

DIVISION - 15 MECHANICAL SPECIFICATIONS

GENERAL

A. THE GENERAL CONDITIONS OF THE GENERAL SPECIFICATIONS, ALONG WITH ALL APPLICABLE INSTRUCTIONS TO BIDDERS SHALL FORM A PART OF THIS SECTION OF THE SPECIFICATIONS.

B. REFERENCE IS MADE TO REQUISITES FOR BIDDERS AND CONTRACTORS UNDER OTHER SECTIONS OF THESE SPECIFICATIONS, WHICH SHALL BE CONSIDERED BINDING, UNLESS OTHERWISE NOTED UNDER THIS SECTION.

SCOPE

EACH CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE CONSTRUCTION DETAILS, BOTH AS ON TENANT CONSTRUCTION DRAWINGS AND LANDLORD'S AS REFERRED TO, BEFORE SUBMITTING HIS BID AS NO ALLOWANCES WILL BE MADE BECAUSE OF THE CONTRACTOR'S UNFAMILIARITY WITH THESE DETAILS. ALL PERFORMANCE OF CONSTRUCTION SHALL BE AS REQUIRED BY THE PACE OF THE GENERAL CONSTRUCTION.

INSPECTION OF SITE

ALL PROPOSALS SHALL PRECLUDE THAT CONTRACTOR IS FAMILIAR WITH JOB SITE CONDITIONS AND UTILITY LOCATIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

PERMITS

ALL PERMITS AND LICENSES NECESSARY FOR THE PROPER EXECUTION OF THE WORK SHALL BE SECURED AND PAID FOR BY THE SUBCONTRACTOR INVOLVED.

CODE REQUIREMENTS

ALL WORK UNDER THIS CONTRACT SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS, DRAWINGS OR AS DIRECTED BY THE OWNER, AND SHALL SATISFY ALL APPLICABLE CODES, ORDINANCES, OR REGULATIONS OF THE GOVERNING BODIES, WHETHER SO SHOWN OR NOT, AND ALL MODIFICATIONS REQUIRED BY SUCH AUTHORITIES SHALL BE MADE BY THE CONTRACTOR WITHOUT ANY ADDITIONAL COST TO THE OWNER.

MATERIALS AND WORKMANSHIP

A. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURERS, AND UNLESS OTHERWISE SPECIFIED SHALL BE NEW, AND FREE FROM ANY DEFECTS. ALL LIKE MATERIALS USED SHALL BE OF THE SAME MANUFACTURE AND QUALITY UNLESS OTHERWISE SPECIFIED.

B. ALL WORK UNDER THIS CONTRACT SHALL BE PERFORMED BY COMPETENT WORKMEN AND EXECUTED IN A NEAT AND WORKMANLIKE MANNER. WORK SHALL BE PROPERLY PROTECTED DURING CONSTRUCTION, AND ON COMPLETION, THE INSTALLATION SHALL BE THOROUGHLY CLEANED AND ALL DEBRIS PRESENT AS A RESULT OF THIS CONTRACT SHALL BE REMOVED FROM THE PREMISES, DO NOT JUST ABANDON.

CODES AND REGULATIONS

EACH SUBCONTRACTOR SHALL COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN OR SPECIFIED. IF A SUBCONTRACTOR OBSERVES THAT THE DRAWINGS AND SPECIFICATIONS ARE AT A VARIANCE, HE SHALL PROMPTLY NOTIFY THE GENERAL CONTRACTOR AND THE TENANT IN WRITING. IF ANY SUBCONTRACTOR PERFORMS ANY WORK KNOWING IT TO BE CONTRARY TO LAWS, ORDINANCES, RULES AND REGULATIONS AND WITHOUT GIVING SUCH NOTICE, THE SUBCONTRACTOR SHALL BEAR ALL COSTS ARISING THEREFROM.

PROTECTION OF WORK AND PROPERTY

A. EACH SUBCONTRACTOR SHALL CONTINUOUSLY MAINTAIN ADEQUATE PROTECTION OF ALL HIS WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S PROPERTY FROM INJURY OR LOSS ARISING FROM HIS WORK. HE SHALL MAKE GOOD ANY SUCH DAMAGE, INJURY, OR LOSS, EXCEPT SUCH AS MAY BE DIRECTLY DUE TO CAUSES BEYOND HIS CONTROL AND NOT TO HIS FAULT OR NEGLIGENCE. HE SHALL ADEQUATELY PROTECT ADJACENT PROPERTY AS WELL.

B. EACH SUBCONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF THEIR EMPLOYEES ON THE WORK AND SHALL COMPLY WITH ALL PROVISIONS OF FEDERAL, STATE AND LOCAL BUILDING CODES AND SAFETY LAWS TO PREVENT ACCIDENTS OR INJURY TO PERSONS ON OR ADJACENT TO THE PREMISES WHERE THE WORK IS BEING PERFORMED. EACH SUBCONTRACTOR SHALL MAINTAIN ALL INSURANCE REQUIRED TO PROTECT HIMSELF, OWNER AND TENANT FOR THE DURATION OF THE WORK AGAINST PROPERTY DAMAGE AND PUBLIC LIABILITY.

CHANGES IN THE WORK

THE TENANT, WITHOUT INVALIDATING THE CONTRACT, MAY ORDER EXTRA WORK OR MAKE CHANGES BY ALTERING, ADDING TO OR DEDUCTING FROM THE WORK, THE CONTRACT SUM BEING ADJUSTED ACCORDINGLY.

COOPERATION

ALL WORK UNDER THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN CONJUNCTION WITH OTHER CONTRACTORS AND TRADES OF THIS PROJECT IN A MANNER WHICH WILL ALLOW EACH CONTRACTOR AND TRADE ADEQUATE TIME AT THE PROPER STAGE OF CONSTRUCTION TO FULFILL HIS CONTRACTS. REFERENCE SHALL BE MADE TO THE OWNER FOR INSTRUCTIONS SHOULD ANY QUESTIONS ARISE BETWEEN TRADES AS TO THE PLACING OF LINES, DUCTS, CONDUITS, FIXTURES, OR EQUIPMENT, OR SHOULD IT APPEAR DESIRABLE TO REMOVE ANY GENERAL CONSTRUCTION WHICH WOULD AFFECT THE APPEARANCE OR STRENGTH OF THE STRUCTURE.

SUBSTITUTION OF MATERIALS

MANUFACTURER'S NAMES ARE LISTED HEREIN TO ESTABLISH A STANDARD. THE PRODUCTS OF OTHER MANUFACTURERS WILL BE ACCEPTABLE IF, IN THE OPINION OF THE TENANT, THE SUBSTITUTE MATERIAL IS OF A QUALITY AS GOOD OR BETTER THAN THE MATERIAL SPECIFIED, AND WILL SERVE WITH EQUAL EFFICIENCY AND DEPENDABILITY, THE PURPOSE FOR WHICH THE ITEMS SPECIFIED WERE INTENDED. CONTRACTOR ASSUMES ALL RESPONSIBILITIES AND COST IMPACTS OF SUBSTITUTIONS.

SHOP DRAWINGS

SHOP DRAWINGS AND CATALOG DATA ON ALL MAJOR ITEMS OF EQUIPMENT AND SYSTEMS, AND SUCH OTHER ILLUSTRATIVE MATERIAL AS MAY BE CONSIDERED NECESSARY BY THE TENANT, SHALL BE SUBMITTED BY THIS CONTRACTOR IN ADEQUATE TIME TO PREVENT DELAY AND CHANGES DURING CONSTRUCTION.

DRAWINGS AND SPECIFICATIONS

A. THE DRAWINGS SHOW DIAGRAMMATICALLY THE LOCATIONS OF THE VARIOUS LINES, DUCTS, CONDUITS, FIXTURES, AND EQUIPMENT AND THE METHOD OF CONNECTING AND CONTROLLING THEM. IT IS NOT INTENDED TO SHOW EVERY CONNECTION IN DETAIL AND ALL FITTINGS REQUIRED FOR A COMPLETE SYSTEM.

B. SHOULD ANY CHANGES BE DEEMED NECESSARY BY THE CONTRACTOR IN ITEMS SHOWN ON CONTRACT DRAWINGS, THE SHOP DRAWINGS, DESCRIPTIONS, AND THE REASON FOR THE PROPOSED CHANGES SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

RESPONSIBILITY

A. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE SATISFACTORY AND COMPLETE EXECUTION OF ALL WORK INCLUDED IN HIS CONTRACT. HE SHALL PRODUCE COMPLETE FINISHED OPERATING SYSTEMS AND PROVIDE ALL INCIDENTAL ITEMS REQUIRED AS PART OF HIS WORK, REGARDLESS OF WHETHER SUCH ITEM IS PARTICULARLY SPECIFIED OR INDICATED.

B. CONTRACTOR SHALL SUPPLY TO LANDLORD AND TENANT A CERTIFIED BALANCE REPORT AT COMPLETION OF PROJECT. THIS IS REQUIRED FOR BOTH REMODELED AND NEW STORES.

HEATING, VENTILATING AND AIR CONDITIONING

GENERAL

A. THE WORK COVERED BY THIS SECTION OF THESE SPECIFICATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE RESPECTIVE DRAWINGS, INFORMATION, OR INSTRUCTIONS TO BIDDERS, AND THE GENERAL CONDITIONS, ADDENDA, OR DIRECTIVES WHICH MAY BE ISSUED BY THE OWNER, HEREWITH, OR OTHERWISE, SHALL BE COMPLIED WITH IN EVERY RESPECT.

B. THE LISTING HEREIN OF AN ARTICLE OR MATERIAL, OPERATION OR METHOD, REQUIRES THAT THE CONTRACTOR SHALL FURNISH AND INSTALL EACH ITEM LISTED, UNLESS SPECIFICALLY NOTED TO THE CONTRARY. THE CONTRACTOR SHALL PERFORM EACH OPERATION PRESCRIBED OR LISTED ACCORDING TO THE CONDITIONS STATED.

EXAMINATION OF SITE

ALL CONTRACTORS SUBMITTING PROPOSALS FOR THIS WORK SHALL FIRST EXAMINE THE SITE AND ALL CONDITIONS THEREON AND/OR THEREIN. ALL PROPOSALS SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY AFFECT THE WORK UNDER THIS CONTRACT.

SCOPE

FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY FOR A COMPLETE FULLY OPERATIVE HEATING, VENTILATING, AND AIR CONDITIONING SYSTEM EXCEPT AS SPECIFICALLY EXCLUDED BY THE DRAWINGS, AND/OR TENANT'S DIRECTIONS.

EQUIPMENT

A. 1. ROOFTOP UNITS: FURNISH HEATING AND AIR CONDITIONING AS SCHEDULED. UNIT TO BE COMBINED PACKAGED SYSTEM, ALL SEASON EQUIPMENT, CONSISTING OF GAS HEATING SECTION, BLOWER, DX COIL, COMPRESSOR(S), AND AIR COOLED CONDENSING SECTION. UNIT SHALL BE DESIGNED FOR DOWN FLOW ARRANGEMENT WITH ALL DUCT PENETRATIONS WITHIN FACTORY ROOF CURB.

2. FEATURES: UNITS TO BE WOUND FOR VOLTAGE AND PHASE AS SCHEDULED. HEAVY GAUGE ALUMINIZED STEEL, STAINLESS STEEL OR COATED HEAT EXCHANGER WILL BE ACCEPTABLE. UNIT MUST BE A.G.A. APPROVED FOR OUTDOOR APPLICATION. DIRECT EXPANSION COIL WITH FACTORY INSTALLED EXPANSION VALVE - BLOWER SHALL BE OF THE CENTRIFUGAL BELT DRIVEN OR MULTI-SPEED DIRECT DRIVE TYPE WITH FORWARD CURVED BLADES - BLOWER AND MOTOR ISOLATED FOR QUIET OPERATION - BUILT IN MOTOR STARTER WITH OVER VOLTAGE PROTECTION. HERMETICALLY SEALED COMPRESSOR WITH INHERENT OVERLOAD PROTECTION THERMOSTAT - NON-PRORATED 5-YEAR WARRANTY ON COMPRESSOR AND 10-YEAR WARRANTY ON HEAT EXCHANGER - CONDENSER COIL CONSTRUCTED OF COPPER TUBING WITH ALUMINUM FINS - CRANKCASE HEATERS - BUILT IN MOTOR STARTERS ELECTRIC IGNITION - HIGH LOW PRESSURE CUTOFF ON COMPRESSOR - SHUTOFF VALVES ON LIQUID AND SUCTION LINES - SHORT CYCLE TIMER PROTECTION - FILTER - DRYER - VIBRATION ISOLATION. UNIT FACTORY CHARGED.

3. ACCESSORIES: SUPPLY AND RETURN FILTER CASING ASSEMBLY, TWO COMPLETE SETS OF THROWAWAY TYPE FILTERS. FILTERS SHALL BE 2" THICK. ONE SET TO BE REMOVED AND REPLACED JUST PRIOR TO TEST & BALANCE - FULL ECONOMIZER PACKAGE WITH LOW LEAKAGE FRESH AIR STANDARD RETURN AIR DAMPERS AND DAMPER MOTOR - MINIMUM POSITION SETTING - PROVIDE MANUFACTURER'S INTERFACE AS REQUIRED FOR OPERATION WITH THERMOSTAT AS SPECIFIED. PROVIDE MOUNTING CURB APPROVED BY NATIONAL ROOF CONTRACTORS ASSOCIATION TO SUPPORT THE ENTIRE ASSEMBLY WITH NAULER STRIP AND AIR TIGHT GASKET.

E. ALL HVAC UNITS WILL BE EQUIPPED WITH PROGRAMMABLE THERMOSTAT. DESIGN AND STANDARD CONDITIONS FOR THERMOSTAT OPERATION WILL BE AS FOLLOWS:

COOLING: 75°F MAXIMUM OCCUPIED COOLING TEMPERATURE
85°F COOLING NIGHT SETBACK.

HEATING: 70°F MAXIMUM OCCUPIED HEATING TEMPERATURE
60°F HEATING NIGHT SETBACK.

FAN: CONTINUOUS IN OCCUPIED AND RECOVERY MODE AND WITH HEATING OR COOLING EQUIPMENT IN UNOCCUPIED MODE.

DEADBAND: CAPABLE OF MAINTAINING A 5°F DEADBAND.

CLOCK: 7 DAY CAPABLE OF 7 DIFFERENT DAY SCHEDULES.

OVERNIGHT: HAVE A 2 HOUR OVERRIDE ACCESSIBLE TO MANAGER.

BACKUP: CAPABLE OF MAINTAINING PROGRAMMED SETTING FOR AT LEAST 10 HOURS WITHOUT POWER.

F. THE HVAC SUBCONTRACTOR SHALL IDENTIFY ALL ROOF MOUNTED HVAC EQUIPMENT AND APPARATUS WITH 2" HIGH PAINTED STENCILED STORE NAME ON ALL SIDES OF EQUIPMENT.

DUCTWORK

A. SQUARE AND RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED OF NEW GALVANIZED PRIME GRADE SHEET STEEL OF THE FOLLOWING GAUGES:

DUCT SIZE	GAUGE
12" AND LESS	NO. 26 U.S. GAUGE
13" TO 30"	NO. 24 U.S. GAUGE
31" TO 54"	NO. 22 U.S. GAUGE
55" TO 84"	NO. 20 U.S. GAUGE
85" AND OVER	NO. 18 U.S. GAUGE

B. SQUARE AND RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED AS FOLLOWS:

SIZE	METHOD
17" AND LESS	"S" AND DRIVE CLEATS
18" TO 30"	"L" STANDING SEAMS ON 3'-0" CENTERS
31" TO 54"	1-1/4" STANDING SEAMS ON 3'-0" CENTERS

ALL KITCHEN HOOD EXHAUST DUCTWORK SHALL BE SINGLE WALL, FACTORY BUILT, GREASE DUCT FOR USE WITH TYPE 1 HOODS, WHICH CONFORMS TO NFPA-96. SEE ADDITIONAL SPECIFICATIONS ON SHEET MH-01 OF HOOD DRAWINGS.

1. THE KITCHEN HOOD EXHAUST DUCTWORK SHALL BE ENCLOSED IN A RATED ENCLOSURE PER CODE, TWO (2) LAYERS OF 3M FIRE BARRIER DUCT WRAP 615+ OR SIMILAR.

2. THE CONTRACTOR SHALL INCLUDE IN HIS PRICE:
- ALL NECESSARY TRANSITION AND CONNECTION FITTINGS TO THE HOOD AND EXHAUST FANS.
- ALL CLEAN-OUT ACCESS PANELS AS REQUIRED BY CODE.
- ALL ELBOW AND TRANSITION FITTINGS.
- ALL HANGERS AND SUPPORTS.
- SHOP DRAWINGS SHOWING PROPOSED FABRICATION AND INSTALLATION COORDINATED WITH EXISTING FIELD CONDITIONS AND OTHER TRADES.

ROUND SPIRAL DUCTWORK SHALL BE LINX FACTORY PAINTED SPIRAL DUCTWORK AND FITTINGS OR APPROVED EQUAL. INSTALLED AND SUSPENDED AS PER MANUFACTURER'S RECOMMENDATIONS. GAUGES FOR SHOP FABRICATED DUCTS SHALL BE AS FOLLOWS:

UP TO 12" IN DIAMETER	NO. 26 GAUGE
13" TO 30"	NO. 24 GAUGE
31" TO 42"	NO. 22 GAUGE
43" TO 60"	NO. 20 GAUGE

ELBOWS SHALL HAVE A CENTERLINE RADIUS OF 1-1/2 TIMES DUCT DIAMETER AND MAY BE SMOOTH ELBOWS OR 5 PIECE 90 DEGREE ELBOWS AND 3 PIECE 45 DEGREE ELBOWS. JOINTS OF ROUND DUCTS SHALL BE SLIP TYPE WITH A MINIMUM OF 3 SHEET METAL SCREWS.

1. NOT USED.
2. ALL LOW PRESSURE DUCTWORK SHALL BE EXTERNALLY SEALED USING UNITED SHEET METAL, MMM EC-800, OR HARDCAST DUCT SEALER INSTALLED IN THE JOINTS PRIOR TO CLOSURE. ADDITIONALLY SEAL ALL EXTERNAL TRANSVERSE JOINTS AND FITTING CONNECTIONS EXTERNALLY.

C. ALL SUPPLY AIR DUCTS (HEATING AND COOLING) AND RETURN AIR DUCTS AND OUTSIDE AIR DUCTS SHALL BE GALVANIZED STEEL WITH MIN. 1-1/2" (R-6) THICK EXTERNAL THERMAL INSULATION EXCEPT DUCT LINED FOR ACOUSTICAL PURPOSES. CONTINUE INSULATION TO TOP OF ALL DIFFUSERS, GRILLES, REGISTERS, ETC. ALL EXHAUST AND RELIEF AIR DUCTS SHALL BE GALVANIZED STEEL. ALL KITCHEN HOOD EXHAUST DUCTWORK SHALL HAVE FIRE BARRIER DUCT WRAP. DUCT WRAP SHALL BE TESTED IN ACCORDANCE WITH ASTM E 2336. 2 LAYERS OF 3M FIRE BARRIER DUCT WRAP 615+ OR SIMILAR TO BE USED.

D. CONTRACTOR WILL INSTALL INSECT SCREENS ON ALL DUCT OPENINGS WHICH LEAD TO OR ARE OUTDOORS. INSECT SCREENS SHALL BE 10 GAUGE, ONE-HALF INCH (1/2") MESH IN REMOVABLE GALVANIZED STEEL FRAMES.

E. ALL DUCTWORK SHALL BE DESIGNED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN THE AMERICAN SOCIETY OF HEATING REFRIGERATION AND AIR CONDITIONING ENGINEERS GUIDE (ASHRAE) AND FABRICATED AND INSTALLED IN ACCORDANCE WITH THE LATEST METHODS RECOMMENDED IN THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) LOW VELOCITY DUCT MANUAL, LATEST EDITION.

F. NOT USED.

HANGERS AND SUPPORTS

A. ALL HORIZONTAL DUCTS HAVING A DIMENSION OF 40 INCHES AND LESS SHALL BE SUPPORTED BY MEANS OF BAND IRON HANGERS OF NO. 18 U.S. GAUGE ATTACHED TO THE DUCT BY MEANS OF RIVETS, SCREWS, OR CLAMPS, AND FASTENED TO STRUCTURE ABOVE BY TOGGLE BOLTS OR OTHER MEANS. EACH SECTION OF DUCTWORK SHALL HAVE AT LEAST ONE PAIR OF SUPPORTS. VERTICAL DUCTS SHALL BE SUPPORTED WITH 1-1/4" x 1-1/4" x 1-1/4" ANGLES WHERE THEY PASS THROUGH THE FLOOR LINES.

B. ALL HORIZONTAL DUCTS HAVING A DIMENSION OF 40 INCHES AND MORE SHALL BE SUPPORTED BY MEANS OF ANGLE IRON TRAPEZOID HANGERS. EACH SECTION OF DUCTWORK SHALL HAVE AT LEAST ONE PAIR OF SUPPORTS.

FLASHING

A. CONTRACTOR WILL PROVIDE WATER TIGHT 24 GA. SHEET METAL FLASHINGS AT ALL EXTERIOR WALLS AND ROOF PENETRATIONS.

B. ALL CUTTING OF ROOF OPENINGS, SUPPORTS FOR ROOF OPENINGS, PITCH PANS, ROOF CURBS, FLASHINGS, COUNTER FLASHINGS, REPAIR TO ROOF, ETC. ASSOCIATED WITH HVAC SUBCONTRACTOR SHALL BE THE RESPONSIBILITY AND PART OF THE CONTRACT WITH THE GENERAL CONTRACTOR. HE SHALL EMPLOY THE LANDLORD'S ROOFERS FOR THIS WORK SO AS TO MAINTAIN THE ROOF BOND.

DAMPERS

A. SPLITTER DAMPERS SHALL BE FABRICATED OF SHEET STEEL NOT LESS THAN NO. 16 U.S. GAUGE WITH THE LEADING EDGE HEMMED. EACH DAMPER SHALL BE LARGE ENOUGH TO COVER THE SMALLER OF THE TWO OPENINGS IT CONTROLS. DAMPERS SHALL BE CONTROLLED AS FOLLOWS

EXPOSED OR ACCESSIBLE DUCTWORK - LOCKING QUADRANTS EQUAL TO YOUNG REGULATOR NO. 1 WITH DAMPER ROD END BEARINGS ON OPPOSITE END.

CONCEALED DUCTWORK - LOCKING QUADRANT EQUAL TO YOUNG REGULATOR NO. 315 (CHROMIUM PLATED WITH DAMPER ROD END BEARINGS ON BOTH ENDS).

B. VOLUME DAMPERS SHALL BE OF THE OPPOSED INTERLOCKING TYPE AS MANUFACTURED BY AMERICAN FOUNDRY AND FURNACES CO. (AFFCO) OR EQUAL. BLADES SHALL BE OF NO. 16 GAUGE SHEET METAL AND SHALL NOT EXCEED 48" IN LENGTH OR 12" IN WIDTH. BLADES SHALL BE ON ONE-HALF INCH (1/2") DIAMETER RUSTPROOF AXLE. BEARINGS SHALL BE OF THE SELF-LUBRICATING FERRULE TYPE.

C. FIRE DAMPERS SHALL BE SUPPLIED AND INSTALLED BY HVAC CONTRACTOR AT DUCT PENETRATIONS IN FIRE RATED WALLS, CEILINGS, AND ROOFS AS REQUIRED. COORDINATE WITH LANDLORD, LOCAL FIRE MARSHALL AND ALL CODES AND GOVERNING AUTHORITIES HAVING JURISDICTION.

D. JOB FABRICATED TURNING VANES SHALL BE ACCEPTABLE IN SQUARE ELBOWS. PROVIDE AND INSTALL BARBER-COLEMAN AIR TURNS OR EQUAL TURNING VANES SHALL BE OF THE SAME GAUGE METAL AS THE DUCT IN WHICH THEY ARE INSTALLED. RADIUS ELBOWS SHALL HAVE A CENTERLINE RADIUS OF ONE AND ONE-HALF (1-1/2) TIMES THE DUCT WIDTH.

DUCTWORK - EXCEPTIONS

DUCTWORK FOR EXHAUSTING AIR OR OUTSIDE SUPPLY AIR SHALL BE ALL METAL AND CONSTRUCTED ACCORDING TO RECOMMENDED PRACTICES AS FOUND IN THE LATEST ISSUE OF ASHRAE.

SUPPORT OF DUCT SYSTEM

HANGER DESIGN SHALL BE AS DESCRIBED IN THE LATEST EDITION OF THE "SMACNA" MANUAL. REINFORCEMENT MEMBERS MAY BE USED TO SUPPORT DUCT SYSTEM PROVIDED DETAILS OUTLINED IN THE AFOREMENTIONED MANUAL ARE ADHERED TO. DUCTS SHALL BE SUPPORTED AT ALL TURNS AND TRANSITIONS AND NOT MORE THAN 8'-0" O.C. STRAIGHT DUCTS UP TO 59" MAX. DIMENSIONS SHALL BE SUPPORTED 6'-0" O.C. DUCTS OVER 60" MAX. DIMENSIONS SHALL BE SUPPORTED AT 4'-0" O.C.

REINFORCEMENT

ALL DUCTS REQUIRING REINFORCEMENT SHALL BE REINFORCED ACCORDING TO THE LATEST EDITION OF "SMACNA" MANUAL.

MATERIALS FOR REINFORCEMENT MEMBERS SHALL BE GALVANIZED STEEL. ALL SCREWS AND WASHERS SHALL BE PLATED OR GALVANIZED.

ACCESSORY ITEMS

ALL MANUAL DAMPERS, FIRE DAMPERS, TURNING VANES, REGISTER CONNECTIONS, ACCESS DOORS OR OTHER ASSOCIATED ACCESSORIES SHALL BE INSTALLED ACCORDING TO THE LATEST PUBLICATION OF "SMACNA" MANUAL.

TESTING AND ADJUSTING

CONTRACTOR WILL DEMONSTRATE OPERATION OF SYSTEM TO FULL SATISFACTION OF TENANT, WILL BALANCE AIR FLOW IN ACCORDANCE WITH AIR QUANTITIES ON DRAWINGS AND WILL RECORD VOLUME READINGS IN ACCORDANCE WITH ASHRAE AND PROVIDE SAME TO TENANT. ALL PIPING SHALL WITHSTAND AIR PRESSURE TESTING PER GOVERNING PLUMBING CODE.

A. AIR DISTRIBUTION SYSTEMS:

1. INSPECT INSTALLATION AND VERIFY CONFORMITY TO DESIGN. VERIFY THAT SUPPLY, RETURN, AND EXHAUST DUCTS HAVE BEEN PRESSURE-TESTED FOR LEAKAGE AS RECOMMENDED IN THE APPROPRIATE SMACNA STANDARDS.
2. VERIFY THAT VOLUME AND FIRE DAMPERS ARE PROPERLY LOCATED AND FUNCTIONAL.
3. VERIFY THAT SUPPLY, RETURN, EXHAUST AND TRANSFER GRILLES, REGISTERS AND DIFFUSERS ARE INSTALLED AND OPERATING PROPERLY.

B. VERIFY THAT CONTROL COMPONENTS ARE INSTALLED IN ACCORDANCE WITH PROJECT REQUIREMENTS AND ARE FUNCTIONING AS INTENDED, INCLUDING ELECTRICAL POWER, CONTROL AND INTERLOCK WIRING, DAMPER SEQUENCES, SMOKE DETECTORS, ETC.

C. UPON COMPLETION OF THE INSTALLATION AND START-UP OF THE MECHANICAL EQUIPMENT, TEST, ADJUST AND BALANCE SYSTEM COMPONENTS TO OBTAIN OPTIMUM CONDITIONS IN EACH CONDITIONED SPACE IN THE BUILDING.

D. BEFORE FINAL ACCEPTANCE IS MADE, FURNISH TO THE ARCHITECT THE FOLLOWING DATA:

- SUMMARY OF MAIN SUPPLY, RETURN AND EXHAUST DUCT PILOT TUBE TRANSVERSES AND FAN SETTINGS.
- AIR QUANTITIES AT EACH SUPPLY, RETURN, RELIEF AND EXHAUST AIR HANDLING DEVICE.
- AIR PRESSURE READINGS ENTERING AND LEAVING EACH SUPPLY FAN AND EXHAUST FAN.
- MOTOR CURRENT AND VOLTAGE READINGS AT EACH EQUIPMENT MOTOR.
- TEST RESULTS SHALL BE RECORDED ON STANDARD FORMS CONFORMING TO ARIE AND NEBB REQUIREMENTS. THE REPORT SHALL INCLUDE AIR FLOW SCHEMATIC DIAGRAMS INDICATING AND IDENTIFYING TEST LOCATIONS SUCH AS DUCT TRANSVERSE, OUTLET READINGS, PRESSURE READINGS AND TEMPERATURE READINGS, AND SHALL BE REFERENCED TO THE RECORDED DATA ON THE FORMS.
- MAKE AN INSPECTION IN THE BUILDING DURING THE OPPOSITE SEASON FROM THAT IN WHICH THE INITIAL ADJUSTMENTS WERE MADE, AND AT THAT TIME MAKE ANY NECESSARY MODIFICATIONS TO THE INITIAL ADJUSTMENTS REQUIRED TO PRODUCE OPTIMUM OPERATION OF THE SYSTEM COMPONENTS, TO PRODUCE THE PROPER CONDITIONS IN EACH SPACE.
- INSTRUCTION: THE CONTRACTOR SHALL INSTRUCT THE BUILDING OPERATING PERSONNEL IN THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT.

GUARANTEE

ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTANCE BY TENANT SHALL BE A CONDITION OF THIS CONTRACT. ALL WORK FOUND TO BE DEFECTIVE SHALL BE REPAIRED OR REPLACED BY THIS SUBCONTRACTOR WITHOUT ADDITIONAL CHARGE TO THE TENANT.

MECHANICAL

TEMPORARY SERVICES

THE CONTRACTOR SHALL PROVIDE THE FOLLOWING SPECIFIC ITEMS OF TEMPORARY SERVICES:

A. TELEPHONE - THE TENANT'S GENERAL CONTRACTOR SHALL INSTALL A JOB SITE TELEPHONE AND NOTIFY TENANT AS LISTED ON SHEET A-1 OF THE TELEPHONE NUMBER AND THE NAME OF THE SUPERINTENDENT.

B. TEMPORARY WATER - WATER REQUIRED IN THE PERFORMANCE OF THE CONTRACT SHALL BE PROVIDED AND PAID FOR BY THE CONTRACTOR. WATER USED FOR HUMAN CONSUMPTION SHALL CONFORM TO REQUIREMENTS OF STATE AND LOCAL AUTHORITIES FOR POTABLE WATER.

C. TEMPORARY ELECTRICITY - TEMPORARY ELECTRIC SERVICE REQUIRED IN THE PERFORMANCE OF THE CONTRACT SHALL BE FURNISHED AND PAID FOR BY THE CONTRACTOR WHO SHALL FURNISH, INSTALL, AND MAINTAIN ALL TEMPORARY OVERHEAD CONSTRUCTION, METERS, DROPS, AND OTHER WIRING AND FITTINGS FOR BOTH LIGHT AND POWER AT LOCATIONS REQUIRED IN THE WORK AND SHALL BEAR THE COST OF MAKING THE SERVICE CONNECTIONS. BEFORE FINAL ACCEPTANCE, TEMPORARY ELECTRICAL SERVICE FACILITIES INSTALLED BY THE CONTRACTOR SHALL BE REMOVED AND THE SERVICE CONNECTIONS SEVERED IN ACCEPTABLE MANNER.

D. TEMPORARY HEAT - WHEN REQUIRED FOR PROPER INSTALLATION OR PROTECTION OF ANY PORTION OF THE WORK, THE CONTRACTOR SHALL FURNISH AND INSTALL TEMPORARY HEATING UNITS AS APPROVED BY THE LANDLORD OR LOCAL AUTHORITY.

E. COST OF LANDLORD PROVIDED UTILITY SERVICES - IF THE LANDLORD ELECTS TO PROVIDE TEMPORARY UTILITY SERVICES, THE CONTRACTOR WILL BE SO INFORMED BY THE TENANT. THE CONTRACTOR SHALL MAKE TO PAY THE COST OF SAID TEMPORARY CONSTRUCTION AND UTILITY SERVICES.

NOTE FOR TENANT GENERAL CONTRACTOR

IT IS THE RESPONSIBILITY OF THE TENANT'S GENERAL CONTRACTOR TO MAKE USE OF APPLICABLE NOTES AND SPECIFICATIONS LISTED ON THIS SHEET AS THEY MAY PERTAIN TO THE SPECIFIC JOB.

MUNICIPAL APPROVAL STAMPS

ARCHITECT OF RECORD



ARCHITECTURE

CONSULTANT

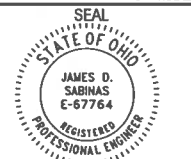
FIVE GUYS

FIVE GUYS - NEW STORE
3431 PRINCETON ROAD
SUITE 100 & 103
HAMILTON, OH 45011

PROJECT NUMBER: A3023.096

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FEBRUARY 05, 2024		
REV	ISSUE	DATE
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James D. Sabinas

SHEET TITLE

MECHANICAL
SPECIFICATIONS

SHEET NUMBER

MO.1

GENERAL NOTES

- DUCTWORK LAYOUT IS SCHEMATIC, EXACT LOCATION OF DUCTWORK AND EQUIPMENT SHALL BE COORDINATED WITH THE BUILDING STRUCTURE, EXISTING CONDITIONS, ARCHITECTURAL DRAWINGS, AND ALL OTHER TRADES PRIOR TO INSTALLATION. ANY CONTRACTOR INSTALLING WORK PRIOR TO COORDINATION SHALL RELOCATE HIS WORK AT HIS EXPENSE TO ALLOW PROPER INSTALLATION OF ANY AND ALL OTHER TRADES' WORK. CONTRACTOR TO VERIFY THAT DUCTWORK SIZES, ELEVATIONS, EQUIPMENT WILL FIT ABOVE CEILING SYSTEM.
- ALL WORK SHALL COMPLY WITH LOCAL MECHANICAL CODE AND ALL OTHER APPLICABLE CODES.
- DUCT SIZES SHOWN ARE NET INSIDE CLEAR DIMENSIONS.
- ALL SUPPLY DUCTWORK ABOVE CEILING SPACES SHALL BE EXTERNALLY INSULATED WITH 1-1/2" THICK FIBERGLASS INSULATION.
- FLEXIBLE RUNOUTS TO AIR DEVICES SHALL BE NO MORE THAN 5'-0" IN LENGTH AND SHALL BE INSULATED.
- MANUAL DAMPERS SHALL BE PROVIDED AT ALL BRANCH TAPS FOR BALANCING.
- ALL MECHANICAL WORK SHALL BE IN STRICT COMPLIANCE WITH THE LOCAL MECHANICAL CODES AND APPLICABLE PROVISION OF THE LOCAL FUEL GAS CODES. ALL WORK IS SUBJECT TO ON-SITE APPROVAL BY THE LOCAL AUTHORITY.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE A COMPLETE SYSTEM BALANCE REPORT, HEAT GAIN, HEAT LOSS, AND COOLING CALCULATIONS TO LANDLORD'S REPRESENTATIVE TO VERIFY THAT THE REQUIRED VENTILATION AIR TO BE PROVIDED TO EACH SPACE HAS BEEN OBTAINED.
- REFER TO SHEET M2.0 FOR MECHANICAL LEGEND.
- SEE ARCHITECTURAL DRAWING A1.7 FOR FINISH SPECIFICATIONS.
- ALL KITCHEN HOOD EXHAUST WORK SHALL BE 14 GAUGE BLACK IRON OR 18 GAUGE 303 STAINLESS STEEL WITH CONTINUOUS WELDED SEAMS, OR CAPTIVE-AIRE NON-WELDED FACTORY GREASE DUCT SYSTEM WHICH IS ETL LISTED TO STANDARD UL-1978 AND CANULC-S662 WHEN INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND NFPA STANDARD 96. ACCESS DOORS SHALL BE PROVIDED EVERY 20'-0" AND AT ANY CHANGE IN DIRECTION. ALL SEAMS, JOINTS, AND PENETRATIONS SHALL BE LIQUID TIGHT AND CONTINUOUS.
- PROVIDE AND INSTALL ALL ADDITIONAL STEEL FOR ROOF STRUCTURE SUPPORT OF ALL EQUIPMENT ON ROOF. ALL ROOF WORK BY LANDLORD'S CONTRACTOR AT TENANT'S EXPENSE. ALL EQUIPMENT ON ROOF SHALL BE CURB OR RAIL MOUNTED AND FLASHED TO ROOF MEMBRANE.
- THE TOP OF ALL DIFFUSERS SHALL BE INSULATED TO PREVENT CONDENSATION AND RUST TO FORM.
- LINEAR DIFFUSERS TO BE PROVIDED WITH INSULATED PLENUM BOXES.
- NO RETURN AIR GRILLES TO BE LOCATED IN THE KITCHEN AREA, EXCEPT FOR TRANSFER GRILLE BETWEEN FRONT AND BACK OF HOUSE.

SEQUENCE OF OPERATIONS

- ROOFTOP UNITS**
- THERMOSTATS SHALL CONTROL OCCUPIED/UNOCCUPIED MODE OF OPERATION FOR THE ENTIRE SYSTEM IN ACCORDANCE WITH PROGRAMMED TIMES AND SET POINTS.
 - ON A CALL FOR COOLING FROM THE THERMOSTAT, SYSTEM SHALL ENERGIZE (MECHANICAL COOLING) IN STAGES. WHEN OUTDOOR ENTHALPY, AS SENSED BY UNIT MOUNTED CONTROLS, IS BELOW ITS SETTING, AND FREE COOLING IS AVAILABLE, UNIT MOUNTED ECONOMIZER SHALL BE ENABLED AND MODULATE DAMPERS BEYOND THEIR MIN. POSITION SET-POINTS TO SATISFY THE SETTING OF (55°F ADJUSTABLE). DURING THIS CYCLE, THE MECHANICAL COOLING SHALL BE DISABLED. ENTHALPY CONTROLLER SHALL RESET THE OUTSIDE AIR DAMPERS TO THE MINIMUM POSITION AND ENERGIZE THE MECHANICAL COOLING WHEN THE SET-POINT IS EXCEEDED.
 - ON A CALL FOR HEATING, GAS FIRED HEAT EXCHANGERS SHALL BE ENERGIZED AND SHALL RUN UNTIL SET-POINT IS SATISFIED.
 - DURING NIGHT SETBACK PERIOD AS PROGRAMMED ON ASSOCIATED ROOFTOP UNIT THERMOSTAT, BLOWER FAN SHALL BE OFF AND OUTSIDE AIR DAMPERS SHUT. ON A CALL FOR HEATING OR COOLING, THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED AND THE HEAT EXCHANGER OR COMPRESSOR CYCLE SHALL RUN UNTIL SPACE SET-POINT IS SATISFIED.
 - OVERRIDE TIMER SWITCH (MOUNTED ON THERMOSTAT) SHALL BYPASS THE PROGRAMMABLE THERMOSTAT (OCCUPIED SETTING) AND SHALL ENERGIZE THE SYSTEM INTO THE OCCUPIED MODE FOR A MINIMUM OF A 3 HOUR PERIOD.
 - REMOTE TEMPERATURE SENSORS SHALL BE USED SO THAT THERMOSTATS CAN BE IN PREP ROOM AREA, AWAY FROM THE PUBLIC.
- EXHAUST FANS:**
- TOILET ROOM EXHAUST FANS SHALL BE INTERLOCKED WITH THE RTU THERMOSTATS. DURING THE OCCUPIED MODE, THE EXHAUST FAN SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED HOURS, EXHAUST FANS SHALL BE TURNED OFF.
- DUCT SMOKE DETECTORS:**
- ROOFTOP UNIT SUPPLY FAN SHALL BE DE-ENERGIZED UPON DETECTION OF SMOKE IN DUCT SMOKE DETECTOR.

MECHANICAL KEYED NOTES

- NOT USED.
- 15"Ø TRANSFER AIR DUCT ABOVE CEILING, CONNECTED TO RETURN GRILLES AS SHOWN.
- REMOTE THERMOSTATS (HM/S) FOR RTU/S. THERMOSTATS LOCATED AT MANAGERS STATION. SEE CAPTIVE-AIRE DRAWINGS FOR DETAILS. INSTALL THERMOSTATS AT 48" AFF.
- NOT USED
- 8"x8" EXHAUST DUCT UP TO EF-3 ON ROOF.
- 4" PVC/CPCV INTAKE AND 4" PVC/CPCV EXHAUST FROM GAS WATER HEATER UP TO ROOF. COMBINE RIGHT BEFORE ROOF PENETRATION WITH CONCENTRIC VENT KIT. WATER HEATER PROVIDED AND INSTALLED BY OTHERS.
- 14"Ø GREASE EXHAUST DUCT UP TO EXHAUST FAN ON ROOF. SEE ROOF PLAN FOR ADDITIONAL DETAILS. TRANSITION DUCTWORK AS NECESSARY TO AVOID OBSTRUCTIONS.
- COORDINATE INSTALLATION OF NEW DUCT SMOKE DETECTOR IN RETURN AIR DUCT WITH ELECTRICAL CONTRACTOR. UNIT TO BE PROVIDED WITH ANNUNCIATOR BELOW UNIT WITH REMOTE TEST STATION LOCATED AT MANAGERS DESK. VERIFY EXACT LOCATION IN FIELD WITH OWNER REPRESENTATIVE.
- ANSUL MANUAL PULL STATION. SEE SHEET ARCHITECTURAL SHEETS FOR EXACT LOCATION.
- MANUAL BALANCE DAMPER. TYPICAL OF ALL.
- INSTALL ROOM TEMPERATURE SENSOR (PROVIDED BY OTHERS) FOR KITCHEN HOOD. VERIFY EXACT MOUNTING HEIGHT IN FIELD.
- 24"Ø SPIRAL DUCT TO DROP IN CEILING SPACE ABOVE DINING. TOP OF DUCT 6" BELOW THE ACT CEILING. CEILING TO BE CUT AND SEALED AROUND SPIRAL DUCT WITH TRIM RING, PAINTED BLACK, TO GIVE CLEAN LOOK.
- EXPOSED NON-FUNCTIONAL DOUBLE WALL DUCTWORK. SEE DETAIL 5MM.0 FOR ADDITIONAL INFORMATION.
- AIR CURTAIN. REFER TO ARCHITECTURAL EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
- RTU SPACE/RH SENSOR LOCATION. SEE CAPTIVE-AIRE DRAWINGS FOR DETAILS. LOCATE IN A SAFE SPACE AWAY FROM ANY HEATING/COOLING SOURCES AND AWAY FROM CEILING DIFFUSERS. INSTALL SENSOR AT 60" AFF.

MECHANICAL SYMBOLS LEGEND

(T)	THERMOSTAT
(S)	TEMPERATURE SENSOR
(SD)	SMOKE DETECTOR
---	FLEXIBLE DUCT
---	VOLUME DAMPER
FD	FIRE DAMPER
⊗	CEILING SUPPLY AIR DIFFUSER
⊗	CEILING RETURN AIR GRILLE
---	SIDEWALL AIR DIFFUSER OR GRILLE
---	NEW DUCTWORK
---	EXISTING DUCTWORK
D	CONDENSATE DRAIN
G	GAS PIPING
---	PIPE TURNING DOWN
---	PIPE TURNING UP
⊕	BALL VALVE
⊕	GATE VALVE
⊕	CONNECTION OF NEW TO EXISTING
⊕	CHECK VALVE
⊕	GAS COCK
⊕	UNION
⊕	PRESSURE GAUGE
---	STRAINER
AFF	ABOVE FINISHED FLOOR
⊕	AIR DEVICE #
CFM	CFM

S - SUPPLY
R - RETURN
E - EXHAUST

MUNICIPAL APPROVAL STAMPS

ARCHITECT OF RECORD



ARCHITECTURE

CONSULTANT

FIVE GUYS

FIVE GUYS - NEW STORE
3431 PRINCETON ROAD
SUITE 100 & 103
HAMILTON, OH 45011


PROJECT NUMBER: A2023.006

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FEBRUARY 05, 2024

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SEAL



JAMES D. SABINAS
E-67764
REGISTERED PROFESSIONAL ENGINEER

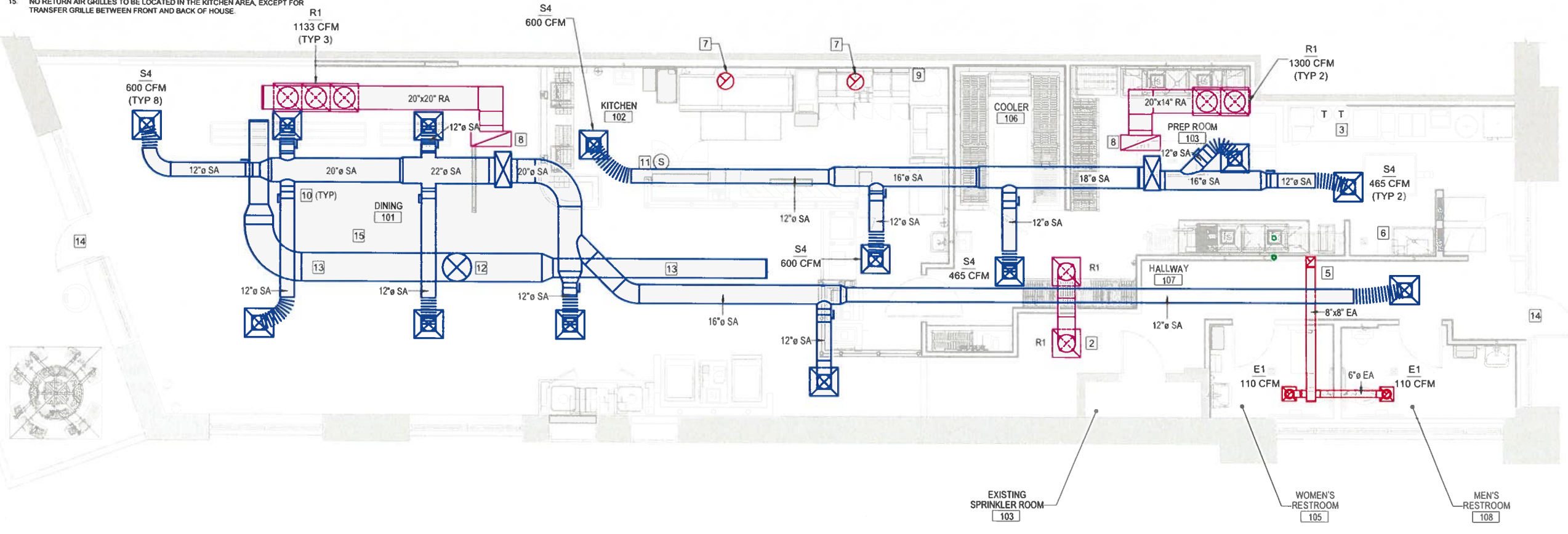
James D. Sabinas

SHEET TITLE

MECHANICAL FLOOR PLAN

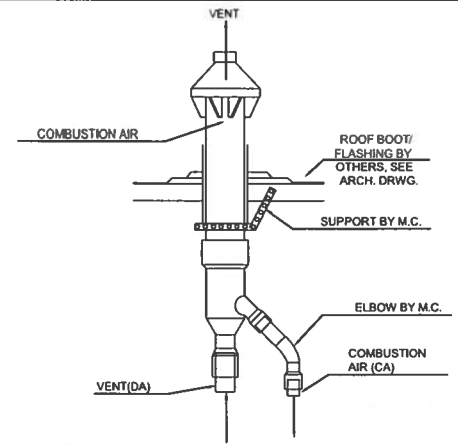
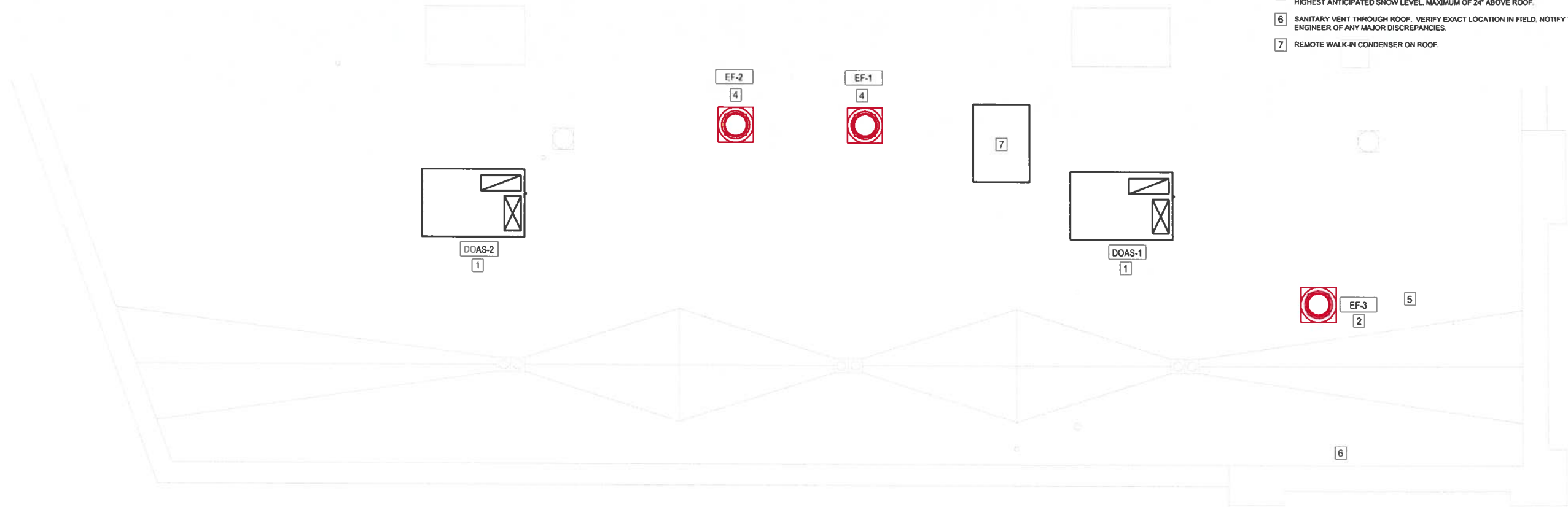
SHEET NUMBER

M2.0



MECHANICAL FLOOR PLAN

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



2 CONCENTRIC VENT KIT DETAIL
NO SCALE

MECHANICAL KEYED NOTES

- 1 INSTALL NEW ROOFTOP UNIT AT LOCATION OF EXISTING UNIT BEING REMOVED. RE-USE EXISTING CURB AND PROVIDE CURB ADAPTER, OR PROVIDE NEW CURB WHERE REQUIRED. VERIFY EXACT LOCATION IN FIELD.
- 2 NEW EXHAUST FAN FOR RESTROOMS.
- 3 NOT USED.
- 4 NEW EXHAUST FAN PROVIDED BY CAPTIVEAIRE FOR THE KITCHEN HOOD. GENERAL CONTRACTOR TO COORDINATE GREASE GUARD SYSTEM INSTALLATION. REFER TO SHEET MH3.0 FOR MORE INFO.
- 5 4"Ø CONCENTRIC KIT FOR WATER HEATER. MAINTAIN 12" MIN. CLEARANCE ABOVE HIGHEST ANTICIPATED SNOW LEVEL. MAXIMUM OF 24" ABOVE ROOF.
- 6 SANITARY VENT THROUGH ROOF. VERIFY EXACT LOCATION IN FIELD. NOTIFY TENANT'S ENGINEER OF ANY MAJOR DISCREPANCIES.
- 7 REMOTE WALK-IN CONDENSER ON ROOF.

MUNICIPAL APPROVAL STAMPS

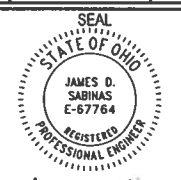
ARCHITECT OF RECORD

 ARCHITECTURE
 CONSULTANT

FIVE GUYS
 FIVE GUYS - NEW STORE
 3431 PRINCETON ROAD
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 HAMILTON, OH 45011
 PROJECT NUMBER: A2023.06

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James D. Sabinas

SHEET TITLE

MECHANICAL ROOF PLAN

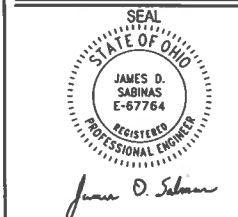
SHEET NUMBER

M2.1

1
 M2.1
MECHANICAL ROOF PLAN
 SCALE: 1/4" = 1' - 0"

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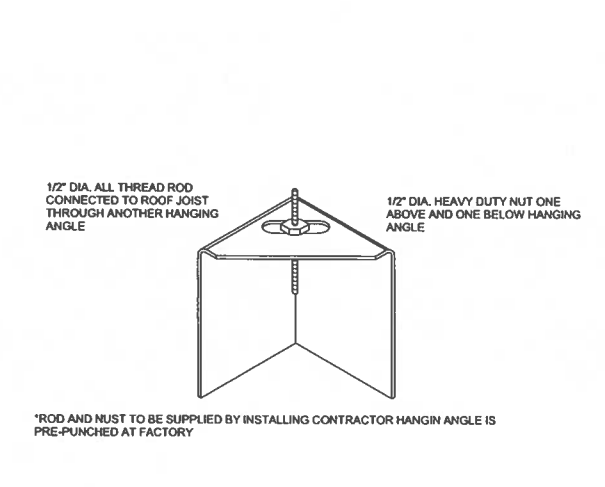
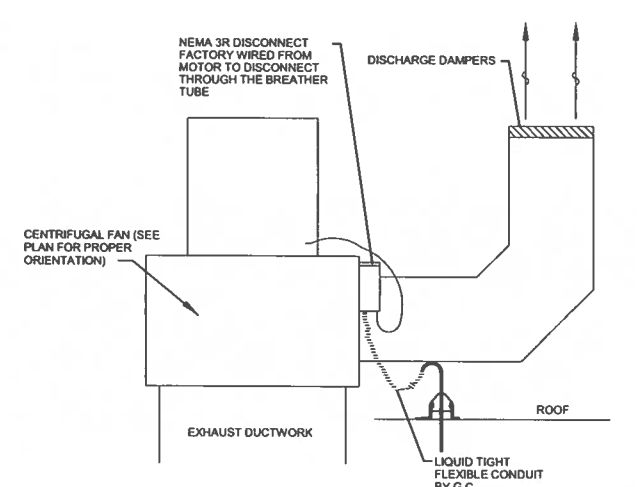
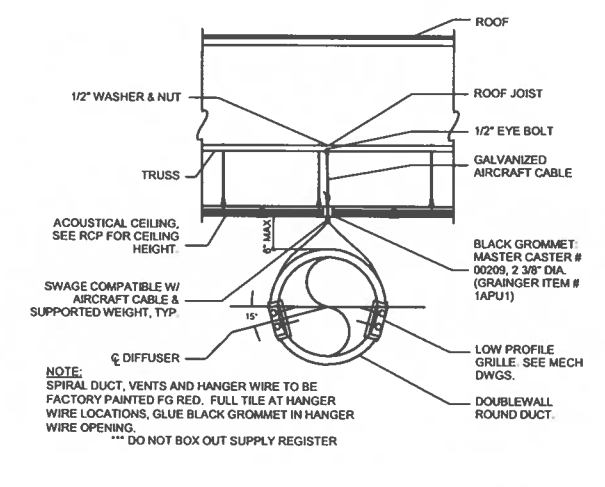
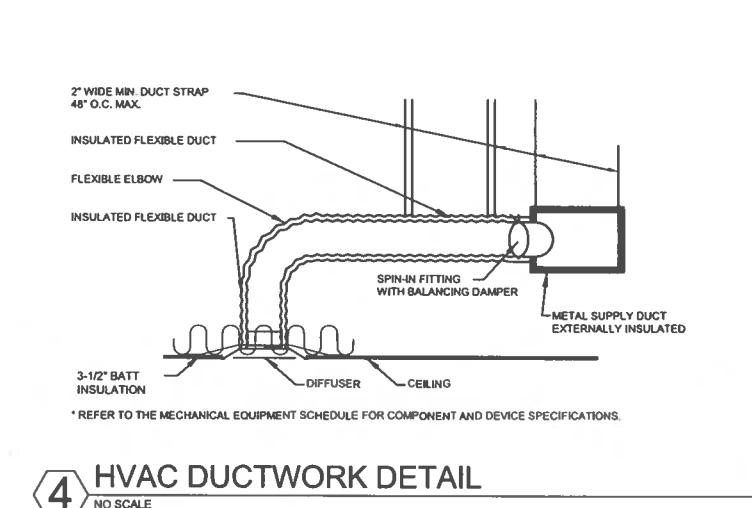
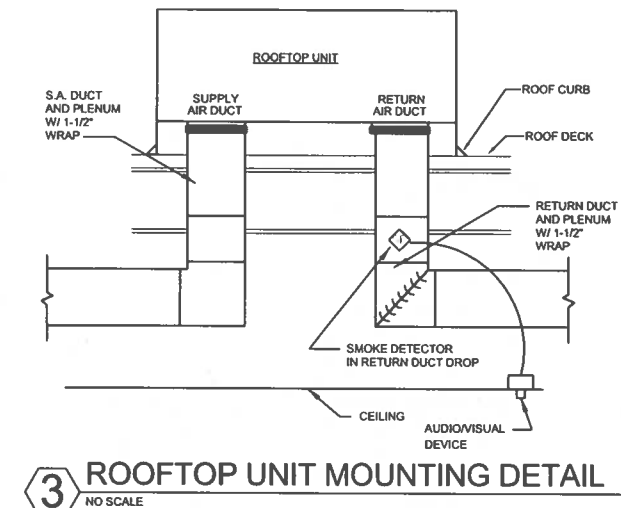
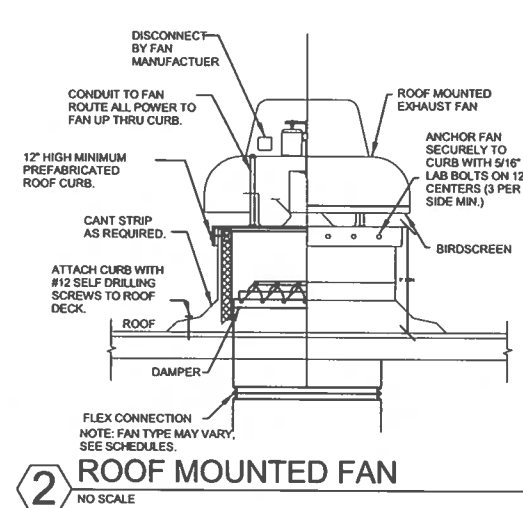
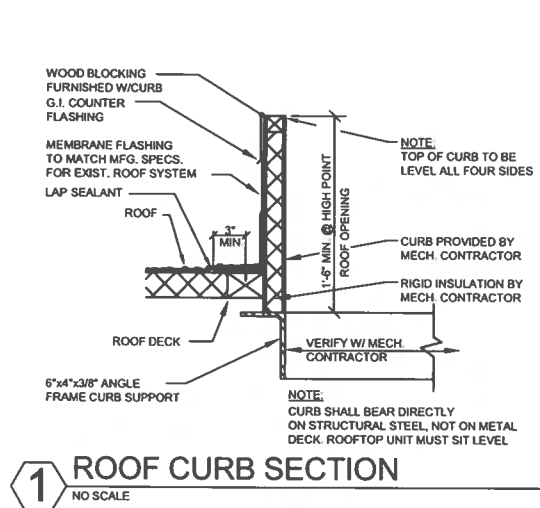


SHEET TITLE

MECHANICAL SCHEDULES

SHEET NUMBER

M4.0



5 EXPOSED DUCT DTL
 NO SCALE
 NATIONAL ACCOUNT INFO:
 LINK INDUSTRIES
 2500 AIRLINE BLVD.
 PORTSMOUTH, VA 23701
 CONTACT: KARIN ANDERSON
 PHONE: 757-392-3222
 EMAIL: KARINA@LI-HVAC.COM

6 GRILL HOOD EXHAUST FAN DETAIL
 NO SCALE
 NOTE: PROVIDE SECOND DUCT CLEANOUT AT 6" ABOVE CONNECTION TO HOOD DUCT COLLAR.

7 HOOD HANGING ANGLE DETAIL
 NO SCALE
 *ROD AND NUT TO BE SUPPLIED BY INSTALLING CONTRACTOR HANGING ANGLE IS PRE-PUNCHED AT FACTORY

GENERAL NOTE:
 FOR DOAS/RTU AND EXHAUST FAN SEE SHEET MH1.2.

UNIT MARK	SUPPLY AIR	OUTSIDE AIR	MAKE-UP AIR	EXHAUST AIR	RETURN AIR	NOTES
DOAS-1	2600	2600			0	
DOAS-2	4800	1250			3400	
MAU-1			0			
EF-1				-1852		
EF-2				-1662		
EF-3				-225		
BLDG. TOTAL	7400	3850	0	-3739	3400	
			MAKE-UP	HVAC UNITS		3850
				MAKEUP AIR UNIT		0
				TOTAL		3850
			EXHAUST	KITCHEN HOODS		-3514
				GENERAL EXHAUST		-225
				TOTAL		-3739
			BALANCE RESULTS	MAKE-UP		3850
				EXHAUST		-3739
				TOTAL		111

MARK	LENGTH	COLOR	MFG	ELEC	AMPS
L810	36"	BLACK	MARS	120V1	2.4 A
L811	72"	BLACK	MARS	120V1	26.6 A
L812	36"	WHITE	MARS	120V1	5.1 A

NOTES:
 1. PLUG ELECTRICAL CONNECTION. PLUG SERVES AS UNIT DISCONNECT.

MARK	MFG	MODEL	REFRIG.	CAPACITY MBH	RL PIPE	RS PIPE	WEIGHT	ELEC	MCA/MOP
E250	BALLY	BEZA009HA-HS2D	R448A	9.181	3/8"	5/8"	188 LBS	208-230/1	11.0 / 15.0

NOTES:
 1. PROVIDE WITH UNIT MOUNTED DISCONNECT.

PLAN MARK	MFR	MODEL	FACE SIZE	NECK SIZE	TYPE	NOTES
S1	TITUS	TMS	24"x24"	10"	DIFF	1.2,3,7
S2	LINDAB	RGS-3	33"x6"	32"x6"	DIFF	1,4,6
S3	TITUS	350FL	10"x4"	10"x4"	DIFF	2,3,5,7
S4	TITUS	TDC	24"x24"	12"	DIFF	1,2,3,7
R1	TITUS	50F	24"x24"	16"	R.G.	2,3,7
E1	TITUS	350FL	12"x12"	8"	E.G.	3,5,7

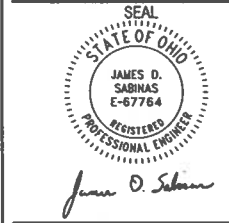
- NOTES:**
- 4-WAY THROW UNLESS OTHERWISE NOTED.
 - PROVIDE ADAPTOR BOOTS AS REQUIRED.
 - FINISH SHALL MATCH CEILING FINISH UNLESS OTHERWISE SPECIFIED. VERIFY FINISHES WITH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING.
 - EXTRACTOR DAMPER.
 - PROVIDE SQUARE TO ROUND ADAPTOR AS REQUIRED.
 - SPRAY PAINT RED TO MATCH DUCTWORK.
 - #26 WHITE IN KITCHEN, PREP, VESTIBULE, AND RESTROOMS. #84 FACTORY BLACK IN DINING ROOM AND HALL.
 - 3-WAY AIR THROW PATTERN.

DUCT CFM	DUCT SIZE
0 - 100	6" ROUND
101 - 240	8" ROUND
241 - 449	10" ROUND
450 - 680	12" ROUND
681 - 1030	14" ROUND
1031 - 1250	15" ROUND
1251 - 1450	16" ROUND
1451 - 2000	18" ROUND

- GENERAL NOTES:**
- AIR DEVICE NECK SIZE SHALL BE THE SAME AS RUNOUT SIZE.
 - RECTANGULAR DUCT SIZES OF EQUIVALENT FREE AREA MAY BE SUBSTITUTED FOR ROUND DUCT.
 - RUNOUTS MAY BE RIGID OR FLEX DUCT PER SPECIFICATIONS.

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SHEET TITLE

HOOD DRAWING

SHEET NUMBER
MH1.0

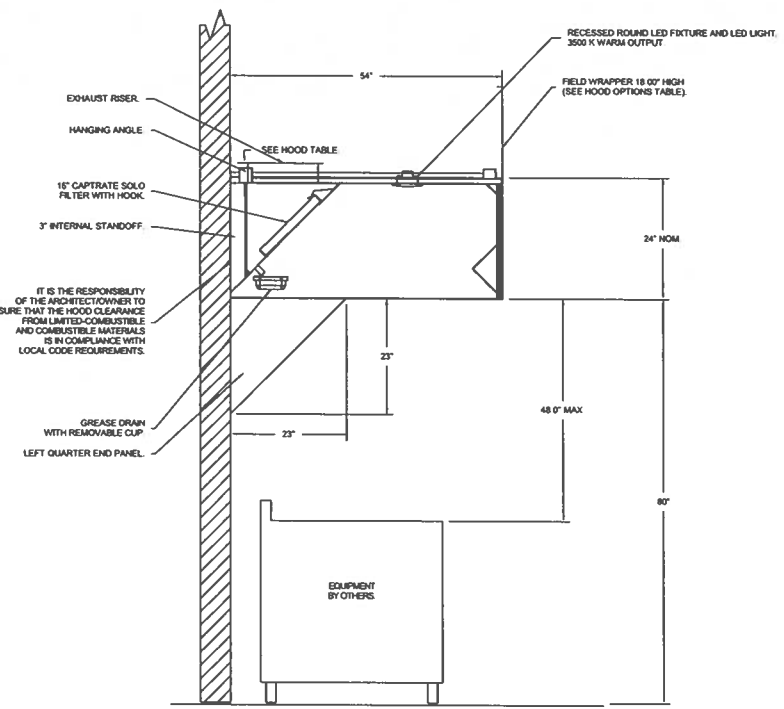
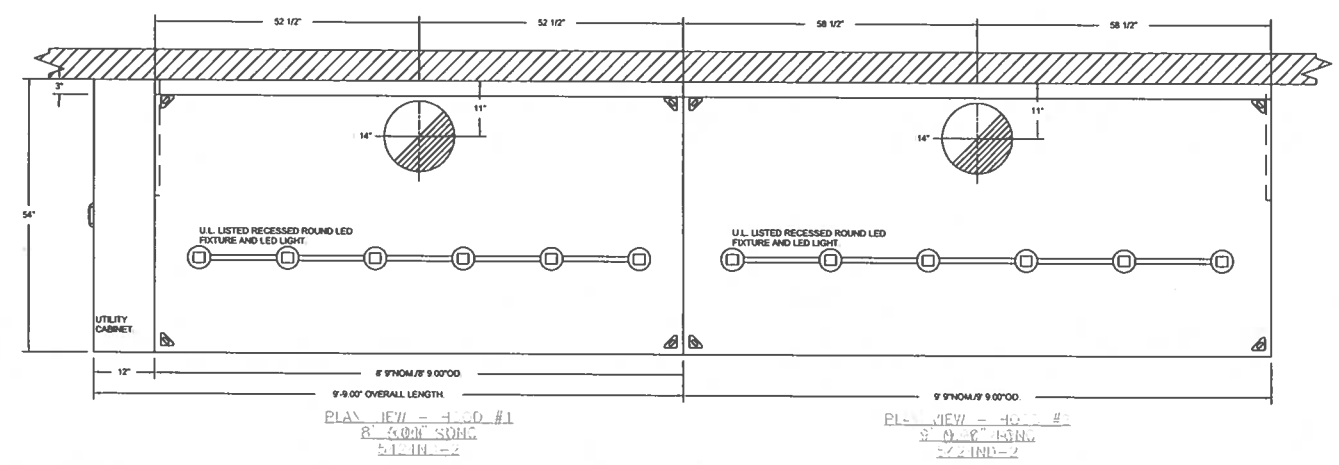


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4/26/2024
 6746585
 AD-32
 MASTER DRAWING

HOOD NO	TAG	MODEL	LENGTH	MAX COOKING TEMP	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)				HOOD CONSTRUCTION	END TO END	ROW	FILTERS			LMBRT(S)	WIRE GUARD	LOCATION	SIZE	UTILITY CABINET(S)			FIRE SYSTEM PIPING	HOOD HANGING WEIGHT					
						HEIGHT	DIA	CFM	VEL				SP	TYPE	QTY					HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS			QTY	TYPE	SIZE	MODEL #	QUANTITY
1	GRILLS	5424 ND-2	8' 9"	600 DEG	1662	4"	14"	1662	1565	-0.792"	430 SS WHERE EXPOSED	LEFT	ALONE	CAPTRATE SOLO FILTER	8	18"	18"	85% SEE FILTER SPEC	6	RECESSED ROUND	NO	LEFT	12"x54"x24"	ANSUL R-102	3 0/3 0	DCV-2011	1 LIGHT 1 FAN	YES	597 LBS
2	FRYERS	5424 ND-2	8' 9"	600 DEG	1852	4"	14"	1852	1732	-0.940"	430 SS WHERE EXPOSED	RIGHT	ALONE	CAPTRATE SOLO FILTER	7	18"	18"	85% SEE FILTER SPEC	6	RECESSED ROUND	NO						YES	478 LBS	

HOOD NO	TAG	OPTION
1	GRILLS	FIELD WRAPPER 18.00" HIGH FRONT, LEFT. LEFT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. 1-PINT GREASE CUP. RISER SENSOR INSTALL 3IN DBL.
2	FRYERS	FIELD WRAPPER 18.00" HIGH FRONT, RIGHT. RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. 1-PINT GREASE CUP. RISER SENSOR INSTALL 3IN DBL.

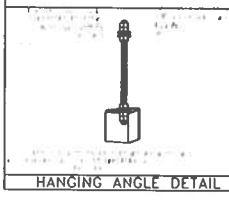


SECTION VIEW - MODEL HOOD - GRILLS & FRYERS

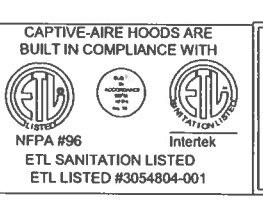
BALANCING NOTES:
 Exhaust Requirements
 100-105% OF DESIGN PER HOOD
 MEASURED AT THE EXHAUST FILTER WHILE THE FILTER IS INSTALLED

SCOPE OF WORK
 HOOD(S): PROVIDED BY OWNER. INSTALLED BY GC.
 FIRE SYSTEM(S): PROVIDED & INSTALLED BY OWNER.
 EXHAUST FAN(S): PROVIDED BY OWNER. INSTALLED BY GC.
 OUTSIDE AIR UNIT(S): PROVIDED BY OWNER. INSTALLED BY GC.
 ELECTRICAL CONTROL(S): PROVIDED BY OWNER. INSTALLED BY GC.
 GC IS RESPONSIBLE FOR COMPLETE START-UP OF EXHAUST FANS AND MAKEUP AIR UNIT PER CAPTIVEAIRE OPERATION & INSTALLATION MANUAL

IMPORTANT INSTALLATION NOTES:
 - LEFT MOUNTED UTILITY CABINET WILL BE PRE-INSTALLED ON HOOD
 IF CEILING HEIGHT IS NOT 10' AFF CONTACT CAPTIVE-AIRE FOR REVISED DRAWINGS AND TO DETERMINE IF THE UTILITY CABINET IS POSSIBLE.
 - DO NOT INSTALL QUARTER END PANELS BETWEEN HOODS



ETL LISTING DESCRIPTION BLOCK
 THE CAPTIVEAIRE MODEL ND-2 HAS BEEN U.L. 710 TESTED, LISTED, AND APPROVED TO EXHAUST A MINIMUM OF 140 CFM PER LINEAR FOOT OVER 600 DEGREE COOKING EQUIPMENT WHEN QUARTER END PANELS ARE INSTALLED.

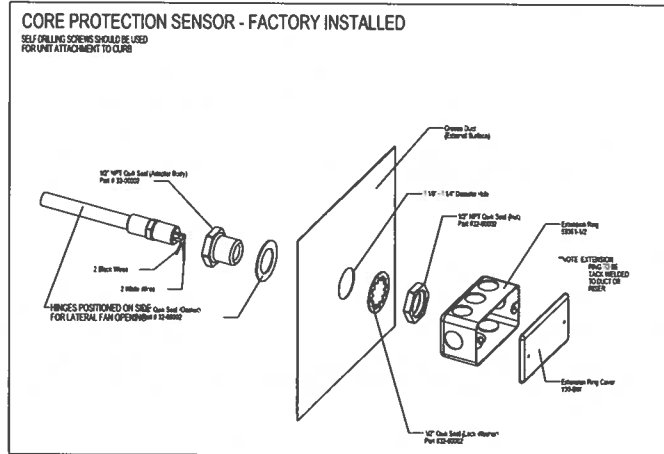


FOR QUESTIONS, CONTACT CAPTIVE-AIRE SYSTEMS, INC

STORES NORTH OF FAIRFAX, VA CONTACT
 MARK PROFFET
 PHONE (800) 988-0881
 EMAIL: REG32@CAPTIVEAIRE.COM

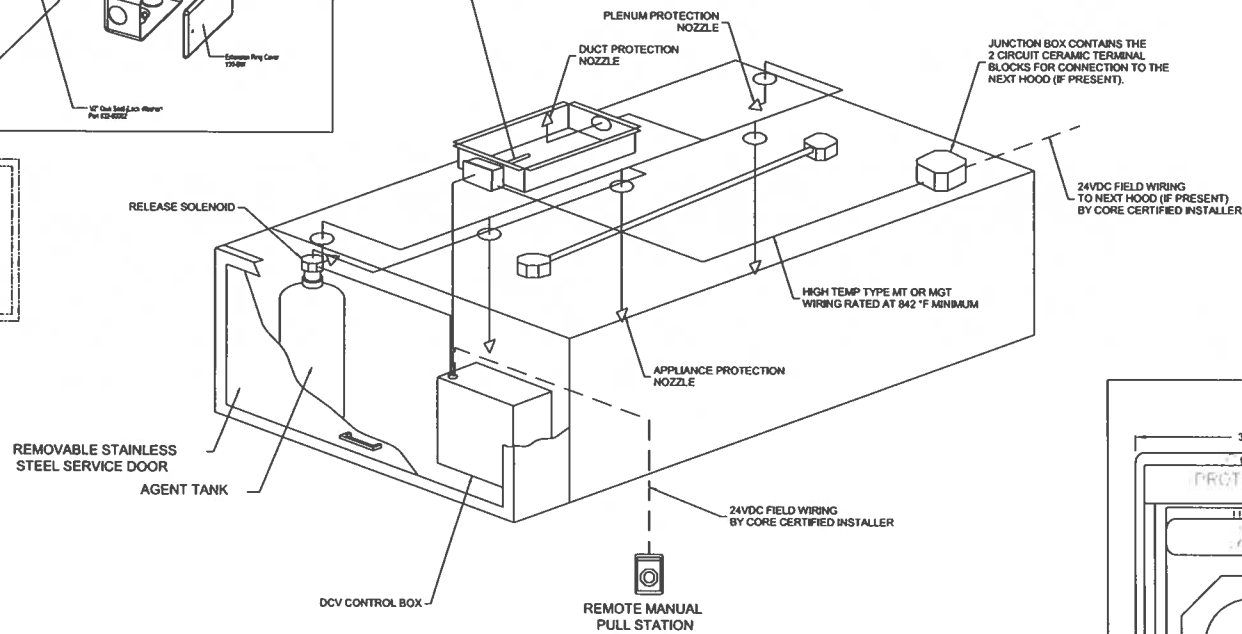
STORES SOUTH OF FAIRFAX, VA CONTACT
 JAYSON NEWMAN
 PHONE (800) 419-1447
 EMAIL: REG28@CAPTIVEAIRE.COM

TYPICAL ELECTRIC WET CHEMICAL SYSTEM LAYOUT

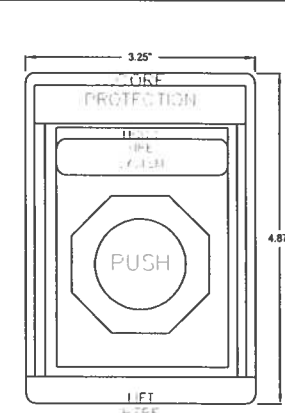


*** NOTE ***
SOLID FUEL APPLIANCES NOT PERMITTED WITH WET CHEMICAL FIRE SYSTEM. PLEASE NOTIFY CAPTIVEAIRE IMMEDIATELY IF A SOLID FUEL COOKING IS APPLIANCE IS PRESENT AT THIS LOCATION

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



ELECTRIC WET CHEMICAL PULL STATION DETAIL



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

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

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

TYPICAL TANK SYSTEM LAYOUT
NOTE: FIRE SYSTEM TO INCLUDE ALL NECESSARY PERMITS, FIELD HOOKUP, AND FINAL TEST.
NOTE: FIRE SYSTEM ENCLOSURE WILL BE FACTORY-MOUNTED ON LEFT SIDE OF THE HOOD

CAPTIVEAIRE
 8120 Woodmont Avenue, Suite 720, Bethesda, MD 20814
 PHONE: (800) 848-0881 FAX: (910) 275-9311 EMAIL: info@captivaire.com

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6746585
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ARCHITECT OF RECORD
CG
 ARCHITECTURE
 CONSULTANT

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 STATE OF OHIO
 JAMES D. SABINAS
 E-67764
 REGISTERED PROFESSIONAL ENGINEER
James D. Sabinas
 SHEET TITLE

HOOD DRAWING

SHEET NUMBER
MH1.1

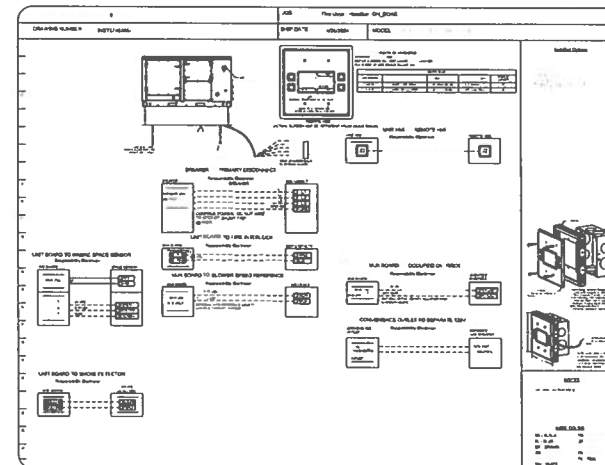
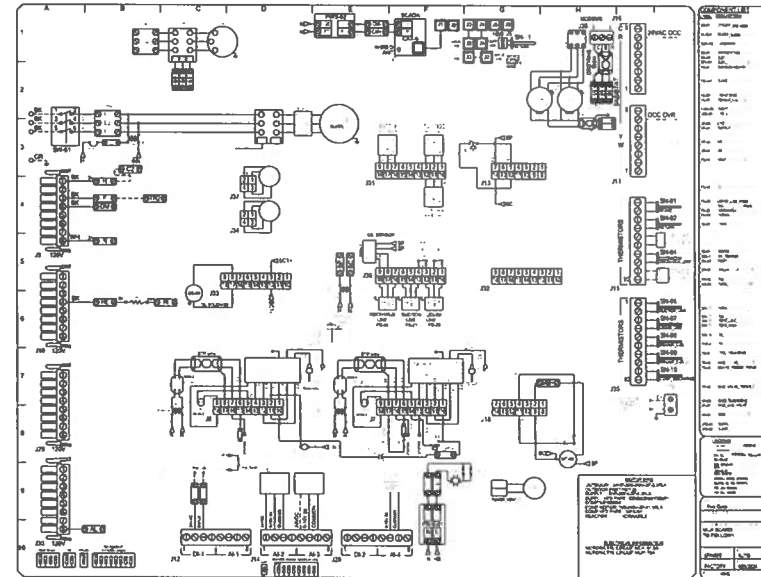
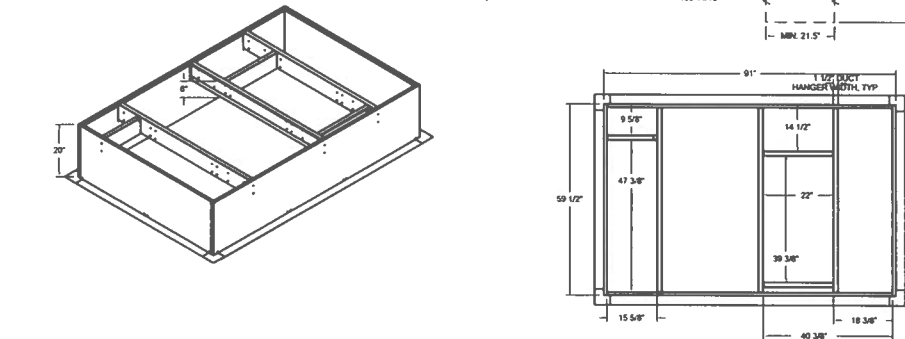
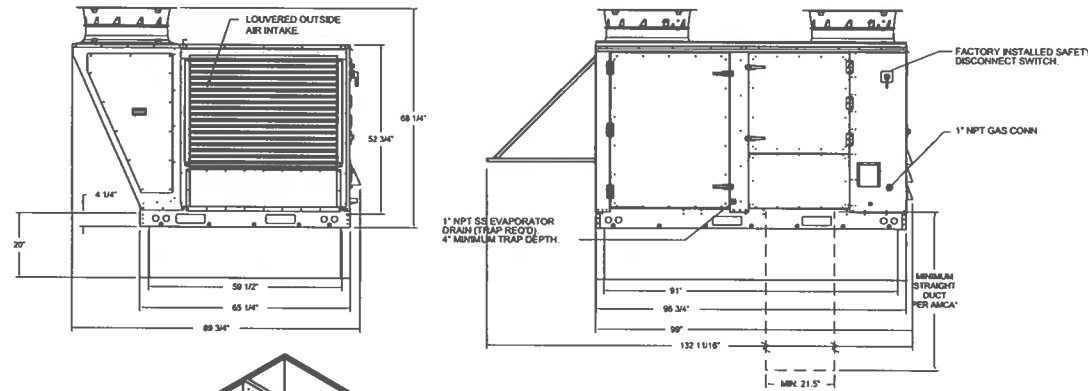
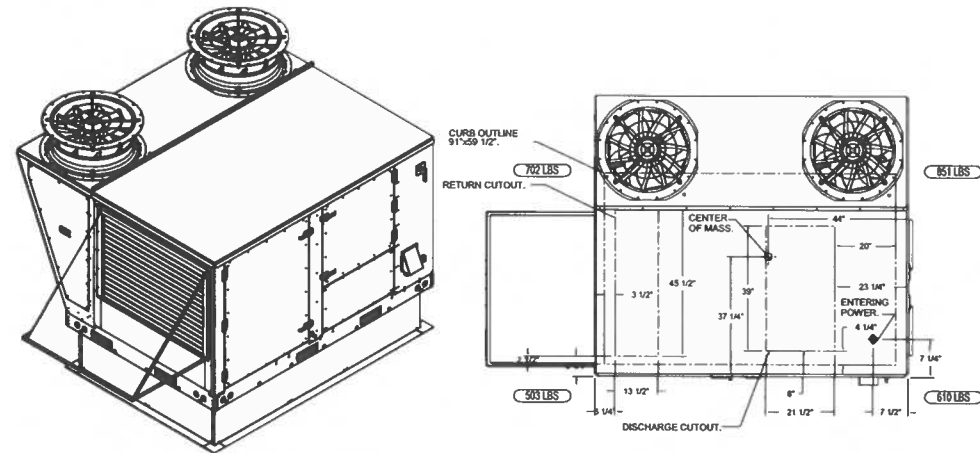
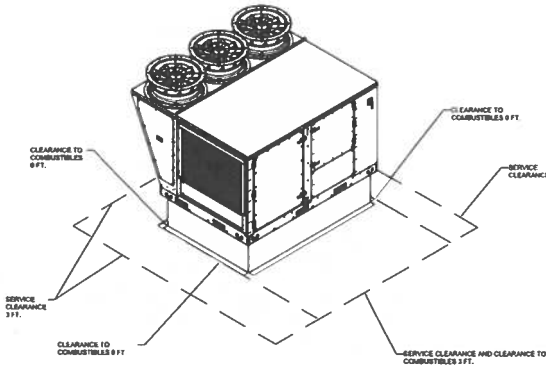
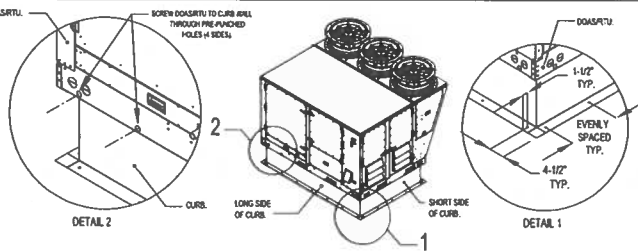
FAN #3 CAS-HVAC3-1.250-18-15T - HEATER (DOAS-1 BOH)
****OUTSIDE AIR UNIT FOR BACK OF HOUSE****

- NOTES:
- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
 - DEPENDS CORNER WEIGHT.
 - ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
 - CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.

*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 21.5" x 39".

TYPICAL DOAS/RTU ROOF MOUNTING INSTALLATION INSTRUCTIONS

- SECURE THE CURB TO THE ROOF FRAMING MEMBERS BY DRILLING 4" DIA HOLES IN THE CURB FLANGES AT LOCATIONS SHOWN IN THE DIAGRAM BELOW. USE 4" DIA 2" THICK PLATED STEEL LAG BOLTS AND ZINC PLATED ANCHORS. SCREW THROUGH THE CURB FLANGES AND INTO THE ROOF FRAMING MEMBERS. A MINIMUM OF (2) LAG BOLTS TO EACH SHORT SIDE IS REQUIRED.
- SECURE THE UNIT BASE TO THE SIDE TRAILS OF THE CURB USING (2) 1/4" x 2" SELF-DRILLING STEEL ZINC PLATED SCREWS. PRE-PUNCHED HOLES HAVE BEEN PROVIDED FOR EACH SCREW LOCATION.



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MUNICIPAL APPROVAL STAMPS

ARCHITECT OF RECORD

FG

ARCHITECTURE

CONSULTANT

FIVE GUYS

FIVE GUYS - NEW STORE
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PROJECT NUMBER A2023.096

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STATE OF OHIO

JAMES D. SABINAS
 E-67764

REGISTERED
 PROFESSIONAL ENGINEER

James O. Sabina

SHEET TITLE

HOOD DRAWING

SHEET NUMBER

MH1.3

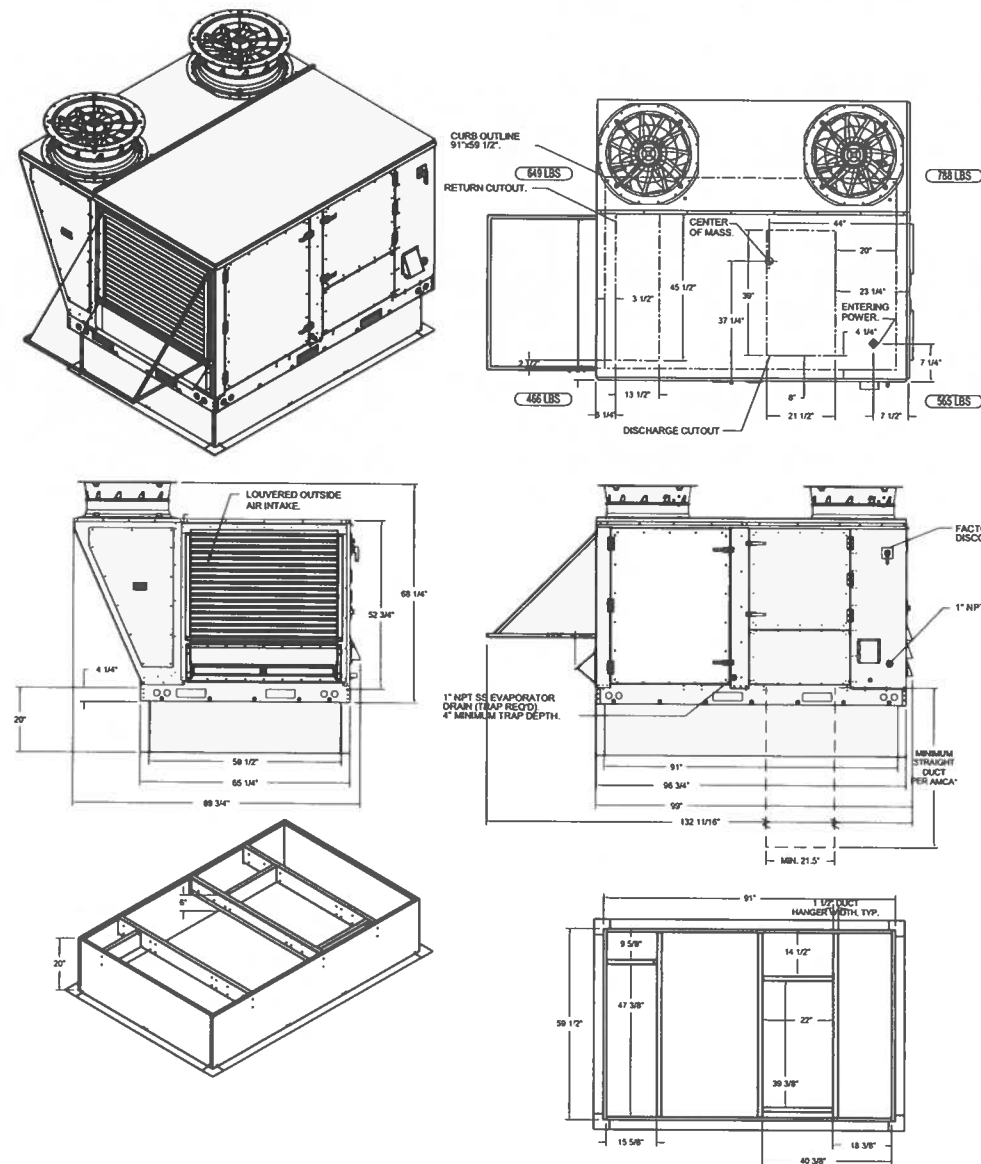
FAN #4 CAS-HVAC3-1,200-24MF-12.5T - HEATER (DOAS-2 FOH)

OUTSIDE AIR UNIT FOR FRONT OF HOUSE

NOTES:

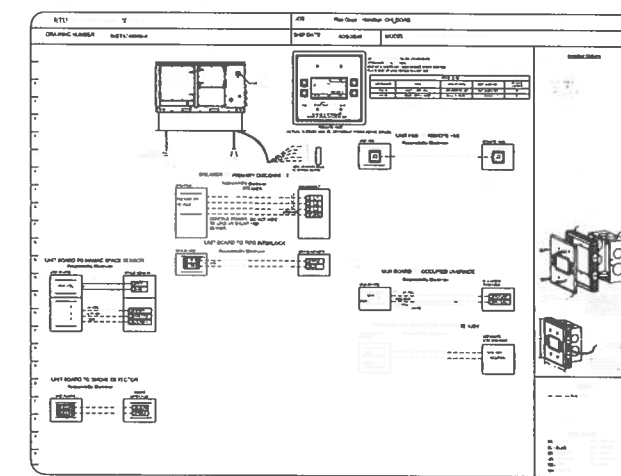
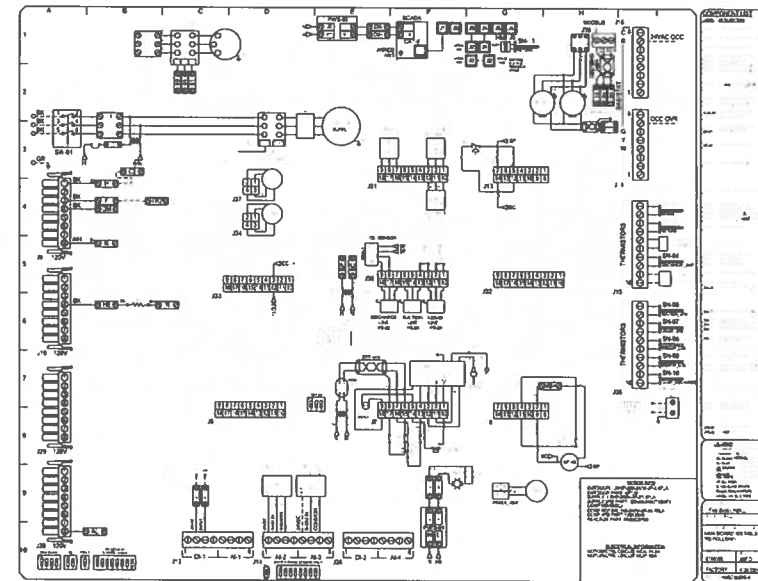
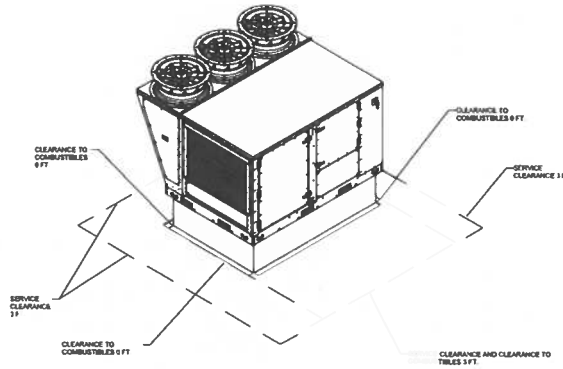
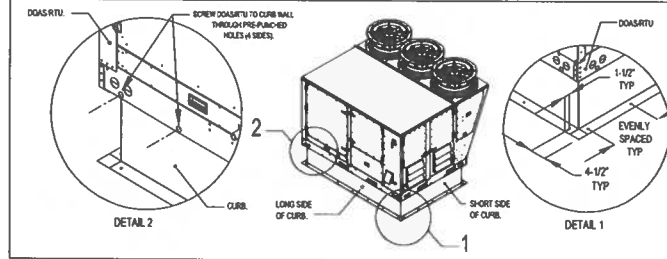
- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
- WEIGHTS CORNER WEIGHT.
- ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
- CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.

*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 21.5" x 39".



TYPICAL DOAS/RTU ROOF MOUNTING INSTALLATION INSTRUCTIONS

- SECURE THE CURB TO THE ROOF FRAMING MEMBERS BY DRILLING 1/4\"/>
- SECURE THE UNIT BASE TO THE SIDE WALLS OF THE CURB USING (4) 1/4\"/>



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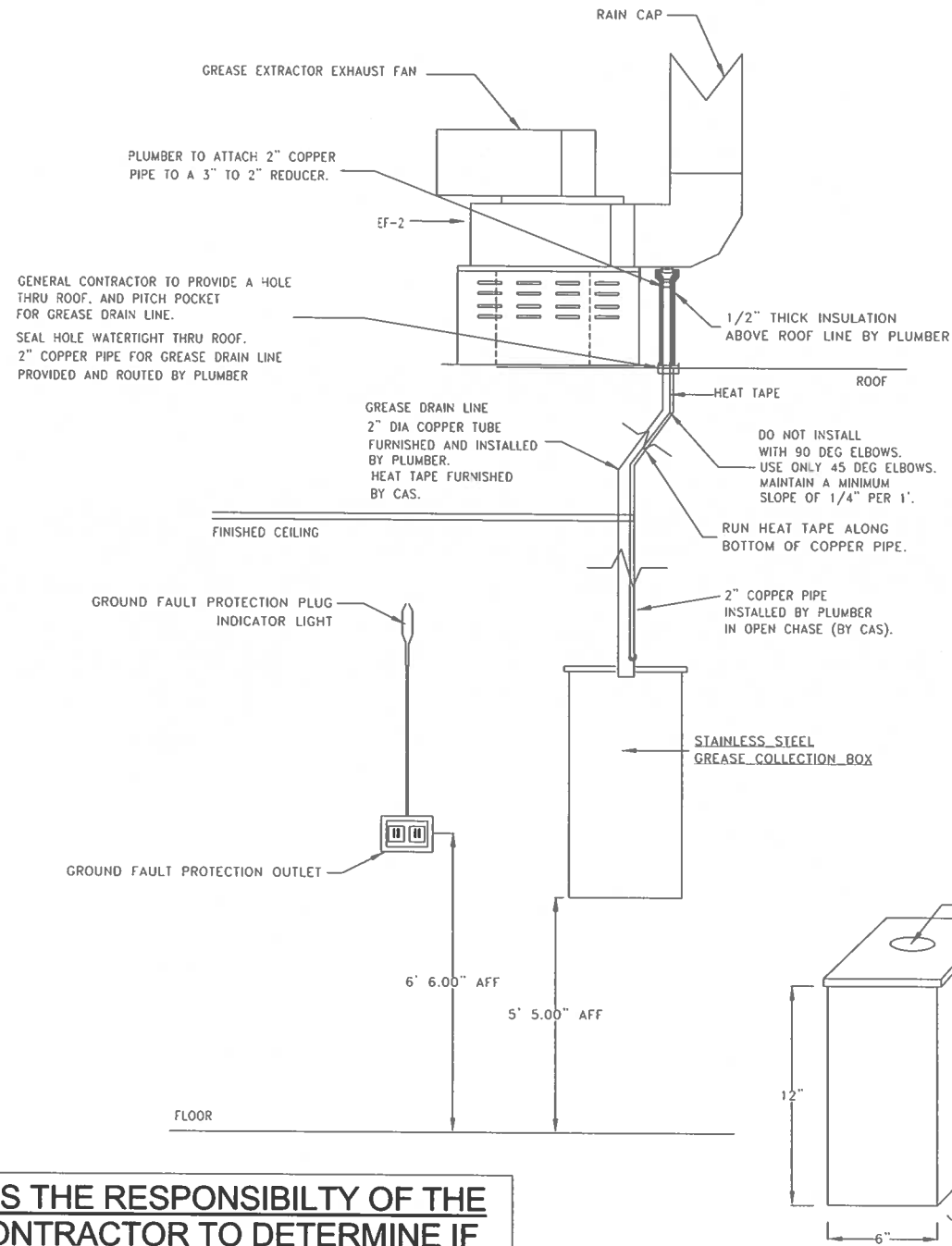
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 JAMES D. SABINAS
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 REGISTERED PROFESSIONAL ENGINEER
James D. Sabinas
 SHEET TITLE

HOOD DRAWING

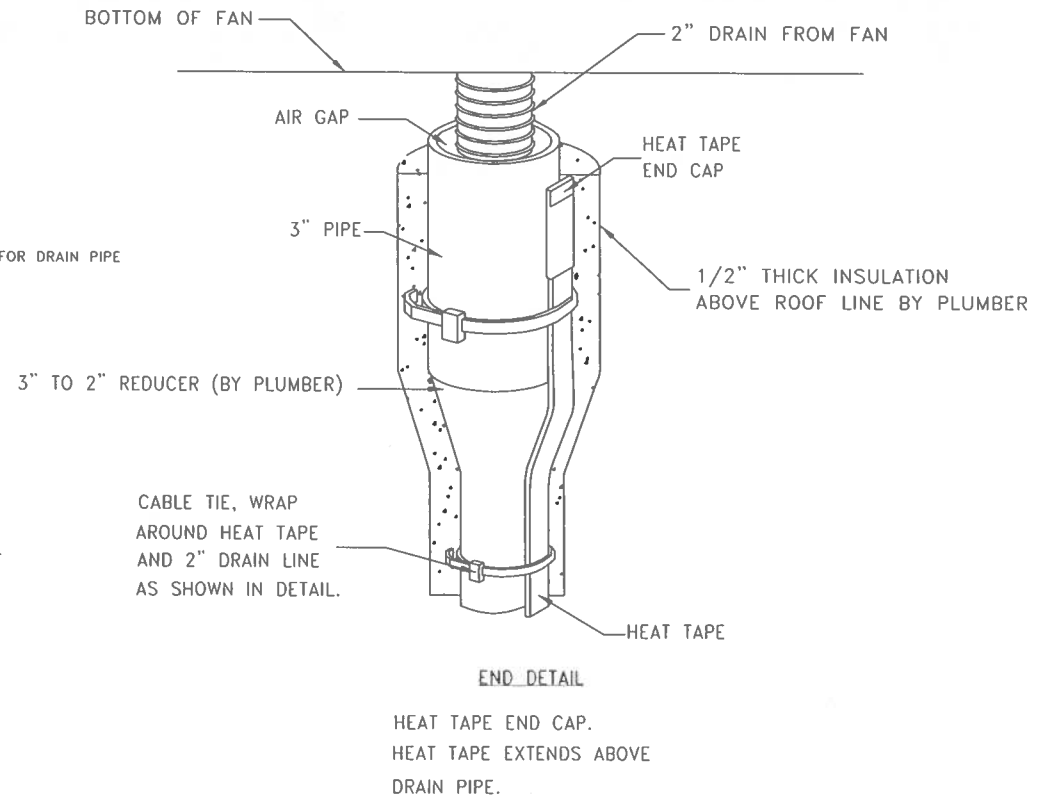
SHEET NUMBER
MH1.4

DRAIN LINE HEATER INSTALLATION DETAIL



IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF THE GREASE DRAIN SYSTEM IS ACCEPTABLE TO LOCAL CODE AUTHORITIES

	INSTALLATION PROCEDURE:	TRADE RESPONSIBLE
1.	THE HEAT TAPE ASSEMBLY IS SHIPPED LOOSE FROM THE EXHAUST FAN.	CAS
2.	THE GENERAL CONTRACTOR IS TO PROVIDE HOLE IN ROOF AND SEAL THE HOLE (SEE DIAGRAM).	GENERAL CONTRACTOR
3.	INSTALL THE COPPER GREASE LINE DRAIN PIPE, SUPPLIED BY THE PLUMBER.	PLUMBER / ELECTRICIAN
4.	REMOVE (AND SAVE) THE END CAP AND GROUND FAULT PLUG. (GIVE PARTS TO ELECTRICIAN)	PLUMBER
5.	ROUTE THE HEAT TAPE ON THE OUTSIDE OF THE COPPER TUBE.	PLUMBER
6.	SECURE HEAT TAPE AND END CAP TO DRAIN USING CABLE TIE AS SHOWN IN END DETAIL.	PLUMBER
7.	INSULATE COPPER DRAIN LINE ABOVE THE ROOF LINE.	PLUMBER
8.	THE ELECTRICIAN IS TO SUPPLY GROUND FAULT PROTECTION OUTLET LOCATED NEAR GREASE COLLECTION BOX (15 AMP, 120 VOLT CIRCUIT) THE POWER SOURCE SHOULD BE A SEPERATE CIRCUIT. THE HEAT TAPE IS TO BE PROTECTED BY G.F.C.I. CIRCUIT BREAKER. THE HEAT TAPE STAYS ON ALL THE TIME, AND IS NOT CONTROLLED BY THE FAN ON-OFF SWITCH.	ELECTRICIAN
9.	PLUMBER TO MOUNT GREASE COLLECTION BOX ON THE WALL IN PREP AREA. GREASE COLLECTION BOX PROVIDED BY CAS.	PLUMBER
10.	ELECTRICIAN TO MAKE FINAL CONNECTION BETWEEN GROUND FAULT PLUG AND HEAT TAPE. GROUND FAULT PLUG PROVIDED BY CAS.	ELECTRICIAN
11.	ELECTRICIAN TO MAKE FINAL CONNECTION BETWEEN END CAP AND HEAT TAPE (ON ROOF). END CAP PROVIDED BY CAS.	ELECTRICIAN



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ARCHITECT OF RECORD

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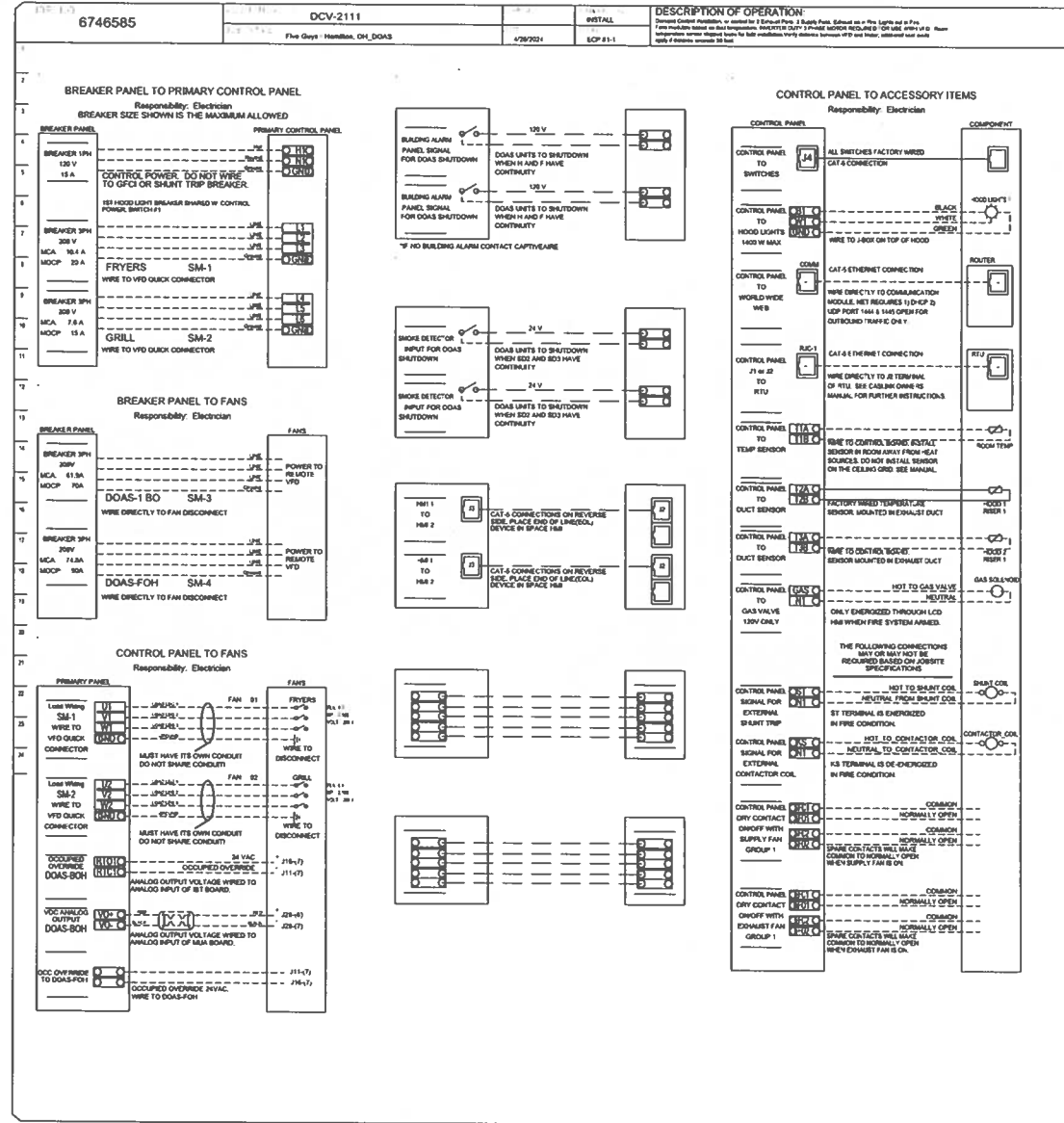
SHEET TITLE

HOOD DRAWING

SHEET NUMBER

MH1.5

ELECTRICAL PACKAGE		SWITCHES		OPTION		FANS CONTROLLED				
NO.	DESCRIPTION	LOCATION	LOCATION	QUANTITY	OPTION	FAN TAG	TYPE	HP	VOLT	FLA
1	DCV-2111	UTILITY CABINET LEFT	UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS DCV	FRYERS	EXHAUST	3	2,000	208 8.3
			HOOD # 1	1 FAN		GRILL	EXHAUST	3	2,000	208 8.1
						DOAS-1 BOH	SUPPLY	3	2,000	208 8.3

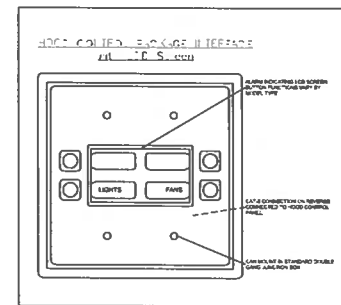
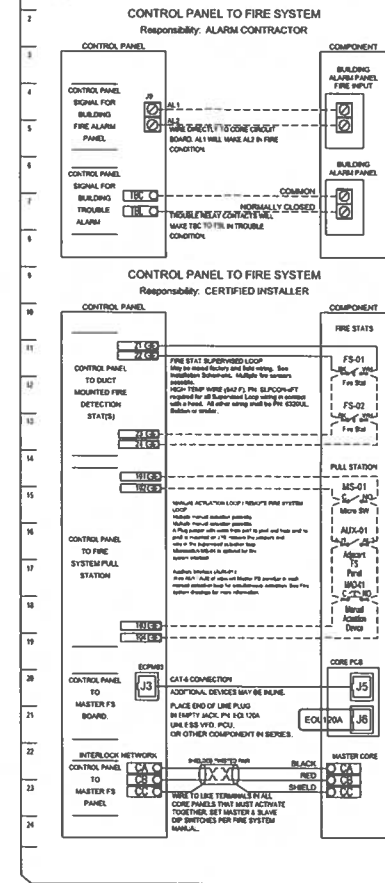


- SEQUENCE OF OPERATION - APPLIANCE INTERLOCK**
- IN AUTO POSITION, FANS WILL TURN ON WHEN TEMPERATURE IS ABOVE 85 DEGREES AND WILL SHUT DOWN WHEN TEMPERATURE COOLS BELOW 85 DEGREES.
 - IN ON POSITION, FANS WILL REMAIN ON CONSTANTLY
 - IN FIRE CONDITION, EXHAUST WILL TURN ON OR REMAIN ON. MAKEUP AIR WILL SHUT DOWN AUTOMATICALLY.

SCOPE OF WORK

HOOD(S): PROVIDED BY OWNER. INSTALLED BY GC.
 FIRE SYSTEM(S): PROVIDED & INSTALLED BY OWNER.
 EXHAUST FAN(S): PROVIDED BY OWNER. INSTALLED BY GC.
 OUTSIDE AIR UNIT(S): PROVIDED BY OWNER. INSTALLED BY GC.
 ELECTRICAL CONTROL(S): PROVIDED BY OWNER. INSTALLED BY GC.
 GC IS RESPONSIBLE FOR COMPLETE START-UP OF EXHAUST FANS AND MAKEUP AIR UNIT PER CAPTIVEAIRE OPERATION & INSTALLATION MANUAL.

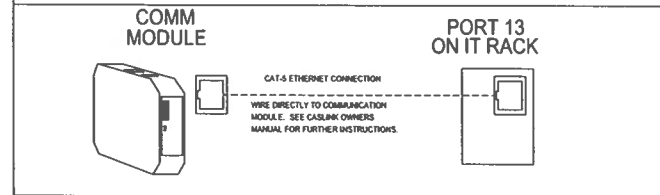
TANK CONNECTIONS



The Room Temperature sensor is a 10K Ohm Thermistor. The sensor provides constant room temperature to the controller. It should be installed on a wall somewhere in the space but not directly under the hood or close to an appliance so that the reading is not affected by heat.

Typically a system will have one room temperature sensor. However, systems configured with 2 fan zones have the option to be ordered with 2 room temperature sensors, one for each zone. They should be mounted in the space accordingly.

CONTROL PANEL TO WORLD WIDE WEB



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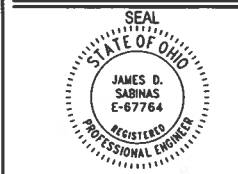
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PROFESSIONAL ENGINEER
James D. Sabinas
SHEET TITLE

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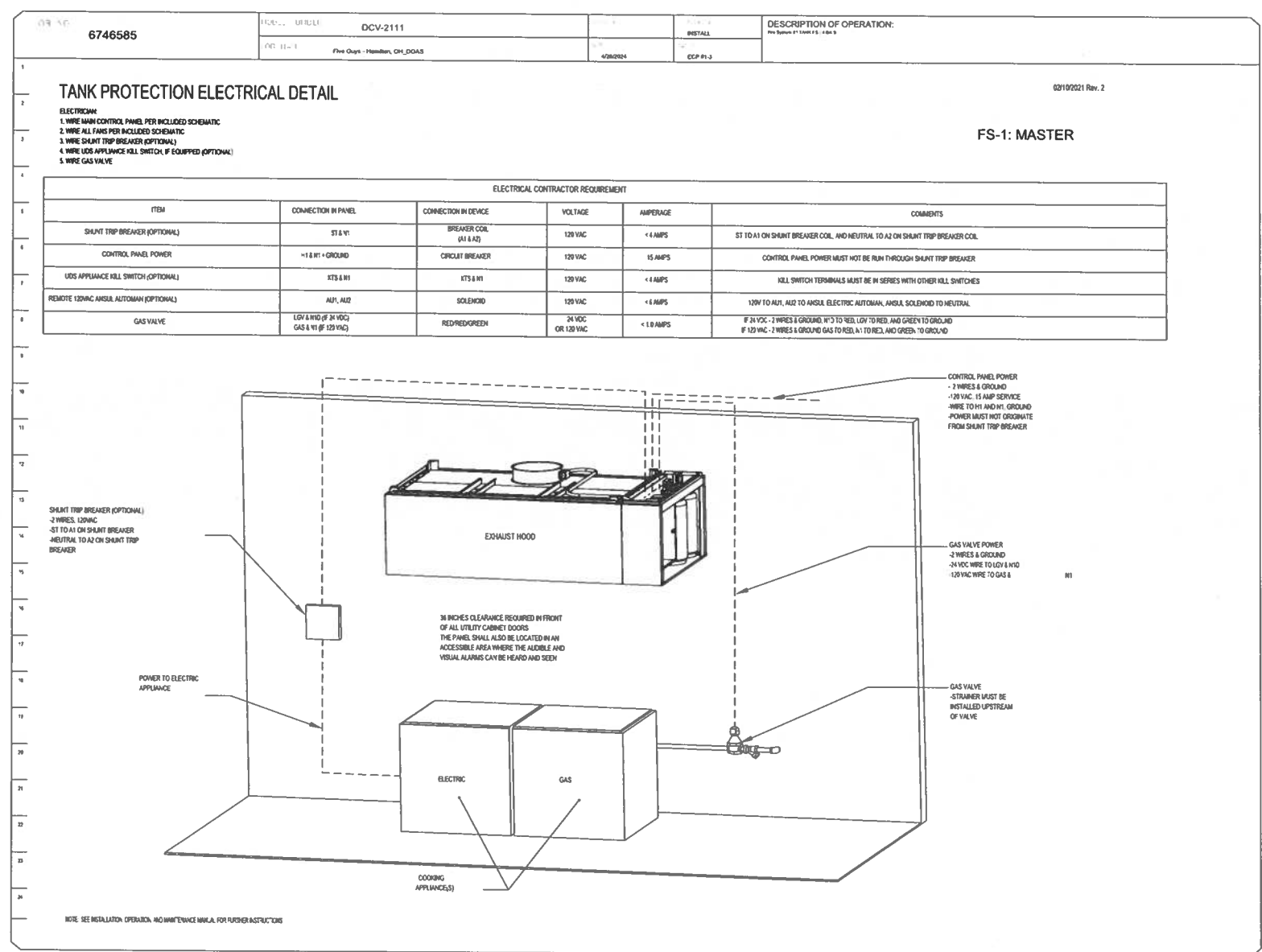
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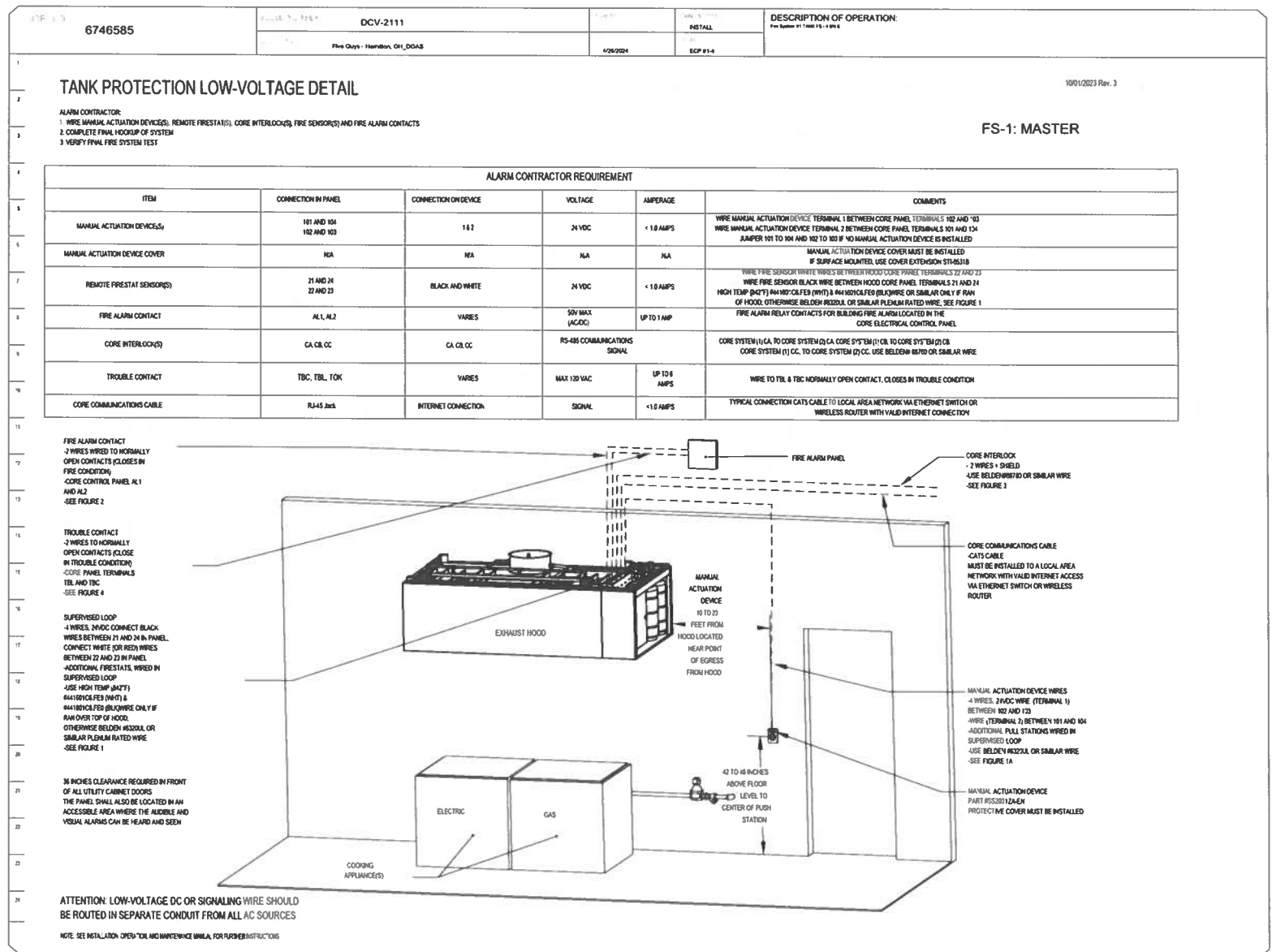
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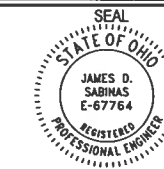
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James D. Sabinas

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HOOD DRAWING

SHEET NUMBER
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