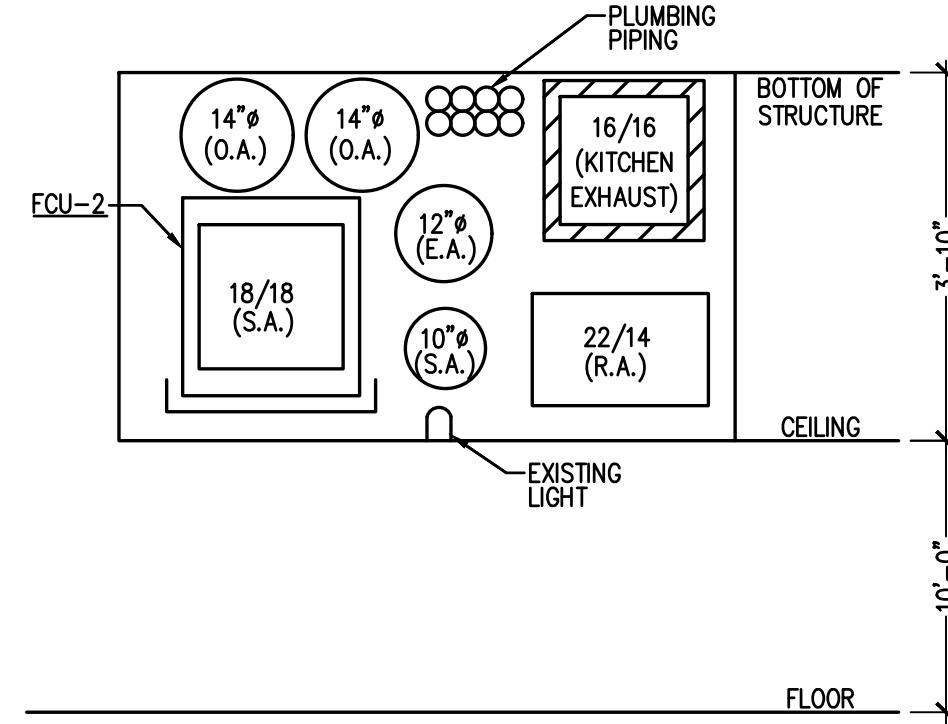


## GENERAL NOTES

- ALL OUTDOOR AIR INTAKES BY MECHANICAL EQUIPMENT SHALL HAVE A MINIMUM 10'-0" HORIZONTAL CLEARANCE FROM THE DISCHARGE OF ANY EXHAUST FAN, COMBUSTION EXHAUST OR PLUMBING VENT.
- PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE DUCT/ PIPING CONNECTIONS TO ALL MOVING MACHINERY NOT INTERNALLY ISOLATED.
- ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL DUCT AND DIFFUSER LOCATIONS WITH LIGHT FIXTURES AS WELL AS SPRINKLER PIPING AND HEADS (WHERE INCLUDED IN THE PROJECT) FOR A COMPLETE INSTALLATION.
- LOCATIONS FOR THERMOSTATS AND REMOTE SENSORS SHALL BE FIELD COORDINATED TO AVOID INTERFERENCE WITH WALL-MOUNTED DECOR OR PROXIMITY TO HEAT PRODUCING EQUIPMENT.
- ALL HVAC AND RESTROOM EXHAUST DUCTWORK SHALL BE INSTALLED AS HIGH AS POSSIBLE UNDER THE ROOF STRUCTURE.
- ALL RECTANGULAR, ROUND, AND FLEXIBLE DUCTWORK SHALL BE SIZED AS SHOWN ON THESE DRAWINGS. DIMENSIONS SHOWN ARE TO BE INTERIOR CLEAR DIMENSIONS; AND SHALL BE FABRICATED AND INSTALLED ACCORDING TO THE MOST RECENTLY PUBLISHED SMACNA STANDARDS. ALL JOINTS, SEAMS, AND CONNECTIONS MUST BE SECURELY FASTENED & SEALED BY APPROVED METHODS.
- ANY FLEXIBLE DUCTS SHALL BE INSTALLED IN CONCEALED SPACES ONLY. THE MAXIMUM ALLOWABLE LENGTH OF FLEXIBLE DUCT SHALL BE 5'-0". ALL A PANDUIT-TYPE BAND, AND SHALL NOT BE ATTACHED DIRECTLY TO THE AIR DEVICE COLLAR.
- SUPPLY, RETURN, RESTROOM EXHAUST, AND MAKEUP AIR DUCT CONSTRUCTION SHALL BE GALVANIZED STEEL. GAUGES, SWAY BRACING AND SUSPENSION SHALL CONFORM TO SMACNA STANDARDS. SEAL ALL SEAMS AND JOINTS AIR AND WATER TIGHT. FLEXIBLE ALUMINUM DUCTWORK OR FIBERGLASS DUCTBOARD IS NOT ALLOWED (UNO).
- PITCH ALL HORIZONTAL GREASE AND CONDENSATE DUCTWORK UNIFORMLY BACK TOWARDS THE RESPECTIVE HOOD OR APPLIANCE AT A MINIMUM 1/4" PER FOOT (NOT TO EXCEED 50'-0").
- THE WALL MOUNTED CANOPY TYPE KITCHEN EXHAUST HOODS SHALL BE INSTALLED AT 6'-8" AFF (UNO). COORDINATE THE INSTALLATION AND PLACEMENT OF THE EXHAUST HOODS IN THE FIELD.
- REFER TO MANUFACTURER SHEETS FOR THE HOOD CONTROL WIRING DIAGRAM FOR OPERATION OF THE KITCHEN HOOD EQUIPMENT.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING THE AIR FILTERS AT THE ROOFTOP UNITS WITH 2" THICK PLEATED MERV 7 THROW AWAY TYPE AIR FILTERS AT THE COMPLETION OF CONSTRUCTION AND PRIOR TO AIR BALANCE AND STORE TURNOVER.
- GENERAL CONTRACTOR SHALL ACQUIRE THE SERVICES OF A LOCAL PROFESSIONAL STRUCTURAL ENGINEER TO ANALYZE ROOF STRUCTURE FOR MOUNTING OF NEW EQUIPMENT.
- USE LANDLORD APPROVED ROOFING CONTRACTOR FOR ALL ROOF WORK.
- CONTRACTOR SHALL ACQUIRE THE SERVICES OF A LOCAL, REGISTERED STRUCTURAL ENGINEER TO ANALYZE ROOF FRAMING FOR NEW ROOFTOP EQUIPMENT.

COORDINATE WITH EXISTING PLUMBING PIPING SERVING APARTMENTS AND SPRINKLER PIPING MAIN BRANCHES.

LANDLORD SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL FCU-XX/OU-XX ALONG WITH REFRIGERANT PIPING AND START-UP.



2 SOFIT SECTION CUT  
1/2"=1'-0"

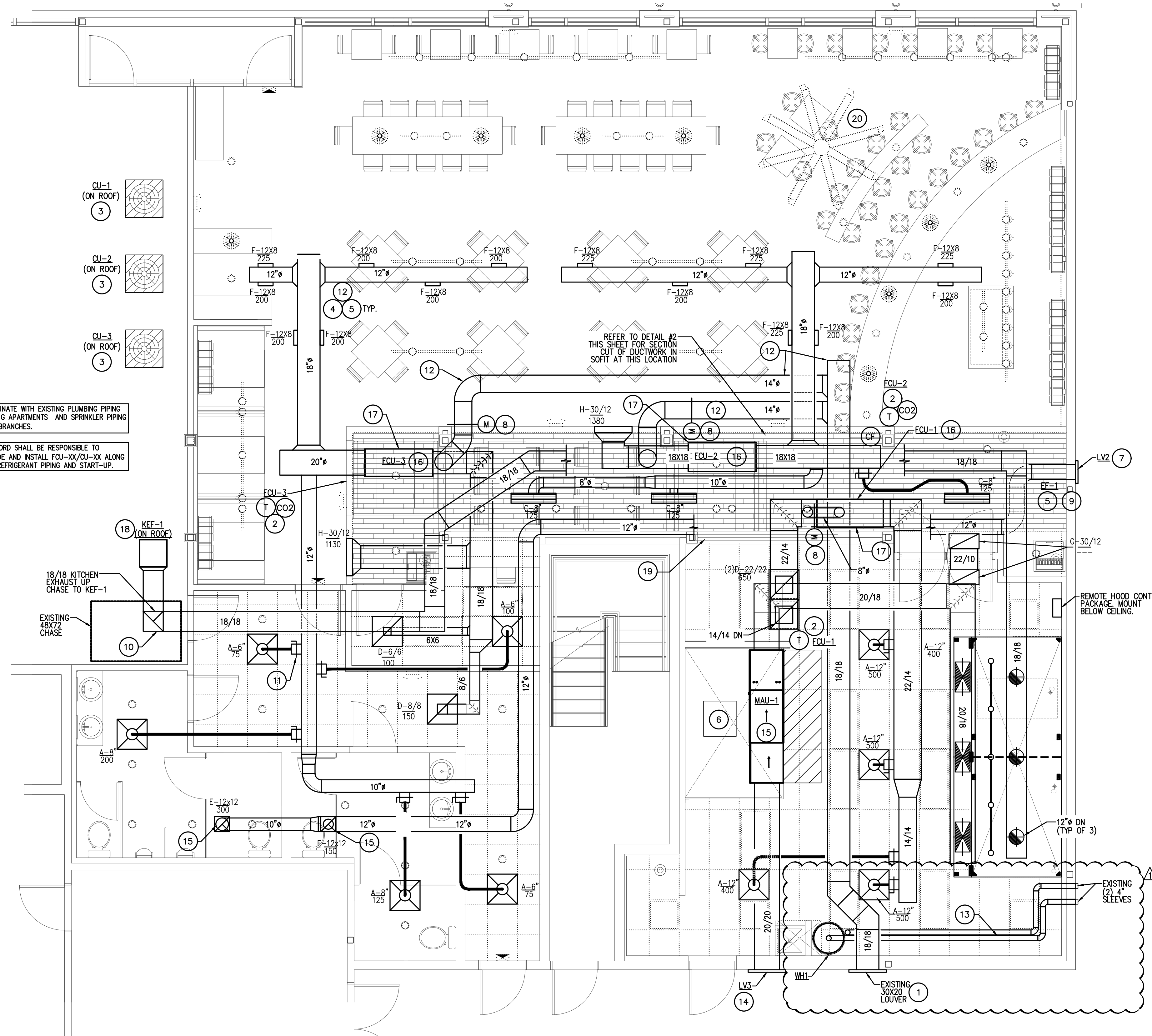
MOUNT DIFFUSERS IN EXPOSED CEILING AREAS IN A MANNER THAT AIR FLOW DOES NOT INTERFERE WITH PENDENT LIGHTING.

## SUPPLY DUCT BRANCH SIZING SCHEDULE

CFM	BRANCH SIZE
0-100	6"
101-200	8"
201-380	10"
381-600	12"
601-900	14"
901-1275	16"

## KEY NOTES

- ROUTE DUCT TO EXISTING 30X20 LOUVER ON OUTSIDE WALL FOR TENANT INTAKE AIR CONNECTION. ROUTE DUCTWORK AS HIGH AS POSSIBLE. INSULATE WITH 2" DUCT WRAP SIMILAR TO SUPPLY DUCTWORK.
- PROVIDE HONEYWELL VISIONPRO 8000 PART NUMBER TH8321R1000, 24 VOLT, OR EQUIVALENT, 7 DAY PROGRAMMABLE THERMOSTAT WITH TIME OF DAY MOTORIZED DAMPER INTERLOCK. MOUNT TOP OF THERMOSTAT AT 48" A.F.F. COORDINATE EXACT LOCATION WITH LANDLORD REPRESENTATIVE. FCU-1 & 2 PROVIDE CO2 SENSOR ABOVE THERMOSTAT. TENANT CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONTROL WIRING BETWEEN THERMOSTAT, FCU, MOTORIZED DAMPER AND CONDENSING UNIT ON ROOF.
- CONDENSING UNIT BY LANDLORD ON ROOF. FIELD VERIFY EXACT LOCATION. REFRIGERANT PIPING FROM CONDENSING UNIT TO FCU BY LANDLORD.
- ALL DUCTWORK TO BE ROUTED AS HIGH AS POSSIBLE. REFER TO DETAIL 2 FOR ADDITIONAL INFORMATION. COORDINATE ROUTING OF DUCTS WITH LIGHTS. COORDINATE ROUTING WITH ALL OTHER TRADES. (TYP.)
- INLINE EXHAUST FAN TO BE SUPPORTED FROM STRUCTURE. REFER TO DETAIL ON M3.0. COORDINATE PLACEMENT WITH SERVICE ACCESS FROM FACE OF SOFFIT. INSULATE DUCTWORK UP TO 10'-0" FROM LOUVER.
- REMOTE MOUNTED CONDENSING UNIT FOR COOLER. APPROXIMATE LOCATION OF COOLER CONDENSING UNIT. FIELD COORDINATE EXACT LOCATION OF THE CONDENSING UNIT WITH LOCATION OF MAU.
- RETROFIT EXISTING (2) 4" SLEEVES WITH NEW LOUVER. OR CAP IF NOT POSSIBLE TO RETROFIT WITH EF-1 LOCATION AND PROVIDE NEW PENETRATION FOR LOUVER.
- PROVIDE OUTDOOR AIR DUCT WITH 24V DC MOTORIZED DAMPER, INTERLOCK BY ELECTRICAL. INTERLOCK DAMPER WITH FCU. DAMPER OPENS TO SCHEDULED OUTDOOR AIR POSITION DURING OCCUPIED HOURS. FCU-1 & 2 MOTORIZED DAMPER TO OPEN TO MINIMUM OUTDOOR AIR SETTING. WHEN CO2 SENSOR IS ACTIVATED MOTORIZED DAMPER TO OPEN TO MAXIMUM OUTDOOR AIR SETTING. ALL MOTORIZED DAMPERS TO BE CLOSED DURING UNOCCUPIED HOURS.
- ROUTE 12" EXHAUST DUCT THRU INLINE FAN TO WALL LOUVER. EXHAUST TERMINATION SHALL BE SEPARATED BY AT LEAST 10'-0" MINIMUM FROM OUTSIDE AIR INTAKE. REFER TO M2.0 FOR LOUVER SPECIFICATIONS. FIELD VERIFY EXACT ROUTING.
- PROVIDE FIRE DAMPER WITH ACCESS PANEL AT BASE OF SHAFT.
- PROVIDE BALANCE DAMPERS AT ALL BRANCHES OR GRILLES. (TYP.)
- ROUTE DUCTWORK CONCEALED WITHIN SOFFIT. DUCTWORK SHOWN IN DINING AREA ONLY FOR CLARITY.
- ROUTE 4" VENT AND INTAKE FROM WATER HEATER TO EXISTING SLEEVES IN WALL. FIELD VERIFY EXACT ROUTING. COORDINATE FINAL TERMINATION IF CONCENTRIC VENT OR SEPARATE VENTING.
- FIELD VERIFY EXACT MOUNTING LOCATION OF LOUVER ON WALL. COORDINATE LOCATION WITH EXISTING CONDITIONS AND OWNER REPRESENTATIVE. MOUNT AS HIGH AS POSSIBLE. PROVIDE ADDITIONAL BRACING AS REQUIRED. INSULATE MAU DUCTWORK WITH 2" DUCT WRAP SIMILAR TO SUPPLY DUCTWORK.
- MAU TO BE MOUNTED ON PLATFORM ABOVE COOLER. REFER TO ARCHITECTURAL DRAWINGS FOR PLATFORM DETAILS. PROVIDE VIBRATION ISOLATION DAMPERS BETWEEN MAU AND PLATFORM. FIELD VERIFY 30" ACCESS CLEARANCE IS MAINTAINED.
- EXISTING FCU BY LANDLORD. FIELD VERIFY 36" ACCESS CLEARANCE IS MAINTAINED FOR MAINTENANCE.
- PROVIDE ACCESS CLEARANCE THIS SIDE OF UNIT.
- KITCHEN EXHAUST FAN TO BE LOCATED ON ROOF. ROUTE 18/18 KITCHEN EXHAUST UP EXISTING CHASE TO EXHAUST FAN. OFF-SET DUCTWORK AS NEEDED. TRANSITION WITHIN ROOF CURB TO CONNECT TO EXHAUST FAN. PROVIDE FLEXIBLE DUCT CONNECTION AT CONNECTION TO UTILITY FAN. FIELD VERIFY EXACT ROUTING. COORDINATE LOCATION OF EXHAUST FAN WITH OWNER REPRESENTATIVE, OWNER STRUCTURAL ENGINEER AND FIELD CONDITIONS. MAINTAIN MINIMUM 10'-0" FROM ANY OUTDOOR AIR INTAKE.
- COORDINATE DUCTWORK ROUTING WITH BUILDING CROSS BRACING.
- PROVIDE AND INSTALL HVLS CIRCULATION FAN. COORDINATE EXACT SWITCH LOCATION WITH TENANT.

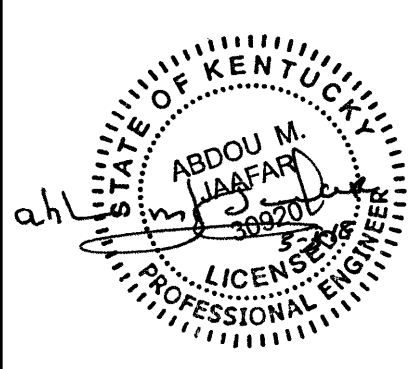


1 HVAC FLOOR PLAN  
1/4"=1'-0"



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Revisions:

Mark	Date	By	Description
	2/26/2018		ISSUED FOR PERMIT
	3/5/2018		BULLETIN #1



ALTO - DUVENECK SQUARE  
COVINGTON, KENTUCKY

PROJECT # 170928  
DATE ISSUED 01/23/2018

HVAC FLOOR PLAN

M1.0

# SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE (PROVIDED BY LANDLORD)

CONDENSER DATA										FAN COIL DATA										REMARKS
MARK	MANUF./MODEL	AREA SERVED	TONS	MIN. CKT. AMP.	MAX. CKT. AMP.	VOLTS/PH	SEER	COOLING CAPACITY (MBH)	HEATING CAPACITY (BTU/H)	MARK	MANUF./MODEL	TOTAL CFM	OUTDOOR AIR CFM	FAN HP	ESP (IN. WG)	AUX. ELECTRIC HEAT CAPACITY (BTU/H)	ELECTRICAL			
CU-1	BRYANT / BHT4N080	KITCHEN	5.0	32.0	50	208/3	14.0	67,000	80,000	FCU-1	BRYANT / BHT4N080	2000	350	625	3/4	0.6	62,800	15		
CU-2	BRYANT / BHT4N080	DINING	5.0	32.0	50	208/3	14.0	67,000	80,000	FCU-2	BRYANT / BHT4N080	2000	350	625	3/4	0.6	62,800	15		
CU-3	BRYANT / BHT4N080	RR/STR/CORR	5.0	32.0	50	208/3	14.0	67,000	80,000	FCU-3	BRYANT / BHT4N080	2000	350	625	3/4	0.6	62,800	15		

REMARKS:  
 1. COOLING CAPACITIES ARE RATED AT 80° DB AND 67° WB AIR CONDITIONS AND 95° AMBIENT OUTDOOR CONDENSER AIR TEMPERATURE, WITH INDOOR DESIGN TEMPERATURE 75° DB/50% RH, AND NOMINAL AIR QUANTITY LISTED.  
 2. PROVIDE MANUFACTURER CLEARANCES FOR UNITS.  
 3. FAN COIL UNIT DISCONNECT SWITCHES FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.  
 4. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH AUTOMATIC SWITCHOVER, INTERLOCKS WITH MOTORIZED DAMPER, AND LOCKING COVER.  
 5. LANDLORD CONTRACTOR TO PROVIDE REFRIGERANT LINES, SOLENOID AND EXPANSION VALVES PER MANUFACTURER'S REQUIREMENTS.  
 6. PROVIDE COIL CONDENSATE PIPING AS REQUIRED, ROUTE TO THE NEAREST AHU APPROVED RECEPTOR.  
 7. PROVIDE ALL NECESSARY COMPONENTS FOR CODE COMPLIANCE AND A COMPLETE AND OPERATIONAL SYSTEM.  
 8. PROVIDE AND INSTALL AUXILIARY DRAIN PAN UNDER COMPLETE FAN COIL UNIT, PROVIDE FLOAT SWITCH WIRED TO SHUT DOWN UNIT UPON ACTIVATION.

### LOUVER SCHEDULE

MARK	AREA	SERVICE	MANUFACTURER/MODEL NO.	SIZE (IN) W x H	FREE AREA (SQ FT)	CFM	REMARKS
LV1	KITCHEN	INTAKE	EXISTING	30X20	-	1250	EXISTING
LV2	RESTROOMS	EXHAUST	UNITED ENERTECH/CFL-D-4	18X18	0.72	450	1,2,3
LV3	MAU	INTAKE	UNITED ENERTECH/CFL-D-4	24X36	2.99	2300	1,2,3

REMARKS:  
 1. PROVIDE WITH INSECT SCREEN.  
 2. FINISH COLOR TO BE SELECTED BY ARCHITECT AFTER RECEIPT OF SUBMITTAL.  
 3. LISTED MANUFACTURER IS USED AS A BASIS FOR DESIGN. ALTERNATE MANUFACTURERS SHALL MEET THE LISTED CAPACITIES AS A MINIMUM.

### FAN SCHEDULE

MARK	SERVICE	MANUFACTURE	MODEL	TYPE	CFM	E.S.P. *W.C.	MOTOR HP (WATTS)	VOLTS/PHASE	WEIGHT	NOTES
EF-1	RR	GREENHECK	CSP-A700	INLINE	450	0.6	163	115/1		1,2,3,4,5,6,8

REMARKS:  
 1. WEATHER PROOF DISCONNECT SWITCH AND INTERNAL WIRING SHALL BE FACTORY INSTALLED.  
 2. PROVIDE DISCONNECT SWITCH OR PLUG.  
 3. PROVIDE GRAVITY BACKDRAFT DAMPER.  
 4. FURNISHED & INSTALLED BY MECHANICAL CONTRACTOR.  
 5. PROVIDE FANS SPEED CONTROLLER & HANGING SUPPORT WITH VIBRATION ISOLATION AND PLUG IN/FACTORY DISCONNECT.  
 6. INTERLOCK EXHAUST FAN WITH RESTROOM LIGHTS.  
 7. FAN TO RUN CONTINUOUS DURING OPERATING HOURS.  
 8. OR EQUAL.

### VENTILATION SCHEDULE (BASED ON 2015 INTERNATIONAL MECHANICAL CODE)

SPACE	OCCUPANCY CLASSIFICATION	FLOOR AREA SQ. FT.	OCCUPANT DENSITY PEOPLE/ 1000 SQ. FT.	MAXIMUM OCCUPANCY	PEOPLE OUTDOOR AIR RATE (CFM/PERSON)	AREA OUTDOOR AIR RATE (CFM/SQ. FT.)	REQUIRED OUTDOOR AIRFLOW Vbz (CFM)	REQUIRED EXHAUST AIR RATE (CFM)	REQUIRED EXHAUST AIR RATE (CFM/FT2)	EXHAUST AIR RATE (CFM)	MECHANICAL UNIT
DINING	DINING ROOM	1971	70	115*	7.5	0.18	1217.3	-	-	-	AHU-2&3
OFFICE	OFFICE	86	5	1*	5	0.06	5.16	-	-	-	AHU-3
CORRIDOR	CORRIDOR	240	-	-	-	0.06	14.4	-	-	-	AHU-3
KITCHEN	KITCHEN	695	-	-	-	-	-	0.7/SQFT	486.5	-	AHU-1
MENS RESTROOM	PUBLIC RESTROOM	138	-	-	-	-	70/FIXTURE	-	300	-	AHU-3
WOMENS RESTROOM	PUBLIC RESTROOM	123	-	-	-	-	70/FIXTURE	-	150	-	AHU-3
-	-	-	-	-	-	-	-	-	-	-	-
TOTAL OUTDOOR AIR REQUIRED							1236.8	TOTAL EXHAUST REQUIRED		936.5	
OUTDOOR AIR PROVIDED							1600	EXHAUST PROVIDED		4470	

\*ACTUAL OCCUPANCY BASED ON SEATS.

### CIRCULATION FAN SCHEDULE

MARK	AREA SERVED	MANUFACTURER	MODEL	SIZE			VOLTAGE		
				DIA	MAX SPEED (RPM)	WEIGHT	SOUND AT MAX SPEED	VOLTS/PHASE	AMPS
HVLS-1	DINING	BIG ASS FANS	ESSENCE	8"	158	75 LB	57	208/1	10

ACCESSORIES:  
 1. PROVIDE WITH FACTORY CONTROL CABLING FOR WALL MOUNTED DIGITAL CONTROLLERS.  
 2. FAN TO BE CAPABLE OF VARIABLE SPEED, FORWARD, AND REVERSE.  
 3. PROVIDE CONTACTS FOR FIRE ALARM CONNECTION.  
 4. 50,000 HOUR MOTOR WARRANTY.  
 5. PROVIDE MOUNTING EXTENSION AS REQUIRED.  
 6. ON BOARD AIR BRAIN WITH VOLTAGE SENSING.  
 7. FAN TO BE IP65 RATED.  
 8. PROVIDE FACTORY MOUNTING KIT.  
 9. TO BE INTERLOCKED WITH FIRE SYSTEM. CIRCULATION FANS TO SHUT DOWN UPON FIRE SYSTEM ACTIVATION.

NOTES:  
 1. APPROVED EQUALS: MACROAIR

### AIR BALANCE SCHEDULE

MARK	SUPPLY AIR	RETURN AIR	OUTSIDE AIR	EXHAUST AIR	PRESSURE
FCU-1	2000	1650	350	---	350
FCU-2	2000	1650	350	---	350
FCU-3	2000	1650	350	---	350
KMAU-1	---	---	2300	---	2300
EF-1	---	---	---	450	-450
KEF-1	---	---	---	2800	-2800
TOTAL			1050	3250	100

### GRILLES, REGISTERS, & DIFFUSERS SCHEDULE

MARK	SERVICE	TYPE	MAKE	MODEL	MATERIAL	FACE SIZE	FINISH	MOUNTING	REMARKS
A	SUPPLY	CEILING	TITUS	TMSA	ALUMINUM	24x24	WHITE	LAY-IN	1,2,3,4,5
B	SUPPLY	CEILING	TITUS	TMSA	ALUMINUM	12x12	WHITE	LAY-IN	1,2,3,4,5
C	SUPPLY	LINEAR	TITUS	ML-39 (4 SLOT)	ALUMINUM	3'-0"L	WHITE	SURFACE	1,2,4,5,8,9
D	RETURN/EXH	CEILING	TITUS	50F	ALUMINUM	24x24	WHITE	LAY-IN	2,4,5,6
E	RETURN/EXH	CEILING	TITUS	50F	ALUMINUM	12x12	WHITE	LAY-IN	2,4,5,6
F	SUPPLY	SURFACE	TITUS	300FL	ALUMINUM	PER NECK SIZE	NOTE 7	DUCT	1,2,3,4,5,7
G	TRANSFER	CEILING	TITUS	50F	ALUMINUM	24X12	WHITE	LAY-IN	2,5
H	TRANSFER	SURFACE	TITUS	50F	ALUMINUM	30X12	WHITE	WALL	2,5

REMARKS:  
 1. BRANCH DUCT SERVING DIFFUSER TO BE SAME SIZE AS DIFFUSER NECK UNLESS OTHERWISE NOTED.  
 2. REFER TO REFLECTED CEILING PLAN FOR EXACT LOCATION.  
 3. PROVIDE WITH 4-WAY THROW PATTERN UNLESS OTHERWISE NOTED ON PLAN.  
 4. PROVIDE WITH OPPOSED BLADE DAMPER.  
 5. REFER TO PLAN FOR NECK SIZES.  
 6. PROVIDE INSULATED PLENUM BOX, INSIDE SURFACE OF PLENUM TO BE FLAT BLACK.  
 7. ALL EXPOSED DUCT AND DIFFUSERS TO BE PRIMED AND PAINTED PER ARCH SPECIFICATIONS (VERIFY COLOR WITH ARCH).  
 8. PROVIDE WITH ADJUSTABLE AIR PATTERN CONTROLLER AND MP-39-SP INSULATED SHORT PATTERN SUPPLY PLENUM.  
 9. PROVIDE CABLE OPERATED VOLUME DAMPER ADJUSTABLE FROM FACE OF GRILLE, YOUNG MODEL 800AHR OR EQUAL.

### MECHANICAL LEGEND

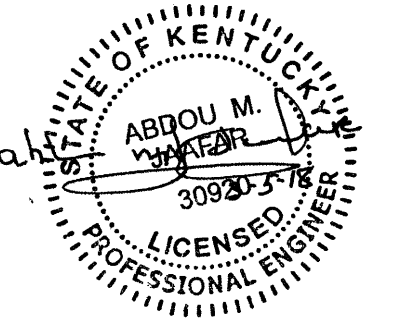
SYMBOL	ABBR.	DESCRIPTION
	CD	CEILING DIFFUSER - SUPPLY
	CD	CEILING DIFFUSER BELOW DUCT - SUPPLY
	SAD	RISER - SUPPLY AIR DUCT
	SAD	DROP - SUPPLY AIR DUCT
	CR	CEILING REGISTER - RETURN
	CR	CEILING REGISTER BELOW DUCT - RETURN
	RAD	RISER - RETURN AIR DUCT
	RAD	DROP - RETURN AIR DUCT
	CE	CEILING REGISTER - EXHAUST
	CE	CEILING REGISTER BELOW DUCT - EXHAUST
	EAD	RISER - EXHAUST AIR DUCT
	(L)	LINED DUCTWORK
	VD	MANUAL VOLUME DAMPER
	FC	FLEXIBLE CONNECTION
		NEW DUCT
		AIR DEVICE DESIGNATION
	Ⓣ	PROGRAMMABLE THERMOSTAT
	Ⓢ	REMOTE TEMPERATURE SENSOR
	Ⓢ	SMOKE DETECTOR
	Ⓢ	POINT OF CONNECTION
	CFM	CUBIC FEET PER MINUTE
	S/A	SUPPLY AIR
	O/A	OUTSIDE AIR
	E/A	EXHAUST AIR
	S.P.	STATIC PRESSURE
	FOH	FRONT OF HOUSE
	BOH	BACK OF HOUSE

- NOTE: FOR THE PURPOSE OF CLEARNESS AND LEGIBILITY, THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND ALTHOUGH SIZES AND LOCATIONS OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE, THE CONTRACTOR SHALL MAKE USE OF ALL DATA IN ALL OF THE CONTRACT DOCUMENTS AND VERIFY THIS INFORMATION PRIOR TO ORDERING, FABRICATING OR INSTALLING ANY MATERIALS.
- THE MECHANICAL CONTRACTOR SHALL PROVIDE COMPLETE INFORMATION AND COOPERATE WITH THE OTHER CONTRACTORS AND TRADES AS REQUIRED FOR THE COMPLETION AND COORDINATION OF THE COMPLETE PROJECT.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ADMINISTERING ALL WARRANTIES ON EQUIPMENT WHICH THEY FURNISH AND INSTALL.
- PROVIDE WRITTEN WARRANTY TO REPLACE ALL FAULTY MATERIALS AND/OR LABOR AND NO COST TO TENANT, FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE. PROVIDE 5 YEAR COMPRESSOR WARRANTY FOR AC UNITS. WARRANTIES SHALL BEGIN ON THE DATE OF SUBSTANTIAL COMPLETION.
- ALL OUTDOOR AIR INTAKE BY MECHANICAL EQUIPMENT SHALL HAVE A MINIMUM 10'-0" HORIZONTAL CLEARANCE FROM THE DISCHARGE OF ANY EXHAUST FAN, RTU GAS EXHAUST OR PLUMBING VENT.
- PROVIDE VIBRATION ISOLATION DEVICES AND FLEXIBLE DUCT/ PIPING CONNECTIONS TO ALL MOVING MACHINERY NOT INTERNALLY ISOLATED.
- ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE ALL DUCT AND DIFFUSER LOCATIONS WITH SPRINKLER PIPING, SPRINKLER HEADS AND LIGHT FIXTURES AS REQUIRED FOR A COMPLETE INSTALLATION.
- THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR AND OTHER TRADES ALL REQUIRED OPENINGS AND PENETRATIONS. ALL REQUIRED OPENINGS IN FOUNDATIONS, FLOORS, WALLS AND ROOF SHALL BE CONSTRUCTED INTO THE STRUCTURE WITH THE USE OF SLEEVES, CURBS, ETC. CUTTING AND PATCHING SHALL BE HELD TO A MINIMUM.
- ALL ITEMS PROJECTING THROUGH THE ROOF SHALL BE FLASHED THROUGH CURBS OR PIPE SEALS A MINIMUM OF 12" ABOVE THE ROOF. THE PIPE CURBS AND NO COST TO TENANT, TO BE INSTALLED BY THE ROOFING CONTRACTOR. ENSURE THAT AMPLE BOOT OPENINGS ARE PROVIDED TO ACCOMMODATE ANY ELECTRICAL CONDUIT PENETRATIONS REQUIRED FOR POWER.
- COORDINATE THE INSTALLATION AND FINISH OF ALL SUPPLY AND RETURN AIR DEVICES. AIR DEVICES LOCATED IN DINING AREAS SHALL BE PAINTED PER THE ARCHITECTURAL DRAWINGS FINISH SCHEDULE.
- ~~THERMOSTATS AND REMOTE SENSORS SHALL BE LOCATED AT A MINIMUM OF 5' FROM WALL MOUNTED WORK AND HEAT PRODUCING EQUIPMENT. EXACT LOCATIONS SHALL BE DETERMINED TO AVOID INTERFERENCE WITH WALL MOUNTED WORK AND HEAT PRODUCING EQUIPMENT.~~
- THERMOSTATS SHALL BE FCU MANUFACTURER AVAILABLE 24/7 AUTOMATIC CHANGEOVER TYPE TO SEQUENCE HEATING AND COOLING. SET POINT RANGE SHALL BE 10° BETWEEN FULL HEATING AND FULL COOLING. ADJUSTABLE TEMPERATURE DIFFERENTIAL SHALL BE 1-1/2°F. THERMOSTAT CONTROL RANGE SHALL BE 55°F TO 85°F. CONTROLS SHALL HAVE CAPABILITY OF TERMINATING HEATING AT NO HIGHER THAN 70°F AND COOLING AT NO LOWER THAN 75°F.
- FAN COIL UNITS SHALL BE SET TO RUN IN "FAN CONTINUOUS" MODE DURING OCCUPIED HOURS. DURING NIGHT SET-BACK HOURS, THE UNITS SHALL RUN IN "FAN AUTO" MODE. CONTRACTOR SHALL COORDINATE NECESSARY CONTROL WIRING REQUIREMENTS WITH THE MANUFACTURER TO ACCOMPLISH THIS CONTROL SEQUENCE WITHOUT THE USE OF A MANUAL SWITCH ON THE SUB-BASE.
- MECHANICAL CONTRACTOR TO FURNISH AND INSTALL 4" HIGH BLACK OVER WHITE LAMINATE NAMEPLATE WITH 2" LETTERS VISIBLE ADJACENT TO DISCONNECT SWITCH FOR ROOFTOP UNITS AND ROOF MOUNTED FANS.
- LINE VOLTAGE WIRING, ALL CONDUIT DISCONNECT SWITCHES AND FINAL CONNECTION BY ELECTRICAL CONTRACTOR. LOW VOLTAGE CONDUIT AND WIRING AND FINAL CONNECTION BY MECHANICAL CONTRACTOR.
- ALL HVAC SUPPLY AND RETURN CONCEALED DUCTWORK TO BE EXTERNALLY WRAPPED WITH MINIMUM R-8.0, 2" INSULATION WITH VAPOR BARRIER PER THE INSULATION SHALL HAVE MAXIMUM RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED.
- SUPPLY, RETURN, RESTROOM EXHAUST, AND MAKEUP AIR DUCT CONSTRUCTION SHALL BE GALVANIZED STEEL. GAUGES, SWAY BRACING AND SUSPENSION SHALL CONFORM TO SMOGNA STANDARDS. SEAL ALL SEAMS AND JOINTS AIR AND WATER TIGHT. FLEXIBLE ALUMINUM DUCTWORK OR FIBERGLASS DUCTBOARD IS NOT ALLOWED (UNO).
- ~~TYPE-1 GREASE EXHAUST DUCTS TO THE BUILDING SHALL BE 16 GA WELDED BLACK IRON, OR 18 GA THINNESS STEEL, EXTERNALLY WELDED WITH LIQUID TIGHT JOINTS, SEAMS, AND SMOOTH RADIUS ELBOWS AND TRANSITIONS.~~
- ~~PITCH ALL HORIZONTAL GREASE AND CONDENSATE DUCTWORK UNIFORMLY BACK TOWARDS THE HOOD AT 1/4" PER FOOT (NOT TO EXCEED 50'-0").~~
- ROOF CURBS FOR EXHAUST FANS AND THE MAKEUP AIR UNIT SHALL BE FACTORY FABRICATED OF FULL WELDED STEEL CONSTRUCTION WITH WOOD NAILER, AND FURNISHED WITH THE HOOD AND FAN PACKAGE. VERIFY REQUIREMENTS FOR THE ROOF CURBS WITH THE EQUIPMENT SUPPLIER. THE GENERAL CONTRACTOR SHALL FLASH ROOF CURBS AND SHIM DEAD LEVEL. COORDINATE EXACT SIZE AND LOCATION OF ROOF OPENINGS WITH THE STRUCTURAL FRAMING. CUTTING OF STRUCTURAL MEMBERS IS NOT PERMITTED.
- ~~ROOF CURBS FOR ROOFTOP UNITS SHALL BE FACTORY FABRICATED OF FULL WELDED STEEL CONSTRUCTION WITH WOOD NAILER, AND FURNISHED WITH THE RTU PACKAGE. VERIFY REQUIREMENTS FOR THE ROOF CURBS WITH THE EQUIPMENT SUPPLIER. THE GENERAL CONTRACTOR SHALL FLASH ROOF CURBS AND SHIM DEAD LEVEL. COORDINATE EXACT SIZE AND LOCATION OF ROOF OPENINGS WITH THE STRUCTURAL FRAMING. CUTTING OF STRUCTURAL MEMBERS IS NOT PERMITTED.~~
- THE WALL MOUNTED CANOPY TYPE KITCHEN EXHAUST HOODS SHALL BE INSTALLED AT 6'-8" AFF (UNO). COORDINATE THE INSTALLATION AND PLACEMENT OF THE EXHAUST HOODS IN THE FIELD.
- THE KITCHEN HOOD PACKAGE WILL BE PROVIDED WITH REMOTE CONTROL PACKAGE, MAU HOOD EXHAUST FAN SWITCHES, AND LIGHT SWITCHES.
- EXHAUST DUCT RISERS BETWEEN THE HOOD COLLARS AND EXHAUST FANS SHALL BE OF THE SAME SIZE AS THE RESPECTIVE HOOD COLLAR SIZE, UNO. REFER TO THE MANUFACTURER SHEETS IN THE KITCHEN EQUIPMENT DRAWING SET FOR THE HOOD COLLAR SIZES AS PROVIDED BY THE HOOD MANUFACTURER.
- REFER TO MANUFACTURER SHEETS FOR THE HOOD CONTROL WIRING DIAGRAM FOR OPERATION OF THE KITCHEN HOOD EQUIPMENT.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING THE AIR FILTERS AT THE FAN COIL UNITS WITH 2" THICK MERV 7 THROW AWAY TYPE AIR FILTERS AT THE COMPLETION OF CONSTRUCTION AND PRIOR TO AIR BALANCE AND STORE TURNOVER.
- A FULL MECHANICAL AIR TEST AND BALANCE REPORT SHALL BE PERFORMED BY AN INDEPENDENT CONTRACTOR.
- MECHANICAL CONTRACTOR SHALL BE ON SITE AND PRESENT AT THE DATE OF STORE TURNOVER.
- PER WHEN REQUIRED EACH SINGLE SYSTEM PROVIDING HEATING OR COOLING AIR IN EXCESS OF 2000 CUBIC FEET PER MINUTE SHALL BE EQUIPPED WITH AN AUTOMATIC SHUTOFF. AUTOMATIC SHUTOFF SHALL BE ACCOMPLISHED BY INTERRUPTING THE POWER SOURCE OF THE AIR MOVING EQUIPMENT DEVICES WHICH WILL DETECT PRODUCTS OF COMBUSTION OTHER THAN HEAT, AND WHICH COMPLY WITH THE I.B.C., SHALL BE LABELED BY AN APPROVED AGENCY FOR AIR DUCT INSTALLATION AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. SUCH DEVICES SHALL BE COMPATIBLE WITH THE OPERATING VELOCITIES, PRESSURES, TEMPERATURES AND HUMIDITIES OF THE SYSTEM WHERE FIRE DETECTION OR ALARM SYSTEMS ARE PROVIDED FOR THE BUILDING, SMOKE DETECTORS SHALL BE SUPERVISED BY SUCH SYSTEMS.



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3/5/2018  
 BULLETIN #1

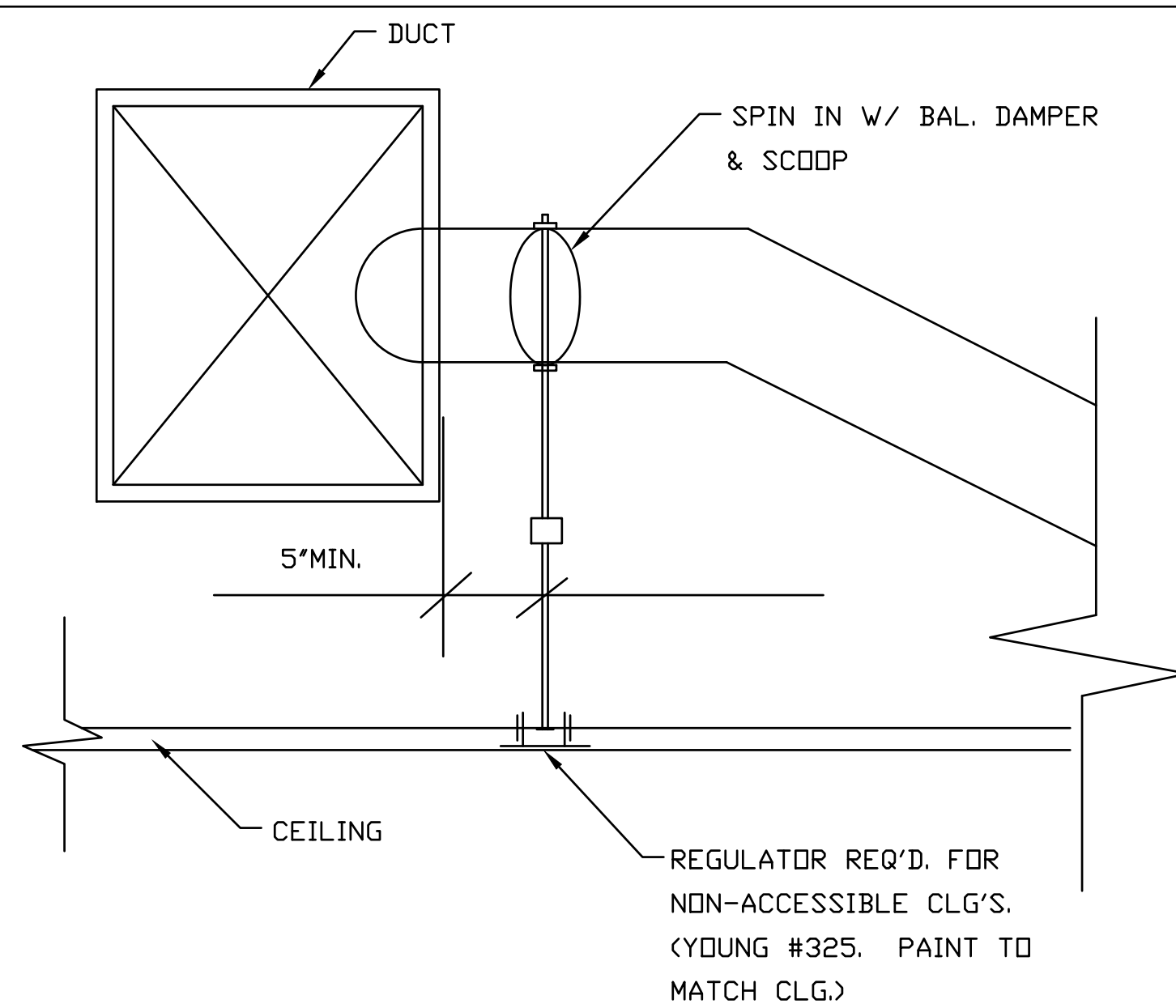


**ALTO - DUVENECK SQUARE**  
 COVINGTON, KENTUCKY

PROJECT # 170928  
 DATE ISSUED 01/23/2018

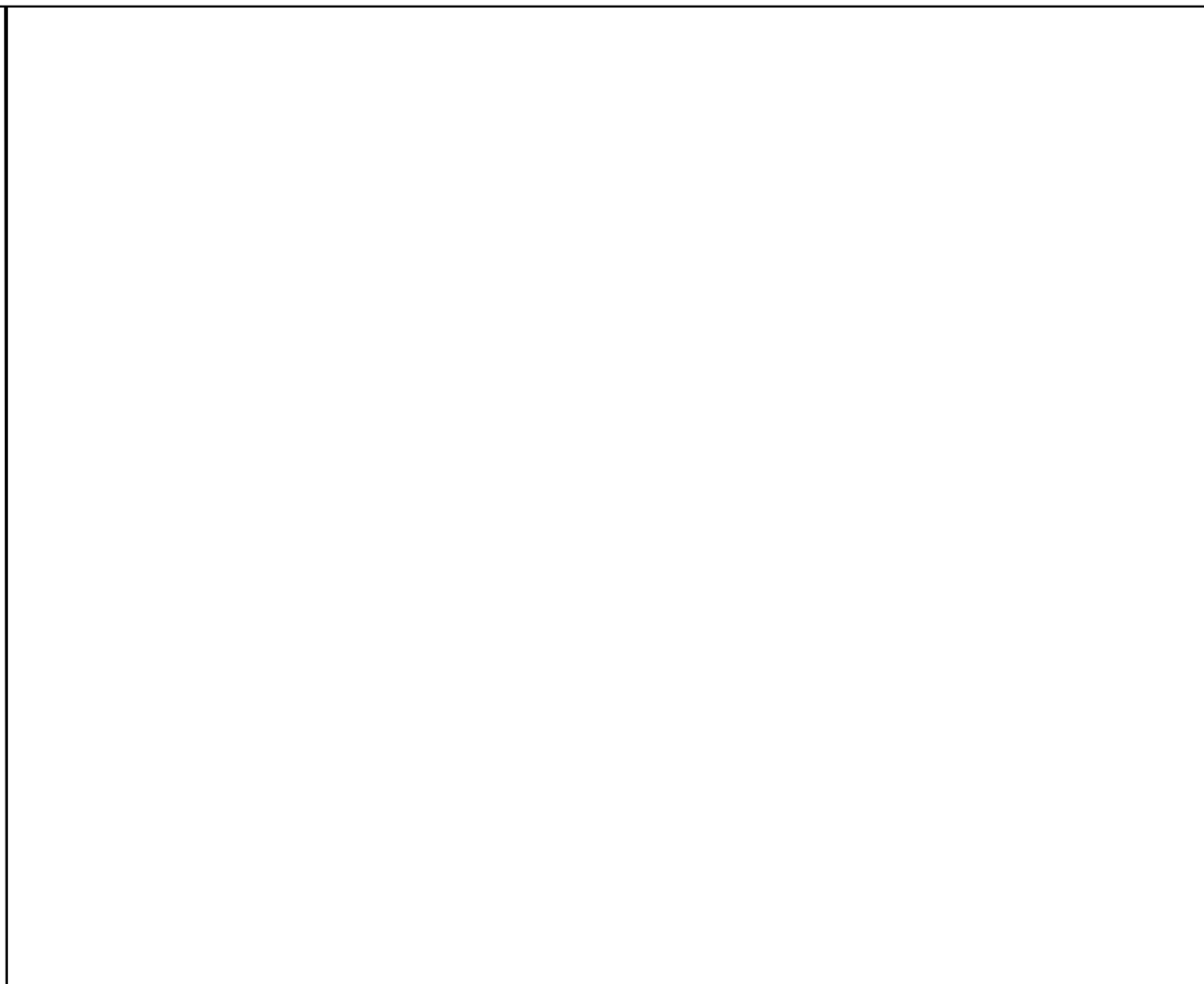
**MECHANICAL SCHEDULES**

**M2.0**



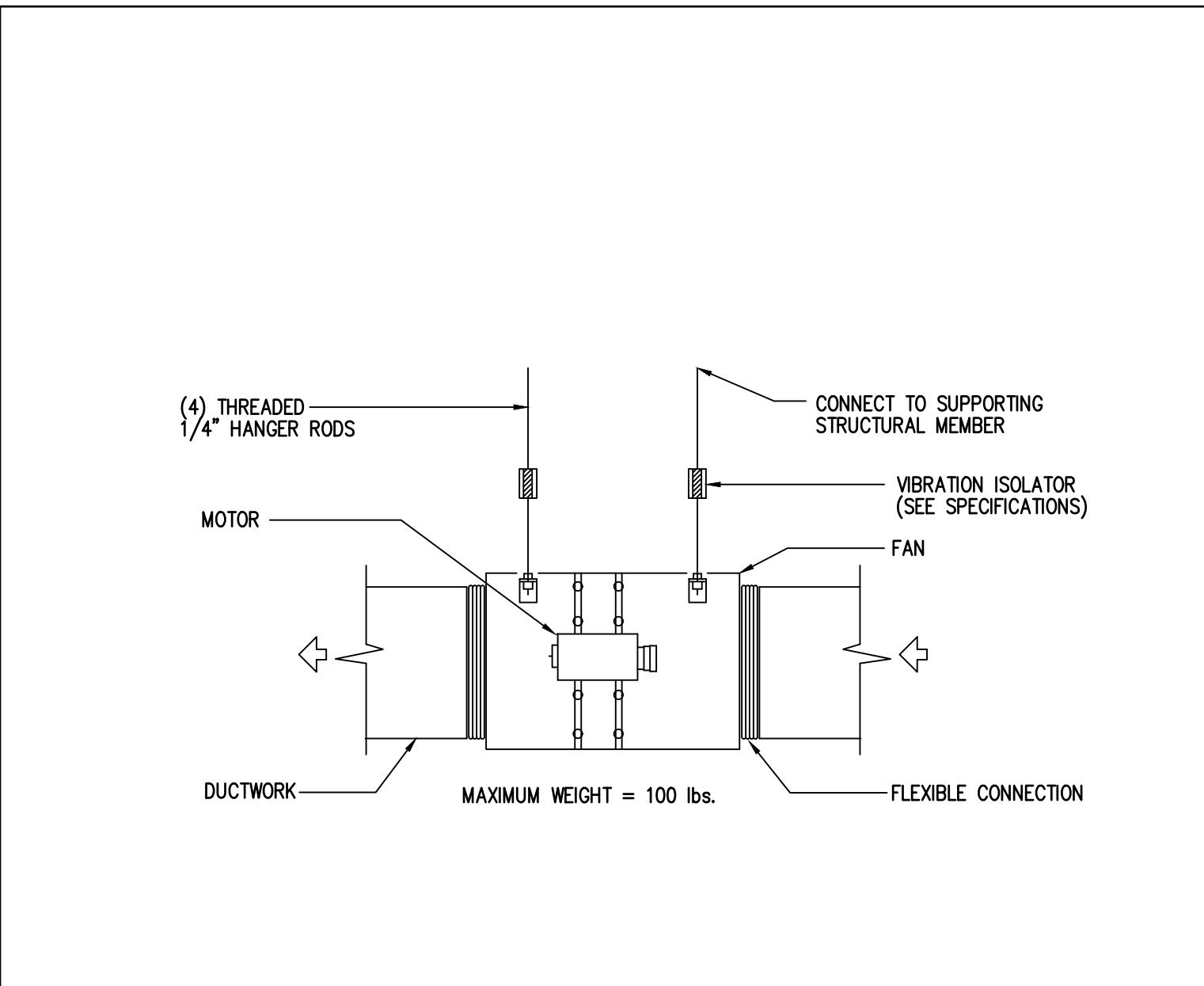
**DAMPER REGULATOR**  
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1



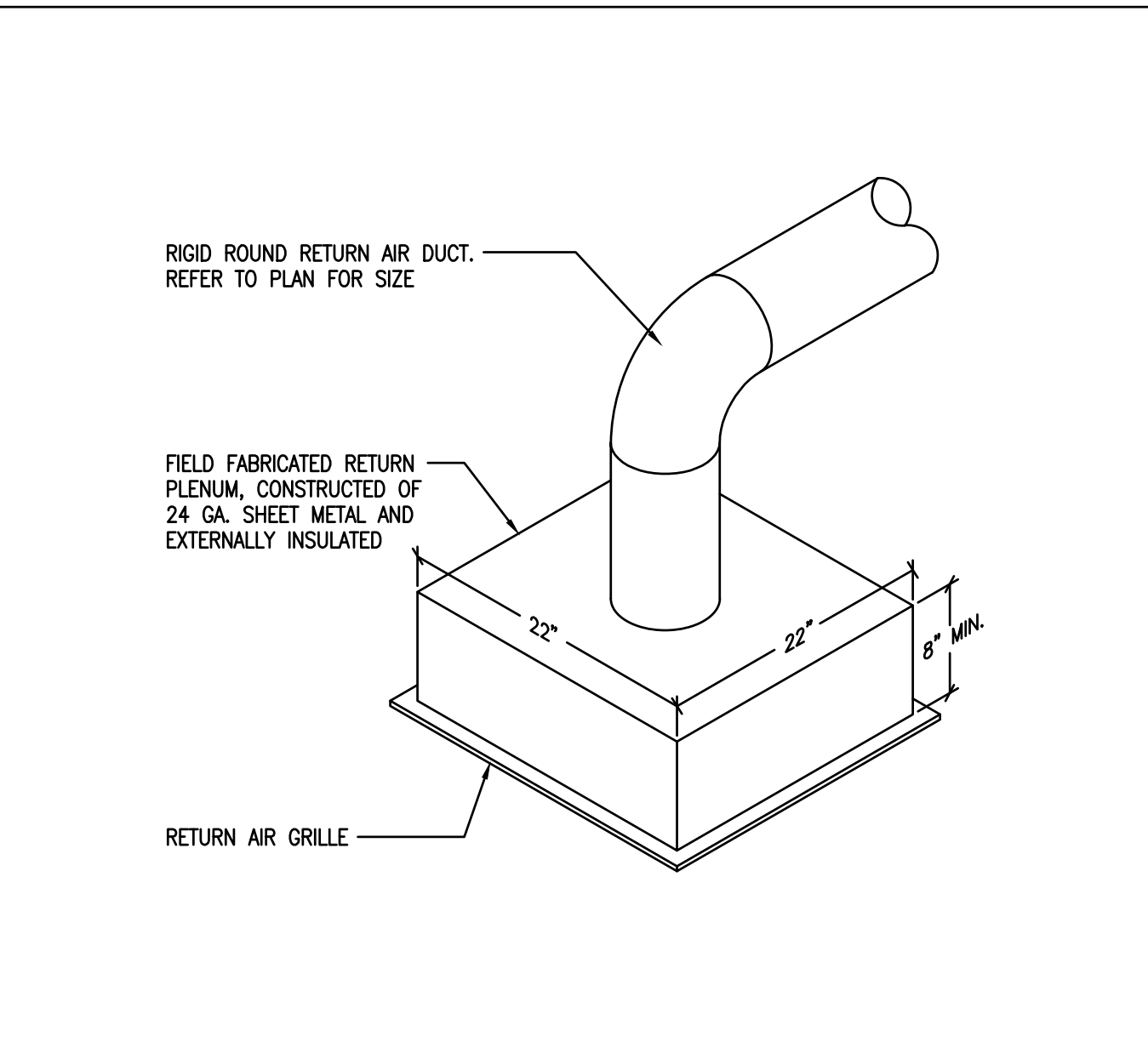
**CEILING MOUNTED SUPPLY AIR DIFFUSER DETAIL**  
SCALE: NONE

6



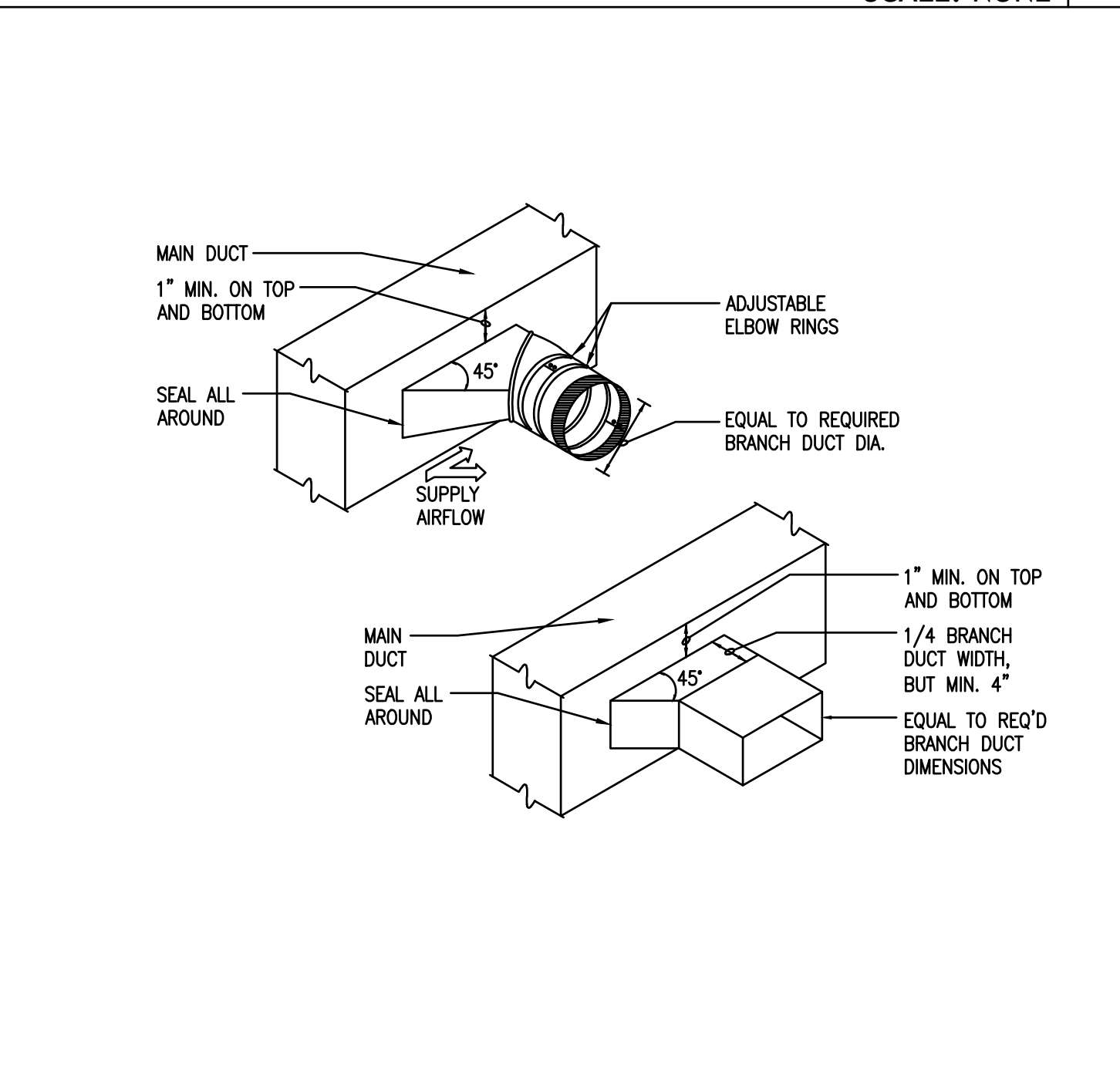
**INLINE EXHAUST FAN MOUNTING DETAIL**  
SCALE: NONE

3



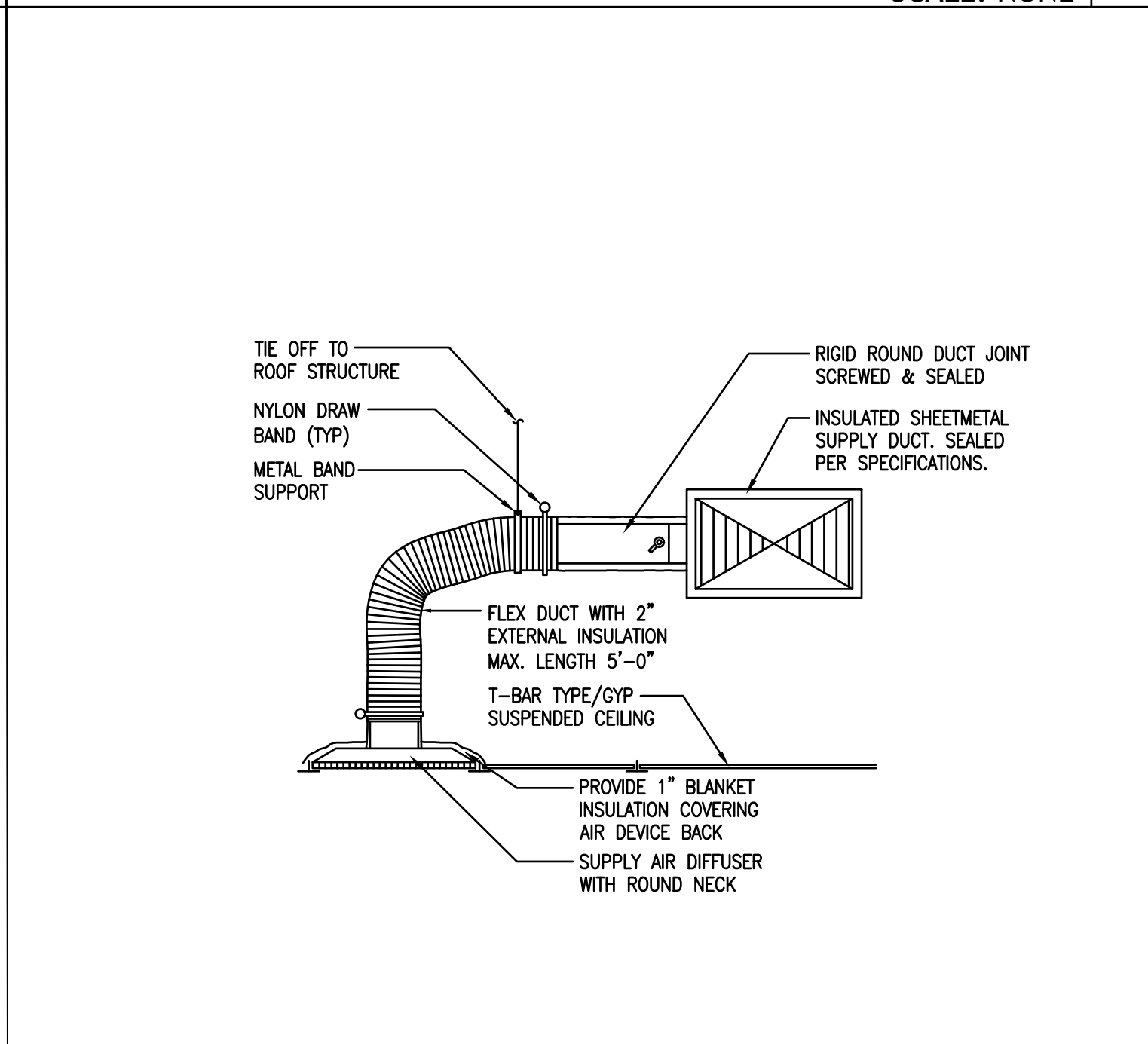
**CEILING MOUNTED RETURN AIR GRILLE DETAIL**  
SCALE: NONE

4



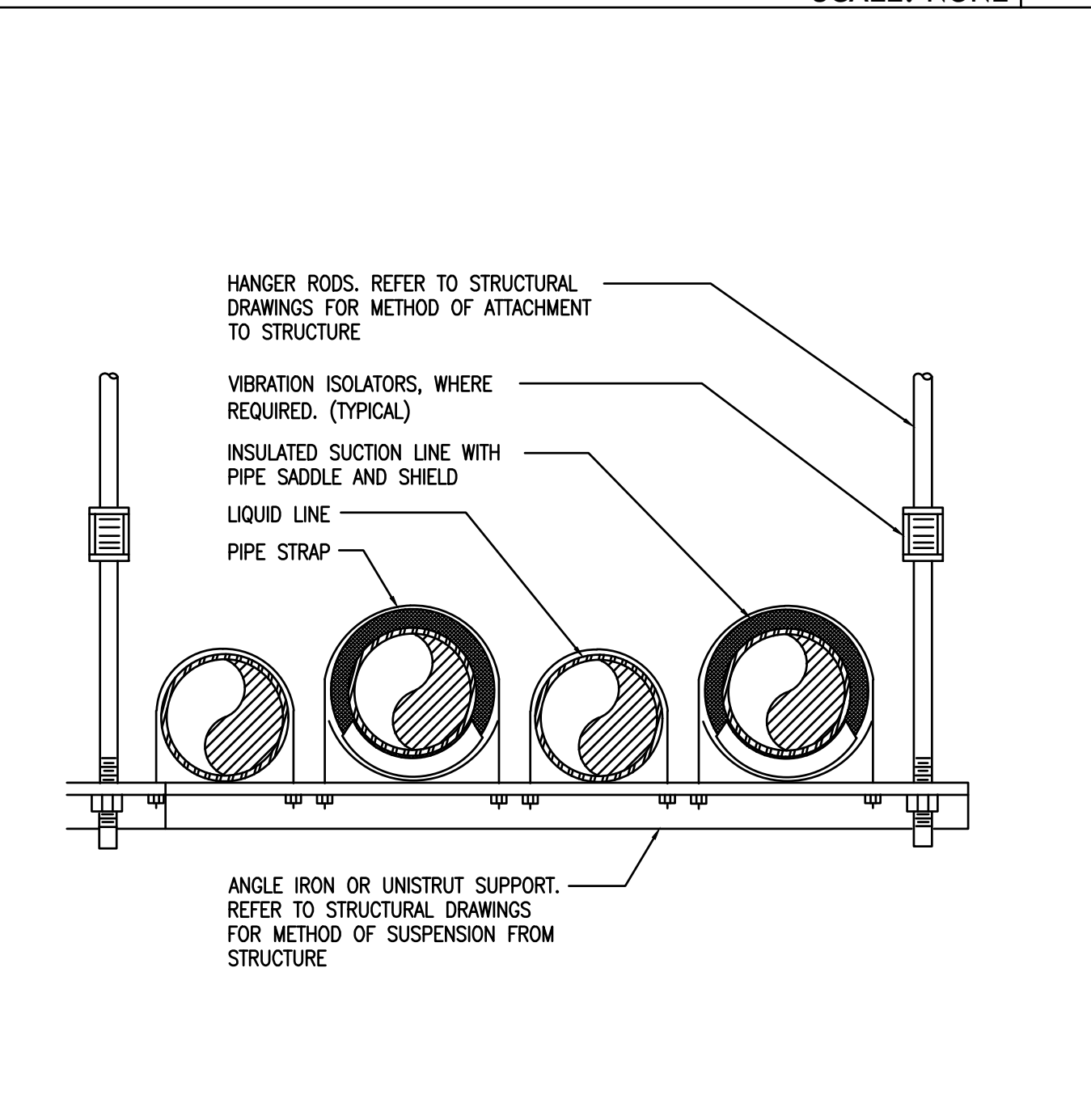
**BRANCH TAKE-OFF FITTING DETAIL**  
SCALE: NONE

5



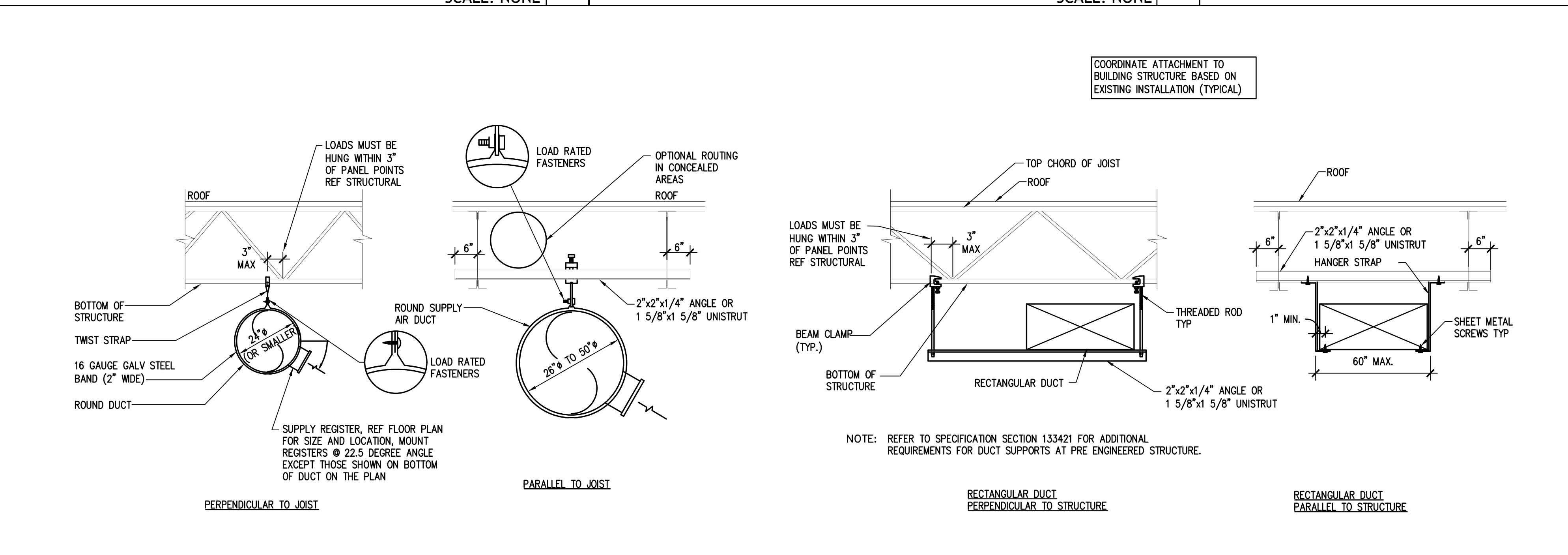
**EXPOSED SPIRAL DUCT SUPPLY GRILLE DETAIL**  
SCALE: NONE

7



**HORIZONTAL REFRIGERANT PIPE SUPPORT DETAIL**  
SCALE: NONE

8



**NOT USED**  
SCALE: NONE

9

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HOOD INFORMATION - Job#3305041

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	EXHAUST PLENUM							TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG.		
					RISER(S)									END TO END	ROW	
					TOTAL EXH. CFM	WIDTH	LENG.	HEIGHT	DIA.	CFM	VEL.	S.P.				
1	KHD-1	7224 VHB-G-PSP-F-ND	16' 0"	700 Deg.	2800			4"	12"	933	1188	-0.132"	2300	430 SS	ALONE	ALONE
								4"	12"	933	1188	-0.132"		100%		
								4"	12"	933	1188	-0.132"				

PATENT NUMBERS  
 AC-PSP (United States) - US Patent 7963830 B2  
 AC-PSP Wall (Canada) - CA Patent 2820509  
 AC-PSP Island (Canada) - CA Patent 2520330

HOOD INFORMATION

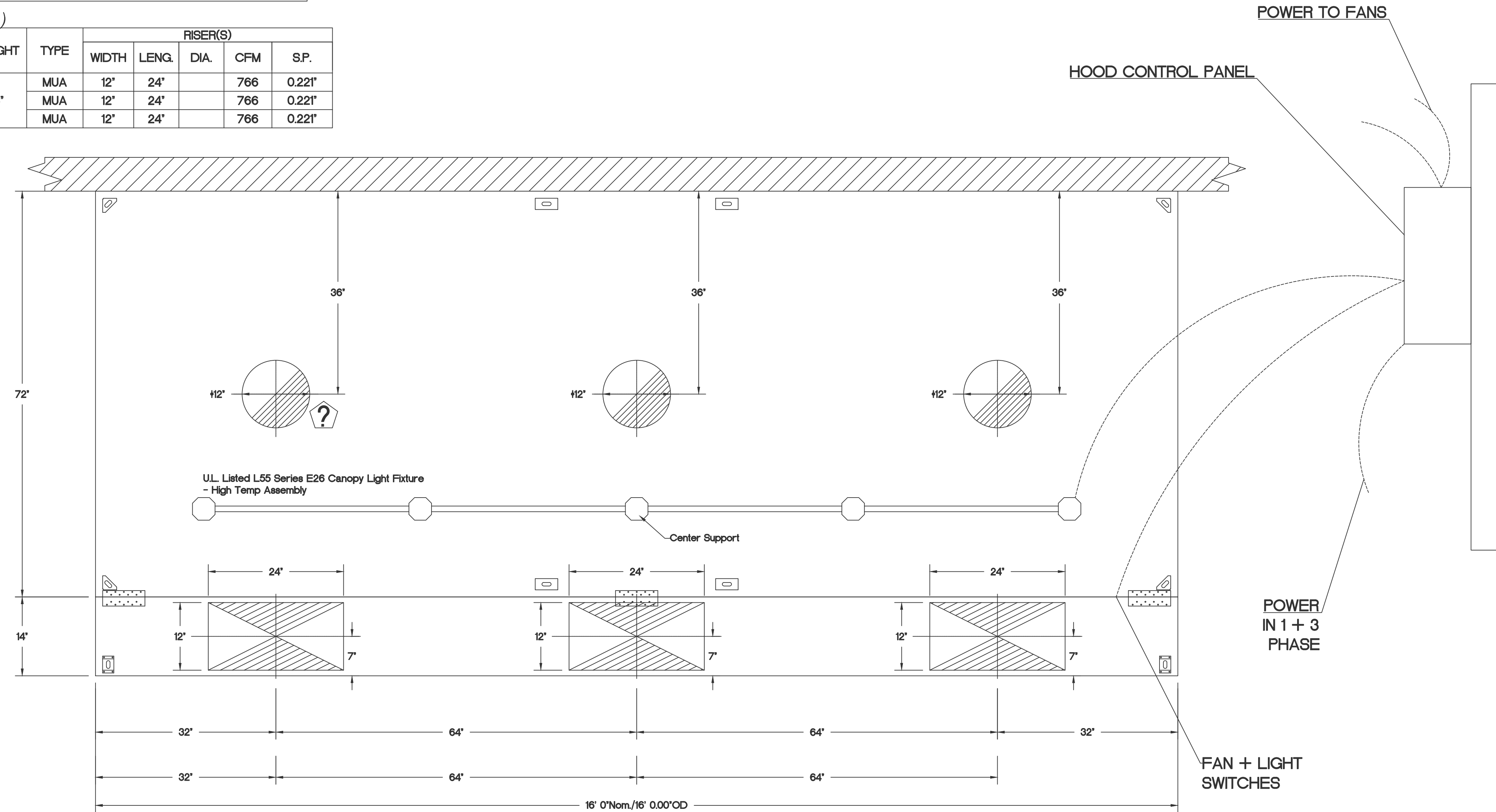
HOOD NO.	TAG	FILTER(S)					LIGHT(S)				UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WGT	
		TYPE	QTY.	HEIGHT	LENGTH	EFFICIENCY * 7 MICRONS	QTY.	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE	SIZE	ELECTRICAL MODEL #			SWITCHES QUANTITY
1	KHD-1						5	L55 Series E26	NO							NO	651 LBS

HOOD OPTIONS

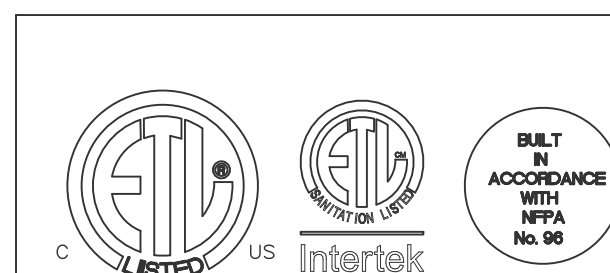
HOOD NO.	TAG	OPTION
1	KHD-1	FIELD WRAPPER 22.00' High Front, Left, Right BACKSPLASH 80.00' High X 192.00' Long 430 SS Vertical

PERFORATED SUPPLY PLENUM(S)

HOOD NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)				
							WIDTH	LENG.	DIA.	CFM	S.P.
1	KHD-1	Front	192'	14'	6'	MUA	12'	24'		766	0.221'
						MUA	12'	24'		766	0.221'
						MUA	12'	24'		766	0.221'



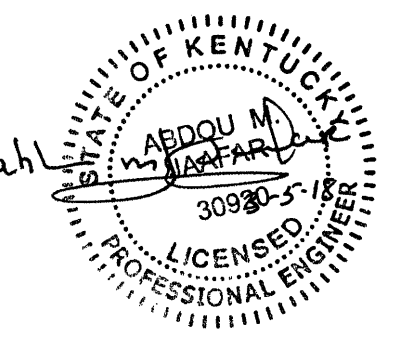
PLAN VIEW - Hood #1 (KHD-1)  
 16' 0.00" LONG 7224VHB-G-PSP-F-ND  
 NOTE: Additional hanging angles provided for hoods 12' and longer.



**CAPTIVE AIR**

JOB Alto's (Northern Kentucky)	
LOCATION COVINGTON, KY, 41011	
DATE 2/13/2018	JOB # 3305041
DWG # 1	DRAWN BY
REV.	SCALE 3/8" = 1'-0"

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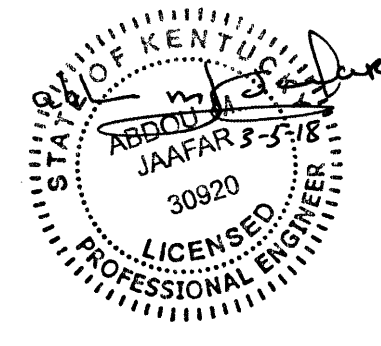


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**HOOD DRAWINGS**

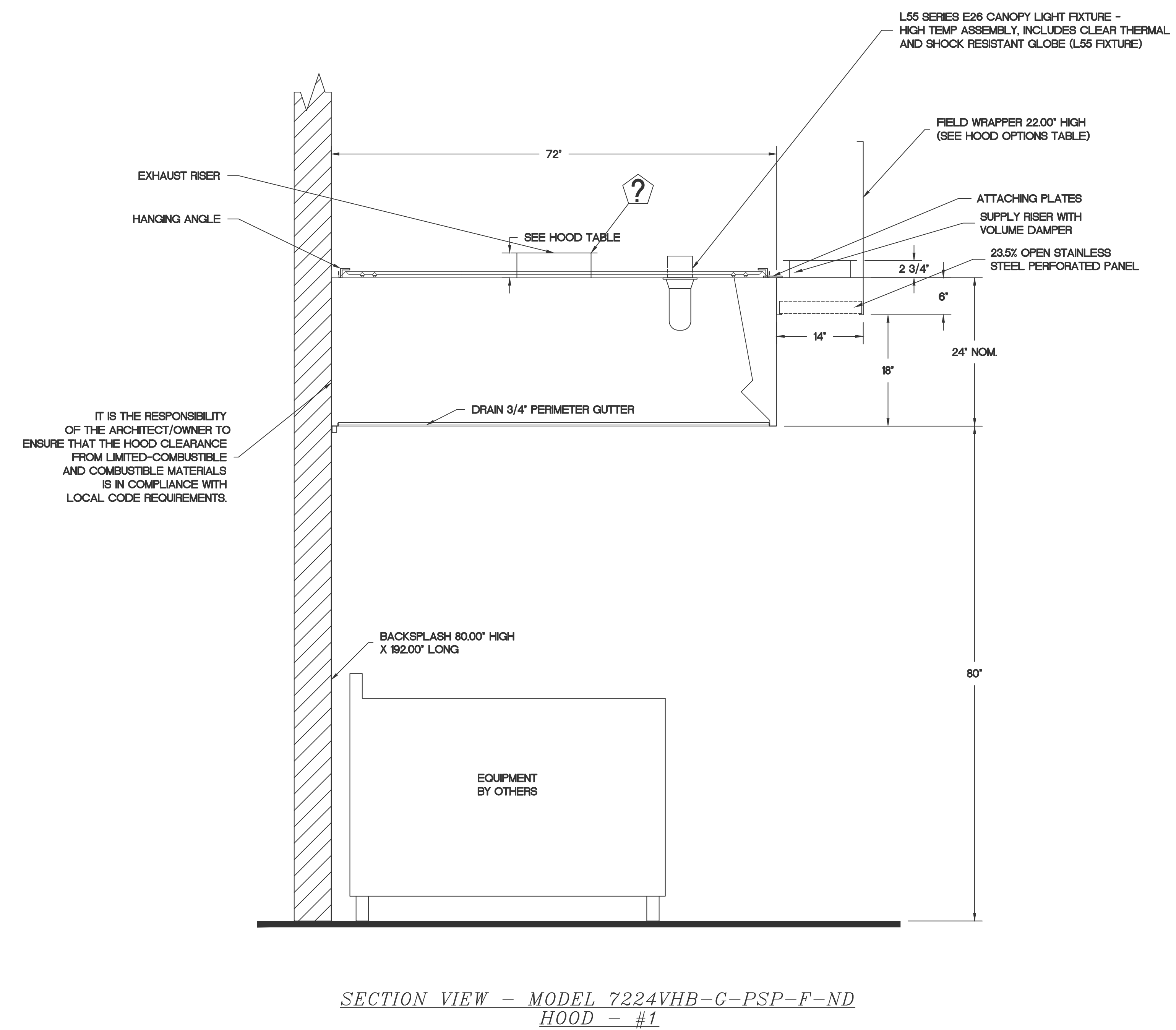
**M4.0**



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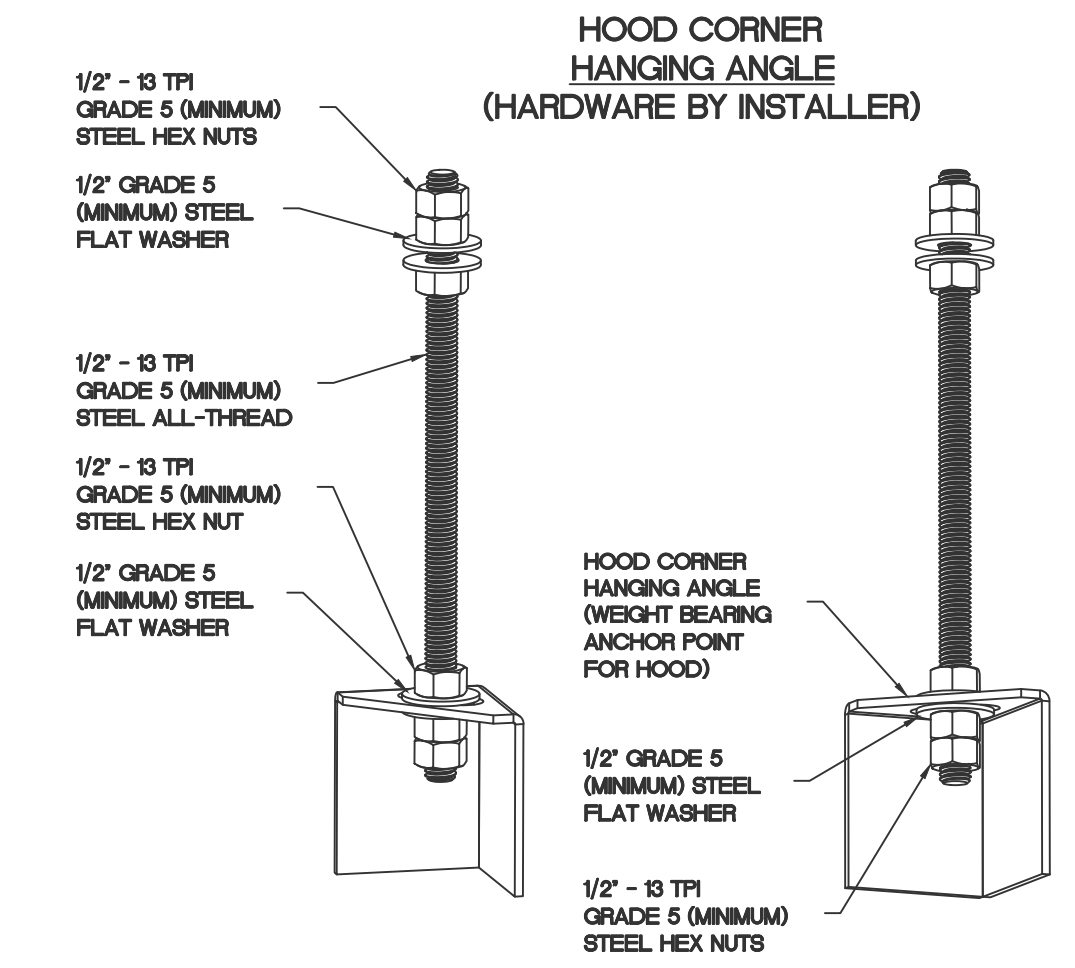
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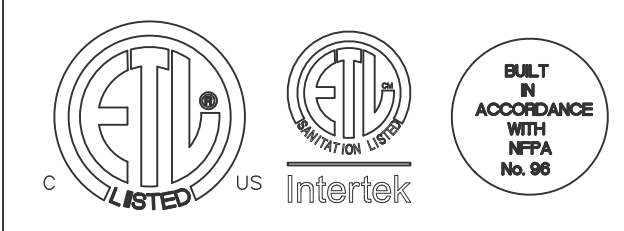
IT IS THE RESPONSIBILITY OF THE ARCHITECT/OWNER TO ENSURE THAT THE HOOD CLEARANCE FROM LIMITED-COMBUSTIBLE AND COMBUSTIBLE MATERIALS IS IN COMPLIANCE WITH LOCAL CODE REQUIREMENTS.

SECTION VIEW - MODEL 7224VHB-G-PSP-F-ND  
 HOOD - #1



**ASSEMBLY INSTRUCTIONS**

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



JOB Alto's (Northern Kentucky)	
LOCATION COVINGTON, KY, 41011	
DATE 2/13/2018	JOB # 3305041
DWG # 2	DRAWN BY
REV.	SCALE 3/8\" = 1'-0\"

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 COVINGTON, KENTUCKY

PROJECT # 170928  
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**HOOD DRAWINGS**

**M4.1**

EXHAUST FAN INFORMATION - Job#3305041

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	†	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1	KEF1	USB18DD-RM	2800	1.650	1269	2.000	1.2680	3	208	8.3	1435 FPM	405	18

MUA FAN INFORMATION - Job#3305041

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	†	VOLT	FLA	WEIGHT (LBS.)	SONES	BURNER EFFICIENCY(%)
2	KMUA1	A1-D.250-G10	G10	A1-D.250	1000	2300	0.400	1152	1.500	1.1080	3	208	4.6	669	21	92

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2	KMUA1	175500	161460	65 deg F	7 in. w.c. - 14 in. w.c.	Natural

FAN OPTIONS

FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1	KEF1	1 - B118 - 24" Discharge Extension.
		1 - B1 - Discharge Orientation Vertical Upper Left - CW Inlet Side.
		1 - B118 - Inlet Ring Used To Connect Non-Factory Duct.
		1 - Utility Set - Spring Vibration Isolators - B112 Thru B118 / Equivalent Sized Utility Set - Indoor/Outdoor use.
		1 - VAV Package w/ Manual Control (VFD Included)
		1 - VFD factory mounted and wired in Exhaust Fan.
		1 - Line Reactor Mounted in Fan
2	KMUA1	1 - Line Reactor Mounting Bracket for Direct Drive Fans (Up to 25 HP).
		1 - Motorized Backdraft Damper for A1-D Housing
		1 - Low Fire Start
		1 - Inlet Pressure Gauge, 0-35"
		1 - Manifold Pressure Gauge, -5 to 15" wc
		1 - VAV Package w/ Manual Control (VFD Included)
		1 - VFD factory mounted and wired in commercial control vestibule for tempered supply fan.
1 - Insulation Option for VBank filter section		

FAN ACCESSORIES

FAN UNIT NO.	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF1							
2	KMUA1				YES		YES	

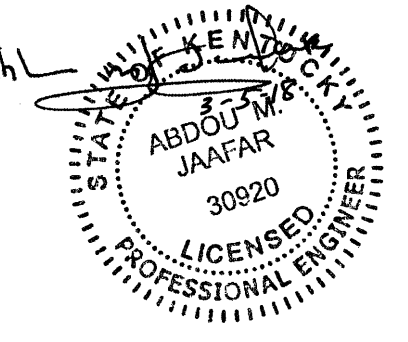
CURB ASSEMBLIES

NO.	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	#1	KEF1	25 LBS	Curb	4.000"W x 48.000"L x 12.000"H



JOB Alto's (Northern Kentucky)	
LOCATION COVINGTON, KY, 41011	
DATE 2/13/2018	JOB # 3305041
DWG # 3	DRAWN BY
REV.	SCALE 3/8" = 1'-0"

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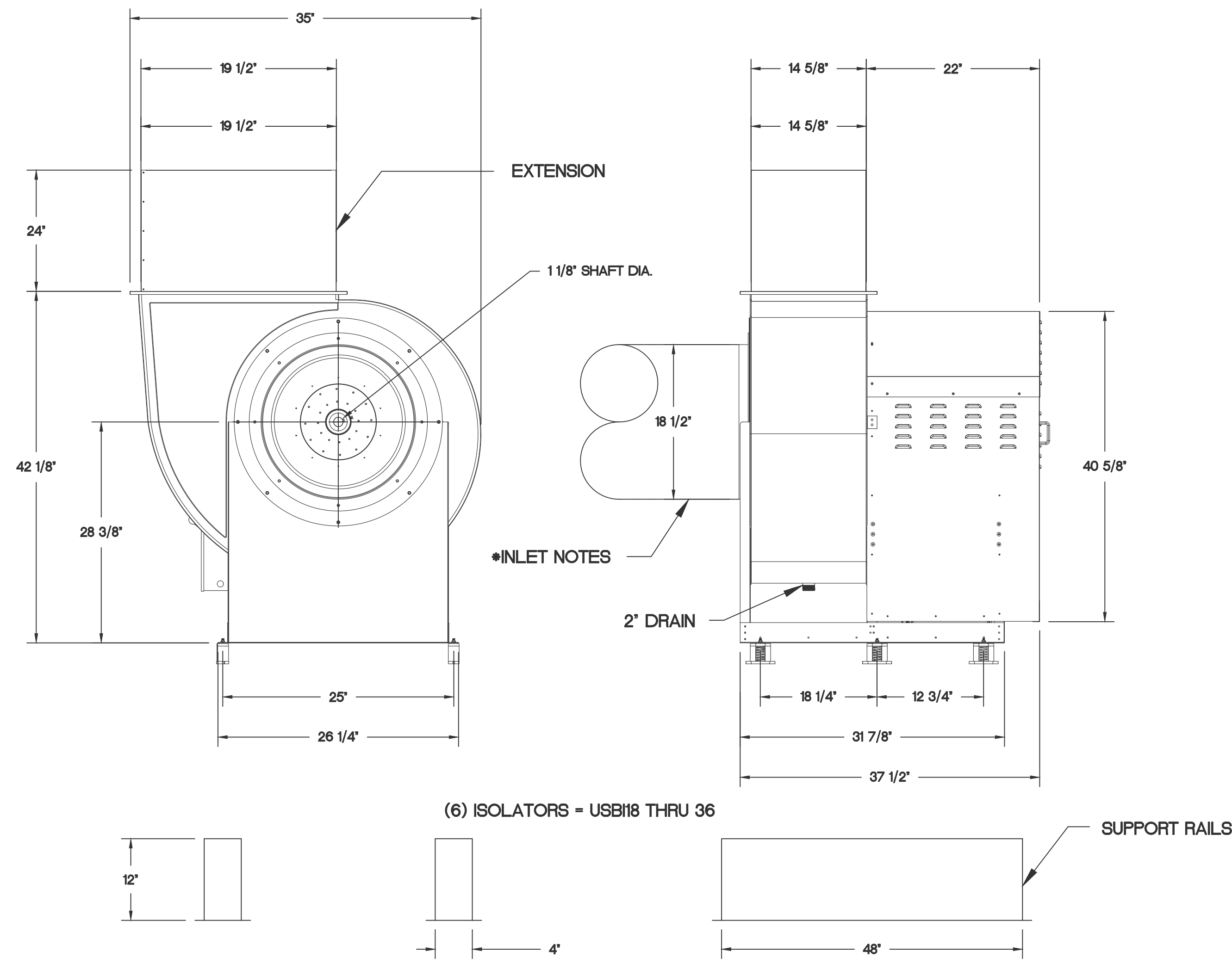
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COVINGTON, KENTUCKY

PROJECT # 170928  
DATE ISSUED 01/23/2018

HOOD DRAWINGS

M4.2

FAN #1 USB118DD-RM - EXHAUST FAN (KEF1)



FEATURES:

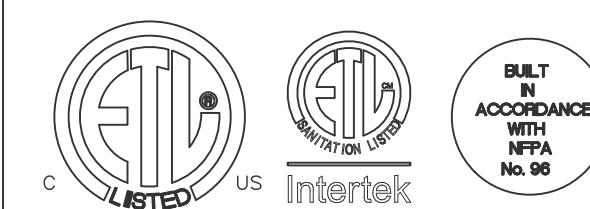
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705
- UL762
- HIGH HEAT OPERATION DIRECT DRIVE 350°F (176°C)
- HIGH HEAT OPERATION BELT DRIVE 350°F (176°C)
- HEAT SLINGER
- GREASE CLASSIFICATION TESTING
- 2" DRAIN
- MOTOR WEATHER COVER
- FULLY SEALED SCROLL HOUSING
- SCROLL ACCESS DOOR
- FLANGE 1 1/4" - 11 THRU 20.
- FLANGE 2" - 24 THRU 36.

OPTIONS

- BI18 - 24" DISCHARGE EXTENSION.
- BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE.
- BI8 - INLET RING USED TO CONNECT NON-FACTORY DUCT.
- UTILITY SET - SPRING VIBRATION ISOLATORS - BI12 THRU BI18 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE.
- VAV PACKAGE W/ MANUAL CONTROL (VFD INCLUDED)
- VFD FACTORY MOUNTED AND WIRED IN EXHAUST FAN.
- LINE REACTOR MOUNTED IN FAN
- LINE REACTOR MOUNTING BRACKET FOR DIRECT DRIVE FANS (UP TO 25 HP).

NORMAL TEMPERATURE TEST DIRECT DRIVE EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 350°F (176°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

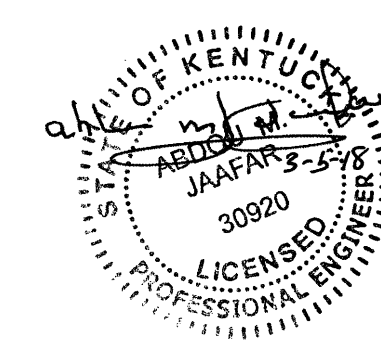
- \* INLET NOTES:  
 LENGTH OF THE STRAIGHT DUCT ON THE INLET TO BE 3 TIMES THE EQUIVALENT DUCT DIAMETER BEFORE CONNECTING TO ANY FITTINGS SUCH AS ELBOWS TO AVOID SYSTEM EFFECT.



**CAPTIVEAIR**

JOB Alto's (Northern Kentucky)	
LOCATION COVINGTON, KY, 41011	
DATE 2/13/2018	JOB # 3305041
DWG # 4	DRAWN BY
REV.	SCALE 3/8" = 1'-0"

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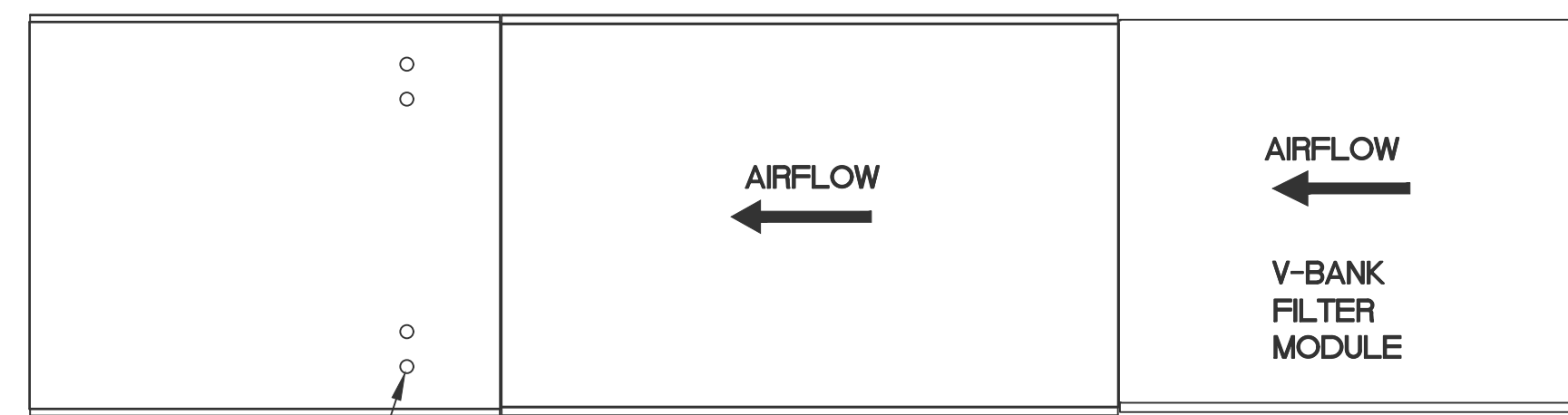
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**HOOD DRAWINGS**

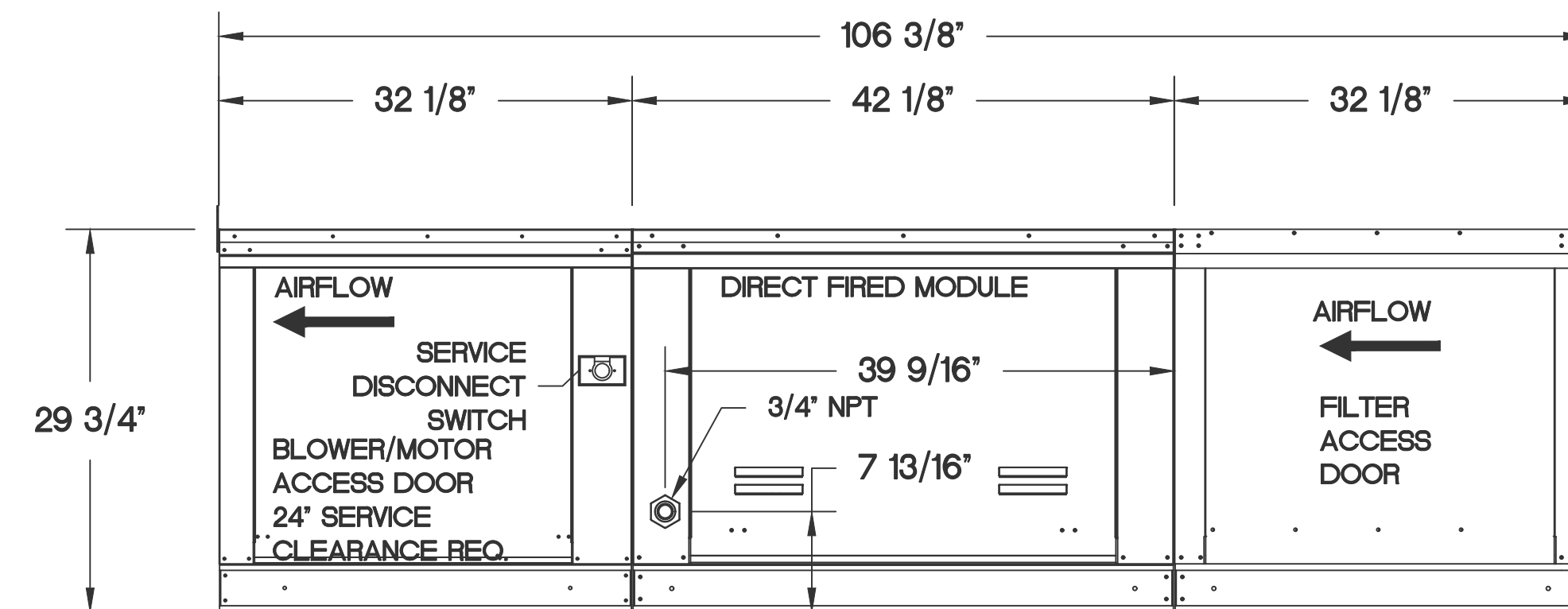
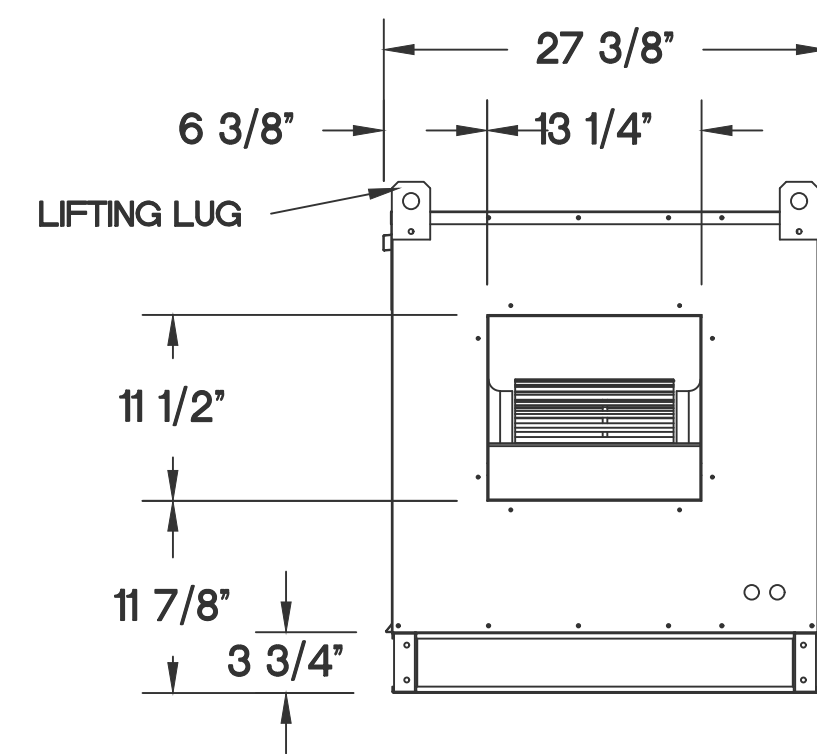
**M4.3**

- FAN #2 A1-D.250-G10 - HEATER (KMUA1)
1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 10" BLOWER
  2. V-BANK EZ FILTERS - INDOOR
  3. SIDE DISCHARGE - AIR FLOW RIGHT -> LEFT
  4. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD + MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, TFB120S 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. VAV (VARIABLE-AIR-VOLUME) WIRING PACKAGE FOR COMMERCIAL FANS.
  9. MANUAL SPEED CONTROL VARIABLE FREQUENCY DRIVE INCLUDED
  10. VFD FACTORY MOUNTED AND WIRED ON UNIT CONTROL PANEL.
  11. "INSULATION" FOR V-BANK INTAKE OPTION.

NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH EQUAL TO THREE TIMES THE SUPPLY DUCT EQUIVALENT DIAMETER MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE UNLESS OTHERWISE SPECIFIED. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY.

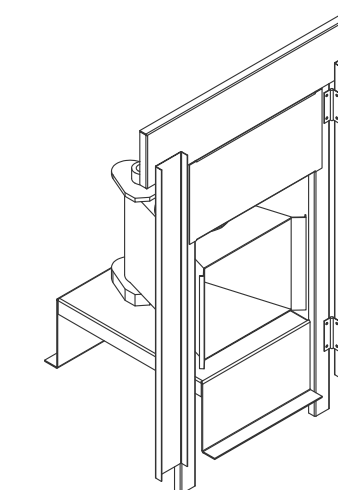


FLEX CONDUIT FOR FIELD WIRING



SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 10°F. TEMP. RISE = 65°F.  
 BTUs CALCULATED OFF STANDARD AIR DENSITY  
 OUTPUT BTUs AT ALTITUDE OF 0.0 ft. = 161460  
 INPUT BTUs AT ALTITUDE OF 0.0 ft. = 175500



Direct Fired (DF) Profile Plate Assembly

Direct Fired Profile Plate Specifications

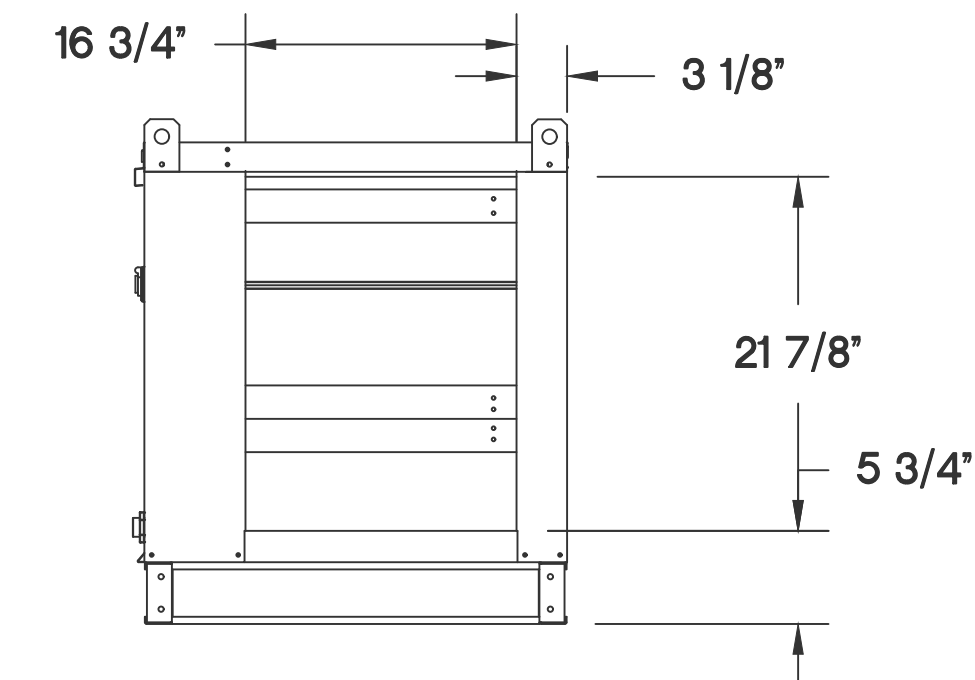
**Description:**  
 Direct fired burners shall have patented (US Patent No. US6629523B2), self-adjusting profile plates designed to ensure proper air velocity and pressure drop across the burner. Profile plates shall allow burners to achieve clean combustion by limiting by-product levels to a maximum of 5ppm of carbon monoxide (CO), and 0.5ppm of nitrogen dioxide (NO2).

**Application:**  
 Spring-loaded burner profile plates are engineered to automatically react to the momentum of a fresh air stream, without the need for any motors or actuators to mechanically adjust them. With this feature, all DF units are designed for demand control ventilation (DCV) requirements.

**Certification:**  
 All profile plate assemblies shall be included in the DF unit's ETL listing and comply with combined safety standards ANSI Z83.4 and CSA 37 (non-recirculating DF heaters) and ANSI Z83.16 (recirculating DF heaters).

General Construction:

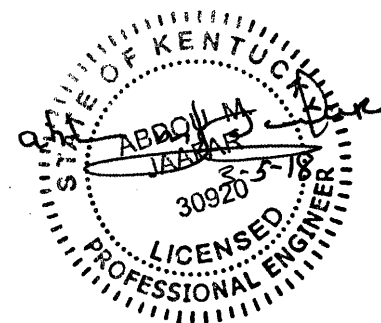
- Profile plates shall be formed from G90 galvanized steel.
- Profile plates shall vary in size per unit.
- Profile plates shall be mounted along the same plane as the discharge of the burner.
- Design shall incorporate properly torqued, permanently mounted spring hinges.
- Spring hinges shall be made from plated steel.



**CAPTIVEAIR**

JOB Alto's (Northern Kentucky)	
LOCATION COVINGTON, KY, 41011	
DATE 2/13/2018	JOB # 3305041
DWG # 5	DRAWN BY
REV.	SCALE 3/8" = 1'-0"

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Revisions:

Mark	Date	By	Description
	2/26/2018		ISSUED FOR PERMIT
△	3/5/2018		BULLETIN #1



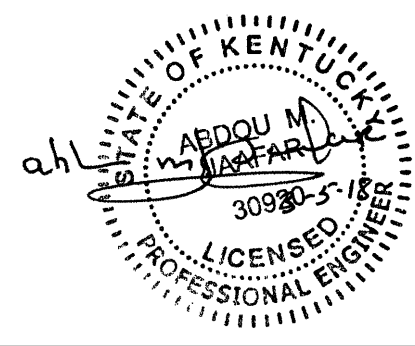
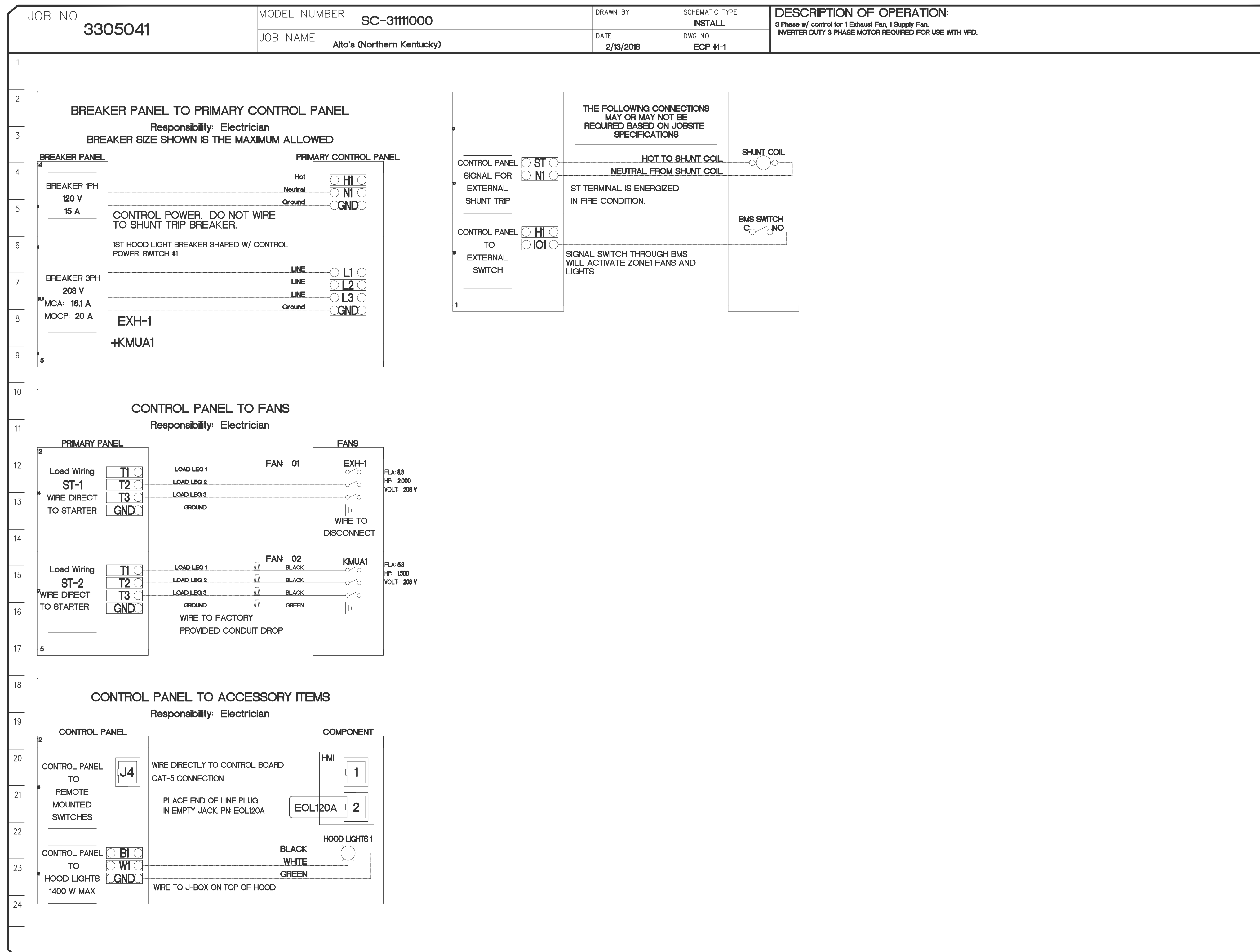
**ALTO - DUVENECK SQUARE**  
 COVINGTON, KENTUCKY

PROJECT # 170928  
 DATE ISSUED 01/23/2018

**HOOD DRAWINGS**

**M4.4**

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	H.P.	VOLT	FLA
1	KEP1	SC-3111000	Wall Mount In SS Box	02 - Face Mount Right Side of Hood Hood # 1	1 Light 1 Fan	Smart Controls Basic	KEF1	Exhaust	3	2.000	208	8.3
							KMUA1	Supply	3	1.500	208	4.6



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Revisions:

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3/5/2018  
 BULLETIN #1

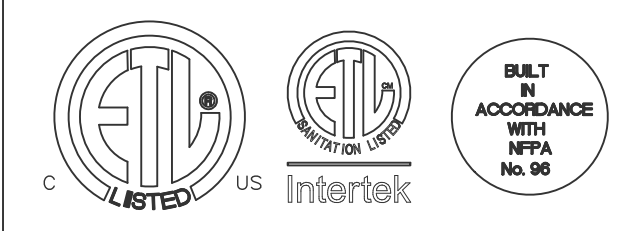


**ALTO - DUVENECK SQUARE**  
 COVINGTON, KENTUCKY

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 DATE ISSUED 01/23/2018

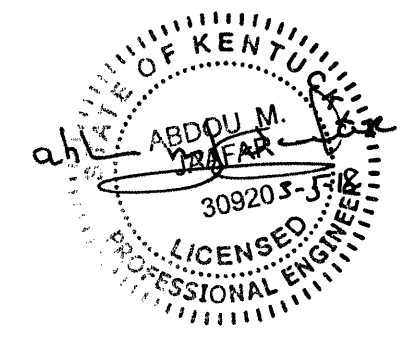
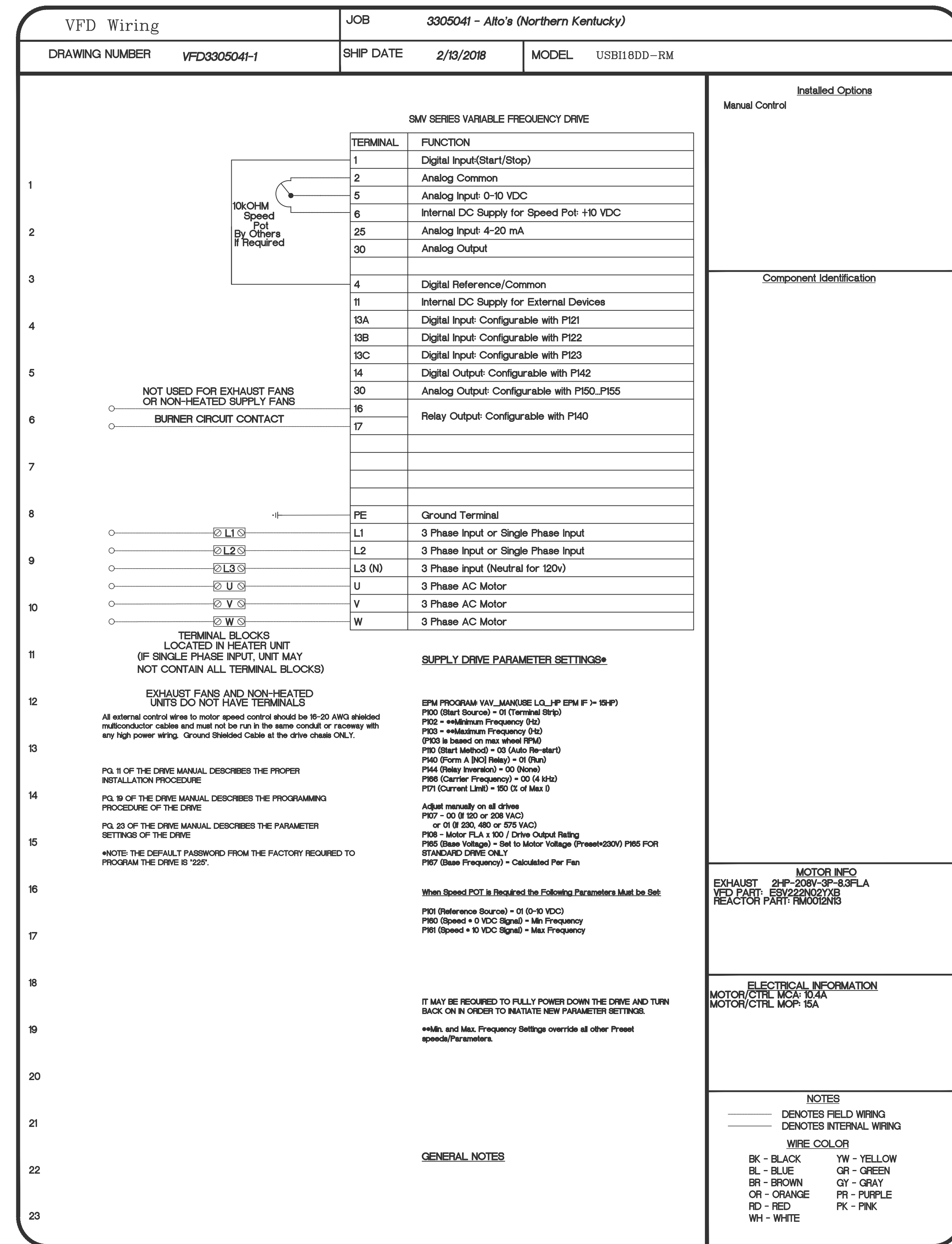
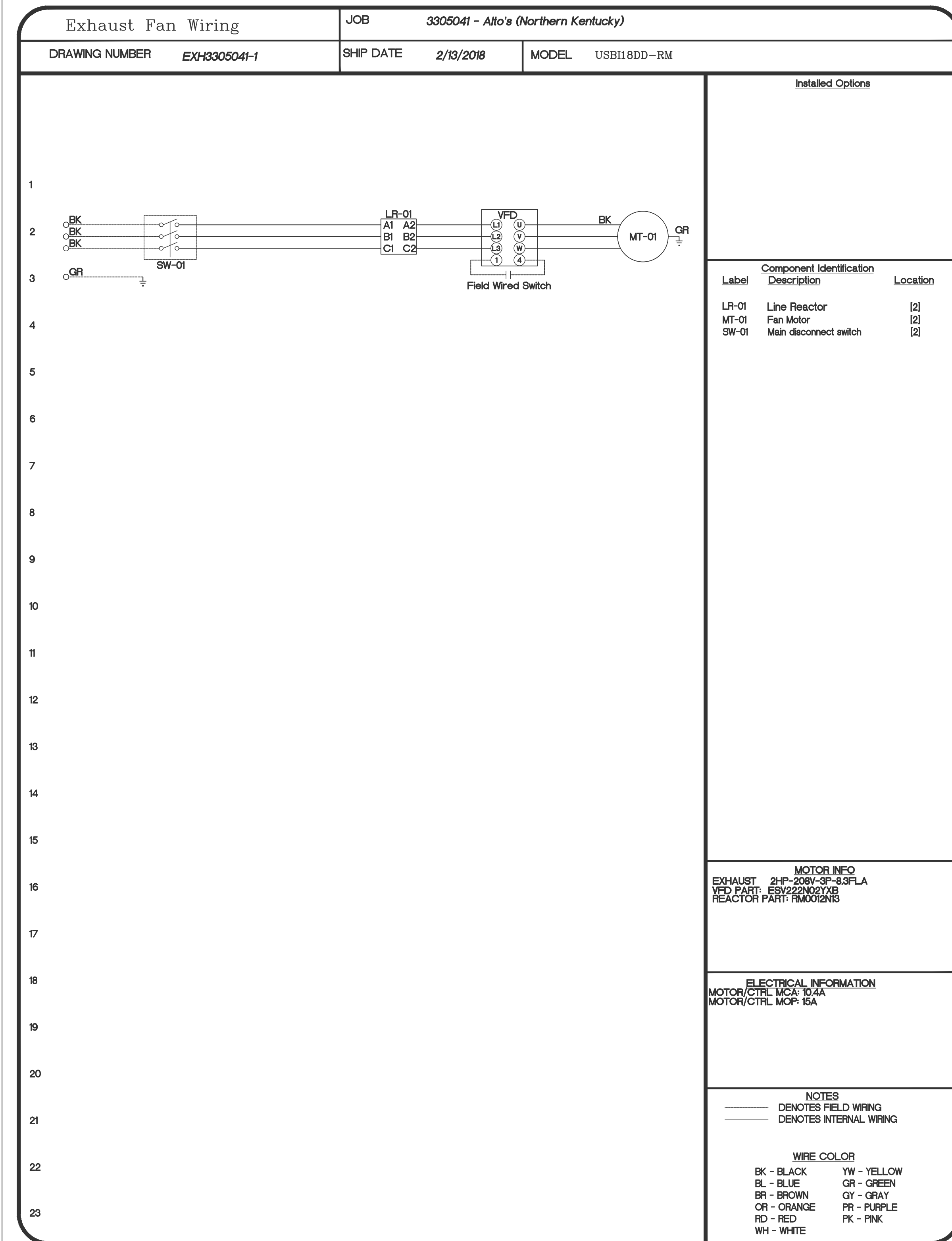
**HOOD DRAWINGS**

**M4.5**



<b>JOB</b> Alto's (Northern Kentucky)	
<b>LOCATION</b> COVINGTON, KY, 41011	
<b>DATE</b> 2/13/2018	<b>JOB #</b> 3305041
<b>DWG #</b> 6	<b>DRAWN BY</b>
<b>REV.</b>	<b>SCALE</b> 3/8" = 1'-0"

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	2/26/2018		

ISSUED FOR PERMIT

3/5/2018

BULLETIN #1

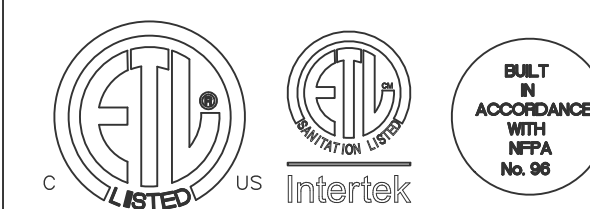


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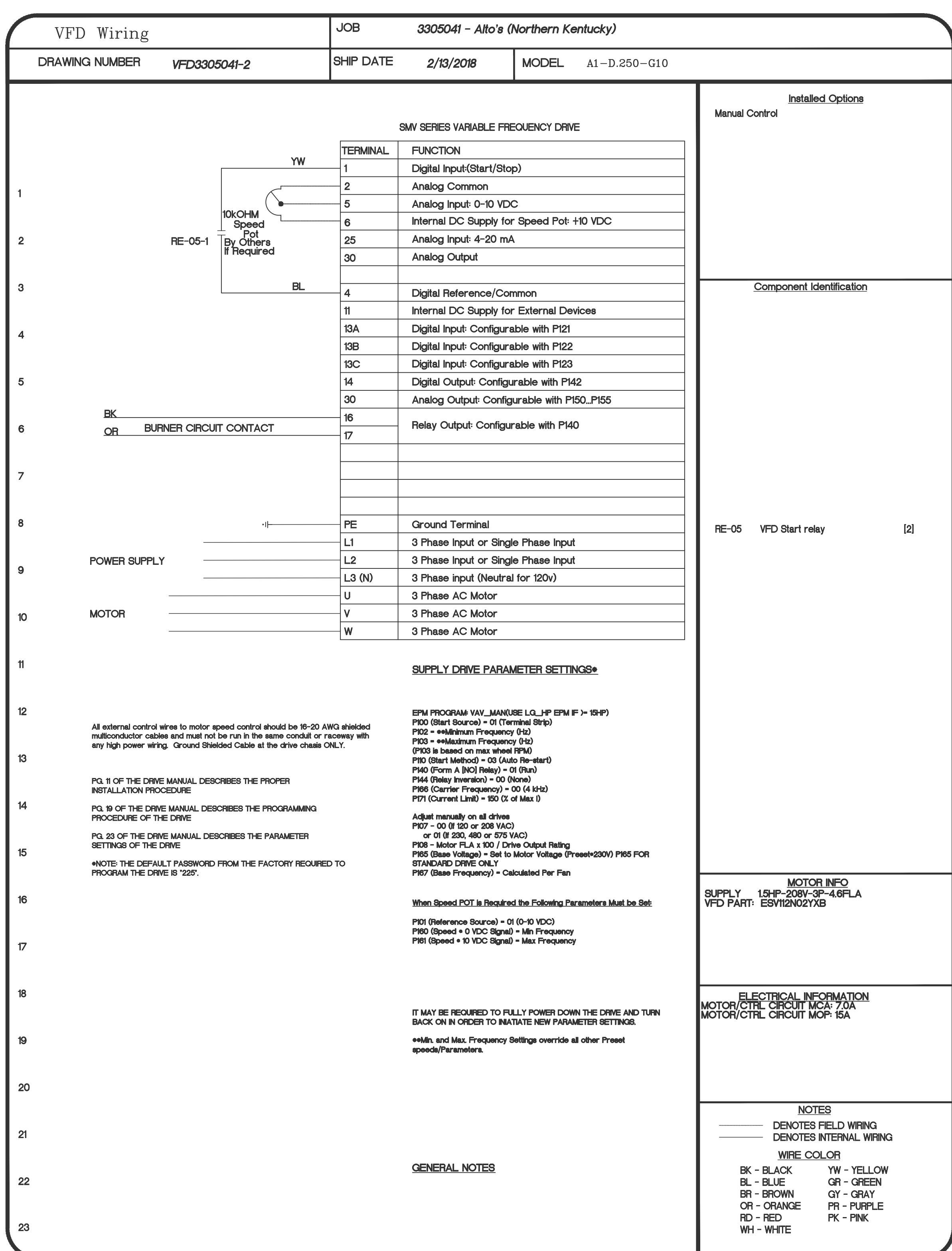
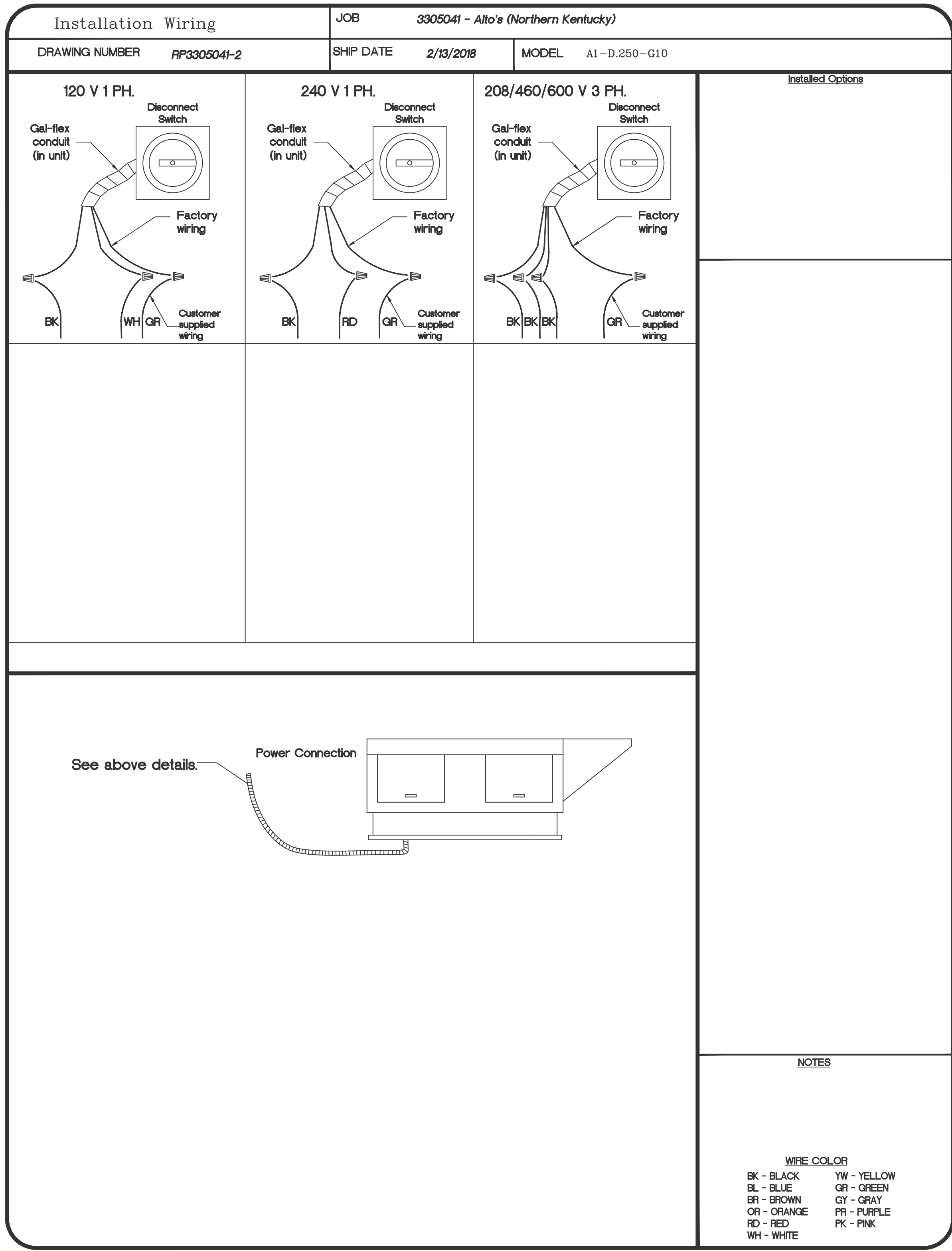
**HOOD DRAWINGS**

**M4.6**



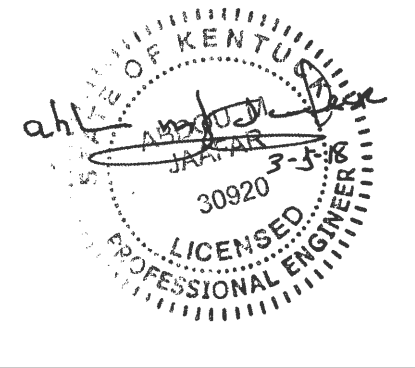
<b>JOB</b> Alto's (Northern Kentucky)	
<b>LOCATION</b> COVINGTON, KY, 41011	
<b>DATE</b> 2/13/2018	<b>JOB #</b> 3305041
<b>DWG #</b> 7	<b>DRAWN BY</b>
<b>REV.</b>	<b>SCALE</b> 3/8" = 1'-0"

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		<p>JOB Alto's (Northern Kentucky)</p> <p>LOCATION COVINGTON, KY, 41011</p> <p>DATE 2/13/2018</p> <p>DWG # 8</p> <p>REV.</p>	<p>JOB # 3305041</p> <p>DRAWN BY</p> <p>SCALE 3/8" = 1'-0"</p>
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**ALTO - DUVENECK SQUARE**  
COVINGTON, KENTUCKY

PROJECT # 170928  
DATE ISSUED 01/23/2018

**HOOD DRAWINGS**

**M4.7**