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	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
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

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 16GA. 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 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
- S — 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 / 12" ROUND / 550 CFM — GRILL, REGISTER, OR DIFFUSER TAG / NECK SIZE / AIRFLOW

HVAC SPECIFICATIONS

SECTION 15080 - MECHANICAL INSULATION
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. Submittals: None.
B. Quality Assurance: Labeled with maximum flame-spread rating of 25 and maximum smoke developed rating of 50 according to ASTM E 84.
PART 2 - PRODUCTS
2.1 PIPE INSULATION
A. Preformed Glass Fiber Pipe Insulation: ASTM C 547, Class 1, with factory applied, all purpose, vapor retarder jacket.
B. Polyolefin Pipe Insulation: Unicellular polyethylene, preformed pipe insulation. Comply with ASTM C 534, Type I, except for density.
PART 3 - EXECUTION
3.1 INSTALLATION
A. Install vapor barriers on insulated pipes with surface operating temperatures below 60 deg F.
B. Insulate fittings, valves, and specialties.
C. Seal vapor barrier penetrations for hangers, supports, anchors, and other projections.
D. Coat glass fiber pipe insulation ends with vapor barrier coating.
E. Roof Penetrations: Apply insulation for interior applications to a point even with the top of the roof flashing.
F. Exterior Wall Penetrations: For penetrations of below grade exterior walls, terminate insulation flush with mechanical sleeve seal.
G. Interior Walls and Partitions Penetrations: Apply insulation continuously through walls and partitions, except fire rated walls and partitions.
H. Fire Rated Walls and Partitions Penetrations: Terminate insulation at penetrations through fire rated walls and partitions. Seal around penetration with through penetration firestop systems.
I. Floor Penetrations: Terminate insulation at the underside of the floor assembly and at the floor support at top of floor. Seal around penetration with through penetration firestop systems.
J. Glass Fiber Insulation Installation: Bond insulation to pipe with adhesive. Seal seams and joints with vapor barrier compound.
K. Interior Piping System Applications: Insulate the following piping systems:
1. Domestic hot and cold water.
2. Exposed sanitary drains of fixtures for the disabled.
3. Refrigerant piping.
L. Do not apply insulation to the following systems, materials, and equipment:
1. Flexible connectors.
2. Fire protection piping systems.
3. Sanitary drainage and vent piping.
4. Chrome plated pipes and fittings, except for plumbing fixtures for the disabled.
5. Piping specialties, including air chambers, unions, strainers, check valves, plug valves, and flow regulators.
M. Pipe Insulation Thickness Application Schedule: Insulate piping with the following materials and thicknesses:
1. Domestic Hot and Cold Water: 1/2-inch preformed glass fiber pipe insulation.
2. Sanitary Drains: 1/2-inch polyolefin pipe insulation.
END OF SECTION 15080

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 90.1-2013 / 2017 D.C. Energy Conservation Code
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 15738 - SPLIT SYSTEM AIR CONDITIONING UNITS
PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
A. Submittals: Product data, including rated capacities accounting for outside air and including weights.
B. EER: Equal to or greater than prescribed by ASHRAE 90.1-2013 / 2017 D.C. Energy Conservation Code.
C. Comply with ASHRAE 15.

PART 2- PRODUCTS
2.1 EVAPORATOR CASING
A. Heavy gauge galvanized steel
B. Removable access panels for servicing
C. Completely insulated with foil faced, cleanable, fire retardant odorless glass fiber material.

2.2 EVAPORATOR COIL
A. Copper tubing mechanical bonded to aluminum fins
B. Draw through airflow
C. Double-sloped, removable, cleanable composite drain pan

2.3 INDOOR FAN
A. Adjustable belt drive
B. Forward curved, centrifugal fan
C. Permanently lubricated bearings

2.4 CONDENSING UNIT
A. Hermetic scroll compressor(s)
B. Crankcase heater
C. Evaporator defrost control

PART 3 - EXECUTION
3.1 INSTALLATION
A. Install air handling units and condensing units, and duct furnaces level and plumb.
B. Install air handling unit and duct furnace components using manufacturer's standard mounting devices securely fastened to the building structure.
C. Connect gas piping to duct furnace. Provide pipe unions and shut off valves and sufficient clearance for burner service and removal.
D. Connect refrigerant piping to and between air handling units and condensing units to allow service and maintenance.
E. Ground all equipment.

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 - Rooftop Units:
1. Unoccupied Cycle: During unoccupied hours, as set by the Energy Management System, the exhaust fans are de-energized and the outside air andreturn dampers for the HVAC unit close, and the thermostat set point resets to 65° F (winter) or 78° F (summer/spring/fall) (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.
3. Economizer: The enthalpy economizer shall modulate the outside air and return air dampers to take advantage of outside air conditions conducive to free cooling.
E. Operation Sequence - Split System Heat Pumps:
1. Unoccupied Cycle: During unoccupied hours as set by the Energy Management System the exhaust fans are de-energized and the outside air and return dampers for the HVAC unit close, and the thermostat set point resets to 65° F (winter) or 78° F (summer/spring/fall) (user adjustable). Upon a call for heating, the reversing valve cycles and places the unit in heating mode to maintain setpoint. If required to reach setpoint, the electric duct heater is energized. Upon a call for cooling, the unit is placed in cooling mode to maintain setpoint.
2. Occupied Cycle: During occupied hours, as set by the Energy Management System the outside air and return dampers open to a minimum position. The heat pump and exhaust fans run continuously. Upon a call for heating, the reversing valve cycles and places the unit in heating mode to maintain setpoint. If required to reach setpoint, the electric duct heater is energized. Upon a call for cooling, the unit is placed in cooling mode to maintain setpoint.
3. Economizer: The enthalpy economizer shall modulate the outside air and return air dampers to take advantage of outside air conditions conducive to free cooling. The refrigeration system shall be disabled in this mode.
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

CHECK THIS

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.

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REV.	DATE	DESCRIPTION
	2021.12.03	PERMIT

PROFESSIONAL SEAL

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PROFESSIONAL IN CHARGE: Anthony J. Scalamandre, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER: 20024

SHEET TITLE:
MECHANICAL SPECIFICATIONS, SYMBOLS, & GENERAL INFORMATION

SHEET NUMBER:
M-010

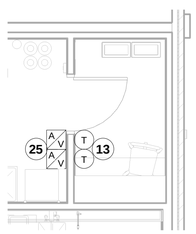
2021-DB#6/P#1-4

KEYNOTES FOR THIS SHEET 1 , 2 ETC.

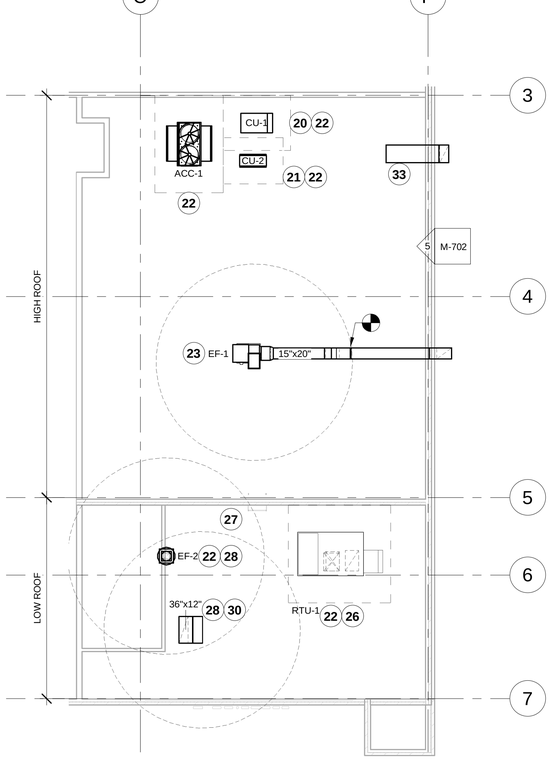
1	SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING MOUNTED EQUIPMENT LOCATION. TYPICAL.
2	PAINT DUCTWORK VISIBLE THROUGH DINING ROOM SUPPLY REGISTERS & RETURN GRILLE BLACK. TYPICAL.
3	INSTALL REME HALO AIR PURIFIER FURNISHED BY TUV IN AHU-1 OR AHU-1 DUCTWORK PER CHIPOTLE'S INSTALLATION INSTRUCTIONS FOR NON-RTU APPLICATIONS, OBTAINED FROM CHIPOTLE CM. SEE ELECTRICAL DRAWINGS FOR POWER CONNECTION INFORMATION. INSTALL UV WARNING STICKERS ON FACE OF ANY AHU ACCESS DOOR(S) THROUGH WHICH THE REME HALO WOULD BE VISIBLE IF OPENED. DEVICE MUST BE EASILY ACCESSIBLE FOR LAMP REPLACEMENT. COORDINATE LOCATION WITH CHIPOTLE CM AND FACILITIES PRIOR TO INSTALLATION.
4	INSTALL MANUFACTURER SUPPLIED PRE-FABRICATED MIXING BOX PER MANUFACTURER'S INSTRUCTIONS. PROVIDE 45/14 RETURN DUCT DOWN FOR TRANSITION TO RETURN CONNECTION ON TOP OF MIXING BOX AND 45/14 O.A. DUCT DOWN FOR TRANSITION TO O.A. CONNECTION ON REAR OF MIXING BOX. AHU-1 SHALL HAVE AN INTEGRAL SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM PRIOR TO ANY MIXING OF AIR. INTERLOCK SMOKE DETECTOR TO AHU-1 OPERATION. SEE SECTION VIEW FOR FURTHER INFORMATION.
5	28/18 DUCT UP FOR TRANSITION TO RTU-1 RETURN CONNECTION IN ROOF CURB. RTU-1 SHALL HAVE AN INTEGRAL SMOKE DETECTOR MOUNTED IN THE RETURN AIR STREAM. INTERLOCK SMOKE DETECTOR TO RTU-1 OPERATION.
6	24/20 DUCT TO TRANSITION TO SUPPLY CONNECTION ON AHU-1 ELECTRIC HEATER ACCESSORY.
7	26/18 DUCT UP FROM BUILDING SUPPLY THROUGH LOW ROOF. TRANSITION TO RTU-1 SUPPLY CONNECTION IN ROOF CURB.
8	16/16 DUCT TO TRANSITION TO MAU-1 SUPPLY CONNECTION.
9	10/15 DUCTS UP FROM HOOD TO CONNECT TO (E) 20/15 DUCT PROVIDED BY LANDLORD. VERIFY (E) DUCT IN FIELD. DUCTS SHALL BE COMPLIANT WITH NFPA 96. PROVIDE RADIUSED ELBOWS WITH AN INSIDE RADIUS OF 0.5W AT ELBOWS IN GREASE DUCT. PROVIDE DUCT CLEANOUT ACCESS DOOR AT ALL CHANGES IN DIRECTION AND AT LINEAR INTERVALS PER LOCAL CODE.
10	8/8 DUCT UP THROUGH LOW ROOF TO EF-2. SEE DETAILS 5 & 6/M-701.
11	28/10 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.
13	INSTALL GRIDPOINT THERMOSTATS FURNISHED BY TEMS FOR AHU-1 AND RTU-1 AT THIS LOCATION AT 48" AFF. COORDINATE WITH ELECTRICAL SWITCHING IN THIS AREA. PROVIDE WIRING AS SHOWN IN DETAIL 8/E-710. LABEL THERMOSTAT WITH CORRESPONDING UNIT.
14	INSTALL GRIDPOINT ZONE SENSOR MODULE FURNISHED BY TEMS FOR AHU-1 AT THIS LOCATION AT 60" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. PROVIDE WIRING AS SHOWN IN DETAIL 8/E-710. LABEL SENSOR WITH CORRESPONDING UNIT.
15	INSTALL GRIDPOINT ZONE SENSOR MODULE FURNISHED BY TEMS FOR RTU-1 AT THIS LOCATION AT 66" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. INSTALL GRIDPOINT ZONE SENSOR MODULE FURNISHED BY TEMS FOR AHU-1 AT THIS LOCATION AT 60" AFF DIRECTLY TO WALL (NO JUNCTION BOX). COORDINATE LOCATION WITH EQUIPMENT. PROVIDE WIRING AS SHOWN IN DETAIL 8/E-710. LABEL SENSOR WITH CORRESPONDING UNIT.
16	INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR AHU-1 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E-710. LOCATE SO THAT PROBE IS ACCESSIBLE.
17	INSTALL GRIDPOINT SUPPLY PROBE FURNISHED BY TEMS FOR RTU-1 IN THE SUPPLY DUCTWORK UPSTREAM FROM THE FIRST BRANCH CONNECTION. PROVIDE WIRING AS SHOWN IN DETAIL 8/E-710. LOCATE SO THAT PROBE IS ACCESSIBLE.
18	INSTALL REMOTE TEMPERATURE SENSOR FOR HOOD HD-1 AT THIS LOCATION AT 66" AFF. COORDINATE LOCATION WITH EQUIPMENT. PROVIDE (2) #18 G. THERMISTOR CABLE FROM TEMPERATURE SENSOR TO HOOD CONTROL PANEL.
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, 2/M-701, AND 3/M-701. CHIPOTLE WILL PROVIDE AN INDEPENDENT TESTING AGENCY FOR TESTING THE INTEGRITY OF THE GREASE DUCT SYSTEM.
20	INSTALL REMOTE CONDENSING UNIT FOR WALK-IN COOLER ON HIGH 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 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.

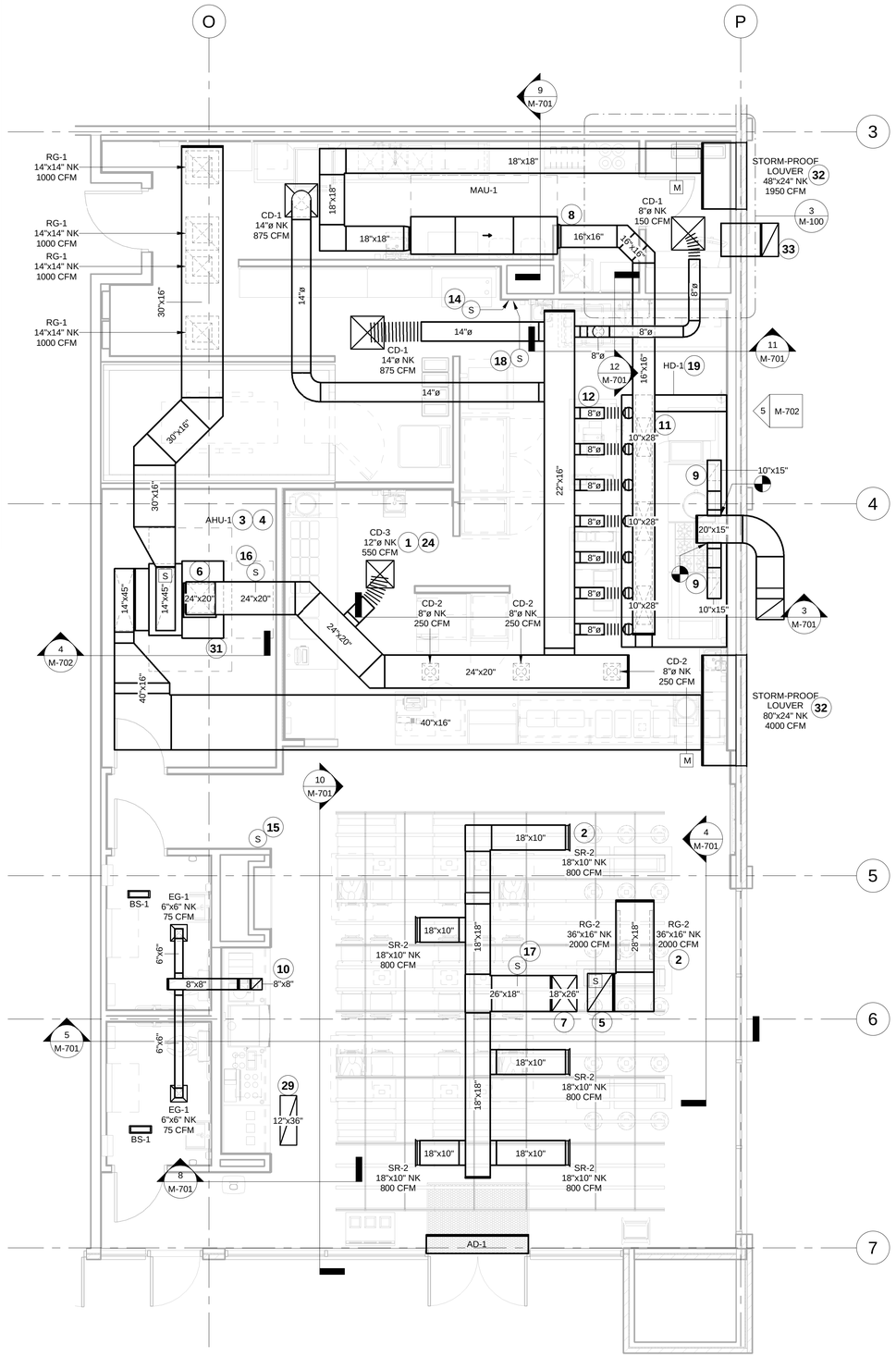
21	INSTALL REMOTE CONDENSER FOR ICE MACHINE ON HIGH ROOF AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, LOW AMBIENT CONTROLS AND WEATHERPROOF HOUSING. 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 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.
22	INSTALL ROOFTOP EQUIPMENT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
23	INSTALL EXHAUST FAN EF-1 PER DETAIL 8/M-700 AND AS DETAILED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
24	PROVIDE SUPPLY DIFFUSER CONNECTION TO SUPPLY SYSTEM PER DETAIL 6/M-700. TYPICAL.
25	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 A/V DEVICE WITH CORRESPONDING UNIT. TYPICAL.
26	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.
27	MAINTAIN 10' CLEARANCE BETWEEN WATER HEATER FLUE TERMINATION AND OUTSIDE AIR INTAKES. MAINTAIN 10' CLEARANCE BETWEEN WATER HEATER COMBUSTION AIR INTAKE AND EXHAUST OUTLETS. SEE PLUMBING DRAWINGS FOR MORE INFORMATION ON WATER HEATER FLUE AND COMBUSTION AIR TERMINATIONS.
28	10'-0" MIN. CLEARANCE FROM OUTER EDGE OF EXHAUST FAN / RELIEF DUCT TO FRESH AIR INTAKES. TYPICAL.
29	PROVIDE 80% FREE AREA MESH SCREENING ON OPEN END OF RELIEF AIR DUCT. PROVIDE BAROMETRIC RELIEF DAMPER AT OPEN-ENDED DUCT IN SPACE. DUCT CONTINUES UP TO RELIEF AIR GOOSENECK ON ROOF. SEE 2/M-100 FOR CONTINUATION.
30	RELIEF GOOSENECK, DUCTED DOWN TO SPACE. SEE 1/M-100 FOR CONTINUATION.
31	PUMP CONDENSATE FROM UNIT TO CLOSEST DRAIN OR FLOOR SINK THAT WILL BE CONCEALED FROM FOOT TRAFFIC AND PUBLIC VIEW, TERMINATE WITH AIR GAP MINIMUM 2X PIPE DIAMETER.
32	PROVIDE 24"D, INSULATED, GALVANIZED STEEL PLENUM BOX ON REAR OF LOUVER. SEE PLANS FOR H X W OF PLENUM BOX. SEE DETAIL X/M-700 FOR FURTHER INFORMATION.
33	(E) LANDLORD PROVIDED 24/12 CLEAR INSIDE, 16 GA. WALL-MOUNTED CHASE FROM LEVEL 1 TO ROOF FOR CHIPOTLE REFRIGERANT LINE SETS, CONDUITS, ETC.. SEAL END ON ROOF LEVEL TO BE WEATHERPROOF ONCE ALL CHIPOTLE ITEMS BETWEEN ROOF AND LEVEL 1 HAVE BEEN INSTALLED. VERIFY CHASE LOCATION IN FIELD.



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



2 HVAC ROOF PLAN
1/8" = 1'-0"



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

2021-DB#6/P#1-4

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DC License #PE900641

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DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
20024

SHEET TITLE:
HVAC PLANS

SHEET NUMBER:
M-100

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

FOR QUESTIONS, CALL THE
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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#5154239

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	14' 3"	600 DEG	I	HEAVY	225	3200	10"	15"	4"		1600	1536	-0.854"	1950	798	430 SS WHERE EXPOSED	ALONE	ALONE
										10"	15"	4"		1600	1536	-0.854"					

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	LOCATION	SIZE	UTILITY CABINET(S) FIRE SYSTEM TYPE	SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLO FILTER	10	16"	16"	85% SEE FILTER SPEC	10	L55 SERIES E26	NO	LEFT	12"x54"x24"	ANSUL R102	3.0/3.0	SC-311110MA	1 LIGHT 1 FAN	YES	1103 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT, LEFT.
		FIELD WRAPPER 6.00" HIGH RIGHT.
		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.
		INSULATION FOR BACK OF HOOD.
		FULL DIMENSION HANGING BRACKET - FRONT.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	RISER(S) TYPE	WIDTH	LENG	DIA	CFM	SP
1		Front	183"	22"	6"	MUA	10"	28"		650	0.166"
						MUA	10"	28"		650	0.166"
						MUA	10"	28"		650	0.166"
						AC			8"	114	0.041"
						AC			8"	114	0.041"
						AC			8"	114	0.041"
						AC			8"	114	0.041"
						AC			8"	114	0.041"
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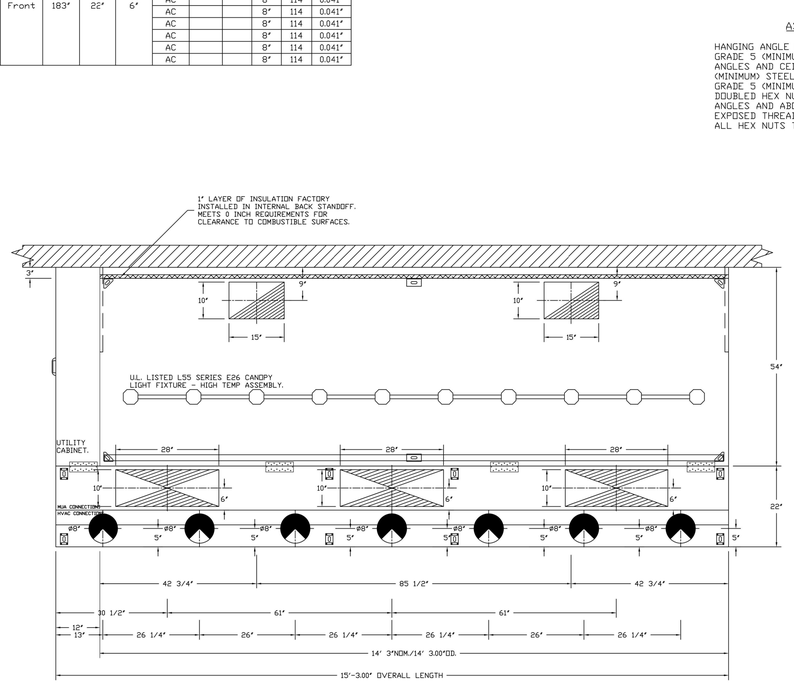
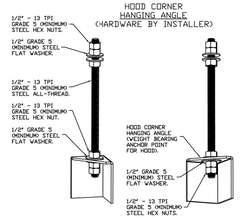


PLAN VIEW - HOOD #1
14' 3.00" LONG 5424ND-2-ACPSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION

HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

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

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.

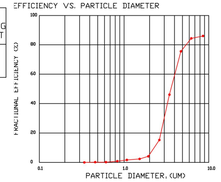
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

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

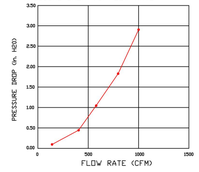
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

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.

EFFICIENCY VS. PARTICLE DIAMETER

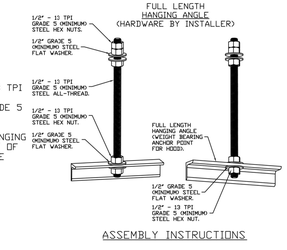


PRESSURE DROP VS. FLOW RATE



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

FULL LENGTH HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

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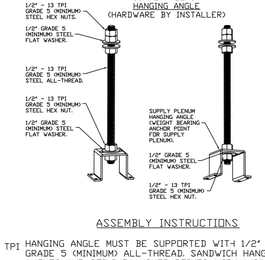
SUPPLY PLENUM HANGING ANGLE (HARDWARE BY INSTALLER)



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REVISIONS

	DESCRIPTION	DATE
1		
2		
3		
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WASHINGTON, DC, 20020

DATE: 10/27/2021
DWG.#: 5154239
DRAWN BY: JMB-40
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 1

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CHECKED BY: AJS

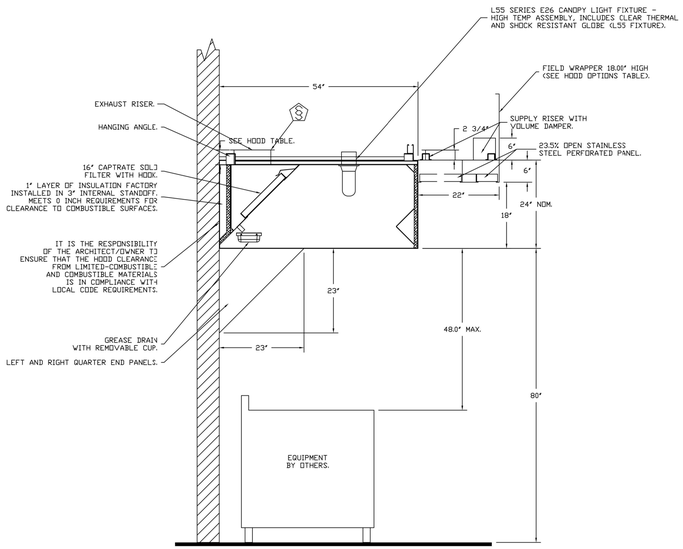
PROJECT NUMBER: 20024

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-400

2021-DB#6/P#1-4

HOOD SHOP DRAWING PRODUCED BY
MANUFACTURER - FOR REFERENCE ONLY



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

FIRE SYSTEM INFORMATION – JOB#5154239

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		ANSUL R102	3.0/3.0	13	FIRE CABINET LEFT	LEFT, HOOD 1

GAS VALVE(S)

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

REVISIONS

	DESCRIPTION	DATE:
1		
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WASHINGTON, DC, 20020

DATE: 10/27/2021

DWG.#: 5154239

DRAWN BY: JMB-40

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

MASTER DRAWING

SHEET NO. 2

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DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
20024

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-401

2021-DB#6/P#1-4

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

SECTION 23 38 13 13

SPECIFICATIONS
TAG: Commercial Kitchen Ventilation Hoods, Listed Commercial Kitchen Hoods

PART 1 - GENERAL

1.1 SUMMARY

A. The ND2 series is a Type I, wall canopy hood for use over 600°F cooking surface temperatures. The aerodynamic design includes a mechanical baffle and performance enhancing lip for exceptional capture and containment.

B. The hood shall have the size, shape, and performance specified on drawings.

1.2 SUBMITTALS

A. The manufacturer assumes no liability for the use or results of use from this document. Specifications are to be reviewed by the engineer to confirm the project's requirements and meet Federal, State, and Local codes and regulations.

B. As the manufacturer continues product development, it reserves the right to change design and specifications without notice.

C. The manufacturer shall supply complete computer generated submittal drawings, including hood section view(s) and hood plan view(s). These drawings must be available to the engineer, architect, and owner for their use in construction, operation, and maintenance.

1.3 QUALITY ASSURANCE

A. This hood is ETL-listed to standard UL710, ULC710, and ULC-S646 when installed in accordance with these installation instructions and National Fire Protection Association Standard "NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations."

B. Built-in compliance with NSF/ANSI Standard 2.

C. The hood shall be ETL Listed as:

1. "Exhaust Hood Without Exhaust Damper."
2. ETL Sanitation Listed and built in accordance with NFPA 96.
3. The ETL label shall list temperature rating(s) and minimum CFM/ft rating(s).

1.4 WARRANTY

A. All units shall be provided with the following standard warranty:

1. This equipment is warranted to be free from defects in materials and workmanship, under normal use and service, for a period of 2-years from date of shipment.

B. The manufacturer shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 2-year warranty period, upon examination by the manufacturer, such part will be repaired or replaced by manufacturer at no charge. The buyer shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without manufacturer's prior authorization, and all returned equipment shall be shipped by the buyer, freight prepaid to a destination determined by the manufacturer.

C. Refer to Manufacturer's Operation, Installation, and Maintenance (OIM) Manual for detailed descriptions of what is/is not covered and contact information for warranty claims.

PART 2 - PRODUCTS

2.1 GENERAL

A. Construction shall be dependent on the structural application to minimize distortion and other defects. All seams, joints, and penetrations of the hood enclosure to the lower outermost perimeter, which directs and captures grease-laden vapor and exhaust gases, shall have a liquid-tight continuous external weld in accordance with NFPA 96.

B. Duct sizes, CFM, and static pressure requirements shall be as shown on drawings. Static pressure requirements shall be precise and accurate; air velocity and volume information shall be accurate within 1-ft increments along the length of the ventilator.

2.2 CONSTRUCTION

A. Construction shall be type 430 stainless steel.

B. Double wall insulated front to eliminate condensation and increase rigidity on wide sizes. The insulation shall have a flexural modulus of 475 EI, meet UL 181 requirements and be in accordance with NFPA 90A and 90B.

C. Hood shall be equipped with a minimum of four connections for hanger rods. Hood lengths greater than 12'will have added hangers.

D. Exhaust duct collar to be 4"high with flange.

E. The grease drain system shall be an enclosed integral part of the hood back and have slopes with an exposed, removable 1/2 grease cup to facilitate cleaning.

F. An integral baffle to direct grease laden vapors toward the exhaust filter bank.

G. Hood shall be furnished with UL classified filters, supplied in size and quantity as required by ventilator.

H. All seams shall be welded and have stainless steel on exposed surfaces.

2.3 LIGHTING

A. L55 Series canopy light fixture, includes clear thermal and shock resistant globe.

2.4 FILTERS

A. Stainless Steel Captrate Solo Filter with hook, ETL Listed. Particulate capture efficiency: 85% efficient at 9 microns, 76% efficient at 5 microns.

2.5 OPTIONS

A. Fire Suppression System: UL 300 fire suppression system.

B. Optional perforated supply plenum shall provide make-up air discharged below the cooking equipment.

1. Perforated diffuser plates shall be included in the design to provide even air distribution.
2. Unexposed surfaces shall be constructed of aluminized steel. Plenum shall be insulated to prevent condensation.
3. Dual Plenum (AC-PSP)

C. Hood Mounted Utility Cabinet - Cabinet can store listed fire suppression system, listed components, pre-wired electrical controls.

2.6 ACCESSORIES

A. End Panel(s) maximize hood performance and eliminate the effects of cross drafts in the kitchen. Units constructed of stainless steel and sized according to hood width and cooking equipment. Exposed edges hemmed for safety and rigidity. Selected panels:

1. Quarter End Panel

B. Wrapper(s) may be installed from the factory or field installed. Wrapper(s) selected:

1. Wrapper

C. Miscellaneous optior(s) selected:

1. Full Dimension Harging Bracket -Unistrut added to allow for various hood mounting locations.
2. Insulation for Back of Hood -Backside of hood is fully insulated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which the system is installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, drawings, written specifications, manufacturer's installation manual, and all applicable building codes.

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

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CHIPOTLE PENN BRANCH #3823
WASHINGTON, DC., 20020

DATE: 10/27/2021

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DRAWN BY: JM3-40

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

MASTER DRAWING

SHEET NO. 3

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2021.12.03 PERMIT

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

PROJECT NUMBER: 20024

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-402

2021-DB#6/P#1-4

HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

EXHAUST FAN INFORMATION – JOB#5154239

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	USBI18DD-RM	CAPTIVEAIRE	3200	1.200	1253	ODP,PREMIUM	2.000	1.1760	3	208	6.1	1640 FPM	402	17.7
2	EF-2	1	DR12HFA	CAPTIVEAIRE	150	0.600	1282	TEAO-ECM	0.250	0.0930	1	115	2.9		49	7.1

MUA FAN INFORMATION – JOB#5154239

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	1950	0.450	2038	ODP,PREMIUM	2.000	1.3580	3	208	6.1	7.7A	15A	593	21

FAN #1 USBI18DD-RM - EXHAUST FAN (EF-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	92790	85357	41°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

FAN OPTIONS

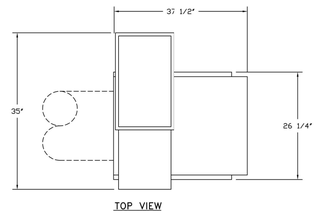
FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF-1	1	BI18 - INLET SERVICE DUCT CONNECTION. USED TO CONNECT TO STANDARD 20" GREASE DUCT OR FIELD WELDED DUCT. INCLUDES (2) 7" RISERS BOLTED TO STANDARD INLET RISER.
		1	UTILITY SET GREASE CUP.
		1	BI18 - 24" DISCHARGE EXTENSION.
		1	BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE.
		1	BI18 - INLET CONNECTION STANDARD 20" FLANGED GREASE DUCT.
		1	UTILITY SET - SPRING VIBRATION ISOLATORS - BI18 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE.
		1	2 YEAR PARTS WARRANTY.
2	EF-2	1	1 12-BID DAMPER.
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL (TELCO MOTOR), CCW ROTATION.
		1	2 YEAR PARTS WARRANTY.
3	MAU-1	1	INLET PRESSURE GAUGE, 0-35".
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC.
		1	MOTORIZED BACKDRAFT DAMPER FOR A1-D HOUSING - MEETS AMCA CLASS 1A RATING.
		1	INSULATION OPTION FOR V-BANK FILTER SECTION.
		1	LOW FIRE START.
		1	DF1 INDOOR HANGING OPTION - INCLUDES 2 HSA125 HANGING SPRING ISOLATORS PER UNI-STRUT.
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY.
		1	UNIT MOUNTED VFD FOR USE WITH ECPM03.
		1	2 YEAR PARTS WARRANTY.

FAN ACCESSORIES

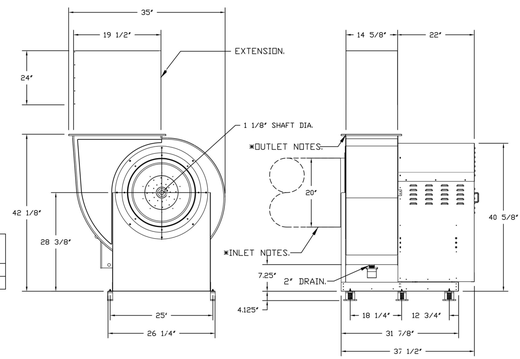
FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	EF-1	YES						
2	EF-2		YES					
3	MAU-1				YES		YES	

CURB ASSEMBLIES

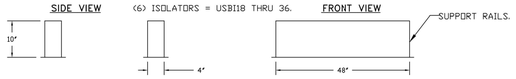
NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	EF-1	25 LBS	RAIL	4.000"W X 48.000"L X 10.000"H ALONG WIDTH, RIGHT COMES AS A SET OF 2.
2	# 2	EF-2	31 LBS	CURB	17.500"W X 17.500"L X 26.000"H ALONG LENGTH, RIGHT.



TOP VIEW



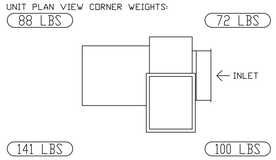
SIDE VIEW



* INLET/OUTLET NOTES:
LENGTH OF THE STRAIGHT DUCT ON THE INLET AND OUTLET TO BE 3 TIMES THE EQUIVALENT DUCT DIAMETER BEFORE CONNECTING TO ANY FITTINGS SUCH AS ELBOWS TO AVOID SYSTEM EFFECT.

NORMAL TEMPERATURE TEST DIRECT DRIVE
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 350°F (176°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

UNIT PLAN VIEW CORNER WEIGHTS:



CORNER WEIGHTS ARE CALCULATED BASED ON VERTICAL DISCHARGE. SUPPORT DUCT PROPERLY BEFORE FAN TO ENSURE CORNER WEIGHTS ARE NOT AFFECTED.

FEATURES:

- ROOF MOUNTED FANS.
- UL705.
- UL762 AND ULC-S645 (RESTAURANT MODEL).
- HIGH HEAT OPERATION DIRECT DRIVE 350°F (176°C).
- HEAT SLINGER.
- NEMA 3R SAFETY DISCONNECT SWITCH.
- GREASE CLASSIFICATION TESTING.
- 2" DRAIN.
- MOTOR WEATHER COVER.
- FULLY SEALED SCROLL HOUSING.
- SCROLL ACCESS DOOR.
- FLANGE 1 1/4".

OPTIONS

BI18 - INLET SERVICE DUCT CONNECTION. USED TO CONNECT TO STANDARD 20" GREASE DUCT OR FIELD WELDED DUCT. INCLUDES (2) 7" RISERS BOLTED TO STANDARD INLET RISER.
UTILITY SET GREASE CUP.
BI18 - 24" DISCHARGE EXTENSION.
BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE.
BI18 - INLET CONNECTION STANDARD 20" FLANGED GREASE DUCT.
UTILITY SET - SPRING VIBRATION ISOLATORS - BI18 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE.
2 YEAR PARTS WARRANTY.

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CHIPOTLE PENN BRANCH #3823
WASHINGTON, DC, 20020

DATE: 10/27/2021

DWG.#: 5154239

DRAWN BY: JMB-40

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

MASTER DRAWING

SHEET NO. 4

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CAPTIVEAIRE DRAWINGS

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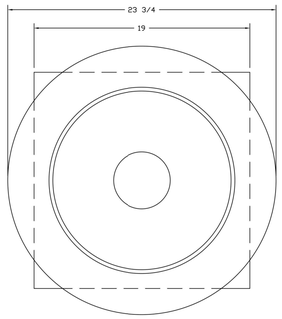
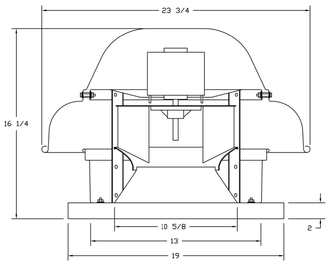
HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

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



TOP VIEW

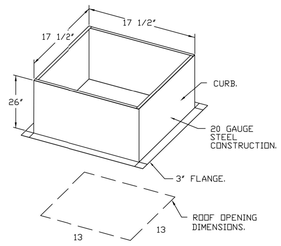


FEATURES:

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

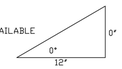
OPTIONS

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

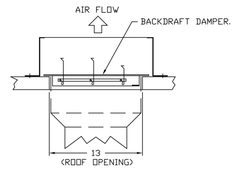


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.



BACKDRAFT DAMPER INSTALLATION



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SHEET NO. 5

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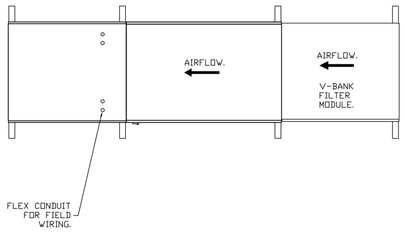
HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

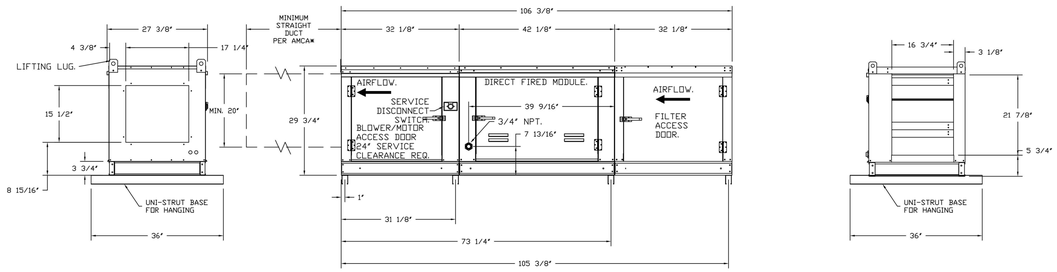
FAN #3 A1-D250-15D - HEATER (MAU-1)
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN.
2. V-BANK EZ FILTERS - INDOOR.
3. SIDE DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. GAS PRESSURE GAUGE, 0-25", 2.5" DIAMETER, 1/4" THREAD SIZE.
5. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE.
6. 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, TF810S ACTUATOR INCLUDED.
7. "INSULATION" FOR V-BANK INTAKE OPTION.
8. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
9. INDOOR HANGING CRADLE FOR THE SIZE 1 DIRECT FIRED UNIT. 2 HSA125 HANGING ISOLATORS PER UNI-STRUT INCLUDED.
10. 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.
11. UNIT MOUNTED VFD FOR USE WITH ECPM03.
12. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
13. 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 26" x 20".

SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 34°F. TEMP. RISE = 41°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY.
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 85414.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 92841.
OUTPUT BTUs AT ALTITUDE OF 15 FT. = 85367.
INPUT BTUs AT ALTITUDE OF 15 FT. = 92791.





DIRECT FIRED (DF) PROFILE PLATE ASSEMBLY

DIRECT FIRED PROFILE PLATE SPECIFICATIONS:
DESCRIPTION:
DIRECT FIRED BURNERS SHALL HAVE PATENTED (US PATENT NO: US6429952B2), 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 35PPM OF NITROGEN DIOXIDE (NO2)DIRECT FIRED BURNERS WITH PROFILE PLATES SHALL MAINTAIN A CONSISTENT AIRFLOW, REGARDLESS OF INLET AIR TEMPERATURE. BURNER THIS ARRANGEMENT WILL ENSURE A CONSISTENT AIRFLOW, REGARDLESS OF INLET AIR TEMPERATURE.

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

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

GENERAL CONSTRUCTION
-PROFILE PLATES SHALL BE FORMED FROM 20R GALVANIZED STEEL.
-PROFILE PLATES SHALL BE SIZED PER UNIT SIZE.
-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.

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DRAWN BY: JMB-40

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

MASTER DRAWING

SHEET NO. 6

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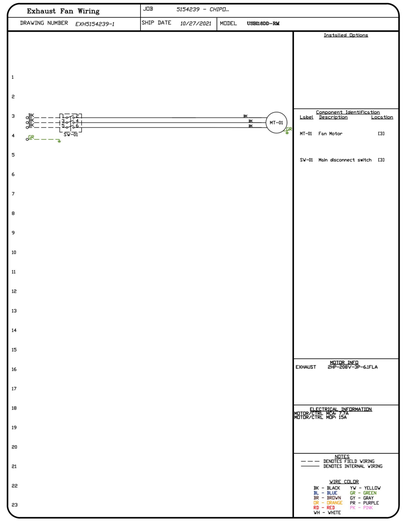

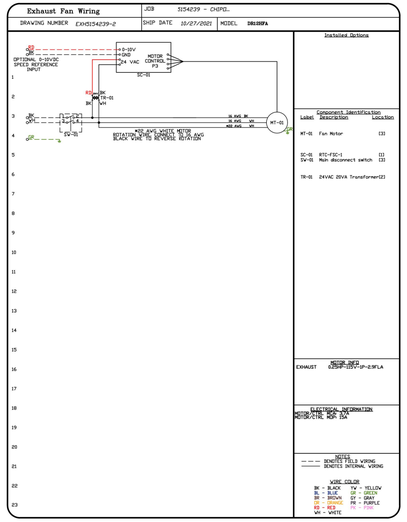

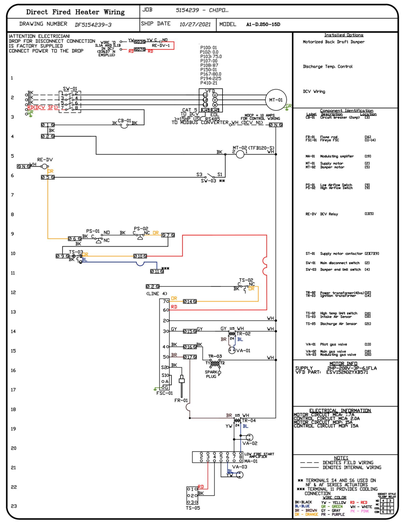

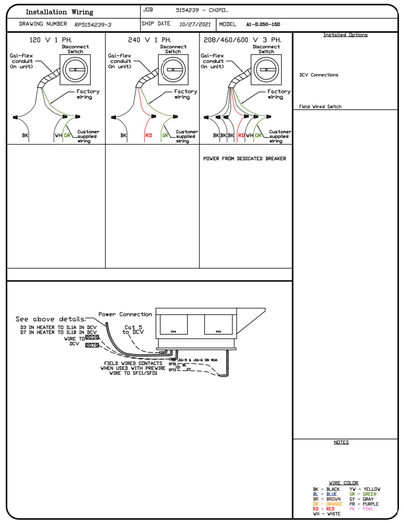

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SHEET NO. 7

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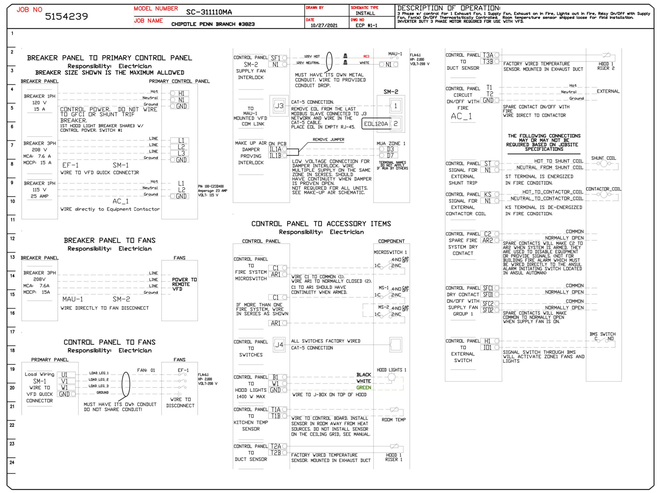
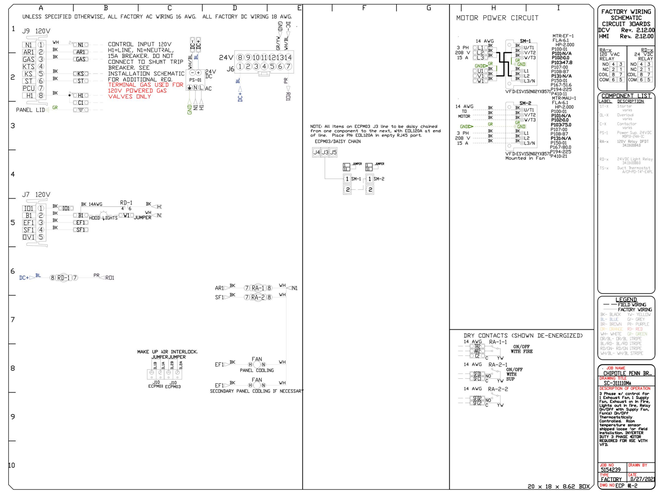
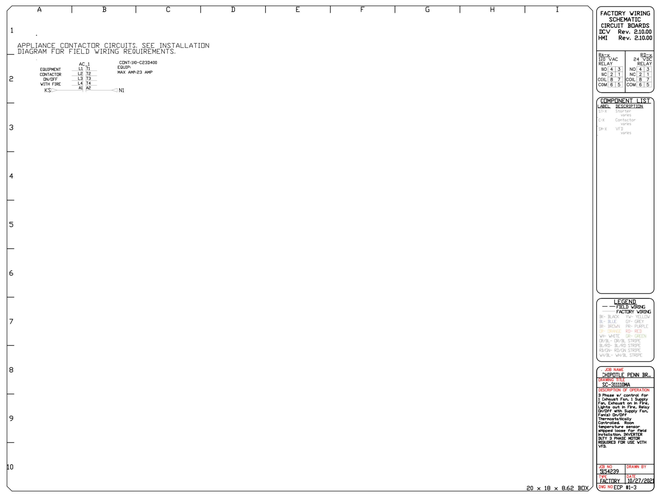
HOOD SHOP DRAWING PRODUCED BY MANUFACTURER - FOR REFERENCE ONLY

ELECTRICAL PACKAGE – JOB#5154239

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1		SC-311110MA	UTILITY CABINET LEFT	03 - UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	EF-1	EXHAUST	3	2.000	208	6.1
				HOOD # 1	1 FAN		MAU-1	SUPPLY	3	2.000	208	6.1







FACTORY WIRING SCHEMATIC CIRCUIT BOARDS
RCV Rev. 2.10.00
HMI Rev. 2.10.00
COMPONENT LIST
LEGEND
FIELD WIRING
FACTORY WIRING
JOB NAME CHIPOTLE PENN BR.
SC-311110MA
DESCRIPTION OF OPERATION
3 Phase w/ control for 1 Exhaust Fan,1 Supply Fan. Exhaust on in Fire, Lights out in Fire, Relay On/Off with Supply Fan,Cycle On/Off from remote/thermostat, Roof mounted curb adapter, Roof top unit temperature sensor shipped loose for field installation. Built to 2018 IMC/IECC/2018 IFC/NFPA 96 with VFD.
JOB NO 5154239
DRAWN BY JMB-40
DATE 10/27/2021
SCHEMATIC TYPE INSTALL
DWG NO ECP #1-2

Consultant:
Polaris Consulting Engineers, PC
214 W. Main Street, Suite 208
Moorestown, NJ 08057
(856) 778-5400

CHIPOTLE MEXICAN GRILL, INC.
PO BOX 182566
COLUMBUS, OH 43218-2566
TELEPHONE: (614) 318-2482
INTERNET: WWW.CHIPOTLE.COM

REVISIONS

DESCRIPTION	DATE:

CAPTIVEAIRE
Highwoods Group
4641 Paragon Park Rd., Raleigh, NC. 27616 PHONE: (919) 875-0420 FAX: (919) 875-0577 EMAIL: mgt40@captiveaire.com
www.captiveaire.com

CHIPOTLE PENN BRANCH #3823
WASHINGTON, DC, 20020

DATE: 10/27/2021
DWG.#: 5154239
DRAWN BY: JMB-40
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 8

STORE NO.: 3823
PENN BRANCH
3240 PENNSYLVANIA AVE SE
WASHINGTON, DC 20020

REV.	DATE	DESCRIPTION

PROFESSIONAL SEAL

Michael L. Wilson
DC License #PE900641

PROFESSIONAL IN CHARGE: Anthony J. Scalamandre, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER: 20024

SHEET TITLE:
CAPTIVEAIRE DRAWINGS

SHEET NUMBER:
M-407

2021-DB#6/P#1-4

EXHAUST FAN SCHEDULE

Tag	Manufacturer	Model	Type	Drive	CFM	E.S.P.	Motor					Sone	Weight	Furnished	Installed	Comments
						IN. W.C.	H.P.	Volts	PH.	Hz.	RPM	Level	lbs.	By	By	
EF-1	Captive-Aire	USBI18DD-RM	Utility	Direct	3200	1.2	2	208	3	60	1253	17.7	402	HS	GC	See Captive-Aire drawings for options & accessories.
EF-2	Captive-Aire	DR12HFA	Roof	Direct	150	0.45	.250	115	1	60	1282	7.10	49	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					Unit Installed Weight lbs.	Furnished By	Installed By	Comments
							Voltage	Phase	Hz.	FLA	MOCP				
CU-1	-	Manitowoc (Kolpak/Harford)	KPCL98MZOP-3E	Walk-in Cooler Remote CU	R-448A	10 lbs. 6.4 oz.	208	3	60	9.4	15	200	WCS	GC	Furnished with walk-in cooler
CU-2	-	-	-	Ice Maker Remote CU (low capacity)	R-404A	11 lbs. 7.4 oz.	120	1	60	-	-	100	KES	GC	Furnished with ice maker
CU-3	-	-	-	PUW Ice Maker Remote CU	R-404A	11 lbs. 7.4 oz.	120	1	60	-	-	100	KES	GC	Furnished with ice maker

MAKE-UP AIR UNIT SCHEDULE

Unit ID	Manuf.	Model	Orientation	Fan Performance				Heating Performance					Unit Electrical Data					Unit Installed Weight lbs.	Furnished By	Installed By	Comments
				Supply Air (CFM)	Total E.S.P. in. w.c.	Motor Nominal HP	RPM	Type	Input MBH	Output MBH	Temperature Rise °F D.B.	Efficiency AFUE %	Voltage	Phase	Hz.	MCA	MOCP				
MAU-1	Captive-Aire	A1-D.250-15D	Inline	1950	0.45	2	2038	Nat.Gas	92.790	85.367	41.0	92	208	3	60	7.7	15	593	HS	GC	See Captive-Aire drawings for options & accessories.

VENTILATION SCHEDULE

Space Served Name	Area (SQ.FT.)	Calculation of Minimum Outside Air (OA) Per 2017 DCMR 12E, DC Mechanical Code (2015 IMC) Classification	Based on Occupancy					Based on CFM / SQ.FT.		Based on Exhaust				OA CFM Required	OA CFM Provided	Ventilation System	Comments
			Persons Per 1000 SQ.FT.	Estimated Max. Occupant Load	Design Occupant Load	CFM Per Person	Total OA CFM	CFM Per SQ.FT.	Total OA CFM	Fixture Quantity	CFM Per Fixture	CFM Per SQ.FT.	Total Exhaust CFM				
101-Dining	791	Food and beverage service: Cafeteria, fast food	100	79	48	7.5	360	0.18	142					502	722	RTU-1	See Note 1
102-Utensil	83	Public spaces, Corridors and utilities						0.06	5					5	7	RTU-1	
103-Passage	44	Public spaces, Corridors and utilities						0.06	3					3	4	RTU-1	
105-Ordering	125	Food and beverage service: Cafeteria, fast food	100	13	13	7.5	93.75	0.18	23					116	167	RTU-1	See Note 1
111-Unisex R.R.	55	Public spaces: Toilet rooms - public							0	1	70		70	0	0	EF-2	
112-Unisex R.R.	59	Public spaces: Toilet rooms - public							0	1	70		70	0	0	EF-2	
Totals:	1157				61									626	900		
104-POS	123	Food and beverage service: Cafeteria, fast food	100	12	2	7.5	15	0.18	22					37	113	AHU-1	See Note 1
106-Serving	61	Food and beverage service: Cafeteria, fast food	100	6	4	7.5	30	0.18	11					41	125	AHU-1	See Note 1
107-Cooking	340	Food and beverage service: Kitchens (cooking)		0		7.5	0	0.12	41			0.7	238	41	125	EF-1	
108-Kitchen	402	Food and beverage service: Cafeteria, fast food	100	40	4	7.5	30	0.18	72					102	313	AHU-1	See Note 1
109-Office	47	Offices: Office spaces	5	0	1	5	5	0.06	3					8	24	AHU-1	
Totals:	973				11									229	700		

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				Cooling Capacity						Heating Performance				Unit Electrical Data					Unit Installed Weight lbs.	Furnished By	Installed By	Accessories, Features & Options												Comments
						Air Balance		Motor	Total	Net Capacity		Efficiency	EAT (Deg. F)			Cond.	Type	Input	Output	Efficiency	Voltage	Phase	Hz.	MCA	MOCP				1	2	3	4	5	6	7	8	9	10	11	12	
						Supply CFM	Outdoor CFM	Hp	E.S.P. in. w.c.	Total MBH	Sensible MBH	(S)EER	DB	WB		EAT (Deg. F)		MBH	MBH	AFUE %																					
RTU-1	10	York	ZJ120	Dining Room	Downflow	4000	900	3	1.0	120.7	86.7	12.0	80.0	67.0	95.0	Nat.Gas	240	192	80	208	3	60	50.4	60	1420	HES	GC	X	X	X	X	X	X	X	X	X	X	X	X	

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 campers 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. Hi-static motor

HEAT PUMP SPLIT SYSTEM AIR HANDLER & CONDENSER UNIT SCHEDULE (AHU & ACC)

Tag	Manuf.	AHU model #	Orientation	ACC model #	Tonnage	Supply Fan					DX Cooling				Heating Performance							Electric-AHU			Electric-ACC			AHU Installed weight LBS	ACC Installed weight LBS	Accessories & Options								
						Design airflow CFM	Outdoor airflow CFM	ESP in H2O	Fan speed RPM	Fan HP	Cooling LDB F	Total capacity MBH	Sensible capacity MBH	(S)EER	Type	Net Capacity MBH @ 17°F D.B.	MBH @ 47°F D.B.	Auxiliary Electric Heat KW	Unit Discharge °F D.B.	Unit Discharge w/ Elec Heat °F D.B.	Efficiency COP @ 17°F D.B.	COP @ 47°F D.B.	Unit voltage	MCA	MOCP	Unit voltage	MCA	MOCP			1	2	3	4	5	6	7	8	9
AHU/ACC-1	York	NL120	Horizontal	PC120	10	4000	700	0.6	844	2.0	58.7	116.4	86.4	11.1	Heat pump	63.0	104.0	36	60.0	81.3	2.3	3.3	208/3/60	100.9	110	208/3/60	41.6	50	562	543	X	X	X	X	X	X	X	X	X

Notes that apply to all units:

1. Maximum air velocity through cooling coil shall not exceed 500 feet per min.
2. 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.
3. Mechanical subcontractor shall affix unit designation decal on unit.
4. Perform testing and balancing and submit reports to the engineer in accordance with specification.
5. Indoor and outdoor units shall be by the same manufacturer.
6. Refrigerant piping to be sized and installed per manufacturer's specifications.

Accessories & Options:

1. 2" Pleated MERV 8 Filter
2. Hail guards (ACC)
3. Mixing box
4. Provide condensate drain pan.
5. Provided manufacturer's electrical disconnect (ACC & AHU).
6. Provide Little Giant VCC-20 Series or equal (if cannot drain via gravity).
7. Service outlets (GFCI type, provided by factory, field wired by EC).
8. R.A. smoke detector w/ remote keyed annunciator/reset.
9. Factory installed economizer (IAQ ready) with differential enthalpy control and hood.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

Tag	Description	Size	Material	Finish	Mounting	Furnished By	Installed By	Manufacturer	Model	Notes
BS-1	Bathroom Air Purification Unit		Stainless Steel	Stainless Steel	Surface Mount	TUV	GC	RGF Environmental Group	BRU Assembly	See electrical sheets for connection information
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: 12"x12" Neck: Varies	Aluminum	White	Surface Mount	GC	GC	Nailor	4320A Type S	Provide with integral OBP
CD-3	Perforated ceiling diffuser	Face: 20"x20" Neck: Varies	Aluminum	White	Surface Mount	GC	GC	Nailor	4320A Type S	Provide with integral OBD
ER-1	Perforated ceiling exhaust	Face: 12"x12" Neck: Varies	Aluminum	White	Surface Mount	GC	GC	Nailor	4330R Type S	Provide integral OBD
RG-1	Perforated ceiling return	Face: 24"x24" Neck: Varies	Aluminum	White	Lay-in ceiling	GC	GC	Nailor	4330R Type L	
RG-2	0 deg. fixed blade return grille	Neck: Varies	Aluminum	Mill	Duct	GC	GC	Nailor	51FH	
SR-2	Double-deflection supply register	Neck: Varies	Aluminum	Mill	Duct	GC	GC	Nailor	51DH	Provide integral OBD

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.

2021-DB#6/P#1-4

Consultant:

Polaris Consulting Engineers, PC
214 W. Main Street, Suite 208
Moorestown, NJ 08057
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PENN BRANCH
3240 PENNSYLVANIA AVE SE
WASHINGTON, DC 20020

REV. DATE DESCRIPTION
2021.12.03 PERMIT

PROFESSIONAL SEAL

Michael L. Wilson
DC License #PE900641

PROFESSIONAL IN CHARGE: Anthony J. Scalamandre, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

PROJECT NUMBER:
20024

SHEET TITLE:
HVAC SCHEDULES

SHEET NUMBER:
M-600

2017 DC ECC Minumum Duct Insulation R-Value, Combined Heating and Cooling Ducts

Climate Zone	Duct Location						
	Exterior	Ventilated Attic	Unvented Attic Above Insulated Ceiling	Unvented Attic with Roof Insulation	Unconditioned Space	Indirectly Conditioned Space	Buried
Supply Ducts							
4	R-6	R-6	R-6	R-3.5	R-3.5	None	R-3.5
Return Ducts							
1 to 8	R-3.5	R-3.5	R-3.5	None	None	None	None

2017 DC ECC PIPE INSULATION THICKNESS SCHEDULE

FLUID DESIGN OPERATING TEMP RANGE (F)	INSULATION CONDUCTIVITY		MINIMUM INSULATION THICKNESS FOR NOMINAL PIPE OR TUBE SIZE (in.)				
	Conductivity Btu-in / (hr-ft-F)	Mean Rating Temp (F)	< 1.0	1.0 < 1.5	1.5 < 4.0	4.0 to < 8.0	8.0 and up
> 350 (deg.)	0.32 - 0.34	250	4.5	5.0	5.0	5.0	5.0
251 - 350	0.29 - 0.32	200	3.0	4.0	4.5	4.5	4.5
201 - 250	0.27 - 0.30	150	2.5	2.5	2.5	3.0	3.0
141 - 200	0.25 - 0.29	125	1.5	1.5	2.0	2.0	2.0
105 - 140	0.21 - 0.28	100	1.0	1.0	1.5	1.5	1.5
40 - 60	0.21 - 0.27	75	0.5	0.5	1.0	1.0	1.0
< 40	0.20 - 0.26	50	0.5	1.0	1.0	1.0	1.5

AIR DOOR SCHEDULE

ID	Manufacturer	Model	Airflow			Electrical			Remarks
			Max FPM	Avg FPM	CFM	KW	V/P/H	FLA	
AD-1	Berner	ALC081072E	3600	2058	2072	11.2	208/3/60	32.8	

AIR BALANCE CALCULATIONS

System	Supply Air CFM	Return Air CFM	Outdoor Air CFM	Exhaust Air CFM	Pressure CFM
RTU-1	4000	3100	900		900
AHU-1	4000	3300	700		700
MAU-1	1950	0	1950		1950
EF-1				3200	-3200
EF-2				150	-150
Total	9950	6400	3550	3350	200

2021-DB#6/P#1-4

Consultant:

Polaris Consulting Engineers, PC
214 W. Main Street, Suite 208
Moorestown, NJ 08057
(856) 778-5400

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3240 PENNSYLVANIA AVE SE
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REV.	DATE	DESCRIPTION
	2021.12.03	PERMIT

PROFESSIONAL SEAL

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DC License #PE900641

PROFESSIONAL IN CHARGE: Anthony J. Scalamandre, P.E.
DRAWN BY: PCE
CHECKED BY: AJS

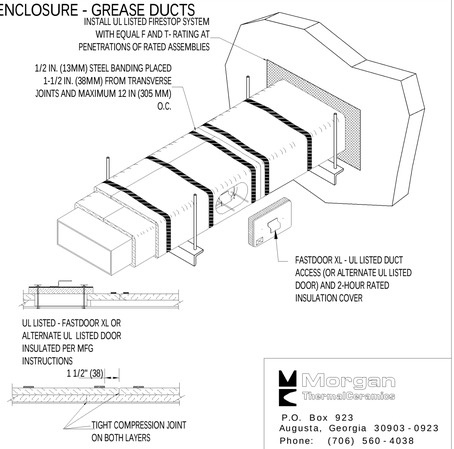
PROJECT NUMBER:
20024

SHEET TITLE:
HVAC SCHEDULES

SHEET NUMBER:
M-601

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.

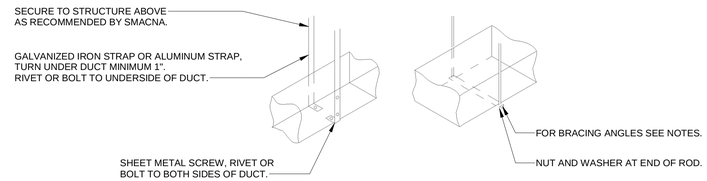


Morgan Thermal Ceramics
P.O. Box 923
Augusta, Georgia 30903 - 0923
Phone: (706) 560 - 4038

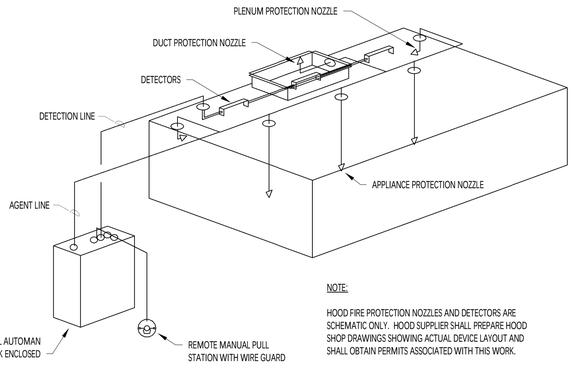
1 FIREMASTER DUCT WRAP - UL HNKT-G18
NOT TO SCALE

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"



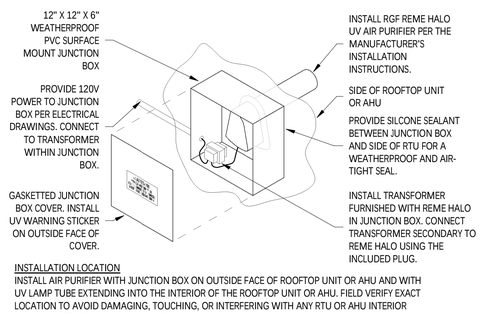
3 HVAC - DUCT HANGER DETAILS
NOT TO SCALE



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



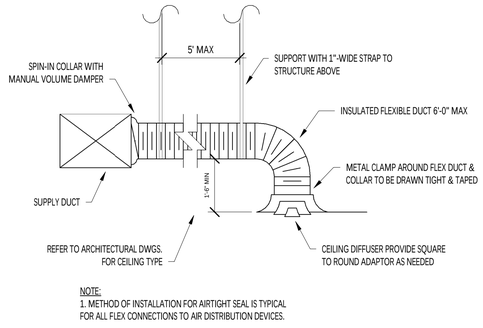
INSTALLATION LOCATION

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

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

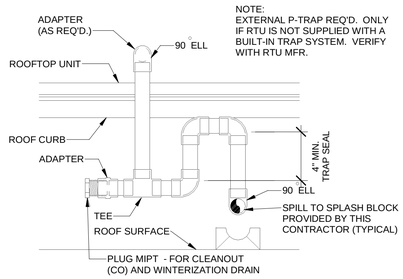
YORK: INSTALL INTO THE SUPPLY AIR PLENUM FROM THE BACK SIDE OF THE UNIT JUST ABOVE THE HEAT EXCHANGER.

5 UV AIR PURIFIER INSTALLATION
NOT TO SCALE



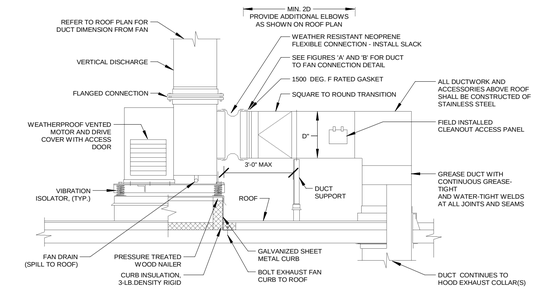
NOTE:
1. METHOD OF INSTALLATION FOR AIRTIGHT SEAL IS TYPICAL FOR ALL FLEX CONNECTIONS TO AIR DISTRIBUTION DEVICES.

6 HVAC - DIFFUSER CONNECTION
NOT TO SCALE

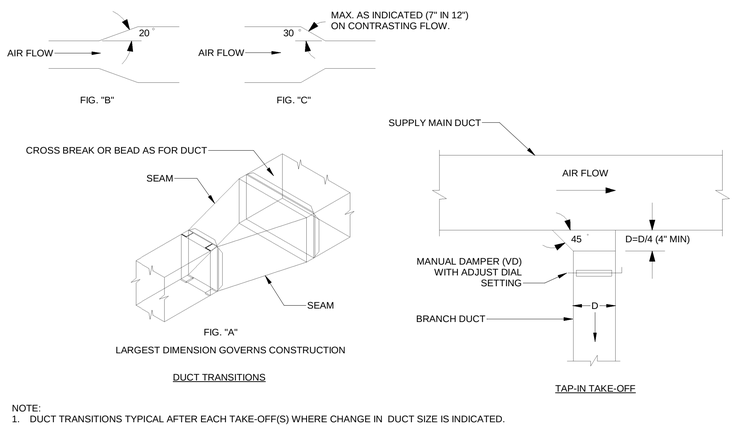


NOTE:
EXTERNAL P-TRAP REQ'D. ONLY IF RTU IS NOT SUPPLIED WITH A BUILT-IN TRAP SYSTEM. VERIFY WITH RTU MFR.

7 HVAC - CONDENSATE PIPING FROM RTU
NOT TO SCALE



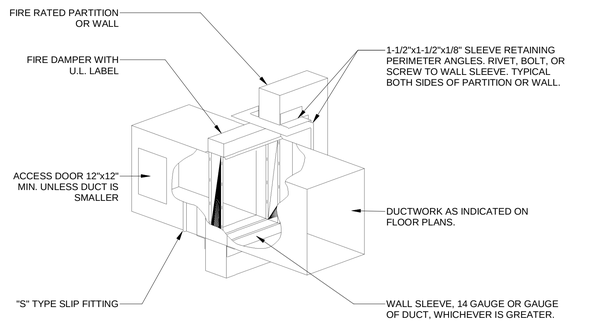
8 HVAC - UTILITY SET GREASE EXHAUST FAN DETAIL
NOT TO SCALE



DUCT TRANSITIONS

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

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REV.	DATE	DESCRIPTION
	2021.12.03	PERMIT

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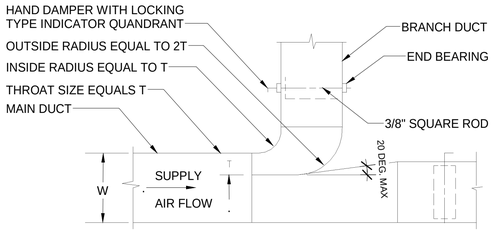
PROJECT NUMBER:
20024

SHEET TITLE:
HVAC DETAILS

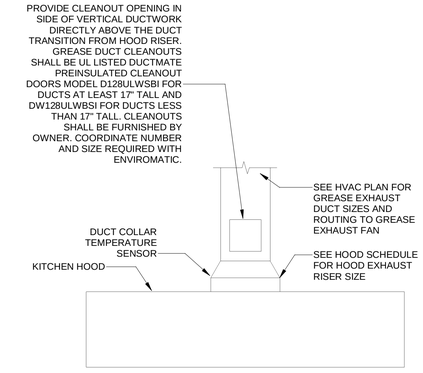
SHEET NUMBER:
M-700

2021-DB#6/P#1-4

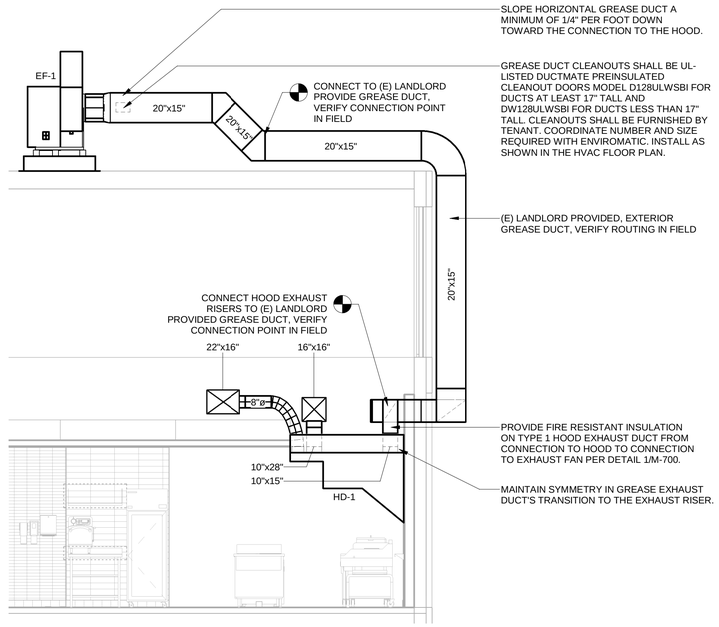


NOTES:
1. FURNISH THIS TYPE CONNECTION FOR BRANCHES WITH MORE THAN 200 CFM.
2. MUST BE USED WHEN W IS GREATER THAN, OR EQUAL TO 36".
3. MINIMUM T = 4".

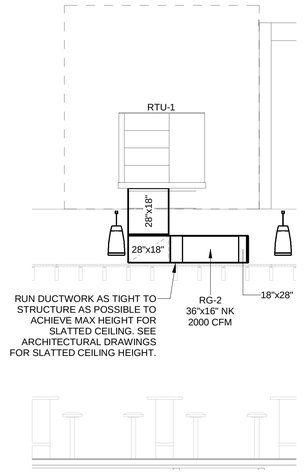
1 HVAC - RECTANGULAR DUCT BRANCH
NOT TO SCALE



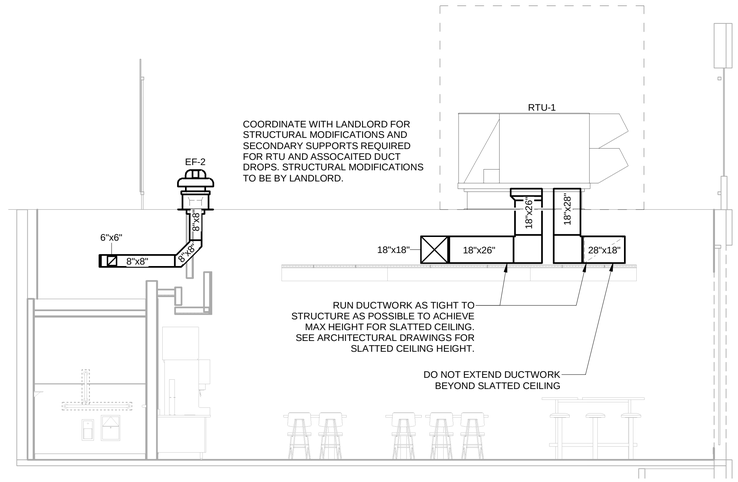
2 HVAC - GREASE EXHAUST DUCT AT HOOD
NOT TO SCALE



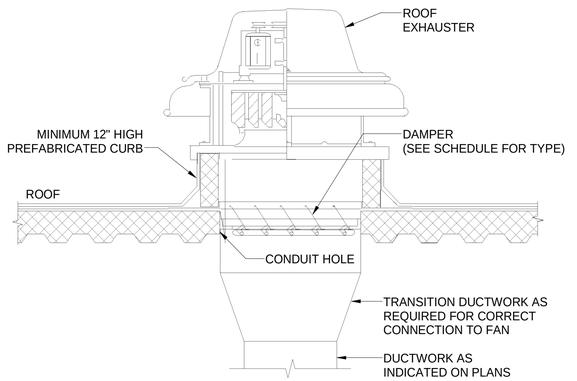
3 HVAC - HOOD DUCTWORK SECTION 'A'
1/4" = 1'-0"



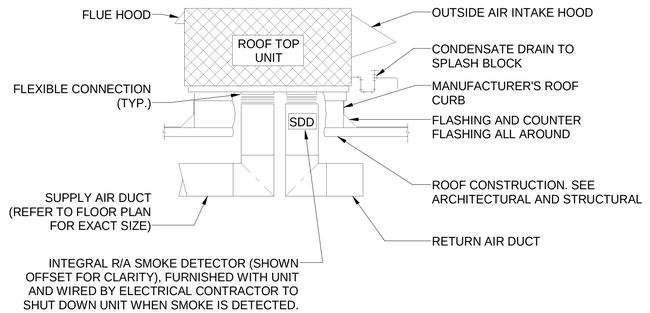
4 HVAC - DINING ROOM RETURN SECTION
1/4" = 1'-0"



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

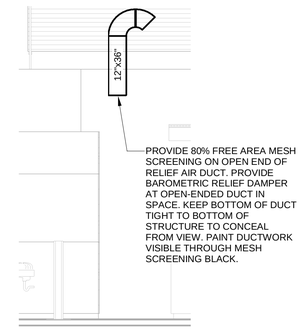


6 HVAC - ROOF MOUNTED EXHAUST FAN
NOT TO SCALE

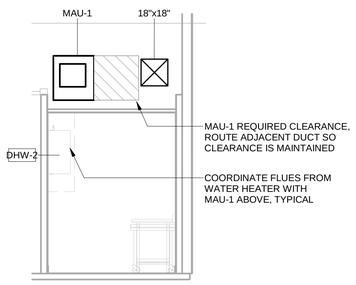


NOTES:
1. THIS DETAIL SHALL SERVE AS A STANDARD FOR INSTALLATION FOR ALL ROOFTOP UNITS. REFER TO FLOOR PLANS FOR EXACT REQUIREMENTS FOR EACH UNIT.
2. ALL ROOF PENETRATIONS ARE BASED ON MANUFACTURERS EQUIPMENT S/A TO R/A OPENING SIZE UNLESS NOTED OTHERWISE. EXTEND FULL SIZE DUCT DOWN TO ABOVE CEILING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

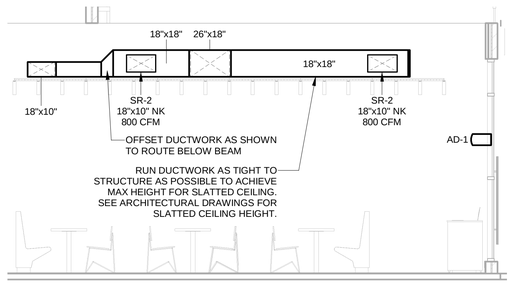
7 HVAC - ROOFTOP UNIT MOUNTING DETAIL
NOT TO SCALE



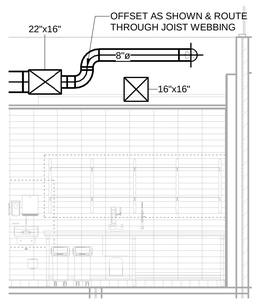
8 HVAC - RELIEF DUCTWORK SECTION
1/4" = 1'-0"



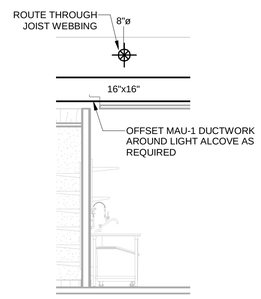
9 HVAC - MAU DUCTWORK SECTION
1/4" = 1'-0"



10 HVAC - DINING ROOM DUCTWORK SECTION 'B'
1/4" = 1'-0"



11 HVAC - AHU-1 / MAU-1 DUCTWORK SECTION 'A'
1/4" = 1'-0"



12 HVAC - AHU-1 / MAU-1 DUCTWORK SECTION 'B'
1/4" = 1'-0"

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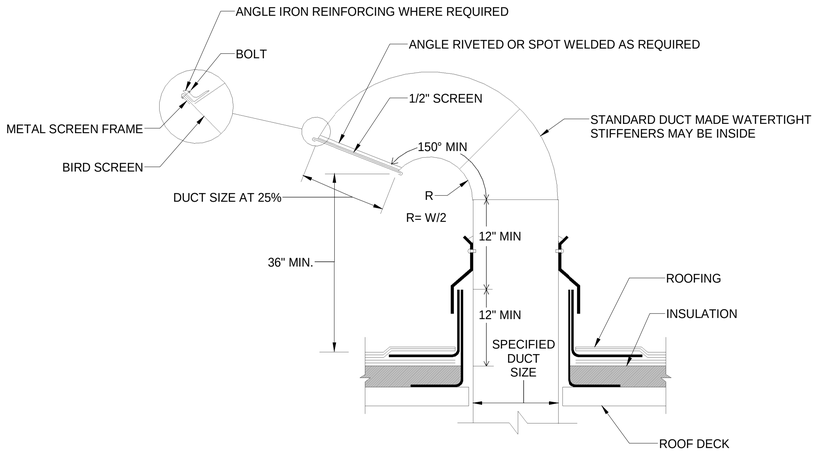
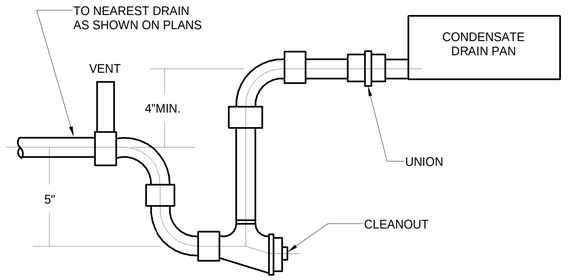
HVAC DETAILS

SHEET NUMBER:
M-701

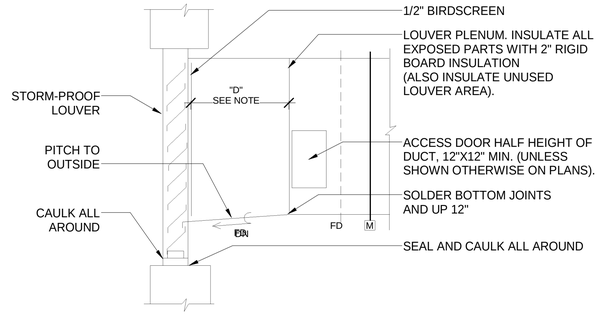
2021-DB#6/P#1-4



1 HVAC - GOOSENECK DETAIL
NOT TO SCALE

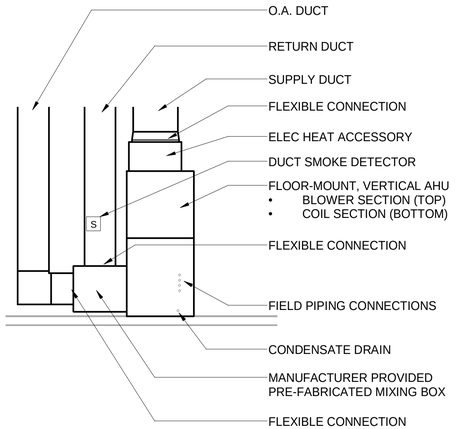


2 HVAC - CONDENSATE COOLING COIL DRAIN PAN
NOT TO SCALE



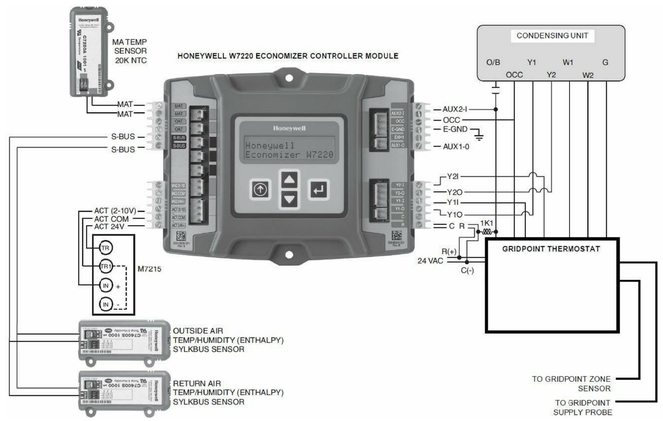
NOTE: WHEN "D" IS OVER 24" PROVIDE 3/4" DRAIN AT
5'-0" CENTERS 6" FROM LOUVER WITH TRAP.

3 HVAC - MOTORIZED WALL LOUVER
1/8" = 1'-0"



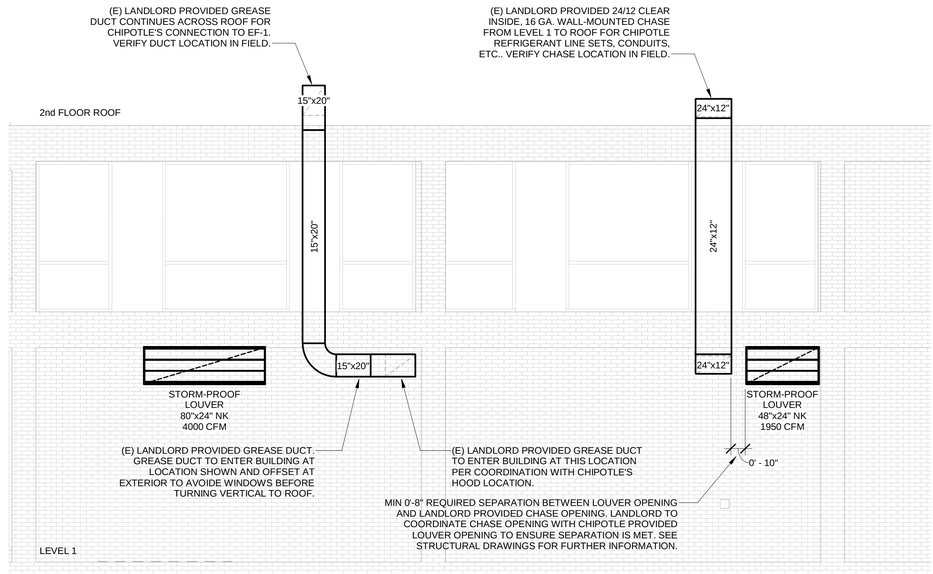
NOTES:
1. MECHANICAL CONTRACTOR SHALL INSTALL AND LOCATE AHU IN MECHANICAL ROOM PER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND TO MAINTAIN ALL REQUIRED CLEARANCES AND ACCESS POINTS
2. MECHANICAL CONTRACTOR SHALL COORDIANTE PIPING OF CONDENSATE DRAIN TO NEARBY FLOOR SINK, OR PUMPED TO NEAREST POINT OF DISCHARGE
3. MECHANICAL CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, OUTDOOR AIR) CONNECTED TO AHU, PROVIDED AT POINT OF CONNECTION OF EQUIPMENT TO DUCTWORK, U.N.O.

4 HVAC - AHU INSTALLATION DETAIL
NOT TO SCALE



NOTES:
1. CONTRACTOR TO COORDINATE INSTALLATION WITH GRIDPOINT PRIOR TO GRIDPOINT 'S INSTALLATION ON SITE AND RPORT ANY ISSUES TO ENGINEER.

6 HVAC - TYPICAL YORK AHU CONTROL WIRING DIAGRAM
NOT TO SCALE



5 HVAC - EXTERIOR LOUVER & DUCT ELEVATION
1/4" = 1'-0"

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