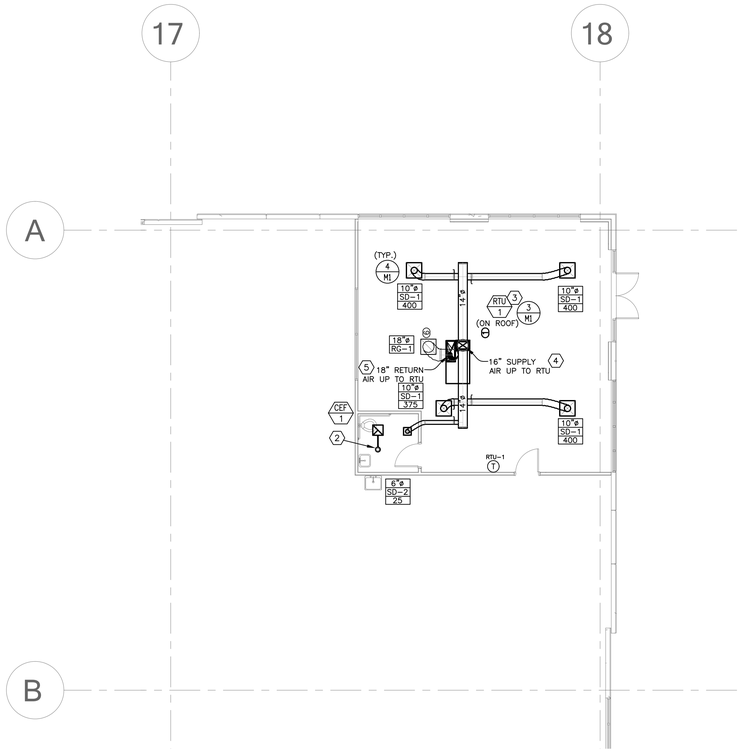
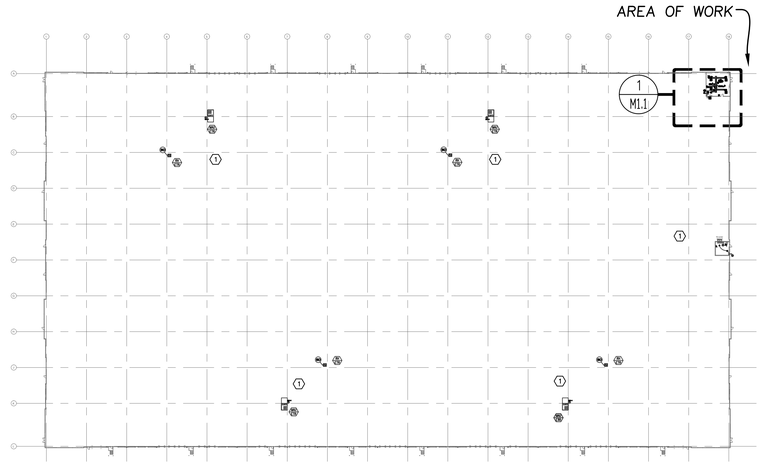


1 Detail Mechanical Floor Plan
scale: 1/8" = 1'-0"

north



2 Overall Mechanical Floor Plan
No Scale

north

MECHANICAL GENERAL NOTES:

1. ALL MECHANICAL DUCTWORK SHALL BE GALVANIZED STEEL, CONSTRUCTED ACCORDING TO SMACNA STANDARDS.
2. ALL CONCEALED SUPPLY AIR AND RETURN AIR DUCTWORK SHALL BE EXTERNALLY INSULATED WITH 2" THICK, 3/4 LB DENSITY FIBERGLASS DUCT WRAP.
   ALL EXPOSED (WAREHOUSE) SUPPLY AIR DUCTWORK AND RETURN AIR DUCTWORK SHALL BE INTERNALLY INSULATED WITH 1" THICK, 2 LB DENSITY FIBERGLASS DUCT LINER.
3. HVAC CONTRACTOR WILL CHECK EACH SYSTEM FOR PROPER OPERATION.
4. HVAC CONTRACTOR SHALL HAVE AN INDEPENDENT CONTRACTOR TO TEST & BALANCE HVAC SYSTEM TO THE PROPER AIRFLOWS AND STATIC PRESSURES. A COPY OF THE BALANCING REPORT WILL BE SUBMITTED TO THE OWNER UPON COMPLETION. AIR TO (+/-) 10% , WATER TO (+/-) 5%.
5. FLEXIBLE RUN-OUTS TO BE U.L. LISTED AND HAVE A MAXIMUM LENGTH OF 8'-0". DUCT RUNS TO BE SAME SIZE AS DIFFUSER NECK SIZE SHOWN.
6. AIR HANDLING UNITS SUPPLYING 2,000 CFM OR MORE SHALL HAVE A SMOKE DETECTOR INSTALLED IN THE RETURN AIR DUCTWORK. THE SMOKE DETECTOR SHALL BE INTERLOCKED TO SHUT DOWN ALL SUPPLY FANS UPON ALARM.
7. MAINTAIN MINIMUM 10'-0" FROM ALL PLUMBING VENTS AND EXHAUST VENTS TO ALL OUTSIDE AIR INTAKES.
8. DO NOT INSTALL PIPING OR DUCTWORK OVER ELECTRICAL PANELS.

MECHANICAL PLAN NOTES:

(1) EXISTING SHELL BUILDING EQUIPMENT TO REMAIN AS CURRENTLY INSTALLED.

(2) PROVIDE 6" VENT UP THRU ROOF. TERMINATE WITH WEATHER CAP.

(3) COORDINATE LOCATION OF RTU WITH FIRE SUPPRESSION PIPING AND STRUCTURE. PROVIDE INTERNALLY LINED SUPPLY AIR RETURN AIR DUCT DROP THRU ROOF. TRANSITION SUPPLY AIR AND RETURN AIR DUCTWORK BELOW ROOF DECK TO SPIRAL DUCTWORK AS SHOWN AND PROVIDE WITH EXTERNAL DUCT INSULATION PER GENERAL NOTES.

(4) TRANSITION SUPPLY AIR FROM CURB OPENING TO 16"ø BELOW ROOF.

(5) TRANSITION RETURN AIR FROM CURB OPENING TO 18"ø BELOW ROOF.

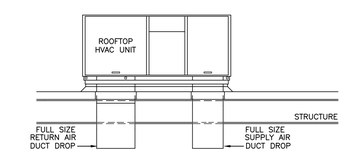
LEGEND

SD-1 SUPPLY AIR DIFFUSER – PRICE SPD 24"x24" WITH INSULATED BACKING

RG-1 RETURN AIR GRILLE – PRICE PDDR 24"x24" WITH INSULATED BACKING

SD-2 SUPPLY AIR DIFFUSER – PRICE SPD 12"x12" WITH INSULATED BACKING

(T) RTU-1 THERMOSTAT WITH ZONE/UNIT DESIGNATION. MOUNT AT 48" A.F.F.

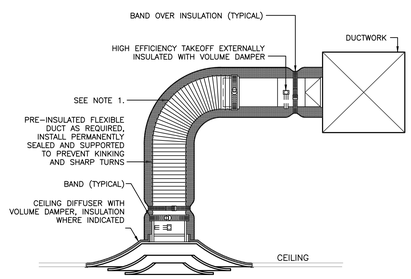


NOTES
1. PROVIDE OPENING THROUGH ROOF AND ROOF DECK INSULATION NO LARGER THAN REQUIRED TO ALLOW DUCTS TO PASS THROUGH. REFER TO PLANS FOR DUCT SIZES OR PROVIDE FULL SIZE DUCT DROPS IF NOT NOTED.

3 ROOFTOP UNIT DETAIL
NO SCALE

EXHAUST FAN (CEF-1) (TYP.)
1. CONTROL:
THE EXHAUST FAN SHALL BE INTERLOCKED WITH THE RESTROOM LIGHT SWITCH, AS INDICATED ON THE EXHAUST FAN EQUIPMENT SCHEDULE.
2. ROOM LIGHT SWITCH:
THE EXHAUST FAN SHALL BE INTERLOCKED WITH THE ROOM LIGHT CONTROL OR WALL SWITCH AND SHALL BE ENERGIZED ANY TIME THE LIGHTS ARE ON IN THE ROOM. (WIRING BY OTHERS)

ROOFTOP UNIT - CONSTANT VOLUME WITH SINGLE SETPOINT CONTROL (ALL RTU'S)
1. DESCRIPTION:
EACH SINGLE-ZONE PACKAGED ROOFTOP UNIT (RTU) WILL BE PROVIDED AS IDENTIFIED ON THE EQUIPMENT SCHEDULES, WITH DIRECT EXPANSION COOLING COIL, GAS HEAT, SINGLE-SPEED SUPPLY FAN, 2" FILTERS, ECONOMIZER, BAROMETRIC RELIEF. ECONOMIZERS SHALL BE 0-100% FULLY MODULATING WITH ENTHALPY CONTROL.
DAMPERS.
2. CONTROL:
EACH UNIT SHALL BE FURNISHED WITH A THERMOSTAT TO BE INSTALLED IN THE SPACE. THE OCCUPANCY MODE SHALL BE DETERMINED THROUGH A USER-ADJUSTABLE PROGRAMMABLE SCHEDULE WITH OR WITHOUT USER OVERRIDE BUTTON ON THE THERMOSTAT.
3. SUPPLY AIR FAN:
THE FAN MODE SHALL SHALL BE SELECTABLE FOR AUTO OR ON. WHEN AUTO IS SELECTED DURING UN-OCCUPIED HOURS, THE FAN SHALL CYCLE ON AND OFF WITH HEATING OR COOLING. WHEN ON IS SELECTED DURING OCCUPIED HOURS, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY.
4. MECHANICAL COOLING:
EACH RTU SHALL CYCLE COOLING COMPRESSOR STAGES IN RESPONSE TO COOLING DEMAND FROM THE THERMOSTAT. THE SUPPLY FAN WILL BE ENERGIZED (AUTO MODE) AND STAGE COOLING CAPACITY TO MAINTAIN SPACE TEMPERATURE SETPOINT BASED ON FACTORY CONTROL SEQUENCES. THE SPACE COOLING TEMPERATURE SETPOINT SHALL BE ADJUSTABLE THRU THE PROGRAMMABLE THERMOSTAT.
5. GAS HEATING:
THE RTU SHALL CYCLE GAS HEATING STAGES IN RESPONSE TO HEATING DEMAND FROM THE THERMOSTAT. ON A CALL FOR HEATING FROM THE ZONE SENSOR, THE SUPPLY FAN WILL BE ENERGIZED AND THE BURNER SHALL BE ENERGIZED TO MAINTAIN SPACE TEMPERATURE. THE SPACE HEATING TEMPERATURE SETPOINT SHALL BE ADJUSTABLE THRU THE PROGRAMMABLE THERMOSTAT.
6. ECONOMIZER:
THE FACTORY RTU CONTROLLER WILL INDEX THE UNIT INTO ECONOMIZER MODE IF THE OUTDOOR AIR DRY BULB/WET BULB IS BELOW THE SETPOINT. WHEN ECONOMIZER MODE IS ENABLED, THE RETURN AND OUTSIDE AIR DAMPERS WILL MODULATE BETWEEN MINIMUM POSITION AND FULL OPEN AS NECESSARY TO MAINTAIN DISCHARGE AIR TEMPERATURE. THE RTU START-UP TECHNICIAN SHALL SET THE
UNIT ECONOMIZER.
7. UNOCCUPIED MODE.
DURING UNOCCUPIED MODE, THE UNIT SHALL CONTROL TO THE UNOCCUPIED MODE SETBACK TEMPERATURE. IF THE UNOCCUPIED SETPOINT IS EXCEEDED, THE RTU SHALL HEAT OR COOL UNTIL THE ZONE TEMPERATURE IS WITHIN THE UNOCCUPIED SETPOINTS, PLUS OR MINUS AN OFFSET OF 6°F (ADJ.).
8. BAROMETRIC RELIEF DAMPER:
THE BAROMETRIC RELIEF DAMPER CONSISTS OF A GRAVITY DAMPER THAT WILL OPEN TO RELIEVE EXCESS AIR AS BUILDING PRESSURE INCREASES.
9. OUTSIDE AIR DAMPER:
WHEN UNIT IS NOT IN ECONOMIZER MODE AND THE SUPPLY FAN IS IN OPERATION, THE OUTDOOR AIR DAMPER SHALL MODULATE TO THE MINIMUM PER THE UNIT SCHEDULE DURING THE OCCUPIED MODE. THE OUTDOOR AIR DAMPER SHALL BE CLOSED WHEN THE SUPPLY FAN IS OFF.



NOTES:
1. EXTEND HARD METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 8'-0".
2. DUCTWORK BRANCH RUNOUTS TO BE SAME SIZE AS DIFFUSER NECK UNLESS NOTED OTHERWISE.

4 CEILING DIFFUSER DETAIL
NO SCALE

OUTSIDE AIR CALCULATIONS

UNIT SERVED	OCCUPANCY CLASSIFICATION	AREA (SQ. FT.)	PEOPLE PER 1,000	FIXED SEATING	QUANTITY OF	REQUIRED OUTSIDE AIR	REQUIRED OUTSIDE AIR	TOTAL REQUIRED	NOTES
RTU-1	OFFICE	1,025	7	---	7	5	0.06	97	A
	RESTROOMS	70	---	---	---	---	0.06	4	A
							REQUIRED VENTILATION	102 CFM	C

NOTES:
A. VENTILATION RATES ARE TAKEN FROM ASHRAE 62.1-2010 - VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY.
B. VENTILATION IS BASED ON TOTAL QUANTITY OF PEOPLE TAKEN FROM NUMBER OF ACTUAL SEATING SHOWN ON ARCHITECTURAL FLOOR PLAN.
C. REFER TO RTU SCHEDULE FOR ACTUAL VENTILATION AIRFLOWS.

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER	QUANTITY	MODEL	LOCATION/ MOUNTING	SERVICE	FAN				ELECTRICAL	WEIGHT	NOTES
						CFM	ESP (IN)	RPM	HP/WATTS	(V/PH)	(LBS)	
CEF-1	GREENHECK	1	SPA-A110	CEILING	RESTROOM EXHAUST	75	0.25	950	25	120/1	20	E, F

NOTES:

A. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
B. PROVIDE WITH 14" INSULATED ROOF CURB, BACKDRAFT DAMPER AND BIRD SCREEN.
C. FAN TO OPERATE CONTINUOUSLY.
D. FURNISH WITH WALL MOUNTED LINE VOLTAGE THERMOSTAT. THERMOSTAT TO BE INSTALLED BY ELECTRICAL CONTRACTOR AND INTERLOCKED WITH ASSOCIATED LOUVER.
E. INTERLOCK EXHAUST FAN WITH LIGHTSWITCH (BY OTHERS)
F. PROVIDE WITH UNIT MOUNTED SPEED CONTROLLER, HANGING BRACKET, BACKDRAFT DAMPER, HARD CEILING MOUNTING KIT AND WHITE GRILLE.
G. FAN TO BE EXPLOSION PROOF.

PACKAGED ROOFTOP UNIT (DX COOLING/GAS HEAT)

MARK	MANUFACTURER	MODEL	NOMINAL TONNAGE	QUANTITY	SERVICE	UNIT TYPE	SUPPLY FAN				COOLING COIL			GAS HEATING			MINIMUM VENTILATION (CFM)	DESIGN/MAX VENTILATION (CFM)	ELECTRICAL				WEIGHT (LBS)	ARI SEER	NOTES
							CFM	ESP (IN)	HP	VFD (Y/N)	SA (DB/WB)	TH (MBH)	SH (MBH)	INPUT (MBH)	OUTPUT (MBH)	STAGES			MCA	MOCP	V/PH	DISC. TYPE			
RTU-1	CARRIER	48FCEA05A2A6	4	1	MAIN OFFICE	CV	1,600	0.50	1.1	N	60/58	48	34	110	88	2	220	220	12	15	460/3	NF	800	14.0	A - G

NOTES:
A. EQUIPMENT SIZED FOR 95 DEGREE F AMBIENT TEMPERATURE.
B. PROVIDE WITH 2", 30% EFFICIENT PLEATED THROWAWAY AIR FILTERS.
C. PROVIDE WITH MANUFACTURERS STANDARD 14" INSULATED ADJUSTABLE ROOF CURB.
D. PROVIDE WITH FACTORY MOUNTED NON-FUSED DISCONNECT SWITCH, PLEATED FILTERS AND HAIL GUARDS.
E. PROVIDE WITH FACTORY MOUNTED ENTHALPY ECONOMIZER WITH BAROMETRIC RELIEF DAMPER.
F. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT.
G. RETURN AIR SMOKE DETECTOR (IF REQUIRED) FURNISHED AND INSTALLED BY OTHERS.

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913.492.0400
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RAYMORE COMMERCE CENTER BUILDING #2

1200 SOUTH DEAN AVENUE
RAYMORE, CASS COUNTY, MISSOURI
64083

REV	DATE	DESCRIPTION

PROJECT NUMBER
15044.00

DATE
3/29/2022
PERMIT SUBMITTAL

DESIGNED:	MDK
DRAWN:	MDK
REVIEWED:	JDG

SHEET TITLE
Mechanical Floor Plan

SHEET NUMBER
M1.10

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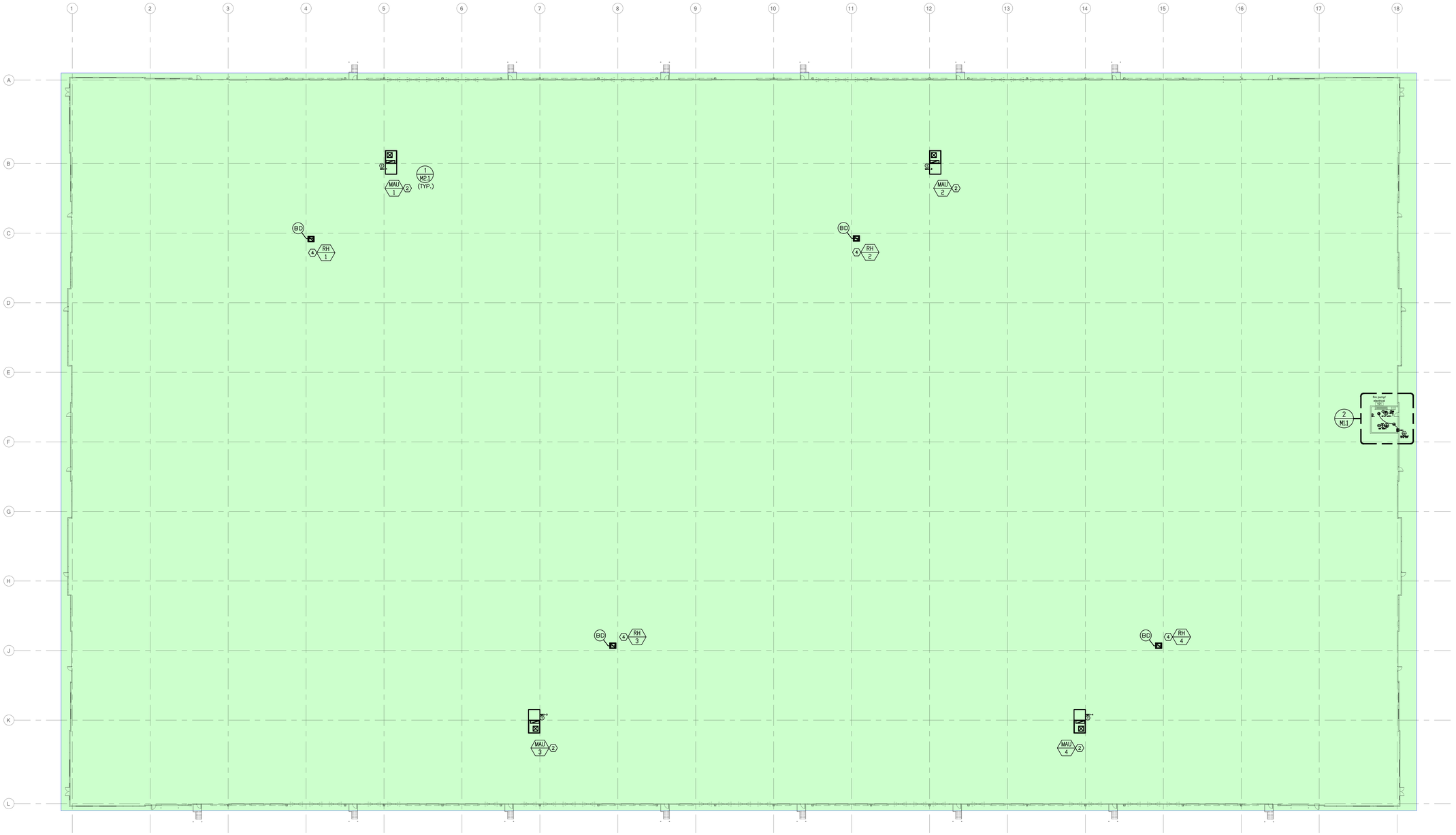
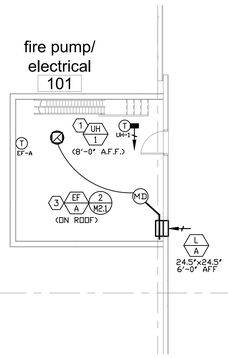
MetroAir
RAYMORE #2 – LEASING OFFICE
RAYMORE, MO

SCALE: AS NOTED	DATE: 8/17/22	DRAWN BY: M.D.K.
APPROVED BY: J.D.G.	DWG # M1	
PERMIT		OF 1

Plotted: 2/14/2022 10:20:40 AM BIM 360://15122/15122-NewCentury-BldgB1-Arch.rvt



1 Overall Mechanical Floor Plan
scale: 1" = 30'-0"
north



2 Pump Room Mechanical Plan
scale: 1/8" = 1'-0"
north

MECHANICAL GENERAL NOTES:

1. ALL MECHANICAL DUCTWORK SHALL BE GALVANIZED STEEL, CONSTRUCTED ACCORDING TO SMACNA STANDARDS.
2. ALL RECTANGULAR SUPPLY, RETURN AND EXHAUST AIR DUCTWORK SHALL BE UNINSULATED. DUCTWORK DIMENSIONS SHOWN ARE ACTUAL SIZES.
3. HVAC CONTRACTOR WILL CHECK EACH SYSTEM FOR PROPER OPERATION UPON START-UP.
4. MAINTAIN MINIMUM 10'-0" FROM ALL PLUMBING VENTS AND EXHAUST VENTS TO ALL OUTSIDE AIR INTAKES.

MECHANICAL PLAN NOTES:

1. ELECTRIC UNIT HEATER FURNISHED BY MECHANICAL, INSTALLED BY ELECTRICAL CONTRACTOR.
2. GAS-FIRED MAKE-UP AIR UNIT PER SCHEDULE. ELECTRICIAN TO INSTALL THERMOSTAT/CONTROLLER ON NEAREST COLUMN AT 10'-0" A.F.F. (OR PER TENANT) SUPPLY AIR 43"X43.2", RETURN AIR 75.75"X21.25"
3. EXTEND 16X16 EXHAUST DUCT DOWN BELOW STRUCTURE WITH MESH OPENING. EXHAUST FAN TO BE CONTROLLED BY LINE VOLTAGE THERMOSTAT.
4. ROOF MOUNTED RELIEF AIR HOOD WITH BACKDRAFT DAMPER PER LEGEND. PROVIDE 36"X36" DUCTWORK DROP THRU ROOF WITH DAMPER INSTALLED AT BOTTOM.

LEGEND

UH 1 — DAYTON UNIT HEATER 15 KW, 460/3 PHASE – PROVIDE WITH UNIT MOUNTED THERMOSTAT. MOUNT BOTTOM OF HEATER 8'-0" A.F.F.

L A — GREENHECK INTAKE LOUVER MODEL ESD635, 24"X24" WITH BIRDSCREEN AND MOTORIZED 120V DAMPER. MOUNT BOTTOM OF LOUVER 6'-0" A.F.F. LOUVER TO BE INTERLOCKED WITH ROOF MOUNTED EXHAUST FAN EF-A.

EF A — GREENHECK ROOF MOUNTED EXHAUST FAN MODEL G-123, 1/3 HP @ 120/1 PHASE. PROVIDE WITH BACKDRAFT DAMPER, 14" ROOF CURB AND LINE VOLTAGE THERMOSTAT. FAN SIZED FOR 1,500 CFM @ 0.25 ESP.

RH 1 RH 4 THRU — GREENHECK ROOF MOUNTED RELIEF HOOD FGR-36X36. PROVIDE WITH BACKDRAFT DAMPER & 14" ROOF CURB APPROXIMATELY 200 LBS WITH CURB. PROVIDE WITH 1/2" ARMAFLEX OR MANUFACTURER'S STANDARD INSULATION.

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MetroAir

RAYMORE COMMERCE CENTER BLDG. #2
RAYMORE, MO

SCALE: AS NOTED	DATE: 3/23/22	DRAWN BY: M.D.K.
APPROVED BY: J.D.G.	DWG # M1	OF 2
PROGRESS		

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STATE OF MISSOURI
MATTHEW DAVID KEYSO
NUMBER
PE 2016027003
03-23-2022
PROFESSIONAL ENGINEER

RAYMORE COMMERCE CENTER BUILDING #2

1200 SOUTH DEAN AVENUE
RAYMORE, CASS COUNTY, MISSOURI
64083

REV	DATE	DESCRIPTION

PROJECT NUMBER
15044.00

DATE
3/4/2022
PERMIT SUBMITTAL

DESIGNED:	MDK
DRAWN:	MDK
REVIEWED:	JDG

SHEET TITLE
Mechanical Floor Plan

SHEET NUMBER
M1.10

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SECTION 1500 - MECHANICAL GENERAL PROVISIONS

1.1 DESCRIPTION:

A. Division 15 shall be governed by all applicable provisions of the Contract Documents. The Mechanical Contractor shall furnish, install and connect all materials, equipment, apparatus, mechanical systems and incidentals required for complete and working installation. The Contractor shall supply all necessary labor, equipment, tools, insurance, taxes services; and The Contractor shall assume full responsibility for all obligations associated with completion of mechanical work as provided by the Contract Documents.

1.2 STANDARDS, REGULATIONS AND CODES:

A. The work shall comply with the edition of the applicable standards, regulations and codes currently in force of all State and location authorities having jurisdiction. Where quantities, sizes, or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications and/or drawings shall govern. In the absence of other applicable local codes, acceptable to the Architect/Engineer, the Uniform Plumbing and Mechanical Codes shall apply to this work.

B. The Contractor shall comply with rules and regulations of public utilities and municipal departments affected by connections of services. The Contractor shall pay all fees associated there with.

C. The Mechanical Contractor shall be licensed to perform mechanical work in the municipality in which the project is located.

D. All products and types of construction shall meet or exceed the latest edition of applicable standards of manufacturer, testing, performance and installation.

1.3 LOCAL CONDITIONS:

A. The Contractor shall carefully examine the local conditions and existing installations and shall thoroughly familiarize himself with all existing conditions which may affect his work. The Contractor shall locate all existing utilities and protect them during the execution of the work.

B. The Contractor shall examine the Architectural, Mechanical and Electrical Drawings and Specifications to familiarize himself with the type of construction, materials, and equipment to be used for all work and how it will affect the installation of his contract.

1.4 CUTTING AND PATCHING:

A. All necessary cutting, drilling and patching shall be provided by this Contractor. Structural members shall not be disturbed without prior approval of the Architect. All areas disturbed by work performed under this Contract shall be neatly repaired and refinished to the condition of adjoining surfaces in a manner suitable to the Architect.

1.5 OPERATION DURING CONSTRUCTION:

A. Mechanical equipment shall not be used during construction unless instructed by the General Contractor. The mechanical contractor is responsible for the installation and operation, service and maintenance of all new equipment during construction and prior to acceptance by the Owner of the completed project at additional costs to the GC and/or owner.

B. Warranty periods shall not commence until final acceptance by the Owner/Substantial Completion.

1.6 SAFETY REGULATIONS:

A. All Mechanical work shall be performed in compliance with all applicable governing safety regulations, including OSHA regulations. Provide safety lights, guards and signs required.

1.7 HOUSEKEEPING:

A. The Contractor shall be responsible for keeping stocks of material and equipment stored on the premises in a neat and orderly manner.

B. The Contractor shall clean and maintain his portion of the work as specified in the General Conditions.

C. The Contractor shall remove from the premises all waste material present as a result of his work.

1.8 GRAPHIC REPRESENTATION AND JOB CONDITIONS:

A. The drawings shall serve as working drawings for the general layout of the various items of equipment; are diagrammatic unless specifically dimensioned; and do not necessarily indicate every required item.

B. The Architectural drawings take precedence over the mechanical drawings in the representation of the general construction work.

C. Arrange work in a neat, well organized manner. Coordinate work with other trades involved.

1.9 GUARANTEES:

A. The Contractor shall guarantee all work performed and materials and equipment furnished under this contract, against defects in materials and workmanship for a period of one year from the Date of the Owner's Final Acceptance of the Work, or as noted in each section.

1.10 MOTORS AND CONTROLS:

A. All motors furnished under this specification shall be recognized manufacturer, of adequate capacity for the loads involved. All motors shall conform to the standards of manufacturer and performance of the National Electrical Manufacturers Association as shown in their latest publications.

1.11 PIPING IN ELECTRICAL ROOMS:

A. No piping except specifically noted otherwise will be permitted in electrical rooms. In rooms, where piping is indicated over electrical equipment, a suitable galvanized sheetmetal pan or gutter piped to the drainage system shall be provided.

END OF SECTION

SECTION 15100 - HEATING, VENTILATION AND AIR CONDITIONING

1.1 SCOPE:

A. The work included under this contract consists of providing all labor, materials, tools, transportation, services, etc., necessary to complete the installation of the heating, ventilating, and air conditioning systems and other items herein listed and as described in these specifications, as illustrated in the accompanying drawings or as directed by the Architect.

1.2 SHEET METAL:

A. Provide ductwork shown with necessary dampers. Construction of new galvanized prime grade steel sheets per ASHRAE and SMACNA Standards. Provide round or rectangular duct as indicated. Fabricate for the pressure and SMACNA seal class required.

B. Flexible duct shall be Wiremold WCK or acceptable equal maximum length shall be 8' - 0" or as noted/detailed.

C. All duct sizes shown are actual size and include liner, where required.

1.3 GRILLES, REGISTERS, INLETS AND OUTLETS:

A. All supply grilles, registers and diffusers shall be as scheduled on the drawings and shall be ADC rated.

1.4 DUCTWORK ACCESSORIES:

A. Provide single thickness turning vanes in all supply duct turns.

B. Provide duct access doors for all internal mounted equipment.

C. Provide 45° take-off fittings with volume damper for all round takeoffs to diffusers.

D. Provide dampers where shown and required. Balance and control dampers shall be opposed blade except air mixing dampers shall be parallel blade.

1.5 AIR CONDITIONING UNITS:

A. Air conditioning units shall be as scheduled. Units shall be standard catalogued products with the appropriate approval or certification by AGA, ARI and UL. Efficiencies shall conform to ASHRAE 90.1 standards.

1.6 FANS:

A. Fans with accessories shall be as scheduled and shall be AMCA rated.

1.7 VIBRATION ISOLATION:

A. Duct flexible connection shall be non-combustible, 16 ounce canvas. Piping flexible connection shall be Flexonics 401H or acceptable equal.

1.8 MISCELLANEOUS MECHANICAL EQUIPMENT:

A. Provide constant, variable volume and/or fan powered boxes and accessories as scheduled. Acceptable manufacturers are E.H. Price or acceptable equal.

1.9 CLEANING:

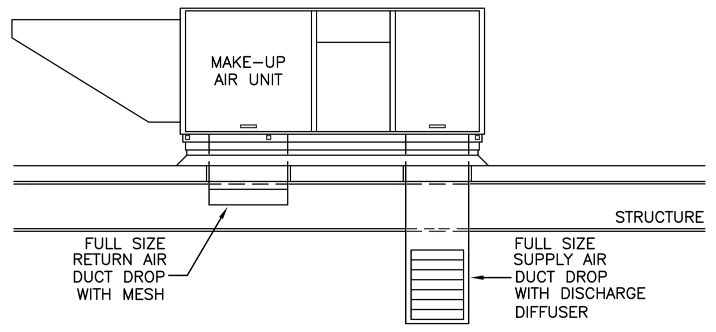
A. Clean system by operating at least three hours prior to final acceptance with temporary filters. Remove all filters and replace with clean.

B. Use precleaned precharged refrigerant tube. Clean per manufacturers recommendations.

1.10 TESTING AND ADJUSTING:

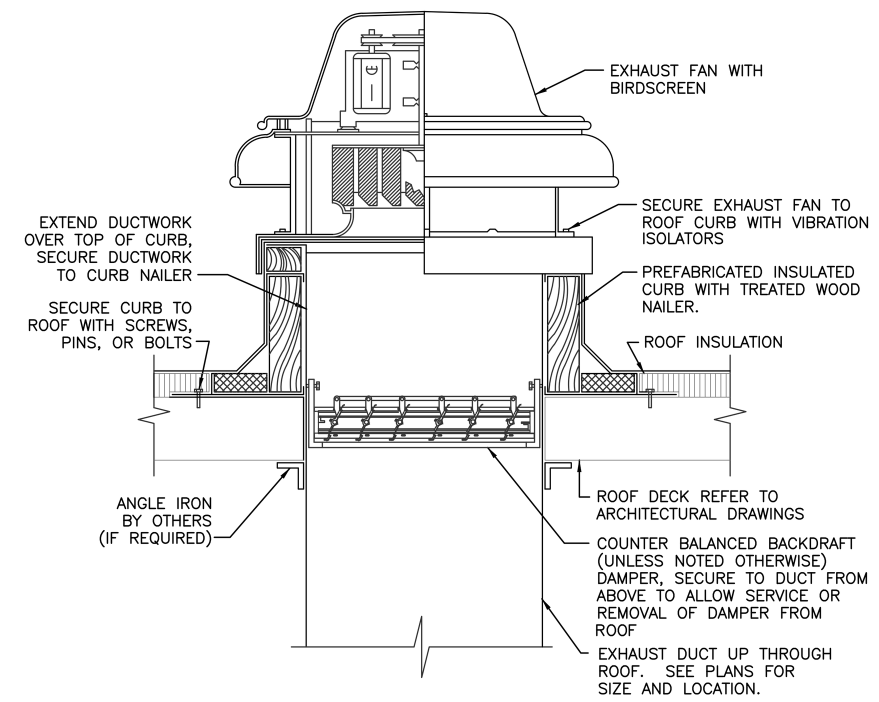
A. Contractor shall operate and test the air conditioning and ventilation systems and instruct the Owner in its operation. Perform a series of general capacity and operating tests. The tests shall demonstrate the specified capacities of various pieces of equipment.

END OF SECTION



NOTES
1. PROVIDE OPENING THROUGH ROOF AND ROOF DECK INSULATION NO LARGER THAN REQUIRED TO ALLOW DUCTS TO PASS THROUGH. DROPS TO BE FULL SIZE PER MANUFACTURER'S SUBMITTALS.

1 SHELL MAKE-UP AIR UNIT DETAIL
NO SCALE



2 DOWNBLAST EXHAUST FAN DETAIL
NO SCALE

ROOFTOP MAKE-UP AIR HEATER SCHEDULE (NATURAL GAS HEAT)

MARK	MANUFACTURER	AREA SERVED	QUANTITY	MODEL	SUPPLY FAN				GAS HEAT EXCHANGER			ELECTRICAL			WEIGHT (LBS) W/ CURB	FIXED OUTSIDE AIR (%)	MIN. EFF	NOTES
					CFM	ESP (IN)	RPM	HP	INPUT (MBH)	OUTPUT (MBH)	TEMP RISE (°F)	MCA	MOCP	V/PH				
MAU-1	RUPP	WAREHOUSE	1	RAM-M 36	37,000	0.15	368	30.0	2,344	2,156	55 °F	45.0	70	460/3	4,500	23	90%	A - J
MAU-2	RUPP	WAREHOUSE	1	RAM-M 36	37,000	0.15	368	30.0	2,344	2,156	55 °F	45.0	70	460/3	4,500	23	90%	A - J
MAU-3	RUPP	WAREHOUSE	1	RAM-M 36	37,000	0.15	368	30.0	2,344	2,156	55 °F	45.0	70	460/3	4,500	23	90%	A - J
MAU-4	RUPP	WAREHOUSE	1	RAM-M 36	37,000	0.15	368	30.0	2,344	2,156	55 °F	45.0	70	460/3	4,500	23	90%	A - J

NOTES:

A. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
B. EQUIPMENT SIZED FOR (+)5 DEGREE F AMBIENT TEMPERATURE AND 60 DEGREE F INDOOR TEMPERATURE.
C. PROVIDE WITH MANUFACTURER'S STANDARD OUTSIDE AIR FILTERS.
D. PROVIDE MANUFACTURER'S STANDARD ROOF CURB WITH MINIMUM HEIGHT OF 14".
E. PROVIDE WITH REMOTE PANEL/TEMPERATURE SENSOR FOR UNIT CONTROL. INSTALL CONTROLLER ON NEAREST COLUMN OR PER PLANS AS NOTED.
F. PROVIDE WITH 3-WAY DISCHARGE AIR DIFFUSER.
G. PROVIDE WITH CURB DUCT HANGER AND FREEZESTAT.
H. PROVIDE WITH MANUFACTURER'S STANDARD MOTORIZED DISCHARGE DAMPER.
J. PROVIDE FACTORY MOUNTED GFCI OUTLET, POWERED BY OTHERS.

OUTSIDE AIR CALCULATIONS

UNIT SERVED	OCCUPANCY CLASSIFICATION	AREA (SQ. FT.)	PEOPLE PER 1,000 SQ. FT.	FIXED SEATING QUANTITY	QUANTITY OF PEOPLE	REQUIRED OUTSIDE AIR PER PERSON	REQUIRED OUTSIDE AIR PER SQ. FT.	TOTAL REQUIRED (CFM)	NOTES
MAU-1	WAREHOUSE	124,000	---	---	---	---	0.06	7,440	A
							REQUIRED VENTILATION	TOTAL CFM	B
MAU-2	WAREHOUSE	124,000	---	---	---	---	0.06	7,440	A
							REQUIRED VENTILATION	(CFM) CFM	B
MAU-3	WAREHOUSE	124,000	---	---	---	---	0.06	7,440	A
							REQUIRED VENTILATION	REQUIRED CFM	B
MAU-4	WAREHOUSE	124,000	---	---	---	---	0.06	7,440	A
							REQUIRED VENTILATION	7,440 CFM	B

NOTES:
A. VALUES TAKEN FROM ASHRAE 62.1-2010 - VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY.
B. VENTILATION FOR EACH MAU TO BE APPROXIMATELY 20-25% OF DESIGN SUPPLY AIR. REFER TO EQUIPMENT SCHEDULE FOR ACTUAL AMOUNT.

MAKE-UP AIR UNIT - 80/20 OUTDOOR AIR HEATING AND VENTILATION (MAU-1 THRU MAU-4)
GENERAL:
THE BUILDING SHALL BE HEATED TO MAINTAIN 60° F AT +9.2° F AMBIENT TEMPERATURE BY MEANS OF ROOF MOUNTED MAKEUP AIR UNITS. THE UNITS INCLUDE MODULATING RETURN AND OUTDOOR AIR DAMPERS WHICH OPERATE BASED ON BUILDING PRESSURE. THERMOSTAT/UNIT CONTROLLER SHALL BE MOUNTED 10'-0" A.F.F. ON THE BUILDING COLUMN NEAREST TO EACH UNIT (OR AS SHOWN).

MAU OCCUPIED MODE:
WHEN THE TOGGLE SWITCH IS IN "OCCUPIED" POSITION, THE MAKEUP AIR UNIT WILL BE COMMANDED ON AND SUPPLY FAN SHALL BE ON. THE MAU WILL MODULATE HEATING AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT. .

MAU SETBACK MODE/UNOCCUPIED:
WHEN THE TOGGLE SWITCH IS IN THE SETBACK OR UNOCCUPIED POSITION AND SPACE TEMPERATURE DROPS BELOW SPACE TEMPERATURE SETPOINT (55° F), THE MAKEUP AIR UNIT WILL BE COMMANDED ON. ONCE THE SPACE TEMPERATURE SETPOINT IS SATISFIED, THE MAKEUP AIR UNIT AND SUPPLY AIR FAN WILL BE COMMANDED OFF.

ELECTRIC FIRE PUMP ROOM HEAT AND VENTILATION (EF-A, L-A & UH-1)
GENERAL:
SYSTEM SHALL CONSIST OF AN EXHAUST FAN WITH COOLING-ONLY LINE VOLTAGE THERMOSTAT, LOUVER DAMPER WITH 120V FACTORY-PROVIDED ACTUATOR, AND ELECTRIC UNIT HEATER WITH UNIT-MOUNTED THERMOSTAT. THE LOUVER SHALL BE SPRING-CLOSED/POWER-OPEN TO FAIL CLOSED UPON A LOSS OF POWER.

L-A LOUVER AND MOTORIZED DAMPER:
THE 120V MOTORIZED DAMPER SHALL BE INTERLOCKED TO OPEN THE MOTORIZED DAMPER WHEN THE EXHAUST FAN IS ENERGIZED AND CLOSE THE DAMPER WHEN THE EXHAUST FAN IS DE-ENERGIZED. INTERLOCK BY THE E.C.

EF-A EXHAUST FAN:
THE EXHAUST FAN SHALL BE CONTROLLED BY A SPACE MOUNTED COOL-ONLY LINE VOLTAGE THERMOSTAT. THE THERMOSTAT WILL ENERGIZE AND DE-ENERGIZE THE EXHAUST FAN TO MAINTAIN A TEMPERATURE OF 90°F (ADJ) IN THE ROOM. THE EXHAUST FAN SHALL BE INTERLOCKED TO OPEN THE LOUVER/DAMPER WHEN THE EXHAUST FAN IS ENERGIZED AND CLOSE THE DAMPER WHEN THE EXHAUST FAN IS DE-ENERGIZED.

UH-1 HEATING:
THE ELECTRIC UNIT HEATER SHALL BE CONTROLLED BY A HEAT-ONLY UNIT-MOUNTED THERMOSTAT. THE THERMOSTAT WILL ENERGIZE AND DE-ENERGIZE THE ELECTRIC UNIT HEATER TO MAINTAIN A MINIMUM TEMPERATURE OF 55°F (ADJ) IN THE ROOM.

Plotted 2/14/2022 10:20:40 AM BIM 360://15122/15122-NewCentury-BldgB1-Arch.rvt

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MetroAir

RAYMORE COMMERCE CENTER BLDG. #2		
RAYMORE, MO		
SCALE: AS NOTED	DATE: 3/23/22	DRAWN BY: M.D.K.
APPROVED BY: J.D.G.	DWG # M1 OF 2	
PROGRESS		

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gbateam.com

STATE OF MISSOURI
MATTHEW DAVID KELSO
NUMBER PE-2016027003
PROFESSIONAL ENGINEER
03-23-2022

RAYMORE COMMERCE CENTER BUILDING #2

1200 SOUTH DEAN AVENUE
RAYMORE, CASS COUNTY, MISSOURI
64083

REV	DATE	DESCRIPTION

PROJECT NUMBER
15044.00

DATE
3/4/2022
PERMIT SUBMITTAL

DESIGNED:	MDK
DRAWN:	MDK
REVIEWED:	JDG

SHEET TITLE
Mechanical Schedules

SHEET NUMBER
M2.10

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