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 RESPONSIBILIES 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 CUTOUT 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 NAILER 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 I HOODS, WHICH CONFORMS TO NFPA–96. SEE ADDITIONAL SPECIFICATIONS ON SHEET MH1–01 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 TRAPEZE 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 HVAC SUB–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 CENTER–LINE 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:
1. SUMMARY OF MAIN SUPPLY, RETURN AND EXHAUST DUCT PILOT TUBE TRANSVERSES AND FAN SETTINGS.
2. AIR QUANTITIES AT EACH SUPPLY, RETURN, RELIEF AND EXHAUST AIR HANDLING DEVICE.
3. AIR PRESSURE READINGS ENTERING AND LEAVING EACH SUPPLY FAN AND EXHAUST FAN.
4. MOTOR CURRENT AND VOLTAGE READINGS AT EACH EQUIPMENT MOTOR.
5. TEST RESULTS SHALL BE RECORDED ON STANDARD FORMS CONFORMING TO AABC 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.

E. 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.

F. 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.

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ISSUE

	PERMIT SET	11/24/21

MECHANICAL SPECIFICATIONS

PROJECT #	21000C
DRAWN BY	TBA
CHECKED BY	TBA
FILE NAME	
PLOT DATE	11/24/2021

M1.0

GREASE EXHAUST DUCTWORK

1. DUCT SCHEDULE:
   a. CONCEALED DUCTWORK.
      1) DUCT SHALL BE A MINIMUM THICKNESS OF 0.060" BLACK STEEL WITH LIQUID–TIGHT WELDED JOINTS

      2) CAPTIVE AIRE SYSTEMS MODEL "DW" PRE–FABRICATED ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK.

   b. EXPOSED DUCTWORK.
      1) DUCT SHALL BE 18 GAUGE MINIMUM STAINLESS STEEL
      2) CAPTIVE AIRE SYSTEMS MODEL "DW" PRE–FABRICATED ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK.

   c. DUCTWORK WITHIN 18 INCHES OF COMBUSTIBLE MATERIALS.
      1) PROVIDE UL 2221 OR UL 103 HT LISTED DOUBLE WALL GREASE DUCT EQUAL TO CAPTIVE AIRE SYSTEMS MODEL "DW–2R, 2R TYPE HT, 3R OR 3Z" ROUND 20 GAUGE 430 STAINLESS STEEL INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

2. INSTALL PER LOCAL CODE AND NFPA 96 REQUIREMENTS. MAINTAIN 18" CLEARANCE FROM DUCT TO COMBUSTIBLES WHERE POSSIBLE.

3. PREVENTION OF GREASE ACCUMULATION IN GREASE DUCTS. DUCT SYSTEMS SERVING A TYPE I HOOD SHALL BE CONSTRUCTED AND INSTALLED SO THAT GREASE CANNOT COLLECT IN ANY PORTION THEREOF, AND THE SYSTEM SHALL SLOPE NOT LESS THAN ONE–FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2 PERCENT SLOPE) TOWARD THE HOOD OR TOWARD AN APPROVED GREASE RESERVOIR. WHERE HORIZONTAL DUCTS EXCEED 75 FEET (22860 MM) IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN ONE UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.3 PERCENT SLOPE).

4. GREASE DUCT CLEANOUTS AND OTHER OPENINGS. GREASE DUCT SYSTEMS SHALL NOT HAVE OPENINGS THEREIN OTHER THAN THOSE REQUIRED FOR PROPER OPERATION AND MAINTENANCE OF THE SYSTEM. ANY PORTION OF SUCH SYSTEM HAVING SECTIONS NOT PROVIDED WITH ACCESS FROM THE DUCT ENTRY OR DISCHARGE SHALL BE PROVIDED WITH CLEANOUT OPENINGS. CLEANOUT OPENINGS SHALL BE EQUIPPED WITH TIGHT–FITTING DOORS CONSTRUCTED OF STEEL HAVING A THICKNESS NOT LESS THAN THAT REQUIRED FOR THE DUCT. DOORS SHALL BE EQUIPPED WITH A SUBSTANTIAL METHOD OF LATCHING, SUFFICIENT TO HOLD THE DOOR TIGHTLY CLOSED. DOOR ASSEMBLIES, INCLUDING ANY FRAMES AND GASKETING, SHALL BE APPROVED FOR THE PURPOSE, AND SHALL NOT HAVE FASTENERS THAT PENETRATE THE DUCT. LISTED AND LABELED ACCESS DOOR ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE TERMS OF THE LISTING.

5. PERSONNEL ENTRY. WHERE DUCTWORK IS LARGE ENOUGH TO ALLOW ENTRY OF PERSONNEL, NOT LESS THAN ONE APPROVED OR LISTED OPENING HAVING DIMENSIONS NOT LESS THAN 22 INCHES BY 20 INCHES (559 MM BY 508 MM) SHALL BE PROVIDED IN THE HORIZONTAL SECTIONS, AND IN THE TOP OF VERTICAL RISERS. WHERE SUCH ENTRY IS PROVIDED, THE DUCT AND ITS SUPPORTS SHALL BE CAPABLE OF SUPPORTING THE ADDITIONAL LOAD, AND THE CLEANOUTS ARE NOT REQUIRED.

6. CLEANOUTS SERVING IN–LINE FANS. A CLEANOUT SHALL BE PROVIDED FOR BOTH THE INLET SIDE AND OUTLET SIDE OF AN IN–LINE FAN EXCEPT WHERE A DUCT DOES NOT CONNECT TO THE FAN. SUCH CLEANOUTS SHALL BE LOCATED WITHIN 3 FEET (914 MM) OF THE FAN DUCT CONNECTIONS.

7. GREASE DUCT HORIZONTAL CLEANOUTS. CLEANOUTS LOCATED ON HORIZONTAL SECTIONS OF DUCTS SHALL BE SPACED NOT MORE THAN 10 FEET (6096 MM) APART. THE CLEANOUTS SHALL BE LOCATED ON THE SIDE OF THE DUCT WITH THE OPENING NOT LESS THAN 11/ 2 INCHES (38 MM) ABOVE THE BOTTOM OF THE DUCT, AND NOT LESS THAN 1 INCH (25 MM) BELOW THE TOP OF THE DUCT. THE OPENING MINIMUM DIMENSIONS SHALL BE 12 INCHES (305 MM) ON EACH SIDE. WHERE THE DIMENSIONS OF THE SIDE OF THE DUCT PROHIBIT THE CLEANOUT INSTALLATION PRESCRIBED HEREIN, THE OPENINGS SHALL BE ON THE TOP OF THE DUCT OR THE BOTTOM OF THE DUCT. WHERE LOCATED ON THE TOP OF THE DUCT, THE OPENING EDGES SHALL BE A MINIMUM OF 1INCH (25 MM) FROM THE EDGES OF THE DUCT. WHERE LOCATED IN THE BOTTOM OF THE DUCT, CLEANOUT OPENINGS SHALL BE DESIGNED TO PROVIDE INTERNAL DAMMING AROUND THE OPENING, SHALL BE PROVIDED WITH GASKETING TO PRECLUDE GREASE LEAKAGE, SHALL PROVIDE FOR DRAINAGE OF GREASE DOWN THE DUCT AROUND THE DAM AND SHALL BE APPROVED FOR THE APPLICATION. WHERE THE DIMENSIONS OF THE SIDES, TOP OR BOTTOM OF THE DUCT PRECLUDE THE INSTALLATION OF THE PRESCRIBED MINIMUM–SIZE CLEANOUT OPENING, THE CLEANOUT SHALL BE LOCATED ON THE DUCT FACE THAT AFFORDS THE LARGEST OPENING DIMENSION AND SHALL BE INSTALLED WITH THE OPENING EDGES AT THE PRESCRIBED DISTANCES FROM THE DUCT EDGES OUTLINED ABOVE.

8. GREASE DUCT ENCLOSURES. A GREASE DUCT SERVING A TYPE I HOOD THAT PENETRATES A CEILING, WALL OR FLOOR SHALL BE ENCLOSED FROM THE POINT OF PENETRATION TO THE OUTLET TERMINAL. A DUCT SHALL PENETRATE EXTERIOR WALLS ONLY AT LOCATIONS WHERE UNPROTECTED OPENINGS ARE PERMITTED BY THE INTERNATIONAL BUILDING CODE. THE DUCT ENCLOSURE SHALL SERVE A SINGLE GREASE DUCT AND SHALL NOT CONTAIN OTHER DUCTS, PIPING OR WIRING SYSTEMS. DUCT ENCLOSURES SHALL BE EITHER FIELD–APPLIED OR FACTORY–BUILT. DUCT ENCLOSURES SHALL HAVE A FIRE–RESISTANCE RATING NOT LESS THAN THAT OFTHE FLOOR ASSEMBLY PENETRATED, BUT NEED NOT EXCEED 2 HOURS.

   a. FIELD– APPLIED GREASE DUCT ENCLOSURE
      1) ENCLOSURE SHALL BE LISTED AND LABELED MATERIAL, SYSTEM, PRODUCT OR METHOD OF CONSTRUCTION SPECIFICALLY EVALUATED FOR SUCH PURPOSE IN ACCORDANCE WITH ASTM E 2336. THE SURFACE OF THE DUCT SHALL BE CONTINUOUSLY COVERED ON ALL SIDES FROM THE POINT AT WHICH THE DUCT ORIGINATES TO THE OUTLET TERMINAL. DUCT PENETRATIONS SHALL BE PROTECTED WITH A THROUGH–PENETRATION FIRESTOP SYSTEM CLASSIFIED IN ACCORDANCE WITH ASTM E 814 OR UL 1479 AND HAVING AN "F" AND "T" RATING EQUAL TO THE FIRE–RESISTANCE RATING OF THE ASSEMBLY BEING PENETRATED. SUCH SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. EXPOSED DUCT WRAP SYSTEMS SHALL BE PROTECTED WHERE SUBJECT TO PHYSICAL DAMAGE.

   b. FACTORY–BUILT GREASE DUCT ENCLOSURE ASSEMBLIES
      1) FACTORY–BUILT GREASE DUCT ASSEMBLIES INCORPORATING INTEGRAL ENCLOSURE MATERIALS SHALL BE LISTED AND LABELED FOR USE AS COMMERCIAL KITCHEN GREASE DUCT ASSEMBLIES IN ACCORDANCE WITH UL 2221. DUCT PENETRATIONS SHALL BE PROTECTED WITH A THROUGH–PENETRATION FIRESTOP SYSTEM CLASSIFIED IN ACCORDANCE WITH ASTM E 814 OR UL 1479 AND HAVING AN "F" AND "T" RATING EQUAL TO THE FIRE–RESISTANCE RATING OF THE ASSEMBLY BEING PENETRATED. SUCH ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

9. A DUCT ENCLOSURE SHALL NOT BE REQUIRED FOR A GREASE DUCT THAT PENETRATES ONLY A NONFIRE–RESISTANCE–RATED ROOF/CEILING ASSEMBLY.

10. WHERE CLEANOUT OPENINGS ARE LOCATED IN DUCTS WITHIN A FIRE–RESISTANCE–RATED ENCLOSURE, ACCESS OPENINGS SHALL BE PROVIDED IN THE ENCLOSURE AT EACH CLEANOUT POINT. ACCESS OPENINGS SHALL BE EQUIPPED WITH TIGHT–FITTING SLIDING OR HINGED DOORS THAT ARE EQUAL IN FIRE–RESISTIVE PROTECTION TO THAT OF THE SHAFT OR ENCLOSURE. AN APPROVED SIGN SHALL BE PLACED ON ACCESS OPENING PANELS WITH WORDING AS FOLLOWS: "ACCESS PANEL. DO NOT OBSTRUCT."

KITCHEN EXHAUST HOODS

   a. HOOD CONTROL PANEL SHALL BE CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME.

      1) AUTOMATIC: THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. FANS EQUIPPED WITH A VFD MOTOR SHALL MODULATE WITHIN A USER DEFINED RANGE BASED ON TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE IS DESCRIBED AS 'STATIC', FANS WILL RUN AT SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE–UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.2.8. EXHAUST AND MAKE–AIR AIR FANS SHALL BE INTERLOCKED TO OPERATE WITH EACH OTHER DURING HOOD OPERATION.

      2) MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM HMI.

      3) SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN THE FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SPACE IS NOT BEING OCCUPIED.

      4) OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD–WIRED INTERLOCK

   b. FIRE SUPPRESSION SYSTEM
      1) AUTOMATIC ANSUL SYSTEM: HEAT SENSITIVE FUSIBLE LINK DETECTORS WILL ACTIVATE THE SYSTEM.
      – APPLIANCE ENERGY SOURCES (GAS) WILL BE AUTOMATICALLY SHUT–OFF.
      – THE FIRE SUPPRESSION AGENT WILL BE DISCHARGED INTO THE PLENUM AND DUCT AND ONTO COOKING APPLIANCES.

      – THE AGENT AND THE HOT GREASE MIX TO FORM A FOAM. THIS TEMPORARILY SEALS COMBUSTION VAPORS, HELPING IN INHIBIT RE–IGNITION.

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MECHANICAL SPECIFICATIONS

PROJECT #	21000C
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FILE NAME	
PLOT DATE	11/24/2021

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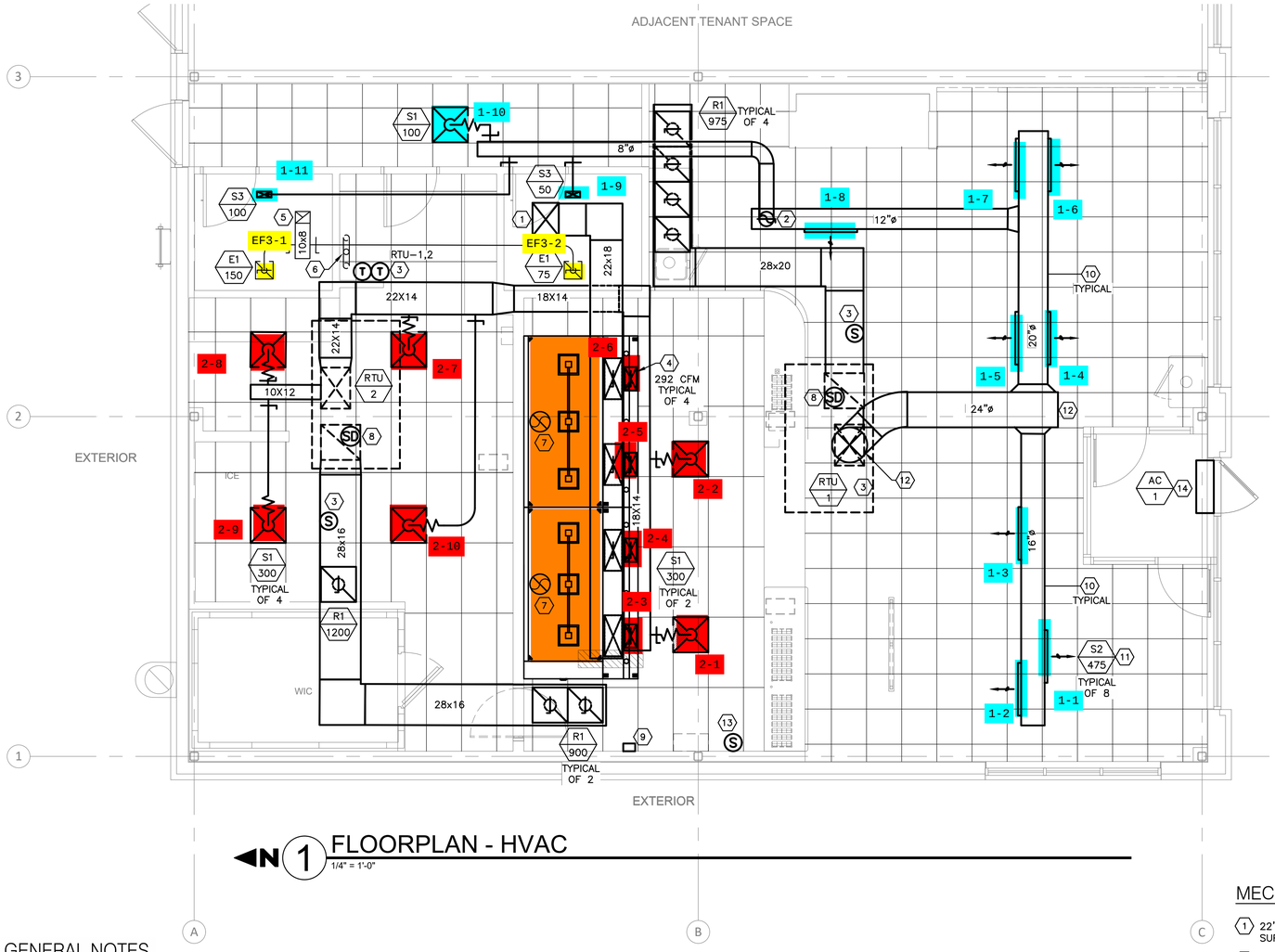


FLOORPLAN - HVAC

1/4" = 1'-0"

GENERAL NOTES

1. DUCT/PIPING LAYOUT IS SCHEMATIC, EXACT LOCATION OF DUCT/PIPING AND EQUIPMENT SHALL BE COORDINATED WITH THE BUILDING STRUCTURE, EQUIPMENT, 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.
2. ALL WORK SHALL COMPLY WITH LOCAL MECHANICAL CODE AND ALL OTHER APPLICABLE CODES.
3. DUCT SIZES SHOWN ARE NET INSIDE CLEAR DIMENSIONS.
4. ALL SUPPLY DUCTWORK ABOVE CEILING SPACES SHALL BE EXTERNALLY INSULATED WITH 1-1/2" THICK FIBERGLASS INSULATION.
5. FLEXIBLE RUNOUTS TO AIR DEVICES SHALL BE NO MORE THAN 5'-0" IN LENGTH AND SHALL BE INSULATED.
6. MANUAL DAMPERS SHALL BE PROVIDED AT ALL BRANCH TAPS FOR BALANCING.
7. 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.
8. 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.
9. SEE ARCHITECTURAL DRAWING A1.7 FOR FINISH SPECIFICATIONS.
10. ALL KITCHEN HOOD EXHAUST WORK SHALL BE 14 GAUGE BLACK IRON OR 18 GAUGE 303 STAINLESS STEEL WITH CONTINUOUS WELDED SEAMS, OR CAPTIVEAIRE NON-WELDED FACTORY GREASE DUCT SYSTEM WHICH IS ETL LISTED TO STANDARD UL-1978 AND CAN/ULC-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.
11. 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.
12. THE TOP OF ALL DIFFUSERS SHALL BE INSULATED TO PREVENT CONDENSATION AND RUST TO FORM.
13. FOR BRANCH DUCT SIZE AND DIFFUSER NECK SIZE SEE AIR DEVICE RUNOUT SCHEDULE ON SHEET M4.0

GENERAL NOTE:
1. PRIOR TO THE USE OR CONCEALMENT OF ANY PORTION OF A GREASE DUCT SYSTEM A LEAKAGE TEST SHALL BE PERFORMED ON ALL PORTIONS OF THE WELDED DUCT.

DUCT DETECTORS SHALL COMPLY WITH OHIO MECHANICAL CODE 606 AND SHALL BE TIRED INTO THE FIRE ALARM SYSTEM.

SEQUENCE OF OPERATIONS

ROOFTOP UNITS:

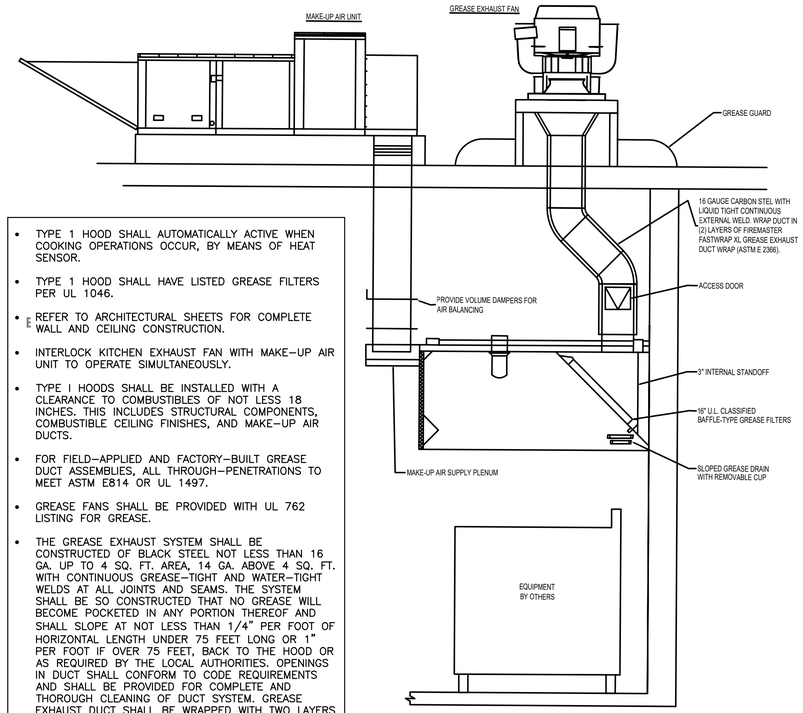
1. THERMOSTATS SHALL CONTROL OCCUPIED/UNOCCUPIED MODE OF OPERATION FOR THE ENTIRE SYSTEM IN ACCORDANCE WITH PROGRAMMED TIMES AND SET POINTS.
2. ON A CALL FOR COOLING FROM THE THERMOSTAT, SYSTEM SHALL ENERGIZE (MECHANICAL COOLING) IN STAGES. WHEN OUTDOOR ENTHALPY, AS SENSED BY UNIT MOUNTED CONTROLS, IS 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.
3. ON A CALL FOR HEATING, GAS FIRED HEAT EXCHANGERS SHALL BE ENERGIZED AND SHALL RUN UNTIL SET-POINT IS SATISFIED.
4. 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.
5. 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.
6. REMOTE TEMPERATURE SENSORS SHALL BE USED SO THAT THERMOSTATS CAN BE IN PREP ROOM AREA, AWAY FROM THE PUBLIC.

EXHAUST FANS:

1. 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:

1. ROOFTOP UNIT SUPPLY FAN SHALL BE DE-ENERGIZED UPON DETECTION OF SMOKE IN DUCT SMOKE DETECTOR.



TYPICAL KITCHEN HOOD TYPE1 SCHEMATIC

NO SCALE

- TYPE 1 HOOD SHALL AUTOMATICALLY ACTIVE WHEN COOKING OPERATIONS OCCUR, BY MEANS OF HEAT SENSOR.
- TYPE 1 HOOD SHALL HAVE LISTED GREASE FILTERS PER UL 1046.
- REFER TO ARCHITECTURAL SHEETS FOR COMPLETE WALL AND CEILING CONSTRUCTION.
- INTERLOCK KITCHEN EXHAUST FAN WITH MAKE-UP AIR UNIT TO OPERATE SIMULTANEOUSLY.
- TYPE I HOODS SHALL BE INSTALLED WITH A CLEARANCE TO COMBUSTIBLES OF NOT LESS 18 INCHES. THIS INCLUDES STRUCTURAL COMPONENTS, COMBUSTIBLE CEILING FINISHES, AND MAKE-UP AIR DUCTS.
- FOR FIELD-APPLIED AND FACTORY-BUILT GREASE DUCT ASSEMBLIES, ALL THROUGH-PENETRATIONS TO MEET ASTM E814 OR UL 1497.
- GREASE FANS SHALL BE PROVIDED WITH UL 762 LISTING FOR GREASE.
- THE GREASE EXHAUST SYSTEM SHALL BE CONSTRUCTED OF BLACK STEEL NOT LESS THAN 16 GA. UP TO 4 SQ. FT. AREA, 14 GA. ABOVE 4 SQ. FT. WITH CONTINUOUS GREASE-TIGHT AND WATER-TIGHT WELDS AT ALL JOINTS AND SEAMS. THE SYSTEM SHALL BE SO CONSTRUCTED THAT NO GREASE WILL BECOME POCKETED IN ANY PORTION THEREOF AND SHALL SLOPE AT NOT LESS THAN 1/4" PER FOOT OF HORIZONTAL LENGTH UNDER 75 FEET LONG OR 1" PER FOOT IF OVER 75 FEET, BACK TO THE HOOD OR AS REQUIRED BY THE LOCAL AUTHORITIES. OPENINGS IN DUCT SHALL CONFORM TO CODE REQUIREMENTS AND SHALL BE PROVIDED FOR COMPLETE AND THOROUGH CLEANING OF DUCT SYSTEM. GREASE EXHAUST DUCT SHALL BE WRAPPED WITH TWO LAYERS OF 1-1/2" 3M FIRE BARRIER DUCT WRAP 615+ (ASTM E OR EQUALENT GREASE DUCT WRAP. INSTALL WRAP PER MANUFACTURER'S INSTRUCTIONS. PROVIDE THE "PENETRATOR" GREASE DUCT CLEAN-OUT ACCESS DOORS MANUFACTURED BY FLAME GARD, INC. (OR EQUIVALENT) AT EVERY CHANGE OF DIRECTION IN THE DUCT, AT EACH FLOOR, AND/OR EVERY 10 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT.
- ANY FIELD APPLIED DUCT WRAP FOR GREASE DUCT MUST BE ONLY ASTM E2336 LISTED. PROVIDE A COMPLETED AND SEALED SPECIAL INSPECTIONS CERTIFICATE FOR INSTALLATION FOR GREASE DUCT WRAP IF USED.

MECHANICAL KEYED NOTES

1. 22"x18" DUCT DOWN FROM MAU. PROVIDE (4) 24"x10" DUCT CONNECTIONS DOWN TO SUPPLY PLENUM AT HOOD. SEE CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFO.
2. DUCT UP THROUGH ACOUSTIC CEILING GRID AND OVER TO SUPPLY GRILLE AS SHOWN.
3. REMOTE TEMPERATURE SENSOR MOUNTED IN RETURN DUCT. REMOTE SENSOR TO COMMUNICATE WITH THERMOSTAT LOCATED IN PREP ROOM. NEW THERMOSTAT(S) TO BE HONEYWELL MODEL TH8110. VERIFY THERMOSTAT LOCATIONS WITH OWNER.
4. PROVIDE 16"x8" SUPPLY DUCT RUN OUT TO SUPPLY PLENUM AT KITCHEN HOOD. PROVIDE WITH VOLUME DAMPER AS SHOWN AND BALANCE TO 292 CFM. SEE CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION. TYPICAL OF 4.
5. 10"x8" EXHAUST DUCT UP TO EF-3 ON ROOF.
6. 4" PVC/CPVC INTAKE AND 4" PVC/CPVC EXHAUST FROM GAS WATER HEATER UP TO ROOF. COMBINE RIGHT BEFORE ROOF PENETRATION WITH CONCENTRIC VENT KIT. WATER HEATER PROVIDED AND INSTALLED BY OTHERS.
7. 14"ø GREASE EXHAUST DUCT UP TO EXHAUST FAN ON ROOF. SEE ROOF PLAN FOR ADDITIONAL DETAILS. TRANSITION DUCTWORK AS NECESSARY TO AVOID OBSTRUCTIONS.
8. 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 IN PREP ROOM. VERIFY EXACT LOCATION IN FIELD WITH OWNER REPRESENTATIVE.
9. ANSUL MANUAL PULL STATION. SEE SHEET A2-11 FOR EXACT LOCATION.
10. EXPOSED SINGLE WALL DUCTWORK. SEE DETAIL 5/M3-01 FOR ADDITIONAL INFORMATION.
11. BALANCE DAMPER WITHIN DIFFUSER. TYPICAL OF ALL "S2" DIFFUSERS.
12. 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.
13. INSTALL ROOM TEMPERATURE SENSOR (PROVIDED BY OTHERS) FOR KITCHEN HOOD. VERIFY EXACT MOUNTING HEIGHT IN FIELD.
14. PROVIDE AIR CURTAIN, (AC-1), MARS MODEL LPV236-1EEI-OB, (208V/3ø), 10 kW ELECTRIC HEAT, ABOVE ENTRY DOORS. THIS CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS FOR A COMPLETE FUNCTIONING SYSTEM, INCLUDING BUT NOT LIMITED TO: WALL MOUNTING BRACKET, ADJUSTABLE DISCHARGE VANES, AND DOOR MICRO SWITCHES WITH MAGNETIC MOTOR CONTROLLERS. COLOR TO BE OBSIDIAN BLACK.

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
S1 / 100	AIR DEVICE # / CFM — S - SUPPLY, R - RETURN, E - EXHAUST

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MECHANICAL PLAN

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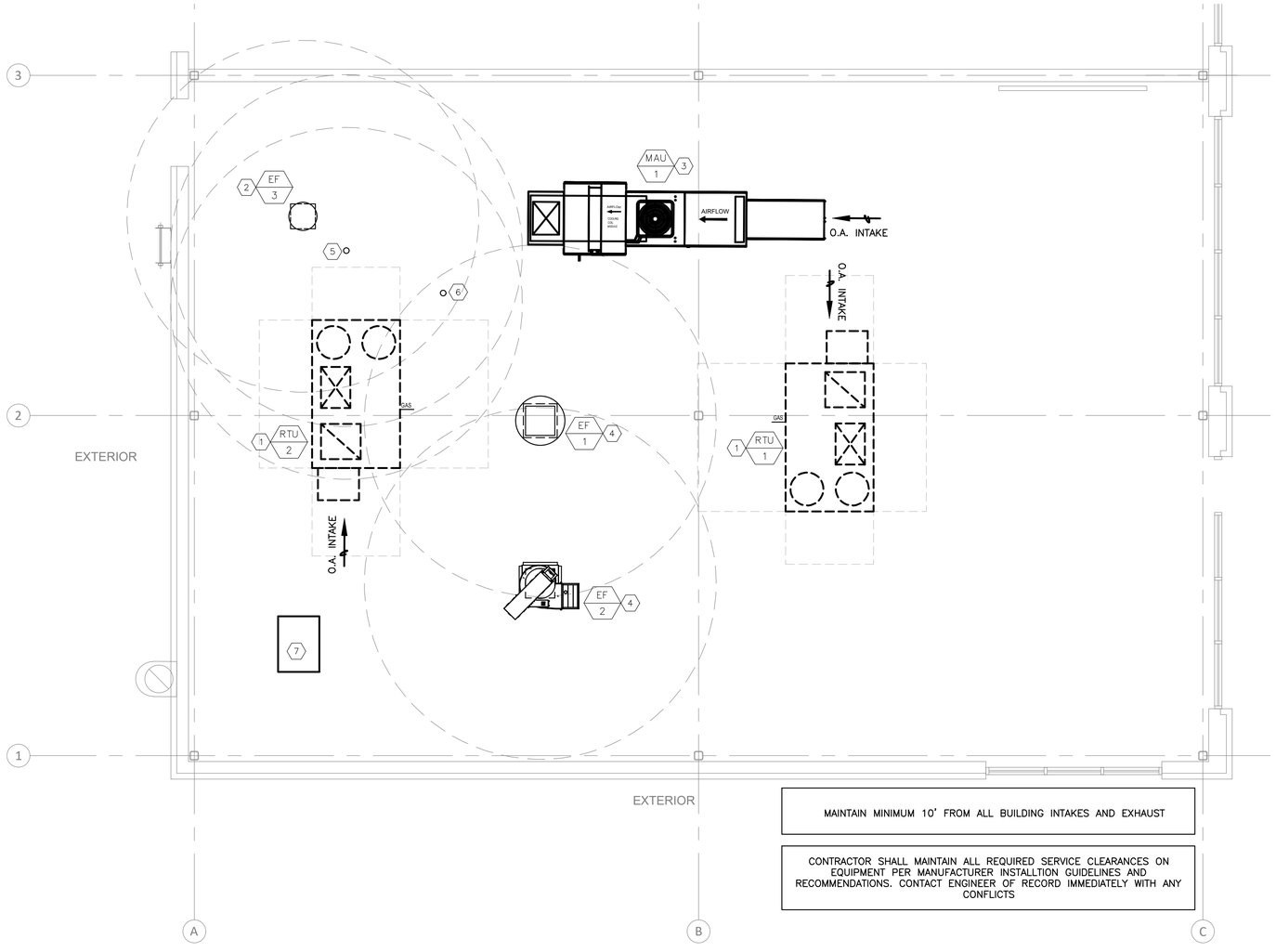
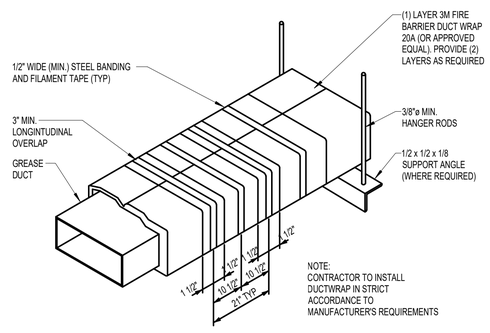


1 ROOF PLAN - HVAC

1/4" = 1'-0"

MECHANICAL KEYED NOTES

1. PROVIDE ROOFTOP UNIT AND CURB. COORDINATE UNIT WITH STRUCTURAL SHELL DRAWINGS. SHIM UNIT AND CURB LEVEL FOR PROPER CONDENSATE DRAINAGE. PROVIDE FLEXIBLE CONNECTORS ON SUPPLY AND RETURN AIR DUCT CONNECTIONS. TRANSITION TO DUCT SIZES SHOWN.
2. NEW EXHAUST FAN FOR RESTROOMS.
3. NEW MAKE UP AIR UNIT ON CURB.
4. NEW EXHAUST FAN PROVIDED BY CAPTIVEAIRE FOR THE KITCHEN HOOD. GENERAL CONTRACTOR TO COORDINATE GREASE GUARD SYSTEM INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS 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. INSTALL PER MANUFACTURERS GUIDELINES AND RECOMMENDATIONS.



UL LISTED GREASE EXHAUST DUCT WRAP DETAIL

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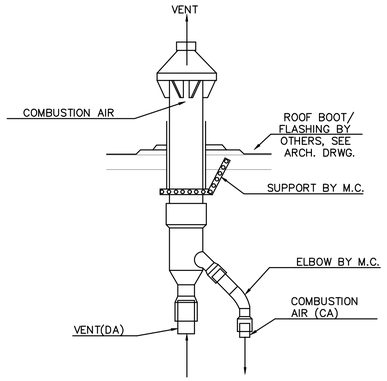

3 CONCENTRIC VENT KIT DETAIL

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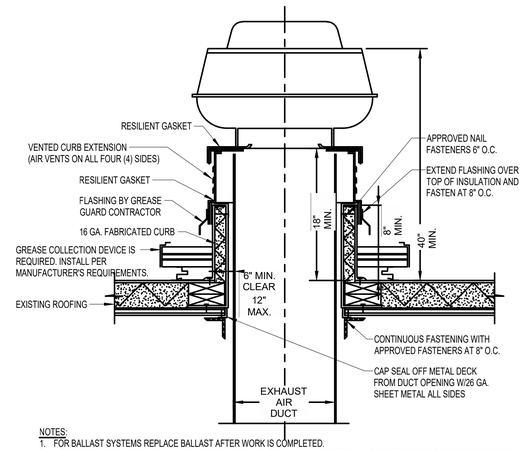
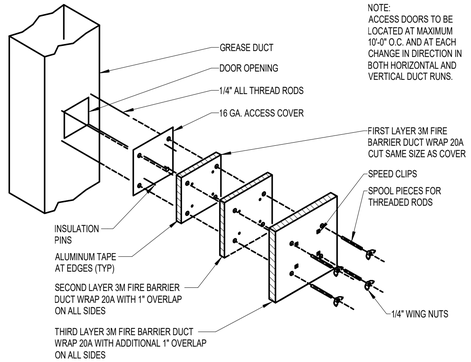


NOTES:
1. FOR BALLAST SYSTEMS REPLACE BALLAST AFTER WORK IS COMPLETED.
2. NEW INSULATION TO MATCH EXISTING INSULATION HEIGHT AND OF THE SAME OR GREATER THERMAL RESISTANCE VALUE.
3. ROOFING TO BE INSTALLED AND FLASHED-IN WITH MATERIALS TO MATCH EXISTING. INSTALL MATERIAL PER MANUFACTURER'S RECOMMENDATIONS.
4. HVAC CONTRACTOR TO COORDINATE INSTALLATION WITH LANDLORD'S ROOFER FOR PROPER SEQUENCE TO PERMIT FLASHING & COUNTERFLASHING INSTALLATION.
5. USE SELF DRILLING FASTENERS FOR METAL DECK, TOGGLES FOR GYPSUM DECKS.
6. LOCATE AWAY FROM BUILDING WALL PER LANDLORD REQUIREMENTS AND 15'-0" FROM ALL OUTSIDE AIR INTAKES.
7. FAN SHALL BE HINGED, SUPPLIED WITH FLEXIBLE WEATHER PROOF ELECTRICAL CABLE TO PERMIT INSPECTION AND CLEANING. HINGE SHALL BE EQUIPPED WITH MEANS TO LIMIT SWING OF HINGE.

RESTAURANT GREASE FAN AND PAN DETAIL

NO SCALE



UL LISTED GREASE EXHAUST DUCT ACCESS DOOR DETAIL

NO SCALE

RDL ARCHITECTS

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MECHANICAL ROOF PLAN

PROJECT #	21000C
DRAWN BY	TBA
CHECKED BY	TBA
FILE NAME	
PLOT DATE	11/24/2021

M3.0

Thorsen Baker Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
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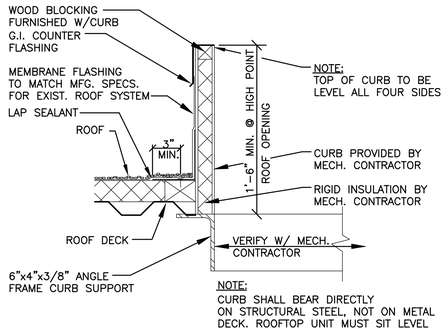
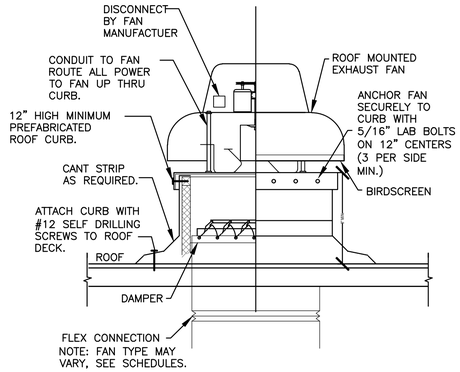
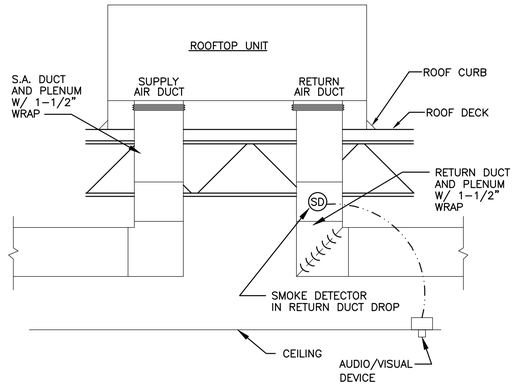


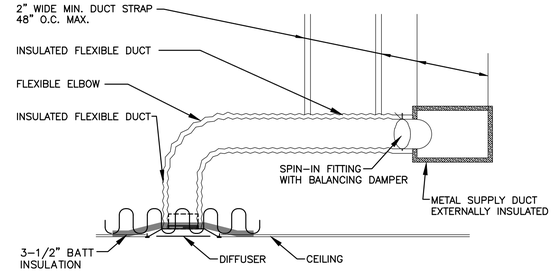
1 ROOF CURB SECTION
NO SCALE



2 ROOF MOUNTED FAN
NO SCALE

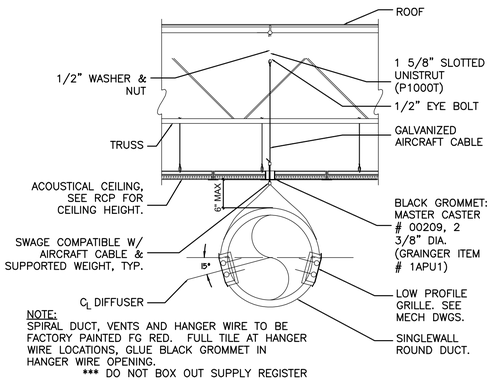


3 ROOFTOP UNIT MOUNTING DETAIL
NO SCALE

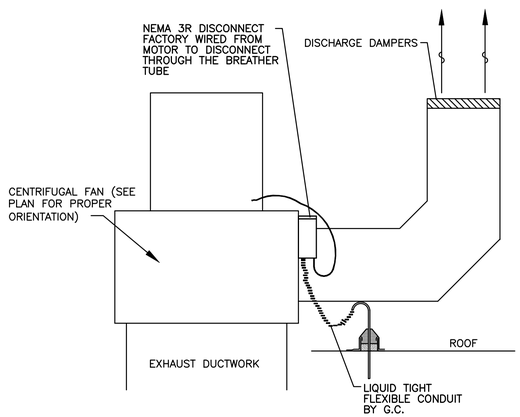


* REFER TO THE MECHANICAL EQUIPMENT SCHEDULE FOR COMPONENT AND DEVICE SPECIFICATIONS.

4 HVAC DUCTWORK DETAIL
NO SCALE

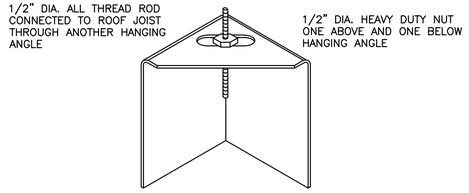


5 EXPOSED DUCT DTL
NO SCALE



6 GRILL HOOD EXHAUST FAN DETAIL
NO SCALE

NOTE: PROVIDE SECOND DUCT CLEANOUT AT 6" ABOVE CONNECTION TO HOOD DUCT COLLAR.



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

7 HOOD HANGING ANGLE DETAIL
NO SCALE

NATIONAL ACCOUNT INFO:
LINX INDUSTRIES
2600 AIRLINE BLVD.
PORTSMOUTH, VA 23701
CONTACT: KARIN ANDERSON
PHONE: 757-392-3222
EMAIL: KARINA@LI-HVAC.COM

NEW RTU SCHEDULE (RTU-1)

MFR.	MODEL NO.	UNIT WT.	UNIT SIZE	VOLTS	HZ	PH	MCA	MOCP	MIN. OUTSIDE AIR CFM
LENNOX	LGH120H4B 12.0 EER	1575	10 TONS	208	60	3	49	60	450

TOTAL CFM	COOLING CAPACITY	HEATING MBH IN/OUT	EVAP. COIL SIZE	EVAP. COIL ROWS	INDOOR FAN MOTOR	FILTERS NO.	FILTERS SIZE	FILTERS TYPE
4050	124.4 MBH	180/144	13.54 SQ.FT.	4	2.0 HP	4	20x25x2	T/A

NEW RTU SCHEDULE (RTU-2)

MFR.	MODEL NO.	UNIT WT.	UNIT SIZE	VOLTS	HZ	PH	MCA	MOCP	MIN. OUTSIDE AIR CFM
LENNOX	LGH092H4B 12.5 EER	1350	7.5 TONS	208	60	3	42	50	200

TOTAL CFM	COOLING CAPACITY	HEATING MBH IN/OUT	EVAP. COIL SIZE	EVAP. COIL ROWS	INDOOR FAN MOTOR	FILTERS NO.	FILTERS SIZE	FILTERS TYPE
2968	93.0 MBH	180/144	12.78 SQ.FT.	4	2.0 HP	4	20x25x2	T/A

NOTES:
1. FIVE (5) YEAR COMPRESSOR WARRANTY, TEN (10) YEAR HEAT EXCHANGER/BURNER WARRANTY.
2. CONTRACTOR SHALL INSTALL FACTORY FURNISHED HAIL GUARDS OVER CONDENSER COILS AND INLET HOODS OVER OUTSIDE AIR INTAKES.
3. CONTRACTOR SHALL FLASH RTU OPENINGS TO MATCH DUCTWORK SIZE INDICATED.
4. FULL MODULATING ECONOMIZER.
5. PROVIDE ENTHALPY SENSOR AND CONTROLS FOR ECONOMIZER.
6. PROVIDE UNIT MOUNTED NEMA 3R DISCONNECT.
7. PROVIDE GFI RATED CONVENIENCE OUTLET.
8. PROVIDE EXHAUST DAMPERS TO MODULATE OUTSIDE AIR AND RETURN AIR AT ROOFTOP UNIT.
9. RETURN AIR SMOKE DETECTOR
10. PROVIDE WITH HUMIDITY CONTROL OPTION
11. PROVIDE WITH HONEYWELL TH8321R1001 THERMOSTAT

AIR BALANCE SCHEDULE

UNIT MARK	SUPPLY AIR	OUTSIDE AIR	MAKE-UP AIR	EXHAUST AIR	RETURN AIR	NOTES
RTU-1	4050	800			3250	
RTU-2	2968	550			2418	
MAU-1			2821			
EF-1				-1852		
EF-2				-1662		
EF-3				-375		
BLDG. TOTAL	7018	1350	2821	-3889	5668	

MAKE-UP	HVAC UNITS		1350
	MAKEUP AIR UNIT		2821
	TOTAL		4171
EXHAUST	KITCHEN HOODS		-3514
	GENERAL EXHAUST		-375
	TOTAL		-3889
BALANCE RESULTS	MAKE-UP		4171
	EXHAUST		-3889
	TOTAL		282

FAN SCHEDULE

MARK	TYPE	CFM	E.S.P. (IN. W.C.)	DRIVE	MOTOR DATA HP	MOTOR DATA VOLTS	MOTOR DATA PH	SERVES	MFR	MODEL	UNIT WT.	NOTES
EF-1	ROOF	1852	1.375	DIRECT	3.0	208	3	FRYERS	CAPTIVEAIRE	DU180HFA	181	3,4,5,6,8
EF-2	ROOF	1662	1.375	DIRECT	3.0	208	3	GRILL	CAPTIVEAIRE	CASRE15DD	252	3,4,5,7,8
EF-3	ROOF	375	0.25	DIRECT	1/20	115	1	TOILET/MOP SK	GREENHECK	G-090-G	26	1,2

NOTES:
1. NEW EXHAUST FAN.
2. FAN SHALL BE INTERLOCKED WITH RTU THERMOSTATS SO THAT EXHAUST FAN RUNS CONTINUOUSLY DURING OCCUPIED MODE.
3. HOOD EXHAUST FAN TO BE CONNECTED TO HOOD CONTROL PANELS AND ANSUL SYSTEM.
4. HOOD EXHAUST FAN TO BE PROVIDED BY KITCHEN EQUIPMENT SUPPLIER.
5. REFER TO MECHANICAL HOOD DRAWINGS FOR MORE INFORMATION.
6. GREASE GUARD TO EXTEND 15" ON ALL SIDES OF EXHAUST FAN, INSTALL BEFORE EXHAUST FAN IS ACTIVATED, CALL JAY MAHON AT 331.229.3460.
7. DRIP GUARD TO BE INSTALLED UNDER FAN, CONTACT JAY MAHON AT 331.229.3460.
8. REFER TO ARCHITECTURAL SHEET A2-15 FOR MORE INFORMATION ON GREASE GUARDS FOR EXHAUST FANS.

AIR DEVICE SCHEDULE

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

NOTES:
1. 4-WAY THROW UNLESS OTHERWISE NOTED.
2. PROVIDE ADAPTOR BOOTS AS REQUIRED.
3. FINISH SHALL MATCH CEILING FINISH UNLESS OTHERWISE SPECIFIED. VERIFY FINISHES WITH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING.
4. EXTRACTOR DAMPER.
5. PROVIDE SQUARE TO ROUND ADAPTOR AS REQUIRED.
6. SPRAY PAINT RED TO MATCH DUCTWORK.
7. #26 WHITE IN KITCHEN, PREP, VESTIBULE, AND RESTROOMS, #84 FACTORY BLACK IN DINING ROOM AND HALL.
8. 3-WAY AIR THROW PATTERN.

AIR DEVICE RUNOUT SCHEDULE

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
1. AIR DEVICE NECK SIZE SHALL BE THE SAME AS RUNOUT SIZE.
2. RECTANGULAR DUCT SIZES OF EQUIVALENT FREE AREA MAY BE BE SUBSTITUTED FOR ROUND DUCT.
3. RUNOUTS MAY BE RIGID OR FLEX DUCT PER SPECIFICATIONS.

MAKEUP AIR UNIT SCHEDULE

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
3	MUA-1	1	A2-D.500-20D-MPU	20MF-2-MOD	A2-D.500	2000	2821	0.375	1425	3.000	1.5250	3	208	9.5	11.9A	20A	1384	13.4

1. REFER TO MECHANICAL HOOD DRAWINGS FOR MORE INFORMATION.

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MECHANICAL SCHEDULES

PROJECT #	21000C
DRAWN BY	TBA
CHECKED BY	TBA
FILE NAME	
PLOT DATE	11/24/2021

M4.0

Thorson Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
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(330) 659-6675 Fax

HOOD NO	TAG	MODEL	LENGTH	MAX COOKING TEMP	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)					MUA CFM	AC CFM	HOOD CONSTRUCTION	HOOD CONFIG	
							HEIGHT	DIA	CFM	VEL	SP				END TO END	ROW
1	GRILLS	5424 ND-2-ACPSP-F	8' 9"	600 DEG	190	1662	4"	14"	1662	1555	-0.792"	1413	584	430 SS WHERE EXPOSED	LEFT	ALONE
2	FRYERS	5424 ND-2-ACPSP-F	9' 9"	600 DEG	190	1852	4"	14"	1852	1732	-0.940"	1408	584	430 SS WHERE EXPOSED	RIGHT	ALONE

HOOD NO	TAG	FILTER(S)					LIGHT(S)				UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY		
1	GRILLS	CAPTRATE SOLO FILTER	6	16"	16"	85% SEE FILTER SPEC	6	RECESSED ROUND	NO	LEFT	12"x54"x24"	ANSUL R102	3.0/3.0	DCV-2111	1 LIGHT 1 FAN	YES	778 LBS
2	FRYERS	CAPTRATE SOLO FILTER	7	16"	16"	85% SEE FILTER SPEC	6	RECESSED ROUND	NO							YES	654 LBS

HOOD OPTIONS

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.
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.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1	GRILLS	Front	117"	24"	6"	MUA	12"	28"		706	0.162"
						MUA	12"	28"		706	0.162"
						AC	8"	16"		292	0.079"
						AC	8"	16"		292	0.079"
2	FRYERS	Front	117"	24"	6"	MUA	12"	28"		704	0.161"
						MUA	12"	28"		704	0.161"
						AC	8"	16"		292	0.079"
						AC	8"	16"		292	0.079"

BALANCING NOTES:

Exhaust Requirements

100–105% OF DESIGN PER HOOD

MEASURED AT THE EXHAUST FILTER WHILE THE FILTER IS INSTALLED

Supply Requirements

95–100% OF DESIGN PER SUPPLY PLENUM

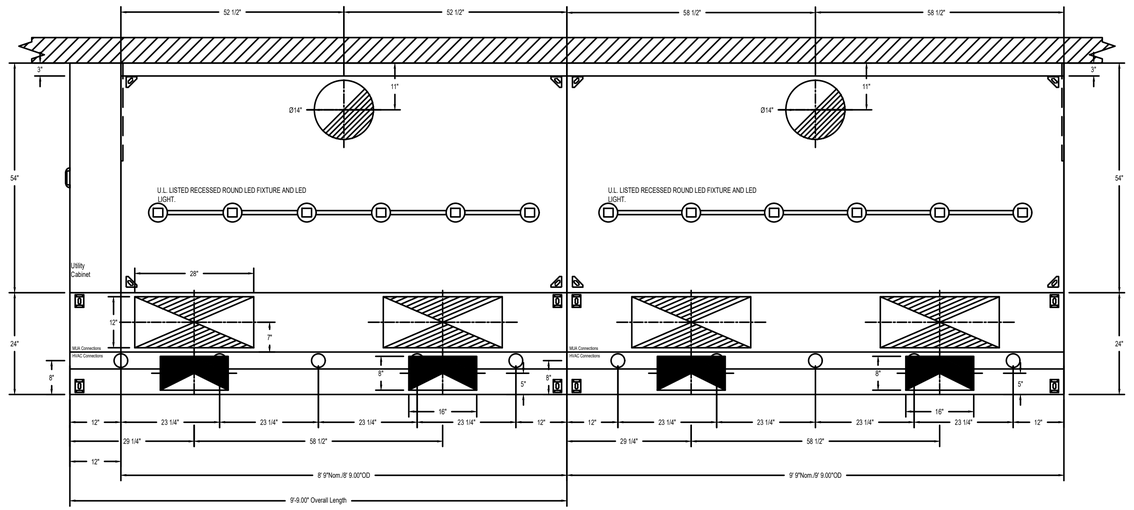
MEASURED AT THE BOTTOM FACE OF THE PERFORATION (DISCHARGE POINT)

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.
MAKEUP 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

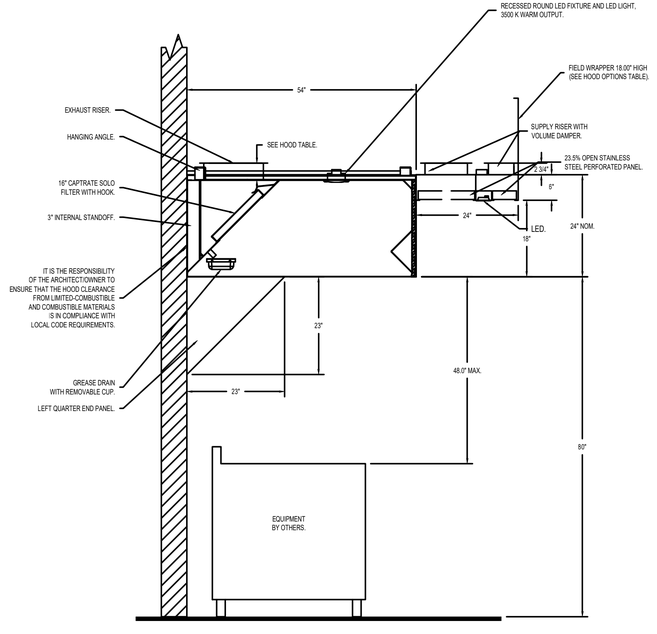


PLAN VIEW – Hood #1 (GRILLS)
8' 9.00" LONG 5424ND–2–ACPSP–F

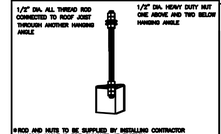
PLAN VIEW – Hood #2 (FRYERS)
9' 9.00" LONG 5424ND–2–ACPSP–F

ACPSP ships loose for field installation

LIGHTING FOR ACPSP Job # 319929 - Hoods #1, #2
INPUT: 120V AC, 1 Phase, 50/60Hz, 3.5 Watts per light.
TO CONTROL LIGHTS WITH HOOD LIGHT SWITCH, WIRE PER HOOD ELECTRICAL CONTROL PANEL SCHEMATIC.
TO CONTROL LIGHTS WITH BUILDING LIGHT SWITCH, WIRE BLACK AND WHITE WIRE TO A 120VAC SERVICE.
END TO END ACPSPS REQUIRE 120VAC FIELD WIRING FROM J-BOX TO J-BOX. REPLACE LIGHTS WITH LED LIGHTS ONLY.



SECTION VIEW – MODEL 5424ND–2–ACPSP–F
HOOD – #1 & 2 (GRILLS & FRYERS)



HANGING ANGLE DETAIL

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.

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH

NFPA #96
ETL SANITATION LISTED
ETL LISTED #3054804-001

FOR QUESTIONS, CONTACT:
CAPTIVE-AIRE SYSTEMS, INC.

STORES NORTH OF FAIRFAX, VA CONTACT:
MARK PROFET
PHONE (800) 888-0881
EMAIL: REG32@CAPTIVEAIR.COM

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

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVE-AIRE
Maryland Office
2221 Kansas Ave. Silver Spring, MD. 20910 PHONE: (800) 988-0881 FAX: (919) 227-5931 EMAIL: reg32@captiveaire.com
www.captiveaire.com

Five Guys - Lorain, OH
5350 N Leavitt Rd,
Lorain, OH, 44053

DATE: 9/14/2021

DWG.#: 5086386

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 1

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HOOD DRAWINGS

PROJECT #	21000C
DRAWN BY	TBA
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FILE NAME	
PLOT DATE	11/24/2021

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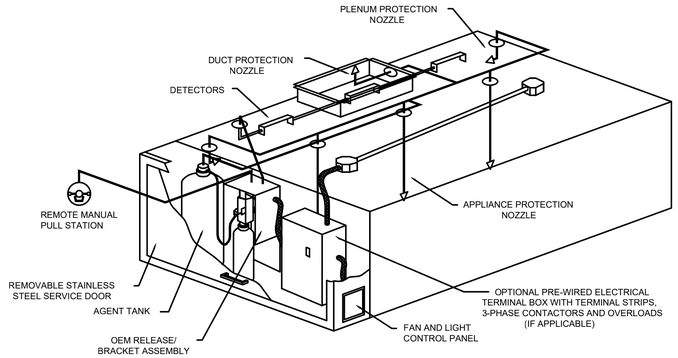
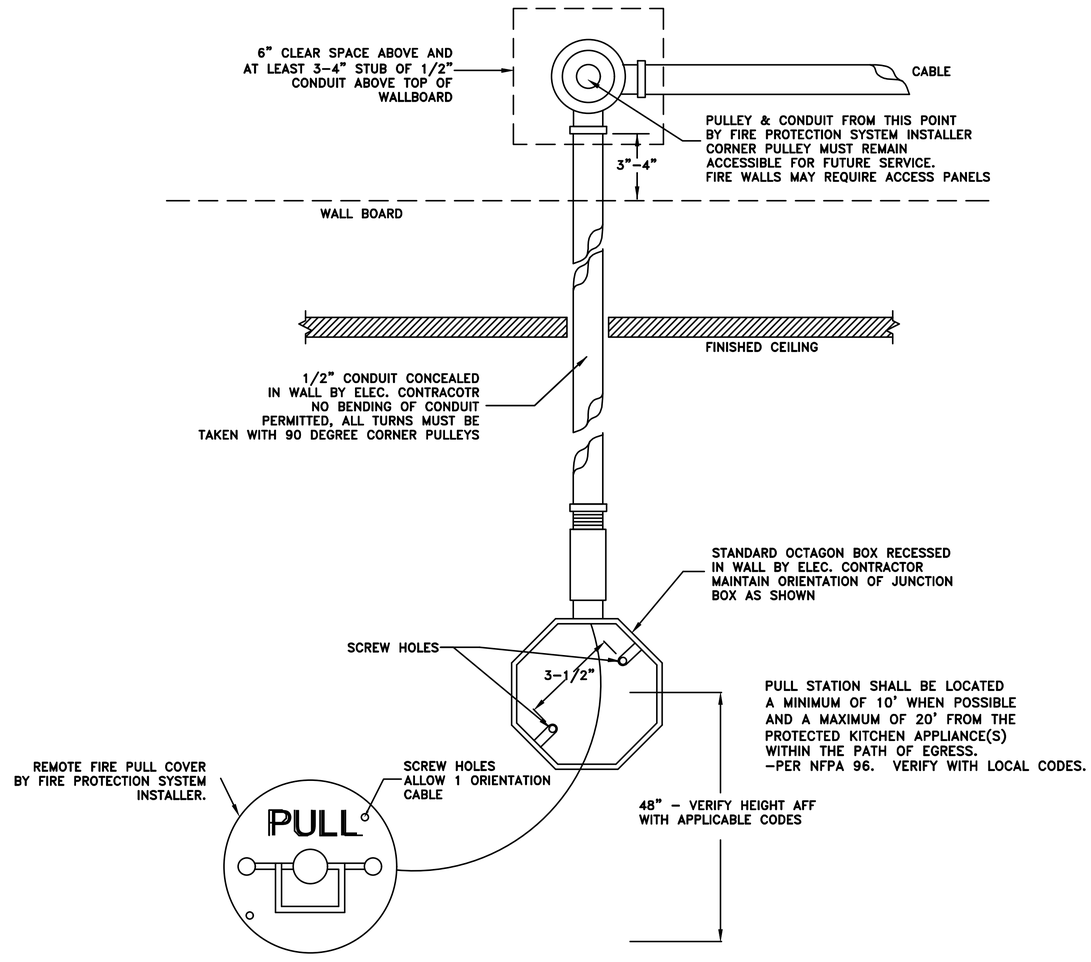


TYPICAL ANSUL R-102 SYSTEM LAYOUT

TYPICAL ANSUL R102 SYSTEM LAYOUT
NOTE: FIRE SYSTEM TO INCLUDE ALL NECESSARY PERMITS, FIELD HOOKUP, AND FINAL TEST.
NOTE: FIRE SYSTEM ENCLOSURE WILL BE FACTORY-MOUNTED ON RIGHT SIDE OF THE LEFT HOOD



RECESSED REMOTE FIRE PROTECTION PULL STATION DETAIL

BOX AND CONDUIT INSTALLED & SECURED BY ELECTRICAL TRADE
FIRE SYSTEM INSTALLATION TO BE BY AUTHORIZED ANSUL DISTRIBUTOR

REVISIONS

	DESCRIPTION	DATE
1		
2		
3		
4		

CAPTIVE-AIRE
Maryland Office
2221 Kansas Ave, Silver Spring, MD, 20910 PHONE: (800) 988-0881 FAX: (919) 227-5931 EMAIL: regs2@captiveaire.com
www.captiveaire.com

Five Guys - Lorain, OH
5350 N Leavitt Rd,
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DATE: 9/14/2021

DWG.#: 5086386

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 2

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ANSUL SYSTEM

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(330) 659-6688 Ph.
(330) 659-6675 Fax

EXHAUST FAN INFORMATION – JOB#5086386

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	CFM	ESP	RPM	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	FRYERS	1	DU180HFA	1852	1.375	1084	2.000	0.9060	3	208	8.3	428 FPM	180	12.8
2	GRILL	1	CASRE15DD	1662	1.375	1801	2.000	1.4860	3	208	6.1	1221 FPM	241	28

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	MUA-1	A2-D.500-20D-MPU	1	5	208-230	3 PHASE	60 HZ	21.4 AMPS	17.4 AMPS	30 AMPS	10 AWG	14

MUA FAN INFORMATION – JOB#5086386

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
3	MUA-1	1	A2-D.500-20D-MPU	20MF-2-MOD	A2-D.500	2000	2821	0.375	1425	3.000	1.5250	3	208	9.5	11.9A	20A	1384	13.4

COILS – JOB#5086386

FAN UNIT NO	TAG	COIL TYPE	DESIGN CFM	COOLING						
				ENTERING DB TEMP	ENTERING WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	TOTAL CAPACITY	SENSIBLE CAPACITY	LATENT CAPACITY
3	MUA-1	DX	2821	87.0°F	73.0°F	66.9°F	66.9°F	60.0 MBH	59.0 MBH	1.0 MBH

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO	TAG	INPUT BTUs	OUTPUT BTUs	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
3	MUA-1	211407	194494	66°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

FAN OPTIONS

FAN UNIT NO	TAG	DESCRIPTION
1	FRYERS	GREASE BOX.
		2 YEAR PARTS WARRANTY.
2	GRILL	RE15 - RAIN CAP ASSEMBLY - INCLUDES HARDWARE AND GASKET.
		2 YEAR PARTS WARRANTY.
3	MUA-1	MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING. MEETS AMCA CLASS 1A RATING.
		LOW FIRE START.
		INLET PRESSURE GAUGE, 0-35".
		MANIFOLD PRESSURE GAUGE, -5 TO 15" WC.
		5 TON SINGLE CIRCUIT MODULAR PACKAGED AC COOLING OPTION FOR SIZE 2 DF/EH MUA (1000 TO 2750 CFM), 208V/230V, 3 PHASE. COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION.
		DOWNTURN PLENUM FOR SIZE 2 DX COIL MODULE.
		SIZE 2 MPU-AC MOISTURE ELIMINATOR OPTION - ALLOWS COOLING COIL FACE VELOCITY TO INCREASE TO 650 FPM. INCREASES COOLING COIL MAX CFM TO 3250 CFM.
		FREEZESTAT.
		SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		SIZE 2 DIRECT FIRED HEATER LOW CFM PROFILE PACKAGE. USED ON HEATERS UNDER 2500 CFM.
		2 YEAR PARTS WARRANTY.

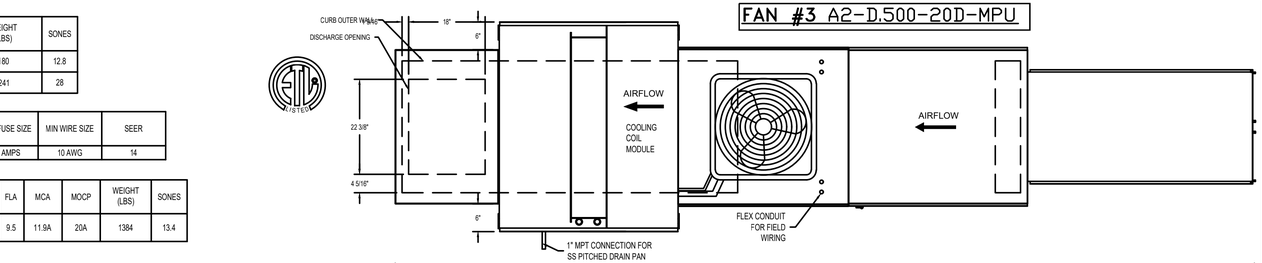
CURB ASSEMBLIES

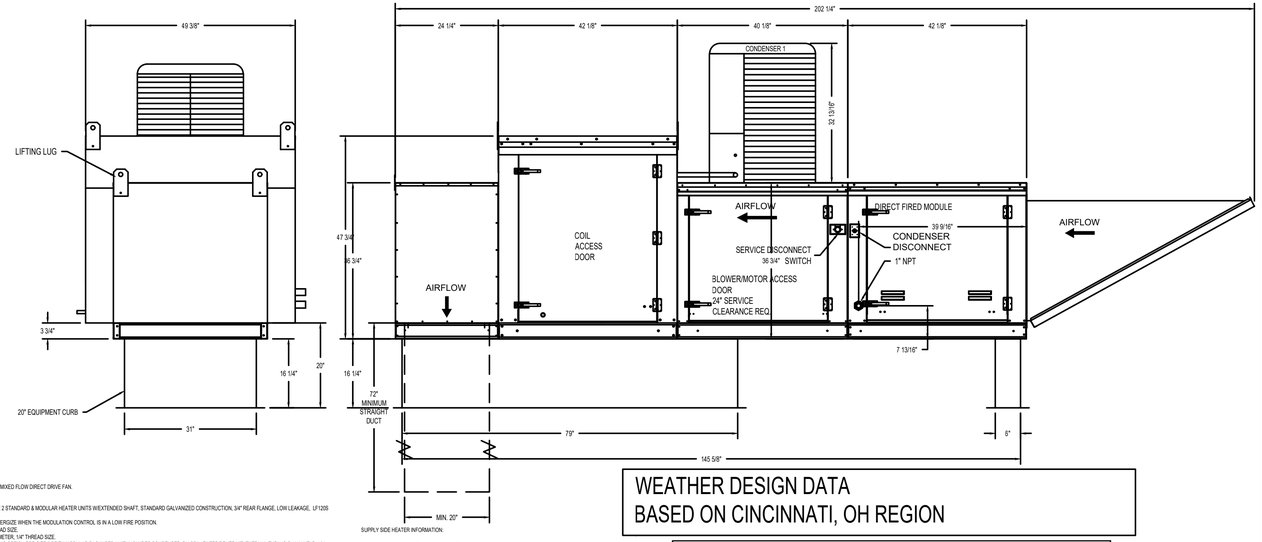
NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	34 LBS	CURB	26.500"W X 26.500"L X 26.000"H VENTED HINGED.
2	# 2	37 LBS	CURB	23.000"W X 23.000"L X 24.000"H VENTED.
3	# 3	107 LBS	CURB	31.000"W X 79.000"L X 20.000"H INSULATED.
	# 3		RAIL	6.000"W X 31.000"L X 20.000"H .

FAN #3 A2-D.500-20D-MPU - HEATER (MUA-1)
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. 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.
5. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
6. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE.
7. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC., 2.5" DIAMETER, 1/4" THREAD SIZE.
8. 5 TON, SINGLE CIRCUIT MODULAR PACKAGED AC 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. (1,000 TO 2,750 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 CU. CONDENSERS REQUIRE SEPARATE 208V, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION. COIL = 3EVV192
9. DOWNTURN PLENUM FOR SIZE 2 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS.
10. SIZE 2 MPU-AC MOISTURE ELIMINATOR OPTION - ALLOWS COOLING COIL FACE VELOCITY TO INCREASE TO 650 FPM. INCREASES COOLING COIL MAX CFM TO 3250 CFM.
11. FREEZESTAT FACTORY SET AT 35°F AND 10 MINUTES.
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. PROFILE PLATE CONFIGURATION FOR SIZE 2 DIRECT FIRED UNIT FOR LOW CFM APPLICATIONS.
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".

FAN #3 A2-D.500-20D-MPU



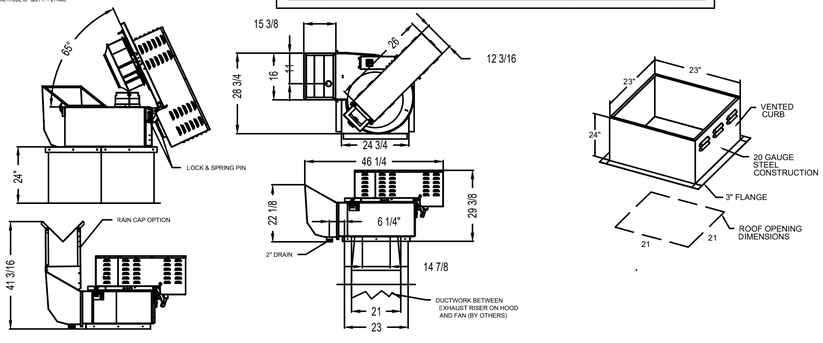


SUPPLY SIDE HEATER INFORMATION

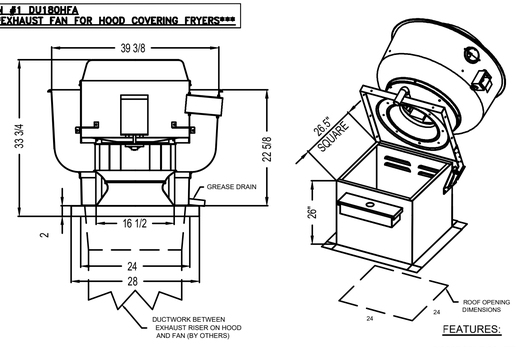
WINTER TEMPERATURE = 9°F. TEMP. RISE = 66°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY.
OUTPUT BTUs AT ALTITUDE OF 0 FT. = 198910.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 216206.
OUTPUT BTUs AT ALTITUDE OF 620 FT. = 194494.
INPUT BTUs AT ALTITUDE OF 620 FT. = 211406.

WEATHER DESIGN DATA
BASED ON CINCINNATI, OH REGION

FAN #2 CASRE15DD
EXHAUST FAN FOR HOOD COVERING GRILLS



FAN #1 DU180HFA
EXHAUST FAN FOR HOOD COVERING FRYERS



ATTENTION

INSTALLER MUST READ LABEL NEAR DISCONNECT SWITCH! MESSAGE ON LABEL: "INSTALLER SHOULD SUPPLY ENOUHG ELECTRICAL CORD TO LET FAN MAKE COMPLETE SWING"

FEATURES:

- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL762
- HIGH HEAT OPERATION DIRECT DRIVE 300°F (149°C)
- HIGH HEAT OPERATION BELT DRIVE 500°F (260°C)
- HEAT SLINGER
- GREASE CLASSIFICATION TESTING
- TILT OUT WHEEL
- LOCKING PIN FOR POWER PACK
- MOTOR WEATHER COVER
- INTERLOCKED DISCONNECT SWITCH

NORMAL TEMPERATURE TEST DIRECT DRIVE
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 BELT & DIRECT DRIVE
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
RE15 - RAIN CAP ASSEMBLY - INCLUDES HARDWARE AND GASKET.

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

FEATURES:

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

HEATER SETTINGS:

SET INTAKE TEMPERATURE TO 58°F

SET DISCHARGE TEMPERATURE TO 65°F

IMPORTANT INSTALLATION NOTES:

– ELECTRICAL CONNECTION SHOULD BE MADE ON THE HINGE SIDE OF THE EXHAUST FANS TO ENSURE FANS CAN BE HINGED FOR CLEANING

– RAIN CAP MUST BE FIELD NSTALLED ON FAN #2 AT THE HEIGHT AND ORIENTATION SHOWN ON DETAIL

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.
MAKEUP 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

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVEAIRE
Maryland Office
2221 Kansas Ave. Silver Spring, MD. 20910 PHONE: (800) 988-0881 FAX: (919) 227-5931 EMAIL: reg32@captiveaire.com
www.captiveaire.com

Five Guys - Lorain, OH
5350 N Leavitt Rd.
Lorain, OH, 44053

DATE: 9/14/2021
DWG.#: 5086386
DRAWN BY: AD-32
SCALE: NTS
MASTER DRAWING
SHEET NO. 3

RDL ARCHITECTS
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Lorain Burgers, LLC
28421 West Oakland Rd
Bay Village, Ohio 44140
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www.fiveguys.com

ISSUE

	PERMIT SET	11/24/21
1		
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ROOF TOP UNITS

PROJECT #	21000C
DRAWN BY	TBA
CHECKED BY	TBA
FILE NAME	
PLOT DATE	11/24/2021

MH3.0

Thorson Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road (330) 659-6688 Ph.
Richfield, Ohio 44286 (330) 659-6675 Fax

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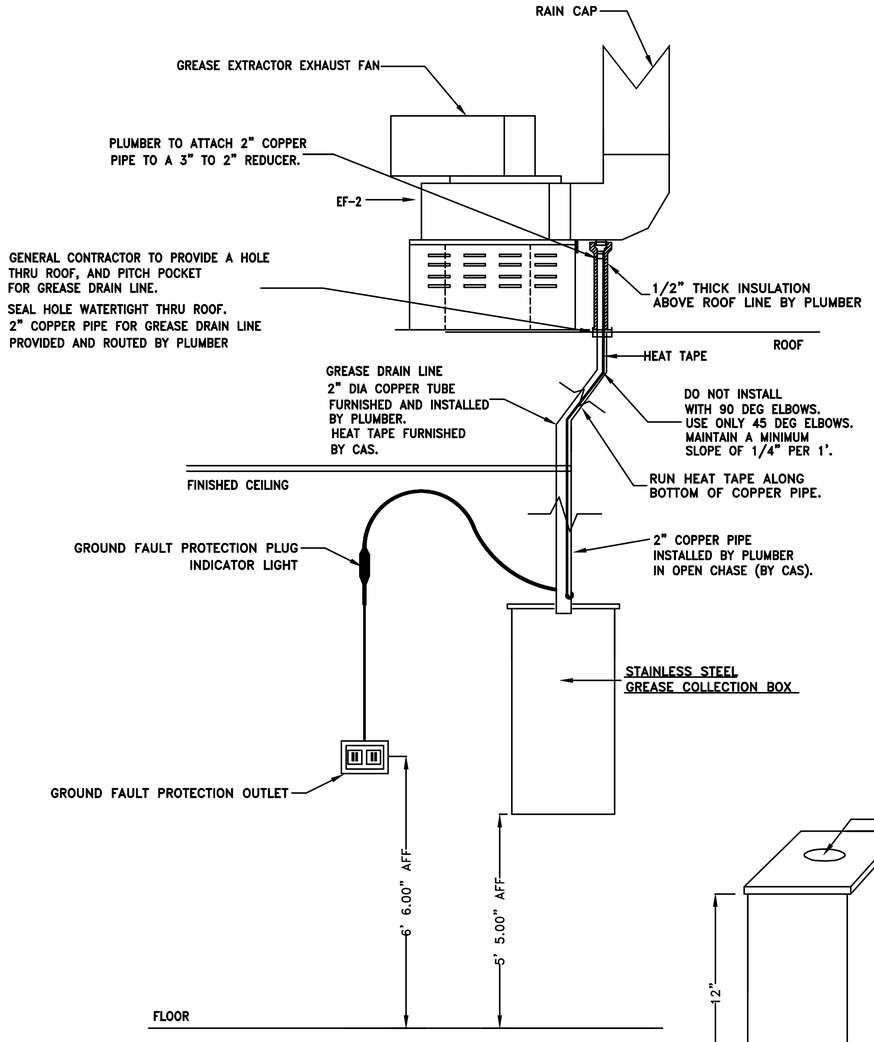
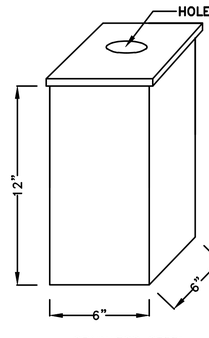
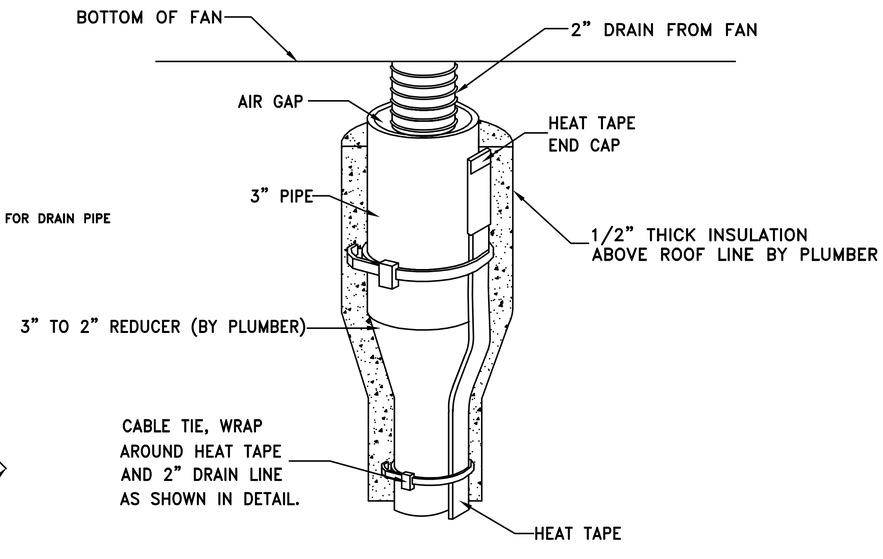
DRAIN LINE HEATER INSTALLATION DETAIL



	INSTALLATION PROCEDURE:	TRADE RESPONSIBLE
1.	THE HEAT TAPE ASSEMBLY IS SHIPPED LOOSE FROM THE EXHAUST FAN.	CAS
2.	THE GENERAL CONRACTOR 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



STAINLESS STEEL GREASE COLLECTION BOX FOR KITCHEN WALL MOUNTING



END DETAIL

HEAT TAPE END CAP.
HEAT TAPE EXTENDS ABOVE DRAIN PIPE.

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

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVE-AIRE
Maryland Office
2221 Kansas Ave, Silver Spring, MD. 20910 PHONE: (800) 988-0881 FAX: (919) 227-5931 EMAIL: regs2@captiveaire.com
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Five Guys - Lorain, OH
5350 N Leavitt Rd,
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DATE: 9/14/2021

DWG.#: 5086386

DRAWN BY: AD-32

SCALE: NTS

MASTER DRAWING

SHEET NO. 4

RDL ARCHITECTS

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E-71263
REGISTERED
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ISSUE

1	PERMIT SET	11/24/21
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DRAIN LINE SYSTEM

PROJECT #	21000C
DRAWN BY	TBA
CHECKED BY	TBA
FILE NAME	
PLOT DATE	11/24/2021

MH4.0

Thorson Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road
Richfield, Ohio 44286
(330) 659-6688 Ph.
(330) 659-6675 Fax

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	HP	VOLT	FLA
1		DCV-2111	UTILITY CABINET LEFT	03 - 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	6.1
							MUA-1	SUPPLY	3	3.000	208	9.5

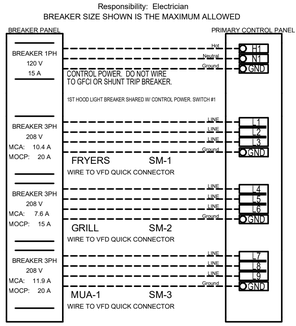
JOB NO 5086386 | MODEL NUMBER DCV-2111 | JOB NAME Five Guys - Lorain, OH | DRAWN BY | DATE 9/14/2021 | SCHEMATIC TYPE INSTALL | DWG NO ECP #1-1

DESCRIPTION OF OPERATION:
Demand Control Ventilation, w/ control for 2 Exhaust Fans, 1 Supply Fan, Exhaust on in Fire, Lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY 3 PHASE MOTOR REQUIRED FOR USE WITH VFD. Room temperature sensor shipped loose for field installation.Verify distance between VFD and Motor; additional cost could apply if distance exceeds 50 feet.

BREAKER PANEL TO PRIMARY CONTROL PANEL

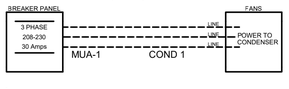
Responsibility: Electrician

BREAKER SIZE SHOWN IS THE MAXIMUM ALLOWED



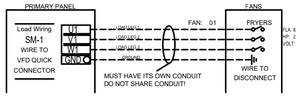
BREAKER PANEL TO FANS

Responsibility: Electrician



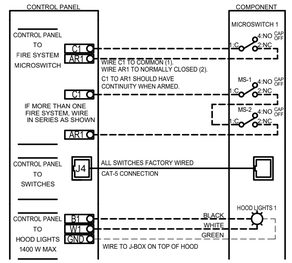
CONTROL PANEL TO FANS

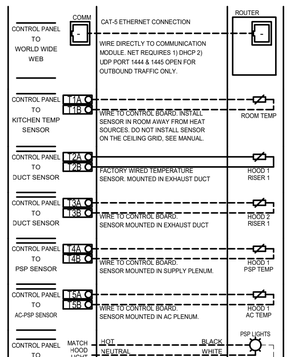
Responsibility: Electrician

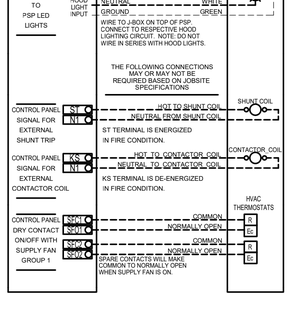


CONTROL PANEL TO ACCESSORY ITEMS

Responsibility: Electrician

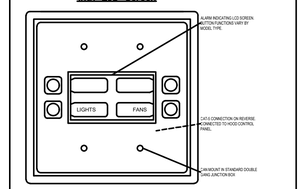




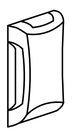


SEQUENCE OF OPERATION – APPLIANCE INTERLOCK
- IN AUTO POSITION, FANS WILL TURN ON WHEN TEMPERATURE IS ABOVE 85 DEGREES AND WILL SHUT DOWN WHEN TEMPERATURE COOLS BELOW 85 DEGREES.
- IN ON POSITION, FANS WILL REMAIN ON CONSTANTLY
- IN FIRE CONDITION, EXHAUST WILL TURN ON OR REMAIN ON. MAKEUP AIR WILL SHUT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

HOOD CONTROL PACKAGE INTERFACE with LCD Screen



ROOM TEMPERATURE SENSOR



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.

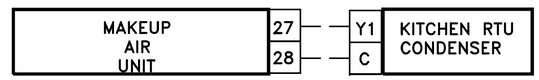
SCOPE OF WORK

HOOD(S): PROVIDED BY OWNER. INSTALLED BY GC.
FIRE SYSTEM(S): PROVIDED & INSTALLED BY OWNER.
EXHAUST FAN(S): PROVIDED BY OWNER. INSTALLED BY GC.
MAKEUP 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

MUA/ RTU INTERLOCK DETAIL) (BY ELECTRICIAN)

24VAC Coil – Signal From Condenser "Call For Cooling Interlock"



NOTE: THIS CONNECTION WILL LOCK OUT THE MUA BURNER CIRCUIT WHEN A/C IS BEING SUPPLIED TO THE SPACE

CONTROL PANEL TO WORLD WIDE WEB

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVEAIRE
www.captiveaire.com
Maryland Office
2221 Kansas Ave, Silver Spring, MD. 20910 PHONE: (800) 988-0881 FAX: (919) 227-5931 EMAIL: reg2@captiveaire.com

Five Guys - Lorain, OH
5350 N Leavitt Rd,
Lorain, OH, 44053

DATE: 9/14/2021
DWG.#: 5086386
DRAWN BY: AD-32
SCALE: NTS
MASTER DRAWING
SHEET NO. 5

Thorson • Baker + Associates
CONSULTING ENGINEERS
3030 West Streetsboro Road, Richfield, Ohio 44286
(330) 659-6688 Ph.
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Bay Village, Ohio 44140
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ISSUE

1	PERMIT SET	11/24/21
2		
3		
4		
5		
6		
7		
8		

WIRING DIAGRAM

PROJECT #	21000C
DRAWN BY	TBA
CHECKED BY	TBA
FILE NAME	
PLOT DATE	11/24/2021

MH5.0