

**BUILDING DEVELOPMENT**  
 This set of plans has been reviewed prior to issuance of a building permit and shall be kept at the construction site during working hours.  
 Such review shall not prevent correction of errors in the plans where such errors are subsequently found to be in violation of any law or of any ordinance. Plans shall not be altered in the field without Building Official's approval.  
 PROCESSED BY: Traci Varland  
 DATE: 02/23/2026 PERMIT #: 2504372

- 1 INSTALL NEW OWNER-FURNISHED TYPE-I KITCHEN HOOD EXHAUST SYSTEM, FIRE SUPPRESSION SYSTEM, GREASE DUCT, AND ALL OTHER REQUIREMENTS FOR A TYPE-I SYSTEM. INSTALL HOOD CONTROL PANEL, TEMPERATURE SENSOR(S) AND HUMIDITY SENSOR(S) WITHIN HOOD UTILITY CABINET ACCORDING TO MANUFACTURER'S INSTALLATION REQUIREMENTS.
- 2 INSTALL NEW OWNER-FURNISHED ROOF-MOUNTED EXHAUST FAN. INSTALL 12" GREASE DUCT TO ROOF MOUNTED FAN. EXTEND HOOD COLLAR. BALANCE TO AIRFLOW RATE SCHEDULED ON M601. COORDINATE WITH ELECTRICAL CONTRACTOR FOR FAN CONTROLS BETWEEN HOOD AND FAN. RE: QT INSTALL DRAWINGS AND HOOD MANUFACTURER'S INSTRUCTIONS.
- 3 INSTALL OWNER-FURNISHED HOOD SUPPRESSION PUSH STATION PER MANUFACTURER'S INSTALLATION REQUIREMENTS. RE: F4-E501 FOR ELEVATION.
- 4 EXISTING ROOF EQUIPMENT TO REMAIN, SHOWN FOR REFERENCE. RE: G1-M601 TO RE-BALANCE AIRFLOWS AS REQUIRED.
- 5 EXISTING TEMPERATURE SENSOR AND HUMIDITY SENSOR SERVING KITCHEN RTU TO REMAIN, SHOWN FOR REFERENCE.
- 6 PROVIDE EXHAUST GRILLE ABOVE COMBI OVENS AND PROVIDE DUCT AS SHOWN TO TAP INTO EXISTING RESTROOM EXHAUST DUCT. RE: G1-M601 FOR MORE INFORMATION.
- 7 RE-BALANCE EXISTING DIFFUSER/GRILLE TO AIRFLOW SHOWN ON PLAN. RE: M601.
- 8 PROVIDE DIFFUSER/GRILLE AS SCHEDULED AND RECONNECT TO EXISTING DUCT MAINTAINED DURING DEMOLITION. RE-BALANCE TO AIRFLOW SHOWN ON PLAN. RE: M601.

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 RTE # 25842

**QuikTrip No. 490**  
 8870 W THUNDERBIRD RD  
 PEORIA, AZ  
 KDF JOB #: 24010

<b>QT</b>	
PROTOTYPE	RYER ADDITION
DIVISION	PHOENIX
VERSION	E3
DATE	06/25/25

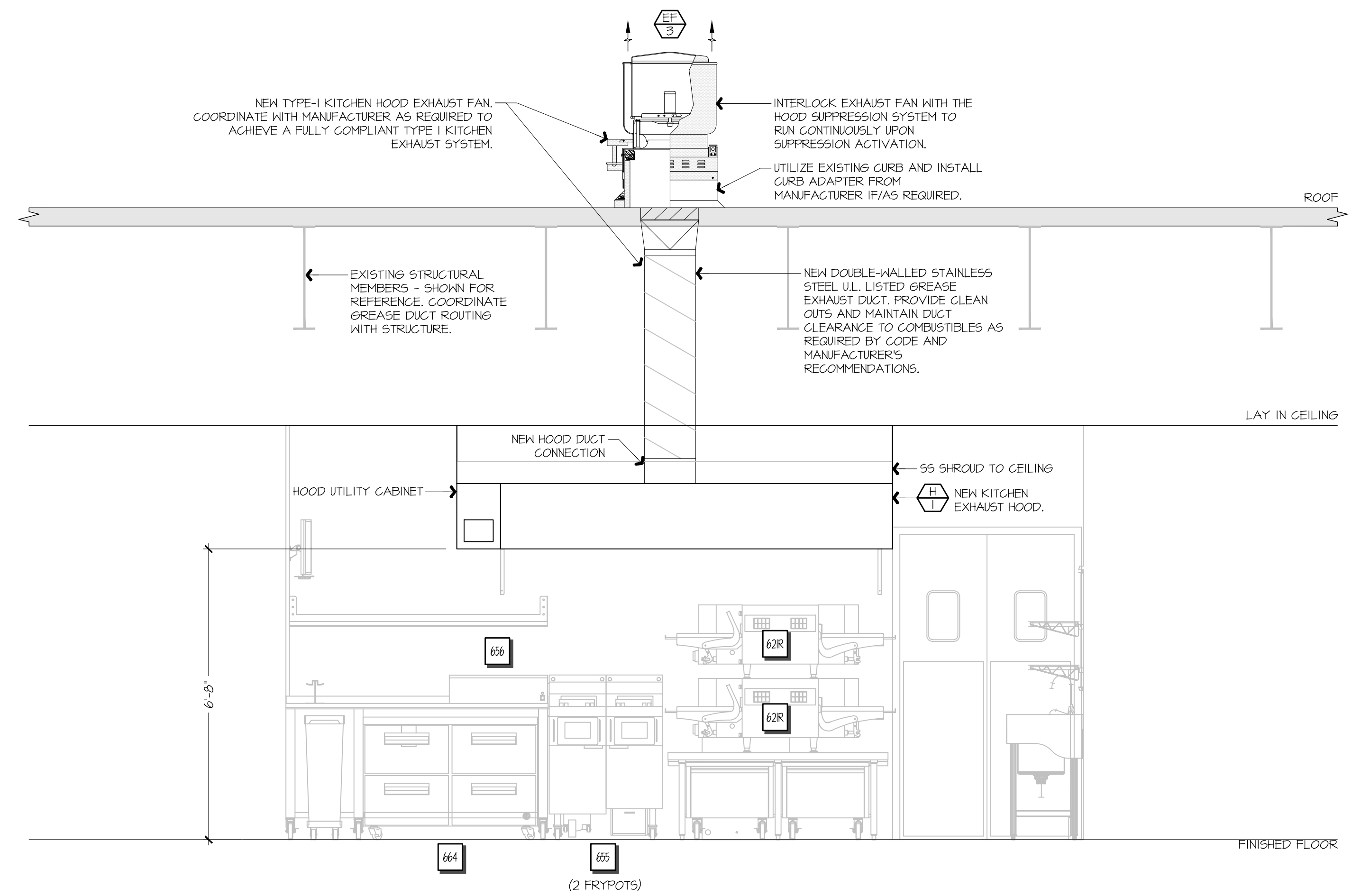
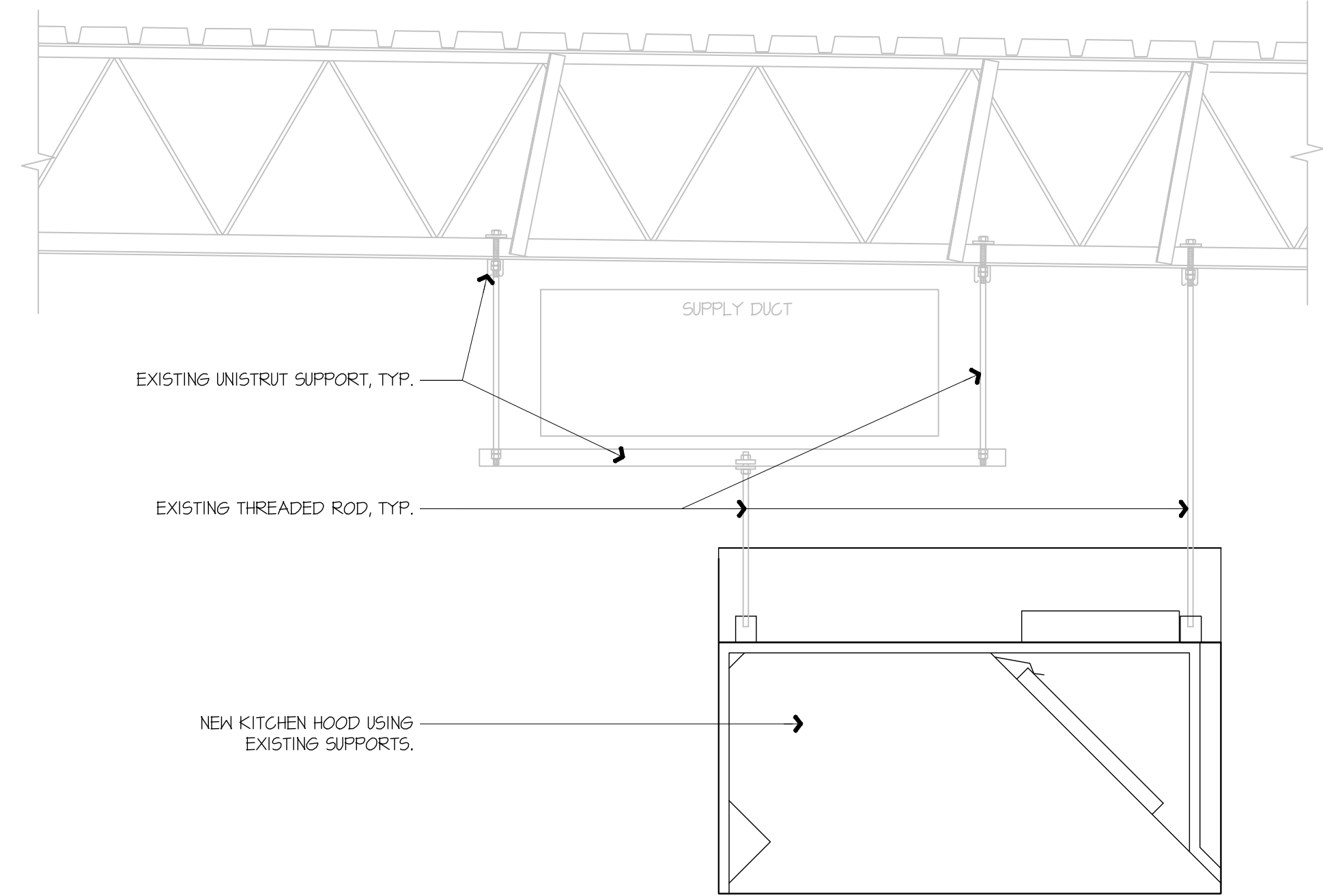
REV	DATE	DESCRIPTION

ORIGINAL ISSUE DATE: 06/18/25

SHEET TITLE:  
 MECHANICAL DUCTWORK  
 CEILING PLAN - NEW

SHEET NUMBER:  
**M102**

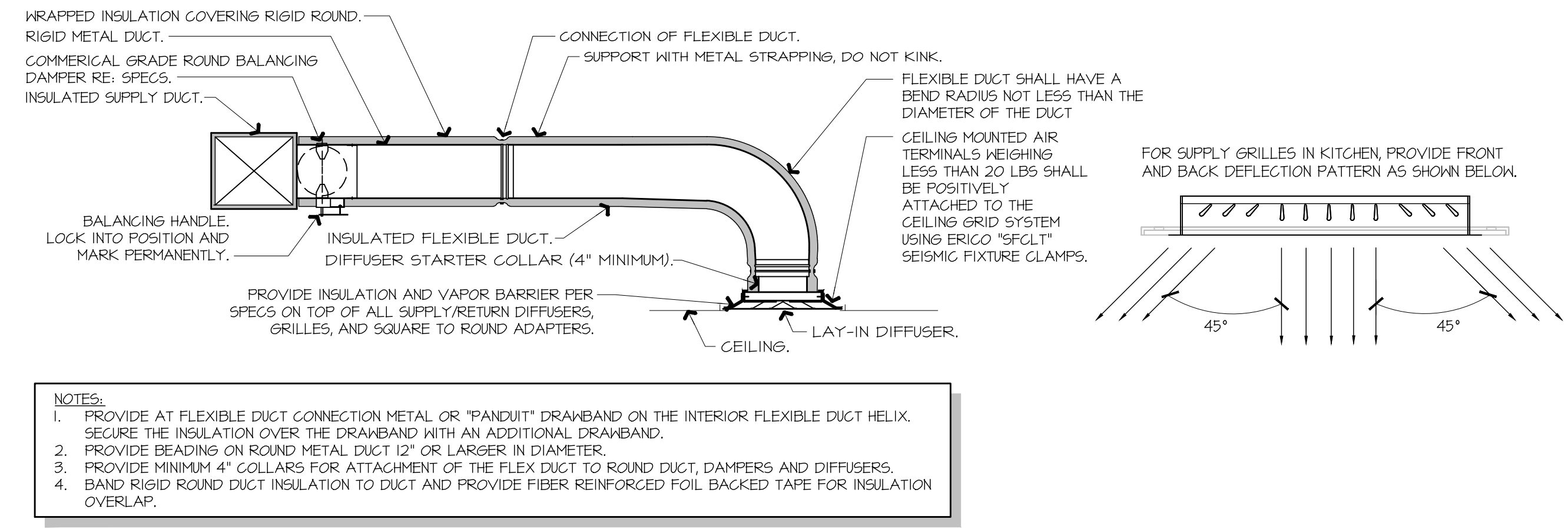
**GENERAL NOTES:**  
 KITCHEN EXHAUST HOOD SHALL BE TYPE-I RATED FOR MEDIUM DUTY COOKING APPLIANCES THAT PRODUCE GREASE OR SMOKE AS A RESULT OF THE COOKING PROCESS. HOOD SHALL BE PROVIDED WITH AUTOMATIC FIRE SUPPRESSION SYSTEM INTERLOCKED WITH EQUIPMENT SHUTDOWN CONTROLS. HOOD SHALL BE PROVIDED WITH UL 1046 GREASE FILTERS. HOOD SHALL BE LISTED IN ACCORDANCE WITH UL10. HOOD SHALL BE LISTED AND LABELED FOR 0' CLEARANCE REQUIREMENTS TO COMBUSTIBLES.  
 HEAT AND MOISTURE LOADS FOR APPLIANCES THAT DO NOT PRODUCE GREASE OR SMOKE AS A RESULT OF THE COOKING PROCESS AND ARE NOT LOCATED UNDER THE HOOD, HAVE BEEN INCORPORATED INTO THE HVAC SYSTEM CAPACITY SERVING THE KITCHEN.  
 ALL OVENS NOT LOCATED UNDERNEATH A HOOD ARE UL10B LISTED FOR VENTLESS OPERATION.  
**SEQUENCE OF OPERATION:**  
 THE FOLLOWING KITCHEN EQUIPMENT SHALL BE INTERLOCKED WITH CURRENT TRANSFORMERS THAT AUTOMATICALLY ACTIVATE THE HOOD EXHAUST FAN UPON THE KITCHEN EQUIPMENT BEING ENERGIZED: (621) PIZZA OVENS, (648) COMBI OVENS, (647) STEAM DRAWER, (655) FRYER, (656) FRY HOLDING STATION.  
 AS HOOD EXHAUST FAN ENERGIZES, RTUS SHALL MODULATE OUTSIDE AIR TO MAINTAIN BUILDING PRESSURIZATION. RE: M601.  
 HEAT SENSORS SHALL BE PROVIDED WITHIN HOOD CANOPY FOR TEMPERATURE AND HUMIDITY MONITORING. RE: MANUFACTURER DRAWINGS.  
 UPON ACTIVATION OF THE FIRE SUPPRESSION SYSTEM, ALL EQUIPMENT LOCATED UNDER THE HOOD SHALL BE SHUTDOWN VIA CONTACTORS LOCATED WITHIN THE HOOD UTILITY CABINET, AND RTU SERVING KITCHEN SPACE SHALL BE AUTOMATICALLY SHUTDOWN. RE: A13-E601.



**F1** KITCHEN EXHAUST HOOD SUPPORT DETAIL  
 NOT TO SCALE

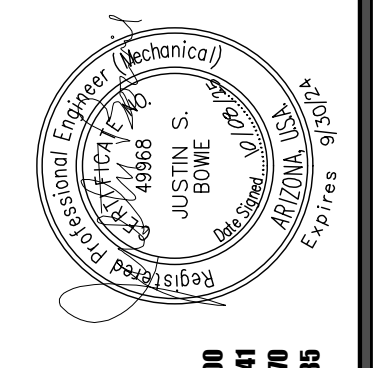
**F9** FSC REAR WALL ELEVATION - NEW  
 1/8" = 1'-0" A1-M102

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**A1** NOT USED

**A9** DIFFUSER CONNECTION DETAIL  
 NOT TO SCALE



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KDF JOB #: 24010

**QuikTrip No. 490**  
 8870 W THUNDERBIRD RD  
 PEORIA, AZ



BY THE PREPARED CONTRACTOR OR ARCHITECT FOR THE ARCHITECT'S REVIEW AND APPROVAL. THIS SET OF PLANS IS THE PROPERTY OF BOWIE TIGRAS ENGINEERING INC. AND IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF BOWIE TIGRAS ENGINEERING INC.

PROTOTYPE	FRYER ADDITION
DIVISION	PHOENIX
VERSION	03
DATE	06/25/25

REV	DATE	DESCRIPTION

ORIGINAL ISSUE DATE: 06/18/25  
 SHEET TITLE:  
 MECHANICAL SECTIONS & DETAILS

SHEET NUMBER:  
**M501**

**HOOD INFORMATION - JOB#7284466**

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST FLENUM	HOOD CONSTRUCTION	HOOD CONFIN			
WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP					END TO END	ROW			
1		6030 ND-2	CAPTIVEAIRE	9' 0"	450 DEG	I	MEDIUM	150	1350	4" 12" 1350	1718	-0.540"	430 55 WHERE EXPOSED	ALONE	ALONE

**FIRE SYSTEM INFORMATION - JOB#7284466**

FIRE SYSTEM NO	TAG	TYPE	SIZE	MAX FP	DESIGN FP	INSTALLATION
1		TANK FS	4.0	20	20	FIRE CABINET LEFT LEFT, HOOD I

**HOOD INFORMATION**

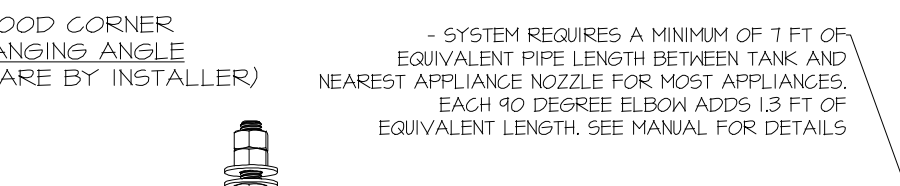
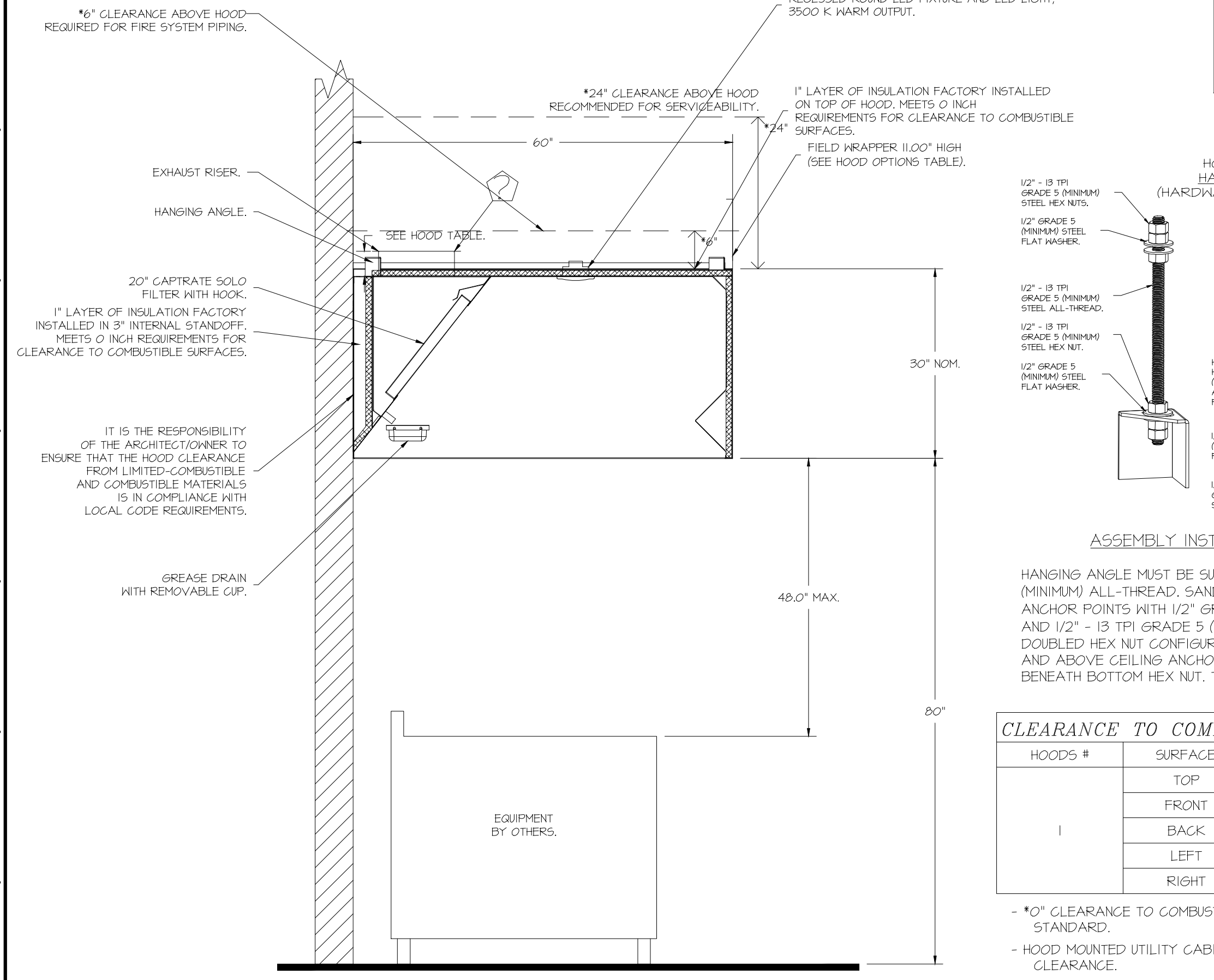
HOOD TAG	TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GAUGE	AVERAGE FOOT CANDLES @ 30" AFF	LOCATION	SIZE	TYPE	SIZE	ELECTRICAL MODEL #	QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING HEIGHT
1	CAPTRATE SOLO FILTER	6	20"	16"	85% SEE FILTER SPEC	6	RECESSED ROUND	NO	66	LEFT	12"x60"x30"	TANK FS	4.0	DCV-1011	1 LIGHT 1 FAN	YES	887 LBS

**HOOD OPTIONS**

HOOD TAG	OPTION
1	FIELD WRAPPER 11.00" HIGH FRONT, LEFT, RIGHT, RIGHT END STANDOFF (FINISHED) 1" WIDE 60" LONG INSULATED. INSULATION FOR TOP OF HOOD. INSULATION FOR BACK OF HOOD. SENSOR-CV.

**CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH**

NSF NFA #96 NSF E.T.L. LISTED 3054804-001 TO UL 710 & UL710 STANDARDS



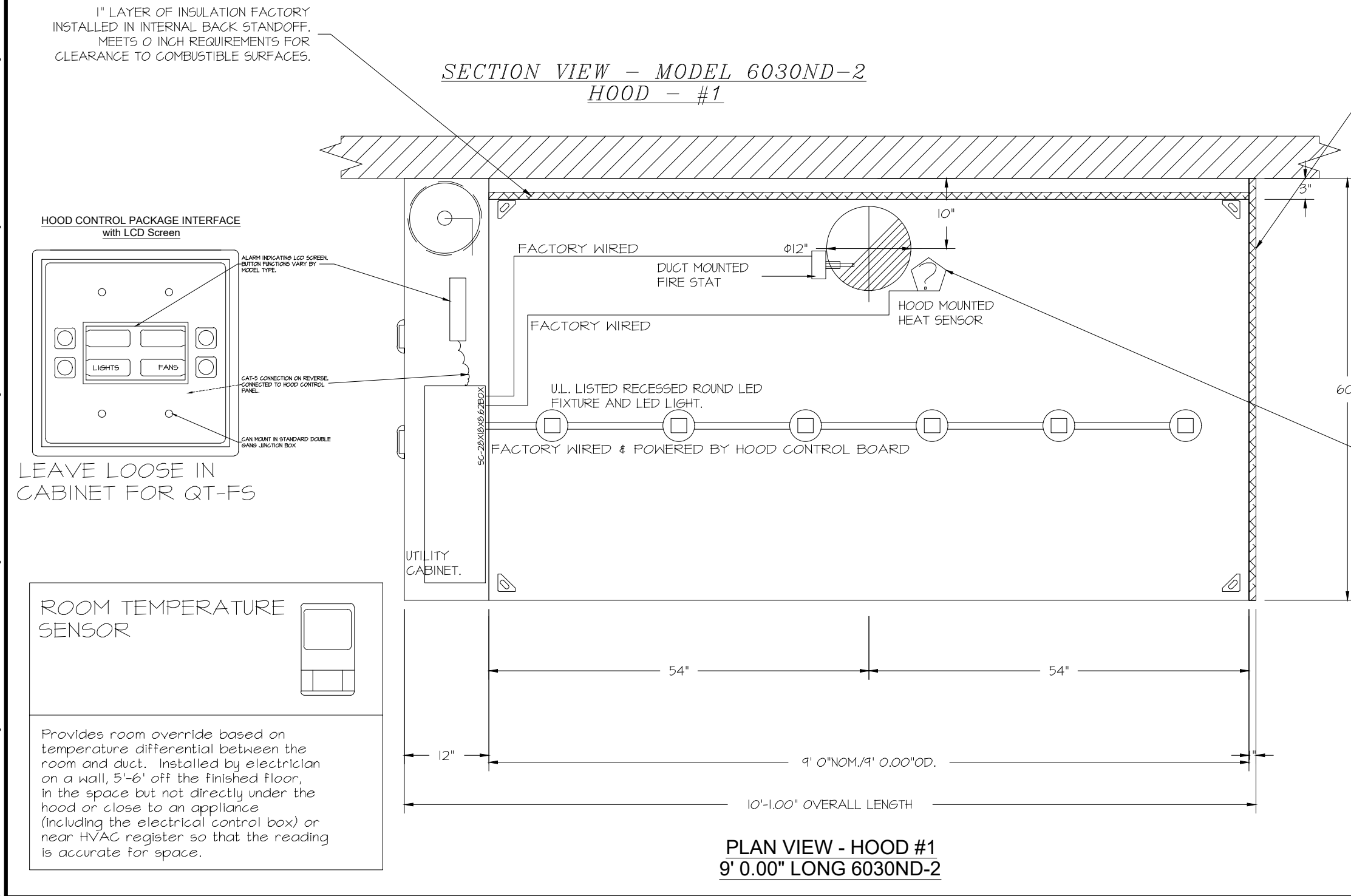
**ASSEMBLY INSTRUCTIONS**

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 51 FT-LBS.

**CLEARANCE TO COMBUSTIBLES**

HOODS #	SURFACE	*CLEARANCE
1	TOP	0"
1	FRONT	0"
1	BACK	0"
1	LEFT	0"
1	RIGHT	0"

\*0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL10 STANDARD.  
- HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.

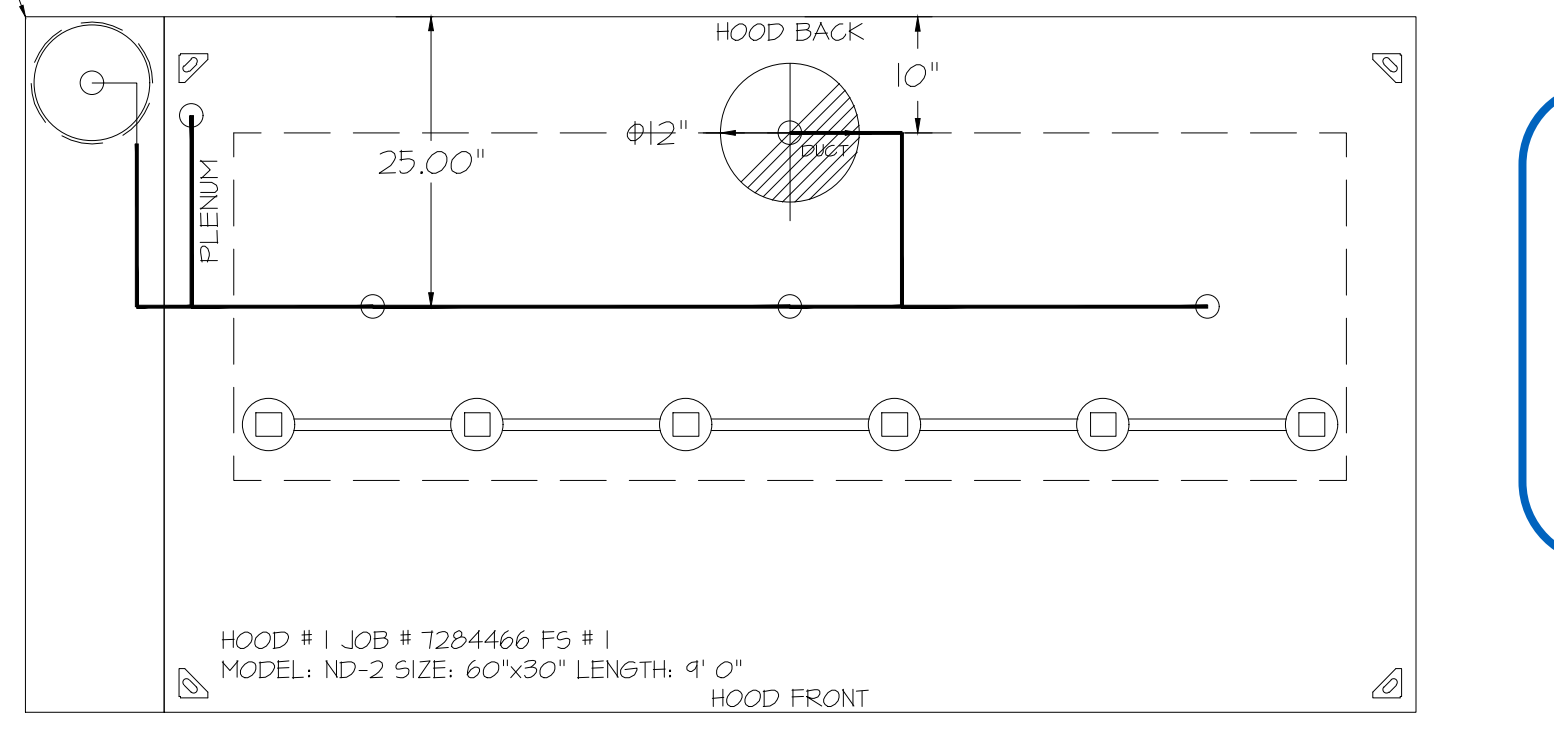


**ROOM TEMPERATURE SENSOR**

Provides room override based on temperature differential between the room and duct. Installed by electrician on a wall, 5'-6" off the finished floor, in the space but not directly under the hood or close to an appliance (including the electrical control box) or near HVAC register so that the reading is accurate for space.

**FIRE SYSTEM PARTS LIST KEY**

FIRE SYSTEM TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
0 - 0	TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
0 - 0	TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
0 - 0	12"-28001-3244-01-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS, NO. CLOSE ON TEMP RISE AT 360°F. (A0034310).	1	0
0 - 0	32-00002 QUIK SEAL - 1/2" (UL).	1	0
0 - 0	442R133 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW BRASS.	1	0
0 - 0	442R133 1/2" X 1/4" BRASS REDUCING BUSHING.	1	0
0 - 0	19525 1/2" 40 PRO-PRESS ELBOW WITH 1/2" ANPT FEMALE CONNECTION, VIEGA.	1	0
0 - 0	19580 1/2" X 1/2" PRO-PRESS TEE X 1/2" ANPT FEMALE CONNECTION, VIEGA.	1	0
0 - 0	81-300001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	1	0
0 - 0	81-300030-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM SUPERVISED, TANK FIRE SUPPRESSION.	1	0
0 - 0	81-300033-001 DIN CONNECTOR, CANFIELD PART #5,560-201-EUQA, TANK FIRE SUPPRESSION, SUBMINATURE SOLENOID CONNECTION (CED VENDOR 303T).	1	0
0 - 0	81-300052-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	4	0
0 - 0	40545919C PRO PRESS 1/2 PRESS X PRESS 40 ELBOW LD.	4	0
0 - 0	4041200PC PRO PRESS P621 1/2 PRESS TEE LD.	4	0
0 - 0	48644A15 HARDWARE, DATALOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	2	0
0 - 0	40034333 JUNCTION BOX FOR MANUAL PULL STATION, 1.5" DEEP BACK BOX, RED COLOR.	1	0
0 - 0	A31484 1/4" NPT SCHRADER VALVE AND CAP, JB INDUSTRIES, 1/4" FLARE X 1/4" NPT HALF UNON, USED ON TANK SERVICE PORT.	1	0
0 - 0	BH43 3/8" BLACK IRON 40 BOLL.	2	0
0 - 0	DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	1	0
0 - 0	TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	3	0
0 - 0	TFS-101 TANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	1	0
0 - 0	HK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	1	0
16 - 16	74210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	5	0
16 - 16	OL-F NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL ELBOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE).	5	0
26 - 26	GS4-3/8 QUIK SEAL - 3/8" (UL).	5	0
34 - 34	A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT, RED COLOR.	1	0



**BUILDING DEVELOPMENT**

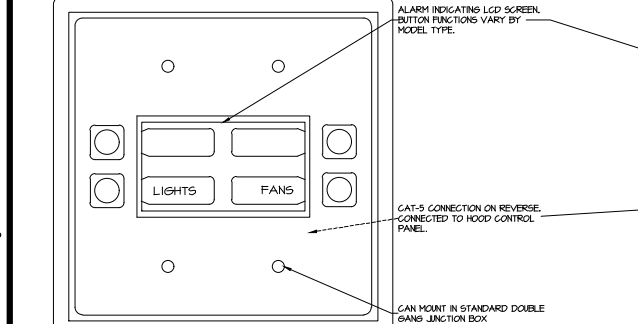
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DATE: **02/23/2026** PERMIT # **2504372**

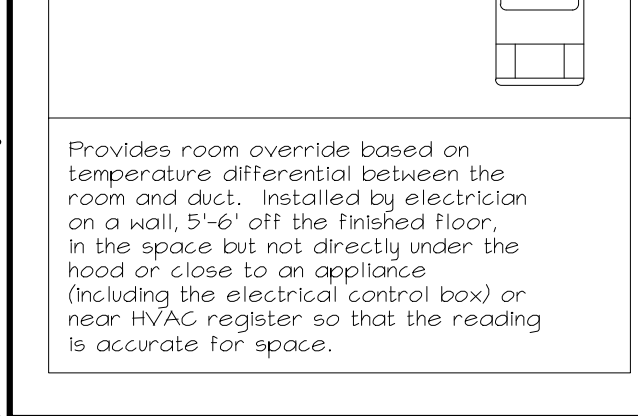
**SECTION VIEW - MODEL 6030ND-2 HOOD - #1**

**HOOD CONTROL PACKAGE INTERFACE with LCD Screen**

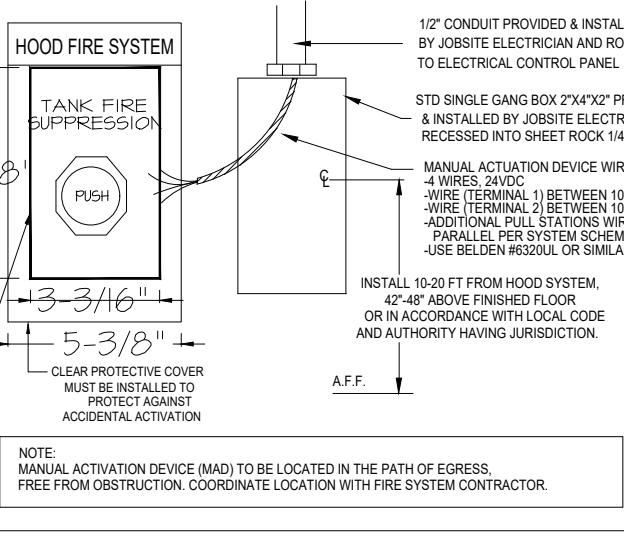
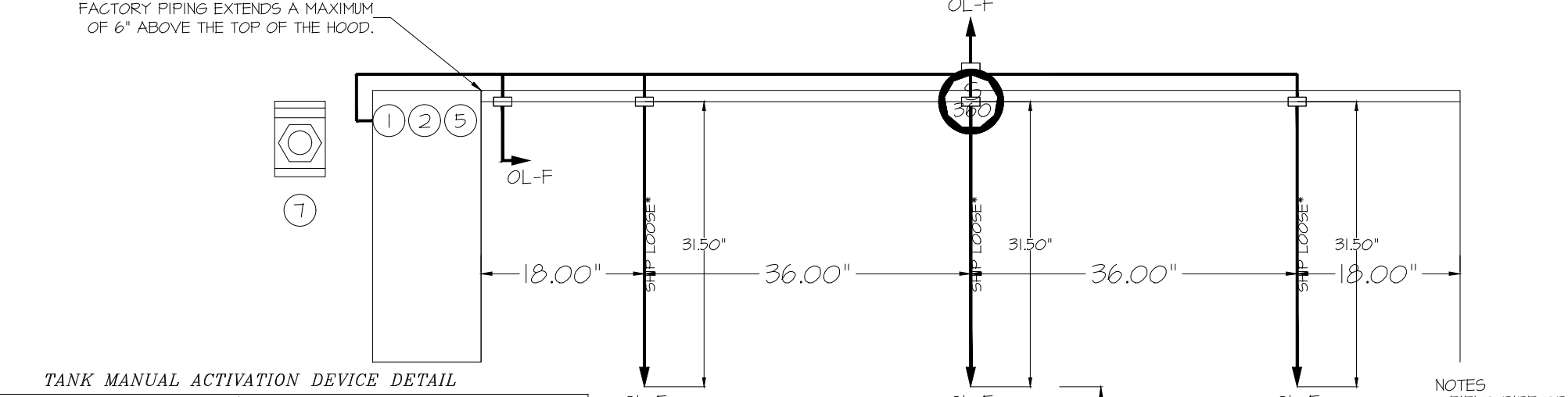


LEAVE LOOSE IN CABINET FOR QT-F5

**ROOM TEMPERATURE SENSOR**



**PLAN VIEW - HOOD #1 9' 0.00" LONG 6030ND-2**



**LEGEND - FIRE CABINET TANK SYSTEM**

AGENT DISTRIBUTION PIPING LIMITATIONS	MAX PIPE LENGTH (FT)
MAX SUPPLY LINE TO FIRST OVERLAPPING NOZZLE	42
OVERLAPPING NOZZLE APPLIANCE BRANCH	10
DEDICATED NOZZLE APPLIANCE BRANCH	10

**REVISIONS**

NO.	DESCRIPTION	DATE

**CAPTIVEAIRE**

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KDF JOB #: 24010

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PEORIA, AZ

12101 East 51st Street, Suite 101A, Tulsa, OK 74146 PHONE: (918) 258 - 0291 FAX: 9182275947 EMAIL: reg@captivair.com

**QT**

QT - 63 New Store Plg Going Forward (DW) (450F)

Various Locations,  
Tulsa, OK, 74136

PROTOTYPE	REVISION

REV	DATE	DESCRIPTION

DATE: 4/29/2025  
DWG.#: 7284466  
DRAWN BY: R.H.80  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET TITLE:  
MECHANICAL HOOD DETAILS

SHEET NUMBER:  
M510

**EXHAUST FAN INFORMATION - JOB#7284466**

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	EF-3 (TYPE I)	1	DU50HFA	CAPTIVEAIRE	1350	0.750	1543	TEAO-ECM	0.500	0.3710	1	208	3.8	513 FPM	74	16.6
2	EF-1 - RR FAN	1	DR33HFA	CAPTIVEAIRE	600	0.500	1304	TEAO-ECM	0.333	0.1530	1	115	4.3	297 FPM	58	8.8
3	TF-1 - TRANS FAN	1	CFA 500CA	CAPTIVEAIRE	350	0.500	725	GENERAL PURPOSE	0.310	0.2220	1	115	2.2		35	N/A
4	VF-1 - CO2 FAN	1	DFA-300-CA	CAPTIVEAIRE	600	0.100	1846	GENERAL PURPOSE	0.333	0.1480	1	115	2.6		12	12.9

**FAN ACCESSORIES**

FAN UNIT NO	TAG	EXHAUST			SUPPLY		
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER
1	EF-3 (TYPE I)	YES					
2	EF-1 - RR FAN		YES				
3	TF-1 - TRANS FAN						
4	VF-1 - CO2 FAN						

**FAN OPTIONS**

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	EF-3 (TYPE I)	1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR50HFA - SHIP LOOSE - FOR GREASE DUCTS
		1	ECM WIRING PACKAGE - EXHAUST - MODBUS CONTROL -M5G- (TELCO), CGW ROTATION
		1	2 YEAR PARTS WARRANTY
2	EF-1 - RR FAN	1	15-BDD DAMPER
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CGW ROTATION
		1	2 YEAR PARTS WARRANTY
		1	FAN CONTROL - 3 AMP FAN MOUNTED SPEED CONTROL FOR CFA CEILING FANS
3	TF-1 - TRANS FAN	1	2 YEAR PARTS WARRANTY
		1	FAN CONTROL - 3 AMP WHITE SPEED CONTROL FOR CFA CEILING FAN
		1	2 YEAR PARTS WARRANTY
4	VF-1 - CO2 FAN	1	FAN CONTROL - 3 AMP WHITE SPEED CONTROL FOR CFA CEILING FAN
		1	2 YEAR PARTS WARRANTY

**CURB ASSEMBLIES**

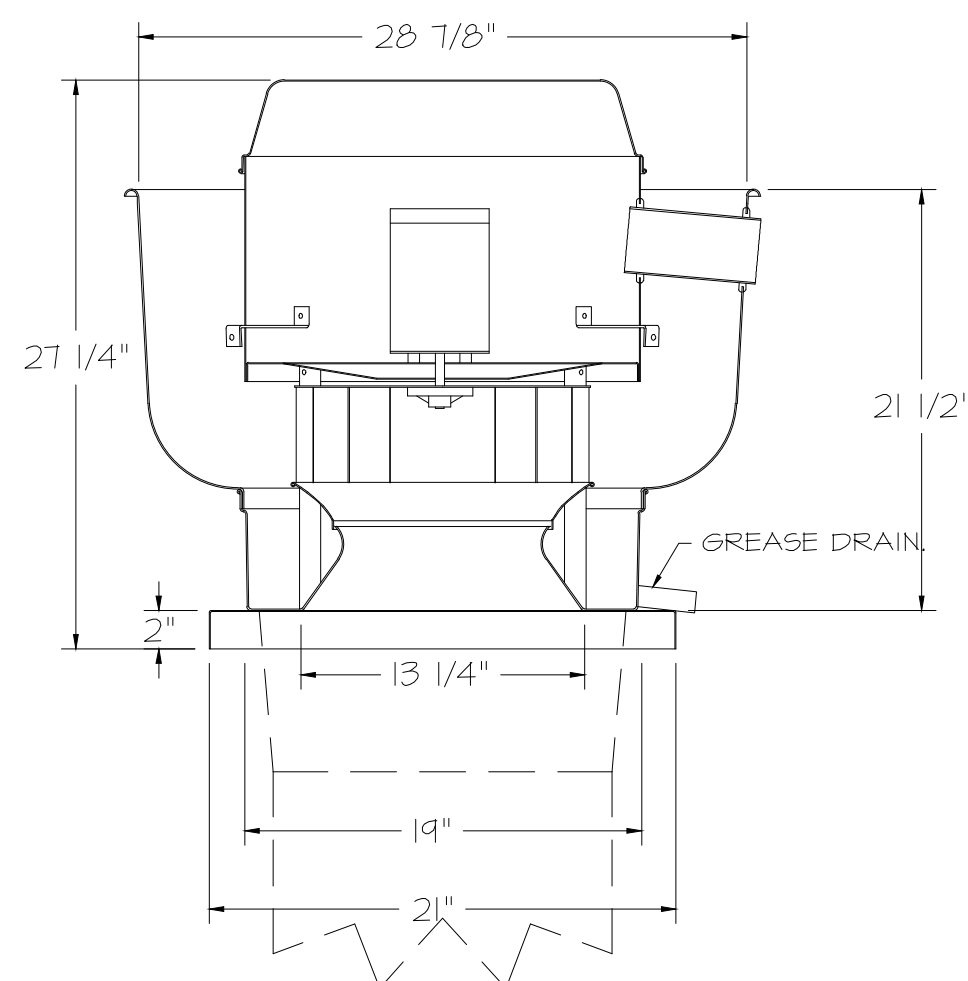
NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	EF-3 (TYPE I)	34 LBS	CURB	14.500"W X 14.500"L X 24.000"H VENTED HINGED.
2	# 2	EF-1 - RR FAN	31 LBS	CURB	14.500"W X 14.500"L X 20.000"H HINGED.

**FAN SOUND DATA**

FAN UNIT NO	TAG	MOTOR	SOUND DATA				OCTAVE BAND SOUND DATA							
			LWA	SONES @ 5 FT	DBA @ 5 FT	DISTANCE (FT)	63 HZ	125 HZ	250 HZ	500 HZ	1 KHZ	2 KHZ	4 KHZ	8 KHZ
1	EF-3 (TYPE I)	EXHAUST	80	16.59126560875544	68.5	5	76.6	78	85	76.5	71.9	69.8	66	57
2	EF-1 - RR FAN	EXHAUST	70.9	8.826390394279191	59.4	5	68.3	75.1	73.9	61.5	64.2	62.8	55.9	44.9
4	VF-1 - CO2 FAN	EXHAUST	76.4	12.925453307131557	64.9	5	65.8	74	74	72.2	69.8	68.5	68	68.2

FAN #3 CFA 500CA - EXHAUST FAN (TF-1 - TRANS FAN)

FAN #1 DU50HFA - EXHAUST FAN (EF-3 (TYPE I))



**FEATURES:**

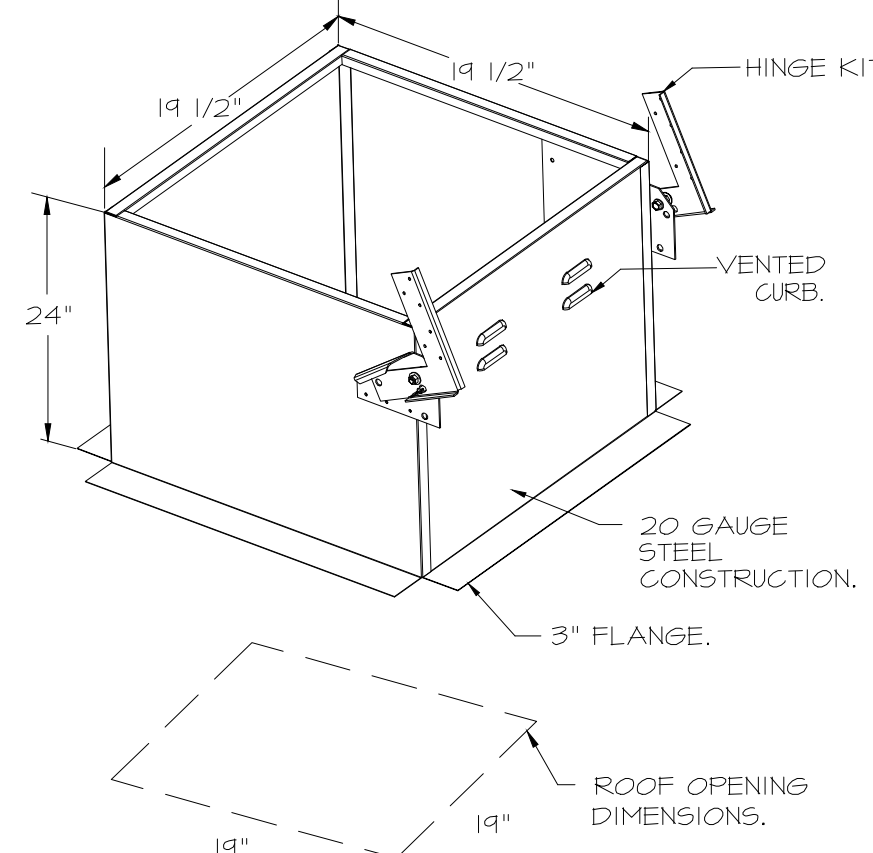
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND UL6-9645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT 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/DR50HFA SHIP LOOSE - FOR GREASE DUCTS.
- ECM WIRING PACKAGE - EXHAUST - MODBUS CONTROL -M5G- (TELCO), CGW ROTATION
- 2 YEAR PARTS WARRANTY.



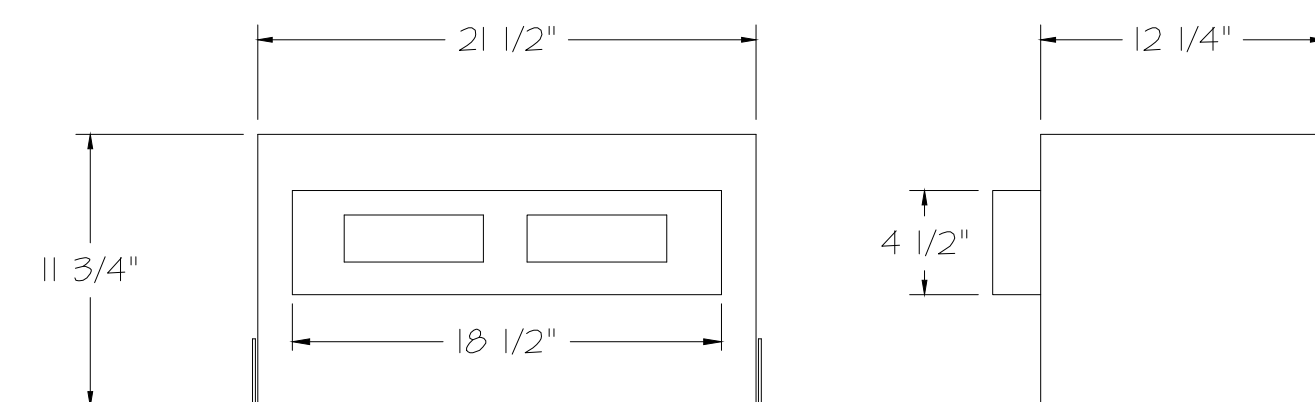
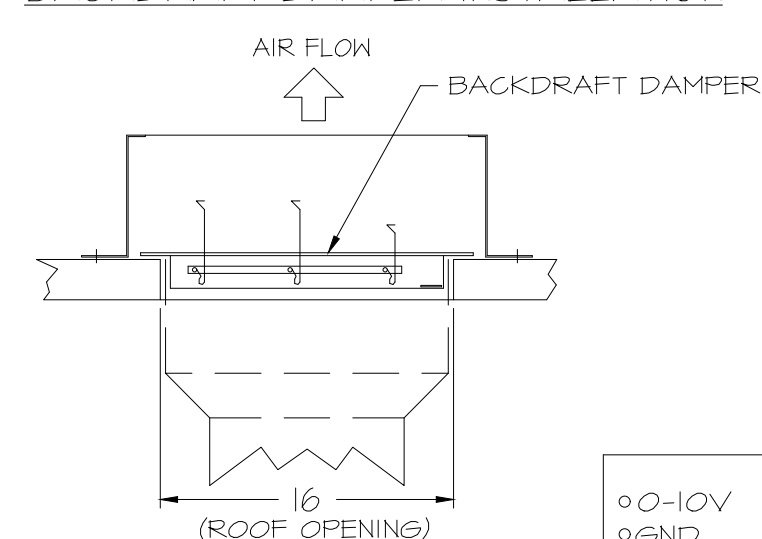
FAN #2 DR33HFA - EXHAUST FAN (EF-1 - RR FAN)

**FEATURES:**

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- UL705.
- SAFETY DISCONNECT.
- STANDARD BIRD SCREEN.
- SPEED CONTROL.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).

- OPTIONS**
- 15-BDD DAMPER.
  - ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CGW ROTATION.
  - 2 YEAR PARTS WARRANTY.

**BACKDRAFT DAMPER INSTALLATION**

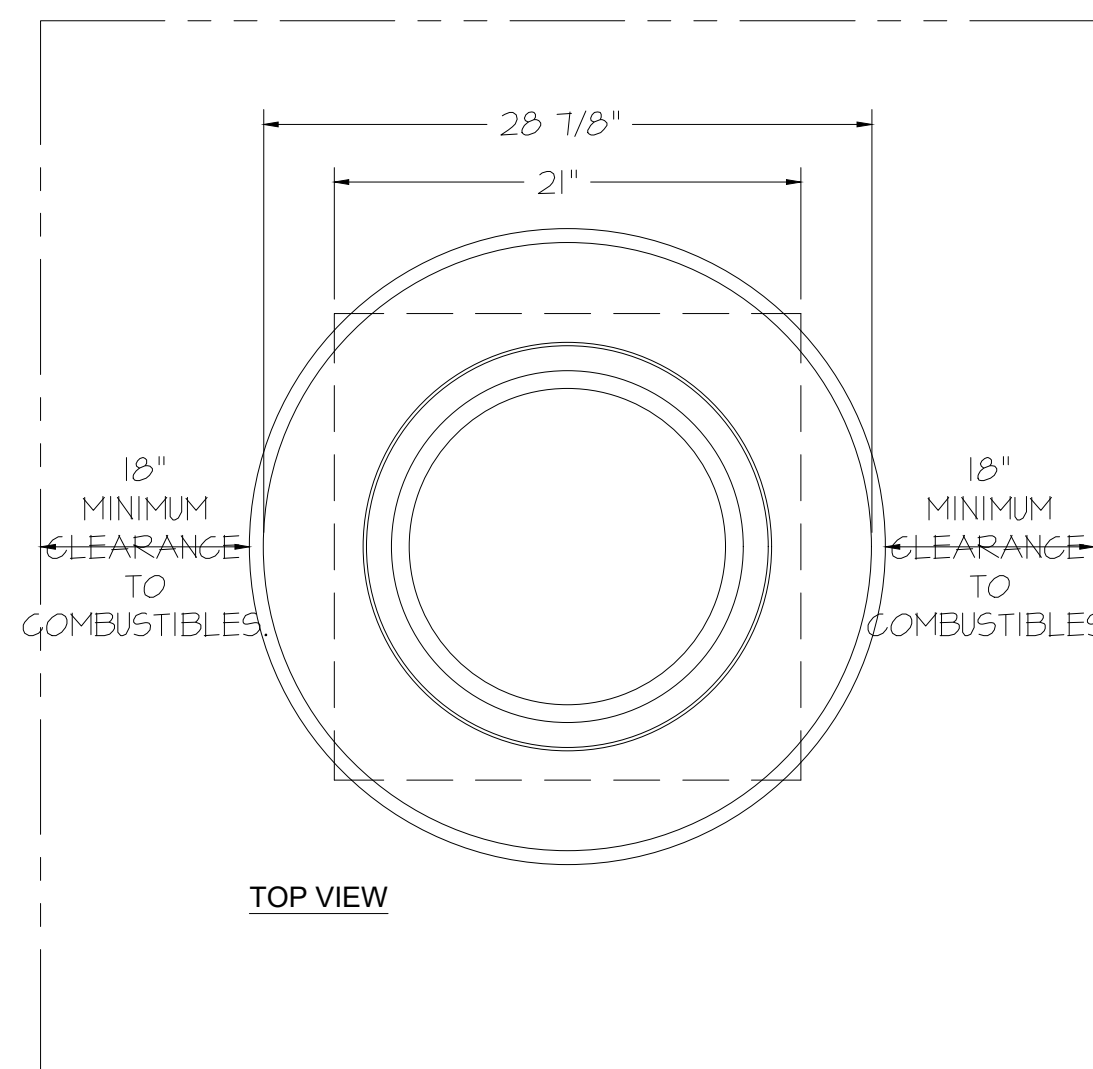
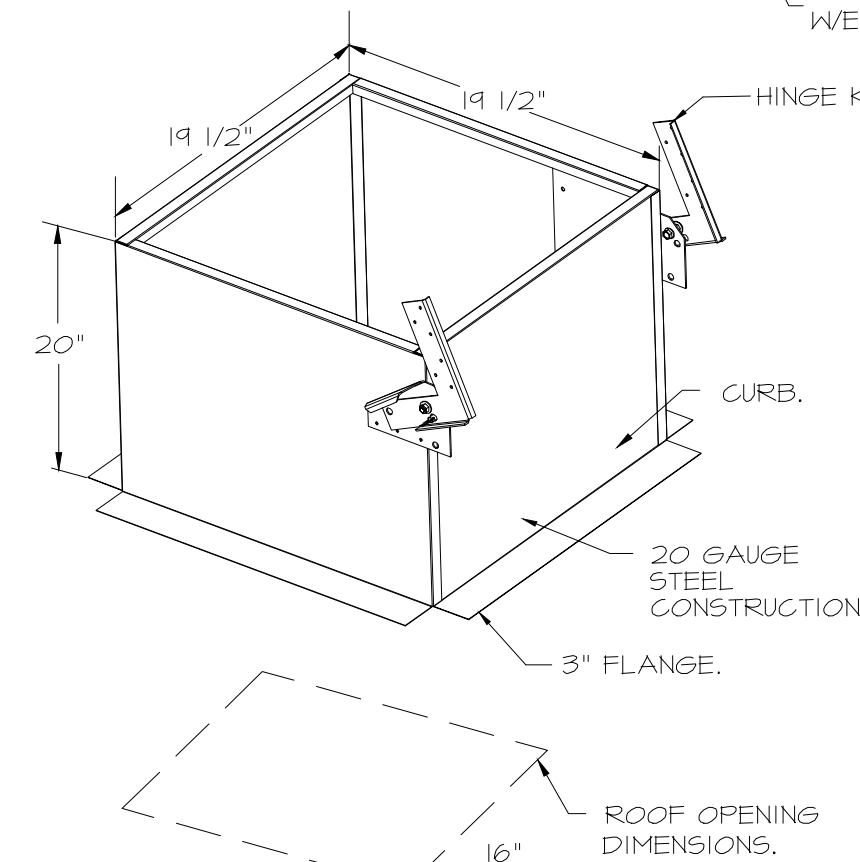


**FEATURES:**

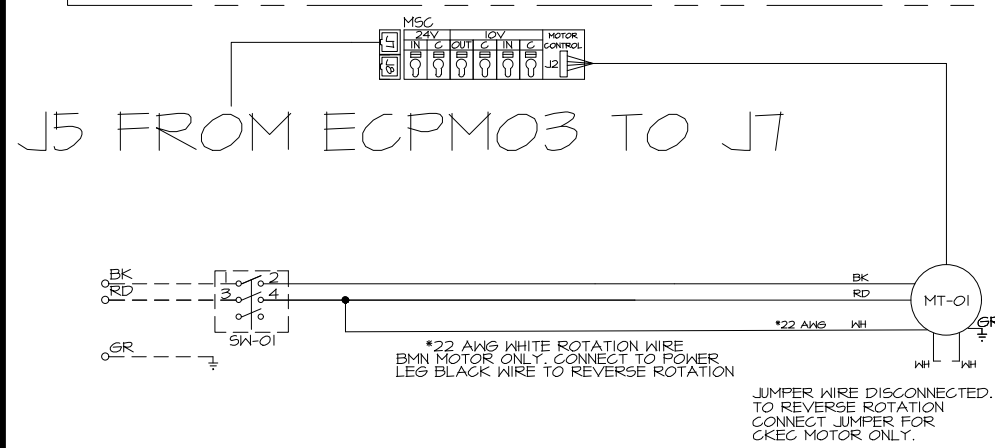
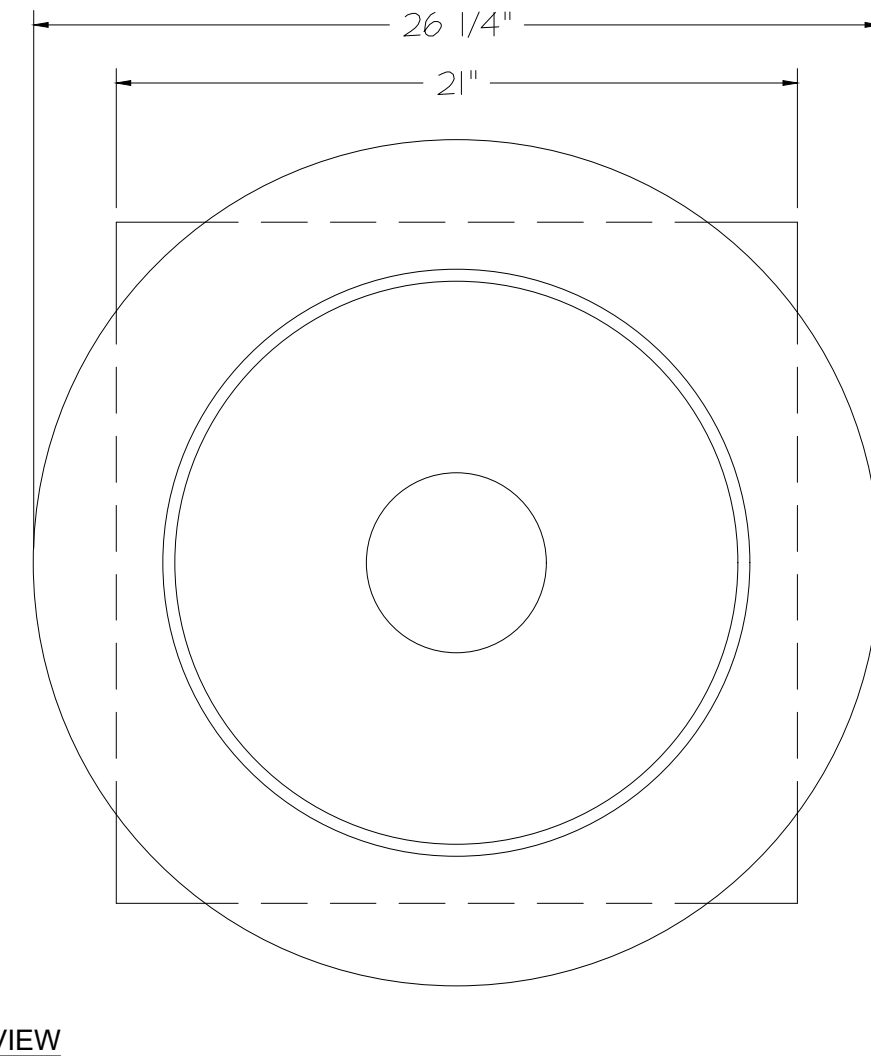
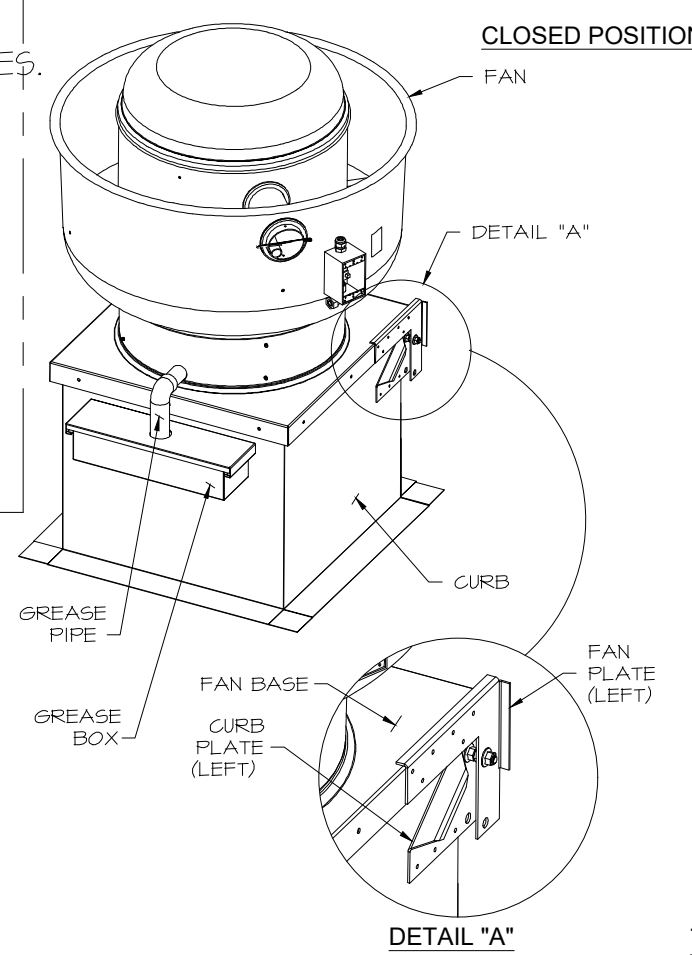
- 1/2" ACOUSTIC HOUSING INSULATION.
- 20 GA. GALVANIZED STEEL HOUSING.
- PLUG TYPE DISCONNECT.
- BUILT IN AUTOMATIC BACKDRAFT DAMPER.
- AMCA SOUND 4 AIR CERTIFIED.
- UL LISTED.
- CAN BE INSTALLED IN CEILING OR HALL.
- 8 POSITION MOUNTING BRACKETS.

**OPTIONS**

- FAN CONTROL - 3 AMP FAN MOUNTED SPEED CONTROL FOR CFA CEILING FANS.
- 2 YEAR PARTS WARRANTY.



**HINGE KIT INSTALLATION**



**BUILDING DEVELOPMENT**  
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PROCESSED BY: Traci Varland  
DATE: 02/23/2026 PERMIT #: 2504372

**REVISIONS**

NO.	DESCRIPTION	DATE

**CAPTIVEAIRE**  
Tulsa Office  
12101 East 51st Street, Suite 101A, Tulsa, OK 74146 PHONE: (918) 258-0291 FAX: 9182275947 EMAIL: reg@captivaire.com  
www.captivaire.com

**Bowie Tiglas Engineering Inc.**  
Consulting Engineers  
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Fax: 602.982.0541  
24820 N 18TH AVE STE 170  
PEORIA, AZ 85085  
BTE # 25842  
KDF JOB #: 24010

**QuikTrip No. 490**  
8870 W THUNDERBIRD RD  
PEORIA, AZ

**QT**

PROTOTYPE	REVISION

REV	DATE	DESCRIPTION

QT - 63 New Store Pkg Going Forward (DW) (450F)  
Various Locations,  
Tulsa, OK, 74136

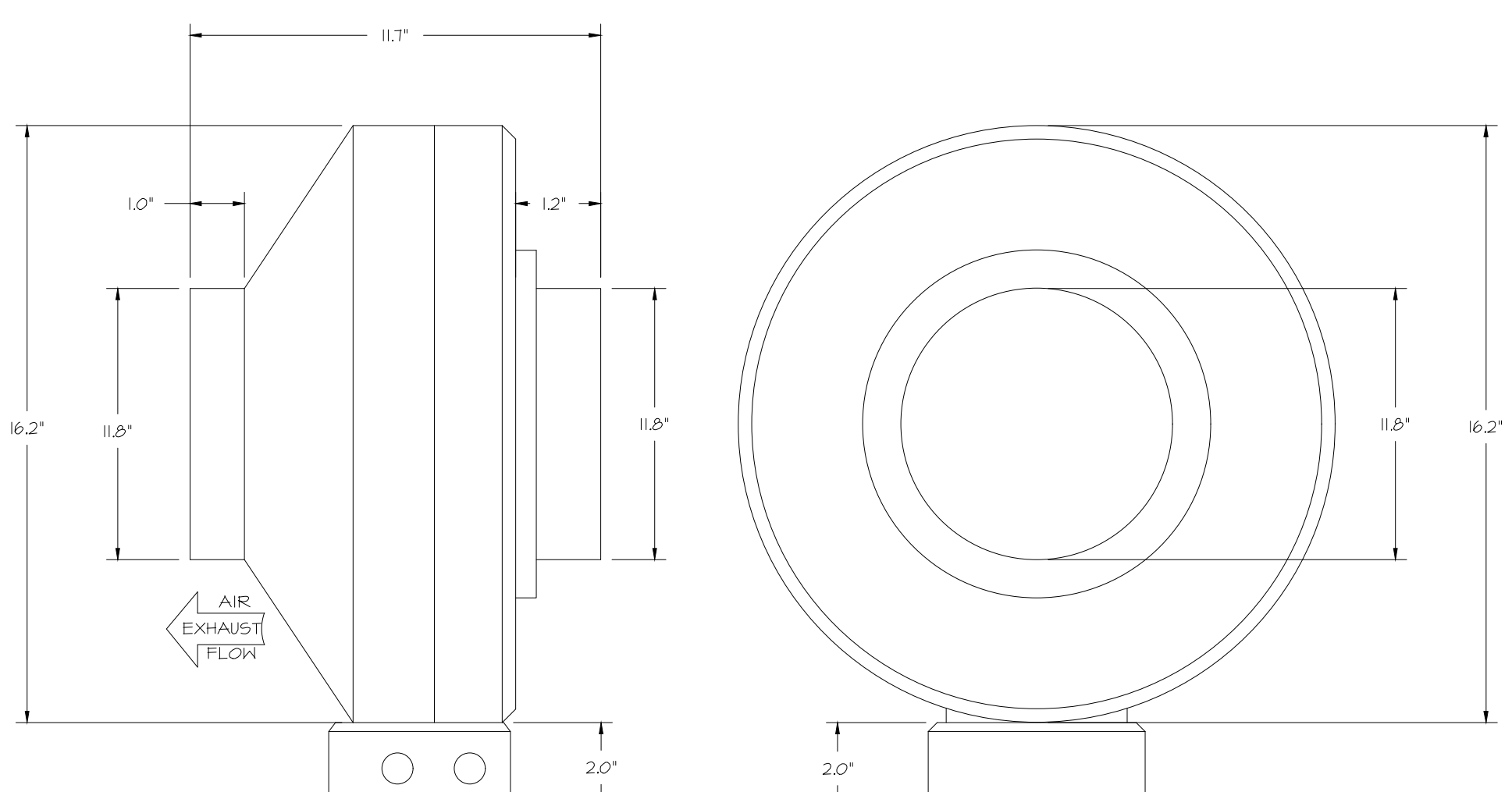
DATE: 4/29/2025  
DWG.#: 7284466  
DRAWN BY: RJH-80  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING

SHEET TITLE:  
MECHANICAL HOOD DETAILS

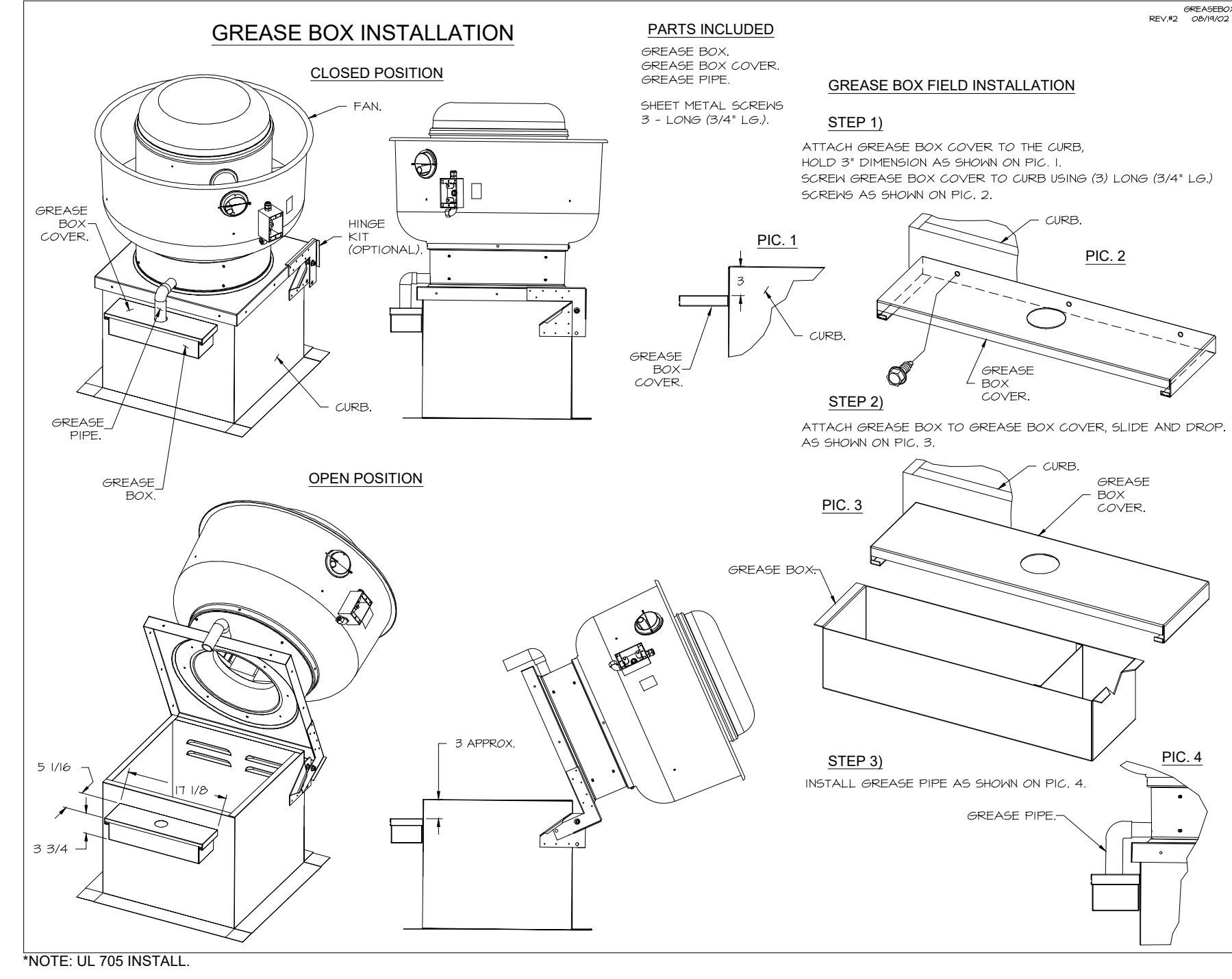
SHEET NUMBER:  
M511

SHEET NO. 2

FAN #4 DFA-300-CA - EXHAUST FAN (VF-1 - G02 FAN)

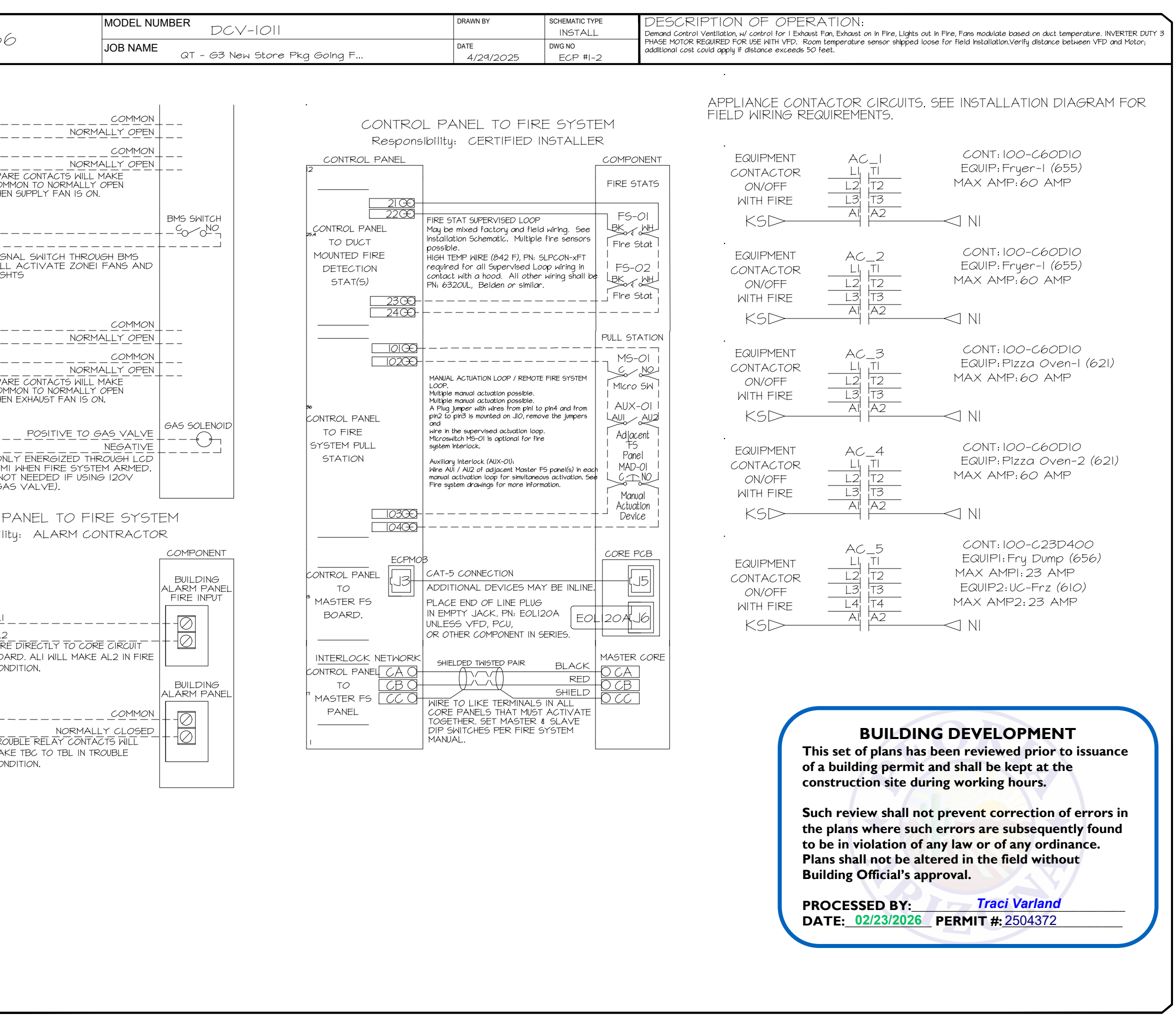
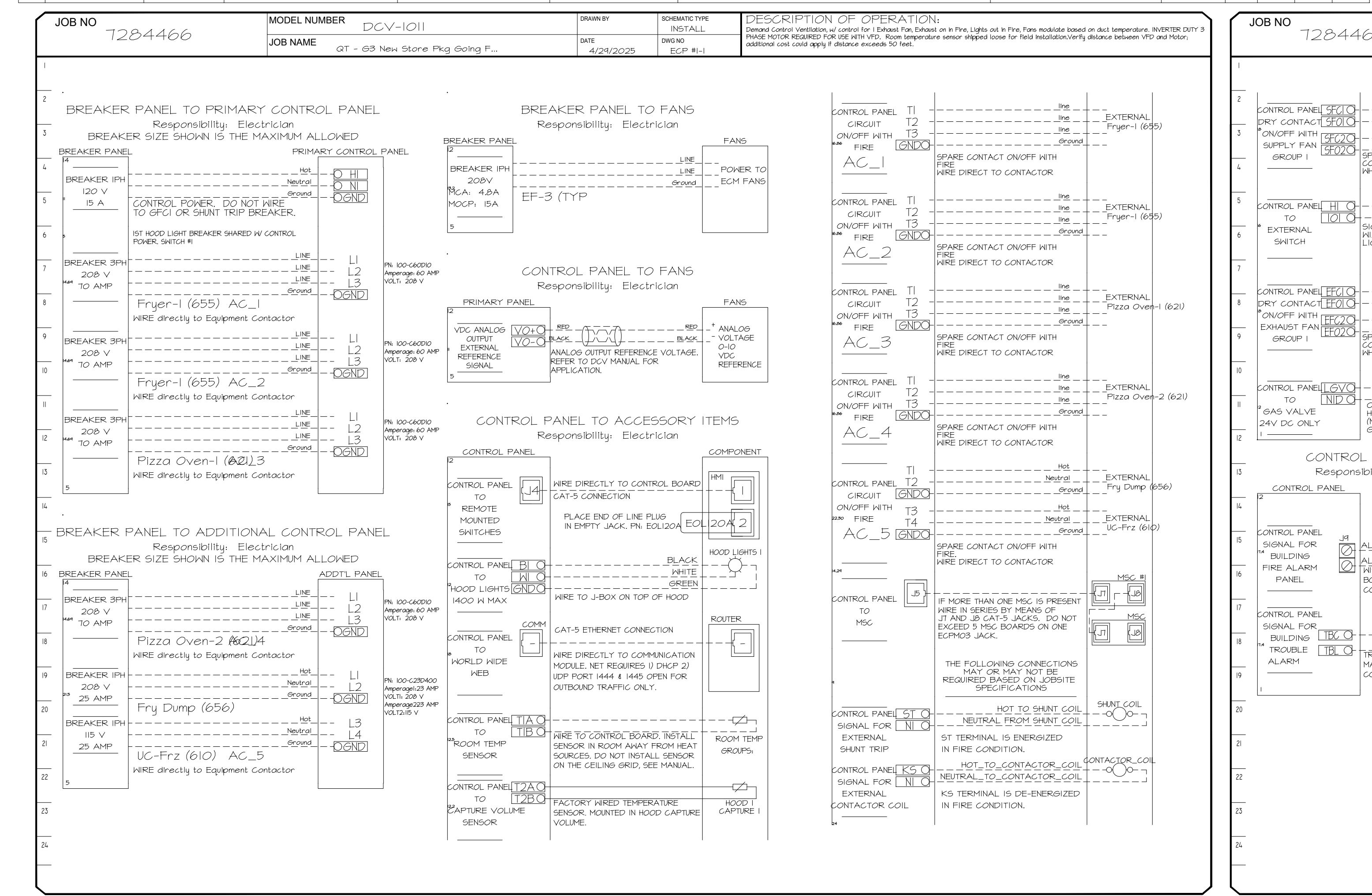


- FEATURES:**
- 20 GA. GALVANIZED STEEL HOUSING.
  - STANDARD 4" - 12" ROUND DUCT CONNECTIONS.
  - EASILY ACCESSIBLE J-BOX.
  - UL507 LISTED.
  - EXTREMELY QUIET OPERATION.
- OPTIONS:**
- FAN CONTROL - 3 AMP WHITE SPEED CONTROL FOR CFA CEILING FAN.
  - 2 YEAR PARTS WARRANTY.



**ELECTRICAL PACKAGE - JOB#7284466**

NO	TAG	PACKAGE	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	HP	VOLT	FLA	
1	TYPE I ECP	DCV-1011	UTILITY CABINET LEFT	SHIP LOOSE W/ PREWIRE	1 LIGHT 1 FAN	SMART CONTROLS DCV	EF-3 (TYPE 1)	EXHAUST	1	0.500	208	3.0



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 www.captivaware.com

**REVISIONS**

NO.	DESCRIPTION	DATE

**PROTOTYPE**    **RYER ADDITION**  
**DIVISION**    **PHONIX**  
**VERSION**    **63**  
**DATE**    **06/25/25**

**DATE:** 4/29/2025  
**DWG.#:** 7284466  
**DRAWN BY:** R.H-80  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET TITLE:**  
 MECHANICAL HOOD  
 DETAILS

**SHEET NO.:**  
 M512

**REV**    **DATE**    **DESCRIPTION**


**ORIGINAL ISSUE DATE:** 06/18/25

**REV**    **DATE**    **DESCRIPTION**


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**QuikTrip No. 490**

8870 W THUNDERBIRD RD  
 PEORIA, AZ

QT - 63 New Store Pkg Going Forward (DW) (450F)  
 Various Locations,  
 Tulsa, OK, 74136

**SHEET NO.:**  
 M512

DUCTWORK #1 PARTS - JOB#7284466 DOUBLE WALL OFFSET										
TAG	PART #	CFM	GPM	ZONE	COVEREDBY	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
HI-EI	DW16DWRISER-2R-5	1350				-0.54	7.31	0.00	1	DOUBLE WALL RISER COVER - USED ON 12" INNER RISER, 4' LONG - 2 LAYERS REDUCED CLEARANCE - 16" STAINLESS STEEL OUTER RISER SHELL ASSEMBLY. INCLUDES INSULATION & SINGLE V CLAMPS FOR INNER & OUTER CONNECTIONS.
P1	DW1230DWASY-2R-5	1350				-0.0381	14.16	1718.81	1	DOUBLE WALL DUCT - 12" INNER 30" DUCT - 2 LAYERS REDUCED CLEARANCE - 16" STAINLESS STEEL OUTER SHELL.
SYSTEM AT P1						-0.5181	0.00			
P2	DW124TDWALD-2R-5	1350				-0.0128	83.19	1718.81	1	DOUBLE WALL ADJUSTABLE DUCT - 12" INNER DUCT - 2 LAYERS REDUCED CLEARANCE - 16" STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11' / MAX LENGTH = 48.5' / ADJUSTMENT = 30.5" / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL "V" CLAMPS.
SYSTEM AT P2						-0.5915	0.00			
P3	DW1230DWASY-2R-5	1350				-0.0442	14.16	1718.81	1	DOUBLE WALL DUCT - 12" INNER 30" DUCT - 2 LAYERS REDUCED CLEARANCE - 16" STAINLESS STEEL OUTER SHELL.
SYSTEM AT P3						-0.6351	0.00			
P4	DW124TDWALD-2R-5	1350				-0.0169	83.19	1718.81	1	DOUBLE WALL ADJUSTABLE DUCT - 12" INNER DUCT - 2 LAYERS REDUCED CLEARANCE - 16" STAINLESS STEEL OUTER SHELL. MIN LENGTH = 11' / MAX LENGTH = 48.5' / ADJUSTMENT = 30.5" / ADJUSTABLE SECTION MAY NEED TO BE CUT. INCLUDES SINGLE AND DOUBLE WALL "V" CLAMPS.
SYSTEM AT P4						-0.6526	0.00			
P5	DW124DWRNDADP2AGY13-2R-5	1350				-0.0122	21.94	1718.81	1	DOUBLE WALL DUCT - 12" X 14" RND2RND ADAPTER - 13" TALL - 2 LAYERS REDUCED CLEARANCE - 16" X 18" STAINLESS STEEL OUTER SHELL. STANDARD ADAPTER.
SYSTEM AT P5						-0.6648	0.00			
P6	DW2314TP	1350					8.49	1262.85	1	DUCT TO CURB TRANSITION, 23" CURB TO 14" DUCT, 16 GA ALUMINIZED. USED ON BDW5, DW15 & 85.
RC1	DW16DWRISER-2R-5						7.31		1	DOUBLE WALL RISER COVER - USED ON 12" INNER RISER, 4' LONG - 2 LAYERS REDUCED CLEARANCE - 16" STAINLESS STEEL OUTER RISER SHELL ASSEMBLY. INCLUDES INSULATION & SINGLE V CLAMPS FOR INNER & OUTER CONNECTIONS.
	3M-2000PLUS						0.80		2	DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.
TOTAL WEIGHT							241.35			

**DOUBLE WALL FACTORY BUILT DUCTWORK**

- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACINGS LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE ENTIRE 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.

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

VERTICAL			
TYPE	WALL SUPPORT (FT)	CURB SUPPORT (FT)	FLOOR SUPPORT (FT)
2R & 2R HT (5"-16")	20'	24'	24'
2R (18")	18'	24'	24'
3R & 3Z (5"-24")	10'	24'	24'
3Z (26" -36")	10'	20'	20'

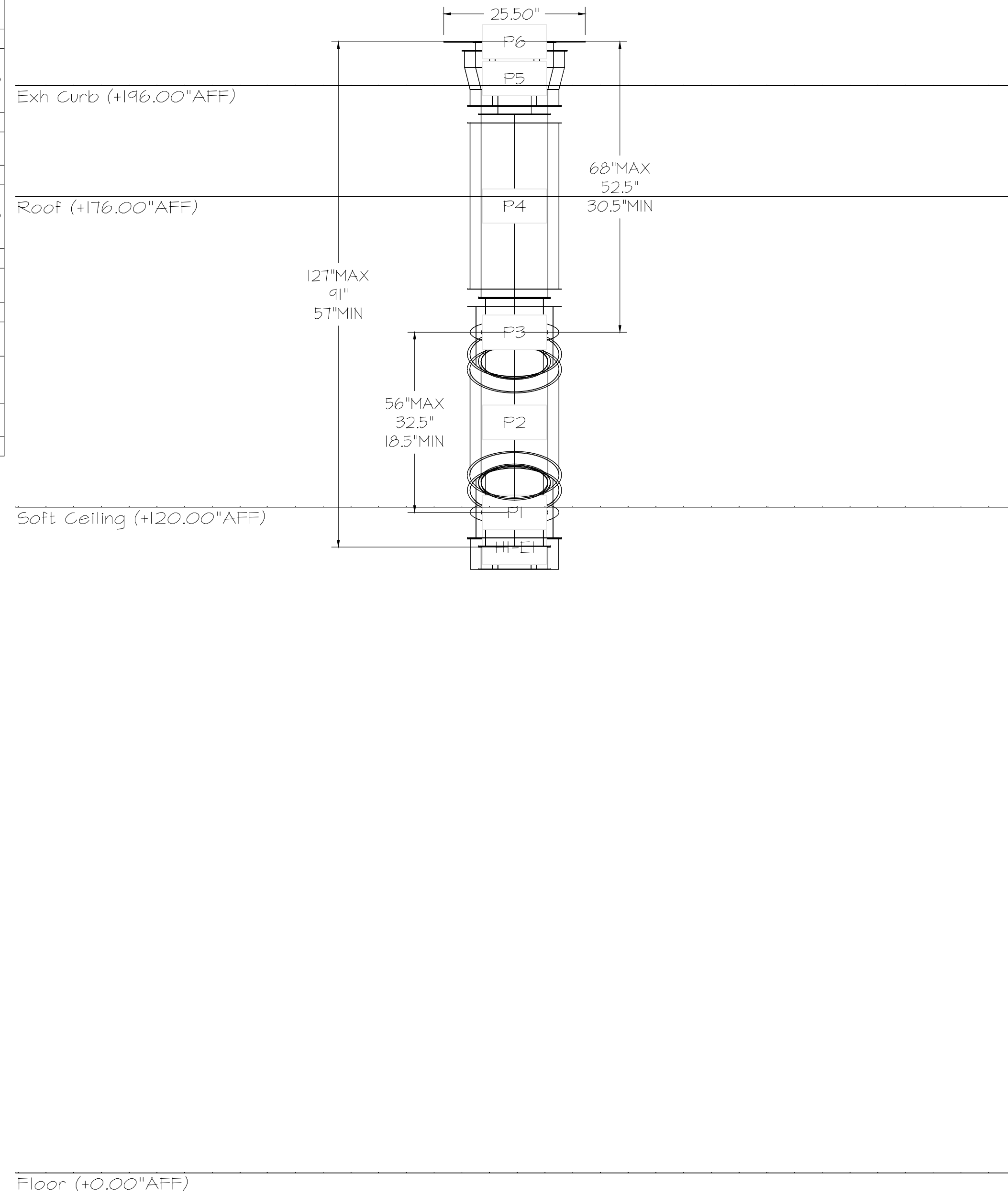
**Double Wall Grease Duct Specification**

Furnish double wall, factory built grease duct for use with Type I kitchen hoods, which conforms to the requirements of NFPA-96. Products shall be ETL listed to UL-197B and UL-2221 for venting air and grease vapors from commercial cooking operation. Models DW-2R, 3R and 3Z are used for grease duct applications when installed in accordance with these instructions and National Fire Protection Association "NFPA 96"; Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. Double wall grease ducts are listed for a continuous internal temperature of 500 degrees F and intermittent temperatures of 2000 degrees F. The duct sections shall be constructed of an inner duct wall and an outer wall with insulation in between. The inner duct wall shall be constructed of .036 inch thick, 430 type stainless steel and be available in diameters 8" through 24". The outer wall shall be constructed of stainless steel at a minimum of .024 inch thickness. The duct, based on model number, shall include layers of Super Wool 607 Plus insulation between the inner and outer wall. Grease duct joints shall be held together by means of formed V clamps and sealed with 3M Fire Barrier 2000+. The duct wall assembly shall be tested and listed at 3/4" or zero inch clearance, according to classifications.

**Classifications and Clearances**

UL 2221: Standard for Fire Resistant Grease Duct Enclosure Assemblies. Chapter 7 of this standard references a test labeled Internal Fire Test. Section 7.1.1 references two installation conditions, Condition A and Condition B. Condition A represents all installation condition except for installation within non-ventilated combustible enclosures. Condition B represents installation within a non-ventilated combustible enclosure. Model DW-2R is classified under UL2221 (Test of Fire Resistant Grease Duct Enclosure Assemblies) as an alternate to 2-Hr. fire resistant shaft enclosures with a reduced clearance to combustibles (sizes 8" to 16" diameter). Model 2R is listed in accordance with the requirements for duct enclosure Condition B.

DUCTWORK #1 FRONT VIEW OFFSET



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 PROCESSED BY: Traci Varland  
 DATE: 02/23/2026 PERMIT #:2504372

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

**REVISIONS**

NO.	DESCRIPTION	DATE

Professional Engineer  
 Justin S. Bowie  
 License No. 10178  
 State of Oklahoma

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 Fax: 602.982.1541  
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**CAPTIVEAIRE**

Tulsa Office

**QuikTrip No. 490**

8870 W THUNDERBIRD RD  
 PEORIA, AZ

**QT**

PROTOTYPE: FRYER ADDITION  
 DIVISION: PHOENIX  
 VERSION: 03  
 DATE: 06/25/25

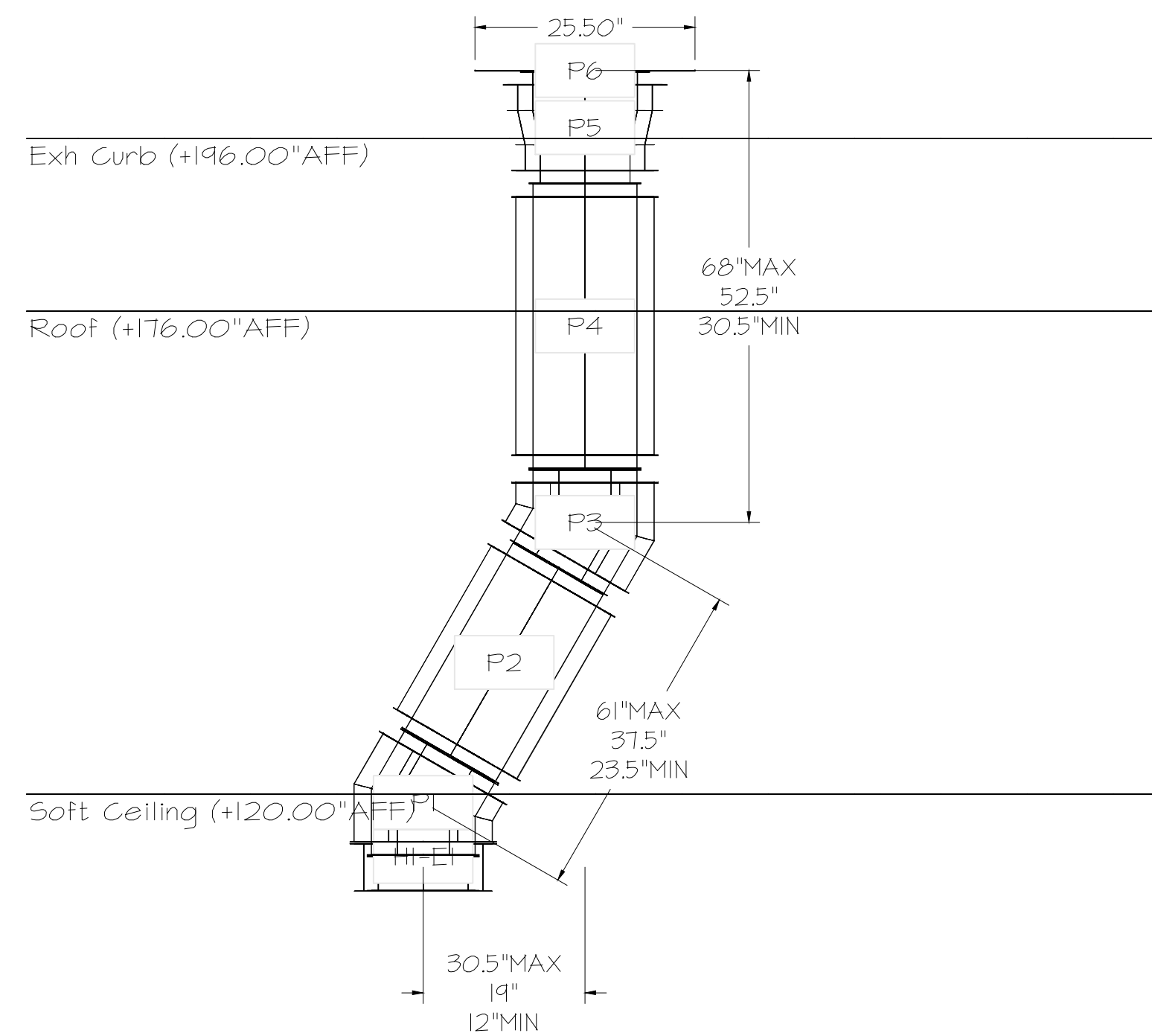
DATE: 4/29/2025  
 DWG.#: 7284466  
 DRAWN BY: RJH-80  
 SCALE: 3/4" = 1'-0"  
 MASTER DRAWING

SHEET TITLE:  
 MECHANICAL HOOD  
 DETAILS

SHEET NUMBER:  
 M513

SHEET NO.  
 4

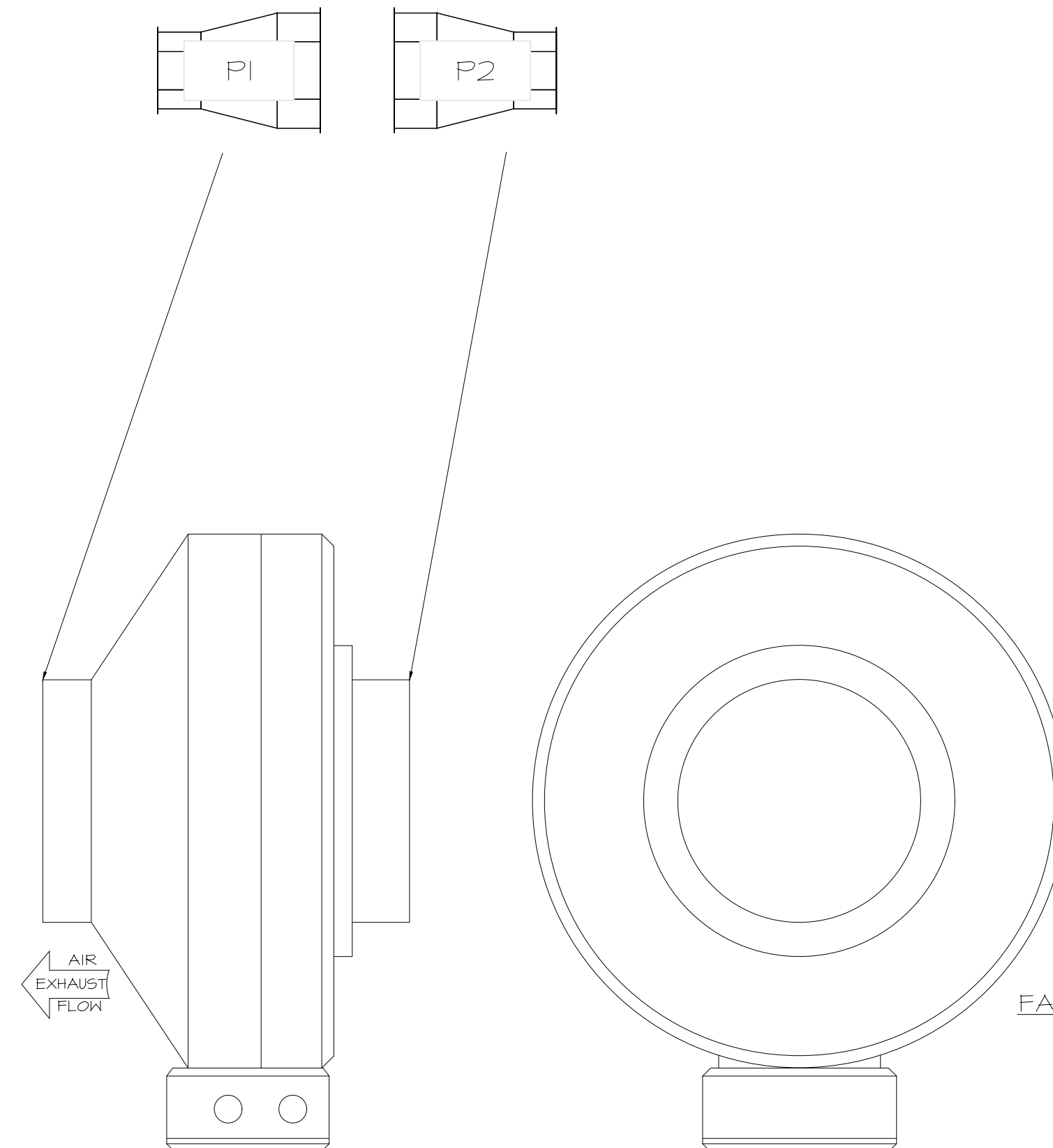
DUCTWORK #1 SIDE VIEW  
OFFSET



**DUCTWORK #2 PARTS - JOB#7284466**

TAG	PART #	CFM	GPM	ZONE	COVEREDBY	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	DW0812ADPIT						6.74		1	SINGLE WALL DUCT ADAPTER, 8" DUCT DIA TO 12" DUCT DIA, ASSEMBLY - 430 STAINLESS STEEL.
P2	DW0812ADPIT						6.74		1	SINGLE WALL DUCT ADAPTER, 8" DUCT DIA TO 12" DUCT DIA, ASSEMBLY - 430 STAINLESS STEEL.
TOTAL WEIGHT							13.48			

DUCTWORK #2 FRONT VIEW



FAN #4 DFA-300-CA - EXHAUST FAN (VF-1 - CO2 FAN)

SYSTEM DESIGN VERIFICATION (SDV)

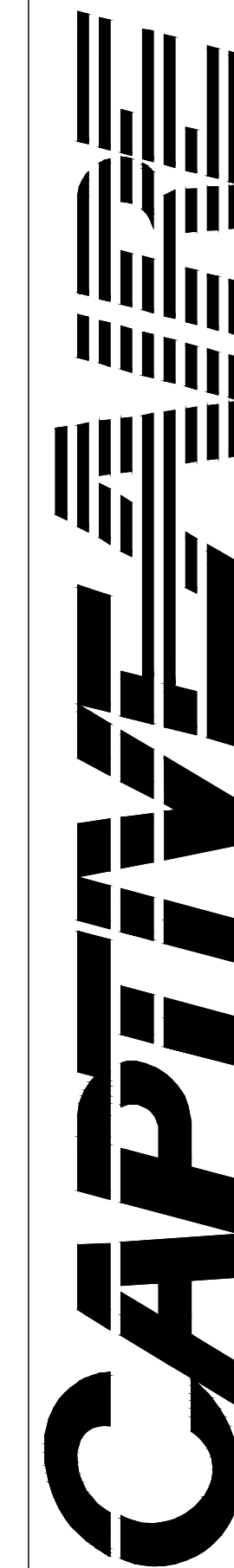
IF ORDERED, GAS SERVICE WILL PERFORM A SYSTEM DESIGN VERIFICATION (SDV) ONCE ALL EQUIPMENT HAS HAD A COMPLETE START UP PER THE OPERATION AND INSTALLATION MANUAL. TYPICALLY, THE SDV WILL BE PERFORMED AFTER ALL INSPECTIONS ARE COMPLETE.

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 GAS 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.

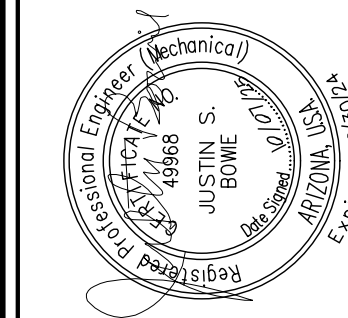
DURING THE SDV, GAS SERVICE WILL ADDRESS ANY DISCREPANCY THAT IS THE FAULT OF THE MANUFACTURER. SHOULD A RETURN TRIP BE REQUIRED, THE GENERAL CONTRACTOR AND APPROPRIATE SALES OFFICE WILL BE NOTIFIED. THERE WILL BE NO ADDITIONAL CHARGES FOR MANUFACTURER DISCREPANCIES.

**REVISIONS**

NO.	DESCRIPTION	DATE



12101 East 51st Street, Suite 101A, Tulsa, OK 74146 PHONE: (918) 258-0291 FAX: 9192275947 EMAIL: reg@captiveware.com



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**QuikTrip No. 490**  
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PEORIA, AZ



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PROTOTYPE	RYER ADDITION

REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

SHEET TITLE:  
MECHANICAL HOOD  
DETAILS

SHEET NUMBER:  
M514

QT - 63 New Store Pkg Going Forward (DW) (450F)  
Various Locations,  
Tulsa, OK, 74136

DATE: 4/29/2025

DWG.#: 7284466

DRAWN BY: RJH-80

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

MASTER DRAWING

SHEET NO. 5

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HOOD / EXHAUST FAN SCHEDULE									
	MANUFACTURER	MODEL	SIZE	CFM OFF/MAX	MISC.	LIGHTS	FIRE SYSTEM	WEIGHT	NOTES
H-1	CAPTIVEAIRE	603OND-2-F	(1) 60"X30"	0 / 1350	2" EXHAUST CON	(6) LED	YES	861 LBS	I-10
EF-3	CAPTIVEAIRE	DUSCHFA	1/2 HP	0 / 1350	DIRECT-DRIVE	-	-	74 LBS	IJ2

**NOTES:**

- HOODS, FANS, AND ACCESSORIES SHALL BE MANUFACTURER-FURNISHED, CONTRACTOR-INSTALLED.
- HOOD SHALL BE 430 STAINLESS STEEL.
- HOOD SHALL BE FURNISHED WITH FAN INDICATOR AND LIGHTSWITCH MOUNTED ON FRONT PANEL.
- MANUFACTURER FURNISHED UL LISTED STAINLESS STEEL DUCT KIT AND ALL REQUIRED CONNECTION ACCESSORIES FOR FIELD-INSTALLATION FROM HOOD TO FAN.
- HOOD SHALL HAVE RIGHT AND LEFT QUARTER END PANELS, AND FRONT, LEFT, AND RIGHT STAINLESS STEEL FIELD WRAPPER.
- HOOD SHALL BE FURNISHED WITH UL LISTED GREASE FILTERS.
- HOOD SHALL BE FURNISHED WITH DUCT MOUNTED HEAT SENSORS AND AUTOMATIC FAN CONTROLS MOUNTED IN HOOD UTILITY CABINET.
- SYSTEM SHALL BE CAPABLE OF MODULATING FAN AS SCHEDULED, AND INTERLOCKED WITH BUILDING HVAC SYSTEM FOR BUILDING PRESSURIZATION.
- EQUIPMENT SHUT DOWN CONTACTORS ARE FACTORY-FURNISHED WITHIN HOOD UTILITY CABINET.
- HOOD SHALL BE LISTED AND LABELED FOR 0" CLEARANCE REQUIREMENTS TO COMBUSTIBLES.
- FAN SHALL BE FURNISHED WITH VENTED AND HINGED CURB, GREASE BOX, AND DISCONNECT.
- VARIABLE SPEED CONTROLLER PRE-MOUNTED IN FAN HOUSING, SPEED CONTROLLER SHALL BE MANUALLY ADJUSTED BY TEST AND BALANCE CONTRACTOR.

GRILLE, REGISTER, & DIFFUSER SCHEDULE							
	MANUFACTURER	MODEL	SERVICE	FACE SIZE	NECK SIZE	DESCRIPTION	NOTES
R1	TITUS	350RL	EXHAUST	8" X 8"	SEE PLAN	3/4" 35" BLADE TRANSFER GRILLE, ALL WHITE.	I,2
S1	TITUS	300FS	SUPPLY	22" X 22"	SEE PLAN	DOUBLE DEFLECTION GRILLE, ALL WHITE.	I,3

**NOTES:**

- PROVIDE TRIM RINGS FOR ALL DIFFUSERS OR GRILLES IN GYP. BOARD CEILING.
- PROVIDE PLASTER FRAME IN HARD CEILING.
- PROVIDE BORDER TYPE I WITH NO SCREEN HOLES.

**GENERAL NOTES (APPLY TO ALL THE ABOVE):**

- GRILLES, REGISTERS, AND DIFFUSERS SHALL BE CONTRACTOR-FURNISHED, CONTRACTOR-INSTALLED.
- MAXIMUM NG OF 30 FOR ALL GRILLES, REGISTERS, AND DIFFUSERS.
- FOUR-WAY THROW PATTERN FOR SQUARE DIFFUSERS UNLESS SHOWN OTHERWISE.
- PROVIDE SQUARE-TO-ROUND ADAPTER ON ALL GRILLES AND DIFFUSERS AS REQUIRED PER THE DRAWINGS.
- PROVIDE NONASBESTOS THERMAL INSULATING BLANKETS WITH VAPOR BARRIER FOR ALL SUPPLY DIFFUSERS AND RETURN GRILLES.
- RE: THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- RE: DRAWINGS FOR FURTHER INSTALLATION AND APPLICATION DETAILS.

EXHAUST FAN CONTROL SETTINGS				RTU 1, 2, 3 O/A CONTROL SETTINGS			
CONDITION	EXHAUST FAN CFM	PERCENTAGE OF MAX EXHAUST	CONTROL VOLTAGE Vdc *	CONTROL VOLTAGE Vdc *	OUTSIDE AIR CFM	O/A DAMPER POSITION **	O/A DAMPER POSITION **
HOOD OFF	0	0.0%	0	0	420	0 / (FAN# X SUPPLY AIRFLOW)	0 / (FAN# X SUPPLY AIRFLOW)
HOOD ON	1350	100.0%	10	5	810	1350 / (FAN# X SUPPLY AIRFLOW)	1350 / (FAN# X SUPPLY AIRFLOW)

\* CONTROL VOLTAGE SIGNAL RECEIVED FROM HOOD CONTROL PANEL \*\* O/A CFM / (SUPPLY FAN# X SUPPLY AIRFLOW)

AIR BALANCE & PRESSURIZATION SCHEDULE				
	SA CFM	HOOD ON RA CFM	HOOD OFF OA CFM	HOOD ON OA CFM
RT-1 OUTSIDE AIR	4200	3400	350	800
RT-2 OUTSIDE AIR	4200	3400	350	800
RT-3 OUTSIDE AIR	4200	3400	350	800
EF-1 WOMENS EXHAUST	0	0	-225	-225
EF-2 MENS EXHAUST	0	0	-525	-525
EF-3 KITCHEN EXHAUST HOOD	0	0	0	-1350
	12600	10200	300	300

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NEW SUPPLY DIFFUSER WITH CFM AMOUNT, NEW RETURN OR EXHAUST GRILLE WITH TYPE AND CFM AMOUNT.  
 RELOCATED SUPPLY DIFFUSER WITH CFM AMOUNT, RELOCATED RETURN OR EXHAUST GRILLE WITH TYPE AND CFM AMOUNT.  
 EXISTING SUPPLY DIFFUSER WITH CFM AMOUNT, EXISTING RETURN GRILLE WITH CFM AMOUNT.  
 REMOVED SUPPLY DIFFUSER WITH CFM AMOUNT, REMOVED RETURN GRILLE WITH CFM AMOUNT.  
 RECTANGULAR DUCTWORK WIDTH INCHES X DEPTH INCHES  
 TAKE-OFF WITH GASKET AND DAMPER 45° OR 90° AS SHOWN ON PLAN FLEXDUCT RUNOUT  
 ELBOW WITH TURNING VANES  
 ROOF-MOUNTED EXHAUST FAN  
 ROOFTOP UNIT (HIDDEN OUTLINE REPRESENTS SERVICE CLEARANCE)

TEMPERATURE SENSOR  
 HUMIDITY SENSOR  
 DUCT SMOKE DETECTOR  
 INTERIOR ELEVATION TAG  
 CONNECT TO EXISTING  
 DISCONNECT FROM EXISTING  
 HOOD SUPPRESSION PUSH STATION

**Bowie Tigras Engineering Inc.**  
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 Email: Just@BowieTigras.com  
 RTE # 25942  
 KDF JOB #: 24010

**QuikTrip No. 490**  
 8870 W THUNDERBIRD RD  
 PEORIA, AZ

**G1 MECHANICAL SCHEDULES**

**MECHANICAL SYSTEM SECTION 230000**

THE WORK INCLUDES INSTALLATION OF THE HVAC SYSTEM AND PROVIDING NEW DUCTWORK, DIFFUSERS AND GRILLES, INSULATION, CONTROLS, AND EQUIPMENT NECESSARY FOR A COMPLETE FUNCTIONING SYSTEM. HVAC SYSTEM INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:  
 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) UNITS, SUPPLY AND RETURN DUCTWORK SYSTEM WITH GRILLES, DIFFUSERS, FILTERS, AND DAMPERS, CONTROL SYSTEM INCLUDING LOW VOLTAGE WIRING AND CONDUIT, DUCT, PIPING, AND EQUIPMENT INSULATION, WHERE INDICATED HEREIN, ROOF CURBS AND FLASHING OF ROOF PENETRATIONS FOR EQUIPMENT NOTED.

EQUIPMENT INDICATED ON THE DRAWINGS OR AS REQUIRED FOR A COMPLETE INSTALLATION, SUCH AS ROOFTOP UNITS, DUCTWORK, HOODS, EXHAUST FANS, SUPPLY AND RETURN DIFFUSERS, ETC., SHALL BE PROVIDED WITHIN THE SCOPE OF WORK OF THIS SECTION.

COMPLY WITH ALL LAWS APPLYING TO MECHANICAL INSTALLATIONS IN EFFECT. ALL MATERIALS USED SHALL BE NEW AND SHALL CONFORM TO THE STANDARDS ESTABLISHED BY LOCAL CODES AND SMACNA.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS AS REQUIRED. PROVIDE ALL DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. THE WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITES.

CONTRACTOR SHALL INSTALL ONE SET OF NEW FILTERS AT THE END OF CONSTRUCTION, WHEN QUIKTRIP TAKES OCCUPANCY OF THE BUILDING.

SHEET METAL DUCTWORK: SHEET METAL FABRICATED AND INSTALLED TO CONFORM TO THE 2005 EDITION OF "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE" OF THE SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION. SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK-FORMING QUALITY, ASTM A-525, UNLESS OTHERWISE NOTED. DUCT DIMENSIONS ON DRAWINGS ARE INTERNAL AIRWAY DIMENSIONS. DUCT REINFORCEMENT SHALL BE SUITABLE FOR "1" AND "1/4" N.G. STATIC PRESSURE.

ALL UNISTRUT USED FOR SUPPORT SHALL BE PRIMED STEEL SHOP PAINTED. CONNECTIONS TO WALLS OR FLOORS SHALL BE AIRTIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIRTIGHT WITH UNITED SHEET METAL "DUCT SEALER" TO SMACNA CLASS 'B'. PROVIDE TURNING VANES AT ALL ELBOWS OR OFFSETS EXCEEDING 45°.

TRAPEZOID DUCT HANGERS: MINIMUM 1"x2"x1/2" 18 GAUGE CHANNELS WITH 1" X1/2" GAUGE STRAPS TO STRUCTURAL SUPPORT ABOVE.

DUCT WRAP/ASJ INSULATION (ON ALL RIGID ROUND AND RECTANGULAR SUPPLY AIR DUCTWORK): PROVIDE 2" THICK (MIN R-6) FIBERGLASS ASJ DUCT WRAP WITH VAPOR SEAL ON ALL RIGID ROUND DUCTWORK ABOVE THE CEILING. CONFORM TO SPEC ASTM C 1290.

RIGID ROUND GALVANIZED DUCT SHALL BE SPIRAL OR SNAP LOCK GALVANIZED SHEET METAL COMPLYING WITH SMACNA.

FLEX DUCT: PROVIDE FACTORY ASSEMBLED CLASS 1 AIR DUCT (UL 181) WITH 1" THICK 1 PCF (MIN R-5) FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEX DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50, AND SHALL BE RATED FOR 2" H.G. PRESSURE AND 0 TO 250 DEGREE FAHRENHEIT. PROVIDE STAINLESS STEEL ADJUSTABLE CLAMPING DEVICES, SCREW OPERATED. USE TWIST-LOCK CONICAL TAP COLLARS AT CONNECTIONS INTO SHEET METAL DUCTWORK. DO NOT EXCEED SIX (6) FEET IN LENGTH FOR ANY FLEX DUCT. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS. FLEXIBLE DUCTWORK SHALL BE SERIES 10 BY ATCO, OR EQUIVALENT.

ROUND BALANCING DAMPERS: FABRICATED OF SAME MATERIAL AS DUCT, TWO METAL GAUGES HEAVIER THAN DUCT. MOUNT ON 3/8" SQUARE ROD WITH SAK SLOT POSITION INDICATOR. PIVOT BEARINGS, LOCKING POSITION REGULATOR, YOUNG REGULATOR CO., SERIES 443. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING.

CEILING DIFFUSERS/RETURNS: PROVIDE SUPPLY DIFFUSERS AND DAMPER IN SIZES, CAPACITIES, MATERIALS, AND PATTERN INDICATED ON THE DRAWINGS.

ACCESS PANELS: PROVIDE HINGED ACCESS PANELS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS IN INSULATED DUCTWORK.

AUTOMATIC TEMPERATURE CONTROL: ENTIRE BUILDING IS SERVED BY A BUILDING ENERGY MANAGEMENT SYSTEM REFERRED TO AS "EMS". SYSTEM WILL INCLUDE THERMOSTATIC AND HUMIDITY CONTROL FOR HVAC ROOFTOP UNITS.

**HVAC TEST AND BALANCING AND CRITERIA:**  
 HVAC TEST AND BALANCING AND SHALL BE PERFORMED BY A CERTIFIED BALANCING CONTRACTOR WHO IS AN INDEPENDENT CONTRACTOR FROM THE HVAC INSTALLING CONTRACTOR. A COMPLETED AND CERTIFIED TEST & BALANCE REPORT SHALL BE PRESENTED TO THE OWNER'S CONSTRUCTION MANAGER PRIOR TO REQUEST FOR FINAL PAYMENT.

CONTRACTOR SHALL FIRST VERIFY THAT THE SYSTEM MATCHES THE CONSTRUCTION DOCUMENTS FOR LOCATIONS OF ALL DIFFUSERS, GRILLES, ROOFTOP UNITS, EXHAUST FAN, THERMOSTATS, TEMPERATURE SENSORS, HUMIDISTATS, SMOKE DETECTORS, TEST UNITS, AND ANNUNCIATORS. MAKE VISUAL OBSERVATIONS OF INSTALLATION SUCH AS ROOFTOP UNITS INSTALLED LEVEL AND COMPLETE, CLEAN FILTERS, GOOD REFRIGERANT CHARGE, ADEQUATE CONDENSATE DRAINAGE, ETC. VERIFY THAT ALL DUCTS ARE CONNECTED (NONE HAVE COME LOOSE AND ARE BLOWING AIR INTO THE PLENUM). NO KINKED FLEX-DUCT, ALL DUCTS WELL INSULATED AND NO GAPS EXIST THAT COULD CREATE A SOURCE FOR CONDENSATION, PARTICULARLY ON TOP OF DIFFUSERS. INDICATE DIRECTION THAT STOREFRONT FACES. (PROVIDE A NORTH ARROW ON PLAN). ANY DISCREPANCIES SHALL BE MARKED ON A DRAWING TO BE PRESENTED TO THE OWNER'S REPRESENTATIVE ALONG WITH THE FINAL REPORT.

MINOR REPAIR WORK, SUCH AS LOOSE FLEX CONNECTIONS, REPLACEMENT BELTS, ETC., SHALL BE PERFORMED BY THE TEST AND BALANCE CONTRACTOR PRIOR TO AIR BALANCING. MAJOR REPAIR WORK SHALL BE REPORTED TO THE QUIKTRIP REPRESENTATIVE AND NEGOTIATED PRIOR TO WORK BEING DONE. INSTALL ALL NEW FILTERS.

ADJUST EACH PIECE OF HVAC EQUIPMENT AS REQUIRED TO ASSURE PROPER BALANCE AND OPERATION. FOLLOW NEBS AND ASHRAE STANDARDS. BALANCE ALL SYSTEMS TO WITHIN 5% OF AIR VOLUMES INDICATED OR PROPORTIONALLY PER THE DRAWING TO ACHIEVE A SLIGHTLY POSITIVE BUILDING PRESSURIZATION OF +.05"WC. TEST AND VERIFY PROPER ECONOMIZER AND GRAVITY RELIEF VENT OPERATION. CHECK RESTROOM PRESSURIZATION AND VERIFY THAT AN ADEQUATE TRANSFER AIR PATH EXISTS. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF ALL CONTROLS, MAINTENANCE OF TEMPERATURE AND HUMIDITY WHERE APPLICABLE, AND OVERALL OPERATION. FINAL BALANCED POSITIONS SHALL BE MARKED ON EACH DAMPER WITH A PERMANENT MARKER.

AUTOMATIC TEMPERATURE & HUMIDITY CONTROL: EACH ROOFTOP UNIT SHALL BE CONTROLLED BY THE BUILDING ENERGY MANAGEMENT SYSTEM BY OTHERS. EMS LOCATED IN THE LOW-VOLTAGE CABINET, TEMPERATURE AND/OR HUMIDITY SENSORS IN THE SPACE. SET OUTSIDE AIR DAMPER TO MINIMUM POSITION DURING OCCUPIED MODE. ALL PROGRAMMING SHALL BE THROUGH THE EMS BY OTHERS. VERIFY THAT ROOFTOP UNITS EQUIPPED WITH DEHUMIDIFICATION (HOT GAS REHEAT) ARE WIRED, FUNCTIONAL, AND SET. ALL WIRING SHALL BE IN CONDUIT.

CONTRACTOR SHALL PRESENT A FINAL DRAWING AND CERTIFIED BALANCE REPORT TO THE QT REPRESENTATIVE THAT CONTAINS ALL ACTUAL DIFFUSER AND GRILLE LOCATIONS WITH AIR QUANTITIES SHOWN FOR EACH DEVICE, EXHAUST AND OUTSIDE AIR QUANTITIES, SUPPLY AIR TEMPERATURE, FAN RPM, MOTOR CURRENTS, MAIN DUCT STATIC PRESSURE, AND DUCT TEMPERATURES, INDOOR/OUTDOOR PRESSURE DIFFERENTIAL, AND ROOFTOP UNIT(S) MAKE AND MODEL NUMBER.

CONTRACTOR TO OBTAIN COPY OF "QT TEST AND BALANCE REPORT FORM" FROM QT REP FOR REPORTING PURPOSES.

**G13 MECHANICAL SYMBOLS LEGEND**

- REFER TO THE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS NOT SHOWN ON THE PLAN.
- ALL TEMPERATURE CONTROL WIRING SHALL BE TAPPAN OR BELDEN CABLE BY THE EMS INSTALLER AND SHALL MEET NATIONAL ELECTRIC CODE REQUIREMENTS. SEE ROOFTOP UNIT SCHEDULE FOR ADDITIONAL REQUIREMENTS. CONCEAL ALL WIRING IN WALL CAVITIES OR ABOVE CEILING.
- MECHANICAL CONTRACTOR SHALL REMOVE AND REPLACE FILTERS FOR ALL EXISTING ROOFTOP UNITS AT THE END OF PROJECT CONSTRUCTION.
- CONTRACTOR SHALL FIELD REVIEW AND VERIFY EXISTING CONDITIONS AS APPLICABLE AND COORDINATE WITH OTHER TRADES.
- TRANSITION AS REQUIRED FROM BRANCH DUCT TO DIFFUSER NECK. COORDINATE BETWEEN PLANS AND SCHEDULES.
- DUCTWORK DIMENSIONS ARE CLEAR INSIDE DIMENSIONS.
- FLEXIBLE DUCTWORK SHALL BE LIMITED TO NO MORE THAN 6' IN LENGTH.
- HOLD TOP OF DUCTWORK INSULATION TO UNDERSIDE OF STRUCTURE WHEREVER POSSIBLE.
- ALL BRANCH DUCTS SHALL HAVE BALANCING DAMPERS INSTALLED AS INDICATED ON DRAWINGS. HANDLE SHALL BE BOTH ACCESSIBLE AND CAPABLE OF OPENING AND CLOSING FULLY. REFER TO DIFFUSER CONNECTION DETAIL.
- FINAL LOCATION OF TEMPERATURE CONTROLS SHALL BE FIELD-VERIFIED BY OWNER AT JOB SITE.
- MECHANICAL CONTRACTOR SHALL CLEAN ALL CONDENSERS AFTER CONSTRUCTION HAS BEEN COMPLETED.
- ALL DUCTWORK SHALL RECEIVE DUCT WRAP INSULATION PER SPECIFICATIONS. LINED DUCTWORK IS NOT ACCEPTABLE.
- A TEST & BALANCE REPORT SHALL BE PROVIDED TO THE MECHANICAL INSPECTOR UPON COMPLETION.

**QT**

PROTOTYPE: \_\_\_\_\_ REVISION: \_\_\_\_\_  
 DIVISION: \_\_\_\_\_ PHONEX: \_\_\_\_\_  
 VERSION: 03  
 DATE: 06/25/25

REV	DATE	DESCRIPTION

ORIGINAL ISSUE DATE: 06/18/25

SHEET TITLE:  
 MECHANICAL SCHEDULES, SPECIFICATIONS, AND SYMBOLS

SHEET NUMBER:  
**M601**

**A1 MECHANICAL DUCTWORK SPECIFICATIONS**

**A13 GENERAL NOTES**