LINETYPES LEGEND:

- NEW
- NEW – ON ROOF
- EXISTING
- EXISTING – ON ROOF
- DEMOLITION

DUCTWORK LEGEND:

- DUCT (SINGLE LINE)
- DUCT (DOUBLE LINE)
- ROUND O/A OR S/A DOWN
- ROUND O/A OR S/A UP
- ROUND E/A OR R/A DOWN
- ROUND E/A OR R/A UP
- RECTANGULAR O/A OR S/A DOWN
- RECTANGULAR O/A OR S/A UP
- RECTANGULAR E/A OR R/A DOWN
- RECTANGULAR E/A OR R/A UP
- O/A OR S/A DIFFUSER
- E/A OR R/A GRILLE
- AIR DEVICE WITH FLEX DUCT CONNECTION
- AIR DEVICE WITH HARD DUCT CONNECTION
- FLEXIBLE CONNECTION TO EQUIPMENT
- DUCT BREAK/CONTINUATION
- MANUAL BALANCING DAMPER
- MOTOR–OPERATED DAMPER
- BACKDRAFT DAMPER
- FIRE DAMPER
- FIRE/SMOKE DAMPER
- SMOKE DAMPER

ANNOTATION LEGEND:

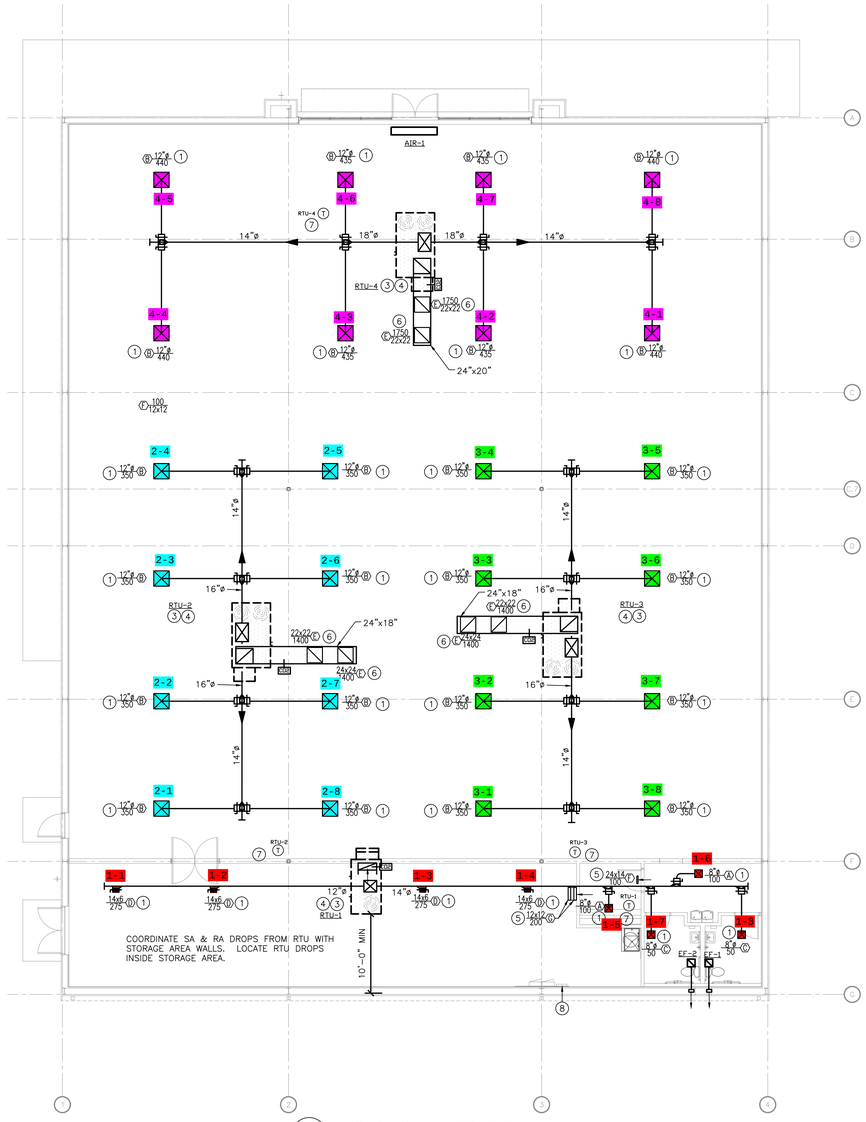
- ABC–1 EQUIPMENT / FIXTURE TAG
- PLAN NOTE
- CONNECT TO EXISTING
- AIR FLOW DIRECTION
- SIZE / AIRFLOW — G/R/D TAG / TYPE

ABBREVIATIONS LEGEND:

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
ATU	AIR TERMINAL UNIT
AV	ANALOG VIRTUAL
BAS	BUILDING AUTOMATION SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
CAV	CONSTANT AIR VOLUME
CFM	CUBIC FEET PER MINUTE
CFH	CUBIC FEET PER HOUR
CU	CONDENSING UNIT
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
(E)	EXISTING
E	ELECTRONIC
E/A	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FACP	FIRE ALARM CONTROL PANEL
FC	FAIL CLOSED
FCU	FAN COIL UNIT
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FIP	FAIL IN PLACE
FO	FAIL OPEN
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FT.WG	FEET WATER GAUGE
GPM	GALLONS PER MINUTE
HC	HEATING CAPACITY
HP	HORSEPOWER
HUM	HUMIDIFIER
IFB	INTEGRAL FACE AND BYPASS
IN.WG	INCHES WATER GAUGE
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	1,000 BTUH
MIN	MINIMUM
NC	NOISE CRITERIA
O/A	OUTDOOR AIR
P	PNEUMATIC
P	PRESSURE
QTY	QUANTITY
R/A	RETURN AIR
RE/A	RELIEF AIR
REFR	REFRIGERANT
RF	RETURN FAN
RG	RETURN GRILLE
RH	REHEAT
RTU	ROOFTOP UNIT
S/A	SUPPLY AIR
SC	SENSIBLE COOLING CAPACITY
SD	SUPPLY DIFFUSER
STM	STEAM
TC	TOTAL COOLING CAPACITY
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TRA	TO ROOF ABOVE
TSP	TOTAL STATIC PRESSURE
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
WPD	WATER PRESSURE DROP

MECHANICAL GENERAL NOTES:

- ALL MECHANICAL WORK SHALL CONFORM TO THE ARKANSAS MECHANICAL CODE AS ADOPTED BY THE CITY OF HAZEN, ARKANSAS
- COORDINATE MECHANICAL WORK WITH ALL OTHER PROJECT TRADES (E.G. ARCHITECTURAL, STRUCTURAL, ELECTRICAL, PLUMBING, FIRE SPRINKLER, ETC.).
- COORDINATE WITH ELECTRICAL CONTRACTOR FOR REQUIRED ELECTRICAL POWER WIRING. PROVIDE ALL CONTROL WIRING AND FINAL CONTROL DEVICE (E.G. THERMOSTATS).
- COORDINATE ALL AUDIO/VISUAL ALARMS REQUIRED WITH THE ELECTRICAL CONTRACTOR.
- FABRICATE AND INSTALL DUCTWORK PER SMACNA RECOMMENDATIONS FOR THE PRESSURE CLASSIFICATIONS ENCOUNTERED.
  - •• LOW PRESSURE SUPPLY AIR: +2.0 IN.WG
  - •• RETURN AIR: –1.0 IN.WG
  - •• EXHAUST AIR (DOWNSTREAM OF FAN): +1.0 IN.WG
- PROVIDE ALL CONDENSATE DRAINS FOR EQUIPMENT THAT GENERATES CONDENSATE. COORDINATE WITH PLUMBING CONTRACTOR.
- PROVIDE DUCT WRAP INSULATION FOR ALL ROUND AND RECTANGULAR SUPPLY AIR DUCTWORK. DUCT WRAP INSULATION SHALL BE 2" THICK, MINIMUM R–5.0 FIBERGLASS WITH VAPOR BARRIER.
- PROVIDE INTERNAL LINER INSULATION FOR ALL RECTANGULAR RETURN AIR DUCTWORK. INTERNAL LINER INSULATION SHALL BE A MINIMUM OF 1" THICK AND 1½ PCF FIBERGLASS, NEOPRENE COATED, AND ADHERED WITH AN APPROVED ADHESIVE WITH 100% COVERAGE AND STICK CLIPS ON 12" CENTERS. INTERNALLY LINED INSULATION SHALL MEET BACTERIOLOGICAL STANDARD ASTM C 665. DUCT DIMENSIONS SHOWN ON THE PLANS INDICATE THE FREE AREA DIMENSIONS. INCREASE SHEET METAL DIMENSIONS AS REQUIRED TO MEET FREE AREA DIMENSIONS WITH LINER INSTALLED.
- FLEXIBLE DUCTWORK SHALL HAVE 2" THICK, MINIMUM R–5.0 INSULATION. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'–0" IN LENGTH FOR SUPPLY AIR APPLICATIONS AND 3'–0" IN LENGTH FOR RETURN AIR AND EXHAUST AIR APPLICATIONS.
- PROVIDE BALANCING DAMPERS IN DUCT TAKE–OFFS TO AIR DEVICES IN LAY–IN CEILINGS, IN THE NECKS OF AIR DEVICES IN GYP BOARD CEILINGS, AND IN THE NECKS OF SIDE WALL AIR DEVICES FOR PROPER AIR BALANCING.
- TOILET ROOM EXHAUST FANS SHALL BE AS SCHEDULED. PROVIDE A MINIMUM OF 75 CFM EXHAUST PER FLUSH FIXTURE.
- COORDINATE ALL REQUIRED ROOF PENETRATIONS WITH ROOFING CONTRACTOR TO AVOID ROOF WARRANTY CONFLICTS.
- VERIFY AVAILABLE SPACE ABOVE ALL CEILINGS PRIOR TO FABRICATION OR INSTALLATION OF ANY DUCTWORK. COORDINATE DUCT INSTALLATION WITH OTHER TRADES.
- ALL DIMENSIONS SHOWN ON PLAN ARE IN INCHES, UNLESS EXPLICITLY LABELED OTHERWISE.
- PROVIDE A COMPLETE TEST AND BALANCE BY A NEBB CERTIFIED TEST AND BALANCE AGENCY.
- PROVIDE ACCESS PANELS AND ADEQUATE CLEARANCE FOR ACCESS OF ALL EQUIPMENT, VALVES, DAMPERS AND DEVICES.
- ALL PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER. (COLOR TO MATCH EXTERIOR)
- ALL SUSPENDED MATERIALS AND EQUIPMENT SHALL BE INDIVIDUALLY SUPPORTED FORM THE BUILDING STRUCTURE. DO NO SUSPEND ITEMS FROM THE CEILING OR ITS SUPPORT SYSTEM.
- INSTALL CONTROL DEVICES, INCLUDING THERMOSTATS AND SWITCHES 4'–0" ABOVE FINISHED FLOOR. PROVIDE THE REQUIRED DEVICES FOR ALL SYSTEM WHETHER LOCATED ON PLANS OR NOT.
- PROVIDE A 1 YEAR WARRANTY ON ALL EQUIPMENT AND A 5 YEAR WARRANTY ON ALL COMPRESSORS.
- CONTRACTOR SHALL VERIFY LOCATIONS OF ALL WALL CAPS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
- CONTRACTOR SHALL PAINT ALL VENT CAPS. CONFIRM COLOR WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.



1 MECHANICAL HVAC PLAN
SCALE: 1/8" = 1'–0"

MECHANICAL PLAN NOTES:

1. PROVIDE SUPPLY AIR DEVICE PER SCHEDULE WHERE SHOWN. COORDINATE FINISH WITH ARCHITECT AND OWNER. COORDINATE WITH REFLECTED CEILING PLAN.
2. PROVIDE EXHAUST FAN PER SCHEDULE. ROUTE 6"ø EXHAUST DUCT FROM EXHAUST FAN THROUGH WALL AS SHOWN. PROVIDE WALL PENETRATION AND VENT CAP EQUAL TO GREENHECK WC–6 WITH BUILT IN BIRDSCREEN AND BACKDRAFT DAMPER. LOCATE DISCHARGE AT MINIMUM OF 10'–0" FROM ANY BUILDING OPENINGS, OUTDOOR AIR INTAKES OR FIRE SEPARATIONS.
3. PROVIDE RTU, WITH CONTROLS AND ACCESSORIES FOR A FULLY FUNCTIONING SYSTEM. REFERENCE RTU SCHEDULE. LOCATE RTU WHERE SHOWN. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. DISCHARGE CONDENSATE DRAIN ON ROOF.
4. EXTEND SUPPLY AND RETURN AIR DROPS FROM RTU'S TO BELOW STRUCTURE. EXTEND SUPPLY DUCT HORIZONTALLY TO FEED THE ZONE IT SERVES. PROVIDE A RETURN AIR ELBOW FULL–SIZE OF RTU OPENING FOR PLENUM RETURN.
5. PROVIDE TRANSFER AIR GRILLE PER SCHEDULE. INSTALL TOP OF GRILLE 12" BELOW CEILING.
6. PROVIDE RETURN AIR DEVICE PER SCHEDULE. COORDINATE FINISH WITH ARCHITECT AND OWNER. PROVIDE BALANCING DAMPER IN TAKE OFF ABOVE ACCESSIBLE CEILING OR AT FACE OF DEVICE IN AN INACCESSIBLE CEILING.
7. CONTRACTOR TO PROVIDE STANDARD THERMOSTAT FOR INITIAL COMMISSIONING OF EQUIPMENT. LOCATE ON CEILING GRID/WALL/OR COLUMN AS SHOWN. PROVIDE WITH 50' EXTRA CONTROL WIRING. VENSTAR WILL REPLACE WITH THEIR THERMOSTAT AT TIME OF FAMILY DOLLAR UPFIT.
8. FUTURE ENERGY MANAGEMENT SYSTEM TO BE PROVIDED AT TIME OF FAMILY DOLLAR UPFIT.

SEQUENCES OF OPERATION:

ROOFTOP UNITS RTU–1, RTU–2, RTU–3, RTU–4:
UNIT SHALL OPERATE SUBJECT TO MANUFACTURER'S STANDARD SEQUENCES AND SAFETIES VIA FACTORY–INSTALLED CONTROLLER AND CONTROL DEVICES. THE 7–DAY PROGRAMMABLE THERMOSTAT SHALL PROVIDE RTU CONTROLLER WITH HEATING/COOLING COMMAND, OCCUPIED/UNOCCUPIED SCHEDULE, AND FAN CONTROL INPUTS.

SET POINTS:
- OCCUPIED MODE: 70°F HEATING, 75°F COOLING
- UNOCCUPIED MODE: 55°F HEATING, 85°F COOLING
- ECONOMIZER MODE ENABLE: O/A TEMPERATURE < 65°F

SUPPLY FAN CONTROL:
- OCCUPIED MODE: MUTLI–STAGE FAN SHALL OPERATE CONTINUOUSLY. FAN STAGE TO BE DETERMINED BY MANUFACTURER'S STANDARD SEQUENCE.
- UNOCCUPIED MODE: FAN SHALL CYCLE WITH HEATING AND COOLING COMMANDS.

OUTDOOR AIR DAMPER:
- OCCUPIED MODE: OUTDOOR AIR DAMPER SHALL OPEN TO SCHEDULED MINIMUM OUTDOOR AIR FLOW POSITION. OUTDOOR AIR DAMPER MINIMUM POSITION SHALL BE DETERMINED DURING TESTING AND BALANCING.
- DCV OCCUPIED MODE: OUTDOOR AIR DAMPER SHALL OPEN TO SCHEDULED DCV MINIMUM OUTDOOR AIR FLOW POSITION. DCV MINIMUM OUTDOOR AIR DAMPER POSITION SHALL BE DETERMINED DURING TESTING AND BALANCING.
- UNOCCUPIED MODE: OUTDOOR AIR DAMPER SHALL BE CLOSED, UNLESS UNIT IS IN COOLING MODE AND OUTDOOR AIR TEMPERATURES ARE SUITABLE FOR ECONOMIZER OPERATION.

AIR CURTAIN SCHEDULE

TAG	MANUFACTURER	MODEL	LOCATION	LENGTH	CFM	MOTOR HP	HEAT CAPACITY	ELECTRICAL V / PH	ELECTRICAL AMPS	ELECTRICAL MOCP	WEIGHT	NOTES
AIR-1	POWERED AIRE	EVE-2-72	FRONT ENTRY	72"	1968	1/4 HP (2)	NONE	120 / 1	4.4	15	100 LBS	1-9

NOTES:
1. UNIT SHALL MEET IECC BUILDING CODE WHICH ALLOWS AMCA CERTIFIED AIR CURTAIN AS AN ALTERNATE TO VESTIBULES.
2. PROVIDE WITH MAGNETIC DOOR SWITCH FOR ACTIVATION. ONE PER EACH DOOR FOR TOTAL OF TWO.
3. PROVIDE WITH 24V TRANSFORMER AND BUILT-IN TIME DELAY RELAY.
4. PROVIDE WITH REMOTE MOUNTED VARIABLE SPEED SWITCH.
5. PROVIDE WITH UNIT MOUNTED NON-FUXED DISCONNECT SWITCH.
6. PROVIDE WITH CLEANABLE WIRE MESH FILTERS.
7. FINISH SHALL BE WHITE OR AS SELECTED BY THE ARCHITECT.
8. MOUNT BOTTOM OF AIR CURTAIN AT 7'-2" ABOVE FINISHED FLOOR.
9. AIR CURTAIN SHALL BE BY POWERED AIRE AS SCHEDULED OR APPROVED EQUAL.

ROOFTOP UNIT SCHEDULE

TAG	AREA SERVED	MANUFACTURER	SERIES	SUPPLY FAN CONTROL	SUPPLY FAN S/A FLOW (CFM)	SUPPLY FAN MOTOR (BHP)	SUPPLY FAN ESP (IN.WG)	O/A FLOW MIN (CFM)	O/A FLOW DCV MIN (CFM)	NOM TONS	REFR TYPE	TC (MBH)	SC (MBH)	COOLING COIL (DX) EAT (°F DB)	EAT (°F WB)	LAT (°F DB)	LAT (°F WB)	MIN EFF (EER)	MIN EFF (SEER)	STAGES (QTY)	HEATING COIL (NATURAL GAS) NOM INPUT (CFM)	HC (MBH)	EAT (°F DB)	LAT (°F DB)	MIN EFF (%)	STAGES (QTY)	ELECTRICAL V/PH	ELECTRICAL MCA	ELECTRICAL MOCP	WEIGHT (LBS)	NOTES
RTU-1	STORAGE	CARRIER	HC	CAV	1,400	1.7	1.00	150	150	4	R-410A	35.0	25	76.6	63.5	53.0	52.0	12.5	15.0	1	115	54.0	59.8	90.0	80	2	208/3	24	30	750	A-M
RTU-2	WEST SALES	CARRIER	HC	MSAV	2,800	2.4	1.00	650	350	7.5	R-410A	98.0	70	79.6	65.5	53.0	52.0	12.2	14.0	2	180	127.0	51.4	90.0	80	2	208/3	39	50	1,200	A-M
RTU-3	EAST SALES	CARRIER	HC	MSAV	2,800	2.4	1.00	650	350	7.5	R-410A	98.0	70	79.6	65.5	53.0	52.0	12.2	14.0	2	180	127.0	51.4	90.0	80	2	208/3	39	50	1,200	A-M
RTU-4	SOUTH SALES	CARRIER	HC	MSAV	3,500	3.7	1.00	775	400	10	R-410A	114.0	81	79.3	65.0	53.0	52.0	12.0	14.0	2	224	147.0	52.2	90.0	80	2	208/3	49	60	1,600	A-M

NOTES:
- A. PROVIDE WITH CONTROLLER AND CONTROL DEVICES BY MANUFACTURER. REFER TO SEQUENCES OF OPERATION.
- B. PROVIDE WITH MANUFACTURERS STANDARD 7-DAY PROGRAMMABLE THERMOSTAT.
- C. PROVIDE WITH DIFFERENTIAL-TYPE, INTEGRATED, ENTHALPY ECONOMIZER ASSEMBLY AND ASSOCIATED CONTROLS.
- D. PROVIDE WITH MANUFACTURER'S BAROMETRIC RELIEF DAMPER.
- E. PROVIDE WITH MANUFACTURER'S STANDARD INSULATED ROOF CURB WITH 1'-2" MINIMUM HEIGHT.
- F. PROVIDE WITH DUCT-MOUNTED CARBON DIOXIDE SENSOR FOR DEMAND CONTROL VENTLATION (DCV) SEQUENCE.
- G. PROVIDE WITH NON-POWERED WEATHER-PROOF DUPLEX RECEPTACLE.
- H. PROVIDE WITH 2" THICK, MINIMUM MERV-8 FILTERS.
- I. PROVIDE WITH FACTORY-MOUNTED RETURN AIR SMOKE DETECTOR.
- J. PROVIDE WITH LOUVERED CONDENSER COIL GUARDS.
- K. PROVIDE WITH FACTORY DISCONNECT SWITCH.
- L. UNIT SIZED FOR 100°F AMBIENT CONDENSING TEMPERATURE.
- M. UNIT PROVIDED WITH MULTISTAGE FAN CONTROL SHALL BE PROVIDED WITH MULTISTAGE COOLING.

GRILLES, REGISTERS AND DIFFUSERS

TAG	SERVICE	MANUFACTURER	MODEL	MATERIAL	MOUNTING	FACE SIZE	MAX NC	MAX DP	NOTES
A	SUPPLY	METALAIRE	5700	ALUMINUM	LAY IN	12x12	30	0.1	1,2,3,6,7
B	SUPPLY	METALAIRE	5700	ALUMINUM	LAY IN	24x24	30	0.1	1,2,3,6
C	SUPPLY	METALAIRE	5700	ALUMINUM	SURFACE	SEE PLAN	30	0.1	1,2,3,6,7
D	SUPPLY	METALAIRE	V400D	ALUMINUM	DUCT	12x12	30	0.1	1,3,4,5,6,7
E	RETURN	METALAIRE	CC1	ALUMINUM	LAY IN	24x24	30	0.1	3,6
F	TRANSFER	METALAIRE	DG DF	ALUMINUM	DOOR	SEE PLANS	30	0.1	3,6
G	TRANSFER	METALAIRE	RH	ALUMINUM	WALL	SEE PLANS	30	0.1	3,6

NOTES:
1. NECK SIZE SHOWN ON PLANS.
2. 4 WAY THROW UNLESS INDICATED OTHERWISE ON PLANS.
3. BAKED ENAMEL FINISH, WHITE TO MATCH CEILING/WALL COLOR. VERIFY WITH ARCHITECT PRIOR TO ORDER.
4. FRONT BLADES PARALLEL TO HORIZONTAL DIMENSION. VERIFY WITH PLANS.
5. PROVIDE DOUBLE DEFLECTION BARS THAT ARE ADJUSTABLE.
6. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
7. PROVIDE OPPOSED BLADE DAMPER THAT IS ADJUSTABLE FROM THE FACE OF THE DEVICE.

FAN SCHEDULE

TAG	MANUFACTURER	MODEL	MOUNTING	SERVES	CFM	ESP (IN)	MOTOR POWER	VOLTAGE	NOTES
EF-1	GREENHECK	SP-B110	CEILING	RESTROOM	75	0.25	80 WATTS	120/1/60	1-5
EF-2	GREENHECK	SP-B110	CEILING	RESTROOM	75	0.25	80 WATTS	120/1/60	1-5

NOTES:
1. PROVIDE WITH MANUFACTURER'S STANDARD HANGING KIT AND CEILING MOUNT TRIM.
2. PROVIDE WITH DISCONNECT SWITCH.
3. PROVIDE WITH BACKDRAFT DAMPER.
4. PROVIDE WITH ROOF DISCHARGE CAP FOR EXHAUST THROUGH THE ROOF. COMBINE EXHAUST OF ALL EXHAUST FANS FOR A SINGLE DISCHARGE.
5. INTERLOCK FAN WITH ASSOCIATED RESTROOM LIGHT SWITCH

OUTSIDE AIR CALCULATIONS

TAG	OCCUPANCY CLASSIFICATION	AREA (FT^2)	OCCUPANTS (QTY)	R_p (CFM/PERSON)	MIN OCCUPANT O/A (CFM)	R_a (CFM/FT^2)	MIN AREA O/A (CFM)	MIN REQUIRED O/A (CFM)	PROVIDED
RTU-1	STORAGE	1185	0	0	0	0.12	142	142	150
RTU-2	SALES	2780	42	7.5	315	0.12	334	649	650
RTU-3	SALES	2780	42	7.5	315	0.12	334	649	650
RTU-4	SALES	3260	49	7.5	367.5	0.12	391	759	775
								REQ'D	PROVIDED
CALCULATIONS PER ARKANSAS MECHANICAL CODE								2198	2,225

h|d ARCHITECTURE
15225 Broadmoor Street
Overland Park, KS 66223
h|d Architecture, LLC

STATE OF KANSAS — BROCK CENTLIVRE — 36783 LICENSED — PROFESSIONAL ENGINEER

11/6/21

LICENSE #: 36783
BROCK CENTLIVRE, LICENSED ENGINEER

The record copy of this drawing is on file at the offices of h|d Architecture, LLC, 15225 Broadmoor Street, Overland Park, Kansas. This electronic document is released for the purposes of reference, coordination, and/or facility management. This electronic document of modifications thereof shall not be used for construction.

CIVIL CONSULTANT

Renaissance Infrastructure Consulting
8653 Penrose Ln
Lenexa, KS, 66219
913-317-9500

STRUCTURAL CONSULTANT

Apex Engineers, Inc
1625 Locust St
Kansas City, MO 64108
816-421-3222

MEP CONSULTANT

5BY5 Engineers, LLC
1100 Main Street, Floor 4
Kansas City, MO 64105
(913) 689-9449

A New Retail Location for:
FAMILY DOLLAR
8210 US-60
LEWISPORT, KY 42351

Date	11/05/2021
Job Number	20-002.31
Drawn By	JMW
Checked By	GH

Revisions

Number	Date	Description

5BY5 ENGINEERS
1100 Main Street, 4th Floor
Kansas City, MO 64105
913-689-9449
contact@5by5eng.com
5by5eng.com

M1.0
MECHANICAL HVAC PLAN

© 2021 h|d Architecture, LLC