HOOD INFORMATION – JOB#4027733

HOOD NO	TAG	MODEL	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	HOOD CONFIG ROW
1		5412 SND-2	9' 0"	450 DEG	I	MEDIUM	222	2000	10"	19"	4"		2000	1516	-0.665"	0	430 SS WHERE EXPOSED	ALONE	ALONE
2		286 MISC-PSP	9' 0"	300 DEG	I	N/A	0	0								1400	430 SS WHERE EXPOSED	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLO FILTER	6	20"	16"	85% SEE FILTER SPEC	4	RECESSED	NO	YES	470 LBS
2							0			NO	124 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 12.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 68.00" HIGH X 108.00" LONG 430 SS VERTICAL.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 68" HIGH INSULATED 430 SS.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 68" HIGH INSULATED 430 SS.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	PDS	LENGTH	WIDTH	HEIGHT	RISER(S) TYPE	WIDTH	LENG	DIA	CFM	SP
2		Front	108"	28"	6"	MUA	12"	28"		700	0.160"
						MUA	12"	28"		700	0.160"

FIRE SYSTEM INFORMATION – JOB#4027733

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION SYSTEM	INSTALLATION LOCATION ON HOOD
1		ANSUL R102	3.0	3	WALL MOUNT LEFT	N/A

ELECTRICAL PACKAGE – JOB#4027733

NO	TAG	PACKAGE #	LOCATION	SWITCHES LOCATION	SWITCHES QUANTITY	OPTION	FANS CONTROLLED FAN TAG	TYPE	÷	HP	VOLT	FLA
1		DCV-1111	WALL MOUNT IN SS BOX	08 - SHIP LOOSE W/ PREWIRE	1 LIGHT 1 FAN	SMART CONTROLS DCV	KEF-1	EXHAUST	1	1.000	208	6.9
							MAU-1	SUPPLY	1	1.000	208	6.9

VERIFY CEILING HEIGHT

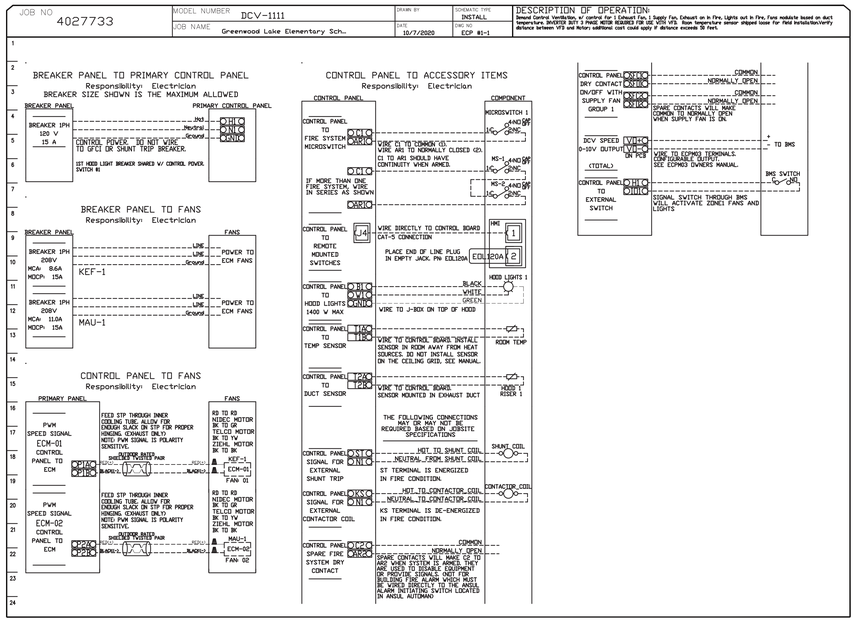
___' ___"

Height required to verify hood will fit and to size the enclosure panels (wrappers)

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH

NFPA #96
NSF
UL 710 & ULC710 STANDARDS
E.T.L. LISTED 3054804-001

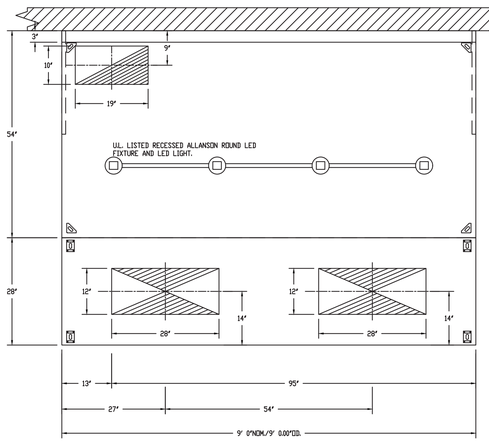
IMC 2015
SECTIONS 506, 507, & 508



SEQUENCE OF OPERATIONS:

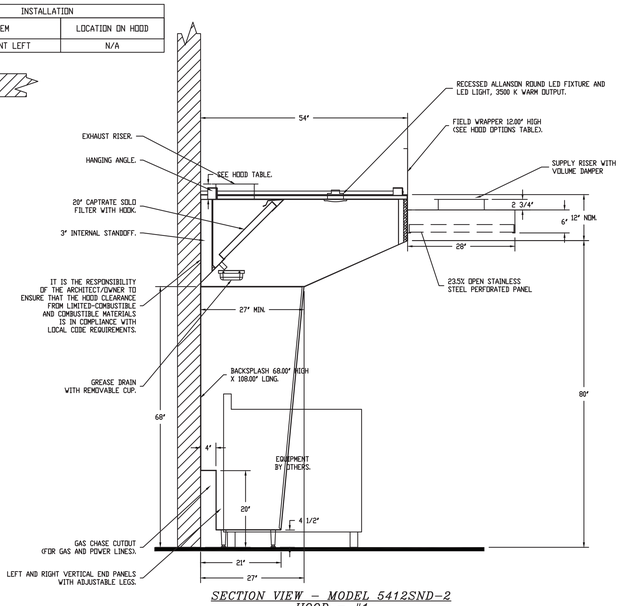
THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:

- 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 PER 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 UNINTENDED 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 (DDC, BMS OR HARD-WIRED INTERLOCK).
- FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO 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 ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

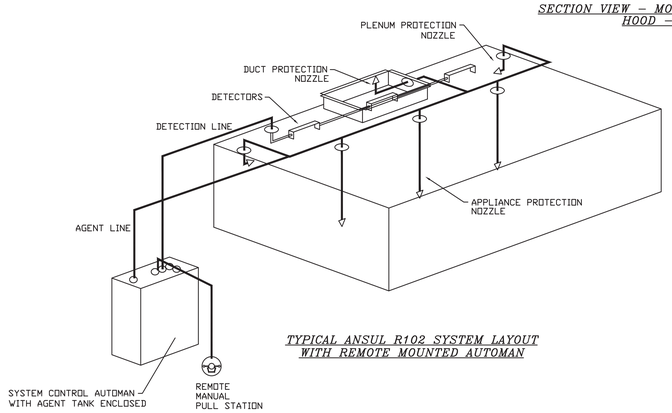


PLAN VIEW – HOOD #1
9' 0.00" LONG 5412SND-2

PLAN VIEW – HOOD #2
9' 0.00" LONG 286MISC-PSP



SECTION VIEW – MODEL 5412SND-2 HOOD – #1



TYPICAL ANSUL R102 SYSTEM LAYOUT WITH REMOTE MOUNTED AUTOMAN

SPECIFICATIONS

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION NETWORK. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL)

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE, POTASSIUM ACETATE-BASED FORMULATION DESIGNED FOR FLAME KNOCKDOWN AND SECUREMENT OF GREASE RELATED FIRES. IT SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/ LINKAGE ASSEMBLY.

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO 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.

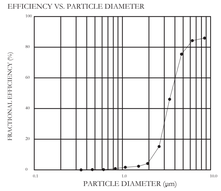
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

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

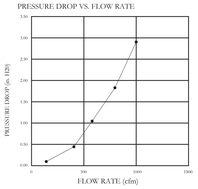
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05.

EFFICIENCY VS. PARTICLE DIAMETER

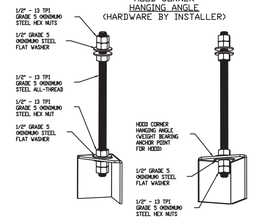


PRESSURE DROP VS. FLOW RATE



CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH.
NFPA #96
NSF STANDARD #2
UL STANDARD #1046
INT. MECH. CODE (IMC)
ULC-S649

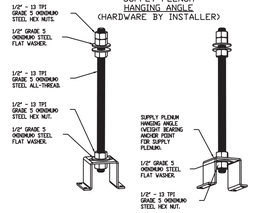
HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)



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.

SUPPLY PLENUM HANGING ANGLE (HARDWARE BY INSTALLER)



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 PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

REVISIONS

	DESCRIPTION	DATE
1		
2		
3		
4		

CAPTIVE-AIRE
N. NJ & S. NY
, Rutherford, N.J. 07070 PHONE: (201) 669-4962 FAX: (916) 747-5624 EMAIL: regoff@captiveaire.com
www.captiveaire.com

Greenwood Lake Elementary School R4
80 Waterstone Rd,,
GREENWOOD LAKE, NY, 10925

DATE: 3/23/21
DWG.#: 4027733
DRAWN BY: SWA
SCALE: 3/4" = 1'-0"
R4 DRAWING
SHEET NO. 1

GREENWOOD LAKE UNION FREE SCHOOL DISTRICT

SED PROJECT NUMBER
44-21-11-02-0-002-015

CAPITAL IMPROVEMENTS

LEGEND

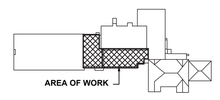
No.	Date	Revisions
	12/29/21	FOR BID

Drawn by	SBL
Checked by	EDF
Project No.	FE# 19-194
Scale	AS NOTED
Date	1-8-21

ERIC D. FELLENZER, P.E.
STATE OF NEW YORK
NY PROFESSIONAL ENGINEER
NO. 073084-1

GREENWOOD LAKE UNION FREE SCHOOL DISTRICT

GREENWOOD LAKE ELEMENTARY SCHOOL



FELLENZER ENGINEERING LLP
FE #: 19-194
www.fellp.com
22 Mulberry St., Suite 2A, Middletown, NY 10940 t 845-343-1481 fx 845-343-4986
181 Church St., Suite 100, Poughkeepsie, NY 12601 t 845-454-9704 fx 855-320-8735

⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title
HVAC: CAPTIVE AIRE DRAWINGS

Drawing No.
H-802

EXHAUST FAN INFORMATION – Job#4027733

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1	KEF-1	DU85HFA	2000	0.850	1383	1.000	0.4690	1	208	6.9	633 FPM	92	16.2

MUA FAN INFORMATION – Job#4027733

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	FLA	WEIGHT (LBS.)	SONES	BURNER EFFICIENCY(%)
2	MAU-1	A1-IBT-150-15D	15MF-1-MOD	A1-IBT-150	800	1400	0.375	1455	1.000	0.5530	1	208	6.9	830	12	80

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2	MAU-1	137595	110076	66 deg F	7 in. w.c. - 14 in. w.c.	Natural

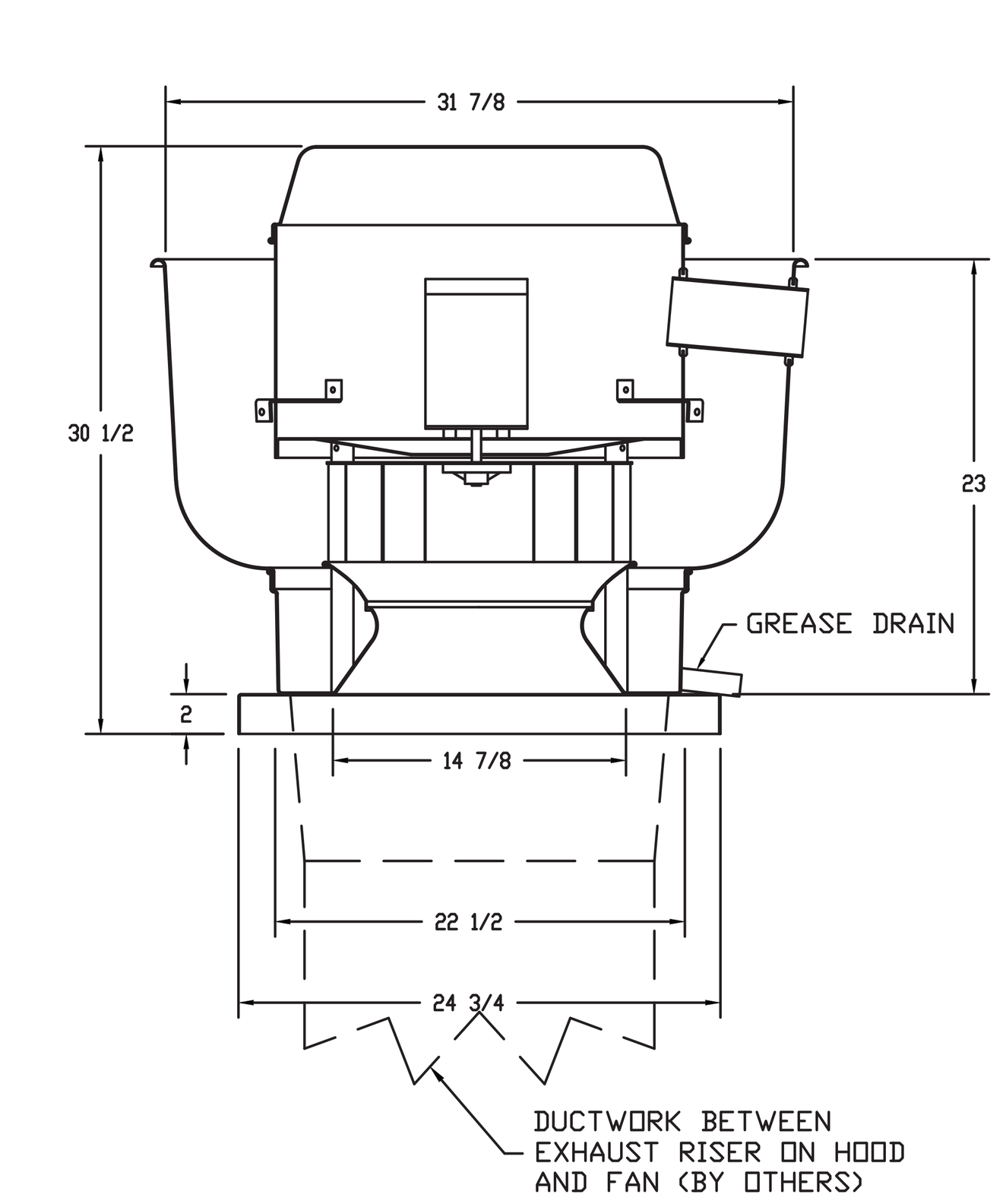
FAN OPTIONS

FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1	KEF-1	1 - Grease Box
		1 - ECM Wiring Package - PWM Signal from ECPMO3 Prewire (TELCO Motor), CCW Rotation
2	MAU-1	1 - Motorized Backdraft Damper for A1-I Housing
		1 - Inlet Pressure Gauge, 0-35"
		1 - Manifold Pressure Gauge, 0 to 10" wc, 1 Furnace
		1 - Single Point Electrical Connection Single Module. If a Non-DCV Prewire is used on the IBT Heater, the #28, #47, "NS", "MA", or "E2" Option Prewire must be selected. Do not provide supply starter in prewire.
		1 - Freezestat
		1 - ECM Wiring Package - DD Supply - PWM Signal from ECPMO3 Prewire (TELCO Motor)

CURB ASSEMBLIES

NO.	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	36 LBS	Curb	23.000"W x 23.000"L x 20.000"H Vented Hinged
2	# 2	MAU-1	85 LBS	Curb	21.000"W x 71.000"L x 20.000"H Insulated
	# 2			Rail	6.000"W x 21.000"L x 20.000"H

FAN #1 DU85HFA - EXHAUST FAN (KEF-1)



FEATURES:

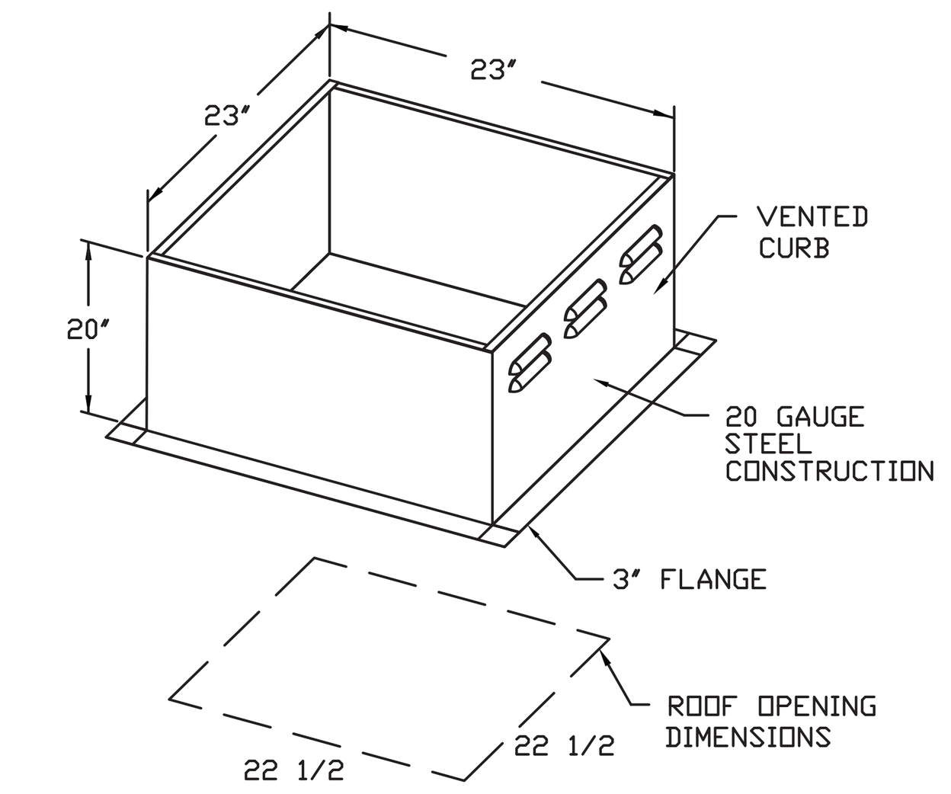
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

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.
ECM WIRING PACKAGE - PWM SIGNAL FROM ECPMO3 PREWIRE (TELCO MOTOR), CCW ROTATION.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

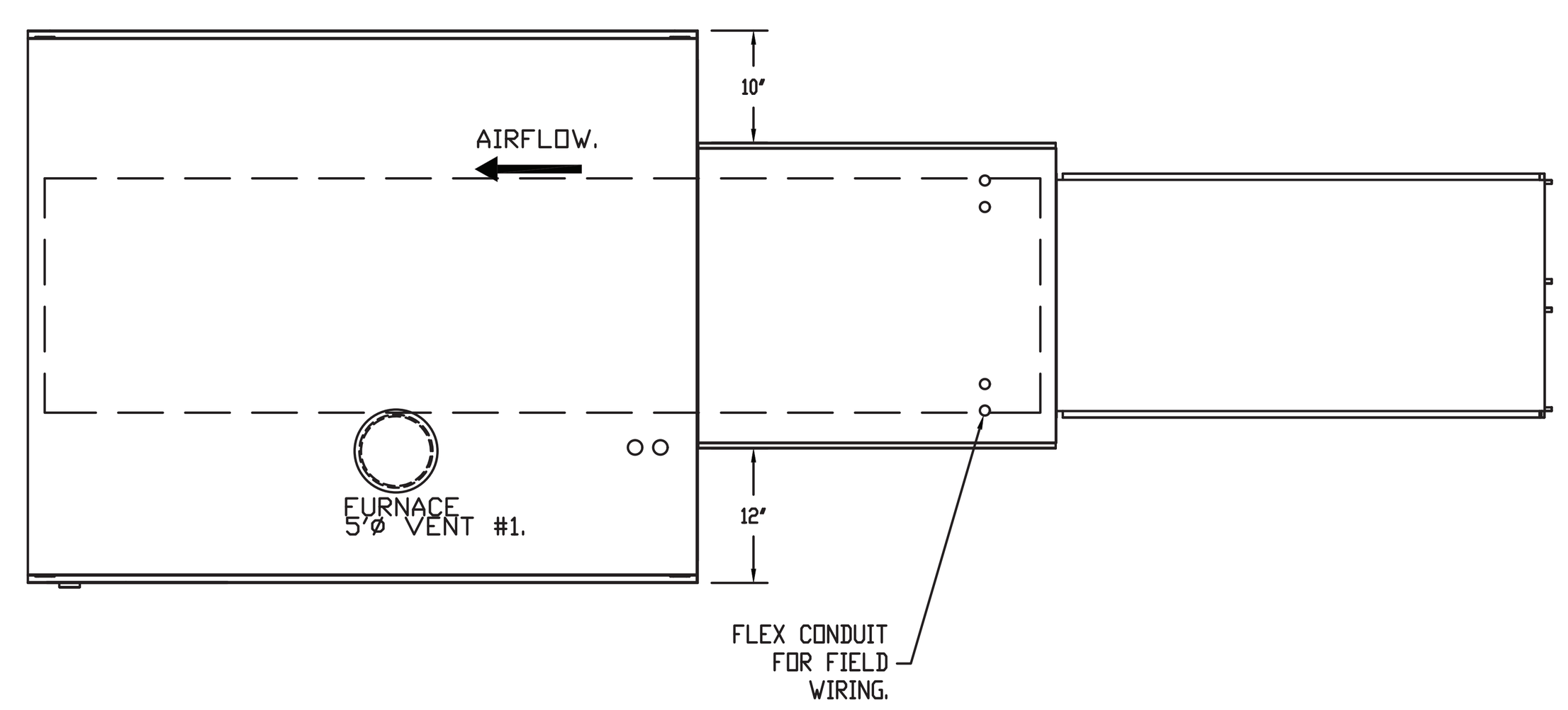
SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE

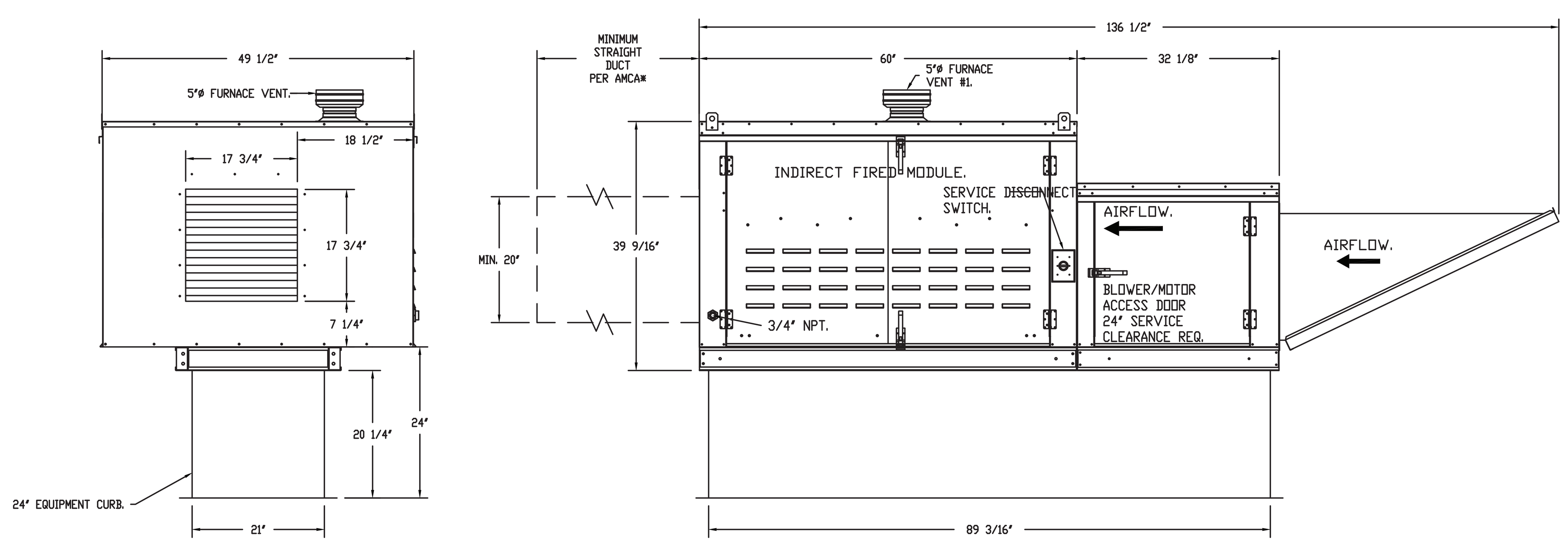
FAN #2 A1-IBT-150-15D - HEATER (MAU-1)
1. INDIRECT BENT TUBE GAS FIRED HEATER WITH 15" DIRECT DRIVE FAN, 1 FURNACE, ELECTRONIC FULL MODULATION, CONSTANT 80% EFFICIENCY, AND 6:1 MAX TURNDOWN FOR NG, (5:1 MAX TURNDOWN FOR LP). STAINLESS STEEL BURNER AND HEAT EXCHANGER.
2. INTAKE HOOD WITH EZ FILTERS.
3. 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, LOW LEAKAGE, TFB120S ACTUATOR INCLUDED.
5. GAS PRESSURE GAUGE, 0-35", 2.5" DIAMETER, 1/4" THREAD SIZE.
6. GAS PRESSURE GAUGE, 0 TO +10 INCHES WC., 2.5" DIAMETER, 1/8" THREAD SIZE, REAR THREAD.
7. SINGLE POINT ELECTRICAL CONNECTION FOR ALL IBT HEATERS WITH 1 MODULE. QNTY 1 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE IS USED ON THE IBT HEATER, THE #28, #47, "MA", OR "E2" OPTION PREWIRE MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREWIRE.
8. FREEZESTAT FACTORY SET AT 35°F AND 10 MINUTES.
9. USED WITH SIZE 1 AND SIZE 2 SIDE DISCHARGE IBT MODULES.
10. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
IBT - US PATENT 877119 B2.

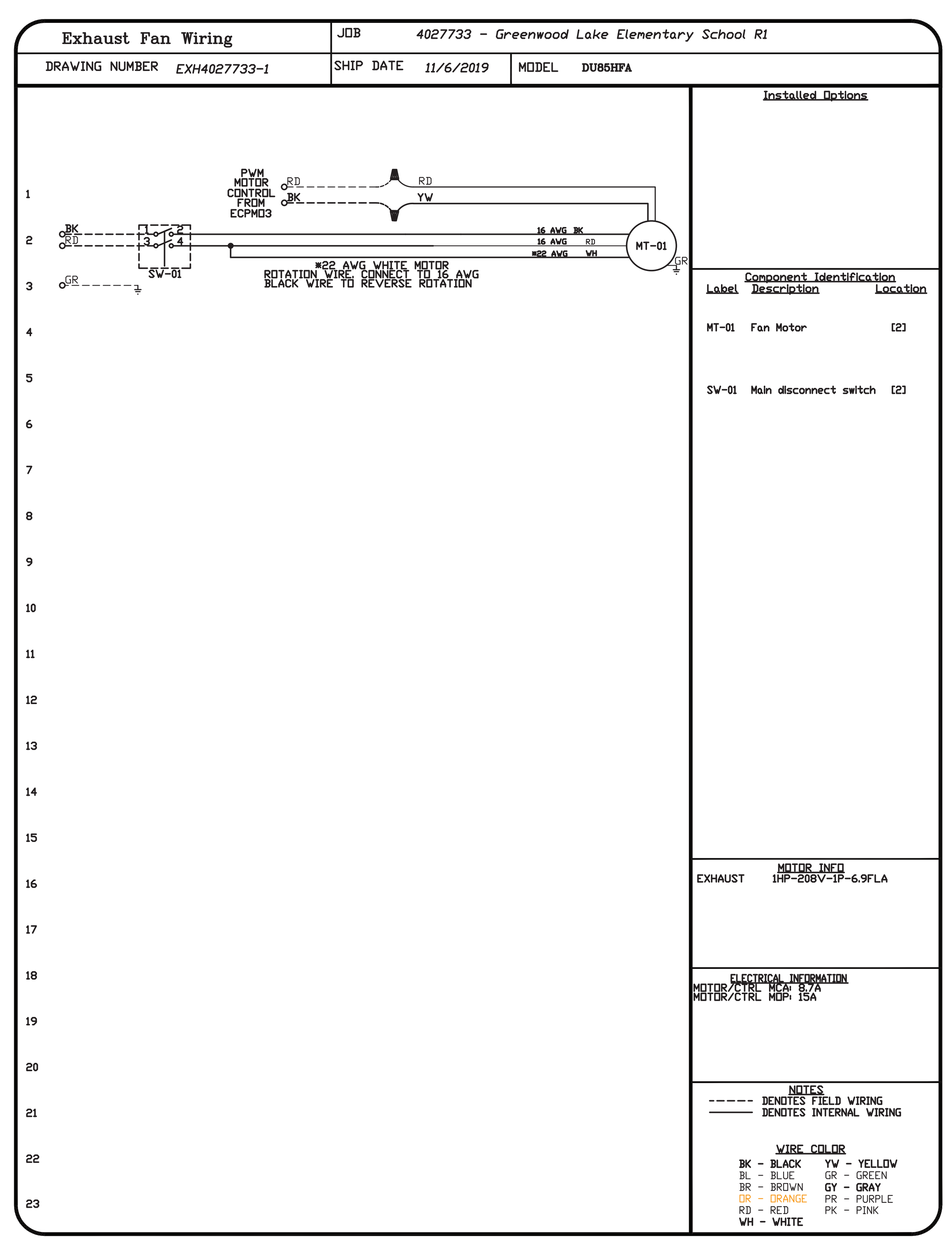
*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 20" x 20".

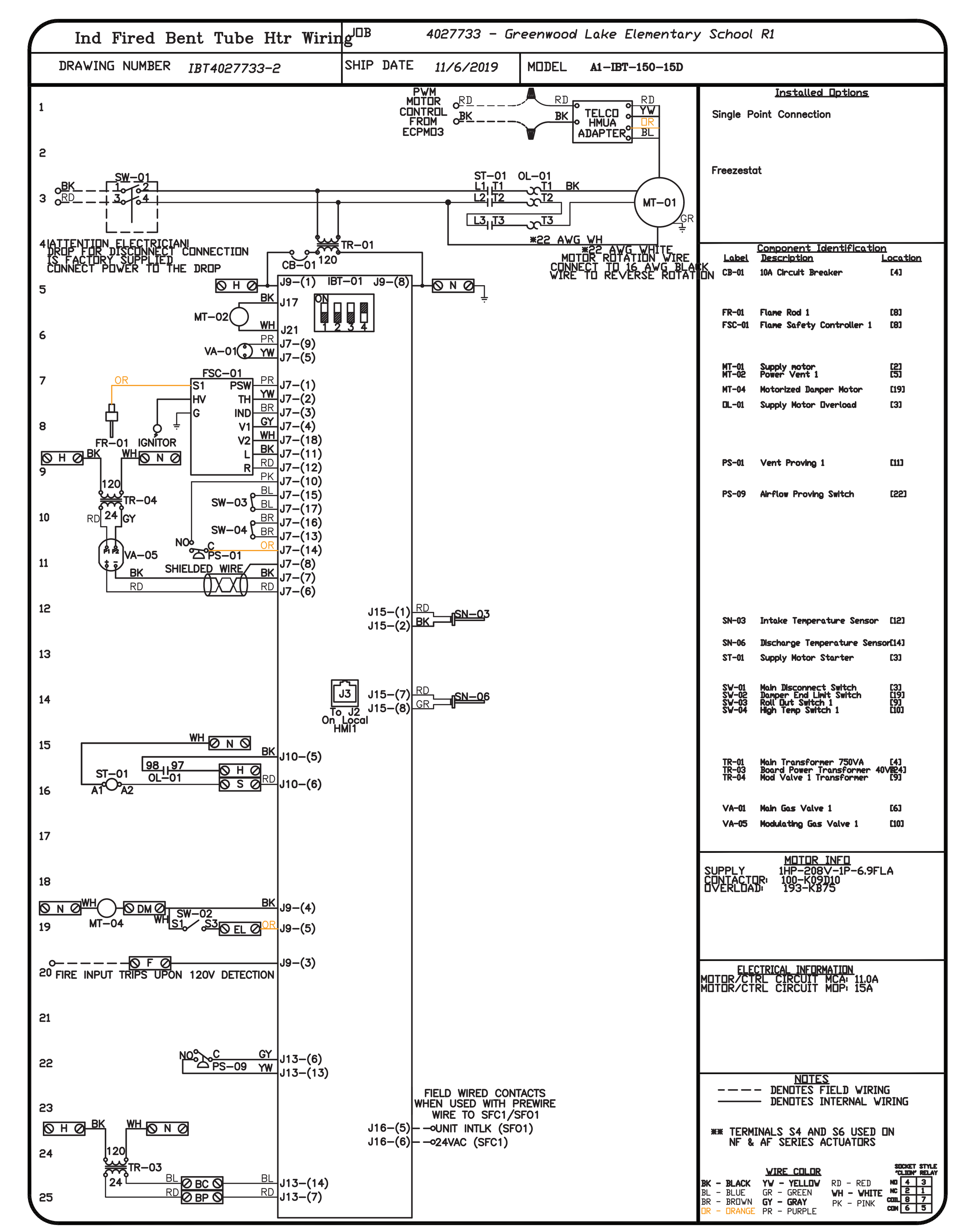
SUPPLY SIDE HEATER INFORMATION:

WINTER TEMPERATURE = 9°F. TEMP. RISE = 66°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 112616.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 140770.
OUTPUT BTUs AT ALTITUDE OF 630 FT. = 110076.
INPUT BTUs AT ALTITUDE OF 630 FT. = 137595.









File Name: F:\2019\19-194 GWLUFSD Kitchen and Cafeteria Renovations\HVAC\H-803.dwg (Layout: H-803)
Date: Tue, Dec 28, 2021 - 4:08 PM (Name: wpb)

REVISIONS

CAPTIVEAIRE
N. NJ & S. NY
Rutherford, NJ 07070 PHONE: (201) 669-4682 FAX: (919) 747-5624 EMAIL: reg98@captiveaire.com
www.captiveaire.com

Greenwood Lake Elementary School R4
80 Waterstone Rd.,
GREENWOOD LAKE, NY, 10925

DATE: 3/23/21
DWG.#: 4027733
DRAWN BY: SWA
SCALE: 3/4" = 1'-0"
R4 DRAWING
SHEET NO. 2

GREENWOOD LAKE UNION FREE SCHOOL DISTRICT

SED PROJECT NUMBER
44-21-11-02-0-002-015
CAPITAL IMPROVEMENTS

LEGEND

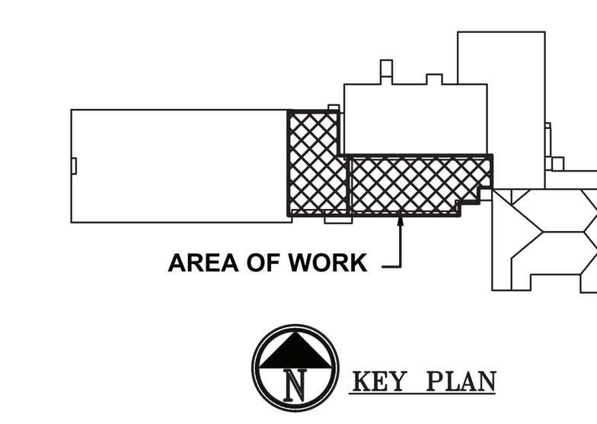
No.	Date	Revisions
	12/29/21	FOR BID

UNAUTHORIZED ALTERATION OR ADDITION TO A PLAN BEARING A LICENSED PROFESSIONAL ENGINEER'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2 OF THE N.Y. STATE EDUCATION LAW.

Drawn by	SBL
Checked by	EDF
Project No.	FE# 19-194
Scale	AS NOTED
Date	1-8-21

ERIC D. FELLENZER, P.E.
NY PROFESSIONAL ENGINEER NO. 073084-1

GREENWOOD LAKE UNION FREE SCHOOL DISTRICT
GREENWOOD LAKE ELEMENTARY SCHOOL



FELLENZER ENGINEERING LLP
FE #: 19-194
www.fellp.com
22 Mulberry St., Suite 2A, Middletown, NY 10940 t 845-343-1481 fx 845-343-4986
181 Church St., Suite 100, Poughkeepsie, NY 12601 t 845-454-9704 fx 855-320-8735

REFERENCE SCALE

Drawing Title
HVAC: CAPTIVE AIRE DRAWINGS

Drawing No.
H-803