

**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:**

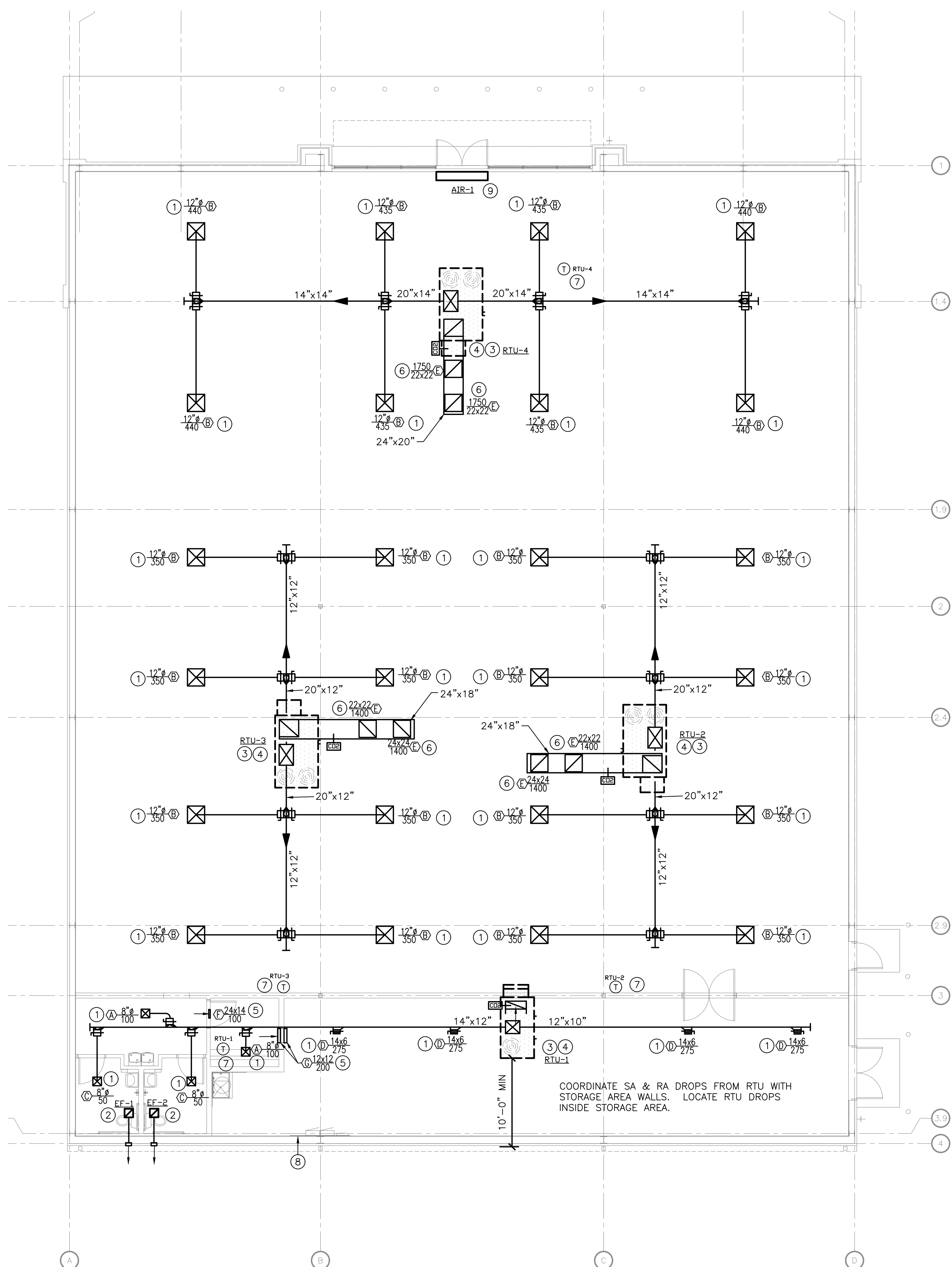
- ABC-1 EQUIPMENT / FIXTURE TAG
- PLAN NOTE
- CONNECT TO EXISTING
- AIR FLOW DIRECTION
- SIZE G/R/D TAG
- AIRFLOW TYPE

**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
- RFR 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:**

- MECHANICAL WORK SHALL CONFORM TO APPLICABLE CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION. REFER TO ARCHITECTURAL CODE PLANS FOR SPECIFIC CODE REFERENCES.
- 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 1/2" 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 FROM THE BUILDING STRUCTURE. DO NOT 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.



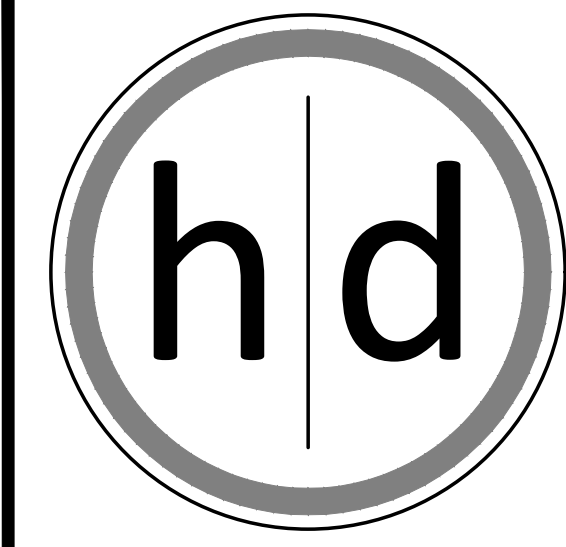
**1 MECHANICAL HVAC PLAN**  
SCALE: 1/8" = 1'-0"

**MECHANICAL PLAN NOTES:**

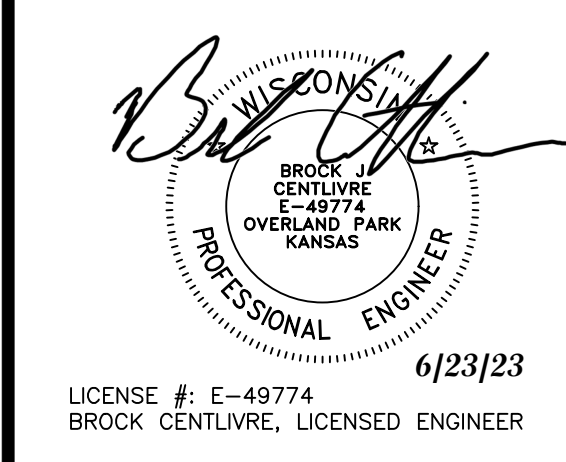
1. PROVIDE SUPPLY AIR DEVICE PER SCHEDULE WHERE SHOWN. COORDINATE FINISH WITH ARCHITECT AND OWNER. COORDINATE WITH REFLECTED CEILING PLAN.
2. PROVIDE EXHAUST FAN PER SCHEDULE. ROUTE 6" EXHAUST DUCT FROM EXHAUST FAN THROUGH WALL AS SHOWN. PROVIDE WALL PENETRATION AND VENT CAP EQUAL TO GREENHECK WC-6 WITH BUILT IN BIRDSHIELD 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.
9. LOCATE NEW AIR CURTAIN ON WALL WHERE SHOWN. INSTALL ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. MINIMUM 8'-0" AFF.

**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: MULTI-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.



15225 Broadmoor Street  
Overland Park, KS 66223  
hjd Architecture, LLC



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**CIVIL CONSULTANT**

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

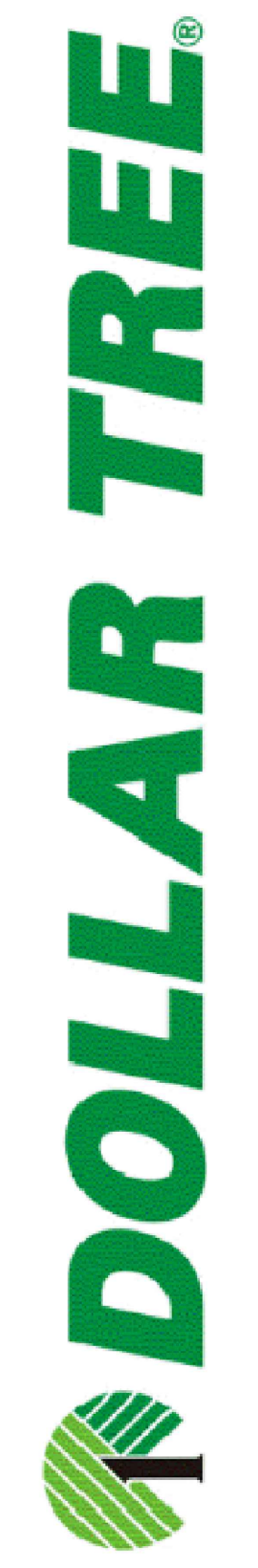
**STRUCTURAL CONSULTANT**

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:



11490 W James Ct.  
Columbus, WI 53925

Date	06/20/2023
Job Number	20-003.08
Drawn By	JS
Checked By	GH
Type	6A-R-3

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  
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ROOFTOP UNIT SCHEDULE																															
TAG	AREA SERVED	MANUFACTURER	SERIES	SUPPLY FAN				O/A FLOW				COOLING COIL (DX)								HEATING COIL (NATURAL GAS)				ELECTRICAL			WEIGHT (LBS)	NOTES			
				FAN CONTROL	S/A FLOW (CFM)	MOTOR (BHP)	ESP (IN.WG)	MIN (CFM)	DCV MIN (CFM)	NOM TONS	REFR TYPE	TC (MBH)	SC (MBH)	EAT		LAT		MIN EFF		STAGES (QTY)	NOM INPUT (CFH)	HC (MBH)	EAT (°F DB)	LAT (°F DB)	MIN EFF (%)	STAGES (QTY)			V/PH	MCA	MOCP
														(°F WB)	(°F DB)	(°F WB)	(°F DB)	(EER)	(SEER)												
RTU-1	STORAGE	CARRIER	48FC	CAV	1,750	1.4	1.00	150	350	5	R-410A	84.9	38	74.4	63.6	53.0	52.0	12.5	16.1	1	110	88.0	55.0	101.3	80	2	208/3	31	45	871	A-N
RTU-2	WEST SALES	CARRIER	48FC	MSAV	2,800	2.4	1.00	650	350	7.5	R-410A	84.5	63	78.5	67.1	53.0	52.0	11.2	15 IEER	2	180	144.0	43.0	90.4	80	2	208/3	39	50	1,065	A-N
RTU-3	EAST SALES	CARRIER	48FC	MSAV	2,800	2.4	1.00	650	350	7.5	R-410A	84.5	63	78.5	67.1	53.0	52.0	11.2	15 IEER	2	180	144.0	43.0	90.4	80	2	208/3	39	50	1,065	A-N
RTU-4	SOUTH SALES	CARRIER	48FC	MSAV	3,500	3.0	1.00	775	400	10	R-410A	115.7	86	78.2	66.9	53.0	52.0	11.0	15 IEER	2	224	179.2	43.8	91.0	80	2	208/3	45	60	1,600	A-N

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 INTEGRATED ENTHALPY TYPE ECONOMIZER ASSEMBLY.  
D. PROVIDE WITH MANUFACTURERS BAROMETRIC RELIEF DAMPER.  
E. PROVIDE WITH MANUFACTURERS STANDARD INSULATED ROOF CURB WITH 1'-2" MINIMUM HEIGHT.  
F. PROVIDE WITH DUCT-MOUNTED CARBON DIOXIDE SENSOR FOR DEMAND CONTROL VENTILATION (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 COOLING SHALL BE PROVIDED WITH MULTISTAGE FAN CONTROL.  
N. PROVIDE WITH MANUFACTURER APPROVED CURB-MOUNTED ROOF-SCREEN SYSTEM. COORDINATE EXACT LOUVER TYPE AND COLOR WITH ARCHITECT AND/OR OWNER PRIOR TO PURCHASE.

AIR CURTAIN SCHEDULE												
TAG	MANUFACTURER	MODEL	LOCATION	LENGTH	CFM	MOTOR HP	HEAT CAPACITY	ELECTRICAL			WEIGHT	NOTES
								V / PH	AMPS	MOCP		
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:  
A. UNIT SHALL MEET IECC BUILDING CODE WHICH ALLOWS AMCA CERTIFIED AIR CURTAIN AS AN ALTERNATE TO VESTIBULES.  
B. PROVIDE WITH MAGNETIC DOOR SWITCH FOR ACTIVATION. ONE PER EACH DOOR FOR TOTAL OF TWO.  
C. PROVIDE WITH 24V TRANSFORMER AND BUILT-IN TIME DELAY RELAY.  
D. PROVIDE WITH REMOTE MOUNTED VARIABLE SPEED SWITCH.  
E. PROVIDE WITH UNIT MOUNTED NON-FUSED DISCONNECT SWITCH.  
F. PROVIDE WITH CLEANABLE WIRE MESH FILTERS.  
G. FINISH SHALL BE WHITE OR AS SELECTED BY ARCHITECT.  
H. MOUNT BOTTOM OF AIR CURTAIN AT 7'-2" ABOVE FINISHED FLOOR.  
I. AIR CURTAIN SHALL BE BY POWERED AIRE AS SCHEDULED OR APPROVED EQUAL.

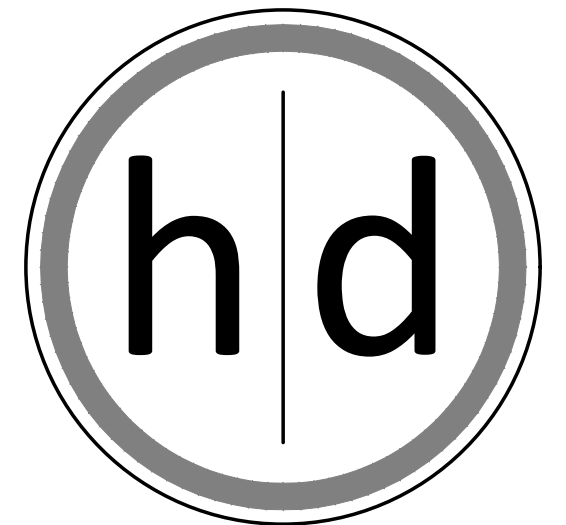
OUTSIDE AIR CALCULATIONS										
TAG	OCCUPANCY CLASSIFICATION	AREA (FT²)	OCCUPANTS (QTY)	R <sub>s</sub> (CFM/PERSON)	MIN OCCUPANT O/A (CFM)	R <sub>a</sub> (CFM/FT²)	MIN AREA O/A (CFM)	MIN REQUIRED O/A (CFM)	PROVIDED	
RTU-1	STORAGE	1185	0	0	0	0.12	142	142	150	
RTU-2	SALES	2780	42	7.5	315	0.12	334	649	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 ASHRAE 62.1								2,198	2,225	

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	ALL
EF-2	GREENHECK	SP-B110	CEILING	RESTROOM	75	0.25	80 WATTS	120/1/60	ALL

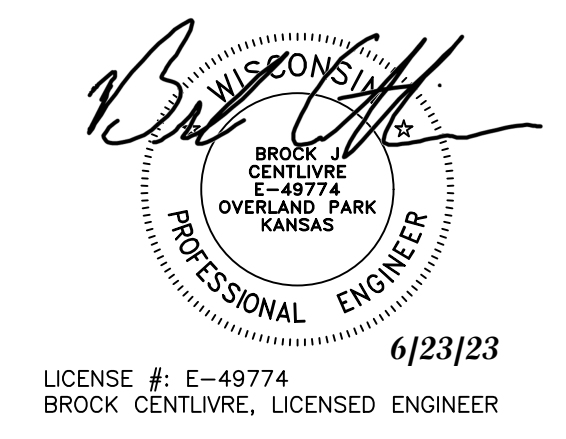
NOTES:  
A. PROVIDE WITH MANUFACTURERS STANDARD HANGING KIT AND CEILING MOUNT TRIM.  
B. PROVIDE WITH DISCONNECT SWITCH.  
C. PROVIDE WITH BACKDRAFT DAMPER.  
D. PROVIDE WITH ROOF DISCHARGE CAP FOR EXHAUST THROUGH THE ROOF. COMBINE EXHAUST OF ALL EXHAUST FANS FOR A SINGLE DISCHARGE.  
E. INTERLOCK FAN WITH ASSOCIATED RESTROOM LIGHT SWITCH

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	A,B,C,F,G
B	SUPPLY	METALAIRE	5700	ALUMINUM	LAY IN	24x24	30	0.1	A,B,C,F
C	SUPPLY	METALAIRE	5700	ALUMINUM	SURFACE	SEE PLAN	30	0.1	A,B,C,F,G
D	SUPPLY	METALAIRE	V400D	ALUMINUM	DUCT	12x12	30	0.1	A,C,D,E,F,G
E	RETURN	METALAIRE	CC1	ALUMINUM	LAY IN	24x24	30	0.1	C,F
F	TRANSFER	METALAIRE	DG DF	ALUMINUM	DOOR	SEE PLANS	30	0.1	C,F
G	TRANSFER	METALAIRE	RH	ALUMINUM	WALL	SEE PLANS	30	0.1	C,F

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



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



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

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

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

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

M2.0  
MECHANICAL SCHEDULES  
AND DETAILS  
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HEAT LOSS SCHEDULE						
EXTERIOR FACE	AREA (FT <sup>2</sup> )	U-VALUE	HEAT LOSS THROUGH SURFACE (MBH)	OUTSIDE AIR CFM	HEAT LOSS FROM OUTSIDE AIR (MBH)	HEAT LOSS (MBH)
NORTHWEST	1720	0.038	6	--	--	6
NORTHEAST	1383	0.038	5	--	--	5
SOUTHWEST	1720	0.038	6	--	--	6
SOUTHWEST	1383	0.038	5	--	--	5
ROOF	10587	0.028	25	2225	205	230
INDOOR TEMPERATURE (DEGF):	70		R-VALUE WALL:	26	TOTAL HEAT LOSS (MBH)	250
OUTDOOR TEMPERATURE (DEGF):	-15		R-VALUE ROOF:	36	HEAT PROVIDED (MBH)	555
CHANGE IN TEMPERATURE (DEGF):	85					

HEAT GAIN CALCULATIONS						
ROOM / HEAT GAIN	AREA (SF)	QUANTITY	KW EACH	BTU EACH	FACTORS	MBH TOTAL
SALES 101 RM	8629					
Exterior Wall - NW	-	97	-	43	100%	4.2
Windows - NW	0	1	-	31	100%	0.0
Exterior Wall - NE	-	92	-	54	100%	5.0
Windows - NE	392	1	-	28	100%	10.9
Exterior Wall - SE	-	97	-	66	100%	6.4
Windows - SE	27	1	-	40	100%	1.1
Exterior Wall - SW	-	0	-	60	100%	0.0
Windows - SW	0	1	-	41	100%	0.0
Flat Roof	8629	-	-	4	100%	33.2
People	8629	70	-	300	100%	21.0
Lights	8629	-	1	3	100%	29.4
OFFICE 102 RM	64					
Exterior Wall - NW	-	0	-	43	100%	0.0
Windows - NW	0	1	-	31	100%	0.0
Exterior Wall - NE	-	0	-	54	100%	0.0
Windows - NE	0	1	-	28	100%	0.0
Exterior Wall - SE	-	0	-	66	100%	0.0
Windows - SE	0	1	-	40	100%	0.0
Exterior Wall - SW	-	0	-	60	100%	0.0
Windows - SW	0	1	-	41	100%	0.0
Flat Roof	64	-	-	4	100%	0.2
People	64	1	-	300	100%	0.3
Lights	64	-	1	3	100%	0.2
HALLWAY 103 RM	105					
Exterior Wall - NW	-	7	-	43	100%	0.3
Windows - NW	0	1	-	31	100%	0.0
Exterior Wall - NE	-	0	-	54	100%	0.0
Windows - NE	0	1	-	28	100%	0.0
Exterior Wall - SE	-	0	-	66	100%	0.0
Windows - SE	0	1	-	40	100%	0.0
Exterior Wall - SW	-	0	-	60	100%	0.0
Windows - SW	0	1	-	41	100%	0.0
Flat Roof	105	-	-	4	100%	0.4
People	105	2	-	300	100%	0.6
Lights	105	-	1	3	100%	0.4
TOILET 104 RM	64					
Exterior Wall - NW	-	9	-	43	100%	0.4
Windows - NW	0	1	-	31	100%	0.0
Exterior Wall - NE	-	0	-	54	100%	0.0
Windows - NE	0	1	-	28	100%	0.0
Exterior Wall - SE	-	0	-	66	100%	0.0
Windows - SE	0	1	-	40	100%	0.0
Exterior Wall - SW	-	0	-	60	100%	0.4
Windows - SW	0	1	-	41	100%	0.0
Flat Roof	64	-	-	4	100%	0.2
People	64	1	-	300	100%	0.3
Lights	64	-	1	3	100%	0.2
TOILET 105 RM	64					
Exterior Wall - NW	-	0	-	43	100%	0.0
Windows - NW	0	1	-	31	100%	0.0
Exterior Wall - NE	-	0	-	54	100%	0.0
Windows - NE	0	1	-	28	100%	0.0
Exterior Wall - SE	-	0	-	66	100%	0.0
Windows - SE	0	1	-	40	100%	0.0
Exterior Wall - SW	-	0	-	60	100%	0.4
Windows - SW	0	1	-	41	100%	0.0
Flat Roof	64	-	-	4	100%	0.2
People	64	1	-	300	100%	0.3
Lights	64	-	1	3	100%	0.2
SUPPORT 106 RM	1117					
Exterior Wall - NW	-	0	-	43	100%	0.0
Windows - NW	0	1	-	31	100%	0.0
Exterior Wall - NE	-	0	-	54	100%	0.0
Windows - NE	0	1	-	28	100%	0.0
Exterior Wall - SE	-	17	-	66	100%	1.1
Windows - SE	54	1	-	40	100%	2.1
Exterior Wall - SW	-	75	-	60	100%	4.5
Windows - SW	0	1	-	41	100%	0.0
Flat Roof	1117	-	-	4	100%	4.3
People	1117	3	-	300	100%	0.9
Lights	1117	-	1	3	100%	3.8
MISC EQUIPMENT LOAD	--	--	--	35000	100%	35.0
CFM PROVIDED:	10850			SPACE HEAT GAIN (MBH):		168.1
ROOM TEMP (DEGF):	70.0			COOLING PROVIDED (MBH):		176.6
SUPPLY AIR TEMP (DEGF):	55.0					
DELTA TEMPERATURE (DEGF):	15.0					

NOTE: COOLING PROVIDED = 1.085\*CFM PROVIDED\*DELTA TEMPERATURE

## COMcheck Software Version 4.1.5.5 Mechanical Compliance Certificate

### Project Information

Energy Code: 2015 IECC  
 Project Title: Dollar Tree - Columbus WI  
 Location: Columbus, Wisconsin  
 Climate Zone: 6a  
 Project Type: New Construction

Construction Site: 11490 W James Ct, Columbus, WI 53925  
 Owner/Agent: MO  
 Designer/Contractor: MN

### Additional Efficiency Package(s)

Credits: 1.0 Required, 1.0 Proposed  
 Reduced Lighting Power, 1.0 credit

### Mechanical Systems List

Quantity	System Type & Description
1	RTU-1 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 88 kBtu/h Proposed Efficiency = 80.00% E1, Required Efficiency: 80.00 % E1 or 78% AFUE Cooling: 1 each - Single Package DX Unit, Capacity = 85 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 18.10 SEER, Required Efficiency: 14.00 SEER Fan System: RTU-1 SF   STORAGE - Compliance (Motor nameplate HP method): Passes Fans: RTU1 SF Supply, Constant Volume, 1750 CFM, 1.4 motor nameplate hp, 50.0 fan efficiency grade
1	RTU-2 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 144 kBtu/h Proposed Efficiency = 80.00% E1, Required Efficiency: 80.00 % E1 or 78% AFUE Cooling: 1 each - Single Package DX Unit, Capacity = 84 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.20 SEER, Required Efficiency: 11.00 SEER + 12.6 IEER Fan System: RTU-2 SF   E Sales - Compliance (Motor nameplate HP method): Passes Fans: RTU2 SF Supply, Constant Volume, 2800 CFM, 2.4 motor nameplate hp, 50.0 fan efficiency grade
1	RTU-3 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 144 kBtu/h Proposed Efficiency = 80.00% E1, Required Efficiency: 80.00 % E1 or 78% AFUE Cooling: 1 each - Single Package DX Unit, Capacity = 84 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.20 SEER, Required Efficiency: 11.00 SEER + 12.6 IEER Fan System: RTU-3 SF   W Sales - Compliance (Motor nameplate HP method): Passes Fans: RTU3 SF Supply, Constant Volume, 2800 CFM, 2.4 motor nameplate hp, 50.0 fan efficiency grade
1	RTU-4 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 150 kBtu/h Proposed Efficiency = 80.00% E1, Required Efficiency: 80.00 % E1 or 78% AFUE Cooling: 1 each - Single Package DX Unit, Capacity = 115 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 11.00 SEER, Required Efficiency: 11.00 SEER + 12.6 IEER Fan System: RTU-4 SF   N Sales - Compliance (Motor nameplate HP method): Passes Fans: RTU4 SF Supply, Constant Volume, 3500 CFM, 3.0 motor nameplate hp, 50.0 fan efficiency grade

Project Title: Dollar Tree - Columbus WI  
 Report date: 06/23/23  
 Data filename: C:\Users\Kevin\White\5by5 Engineers\Dropbox\5BY5 ACTIVE PROJECTS\2000 AA-ONGONG\COMCHECK\Family Dollar - Beaver Dam WI\COMCHECK.cck

### Quantity System Type & Description

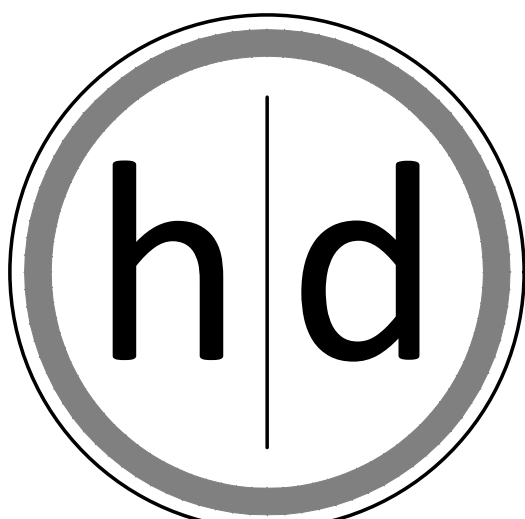
1	WH: Electric Storage Water Heater, Capacity: 10 gallons w/ Circulation Pump Proposed Efficiency: 3.00 SL, %/h (F > 12 kW), Required Efficiency: 3.00 SL, %/h (F > 12 kW)
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### Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Kevin Whiteside - Designer  
 Signature:  Date: 06/23/2023

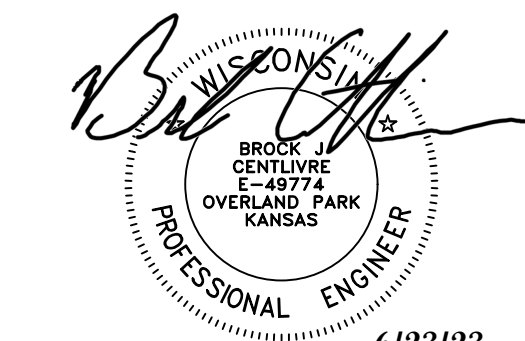
Project Title: Dollar Tree - Columbus WI  
 Report date: 06/23/23  
 Data filename: C:\Users\Kevin\White\5by5 Engineers\Dropbox\5BY5 ACTIVE PROJECTS\2000 AA-ONGONG\COMCHECK\Family Dollar - Beaver Dam WI\COMCHECK.cck



## ARCHITECTURE

15225 Broadmoor Street  
 Overland Park, KS 66223

hjd Architecture, LLC



LICENSE # E-48774  
 BROCK CENTIMORE, LICENSED ENGINEER

The record copy of this drawing is on file at the offices of hjd 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

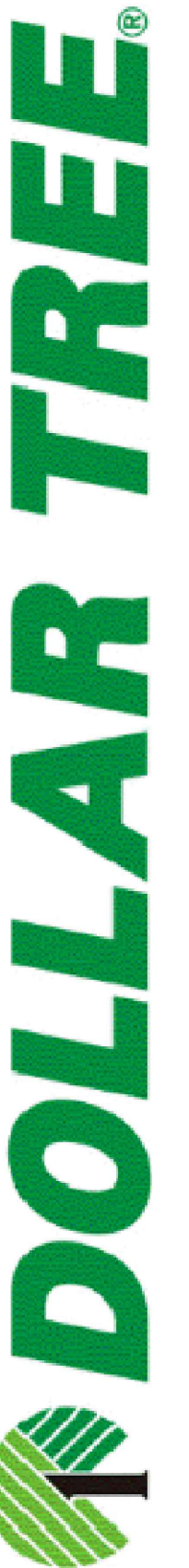
## STRUCTURAL CONSULTANT

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:



11490 W James Ct.  
 Columbus, WI 53925

Date: 06/20/2023  
 Job Number: 20-003.08  
 Drawn By: JS  
 Checked By: GH  
 Type: 6A-R-3

Revisions		
Number	Date	Description

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

M2.1  
 MECHANICAL COMCHECK  
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