MECHANICAL SPECIFICATIONS

HVAC GENERAL
REFER TO ALL OTHER DRAWINGS AND SPECIFICATIONS, AND BE RESPONSIBLE FOR ALL APPLICABLE PROVISIONS THEREIN. FURNISH AND INSTALL ALL NECESSARY LABOR AND MATERIALS FOR A COMPLETE SYSTEM. ANY APPLIANCES OR MATERIALS OBVIOUSLY A PART OF THE SYSTEM AND NECESSARY FOR ITS PROPER OPERATION, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN, SHALL BE FURNISHED AND INSTALLED AS IF CALLED FOR IN DETAIL. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES, NFPA 90A, AND THE BUILDING REGULATIONS. ATTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES. EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS OTHERWISE SPECIFIED. MECHANICAL CONTRACTOR SHALL BE LICENSED TO HANDLE CFC REFRIGERANTS.

DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EVERY FITTING, OFFSET, DROP AND RISE OF RUNS, AND DETAIL. INSTALL DUCTS, EQUIPMENT, AND CONTROLS IN A NEAT, WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD PRACTICE FOR A COMPLETE, WORKABLE INSTALLATION. AVOID CONFLICT WITH OTHER WORK; MAKE ADEQUATE PROVISIONS FOR PREVENTING NOISE AND VIBRATION. DRAWINGS INDICATE LOCATIONS OF FIXTURES, APPARATUS, DUCTWORK, AND PIPING; WHILE THESE ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE, IF IT IS NECESSARY TO CHANGE THE LOCATION OF SOME TO ACCOMMODATE BUILDING CONDITIONS, MAKE CHANGES WITHOUT ADDITIONAL COST TO THE OWNER AND AS APPROVED BY THE ARCHITECT. PROVIDE ADEQUATE ACCESS TO EQUIPMENT AND APPARATUS REQUIRING OPERATION, SERVICE, OR MAINTENANCE WITHIN THE LIFE OF THE SYSTEM. DO NOT RUN PIPING OR DUCTWORK, OR LOCATE EQUIPMENT (WITH RESPECT TO SWITCHBOARDS, PANEL BOARDS, POWER PANELS, MOTOR CONTROL CENTERS OR DRY TYPE TRANSFORMERS) WITHIN 42 INCHES IN FRONT OF EQUIPMENT, OVER EQUIPMENT, OR WITHIN 36 INCHES HORIZONTALLY OF SAME SPACE.

EXISTING CONDITIONS
CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE JOB CONDITIONS BEFORE SUBMITTING HIS PROPOSAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND SIZES OF ALL EXISTING UTILITY SERVICES PRIOR TO SUBMITTING HIS PROPOSAL. NO CONSIDERATION WILL BE GIVEN TO CLAIMS FOR EXTRA COST ARISING FROM CONTRACTOR'S FAILURE TO BE FULLY COGNIZANT OF JOB OR SITE CONDITIONS EXISTING AT TIME OF ACCEPTANCE OF BID

IF, DURING THIS INSPECTION, THE CONTRACTOR FINDS ANY OBSTRUCTION OR INTERFERENCE THAT MAY PROHIBIT THE PROPER INSTALLATION OF HIS WORK, HE IS TO MAKE IT KNOWN TO THE BUILDING MANAGEMENT AND/OR OWNER AND TENANT BEFORE AND AT THE TIME OF SUBMITTING HIS PROPOSAL.

BY SUBMISSION OF THE BID, IT IS UNDERSTOOD THAT SUCH INSPECTION HAS BEEN MADE AND INCLUDES ALL THE MATERIALS AND REQUIRED RELOCATION FOR ALL WORK.

ACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, PROTECT, BRACE, OR SUPPORT EXISTING ACTIVE SEWERS, GAS, AND OTHER SERVICES REQUIRED FOR PROPER EXECUTION OF WORK. IF EXISTING ACTIVE SERVICES ARE ENCOUNTERED THAT REQUIRE RELOCATION, RELOCATE AS APPROVED. DO NOT PREVENT OR DISTURB OPERATION OF ACTIVE SERVICES THAT ARE TO REMAIN.

INACTIVE SERVICES: WHEN ENCOUNTERED IN WORK, REMOVE, CAP, OR PLUG INACTIVE SERVICES, AS INDICATED. OPENINGS IN THE DUCTWORK SHALL BE PATCHED WITH SHEET METAL, SEALED AIRTIGHT WITH DUCT SEALANT, AND RE-INSULATED.

INTERRUPTION OF SERVICES: WHERE WORK MAKES TEMPORARY SHUTDOWNS OF SERVICES UNAVOIDABLE, SHUT DOWN AT NIGHT, OR AT SUCH TIMES AS APPROVED BY OWNER AND THE BUILDING MANAGEMENT WHICH WILL CAUSE LEAST INTERFERENCE WITH ESTABLISHED OPERATING ROUTINE. ARRANGE WORK TO ASSURE THAT SERVICES WILL BE SHUT DOWN ONLY DURING TIME ACTUALLY REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

WHERE EXISTING WALLS, CEILINGS, FLOORS, ETC., ARE CUT OR OTHERWISE DAMAGED DURING CONSTRUCTION, REPAIR ALL SURFACES TO THEIR ORIGINAL CONDITION.

COORDINATION
COORDINATE ALL WORK UNDER THIS DIVISION WITH THE WORK UNDER OTHER DIVISIONS. PROVIDE ADJUSTMENTS AS NECESSARY. EQUIPMENT, APPARATUS, DUCTWORK, PIPING, ETC., INSTALLED WITHOUT REGARD FOR THE SPEC REQUIREMENTS OR OTHER TRADES WILL BE REWORKED AT THE EXPENSE OF THE INSTALLING SUBCONTRACTOR IF IT CREATES AN UNNECESSARY HINDRANCE TO THE INSTALLATION OF ANOTHER TRADE'S WORK. ALL ITEMS MOUNTED OR BELOW THE CEILING, AND ANY ITEM PENETRATING THE CEILING, SHALL BE COORDINATED WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

PROTECTION OF WORK DURING CONSTRUCTION
PROVIDE PROTECTIVE COVERS, SKIDS, PLUGS OR CAPS TO PROTECT EQUIPMENT AND MATERIALS FROM DAMAGE AND DETERIORATION DURING CONSTRUCTION. PROTECT EXPOSED COILS WITH PLYWOOD OR OTHER SUITABLE RIGID COVERS TO AVOID DAMAGE TO FINS.

CONTRACTOR SHALL TAKE PRECAUTIONS AGAINST DAMAGING OR DISRUPTING BUILDING SYSTEMS, WIRING OR CONTROL TUBING FOR ADJACENT TENANTS. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S COST.

PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE. ANY DAMAGE SHALL BE REPAIRED USING THE SAME MATERIALS AT THE CONTRACTOR'S COST.

TEST AND BALANCE
TEST AND BALANCE HVAC AIR SYSTEMS TO WITHIN +10%, -5% OF DESIGN FLOW.

CHECK ALL FANS, INSTRUMENTATION DEVICES, CONTROL DEVICES, DAMPERS, ETC., FOR PROPER OPERATION AND CALIBRATION. REPORT DEFICIENCIES THAT CANNOT BE CORRECTED. MARK AND LOCK DAMPER AT THEIR PROPER POSITION. ADJUST FANS FOR THE CFM SHOWN ON THE FLOOR PLAN.

ADJUST, TEST AND CONFIRM DESIGN AIR FLOW RATES, PRESSURES, TEMPERATURES, AIR QUANTITIES, EQUIPMENT SPEED, AND MOTOR AMPERAGES FOR EACH SEGMENT BRANCH AND COMPONENT OF EACH SYSTEM.

VERIFY THAT DIFFUSER DISCHARGE PATTERNS HAVE BEEN PROPERLY SET. AIR FLOWS SHALL BE BALANCED WITH THE VOLUME DAMPERS INSTALLED IN BRANCH DUCTWORK. OPPOSED BLADE DAMPERS (OBD) IN THE DIFFUSERS SHALL BE SET IN THE FULLY OPEN POSITION DURING BALANCING. AFTER THE MAIN SYSTEM IS BALANCED WITHIN LIMITS SPECIFIED ABOVE, OBD CAN BE USED FOR MINOR ADJUSTMENT.

SET MAXIMUM AND MINIMUM CFM. SET POINTS ON ALL NEW AND EXISTING VAV BOXES AND POWER INDUCTION UNITS (PIU) PER DESIGN CFM NOTED ON PLANS.

DETERMINE REQUIRED MINIMUM STATIC PRESSURE SET POINT OF BASE BUILDING AIR HANDLING UNIT(S) TO ENSURE THAT DESIGN ARE ATTAINED. INFORM BUILDING OPERATOR OF THIS REQUIRED SETTING.

ADJUSTMENTS AND TESTS SHALL BE MADE UNDER SIMULATED MAXIMUM LOAD CONDITIONS.

THE MECHANICAL CONTRACTOR SHALL PERFORM THE TEST AND PROVIDE REPORT(S) FOR REVIEW TO THE ARCHITECT/ENGINEER AT THE COMPLETION OF THE JOB. WORK SHALL BE PERFORMED AND FORM SUBMITTED IN ACCORDANCE WITH THE GUIDELINES ON ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

THE TEST AND BALANCE AGENCY SHALL PROVIDE EQUIPMENT, PERSONNEL, AND A COPY OF THE TEST AND BALANCE REPORT AT THE ENGINEER'S FINAL INSPECTION FOR SPOT-CHECKING. ANY SYSTEM FOUND IMPROPERLY BALANCED OR NOT IN AGREEMENT WITH THE REPORT SHALL BE RE-BALANCED AND A REVISED REPORT SHALL BE SUBMITTED.

THE TEST AND BALANCE AGENCY SHALL PERFORM A "COMFORT" BALANCE 45 DAYS AFTER TENANT MOVES IN.

RECORD DRAWINGS
UPON COMPLETION OF PROJECT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF REPRODUCIBLE DRAWINGS REFLECTING THE "AS BUILT" CONDITION OF THE MECHANICAL SYSTEMS.

OPERATING AND MAINTENANCE MANUALS
MECHANICAL CONTRACTOR SHALL SUBMIT OPERATING AND MAINTENANCE MANUALS UPON COMPLETION OF THE PROJECT. MANUALS TO BE IN ACCORDANCE WITH SECTION 503.2.9.2 OF THE CURRENT LOCALLY ADOPTED ENERGY CONSERVATION CODE.

GUARANTEE
MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AGAINST DEFECTS FOR ONE YEAR. PROVIDE ADDITIONAL FOUR YEARS WARRANTY ON ALL COMPRESSORS.

SLEEVES
SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH WALLS, FLOORS, AND ROOFS; IRON PIPES PASSING THROUGH MASONRY WALL MAY BE BUILT INTO THE WALL. SLEEVES SHALL BE STANDARD WEIGHT STEEL PIPE, EXCEPT SLEEVES FOR CONCEALED PIPING THROUGH FLOORS NOT IN STRUCTURAL MEMBERS; THEY MAY BE 25 GAUGE GALVANIZED SHEET METAL. FLOOR SLEEVES FOR PIPING SHALL EXTEND FROM THE BOTTOM OF THE SLAB TO 2 INCHES ABOVE THE FINISHED FLOOR. WALL SLEEVES SHALL BE FULL THICKNESS OF WALLS. SEAL BETWEEN PIPING AND SLEEVE WITH FIRE-RATED CAULK AT ALL PENETRATIONS OF FIRE-RATED WALLS, PARTITIONS OR FLOORS. MAKE SLEEVES THROUGH OUTSIDE WALLS WATERTIGHT. CAULK BETWEEN UN-INSULATED PIPE AND SLEEVE. SIZE SLEEVES FOR INSULATED PIPES TO ALLOW FULL THICKNESS INSULATION.

ELECTRICAL WORK
ALL ELECTRICAL WORK AND INSTALLATION PROVIDED UNDER THIS DIVISION SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF DIVISION 16. ALL POWER WIRING AND FINAL POWER CONNECTIONS TO THE SYSTEM SHALL BE PROVIDED UNDER DIVISION 16. CONTROL WIRING (120V AND LESS) SHALL BE PROVIDED UNDER DIVISION 15 AND EXTENDED FROM THE 120V POWER CIRCUITS INDICATED ON THE ELECTRICAL DRAWINGS. ALL WIRING FOR VOLTAGES HIGHER THAN 30 VOLTS SHALL BE DONE BY A LICENSED ELECTRICIAN. ALL ELECTRICAL CHARACTERISTICS SHALL BE TAKEN FROM THE ELECTRICAL DRAWINGS AND SPECIFICATIONS AND COORDINATED BEFORE EQUIPMENT IS ORDERED OR SUBMITTED. ALL WIRING IN THE CEILING PLENUM SHALL BE PLENUM-RATED CABLE OR IN CONDUIT.

MOTORS AND STARTERS
PROVIDE MOTORS, STARTERS, PUSH BUTTONS, THERMAL OVERLOAD SWITCHES, AND CONTACTORS FOR EQUIPMENT COVERED HEREIN, UNLESS OTHERWISE SPECIFIED. INSTALLATION OF STARTERS, PUSH BUTTONS, THERMAL OVERLOAD SWITCHES, AND CONTACTORS (NOT FACTORY-INSTALLED) IS SPECIFIED UNDER ANOTHER DIVISION.

UNLESS OTHERWISE SPECIFIED, PROVIDE EACH MOTOR ½ HP AND LARGER WITH A MAGNETIC STARTER PROVIDING OVERLOAD AND LOW VOLTAGE PROTECTION. PROVIDE A CONTROL VOLTAGE TRANSFORMER IN EACH STARTER.

A HAND-OFF-AUTO SWITCH WITH PILOT LIGHT SHALL BE MOUNTED ON THE FACE OF EACH STARTER.

EQUIPMENT IDENTIFICATION
PROVIDE LABELS FOR EACH EQUIPMENT, STARTER, AND CONTROL SWITCH. LABELS TO BE ENGRAVED, LAMINATED, BAKELITE NAMEPLATES WITH ¼ INCH HIGH WHITE CUT LETTERS; SECURE TO STARTER OR SWITCH.

EQUIPMENT, MATERIALS AND BID BASIS
SPECIFIED MANUFACTURER'S NAMES AND MODEL NUMBERS ARE FOR THE PURPOSE OF DESCRIBING TYPE, CAPACITY, FUNCTION, AND QUALITY OF EQUIPMENT AND MATERIALS TO BE USED. UNLESS "OR EQUAL" OR SPECIFICALLY STATED, BIDS SHALL BE BASED ON EQUIPMENT NAMES. CAPACITIES INDICATED TAKE PRECEDENCE OVER MODEL NUMBERS.

EQUIPMENT SUPPORT
SUPPORT ALL CEILING-MOUNTED EQUIPMENT, DUCTWORK, AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS AND EQUIPMENT, PROVIDE ADDITIONAL STEEL FRAMING.
THIS CONTRACTOR SHALL COORDINATE SUPPORTS WITH THE BUILDING MANAGEMENT AND SUBMIT THE METHOD OF SUPPORT FOR REVIEW TO THE BUILDING MANAGEMENT.

OPENINGS THROUGH ROOF
PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOF INTEGRITY OF THIS BUILDING AS REQUIRED BY THE REMOVAL AND/OR INSTALLATION OF PIPES, DUCTS, CONDUITS, AND EQUIPMENT. SUBMIT FOR REVIEW TO THE BUILDING MANAGEMENT.

VIBRATION ISOLATORS
VIBRATION ISOLATORS FOR FANS SHALL BE THE HANGER TYPE AND SHALL CONTAIN A STEEL SPRING AND 0.3" DEFLECTION NEOPRENE ELEMENT IN SERIES. THE NEOPRENE ELEMENT SHALL BE MOLDED WITH A ROD ISOLATION BUSHING THAT PASSES THROUGH THE HANGER BOX.

SPRING DIAMETERS AND HANGER BOX LOWER HOLE SIZES SHALL BE LARGE ENOUGH TO PERMIT THE HANGER ROD TO SWING THROUGH A 15 DEGREE ARC BEFORE CONTACTING THE HOLE AND SHORT CIRCUITING THE SPRING. SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL TO SOLID HEIGHT EQUAL TO 50% OF THE RATED DEFLECTION.

SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH VIBRATION ISOLATION HANGERS WHICH SHALL BE FURNISHED WITH THE UNIT, AND ISOLATOR SHALL BE MATCHED TO EQUIPMENT WEIGHT AND SUPPORT LOCATIONS. ISOLATION HANGERS SHALL BE COMBINATION STEEL SPRING AND NEOPRENE-IN-SHEAR WITH STEEL HOUSING. ISOLATORS SHALL HAVE A MINIMUM OPERATING DEFLECTION OF 1 ½". SPRINGS SHALL HAVE A MINIMUM ADDITIONAL TRAVEL FOR 50% BETWEEN THE DESIGN HEIGHT AND THE SOLID HEIGHT.

HVAC INSULATION
QUALITY ASSURANCE: SPECIFIED COMPONENTS OF THIS INSULATION SYSTEM, INCLUDING FACINGS, MASTICS AND ADHESIVES, SHALL HAVE A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED RATING, AS PER TESTS CONDUCTED IN ACCORDANCE WITH ASTM E84 (NFPA 255) METHODS.

PIPE INSULATION:
TYPE P1 ASTM C547, CLASS 1 (-20 DEGREES F TO 500 DEGREES F):
FIBERGLASS, MINIMUM 4 POUNDS PER CUBIC FOOT (P.C.F.) DENSITY, K FACTOR 0.23 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY-APPLIED ALL-SERVICE-JACKET (ASJ) COMPOSED OF REINFORCED KRAFT AND ALUMINUM FOIL LAMINATE. JACKET SHALL HAVE SELF-SEALING LAP TO FACILITATE CLOSING LONGITUDINAL AND END JOINTS.

APPROVED PRODUCTS:
CERTAINED 500 DEGREE SNAP-ON ASJ/SSL
MANVILLE MICRO-LOK AP-T
OWENS/CORNING FIBERGLASS 25 ASJ/SSL
KNAUF PIPE INSULATION ASJ/SSL

TYPE P2 ASTM C534 (-40 DEGREES F TO 220 DEGREES F:)
FLEXIBLE, CLOSED-CELL ELASTOMERIC, NOMINAL 6 PCF DENSITY, K FACTOR 0.27 MAXIMUM AT 75 DEGREES F MEAN.

APPROVED PRODUCTS:
ARMSTRONG AP ARMAFLEX
MANVILLE AEROTUBE II
NOMACO THERMA-CEL
RUBATEX R-180-F5

DUCT INSULATION:
TYPE D1 ASTM C553 TYPE 1, CLASS B3:
FIBERGLASS, NOMINAL 1 P.C.F. DENSITY BLANKET, K FACTOR 0.31 MAXIMUM AT 75 DEGREES F MEAN, WITH FACTORY APPLIED FSK (FOIL-SCRIM-KRAFT) VAPOR BARRIER JACKET, FOR TEMPERATURES TO TEMPERATURES 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED "STANDARD DUCT WRAP"
MANVILLE "MICROLITE"
OWENS/CORNING FIBERGLASS RFK-75
KNAUF "DUCTWRAP"

TYPE D3:
FIBERGLASS, NOMINAL 2.0 P.C.F. DENSITY LINER, K FACTOR 0.26 MAXIMUM AT 75 DEGREES F MEAN, BLACK COATING, FOR TEMPERATURES TO 250 DEGREES F.

APPROVED PRODUCTS:
CERTAINED ULTRALITE DUCT LINER 200
MANVILLE LINACOUSTIC
KNAUF DUCT LINER M

INSTALLATION OF PIPE INSULATION:
INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO TESTING AND ACCEPTANCE OF TEST.

MAINTAIN INTEGRITY OF VAPOR-BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. SEAL OPEN ENDS OF INSULATION WITH MASTIC. SECTIONALLY SEAL ALL BUTT ENDS OF ALL COLD WATER PIPING INSULATION AT FITTINGS WITH WHITE VAPOR BARRIER COATING.

COVER VALVES, FLANGES, FITTINGS, AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION). FINISH COLD PIPE FITTINGS WITH WHITE VAPOR BARRIER COATING AND HOT PIPING WITH WHITE VINYL ACRYLIC MASTIC, BOTH REINFORCED WITH GLASS CLOTH.

EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

INSTALL PROTECTIVE METAL SHIELDS AND FOAM GLASS INSERTS WHERE PIPE HANGERS BEAR ON OUTSIDE ON INSULATION.

INSTALLATION OF DUCTWORK INSULATION:
MAINTAIN INTEGRITY OF VAPOR-BARRIER ON DUCTWORK INSULATION, AND PROTECT IT TO PREVENT PUNCTURE AND OTHER DAMAGE. TAPE ALL PUNCTURES. SECURE ALL DUCTWORK WITH GALVANIZED WIRE 12" O.C. SECURE DUCTWORK WITH OUTWARD CLINCHING STAPLES. SEAL ALL LONGITUDINAL AND CIRCUMFERENTIAL JOINTS WITH FSK TAPE.

EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR DUCTWORK PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.

EXCEPT AS OTHERWISE INDICATED, OMIT INSULATION ON DUCTWORK WHERE INTERNAL INSULATION OR SOUND ABSORBING LININGS HAVE BEEN INSTALLED.

ALL INTERNAL INSULATION SHALL BE ADHERED TO THE DUCT WITH 100% COVERAGE OF APPROVED FIRE RETARDANT MASTIC. ALL EDGES SHALL BE SEALED. ANY ABRASIONS OR TEARS REPAIRED WITH MASTIC. INCREASE INDICATED DUCT SIZES TO COMPENSATE FOR LINER THICKNESS.

INSULATION REQUIREMENTS:

INSULATION SCHEDULE

LOCATION	WRAP	WRAP SIZE (IN.)	WRAP TYPE	WRAP R-VAL	LINER	LINER SIZE (IN.)	LINER LOCATION	LINER TYPE	LINER R-VAL
INDOOR CONCEALED SA/RA	☒	2"	D1	6.0	☒	1"	FIRST 10' FROM UNIT	SEE SINGLE & DUAL WALL SPEC THIS SHEET	
INDOOR EXPOSED SA/RA	☐	–	–	–	☒	1"	CONTINUOUS		
OUTDOOR CONCEALED SA/RA	☒	2"	D1	8.0	☒	2"	CONTINUOUS	D3	8.0
OUTDOOR EXPOSED SA/RA	☐	–	–	–	☐	–	–	–	–
INDOOR CONCEALED OA	☒	2"	D1	6.0	☐	–	–	–	–
INDOOR EXPOSED OA	☐	–	–	–	☐	–	–	–	–
INDOOR EA	☐	–	–	–	☐	–	–	–	–
INDOOR TRANSFER	☐	–	–	–	☐	1"	CONTINUOUS	D3	4.2
TYPE I KITCHEN EA	☐	–	–	–	☐	–	–	–	–
REFRIGERANT PIPING	☒	1/2"	P1	CODE MIN.	☐	–	–	–	–
CONDENSATE PIPING	☐	–	–	–	☐	–	–	–	–

MAINTENANCE AND SERVICE
THIS CONTRACTOR SHALL INCLUDE AND ASSUME COMPLETE RESPONSIBILITY FOR START-UP, 24 HOURS A DAY SERVICE WITH A RESPONSE TIME NOT TO EXCEED FOUR (4) HOURS.
MAINTENANCE ON A QUARTERLY BASIS (FOUR MAINTENANCE INSPECTIONS A YEAR) FOR A PERIOD OF ONE YEAR FOR ALL HVAC EQUIPMENT, INCLUDING PRE PURCHASED EQUIPMENT AS IS SAID PRE PURCHASED EQUIPMENT WERE PURCHASED BY THIS CONTRACTOR, AND INCLUDING EXISTING EQUIPMENT WITHIN TENANT SPACE.
PROVIDE COST TO PERFORM PREVENTATIVE MAINTENANCE FOR THE FIRST YEAR ONLY.

THIS ONE-YEAR MAINTENANCE CONTRACT SHALL INCLUDE, BUT IS NOT LIMITED TO THE FOLLOWING WORK:
CHECK LINES FOR LEAKAGE OF REFRIGERANT/WATER
REFILL LINES IF NECESSARY
LUBRICATE MOTORS
CHECK OPERATION OF THERMOSTATS
REPLACE RETURN AIR FILTERS
CLEAN CONDENSER COILS
CHECK AND TIGHTEN ELECTRICAL CONNECTIONS
CHECK CONTROLS
CHECK FOR NOISE AND VIBRATION
CHECK REFRIGERANT PRESSURE DURING OPERATION
CHECK CURRENT (AMPERAGE) DRAW OF ALL MOTORS
CHECK OPERATION OF CONDENSATE DRAIN SYSTEM
CHECK AND ADJUST BLOWER FAN BELT TENSION

SHEET METAL WORK
EXCEPT AS OTHERWISE NOTED, ALL DUCTWORK AND OTHER SHEET METAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH LATEST EDITION OF THE SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION, INC. (SMACNA), HVAC CONSTRUCTION STANDARDS MANUAL. DUCTWORK SHALL BE GALVANIZED SHEET STEEL, UNLESS OTHERWISE NOTED. FIBERGLASS DUCTWORK IS NOT ACCEPTABLE.

MINIMUM DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 2" W.G. DUCTWORK STATIC PRESSURE CONSTRUCTION SHALL BE 4" W.G. FOR OPERATING PRESSURES ABOVE 2" W.G. AND UP TO 4" W.G. ALL DUCTS SHALL BE SEAL CLASS "A".

LOW PRESSURE FLEXIBLE DUCT SHALL BE SIMILAR TO FLEX MASTER TYPE 5, OR APPROVED EQUAL, WITH 1" THICK INSULATION AND SHALL CONFORM TO U.L. 181 AND NFPA BULLETIN 90A.

MEDIUM PRESSURE FLEXIBLE DUCT TAKE-OFFS TO VARIABLE VOLUME TERMINAL UNITS TO BE THERMAFLEX 11 TYPE ST-L OR APPROVED EQUAL.

FIRE DAMPERS: FIRE DAMPERS SHALL BE DYNAMIC TYPE SIMILAR TO RUSKIN CURTAINTYPE DIBD2, WITH BLADES OUTSIDE AIR STREAM, GALVANIZED STEEL CONSTRUCTION, EQUIPPED WITH FUSIBLE LINK, U.L. LISTED AND INSTALLED IN CONFORMANCE WITH U.L. AND NFPA STANDARD 90A, AND APPROVED FOR USE BY AUTHORITIES HAVING JURISDICTION. PROVIDE ACCESS DOOR IN DUCTWORK FOR EACH FIRE DAMPER.

VOLUME DAMPERS: SAME MATERIAL AS DUCT, PER SMACNA, EXCEPT PROVIDE BEARING AT ONE END OF DAMPER ROD AND QUADRANT WITH LEVER AND LOCK SCREW AT OTHER END. FOR INSULATED DUCTS, QUADRANTS MOUNTED ON COLLAR SHALL CLEAR INSULATION; INSTALL WITH LEVERS ACCESSIBLE OUTSIDE INSULATION. BALANCING DAMPERS SHALL BE THE OPPOSED BLADE TYPE.

PROVIDE AND INSTALL INSULATED HINGED ACCESS PANELS FOR ALL FIRE AND COMBINATION FIRE/SMOKE DAMPERS.

FLEXIBLE CONNECTIONS: NEOPRENE-COATED GLASS FABRIC, 30 OZ. PER SQUARE YARD WITH SEWED AND CEMENTED SEAMS, SIMILAR TO VENT FABRICS. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL EQUIPMENT AND RIGID DUCTWORK. FABRIC CONNECTIONS SHALL BE AT LEAST FOUR (4) INCHES LONG AND HAVE METAL COLLAR AT EACH END; ALLOW AT LEAST 1" SLACK TO ELIMINATE VIBRATION TRANSMISSION.

TURNING VANES: GALVANIZED STEEL, SINGLE THICKNESS VANES WITH MINIMUM TWO (2) INCHES INSIDE RADIUS. ALL SQUARE ELBOWS SHALL HAVE TURNING VANES.

ACCESS TILE IDENTIFICATIONS: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF ALL CONCEALED VALVES, DAMPERS, AND EQUIPMENT. SUBMIT TO ARCHITECT FOR APPROVAL.

DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. WHERE INTERNAL INSULATION IS CALLED FOR, DIMENSIONS SHALL BE INCREASED BY THICKNESS OF INSULATION.

PORTIONS OF DUCTWORK VISIBLE THROUGH SUPPLY AND RETURN AIR OPENINGS SHALL BE PAINTED FLAT BLACK.

TRANSITION RECTANGULAR DUCTWORK ON THE BOTTOM AND SIDES. MAINTAIN DUCTWORK LEVEL AND AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.

FLEXIBLE DUCT RUNOUTS TO ALL PIUS, VAVS, AND DIFFUSERS SHALL BE INSTALLED FREE OF KINKS AND SAGS. ALL BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE INLET OF THE PIU, VAV AND DIFFUSERS SERVED. FLEXIBLE DUCT SHALL NOT BE ANY LONGER THAN 6 FEET.

ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTEPTABLE

ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH 1½" x 1½" x ⅛" GALVANIZED STEEL ANGLES BOLTED OR RIVETED 6" ON CENTER ALL AROUND THE EXTERIOR PERIMETER OF THE DUCT.

ALL SUPPLY DUCTWORK BETWEEN AIR HANDLING UNITS AND VAVS AND PIUS TO BE CONSIDERED AS HIGH VELOCITY, MEDIUM PRESSURE DUCTWORK.

FOR ROUND DUCT TAKE-OFFS FROM METAL DUCTS, USE GENFLEX MODEL NUMBER SM-1DEL "SPIN-IN" FITTING.

PIPING
GENERAL: PIPING SHALL BE COMPLETE WITH PIPE FITTINGS, VALVES, COUPLING, STRAINERS, HANGER RODS, HANGERS, SUPPORTS, GUIDES, SLEEVES, AND ACCESSORIES IN CONFORMANCE WITH THE LATEST CODES AND ASME, ANSI, ASTM AND MSS STANDARDS.

NO PIPING SHALL BE LESS THAN ¾", UNLESS OTHERWISE NOTED.

FOR PIPE SIZES NOT INDICATED ON PLANS, SEE MANUFACTURER'S EQUIPMENT CONNECTION DETAILS.

PROVIDE FITTINGS FOR CHANGE IN PIPE SIZE AND FOR FINAL CONNECTION AT EQUIPMENT, AS REQUIRED.

AVOID ENTRY OF FOREIGN MATTER INTO PIPING DURING CONSTRUCTION.

PROVIDE MINIMUM PITCH TO INSURE ADEQUATE VENTING AND DRAINAGE.

PIPING SUPPORTS:

HORIZONTAL PIPING AND PIPING HANGERS SHALL BE ADJUSTABLE CLEVIS TYPE "CARPENTER AND PATTERSON" FIGURE NUMBER 100 OR 100SH, OR APPROVAL EQUAL. HANGER RODS SHALL BE ON THE FOLLOWING DIAMETER:

PIPE SIZE: 1¼" & BELOW; ROD DIAMETER: ⅜"; MAX SPACING: 6'
PIPE SIZE: 1½" & 2"; ROD DIAMETER: ⅜"; MAX SPACING: 8'

PROVIDE ADDITIONAL SUPPORTS AT CHANGE OF DIRECTION, RUNOUTS, AND CONCENTRATED LOADS DUE TO VALVES, ETC.

PIPING MATERIAL:

REFRIGERANT PIPING SHALL BE COPPER ASTM #B280, FACTORY CLEANED, NITROGEN CHARGED, AND CAPPED.

CONDENSATE DISCHARGE PIPING AND FITTINGS SHALL BE COPPER TYPE "L" PIPE. SCHEDULE 40 PVC SHALL BE ACCEPTABLE FOR PIPE INSTALLED ON ROOF ONLY.

HUMIDIFIER MAKE-UP WATER PIPING SHALL BE COPPER TYPE "L" PIPE.

PIPING AND FITTINGS SHALL BE SUITABLE FOR OPERATING PRESSURES OF 150 PSI.

FITTINGS:

PROVIDE DIELECTRIC GASKETS FOR JOINTS OF DISSIMILAR METALS: ISOLATING GASKETS, SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.

FOR MANUAL AIR VENTS, PROVIDE LINE SIZE AIR CHAMBER WITH ½" VALVE. PROVIDE VALVES AT ALL HIGH POINTS AND WHERE FLOW CHANGES FROM HORIZONTAL TO DOWNWARD.

TRAP SEAL IN CONDENSATE DRAIN PIPING SHALL BE MINIMUM 1" GREATER THAN THE STATIC PRESSURE IN SYSTEM.

CITY WATER PIPING FOR HUMIDIFIER MAKE-UP AND CONDENSATE DISCHARGE PIPING: 95-5 TIN-ANTIMONY SOLDER JOINT CONNECTIONS--NO LEAD.

VALVES:

VALVES FOR WATER PIPING SHALL BE SUITABLE FOR THE SERVICE PRESSURE AND TEMPERATURE AND SHALL BE:

GLOBE VALVE: "JENKINS" FIGURE 556P, FIGURE 1200, FIGURE 613-C, OR FIGURE 923-C, OR APPROVED EQUAL.

REFRIGERANT PIPE SIZE:

LIQUID AND SUCTION REFRIGERANT LINES SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATIONS. HOWEVER, LIQUID LINE VELOCITY SHALL NOT EXCEED 360 FPM, AND THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE. THE SUCTION LINE VELOCITY SHALL BE A MINIMUM OF 500 FPM IN HORIZONTAL LINES, AND A MINIMUM OF 1000 FPM IN VERTICAL RISERS (IF PART LOAD CONDITIONS EXIST, A DOUBLE RISER MAY BE REQUIRED); THE PRESSURE DROP SHALL BE LIMITED TO A MAXIMUM EQUIVALENT OF 2 DEGREES F OF TEMPERATURE CHANGE.

AIR DISTRIBUTION
DIFFUSERS, REGISTERS, AND GRILLES SHALL BE BUILDING STANDARD.

CEILING DIFFUSERS SHALL BE 4-WAY THROW, UNLESS SHOWN OTHERWISE ON DRAWINGS.

ALL REGISTERS SHALL BE FURNISHED WITH OPPOSED BLADE DAMPERS.

EXACT LOCATION OF ALL CEILING MOUNTED DIFFUSERS, GRILLES, AND REGISTERS TO BE COORDINATED WITH LIGHTING LAYOUT AND REFLECTED CEILING PLAN.

AUTOMATIC CONTROLS
MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS THAT MATCH THE MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT PROVIDED.

CONTROL WIRING SHALL BE #12 CU THHN INSTALLED IN EMT CONDUIT (MINIMUM ½" DIAMETER OR PLENUM RATED CABLE.

ALL AUTOMATIC CONTROL VALVES AND DAMPERS SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.

PROVIDE OCCUPANCY SENSORS AS REQUIRED BASED ON SEQUENCE OF OPERATIONS IF NOT PROVIDED FOR LIGHTING CONTROLS OTHERWISE BE ELECTRICAL CONTRACTOR.

EXHAUST FANS: EXHAUST FANS SHALL BE CONTROLLED AS SHOWN ON FAN SCHEDULE.

THERMOSTATS: ALL THERMOSTATS WITH ADJUSTABLE TEMPERATURE SET POINTS SHALL BE MOUNTED WHERE INDICATED ON PLANS 48" AFF, UNLESS NOTED OTHERWISE, AND BE FULLY COORDINATED WITH ARCHITECTURAL PLANS, OWNER GRAPHICS, WALL PATTERNS, LIGHTING CONTROLS/SWITCHES, POWER/DATA OUTLETS, AND ALL OTHER FIELD CONDITIONS. THERMOSTATS SHALL BE BY UNIT MANUFACTURER WITH PRIOR WRITTEN OWNER APPROVAL OF STYLE/TYPE AND COORDINATED PLACEMENT IN FIELD.

THE SEQUENCE OF OPERATIONS PROVIDED IN THE CONTRACT DOCUMENTS IS INTENDED TO COMMUNICATE THE GENERAL DESIGN INTENT TO THE CONTROLS SUBCONTRACTOR AND IS NOT INTENDED TO BE FULLY DEVELOPED OR COMPLETE. IN THE CONTROLS SUBMITTAL, THE SUBCONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, AND ALARM POINTS. THE CONTROLS SUBCONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS FROM SETPOINTS TO PREVENT EQUIPMENT FROM SHORT CYCLING AND WHEN HOVERING AROUND SETPOINTS. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO HAVING TO TAKE CORRECTIVE ACTIONS OR EQUIPMENT SHUTDOWNS. TRANSMITTERS SHALL INCLUDE OUT-OF-RANGE, FAIL-SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION. CONTROL CONTRACTOR SHALL SPECIFY TO FAIL DE-ENERGIZER, HOLD LAST STATE, OR DEFAULT TO A PREDETERMINED SETPOINT. THESE BASIC FEATURES THAT ARE NECESSARY AND ARE PART OF A ROBUST CONTROLS INSTALLATION SHALL BE ASSUMED INCLUDED IN THE SCOPE OF SERVICES FOR DELIVERABLES AT NO ADDITIONAL COSTS TO THE OWNER.

MECHANICAL DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
M0.1	MECHANICAL SPECIFICATIONS
M0.2	MECHANICAL SCHEDULES
M0.3	MECHANICAL LEGENDS & DETAILS
M1.1	FLOOR PLAN – MECHANICAL
M2.1	ROOF PLAN – MECHANICAL
M3.1	KITCHEN HOOD DRAWINGS
M3.2	KITCHEN HOOD DRAWINGS
M3.3	KITCHEN HOOD DRAWINGS
M3.4	KITCHEN HOOD DRAWINGS
M3.5	KITCHEN HOOD DRAWINGS
M3.6	KITCHEN HOOD DRAWINGS
M3.7	KITCHEN HOOD DRAWINGS

MECHANICAL CONTRACTOR NOTE:

THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING THE KITCHEN HOOD SYSTEM AS PRESENTED ON DRAWINGS M.1 THRU M3.7. HE SHALL BE COORDINATE WITH OTHER TRADES AS NEEDED FOR POWER, STRUCTURAL SUPPORT, ETC. ANY SUBSTITUTIONS SHALL BE PRESENTED TO THE ARCHITECT/ENGINEER AS A SHOP DRAWING, SUBMITTED FOR REVIEW AND APPROVAL.

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12/20/22

RESTAURANT
AY CARAMBA I

650 WEST ROOSEVELT BLVD.
MONROE, NC 28110

MARK	DATE	DESCRIPTION

ISSUE: 08/29/2022
PROJECT NO: 22159
CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

MECHANICAL SPECIFICATIONS

M0.1

ROOFTOP UNIT SCHEDULE (DX COOLING /W GAS HEAT)

TAG	AREA SERVED	S.A. CFM	O.A. CFM	E.S.P. (IN.WC)	COOLING CAPACITY TC (MBH)	COOLING CAPACITY SC (MBH)	COOLING CAPACITY EFFICIENCY	HEATING CAPACITY (GAS) INPUT (MBH)	HEATING CAPACITY (GAS) OUTPUT (MBH)	IFM HP	COMPRESSOR (EA) NO.	COMPRESSOR (EA) RLA	COMPRESSOR (EA) LRA	ELECTRICAL DATA MCA	ELECTRICAL DATA MOCP	ELECTRICAL DATA VOLTAGE	OPERATING WEIGHT	MANUFACTURER TRANE & MODEL	NOMINAL TONS	ADDITIONAL OPTIONS
RTU-1	KITCHEN	3750	825	1.2	116.26	92.50	EER 11.2	150.0	120.0	2.75	2	19.6/13.1	--	49.0	60	208V-3ø	1300 LBS	YSC120H3ELA	10.0	S
RTU-2	KITCHEN	3600	825	1.2	116.26	92.50	EER 11.2	150.0	120.0	2.75	2	19.6/13.1	--	49.0	60	208V-3ø	1300 LBS	YSC120H3ELA	10.0	S
RTU-3	SEATING AREA	3200	500	1.2	92.5	71.16	EER 11.2	120.0	97.2	1.0	1	25.0	--	48.0	60	208V-3ø	1100 LBS	YSC090H3ELA	7.5	S,V
RTU-4	SEATING AREA	4000	500	1.2	116.26	92.50	EER 11.2	150.0	120.0	2.75	2	19.6/13.1	--	49.0	60	208V-3ø	1300 LBS	YSC120H3ELA	10.0	S,V

OPTIONS (ALL UNITS)

- 14" HIGH PREFAB. ROOF CURB
- STANDARD EFFICIENCY
- SINGLE POINT ELEC. CONN.
- DX COOLING, GAS HEAT
- 2000+ CFM: DUCT SMOKE DETECTOR, SEE NOTE #3
- STANDARD CONDENSER COIL
- BIRD/INSECT SCREENS
- PHASE MONITOR
- ≤ 4 TONS; 0-50% MOTORIZED O.A. DAMPER
- ≥ 5 TON; 100% COMPARATIVE ENTHALPY ECONOMIZER /W BAROMETRIC RELIEF
- CONDENSATE DRAIN PAN OVERFLOW SWITCH
- 7-DAY PROGRAMMABLE DIGITAL THERMOSTAT
- 2" FILTERS
- LOW AMBIENT CONTROL TO 0°F
- DUAL SLOPED DRAIN PAN
- FACTORY TRAINED START-UP
- 5-YEAR FACTORY COMPRESSOR WARRANTY, 1ST YEAR PARTS & LABOR

ADDITIONAL OPTIONS (UNITS AS NOTED)

A: BACNET/LONTALK CONTROLS
B: DEMAND CONTROL VENTILATION
C: CO2 SENSOR, WALL MOUNTED
D: CO2 SENSOR, DUCT MOUNTED
E: HUMIDITY SENSOR, WALL MOUNTED
F: HUMIDITY SENSOR, DUCT MOUNTED
G: HINGED ACCESS PANELS
H: VIBRATION ISOLATION ROOF CURB
J: INSULATED CURB VOID FOR SOUND
K: CORROSION RESISTANT CONDENSER COIL
L: HOT GAS REHEAT
M: STAINLESS STEEL HEAT EXCHANGER
N: STAINLESS STEEL DRAIN PAN
O: CLOGGED FILTER SWITCH
P: DISCHARGE AIR TEMP KIT
Q: FROSTAT
R: HIGH STATIC DRIVE
S: HAIL GUARDS
T: LAT SENSOR, DUCT MOUNTED
U: EAT SENSOR, DUCT MOUNTED
V: BI-POLAR IONIZATION FILTER DEVICE

NOTES:

1. ALL UNITS SHALL BE AGA CERTIFIED AND U.L. LABELED.
2. ALL UNITS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE EACH UNIT WITH A SMOKE DETECTOR.
THE SMOKE DETECTOR SHALL BE IONIZATION TYPE WIRED TO SHUT-DOWN UNIT WHEN ACTIVATED.
THE SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.
THE SMOKE DETECTOR SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR TO AN AN HVAC MONITORING PANEL.
THE PANEL SHALL PROVIDE VISUAL AND AUDIBLE SIGNAL. THE SIGNAL SHALL INDICATE AND BE LABELED AS AIR DETECTOR TROUBLE.
THE PANEL SHALL BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.
PROVIDE SMOKE DETECTOR WITH REMOTE ALARM OR SUPERVISORY INDICATING DEVICES.
EACH REMOTE DEVICE SHALL BE PERMANENTLY LABELED TO ACCURATELY IDENTIFY THE UNIT SERVED.

FAN SCHEDULE

TAG	AREA SERVED	FAN TYPE	CFM	E.S.P. (IN.WC)	DRIVE TYPE	RPM	ELECTRICAL DATA H.P.	ELECTRICAL DATA WATTS	ELECTRICAL DATA VOLTAGE	SONES	OPERATING WEIGHT	MANUFACTURER & MODEL NO.	OPTIONS
EF-1	RESTROOM	CEILING EXHAUST	150	0.25	DIRECT	1400	–	52.4	115V-1ø	1.5	17 LBS	SP-A190L	A,B,F,K,S
KEF-1	HOOD (BY MC)	ROOF EXHAUST	2220	1.25	DIRECT	1120	2	–	208V-3ø	13.6	160 LBS	CAPTIVEAIRE DU180HFA	G,U
KEF-2	HOOD (BY MC)	ROOF EXHAUST	2880	1.25	DIRECT	1200	2	–	208V-3ø	17.4	185 LBS	CAPTIVEAIRE DU180HFA	G,U
EF-3	DISHWASHER HOOD	ROOF EXHAUST	600	0.375	DIRECT	1490	1/4	–	120V-1ø	9..3	60 LBS	GREENHECK G-098VG-1/4	A,B,F,Q
MUA-1	MAKE-UP AIR FAN	HOOD MAKE-UP AIR	4069	0.50	DIRECT	1679	3	–	208V-3ø	17.6	1620LBS	CAPTIVEAIRE A2-D.250-20D-MPU	A,C,G

OPTIONS

A: DISCONNECT SWITCH
B: BACKDRAFT DAMPER
C: PREFAB. ROOF CURB
D: BIRDSCREEN
E: SHORT BASE OPTION
F: HANGING BRACKETS WITH VIBRATION ISOLATION
G: KITCHEN EXHAUST FAN PROVIDED WITH HOOD PACKAGE. REFER TO HOOD DRAWINGS FOR DETAILS.
H: PROVIDE CORROSION PROTECTION FOR EXTERIOR EXHAUST FANS LOCATED WITHIN 1 MILE OF OCEAN OR SALT WATER BODY.
I: WALL MOUNTED THERMOSTAT
J: PROVIDE FACTORY FAN SPEED CONTROLLER TO BALANCE FAN
K: INTERLOCKED WITH LIGHTING FIXTURE SWITCH
L: WL, WALL LOUVER DISCHARGE
M: RFC, ROOF CAP (FLAT ROOF)
RL, ROOF CAP (PITCHED ROOF) WITH MANUAL DAMPER
N: MOTORIZED DAMPER – 120V
O: PROVIDE FAN WITH FREE STANDING SPRING ISOLATORS AND VIBRATION ISOLATION RAILS, W/ WIND RESTRAINTS
P: WASHABLE ALUMINUM FILTERS
Q: ON/OFF WITH HOOD MOUNTED SWITCH
R: EXHAUST METAL GRILLE
S: INTERLOCKED WITH LIGHTING OCCUPIED SENSOR (PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
T: RUN CONTINUOUSLY DURING OCCUPIED HOUR USE, CONNECTED VIA LIGHTING CONTROL. (CONTROL PROVIDED BY E.C. – SEE ELEC. DWGS FOR LOCATION)
U: INTERLOCK W/ RTU(S)/AHU(S) FOR MAKE-UP AIR
V: HEATER – 231 MBH IN, 213 MBH OUT (92% EFF)
W: FOR OUTDOOR INSTALLATION
X: 3-WAY DIFFUSER BY MANUFACTURER
Y: RATED FOR HIGH TEMPERATURE OPERATION UP TO 450°F.

NOTES:

1. ALL FANS SHALL BE U.L. LABELED.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. BACKDRAFT DAMPER ON ROOF SUPPLY FANS SHALL BE MOTORIZED.

SEQUENCE OF OPERATION

RTU-1
RTU-2
RTU-3
RTU-4

THE SA FANS IN THE RTUS SHALL RUN CONTINUOUSLY DURING OCCUPIED HOURS. THE SA FANS SHALL SHALL BE INTERLOCKED TO RUN WHEN KEF-1, KEF-2 AND MUA-1 ARE ENGERGIZED. KEF-1 AND KEF-2 SHALL BE INTERLOCKED WITH MUA-1 TO RUN SIMULTANEOUSLY.

ALL AREAS – THE FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED HOURS. ON A CALL FOR COOLING, THE 1ST STAGE OF COOLING SHALL ENERGIZE. IF THE THERMOSTAT CALLS FOR ADDITIONAL COOLING, THE SECOND STAGE SHALL ENERGIZE IF THE THERMOSTAT CONTINUES TO RISE AND CALLS FOR MORE COOLING, THE FIRST STAGE OF COOLING SHALL ENERGIZE AND CONTINUE TO RUN UNTIL THE THERMOSTAT IS SATISFIED. AS THE NEED FOR COOLING DECREASES, THE COMPRESSOR SHALL UNLOAD IN A SIMILAR STEP PROCESS.

OFF-HOURS OPERATION – RTU-1, RTU-2, RTU-3 AND RTU-4 SHALL BE FIELD WIRED TO STILL HAVE OPERATION DURING UNOCCUPIED HOURS AND WHEN HOOD SYSTEM IS NOT IN OPERATION. RTUS SHALL BE CAPABLE OF VENTILATING, COOLING AND/OR HEATING AS SYSTEM THERMOSTAT DEMANDS WHETHER HOOD SYSTEM IS IN OPERATION OR NOT TO MAINTAIN MINIMUM SET BACK TEMPS DURING UNOCCUPIED HOURS.

ON WINTER OPERATION – ON A CALL FOR HEATING, FIRST STAGE OF HEAT SHALL ENERGIZE TO HEAT THE SPACE. AS THE SPACE TEMPERATURE CONTINUES TO FALL, THE SECOND STAGE, IF APPLICABLE, SHALL ENERGIZE AS NEEDED TO MAINTAIN TEMPERATURE SET POINT.

OUTSIDE AIR DAMPERS – THE NORMALLY CLOSED MOTOR OPERATED OUTSIDE AIR DAMPER SHALL OPEN WHEN THE FAN IN THE ROOF TOP UNITS ARE ENERGIZED EITHER DURING OCCUPIED HOURS OR WHEN KEF-1, KEF-2 ARE ENERGIZED. THE DAMPER SHALL BE CLOSED DURING UNOCCUPIED TIMES.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

TAG	SERVICE	CFM RANGE	FACE SIZE (IN)	NECK SIZE (IN)	TYPE	OBD	MANUFACTURER PRICE & MODEL	ADDITIONAL OPTIONS
(A)	SUPPLY	50 – 125	24x24	6"ø	SQUARE PLAQUE	NO	SPD	
(B)	SUPPLY	180 – 270	24x24	10"ø	SQUARE PLAQUE	NO	SPD	
(C)	SUPPLY	275 – 425	24x24	12"ø	SQUARE PLAQUE	NO	SPD	
(D)	SUPPLY	430 – 950	24x24	14"ø	SQUARE PLAQUE	NO	SPD	
(E)	SUPPLY	600 – 850	24x24	14"ø	CAPTIVEAIRE DI-PSP (LAMINAR FLOW)	NO	--	
(F)	SUPPLY	200 –260	24x24	14"ø	SPIRAL DUCT GRILLE	NO	SDG-ST	
(G)	SUPPLY	335 – 400	24x24	14"ø	SPIRAL DUCT GRILLE	NO	SDG-ST	
[A]	RETURN	600 – 1500	24x24	18"x18"	PERFORATED FACE	NO	PDDR	
⟨A⟩	EXHAUST	665	24x24	14"ø	PERFORATED FACE	NO	PDDR	

ADDITIONAL OPTIONS (AS NOTED)

A: ADJUST FROM HORIZONTAL DISCHARGE TO VERTICAL DISCHARGE. PROVIDE DIFFUSER WITH SQUARE TO ROUND NECK ADAPTOR, MODEL #SR
B: PROVIDE REGISTER WITH ROUND NECK ADAPTOR WHERE REQUIRED.

NOTES:

1. ALL DEVICES SHALL BE FINISHED WITH AN ENAMEL FINISH, COLOR BY ARCHITECT. COORDINATE DEVICE COLOR(S) WITH ARCHITECT PRIOR TO ORDERING. COLOR COORDINATION SHALL INCLUDE BUT NOT BE LIMITED TO DIFFUSER FACE, CENTER TEE, FRAME INTERIOR, PATTERN CONTROLLER, ETC.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR TYPE OF INSTALLATION REQUIRED, NO EXCEPTIONS.
3. PROVIDE EXTERNAL BACK INSULATION, FACTORY INSTALLED FOR ALL DIFFUSER/GRILLE HOUSING.
4. PROVIDE TAPERED TRANSITIONS FOR ALL SUPPLY DIFFUSERS WITH NECK SIZES DIFFERENT THAN SUPPLY DUCT RUN-OUT SIZES.
5. ALL DEVICES INSTALLED IN HARD CEILINGS, WALLS, OR DIRECTLY ATTACHED TO DUCTS SHALL BE PROVIDED WITH OBD'S.
6. COORDINATE GRILLES/DIFFUSERS WITH ARCHITECTURAL CEILING AND STRUCTURAL FRAMING LAYOUTS PRIOR TO ORDERING. COORDINATION SHALL INCLUDE TYPE OF INSTALLATION, MOUNTING REQUIREMENTS, T-BAR SPACING/SIZE, GYPBOARD FRAMING, INSTALLATION CLEARANCES, ETC.
7. CONTRACTOR SHALL PAINT ALL VISIBLE SURFACES THROUGH GRD'S FLAT BLACK. PLENUM BOX INSULATION SHALL BE COLOR BLACK FROM FACTORY.
8. PROVIDE SPIN-IN TAP WITH MANUAL VOLUME DAMPER AT EACH BRANCH TAKE-OFF. SEE DETAILS SHEET AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. SEE AIR DEVICE TAG FOR DUCT INLET SIZE. ALL DUCT RUNOUTS TO BE SIZED PER GRD AIR TERMINAL NECK SIZE ON SCHEDULE AND/OR AS INDICATED ON PLANS IN CONJUNCTION WITH REQUIREMENTS BY GRD MANUFACTURER. COORDINATE ALL DUCT SIZES PRIOR TO BIDDING, NO EXCEPTIONS. DUCT SIZE SHALL MATCH GREILLE/LOUVER SIZE IF NO DUCTWORK SIZE INDICATED ON PLANS. CONTRACTOR SHALL REFERENCE DUCTWORK INSULATION SCHEDULE FOR ALL DUCTWORK INSULATION REQUIREMENTS.
10. TEE-BAR CEILING GRID IS USED. GENERAL CONTRACTOR SHALL MAKE SURE THE GRILLES/DIFFUSERS/LIGHITING FIXTURES WILL FIT PROPERLY IN THE NARROW GRID.

AIR BALANCE CALCULATION (W/ HOOD)

TAG	TYPE	SUPPLY AIR (CFM)	RETURN AIR (CFM)	OUTSIDE AIR (CFM)	EXHAUST (CFM)
RTU-1	NEW RTU	3750	2925	825	N/A
RTU-2	NEW RTU	3600	2775	825	N/A
RTU-3	NEW RTU	3200	2700	500	N/A
RTU-4	NEW RTU	4000	3500	500	N/A
MUA-1	NEW MAKE-UP AIR UNIT	4069	0	4069	N/A
EF-1 (2)	GENERAL EXHAUST	N/A	N/A	N/A	-300
KEF-1	KITCHEN HOOD EXHAUST FAN	N/A	N/A	N/A	-2220
KEF-2	KITCHEN HOOD EXHAUST FAN	N/A	N/A	N/A	-2880
EF-3	DISHWASHER HOOD	N/A	N/A	N/A	-600
	TOTAL	18,619	11,900	6,719	-6,000
	TOTAL DIFFERENTIAL (CFM):	6719 (OA) – 6000 (EA) = +719 (POSITIVE)			

NOTE: AIR BALANCE BASED ON ALL HVAC SYSTEMS, AND KITCHEN HOOD RUNNING SIMULTANEOUSLY. EXCESS POSITIVE CFM WILL BE RELIEVED THRU RTU-3 AND RTU-4, TO MAINTAIN A POSITIVE PRESSURE OF 200 CFM (TARGET POINT).

EXHAUST AIR CALCULATION

2018 NORTH CAROLINA BUILDING CODE: MECHANICAL – TABLE 403.3

ROOM NAME	AREA (SQ.FT) NET	NUMBER OF UNIT	CFM/UNIT	NET AREA O.A. RATE (CFM/SQ FT)	REQUIRED EXHAUST (CFM)	PROVIDED EXHAUST (CFM)	SERVED BY
MEN 110	153	2	70	–	140	150	EF-1
WOMEN 111	153	2	70	–	140	150	EF-1
KITCHEN	1128	–	–	0.7	653	5100	KEF-1, KEF-2

UNIT = WATER CLOSET OR URINAL

NORTH CAROLINA ENERGY CODE

(2018 North Carolina Energy Conservation Code)

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
METHOD OF COMPLIANCE:
PRESCRIPTIVE [X] ENERGY COST BUDGET [ ]

THERMAL ZONE: 3A

EXTERIOR DESIGN CONDITIONS
- winter dry bulb: 18° F.
- summer dry bulb: 93° F.

INTERIOR DESIGN CONDITIONS
- winter dry bulb: 72° F.
- summer dry bulb: 75° F.
- relative humidity: 50% R.H.

BUILDING HEATING LOAD: 121 MBH (PEAK)
BUILDING COOLING LOAD: 247 MBH (PEAK)

MECHANICAL SPACING CONDITIONING SYSTEM

UNITARY
- description of unit: GAS ROOF TOP PACKAGED UNITS
- heating efficiency: SEE SCHEDULES
- cooling efficiency: SEE SCHEDULES
- heat output of unit: SEE SCHEDULES
- cooling output of unit: SEE SCHEDULES

BOILER
- total boiler output of unit: N/A

CHILLER
- total chiller capacity: N/A

LIST EQUIPMENT EFFICIENCIES

Equipment schedules with motors (mechanical systems)
- motor horsepower: N/A
- number of phases: N/A
- minimum efficiency: N/A
- motor type: N/A
- # of poles: N/A

501.2 APPLICATION COMPLIANCE / 506 ADDITIONAL PRESCRIPTIVE COMPLIANCE:

[ ] 506.2.1 MORE EFFICIENT MECH. EQUIPMENT
[ ] 506.2.4 HIGHER EFF DOMESTIC HW
[X] 506.2.2 REDUCED LTG DENSITY
[ ] 506.2.5 ON-SITE RENEWABLE ENERGY
[ ] 506.2.3 ENERGY RECOVERY SYSTEM
[ ] 506.2.6 DAYLIGHT CONTROLS

DESIGNER STATEMENT: 1
To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2018 North Carolina Energy Conservation Code.

SIGNED: [signature]
NAME: M. MICHAEL SCHON, P.E.
TITLE: MECHANICAL ENGINEER

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11982 M. MICHAEL SCHON
12/20/22

RESTAURANT
AY CARAMBA I

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MONROE, NC 28110

MARK	DATE	DESCRIPTION
2	12/20/22	OWNER VE CHANGES

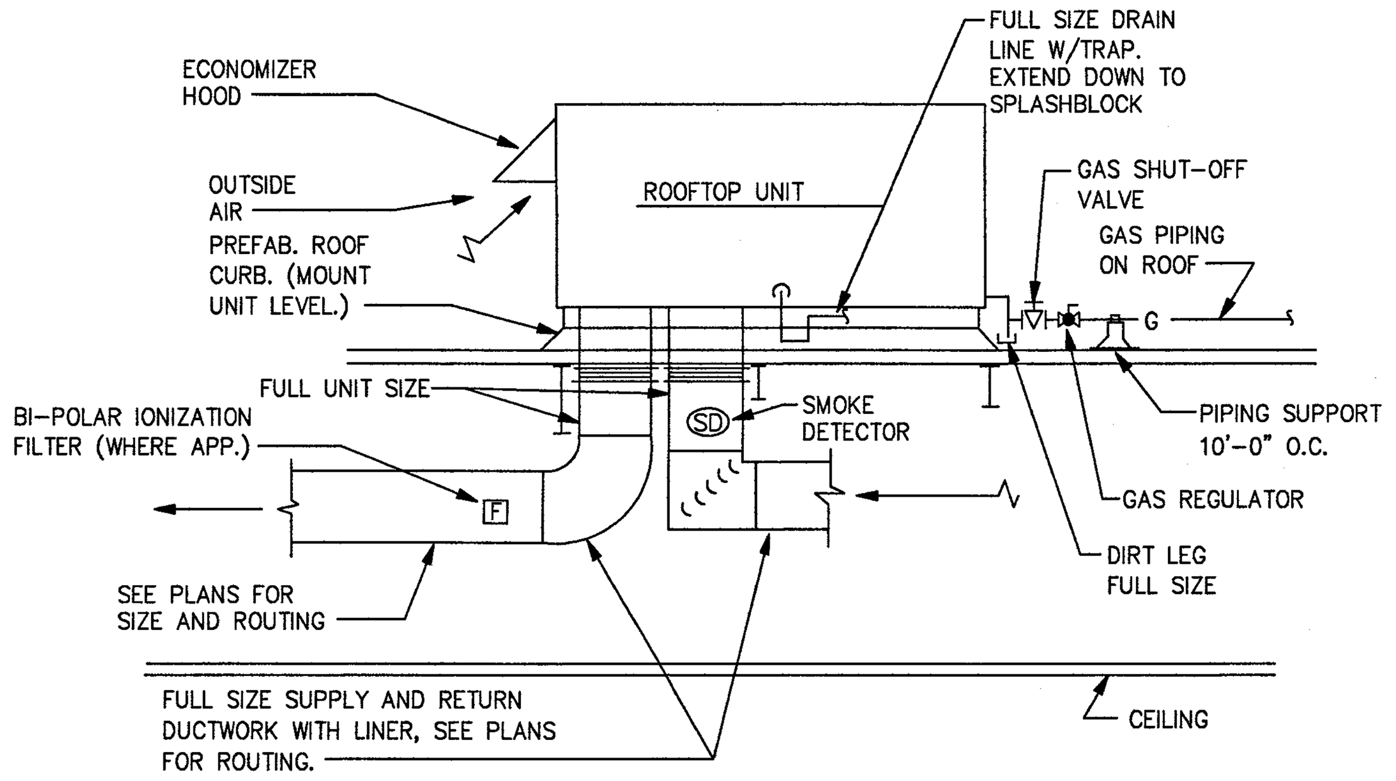
ISSUE: 08/29/2022
PROJECT NO: 22159
CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

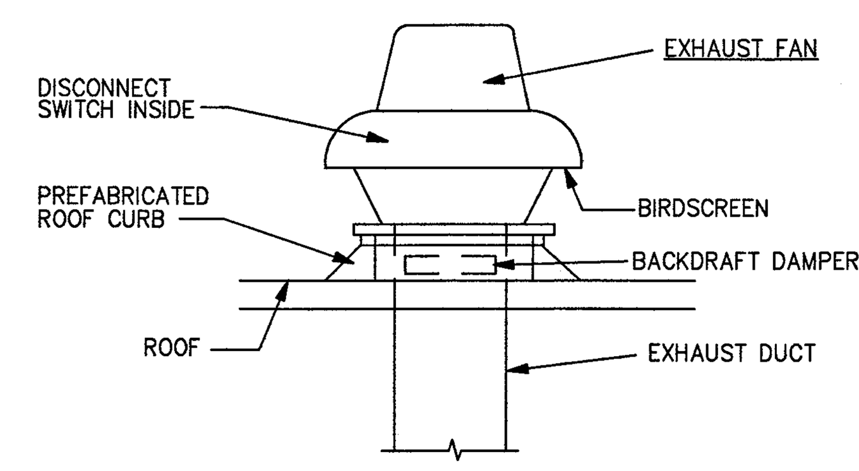
MECHANICAL SCHEDULES

M0.2

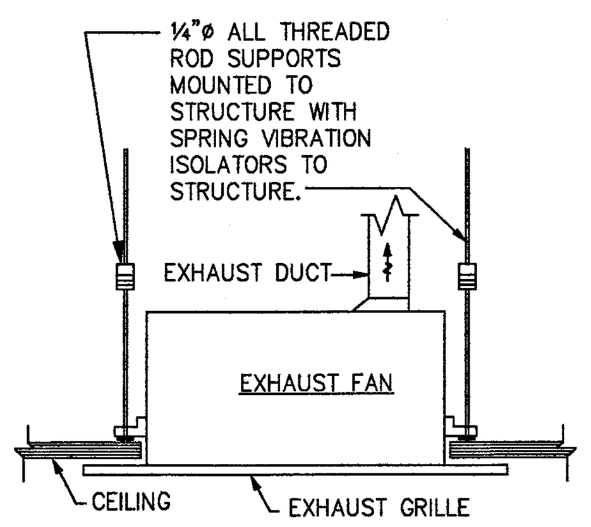
NOTES:
1. PROVIDE OPENING IN ROOF SIZED FOR SUPPLY AND RETURN DUCTS. ALL OTHER AREAS UNDER UNIT SHALL HAVE ANGLES AND SHEET METAL ACROSS UNDER UNIT WITH BATT INSULATION FILLING VOID.
2. ROOF CURBS SHALL MATCH SLOPE OF ROOF.
3. SMOKE DETECTORS SHALL BE IONIZITION TYPE WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTORS SHALL BE PROVIDED AND WIRED BY THE ELECTRICAL CONTRACTOR AND INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR.



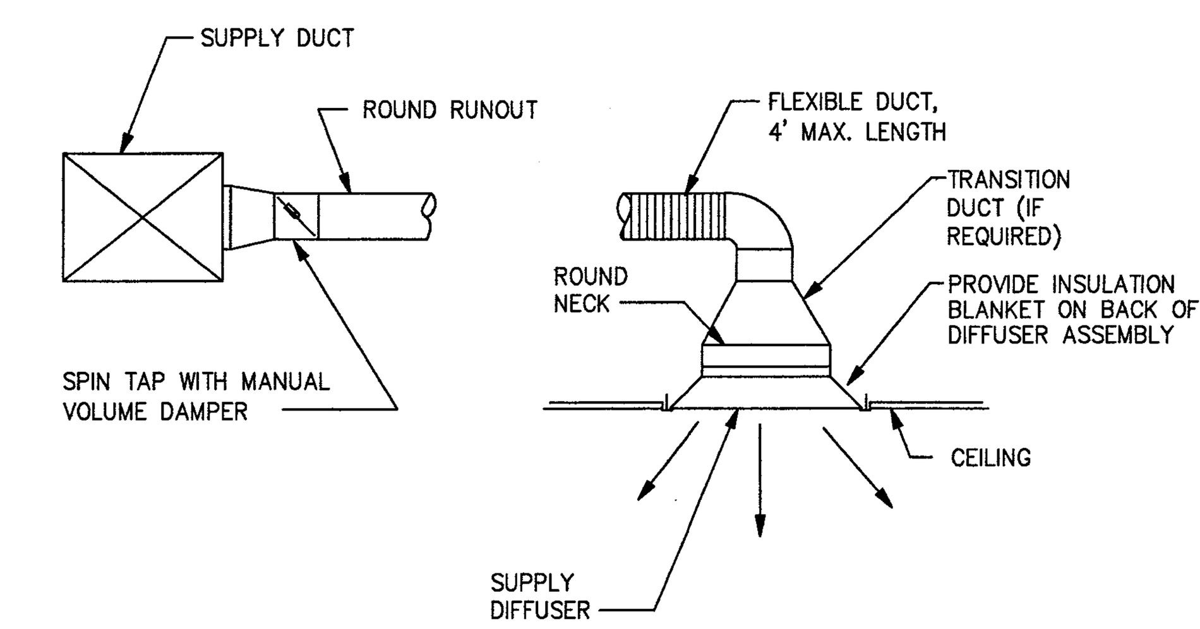
1 GAS-FIRED ROOFTOP UNIT DETAIL
SCALE: NONE



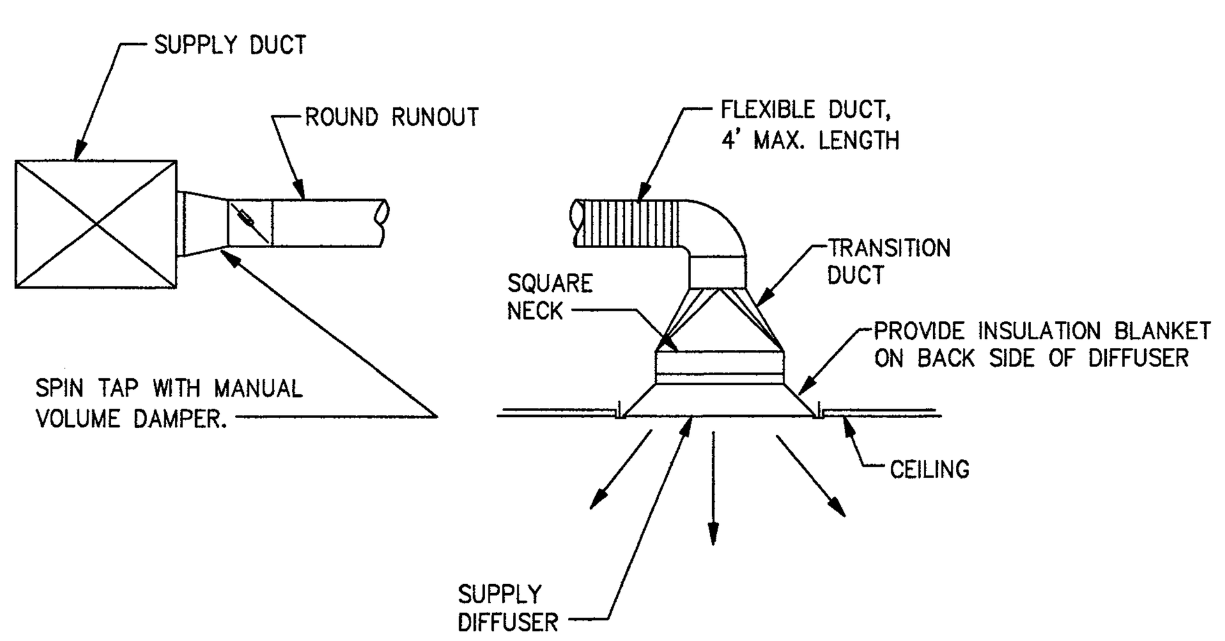
2 ROOF-MOUNTED EXHAUST FAN DETAIL
SCALE: NONE



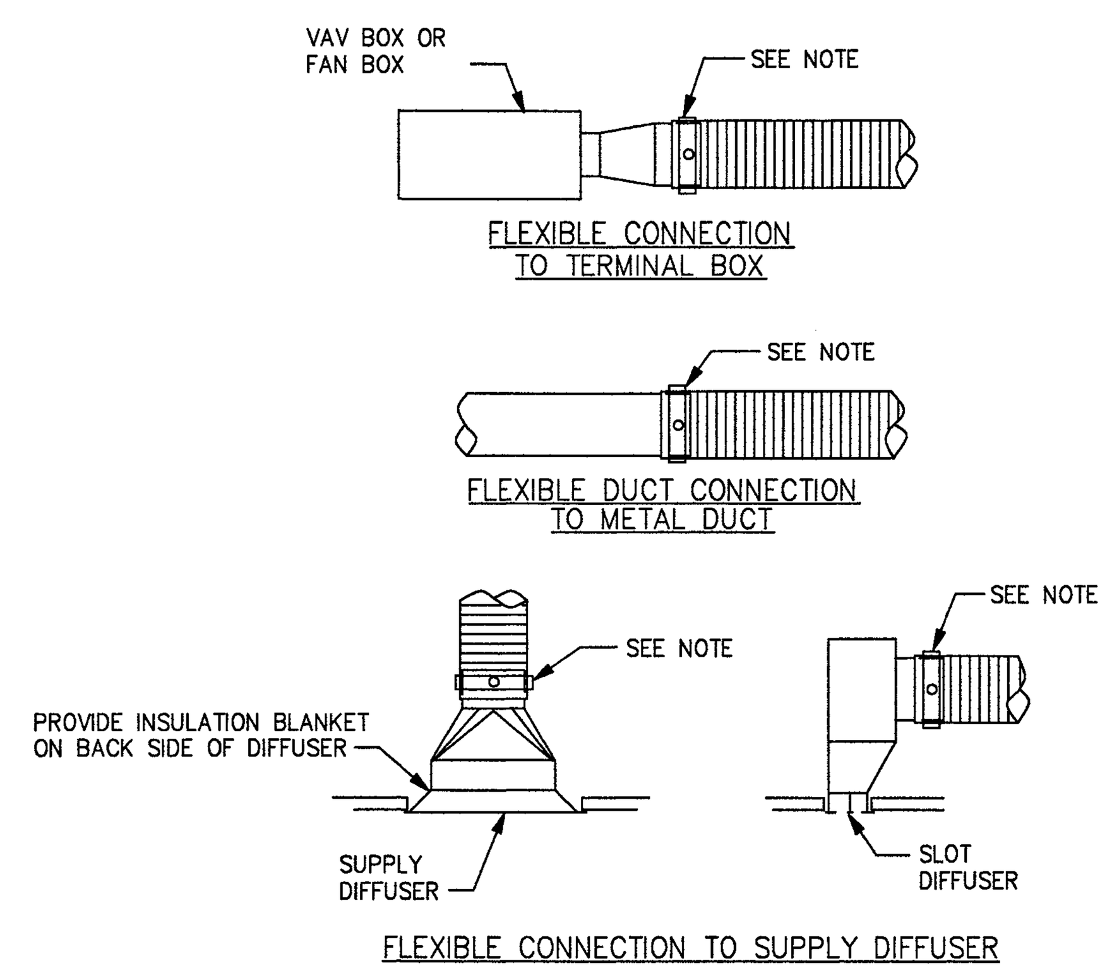
3 CEILING MOUNTED FAN DETAIL
SCALE: NONE



4 SPIN TAP TO ROUND NECK DIFFUSER
SCALE: NONE

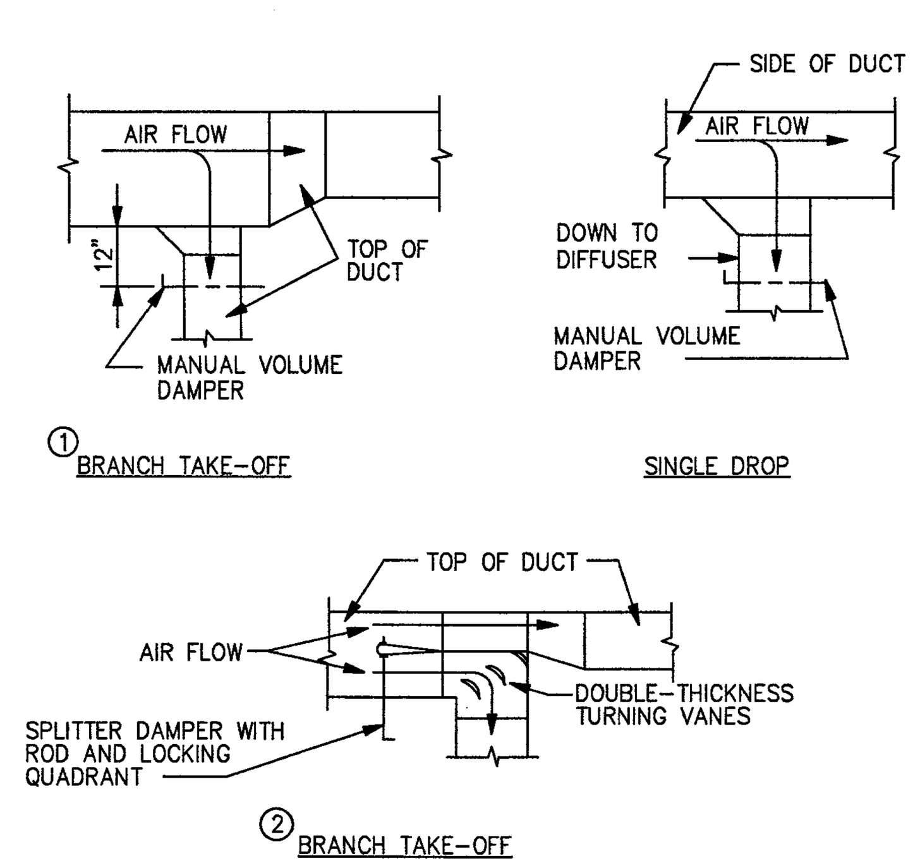


5 SPIN TAP TO SQUARE NECK DIFFUSER
SCALE: NONE



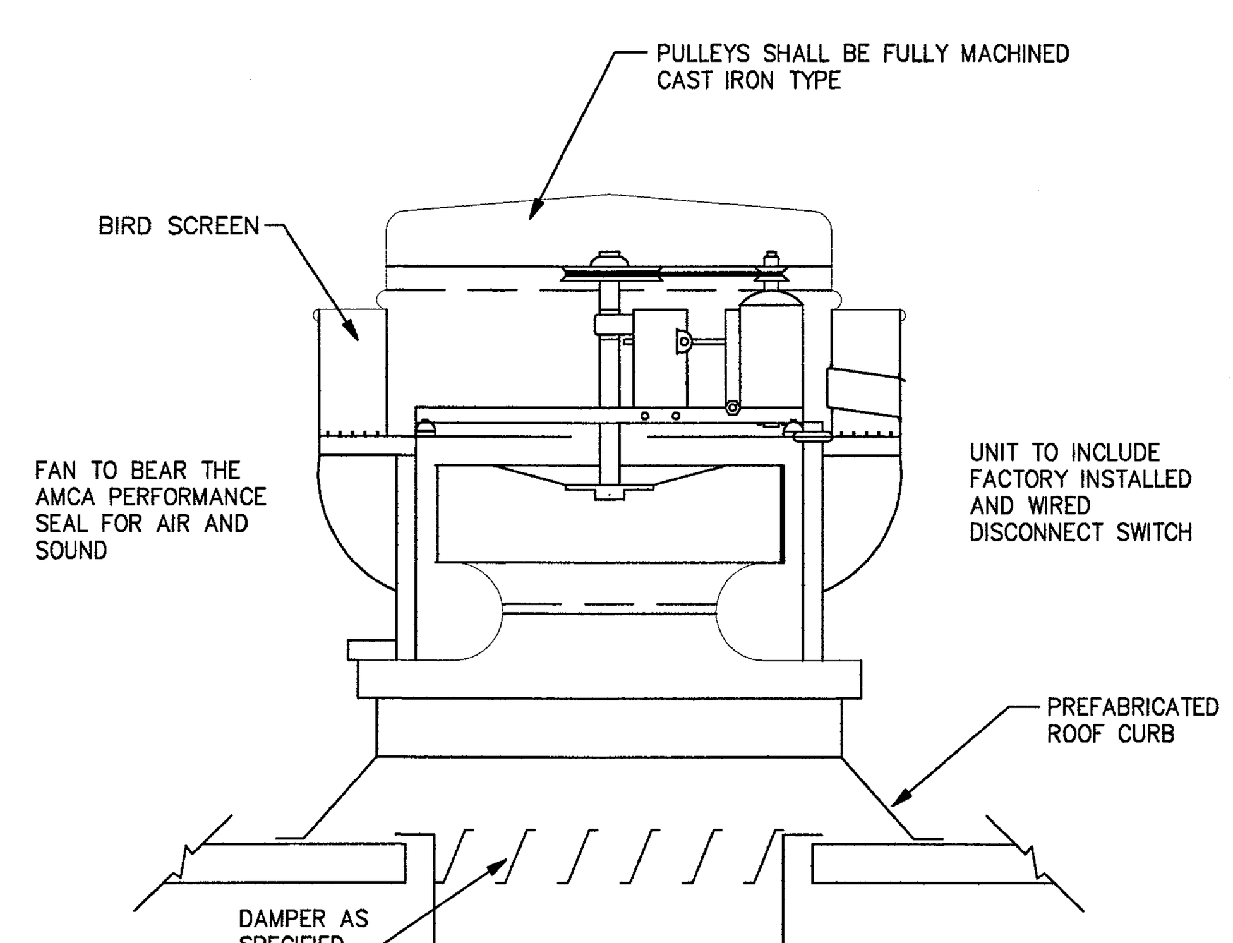
NOTE: ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH NYLON STRAP AND 2 SHEET METAL SCREWS (MIN.).

6 TYPICAL FLEX. CONNECTION DETAILS
SCALE: NONE



NOTE:
1. USE BRANCH TAKE-OFF ① WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF ② WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS

7 DUCTWORK DETAIL
SCALE: NONE



8 CENTRIFUGAL UPBLAST ROOF EXHAUST FAN
SCALE: NONE

NOTE:
FANS HANDLING GREASE LADEN AIR SHALL BE PROVIDED WITH GREASE DRIP TRAYS/GUTTERS AND HINGED FAN ACCESS. GREASE GUTTER SHALL DRAIN TO A COLLECTION CONTAINER. CONTAINER SHALL BE DRAINED AS PART OF MAINTENANCE SCHEDULE BASED ON THE COLLECTION RATE AND SIZE OF THE CONTAINER.

PlasmaSoft

Ay Caramba 1 - Restaurant Seating

PlasmaSoft calculations are exclusively for Plasma Air products and should not be used for any other manufacturer.

ASHRAE 62.1
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

Green colored fields need user input. Yellow colored fields are constants provider by Plasma Air.
Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air
Space Type	Restaurant dining rooms
Ez	0.8 - Ceiling supply of warm air 15°F above space Temp and ceiling return

Area (Sq.Ft.)	1705	Number of People	156
Supply Air (CFM)	4265	Emission Rate/ Person (µg/min)	260

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	11.83	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	4,265	120,785	Supply Air	4,265	120,785
Outside Air	1,846.13	52,282.26	Outside Air	780.00	22,089.60
Return Air	2,418.87	68,502.54	Return Air	3,485.00	98,695.20

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	40,560	µg/min	N	Contaminant Generation Rate	40,560	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	52,282.26	L/min	Voz	Outdoor Air Flow Rate	22,089.60	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.57		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.82	
Vr	Return Air Flow Rate	68,502.54	L/min	Vr	Return Air Flow Rate	98,695.20	L/min
Cbz	Contaminant Concentration, zone	1.396	ppm	Cbz	Contaminant Concentration, zone	0.948	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

PlasmaSoft

Ay Caramba 1 - Bar Area

PlasmaSoft calculations are exclusively for Plasma Air products and should not be used for any other manufacturer.

ASHRAE 62.1
Space Contamination Calculations Using Appendix D Equations

USER INPUT FIELDS

Green colored fields need user input. Yellow colored fields are constants provider by Plasma Air.
Pink fields are auto-calculated based on user selection. Grey values are auto-calculated but also editable.

ASHRAE Equation	Equation 5 – Filter return air and outside air, Constant Volume Supply Air, Constant Volume Outside Air
Space Type	Bars, cocktail lounges
Ez	0.8 - Ceiling supply of warm air 15°F above space Temp and ceiling return

Area (Sq.Ft.)	365	Number of People	28
Supply Air (CFM)	650	Emission Rate/ Person (µg/min)	320

Calculation of Space Contaminants Using Ventilation Rate Procedure (VRP) OA			Calculation of Space Contaminants Using IAQ Procedure (IAQP) OA		
VRP Outside Air Rate per Person	12.31	CFM	IAQP Outside Air Rate per Person	5.00	CFM
Space Airflows	CFM	L/Min	Space Airflows	CFM	L/min
Supply Air	650	18,408	Supply Air	650	18,408
Outside Air	344.63	9,759.78	Outside Air	140.00	3,964.80
Return Air	305.37	8,648.22	Return Air	510.00	14,443.20

$$C_{bz} = \frac{N + Ez\ Voz\ Co(1 - Ef)}{Ez\ (Voz + R\ Vr\ Ef)}$$

Variable	Description	Value	Units	Variable	Description	Value	Units
N	Contaminant Generation Rate	8,960	µg/min	N	Contaminant Generation Rate	8,960	µg/min
Ez	Zone Air Distribution Effectiveness	0.8		Ez	Zone Air Distribution Effectiveness	0.8	
Voz	Outdoor Air Flow Rate	9,759.78	L/min	Voz	Outdoor Air Flow Rate	3,964.80	L/min
Ef	Filter Efficiency	0		Ef	Filter Efficiency	0.68	
Co	Contaminant Concentration, OA	1.2	µg/m³	Co	Contaminant Concentration, OA	1.2	µg/m³
R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.47		R	Recirculation Flow Variable =Vr/(Vo+Vr)	0.78	
Vr	Return Air Flow Rate	8,648.22	L/min	Vr	Return Air Flow Rate	14,443.20	L/min
Cbz	Contaminant Concentration, zone	1.652	ppm	Cbz	Contaminant Concentration, zone	1.380	ppm

Is the Cbz for the IAQP equal or less than Cbz for the VRP? Yes

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11982 MICHAEL SCHON
12/20/22

RESTAURANT
AY CARAMBA 1

650 WEST ROOSEVELT BLVD.
MONROE, NC 28110

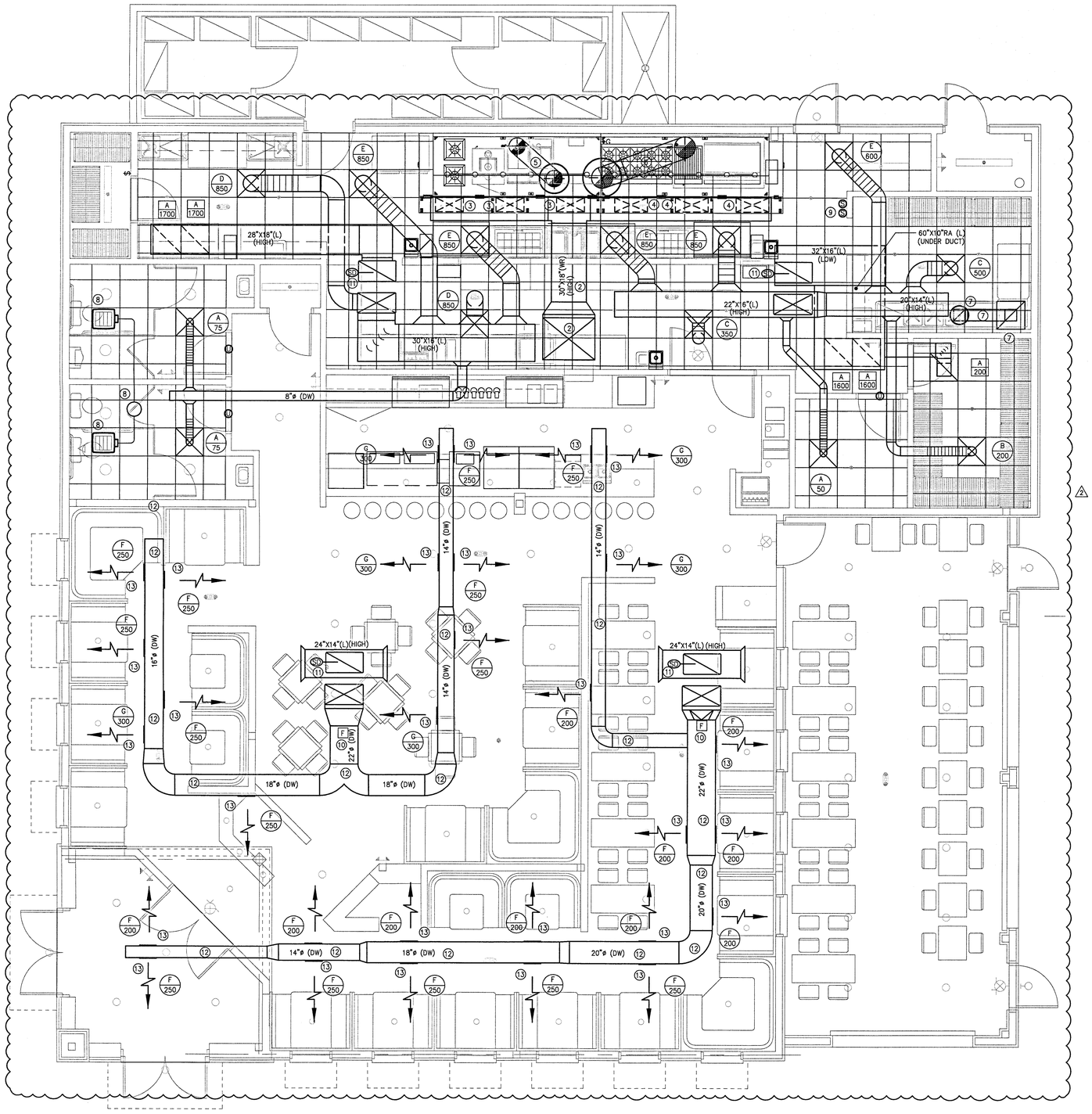
MARK	DATE	DESCRIPTION

ISSUE: 08/29/2022
PROJECT NO: 22159
CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

MECHANICAL DETAILS

M0.3



1 FLOOR PLAN – MECHANICAL
SCALE: 1/4" = 1'-0"

NOTES THIS SHEET

1. SEE SHEETS M0.1 – M0.3 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. NEW 30"X18" SA FROM MUA-1 UNIT, TRAANISTION TO UNIT CONNECTION SIZE AS REQUIRED. ROUTE NEW DUCT TO 20"X18" MAU DUCT THAT PROVIDES AIR TO THE SA PLENUM AT HOOD.
3. 24"X12" MUA CONNECTION FROM 20"X18" MUA DUCT TO CONNECTION AT HOOD, TYPICAL OF THREE, BALANCE AIR TO 636 CFM EACH. PROVIDE MANUAL BALANCING DAMPER AT HOOD CONNECTION.
4. 28"X12" MUA CONNECTION FROM 20"X18" MUA DUCT TO CONNECTION AT HOOD, TYPICAL OF THREE, BALANCE AIR TO 720 CFM EACH. PROVIDE MANUAL BALANCING DAMPER AT HOOD CONNECTION.
5. 14"ø GREASE DUCT (16 GAUGE, CARBON STEEL, WELDED CONTINUOUSLY). TIE INTO CONNECTION AT HOOD AND ROUTE AS INDICATED TO KITCHEN HOOD EXHAUST FAN, KEF-1. PROVIDE 2 LAYERS OF FIRE MASTER INSULATION WHERE THE EXHAUST DUCT IS CLOSER THAN 18" TO COMBUSTIBLES. PROVIDE UL LISTED CLEANOUTS AT ALL 90 DEGREE ELBOWS AND EVERY 20 FEET OF LENGTH. FIELD VERIFY EXACT LOCATION/CONDITIONS.
6. 18"ø GREASE DUCT (16 GAUGE, CARBON STEEL, WELDED CONTINUOUSLY). TIE INTO CONNECTION AT HOOD AND ROUTE AS INDICATED TO KITCHEN HOOD EXHAUST FAN, KEF-2. PROVIDE 2 LAYERS OF FIRE MASTER INSULATION WHERE THE EXHAUST DUCT IS CLOSER THAN 18" TO COMBUSTIBLES. PROVIDE UL LISTED CLEANOUTS AT ALL 90 DEGREE ELBOWS AND EVERY 20 FEET IN LENGTH. FIELD VERIFY EXACT LOCATION/CONDITIONS.
7. 10"X10" ALUMINUM DUCT FROM 2'X2'X12" ALUMINUM HOOD AT DISHWASHER. DUCT SHALL SLOPE BACK TOWARDS THE HOOD. DUCT SHALL BE CAULKED FOR WATERPROOF JOINTS. ROUTE TO ROOF MOUNTED EXHAU FAN, EF-3.
8. CEILING EXHAUST FAN, EF-1, ROUTE 8"ø EXHAUST DUCT TO COMMON 10"ø EXHAUST DUCT THAT EXTENDS UP TO ROOF CAP, FIELD VERIFY EXACT LOCATION. MAINTAIN 10FEET BETWEEN ANY EXHAUST TERMINATION AND OUTSIDE AIR INTAKE.
9. EMERGENCY SHUT DOWN BUTTON FOR KITCHEN HOOD, FIELD VERIFY EXACT LOCATION.
10. PROVIDE PLASMA FILTER, EQUAL TO PLASMA AIR 7000 SERIES IN SA DUCT MAIN. SEE CALCULATIONS ON SHEET M0.3.
11. PROVIDE EACH UNIT WITH A UL LISTED, SMOKE DETECTOR IN RETURN AIR DUCT MAIN TO SHUT UNIT DOWN UPON ACTIVATION. PROVIDE AND INSTALL REMOTE ANNUNCIATING DEVICE WITH A KEYED OVERRIDE, REMOTE ANNUNCIATING DEVICE SHALL BE LOCATED IN A ROUTINELY OCCUPIED AREA AND SHALL IDENTIFY ASSOCIATED EQUIPMENT IN ALARM.
12. SPIRAL DUCT SHALL BE DOUBLED WALL (DW). THE DUCT SHALL BE SUPPORTED FRM STRUCTURE WITH ALL THREAD RODS PER MANUFACTURER'S AND SMACNA STANDARDS.
13. GRILLES IN THE SPIRAL DUCT SHALL BE MOUNTED AT 30 DEGREES DOWNWARD FROM HORIZONTAL.

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NORTH CAROLINA PROFESSIONAL SEAL 11982 ENGINEER MICHAEL SCHON
12/20/22

RESTAURANT
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650 WEST ROOSEVELT BLVD.
MONROE, NC 28110

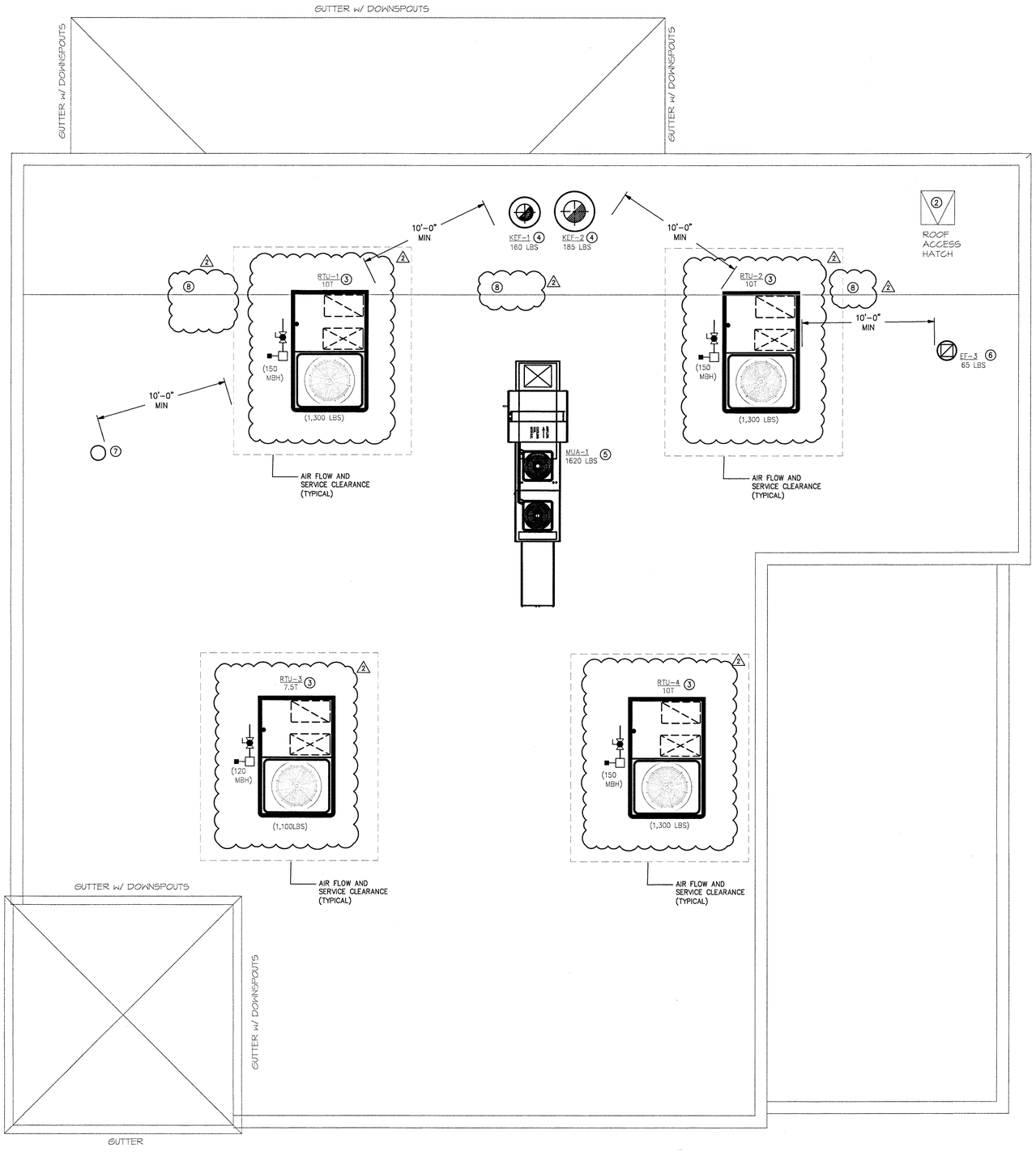
MARK	DATE	DESCRIPTION
2	12/20/22	OWNER VE CHANGES

ISSUE: 08/29/2022
PROJECT NO: 22159
CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

FLOOR PLAN MECHANICAL

M1.1



1 ROOF PLAN – MECHANICAL
SCALE: 1/4" = 1'-0"

NOTES THIS SHEET

1. SEE SHEETS M0.1 – M0.3 FOR SCHEDULES, DETAILS AND SPECIFICATIONS.
2. PERMANENT ROOF HATCH, ACCESABLE THRU MECHANICAL ROOM. FIELD VERIFY EXACT LOCATION.
3. NEW ROOF TOP UNIT ON FACTORY ROOF CURB, FIELD VERIFY EXACT LOCATION WITH STRUCTURAL PLANS. PROVIDE EACH UNIT WITH A UL LISTED, SMOKE DETECTOR IN RETURN AIR DUCT MAIN TO SHUT UNIT DOWN UPON ACTIVATION. PROVIDE AND INSTALL REMOTE ANNUNCIATING DEVICE WITH A KEYED OVERRIDE, REMOTE ANNUNCIATING DEVICE SHALL BE LOCATED IN A ROUTINELY OCCUPIED AREA AND SHALL IDENTIFY ASSOCIATED EQUIPMENT IN ALARM.
4. ROOF MOUNTED KITCHEN HOOD EXHAUST FANS, KEF-1 & KEF-2, ON FACTORY ROOF CURB. OFFSET HOOD EXHAUST DUCT AS INDICATED TO MAINTAIN 10 FEET BETWEEN EXHAUST AND ANY OA INTAKE AT THE UNITS. INTERLOCK HOOD EXHAUST FAN WITH MAKE-UP AIR UNIT, MUA-1 SO THAT THE MUA UNIT IS ENERGIZED WHEN THE EXHAUST FANS ARE ENERGIZED.
5. MAKE-UP AIR UNIT, MUA-1, ON FACTORY ROOF CURB. COORDINATE EXACT LOCATION WITH STRUCTURAL DRAWINGS. MAU-1 UNIT SHALL BE INTERLOCKED WITH KITCHEN HOOD EXHAUST FANS TO ENERGIZE WHEN THE HOOD EXHAUST FANS ARE ENERGIZED.
6. DISHWASHER HOOD FAN, EF-3, ON FACTORY ROOF CURB. FIELD VERIFY EXACT LOCATION.
7. 10"ø EXHAUST DUCT FROM RESTROOM FANS, TERMINATING WITH FACTORY ROOF CAP, FIELD VERIFY EXACT LOCATION.
8. ROOF DRAIN – DELETED (A2)

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A2	12/20/22	OWNER VE CHANGES

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CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

ROOF PLAN MECHANICAL

M2.1

FOR QUESTIONS, CALL THE
CT[illegible]/P[illegible]
REGION 30
PHONE: (704) 844-9088
EMAIL: [illegible]30@c[illegible].c[illegible]m

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#5574303

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM WIDTH	EXHAUST PLENUM LENG	EXHAUST PLENUM HEIGHT	RISER(S) DIA	RISER(S) CFM	RISER(S) VEL	RISER(S) SP	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	HOOD CONFIG ROW
1		5424 ND-2-PSP-F	CAPTIVEAIRE	12' 0"	450 DEG	I	MEDIUM	185	2220			4"	14"	2220	2077	-0.947"	1909	430 SS WHERE EXPOSED	LEFT	ALONE
2		5424 ND-2-PSP-F	CAPTIVEAIRE	12' 0"	600 DEG	I	HEAVY	240	2880			4"	18"	2880	1630	-0.876"	2160	430 SS WHERE EXPOSED	RIGHT	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	FILTER(S) QTY	FILTER(S) HEIGHT	FILTER(S) LENGTH	FILTER(S) EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	LIGHT(S) TYPE	LIGHT(S) WIRE GUARD	UTILITY CABINET(S) LOCATION	UTILITY CABINET(S) SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLO FILTER	9	20"	16"	85% SEE FILTER SPEC	6	L55 SERIES E26	NO	LEFT	12"x54"x24"			SC-321110MA	1 LIGHT 1 FAN	YES	782 LBS
2		CAPTRATE SOLO FILTER	9	20"	16"	85% SEE FILTER SPEC	6	L55 SERIES E26	NO	RIGHT	12"x54"x24"	TANK FS	4.0/4.0/4.0/4.0			YES	1181 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT, LEFT.
		BACKSPLASH 80.00" HIGH X 312.00" LONG 430 SS VERTICAL.
		RISER SENSOR INSTALL 6IN PLEN.
2		FIELD WRAPPER 18.00" HIGH FRONT, RIGHT.
		RISER SENSOR INSTALL 6IN PLEN.

FIRE SYSTEM INFORMATION – JOB#5574303

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION SYSTEM	INSTALLATION LOCATION ON HOOD
1		TANK FS	4.0/4.0/4.0/4.0	74	FIRE CABINET RIGHT	RIGHT, HOOD 2

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	RISER(S) LENG	RISER(S) DIA	RISER(S) CFM	RISER(S) SP
1		F[illegible]	156"	14"	6"	MUA	12"	24"		636	0.181"
						MUA	12"	24"		636	0.181"
						MUA	12"	24"		636	0.181"
2		F[illegible]	156"	14"	6"	MUA	12"	28"		720	0.195"
						MUA	12"	28"		720	0.195"
						MUA	12"	28"		720	0.195"

CAPTIVE-AIRE HOODS ARE
ETL LISTED AND LABELED
IN COMPLIANCE WITH

NFPA #96
NSF
UL 710 & ULC710 STANDARDS
E.T.L. LISTED 3054804-001

SPECIFICATION: CAPTRATE GREASE-STOP SOLO FILTER

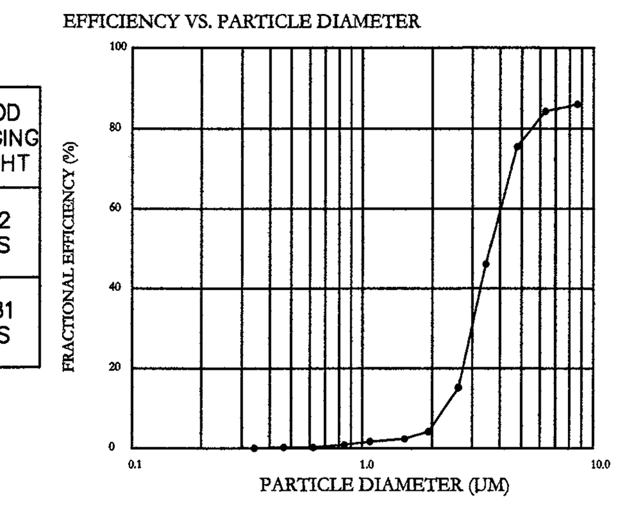
THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

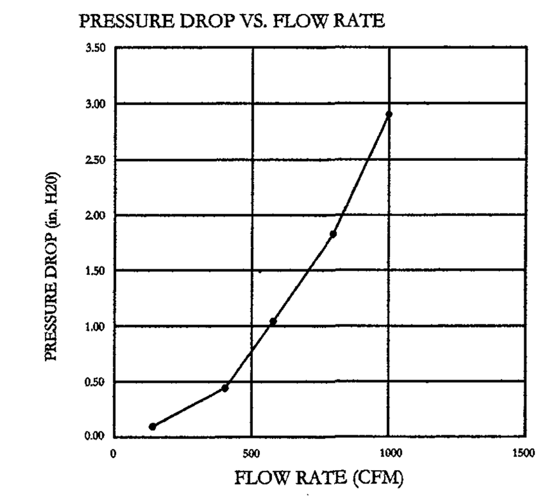
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

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

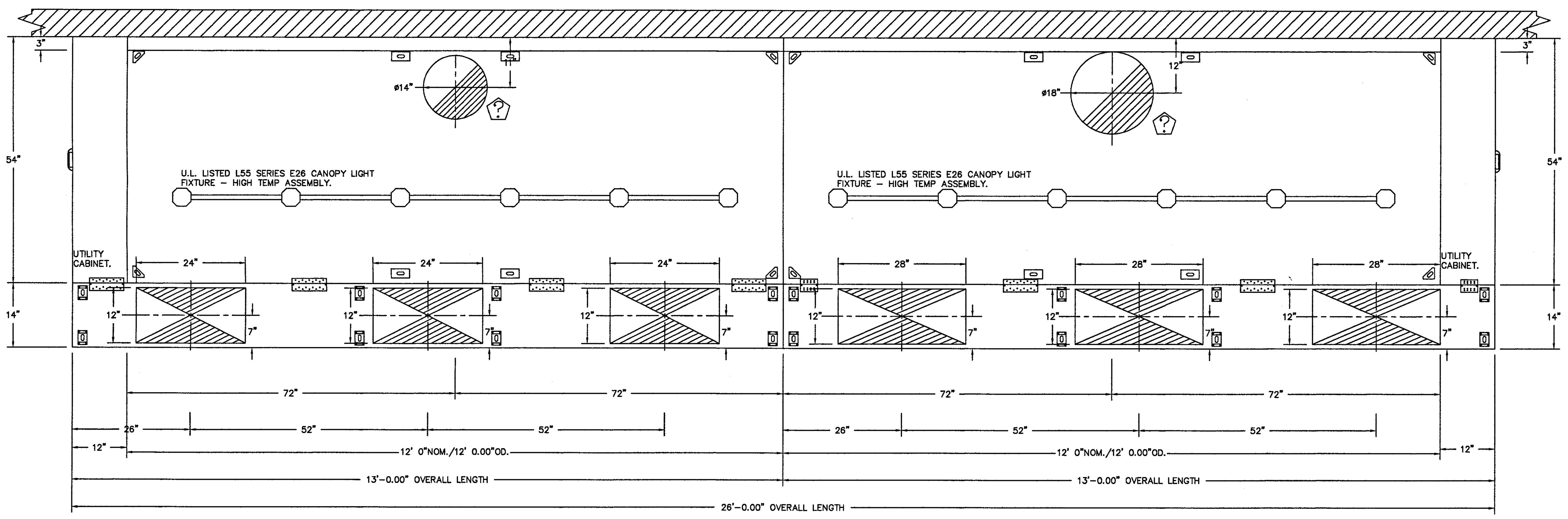
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

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





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



PLAN VIEW – HOOD #1
12' 0.00" LONG 5424ND-2-PSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.

PLAN VIEW – HOOD #2
12' 0.00" LONG 5424ND-2-PSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.

REVISIONS

	DESCRIPTION	DATE:
△		
△		
△		
△		

www.captiveaire.com
Charlotte/Piedmont
6303 Carmel Road, Suite 105, Charlotte, NC, 28226 PHONE: (704) 844-9088 FAX: (919) 227-5952 EMAIL: reg30@captiveaire.com

AY CARAMBA – MONROE NC
MONROE, NC, 28110

DATE: 7/27/2022
DWG.#: 5574303
DRAWN BY: [illegible]
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 1

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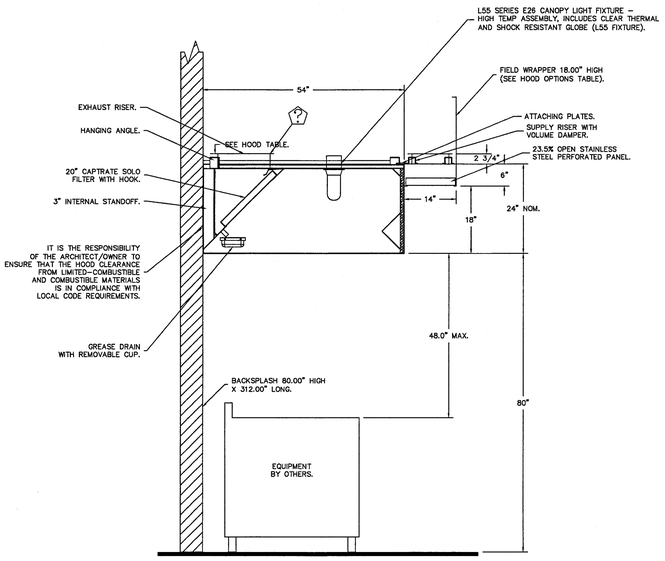
CHECKED BY: MMS

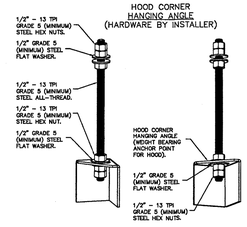
SHEET TITLE

KITCHEN HOOD INFORMATION

M3.1

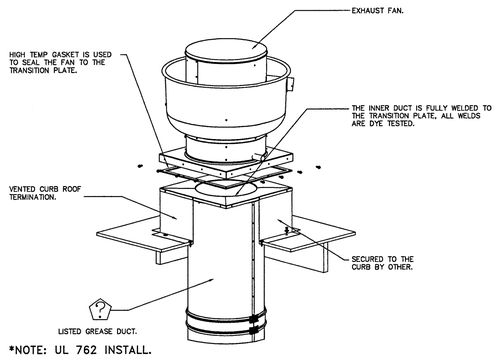


SECTION VIEW – MODEL 5424ND-2-PSP-F HOOD – #1

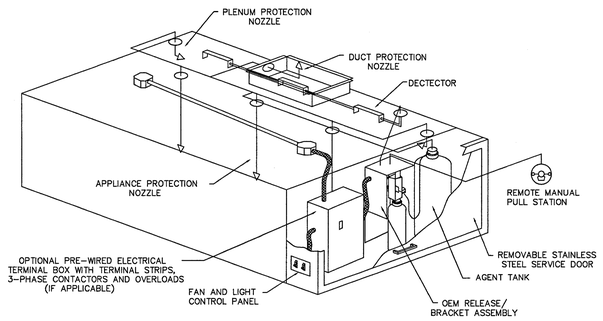


ASSEMBLY INSTRUCTIONS

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.



*NOTE: UL 762 INSTALL.



TYPICAL UL300 LIQUID FIRE SYSTEM LAYOUT

REVISIONS

DESCRIPTION	DATE

CAPTIVE-AIRE
Charlotte/Piedmont
6303 Carmel Road, Suite 105, Charlotte, NC, 28226 PHONE: (704) 844-9088 FAX: (919) 227-5952 EMAIL: mgs3@captiveaire.com
www.captiveaire.com

AY CARAMBA – MONROE NC
MONROE, NC, 28110

DATE: 7/27/2022

DWG.#: 5574303

DRAWN BY: 1/16 1/8 1/4 1/16 EN 5/16

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

MASTER DRAWING

SHEET NO. 2

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NORTH CAROLINA PROFESSIONAL SEAL 11982 ENGINEER MICHAEL SCHON

12/20/22

RESTAURANT
AY CARAMBA I

650 WEST ROOSEVELT BLVD.
MONROE, NC 28110

MARK	DATE	DESCRIPTION

ISSUE: 08/29/2022
PROJECT NO: 22159
CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

KITCHEN HOOD INFORMATION

M3.2

EXHAUST FAN INFORMATION – JOB#5574303

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		1	DU180HFA	CAPTIVEAIRE	2220	1.250	1120	ODP,PREMIUM	2.000	0.9590	3	208	6.1	513 FPM	158	13.6
2		1	DU180HFA	CAPTIVEAIRE	2880	1.200	1209	ODP,PREMIUM	2.000	1.2440	3	208	8.3	665 FPM	182	17.4

CONDENSER DETAILS

FAN UNIT NO	TAG	FAN UNIT MODEL #	CONDENSER NO	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX FUSE SIZE	MIN WIRE SIZE	SEER
3		A2-D.250-20D-MPU	1	5	208-230	3 PHASE	60 HZ	21.4 AMPS	17.4 AMPS	30 AMPS	10 AWG	14
			2	5	208-230	3 PHASE	60 HZ	21.4 AMPS	17.4 AMPS	30 AMPS	10 AWG	14

MUA FAN INFORMATION – JOB#5574303

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
3		1	A2-D.250-20D-MPU	20MF-2-MOD	A2-D.250	3600	4069	0.500	1679	ODP,PREMIUM	3.000	2.6540	3	208	9.5	11.9A	20A	1613	17.6

COILS – JOB#5574303

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
3		DX	4069	92.0°F	74.0°F	75.2°F	67.1°F	---	---	---	---	100.5 MBH	70.7 MBH	29.8 MBH	---	---	---	---	---	---	---	---	---

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO	TAG	INPUT BTU¾	OUTPUT BTU¾	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
3		231412	212899	50°F	7 IN. W.C. – 14 IN. W.C.	NATURAL	92

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1		1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
2		1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
3		1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15" WC
		1	LOW FIRE START
		1	SHIP LOOSE GAS STRAINER 1"
		1	AC INTERLOCK RELAY – 24VAC COIL
		1	MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING – MEETS AMCA CLASS 1A RATING
		1	10 TON 2 CIRCUIT (5/5) MODULAR PACKAGED COOLING OPTION FOR SIZE 2 DF/EH MUA (3,600 TO 5,000 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION
		1	DOWNTURN PLENUM FOR SIZE 2 DX COIL MODULE
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) – THREE PHASE ONLY
		1	COOLING THERMOSTAT AND RELAY (NOT REQUIRED FOR EVAP)
		1	2 YEAR PARTS WARRANTY

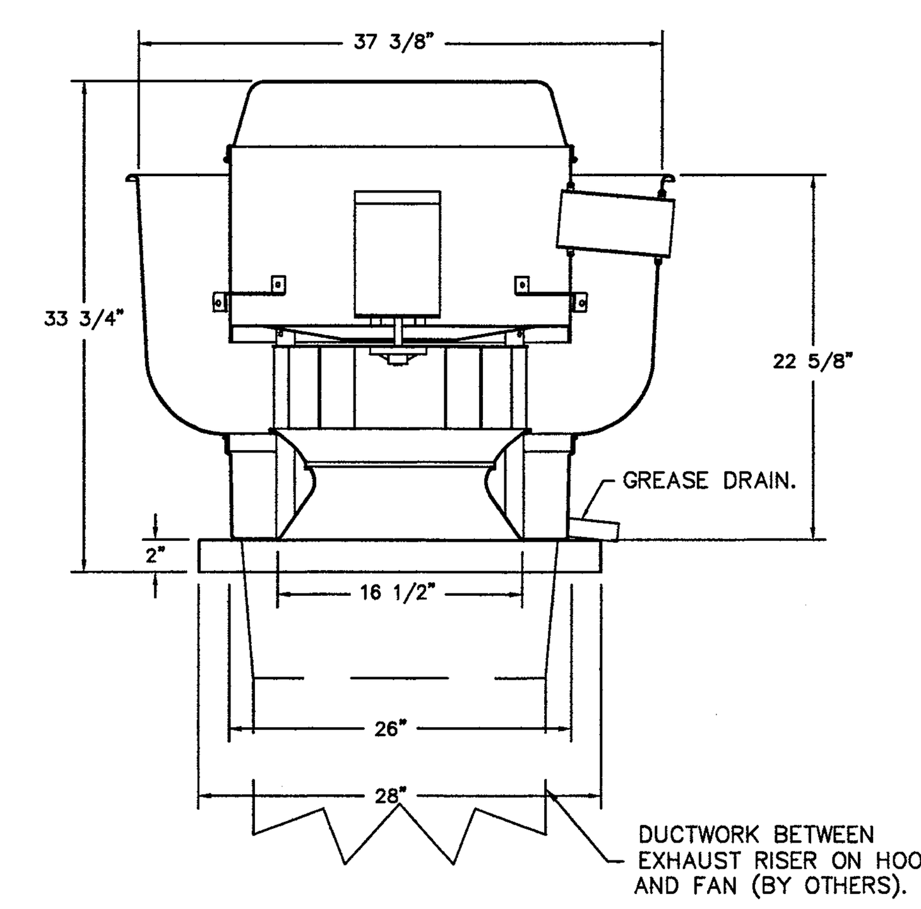
FAN ACCESSORIES

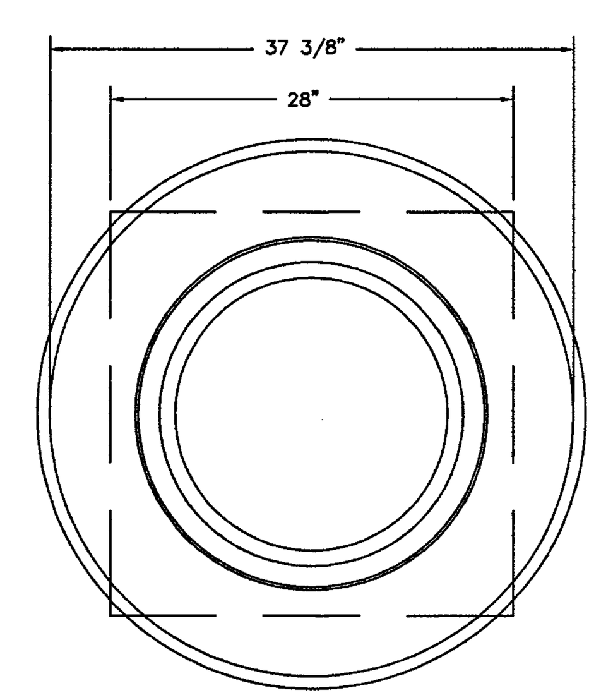
FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1		YES						
2		YES						
3							YES	

CURB ASSEMBLIES

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	34 LBS	CURB	26.500"W X 26.500"L X 26.000"H ALONG LENGTH, RIGHT VENTED HINGED.
2	# 2	30 LBS	CURB	26.500"W X 26.500"L X 26.000"H ALONG LENGTH, RIGHT VENTED.
3	# 3	96 LBS	RAIL	6.000"W X 31.000"L X 15.000"H RIGHT.
3	# 3	96 LBS	CURB	31.000"W X 79.000"L X 15.000"H ALONG WIDTH, RIGHT INSULATED.

FAN #1 DU180HFA – EXHAUST FAN





TOP VIEW

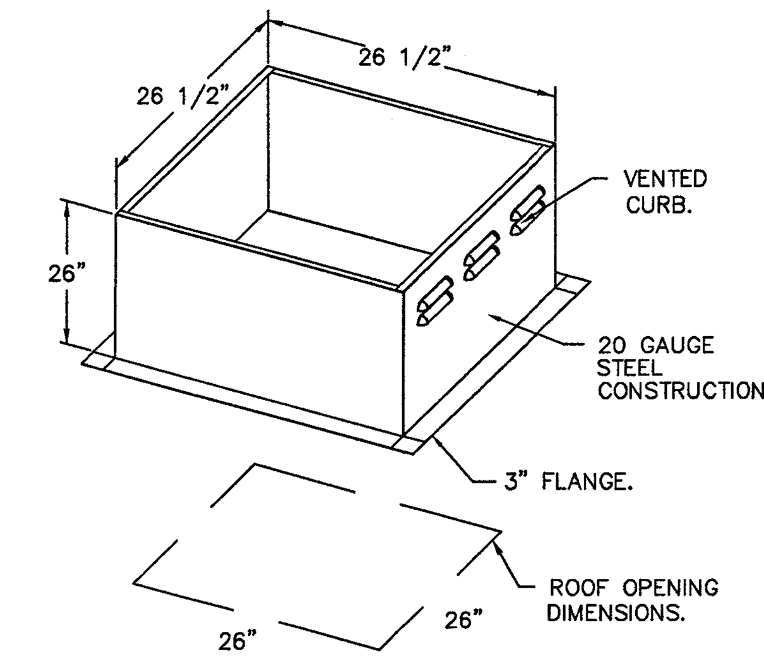
FEATURES:

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

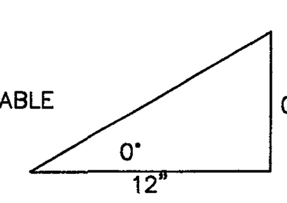
NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

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

OPTIONS
GREASE BOX.
2 YEAR PARTS WARRANTY.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.



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

REVISIONS

DESCRIPTION	DATE:
△	
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MASTER DRAWING
SHEET NO. 3

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11982 M. MICHAEL SCHON
12/20/22

RESTAURANT
AY CARAMBA 1

650 WEST ROOSEVELT BLVD.
MONROE, NC 28110

MARK	DATE	DESCRIPTION

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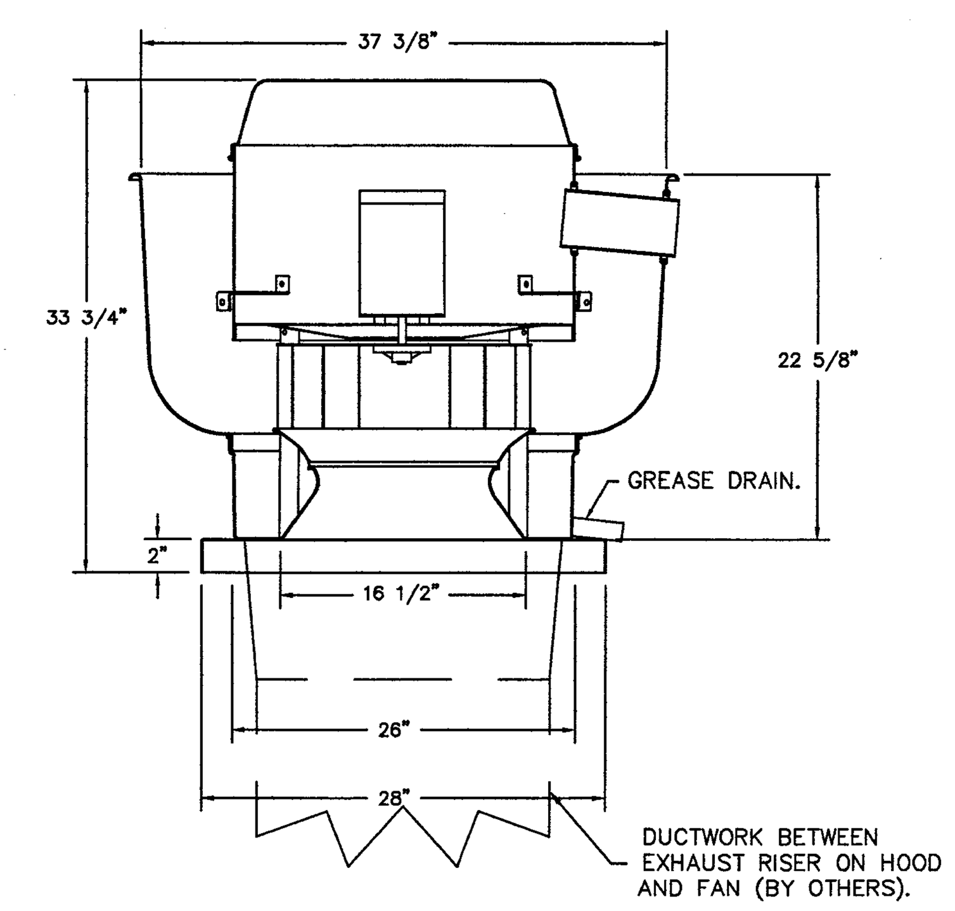
CHECKED BY: MMS

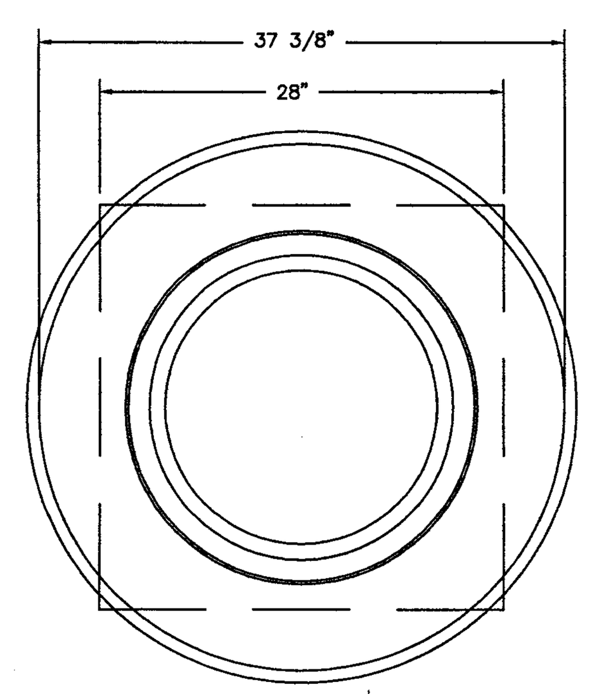
SHEET TITLE

KITCHEN HOOD INFORMATION

M3.3

FAN #2 DU180HFA – EXHAUST FAN





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FEATURES:

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

NORMAL TEMPERATURE TEST

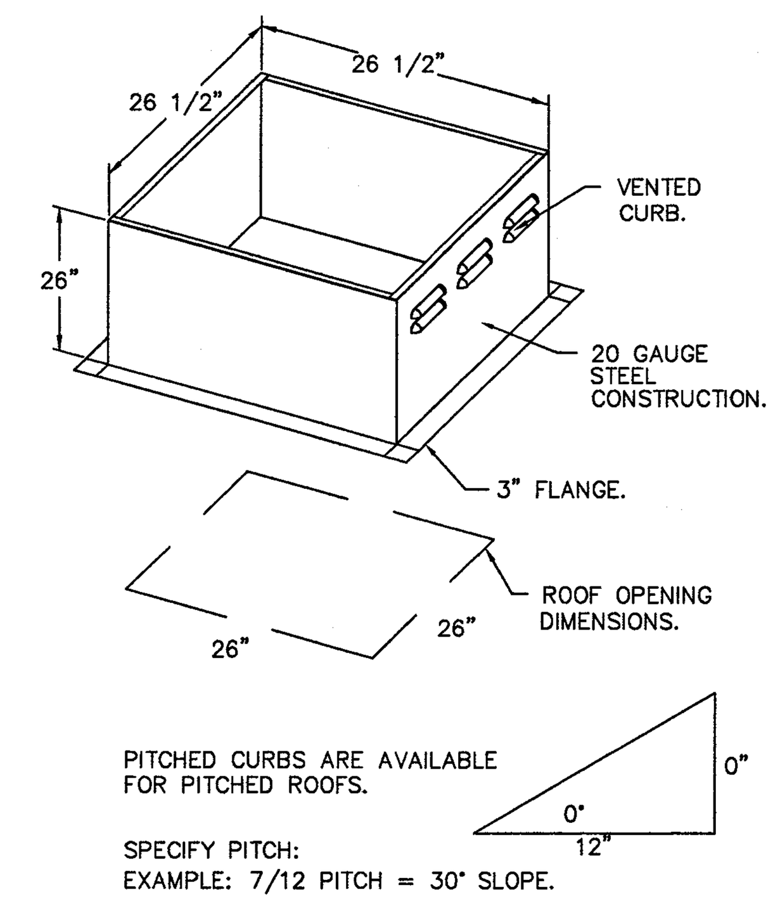
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST

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

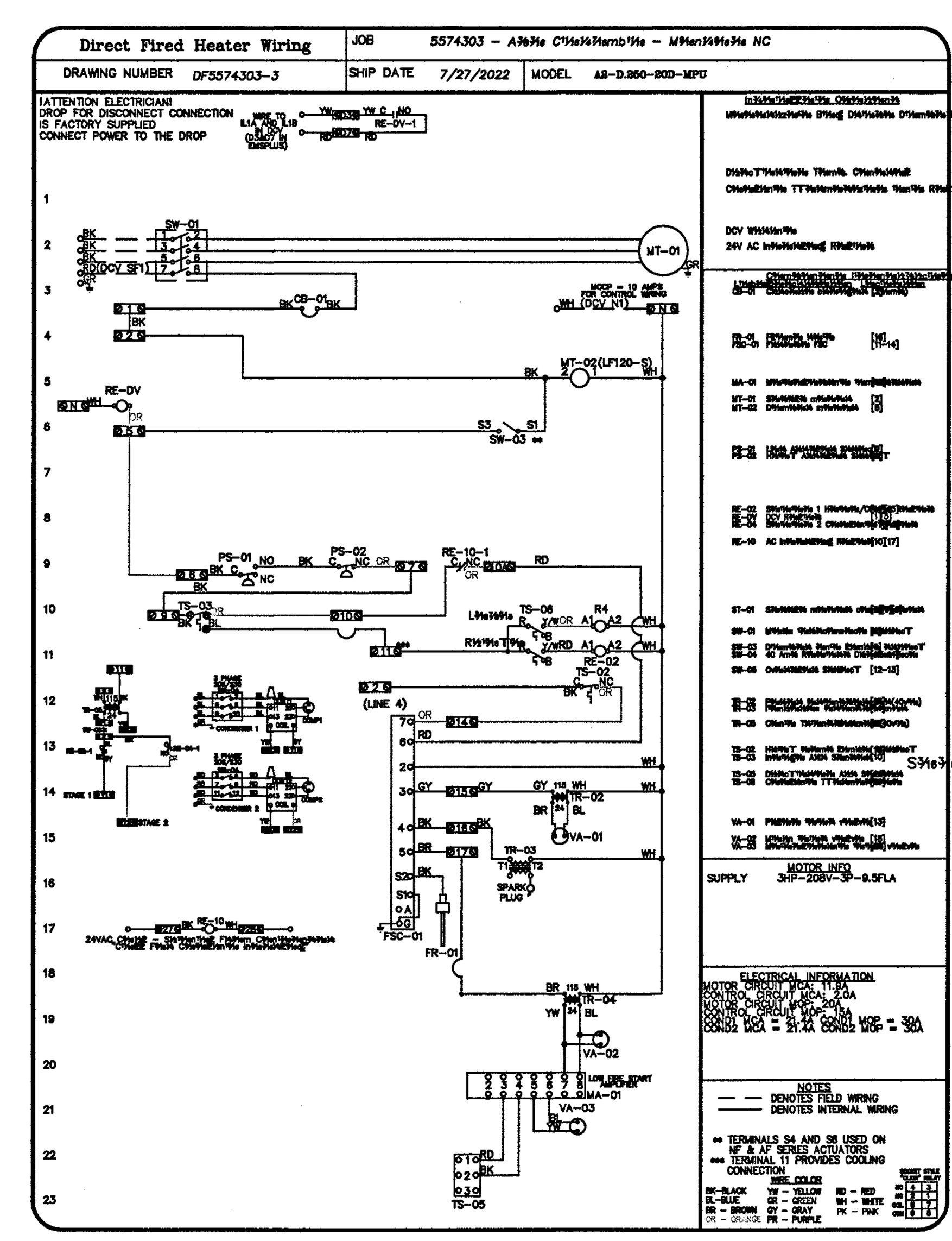
OPTIONS

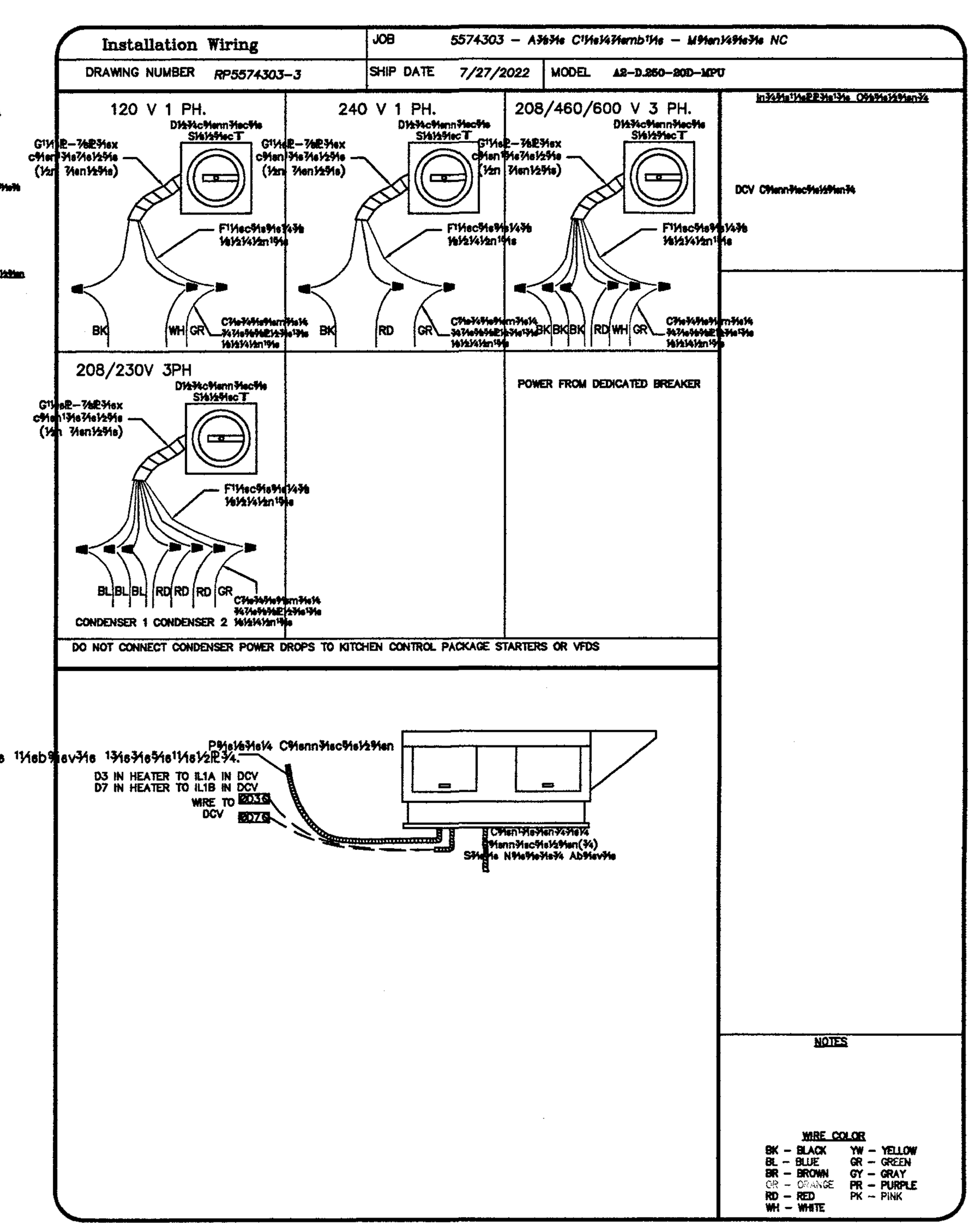
GREASE BOX.
2 YEAR PARTS WARRANTY.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

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





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AY CARAMBA – MONROE NC
MONROE, NC, 28110

DATE: 7/27/2022
DWG.#: 5574303
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 4

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NORTH CAROLINA PROFESSIONAL SEAL 11982 ENGINEER M. MICHAEL SCHON
12/20/22

RESTAURANT
AY CARAMBA I

650 WEST ROOSEVELT BLVD.
MONROE, NC 28110

MARK	DATE	DESCRIPTION

ISSUE: 08/29/2022
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CAD DWG FILE: SEE DRAWINGS
DRAWN BY: MMS
CHECKED BY: MMS

SHEET TITLE

KITCHEN HOOD INFORMATION

M3.4

Reviewed for Code Compliance
City of Monroe Building Standards
The property owner is responsible for compliance with all applicable Local, State and Federal Laws. This authorization does not permit a violation of any City, State or Federal Laws.
Plans Examiner: ________
Date: 04/06/2023

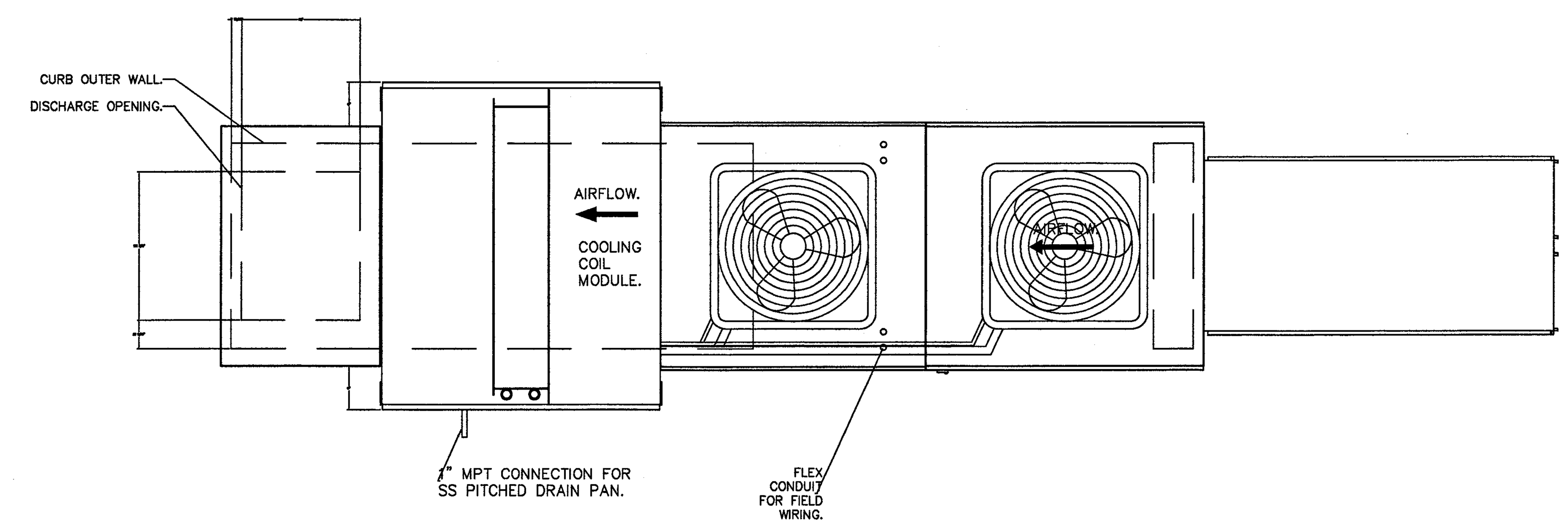
FAN #3 A2-D.250-20D-MPU – HEATER

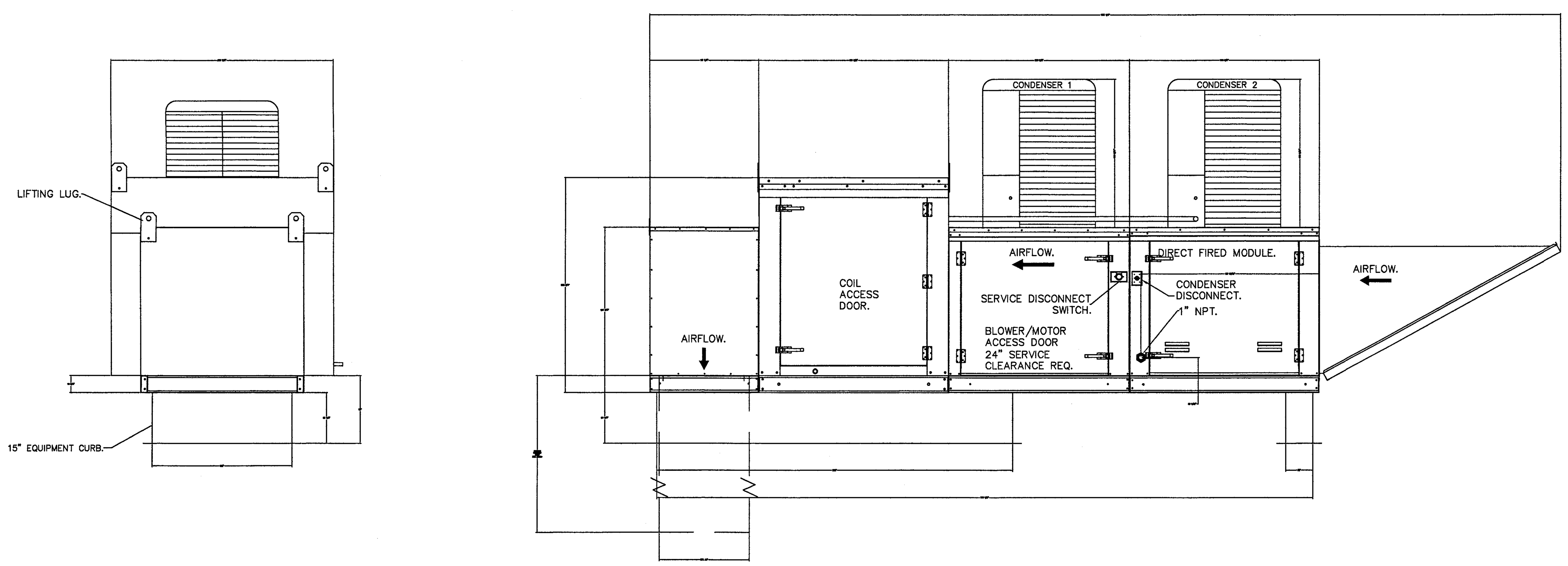
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE – AIR FLOW RIGHT -> LEFT.
4. GAS PRESSURE GAUGE, 0–35", 2.5" DIAMETER, 1/4" THREAD SIZE.
5. GAS PRESSURE GAUGE, –5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE.
6. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
7. SHIP LOOSE GAS STRAINER. TO BE INSTALLED UPSTREAM OF UNIT CONNECTION. 1" CONNECTION.
8. COOLING INTERLOCK RELAY. 24VAC COIL. 120V CONTACTS. LOCKS OUT BURNER CIRCUIT WHEN AC IS ENERGIZED.
9. MOTORIZED BACK DRAFT DAMPER 22.75" X 24" FOR SIZE 2 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, LF120S ACTUATOR INCLUDED.
10. 10 TON, DUAL CIRCUIT (5/5) MODULAR PACKAGED COOLING OPTION FOR SIZE 2 DF/EH MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING. (3,600 TO 5,000 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 = 3EZ0802B.
11. DOWNTURN PLENUM FOR SIZE 2 COOLING COIL MODULE – REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS.
12. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.
13. DX COOLING INTAKE AIR THERMOSTAT AND RELAYS MOUNTED IN UNIT – SET POINT FOR THERMOSTAT SHOULD BE 85°F.
14. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/MPU SECTION).
15. 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 20" x 20".

SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 25°F. TEMP. RISE = 50°F.
BTU¾ CALCULATED OFF ACTUAL AIR DENSITY.
OUTPUT BTU¾ AT ALTITUDE OF 0.0 FT. = 217354.
INPUT BTU¾ AT ALTITUDE OF 0.0 FT. = 236254.
OUTPUT BTU¾ AT ALTITUDE OF 572 FT. = 212899.
INPUT BTU¾ AT ALTITUDE OF 572 FT. = 231411.





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SHEET TITLE

KITCHEN HOOD INFORMATION

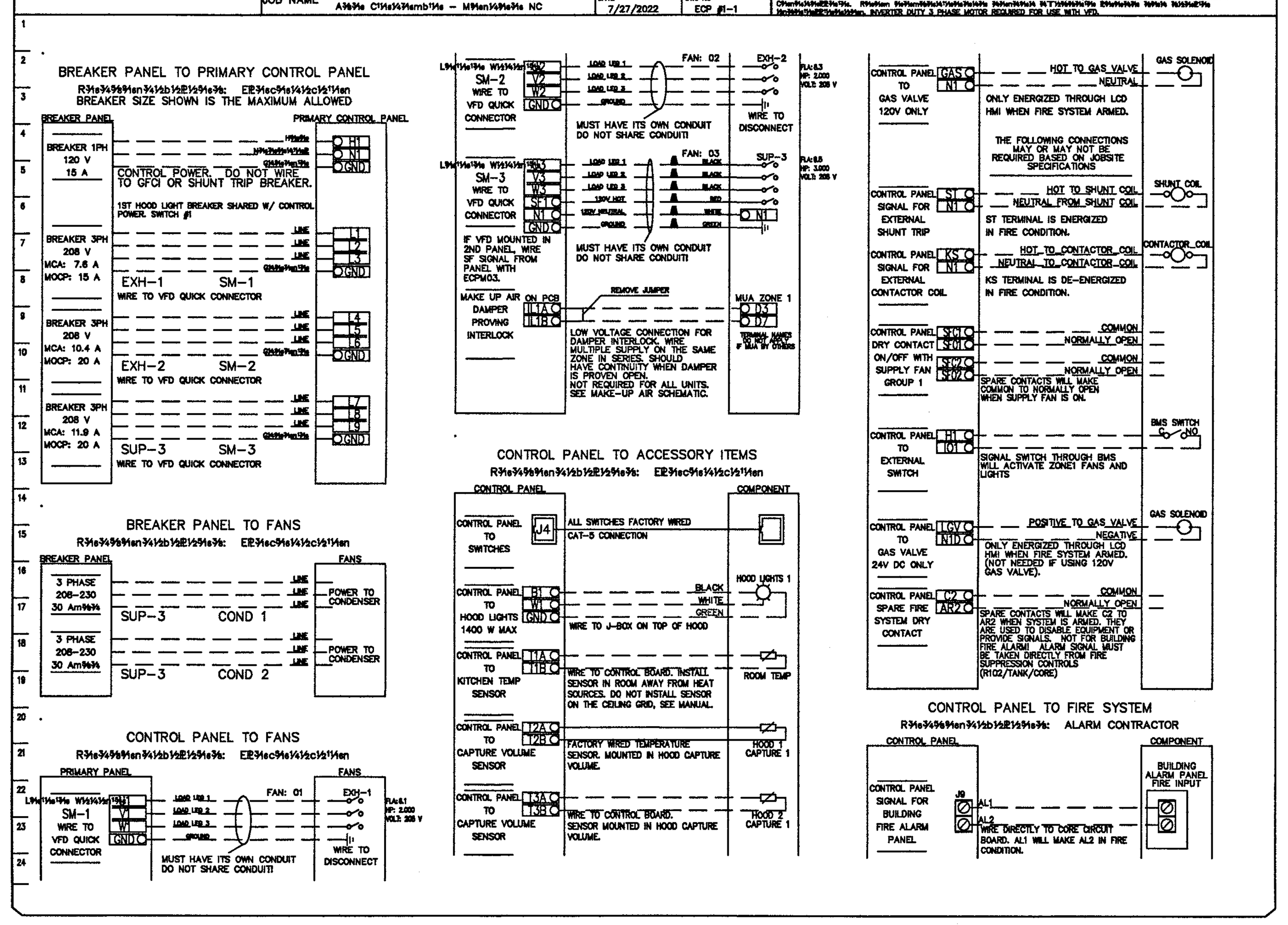
M3.5

ELECTRICAL PACKAGE – JOB#5574303

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	Φ	HP	VOLT	FLA
1		SC-321110MA	UTILITY CABINET LEFT	03 – UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	EXHAUST	3	2.000	208	6.1
				HOOD # 1	1 FAN		EXHAUST	3	2.000	208	8.3
							SUPPLY	3	3.000	208	9.5

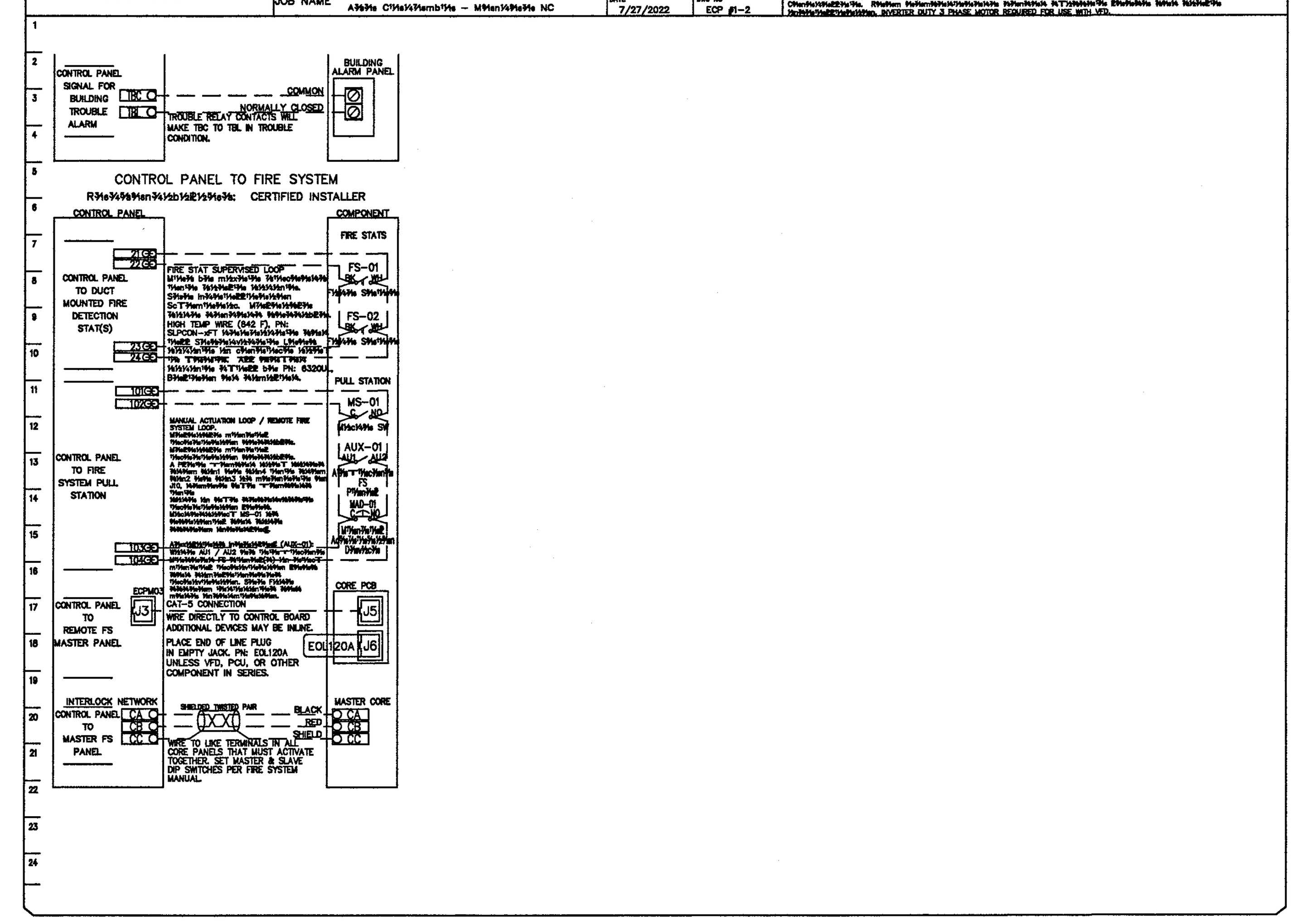
JOB NO 5574303 | MODEL NUMBER SC-321110MA | SCHEMATIC TYPE INSTALL | DATE 7/27/2022 | DWG NO ECP #1-1

DESCRIPTION OF OPERATION:



JOB NO 5574303 | MODEL NUMBER SC-321110MA | SCHEMATIC TYPE INSTALL | DATE 7/27/2022 | DWG NO ECP #1-2

DESCRIPTION OF OPERATION:



JOB NO 5574303 | MODEL NUMBER SC-321110MA | SCHEMATIC TYPE INSTALL | DATE 7/27/2022 | DWG NO ECP #1-3

DESCRIPTION OF OPERATION:

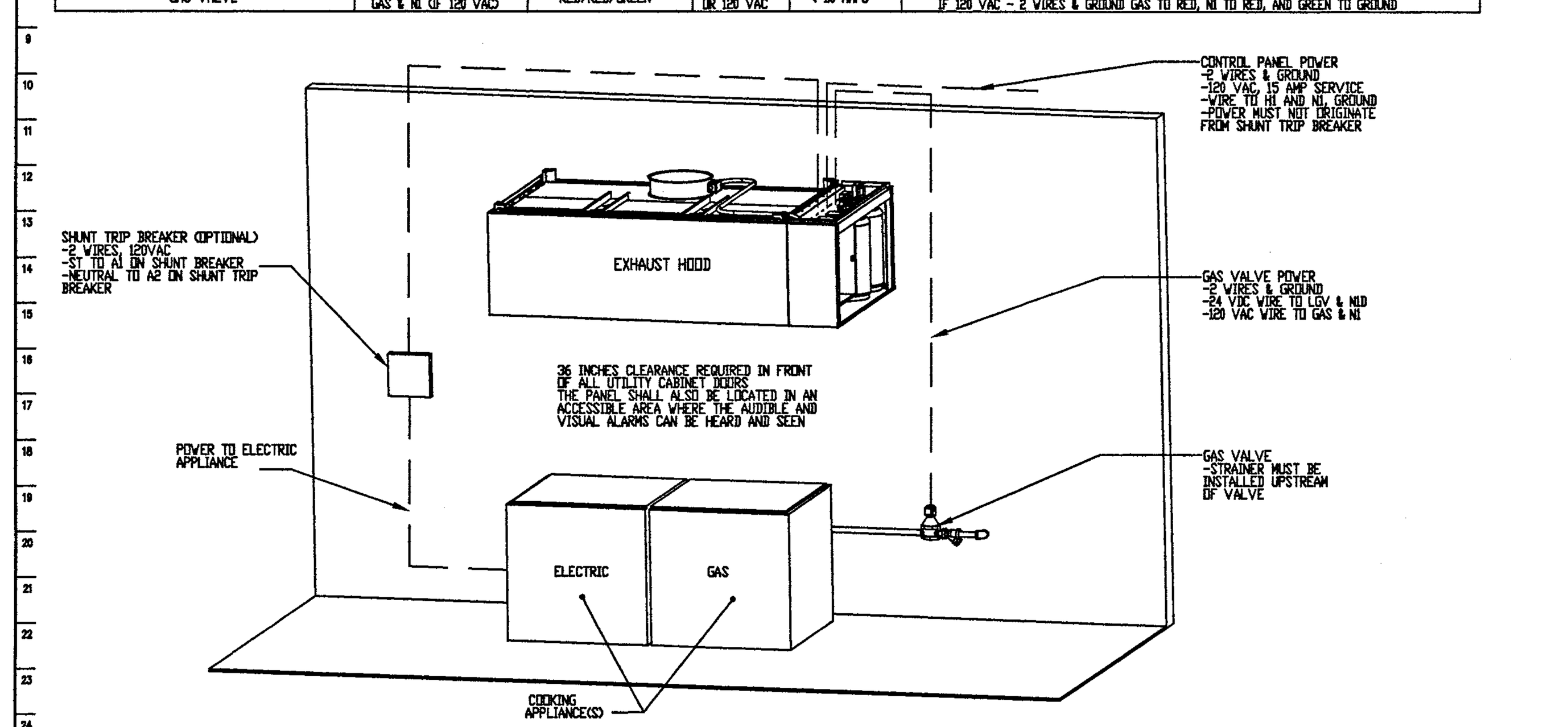
TANK PROTECTION ELECTRICAL DETAIL

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 & N1D (IF 24 VDC) GAS & N1 (IF 120 VAC)	RED/RED/GREEN	24 VDC OR 120 VAC	< 1.0 AMPS	IF 24 VDC – 2 WIRES & GROUND, N1D TO RED, LGV TO RED, AND GREEN TO GROUND IF 120 VAC – 2 WIRES & GROUND GAS TO RED, N1 TO RED, AND GREEN TO GROUND



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

JOB NO 5574303 | MODEL NUMBER SC-321110MA | SCHEMATIC TYPE INSTALL | DATE 7/27/2022 | DWG NO ECP #1-4

DESCRIPTION OF OPERATION:

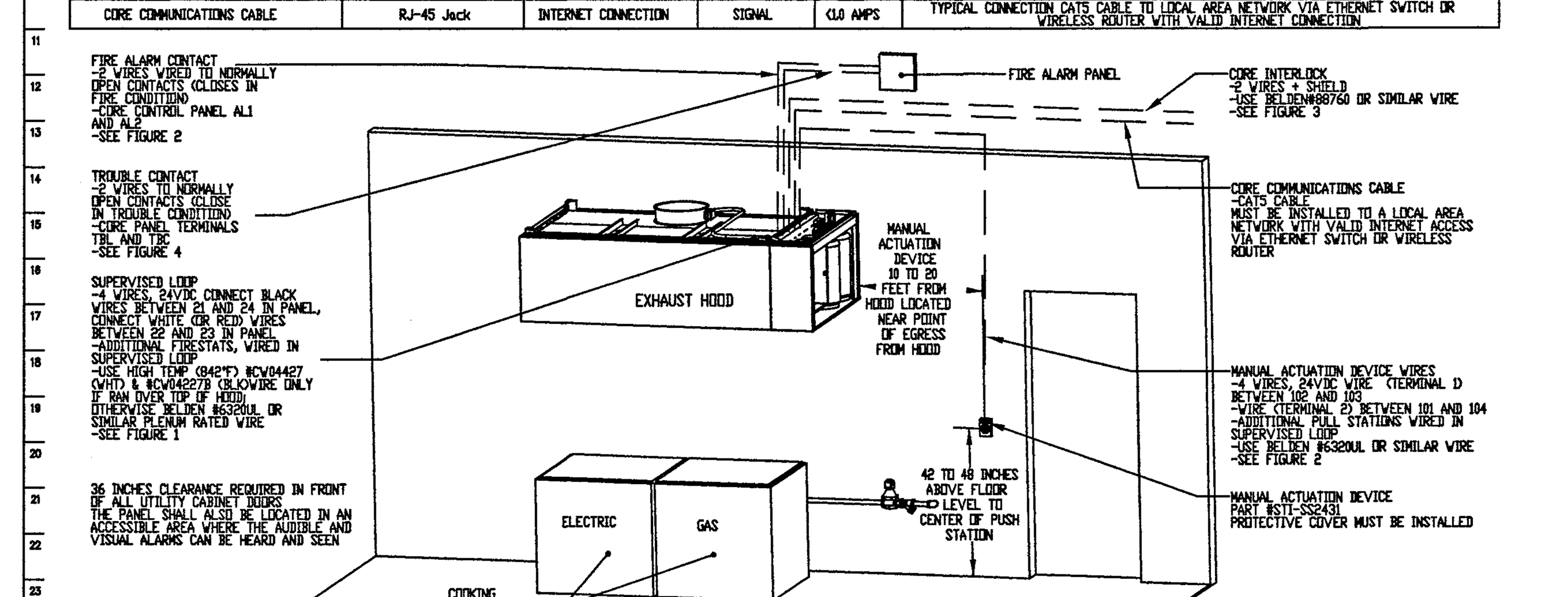
TANK PROTECTION LOW-VOLTAGE DETAIL

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 104 102 AND 103	1 & 2	24 VDC	< 1.0 AMPS	WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 102 AND 103 WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 101 AND 104 JUMPER 101 TO 104 AND 102 TO 103 IF NO MANUAL ACTUATION DEVICE IS INSTALLED
MANUAL ACTUATION DEVICE COVER	N/A	N/A	N/A	N/A	MANUAL ACTUATION DEVICE COVER MUST BE INSTALLED IF SURFACE MOUNTED, USE COVER EXTENSION STI-6531B
REMOTE FIRESTAT SENSOR(S)	21 AND 24 22 AND 23	BLACK AND WHITE	24 VDC	< 1.0 AMPS	WIRE FIRE SENSOR WHITE WIRES BETWEEN HOOD CORE PANEL TERMINALS 22 AND 23 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 21 AND 24 HIGH TEMP (842°F) #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

REVISIONS

DESCRIPTION	DATE

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DATE: 7/27/2022
DWG.#: 5574303
DRAWN BY:
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 6

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650 WEST ROOSEVELT BLVD.
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MARK	DATE	DESCRIPTION

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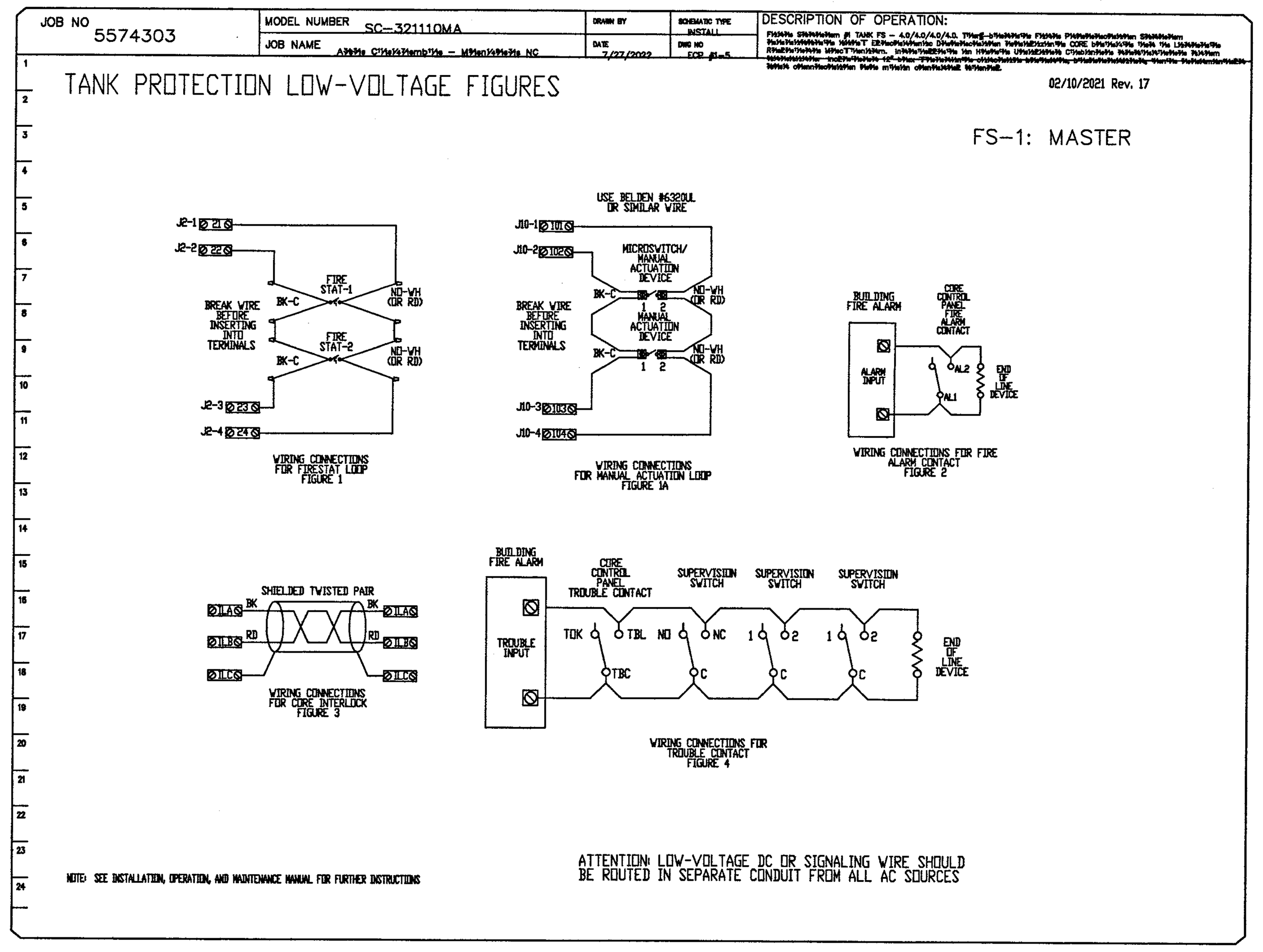
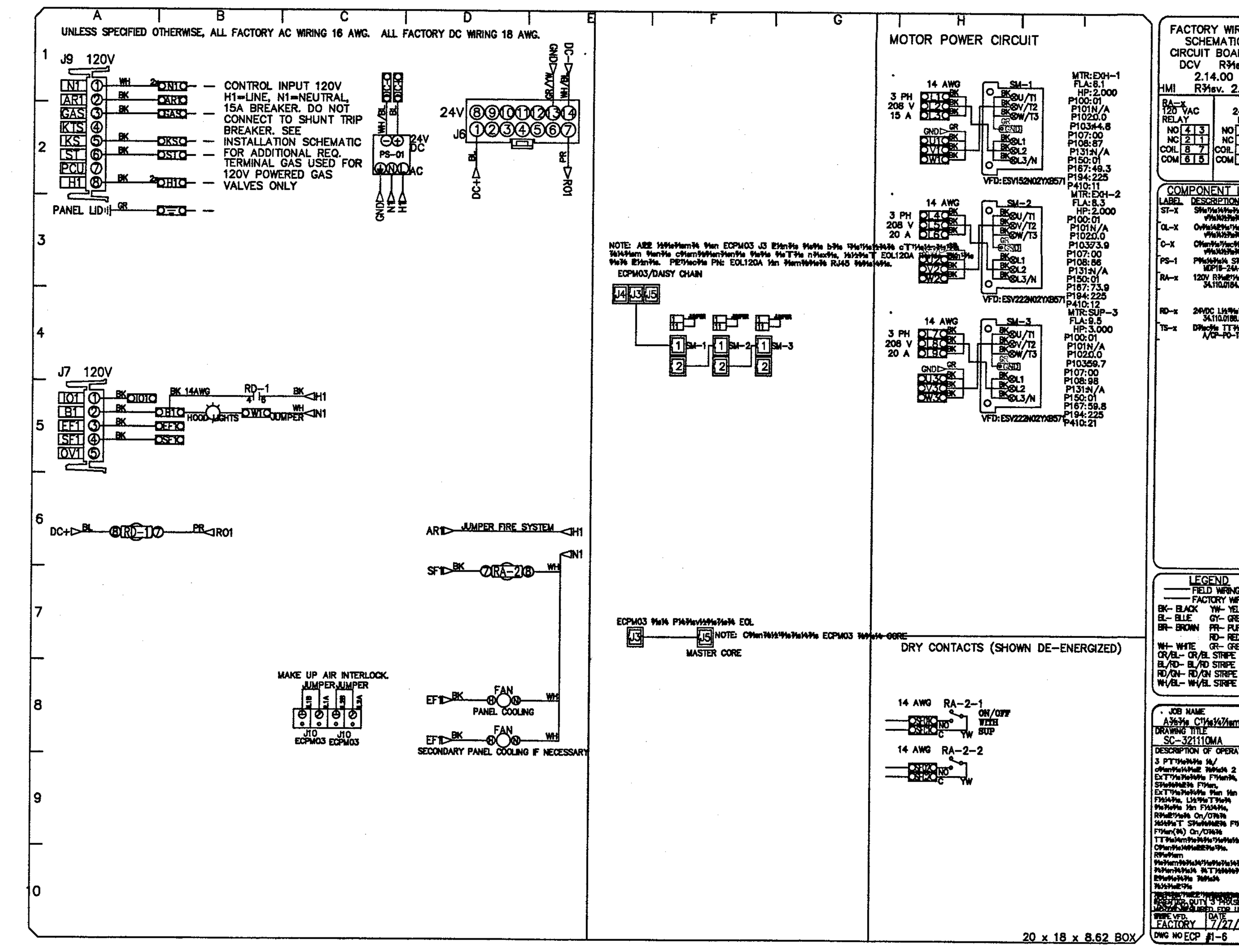
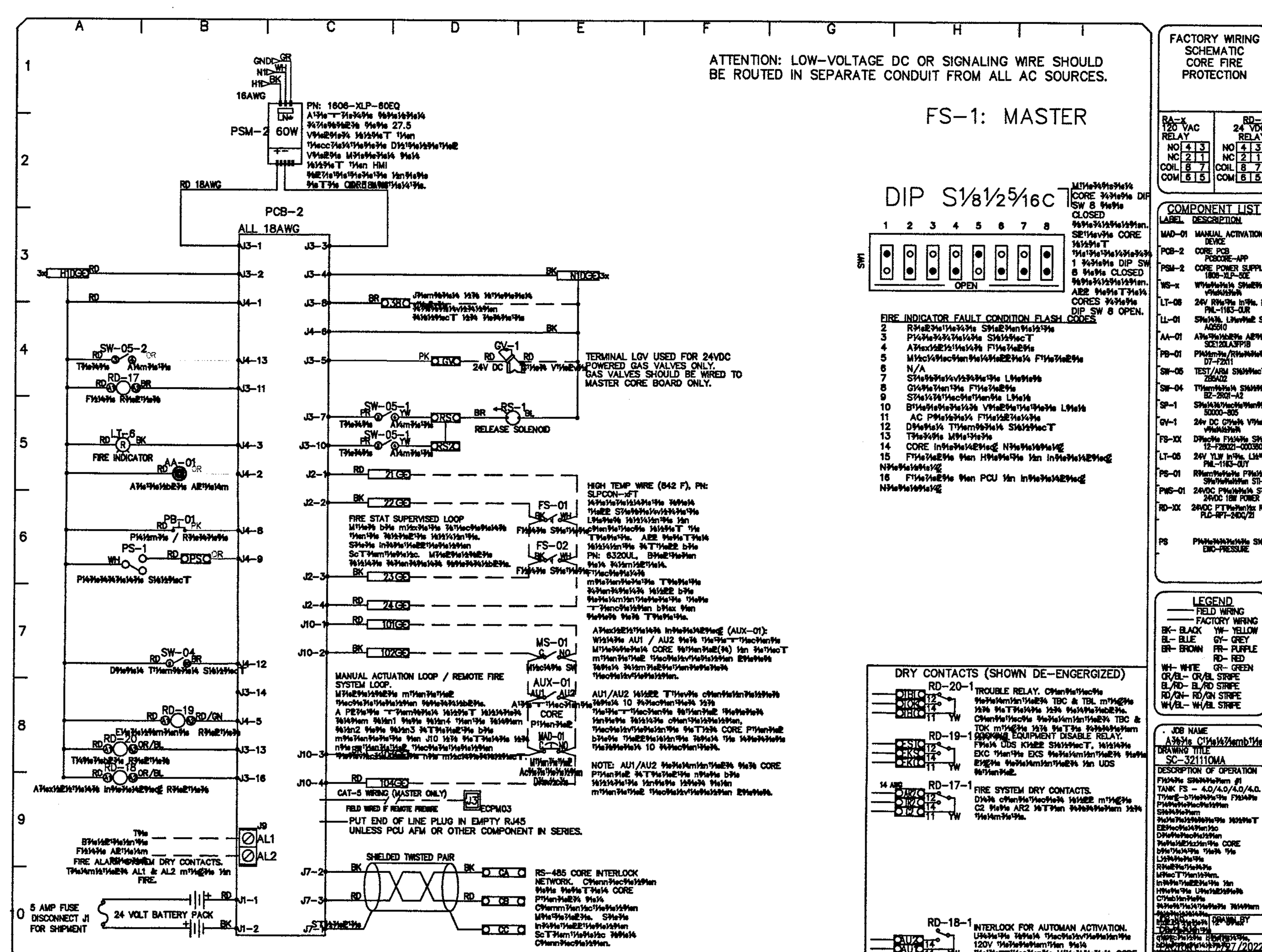
KITCHEN HOOD INFORMATION

M3.6







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KITCHEN HOOD INFORMATION

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