

HVAC SPECIFICATIONS

PART 1 - GENERAL

1.01 SCOPE
FURNISH ALL LABOR, MATERIALS, EQUIPMENT, CONTROL SYSTEMS, DEVICES, ACCESS PANELS, PERMITS, AND SERVICES NECESSARY TO INSTALL THE COMPLETE AND OPERABLE AIR CONDITIONING, HEATING, AND VENTILATING SYSTEM INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN, AND IN ACCORDANCE WITH ALL CITY, STATE, AND NATIONAL CODES, IF THERE IS A CONFLICT BETWEEN CODES AND OR THE CONTRACT DOCUMENTS, THE CONTRACTOR IS TO FOLLOW THE MORE STRINGENT OF THE REQUIREMENTS. ALL MATERIALS SHALL BE NEW AND ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, PRODUCT APPROVAL, RULES AND ORDINANCES. ANY DAMAGED EQUIPMENT SHALL BE REPLACED OR RESTORED TO ORIGINAL CONDITION. ALL MECHANICAL EQUIPMENT SHALL BE ARI & UL LISTED WHERE APPLICABLE AND RATED FOR THE REQUIRED SERVICE, PRESSURES, TEMPERATURES AND SHALL BE PROVIDED WITH ALL NECESSARY TRANSFORMERS, SEALS, VALVES, CONNECTIONS, ETC. TO FUNCTION PROPERLY.

1.02 ELECTRICAL WORK
ALL CONDUIT, ROUGH IN ELECTRICAL BOXES AND WIRING, EXCLUDING LOW VOLTAGE CONTROL WIRING, SHALL BE INCLUDED UNDER THE ELECTRICAL SECTION OF THE CONTRACT DOCUMENTS, COORDINATE REQUIREMENTS AND ROUGH IN LOCATIONS FOR ALL EQUIPMENT. CONTROL WIRING SHALL BE PROVIDED AND INSTALLED UNDER THE MECHANICAL SECTION OF THE CONTRACT DOCUMENTS.

1.03 SUBMITTAL DATA
PRIOR TO ORDERING EQUIPMENT THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A MINIMUM OF THREE (3) COPIES OF THE EQUIPMENT BROCHURES, TECHNICAL DATA AND/OR SHOP DRAWINGS, AS AN ALTERNATIVE, AN ELECTRONIC SUBMITTAL IS ACCEPTABLE. CONTRACTOR IS INSTRUCTED TO CONSOLIDATE INFORMATION WHEN SUBMITTING ELECTRONICALLY AND AVOID MULTIPLE COMMUNICATIONS.

1.04 NOISE AND VIBRATION
EQUIPMENT SHALL OPERATE QUIETLY. THE OPERATION OF THE EQUIPMENT SHALL CAUSE NO PERCEPTIVE VIBRATION NOR OBJECTIONABLE NOISE IN ANY PORTION OF THE BUILDING OR STRUCTURE.

1.05 MAINTENANCE MANUALS
FURNISH (3) THREE SETS OF OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS COVERING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS AS WELL AS EQUIPMENT WARRANTIES, CONTROL SEQUENCES AND DIAGRAMS. MANUALS ARE TO BE BOUND AND COVERED. DELIVER MANUALS TO THE ARCHITECT. INCLUDE A COMPLETE DESCRIPTION OF THE OPERATION OF THE CONTROL SYSTEM. THE CONTRACTOR SHALL INSTRUCT THE OWNERS REPRESENTATIVE IN THE PROPER OPERATION OF ALL EQUIPMENT.

1.06 WARRANTIES
1. ALL WARRANTIES SHALL BEGIN UPON FINAL ACCEPTANCE BY THE OWNER, NOT BENEFICIAL USE BY THE CONTRACTOR.
2. FURNISH A FIVE (5) YEAR WARRANTY ON ALL COMPRESSORS AND REFRIGERATION CIRCUIT AND A ONE (1) YEAR WARRANTY ON ALL CONTROLS AND OTHER EQUIPMENT.
3. THE MC WILL WARRANTY ALL MECHANICAL SYSTEMS, DUCTWORK, THERMOSTATS, AND ALL OTHER EQUIPMENT, PARTS, AND LABOR SHOWN ON THE MECHANICAL DRAWINGS AND IN THE SPECIFICATIONS FOR A PERIOD OF ONE (1) YEAR AFTER ISSUANCE OF THE CERTIFICATE OF OCCUPANCY. SEE HVAC GENERAL NOTE 17.
4. ANY REPAIRS REQUIRING SYSTEM SHUT DOWN WILL BE DONE DURING NON-OPERATIONAL PERIODS.
5. THE MC SHALL COORDINATE WITH ALL OTHER TRADES PRIOR TO BIDDING AND PURCHASING ANY EQUIPMENT.
6. AN INDEPENDENT CONTRACTOR SHALL TEST AND BALANCE ALL MECHANICAL EQUIPMENT AIR DEVICES, EXTRACTORS, DAMPERS, AHUS AND FANS, ETC. TO PROVIDE THE DESIGN QUANTITIES (+/- 5%) AS SHOWN ON THE PLANS OR SCHEDULES. PROVIDE T & B REPORT IN ACCORDANCE WITH THE AIR BALANCE 2.02 COUNCIL (ABC) STANDARDS, SIGNED AND SEALED BY A REGISTERED ENGINEER. PROVIDE FINAL BALANCING FOR ALL SYSTEMS TO SATISFACTION OF OWNER AND ENGINEER. T & B CONTRACTOR SHALL VISIT THE JOB SITE DURING CONSTRUCTION TO ENSURE THAT ALL DUCTS, DAMPERS, AND OTHER AIR CONTROL DEVICES ARE INSTALLED FOR PROPER AND QUIET AIR DELIVERY.
7. PROVIDE ALL MATERIALS AND LABOR REQUIRED FOR EQUIPMENT ANCHORAGE TO BUILDING STRUCTURE.

1.07 PERMITS, ORDINANCES, AND INSPECTIONS
1. OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED. DELIVER TO THE ARCHITECT ALL CERTIFICATES AND INSPECTION REPORTS.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CITY, COUNTY, STATE, OR NATIONAL ORDINANCES AND CODES. EFFORT HAS BEEN MADE TO MEET OR EXCEED REQUIREMENTS. THE CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS TO MEET THESE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER.

PART 2 - PRODUCTS
2.01 DUCTWORK
1. GENERAL
A. SEE HVAC GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
B. DIMENSIONS INDICATED ON THE DRAWINGS ARE INSIDE AREAS. WHERE DUCTS ARE TO BE INTERNALLY INSULATED OR LINED INCREASE SHEET METAL OVERALL DIMENSIONS TO ACCOMMODATE INSULATION THICKNESS.
C. PROVIDE FLEXIBLE WOVEN DUCT CONNECTIONS IN DUCTS AS INDICATED. SECURE CONNECTIONS WITH GALVANIZED CHANNELS. PROVIDE A BRAIDED COPPER BRIDGE STRAP ACROSS FLEXIBLE CONNECTIONS.
2. FLEXIBLE DUCTWORK
THE CONTRACTOR MAY INSTALL SUPPLY DIFFUSERS WITH A MAXIMUM OF A 5 FOOT RUN OF INSULATED FLEXIBLE DUCTWORK EQUAL TO FLEXMASTER TYPE 1M, MINIMUM R-8. ALL FLEXIBLE DUCTWORK SHALL BE INSTALLED AND ENDS TERMINATED IN COMPLIANCE WITH THE METHODS SHOWN IN THE AOC INSTALLATION MANUAL AND USE METAL STRAPS NOT LESS THAN 1-1/2" WIDE AT A MAXIMUM OF 5 FEET ON CENTER. DUCTS SHALL NOT DEFLECT MORE THAN 1/2" IN 5 FEET NOR HAVE ANY KINKS OR RESTRICTIONS TO FLOW. ELBOWS SHALL HAVE A MINIMUM RADIUS OF ONE DUCT DIAMETER WITH INTERIOR LINER FULLY EXTENDED. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN NOR EXHAUST SYSTEMS.

2.02 PROTECTIVE DEVICES
1. FIRE DAMPERS
A. INSTALL NFPA APPROVED, FUSIBLE LINK OPERATED TYPE 'B' FIRE DAMPERS OF SUITABLE RATING IN ALL DUCTWORK PENETRATIONS OF RATED WALLS AND FLOORS IN LOCATIONS REQUIRED BY LOCAL AND STATE ORDINANCES.
B. PROVIDE ACCESS IN BOTH CEILING CONSTRUCTION AND DUCTWORK FOR MAINTENANCE OF ALL FIRE DAMPERS.

3. LOW PRESSURE DUCTWORK
A. CONCEALED SYSTEMS. (DEFINED AS ANY DUCTWORK NOT VISIBLE TO OCCUPANTS OF A SPACE ) PROVIDE MINIMUM 26 GAUGE RECTANGULAR AND/OR ROUND GALVANIZED STEEL SHEET METAL DUCTWORK CONSTRUCTED AND INSTALLED IN THE VENTILATION SYSTEMS IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. SEE HVAC GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
B. EXPOSED SYSTEMS. (DEFINED AS ANY DUCTWORK VISIBLE TO OCCUPANTS OF A SPACE ) FOR ALL DUCTWORK SYSTEMS PROVIDE GALVANEALED STEEL (ASTM A875) SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
I. PROVIDE 2" WG LEAKAGE CLASS FOR ALL SYSTEMS
II. FOR SUPPLY AND OUTSIDE AIR INTAKE DUCTWORK PROVIDE DUAL WALL CONSTRUCTION WITH 2" FIBERGLASS INSULATION (MIN. K= 0.27). INNER WALL SHALL BE SOLID, PERFORATED INNER WALLS ARE NOT ACCEPTABLE.
III. FOR RETURN AND EXHAUST DUCTWORK PROVIDE SINGLE WALL CONSTRUCTION.
IV. ALL DUCTWORK IS TO BE CLEANED OF GREASE, OIL, AND DIRT THEN PRIMED PRIOR TO APPLICATION OF A TOP COAT. CLEANING AND PRIMING ARE TO BE PERFORMED BY PAINTING CONTRACTOR PER THE PAINT MANUFACTURERS RECOMMENDATION. PAINT COLOR SELECTION IS TO BE APPROVED BY THE ARCHITECT.

4. MEDIUM PRESSURE DUCTWORK. (DEFINED AS SUPPLY DUCTWORK DOWNSTREAM OF AIR HANDLER AND UPSTREAM OF VAV BOX ) PROVIDE GALVANEALED STEEL (ASTM A875) SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
A. CONCEALED SYSTEMS. (DEFINED AS ANY DUCTWORK NOT VISIBLE TO OCCUPANTS OF A SPACE ) FOR ALL DUCTWORK SYSTEMS PROVIDE GALVANIZED (ASTM A653) OR GALVANEALED (ASTM A875) STEEL SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
I. PROVIDE 4" WG LEAKAGE CLASS FOR ALL SYSTEMS
II. PROVIDE DUAL WALL CONSTRUCTION WITH 2" FIBERGLASS INSULATION (MIN. K=0.27). INNER WALL SHALL BE SOLID, PERFORATED INNER WALLS ARE NOT ACCEPTABLE.
III. CONNECTIONS BETWEEN ALL DUCT SECTIONS AND FITTINGS TO BE GASKET SEALED.
B. EXPOSED SYSTEMS. (DEFINED AS ANY DUCTWORK VISIBLE TO OCCUPANTS OF A SPACE ) FOR ALL DUCTWORK SYSTEMS PROVIDE GALVANEALED STEEL (ASTM A875) SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
I. PROVIDE 4" WG LEAKAGE CLASS FOR ALL SYSTEMS
II. PROVIDE DUAL WALL CONSTRUCTION WITH 2" FIBERGLASS INSULATION (MIN. K=0.27). INNER WALL SHALL BE SOLID, PERFORATED INNER WALLS ARE NOT ACCEPTABLE.
III. ALL DUCTWORK IS TO BE CLEANED OF GREASE, OIL, AND DIRT THEN PRIMED PRIOR TO APPLICATION OF A TOP COAT. CLEANING AND PRIMING ARE TO BE PERFORMED BY PAINTING CONTRACTOR PER THE PAINT MANUFACTURERS RECOMMENDATION. PAINT COLOR SELECTION IS TO BE APPROVED BY THE ARCHITECT.
IV. CONNECTIONS BETWEEN ALL DUCT SECTIONS AND FITTINGS TO BE GASKET SEALED.

DAMPERS.
PROVIDE APPROVED MANUAL BALANCE DAMPERS WHERE SHOWN ON THE PLANS FOR THE PROPER REGULATION OF THE AIR HANDLING SYSTEM AND SO LOCATE AS TO BE ACCESSIBLE.
GRILLES, REGISTERS, AND DIFFUSERS

1. FURNISH AND INSTALL WHERE INDICATED RETURN AND SUPPLY GRILLES, COMPLETE WITH BAKED ENAMEL FINISH AND OPPOSED BLADE DAMPERS.
2. ALL DUCTWORK AND DIFFUSERS SHALL BE RATED FOR THE USE, PRESSURE AND TEMPERATURE SPECIFIED AND AS REQUIRED BY THE CEILING OR WALL SYSTEM RATING. IF THE CEILING ASSEMBLY IS RATED PROVIDE RADIATION DAMPERS AT THE PENETRATION WHEN THE AREA OF ALL PENETRATIONS, INCLUDING DUCT AND DIFFUSERS, IN THE MEMBRANE EXCEED AN AGGREGATE AREA OF 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF CEILING AREA.
3. DUCT INSULATION: INSULATE ALL SUPPLY, RETURN AND OUTDOOR AIR DUCTWORK WITH A MINIMUM OF 2" THICK 3/4" DENSITY DUCTWRAP INSULATION. ALL INSULATION WILL HAVE FIRE/SMOKE RATING LESS THAN 2550. ALL EXTERIOR DUCTWORK SHALL BE WEATHER-PROOFED WITH A COVERING OF 'ALUMIGUARD' WRAP.

2.04 EXHAUST FANS
FANS SHALL BE AS INDICATED ON DRAWINGS.
2.05 CONTROLS
CONTROLS SHALL BE ELECTRO/ELECTRONIC TYPE. PROVIDE ALL WIRING, ACTUATORS, AND CONTROL DEVICES. FURNISH ALL THERMOSTATS AND SENSORS WITH INSULATED SUB-BASE.

2.06 PROTECTIVE DEVICES
1. MOUNT THERMOSTATS AS INDICATED ON DRAWINGS.
2. THERMOSTAT SHALL COMMUNICATE WITH WEG-BASED CONTROLLER.
3. CONTROL PANELS TO BE LOCATED AS REQUIRED. FOR CONTROLS SYSTEM TO OPERATE, IT SHALL BE ENERGIZED BY 120/10, COORDINATED WITH ELECTRICAL CONTRACTOR AT NO COST TO PROJECT.

2.06 PROTECTIVE DEVICES
1. FIRE DAMPERS
A. INSTALL NFPA APPROVED, FUSIBLE LINK OPERATED TYPE 'B' FIRE DAMPERS OF SUITABLE RATING IN ALL DUCTWORK PENETRATIONS OF RATED WALLS AND FLOORS IN LOCATIONS REQUIRED BY LOCAL AND STATE ORDINANCES.
B. PROVIDE ACCESS IN BOTH CEILING CONSTRUCTION AND DUCTWORK FOR MAINTENANCE OF ALL FIRE DAMPERS.

HVAC GENERAL NOTES

- 1. REFERENCE HVAC SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALL WARRANTIES SHALL BEGIN UPON FINAL ACCEPTANCE BY THE OWNER, NOT BENEFICIAL USE BY THE CONTRACTOR.
3. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATE THE APPROXIMATE ROUTING OF PIPING AND DUCTWORK. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS AND DELAYS MINOR OFFSETS AND ADJUSTMENTS SHALL BE PROVIDED WHERE REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
4. COORDINATE CEILING DIFFUSERS AND REGISTER LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING. COORDINATE SIDE WALL GRILLES AND REGISTERS WITH STRUCTURAL AND ARCHITECTURAL ELEMENTS.
5. DUCT DIMENSIONS INDICATED ON THE DRAWINGS ARE NET AIR SIDE DIMENSIONS.
6. DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. SEAL ALL DUCTS, JOINTS, AND SEAMS IN DUCTWORK TO INSURE AGAINST LEAKAGE. MITERED ELBOWS SHALL BE PROVIDED WITH SINGLE THICKNESS TURNING VANES. SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK SHALL BE GALVANIZED STEEL WITH INSULATION AS NOTED. EXHAUST DUCTWORK SHALL BE GALVANIZED STEEL.
7. INSULATE SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK WITH A MINIMUM OF 2" THICK 3/4" PCF BLANKET INSULATION WITH FOIL VAPOR BARRIER. SEAL ALL JOINTS AND SEAMS IN THE VAPOR BARRIER. FOR ACOUSTICAL REASONS, IN ADDITION TO EXTERIOR INSULATION, ALL RETURN AIR DUCTS WITHIN 15' OF AIR HANDLER ARE TO BE INTERNALLY LINED WITH 1" LAYER OF 3/4" LB DENSITY LINER.
8. DUCT SEALING: PRESSURE SENSITIVE TAPE USED AS THE PRIMARY SEALANT IS TO BE CERTIFIED AND SHALL COMPLY WITH UL-181A OR UL-181B. PROVIDE LONGITUDINAL SEAMS ON RIGID DUCT WITH UL-181A OR UL-181B. PROVIDE LONGITUDINAL SEAMS ON RIGID DUCT WITH UL-181A OR UL-181B. MECHANICAL FASTENERS AND SEALANTS SHALL BE USED TO CONNECT DUCTS AND AIR DISTRIBUTION DEVICES.
9. RECTANGULAR SUPPLY AND RETURN BRANCH TAKE-OFFS SHALL BE 45° THROAT TAKE-OFFS WITH BALANCING DAMPERS IN THE BRANCH DOWNSTREAM OF THE TAKE-OFF. ROUND SUPPLY AND RETURN TAKE-OFFS SHALL BE BELL-MOUTH OR SPIN-IN FITTINGS WITH DAMPERS IN THE BRANCH DOWNSTREAM. PROVIDE BACKDRAFT DAMPERS ON ALL EXHAUST FANS AND/OR INLINE FANS.
10. ALL LOUVERS, ALL GRILLES, EXPOSED PIPING, EXPOSED EQUIPMENT, AND EXPOSED DUCTWORK SHALL BE PAINTED TO MATCH ADJACENT SURFACE COLOR AND TEXTURE OR AS DIRECTED BY THE ARCHITECT. VERIFY COLOR AND TEXTURE WITH THE ARCHITECT PRIOR TO PAINTING. PAINT ALL EXPOSED MECHANICAL EQUIPMENT WITH BENJAMIN MOORE EPOXY ENAMEL 182 OR AS DIRECTED BY THE ARCHITECT.
11. THERMOSTATS AND SENSORS SHALL BE LOCATED 48" A.F.F. UNLESS OTHERWISE NOTED. ALL CONDUIT, ROUGH IN ELECTRICAL BOXES AND WIRING, EXCLUDING LOW VOLTAGE CONTROL WIRING, SHALL BE INCLUDED UNDER THE ELECTRICAL SECTION OF THE CONTRACT DOCUMENTS, COORDINATE REQUIREMENTS AND ROUGH IN LOCATIONS FOR ALL CONTROL DEVICES. ELECTRICAL CONNECTIONS TO EQUIPMENT, AND SWITCH LOCATION. CONTROL WIRING SHALL BE PROVIDED AND INSTALLED UNDER THE MECHANICAL SECTION OF THE CONTRACT DOCUMENTS.
12. PROVIDE A 1/2" (MINIMUM) ACCESS DOOR FOR ACCESS TO ALL DAMPERS, CONTROL DAMPERS, EXTRACTORS, PLENUMS, OR ANY OTHER DEVICE MOUNTED IN THE DUCT SYSTEM.
13. INSTALL ALL EQUIPMENT ACCORDING TO THE MANUFACTURERS' INSTRUCTIONS.
14. REFRIGERANT PIPING SHALL BE PRE-CHARGED TUBING PACKAGES OR TYPE ACR COPPER TUBING IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
15. PROVIDE A MINIMUM OF 10' CLEARANCE BETWEEN FRESH AIR INTAKES AND EXHAUST OUTLETS, RELIEF OUTLETS, PLUMBING VENTS, ETC.
16. PROVIDE CONDENSATE DRAINS WITH A VENTED P-TRAP FOR ALL COOLING COILS. P-TRAPS TO BE PVC ON INTERIOR INSTALLED EQUIPMENT AND TYPE M COPPER ON EXTERIOR INSTALLED EQUIPMENT.
17. THE OUTSIDE AIR QUANTITIES ARE CALCULATED ACCORDING TO TABLE 6.1 'MINIMUM VENTILATION RATES IN BREATHING ZONE' OF ASHRAE STANDARD 62.1. CHAPTER 6 'DESIGN FOR VARYING OPERATING CONDITIONS' HAS BEEN UTILIZED AS ALLOWED TO REDUCE AIRFLOW RATES FOR INTERMITTENT USE.
18. AFTER THE CONSTRUCTION OF THE BUILDING HAS REACHED A POINT WHERE THE PERMANENT HEATING AND COOLING SYSTEMS ARE OPERABLE, THE CONTRACTOR MAY, AT HIS OPTION, USE THE PERMANENT HEATING AND COOLING EQUIPMENT FOR TEMPORARY ENVIRONMENTAL CONTROL. THE CONTRACTOR MUST SUBMIT A REQUEST FOR USE TO THE ARCHITECT OUTLINING THE INTENDED USE. THE HEATING SYSTEM SHALL NOT BE USED FOR TEMPORARY HEAT UNTIL THE BUILDING IS BROOK CLEAN AND SHALL NOT BE USED WITHOUT ALL FILTERS IN PLACE. FILTERS MUST BE CHECKED WEEKLY AND REPLACED AS REQUIRED TO PROTECT THE EQUIPMENT AND DUCT SYSTEMS. UPON THE COMPLETION OF THE WORK, AND PRIOR TO SUBSTANTIAL COMPLETION, ALL DUCTWORK AND EQUIPMENT SHALL BE INTERNALLY CLEANED AND ALL FILTERS SHALL BE REPLACED WITH NEW FILTERS.
19. ALL OF THE COSTS ASSOCIATED WITH PROVIDING TEMPORARY HEATING AND COOLING SHALL BE BORNE SOLELY BY THE CONTRACTOR, INCLUDING BUT NOT LIMITED POWER CONSUMPTION, ADDITIONAL ACCESS DOORS FOR CLEANING, FILTERS, DUCT AND EQUIPMENT CLEANING, ENGINEERS TIME, TEST AND BALANCE AGENT TIME TO SUPPORT THE ENGINEERS INSPECTION, ETC.
20. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL EQUIPMENT WITH THE ELECTRICAL SERVICE AND THE EC. THE SCOPE OF THIS COORDINATION INCLUDES BUT IS NOT LIMITED TO, REQUIRED VOLTAGE, PHASE, AMP CAPACITY, WIRE SIZE, CONDUIT SIZE AND LOCATION, DISCONNECT SIZE AND LOCATION, FUSE SIZE, ETC. IN THE EVENT OF A CONFLICT, THE MC IS TO NOTIFY THE ENGINEER PRIOR TO MECHANICAL AND ELECTRICAL EQUIPMENT BEING ORDERED.
21. ALL CUTTING, PATCHING, STRUCTURAL STEEL, WEATHER PROOFING, PAINTING, AND WALL OPENINGS REQUIRED FOR THE INSTALLATION OF MECHANICAL WORK SHALL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE OWNER. COORDINATE WITH OTHER TRADES.
22. PROVIDE VIBRATION ISOLATORS ON ALL MECHANICAL EQUIPMENT. IF NOT SPECIFICALLY CALLED OUT, PROVIDE AS RECOMMENDED BY MANUFACTURER FOR QUIET OPERATION.
23. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO BIDDING, ORDERING, FABRICATION OR INSTALLATION OF MATERIALS OR EQUIPMENT.
24. SUBMITTALS AND ACCEPTANCE: THE CONTRACTOR SHALL SUBMIT A MINIMUM OF THREE (3) SETS OF HVAC SHOP DRAWINGS TO THE PROJECT MANAGER WHO SHALL THEN RELAY THEM TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PURCHASE OF EQUIPMENT. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL SUBMIT OPERATION AND MAINTENANCE MANUALS FOR ALL MECHANICAL EQUIPMENT INCLUDED IN THE PROJECT. THE MANUALS SHALL BE COMPILED INTO A THREE RING BINDER AND TURNED OVER TO BUILDING OWNER.

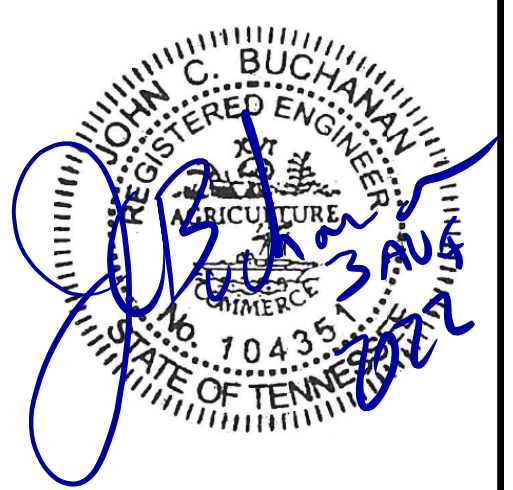
HVAC SYMBOLS AND ABBREVIATIONS

Table with 3 columns: Symbol, Description, and Abbreviation. Symbols include circles with numbers, rectangles with numbers, and various pipe/duct symbols. Descriptions include Round Ductwork, Rectangular Supply and Return Ductwork, Flexible Duct, Supply or Outside Air Duct Up, Supply or Outside Air Duct Down, Return Air Duct Up, Return Air Duct Down, Existing Ductwork to Remain, Existing Ductwork to be Removed, 90 Degree Ductwork Elbow, Radius Ductwork Elbow, Flared Spin-in with Damper and Flex Duct, Round and Rectangular Duct Branch Take-off from Rectangular Main with Conical Tap, Ductwork Size Transition, Ductwork Square to Round Transition, Point of Connection to Existing, Thermostat, Sensor, Switch, Motor Operated Damper, Smoke Detector, Fire Damper, Security Bar, Diffuser/Grille Label, Volume Control Damper, Chilled Water Supply Pipe, Chilled Water Return Pipe, Hot Water Supply Pipe, Hot Water Return Pipe, Existing Piping to Remain, Existing to be Removed, Refrigerant Gas Line, Refrigerant Liquid Line, Refrigerant Suction Line, Strainer, Gas Cook, Balancing Valve, Plug Valve, Gate Valve, Butterfly Valve, Ball Valve, Check Valve, Triple Duty Valve, Pressure Relief Valve, Pipe Turning Down, Pipe Turning Up, Thermometer, Gauge, Pipe Sleeve or Guide, Pipe Anchor, Gauge Cock.



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PROJECT INFORMATION
PROJECT:
1625 Highland Ave, Knoxville, 37916
PROJECT NO.: 220737
ACTIVE DESIGN PHASE
FOR REVIEW ONLY
FOR PERMITTING ONLY
SCHEMATIC DESIGN
DESIGN DEVELOPMENT
CONSTRUCTION BIDDING
CONSTRUCTION DOCUMENTS
AS-BUILT RECORD SET

REVISION INFORMATION
NO. DATE DESCRIPTION

KEY PLAN

SHEET INFORMATION
SHEET ISSUED: 8/3/2022
DESIGNED BY: RFC
DRAWN BY: RFC
REVIEWED BY: JCB
SHEET TITLE:

HVAC LEGENDS, SPECIFICATIONS, AND NOTES

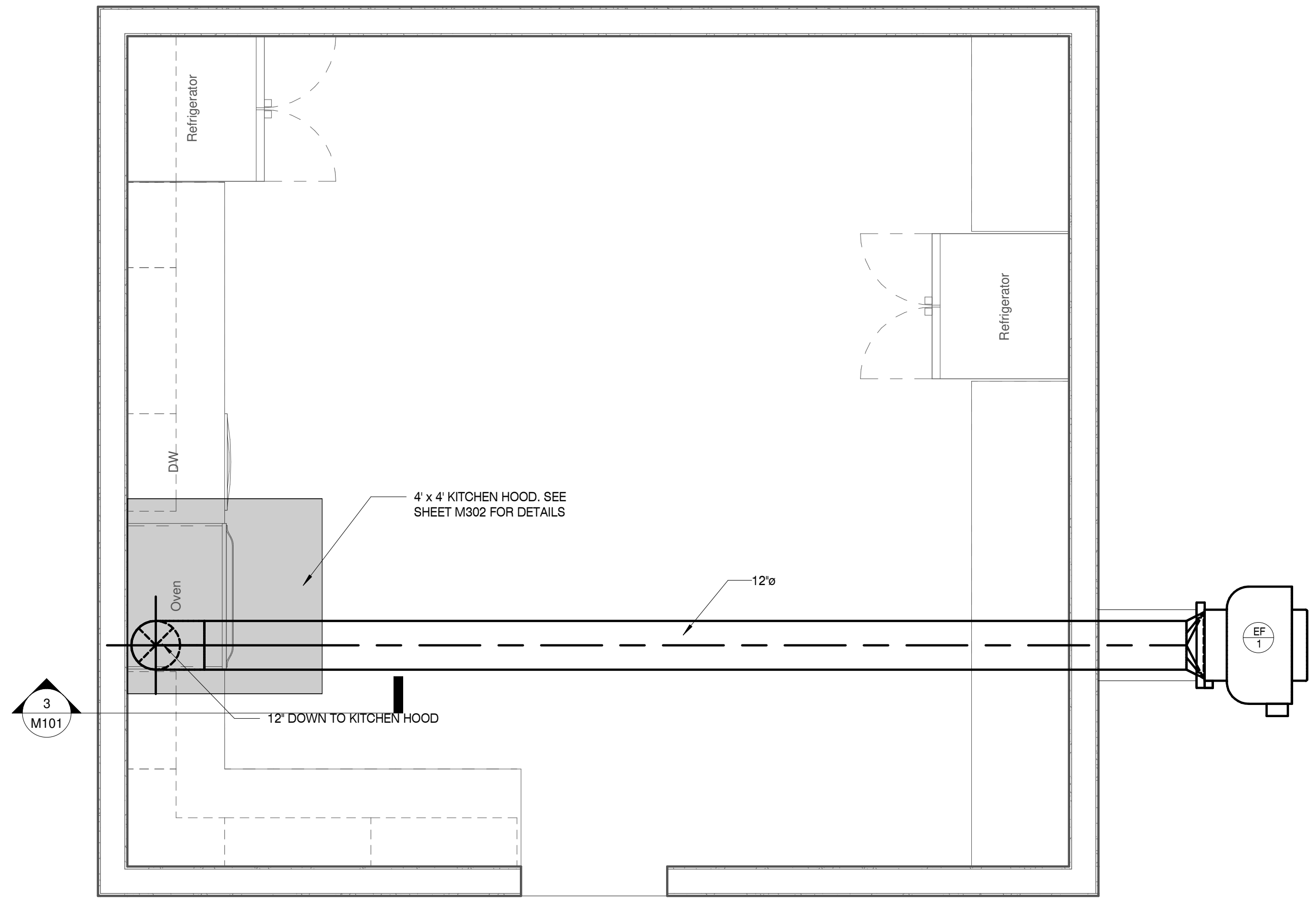
SHEET NO.: M001

**GENERAL NOTES**

- COORDINATE EXACT CEILING GRILLE LOCATION WITH REFLECTED CEILING PLAN AND LIGHTING PLAN.
- UNLESS SPECIFICALLY NOTED OTHERWISE, ROUTE ALL DUCTWORK IN CEILING SPACE.

**KITCHEN HOOD EXHAUST SYSTEM NOTES**

- KITCHEN TYPE I EXHAUST HOODS SHALL BE UL LISTED (SEE UL LISTING DESCRIPTION).
- JOINTS AND SEAMS ON EXHAUST HOODS SHALL BE WELDED LIQUID-TIGHT.
- EXHAUST FAN MOTOR SHALL BE LOCATED OUTSIDE OF THE EXHAUST DUCT. EXHAUST DISCHARGE MUST TERMINATE AT MINIMUM OF 40 INCHES ABOVE THE ROOF SURFACE. ALL OUTSIDE AIR INTAKES SHALL BE LOCATED A MINIMUM OF 10 FEET AWAY FROM THE EXHAUST DUCT TERMINATION.
- GREASE TROUGH SHALL BE SLOPED TO REMOVABLE GREASE CUP (1 GALLON MAX).
- CLEARANCE TO COMBUSTIBLES SHALL BE OBSERVED FOR THE FOLLOWING: 18 INCHES, OR 2-HOUR RATED DUCT W/ DESIGN LISTING INFORMATION, OR 9 IN. OR 3 IN., FOLLOWING NFPA 96 GUIDELINES (1-3.2.1).
- EXHAUST HOOD METAL SHALL BE A MINIMUM OF 18 GA ALUMINIZED STEEL AND 20 GA STAINLESS STEEL.
- DISTANCE FROM THE FLOOR TO THE BOTTOM OF THE HOOD ON A CANOPY EXHAUST HOOD SHALL BE 75" - 84".
- DISTANCE FROM THE COOKING SURFACE TO THE BOTTOM OF THE FILTER SHALL BE GREATER THAN 18" (SEE DRAWING).
- CLEANOUTS ON THE EXHAUST DUCT SHALL BE PROVIDED AT ALL CHANGES OF DIRECTION AND 20 FOOT INTERVALS ON ALL HORIZONTAL RUNS.
- CLEANOUTS ON THE EXHAUST DUCT SHALL HAVE A MINIMUM DIMENSION OF 12".
- AN AUTOMATIC SUPPRESSION SYSTEM COMPLYING WITH UL300 SHALL BE INSTALLED IN THE KITCHEN HOOD SYSTEM.
- IF A FIRE ALARM IS PROVIDED, THE AUTOMATIC SUPPRESSION SYSTEM MUST BE CONNECTED TO THE FIRE ALARM SYSTEM.
- ACTIVATION OF THE SYSTEM SHALL AUTOMATICALLY SHUT OFF ALL FUEL AND HEAT COMPONENTS TO ALL EQUIPMENT UNDER THE HOOD.
- MANUAL ACTIVATION OF THE SUPPRESSION SYSTEM SHALL BE LOCATED AT LEAST 10' BUT NOT MORE THAN 20' AWAY FROM THE EXHAUST HOOD, IN THE PATH OF EGRESS.
- ALL KITCHEN EXHAUST DUCT MUST SLOPE NOT LESS THAN 1/4" PER FOOT TOWARD THE HOOD.
- DUCT MUST BE CONSTRUCTED OF STEEL NOT LESS THAN 16 GAUGE IN THICKNESS OR STAINLESS STEEL NOT LESS THAN 18 GAUGE IN THICKNESS. ALL SEAMS, JOINTS, AND PENETRATIONS SHALL HAVE LIQUID TIGHT EXTERNAL WELDS.
- EXHAUST FANS MUST BE POSITIONED SO THAT THE DISCHARGE DOES NOT IMPINGE ON THE ROOF, OTHER EQUIPMENT, OR APPLIANCE, OR PARTS OF THE STRUCTURE.



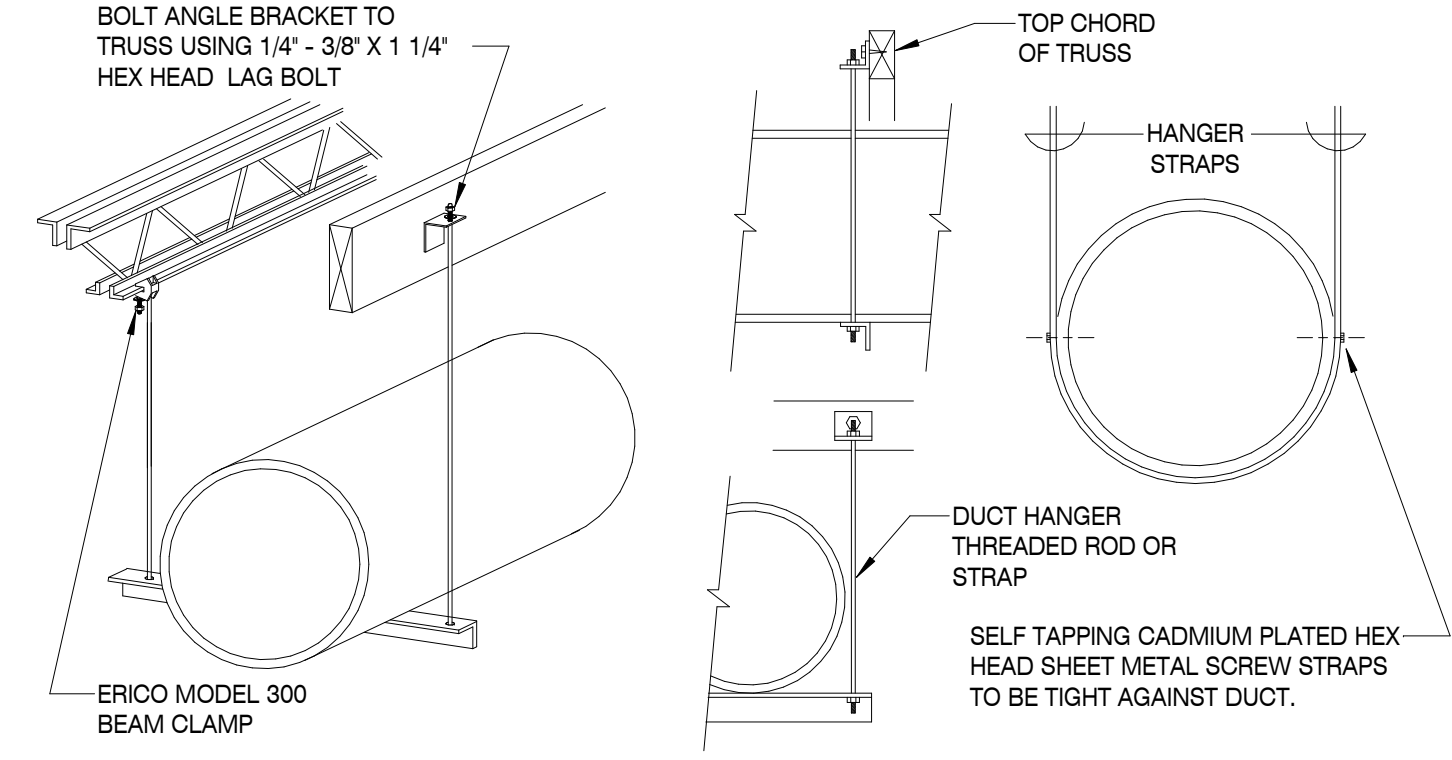
**KITCHEN PLAN - HVAC**  
SCALE: 1/2" = 1'-0"

**HANGER SIZES FOR ROUND DUCT**

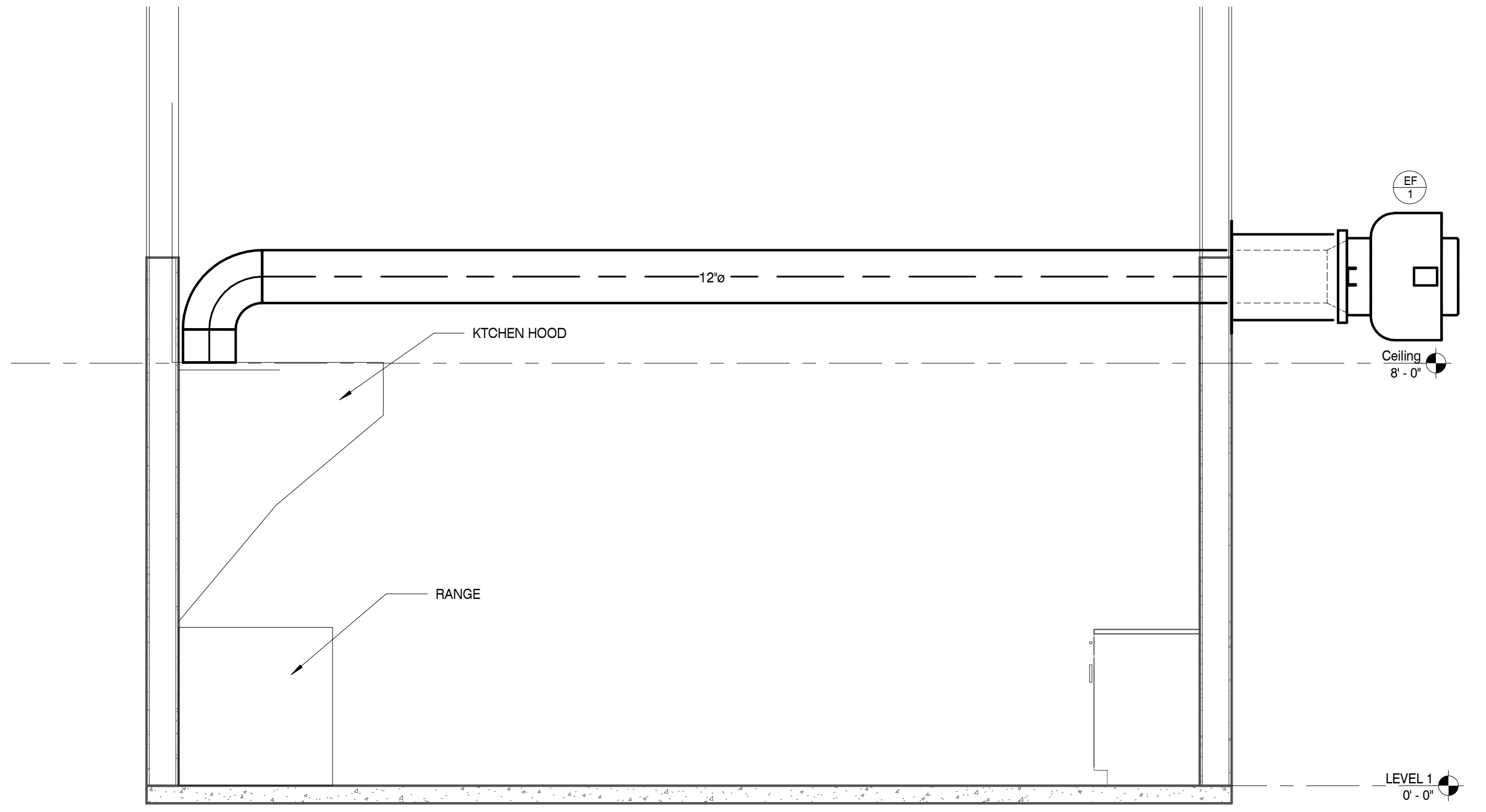
MAX SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x 18-GAGE STRAP	1-1/2"x1/2"x1/8"	10'-0"
36"	1/4" ROUND ROD	1-1/2"x1/2"x1/8"	8'-0"
48"	1/4" ROUND ROD	2"x2"x1/8"	8'-0"
60"	5/16" ROUND ROD	2"x2"x1/8"	8'-0"
84"	5/16" ROUND ROD	2"x2"x1/8"	8'-0"

NOTE:  
ALL SUPPLY AIR DUCTS SHALL BE WRAPPED EXTERNALLY AS PER SPECIFICATIONS.

NO POP RIVETS ALLOWED



**ROUND DUCT HANGER DETAIL**  
SCALE: 1/8" = 1'-0"



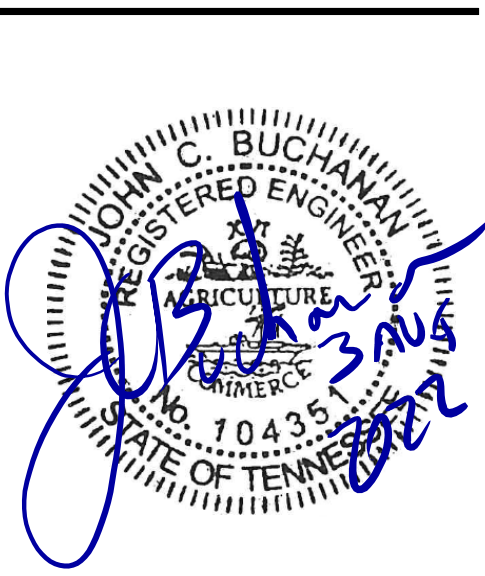
**KITCHEN HOOD SECTION**  
SCALE: 1/2" = 1'-0"



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**CONSULTANT**  
MECHANICAL ENGINEER:

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**PROJECT INFORMATION**

PROJECT:  
**FIRE STATION# 9  
KITCHEN HOOD**  
PROJECT ADDRESS:  
1625 Highland Ave, Knoxville, 37916  
PROJECT NO.: **220737**

**ACTIVE DESIGN PHASE**

FOR REVIEW ONLY  
 FOR PERMITTING ONLY  
 SCHEMATIC DESIGN  
 DESIGN DEVELOPMENT  
 CONSTRUCTION BIDDING  
 CONSTRUCTION DOCUMENTS  
 AS-BUILT RECORD SET

**REVISION INFORMATION**

NO.	DATE	DESCRIPTION

**KEY PLAN**



**SHEET INFORMATION**

SHEET ISSUED: 8/3/2022  
 DESIGNED BY: RFC  
 DRAWN BY: RFC  
 REVIEWED BY: JCB  
 SHEET TITLE:

**FLOOR PLAN - HVAC**  
SHEET NO.:

**M101**

FOR QUESTIONS, CALL THE  
 Charlotte Piedmont  
 REGION 30  
 PHONE: (704) 844-9088  
 EMAIL: rsg30@captiveaire.com

HOOD INFORMATION										EXHAUST PLENUM RISER(S)				HOOD CONFIG		SWITCHES					
HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN GRMFT	TOTAL EXH GRM	WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	HOOD CONSTRUCTION	END TO END	ROW	QUANTITY	LOCATION
1		4812-SND-2	CAPTIVEAIRE	4' 0"	450 DEG	I	MEDIUM	200	800	4"	10"	800	1467	0.290"			430 SS WHERE EXPOSED	ALONE	ALONE	1 FAN	FRONT LEFT FACE

HOOD INFORMATION										UTILITY CABINETS		ELECTRICAL		SWITCHES		FIRE HOOD				
HOOD NO	TAG	FILTER(S)			EFFICIENCY @ 7 MICRONS			LIGHT(S)			FIRE SYSTEM		MODEL #		QUANTITY		HOOD SYSTEM HANGING PIPING			
1		SS BAFFLE WITH HANDLES			30%			RECESSED ROUND			NO						YES		213 LBS	

HOOD OPTIONS		OPTION
HOOD NO	TAG	
1		FIELD WRAPPER 6.00" HIGH FRONT, LEFT, RIGHT. BACKSPASH 66.00" HIGH X 50.00" LONG 430 SS VERTICAL. LEFT END STANDOFF(FINSLP) 1" WIDE 48" LONG INSULATED. RIGHT END STANDOFF(FINSLP) 1" WIDE 48" LONG INSULATED. RIGHT QUARTER END PANEL 27" TOP WIDTH, 0" BOTTOM WIDTH, 27" HIGH 430 SS. LEFT QUARTER END PANEL 27" TOP WIDTH, 0" BOTTOM WIDTH, 27" HIGH 430 SS. RISER SENSOR INSTALL IN PLEN.

**GREASE DUCT & CHIMNEY SPECIFICATIONS:**  
 PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "Y" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.  
 PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".  
 DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.  
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

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

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

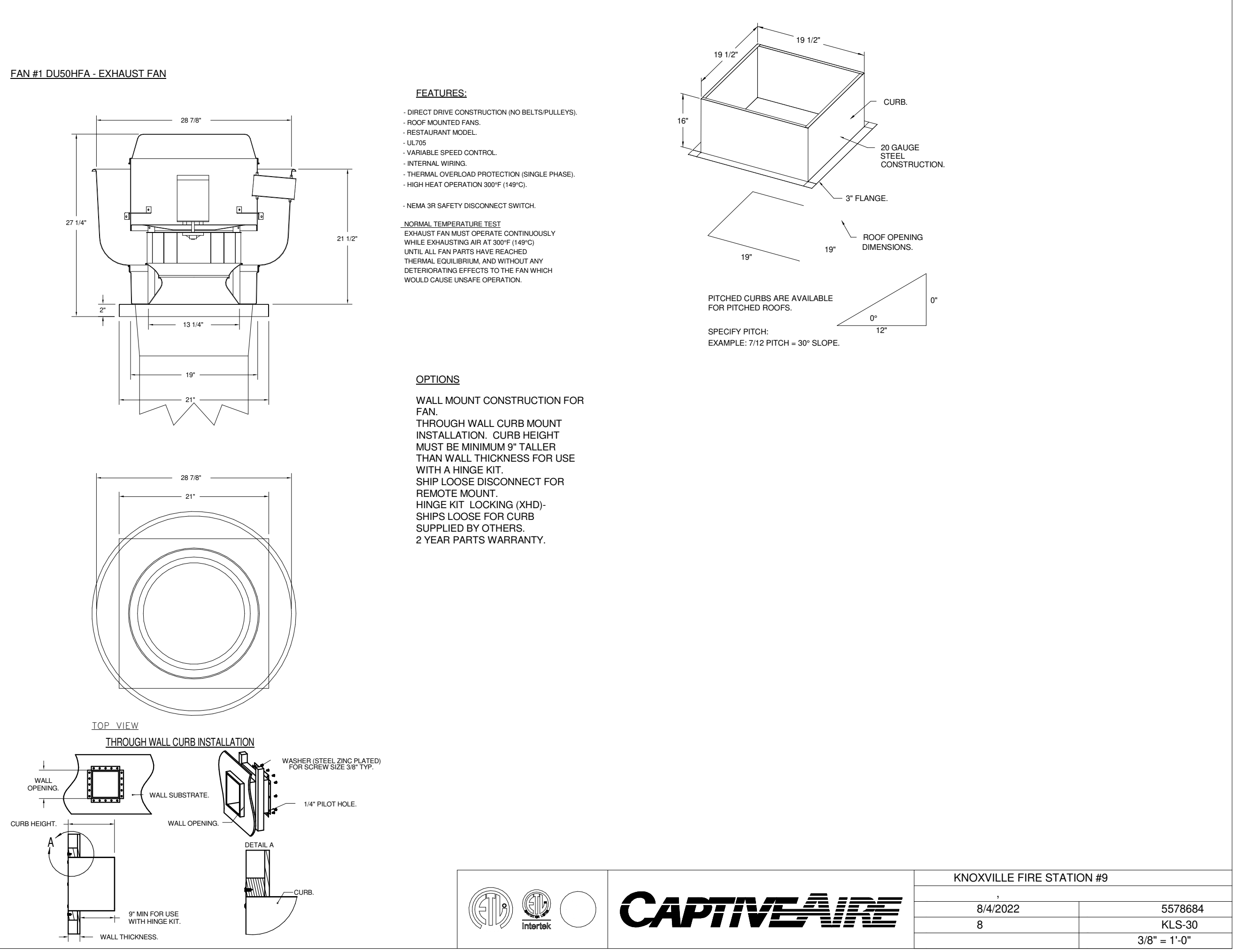
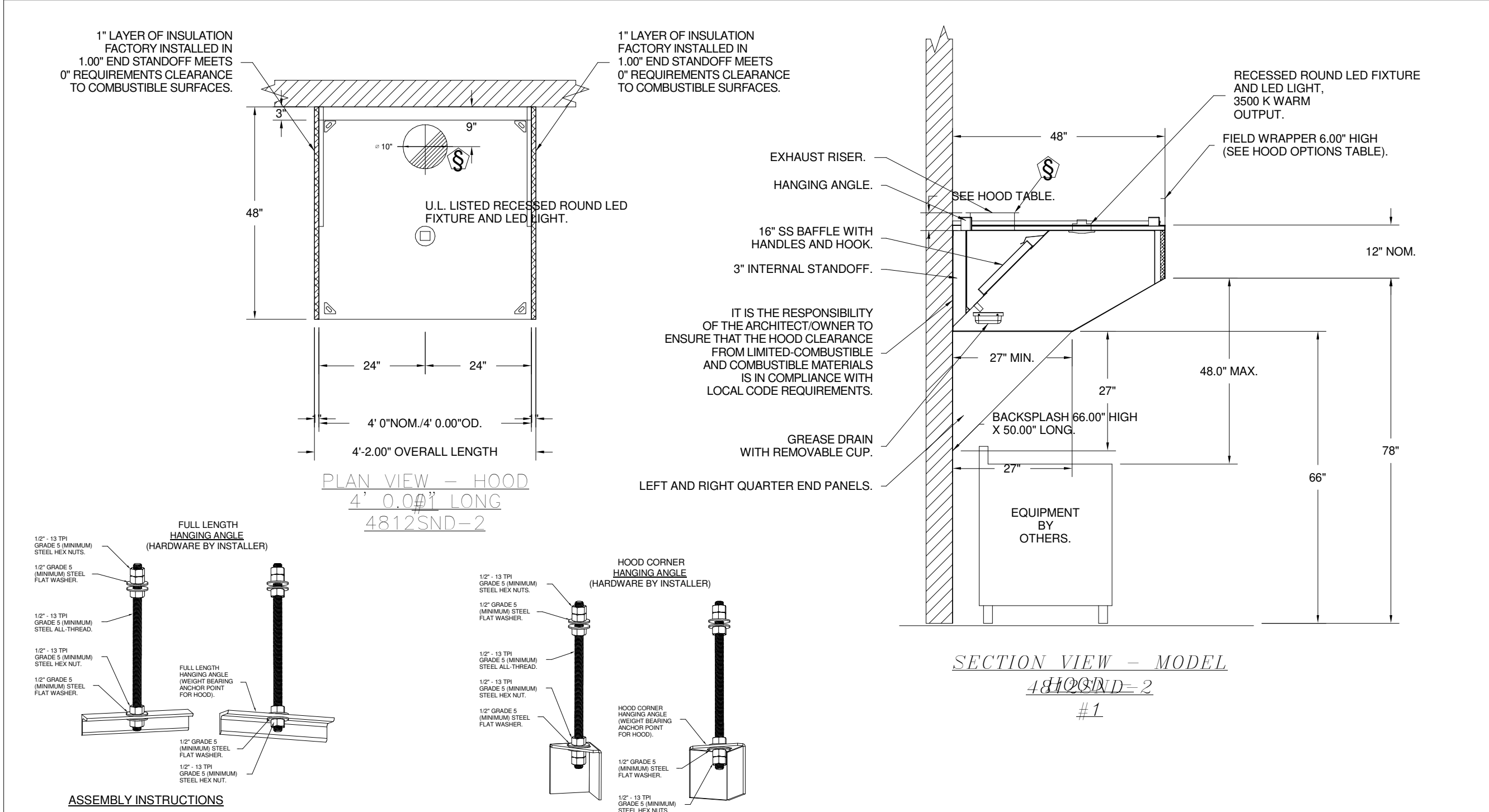
**VERIFY CEILING HEIGHT**  
 HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS.

**CUSTOMER APPROVAL TO MANUFACTURE:**  
 APPROVED AS NOTED:   
 APPROVED WITH NO EXCEPTION:   
 TAKEN:   
 REVISE AND RESUBMIT:   
 SIGNATURE: \_\_\_\_\_  
 TITLE: \_\_\_\_\_  
 DATE: \_\_\_\_\_

**PATENT NUMBERS**  
 EXHAUST HOODS ND-2/BD-2/SND-2 (CANADA); CA PATENT 2520435 C.

KNOXVILLE FIRE STATION #9	
8/4/2022	5578684
1	KLS-30
3/8" = 1'-0"	

KNOXVILLE FIRE STATION #9	
8/4/2022	5578684
2	KLS-30
3/8" = 1'-0"	



KNOXVILLE FIRE STATION #9	
8/4/2022	5578684
3	KLS-30
3/8" = 1'-0"	

KNOXVILLE FIRE STATION #9	
8/4/2022	5578684
8	KLS-30
3/8" = 1'-0"	

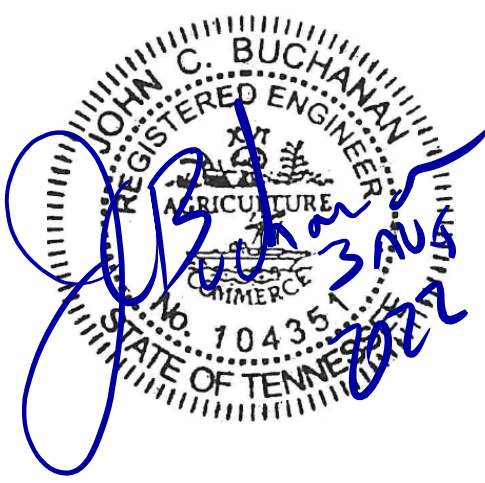


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**CONSULTANT**  
 MECHANICAL ENGINEER:

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**SEAL**



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**PROJECT INFORMATION**

PROJECT:

**FIRE STATION# 9 KITCHEN HOOD**

PROJECT ADDRESS:

1625 Highland Ave, Knoxville, 37916  
 PROJECT NO.: 220737

**ACTIVE DESIGN PHASE**

- FOR REVIEW ONLY
- FOR PERMITTING ONLY
- SCHEMATIC DESIGN
- DESIGN DEVELOPMENT
- CONSTRUCTION BIDDING
- CONSTRUCTION DOCUMENTS
- AS-BUILT RECORD SET

**REVISION INFORMATION**

NO.	DATE	DESCRIPTION

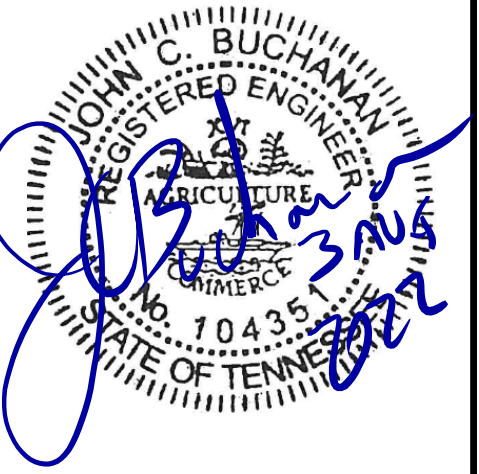
**KEY PLAN**

**SHEET INFORMATION**

SHEET ISSUED: 8/3/2022  
 DESIGNED BY: RFC  
 DRAWN BY: RFC  
 REVIEWED BY: JCB  
 SHEET TITLE:

**HVAC DETAILS**

SHEET NO.: M301



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PROJECT INFORMATION

PROJECT: FIRE STATION# 9 KITCHEN HOOD

PROJECT ADDRESS: 1625 Highland Ave, Knoxville, 37916

PROJECT NO.: 220737

ACTIVE DESIGN PHASE

- FOR REVIEW ONLY
FOR PERMITTING ONLY
SCHEMATIC DESIGN
DESIGN DEVELOPMENT
CONSTRUCTION BIDDING
CONSTRUCTION DOCUMENTS
AS-BUILT RECORD SET

REVISION INFORMATION

Table with columns: NO., DATE, DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED: 8/3/2022
DESIGNED BY: RFC
DRAWN BY: RFC
REVIEWED BY: JCB
SHEET TITLE:

HVAC DETAILS

SHEET NO.: M302

SECTION 23 38 13 13 SPECIFICATIONS

TAG: Commercial Kitchen Ventilation Hoods, Listed Commercial Kitchen Hoods

PART 1 - GENERAL

1.1 SUMMARY

A. The SMC-2 series is a Type 1 sloped wall canopy hood for use over 400°F cooking surface temperatures. The sloped canopy is the ideal hood choice for low ceiling heights.

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

1.2 SUBMITTALS

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

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

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

1.3 QUALITY ASSURANCE

A. This hood is ETL listed to standard UL710, UL-C710, and UL-C848 when installed in accordance with these installation instructions and National Fire Protection Association Standard NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.

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

C. The hood shall be ETL Listed as:

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

1.4 WARRANTY

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

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

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

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

PART 2 - PRODUCTS

2.1 GENERAL

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

B. Duct sizes, CFM, and static pressure requirements shall be as shown

on drawings. Static pressure requirements shall be precise and accurate; air velocity and volume information shall be accurate within 1-ft increments along the length of the ventilator.

2.2 CONSTRUCTION

A. Construction shall be type 430 stainless steel.

B. Double wall insulated front to eliminate condensation and increase rigidity on wide sides. The insulation shall have a flexural modulus of 475 EI, meet UL 191 requirements and be in accordance with NFPA 96A and 96B.

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

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

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

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

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

2.3 LIGHTING

A. Recessed round LED fixture and LED light, 3500K Warm output.

2.4 FILTERS

A. Kleen-Gard Stainless Steel Baffle Filter with Handles and Bottom Hanging Hook, UL Classified.

2.5 OPTIONS

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

B. End Panel(s) maximize hood performance and eliminate the effects of cross drafts in the kitchen. Delta construction of stainless steel and listed according to hood width and cooking equipment. Exposed edges hemmed for safety and rigidity.

1. Quarter End Panel. Selected panels:

- 1. Quarter End Panel
2. Right End Standoff

C. Standoff(s) selected:

- 1. Left End Standoff
2. Right End Standoff

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

- 1. Wrapper

E. Miscellaneous option(s) selected:

- 1. Floor Sensor Install - Sensor set-up for 6" plenum.

3.1 EXAMINATION

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

3.2 INSTALLATION

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

FIRE SYSTEM INFORMATION

Table with columns: FIRE SYSTEM NO., TAG, TYPE, SIZE, FLOW POINTS, INSTALLATION

CLASSIFICATION

Table with columns: FIRE SYSTEM NO., TAG, TYPE, SIZE, SUPPLIED BY

FIRE SYSTEM PARTS LIST KEY

Table with columns: FIRE SYSTEM NO., TAG, KEY NUMBER, PART DESCRIPTION, QTY BY FACTORY, QTY BY DIST

PART 3 - EXECUTION

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

Table with columns: EXHAUST FAN INFORMATION, FAN UNIT NO., TAG, QTY, FAN UNIT MODEL #, MANUFACTURER, CFM, ESP, RPM, MOTOR ENCL, HP, BHP, PHASE, VOLT, FLA, DISCHARGE VELOCITY, WEIGHT (LBS), SONES

FAN OPTIONS

Table with columns: FAN UNIT NO., TAG, QTY, DESCRIPTION

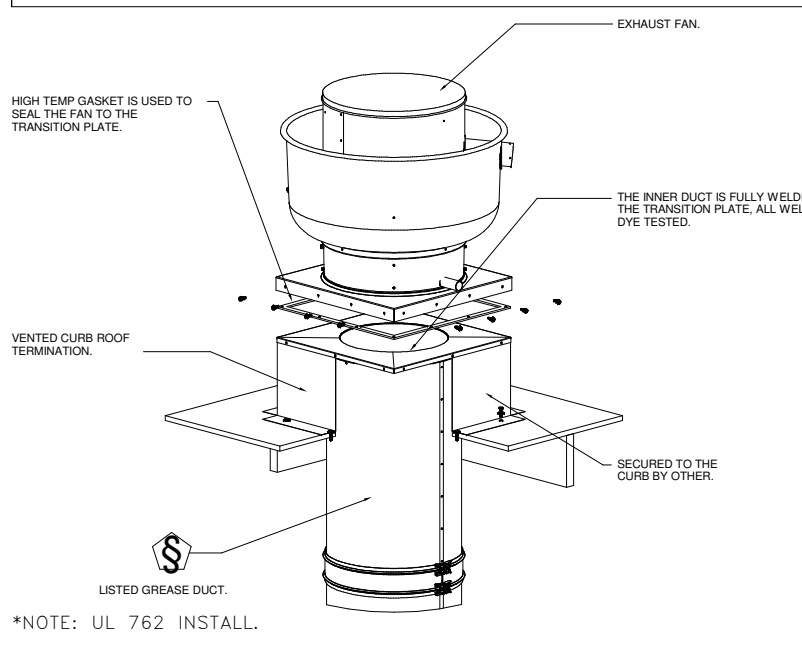
CURB ASSEMBLIES

Table with columns: NO, ON FAN, WEIGHT, ITEM, SIZE

GREASE DUCT & CHIMNEY SPECIFICATIONS: PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK, MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS...

CUSTOMER APPROVAL TO MANUFACTURE:

Approval form with checkboxes for APPROVED BY, APPROVED WITH NO EXCEPTIONS, DATE, SIGNATURE, TITLE.

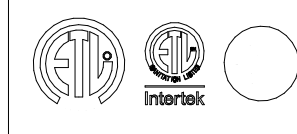


\*NOTE: UL 762 INSTALL.

Logo for CAPTIVEAIRE and Intertek, along with project details for KNOXVILLE FIRE STATION #9, including dates and part numbers.

Logo for CAPTIVEAIRE and Intertek, along with project details for KNOXVILLE FIRE STATION #9, including dates and part numbers.

DUCTWORK #1 PARTS - JOB#5578684										
TAG	PART #	QFM	GPM	ZONE	COVERED	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	DW1007LT	800				-0.0029	2.80	1466.77	1	SINGLE WALL DUCT 10" DIAMETER, 7' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.
P2	DW1012ADKIT	800				-0.0021	5.82	1466.77	1	SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 11.5' LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL.
P3	DW1006ASY	800				-0.008	6.49	1466.77	1	SINGLE WALL DUCT 90 DEGREE ELBOW, 10" DUCT, ASSEMBLY.
P4	DW1004CD	800				-0.002	1.77	1466.77	1	SINGLE WALL DUCT OFF SET COLLAR, 10" DIAMETER DUCT, 1/2" PITCH.
P5	DW1047LT	800				-0.0212	15.72	1466.77	1	SINGLE WALL DUCT 10" DIAMETER, 47' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.
P6	DW1026LT	800				-0.0131	9.75	1466.77	1	SINGLE WALL DUCT 10" DIAMETER, 29' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.
P7	DW1048ADKIT	800				-0.0108	18.63	1466.77	1	SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 47.5' LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL.
P8	DW1055URASY	800				2.54			1	DUCT SUPPORT BRACKET KIT, 10" DUCT, USED FOR HANGING DUCT, 12 GA STEEL, CLEAR ZINC COATING, - 2 RINGS, 4 BRACKETS, & HARDWARE BAG 2.
P9	DW10TEASY	800	1			-0.01	10.16	1466.77	1	SINGLE WALL DUCT TEE, 10" DUCT, ASSEMBLY.
P10	ASSEMBLED WP10									
P11	DW1043LT	800				-0.0207	15.72	1466.77	1	SINGLE WALL DUCT 10" DIAMETER, 47' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.
P12	DW1048ADKIT	800				-0.0093	18.63	1466.77	1	SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 47.5' LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL.
P13	DW1055URASY	800				2.54			1	DUCT SUPPORT BRACKET KIT, 10" DUCT, USED FOR HANGING DUCT, 12 GA STEEL, CLEAR ZINC COATING, - 2 RINGS, 4 BRACKETS, & HARDWARE BAG 2.
P14	DW1004CD	800				-0.002	1.77	1466.77	1	SINGLE WALL DUCT OFF SET COLLAR - 10" DIAMETER DUCT - 1/2" PITCH.
P15	DW1011LT	800				-0.005	3.90	1466.77	1	SINGLE WALL DUCT 10" DIAMETER, 11' LONG, FLANGE AT BOTH ENDS, STAINLESS STEEL.
P16	ASSEMBLED WP17					-0.006	10.09	1466.77	1	SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 23.5' LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL.
P17	ASSEMBLED WP16									
P18	DW1910TPOBEX	800					7.50	1466.77	1	DUCT TO CURB TRANSITION 3/4" DOWN TURN, 19-1/2" CURB TO 10" DUCT, 16 GA ALUMINIZED STEEL, FOR USE WITH EXHAUST FANS.
P19	3M 2000PLUS						0.80		3	DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.
P20	DW10CLASY						0.82		14	DUCT "C" CLAMP WITH NEW DESIGN 14 GA BRACKETS, 10" DUCT, ASSEMBLY.
<b>TOTAL WEIGHT</b>							149.74			



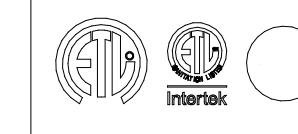
**CAPTIVEAIR**

KNOXVILLE FIRE STATION #9			
8/4/2022	5578684		
11	KLS-30	3/8" = 1'-0"	

**SINGLE WALL FACTORY-BUILT DUCTWORK**  
 - ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.  
 - FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.  
 - DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.  
 - WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

DUCT DIAMETER	HORIZONTAL SUPPORT (FT)	VERTICAL WALL SUPPORT (FT)	VERTICAL CURB SUPPORT (FT)
5"	10'	10'	24'
6"	10'	10'	24'
7"	10'	10'	24'
8"	10'	10'	24'
10"	10'	10'	24'
12"	10'	10'	24'
14"	10'	10'	24'
16"	10'	10'	24'
18"	10'	10'	24'
20"	10'	10'	24'
22"	10'	10'	24'
24"	10'	10'	24'
26"	10'	10'	24'
28"	10'	10'	24'
30"	10'	10'	24'
32"	10'	10'	24'
34"	10'	10'	24'
36"	10'	10'	24'

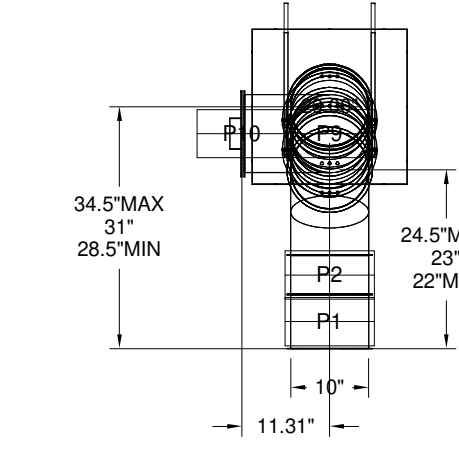
DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIR FOR PROPER LEAK TESTING METHODS.



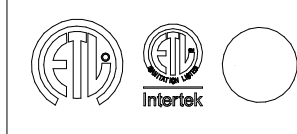
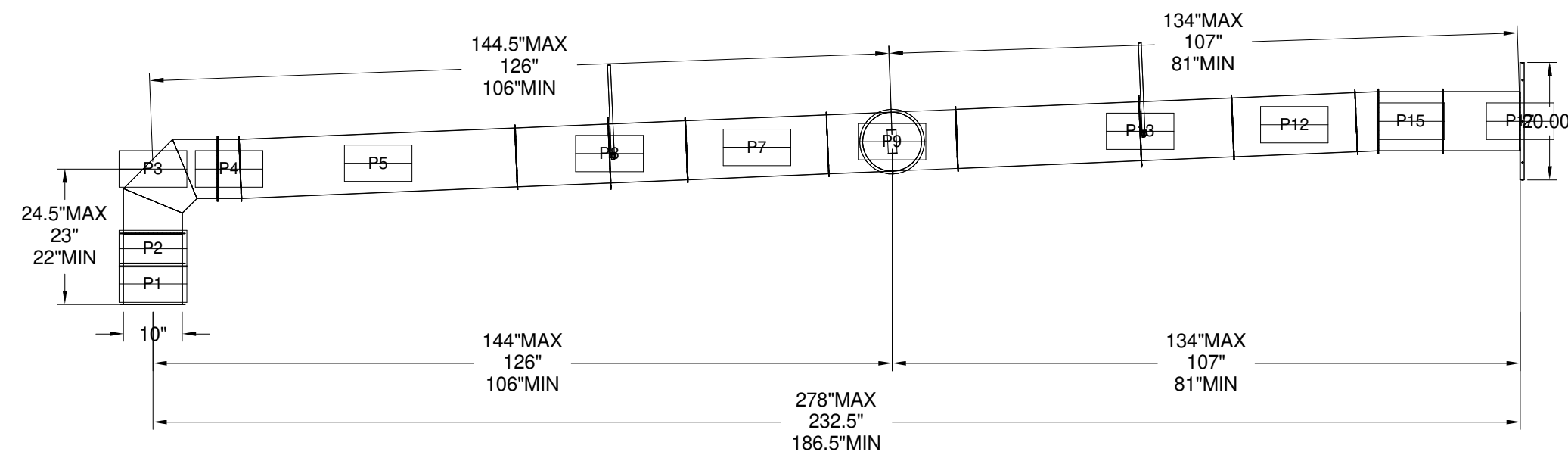
**CAPTIVEAIR**

KNOXVILLE FIRE STATION #9			
8/4/2022	5578684		
12	KLS-30	3/8" = 1'-0"	

DUCTWORK #1 FRONT VIEW



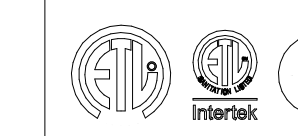
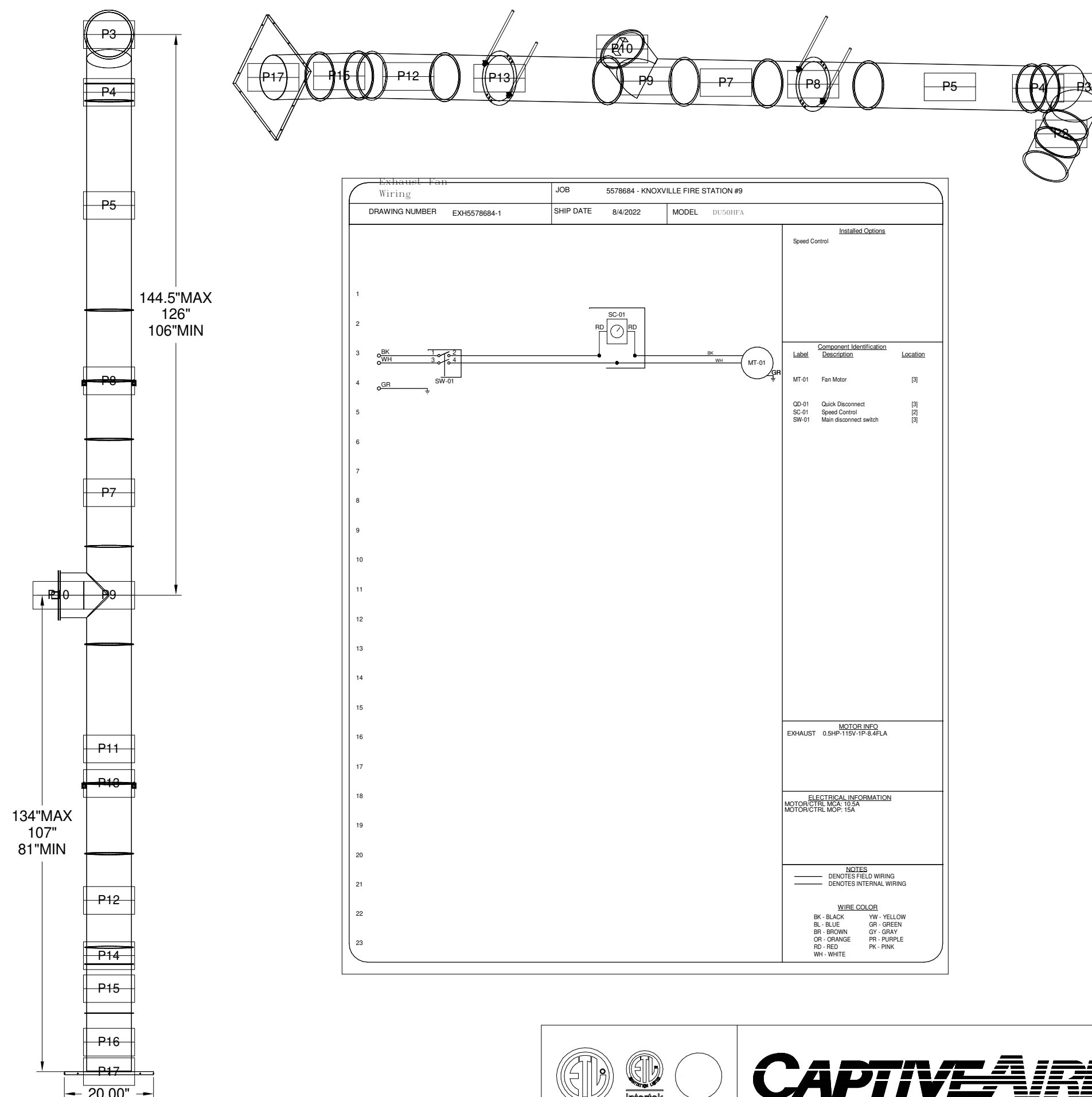
DUCTWORK #1 SIDE VIEW



**CAPTIVEAIR**

KNOXVILLE FIRE STATION #9			
8/4/2022	5578684		
13	KLS-30	3/8" = 1'-0"	

DUCTWORK #1 TOP VIEW DUCTWORK #1 SE VIEW



**CAPTIVEAIR**

KNOXVILLE FIRE STATION #9			
8/4/2022	5578684		
14	KLS-30	NOT TO SCALE	

**MBI**

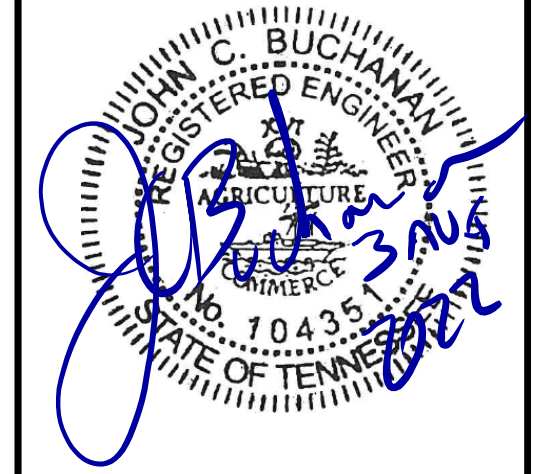
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**SEAL**



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**PROJECT INFORMATION**

PROJECT:

**FIRE STATION # 9**  
**KITCHEN HOOD**

PROJECT ADDRESS:

1625 Highland Ave, Knoxville, 37916

PROJECT NO.: **220737**

**ACTIVE DESIGN PHASE**

- FOR REVIEW ONLY
- FOR PERMITTING ONLY
- SCHEMATIC DESIGN
- DESIGN DEVELOPMENT
- CONSTRUCTION BIDDING
- CONSTRUCTION DOCUMENTS
- AS-BUILT RECORD SET

**REVISION INFORMATION**

NO.	DATE	DESCRIPTION

**KEY PLAN**

**SHEET INFORMATION**

SHEET ISSUED: 8/3/2022  
 DESIGNED BY: RFC  
 DRAWN BY: RFC  
 REVIEWED BY: JCB  
 SHEET TITLE:

HVAC DETAILS

SHEET NO.:

**M303**

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