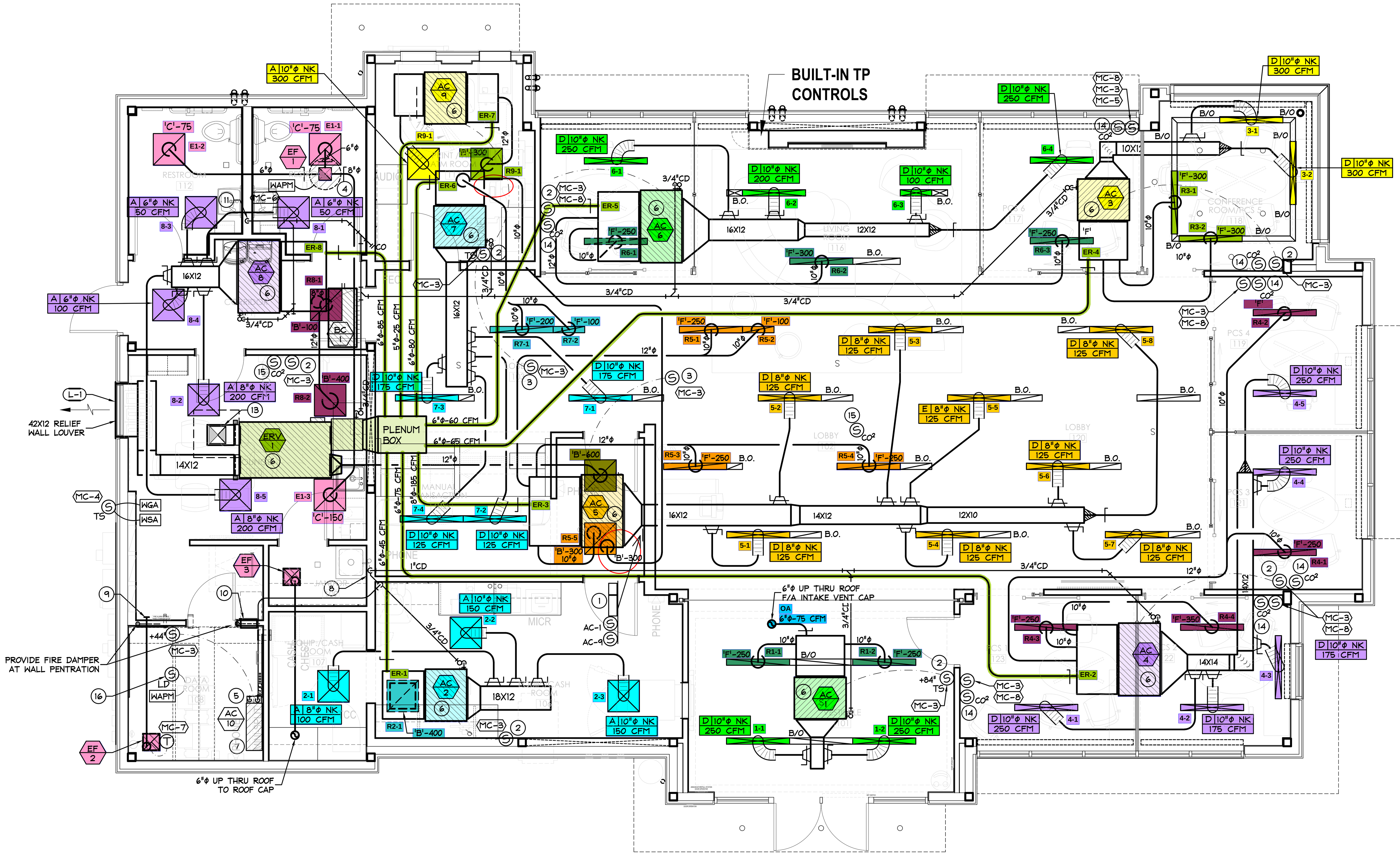
MECHANICAL GENERAL NOTES:

1.	HVAC WORK CONSISTS OF PROVIDING AIR CONDITIONING SYSTEMS FOR A COMPLETE OPERATING SYSTEM AS INDICATED ON THE DRAWINGS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES IN SPECIFICATIONS. IT IS THE INTENTION OF THE CONTRACT DRAWINGS AND SPECIFICATION TO CALL FOR COMPLETE, FINISHED WORK, TESTED, AND READY FOR OPERATION.
2.	AN AIR BALANCE SHALL BE PERFORMED BY AN APPROVED INDEPENDENT THIRD PARTY AIR BALANCE CONTRACTOR IN ACCORDANCE WITH THE LATEST EDITION OF STANDARDS PUBLISHED BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC), THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), OR THE TESTING, ADJUSTING, AND BALANCING BUREAU (TABB). BALANCE EACH SUPPLY, RETURN, EXHAUST AND OUTSIDE AIR DEVICE WITHIN 5% OF REQUIREMENTS AND FURNISH A REPORT TO THE CONSTRUCTION MANAGER. THE ENTIRE HVAC SYSTEM MUST BE FULLY OPERABLE, BALANCED, AND APPROVED BY THE OWNER'S REPRESENTATIVE.
3.	ALL DUCT SIZES SHOWN ARE SHEET METAL SIZES AND DON'T ACCOUNT FOR INSULATION. INSULATE ALL ROUND DUCTS EXTERNALLY, EXCEPT EXHAUST DUCTS, WITH 2" FIBERGLASS INSULATION WITH VAPOR BARRIER. INSULATE ALL RECTANGULAR DUCT WITH 1"-THICK, 1-1/2 LB. DENSITY DUCT LINER. TAPE ALL JOINTS.
4.	PROVIDE SPIN-IN FITTINGS AT ALL FLEXIBLE DUCT RUN OUTS TO DIFFUSERS (NO EXTRACTOR) AND DAMPER, TYPICAL UNLESS NOTED OTHERWISE ON PLAN.
5.	MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0".
6.	ALL PIPING SUBJECT TO THERMAL EXPANSION AND/OR CONTRACTION THAT PENETRATES A SMOKE, FIRE, OR FIRE/SMOKE WALL, PARTITION, OR FLOOR SLAB SHALL BE SUITABLY SLEEVED AND FIRE-SAFED.
7.	METAL DUCTS WHICH PENETRATE 1 HOUR RATED FIRE WALLS AND ARE LESS THAN 100 SQUARE INCHES SHALL EXTEND A MINIMUM OF 5 FEET ON BOTH SIDES OF THE WALL WITHOUT AN OPENING (TO PRECLUDE THE REQUIREMENT OF A FIRE DAMPER). DUCTWORK SHALL IN NO CASE BE LIGHTER THAN 24 GAUGE STEEL.
8.	PROVIDE IDENTIFICATION OF THE LOCATION OF ALL FIRE AND BALANCING DAMPERS. IDENTIFICATION TAGS SHALL BE AFFIXED TO THE WALLS OR CEILINGS AND SHALL BE VISIBLE FROM THE OCCUPIED SPACE.
9.	PROVIDE ORANGE TAGS ON ALL VOLUME AND BALANCING DAMPERS ABOVE THE CEILING. TAGS AND DAMPER HANDLES SHALL BE VISIBLE AND ACCESSIBLE FOR THE TEST & BALANCE AGENCY.
10.	ALL PIPING SHALL BE SUPPORTED WITH COMMERCIAL MANUFACTURED CLAMPS. PROVIDE ISOLATION SLEEVES TO PREVENT CONTACT OF DISSIMILAR METALS.
11.	INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE CONNECTIONS FOR ALL MOVING MACHINERY.
12.	CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
13.	ALL INSULATION SHALL BE FIRE RATED IN ACCORDANCE WITH NFPA 90A 50/25 SMOKE DEVELOPMENT AND FLAME SPREAD REQUIREMENTS. INSULATION "R" VALUES SHALL COMPLY APPLICABLE ENERGY CODE.
14.	MOUNT ALL SPACE THERMOSTATS AND/OR SENSORS 4.5 FEET ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
15.	INSTALL DUCT MOUNTED SMOKE DETECTORS (FURNISHED BY DIVISION 16) IN SUPPLY AIR DUCTWORK CONNECTED TO EACH A/C UNIT. WIRE DUCT MOUNTED SMOKE DETECTORS SUCH THAT ACTIVATION WILL DE-ENERGIZE AIR HANDLING UNIT FAN. LOCATE DUCT MOUNTED SMOKE DETECTORS THE REQUIRED DISTANCE DOWNSTREAM FROM BENDS OR INLETS AS RECOMMENDED BY THE MANUFACTURER.
16.	SEE ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT.
17.	UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO THE BOTTOM OF THE STRUCTURE. COORDINATE ELEVATION AND LOCATION WITH RAIN LEADERS, WATER PIPING, PLUMBING VENTS, AND MAJOR ELECTRICAL CONDUITS OR CABLE TRAY.
18.	PROVIDE DRAIN P-TRAPS IN THE CONDENSATE LINES AT ALL AIR HANDLING UNITS.
19.	ROUTE FULL SIZE PVC DRAIN PIPE FROM EACH RTU (1" MIN) DRAIN PAN AND FROM EACH FCU (3/4" MIN) TO RESPECTIVE FLOOR DRAIN OR TO DAYLIGHT WITH AIR GAP. INSULATE WITH 3/4" ARMSTRONG "ARMAFLEX" INSULATION.
20.	THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO CHECK FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.
21.	ALL OUTSIDE AIR INTAKES SHALL BE A MINIMUM OF 10 FEET FROM ANY EXHAUST FANS OR PLUMBING VENTS.
22.	ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
23.	UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER.
24.	WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
25.	THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
26.	PROVIDE BALANCING DAMPER IN EACH BRANCH CONNECTION.
27.	ALL DUCTWORK INSTALLED ON THIS PROJECT SHALL BE OF SHEET METAL CONSTRUCTION. DUCTWORK SHALL BE FABRICATED AND CONSTRUCTED IN ACCORDANCE WITH SMACNA REQUIREMENTS.
28.	ALL ROOF ATTACHED EQUIPMENT AND APPURTENANCES INCLUDED IN THE SCOPE OF THIS PROJECT ARE REQUIRED TO BE SECURED TO THE UNDERLYING BUILDING STRUCTURE. THE FASTENING SYSTEMS SHALL BE INSTALLED TO RESIST THE WIND PRESSURES ON THE EQUIPMENT AS DETERMINED IN ACCORDANCE WITH THE CURRENT BUILDING CODE.
29.	MECHANICAL CONTRACTOR SHALL PROVIDE NAMEPLATE INFO TO THE FACILITY MANAGER FOR ALL FAN COILS, CONDENSING UNITS, RTU'S, AND EXHAUST FANS.



01 FLOOR PLAN–MECHANICAL

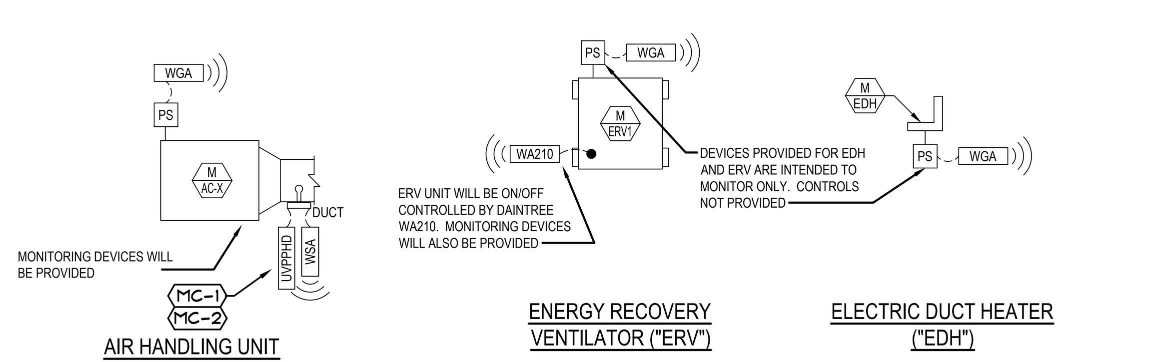
SCALE: 1/4"=1'-0"

MECHANICAL CONTROL PLAN NOTES

MC-1	PROVIDE SUPPLY DUCT PROBE TEMPERATURE SENSOR FOR EACH MECHANICAL UNIT SUPPLY DUCT. HARDWARE SUPPLIED BY DAINTREE.
MC-2	PROVIDE HUMIDITY SENSOR WIRED, VIA LOW VOLTAGE, TO WSA10 FOR MONITORING ONLY WHEN REFERENCED ON BID DOCUMENTS. REFER TO MECHANICAL EQUIPMENT SCHEDULE OR PLAN NOTES. HARDWARE SUPPLIED BY DAINTREE.
MC-3	PROVIDE BMS WIRELESS THERMOSTAT AT EACH VRF INDOOR UNIT. THERMOSTAT ADAPTER MAY BE REQUIRED - VERIFY WITH UNIT MANUFACTURER. SCREWED TO DEMOUNTABLE PARTITION PANEL; CABLE ROUTED THRU MULLION TO CEILING. HARDWARE SUPPLIED BY DAINTREE. MECHANICAL ENGINEER SHALL VERIFY WITH MANUFACTURER USING DAINTREE THERMOSTAT INSTALL GUIDE COMPATIBILITY AND INTERFACE REQUIRED.
MC-4	PROVIDE HARDWIRED EXTERIOR TEMPERATURE SENSOR WITH DAINTREE WGA100 AND WSA10 MOUNTED IN THE INTERIOR OF BUILDING FOR MONITORING. HARDWARE SUPPLIED BY DAINTREE.
MC-5	PROVIDE REMOTE ROOM TEMPERATURE SENSOR PER MECHANICAL UNIT WHERE THERMOSTAT IS REMOTE. SCREWED TO DEMOUNTABLE PARTITION PANEL; CABLE ROUTED THRU MULLION TO CEILING. HARDWARE SUPPLIED BY DAINTREE.
MC-6	REFER TO LIGHTING PLAN FOR EXHAUST FAN CONTROL
MC-7	DATA ROOM EXHAUST FAN EF-2 IS CONTROLLED BY NON-DAINTREE HARDWIRED REVERSE THERMOSTAT PROVIDED BY ELECTRICAL CONTRACTOR
MC-8	ZONE CONTROL TO BE AVERAGED ACROSS THERMOSTAT AND TEMPERATURE SENSOR
MC-9	ZONE CONTROL THRU REMOTE TEMPERATURE SENSOR ONLY.
MC-10	ZONE CONTROL TO BE AVERAGED ACROSS THERMOSTAT AND TEMPERATURE SENSOR DURING BUSINESS HOURS. ZONE CONTROL THRU THERMOSTAT ONLY DURING OFF-HOURS

MECHANICAL CONTROL GENERAL NOTES

1	FOR VARIABLE REFRIGERANT FLOW (VRF) EQUIPMENT, PROVIDE UNIT MANUFACTURER'S 24V THERMOSTAT INTERFACE ACCESORY.
2	REFER TO ELECTRICAL PLANS FOR HARDWIRED FAN/LIGHT CONTROL AND TIMERS.
3	SOME HVAC EQUIPMENT MAY HAVE CONDENSATE PUMPS AND/OR SOLENOID VALVES THAT WILL REQUIRE A WIRELESS LEAK DETECTOR AND WGA100 FOR MONITORING, THIS DOES NOT INTERFACE WITH THE EQUIPMENT FOR SHUTDOWN/CONTROL. REFER BID DOCUMENTS TO MECHANICAL EQUIPMENT SCHEDULE OR PLAN NOTES FOR MORE DETAILS.



02 TYP. MISC. MECHANICAL EQUIPMENT MONITORING AND CONTROL

SCALE: 1/4"=1'-0"

HVAC SEQUENCE OF OPERATIONS

OCCUPIED AND UNOCCUPIED OPERATION
- THE TEMPERATURE CONTROL SYSTEM SHALL BE SET FOR OCCUPIED AND UNOCCUPIED HOURS.
- SET A/C BLOWER FAN TO "ON" POSITION DURING OCCUPIED MODE. SET A/C BLOWER FAN TO "AUTO" DURING UNOCCUPIED MODE.
- DURING THE OCCUPIED HOURS THE SPACE SHALL BE MAINTAINED AT: 70° F HEATING AND 75° F COOLING. 100% OA UNIT (ERV-1) SHALL BE ON.
- DURING UNOCCUPIED PERIODS, THE SPACE TEMPERATURE SHALL MAINTAIN (ALL MONTHS) 65° F HEATING AND 80° F COOLING. 100% OA UNIT (ERV-1) SHALL BE OFF.
- MORNING WARM UP: PROVIDE A MORNING WARM UP MODE, ENGAGE OCCUPIED MODE (1) ONE HOUR PRIOR TO STORE OPENING. WARM-UP MODE START-UP MAY BE ADJUSTED TO OWNERS DESIRED TIME INTERVAL.

CEILING DUCTED AIR HANDLING UNITS
- UPON RECEIVING A SIGNAL FROM THE TEMPERATURE CONTROL SYSTEM FOR OCCUPIED HOURS, THE VRF SYSTEM SHALL ENERGIZE AND REMAIN ON DURING OCCUPIED HOURS.
- THE OUTSIDE 100% OA UNIT (ERV-1) SHALL REMAIN CLOSED FOR MORNING WARM-UP UNTIL THE OCCUPIED HOURS ARE REACHED, AND THEN WILL OPEN.
- THE TEMPERATURE CONTROL SYSTEM SHALL MAINTAIN THE COOLING AND HEATING SETPOINTS AS INDICATED ABOVE FOR OCCUPIED AND UNOCCUPIED OPERATION.

100% OA UNIT (ERV-1)
- 100% OA UNIT SHALL ENERGIZE AND REMAIN ON DURING OCCUPIED HOURS AND POWER OFF DURING UNOCCUPIED HOURS. DURING COOLING AND HEATING MODE, ERV-1 UNIT SHALL MAINTAIN SUPPLY AIR TEMPERATURE AT 80°F SUMMER / 60°F INTER(ADJ.). SUPPLY AIR DUCT SHALL DISTRIBUTE CONDITIONED VENTILATION AIR TO EACH CEILING DUCTED UNITS' RETURN AIR PLENUM. THE AMOUNT OF VENTILATION AIR TO EACH UNIT SHALL MEET ASHRAE 62 MINIMUM REQUIREMENT.

CO^2 SENSOR (OFFICES, CONF. ROOM):
- SET TO ENGAGE AUDIO/VISUAL ALARM AND/OR DAINTREE CONTROL SYSTEM. MONITOR CO^2 CONCENTRATIONS WITHIN ALL DENSELY OCCUPIED SPACES. CO^2 MONITORS MUST HAVE AN AUDIBLE OR VISUAL INDICATOR. IF THE SENSED CO^2 CONCENTRATION EXCEEDS THE SETPOINT OF 1000 PPMV BY MORE THAN 10%.

24-HOUR VESTIBULE (AC-1)
- THE TEMPERATURE CONTROL SYSTEM SHALL BE SET FOR THE SPACE TO BE MAINTAINED AT 75°F (ADJ.) IN THE COOLING MODE AND 70°F (ADJ.) IN THE HEATING MODE. 24/7.

24-HOUR DATA ROOM (AC-10)
- THE TEMPERATURE CONTROL SYSTEM SHALL BE SET FOR THE SPACE TO BE MAINTAINED AT 72°F (ADJ.) IN THE COOLING MODE AND IF PROVIDED, 68°F (ADJ.) IN THE HEATING MODE. 24/7.

NOTES BY SYMBOL: (#)

1. HVAC VRF SYSTEM CONTROL INTERFACE AND ERV-1 HMI CONTROLLER.
2. WALL MOUNTED REMOTE TEMPERATURE SENSOR.
3. CEILING MOUNTED REMOTE TEMPERATURE SENSOR.
4. 10X10 EXHAUST DUCT UP TO EXHAUST FAN EF-1 ON ROOF.
5. INSTALL CONDENSATE PUMP IF NOT INTEGRAL WITH UNIT AND EXTEND TUBING TO CONDENSATE MAIN PIPE, SEE PLAN. CONNECT INTO TOP OF CONDENSATE MAIN PIPE.
6. AHU MOUNTED HORIZONTAL ABOVE CEILING, TIGHT TO STRUCTURE.
7. WALL MOUNTED UNIT, REFER TO ARCHITECT FOR MOUNTING HEIGHT.
8. CONDENSATE DRAIN PIPE DOWN IN WALL AND OUT TO MS.
9. 10"ϕ CIRCULATION AIR DUCT TO TERMINATE ABOVE CEILING..
10. 12"X8" SIDEWALL TRANSFER GRILLE MOUNTED LOW (TYPE 'B'). PROVIDE FIRE DAMPER AND BACKDRAFT DAMPER, REFER TO ARCHITECT FOR DETAIL AND ADDITIONAL INFORMATION.
11. 1" CONDENSATE DRAIN DOWN IN WALL AND OUT TO LAV P-TRAP TAIL PIECE.
12. RUN DUCT UP BETWEEN JOISTS OR THRU JOISTS WEBS.
13. 12X12 FRESH AIR INTAKE DUCT UP THRU ROOF TO VENTILATOR CAP ON ROOF CURB. VENTILATOR CAP EQUAL TO COOK MODEL "TRE".
14. CO^2 SENSOR MOUNTED AT 44" A.F.F.. SET TO ENGAGE AUDIO/VISUAL ALARM. MONITOR CO^2 CONCENTRATIONS WITHIN ALL DENSELY OCCUPIED SPACES. CO^2 MONITORS MUST HAVE AN AUDIBLE OR VISUAL INDICATOR. IF THE SENSED CO^2 CONCENTRATION EXCEEDS THE SETPOINT OF 1000 PPMV BY MORE THAN 10%.
15. BMS HARDWIRED CO2 SENSOR: BAPI #BA/AQX-D WIRED TO A WSA10 BY DAINTREE.
16. CEILING OR WALL MOUNTED LEAK DETECTOR SENSOR WIRED VIA WAPM IN DATA ROOM BY DAINTREE.

PLAN NOTE:

1. ROUTING OF MECHANICAL DUCT WORK IS DIAGRAMMATICAL. THE CONTRACTOR SHALL SURVEY THE ACTUAL CONDITIONS OF CONSTRUCTION AND MODIFY THE EXACT ROUTING AS NECESSARY TO ACHIEVE THE DESIGN INTENT.
2. CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL REFLECTED CEILING PLAN FOR DIFFUSER LENGTHS, 6', 5', 4', 3', OR 2'/ 4' IN OFFICES / 12' IN VESTIBULE AND CONTINUOUS IN CONFERENCE ROOM. VERIFY DIFFUSER END CONDITIONS, STRAIGHT, MITERED OR FLANGED END. PROVIDE BLANK OFF FOR ALL IN-ACTIVE SECTIONS OF DIFFUSER.
3. PROVIDE AIR HANDLING UNITS WITH MERV 13 FILTERS. DURING CONSTRUCTION MERV 11 FILTERS MAY BE USED.

MEP DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE USED FOR SCALING

Seal
STATE OF TEXAS
Richard L. Norris
100089
REGISTERED PROFESSIONAL ENGINEER

The seal on this document was authorized by Richard L. Norris, P.E. 100089 on the date shown below.

August 01, 2024
Project # 2211

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