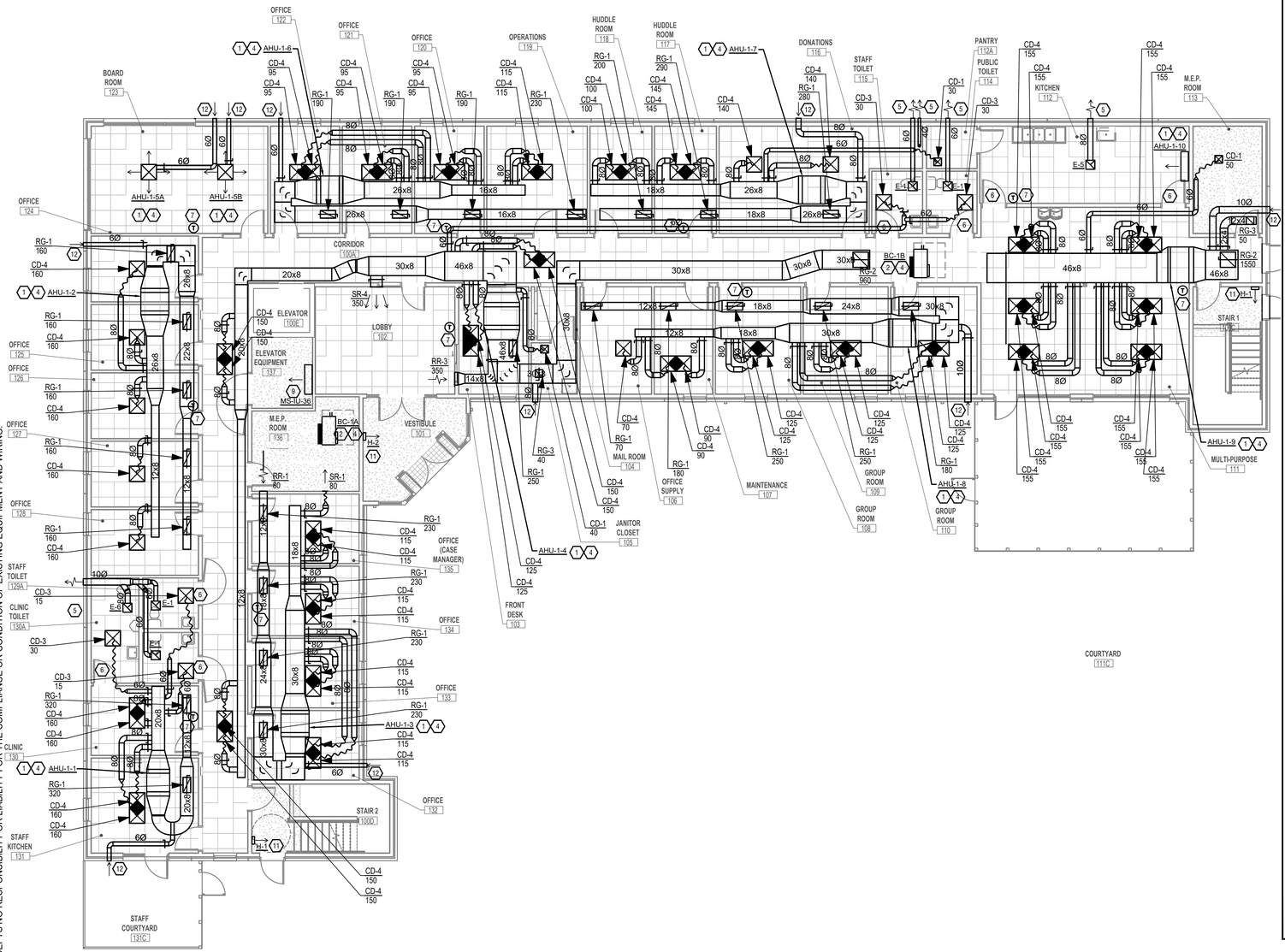


KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM, PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN OR EXTERIOR LANDSCAPING BED. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS. FOR A COMPLETE AND OPERATING SYSTEM.
5. ROUTE DRYER, RESIDENTIAL RANGE HOOD (<400 CFM), OR BATH EXHAUST TO EXTERIOR WALL. PROVIDE A FAMCO MODEL DWVVP HOODED VENT FOR DRYER AND KITCHEN. PROVIDE A FAMCO MODEL SDWVP HOODED VENT WITH DAMPER AND SCREEN VENT FOR BATH. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. PROVIDE "INSECT" SCREEN FOR BATH EXHAUST ("INSECT" SCREEN SHALL NOT BE USED ON DRYER OR KITCHEN EXHAUST). ALL EXHAUST SHALL MEET THE FOLLOWING REQUIREMENTS.
   - 5.1. 3' FROM PROPERTY LINE.
   - 5.2. 3' FROM OPERABLE OPENINGS INTO BUILDING.
   - 5.3. 10' FROM MECHANICAL AIR INTAKE.
6. UNDERCUT DOOR 1" FOR TRANSFER AIR. FOR DOORS TO CORRIDOR, PROVIDE FIRE RATED TRANSFER AIR GRILLE IN DOOR.
7. PROVIDE PROGRAMMABLE THERMOSTAT, AND INSTALL TO MEET ADA REQUIREMENTS. COORDINATE FINAL LOCATIONS WITH ARCHITECT / OWNER PRIOR TO INSTALLATION. FOR THERMOSTATS INSTALLED ON EXPOSED BRICK WALLS, PROVIDE CONDUIT FOR THERMOSTAT WIRE. FOR THERMOSTATS INSTALLED ON EXTERIOR WALLS, INSULATE BACKSIDE.
8. REFER TO DETAILS AND DIAGRAMS ON DRAWING SERIES M300 & M500, FOR WORK IN THIS AREA. PROVIDE COMPLETE SYSTEM, AND LEAVE IN OPERATING CONDITION.
9. PROVIDE INDOOR UNIT. VERIFY LOCATION WITH ALL OTHER TRADES. MECHANICAL CONTRACTOR TO PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. FOR WALL MOUNTED MINI SPLIT SYSTEMS, PROVIDE SICCOM MODEL DEOSLUB100/110 OR APPROVED EQUAL. PROVIDE ALL REFRIGERATION PIPING, ACCESSORIES, CONTROLS, AND LEAVE UNIT IN OPERATING CONDITION.
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT, LENGTH OF PIPE, NUMBER OF ELBOWS, AND MAXIMUM RISE BETWEEN INDOOR AND OUTDOOR UNITS; WITH ALL OTHER TRADES AND MANUFACTURE BEFORE ORDERING EQUIPMENT OR ANY MATERIALS. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR UNIT. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURES RECOMMENDATIONS. PROVIDE SUPPORT BLOCKS FOR PIPING INSTALLED ON ROOF EQUAL TO EATON DURA-BLOK B-LINE SERIES. UNITS ON ROOF TO BE 10 FEET FROM ROOFS EDGE OR PROVIDED WITH FALL PROTECTION. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING AND LEAVE UNITS IN OPERATING CONDITION.
    - 10.1. MINI SPLIT SYSTEMS: POWER WIRING TO HEAT PUMP BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL METAL CLAD (MC) CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.
11. PROVIDE HEATER. VERIFY LOCATION WITH ALL OTHER TRADES.
12. ROUTE OUTSIDE AIR INTAKE FROM EXTERIOR WALL. TRANSITION TO CONNECTION SIZE AT UNIT AS REQUIRED. PROVIDE A FAMCO MODEL RDWV HOODED INTAKE VENT WITH REMOVABLE "INSECT" SCREEN AND REVERSIBLE BACKDRAFT DAMPER, SAME SIZE AS DUCT. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. FOR OUTSIDE AIR DUCT, PROVIDE MOTOR OPERATED DAMPER TO OPEN WHEN UNIT IS ENERGIZED. ALL INTAKES SHALL MEET THE FOLLOWING REQUIREMENTS.
    - 12.1. NOT LESS THAN 10 FEET FROM LOT LINES OR BUILDINGS ON THE SAME LOT.
    - 12.2. NOT LESS THAN 10 FEET HORIZONTALLY FROM ANY HAZARDOUS OR NOXIOUS CONTAMINANT SOURCE. SUCH AS VENTS, STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS, EXCEPT AS SPECIFIED IN ITEM 3 OR SECTION "LOCATION OF EXHAUST OUTLETS". OUTDOOR AIR INTAKE OPENINGS SHALL BE PERMITTED TO BE LOCATED LESS THAN 10 FEET HORIZONTALLY FROM STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS PROVIDED THAT THE OPENINGS ARE LOCATED NOT LESS THAN 25 FEET VERTICALLY ABOVE SUCH LOCATIONS. WHERE OPENINGS FRONT ON A STREET OR PUBLIC WAY, THE DISTANCE SHALL BE MEASURED FROM THE CLOSEST EDGE OF THE STREET OR PUBLIC WAY.
    - 12.3. NOT LESS THAN 3 FEET BELOW CONTAMINANT SOURCES WHERE SUCH SOURCES ARE LOCATED WITHIN 10 FEET OF THE OPENING.
    - 12.4. INTAKE OPENINGS ON STRUCTURES IN FLOOD HAZARD AREAS SHALL BE AT OR ABOVE THE ELEVATION REQUIRED BY SECTION 1612 OF THE BUILDING CODE FOR UTILITIES AND ATTENDANT EQUIPMENT.
13. PROVIDE WALL PENETRATION PER OMC SECTION 607.5.3 EXCEPTION 4. DUCT TO BE CONSTRUCTED OF SHEET STEEL NOT LESS THAN 26 GAGE THICKNESS AND SHALL BE CONTINUOUS FROM THE AIR-HANDLING APPLIANCE OR EQUIPMENT TO THE AIR OUTLET AND INLET TERMINALS.
14. PROVIDE WALL PENETRATION PER OMC SECTION 607.5.3 EXCEPTION 1. REFER TO DETAIL 2 ON DRAWING M302.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY
PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

- 2017 OHIO MECHANICAL CODE
- 2017 OHIO BUILDING CODE
- ASHRAE 90.1-2010

HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR ALL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
O. PROVIDE COMPLETE CONTROL SYSTEM, AND LEAVE UNITS IN OPERATING CONDITION.
P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OR SIMILAR FASTENERS THAT PROTRUDE MORE THAN $\frac{1}{8}$ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90 . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35'; OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS. PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

MECHANICAL FIRST FLOOR PLAN

N

1 / M100 SCALE: 1/8" = 1'-0"

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES		
DATE	NO.	DESCRIPTION
08-05-2022	-	PERMIT SET

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.

Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

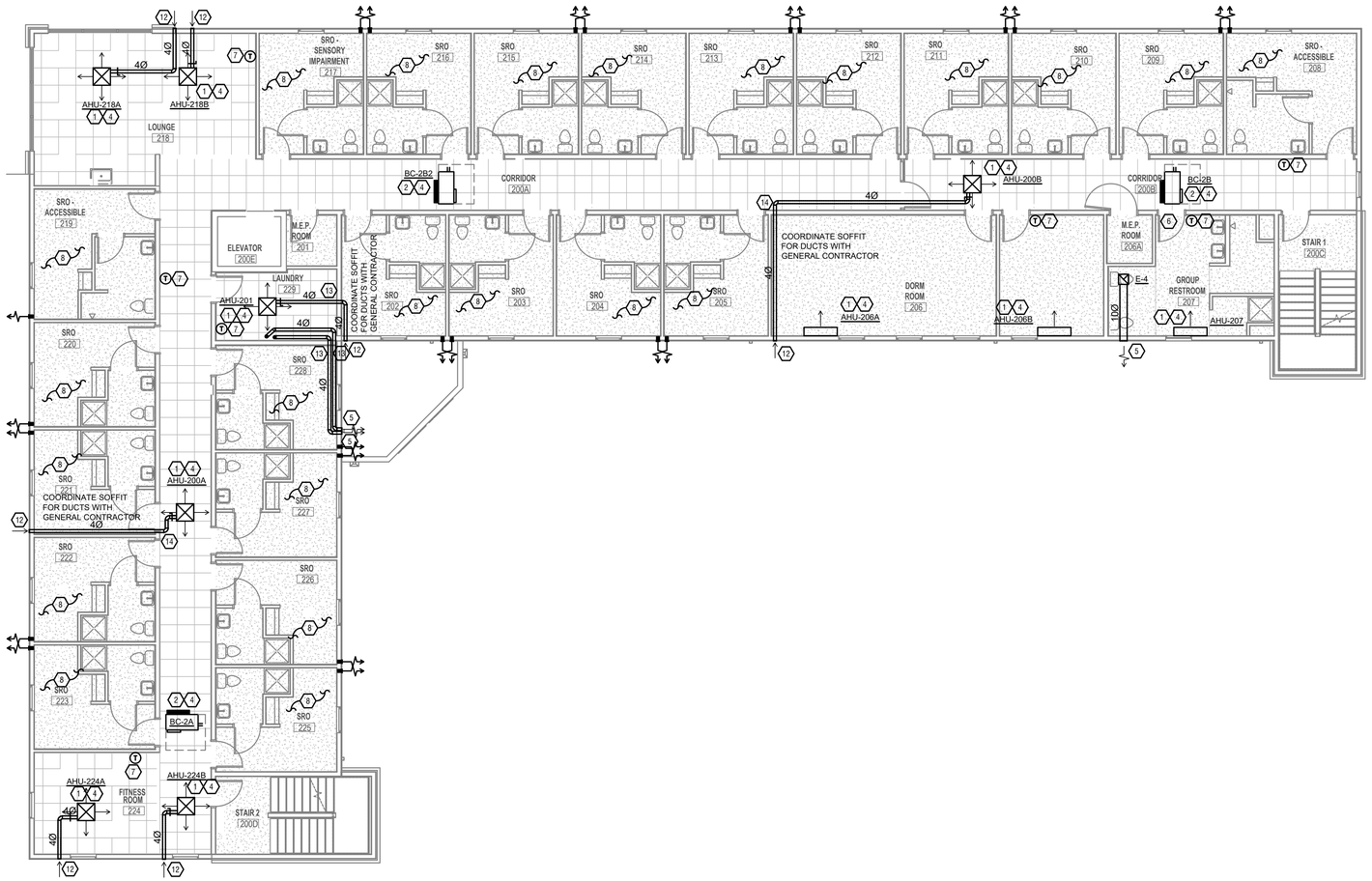
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL FIRST FLOOR PLAN

SHEET NO.
M100



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12. ROUTE OUTSIDE AIR INTAKE FROM EXTERIOR WALL. TRANSITION TO CONNECTION AT UNIT AS REQUIRED. PROVIDE A FAMCO MODEL RDWV HOODED INTAKE VENT WITH REMOVABLE "INSECT" SCREEN AND REVERSIBLE BACKDRAFT DAMPER, SAME SIZE AS DUCT. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. FOR OUTSIDE AIR DUCT, PROVIDE MOTOR OPERATED DAMPER TO OPEN WHEN UNIT IS ENERGIZED. ALL INTAKES SHALL MEET THE FOLLOWING REQUIREMENTS.
    - 12.1. NOT LESS THAN 10 FEET FROM LOT LINES OR BUILDINGS ON THE SAME LOT.
    - 12.2. NOT LESS THAN 10 FEET HORIZONTALLY FROM ANY HAZARDOUS OR NOXIOUS CONTAMINANT SOURCE, SUCH AS VENTS, STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS, EXCEPT AS SPECIFIED IN ITEM 3 OR SECTION "LOCATION OF EXHAUST OUTLETS". OUTDOOR AIR INTAKE OPENINGS SHALL BE PERMITTED TO BE LOCATED LESS THAN 10 FEET HORIZONTALLY FROM STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS PROVIDED THAT THE OPENINGS ARE LOCATED NOT LESS THAN 25 FEET VERTICALLY ABOVE SUCH LOCATIONS. WHERE OPENINGS FRONT ON A STREET OR PUBLIC WAY, THE DISTANCE SHALL BE MEASURED FROM THE CLOSEST EDGE OF THE STREET OR PUBLIC WAY.
    - 12.3. NOT LESS THAN 3 FEET BELOW CONTAMINANT SOURCES WHERE SUCH SOURCES ARE LOCATED WITHIN 10 FEET OF THE OPENING.
    - 12.4. INTAKE OPENINGS ON STRUCTURES IN FLOOD HAZARD AREAS SHALL BE AT OR ABOVE THE ELEVATION REQUIRED BY SECTION 1612 OF THE BUILDING CODE FOR UTILITIES AND ATTENDANT EQUIPMENT.
13. PROVIDE WALL PENETRATION PER OMC SECTION 607.5.3 EXCEPTION 4. DUCT TO BE CONSTRUCTED OF SHEET STEEL NOT LESS THAN 26 GAGE THICKNESS AND SHALL BE CONTINUOUS FROM THE AIR-HANDLING APPLIANCE OR EQUIPMENT TO THE AIR OUTLET AND INLET TERMINALS.
14. PROVIDE WALL PENETRATION PER OMC SECTION 607.5.3 EXCEPTION 1. REFER TO DETAIL 2 ON DRAWING M302.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY. PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

- 2017 OHIO MECHANICAL CODE
- 2017 OHIO BUILDING CODE
- ASHRAE 90.1-2010

HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
O. PROVIDE COMPLETE CONTROL SYSTEM, AND LEAVE UNITS IN OPERATING CONDITION.
P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90 . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35'; OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

N

1 / M101 MECHANICAL SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES		
DATE	NO.	DESCRIPTION
08-05-2022	-	PERMIT SET

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.

Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

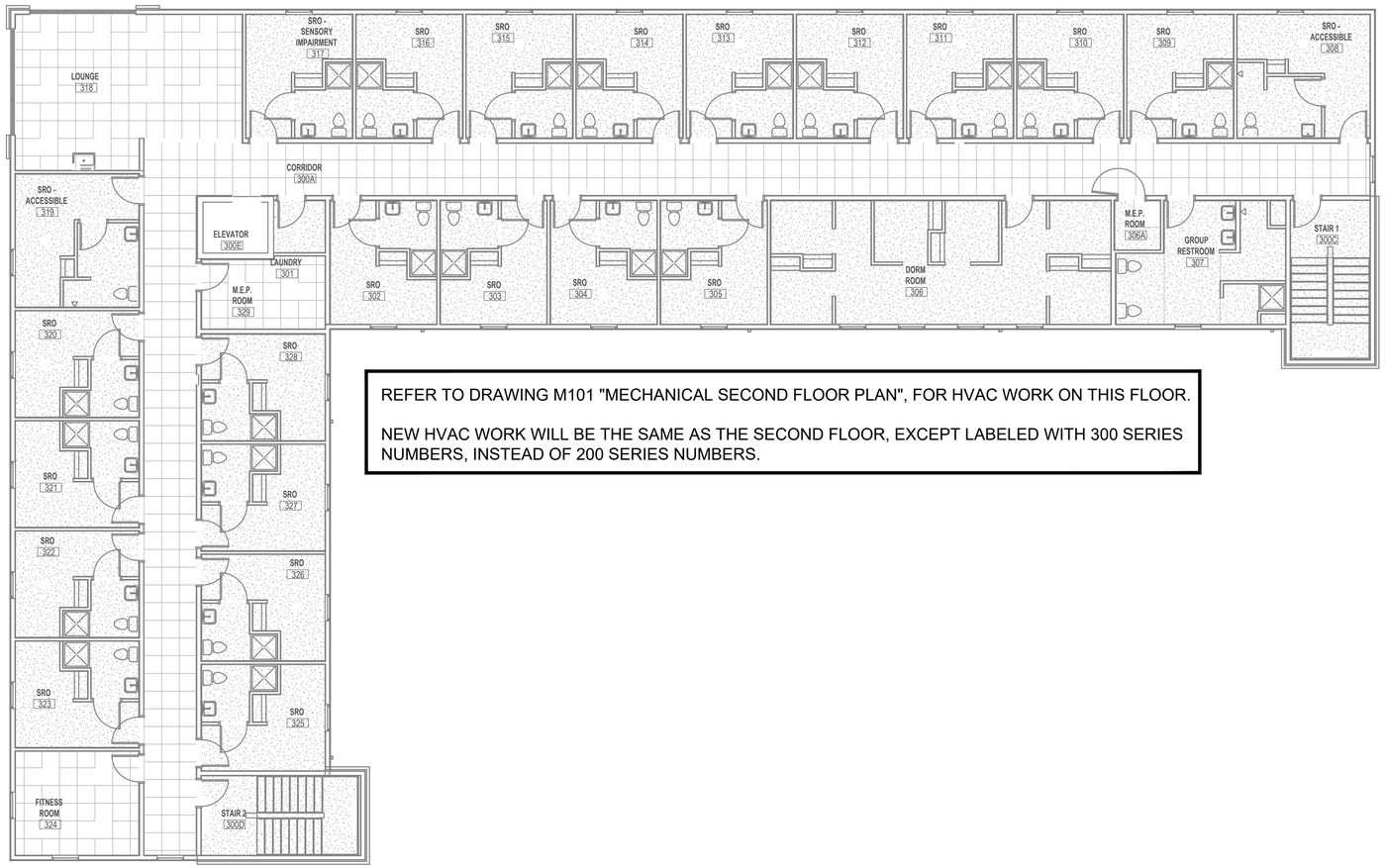
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL SECOND FLOOR PLAN

SHEET NO.
M101



REFER TO DRAWING M101 "MECHANICAL SECOND FLOOR PLAN", FOR HVAC WORK ON THIS FLOOR.

NEW HVAC WORK WILL BE THE SAME AS THE SECOND FLOOR, EXCEPT LABELED WITH 300 SERIES NUMBERS, INSTEAD OF 200 SERIES NUMBERS.

N

1 / M102 MECHANICAL THIRD FLOOR PLAN

SCALE: 1/8" = 1'-0"

KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4.
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM. PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN OR EXTERIOR LANDSCAPING BED. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. ROUTE DRYER, RESIDENTIAL RANGE HOOD (<400 CFM), OR BATH EXHAUST TO EXTERIOR WALL. PROVIDE A FAMCO MODEL DWVP HOODED VENT FOR DRYER AND KITCHEN. PROVIDE A FAMCO MODEL SDWVP HOODED VENT WITH DAMPER AND SCREEN VENT FOR BATH. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. PROVIDE "INSECT" SCREEN FOR BATH EXHAUST ("INSECT" SCREEN SHALL NOT BE USED ON DRYER OR KITCHEN EXHAUST). ALL EXHAUST SHALL MEET THE FOLLOWING REQUIREMENTS.
   - 5.1. 3' FROM PROPERTY LINE.
   - 5.2. 3' FROM OPERABLE OPENINGS INTO BUILDING.
   - 5.3. 10' FROM MECHANICAL AIR INTAKE.
6. UNDERCUT DOOR 1" FOR TRANSFER AIR. FOR DOORS TO CORRIDOR, PROVIDE FIRE RATED TRANSFER AIR GRILLE IN DOOR.
7. PROVIDE PROGRAMMABLE THERMOSTAT, AND INSTALL TO MEET ADA REQUIREMENTS. COORDINATE FINAL LOCATIONS WITH ARCHITECT / OWNER PRIOR TO INSTALLATION. FOR THERMOSTATS INSTALLED ON EXPOSED BRICK WALLS, PROVIDE CONDUIT FOR THERMOSTAT WIRE. FOR THERMOSTATS INSTALLED ON EXTERIOR WALLS, INSULATE BACKSIDE.
8. REFER TO DETAILS AND DIAGRAMS ON DRAWING SERIES M300 & M500, FOR WORK IN THIS AREA. PROVIDE COMPLETE SYSTEM, AND LEAVE IN OPERATING CONDITION.
9. PROVIDE INDOOR UNIT. VERIFY LOCATION WITH ALL OTHER TRADES. MECHANICAL CONTRACTOR TO PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. FOR WALL MOUNTED MINI SPLIT SYSTEMS, PROVIDE SICCOM MODEL DE05LUB100/110 OR APPROVED EQUAL. PROVIDE ALL REFRIGERATION PIPING, ACCESSORIES, CONTROLS, AND LEAVE UNIT IN OPERATING CONDITION.
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT, LENGTH OF PIPE, NUMBER OF ELBOWS, AND MAXIMUM RISE BETWEEN INDOOR AND OUTDOOR UNITS; WITH ALL OTHER TRADES AND MANUFACTURE BEFORE ORDERING EQUIPMENT OR ANY MATERIALS. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR UNIT. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURES RECOMMENDATIONS. PROVIDE SUPPORT BLOCKS FOR PIPING INSTALLED ON ROOF EQUAL TO EATON DURA-BLOK B-LINE SERIES. UNITS ON ROOF TO BE 10 FEET FROM ROOFS EDGE OR PROVIDED WITH FALL PROTECTION. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING AND LEAVE UNITS IN OPERATING CONDITION.
    - 10.1. MINI SPLIT SYSTEMS: POWER WIRING TO HEAT PUMP BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL METAL CLAD (MC) CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.
11. PROVIDE HEATER. VERIFY LOCATION WITH ALL OTHER TRADES.
12. ROUTE OUTSIDE AIR INTAKE FROM EXTERIOR WALL. TRANSITION TO CONNECTION SIZE AT UNIT AS REQUIRED. PROVIDE A FAMCO MODEL RDWV HOODED INTAKE VENT WITH REMOVABLE "INSECT" SCREEN AND REVERSIBLE BACKDRAFT DAMPER, SAME SIZE AS DUCT. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. FOR OUTSIDE AIR DUCT, PROVIDE MOTOR OPERATED DAMPER TO OPEN WHEN UNIT IS ENERGIZED. ALL INTAKES SHALL MEET THE FOLLOWING REQUIREMENTS.
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   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ╪ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90. . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35', OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

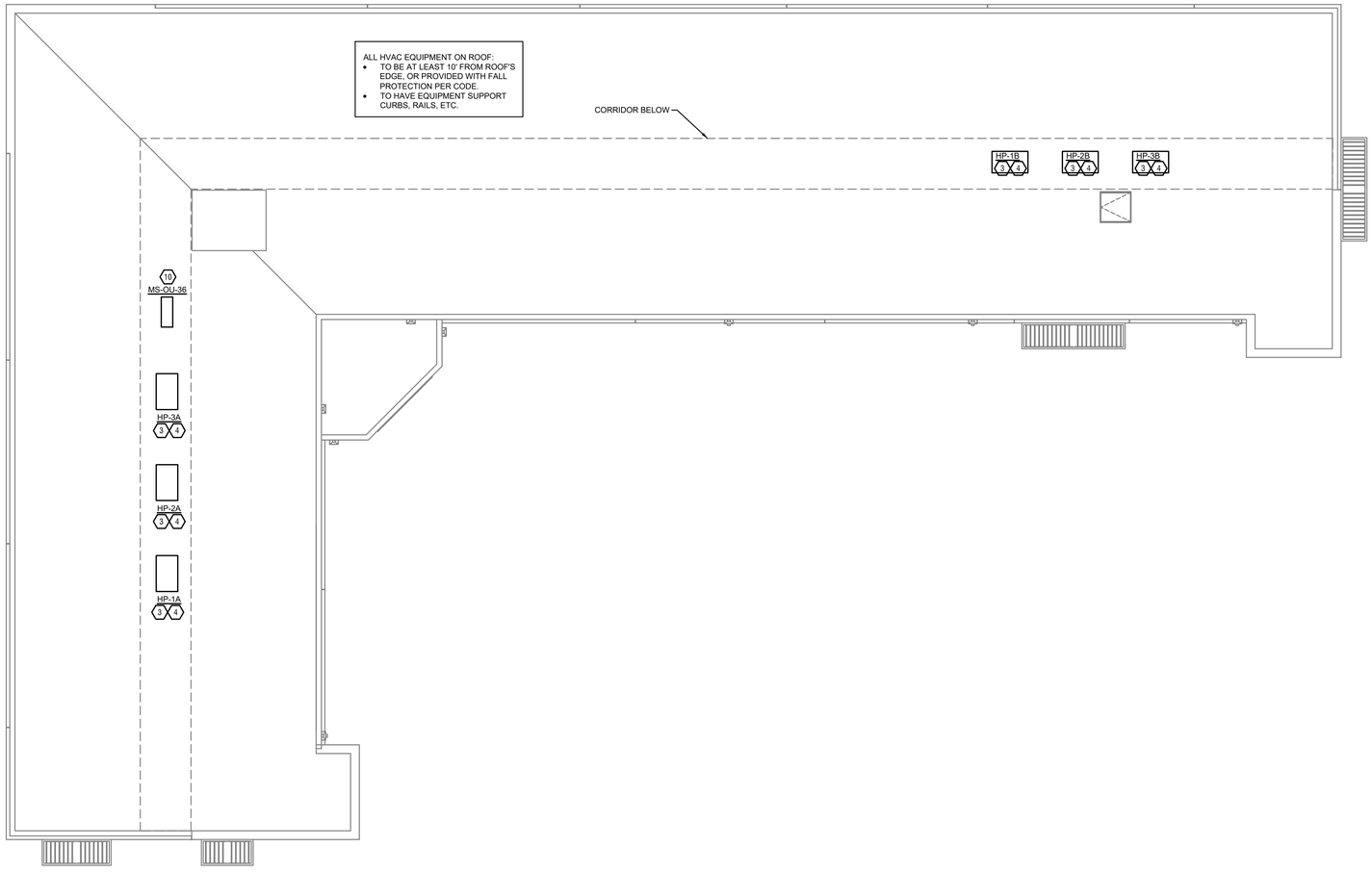
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL THIRD FLOOR PLAN

SHEET NO.
M102



KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM, PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN OR EXTERIOR LANDSCAPING BED. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. ROUTE DRYER, RESIDENTIAL RANGE HOOD (<400 CFM), OR BATH EXHAUST TO EXTERIOR WALL. PROVIDE A FAMCO MODEL DWVP HOODED VENT FOR DRYER AND KITCHEN. PROVIDE A FAMCO MODEL SDWVP HOODED VENT WITH DAMPER AND SCREEN VENT FOR BATH. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. PROVIDE "INSECT" SCREEN FOR BATH EXHAUST ("INSECT" SCREEN SHALL NOT BE USED ON DRYER OR KITCHEN EXHAUST). ALL EXHAUST SHALL MEET THE FOLLOWING REQUIREMENTS.
   - 5.1. 3' FROM PROPERTY LINE.
   - 5.2. 3' FROM OPERABLE OPENINGS INTO BUILDING.
   - 5.3. 10' FROM MECHANICAL AIR INTAKE.
6. UNDERCUT DOOR 1" FOR TRANSFER AIR. FOR DOORS TO CORRIDOR, PROVIDE FIRE RATED TRANSFER AIR GRILLE IN DOOR.
7. PROVIDE PROGRAMMABLE THERMOSTAT, AND INSTALL TO MEET ADA REQUIREMENTS. COORDINATE FINAL LOCATIONS WITH ARCHITECT / OWNER PRIOR TO INSTALLATION. FOR THERMOSTATS INSTALLED ON EXPOSED BRICK WALLS, PROVIDE CONDUIT FOR THERMOSTAT WIRE. FOR THERMOSTATS INSTALLED ON EXTERIOR WALLS, INSULATE BACKSIDE.
8. REFER TO DETAILS AND DIAGRAMS ON DRAWING SERIES M300 & M500, FOR WORK IN THIS AREA. PROVIDE COMPLETE SYSTEM, AND LEAVE IN OPERATING CONDITION.
9. PROVIDE INDOOR UNIT. VERIFY LOCATION WITH ALL OTHER TRADES. MECHANICAL CONTRACTOR TO PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. FOR WALL MOUNTED MINI SPLIT SYSTEMS, PROVIDE SICCOM MODEL DEO5LUB100/110 OR APPROVED EQUAL. PROVIDE ALL REFRIGERATION PIPING, ACCESSORIES, CONTROLS, AND LEAVE UNIT IN OPERATING CONDITION.
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT, LENGTH OF PIPE, NUMBER OF ELBOWS, AND MAXIMUM RISE BETWEEN INDOOR AND OUTDOOR UNITS; WITH ALL OTHER TRADES AND MANUFACTURE BEFORE ORDERING EQUIPMENT OR ANY MATERIALS. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR UNIT. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURES RECOMMENDATIONS. PROVIDE SUPPORT BLOCKS FOR PIPING INSTALLED ON ROOF EQUAL TO EATON DURA-BLOK B-LINE SERIES. UNITS ON ROOF TO BE 10 FEET FROM ROOFS EDGE OR PROVIDED WITH FALL PROTECTION. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING AND LEAVE UNITS IN OPERATING CONDITION.
    - 10.1. MINI SPLIT SYSTEMS: POWER WIRING TO HEAT PUMP BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL METAL CLAD (MC) CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.
11. PROVIDE HEATER. VERIFY LOCATION WITH ALL OTHER TRADES.
12. ROUTE OUTSIDE AIR INTAKE FROM EXTERIOR WALL. TRANSITION TO CONNECTION SIZE AT UNIT AS REQUIRED. PROVIDE A FAMCO MODEL RDWV HOODED INTAKE VENT WITH REMOVABLE "INSECT" SCREEN AND REVERSIBLE BACKDRAFT DAMPER, SAME SIZE AS DUCT. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. FOR OUTSIDE AIR DUCT, PROVIDE MOTOR OPERATED DAMPER TO OPEN WHEN UNIT IS ENERGIZED. ALL INTAKES SHALL MEET THE FOLLOWING REQUIREMENTS.
    - 12.1. NOT LESS THAN 10 FEET FROM LOT LINES OR BUILDINGS ON THE SAME LOT.
    - 12.2. NOT LESS THAN 10 FEET HORIZONTALLY FROM ANY HAZARDOUS OR NOXIOUS CONTAMINANT SOURCE, SUCH AS VENTS, STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS, EXCEPT AS SPECIFIED IN ITEM 3 OR SECTION "LOCATION OF EXHAUST OUTLETS". OUTDOOR AIR INTAKE OPENINGS SHALL BE PERMITTED TO BE LOCATED LESS THAN 10 FEET HORIZONTALLY FROM STREETS, ALLEYS, PARKING LOTS AND LOADING DOCKS PROVIDED THAT THE OPENINGS ARE LOCATED NOT LESS THAN 25 FEET VERTICALLY ABOVE SUCH LOCATIONS. WHERE OPENINGS FRONT ON A STREET OR PUBLIC WAY, THE DISTANCE SHALL BE MEASURED FROM THE CLOSEST EDGE OF THE STREET OR PUBLIC WAY.
    - 12.3. NOT LESS THAN 3 FEET BELOW CONTAMINANT SOURCES WHERE SUCH SOURCES ARE LOCATED WITHIN 10 FEET OF THE OPENING.
    - 12.4. INTAKE OPENINGS ON STRUCTURES IN FLOOD HAZARD AREAS SHALL BE AT OR ABOVE THE ELEVATION REQUIRED BY SECTION 1612 OF THE BUILDING CODE FOR UTILITIES AND ATTENDANT EQUIPMENT.
13. PROVIDE WALL PENETRATION PER OMC SECTION 607.5.3 EXCEPTION 4. DUCT TO BE CONSTRUCTED OF SHEET STEEL NOT LESS THAN 26 GAGE THICKNESS AND SHALL BE CONTINUOUS FROM THE AIR-HANDLING APPLIANCE OR EQUIPMENT TO THE AIR OUTLET AND INLET TERMINALS.
14. PROVIDE WALL PENETRATION PER OMC SECTION 607.5.3 EXCEPTION 1. REFER TO DETAIL 2 ON DRAWING M302.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY.
PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

- 2017 OHIO MECHANICAL CODE
- 2017 OHIO BUILDING CODE
- ASHRAE 90.1-2010

HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
O. PROVIDE COMPLETE CONTROL SYSTEM, AND LEAVE UNITS IN OPERATING CONDITION.
P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
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   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35', OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

MECHANICAL ROOF PLAN

1 / M103 SCALE: 1/8" = 1'-0"

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.

Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
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DRAWN BY	CHECKED BY
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PROJECT NO.: 9656

SCALE:AS NOTED

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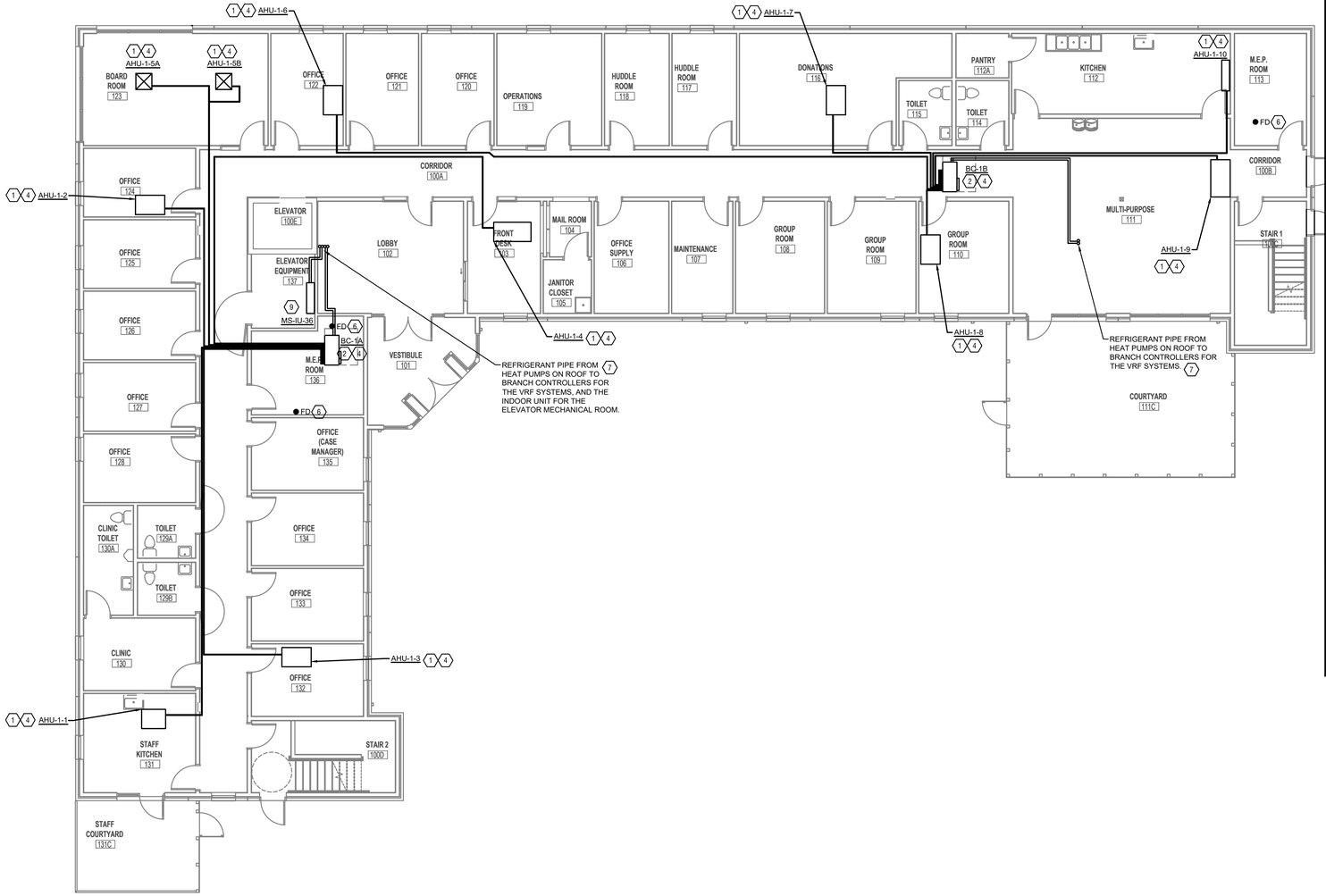
DRAWING TITLE
MECHANICAL ROOF PLAN

SHEET NO.
M103



KEYED SHEET NOTES

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   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. REFER TO DETAIL 3 ON DRAWING M301 FOR REFRIGERANT PIPE DOGHOUSE.
6. FLOOR DRAIN BY PLUMBING CONTRACTOR. ROUTE CONDENSATE FROM EACH VRF TERMINAL UNIT AND BRANCH BOX TO A FLOOR DRAIN ON THIS FLOOR. IF THEY ARE COMBINED TOGETHER, PIPE SIZES TO BE PER OMC 307.2.2. PROVIDE WALL PENETRATION PER DETAIL 1 ON DRAWING M302. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
7. ROUTE REFRIGERANT PIPING FROM EACH VRF TERMINAL UNIT TO BRANCH CONTROLLER AND THEN TO HEAT PUMP ON ROOF. PIPING SHALL BE RUN BELOW DUCT OR TO THE SIDE OF DUCT AS HIGH AS POSSIBLE, AND NOT OVER EQUIPMENT OR ELECTRICAL PANELS. ROUTE BELOW FLOOR / CEILING ASSEMBLY WHERE POSSIBLE. PROVIDE FIRE PENETRATION PROTECTION IF ROUTED IN RATED FLOOR / CEILING ASSEMBLY. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
8. REFER TO DETAILS AND DIAGRAMS ON DRAWING SERIES M300 & M500, FOR WORK IN THIS AREA. PROVIDE COMPLETE SYSTEM, AND LEAVE IN OPERATING CONDITION.
9. PROVIDE INDOOR UNIT. VERIFY LOCATION WITH ALL OTHER TRADES. MECHANICAL CONTRACTOR TO PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. FOR WALL MOUNTED MINI SPLIT SYSTEMS, PROVIDE SICCOM MODEL DEOSUB100110 OR APPROVED EQUAL. PROVIDE ALL REFRIGERATION PIPING, ACCESSORIES, CONTROLS, AND LEAVE UNIT IN OPERATING CONDITION.
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT, LENGTH OF PIPE, NUMBER OF ELBOWS, AND MAXIMUM RISE BETWEEN INDOOR AND OUTDOOR UNITS; WITH ALL OTHER TRADES AND MANUFACTURE BEFORE ORDERING EQUIPMENT OR ANY MATERIALS. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR UNIT. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURES RECOMMENDATIONS. PROVIDE SUPPORT BLOCKS FOR PIPING INSTALLED ON ROOF EQUAL TO EATON DURA-BLOK B-LINE SERIES. UNITS ON ROOF TO BE 10 FEET FROM ROOFS EDGE OR PROVIDED WITH FALL PROTECTION. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING AND LEAVE UNITS IN OPERATING CONDITION.
    - 10.1. MINI SPLIT SYSTEMS: POWER WIRING TO HEAT PUMP BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL METAL CLAD (MC) CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY.
PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

- 2017 OHIO MECHANICAL CODE
- 2017 OHIO BUILDING CODE
- ASHRAE 90.1-2010

HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
O. PROVIDE COMPLETE CONTROL SYSTEM, AND LEAVE UNITS IN OPERATING CONDITION.
P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT. SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90 . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35'; OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

PIPING FIRST FLOOR PLAN

N — 1 / M200 — SCALE: 1/8" = 1'-0"

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

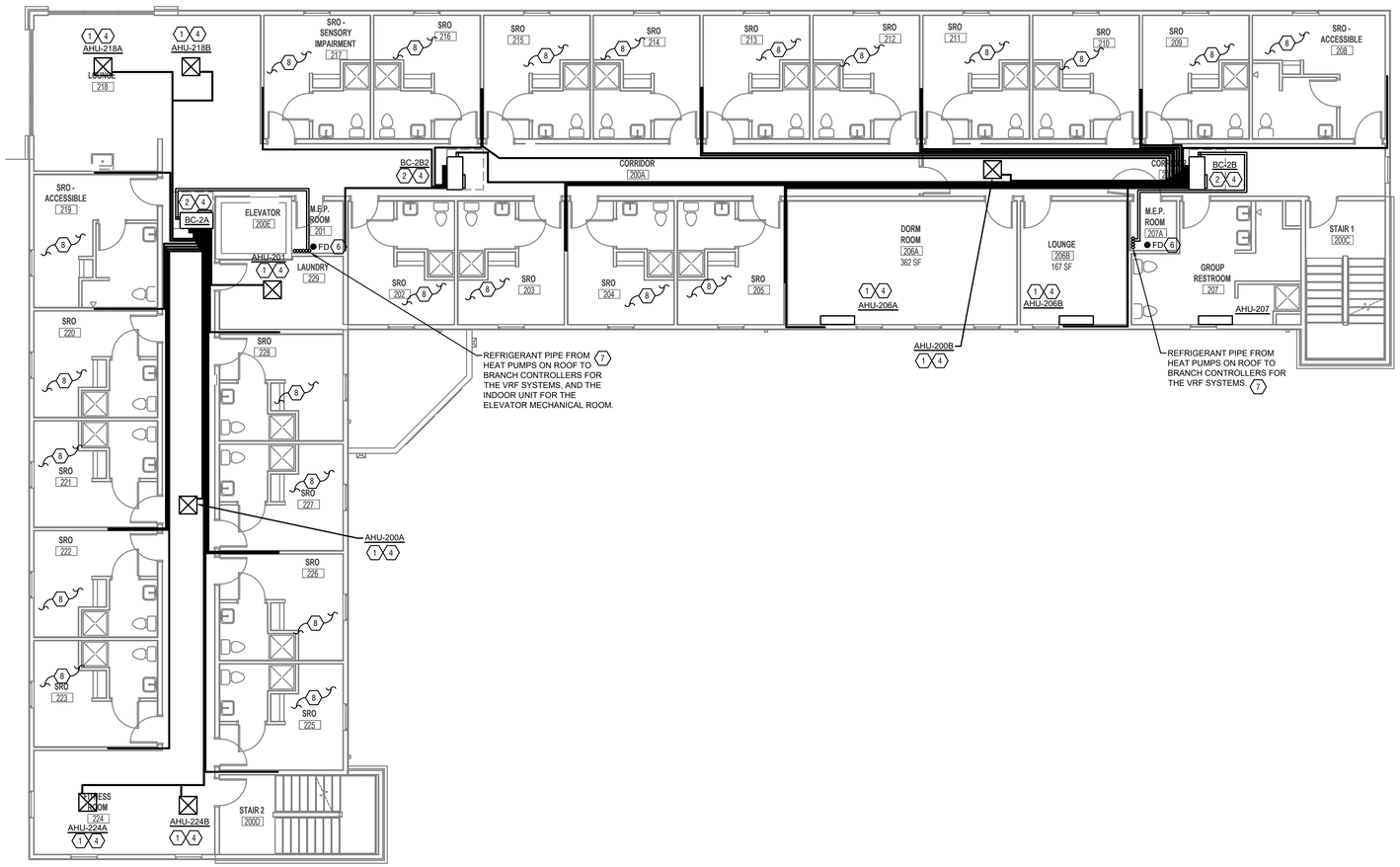
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
PIPING FIRST FLOOR PLAN

SHEET NO.
M200



1 M201 PIPING SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM. PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN OR EXTERIOR LANDSCAPING BED. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. REFER TO DETAIL 3 ON DRAWING M301 FOR REFRIGERANT PIPE DOGHOUSE.
6. FLOOR DRAIN BY PLUMBING CONTRACTOR. ROUTE CONDENSATE FROM EACH VRF TERMINAL UNIT AND BRANCH BOX TO A FLOOR DRAIN ON THIS FLOOR. IF THEY ARE COMBINED TOGETHER, PIPE SIZES TO BE PER OMC 307.2.2. PROVIDE WALL PENETRATION PER DETAIL 1 ON DRAWING M302. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
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P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90. . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35', OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

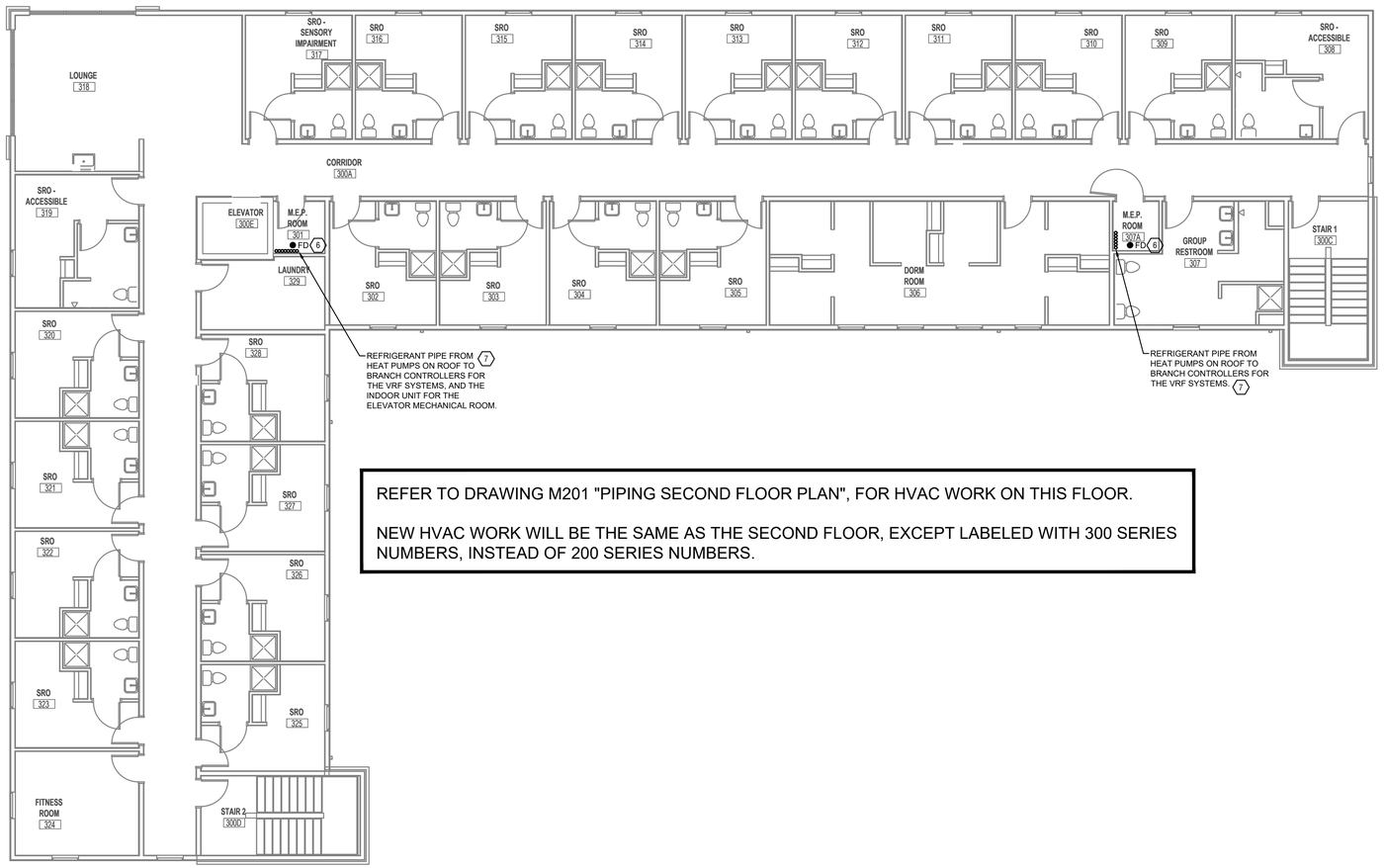
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
PIPING SECOND FLOOR PLAN

SHEET NO.
M201



REFER TO DRAWING M201 "PIPING SECOND FLOOR PLAN", FOR HVAC WORK ON THIS FLOOR.

NEW HVAC WORK WILL BE THE SAME AS THE SECOND FLOOR, EXCEPT LABELED WITH 300 SERIES NUMBERS, INSTEAD OF 200 SERIES NUMBERS.

KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4.
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM. PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN OR EXTERIOR LANDSCAPING BED. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. REFER TO DETAIL 3 ON DRAWING M301 FOR REFRIGERANT PIPE DOGHOUSE.
6. FLOOR DRAIN BY PLUMBING CONTRACTOR. ROUTE CONDENSATE FROM EACH VRF TERMINAL UNIT AND BRANCH BOX TO A FLOOR DRAIN ON THIS FLOOR. IF THEY ARE COMBINED TOGETHER, PIPE SIZES TO BE PER OMC 307.2.2. PROVIDE WALL PENETRATION PER DETAIL 1 ON DRAWING M302. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
7. ROUTE REFRIGERANT PIPING FROM EACH VRF TERMINAL UNIT TO BRANCH CONTROLLER AND THEN TO HEAT PUMP ON ROOF. PIPING SHALL BE RUN BELOW DUCT OR TO THE SIDE OF DUCT AS HIGH AS POSSIBLE, AND NOT OVER EQUIPMENT OR ELECTRICAL PANELS. ROUTE BELOW FLOOR / CEILING ASSEMBLY WHERE POSSIBLE. PROVIDE FIRE PENETRATION PROTECTION IF ROUTED IN RATED FLOOR / CEILING ASSEMBLY. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
8. REFER TO DETAILS AND DIAGRAMS ON DRAWING SERIES M300 & M500, FOR WORK IN THIS AREA. PROVIDE COMPLETE SYSTEM, AND LEAVE IN OPERATING CONDITION.
9. PROVIDE INDOOR UNIT. VERIFY LOCATION WITH ALL OTHER TRADES. MECHANICAL CONTRACTOR TO PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. FOR WALL MOUNTED MINI SPLIT SYSTEMS, PROVIDE SICCOM MODEL DEO5LUB100/110 OR APPROVED EQUAL. PROVIDE ALL REFRIGERATION PIPING, ACCESSORIES, CONTROLS, AND LEAVE UNIT IN OPERATING CONDITION.
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT, LENGTH OF PIPE, NUMBER OF ELBOWS, AND MAXIMUM RISE BETWEEN INDOOR AND OUTDOOR UNITS; WITH ALL OTHER TRADES AND MANUFACTURE BEFORE ORDERING EQUIPMENT OR ANY MATERIALS. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR UNIT. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURES RECOMMENDATIONS. PROVIDE SUPPORT BLOCKS FOR PIPING INSTALLED ON ROOF EQUAL TO EATON DURA-BLOK B-LINE SERIES. UNITS ON ROOF TO BE 10 FEET FROM ROOFS EDGE OR PROVIDED WITH FALL PROTECTION. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING AND LEAVE UNITS IN OPERATING CONDITION.
    - 10.1. MINI SPLIT SYSTEMS: POWER WIRING TO HEAT PUMP BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL METAL CLAD (MC) CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY.
PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

- 2017 OHIO MECHANICAL CODE
- 2017 OHIO BUILDING CODE
- ASHRAE 90.1-2010

HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
O. PROVIDE COMPLETE CONTROL SYSTEM, AND LEAVE UNITS IN OPERATING CONDITION.
P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90. . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35', OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

N

1 / M202 PIPING THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES		
DATE	NO.	DESCRIPTION
08-05-2022	-	PERMIT SET

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

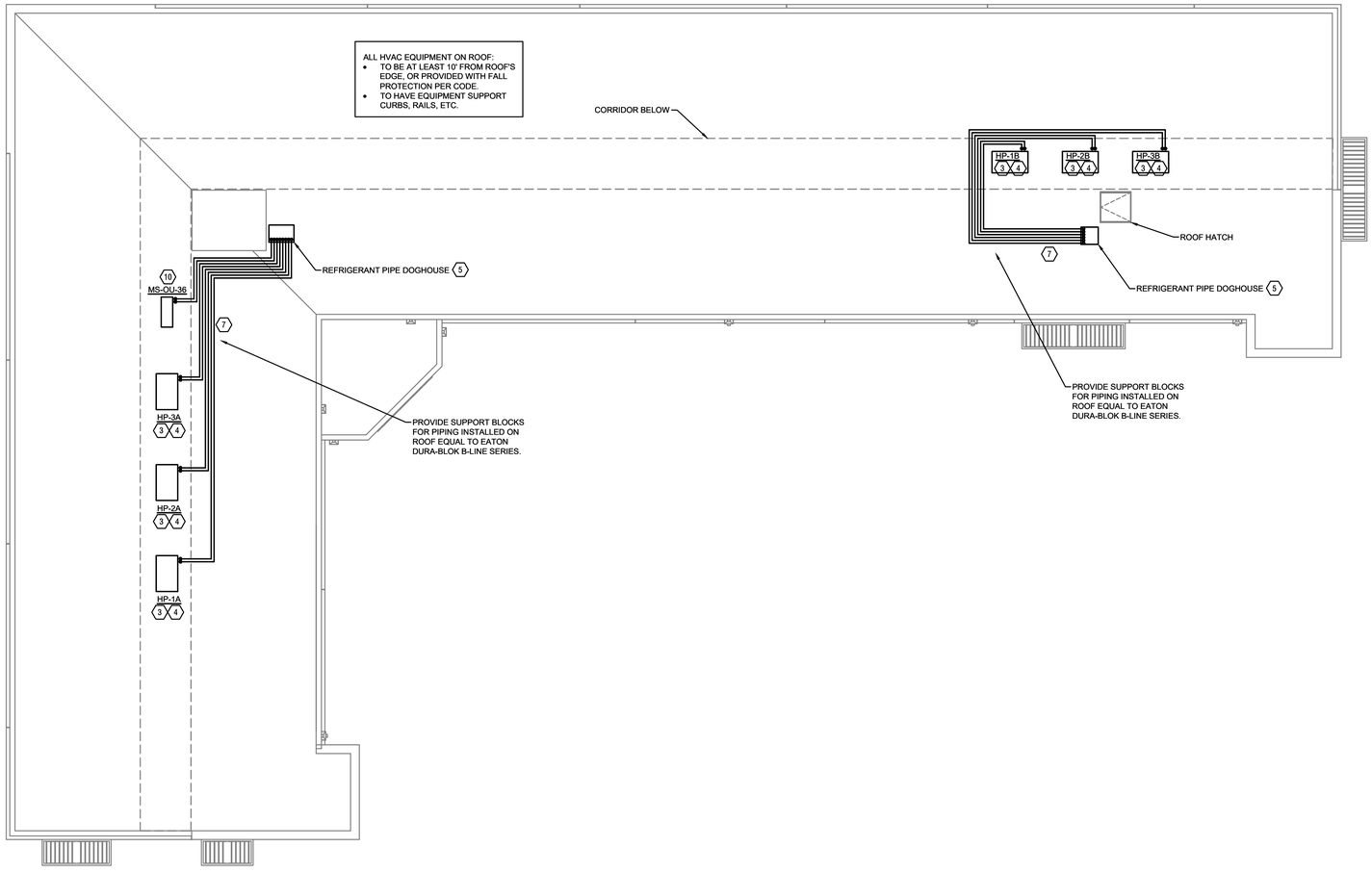
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
PIPING THIRD FLOOR PLAN

SHEET NO.
M202



PIPING ROOF PLAN

1 / M203 — SCALE: 1/8" = 1'-0"

KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4.
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM. PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN OR EXTERIOR LANDSCAPING BED. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. REFER TO DETAIL 3 ON DRAWING M301 FOR REFRIGERANT PIPE DOGHOUSE.
6. FLOOR DRAIN BY PLUMBING CONTRACTOR. ROUTE CONDENSATE FROM EACH VRF TERMINAL UNIT AND BRANCH BOX TO A FLOOR DRAIN ON THIS FLOOR. IF THEY ARE COMBINED TOGETHER, PIPE SIZES TO BE PER OMC 307.2.2. PROVIDE WALL PENETRATION PER DETAIL 1 ON DRAWING M302. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
7. ROUTE REFRIGERANT PIPING FROM EACH VRF TERMINAL UNIT TO BRANCH CONTROLLER AND THEN TO HEAT PUMP ON ROOF. PIPING SHALL BE RUN BELOW DUCT OR TO THE SIDE OF DUCT AS HIGH AS POSSIBLE, AND NOT OVER EQUIPMENT OR ELECTRICAL PANELS. ROUTE BELOW FLOOR / CEILING ASSEMBLY WHERE POSSIBLE. PROVIDE FIRE PENETRATION PROTECTION IF ROUTED IN RATED FLOOR / CEILING ASSEMBLY. ROUTE ALL PIPING ABOVE DROP CEILINGS, IN WALLS, OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. PIPES SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN PIPES ARE ROUTED UP IN JOIST POCKET, RATING SHALL BE MAINTAINED AROUND PIPE. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
8. REFER TO DETAILS AND DIAGRAMS ON DRAWING SERIES M300 & M500, FOR WORK IN THIS AREA. PROVIDE COMPLETE SYSTEM, AND LEAVE IN OPERATING CONDITION.
9. PROVIDE INDOOR UNIT. VERIFY LOCATION WITH ALL OTHER TRADES. MECHANICAL CONTRACTOR TO PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. FOR WALL MOUNTED MINI SPLIT SYSTEMS, PROVIDE SICCOM MODEL DEO5LUB100/110 OR APPROVED EQUAL. PROVIDE ALL REFRIGERATION PIPING, ACCESSORIES, CONTROLS, AND LEAVE UNIT IN OPERATING CONDITION.
10. COORDINATE EXACT LOCATION OF HVAC EQUIPMENT, LENGTH OF PIPE, NUMBER OF ELBOWS, AND MAXIMUM RISE BETWEEN INDOOR AND OUTDOOR UNITS; WITH ALL OTHER TRADES AND MANUFACTURE BEFORE ORDERING EQUIPMENT OR ANY MATERIALS. ROUTE REFRIGERANT PIPING FROM OUTDOOR UNIT TO INDOOR UNIT. ALL PIPING SHALL BE CONCEALED IN FINISHED AREA. SIZE PER MANUFACTURES RECOMMENDATIONS. PROVIDE SUPPORT BLOCKS FOR PIPING INSTALLED ON ROOF EQUAL TO EATON DURA-BLOK B-LINE SERIES. UNITS ON ROOF TO BE 10 FEET FROM ROOFS EDGE OR PROVIDED WITH FALL PROTECTION. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING AND LEAVE UNITS IN OPERATING CONDITION.
    - 10.1. MINI SPLIT SYSTEMS: POWER WIRING TO HEAT PUMP BY ELECTRICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL METAL CLAD (MC) CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY. PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

- 2017 OHIO MECHANICAL CODE
- 2017 OHIO BUILDING CODE
- ASHRAE 90.1-2010

HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
O. PROVIDE COMPLETE CONTROL SYSTEM, AND LEAVE UNITS IN OPERATING CONDITION.
P. MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL BE LISTED AND LABLED AS HAVING A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723.
Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90. . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35', OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

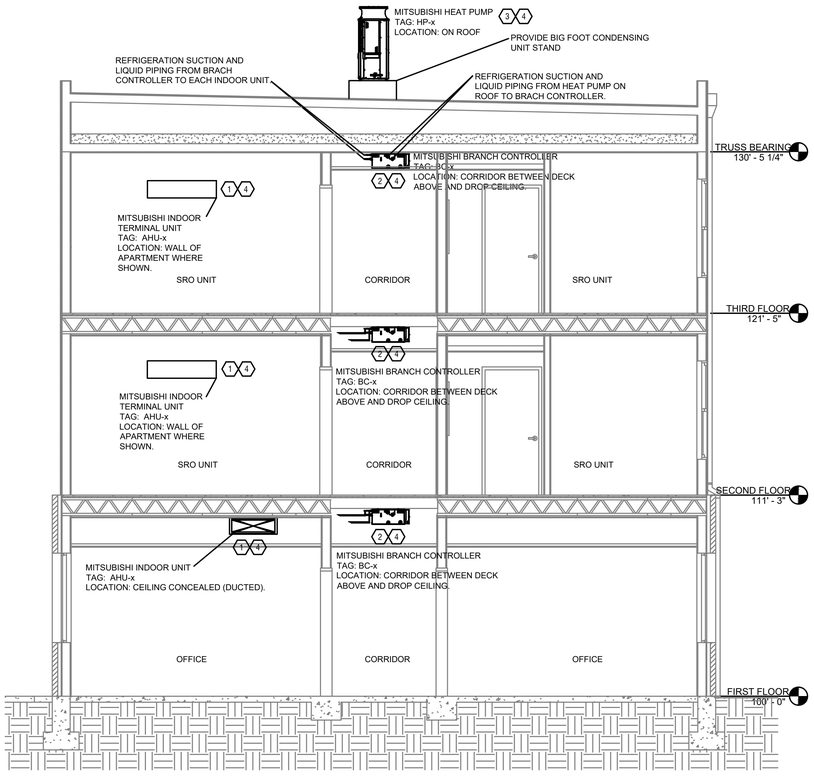
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

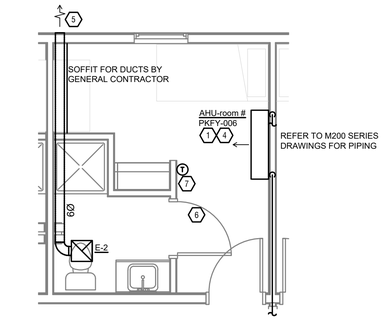
DRAWING TITLE
PIPING ROOF PLAN

SHEET NO.
M203



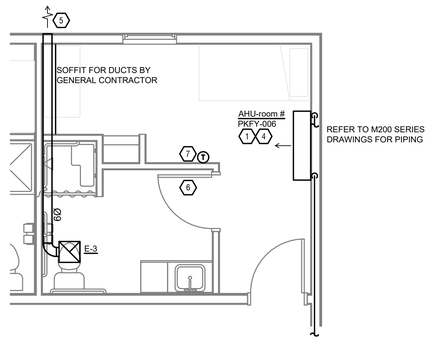
MECHANICAL TYPICAL ELEVATION

1 / M200 SCALE: 1/4" = 1'-0"



MECHANICAL TYPICAL SRO ROOM PLAN

2 / M200 SCALE: 1/4" = 1'-0"



MECHANICAL TYPICAL SRO-ADA ROOM PLAN

3 / M200 SCALE: 1/4" = 1'-0"

KEYED SHEET NOTES

1. PROVIDE VRF TERMINAL UNIT AND MOUNT AS NOTED REFER TO DRAWING NOTE 4.
2. PROVIDE VRF BRANCH CIRCUIT CONTROLLER ABOVE DROP CEILING AND BELOW DECK ABOVE. REFER TO DRAWING NOTE 4
3. PROVIDE HEAT PUMP UNIT AND EQUIPMENT BASE TO ELEVATE OFF ADJACENT STRUCTURE. HEAT PUMP TO BE MOUNTED ON ROOF ABOVE CORRIDOR BELOW, WITH BIG FOOT SYSTEMS STANDS AND VIBRATION ISOLATION. PROVIDE VIBRATION ISOLATION ON ALL CONNECTIONS TO UNIT AND BASE REFER TO DRAWING NOTE 4.
4. PROVIDE COMPLETE VRF SYSTEM. PER MANUFACTURER'S INSTRUCTIONS, AND LEAVE IN OPERATING CONDITION.
   - 4.1. COORDINATE EXACT EQUIPMENT LOCATIONS WITH OWNER'S REPRESENTATIVE, MANUFACTURER'S INSTRUCTIONS, AND ALL OTHER TRADES. UNITS TO BE INSTALLED TO MAINTAIN REQUIRED SERVICE AND CODE CLEARANCES. PROVIDE ACCESS PANELS AS REQUIRED.
   - 4.2. ROUTE REFRIGERANT PIPING FROM HEAT PUMP TO BRANCH CONTROLLER, AND FROM BRANCH CONTROLLER TO EACH VRF TERMINAL UNIT. PRELIMINARY SIZES INDICATED ON THE PIPING DIAGRAMS. PIPE SIZES AND QUANTITY TO BE DETERMINED BY UNIT MANUFACTURER ONCE FINAL ROUTING IS DETERMINED. DO NOT ORDER UNITS OR MATERIALS UNTIL FINAL PIPE ROUTING IS FINALIZED WITH TOTAL FEET, FEET OF RISE, AND NUMBER OF ELBOWS, AND COORDINATED WITH THE EQUIPMENT MANUFACTURER AND OWNER'S REPRESENTATIVE. INSULATE REFRIGERATION PIPING.
   - 4.3. PROVIDE P-TRAP PER OMC 307.2.4. FOR MINI-SPLITS A P-TRAP OR CHECK VALVE EQUAL TO RECTORSEAL MODEL EZT180 CAN BE USED PER OMC 307.2.4.1. PROVIDE 3/4" CONDENSATE DRAIN LINE TO NEAREST FLOOR DRAIN. COORDINATE WITH PLUMBING CONTRACTOR AND OWNER'S REPRESENTATIVE. SLOPE PIPE A MINIMUM OF 1/8" PER FOOT AWAY FROM UNIT. PROVIDE CONDENSATE PUMP HARDWIRED TO UNIT TO PROVIDE THE NECESSARY LIFT TO DRAIN CONDENSATE BY GRAVITY IF REQUIRED. CONDENSATE PUMP SHALL BE COMPLETELY CONCEALED IN UNIT CABINET, FOR UNITS LOCATED IN OCCUPIED SPACES.
   - 4.4. FOR CONCEALED UNITS, PROVIDE OVERFLOW SWITCH IN PRIMARY DRAIN LINE THAT WILL SHUT OFF THE UNIT ON HIGH WATER LEVEL.
   - 4.5. PROVIDE HOLES THRU WALLS, FLOORS AND ROOF AS REQUIRED. ROUTE ALL PIPING AND WIRES, CONCEALED WHERE FEASIBLE, TO AVOID SIGNIFICANT TRIM AND ARCHITECTURAL FEATURES WHEN INSTALLING THEM. ALL PIPING TO HAVE FIRE STOP AND BE SEALED WATERTIGHT.
   - 4.6. PROVIDE STAND ALONE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, WITH CAPABILITY TO CONNECT TO BUILDING AUTOMATION SYSTEM IN THE FUTURE. PROVIDE ALL INTERCONNECTING CONTROL WIRING. PROVIDE CONTROL SYSTEM TO CONTROL ALL ASPECTS OF HVAC SYSTEM, AND MONITOR SPACE TEMPERATURE, AND FAILURE OF VRF SYSTEM.
   - 4.7. PROVIDE ALL PIPING, ACCESSORIES, THERMOSTATS, AND CONTROLS, FOR A COMPLETE AND OPERATING SYSTEM.
5. ROUTE DRYER, RESIDENTIAL RANGE HOOD (<400 CFM), OR BATH EXHAUST TO EXTERIOR WALL. PROVIDE A FAMCO MODEL DWVP HOODED VENT FOR DRYER AND KITCHEN. PROVIDE A FAMCO MODEL SWVP HOODED VENT WITH DAMPER AND SCREEN VENT FOR BATH. SEE ARCHITECT BEFORE PENETRATION, FOR EXACT LOCATION, MODEL, AND COLOR COORDINATION. PROVIDE "INSECT" SCREEN FOR BATH EXHAUST ("INSECT" SCREEN SHALL NOT BE USED ON DRYER OR KITCHEN EXHAUST). ALL EXHAUST SHALL MEET THE FOLLOWING REQUIREMENTS.
   - 5.1. 3' FROM PROPERTY LINE.
   - 5.2. 3' FROM OPERABLE OPENINGS INTO BUILDING.
   - 5.3. 10' FROM MECHANICAL AIR INTAKE.
6. UNDERCUT DOOR 1" FOR TRANSFER AIR.
7. PROVIDE PROGRAMMABLE THERMOSTAT, AND INSTALL TO MEET ADA REQUIREMENTS. COORDINATE FINAL LOCATIONS WITH ARCHITECT / OWNER PRIOR TO INSTALLATION. FOR THERMOSTATS INSTALLED ON EXPOSED BRICK WALLS, PROVIDE CONDUIT FOR THERMOSTAT WIRE. FOR THERMOSTATS INSTALLED ON EXTERIOR WALLS, INSULATE BACKSIDE.

MECHANICAL SCOPE OF WORK

PROVIDE NEW VRF HVAC SYSTEM FOR A NEW DORM FACILITY.
PROVIDE CONTROL SYSTEMS FOR ALL HVAC EQUIPMENT. FOR VRF SYSTEMS PROVIDE COMPLETE CONTROLS SYSTEM, INCLUDING BUT NOT LIMITED TO, ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS, ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS, AND ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT. LEAVE ALL SYSTEMS IN OPERATING CONDITION.

CODES REFERENCED

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HVAC DESIGN CONDITIONS

COOLING	HEATING
OUTDOOR: 93 DB / 75 WB	OUTDOOR: 0 DB
INDOOR: 74 (COMMON AREAS)	INDOOR: 72 (COMMON AREAS)
INDOOR: 75 (RESIDENTIAL)	INDOOR: 70 (RESIDENTIAL)

GENERAL NOTES

A. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO COVER THE SCOPE OF THE WORK AND TO INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE SIZE AND LOCATION OF EQUIPMENT, DUCTS, PIPES, ETC. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, AND COMPONENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING ALL CONDITIONS AND DIMENSIONS. DO NOT SCALE THE DRAWINGS. CONTRACTOR TO VERIFY EXISTING SUPPLY AND RETURN DUCTWORK AND PIPING, SYSTEMS, SIZE, AND DUCT AND PIPE TYPE PRIOR TO MAKING CONNECTIONS.
B. FOR FULL SCHEDULES, SPECIFICATIONS, AND COMPLETE LISTING SEE DETAIL SHEETS.
C. COORDINATE ROUTING OF ALL WORK WITH OTHER TRADES.
D. COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. MAINTAIN ALL CODE RECOMMENDED CLEARANCES FOR ACCESS AND MAINTENANCE.
F. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS, AND FINAL CEILING DIFFUSER LOCATIONS.
G. MAINTAIN ALL CODE REQUIRED SERVICE CLEARANCES. FOLLOW CLEARANCE TO COMBUSTIBLE DISTANCE PER MANUFACTURER'S INSTRUCTIONS.
H. PROVIDE BACKDRAFT DAMPERS FOR ALL EXHAUST SYSTEMS AND EITHER LOUVER, BRICK VENT, OR CAPS AT ALL EXTERIOR BUILDING PENETRATIONS.
I. PROVIDE AN AUXILIARY DRAIN PAN WITH OVERFLOW SWITCH UNDERNEATH HORIZONTAL UNITS, WHICH WILL SHUTOFF THE UNIT ON HIGH WATER LEVEL.
J. A WATER-LEVEL DETECTION DEVICE CONFORMING TO UL508 SHALL BE PROVIDED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE, OR IN THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.
K. ROUTE ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK ABOVE DROP CEILING OR IN BULKHEADS. COORDINATE ROUTING WITH ARCHITECTURAL DRAWINGS. DUCTS SHALL BE RUN BELOW THE RATED FLOOR/CEILING. WHEN DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
L. ROUTE ALL AIR CONDITIONER CONDENSATE TO NEARBY FLOOR DRAIN. PROVIDE MINIMUM SLOPE OF 1/8 " PER FOOT. SIZE CONDENSATE PER SECTION 307.2.2 OF THE OHIO MECHANICAL CODE.
M. PROVIDE AN APPROVED THROUGH PENETRATION FIRESTOP FOR ALL PIPING INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL 1479. FIRESTOP SHALL HAVE A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCHES OF WATER AND SHALL HAVE AN F RATING OF NOT LESS THAN THE REQUIRED FIRE-RESISTANCE RATING OF THE WALL OR FLOOR PENETRATED.
N. ANY EQUIPMENT THAT IS SUBSTITUTED SHALL FIT IN THE SPACE PROVIDED WITH ADEQUATE ROOM FOR SERVICING, INCLUDING SUBSTITUTE EQUIPMENT NAMED IN THE SPECIFICATIONS. SUBMIT A 1/4" SCALE DRAWING OF ALL EQUIPMENT SUBSTITUTED FOR APPROVAL PRIOR TO INSTALLATION, INCLUDING, BUT NOT LIMITED TO, STRUCTURAL AND ARCHITECTURAL IMPACT, CLEARANCE REQUIREMENTS AND UTILITY REQUIREMENTS. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO COORDINATE ALL NEW ELECTRICAL AND PLUMBING REQUIREMENTS WITH THE ELECTRICAL AND PLUMBING CONTRACTORS.
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Q. THE FOLLOWING GUIDELINES MUST BE FOLLOWED FOR THE DOMESTIC DRYER EXHAUST SYSTEMS.
   - Q.A. EXHAUST DUCTS SHALL HAVE A SMOOTH INTERIOR FINISH AND BE CONSTRUCTED OF METAL A MINIMUM OF 28 GAGE.
   - Q.B. DUCT SIZE SHALL BE 4 INCHES NOMINAL DIAMETER.
   - Q.C. DUCTS SHALL BE SUPPORTED AT 4-FOOT INTERVALS AND SECURED IN PLACE. THE INSERT END OF THE DUCT SHALL EXTEND INTO THE ADJOINING DUCT OR FITTING IN THE DIRECTION OF AIRFLOW.
   - Q.D. DUCTS SHALL NOT BE JOINED WITH SCREWS OF SIMILAR FASTENERS THAT PROTRUDE MORE THAN ¼ INCH INTO THE INSIDE OF THE DUCT.
   - Q.E. PROTECTIVE SHIELD PLATES SHALL BE PLACED WHERE NAILS OR SCREWS FROM FINISH OR OTHER WORK ARE LIKELY TO PENETRATE THE CLOTHES DRYER EXHAUST DUCT.SHIELD PLATES SHALL BE PLACED ON THE FINISHED FACE OF ALL FRAMING MEMBERS WHERE THERE IS LESS THAN 1-1/4 INCHES BETWEEN THE DUCT AND THE FINISHED FACE OF THE FRAMING MEMBER. SHIELD PLATES SHALL BE CONSTRUCTED OF STEEL, HAVE A THICKNESS OF 0.062 INCHES, AND EXTEND NOT LESS THAN 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.
   - Q.F. TRANSITION DUCTS USED TO CONNECT THE DRYER TO THE EXHAUST DUCT SYSTEM SHALL BE A SINGLE LENGTH THAT IS LISTED AND LABELED IN ACCORDANCE WITH UL 2158A. TRANSITION DUCTS SHALL BE NOT GREATER THAN 8 FEET IN LENGTH AND SHALL NOT BE CONCEALED WITHIN CONSTRUCTION.
   - Q.G. PROVIDE DRYER WALL BOX EQUAL TO DRYERBOX MODEL 350 NEAR DRYER. INSTALL PER MANUFACTURER'S INSTRUCTIONS, INCLUDING FIRE STOP IF INSTALLED IN A RATED WALL. CAP EXHAUST DUCT AT DRYER WALL BOX FOR FUTURE CONNECTION.
   - Q.H. PROVIDE A PERMANENT LABEL OR TAG (EQUAL TO DRYERPLACARD) INDICATING ACTUAL EQUIVALENT LENGTH OF EXHAUST DUCT. LENGTH SHALL INCLUDE 5' FOR 90. . LABEL/TAG MUST BE WITHIN 6' OF DRYER EXHAUST CONNECTION. DRYER EXHAUST DUCT FITTING EQUIVALENT LENGTH SHALL BE 2'-6" FOR A RADIUS MITERED 45-DEGREE ELBOW AND 5 FEET FOR A RADIUS MITERED 90-DEGREE ELBOW.
   - Q.I. IF LENGTH OF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN 35', AND DRYER TO BE INSTALLED IS NOT RATED FOR OVER 35', OR IF DRYER VENT EQUIVALENT LENGTH IS GREATER THAN THAT OF INSTALLED DRYERS INSTALLATION DIRECTIONS; PROVIDE NEW SECONDARY LINT TRAP, DRYER EXHAUST FAN BF-1, SENSORS, AND CONTROLS. FAN TO BE FANTECH MODEL DEDPV-705 OR EQUAL. FAN TO BE LISTED AND LABELED TO UL705 FOR USE IN DRYER EXHAUST DUCT SYSTEMS. LINT TRAP TO BE FANTECH MODEL DBLT4W OR EQUAL. COORDINATE FINAL DRYER VENT ROUTING LENGTH AND ELBOWS WITH FAN MANUFACTURER, BEFORE ORDERING FAN, AND PROVIDE FAN FOR FINAL DRYER VENT ROUTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS, AND AUTHORITY HAVING JURISDICTION.
R. INSTALL ALL EQUIPMENT WITH PROPER CODE REQUIRED SERVICE/ ACCESS CLEARANCES, AND ACCESS PANELS. EQUIPMENT SHALL BE COMPLETELY REPLACEABLE WITHOUT REMOVING PERMANENT BUILDING COMPONENTS.

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

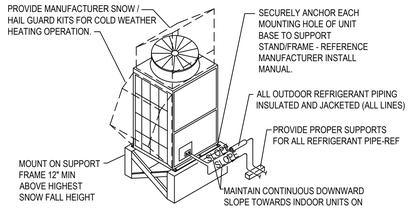
PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL DETAILS

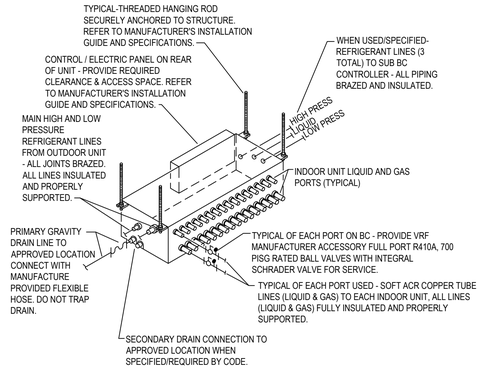
SHEET NO.
M300



NOTE:
DETAIL PROVIDED FOR REFERENCE ONLY. INSTALL PER MANUFACTURER'S INSTRUCTIONS AND LOCAL CODE.

VARIABLE REFRIGERANT FLOW (VRF) SYSTEM
MITSUBISHI VRF OUTDOOR MODULE DETAIL
SCALE: NTS

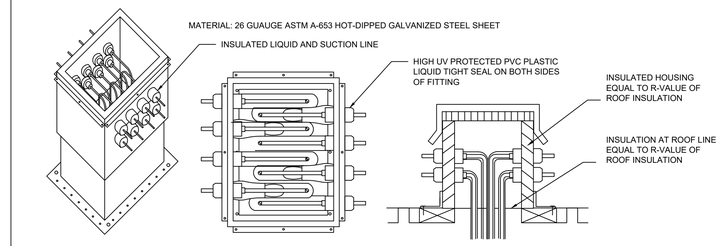
1



NOTE:
DETAIL PROVIDED FOR REFERENCE ONLY. INSTALL PER MANUFACTURER'S INSTRUCTIONS AND LOCAL CODE.

VARIABLE REFRIGERANT FLOW (VRF) SYSTEM
MITSUBISHI VRF BRANCH CONTROLLER DETAIL
SCALE: NTS

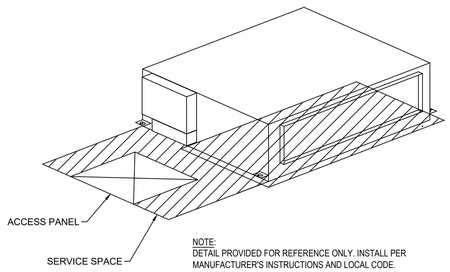
2



DETAIL IS INTENDED TO CONVEY DESIGN INTENT. MECHANICAL CONTRACTOR TO COORDINATE ROOF PENITRATION AND SELECTION WITH OWNER/ARCHTECT PRIOR TO PURCHASE AND INSTALLATION

LINE SET ROOF CURB DETAIL
SCALE: NTS

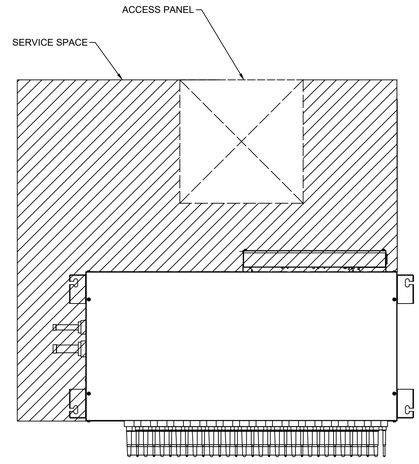
3



NOTE:
DETAIL PROVIDED FOR REFERENCE ONLY. INSTALL PER MANUFACTURER'S INSTRUCTIONS AND LOCAL CODE.

ACCESS PANEL AND SERVICE CLEARANCE FOR
MITSUBISHI VRF BRANCH CONTROLLER DETAIL
SCALE: NTS

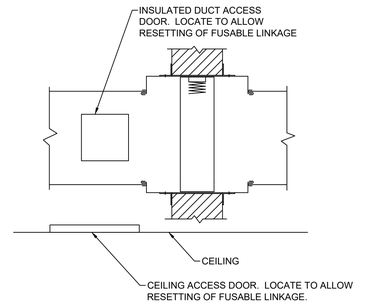
4



NOTE:
DETAIL PROVIDED FOR REFERENCE ONLY. INSTALL PER MANUFACTURER'S INSTRUCTIONS AND LOCAL CODE.

ACCESS PANEL AND SERVICE CLEARANCE FOR
MITSUBISHI VRF HORIZONTAL DUCTED DETAIL
SCALE: NTS

5



NOTE:
DETAIL PROVIDED FOR REFERENCE ONLY. INSTALL PER MANUFACTURER'S INSTRUCTIONS AND LOCAL CODE.

ACCESS PANEL AND DOOR FOR
FIRE AND / OR SMOKE DAMPER DETAIL
SCALE: NTS

6

SCOTT SEVERT STILKEY E-77795
REGISTERED PROFESSIONAL ENGINEER
STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL DETAILS

SHEET NO.
M301

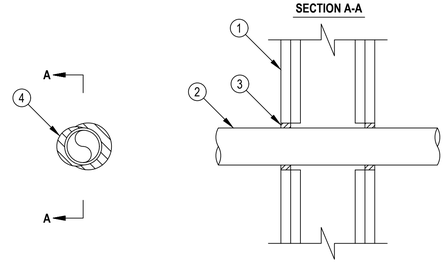
WL 2474

Classified by Underwriters Laboratories, Inc. to UL 1479

System No. W-L-2474

F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/Sq Ft
L Rating at 400 F - 4 CFM/Sq Ft

SECTION A-A



1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL fire Resistance Directory and shall include the construction features noted below:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Diam of opening shall be 1 in. (25 mm) larger than the nom pipe diam.

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One nonmetallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe and the periphery of the opening shall be min 0 in. (point contact) to a max 1/2 in. (13 mm). The following types and sizes of nonmetallic pipes may be used:
   A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) cellular or solid core Schedule 40 (or heavier) pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.
   C. Crosslinked Polyethylene (PEX) Tubing — Nom 2 in. (51 mm) diam (or smaller) SDR 9 PEX tubing for use in closed (process or supply) piping systems.
   D. Rigid Nonmetallic Conduit (RNC)+ — Nom 2 in. diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA No. 70).
3. Fill, Void or Cavity Material* - Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At point contact location, a min 5/8 in. (16 mm) diam bead of fill material shall be applied to the wall/penetrant interface on both surfaces of the wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
\+ Bearing the UL Listing Mark

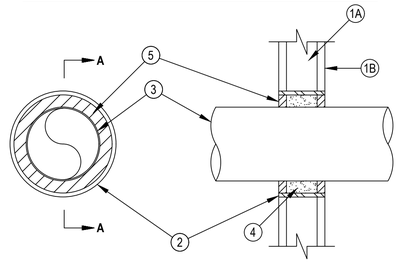
Hilti Firestop Systems

WL 7017

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

System No. W-L-7017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 1 Hr
	FTH Rating — 0 Hr

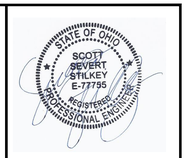


SECTION A-A

1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 8-5/8 in. (219 mm).
2. Metallic Sleeve — Nom 8 in. (203 mm) diam (or smaller) Schedule 40 (or heavier) steel sleeve cast into wall assembly with joint compound and installed flush with wall surfaces.
3. Air Duct — Nom 6 in. (152 mm) diam (or smaller) prefabricated No. 28 MSG galv sheet metal duct. A min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm) annular space is required within the firestop system. Duct to be rigidly supported on both sides of wall assembly.
4. Forming Material* — Foamed plastic forming material foamed into opening as a permanent form. Forming material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CF812 or CF-AS CJP Foam Sealant
5. Fill, Void or Cavity Material* — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems



ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656
ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL DETAILS

SHEET NO.
M302

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF OUTDOOR UNIT SCHEDULE

	System Tag	HP-1A	HP-1B	HP-2A	HP-2B
	Tag Reference	HP-1A	HP-1B	HP-2A	HP-2B
Nominal Data	M-NET Address	51, 52	57, 58	51	66
	Model Number	PURY-HP144TSNU-A	PURY-HP144TSNU-A	PURY-HP120TNU-A	PURY-HP120TNU-A
	Modules	P72, P72	P72, P72	P120	P120
	Nominal Cooling Capacity (BTU/h)	144,000.0	144,000.0	120,000.0	120,000.0
	Nominal Heating Capacity (BTU/h)	160,000.0	160,000.0	135,000.0	135,000.0
	Cooling Efficiency IEER/EER [SEER]	22.1 / 11.55	22.1 / 11.55	22.05 / 12.65	22.05 / 12.65
	Heating COP @ 47°F [HSPF]	3.635	3.635	3.81	3.81
	Nom System Connected Capacity (% of NOM)	100.0%	104.2%	110.0%	110.0%
Design Conditions	Design Cooling Outdoor Temp DB (°F)	91.0	91.0	91.0	91.0
	Design Heating Outdoor Temp WB (°F)	0.2	0.2	0.2	0.2
	Max Pipe Length from BC or 1st Joint (feet)	84.8	104.8	104.8	133.1
	Refrig Pipe Dim High/Low Pressure (inch) (See Note 4)	7/8 / 1 1/8	7/8 / 1 1/8	3/4 / 1 1/8	3/4 / 1 1/8
Performance Data	Corrected Cooling Total Capacity (BTU/h)	137,082.6	137,329.2	112,722.0	110,443.2
	Corrected Heating Capacity (BTU/h)	156,918.8	156,630.2	111,363.9	110,718.8
	Sound Pressure (dBA)	59.5/61	59.5/61	64/65	64/65
Compressor Data	Compressor Type	SCROLL	SCROLL	SCROLL	SCROLL
	Compressor Quantity	2	2	1	1
	Preliminary Added Field Charge (See Note 5)	29.7	33.9	26.3	35.5
Electrical Data	Voltage / Phase	208/230V / 3-phase 3-wire	208/230V / 3-phase 3-wire	208/230V / 3-phase 3-wire	208/230V / 3-phase 3-wire
	MCA 208/230 or [460V]	38/35, 38/35	38/35, 38/35	47/44	47/44
	Recommended Fuse Size (RFS)	60/50, 60/50	60/50, 60/50	70/60	70/60
	MOCP	60/50, 60/50	60/50, 60/50	70/60	70/60
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 Efficiency values for EER, IEER, COP are based on AHRI 1230 test method for mixture of ducted & non-ducted indoor units.
4 For systems with multiple modules, refrigerant pipe dimensions indicate total system combined piping downstream of module twinning.
5 Added field charge listed is in addition to factory charge, this must be updated based upon final as-built piping layout.
6 Factory representatives shall review the project prior to and throughout the installation of CITY MULTI equipment
7 Factory representatives shall startup and commission CITY MULTI equipment upon completion of equipment installations
8 Factory representatives shall provide on-site assistance for the BMS integration of the CITY MULTI equipment
9 Factory representatives shall provide end-user training on the CITY MULTI equipment upon completion of the installation of equipment

QUANTITY OF 2.
HP-3A & HP-3B VRF SYSTEM ON THIRD FLOOR, IS SAME AS HP-2A & HP-2B ON SECOND FLOOR. ALL EQUIPMENT TAGS ON THIRD FLOOR SYSTEM TO INCLUDE '3' INSTEAD OF '2'. ASSOCIATED ROOM NUMBERS TO BE 300 SERIES INSTEAD OF 200 SERIES.

FOR ALL HEAT PUMPS, PROVIDE HOOD AND WIND BAFFLES FOR COOLING TO -10F.
ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECTS.

VRF HEAT RECOVERY BRANCH CIRCUIT CONTROLLER

	System Tag	HP-1A	HP-1B	HP-2A	HP-2B	HP-2B
	Tag Reference	BC-1A	BC-1B	BC-2A	BC-2B	BC-2B2
Nominal Data	M-NET Address	53	59	52	67	81
	Model Number	CMB-P108NU-JA1	CMB-P108NU-JA1	CMB-P1016NU-J1	CMB-P1016NU-JA1	CMB-P104NU-KB1
	Type (double / Main / Sub)	Main	Main	Single	Main	Sub
	Number of Ports	8	8	16	16	4
	Connected Capacity to BC	144,000.0	150,000.0	132,000.0	132,000.0	18,000.0
Electrical Data	Voltage / Phase	208/230V / 1-phase	208/230V / 1-phase	208/230V / 1-phase	208/230V / 1-phase	208/230V / 1-phase
	Power Cooling 208V/230V (kW)	0.137/0.176	0.137/0.176	0.243/0.314	0.258/0.333	0.061/0.078
	Power Heating 208V/230V (kW)	0.076/0.098	0.076/0.098	0.122/0.157	0.137/0.176	0.030/0.039
	MCA 208/230					
Notes / Options	Applicable System Notes - See Notes Below	1, 2	1, 2	1, 2	1, 2	1, 2

Notes & Options:
1 Include Diamondback Ball Valves BV-Series, 700PSIG working pressure, full port, 410A rated.
2 For sub BC controller CMB-P-NU-GB1 or -GB, the total connectable indoor unit capacity can be 126,000 BTUs or less. If two sub BC controllers are used, the total indoor unit capacity connected to BOTH sub BC controllers also cannot exceed 126,000 BTUs. For sub BC controller CMB-P1016NU-HB1 the total connectable indoor unit capacity can be 126,000 BTUs or less. However, if two sub controllers are used, and one of them is CMB-1016NU-HB1, the total indoor unit capacity connected to BOTH sub controllers must NOT exceed 168,000 BTUs.

ELECTRICAL CONTRACTOR TO PROVIDE DISCONNECTS.

QUANTITY OF 2.
HP-3A & HP-3B VRF SYSTEM ON THIRD FLOOR, IS SAME AS HP-2A & HP-2B ON SECOND FLOOR. ALL EQUIPMENT TAGS ON THIRD FLOOR SYSTEM TO INCLUDE '3' INSTEAD OF '2'. ASSOCIATED ROOM NUMBERS TO BE 300 SERIES INSTEAD OF 200 SERIES.

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF INDOOR UNIT SCHEDULE

	System Tag	HP-1A	HP-1A	HP-1A	HP-1A	HP-1A	HP-1A	HP-1B	HP-1B	HP-1B	HP-1B	HP-1B
	Tag Reference	AHU-1-1	AHU-1-2	AHU-1-3	AHU-1-4	AHU-5A	AHU-5B	AHU-1-6	AHU-1-7	AHU-1-8	AHU-1-9	AHU-1-10
Nominal Data	Room Name											
	M-NET Address	1	2	3	4	5	6	7	8	9	10	11
	Model	PEFY-P18NMAU-E4	PEFY-P24NMAU-E4	PEFY-P30NMAU-E4	PEFY-P48NMAU-E4	PLFY-P12NFMU-E	PLFY-P12NFMU-E	PEFY-P24NMAU-E4	PEFY-P24NMAU-E4	PEFY-P30NMAU-E4	PEFY-P48NMAU-E4	PKFY-P24NKMU-E2.TH
	Type	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Wall -Mounted
	Nominal Cooling Capacity (BTU/h)	18,000.0	24,000.0	30,000.0	48,000.0	12,000.0	12,000.0	24,000.0	24,000.0	30,000.0	48,000.0	24,000.0
	Nominal Heating Capacity (BTU/h)	20,000.0	27,000.0	34,000.0	54,000.0	13,500.0	13,500.0	27,000.0	27,000.0	34,000.0	54,000.0	27,000.0
Design Conditions	Cooling Design Entering Temp DB/WB (°F) / [Water in temp]	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4
	Heating Design Entering Temp DB/WB (°F) / [Water in temp]	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
	Cooling Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Heating Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Refrig Pipe Dim Liquid/Suction (inch)	1/4 / 1/2	3/8 / 5/8	3/8 / 5/8	3/8 / 5/8	1/4 / 1/2	1/4 / 1/2	3/8 / 5/8	3/8 / 5/8	3/8 / 5/8	3/8 / 5/8	3/8 / 5/8
Performance Data	Cooling Total Capacity (BTU/h)	16,375.0	21,833.4	27,291.7	43,666.8	10,916.7	10,916.7	21,833.4	21,833.4	27,291.7	43,666.8	21,833.4
	Cooling Sensible Capacity (BTU/h)	13,539.2	18,960.5	21,318.5	33,165.9	7,978.0	7,978.0	18,960.5	18,960.5	21,318.5	33,165.9	19,348.5
	Heating Capacity (BTU/h)	19,372.7	26,153.1	32,933.6	52,306.3	13,076.6	13,076.6	25,023.8	25,023.8	31,511.4	50,047.5	25,023.8
	Estimated Cooling Coil LAT (°F) / [LWT]	53.1	54.2	51.6	50.4	51.9	51.9	54.2	54.2	51.6	50.4	54.6
	Estimated Heating Coil LAT (°F) / [LWT]	101.0	98.5	105.8	108.5	107.5	107.5	97.2	97.2	104.3	106.8	96.2
Fan / Water Flow Data	Fan Speed Setting	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	Peak Fan Airflow (cfm) / [Design gpm]	600	883	883	1306	335	335	883	883	883	1306	918
	Max Fan ESP Setting 208V/230V (IN WG)	0.6/0.6	0.6/0.6	0.6/0.6	0.6/0.6			0.6/0.6	0.6/0.6	0.6/0.6	0.6/0.6	
	Sound Pressure Per Fan Speed 208V/230V (dBA)	29-33-37	31-35-39	31-35-39	35-40-44	26-30-34	26-30-34	31-35-39	31-35-39	31-35-39	35-40-44	39-49
Electrical Data	Voltage / Phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase
	Power Cooling 208V/230V (kW)	0.082	0.142	0.142	0.242	0.02	0.02	0.142	0.142	0.142	0.242	0.07
	Power Heating 208V/230V (kW)	0.08	0.14	0.14	0.24	0.02	0.02	0.14	0.14	0.14	0.24	0.07
	Electrical MCA/MFS	2.94/15	2.88/15	2.88/15	4.38/15	0.29/0.29/15	0.29/0.29/15	2.88/15	2.88/15	2.88/15	4.38/15	0.63(208V)/0.63(230V)/15
	Condensate Removal Rate (gal/hr)	0.53	0.82	1.04	1.53	0.45	0.45	0.82	0.82	1.04	1.53	0.53
	Actual Port Assignments											
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities
4 See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices.
5 Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system.
Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply.
It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.
6 It is recommended to always base heating corrected capacity on full demand.

DISCONNECT SWITCH FURNISHED BY MANUFACTURER. ELECTRICAL CONTRACTOR TO PROVIDE 2"x4" ELECTRICAL WALL BOX WITH SWITCH COVER PLATE, AND ALL WIRING.

ALL SCHEDULES ON THIS SHEET ARE FOR VRF SYSTEMS. SEE DRAWINGS FOR QUANTITY OF EACH SYSTEM.

FOR CONTROL SYSTEM, PROVIDE:
ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS
ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS
ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT

STATE OF OHIO
SCOTT SEVERT STILKEY
E-77795
REGISTERED PROFESSIONAL ENGINEER

ISSUANCES		
NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE
3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL SCHEDULES

SHEET NO.
M400

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF INDOOR UNIT SCHEDULE

	System Tag	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A	HP-2A
	Tag Reference	AHU-224A	AHU-224B	AHU-218A	AHU-218B	AHU-200A	AHU-223	AHU-222	AHU-221	AHU-220	AHU-219	AHU-225	AHU-226	AHU-227	AHU-228	AHU-201
Nominal Data	Room Name															
	M-NET Address	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Model	PLFY-P12NFMU-E	PLFY-P12NFMU-E	PLFY-P12NFMU-E	PLFY-P12NFMU-E	PLFY-P12NFMU-E	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PLFY-P18NFMU-E
	Type	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Ceiling-Cassette (Four-Way)
	Nominal Cooling Capacity (BTU/h)	12,000.0	12,000.0	12,000.0	12,000.0	12,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	18,000.0
	Nominal Heating Capacity (BTU/h)	13,500.0	13,500.0	13,500.0	13,500.0	13,500.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	20,000.0
Design Conditions	Cooling Design Entering Temp DB/WB (°F) / [Water in temp]	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4
	Heating Design Entering Temp DB/WB (°F) / [Water in temp]	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
	Cooling Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Heating Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Refrig Pipe Dim Liquid/Suction (inch)	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2
Performance Data	Cooling Total Capacity (BTU/h)	10,247.5	10,247.5	10,247.5	10,247.5	10,247.5	5,123.7	5,123.7	5,123.7	5,123.7	5,123.7	5,123.7	5,123.7	5,123.7	5,123.7	15,371.2
	Cooling Sensible Capacity (BTU/h)	7,671.3	7,671.3	7,671.3	7,671.3	7,671.3	4,052.7	4,052.7	4,052.7	4,052.7	4,052.7	4,052.7	4,052.7	4,052.7	4,052.7	11,291.8
	Heating Capacity (BTU/h)	10,171.9	10,171.9	10,171.9	10,171.9	10,171.9	5,048.3	5,048.3	5,048.3	5,048.3	5,048.3	5,048.3	5,048.3	5,048.3	5,048.3	15,069.5
	Estimated Cooling Coil LAT (°F) / [LWT]	52.8	52.8	52.8	52.8	52.8	54.4	54.4	54.4	54.4	54.4	54.4	54.4	54.4	54.4	51.2
	Estimated Heating Coil LAT (°F) / [LWT]	99.2	99.2	99.2	99.2	99.2	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	101.5
Fan / Water Flow Data	Fan Speed Setting	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	Peak Fan Airflow (cfm) / [Design gpm]	335	335	335	335	335	191	191	191	191	191	191	191	191	191	460
	Max Fan ESP Setting 208V/230V (IN WG)															
	Sound Pressure Per Fan Speed 208V/230V (dBA)	26-30-34	26-30-34	26-30-34	26-30-34	26-30-34	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	33-39-43
Electrical Data	Voltage / Phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase
	Power Cooling 208V/230V (kW)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04
	Power Heating 208V/230V (kW)	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04
	Electrical MCA/MFS	0.29/0.29/15	0.29/0.29/15	0.29/0.29/15	0.29/0.29/15	0.29/0.29/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.5/0.5/15
	Condensate Removal Rate (gal/hr)	0.45	0.45	0.45	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.71
	Actual Port Assignments															
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
3 See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities
4 See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices.
5 Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system.
Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply.
It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.
6 It is recommended to always base heating corrected capacity on full demand.

DISCONNECT SWITCH FURNISHED BY MANUFACTURER. ELECTRICAL CONTRACTOR TO PROVIDE 2"x4" ELECTRICAL WALL BOX WITH SWITCH COVER PLATE, AND ALL WIRING.

ALL SCHEDULES ON THIS SHEET ARE FOR VRF SYSTEMS. SEE DRAWINGS FOR QUANTITY OF EACH SYSTEM.

FOR CONTROL SYSTEM, PROVIDE:
ONE MITSUBISHI AE200 CENTRALISED AND WEB CONTROLLER FOR EACH 200 INDOOR UNITS
ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS
ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT

QUANTITY OF 2. HP-3A & HP-3B VRF SYSTEM ON THIRD FLOOR, IS SAME AS HP-2A & HP-2B ON SECOND FLOOR. ALL EQUIPMENT TAGS ON THIRD FLOOR SYSTEM TO INCLUDE '3' INSTEAD OF '2'. ASSOCIATED ROOM NUMBERS TO BE 300 SERIES INSTEAD OF 200 SERIES.

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL SCHEDULES

SHEET NO.
M401

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF INDOOR UNIT SCHEDULE

	System Tag	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B	HP-2B
	Tag Reference	AHU-200B	AHU-206A	AHU-206B	AHU-207	AHU-208	AHU-209	AHU-210	AHU-211	AHU-212	AHU-213	AHU-214	AHU-215	AHU-205	AHU-204	AHU-203	AHU-217	AHU-216	AHU-202
Nominal Data	Room Name																		
	M-NET Address	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
	Model	PLFY-P12NFMU-E	PKFY-P12NLMU-E.TH	PKFY-P12NLMU-E.TH	PKFY-P12NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH	PKFY-P06NLMU-E.TH
	Type	Ceiling-Cassette (Four-Way)	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted	Wall -Mounted
	Nominal Cooling Capacity (BTU/h)	12,000.0	12,000.0	12,000.0	12,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0
	Nominal Heating Capacity (BTU/h)	13,500.0	13,500.0	13,500.0	13,500.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0	6,700.0
Design Conditions	Cooling Design Entering Temp DB/WB (°F) / [Water in temp]	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4	75.0/62.4
	Heating Design Entering Temp DB/WB (°F) / [Water in temp]	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
	Cooling Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Heating Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
	Refrig Pipe Dim Liquid/Suction (inch)	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2
Performance Data	Cooling Total Capacity (BTU/h)	10,040.3	10,040.3	10,040.3	10,040.3	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1	5,020.1
	Cooling Sensible Capacity (BTU/h)	7,577.4	7,591.9	7,591.9	7,591.9	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3	4,007.3
	Heating Capacity (BTU/h)	10,113.0	10,113.0	10,113.0	10,113.0	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1	5,019.1
	Estimated Cooling Coil LAT (°F) / [LWT]	53.1	50.2	50.2	50.2	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6	54.6
	Estimated Heating Coil LAT (°F) / [LWT]	99.0	102.7	102.7	102.7	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3
Fan / Water Flow Data	Fan Speed Setting	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
	Peak Fan Airflow (cfm) / [Design gpm]	335	297	297	297	191	191	191	191	191	191	191	191	191	191	191	191	191	191
	Max Fan ESP Setting 208V/230V (IN WG)																		
	Sound Pressure Per Fan Speed 208V/230V (dBA)	26-30-34	24-31-37-41	24-31-37-41	24-31-37-41	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31	22-26-29-31
Electrical Data	Voltage / Phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase
	Power Cooling 208V/230V (kW)	0.02	0.04	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	Power Heating 208V/230V (kW)	0.02	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Electrical MCA/MFS	0.29/0.29/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15	0.24/0.24/15
	Condensate Removal Rate (gal/hr)	0.45	0.59	0.59	0.59	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
	Actual Port Assignments																		
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6

Notes & Options:
1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
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ONE MITSUBISHI EW-50E CENTRALIZED AND EXPANSION CONTROLLER FOR EACH 50 INDOOR UNITS
ONE MITSUBISHI WALL THERMOSTAT FOR EACH INDOOR UNIT

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STATE OF OHIO
SCOTT SEVERT STILKEY
E-77795
REGISTERED PROFESSIONAL ENGINEER

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656
ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

PROJECT NO.: 9656

SCALE: AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL SCHEDULES

SHEET NO.
M402

DIFFUSER, GRILLE, AND REGISTER SCHEDULE

CALLOUT	DESCRIPTION	FACE SIZE (IN)	INLET SIZE (IN)	MODEL	NOTES
CD-1	4-WAY THREE CONE DIFFUSER	12x12	6Ø	TITUS TMS	REMOVABLE CORE FROM FACE OF DIFFUSER. INSULATE BACK OF DIFFUSER.
CD-3	4-WAY THREE CONE DIFFUSER	24x24	6Ø	TITUS TMS	REMOVABLE CORE FROM FACE OF DIFFUSER. INSULATE BACK OF DIFFUSER.
CD-4	4-WAY THREE CONE DIFFUSER	24x24	8Ø	TITUS TMS	REMOVABLE CORE FROM FACE OF DIFFUSER. INSULATE BACK OF DIFFUSER.
RG-1	EGGCRATE RETURN GRILLE	24x12	22x10	TITUS 50F	#26 WHITE FINISH.
RG-2	EGGCRATE RETURN GRILLE	24x24	22x22	TITUS 50F	#26 WHITE FINISH.
RG-3	EGGCRATE RETURN GRILLE	12x12	10x10	TITUS 50F	#26 WHITE FINISH.
RR-1	STEEL RETURN GRILLE, 3/4" BLADE SPACING, 35 DEGREE DEFLECTION, BLADES PARALLEL TO LONG DIMENSION	8x8	6x6	TITUS 350RL	STEEL OPPOSED-BLADE DAMPER OPERABLE FROM THE FACE OF THE GRILLE.
RR-3	STEEL RETURN GRILLE, 3/4" BLADE SPACING, 35 DEGREE DEFLECTION, BLADES PARALLEL TO LONG DIMENSION	22x8	20x6	TITUS 350RL	STEEL OPPOSED-BLADE DAMPER OPERABLE FROM THE FACE OF THE GRILLE.
SR-1	STEEL DOUBLE DEFLECTION, 3/4" BLADE SPACING, FRONT BLADES PARALLEL TO LONG DIMENSION.	8x8	6x6	TITUS 300RL	STEEL OPPOSED-BLADE DAMPER OPERABLE FROM THE FACE OF THE GRILLE.
SR-4	STEEL DOUBLE DEFLECTION, 3/4" BLADE SPACING, FRONT BLADES PARALLEL TO LONG DIMENSION.	20x8	18x6	TITUS 300RL	STEEL OPPOSED-BLADE DAMPER OPERABLE FROM THE FACE OF THE GRILLE.

NOTES FOR ALL AIR DEVICES:
1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR MOUNTING TYPE
2. DUCT RUN-OUT SAME SIZE AS NECK UNLESS NOTED OTHERWISE
3. PLASTER FRAME WHERE LOCATED IN GYPSUM CEILING
4. PAINT DUCTWORK THAT IS VISIBLE BEHIND AIR DEVICES MATTE BLACK
5. AIR DEVICES SHALL BE ALUMINUM IN HIGH MOISTURE AREAS. (BATHROOMS AND KITCHENS)
6. DO NOT CONNECT AIR DEVICE DIRECTLY TO DUCT. PROVIDE FULL SIZE TAKE-OFF WITH BALANCING DAMPER AND 45 DEGREE FLARED OUT CONNECTION TO MAIN OR BRANCH DUCT.
7. WHERE AIR DEVICES ARE LOCATED IN A FIRE RATED ASSEMBLY, PROVIDE CEILING RADIATION DAMPERS, FIRE DAMPER, FIRE RATED INSULATION, AS REQUIRED PER CODE.
8. WHERE DAMPER IN DUCTWORK IS NOT ACCESSIBLE, PROVIDE METROPOLITAN AIR TRANSFER (MAT) MODEL RT-150 SERIES CABLE ACTUATED DAMPER DRIVE SYSTEM, OR APPROVED EQUAL.
9. PROVIDE SAMPLE AIR DEVICES STYLE AND COLOR, FOR OWNER'S REPRESENTATIVE APPROVAL, BEFORE ORDERING FINAL AIR DEVICES.
10. ADD INSULATION TO THE BACK OF ALL AIR DEVICES WHERE DUCTWORK ALSO REQUIRES INSULATION.
11. WHERE DIFFUSER SHOWS A SOLID SECTION ON THE PLAN, THE AIRFLOW DIRECTION IS INTENDED TO BE BLANKED OFF IN THOSE DIRECTIONS. COORDINATE BLANK OFF ACCESSORY WITH THE SPECIFIC AIR DEVICE MANUFACTURER.

SINGLE ZONE - MINI SPLIT SYSTEM SCHEDULE

TAG	AREA SERVED	MANUFACTURER	MODEL	CFM	RATED CLG MBH	HEAT-MBH @ -3 F	VOLT/PHASE	MCA	MOCP	SEER	HSPF	MOUNTING	APPROX. DIMENSIONS	WEIGHT	MAX ODU TO IDU (LIN.FT. + 5' x # ELBOWS	MAX ELEVATION BETWEEN ODU AND IDU	NOTES
MS-IU-36	ELEVATOR EQUIPMENT	LG	LSN363HLV3	601 / 742 / 883 / 1095	36	26.8	208-230 / 1	0.4	-	-	-	WALL INDOORS	47.3"L x 10.5"D x 14.7"H	40.8	164.0	98.4	SEE BELOW NOTES
MS-OU-36	MS-IU-36	LG	LSU363HLV3	-	36	26.8	208-230/1	23	30	18.5	11	OUTDOORS	38.4"L x 14"D x 33"H	147.9	164.0	98.4	SEE BELOW NOTES

NOTES:
1. R410A REFRIGERANT
2. COOLING OPERATING RANGE 14F TO 118F
3. HEATING OPERATING RANGE -13F TO 75F FOR MODEL "LA", AND -4F TO 65F FOR MODEL "LS"
4. ELECTRICAL POWER BY ELECTRICAL CONTRACTOR. INDOOR UNITS FED FROM OUTDOOR UNIT.
5. PROVIDE LG PROGRAMMABLE THERMOSTAT
6. MECHANICAL CONTRACTOR TO FURNISH AND INSTALL MC CABLE BETWEEN OUTDOOR UNIT (ODU) AND INDOOR UNIT (IDU), INCLUDING A DISCONNECT SWITCH NEXT TO IDU. MC CABLE TO BE 14 GA IF PROTECTED BY 15 AMP FUSES IN ODU, OR A MINIMUM GAUGE AS REQUIRED FOR FULL AMPERAGE OF ODU.
7. MECHANICAL CONTRACTOR TO PROVIDE ALL CONTROLS AND CONTROL WIRING.
8. PROVIDE CONDENSATE PUMP WHERE REQUIRED TO LIFT CONDENSATE PIPE TO BE DRAINED BY GRAVITY.
9. LOW AMBIENT KIT.
10. PROVIDE REFRIGERATION PIPING AND COORDINATE SIZING WITH MANUFACTURER. VERIFY LENGTH OF REFRIGERATION PIPING, NUMBER OF ELBOWS, AND FEET RISE BETWEEN INDOOR AND OUTDOOR UNIT, BEFORE PURCHASING ANY MATERIALS OR EQUIPMENT.
11. HEAT PUMP PAD EQUIVALENT TO DIVERSITECH 8 INCH HEAT PUMP PAD FOR GROUND MOUNTING. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH ARCHITECT. PROVIDE THYBAR MODEL TEMS OR EQUIVALENT MOUNTING RAILS, TO ELEVATE UNIT A MINIMUM OF 12" FROM ROOF FOR ROOF MOUNTING. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH ARCHITECT. PROVIDE RACKING WITH ISOLATION PADS FOR STACKED UNITS WHERE APPLICABLE.
12. COORDINATE LOCATION OF ALL UNITS WITH ARCHITECT

HEATER SCHEDULE

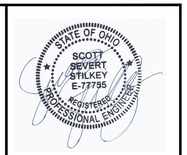
TAG	TYPE	AREA SERVED	MANUFACTURER	MODEL	HEAT-MBH	HEAT-KW	FUEL	VOLT/PHASE	MOUNTING	WEIGHT	NOTES
H-1	WALL HEATER	REFER TO PLANS	BERKO	FRA4024F	5.1 - 6.8	1.5 - 2	ELECTRIC	208-240 / 1	WALL	30	1,2
H-2	WALL HEATER	REFER TO PLANS	BERKO	FRA4024F	10.2 - 13.6	3 - 4	ELECTRIC	208-240 / 1	WALL	30	1,2

1. SURFACE MOUNTING FRAME FOR HEATERS ON RATED AND MASONRY WALLS. 2" SEMI-RECESSED SLEEVE FOR ALL OTHERS.
2. INTEGRAL THERMOSTAT

FAN SCHEDULE

TAG	TYPE	AREA SERVED	MANUFACTURER	MODEL	DRIVE	CFM	SONES	ESP	WATTS	RPM	VOLT/PHASE	MOUNTING	WEIGHT	NOTES
E-1	EXHAUST	PUBLIC RESTROOM (1) FIXTURE	GREENHECK	SP-B90	DIRECT	70	1.7	0.2	20	700	115 / 1	CEILING	10	2
E-2	EXHAUST	SRO (TYPICAL ROOM)	PANASONIC	FV-05-11VKS1	DIRECT	30, 80		0.15	17	1205	115 / 1	CEILING	12	1
E-3	EXHAUST	SRO-ADA (TYPICAL ADA ROOM)	PANASONIC	FV-05-11VKS1	DIRECT	30, 80		0.15	17	1205	115 / 1	CEILING	12	1
E-4	EXHAUST	GROUP RESTROOM	GREENHECK	SP-A250	DIRECT	240	3.5	0.2	83	1000	115 / 1	CEILING	24	2
E-5	EXHAUST	KITCHEN	GREENHECK	SP-A190	DIRECT	195	2.5	0.2	50	1400	115 / 1	CEILING	17	2
E-6	EXHAUST	PUBLIC RESTROOM (2) FIXTURES	GREENHECK	SP-A190	DIRECT	140	1.5	0.2	48	1400	115 / 1	CEILING	17	2

1. FAN SHALL RUN CONTINUOUSLY AT LOW SPEED (30 CFM UNLESS OTHERWISE NOTED) AND SHALL RAMP UP TO HIGH SPEED (80 CFM) WHEN SWITCH IS TURNED ON. PROVIDE ALL RELEVANT ACCESSORIES. ENERGY STAR RATED.
2. FAN SHALL RUN WHEN ACTIVATED BY WALL SWITCH.



ISSUANCES

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DRAWING TITLE
MECHANICAL SCHEDULES

SHEET NO.
M403

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-1)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-1	129A	STAFF TOILET	47	0	0	0	0	0	0	0	0.8	0.0	15	0.00	2	12.7%
AHU-1-1	129B	STAFF TOILET	47	0	0	0	0	0	0	0	0.8	0.0	15	0.00	2	12.7%
AHU-1-1	130A	CLINIC TOILET	84	0	0	0	0	0	0	0	0.8	0.0	30	0.00	4	12.7%
AHU-1-1	130	CLINIC	139	5	5	1	5	0.06	8	13	0.8	16.7	220	0.08	28	12.7%
AHU-1-1	131	STAFF BREAKROOM	172	50	5	9	45	0.06	10	55	0.8	69.2	320	0.22	41	12.7%
TOTALS:			489			10	50		19	69		85.8	600	0.22	76	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 69
Ev (SYSTEM VENTILATION EFFICIENCY) = 0.9
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 76

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-2)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-2	124	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	160	0.10	13	7.8%
AHU-1-2	125	OFFICE	126	5	5	1	5	0.06	8	13	0.8	15.7	160	0.10	13	7.8%
AHU-1-2	126	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	160	0.10	13	7.8%
AHU-1-2	127	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	160	0.10	13	7.8%
AHU-1-2	128	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	160	0.10	13	7.8%
TOTALS:			626			5	25		38	63		78.2	800	0.10	63	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 63
Ev (SYSTEM VENTILATION EFFICIENCY) = 1.0
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 63

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-3)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-3	101	M.E.P. ROOM	141	0	0	0	0	0.06	8	8	0.8	10.6	80	0.13	5	5.9%
AHU-1-3	132	OFFICE	139	5	5	1	5	0.06	8	13	0.8	16.7	230	0.07	14	5.9%
AHU-1-3	133	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	230	0.07	14	5.9%
AHU-1-3	134	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	230	0.07	14	5.9%
AHU-1-3	135	OFFICE	126	5	5	1	5	0.06	8	13	0.8	15.7	230	0.07	14	5.9%
TOTALS:			656			4	20		39	59		74.2	1,000	0.13	59	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 59
Ev (SYSTEM VENTILATION EFFICIENCY) = 1.0
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 59

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-4)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-4	102	LOBBY	274	10	5	3	15	0.06	16	31	0.8	39.3	350	0.11	24	6.9%
AHU-1-4	103	FRONT DESK	126	5	5	1	5	0.06	8	13	0.8	15.7	250	0.06	17	6.9%
AHU-1-4	105	JANITOR	45	0	0	0	0	0.06	3	3	0.8	3.4	40	0.08	3	6.9%
AHU-1-4	114	PUBLIC TOILET	52	0	0	0	0	0	0	0	0.8	0.0	30	0.00	2	6.9%
AHU-1-4	115	STAFF TOILET	52	0	0	0	0	0	0	0	0.8	0.0	30	0.00	2	6.9%
AHU-1-4	100A	CORRIDOR	1070	0	0	0	0	0.06	64	64	0.8	80.3	900	0.09	62	6.9%
TOTALS:			1,619			4	20		91	111		138.6	1,600	0.11	111	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 111
Ev (SYSTEM VENTILATION EFFICIENCY) = 1.0
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 111

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-5A & 5B)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-5A & 5B	123	BOARD ROOM	321	50	5	17	85	0.06	19	104	0.8	130.3	800	0.16	130	16.3%
TOTALS:			321			17	85		19	104		130.3	800	0.16	130	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = -
Ev (SYSTEM VENTILATION EFFICIENCY) = -
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 130

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-6)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-6	119	OPERATIONS	181	5	5	1	5	0.06	11	16	0.8	19.8	230	0.09	15	6.7%
AHU-1-6	120	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	190	0.08	13	6.7%
AHU-1-6	121	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	190	0.08	13	6.7%
AHU-1-6	122	OFFICE	125	5	5	1	5	0.06	8	13	0.8	15.6	190	0.08	13	6.7%
TOTALS:			556			4	20		33	53		66.7	800	0.09	53	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 53
Ev (SYSTEM VENTILATION EFFICIENCY) = 1.0
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 53

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-7)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-7	116	DONATIONS	311	0	0	0	0	0.06	19	19	0.8	23.3	200	0.12	26	13.1%
AHU-1-7	117	HUDDLE ROOM	112	50	5	6	30	0.06	7	37	0.8	45.9	290	0.16	38	13.1%
AHU-1-7	118	HUDDLE ROOM	112	50	5	6	30	0.06	7	37	0.8	45.9	280	0.16	37	13.1%
AHU-1-7	112A	PANTRY	36	0	0	0	0	0.06	2	2	0.8	2.7	30	0.09	4	13.1%
TOTALS:			571			12	60		34	94		117.8	800	0.16	105	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 94
Ev (SYSTEM VENTILATION EFFICIENCY) = 0.9
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 105

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-8)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-8	106	OFFICE SUPPLY	129	5	5	1	5	0.06	8	13	0.8	15.9	70	0.23	13	19.1%
AHU-1-8	107	MAINTENANCE	105	5	5	1	5	0.06	6	11	0.8	14.1	180	0.08	34	19.1%
AHU-1-8	108	GROUP ROOM	153	50	5	8	40	0.06	9	49	0.8	61.5	250	0.25	48	19.1%
AHU-1-8	109	GROUP ROOM	153	50	5	8	40	0.06	9	49	0.8	61.5	250	0.25	48	19.1%
AHU-1-8	110	GROUP ROOM	153	50	5	8	40	0.06	9	49	0.8	61.5	250	0.25	48	19.1%
TOTALS:			693			26	130		42	172		214.5	1,000	0.25	191	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 172
Ev (SYSTEM VENTILATION EFFICIENCY) = 0.9
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 191

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-9)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-9	111	MULTI PURPOSE	719	50	5	36	180	0.06	43	223	0.8	278.9	1,550	0.18	248	16.0%
AHU-1-9	113	M.E.P. ROOM	126	0	0	0	0	0.06	8	8	0.8	9.5	50	0.19	8	16.0%
TOTALS:			845			36	180		51	231		288.4	1,600	0.19	256	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 231
Ev (SYSTEM VENTILATION EFFICIENCY) = 0.9
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 256

MECHANICAL VENTILATION SCHEDULE* (FIRST FLOOR, AHU-1-10)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-1-10	112	KITCHEN	273	0	0	0	0	0	0	0	0.8	0.0	800	0.00	0	0.0%
TOTALS:			273			0	0		0	0		0.0	800	0.00	0	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = -
Ev (SYSTEM VENTILATION EFFICIENCY) = -
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 0

MECHANICAL VENTILATION SCHEDULE* (SECOND FLOOR COMMON AREAS)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-200A	200A	CORRIDOR WEST	1,092	0	0	0	0	0.06	66	66	0.8	81.9	400	0.20	41	10.2%
AHU-200B	200B	CORRIDOR EAST	308	0	0	0	0	0.06	18	18	0.8	23.1	400	0.06	41	10.2%
AHU-224	224	FITNESS	171	10	20	2	40	0.06	10	50	0.8	62.8	800	0.08	82	10.2%
AHU-218A & 218B	218	LOUNGE	270	50	5	14	70	0.06	16	86	0.8	107.8	800	0.13	82	10.2%
TOTALS:			1,841			16	110		110	220		275.6	2,400	0.20	245	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 220
Ev (SYSTEM VENTILATION EFFICIENCY) = 0.9
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 245

MECHANICAL VENTILATION SCHEDULE* (SECOND FLOOR LAUNDRY)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-201	201	LAUNDRY	99	20	15	2	30	0	0	30	0.8	37.5	600	0.06	38	6.3%
TOTALS:			99			2	30		0	30		37.5	600	0.06	38	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = -
Ev (SYSTEM VENTILATION EFFICIENCY) = -
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 38

MECHANICAL VENTILATION SCHEDULE* (THIRD FLOOR COMMON AREAS)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-300A & 300B	300A	CORRIDOR	1,400	0	0	0	0	0.06	84	84	0.8	105.0	800	0.13	73	9.2%
AHU-324	324	FITNESS	171	10	20	2	40	0.06	10	50	0.8	62.8	800	0.08	73	9.2%
AHU-318A & 318B	318	LOUNGE	270	50	5	14	70	0.06	16	86	0.8	107.8	800	0.13	73	9.2%
TOTALS:			1,841			16	110		110	220		275.6	2,400	0.13	220	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = 220
Ev (SYSTEM VENTILATION EFFICIENCY) = 1.0
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 220

MECHANICAL VENTILATION SCHEDULE* (THIRD FLOOR LAUNDRY)

SYSTEM TAG	ROOM NUMBER	ROOMNAME	AREA Az (ft2)	OCCUPANCY DENSITY (PEOPLE/1000 ft2)	RATE Rp (CFM/PERSON)	PEOPLE (Pz)	TOTAL Rp*Pz (CFM)	RATE Ra (CFM/ft2)	TOTAL Ra*Az (CFM)	BREATHING ZONE OUTDOOR AIRFLOW Vbz (CFM)	ZONE EFFECTIVENESS (EZ)	ZONE OUTDOOR AIRFLOW Voz (CFM)	REQUIRED SUPPLY AIRFLOW CFM	OUTSIDE AIR PRIMARY AIR RATIO, (Zp)	REQUIRED OA CFM	REQUIRED OUTDOOR AIR %
AHU-301	301	LAUNDRY	99	20	15	2	30	0	0	30	0.8	37.5	600	0.06	38	6.3%
TOTALS:			99			2	30		0	30		37.5	600	0.06	38	

* ALL VENTILATION CALCULATIONS PERFORMED PER CHAPTER 403 OF THE OHIO MECHANICAL CODE.

Vou (CFM UNCORRECTED OUTDOOR AIR INTAKE) = -
Ev (SYSTEM VENTILATION EFFICIENCY) = -
Vot (CFM OUTDOOR AIR INTAKE REQUIRED) = 38

NATURAL VENTILATION SCHEDULE -

ROOM NUMBER	ROOMNAME	AREA	DOOR OPENABLE AREA [SQ. FT]	WINDOW OPENABLE AREA [SQ. FT]	TOTAL OPENABLE AREA	4% OF FLOOR AREA
SEE PLANS	SRO (TYPICAL SINGLE DORM ROOM)	119	0	6.5	6.5	4.8
SEE PLANS	SRO-ADA (TYPICAL ADA SINGLE DORM ROOM)	131	0	6.5	6.5	5.2
SEE PLANS	TYPICAL MULTI-PERSON DORM	535	0	26.0	26.0	21.4
101	VESTIBULE	88	0	21.0	21.0	3.5

NATURAL VENTILATION CALCULATIONS PER SEC 402.1 OF 2017 OMC

MECHANICAL EXHAUST SCHEDULE

ROOM NUMBER	ROOMNAME	OCCUPANCY CLASSIFICATION	AREA (ft2)	EXHAUST AIRFLOW RATE (CFM/ft2)	FIXTURES: EXHAUST RATE PER FIXTURE (CFM)	FIXTURES: LOWER CONTINUOUS RATE?	FIXTURES: HIGHER INTERMITTENT RATE?	FIXTURES: QTY. OF FIXTURES	TOTAL EXHAUST AIRFLOW REQ. (CFM)	TOTAL EXHAUST AIRFLOW ACT. (CFM)	NOTES
SEE PLANS	PUBLIC BATHROOM	PUBLIC SPACES - TOILET ROOM (1) FIXTURE	-	-	50 / 70	NO	YES	1	70	70	
SEE PLANS	PUBLIC BATHROOM	PUBLIC SPACES - TOILET ROOM (2) FIXTURES	-	-	50 / 70	NO	YES	2	140	140	
SEE PLANS	GROUP BATHROOM	PUBLIC SPACES - TOILET ROOM	-	-	50 / 70	NO	YES	2	140	140	
SEE PLANS	GROUP BATHROOM	PUBLIC SPACES - SHOWER ROOM (PER HEAD)	-	-	20 / 50	NO	YES	2	100	100	
SEE PLANS	DWELLING UNIT BATHROOM	PRIVATE DWELLING - TOILET ROOMS	-	-	20 / 50	NO	YES	1	50	50	
SEE PLANS	KITCHEN	FOOD AND BEVERAGE SERVICE - KITCHEN (COOKING)	273	0.7	-	-	-	-	191.1	195	

EXHAUST CALCULATIONS PER SEC 403 OF 2017 OHIO MECHANICAL CODE

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER

ISSUANCES

NO.	DESCRIPTION	DATE
-	PERMIT SET	08-05-2022

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.

Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

DRAWN BY	CHECKED BY
SRB	SSS

PROJECT NO.: 9656

SCALE: AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL SCHEDULES

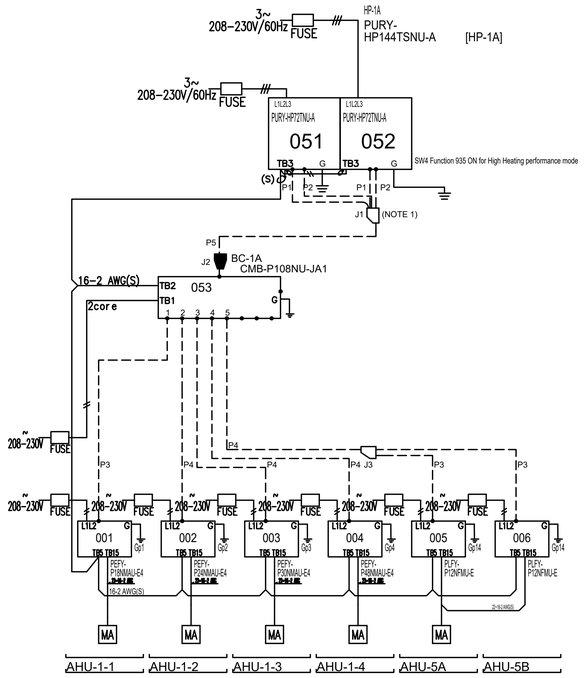
SHEET NO.
M404

CITY MULTI

SYSTEM SCHEMATIC DWG.

DIAGRAM SYMBOL LEGEND		CONT.No		PAGE	
DISPLAY	DESCRIPTION				
—#—	POWER WIRE				
———	CONTROL WIRE				
— —	REF. PIPE				

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-R100NCBK
J2	CMY-R302S-G1
J3	CMY-Y102SS-G2
SYMBOL	LIQUID PIPE/GAS PIPE SIZE
P1	5/8 /
P2	/ 3/4
P3	1/4 / 1/2
P4	3/8 / 5/8
P5	7/8 / 1-1/8
SYMBOL	MODE NUMBER
MA	PAR-40MAU



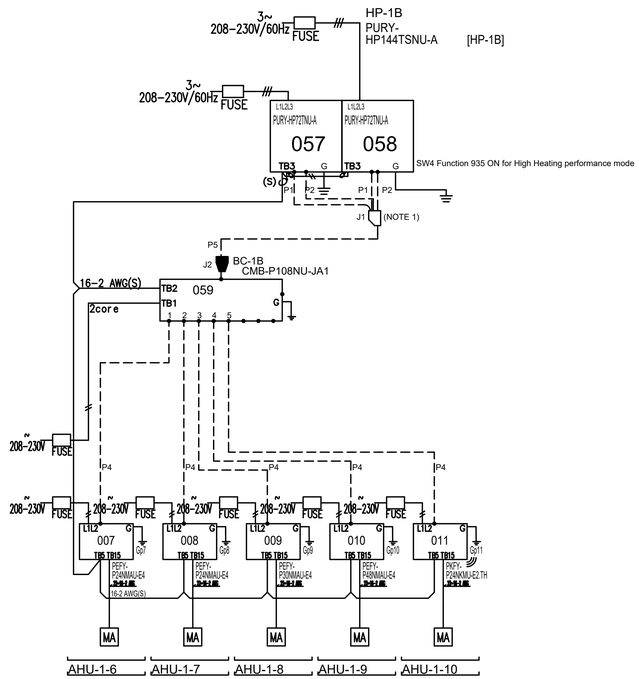
HEAT PUMP SYSTEM TAG: HP-1A
SCHEMATIC DIAGRAM

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record

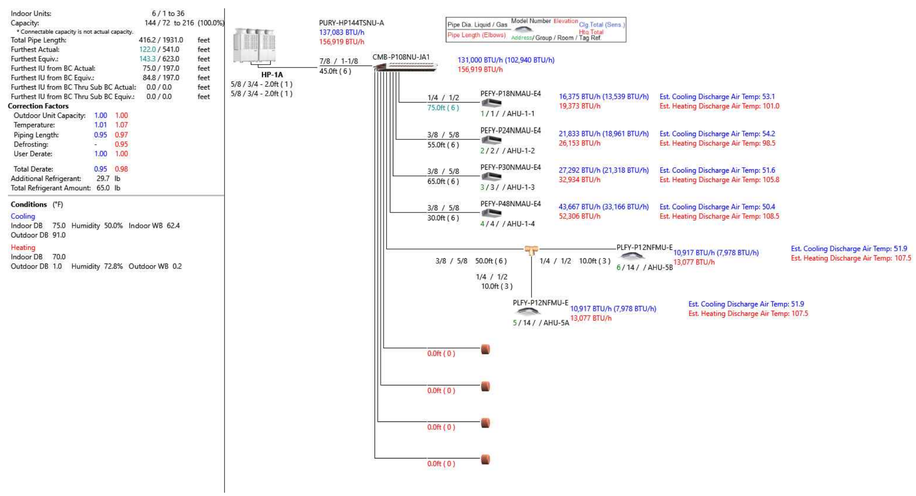
Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

1.25mm(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

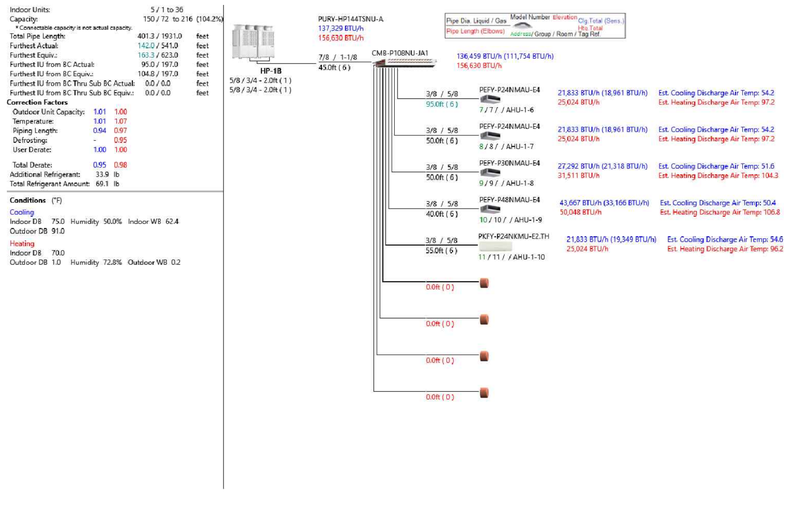
Coded Notes:
NOTE 1: Install twinning Y's within 15 degrees of level and with 20 inches of straight pipe on converging connection - reference installation manual for additional details including but not limited to special trapping requirements when twinning, and pipe slope requirements



HEAT PUMP SYSTEM TAG: HP-1B
SCHEMATIC DIAGRAM



HEAT PUMP SYSTEM TAG: HP-1A
PIPING DIAGRAM



HEAT PUMP SYSTEM TAG: HP-1B
PIPING DIAGRAM

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES		
DATE	NO.	DESCRIPTION
08-05-2022	-	PERMIT SET

JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656
ENGINEERED BUILDING SYSTEMS INC.
Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

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PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL DIAGRAMS

SHEET NO.
M500

DIAGRAM SYMBOL LEGEND		CONT.No	PAGE
DISPLAY	DESCRIPTION		
——#——	POWER WIRE		
————	CONTROL WIRE		
— — —	REF. PIPE		

CITY MULTI

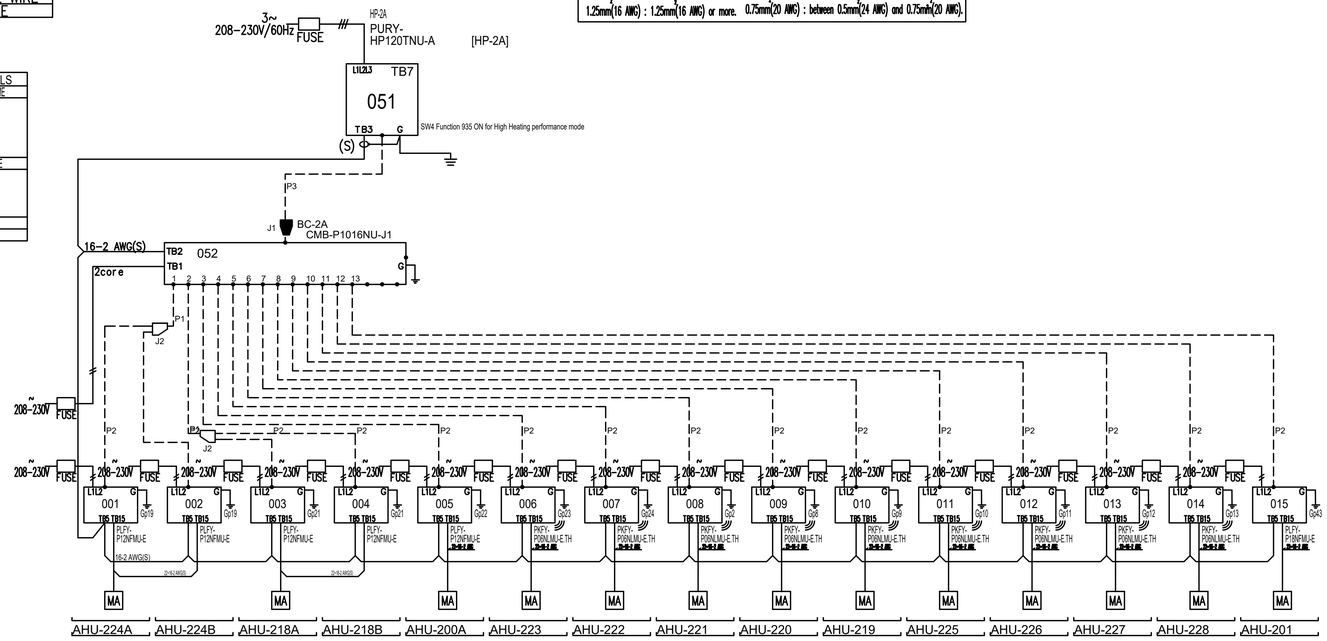
SYSTEM SCHEMATIC DWG.

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record

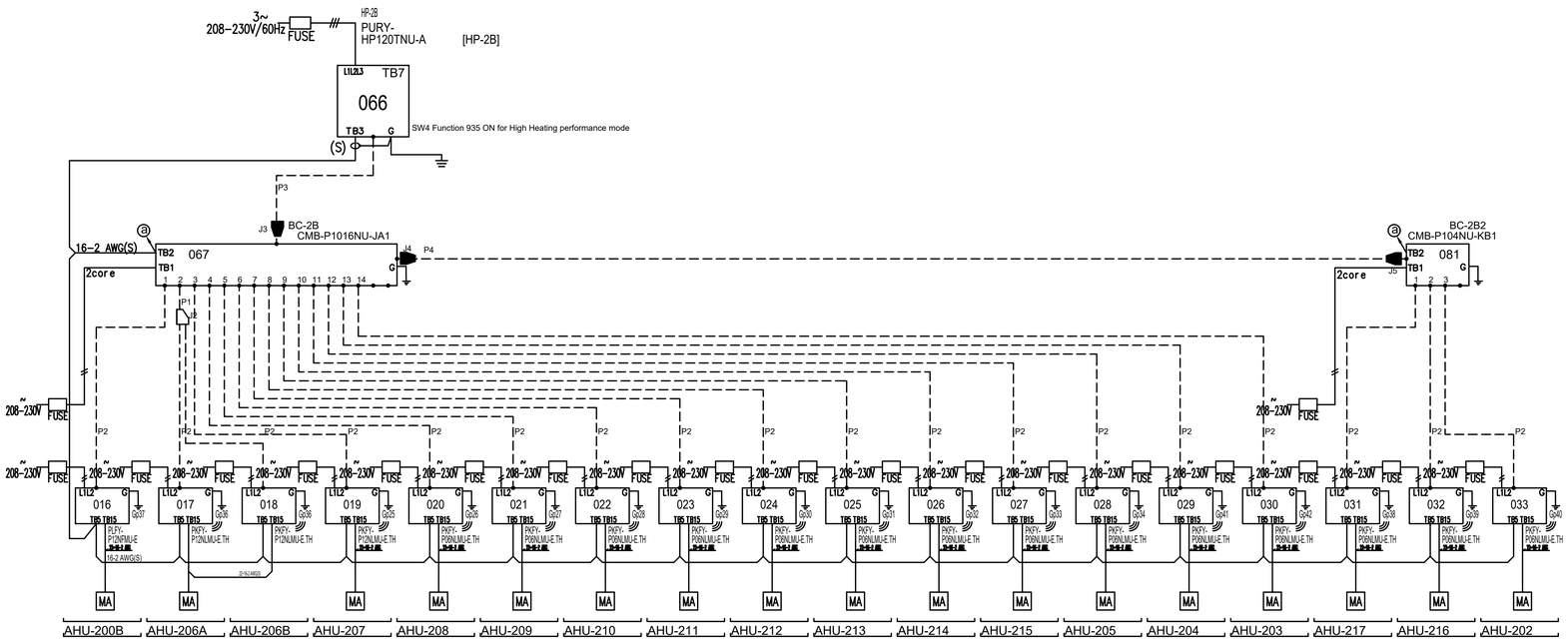
Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.

1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-R301S-G
J2	CMY-Y102SS-G2
J3	CMY-R302S-G1
J4	CMY-R303S-G1
J5	CMY-R306S-G
SYMBOL	LIQUID PIPE/GAS PIPE SIZE
P1	3/8 / 5/8
P2	1/4 / 1/2
P3	3/4 / 1-1/8
P4	3/8 / 5/8 , 3/4
SYMBOL	MODEL NUMBER
MA	PAR-20MAU



HEAT PUMP SYSTEM TAG: HP-2A
SCHEMATIC DIAGRAM



HEAT PUMP SYSTEM TAG: HP-2B
SCHEMATIC DIAGRAM

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES		
DATE	NO.	DESCRIPTION
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JOSEPH HOUSE

3304 Colerain Avenue
Cincinnati, Ohio 45225

PR-09656

ENGINEERED BUILDING SYSTEMS INC.

Shared Success Through Collaboration and Efficiency
515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
MEP Consulting Services, Inc. in OH

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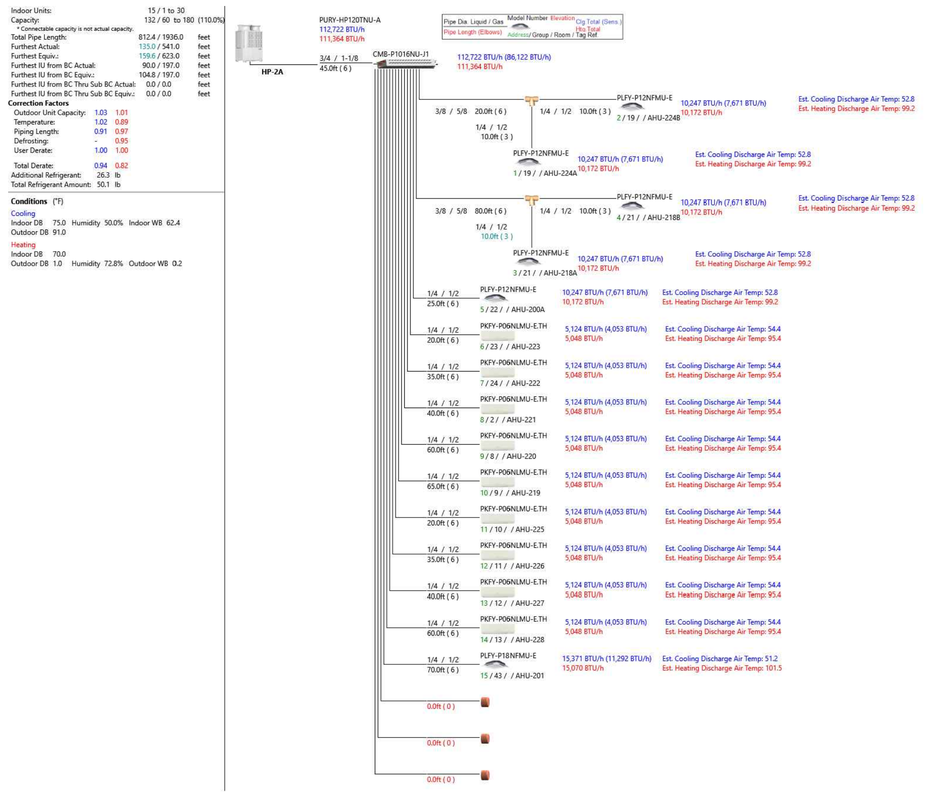
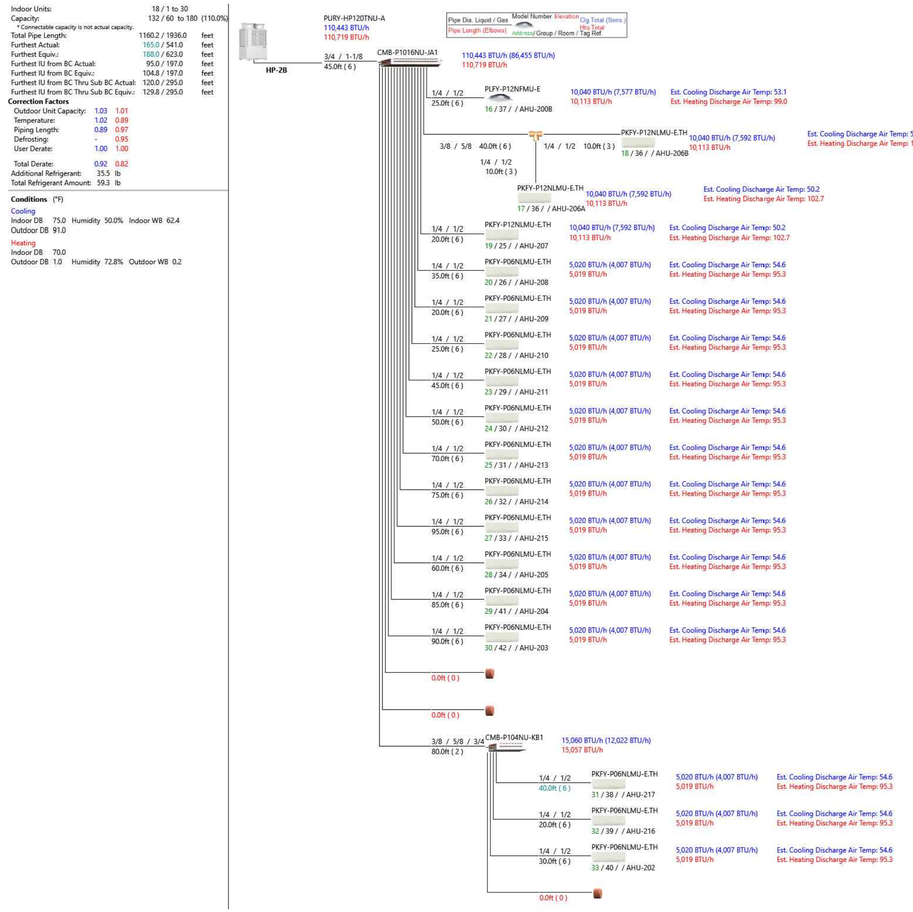
DRAWING TITLE
MECHANICAL DIAGRAMS

SHEET NO.
M501



HEAT PUMP SYSTEM TAG: HP-2A
PIPING DIAGRAM



HEAT PUMP SYSTEM TAG: HP-2B
PIPING DIAGRAM

QUANTITY OF 2.
HP-3A & HP-3B VRF SYSTEM ON THIRD FLOOR, IS SAME AS HP-2A & HP-2B ON SECOND FLOOR. ALL EQUIPMENT TAGS ON THIRD FLOOR SYSTEM TO INCLUDE '3' INSTEAD OF '2'. ASSOCIATED ROOM NUMBERS TO BE 300 SERIES INSTEAD OF 200 SERIES.

SCOTT SEVERT STILKEY E-77795 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

ISSUANCES

NO.	DESCRIPTION	DATE
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Cincinnati, Ohio 45225

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515 Monmouth Street, Suite 201
Newport, KY 41071 (859) 261-0585
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PROJECT NO.: 9656

SCALE:AS NOTED

DATE: 08-05-2022

DRAWING TITLE
MECHANICAL DIAGRAMS

SHEET NO.
M502

MECHANICAL SPECIFICATIONS

1. GENERAL
   a. REFER TO ARCHITECTURAL DRAWINGS, GENERAL NOTES, INSTRUCTIONS TO BIDDERS, GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, BASE BUILDING SPECIFICATIONS AND DRAWINGS, SHOP DRAWING MANUALS AND AS-BUILT PLANS, EXCEPT AS NOTED HEREIN, WHICH APPLY IN ALL RESPECTS TO THIS SECTION. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS PRIOR TO BIDDING THE WORK.
2. USE OF DRAWINGS AND SPECIFICATIONS
   a. EBS DRAWINGS AND SPECIFICATIONS ARE INTENDED TO CONVEY DESIGN INTENT ONLY. ALL MEANS AND METHODS SEQUENCES, TECHNIQUES, AND PROCEDURES OF CONSTRUCTION AS WELL AS ANY ASSOCIATED SAFETY PRECAUTIONS AND PROGRAMS, AND ALL INCIDENTAL AND TEMPORARY DEVICES REQUIRED TO CONSTRUCT THE PROJECT, AND TO PROVIDE A COMPLETE AND FULLY OPERATIONAL MECHANICAL SYSTEM ARE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.
3. STANDARDS
   a. EQUIPMENT AND MATERIALS SHALL CONFORM WITH APPROPRIATE PROVISIONS OF AGA, ARI, ASME, ASTM, CISPI, UL, NEMA, ANSI, SMACNA, ASHRAE, NFPA, NEC, AS APPLICABLE TO EACH INDIVIDUAL UNIT OR ASSEMBLY. ALL EQUIPMENT MUST BEAR UL LABEL.
4. LICENSE / EXPERIENCE
   a. CONTRACTOR MUST BE LICENSED BY THE STATE TO INSTALL HVAC SYSTEMS/EQUIPMENT. CONTRACTOR MUST ALSO HAVE A MINIMUM OF 5 YEARS OF EXPERIENCE AND HAVE INSTALLED AT LEAST (5) SUCCESSFUL PROJECT INSTALLATIONS OF SIMILAR SIZE AND SCOPE. REFERENCES MUST BE PROVIDED UPON REQUEST.
5. CODES
   a. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. THE MECHANICAL CONTRACTOR SHALL SATISFY CODE REQUIREMENTS AT A MINIMUM WITHOUT ANY EXTRA COST TO THE OWNER. IN CASE OF CONFLICT BETWEEN THE DRAWINGS/SPECIFICATIONS AND THE CODES AND ORDINANCES, THE HIGHEST STANDARD SHALL APPLY.
6. PERMITS AND FEES
   a. THE MECHANICAL CONTRACTOR SHALL PROCURE AND PAY FOR ALL PERMITS, FEES, TAXES, AND INSPECTIONS NECESSARY TO COMPLETE THE MECHANICAL WORK. FURNISH CERTIFICATE OF APPROVAL FOR WORK FROM INSPECTION AUTHORITY TO OWNER BEFORE FINAL ACCEPTANCE FOR WORK. CERTIFICATE OF FINAL INSPECTION AND APPROVAL SHALL BE SUBMITTED WITH THE CONTRACTOR'S REQUEST FOR PAYMENT. NO FINAL PAYMENT WILL BE APPROVED WITHOUT THIS CERTIFICATE.
7. SITE EXAMINATION
   a. THE MECHANICAL CONTRACTOR SHALL THOROUGHLY EXAMINE ALL AREAS OF WORK WHERE EQUIPMENT, DUCTWORK, AND PIPING WILL BE INSTALLED AND SHALL REPORT ANY CONDITION THAT, IN HIS OPINION, PREVENTS THE PROPER INSTALLATION OF THE MECHANICAL WORK PRIOR TO BID. CONTRACTOR SHALL ALSO EXAMINE THE DRAWINGS AND SPECIFICATIONS OF OTHER BRANCHES OF WORK, MAKING REFERENCE TO THEM FOR DETAILS OF NEW OR EXISTING BUILDING CONDITIONS. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO INCLUDE ALL REQUIRED WORK IN BID.
   b. ALL WORK SHALL BE DONE AT TIMES CONVENIENT TO THE OWNER AND ONLY DURING NORMAL WORKING HOURS, UNLESS SPECIFIED OTHERWISE.
   c. MECHANICAL CONTRACTOR SHALL TAKE THEIR OWN MEASUREMENTS AND BE RESPONSIBLE FOR THEM.
   d. ACCESS PANELS ARE NOT SHOWN ON DRAWINGS. DURING SITE EXAMINATION, CONTRACTOR SHALL IDENTIFY ALL AREAS WHERE ACCESS PANELS ARE REQUIRED, AND REPORT TO GENERAL CONTRACTOR. DESIGNATION OF WHO FURNISHES AND WHO INSTALLS ACCESS PANELS MUST BE COORDINATED WITH GENERAL CONTRACTOR PRIOR TO STARTING WORK.
   e. MECHANICAL CONTRACTOR RESPONSIBLE FOR SITE INVESTIGATION PRIOR TO BID TO REVEAL FULL SCOPE OF WORK.
8. CONTRACTOR COORDINATION
   a. COORDINATION DRAWINGS SHOWING SYSTEM AND COMPONENT INSTALLATION LAYOUT, ROUTING, DETAILS, ETC. SHALL BE PRODUCED BY THE MECHANICAL CONTRACTOR AND UNDER THE SUPERVISION OF THE GENERAL CONTRACTOR/CONSTRUCTION MANAGER, OR APPROPRIATE PARTY AS APPLICABLE.
   b. ALL SYSTEMS INSTALLED BY EACH SUB-CONTRACTOR SHALL BE COORDINATED WITH ONE ANOTHER AND APPROVED BY GENERAL CONTRACTOR/CONSTRUCTION MANAGER, ETC. PRIOR TO INSTALLATION AND/OR FABRICATION.
   c. IF QUESTIONS CONCERNING DESIGN INTENT ARISE DURING COORDINATION, EBS CAN ASSIST WHERE APPROPRIATE.
   d. THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER ALL OTHER DRAWINGS. DO NOT SCALE DISTANCES OFF THE MECHANICAL DRAWINGS; USE ACTUAL BUILDING DIMENSIONS.
9. SHOP DRAWINGS / SUBMITTALS
   a. SUBMIT TO THE ARCHITECT ELECTRONIC COPIES OF COMPLETE AND CERTIFIED SHOP DRAWINGS, DESCRIPTIVE DATA, PERFORMANCE DATA AND RATINGS, DIAGRAMS AND SPECIFICATIONS ON ALL SPECIFIED EQUIPMENT, INCLUDING ACCESSORIES, AND MATERIALS FOR REVIEW. THE MAKE, MODEL NUMBER, TYPE, FINISH AND ACCESSORIES OF ALL EQUIPMENT AND MATERIALS SHALL BE REVIEWED AND APPROVED BY THE MECHANICAL CONTRACTOR AND GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE ARCHITECT FOR THEIR REVIEW AND APPROVAL. APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE MECHANICAL CONTRACTOR/VENDOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS, SPECIFICATIONS AND APPLICABLE CODES.
   b. SHOP DRAWINGS SHALL BE REQUIRED FOR THE FOLLOWING:
      i. HVAC EQUIPMENT
      ii. FANS
      iii. DIFFUSERS, REGISTERS, GRILLES, DAMPERS, LOUVERS, AND ALL SHEET METAL ACCESSORIES
      iv. TEMPERATURE CONTROLS
      v. SHEET METAL COORDINATION DRAWINGS
      vi. DUCT SEALANTS FOR LEED PROJECTS
      vii. AIR BALANCE REPORT
   c. PRODUCTS INSTALLED BY THE MECHANICAL CONTRACTOR AND PROVIDED BY OTHERS MUST BE SUBMITTED FOR REVIEW PRIOR TO PURCHASING. PRODUCTS SHALL NOT BE SELECTED BASED ON PERMIT DRAWINGS WITHOUT EXPRESS PERMISSION - PRODUCTS SHALL BE SELECTED BASED ON CONSTRUCTION DRAWINGS.
10. RECORD DRAWING
   a. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CREATING RECORD DRAWINGS WHERE REQUIRED. DRAWINGS SHALL BE PRODUCED IN AUTOCAD 2004 FORMAT OR LATER.
11. TESTING
   a. ALL MECHANICAL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION.
12. FIRE STOPPING
   a. PROVIDE FIRE STOPPING AT ALL PENETRATIONS THROUGH RATED SEPARATIONS PER LOCAL CODES & REGULATIONS & PER UL RECOMMENDATIONS FOR ASSEMBLIES ENCOUNTERED IN PROJECT.
   b. THE FIRE STOPPING MATERIAL SHALL MEET THE INTEGRITY OF THE FIRE RATED WALL, FLOOR, CEILING & ROOF BEING PENETRATED. REFER TO ARCHITECT'S DRAWINGS FOR WALL, FLOOR, CEILING & ROOF FIRE RATINGS PRIOR TO BIDDING WORK.
   c. REFER TO ARCHITECT'S DRAWINGS FOR WALL, FLOOR, CEILING, AND ROOF FIRE RATINGS PRIOR TO BIDDING WORK.
13. ACCESS PANELS
   a. PROVIDE CEILING AND WALL ACCESS PANEL QUANTITIES & LOCATIONS TO THE GENERAL CONTRACTOR PRIOR TO BIDDING. ACCESS PANELS ARE REQUIRED FOR ALL CONCEALED APPLIANCES, CONTROLS DEVICES, HEAT EXCHANGERS AND HVAC SYSTEM COMPONENTS THAT UTILIZE ENERGY. WHERE ACCESS PANELS ARE USED, THE ACCESS PANEL SHOULD BE SIZED TO ALLOW ACCESSIBILITY FOR INSPECTION, SERVICE, REPAIR AND REPLACEMENT WITHOUT DISABLING THE FUNCTION OF A FIRE-RESISTANCE-RATED ASSEMBLY OR REMOVING PERMANENT CONSTRUCTION, OTHER APPLIANCES, VENTING SYSTEMS OR ANY OTHER PIPING OR DUCTS NOT CONNECTED TO THE APPLIANCE BEING INSPECTED, SERVICED, REPAIRED OR REPLACED. THERE SHALL BE NO EXTRAS FOR HAVING TO ADD ACCESS PANELS AFTER BIDS ARE AWARDED.
   b. PROVIDE ACCESS PANELS, DOORS, ETC. WHERE REQUIRED TO ALLOW FOR COMPLETE REMOVAL OF APPLIANCES WITHOUT THE REMOVAL OF PERMANENT BUILDING CONSTRUCTION MATERIALS.
14. CUTTING AND PATCHING
   a. NEATLY DO ALL CUTTING AS REQUIRED AND PATCH ALL CUT SURFACES TO MATCH BUILDING CONSTRUCTION. THE CONTRACTOR SHALL EMPLOY AND PAY A TRADE TRAINED AND QUALIFIED TO PERFORM THE REQUIRED PATCHING WORK. ALL SURFACES DISTURBED SHALL BE RESTORED WITH LIKE MATERIALS TO THE SATISFACTION OF THE OWNER. ALL PENETRATIONS THROUGH ROOF SHALL BE MADE BY BONDED ROOFER. MECHANICAL CONTRACTOR SHALL PAY ALL FEES REQUIRED.
15. FLASHING & COUNTERFLASHING
   a. ROOF FLASHING SHALL BE FURNISHED AND INSTALLED BY THE ROOFING CONTRACTOR. ROOF COUNTERFLASHING SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. COORDINATE WORK WITH ROOFING CONTRACTOR AND PAY ALL FEES.
   b. OBTAIN APPROVAL FROM GENERAL CONTRACTOR, CONSTRUCTION MANAGER, OWNER AND/OR ROOFING CONTRACTOR PRIOR TO MAKING ANY PENETRATIONS SO THAT WARRANTIES ARE NOT COMPROMISED OR VOIDED.
16. WARRANTY
   a. THE MECHANICAL CONTRACTOR SHALL UNCONDITIONALLY WARRANT ALL WORK TO BE FREE OF DEFECTS IN EQUIPMENT, MATERIAL AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE BY OWNER. THE MECHANICAL CONTRACTOR WILL REPAIR OR REPLACE ANY DEFECTIVE WORK PROMPTLY AND WITHOUT CHARGE TO THE OWNER.
   b. RESTORE ANY OTHER EXISTING WORK DAMAGED IN THE COURSE OF REPAIRING DEFECTIVE EQUIPMENT, MATERIALS AND WORKMANSHIP.
17. MECHANICAL WORK
   a. THE MECHANICAL CONTRACTOR SHALL PROVIDE NEW HVAC EQUIPMENT, FANS, DUCTWORK, PIPING, AIR DEVICES, CONTROLS AS INDICATED ON DRAWINGS AND AS SPECIFIED. STARTUP AND 1ST YEAR PARTS AND LABOR WARRANTY SHALL BE INCLUDED AND MANUFACTURER'S EXTENDED WARRANTIES. EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND THE APPLICABLE CODE.
18. OWNER'S INSTRUCTIONS
   a. PROVIDE TWO SETS OF COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS WITH DRAWINGS, TYPEWRITTEN INSTRUCTIONS AND OPERATING SEQUENCES AND DESCRIPTIVE DATA SHEETS. ASSEMBLE EACH SET IN A HARD-BOUND COVER. PROVIDE PDF FILES OF ALL DOCUMENTATION.
19. FINALE
   a. PUT ALL EQUIPMENT IN SERVICE AND DEMONSTRATE THAT ALL CONDITIONS OF THE CONTRACT HAVE BEEN FULFILLED. REMOVE ALL TOOLS, DEBRIS, ETC. OCCASIONED BY WORK UNDER THIS CONTRACT. SUBMIT ALL WARRANTIES, TEST REPORTS, OPERATING AND MAINTENANCE MANUALS FOR HVAC SYSTEMS, LOG SHEETS AND CHARTS, AND GUARANTEES AS PREVIOUSLY SPECIFIED. PROVIDE ALL REPORTS, FORMS, ETC. REQUIRED BY INSPECTORS TO THE SATISFACTION OF THE OWNER. PROVIDE AS-BUILT RECORD DRAWINGS (IN AUTOCAD 2007 OR LATER) SHOWING AN ACCURATE ACCOUNT OF THE FINAL INSTALLED SYSTEMS. SYSTEMS INCLUDING BUT NOT LIMITED TO ALL EQUIPMENT AND ASSOCIATED CONTROLS, DUCTWORK/PIPING, AIR DEVICES, ETC.
20. SHEETMETAL DUCTWORK
   a. ALL SIZES OF DUCTS SHOWN ON THE DRAWINGS ARE INTERIOR DUCT DIMENSIONS. ALL DUCTWORK SHALL BE RIGID SHEETMETAL CONSTRUCTED FROM GALVANIZED SHEET STEEL IN ACCORDANCE WITH SMACNA LOW VELOCITY DUCT CONSTRUCTION STANDARDS. ALL EXPOSED DUCTWORK SHALL BE ROUND, SPIRAL, OR RECTANGULAR LOCK-SEAM TYPE, AS SHOWN ON HVAC DRAWINGS. ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE FOR ACHIEVING AIR TIGHT (5% LEAKAGE) AND NOISELESS (NO OBJECTIONABLE NOISE) SYSTEMS, CAPABLE OF PERFORMING EACH INDICATED SERVICE. FURNISH ALL REQUIRED DAMPERS, TRANSITIONS, OFFSETS, CONNECTIONS TO AIR DEVICES, AND OTHER ACCESSORIES NECESSARY FOR A COMPLETE OPERATING SYSTEM. FLEXIBLE DUCTWORK SHALL NOT EXCEED 8'-0" LONG.
21. ADHESIVES AND SEALANTS
   a. SEAL ALL LONGITUDINAL AND TRANSVERSE DUCT JOINTS WITH A UL 181A OR 181B NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT OF A TYPE RECOMMENDED BY THE MANUFACTURER FOR SEALING JOINTS AND SEAMS IN SHEET METAL DUCTWORK. COVER ALL FIELD JOINTS, JOINTS AROUND SPIN-IN FITTINGS AND FASTENING SCREWS WITH MASTIC. ALL SEALANTS AND GASKETS SHALL HAVE SURFACE-BURNING CHARACTERISTICS WITH A MAXIMUM FLAME-SPREAD INDEX OF 25 AND A MAXIMUM SMOKE-DEVELOPED INDEX OF 50 WHEN TESTED ACCORDING TO UL 723.
   b. EXPOSED DUCTWORK: TRIM DUCT SEALANTS FLUSH WITH METAL. CREATE A SMOOTH AND UNIFORM EXPOSED BEAD. DO NOT USE TWO-PART TAPE SEALING SYSTEM.
   c. FOR INDOOR APPLICATIONS, ALL ADHESIVES, SEALANTS, AND SEALANT PRIMERS MUST COMPLY WITH SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168. VOLATILE ORGANIC COMPOUND (VOC) LIMITS LISTED IN THE TABLE BELOW CORRESPOND TO THE TABLE LISTED IN LEED NC 2009 CREDIT IEQ 4.1: LOW-EMITTING MATERIALS - ADHESIVES AND SEALANTS.
22. DUCT SUPPORTS
   a. FURNISH AND INSTALL HOT-DIPPED GALVANIZED STEEL FASTENERS, HANGERS, ANCHORS, RODS, STRAPS, TRIM, AND ANGLES FOR SUPPORT OF DUCTWORK.
23. FLEXIBLE CONNECTIONS
   a. FURNISH AND INSTALL NEOPRENE FLEXIBLE DUCT CONNECTIONS AT THE INLET AND DISCHARGE OF UNITS AND FANS.
24. DAMPERS
   a. DUCT MANUAL VOLUME DAMPERS - FURNISH AND INSTALL OPPOSED-BLADE, LEAK-PROOF VOLUME CONTROL DAMPERS WHERE INDICATED ON DRAWINGS AND LOCATIONS IN SUPPLY, RETURN AND EXHAUST DUCTS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS OR AT EACH INDIVIDUAL DUCT REGISTER IN ORDER TO ACHIEVE SYSTEM AIR BALANCE QUANTITIES. BALANCING DEVICES MUST BE PROVIDED IN ACCORDANCE WITH IMC 603.17. ALL MANUAL VOLUME DAMPERS MUST BE SHOWN ON COORDINATION DRAWINGS WHEN SUBMITTED FOR REVIEW.
   b. PROVIDE MANUAL DAMPERS IN ACCESSIBLE LOCATIONS, AND NOT ABOVE DRYWALL CEILINGS WHERE FEASIBLE. WHERE DAMPER IN DUCTWORK IS NOT ACCESSIBLE, PROVIDE METROPOLITAN AIR TRANSFER (MAT) MODEL RT-150 SERIES CABLE ACTUATED DAMPER DRIVE SYSTEM, OR APPROVED EQUAL.
   c. PROVIDE FIRE, SMOKE, AND FIRE / SMOKE RATED DAMPERS ON ALL PENETRATIONS TO RATED WALLS, CEILINGS, AND FLOORS. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
   d. WHERE DUCTS ARE ROUTED UP IN JOIST POCKET. RATING SHALL BE MAINTAINED AROUND JOIST TO PREVENT FIRE DAMPER, WHERE FEASIBLE. REFER TO ARCHITECTURAL PLANS FOR DETAILS. WHERE A CLOTHES DRYER EXHAUST DUCT PENETRATES A WALL OR CEILING MEMBRANE, THE ANNULAR SPACE AROUND THE DUCT SHALL BE SEALED WITH APPROVED FIRE CAULKING.
   e. PROVIDE RADIATION DAMPERS ON ALL AIR DEVICES, FANS, ETC., THAT PENETRATE THE MEMBRANE OF THE RATED FLOOR/CEILING ASSEMBLY.
25. DUCT ACCESS DOORS
   a. FURNISH AND INSTALL CONVENIENTLY LOCATED DUCT ACCESS DOORS OF AMPLE SIZE AND QUANTITY FOR SERVICING THE DAMPERS.
26. DIFFUSERS, GRILLES AND REGISTERS
   a. DIFFUSERS, GRILLES AND REGISTERS SHALL BE MANUFACTURED BY TITUS, PRICE, OR ENGINEERED APPROVED EQUAL AND SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. DIFFUSERS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS AND SCHEDULES. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS ITEMS NECESSARY FOR A COMPLETE AND PROPER INSTALLATION IN THE TYPE OF CEILING AND WALLS USED IN THIS PROJECT.
   b. ALL NEW DIFFUSERS AND GRILLES, INSTALL PER MFR'S INSTRUCTIONS, PROVIDE INSULATION ON ALL SUPPLY GRILLE/DIFFUSER BACKS, COORDINATE WITH CEILING WORK.
27. EXHAUST FAN
   a. FAN MANUFACTURER SHALL BE PANASONIC, BROAN, S&P, COOK, GREENHECK, OR ENGINEERED APPROVED EQUAL. REFER TO DRAWINGS AND SCHEDULES FOR UNIT LOCATION, TECHNICAL DATA, AND ANY APPLICABLE ACCESSORIES.
28. MINI-SPLIT SYSTEMS
   a. SPLIT SYSTEMS SHALL CONSIST OF INDOOR AIR HANDLER AND ASSOCIATED OUTDOOR HEAT PUMP UNIT. EQUIPMENT SHALL HAVE MANUFACTURER'S STANDARD WARRANTY. PROVIDE AN INLINE CHECK VALVE LOCATED IN THE DRAIN LINE OR TRAP.
   b. MINI-SPLIT SYSTEM MANUFACTURER SHALL BE CARRIER, MITSUBISHI, DAIKIN, OR ENGINEERED EQUAL.
29. VARIABLE REFRIGERANT FLOW (VRF) SYSTEMS
   a. VRF MANUFACTURER SHALL BE SYSTEM MANUFACTURER SHALL BE CARRIER, TRANE-MITSUBISHI, DAIKIN, OR ENGINEERED EQUAL.
   b. SPLIT SYSTEMS CONSISTING OF OUTDOOR HEAT PUMPS, BRANCH CIRCUIT CONTROLLERS, MULTIPLE INDOOR FAN COIL UNITS, AND A DIRECT DIGITAL CONTROLS SYSTEM. EACH INDOOR UNIT OR GROUP OF INDOOR UNITS SHALL BE CAPABLE OF OPERATING IN ANY MODE INDEPENDENTLY OF OTHER INDOOR UNITS OR GROUPS. SYSTEM SHALL BE CAPABLE OF CHANGING MODE (COOLING TO HEATING, HEATING TO COOLING) WITH NO INTERRUPTIONS TO SYSTEM OPERATION. CONTRACTOR TO COORDINATE/LAYOUT ALL EQUIPMENT, PIPING, BRANCH CIRCUITS, ETC. FOR A COMPLETE VRF SYSTEM. CONTRACTOR MUST HAVE COMPLETED THE MINIMUM TRAINING REQUIRED BY THE VRF MANUFACTURER TO INSTALL THE VRF SYSTEMS. THE CONTRACTOR MUST BE CERTIFIED BY THE MANUFACTURER AND A COPY OF THE CERTIFICATE MUST BE INCLUDED IN THE SUBMITTAL PROCESS.
   c. WARRANTY: EQUIPMENT SHALL BE COVERED BY THE STANDARD MANUFACTURER'S LIMITED WARRANTY FOR A PERIOD OF ONE (1) YEAR PARTS AND SEVEN (7) YEAR COMPRESSOR TO THE ORIGINAL OWNER FROM DATE OF INSTALLATION. PROVIDE THE NECESSARY MANUFACTURER CONTRACT CRITERIA TO ALLOW AN EXTENDED MANUFACTURER'S LIMITED WARRANTY FOR A PERIOD OF TEN (10) YEARS TO THE ORIGINAL OWNER FROM DATE OF INSTALLATION. MANUFACTURER CRITERIA SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO (1) DESIGNED BY A CERTIFIED SYSTEM DESIGN SOFTWARE DESIGNED FOR RUNNING SYSTEM BUILDING SOFTWARE, (2) INSTALLED BY A CONTRACTOR THAT HAS SUCCESSFULLY COMPLETED THE VRF MANUFACTURERS SERVICE COURSE, AND (3) VERIFIED WITH REQUIRED MATERIALS SUBMITTED TO AND APPROVED BY THE VRF MANUFACTURERS ELECTRIC SERVICE DEPARTMENT WHICH INCLUDE AS BUILT SYSTEM BUILDER FILE, A ONE HOUR MAINTENANCE TOOL RECORD WITH SYSTEM INFORMATION IN ORDINARY CONTROL MODE, OUTDOOR AND INDOOR UNIT DIP SWITCH SETTINGS AND OUTDOOR UNIT FUNCTION SETTINGS (SPECIFIC REQUIREMENTS MAY VARY BY MANUFACTURER).
   d. CONTROLS: PROVIDE ALL NECESSARY REMOTE CONTROLLERS, CENTRALIZED CONTROLLERS, INTEGRATED WEB-BASED INTERFACE COMMUNICATION (IP ADDRESSABLE THROUGH NEW BAS), CONTROL WIRING, ETC. FOR A COMPLETE AND OPERATIONAL TEMPERATURE CONTROL SYSTEM. PROVIDE MASTER CONTROLLERS WITH A TOUCH SCREEN INTERFACE. ALL SYSTEM CONTROL COMPONENTS SHALL BE ACCESSIBLE THROUGH THE MASTER CONTROLLER AND LOCAL REMOTE CONTROLLERS FOR ALL AIR HANDLERS. SYSTEM SHALL BE CAPABLE OF SUPPORTING OPERATION MONITORING, SCHEDULING, OCCUPANCY, ERROR EMAIL DISTRIBUTION, PERSONAL WEB BROWSERS, TENANT BILLING, AND ONLINE MAINTENANCE SUPPORT
   e. VRF PROJECT SUPERVISION: VRF MANUFACTURER SHALL PROVIDE ON-SITE PROJECT SUPERVISION PROVIDING ONSITE TECHNICAL REVIEW OF INSTALLED VRF SYSTEMS, REVIEW OF ACTIVITIES RELATED TO THE INSTALLATION OF THE VRF SYSTEM, VRF SYSTEM COMPONENTS AND ASSOCIATED CONTROLS.
   f. PROJECT SUPERVISION: PROJECT SUPERVISION SHALL BE COMPLETED BY AN EMPLOYEE OF THE VRF MANUFACTURER WHOSE PRIMARY JOB RESPONSIBILITIES ARE TO PROVIDE DIRECT TECHNICAL SUPPORT OF THEIR PRODUCT (SALES STAFF OR IN-HOUSE SUPPORT STAFF ARE NOT PERMITTED TO COMPLETE THIS SCOPE OF WORK). A FACTORY CERTIFIED REPRESENTATIVE CAN BE USED TO COMPLETE CERTAIN ELEMENTS OF WORK BUT SHALL NOT BE USED IN LIEU OF THE MANUFACTURER'S PERSONNEL. THE PROJECT SUPERVISOR SHALL WORK DIRECTLY WITH THE GENERAL CONTRACTOR, MECHANICAL CONTRACTOR, AND COMMISSIONING AGENT. PROJECT SUPERVISOR SHALL BE IN DIRECT CONTACT WITH THIS TEAM TO MAKE SURE THEY ATTEND ALL SITE VISITS, MEETINGS, COMMUNICATION, ETC. IS HAPPENING AT THE APPROPRIATE TIMES DURING CONSTRUCTION.
   g. SITE VISITS: VRF MANUFACTURER SHALL PROVIDE (4) ONSITE VISITS DURING THE PROJECT'S COMPLETION. ONSITE VISITS SHALL BE CONDUCTED AT THE FOLLOWING INSTALLATION MILESTONES: (1) PROJECT KICKOFF MEETING, (2) SITE VISIT AT 25% PROJECT COMPLETION, (3) SITE VISIT AT 50% PROJECT COMPLETION, (4) FINAL INSPECTION PRIOR TO COMMISSIONING OF THE VRF SYSTEM. THE PROJECT KICKOFF MEETING WILL BE CONDUCTED WITH THE INSTALLING CONTRACTOR AND APPROPRIATE PARTIES WITH THE SOLE PURPOSE TO REVIEW THE INSTALLATION OF VRF SYSTEMS BEING INSTALLED. MEETING SHALL CONSIST OF BUT NOT BE LIMITED TO THE FOLLOWING:
      - PRESENTATION OF BEST PRACTICES & INSTALLATION REQUIREMENTS SPECIFIC TO THE VRF SYSTEMS BEING INSTALLED UNDER THIS SCOPE OF WORK
      - REVIEW OF THE PROJECT'S MECHANICAL DESIGN DRAWINGS RELATED TO THE VRF SYSTEMS BEING INSTALLED (DOCUMENTS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR).
      - REVIEW OF VRF MANUFACTURER'S DESIGN SELECTION SOFTWARE AND SYSTEM DESIGN SCHEMATIC DRAWINGS FOR THE SYSTEMS BEING INSTALLED (DOCUMENTS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR).
      - DISCUSS PROJECT ACTIVITY RELATED TO THE INSTALLATION OF VRF SYSTEM COMPONENTS.
      - ESTABLISH CLEAR PATH OF COMMUNICATION AND PROJECT SUPPORT (MECHANICAL CONTRACTOR SHALL DESIGNATE AN ONSITE POINT OF CONTACT FOR ALL FIELD COORDINATION ACTIVITIES).
   h. EACH SITE VISIT SHALL CONSIST OF A SINGLE VISIT NOT EXCEEDING 8 HOURS AND SHALL OCCUR DURING REGULAR BUSINESS HOURS (8:00-4:00, MONDAY THRU FRIDAY). THE FOLLOWING ACTIVITIES SHALL BE COMPLETED DURING THIS TIME.
   i. MEET WITH DESIGNATED REPRESENTATIVE FROM THE VRF INSTALLATION CONTRACTOR TO DISCUSS FIELD ACTIVITIES AND PROVIDE TECHNICAL SUPPORT RELATED TO VRF SYSTEMS.
   j. REVIEW INSTALLED VRF SYSTEMS FOR COMPLIANCE WITH MANUFACTURER'S INSTALLATION, SERVICE, AND ENGINEERING SPECIFICATIONS.
   k. ASSIST THE CONTRACTOR IN UPDATING THE VRF DESIGN SOFTWARE FOR AS-BUILT PURPOSES AND FOR CALCULATING THE APPROPRIATE REFRIGERANT CHARGE.
   l. PROVIDE A FIELD REPORT IDENTIFYING ANY INSTALLATION ISSUES REQUIRING ATTENTION. REPORT SHALL PROVIDE DETAILED INFORMATION CONTAINING ISSUE REFERENCE NUMBER, PRIORITY LEVEL OF ISSUE, EQUIPMENT M# & REFERENCE TAG#, STATUS OF ISSUE, DESCRIPTION OF ISSUE BEING IDENTIFIED, RECOMMENDATION FOR CORRECTIVE ACTION, AND FOLLOW-UP REQUIREMENTS AS REQUIRED.
   m. PROJECT CLOSE OUT DOCUMENTS: DOCUMENTS COMPLETED DURING THE PROJECT SUPERVISION PROCESS SHALL BE COMPILED AND PRESENTED TO THE OWNER/OWNER'S REPRESENTATIVE AT THE COMPLETION OF FIELD ACTIVITIES. CLOSE OUT DOCUMENTATION SHALL INCLUDE THE FOLLOWING:
      - PROJECT SUPERVISION REPORT OUTLINING ACTIVITIES COMPLETED UNDER THIS SCOPE OF WORK.
      - AS-BUILT VRF DESIGN FILE DEPICTING MODEL NUMBERS AND BTU CAPACITY RATINGS OF EQUIPMENT INSTALLED, REFRIGERANT PIPE SIZE & CONNECTION LENGTHS BETWEEN EACH SYSTEM COMPONENT, CALCULATED REFRIGERANT CHARGE.
      - ISSUE REPORT.
   n. VRF SYSTEM COMMISSIONING: THE VRF MANUFACTURER (OR PREFERABLY A COMMISSIONING COMPANY SPECIALIZING IN VRF INSTALLATIONS SUCH AS VRF SOLUTIONS) SHALL OVERSEE AND ASSIST THE INSTALLING CONTRACTOR AND THE COMMISSIONING AGENT (IF APPLICABLE) WITH THE STARTUP AND COMMISSIONING OF ALL VRF EQUIPMENT. THE PROCESS WILL BE COMPLETED IN TWO PHASES: PRE-START-UP INSPECTION PROCESS, AND PHYSICAL START-UP & COMMISSIONING OF EQUIPMENT.
   o. SYSTEM COMMISSIONING: ALL VRF SYSTEM COMMISSIONING ACTIVITIES SHALL BE COMPLETED BY AN EMPLOYEE OF THE VRF MANUFACTURER (OR A COMMISSIONING COMPANY SPECIALIZING IN VRF INSTALLATIONS HIRED BY THE VRF MANUFACTURER) WHOSE PRIMARY JOB RESPONSIBILITIES ARE TO PROVIDE START UP AND COMMISSIONING OF THEIR PRODUCTS (SALES STAFF OR IN-HOUSE SUPPORT STAFF ARE NOT PERMITTED TO COMPLETE THIS SCOPE OF WORK). A FACTORY CERTIFIED REPRESENTATIVE CAN BE USED TO COMPLETE CERTAIN ELEMENTS OF WORK BUT SHALL NOT BE USED IN LIEU OF THE MANUFACTURER'S PERSONNEL. UPON COMPLETION OF THE EQUIPMENT STARTUP & VRF COMMISSIONING PROCESS, THE VRF MANUFACTURER SHALL PROVIDE A FORMAL REPORT OUTLINING THE STATUS OF THE SYSTEM, IN ELECTRONIC FORMAT ONLY, CONTAINED WITHIN THIS REPORT SHALL BE COPIES OF ALL FIELD INSPECTION REPORTS, REQUIRED ACTION ITEMS AND STATUS, MANUFACTURER'S DESIGN SOFTWARE AS-BUILT, EQUIPMENT MODEL AND SERIAL NUMBERS. COMPLETION OF THIS PROCESS SHALL VERIFY THAT THE VRF SYSTEM HAS BEEN INSTALLED PER THE ENGINEER'S DESIGN INTENT AND COMPLIES WITH THE VRF MANUFACTURER'S ENGINEERING AND INSTALLATION SPECIFICATIONS RELATED TO THEIR EQUIPMENT.
   p. PRE-START-UP INSPECTION: CONTRACTOR SHALL EMPLOY THE SERVICES OF THE VRF MANUFACTURER TO PROVIDE A COMPREHENSIVE FIELD REVIEW OF THE COMPLETE VRF SYSTEM INSTALLATION, PRIOR TO THE PHYSICAL START UP AND OPERATION OF EQUIPMENT. UPON SATISFACTION THAT THE SYSTEM MEETS THE VRF MANUFACTURER'S INSTALLATION REQUIREMENTS AND SPECIFICATIONS, THE CONTRACTOR SHALL BE ALLOWED TO PROCEED WITH THE PHYSICAL START UP AND OPERATION OF EQUIPMEN