GENERAL NOTES

A. CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.

B. COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE DUCT RISES AND DROPS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.

C. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

D. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.

E. INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE.

F. CONTRACT LANDLORD APPROVED ROOFING CONTRACTOR TO FLASH AND SEAL RELATED ROOF PENETRATIONS TO MAINTAIN ROOFING WARRANTY.

G. INSTALL EXHAUST FAN A MINIMUM OF 10 FT FROM INTAKE AIR OPENINGS.

HVAC SEQUENCE OF OPERATIONS

PROVIDE NECESSARY SENSORS, DAMPER ACTUATORS, CONTROL TRANSFORMERS WITH SECONDARY OVERLOAD PROTECTION, WIRING IN CONDUIT, AND ALL MISCELLANEOUS ITEMS TO ACCOMPLISH FOLLOWING SEQUENCE OF OPERATION: 2

ROOFTOP UNIT:

UNIT CONTROLLER SHALL BE SET TO DETERMINE OCCUPIED AND UNOCCUPIED HOURS OF OPERATION. HOURS SHALL BE COORDINATED WITH OWNER.

OCCUPIED MODE:

SUPPLY FAN SHALL RUN CONTINUOUSLY AND OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM POSITION TO DELIVER THE SCHEDULED QUANTITY OF VENTILATION AIR.

SUPPLY FAN SPEED SHALL VARY AIRFLOW AS FUNCTION OF LOAD (WHERE APPLICABLE). DURING NON-COOLING, FIRST STAGE COOLING, AND NON-HEATING TIMES, SUPPLY FAN SHALL RUN AT MINIMUM SPEED. DURING SECOND STAGE COOLING AND HEATING TIMES, SUPPLY FAN SHALL RUN AT FULL SPEED. OUTSIDE AIR DAMPER SHALL MODULATE POSITION TO MAINTAIN REQUIRED QUANTITY OF OUTSIDE AIR AS SUPPLY FAN VARIES SPEED.

COOLING:
WHEN SPACE TEMPERATURE RISES ABOVE OCCUPIED COOLING SET POINT, PACKAGED DIRECT EXPANSION COOLING SHALL BE ENERGIZED AND STAGED AS REQUIRED TO MAINTAIN SPACE TEMPERATURE.

ECONOMIZER:
WHEN OUTSIDE AIR TEMPERATURE IS BELOW 75°F (ADJUSTABLE), ECONOMIZER SHALL MODULATE BETWEEN ITS MINIMUM SET POINT AND FULL OPEN TO MAINTAIN SPACE COOLING SET POINT, SUBJECT TO A MIXED AIR TEMPERATURE LOW LIMIT CONTROLLER SET POINT OF 55°F. IF OUTDOOR TEMPERATURE IS ABOVE COMPRESSOR LOCKOUT THERMOSTAT SETTING, MECHANICAL COOLING SHALL BE ENABLED AS SECOND STAGE OF COOLING. ECONOMIZER HIGH-LIMIT SHUTOFF CONTROL SETTING IS SET TO 75°F PER IECC TABLE C403.5.3.3.

HEATING:
WHEN SPACE TEMPERATURE FALLS 2 DEGREES OR MORE BELOW HEATING SETPOINT, COMPRESSORS SHALL BE ACTIVATED IN HEATING MODE. ONCE TEMPERATURE REACHES 2 DEGREES ABOVE SET POINT, COMPRESSORS SHALL BE DEACTIVATED. IF HEAT PUMP HEATING CANNOT MEET SPACE REQUIREMENTS, ELECTRIC BACKUP HEATER SHALL BE ACTIVATED AND STAGED AS REQUIRED TO MAINTAIN SPACE TEMPERATURE.

UNOCCUPIED MODE:

COOLING:
UPON SIGNAL FROM UNIT CONTROLLER, SUPPLY FAN SHALL BE DEENERGIZED AND OUTSIDE AIR DAMPER SHALL CLOSE. IF SPACE TEMPERATURE RISES 2 DEGREES OR MORE ABOVE UNOCCUPIED SET POINT, OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, SUPPLY FAN SHALL BE ACTIVATED AND DX COOLING SHALL BE STAGED AS REQUIRED TO MAINTAIN UNOCCUPIED SPACE TEMPERATURE. WHEN TEMPERATURE FALLS 2 DEGREES BELOW SET POINT, COMPRESSOR SHALL BE DEENERGIZED AND SUPPLY FAN SHALL SHUT OFF.

HEATING:
UPON SIGNAL FROM UNIT CONTROLLER, SUPPLY FAN SHALL BE DEENERGIZED AND OUTSIDE AIR DAMPER SHALL CLOSE. IF SPACE TEMPERATURE FALLS 2 DEGREES OR MORE BELOW SET POINT, OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, FAN SHALL BE ACTIVATED AND HEAT PUMP HEATING SHALL BE ENERGIZED. IF SPACE TEMPERATURE CONTINUES TO DROP, ELECTRIC HEATING SHALL BE ENERGIZED. HEATING SHALL OPERATE UNTIL UNOCCUPIED SPACE TEMPERATURE IS SATISFIED. WHEN TEMPERATURE RISES 2 DEGREES ABOVE SET POINT, HEATING SHALL BE DISABLED AND FAN SHALL BE DEENERGIZED.

MORNING WARM-UP/COOL DOWN:
CONTROLS SHALL BE CAPABLE OF AUTOMATICALLY ADJUSTING DAILY START TIME OF UNIT IN ORDER TO BRING EACH SPACE TO SPECIFIED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

SET POINTS:

OCCUPIED COOLING:	75°F
OCCUPIED HEATING:	70°F
UNOCCUPIED COOLING:	85°F
UNOCCUPIED HEATING:	55°F

SMOKE DETECTOR SHUT DOWN:

SMOKE DETECTOR SHALL DEENERGIZE ROOFTOP UNIT FAN AND CLOSE OUTSIDE AIR DAMPER IN BOTH OCCUPIED AND UNOCCUPIED MODES WHENEVER SMOKE IS SENSED BY SMOKE DETECTORS.

KITCHEN HOOD INTERLOCKS AND FIRE SUPPRESSION SYSTEM:

RTU-X1 AND X2 SHALL BE INTERLOCKED WITH HOOD EXHAUST FAN KEF-1 TO OPERATE IN OCCUPIED MODE WHENEVER KITCHEN FAN IS ENERGIZED. RTU-X2 SHALL BE DEENERGIZED UPON ACTIVATION OF THE KITCHEN HOOD FIRE SUPPRESSION SYSTEM.

MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM.

DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

COORDINATION: COORDINATE WITH THE WORK OF OTHER TRADES, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

SHEETMETAL DUCTWORK: PROVIDE SHEETMETAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEETMETAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEETMETAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

ROUND SHEETMETAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

FLEXIBLE DUCT: PROVIDE FACTORY ASSEMBLED CLASS 1 AIR DUCT (UL 181) WITH 1" THICK 1 PCF FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEXIBLE DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50, AND SHALL BE RATED FOR MINIMUM 2" W.G. PRESSURE AND 0 TO 250°F TEMPERATURE. PROVIDE SCREW-OPERATED METAL ADJUSTABLE CLAMPING DEVICES. USE TWIST-LOCK TAP COLLARS AT CONNECTIONS INTO SHEETMETAL DUCTWORK. MAXIMUM EXTENDED LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 6 FEET.

EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT.

DUCT SEALANT: PROVIDE WATER BASED SYNTHETIC LATEX EMULSION PERMANENTLY FLEXIBLE HIGH VELOCITY DUCT SEALANT, DUCTMATE INDUSTRIES, INC. PRO SEAL OR EQUAL. SEALANT TO BE LOW VOC LEED COMPLIANT CAPABLE OF 15" W.G., NFPA 90A AND 90B APPROVED, UL 181B-M LISTED AND UL 723 CLASSIFIED. INSTALL PER MANUFACTURER INSTRUCTIONS. SEALANT SHALL BE APPROVED FOR PLENUM INSTALLATIONS AND MEET FLAME SPREAD AND SMOKE DEVELOPED RATINGS FOR PLENUM APPLICATIONS.

DUCT INSULATION (ALL MAKE-UP AIR DUCT, ROUND SUPPLY DUCT AND ROUND RETURN DUCT ABOVE CEILING): PROVIDE MINIMUM 1-1/2" THICK BLANKET TYPE FIBERGLASS INSULATION COMPLYING WITH ASTM C-553, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL, REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II. INSTALLED R VALUE SHALL BE 4.2 OR HIGHER WITH A 0.75 PCF DENSITY.

DUCT LINER (ALL RECTANGULAR SUPPLY AND RETURN DUCT): PROVIDE MINIMUM 1" THICK, 2 PCF DENSITY, LONG TEXTILE FIBER TYPE DUCT LINER, WITH COATING ON THE AIR STREAM SIDE CONFORMING TO NFPA 90A. DUCT LINER SHALL BE SECURED TO DUCT WITH BOTH ADHESIVE AND MECHANICAL FASTENERS. ADHESIVE SHALL BE LEED COMPLIANT LOW VOC AS RECOMMENDED BY DUCT LINER MANUFACTURER, AND SHALL COMPLY WITH ASTM C-916. DUCT LINER FASTENERS SHALL COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION. THERMAL CONDUCTIVITY SHALL BE EQUAL TO OR LESS THAN 0.24 AT 75°F.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEETMETAL BRACKET BEYOND DUCT COVERING. WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, MOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS AT DUCT CONNECTIONS TO ALL VIBRATING EQUIPMENT.

DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEETMETAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UNINSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

GREASE EXHAUST DUCTWORK: PROVIDE FACTORY BUILT DOUBLE WALL GREASE EXHAUST DUCT AS MANUFACTURED BY CAPTIVEAIRE OR APPROVED EQUAL. DUCT SHALL BE ETL LISTED TO UL-1978 AND UL-2221 FOR ZERO CLEARANCE TO COMBUSTIBLES. ALL ELBOWS IN GREASE EXHAUST DUCTWORK SHALL BE RADIUS ELBOWS. NO SQUARE ELBOWS ARE ALLOWED. PROVIDE GREASE DUCT CLEAN-OUT ACCESS DOORS BY DUCT MANUFACTURER AT EVERY CHANGE OF DIRECTION IN DUCT AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT.

COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION: PROVIDE FLEXIBLE BLANKET-TYPE INSULATION COMPOSED OF FIBER BLANKET ENCAPSULATED IN AN ALUMINUM FOIL SCRIM, PROVIDING A NONCOMBUSTIBLE WRAP TO PROVIDE A VAPOR AND DUST BARRIER. DUCT WRAP SYSTEM SHALL HAVE FLAME SPREAD INDEX OF NOT MORE THAN 5 AND SMOKE DEVELOPED INDEX NOT EXCEEDING 5, WHEN TESTED PER ASTM E-84 METHOD. INSULATION AND JACKET SHALL BE RATED FOR OPERATING TEMPERATURES UP TO 2000°F. DUCT WRAP SYSTEM MUST COMPLY WITH ALL FIVE FIRE TESTS OF STANDARD ASTM E2336, GREASE DUCT ENCLOSURE SYSTEM, AND THE DUCT FIRESTOP SYSTEM SHALL BE ASTM E 814 CLASSIFIED. FABRICATE DUCT WRAP ENCLOSURE WITH (2) LAYERS OF DUCT WRAP TO PROVIDE 2-HOUR FIRE RATING. PROVIDE COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION FROM ONE OF THE FOLLOWING: THERMAL CERAMICS FIREMASTER FASTWRAP XL, UNIFRAX FYREWRAP ELITE 1.5.

MECHANICAL EQUIPMENT IDENTIFICATION: PROVIDE ENGRAVED PLASTIC LAMINATE LABEL FOR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT AND EACH OPERATIONAL DEVICE. LETTERS TO BE A MINIMUM OF ½" HIGH. PROVIDE SIGNS TO INFORM OPERATOR OF OPERATIONAL REQUIREMENTS, TO INDICATE SAFETY AND EMERGENCY PRECAUTIONS, AND TO WARN OF HAZARDS AND IMPROPER OPERATION.

TESTING AND BALANCING: TEST AND ADJUST ALL MECHANICAL SYSTEMS AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH THE MOST CURRENT NEBB OR AABC, AND ASHRAE STANDARDS. ELIMINATE OBJECTIONABLE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. BALANCING CONTRACTOR SHALL BE AN INDEPENDENT CERTIFIED TEST AND BALANCE CONTRACTOR, WITH NEBB OR AABC CERTIFICATION. SUBMIT COMPLETED AND CERTIFIED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCE ALL SYSTEMS TO WITHIN 5% OF AIR FLOWS INDICATED ON THE DRAWINGS, AND REPORT ALL DISCREPANCIES TO HVAC INSTALLER FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

OPERATIONS AND MAINTENANCE MANUALS (O&M): AT COMPLETION OF PROJECT PROVIDE A MINIMUM OF TWO O&M MANUALS IN THREE RING BINDERS TO THE OWNER/TENANT. MANUALS SHALL HAVE TABS LABELED WITH ALL SECTIONS SEPARATED WITH A CLEAR INDEX AT THE FRONT. PROVIDE A WARRANTY LETTER AT THE FRONT OF THE MANUAL STATING DATES OF WARRANTY (START DATE AND END DATE) AND CONTRACTS WITH PHONE NUMBERS FOR WARRANTY WORK. PROVIDE A NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE INCLUDING RECOMMENDED SETPOINTS. MANUALS SHALL INCLUDE SUBMITTALS OF ALL EQUIPMENT, SIZE AND OPTIONS SELECTED. PROVIDE ALL BALANCING REPORTS. PROVIDE MANUFACTURER LITERATURE FOR OPERATIONS AND MAINTENANCE FOR ALL THE EQUIPMENT ON THE PROJECT. ALL PERIODIC AND ROUTINE MAINTENANCE SHALL BE CLEARLY IDENTIFIED. PROVIDE A CONTROLS SECTION LISTING SYSTEM OPERATING AND CONTROL INSTRUCTIONS, MAINTENANCE, CALIBRATION, WIRING DIAGRAMS, SCHEMATICS AND CONTROL SEQUENCE DESCRIPTIONS.

SHOP DRAWINGS/SUBMITTALS: SUBMIT ELECTRONIC SUBMITTALS AND SHOP DRAWINGS VIA EMAIL AS PDF ELECTRONIC FILES. PROVIDE SUBMITTALS ON ALL MECHANICAL EQUIPMENT (INCLUDING CONTROLS PACKAGES), AIR DISTRIBUTION DEVICES, DUCTWORK, DAMPERS, AND INSULATION. SUBMITTALS AND SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING INFORMATION:

- PROJECT NAME
- DATE
- NAME AND ADDRESS OF ARCHITECT AND MEP ENGINEER
- NAME OF CONSTRUCTION MANAGER
- NAME OF CONTRACTOR
- NAME OF FIRM OR ENTITY THAT PREPARED SUBMITTAL
- NAMES OF SUBCONTRACTOR, MANUFACTURER, AND SUPPLIER.
- CATEGORY AND TYPE OF SUBMITTAL
- SUBMITTAL PURPOSE AND DESCRIPTION
- MANUFACTURER NAME
- PRODUCT NAME
- DRAWING NUMBER AND DETAIL REFERENCES, AS APPROPRIATE
- INDICATION OF FULL OR PARTIAL SUBMITTAL
- TRANSMITTAL NUMBER
- REMARKS

IDENTIFY DEVIATIONS FROM THE CONTRACT DOCUMENTS ON SHOP DRAWINGS AND SUBMITTALS. FURNISH COPIES OF FINAL SUBMITTALS TO MANUFACTURERS, SUBCONTRACTORS, SUPPLIERS, FABRICATORS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHERS AS NECESSARY FOR PERFORMANCE OF CONSTRUCTION ACTIVITIES. SHOW DISTRIBUTION ON TRANSMITTAL FORMS.

SUBMITTALS SHALL INCLUDE (AS APPLICABLE):

- MANUFACTURER'S CATALOG CUTS
- MANUFACTURER'S PRODUCT SPECIFICATIONS
- STATEMENT OF COMPLIANCE WITH SPECIFIED REFERENCED STANDARDS
- TESTING BY RECOGNIZED TESTING AGENCY
- APPLICATION OF TESTING AGENCY LABELS AND SEALS
- WIRING DIAGRAMS SHOWING FACTORY-IINSTALLED WIRING
- PERFORMANCE CURVES
- OPERATIONAL RANGE DIAGRAMS
- CLEARANCES REQUIRED TO OTHER CONSTRUCTION, IF NOT INDICATED ON SHOP DRAWINGS.

FULL SIZE SHOP DRAWINGS SHALL INCLUDE (AS APPLICABLE):

- IDENTIFICATION OF PRODUCTS
- SCHEDULES
- COMPLIANCE WITH SPECIFIED STANDARDS
- NOTATION OF COORDINATION REQUIREMENTS
- NOTATION OF DIMENSIONS ESTABLISHED BY FIELD MEASUREMENT
- RELATIONSHIP AND ATTACHMENT TO ADJOINING CONSTRUCTION CLEARLY INDICATED.

MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING DUCT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION AND INSTALLATION.

MECHANICAL SYMBOLS LEGEND

ABBREVIATIONS:

AD	ACCESS DOOR
AFF/AFG	ABOVE FINISHED FLOOR/GRADE
AHU	AIR HANDLING UNIT
AHJ	AUTHORITY HAVING JURISDICTION
BDD	BACKDRAFT DAMPER
BOD	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
CD	CONTROL DAMPER
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
EC	ELECTRICAL CONTRACTOR
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWT	ENTERING WATER TEMPERATURE
FD	FIRE DAMPER
FPC	FIRE PROTECTION CONTRACTOR
FSD	COMBINATION FIRE/SMOKE DAMPER
GC	GENERAL CONTRACTOR
HZ	FREQUENCY
LAT	LEAVING AIR TEMPERATURE
MA	MIXED AIR
MD	MANUAL DAMPER
MC	MECHANICAL CONTRACTOR
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NC	NOISE CRITERIA
OA	OUTSIDE AIR
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
RLF	RELIEF AIR
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SD	SMOKE DAMPER
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
WC	WATER COLUMN
WB	WET BULB

GRILLES/DIFFUSERS:

- SUPPLY DIFFUSER
- SIDEWALL MOUNTED SUPPLY REGISTER
- RETURN GRILLE
- EXHAUST GRILLE

DOUBLE LINE DUCT SYMBOLS:

- NEW SHEET METAL DUCTWORK
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- DUCTWORK TRANSITION
- DUCTWORK TRANSITION – RECTANGULAR TO ROUND
- SUPPLY DUCT ELBOW UP OR DOWN
- RETURN DUCT ELBOW UP OR DOWN
- EXHAUST DUCT ELBOW UP OR DOWN
- DUCT ELBOW WITH FIXED TURNING VANES
- DUCT BRANCH TAKE-OFF
- ROUND SPIN-IN WITH DAMPER
- SQUARE TO ROUND TAP WITH DAMPER
- FLEXIBLE DUCT CONNECTION
- EOD — ELECTRIC OPERATED DAMPER
- VD — VOLUME DAMPER
- FLEXIBLE DUCTWORK

EQUIPMENT:

- ROOF MOUNTED EXHAUST FAN
- AIR CURTAIN
- ROOFTOP UNIT
- MAKE-UP AIR UNIT
- T — THERMOSTAT – ELECTRIC
- TS — TEMPERATURE SENSOR
- H — HUMIDITY SENSOR
- DUCT SMOKE DETECTOR

GENERAL REFERENCES/NOTATIONS:

- CONNECT TO EXISTING
- # — SQUARE NOTE DESIGNATION
- # — REVISION DESIGNATION
- TYPE X — MECHANICAL EQUIPMENT DESIGNATION
- ? CFM — DIFFUSER DESIGNATION AND CFM

SYMBOLS LEGEND NOTES:
1. REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS SCHEDULE, PROVIDED BY THIS CONTRACTOR.

APPLICABLE CODES

BUILDING:	2021 INTERNATIONAL BUILDING CODE 2022 DENVER COMMERCIAL BUILDING CODE
MECHANICAL:	2021 INTERNATIONAL MECHANICAL CODE
PLUMBING:	2021 INTERNATIONAL PLUMBING CODE
ELECTRICAL:	2023 NATIONAL ELECTRICAL CODE
FIRE:	2021 INTERNATIONAL FIRE CODE
ENERGY:	2021 INTERNATIONAL ENERGY CONSERVATION CODE 2022 DENVER ENERGY CODE

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CITY AND COUNTY OF DENVER
APPROVED BUILDING PLANS
LOG# 2025-LOG-0001972
Date: 04/03/2025
Reviewer: Naomi Saliman, PE
This review shall not be construed to mean acceptance of any code violations shown on these plans, unless specifically authorized in writing by Administrative Modification or Board of Appeals decision. No review is made for compliance with ADA or any other law not adopted as part of the building code for the City and County of Denver.

zebra

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Project # -10202366.01

STORE NO.:

CAVA

8969 E 46TH AVENUE
DENVER, CO 80238
UNITED STATES

REVISIONS / ISSUES

△		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	03/14/25	REVISED ROOF PLAN

STATUS:
ISSUE FOR CONSTRUCTION

COLORADO LICENSED PROFESSIONAL ENGINEER
ROBERT A. HARRIS
42440
03/14/2025
02/27/2025
Robert Harris

FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL SPECIFICATIONS, NOTES AND LEGEND

DATE: 05-24-24	PROJECT NO.: 36667
DRAWN: VOC	SCALE: AS NOTED

SHEET NO.:
M000

2021 INTERNATIONAL MECHANICAL CODE TABLE 403.3.1.1 VENTILATION SUMMARY

OCCUPANCY CATEGORY	PEOPLE OUTDOOR AIR RATE - (Rp)	AREA OUTDOOR AIR RATE - (Ra)	OCCUPANCY DENSITY	OCCUPANCY CLASSIFICATION	CALCULATED OCCUPANCY DENSITY	ZONE OCCUPANCY OVERRIDE	PEOPLE EXPECTED TO OCCUPY THE ZONE - (Pz)	Rp*Pz	Ra*Az	AREA - (Az)	ZONE AIR DISTRIBUTION EFFECTIVENESS -	BREATHING ZONE OUTDOOR AIRFLOW - (Vbz)	ZONE OUTDOOR AIRFLOW (Voz) Voz=Vbz/Ez	ZONE PRIMARY AIRFLOW (Vpz)	PRIMARY OUTDOOR AIR FRACTION (Zp) Zp=Voz/Vpz	OCCUPANT DIVERSITY RATIO (D)	UNCORRECTED OUTDOOR AIR INTAKE (Vou)	SYSTEM VENTILATION EFFICIENCY	CORRECTED OUTDOOR AIRFLOW (Vot)	PROVIDED OUTDOOR AIRFLOW
	(CFM/PERSON)	(CFM/SQ.FT.)	P/1,000 SQ.FT.	P/1,000 SQ.FT.						SQ.FT.	Ez	CFM					CFM	Ev	CFM	CFM
RTU-X1																				
Dining	7.5	0.18	70	DINING	74	—	74	558	191	1062	0.8	749	936	2600	0.36		749		948	
Hallway	—	0.06	—	CORRIDOR	—	—	—	—	4	71	0.8	4	5	100	0.05		4		5	
Restrooms	—	—	—	TOILET	—	—	—	—	—	96	0.8	—	—	100	—		—		—	
				SYSTEM POPULATION INCLUDING DIVERSITY (Ps) =			74							2800	0.36	1.00	753	0.79	953	955
RTU-X2																				
Kitchen	7.5	0.12	20	KITCHEN	22	—	22	166	132	1104	0.8	298	373	4000	0.09		298		373	
				SYSTEM POPULATION INCLUDING DIVERSITY (Ps) =			22							4000	0.09	1.00	298	0.80	373	400

5

ROOFTOP HEAT PUMP UNIT SCHEDULE - LANDLORD PROVIDED

IDENTIFICATION					PERFORMANCE			DX COOLING DATA			HEAT PUMP HEATING DATA		ELECTRIC HEATING COIL		ELECTRICAL			NOTES
MARK	MANUFACTURER	MODEL	SERVES	NOMINAL TONNAGE	SUPPLY AIR FLOW	OUTSIDE AIR FLOW	IEER	EAT	AMBIENT O.A.T.	NOMINAL TOTAL	OUTPUT@ 47°F	COP	INPUT	OUTPUT	VOLTS/PH	MCA	MOCP	
RTU-				TONS	CFM	CFM		°F DB/WB	°F	BTU/HR	BTU/HR		kW	BTU/HR		AMPS	AMPS	
X1	DAIKIN	DPS007A	DINING	7.0	2,800	955	18.0	79.8/57.5	95	72,000	76,499	3.58	36	122,760	208V-3PH	171.8	175	1,2
X2	DAIKIN	DPS010A	KITCHEN	10.0	4,000	400	18.0	80.8/56.9	95	102,000	100,495	3.42	36	122,760	208V-3PH	223.0	225	1,2

2 5

NOTES:
1. LANDLORD PROVIDED RTU.
2. SET MINIMUM OUTSIDE AIR AS SPECIFIED ABOVE. FIELD SET 2 MINIMUM POSITIONS TO MAINTAIN SCHEDULED OUTSIDE AIR FLOW RATE AT SUPPLY FAN MINIMUM AND MAXIMUM SPEEDS. OUTSIDE AIR DAMPER SHALL FULLY CLOSE ON UNIT SHUTDOWN.

MAKE UP AIR UNIT SCHEDULE - OWNER FURNISHED

IDENTIFICATION					CONFIGURATION		PERFORMANCE		DX COOLING DATA			GAS HEAT				ELECTRICAL				PHYSICAL	NOTES
MARK	MANUFACTURER	MODEL	SERVICE	NOMINAL TONNAGE	TYPE	DRIVE TYPE	OUTSIDE AIR FLOW	EXT. STATIC	EAT	TOTAL	SENSIBLE	FUEL	INPUT	OUTPUT	EFFICIENCY	MOTOR	VOLTS/PH	MCA	MOCP	APPROX. WEIGHT	5
MAU-				TONS			CFM	IN.W.C	°F DB/WB	BTU/HR	BTU/HR	TYPE	BTU/HR	BTU/HR	AFUE %	HP		AMPS	AMPS	LBS	
1	CAPTIVEAIRE	CAS-HVAC1-I.200-15-3T-MPU	HOOD #1	3	DOWNFLOW	DIRECT	1,694	0.75	91.0/60.0	38,400	38,400	NATURAL GAS	148,241	120,075	81	1.50	208V-3PH	23.0	25	1,300	1-9

3

NOTES:
1. FACTORY MOUNTED AND WIRED NEMA 3R DISCONNECT SWITCH.
2. FACTORY PROVIDED REMOVABLE ACCESS PANELS.
3. FACTORY PROVIDED MOTORIZED INTAKE DAMPER.
4. FACTORY PROVIDED R454B LEACK DETECTION SYSTEM. 5
5. PROVIDE UNIT MOUNTED VARIABLE FREQUENCY DRIVE.
6. FACTORY FURNISHED 20" HIGH INSULATED ROOF CURB. 5
7. PROVIDE WITH SPECIAL ORIFICES FOR HEATING ABOVE 2000 FEET
3 8. REFER TO CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION.
9. FACTORY FURNISHED DEMAND RESPONSE THERMOSTAT.

KITCHEN EXHAUST FAN SCHEDULE - OWNER FURNISHED

IDENTIFICATION				CONFIGURATION		PERFORMANCE				ELECTRICAL				PHYSICAL	ACCESSORIES	NOTES
MARK	MANUFACTURER	MODEL	SERVICE	TYPE	DRIVE TYPE	EXHAUST AIR FLOW	EXT. STATIC	FAN SPEED	SOUND LEVEL	MOTOR	VOLTS/PH	MCA	MOCP	APPROX. WEIGHT		
KEF-						CFM	IN.W.C	RPM	SONES	HP		AMPS	AMPS	LBS		
1	CAPTIVEAIRE	DU85HFA	HOOD #1	UPBLAST	DIRECT	2,117	1.00	1,479	15.0	1	120V-1PH	14.5	25	150	GDC,RC,WP	1-3

5

ACCESSORIES:
GDC-GREASE DRAIN AND CUP, RC-24" TALL ROOF CURB, WP-NEMA 3R DISCONNECT SWITCH

NOTES:
1. FAN IS OWNER FURNISHED. REFER TO CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION.
2. VARIABLE FREQUENCY DRIVE IS PROVIDED WITH HOOD CONTROL PANEL.
3. FAN SHALL BE CONTROLLED BY SWITCH AT CAPTIVEAIRE HOOD. INTERLOCK RTU-X1 AND RTU-X2 TO OPERATE IN OCCUPIED MODE WHILE HOOD EXHAUST FAN IS ENERGIZED.

EXHAUST FAN SCHEDULE

IDENTIFICATION			CONFIGURATION		PERFORMANCE				ELECTRICAL				PHYSICAL	ACCESSORIES	NOTES
MARK	MANUFACTURER	MODEL	TYPE	DRIVE TYPE	EXHAUST AIR FLOW	EXT. STATIC	FAN SPEED	SOUND LEVEL	MOTOR	VOLTS/PH	MCA	MOCP	APPROX. WEIGHT		
EF-					CFM	IN.W.C	RPM	SONES	HP		AMPS	AMPS	LBS		
1	GREENHECK	G-080-VG	DOWNBLAST	DIRECT	200	0.35	1,489	7	1/10	120V-1PH	1.9	15	30	BD,BG,BS,DS,RC,SC	1

ACCESSORIES:
BD-BACKDRAFT DAMPER, BG-BELT GUARD, BS-BIRD SCREEN, DS-DISCONNECT SWITCH, RC-14" ROOF CURB, SC-FACTORY MOUNTED AND WIRED SPEED CONTROLLER

NOTES:
1. ELECTRICAL CONTRACTOR SHALL INTERLOCK FAN WITH TIMECLOCK TO OPERATE CONTINUOUSLY DURING OCCUPIED HOURS.

AIR CURTAIN SCHEDULE

IDENTIFICATION			PERFORMANCE	ELECTRIC HEATING COIL			ELECTRICAL				PHYSICAL		ACCESSORIES	NOTES
MARK	MANUFACTURER	MODEL	AIRFLOW	INPUT	OUTPUT	STAGES	MOTOR	VOLTS/PH	MCA	MOCP	APPROX. WEIGHT	FINISH		
AC-			CFM	kW	BTU/HR	QTY	HP		AMPS	AMPS	LBS			
1	BERNER	ALC08-1042E	1,212	7.5	25,575	1	1/5	208V-3PH	28.1	30	50	PER ARCH	DRA,F,MS,T	1
2	BERNER	ALC08-1048E	1,381	10.8	36,828	1	1/5	208V-3PH	39.6	40	55	PER ARCH	DRA,F,MS,T	2

3

ACCESSORIES:
DRA-DECORATIVE REAR ADAPTOR, F-FILTER, MS-DOOR MICROSWITCH, T-DEMAND RESPONSE THERMOSTAT

NOTES:
1. PROVIDE WITH INTEGRAL DISCONNECT SWITCH.
2. ELECTRICAL CONTRACTOR TO PROVIDE FUSED DISCONNECT SWITCH.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	TYPE	NECK SIZE	FACE SIZE	FRAME TYPE	FINISH	NOISE CRITERIA LEVEL	ACCESSORIES
				L" X W"	L" X W"				
A	TITUS	TMS-AA	SQUARE CONE DIFFUSER	SEE PLAN	24"X24"	LAY-IN	PER ARCHITECT	<30	
B	TITUS	300FL	LOUVERED SUPPLY GRILLE	10"X10"	12"X12"	SURFACE	PER ARCHITECT	<30	OBD
C	TITUS	TMS	SQUARE CONE DIFFUSER	SEE PLAN	12"X12"	LAY-IN	PER ARCHITECT	<30	OBD,TRM
D	TITUS	355FL	LOUVERED RETURN GRILLE	22"X22"	24"X24"	LAY-IN	PER ARCHITECT	<30	OBD,STR,TRM
E	TITUS	R-300F	ROUND SUPPLY DIFFUSER	12" ROUND	15" ROUND	DUCT MOUNT	PER ARCHITECT	<30	
F	TITUS	355FL	LOUVERED RETURN GRILLE	22"X22"	24"X24"	LAY-IN	PER ARCHITECT	<30	STR
G	TITUS	50F	EXHAUST GRILLE	10"X10"	12"X12"	LAY-IN	PER ARCHITECT	<30	OBD,STR,TRM

ACCESSORIES:
OBD-OPPOSED BLADE DAMPER, STR-SQUARE TO ROUND TRANSITION, TRM-RAPID MOUNT SHEETROCK FRAME

AIR BALANCE SCHEDULE

MARK	SUPPLY AIR FLOW	OUTSIDE AIR FLOW	EXHAUST AIR FLOW	RETURN AIR FLOW	BUILDING PRESSURE	
		CFM	CFM	CFM	CFM	5
MAU-1	1694	1694	0	0	1694	
RTU-X1	2800	955	0	1845	955	
RTU-X2	4000	400	0	3600	400	
KEF-1	0	0	2117	0	-2117	5
EF-1	0	0	200	0	-200	
TOTAL	8494	3049	2317	5445	732	

AIR CONDITIONING REFRIGERATION INFORMATION

	ROOM DIMENSIONS			REFRIGERATION INFORMATION				
	AREA (SQUARE FEET)	HEIGHT (FEET)	VOLUME (CUBIC FEET)	QTY	TYPE	TOTAL CHARGE (LBS)	ALLOWED LBS/1,000 CUBIC FEET	ACTUAL LBS/1,000 CUBIC FEET
MAU-1	372	9	3348.00	1	R454-B	15.00	34.00	4.48
WALK-IN COOLER	108	9	972.00	1	R404-A	14.00	31.00	14.40

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2

REVISIONS / ISSUES

		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	03/14/25	REVISED ROOF PLAN
6	03/14/25	RFI #4 RESPONSE
7	03/28/25	CITY COMMENTS

STATUS:

ISSUE FOR CONSTRUCTION

COLORADO LICENSED
ROBERT K. THOMAS
42440
PROFESSIONAL ENGINEER
03/27/2025
02/27/2025
PROFESSIONAL ENGINEER

FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:

MECHANICAL SCHEDULES

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:

M001

RTU-X1 LOAD CALCULATIONS

Air System Information

Air System Name	RTU-X1 DINING	Number of zones	1
Equipment Class	PKG ROOF	Floor Area	1230.0 ft²
Air System Type	SZCAV	Location	Denver, Colorado

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Peak zone sensible load
Sizing Data	User-Modified	Space CFM Sizing	Coincident space loads

Central Cooling Coil Sizing Data

Total coil load	4.9	Tons	Load occurs at	Aug 1400	
Total coil load	59.0	MBH	OA DB / WB	93.1 / 60.5	°F
Sensible coil load	59.0	MBH	Entering DB / WB	79.8 / 57.5	°F
Coil CFM at Aug 1400	2800	CFM	Leaving DB / WB	56.1 / 48.7	°F
Max block CFM	2800	CFM	Coil ADP	53.5	°F
Sum of peak zone CFM	2800	CFM	Bypass Factor	0.100	
Sensible heat ratio	1.000		Resulting RH	37	%
CFM/Ton	569.4		Design supply temp.	57.0	°F
ft²/Ton	250.1		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	48.0		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data

Max coil load	93.2	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	2800	CFM	BTU/(hr·ft²)	75.8	
Max coil CFM	2800	CFM	Ent. DB / Lvg DB	45.1 / 82.5	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	2800	CFM	Fan motor BHP	1.15	BHP
Standard CFM	2305	CFM	Fan motor kW	0.91	kW
Actual max CFM/ft²	2.28	CFM/ft²	Fan static	1.50	in wg

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 93.1 °F / 60.5 °F			HEATING OA DB / WB -1.4 °F / -4.6 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	668 ft²	12707	-	668 ft²	-	-
Wall Transmission	864 ft²	588	-	864 ft²	2323	-
Roof Transmission	1230 ft²	1761	-	1230 ft²	3071	-
Window Transmission	668 ft²	3845	-	668 ft²	17157	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	72 ft²	1942	-	72 ft²	3239	-
Floor Transmission	1230 ft²	0	-	1230 ft²	3653	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	562 W	1918	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	45	7889	5400	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	5532	0	-	0	0
Safety Factor	0% / 0%	0	0	25%	7361	0
>> Total Zone Loads	-	**36183**	**5400**	-	**36804**	**0**
Zone Conditioning	-	38861	5400	-	36420	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	2800 CFM	0	-	2800 CFM	0	-
Ventilation Load	955 CFM	17038	-5388	955 CFM	59868	0
Supply Fan Load	2800 CFM	3114	-	2800 CFM	-3114	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	**59013**	**12**	-	**93174**	**0**
Central Cooling Coil	-	59013	0	-	0	0
Central Heating Coil	-	0	-	-	93174	-
>> Total Conditioning	-	**59013**	**0**	-	**93174**	**0**
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

RTU-X2 LOAD CALCULATIONS

Air System Information

Air System Name	RTU-X2 KITCHEN	Number of zones	1
Equipment Class	PKG ROOF	Floor Area	1032.0 ft²
Air System Type	SZCAV	Location	Denver, Colorado

Sizing Calculation Information

Calculation Months	Jan to Dec	Zone CFM Sizing	Peak zone sensible load
Sizing Data	User-Modified	Space CFM Sizing	Coincident space loads

Central Cooling Coil Sizing Data 5

Total coil load	6.2	Tons	Load occurs at	Aug 1500	
Total coil load	74.7	MBH	OA DB / WB	93.9 / 60.7	°F
Sensible coil load	74.7	MBH	Entering DB / WB	75.7 / 56.0	°F
Coil CFM at Aug 1500	4000	CFM	Leaving DB / WB	54.7 / 48.1	°F
Max block CFM	4000	CFM	Coil ADP	52.4	°F
Sum of peak zone CFM	4000	CFM	Bypass Factor	0.100	
Sensible heat ratio	1.000		Resulting RH	34	%
CFM/Ton	642.5		Design supply temp.	55.0	°F
ft²/Ton	165.8		Zone T-stat Check	1 of 1	OK
BTU/(hr·ft²)	72.4		Max zone temperature deviation	0.0	°F
Water flow @ 10.0 °F rise	N/A				

Central Heating Coil Sizing Data 5

Max coil load	32.5	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	2700	SCAV	BTU/(hr·ft²)	31.5	
Max coil CFM	4000	CFM	Ent. DB / Lvg DB	62.7 / 71.9	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	4000	CFM	Fan motor BHP	1.64	BHP
Standard CFM	3292	CFM	Fan motor kW	1.30	kW
Actual max CFM/ft²	3.88	CFM/ft²	Fan static	1.50	in wg

Outdoor Ventilation Air Data 5

Design airflow CFM	400	CFM	CFM/person	50.00	CFM/person
CFM/ft²	0.39	CFM/ft²			

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 93.9 °F / 60.7 °F			HEATING OA DB / WB -1.4 °F / -4.6 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	16 ft²	377	-	16 ft²	-	-
Wall Transmission	1308 ft²	1112	-	1308 ft²	3518	-
Roof Transmission	1032 ft²	1415	-	1032 ft²	2577	-
Window Transmission	16 ft²	97	-	16 ft²	411	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	24 ft²	150	-	24 ft²	634	-
Floor Transmission	1032 ft²	0	-	1032 ft²	4205	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	679 W	2317	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	500 W	1706	-	0	0	-
People	8	1525	1640	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	51969	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	**60668**	**1640**	-	**11345**	**0**
Zone Conditioning	-	63090	1640	-	11625	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	4000 CFM	0	-	4000 CFM	0	-
Ventilation Load	400 CFM	7174	-1586	400 CFM	25343	0
Supply Fan Load	4000 CFM	4346	-	4000 CFM	4346	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	**74711**	**54**	-	**32520**	**0**
Central Cooling Coil	-	74711	0	-	0	0
Central Heating Coil	-	0	-	-	32520	-
>> Total Conditioning	-	**74711**	**0**	-	**32520**	**0**
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

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REVISIONS / ISSUES

△		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	02/20/25	REVISED ROOF PLAN

STATUS:

ISSUE FOR CONSTRUCTION

COLORADO LICENSED
ROBERT A. HARRIS
42440
02/27/2025
PROFESSIONAL ENGINEER

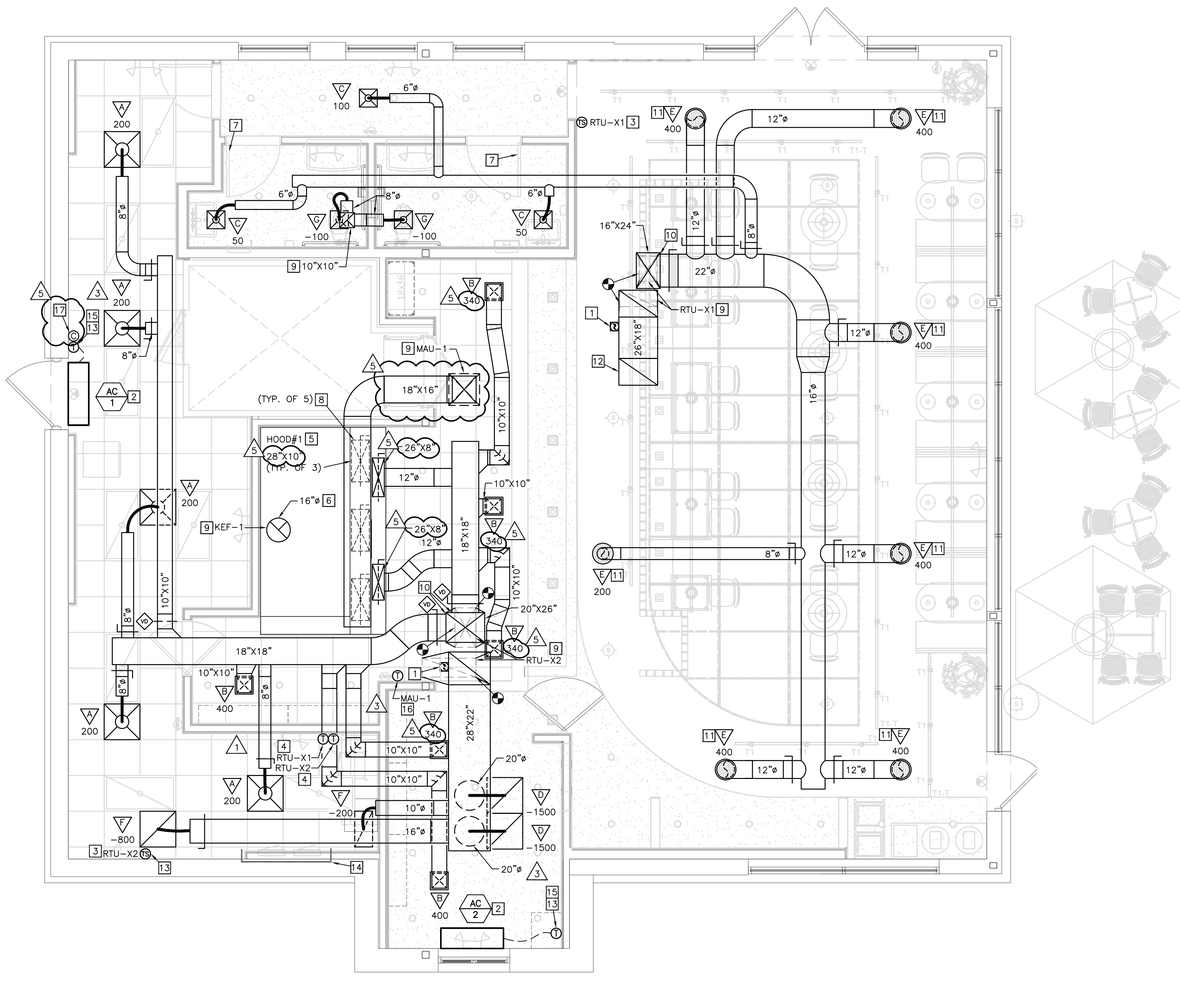
FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL SCHEDULES

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M002

1



1 MECHANICAL PLAN
1/4" = 1'-0"

MECHANICAL KEY NOTES

1. PROVIDE DUCT MOUNTED SMOKE DETECTOR. DETECTOR SHALL MEET REQUIREMENTS OF U.L. 268A. INTERLOCK SMOKE DETECTOR TO SHUT DOWN UNIT UPON DETECTION OF SMOKE. PROVIDE SMOKE DETECTOR WITH AN ANNUNCIATOR WITH PIEZO ALARM AND POWER LEDS FOR VISIBLE AND AUDIBLE ALARM SIGNAL; AND VISIBLE TROUBLE SIGNAL. MOUNT ANNUNCIATOR ON ROOM SIDE OF CEILING/STRUCTURE.
2. PROVIDE AIR CURTAIN. MOUNT UNIT ON WALL DIRECTLY ABOVE DOOR PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. PROVIDE REMOTE TEMPERATURE SENSOR COMPATIBLE WITH THERMOSTAT. MOUNT SENSOR 48" ABOVE FINISHED FLOOR.
4. PROVIDE HONEYWELL WI-FI VISION PRO 8000 TOUCHSCREEN 7-DAY PROGRAMMABLE THERMOSTAT WITH DEMAND RESPONSE CAPABILITY, AUTO-CHANGEOVER, AND AUTOMATIC START CAPABILITY. MOUNT THERMOSTAT 48" ABOVE FINISHED FLOOR. COORDINATE FINAL INSTALLATION LOCATION OF THERMOSTAT WITH OWNER'S REPRESENTATIVE. (1)
5. INSTALL OWNER FURNISHED TYPE I GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. REFER TO HOOD DRAWINGS IN FOOD SERVICE SET FOR HOOD SPECIFICATION AND ADDITIONAL INFORMATION INCLUDING BALANCE OF MAKEUP AND CONDITIONED SUPPLY AIR TO HOOD.
6. INSTALL OWNER FURNISHED UL-2221 LISTED DOUBLE-WALL GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL DW-3R OR 3Z ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL, FROM HOOD COLLAR EXHAUST FAN ON ROOF. INSTALL EXHAUST DUCT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT. COORDINATE ROUTING OF DUCTWORK WITH OWNER'S CAPTIVEAIRE REPRESENTATIVE.
7. UNDERCUT RESTROOM DOOR 1" FOR TRANSFER AIR.
8. REFER TO HOOD DRAWINGS FOR BALANCE OF MAKEUP AND CONDITIONED SUPPLY AIR TO HOODS.
9. DUCT UP TO EQUIPMENT ON ROOF. REFER TO SHEET M200 FOR EQUIPMENT LOCATION.
10. PROVIDE SHOE TAP AT CONNECTION TO DUCT DROP FROM ROOFTOP UNIT.
11. INSTALL BOTTOM OF ROUND DIFFUSER TO MATCH HEIGHT OF CEILING CLOUD.
12. ELBOW END OF RETURN DUCT UP 4". PROVIDE 1"X1" MESH SCREEN AT OPENING.
13. INSULATE EXTERIOR WALL BEHIND THERMOSTAT AND CAULK WIRE PENETRATION THROUGH WALL.
14. DUCTWORK SHALL NOT RUN OVER ELECTRICAL PANELS.
15. PROVIDE THERMOSTAT FOR AIR CURTAIN HEATER OPERATION WITH DEMAND RESPONSE CAPABILITY. MOUNT THERMOSTAT 48" ABOVE FINISHED FLOOR. COORDINATE FINAL INSTALLATION LOCATION OF THERMOSTAT WITH OWNER'S REPRESENTATIVE. (3)
16. INSTALL THERMOSTAT WITH DEMAND RESPONSE CAPABILITY FOR MAU FURNISHED WITH HOOD PACKAGE. MOUNT THERMOSTAT 48" ABOVE FINISHED FLOOR. COORDINATE FINAL INSTALLATION LOCATION OF THERMOSTAT WITH OWNER'S REPRESENTATIVE.
17. PROVIDE CO2 DETECTOR MODEL NUMBER RAD-0102-6-S NEAR CO2 BULK TANKS FOR BEVERAGE SYSTEM. INSTALL 18" ABOVE FINISHED FLOOR. (5)

HVAC COMMISSIONING

GENERAL CONTRACTOR SHALL HIRE A THIRD PARTY REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY TO DEVELOP A COMMISSIONING PLAN THAT SHALL INCLUDE THE FOLLOWING ITEMS:

1. NARRATIVE DESCRIPTION OF ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING, INCLUDING PERSONNEL INTENDED TO ACCOMPLISH EACH OF ACTIVITY.
2. LISTING OF SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED AND DESCRIPTION OF TESTS TO BE PERFORMED.
3. FUNCTIONS TO BE TESTED, INCLUDING, BUT NOT LIMITED TO CALIBRATIONS AND ECONOMIZER CONTROLS.
4. CONDITIONS UNDER WHICH TEST WILL BE PERFORMED. AT MINIMUM, TESTING SHALL AFFIRM WINTER AND SUMMER DESIGN CONDITIONS AND FULL OUTSIDE AIR CONDITIONS.
5. MEASURABLE CRITERIA FOR PERFORMANCE.

A PRELIMINARY REPORT OF COMMISSIONING TEST PROCEDURES AND RESULTS SHALL BE COMPLETED AND CERTIFIED BY REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY IN ACCORDANCE WITH REQUIREMENTS OF SECTION C408.2 OF THE 2021 INTERNATIONAL ENERGY CONSERVATION CODE AND PROVIDED TO PROJECT OWNER. A COPY OF THE REPORT SHALL BE MADE AVAILABLE TO CODE OFFICIAL IF REQUESTED.

FINAL COMMISSIONING REPORT SHALL BE DUE TO PROJECT OWNER WITHIN 90 DAYS OF RECEIPT OF CERTIFICATE OF OCCUPANCY.

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UNITED STATES

REVISIONS / ISSUES

△		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	02/20/25	REVISED ROOF PLAN

STATUS:
ISSUE FOR CONSTRUCTION

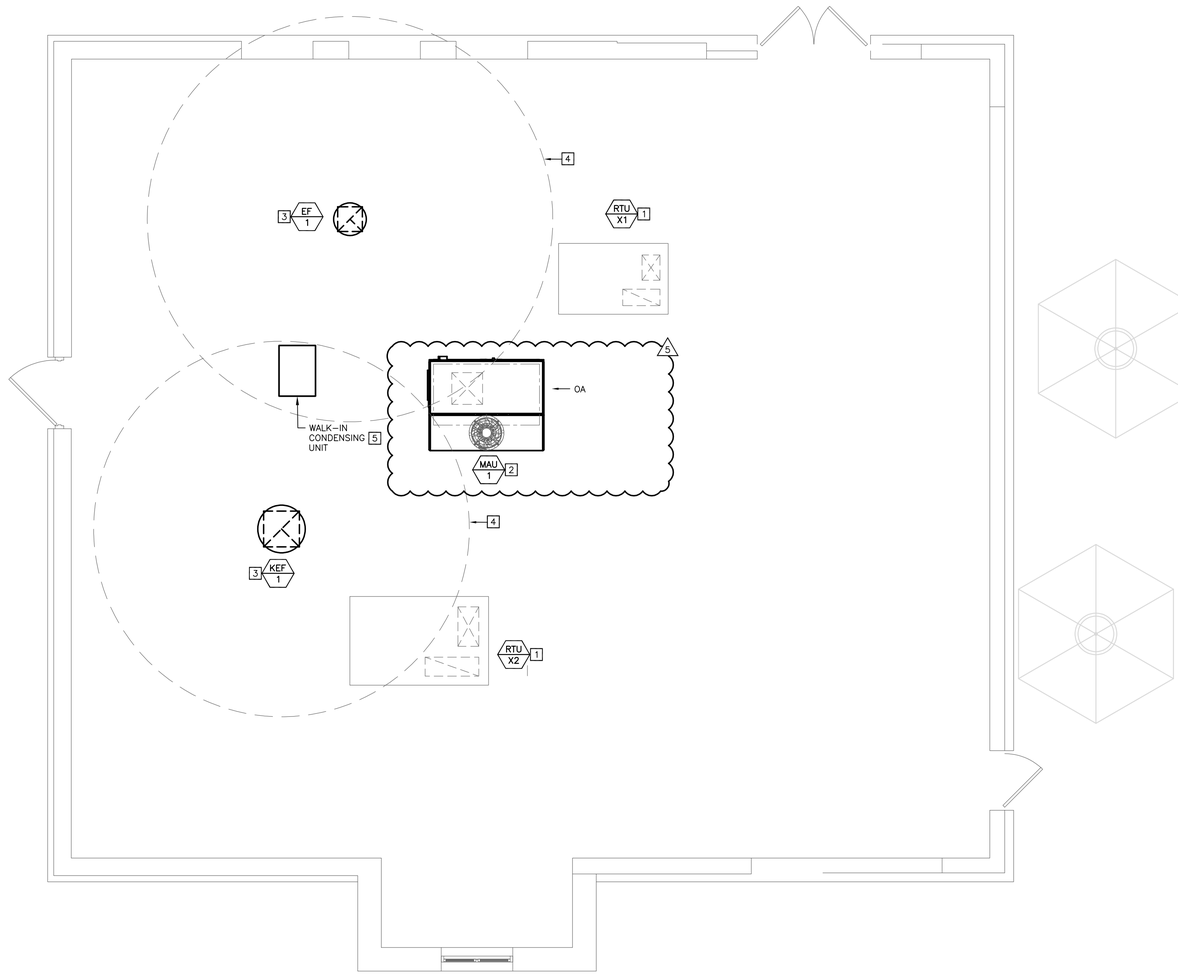
COLORADO LICENSED
ROBERT A. HARRIS
42440
02/27/2025
PROFESSIONAL ENGINEER

FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL PLAN

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M100



1 MECHANICAL PLAN-ROOF

1/4" = 1'-0"

MECHANICAL KEY NOTES

1. LANDLORD PROVIDED ROOFTOP UNIT, CURB, AND DUCT STUBS. COORDINATE UNIT WITH STRUCTURE. SHIM UNIT AND CURB LEVEL FOR PROPER CONDENSATE DRAINAGE. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN AIR DUCT CONNECTIONS. TRANSITION TO DUCT SIZES SHOWN.
2. INSTALL OWNER FURNISHED MAKEUP AIR UNIT AND ROOF CURB. SHIM UNIT AND CURB LEVEL. PROVIDE FLEXIBLE CONNECTOR ON SUPPLY AIR DUCT CONNECTION. TRANSITION TO DUCT SIZE SHOWN ON SHEET M100.
3. INSTALL OWNER FURNISHED ROOF MOUNTED EXHAUST FAN AND CURB.
4. MAINTAIN A MINIMUM 10'-0" CLEARANCE FROM EXHAUST DISCHARGE TO OUTSIDE AIR INTAKES.
5. PROVIDE ROOF MOUNTED EQUIPMENT SUPPORT RAILS AND INSTALL OWNER FURNISHED REMOTE CONDENSING UNIT FOR WALK-IN COOLER. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, CRANKCASE HEATER, LOW AMBIENT CONTROLS, AND WEATHERPROOF HOUSING. PROVIDE ROOF RAILS TO SUPPORT CONDENSING UNIT ON ROOF. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE PIPE CURB ASSEMBLY FOR ROOF PENETRATIONS. SEAL PIPING PENETRATIONS THROUGH COOLER ROOF.

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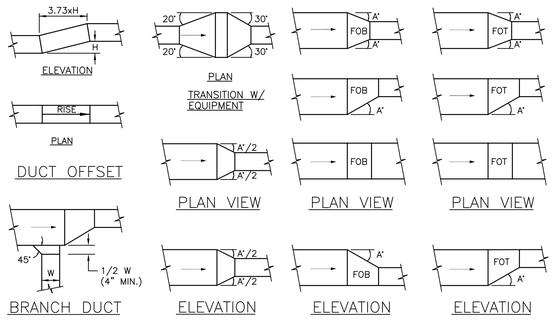
SHEET NAME:

MECHANICAL PLAN - ROOF

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

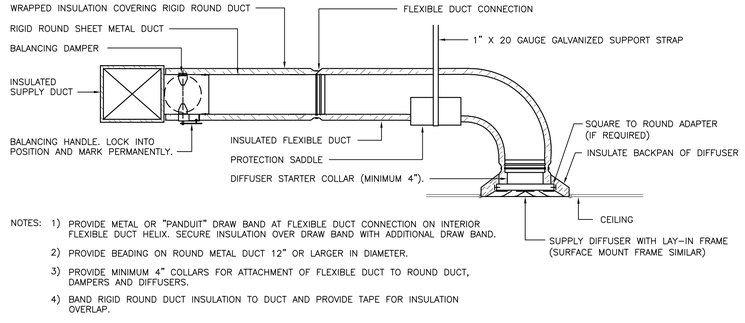
SHEET NO.:

M200



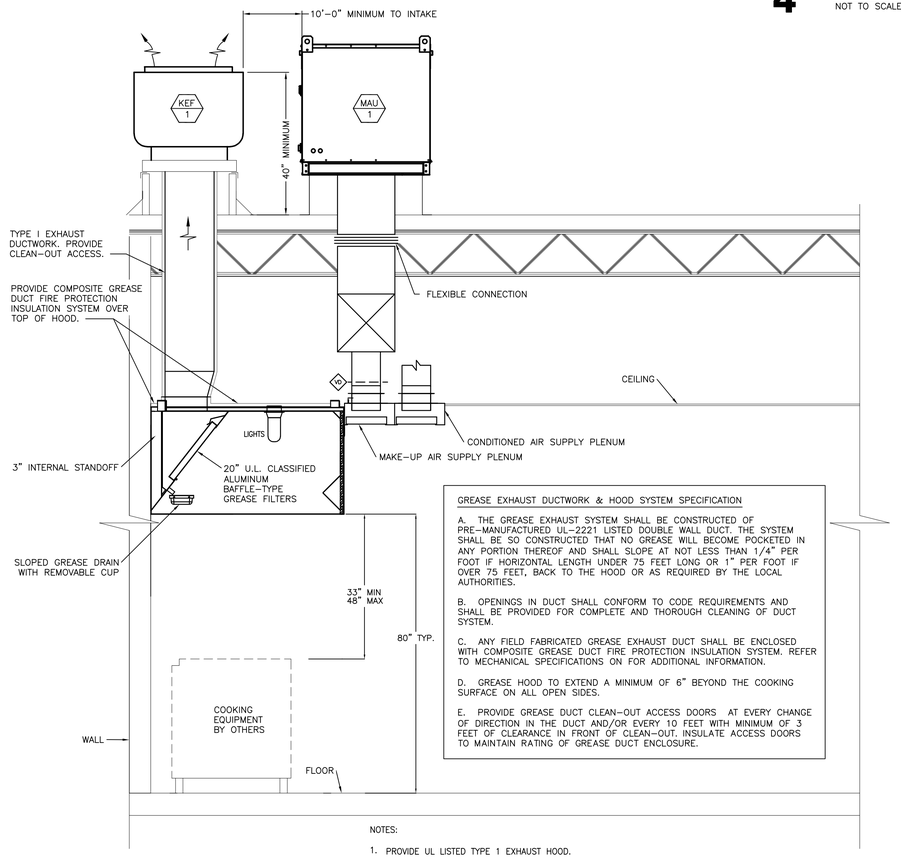
NOTES: 1) ANGLE A = 30° WHEN AIR FLOWS IN DIRECTION OF ARROW (SUPPLY AIR).
2) ANGLE A = 20° WHEN AIR FLOWS IN OPPOSITE DIRECTION OF ARROW (RETURN OR EXHAUST).

4 LOW VELOCITY DUCT FITTINGS DETAIL
NOT TO SCALE



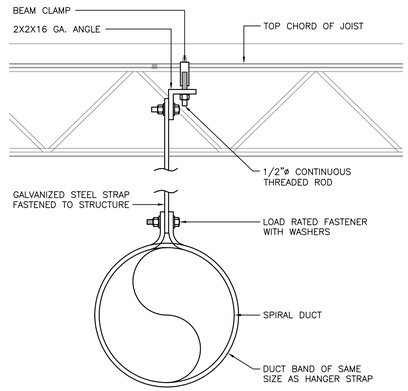
NOTES:
1) PROVIDE METAL OR "PANDUIT" DRAW BAND AT FLEXIBLE DUCT CONNECTION ON INTERIOR FLEXIBLE DUCT HELIX. SECURE INSULATION OVER DRAW BAND WITH ADDITIONAL DRAW BAND.
2) PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.
3) PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF FLEXIBLE DUCT TO ROUND DUCT, DAMPERS AND DIFFUSERS.
4) BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

1 DIFFUSER CONNECTION DETAIL
NOT TO SCALE

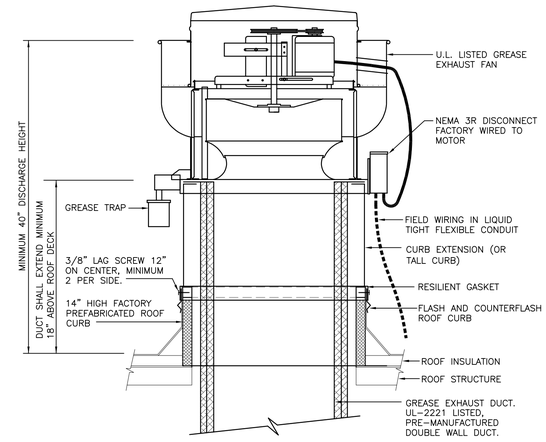


NOTES:
1. PROVIDE UL LISTED TYPE 1 EXHAUST HOOD.
2. THE GREASE HOOD SHALL MEET THE REQUIREMENTS OF THE MECHANICAL CODE, NSF AND NFPA FOR A TYPE I HOOD.
3. FIRE DEPARTMENT APPROVAL SHALL BE REQUIRED ON FIRE PROTECTION SYSTEM FOR GREASE HOODS AND DUCTS AS REQUIRED BY THE MECHANICAL CODE AND AS REQUIRED BY THE FIRE CODE.
4. PROVIDE CHEMICAL FIRE SUPPRESSION SYSTEM AS REQUIRED BY NFPA 17A.
5. PERFORM SMOKE TEST ON GREASE EXHAUST DUCTWORK AFTER DUCTWORK INSTALLATION IS COMPLETE BUT PRIOR TO DUCTWORK CONCEALMENT PER REQUIREMENTS OF LOCAL CODE AUTHORITIES.

7 KITCHEN HOOD SCHEMATIC
NOT TO SCALE

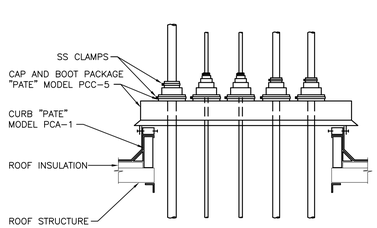


5 SPIRAL DUCT SUPPORT DETAIL
NOT TO SCALE



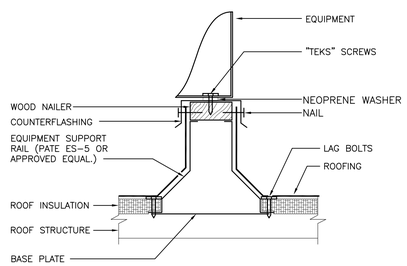
NOTE: INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 96 REQUIREMENTS.

2 ROOF MOUNTED GREASE EXHAUST FAN DETAIL
NOT TO SCALE



NOTES:
1. USE SINGLE ROOF PENETRATION FOR ALL CONTROL WIRING, POWER WIRING, AND REFRIGERANT LINES.
2. INSULATE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS.

6 PIPE ROOF PENETRATION DETAIL
NOT TO SCALE



NOTES: 1) PROVIDE TWO ROOF RAILS FOR EACH UNIT.

3 EQUIPMENT SUPPORT RAIL DETAIL
NOT TO SCALE

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REVISIONS / ISSUES

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COLORADO LICENSED
ROBERT A. HAMANN
42440
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PROFESSIONAL ENGINEER

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SHEET NAME:
MECHANICAL
DETAILS

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M300

COMcheck Software Version COMcheckWeb
Mechanical Compliance Certificate

Project Information

Energy Code:	2021 IECC
Project Title:	CAVA - Stapleton
Location:	Denver, Colorado
Climate Zone:	5b
Project Type:	New Construction

Construction Site: 2
4667 Central Park Blvd.
Denver, Colorado 80238

Owner/Agent:

Designer/Contractor:
Dialectic, Inc.
310 W 20th St, Suite 100
Kansas City, Missouri 64108

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Mechanical Systems List

Quantity	System Type & Description
1	AC-1 (Single Zone): Heating: 1 each - Other, Electric, Capacity = 26 kBtu/h No minimum efficiency requirement applies Fan System: AC-1 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 2 Supply, Constant Volume, 1212 CFM, 0.2 motor nameplate hp, 1.00 fan energy index , fan exception: Single fan <= 5HP
1	AC-2 (Single Zone): Heating: 1 each - Other, Electric, Capacity = 37 kBtu/h No minimum efficiency requirement applies Fan System: AC-2 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 3 Supply, Constant Volume, 1381 CFM, 0.2 motor nameplate hp, 1.00 fan energy index , fan exception: Single fan <= 5HP
1	MAU-1 (Single Zone): Heating: 1 each - Central Furnace, Gas, Capacity = 148 kBtu/h Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE Cooling: 1 each - DX DOAS (Dehumidification), Capacity = 38 kBtu/h, Air-Cooled Condenser, Unknown Economizer Proposed Efficiency = 6.10 ISMRE, Required Efficiency = 4.00 ISMRE Proposed Part Load Efficiency = 0.00 , Required Part Load Efficiency = 0.00 Fan System: MAU-1 -- Compliance (Motor nameplate HP and fan efficiency method) : Passes Fans: FAN 1 Supply, Constant Volume, 1694 CFM, 1.5 motor nameplate hp, 1.00 fan energy index , fan exception: Part of code listed equipment
1	WH-1 & WH-2: Electric Storage Water Heater, Capacity: 80 gallons w/ Circulation Pump No minimum efficiency requirement applies
1	WH-3: Electric Storage Water Heater, Capacity: 20 gallons No minimum efficiency requirement applies

5

1

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 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Christine Kerschen | [signature] | 2-19-25
Name - Title | Signature | Date

2

COMcheck Software Version COMcheckWeb
Inspection Checklist

Energy Code: 2021 IECC

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical and service water heating systems and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6][3]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.1, C404.6.2 [PL3][1]	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.3 [PL7][3]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.1, C404.6.1.1 [PL8][3]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.8.4 [ME142][2]	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.8.6 [ME143][2]	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.9 [ME144][2]	Large diameter fans where installed shall be tested and labeled in accordance with AMCA 230.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.13.1 [ME71][2]	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.3 [ME55][2]	HVAC equipment efficiency verified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.2.2 [ME59][1]	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.7.1 [ME59][1]	Demand control ventilation provided for spaces >500 ft2 and >15 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.2 [ME115][3]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.6 [ME141][3]	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.7.4 [ME57][1]	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.7.5 [ME116][3]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.12.1, C403.12.2 [ME60][2]	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.4 [ME63][2]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.2.1 [ME53][3]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.11.3, C403.11.3.1, C403.11.3.2 [ME123][3]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.11.3.1 and refrigeration compressor systems that comply with C403.11.3.2..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

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DialecticEng.com

This sheet is part of the construction documents. Drawings, specifications and other sheets apply and need to be reviewed in total. Items shown are for diagrammatic representation and may not be relied on or used as shop drawings. Provide all modifications required to conform to site conditions, equipment and material used. Verify locations and dimensions of all architectural and structural elements per their respective documents, as these elements are shown only for reference, and require verification prior to fabrication or construction. Engineer has no liability for the accuracy of these associated elements, or for any work the engineer has not signed and sealed.
Project # -10202366.01

STORE NO.:

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REVISIONS / ISSUES

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COLORADO LICENSED
ROBERT A. HARRIS
42440
02/27/2025
PROFESSIONAL ENGINEER

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MECHANICAL COMCHECK FORMS

DATE:	PROJECT NO.:
05-24-24	36667
DRAWN: VOC	SCALE: AS NOTED

SHEET NO.:
M401

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.7 [EL26][3]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8 [EL27][3]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.9.1, C405.9.2 [EL28][3]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.10 [EL29][3]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.1.1 [EL30][3]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.11, C405.11.1 [EL31][3]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.1, C408.2.5.3 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.1.1 [FI50][3]	HVAC systems and equipment design loads calculated in accordance with ANSI/ASHRAE/ACCA Standard 183 or by an approved equivalent computational procedure	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.3.1 [FI27][3]	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1 [FI47][3]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.2 [FI38][3]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.3 [FI20][3]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2 [FI39][3]	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2.1, C403.4.2.2 [FI40][3]	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.2.3 [FI41][3]	Systems include optimum start controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.3 [FI11][3]	Heat traps installed on supply and discharge piping of non-circulating systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.4 [FI25][3]	All piping insulated in accordance with section details and Table C403.12.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1 [FI12][3]	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.1.1 [FI57][3]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.1 [FI28][3]	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.1 [FI31][3]	HVAC equipment, systems and system-to-system relationships have been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.2 [FI10][3]	HVAC and service water heating control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.4 [FI29][3]	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI43][3]	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.2 [FI30][3]	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

5

zebra

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CAVA

1

2

8969 E 46TH AVENUE
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UNITED STATES

REVISIONS / ISSUES

△		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	02/20/25	REVISED ROOF PLAN

STATUS:

ISSUE FOR CONSTRUCTION

COLORADO LICENSED
ROBERT A. HARRIS
42440
02/27/2025
PROFESSIONAL ENGINEER

FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:

MECHANICAL
COMCHECK FORMS

DATE: 05-24-24

PROJECT NO.: 36667

DRAWN: VOC

SCALE: AS NOTED

SHEET NO.:

M402

Planning Tool for C406.1 2022 Denver Energy Code Additional Energy Efficiency Credit Requirements for New Construction and C502 Additions

Instructions: Enter values in to applicable cells. Floor areas in Tables C406.1(1) and C406.1(2) must match.

Project Background

1. Property is all-electric (Y/N):	N	3. C403.2.4 Space Heating is required (Y/N):	Y
2. Project is non-previously-occupied tenant space (Y/N):	Y	4. C404.10 Water Heating is required (Y/N):	Y
5. Using CE02 for Denver Green Code LMU Compliance (Y/N):	N		

1. Check Floor Area matches in Tables C406.1(1) and C406.1(2)	Y
2. Check project achieves required credits (Pass / Needs Additional Credits)	PASS
3. Summary requirements versus credits:	Building Credit Requirement is 10 and Included Credits are 13

Credit Requirements Table C406.1(2)

	Floor Area by Building Type (sf)	Denver Credit Requirements		Use Group for Table C406.1(1)
		All-Electric Properties[a]	All Other Buildings	
Multifamily		10	40	Group R
Healthcare/Hospital		10	40	Group I
Hotel/Motel		10	36	Group R
Office		10	31	Group B
Retail		10	35	Group M
School		10	24	Group E
Warehouse		10	48	Other Occupancies (Group S)
All Other	2,623	10	40	Other Occupancies
Total	**2,623**			
Area Weighted Denver Credit Requirements		10	40	
Building Credit Requirement	**10**			

a. Where the all-electric property complies with Sections C406.13 and C406.15. All-electric properties shall not be eligible for credits from Sections C406.13 and C406.15.

C406.7.1 Prorate Service Hot Water Credits - Optional

	Floor Area by Building Type (sf)	Percent Prorated by Building Floor Area (%)
Group R-1: Boarding houses, hotels or motels		
Group I-2: Hospitals, psychiatric hospitals and nursing homes		
Group R-2		
Total Group R and I	**0**	0%
Group E: Schools with full-service kitchens or locker rooms with showers		
Total Group E	**0**	
Group A-2: Restaurants, banquet halls and buildings containing food preparation areas	2,623	
Group F: Laundries		
Group A-3: Health clubs and spas		
Total Other Occupancies	**2,623**	100%
Buildings with service hot water load of 10% or more of total building energy loads, as shown with an energy analysis described in Section C407		Buildings with service hot water load of 10% are not included in this tool Provide separate documentation
1: Building must comply with C404.2.1 High Input Service Water-Heating Systems (Y/N):	N	Buildings that must comply with C404.2.1 are eligible for half the credits of C406.7.2.

Table C406.1 Additional energy efficiency credit requirements for Denver

	Group B	Group R and I	Group E	Group M	Other Occupancies[a]	Total Area (sf)
Enter Floor Area by Use Group (sf)					2,623	**2,623**
Check: Too many credits selected for (OK if blank):						
Included Credits by Use Group	**0**	**0**	**0**	**0**	**13**	Total Included Credits
Total Floor Area Weighted Included Credits						**13**

Section	Included in COMcheck IECC-2021 OR Denver Specific	Group B Enter Y if included	Group B Denver Credits	Group R and I Enter Y if included	Group R and I Denver Credits	Group E Enter Y if included	Group E Denver Credits	Group M Enter Y if included	Group M Denver Credits	Other Occupancies Enter Y if included	Other Occupancies Denver Credits	Notes	Documentation	Calculation Type	Threshold
C406.2.1: 5% Heating Efficiency Improvement	COMcheck IECC-2021		1		1		1		2		1	Select only 1 from C406.1.2, C406,2.3, C406.2.6	Calculation	Efficiency % diff	5%
C406.2.2: 5% Cooling Efficiency Improvement	COMcheck IECC-2021		2		1		1		1		1	Select only 1 from C406.2.2, C406.2.4, C406.2.5	Calculation	Efficiency % diff	5%
C406.2.3: 10% Heating Efficiency Improvement	COMcheck IECC-2021		2		2		3		3		3	Select only 1 from C406.1.2, C406,2.3, C406.2.6	Calculation	Efficiency % diff	10%
C406.2.4: 10% Cooling Efficiency Improvement	COMcheck IECC-2021		4		1		2		2		2	Select only 1 from C406.2.2, C406.2.4, C406.2.5	Calculation	Efficiency % diff	10%
C406.2.5: >10% Cooling Efficiency Improvement	Denver Specific											Select only 1 from C406.2.2, C406.2.4, C406.2.5. Manually enter credits and provide calculation	Calculation	Modified efficiency % diff	>10%
C406.2.6: >10% Heating Efficiency Improvement	Denver Specific											Select only 1 from C406.1.2, C406,2.3, C406.2.6. Manually enter credits and provide calculation	Calculation	Modified efficiency % diff	>10%
C406.3: Reduced Light Power	COMcheck IECC-2021 with Denver Specific instructions		7		2		8		12	Y	7	Select only 1 from C406.3, C406.3.2 15%, C406.3.2 >15%. Denver modifies Building Area Method Table C405.3.2(1)	Calculation	Efficiency % diff	10%
C406.3.2: Reduced lighting power by 15%	COMcheck IECC-2021 with Denver Specific instructions		11		3		12		18		11	Select only 1 from C406.3, C406.3.2 15%, C406.3.2 >15%. Denver modifies Building Area Method Table C405.3.2(1)	Calculation	Efficiency % diff	15%
C406.3.2: Reduced lighting power by >15%	COMcheck IECC-2021 with Denver Specific instructions											Select only 1 from C406.3, C406.3.2 15%, C406.3.2 >15%. Denver modifies Building Area Method Table C405.3.2(1)	Calculation	Modified efficiency % diff	>15%
C406.4: Enhanced Digital Light Ctrl	COMcheck IECC-2021		2		NA		2		3		2		Drawing, Sequence of Ops	NA	
C406.5.1: Basic Renewable Credit.	COMcheck IECC-2021		9		7		6		7		2	Select only 1 from C406.5.1, C406.5.2	Calculation	Capacity	
C406.5.2: Enhanced Renewable Credit	Denver Specific											Select only 1 from C406.5.1, C406.5.2. Manually enter credits and provide calculation	Calculation	Modified Capacity	
C406.6: Dedicated OA Sys (DOAS)	COMcheck IECC-2021		5		8		NA		2		5		Drawing, Sequence of Ops	NA	
C406.7.2: Recovered/Renew SWH[b]	COMcheck IECC-2021		NA		0				NA		14	Enter building types in Table C406.7.1 to prorate. If must comply with C404.2.1, eligible for half the credits	Calculation	Capacity	
C406.7.3: Efficient fossil fuel SWH[b]	COMcheck IECC-2021		NA		0				NA		6	Enter building types in Table C406.7.1 to prorate	Schedule	NA	
C406.7.4: Heat Pump SWH[b]	COMcheck IECC-2021		NA		0				NA	Y	5	Enter building types in Table C406.7.1 to prorate	Schedule, Drawing	NA	
C406.8.1: Reduced envelope UA	COMcheck IECC-2021 with Denver Specific instructions		10		4		2		4		5	Select only 1 from C406.8.1, C406.8.2	Calculation	UA % diff	15%
C406.8.2: Further reduced envelope UA	COMcheck IECC-2021 with Denver Specific instructions		15		6		3		6		8	Select only 1 from C406.8.1, C406.8.2	Calculation	UA % diff	25%
C406.9.1: Reduced Air Infiltration	COMcheck IECC-2021		4		5		NA		2		4	Select only 1 from C406.9.1, C406.9.2	Document, Report	NA	0.25 cfm/sf at 75 Pa
C406.9.2: Further Reduced Air Infiltration	Denver Specific - threshold only		7		8		NA		3		7	Select only 1 from C406.9.1, C406.9.2	Document, Report	NA	0.15 cfm/sf at 75 Pa
C406.10: Energy Monitoring	COMcheck IECC-2021		2		1		2		3		2		Drawings, Specs	NA	
C406.11: Fault Detection	COMcheck IECC-2021		1		1		1		1		1		Drawings, Specs	NA	
C406.12: Efficient Kitchen Equipment	COMcheck IECC-2021											Manually enter points and provide calculation - 20 Max	Calculation	Modified efficiency % diff	
C406.13: All-Electric Space Heating	Denver Specific		0		0		0		0		0	All-Electric Properties are not eligible. Available when not required by C403.2.4	Calculation	W/sf	
C406.14: Cold Climate Heat Pumps	Denver Specific		4		5		5		9		6		Schedule, Calculation	W/sf	
C406.15: All-Electric Water Heating	Denver Specific		0		0		0		0		0	All-Electric Properties are not eligible. Available when not required by C404.10	Drawing	NA	
C406.16: Demand Responsive Thermostats	Denver Specific		1		1		1		1	Y	1		Drawings, Specs	NA	
C406.17.1: Reduced Fan Power	Denver Specific		2		NA		6		7		3	Select only 1 from C406.17.1, C406.17.2	Calculation	Fan power % diff	10%
C406.17.2: Further Reduced Fan Power	Denver Specific		4		NA		11		14		6	Select only 1 from C406.17.1, C406.17.2	Calculation	Fan power % diff	20%

a. Other occupancy groups include all Groups except for Groups B, R, I, E, and M

b. For occupancy groups listed in C406.7.1

Version 1.4 Dated November 7, 2023

Legend for Energy End Use:

Heating	COMcheck IECC-2021	Group B: Business
Cooling		Group R: Residential
Interior Lighting		Group I: Institutional
Exterior Lighting		Group E: Educational
Interior Equipment		Group M: Mercantile
Exterior Equipment		
HVAC Fans		
Pumps		
Service Hot Water		
Renewable Energy		

Commercial Prescriptive Checklist - C406

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Project # -10202366.01

STORE NO.:

CAVA
8969 E 46TH AVENUE
DENVER, CO 80238
UNITED STATES

REVISIONS / ISSUES

△		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	02/20/25	REVISED ROOF PLAN

STATUS: ISSUE FOR CONSTRUCTION

COLORADO LICENSED PROFESSIONAL ENGINEER
ROBERT A. HARRIS
42440
02/27/2025

FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME: MECHANICAL COMPLIANCE CHECKLIST

DATE: 05-24-24	PROJECT NO.: 36667
DRAWN: VOC	SCALE: AS NOTED

SHEET NO.: M403

2022 Denver Energy Code - Commercial Compliance Checklist
Prescriptive Path - HVAC & Kitchen

DENVER COMMUNITY PLANNING & DEVELOPMENT

Project Address: 8969 E 46TH AVENUE
DENVER, CO 80238
UNITED STATES

Date: 5/9/2024

Code Section	Focus Area	Code Description	Drawing or Specification Number to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on drawings/specs)	Submittal Requirements and Clarifications
HVAC - ALL COMPLIANCE PATHS					
C402.5.11	Operable Openings Interlocking	Cooling and heating set point adjusted whenever the operable opening larger than 40 sf is open within 10 minutes of opening.	N/A	Front doors not intended to be opened for long periods of time.	Indicate location of: - Building drawings showing that operable openings have interlock switches to trigger setback of thermostat when open - Sequence of operation
C403.1.2	Data Centers	Data centers systems shall comply with Sections 6 and 8 of ASHRAE 90.4 with changes listed in C403.1.2: - HVAC Maximum Annualized Mechanical Load Component of 0.12 for data centers with ITE design load greater than 300 kW or 0.20 for data centers with ITE design power of 300 kW or less - When ITE design load exceeds 35 kW (10 tons) per room and 20 W/sf of condition floor area use adiabatic humidification systems and include hot-aisle containment - When ITE design load exceeds 35 kW (10 tons) per room and 20 W/sf of condition floor area and air-cooled computers in racks use aisle containment - Use utility recycled water for evaporative cooling towers where available	N/A	There are no data centers on the project.	Indicate location of: - ITE design load and W/sf, Annualized MLC - Humidification system if applicable - Hot-aisle containment if applicable - Connection to recycled water system if applicable
C403.2.3	Fault Detection Diagnostics	For new buildings of 25,000 square feet or larger, provide a fault detection and diagnostics (FDD) system to monitor the HVAC system's performance, automatically identify faults, and be capable of reporting them to remotely located authorized personnel. R-1 and R-2 occupancies and heated-only warehouses are exempt.	N/A	Project is less than 25,000 square feet.	Indicate location of: - Specification of fault detection and diagnostics system
C403.2.4	Space Heating Equipment	**For permit applications submitted after January 1, 2024**, fossil-fuel warm air furnaces and electric resistance space heating equipment are not allowed, with exceptions: - Does not apply to gas fired boiler heating - Not required for make up air systems where energy recovery is prohibited by Denver Mechanical Code - Limited electric resistance is allowed - See 2022 Denver Energy Code for full exception list	M001	Makeup Air Unit is gas heating. Electrical panel has capacity for future all electric makeup air unit.	Indicate location of: - Mechanical drawings and schedules detailing compliance with C403.2.4 - Rationale or calculations for exceptions to C403.2.4 if applicable
C403.4.1.1	Heat Pump Supplementary Heat	Provide heat pump controls that limit supplementary heat operation to specific instances noted in C403.4.1.1.	M000	Refer to sequence of operations.	Indicate location of: - Sequence of operations for heat pump supplementary heat

Code Section	Focus Area	Code Description	Drawing or Specification Number to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on drawings/specs)	Submittal Requirements and Clarifications
C403.4	Thermostatic Controls	Each zone shall be controlled by individual thermostatic controls.	M100		Indicate location of: - Mechanical drawings with thermostats for each HVAC system
C403.4.1.2 C403.4.1.3	Deadband Setpoint Overlap Restriction	Where zone thermostatic controls automatically change between heating and cooling, provide a deadband of not less than 5degF. Where zone has separate controls for heating and cooling, provide mechanical stop or DDC programing to maintain deadband.	M000		Indicate location of: - Sequence of operations
C403.4.1.4	Heated or Cooled Vestibules	Vestibule heating shall shut off when outdoor temperature is greater than 45degF. Space temp shall not be set to heat above than 60degF or cool below 85degF.	N/A	No vestibule on the project.	Indicate location of: - Sequence of operations
C403.4.1.5	Hot Water Boiler Outdoor Temperature Setback Control	Provide boiler setback based on the outdoor temperature.	N/A	No boiler on this project.	Indicate location of: - Sequence of operations
C403.4.2	Off-hour Controls	Systems shall be provided with thermostatic setback to maintain zone temperatures down to 55degF or up to 85degF	M000		Indicate location of: - Sequence of operations
C403.4.3	Hydronic Systems Controls	Hydronic system controls shall comply with all applicable sections C403.4.3 through C403.3.3.3.	N/A	No hydronic systems on this project.	Indicate location of: - Sequence of operations
C403.4.4	Part-load Controls	Hydronic systems of 300,000 Btu/h or greater shall include: - Automatically reset supply-water temperature in response to building demand - Automatically vary fluid flow - VFD pump motor power input shall be not more than 30% of design wattage at 50% of design flow	N/A	No hydronic systems on this project.	Indicate location of: - Sequence of operations
C403.4.5	Pump Isolation	Boiler and chiller plants with more than one boiler/chiller shall be configured to reduce flow automatically when a boiler/chiller is shut down.	N/A	No boiler on this project.	Indicate location of: - Sequence of operations
C403.5	Economizers	Provide air or water economizer per C403.5 with exceptions. - Other than a Group R occupancy: Provide air economizer for individual fan systems with published nominal cooling capacity of 33,000 Btu/h (9.7 kW). - Group R occupancy: Provide air economizer for individual fan systems with cooling capacity of 270,000 Btu/h (79.1 kW) - Supply capacity of fan cooling units without economizers shall not exceed requirements of C403.5.	M000	Refer to Landlord set of MEP drawings for full RTU schedule. Refer to sequence of operations on sheet M000 for economizer sequence.	Indicate location of: - Equipment schedules showing air and / or water economizer
C403.5.5	Economizer Fault Detection and Diagnostics	Air-cooled unitary direct-expansion units listed in Tables C403.3.2(1) through C403.3.2(3) and variable refrigerant flow (VRF) units that are equipped with an economizer shall include a fault detection and diagnostics.	M000	Refer to Landlord set of MEP drawings for full RTU schedule. Refer to sequence of operations on sheet M000 for economizer sequence.	Indicate location of: - Economizer fault detection and diagnostics specification.
C403.6	Supply-air temperature reset controls	C403.6.1 through C403.6.9 shall apply to mechanical systems serving multiple zones.	N/A	This project has only single zone systems.	Indicate location of: - Sequence of operations
C403.7.1	Demand Control Ventilation	Demand control ventilation shall be provided for spaces larger than 500 square feet and with an average occupant load of 15 people or greater per 1,000 square feet of floor area.	N/A	Exceptions 4: Spaces where more than 75 percent of the space design outdoor airflow is required for makeup air that is exhausted from the space or transfer air that is required for makeup air that is exhausted from other spaces.	Indicate location of: - Mechanical drawings with sensor locations noted - Sequence of operations

Code Section	Focus Area	Code Description	Drawing or Specification Number to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on drawings/specs)	Submittal Requirements and Clarifications
C503.3.2	Alteration: Low-Nitrogen Emissions	Provide one of the following where an indoor gas-fired warm air furnace is replaced with another gas-fired warm air furnace: - Low-nitrogen dioxide emissions shall not exceed 14 nanograms of nitrogen dioxide per joule of useful heat delivered to the heated space. - An Annual Fuel Utilization Efficiency of not less than 90 percent. Indoor gas-fired make-up air units are exempt.	M001	MAU has efficiency of 92%.	Indicate location of: - Mechanical schedule with nitrogen dioxide or AFUE rating
C503.3.3	Alteration: Partial Electrification for Space Heating	Provide two of the following where a gas-fired warm-air furnace is replaced with a gas-fired warm-air furnace OR one of the following when a unitary air conditioner or condensing unit serving a heated space is replaced with another unitary air conditioner or condensing unit: - Electrification Retrofit Feasibility Report - Sizing per C403.3.1 - Testing of all gas piping connected to the gas meter serving the replaced warm-air furnace per Section 406 of the IFGC. Equipment replaced as an emergency equipment replacement is exempt. Gas-fired boilers used for space heating are exempt.	N/A	There is no equipment being replaced on this project.	Indicate selection / location of the following: - Electrification Retrofit Feasibility Report - Load calculations showing sizing - Intent to test gas piping
PRESCRIPTIVE COMPLIANCE PATH					
C401.2	COMcheck	Demonstrate compliance with C401.2 by submitting the 2022 Denver Energy Code specific COMcheck compliance certificate and inspection checklist.	M4XX series	COMcheck forms and Denver checklist forms have been added to the drawing set.	Indicate location of: -COMcheck certificate and inspection checklist Provide COMcheck certificates on a stamped and signed drawing by the Colorado registered design professional responsible for each compliance certificate.
C403.1.1	Calculations of Heating and Cooling Loads	Heating, ventilating, and air conditioning design loads shall be calculated per Section C403.1.1.	M001		Provide load calculations when requested by the Authority Having Jurisdiction. Submitter can list as N.A. for this item, however reviewer may request loads be submitted.
C403.2.1	Zone Isolation Required	HVAC systems serving zones that are over 25,000 square feet in floor area or that span more than one floor and are designed to operate or be occupied non-simultaneously shall be divided into isolation areas.	N/A	Project is less than 25,000 square feet.	Indicate location of: - Zone isolation - Sequence of operations
C403.2.2	Ventilation	Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the Denver Mechanical Code (DMC). Note that Section 403.3.1.1 of DMC recommends use of ASHRAE 62.1 spreadsheet.	M001		Indicate location of: - Ventilation calculations on the mechanical drawings. Demonstrate compliance by identifying the outside air flow on the equipment schedules and showing that the equipment outside air flow is greater than the outside air flow as determined by the calculations.
C403.3.1	Equipment Sizing	The output capacity of heating and cooling equipment shall be not greater than that of the smallest available equipment size that exceeds the loads calculated in accordance with Section C403.1.1.	M001		Provide the heat loss and heat gain load calculations when requested by the Authority Having Jurisdiction and show that the equipment provided is the smallest size available from the manufacturer. Submitter can list as N.A. for this item, however reviewer may request loads be submitted.
C403.3.2	Equipment Performance Requirements	Equipment shall comply with the minimum efficiency requirements of Tables C403.3.2(1) through C403.3.2(9).	M001		Indicate location of: - Equipment schedules with efficiencies
C403.3.3	Hot Gas Bypass Limitation	Hot gas bypass is only allowed with multiple steps of unloading or continuous capacity modulation.	N/A	No hot gas bypass specified.	Indicate location of: - Sequence of operations for hot gas bypass
C403.3.4	Boiler Turndown	Boiler systems with design input of greater than 1,000,000 Btu/h (293 W) shall comply with turndown ratio.	N/A	No boiler on this project.	Indicate location of: - Boiler turn down ratio

Code Section	Focus Area	Code Description	Drawing or Specification Number to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on drawings/specs)	Submittal Requirements and Clarifications
C403.7.8	System Control	VAV, SZVAV, DOAS, ERV and MUA systems shall have controls to provide fault if there is excessive outside air, and display or report to DDC and measure and maintain the required flow rate of outside air.	N/A	MUA system is less than 4000 CFM.	Indicate location of: - Mechanical drawings with sensor locations noted - Sequence of operations
C403.7.2	Enclosed Parking Garage Ventilation Controls	Enclosed parking garages shall employ carbon monoxide and nitrogen oxide detectors and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels.	N/A	No parking garage on project.	Indicate location of: - Mechanical drawings with sensor locations noted - Sequence of operations
C403.7.4.1	Energy Recovery for Nontransient Dwelling Units	Provide outdoor air recovery ventilation systems with an enthalpy ratio of not less than 50% at cooling and 60% at heating design conditions.	N/A	No dwelling units on project.	Indicate location of: - Energy recovery systems and effectiveness
C403.7.4.2	Energy Recovery for Spaces Other Than Nontransient Dwelling Units	Systems with design airflow that exceed the minimum in Tables C403.7.4.2(1) and C403.7.4.(2) shall include an energy recovery system with a minimum enthalpy recovery ratio of 60% at balanced airflow conditions. Systems with economizers shall include a bypass of the energy recovery when conditions allow for free cooling. Energy recovery devices shall not exceed a pressure drop of 1.1" w.g. at design conditions and shall not exceed 0.6" w.g. in economizer mode (bypass). Supply and exhaust fan static efficiency must meet 65%.	N/A	Tenant will operate less than 8,000 hours a year. Following table C403.7.4.2(1), for climate zone 5B, energy recovery is not required.	Indicate location of: - Energy recovery when applicable - Energy recovery effectiveness. - Mechanical drawings that distinguish continuously occupied spaces (8,000 or more hr/yr) from other spaces
C403.7.5	Kitchen Exhaust Systems	Kitchen exhaust and make up air systems shall meet requirements of Section C403.7.5.	M5XX Series Drawings		Indicate location of: - Make up air calculations - Hood specifications detailing UL710 listing and exhaust rates per table C403.7.5 of the DEC.
C403.7.6	Automatic Guestroom Controls	In buildings with more than 50 guestrooms, each guestroom shall be provided with controls to automatically setback space setpoints. Rented unoccupied room shall be setback by 4degF during unoccupied times. Unrented rooms shall be setback to not lower than 80degF (cooling) and not higher than 60degF (heating).	N/A	Project does not include guestrooms.	Indicate location of: - Sequence of operations - Occupancy sensors or other means of verifying occupancy (keycard controls)
C403.7.7	Shutoff Dampers	Outdoor air intake and exhaust openings and stairway and shaft vents shall be provided with Class I motorized dampers. Not required for exhaust or relief openings in buildings less than three stories in height. Not required for exhaust design capacity is less than 300 cfm.	M001	Backdraft damper is included on the restroom EF of 200 CFM. Building is less than 3 stories.	Indicate location of: - All dampers on the mechanical drawings - Specification for dampers showing Class 1 rated
C403.8	Fans and Fan Controls	Fan and fan controls shall comply with all applicable sections of C403.8.1 through C403.8.5.	M000, M001		Indicate location of: - Schedules showing fan - Sequence of operations

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UNITED STATES

REVISIONS / ISSUES

△		DESCRIPTION
	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	02/20/25	REVISED ROOF PLAN

STATUS:
ISSUE FOR CONSTRUCTION

COLORADO LICENSED
ROBERT A. HARMON
42440
02/27/2025
PROFESSIONAL ENGINEER

FIELD VERIFICATION:
The Contractor shall verify all figured dimensions and conditions at the project site and notify Zebra Projects, INC. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL COMPLIANCE CHECKLIST

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M404

Code Section	Focus Area	Code Description	Drawing or Specification Number to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on drawings/specs)	Submittal Requirements and Clarifications
C403.8.6	Fan Control	Fan systems that control mechanical cooling output based on space temperature shall have at least two stages of fan control, with the fan drawing at low stage no greater than 40% of the fan power of the fan power a the maximum cooling stage.	M000, M001		Indicate location of: - Schedules showing fan - Sequence of operations
C403.8.6.2	Intermittent Exhaust Control for Bathroom Fans	An exhaust designed for intermittent operation shall include a Manual-On control, and either a time delay, occupancy sensor, or relative-humidity control	M001	Restroom EF-1 shall be interlocked with timeclock to operate continuously during occupied hours.	Indicate location of: - Controls for all bathroom and toilet fans with intermittent exhaust - Sequence of operation
C403.10	Heat Rejection Equipment	Requires: fan speed controls for fan systems with total horsepower of 5 HP or greater (C403.10.1); capability for towers with multiple cells to be run with fans modulated to 50% of design airflow when conditions allow (C403.10.4); heat recovery where there is a design service water heating load exceeds 1,000,000 Btu/h and total heat rejection capacity exceeds 6,000,000 Btu/h (C403.10.5)	N/A	No fan systems with total horsepower of 5 HP or greater.	Indicate location of: - Heat rejections equipment schedules - Sequence of operations
C403.11	Walk-in Coolers/Freezers, Refrigerated Warehouse Coolers/Freezers, and Refrigerated Cases	Walk-in coolers/freezers and refrigerated warehouse coolers/freezers shall comply with Section C403.11.1 or C403.11.2 and C403.11.2.1. Refrigerated display cases shall comply with Section C403.11.3.	N/A	Walk-in cooler is included in deferred submittal list. 2	Indicate location of: - Manufacturer product catalog information with the required items identified Site assembled or site constructed walk-in coolers/freezers shall comply with Tables C403.10.2.1(1) through C403.10.2.1(3). Provide calculations demonstrating compliance.
C403.12.1	Duct and Plenum Insulation and Sealing	Supply and return ducts and plenums shall be insulated in accordance with Section C403.12.1. Duct, air handers, and filter boxes shall be sealed per Section C403.12.1.	M000		Indicate location of: - Insulation and sealing details on the mechanical drawings
C403.12.2	Duct Construction	Medium-pressure and high-pressure ductwork shall be constructed in accordance with Sections C403.12.2.1 through C403.12.2.3.	N/A	There is no medium or high pressure ductwork on this project. All ductwork is low pressure.	Indicate location of: - Duct construction requirements on the mechanical drawings - Requirements for air leak testing of ducts and plenums operating at 3 in w.g. or higher
C403.12.3	Piping Insulation	Piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.12.3.	M000		Indicate location of: - Pipe insulation thickness and conductivity on the mechanical drawings
C403.13	Heating Outside Building	Heating outside the building shall be a radiant system and controlled by an occupancy sensor or timer switch. Provide C403.13.2 Snow and ice-melt controls or C403.13.2 Freeze protection controls as applicable.	N/A	No heating outside the building.	Indicate location of: - Heating outside the building and control device to be installed on the mechanical drawings - Sequence of operations
C403.15	Dehumidification and Cooling Efficiency for Plant Growth and Maintenance	Dehumidification and cool efficiency for plant growth and maintenance shall comply with Sections C403.15.1 and C403.15.2.	N/A	No plant growth on the project.	Indicate location of: - Equipment schedules with fan efficiencies - If using electric or fossil fuel reheat systems, calculations showing that the primary dehumidification system meets 60% of the peak dehumidification load
C405.8	Electric Motors	Electric motors shall meet the minimum efficiency requirements in Tables C405.8[1] through C405.8(4).	M001		Indicate location of: - Motor efficiency

Code Section	Focus Area	Code Description	Drawing or Specification Number to demonstrate compliance (N/A if not applicable)	Submitter Notes (e.g. If "N/A" Please explain why requirement does not apply or is not demonstrated on drawings/specs)	Submittal Requirements and Clarifications
C406 SELECTED ADDITIONAL EFFICIENCY CREDITS					
C406.2.1 C406.2.3 C406.2.6	Heating Efficiency Improvement	More Efficient Heating Performance: C406.2.1 - 5% C406.2.3 - 10% C406.2.6 - > 10%	N/A	Landlord RTUs are standard efficiency.	Indicate credit selected and location of: - Heating efficiency - Supplemental calculations if applicable
C406.2.2 C406.2.4 C406.2.5	Cooling Efficiency Improvement	More Efficient Cooling Performance: C406.2.2 - 5% C406.2.4 - 10% C406.2.5 - > 10%	N/A	Landlord RTUs are standard efficiency.	Indicate credit selected and location of: - Cooling efficiency - Supplemental calculations if applicable
C406.6	Dedicated Outside Air System	Dedicated Outside Air System	N/A	There are no DOAS systems on this project.	Indicate location of: - Dedicated outside air systems with energy recovery - Sequence of operations for reset - Supplemental calculations if applicable
C406.11	Fault Detection and Diagnostics	Provide a fault detection and diagnostics (FDD) system to monitor the HVAC system's performance and automatically identify faults and be capable of reporting them to remotely located authorized personnel.	N/A		Indicate location of: - Specification of fault detection and diagnostics system
C406.12	Efficient Kitchen Equipment	High performance commercial kitchen equipment with at least one gas or electric fryer, all fryers, dishwashers, steam cookers and ovens	N/A		Indicate location of: - Kitchen equipment and performance levels
C406.13	All-Electric Space Heating	Provide electric equipment for space heating. Electric resistance load shall not exceed 5 W per square foot of conditioned floor area for areas of the building served by Variable Air Volume systems and 1.35 W per square foot of conditioned floor for all other areas of the building.	N/A		Indicate location of: - Heating equipment - Supplemental calculations of electric heat W/sf if applicable
C406.14	Cold Climate Heat Pumps	Adds requirement for COP and capacity of heat pumps at low ambient temperatures and restricts the use of electric resistance heat. 2	N/A		Indicate location of: - Heat pump equipment and performance data - Supplemental calculations of electric heat W/sf if applicable
C406.16	Demand Responsive Thermostats	All thermostatic controls serving the building shall be provided with demand responsive controls that serves the building site.	M001, M100, M504	All thermostats shall have demand response capability. Key notes 4, 15, and 16 on sheet M100 states demand response capability shall be included in the thermostat spec provided. Sheet M504 CaptiveAire Hood drawing has a thermostat spec called out with demand response capability for the MAU cooling operation. Sheet M001 Mechanical Schedules for Makeup Air Unit and Air Curtain contain notes/accessories on demand response thermostats.	Indicate location of: - Demand responsive thermostats - Sequence of operations 3
C406.17.1 C406.17.2	Reduced Fan Power	Reduced Fan Power C406.17.1 - 10% C406.17.2 - 20%	N/A		Indicate credit selected and location of: - Fan power - Supplemental calculations

Version 1.6 Dated March 1, 2024

zebra

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REVISIONS / ISSUES

△		DESCRIPTION
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2	09/03/24	CITY COMMENTS
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COLORADO LICENSED
ROBERT A. HARMON
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SHEET NAME: 3
MECHANICAL COMPLIANCE CHECKLIST

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.: 2
M405

HOOD STYLE / MODEL	450 DEGREES cfm/ft.	600 DEGREES cfm/ft.	700 DEGREES cfm/ft.
CANOPY ND2	150	200	250
WITH END PANELS (15% reduction)	127.5	170	212.5
SLOPED SND-2	228	294	–
ISLAND ND-2WI	269	300	350
NDI	346	422	475

ETL HOOD LISTING DETAIL

EXHAUST CFM=LENGTH OF HOOD X CFM/LIN.FT. (LOAD)

SUPPLY CFM=EXHAUST CFM X PERCENTAGE REQUIRED

TOTAL DUCT AREA=144 X $\frac{\text{CFM}}{\text{FPM(V)}}$

DUCT LENGTH= $\frac{\text{TOTAL DUCT AREA}}{\text{DUCT DEPTH}}$

* CAPTIVE-AIRE VENTILATOR DUCT SIZES ARE CALCULATED USING AN EXHAUST VELOCITY OF 1500-1800 FPM AND A SUPPLY VELOCITY OF 1000 FPM.

CALCULATIONS UTILIZED

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

ETL & ETLC 3054804-001 & 3054804-002

STANDARD 710

intertek

BUILT IN ACCORDANCE WITH NFPA No. 96

Listed under ETL File number 3054804-001/002

BUILDING CODES

CAPTIVE-AIRE HOODS HAVE OPTIONAL CLEARANCE REDUCTION SYSTEMS AVAILABLE AS FOLLOWS:

MATERIAL	CLEARANCE REDUCTION SYSTEM
NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
COMBUSTIBLE	1" INSULATED STANDOFF

CLEARANCE TO COMBUSTIBLES

INSTALLATION

1. ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
2. ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
3. HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
4. ALL CONNECTIONS FROM CAPTIVE-AIRE DUCT PER MECHANICAL CONTRACTOR'S PLANS.
5. COOKING EQUIPMENT TO SHUTOFF IN EVENT OF FIRE.
6. EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
7. ALL LIGHTS FIXTURE SHOWN INSTALLED BY CAPTIVE-AIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES BY ELECTRICAL CONTRACTORS.
8. LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
9. SEISMIC RESTAINTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
10. INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITY FOR VERIFICATION OF DIMENSIONAL DATA CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTEGRATION, AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT SHOWN.

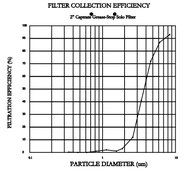
BALANCE

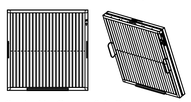
11. KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
12. KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
13. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

ADDITIONAL

14. WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
15. SIGNED AND "APPROVED" COPIES OF THIS DOCUMENT MUST BE RECEIVED BY THE FACTORY PRIOR TO COMMENCEMENT OF FABRICATION.

GENERAL NOTES





CaptiveAire Captrate Solo Filter
ETL Listed Grease Extracting Filters
Made From 430 Stainless Steel

FILTER DETAIL

FOR QUESTIONS, CALL THE
Maryland Mechanical
REGION 76
PHONE: (800) 988 - 0881
EMAIL: reg76@captiveaire.com

PATENT NUMBERS

AC-PSP (UNITED STATES) - US PATENT 7963830 B2.
AC-PSP WALL (CANADA) - CA PATENT 2820509.
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

HOOD INFORMATION - JOB#7327435

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	MUA CFM	AC CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1		6030 ND-2-ACPSP-F	CAPTIVEAIRE	10' 7"	600 DEG	I	HEAVY	200	2117			4"	16"	2117	1516	-0.653"	1694	844	430 SS WHERE EXPOSED	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLO FILTER	7	20"	16"	85% SEE FILTER SPEC	6	L55 SERIES E26	ND	LEFT	12"x60"x30"	TANK FS	4.0/4.0	DCV-1111	1 LIGHT 1 FAN	YES	1134 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 10.00" HIGH FRONT, LEFT.
		RIGHT END STANDOFF (FINISHED) 1" WIDE 60" LONG INSULATED.
		INSULATION FOR BACK OF HOOD.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		RIGHT WALL AS END PANEL.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1		Front	140"	22"	6"	MUA	10"	28"		564	0.148"
						MUA	10"	28"		564	0.148"
						MUA	10"	28"		564	0.148"
						AC	8"	26"		422	0.095"
						AC	8"	26"		422	0.095"

5 GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CAPTIVEAIRE SYSTEMS RECOMMENDS THE USE OF LISTED, PRE-FABRICATED ROUND GREASE EXHAUST DUCT TO REDUCE STATIC PRESSURE IN THE SYSTEM, MINIMIZE INSTALLATION AND INSPECTION TIMES, AND ENSURE DUCT IS LIQUID TIGHT

HVAC DISTRIBUTION NOTE

HIGH VELOCITY DIFFUSERS OR HVAC RETURNS SHOULD NOT BE PLACED WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

VERIFY CEILING HEIGHT

___' - ___"

HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS

CUSTOMER APPROVAL TO MANUFACTURE:

APPROVED AS NOTED ☐
APPROVED WITH NO EXCEPTION TAKEN ☐
REVISE AND RESUBMIT ☐
SIGNATURE _____
YOUR TITLE _____ DATE _____

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

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Maryland Mechanical

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Denver, CO, 80238

DATE: 2/6/2025
DWG.#: 7327435
DRAWN BY: AJP-32
SCALE: NOT TO SCALE
MASTER DRAWING
SHEET NO. 1

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STATUS:
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COLORADO LICENSED ROBERT A. NARAMORE 42440 02/27/2025 PROFESSIONAL ENGINEER

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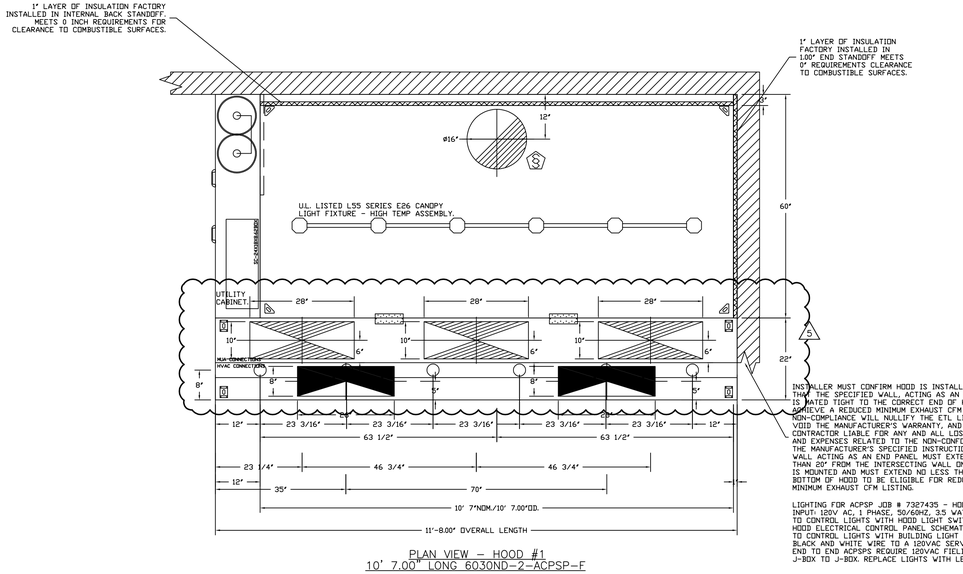
SHEET NAME:
HOOD DRAWINGS

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M501



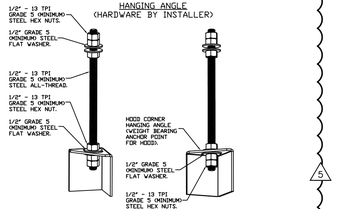
PLAN VIEW - HOOD #1
10' 7.00" LONG 6030ND-2-ACPSP-F

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION

INSTALLER MUST CONFIRM HOOD IS INSTALLED SUCH THAT THE SPECIFIED WALL, ACTING AS AN END PANEL, IS RATED TIGHT TO THE CORRECT END OF HOOD TO ACHIEVE A REDUCED MINIMUM EXHAUST CFM LISTING. NON-COMPLIANCE WILL NULLIFY THE ETL LISTING, VOID THE MANUFACTURER'S WARRANTY, AND HOLD THE CONTRACTOR LIABLE FOR ANY AND ALL LOSSES, COSTS, AND EXPENSES RELATED TO THE NON-CONFORMANCE OF THE MANUFACTURER'S SPECIFIED INSTRUCTION. THE WALL ACTING AS AN END PANEL MUST EXTEND NO LESS THAN 20" FROM THE INTERSECTING WALL ON WHICH HOOD IS MOUNTED AND MUST EXTEND NO LESS THAN 20" UNDER BOTTOM OF HOOD TO BE ELIGIBLE FOR REDUCED MINIMUM EXHAUST CFM LISTING.

LIGHTING FOR ACPSP JOB # 7327435 - HOOD #1
INPUT: 120V AC, 1 PHASE, 50/60HZ, 3.5 WATTS PER LIGHT.
TO CONTROL LIGHTS WITH HOOD LIGHT SWITCH, WIRE PER HOOD ELECTRICAL CONTROL PANEL SCHEMATIC.
TO CONTROL LIGHTS WITH BUILDING LIGHT SWITCH, WIRE BLACK AND WHITE WIRE TO A 120VAC SERVICE.
END TO END ACPSPS REQUIRE 120VAC FIELD WIRING FROM J-BOX TO J-BOX. REPLACE LIGHTS WITH LED LIGHTS ONLY.

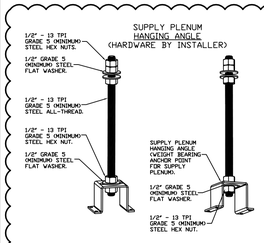
HOOD CORNER
HANGING ANGLE
(HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

SUPPLY PLENUM
HANGING ANGLE
(HARDWARE BY INSTALLER)



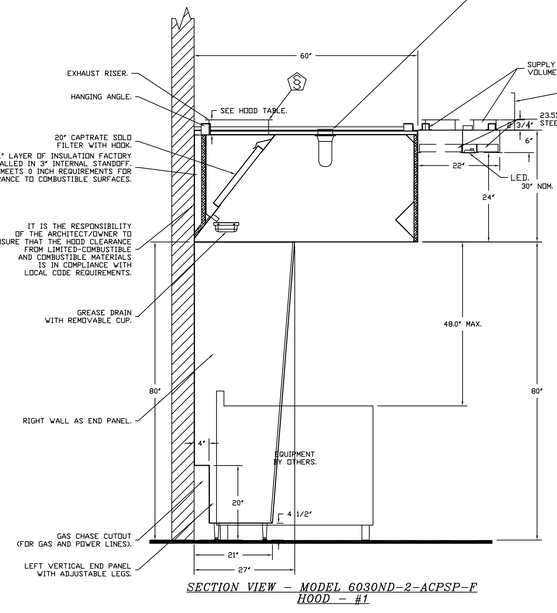
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

CLEARANCE TO COMBUSTIBLES

HOODS #	SURFACE	*CLEARANCE
1	TOP	18"
	FRONT	0"
	BACK	0"
	LEFT	0"
	RIGHT	0"

- *0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.
- HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.



SECTION VIEW - MODEL 6030ND-2-ACPSP-F
HOOD - #1

REVISIONS

	DESCRIPTION	DATE:
1		
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DATE: 2/6/2025
DWG.#: 7327435
DRAWN BY: AJP-32
SCALE: NOT TO SCALE
MASTER DRAWING
SHEET NO. 2

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ROBERT A. HARRIS
42440
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DATE: 05-24-24
PROJECT NO.: 36667
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SHEET NO.:
M502

FIRE SYSTEM INFORMATION – JOB#7327435

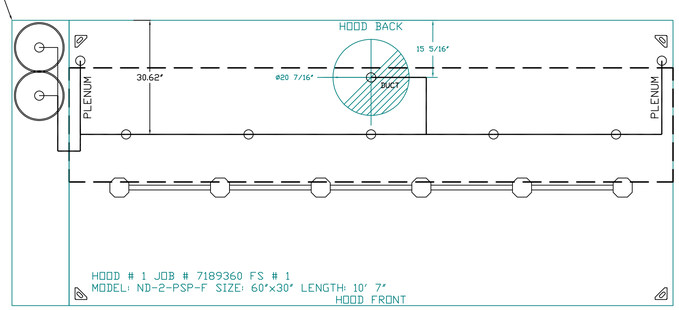
FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION	
						SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0	40	37	FIRE CABINET LEFT	LEFT, HOOD 1

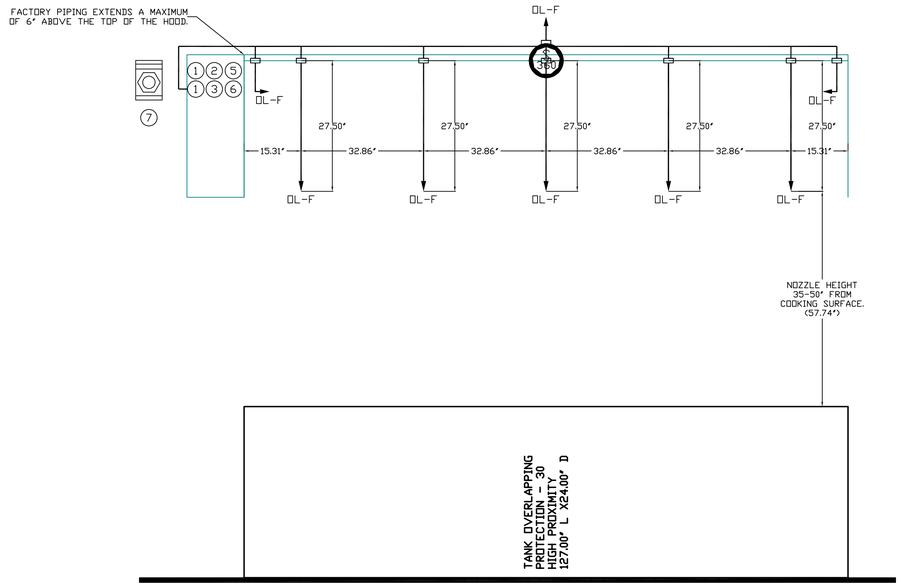
GAS VALVE(S)

FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1		SC ELECTRICAL	2.000	CAPTIVEAIRE SYSTEMS

5

– SYSTEM REQUIRES A MINIMUM OF 7 FT OF EQUIVALENT PIPE LENGTH BETWEEN TANK AND NEAREST APPLIANCE NOZZLE FOR MOST APPLIANCES. EACH 90 DEGREE ELBOW ADDS 1.3 FT OF EQUIVALENT LENGTH. SEE MANUAL FOR DETAILS





FIRE SYSTEM PARTS LIST KEY

FIRE SYSTEM NO	TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1		0 – 0 – TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – 12-F28021-32144-GT-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. ND, CLOSE ON TEMP RISE AT 360°F. (A0034310).	1	0
		0 – 0 – 32-00002 QUIK SEAL – 1/2" (UL).	1	0
		0 – 0 – 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	2	0
		0 – 0 – 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.	1	0
		0 – 0 – 79525 1/2" 90 PRD-PRESS ELBOW WITH 1/2"NPT FEMALE CONNECTION, VIEGA.	1	0
		0 – 0 – 79580 1/2" X 1/2" PRD-PRESS TEE X 1/2"NPT FEMALE CONNECTION, VIEGA.	2	0
		0 – 0 – 87-120042-001 SECONDARY ACTUATOR VALVE (SVA) – SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-120045-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5" BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-300001-001 TANK – PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	2	0
		0 – 0 – 87-300030-001 PRIMARY ACTUATOR KIT (PAK) – ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-300152-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	8	0
		0 – 0 – 90554459PC PRD PRESS 1/2 PRESS X PRESS 90 ELBOW LD.	6	0
		0 – 0 – 9097209PC PRD PRESS PC611 1/2 PRESS TEE LD.	7	0
		0 – 0 – 986944115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	4	0
		0 – 0 – A0034332 JUNCTION BOX FOR MANUAL PULL STATION. 1.5" DEEP BACK BOX, RED COLOR.	1	0
		0 – 0 – A31484 1/4" NPT SCHRADER VALVE AND CAP, JB INDUSTRIES. 1/4" FLARE X 1/4" MPT HALF UNION. USED ON TANK SERVICE PORT.	1	0
		0 – 0 – B1145 3/8" BLACK IRON 90 ELL.	3	0
		0 – 0 – DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – TANK STRAP TANK STRAP – USED FOR TANK FIRE SUPPRESSION.	6	0
		0 – 0 – TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	2	0
		16 – 16 – 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	8	0
		16 – 16 – DL-F NOZZLE – TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLDW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	8	0
		26 – 26 – QSA-3/8 QUIK SEAL – 3/8" (UL).	8	0
		34 – 34 – A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT. RED COLOR.	1	0
		ADDITIONAL PARTS TO BE DETERMINED..		

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DATE: 05-24-24

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DRAWN: VOC

SCALE: AS NOTED

SHEET NO.:
M503

EXHAUST FAN INFORMATION – JOB#7327435

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	KEF	1	DU85HFA	CAPTIVEAIRE	2117	1.000	1479	TEAO-ECM	1.000	0.5770	1	115	11.6	670 FPM	94	15

DOAS/RTU FAN SCHEDULE – JOB#7327435

FAN INFORMATION											ELECTRICAL INFORMATION					COOLING INFORMATION													GAS HEAT INFORMATION					A2L MINIMUM ROOM VOLUME			
																OUTSIDE AIR		MIXED AIR		LEAVING AIR		CAPACITY													
FAN UNIT NO	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	WEIGHT (LBS)	ESP	HP	PHASE	VOLT	MCA	MOCP	DB	WB	DB	WB	DB	WB	DP	TOTAL	SENS.	IEER	ISMRE	GAS TYPE	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	ROOM AREA (FT2)	AIRFLOW (CFM)	HEIGHT (FT)	NOTES
2	MAU	1	CAS-HVAC1-1.200-15-3T-MPU	CAPTIVEAIRE	15P-1	0	1694	1694	1192	0.750	1.50	3	208	23A	25A	91.0°F	60.0°F	91.0°F	60.0°F	64.7°F	50.7°F	40.1°F	38.4 MBH	38.4 MBH	17.9	6.1	NATURAL	148241	120075	70°F	7 IN. W.C. – 14 IN. W.C.	250.8	370	7.2	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15

NOTES:
1. INVERTER SCROLL COMPRESSOR WITH INTEGRATED OIL SENSOR. DIGITAL OR STAGED SCROLL NOT AN APPROVED EQUAL
2. DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE
3. INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER
4. REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE
5. EC MOTOR CONDENSING FANS
6. ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE
7. SUCTION LINE ACCUMULATOR
8. FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER
9. AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT)
10. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 6:1 TURNDOWN WITH NG AND 5:1 TURNDOWN WITH LP
11. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE
12. 15 DEGREE LOW AMBIENT OPERATION
13. 1" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-4.3 INSULATION-MINIMUM 24GA EXTERIOR W/ 18GA BASE
14. DOWN DISCHARGE/NO RETURN
15. MINIMUM ROOM AREA ASSUMED 7.2' SUPPLY DIFFUSER HEIGHT AND IS CALCULATED PER UL60335-2-40 4TH ED. VALUES BASED ON FACTORY CHARGE. ACTUAL SITE CHARGE MAY DIFFER.

5

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF	1	GREASE BOX
		1	ECM WIRING PACKAGE – PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
2	MAU	1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
		1	SHIP LOOSE GAS STRAINER 3/4"
		1	CASLINK BUILDING MONITORING SYSTEM – INTERNET OR CELLULAR CONNECTION REQUIRED
		1	CONSTRUCTION MODE – MODIFIES START-UP SETTINGS TO ALLOW TEMPERING A BUILDING STILL UNDER CONSTRUCTION
		1	RTU BLOWER DOOR SWITCH
		1	2" MERV 13 FILTERS FOR RTU1 (QTY. 4)
		1	2" MERV 8 FILTERS FOR RTU1 (QTY. 4)
		1	TOTAL CFM MONITORING
		1	SPECIAL ORIFICES FOR IF HEATERS ABOVE 2,000'
		1	RTU1 DOWN DISCHARGE
		1	3 TON MODULATING COOLING OPTION, 208/230V. R454B REFRIGERANT, VARIABLE SPEED COMPRESSOR, DI, ECM CONDENSING FAN
		1	LOW AMBIENT COOLING OPERATION – DOWN TO 0F AMBIENT
		1	R454B LEAK DETECTOR OPTION FOR RTU1
		1	RTU1 FIXED 100% OA INTAKE CONTROL
		1	DISCHARGE FIRESTAT SET TO 240°F
		1	INTAKE FIRESTAT SET TO 135°F
		1	RTU1 NO RETURN – 100% OA – MPU
		1	RTU1 CURB DUCT HANGER
		1	24VAC FIRE INPUT
		1	REHEAT – NO REHEAT
		1	VAV PACKAGE W/ 0-10VDC INPUT CONTROL (571 VFD INCLUDED)
		1	LOAD REACTOR MOUNTED IN FAN
		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
		1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
		1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)
		1	EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET

5

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF	YES						

CURB ASSEMBLIES

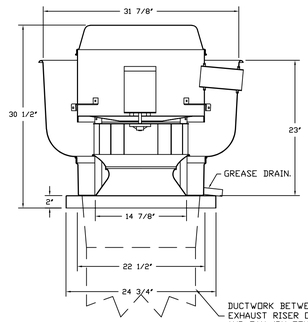
NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF	41 LBS	CURB	23.000"W X 23.000"L X 24.000"H VENTED HINGED
2	# 2	MAU	103 LBS	CURB	41.000"W X 71.000"L X 20.000"H INSULATED.

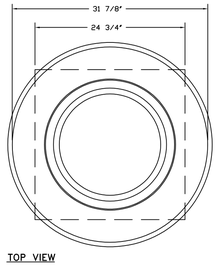
5

HMI SCHEDULE

UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS
FAN #2	HMI #1 – UNIT	IN UNIT	NOT AVERAGED	55

FAN #1 DU85HFA – EXHAUST FAN (KEF)





TOP VIEW

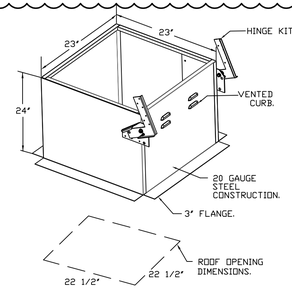
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

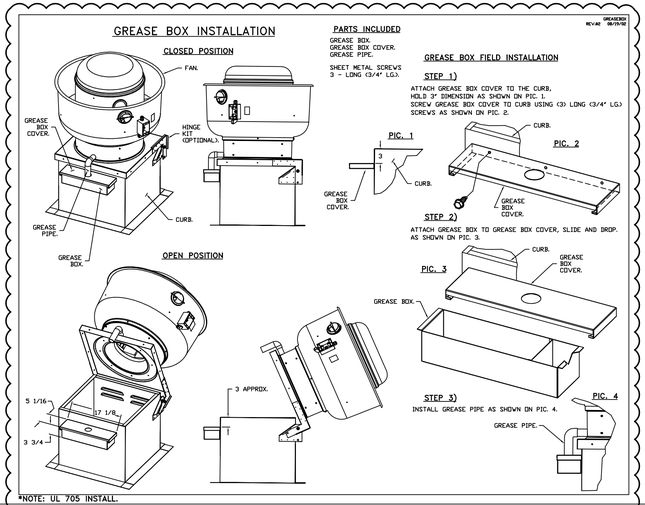
NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS
- GREASE BOX.
- ECM WIRING PACKAGE – PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.



GREASE BOX INSTALLATION



*NOTE: UL 705 INSTALL.

5

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DWG.#: 7327435

DRAWN BY: AJP-32

SCALE: NOT TO SCALE

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SHEET NO. 4

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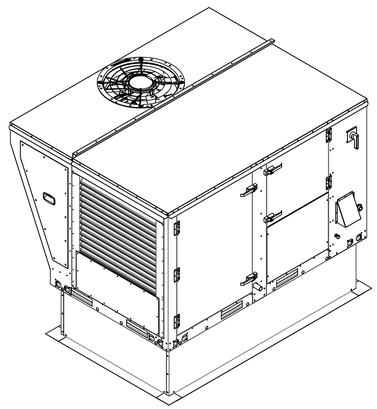
DRAWN: VOC
SCALE: AS NOTED

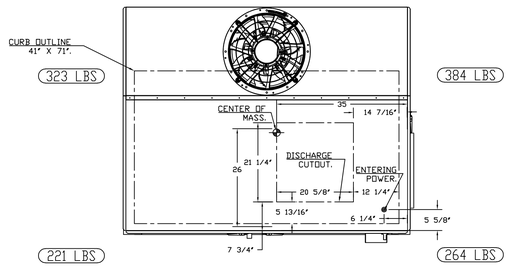
SHEET NO.:
M504

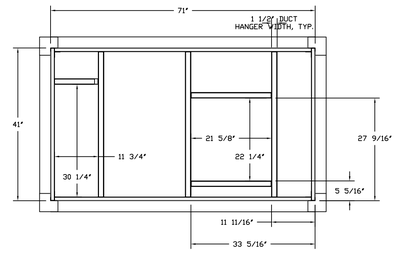
FAN #2 CAS-HVAC1-I.200-15-3T-MPU - HEATER (MAU)

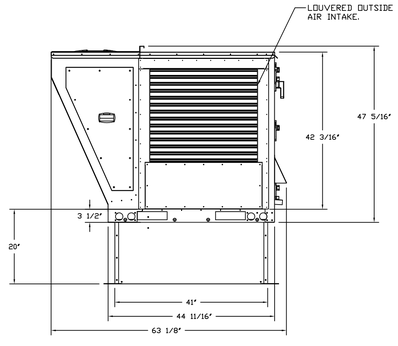
NOTES:
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. ( ) DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
4. CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.
5. EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.

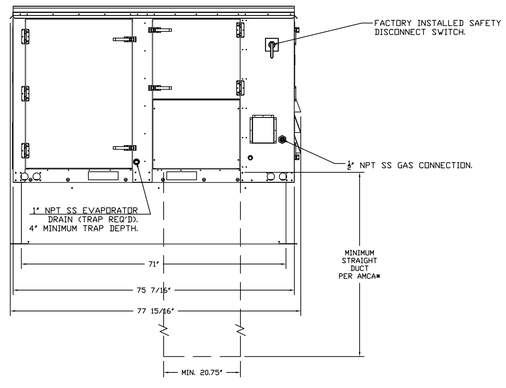
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 20.75" x 21.5".

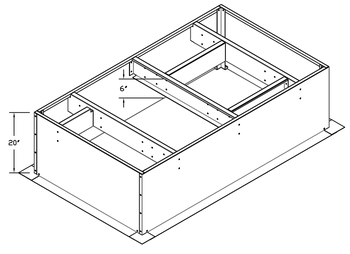












REVISIONS

	DESCRIPTION	DATE:
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Cava - Stapleton CO (Denver)_R1
8969 East 46th Avenue,
Denver, CO, 80238

DATE: 2/6/2025

DWG.#: 7327435

DRAWN BY: AJP-32

SCALE: NOT TO SCALE

MASTER DRAWING

SHEET NO. 5

zebra
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STORE NO.:

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UNITED STATES
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REVISIONS / ISSUES

		DESCRIPTION
0	05/24/24	PERMIT SET
1	08/09/24	CITY COMMENTS
2	09/03/24	CITY COMMENTS
3	09/20/20	CITY COMMENTS
4	02/03/25	OWNER CHANGES
5	02/20/25	REVISED ROOF PLAN

STATUS:
ISSUE FOR CONSTRUCTION

COLORADO LICENSED
ROBERT A. HARRIS
42440
02/27/2025
PROFESSIONAL ENGINEER

FIELD VERIFICATION:
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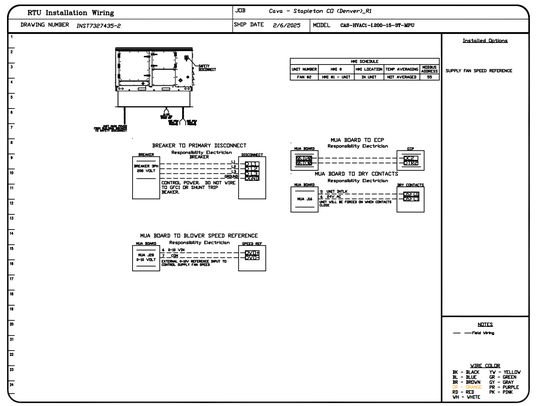
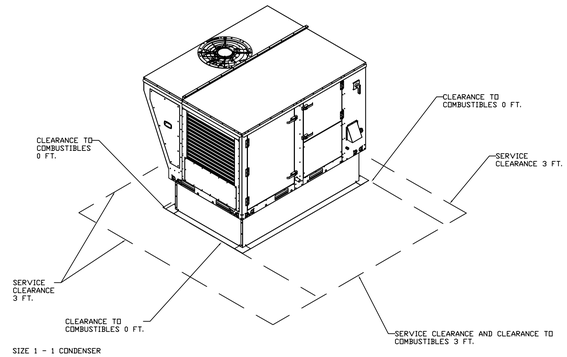
HOOD DRAWINGS

DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M505



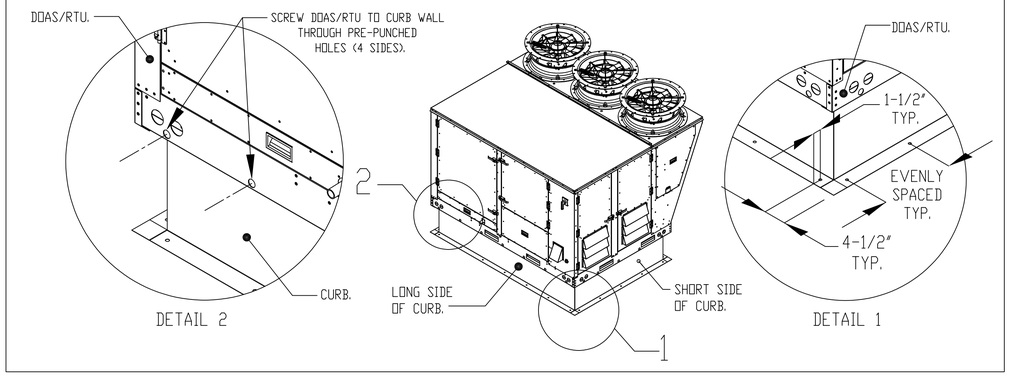


SIZE 1 - 1 CONDENSER

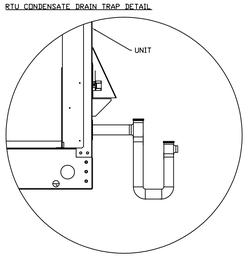
TYPICAL DOAS/RTU ROOF MOUNTING INSTALLATION INSTRUCTIONS

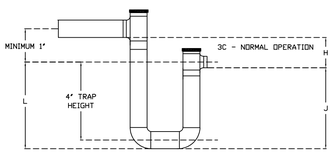
1. SECURE THE CURB TO THE ROOF FRAMING MEMBERS BY DRILLING 1/4" PILOT HOLES IN THE CURB FLANGES AT LOCATIONS SHOWN IN THE DIAGRAM BELOW. USING 3/8" X 2" ZINC PLATED STEEL LAG BOLTS, AND ZINC PLATED WASHERS, SCREW THROUGH THE CURB FLANGES AND INTO THE ROOF FRAMING MEMBERS. A MINIMUM OF (5) LAG BOLTS ON EACH SHORT SIDE, AND (7) LAG BOLTS ON EACH LONG SIDE IS REQUIRED.

2. SECURE THE UNIT BASE TO THE SIDE WALLS OF THE CURB USING (24) 1/4"-14 X 2" SELF-DRILLING, STEEL ZINC PLATED SCREWS. PRE-PUNCHED HOLES HAVE BEEN PROVIDED FOR EACH SCREW LOCATION.



RTU CONDENSATE DRAIN TRAP DETAIL





H = (1" FOR EACH 1" OF MAXIMUM NEGATIVE STATIC PRESSURE) + 1"
J = HALF OF H
L = H + J + PIPE DIAMETER + INSULATION

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DRAWN BY: AJP-32
SCALE: NOT TO SCALE
MASTER DRAWING

SHEET NO. 6

zebra

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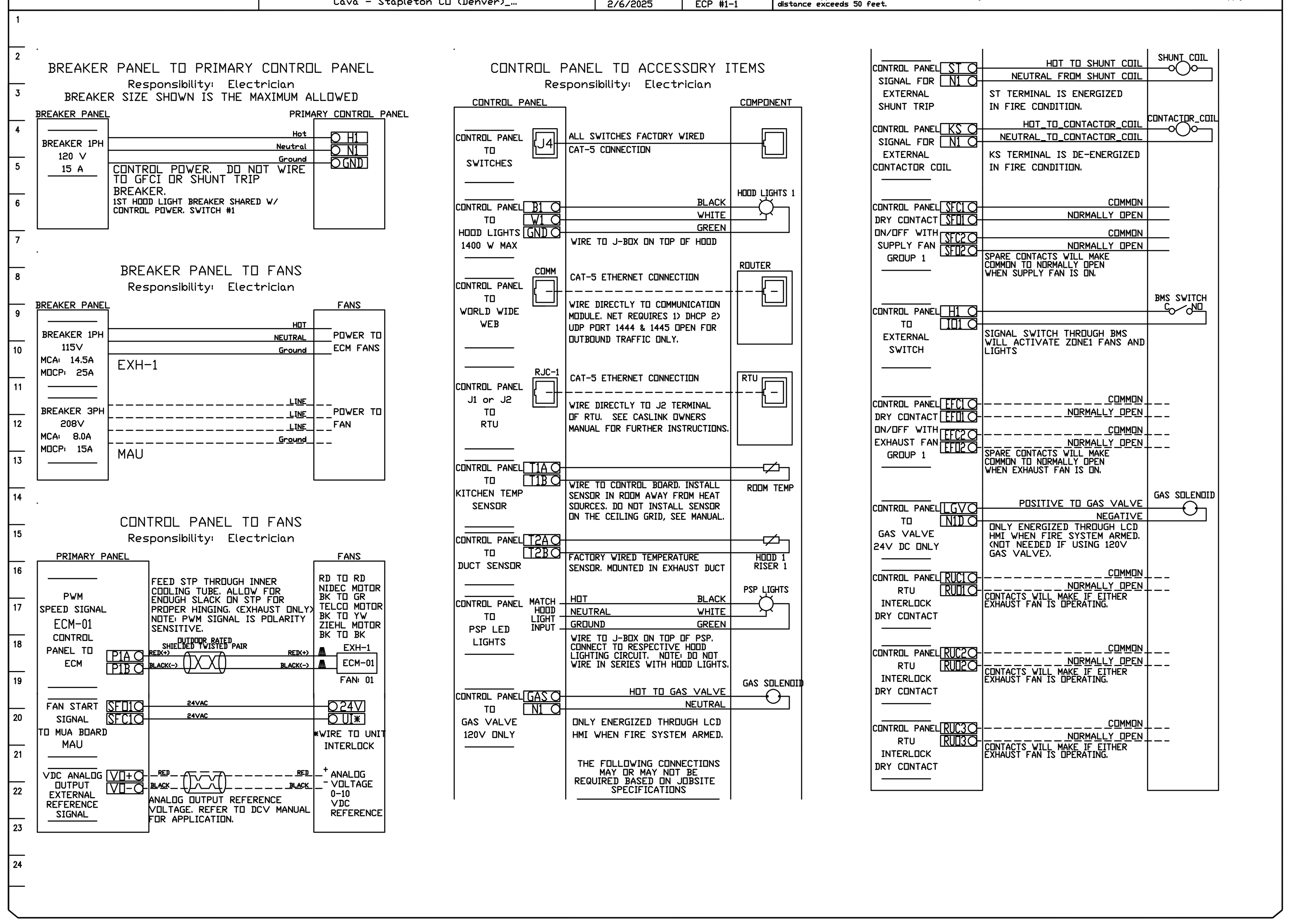
DATE: 05-24-24
PROJECT NO.: 36667
DRAWN: VOC
SCALE: AS NOTED

SHEET NO.:
M506

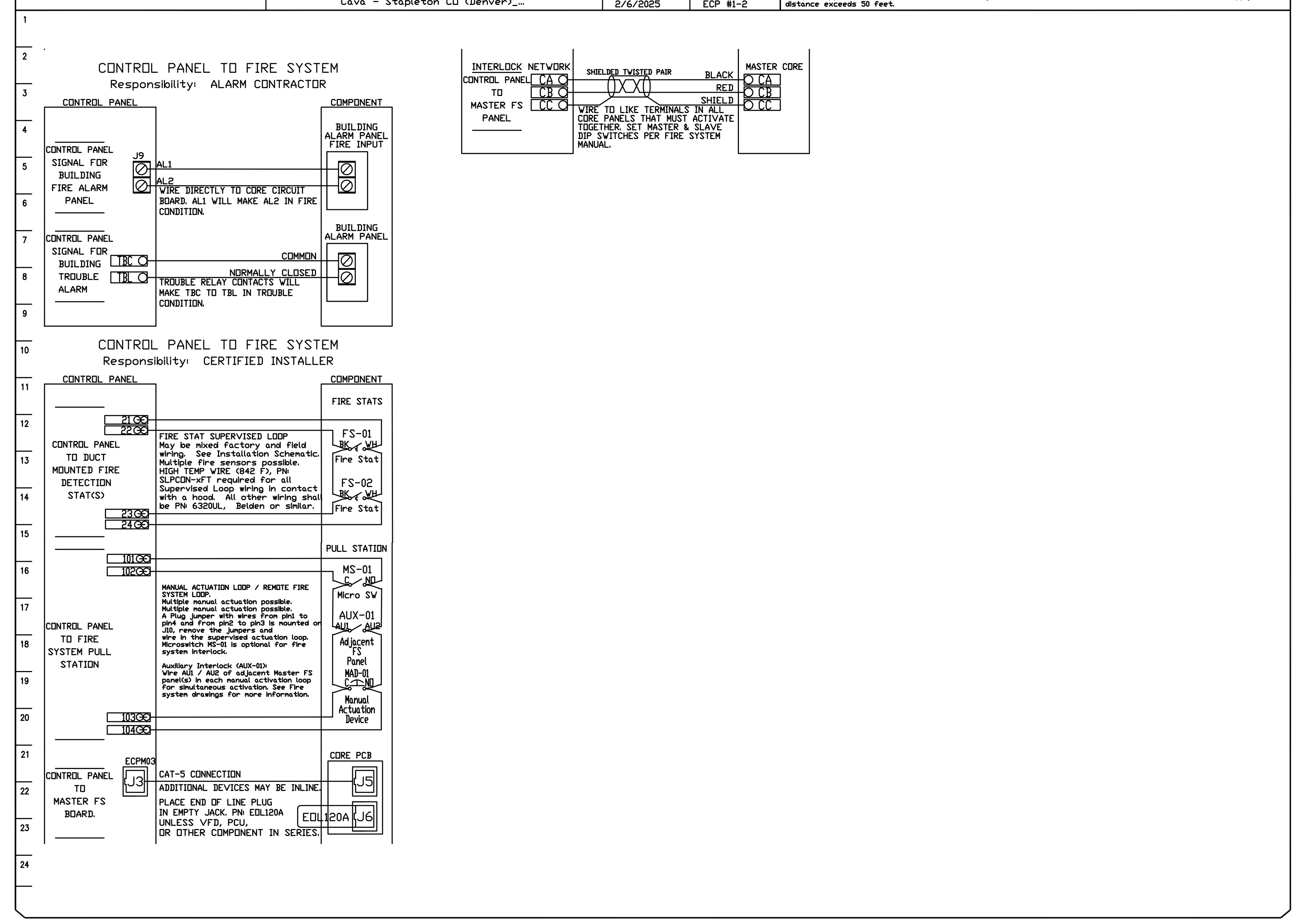
ELECTRICAL PACKAGE – JOB#7327435

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1		DCV-1111	UTILITY CABINET LEFT	UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS DCV	KEF	EXHAUST	1	1.000	115	11.6
				HOOD # 1	1 FAN		MAU	SUPPLY	3	1.500	208	4.4

JOB NO 7327435	MODEL NUMBER DCV-1111	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION: Demand Control Ventilation, w/ control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY 3 PHASE MOTOR REQUIRED FOR USE WITH VFD. Room temperature sensor shipped loose for field installation.Verify distance between VFD and Motor; additional cost could apply if distance exceeds 50 feet.
	JOB NAME Cava - Stapleton CO (Denver)_...	DATE 2/6/2025	DWG NO ECP #1-1	



JOB NO 7327435	MODEL NUMBER DCV-1111	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION: Demand Control Ventilation, w/ control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY 3 PHASE MOTOR REQUIRED FOR USE WITH VFD. Room temperature sensor shipped loose for field installation.Verify distance between VFD and Motor; additional cost could apply if distance exceeds 50 feet.
	JOB NAME Cava - Stapleton CO (Denver)_...	DATE 2/6/2025	DWG NO ECP #1-2	



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DATE: 2/6/2025

DWG.#: 7327435

DRAWN BY: AJP-32

SCALE: NOT TO SCALE

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Project # -10202366.01

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COLORADO LICENSED PROFESSIONAL ENGINEER
ROBERT A. HARRIS
42440
02/27/2025

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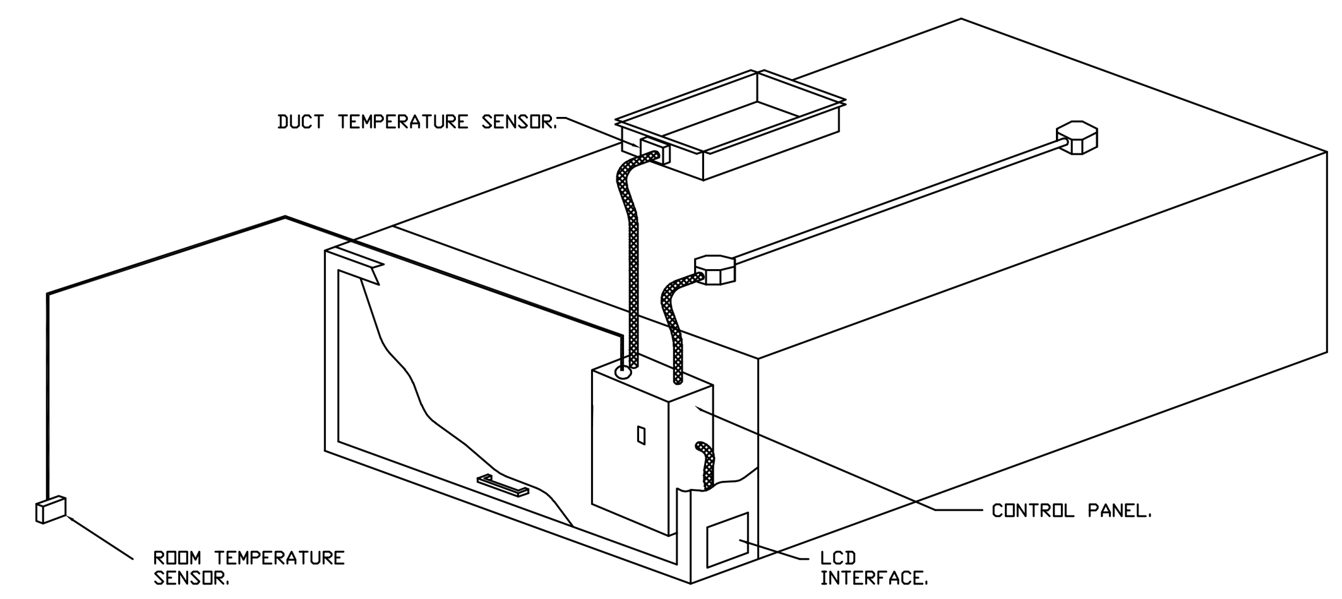
SHEET NAME:
HOOD DRAWINGS

DATE:	PROJECT NO.:
05-24-24	36667
DRAWN: VOC	SCALE: AS NOTED

SHEET NO.:
M507

DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.2.8 (2015).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDS) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDS BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FAN(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
  A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
  B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).
  C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
  G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDS.



TYPICAL HOOD CONTROL PANEL INSTALLATION

SEQUENCE OF OPERATIONS:

THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:

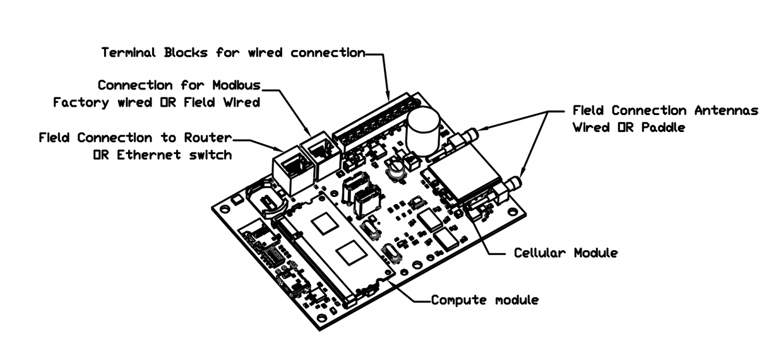
- AUTOMATIC: THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS "DYNAMIC", THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS "STATIC", FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.2.8.
- MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
- SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
- OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
- FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

SYSTEM DESIGN VERIFICATION (SDV)

IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.



CASlink Monitor and Control

- ***Hood control panel to support communications to cloud-based Building Management System.***
- ***Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.***
- ***Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.***
- ***Hood Control Panel to allow cloud-based Building Management System to implement SYSTEM ECONOMIZER control strategies for fully integrated Building Management.***

MONITORING AND CONTROL POINTS LIST

DCV Packages	Function
Room Temperature	MONITOR
Duct Temperature(s)	MONITOR
MUA Discharge Temperature	MONITOR
Kitchen RTU Discharge Temperature	MONITOR
Fan Speed	MONITOR
Fan Amperage	MONITOR
Fan Power	MONITOR
VFD Faults	MONITOR
Controller Faults	MONITOR
Fan Faults	MONITOR
Fan Status	MONITOR
PCU Faults	MONITOR
PCU Filter Clog Percentages	MONITOR
Fire Condition	MONITOR
CORE Fire System	MONITOR
Building Pressures	MONITOR
Prep Time Button	MONITOR & CONTROL
Fans Button	MONITOR & CONTROL
Lights Button	MONITOR & CONTROL
Wash Button	MONITOR & CONTROL

SC Packages	Function
Room Temperature(s)	MONITOR
Duct Temperature(s)	MONITOR
MUA Discharge Temperature	MONITOR
Kitchen RTU Discharge Temperature	MONITOR
Controller Faults	MONITOR
Fan Faults	MONITOR
Fan Status	MONITOR
PCU Faults	MONITOR
PCU Filter Clog Percentages	MONITOR
Fire Condition	MONITOR
CORE Fire System	MONITOR
Building Pressures	MONITOR
Fans Button(s)	MONITOR & CONTROL
Lights Button(s)	MONITOR & CONTROL
Wash Button	MONITOR & CONTROL

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