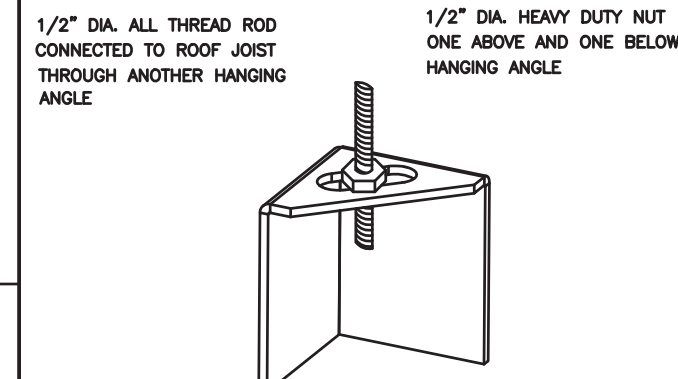


ND-2 HANGING ANGLE DETAIL



ROD AND NUTS TO BE SUPPLIED BY INSTALLING CONTRACTOR. HANGING ANGLE IS PRE-FINISHED AT FACTORY.

HANGING ANGLE LOCATIONS

HOOD STYLE	DIM FROM REAR	DIM FROM FRONT (24\"/>	
CANOPY ND2	4.166"	2.246"	2.246"
ND2-PSP-F	4.166"	2.246"	2.246"
BACKSHELF BD-2	4.166"	2.246"	-
VHB/VHB-G	36"X36"	42"X42"	48"X48"
FRONT/BACK DIMS BY SIZE	2.246"	2.246"	2.246"

CALCULATIONS UTILIZED

EXHAUST CFM-LENGTH OF HOOD X CFM/INCH (LOAD)
 SUPPLY CFM-EXHAUST CFM X PERCENTAGE REQUIRED (PPM%)
 TOTAL DUCT AREA=144 X PPM%
 DUCT LENGTH= TOTAL DUCT AREA / DUCT DEPTH

* CAPTIVE-AIRE DUCT CONNECTIONS ARE TO BE INSTALLED USING AN EXHAUST VELOCITY OF 1500-1800 FPM AND A SUPPLY VELOCITY OF 300-400 FPM.

BUILDING CODES

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

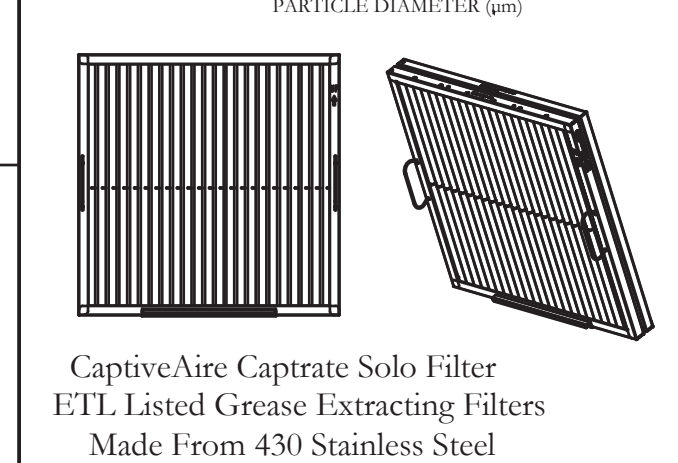
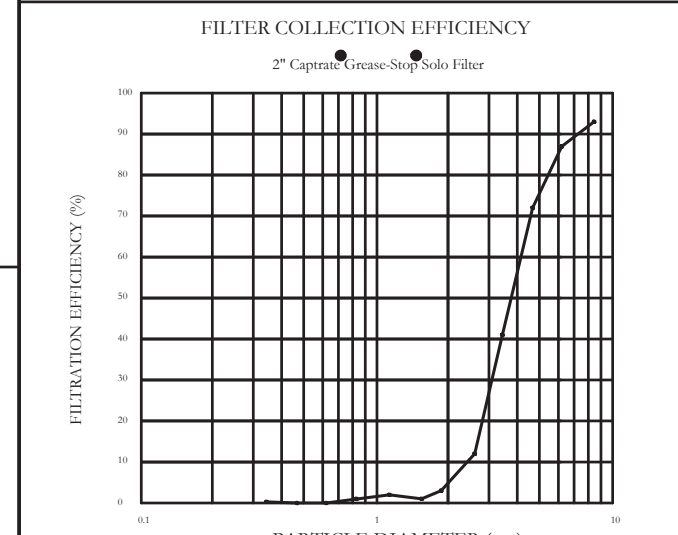
CLEARANCE TO COMBUSTIBLES

MATERIAL	CLEARANCE REDUCTION SYSTEM
NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
COMBUSTIBLE	1" INSULATED STANDOFF

GENERAL NOTES

- INSTALLATION**
1. ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
 2. ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
 3. HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
 4. ALL CONNECTIONS FROM CAPTIVE-AIRE ARE DUCT PER MECHANICAL CONTRACTOR'S PLANS.
 5. COOKING EQUIPMENT TO SHUTOFF IN EVENT OF FIRE.
 6. EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
 7. ALL LIGHTS FIXTURE SHOWN INSTALLED BY CAPTIVE-AIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES BY ELECTRICAL CONTRACTORS.
 8. LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
 9. SESAMC RESTAURANTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
 10. INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITY FOR VERIFICATION OF DIMENSIONAL DATA CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTENTION AND ADHERENCE TO ANY CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT SHOWN.
- BALANCE**
11. KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
 12. KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
 13. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.
- ADDITIONAL**
14. WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
 15. SIGNED AND "APPROVED" COPIES OF THIS DOCUMENT MUST BE RECEIVED BY THE FACTORY PRIOR TO COMMENCEMENT OF FABRICATION.

FILTER DETAIL



HOOD INFORMATION - JOB#4584419

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX. COOKING TEMP.	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH. CFM	EXHAUST PLENUM RISERS(S)				HOOD CONSTRUCTION	HOOD END TO END	HOOD FRONT ROW	
										WIDTH	LENG	HEIGHT	DIA				CFM
1	ITEM 53A	5424 ND-2	CAPTIVEAIRE	8' 0"	450 DEG	I	MEDIUM	200	1600	4"	14"	1600	1497	-0.734"	430 SS WHERE EXPOSED	ALONE	FRONT
2	ITEM 33B	5424 ND-2	CAPTIVEAIRE	5' 0"	450 DEG	I	MEDIUM	155	775	4"	10"	775	1421	-0.436"	430 SS WHERE EXPOSED	ALONE	ALONE
3	ITEM 10.1	4224 VHB-G	CAPTIVEAIRE	3' 6"	700 DEG	II	N/A	150	525	4"	10"	525	963	-0.069"	304 SS 100%	ALONE	ALONE

HOOD INFORMATION

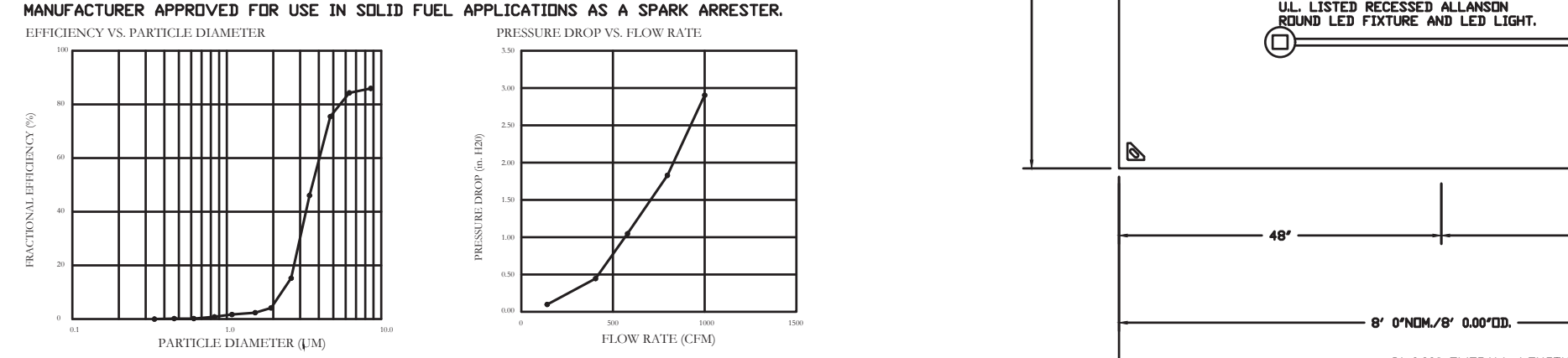
HOOD NO	TAG	TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	UTILITY CABINETS(S)		ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE HOOD SYSTEM PIPING WEIGHT
												TYPE	SIZE			
1	ITEM 53A	CAPTRETE SOLID FILTER	5	16"	16"	85% SEE FILTER SPEC	2	RECESSED	NO	RIGHT	12"X54"X24"			DCV-2011	1 LIGHT 1 FAN	NO 513 LBS
2	ITEM 53B	CAPTRETE SOLID FILTER	3	16"	16"	85% SEE FILTER SPEC	2	RECESSED	NO							NO 348 LBS
3	ITEM 10.1						0									NO 163 LBS

HOOD OPTIONS

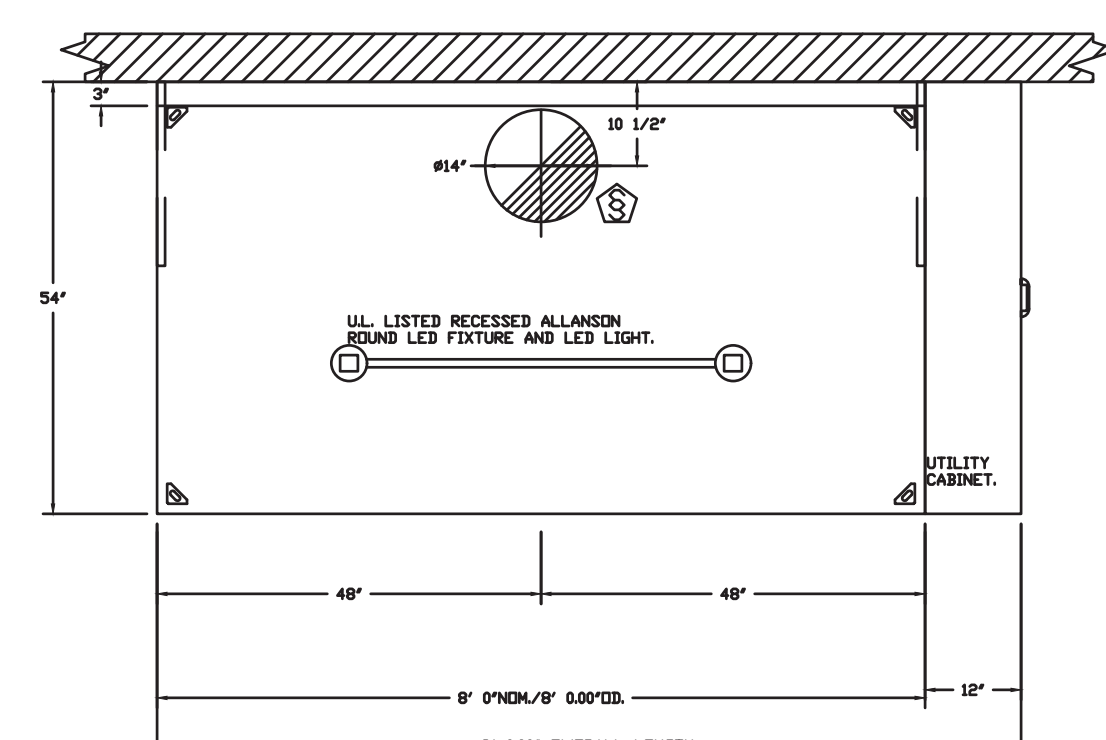
HOOD NO	TAG	OPTION
1	ITEM 33A	FIELD WRAPPER 1800" HIGH FRONT, LEFT, RIGHT. LEFT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. RISER SENSOR INSTALL 3IN DBL. FIELD WRAPPER 1800" HIGH FRONT, LEFT, RIGHT. RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. RISER SENSOR INSTALL 3IN DBL. LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS. FIELD WRAPPER 1800" HIGH FRONT, LEFT, RIGHT.
2	ITEM 33B	
3	ITEM 10.1	

SPECIFICATION: CAPTRETE® GREASE-STOP® SOLID FILTER

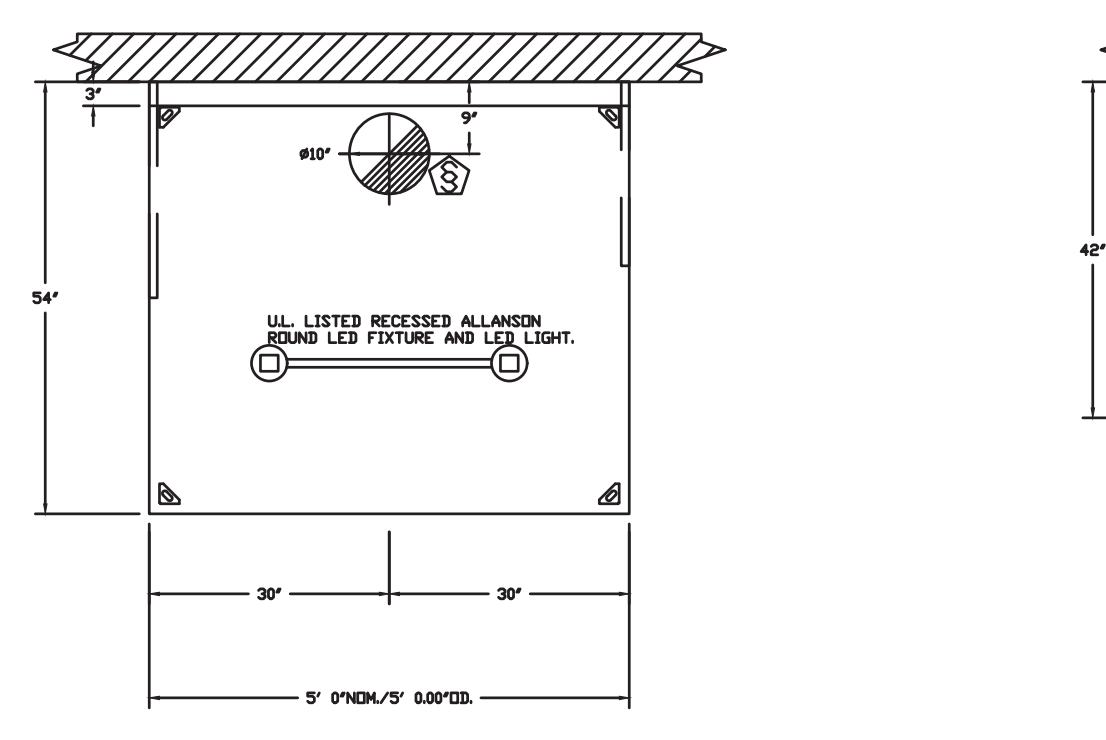
THE CAPTRETE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY. FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNELS. UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED. GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 10 INCHES OF WATER GAUGE. THE CAPTRETE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2819-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.



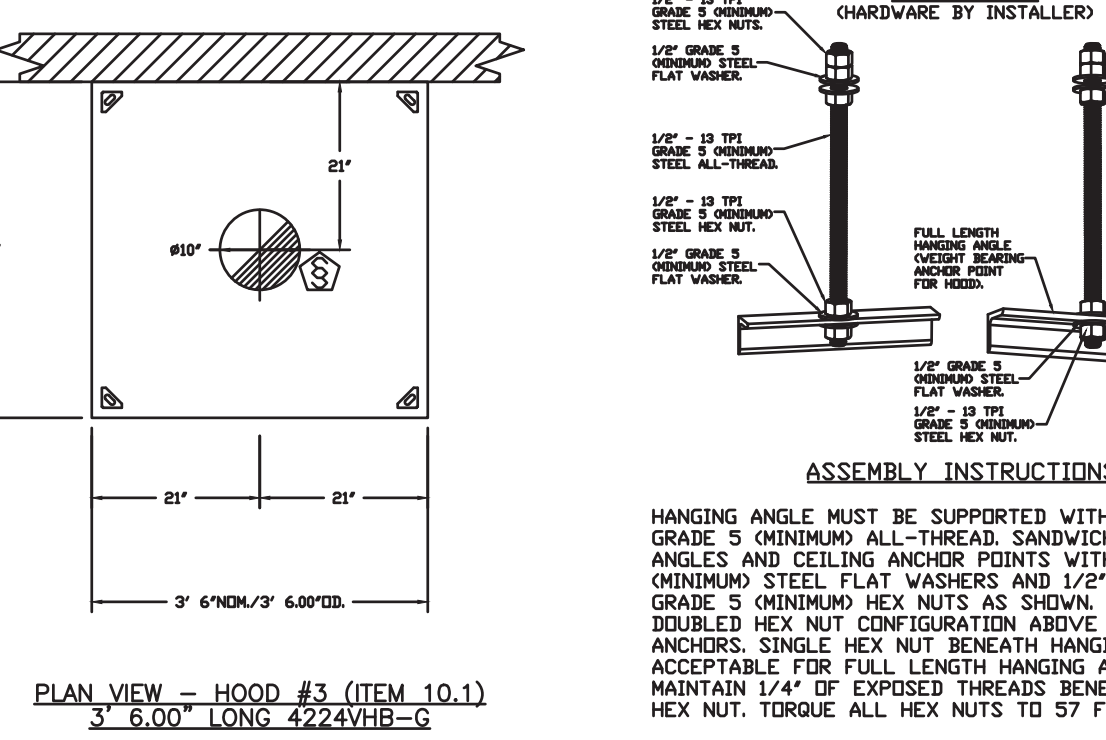
CAPTRETE FILTERS ARE BUILT IN COMPLIANCE WITH:
 NFPA #96
 NSF STANDARD #2
 UL STANDARD #866
 INT. MECH. CODE (IMC)
 ILC-304.95



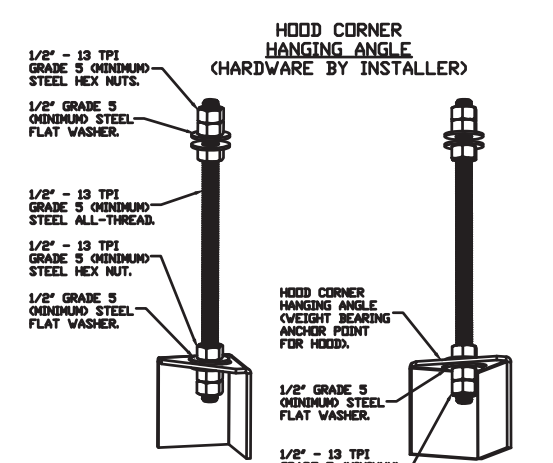
PLAN VIEW - HOOD #1 (ITEM 33A)
8' 0.00" LONG 5424ND-2



PLAN VIEW - HOOD #2 (ITEM 33B)
5' 0.00" LONG 5424ND-2

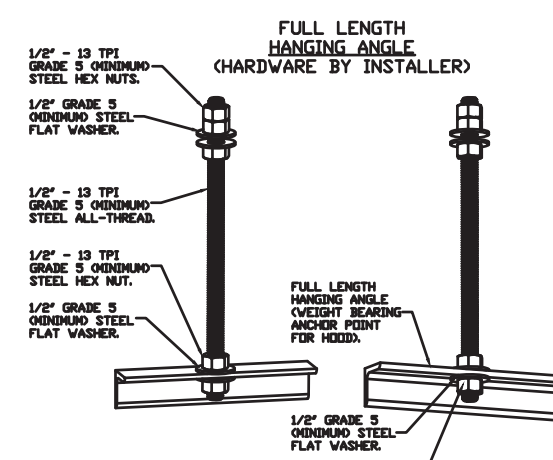


PLAN VIEW - HOOD #3 (ITEM 10.1)
3' 6.00" LONG 4224VHB-G



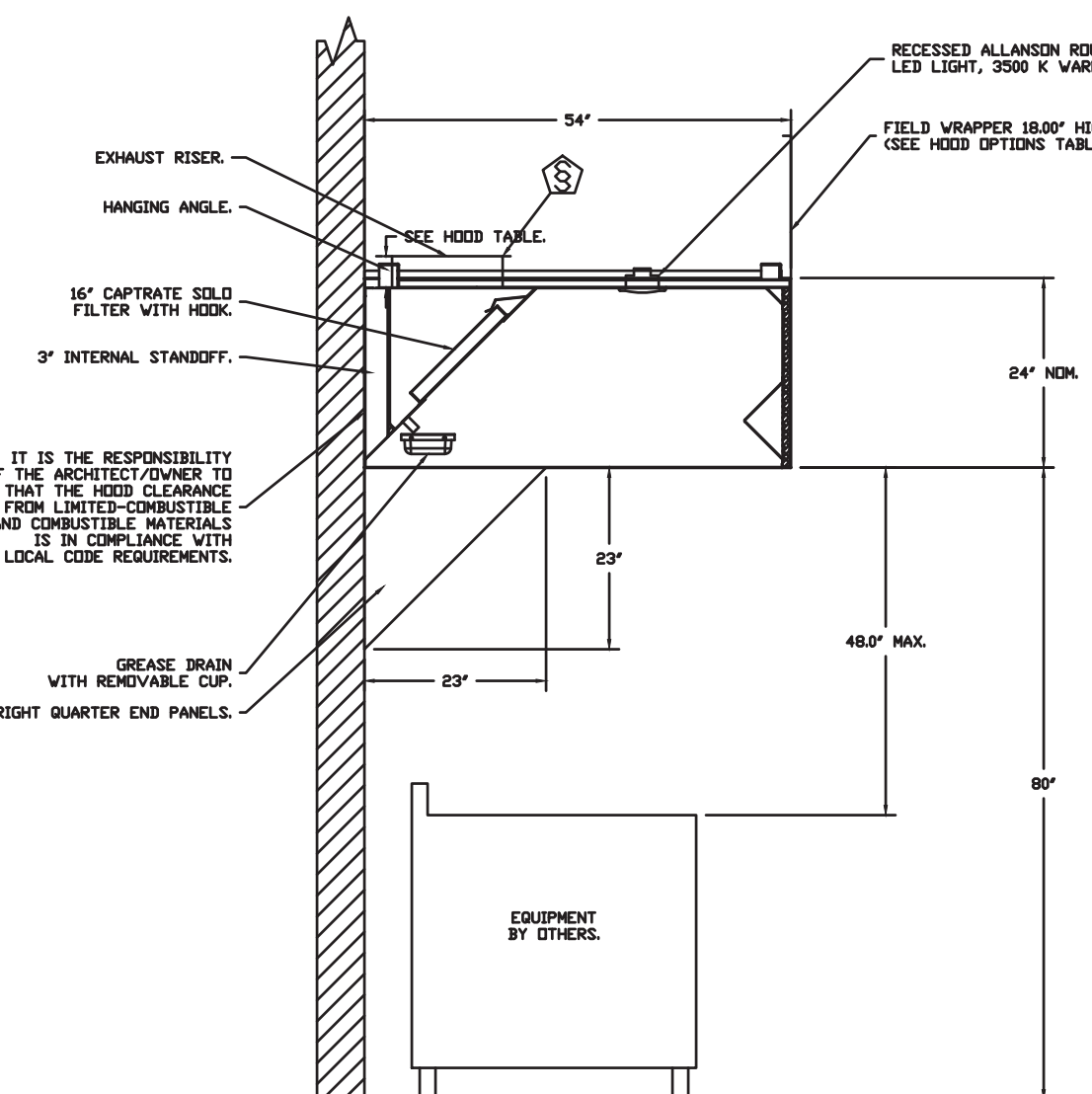
ASSEMBLY INSTRUCTIONS

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.

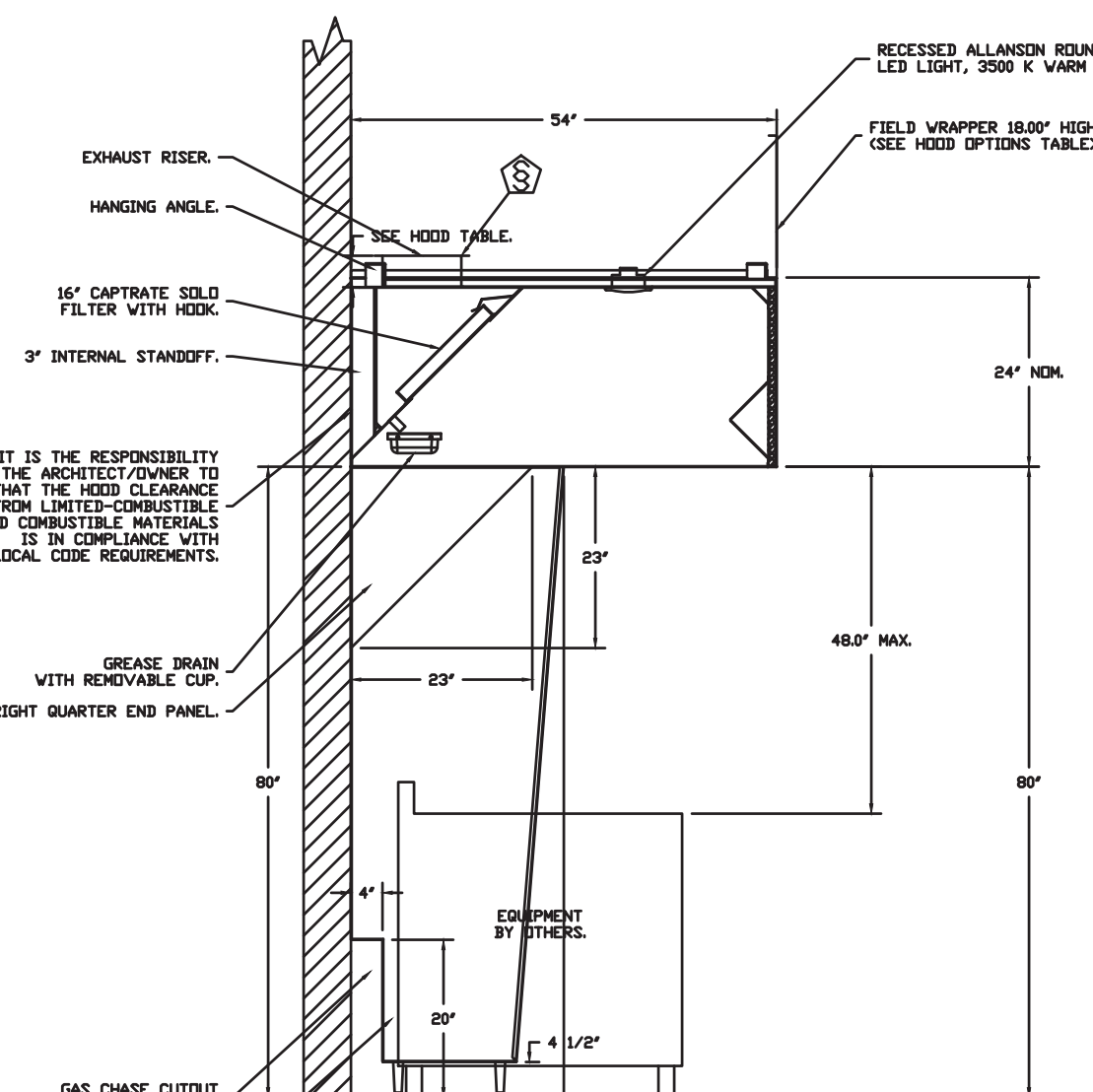


ASSEMBLY INSTRUCTIONS

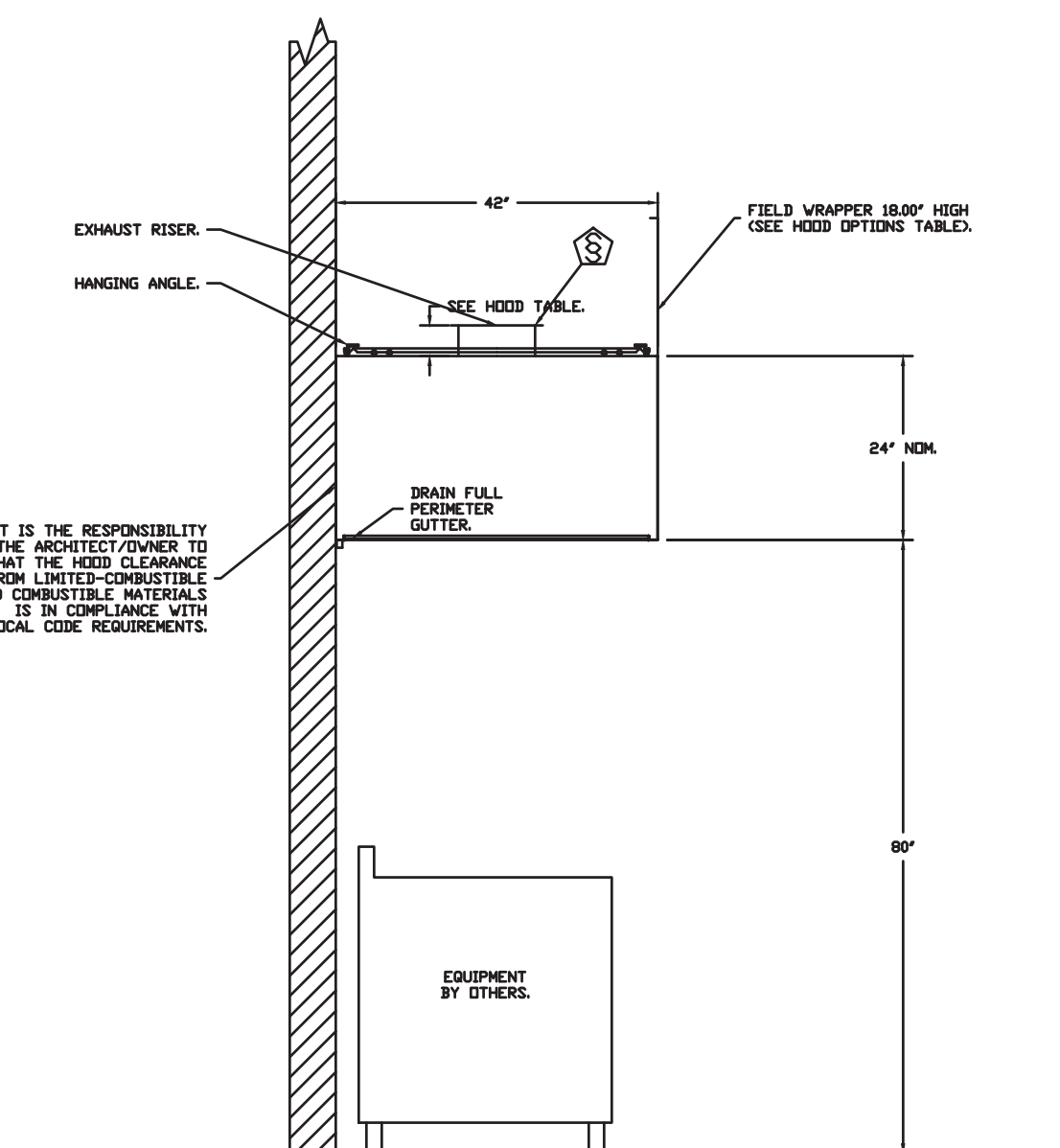
HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE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



SECTION VIEW - MODEL 5424ND-2
HOOD - #1 (ITEM 33A)



SECTION VIEW - MODEL 5424ND-2
HOOD - #2 (ITEM 33B)



SECTION VIEW - MODEL 4224VHB-G
HOOD - #3 (ITEM 10.1)

FOR QUESTIONS, CALL THE: KANSAS CITY REGIONAL OFFICE
 1126 SWIFT STREET, KANSAS CITY, MO 64116
 PHONE: (816) 221-8575
 FAX: (816) 221-8511

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted
 Approved with NO Exception Taken
 Revised and Resubmit
 SIGNATURE _____ DATE _____
 Your Title _____

***** NOTE *****
 ALL WALLS AND STRUCTURES THAT COME WITHIN 18" OF HOOD MUST BE METAL STUDS AND SHEETROCK. WOOD STUDS OR ANY OTHER COMBUSTIBLE MATERIAL WITHIN 18" OF HOOD NO ALLOWED.

***** NOTE *****
 HOOD MANUFACTURER RECOMMENDS NO RETURNS OR 4-WAY DIFFUSERS WITHIN 10 FEET OF HOOD IN ALL DIRECTION.

***** NOTE *****
 MAKEUP AIR SHALL BE DELIVERED INTO SPACE IN MANNER THAT WILL NOT DISRUPT HOODS ABILITY TO CAPTURE AND CONTAIN.

SYSTEM DESIGN VERIFICATION (SDV)

IF ORDERED, CAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

ANY FIELD RELATED DISCREPANCIES THAT ARE DISCOVERED DURING THE SDV WILL BE BROUGHT TO THE ATTENTION OF THE GENERAL CONTRACTOR AND CORRESPONDING TRADES ON SITE. THESE ISSUES WILL BE DOCUMENTED AND FORWARDED TO THE APPROPRIATE SALES OFFICE. IF CAS SERVICE HAS TO RESOLVE A DISCREPANCY THAT IS A FIELD ISSUE, THE GENERAL CONTRACTOR WILL BE NOTIFIED AND BILLED FOR THE WORK. SHOULD A RETURN TRIP BE REQUIRED DUE TO ANY FIELD RELATED DISCREPANCY THAT CANNOT BE RESOLVED DURING THE SDV, THERE WILL BE ADDITIONAL TRIP CHARGES.

DURING THE SDV, CAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

REVISIONS

#	DESCRIPTION	DATE
1	ASSEMBLY #1	3/5/2021
2	ASSEMBLY #2	3/5/2021

DATE: 10/28/2020
 DWG.#: 4584419
 DRAWN BY: michael.co
 SCALE: 1/2" = 1'-0"
 MASTER DRAWING

REVISIONS

Project #: 200701
 RE-PERMIT DOCUMENTS

05/05/2022

SHEET NO. 1

CAPTIVE-AIRE

Freddy's - Kansas City, MO
 KANSAS CITY, MO 64113

BC PROJECT #: 20548
 MISSOURI PE COA #2009003829

BC ENGINEERS INCORPORATED
 5730 Beecher (Shawnee, MO 66203) (913)506-1772

5/3/2022

BRIANA QUISSELL
 REGISTERED PROFESSIONAL ENGINEER
 NUMBER: PE-2004000629

HBT Foodservice
 104 W 9th St, Suite 204, Kansas City, MO 64108 PHONE: (816) 221-8575 FAX: (816) 221-8311 EMAIL: cag@bcengineers.com www.captiveaire.com

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 Kansas City, Missouri • Omaha, Nebraska
 888.756.1918
 slaggie.com

BC ENGINEERS INCORPORATED
 5730 Beecher (Shawnee, MO 66203) (913)506-1772

Freddy's KCMO
 Remodel
 Freddy's Frozen Custard & Steaksburgers
 13628 Washington St
 Kansas City, MO 64145

KITCHEN HOOD DRAWINGS
M-3

FAN UNIT NO.	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL.	HP	BHP	#	VOLTS	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SDMS
1	ITEM 74.1	1	CASRE18DD	CAPTIVEAIRE	1600	1.400	1105	DIP PREMIUM	1.000	0.6270	3	208	3.8	928 FPM	280	13.6
2	ITEM 74.2	1	DUS3HFA	CAPTIVEAIRE	775	1.250	1532	TEAD-ECH	0.500	0.3950	1	115	6.3	295 FPM	101	16.6
3	ITEM 10.2	1	DUS3HFA	CAPTIVEAIRE	525	0.750	1458	TEAD-ECH	0.333	0.1860	1	115	4.3	260 FPM	67	14

FAN UNIT NO.	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLDVDR	RETURN AIR CFM	MAX. OUTSIDE AIR CFM	TOTAL CFM	ESP	HP	BHP	#	VOLTS	MCA	MDCP	WEIGHT (LBS)
4	DDAS-1	1	CASRTU3-1400-15-20T-10AS	CAPTIVEAIRE	15P-3	0	2900	2900	0.500	2.000	1.6590	3	208	76.4A	80A	2941

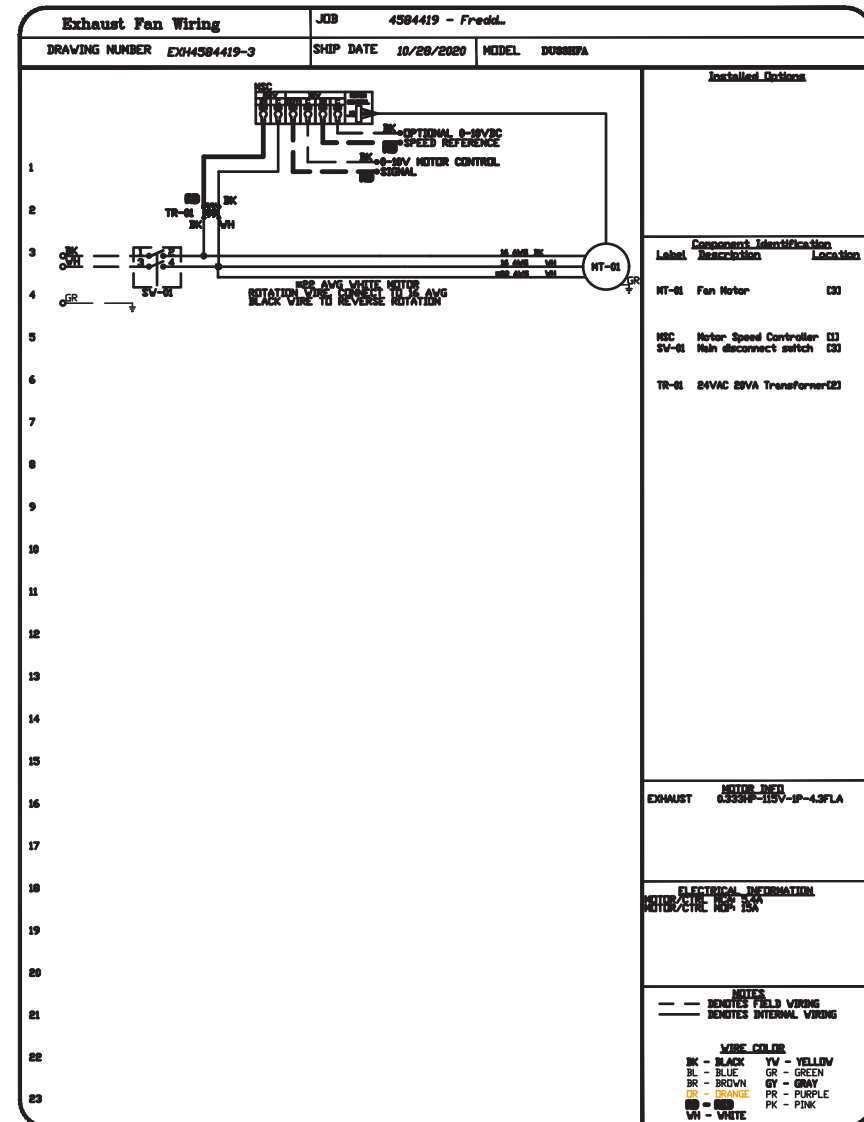
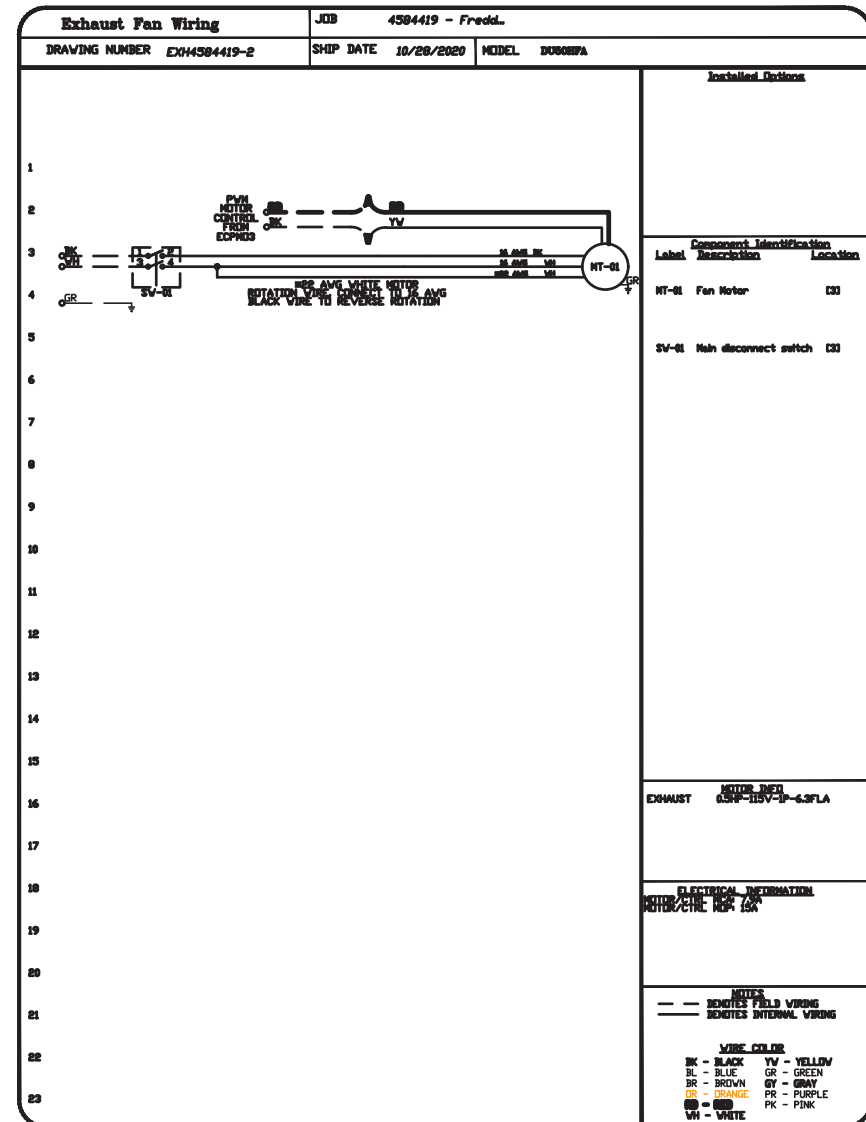
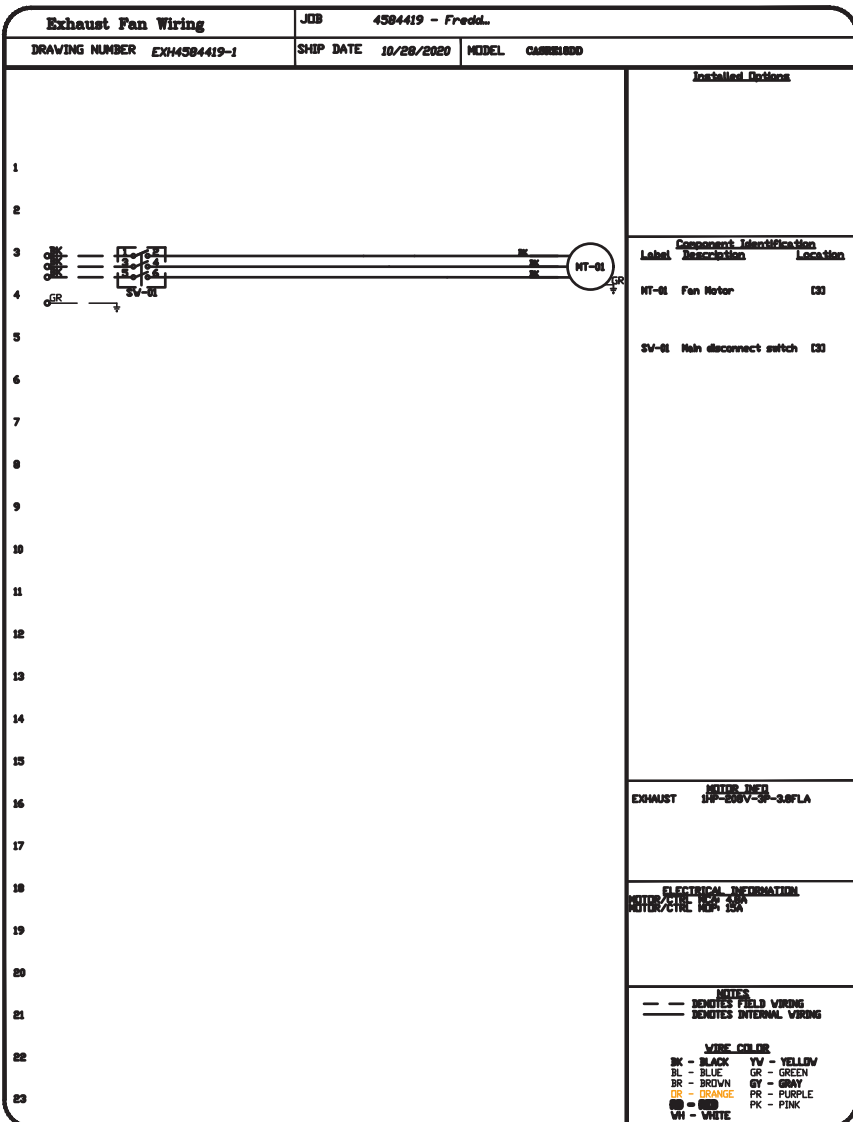
FAN UNIT NO.	TAG	COMPRESSOR	OUTDOOR FAN	INDOOR COIL	OUTSIDE AIR DB TEMP	OUTSIDE AIR WB TEMP	MIXED AIR DB TEMP	MIXED AIR WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	LEAVING DP TEMP	TOTAL CAPACITY	SENSIBLE CAPACITY	LATENT CAPACITY	REHEAT LEAVING DB TEMP	REHEAT LEAVING WB TEMP	DESIRED REHEAT CAPACITY	MAX REHEAT CAPACITY	REHEAT RELATIVE HUMIDITY	MOISTURE REMOVAL RATE	IEER						
4	DDAS-1	20	190-240	3	200-240	3	60	3	7	11.9	50°F	86.7°F	79.0°F	86.7°F	79.0°F	54.8°F	54.9°F	260.4 MBH	103.8 MBH	156.6 MBH	70.0°F	60.6°F	47.8 MBH	129.6 MBH	59	129.9 LBS/HR	18.2

FAN UNIT NO.	TAG	INPUT RTU	OUTPUT RTU	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
4	DDAS-1	36E785	290228	85°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	80

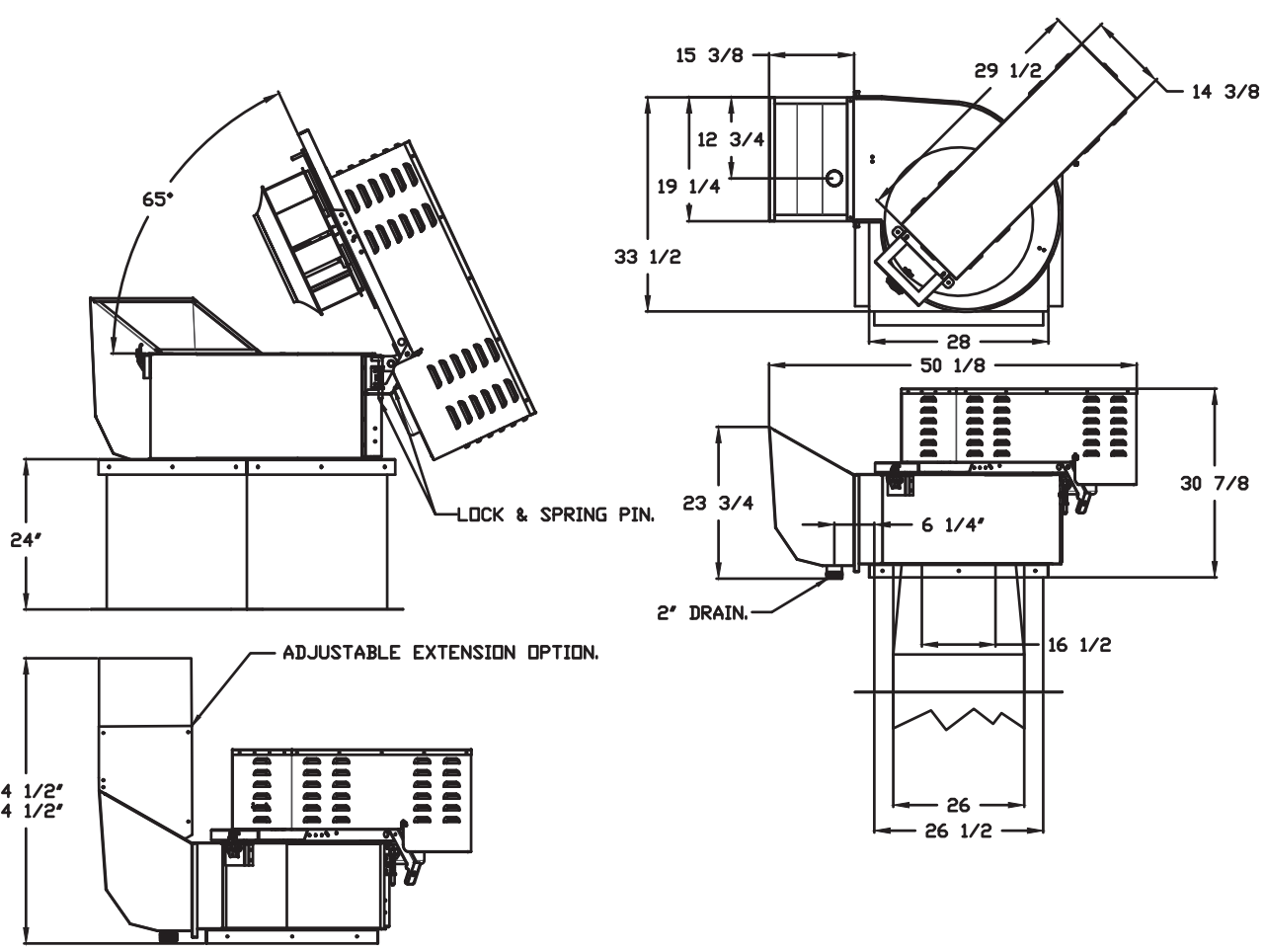
FAN UNIT NO.	TAG	QTY	DESCRIPTION
1	ITEM 74.1	1	UTILITY SET GREASE CUP.
1	ITEM 74.1	1	REIB - DISCHARGE EXTENSION ASSEMBLY WITH HARDWARE.
1	ITEM 74.1	1	GREASE BOX.
2	ITEM 74.2	1	UPBLAST FAN WHEEL ACCESS PORT.
1	ITEM 74.2	1	36" TALL STRAIGHT WIND BAND EXTENSION 13 CHIPS LOADED.
1	ITEM 74.2	1	GUY LINE EYE BOLTS - USED FOR 3 GUY LINE TIE OFF POINTS.
1	ITEM 10.2	1	ECH WIRING PACKAGE - PWM SIGNAL FROM ECPM33 PREVIEW (TELCD MOTOR), CCV ROTATION.
1	ITEM 10.2	1	ECH WIRING PACKAGE - EXHAUST - MANUAL DR 0-10VDC REFERENCE SPEED CONTROL - MSC- (TELCD), CCV ROTATION.
1	ITEM 10.2	1	SCR-11 BIRD SCREEN.
1	ITEM 10.2	1	I 15-BDD DAMPER.
1	ITEM 10.2	1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. QNTY 1 750VA TRANSFORMER USED.
1	ITEM 10.2	1	IF A NON-120V PREVIEW CONTROLS THIS UNIT, THE RES, R47, R47, OR R21 OPTION PREVIEW MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREVIEW.
1	ITEM 10.2	1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED.
1	ITEM 10.2	1	RTU SIZE 3 DOWN DISCHARGE.
1	ITEM 10.2	1	2" MERV 13 FILTERS FOR SIZE 3 RTU QTY 4.
1	ITEM 10.2	1	2" MERV 8 FILTERS FOR SIZE 3 RTU QTY 4.
1	ITEM 10.2	1	OVERHEAT STAT.
1	ITEM 10.2	1	VFD FACTORY MOUNTED AND WIRED IN COMMERCIAL CONTROL VESTIBULE FOR RTU.
1	ITEM 10.2	1	INLET PRESSURE GAUGE, 0-30".
1	ITEM 10.2	1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE.
1	ITEM 10.2	1	OCCUPIED SCHEDULING.
1	ITEM 10.2	1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK (SUPPLIED BY OTHERS).
1	ITEM 10.2	1	SIZE 3 RTU CURB BUILT HANGER.
1	ITEM 10.2	1	CLOSED FILTER SWITCH WITH NOTIFICATION ON HMI.
1	ITEM 10.2	1	20 TON MODULATING COOLING OPTION, 208/230V, R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECH CONDENSING FANS(S).
1	ITEM 10.2	1	20 TON MODULATING REHEAT OPTION, DISCHARGE RELATIVE HUMIDITY CONTROL.
1	ITEM 10.2	1	RTU SCHEDULED ON PERCENTAGE INTAKE/RETURN DAMPER CONTROL.
1	ITEM 10.2	1	RTU 3 HAIL GUARD.
1	ITEM 10.2	1	RTU SIZE 3 DOWN RETURN.
1	ITEM 10.2	1	VAV PACKAGE V/ 0-10VDC INPUT CONTROL (571 VFD INCLUDED).

FAN UNIT NO.	TAG	EXHAUST GREASE CUP	WALL DAMPER	SIDE MOUNT DISCHARGE	GRAVITY DAMPER	HORIZONTAL WALL DAMPER
1	ITEM 74.1	YES				
2	ITEM 74.2	YES				
3	ITEM 10.2	YES				

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	ITEM 74.1	30 LBS	CURB	26.500"W X 26.500"L X 24.000"H VENTED.
2	# 2	ITEM 74.2	31 LBS	CURB	19.500"W X 19.500"L X 20.000"H VENTED HINGED.
3	# 3	ITEM 10.2	27 LBS	CURB	19.500"W X 19.500"L X 20.000"H VENTED.
4	# 4	DDAS-1	74 LBS	CURB	59.500"W X 31.000"L X 14.000"H INSULATED.



FAN #1 CASRE18DD - EXHAUST FAN (ITEM 74.1)

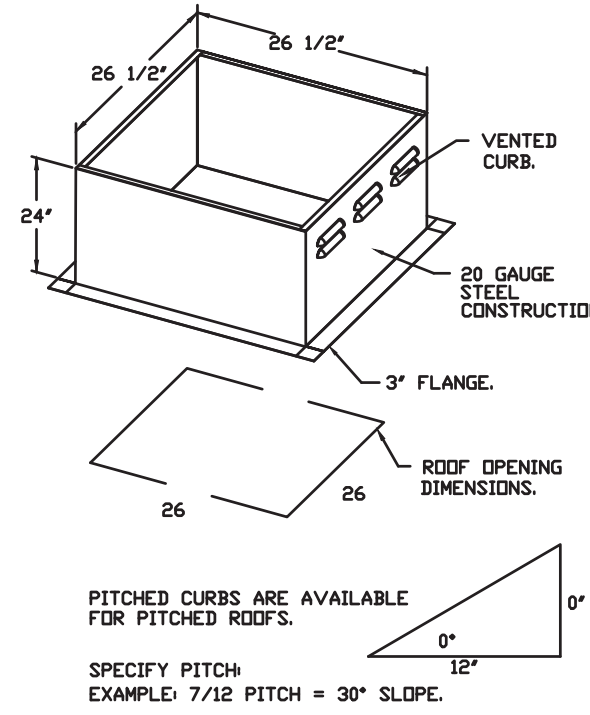


- FEATURES:**
- ROOF MOUNTED FANS.
 - RESTAURANT MODEL.
 - UL705 AND ULIC-5645.
 - HIGH HEAT OPERATION DIRECT DRIVE 300°F (149°C).
 - HEAT SLINGER.
 - GREASE CLASSIFICATION TESTING.
 - TILT OUT WHEEL.
 - LOCKING PIN FOR POWER PACK.
 - MOTOR WEATHER COVER.
 - INTERLOCKED DISCONNECT SWITCH.
 - NEMA 3R SAFETY DISCONNECT SWITCH.

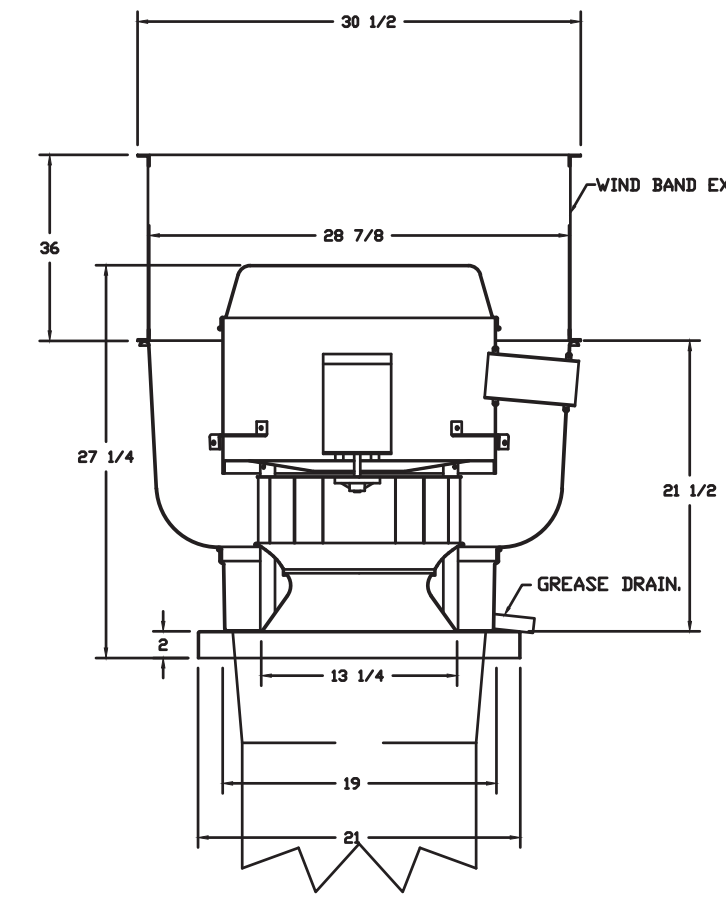
NORMAL TEMPERATURE TEST DIRECT DRIVE EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

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:**
- UTILITY SET GREASE CUP.
 - REIB - DISCHARGE EXTENSION ASSEMBLY WITH HARDWARE.



FAN #2 DUS3HFA - EXHAUST FAN (ITEM 74.2)



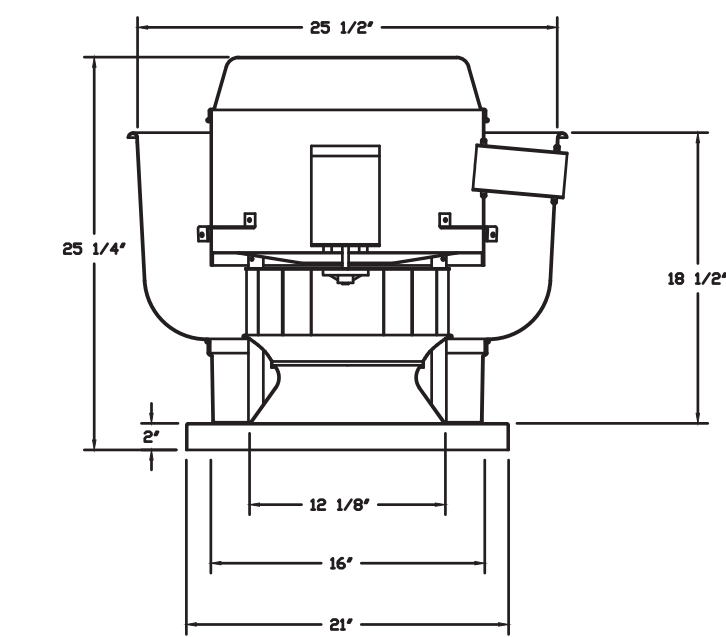
- FEATURES:**
- DIRECT DRIVE CONSTRUCTION ON BELTS/PULLEYS.
 - ROOF MOUNTED FANS.
 - UL705 AND ULIC-5645.
 - VARIABLE SPEED CONTROL.
 - INTERNAL WIRING.
 - THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
 - HIGH HEAT OPERATION 300°F (149°C).
 - GREASE CLASSIFICATION TESTING.
 - NEMA 3R SAFETY DISCONNECT SWITCH.

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

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

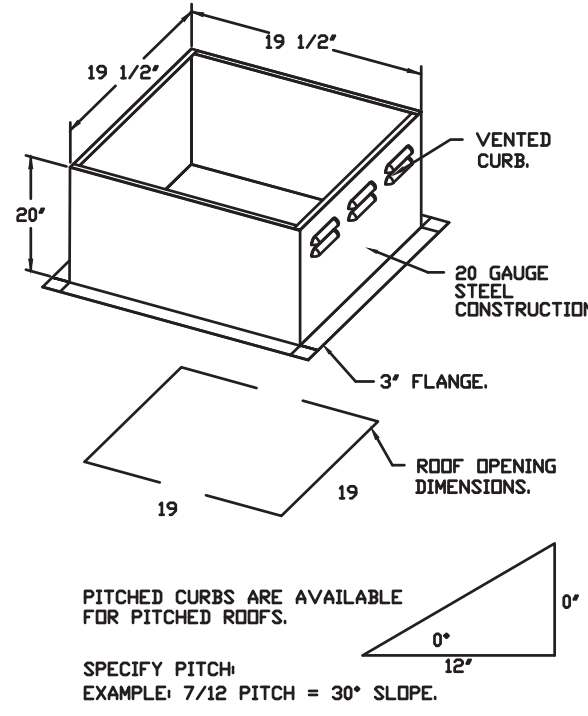
- OPTIONS:**
- GREASE BOX.
 - UPBLAST FAN WHEEL ACCESS PORT.
 - 36" TALL STRAIGHT WIND BAND EXTENSION 13 CHIPS LOADED.
 - GUY LINE EYE BOLTS - USED FOR 3 GUY LINE TIE OFF POINTS.
 - ECH WIRING PACKAGE - PWM SIGNAL FROM ECPM33 PREVIEW (TELCD MOTOR), CCV ROTATION.

FAN #3 DUS3HFA - EXHAUST FAN (ITEM 10.2)

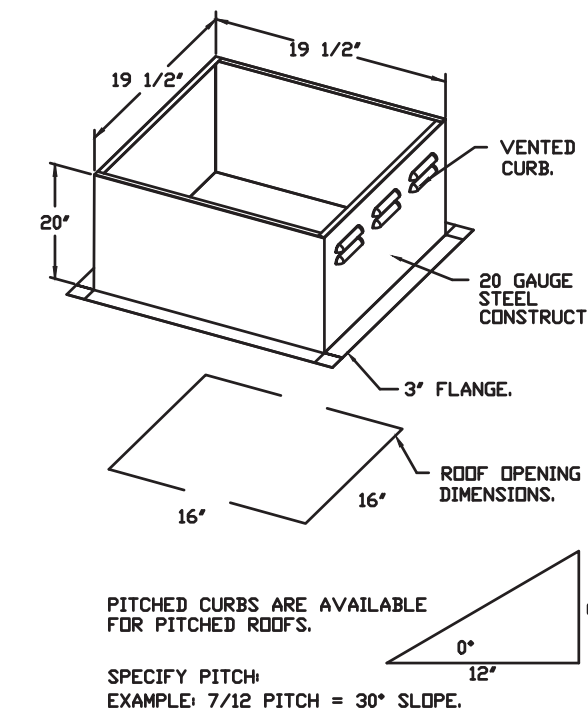


- FEATURES:**
- DIRECT DRIVE CONSTRUCTION ON BELTS/PULLEYS.
 - ROOF MOUNTED FANS.
 - UL705.
 - VARIABLE SPEED CONTROL.
 - INTERNAL WIRING.
 - THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
 - NEMA 3R SAFETY DISCONNECT SWITCH.

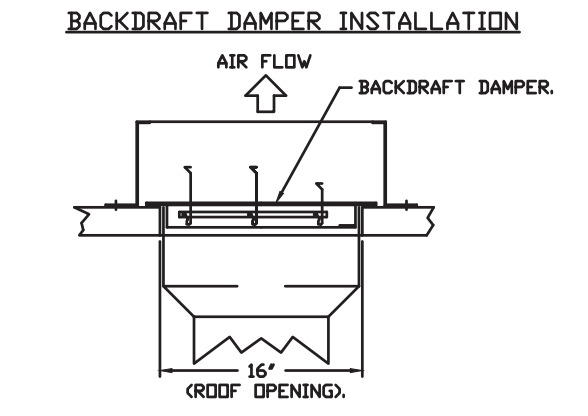
- OPTIONS:**
- ECH WIRING PACKAGE - EXHAUST - MANUAL DR 0-10VDC REFERENCE SPEED CONTROL - MSC- (TELCD), CCV ROTATION.
 - SCR-11 BIRD SCREEN.
 - I 15-BDD DAMPER.



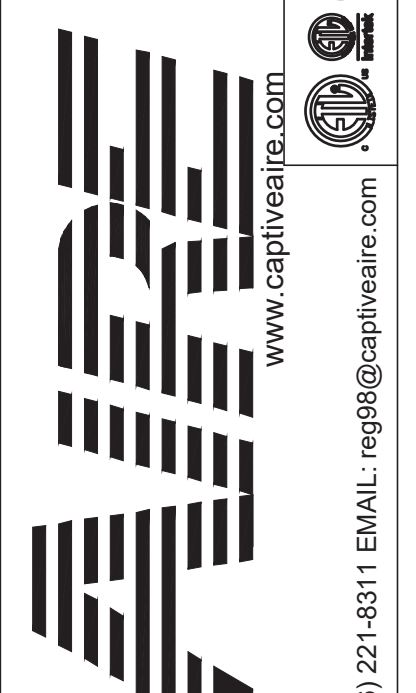
PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS. SPECIFY PITCH. EXAMPLE 7/12 PITCH = 30° SLOPE.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS. SPECIFY PITCH. EXAMPLE 7/12 PITCH = 30° SLOPE.



REVISIONS	DESCRIPTION	DATE
1		
2		
3		



Freddy's - Kansas City, MO
KANSAS CITY, MO 64113

DATE: 10/28/2020
DWG.#: 4584419
DRAWN BY: michael.co
SCALE: 1/2" = 1'-0"
MASTER DRAWING

SHEET NO. 2



BC PROJECT #: 20548
MISSOURI PE COA #2009003629

Freddy's KCMO Remodel
Freddy's Frozen Custard & Steaksburgers
13628 Washington St
Kansas City, MO 64145

REVISIONS	ASSEMBLER #1	DATE
1		3/5/2021
2		3/5/2021

Project #: 200701
RE-PERMIT DOCUMENTS

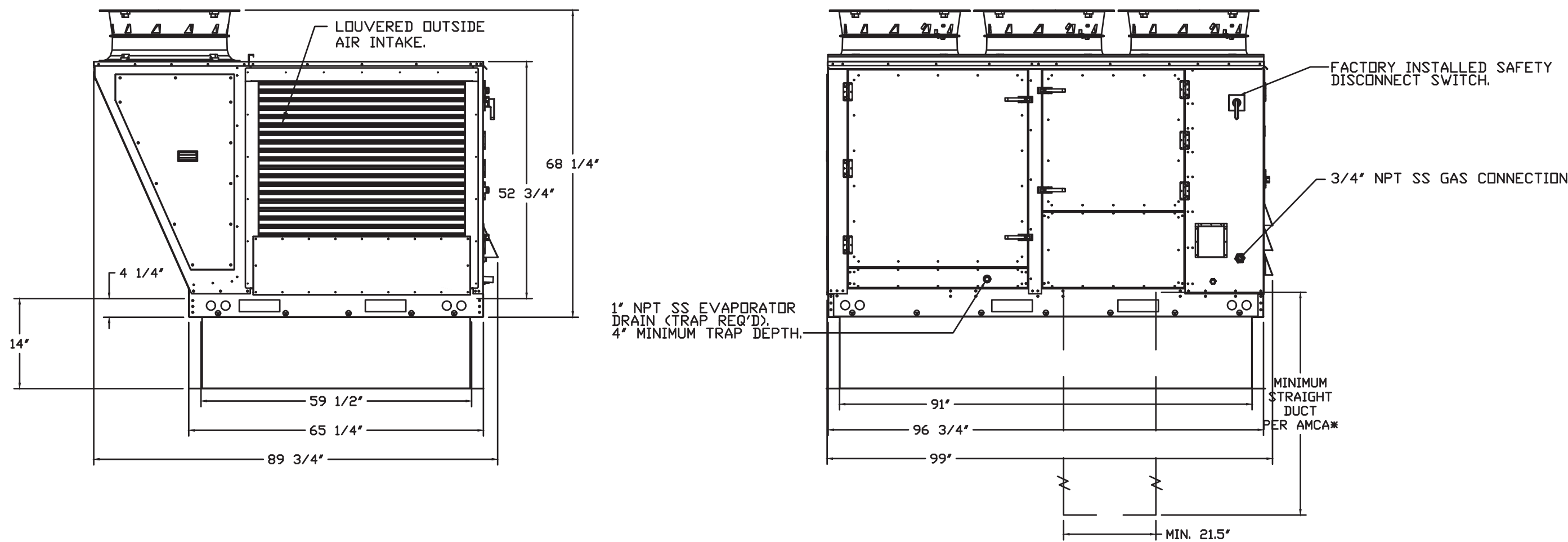
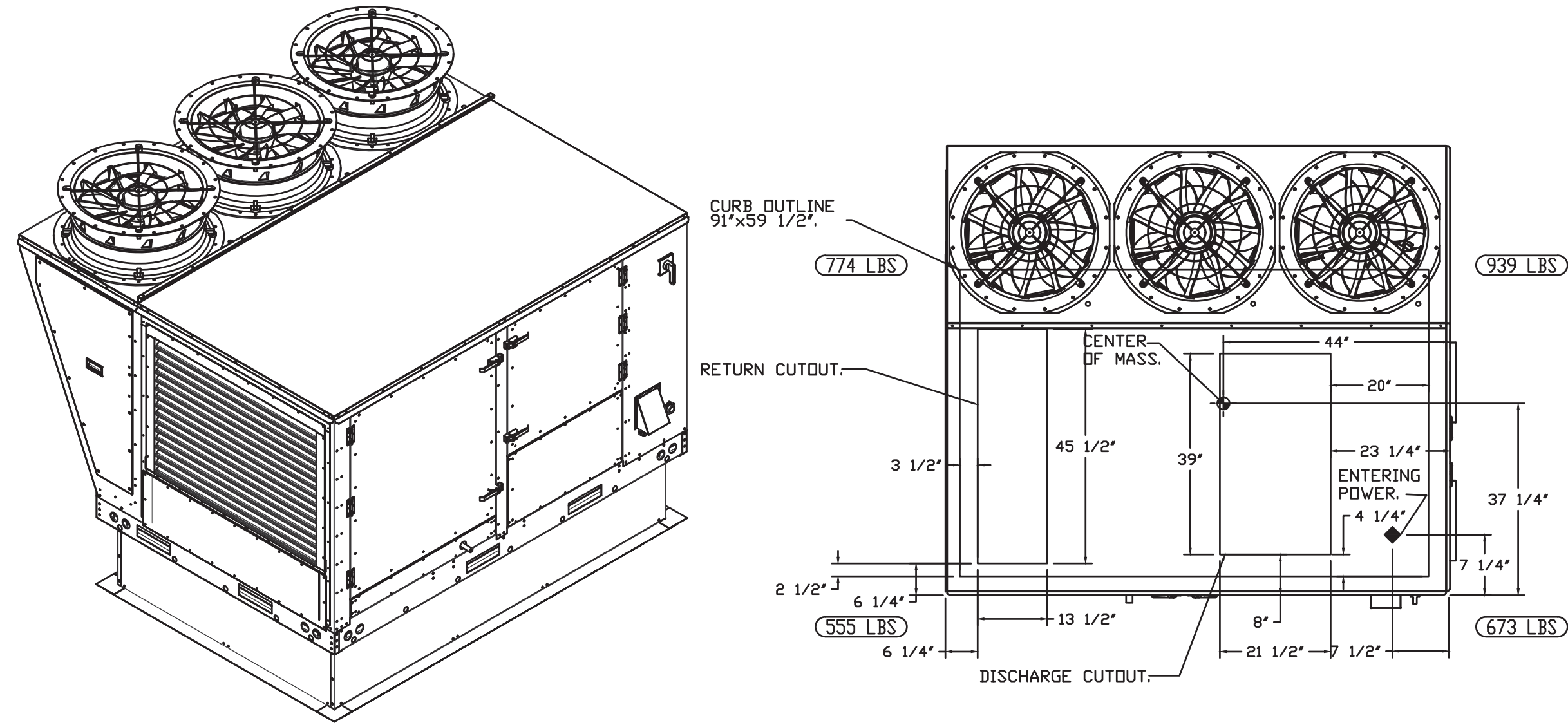
05/05/2022
KITCHEN HOOD DRAWINGS
M-4

FAN #4 CASRTU3-1.400-15-20T-DDAS - HEATER (DDAS-1)

NOTES:

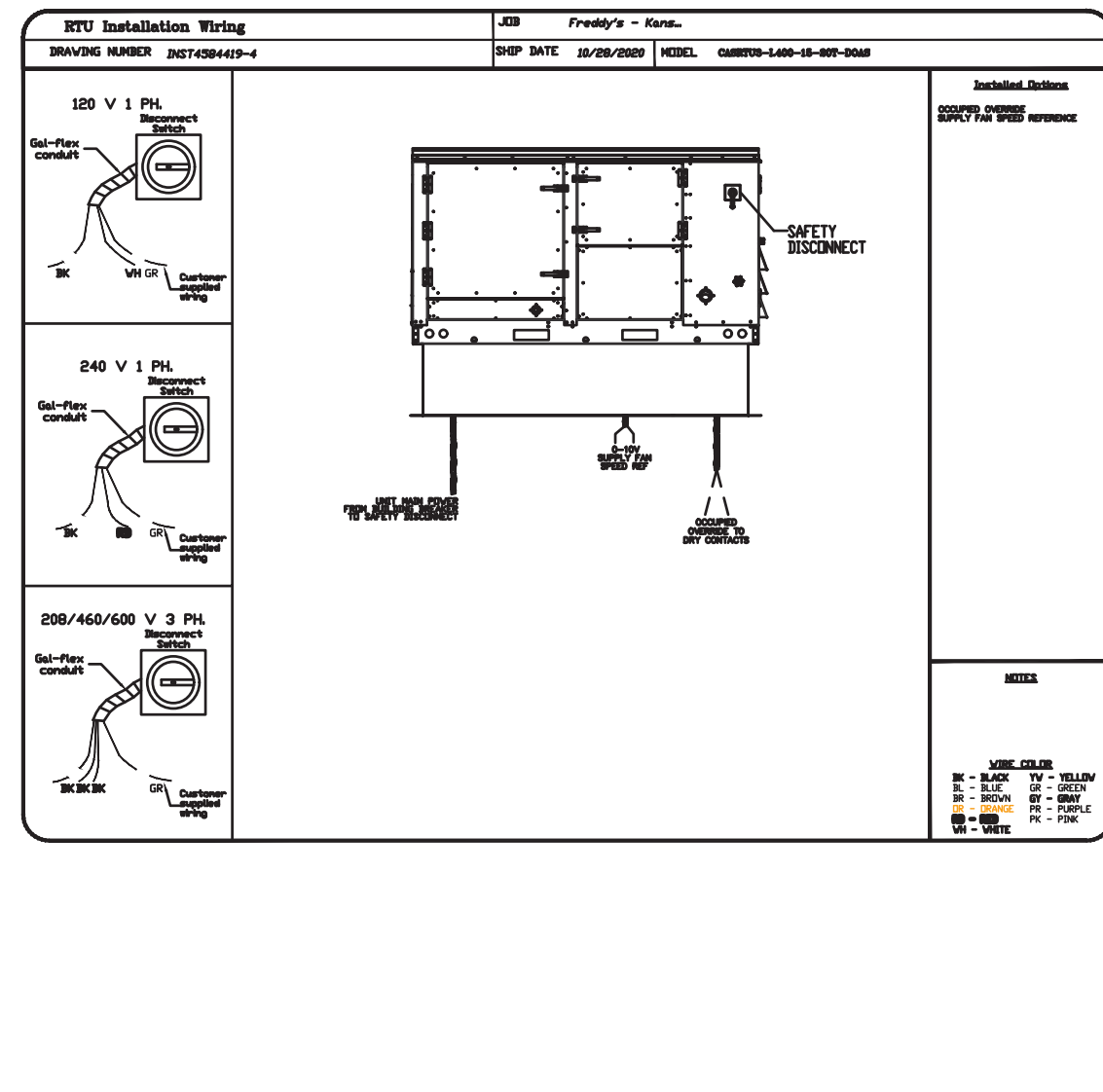
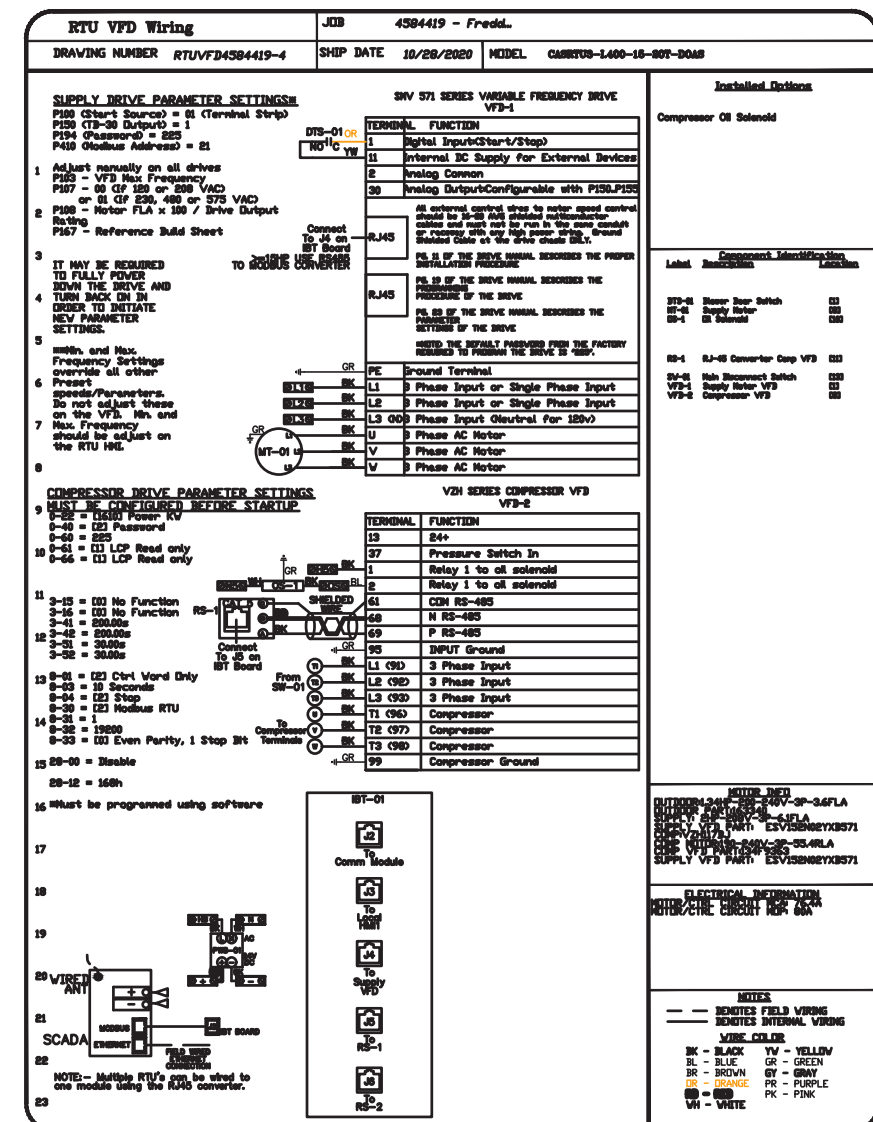
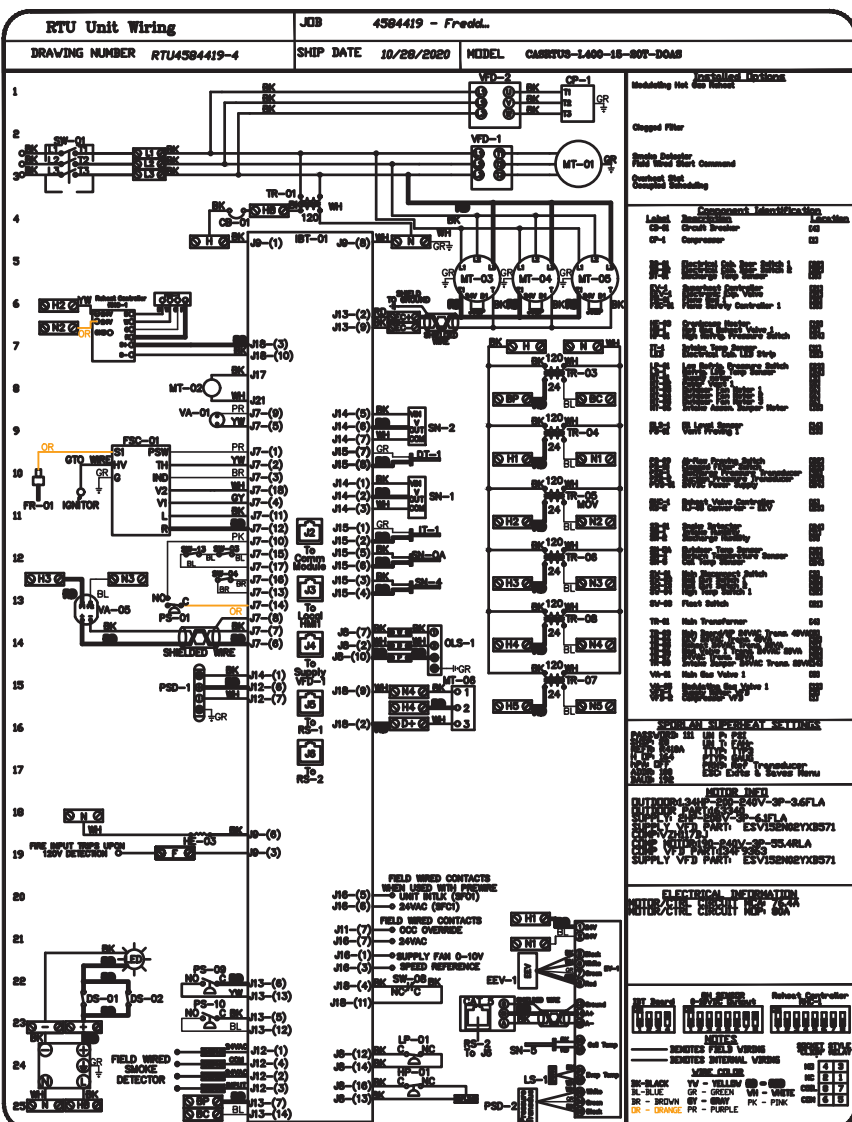
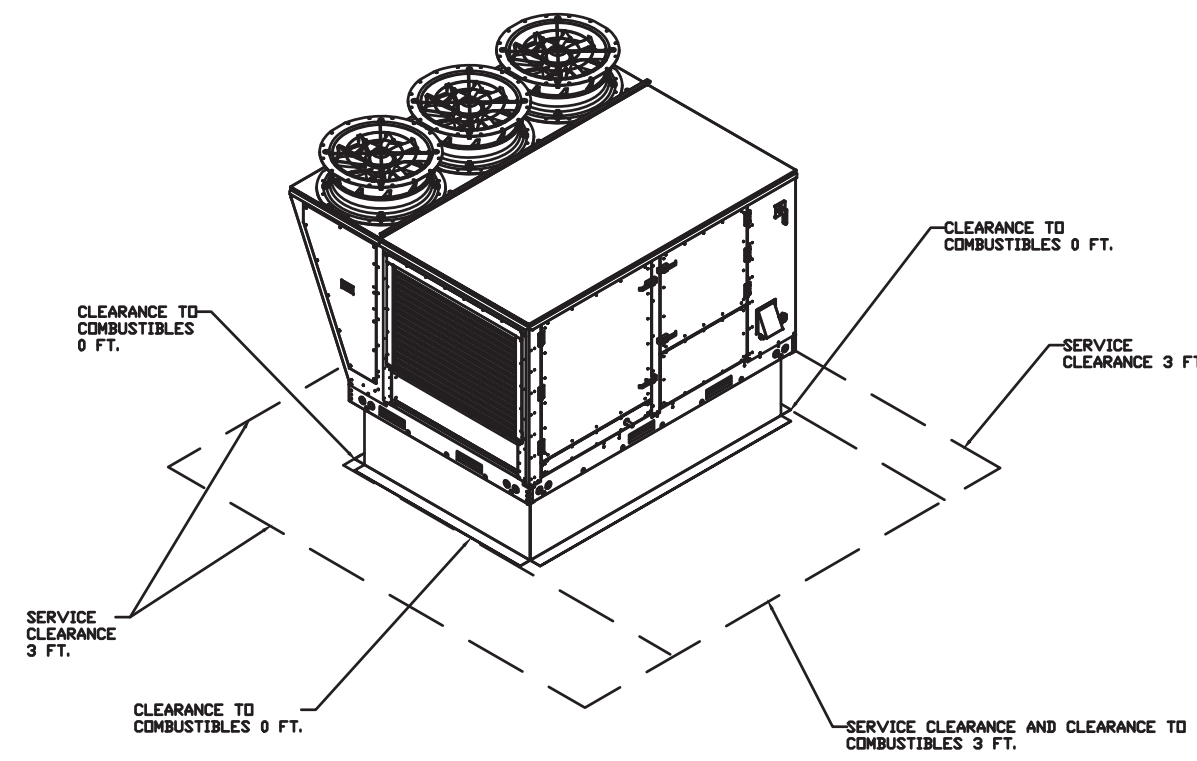
- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
- DENOTES CORNER WEIGHT.
- ROOF OPENING MUST BE 2' SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 21.5' x 39'.



OPTIONS:

- SINGLE POINT ELECTRICAL CONNECTION FOR RTU. QNTY 1 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" OPTION PREWIRE MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREWIRE.
- CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED.
- RTU SIZE 3 DOWN DISCHARGE.
- 2" MERV 13 FILTERS FOR SIZE 3 RTU. QTY 4.
- 2" MERV 8 FILTERS FOR SIZE 3 RTU. QTY 4.
- OVERHEAT STAT.
- VFD FACTORY MOUNTED AND WIRED IN COMMERCIAL CONTROL VESTIBULE FOR RTU.
- INLET PRESSURE GAUGE, 0-35".
- MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE.
- OCCUPIED SCHEDULING.
- COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK (SUPPLIED BY OTHERS).
- SIZE 3 RTU CURB DUCT HANGER.
- CLOGGED FILTER SWITCH WITH NOTIFICATION ON HMI.
- 20 TON MODULATING COOLING OPTION, 208/230V, R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FAN(S).
- 20 TON MODULATING REHEAT OPTION, DISCHARGE RELATIVE HUMIDITY CONTROL.
- RTU SCHEDULED DA PERCENTAGE INTAKE/RETURN DAMPER CONTROL.
- RTU 3 HAIL GUARD.
- RTU SIZE 3 DOWN RETURN.
- VAV PACKAGE W/ 0-10VDC INPUT CONTROL (571 VFD INCLUDED).



Model CASRTU Specifications

SECTION 23-20.00 - MECHANICAL

23-20.00-10 - ROOF TOP PACKAGES, GAS OUTSIDE, HEATING AND COOLING (RTU/UP AIR UNIT)

23-20.00-10-10 - PREWIRE

23-20.00-10-10-10 - GENERAL

23-20.00-10-10-10-10 - GENERAL

23-20.00-10-10-10-10-10 - GENERAL

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23-20.00-10 - GENERAL

REVISIONS

NO.	DESCRIPTION	DATE
1		
2		
3		



BC PROJECT #: 20548
MISSOURI PE COA #2009003629

5/3/2022

BC PROJECT # 20548
MISSOURI PE COA #2009003629

104 W 9th St Suite 204, Kansas City, MO 64105 PHONE: (816) 221-8575 FAX: (816) 221-4311 EMAIL: reg98@caplive.com

HBT FOODSERVICE

www.caplive.com

REVISIONS

DATE: 10/28/2020

DWG #: 4584419

DRAWN BY: michael.co

SCALE: 1/2" = 1'-0"

MASTER DRAWING

SHEET NO. 3



5/3/2022

BC PROJECT # 20548
MISSOURI PE COA #2009003629

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REVISIONS

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SHEET NO. 3

PROJECT # 200701

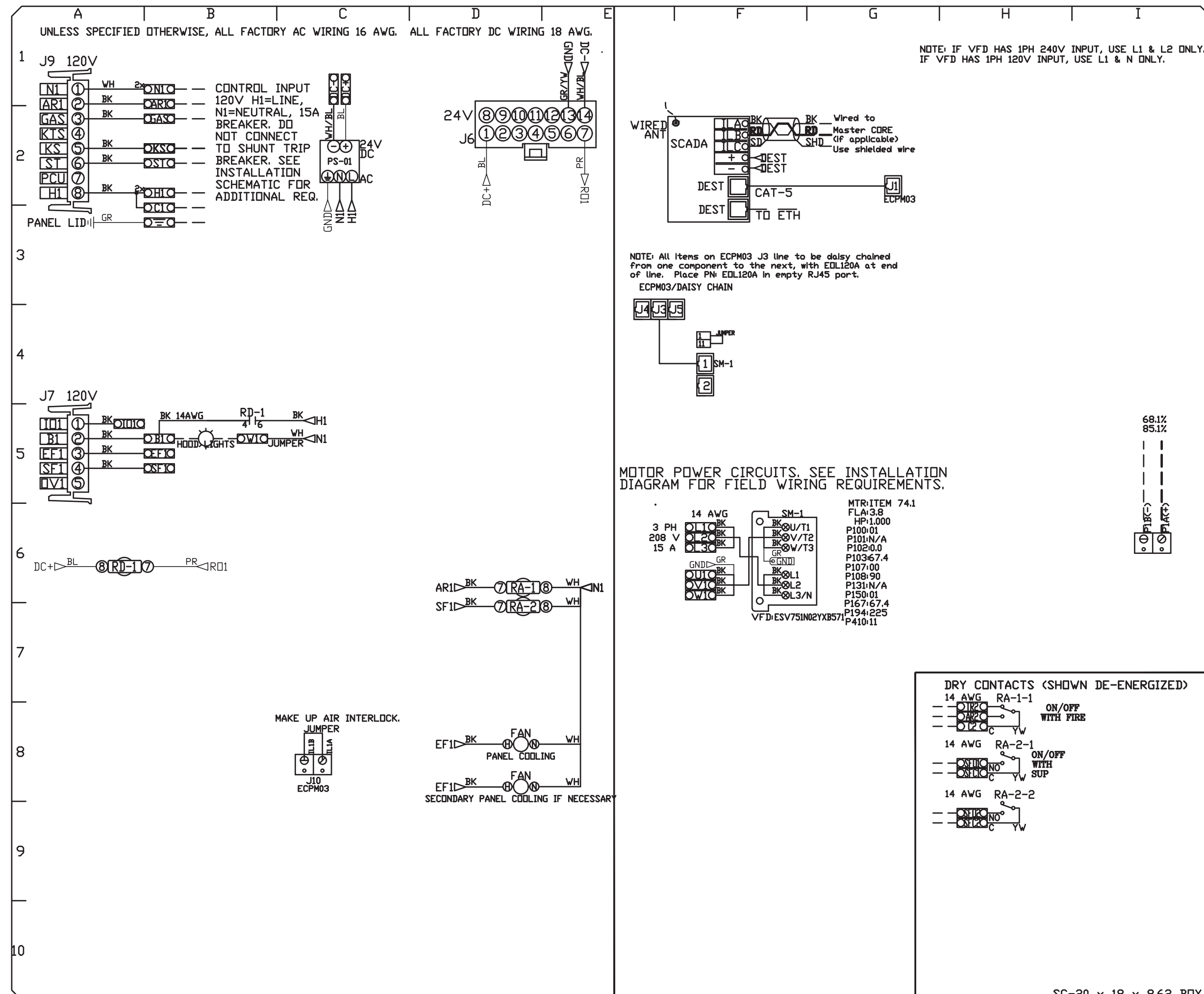
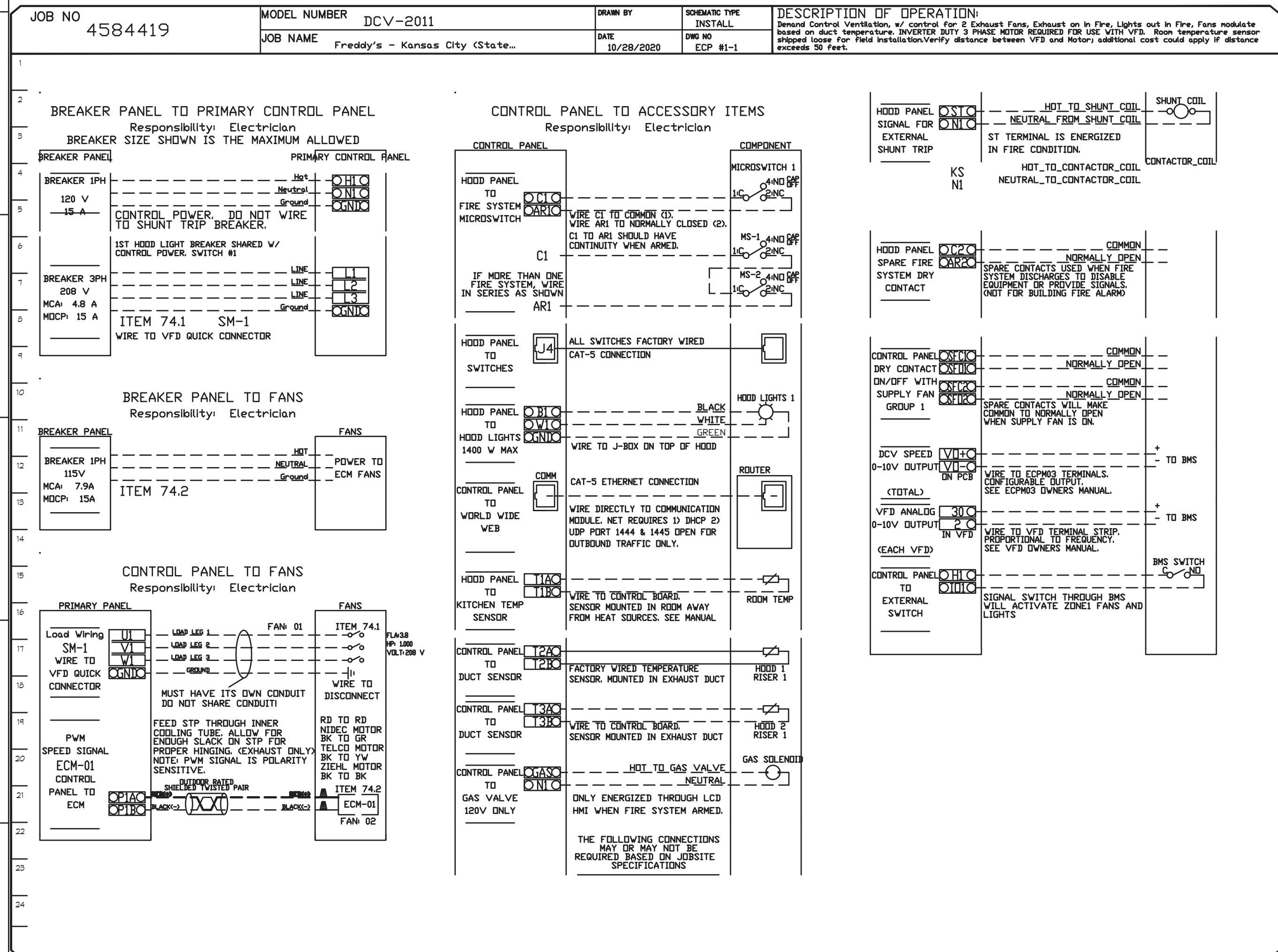
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05/05/2022

KITCHEN HOOD DRAWINGS

M-5

NO	TAG	PACKAGE #	LOCATION	SWITCHES	QUANTITY	OPTION	FANS CONTROLLED
1	DCV-001	DCV-001	UTILITY CABINET RIGHT HOOD # 1	1 LIGHT CONTROL SWITCH HOOD # 1	1 FAN	SMART CONTROL DCV	FAN TAG TYPE 1 1 HP VOL. FLA ITEM 741 EXHAUST 3 1.000 208 3.8 ITEM 742 EXHAUST 1 0.500 105 6.3



REVISIONS

NO	DESCRIPTION	DATE

COMPONENT LIST

ITEM	DESCRIPTION	QTY
ST-X	Starter	1
DL-X	Overload	1
TR-X	Thermistor	1
CT-X	Contactor	1
PS-1	Power Sup. 24VDC	1
RA-X	24V Relay 1PDT	1
RD-X	24VDC Relay	1
TS-X	Duct Thermostat	1

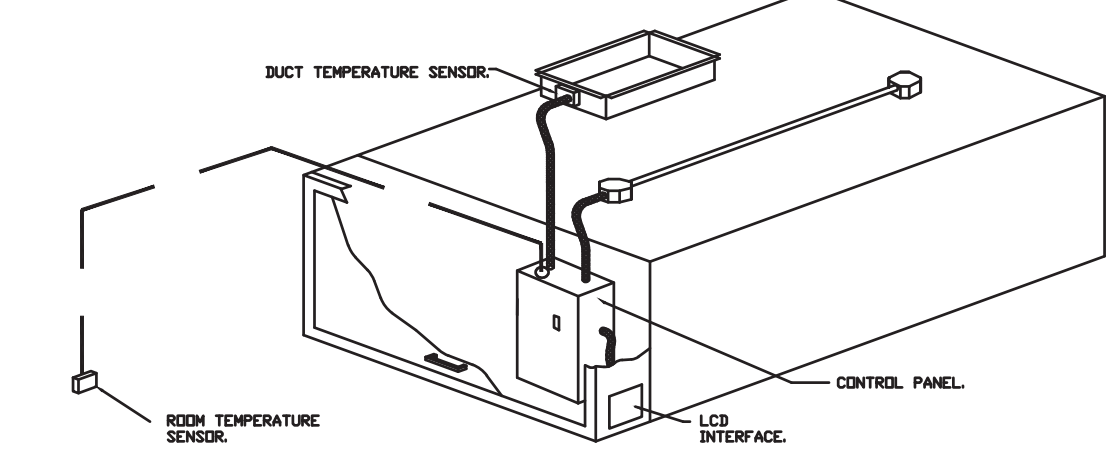
LEGEND

- FIELD WIRING
- FACTORY WIRING
- BLACK
- BLUE
- BROWN
- GREEN
- GREY
- PURPLE
- RED
- WHITE
- VFD
- VFD/STRIPE
- VFD/STRIPE
- VFD/STRIPE
- VFD/STRIPE

DESCRIPTION OF OPERATION
Demand Control Ventilation w/ control for 2 Exhaust Fans, 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.

DATE 10/28/2020
BY ECP #1-2

- DEMAND CONTROL VENTILATION HOOD CONTROL PANEL SPECIFICATIONS:**
- CONTROLS SHALL BE LISTED BY ETL (UL 508A) AND SHALL COMPLY WITH DEMAND VENTILATION SYSTEM TURNDOWN REQUIREMENTS OUTLINED IN IECC 403.2.8 (2015).
 - THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
 - TEMPERATURE PROBES LOCATED IN THE EXHAUST DUCT RISERS SHALL BE CONSTRUCTED OF STAINLESS STEEL.
 - A DIGITAL CONTROLLER SHALL BE PROVIDED TO ACTIVATE THE HOOD EXHAUST FANS DYNAMICALLY BASED ON A FIXED DIFFERENTIAL BETWEEN THE AMBIENT AND DUCT TEMPERATURES. THIS FUNCTION SHALL MEET THE REQUIREMENTS OF IMC 507.11.
 - A DIGITAL CONTROLLER SHALL PROVIDE ADJUSTABLE HYSTERESIS SETTINGS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND/OR THE HEAT IN THE EXHAUST SYSTEM IS REDUCED.
 - A DIGITAL CONTROLLER SHALL PROVIDE AN ADJUSTABLE MINIMUM FAN RUN-TIME SETTING TO PREVENT FAN CYCLING.
 - VARIABLE FREQUENCY DRIVES (VFDs) SHALL BE PROVIDED FOR FANS AS REQUIRED. THE DIGITAL CONTROLLER SHALL MODULATE THE VFDs TO A MINIMUM SETPOINT AND A MAXIMUM SETPOINT ON DEMAND. THE DUCT TEMPERATURE SENSOR INPUTS TO THE DIGITAL CONTROLLER SHALL BE USED TO CALCULATE THE SPEED REFERENCE SIGNAL.
 - THE VFD SPEED RANGE OF OPERATION SHALL BE FROM 0% TO 100% FOR THE SYSTEM, WITH THE ACTUAL MINIMUM SPEED SET AS REQUIRED TO MEET MINIMUM VENTILATION REQUIREMENTS.
 - AN INTERNAL ALGORITHM TO THE DIGITAL CONTROLLER SHALL MODULATE SUPPLY FAN VFD SPEED PROPORTIONAL TO ALL EXHAUST FANS THAT ARE LOCATED IN THE SAME FAN GROUP AS THE SUPPLY FAN.
 - THE SYSTEM SHALL OPERATE IN PREP MODE DURING LIGHT COOKING LOAD OR COOL DOWN MODE WHEN SUFFICIENT HEAT REMAINS UNDERNEATH THE HOOD SYSTEM AFTER COOKING OPERATIONS HAVE COMPLETED. OPERATION DURING EITHER OF THESE PERIODS WILL DISABLE THE SUPPLY FANS AND PROVIDE AN EXHAUST FAN SPEED THAT IS EQUAL TO THE MINIMUM VENTILATION REQUIREMENT.
 - A DIGITAL CONTROLLER SHALL DISABLE THE SUPPLY FANS, ACTIVATE THE EXHAUST FANS, ACTIVATE THE APPLIANCE SHUNT TRIP, AND DISABLE AN ELECTRIC GAS VALVE AUTOMATICALLY WHEN FIRE CONDITION IS DETECTED ON A COVERED HOOD.
 - A DIGITAL CONTROLLER SHALL ALLOW FOR EXTERNAL BMS FAN CONTROL VIA DRY CONTACT (EXTERNAL CONTROL SHALL NOT OVERRIDE FAN OPERATION LOGIC AS REQUIRED BY CODE).
 - AN LCD INTERFACE SHALL BE PROVIDED WITH THE FOLLOWING FEATURES:
 - A. ON/OFF PUSH BUTTON FAN & LIGHT SWITCH ACTIVATION.
 - B. INTEGRATED GAS VALVE RESET FOR ELECTRONIC GAS VALVES AND RESET RELAY REQUIRED.
 - C. VFD FAULT DISPLAY WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
 - D. DUCT TEMPERATURE SENSOR FAILURE DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
 - E. MS-WIRED DUCT TEMPERATURE SENSOR DETECTION WITH AUDIBLE & VISUAL ALARM NOTIFICATION.
 - F. A SINGLE LVD VOLTAGE CAT-5 RJ45 WIRING CONNECTION.
 - G. AN ENERGY SAVINGS INDICATOR THAT UTILIZES MEASURED KWH FROM THE VFDs.



- SEQUENCE OF OPERATIONS:**
- THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:
- AUTOMATIC:** THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE 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. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS "DYNAMIC", THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS "STATIC", FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS FOR THE REQUIREMENTS OUTLINED IN IECC 403.2.8.
 - MANUAL:** THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
 - SCHEDULE:** A WEEKLY SCHEDULE CAN BE SET TO RUN 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 TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNDESIRED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
 - OTHER:** THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (ODC, BMS OR HARD-WIRED INTERLOCK).
 - FIRE:** UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO RUN. THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTIVATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

Freddy's - Kansas City, MO
KANSAS CITY, MO 64113

DATE: 10/28/2020
DWG #: 4584419
DRAWN BY: michael.co
SCALE: 1/2" = 1'-0"
MASTER DRAWING
SHEET NO. 4

Revisions:

NO	REVISION	DATE
1	ADDENDUM #1	10/28/2020
2	ADDENDUM #2	10/28/2020

Project #: 200701
RE-PERMIT DOCUMENTS
05/05/2022
KITCHEN HOOD DRAWINGS
M-7

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9320 Reseda, Sherman, KS 66503 (913)262-1772

5/3/2022
BRIANA QUISSELL
REGISTERED PROFESSIONAL ENGINEER
NUMBER: PE-2004000629

BC PROJECT #: 20548
MISSOURI PE COA #2009003629

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Remodel
Freddy's Frozen Custard & Steakhburgers
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104 W 9th St Suite 204, Kansas City, MO 64105
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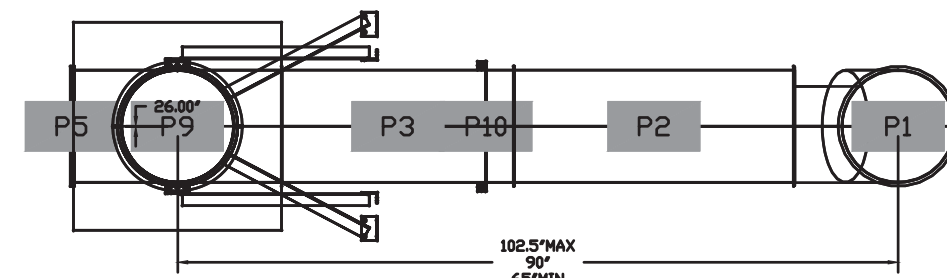
DUCTWORK #1 PARTS - JOB#4584419 CRIDDLE

TAG	PART #	CFM	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	DW149SAS	1600	-0.112	10.62	1496.71	1	SINGLE WALL DUCT 90 DEGREE ELBOW, 14" DUCT, ASSEMBLY.
P2	DW143SLT	1600	-0.0115	16.34	1496.71	1	SINGLE WALL DUCT 14" DIAMETER, 35" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P3	DW144BJDKIT	1600	-0.0095	26.62	1496.71	1	SINGLE WALL DUCT ADJUSTABLE, 14" DIAMETER, 47.5" LONG, FLANGE AT ONE END WITH A 14" ADJUSTABLE COLLAR - STAINLESS STEEL.
P4	DW14TEASY	1600	-0.0896	15.95	1496.71	1	SINGLE WALL DUCT TEE, 14" DUCT, ASSEMBLY.
P5	DW14SADIASY			13.89		1	DUCT ACCESS DOOR - INSULATED - USED WITH 14" DUCT - GREASE DAM INCLUDED - ASSEMBLY.
P6	DW143SLT	1600	-0.0115	16.34	1496.71	1	SINGLE WALL DUCT 14" DIAMETER, 35" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P7	DW144BJDKIT	1600	-0.0105	26.62	1496.71	1	SINGLE WALL DUCT ADJUSTABLE, 14" DIAMETER, 47.5" LONG, FLANGE AT ONE END WITH A 14" ADJUSTABLE COLLAR - STAINLESS STEEL.
P8	DW23514TP	1600		18.00	1496.71	1	DUCT TO CURB TRANSITION, 23.50" CURB TO 14" DUCT, 16 GA ALUMINIZED MISC. NON-STANDARD TRANSITION PLATE.
P9	DW14VESUB			22.58		1	DUCT VERTICAL SUPPORT KIT, 14" DUCT, 18" CLEARANCE TO COMBUSTIBLES. PARTS ARE ZINC COATED. HARDWARE KIT #3 USED ON DW14VESU & DW14VESUB.
P10	DW14SUBRASY			2.96		1	DUCT SUPPORT BRACKET KIT, 14" DUCT, USED FOR HANGING DUCT. 12 GA STEEL, CLEAR ZINC COATING - 2 RINGS, 4 BRACKETS, & HARDWARE BAG 2.
	3M-2000PLUS			0.80		2	DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.
	735602000			52.00		5	DUCT - DUCT INSULATION FOR ZERO CLEARANCE TO COMBUSTIBLES - 300" X 24" X 1-1/2" ROLL. UNIFRAX FVREWRAP ELITE 1.5.
	BANDINGS			5.00		2	DUCT - FIRE BARRIER WRAP STAINLESS STEEL BANDING 5" WIDTH - 200 FT PER ROLL.
	DW14CLASY			1.06		7	DUCT "V" CLAMP WITH NEW DESIGN 14 GA BRACKETS, 14" DUCT, ASSEMBLY.
	SEAL-50-50			0.50		2	DUCT - FIRE BARRIER WRAP STAINLESS STEEL BANDING SEAL 5" WIDTH. QUANTITY OF 50.
	TAPEALUM			0.25		2	DUCT - FIRE BARRIER WRAP ALUMINUM FOIL TAPE - 3" X 150' ROLL.
TOTAL WEIGHT				444.44			

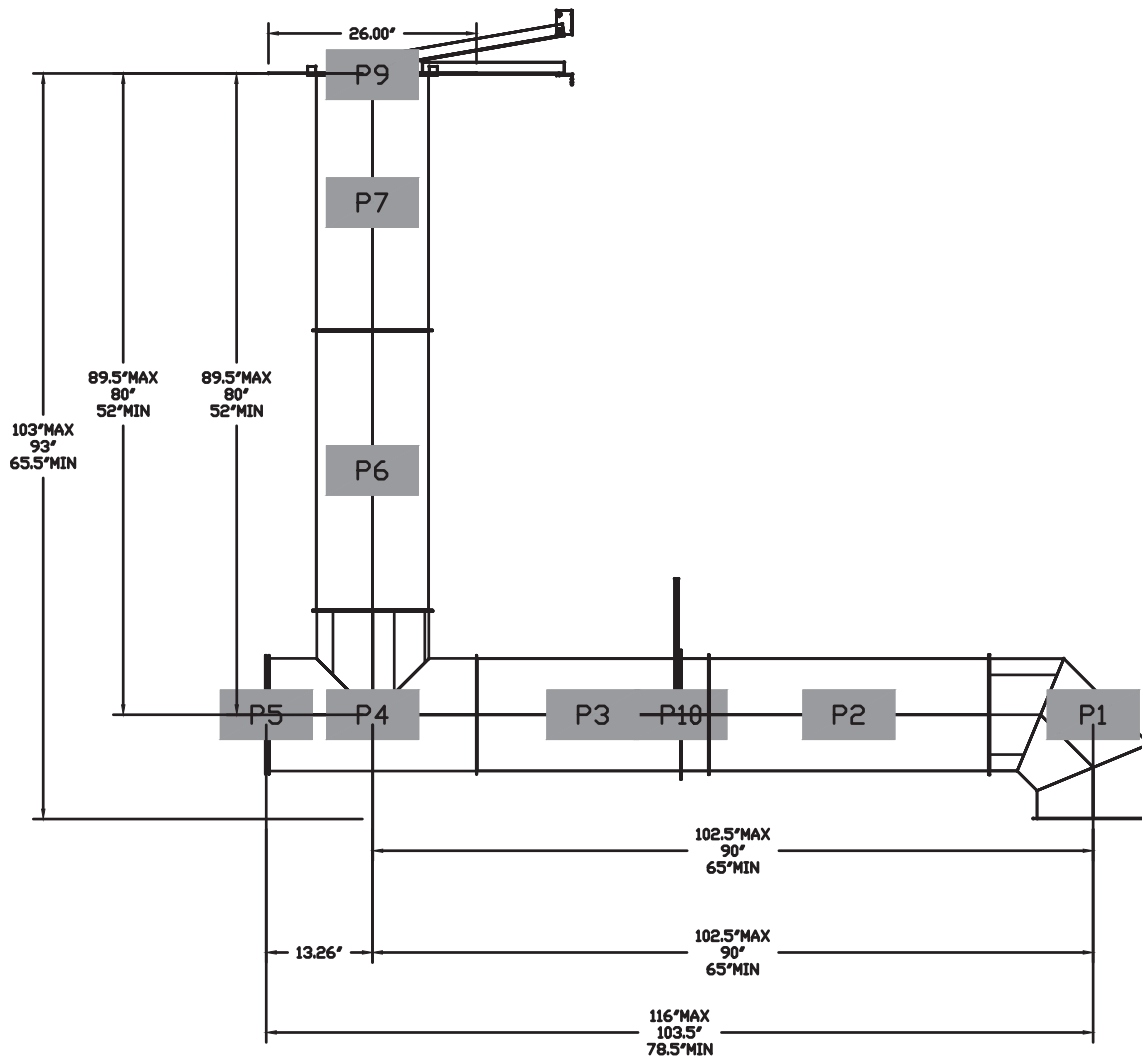
- SINGLE WALL FACTORY BUILT DUCTWORK**
- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
 - FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.
 - DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD 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'

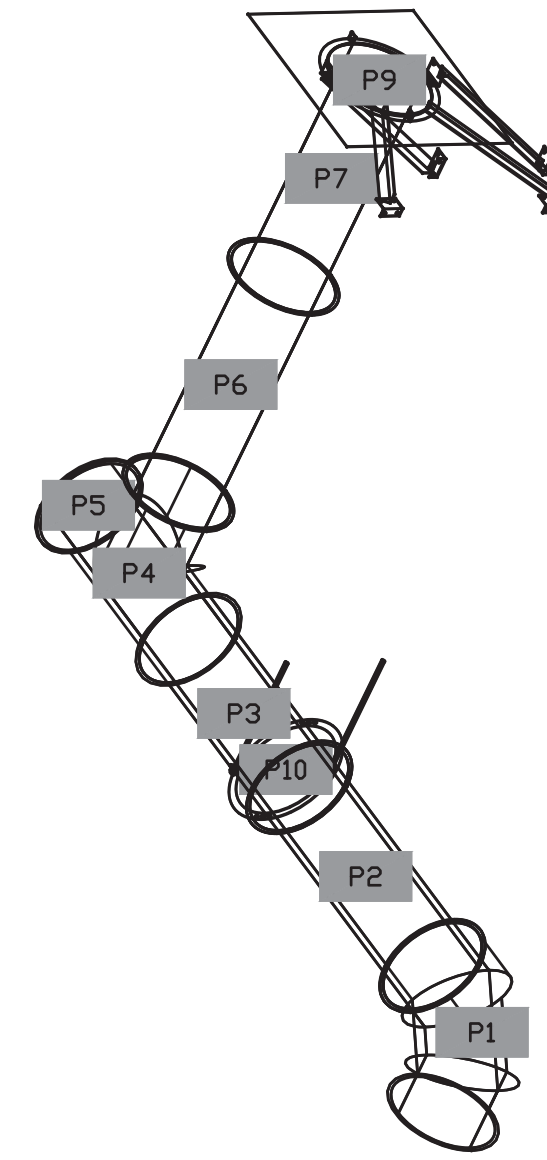
DUCTWORK #1 TOP VIEW GRIDDLE



DUCTWORK #1 FRONT VIEW GRIDDLE



DUCTWORK #1 SE VIEW GRIDDLE



DUCTWORK #1 SIDE VIEW GRIDDLE

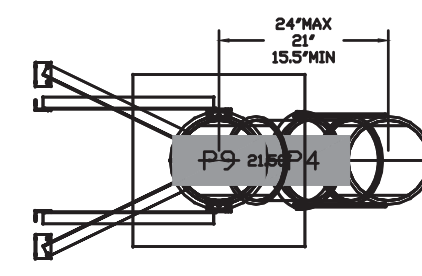
DUCTWORK #2 PARTS - JOB#4584419 FRYER

TAG	PART #	CFM	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	DW104SAS	775	-0.0333	4.62	1420.94	1	SINGLE WALL DUCT 45 DEGREE ELBOW, 10" DUCT, ASSEMBLY.
P2	DW1007LT	775	-0.003	2.60	1420.94	1	SINGLE WALL DUCT 10" DIAMETER, 7" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P3	DW1018AJDKIT	775	-0.004	7.95	1420.94	1	SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 17.5" LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL.
P4	DW10SUBRASY			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.
P5	DW104SAS	775	-0.0475	4.62	1420.94	1	SINGLE WALL DUCT 45 DEGREE ELBOW, 10" DUCT, ASSEMBLY.
P6	DW103SLT	775	-0.015	11.78	1420.94	1	SINGLE WALL DUCT 10" DIAMETER, 35" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P7	DW104BJDKIT	775	-0.01	18.63	1420.94	1	SINGLE WALL DUCT ADJUSTABLE, 10" DIAMETER, 47.5" LONG, FLANGE AT ONE END WITH A 10" ADJUSTABLE COLLAR - STAINLESS STEEL.
P8	DW1910TP	775		6.62	1420.94	1	DUCT TO CURB TRANSITION, 19-1/2" CURB TO 10" DUCT, 16 GA ALUMINIZED STEEL. MISC. NON-STANDARD TRANSITION PLATE.
P9	DW10VESUB			19.56		1	DUCT VERTICAL SUPPORT KIT, 10" DUCT, 18" CLEARANCE TO COMBUSTIBLES. PARTS ARE ZINC COATED. HARDWARE KIT #3 USED ON DW10VESU & DW10VESUB.
	3M-2000PLUS			0.80		1	DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.
	735602000			52.00		3	DUCT - DUCT INSULATION FOR ZERO CLEARANCE TO COMBUSTIBLES - 300" X 24" X 1-1/2" ROLL. UNIFRAX FVREWRAP ELITE 1.5.
	BANDINGS			5.00		1	DUCT - FIRE BARRIER WRAP STAINLESS STEEL BANDING 5" WIDTH - 200 FT PER ROLL.
	DW10CLASY			0.82		6	DUCT "V" CLAMP WITH NEW DESIGN 14 GA BRACKETS, 10" DUCT, ASSEMBLY.
	SEAL-50-50			0.50		1	DUCT - FIRE BARRIER WRAP STAINLESS STEEL BANDING SEAL 5" WIDTH. QUANTITY OF 50.
	TAPEALUM			0.25		1	DUCT - FIRE BARRIER WRAP ALUMINUM FOIL TAPE - 3" X 150' ROLL.
TOTAL WEIGHT				246.39			

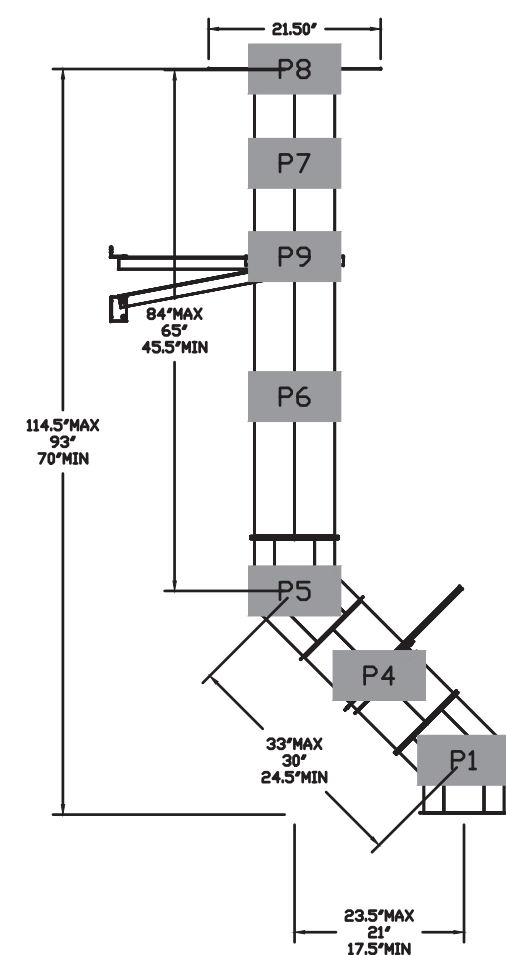
- SINGLE WALL FACTORY BUILT DUCTWORK**
- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
 - FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.
 - DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD 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'

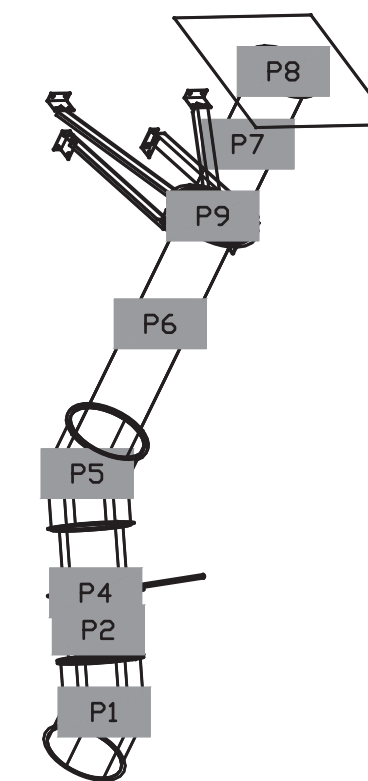
DUCTWORK #2 TOP VIEW FRYER



DUCTWORK #2 FRONT VIEW FRYER



DUCTWORK #2 SE VIEW FRYER



DUCTWORK #2 SIDE VIEW FRYER

REVISIONS

NO.	DESCRIPTION	DATE

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BC ENGINEERS INCORPORATED
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5/3/2022

BRIANA QUISSELL
REGISTERED PROFESSIONAL ENGINEER
NUMBER: PE-004000629

BC PROJECT #: 20548
MISSOURI PE COA #2009003629

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DATE: 10/28/2020
DWG.#: 4584419
DRAWN BY: michael.co
SCALE: 1/2" = 1'-0"
MASTER DRAWING

SHEET NO. 5

Revisions:
1. ASSEMBLY #1 3/5/2021
2. ASSEMBLY #2 3/5/2021

Project #: 200701
RE-PERMIT DOCUMENTS

05/05/2022
KITCHEN HOOD DRAWINGS
M-8