRECTION OF FLOW. EQUIPMENT SHALL BE IDENTIFIED WITH ENGRAVED PLASTIC LAMINATE OR ANODIZED ALUMINUM NAMEPLATES WITH PRESSURE SENSITIVE BACKING. PLATES SHALL ALSO BE PROVIDED WITH DRILLED HOLES AND FASTENED TO THE EQUIPMENT WITH MOLY RIVETS. LETTERS SHALL BE AT LEAST 3/8 INCH HIGH AND LARGER IN PROPORTION TO THE SIZE OF THE PIECE OF EQUIPMENT. IDENTIFICATION SHALL BE THE SAME AS NOTED ON SCHEDULES IN THE DRAWINGS.

**ADD ALTERNATES:**

- RADIANT ZONE 5 ALT SHALL BE APPLICABLE TO THE WASH BAY EXTENSION PER A9.01.

MECHANICAL SPECIFIC NOTE LEGEND COMPLETE	
SPECIFIC NOTE VALUE	SPECIFIC NOTE TEXT
M1	CONDENSING UNITS SHALL SIT ON EQUIPMENT RAILS WITH VIBRATION ISOLATORS (TYP.).
M2	DASHED AREA REPRESENTS MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE (TYP.).
M3	1" H & HR TO RADIANT ZONE MANIFOLD. EXTEND RADIANT PIPING BELOW SLAB FROM MANIFOLD TO EACH RADIANT ZONE. RADIANT ZONE PIPING LAYOUT AND SPACING PER MANUFACTURER'S RECOMMENDATIONS. SLEEVE TUBING WHERE RADIANT PIPING PASSES UNDERNEATH TRENCH DRAINS.
M4	DUCTWORK IN THIS AREA TO FOLLOW SLOPE OF ROOF.
M6	DUCT DROP.
M7	DUCTWORK IN THIS AREA SHALL BE DOUBLE-WALLED SPIRAL ROUND.
M8	PROVIDE PROTECTIVE HOUSING FOR THERMOSTAT AND/OR HUMIDISTAT.
M9	TRANSITION AND MAKE FULL SIZE CONNECTION TO KH-1.
M10	DUCTWORK IS DOUBLE-WALLED SPIRAL FLAT OVAL.
M11	6"Ø EXHAUST DUCT UP & DN.
M12	6"Ø EA DN TO SERVE RESIDENTIAL KITCHEN EXHAUST HOOD.
M13	PROVIDE 2-WAY CONTROL VALVE AT EACH RADIANT MANIFOLD.

**MECHANICAL DRAWING LIST**

Sheet Number	Sheet Name
MO.0	MECHANICAL COVER SHEET
MO.1	AIR DEVICE SCHEDULE
MO.2	MECHANICAL SCHEDULES
MO.3	MECHANICAL CALCULATIONS
M1.1	FIRST FLOOR PLAN - MECHANICAL
M1.2	SECOND FLOOR PLAN - MECHANICAL
M1.3	ROOF PLAN - MECHANICAL
M3.1	MECHANICAL PARTIAL PLANS
MS.1	MECHANICAL DETAILS

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Revision Schedule		
#	Date	Revision
9	05/21/19	ADDENDUM #9