

# SK-23-0244 - Global Impact STEM Academy

572 E. Leffel Lane  
Springfield, Ohio 45505  
United States



Marker, Inc.  
2011 Riverside Dr  
Columbus, Ohio 43221  
United States  
(614) 754-8349

## Title

Food Service Fume Hood SD

## Submittal Manager

Stephen Ford

## Spec Section

FSE-Series Drawings -

## Type

Shop Drawing

## Number

FSE-Series Drawings-1

## Rev

1

## Description

None

Contractor's Stamp

**MARKER**  Reviewed  Reviewed As Noted  
 Rejected  Revise & Resubmit

By Stephen Ford Date 07/03/2024

This review is only for general conformance of the project and general compliance. Corrections or comments made during this review does not relieve the Vendor from compliance with the requirements of the plans and specifications. Vendor is responsible for all dimensions and fabrication to be confirmed and correlated at the job site.

EF-15 PAGE 4

Architect's Stamp

**WSA**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> NO EXCEPTIONS | <input type="checkbox"/> REJECTED              |
| <input type="checkbox"/> EXCEPTIONS NOTED         | <input type="checkbox"/> SUBMIT SPECIFIED ITEM |
| <input type="checkbox"/> REVISE AND RESUBMIT      | <input type="checkbox"/> NOT REVIEWED          |

Approval is only for general conformance with the design concept of the Project and the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site: information that pertains solely to the fabrication process or to the means and methods of construction; coordination of the work of all trades; and performing all work in a safe and satisfactory manner. This approval does not modify Contractor's duty to comply with the Contract Documents.

Aleah Springer

07/17/2024

WSA STUDIO

DATE

Engineer's Stamp

FOR QUESTIONS, CALL THE:  
OHIO REGIONAL OFFICE  
806 MORRISON ROAD, GAHANNA, OH 43230  
PHONE: (800) 948-6945  
FAX: (614) 227-5925

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted   
Approved with NO Exception Taken   
Revise and Resubmit   
SIGNATURE \_\_\_\_\_ Date: \_\_\_\_\_  
Your Title: \_\_\_\_\_

**HANGING ANGLE LOCATIONS**

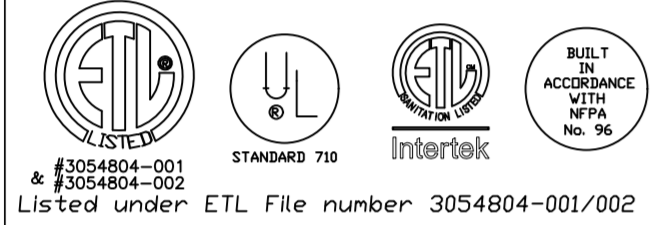
HOOD STYLE	DIM FROM REAR	DIM FROM FRONT (24"H)	DIM FROM FRONT (30"H)
CANOPY ND2	4.166"	2.246"	2.246"
ND2-PSP-F	4.166"	2.246"	2.246"
BACKSHELF BD-2	4.166"	2.246"	-
VHB/VHB-G	36"x36"	42"x42"	48"x48"
FRONT/BACK DIMS BY SIZE	2.246"	2.246"	2.246"

**CALCULATIONS UTILIZED**

EXHAUST CFM=LENGTH OF HOOD X CFM/LIN.FT. (LOAD)  
SUPPLY CFM=EXHAUST CFM X PERCENTAGE REQUIRED  
TOTAL DUCT AREA=144 X  $\frac{CFM}{FPM}$   
DUCT LENGTH=  $\frac{TOTAL DUCT AREA}{DUCT DEPTH}$   
\*CAPTIVE-AIRE DUCT CONNECTION SIZES ARE CALCULATED 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**

CAPTIVE-AIRE HOODS HAVE OPTIONAL CLEARANCE REDUCTION SYSTEMS AVAILABLE AS FOLLOWS:

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

**GENERAL NOTES**

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

**HOOD INFORMATION - JOB#6652757**

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)					HOOD CONFIG				
										WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	HOOD CONSTRUCTION	END TO END	ROW
1		6024 ND-2	CAPTIVEAIRE	7' 0"	600 DEG	I	HEAVY	200	1400			4'	12'	1400	1783	-0.826"	430 SS WHERE EXPOSED	ALONE	ALONE

**HOOD INFORMATION**

HOOD NO	TAG	FILTER(S)					LIGHT(S)					UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE	SIZE	MODEL #	SWITCHES QUANTITY		
1		CAPTRATE SOLD FILTER	5	16"	16"	85% SEE FILTER SPEC	4	L55 SERIES E26	ND	RIGHT	12"x60"x24"	TANK FS	4.0/4.0	SC-310110MA	1 LIGHT 1 FAN	YES	825 LBS

**HOOD OPTIONS**

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT. BACKSPLASH 122.00" HIGH X 133.00" LONG 430 SS VERTICAL. LEFT END STANDOFF (FINISHED) 1" WIDE 60" LONG INSULATED. RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. LEFT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. INSULATION FOR TOP OF HOOD. INSULATION FOR BACK OF HOOD. RISER SENSOR INSTALL 6IN PLEN.

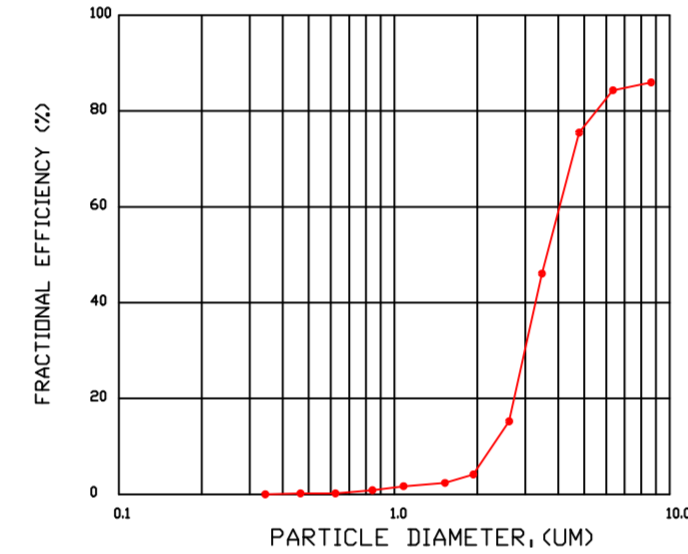
**SPECIFICATION: CAPTRATE® GREASE-STOP® SOLD FILTER**

THE CAPTRATE GREASE-STOP SOLD 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 CHANNEL(S).

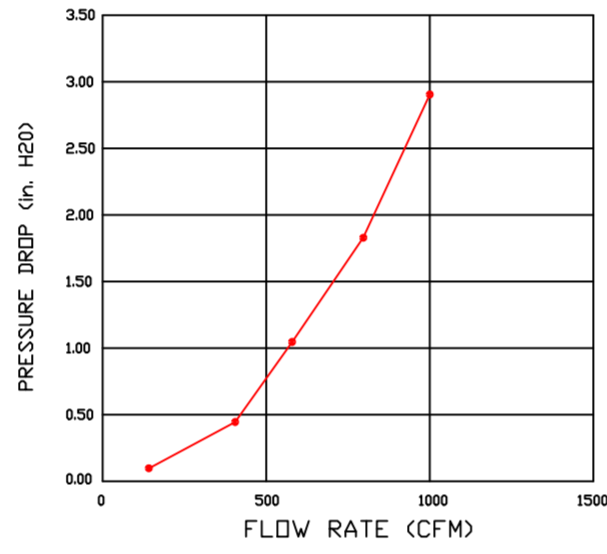
UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

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 1.0 INCHES OF WATER GAUGE.  
THE CAPTRATE GREASE-STOP SOLD WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER

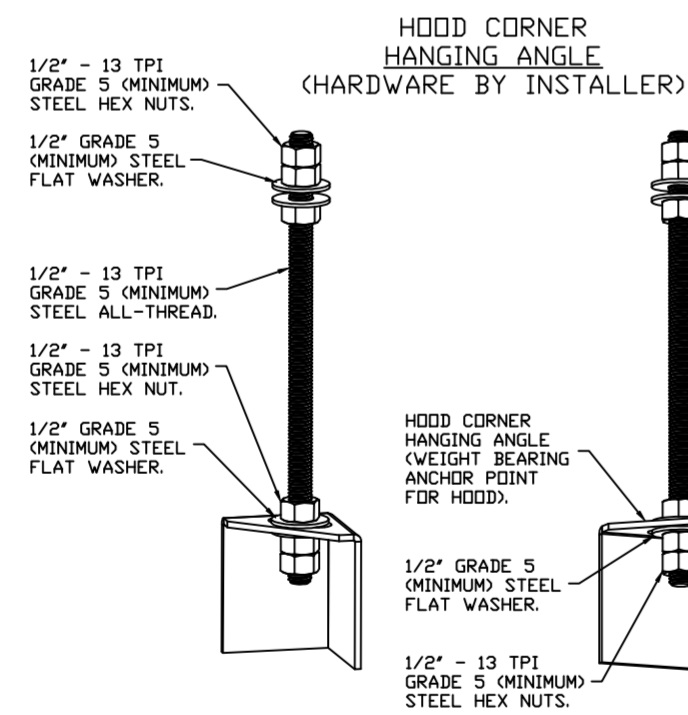


PRESSURE DROP VS. FLOW RATE



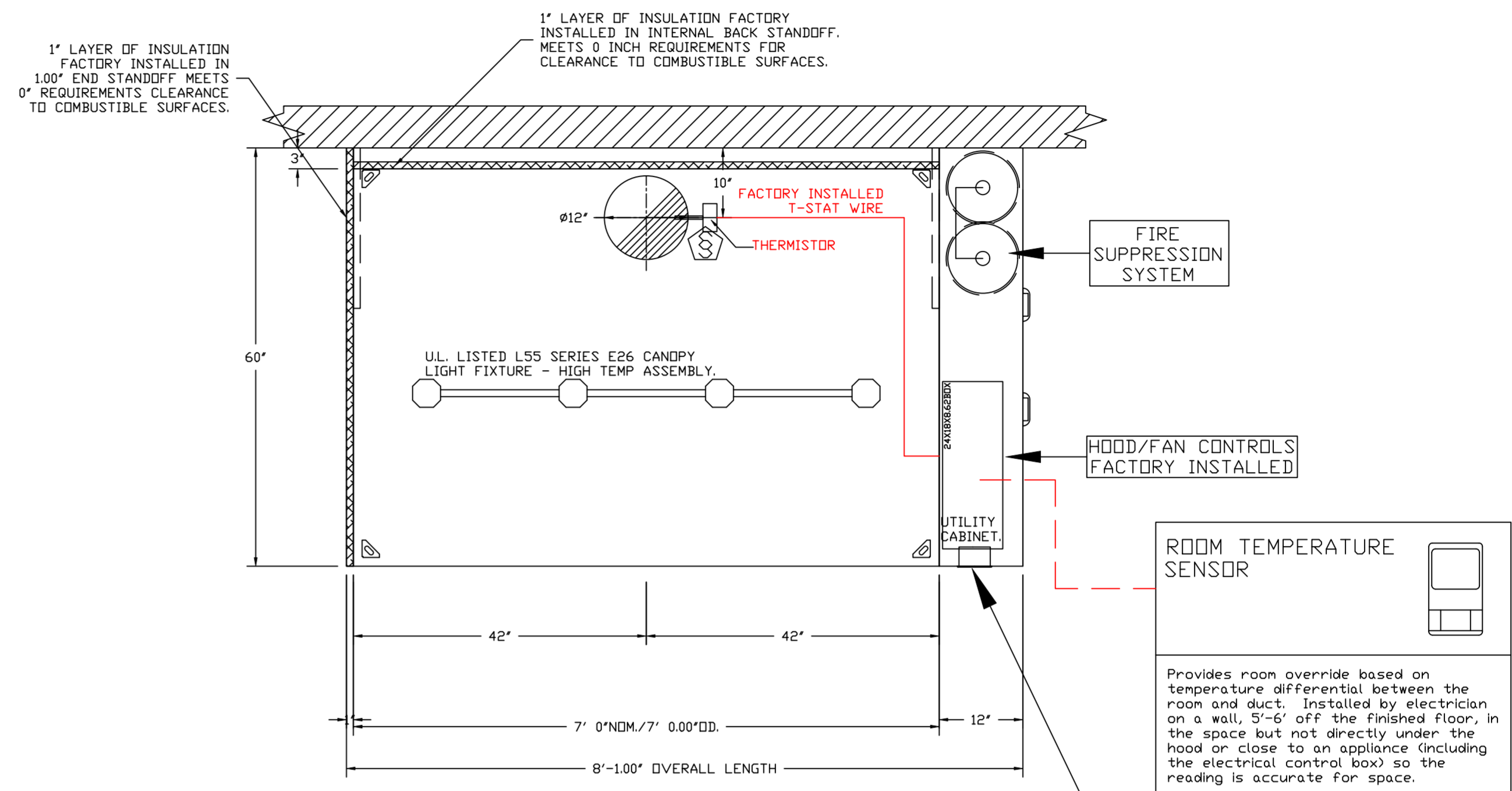
CAPTIVE FILTERS ARE BUILT IN COMPLIANCE WITH:

- NFPA #96.
- NSF STANDARD #2.
- UL STANDARD #1046.
- INT. MECH. CODE (IMC).
- ULC-S649.

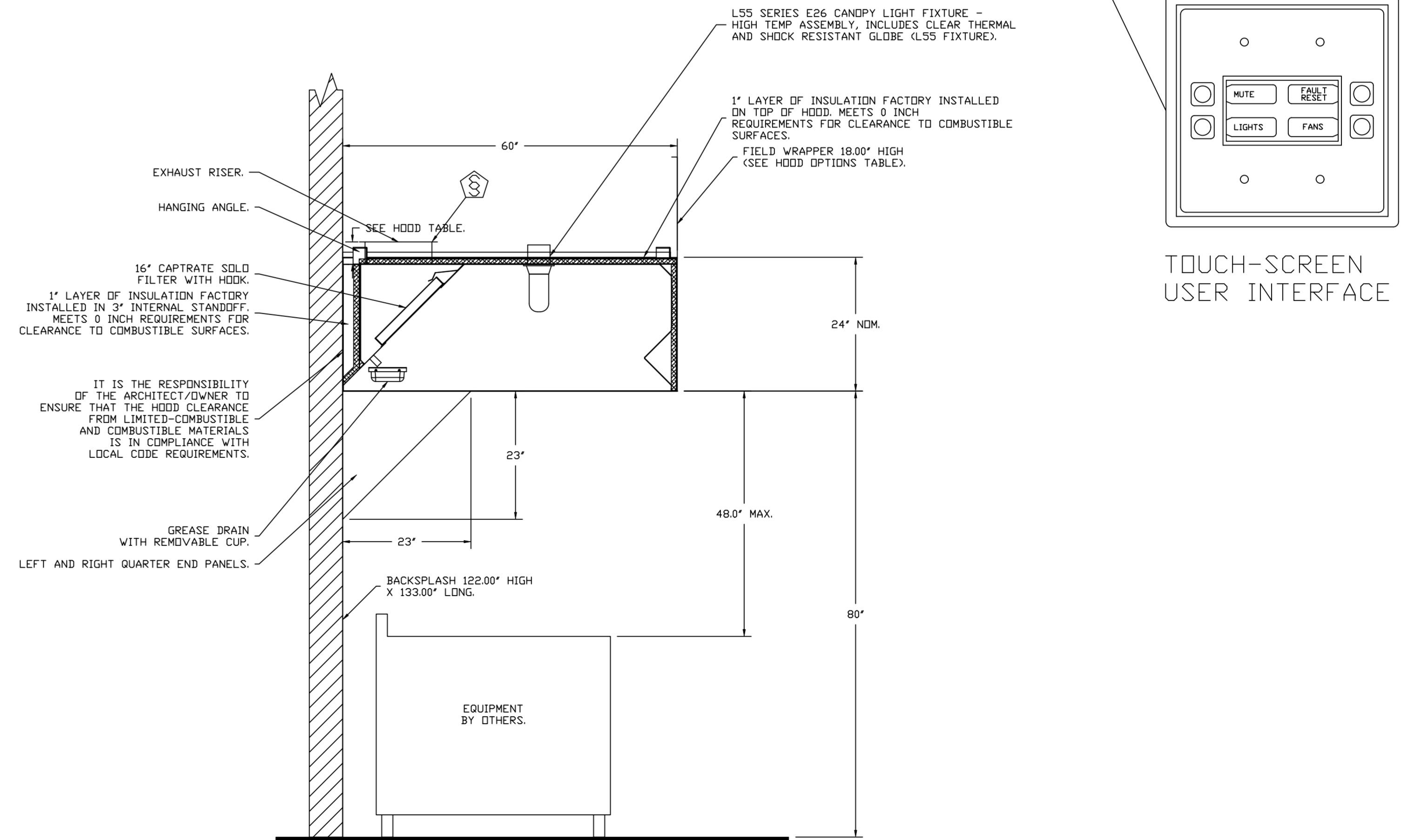


**ASSEMBLY INSTRUCTIONS**

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.



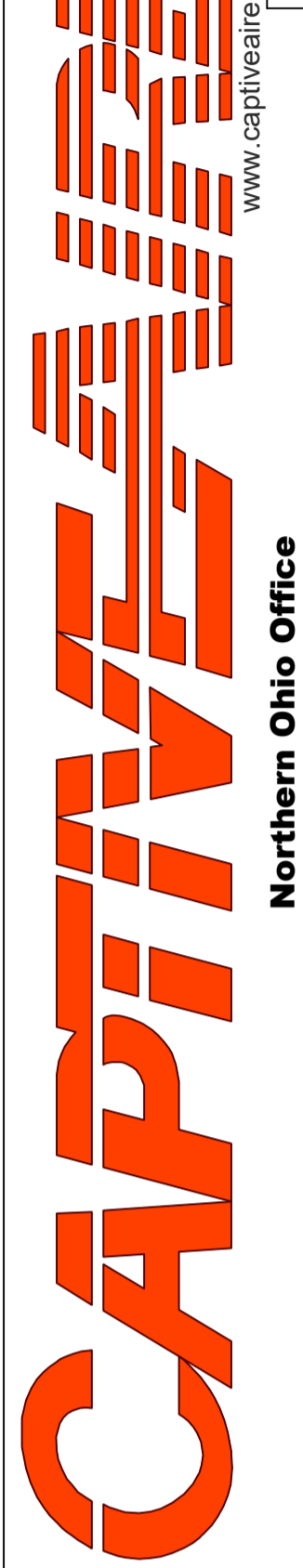
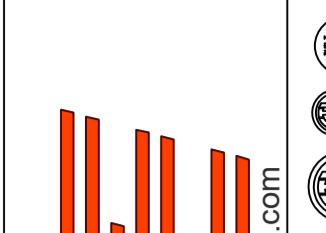
PLAN VIEW - HOOD #1  
7' 0.00" LONG 6024ND-2



SECTION VIEW - MODEL 6024ND-2  
HOOD - #1

**REVISIONS**

DESCRIPTION	DATE



Northern Ohio Office  
Global Impact Stem Academy - GISA - Lab  
570 East Lefel Lane,  
Springfield, OH, 45505

DATE: 3/1/2024

DWG.#:  
6652757

DRAWN BY: RTG - 52

SCALE:  
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.

1

**FIRE SYSTEM INFORMATION - JOB#6652757**

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION	
						SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0	40	23	FIRE CABINET RIGHT	RIGHT, HOOD 1

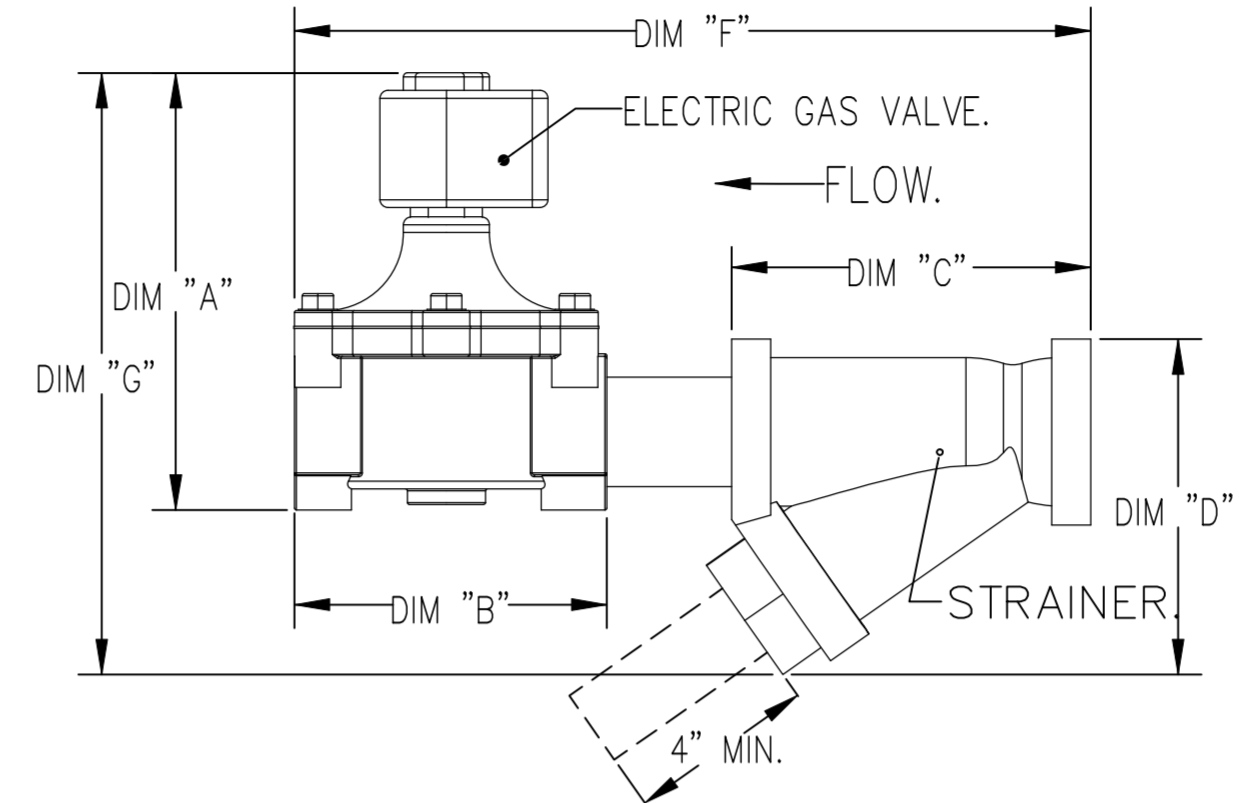
**GAS VALVE(S)**

FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1		SC ELECTRICAL	2.000	CAPTIVEAIR SYSTEMS

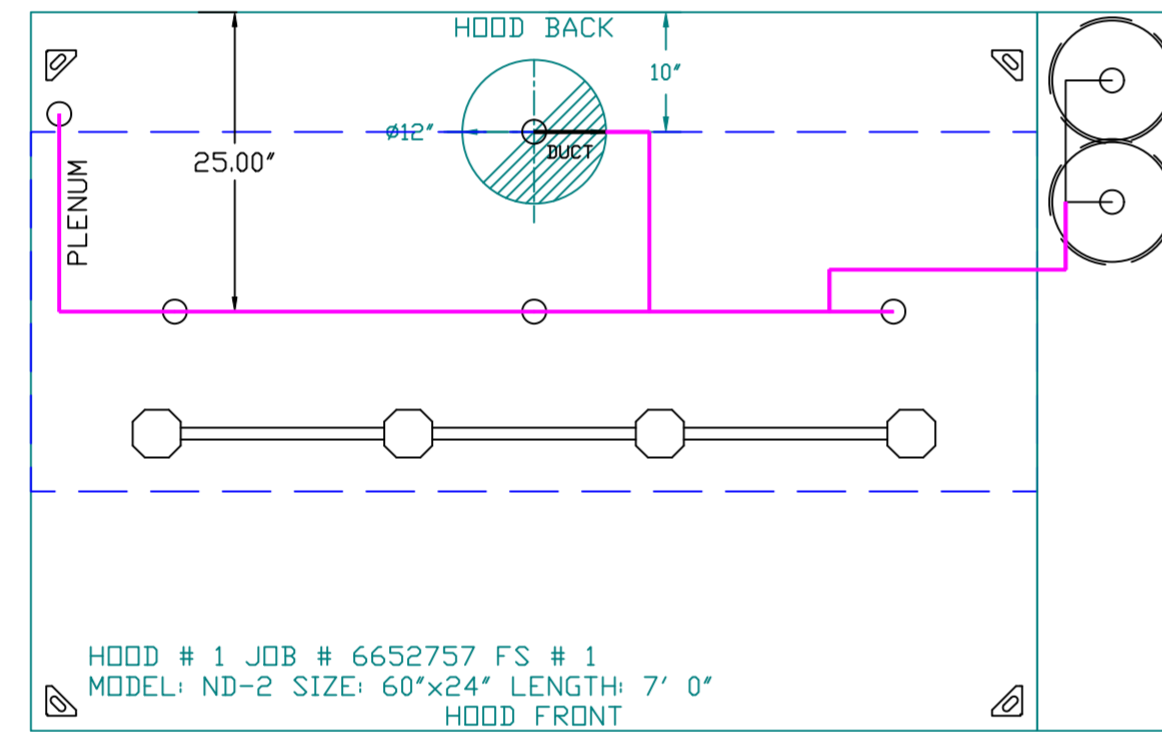
GAS VALVE SIZING														GAS VALVE DIMENSIONS				INSTALLATION		PART NUMBERS		
TYPE	SIZE	VOLTAGE	MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "F"	DIM "G"	MOUNTING ORIENTATION	GAS VALVE PART NUMBER	STRAINER PART NUMBER	GAS VALVE/STRAINER KIT						
ELECTRICAL	2"	120 VAC	0 PSI (0 IN.W.C.)	5 PSI (138 IN.W.C.)	2,940,500 BTU/HR	1,908,048 BTU/HR	7-5/8"	6-3/8"	7-1/4"	7-13-16"	15-5/8"	13-15/16"	HORIZONTAL/VERTICAL	8214280	4417K68	(SC)EGVA2						

**ALL GAS VALVES/STRAINERS**  
 PROPER CLEARANCE MUST BE PROVIDED IN ORDER TO SERVICE THE STRAINERS A MINIMUM OF 4" CLEARANCE DISTANCE MUST BE PROVIDED AT THE BASE OF THE STRAINER CUSTOMER MUST VERIFY BTU CONSUMPTION AS WELL AS PRESSURE RATING SPECIFIC GRAVITY OF NATURAL GAS = 0.64, SPECIFIC GRAVITY OF LP = 1.52.

**CALCULATIONS**  
 TO CALCULATE GAS FLOW FOR OTHER THAN 1 IN.W.C. PRESSURE DROP  
 NEW BTU/HR = (BTU/HR AT 1 IN.W.C. PRESSURE DROP) X NEW PRESSURE DROP<sup>0.5</sup>  
 TO CALCULATE GAS FLOW FOR OTHER THAN 0.64 SPECIFIC GRAVITY  
 NEW BTU/HR = (BTU/HR AT 0.64) X (0.64 / NEW SPECIFIC GRAVITY)<sup>0.5</sup>

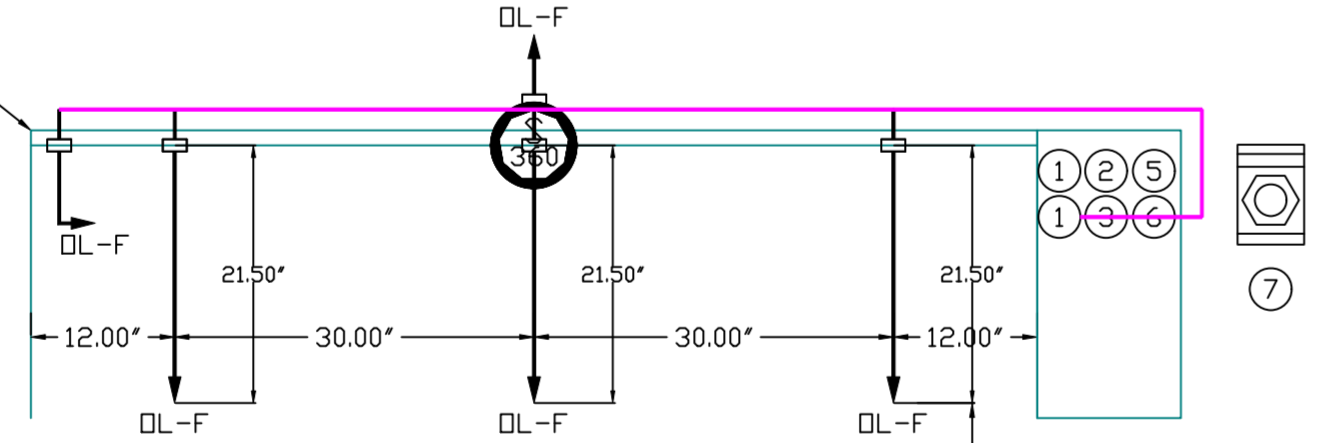


SYSTEM REQUIRES A MINIMUM OF 7 FT OF EQUIVALENT PIPE LENGTH BETWEEN TANK AND NEAREST APPLIANCE NOZZLE FOR MOST APPLIANCES. EACH 90 DEGREE ELBOW ADDS 1.3 FT OF EQUIVALENT LENGTH. SEE MANUAL FOR DETAILS

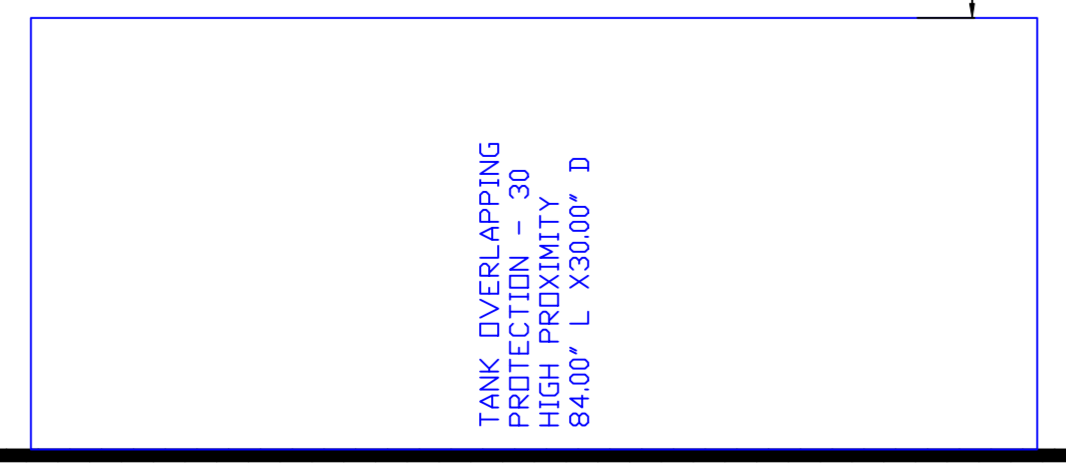


HOOD # 1 JOB # 6652757 FS # 1  
 MODEL: ND-2 SIZE: 60"x24" LENGTH: 7' 0"  
 HOOD FRONT

FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.



NOZZLE HEIGHT 35-50' FROM COOKING SURFACE. (45.25')



**NOTES**

- FIELD PIPE DROPS AS SHOWN
- PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY GAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.
- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS  
 JOB #: 6652757.  
 JOB NAME: \*\* GLOBAL IMPACT STEM ACADEMY - GISA - MAIN.

SYSTEM SIZE: TANK-SP-2 DESIGN FP: 23. MAXIMUM FP: 40.  
 HOOD # 1 7' 0.00" LONG x 60" WIDE x 24" HIGH.  
 RISER # 1 SIZE: 12" DIA.  
 HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

**LEGEND - FIRE CABINET TANK SYSTEM**

- 4 GALLON TANK.
- PRIMARY ACTUATOR RELEASE.
- SECONDARY ACTUATOR RELEASE.
- PRESSURE SUPERVISION SWITCH.
- PRIMARY HOSE ASSEMBLY.
- SECONDARY HOSE ASSEMBLY.
- REMOTE MANUAL ACTUATION DEVICE.

**REVISIONS**

DESCRIPTION	DATE

**CAPTIVE**  
 www.captiveair.com  
 Northern Ohio Office  
 806 Morrison Rd., Gahanna, OH, 43230 PHONE: FAX: 919275925 EMAIL: reg5@captiveair.com

Global Impact Stem Academy - GISA - Lab  
 570 East Leffel Lane,  
 Springfield, OH, 45505

DATE: 3/1/2024  
 DWG.#: 6652757  
 DRAWN BY: RTG - 52  
 SCALE: 3/4" = 1'-0"  
 MASTER DRAWING

SHEET NO. 2

**EXHAUST FAN INFORMATION** - JOB#6652757

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SDNES
1		1	DU85HFA	CAPTIVEAIRE	1400	1.250	1366	DDP	0.750	0.4450	3	460	1.3	443 FPM	96	11.6

EF-15

**FAN OPTIONS**

FAN UNIT NO	TAG	QTY	DESCRIPTION
1		1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR85HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	LOAD REACTOR MOUNTED IN FAN
		1	2 YEAR PARTS WARRANTY

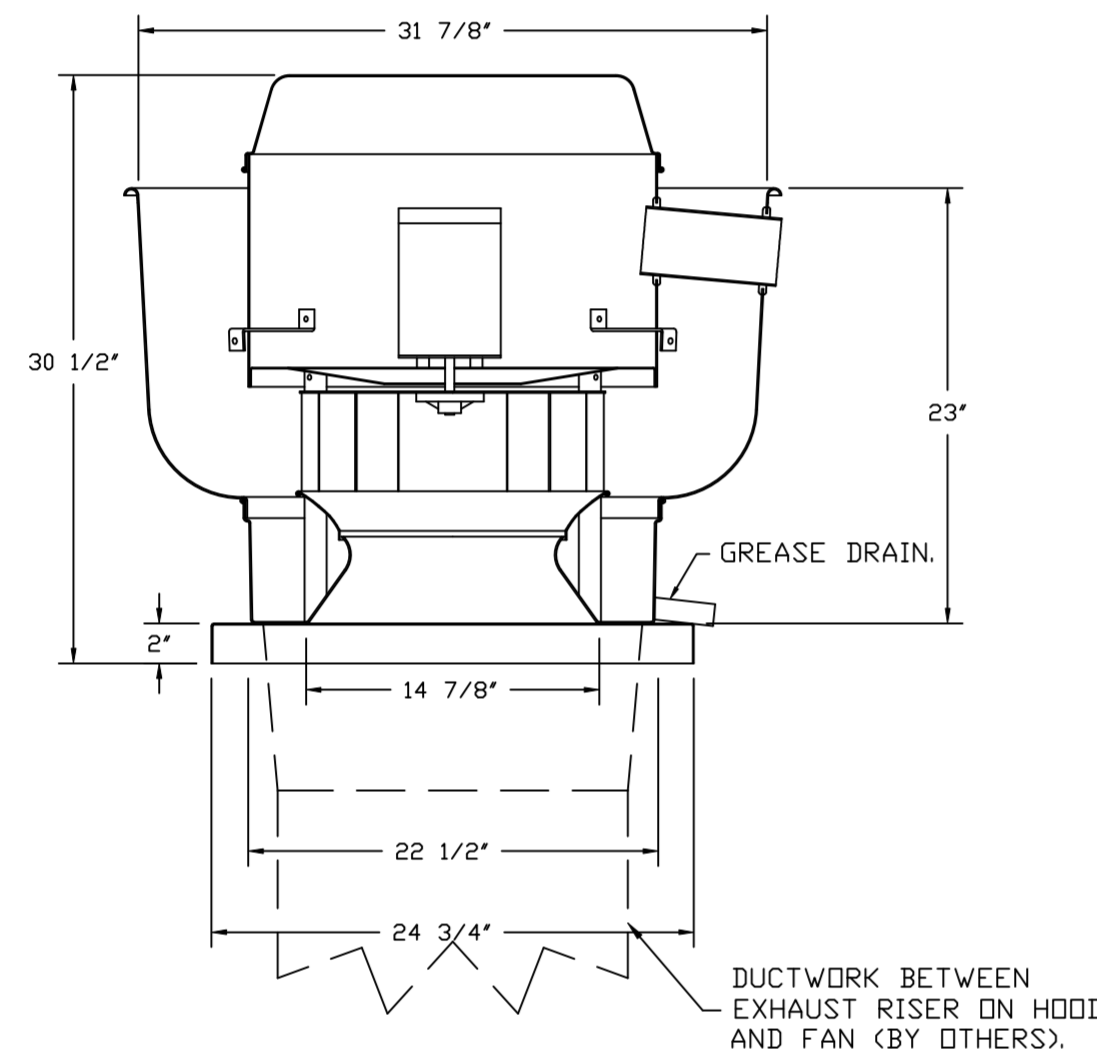
**FAN ACCESSORIES**

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

**CURB ASSEMBLIES**

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	37 LBS	CURB	23.000"W X 23.000"L X 24.000"H VENTED.

FAN #1 DU85HFA - EXHAUST FAN



**FEATURES:**

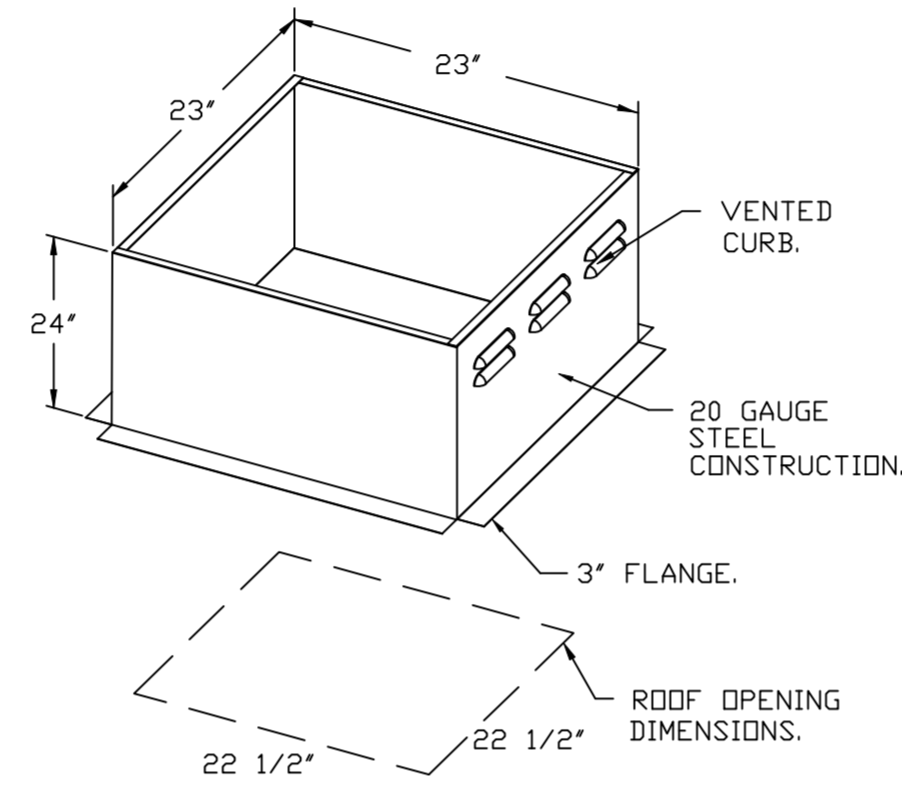
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT 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.

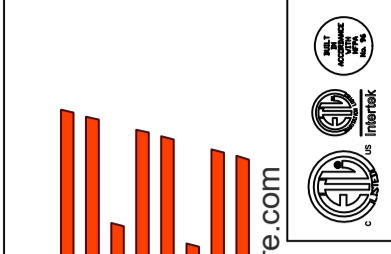
**OPTIONS**

- GREASE BOX.
- FAN BASE CERAMIC SEAL - DU/DR85HFA
- INSTALLED AT PLANT - FOR GREASE DUCTS.
- LOAD REACTOR MOUNTED IN FAN.
- 2 YEAR PARTS WARRANTY.



**REVISIONS**

DESCRIPTION	DATE:



Northern Ohio Office  
806 Morrison Rd., Gahanna, OH, 43230 PHONE: FAX: 9192275925 EMAIL: reg52@captiveair.com

Global Impact Stem Academy - GISA - Lab  
570 East Lefel Lane,  
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DWG.#:  
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DRAWN BY: RTG - 52

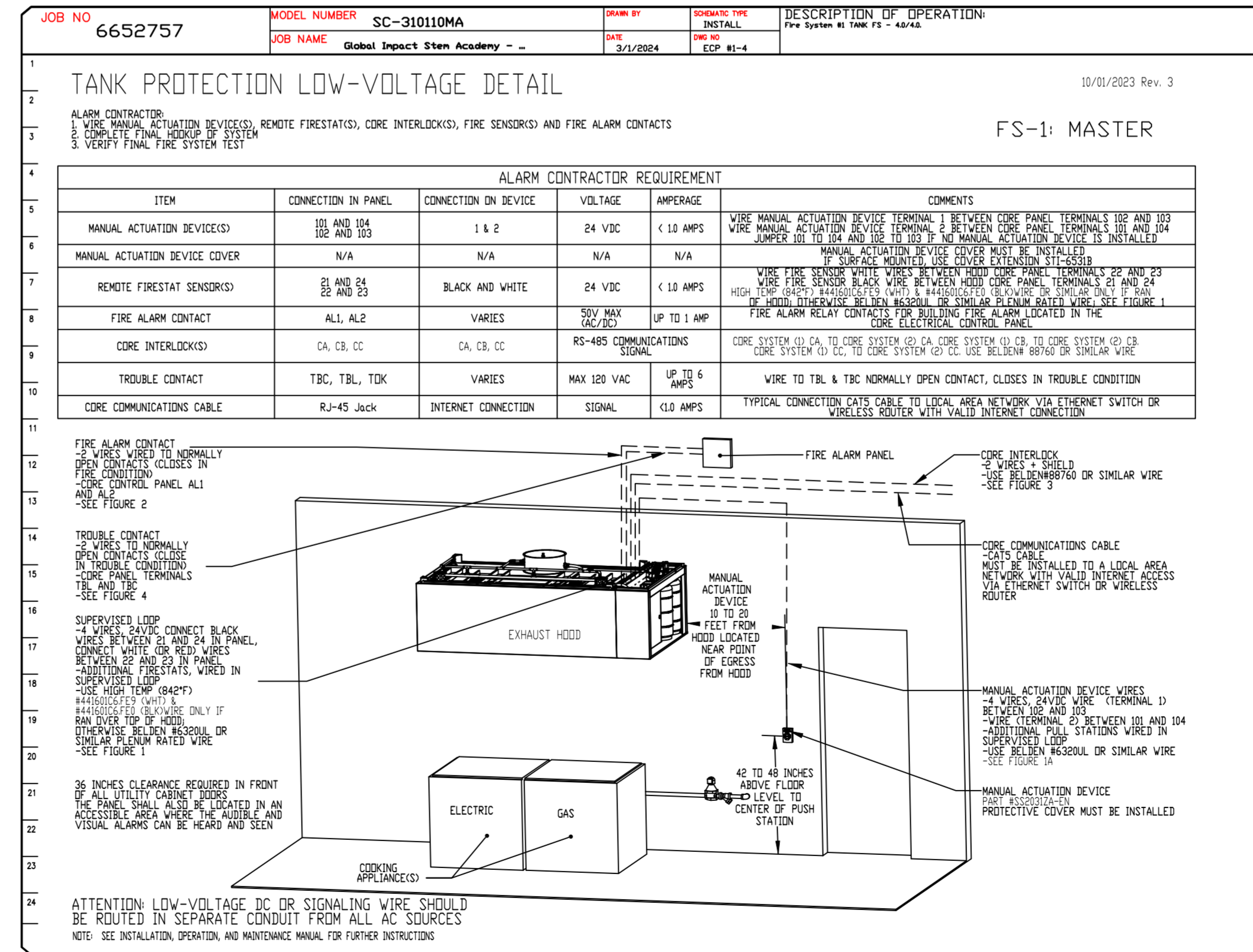
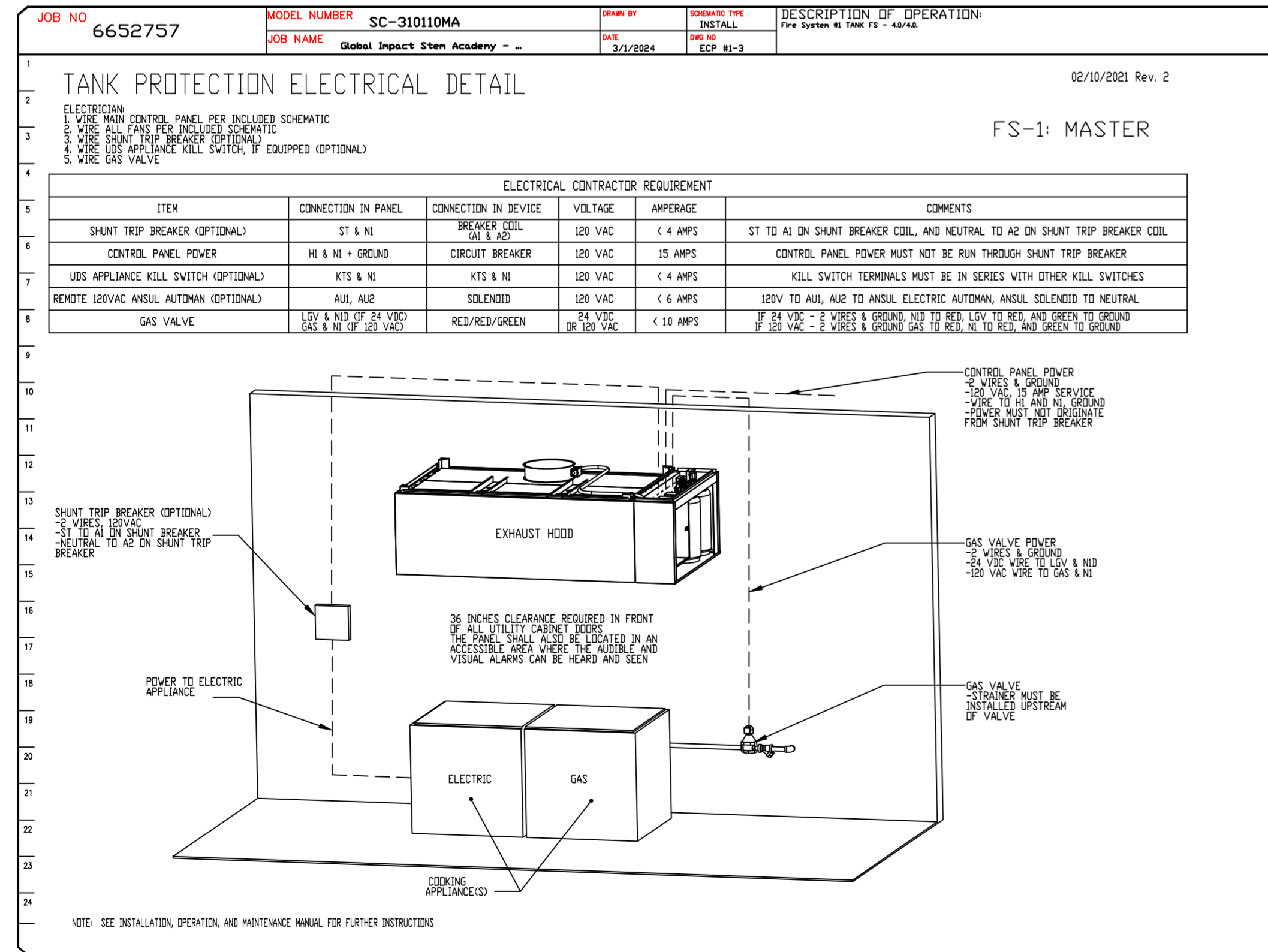
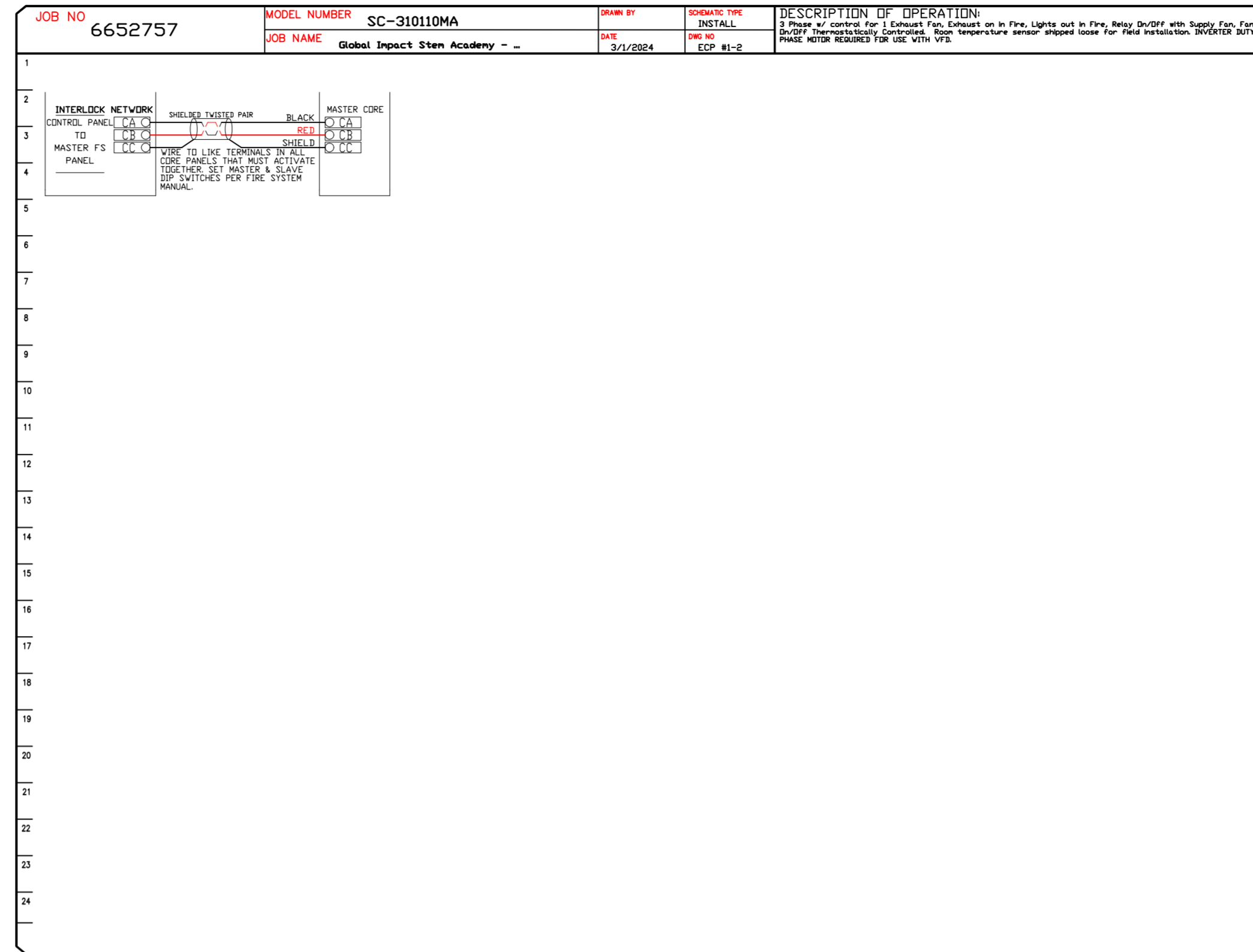
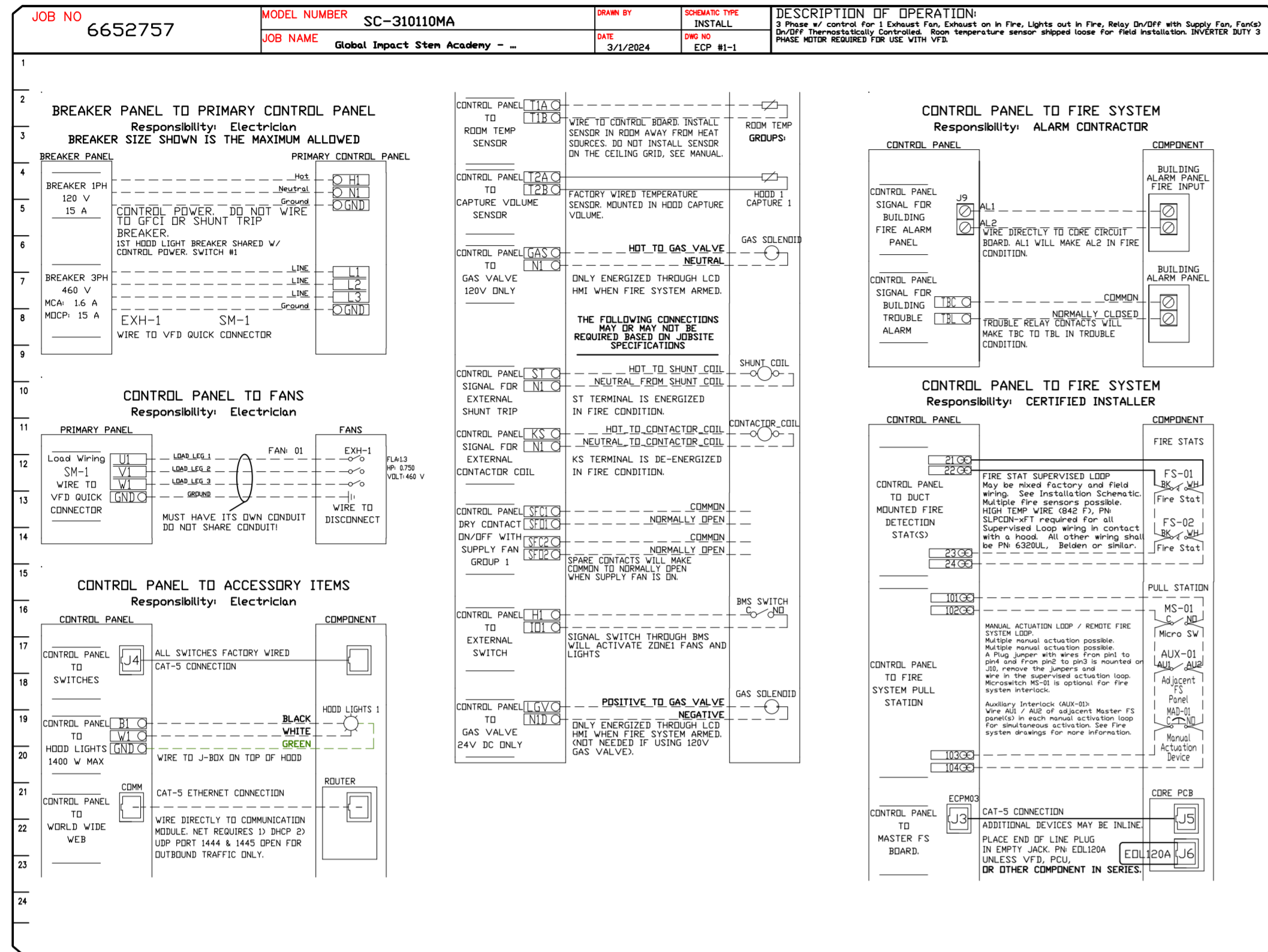
SCALE:  
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.  
3

**ELECTRICAL PACKAGE - JOB#6652757**

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED			
				LOCATION	QUANTITY		TYPE	#	HP	VOLT FLA
1		SC-310110MA	UTILITY CABINET RIGHT	UTILITY CABINET RIGHT HOOD # 1	1 LIGHT 1 FAN	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	EXHAUST	3	0.750	460 1.3



**REVISIONS**

NO.	DESCRIPTION	DATE

**CAPTIVE**

www.captive.com

**Northern Ohio Office**

806 Morrison Rd., Gahanna, OH, 43230 PHONE: FAX: 919275925 EMAIL: reg5@captive.com

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**DATE:** 3/1/2024

**DWG.#:** 6652757

**DRAWN BY:** RTG - 52

**SCALE:** 3/4" = 1'-0"

**MASTER DRAWING**

**SHEET NO.** 4