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COMcheck Software Version COMcheckWeb

Mechanical Compliance Certificate

Project Information

Energy Code:	2021 IECC
Project Title:	Dash In # 1042 Kitchen /Sales Copy 2
Location:	La Plata, Maryland
Climate Zone:	4a
Project Type:	New Construction

Construction Site:
6670 Crain Highway
La Plata, MD 20646

Owner/Agent:
The Wills Group, Inc
La Plata, MD 20646

Designer/Contractor:
B&R ENGINEERING SERVICE
502 McCormick Drive, Suite M
Glen Burnie, MD

Additional Efficiency Package(s)

Credits: 10.0 Required 0.0 Proposed

Mechanical Systems List

Quantity System Type & Description

1 RTU-1 (Single Zone):
Heating: 1 each - Central Furnace, Propane, Capacity = 200 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 118 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency = 11.00 EER
Proposed Part Load Efficiency = 0.00 IEER, Required Part Load Efficiency = 14.60 IEER
Fan System: FAN SYSTEM 1 | Sales -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 1 Supply, Constant Volume, 3400 CFM, 3.0 motor nameplate hp, 80.00 fan energy index , fan exception: Single fan <= 5HP

1 RTU-2 (Single Zone):
Heating: 1 each - Central Furnace, Propane, Capacity = 180 kBtu/h
No minimum efficiency requirement applies
Cooling: 1 each - Single Package DX Unit, Capacity = 86 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 11.00 EER, Required Efficiency = 11.00 EER
Proposed Part Load Efficiency = 0.00 IEER, Required Part Load Efficiency = 14.60 IEER
Fan System: FAN SYSTEM 2 | Kitchen/BOH -- Compliance (Motor nameplate HP and fan efficiency method) : Passes

Fans:
FAN 2 Supply, Constant Volume, 2750 CFM, 3.0 motor nameplate hp, 80.00 fan energy index , fan exception: Single fan <= 5HP

2 Water Heater 1:
Gas Instantaneous Water Heater, Capacity: 4 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump
No minimum efficiency requirement applies

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 COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

ABBREVIATIONS

SYMBOL	ABBR.	DEFINITION
		REMOVE EXISTING TO THIS POINT
		CONNECT NEW TO EXISTING AT THIS POINT
	AFF.	ABOVE FINISHED FLOOR
	AFG.	ABOVE FINISHED GRADE
	AHU	AIR HANDLING UNIT
	APD	AIR PRESSURE DROP
	ATC	AUTOMATIC TEMPERATURE CONTROL
	BTUH	BRITISH THERMAL UNITS PER HOUR
	CFH	CUBIC FEET PER HOUR
	CFM	CUBIC FEET PER MINUTE
	CUH	CABINET UNIT HEATER
	DB	DRY BULB
□	DIA.	DIAMETER
	DN.	DOWN
	DWG.	DRAWING
	EAT	ENTERING AIR TEMPERATURE
	EF	EXHAUST FAN
	ESP	EXTERNAL STATIC PRESSURE
	EWT	ENTERING WATER TEMPERATURE
	EX	EXISTING
	EXH	EXHAUST
	FCU	FAN COIL UNIT
	FD	FIRE DEPARTMENT
	GPH	GALLONS PER HOUR
	GPM	GALLONS PER MINUTE
	HP	HORSEPOWER
	IN.	INCHES
	INV. ELEV.	INVERT ELEVATION
	KW	KILOWATTS
	LAT	LEAVING AIR TEMPERATURE
	LWT	LEAVING WATER TEMPERATURE
	MAX	MAXIMUM
	MBH	ONE THOUSAND BTU
	MFG	MANUFACTURER
	MIN	MINIMUM
	NA	NOT APPLICABLE
#	NO	NUMBER
	OA	OUTSIDE AIR
	OED	OPEN END DUCT
	OSD	OPEN SITE DRAIN
	RM.	ROOM
	RPM	REVOLUTIONS PER MINUTE
	RTU	ROOF TOP UNIT
	SF	SQUARE FEET
	TYP	TYPICAL
	V / Ph / Hz	VOLTS / PHASE / HERTZ
	VIF	VERIFY IN FIELD
	VTR	VENT THRU ROOF
	WC	WATER COLUMN
	WG	INCHES WATER GAUGE
	W/	WITH
	WB	WET BULB
	WPD	WATER PRESSURE DROP

NOTE: ALL SYMBOLS AND ABBREVIATIONS MAY NOT BE USED.

MECHANICAL LEGEND

SYMBOL	ABBR.	DEFINITION
	SA	SUPPLY AIR DUCT
	RA	RETURN AIR DUCT
	EA	EXHAUST AIR DUCT
	VD	VOLUME DAMPER
	FD	FIRE DAMPER
	BDD	BACK DRAFT DAMPER
	MOD	MOTOR OPERATED DAMPER
		FLEXIBLE DUCTWORK (MAX 5 FT LENGTH)
	UH	UNIT HEATER
UC DL		1" DOOR UNDERCUT / DOOR LOUVER
T		THERMOSTAT
SD	SD	SMOKE DETECTOR
A / 100		AIR DEVICE DESIGNATION / CUBIC FEET OF AIR PER MINUTE
		FLEXIBLE CONNECTION
		PLUG VALVE
		BALL VALVE
		SHUT OFF VALVE (SEE SPECIFICATIONS)
		GLOBE VALVE
		GAS COCK
		UNION
		PIPE ANCHOR
		PIPE GUIDE
RL	RL	REFRIGERANT LIQUID PIPING
RS	RS	REFRIGERANT SUCTION PIPING
G	G	NATURAL GAS PIPING
CD	CD	CONDENSATE DRAIN PIPING
		CAPPED PIPE
		PIPE BREAK
		PIPE UP
		DROP IN PIPE
		TOP PIPE CONNECTION
		BOTTOM PIPE CONNECTION

NOTE: ALL SYMBOLS AND ABBREVIATIONS MAY NOT BE USED.

GENERAL NEW WORK NOTES

1. DUCTWORK AND PIPING SHALL BE KEPT AS TIGHT TO STRUCTURE AS POSSIBLE. PROVIDE TRANSITIONS OR OFFSETS IN DUCTWORK AND PIPING AS REQUIRED TO MAINTAIN ELEVATION.
2. OPEN END DUCTS SHALL BE PROVIDED WITH 1/2" BIRD SCREEN OVER DUCT OPENING.
3. AIR DISTRIBUTION SYSTEMS SHALL BE CONSTRUCTED PER SMACNA REQUIREMENTS AND AS SPECIFIED.
4. COORDINATE INSTALLATION OF MECHANICAL EQUIPMENT WITH OTHER TRADES. PROVIDE OFFSETS, RISERS OR TRANSITIONS REQUIRED TO AVOID CONFLICTS OR TO MAINTAIN REQUIRED ELEVATIONS.
5. DUCT SIZES INDICATED ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATION OF SIDEWALL AND CEILING AIR DEVICES.
7. CEILINGS ARE USED AS RETURN AIR PLENUM. NO COMBUSTIBLE MATERIALS ARE ALLOWED IN THE PLENUM.
8. WHERE FLEXIBLE DUCT CONNECTIONS OF AIR DEVICES TO BRANCH DUCTS ARE INDICATED FLEXIBLE DUCT LENGTH SHALL NOT EXCEED 5'-0" MAXIMUM.
9. INSTALL PIPING AND DUCTWORK SO THAT VALVES AND DAMPERS ARE ACCESSIBLE.
10. INSTALL THERMOSTATS WITH CENTERLINE AT 4'-0" ABOVE FINISHED FLOOR. COORDINATE LOCATIONS WITH LIGHT SWITCHES AND OTHER ROOM CONTROL DEVICES AS DIRECTED BY THE ARCHITECT.
11. PROVIDE ACCESS PANELS TO ALLOW ACCESS TO ITEMS LOCATED ABOVE HARD CEILINGS OR IN SHAFTS. ACCESS PANELS SHALL NOT BE INSTALLED IN FINISHED CEILINGS IN COMMON PUBLIC AREAS.
12. PROVIDE FIRESTOP SYSTEMS AT PENETRATIONS OF FIRE RATED ASSEMBLIES.
13. PROVIDE RIGGING, LIFTING, HOISTING, AND SCAFFOLDING AS REQUIRED FOR THE INSTALLATION OF MECHANICAL EQUIPMENT INCLUDING ROOFTOP EQUIPMENT.
14. PROTECT DUCT INTERORS FROM CONSTRUCTION DUST AND DEBRIS, MOISTURE, AND OTHER FOREIGN MATERIALS PRIOR TO AND AFTER INSTALLATION.
15. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATING OF WALLS, PARTITIONS AND FLOORS.

HVAC DESIGN CRITERIA

1. WEATHER DATA:
(ASHRAE 2021 FUNDAMENTALS: ANDREWS AIR FORCE BASE)

SUMMER (1.0%):	91°F DB / 74.1°F WB
WINTER (99%):	18.1°F DB

2. INDOOR SPACE DESIGN CONDITIONS:

	COOLING	HEATING
OFFICE	72°F DB / 50% RH	70°F DB / 30% RH
SALES AREA	72°F DB / 50% RH	70°F DB / 30% RH

3. GENERAL DESIGN LOAD REQUIREMENTS:

LIGHTING:	1.4 W/SF
EQUIPMENT:	1.5 W/SF
PEOPLE:	250 BTUH/PERSON (SENSIBLE)
	200 BTUH/PERSON (LATENT)

4. GENERAL EXHAUST CRITERIA:

TOILET ROOMS:	2 CFM/SF OR 75 CFM/FLUSH FIXTURE WHICHEVER IS GREATER
JANITOR CLOSETS:	6 ACH OR 100 CFM MINIMUM

5. VENTILATION RATES:

	NO. OF PEOPLE	CFM PER PERSON	CFM PER SF
OFFICE:	1	5	0.06
SALES AREA	15 PER 1000SF	7.5	0.12

6. OCCUPANCY SCHEDULE: 7:00 AM - 11:00 PM
7. BUILDING ENVELOPE CRITERIA:

WALL U-VALUE:	0.08
ROOF U-VALUE:	0.05
GLASS U-VALUE:	0.5
GLASS SHGC:	0.55

8. HEATING AND COOLING LOAD CALCULATIONS PERFORMED IN ACCORDANCE WITH CARRIER HOURLY ANALYSIS PROGRAM.
9. APPLICABLE CODES:

2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL MECHANICAL CODE
2021 INTERNATIONAL ENERGY CONSERVATION CODE

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DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

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THE WILLS GROUP
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seals

STATE OF MARYLAND · FRANK A. SERGIO · 43013 · PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NUMBER 43013 EXPIRATION DATE 12/10/2025

revisions

#	date	description
4	12.04.2024	2021 Code Adoption

sheet title

MECHANICAL - DATA SHEET

issued for
ISSUED FOR PERMIT

issued date
02/16/2024

sheet number
M-001

15000 - GENERAL PROVISIONS

PART 1 GENERAL

1.01 SCOPE

A. PROVIDE LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR AND INCIDENTAL TO THE WORK AS SHOWN ON THE DRAWINGS OR SPECIFIED AND IN CONFORMANCE WITH OTHER CONTRACT DOCUMENTS.

B. PERFORM MECHANICAL WORK IN STRICT ACCORDANCE WITH APPLICABLE STATE AND LOCAL CODES, NATIONAL FIRE PROTECTION ASSOCIATION, REFERENCED CODES AND STANDARDS BY VARIOUS TECHNICAL SOCIETIES, FEDERAL OCCUPATIONAL SAFETY AND HEALTH STANDARDS, LOCAL INSPECTOR REQUIREMENTS, AND OWNER INSURING AGENCY REQUIREMENTS.

C. CONTRACTOR SHALL APPLY AND PAY FOR NECESSARY PERMITS AND CERTIFICATES OF INSPECTION REQUIRED BY THE CODE AUTHORITY.

D. FINISH PAINTING IS TO BE PROVIDED BY THE GENERAL CONTRACTOR, EXCEPT AS NOTED ELSEWHERE. THIS CONTRACTOR SHALL RESTORE TO THE ORIGINAL CONDITION , ANY PAINTING DEFACED BY HIM AFTER ORIGINAL PAINTING.

E. THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED, SHALL PROVIDE POWER WIRING FOR EACH ITEM OF ELECTRICAL EQUIPMENT AND MAKE FINAL CONNECTIONS TO MOTORS.

F. PROVIDE NECESSARY CONTROLS, RELAYS, ETC. REQUIRED FOR PROPER OPERATION OF ALL EQUIPMENT.

G. GUARANTEE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE.THIS CONTRACTOR WILL BE RESPONSIBLE FOR ADJUSTMENTS TO ENSURE EFFICIENT AND PROPER OPERATION OF SYSTEMS AND EQUIPMENT DURING THE GUARANTEE PERIOD.

1.02 CUTTING AND PATCHING

A. THE CONTRACTOR FOR THIS DIVISION SHALL BE RESPONSIBLE FOR CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF HIS WORK.

1.03 EXAMINATION OF SITE

A. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. LOCATIONS OF EXISTING UTILITIES INDICATED ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY SIZES, LOCATIONS AND INVERT ELEVATIONS AS NECESSARY.

1.04 SUBMITTAL PROCEDURES

A. SUBMITTAL INFORMATION: INCLUDE A COVER PAGE WITH THE FOLLOWING INFORMATION WITH EACH SUBMITTAL:

1. PROJECT NAME.
2. DATE.
3. NAME OF ARCHITECT/ENGINEER.
4. NAME OF CONSTRUCTION MANAGER.
5. NAME OF CONTRACTOR.
6. NAME OF FIRM OR ENTITY THAT PREPARED SUBMITTAL.
7. NAMES OF SUBCONTRACTOR, MANUFACTURER, AND SUPPLIER.
8. UNIQUE SUBMITTAL NUMBER, INCLUDING REVISION IDENTIFIER. INCLUDE SPECIFICATION SECTION NUMBER WITH SEQUENTIAL ALPHANUMERIC IDENTIFIER; AND ALPHANUMERIC SUFFIX FOR RESUBMITTALS.
9. CATEGORY AND TYPE OF SUBMITTAL.
10. NUMBER AND TITLE OF SPECIFICATION SECTION, WITH PARAGRAPH NUMBER AND GENERIC NAME FOR EACH OF MULTIPLE ITEMS.
11. INDICATION OF FULL OR PARTIAL SUBMITTAL.
12. OTHER NECESSARY IDENTIFICATION.
13. REMARKS.
14. SIGNATURE OF TRANSMITTER.
15. PROVIDE A SPACE TO RECORD CONTRACTOR'S REVIEW AND APPROVAL MARKINGS AND ACTION TAKEN BY ARCHITECT AND ENGINEER.

B. DEVIATIONS AND ADDITIONAL INFORMATION: ON EACH SUBMITTAL, CLEARLY INDICATE DEVIATIONS FROM REQUIREMENTS IN THE CONTRACT DOCUMENTS, INCLUDING MINOR VARIATIONS AND LIMITATIONS; INCLUDE RELEVANT ADDITIONAL INFORMATION AND REVISIONS, OTHER THAN THOSE REQUESTED BY ARCHITECT ON PREVIOUS SUBMITTALS. INDICATE BY HIGHLIGHTING ON EACH SUBMITTAL OR NOTING ON ATTACHED SEPARATE SHEET.

C. PDF SUBMITTALS: PREPARE SUBMITTALS AS PDF PACKAGE, INCORPORATING COMPLETE INFORMATION INTO EACH PDF FILE. NAME PDF FILE WITH SUBMITTAL NUMBER.

D. PROCESSING TIME: ALLOW TIME FOR SUBMITTAL REVIEW, INCLUDING TIME FOR RESUBMITTALS, AS FOLLOWS. TIME FOR REVIEW SHALL COMMENCE ON ARCHITECT’S RECEIPT OF SUBMITTAL. NO EXTENSION OF THE CONTRACT TIME WILL BE AUTHORIZED BECAUSE OF FAILURE TO TRANSMIT SUBMITTALS ENOUGH IN ADVANCE OF THE WORK TO PERMIT PROCESSING, INCLUDING RESUBMITTALS.

1. INITIAL REVIEW: ALLOW10 DAYS FOR INITIAL REVIEW OF EACH SUBMITTAL. ALLOW ADDITIONAL TIME IF COORDINATION WITH SUBSEQUENT SUBMITTALS IS REQUIRED. ARCHITECT WILL ADVISE CONTRACTOR WHEN A SUBMITTAL BEING PROCESSED MUST BE DELAYED FOR COORDINATION.
2. RESUBMITTAL REVIEW: ALLOW 10 DAYS FOR REVIEW OF EACH RESUBMITTAL.

E. RESUBMITTALS: MAKE RESUBMITTALS IN SAME FORM AND NUMBER OF COPIES AS INITIAL SUBMITTAL.

F. USE FOR CONSTRUCTION: RETAIN COMPLETE COPIES OF SUBMITTALS ON PROJECT SITE. USE ONLY FINAL ACTION SUBMITTALS THAT ARE MARKED WITH APPROVAL NOTATION FROM ARCHITECT'S AND ENGINEER’S ACTION STAMP.

G. PRODUCT DATA: COLLECT INFORMATION INTO A SINGLE SUBMITTAL FOR EACH ELEMENT OF CONSTRUCTION AND TYPE OF PRODUCT OR EQUIPMENT.

1. IF INFORMATION MUST BE SPECIALLY PREPARED FOR SUBMITTAL BECAUSE STANDARD PUBLISHED DATA ARE UNSUITABLE FOR USE, SUBMIT AS SHOP DRAWINGS, NOT AS PRODUCT DATA.
2. MARK EACH COPY OF EACH SUBMITTAL TO SHOW WHICH PRODUCTS AND OPTIONS ARE APPLICABLE.
3. INCLUDE THE FOLLOWING INFORMATION, AS APPLICABLE:

   a. MANUFACTURER'S CATALOG CUTS.
   b. MANUFACTURER'S PRODUCT SPECIFICATIONS.
   c. STANDARD COLOR CHARTS.
   d. STATEMENT OF COMPLIANCE WITH SPECIFIED REFERENCED
   e. STANDARDS. TESTING BY RECOGNIZED TESTING AGENCY.
   f. APPLICATION OF TESTING AGENCY LABELS AND SEALS.
   g. NOTATION OF COORDINATION REQUIREMENTS.
   h. AVAILABILITY AND DELIVERY TIME INFORMATION.

4. FOR EQUIPMENT, INCLUDE THE FOLLOWING IN ADDITION TO THE ABOVE, AS APPLICABLE:

   a. WIRING DIAGRAMS THAT SHOW FACTORY-INSTALLED WIRING.
   b. PRINTED PERFORMANCE CURVES.
   c. OPERATIONAL RANGE DIAGRAMS.
   d. CLEARANCES REQUIRED TO OTHER CONSTRUCTION, IF NOT INDICATED ON ACCOMPANYING SHOP DRAWINGS.

G. INCOMPLETE SUBMITTALS ARE UNACCEPTABLE, WILL BE CONSIDERED NONRESPONSIVE, AND WILL BE RETURNED FOR RESUBMITTAL WITHOUT REVIEW.

1.05 OPERATION AND MAINTENANCE MANUALS

A. UPON COMPLETION OF WORK, OPERATION AND MAINTENANCE (O&M) MANUALS SHALL BE SUBMITTED FOR APPROVAL.O & M MANUALS SHALL BE BOUND IN A HARD COVER 3 RING BINDER AND LABELED WITH THE PROJECT NAME. MANUALS SHALL INCLUDE NAME, ADDRESSES, AND PHONE NUMBERS OF THE CONTRACTOR(S) FOR EACH DISCIPLINE AND THE APPROVED MANUFACTURERS LIST. THE MANUALS SHALL ALSO INCLUDE COPIES OF ALL APPROVED SHOP DRAWINGS AS WELL AS ALL APPLICABLE (AND APPROPRIATELY EDITED) MANUFACTURERS MAINTENANCE AND OPERATING INSTRUCTIONS.

1.06 RECORD DRAWINGS

A. WITHIN 60 DAYS AFTER THE DATE OF OCCUPANCY, PROVIDE RECORD OF DRAWINGS OF THE ACTUAL INSTALLATION TO THE OWNER. RECORD DRAWINGS SHALL INCLUDE AT MINIMUM DEVIATIONS FROM THE PLANS, THE LOCATION AND PERFORMANCE DATA OF EACH PIECE OF EQUIPMENT, AND THE GENERAL CONFIGURATION OF DUCT AND PIPING DISTRIBUTION SYSTEMS INCLUDING SIZES.

15700 - HEATING, VENTILATION, AND AIR CONDITIONING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, AND SUPERVISION REQUIRED TO PROVIDE COMPLETE AND WORKING HVAC SYSTEMS AS INDICATED ON THE DRAWINGS AND AS OTHERWISE INDICATED TO BE REQUIRED.

1.02 WORK INCLUDED

A. THE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FURNISHING AND INSTALLATION OF THE FOLLOWING:
1. HVAC SYSTEMS
2. DUCTWORK AND HANGERS
3. AUTOMATIC TEMPERATURE CONTROLS AND CONTROL WIRING
4. CUTTING AND PATCHING IN CONNECTION WITH THE WORK
5. TESTING, CLEANING AND PLACING IN OPERATION ALL SYSTEMS AND EQUIPMENT SPECIFIED UNDER THIS SECTION OF THE SPECIFICATION
6. WORK SHALL COMPLY WITH APPLICABLE CODES AND ORDINANCES
7. CONTRACTOR SHALL OBTAIN PERMITS AND REQUIRED INSPECTIONS
8. COORDINATE THE WORK OF THIS DIVISION WITH OTHER TRADES

1.03 RELATED WORK TO BE PERFORMED UNDER OTHER SECTIONS

A. POWER WIRING, AND POWER CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED
B. MOTOR STARTERS AND DISCONNECTS WITH FUSES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED
C. CONTROL WIRING SHALL BE IN CONDUIT
D. ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ALL LOCAL CODES AND JURISDICTIONS

1.04 CODES AND STANDARDS

A. ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES AND THE FOLLOWING STANDARDS:

1.	NFPA-90	AIR CONDITIONING AND VENTILATING SYSTEM
2.	ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
3.	ARI	AMERICAN REFRIGERATION INSTITUTE
4.	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION, INC.
5.	ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
6.	ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
7.	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
8.	UL-181	UNDERWRITERS LABORATORIES, INC.
9.	NEC	NATIONAL ELECTRIC CODE
10.	AMCA	AIR MOVING AND CONDITIONING ASSOCIATION
11.	ICC	INTERNATIONAL CODE COUNCIL
12.	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

1.05 FLAME SPREAD AND SMOKE DEVELOPED PROPERTIES OF MATERIALS

A. MATERIALS AND ADHESIVES USED THROUGHOUT THE MECHANICAL AND ELECTRICAL SYSTEMS FOR INSULATION, AND JACKETS OR COVERINGS OF ANY KIND, OR FOR PIPING OR CONDUIT SYSTEM COMPONENTS, SHALL HAVE A FLAMESPREAD RATING NOT OVER 25 WITHOUT EVIDENCE OF CONTINUED COMBUSTION AND WITH A SMOKE DEVELOPED RATING NOT HIGHER THAN 50.

1.06 SUBMITTALS

A. THREE COMPLETE SCHEDULES OF PROPOSED MATERIALS AND EQUIPMENT SHALL BE SUBMITTED TO THE OWNER FOR REVIEW WITHIN 30 DAYS OF CONTRACT AWARD, INCLUDING:
1. GAS FIRED ROOFTOP DOAS UNIT
2. KITCHEN EXHAUST FAN
3. EXHAUST FANS
4. AIR DEVICES
5. THERMOSTATS AND CONTROLS.

B. CONTRACTOR SHALL PROVIDE MARKED UP DRAWINGS OF THE ORIGINAL CONTRACT DRAWINGS TO REFLECT CHANGES MADE TO THE INSTALLATION, TO THE OWNER

1.08 PRODUCT HANDLING AND STORAGE

A. MATERIALS AND EQUIPMENT USED SHALL BE NEW, DAMAGE FREE AND SHALL BE PROPERLY STORED AND PROTECTED BY THE MANUFACTURER'S RECOMMENDATION, THE CONTRACTOR SHALL STORE THE MATERIALS AND EQUIPMENT IN A PROTECTED AREA TO PREVENT DAMAGE, CORROSION, OR LOSS. THE CONTRACTOR SHALL INSPECT ALL MATERIAL AND EQUIPMENT UPON RECEIPT AND BEFORE INSTALLATION. ANY DAMAGED OR DEFECTIVE MATERIAL OR EQUIPMENT SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO INSTALLATION. DAMAGED OR DEFECTIVE MATERIAL OR EQUIPMENT SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THE OPTION OF THE OWNER. THE CONTRACTOR WILL HANDLE ANY FREIGHT CLAIMS THAT MAY ARISE.

B. WORKMANSHIP SHALL CONFORM TO INDUSTRY STANDARDS FOR THE TRADE INVOLVED.

1.09 PAINTING

A. FACTORY PAINTED EQUIPMENT THAT HAS BEEN SCRATCHED OR MARRED SHALL BE REPAINTED TO MATCH ORIGINAL FACTORY COLOR AND FINISH.

1.10 CONTRACTOR'S WARRANTY

A. THE CONTRACTOR SHALL FURNISH A WRITTEN WARRANTY GUARANTEEING THE SYSTEM AGAINST DEFECTS IN WORKMANSHIP, MATERIALS, EQUIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. PARTS AND LABOR SHALL BE INCLUDED WITH THE EXCEPTION OF BELTS, FILTERS, AND FUSES.THE CONTRACTOR SHALL FURNISH A FIVE YEAR WRITTEN WARRANTY GUARANTEEING THE COMPRESSORS AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS.

PART 2 PRODUCTS

2.01 AIR DEVICES

A. PROVIDE BASIS-OF-DESIGN PRODUCT INDICATED ON THE DRAWINGS BY TITUS, METALAIRE,PRICE OR APPROVED EQUAL.

B. DIFFUSERS SHALL BE SIZED AS INDICATED AND DESIGNED TO DISTRIBUTE THE AIR QUANTITY EVENLY OVER THE SPACE INTENDED WITH ALLOWANCE FOR DIFFUSION, SPREAD, DROP AND THROW. THE DIFFUSERS, REGISTERS, AND GRILLES SHALL BE FACTORY FABRICATED OF STEEL AND/OR ALUMINUM CONSTRUCTION FINISHED WITH A WHITE ENAMEL PAINT. DIFFUSERS AND GRILLES SHALL BE TESTED AND LISTED UNDER THE AIR DIFFUSION COUNCIL, (ADC), TEST CODE AND EQUAL TO MODELS INDICATED.

C. COORDINATE EXACT LOCATION OF DIFFUSERS WITH LIGHTING FIXTURES AND EXISTING AIR CONDITIONING DEVICES.

2.02. DUCTWORK

A. DUCT SIZES SHALL BE AS INDICATED ON THE DRAWINGS.

B. DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL SHEETS. DUCTS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMACNA AND THE ASHRAE GUIDE.

C. FLEXIBLE CONNECTIONS SHALL BE INSTALLED ON THE CONNECTIONS TO AIR HANDLING UNITS. FLEXIBLE CONNECTIONS SHALL BE MINIMUM LENGTH AND MADE OF NFPA 90A APPROVED FLAME PROOF FABRIC.

D. PROVIDE TURNING VANES IN RECTANGULAR DUCT ELBOWS. BLADES SHALL BE HOLLOWED-FORMED DOUBLE-THICKNESS VANES.

E. PROVIDE SUPPLY, RETURN AND EXHAUST DIFFUSERS AND GRILLES AS INDICATED ON THE DRAWINGS AND AS SCHEDULED.

F. FLEXIBLE SUPPLY AIR DUCTWORK SHALL BE PROVIDED WITH 1" THICK FIBERGLASS BLANKET INSULATION WITH METALIZED FILM VAPOR BARRIER OUTER JACKET. FLEXIBLE DUCTWORK LENGTH SHALL NOT EXCEED 5'-0".

G. ALL SPIRAL DUCT SHALL BE MANUFACTURED FROM G-90 GALVANIZED STEEL, CONFORMING TO ASTM AND SMACNA STANDARDS. STANDARD ELBOW SHALL HAVE 1.5 CENTERLINE RADIUS. ELBOWS THROUGH 12" SHALL BE DIE-FORMED WITH STITCH WELDED JOINTS. ELBOWS 14" THROUGH 30" SHALL BE GORE-LOCKED CONSTRUCTION. BRANCH CONNECTIONS IN MEDIUM PRESSURE SHALL BE CONICAL FOR 90 DEGREE TAPS AND STRAIGHT FOR 45 DEGREES. STANDARD CONNECTIONS ARE SLIP FIT WITH COUPLINGS AND GASKETED.

H. DUCT SOUND LINING. SOUND LINING SHALL BE 1" THICK, 1-1/2 POUND DENSITY PER CUBIC FOOT, K=0.29 AT 75 DEGREE F MEAN TEMPERATURE WITH A COATING ON ONE SIDE. FIRE HAZARD CLASSIFICATION SHALL NOT EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED. LINING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST SMACNA DUCT LINER APPLICATION STANDARD. LINING SHALL BE EQUAL TO CERTAINEED ULTRALITE OR APPROVED EQUAL.

I. KITCHEN HOOD EXHAUST DUCTS: COMPLY WITH NFPA 96.

1. INSTALL COMMERCIAL KITCHEN HOOD EXHAUST DUCTS WITHOUT DIPS AND TRAPS THAT MAY HOLD GREASE, AND SLOPED A MINIMUM OF 2 PERCENT TO DRAIN GREASE BACK TO THE HOOD
2. MATERIAL: 1.6 MM (16 GAGE) STEEL SHEET (BLACK IRON), ASTM A1011, OR 1.3 MM (18 GAGE) STAINLESS STEEL. USE STAINLESS STEEL FOR EXPOSED DUCT IN OCCUPIED AREAS.
3. CONSTRUCTION: LIQUID TIGHT WITH CONTINUOUS EXTERNAL WELD FOR ALL SEAMS AND JOINTS. WHERE DUCTS ARE NOT SELF DRAINING BACK TO THE EQUIPMENT, PROVIDE LOW POINT DRAIN POCKET WITH COPPER DRAIN PIPE TO SANITARY SEWER. PROVIDE ACCESS DOORS OR PANELS FOR DUCT CLEANING INSIDE OF HORIZONTAL DUCT AT DRAIN POCKETS, AT 20 FEET INTERVALS, AND AT EACH CHANGE OF DIRECTION.
4. ACCESS DOORS OR PANELS SHALL BE OF THE SAME MATERIAL AND THICKNESS OF THE DUCT WITH GASKETS AND SEALANTS THAT ARE RATED 815 DEGREES C (1500 DEGREES F) AND SHALL BE GREASE-TIGHT. LOCATE ACCESS PANEL ON TOP OR SIDES OF DUCT A MINIMUM OF 1-1/2 INCHES FROM BOTTOM OF DUCT.

J. LISTED GREASE DUCTS

1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
   a. CAPTIVEAIRE.
   b. MCGILL AIRFLOW.
   c. SELKIRK.

2. DESCRIPTION: FACTORY-FABRICATED, -LISTED, AND -LABELED, DOUBLE-WALL DUCTS TESTED ACCORDING TO UL 1978 AND RATED FOR 500 DEG F CONTINUOUSLY, OR 2000 DEG F FOR 30 MINUTES; WITH POSITIVE OR NEGATIVE DUCT PRESSURE AND COMPLYING WITH NFPA 211.

3. CONSTRUCTION: INNER SHELL AND OUTER JACKET SEPARATED BY AT LEAST A 1-INCH ANNULAR SPACE FILLED WITH HIGH-TEMPERATURE, CERAMIC-FIBER INSULATION.
   a. INNER SHELL: ASTM A666, TYPE 304 STAINLESS STEEL.
   b. OUTER JACKET: ALUMINIZED STEEL WHERE CONCEALED. STAINLESS STEEL WHERE EXPOSED.

4. GASKETS AND FLANGES: ENSURE THAT GASKETS AND SEALING MATERIALS ARE RATED AT 1500 DEG F MINIMUM.

5. HOOD CONNECTORS: CONSTRUCTED FROM SAME MATERIAL AS GREASE DUCT WITH INTERNAL OR EXTERNAL CONTINUOUSLY WELDED OR BRAZED JOINTS.

6. ACCESSORIES: TEES, ELBOWS, INCREASERS, TERMINATIONS, ADJUSTABLE ROOF FLASHINGS, STORM COLLARS, SUPPORT ASSEMBLIES, THIMBLES, FIRESTOP SPACERS, AND FASTENERS; FABRICATED FROM SIMILAR MATERIALS AND DESIGNS AS VENT-PIPE STRAIGHT SECTIONS; ALL LISTED FOR SAME ASSEMBLY. INCLUDE UNIQUE COMPONENTS REQUIRED TO COMPLY WITH NFPA 96 INCLUDING CLEANOUTS, TRANSITIONS, ADAPTERS, AND DRAIN FITTINGS.

7. GREASE DUCT SUPPORTS: CONSTRUCT DUCT BRACING AND SUPPORTS FROM NON-COMBUSTIBLE MATERIAL.
   a. DESIGN BRACING AND SUPPORTS TO CARRY STATIC AND SEISMIC LOADS WITHIN STRESS LIMITATIONS OF THE INTERNATIONAL BUILDING CODE.
   b. ENSURE THAT BOLTS, SCREWS, RIVETS AND OTHER MECHANICAL FASTENERS DO NOT PENETRATE DUCT WALLS.

8. COMPLY WITH ASTM E2336.

2.03 DAMPERS

A. MANUFACTURERS SHALL BE AMERICAN WARMING AND VENTILATING CO, PREFCO, RUSKIN OR APPROVED EQUAL.

B. RECTANGULAR DUCT: GALVANIZED STEEL MANUAL VOLUME DAMPER WITH 6" WIDE OPPOSED BLADES, CHANNEL FRAME WITH BRACED CORNERS, CONCEALED LINKAGE, TEFLON FILLED BEARINGS, 3/8" DIAMETER AXLE, 6" LONG CONTROL SHAFT.

C. ROUND DUCT: GALVANIZED STEEL MANUAL VOLUME DAMPER WITH SINGLE BLADE, CHANNEL FRAME, STAINLESS STEEL SLEEVE BEARINGS PRESSED INTO FRAME, 3/8" DIAMETER AXLE EXTENDED 6" FOR CONTROL SHAFT, BLADE STOP.

D. PROVIDE DAMPERS WITH LOCKING QUADRANTS.

E. VOLUME DAMPERS SHALL BE TWO GAUGES HEAVIER THAN DUCT IN WHICH INSTALLED.

F. CHECK DAMPERS FOR PROPER OPERATION BEFORE AND AFTER INSTALLATION.

G. INSTALL VOLUME DAMPERS AT BRANCH TAKE-OFFS IN SUPPLY AND RETURN FROM MAIN DUCTS. WHERE INDICATED ON DRAWINGS, AND WHERE REQUIRED TO OBTAIN PROPER SYSTEM BALANCE.

2.04 DUCT INSULATION

A. PROVIDE PRODUCTS BY JOHNS MANVILLE, KNAUF, OWENS CORNING OR APPROVED EQUAL.

B. TYPE 1: MINERAL-FIBER BLANKET INSULATION WITH MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE II AND ASTM C 1290, TYPE III WITH FACTORY-APPLIED FSK JACKET. FSK JACKET SHALL BE ALUMINUM-FOIL, FIBERGLASS-REINFORCED SCRIM WITH RAFT-PAPER BACKING; COMPLYING WITH ASTM C 1136, TYPE II. PROVIDE JOHNS MANVILLE MICROLITE OR EQUAL BY MANUFACTURERS SPECIFIED.

C. INSULATION SHALL NOT BE APPLIED UNTIL THE GENERAL CONSTRUCTION HAS PROGRESSED SUFFICIENTLY TO ENSURE AGAINST PHYSICAL OR MOISTURE DAMAGE TO THE INSTALLATION. ALL INSULATION DAMAGED THROUGH THE FAILURE TO OBSERVE THIS DIRECTIVE SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

D. HANGER RODS MUST BE PERPENDICULAR TO DUCTWORK BEFORE INSULATION IS INSTALLED.

E. INSULATION SHALL BE APPLIED OVER FLANGES, JOINTS, AND SEAMS IN DUCTWORK.

F. JOINTS AND SEAMS IN DUCTWORK INSULATION SHALL BE PROPERLY SEALED TO MAINTAIN VAPOR BARRIER INTEGRITY.

G. DUCT INSULATION SCHEDULE, GENERAL

1. PLENUMS AND DUCTS REQUIRING INSULATION:
   a. INDOOR, CONCEALED SUPPLY.
   b. INDOOR, EXPOSED SUPPLY.
   c. INDOOR, CONCEALED RETURN LOCATED IN UNCONDITIONED SPACE.

2. ITEMS NOT INSULATED:
   a. INDOOR, EXPOSED SUPPLY IN CONDITIONED SPACE.
   b. INDOOR, EXPOSED RETURN IN CONDITIONED SPACE.
   c. METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/IESNA 90.1.
   d. FACTORY-INSULATED FLEXIBLE DUCTS.
   e. FACTORY-INSULATED PLENUMS AND CASINGS.
   f. FLEXIBLE CONNECTORS.
   g. VIBRATION-CONTROL DEVICES.
   h. FACTORY-INSULATED ACCESS PANELS AND DOORS.

2.05 FANS

A. TYPE A:

1. FAN SHALL BE SPUN ALUMINUM UP BLAST, BELT-DRIVEN TYPE DESIGNED FOR ROOF APPLICATION. FAN SHALL BE CENTRIFUGAL NON-OVERLOADING BACKWARD INCLINED WITH A WHEEL CONE MATCHED TO THE INLET CONE. WHEELS SHALL BE STATICALLY AND DYNAMICALLY BALANCED IN ACCORDANCE WITH AMCA 204-05.
2. MOTOR SHALL BE HEAVY-DUTY BALL BEARING TYPE MATCHED TO THE FAN LOAD AT SPECIFIED VOLTAGE AND PHASE. DRIVES SHALL BE SIZED FOR ALUMINUM 150% OF DRIVEN HORSEPOWER. MOTOR AND DRIVE SHALL BE MOUNTED ON VIBRATION ISOLATORS OUT OF THE AIRSTREAM.
3. FAN SHALL BE PRECISION GROUND AND POLISHED STEEL WITH ANTI-CORROSIVE COATING. FAN SHAFT SHALL BE MOUNTED IN PERMANENTLY SEALED, LUBRICATED, PILLOW BLOCK BALL BEARINGS. BEARINGS SHALL BE SELECTED FOR A MINIMUM L10 LIFE IN EXCESS OF 100.000 HOURS.
4. FAN HOUSING SHALL CONSIST OF THE MOTOR COVER, SHROUD, CURB CAB AND LOWER WIND BAND.
5. PROVIDE WITH CURB, AUTO-BELT TENSIONER, CURB EXTENSION, CURB SEAL, DISCONNECT SWITCH, MOTOR OPERATED DAMPER, AND BIRDSCREEN.

2.06 PACKAGED ROOFTOP AIR HANDLING UNITS (ELECTRIC COOLING/GAS HEATING)

A. UNIT SHALL BE FACTORY ASSEMBLED AIR TO AIR ELECTRIC COOLING UNIT WITH PROPANE COMBUSTION HEATING SECTION, REFRIGERATION SYSTEM, AIR HANDLING SYSTEM CASING, CURB, AND CONTROLS.

B. CABINET SHALL BE GALVANIZED STEEL, BONDERIZED AND COATED WITH BAKED ENAMEL. UNIT SHALL BE ARRANGED FOR ALL EXTERIOR CONNECTIONS TO BE WITHIN ROOF CURB. CABINET SHALL BE LINED WITH 1" THICK NEOPRENE-COATED FIBERGLASS WITH EASILY REMOVABLE SERVICE PANELS TO ALL OPERATING COMPONENTS.

C. CONDENSATE DRAIN PAN SHALL BE A SLOPED PAN MADE OF NON-CORROSIVE MATERIAL WITH A MINIMUM 3/4" DRAIN CONNECTION.

D. GAS PIPING CONNECTIONS SHALL ENTER THE UNIT AT A SINGLE LOCATION ON THE SIDE OF THE UNIT.

E. REFRIGERATION SYSTEM SHALL INCLUDE ONE FULLY HERMETIC SCROLL COMPRESSOR FOR EACH REFRIGERANT CIRCUIT, CONDENSERS, INTERTWINED CIRCUIT EVAPORATOR COIL, EXPANSION VALVES, SERVICE VALVES, VIBRATION ISOLATORS, CRANKCASE HEATERS, SIGHT GLASSES, FILTER DRIERS, HOT GAS MUFFLERS, AND REFRIGERANT PIPING. SAFETY CONTROLS SHALL INCLUDE FUSIBLE PLUG, LOW AND HIGH PRESSURE THERMOSTATS, COMPRESSOR MOTOR OVERLOADS, TIMER TO PREVENT SHORT CYCLING COMPRESSORS, AND LEAD-LAG SEQUENCING SWITCH TO CHANGE LEAD COMPRESSOR.

F. UNITS SPECIFIED SHALL HAVE FULL ECONOMIZER PACKAGE INCLUDING ENTHALPY CONTROL AND 100% OUTSIDE AIR HOOD.

G. CONDENSER FANS SHALL BE VERTICAL DISCHARGE PROPELLER TYPE DIRECT DRIVEN BY PERMANENTLY LUBRICATED MOTORS WITH INHERENT THERMAL OVERLOAD PROTECTION WITH AN AUTOMATIC RESET FEATURE.

H. EVAPORATOR AND CONDENSER COILS SHALL HAVE ALUMINUM PLATE FINS MECHANICALLY BONDED TO SEAMLESS INTERNALLY GROOVED COPPER TUBES WITH ALL JOINTS BRAZED.

I. EVAPORATOR FAN SHALL BE CENTRIFUGAL, DOUBLE-INLET TYPE WITH FORWARD-CURVED BLADES, BELT-DRIVEN. EVAPORATOR FAN MOTOR SHALL BE EQUIPPED WITH PERMANENTLY LUBRICATED BEARINGS AND SHALL HAVE INHERENT AUTOMATIC-RESET THERMAL OVERLOAD PROTECTION OR CIRCUIT BREAKER.

J. GAS HEATING SECTION SHALL HAVE AN INDUCED DRAFT DESIGN HEAT EXCHANGER WITH DIRECT-SPARK IGNITION AND REDUNDANT MAIN GAS VALVE. HEAT EXCHANGER SHALL BE STAINLESS STEEL IN CONSTRUCTION. BURNERS SHALL BE THE IN-SHOT TYPE CONSTRUCTED OF ALUMINUM-COATED STEEL. INDUCED DRAFT COMBUSTION MOTOR AND BLOWER SHALL BE A DIRECT DRIVE, SINGLE-INLET, FORWARD-CURVED CENTRIFUGAL TYPE, STEEL WITH A CORROSION RESISTANT FINISH. BLOWER SHALL BE EQUIPPED WITH PERMANENTLY LUBRICATED, SEALED BEARINGS WITH INHERENT THERMAL OVERLOAD PROTECTION AND AUTOMATIC RESET.

K. CONTROLS:

1. THE COOLING SYSTEM SHALL BE PROTECTED WITH HIGH PRESSURE SAFETIES, LOW PRESSURE SAFETIES, LOSS-OF-CHARGE PROTECTION, INDOOR COIL FREEZE THERMOSTATS, AND CURRENT AND TEMPERATURE SENSITIVE OVERLOAD DEVICES.
2. ALL DEVICES SHALL BE WIRED TO PREVENT COMPRESSOR RESTART UNTIL RESET OF CIRCUIT BREAKER.
3. FURNISH HEATING/COOLING THERMOSTATS TO PROVIDE STAGED HEATING AND COOLING WITH AUTOMATIC CHANGEOVER, LOCKING OPAQUE PLASTIC COVER "FAN ON" SWITCH POSITION. MOUNT THE BOTTOM OF THE THERMOSTAT 48" ABOVE THE FLOOR.
4. HVAC CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION.
5. TIME GUARD CIRCUIT TO PREVENT COMPRESSOR SHORT CYCLING AS A RESULT OF A RAPID CHANGE IN THERMOSTAT SETTING AND AUTOMATICALLY PREVENT COMPRESSOR RESTART FOR AT LEAST FIVE MINUTES AFTER SHUTDOWN.
6. CONTROLS AND THERMOSTAT SHALL BE INSTALLED APPROXIMATELY 48" ABOVE FINISH FLOOR.

L. PROVIDE WITH THE FOLLOWING ACCESSORIES:

1. OUTDOOR AIR ENTHALPY SENSOR.
2. RETURN AIR ENTHALPY SENSOR.

M. CURBS TO BE PROVIDED BY UNIT MANUFACTURER AND INSTALLED BY THE CONTRACTOR. COORDINATE PENETRATIONS OF THE ROOF WITH THE ROOFING CONTRACTOR.

N. HVAC CONTRACTOR TO SET UNIT ON CURB AND MAKE CONTROL CONNECTIONS.

O. ELECTRICAL CONTRACTOR TO MAKE POWER CONNECTIONS TO UNITS.

P. HVAC CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL CONTROLS AND CONTROL WIRING.

Q. HVAC CONTRACTOR SHALL CHANGE OUT ALL AIR FILTERS ONE DAY PRIOR TO COMPLETION OF WORK AND HOLD REMOVED AIR FILTERS FOR OWNER'S INSPECTION.

PART 3 EXECUTION

3.01 GENERAL

A. ALL EQUIPMENT AND SYSTEMS, DESIGNS, INSTALLATIONS, AND TESTING SHALL BE IN CONFORMANCE WITH APPLICABLE STATE AND LOCAL CODES, STANDARDS, AND ORDINANCES, THE MANUFACTURER'S RECOMMENDATIONS, AND THE CRITERIA NOTED.

B. DUCTWORK SHALL BE PLACED TO NOT INTERFERE WITH PLUMBING PIPES, ELECTRICAL CONDUITS AND OTHER TRADES.

C. DUCTWORK SHALL BE LOCATED AT SUFFICIENT DISTANCE FROM WALLS, PIPES, EQUIPMENT AND OTHER OBSTACLES TO PERMIT THE APPLICATION OF FULL THICKNESS OF INSULATION SPECIFIED.

3.02 KITCHEN HOOD EXHAUST DUCTWORK INSTALLATION

A. INSTALL COMMERCIAL KITCHEN HOOD EXHAUST DUCTS WITHOUT DIPS AND TRAPS THAT MAY HOLD GREASE, AND SLOPED A MINIMUM OF 2 PERCENT TO DRAIN GREASE BACK TO THE HOOD.

B. INSTALL FIRE-RATED ACCESS PANEL ASSEMBLIES AT EACH CHANGE IN DIRECTION AND AT MAXIMUM INTERVALS OF 20 FEET IN HORIZONTAL DUCTS, AND AT EVERY FLOOR FOR VERTICAL DUCTS, OR AS INDICATED ON DRAWINGS.

C. DO NOT PENETRATE FIRE-RATED ASSEMBLIES EXCEPT AS ALLOWED BY APPLICABLE BUILDING CODES AND AUTHORITIES HAVING JURISDICTION.

3.03 SYSTEM TESTING

A. AIR SYSTEMS SHALL BE TESTED AND BALANCED BY A CERTIFIED (AABC OR NEBB) CONTRACTOR REGULARLY ENGAGED IN THE TESTING AND BALANCING OF HVAC SYSTEMS. THREE COPIES OF THE REPORT SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

B. AFTER TESTING AND ADJUSTMENT PROCEDURES HAVE BEEN COMPLETED, A SYSTEM CHECKOUT SHALL BE PERFORMED. THE OWNER'S REPRESENTATIVE SHALL BE GIVEN 48 HOURS NOTICE THAT THE SYSTEM IS READY FOR FINAL CHECKOUT. ANY DEFECTS FOUND IN THE WORK SHALL BE CORRECTED.

C. WHEN THE PROJECT IS A RENOVATION. AN AIR BALANCE SHALL BE PERFORMED ON THE EXISTING SYSTEM TO CONFIRM AVAILABLE FLOWS AND CAPACITIES. THIS REPORT SHALL BE PRESENTED TO THE DESIGN TEAM PRIOR TO START OF CONSTRUCTION.

D. AFTER INSTALLATION, CHECK ALL EQUIPMENT, AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PLACE ALL SYSTEMS INTO OPERATION.

E. AIR BALANCING SHALL BE PERFORMED BY AN AABC CERTIFIED CONTRACTOR. THIS CONTRACTOR SHALL BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER. ADJUST AND BALANCE THE AIR SYSTEMS BEFORE HYDRONIC, STEAM, AND REFRIGERANT SYSTEMS. TESTING AND BALANCING SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT AABC NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE. GPM'S SHALL BE BALANCED WITHIN 10% OF DESIGN. AFTER ALL AIR SYSTEMS ARE INSTALLED, EACH SUPPLY AIR OUTLET SHALL BE AIR BALANCED TO WITHIN 10% OF THE CFM SHOWN WITH AIR PATTERNS SET AS INDICATED ON DRAWINGS (OR WITHIN 10 CFM WHEN BELOW 100 CFM). FAN RPMS AND ZONE DAMPERS SHALL BE ADJUSTED AND SHEAVES SHALL BE REPLACED AS REQUIRED TO ACHIEVE AIR BALANCE. ALL ZONES OR PORTIONS THEREOF SERVING OTHER SPACES AND WHICH MAY BE AFFECTED BY THE PROJECT SHALL BE TRAVERSED PRIOR TO CONSTRUCTION. THE FINAL AIR BALANCE SHALL RESTORE THESE AIR QUANTITIES. BEFORE AND AFTER AIR QUANTITIES SHALL BE LISTED IN THE AIR BALANCE REPORT

F. SHOULD THE AIR BALANCE REPORT INDICATE UNACCEPTABLE DUCT LEAKAGE, AS DETERMINED BY THE ENGINEER, THEN DUCT LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH AABC STANDARDS. DUCT SHALL BE RESEALED OR REPAIRED AS REQUIRED TO MEET DESIGN REQUIREMENTS. THE SYSTEM SHALL BE REBALANCED AS REQUIRED UNTIL SYSTEMS ARE WITHIN THE PERFORMANCE STANDARDS LISTED ABOVE.

G. CLEAN MECHANICAL EQUIPMENT AND DUCTWORK OF CONSTRUCTION DUST AT PROJECT COMPLETION. REPLACE FILTERS PRIOR TO AIR BALANCING. PROVIDE ONE SPARE SET OF FILTERS FOR EACH PIECE OF EQUIPMENT TO THE OWNER.

H. PROVIDE OWNER TRAINING AND DEMONSTRATION OF MECHANICAL SYSTEMS AND EQUIPMENT. INSTRUCT OWNER ON PROPER OPERATION AND PREVENTATIVE MAINTENANCE OF SYSTEM. SUBMIT OPERATING AND MAINTENANCE MANUAL ON EQUIPMENT AND SYSTEMS.

I. AIR QUALITY TESTING SHALL BE PERFORMED BY AN AABC CERTIFIED CONTRACTOR, THIS CONTRACTOR SHALL BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER. CONDUCT BASELINE INDOOR AIR QUALITY TESTING AFTER CONSTRUCTION ENDS AND BEFORE OCCUPANCY. TESTING PROCEDURES SHALL BE PER THE U.S. E.P.A. COMPENDIUM OF METHODS FOR THE DETERMINATION OF AIR POLLUTANTS IN INDOOR AIR AND AS DETAILED BY THE U.S.G.B.C. IN THE LEED-NC VERSION 3.0 REFERENCE GUIDE. CONTRACTOR SHALL DEMONSTRATE THAT THE CONTAMINANT MAXIMUM CONCENTRATIONS LISTED UNDER EQ CREDIT 3.2 IN THE LEED REFERENCE GUIDE ARE NOT EXCEEDED. CONTRACTOR SHALL INCLUDE ONE ADDITIONAL SAMPLING / RE-TESTING OF EACH BUILDING AREA IN HIS BID.

3.04 CLEANING AND ADJUSTING

A. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN 12 MONTHS OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTINGAIR HANDLING SYSTEMS TO SUIT ACTUAL SITE CONDITIONS. PROVIDE UP TO TWO VISITS TO THE SITE DURING OTHER-THAN-NORMAL OCCUPANCY HOURS FOR THIS PURPOSE.

B. AFTER COMPLETING SYSTEM INSTALLATION AND TESTING, ADJUSTING, AND BALANCING OF SPLIT SYSTEM AIR HANDLING UNITS AND AIR DISTRIBUTION SYSTEMS, CLEAN FILTER HOUSING AND INSTALL NEW AIR FLITERS.

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dash in

DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

owner

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seals

43013

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NUMBER 43013 EXPIRATION DATE 12/10/2024

revisions

#	date	description

sheet title

MECHANICAL - SPECIFICATION

issued for

ISSUED FOR PERMIT

issued date

02/16/2024

sheet number

M-002

GAS-FIRED ROOFTOP UNIT SCHEDULE

MARK	AREA SERVED	SUPPLY FAN						COOLING							HEATING							ELECTRICAL			IEER	EER	WEIGHT LBS	BASIS OF DESIGN	REMARKS
		TOTAL CFM	MINIMUM OA CFM	ESP INCHES WG	BHP (motor)	MBE (input)	RPM	AMBIENT AIR °F DB	EAT °F DB	EAT °F WB	LAT °F DB	LAT °F WB	TOTAL MBH	SENSIBLE MBH	TYPE	STAGES	HEATING CAPACITY OUTPUT MBH	HEATING CAPACITY INPUT MBH	LOW STAGE CAPACITY OUTPUT MBH	LOW STAGE CAPACITY INPUT MBH	THERMAL EFFICIENCY %	V/□/Hz	MCA	MOCP					
RTU-1	ENTIRE STORE	3,400	600	0.75	5.0	1.58	1635	95	80	67	57	55.8	120.36	84.5	PROPANE	2	181.0	224.0	146.0	180.0	81	208-230/3/60	63	80	15.2	11.2	1032	ICP RGF120HR	1,2,3,4,5,6,7,8,9,10

REMARKS:

1. PROVIDE WITH SINGLE POINT POWER ELECTRICAL CONNECTION.
2. PROVIDE WITH FACTORY NON- FUSED DISCONNECT, POWERED 115v C.O..
3. PROVIDE WITH DIRECT DRIVE ECM MOTOR.
4. PROVIDE WITH HOT GAS REHEAT FOR HUMIDITY CONTROL.
5. PROVIDE WITH MERV-13 FILTER.
6. PROVIDE WITH TWO DUCT SMOKE DETECTORS TO SHUT DOWN UNIT.
7. PROVIDE PROGRAMMABLE THERMOSTAT.
8. UNIT TO BE CAPABLE OF PROVIDING 100% OUTDOOR AIR ECONOMIZER MODE WITH ENTHALPY SENSORS ON OUTDOOR AIR AND RETURN AIR SIDE, AND BAROMETRIC RELIEF DAMPER.
9. PROVIDE WITH 14" FULLY INSULATED ROOF CURB.
10. PROVIDE WITH MOTORIZED OUTDOOR AIR DAMPER.

Project Name: DASH IN # 1042	Unit Total Supply Air: 3400 cfm
Unit Designation: RTU-1	Unit Total Outdoor Air: 600 cfm

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Room Number	Description	Area (ft^2) (Az)	Area Outdoor Air Rate per VMC Table 403.3 (Ra)	Area Outdoor Air (RaAz)	Occupant Load Rate per IMC Table 403.3 (People/ 1000 ft2)	Occupancy C x F/1000 (Pz)	Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	Occupant Outdoor Air (RpPz)	Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	Zone Air Distribution Effectiveness (Ez)	Zone Outdoor Air (Voz = Vbz / Ez)	Supply Air Design (Vpz)	Secondary Recirculated Air	Outdoor Air Fraction (Zp = Voz / Vpz)
Sales Area	Sales Area	2030	0.12	244	15	31	7.5	232.5	476.5	0.8	596	3400	0	0.175
Totals		2030		244		31		232.5	476.5		596	3400	0	0.175

Occupant Diversity
D = Ps/∑all zones Pz: 1.000

Total Required Outdoor Air: 497

E_v: 0.960

Uncorrected O.A.
Vou = D ∑all zones RpPz + ∑all zones RaAz: 477

System Population (Ps): Diversity → 31

Percentage of Outdoor Air: 14%

Method: IMC Chart

Project Name: DASH IN # 1042	Unit Total Supply Air: 1800 cfm
Unit Designation: DOAS-1	Unit Total Outdoor Air: 1800 cfm

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Room Number	Description	Area (ft^2) (Az)	Area Outdoor Air Rate per VMC Table 403.3 (Ra)	Area Outdoor Air (RaAz)	Occupant Load Rate per IMC Table 403.3 (People/ 1000 ft2)	Occupancy C x F/1000 (Pz)	Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	Occupant Outdoor Air (RpPz)	Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	Zone Air Distribution Effectiveness (Ez)	Zone Outdoor Air (Voz = Vbz / Ez)	Supply Air Design (Vpz)	Secondary Recirculated Air	Outdoor Air Fraction (Zp = Voz / Vpz)
Kitchen/BOH		1074	0.12	129	20	22	7.5	165	294	0.8	368	1800	0	0.204
Totals		1074		129		22		165	294		368	1800	0	0.204

Occupant Diversity
D = Ps/∑all zones Pz: 1.000

Total Required Outdoor Air: 307

E_v: 0.960

Uncorrected O.A.
Vou = D ∑all zones RpPz + ∑all zones RaAz: 294

System Population (Ps): Diversity → 22

Percentage of Outdoor Air: 14%

Method: IMC Chart

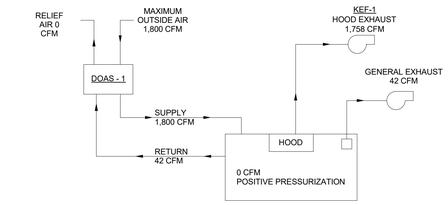
AIR DEVICE SCHEDULE

MARK	SERVICE	TYPE	CFM RANGE	NECK SIZE	BLOW	MODULE SIZE	BASIS OF DESIGN	NOTES
A1	SUPPLY	A	0-150	6"	4-WAY	24"x24"	TITUS TDCA	1
A2	SUPPLY		151-275	8"	4-WAY	24"x24"	TITUS TDCA	1
A3	SUPPLY		276-375	10"	4-WAY	24"x24"	TITUS TDCA	1
A4	SUPPLY		376-550	12"	4-WAY	24"x24"	TITUS TDCA	1
B1	SUPPLY	B	0-100	6"x6"			TITUS 300RL	1
B2	SUPPLY		101-190	10"x6"			TITUS 300RL	1
B3	SUPPLY		191-250	12"x6"			TITUS 300RL	1
B4	SUPPLY		251-400	12"x12"			TITUS 300RL	1
C1	RETURN	C	0-100	6"	-	24"x24"	TITUS PAR	1
C2	RETURN		101-175	8"	-	24"x24"	TITUS PAR	1
C3	RETURN		176-275	10"	-	24"x24"	TITUS PAR	1
C4	RETURN		276-400	12"	-	24"x24"	TITUS PAR	1
C5	RETURN		1000-2000	22"x22"	-	24"x24"	TITUS PAR	1
D1	RETURN	D	101-175	10"x6"	-	-	TITUS 350RL	1
D2	RETURN		176-275	12"x6"	-	-	TITUS 350RL	1
D3	RETURN		276-400	12"x12"	-	-	TITUS 350RL	1
D4	RETURN		1000-2000	34"x14"	-	-	TITUS 350RL	1
D5	RETURN		3000-4000	32"x14"	-	-	TITUS 350RL	1
E1	SUPPLY	E	0-850	24"x12"	-	-	TITUS TBF-AA	2
F1	EXHAUST	F	0-100	6"x6"	-	-	TITUS 350RL	1
F2	EXHAUST		101-175	10"x6"	-	-	TITUS 350RL	1
F3	EXHAUST		176-275	12"x6"	-	-	TITUS 350RL	1
F4	EXHAUST		276-400	12"x12"	-	-	TITUS 350RL	1
G1	SUPPLY	G	50-170	-	-	-	TITUS ML	3

NOTES:

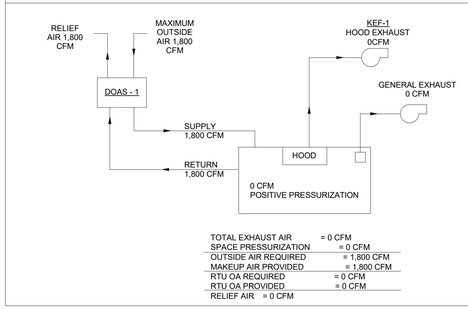
1. COORDINATE BORDER TYPES WITH ARCHITECTURAL REFLECTED CEILING PLANS.
2. TITUS JET DIFFUSER WITH TWO NOZZLES
3. 2 SLOT, 4'-0" L, 1" SLOT WIDTH

DOAS-1 AIR BALANCE (HOOD RUNNING)



TOTAL EXHAUST AIR	= 1,758 CFM
SPACE PRESSURIZATION	= 0 CFM
OUTSIDE AIR REQUIRED	= 1,800 CFM
MAKEUP AIR PROVIDED	= 1,800 CFM
RTU OA REQUIRED	= 0 CFM
RTU OA PROVIDED	= 0 CFM
RELIEF AIR	= 0 CFM

DOAS-1 AIR BALANCE (HOOD NOT RUNNING)



TOTAL EXHAUST AIR	= 0 CFM
SPACE PRESSURIZATION	= 0 CFM
OUTSIDE AIR REQUIRED	= 1,800 CFM
MAKEUP AIR PROVIDED	= 1,800 CFM
RTU OA REQUIRED	= 0 CFM
RTU OA PROVIDED	= 0 CFM
RELIEF AIR	= 0 CFM

FAN SCHEDULE

MARK	SERVICE	TYPE	CFM	ESP INCH WG	BHP	HP	RPM	WHEEL DIAMETER INCHES	DRIVE	ELECTRICAL V / □ / Hz	WEIGHT LBS	BASIS OF DESIGN	NOTES
EF-2	TOILET ROOMS	A	250	0.5	0.05	-	1334	-	DIRECT	115/1/60	15	PENNBARRY MODEL Z8H	1,2,3,4

NOTES:

1. CEILING/INLINE FAN WITH INTEGRAL CHATTER PROOF BACKDRAFT DAMPER.
2. PROVIDE WITH FACTORY INSTALLED INLINE CONVERSION KIT.
3. FAN TO RUN CONTINUOUSLY DURING OCCUPIED HOURS THROUGH TIME CLOCK.
4. PROVIDE WITH CURB MOUNTED ROOF CAP. ROOF CAP MODEL PENNBARRY WCC06.

ELECTRIC DUCT HEATER SCHEDULE

MARK	CFM	SIZE LxH	MAXIMUM VELOCITY FPM	EAT °F	LAT °F	REQUIRED MBH	KW	LOAD AMPS	ELECTRICAL VOLTS / Ph / Hz	BASIS OF DESIGN	NOTES
EDH-1	300	10"x10"	800	90	105	4875	1.4 KW	12	120/1/60	INDEECO QUA	1,2,3

NOTES:

1. DUCT HEATER SHALL BE OPEN COIL, SLIP-IN TYPE BY BRASCH, CHROMALOX, OR INDEECO.
2. PROVIDE WITH NEMA 3R ENCLOSURE.
3. PROVIDE WITH WALL MOUNTED THERMOSTAT.

DASH IN 1042
6670 Crain Highway,
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project info # 22-128

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STATE OF MARYLAND — #43013 — PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND. LICENSE NUMBER #3013 EXPIRATION DATE 12/10/2024

revisions

#	date	description
3	11.22.2024	Permit Revision #2

sheet title

MECHANICAL - SCHEDULE

issued for: ISSUED FOR PERMIT

issued date: 02/16/2024

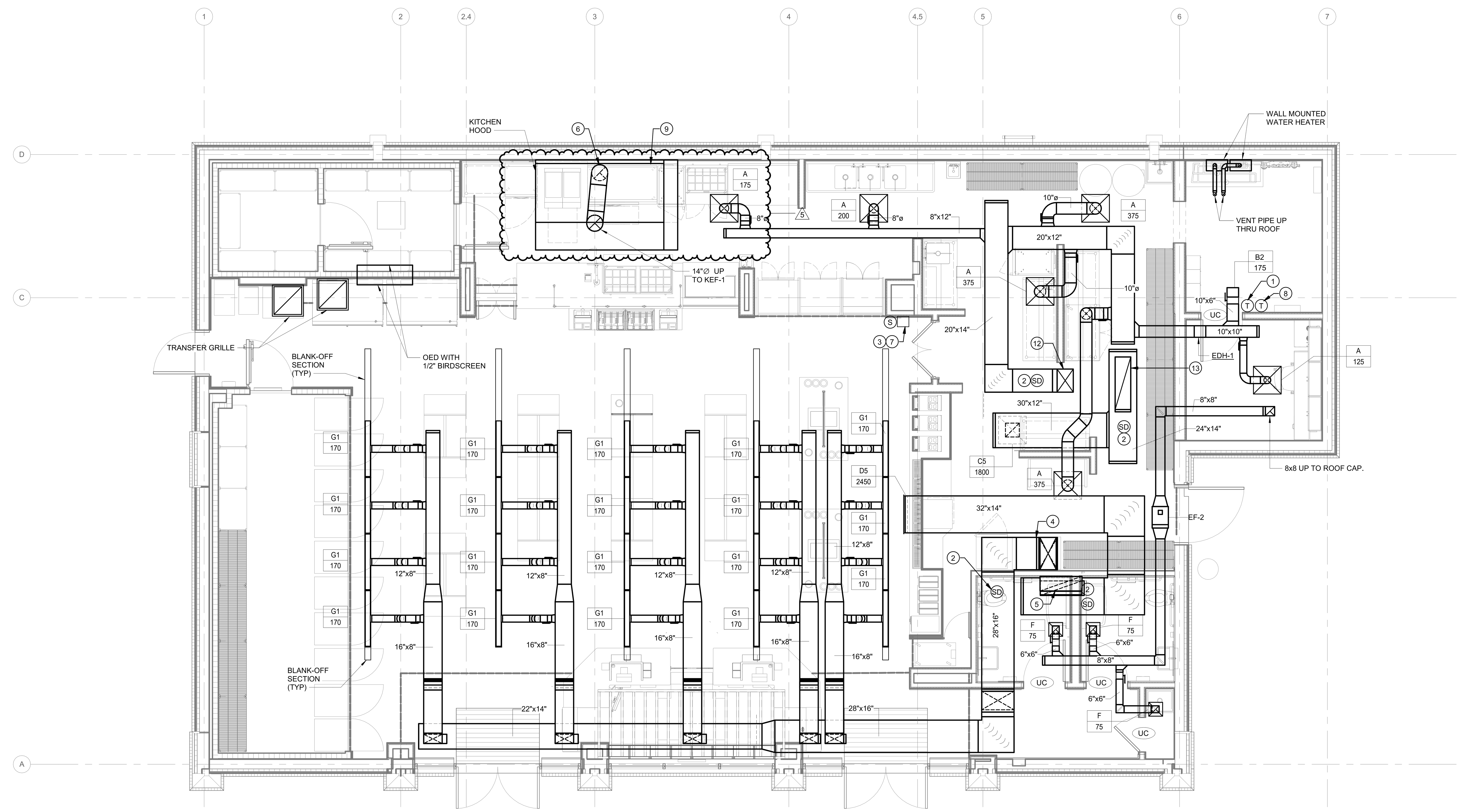
sheet number: M-003

DRAWING NOTES:

1. RTU UNIT THERMOSTATS ON WALL AT 48" AFF. WIRE TO PERSPECTIVE RTU TEMPERATURE SENSOR.
2. DUCT SMOKE DETECTOR. WIRE TO SMOKE DETECTOR TEST STATION.
3. RTU TEMPERATURE SENSOR ON WALL AT 48" AFF. WIRE TO THERMOSTAT IN OFFICE.
4. 28x16 SUPPLY AIR DUCT. TRANSITION TO FULL SIZE SUPPLY AIR DUCT UP TO RTU-1 UNIT ON ROOF.
5. FULL SIZE RETURN AIR DUCT UP TO RTU-1 UNIT ON ROOF.
6. 14" ROUND EXHAUST CONNECTION TO HOOD.
7. SMOKE DETECTOR TEST STATION.
8. DUCT HEATER THERMOSTAT.
9. LISTED GREASE DUCT SYSTEM BY CAPTIVEAIRE WITH ROUND DUCT INDICATED.GALVANIZED, RECTANGULAR BLACK IRON DUCTWORK WILL BE ACCEPTABLE ALTERNATIVE.REFER TO SPECIFICATION SHEET FOR ADDITIONAL DETAILS.
10. NOT USED.
11. NOT USED.
12. 20x14 SUPPLY AIR DUCT UP. TRANSITION TO FULL SIZE SUPPLY AIR OPENING ON DOAS-1 UNIT.
13. FULL SIZE RETURN AIR DUCT UP TO DOAS-1 UNIT.

GENERAL NOTES:

1. REFER TO DRAWING M001 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. REFER TO FOOD SERVICE CONSULTANT DRAWINGS FOR MATERIALS, SPECIFICATIONS, CAPACITY AND INSTALATION REQUIREMENTS FOR, MAKE-UP AIR SYSTEM, KITCHEN HOODS SYSTEM, KITCHEN HOOD, HOOD CONNECTIONS, HOOD FIRE SUPPRESSION SYSTEM, CONTROLS, INTERLOCKS AND SHUT-OFF SWITCH/VALVES.
3. FIELD COORDINATE FINAL EQUIPMENT LOCATIONS WITH OWNER, EQUIPMENT SUPPLIER AND VENDOR.
4. FIELD COORDINATE AIR DEVICES LOCATION WITH CEILING DEVICES, CEILING FEATURES, MILLWORK AND FLOOR EQUIPMENTS.
5. EXPOSED DUCTWORK IN THE SEATING AND BAR AREAS SHALL BE PROVIDED WITH 1" INTERIOR SOUND LINING.



GROUND LEVEL - MECHANICAL
1/4" = 1'-0"

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revisions

#	date	description
1	05.17.2024	Contractor Coordination
3	11.22.2024	Permit Revision #2
5	02.25.2025	Permit Revision #3

sheet title
MECHANICAL FLOOR PLAN

issued for
ISSUED FOR PERMIT

issued date
02/16/2024

sheet number
M-101

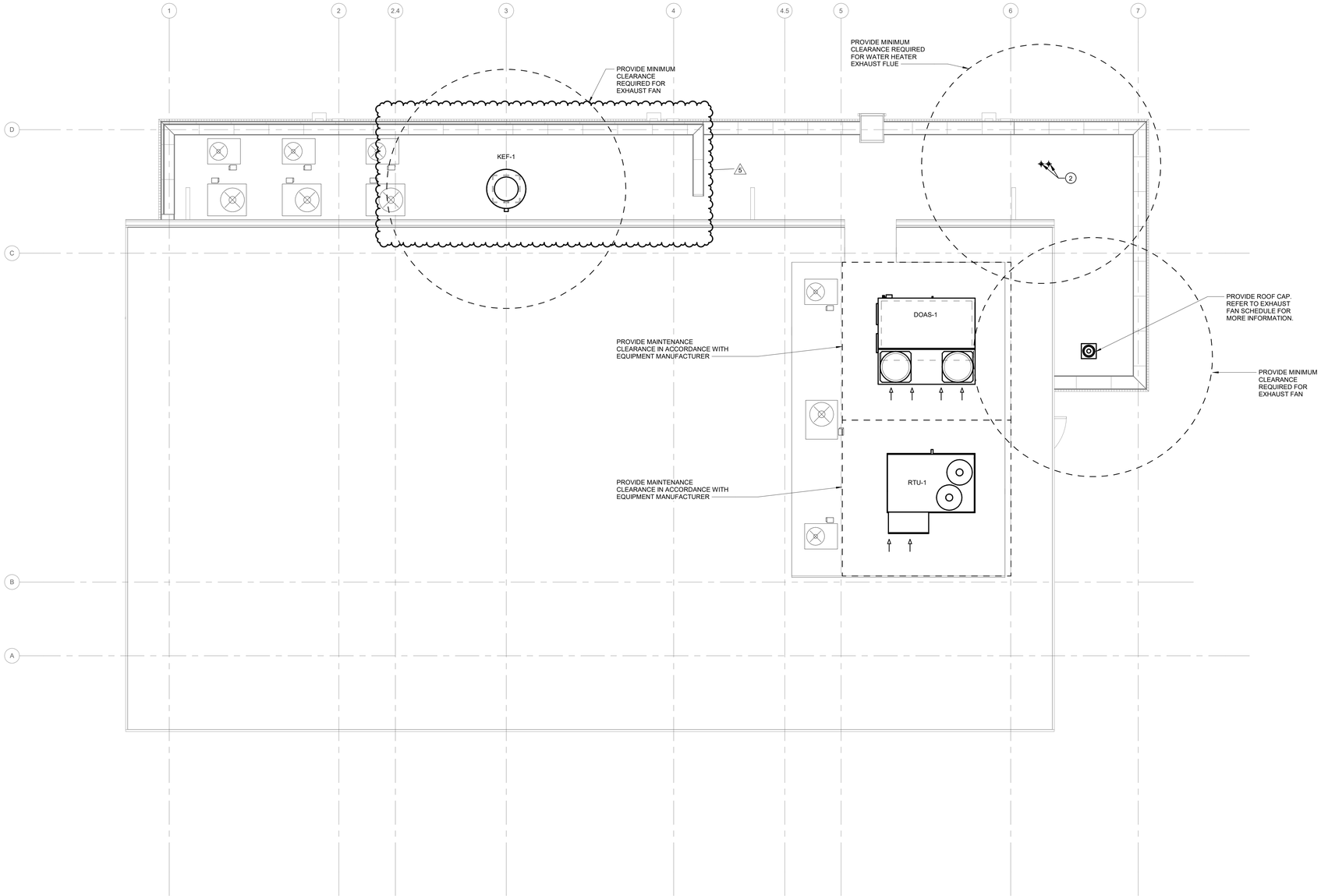
DRAWING NOTES:

1. MECHANICAL EQUIPMENT OUTDOOR AIR INTAKE HOOD SHOWN WITH DIRECTIONAL ARROW. PROVIDE NO LESS THAN 10'-0" CLEAR AWAY FROM VENT AND EXHAUST.

2. WATER HEATER CONCENTRIC VENT. REFER TO WATER HEATER MANUFACTURER'S RECOMMENDED SIZE AND SPECIFICATION.

GENERAL NOTES:

1. REFER TO DRAWING M001 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
   .
2. FIELD COORDINATE FINAL EQUIPMENT LOCATIONS WITH OWNER, EQUIPMENT SUPPLIER AND VENDOR.



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

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MECHANICAL ROOF PLAN

issued for
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issued date
02/16/2024

sheet number
M-102

MASTER COOLING, HEATING, AND DEHUMIDIFICATION CONTROL:

1. AIR HANDLING UNIT SHALL PROVIDE HEATED AND COOLED AIR TO MAINTAIN ACCEPTABLE INDOOR DESIGN CONDITIONS. THE AIR HANDLING UNIT MANUFACTURER INTERNAL CONTROL SYSTEM SHALL MAKE ALL HEATING AND COOLING DECISIONS IN RESPONSE TO DEVICES MEASURING SPACE TEMPERATURE. THE INTERNAL CONTROLS SHALL AUTOMATICALLY MODULATE THE EVAPORATOR COOLING COIL AND GAS-FIRED HEAT EXCHANGER TO MAINTAIN SPACE TEMPERATURE SETPOINTS.

TEMPERATURE CONTROL SEQUENCES:

1. REFER TO FLOOR PLANS FOR LOCATIONS OF TEMPERATURE TRANSMITTERS, PANELS, DAMPERS, AND EQUIPMENT. WHERE DEVICES ARE NOT INDICATED, HOWEVER, REQUIRED BY THE SEQUENCES, DEVICES SHALL BE PROVIDED BY THE CONTRACTOR AND LOCATED IN AS DIRECTED BY THE OWNER.

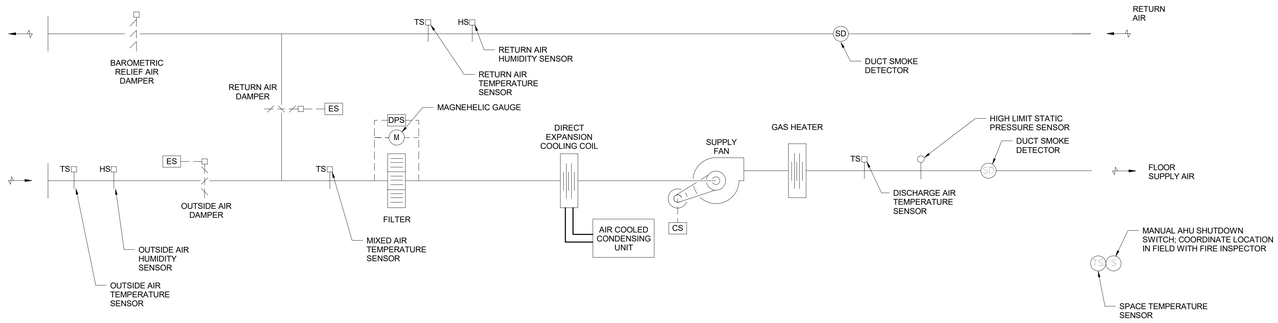
2. AIR HANDLING UNIT MANUFACTURER SHALL PROVIDE SMOKE OR HEAT DETECTION DEVICES AS REQUIRED BY NFPA STANDARD 90A AND THE APPLICABLE MECHANICAL CODE. DETECTION DEVICES SHALL BE FACTORY MOUNTED. CONTROL AND POWER WIRING FOR DETECTION DEVICES SHALL BE PROVIDED BY DIVISION 16. DETECTION DEVICES SHALL PROVIDE AUTOMATIC SHUTDOWN OF THE HVAC SYSTEM IN ACCORDANCE WITH NFPA 90A AND THE APPLICABLE MECHANICAL CODE.

3. ALL SAFETIES SHALL BE HARDWIRED.

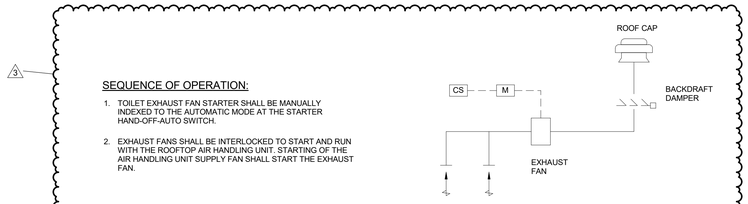
4. REFER TO FLOOR PLANS AND EQUIPMENT SCHEDULES FOR LOCATIONS AND NUMBER OF UNITS.

SEQUENCE OF OPERATION:

1. SYSTEM CONTROL:
   A. AIR HANDLING UNIT SHALL BE ENERGIZED AND DE-ENERGIZED BY A PROGRAMMABLE SPACE THERMOSTAT AND OPERATE ON AN OPTIMAL OCCUPIED/UNOCCUPIED SCHEDULE WITH A 365 DAY/24 HOUR GRAPHIC INTERFACE SCHEDULE PROGRAM.
   B. WHEN THE AIR HANDLING UNIT IS DE-ENERGIZED, CONTROLS SHALL RETURN TO THEIR NORMAL POSITIONS READY FOR RESTARTING. OUTSIDE AIR AND RETURN AIR DAMPERS SHALL CLOSE AND THE REFRIGERATION CIRCUIT, HEAT EXCHANGER AND SUPPLY FAN SHALL DE-ENERGIZE.
   C. A FAILURE OF THE SUPPLY FAN MOTOR, AS SENSED BY ITS CURRENT SWITCH, SHALL DE-ENERGIZE THE UNIT AND SHALL ALARM AT THE UNIT CONTROLLER.
2. COOLING MODE:
   A. THE GAS HEAT EXCHANGER SHALL BE DE-ENERGIZED DURING THE COOLING MODE.
   B. THE SUPPLY AIR FAN SHALL RUN CONTINUOUSLY DURING THE OCCUPIED MODE.
   C. THE AIR HANDLING UNIT INTERNAL CONTROL SYSTEM SHALL ENERGIZE AND CONTROL THE DIRECT EXPANSION REFRIGERATION CIRCUIT AND STAGE COMPRESSORS TO MAINTAIN THE OCCUPIED MODE COOLING DISCHARGE TEMPERATURE SETPOINT.
   D. DURING THE UNOCCUPIED MODE, THE AIR HANDLING UNIT SHALL BE DE-ENERGIZED, DAMPERS AND CONTROLS SHALL RETURN TO NORMAL POSITIONS READY FOR RESTARTING. WHILE IN THE UNOCCUPIED MODE, THE AIR HANDLING UNIT SHALL ENERGIZE WHEN THE ZONE TEMPERATURE RISES ABOVE THE UNOCCUPIED TEMPERATURE SETPOINT OF 80°F (ADJUSTABLE) AND SHALL CONTINUE TO OPERATE UNTIL THE ZONE TEMPERATURE REACHES 75°F (ADJUSTABLE).
3. HEATING MODE:
   A. THE REFRIGERANT SYSTEM SHALL BE DE-ENERGIZED DURING THE HEATING MODE.
   B. THE SUPPLY AIR FAN SHALL RUN CONTINUOUSLY DURING THE OCCUPIED MODE.
   C. OUTSIDE AIR, RETURN AIR, AND RELIEF AIR DAMPERS SHALL OPEN TO MINIMUM POSITIONS.
   D. THE AIR HANDLING UNIT INTERNAL CONTROL SYSTEM SHALL ENERGIZE AND SEQUENCE STAGES OF THE HEAT EXCHANGER TO MAINTAIN THE OCCUPIED HEATING MODE DISCHARGE TEMPERATURE SETPOINT.
   E. DURING THE UNOCCUPIED MODE, THE AIR HANDLING UNIT SHALL BE DE-ENERGIZED, DAMPERS AND CONTROLS SHALL RETURN TO NORMAL POSITIONS READY FOR RESTARTING. WHILE IN THE UNOCCUPIED MODE, THE AIR HANDLING UNIT SHALL ENERGIZE WHEN THE ZONE TEMPERATURE FALLS BELOW THE UNOCCUPIED TEMPERATURE SETPOINT OF 60°F (ADJUSTABLE) AND SHALL CONTINUE TO OPERATE UNTIL THE ZONE TEMPERATURE REACHES 65°F (ADJUSTABLE).
4. ECONOMIZER:
   A. SUPPLY AIR FAN SHALL BE RUNNING, RETURN AIR DAMPER SHALL BE OPEN AND OUTSIDE AIR DAMPER SHALL BE OPEN TO MINIMUM POSITION. OUTSIDE AIR AND RETURN AIR DAMPERS SHALL, THROUGH THE UNIT CONTROLLER, BE UNDER DIFFERENTIAL ENTHALPY CONTROL, WHICH SHALL COMPARE THE CALCULATED ENTHALPY OF THE RETURN AIR AND OUTSIDE AIR. THE ECONOMIZER CYCLE SHALL BE ENABLED WHEN THE ENTHALPY DIFFERENTIAL IS GREATER THAN 7 BTU/LB (ADJUSTABLE). THE ECONOMIZER CYCLE SHALL BE DISABLED WHEN THE CALCULATED ENTHALPY DIFFERENTIAL IS EQUAL. THE DIRECT EXPANSION REFRIGERATION CIRCUITS AND GAS HEATING SHALL OPERATE AS DESCRIBED IN COOLING AND HEATING SEQUENCES.
5. SMOKE CONTROL:
   A. UPON THE DETECTION OF PRODUCTS OF COMBUSTION, AIR HANDLING SYSTEM SMOKE DETECTORS SHALL DE-ENERGIZE THE AIR HANDLING UNIT IN ACCORDANCE WITH NFPA STANDARD 90A. AIR HANDLING SYSTEM SMOKE DETECTORS SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM AS A SUPERVISORY SIGNAL ONLY. IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA STANDARD 72, NATIONAL FIRE ALARM CODE.
   B. SMOKE DETECTORS SHALL BE HARDWIRED.
6. FILTERS:
   A. DIFFERENTIAL PRESSURE TRANSMITTERS INSTALLED ACROSS THE FILTER BANK SHALL ALARM AT THE UNIT CONTROLLER WHEN THE HIGH DIFFERENTIAL PRESSURE SETPOINT IS REACHED.
7. DEADBAND:
   A. TEMPERATURE CONTROLS SHALL BE CAPARLE OF PROVIDING A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F. EXCEPTION WITH THERMOSTATS REQUIRING MANUAL CHANGEOVER BETWEEN HEATING AND COOLING MODES.



1 ROOFTOP AIR HANDLING UNIT SCHEMATIC AND CONTROL DIAGRAM
Scale: NONE



2 TOILET EXHAUST FAN SCHEMATIC AND CONTROL DIAGRAM
Scale: NONE

3

SEQUENCE OF OPERATION:

1. TOILET EXHAUST FAN STARTER SHALL BE MANUALLY INDEXED TO THE AUTOMATIC MODE AT THE STARTER HAND-OFF-AUTO SWITCH.
2. EXHAUST FANS SHALL BE INTERLOCKED TO START AND RUN WITH THE ROOFTOP AIR HANDLING UNIT. STARTING OF THE AIR HANDLING UNIT SUPPLY FAN SHALL START THE EXHAUST FAN.

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revisions

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SCHEMATIC AND CONTROL DIAGRAM

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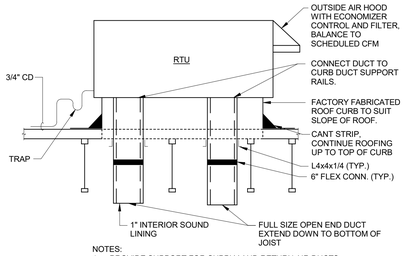
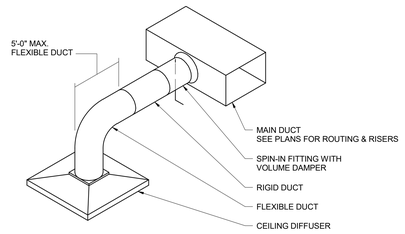
M-201



NOTES:
1. PROVIDE SUPPORT FOR SUPPLY AND RETURN AIR DUCTS
2. WHERE NEW L4x4x1/4 DOES NOT FALL AT JOIST PANEL POINT, PROVIDE STRUT REINFORCING.

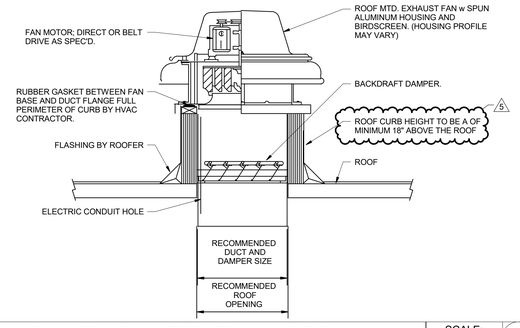
DETAIL - ROOF TOP UNIT

SCALE: NONE | 5



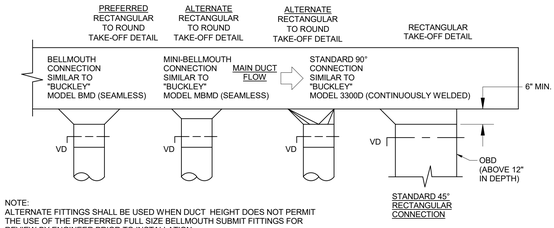
DETAIL - CEILING DIFFUSER WITH FLEX DUCT HOOK-UP

SCALE: NONE | 1



DETAIL - ROOF MOUNTED EXHAUST FAN

SCALE: NONE | 6

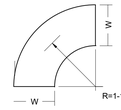


NOTE:
ALTERNATE FITTINGS SHALL BE USED WHEN DUCT HEIGHT DOES NOT PERMIT THE USE OF THE PREFERRED FULL SIZE BELLMOUTH SUBMIT FITTINGS FOR REVIEW BY ENGINEER PRIOR TO INSTALLATION.

DETAIL - DUCT TAKE-OFFS

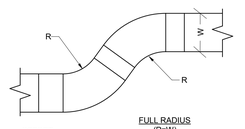
SCALE: NONE | 2

ELBOW



NOTE:
90° ELBOW SHOWN SIMILAR RADIUS CONSTRUCTION FOR ALL ANGLES

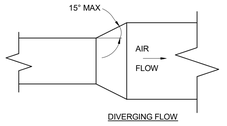
LONG RADIUS ELBOW



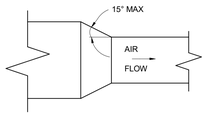
OFFSET

FULL RADIUS (R=W)

TRANSITIONS



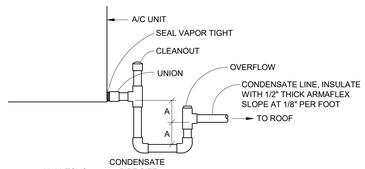
DIVERGING FLOW



CONTRACTING FLOW

DETAIL - DUCT TAKE-OFFS

SCALE: NONE | 3



MAX. TONS	CONDENSATE PIPE SIZE
2	3/4"
5	1"
30	1 1/4"
50	1 1/2"

A = TOTAL FAN SUCTION PRESSURE + 1 INCH

NOTE:
HOUSEKEEPING PAD MAY REQUIRE TO BE HIGHER TO PROVIDE PROPER P-TRAP DEPTH.

DETAIL - CONDENSATE DRAIN TRAP

SCALE: NONE | 4

dash in

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DETAILS - MECHANICAL

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issued date

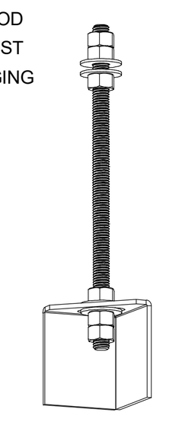
02/16/2024

sheet number

M-301

1/2" DIA. ALL THREAD ROD CONNECTED TO ROOF JOIST THROUGH ANOTHER HANGING ANGLE

1/2" DIA. HEAVY DUTY NUT ONE ABOVE AND TWO BELOW HANGING ANGLE



* ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR HANGING ANGLE IS PRE-PUNCHED AT FACTORY

HANGING ANGLE DETAILS

HOOD STYLE / MODEL	450 DEGREES cfm/ft.	600 DEGREES cfm/ft.	700 DEGREES cfm/ft.
CANOPY ND-2	150	200	250
CANOPY ND-2 W/ END PANELS	105	140	175
SLOPED SND-2	228	294	-
ISLAND ND-2WI	269	300	350
ISLAND ND-2I	346	422	475

ETL HOOD LISTING DETAIL

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

SUPPLY CFM = EXHAUST CFM X PERCENTAGE REQUIRED

$$\text{TOTAL DUCT AREA (sq. in.)} = 144 \times \frac{\text{CFM}}{\text{FPM(*)}}$$

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

* CAPTIVEAIRE 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 BUILT IN COMPLIANCE WITH:

LISTED #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 CAPTIVEAIRE HOOD PER MECHANICAL CONTRACTOR'S PLANS.
5. COOKING EQUIPMENT TO SHUT OFF IN EVENT OF FIRE.
6. EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
7. ALL LIGHT FIXTURES SHOWN INSTALLED BY CAPTIVEAIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES ARE BY ELECTRICAL CONTRACTOR.
8. LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
9. SEISMIC RESTRAINTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
10. INSTALLING CONTRACTORS ASSUME ALL RESPONSIBILITY FOR VERIFICATION OF REPORTS DATA DIMENSIONAL 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.

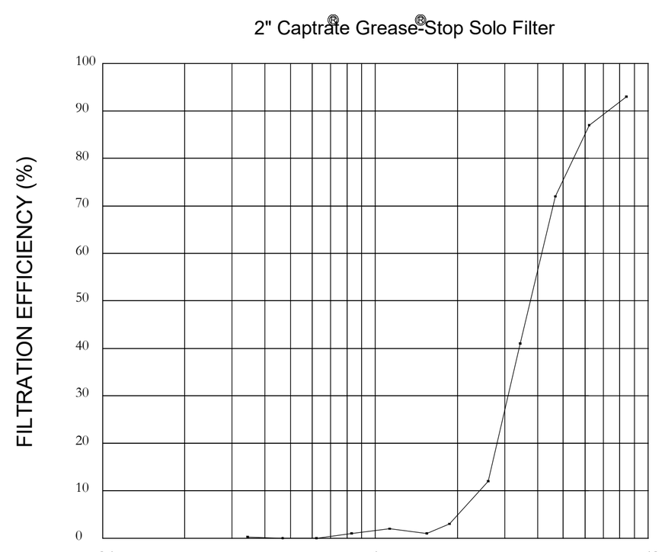
ADDITIONAL

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.

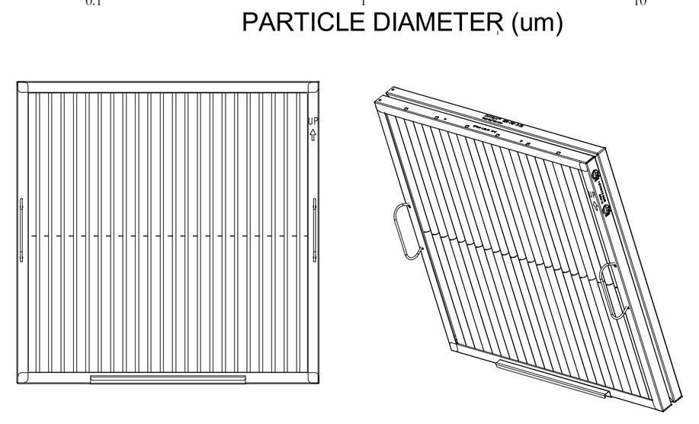
GENERAL NOTES

FILTER COLLECTION EFFICIENCY

2" Captrate® Grease-Stop® Solo Filter



PARTICLE DIAMETER (um)



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

FILTER DETAIL

HOOD INFORMATION - JOB#7125857

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	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1		5424 ND-2	CAPTIVEAIRE	9' 3"	600 DEG	I	HEAVY	190	1758			4"	14"	1758	1645	-0.636"	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	6	20"	16"	85% SEE FILTER SPEC	5	RECESSED ROUND	NO	RIGHT	12"x54"x24"	TANK FS	4.0	DCV-1111	1 LIGHT 1 FAN	YES	752 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 42.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 80.00" HIGH X 123.00" LONG 430 SS VERTICAL.
		RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS.
		LEFT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS.

CLEARANCE TO COMBUSTIBLES

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

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

§ 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

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 __________ __________

HVAC DISTRIBUTION NOTE

IT IS RECOMMENDED NOT TO INSTALL HIGH VELOCITY DIFFUSERS OR HVAC RETURNS WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

EXHAUST HOOD DETAILS

REVISIONS

DESCRIPTION	DATE

CAPTIVEAIRE

Maryland Office
8120 Woodmont Avenue, Suite 720, Bethesda, MD, 20814 PHONE: (800) 988 - 0881 FAX: 9192275931 EMAIL: reg32@captiveaire.com
www.captiveaire.com

DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
La Plata, MD, 20646

DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 1

DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

owner

THE WILLS GROUP
102 Centennial Street, Suite 100
La Plata, MD 20646
301.932.3600
www.willsgroup.com

structural engineer

CARROLL ENGINEERING
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Hunt Valley, MD 21031
410.785.7423
www.ceiengineering.com

food service

REAL FOOD
103 Blanchard Rd
Cambridge, MA 02138
617.876.2100
www.rfhsd.com.com

mep engineer

B&R CONSTRUCTION SERVICES
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Glen Burnie, MD 21061
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Baltimore, Maryland, USA 21201
+1.410.837.2727
bctdesigngroup.com

seals

STATE OF MARYLAND KEITH A SEEGER 43013 PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NUMBER 43013 EXPIRATION DATE 12/10/2024

revisions

#	date	description
3	11.22.2024	Permit Revision #2

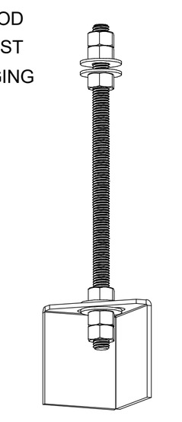
sheet title

FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

issued for: ISSUED FOR PERMIT

issued date: 02/16/2024

sheet number: M-401



* ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR
HANGING ANGLE IS PRE-PUNCHED AT FACTORY

HANGING ANGLE DETAILS

HOOD STYLE / MODEL	450 DEGREES cfm/ft.	600 DEGREES cfm/ft.	700 DEGREES cfm/ft.
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EXHAUST CFM = LENGTH OF HOOD X CFM/LIN.FT. (LOAD)

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CALCULATIONS UTILIZED

CAPTIVE-AIRE HOODS BUILT IN COMPLIANCE WITH:

LISTED #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:

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NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
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BALANCE

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13. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

ADDITIONAL

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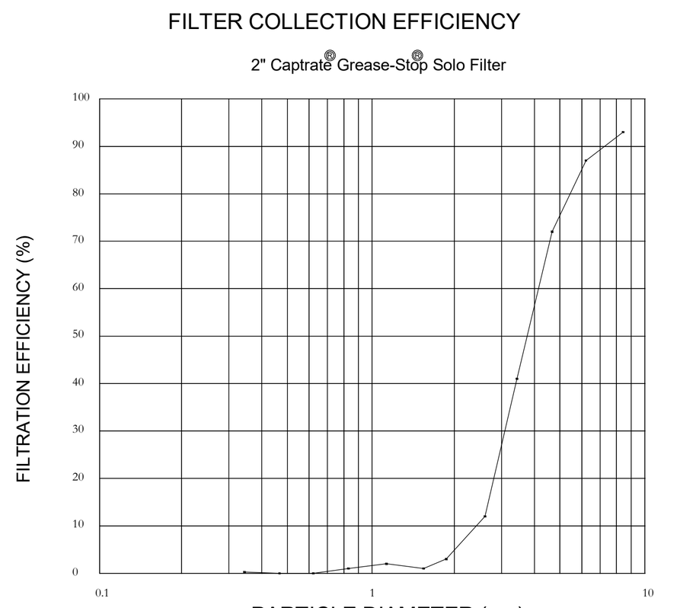
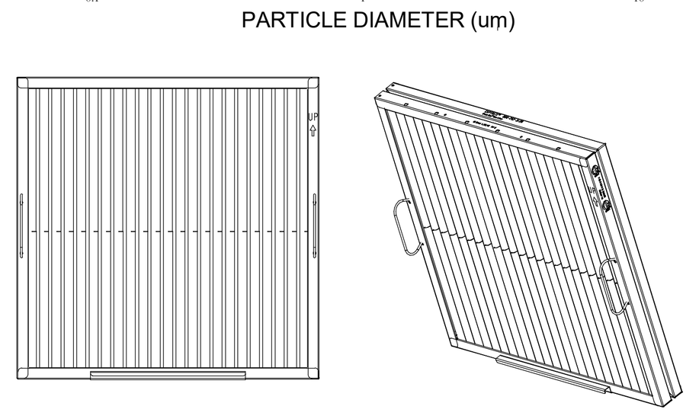
15. SIGNED AND "APPROVED" COPIES OF THIS DOCUMENT MUST BE RECEIVED BY THE FACTORY PRIOR TO COMMENCEMENT OF FABRICATION.

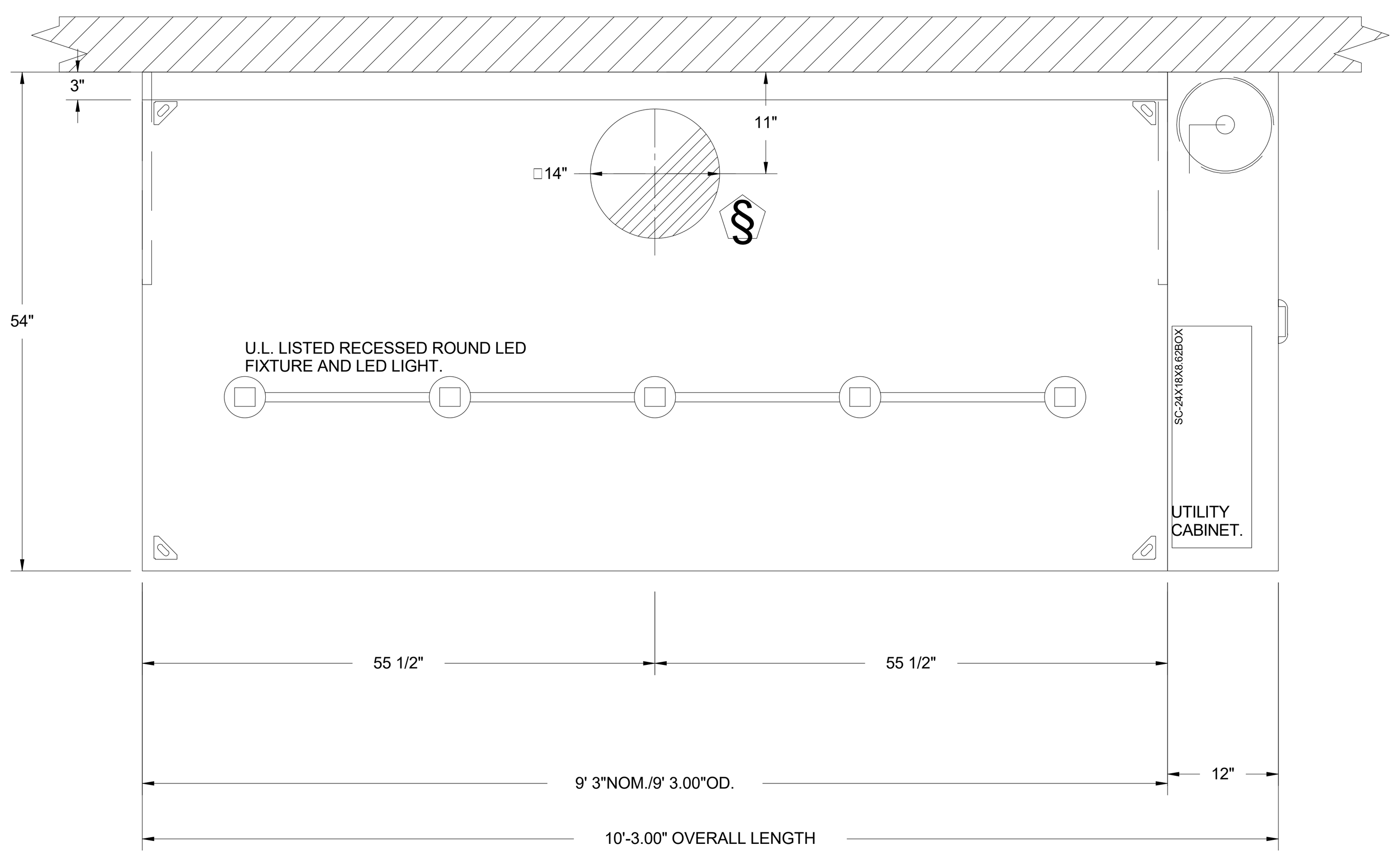
GENERAL NOTES



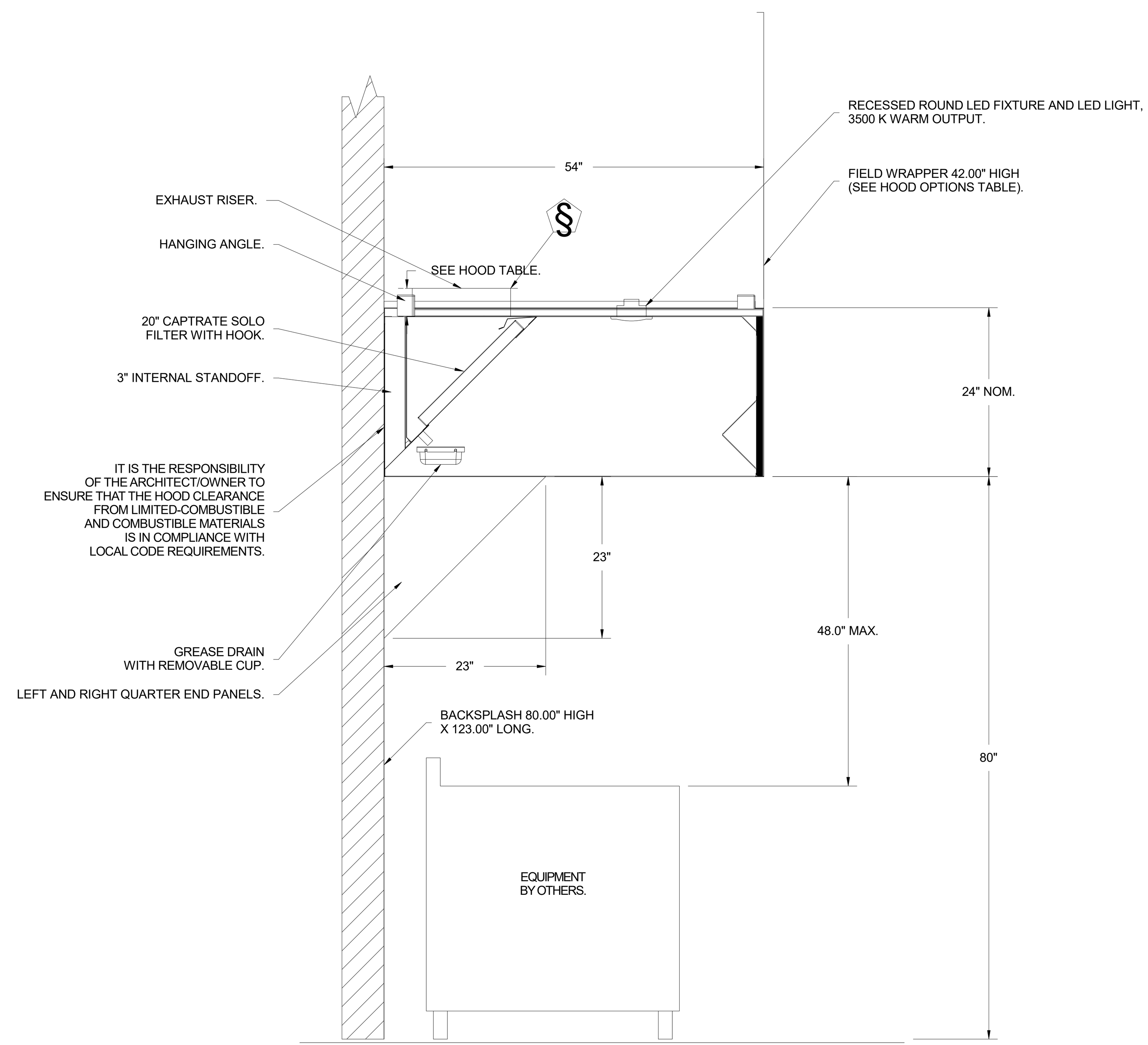


CaptiveAire Captrate Solo Filter
ETL Listed Grease Extracting Filters
Made From 430 Stainless Steel

FILTER DETAIL



PLAN VIEW - HOOD #1
9' 3.00" LONG 5424ND-2



SECTION VIEW - MODEL 5424ND-2
HOOD - #1

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 Token	☐
Revise and Resubmit	☐

SIGNATURE ____________
Your Title ____________
Date ____________

HVAC DISTRIBUTION NOTE

IT IS RECOMMENDED NOT TO INSTALL HIGH VELOCITY DIFFUSERS OR HVAC RETURNS WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

EXHAUST HOOD DETAILS

REVISIONS	
DESCRIPTION	DATE:
△	
△	
△	
△	

CAPTIVEAIRE
www.captiveaire.com
Maryland Office
8120 Woodmont Avenue, Suite 720, Bethesda, MD, 20814 PHONE: (800) 988 - 0881 FAX: 9192275931 EMAIL: reg32@captiveaire.com

DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
La Plata, MD, 20646

DATE: 10/25/2024
DWG.#: 7125857
DRAWN BY: AD-32
SCALE: NTS
MASTER DRAWING
SHEET NO. 2

dash in

DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

owner
Wills Group
THE WILLS GROUP
102 Centennial Street, Suite 100
La Plata, MD 20646
301.932.3600
www.willsgroup.com

structural engineer
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Hunt Valley, MD 21031
410.785.7423
www.ceiengineering.com

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www.rfhsd.com.com

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bcdesigngroup.com

seals

STATE OF MARYLAND — KEITH A. SEGER — 43013 — PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NUMBER 43013 EXPIRATION DATE 12/10/2024

revisions

#	date	description
3	11.22.2024	Permit Revision #2

sheet title
FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

issued for: ISSUED FOR PERMIT
issued date: 02/16/2024
sheet number: M-402

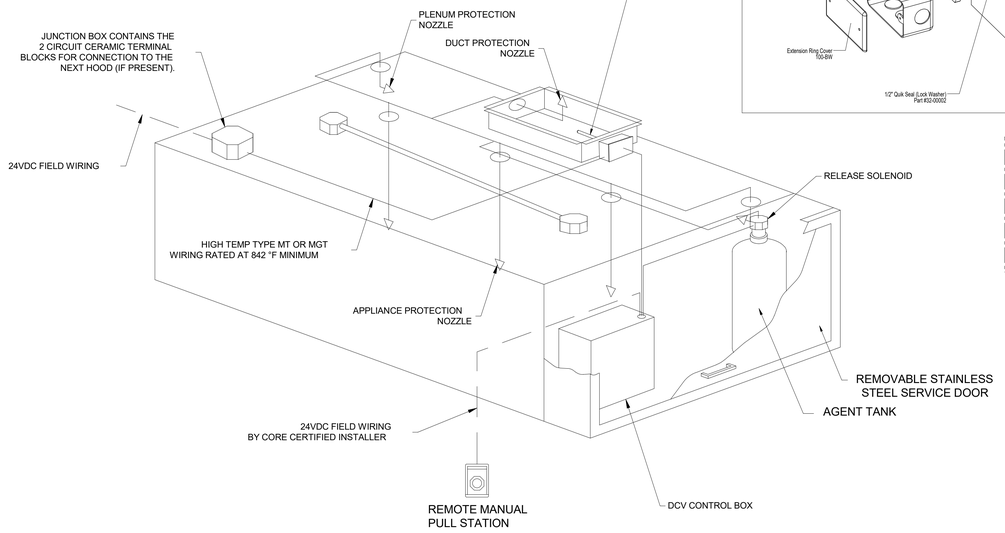
FIRE SYSTEM INFORMATION - JOB#7125857

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION	
						SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0	20	20	FIRE CABINET RIGHT	RIGHT, HOOD 1

TYPICAL ELECTRIC WET CHEMICAL SYSTEM LAYOUT

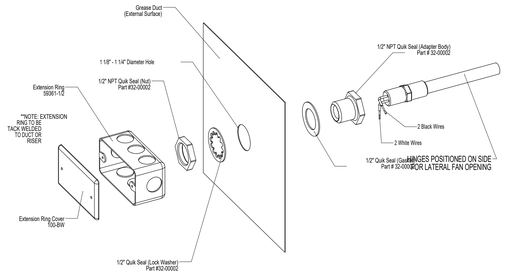
*** NOTE ***

SOLID FUEL APPLIANCES NOT PERMITTED WITH WET CHEMICAL FIRE SYSTEM. PLEASE NOTIFY CAPTIVEAIRE IMMEDIATELY IF A SOLID FUEL COOKINGIS APPLIANCE IS PRESENT AT THIS LOCATION



CORE PROTECTION SENSOR - FACTORY INSTALLED

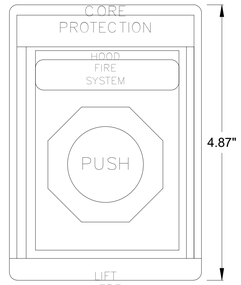
SELF DRILLING SCREWS SHOULD BE USED FOR UNIT ATTACHMENT TO CURB



*** NOTE ***

A FIRESTAT MUST BE INSTALLED AT 50 FT INTERVALS WHEN DUCT LENGTH EXCEEDS 50 FT.

ELECTRIC WET CHEMICAL PULL STATION DETAIL



THE PUSH/PULL STATION IS A REMOTE MANUAL ACTIVATION DEVICE TO ACTIVATE THE FIRE SYSTEM. THIS REMOTE MANUAL ACTIVATION DEVICE (PUSH/PULL STATION) CONTAINS ONE SET OF NORMALLY OPEN CONTACTS, AND MOUNTS TO ANY STANDARD JUNCTION BOX. WHEN THE FRONT BUTTON IS PRESSED, THE ELECTRICAL CONNECTION TO THE FIRE SYSTEM IS COMPLETED, THUS ACTIVATING THE FIRE SYSTEM.

THE REMOTE MANUAL ACTIVATION (PUSH/PULL STATION) SHOULD BE MOUNTED AT A POINT OF EGRESS AND POSITIONED AT A HEIGHT DETERMINED BY THE AUTHORITY HAVING JURISDICTION (AHJ). THIS POSITION IS USUALLY 10 TO 20 FEET FROM THE HOOD AND 42 TO 48 INCHES ABOVE THE FLOOR. TO RESET, TWIST THE PUSH-BUTTON CLOCKWISE UNTIL THE INTERNAL LATCH IS RELEASED.

THE CLEAR PROTECTIVE COVER MUST BE INSTALLED TO PROTECT THE DEVICE FROM ACCIDENTAL ACTIVATIONS. THE COVER IS PROVIDED AS PART OF THE MANUAL ACTIVATION DEVICE.

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted ☐
Approved with NO Exception Taken ☐
Revise and Resubmit ☐

SIGNATURE _____
Your Title _____
Date _____ _____

VERIFY MAKE/MODEL OF ALL COOKING APPLIANCES BENEATH HOOD PRIOR TO FABRICATION. CHANGES TO COOKING EQUIPMENT SPECIFICATION MAY RESULT IN ADDITIONAL FIRE SUPPRESSION SYSTEM INSTALLATION CHARGES.

SPECIFICATIONS

ELECTRIC WET CHEMICAL (CAS-EWC) SPECIFICATION

THE CORE ELECTRIC WET CHEMICAL (EWC) FIRE SUPPRESSION SYSTEM IS A HYBRID FIRE SUPPRESSION SYSTEM FOR USE IN COMMERCIAL KITCHENS.

THE CORE EWC MICROPROCESSOR-BASED CONTROL BOARD, PCBCORE BOARD, IS ETL LISTED UNDER REPORT NUMBER 101196419NYM-001 TO THE UL STANDARD 864 AND CAN/ULC-S527-11. THE COREPCB IS DESIGNED TO CONTROL A 24VDC-BASED, LISTED UL 300 WET CHEMICAL RESTAURANT FIRE SUPPRESSION SYSTEM. THE COREPCB CONTROLS PROVIDE ALL NECESSARY MONITORING, TIMING AND SUPERVISION FUNCTIONS REQUIRED FOR THE RELIABLE OPERATION OF THE WET CHEMICAL FIRE SUPPRESSION SYSTEM. ALL DEVICES THAT ARE CRITICAL FOR PROPER OPERATION ARE SUPERVISED AND INCLUDE AN ELECTRIC THERMAL DETECTOR(S) AND MANUAL PULL STATION(S)/MANUAL ACTUATION DEVICE(S). THE COREPCB CONTROL BOARD ALSO SUPERVISES FAULTS WITHIN THE SYSTEM AND WILL ALERT THE USER OF SPECIFIC CONDITION.

THE SYSTEM IS CAPABLE OF AUTOMATIC DETECTION AND ACTIVATION AND/OR REMOTE MANUAL ACTIVATION. THE DETECTION PORTION OF THE FIRE SUPPRESSION SYSTEM ALLOWS FOR AUTOMATIC DETECTION BY MEANS OF AN ELECTRIC THERMAL DETECTOR(S) LOCATED IN THE HOOD DUCT CONNECTION(S). A PULL STATION/MANUAL ACTUATION DEVICE IS ALSO PROVIDED TO ALLOW FOR MANUAL ACTIVATION OF THE FIRE SYSTEM.

WITH THE ELECTRIC THERMAL DETECTION, A BATTERY BACKUP SYSTEM IS PROVIDED. THE BACKUP BATTERY SYSTEM POWERS THE COREPCB BOARD CONTROLS INCLUDING THE AUTOMATIC DETECTION, PULL STATION/MANUAL ACTUATION DEVICE CIRCUITS, AS WELL AS SUPERVISES THOSE DEVICES AND ANY AUXILIARY SUPERVISORY EQUIPMENT IN THE EVENT OF A LOSS OF POWER TO THE BUILDING.

UPON A FIRE CONDITION, THE ELECTRIC THERMAL DETECTOR CONTACTS WILL CLOSE AND SEND A SUPERVISED SIGNAL TO THE COREPCB BOARD. THE COREPCB BOARD THEN SENDS A SIGNAL TO THE 24VDC REGULATED RELEASE SOLENOID, WHICH WILL SIGNAL PRESSURIZED AGENT TAKES TO PROPEL THE WET CHEMICAL AGENT INTO THE DISTRIBUTION LINES TOWARDS THE DISCHARGE NOZZLES.

FIRE SUPPRESSION SYSTEM DETAILS

REVISIONS

	DESCRIPTION	DATE
△		
△		
△		
△		

CAPTIVEAIRE

Maryland Office
8120 Woodmont Avenue, Suite 720, Bethesda, MD, 20814 PHONE: (800) 988 - 0881 FAX: 9192275931 EMAIL: reg32@captiveaire.com
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DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 3

dash in

DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

owner
Wills Group
THE WILLS GROUP
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seals

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revisions

#	date	description
3	11.22.2024	Permit Revision #2

sheet title
FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

issued for
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issued date
02/16/2024

sheet number
M-403

EXHAUST FAN INFORMATION - JOB#7125857

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	1	DU180HFA	CAPTIVEAIRE	2081	2.000	1319	TEFC,PREMIUM	2.000	1.1080	3	208	7.3	481 FPM	199	17.1

DOAS/RTU FAN SCHEDULE - JOB#7125857

FAN INFORMATION										ELECTRICAL INFORMATION					COOLING INFORMATION									REHEAT INFORMATION					GAS HEAT INFORMATION						NOTES
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	OUTSIDE AIR	MIXED AIR		LEAVING AIR			CAPACITY		IEER	ISMRE	DISCHARGE	CAPACITY		MOISTURE REMOVAL RATE	GAS TYPE	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	
																DB	WB	DB	WB	DB	WB	DP	TOTAL	SENS.			DB	WB	DESIRED	MAX						
2	DOAS-1 BOH	1	CAS-HVAC3-I.200-15-12.5T	CAPTIVEAIRE	15P-3	0	1800	1800	2347	0.500	2.00	3	208	56.1A	60A	93.0°F	75.0°F	93.0°F	75.0°F	48.4°F	48.1°F	47.9°F	146.6 MBH	84.0 MBH	21.3	4.1	70.0°F	60.0°F	43.9 MBH	101 MBH	56.9 LBS/HR	NATURAL	177031	143395	67°F	7 IN. W.C. - 14 IN. W.C.	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18

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. 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 14GA BASE
11. 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 16:1 TURNDOWN WITH NG AND 13:1 TURNDOWN WITH LP
12. SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE
13. FULLY MODULATING HOT GAS REHEAT
14. HAIL GUARD FOR CONDENSING COIL
15. FACTORY INSTALLED COMPRESSOR SOUND BLANKET
16. RTU ECONOMIZER WITH DIFFERENTIAL DRY BULB CONTROL
17. BAROMETRIC RELIEF DAMPER
18. DOWN DISCHARGE/DOWN RETURN

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
2	DOAS-1 BOH	1	INLET PRESSURE GAUGE, 0-35"
		1	SHIP LOOSE GAS STRAINER 3/4"
		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	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	RTU3 DOWN DISCHARGE
		1	2" MERV 13 FILTERS FOR RTU3 (QTY. 4)
		1	2" MERV 8 FILTERS FOR RTU3 (QTY. 4)
		1	OVERHEAT STAT
		1	TOTAL CFM MONITORING
		1	OCCUPIED SCHEDULING
		1	INTAKE FIRESTAT SET TO 135°F
		1	FREEZESTAT
		1	DISCHARGE FIRESTAT SET TO 240°F
		1	RTU3 CURB DUCT HANGER
		1	120V FIRE INPUT
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		1	HIGH TURNDOWN OPTION FOR DOAS UNITS
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 2 FURNACES
		1	CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
		1	RTU3 CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION. INCLUDES RECEPTACLE, COVER AND J-BOX
		1	R454B LEAK DETECTOR OPTION FOR RTUS
		1	RTU INTAKE/RETURN DAMPER - MANUAL CONTROL VIA HMI
		1	RTU ECONOMIZER - DIFFERENTIAL DRY BULB CONTROL
		1	RTU3 ECONOMIZER BAROMETRIC RELIEF
		1	RTU3 HAIL GUARD
		1	RTU3 DOWN RETURN
		1	REMOTE TEMPERATURE AND HUMIDITY SPACE SENSOR
		1	R454B - 12.5 TON MODULATING COOLING OPTION, 208/230V. R454B REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
		1	R454B - 12.5 TON MODULATING REHEAT OPTION - SPACE DEW/POINT CONTROL - R454B
		1	RTUVZH065 COMPRESSOR SOUND BLANKET 230/460/575V - FACTORY INSTALLED
		1	UNIT MOUNTED VFD CONFIGURED FOR DCV
		1	LOAD REACTOR MOUNTED IN FAN
		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

FAN ACCESSORIES

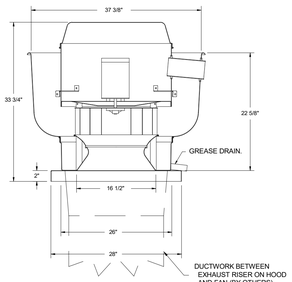
FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF-1	YES						

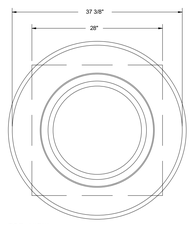
CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	43 LBS	CURB	26.500"W X 26.500"L X 20.000"H VENTED HINGED.
2	# 2	DOAS-1 BOH	130 LBS	CURB	59.500"W X 91.000"L X 20.000"H INSULATED.

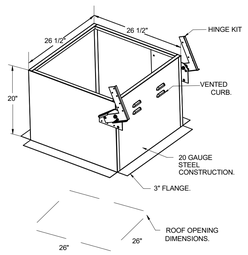
HMI SCHEDULE				
UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS
FAN #2	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	55
FAN #2	HMI #2 - SPACE	SPACE	NOT AVERAGED	56

FAN #1 DU180HFA - EXHAUST FAN (KEF-1)





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.
- 2 YEAR PARTS WARRANTY.

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.

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted ☐
Approved with NO Exception Taken ☐
Revise and Resubmit ☐

SIGNATURE _____
Your Title _____
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APPROVED WITH NO EXCEPTION TAKEN ☐
REVISE AND RESUBMIT ☐

SIGNATURE _____
YOUR TITLE _____
DATE _____ _____

NOTES

DRAWING CONTAINS IMPORTANT INFORMATION FOR COORDINATION WITH M/E/P ENGINEER

KITCHEN FAN DETAILS

REVISIONS

	DESCRIPTION	DATE
1		
2		
3		
4		

CAPTIVEAIRE
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DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
La Plata, MD, 20646

DATE: 10/25/2024
DWG.#: 7125857
DRAWN BY: AD-32
SCALE: NTS
MASTER DRAWING
SHEET NO. 4

dash in
DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

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Wills Group
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seals

PROFESSIONAL CERTIFICATION
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NUMBER 43013 EXPIRATION DATE 12/10/2024

revisions

#	date	description
3	11.22.2024	Permit Revision #2

sheet title
FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

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02/16/2024

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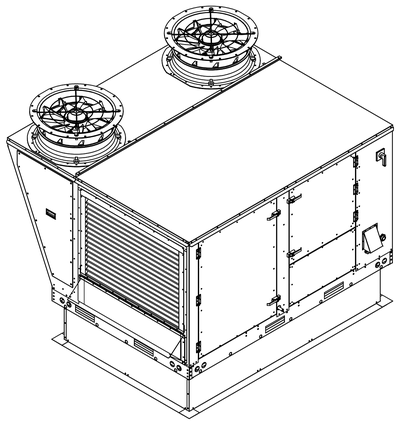
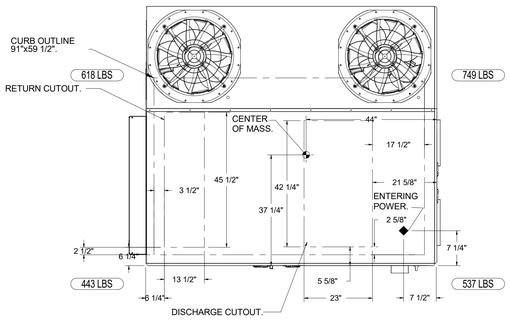
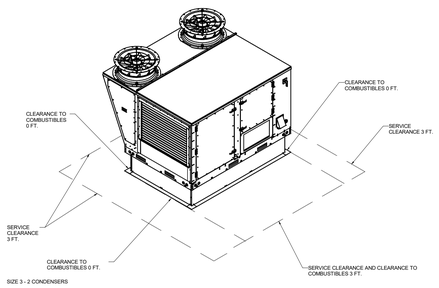
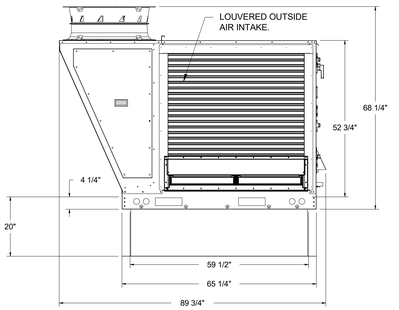
FAN #2 CAS-HVAC3-I.200-15-12.5T - HEATER (DOAS-1 BOH)

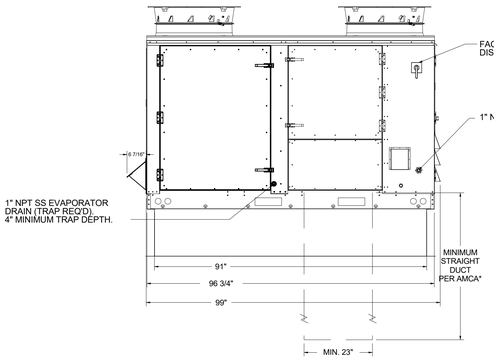
NOTES:
1. DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
2. DENOTES CORNER WEIGHT.
3. ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
4. CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.
5. EXTERIOR GAS CONNECTION PROVIDED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

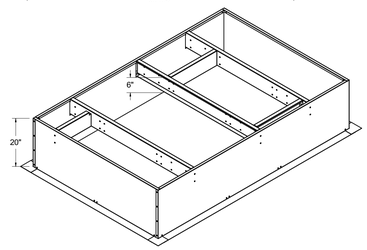


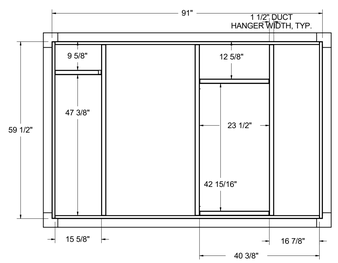








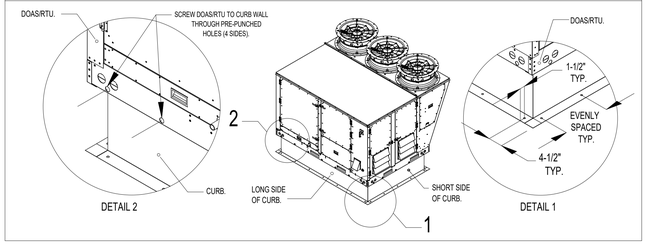




*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE 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 23" x 39".

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.



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Your Title _____
Date _____ _____

NOTES

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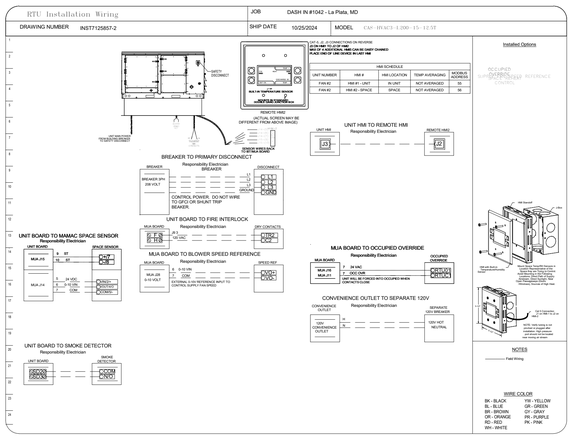

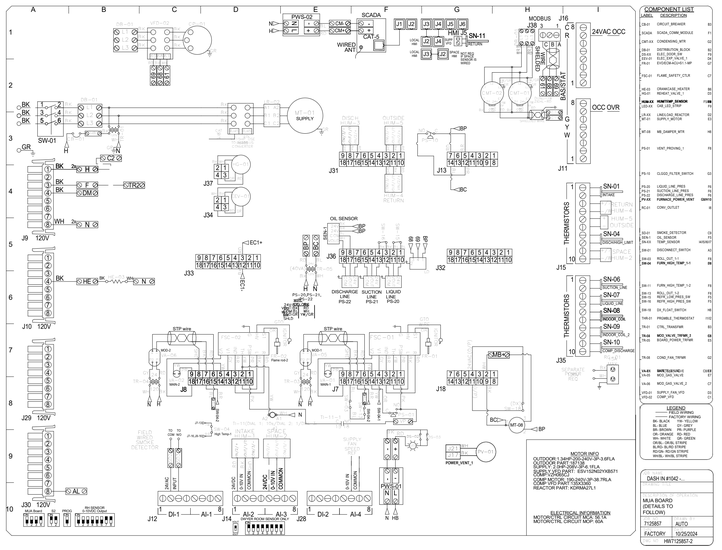

dash in

DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

owner
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102 Centennial Street, Suite 100
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REVISIONS

DESCRIPTION	DATE

DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
La Plata, MD, 20646

DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 5

seals

PROFESSIONAL CERTIFICATION

I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NUMBER 43013 EXPIRATION DATE 12/13/2024.

revisions

#	date	description
3	11.22.2024	Permit Revision #2

sheet title

KITCHEN FAN DETAILS

FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

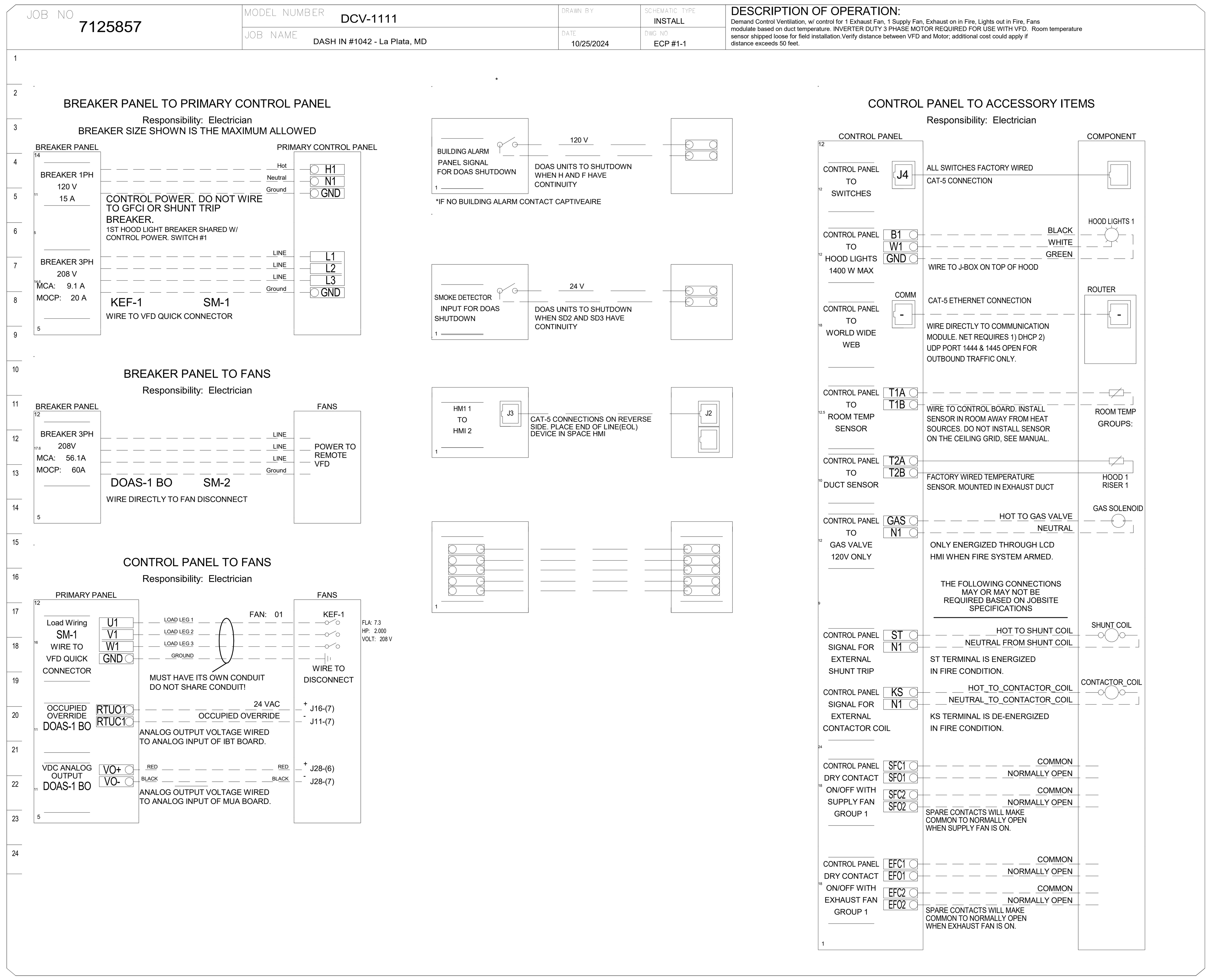
issued for ISSUED FOR PERMIT

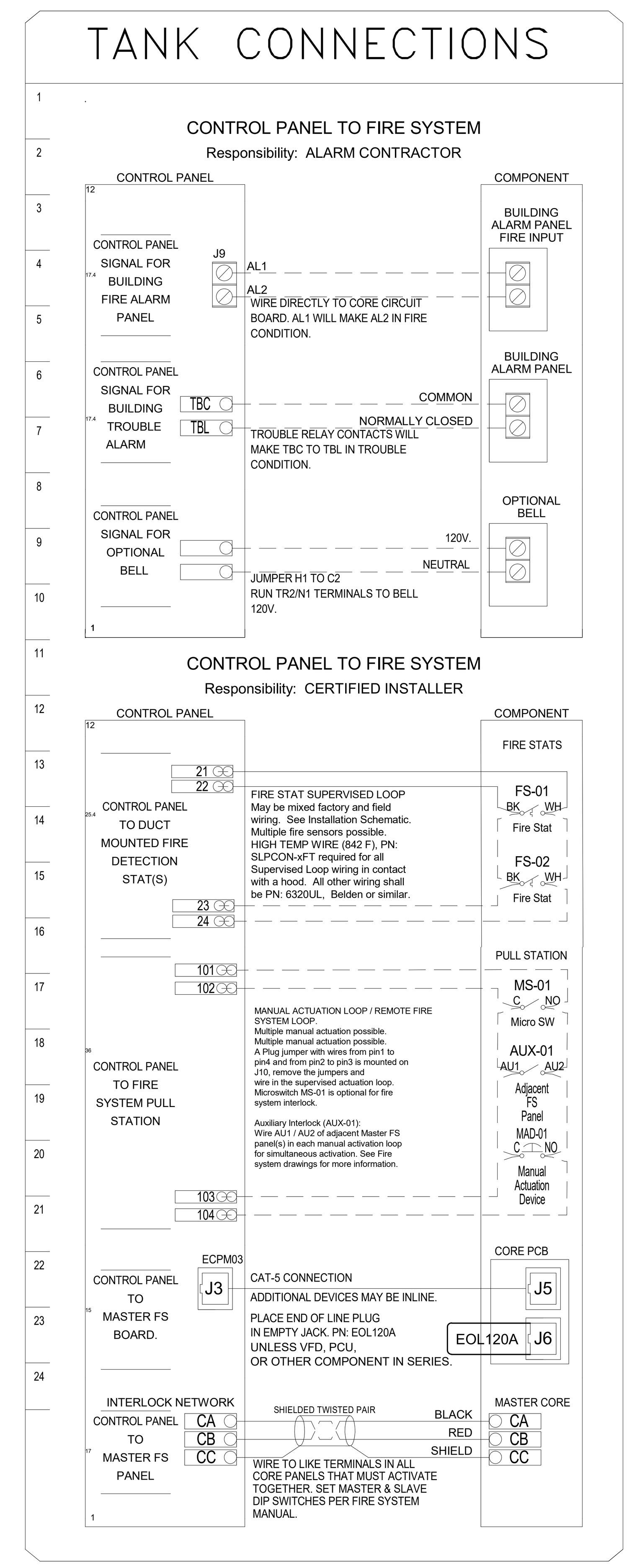
issued date 02/16/2024

sheet number M-405

ELECTRICAL PACKAGE – JOB#7125857

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	ϕ	HP	VOLT	FLA
1		DCV-1111	UTILITY CABINET RIGHT	UTILITY CABINET RIGHT	1 LIGHT	SMART CONTROLS DCV	KEF-1	EXHAUST	3	2.000	208	7.3
				HOOD # 1	1 FAN		DOAS-1 BOH	SUPPLY	3	2.000	208	6.1





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SEQUENCE OF OPERATION – HOOD CONTROLS

ELECTRICAL PACKAGE: DCV SERIES

Once all power, light and temperature sensor circuits are properly landed on the control terminal block the LCD interface will be illuminated. All temperature readings are measured by resistive temperature sensors (thermistors) installed in each hood exhaust riser. One room temperature sensor is installed in the space to measure ambient air temperature.

Two methods to activate system:

Manual activation:

1. Operator presses the fan button to engage the exhaust fan(s) and the exhaust fan(s) begin operation in low-CFM Prep Mode. Dedicated make-up air units (if applicable) for the hood remain off in Prep Mode.

2. Operator turns on the cooking appliances. Once the exhaust air temperature reaches 10 degrees (F) above ambient temperature in the space, the exhaust system will ramp up to a preset minimum speed (low-volume cooking conditions). Makeup air fan will power on at this point (also at minimum speed).

3. As the temperature of the exhaust air increases, the exhaust and make-up air fan speeds increase proportionally. The fans will modulate between preset low-speed and high-speed exhaust levels, dependent upon the exhaust air temperature (cooking load).

4. At any point, operator may engage the 100% override option on the touch screen and run the fans at full speed for a fixed period of time (adjustable). After this period, fan modulation based on temperature will resume.

Automatic activation:

1. If the operator does not manually engage the exhaust system, the SC-EMS will automatically activate Prep Mode when the exhaust air temperature reaches 5 degrees above ambient temperature. When the air temperature at the hood collar increases to 10 degrees above ambient, the exhaust and makeup air fans will ramp up to preset low speeds for low volume conditions.

2. System will continue operating per steps 3 & 4 (above)

At the end of the day, after cooking operations have ceased, the system will enter its Cool Down mode (similar to Prep mode). Once the exhaust air temperature drops to less than five degrees above ambient, the fans will shut off.

DEMAND CONTROL VENTILATION SYSTEM NOTE

FAN(S) TO BE CONTROLLED BY A MODULATING ENERGY MANAGEMENT SYSTEM. PRE-WIRED VARIABLE FREQUENCY DRIVES (VFD) ARE INCLUDED IN THE MANUFACTURER'S CONTROL PACKAGE. FAN MOTORS MUST BE INVERTER-DUTY AND COMPATIBLE WITH A VARIABLE AIR VOLUME APPLICATION.

NOTE TO ELECTRICAL CONTRACTOR

CAPTIVEAIRE HOOD CONTROL PACKAGE IS FURNISHED BY KITCHEN EQUIPMENT CONTRACTOR AND SHOWN ON ELECTRICAL DRAWINGS FOR COORDINATION PURPOSES ONLY. ALL FIELD WIRING AND INTERLOCKS TO BE COMPLETED BY ELECTRICAL CONTRACTOR. CONTACT CAPTIVEAIRE WITH QUESTIONS REGARDING SCOPE OF WORK: (800) 988-0881

HOOD CONTROL DETAILS

REVISIONS

DESCRIPTION	DATE

CAPTIVEAIRE

www.captiveaire.com

Maryland Office
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DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
La Plata, MD, 20646

DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 6

DASH IN 1042
6670 Crain Highway,
La Plata, Maryland 20646

project info # 22-128

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revisions

#	date	description
3	11.22.2024	Permit Revision #2

sheet title
FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

issued for
ISSUED FOR PERMIT

issued date
02/16/2024

sheet number
M-406

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
7125857	DCV-1111		INSTALL	Fire System #1 TANK FS - 4.0.
	JOB NAME: DASH IN #1042 - La Plata, MD	DATE: 10/25/2024	DWG NO: ECP #1-3	

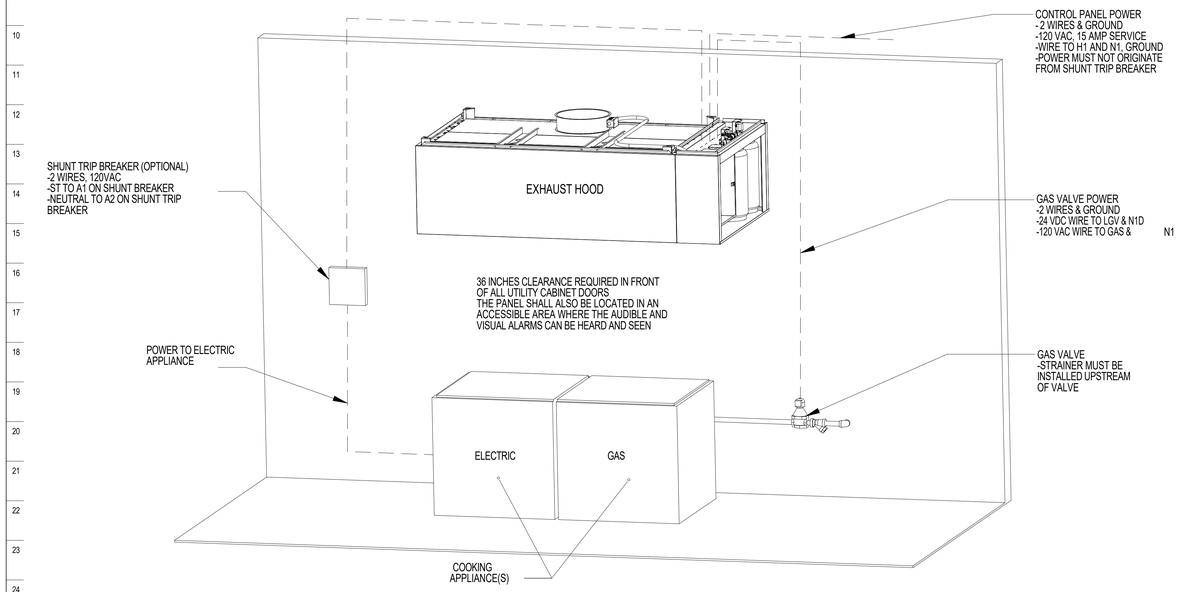
TANK PROTECTION ELECTRICAL DETAIL

02/10/2021 Rev. 2

ELECTRICIAN:
1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC
2. WIRE ALL FANS PER INCLUDED SCHEMATIC
3. WIRE SHUNT TRIP BREAKER (OPTIONAL)
4. WIRE UDS APPLIANCE KILL SWITCH, IF EQUIPPED (OPTIONAL)
5. WIRE GAS VALVE

FS-1: MASTER

ELECTRICAL CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
SHUNT TRIP BREAKER (OPTIONAL)	ST & N1	BREAKER COIL (A1 & A2)	120 VAC	< 4 AMPS	ST TO A1 ON SHUNT BREAKER COIL, AND NEUTRAL TO A2 ON SHUNT TRIP BREAKER COIL
CONTROL PANEL POWER	H1 & N1 + GROUND	CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER
UDS APPLIANCE KILL SWITCH (OPTIONAL)	KTS & N1	KTS & N1	120 VAC	< 4 AMPS	KILL SWITCH TERMINALS MUST BE IN SERIES WITH OTHER KILL SWITCHES
REMOTE 120VAC ANSUL AUTOMAN (OPTIONAL)	AU1, AU2	SOLENOID	120 VAC	< 6 AMPS	120V TO AU1, AU2 TO ANSUL ELECTRIC AUTOMAN, ANSUL SOLENOID TO NEUTRAL
GAS VALVE	LGV & N1D (IF 24 VDC) GAS & N1 (IF 120 VAC)	RED/RED/GREEN	24 VDC OR 120 VAC	< 1.0 AMPS	IF 24 VDC - 2 WIRES & GROUND, N1D TO RED, LGV TO RED, AND GREEN TO GROUND IF 120 VAC - 2 WIRES & GROUND GAS TO RED, N1 TO RED, AND GREEN TO GROUND



NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

REVISIONS

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DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
La Plata, MD, 20646

DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 7

dash in
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3	11.22.2024	Permit Revision #2

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FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

issued for: ISSUED FOR PERMIT

issued date: 02/16/2024

sheet number: M-407

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
7125857	DCV-1111		INSTALL	Fire System #1 TANK FS - 4.0.
	JOB NAME: DASH IN #1042 - La Plata, MD	DATE: 10/25/2024	DWG NO: ECP #1-4	

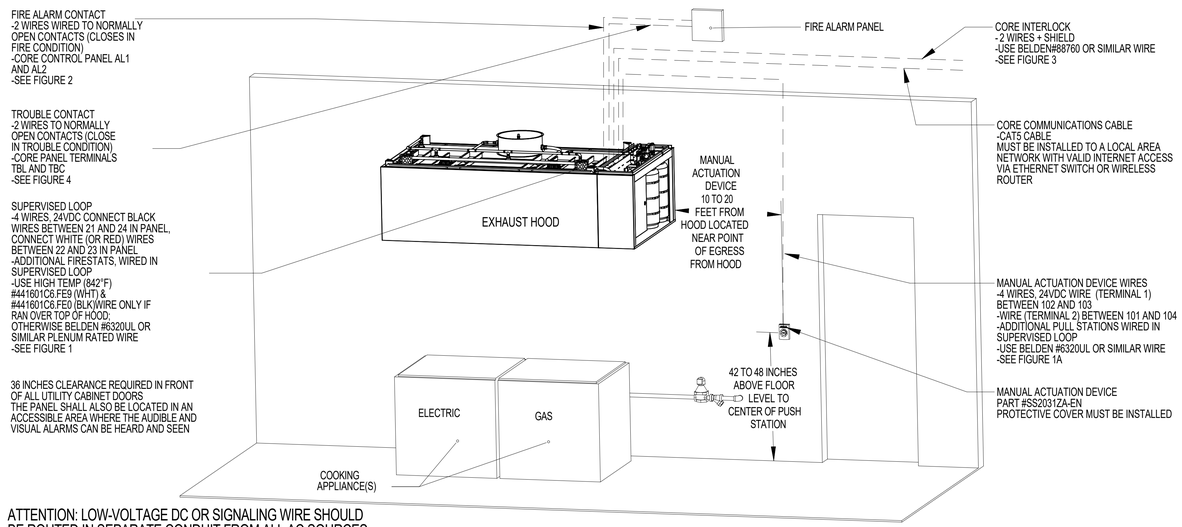
TANK PROTECTION LOW-VOLTAGE DETAIL

10/01/2023 Rev. 3

ALARM CONTRACTOR:
1. WIRE MANUAL ACTUATION DEVICE(S), REMOTE FIRESTAT(S), CORE INTERLOCK(S), FIRE SENSOR(S) AND FIRE ALARM CONTACTS
2. COMPLETE FINAL HOOKUP OF SYSTEM
3. VERIFY FINAL FIRE SYSTEM TEST

FS-1: MASTER

ALARM CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION ON DEVICE	VOLTAGE	AMPERAGE	COMMENTS
MANUAL ACTUATION DEVICE(S)	101 AND 104 102 AND 103	1 & 2	24 VDC	< 1.0 AMPS	WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 102 AND 103 WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 101 AND 104 JUMPER 101 TO 104 AND 102 TO 103 IF NO MANUAL ACTUATION DEVICE IS INSTALLED
MANUAL ACTUATION DEVICE COVER	N/A	N/A	N/A	N/A	MANUAL ACTUATION DEVICE COVER MUST BE INSTALLED IF SURFACE MOUNTED, USE COVER EXTENSION STI-6531B
REMOTE FIRESTAT SENSOR(S)	21 AND 24 22 AND 23	BLACK AND WHITE	24 VDC	< 1.0 AMPS	WIRE FIRE SENSOR WHITE WIRES BETWEEN HOOD CORE PANEL TERMINALS 22 AND 23 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 21 AND 24 HIGH TEMP (842°F) #441601C6.FE9 (WHT) & #441601C6.FE0 (BLK)WIRE OR SIMILAR ONLY IF RAN OF HOOD; OTHERWISE BELDEN #6320UL OR SIMILAR PLENUM RATED WIRE; SEE FIGURE 1
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	UP TO 1 AMP	FIRE ALARM RELAY CONTACTS FOR BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL
CORE INTERLOCK(S)	CA, CB, CC	CA, CB, CC	RS-485 COMMUNICATIONS SIGNAL		CORE SYSTEM (1) CA, TO CORE SYSTEM (2) CA. CORE SYSTEM (1) CB, TO CORE SYSTEM (2) CB. CORE SYSTEM (1) CC, TO CORE SYSTEM (2) CC. USE BELDEN# 88760 OR SIMILAR WIRE
TROUBLE CONTACT	TBC, TBL, TOK	VARIES	MAX 120 VAC	UP TO 6 AMPS	WIRE TO TBL & TBC NORMALLY OPEN CONTACT, CLOSES IN TROUBLE CONDITION
CORE COMMUNICATIONS CABLE	RJ-45 Jack	INTERNET CONNECTION	SIGNAL	<1.0 AMPS	TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION



ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

REVISIONS

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DASH IN #1042 - La Plata, MD
6670 Robert S. Crain Highway,
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DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 8

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3	11.22.2024	Permit Revision #2

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FOOD SERVICE KITCHEN HOOD AND EXHAUST DETAILS

issued for: ISSUED FOR PERMIT

issued date: 02/16/2024

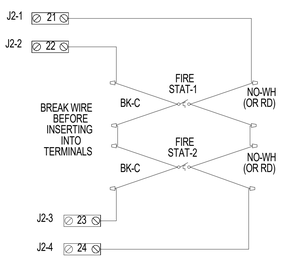
sheet number: M-408

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
7125857	DCV-1111		INSTALL	Fire System #1 TANK FS - 4.0.
	JOB NAME: DASH IN #1042 - La Plata, MD	DATE: 10/25/2024	DWG NO: ECP #1-5	

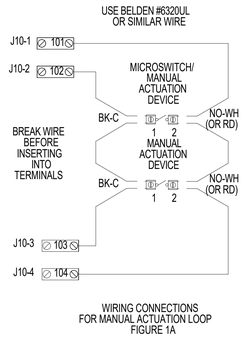
TANK PROTECTION LOW-VOLTAGE FIGURES

10/01/2023 Rev. 17

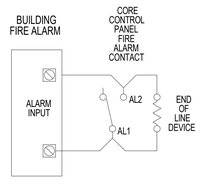
FS-1: MASTER



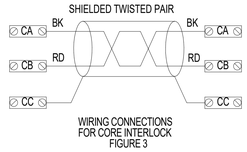
WIRING CONNECTIONS FOR FIRESTAT LOOP
FIGURE 1



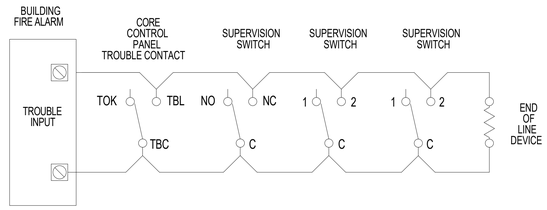
WIRING CONNECTIONS
FOR MANUAL ACTUATION LOOP
FIGURE 1A



WIRING CONNECTIONS FOR FIRE
ALARM CONTACT
FIGURE 2



WIRING CONNECTIONS
FOR CORE INTERLOCK
FIGURE 3



WIRING CONNECTIONS FOR
TROUBLE CONTACT
FIGURE 4

ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD
BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

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DATE: 10/25/2024

DWG.#: 7125857

DRAWN BY: AD-32

SCALE: NTS

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SHEET NO. 9

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FOOD SERVICE
KITCHEN HOOD AND
EXHAUST DETAILS

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