HVAC ABBREVIATIONS

ACC	AIR COOLED CONDENSING UNIT (HVAC)
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
CD	CEILING DIFFUSER
CU	CONDENSING UNIT (COOLER)
EF	EXHAUST FAN
ER	EXHAUST REGISTER
(E)/EXT'G	EXISTING
HD	HOOD
MAU	MAKEUP AIR UNIT
OBD	OPPOSED BLADE DAMPER
RG	RETURN GRILL
RTU	ROOFTOP UNIT
SR	SUPPLY REGISTER
VSC	VARIABLE SPEED CONTROL

SUPPLIER/VENDOR ABBREVIATIONS

CO2AS	TENANT'S CO2 ALARM SUPPLIER
GC	GENERAL CONTRACTOR
HES	TENANT'S HVAC EQUIPMENT SUPPLIER
HS	TENANT'S HOOD SUPPLIER
KES	TENANT'S KITCHEN EQUIPMENT SUPPLIER
LL	LANDLORD
SPS	TENANT'S SODA POP SUPPLIER
TAB	TENANT'S TEST & BALANCE VENDOR
TCC	TENANT'S CABLING CONTRACTOR
TDC	TENANT'S DUCT CLEANER
TEMS	TENANT'S ENERGY MANAGEMENT SYSTEM SUPPLIER
TLS	TENANT'S LIGHT/LAMP SUPPLIER
TMB	TENANT'S MENU BOARD SUPPLIER
TMS	TENANT'S MILLWORK SUPPLIER
TP	TENANT'S PHONE SUPPLIER
TRS	TENANT'S RAILING SUPPLIER
TSV	TENANT'S SIGN VENDOR
TUV	TENANT'S UV SANITIZER SUPPLIER
WCS	TENANT'S WALK-IN COOLER SUPPLIER
WHS	TENANT'S WATER HEATER SUPPLIER

HVAC SYMBOLS

- CEILING DIFFUSER
- CEILING-MOUNTED RETURN REGISTER
- CEILING-MOUNTED EXHAUST REGISTER
- SUPPLY REGISTER
- RETURN REGISTER
- FLEXIBLE DUCT
- MITERED CORNER WITH TURNING VANES
- W x H — DUCTWORK INTERNAL FREE DIMENSIONS (WIDTH x HEIGHT)
- RECTANGULAR TO ROUND DUCT TRANSITION
- DUCT-MOUNTED SMOKE DETECTOR
- M — MOTOR-OPERATED DAMPER
- MANUAL VOLUME DAMPER
- GREASE DUCT CLEANOUT
- MITERED CORNER WITHOUT TURNING VANES
- T — GRIDPOINT THERMOSTAT
- S — GRIDPOINT ZONE SENSOR MODULE
- S — GRIDPOINT SUPPLY PROBE
- # — PLAN NOTE: SEE PLAN NOTES LISTED ON THE SAME SHEET FOR NOTE MEANING
- CONNECT TO EXISTING
- XXX-# — EQUIPMENT TAG: SEE EQUIPMENT SCHEDULE ON SHEET M-600 FOR EQUIPMENT INFORMATION
- A V — AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET
- M — MOTORIZED DAMPER
- FD/AD — FIRE DAMPER W/ ACCESS DOOR
- CD-1 — GRILL, REGISTER, OR DIFFUSER TAG
- 12" ROUND — NECK SIZE
- 550 CFM — AIRFLOW

HVAC GENERAL NOTES

A. GENERAL NOTES APPLY TO HVAC SHEETS.

B. WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE AUTHORITY HAVING JURISDICTION, INCLUDING APPLICABLE SECTIONS OF NFPA, THE MECHANICAL CODE, AND ANY INTERIM AMENDMENTS AT THE TIME OF THE PROPOSAL. PURCHASE PERMITS ASSOCIATED WITH THE WORK. OBTAIN INSPECTIONS REQUIRED BY CODE. SEE SHEET G-001 FOR THE PREVAILING CODES.

C. CONTRACTOR AND SUBCONTRACTORS SHALL REVIEW A COMPLETE SET OF THE CONSTRUCTION DOCUMENTS.

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

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

F. DUCT DIMENSIONS ON PLANS INDICATE DIMENSIONS OF INTERNAL FREE AREA.

G. PERFORATED CEILING DIFFUSERS SHALL BE 4-WAY UNLESS NOTED OTHERWISE.

H. COORDINATE ROOF WORK WITH THE OWNER'S CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.

I. UNLESS NOTED OTHERWISE, RECTANGULAR DUCT ELBOWS GREATER THAN 45° SHALL BE MITERED ELBOWS WITH DOUBLE-THICKNESS TURNING VANES AND RECTANGULAR DUCT ELBOWS 45° OR LESS SHALL BE RADIUSED ELBOWS WITH AN INSIDE RADIUS OF AT LEAST 1/2 THE WIDTH OF THE DUCT.

J. REPLACE AIR FILTERS WITH NEW, CLEAN, MERV 7 AIR FILTERS AT TURNOVER.

K. THE TERM "FURNISH" MEANS SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS. THE TERM "INSTALL" DESCRIBES THE OPERATIONS AT THE PROJECT SITE INCLUDING THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS. THE TERM "PROVIDE" MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

L. PROVIDE LABELING CALLED FOR IN THE HVAC PLANS USING ENGRAVED PHENOLIC PLATES.

M. PROVIDE P3000 12 GA. UNISTRUT WITH PG FINISH FOR DUCT SUPPORTS AND OTHER UNISTRUT IN AREAS EXPOSED TO VIEW. SLOTTED UNITRUT AND OTHER UNISTRUT WITH HOLES IS NOT ACCETABLE.

MATERIAL SCHEDULE

CATEGORY	APPLICATION	ALLOWABLE MATERIAL
DUCT	EXPOSED SUPPLY	RECT. LINED OR ROUND AS SHOWN, NO EXPOSED DUCT SEALING MASTIC
	EXPOSED RETURN	RECTANGULAR, NO EXPOSED DUCT SEALING MASTIC
	EXPOSED GEN. EXHAUST	RECTANGULAR, NO EXPOSED DUCT SEALING MASTIC
	CONCEALED, SUPPLY	RECT. OR ROUND AS SHOWN, LINED OR INSULATED
	CONCEALED, RETURN	RECT. OR ROUND AS SHOWN, LINED OR INSULATED
	CONCEALED, GEN. EXHAUST	RECT. OR ROUND AS SHOWN
	CONCEALED, TYPE I HOOD EXHAUST	RECTANGULAR 16 GA. BLACK IRON W/ WRAP OR UL 1978 FACTORY-MANUFACTURED DUCT W/ WRAP (SUBMIT SHOP DRAWINGS FOR FACTORY-MANUFACTURED DUCT PRIOR TO ORDERING FOR APPROVAL)

HVAC SPECIFICATIONS

SECTION 15732 - PACKAGED ROOFTOP AIR-CONDITIONING UNITS
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. Submittals: Product Data and Shop Drawings.
B. Comply with ASHRAE 15.
C. EER: Equal to or greater than prescribed by ASHRAE 90.1 - 2019
D. Warranties: Submit a written warranty, signed by the manufacturer, agreeing to the repair or replacement of components that fail within 5 years of Substantial Completion.
PART 2 - PRODUCTS
2.1 PACKAGED UNITS, 5 TO 20 TONS
A. Factory assembled and tested, consisting of compressors, condensers, evaporator coils, condenser and evaporator fans, refrigeration and temperature controls, filters, and dampers.
1. Refer to Rooftop Heating/Cooling Unit Schedule on drawing M600 for capacities, and manufacturers.
2. Evaporator Fans: Belt or direct driven, forward curved centrifugal.
3. Exhaust/Relief Fans: Direct drive, forward curved centrifugal or propeller.
4. Condenser Fans: Direct drive propeller.
5. Refrigerant Coils: Aluminum fins and copper coil.
6. Compressors: Serviceable hermetic or fully hermetic, with safety controls, hot gas bypass, and timed off controls.
7. Heat Exchangers: Gas fired, with gas controls, electronic ignition, high limit cutout, and forced draft proving switch.
8. Economizer controls (Comparative Enthalpy, 100% capacity).
9. Low ambient controls.
10. Smoke Detectors: Photoelectric - In supply and/or return as called for on teh schedule on M-600.
11. Operating Controls: Two stage heating and two stage cooling on units 8-1/2 tons and over.
12. Roof curb.
13. Control Wiring from T-stat to rooftop unit: Shall be 18ga / 7 conductor, rated for plenum applications.
14. Control Wiring from T-stat to remote sensor: Shall be a separate 18ga / 2 conductor shielded, rated for plenum applications.
PART 3 - EXECUTION
3.1 INSTALLATION
A. Install units level and plumb and firmly anchored.
B. Connect gas piping to burner with pipe same size as gas train inlet, and provide union with sufficient clearance for burner removal and service.
C. Connect to supply and return hydronic piping with shutoff valve and union or flange at each connection.
D. Install ducts to termination in roof mounting frames. Terminate return air duct through roof structure.
E. Connect units to wiring systems and to ground.
END OF SECTION 15732

SECTION 15810 - DUCTS AND ACCESSORIES
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. Submittals: Product Data for fire and smoke dampers.
B. Comply with NFPA 90A for systems serving spaces more than 25,000 cu. ft. in volume or building Types II, IV, and V construction more than 3 stories in height.
C. Comply with NFPA 90B for systems serving spaces in 1 or 2 family dwellings or serving spaces less than 25,000 cu. ft.
D. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," Chapter 3, "Duct System," for range hood ducts, except single family residential usage, unless otherwise indicated.
E. Comply with UL 181 and UL 181A for ducts and closures.
F. Testing, Adjusting, and Balancing Agency Qualifications: AABC certified.
PART 2 - PRODUCTS
2.1 DUCTS
A. Spiral Duct: Spiral Lock Seam, without insulation, G90 galvanized finish, ASTM A-653/924
1. Basis of Design Manufacturers: Lindab SPIROsafe, alternates to the basis of design must be submitted for review.
2. Fittings: Factory produced standing seam construction with internal sealing. Fittings with a major axis of 36" or smaller shall be 20 gauge. Fittings with a major axis of 37"-48" shall be 18 gauge.
B. Galvanized Steel Sheet: Forming steel, ASTM A 653/653M, G90 coating designation.
C. Duct Liner: ASTM C 1071, Type II, with an airstream surface coated with a temperature resistant coating. Thickness: 1-1/2 inch. R-value : 6.3.
1. Adhesive: ASTM C 916, Type I.
2. Mechanical Fasteners: Galvanized steel pin, length as required to penetrate liner plus a 1/8 inch projection maximum into the airstream.
D. Joint and Seam Tape: Comply with UL 181A.
E. Joint and Seam Sealant: Comply with UL 181A.
F. Rectangular Metal Duct Fabrication: Comply with SMACNA's "HVAC Duct Construction Standard" for metal thickness, reinforcing types and intervals, tie rod applications, and joint types and intervals.
2.2 ACCESSORIES
A. Volume-Control Dampers: Factory fabricated volume control dampers, complete with required hardware and accessories. Single blade and multiple opposed blade, standard leakage rating, and suitable for horizontal or vertical applications.
B. Fire Dampers: Factory-fabricated fire dampers, complete with required hardware and accessories. UL labeled according to UL 555, "Fire Dampers".
C. Flexible Connectors: Flame retardant or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.
D. Flexible Ducts: Factory fabricated, insulated, round duct, with an outer jacket enclosing 2 inch thick, glass fiber insulation, R-value: 6.0, around a continuous inner liner.
PART 3 - EXECUTION
3.1 INSTALLATION
A. Duct System Pressure Class: Construct and install each duct system with 2 inch positive and negative duct pressure classifications.
B. Conceal ducts from view in finished and occupied spaces. Except where noted as exposed.
C. Avoid passing through electrical equipment spaces and enclosures.
D. Support and connect metal ducts according to SMACNA's "HVAC Duct Construction Standard".
E. Install duct accessories according to applicable portions of details of construction as shown in SMACNA standards.
F. Install liner on all supply and return duct.
G. Install volume control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.
H. Install fire and smoke dampers according to manufacturer's UL approved written instructions.
I. Install fusible links in fire dampers.
J. Provide saddle taps at tees for exposed ductwork.
3.2 TESTING, ADJUSTING, AND BALANCING
A. The owner will supply an independent balance agent to to balance and adjust the HVAC installation. The balance agent will be responsible for any pulley or belt changes required.
B. The general contactor is to have trained staffed available during the balancing to correct issues noted by the balance agent.
C. The balance agent is to balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities +/- 10%. The hood exhaust system shall be balanced to a tolerance of -0+10% and the make-up air system to a tolerance of -10+0%.
D. The balance agent is to supply a copy of the balance report to the owner, engineer and general contractor for review.
END OF SECTION 15810

SECTION 15855 - DIFFUSERS, REGISTERS, AND GRILLES
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. Submittals: None.
PART 2 - PRODUCTS
2.1 OUTLETS AND INLETS
A. Diffusers:
1. Refer to Grills, Registers, and Diffusers Schedule for equipment schedule
2. Manufacturer: As scheduled (NO SUBSTITUTIONS)
3. Material: As scheduled.
4. Finish: As scheduled.
5. Mounting: As scheduled.
B. Wall and Ceiling Registers:
1. Refer to Grills, Registers, and Diffusers Schedule for equipment schedule
2. Manufacturer: As scheduled (NO SUBSTITUTIONS)
3. Material: As scheduled.
4. Finish: As Scheduled.
5. Mounting: Countersunk screw.
C. Wall and Ceiling Grilles:
6. Refer to Grills, Registers, and Diffusers Schedule for equipment schedule
7. Manufacturer: As scheduled (NO SUBSTITUTIONS)
8. Material: As scheduled.
9. Finish: As Scheduled.
10. Mounting: Countersunk screw or lay in depending location.
PART 3 - EXECUTION
3.1 INSTALLATION
A. Coordinate location and installation with duct installation and installation of other ceiling and wall mounted items.
B. Locate ceiling diffusers, registers, and grilles, as indicated on general construction "reflected ceiling plans." Unless otherwise indicated, locate units in center of acoustical ceiling panels.
END OF SECTION 15855

SECTION 15900 - HVAC INSTRUMENTATION AND CONTROLS
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. Summary: Electric/electronic control sequences for HVAC systems and equipment.
B. Submittals: Shop Drawings detailing operating control sequences of each item of HVAC equipment and system and Product Data for controllers, sensors, operators, control panels, thermostats, humidistats, actuators, control valves and dampers.
C. System Description: Control systems consists of sensors, indicators, actuators, final control elements, interface equipment, and other apparatus, accessories, required to operate mechanical systems according to sequences of operation indicated and specified.
D. Operation Sequence:
1. Unoccupied Cycle: During unoccupied hours, as set by the Energy Management System, the outside air and return dampers for the HVAC unit close, and the thermostat set point resets to 65° F (user adjustable). Upon a call for heating, the HVAC unit energizes.
2. Occupied Cycle: During occupied hours, as set by the Energy Management System, the outside air and return dampers open to a minimum set point. The furnace and exhaust fans run continuously. Upon a call for heating, the furnace heating energizes. Upon a call for cooling, the condensing unit energizes.
PART 2 - PRODUCTS (Not Applicable)
PART 3 - EXECUTION
3.1 INSTALLATION
A. Install control wiring concealed, except in mechanical rooms, and according to requirements specified in Division 16 Sections.
END OF SECTION 15900

2024-DB#2/P#1-2

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REV.	DATE	DESCRIPTION
	07.14.2023	PERMIT SET
2	02.16.2024	BID SET
3	03.25.2024	CONSTRUCTION SET

PROFESSIONAL SEAL

Michael L. Wilson, P.E.
NJ License #30077

PROFESSIONAL IN CHARGE: Michael L. Wilson, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
21008

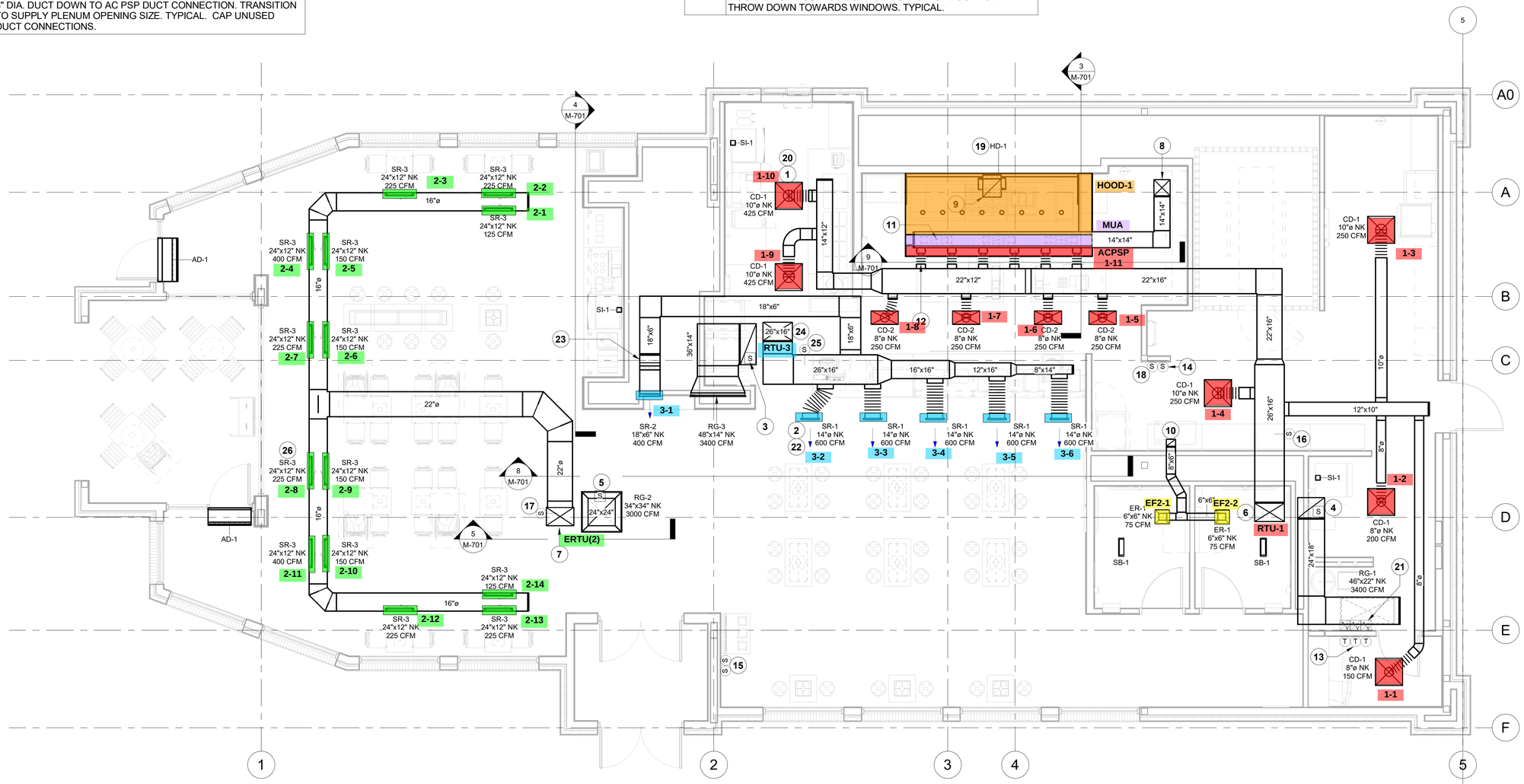
SHEET TITLE:
MECHANICAL SPECIFICATIONS, SYMBOLS, & GENERAL INFORMATION

SHEET NUMBER:
M-010

KEYNOTES FOR THIS SHEET 1 , 2 ETC.	
1	SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING MOUNTED EQUIPMENT LOCATION. TYPICAL.
2	PAINT DUCTWORK VISIBLE THROUGH DINING ROOM SUPPLY REGISTERS BLACK. TYPICAL.
3	36/14 DUCT UP FOR TRANSITION TO RTU-3 RETURN CONNECTION IN ROOF CURB. RTU-3 SHALL HAVE AN INTEGRAL SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM. INTERLOCK SMOKE DETECTOR TO RTU-3 OPERATION.
4	24/18 DUCT UP FOR TRANSITION TO (E) RTU-1 RETURN CONNECTION IN ROOF CURB. REPAIR & REFURBISH (E) DUCT SMOKE DETECTOR, OR PROVIDE (N) SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM. VERIFY (E) CONDITIONS IN FIELD. INTERLOCK SMOKE DETECTOR TO (E) RTU-1 OPERATION.
5	24/24 DUCT UP FOR TRANSITION TO (E) RTU-2 RETURN CONNECTION IN ROOF CURB. REPAIR & REFURBISH (E) DUCT SMOKE DETECTOR, OR PROVIDE (N) SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM. VERIFY (E) CONDITIONS IN FIELD. INTERLOCK SMOKE DETECTOR TO (E) RTU-2 OPERATION.
6	26/16 DUCT UP FROM BUILDING SUPPLY THROUGH ROOF. TRANSITION TO (E) RTU-1 SUPPLY CONNECTION IN ROOF CURB.
7	24/16 DUCT UP FROM BUILDING SUPPLY THROUGH ROOF. TRANSITION TO (E) RTU-2 SUPPLY CONNECTION IN ROOF CURB.
8	14/14 DUCT UP THROUGH ROOF. TRANSITION TO MAU-1 SUPPLY CONNECTION IN ROOF CURB.
9	16/16 DUCT UP FROM HOOD THROUGH ROOF TO EF-1 COMPLIANT WITH NFPA 96. PROVIDE RADIUSED ELBOWS WITH AN INSIDE RADIUS OF 0.5W AT ELBOWS IN GREASE DUCT.
10	8/6 DUCT UP THROUGH ROOF TO EF-2. SEE DETAIL 6/M-701.
11	28/6 DUCT DOWN TO MAKEUP AIR PSP DUCT CONNECTION. TRANSITION TO SUPPLY PLENUM OPENING SIZE. TYPICAL FOR 3.
12	8" DIA. DUCT DOWN TO AC PSP DUCT CONNECTION. TRANSITION TO SUPPLY PLENUM OPENING SIZE. TYPICAL. CAP UNUSED DUCT CONNECTIONS.

KEYNOTES FOR THIS SHEET 1 , 2 ETC.	
13	INSTALL SINGLE-GANG VERTICAL J-BOX FOR GRIDPOINT THERMOSTATS FURNISHED BY TEMS FOR (E) RTU-1, (E) RTU-3 AND RTU-3 AT THIS LOCATION AT 48" AFF. COORDINATE WITH ELECTRICAL SWITCHING IN THIS AREA. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710. LABEL THERMOSTAT WITH CORRESPONDING UNIT.
14 (3)	INSTALL GRIDPOINT ZONE SENSOR MODULE,FURNISHED BY TEMS FOR (E) RTU-1 AT THIS LOCATION AT 72" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710. LABEL SENSOR WITH CORRESPONDING UNIT.
15	INSTALL GRIDPOINT ZONE SENSOR MODULE FURNISHED BY TEMS FOR (E) RTU-2 & RTU-3 AT THIS LOCATION AT 66" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710. LABEL SENSOR WITH CORRESPONDING UNIT.
16	INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR (E) RTU-1 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
17	INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR (E) RTU-2 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
18 (3)	INSTALL REMOTE TEMPERATURE SENSOR FOR HOOD HD-1 AT THIS LOCATION AT 72" AFF. COORDINATE LOCATION WITH EQUIPMENT. PROVIDE (2) #18 G. THERMISTOR CABLE FROM TEMPERATURE SENSOR TO HOOD CONTROL PANEL. LABEL SENSOR "HD-1".

KEYNOTES FOR THIS SHEET 1 , 2 ETC.	
19	INSTALL KITCHEN HOOD, HD-1. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL HOOD ACCORDING TO THE REQUIREMENTS OF ITS LISTING, IN COMPLIANCE WITH NFPA 96, THE BUILDING CODE, AND AUTHORITIES HAVING JURISDICTION. HOOD SHALL HAVE AN INTEGRAL DUCT COLLAR TEMPERATURE SENSOR TO AUTOMATICALLY ENERGIZE THE EXHAUST AND MAKEUP AIR FANS IF COOKING TEMPERATURES ARE DETECTED. EXHAUST DUCT SYSTEM TO BE WELDED OR FACTORY-MANUFACTURED WATER AND AIR TIGHT. INSTALL CLEANOUTS PER CODE AND AS SHOWN. INSTALL HOOD PER DETAILS 4/M-700, AND 2,3 AND 9/M-701. CHIPOTLE WILL PROVIDE AN INDEPENDENT TESTING AGENCY FOR TESTING THE INTEGRITY OF THE GREASE DUCT SYSTEM.
20	PROVIDE SUPPLY DIFFUSER CONNECTION TO SUPPLY SYSTEM PER DETAIL 6/M-700. TYPICAL.
21	PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET. WIRE A UNIT BACK TO EACH SMOKE DETECTOR. MOUNT UNIT 60" AFF. LABEL ANNUNCIATOR WITH CORRESPONDING UNIT. TYPICAL.
22	ADJUST SUPPLY REGISTERS SO THAT SUPPLY AIR HITS WALL ON OPPOSITE SIDE OF ROOM AT APPROXIMATELY 7' AFF WITH NO DRAFTS FELT IN THE DINING ROOM.
23	OFFSET DUCT AS REQUIRED TO HEIGHT OF SR-2.
24	26/16 DUCT UP FROM BUILDING SUPPLY THROUGH ROOF. TRANSITION TO RTU-3 SUPPLY CONNECTION IN ROOF CURB.
25	INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR RTU-3 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E710.
26	DIFFUSERS FACING WINDOWS / EXTERIOR OF DINING TO BE MOUNTED ON DUCT 45 DEG FROM BOTTOM OF DUCT FOR THROW DOWN TOWARDS WINDOWS. TYPICAL.



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

2024-DB#2/P#1-2

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DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
21008

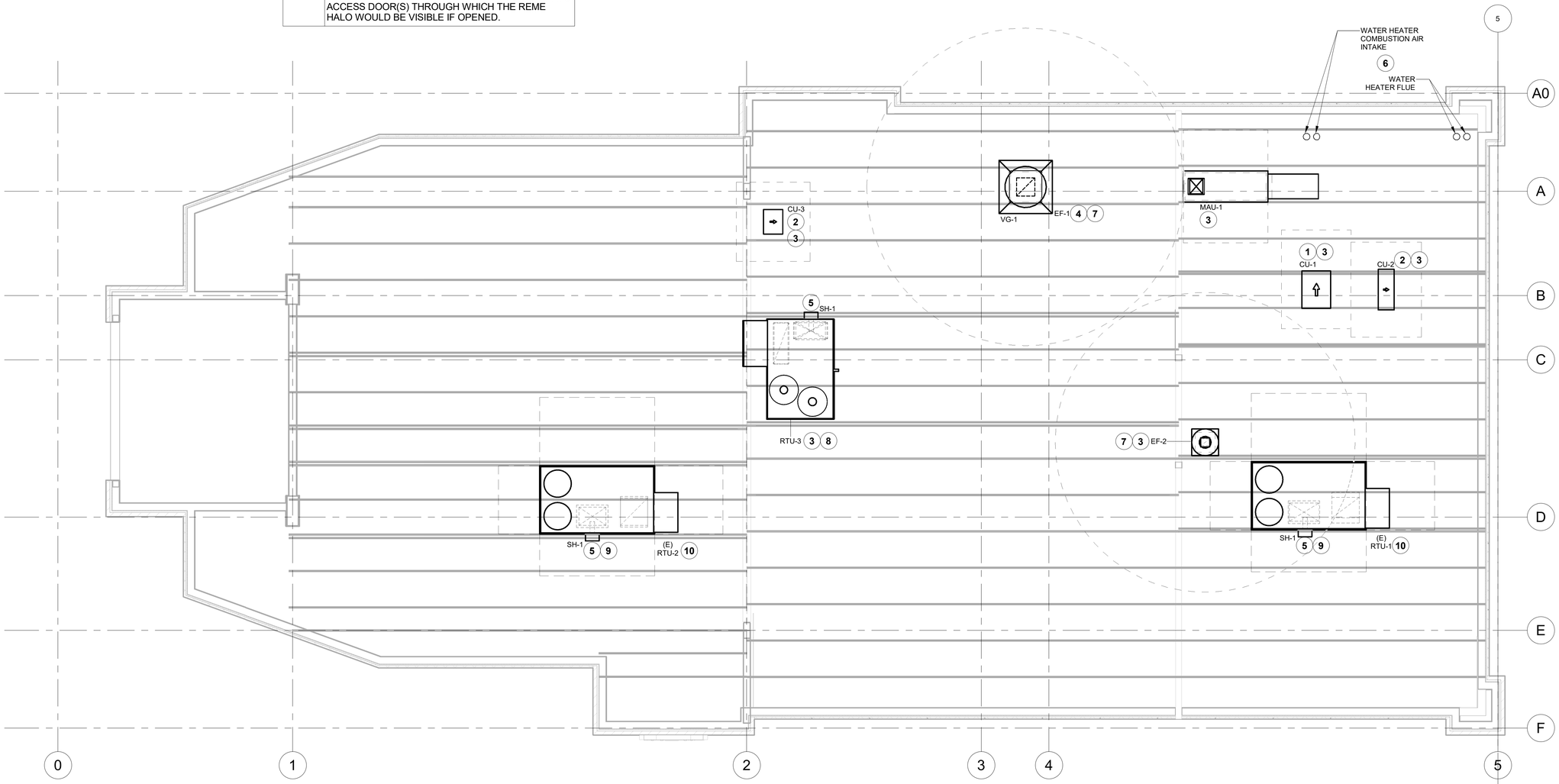
SHEET TITLE:
HVAC PLAN

SHEET NUMBER:
M-100

KEYNOTES FOR THIS SHEET 1 , 2 ETC.	
1	INSTALL REMOTE CONDENSING UNIT FOR WALK-IN COOLER ON ROOF AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, LOW AMBIENT CONTROLS, AND WEATHERPROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. SEAL PIPING PENETRATIONS THROUGH ROOF. INSTALLATION SHALL COMPLY WITH ASHRAE/ANSI STANDARD 15. INSTALL THE REFRIGERANT LINE SET UNDER THE ROOF DECK TO WITHIN 3'-0" OF THE CONDENSING UNIT. CUT 2-1/2" HOLE IN WALK-IN COOLER ROOF FOR REFRIGERANT LINE SET AND SEAL PER THE COOLER MANUFACTURER'S INSTALLATION INSTRUCTIONS AFTER LINE SET IS INSTALLED.

KEYNOTES FOR THIS SHEET 1 , 2 ETC.	
2	INSTALL REMOTE CONDENSER FOR ICE MACHINE ON ROOF. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, LOW AMBIENT CONTROLS AND WEATHERPROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. SEAL PIPING PENETRATIONS THROUGH ROOF. INSTALLATION SHALL COMPLY WITH ASHRAE/ANSI STANDARD 15. INSTALL THE REFRIGERANT LINE SET UNDER THE ROOF DECK TO WITHIN 3'-0" OF THE REMOTE CONDENSER. IF REFRIGERANT PIPING TO ICE MACHINE IS EXPOSED TO PUBLIC VIEW, CONCEAL WITHIN A STAINLESS STEEL SHROUD AS SHOWN IN THE ARCHITECTURAL DRAWINGS.
3	INSTALL ROOFTOP EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
4	INSTALL EXHAUST FAN EF-1 PER DETAIL 8/M-700 AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL GREASE VIROGUARD SYSTEM FURNISHED BY CHIPOTLE ON EXHAUST FAN EF-1.
5	INSTALL REME HALO AIR PURIFIER FURNISHED BY TUV IN RTU PER DETAIL 5/M-700. SEE ELECTRICAL DRAWINGS FOR POWER CONNECTION INFORMATION. INSTALL UV WARNING STICKERS ON FACE OF ENCLOSURE PER DETAIL AND ON ANY RTU ACCESS DOOR(S) THROUGH WHICH THE REME HALO WOULD BE VISIBLE IF OPENED.

KEYNOTES FOR THIS SHEET 1 , 2 ETC.	
6	MAINTAIN 10' CLEARANCE BETWEEN WATER HEATER FLUE TERMINATION AND OUTSIDE AIR INTAKES. MAINTAIN 10' CLEARANCE BETWEEN WATER HEATER COMBUSTION AIR INTAKE AND EXHAUST FAN EF-1 DISCHARGE. SEE PLUMBING DRAWINGS FOR MORE INFORMATION ON WATER HEATER FLUE AND COMBUSTION AIR TERMINATIONS.
7	10'-0" MIN. CLEARANCE FROM OUTER EDGE OF EXHAUST FAN TO FRESH AIR INTAKES. TYPICAL.
8	PROVIDE (N) RTU IN LOCATION OF (E) TO BE REMOVED RTU. VERIFY (E) CURB DIMENSIONS & NOTIFY CARRIER TO DETERMINE IF CURB ADAPTOR IS REQUIRED. VERIFY (E) RTU LOCATION & ASSOCIATED ROOF OPENING(S) IN FIELD.
9	CONFIRM LOCATION OF REME HALO AIR PURIFIER INSTALLATION WITH LENNOX PRIOR TO ROUGH-IN, AS NOTED IN DETAIL 5/M-700,
10	(E) RTU TO REMAIN. REPAIR & REFURBISH AS NECESSARY TO ENSURE PROPER WORKING ORDER. VERIFY (E) RTU LOCATION & ASSOCIATED ROOF OPENING(S) IN FIELD.



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

2024-DB#2/P#1-2

Consultant:

Polaris Consulting Engineers, PC
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PROFESSIONAL SEAL

Michael L. Wilson, P.E.
NJ License #30077

PROFESSIONAL IN CHARGE: Michael L. Wilson, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
21008

SHEET TITLE:
HVAC ROOF PLAN

SHEET NUMBER:
M-101

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

FOR QUESTIONS, CALL THE
Highwoods Group
REGION 40
PHONE: (919) 875 - 0420
EMAIL: reg40@captiveaire.com

PATENT NUMBERS

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

HOOD INFORMATION – JOB#6017478

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	MUA CFM	AC CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1		5424 ND-2-ACPSP-F	CAPTIVEAIRE	12' 9"	600 DEG	I	HEAVY	200	2550	10"	24"	4"		2550	1530	-0.966"	1300	696	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	SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLO FILTER	9	16"	16"	85% SEE FILTER SPEC	8	L55 SERIES E26	NO	RIGHT	12"x54"x24"	TANK FS	4.0/4.0	SC-311110MA	1 LIGHT 1 FAN	YES	1192 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 10.00" HIGH FRONT, LEFT, RIGHT.
		INSULATION FOR BACK OF HOOD.
		RISER SENSOR INSTALL 6IN PLEN.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		FULL DIMENSION HANGING BRACKET - FRONT.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1		Front	165"	19"	6"	MUA	6"	28"		432	0.127"
						MUA	6"	28"		432	0.127"
						MUA	6"	28"		432	0.127"
						AC			8"	116	0.043"
						AC			8"	116	0.043"
						AC			8"	116	0.043"
						AC			8"	116	0.043"
						AC			8"	116	0.043"
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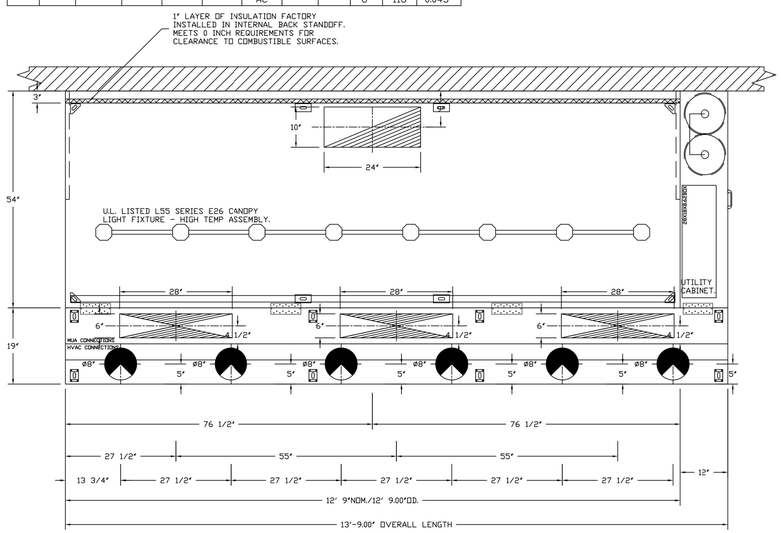
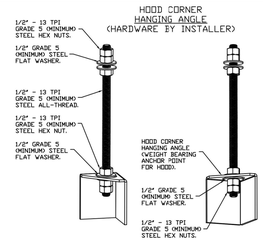


PLAN VIEW – HOOD #1
12' 9.00" LONG 5424ND-2-ACPSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION



ASSEMBLY INSTRUCTIONS

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

SPECIFICATION: CAPTRATE• GREASE-STOP• SOLO FILTER

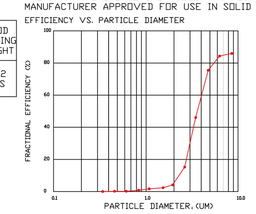
THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

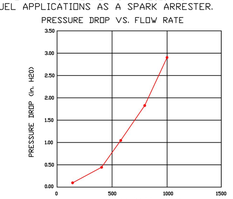
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

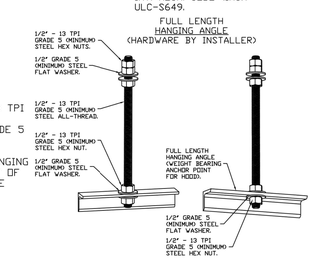
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.





CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH.
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.



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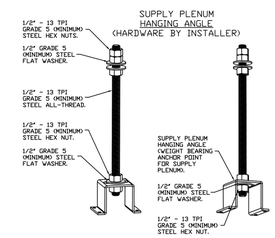

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REVISIONS

DESCRIPTION	DATE:

CAPTIVEAIRE
www.captiveaire.com
Highwoods Group
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CHIPOTLE HAMILTON NJ #4064
TRENTON, NJ, 08691

DATE: 11/21/2023
DWG.#: 6017478
DRAWN BY: JMB-40
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 1

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PROFESSIONAL SEAL

Michael L. Wilson, P.E.
NJ License #30077

PROFESSIONAL IN CHARGE: Michael L. Wilson, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

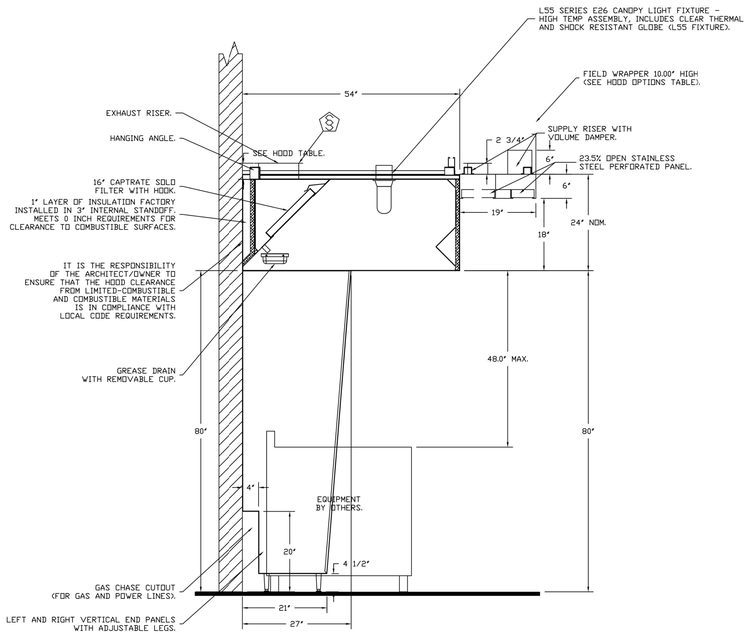
PROJECT NUMBER:
21008

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-401

2024-DB#2/P#1-2

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY



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

REVISIONS

	DESCRIPTION	DATE:
△		
△		
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TRENTON, NJ, 08691

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DWG.#: 6017478

DRAWN BY: JMB-40

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 2

2024-DB#2/P#1-2

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CHECKED BY: AJS

PROJECT NUMBER:
21008

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-402

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

FIRE SYSTEM INFORMATION – JOB#6017478

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION	
						SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0	40	32	FIRE CABINET RIGHT	RIGHT, HOOD :

GAS VALVE(S)

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

FIRE SYSTEM PARTS LIST KEY

FIRE SYSTEM NO	TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1		0 – 0 – TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
		0 – 0 – 12-F28021-32144-QT-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO, CLOSE ON TEMP RISE AT 360°F.	1	0
		0 – 0 – 32-00002 QUIK SEAL – 1/2" (UL).	1	0
		0 – 0 – 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	2	0
		0 – 0 – 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.	1	0
		0 – 0 – 79525 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.	1	0
		0 – 0 – 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.	2	0
		0 – 0 – 87-120042-001 SECONDARY ACTUATOR VALVE (SVA) – SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-120045-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5" BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-300001-001 TANK – PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	2	0
		0 – 0 – 87-300030-001 PRIMARY ACTUATOR KIT (PAK) – ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
		0 – 0 – 87-300152-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	8	0
		0 – 0 – 9055455PC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LD.	7	0
		0 – 0 – 9097200PC PRO PRESS PC611 1/2 PRESS TEE LD.	7	0
		0 – 0 – 98694A115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	4	0
		0 – 0 – A0034332 JUNCTION BOX FOR MANUAL PULL STATION. 1.5" DEEP BACK BOX, RED COLOR.	1	0
		0 – 0 – A31484 1/4" NPT SCHRADER VALVE AND CAP, JB INDUSTRIES. 1/4" FLARE X 1/4" MPT HALF UNION. USED ON TANK SERVICE PORT.	1	0
		0 – 0 – B1145 3/8" BLACK IRON 90 ELL.	3	0
		0 – 0 – DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – TANK STRAP TANK STRAP – USED FOR TANK FIRE SUPPRESSION.	6	0
		0 – 0 – TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
		0 – 0 – WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	2	0
		16 – 16 – 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	8	0
		16 – 16 – DL-F NOZZLE – TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	8	0
		26 – 26 – QSA-3/8 QUIK SEAL – 3/8" (UL).	8	0
		34 – 34 – A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT. RED COLOR.	1	0

REVISIONS

DESCRIPTION	DATE:

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CHIPOTLE HAMILTON NJ #4064

TRENTON, NJ, 08691

DATE: 11/21/2023

DWG.#: 6017478

DRAWN BY: JMB-40

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 3

Consultant:

Polaris Consulting Engineers, PC

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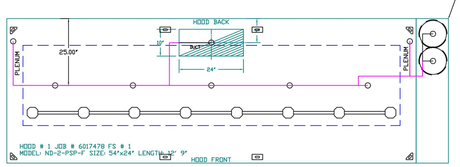
SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-403

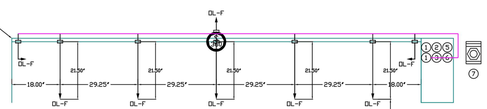
2024-DB#2/P#1-2

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

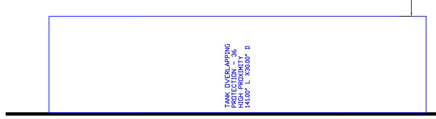
SYSTEM REQUIRES A MINIMUM OF 7 FT OF EQUIVALENT PIPE LENGTH BETWEEN TANK AND FIRST DETECTION DEVICE OR FIRST NOZZLE. EACH 90 DEGREE ELBOW ADDS 10 FT OF EQUIVALENT LENGTH. SEE MANUAL FOR DETAILS



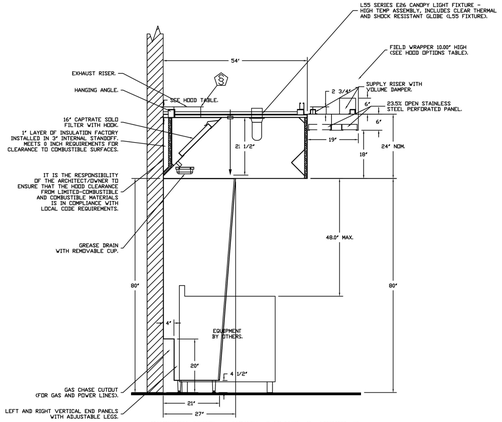
FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.



NOZZLE HEIGHT 35-50" FROM COOKING SURFACE. (45.25")



L55 SERIES E26 CANOPY LIGHT FIXTURE - HIGH TEMP ASSEMBLY. INCLUDES CLEAR THERMAL AND SHOCK RESISTANT GLOBE (L55 FIXTURE).



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

NOTES
- FIELD PIPE DROPS AS SHOWN
  PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.

- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS

JOB #: 601747B.
JOB NAME: CHIPOTLE HAMILTON NJ #4064.

SYSTEM SIZE: TANK-SP-2 DESIGN FP: 32. MAXIMUM FP: 40.
HOOD # 1 12' 9.00' LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 10" x 24".
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

LEGEND - FIRE CABINET TANK SYSTEM

1 4 GALLON TANK.
2 PRIMARY ACTUATOR RELEASE.
3 SECONDARY ACTUATOR RELEASE.
4 PRESSURE SUPERVISION SWITCH.
5 PRIMARY HOSE ASSEMBLY.
6 SECONDARY HOSE ASSEMBLY.
7 REMOTE MANUAL ACTUATION DEVICE.

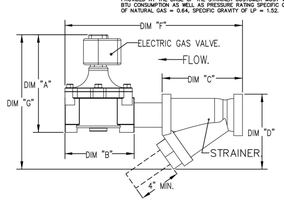
INCLUDES: FIELD INSTALLATION AND HOOKUP DURING NORMAL BUSINESS HOURS BY CERTIFIED INSTALLERS ONLY IN THE LOCATION NOTED ABOVE, TWO SITE VISITS ONLY (ONE VISIT TO SET PULL STATION & SYSTEM HOOKUP AND ONE VISIT FOR ONE TEST); ADDITIONAL VISITS WILL RESULT IN ADDITIONAL CHARGES, ONE MECHANICAL OR ELECTRICAL GAS VALVE PER SYSTEM AT A MAXIMUM SIZE OF 2", PERMIT, AND SYSTEM TEST.
EXCLUDES: UNION LABOR & PREVAILING WAGE (LABOR & WAGES WILL BE ADDED IF APPLICABLE), GAS VALVE INSTALLATION, ELECTRICAL HOOKUP AND CONNECTIONS, HANGING OF FIRE CABINET, SHUNT TRIP, HANDHELD EXTINGUISHER(S), ON-SITE RE-PIPING DUE TO EQUIPMENT LAYOUT CHANGES.

GAS VALVES AND STRAINERS

	GAS VALVE SIZING						GAS VALVE DIMENSIONS						INSTALLATION	PART NUMBERS		
	TYPE	SIZE	VOLTAGE	MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "F"	DIM "G"	MOUNTING ORIENTATION	GAS VALVE PART NUMBER	STRAINER PART NUMBER	GAS VALVE/STRAINER KIT
GAS VALVE FOR FS#1	ELECTRICAL	2"	24 VDC	0 PSI (0 IN.W.C.)	5 PSI (138 IN.W.C.)	2,940,500 BTU/HR	1,908,048 BTU/HR	7-5/8"	6-3/8"	7-1/4"	7-13-16"	15-5/8"	13-15/16"	HORIZONTAL	8214280-24VDC	4417K68	(SC)ECVC2-24

ALL GAS VALVES/STRAINERS
PROPER CLEARANCE MUST BE PROVIDED IN ORDER TO SERVICE THE VALVE AND STRAINER. A 4" MINIMUM CLEARANCE IS REQUIRED. PROVIDED AT THE BASE OF THE STRAINER CUSTOMER MUST VERIFY BTU CONSUMPTION AS WELL AS PRESSURE RATING SPECIFIC GRAVITY OF NATURAL GAS = 0.64, SPECIFIC GRAVITY OF LP = 1.52.

CALCULATIONS
TO CALCULATE GAS FLOW FOR OTHER THAN 1 IN.W.C. PRESSURE DROP NEW BTU/HR = (BTU/HR AT 1 IN.W.C. PRESSURE DROP) X (NEW PRESSURE DROP)^0.5 TO ADJUST GAS FLOW FOR OTHER THAN 0.64 SPECIFIC GRAVITY NEW BTU/HR = (BTU/HR AT 0.64) X (0.64 / NEW SPECIFIC GRAVITY)^0.5



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CHIPOTLE HAMILTON NJ #4064
TRENTON, NJ, 08691

DATE: 11/21/2023
DWG.#: 6017478
DRAWN BY: JMB-40
SCALE: 1/2" = 1'-0"
MASTER DRAWING
SHEET NO. 4

Consultant:

Polaris Consulting Engineers, PC
214 W. Main Street, Suite 208
Moorestown, NJ 08057
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NJ License #30077

PROFESSIONAL IN CHARGE: Michael L. Wilson, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
21008

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-404

2024-DB#2/P#1-2

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

EXHAUST FAN INFORMATION – JOB#6017478

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	EF-1	1	DU180HFA	CAPTIVEAIRE	2550	1.450	1221	ODP,PREMIUM	2.000	1.2790	3	208	8.3	589 FPM	183	16.7
2	EF-2	1	DR12HFA	CAPTIVEAIRE	150	0.600	1282	TEAO-ECM	0.250	0.0930	1	115	2.9		50	6.1

MUA FAN INFORMATION – JOB#6017478

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
3	MAU-1	1	A1-D.250-15D	15MF-1-MOD	A1-D.250	1000	1300	0.500	1546	ODP,PREMIUM	1.000	0.5670	3	208	3.1	3.9A	15A	495	12.1

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
3	MAU-1	90289	83066	60°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

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

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF-1	1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
2	EF-2	1	I 12-BDD DAMPER
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY
3	MAU-1	1	SIZE 1 TEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC
		1	SHIP LOOSE GAS STRAINER 3/4"
		1	MOTORIZED BACKDRAFT DAMPER FOR A1-D HOUSING - MEETS AMCA CLASS 1A RATING
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

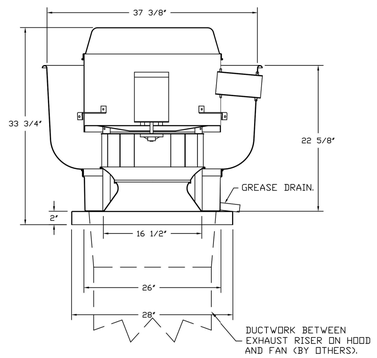
FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	EF-1	YES						
2	EF-2		YES					
3	MAU-1						YES	

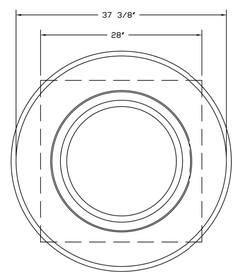
CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	EF-1	37 LBS	CURB	26.500"W X 26.500"L X 20.000"H VENTED.
2	# 2	EF-2	31 LBS	CURB	17.500"W X 17.500"L X 26.000"H.
3	# 3	MAU-1	65 LBS	CURB	21.000"W X 71.000"L X 20.000"H INSULATED.

HMI SCHEDULE

UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS
FAN #3	HMI #1 - UNIT HMI #1	MOUNTED IN UNIT	NOT AVERAGED	55
FAN #3	HMI #1 - SPACE HMI #0	MOUNTED IN UNIT	NOT AVERAGED	55





TOP VIEW

FEATURES:

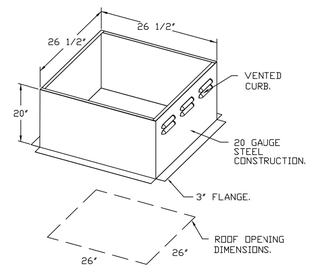
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT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



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CHIPOTLE HAMILTON NJ #4064
TRENTON, NJ, 08691

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DWG.#: 6017478
DRAWN BY: JMB-40
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 5

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CHECKED BY: AJS

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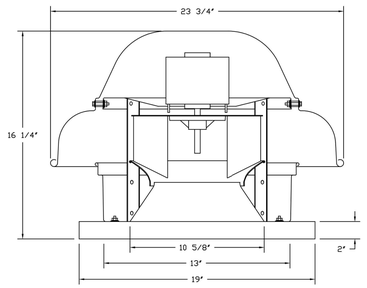
CAPTIVEAIRE DRAWINGS

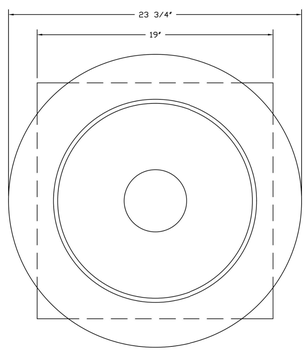
SHEET NUMBER:
M-405

2024-DB#2/P#1-2

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

FAN #2 DR12HFA - EXHAUST FAN (EF-2)





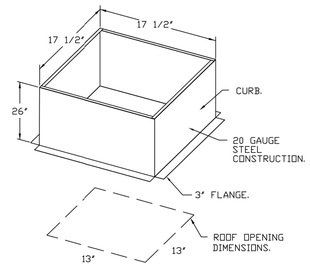
TOP VIEW

FEATURES:

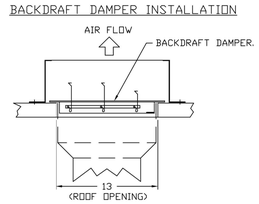
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- SAFETY DISCONNECT.
- STANDARD BIRD SCREEN.
- SPEED CONTROL.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).

OPTIONS

- 1 12-BDD DAMPER.
- ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL.
-RTC- (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.



BACKDRAFT DAMPER INSTALLATION



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DRAWN BY: JMB-40

SCALE: 3/4" = 1'-0"

MASTER DRAWING

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CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-406

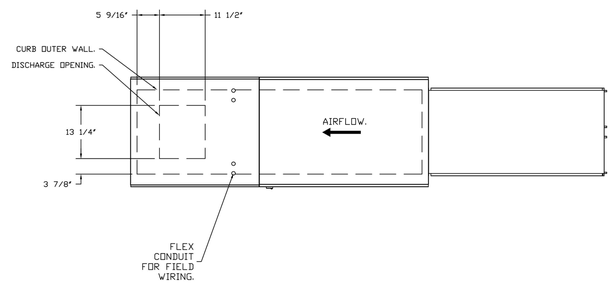
HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

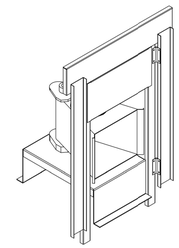
FAN #3 A1-D250-15D - HEATER (MAU-1)
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 1 DIRECT DRIVE AHUS.
5. GAS PRESSURE GAUGE, 0-25", 2.5" DIAMETER, 1/4" THREAD SIZE.
6. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE.
7. SHIP LOOSE GAS STRAINER. TO BE INSTALLED UPSTREAM OF UNIT CONNECTION. 3/4" CONNECTION.
8. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, TF8120S ACTUATOR INCLUDED.
9. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.
10. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
11. 2 YEAR PARTS WARRANTY.

*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 14" x 14".

SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 15°F. TEMP. RISE = 60°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY.
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 83331.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 90577.
OUTPUT BTUs AT ALTITUDE OF 88 FT. = 83066.
INPUT BTUs AT ALTITUDE OF 88 FT. = 90289.





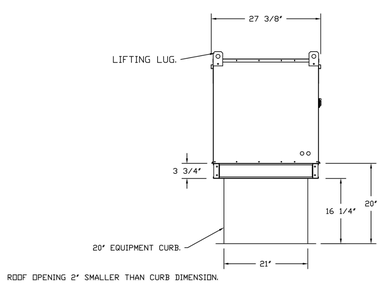
DIRECT FIRED (DF) PROFILE PLATE ASSEMBLY

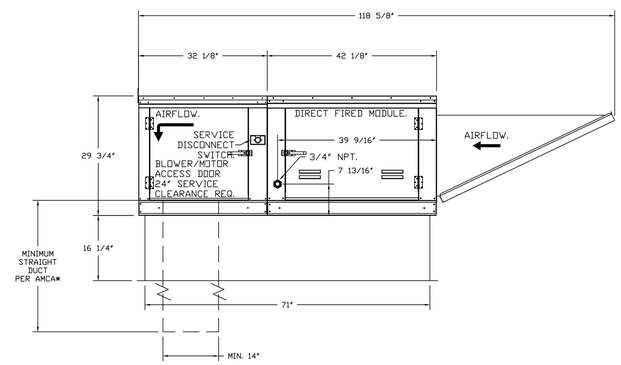
DIRECT FIRED PROFILE PLATE SPECIFICATIONS:
DESCRIPTION:
DIRECT FIRED BURNERS SHALL HAVE PATENTED (US PATENT NO: US6629523B2), SELF-ADJUSTING PROFILE PLATES DESIGNED TO ENSURE PROPER AIR VELOCITY AND PRESSURE DROP ACROSS THE BURNER. PROFILE PLATES SHALL ALLOW BURNERS TO ACHIEVE CLEAN COMBUSTION BY LIMITING BY-PRODUCT LEVELS TO A MAXIMUM OF 5PPM OF CARBON MONOXIDE (CO), AND 0.5PPM OF NITROGEN DIOXIDE (NO2)DIRECT FIRED UNITS SHALL BE CONFIGURED WITH THE BLOWER MOUNTED DOWNSTREAM OF THE BURNER. THIS ARRANGEMENT WILL ENSURE A CONSISTENT AIRFLOW, REGARDLESS OF INLET AIR TEMPERATURE.

APPLICATION:
SPRING-LOADED BURNER PROFILE PLATES ARE ENGINEERED TO AUTOMATICALLY REACT TO THE MOMENTUM OF A FRESH AIR STREAM, WITHOUT THE NEED FOR ANY MOTORS OR ACTUATORS TO MECHANICALLY ADJUST THEM. WITH THIS FEATURE, ALL DF UNITS ARE DESIGNED FOR DEMAND CONTROL VENTILATION (DCV) REQUIREMENTS.

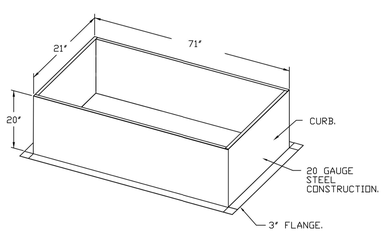
CERTIFICATIONS:
ALL PROFILE PLATE ASSEMBLIES SHALL BE INCLUDED IN THE DF UNIT'S ETL LISTING AND COMPLY WITH COMBINED SAFETY STANDARDS ANSI Z83.4 AND CSA 3.7 (NON-RECIRCULATING DF HEATERS) AND ANSI Z83.18 (RECIRCULATING DF HEATERS).

GENERAL CONSTRUCTION:
-PROFILE PLATES SHALL BE FORMED FROM G90 GALVANIZED STEEL.
-PROFILE PLATES SHALL VARY IN SIZE PER UNIT.
-PROFILE PLATES SHALL BE MOUNTED ALONG THE SAME PLANE AS THE DISCHARGE OF THE BURNER.
-DESIGN SHALL INCORPORATE PROPERLY TORQUED, PERMANENTLY MOUNTED SPRING HINGES.
-SPRING HINGES SHALL BE MADE FROM PLATED STEEL.





OPTIONS:
- FULL BOTTOM CORNERS.



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REV.	DATE	DESCRIPTION
	07.14.2023	PERMIT SET
2	02.16.2024	BID SET
3	03.25.2024	CONSTRUCTION SET

PROFESSIONAL SEAL

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NJ License #30077

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DRAWN BY: PCE
CHECKED BY: AJS

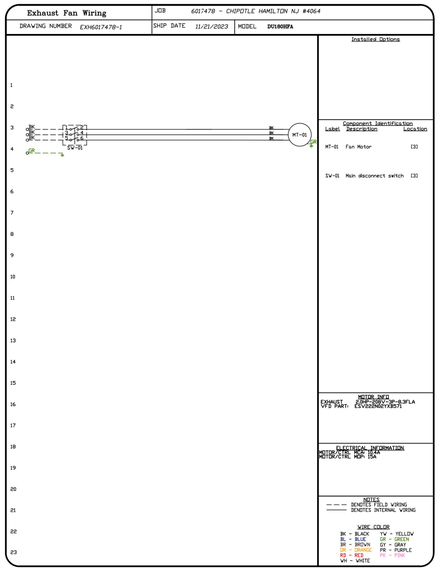
PROJECT NUMBER:
21008

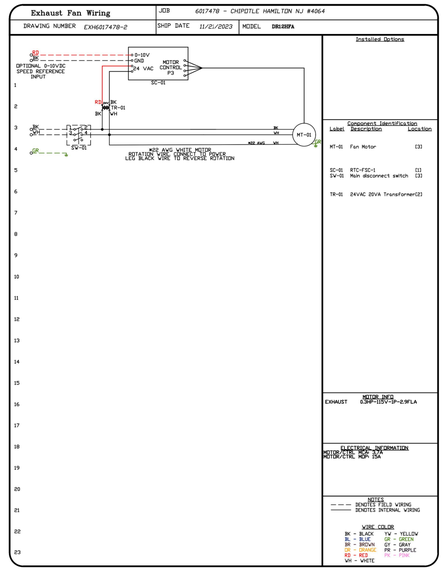
SHEET TITLE:
CAPTIVEAIRE DRAWINGS

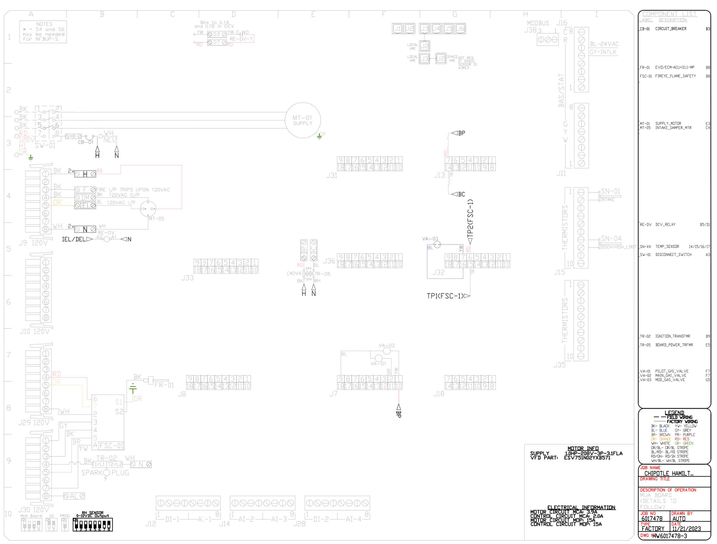
SHEET NUMBER:
M-407

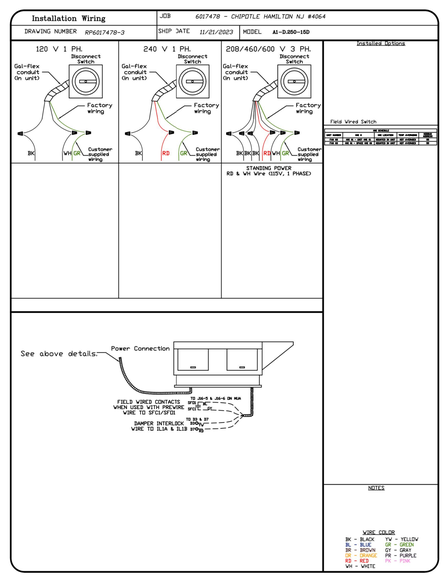
2024-DB#2/P#1-2

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY









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CHIPOTLE HAMILTON NJ #4064
TRENTON, NJ, 08691

DATE: 11/21/2023
DWG.#: 6017478
DRAWN BY: JMB-40
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 8

Consultant:

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CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-408

2024-DB#2/P#1-2

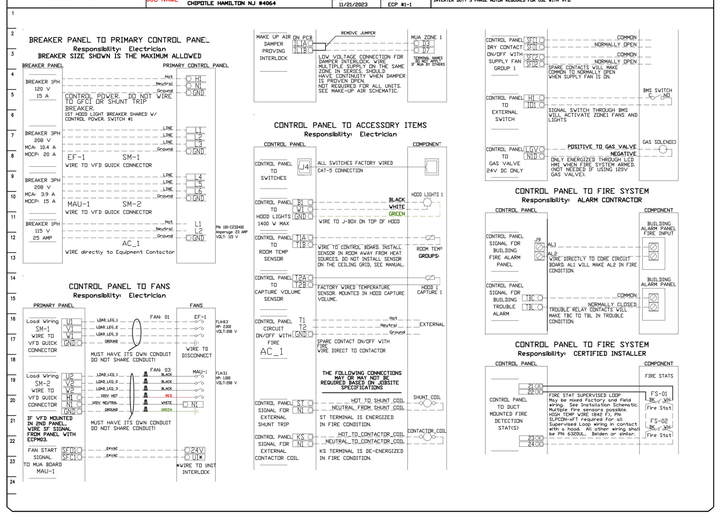
HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

ELECTRICAL PACKAGE — JOB#6017478

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1		SC-311110MA	UTILITY CABINET RIGHT	UTILITY CABINET RIGHT HOOD # 1	1 LIGHT 1 FAN	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	EF-1	EXHAUST	3	2.000	208	8.3
							MAU-1	SUPPLY	3	1.000	208	3.1

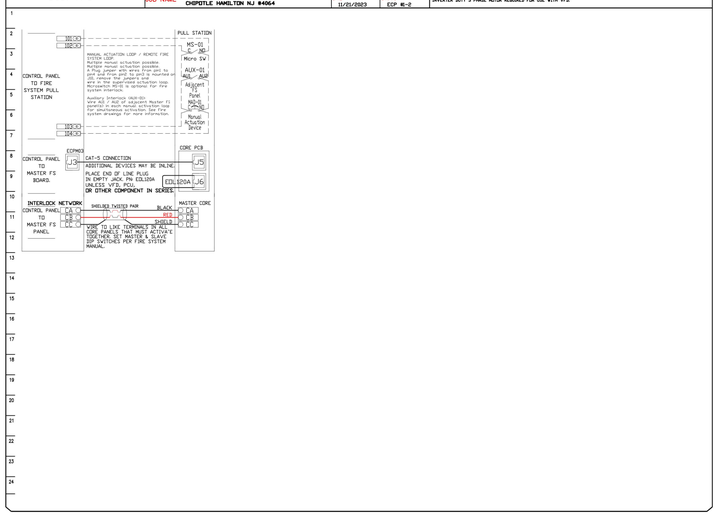
JOB NO 6017478 | MODEL NUMBER SC-311110MA | JOB NAME CHIPOTLE HAMILTON NJ #4064 | DRAWN BY | DATE 11/21/2023 | SCHEMATIC TYPE INSTALL | DWG NO ECP #1-1

DESCRIPTION OF OPERATION:
2 Phase air control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Relay On/Off with Supply Fan, Fanzil On/Off thermostatically Controlled, Room temperature sensor shipped loose for field installation. INVERTER duty 3 PHASE MOTOR REQUIRED FOR USE with VFD



JOB NO 6017478 | MODEL NUMBER SC-311110MA | JOB NAME CHIPOTLE HAMILTON NJ #4064 | DRAWN BY | DATE 11/21/2023 | SCHEMATIC TYPE INSTALL | DWG NO ECP #E-2

DESCRIPTION OF OPERATION:
2 Phase air control for 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Relay On/Off with Supply Fan, Fanzil On/Off thermostatically Controlled, Room temperature sensor shipped loose for field installation. INVERTER duty 3 PHASE MOTOR REQUIRED FOR USE with VFD



JOB NO 6017478 | MODEL NUMBER SC-311110MA | JOB NAME CHIPOTLE HAMILTON NJ #4064 | DRAWN BY | DATE 11/21/2023 | SCHEMATIC TYPE INSTALL | DWG NO ECP #E-3

DESCRIPTION OF OPERATION:
Fire System #1 TANK FS - 48/48

TANK PROTECTION ELECTRICAL DETAIL

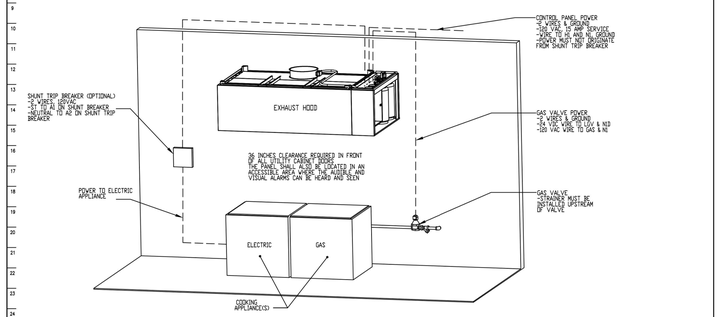
02/10/2021 Rev. 2

ELECTRICIAN
1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC
2. WIRE GAS VALVE 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 & N	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 & N(0 OF 24 VDC) (A5 & N1 OF 350 VAC)	RED/RED/GREEN	24 VDC OR 350 VAC	< 10 AMPS	IF 24 VDC - 2 WIRES & GROUND (A5 TO RED, LGV TO RED, AND GREEN TO GROUND IF 350 VAC - 2 WIRES & GROUND (A5 TO RED, N1 TO RED, AND GREEN TO GROUND



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

JOB NO 6017478 | MODEL NUMBER SC-311110MA | JOB NAME CHIPOTLE HAMILTON NJ #4064 | DRAWN BY | DATE 11/21/2023 | SCHEMATIC TYPE INSTALL | DWG NO ECP #E-4

DESCRIPTION OF OPERATION:
Fire System #1 TANK FS - 48/48

TANK PROTECTION LOW-VOLTAGE DETAIL

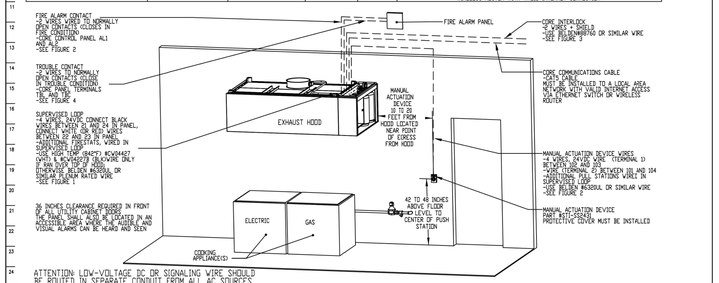
02/10/2021 Rev. 2

ALARM CONTRACTOR:
1. WIRE MANUAL ACTUATION DEVICE(S), REMOTE FIRESTAT(S), CORE INTERLOCK(S), FIRE SENSOR(S) AND FIRE ALARM CONTACTS
2. COMPLETE FINAL DEBUG 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	< 10 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 OF THE 104 AND 103 TO 103 % 102 MANUAL ACTUATION DEVICES 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 RTI-SCE6B
REMOTE FIRESTAT SENSOR(S)	E1 AND 24 E2 AND 23	BLACK AND WHITE	24 VDC	< 10 AMPS	WIRE FIRE SENSOR WHITE WIRE BETWEEN HOOD CORE PANEL TERMINALS 23 AND E1 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS E2 AND 24 HIGH TEMP (840°F) RV1054B1 (WHITE & RV4944F3 (BLACK)OR SIMILAR ON 1' OR MAN EVER TOP OF HOOD, OTHERWISE BELDEN #6380UL OR SIMILAR RATED WIRE - SEE FIGURE 1
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	UP TO 1 AMP	FIRE ALARM RELAY CONTACTS FROM BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL
CORE INTERLOCK(S)	ILA, ILB, ILC	ILA, ILB, ILC	RS-485 COMMUNICATIONS SIGNAL	UP TO 6 AMPS	CORE SYSTEM (1) ILA TO CORE SYSTEM (2) ILA, CORE SYSTEM (1) ILB TO CORE SYSTEM (2) ILB, CORE SYSTEM (1) ILC TO CORE SYSTEM (2) ILC 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	<10 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

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TRENTON, NJ, 08691

DATE: 11/21/2023
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SCALE: 3/4" = 1'-0"
MASTER DRAWING
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PROFESSIONAL IN CHARGE: Michael L. Wilson, P.E.
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CHECKED BY: AJS

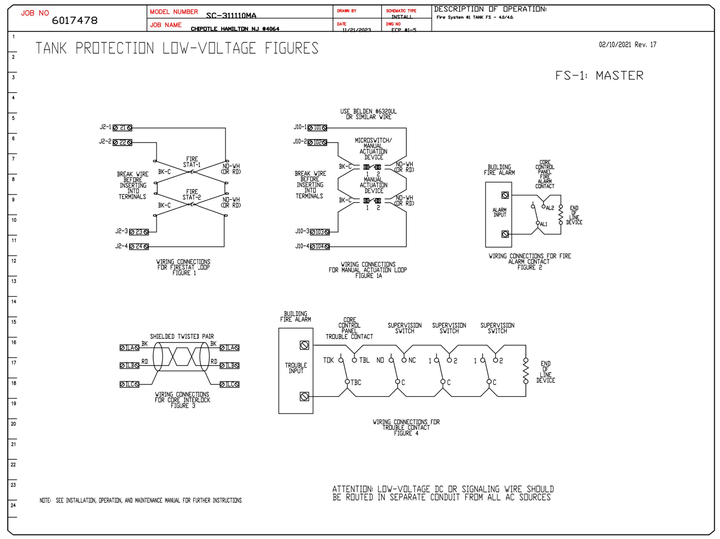
PROJECT NUMBER: 21008

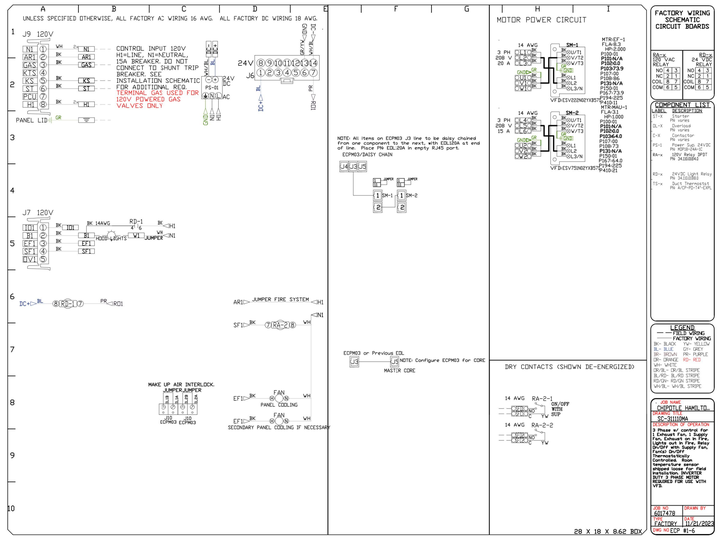
SHEET TITLE: CAPTIVEAIRE DRAWINGS

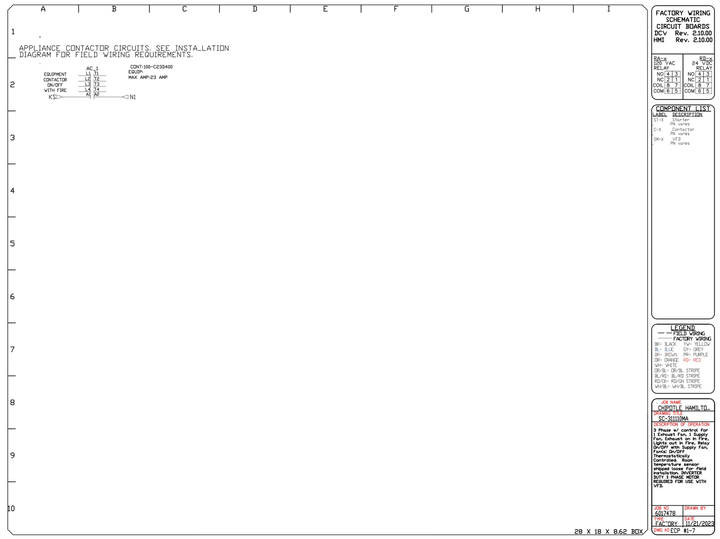
SHEET NUMBER: M-409

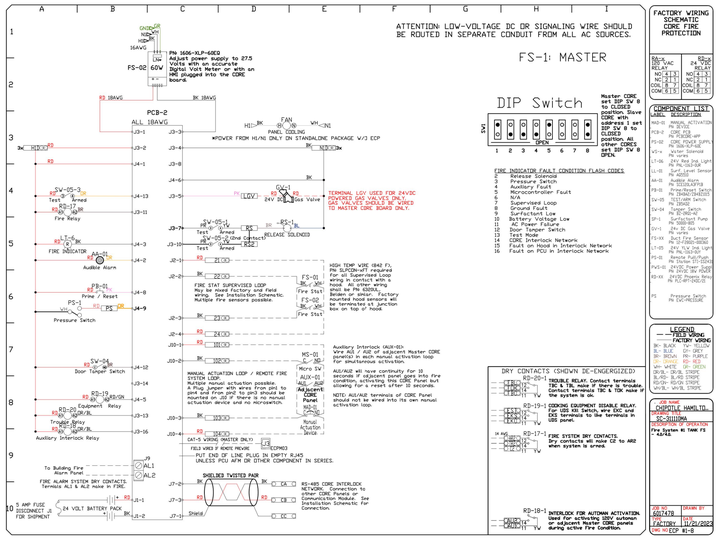
2024-DB#2/P#1-2

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY









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SCALE: 3/4" = 1'-0"

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SHEET NO. 10

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CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-410

2024-DB#2/P#1-2

EXHAUST FAN SCHEDULE

Tag	Manufacturer	Model	Type	Drive	CFM	E.S.P. IN. W.C.	Motor H.P.	Volts	PH.	Hz.	RPM	Sone Level	Weight lbs.	Furnished By	Installed By	Comments
EF-1	Captive-Aire	DU180HFA	Roof	Direct	2550	1.45	2	208	3	60	1221	16.7	183	HS	GC	See Captive-Aire drawings for options & accessories.
EF-2	Captive-Aire	DR12HFA	Roof	Direct	150	0.6	.25	115	1	60	1282	6.10	50	HS	GC	See Captive-Aire drawings for options & accessories.

OUTDOOR AIR COOLED CONDENSING UNIT SCHEDULE

Unit ID	Nominal Cooling Capacity (Tons)	Manuf.	Model	Description	Refrig. Type	Refrig. Charge	Unit Electrical Data Voltage	Phase	Hz.	FLA	MOCP	Unit Installed Weight lbs.	Furnished By	Installed By	Comments
CU-1	-	Manitowoc (Harford)	PC98MZOP-3	Walk-in Cooler Remote CU	R-404A	-	208	3	60	6.5	15	200	WCS	GC	Furnished with walk-in cooler
CU-2	-	HOSHIZAKI	URC-9FZ	Ice Maker Remote CU	R-404A	11 lbs. 7.4 oz.	120	1	60	-	-	100	KES	GC	Furnished with ice maker
CU-3	-	HOSHIZAKI	URC-5FZ	PUW Ice Maker Remote CU	R-404A	11 lbs. 7.4 oz.	120	1	60	-	-	100	KES	GC	Furnished with ice maker

AIR DOOR SCHEDULE

ID	Manufacturer	Model	Airflow Max FPM	Avg FPM	CFM	Electrical KW	V/P/H	FLA	Furnished By	Installed By	Remarks
AD-1	Berner	ALC081036E	3600	2116	1036	5.6	208/1/60	28.6	GC	GC	(2) total units

MAKE-UP AIR UNIT SCHEDULE

Unit ID	Manuf.	Model	Orientation	Fan Performance Design Supply (CFM)	Min Supply CFM	Total E.S.P. in. w.c.	Motor Nominal HP	RPM	Heating Performance Type	Input MBH	Output MBH	Temperature Rise °F D.B.	Efficiency AFUE %	Unit Electrical Data Voltage	Phase	Hz.	MCA	MOCP	Unit Installed Weight lbs.	Furnished By	Installed By	Comments
MAU-1	Captive-Aire	A1-D.250-15D	Downflow	1300	1000	0.50	1	1546	Nat.Gas	90.2	83.1	60.0	92	208	3	60	3.9	15	495	HS	GC	See Captive-Aire drawings for options & accessories.

VENTILATION SCHEDULE

Space Served Name	Area (SQ.FT.)	Calculation of Minimum Outside Air (OA) Per IMC 2021 Classification	Based on Occupancy: Persons Per 1000 SQ.FT.	Estimated Max. Occupant Load	Design Occupant Load	CFM Per Person	Total OA CFM	Based on CFM / SQ.FT.: CFM Per SQ.FT.	Total OA CFM	Based on Exhaust: Fixture Quantity	CFM Per Fixture	CFM Per SQ.FT.	Total Exhaust CFM	OA CFM Required	Provided	Ventilation System	Comments
101-Dining	1675	Food and beverage service: Cafeteria, fast food	100	168	69	7.5	517.5	0.18	302					819	1125	RTU-2&RTU-3	See Note 1
102-Utensil	92	Public spaces, Corridors and utilities						0.06	6					6	8	RTU-2	
103-Passage	109	Public spaces, Corridors and utilities						0.06	7					7	9	RTU-2	
105-Ordering	124	Food and beverage service: Cafeteria, fast food	100	12	12	7.5	93	0.18	22					115	158	RTU-2	See Note 1
111-Unisex1	62	Public spaces: Toilet rooms - public							0	1	70		70	0	0	EF-2	
112-Unisex2	62	Public spaces: Toilet rooms - public							0	1	70		70	0	0	EF-2	
Totals:	2124				81									946	1300	RTU-2&RTU-3	See Note 2
104-POS	198	Food and beverage service: Cafeteria, fast food	100	20	2	7.5	15	0.18	36					51	130	RTU-1	See Note 1
106-Serving	64	Food and beverage service: Cafeteria, fast food	100	6	4	7.5	30	0.18	12					42	106	RTU-1	See Note 1
107-Cooking	273	Food and beverage service: Kitchens (cooking)	20	5	2	7.5	15	0.12	33			0.7	191	48	122	EF-1	
108-Kitchen	488	Food and beverage service: Cafeteria, fast food	100	49	4	7.5	30	0.18	88					118	302	RTU-1	See Note 1
109-Office	50	Offices: Office spaces	5	0	1	5	5	0.06	3					8	20	RTU-1	
Totals:	1073				13									266	680	RTU-1	

Notes:

1. Classification of "Food and beverage service, Cafeteria, fast food" results in an estimated quantity of people on a square footage basis that is unrealistic with regard to the actual use of the space. The calculated number of people has been noted in the above calculation, but an alternative, reasonably conservative actual maximum occupancy (which is supported by the Owner's historical data) is utilized in the calculation for the Total Outside Air CFM required for the respective Zones. The code-mandated value of 7.5 cfm/person for "Food and beverage service, Cafeteria, fast food" is used in the calculation.

ROOFTOP UNIT SCHEDULE

Unit ID	Nominal Cooling Capacity Tons	Manuf.	Model	Area Served	Orientation	Fan Performance Air Balance Supply CFM	Outdoor CFM*	Motor BHp	Total E.S.P. in. w.c.	Cooling Capacity Net Capacity Total MBH	Sensible MBH	Efficiency (S)EER	EAT (Deg. F) DB	WB	Cond. EAT (Def. F)	Heating Performance Type	Input MBH	Output MBH	Efficiency AFUE %	Unit Electrical Data Voltage	Phase	Hz.	MCA	MOCP	Unit Installed Weight lbs.	Furnished By	Installed By	Accessories, Features & Options 1	2	3	4	5	6	7	8	9	10	11	12	Comments
(E)RTU-1	8.5	Lennox	LGH102	Kitchen	Downflow	3400	340	-	0.8	-	-	-	-	-	-	Nat.Gas	240	192	80	208	3	60	44.0	50	-	--	GC	X	X	X	X	X	X	X	X	X	X	X	X	Existing to Remain
(E)RTU-2	7.5	Lennox	LGH092	Dining	Downflow	3000	600	-	0.8	-	-	-	-	-	-	Nat.Gas	240	192	80	208	3	60	42.0	50	-	--	GC	X	X	X	X	X	X	X	X	X	X	X	X	Existing to Remain
RTU-3	8.5	Carrier	48FCEM09	Dining	Downflow	3400	680	1.9	0.8	96.4	73.5	11.2	80.0	67.0	95.0	Nat.Gas	180	148	82	208	3	60	42.0	50	1108	HES	GC	X	X	X	X	X	X	X	X	X	X	X	X	

*Re-balance OA CFM for (E) RTU-1 & (E) RTU-2 as shown

Notes that apply to all units:

1. Static pressure indicated above is the external static pressure which excludes any pressure drops within the unit.
2. Unit shall be complete with side outlet drain and access doors. Outside air dampers shall be equipped with blade and jamb seals.
3. Contractor to ensure that outdoor air intakes are a minimum of 10'-0" away from any exhaust fan discharge, plumbing vent or other contaminant source.
4. Maximum air velocity through cooling coil shall not exceed 500 feet per min.
5. Provide 4 sided factory roof curb suitable for seismic conditions of project location.
6. Perform testing and balancing and submit reports to the engineer in accordance with specification.
7. Refer to roof framing plan for exact location of rooftop units.
8. Mechanical subcontractor shall affix unit designation decal on unit.
9. Unit to operate at 7 in. w.g. natural gas pressure. See Manufacturer's specifications for final connection size to unit.
10. Provide alternate bid to supply all rooftop units with coastal package (coated coils, painted rails, etc.) when site is located within 5 miles of the coast.

Accessories, Features & Options:

1. MERV-8 filters.
2. Roof curb - 14" high.
3. M.O.D.
4. Hail guard.
5. Unit mounted convenience receptacle.
6. R.A. smoke detector w/ remote keyed annunciator/reset.
7. Comp. enthalpy econ.
8. Barometric relief.
9. Toolless hinged access panels.
10. Unit shall be charged with refrigerant type R-410A
11. Disconnect.
12. STD / MED static motor

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

Tag	Description	Face Size / Neck Size	Material	Finish	Mounting	Furnished By	Installed By	Manufacturer	Model	Notes
CD-1	Perforated ceiling diffuser	Face: 24"x24" Neck: Varies	Aluminum	White	Lay-in ceiling	GC	GC	Nailor	4320A Type L	Provide with integral OBD
CD-2	Perforated ceiling diffuser	Face: 24"x12" Neck: Varies	Aluminum	White	Lay-in ceiling	GC	GC	Nailor	4320A Type L	Provide with integral OBP Remove 4-way deflectors
ER-1	Perforated ceiling exhaust	Face: 12"x12" Neck: Varies	Aluminum	White	Surface mount	GC	GC	Nailor	4330R Type S	Provide with integral OBD
RG-1	Perforated ceiling return	Face: 48"x24" Neck: Varies	Aluminum	White	Lay-in ceiling	GC	GC	Nailor	4330R Type L	
RG-2	Perforated ceiling return	Face: 48"x24" Neck: Varies	Aluminum	White	Surface mount	GC	GC	Nailor	4330R Type S	
RG-3	0 deg. Fixed blade return grille	Face: Varies Neck: Varies	Aluminum	White	Wall	GC	GC	Nailor	51FH	
SR-1	Adjustable turbo nozzle	Neck: Varies	Aluminum	White	Wall	GC	GC	Air Concepts	ANR-14	Provide with concealed mounting and integral OBD
SR-2	Double-deflection supply register	Neck: Varies	Aluminum	White	Wall	GC	GC	Nailor	51DH	Provide with integral OBD
SR-3	Curved double-deflection supply register	Neck: Varies	Aluminum	Mill	Duct	GC	GC	Nailor	51DHC	Provide with integral OBD

VIROGUARD SCHEDULE

TAG	QUANTITY	DESCRIPTION	DUCT CONNECTION SIZE	FAN	FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN MANUFACTURER
VG-1	1	VIROGUARD HOOD EXHAUST FAN ROOFTOP CONTAINMENT SYSYTEM	16"x16"	Captive-Aire DU180HFA	TDC	GC	ENVIROMATIC

SANITIZING EQUIPMENT SCHEDULE

TAG	COUNT	DESCRIPTION	FURNISHED BY	INSTALLED BY	BASIS FOR DESIGN MANUFACTURER	MODEL	REMARKS
SB-1	2	BATHROOM AIR PURIFICATION UNIT	TUV	GC	RGF ENVIRONMENTAL GROUP	BRU ASSEMBLY	SEE ELECTRICAL SHEETS FOR CONNECTION INFORMATION
SH-1	3	HVAC AIR PURIFICATION UNIT	TUV	GC	RGF ENVIRONMENTAL GROUP	REME-HALO	SEE DETAIL 6/M700 FOR INSTALLATION INFORMATION
SI-1	3	ICE MACHINE TREATMENT SYSTEM	TUV	GC	RGF ENVIRONMENTAL GROUP	IMS-B-GA	SEE PLUMBING DRAWINGS FOR INSTALLATION INFORMATION

AIR BALANCE CALCULATIONS

System	Supply Air CFM	Return Air CFM	Outdoor Air CFM	Exhaust Air CFM	Pressure CFM
RTU-1	3400	3060	340		340
RTU-2	3000	2400	600		600
RTU-3	3400	2720	680		680
MAU-1	1300	0	1300		1300
EF-1				2550	-2550
EF-2				150	-150
Total	11100	8180	2920	2700	220

CONTROL FUNCTIONS

A. THE MAIN COOKING EXHAUST FAN AND MAKE-UP AIR UNIT SHALL BE INTERLOCKED TO OPERATE TOGETHER. THIS CONTROL CIRCUIT IS ACTIVATED BY A SWITCH AND INCLUDES A FIRE PROTECTION OVERRIDE.

B. THE TEMPERATURE IN EACH ZONE IS CONTROLLED BY SPACE TEMPERATURE SENSORS CONNECTED TO THE THERMOSTATS LOCATED IN THE OFFICE. ALL ZONES SHALL OPERATE WITH CONTINUOUS FAN OPERATION DURING OCCUPIED TIMES AND INTERMITTENLY AS NEEDED TO MAINTAIN SET POINTS DURING UNOCCUPIED TIMES. OUTSIDE AIR DAMPERS SHALL BE OPEN CONTINUOUSLY WHEN EITHER IN OCCUPIED MODE OR WHEN HOOD SYSTEM IS ON AND SHALL BE CLOSED DURING UNOCCUPIED PERIODS.

C. THE THERMOSTATS SHALL DETERMINE OCCUPIED/UNOCCUPIED STATUS BASED ON THE SCHEDULE IN THE ENERGY MANAGEMENT SYSTEM.

2024-DB#2/P#1-2

Consultant:

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DRAWN BY: PCE
CHECKED BY: AJS

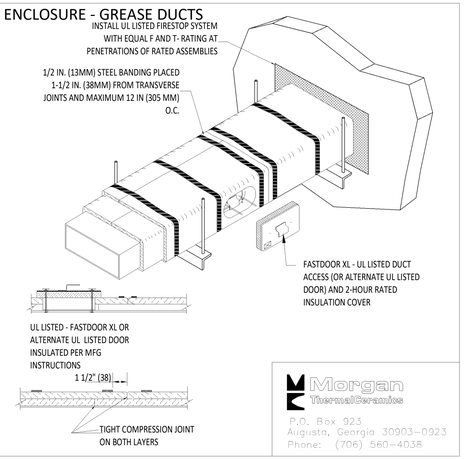
PROJECT NUMBER:
21008

SHEET TITLE:
HVAC SCHEDULES

SHEET NUMBER:
M-600

FIRE RATED ENCLOSURE - GREASE DUCTS

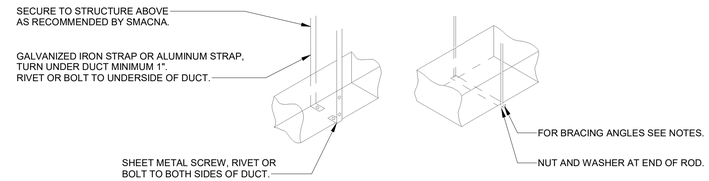
1. THERMAL CERAMICS FIREMASTER FASTWRAP XL IS TESTED TO ASTM E2336 AND UL LISTED PER HNKT.G18 TO PROVIDE ZERO CLEARANCE TO COMBUSTIBLES AND TO PROVIDE A 1- OR 2- HOUR ENCLOSURE. THROUGH PENETRATIONS FIRESTOP SYSTEMS ARE TESTED IN ACCORDANCE WITH ASTM E 814 (UL 1479). ICC CODE EVALUATION PER REPORT UL ER 14229-01.
2. COMPLIANT TO THE FOLLOWING CODES:
   - NFPA 96
   - INTERNATIONAL MECHANICAL CODES
   - UNIFORM MECHANICAL CODE
   - CALIFORNIA MECHANICAL CODE
3. INSULATION APPLIED IN TWO LAYERS WITH TIGHT COMPRESSION JOINT ON BOTH LAYERS AT ALL JOINTS.
4. MINIMUM 16 GAUGE CARBON STEEL (OR 18 GAGE STAINLESS STEEL) RECTANGULAR OR ROUND GREASE EXHAUST DUCT
5. INSTALL UL LISTED AND LIQUID TIGHT THERMAL CERAMICS FASTDOOR XL ACCESS DOORS, OR ALTERNATE DOOR UL LISTED PER UL1978, AT ALL CHANGES IN DIRECTION AND AT MINIMUM EVERY 12 FT ON HORIZONTAL RUNS.
6. SUPPORT HANGER SYSTEMS DO NOT NEED TO BE WRAPPED PROVIDED THE HANGER RODS ARE MINIMUM OF 3/8 IN. DIAMETER AND SUPPORTS ARE MINIMUM 2 X 2 X 1/8 IN. STEEL ANGLE OR SMACNA EQUIVALENT SUPPORT SYSTEM.
7. THERMAL CERAMICS DUCT WRAP SHALL BE INSTALLED DIRECTLY ONTO THE DUCT AND APPLIED FROM THE HOOD CONNECTION TO THE CONNECTION TO THE FAN.
8. THERMAL CERAMICS DUCT ENCLOSURE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND UL LISTINGS.



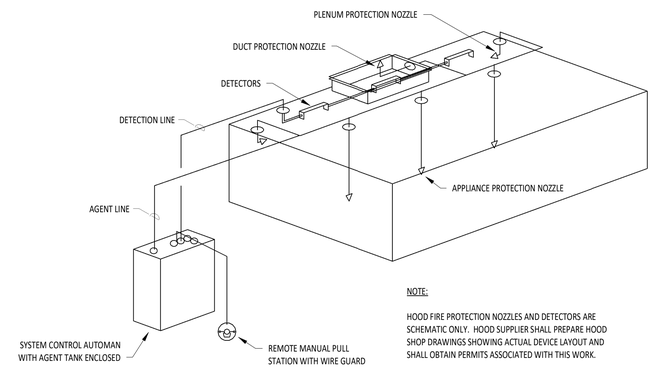
Morgan Thermal Ceramics
P.O. Box 923
Augusta, Georgia 30903-0923
Phone: (706) 560-4038

1 FIREMASTER DUCT WRAP - UL HNKT-G18
NOT TO SCALE

RECTANGULAR DUCT HANGER SCHEDULE (MINIMUM SIZES)								
HALF DUCT PERIMETER RANGE	PAIR AT 10' SPACING		PAIR AT 8' SPACING		PAIR AT 5' SPACING		PAIR AT 4' SPACING	
	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD	STRAP	WIRE/ROD
P/2<30'	1"X22 GA.	10 GA. (0.135")	1"X22 GA.	10 GA. (0.135")	1"X22 GA.	12 GA. (0.106")	1"X22 GA.	12 GA. (0.106")
P/2<72"	1"X18 GA.	3/8"	1"X20 GA.	1/4"	1"X22 GA.	1/4"	1"X22 GA.	1/4"
P/2<96"	1"X16 GA.	3/8"	1"X18 GA.	3/8"	1"X20 GA.	3/8"	1"X22 GA.	1/4"
P/2<120"	1-1/2"X16 GA.	1/2"	1"X16 GA.	3/8"	1"X18 GA.	3/8"	1"X20 GA.	1/4"
P/2<168"	1-1/2"X16 GA.	1/2"	1"X16 GA.	1/2"	1"X16 GA.	3/8"	1"X18 GA.	3/8"
P/2<192"	-	1/2"	1-1/2"X16 GA.	1/2"	1"X16 GA.	3/8"	1"X16 GA.	3/8"



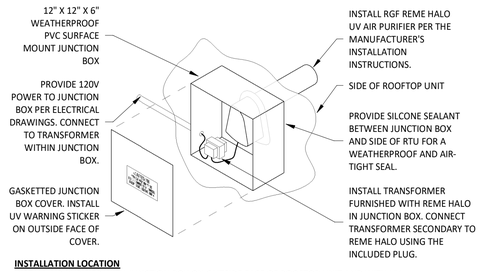
3 HVAC - DUCT HANGER DETAILS
NOT TO SCALE



NOTE:

HOOD FIRE PROTECTION NOZZLES AND DETECTORS ARE SCHEMATIC ONLY. HOOD SUPPLIER SHALL PREPARE HOOD SHOP DRAWINGS SHOWING ACTUAL DEVICE LAYOUT AND SHALL OBTAIN PERMITS ASSOCIATED WITH THIS WORK.

4 HVAC - FIRE SUPPRESSION SYSTEM SCHEMATIC
NOT TO SCALE



INSTALLATION LOCATION

INSTALL AIR PURIFIER WITH JUNCTION BOX ON OUTSIDE FACE OF ROOFTOP UNIT AND WITH UV LAMP TUBE EXTENDING INTO THE INTERIOR OF THE ROOFTOP UNIT. FIELD VERIFY EXACT LOCATION TO AVOID DAMAGING, TOUCHING, OR INTERFERING WITH ANY RTU INTERIOR COMPONENTS. INSTALLATION LOCATION SHALL BE AS FOLLOWS:

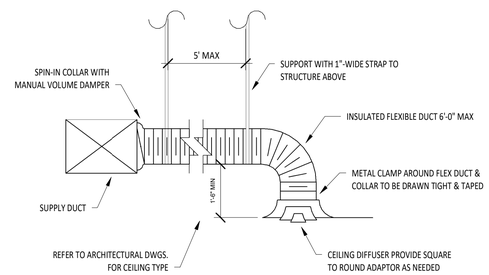
TRANE: INSTALL INTO THE SUPPLY AIR STREAM THROUGH THE REMOVABLE PANEL COVERING THE HORIZONTAL DISCHARGE SUPPLY AIR OPENING.

YORK: INSTALL INTO THE SUPPLY AIR PLENUM FROM THE BACK SIDE OF THE UNIT JUST ABOVE THE HEAT EXCHANGER.

CARRIER: INSTALL DOWNSTREAM FROM THE EVAPORATOR, AWAY FROM THE HEAT EXCHANGER, AT TOP OF UNIT ABOVE REMOVABLE PANEL COVERING THE HORIZONTAL DISCHARGE SUPPLY OPENING.

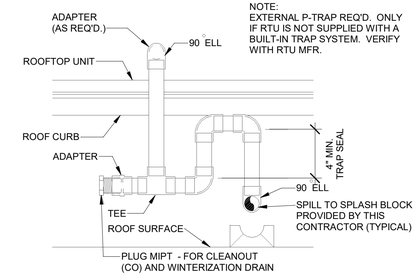
(E) LENNOX UNITS: INSTALL ON LONG SIDE OF UNIT WITH REMOVABLE PANEL COVERING THE HORIZONTAL SUPPLY & RETURN DISCHARGE OPENINGS. CONFIRM WITH LENNOX IF SHOULD BE INSTALLED DIRECTLY IN SUPPLY PANEL, OR ABOVE PANEL.

5 UV AIR PURIFIER INSTALLATION
NOT TO SCALE



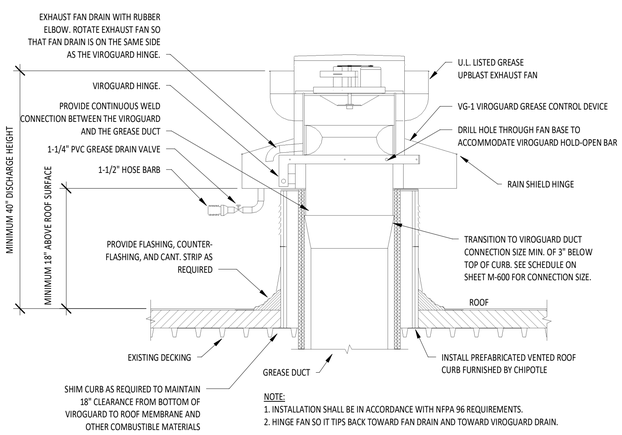
NOTE:
1. METHOD OF INSTALLATION FOR AIRTIGHT SEAL IS TYPICAL FOR ALL FLEX CONNECTIONS TO AIR DISTRIBUTION DEVICES.

6 HVAC - DIFFUSER CONNECTION
NOT TO SCALE



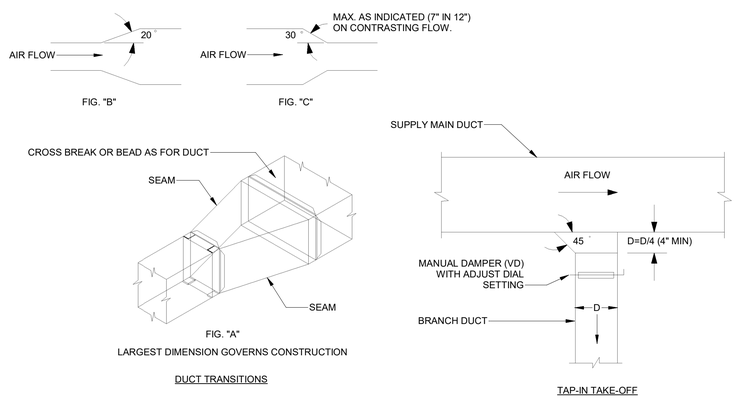
NOTE:
EXTERNAL P-TRAP REQ'D. ONLY IF RTU IS NOT SUPPLIED WITH A BUILT-IN TRAP SYSTEM. VERIFY WITH RTU MFR.

7 HVAC - CONDENSATE PIPING FROM RTU
NOT TO SCALE



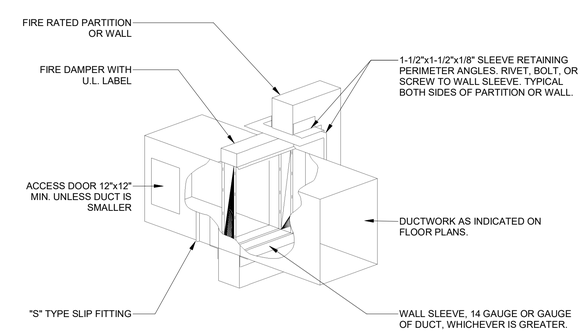
NOTE:
1. INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 96 REQUIREMENTS.
2. HINGE FAN SO IT TIPS BACK TOWARD FAN DRAIN AND TOWARD VIROGUARD DRAIN.

8 GREASE EXHAUST FAN
NOT TO SCALE



NOTE:
1. DUCT TRANSITIONS TYPICAL AFTER EACH TAKE-OFF(S) WHERE CHANGE IN DUCT SIZE IS INDICATED.

9 HVAC - DUCT TRANSITION DETAILS
NOT TO SCALE



NOTES:
1. FIRE DAMPER INSTALLATION FOR VERTICAL AIRFLOW SHALL BE SIMILAR WITH S.S. NEGATOR SPRINGS FOR CLOSURE.

10 HVAC - FIRE DAMPER DETAIL
NOT TO SCALE

2024-DB#2/P#1-2

Consultant:

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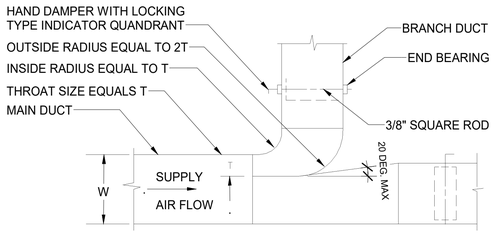
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
21008

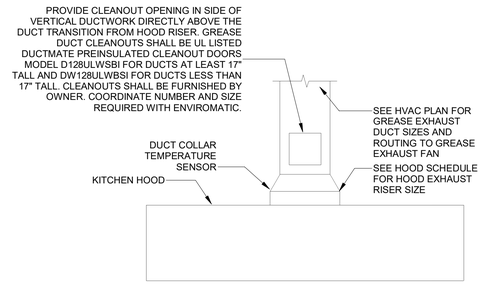
SHEET TITLE:
HVAC DETAILS

SHEET NUMBER:
M-700

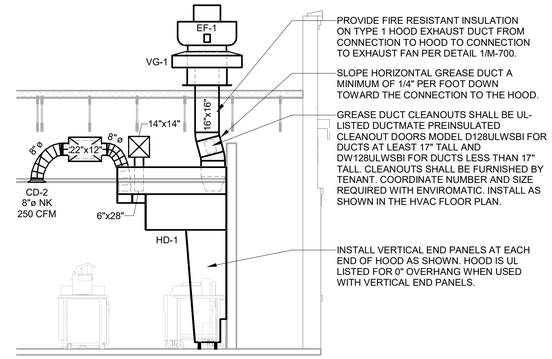


NOTES:
1. FURNISH THIS TYPE CONNECTION FOR BRANCHES WITH MORE THAN 200 CFM.
2. MUST BE USED WHEN W IS GREATER THAN, OR EQUAL TO 36".
3. MINIMUM T = 4".

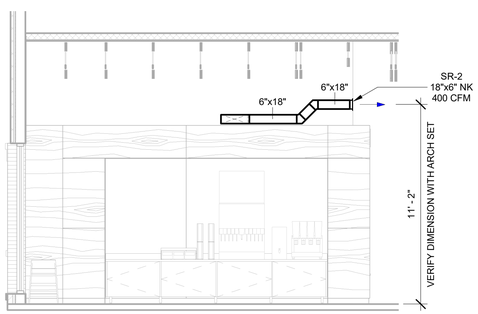
1 HVAC - RECTANGULAR DUCT BRANCH
NOT TO SCALE



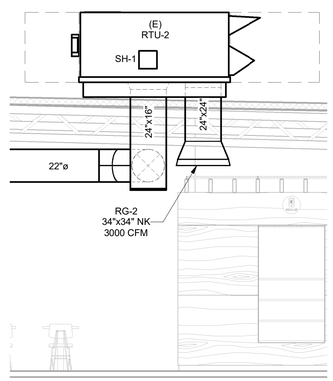
2 HVAC - GREASE EXHAUST DUCT AT HOOD
NOT TO SCALE



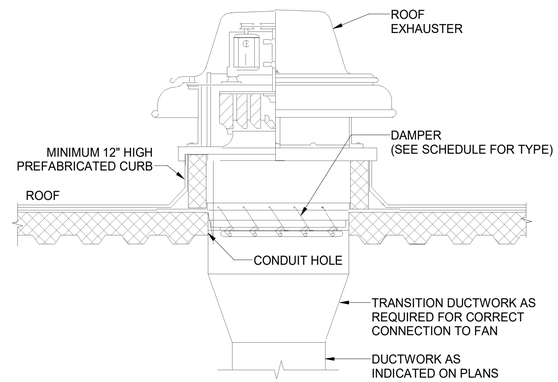
3 HVAC - HOOD DUCTWORK SECTION 'A'
1/4" = 1'-0"



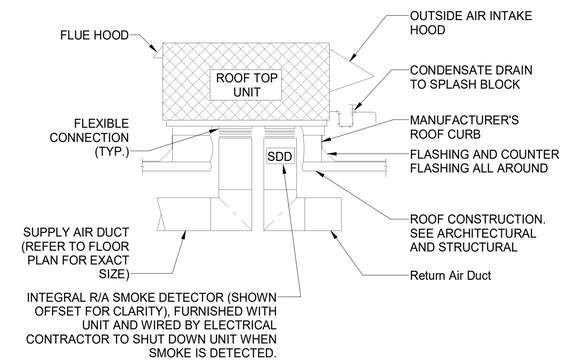
4 HVAC - UTENSIL COUNTER DUCTWORK SECTION 'A'
1/4" = 1'-0"



5 HVAC - (E) RTU-2A DUCTWORK SECTION
1/4" = 1'-0"

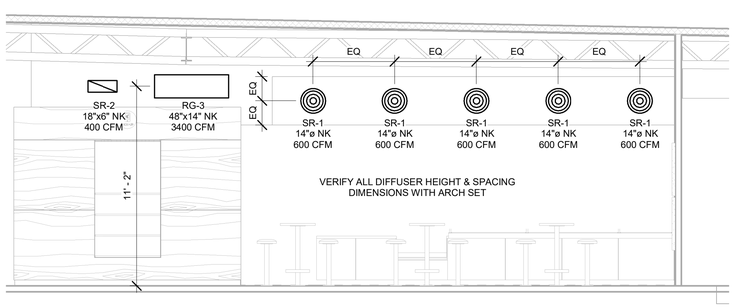


6 HVAC - ROOF MOUNTED EXHAUST FAN
NOT TO SCALE

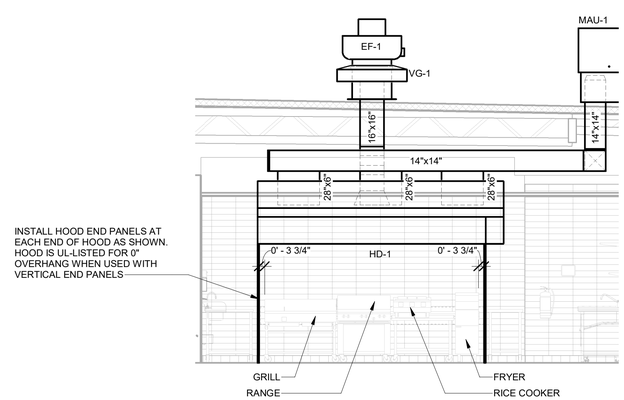


NOTES:
1. THIS DETAIL SHALL SERVE AS A STANDARD FOR INSTALLATION FOR ALL ROOFTOP UNITS. REFER TO FLOOR PLANS FOR EXACT REQUIREMENTS FOR EACH UNIT.
2. ALL ROOF PENETRATIONS ARE BASED ON MANUFACTURERS EQUIPMENT S/A TO R/A OPENING SIZE UNLESS NOTED OTHERWISE. EXTEND FULL SIZE DUCT DOWN TO ABOVE CEILING AND TRANSITION AS SHOWN ON PLANS.

7 HVAC - ROOFTOP UNIT MOUNTING DETAIL
NOT TO SCALE



8 HVAC - DINING ROOM DUCTWORK SECTION 'A'
1/4" = 1'-0"



9 HVAC - HOOD ELEVATION
1/4" = 1'-0"

2024-DB#2/P#1-2

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