## MECHANICAL SPECIFICATIONS

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

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

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

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

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

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

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

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

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

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

DUCT INSTALLATION (ALL MAKE-UP AIR DUCT, ROUND SUPPLY DUCT AND ROUND RETURN DUCT ABOVE CEILING): PROVIDE MINIMUM 1-1/2" THICK BLANKET TYPE FIBERGLASS INSULATION COMPLYING WITH ASTM C-553, TYPE II, WITH FACTORY APPLIED KRAFT BONDED TO ALUMINUM FOIL, REINFORCED WITH FIBERGLASS VAPOR BARRIER/JACKET. JACKET SHALL CONFORM TO ASTM C-1136, TYPE II. INSTALLED R VALUE SHALL BE 6 OR HIGHER WITH A 0.75 PCF DENSITY.

DUCT LINER (ALL RECTANGULAR SUPPLY AND RETURN DUCT, AND EXPOSED ROUND DUCT): PROVIDE MINIMUM 1" THICK, 3 PCF DENSITY, LONG TEXTILE FIBER TYPE DUCT LINER, WITH COATING ON THE AIR STREAM SIDE CONFORMING TO NFPA 90A. DUCT LINER SHALL BE SECURED TO DUCT WITH BOTH ADHESIVE AND MECHANICAL FASTENERS. ADHESIVE SHALL BE LEED COMPLIANT LOW VOC AS RECOMMENDED BY DUCT LINER MANUFACTURER, AND SHALL COMPLY WITH ASTM C-916. DUCT LINER FASTENERS SHALL COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTIONS STANDARDS", LATEST EDITION. THERMAL CONDUCTIVITY SHALL BE EQUAL TO OR LESS THAN 0.24 AT 75°F.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEETMETAL BRACKET BEYOND DUCT COVERING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

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

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

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

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

MECHANICAL EQUIPMENT IDENTIFICATION: PROVIDE ENGRAVED PLASTIC LAMINATE LABEL FOR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT AND EACH OPERATIONAL DEVICE. SIGNS TO INFORM OPERATOR OF 1/2" HIGH. PROVIDE SIGNS TO INFORM OPERATOR OF OPERATIONAL REQUIREMENTS, TO INDICATE SAFETY AND EMERGENCY PRECAUTIONS, AND TO WARN OF HAZARDS AND IMPROPER OPERATION.

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

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

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

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

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

SUBMITTAL SHALL INCLUDE (AS APPLICABLE):

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

FULL SIZE SHOP DRAWINGS SHALL INCLUDE (AS APPLICABLE):

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

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

## MECHANICAL SYMBOLS LEGEND

ABBREVIATIONS:

| | |
|---|---|
| AFF | ABOVE FINISHED FLOOR |
| BOD | BOTTOM OF DUCT |
| BTU | BRITISH THERMAL UNIT |
| CFM | CUBIC FEET PER MINUTE |
| DB | DRY BULB |
| EAT | ENTERING AIR TEMPERATURE |
| ESP | EXTERNAL STATIC PRESSURE |
| FOB | FLAT ON BOTTOM |
| HZ | FREQUENCY |
| NC | NOISE CRITERIA |
| PSI | POUNDS PER SQUARE INCH |
| RTU | ROOFTOP UNIT |
| TYP | TYPICAL |
| WC | WATER COLUMN |
| WB | WET BULB |

GRILLES/DIFFUSERS:

- SUPPLY DIFFUSER
- SUPPLY DIFFUSER WITH 3-WAY THROW
- SUPPLY DIFFUSER WITH 2-WAY THROW
- SIDEWALL MOUNTED SUPPLY REGISTER
- RETURN GRILLE
- EXHAUST GRILLE
- ROUND DIFFUSER

EQUIPMENT:

- ROOF MOUNTED EXHAUST FAN
- CEILING MOUNTED EXHAUST FAN
- ROOFTOP UNIT
- MAKE-UP AIR UNIT
- TS — TEMPERATURE SENSOR - ELECTRIC
- T — THERMOSTAT
- CO2 — CARBON DIOXIDE SENSOR
- SD — DUCT SMOKE DETECTOR
- A — AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR
- H — HUMIDITY SENSOR

DOUBLE LINE DUCT SYMBOLS:

- NEW SHEET METAL DUCTWORK
- SUPPLY OR OUTSIDE AIR DUCT
- RETURN AIR DUCT
- EXHAUST AIR DUCT
- DUCTWORK TRANSITION
- DUCTWORK TRANSITION - RECTANGULAR TO ROUND
- SUPPLY DUCT ELBOW UP OR DOWN
- RETURN DUCT ELBOW UP OR DOWN
- EXHAUST DUCT ELBOW UP OR DOWN

- DUCT ELBOW WITH FIXED TURNING VANES
- DUCT BRANCH TAKE-OFF
- ROUND SPIN-IN WITH DAMPER
- SQUARE TO ROUND TAP WITH DAMPER
- FLEXIBLE DUCT CONNECTION
- VOLUME DAMPER (VD)
- BACKDRAFT DAMPER (BD)
- FLEXIBLE DUCTWORK

GENERAL REFERENCES/NOTATIONS:

- CONNECT TO EXISTING
- # — NOTE DESIGNATION
- # — REVISION DESIGNATION
- TYPE # — MECHANICAL EQUIPMENT DESIGNATION
- TAG / CFM — DIFFUSER DESIGNATION AND CFM

SYMBOLS LEGEND NOTES:

1. REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS SCHEDULE.
2. PROJECT MAY NOT USE EVERY SYMBOL OR DEVICE INDICATED ON THIS LEGEND.

## GENERAL NOTES

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

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

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

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

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

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

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

## INSULATION SCHEDULE

| | |
|---|---|
| ALL EXPOSED DUCTWORK IN CONDITIONED SPACES | NONE |
| ALL EXTERIOR DUCTWORK | MIN. R-8 |
| ALL CONCEALED SUPPLY AND RETURN DUCT | MIN. R-6 |
| ALL EXHAUST UP TO 10'-0" FROM DISCHARGE | MIN. R-8 |

NOTE:

ALL SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHEN LOCATED IN UNCONDITIONED SPACES AND WITH A MINIMUM OF R-8 INSULATION WHEN LOCATED OUTSIDE THE BUILDING ENVELOPE. WHEN LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY A MINIMUM OF R-8 INSULATION. ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS, MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS OR TAPES. TAPES AND MASTICS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.

## ENERGY NOTES

1. MOTORIZED DAMPERS SHALL BE INSTALLED ON ALL INTAKES AND EXHAUST OPENINGS UNLESS NOTED OTHERWISE.

2. MAXIMUM FAN NAMEPLATE HORSEPOWER SHALL NOT EXCEED 1.1 HP/1000CFM.

3. LOAD CALCULATIONS WERE BASED ON ASHRAE 2021 FUNDAMENTALS

4. ALL PROGRAMMABLE THERMOSTATS SHALL HAVE 5 DEGREE DEADBAND AND SHALL HAVE 7-DAY CLOCK, 2-HOUR MANUAL OVERRIDE, 10 HOUR BACKUP AND SETBACK CAPABLE OF 55 DEGREES HEATING AND 85 DEGREES COOLING. (EXCEPT CONTINUOUS OPERATING ZONES)

5. DUCT INSULATION AS SPECIFIED WITH MINIMUM VALUES AS FOLLOWS:
a.R-6 SUPPLY AND RETURN DUCT INSULATION IN UNCONDITIONED SPACES.
b.R-8 SUPPLY AND RETURN DUCT INSULATION FOR EXTERIOR DUCTS.
c.R-3 SUPPLY AND RETURN DUCT INSULATION UNDERGROUND.
d.1-1/2" WRAPPED OR 1" INTERNAL LINER ON DUCTS WITHIN INDIRECTLY CONDITIONED PLENUM SPACES.

6. ALL DUCTWORK SHALL BE SEALED PRESSURE SENSITIVE TAPE IS NOT USED AS THE PRIMARY SEALANT. LONGITUDINAL AND TRANSVERSE SEAMS FOR DUCTS IN UNCONDITIONED SPACES AND WALL PENETRATIONS. TRANSVERSE SEAMS ON BURIED DUCTS.

7. ALL MOTORS SHALL MEET THE REQUIREMENTS OF C405.8.

8. PROVIDE COMMISSIONING PER C408.

1 9. BUILING SHALL COMPLY WITH THE INTERNATIONAL CONSERVATION CODE AS ADOPTED IN SECTION AND ANY AMENDMENTS TO THE VIRGINIA CONSTRUCTION CODE.

## APPLICABLE CODES

AS ADOPTED BY THE COUNTY OF CHESTERFIELD, VIRGINIA :
2018 VIRGINIA MECHANICAL CODE
2021 VIRGINIA PLUMBING CODE
2021 VIRGINIA BUILDING AND FIRE CODE
2018 VIRGINIA ENERGY CONSERVATION CODE

## DESIGN CRITERIA

BASED ON ASHRAE HANDBOOK - 2021 FUNDAMENTALS

DINWIDDIE, VA, USA

OUTDOOR DESIGN CONDITION

1% COOLING: 97.2°/76.8°F DB/WB

99.6% HEATING: 15.8°F DB

INDOOR DESIGN CONDITION (ADJUSTABLE)

SUMMER: 75°F DB/50% RH

WINTER: 70°F DB

## SEQUENCE OF OPERATION

1

A. PROVIDE STAND ALONE OR APPLICATION SPECIFIC CONTROLLERS AS REQUIRED TO PERFORM THE FOLLOWING SEQUENCES OF OPERATIONS.

B. PACKAGED ROOFTOP UNITS

1. UNIT SHALL CONSIST OF SUPPLY AIR FAN, FILTERS, DX COOLING COIL, GAS-FIRED HEAT SECTION, AND A 7-DAY PROGRAMMABLE THERMOSTAT.

2. PROVIDE AN OVERRIDE SWITCH TO OPERATE THE UNIT DURING UNOCCUPIED HOURS. THIS SWITCH SHALL BE PART OF THE PROGRAMMABLE THERMOSTAT. OVERRIDE SWITCH ALLOWS THE UNIT TO OPERATE FOR TWO HOURS (ADJUSTABLE).

3. OCCUPIED MODE: BASED ON THE ROOFTOP UNIT'S HOURS OF OCCUPANCY, START THE UNIT AT THE BEGINNING OF OCCUPANCY AND SHUT DOWN THE UNIT AT THE END OF OCCUPANCY (NOTE: OUTSIDE AIR DAMPER WITHIN THE RTU SHALL OPEN AND THEN THE RTU SHALL START). THE UNIT SHALL START EARLIER AS DETERMINED BY THE PROGRAM FOR EARLY WARM-UP OR COOL DOWN. ON A SYSTEM STARTUP, THE RTU FAN SHALL START AND RUN CONTINUOUSLY AND THE INTERNAL FACTORY CONTROLS SHALL BE ENABLED. BASED ON THE SPACE TEMPERATURE SENSOR, THE UNIT SHALL CYCLE THE HEATING/COOLING TO MAINTAIN THE SPACE TEMPERATURE SETPOINT (COOLING 75 DEGREE F, HEATING 70 DEGREE F)

3.1 ECONOMIZER MODE: WHEN ENTHALPY OF OA IS BELOW 28 BTU/LB, ECONOMIZER MODE SHALL BE ENABLED. ECONOMIZER MODE SHALL LINEARLY MODULATE OUTDOOR AIR CFM FROM MINIMUM OA CFM TO 100% BASED ON ENTHALPY READINGS.

3.2 HUMIDITY CONTROL (WHEN NEEDED BASED ON CLIMATE): UPON DETECTION OF RELATIVE HUMIDITY ABOVE 55%, THE UNIT SHALL CYCLE INTO DEHUMIDIFICATION MODE IF NOT ALREADY IN COOLING.

4. UNOCCUPIED MODE: THE RTU INTERNAL OA DAMPERS SHALL REMAINED CLOSED WHEN THE BUILDING IS NOT OCCUPIED. THE RTU SHALL STOP HEATING/COOLING AND THE FAN SHALL STOP. IF THE SPACE TEMPERATURE FALLS BELOW 56 DEGREE F (ADJUSTABLE), THE UNIT SHALL START AND HEAT UNTIL THE SPACE TEMPERATURE IS 60 DEGREE F (ADJUSTABLE) AND THEN SHUTDOWN. IF THE SPACE TEMPERATURE RISES ABOVE 85 DEGREE F (ADJUSTABLE), THE UNIT SHALL START AND COOL UNTIL THE SPACE TEMPERATURE IS 80 DEGREE F (ADJUSTABLE) AND THEN SHUTDOWN.

5. UPON DETECTION OF SMOKE BY UNIT SMOKE DETECTOR BOTH RTUS SHALL SHUT DOWN AND AN ALARM SHALL BE SENT TO THE FIRE ALARM CONTROL PANEL (WHERE APPLICABLE). LOCAL REMOTE ANNUNCIATORS SHALL ALSO BE ACTIVATED.

C. KITCHEN HOOD EXHAUST FAN (KF-1)

1. THE KITCHEN HOOD EXHAUST FAN SHALL BE ENABLED WHEN ANY COOKING APPLIANCE LOCATED UNDER ITS RESPECTIVE HOOD, IS IN USE.

D. MAKE UP AIR UNIT

1. THE MAKE UP AIR UNIT SHALL BE ENABLED WHEN THE KITCHEN HOOD EXHAUST FAN (KF-1) IS ENERGIZED. THE INTERNAL MOTORIZED DAMPER WITHIN WITH MAU-1 SHALL OPEN AND THE FAN SHALL RUN. IF OA IS LESS THAN 65° (ADJ.), THE MAU-1 GAS-FIRED HEAT SECTION SHALL BE ENABLED TO MAINTAIN A MINIMUM OF 65°.

2. WHEN KF-1 IS OFF, MAU-1 SHALL BE DE-ENERGIZED AND THE INTERNAL MOTORIZED DAMPED SHALL CLOSE.

E. ANSUL SYSTEM ACTIVATION

1. UPON ACTIVATION OF ANSUL SYSTEM, SHUT DOWN MAU-1,AND RTUS. PROVIDE RELAYS CONTACTS, INTERLOCKS, TRANSFORMERS AND ALL ASSOCIATED WIRING TO ACCOMPLISH SEQUENCE. MAU-1 IS ALREADY PREWIRED TO SHUT DOWN IN HOOD CONTROL PANEL. MECHANICAL CONTRACTOR SHALL INTERLOCK RTUS TO ALSO SHUT DOWN.

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AOR PROJECT NUMBER:
CAV021

| ISSUE | DATE |
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| PERMIT COMMENTS | 01.26.2024 |
| IFC | 04.08.2024 |

MECHANICAL GENERAL NOTES, SYMBOLS & LEGEND

SHEET:

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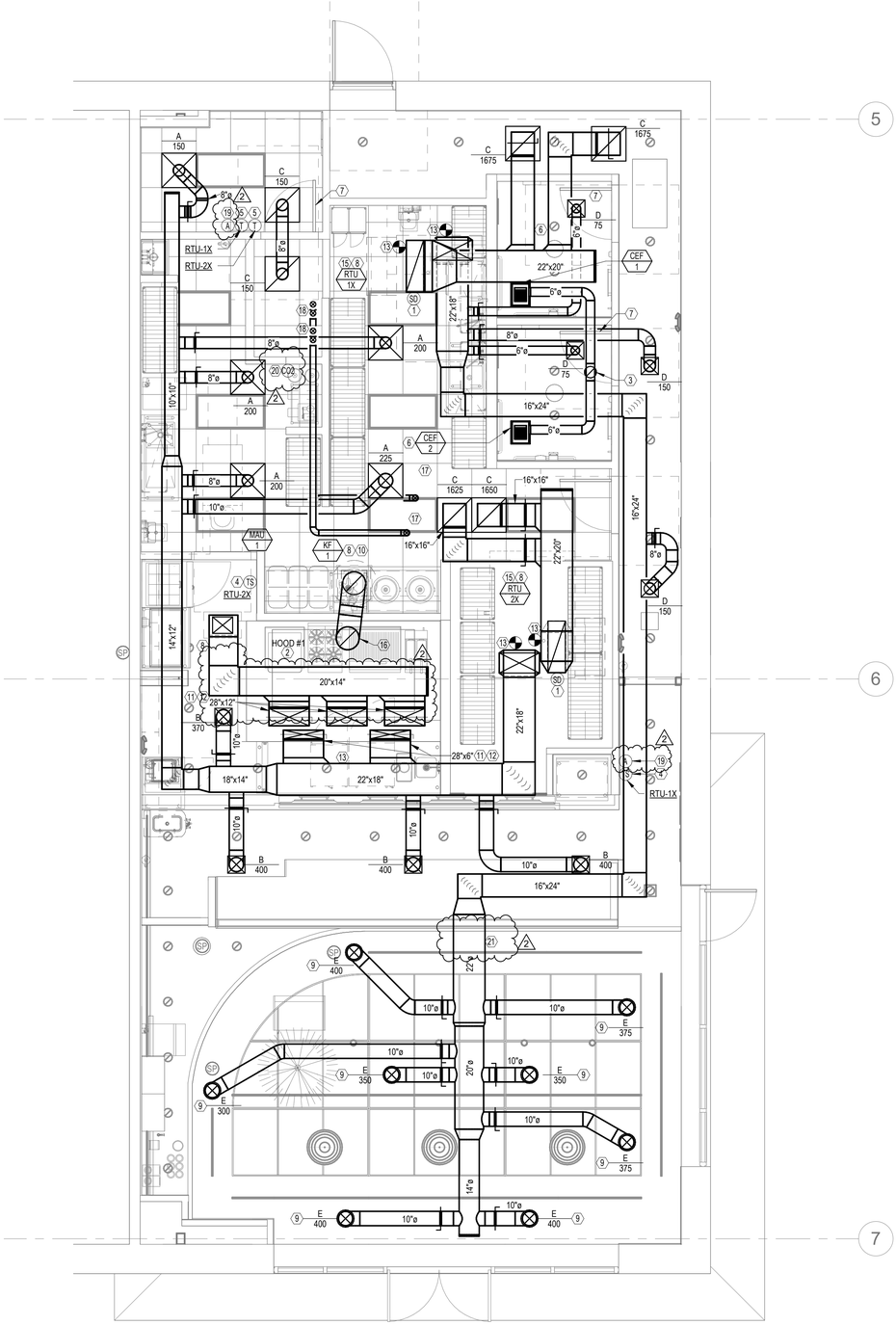


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## MECHANICAL PLAN

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

## KEYED NOTES

1. DUCT MOUNTED SMOKE DETECTOR FURNISHED BY FIRE ALARM CONTRACTOR AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. INTERLOCK WIRING BETWEEN FIRE ALARM SYSTEM RELAY AND ROOFTOP UNIT. SHUTDOWN CONTACT SHALL BE PROVIDED BY MECHANICAL CONTRACTOR. ALL OTHER WIRING BY FIRE ALARM CONTRACTOR. UPON DETECTION OF SMOKE, ROOFTOP UNIT SHALL SHUT DOWN UPON SIGNAL FROM FIRE ALARM SYSTEM. COORDINATE INSTALLATION LOCATION WITH ACCESS REQUIREMENTS.
2. INSTALL OWNER FURNISHED TYPE I GREASE EXHAUST HOOD. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE TRAPEZE HANGERS AND MOUNTING BRACKETS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. REFER TO HOOD DRAWINGS IN FOOD SERVICE SET FOR HOOD SPECIFICATION AND ADDITIONAL INFORMATION INCLUDING BALANCE OF MAKEUP AND CONDITIONED SUPPLY AIR TO HOOD.
3. 8"Ø EXHAUST DUCT VTR.
4. PROVIDE REMOTE TEMPERATURE SENSOR COMPATIBLE WITH THERMOSTAT. MOUNT SENSOR 48" ABOVE FINISHED FLOOR. COORDINATE EXACT LOCATION WITH OWNER.
5. PROVIDE HONEYWELL WI-FI VISION PRO 8000 TOUCHSCREEN 7-DAY PROGRAMMABLE THERMOSTAT WITH AUTO-CHANGEOVER AND AUTOMATIC START CAPABILITY. MOUNT THERMOSTAT 48" ABOVE FINISHED FLOOR. COORDINATE FINAL INSTALLATION LOCATION OF THERMOSTAT WITH OWNER'S REPRESENTATIVE. VERIFY COMPATIBILITY WITH EXISTING ROOFTOP UNITS.
6. PROVIDE CEILING MOUNTED EXHAUST FAN. TRANSITION FROM FAN DISCHARGE TO DUCT SIZE SHOWN AND EXTEND UP THROUGH ROOF.
7. UNDERCUT DOOR 1" FOR TRANSFER AIR.
8. DUCT UP TO EQUIPMENT ON ROOF. REFER TO SHEET M200 FOR EQUIPMENT LOCATION.
9. INSTALL BOTTOM OF ROUND SUPPLY DIFFUSER TO MATCH HEIGHT OF CEILING CLOUD (11'-0").
10. INSTALL OWNER FURNISHED UL-2221 LISTED DOUBLE-WALL GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL DW-3R OR 32 ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL, FROM HOOD COLLAR EXHAUST FAN ON ROOF. INSTALL EXHAUST DUCT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND/OR EVERY 10 FEET WITH A MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT. COORDINATE ROUTING OF DUCTWORK WITH OWNER'S CAPTIVEAIRE REPRESENTATIVE.
11. REFER TO HOOD DRAWINGS FOR BALANCE OF MAKEUP AIR AND CONDITIONED SUPPLY AIR.
12. PROVIDE YOUNG REGULATOR MODEL 830ACC RECTANGULAR CABLE CONTROLLED OPPOSED BLADE BALANCING DAMPER, MODEL 270-301EZ BOWDEN CABLE CONTROL KIT, AND BCW CONTROL WIRE AND CASINGS. COORDINATE INSTALLATION LOCATION WITH ARCHITECT AND MOUNT CABLE CONTROLLER IN CEILING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
13. COORDINATE FINAL LOCATIONS/SIZES WITH ACTUAL SITE CONDITIONS.
14. EXISTING 10-TON RTU (KITCHEN) & CURB PROVIDED BY LANDLORD.
15. EXISTING 10-TON RTU (DINNING) & CURB PROVIDED BY LANDLORD.
16. KITCHEN HOOD POC. TRANSITION AS REQUIRED.
17. PROVIDE WITH NAVIAN GXXX000057 CONCENTRIC VENT AT TERMINATION.
18. 2"Ø WATER HEATER EXHAUST AND INTAKE VENT POCS. PROVIDE CONDENSATE TRAP AND SLOPE HORIZONTAL RUNS, UPWARD TOWARD THE VENT TERMINATION AT A RATE OF 1/4" PER FOOT. REFER TO PLUMBING DRAWINGS & MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INFORMATION.
19. PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET FOR SMOKE DETECTOR MOUNTED AT 48" AFF. ALIGN ANNUNCIATOR WITH THERMOSTAT SENSOR WHERE APPLICABLE.
20. PROVIDE CO2 MEASUREMENT SPECIALISTS RAD-0102-6 REMOTE CO2 STORAGE SAFETY ALARM(OR EQUAL), INSTALL PER MANUFACTURERS RECOMMENDATIONS.
21. EXPOSED DUCTWORK IN THE DINNING AREA SHALL BE MADE OF ELECTRO-GALVARIZED STEEL (PAINTLOCK). SEE MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

## GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR AS REQUIRED TO INSTALL A COMPLETE AND OPERABLE HVAC SYSTEM PER THE NEW ARCHITECTURAL LAYOUT AND AS TO COMPLY WITH THE SPECIFICATIONS, DETAILS, THIS SCOPE OF WORK AND ALL APPLICABLE CODES.
2. ALL WORK PERFORMED SHALL CONFORM TO ALL APPLICABLE STATE AND LOCAL CODES.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND COORDINATE ALL NEW WORK WITH ALL TRADES PRIOR TO ANY WORK BEING DONE TO ENSURE CONFLICTS DO NOT OCCUR.
4. DISRUPTION OF ANY EXISTING SERVICE SHALL BE CLEARED WITH THE OWNER AND SHALL BE PERFORMED AT A TIME AND IN A MANNER SO AS TO CAUSE THE OWNER A MINIMUM OF INCONVENIENCE.
5. ALL DUCT SIZES INDICATED ON PLANS AND RISERS ARE CLEAR INSIDE DIMENSIONS. DUCT SIZES NOT SHOWN SHALL BE SIZED TO VELOCITIES NO GREATER THAN UPSTREAM SECTION USING SIMILAR ASPECT RATIOS.
6. ALL SUPPLY AIR TAKEOFFS FROM MAIN TRUNK DUCTS ARE TO BE INSTALLED WITH BELL MOUTH FITTINGS OR 45 DEGREE ENTRY TO PROVIDE THE SMOOTHEST AIR FLOW POSSIBLE.
7. PROVIDE TURNING VANES IN ALL LOW-PRESSURE 90-DEGREE DUCT TURNS.
8. ALL THERMOSTAT LOCATIONS SHALL BE APPROVED BY THE ARCHITECT.
9. ALL DUCTS LOCATED ABOVE INACCESSIBLE CEILINGS ARE TO BE BALANCED PRIOR TO CEILING INSTALLATIONS.
10. CONTRACTOR SHALL PROVIDE ACCESS DOORS FOR SERVICE AND MAINTENANCE OF ALL EQUIPMENT LOCATED ABOVE INACCESSIBLE CEILINGS.
11. PROVIDE GUIDES, HANGERS, EXPANSION LOOPS AND SUPPLEMENTARY STEEL SUPPORT WHERE REQUIRED FOR ALL PIPING.
12. EXPOSED DUCTWORK IN THE DINNING AREA SHALL BE MADE OF ELECTRO-GALVARIZED STEEL (PAINTLOCK). SEE MECHANICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.

## HVAC COMMISSIONING

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

1. NARRATIVE DESCRIPTION OF ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING, INCLUDING PERSONNEL INTENDED TO ACCOMPLISH EACH PHASE OF ACTIVITY.
2. LISTING OF SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED AND DESCRIPTION OF TESTS TO BE PERFORMED.
3. FUNCTIONS TO BE TESTED, INCLUDING, BUT NOW LIMITED TO CALIBRATIONS AND ECONOMIZER CONTROLS.
4. CONDITIONS UNDER WHICH TEST WILL BE PERFORMED. AT MINIMUM, TESTING SHALL AFFIRM WINTER AND SUMMER DESIGN CONDITIONS AND FULL OUTSIDE AIR CONDITIONS.
5. MEASURABLE CRITERIA FOR PERFORMANCE.

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

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

## DEMOLITION NOTES

REMOVE ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, HANGERS, SUPPORTS, PIPING, AND ACCESSORIES ONLY SERVICING THIS SPACE AND NOT INDICATED TO REMAIN, CAP UNUSED ROOF CURBS WITH 18 GAUGE GALVANIZED SHEET METAL CAP, INSULATE CURB CAPS WITH 2" THICK 2 PCF DENSITY DUCT LINER, AND SEAL WATER TIGHT. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.

## REMODEL NOTES

THIS DRAWING IS BASED ON BEST AVAILABLE INFORMATION AT TIME OF DESIGN AND MAY NOT REFLECT AS-BUILT CONDITIONS. ALL MECHANICAL INSTALLATIONS INDICATED ON THIS SHEET SHALL BE FIELD VERIFIED PRIOR TO BID AND DEMOLITION.

## EQUIPMENT CLEARANCE NOTES

VERIFY ALL EXISTING EXHAUST OUTLETS WITHIN 10'-0" OF OUTDOOR AIR INTAKES ARE MINIMUM 3'-0" HIGHER THAN OUTDOOR AIR INTAKES. CONTACT THE ARCHITECT AND ENGINEER IMMEDIATELY IF ANY EXISTING EXHAUST OUTLETS WITHIN 10'-0" OF OUTDOOR AIR INTAKES ARE OBSERVED TO BE LESS THAN 3'-0" HIGHER THAN OUTDOOR AIR INTAKES.

## EQUIPMENT CLEARANCE NOTES

VERIFY ALL EXISTING EXHAUST OUTLETS WITHIN 10'-0" OF OUTDOOR AIR INTAKES ARE MINIMUM 3'-0" HIGHER THAN OUTDOOR AIR INTAKES. CONTACT THE ARCHITECT AND ENGINEER IMMEDIATELY IF ANY EXISTING EXHAUST OUTLETS WITHIN 10'-0" OF OUTDOOR AIR INTAKES ARE OBSERVED TO BE LESS THAN 3'-0" HIGHER THAN OUTDOOR AIR INTAKES.

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AOR PROJECT NUMBER:
CAV021

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| IFC | 04.08.2024 |

MECHANICAL PLAN

SHEET:
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1 M200

## MECHANICAL ROOF PLAN

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

## GENERAL NOTES

1. ALL ROOFTOP EQUIPMENT LOCATIONS SHALL BE COORDINATED WITH ROOF DRAINS. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR EXACT LOCATIONS OF EQUIPMENT.
2. THE INSTALLING CONTRACTOR SHALL PROVIDE ROOF CURBS AND LEVELING CURBS TO MATCH THE ROOF PITCH IF REQUIRED. THE ROOFING CONTRACTOR SHALL FLASH ALL CURBS INTO ROOF.
3. ALL ROOFTOP EQUIPMENT SHALL BE SET ON CURBS OR RAILS. ALL PIPE AND DUCT PENETRATIONS THROUGH THE ROOF SHALL HAVE A WEATHER PROOF CURB OR FLASHING. ALL ROOF FLASHING SHALL BE PERFORMED BY THE ROOFING CONTRACTOR.
4. ALL VENTS AND EXHAUSTS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM FRESH AIR INTAKES PER LOCAL CODE.
5. VENT TERMINATIONS PROVIDED BY THE PLUMBING CONTRACTOR SHALL BE 10'-0" MINIMUM FROM ANY AIR INTAKE. EXTEND TERMINATION HEIGHT TO PROVIDE 10'-0" CROSS SECTION CLEARANCE WHERE NEEDED.
6. ANY PENETRATION THROUGH THE ROOF SHALL BE COORDINATED WITH THE ROOFING CONTRACTOR.
7. ALL STRUCTURAL DUCT OPENINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO CUTTING. INDICATE ON 1/8" SHOP DRAWINGS EXACT LOCATION OF OPENINGS COORDINATED WITH STRUCTURAL TRADES. PROVIDE DUCT ROOF CURBS AT ALL DUCT PENETRATIONS THRU THE ROOF.
8. ALL EQUIPMENT SHALL BE A MINIMUM OF 10'-0" AWAY FROM ROOF EDGE.
9. ACCESS TO MECHANICAL APPLIANCES INSTALLED IN UNDER-FLOOR AREAS, IN ATTIC SPACES, AND ON ROOFS OR ELEVATED STRUCTURES SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE.
10. EXHAUST TERMINATION OF ENVIRONMENTAL AIR DUCTS SHALL TERMINATE NOT LESS THAN 3'-0" FROM A PROPERTY LINE, 10'-0" FROM A FORCED AIR INLET, AND 3'-0" FROM OPENINGS INTO BUILDINGS.
11. PROVIDE GUARDS FOR ANY MECHANICAL EQUIPMENT THAT REQUIRE SERVICE ON ROOF THAT IS LOCATED WITHIN 10' OF A ROOF EDGE. THE TOP OF THE GUARD SHALL BE LOCATED NOT LESS THAN 42" ABOVE THE ELEVATED SURFACE ADJACENT TO THE GUARD.

## KEYED NOTES

1. EXISTING ROOFTOP UNIT TO REMAIN AND BE REUSED. FIELD VERIFY EXACT LOCATION OF UNIT AND ADJUST DUCTWORK ROUTING ACCORDINGLY. CLEAN UNIT, GREASE ALL BEARINGS, LEAK-CHECK AND CHARGE REFRIGERANT SYSTEM, REPLACE FILTERS, AND CLEAN INDOOR AND OUTDOOR COILS. PROVIDE FLEXIBLE CONNECTORS ON THE SUPPLY AND RETURN AIR DUCT CONNECTIONS. TRANSITION TO DUCT SIZES SHOWN ON SHEET M100. RESHEAVE MOTOR AS REQUIRED TO DELIVER SPECIFIED AIRFLOW.
2. INSTALL OWNER FURNISHED MAKEUP AIR UNIT AND ROOF CURB. SHIM UNIT AND CURB LEVEL. PROVIDE FLEXIBLE CONNECTORS ON THE SUPPLY AIR DUCT CONNECTION. TRANSITION TO DUCT SIZE SHOWN ON M100.
3. INSTALL OWNER FURNISHED ROOF MOUNTED EXHAUST FAN AND CURB.
4. MAINTAIN A MINIMUM 10'-0" CLEARANCE FROM EXHAUST DISCHARGE TO OUTSIDE AIR INTAKES.
5. EXTEND 8"∅ EXHAUST DUCT UP THROUGH ROOF. PROVIDE A ROOF JACK, STORM COLLAR, AND ALL-WEATHER CAP.
6. PROVIDE ROOF MOUNTED EQUIPMENT SUPPORT RAILS AND INSTALL OWNER FURNISHED REMOTE CONDENSING UNIT FOR WALK-IN COOLER. INSTALL REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, CRANKCASE HEATER, LOW AMBIENT CONTROLS, AND WEATHER PROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE PIPE CURB ASSEMBLY FOR ROOF PENETRATIONS. SEAL PIPING PENETRATIONS THROUGH COOLER ROOF.
7. PROVIDE WITH NAVIAN GXXX000057 CONCENTRIC VENT AT TERMINATION.

## EQUIPMENT CLEARANCE NOTE

VERIFY ALL EXISTING EXHAUST OUTLETS WITHIN 10'-0" OF OUTDOOR AIR INTAKES ARE MINIMUM 3'-0" HIGHER THAN OUTDOOR AIR INTAKES. CONTACT THE ARCHITECT AND ENGINEER IMMEDIATELY IF ANY EXISTING EXHAUST OUTLETS WITHIN 10'-0" OF OUTDOOR AIR INTAKES ARE OBSERVED TO BE LESS THAN 3'-0" HIGHER THAN OUTDOOR AIR INTAKES.

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MECHANICAL ROOF PLAN

SHEET: **M200**

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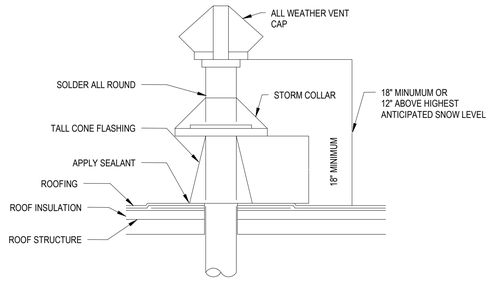
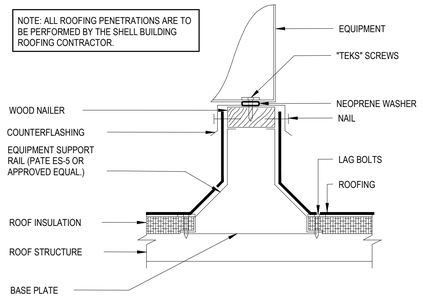
ALL ROOFING PENETRATIONS ARE TO BE PERFORMED BY THE SHELL BUILDING ROOFING CONTRACTOR.




1 DUCT THRU ROOF DETAIL
SCALE: N.T.S.

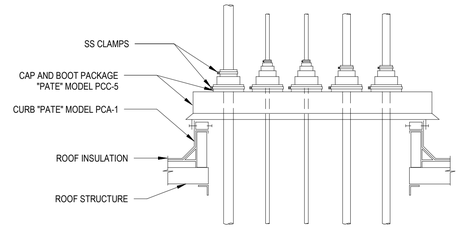
NOTE: ALL ROOFING PENETRATIONS ARE TO BE PERFORMED BY THE SHELL BUILDING ROOFING CONTRACTOR.




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

2 EQUIPMENT SUPPORT RAIL DETAIL
SCALE: N.T.S.

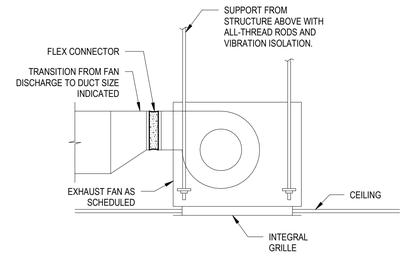
ALL ROOFING PENETRATIONS ARE TO BE PERFORMED BY THE SHELL BUILDING ROOFING CONTRACTOR.



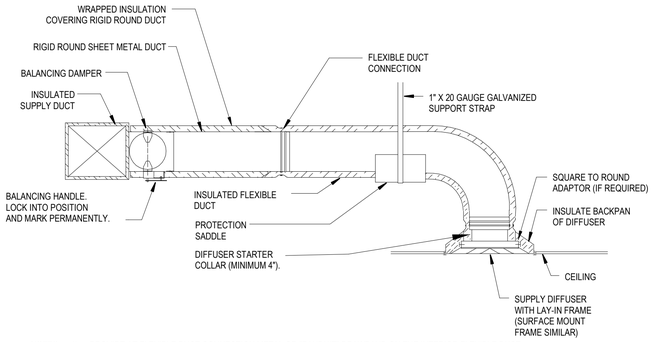

NOTES:

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

3 PIPE ROOF PENETRATION DETAIL
SCALE: N.T.S.

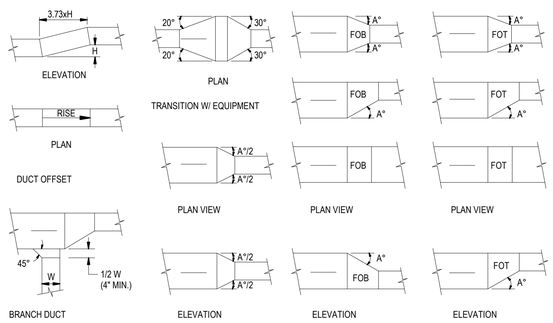



4 TYPICAL CABINET EXHAUST FAN DETAIL
SCALE: N.T.S.



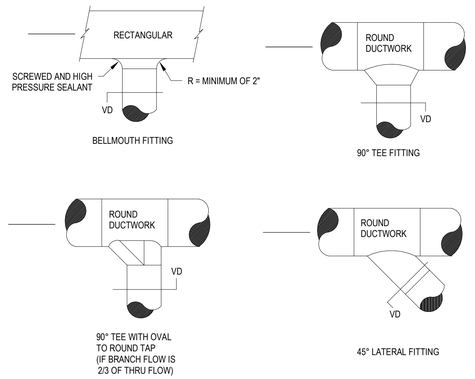

NOTES:
1) PROVIDE AT FLEXIBLE DUCT CONNECTION METAL OR "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX. SECURE THE INSULATION OVER THE DRAW BAND WITH AN ADDITIONAL DRAWBAND.
2) PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.
3) PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF THE FLEXIBLE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

5 DIFFUSER CONNECTION DETAIL
SCALE: N.T.S.

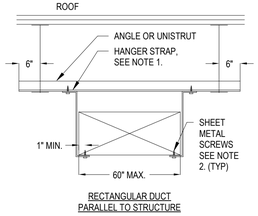



NOTES: 1) ANGLE A = 30° WHEN AIR FLOWS IN DIRECTION OF ARROW (SUPPLY AIR).
2) ANGLE A = 20° WHEN AIR FLOWS IN OPPOSITE DIRECTION OF ARROW (RETURN OR EXHAUST).

6 LOW VELOCITY DUCT FITTINGS DETAIL
SCALE: N.T.S.

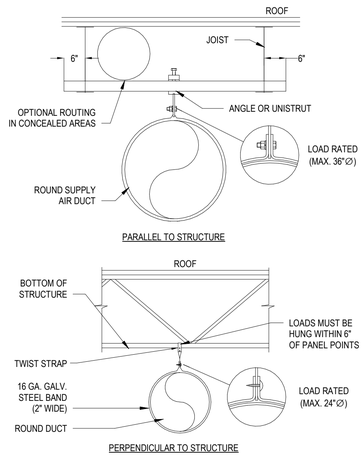



7 ROUND DUCTWORK FITTINGS
SCALE: N.T.S.



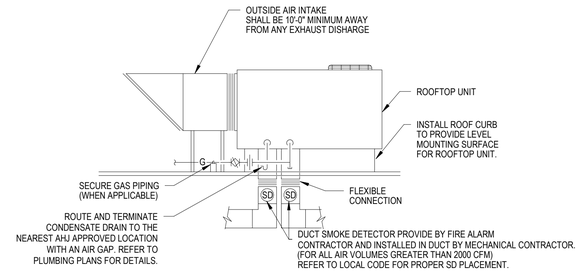

NOTE:
1. USE THREADED ROD FOR ALL DUCTS LARGER THAN 60" WIDE.
2. SHEET METAL SCREWS MAY BE OMITTED IF HANGER STRAP IS CONTINUOUS AND LOOPS UNDER ENTIRE DUCT.

8 RECTANGULAR DUCT SUPPORT FROM CEILING STRUCTURE/JOISTS DETAIL
SCALE: N.T.S.

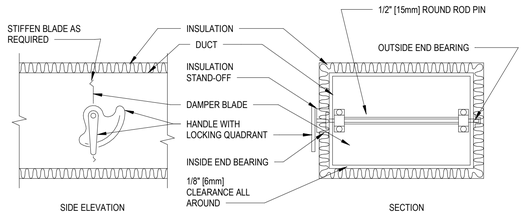



NOTE:
1. FOR DUCTS LARGER THAN 36"∅, USE TWO HANGER RODS, WIRES OR STRAPS TO SUPPORT DUCT FROM EACH SIDE.

9 ROUND DUCT SUPPORT DETAIL
SCALE: N.T.S.



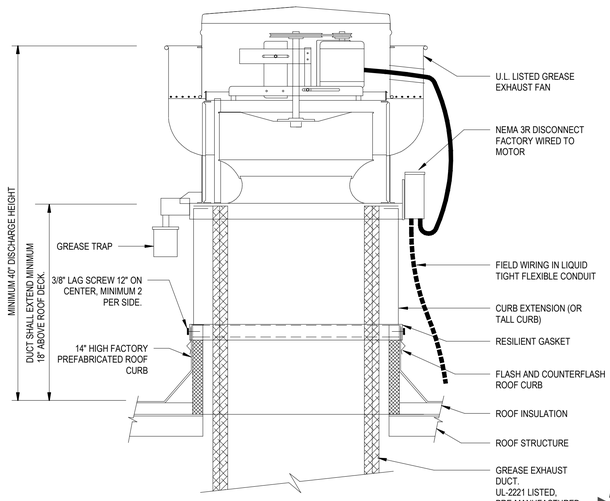

11 ROOF TOP UNIT DETAIL
SCALE: N.T.S.




NOTE:

1. REMOVE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

10 VOLUME DAMPER DETAIL
SCALE: N.T.S.




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

12 ROOF MOUNTED GREASE EXHAUST FAN DETAIL
SCALE: N.T.S.

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MECHANICAL DETAILS

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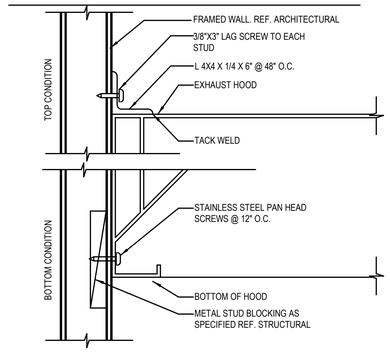
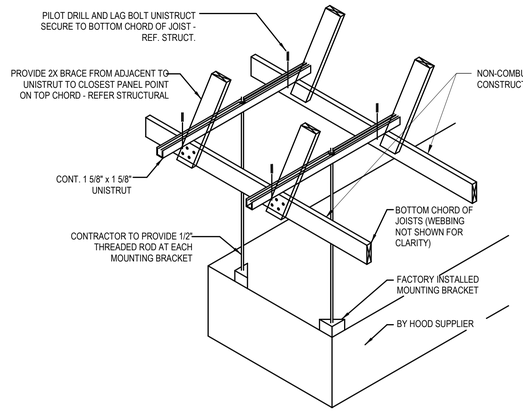
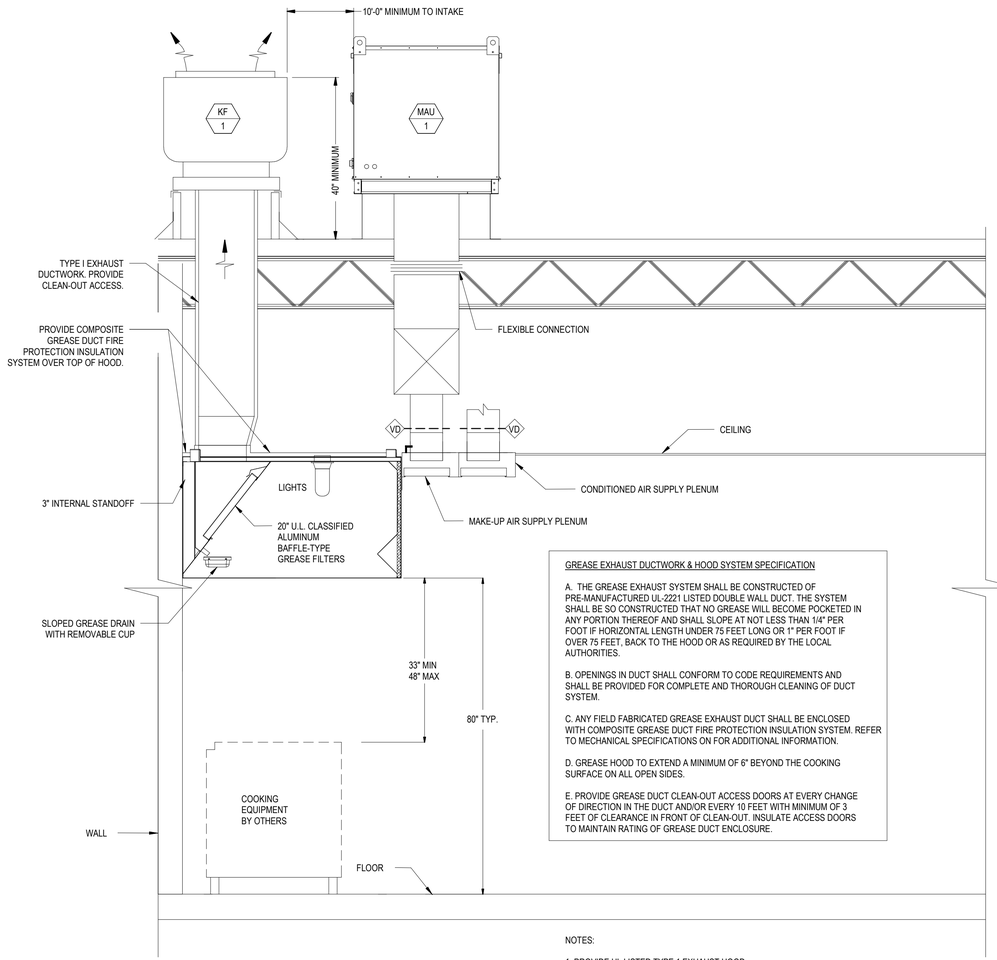



1 TYPICAL HOOD CLIP AT WALL
SCALE: N.T.S.




2 TYPICAL HOOD SUPPORT AT TRUSS
SCALE: N.T.S.




GREASE EXHAUST DUCTWORK & HOOD SYSTEM SPECIFICATION

A. THE GREASE EXHAUST SYSTEM SHALL BE CONSTRUCTED OF PRE-MANUFACTURED UL-2221 LISTED DOUBLE-WALL DUCT. THE SYSTEM SHALL BE SO CONSTRUCTED THAT NO GREASE WILL BECOME POCKETED IN ANY PORTION THEREOF AND SHALL SLOPE AT NOT LESS THAN 1/4" PER FOOT IF HORIZONTAL LENGTH UNDER 75 FEET LONG OR 1" PER FOOT IF OVER 75 FEET, BACK TO THE HOOD OR AS REQUIRED BY THE LOCAL AUTHORITIES.

B. OPENINGS IN DUCT SHALL CONFORM TO CODE REQUIREMENTS AND SHALL BE PROVIDED FOR COMPLETE AND THOROUGH CLEANING OF DUCT SYSTEM.

C. ANY FIELD FABRICATED GREASE EXHAUST DUCT SHALL BE ENCLOSED WITH COMPOSITE GREASE DUCT FIRE PROTECTION INSULATION SYSTEM. REFER TO MECHANICAL SPECIFICATIONS ON FOR ADDITIONAL INFORMATION.

D. GREASE HOOD TO EXTEND A MINIMUM OF 6" BEYOND THE COOKING SURFACE ON ALL OPEN SIDES.

E. PROVIDE GREASE DUCT CLEAN-OUT ACCESS DOORS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT. INSULATE ACCESS DOORS TO MAINTAIN RATING OF GREASE DUCT ENCLOSURE.

NOTES:

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

3 KITCHEN HOOD SCHEMATIC
SCALE: N.T.S.

INFORMATIONAL GUIDE FOR COMMERCIAL COOKING HOODS

1. STAINLESS STEEL TO BE NO. 18 U.S. GAGE.
2. WHEN GUTTERS ARE PROVIDED THEY SHALL DRAIN TO A COLLECTING PAN WHICH IS READILY ACCESSIBLE FOR CLEANING
3. SEE TABLE 507.2.8 FOR MINIMUM DISTANCE BETWEEN LOWER EDGE OF GREASE FILTER AND THE COOKING OR HEATING SURFACE.
4. GREASE FILTERS SHALL BE OF STEEL CONSTRUCTION AND READILY ACCESSIBLE FOR CLEANING.
5. ALL JOINTS AND SEAMS SHALL BE GREASE TIGHT.
6. HOODS SHALL BE SECURELY FASTENED IN PLACE BY INCOMBUSTIBLE SUPPORTS.

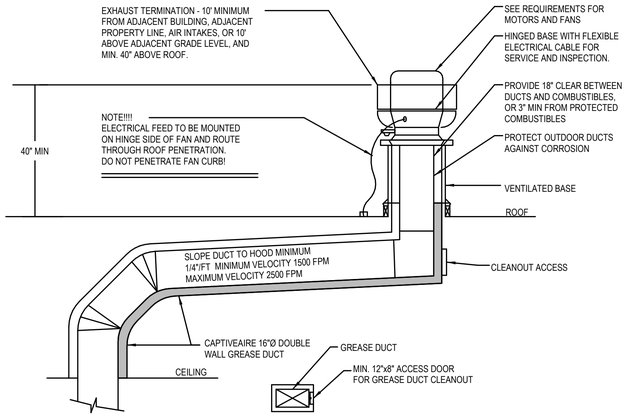
NOTES

1. PROVIDE ADEQUATE CLEANOUT OPENINGS FOR THOROUGH CLEANING OF DUCT SYSTEM.
2. PROVIDE ADEQUATE MAKE-UP AIR FOR PROPER OPERATION.
3. PROVIDE A SEPARATE DUCT SYSTEM FOR EACH HOOD.
4. THICKNESS OF DUCTS SHALL BE:

| DUCT AREA | U.S. GAGE STEEL |
|---|---|
| UP TO 4 SQ. FT. | 16 GA |
| OVER 4 SQ. FT. | 14 GA |

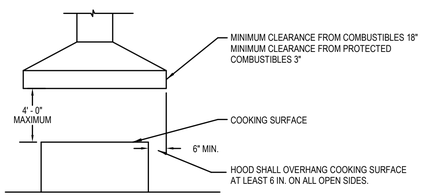
5. SUPPORT THE DUCTS AS REQUIRED. DO NOT PENETRATE DUCT WALLS WITH SCREWS, NAILS, ETC.
6. SECTIONS OF DUCT SHALL NOT CONTAIN GREASE POCKETS.

ALL ROOFING PENETRATIONS ARE TO BE PERFORMED BY THE SHELL BUILDING ROOFING CONTRACTOR.




CANOPY TYPE (FRONT VIEW)

CLEAN OUT DOOR DETAIL
N.T.S.




(FOR REFERENCE ONLY)

4 TYPICAL HOOD VENTILATION AND SECTION
SCALE: N.T.S.

ferris+sloane
100 N. Howard Street, Suite 4500 Spokane, WA 99201

CAVA #010444 CHESTERFIELD, VA
9959 IRON BRIDGE ROAD
CHESTERFIELD, VA 23832
FOR
CAVA
14 Ridge Square NW #500, WASHINTON, DC 20016

AOR PROJECT NUMBER: CAV021

| ISSUE | DATE |
|---|---|
| PERMIT | 12.15.2023 |
| PERMIT COMMENTS | 01.26.2024 |
| IFC | 04.08.2024 |

MECHANICAL DETAILS

SHEET: M402

rtm engineering consultants
2800 156th Ave SE | Suite 115
Bellevue, WA 98007
rtmec.com | 847.756.4180

4/8/2024 3:48:45 PM

## AIR DEVICE SCHEDULE

| TAG | TYPE | MAKE/MODEL | AIR STREAM | MOUNTING TYPE | NECK SIZE | SIZE | REMARKS |
|---|---|---|---|---|---|---|---|
| A | SQUARE CONE DIFFUSER | TITUS / TMS-AA | SUPPLY | LAY IN | SEE PLAN | 24"X24" | 1-4 |
| B | LOUVERED SUPPLY REGISTER | TITUS / 300FL | SUPPLY | SURFACE | SEE PLAN | 12"X12" | 1-4 |
| C | LOUVERED RETURN GRILLE | TITUS / 355FL | RETURN | LAY IN | SEE PLAN | 24"X24" | 1-4 |
| D | SQUARE CONE DIFFUSER | TITUS / TMS | SUPPLY | LAY IN | SEE PLAN | 12"X12" | 1-4 |
| E | ROUND LOUVERED SUPPLY REGISTER | TITUS / R-300F | SUPPLY | DUCT MOUNTED | SEE PLAN | 12" ROUND | 1-4 |

REMARKS:
1. PROVIDE WITH INTEGRAL OPPOSED BLADE BALANCING DAMPER FOR DIFFUSERS MOUNTED IN HARD/INACCESSIBLE CEILINGS.
2. PROVIDE WITH SURFACE MOUNTING FRAME WHERE APPLICABLE.
3. COORDINATE FINISH AND LOCATION WITH ARCHITECT.
4. SEE PLAN FOR INLET SIZE.

## VENTILATION SCHEDULE

| ROOM NUMBER | ROOM NAME | OCCUPANCY CLASSIFICATION | ZONE FLOOR AREA | ZONE POPULATION | 2018 VIRGINA MECHANICAL CODE | | | | | | ACTUAL | | | EQUIPMENT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PEOPLE OUTDOOR AIR RATE | AREA OUTDOOR AIR RATE | BREATHING ZONE OUTDOOR AIRFLOW | Ez | REQUIRED OUTDOOR AIRFLOW | E.A. CFM | MAX SUPPLY CFM | OA CFM | EXHAUST CFM | SUPPLY FAN | EXHAUST FAN |
| 101 | DINING | DINNING | 460 | 33 | 7.5 | 0.18 | 330 | 0.8 | 413 | - | 2500 | 425 | - | RTU-1X | - |
| 102 | QUEUEING | CORRIDOR | 155 | 8 | 0.0 | 0.06 | 9 | 0.8 | 12 | - | 400 | 68 | - | RTU-1X | - |
| 108 | CORRIDOR | CORRIDOR | 265 | 0 | 0.0 | 0.06 | 16 | 0.8 | 20 | - | 300 | 51 | - | RTU-1X | - |
| 109 | WOMEN'S | PUBLIC BATHROOM | 60 | 1 | 0.0 | 0.00 | 0 | 0.8 | 0 | 50 | 75 | 15 | 100.0 | RTU-1X | CEF-2 |
| 110 | MEN'S | PUBLIC BATHROOM | 60 | 1 | 0.0 | 0.00 | 0 | 0.8 | 0 | 50 | 75 | 15 | 100.0 | RTU-1X | CEF-1 |
| 104 | FRONT KITCHEN | KITCHEN (COOKING) | 435 | 9 | 7.5 | 0.12 | 117 | 0.8 | 147 | - | 2300 | 460 | 2381.0 | RTU-2X | KF-1 |
| 106 | BACK KITCHEN | KITCHEN | 485 | 10 | 7.5 | 0.12 | 131 | 0.8 | 164 | - | 825 | 165 | - | RTU-2X | - |
| 107 | MANAGER OFFICE | OFFICE SPACES | 80 | 1 | 5.0 | 0.06 | 10 | 0.8 | 12 | - | 150 | 30 | - | RTU-2X | - |
| TOTAL | | | 2000 | 61 | - | - | 604 | - | 767 | 100 | 6625 | 1199 | 2581 | | |

## PACKAGED GAS HEATING / ELECTRIC COOLING ROOFTOP UNIT SCHEDULE - PROVIDED BY LL

| TAG | MANUFACTURER | MODEL # | AREA SERVED | TONS | EER | BLOWER SECTION | | | | COOLING CAPACITY | | HEATING CAPACITY | | | ELECTRICAL DATA | | | FILTERS | UNIT WEIGHT (LBS) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | CFM | OA CFM | ESP (IN. W.C.) | FAN HP | REFRIG. TYPE | GROSS (MBH) | INPUT (MBH) | OUTPUT (MBH) | AFUE (%) | VOLTAGE/ PHASE | MCA | MOCP | | | |
| RTU-1X | CARRIER | 48FCEN12A2A5-6U4F0 | DINNING | 10.0 | 11 | 3,350 | 570 | 1 | 2.4 | R-410A | 125.80 | 180/224 | 146/181 | 82 | 208/3 | 45 | 60 | THROWAWAY | 1090 | ALL |
| RTU-2X | CARRIER | 48FCEN12A2A5-6U4F0 | KITCHEN | 10.0 | 11 | 3,275 | 655 | 1 | 2.4 | R-410A | 125.80 | 180/224 | 146/181 | 82 | 208/3 | 45 | 60 | THROWAWAY | 1090 | ALL |

REMARKS:
1.MECHANICAL CONTRACTOR TO NOTIFY ENGINEER ON RECORD OF ANY DISCREPANCIES.
2. EXISTING UNIT SHALL BE BALANCED AS PER SCHEDULE. CONTRACTOR SHALL FULLY INSPECT AND SERVICE THE UNIT. PROVIDE ROUTINE MAINTENANCE INCLUDING BUT NOT LIMITED TO, CHANGING FILTERS & BELTS, RECHARGING REFRIGERANT, ETC.

## AIR BALANCE SCHEDULE

| | RTU-1X (DINNING) | RTU-2X (KITCHEN) | MAU-1 | KF-1 | EF-1 (WOMEN'S) | EF-2 (MEN'S) | TOTAL |
|---|---|---|---|---|---|---|---|
| OUTSIDE AIR FLOW (CFM) | 570 | 655 | 1905 | 0 | 0 | 0 | 3130 |
| RETURN AIR FLOW (CFM) | 2780 | 2620 | 0 | 0 | 0 | 0 | 5400 |
| SUPPLY AIR FLOW (CFM) | 3350 | 3275 | 1905 | 0 | 0 | 0 | 8530 |
| EXHAUST AIR FLOW (CFM) | 0 | 0 | 0 | 2381 | 100 | 100 | 2581 |
| BUILDING PRESSURE (CFM) | 570 | 655 | 1905 | -2381 | -100 | -100 | 548 |
| RESULTING BUILDING PRESSURIZATION (CFM) | | | | | | | 548 |

## EXHAUST FAN SCHEDULE

| ITEM TAG | TYPE | DRIVE | PERFORMANCE | | ELECTRICAL | | | APPROX. WEIGHT (LBS) | SERVICE LOCATION | MANUFACTURER | OPERATION | MODEL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AIR FLOW (CFM) | EXT. STATIC (IN W.C) | V/PH/HZ | MCA (AMP) | MOCP (AMP) | | | | | | |
| CEF-1 | CEILING MOUNTED | DIRECT | 100 | 0.3 | 120/1/60 | 1 | 15 | 15 | WOMEN'S | COOK | NOTE 1 | GC-148 | 2-4 |
| CEF-2 | CEILING MOUNTED | DIRECT | 100 | 0.3 | 120/1/60 | 1 | 15 | 15 | MEN'S | COOK | NOTE 1 | GC-148 | 2-4 |

REMARKS:
1. FAN SHALL BE CONTROLLED THROUGH THE LIGHT SWITCH AND OCCUPANCY SENSOR. ELECTRICAL CONTRACTOR TO WIRE.
2. PROVIDE BACKDRAFT DAMPER ON EXHAUST FAN.
3. PROVIDE DISCONNECT SWITCH AND VIBRATION ISOLATION.
4. PROVIDE MANUFACTURER'S OPTIONAL SPEED CONTROLLER. SPEED CONTROLLER SHALL BE MOUNTED WITHIN FAN HOUSING.

## KITCHEN EXHAUST FAN SCHEDULE

| ITEM TAG | MANUFACTURER | MODEL | TYPE | AIR FLOW (CFM) | EXTERNAL STATIC (IN W.C) | ELECTRICAL | | SERVICE | WEIGHT (LBS) | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | V/PH/HZ | FAN MOTOR HP | | | |
| KF-1 | CAPTIVEAIRE | DU85HFA | CENTRIFUGAL UPBLAST | 2381 | 1 | 115/1/60 | 1 | KITCHEN HOOD | 150 | 1,2 |

REMARKS:
1. PROVIDE WITH ROOF CURB, AND HINGED & CHAINED FAN INSTALLATION FOR DUCT ACCESS.
2. INTERLOCK MAU-1 AND RTU-2 TO OPERATE IN OCCUPIED MODE WHILE KITCHEN EXHAUST FANS ARE ENERGIZED.

## MAKE-UP AIR UNIT SCHEDULE

| ITEM TAG | MANUFACTURER | MODEL | CONFIGURATION | DRIVE | AIR FLOW (CFM) | EXTERNAL STATIC (IN W.C.) | FAN SPEED (RPM) | DX COOLING | | | GAS HEATING | | | ELECTRICAL | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | TOTAL (MBH) | SENSIBLE (MBH) | SEER | INPUT (MBH) | OUTPUT (MBH) | BURNER EFF. | FAN | | | | CONDENSER | | | |
| | | | | | | | | | | | | | | V/PH/HZ | HP | MCA | MOCP | V/PH/HZ | MCA | MOCP | |
| MAU-1 | CAPTIVEAIRE | A2-D.250-15D-MPU | ROOF MOUNTED | DIRECT | 1905 | 0.4 | 1298 | 36.0 | 20.2 | 14 | 110545 | 101702 | 92% | 208/3/60 | 1.5 | 7.8 | 15 | 208/3/60 | 14.5 | 20 | ALL |

REMARKS:
1.PROVIDE WITH 3TON SINGLE CIRCUIT COOLING OPTION.
2.PROVIDE WITH FACTORY MOUNTED AND WIRED MOTORIZED INTAKE DAMPER.
3.PROVIDE WITH DISCONNECT SWITCH.
4.PROVIDE WITH WEATHER HOOD AND BIRD SCREEN.
5.PROVIDE WITH ROOF CURB.
6.REFER TO CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION.

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CAVA

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AOR PROJECT NUMBER:
CAV021

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| PERMIT | 12.15.2023 |
| PERMIT COMMENTS | 01.26.2024 |
| IFC | 04.08.2024 |

MECHANICAL SCHEDULES

SHEET:
M501

rtm engineering consultants
2800 156th Ave SE | Suite 115
Bellevue, WA 98007
rtmec.com | 847.756.4180

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

## HANGING ANGLE DETAILS

| HOOD STYLE / MODEL | 450 DEGREES cfm/ft. | 600 DEGREES cfm/ft. | 700 DEGREES cfm/ft. |
|---|---|---|---|
| CANOPY ND2 | 150 | 200 | 250 |
| WITH END PANELS (15% reduction) | 127.5 | 170 | 212.5 |
| SLOPED SND-2 | 228 | 294 | – |
| ISLAND ND-2WI | 269 | 300 | 350 |
| ND1 | 346 | 422 | 475 |

## ETL HOOD LISTING DETAIL

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

SUPPLY CFM=EXHAUST CFM X PERCENTAGE REQUIRED

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

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

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

## CALCULATIONS UTILIZED

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

ETL LISTED & #3054804-001 & 3054804-002

STANDARD 710

Intertek

BUILT IN ACCORDANCE WITH NFPA No. 96

Listed under ETL File number 3054804-001/002

## BUILDING CODES

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

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

## CLEARANCE TO COMBUSTIBLES

INSTALLATION

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

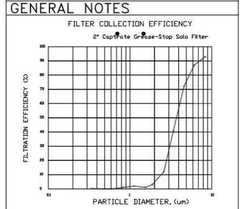
BALANCE

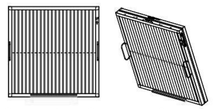
11. KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
12. KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
13. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

ADDITIONAL

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

## GENERAL NOTES



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

## FILTER DETAIL

FOR QUESTIONS, CALL THE
Maryland Office
REGION 32
PHONE: (800) 988 - 0881
EMAIL: reg32@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#6272405*

| 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 | 33 | 6030 ND-2-ACPSP-F | CAPTIVEAIRE | 10' 7" | 600 DEG | I | HEAVY | 225 | 2381 | | | 4" | 16" | 2381 | 1705 | -0.825" | 1976 | 728 | 430 SS WHERE EXPOSED | ALONE | ALONE |

## *HOOD INFORMATION*

| HOOD NO | TAG | FILTER(S) TYPE | QTY | HEIGHT | LENGTH | EFFICIENCY @ 7 MICRONS | LIGHT(S) QTY | TYPE | WIRE GUARD | UTILITY CABINET(S) LOCATION | SIZE | FIRE SYSTEM TYPE | FIRE SYSTEM SIZE | ELECTRICAL MODEL # | SWITCHES QUANTITY | FIRE SYSTEM PIPING | HOOD HANGING WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | CAPTRATE SOLO FILTER | 7 | 20" | 16" | 85% SEE FILTER SPEC | 6 | L55 SERIES E26 | NO | LEFT | 12"x60"x30" | TANK FS | 4.0/4.0 | DCV-1111 | 1 LIGHT 1 FAN | YES | 1170 LBS |

## *HOOD OPTIONS*

| HOOD NO | TAG | OPTION |
|---|---|---|
| 1 | 33 | FIELD WRAPPER 18.00" HIGH FRONT, LEFT. |
| | | RIGHT END STANDOFF (FINISHED) 1" WIDE 60" LONG INSULATED. |
| | | LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS. |
| | | RIGHT WALL AS END PANEL. |

## *PERFORATED SUPPLY PLENUM(S)*

| HOOD NO | TAG | POS | LENGTH | WIDTH | HEIGHT | TYPE | RISER(S) WIDTH | LENG | DIA | CFM | SP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | Front | 140" | 24" | 6" | MUA | 12" | 28" | | 658 | 0.165" |
| | | | | | | MUA | 12" | 28" | | 658 | 0.165" |
| | | | | | | MUA | 12" | 28" | | 658 | 0.165" |
| | | | | | | AC | 6" | 28" | | 364 | 0.090" |
| | | | | | | AC | 6" | 28" | | 364 | 0.090" |

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

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

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

## HVAC DISTRIBUTION NOTE

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

## VERIFY CEILING HEIGHT

___' - ___"

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

## CUSTOMER APPROVAL TO MANUFACTURE:

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

**REVISIONS**

| | DESCRIPTION | DATE: |
|---|---|---|
| △ | | |
| △ | | |
| △ | | |
| △ | | |

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

Cava - Chesterfield, VA
9959 Iron Bridge Road,
Chesterfield, VA, 23832

**DATE:** 10/12/2023
**DWG.#:** 6272405
**DRAWN BY:** EG-32
**SCALE:** NTS
**MASTER DRAWING**
**SHEET NO.** 1

ferris+sloane
100 N. Howard Street, Suite 4563 Spokane, WA 99201

**CAVA**

CAVA #010444 CHESTERFIELD, VA
9959 IRON BRIDGE ROAD
CHESTERFIELD, VA 23832
FOR
CAVA
14 Ridge Square NW #500, WASHINTON, DC 20016

AOR PROJECT NUMBER: CAV021

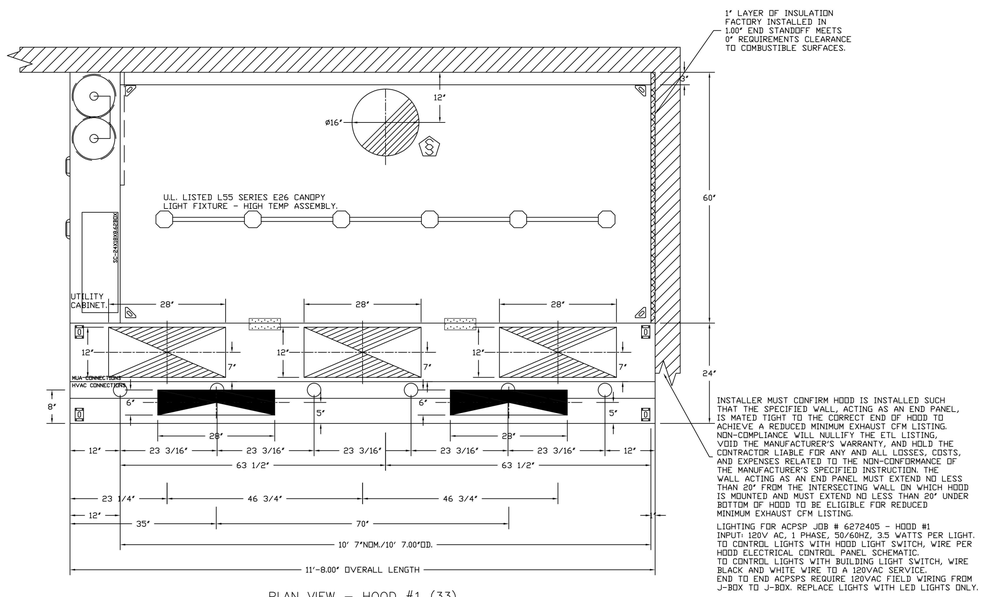
| ISSUE | DATE |
|---|---|
| PERMIT | 12.15.2023 |
| PERMIT | 01.26.2024 |
| COMMENTS | |
| IFC | 04.08.2024 |

MECHANICAL HOOD DETAIL PLAN

SHEET: **M601**

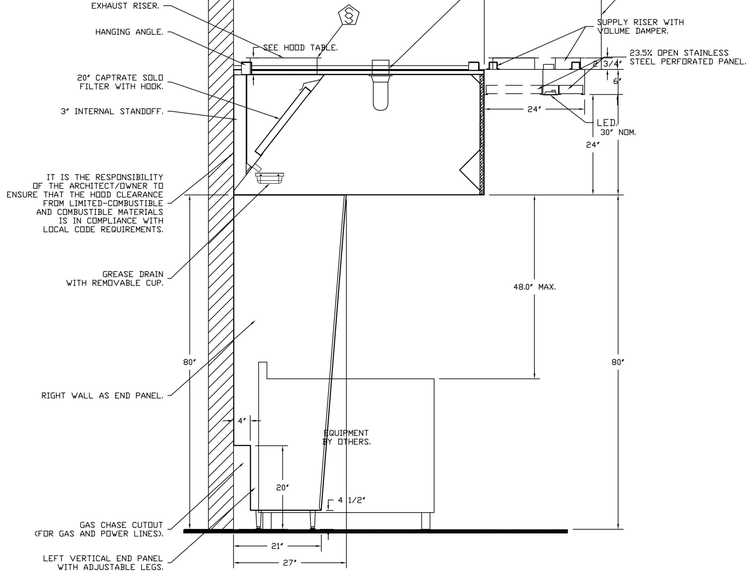
rtm engineering consultants
2800 156th Ave SE | Suite 115
Bellevue, WA 98007
rtmec.com | 847.756.4180

4/8/2024 3:48:47 PM

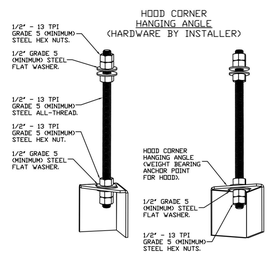



PLAN VIEW – HOOD #1 (33)
10' 7.00" LONG 6030ND-2-ACPSP-F

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION

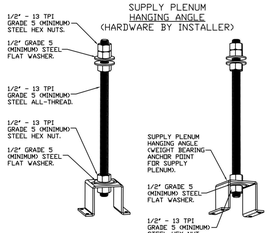



*SECTION VIEW – MODEL 6030ND-2-ACPSP-F HOOD – #1 (33)*




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.

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

**REVISIONS**

| | DESCRIPTION | DATE: |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

CAPTIVEAIRE
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9959 Iron Bridge Road,
Chesterfield, VA, 23832

**DATE:** 10/12/2023
**DWG.#:** 6272405
**DRAWN BY:** EG-32
**SCALE:** NTS
**MASTER DRAWING**

**SHEET NO.** 2

**CAVA #010444 CHESTERFIELD, VA**
9959 IRON BRIDGE ROAD
CHESTERFIELD, VA 23832
FOR
CAVA
14 Ridge Square NW #500, WASHINTON, DC 20016

AOR PROJECT NUMBER: CAV021

| ISSUE | DATE |
|---|---|
| PERMIT | 12.15.2023 |
| PERMIT COMMENTS | 01.26.2024 |
| IFC | 04.08.2024 |

MECHANICAL HOOD DETAIL PLAN

SHEET: **M602**

rtm engineering consultants
2800 156th Ave SE | Suite 115
Bellevue, WA 98007
rtmec.com | 847.756.4180

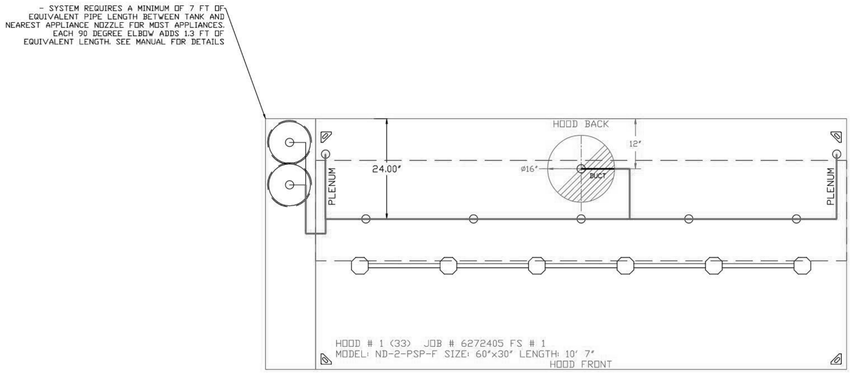
4/8/2024 3:48:48 PM

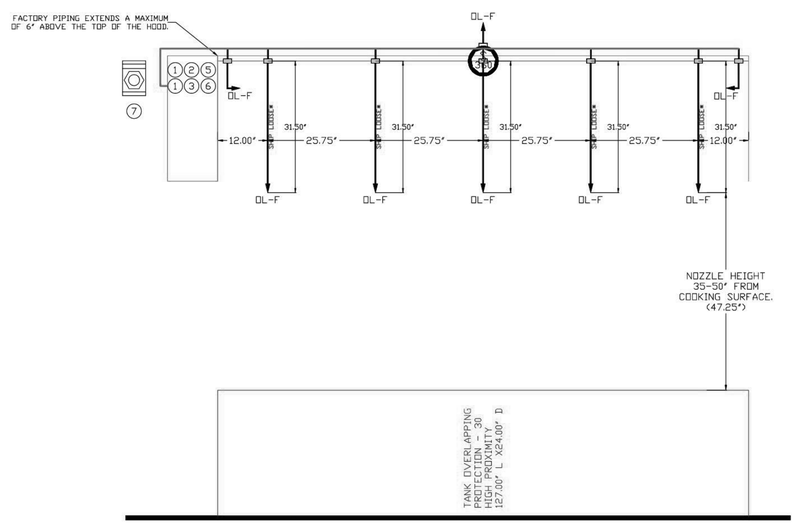
## *FIRE SYSTEM INFORMATION – JOB#6272405*

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

## *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 MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET. | 1 | 0 |
| | | 0 – 0 – TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET. | 1 | 0 |
| | | 0 – 0 – 12-F28021-32144-OT-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. ND, CLOSE ON TEMP RISE AT 360°F. | 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. | 6 | 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 – BI145 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 – OL-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 |




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.

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

JOB #: 6272405.
JOB NAME: CAVA – CHESTERFIELD, VA.

SYSTEM SIZE: TANK-SP-2 DESIGN FP: 37. MAXIMUM FP: 40.
HOOD # 1 10' 7.00" LONG x 60" WIDE x 30" HIGH.
RISER # 1 SIZE: 16" DIA.
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.

**REVISIONS**

| | DESCRIPTION | DATE: |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |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Cava – Chesterfield, VA
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**MASTER DRAWING**
**SHEET NO.** 3


ferris+sloane
100 N. Howard Street, Suite 4563 Spokane, WA 99201


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MECHANICAL HOOD DETAIL PLAN

SHEET: **M603**


rtm engineering consultants
2800 156th Ave SE | Suite 115
Bellevue, WA 98007
rtmec.com | 847.756.4180


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## EXHAUST FAN INFORMATION – JOB#6272405

| FAN UNIT NO | TAG | QTY | FAN UNIT MODEL # | MANUFACTURER | CFM | ESP | RPM | MOTOR ENCL | HP | BHP | PHASE | VOLT | FLA | DISCHARGE VELOCITY | WEIGHT (LBS) | SONES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | KEF | 1 | DUB5HFA | CAPTIVEAIRE | 2381 | 1.000 | 1567 | TEAO-ECM | 1.000 | 0.6970 | 1 | 115 | 11.6 | 753 FPM | 93 | 17.1 |

## CONDENSER DETAILS

| FAN UNIT NO | TAG | FAN UNIT MODEL # | CONDENSER NO | TONNAGE | VOLTAGE | PHASE | FREQUENCY | MCA | RLA | MAX FUSE SIZE | MIN WIRE SIZE | SEER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | SF | A1-D.250-15D-MPU | 1 | 3 | 208-230 | 3 PHASE | 60 HZ | 14.5 AMPS | 11.9 AMPS | 20 AMPS | 14 AWG | 14 |

## MUA FAN INFORMATION – JOB#6272405

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | SF | 1 | A1-D.250-15D-MPU | 15MF-1-MOD | A1-D.250 | 1100 | 1905 | 0.400 | 2098 | TEFC,PREMIUM | 2.000 | 1.4540 | 3 | 208 | 6.2 | 7.8A | 15A | 1096 | 21.1 |

## COILS – JOB#6272405

| FAN UNIT NO | TAG | COIL TYPE | DESIGN CFM | COOLING | | | | | | | | | | HEATING | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ENTERING DB TEMP | ENTERING WB TEMP | LEAVING DB TEMP | LEAVING WB TEMP | ENTERING FLUID TEMP | LEAVING FLUID TEMP | FLUID FLOW RATE | PERCENT GLYCOL | TOTAL CAPACITY | SENSIBLE CAPACITY | LATENT CAPACITY | ENTERING DB TEMP | LEAVING DB TEMP | ENTERING FLUID TEMP | LEAVING FLUID TEMP | FLUID FLOW RATE | PERCENT GLYCOL | STEAM PRESSURE | TOTAL CAPACITY | SENSIBLE CAPACITY |
| 2 | SF | DX | 1905 | 91.0°F | 77.0°F | 81.0°F | 72.3°F | --- | --- | --- | --- | 36.0 MBH | 20.2 MBH | 15.8 MBH | --- | --- | --- | --- | --- | --- | --- | --- | --- |

## 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(%) |
|---|---|---|---|---|---|---|---|
| 2 | SF | 110545 | 101701 | 50°F | 7 IN. W.C. - 14 IN. W.C. | NATURAL | 92 |

## FAN OPTIONS

| FAN UNIT NO | TAG | QTY | DESCRIPTION |
|---|---|---|---|
| 1 | KEF | 1 | GREASE BOX |
| | | 1 | ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION |
| | | 1 | 2 YEAR PARTS WARRANTY |
| 2 | SF | 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 | 3 TON SINGLE CIRCUIT MODULAR PACKAGED COOLING OPTION FOR SIZE 1 DF/EH MUA (1,100 TO 1,800 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION |
| | | 1 | DOWNTURN PLENUM FOR SIZE 1 DX COIL MODULE |
| | | 1 | SIZE 1 COOLING COIL MOISTURE ELIMINATOR OPTION - ALLOWS COOLING COIL FACE VELOCITY TO INCREASE TO 650 FPM - INCREASES COOLING COIL MAX CFM TO 3650 CFM |
| | | 1 | SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY |
| | | 1 | 2 YEAR PARTS WARRANTY |

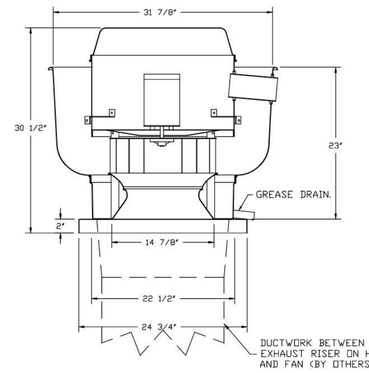
## FAN ACCESSORIES

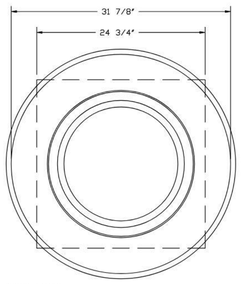
| FAN UNIT NO | TAG | EXHAUST | | | SUPPLY | | | |
|---|---|---|---|---|---|---|---|---|
| | | GREASE CUP | GRAVITY DAMPER | WALL MOUNT | SIDE DISCHARGE | GRAVITY DAMPER | MOTORIZED DAMPER | WALL MOUNT |
| 1 | KEF | YES | | | | | | |
| 2 | SF | | | | | | YES | |

## CURB ASSEMBLIES

| NO | ON FAN | TAG | WEIGHT | ITEM | SIZE |
|---|---|---|---|---|---|
| 1 | # 1 | KEF | 44 LBS | CURB | 23.000"W X 23.000"L X 26.000"H 0.500:12.000 PITCH ALONG LENGTH, RIGHT VENTED HINGED. |
| 2 | # 2 | SF | 107 LBS | CURB | 21.000"W X 131.000"L X 20.000"H INSULATED. |

FAN #1 DUB5HFA - EXHAUST FAN (KEF)




TOP VIEW

### FEATURES:

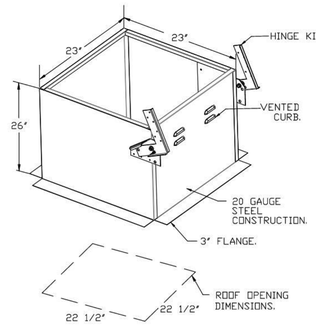
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT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

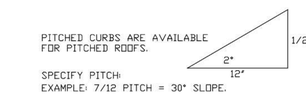
NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

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

OPTIONS

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




**REVISIONS**

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MECHANICAL HOOD DETAIL PLAN

SHEET: **M604**


rtm engineering consultants
2800 156th Ave SE | Suite 115
Bellevue, WA 98007
rtmec.com | 847.756.4180


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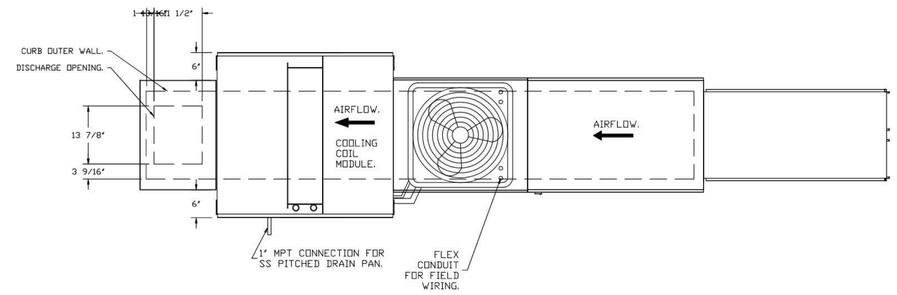
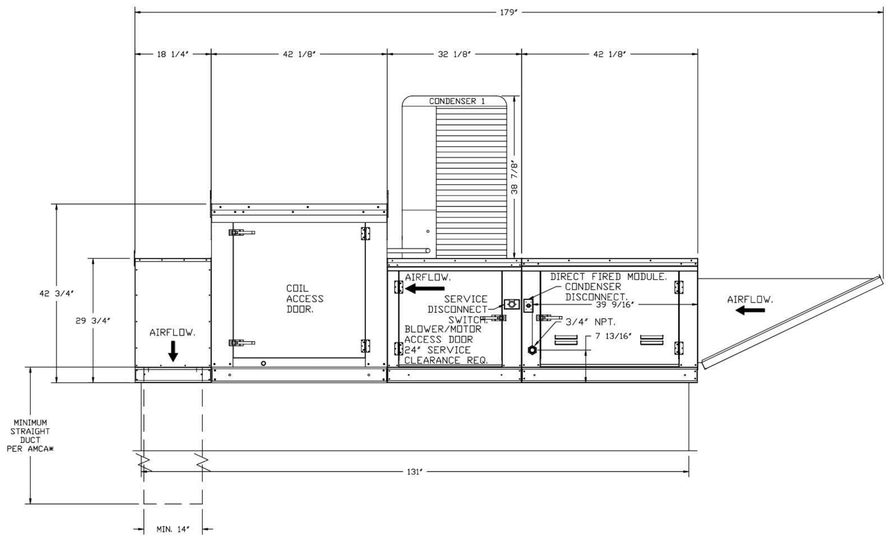
FAN #2 A1-D250-15D-MPU - HEATER (SF)
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE.
5. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE.
6. SHIP LOOSE GAS STRAINER. TO BE INSTALLED UPSTREAM OF UNIT CONNECTION. 3/4" CONNECTION.
7. 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.
8. 3 TON, SINGLE CIRCUIT MODULAR PACKAGED COOLING OPTION FOR SIZE 1 DF/EH MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING. (1,100 TO 1,800 CFM) WHEN ORDERED WITH OPPOSITE AIRFLOW CONDENSERS ACCESS AND COIL PIPING WILL REMAIN IN STANDARD POSITION. DRAIN AND SLEDS WILL MOVE TO THE OPPOSITE SIDE. ANY OTHER CHANGE WILL REQUIRE CLI. CONDENSERS REQUIRE SEPARATE 208V, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION. COIL = 2EZ1001N.
9. DOWNTURN PLENUM FOR SIZE 1 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS.
10. SIZE 1 MOISTURE ELIMINATOR OPTION FOR DX COILS, MPUS AND CHILLED WATER COILS - ALLOWS COOLING COIL FACE VELOCITY TO INCREASE TO 650 FPM. INCREASES COOLING COIL MAX CFM TO 3650 CFM.
11. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREVIRE 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.
12. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/MPU 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 14" x 14".

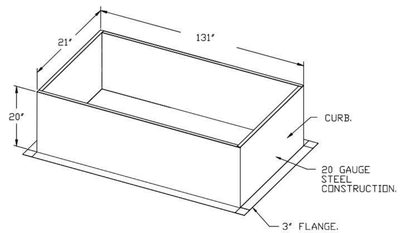
SUPPLY SIDE HEATER INFORMATION:

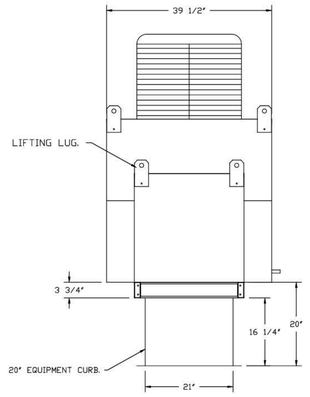
WINTER TEMPERATURE = 25°F. TEMP. RISE = 50°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY.
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 101759.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 110608.
OUTPUT BTUs AT ALTITUDE OF 16 FT. = 101701.
INPUT BTUs AT ALTITUDE OF 16 FT. = 110544.



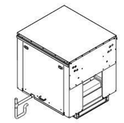




OPTIONS:
- FULL BOTTOM CORNERS.

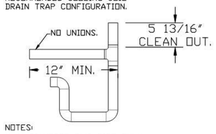


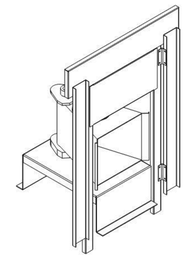

TYPICAL DRAIN TRAP INSTALL



RECOMMENDED COOLING COIL DRAIN TRAP CONFIGURATION.




NOTES:
1) 1" DIAMETER PVC PIPE ONLY.
2) USE ONLY LOW PROFILE COUPLINGS.
3) ADD CLEAN OUT AS SHOWN.



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.

**REVISIONS**

| | DESCRIPTION | DATE: |
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| 4 | | |


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Cava - Chesterfield, VA
9959 Iron Bridge Road,
Chesterfield, VA, 23832

**DATE:** 10/12/2023
**DWG.#:** 6272405
**DRAWN BY:** EG-32
**SCALE:** NTS
**MASTER DRAWING**
**SHEET NO.** 5


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100 N. Howard Street, Suite 4560 Spokane, WA 99201


CAVA #010444 CHESTERFIELD, VA
9959 IRON BRIDGE ROAD
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FOR
CAVA
14 Ridge Square NW #500, WASHINTON, DC 20016

AOR PROJECT NUMBER: CAV021

| ISSUE | DATE |
|---|---|
| PERMIT | 12.15.2023 |
| PERMIT COMMENTS | 01.26.2024 |
| IFC | 04.08.2024 |

MECHANICAL HOOD DETAIL PLAN

SHEET: **M605**


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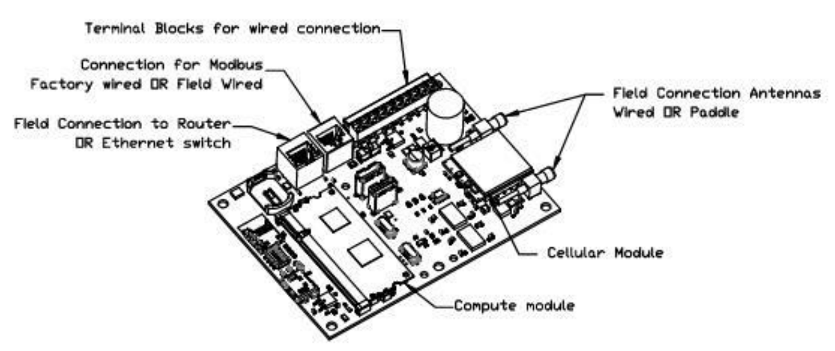
4/8/2024 3:48:49 PM

*ELECTRICAL PACKAGE – JOB#6272405*

| NO | TAG | PACKAGE # | LOCATION | SWITCHES |  | OPTION | FANS CONTROLLED |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | LOCATION | QUANTITY |  | FAN TAG | TYPE | ϕ | HP | VOLT | FLA |
| 1 |  | DCV-1111 | UTILITY CABINET LEFT | UTILITY CABINET LEFT | 1 LIGHT | SMART CONTROLS DCV | KEF | EXHAUST | 1 | 1.000 | 115 | 11.6 |
|  |  |  |  | HOOD # 1 | 1 FAN |  | SF | SUPPLY | 3 | 2.000 | 208 | 6.2 |



## *CASlink Monitor and Control*

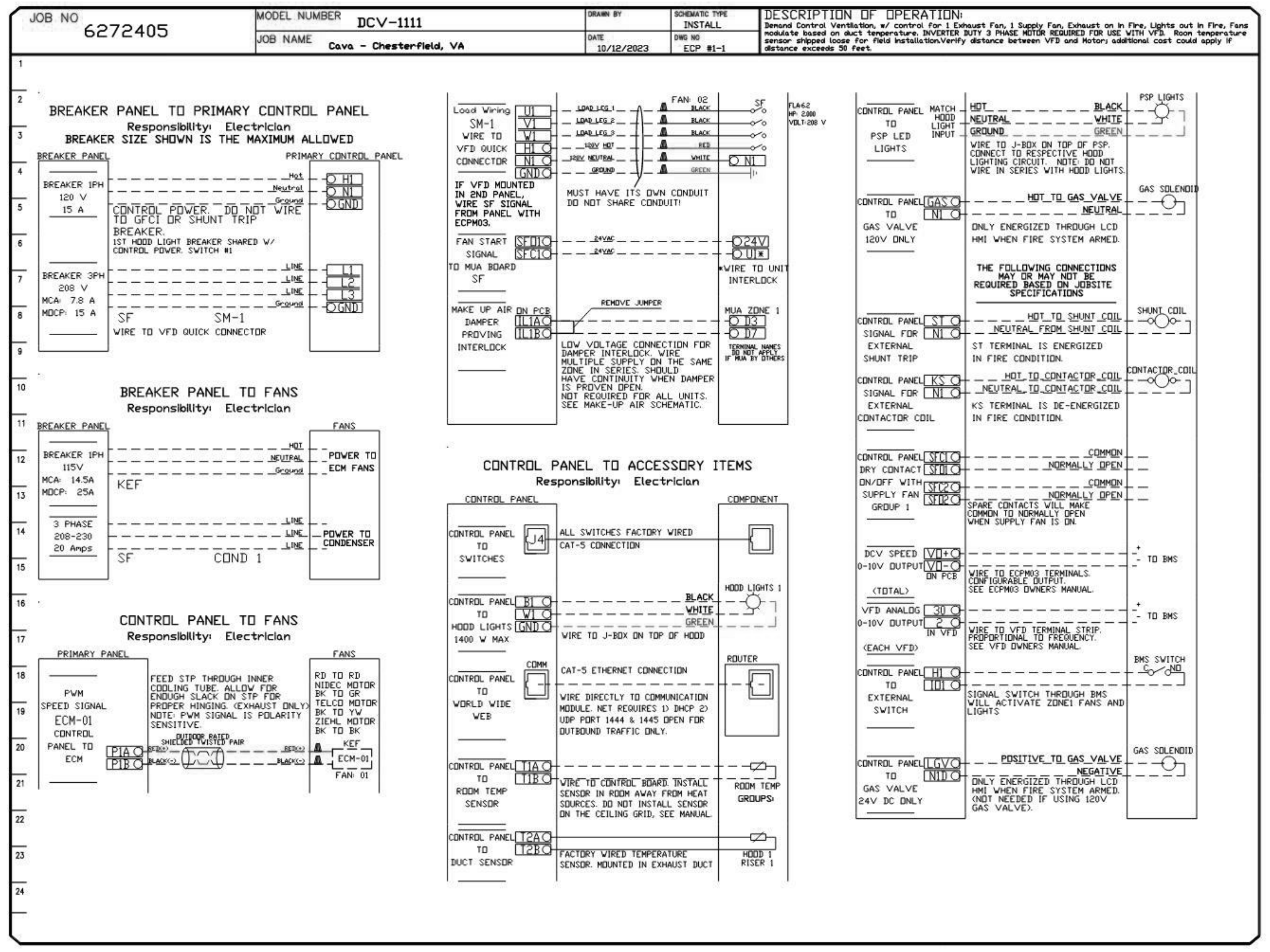
- *Hood control panel to support communications to cloud–based Building Management System.*
- *Hood Control Panel to allow cloud–based Building Management System to monitor real time parameters outlined as MONITOR in the points list.*
- *Hood Control Panel to allow cloud–based Building Management System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

## *MONITORING AND CONTROL POINTS LIST*

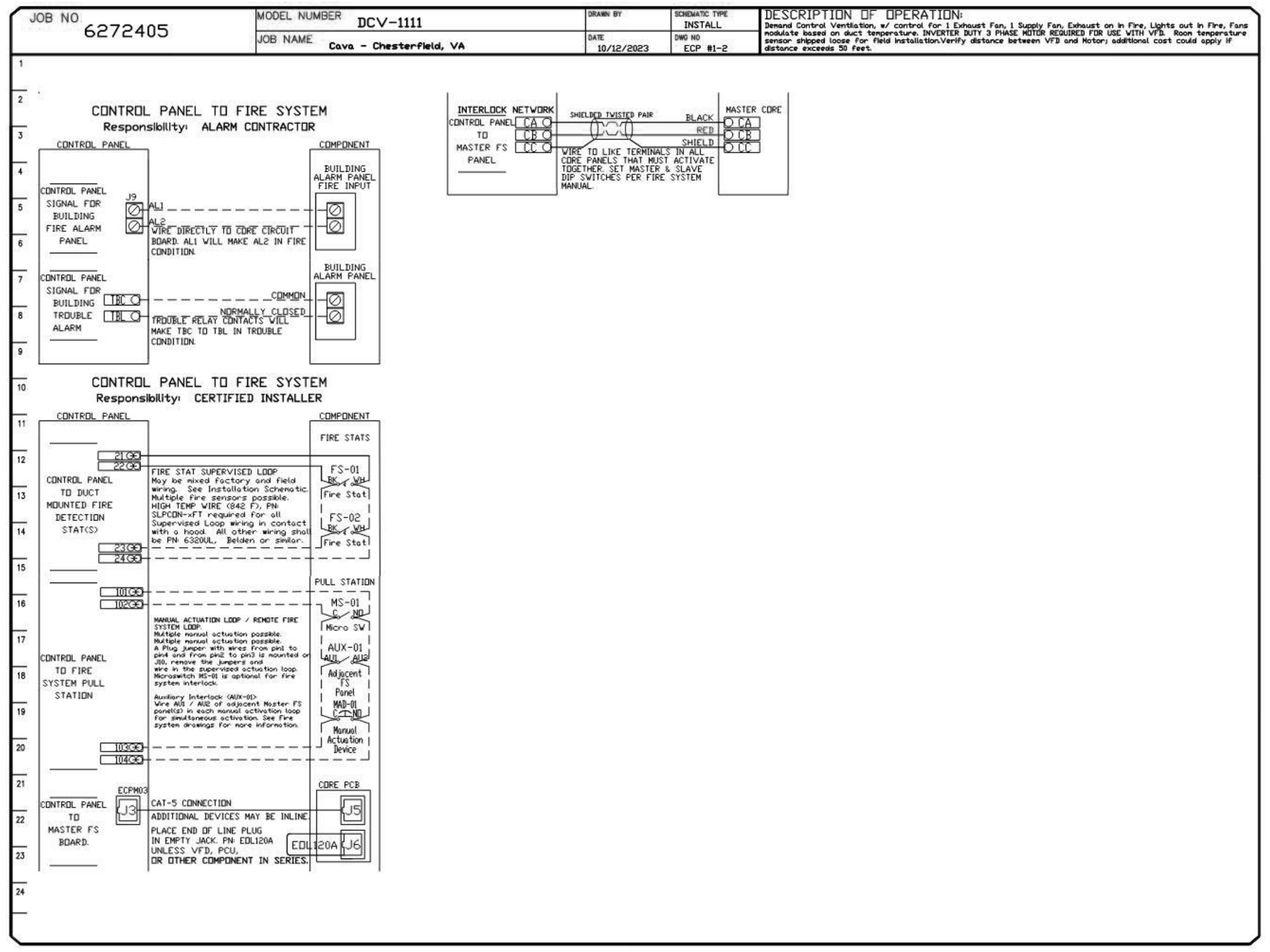
| ***DCV Packages*** | ***Function*** |
|---|---|
| ***Room Temperature*** | ***MONITOR*** |
| ***Duct Temperature(s)*** | ***MONITOR*** |
| ***MUA Discharge Temperature*** | ***MONITOR*** |
| ***Kitchen RTU Discharge Temperature*** | ***MONITOR*** |
| ***Fan Speed*** | ***MONITOR*** |
| ***Fan Amperage***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

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

JOB NO 6272405
MODEL NUMBER DCV-1111
JOB NAME Cava – Chesterfield, VA
DRAWN BY
DATE 10/12/2023
SCHEMATIC TYPE INSTALL
DWG NO ECP #1-1
DESCRIPTION OF OPERATION:



JOB NO 6272405
MODEL NUMBER DCV-1111
JOB NAME Cava – Chesterfield, VA
DRAWN BY
DATE 10/12/2023
SCHEMATIC TYPE INSTALL
DWG NO ECP #1-2
DESCRIPTION OF OPERATION:



JOB NO 6272405
MODEL NUMBER DCV-1111
JOB NAME Cava – Chesterfield, VA
DRAWN BY
DATE 10/12/2023
SCHEMATIC TYPE INSTALL
DWG NO ECP #1-3
DESCRIPTION OF OPERATION:
Fire System #1 TANK FS – 4.0/4.0.

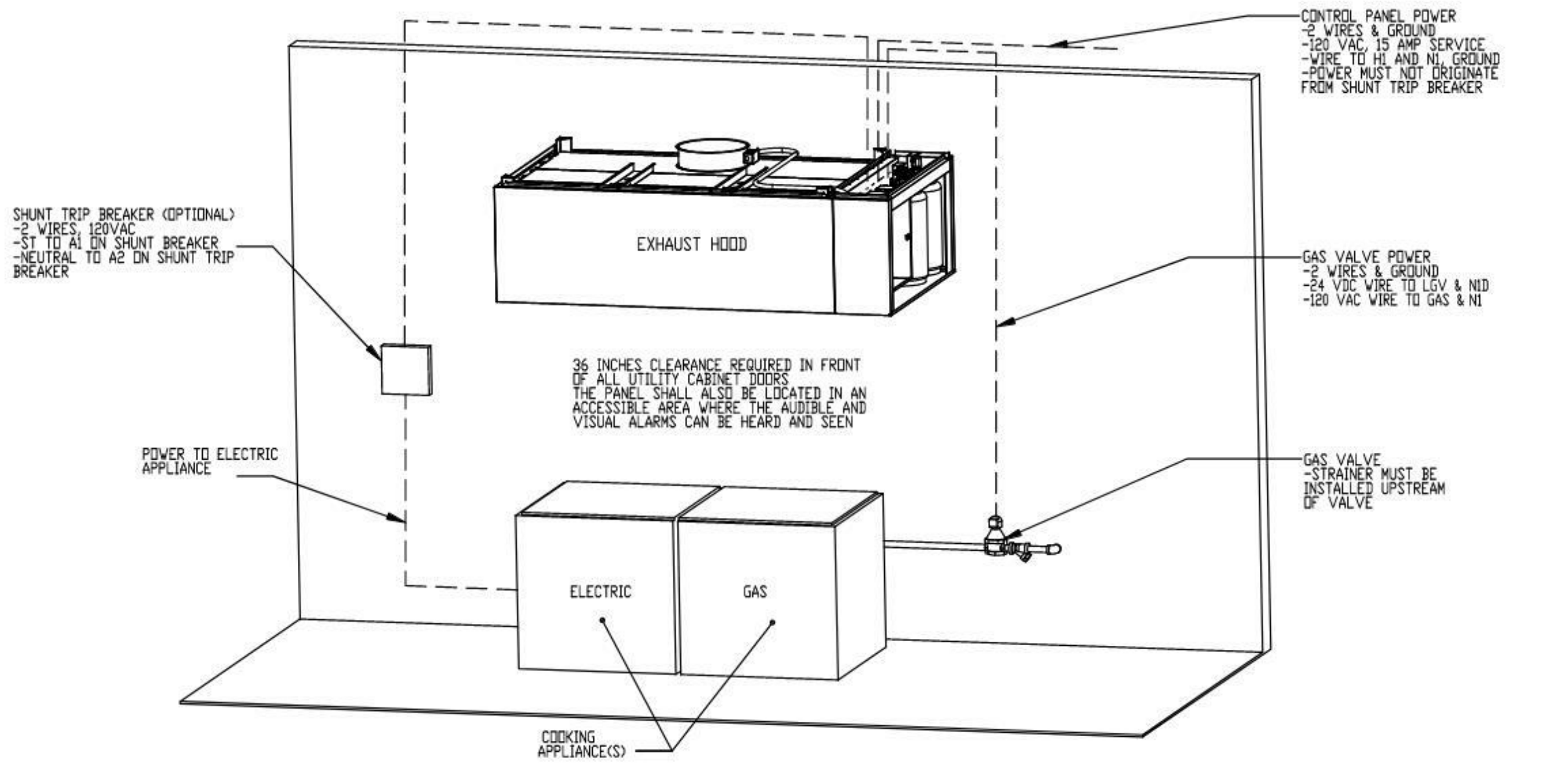
## TANK PROTECTION ELECTRICAL DETAIL

02/10/2021 Rev. 2

FS-1: MASTER

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

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



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

JOB NO 6272405
MODEL NUMBER DCV-1111
JOB NAME Cava – Chesterfield, VA
DRAWN BY
DATE 10/12/2023
SCHEMATIC TYPE INSTALL
DWG NO ECP #1-4
DESCRIPTION OF OPERATION:
Fire System #1 TANK FS – 4.0/4.0.

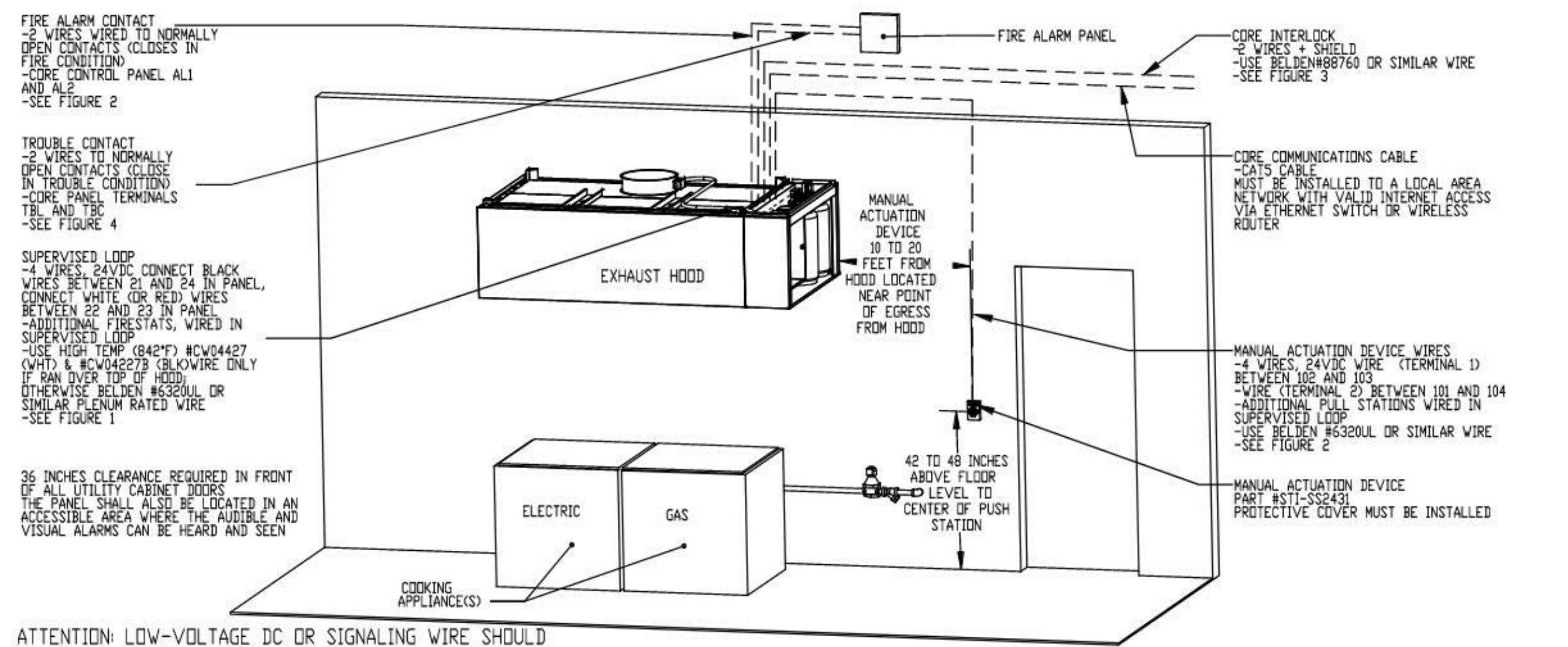
## TANK PROTECTION LOW-VOLTAGE DETAIL

02/10/2021 Rev. 2

FS-1: MASTER

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

| ALARM CONTRACTOR REQUIREMENT |  |  |  |  |  |
|---|---|---|---|---|---|
| ITEM | CONNECTION IN PANEL | CONNECTION ON DEVICE | VOLTAGE | AMPERAGE | COMMENTS |
| MANUAL ACTUATION DEVICE(S) | 101 AND 104<br>102 AND 103 | 1 & 2 | 24 VDC | < 1.0 AMPS | WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 102 AND 103<br>WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 101 AND 104<br>JUMPER 101 TO 104 AND 102 TO 103 IF NO MANUAL ACTUATION DEVICE IS INSTALLED |
| MANUAL ACTUATION DEVICE COVER | N/A | N/A | N/A | N/A | MANUAL ACTUATION DEVICE COVER MUST BE INSTALLED<br>IF SURFACE MOUNTED, USE COVER EXTENSION STI-6531B |
| REMOTE FIRESTAT SENSOR(S) | 21 AND 24<br>22 AND 23 | BLACK AND WHITE | 24 VDC | < 1.0 AMPS | WIRE FIRE SENSOR WHITE WIRES BETWEEN HOOD CORE PANEL TERMINALS 22 AND 23<br>WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 21 AND 24<br>HIGH TEMP (842°F) #CW04427 (WHT) & #CW04427B (BLK)WIRE OR SIMILAR ONLY IF RAN OVER TOP OF HOOD; OTHERWISE BELDEN #6320UL OR SIMILAR PLENUM RATED WIRE; SEE FIGURE 1 |
| FIRE ALARM CONTACT | AL1, AL2 | VARIES | 50V MAX (AC/DC) | UP TO 1 AMP | FIRE ALARM RELAY CONTACTS FOR BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL |
| CORE INTERLOCK(S) | ILA, ILB, ILC | ILA, ILB, ILC | RS-485 COMMUNICATIONS SIGNAL |  | 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 | <1.0 AMPS | TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION |



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

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

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Chesterfield, VA, 23832

**DATE:** 10/12/2023

**DWG.#:** 6272405

**DRAWN BY:** EG-32

**SCALE:** NTS

**MASTER DRAWING**

**SHEET NO.** 6

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FOR
CAVA
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AOR PROJECT NUMBER:
CAV021

| ISSUE | DATE |
|---|---|
| PERMIT | 12.15.2023 |
| PERMIT COMMENTS | 01.26.2024 |
| IFC | 04.08.2024 |

MECHANICAL HOOD DETAIL PLAN

SHEET:
M606

rtm
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Bellevue, WA 98007
rtmec.com | 847.756.4180

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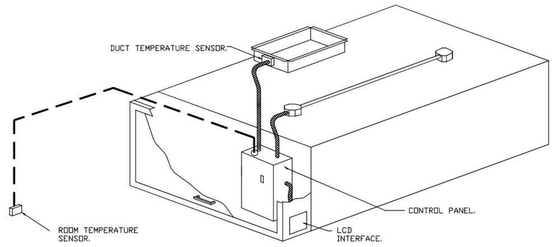
DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:

- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
- THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
- TEMPERATURE PROBE(S) LOCATED IN THE EXHAUST DUCT RISER(S) SHALL BE CONSTRUCTED OF STAINLESS STEEL.
- A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES SENSORS. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.1.1.
- A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
- A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
- VARIABLE FREQUENCY DRIVES (VFDS) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDS BETWEEN A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUT(S) TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
- THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
- AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
- THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
- A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FAN(S), ACTIVATE THE EXHAUST FAN(S), ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
- A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
- AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
  A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
  B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES (NO RESET RELAY REQUIRED).
  C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  E. MIS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
  F. A SINGLE LOW VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
  G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDS.




*TYPICAL HOOD CONTROL PANEL INSTALLATION*

SEQUENCE OF OPERATIONS:

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

- AUTOMATIC: THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS 'DYNAMIC', THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS 'STATIC', FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.7.5 (2021).
- MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
- SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
- OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
- FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

SYSTEM DESIGN VERIFICATION (SDV)

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

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

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

REVISIONS

| | DESCRIPTION | DATE |
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www.captiveaire.com


Cava - Chesterfield, VA
9959 Iron Bridge Road,
Chesterfield, VA, 23832

**DATE:** 10/12/2023

**DWG.#:** 6272405

**DRAWN BY:** EG-32

**SCALE:** NTS

**MASTER DRAWING**

**SHEET NO.** 7


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CAVA #010444 CHESTERFIELD, VA
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CAVA
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AOR PROJECT NUMBER: CAV021

| ISSUE | DATE |
|---|---|
| PERMIT | 12.15.2023 |
| PERMIT | 01.26.2024 |
| COMMENTS | |
| IFC | 04.08.2024 |

MECHANICAL HOOD DETAIL PLAN

SHEET: **M607**

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