MECHANICAL NOTES

1. ALL MECHANICAL SYSTEMS AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE 2020 NEW YORK BUILDING CODES INCLUDING MECHANICAL, FIRE, FUEL GAS AND ENERGY CODES AS ARE APPLICABLE TO THE PROJECT IN ADDITION TO ALL NATIONAL FIRE CODES AND LOCAL AHJ AND/OR UTILITY REQUIREMENTS WHICH APPLY.
2. ALL MECHANICAL EQUIPMENT SHALL BE CLOSELY COORDINATED WITH STRUCTURAL SYSTEM, PLUMBING SYSTEM AND ELECTRICAL SYSTEM TO ENSURE PROPER COMPLIANCE WITH CODES AND ENSURE THAT ALL TRADES WILL NOT CONFLICT WITH EACH OTHER.
3. DO NOT SCALE DRAWINGS, DRAWINGS ARE DIAGRAMMATIC. SCALE WHERE INDICATED IS FOR REFERENCE ONLY.
4. PROVIDE TWO COPIES OF INSTALLATION, OPERATION, AND MAINTENANCE MANUALS TO THE OWNER WITHIN 15 CALENDAR DAYS OF ACCEPTANCE OF THE SYSTEM.
5. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
6. MECHANICAL MECHANICAL CONTRACTOR SHALL HAVE A FULL TEST AND BALANCE REPORT FOR REVIEW/APPROVAL. MECHANICAL CONTRACTOR SHALL PROVIDE A CERTIFIED TEST AND BALANCE REPORT FOR REVIEW PRIOR TO CERTIFICATE OF OCCUPANCY. SEE MECHANICAL SPECIFICATIONS FOR REQUIREMENTS.
7. THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUBCONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU. RECORD DATA ON STANDARD AABC OR NEBB FORMS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE THAT ANY AND ALL REQUIRED AIR BALANCE TESTING PROCEDURE COSTS ARE INCORPORATED AND COVERED BY CONTRACTOR'S BASE BID.

INSTALLATION/MATERIALS NOTES

1. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
2. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOORS OF NON– COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH NONCOMBUSTIBLE MATERIALS. PENETRATIONS OF NONRATED WALLS, PARTITIONS AND FLOOR OF COMBUSTIBLE CONSTRUCTION SHALL BE FIRESTOPPED WITH MATERIALS EQUIVALENT TO TWO INCHES OF WOOD. FIRESTOPPING SHALL COMPLY WITH ASTM E–814.
3. MECHANICAL CONTRACTOR SHALL PROVIDE FIRE DAMPERS WHERE DUCTWORK PENETRATES ANY/ALL FIRE RATED WALLS/CEILINGS/PARTITIONS WHETHER FIRE DAMPERS INDICATED ON DRAWINGS OR NOT. COORDINATE WITH ARCH. DWGS FOR FIRE RATED LOCATIONS.
4. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND HVAC EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL

   MECHANICAL MECHANICAL CONTRACTOR SHALL VERIFY LOCATION OF ROOF PENETRATIONS FOR RELIEF HOODS AND OUTSIDE AIR HOODS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
5. MECHANICAL CONTRACTOR SHALL COORDINATE ANY AND ALL PAINTING OR FINISHING REQUIREMENTS WITH ARCHITECT PRIOR TO PURCHASING ANY MATERIALS.
6. MECHANICAL MECHANICAL CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 10'–0" FROM ANY OUTSIDE AIR INTAKE.
7. MECHANICAL MECHANICAL CONTRACTOR SHALL LOCATE ALL ROOF MOUNTED EQUIPMENT A MINIMUM OF 10'–0" FROM EDGE OF ROOF AND/OR PARAPET AS REQUIRED BY CODE REGARDLESS OF LOCATIONS INDICATED ON PLANS. COORDINATE INSTALLATION LOCATIONS WITH ARCHITECTURAL AND STRUCTURAL PRIOR TO ROUGHING–IN.
8. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
9. COORDINATE ROOFTOP EQUIPMENT WITH BUILDING STRUCTURE AND WORK BY OTHERS TO DETERMINE EXACT EQUIPMENT INSTALLATION LOCATION.
10. SPACE ABOVE CEILING IS LIMITED. MECHANICAL CONTRACTOR TO FIELD VERIFY EXACT DUCTWORK INSTALLATION LOCATION AND ROUTING PRIOR TO DUCTWORK FABRICATION.

SHEETMETAL/INSULATION NOTES

1. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL DUCT DIMENSIONS ON PLANS ARE SHEET METAL SIZE. DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED, SIZES LISTED ARE O.D., DUCT FABRICATION DIMENSIONS. SPIRAL DUCTWORK SHALL BE DOUBLE WALL TYPE. ALL DUCT RUNOUTS TO GRD AIR TERMINAL DEVICES TO BE PROVIDED AS ROUND SPIRAL DUCT WITH EXTERNAL WRAP. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE AS INDICATED ON GRD SCHEDULE. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. SEE MECHANICAL SPECIFICATIONS (DUCTWORK INSULATION SCHEDULE) FOR REQUIREMENTS.
2. ALL RECTANGULAR SUPPLY AND RETURN DUCTS SHALL BE LINED WITH 1" THICK DUCT LINER FOR THE FIRST 10FT FROM THE UNIT OR INDICATED ON PLANS. LINED DUCTWORK SHALL BE LABELED AS --"X--" (L). DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED. ALL WRAPPED DUCTS SHALL BE WRAPPED WITH 2" THICK DUCT INSULATION. WRAPPED DUCTS SHALL BE LABELED AS --"X --" (WR).
3. OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" FIBERGLASS DUCT WRAP WITH VAPOR BARRIER IN LIEU OF DUCT LINER.
4. FLEXIBLE DUCT SHALL BE INSULATED FLEXMASTER TYPE 9M (OR EQUAL). MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE A MAXIMUM OF 4'–0".
5. PORTIONS OF DUCTWORK ABOVE CEILING VISIBLE THROUGH GRILLES, DIFFUSERS, AND REGISTERS SHALL HAVE INTERIOR AND EXTERIOR OF DUCTWORK PAINTED FLAT BLACK. IF EXTERIOR OF DUCTWORK IS INSULATED, WRAP VISIBLE INSULATION WITH FLAT BLACK VINYL WRAP.
6. ALL EXPOSED DUCTWORK TO BE PROVIDED WITH PAINT GRIP AND PAINTED TO MATCH WITH STRUCTURE OR COLOR SELECTED BY ARCHITECT, PAINTING BY GENERAL CONTRACTOR. ALL EXPOSED WRAPPED DUCTWORK TO BE PROVIDED WITH CONTINUOUS WHITE VINYL WRAP.
7. UNLESS OTHERWISE NOTED, BRANCH TAKE–OFF DUCTS SHALL BE EQUAL TO NECK SIZE OF THE GRILLE/DIFFUSER/REGISTER.

CONTROLS NOTES

1. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE PLANS OR NOT. LOCATE ALL THERMOSTATS AND SWITCHES ±4'–0" ABOVE FINISH FLOOR. VERIFY EXACT LOCATION OF THERMOSTATS WITH THE OWNER/ARCHITECT BEFORE ROUGHING–IN. PROVIDE THERMOSTAT WITH INSULATED SUB–BASE OPTION WHERE INSTALLED ON EXTERIOR WALL. PROVIDE THERMOSTAT WITH WATER RESISTANT OPTION WHERE USED IN WET ENVIRONMENT AREA.
2. PROVIDE MAGNETIC MOTOR STARTER WITH HAND–OFF–AUTO (H.O.A) SELECTOR SWITCH FOR EACH MOTOR SPECIFIED TO OPERATE AT 200 VOLTS OR HIGHER. PROVIDE MANUAL STARTER WITH HAND–OFF–AUTO (H.O.A) SELECTOR SWITCH FOR EACH MOTOR SPECIFIED TO OPERATE AT 120 VOLTS. ALL EQUIPMENT SUPPLIED WITH INTEGRAL STARTERS SHALL BE PROVIDED WITH ADDITIONAL SEPARATE DISCONNECT BY ELECTRICAL CONTRACTOR, NO EXCEPTIONS. COORDINATE EQUIPMENT DISCONNECTS WITH ELECTRICAL CONTRACTOR.
3. DUCT MOUNTED SMOKE DETECTORS SHALL BE WIRED TO SUPERVISORY INDICATOR DEVICES TO MEET NFPA 72 REQUIREMENTS. EACH DEVICE MUST BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED TO MEET NFPA 72 REQUIREMENTS. SEE PLANS FOR INFORMATION.
4. ALL CONTROL VOLTAGE WIRING IN EXPOSED AREAS TO BE IN RIGID CONDUIT. ALL CONTROL VOLTAGE INSTALLED WITHIN A PLENUM RATED CEILING SHALL UTILIZE PLENUM RATED CABLE OR BE INSTALLED IN PLENUM RATED RIGID CONDUIT.
5. COORDINATE THE EXACT LOCATION OF ALL THERMOSTATS WITH FINAL FURNITURE LAYOUT, EQUIPMENT LAYOUT, ARCH AND OWNERS REPRESENTATIVES.

PIPING NOTES

1. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
2. PROVIDE NON–CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
3. ALL VALVES AND SPECIALTIES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE, USING ECCENTRIC REDUCERS ON PUMP SUCTION AND AUTOMATIC VALVES AND CONCENTRIC REDUCERS ON PUMP DISCHARGE.
4. ALL PIPING BELOW ROOF SHALL BE SUPPORTED WITH CARBON STEEL, ADJUSTABLE, CLEVIS HANGERS AT 10'–0" ON CENTER. ADDITIONAL HANGERS SHALL BE PROVIDE AS REQUIRED TO PREVENT WEIGHT OF EQUIPMENT BEING PLACED ON EQUIPMENT. PROVIDE RIGID INSULATION AND SHEET METAL PIPE SHIELDS AT HANGER LOCATIONS.
5. EXTEND ALL DRAIN LINES TO THE NEAREST FLOOR DRAIN OR AS INDICATED ON PLANS. COORDINATE DISCHARGE REQUIREMENTS WITH LOCAL AHJ PRIOR TO ROUGHING–IN.
6. CONDENSATE DRAIN PIPING, TRAPS, AND FITTINGS SHALL BE COPPER TYPE "L". SCHEDULE 40 PVC PIPE AND FITTINGS SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY. DRAINS FROM HVAC EQUIPMENT SHALL BE TRAPPED. TERMINATE ROOFTOP UNIT DRAINS ON A CONCRETE SPLASHBLOCK.
7. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE AND INSULATED WITH 1" ARMAFLEX.

MECHANICAL LEGEND

SYMBOLS (NOT ALL SYMBOLS SHOWN ARE USED)

- SUPPLY AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- SUPPLY DUCT TURNING UP
- RETURN/EXHAUST DUCT TURNING UP
- SUPPLY DUCT TURNING DOWN
- RETURN/EXHAUST DUCT TURNING DOWN
- RISE IN DUCT
- DROP IN DUCT
- TRANSITION IN DUCT, SQUARE TO SQUARE
- DUCT ROUTED UP/DOWN
- TRANSITION IN DUCT, SQUARE TO ROUND
- DUCT CAPPED AND SEALED
- DUCTWORK WITH INTERNAL LINER (X"LINED)
- DUCTWORK TRANSITION FROM HARD ROUND TO FLEXIBLE
- SQUARE THROAT DUCT ELBOW WITH TURNING VANES
- SQUARE THROAT DUCT ELBOW WITHOUT TURNING VANES
- FULL RADIUS ELBOW
- FLEXIBLE DUCT CONNECTION
- 45 DEGREE TAP
- CONICAL TAP
- SPIN–IN FITTING W/ VOLUME DAMPER & FLEXIBLE DUCT
- ROUND FLEXIBLE DUCT
- VOLUME BALANCING DAMPER
- BOTTOM REGISTER
- SQUARE–TO–ROUND BRANCH DUCT TAKE–OFF
- TRANSITION
- TEE WITH TURNING VANES AND SPLITTER DAMPER
- SQUARE ELBOW WITH TURNING VANES
- S.A. CFM / R.A. CFM / E.A. CFM — SEE AIR DISTRIBUTION SCHEDULE AIR QUANTITY REQUIRED
- PIPE UP
- PIPE DOWN
- VALVE IN VERTICAL
- G — GAS PIPING ON ROOF, SIZED PER PLANS
- G — GAS PIPING BELOW ROOF, SIZED PER PLANS
- CD — CONDENSATE DRAIN PIPING
- RS — REFRIGERANT SUCTION LINE
- RL — REFRIGERANT LIQUID LINE
- HG — REFRIGERANT HOT GAS LINE
- CONNECT NEW TO EXISTING
- XX/XXX — THROUGH PLAN SECTION
- ACCESS DOOR/PANEL
- 3' MIN — EQUIPMENT ELECTRICAL ACCESS WITH SERVICE CLEARANCE OUTLINE

SYMBOLS (NOT ALL SYMBOLS SHOWN ARE USED)

- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST AIR DIFFUSER
- SUPPLY AIR SPIRAL DUCT DIFFUSER
- SUPPLY AIR SPIRAL DUCT DIFFUSER
- DOOR TRANSFER AIR GRILLE
- U — 1" DOOR UNDERCUT, COORD /W G.C. & ARCH
- T — WALL MOUNTED THERMOSTAT
- P — WALL MOUNTED PRESSURE CONTROLLER
- 120V M — 120V/1ø MOTOR OPERATED DAMPER
- 24V M — 24–VOLT MOTOR OPERATED DAMPER
- SD — DUCT MOUNTED SMOKE DETECTOR
- SPLITTER DAMPER
- ELECTRIC WALL HEATER /W INTEGRAL THERMOSTAT
- IN–LINE EXHAUST FAN
- CEILING EXHAUST FAN
- SPLIT AIR HANDLING UNIT (VERTICAL)
- SPLIT DOAS UNIT (HORIZONTAL)
- SPLIT SYSTEM OUTDOOR UNIT
- MINI–SPLIT SYSTEM OUTDOOR UNIT
- MINI–SPLIT SYSTEM INDOOR WALL–MOUNTED UNIT
- CEILING MOUNTED FAN FILTER UNIT
- EQUIPMENT CLEARANCES, TYPICAL

ABBREVIATIONS (NOT ALL ABBREVIATIONS SHOWN ARE USED)

AHU	AIR HANDLING UNIT
AC	AIR CURTAIN
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ATC	AUTOMATIC TEMPERATURE CONTROLS
BC	BRANCH CONROL BOX
BE	BOTTOM ELEVATION
BHP	BRAKE HORSE POWER
BTUH	BRITISH THERMAL UNITS PER HOUR
CUH	CABINET UNIT HEATER
CC	COOLING COIL
CD	CONDENSATE DRAIN LINE
CL	CENTERLINE
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CHWS/R	CHILLED WATER SUPPLY/RETURN
CW	CITY WATER (DOMESTIC)
CP	CONDENSATE PUMP
D	DRAIN
DB	DRY BULB TEMPERATURE
DIA, ø	DIAMETER
DN	DOWN
DWS	DOUBLE WALL SPIRAL DUCTWORK
DWG	DRAWING
EA	EXHAUST AIR
EAD	EXHAUST AIR DAMPER
EDP	EMERGENCY DRIP PAN
EG	EXISTING GAS PIPING
(E)	EXISTING
(ER)	EXISTING RELOCATED
(ERR)	EXISTING REMOVED AND RELOCATED
ESP	EXTERNAL STATIC PRESSURE
EF	EXHAUST FAN
FCU	FAN COIL UNIT
F	FAN
FC	FLEXIBLE CONNECTION
G	GRILLE
GF	GAS FURNACE
GL	GLYCOL PIPING (BY OTHERS)
HC	HEATING COIL
HG	HOT GAS PIPING
HP	HORSEPOWER
HWS/R	HEATING HOT WATER SUPPLY/RETURN
KEF	KITCHEN EXHAUST FAN
(L)	LINED DUCTWORK
LPS	LOW PRESSURE STEAM
MUW	MAKE UP WATER
MAX	MAXIMUM
MA	MIXED AIR
MBH	ONE THOUSAND BTUH
MD	MOTORIZED DAMPER
MTD	MOUNTED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OC	ON CENTER
OSD	OPEN SITE DRAIN
PC	PUMPED CONDENSATE
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
PH	PHASE
PMU	PAD MOUNTED UNIT
RA	RETURN AIR
RAD	RETURN AIR DAMPER
RAG	RETURN AIR GRILLE
(R)	REMOVE
R	RETURN FAN
RS/RL	REFRIGERANT SUCTION/LIQUID LINES
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SENS	SENSIBLE
TD	TRANSFER DUCT
TYP	TYPICAL
TOS	TOP OF SLAB
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VF	VENTILATION FAN
VRV	VARIABLE REFRIG. VOLUME
V	VOLTS
VD	VOLUME DAMPER
VIF	VERIFY IN FIELD
W/	WITH
WMS	WIRE MESH SCREEN
WO	WALL OPENING
(WR)	WRAPPED DUCTWORK

MECHANICAL DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
M001	MECHANICAL LEGENDS & GENERAL NOTES
M002	MECHANICAL SPECIFICATIONS
M003	MECHANICAL SCHEDULES
M004	MECHANICAL SCHEDULES & NOTES
M005	MECHANICAL CALCULATIONS
M006	MECHANICAL CALCULATIONS
M007	MECHANICAL DETAILS
M101	MAIN FLOOR PLAN – MECHANICAL – WEST
M102	MAIN FLOOR PLAN – MECHANICAL – EAST
M103	UPPER FLOOR PLAN – MECHANICAL – WEST
M104	UPPER FLOOR PLAN – MECHANICAL – EAST
M105	ROOF PLAN – MECHANICAL – WEST
M106	ROOF PLAN – MECHANICAL – EAST
M201	VRF PIPING SCHEMATICS

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STATE OF NEW YORK — M MICHAEL SCHON — 071324 — LICENSED PROFESSIONAL ENGINEER

07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL LEGENDS & GENERAL NOTES

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M001

MECHANICAL SPECIFICATIONS

HVAC GENERAL
REFER TO ALL OTHER DRAWINGS AND SPECIFICATIONS, AND BE RESPONSIBLE FOR ALL APPLICABLE PROVISIONS THEREIN. FURNISH AND INSTALL ALL NECESSARY LABOR AND MATERIALS FOR A COMPLETE SYSTEM. ANY APPLIANCES OR MATERIALS OBVIOUSLY A PART OF THE SYSTEM AND NECESSARY FOR ITS PROPER OPERATION, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN, SHALL BE FURNISHED AND INSTALLED AS IF CALLED FOR IN DETAIL. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES, NFPA 90A, AND THE BUILDING REGULATIONS. ATTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES. EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS OTHERWISE SPECIFIED. MECHANICAL CONTRACTOR SHALL BE LICENSED TO HANDLE CFC REFRIGERANTS.

DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING, OFFSET, DROP AND RISE OF RUNS, AND DETAIL. INSTALL DUCTS, EQUIPMENT, AND CONTROLS IN A NEAT, WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD PRACTICE FOR A COMPLETE, WORKABLE INSTALLATION. AVOID CONFLICT WITH OTHER WORK; MAKE ADEQUATE PROVISIONS FOR PREVENTING NOISE AND VIBRATION. DRAWINGS INDICATE LOCATIONS OF FIXTURES, APPARATUS, DUCTWORK, AND PIPING; WHILE THESE ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS NECESSARY TO CHANGE THE LOCATION OF SOME TO ACCOMMODATE BUILDING CONDITIONS, MAKE CHANGES WITHOUT ADDITIONAL COST TO THE OWNER AND AS APPROVED BY THE ARCHITECT. PROVIDE ADEQUATE ACCESS TO EQUIPMENT AND APPARATUS REQUIRING OPERATION, SERVICE, OR MAINTENANCE WITHIN THE LIFE OF THE SYSTEM. DO NOT RUN PIPING OR DUCTWORK, OR LOCATE EQUIPMENT (WITH RESPECT TO SWITCHBOARDS, PANEL BOARDS, POWER PANELS, MOTOR CONTROL CENTERS OR DRY TYPE TRANSFORMERS) WITHIN 42 INCHES IN FRONT OF EQUIPMENT, OVER EQUIPMENT, OR WITHIN 36 INCHES HORIZONTALLY OF SAME SPACE.

EXISTING CONDITIONS
CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE JOB CONDITIONS BEFORE SUBMITTING HIS PROPOSAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING UTILITY SERVICES PRIOR TO SUBMITTING HIS PROPOSAL. NO CONSIDERATION WILL BE GIVEN TO CLAIMS FOR EXTRA COST ARISING FROM CONTRACTOR'S FAILURE TO BE FULLY COGNIZANT OF JOB OR SITE CONDITIONS EXISTING AT TIME OF ACCEPTANCE OF BID

IF, DURING THIS INSPECTION, THE CONTRACTOR FINDS ANY OBSTRUCTION OR INTERFERENCE THAT MAY PROHIBIT THE PROPER INSTALLATION OF HIS WORK, HE IS TO MAKE IT KNOWN TO THE BUILDING MANAGEMENT AND/OR OWNER AND TENANT BEFORE AND AT THE TIME OF SUBMITTING HIS PROPOSAL.

BY SUBMISSION OF THE BID, IT IS UNDERSTOOD THAT SUCH INSPECTION HAS BEEN MADE AND INCLUDES ALL THE MATERIALS AND REQUIRED RELOCATION FOR ALL WORK.

ACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, PROTECT, BRACE, OR SUPPORT EXISTING ACTIVE SEWERS, GAS, AND OTHER SERVICES REQUIRED FOR PROPER EXECUTION OF WORK. IF EXISTING ACTIVE SERVICES ARE ENCOUNTERED THAT REQUIRE RELOCATION, RELOCATE AS APPROVED. DO NOT PREVENT OR DISTURB OPERATION OF ACTIVE SERVICES THAT ARE TO REMAIN.

INACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, REMOVE, CAP, OR PLUG INACTIVE SERVICES, AS INDICATED. OPENINGS IN THE DUCTWORK SHALL BE PATCHED WITH SHEET METAL, SEALED AIRTIGHT WITH DUCT SEALANT, AND RE-INSULATED.

INTERRUPTION OF SERVICES: WHERE WORK MAKES TEMPORARY SHUTDOWNS OF SERVICES UNAVOIDABLE, SHUT DOWN AT NIGHT, OR AT SUCH TIMES AS APPROVED BY OWNER AND THE BUILDING MANAGEMENT WHICH WILL CAUSE LEAST INTERFERENCE WITH ESTABLISHED OPERATING ROUTINE. ARRANGE WORK TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

WHERE EXISTING WALLS, CEILINGS, FLOORS, ETC., ARE CUT OR OTHERWISE DAMAGED DURING CONSTRUCTION, REPAIR ALL SURFACES TO THEIR ORIGINAL CONDITION.

COORDINATION
COORDINATE ALL WORK UNDER THIS DIVISION WITH THE WORK UNDER OTHER DIVISIONS. PROVIDE ADJUSTMENTS AS NECESSARY. EQUIPMENT, APPARATUS, DUCTWORK, PIPING, ETC., INSTALLED WITHOUT REGARD FOR THE SPEC REQUIREMENTS OR OTHER TRADES WILL BE REWORKED AT THE EXPENSE OF THE INSTALLING SUBCONTRACTOR IF IT CREATES AN UNNECESSARY HINDRANCE TO THE INSTALLATION OF ANOTHER TRADE'S WORK. ALL ITEMS MOUNTED OR BELOW THE CEILING, AND ANY ITEM PENETRATING THE CEILING, SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

PROTECTION OF WORK DURING CONSTRUCTION
PROVIDE PROTECTIVE COVERS, SKIDS, PLUGS OR CAPS TO PROTECT EQUIPMENT AND MATERIALS FROM DAMAGE AND DETERIORATION DURING CONSTRUCTION. PROTECT EXPOSED COILS WITH PLYWOOD OR OTHER SUITABLE RIGID COVERS TO AVOID DAMAGE TO FINS.

CONTRACTOR SHALL TAKE PRECAUTIONS AGAINST DAMAGING OR DISRUPTING BUILDING SYSTEMS, WIRING OR CONTROL TUBING FOR ADJACENT TENANTS. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S COST.

PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE. ANY DAMAGE SHALL BE REPAIRED USING THE SAME MATERIALS AT THE CONTRACTOR'S COST.

TEST AND BALANCE
TEST AND BALANCE HVAC AIR SYSTEMS TO WITHIN +10%, -5% OF DESIGN FLOW.

CHECK ALL FANS, INSTRUMENTATION DEVICES, CONTROL DEVICES, DAMPERS, ETC., FOR PROPER OPERATION AND CALIBRATION. REPORT DEFICIENCIES THAT CANNOT BE CORRECTED. MARK AND LOCK DAMPER AT THEIR PROPER POSITION. ADJUST FANS FOR THE CFM SHOWN ON THE FLOOR PLAN.

ADJUST, TEST AND CONFIRM DESIGN AIR FLOW RATES, PRESSURES, TEMPERATURES, AIR QUANTITIES, EQUIPMENT SPEED, AND MOTOR AMPERAGES FOR EACH SEGMENT BRANCH AND COMPONENT OF EACH SYSTEM.

VERIFY THAT DIFFUSER DISCHARGE PATTERNS HAVE BEEN PROPERLY SET. AIR FLOWS SHALL BE BALANCED WITH THE VOLUME DAMPERS INSTALLED IN BRANCH DUCTWORK. OPPOSED BLADE DAMPERS (OBD) IN THE DIFFUSERS SHALL BE SET IN THE FULLY OPEN POSITION DURING BALANCING. AFTER THE MAIN SYSTEM IS BALANCED WITHIN LIMITS SPECIFIED ABOVE, OBD CAN BE USED FOR MINOR ADJUSTMENT.

ADJUSTMENTS AND TESTS SHALL BE MADE UNDER SIMULATED MAXIMUM LOAD CONDITIONS.

THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT TEST AND BALANCE AGENCY THAT IS INDEPENDENT OF ANY CONTRACTOR, SUBCONTRACTOR, OR MANUFACTURER TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. THE INDEPENDENT TEST AND BALANCE AGENCY SHALL BE A CERTIFIED MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU. RECORD DATA ON STANDARD AABC OR NEBB FORMS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO ENSURE THAT ANY AND ALL REQUIRED AIR BALANCE TESTING PROCEDURE COSTS ARE INCORPORATED AND COVERED BY CONTRACTOR'S BASE BID.

THE TEST AND BALANCE AGENCY SHALL PROVIDE EQUIPMENT, PERSONNEL, AND A COPY OF THE TEST AND BALANCE REPORT AT THE ENGINEER'S FINAL INSPECTION FOR SPOT-CHECKING. ANY SYSTEM FOUND IMPROPERLY BALANCED OR NOT IN AGREEMENT WITH THE REPORT SHALL BE RE-BALANCED AND A REVISED REPORT SHALL BE SUBMITTED.

THE TEST AND BALANCE AGENCY SHALL PERFORM A "COMFORT" BALANCE 45 DAYS AFTER TENANT MOVES IN.

RECORD DRAWINGS
UPON COMPLETION OF PROJECT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF REPRODUCIBLE DRAWINGS REFLECTING THE "AS BUILT" CONDITION OF THE MECHANICAL SYSTEMS.

OPERATING AND MAINTENANCE MANUALS
MECHANICAL CONTRACTOR SHALL SUBMIT OPERATING AND MAINTENANCE MANUALS UPON COMPLETION OF THE PROJECT. MANUALS TO BE IN ACCORDANCE WITH C408.2.5.2 OF 2020 NEW YORK STATE ENERGY CONSERVATION CODE.

GUARANTEE
MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AGAINST DEFECTS FOR ONE YEAR. PROVIDE ADDITIONAL FOUR YEARS WARRANTY ON ALL COMPRESSORS.

SLEEVES
SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH WALLS, FLOORS, AND ROOFS; IRON PIPES PASSING THROUGH MASONRY WALL MAY BE BUILT INTO THE WALL. SLEEVES SHALL BE STANDARD WEIGHT STEEL PIPE, EXCEPT SLEEVES FOR CONCEALED PIPING THROUGH FLOORS NOT IN STRUCTURAL MEMBERS; THEY MAY BE 25 GAUGE GALVANIZED SHEET METAL. FLOOR SLEEVES FOR PIPING SHALL EXTEND FROM THE BOTTOM OF THE SLAB TO 2 INCHES ABOVE THE FINISHED FLOOR. WALL SLEEVES SHALL BE FULL THICKNESS OF WALLS. SEAL BETWEEN PIPING AND SLEEVE WITH FIRE-RATED CAULK AT ALL PENETRATIONS OF FIRE-RATED WALLS, PARTITIONS OR FLOORS. MAKE SLEEVES THROUGH OUTSIDE WALLS WATERTIGHT. CAULK BETWEEN UN-INSULATED PIPE AND SLEEVE. SIZE SLEEVES FOR INSULATED PIPES TO ALLOW FULL THICKNESS INSULATION.

ELECTRICAL WORK
ALL ELECTRICAL WORK AND INSTALLATION PROVIDED UNDER THIS DIVISION SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF DIVISION 16. ALL POWER WIRING AND FINAL POWER CONNECTIONS TO THE SYSTEM SHALL BE PROVIDED UNDER DIVISION 16. CONTROL WIRING (120V AND LESS) SHALL BE PROVIDED UNDER DIVISION 15 AND EXTENDED FROM THE 120V POWER CIRCUITS INDICATED ON THE ELECTRICAL DRAWINGS. ALL WIRING FOR VOLTAGES HIGHER THAN 30 VOLTS SHALL BE DONE BY A LICENSED ELECTRICIAN. ALL ELECTRICAL CHARACTERISTICS SHALL BE TAKEN FROM THE ELECTRICAL DRAWINGS AND SPECIFICATIONS AND COORDINATED BEFORE EQUIPMENT IS ORDERED OR SUBMITTED. ALL WIRING IN THE CEILING PLENUM SHALL BE PLENUM-RATED CABLE OR IN CONDUIT.

EQUIPMENT IDENTIFICATION
PROVIDE LABELS FOR EACH EQUIPMENT, STARTER, AND CONTROL SWITCH. LABELS TO BE ENGRAVED, LAMINATED, BAKELITE NAMEPLATES WITH ¼ INCH HIGH WHITE CUT LETTERS; SECURE TO STARTER OR SWITCH.

EQUIPMENT, MATERIALS AND BID BASIS
SPECIFIED MANUFACTURER'S NAMES AND MODEL NUMBERS ARE FOR THE PURPOSE OF DESCRIBING TYPE, CAPACITY, FUNCTION, AND QUALITY OF EQUIPMENT AND MATERIALS TO BE USED. UNLESS "OR EQUAL" OR SPECIFICALLY STATED, BIDS SHALL BE BASED ON EQUIPMENT NAMES. CAPACITIES INDICATED TAKE PRECEDENCE OVER MODEL NUMBERS.

EQUIPMENT SUPPORT
SUPPORT ALL CEILING-MOUNTED EQUIPMENT, DUCTWORK, AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS AND EQUIPMENT, PROVIDE ADDITIONAL STEEL FRAMING.
THIS CONTRACTOR SHALL COORDINATE SUPPORTS WITH THE BUILDING MANAGEMENT AND SUBMIT THE METHOD OF SUPPORT FOR REVIEW TO THE BUILDING MANAGEMENT.

OPENINGS THROUGH ROOF
PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOF INTEGRITY OF THIS BUILDING AS REQUIRED BY THE REMOVAL AND/OR INSTALLATION OF PIPES, DUCTS, CONDUITS, AND EQUIPMENT. SUBMIT FOR REVIEW TO THE BUILDING MANAGEMENT.

VIBRATION ISOLATORS
VIBRATION ISOLATORS FOR FANS SHALL BE THE HANGER TYPE AND SHALL CONTAIN A STEEL SPRING AND 0.3" DEFLECTION NEOPRENE ELEMENT IN SERIES. THE NEOPRENE ELEMENT SHALL BE MOLDED WITH A ROD ISOLATION BUSHING THAT PASSES THROUGH THE HANGER BOX.

SPRING DIAMETERS AND HANGER BOX LOWER HOLE SIZES SHALL BE LARGE ENOUGH TO PERMIT THE HANGER ROD TO SWING THROUGH A 15 DEGREE ARC BEFORE CONTACTING THE HOLE AND SHORT CIRCUITING THE SPRING. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID HEIGHT EQUAL TO 50% OF THE RATED DEFLECTION.

SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH VIBRATION ISOLATION HANGERS WHICH SHALL BE FURNISHED WITH THE UNIT, AND ISOLATOR SHALL BE MATCHED TO EQUIPMENT WEIGHT AND SUPPORT LOCATIONS. ISOLATION HANGERS SHALL BE COMBINATION STEEL SPRING AND NEOPRENE-IN-SHEAR WITH STEEL HOUSING. ISOLATORS SHALL HAVE A MINIMUM OPERATING DEFLECTION OF 1 ½". SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL FOR 50% BETWEEN THE DESIGN HEIGHT AND THE SOLID HEIGHT.

HVAC INSULATION
QUALITY ASSURANCE: SPECIFIED COMPONENTS OF THIS INSULATION SYSTEM, INCLUDING FACINGS, MASTICS AND ADHESIVES, SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED RATING, AS PER TESTS CONDUCTED IN ACCORDANCE WITH ASTM E84 (NFPA 255) METHODS.

PIPE INSULATION:
TYPE P1 ASTM C547, CLASS 1 (-20 DEGREES F TO 500 DEGREES F):
FIBERGLASS, MINIMUM 4 POUNDS PER CUBIC FOOT (P.C.F.) DENSITY, K FACTOR 0.23 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY-APPLIED ALL-SERVICE-JACKET (ASJ) COMPOSED OF REINFORCED KRAFT AND ALUMINUM FOIL LAMINATE. JACKET SHALL HAVE SELF-SEALING LAP TO FACILITATE CLOSING LONGITUDINAL AND END JOINTS.

APPROVED PRODUCTS:
CERTAINED 500 DEGREE SNAP-ON ASJ/SSL
MANVILLE MICRO-LOK AP-T
OWENS/CORNING FIBERGLASS 25 ASJ/SSL
KNAUF PIPE INSULATION ASJ/SSL

TYPE P2 ASTM C534 (-40 DEGREES F TO 220 DEGREES F:)
FLEXIBLE, CLOSED-CELL ELASTOMERIC, NOMINAL 6 PCF DENSITY, K FACTOR 0.27 MAXIMUM AT 75 DEGREES F MEAN.

APPROVED PRODUCTS:
ARMSTRONG AP ARMAFLEX
MANVILLE AEROTUBE II
NOMACO THERMA-CEL
RUBATEX R-180-F5

DUCT INSULATION:
TYPE D1 ASTM C553 TYPE 1, CLASS B3:
FIBERGLASS, NOMINAL 1 P.C.F. DENSITY BLANKET, K FACTOR 0.31 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY APPLIED FSK (FOIL-SCRIM-KRAFT) VAPOR BARRIER JACKET, FOR TEMPERATURES TO TEMPERATURES 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED "STANDARD DUCT WRAP"
MANVILLE "MICROLITE"
OWENS/CORNING FIBERGLASS RFK-75
KNAUF "DUCTWRAP"

TYPE D3:
FIBERGLASS, NOMINAL 2.0 P.C.F. DENSITY LINER, K FACTOR 0.26 MAXIMUM AT 75 DEGREES F MEAN, BLACK COATING, FOR TEMPERATURES TO 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED ULTRALITE DUCT LINER 200
MANVILLE LINACOUSTIC
KNAUF DUCT LINER M

INSTALLATION OF PIPE INSULATION:
INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO TESTING AND ACCEPTANCE OF TEST.

MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. SEAL OPEN ENDS OF INSULATION WITH MASTIC. SECTIONALLY SEAL ALL BUTT ENDS OF ALL COLD WATER PIPING INSULATION AT FITTINGS WITH WHITE VAPOR BARRIER COATING.

COVER VALVES, FLANGES, FITTINGS, AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION). FINISH COLD PIPE FITTINGS WITH WHITE VAPOR BARRIER COATING AND HOT PIPING WITH WHITE VINYL ACRYLIC MASTIC, BOTH REINFORCED WITH GLASS CLOTH.

EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

INSTALL PROTECTIVE METAL SHIELDS AND FOAM GLASS INSERTS WHERE PIPE HANGERS BEAR ON OUTSIDE ON INSULATION.

INSTALLATION OF DUCTWORK INSULATION:
MAINTAIN INTEGRITY OF VAPOR-BARRIER ON DUCTWORK INSULATION, AND PROTECT IT TO PREVENT PUNCTURE AND OTHER DAMAGE. TAPE ALL PUNCTURES. SECURE ALL DUCTWORK WITH GALVANIZED WIRE 12" O.C. SECURE DUCTWORK WITH OUTWARD CLINCHING STAPLES. SEAL ALL LONGITUDINAL AND CIRCUMFERENTIAL JOINTS WITH FSK TAPE.

EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR DUCTWORK PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

EXCEPT AS OTHERWISE INDICATED, OMIT INSULATION ON DUCTWORK WHERE INTERNAL INSULATION OR SOUND ABSORBING LININGS HAVE BEEN INSTALLED.

ALL INTERNAL INSULATION SHALL BE ADHERED TO THE DUCT WITH 100% COVERAGE OF APPROVED FIRE RETARDANT MASTIC. ALL EDGES SHALL BE SEALED. ANY ABRASIONS OR TEARS REPAIRED WITH MASTIC. DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED.

INSULATION REQUIREMENTS:

INSULATION SCHEDULE

LOCATION	WRAP	WRAP SIZE (IN.)	WRAP TYPE	WRAP R-VAL	LINER	LINER SIZE (IN.)	LINER LOCATION	LINER TYPE	LINER R-VAL
INDOOR CONCEALED SA/RA	☒	2"	D1	6.0	☒	1"	FIRST 10' FROM UNIT	D3	4.2
INDOOR EXPOSED SA/RA	☐	–	–	–	☒	1"	CONTINUOUS	D3	4.2
OUTDOOR CONCEALED SA/RA	☒	2"	D1	8.0	☒	2"	CONTINUOUS	D3	8.0
OUTDOOR EXPOSED SA/RA	☐	–	–	–	☐	–	–	–	–
INDOOR CONCEALED OA	☒	2"	D1	6.0	☐	–	–	–	–
INDOOR EXPOSED OA	☐	–	–	–	☐	–	–	–	–
INDOOR EA	☐	2"	D1	6.0	☐	–	–	–	–
INDOOR TRANSFER	☐	–	–	–	☐	1"	CONTINUOUS	D3	4.2
TYPE I KITCHEN EA	☐	–	–	–	☐	–	–	–	–
REFRIGERANT PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–
CONDENSATE PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–

MAINTENANCE AND SERVICE
THIS CONTRACTOR SHALL INCLUDE AND ASSUME COMPLETE RESPONSIBILITY FOR START-UP, 24 HOURS A DAY SERVICE WITH A RESPONSE TIME NOT TO EXCEED FOUR (4) HOURS.
MAINTENANCE ON A QUARTERLY BASIS (FOUR MAINTENANCE INSPECTIONS A YEAR) FOR A PERIOD OF ONE YEAR FOR ALL HVAC EQUIPMENT, INCLUDING PRE PURCHASED EQUIPMENT AS IS SAID PRE PURCHASED EQUIPMENT WERE PURCHASED BY THIS CONTRACTOR, AND INCLUDING EXISTING EQUIPMENT WITHIN TENANT SPACE.
PROVIDE COST TO PERFORM PREVENTATIVE MAINTENANCE FOR THE FIRST YEAR ONLY.

THIS ONE-YEAR MAINTENANCE CONTRACT SHALL INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING WORK:
CHECK LINES FOR LEAKAGE OF REFRIGERANT/WATER
REFILL LINES IF NECESSARY
LUBRICATE MOTORS
CHECK OPERATION OF THERMOSTATS
REPLACE RETURN AIR FILTERS
CLEAN CONDENSER COILS
CHECK AND TIGHTEN ELECTRICAL CONNECTIONS
CHECK CONTROLS
CHECK FOR NOISE AND VIBRATION
CHECK REFRIGERANT PRESSURE DURING OPERATION
CHECK CURRENT (AMPERAGE) DRAW OF ALL MOTORS
CHECK OPERATION OF CONDENSATE DRAIN SYSTEM
CHECK AND ADJUST BLOWER FAN BELT TENSION

SHEET METAL WORK
EXCEPT AS OTHERWISE NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LATEST EDITION OF THE SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION, INC. (SMACNA), HVAC CONSTRUCTION STANDARDS MANUAL. DUCTWORK SHALL BE GALVANIZED SHEET STEEL, UNLESS OTHERWISE NOTED. FIBERGLASS DUCTWORK IS NOT ACCEPTABLE.

MINIMUM DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 2" W.G. DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 4" W.G. FOR OPERATING PRESSURES ABOVE 2" W.G. AND UP TO 4" W.G. ALL DUCTS SHALL BE SEAL CLASS "A".

LOW PRESSURE FLEXIBLE DUCT SHALL BE SIMILAR TO FLEX MASTER TYPE 5, OR APPROVED EQUAL, WITH 1" THICK INSULATION AND SHALL CONFORM TO U.L. 181 AND NFPA BULLETIN 90A.

MEDIUM PRESSURE FLEXIBLE DUCT TAKE-OFFS TO VARIABLE VOLUME TERMINAL UNITS TO BE THERMAFLEX 11 TYPE ST-L OR APPROVED EQUAL.

FIRE DAMPERS: FIRE DAMPERS SHALL BE DYNAMIC TYPE SIMILAR TO RUSKIN CURTAINTYPE DIBD2, WITH BLADES OUTSIDE AIR STREAM, GALVANIZED STEEL CONSTRUCTION, EQUIPPED WITH FUSIBLE LINK, U.L. LISTED AND INSTALLED IN CONFORMANCE WITH U.L. AND NFPA STANDARD 90A, AND APPROVED FOR USE BY AUTHORITIES HAVING JURISDICTION. PROVIDE ACCESS DOOR IN DUCTWORK FOR EACH FIRE DAMPER.

VOLUME DAMPERS: SAME MATERIAL AS DUCT, PER SMACNA, EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT WITH LEVER AND LOCK SCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR SHALL CLEAR INSULATION; INSTALL WITH LEVERS ACCESSIBLE OUTSIDE INSULATION. BALANCING DAMPERS SHALL BE THE OPPOSED BLADE TYPE.

PROVIDE AND INSTALL INSULATED HINGED ACCESS PANELS FOR ALL FIRE AND COMBINATION FIRE/SMOKE DAMPERS.

FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ. PER SQUARE YARD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL EQUIPMENT AND RIGID DUCTWORK. FABRIC CONNECTIONS SHALL BE AT LEAST FOUR (4) INCHES LONG AND HAVE METAL COLLAR AT EACH END; ALLOW AT LEAST 1" SLACK TO ELIMINATE VIBRATION TRANSMISSION.

TURNING VANES: GALVANIZED STEEL, SINGLE THICKNESS VANES WITH MINIMUM TWO (2) INCHES INSIDE RADIUS. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.

ACCESS TILE IDENTIFICATIONS: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF ALL CONCEALED VALVES, DAMPERS, AND EQUIPMENT. SUBMIT TO ARCHITECT FOR APPROVAL.

DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. WHERE INTERNAL INSULATION IS CALLED FOR, DUCT DIMENSIONS HAVE BEEN INCREASED IN SIZE TO ALLOW FOR LINER WHERE REQUIRED.

PORTIONS OF DUCTWORK VISIBLE THROUGH SUPPLY AND RETURN AIR OPENINGS SHALL BE PAINTED FLAT BLACK.

TRANSITION RECTANGULAR DUCTWORK ON THE BOTTOM AND SIDES. MAINTAIN DUCTWORK LEVEL AND AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.

FLEXIBLE DUCT RUNOUTS TO ALL GRILLES, DIFFUSERS SHALL BE INSTALLED FREE OF KINKS AND SAGS. ALL BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE INLET OF THE GRILLES, DIFFUSERS SERVED. FLEXIBLE DUCT SHALL NOT BE ANY LONGER THAN 4 FEET.

ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTEPTABLE

ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH 1½" x 1½" x ⅛" GALVANIZED STEEL ANGLES BOLTED OR RIVETED 6" ON CENTER ALL AROUND THE EXTERIOR PERIMETER OF THE DUCT.

FOR ROUND DUCT TAKE-OFFS FROM METAL DUCTS, USE GENFLEX MODEL NUMBER SM-1DEL "SPIN-IN" FITTING.

PIPING
GENERAL: PIPING SHALL BE COMPLETE WITH PIPE FITTINGS, VALVES, COUPLING, STRAINERS, HANGER RODS, HANGERS, SUPPORTS, GUIDES, SLEEVES, AND ACCESSORIES IN CONFORMANCE WITH THE LATEST CODES AND ASME, ANSI, ASTM AND MSS STANDARDS.

NO PIPING SHALL BE LESS THAN ¾", UNLESS OTHERWISE NOTED.

FOR PIPE SIZES NOT INDICATED ON PLANS, SEE MANUFACTURER'S EQUIPMENT CONNECTION DETAILS.

PROVIDE FITTINGS FOR CHANGE IN PIPE SIZE AND FOR FINAL CONNECTION AT EQUIPMENT, AS REQUIRED.

AVOID ENTRY OF FOREIGN MATTER INTO PIPING DURING CONSTRUCTION.

PROVIDE MINIMUM PITCH TO INSURE ADEQUATE VENTING AND DRAINAGE.

PIPING SUPPORTS:

HORIZONTAL PIPING AND PIPING HANGERS SHALL BE ADJUSTABLE CLEVIS TYPE "CARPENTER AND PATTERSON" FIGURE NUMBER 100 OR 100SH, OR APPROVAL EQUAL. HANGER RODS SHALL BE ON THE FOLLOWING DIAMETER:

PIPE SIZE: 1¼" & BELOW; ROD DIAMETER: ⅜"; MAX SPACING: 6'
PIPE SIZE: 1½" & 2"; ROD DIAMETER: ⅜"; MAX SPACING: 8'

PROVIDE ADDITIONAL SUPPORTS AT CHANGE OF DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

PIPING MATERIAL:

REFRIGERANT PIPING SHALL BE COPPER ASTM #B280, FACTORY CLEANED, NITROGEN CHARGED, AND CAPPED.

CONDENSATE DISCHARGE PIPING AND FITTINGS SHALL BE COPPER TYPE "L" PIPE. SCHEDULE 40 PVC SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY.

PIPING AND FITTINGS SHALL BE SUITABLE FOR OPERATING PRESSURES OF 150 PSI.

FITTINGS:

PROVIDE DIELECTRIC GASKETS FOR JOINTS OF DISSIMILAR METALS: ISOLATING GASKETS, SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.

FOR MANUAL AIR VENTS, PROVIDE LINE SIZE AIR CHAMBER WITH ½" VALVE. PROVIDE VALVES AT ALL HIGH POINTS AND WHERE FLOW CHANGES FROM HORIZONTAL TO DOWNWARD.

TRAP SEAL IN CONDENSATE DRAIN PIPING SHALL BE MINIMUM 1" GREATER THAN THE STATIC PRESSURE IN SYSTEM.

VALVES:

VALVES FOR WATER PIPING SHALL BE SUITABLE FOR THE SERVICE PRESSURE AND TEMPERATURE AND SHALL BE:

GLOBE VALVE: "JENKINS" FIGURE 556P, FIGURE 1200, FIGURE 613-C, OR FIGURE 923-C, OR APPROVED EQUAL.

REFRIGERANT PIPE SIZE:

LIQUID AND SUCTION REFRIGERANT LINES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. HOWEVER, LIQUID LINE VELOCITY SHALL NOT EXCEED 360 FPM, AND THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE. THE SUCTION LINE VELOCITY SHALL BE A MINIMUM OF 500 FPM IN HORIZONTAL LINES, AND A MINIMUM OF 1000 FPM IN VERTICAL RISERS (IF PART LOAD CONDITIONS EXIST, A DOUBLE RISER MAY BE REQUIRED); THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE.

AIR DISTRIBUTION
DIFFUSERS, REGISTERS, AND GRILLES SHALL BE MATCHED AS SCHEDULE OR AS APPROVED EQUAL.

CEILING DIFFUSERS SHALL BE 4-WAY THROW, UNLESS SHOWN OTHERWISE ON DRAWINGS.

ALL REGISTERS SHALL BE FURNISHED WITH OPPOSED BLADE DAMPERS.

EXACT LOCATION OF ALL CEILING MOUNTED DIFFUSERS, GRILLES, AND REGISTERS TO BE COORDINATED WITH LIGHTING LAYOUT AND REFLECTED CEILING PLAN.

AUTOMATIC CONTROLS
MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED.

CONTROL WIRING SHALL BE #12 CU THHN INSTALLED IN EMT CONDUIT (MINIMUM ½" DIAMETER OR PLENUM RATED CABLE.

ALL AUTOMATIC CONTROL VALVES AND DAMPERS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

PROVIDE OCCUPANCY SENSORS AS REQUIRED BASED ON SEQUENCE OF OPERATIONS IF NOT PROVIDED FOR LIGHTING CONTROLS OTHERWISE BE ELECTRICAL CONTRACTOR.

EXHAUST FANS: EXHAUST FANS SHALL BE CONTROLLED AS SHOWN ON FAN SCHEDULE.

THERMOSTATS: ALL THERMOSTATS WITH ADJUSTABLE TEMPERATURE SET POINTS SHALL BE MOUNTED WHERE INDICATED ON PLANS 48" AFF, UNLESS NOTED OTHERWISE, AND BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, OWNER GRAPHICS, WALL PATTERNS, LIGHTING CONTROLS/SWITCHES, POWER/DATA OUTLETS, AND ALL OTHER FIELD CONDITIONS. THERMOSTATS SHALL BE BY UNIT MANUFACTURER WITH PRIOR WRITTEN OWNER APPROVAL OF STYLE/TYPE AND COORDINATED PLACEMENT IN FIELD.

THE SEQUENCE OF OPERATIONS PROVIDED IN THE CONTRACT DOCUMENTS IS INTENDED TO COMMUNICATE THE GENERAL DESIGN INTENT TO THE CONTROLS SUBCONTRACTOR AND IS NOT INTENDED TO BE FULLY DEVELOPED OR COMPLETE. IN THE CONTROLS SUBMITTAL, THE SUBCONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, AND ALARM POINTS. THE CONTROLS SUBCONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS FROM SETPOINTS TO PREVENT EQUIPMENT FROM SHORT CYCLING AND WHEN HOVERING AROUND SETPOINTS. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO HAVING TO TAKE CORRECTIVE ACTIONS OR EQUIPMENT SHUTDOWNS. TRANSMITTERS SHALL INCLUDE OUT-OF-RANGE, FAIL-SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION. CONTROL CONTRACTOR SHALL SPECIFY TO FAIL DE-ENERGIZER, HOLD LAST STATE, OR DEFAULT TO A PREDETERMINED SETPOINT. THESE BASIC FEATURES THAT ARE NECESSARY AND ARE PART OF A ROBUST CONTROLS INSTALLATION SHALL BE ASSUMED INCLUDED IN THE SCOPE OF SERVICES FOR DELIVERABLES AT NO ADDITIONAL COSTS TO THE OWNER.

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BDA

STATE OF NEW YORK · M. MICHAEL SCHON · 071324 · LICENSED PROFESSIONAL ENGINEER
07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL SPECIFICATIONS

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS
PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M002

VARIABLE REFRIGERANT VOLUME - AIR-COOLED CONDENSING UNIT SCHEDULE

TAG: ROOM	BASIS OF DESIGN (DAIKIN)	NOMINAL TONNAGE	DESCRIPTION	COOLING CAPACITY BTU/h	COOLING CAPACITY AMBIENT DESIGN (°F DB)	HEATING CAPACITY BTU/h	HEATING CAPACITY AMBIENT DESIGN (°F DB / WB)	REFRIGERANT CHARGE Factory Charge (lbs)	REFRIGERANT CHARGE Add'l Refrigerant (lbs)	CONNECTION RATIO (%)
CU-1 (DOAS-1-2-3)	REYQ312XATJB	26	Air cooled heat recovery (2)	312,666	92.2	246,834	13.0 / 10.0	51.6	NA	92.3
CU-2 (DOAS-8-9-10)	REYQ192XATJB	16	Air cooled heat recovery (2)	192,407	92.2	177,510	13.0 / 10.0	51.6	NA	93.8
CU-3 (DOAS-11-13)	REYQ264XATJB	22	Air cooled heat recovery (2)	264,555	92.2	211,340	13.0 / 10.0	51.6	NA	90.9
CU-4 (DOAS-14-15)	REYQ144XATJB	12	Air cooled heat recovery (1)	144,297	92.2	115,105	13.0 / 10.0	25.8	NA	91.7

TAG: ROOM	ELECTRICAL VOLTAGE-PHASE	MIN CIRCUIT AMPS (MCA) mod #1	MCA mod #2	MCA mod #3	MCA total	MAX OVERCURRENT PROTECTION (MOP) mod #1	MOP mod #2	MOP mod #3	MOP total	RUNNING CURRENT(RLA) mod #1	RLA mod #2	RLA mod #3	RLA total
CU-1 (DOAS-1-2-3)	208V - 230V 3ph	61.9	58.3		120.2	70.0	70.0		125.0	49.0	42.6		91.6
CU-2 (DOAS-8-9-10)	208V - 230V 3ph	38.1	38.1		76.2	45.0	45.0		80.0	23.3	23.3		46.6
CU-3 (DOAS-11-13)	208V - 230V 3ph	58.3	43.0		101.3	70.0	50.0		110.0	42.6	28.2		70.8
CU-4 (DOAS-14-15)	208V - 230V 3ph	58.3			58.3	70.0			70.0	42.6			42.6

TAG: ROOM	DIMENSIONS (WxHxD) (inch)	WEIGHT (lbs)	EER	IEER	COP47	COP17	SCHE	SEER	HSPF	NOTES	Options and Accessories
CU-1 (DOAS-1-2-3)	48.9 x 66.7 x 30.2 / 48.9 x 66.7 x 30.2	793.0 / 727.0	10.1 / 9.9	20.4 / 18	3.56 / 3.2	2.09 / 2.05	24.3 / 20.7	NA	NA		BHFP26P100UA (1), EKEQDCBAV3-US (4)
CU-2 (DOAS-8-9-10)	48.9 x 66.7 x 30.2 / 48.9 x 66.7 x 30.2	727.0 / 727.0	13 / 13	22.6 / 21.4	3.85 / 3.67	2.5 / 2.37	26.6 / 22.8	NA	NA		BHFP26P100UA (1), EKEQDCBAV3-US (3)
CU-3 (DOAS-11-13)	48.9 x 66.7 x 30.2 / 48.9 x 66.7 x 30.2	727.0 / 727.0	11.2 / 10.4	21.6 / 18	3.62 / 3.2	2.22 / 2.07	26.1 / 18.2	NA	NA		BHFP26P100UA (1), EKEQDCBAV3-US (3)
CU-4 (DOAS-14-15)	48.9 x 66.7 x 30.2	727.0	11.9 / 11.6	23.5 / 21.6	3.75 / 3.42	2.16 / 2.12	25.5 / 22	NA	NA		EKEQDCBAV3-US (2)

(EFFICIENCY columns EER–HSPF: EFFICIENCY (NonDucted/Ducted or Specific Combo))

Schedule Notes:
1. ALL UNITS SHALL BE AGA CERTIFIED AND U.L. LABELED.
2. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. REFRIGERANT SHALL BE R410A
4. PROVIDE ALL SUPPORTS, RAILS, CURBS, ETC. AS REQUIRED TO AND INSTALL UNITS ON ROOF.
5. VARIABLE REFRIGERANT SYSTEM SHALL BE INSTALLED, PIPED, AND CONTROLLED PER MANUFACTURERS RECOMMENDATIONS.
6. PROVIDE ANY ADDITIONAL PIPING, REFRIGERANT, ETC TO ACCOMMODATE ACTUAL PIPING LENGTHS, FIELD VERIFIED.
7. EQUIPMENT MANUFACTURER SHALL PROVIDE ALL REQUIRED TRAINING, ONSITE ASSISTANCE, PROJECT SPECIFIC SHOP DRAWINGS, ETC. AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. EQUIPMENT MANUFACTURERS SERVICE REPRESENTATIVE SHALL PROVIDE A FINAL REPORT AFTER START-UP CERTIFYING PROPER INSTALLATION AND CONFIRMING WARRANTIES.
8. COORDINATE WITH BRANCH CONTROLLER LAYOUT, SIZE, QUANTITY, ETC WITH MANUFACTURER.
9. PROVIDE PANEL HEATER KIT TO PREVENT ICE BUILDUP ON OUTDOOR DRAIN PAN.
10. PROVIDE WITH WIND BAFFLE KIT.
11. PROVIDE SNOW/HAIL KIT TO PREVENT DAMAGE OR SNOW BUILD-UP IN SEVERE WINTER CLIMATES.
12. PROVIDE WITH MASTER "CENTRAL BRANCH CIRCUIT CONTROLLER", 120V/1Ø, 0.3A.
13. PROVIDE WITH EXPANSION CONTROLLER, 120V/1Ø, 0.3A.
14. FIELD INSTALLED LOW-AMBIENT KIT.
15. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB).
16. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB).
17. EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE OF DUCTED & NON-DUCTED INDOOR UNITS.
18. FOR SYSTEMS WITH MULTIPLE MODULES, REFRIGERANT PIPE DIMENSIONS INDICATE TOTAL SYSTEM COMBINED PIPING DOWNSTREAM OF MODULE TWINNING.
19. ADDED FIELD CHARGE LISTED IS IN ADDITION TO FACTORY CHARGE, THIS MUST BE UPDATED BASED UPON FINAL AS-BUILT PIPING LAYOUT.
20. EACH CONDENSING UNIT SHALL BE PROVIDED WITH A HOFFMAN & HOFFMAN SINGLE POINT POWER PANEL (SPPP).

VARIABLE REFRIGERANT VOLUME AIR HANDLING UNIT SCHEDULE

TAG	LEVEL SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING CAPACITY TC (MBH)	COOLING CAPACITY SC (MBH)	COOLING CAPACITY EFFICIENCY	COOLING COIL MANUFACTURER DAIKIN & MODEL	IFM FLA	ELECTRICAL DATA MCA	MOCP	VOLTAGE	CONFIGURATION	OPERATING WEIGHT	MANUFACTURER DAIKIN & MODEL	NOMINAL TONS	CONTROLLING VRF OUTDOOR UNIT	ADDITIONAL OPTIONS
AHU-1	MAIN	1840	1840	0.75	128.1	77.3	EER 10.1	DXM06C12	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	634 LBS	T24IN	6	CU-1	A
AHU-2	MAIN	1805	1805	0.75	128.0	79.1	EER 10.1	DXM06C12	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	634 LBS	T24IN	6	CU-1	A
AHU-3	MAIN	2900	2900	0.75	165.2	99.7	EER 10.1	DXM06C13	3.9	10.8	15	208V-1ø	FLOOR MOUNTED	634 LBS	T32IN	6	CU-1	A
AHU-8	MAIN	1045	1045	0.75	69.9	42.4	EER 13	DXM06C14	3.9	4.8	15	208V-1ø	FLOOR MOUNTED	465 LBS	T12IN	6	CU-2	A
AHU-9	MAIN	1255	1255	0.75	87.2	52.7	EER 13	DXM06C14	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	465 LBS	T15IN	6	CU-2	A
AHU-10	MAIN	1425	1425	0.75	116.3	70.1	EER 13	DXM07C13	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	562 LBS	T15IN	7	CU-2	A
AHU-11	UPPER	2065	2065	0.75	123.4	72.2	EER 11.2	DXM06C12	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	634 LBS	T24IN	6	CU-3	A
AHU-13	UPPER	3150	3150	0.75	159.8	97.3	EER 11.2	DXM06C13	3.9	10.8	15	208V-1ø	FLOOR MOUNTED	634 LBS	T32IN	6	CU-3	A
AHU-14	UPPER	1650	1650	0.75	116.3	70.1	EER 11.9	DXM07C13	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	562 LBS	T18IN	7	CU-4	A
AHU-15	UPPER	1245	1245	0.75	87.0	53.1	EER 11.9	DXM06C14	3.9	8.8	15	208V-1ø	FLOOR MOUNTED	465 LBS	T15IN	6	CU-4	A

OPTIONS (ALL UNITS)
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT W/ HUMIDISTAT
- FILTER KIT /W 2" FILTERS
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- DUCT SMOKE DETECTOR, SEE NOTE #3
- SINGLE POINT ELECTRICAL CONNECTION
- MANUAL O.A. DAMPER
- GALVANIZED CONDENSATE DRAIN PAN
- FACTORY INSTALLED ELECTRIC HEATER KIT

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: CO2 SENSOR, WALL MOUNTED

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN HVAC MONITORING PANEL.
THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.
4. ELECTRIC HEATER SHALL BE BY UNIT MANUFACTURER.

VARIABLE REFRIGERANT VOLUME - BRANCH SELECTOR & ZONE HEAT RECOVERY DEVICE SCHEDULE

TAG: ROOM	BRANCH SELECTOR BASIS OF DESIGN (DAIKIN)	CONDENSING UNIT SERVED	VOLTAGE-PHASE	MIN CIRCUIT AMPS (MCA)	MAX OVERCURRENT PROTECTION (MOP)	MAX CAPACITY (per Port)	DIMENSIONS (WxHxD inch)	WEIGHT (lbs)	ZONE SERVED	REHEAT BOX BASIS OF DESIGN
BS-1	BSF4Q54TVJ	CU-1 for DOAS-1-2-3	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)
BS-2	BSF4Q54TVJ	CU-1 for DOAS-1-2-3	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)
BS-3	BSF6Q54TVJ	CU-1 for DOAS-1-2-3	208-230V 1ph	0.6	15.0	54,000	23.3 x 9.5 x 23.7	72.8	N/A	KHRP26A250TA (2)
BS-8	BSF4Q54TVJ	CU-2 for DOAS-8-9-10	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (2)
BS-9	BSF4Q54TVJ	CU-2 for DOAS-8-9-10	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)
BS-10	BSF4Q54TVJ	CU-2 for DOAS-8-9-10	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)
BS-11	BSF4Q54TVJ	CU-3 for DOAS-11-13	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)
BS-13	BSF6Q54TVJ	CU-3 for DOAS-11-13	208-230V 1ph	0.6	15.0	54,000	23.3 x 9.5 x 23.7	72.8	N/A	KHRP26A250TA (2)
BS-14	BSF4Q54TVJ	CU-4 for DOAS-14-15	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)
BS-15	BSF4Q54TVJ	CU-4 for DOAS-14-15	208-230V 1ph	0.4	15.0	54,000	13.7 x 9.5 x 23.7	48.5	N/A	KHFP26A100CA (1), KHRP26A250TA (1)

Schedule Notes:
1. INCLUDE DIAMONDBACK BALL VALVES BV-SERIES, 700PSIG WORKING PRESSURE, FULL PORT, 410A RATED.
2. FOR SUB BC CONTROLLER, 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.

STANDARD AIR HANDLING UNIT SCHEDULE

TAG	AREA SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING CAPACITY TC (MBH)	COOLING CAPACITY SC (MBH)	COOLING CAPACITY EFFICIENCY	ELECT. HEAT KW	ELECT. HEAT STEPS	ELECTRICAL DATA MCA	MOCP	VOLTAGE	CONFIGURATION	OPERATING WEIGHT	MANUFACTURER DAIKIN & MODEL	NOMINAL TONS	ADDITIONAL OPTIONS
AHU-4	INTAKE OFFICES	520	30	0.5	16.6	12.7	SEER2 17.5	5.0	1	27	30	208V-1ø	VERTICAL	115 LBS	DFVE24BP1400	2	B
AHU-5	SURRENDER/CONF	1460	140	0.75	45.0	33.4	SEER2 16.2	8.0	1	43	45	208V-1ø	VERTICAL	150 LBS	DFVE48DP1400	4	B
AHU-6	BULL PEN/COPY	1605	125	0.75	45.0	34.2	SEER2 16.2	10.0	1	50	50	208V-1ø	VERTICAL	150 LBS	DFVE48DP1400	4	B
AHU-7	ADOPTION LOBBY	1205	105	0.75	27.8	21.2	SEER2 17.1	15.0	1	71.5	80	208V-1ø	VERTICAL	140 LBS	DFVE36CP1400	3	B
AHU-12	ADOPTION LOBBY	2800	185	0.5	86.7	65.9	EER 11.0	30.0	1	95.4	110	208V-3	VERTICAL	406 LBS	DAX09043	6	B

OPTIONS (ALL UNITS)
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT W/ HUNIDISTAT
- FILTER KIT /W 2" FILTERS
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- DUCT SMOKE DETECTOR, SEE NOTE #3
- SINGLE POINT ELECTRICAL CONNECTION
- MANUAL O.A. DAMPER
- GALVANIZED CONDENSATE DRAIN PAN
- FACTORY INSTALLED ELECTRIC HEATER KIT

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: CO2 SENSOR, WALL MOUNTED

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN AN HVAC MONITORING PANEL.
THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.
4. ELECTRIC HEATER SHALL BE BY UNIT MANUFACTURER.

STANDARD HEAT PUMP SCHEDULE

TAG	COOLING CAPACITY TC (MBH)	COOLING CAPACITY SC (MBH)	COOLING CAPACITY EFFICIENCY	COOLING CAPACITY OA DB (°F)	HEATING CAPACITY TH (MBH)	HEATING CAPACITY OA DB (°F)	COMPRESSOR RLA	ELECTRICAL DATA MCA	MOCP	VOLTAGE	MANUFACTURER DAIKIN & MODEL	OPERATING WEIGHT	NOMINAL TONS	MATCHING INDOOR UNIT
HP-4	16.6	12.7	SEER2 17.5	94	17.4	13	10.0	14.6	15	208V-1ø	DZ6VSA1810	122 LBS	2	AHU-4
HP-5	45.0	33.4	SEER2 16.2	94	45.5	13	25.5	34.4	35	208V-1ø	DZ6VSA4810	168 LBS	4	AHU-5
HP-6	45.0	34.2	SEER2 16.2	94	45.5	13	25.5	34.4	35	208V-1ø	DZ6VSA4810	168 LBS	4	AHU-6
HP-7	27.8	21.2	SEER2 17.1	94	28.8	13	16.8	23.9	25	208V-1ø	DZ6VSA3010	132 LBS	3	AHU-7
HP-12	86.7	65.9	EER 11.0	95	86.7	95	26.9	40.6	60	208V-3ø	DZ14XA0903A	347 LBS	6	AHU-12

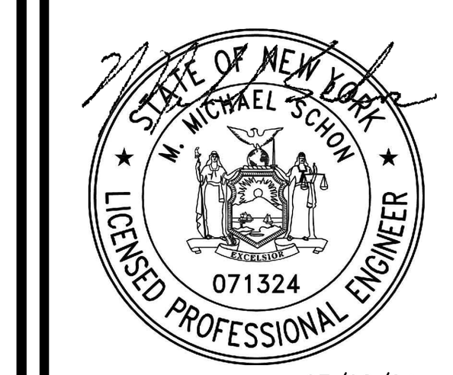
OPTIONS (ALL UNITS)
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

OPTIONS IF TOTAL EQUIVALENT REFRIGERANT LENGTH ≥ 50'-0" & ≤ 175'-0"
- COMPRESSOR CRANKCASE HEATER
- COMPRESSOR START ASSIST CAPACITOR AND RELAY (NOT REQUIRED FOR SCROLL COMPRESSORS OR 3 PHASE UNITS)
- OUTDOOR UNIT CYCLE PROTECTOR (5 MINUTE)
- WIND BAFFLES (UNITS MOUNTED ON ROOF)
- FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE SOLENOID WITHIN 2'-0" OF OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
- FOR INDOOR UNIT LOCATED ABOVE HEAT PUMP (50'-0" MAX); A LIQUID LINE (BI-FLOW) SOLENOID MUST BE INSTALLED WITHIN 2'-0" OF OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. AN INVERTED VAPOR LINE TRAP MUST BE INSTALLED AT INDOOR UNIT. THE TOP OF THE TRAP MUST BE GREATER THAN THE HEIGHT OF THE INDOOR COIL.
- FOR INDOOR UNIT LOCATED BELOW HEAT PUMP (150'-0" MAX); A LIQUID LINE (BI-FLOW) SOLENOID MUST BE INSTALLED WITHIN 2'-0" OF OUTDOOR UNIT.

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.

M MICHAEL SCHON, PE
1001 LANCASTER AVENUE
MONROE, NC 28112
P: 704.995.7020

BDA



07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL SCHEDULES

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS
PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M003

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

TAG	SERVICE	CFM RANGE	FACE SIZE (IN)	NECK SIZE (IN)	TYPE	OBD	MANUFACTURER PRICE & MODEL	ADDITIONAL OPTIONS
A	SUPPLY	0 – 100	24x24	6"ø	SQUARE PLAQUE	NO	SPD	
B	SUPPLY	105 – 175	24x24	8"ø	SQUARE PLAQUE	NO	SPD	
C	SUPPLY	180 – 270	24x24	10"ø	SQUARE PLAQUE	NO	SPD	
D	SUPPLY	275 – 425	24x24	12"ø	SQUARE PLAQUE	NO	SPD	
E	SUPPLY	430 – 700	24x24	14"ø	SQUARE PLAQUE	NO	SPD	
F	SUPPLY	0 – 100	12x12	6"ø	SQUARE PLAQUE	NO	SPD	
G	SUPPLY	105 – 250	12x12	8"ø	SQUARE PLAQUE	NO	SPD	
H	SUPPLY	175 – 275	24x24	8"x8"	MODULAR 4-WAY	NO	SPD	
A	RETURN	0 – 175	24x24	8"ø	PERFORATED FACE	NO	PDDR	
B	RETURN	180 – 270	24x24	10"ø	PERFORATED FACE	NO	PDDR	
C	RETURN	275 – 400	24x24	12"ø	PERFORATED FACE	NO	PDDR	
D	RETURN	405 – 620	24x24	14"ø	PERFORATED FACE	NO	PDDR	
E	RETURN	625 – 1250	24x24	16"ø	PERFORATED FACE	NO	PDDR	
F	RETURN	0 – 100	16x16	6"ø	PERFORATED FACE	NO	PDDR	
G	RETURN	105 – 210	16x16	8"ø	PERFORATED FACE	NO	PDDR	
H	RETURN	215 – 330	16x16	10"ø	PERFORATED FACE	NO	PDDR	
I	RETURN	130 – 350	MFG	18"x4"	45° DEFL. LVRD FACE, 3/4" SPACING	NO	530 D	B,E
A	EXHAUST	0 – 175	24x24	8"ø	PERFORATED FACE	NO	PDDR	
B	EXHAUST	180 – 270	24x24	10"ø	PERFORATED FACE	NO	PDDR	
C	EXHAUST	275 – 390	24x24	12"ø	PERFORATED FACE	NO	PDDR	
D	EXHAUST	395 – 620	24x24	14"ø	PERFORATED FACE	NO	PDDR	
E	EXHAUST	625 – 1250	24x24	16"ø	PERFORATED FACE	NO	PDDR	
F	EXHAUST	0 – 100	16x16	6"ø	PERFORATED FACE	NO	PDDR	
G	EXHAUST	105 – 210	16x16	8"ø	PERFORATED FACE	NO	PDDR	
H	EXHAUST	215 – 330	16x16	8"ø	PERFORATED FACE	NO	PDDR	

ADDITIONAL OPTIONS (AS NOTED)

A: ADJUST FROM HORIZONTAL DISCHARGE TO VERTICAL DISCHARGE. PROVIDE DIFFUSER WITH SQUARE TO ROUND NECK ADAPTOR, MODEL #SR

B: PROVIDE REGISTER WITH ROUND NECK ADAPTOR WHERE REQUIRED.

C: PROVIDE LINEAR SLOT AND/OR LINEAR BAR GRILLE WITH END CAPS, BORDER SUITABLE FOR INSTALLING ON GYB CEILING/SIDEWALL.

D: PROVIDE SPIRAL DUCT GRILLE SIZED TO MATCH DUCT SIZE O.D., END FRAMES TO MATCH DUCT SIZE O.D., CLOSED CELL FOAM GASKET FACTORY COLOR TO MATCH DUCTWORK COLOR, AIR SCOOP ACCESSORY, AND OPPOSED BLADE DAMPER, NO EXCEPTIONS.

E: PROVIDE LOUVERED FACE GRILLE WITH STEEL OBD, FACTORY INSTALLED.

NOTES:

1. ALL DEVICES SHALL BE FINISHED WITH AN ENAMEL FINISH, COLOR BY ARCHITECT. COORDINATE DEVICE COLOR(S) WITH ARCHITECT PRIOR TO ORDERING. COLOR COORDINATION SHALL INCLUDE BUT NOT BE LIMITED TO DIFFUSER FACE, CENTER TEE, FRAME INTERIOR, PATTERN CONTROLLER, ETC.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED, NO EXCEPTIONS.
3. PROVIDE EXTERNAL FOIL-BACK INSULATION, FACTORY INSTALLED FOR ALL DIFFUSER/GRILLE HOUSING.
4. ALL LINEAR SLOT DIFFUSERS AND BAR GRILLES SHALL BE FURNISHED WITH END CAPS.
5. ALL DEVICES INSTALLED IN HARD CEILINGS, WALLS, OR DIRECTLY ATTACHED TO DUCTS SHALL BE PROVIDED WITH OBD'S.
6. UNLESS OTHERWISE NOTED, ALL LINEAR SLOTS, BAR GRILLES, LOUVERED AND/OR EGGCRATE FACE GRILLES/REGISTERS SHALL BE PROVIDED WITH AN INSULATED PLENUM BOX FACTORY INSTALLED BY MANUFACTURER. PLENUM BOX SHALL BE FACTORY INSULATED WITH FIBER FREE FOAM, COLOR BLACK. PROVIDE PLENUM BOX WITH DUCT COLLAR AND WITH CABLE/FACE OPERATED FULL FLOW MANUAL CONTROL DAMPER ACCESSIBLE FROM FACE OF LINEAR SLOT OR BAR GRILLE.
7. COORDINATE GRILLES/DIFFUSERS WITH ARCHITECTURAL CEILING AND STRUCTURAL FRAMING LAYOUTS PRIOR TO ORDERING. COORDINATION SHALL INCLUDE TYPE OF INSTALLATION, MOUNTING REQUIREMENTS, T-BAR SPACING/SIZE, GYPBOARD FRAMING, INSTALLATION CLEARANCES, ETC.
8. ADJUST PATTERN CONTROLLERS ON ALL LINEAR SLOTS AND LINEAR BAR GRILLES PRIOR TO AIR BALANCE (T&B).
9. SEE AIR DEVICE TAG FOR DUCT INLET SIZE. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE ON SCHEDULE AND/OR AS INDICATED ON PLANS IN CONJUNCTION WITH REQUIREMENTS BY GRD MANUFACTURER. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. DUCT SIZE SHALL MATCH GREILLE/LOUVER SIZE IF NO DUCTWORK SIZE INDICATED ON PLANS. CONTRACTOR SHALL REFERENCE DUCTWORK INSULATION SCHEDULE FOR ALL DUCTWORK INSULATION REQUIREMENTS.
10. CONTRACTOR SHALL PAINT ALL VISIBLE SURFACES THROUGH GRD'S FLAT BLACK. PLENUM BOX INSULATION SHALL BE COLOR BLACK FROM FACTORY.
11. PROVIDE TAPERED TRANSITIONS FOR ALL SUPPLY DIFFUSERS WITH NECK SIZES DIFFERENT THAN SUPPLY DUCT RUN-OUT SIZES.
12. PROVIDE SPIN-IN TAP WITH MANUAL VOLUME DAMPER AT EACH BRANCH TAKE-OFF. SEE DETAILS SHEET AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
13. 9/16" TEE-BAR CEILING GRID IS USED. GENERAL CONTRACTOR SHALL MAKE SURE THE GRILLES/DIFFUSERS/LIGHITING FIXTURES WILL FIT PROPERLY IN THE NARROW GRID.

HVAC SEQUENCE OF OPERATIONS

MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED. SEE SPECIFICATIONS FOR ADDITIONAL CONTROLS INFORMATION.

THE SEQUENCE OF OPERATIONS PROVIDED IN THE CONTRACT DOCUMENTS IS INTENDED TO COMMUNICATE THE GENERAL DESIGN INTENT TO THE CONTROLS SUBCONTRACTOR AND IS NOT INTENDED TO BE FULLY DEVELOPED OR COMPLETE. IN THE CONTROLS SUBMITTAL, THE SUBCONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, AND ALARM POINTS. THE CONTROLS SUBCONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS FROM SETPOINTS TO PREVENT EQUIPMENT FROM SHORT CYCLING AND WHEN HOVERING AROUND SETPOINTS. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO HAVING TO TAKE CORRECTIVE ACTIONS OR EQUIPMENT SHUTDOWNS. TRANSMITTERS SHALL INCLUDE OUT-OF-RANGE, FAIL-SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION. CONTROL CONTRACTOR SHALL SPECIFY TO FAIL DE-ENERGIZER, HOLD LAST STATE, OR DEFAULT TO A PREDETERMINED SETPOINT. THESE BASIC FEATURES THAT ARE NECESSARY AND ARE PART OF A ROBUST CONTROLS INSTALLATION SHALL BE ASSUMED INCLUDED IN THE SCOPE OF SERVICES FOR DELIVERABLES AT NO ADDITIONAL COSTS TO THE OWNER.

GENERAL AREAS:

THE AHU's WILL BE FULLY CONTROLLED BY INTERNAL CONTROLS. THE UNITS WILL BE PROVIDED WITH STAND-ALONE CONTROLLERS.

AHU's SHALL BE CONTROLLED BY 7-DAY PROGRAMMABLE THERMOSTAT WITH HUMIDISTAT FEATURE OR ZONE SENSORS /W UNIT SENSORS/CONTROLS (SEE PLANS FOR INFORMATION). ROOFTOP UNITS SHALL SWITCH TO OCCUPIED MODE (74° – ADJUSTABLE, ± 4°F) ONE HOUR PRIOR TO BUILDING OCCUPANCY AND SHALL SWITCH TO UNOCCUPIED MODE (85°F COOLING, 68°F HEATING) ONE HOUR AFTER BUILDING OCCUPANCY. OCCUPANCY TIME TO BE DETERMINED BY OWNER. 3-HOUR OVERRIDES SHALL BE PROVIDED AS NEEDED FOR RETAIL PERSONNEL. DUCT MOUNTED HUMIDITY SENSORS SHALL BE INSTALLED IN R.A. DUCTWORK INTERLOCKED WITH 7-DAY PROGRAMMABLE THERMOSTAT WITH BUILT IN HUMIDISTAT FEATURE TO ENERGIZE ROOFTOP UNITS AND CORRESPONDING COMPRESSOR(S) TO MAINTAIN 50% RH WITH ±3°F OCCUPIED AND UNOCCUPIED DEADBAND AND MINIMUM UNIT RUNTIME OF 15 MINUTES DURING HUMIDITY OVERRIDE.

OPTIMAL START/STOP
THE AHU SYSTEM WILL BE STARTED AND STOPPED AS DEFINED BY OWNER BUILDING SCHEDULE. THE SYSTEM WILL START/STOP BY SCHEDULED OCCUPANCY TIME.

UNOCCUPIED COOLING
THE AHU's TO HAVE AN UNOCCUPIED COOLING SET POINT (85 DEG F, ADJUSTABLE AT EACH AHU). TO MAINTAIN DURING UNOCCUPIED PERIODS. ONCE ENERGIZED, THE RTU WILL PROVIDE COOLING AS SCHEDULED. THE SYSTEM WILL REMAIN ENERGIZED UNTIL SPACE SCHEDULED SET POINTS ARE MET.

UNOCCUPIED HEATING
THE AHU's TO HAVE AN UNOCCUPIED HEATING SET POINT (65 DEG F, ADJUSTABLE AT EACH AHU). TO MAINTAIN DURING UNOCCUPIED PERIODS. ONCE ENERGIZED, THE OUTSIDE AIR DAMPER WILL REMAIN CLOSED AND THE SUPPLY FAN WILL MAINTAIN THE DUCT STATIC PRESSURE SET POINT. THE SYSTEM WILL REMAIN ENERGIZED UNTIL NO ZONES REQUIRE UNOCCUPIED HEATING.

OCCUPANCY OVERRIDE
EACH SYSTEM WILL BE AVAILABLE FOR OCCUPANCY OVERRIDE. DURING UNOCCUPIED MODE, THE UNIT CONTROLLER WILL OVERRIDE THE ASSOCIATED SYSTEM INTO OCCUPIED MODE FOR 3 HOURS (ADJ.).

SUPPLY FAN CONTROL
WHEN THE AHU IS ENERGIZED, THE SUPPLY FAN VFD OR ECM MOTOR, WILL MODULATE TO MAINTAIN THE DUCT STATIC PRESSURE SET POINT (ADJ.). FAN SHALL MODULATE CAPACITY TO MAINTAIN 55° FLAT.

MECHANICAL COOLING
IF OUTSIDE AIR IS NOT SUFFICIENT TO PROVIDE COOLING, THE DX COMPRESSORS WILL BE TASKED WITH MAINTAINING THE DISCHARGE AIR TEMPERATURE SET POINT WHEN THE SYSTEM IS ENERGIZED AND NOT IN MORNING WARM-UP. STAGES OF DX COOLING WILL BE ENERGIZED AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT. COMPRESSOR STAGING CONTROL WILL BE DETERMINED BY THE AHU's INTERNAL CONTROLS. THE DISCHARGE AIR TEMPERATURE SET POINT SHALL MODULATE TO CONTROL SPACE TEMPERATURE AND/OR HUMIDITY AS SCHEDULED.

THE AIR ECONOMIZER WILL BE ENABLED BY A COMPARATIVE ENTHALPY. AHU-12 SHOULD BE PROVIDED WITH AN OUTSIDE AIR TEMP AND HUMIDITY SENSOR AS WELL AS A RETURN AIR TEMP AND HUMIDITY SENSOR. OUTSIDE AIR ENTHALPY AND RETURN AIR ENTHALPY WILL BE CALCULATED. IF THE OUTSIDE ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY, FREE COOLING IS AVAILABLE AND THE ECONOMIZER WILL BE ENABLED. AFTER BEING ENABLED, INTERNAL TRANE AHU CONTROLS WILL MODULATE THE OUTSIDE AIR AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT.

HUMIDITY CONTROL
RETURN TEMPERATURE AND HUMIDITY WILL BE MONITORED AT EACH AHU, AND ZONE CONTROLLER LOCATION. IF THE RETURN AND /OR SPACE HUMIDITY RISES ABOVE SET POINT. THE DISCHARGE AIR TEMPERATURE SET POINT WILL RESET AND UNIT FAN SPEED AND CAPACITY SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE HUMIDITY SET POINTS.

MINIMUM OA DAMPER POSITION
THE OUTSIDE AIR DAMPER WILL GO TO MINIMUM POSITION DURING SCHEDULED OCCUPIED TIMES IF NOT IN ECONOMIZER MODE. THE MINIMUM POSITION WILL BE DEFINED BY THE TEST AND BALANCE CONTRACTOR AND BE BASED ON OUTDOOR AIR INTAKE AS LISTED IN RTU SCHEDULE.

DISCHARGE AIR TEMPERATURE RESET
IF NOT IN MORNING WARM-UP, MORNING COOL-DOWN, OR HUMIDITY CONTROL, THE DISCHARGE AIR TEMPERATURE SET POINT WILL BE RESET ACCORDING TO THE OUTSIDE AIR TEMPERATURE. (ADJ.):

DUCT SMOKE DETECTORS:

CONTRACTOR SHALL PROVIDE SMOKE DETECTORS AS OUTLINED ON PLANS FOR ALL SPLIT SYSTEMS. SEE AHU UNIT SCHEDULE FOR INFORMATION.

RESTROOM EXHAUST FANS:

CEILING MOUNTED RESTROOM EXHAUST FANS ARE TO BE INTERLOCKED WITH LOCAL LIGHTING CIRCUIT TO ACTIVATE UPON RESTROOM OCCUPANCY. ROOF MOUNTED FANS SERVING MULTIPLE SPACES, INCLUDING RESTROOMS, SHALL BE INTERLOCKED WITH A TIME CLOCK AND OPERATE CONTINUOUSLY BUILDING IS IN OPERATION.

EXHAUST SYSTEMS SEQUENCES OF OPERATION

GENERAL REST ROOM EXHAUST:
- ALL EXHAUST FANS SERVING REST ROOMS, SHOWER ROOMS, LOCKER ROOMS, ETC. SHALL BE INTERLOCKED WITH ASSOCIATED ROOM LIGHTING OCCUPANCY SENSOR FOR CONTROL.

ISOLATION ROOM EXHAUST:
- ISOLATION ROOM(S) WILL REQUIRE 100 PERCENT OUTSIDE AIR WHEN IN USE; NO RETURN FROM THIS ROOM. FAN SHALL BE CONTROLLED VIA MANUAL SWITCH ON INTERIOR ROOM WALL. SWITCH SHALL BE PROVIDED WITH A PILOT LIGHT LOCATED ON ADJACENT EXTERIOR OF ROOM FOR VISUAL CONFIRMATION THE FAN IS OPERATING WHEN NEEDED.

ANIMAL AREAS ROOM EXHAUST:
- ALL ANIMAL AREAS (E.G. RUNS, WARDS, HOLDING KENNELS, ETC.) SHALL BE PROVIDED WITH AN ENERGY RECOVERY VENTILATOR THAT IS INTERCONNECTED WITH ASSOCIATED HVAC SYSTEM(S) SERVING EXHAUST SPACE. ERV EXHAUST FAN(S) SHALL ENERGIZE AND DE-ENERGIZE WITH THE ACTIVATION AND DE-ACTIVATION OF INTERLOCKED AHU FOR GENERAL SPACE CONDITIONING. MECHANICAL CONTRACTOR SHALL COORDINATE ALL REQUIRED CONTROL(S) SYSTEMS, WIRING, SWITCHES BETWEEN FAN MANUFACTURER AND RTU MANUFACTURER TO ENSURE INTERCONNECTION IS POSSIBLE.

AREAS OF FOCUS THIS PROJECT:
CANINE ADOPTION AREAS
FELINE/CANINE HOLDING AREAS
FELINE CONDO AREAS
REAL LIFE ROOMS
CONGREGATION ROOMS
INDOOR PLAY/EXERCISE AREAS
EXOTIC/AVIAN
TREATMENT/RECOVERY AREAS

FAN SCHEDULE

TAG	SYSTEM SERVED	FAN TYPE	CFM	E.S.P. (IN.WC)	DRIVE TYPE	RPM	ELECTRICAL DATA			SONES	OPERATING WEIGHT	MANUFACTURER GREENHECK & MODEL	OPTIONS
							H.P.	WATTS	VOLTAGE				
EF-1	141 MENS RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-2	142 WOMENS RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-3	162 PUBLIC RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-4	243 MENS RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-5	249 MENS SHOWER	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-6	223 JANITOR	CEILING EXHAUST	30	0.25	DIRECT	900	–	16.4	115V-1ø	1.3	12 LBS	SP-A70	A,B,F,S
EF-7	226 WOMENS SHOWER	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-8	242 WOMENS RR	CEILING EXHAUST	70	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-9	155 02 CLOSET	CEILING EXHAUST	25	0.5	DIRECT	900	–	17	115V-1ø	2.0	9 LBS	SP-B80	A,B,F,Q
EF-10	173 JANITOR CLOSET	CEILING EXHAUST	30	0.25	DIRECT	900	–	17.6	115V-1ø	1.1	12 LBS	SP-A90	A,B,F,S
EF-11	232 FELINE HOLD 2	INLINE EXHAUST	300	0.25	DIRECT	1050	1/30	–	115V-1ø	4.0	27 LBS	SQ-95-VG	A,B,F,L,Y
EF-12	116 FELINE CONDOS 1	INLINE EXHAUST	180	0.25	DIRECT	1050	1/30	–	115V-1ø	4.0	27 LBS	SQ-95-VG	A,B,F,L,Y
EF-13	112 FELINE CONDOS 2	INLINE EXHAUST	120	0.25	DIRECT	1050	1/30	–	115V-1ø	2.8	27 LBS	SQ-80-VG	A,B,F,L,Y
EF-14	143 JANITOR	CEILING EXHAUST	30	0.25	DIRECT	900	–	17.6	115V-1ø	1.3	12 LBS	SP-A70	A,B,F,S
EF-15	171 FELINE HOLD CONDOS	INLINE EXHAUST	150	0.25	DIRECT	1050	1/30	–	115V-1ø	4.0	27 LBS	SQ-95-VG	A,B,F,L,Y
EF-16	156/158 ISO AREAS	INLINE EXHAUST	210	0.25	DIRECT	1050	1/30	–	115V-1ø	4.0	27 LBS	SQ-95-VG	A,B,F,L,Y
RF-1	ECONOMIZER RELIEF FAN	IN-LINE EXHAUST	2800	1.0	VARI GREEN	1336	2	–	208V-1ø	9.7	122 LBS	SQ-160-VG	A,B,J,X

OPTIONS

A: DISCONNECT SWITCH
B: BACKDRAFT DAMPER
C: PREFAB. ROOF CURB
D: BIRDSCREEN
E: SHORT BASE OPTION
F: HANGING BRACKETS WITH VIBRATION ISOLATION
G: WALL MOUNTED HAND-OFF-AUTO (HOA) SWITCH WITH MOTOR STARTER/ (200 VOLTS OR HIGHER – 3 PHASES) WITH AUXILIARY CONTACT AND RELAY. STARTER PROVIDED BY M.C.
H: WALL MOUNTED HAND-OFF-AUTO (HOA) SWITCH WITH MAGNESTIC MOTOR STARTER (120 VOLTS – SINGLE PHASE) AND AUXILIARY CONTACT AND RELAY. STARTER PROVIDED BY M.C.
I: INTERLOCK WITH ASSOCIATED DOAS SYSTEM
J: PROVIDE FACTORY FAN SPEED CONTROLLER TO BALANCE FAN
K: INTERLOCKED WITH LIGHTING FIXTURE SWITCH
L: WL, WALL LOUVER DISCHARGE
M: RFC, ROOF CAP (FLAT ROOF) RL, ROOF CAP (PITCHED ROOF) WITH MANUAL DAMPER
N: MOTORIZED DAMPER – 120V
O: PROVIDE FAN WITH FREE STANDING SPRING ISOLATORS AND VIBRATION ISOLATION RAILS, W/ WIND RESTRAINTS
P: WASHABLE ALUMINUM FILTERS
Q: CONTINUOUS RUN 24/7
R: EXHAUST METAL GRILLE
S: INTERLOCKED WITH LIGHTING OCCUPIED SENSOR (PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
T: RUN CONTINUOUSLY DURING OCCUPIED HOUR USE, CONNECTED VIA LIGHTING CONTROL. (CONTROL PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
U: INTERLOCK WITH CO/N20 MONITORS/DETECTORS
V: DISCHARGE SHUTTER (OUTLET DAMPER)
W: FOR OUTDOOR INSTALLATION
X: INTERLOCKED WITH ECONOMIZER/AHU TO ENERGIZE WHEN SYSTEM IN ECONOMIZER MODE; COORDINATE ALL CONTROLS INVOLVED
Y: RUN CONTINUOUSLY 24/7 FOR CAT CONDO EXHAUST SYSTEM

NOTES:
1. ALL FANS SHALL BE U.L. LABELED.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. BACKDRAFT DAMPER ON ROOF SUPPLY FANS SHALL BE MOTORIZED.

ELECTRIC HEATER SCHEDULE

TAG	AREA SERVED	HEATER TYPE	ELECTRICAL DATA			OPERATING WEIGHT	MANUFACTURER MARKEL & MODEL	ADDITIONAL OPTIONS
			KW	AMPS	VOLTAGE			
EWH-1	FIRE RISER ROOM	WALL	5	24.1	208V-1ø	41 LBS	F3425T	A
EWH-2,3	STAIRWELL	WALL	3	14.4	208V-1ø	– LBS	F3423T	A

OPTIONS (ALL UNITS)
- BUILT-IN THERMOSTAT
- TAMPER PROOF CONTROLS
- MOUNTING BRACKETS/HARDWARE

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: FLUSH MOUNTING KIT, FULLY RECESSED
B: WALL MOUNTED THERMOSTAT /W INSULATED SUB BASE
C: WET LISTED FOR USE IN WET ENVIRONMENT
D: STAINLESS STEEL FINNED HEATING ELEMENTS
E: SUSPENDED HEATER SUPPORTS
F: ADJUSTABLE DISCHARGE LOUVERS

NOTES:
1. ALL HEATERS SHALL BE U.L. LABELED.
2. ALL HEATERS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. VERIFY MOUNTING HEIGHTS AND EXACT LOCATION WITH THE OWNER/ARCHITECT PRIOR TO INSTALLING UNIT.

MINI SPLIT SYSTEM/HEAT PUMP SCHEDULE

TAG	AREA SERVED	S.A. (CFM)	EVAPORATOR SECTION							CONDENSING SECTION				EFFICIENCY	MANUFACTURER MITSUBISHI & MODEL	ADDITIONAL OPTIONS
			RATED TC (MBH)	MIN/MAX TC (MBH)	SC (MBH)	MIN/MAX HEAT (MBH)	WEIGHT (LBS)	ELECTRICAL DATA		ELECTRICAL DATA			WEIGHT (LBS)			
								MCA	VOLTAGE	MCA	MOCP	VOLTAGE				
DAH-1/DHP-1	154 DOUBLE SURGERY	550	17.2	5.8/18.0	14.8	5.4/20.9	28	1	208V-1ø	10	15	208V-1ø	81	16 SEER/3.1 COP	MSZ-WR18NA/MUZ-WR18NA	F

OPTIONS (ALL UNITS)
- WALL MOUNTED 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- SINGLE POINT ELECTRICAL CONNECTION
- GALVANIZED CONDENSATE DRAIN PAN
- INTEGRAL CONDENSATE PUMP
- 4" THICK PREFABRICATED PAD OR CONCRETE PAD FOR OUTDOOR UNIT
- PRE-CHARGED REFRIGERANT LINE SETS
- MANUFACTURER MINIMUM CLEARANCES

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: CONDENSATE PUMP, DIVERSITECH CP-22 120V/1ø
B: 24V MOTORIZED O.A. DAMPER
C: 120V/1ø MOTORIZED O.A. DAMPER
D: STAINLESS STEEL DRAIN PAN
E: OUTDOOR UNIT WIND RESTRAINTS
F: UV LIGHT EQUAL TO ULTRAVATION MODEL 'UVPHOTOMAX' MOUNTED IN AIRSTREAM

NOTES:
1. ALL UNITS SHALL BE U.L. LABELED.
2. ALL UNITS SHALL HAVE R-410A REFRIGERANT.
3. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
4. INDOOR UNIT POWERED BY OUTDOOR UNIT, SINGLE POINT ELECTRICAL CONNECT AT OUTDOOR UNIT ONLY. DISCONNECT SWITCH REQUIRED BY ELECTRICAL CONTRACTOR AT BOTH INDOOR AND OUTDOOR UNIT LOCATION.
5. CONTRACTOR SHALL VERIFY EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURER RECOMMENDATIONS.

INTAKE LOUVER SCHEDULE

TAG	AREA SERVED	AIR FLOW (CFM)	LOUVER FUNCTION	THROAT VELOCITY (FT/MIN)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	FREE AREA (%)	MANUFACTURER RUSKIN & MODEL	OPERATING WEIGHT	ADDITIONAL OPTIONS
IL-1	212 MECH 1	5795	INTAKE	703	60	36	WALL	55	ELF6375DX	155 LBS	A,B,C
IL-2	215 MECH 2	5770	INTAKE	703	60	36	WALL	55	ELF6375DX	155 LBS	A,B,C
IL-3	230 MECH 3	9370	INTAKE	678	72	48	WALL	58	ELF6375DX	213 LBS	A,B,C

OPTIONS (ALL LOUVERS)
- STANDARD CONSTRUCTION
- BIRD/INSECT SCREEN
- PAINTED TO MATCH ADJ. SURFACES
- BACKDRAFT DAMPER
- DRAINABLE BLADES
- COMBINATION LOUVER/DAMPER
- INTERLOCKED WITH EXHAUST FAN
- ALL WELDED CONSTRUCTION
- ARCH. STYLE HIDDEN MULLIONS

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: PAINTED /W BAKED ENAMEL FINISH (COORD. COLOR W/ ARCHITECT)
B: EXTENDED SILL
C: HINGED FRAME
D: FILTER RACKS
E: SECURITY BARS

NOTES:
1. ALL LOUVERS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
2. LOUVER DAMPER TO CLOSE WHEN INTERLOCKED FAN NOT IN OPERATION.

EXHAUST LOUVER SCHEDULE

TAG	AREA SERVED	AIR FLOW (CFM)	LOUVER FUNCTION	THROAT VELOCITY (FT/MIN)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	FREE AREA (%)	MANUFACTURER RUSKIN & MODEL	OPERATING WEIGHT	ADDITIONAL OPTIONS
E-1	212 MECH 1	5795	EXHAUST	706	60	36	WALL	55	ELF6375DX	155 LBS	A,B,C
EL-2	215 MECH 2	5770	EXHAUST	706	60	36	WALL	55	ELF6375DX	155 LBS	A,B,C
EL-3	230 MECH 3	9370	EXHAUST	678	72	48	WALL	58	ELF6375DX	213 LBS	A,B,C

OPTIONS (ALL LOUVERS)
- STANDARD CONSTRUCTION
- BIRD/INSECT SCREEN
- PAINTED TO MATCH ADJ. SURFACES
- BACKDRAFT DAMPER
- DRAINABLE BLADES
- COMBINATION LOUVER/DAMPER
- INTERLOCKED WITH EXHAUST FAN
- ALL WELDED CONSTRUCTION
- ARCH. STYLE HIDDEN MULLIONS

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: PRIME COATED /W BAKED ENAMEL FINISH
B: EXTENDED SILL
C: HINGED FRAME
D: FILTER RACKS
E: SECURITY BARS

NOTES:
1. ALL LOUVERS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
2. LOUVER DAMPER TO CLOSE WHEN INTERLOCKED FAN NOT IN OPERATION.

FAN FILTER UNIT SCHEDULE

TAG	AREA SERVED	FAN FILTER INFORMATION				ELECTRICAL INFORMATION			MANUFACTURER ENVIRCO & MODEL	ADDITIONAL OPTIONS
		NOMINAL UNIT SIZE	ACTIVE FILT. FACE AREA (SQ.FT.)	MAXIMUM CFM	DESIGN CFM	WATTS AT MAXIMUM CFM	FLA	VOLTAGE		
FFU-1	154 DBL. SURG.	2x4 RSRE	5.3	610	300	300	1.5	208V-1PH	MAC-10-LAF	A,B,C,D

ADDITIONAL OPTIONS (UNITS AS NOTED)
A: RSRE OPTION FOR ROOM SIDE MAINTENANCE ON FILTER AND MOTOR/BLOWER ASSEMBLY
B: AIRFLOW INDICATOR LIGHT
C: SOLID STATE SPEED CONTROL
D: FILTER REPLACEMENT INDICATOR LIGHT

CONTRACTOR NOTE:
FAN FILTER UNITS SHALL BE WIRED DIRECTLY TO PANEL FOR CONTINUOUS RUN 24/7. COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE TAG-OUT-LOCK-OUT PROVISIONS MADE AT PANEL FOR FUTURE MAINTENANCE.

M MICHAEL SCHON, PE
1001 LANCASTER AVENUE
MONROE, NC 28112
P: 704.995.7020

BDA

07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL SCHEDULES & NOTES

REVISION:	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M004

MAIN LEVEL EXHAUST AIR CALCULATION

2020 MECHANICAL CODE OF NEW YORK STATE (TABLE 403.3.1.1)

ROOM NAME	AREA (SQ.FT) NET	NUMBER OF UNIT	CFM/UNIT	NUMBER OF SHOWERS	CFM/UNIT	NET AREA O.A. RATE (CFM/SQ FT)	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (MIN/MAX) (CFM)	SERVED BY	MAKE-UP AIR PROVIDED BY
124 CANINE ADOPT PUBLIC 1	482	–	–	–	–	0.9	434	435	AHU-1	AHU-1
125 CANINE ADOPT PUBLIC 2	384	–	–	–	–	0.9	346	350		
127 CANINE ADOPT PUBLIC 3	349	–	–	–	–	0.9	314	340		
128 CANINE ADOPT PUBLIC 4	329	–	–	–	–	0.9	296	315		
130 CANINE ADOPT PUBLIC 5	411	–	–	–	–	0.9	370	370		
126 JANITOR	20	–	–	–	–	1.0	20	30		
129 JANITOR	20	–	–	–	–	1.0	20	30		
131 CANINE ADOPT STAFF 5	408	–	–	–	–	0.9	367	370	AHU-2	AHU-2
132 CANINE ADOPT STAFF 4	302	–	–	–	–	0.9	272	300		
133 CANINE ADOPT STAFF 3	367	–	–	–	–	0.9	330	350		
135 CANINE ADOPT STAFF 2	356	–	–	–	–	0.9	320	350		
136 CANINE ADOPT STAFF 1	393	–	–	–	–	0.9	354	355		
134 JANITOR	20	–	–	–	–	1.0	20	30		
137 JANITOR	20	–	–	–	–	1.0	20	30		
153 TREATMENT/RECOVERY	406	–	–	–	–	0.9	365	425	AHU-3	AHU-3
158 CANINE ISO	72	–	–	–	–	0.9	65	70		
159 FELINE ISO	45	–	–	–	–	0.9	41	45		
170 FOOD PREP/LAUNDRY	242	–	–	–	–	1.0	242	250		
171 FELINE HOLD	241	–	–	–	–	0.9	217	350		
172 CANINE HOLD	514	–	–	–	–	0.9	463	500		
175 INTAKE HOLD	64	–	–	–	–	0.9	58	70		
152 OXYGEN RM	8	–	–	–	–	1.0	8	25		
162 PUBLIC RR	47	1	70	–	–	–	70	70	GF-5	GF-5
173 JANITOR	24	–	–	–	–	1.0	24	30		
141 MEN'S RR	47	1	70				70	70	GF-6	GF-6
142 WOMEN'S RR	47	1	70	–	–	–	70	70		
143 JANITOR	19	–	–	–	–	1.0	19	30		
106 CONG. FELINE RM 1	224	–	–	–	–	0.9	202	330	GF-8	GF-8
107 CONG. FELINE RM 2	213	–	–	–	–	0.9	193	330		
108 CONG. FELINE RM 3	214	–	–	–	–	0.9	193	385		
111 JAN/STORAGE	53	–	–	–	–	1.0	53	55	AHU-9	AHU-9
112 FELINE CONDOS 2	147	–	–	–	–	0.9	132	260		
116 FELINE CONDOS 1	334	–	–	–	–	0.9	301	340		
114 CONG. FELINE RM 4	139	–	–	–	–	0.9	125	400	AHU-10	AHU-10
115 CONG. FELINE RM 5	139	–	–	–	–	0.9	125	400		
119 REAL LIFE RM 1	85	–	–	–	–	0.9	76	105		
120 REAL LIFE RM 2	85	–	–	–	–	0.9	76	105		

NOTE: ONE (1) UNIT = ONE (1) FLUSHING FIXTURE AND/OR SHOWERHEAD.

UPPER LEVEL EXHAUST AIR CALCULATION

2020 MECHANICAL CODE OF NEW YORK STATE (TABLE 403.3.1.1)

ROOM NAME	AREA (SQ.FT) NET	NUMBER OF UNIT	CFM/UNIT	NUMBER OF SHOWERS	CFM/UNIT	NET AREA O.A. RATE (CFM/SQ FT)	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (MIN/MAX) (CFM)	SERVED BY	MAKE-UP AIR PROVIDED BY
203 FELINE INDOOR PLAY	475	–	–	–	–	0.9	428	500	AHU-11	AHU-11
204 CONG. FELINE RM #7	127	–	–	–	–	0.9	114	175		
205 CONG. FELINE RM #8	130	–	–	–	–	0.9	117	175		
206 CONG. FELINE RM #9	131	–	–	–	–	0.9	117	175		
207 CONG. FELINE RM #10	174	–	–	–	–	0.9	150	275		
208 CONG. FELINE RM #11	151	–	–	–	–	0.9	135	200		
209 CONG. FELINE RM #12	224	–	–	–	–	0.9	186	250		
210 CONG. FELINE RM #13	152	–	–	–	–	0.9	121	175		
213 EXOTIC/AVIAN	534	–	–	–	–	0.9	466	750	AHU-13	AHU-13
213 LVL 2 CANINE ADOPT (EAST)	1028	–	–	–	–	0.9	888	1100		
218 JANITOR (WEST)	32	–	–	–	–	1.0	32	50		
219 JANITOR (EAST)	32	–	–	–	–	1.0	32	50		
248 LVL 2 CANINE ADOPT (WEST)	714	–	–	–	–	0.9	643	800		
233 INDOOR EXERCISE	1280	–	–	–	–	0.9	1152	1350	AHU-14	AHU-14
247 WHELPING PARTITION	284	–	–	–	–	0.9	256	300		
223 JANITOR	24	–	–	–	–	1.0	24	50	AHU-15	AHU-15
226 WOMEN'S SHOWER	29	1	70	–	–	–	70	70		
227 MEN'S LAVATORY	44	1	70	–	–	–	70	70		
229 MEN'S SHOWER	40	1	70	–	–	–	70	70		
232 FELINE HOLD #2	464	–	–	–	–	0.9	419	560		
241 WOMEN'S LAVATORY	44	1	70	–	–	–	70	70		
242 WOMEN'S RR	48	1	70	–	–	–	70	70		
243 MEN'S RR	48	1	70	–	–	–	70	70		

NOTE: ONE (1) UNIT = ONE (1) FLUSHING FIXTURE AND/OR SHOWERHEAD.

NEW YORK ENERGY CODE

(2020 New York Energy Conservation Code)

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
METHOD OF COMPLIANCE:

PRESCRIPTIVE [X] ENERGY COST BUDGET [ ]

THERMAL ZONE: 5A

EXTERIOR DESIGN CONDITIONS

winter dry bulb 13° F.
summer dry bulb 93° F.

INTERIOR DESIGN CONDITIONS

winter dry bulb 72° F.
summer dry bulb 75° F.
relative humidity 50% R.H.

BUILDING HEATING LOAD 756.1 MBH (PEAK)
BUILDING COOLING LOAD 1,083.6 MBH (PEAK)

MECHANICAL SPACING CONDITIONING SYSTEM

UNITARY
description of unit SPLIT AHUs/HPs W/ INTEGRATED ERVs
heating efficiency SEE SCHEDULES
cooling efficiency SEE SCHEDULES
heat output of unit SEE SCHEDULES
cooling output of unit SEE SCHEDULES

BOILER
total boiler output of unit N/A

CHILLER
total chiller capacity N/A

LIST EQUIPMENT EFFICIENCIES

Equipment schedules with motors (mechanical systems)
motor horsepower N/A
number of phases N/A
minimum efficiency N/A
motor type N/A
# of poles N/A

SECTION C406 COMPLIANCE
"ADDITIONAL EFFICIENCY PACKAGE OPTIONS"

- [ ] MORE EFFICIENT HVAC PERFORMANCE PER C406.2
- [X] REDUCED LIGHTING POWER DENSITY SYSTEM PER C406.3
- [ ] ENHANCED LIGHTING CONTROLS PER C406.4
- [ ] ON-SITE SUPPLY OF RENEWABLE ENERGY PER C406.5
- [ ] PROVISION OF A DEDICATED OUTDOOR AIR SYSTEM PER C406.6
- [ ] HIGH-EFFICIENCY SERVICE WATER HEATING PER C406.7

DESIGNER STATEMENT:
To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2020 New York Energy Conservation Code.

SIGNED: [signature]

NAME: M. MICHAEL SCHON, P.E.
TITLE: MECHANICAL ENGINEER

Ventilation Sizing Summary for AHU-1

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:53AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **1770** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
124 Can Adpt Pub 1	1	482.0	2.0	435.0	0.00	0.00	435.0	0.0	435.0
125 Can Adpt Pub 2	1	384.0	2.0	350.0	0.00	0.00	350.0	0.0	350.0
127 Can Adpt Pub 3	1	349.0	2.0	338.4	0.00	0.00	315.0	0.0	315.0
128 Can Adpt Pub 4	1	329.0	2.0	335.6	0.00	0.00	300.0	0.0	300.0
130 Can Adpt Pub 5	1	411.0	2.0	385.1	0.00	0.00	370.0	0.0	370.0
Totals (incl. Space Multipliers)				**1844.0**					**1770.0**

Ventilation Sizing Summary for AHU-2

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:59AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **1654** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
121 Adoption Hallway	1	60.0	0.0	3.6	0.00	0.06	0.0	0.0	3.6
131 Can Adpt Staff 5	1	408.0	2.0	370.0	0.00	0.00	370.0	0.0	370.0
132 Can Adpt Staff 4	1	302.0	2.0	275.0	0.00	0.00	275.0	0.0	275.0
133 Can Adpt Staff 3	1	367.0	2.0	330.0	0.00	0.00	330.0	0.0	330.0
135 Can Adpt Staff 2	1	356.0	2.0	320.0	0.00	0.00	320.0	0.0	320.0
136 Can Adpt Staff 1	1	393.0	2.0	355.0	0.00	0.00	355.0	0.0	355.0
Totals (incl. Space Multipliers)				**1653.6**					**1653.6**

Ventilation Sizing Summary for AHU-3

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:00PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **1468** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
144 Hallway 1	1	423.0	0.0	25.4	0.00	0.06	0.0	0.0	25.4
153 Treatment/Recovery	1	406.0	4.0	365.0	0.00	0.00	365.0	0.0	365.0
154 Double Surgery	1	190.0	4.0	185.2	7.50	0.18	0.0	0.0	64.2
156 Iso Hallway	1	97.0	0.0	59.9	0.00	0.06	0.0	0.0	5.8
158 Canine Iso	1	72.0	1.0	69.0	0.00	0.00	65.0	0.0	65.0
159 Feline Iso	1	45.0	1.0	45.0	0.00	0.00	45.0	0.0	45.0
170 Food Prep/Laun/Bathe	1	242.0	2.0	220.0	0.00	0.00	220.0	0.0	220.0
171 Feline Hold	1	241.0	1.0	465.0	0.00	0.00	465.0	0.0	465.0
172 Canine Hold	1	514.0	1.0	295.8	7.50	0.18	0.0	0.0	100.0
174 Hallway	1	110.0	0.0	6.6	0.00	0.06	0.0	0.0	6.6
175 Intake Hold	1	64.0	1.0	70.6	0.00	0.00	60.0	0.0	60.0
177 Receiving	1	156.0	1.0	139.8	5.00	0.12	0.0	0.0	23.7
178 Food Storage	1	119.0	1.0	77.7	5.00	0.06	0.0	0.0	12.1
179 Central Storage	1	87.0	0.0	12.1	5.00	0.12	0.0	0.0	10.4
Totals (incl. Space Multipliers)				**2037.2**					**1468.3**

Ventilation Sizing Summary for AHU-4

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:00PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **30** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
163 Storage	1	77.0	0.0	10.7	0.00	0.00	0.0	0.0	0.0
164 Intake 1	1	106.0	1.0	67.6	0.00	0.00	5.0	0.0	5.0
165 Intake 2	1	106.0	1.0	67.6	0.00	0.00	5.0	0.0	5.0
166 Intake Exam	1	106.0	1.0	67.6	0.00	0.00	5.0	0.0	5.0
167 DVM Office	1	106.0	3.0	114.0	0.00	0.00	15.0	0.0	15.0
Totals (incl. Space Multipliers)				**327.5**					**30.0**

NOTE: THIS SYSTEM SHALL BE PROVIDED WITH A BI-POLAR IONIZATION FILTER DEVICE EQUAL TO PLASMA-AIR "7000" SERIES FOR REDUCED I.A.Q. DEMAND. SEE SHEET M006 FOR REDUCED I.A.Q. CALCULATIONS AND ADDITIONAL INFORMATION.

Ventilation Sizing Summary for AHU-5

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:00PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **140** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
147 Conf Room	1	306.0	8.0	437.7	0.00	0.00	60.0	0.0	60.0
149 Staff Lounge	1	204.0	8.0	347.5	0.00	0.00	50.0	0.0	50.0
160 Surrender Vest	1	69.0	0.0	207.7	0.00	0.00	5.0	0.0	5.0
161 Surrender Waiting	1	305.0	6.0	419.4	0.00	0.00	25.0	0.0	25.0
162 Public RR	1	49.0	0.0	20.5	0.00	0.00	0.0	0.0	0.0
Totals (incl. Space Multipliers)				**1432.8**					**140.0**

NOTE: THIS SYSTEM SHALL BE PROVIDED WITH A BI-POLAR IONIZATION FILTER DEVICE EQUAL TO PLASMA-AIR "7000" SERIES FOR REDUCED I.A.Q. DEMAND. SEE SHEET M006 FOR REDUCED I.A.Q. CALCULATIONS AND ADDITIONAL INFORMATION.

Ventilation Sizing Summary for AHU-6

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:01PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **125** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
104 Closet	1	27.0	0.0	3.8	5.00	0.12	0.0	0.0	3.2
138 Hallway	1	63.0	0.0	3.8	0.00	0.06	0.0	0.0	3.8
139 Hallway	1	205.0	0.0	71.1	0.00	0.06	0.0	0.0	12.3
141 Mens RR	1	49.0	0.0	20.5	0.00	0.00	0.0	0.0	0.0
142 Womans RR	1	49.0	0.0	20.5	0.00	0.00	0.0	0.0	0.0
144 Hallway 2	1	397.0	0.0	23.8	0.00	0.06	0.0	0.0	23.8
145 Bullpen	1	290.0	6.0	390.4	5.00	0.06	0.0	0.0	47.4
146 Copy Station	1	113.0	1.0	73.1	5.00	0.06	0.0	0.0	11.8
150 Marketing Office	1	102.0	1.0	65.5	5.00	0.06	0.0	0.0	11.1
151 Directors Office	1	102.0	1.0	65.5	5.00	0.06	0.0	0.0	11.1
Totals (incl. Space Multipliers)				**738.1**					**124.6**

Ventilation Sizing Summary for AHU-7

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:01PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **105** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
101 Adoption Vest	1	95.0	0.0	220.4	5.00	0.06	0.0	0.0	5.7
102 Adoption Lobby	1	589.0	8.0	366.4	5.00	0.06	0.0	0.0	75.3
103 Adoption Reception	1	152.0	3.0	117.8	5.00	0.06	0.0	0.0	24.1
Totals (incl. Space Multipliers)				**704.6**					**105.2**

Ventilation Sizing Summary for AHU-8

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:01PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **590** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
106 Cong Feline 1	1	224.0	1.0	354.0	0.00	0.00	195.0	0.0	195.0
107 Cong Feline 2	1	213.0	1.0	352.4	0.00	0.00	195.0	0.0	195.0
108 Cong Feline 3	1	213.0	1.0	352.4	0.00	0.00	195.0	0.0	195.0
109 Closet	1	39.0	0.0	54.5	5.00	0.12	0.0	0.0	4.7
Totals (incl. Space Multipliers)				**1113.4**					**589.7**

Ventilation Sizing Summary for AHU-9

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 12:01PM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **532** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
105 Feline Hallway 1	1	235.0	0.0	14.1	0.00	0.06	0.0	0.0	14.1
105 Feline Hallway 2	1	253.0	0.0	15.2	0.00	0.06	0.0	0.0	15.2
111 Janitor/Storage	1	53.0	0.0	55.0	0.00	0.00	55.0	0.0	55.0
112 Feline Condos 2	1	147.0	1.0	272.8	0.00	0.00	135.0	0.0	135.0
116 Feline Condos 1	1	334.0	2.0	305.0	0.00	0.00	305.0	0.0	305.0
117 Feline Imaging 2	1	42.0	1.0	104.4	5.00	0.06	0.0	0.0	7.5
Totals (incl. Space Multipliers)				**766.5**					**531.8**

Ventilation Sizing Summary for AHU-10

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:58AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **1425** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
113 Feline Food/Prep	1	130.0	1.0	140.0	0.00	0.00	140.0	0.0	140.0
114 Cong Feline 4	1	139.0	1.0	400.0	0.00	0.00	400.0	0.0	400.0
115 Cong Feline 5	1	139.0	1.0	400.0	0.00	0.00	400.0	0.0	400.0
119 Real Life Rm 1	1	85.0	1.0	105.0	0.00	0.00	105.0	0.0	105.0
120 Real Life Rm 2	1	85.0	1.0	105.0	0.00	0.00	105.0	0.0	105.0
122 Canine Imaging 2	1	49.0	1.0	125.0	0.00	0.00	125.0	0.0	125.0
123 Canine Imaging	1	49.0	1.0	150.0	0.00	0.00	150.0	0.0	150.0
Totals (incl. Space Multipliers)				**1425.0**					**1425.0**

Ventilation Sizing Summary for AHU-11

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:58AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **2055** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
204 Cong Feline Rm #7	1	127.0	1.0	175.0	0.00	0.00	175.0	0.0	175.0
205 Cong Feline Rm #8	1	130.0	1.0	175.0	0.00	0.00	175.0	0.0	175.0
206 Cong Feline Rm #9	1	131.0	1.0	175.0	0.00	0.00	175.0	0.0	175.0
207 Cong Feline Rm #10	1	174.0	1.0	275.0	0.00	0.00	275.0	0.0	275.0
203 Feline Indoor Play	1	475.0	1.0	500.0	0.00	0.00	500.0	0.0	500.0
208 Cong Feline Rm #11	1	151.0	1.0	190.0	0.00	0.00	190.0	0.0	190.0
209 Cong Feline Rm #12	1	224.0	1.0	250.0	0.00	0.00	250.0	0.0	250.0
210 Cong Feline Rm #13	1	152.0	1.0	175.0	0.00	0.00	175.0	0.0	175.0
211 Upper Feline Food Pr	1	138.0	1.0	140.0	0.00	0.00	140.0	0.0	140.0
Totals (incl. Space Multipliers)				**2055.0**					**2055.0**

Ventilation Sizing Summary for AHU-12

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:58AM

1. Summary
Ventilation Sizing Method .... **ASHRAE Std 62.1-2016**
Design Condition .... **Heating operation**
Occupant Diversity (D) **1.000**
Uncorrected Outdoor Air Intake (Vou) .... **173** CFM
System Ventilation Efficiency (Ev) **0.941**
Outdoor Air Intake (Vot) .... **184** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Supply Air (CFM) (Vpz)	Space Floor Area (ft²) (Az)	Area Outdoor Air Rate (CFM/ft²) (Ra)	Time Averaged Occupancy (Occupants) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Space Outdoor Air (CFM) (Voz)	Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
Zone 1										
201 Upper Lobby	1	353	552.0	0.06	4.0	5.00	0.8	**66**	*53*	0.985
202 Open Atrium	1	645	1664.0	0.06	4.0	5.00	0.8	**150**	*120*	0.941
Totals (incl. Space Multipliers)		**997**							**173**	**0.941**

Ventilation Sizing Summary for AHU-13

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:59AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **3150** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
213 Exotics/Avian	1	534.0	2.0	750.0	0.00	0.00	750.0	0.0	750.0
213 Lvl 2 Canine Adopt E	1	1028.0	1.0	1100.0	0.00	0.00	1100.0	0.0	1100.0
214 Hallway (East)	1	553.0	0.0	400.0	0.00	0.00	400.0	0.0	400.0
218 Janitor W	1	32.0	0.0	50.0	0.00	0.00	50.0	0.0	50.0
219 Janitor E	1	32.0	0.0	50.0	0.00	0.00	50.0	0.0	50.0
248 Lvl 2 Canine Adopt W	1	748.0	1.0	800.0	0.00	0.00	800.0	0.0	800.0
Totals (incl. Space Multipliers)				**3150.0**					**3150.0**

Ventilation Sizing Summary for AHU-14

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:59AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **1650** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
233 Indoor Exercise	1	1280.0	3.0	1350.0	0.00	0.00	1350.0	0.0	1350.0
247 Whelping/Part	1	284.0	1.0	300.0	0.00	0.00	300.0	0.0	300.0
Totals (incl. Space Multipliers)				**1650.0**					**1650.0**

Ventilation Sizing Summary for AHU-15

Project Name: Rockland Green Animal Shelter 05/02/2024
Prepared by: TEG 11:59AM

1. Summary
Ventilation Sizing Method .... **Sum of Space OA Airflows**
Design Ventilation Airflow Rate .... **1245** CFM

2. Space Ventilation Analysis

Zone Name / Space Name	Mult.	Floor Area (ft²)	Maximum Occupants	Maximum Supply Air (CFM)	Required Outdoor Air (CFM/person)	Required Outdoor Air (CFM/ft²)	Required Outdoor Air (CFM)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (CFM)
Zone 1									
221 Hallway (East)	1	266.0	0.0	200.0	0.00	0.00	200.0	0.0	200.0
222 Alcove	1	69.0	0.0	50.0	0.00	0.00	50.0	0.0	50.0
226 Women's Shower	1	29.0	0.0	30.0	0.00	0.00	30.0	0.0	30.0
227 Men's Lavatory	1	44.0	0.0	45.0	0.00	0.00	45.0	0.0	45.0
229 Men's Shower	1	40.0	0.0	40.0	0.00	0.00	40.0	0.0	40.0
231 Elevator Lobby	1	173.0	0.0	175.0	0.00	0.00	175.0	0.0	175.0
232 Feline Hold #2	1	464.0	1.0	560.0	0.00	0.00	560.0	0.0	560.0
241 Women's Lavatory	1	44.0	0.0	45.0	0.00	0.00	45.0	0.0	45.0
242 Women's RR	1	49.0	0.0	50.0	0.00	0.00	50.0	0.0	50.0
243 Men's RR	1	48.0	0.0	50.0	0.00	0.00	50.0	0.0	50.0
Totals (incl. Space Multipliers)				**1245.0**					**1245.0**

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BDA

STATE OF NEW YORK
M. MICHAEL SCHON
071324
LICENSED PROFESSIONAL ENGINEER
07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL CALCULATIONS

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS
PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M005

SYSTEM GF-4 REDUCED I.A.Q. CALCULATIONS

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 164 Intake 1

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

PlasmaSoft calculations are exclusively for Plasma Air products and should not be used for any other manufacturer.

ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

Green colored fields need user input. Yellow colored fields are constants provider by Plasma Air.
Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Office space		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	106	Number of People	1
Supply Air (CFM)	100	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	14.20	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	100	2,832	Supply Air	100	2,832
Outside Air	14.20	402.14	Outside Air	5.00	141.60
Return Air	85.80	2,429.86	Return Air	95.00	2,690.40

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	260	µg/min	N	Contaminant Generation Rate	260	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	402.14	L/min	Voz	Outdoor Air Flow Rate	141.60	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.86		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.95	
Vr	Return Air Flow Rate	2,429.86	L/min	Vr	Return Air Flow Rate	2,690.40	L/min
Cbz	Contaminant Concentration, zone	1.164	ppm	Cbz	Contaminant Concentration, zone	0.249	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 165 Intake 2

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

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ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

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Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Office space		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	106	Number of People	1
Supply Air (CFM)	100	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	14.20	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	100	2,832	Supply Air	100	2,832
Outside Air	14.20	402.14	Outside Air	5.00	141.60
Return Air	85.80	2,429.86	Return Air	95.00	2,690.40

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	260	µg/min	N	Contaminant Generation Rate	260	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	402.14	L/min	Voz	Outdoor Air Flow Rate	141.60	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.86		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.95	
Vr	Return Air Flow Rate	2,429.86	L/min	Vr	Return Air Flow Rate	2,690.40	L/min
Cbz	Contaminant Concentration, zone	1.164	ppm	Cbz	Contaminant Concentration, zone	0.249	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 166 Intake Exam

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

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ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

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Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Office space		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	106	Number of People	1
Supply Air (CFM)	100	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	14.20	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	100	2,832	Supply Air	100	2,832
Outside Air	14.20	402.14	Outside Air	5.00	141.60
Return Air	85.80	2,429.86	Return Air	95.00	2,690.40

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	260	µg/min	N	Contaminant Generation Rate	260	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	402.14	L/min	Voz	Outdoor Air Flow Rate	141.60	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.86		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.95	
Vr	Return Air Flow Rate	2,429.86	L/min	Vr	Return Air Flow Rate	2,690.40	L/min
Cbz	Contaminant Concentration, zone	1.164	ppm	Cbz	Contaminant Concentration, zone	0.249	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 167 DVM Office

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

PlasmaSoft calculations are exclusively for Plasma Air products and should not be used for any other manufacturer.

ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

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Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Office space		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	106	Number of People	3
Supply Air (CFM)	110	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	8.90	CFM	IAQP Outside Air Rate per Person	4.45	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	110	3,115	Supply Air	110	3,115
Outside Air	26.70	756.14	Outside Air	13.35	378.07
Return Air	83.30	2,359.06	Return Air	96.65	2,737.13

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	780	µg/min	N	Contaminant Generation Rate	780	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	756.14	L/min	Voz	Outdoor Air Flow Rate	378.07	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.76		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.88	
Vr	Return Air Flow Rate	2,359.06	L/min	Vr	Return Air Flow Rate	2,737.13	L/min
Cbz	Contaminant Concentration, zone	1.856	ppm	Cbz	Contaminant Concentration, zone	0.697	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

TOTAL REDUCED O.A. REQUIRED = 30 CFM

SYSTEM GF-5 REDUCED I.A.Q. CALCULATIONS

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 147 Conference Room

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

PlasmaSoft calculations are exclusively for Plasma Air products and should not be used for any other manufacturer.

ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

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Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Conference / meeting		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	306	Number of People	15
Supply Air (CFM)	420	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	7.78	CFM	IAQP Outside Air Rate per Person	3.89	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	420	11,894	Supply Air	420	11,894
Outside Air	116.70	3,304.94	Outside Air	58.35	1,652.47
Return Air	303.30	8,589.46	Return Air	361.65	10,241.93

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	3,900	µg/min	N	Contaminant Generation Rate	3,900	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	3,304.94	L/min	Voz	Outdoor Air Flow Rate	1,652.47	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.72		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.86	
Vr	Return Air Flow Rate	8,589.46	L/min	Vr	Return Air Flow Rate	10,241.93	L/min
Cbz	Contaminant Concentration, zone	2.123	ppm	Cbz	Contaminant Concentration, zone	0.917	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 149 Staff Lounge

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

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ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

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Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Breakrooms		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	204	Number of People	10
Supply Air (CFM)	350	Emission Rate/ Person (µg/min)	320

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	9.31	CFM	IAQP Outside Air Rate per Person	4.65	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	350	9,912	Supply Air	350	9,912
Outside Air	93.10	2,636.59	Outside Air	46.55	1,318.30
Return Air	256.90	7,275.41	Return Air	303.45	8,593.70

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	3,200	µg/min	N	Contaminant Generation Rate	3,200	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	2,636.59	L/min	Voz	Outdoor Air Flow Rate	1,318.30	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.73		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.87	
Vr	Return Air Flow Rate	7,275.41	L/min	Vr	Return Air Flow Rate	8,593.70	L/min
Cbz	Contaminant Concentration, zone	2.184	ppm	Cbz	Contaminant Concentration, zone	0.901	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 160 Surrender Vestibule

Support: plasmasoft@plasma-air.com or call (203)662-0800 Version PlasmaSoft 2.0 ASHRAE 62.1 2013-2019

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ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

Green colored fields need user input. Yellow colored fields are constants provider by Plasma Air.
Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Main entry lobbies - Office		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	69	Number of People	1
Supply Air (CFM)	200	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	11.42	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	200	5,664	Supply Air	200	5,664
Outside Air	11.42	323.56	Outside Air	5.00	141.60
Return Air	188.58	5,340.44	Return Air	195.00	5,522.40

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	260	µg/min	N	Contaminant Generation Rate	260	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	323.56	L/min	Voz	Outdoor Air Flow Rate	141.60	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.94		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.97	
Vr	Return Air Flow Rate	5,340.44	L/min	Vr	Return Air Flow Rate	5,522.40	L/min
Cbz	Contaminant Concentration, zone	1.446	ppm	Cbz	Contaminant Concentration, zone	0.123	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft IAQ Procedure Software — Rockland Green Animal Care - 161 Surrender Waiting

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ASHRAE 62.1 2013-2019
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

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Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air		
Space Type	Main entry lobbies - Office		
Ez	0.8 - Ceiling supply of warm air 15ºF above space Temp and ceiling return		
Area (Sq.Ft.)	305	Number of People	5
Supply Air (CFM)	450	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	10.82	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	450	12,744	Supply Air	450	12,744
Outside Air	54.12	1,532.82	Outside Air	25.00	708.00
Return Air	395.88	11,211.18	Return Air	425.00	12,036.00

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	1,300	µg/min	N	Contaminant Generation Rate	1,300	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	1,532.82	L/min	Voz	Outdoor Air Flow Rate	708.00	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.88		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.94	
Vr	Return Air Flow Rate	11,211.18	L/min	Vr	Return Air Flow Rate	12,036.00	L/min
Cbz	Contaminant Concentration, zone	1.526	ppm	Cbz	Contaminant Concentration, zone	0.277	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

TOTAL REDUCED O.A. REQUIRED = 140 CFM

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BDA

07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL CALCULATIONS

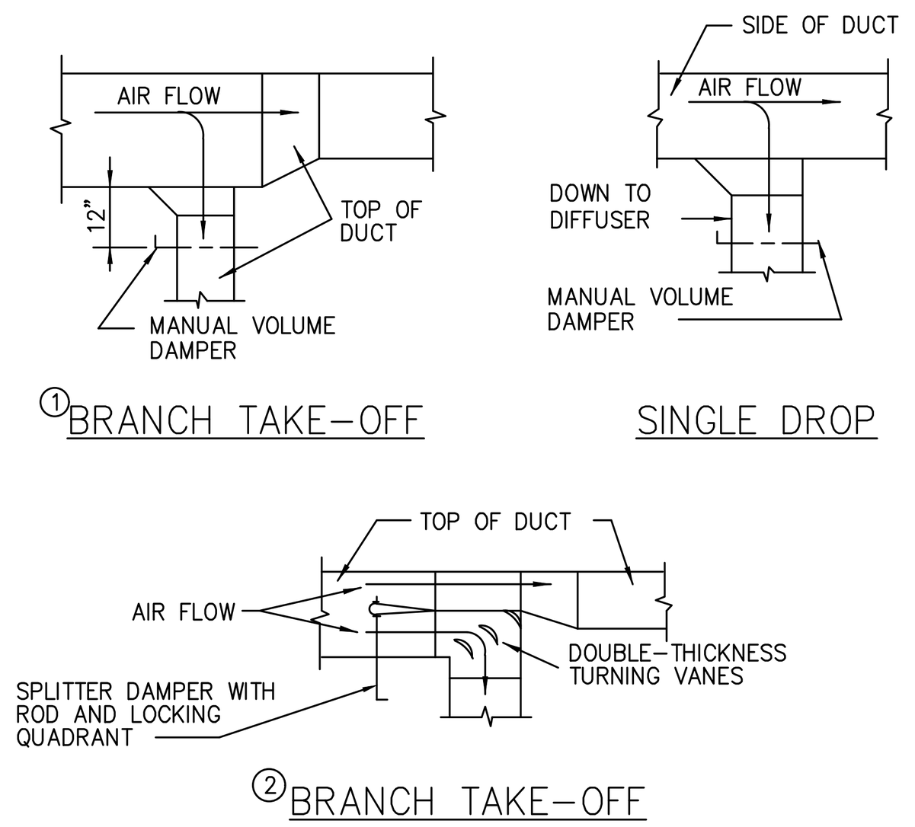
	REV.#	DATE	COMMENTS
REVISION	-	-	-
REVISION	-	-	-
REVISION	-	-	-
REVISION	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

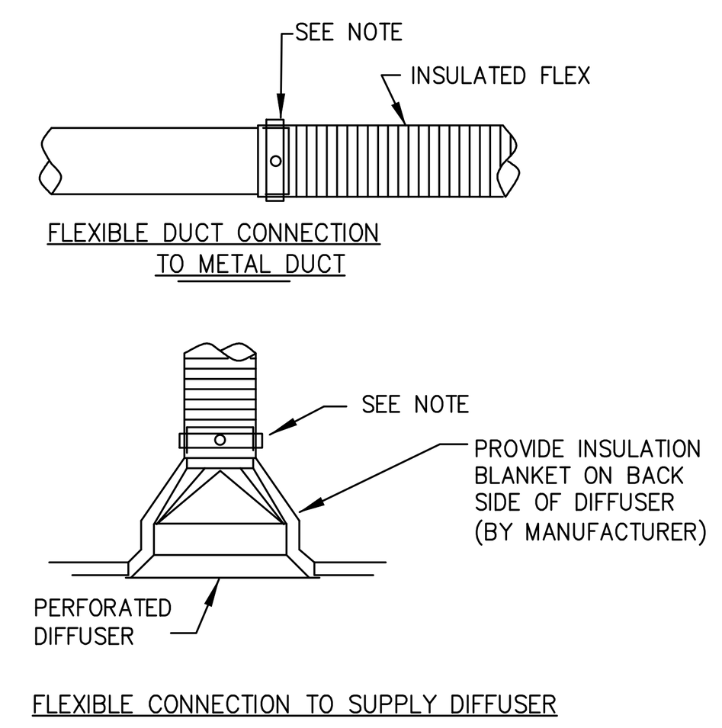
PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M006



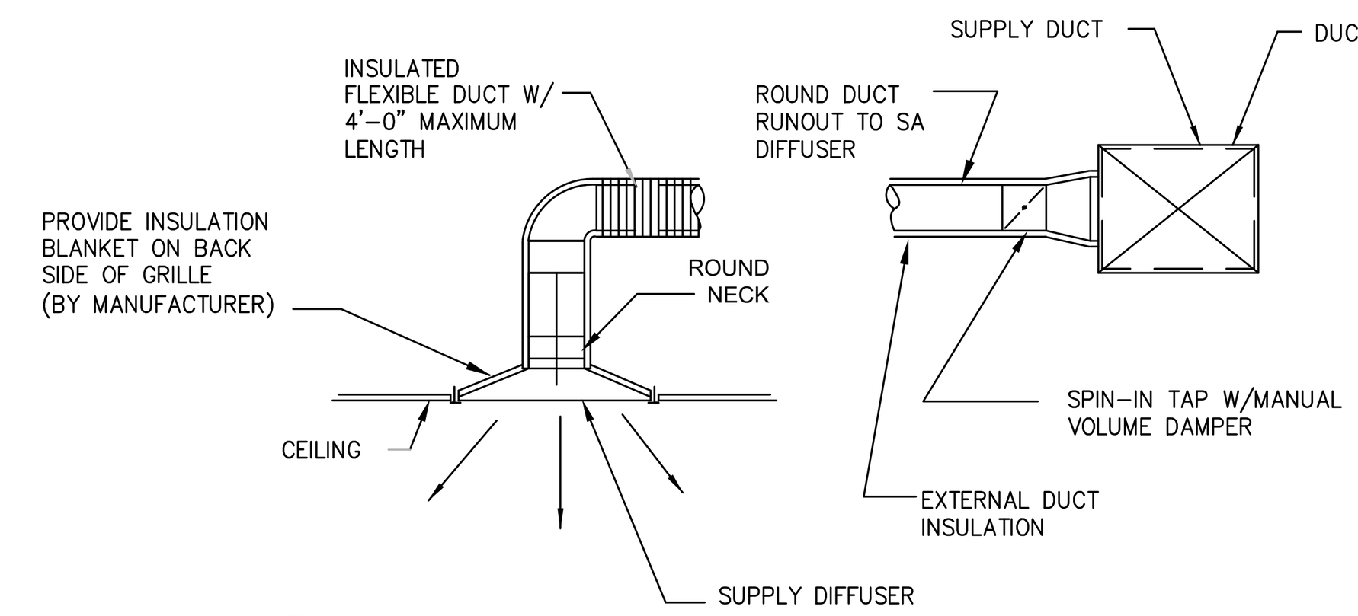
NOTE:
1. USE BRANCH TAKE-OFF (1) WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF (2) WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS

1 DUCTWORK DETAIL
SCALE: NONE



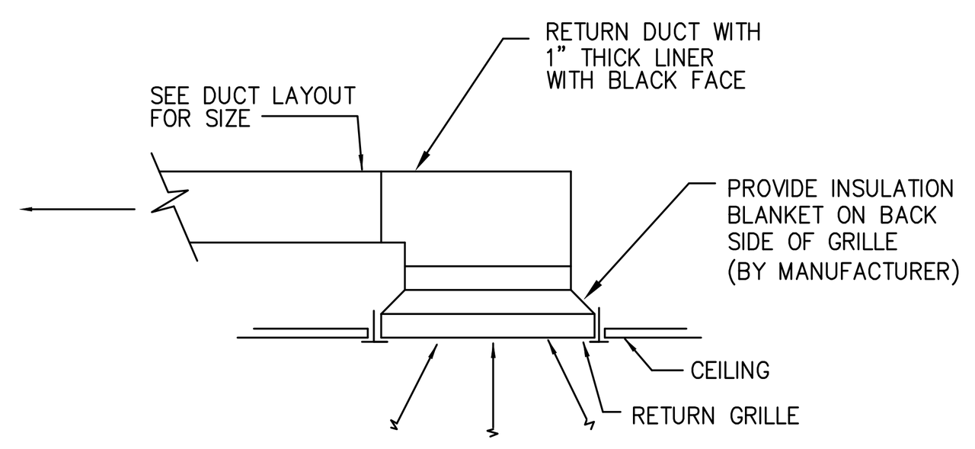
NOTE:
1. ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH NYLON STRAP AND 2 SHEET METAL SCREWS (MIN.).
2. PROVIDE INSULATION BLANKET ON BACK OF GRILLE FACE, TAPE EDGES DOWN TO GRILLE AND FLEX CONNECTION

2 FLEX. CONNECTION DETAIL
SCALE: NONE

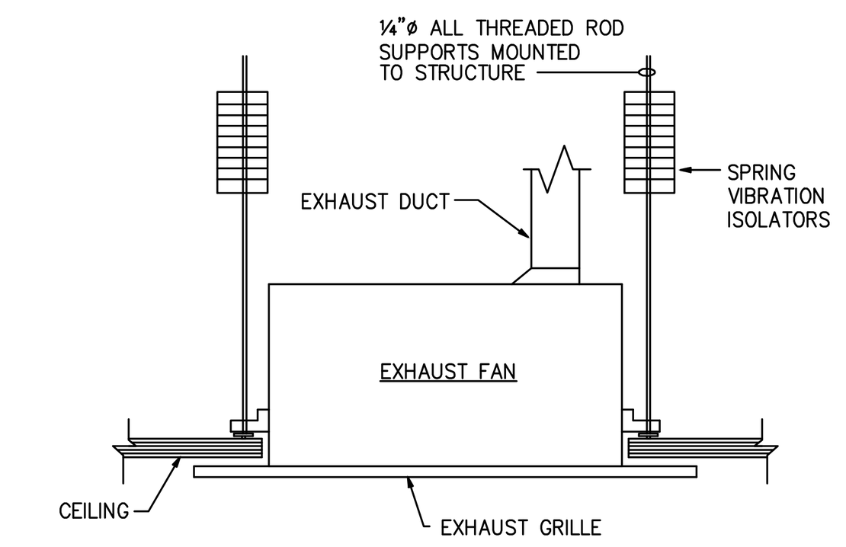


NOTES:
1. PROVIDE TRANSITION FROM ROUND DUCT TO DIFFUSER IF REQ'D.
2. PROVIDE EACH SUPPLY GRILLE A OPPOSED BLADE DAMPER (OBD)

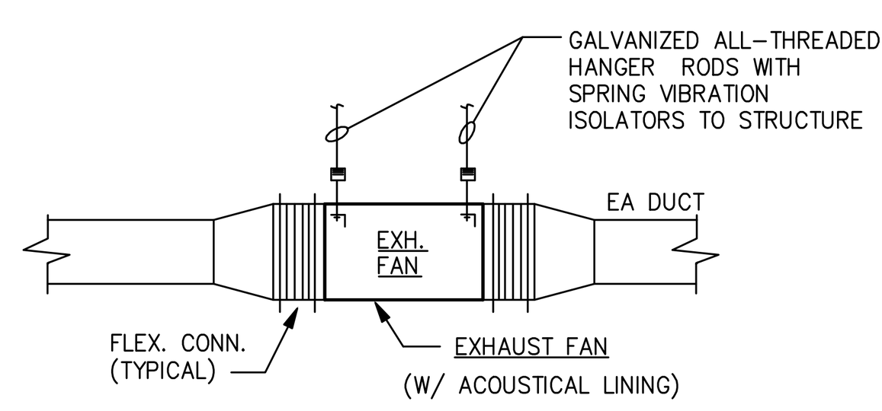
3 SPIN TAP TO ROUND NECK DIFFUSER
SCALE: NONE



4 RETURN GRILLE DETAIL
SCALE: NONE



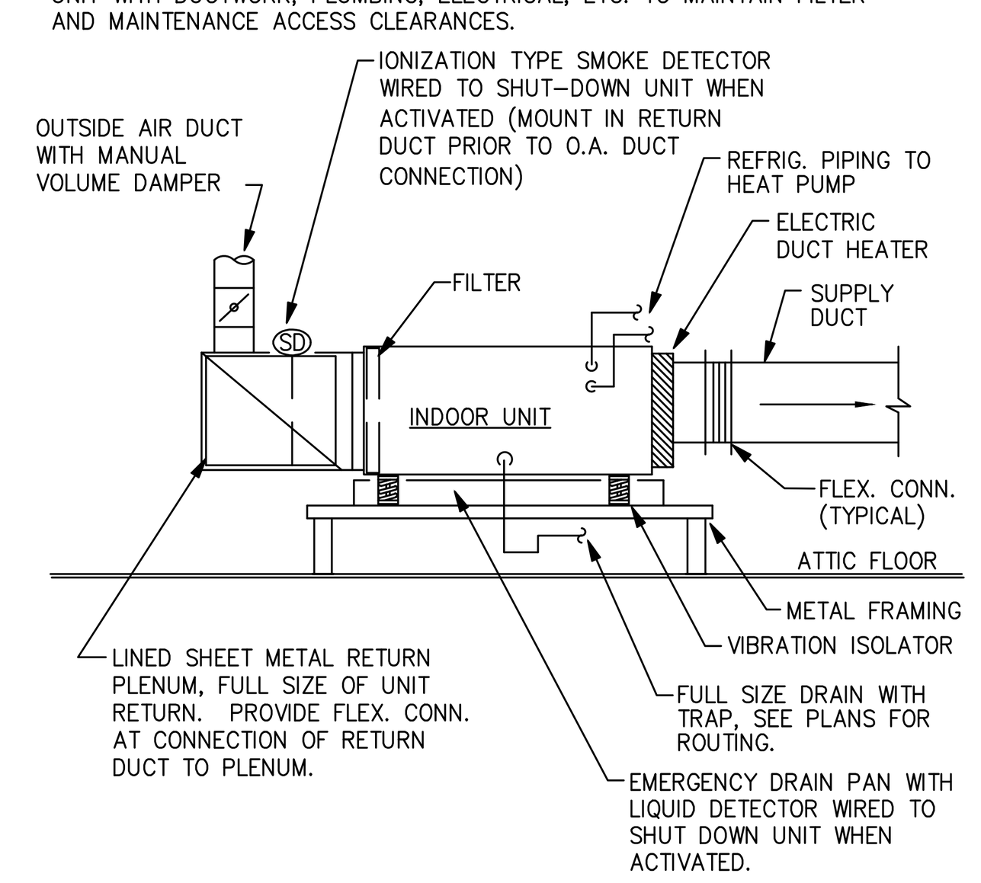
5 CEILING FAN DETAIL
SCALE: NONE



NOTES:
1. COORDINATE LOCATION OF FAN WITH OTHER TRADES TO INSURE SERVICE CLEARANCES.
2. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING IF REQUIRED.

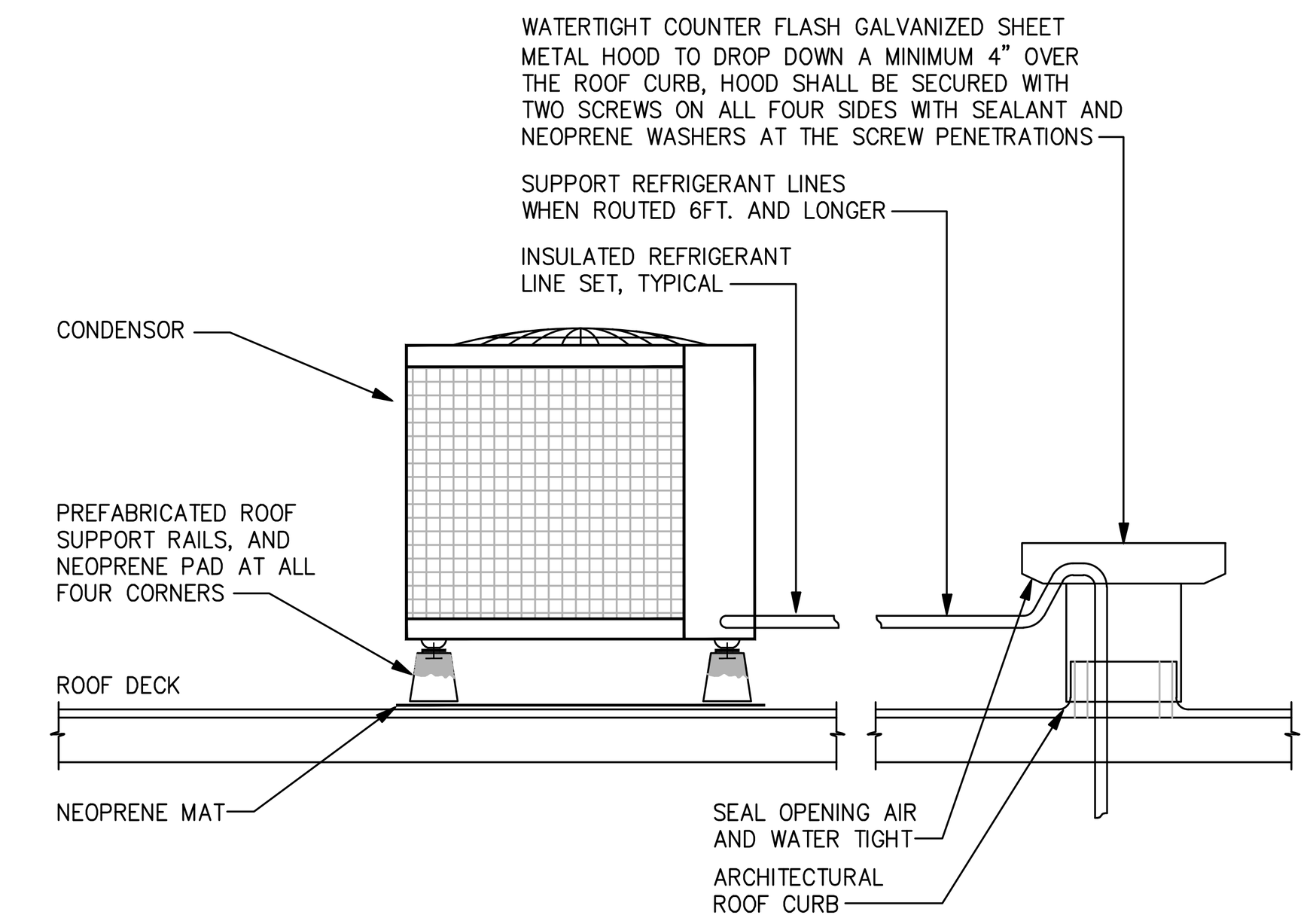
6 INLINE EXH. FAN DETAIL
SCALE: NONE

NOTE:
MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF INDOOR UNIT WITH DUCTWORK, PLUMBING, ELECTRICAL, ETC. TO MAINTAIN FILTER AND MAINTENANCE ACCESS CLEARANCES.

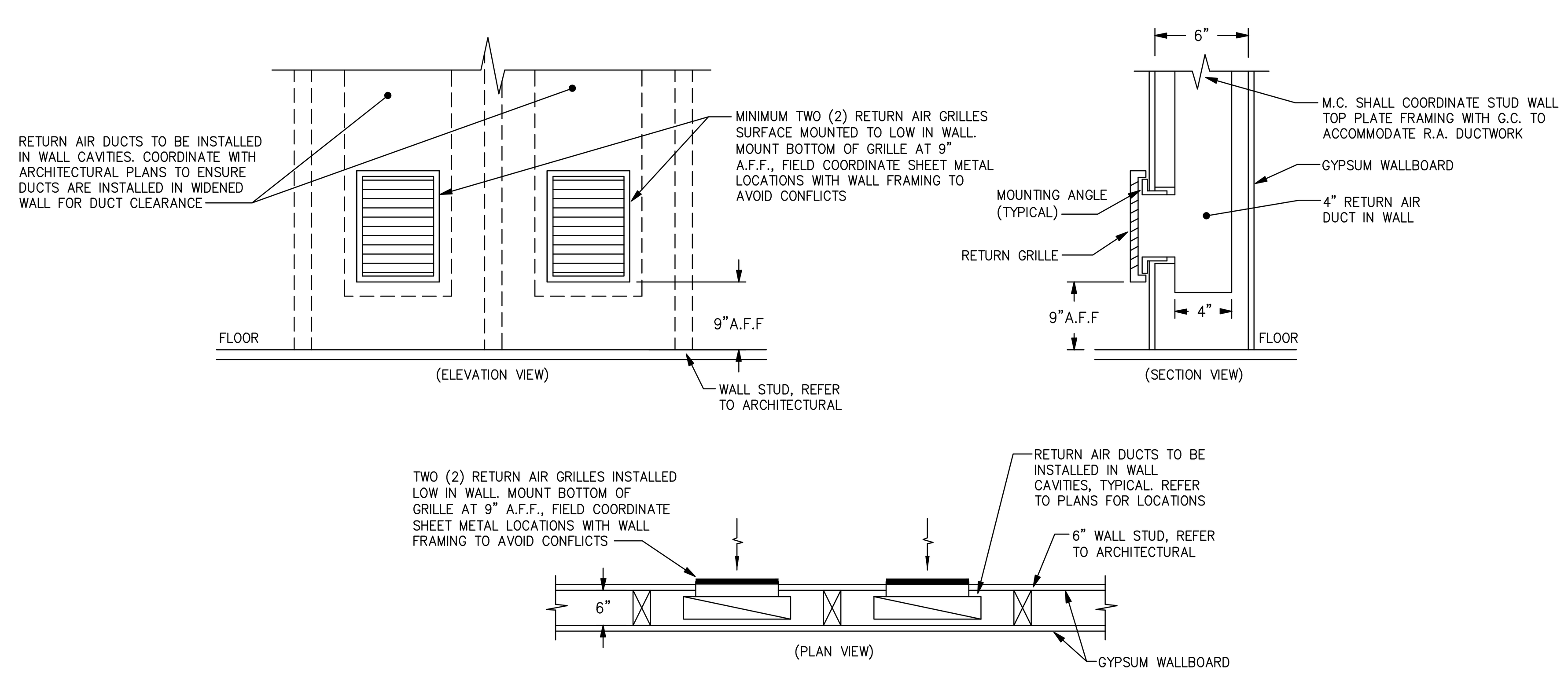


7 INDOOR UNIT DETAIL
SCALE: NONE

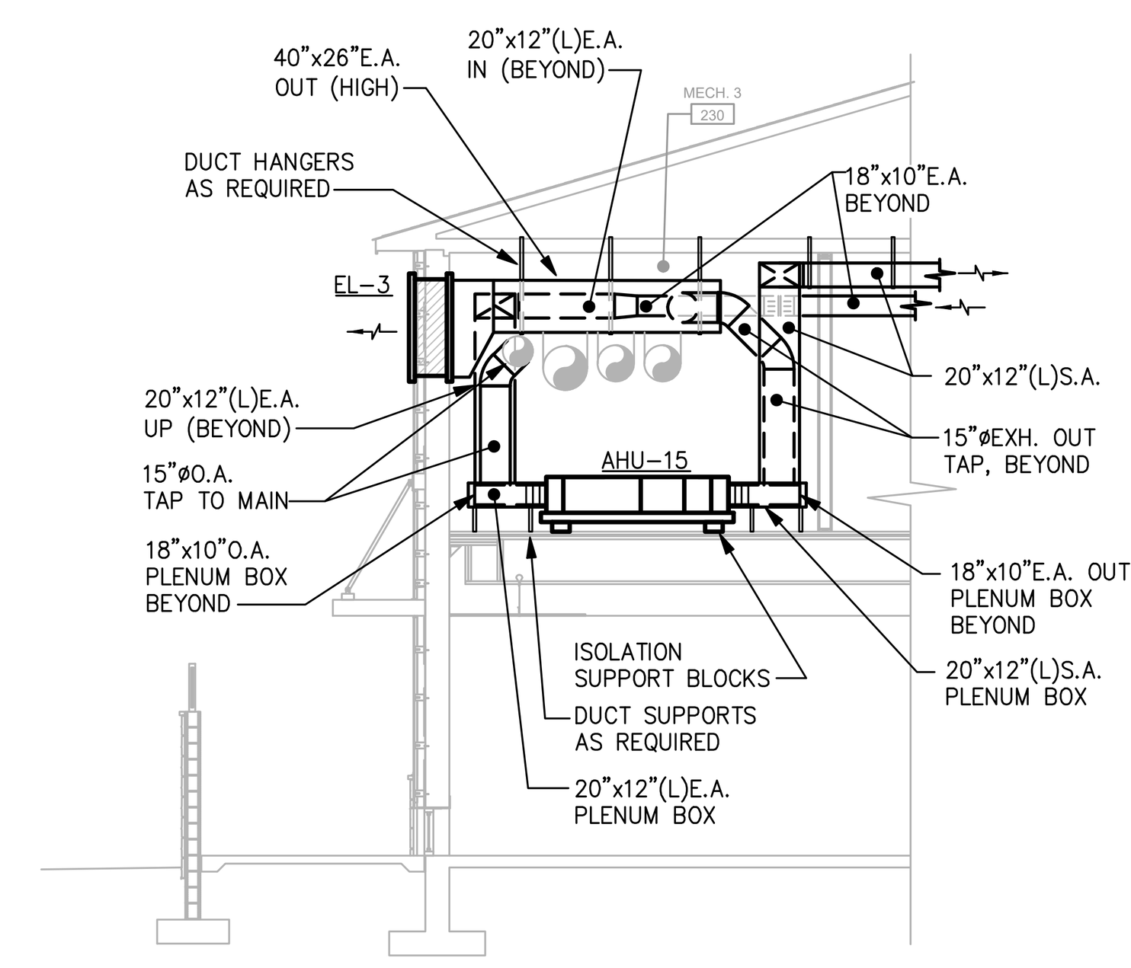
NOTE:
PROVIDE SMOKE DETECTORS WHERE INDICATED AND/OR ON ALL SYSTEMS 2000 CFM OR GREATER SUPPLY AIR. SMOKE DETECTORS SHALL BE WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED, AND WIRED BY THE MECHANICAL CONTRACTOR AND CONNECTED TO LOCAL FACP OR HVAC MONITORING PANEL AS REQUIRED.



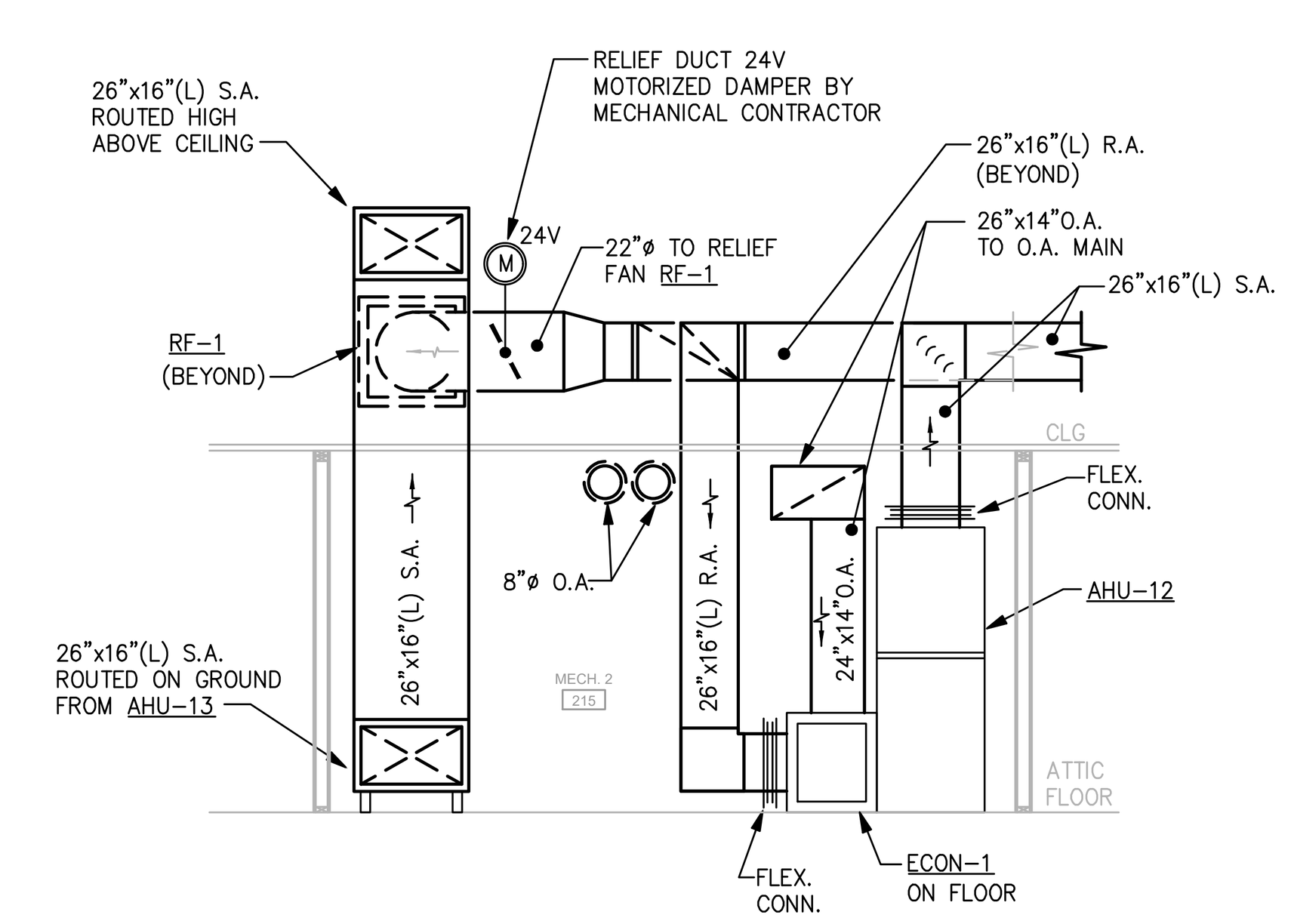
8 HEAT PUMP/ CONDENSING UNIT INSTALLATION
SCALE: NONE



9 SURGERY ROOM RETURN AIR GRILLE DETAIL
SCALE: NO SCALE



10 MECHANICAL ATTIC #3 - BUILDING SECTION
SCALE: NO SCALE



11 MECHANICAL ATTIC #2 - BUILDING SECTION
SCALE: NO SCALE

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BDA

STATE OF NEW YORK · M. MICHAEL SCHON · 071324 · LICENSED PROFESSIONAL ENGINEER
07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.
R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MECHANICAL DETAILS

REV.#	DATE	COMMENTS
REVISION: -	-	-
REVISION: -	-	-
REVISION: -	-	-
REVISION: -	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

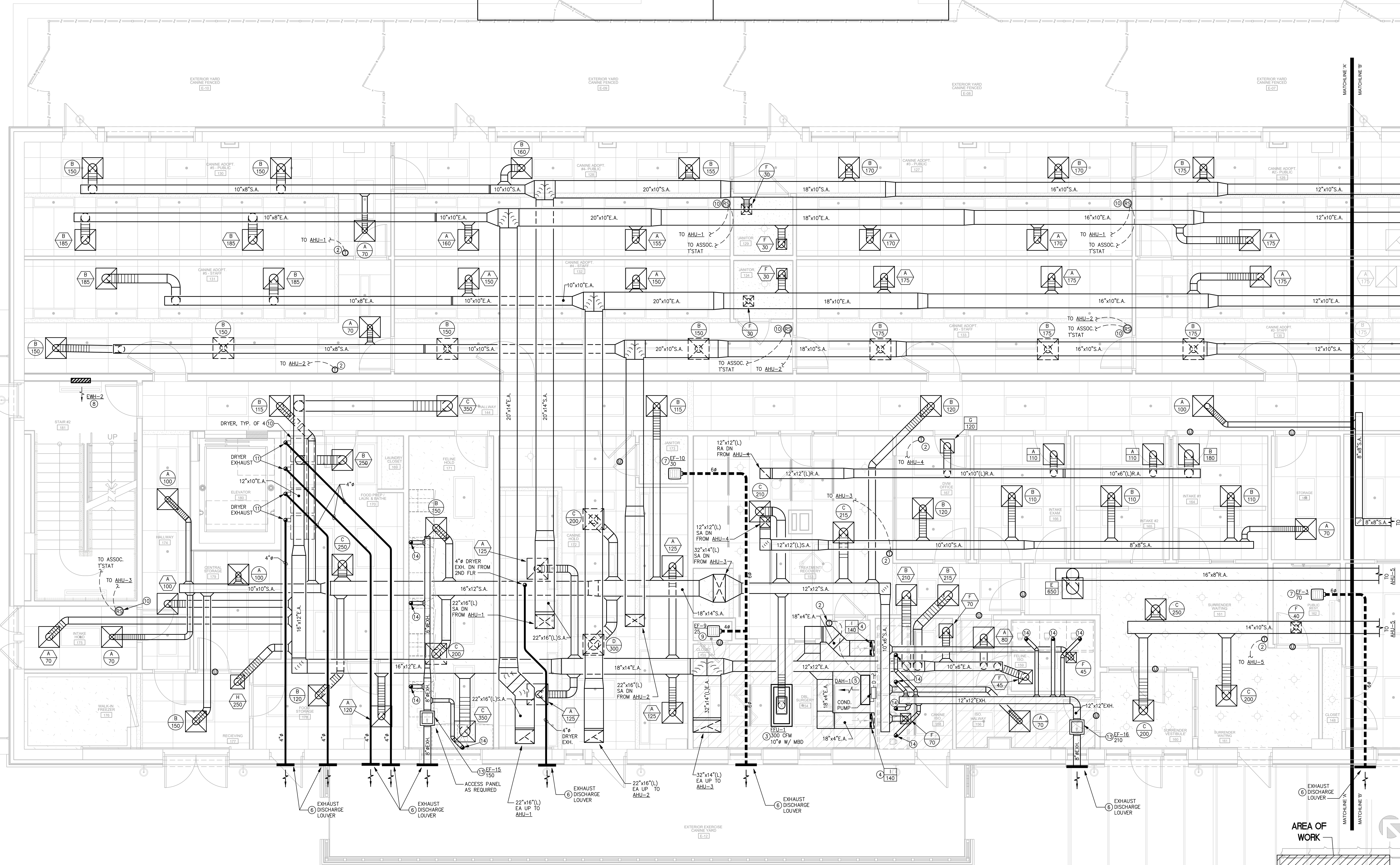
M007

RATED WALL LEGEND

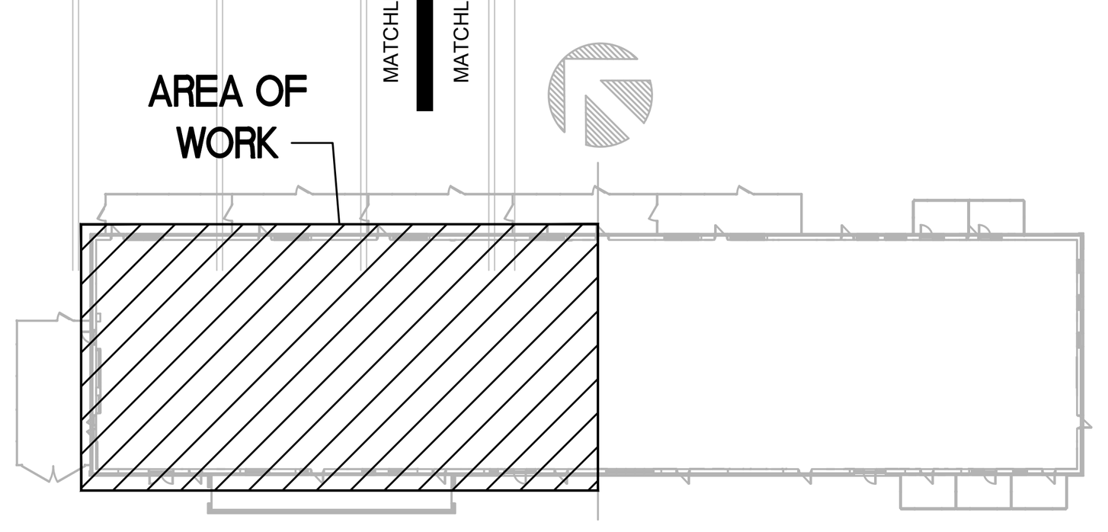
— · — · —	INDICATES A 1-HOUR RATED WALL

NOTES THIS SHEET

1. SEE SHEETS M001-007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. COORDINATE THERMOSTAT/SWITCH LOCATION WITH OWNER PRIOR TO ROUGHING-IN.
3. SURGERY ROOMS: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL FAN FILTER UNIT (FFU-#) IN CEILING, SIZED AS INDICATED. COORDINATE WITH OWNER AND SURGERY ROOM EQUIPMENT SUPPLIER FOR EXACT LOCATION OF FFU PRIOR TO ROUGHING-IN. ENSURE THAT FFU MAINTAINS ALL REQUIRED MAINTENANCE AND OPERATIONAL CLEARANCES PER MANUFACTURER'S INSTRUCTION. FFU SHALL BE WIRED DIRECTLY TO ELECTRICAL PANEL FOR CONTINUOUS OPERATION AND SHALL RUN 24/7. COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE LOCK-OUT-TAG-OUT PROVISIONS MADE AT PANEL FOR FUTURE MAINTENANCE OF UNIT. ALL SUPPLY AIR DUCTWORK FEEDING FFU SHALL BE CONSTRUCTED OF RIGID DUCT, NO EXCEPTIONS.
4. SURGERY ROOMS: TWO (2) RETURN AIR GRILLES SHALL BE LOCATED LOW IN WALL (BOTTOM OF GRILLE TO BE 9" A.F.F.). GRILLE LOCATIONS SHALL BE COORDINATED WITH OWNER PRIOR TO ROUGHING-IN. PROVIDE AND INSTALL SHEET METAL R.A. DUCTS IN WALL SIZED AS INDICATED BELOW. FIELD COORDINATE DUCT LOCATIONS WITH STUD WALLS TO AVOID CONFLICT.
   154 DOUBLE SURGERY – 4"x18" R.A. SHEET METAL DUCT IN WALL
5. DAH-#: DUCTLESS AIR HANDLER MOUNTED CENTERED ON WALL, COORDINATE EXACT MOUNTING HEIGHT AND LOCATION WITH OWNER AND MANUFACTURER PRIOR TO ROUGHING-IN. ROUTE CONDENSATE DRAIN LINE TO AUXILIARY DRAIN BOX BELOW CABINET NEAR SINK "S-4" IN 153 TREATMENT/RECOVERY AREA. SPILL WITH CODE APPROVED AIR GAP.
6. APPROXIMATE LOCATION OF SIDEWALL EXHAUST DISCHARGE. PROVIDE WITH CODE APPROVED DISCHARGE LOUVER WITH GRAVITY BACKDRAFT DAMPER. COORDINATE LOUVER FINISH AND FINAL LOCATION WITH ARCHITECT.
7. APPROXIMATE LOCATION OF CEILING MOUNTED EXHAUST FAN. FIELD VERIFY EXACT LOCATION OF FAN PRIOR TO ROUGHING-IN.
8. ELECTRIC WALL HEATER (EWH-#) TO BE FULLY RECESSED IN WALL. COORDINATE EXACT LOCATION WITH ARCHITECT. INSTALL PER MANUFACTURER'S RECOMMENDATION.
9. OXYGEN CLOSET EXHAUST FAN (EF-9) TO BE RUN 24/7. 6"ø EXHAUST DUCT ROUTED TO ROOF. EXHAUST DUCT SERVING N20/02 ROOM SHALL BE CONSTRUCTED OF SCHEBLER "FYRE GUARD" PRE-FABRICATED DUCT, OR, SHALL BE WRAPPED IN A FIRE RETARDANT DUCT WRAP TO ACHIEVE A MINIMUM 1-HOUR FIRE BARRIER AND ZERO CLEARANCE TO COMBUSTIBLES DUCT SYSTEM. FIELD VERIFY BEST ROUTING OF DUCTWORK.
10. APPROXIMATE LOCATION OF REMOTE WALL MOUNTED TEMPERATURE SENSOR TO BE INTERLOCKED WITH ASSOCIATED SPLIT SYSTEM AND THERMOSTAT.
11. DRYER BY OTHERS. COORDINATE ALL MECHANICAL REQUIREMENTS VIA OWNER PROVIDED DRYER MANUFACTURER LITERATURE.
12. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL 4"/6"/8"ø RIGID DRYER DUCT (FIELD VERIFY WHICH EXACT SIZE EXHAUST DUCT TO INSTALL, VIA OWNER PROVIDED DRYER MANUFACTURER LITERATURE) PRIOR TO ROUGHING-IN. ROUTE RIGID CODE APPROVED DRYER DUCT TO EXTERIOR AS REQUIRED AND PROVIDE WITH CODE APPROVED DISCHARGE LOUVER, LINT TRAP, AND BACKDRAFT DAMPER.
    - WHERE THE EXHAUST DUCT EQUIVALENT LENGTH EXCEEDS 35' (10 688 mm), THE EQUIVALENT LENGTH OF THE EXHAUST DUCT SHALL BE IDENTIFIED ON A PERMANENT LABEL OR TAG. THE LABEL OR TAG SHALL BE LOCATED WITHIN 6 FEET (1829 mm) OF THE EXHAUST TERMINATION, AS PER SECTION 504.8.5 OF THE 2020 MECHANICAL CODE OF NEW YORK STATE.
13. APPROXIMATE LOCATION OF INLINE EXHAUST FAN (EF-15) TO BE INSTALLED ABOVE CEILING. MECHANICAL CONTRACTOR SHALL FULLY COORDINATE WITH GENERAL CONTRACTOR TO HAVE ACCESS PANEL(S) INSTALLED AS REQUIRED FOR MAINTENANCE AND CODE PURPOSES. FIELD VERIFY EXACT LOCATION OF FAN AND DISCHARGE POINT WITH ALL CONDITIONS PRIOR TO ROUGHING-IN. PROVIDE PERMANENT IDENTIFICATION LABEL AS CLOSE TO FAN AS POSSIBLE.
14. 4"ø EXHAUST CONNECTION FROM REAR OF CAT CONDO. MECHANICAL CONTRACTOR SHALL COORDINATE THE ROUTING OF NEW CAT CONDO EXHAUST DUCTWORK TO 10"ø MAIN AND ASSOCIATED CONTINUOUS RUN EXHAUST FAN. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.



1 MAIN LEVEL FLOOR PLAN – MECHANICAL – WEST
SCALE: 1/4" = 1'-0"



KEYPLAN

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07/08/24

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R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

MAIN LEVEL FLOOR PLAN - MECHANICAL - WEST

REV.#	DATE	COMMENTS
REVISION	-	-
REVISION	-	-
REVISION	-	-
REVISION	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.:	23077
DRAWN:	DRH
DATE:	07/08/2024

M101

RATED WALL LEGEND

— · — · —	INDICATES A 1-HOUR RATED WALL

NOTES THIS SHEET

1. SEE SHEETS M001-00? FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. COORDINATE THERMOSTAT/SWITCH LOCATION WITH OWNER PRIOR TO ROUGHING-IN.
3. DRYER BY OTHERS. COORDINATE ALL MECHANICAL REQUIREMENTS VIA OWNER PROVIDED DRYER MANUFACTURER LITERATURE.
4. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL 4"/6"/8"ø RIGID DRYER DUCT (FIELD VERIFY WHICH EXACT SIZE EXHAUST DUCT TO INSTALL, VIA OWNER PROVIDED DRYER MANUFACTURER LITERATURE) PRIOR TO ROUGHING-IN. ROUTE RIGID CODE APPROVED DRYER DUCT TO ROOF AS REQUIRED AND PROVIDE WITH CODE APPROVED DRYER VENT CAP, LINT TRAP, AND BACKDRAFT DAMPER.
5. APPROXIMATE LOCATION OF SIDEWALL EXHAUST DISCHARGE. PROVIDE WITH CODE APPROVED DISCHARGE LOUVER WITH GRAVITY BACKDRAFT DAMPER. COORDINATE LOUVER FINISH AND FINAL LOCATION WITH ARCHITECT.
6. APPROXIMATE LOCATION OF REMOTE WALL MOUNTED TEMPERATURE SENSOR TO BE INTERLOCKED WITH ASSOCIATED SPLIT SYSTEM AND THERMOSTAT.
7. ELECTRIC WALL HEATER (EWH-#) TO BE FULLY RECESSED IN WALL. COORDINATE EXACT LOCATION WITH ARCHITECT. INSTALL PER MANUFACTURER'S RECOMMENDATION.
8. APPROXIMATE LOCATION OF INLINE EXHAUST FAN (EF-#) TO BE INSTALLED ABOVE CEILING. MECHANICAL CONTRACTOR SHALL FULLY COORDINATE WITH GENERAL CONTRACTOR TO HAVE ACCESS PANEL(S) INSTALLED AS REQUIRED FOR MAINTENANCE AND CODE PURPOSES. FIELD VERIFY EXACT LOCATION OF FAN AND DISCHARGE POINT WITH ALL CONDITIONS PRIOR TO ROUGHING-IN. PROVIDE PERMANENT IDENTIFICATION LABEL AS CLOSE TO FAN AS POSSIBLE.
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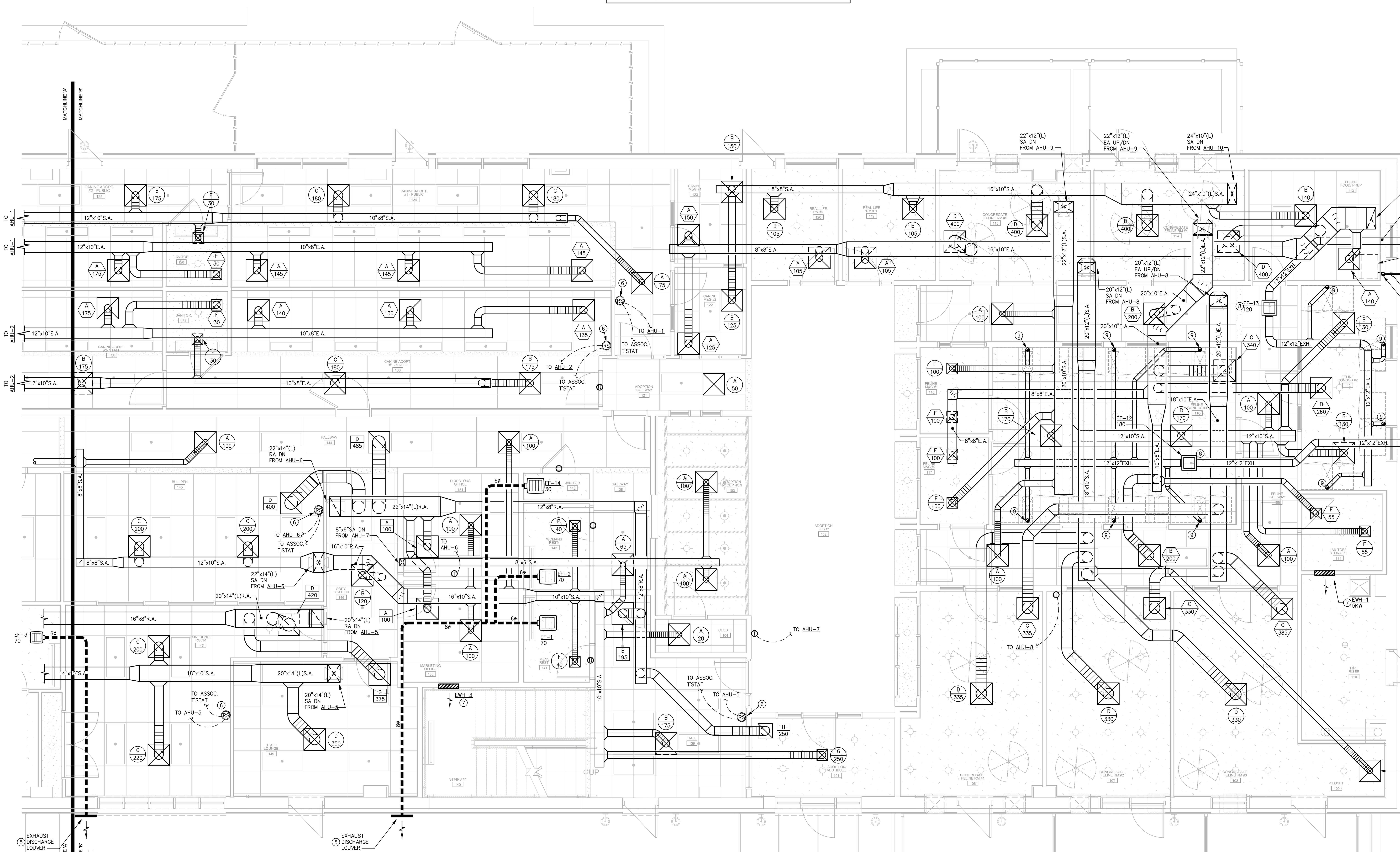
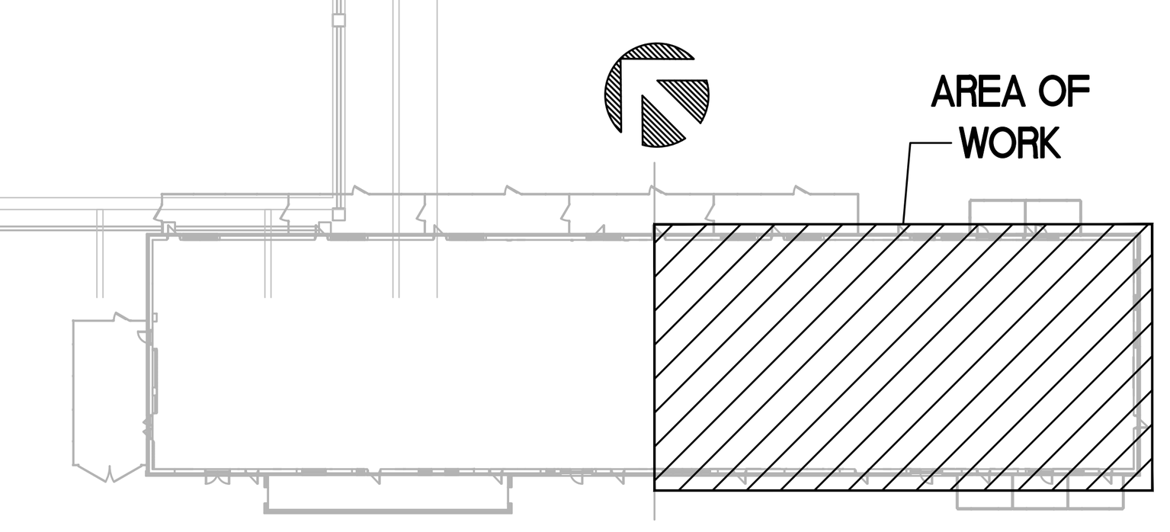


1 MAIN LEVEL FLOOR PLAN – MECHANICAL – EAST

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



KEYPLAN

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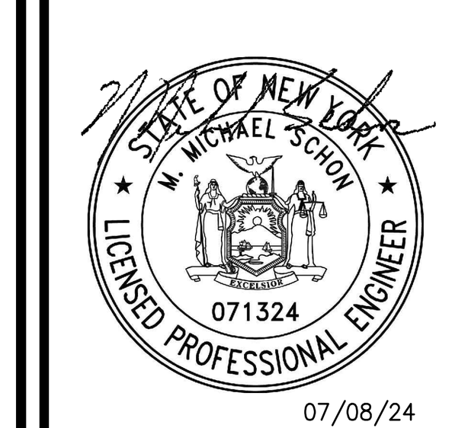

07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.

R.G. C.A.R.E.S. ANIMAL SHELTER

427 BEACH RD. LOCATED IN THE TOWN OF HAVERSTRAW, NY 10993

MAIN LEVEL FLOOR PLAN - MECHANICAL - EAST

REV.#	DATE	COMMENTS
REVISION: -	-	-
REVISION: -	-	-
REVISION: -	-	-
REVISION: -	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M102

RATED WALL LEGEND

— · — · —	INDICATES A 1-HOUR RATED WALL

NOTES THIS SHEET

1. SEE SHEETS M001-007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. COORDINATE THERMOSTAT/SWITCH LOCATION WITH OWNER PRIOR TO ROUGHING-IN.
3. APPROXIMATE LOCATION OF HORIZONTAL, DOAS SPLIT SYSTEM AIR HANDLING UNIT (AHU-#) TO BE INSTALLED ON PREFABRICATED MANUFACTURER SUPPORT RAILS ON ATTIC FLOOR, MAKE DEAD LEVEL. PROVIDE UNIT WITH FULL SIZE DRAIN PAN AND HI-FLUID LEVEL SWITCH WIRED TO SHUT UNIT DOWN UPON ACTIVATION OF SWITCH. ROUTE CONDENSATE DRAIN LINE TO NEAREST FLOOR/HUB DRAIN (DRAIN BY OTHERS) AND SPILL WITH AIR GAP. FULLY COORDINATE EXACT LOCATION OF UNIT AND DUCT DROP LOCATIONS WITH STRUCTURAL PRIOR TO BEGINNING ANY WORK. INSTALL PER MANUFACTURER'S RECOMMENDATION AND CLEARANCES.
4. APPROXIMATE LOCATION OF VERTICAL, CONVENTIONAL SPLIT SYSTEM AIR HANDLING UNIT (AHU-#) TO BE INSTALLED ON PREFABRICATED MANUFACTURER SUPPORT RAILS ON ATTIC FLOOR, MAKE DEAD LEVEL. PROVIDE UNIT WITH FULL SIZE DRAIN PAN AND HI-FLUID LEVEL SWITCH WIRED TO SHUT UNIT DOWN UPON ACTIVATION OF SWITCH. ROUTE CONDENSATE DRAIN LINE TO NEAREST FLOOR/HUB DRAIN (DRAIN BY OTHERS) AND SPILL WITH AIR GAP. FULLY COORDINATE EXACT LOCATION OF UNIT AND DUCT DROP LOCATIONS WITH STRUCTURAL PRIOR TO BEGINNING ANY WORK. INSTALL PER MANUFACTURER'S RECOMMENDATION AND CLEARANCES.
5. DRYER BY OTHERS. COORDINATE ALL MECHANICAL REQUIREMENTS VIA OWNER PROVIDED DRYER MANUFACTURER LITERATURE.
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7. APPROXIMATE LOCATION OF OUTSIDE AIR INTAKE LOUVER (IL-#). COORDINATE WITH STRUCTURAL PRIOR TO ROUGHING-IN. COORDINATE EXACT LOCATION AND ELEVATION OF LOUVER WITH ARCHITECT PRIOR TO ROUGHING-IN. COORDINATE GRILLE FINISH AND COLOR WITH ARCHITECT PRIOR TO PURCHASE.
8. MECHANICAL CONTRACTOR SHALL FIELD FABRICATE O.A. PLENUM BOX TO CONNECT INTAKE LOUVER TO MAIN O.A. DUCT AS INDICATED. FIELD VERIFY ALL WORK INVOLVED.
9. CEILING MOUNTED EXHAUST FAN (EF-#), FILED VERIFY BEST LOCATION OF FAN PRIOR TO ROUGHING-IN. INSTALL PER MANUFACTURER'S RECOMMENDATION AND CLEARANCES.
10. APPROXIMATE LOCATION OF DOAS EXHAUST AIR DISCHARGE LOUVER (EL-#). COORDINATE WITH STRUCTURAL PRIOR TO ROUGHING-IN. COORDINATE EXACT LOCATION AND ELEVATION OF LOUVER WITH ARCHITECT PRIOR TO ROUGHING-IN. COORDINATE GRILLE FINISH AND COLOR WITH ARCHITECT PRIOR TO PURCHASE.
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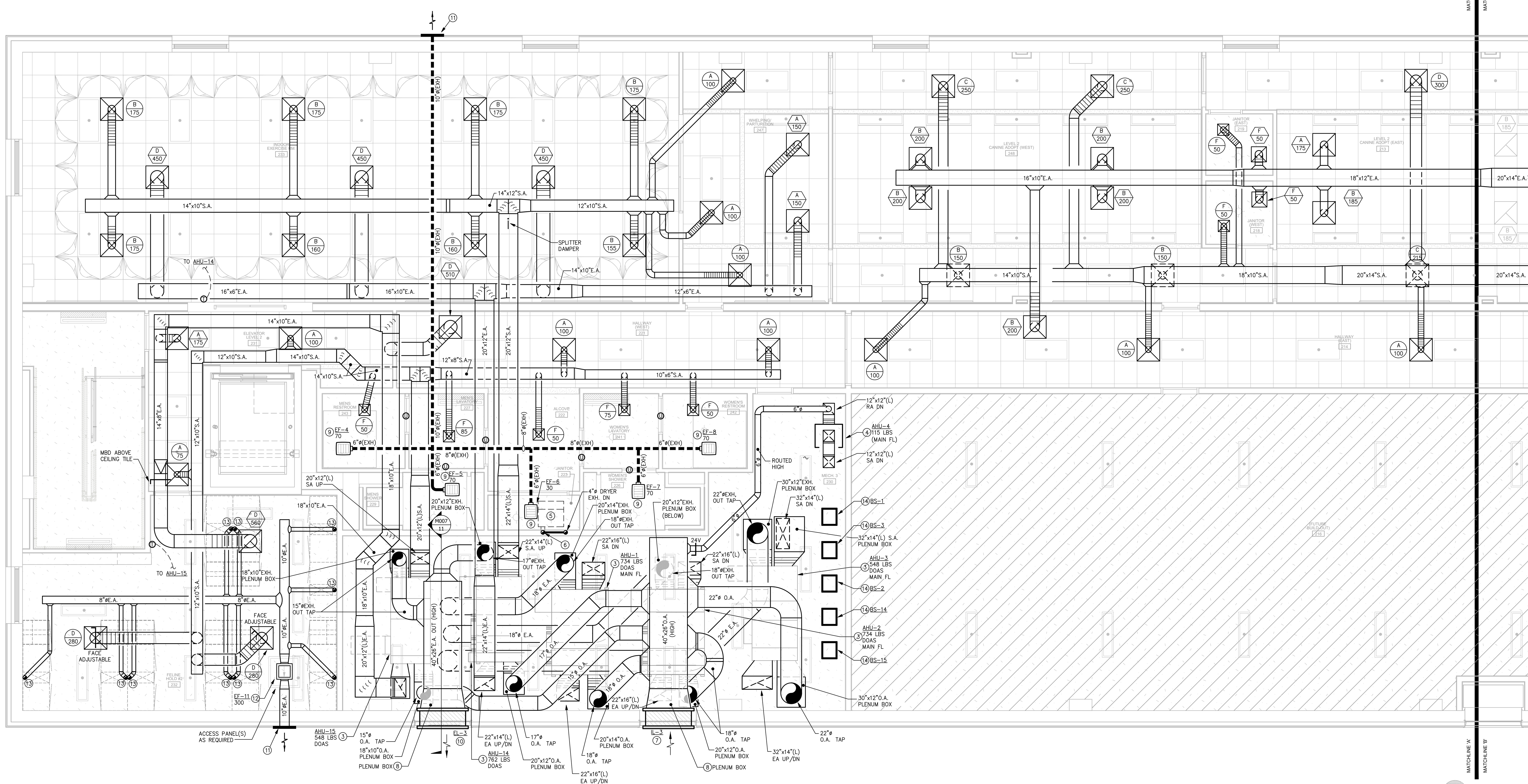
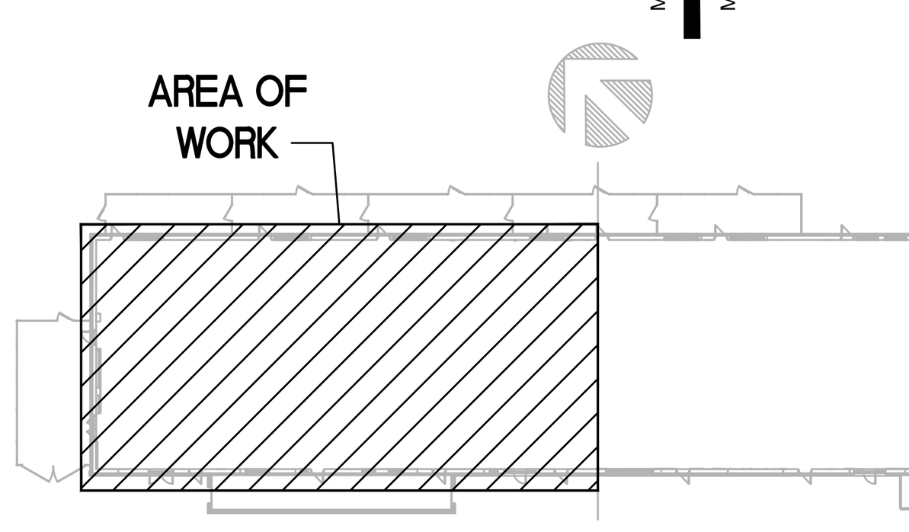
14. APPROXIMATE LOCATION OF VARIABLE REFRIGERANT VOLUME BRANCH SELECTOR (BS-#) TO BE SUSPENDED BELOW CEILING. INSTALL PER MANUFACTURER GUIDELINES AND RECOMMENDATIONS, ADHERE TO ALL REQUIRED CLEARANCES. COORDINATE WITH ALL TRADES PRIOR TO ROUGHING-IN.



UPPER LEVEL FLOOR PLAN - MECHANICAL - WEST

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

AREA OF WORK



KEYPLAN

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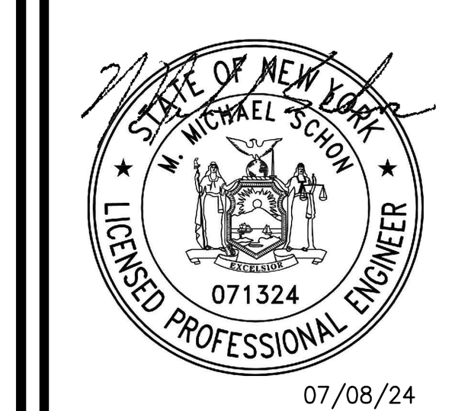

07/08/24

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UPPER LEVEL FLOOR PLAN - MECHANICAL - WEST

REV.#	DATE	COMMENTS
REVISION:	-	-
REVISION:	-	-
REVISION:	-	-
REVISION:	-	-
REVISION:	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.:	23077
DRAWN:	DRH
DATE:	07/08/2024

M103

RATED WALL LEGEND

INDICATES A 1-HOUR RATED WALL

NOTES THIS SHEET

1. SEE SHEETS M001-007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. COORDINATE THERMOSTAT/SWITCH LOCATION WITH OWNER PRIOR TO ROUGHING-IN.
3. APPROXIMATE LOCATION OF HORIZONTAL, DOAS SPLIT SYSTEM AIR HANDLING UNIT (AHU-#) TO BE INSTALLED ON PREFABRICATED MANUFACTURER SUPPORT RAILS ON ATTIC FLOOR, MAKE DEAD LEVEL. PROVIDE UNIT WITH FULL SIZE DRAIN PAN AND HI-FLUID LEVEL SWITCH WIRED TO SHUT UNIT DOWN UPON ACTIVATION OF SWITCH. ROUTE CONDENSATE DRAIN LINE TO NEAREST FLOOR/HUB DRAIN (DRAIN BY OTHERS) AND SPILL WITH AIR GAP. FULLY COORDINATE EXACT LOCATION OF UNIT AND DUCT DROP LOCATIONS WITH STRUCTURAL PRIOR TO BEGINNING ANY WORK. INSTALL PER MANUFACTURER'S RECOMMENDATION AND CLEARANCES.
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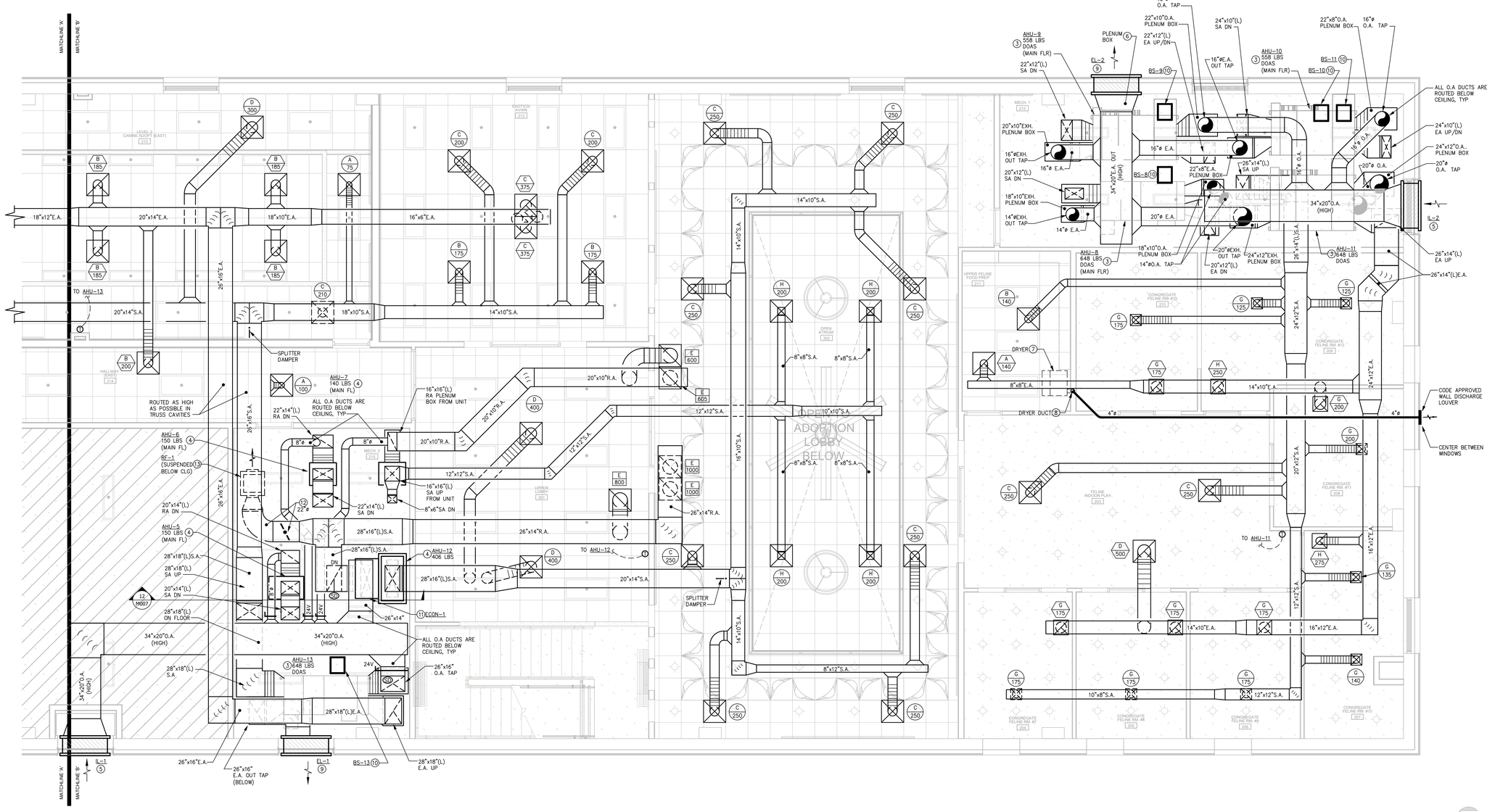
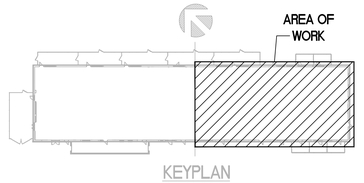
11. ECON-1: MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL DIFFERENTIAL ENTHALPY ECONOMIZER (MIXING BOX) AT AIR HANDLER R.A. INLET. ECONOMIZER (MIXING BOX) SHALL BE EQUAL TO MICROMETL #MB-RU1CA-D2EH (1,800 – 5,000 CFM CAPACITY). ECONOMIZER O.A., R.A., AND REMOTE E.A. DAMPERS SHALL BE INTERLOCKED WITH ECONOMIZER AND AIR HANDLER CONTROLS. SEE AIR HANDLER SCHEDULE ON SHEET M003 AND VERTICAL AHU DETAIL ON SHEET M004 FOR ADDITIONAL INFORMATION.
12. RELIEF AIR DUCT (SIZED AS INDICATED) WITH 24V MOTORIZED RELIEF DUCT DAMPER INSTALLED ON R.A. DUCT ABOVE CEILING. INTERLOCK RELIEF DAMPER WITH IN-LINE RELIEF FAN AND AIR HANDLER ECONOMIZER CONTROLS TO OPEN WHEN UNIT IS IN ECONOMIZER MODE. DAMPER SHALL BE NORMALLY SHUT, SPRING CLOSED, 24V POWER OPENED. LOW VOLTAGE POWER TO BE PROVIDED BY MECHANICAL CONTRACTOR FROM CORRESPONDING GAS FURNACE. SEE GAS FURNACE DETAILS SHEET M007 FOR ADDITIONAL INFORMATION. RELIEF SHALL BE DISCHARGED TO ATTIC SPACE.
13. RELIEF AIR FAN (RF-1) INSTALLED ON OUTLET OF RELIEF AIR DUCT. INTERLOCK FAN WITH RELIEF DUCT DAMPER AND AIR HANDLER ECONOMIZER CONTROLS TO ENERGIZE FAN WHEN UNIT IS IN ECONOMIZER MODE. CONTRACTOR SHALL INSTALL CONSTANT PRESSURE ROOM CONTROL PROBE, BY FAN MANUFACTURER, IN CORRESPONDING SYSTEM BREATHING ZONE AND INTERLOCK WITH RELIEF AIR FAN TO MODULATE RELIEF AIR FAN FLOW RATE BASED ON ZONE PRESSURE TO MAINTAIN BUILDING NEUTRAL PRESSURIZATION DURING ECONOMIZER MODE. RELIEF AIR SHALL BE DISCHARGED TO ATTIC SPACE.



1 UPPER LEVEL
FLOOR PLAN – MECHANICAL – EAST
SCALE: 1/4" = 1'-0"



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BDA

STATE OF NEW YORK
M. MICHAEL SCHON
071324
LICENSED PROFESSIONAL ENGINEER
07/08/24

ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.

R.G. C.A.R.E.S. ANIMAL SHELTER
427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

UPPER LEVEL
FLOOR PLAN - MECHANICAL - EAST

REV.#	DATE	COMMENTS
-	-	-
-	-	-
-	-	-
-	-	-

REVISION:
REVISION:
REVISION:
REVISION:

REVIEWS

INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

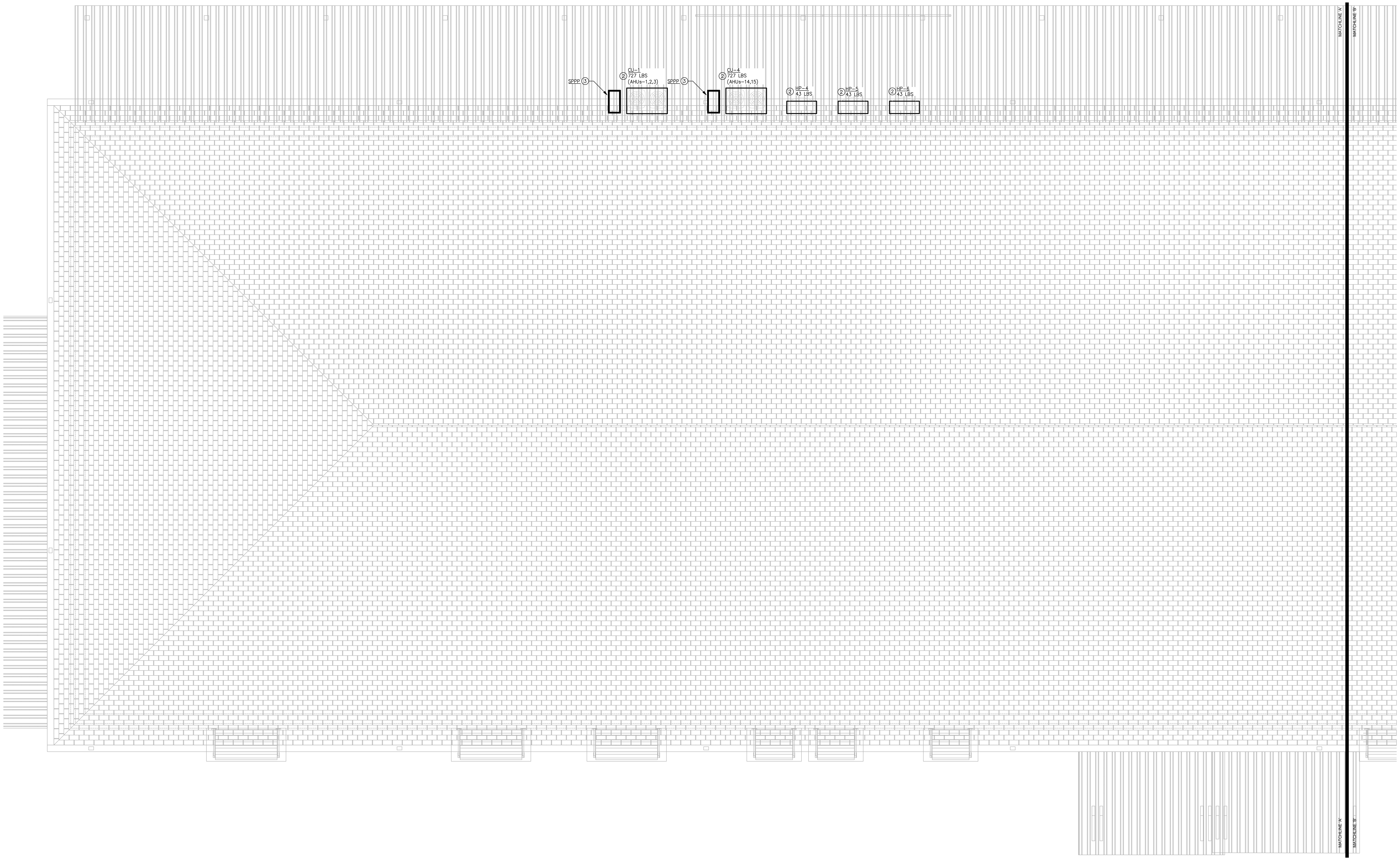
RGAS
PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M104

11 OF 14

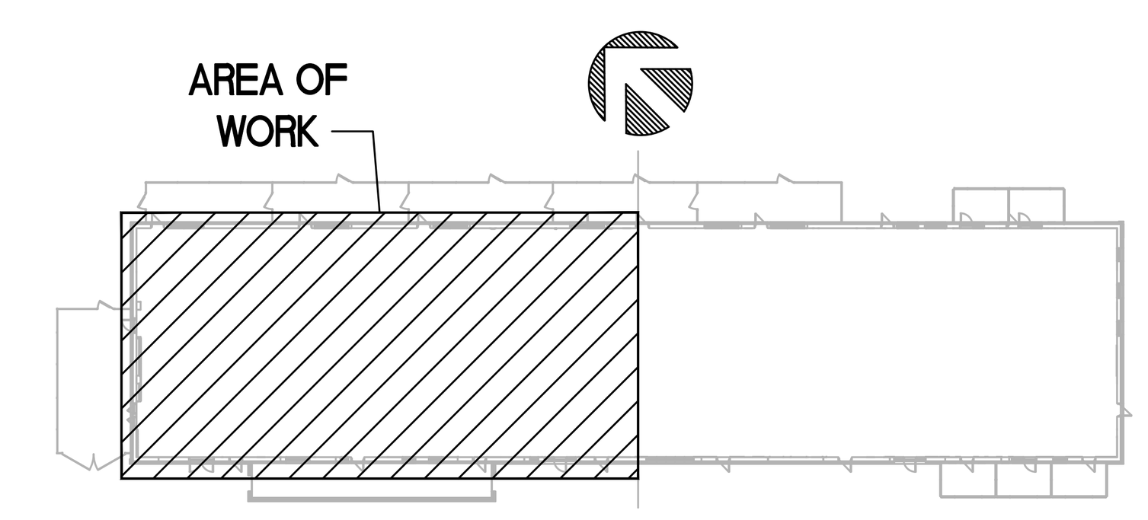
NOTES THIS SHEET

1. SEE SHEETS M001-007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
2. CONDENSING/HEAT-PUMP OUTDOOR UNIT TO BE INSTALLED ATOP OF THE ROOF OVER THE CANINE EXERCISE YARDS ON PRE-MANUFACTURED SUPPORT RAILS, MAKE DEAD LEVEL. COORDINATE FINAL INSTALLATION LOCATION, CONDENSATE LINE CONCEALMENT AND DRAINAGE CONCEALMENT WITH ARCHITECT. COORDINATE LEVEL PLATFORM/CURB WITH ARCHITECT AND STRUCTURAL ENGINEER. ROOF SYSTEM(S) BY OTHERS. TYPICAL.
3. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL A SINGLE POINT POWER PANEL EQUAL TO HOFFMAN & HOFFMAN "SPPP" AT EACH VRF CONDENSING UNIT. MECHANICAL CONTRACTOR SHALL FULLY COORDINATE WITH ELECTRICAL CONTRACTOR TO HAVE ALL ELECTRICAL CONNECTIONS LANDED AT PANEL AND THEN DISTRIBUTED TO ASSOCIATED INDOOR UNIT(S) AS REQUIRED. COORDINATE BEST LOCATION AND MOUNTING TECHNIQUE OF PANEL PRIOR TO ROUGHING-IN.



(1) ROOF PLAN - MECHANICAL - WEST

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



KEYPLAN

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ROCKLAND GREEN CENTER FOR ANIMAL RESCUE AND EDUCATIONAL SERVICES, INC.

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427 BEACH RD. LOCATED IN THE TOWN OF HARVERSTRAW, NY 10993

ROOF PLAN - MECHANICAL - WEST

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.: 23077

DRAWN: DRH

DATE: 07/08/2024

M105

NOTES THIS SHEET

1. SEE SHEETS M001–007 FOR SPECIFICATIONS, LEGENDS, GENERAL NOTES, SCHEDULES AND DETAILS.
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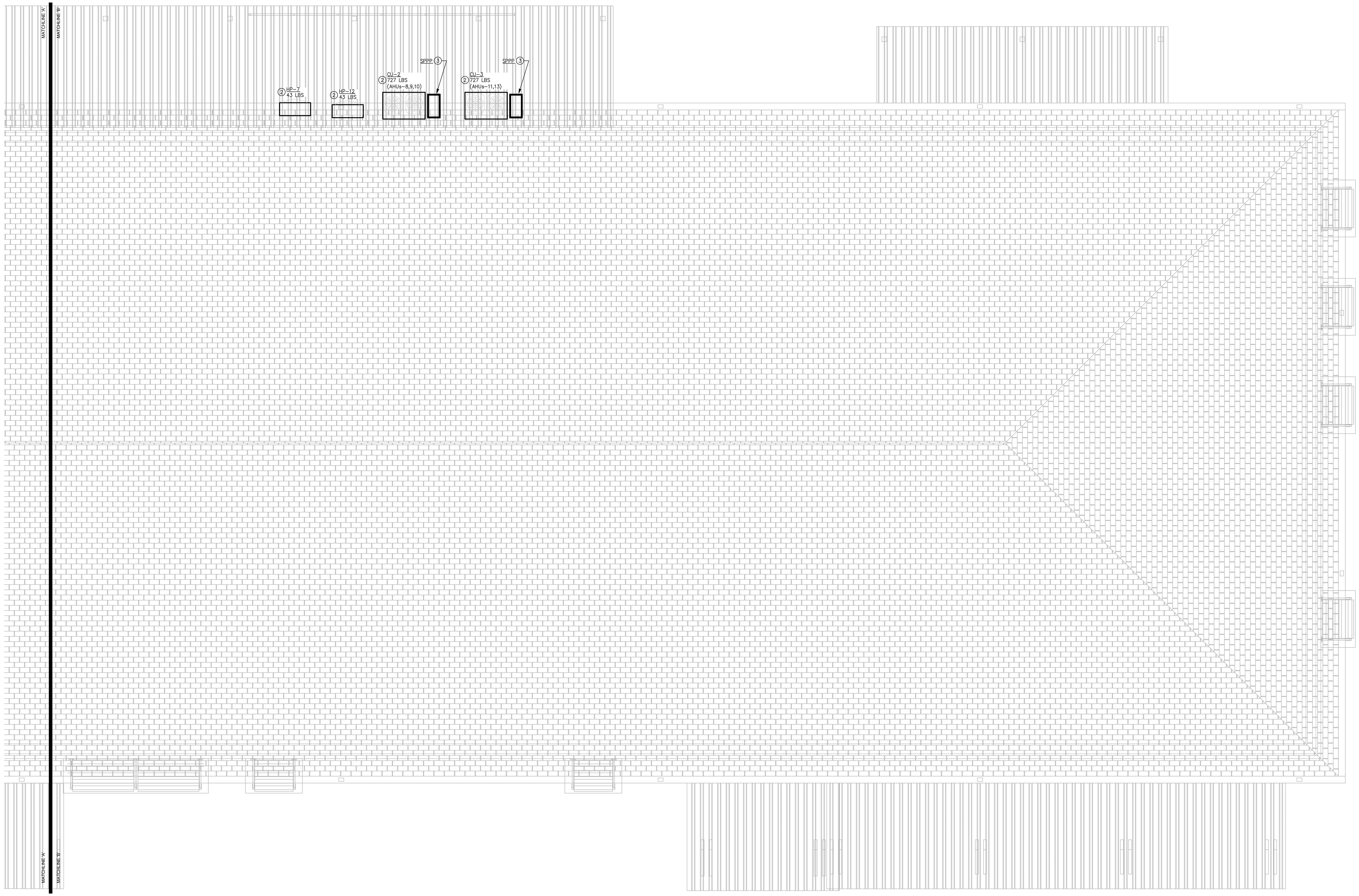
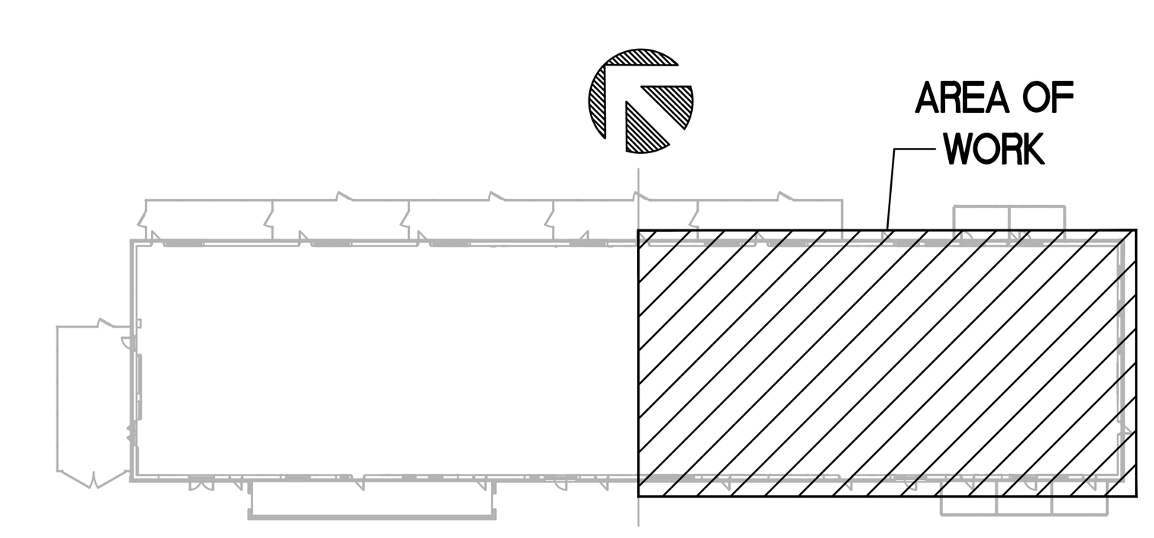


1 ROOF PLAN – MECHANICAL – EAST
SCALE: 1/4" = 1'-0"



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R.G. C.A.R.E.S. ANIMAL SHELTER
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ROOF PLAN - MECHANICAL - EAST

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
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REVIEWS	
INITIALS	
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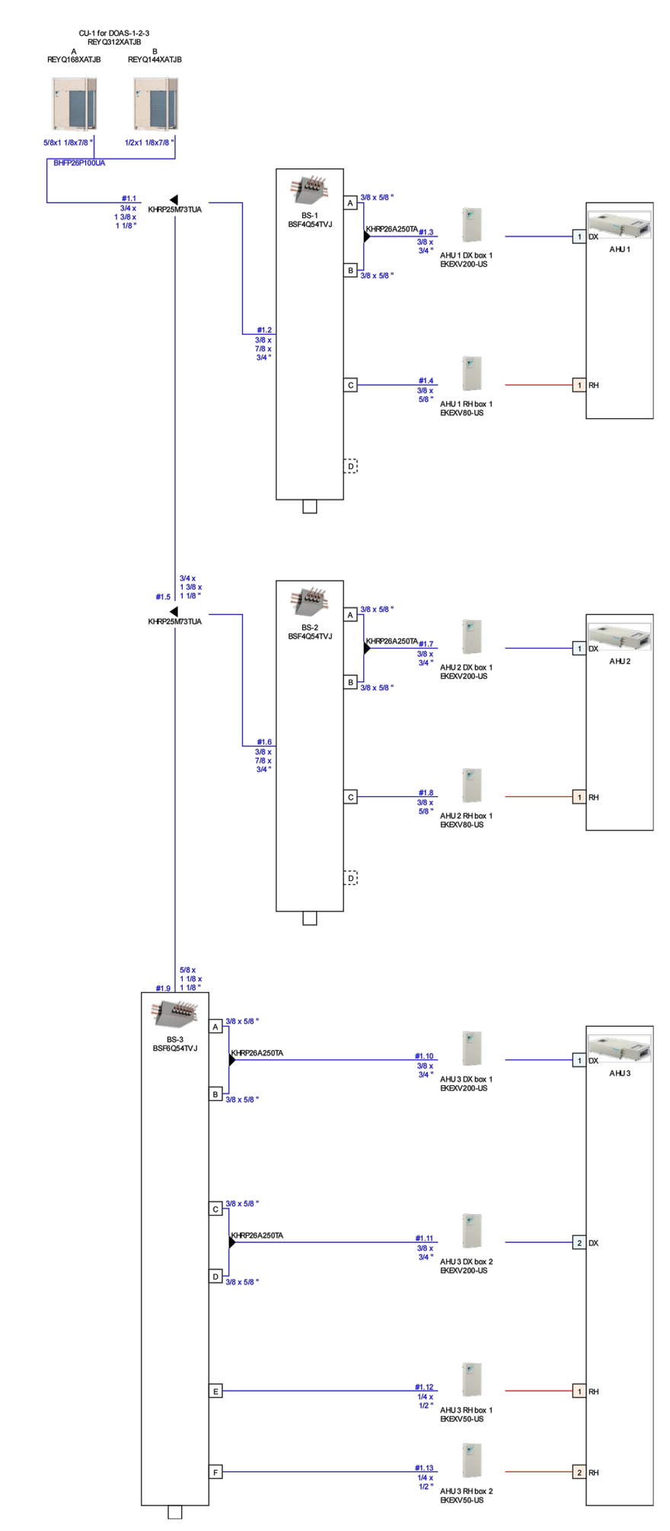
RGAS
PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M106

DAIKIN

Piping diagrams

Piping CU-1 for DOAS-1-2-3

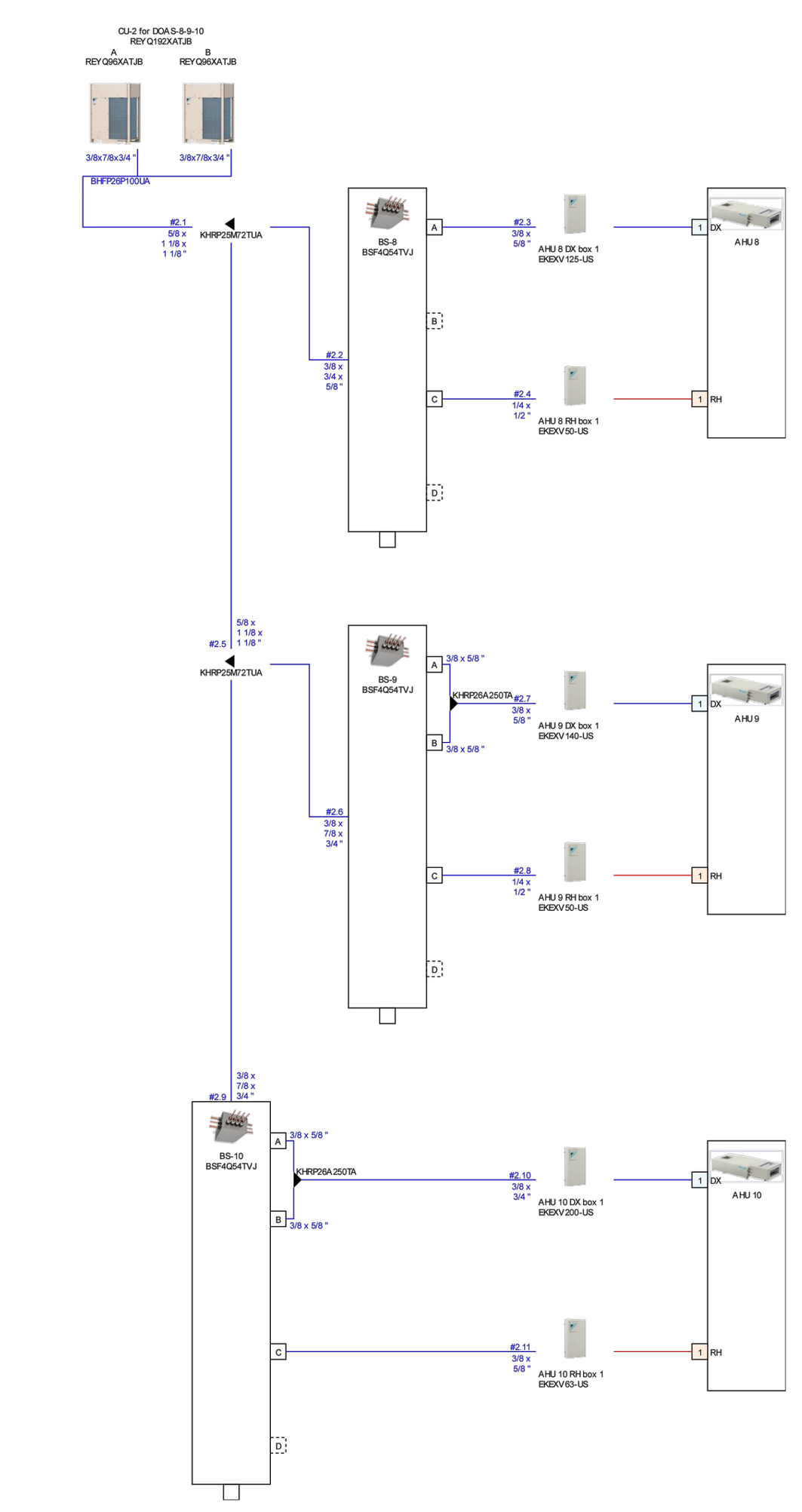


Piping

Warning: The pipe diameter values are purely indicative. Depending on the required pipe lengths, a different pipe diameter might be required.

DAIKIN

Piping CU-2 for DOAS-8-9-10

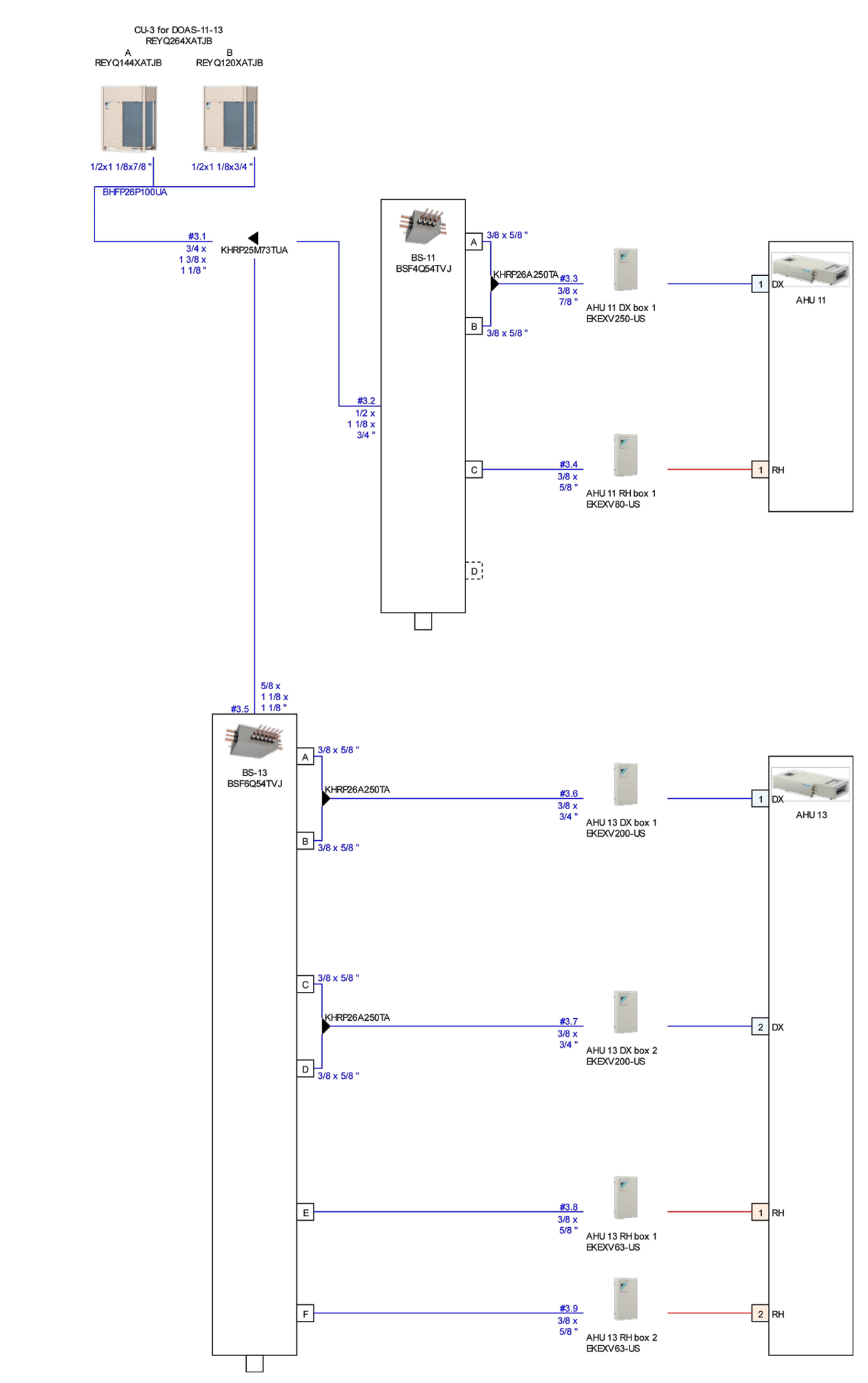


Piping

Warning: The pipe diameter values are purely indicative. Depending on the required pipe lengths, a different pipe diameter might be required.

DAIKIN

Piping CU-3 for DOAS-11-13

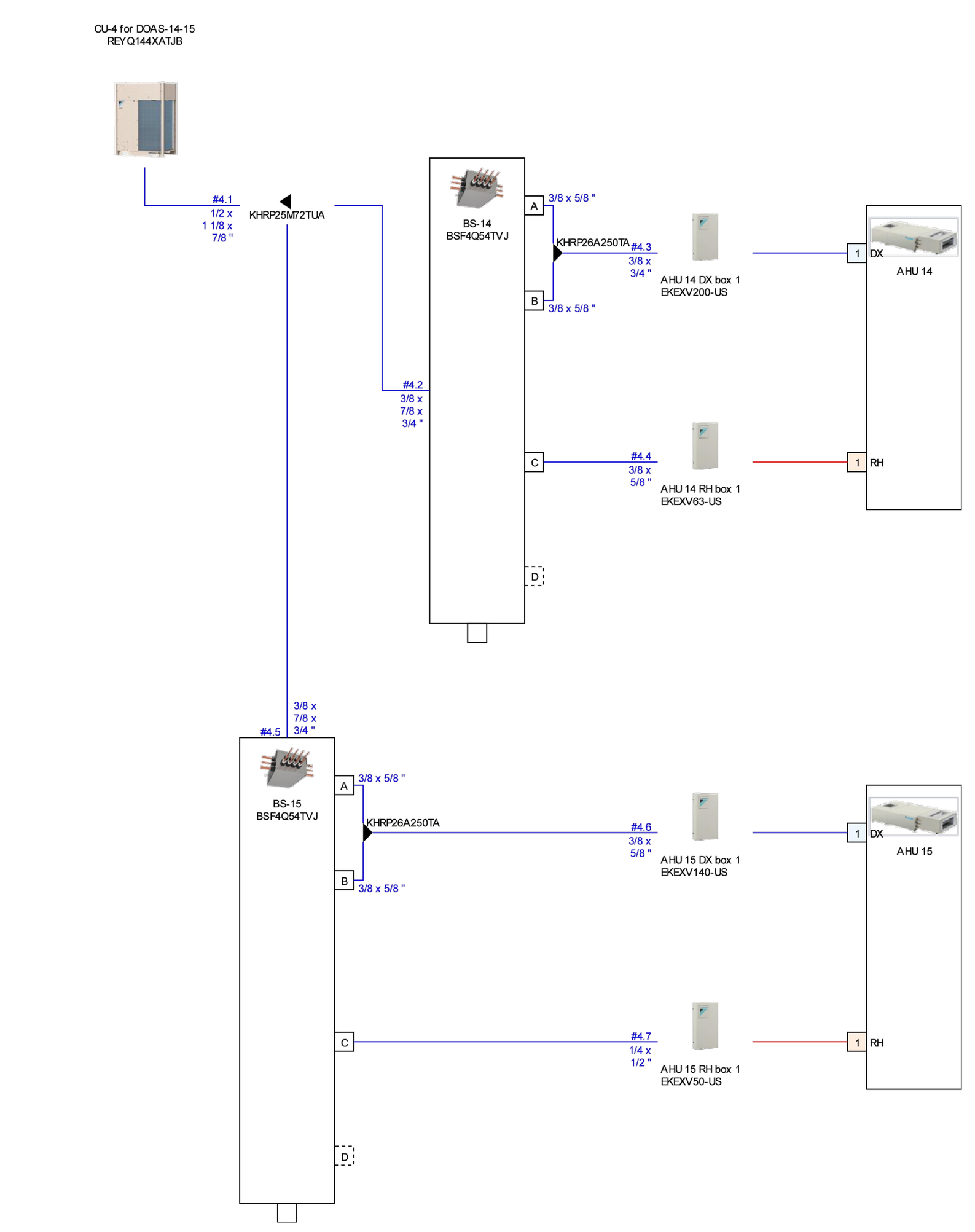


Piping

Warning: The pipe diameter values are purely indicative. Depending on the required pipe lengths, a different pipe diameter might be required.

DAIKIN

Piping CU-4 for DOAS-14-15



Piping

Warning: The pipe diameter values are purely indicative. Depending on the required pipe lengths, a different pipe diameter might be required.

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VRF PIPING SCHEMATICS

	REV.#	DATE	COMMENTS
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-
REVISION:	-	-	-

REVIEWS	
INITIALS	
	BDA DSGN. REV.
	BDA TECH REV.

RGAS

PROJECT NO.: 23077
DRAWN: DRH
DATE: 07/08/2024

M201