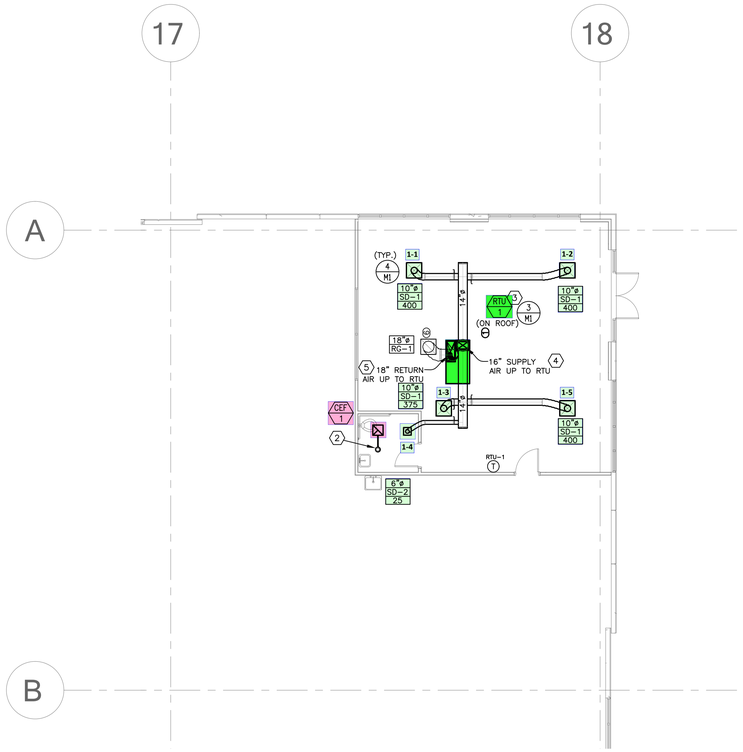
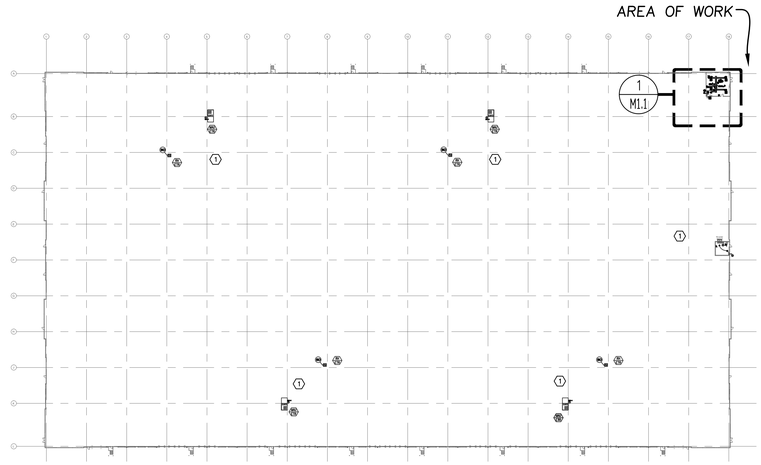


1 Detail Mechanical Floor Plan
scale: 1/8" = 1'-0"

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.

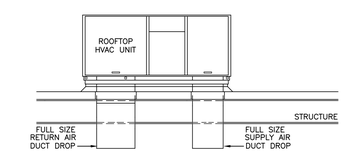
LEGEND

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.

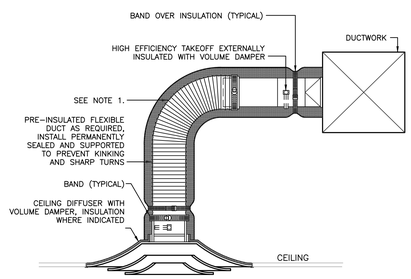


NOTES
1. PROVIDE OPENING THROUGH ROOF AND ROOF DECK INSULATION NO LARGER THAN REQUIRED TO ALLOW DUCTS TO PASS THROUGH. REFER TO PLANS FOR DUCT SIZES OR PROVIDE FULL SIZE DUCT DROPS IF NOT NOTED.

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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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