

MECHANICAL GENERAL NOTES	
1	CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW CONSTRUCTION DOCUMENTS. INFORMATION REGARDING COMPLETE WORK IS DISPERSED THROUGHOUT DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO COMPLETE DOCUMENT SET.
2	COORDINATE WITH WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF OWNER, AND WITH CONSTRAINTS OF EXISTING CONDITIONS OF PROJECT SITE. COORDINATE THE INSTALLATION OF MECHANICAL EQUIPMENT, DUCTWORK, ETC. TO FIT WITHIN THE SPACE ALLOWED BY ARCHITECTURAL AND STRUCTURAL CONDITIONS. CUTTING OR OTHERWISE ALTERING STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER OF RECORD AND COORDINATION WITH THE GENERAL CONTRACTOR. PROVIDE DUCT AND PIPE RISES AND DROPS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWINGS PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS. FURNISH EQUIPMENT WIRED FOR VOLTAGES SHOWN THEREIN. CONTRACTOR SHALL BEAR ALL COST(S) ASSOCIATED WITH FAILURE TO COORDINATE ELECTRICAL CHARACTERISTICS. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.
3	DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY FOR A COMPLETE SYSTEM. GENERALLY DUCTWORK SHALL BE KEPT AS HIGH AS POSSIBLE.
4	WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY GOVERNING CITY. PURCHASE PERMITS ASSOCIATED WITH WORK. OBTAIN INSPECTIONS REQUIRED BY CODE.
5	INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE.
6	PROVIDE ACCESS PANELS IN CEILINGS AND WALLS TO ALLOW ACCESS TO VALVES, TRAPS, DAMPERS, CLEANOUTS, CONTROLS, ETC. MINIMUM ACCESS SIZE - 12"x12", UNLESS LIMITED BY PHYSICAL CONSTRAINTS.
7	CONTRACT LANDLORD APPROVED ROOFING CONTRACTOR TO FLASH AND SEAL RELATED ROOF PENETRATIONS TO MAINTAIN ROOFING WARRANTY.
8	INSTALL EXHAUST FAN A MINIMUM OF 10 FT FROM INTAKE AIR OPENINGS.
9	COORDINATE LOCATIONS OF GRILLES, REGISTERS AND DIFFUSERS WITH ARCHITECTURAL REFLECTED CEILING PLAN. LOCATIONS SHOWN ARE APPROXIMATE, ADJUST LOCATIONS IN THE FIELD AS REQUIRED BY CONSTRUCTION CONSTRAINTS.
10	ELECTRICAL CONTRACTOR SHALL FURNISH, ROUTE, AND INSTALL CONTROL WIRING FOR MECHANICAL SYSTEMS. MECHANICAL CONTRACTOR SHALL PROVIDE CONTROLS AND CONTROL WIRING TERMINATIONS FOR MECHANICAL SYSTEMS.

DRAWING NUMBER	DESCRIPTIONS
M1-1	MECHANICAL GENERAL NOTES AND LEGEND
M1-2	MECHANICAL SCHEDULES
M2-1	MECHANICAL PLANS
M3-1	MECHANICAL DETAILS
M4-1	MECHANICAL SPECIFICATIONS
M5-1	MECHANICAL ENERGY COMPLIANCE
H1-1	HOOD DRAWINGS
H1-2	HOOD DRAWINGS
H1-3	HOOD DRAWINGS
H1-4	HOOD DRAWINGS

MECHANICAL SYMBOLS AND ABBREVIATIONS	
<b>GRILLES/DIFFUSERS:</b>	
	SUPPLY DIFFUSER
	SIDEWALL MOUNTED SUPPLY REGISTER
	RETURN GRILLE
	EXHAUST GRILLE
<b>DUCT SYMBOLS:</b>	
	NEW SHEET METAL DUCTWORK
	EXISTING DUCT/PIPE TO BE REMOVED
	EXISTING DUCT/PIPE TO REMAIN
	SUPPLY OR OUTSIDE AIR DUCT
	RETURN AIR DUCT
	EXHAUST AIR DUCT
	DUCTWORK TRANSITION
	SUPPLY DUCT ELBOW UP OR DOWN
	RETURN DUCT ELBOW UP OR DOWN
	EXHAUST DUCT ELBOW UP OR DOWN
	DUCT ELBOW WITH FIXED TURNING VANES
	DUCT BRANCH TAKE-OFF
	ROUND SPIN-IN TAKEOFF
	MANUAL DAMPER
	FLEXIBLE DUCT CONNECTION
	FIRE DAMPER
	SMOKE DAMPER
	COMBINATION FIRE/SMOKE DAMPER
	ELECTRIC OPERATED DAMPER
	BACKDRAFT DAMPER
	VOLUME DAMPER
	FLEXIBLE DUCTWORK
<b>EQUIPMENT:</b>	
	ROOF MOUNTED EXHAUST FAN
	CEILING MOUNTED EXHAUST FAN
	IN-LINE CABINET FAN
	FAN TERMINAL UNIT
	VAV TERMINAL UNIT
	AIR HANDLING UNIT
	ROOFTOP UNIT
	UNIT HEATER
	ELECTRIC DUCT HEATER IN DUCT
	THERMOSTAT
	TEMPERATURE SENSOR
	SPACE CARBON DIOXIDE SENSOR
	HUMIDITY SENSOR
	PRESSURE SENSOR
	DUCT SMOKE DETECTOR
<b>GENERAL REFERENCES/NOTATIONS:</b>	
	CONNECT TO EXISTING
	NOTE DESIGNATION
	REVISION DESIGNATION
<b>MARK</b>	MECHANICAL EQUIPMENT DESIGNATION
<b>CD-1</b> 350	DIFFUSER DESIGNATION AND CFM
<b>ABBREVIATIONS:</b>	
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AHJ	AUTHORITY HAVING JURISDICTION
BOD	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
EC	ELECTRICAL CONTRACTOR
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWT	ENTERING WATER TEMPERATURE
FPC	FIRE PROTECTION CONTRACTOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
GPM	GALLONS PER MINUTE
GC	GENERAL CONTRACTOR
HP	HEAT PUMP
HZ	FREQUENCY
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MA	MIXED AIR
MC	MECHANICAL CONTRACTOR
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NC	NOISE CRITERIA
OA	OUTSIDE AIR
PC	PLUMBING CONTRACTOR
POD	PNEUMATIC OPERATED DAMPER
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
RLF	RELIEF AIR
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
WC	WATER COLUMN
WB	WET BULB

**SYMBOLS LEGEND NOTES:**  
1. REFER TO SPECIFICATIONS AND PLAN NOTES FOR DETAILED DESCRIPTION OF ALL DEVICES SHOWN IN THIS LEGEND, PROVIDED BY CONTRACTOR.

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PROJECT #12369

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SHEET TITLE:  
**MECHANICAL GENERAL NOTES AND LEGEND**

SHEET NO. **M1-1**

WALK-IN CONDENSING UNIT SCHEDULE										
TAG	MANUFACTURER	MODEL	COMPRESSOR HP	VOLTAGE	Ø	MCA	MOCP	SUPPLIED BY	INSTALLED BY	APPROXIMATE WEIGHT
CU-1	KOLPAK		1.5	208	1	13.6	20	KEC	GC	165
REFER TO KITCHEN EQUIPMENT AND MANUFACTURER'S DRAWINGS FOR EXACT REQUIREMENTS.										

ROOFTOP UNIT SCHEDULE																				
TAG	MANUFACTURER	MODEL	NOMINAL TONNAGE	SUPPLY CFM	OA CFM	ESP IN IN. W.C.	TOT BTUH	SENS BTUH	(S)EER	STAGE	HTG IN BTUH	HTG OUT BTUH	ELECTRICAL				WEIGHT	REMARKS		
													BHP	VOLTAGE	PHASE	FLA				
RTU-1	CARRIER	48TCEA06A2A5	5.0	2000	200	0.8	59,000	44,000	13.0	1	115,000	93,000	2.4	208	3	-	27	40	578	A,B,G
RTU-2	CARRIER	48FCEA06A2A5	5.0	2000	220	0.5	59,310	44,730	14.0	1	110,000	88,000	2.4	208	3	-	31.0	45	578	A,B,C,D,E,F

REMARKS:  
A. ALL HVAC EQUIPMENT TO BE FIELD LABELED TO IDENTIFY WHICH AREAS OF THE BUILDING THEY SERVE.  
B. MERV 13 PLEATED FILTER.  
C. DRY BULB ECONOMIZER WITH BAROMETRIC RELIEF.  
D. SMOKE DETECTOR WITH REMOTE ANNUNCIATOR (BY EC)  
E. UNIT MOUNTED NON POWERED CONVENIENCE OUTLET.  
F. UNIT MOUNTED NON FUSED DISCONNECT SWITCH  
G. EXISTING ROOFTOP UNIT. MECHANICAL CONTRACTOR TO SERVICE ROOFTOP UNIT TO ASSURE IT IS OPERATING PROPERLY AND REPLACE ALL FILTERS.

EXHAUST FAN SCHEDULE																
MARK	MANUFACTURER	MODEL	TYPE	AREA SERVED	FAN				VOLTAGE-PHASE	FLA	APPROXIMATE WEIGHT	SUPPLIED BY	INSTALLED BY	ACCESSORIES	NOTES	
					EXHAUST AIRFLOW (CFM)	EXTERNAL STATIC (IN. W.G.)	DRIVE TYPE	MOTOR WATTS								MOTOR HP
EF-1	CAPTIVEAIRE	DU85HFA	UPBLAST	HOOD 1	1500	1.0	DIRECT	--	0.75	115-1Ø	8.9	94	O	GC	RC, FSC, GDC, WP	1,2
EF-2	GREENHECK	SP-B90	CEILING	RESTROOM	75	.25	--	21W	--	120-1Ø	--	10	--	--	--	3

ACCESSORIES:  
BD-BACKDRAFT DAMPER, DP-DISCONNECT PLUG, GDC- GREASE DRAIN CUP, RC-FACTORY FURNISHED 18" ROOF CURB, FSC-FACTORY MOUNTED AND WIRED VARIABLE SPEED CONTROL, VI-VIBRATION ISOLATION, WP-NEMA 3R DISCONNECT SWITCH.

NOTES:  
1. FAN SHALL BE CONTROLLED BY HOOD CONTROLS. INTERLOCK RTU-1 TO OPERATE IN OCCUPIED MODE WHILE KITCHEN EXHAUST FAN IS ENERGIZED.  
2. REFER TO CAPTIVEAIRE DRAWINGS FOR ADDITIONAL INFORMATION.  
3. FAN TO BE ACTIVATED BY LIGHT SWITCH.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE													
MARK	MANUFACTURER	MODEL	TYPE	NECK SIZE	FACE SIZE	FRAME TYPE	MATERIAL	FINISH	NOISE CRITERIA	ACCESSORIES	SUPPLIED BY	INSTALLED BY	
R-1	TITUS	50F	EGGCRATE GRILLE	22"X22"	24"X24"	LAY-IN	ALUMINUM	#26 WHITE	<30	STR	GC	GC	
S-1	PRICE	620	REGISTER	16"X8"	18"X10"	SURFACE	ALUMINUM	#26 WHITE	<30	OBD	GC	GC	
S-2	TITUS	PAR-AA	PERFORATED DIFFUSER	PER PLAN	24"X24"	LAY-IN	ALUMINUM	#26 WHITE	<30		GC	GC	
S-3	TITUS	TMS-AA	SQUARE CONE DIFFUSER	PER PLAN	24"X24"	LAY-IN	ALUMINUM	#26 WHITE	<30		GC	GC	
S-4	TITUS	TMS-AA	SQUARE CONE DIFFUSER	PER PLAN	12"X12"	SURFACE	ALUMINUM	#26 WHITE	<30	OBD	GC	GC	

ACCESSORIES:  
OBD-OPPOSED BLADE DAMPER  
STR-SQUARE TO ROUND TRANSITION  
TRM-RAPID MOUNT FRAME FOR GYP. BOARD CEILINGS.

HOOD SCHEDULE													
MARK	MANUFACTURER	MODEL	TYPE	HOOD LENGTH	HOOD WIDTH	EXHAUST AIR FLOW (CFM)	SUPPLY AIR FLOW (CFM)	MAKEUP AIR FLOW (CFM)	EXHAUST EXTERNAL STATIC (IN. W.G.)	SUPPLY AIR PER RISER (CFM)	MAKEUP AIR PER RISER (CFM)	SUPPLIED BY	INSTALLED BY
H-1	CAPTIVEAIRE	7824ND-ZWI-PO-ACSP-F	ISLAND	11'-0"	8'-4"	1500	500	1350	0.578	125	675	O	GC

REFER TO CAPTIVEAIRE HOOD DRAWINGS FOR EXACT REQUIREMENTS AND ACCESSORIES.

MAKEUP AIR UNIT SCHEDULE																																
FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	CFM	ESP.	RPM	H.P.	B.H.P.	Ø	VOLT	MCA	WEIGHT (LBS.)	SONES	COOLING										BURNER EFFICIENCY(%)	GAS INPUT BTUH	GAS OUTPUT BTUH	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	REMARKS	
															ENTERING DB TEMPERATURE	ENTERING WB TEMPERATURE	LEAVING DB TEMPERATURE	LEAVING WB TEMPERATURE	ENTERING FLUID TEMP.	LEAVING FLUID TEMP.	FLUID FLOW RATE	PERCENT GLYCOL	TOTAL CAPACITY	SENSIBLE CAPACITY								LATENT CAPACITY
2	MAU-1	A1-D.250-15D-MPU	15MF-1-MOD	A1-D.250	1350	0.5	1709	1.000	0.723	1	115	14.5A	1152	14.5	90.0°F	74.0°F	76.1°F	68.0°F	-	-	-	-	29,600	19,800	9,800	92	119,988	110,389	80°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	A,B,C,D,E,F,G

REMARKS:  
A. 14" HIGH ROOF CURB  
B. INTAKE HOOD WITH MOTOR OPERATED DAMPER  
C. V BANK FILTER SECTION  
D. BURNER SECTION WITH ALL CONTROLS  
E. CENTRIFUGAL FAN SECTION  
F. UNIT MOUNTED NON FUSED DISCONNECT SWITCH  
G. ALL MAKEUP AIR UNITS TO BE FIELD LABELED TO IDENTIFY THE AREA OF THE BUILDING SPACE THEY SERVE.

AIR BALANCE SCHEDULE									
MARK	SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW (CFM)	RETURN AIRFLOW (CFM)	EXHAUST AIRFLOW (CFM)	RESULTING BUILDING PRESSURE (CFM)				
EF-1				-1500	-1500				
EF-2				-75	-1575				
RTU-1	2000	200			-1375				
RTU-2	2000	220			-1155				
MAU-1		1350			+195				
TOTAL BUILDING PRESSURE					+195				

VENTILATION SCHEDULE																
ROOM #	ROOM NAME	SQFT	OCCUPANCY CATEGORY	Rp	Ra	Pz	PEOPLE				OA	AIR	SA	Zp =	Vot =	
							Rp x Pz	Az x Ra	CFM	Vbz						
	Ordering	126	Dining	7.5	0.18	4	30	23	53	0.8	66	950	105	0.07	1.00	66
	Kitchen	454	Kitchen	7.5	0.12	4	30	54	84	0.8	106	1050	116	0.10	1.00	106
	RTU-2	580				8					171	2000	220		171	
	RR	53	Restroom	0	0.06	0	0	3	3	0.8	4	50	5	0.08	1.00	4
	Kitchen	454	Kitchen	7.5	0.12	4	30	54	84	0.8	106	1950	195	0.05	1.00	106
	RTU-1	507				4					110	2000	200		110	

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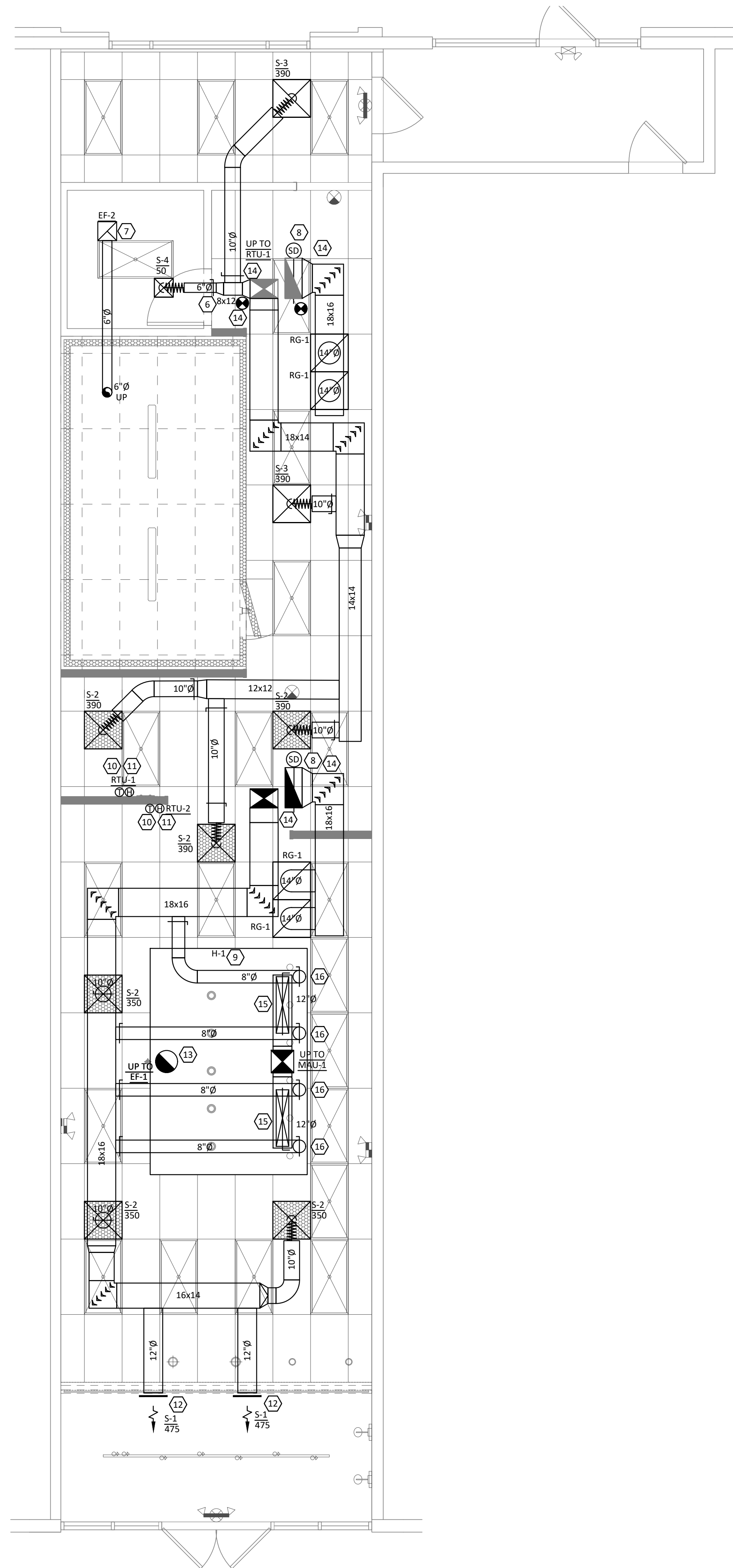
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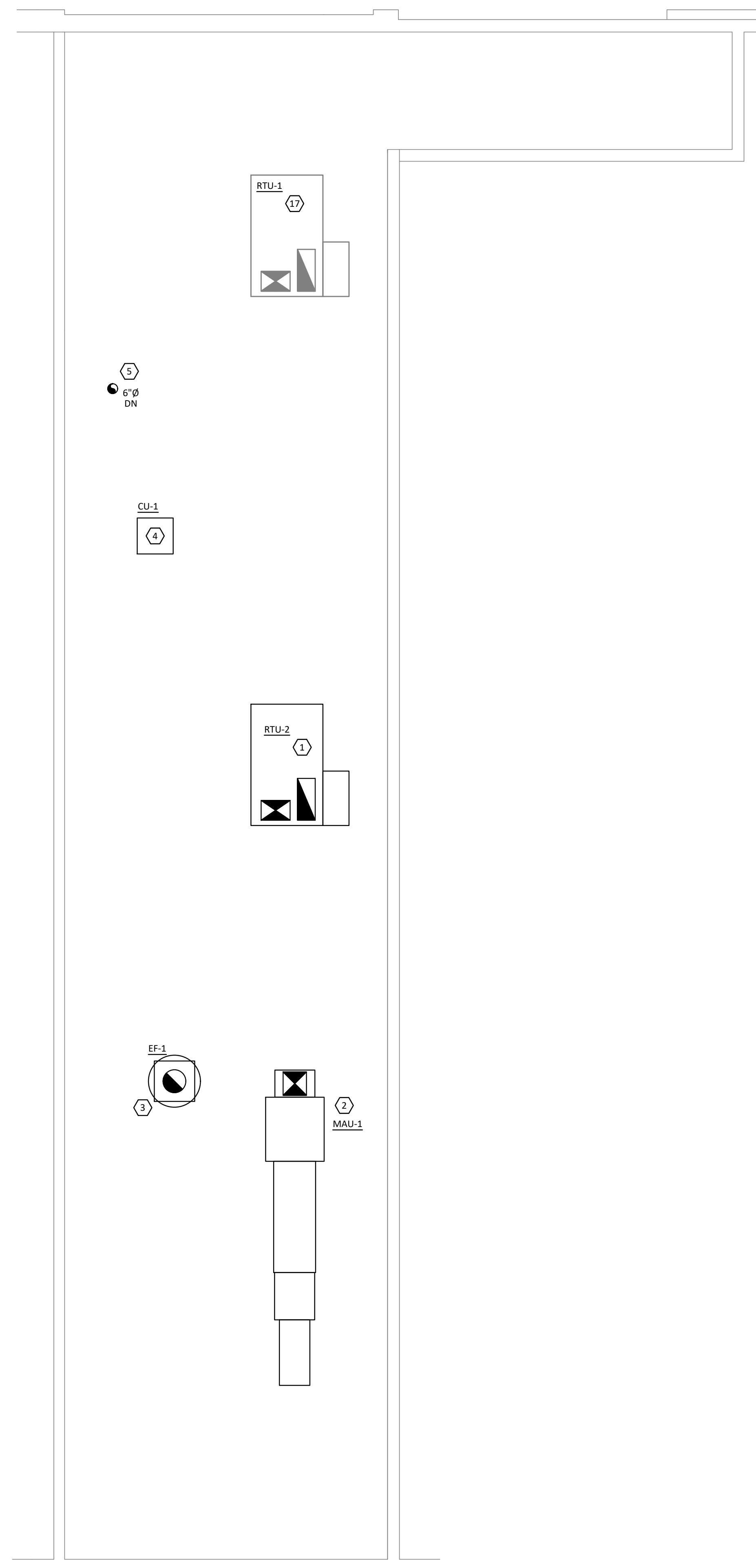
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SHEET TITLE: MECHANICAL SCHEDULES

SHEET NO. M1-2



01 MECHANICAL PLAN  
M2-1 1/4" = 1'-0"



02 MECHANICAL ROOF PLAN  
M2-1 1/4" = 1'-0"

### KEYED NOTES

1. PROVIDE ROOFTOP UNIT AND CURB. COORDINATE UNIT WITH STRUCTURE, SHIM UNIT AND CURB LEVEL FOR PROPER CONDENSATE DRAINAGE. FURNISH AND INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN AIR DUCT CONNECTIONS. TRANSITION TO DUCT SIZE SHOWN ON MECHANICAL FLOOR PLAN.
2. PROVIDE MAKE-UP AIR UNIT AND CURB. COORDINATE UNIT WITH STRUCTURE, SHIM UNIT AND CURB LEVEL FOR PROPER OPERATION. FURNISH AND INSTALL FLEXIBLE CONNECTOR ON DUCT CONNECTION. TRANSITION TO DUCT SIZE SHOWN ON MECHANICAL FLOOR PLAN.
3. PROVIDE EXHAUST FAN AND INSTALL ON 20" HIGH INSULATED AND VENTILATED ROOF CURB. DISCHARGE OPENING SHALL BE NO LESS THAN 40" ABOVE THE ROOF. MAINTAIN MINIMUM 10' CLEARANCE FROM ANY OUTDOOR AIR INTAKES. PROVIDE 16 GA. STEEL DUCT, WITH SEAMS WELDED LIQUID TIGHT, IN ACCORDANCE WITH SECTION 506.3 OF INTERNATIONAL MECHANICAL CODE AND SLOPE DUCT AT 1/4" / FT TOWARDS HOOD. PROVIDE CLEANOUT AT EVERY CHANGE OF DIRECTION, EVERY 20' HORIZONTALLY AND AS REQUIRED BY MFG. PROVIDE 2 LAYERS OF 3M S15+, OR EQUIVALENT, FIRE BARRIER DUCT WRAP ON EXHAUST DUCT BETWEEN HOOD AND ROOF. AS AN OPTION TO UTILIZING 16 GA STEEL DUCT, PROVIDE CAPTIVE AIRE MODEL DW ROUND 20 GAUGE STAINLESS STEEL DOUBLE WALL DUCT SYSTEM.
4. INSTALL REMOTE CONDENSING UNIT FOR FOOD SERVICE EQUIPMENT. FURNISH AND INSTALL ROOF MOUNTED EQUIPMENT RAILS, REFRIGERANT LINE SET, THERMOSTATIC EXPANSION VALVE, SOLENOID VALVE, TEMPERATURE CONTROL, SIGHT GLASS, FILTER DRIER, PRESSURE CONTROL, CRANKCASE HEATER, LOW AMBIENT CONTROLS AND WEATHERPROOF HOUSING. TRAP AND SLOPE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS. FURNISH AND INSTALL REQUIRED ROOF PENETRATIONS FOR REFRIGERANT PIPING. SEAL PIPING PENETRATIONS THROUGH WALK-IN ROOF.
5. EXHAUST DUCT THROUGH ROOF. PROVIDE ROOF JACK, STORM COLLAR, AND ALL-WEATHER CAP. MAINTAIN MINIMUM 10' CLEARANCE FROM ANY OUTDOOR AIR INTAKES.
6. UNDERCUT DOOR 1" FOR TRANSFER AIR.
7. CEILING MOUNTED EXHAUST FAN. TRANSITION FROM FAN DISCHARGE TO DUCT SIZE SHOWN AND EXTEND UP THROUGH ROOF.
8. EC TO FURNISH DUCT MOUNTED SMOKE DETECTOR AND PROVIDE COMPATIBLE REMOTE ANNUNCIATOR/TEST SWITCH. MC TO INSTALL SMOKE DETECTOR IN RETURN DUCT, PRIOR TO ANY OUTDOOR AIR CONNECTIONS. MC TO PROVIDE INTERLOCK WIRING BETWEEN SMOKE DETECTOR AND UNIT TO SHUT DOWN UNIT UPON DETECTION OF SMOKE. EC SHALL PROVIDE WIRING FOR FINAL CONNECTION TO CENTRAL FIRE ALARM SYSTEM, IF APPLICABLE, AND WIRING TO REMOTE ANNUNCIATOR/TEST SWITCH.
9. TYPE I GREASE EXHAUST HOOD. INSTALL NEW HOOD PARALLEL TO MAKE LINE. SUPPORT HOOD PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. FURNISH AND INSTALL TRAPEZE HANGERS FOR ALL THREAD SUPPORT UNDER DUCTWORK AS REQUIRED. TRANSITION FROM HOOD CONNECTIONS TO KITCHEN EXHAUST DUCT SIZES SHOWN. REFER TO HOOD SCHEDULE AND DRAWINGS FOR HOOD SPECIFICATIONS AND FOR BALANCE OF MAKE-UP AND SUPPLY AIR TO HOOD
10. FURNISH AND INSTALL HONEYWELL T7350 7-DAY PROGRAMMABLE THERMOSTAT WITH AUTO-CHANGEOVER AND AUTOMATIC START CAPABILITY. MOUNT 46" ABOVE FINISHED FLOOR. SETBACK SHALL BE SET TO 55°F HEATING AND 72°F COOLING. PROVIDE WITH 2 HOUR OCCUPANT OVERRIDE AND 10-HOUR BACKUP.
11. HUMIDITY SENSOR TO BE SET WITH HONEYWELL T7350 THERMOSTAT. HUMIDITY SENSOR SHALL CONTROL REFRIGERATION SYSTEM AND INITIATE HOT GAS REHEAT AS REQUIRED TO MAINTAIN SPACE HUMIDITY AT 55% RH.
12. MOUNT NEW SUPPLY GRILLES VERTICALLY TO NEW SOFFIT. COORDINATE FINAL LOCATION OF GRILLES WITH ARCHITECT AND OWNER.
13. INSTALL OWNER FURNISHED UL-2221 LISTED DOUBLE-WALL GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL DW-2R ROUND 20 GAUGE 430 STAINLESS STEEL INNER DUCT INSULATED WITH A 24 GAUGE OUTER SHELL FROM HOOD COLLAR TO EXHAUST FAN ON ROOF. INSTALL EXHAUST DUCT PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE DUCT AND EVERY 30 FEET WITH MINIMUM OF 3 FEET OF CLEARANCE IN FRONT OF CLEAN-OUT. COORDINATE EXACT DUCT LENGTHS REQUIRED BASED ON FIELD CONDITIONS WITH MANUFACTURER.
14. FURNISH AND INSTALL SHOE TAP AT PLENUM CONNECTION
15. FURNISH AND INSTALL MANUAL VOLUME DAMPER IN EACH MAKEUP AIR DUCT CONNECTED TO MAKEUP AIR PLENUM. REFER TO HOOD SCHEDULE FOR REQUIRED AIRFLOW AT EACH CONNECTION.
16. FURNISH AND INSTALL MANUAL VOLUME DAMPER IN EACH SUPPLY AIR DUCT CONNECTED TO HOOD SUPPLY AIR PLENUM. REFER TO HOOD SCHEDULE FOR REQUIRED AIRFLOW AT EACH CONNECTION.
17. EXISTING ROOFTOP UNIT TO REMAIN. MECHANICAL CONTRACTOR TO FIELD VERIFY EXACT LOCATION PRIOR TO BID AND SERVICE UNIT TO ASSURE IT IS OPERATING PROPERLY. REPLACE ALL FILTERS PRIOR TO LEAVING JOB SITE. BALANCE SUPPLY OUTSIDE AIR TO CFM SCHEDULED.

#### HOOD AIR BALANCE REPORT

PRIOR TO THE HOOD FINAL INSPECTION, AN AIR BALANCE REPORT FOR THE HOOD WILL BE REQUIRED. THE REPORT SHALL INCLUDE THE MEASURED EXHAUST AIR QUANTITY (CFM), VELOCITY (FPM), MAKEUP AIR QUANTITY (CFM), OUTSIDE AIR (CFM) AND PRESSURE RELATIONSHIP BETWEEN THE SERVING AREA AND THE DINING AREA. THIS IS REQUIRED ON ALL HOODS.

#### ROOF PENETRATIONS

COORDINATE ROOF WORK WITH BUILDING OWNER'S ROOFING CONTRACTOR TO ASSURE THAT THE ROOF WARRANTY IS NOT VOIDED.

#### HVAC DESIGN CONDITIONS

COOLING: OUTDOOR = 89°FDB/74°FWB INDOOR = 72°FDB/50%RH	HEATING: OUTDOOR = -7°FDB INDOOR = 70°FDB
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**PAPA JOHN'S**  
 PAPA JOHN'S - INLINE  
 W249 N5245 Executive Drive  
 Sussex, WI 53089  
 STORE NUMBER: TBD

PAPA JOHN'S INTERNATIONAL, INC.  
 788 CIRCLE 70 PARKWAY  
 ATLANTA, GA 30339  
 PROTOTYPE VERSION: PJ\_INLINE\_1.0

PROJECT STATUS: PERMIT SET 05.25.23

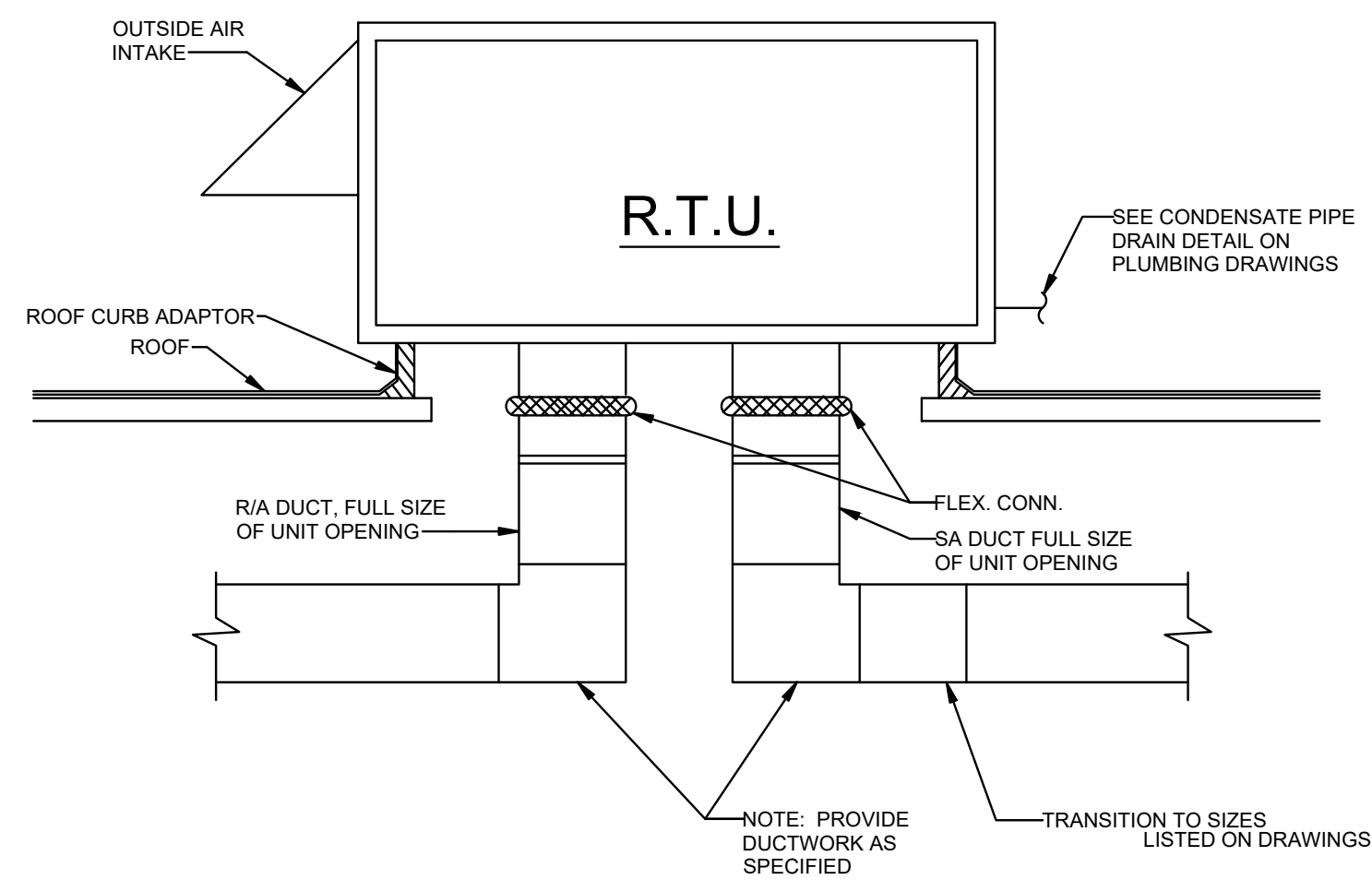
SHEET ISSUE: NO. DATE DESCRIPTION ORIGINAL CD

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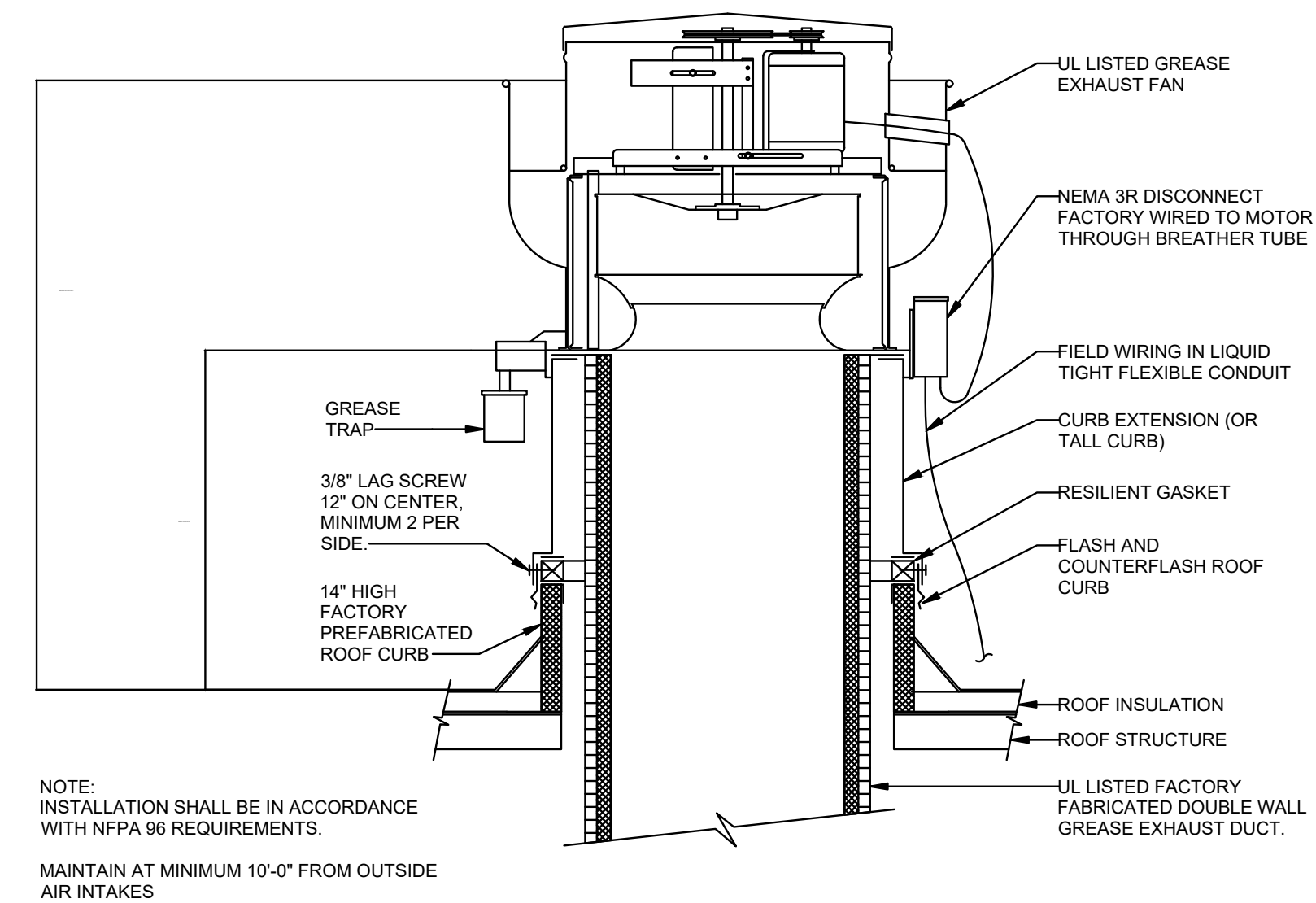
ORIGINAL CD 05.25.23

SHEET TITLE:  
**MECHANICAL PLANS**

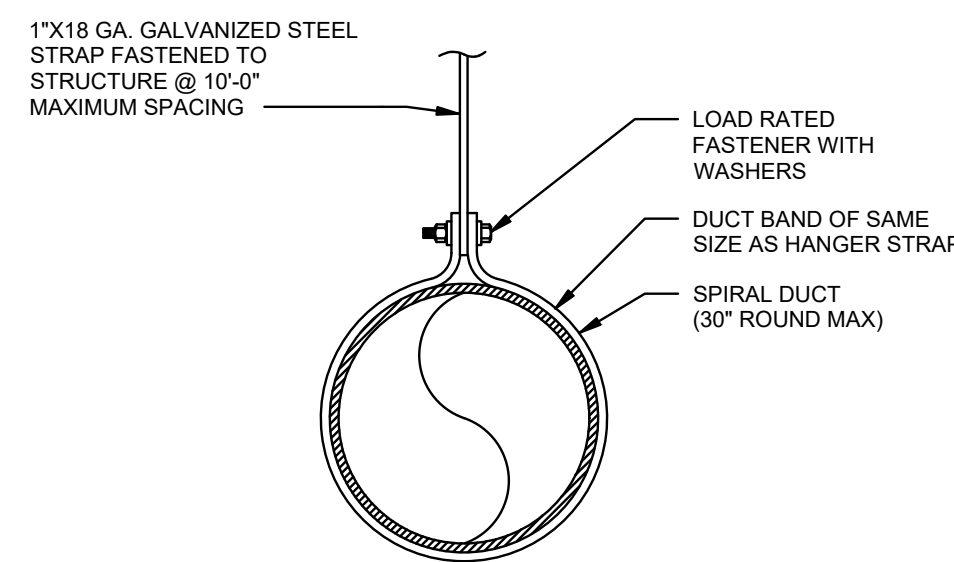
SHEET NO.  
**M2-1**



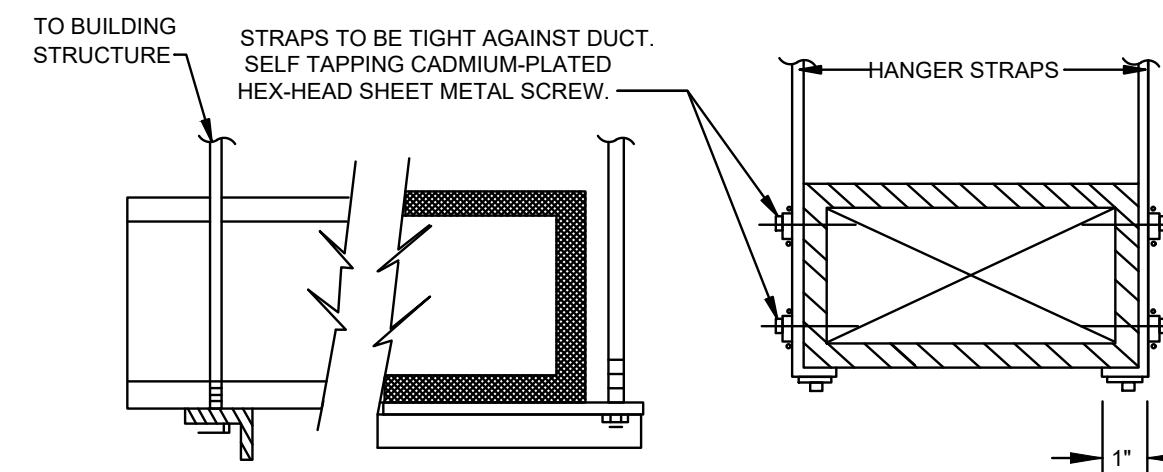
4 ROOF TOP UNIT DETAIL - DUCTED  
M3-1 NOT TO SCALE



1 ROOF MOUNTED GREASE EXHAUST FAN DETAIL  
M3-1 NOT TO SCALE

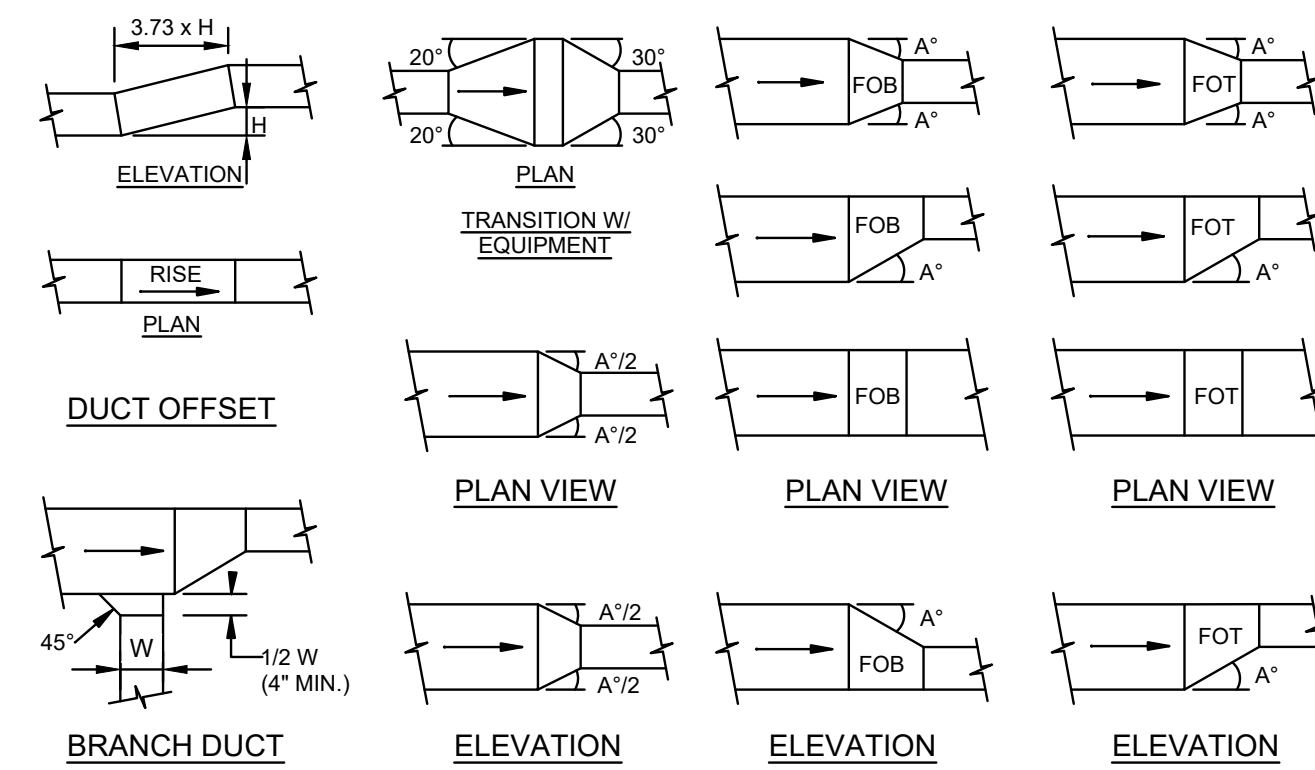


5 SPIRAL DUCT INSTALLATION DETAIL  
M3-1 NOT TO SCALE



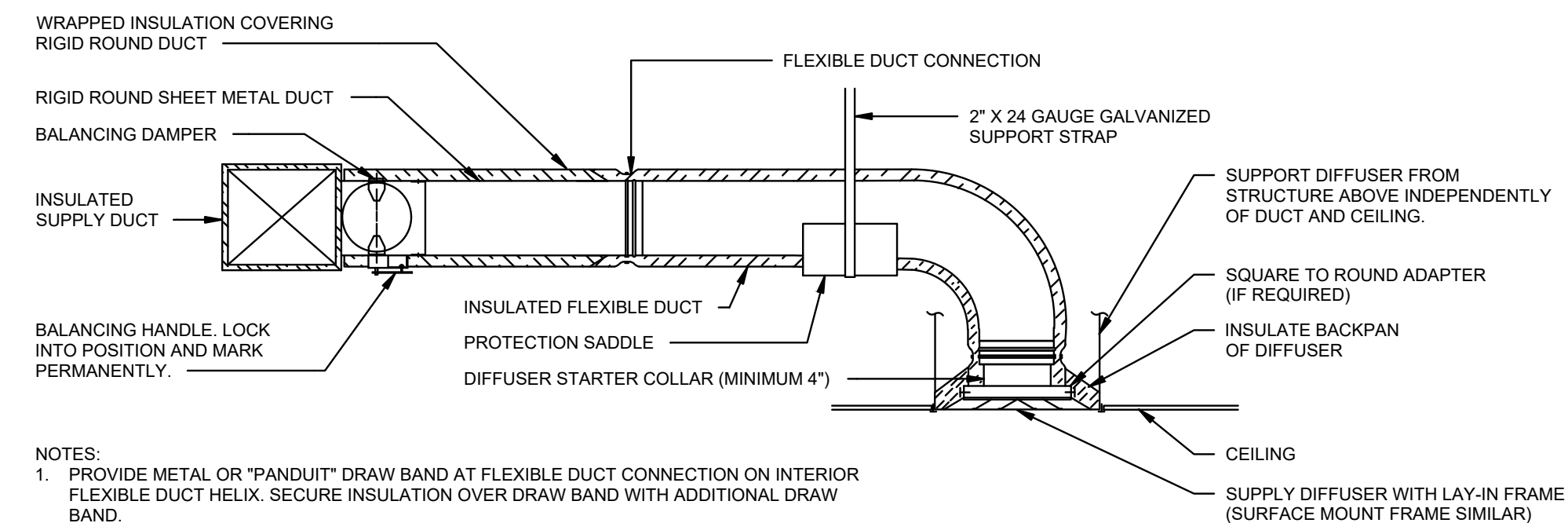
HANGER SIZES FOR RECTANGULAR DUCTS			
MAXIMUM DUCT WIDTH	HANGER	SUPPORT ANGLE HORIZONTAL	MAXIMUM HANGER SPACING
30"	1" x 18" GAUGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROUND ROD	1-1/2" X 1-1/2" X 1/8"	8'-0"
48"	1/4" ROUND ROD	2" X 2" X 1/8"	8'-0"
60"	5/16" ROUND ROD	2" X 2" X 1/8"	8'-0"
84"	3/8" ROUND ROD	2" X 2" X 1/8"	8'-0"

2 DUCT HANGER SIZING FOR RECTANGULAR  
M3-1 NOT TO SCALE



NOTES: 1) ANGLE A = 30° WHEN AIR FLOWS IN DIRECTION OF ARROW (SUPPLY AIR).  
2) ANGLE A = 20° WHEN AIR FLOWS IN OPPOSITE DIRECTION OF ARROW (RETURN OR EXHAUST).

6 LOW VELOCITY DUCT FITTINGS DETAIL  
M3-1 NOT TO SCALE



NOTES:  
1. PROVIDE METAL OR "PANDUIT" DRAW BAND AT FLEXIBLE DUCT CONNECTION ON INTERIOR FLEXIBLE DUCT HELIX. SECURE INSULATION OVER DRAW BAND WITH ADDITIONAL DRAW BAND.  
2. PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER.  
3. PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF FLEXIBLE DUCT TO ROUND DUCT, DAMPERS, AND DIFFUSERS.  
4. BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

3 DIFFUSER CONNECTION DETAIL - FLEX DUCT  
M3-1 NOT TO SCALE

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PROJECT #12369

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WI LICENSE NO.: E-44907

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PROFESSIONAL ENGINEER  
JOHN J. GRAVES  
E-44907  
VILLA HILLS, KY

SHEET TITLE: **MECHANICAL DETAILS**

SHEET NO. **M3-1**

DIVISION 23 MECHANICAL SPECIFICATIONS

23 05 01 COMMON REQUIREMENTS FOR HVAC

ALL MECHANICAL WORK AND TESTS SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST STATE, COUNTY, AND LOCAL REGULATIONS, LAWS, AND ORDINANCES WHICH MAY BE APPLICABLE.

BEFORE SUBMITTING A BID, EXAMINE DOCUMENTS OF ALL OTHER TRADES, VISIT THE SITE AND GET ACQUAINTED WITH ALL CONDITIONS THAT MAY IN ANY WAY AFFECT THE EXECUTION OF THIS CONTRACT. TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF ALL OPENINGS REQUIRED. VERIFY INSTALLATION MAY BE MADE IN COMPLETE ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROFESSIONAL ENGINEER OF RECORD. DO NOT PROCEED WITH THE INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

IT IS NOT THE INTENT OF THE DRAWINGS THAT EXISTING CONDITIONS BE ACCURATELY SHOWN. EXISTING MECHANICAL WORK IS SHOWN TO LIMITED EXTENT ON DRAWINGS AND IS SHOWN FOR GENERAL REFERENCE ONLY. LOCATIONS AND INFORMATION WERE DERIVED FROM CURSORY SITE VISUAL OBSERVATIONS OR FROM DOCUMENTS THAT WERE PREPARED FOR PREVIOUSLY INSTALLED WORK WHEN AVAILABLE.

THE WORK COVERED BY THESE SPECIFICATIONS SHALL CONSIST OF PROVIDING ALL NEW MATERIAL, LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE MECHANICAL INSTALLATION AS SPECIFIED HEREIN. WORK IN THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:

- ROOFTOP UNIT
- TOILET EXHAUST FANS
- KITCHEN HOOD AND EXHAUST FAN
- LOW VOLTAGE THERMOSTATS
- DUCT
- DAMPERS
- DIFFUSERS, REGISTERS, AND LOUVERS

WHENEVER THE WORDS "CONTRACTOR" APPEAR ON MECHANICAL DRAWINGS OR IN THESE SPECIFICATIONS, IT SHALL REFER TO THE MECHANICAL SUB-CONTRACTOR. WHENEVER THE WORD "PROVIDE" APPEARS IN THESE DOCUMENTS, IT SHALL BE INTERPRETED TO MEAN "FURNISH AND INSTALL".

COORDINATE ALL WORK WITH THE OWNER TO MINIMIZE INTERRUPTION OF BUILDING OPERATION.

COORDINATE THE INSTALLATION OF MECHANICAL ITEMS WITH THE SCHEDULES FOR WORK OF ALL OTHER TRADES TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

THIS CONTRACTOR SHALL VERIFY AND SATISFY HIMSELF THAT ALL EQUIPMENT FURNISHED WILL PROPERLY FIT IN THE SPACE PROVIDED, THAT IT WILL FUNCTION PROPERLY, AND THAT ALL PARTS OF EQUIPMENT REQUIRING SERVICE ARE READILY ACCESSIBLE.

ALL PIPING SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING WALLS AND FRAMING SYSTEM. ALL VERTICAL RUNS SHALL BE HELD AGAINST WALLS, COLUMNS, ETC., AS POSSIBLE TO PERMIT MAKING OF PIPE JOINTS.

CONTRACTOR SHALL PROVIDE A GUARANTEE IN WRITTEN FORM STATING THAT ALL WORK SHALL BE FREE OF DEFECTS OR ERRORS, AND ALL EQUIPMENT, MATERIALS, OR PARTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF OWNER'S FINAL ACCEPTANCE AND SHALL REPAIR, REVISE OR REPLACE AT NO COST TO THE OWNER ANY SUCH DEFECTS OCCURRING WITHIN THE GUARANTEE PERIOD.

CONTRACTOR SHALL ALSO STATE IN WRITTEN FORM THAT ANY ITEMS OR OCCURRENCES ARISING DURING THE GUARANTEE PERIOD WILL BE ATTENDED TO IN A TIMELY MANNER AND WILL IN NO CASE EXCEED THREE (3) WORKING DAYS FROM DATE OF NOTIFICATION BY OWNER.

PROVIDE A COMPLETE INSTALLATION IN CONFORMANCE WITH THE FOLLOWING STANDARDS.

- AGA: AMERICAN GAS ASSOCIATION
- ASHRAE: AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
- NFPA: NATIONAL FIRE PROTECTION ASSOCIATION
- SMAACNA: SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION.
- STATEWIDE BUILDING CODE
- INTERNATIONAL MECHANICAL CODE

CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF THIS WORK. ALL OPENINGS IN WALLS, FLOORS OR CEILINGS SHALL BE PROPERLY SEALED AND RESTORED IN KIND. FLASH AND COUNTERFLASH AT ROOF OPENINGS.

ALL EQUIPMENT SHALL BE LISTED AND LABELED, UNLESS OTHERWISE APPROVED.

ALL WIRING SHALL MEET THE REQUIREMENTS LISTED IN THE ELECTRICAL SPECIFICATIONS. ALL CONTROL AND INTERLOCK WIRING AND CONDUIT (120V OR 24V) SHALL BE BY THE MECHANICAL CONTRACTOR.

EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THIS CODE.

CLEANING: THIS CONTRACTOR SHALL REMOVE FROM THE PREMISES ALL ACCUMULATION OF DIRT, DEBRIS, WASTE MATERIALS AND RUBBISH CAUSED BY HIS EMPLOYEES OR WORK, AT LEAST ONCE A WEEK, EXCEPT THAT COMBUSTIBLE MATERIALS SHALL BE REMOVED DAILY.

DURING PROGRESS OF THE WORK, MAINTAIN ON DRAWINGS AT THE SITE, AN ACCURATE RECORD OF THE INSTALLATION OF THE MECHANICAL SYSTEM, INDICATING ALL ITEMS WHICH HAVE BEEN CHANGED OR ADDED.

APPLY FOR AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY LOCAL AUTHORITY, FOR THE APPROVAL OF WORK.

A CERTIFICATE OF FINAL INSPECTION AND APPROVAL SHALL BE SUBMITTED WITH THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT. NO FINAL PAYMENT WILL BE APPROVED WITHOUT THIS CERTIFICATE.

GUARANTEE ALL WORKMANSHIP, MATERIAL, AND EQUIPMENT AND REPLACE ANY FOUND DEFECTIVE WORK WITHOUT COST TO THE OWNER, FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE.

EXISTING CONDITIONS

DO NOT REUSE REMOVED MECHANICAL MATERIALS UNLESS SPECIFICALLY INDICATED ON DRAWINGS. EXISTING SYSTEMS MAY BE UTILIZED ONLY TO THE EXTENT INDICATED ON DRAWINGS.

IF REQUIRED TO ACCOMMODATE CONSTRUCTION RELATED ACTIVITIES TEMPORARILY REMOVE, STORE IN PROTECTED LOCATION ON SITE, AND REINSTALL CONFLICTING MECHANICAL EQUIPMENT, OR DEVICES THAT ARE TO REMAIN OR TO BE RELOCATED.

WHERE THE TERM "DEMOLITION" IS USED HEREIN, INTERPRET IT TO MEAN "DEMOLITION" OR "SELECTIVE DEMOLITION" WHERE APPLICABLE.

PROVIDE MECHANICAL DEMOLITION WORK AS REQUIRED TO ACCOMMODATE PROJECT DEMOLITION AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION. DISCONNECT AND REMOVE WORK TO BE ABANDONED, AND AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES, IN AREAS AFFECTED BY THIS PROJECT.

LEGALLY DISPOSE OF MATERIALS TO SALVAGED OR RETAINED.

23 05 03 SUBMITTALS FOR MECHANICAL SYSTEMS

DESIGN BASIS MANUFACTURERS OF MATERIAL AND EQUIPMENT ARE SPECIFIED AND PLANS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE HIS BID ON FURNISHING AND INSTALLING THIS MAKE OF MATERIAL AND EQUIPMENT.

AN ACCEPTABLE MANUFACTURER'S NAME AND MODEL NUMBER OF A PRODUCT MAY BE PROVIDED IN THESE DOCUMENTS. THIS IS THE EQUIPMENT INCLUDED DURING THE DESIGN PROCESS AND FORMS THE BASIS OF A STANDARD OF QUALITY. WHERE MORE THAN ONE MAKE OF MATERIAL OR EQUIPMENT IS SPECIFIED, THE CONTRACTOR SHALL STATE IN HIS BID WHICH MAKE HE PROPOSES TO FURNISH AND INSTALL. SHOP DRAWING APPROVAL SHALL BE OBTAINED PRIOR TO SHIPMENT OF EQUIPMENT.

VERIFY THE MODEL NUMBER OR PRODUCT IS STILL ACCURATE AND MEETS ALL REQUIREMENTS SHOWN ON THE DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN THE REQUIREMENTS AND THE PRODUCT OR MODEL NUMBER, THE STRICTER OF THE TWO SHALL GOVERN.

SUBMIT SHOP DRAWINGS AND/OR PRODUCT DATA (ELECTRONIC COPIES) ON THE FOLLOWING ITEMS FOR REVIEW BEFORE FABRICATION OR SHIPMENT:

- ROOFTOP UNIT
- TOILET EXHAUST FANS
- KITCHEN HOOD AND EXHAUST FAN
- LOW VOLTAGE THERMOSTATS
- DUCT
- DAMPERS
- DIFFUSERS, REGISTERS, AND LOUVERS

MAINTENANCE MANUALS: THE MANUALS SHALL INCLUDE WIRING DIAGRAMS, MAINTENANCE AND OPERATING INSTRUCTIONS, PARTS LISTINGS, AND COPIES OF OTHER SUBMITTALS INDICATED FOR INCLUSION.

REVIEW AND CORRECTIONS OR COMMENTS MADE ON SHOP DRAWINGS, PRODUCT DATA: CATALOGS, CUT SHEETS, CHARTS, AND OTHER ITEMS DURING CONSTRUCTION PHASE SUBMITTAL REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS, FOR PROVIDING A COMPLETE AND FUNCTIONING PROJECT, NOR SHALL THEY RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS OR ERRORS OF ANY SORT. THIS REVIEW IS FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS. CONTRACTOR REMAINS RESPONSIBLE FOR DETERMINING THE ACCURACY AND COMPLETENESS OF OTHER DETAILS SUCH AS DIMENSIONS AND QUANTITIES, FOR SUBSTANTIATING

INSTRUCTIONS FOR INSTALLATIONS, VERIFYING MATERIALS REQUIRED, OBTAINING FIELD MEASUREMENTS AND RELATED CRITERIA, COORDINATING WORK WITH OTHER DISCIPLINES AND PERFORMING WORK IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

ANY CHANGES TO ITEMS SPECIFIED MUST BE SUBMITTED IN WRITING AS A SUBSTITUTION, WITH COMPLETE DOCUMENTATION OF PRICE DIFFERENTIAL AND EQUIPMENT DETAILS. ANY SUBSTITUTIONS PROVIDED SHALL BE REVIEWED AT MARQUE ENGINEERING'S HOURLY RATES. REVIEW SHALL BE PAID FOR BY THE CONTRACTOR TO MARQUE ENGINEERING AT NO COST TO THE OWNER. BY USING PRE-APPROVED SUBSTITUTIONS, THE CONTRACTOR ACCEPTS ALL RESPONSIBILITY AND ASSOCIATED COSTS FOR ALL REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS TO INCLUDE BUT NOT LIMITED TO MATERIAL OR EQUIPMENT COSTS FOR THEIR OR OTHER TRADES, AND ENSURING THAT SUBSTITUTED MATERIALS AND EQUIPMENT TO BE FURNISHED FIT INTO SPACE AVAILABLE.

EXTENSIVE REVISIONS NECESSITATED TO THE CONTRACT DOCUMENTS, OR SUBSTITUTION ACTIONS RELATED TO ANY SPECIFIED PRODUCT NOT ABLE TO BE PROVIDED DUE TO A FAILURE TO COMMENCE WORK, RELEASE PRODUCT OR COORDINATE CONSTRUCTION ACTIVITIES SHALL BE PROVIDED AT MARQUE ENGINEERING'S HOURLY RATES. COSTS SHALL BE BORN BY THE CONTRACTOR AT NO COST TO THE OWNER.

23 05 29 HANGERS AND SUPPORTS

SUPPORT ALL PIPING, DUCTWORK AND EQUIPMENT BY HANGERS OR BRACKETS. FURNISH STRUCTURAL STEEL MEMBERS WHERE REQUIRED TO SUPPORT PIPING AND EQUIPMENT. NO PORTION OF PIPING OR VALVES SHALL BE SUPPORTED BY EQUIPMENT.

DUCTWORK - SUPPORT BY MEANS OF HANGERS AS FOLLOWS:

- DUCT WIDTH 30 OR LESS
- HANGER SIZE (16 GAUGE)
- TYPE MAX. SPACING 8

A PAIR OF HANGERS SHALL BE LOCATED AT EVERY TRANSVERSE JOINT AND ELSEWHERE ACCORDING TO THE TABLE.

23 05 93 HVAC SYSTEM TESTING , ADJUSTING AND BALANCING FOR HVAC

ALL SYSTEMS AND EQUIPMENT SHALL BE CAREFULLY ADJUSTED TO PROVIDE COMFORTABLE AND UNIFORM CONDITIONS IN EACH AND EVERY SPACE TO THE OWNER'S SATISFACTION. PROVIDE ANY REQUIRED DRIVES TO SATISFY QUANTITIES INDICATED. PROVIDE A CERTIFIED AIR BALANCE OF THE DIFFUSERS AND AIR HANDLERS.

AIR SYSTEM:

AIR BALANCE AND TESTING SHALL NOT BEGIN UNTIL THE SYSTEM HAS BEEN COMPLETED AND IS IN FULL WORKING ORDER. CONTRACTOR SHALL PUT ALL HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND SHALL CONTINUE THE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING. CONTRACTOR SHALL SUBMIT WITHIN 30 DAYS AFTER RECEIPT OF CONTRACT, COPIES OF SUBMITTAL DATA FOR THE TESTING AND BALANCING OF THE AIR CONDITIONING, HEATING, AND VENTILATING SYSTEMS. THE AIR BALANCE AND TESTING AGENCY SHALL PROVIDE PROOF OF HAVING SUCCESSFULLY COMPLETED AT LAST FIVE PROJECTS OF SIMILAR SIZE AND SCOPE.

CONTRACTOR SHALL PROCURE THE SERVICES OF AN INDEPENDENT AIR BALANCE AND TESTING AGENCY, APPOINTED BY THE ENGINEER, AND A MEMBER OF AABC OR NEBB, WHICH SPECIALIZES IN THE BALANCING AND TESTING OF HEATING VENTILATION AND AIR CONDITIONING SYSTEMS, TO BALANCE, ADJUST AND TEST AIR MOVING EQUIPMENT AND AIR DISTRIBUTION OR EXHAUST SYSTEMS AS HEREIN SPECIFIED.

ALL WORK BY THIS AGENCY SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A QUALIFIED HEATING AND VENTILATING ENGINEER EMPLOYED BY THIS AGENCY. ALL INSTRUMENTS USED BY THIS AGENCY SHALL BE ACCURATELY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER.

23 07 13 DUCT INSTALLATION

INSULATE ALL SUPPLY, DIFFUSER PLENUMS, AND OUTSIDE AIR DUCTWORK OF ALL UNITS WITH OWENS CORNING "ALL SERVICE DUCT WRAP" TYPE 150 GLASS FIBER INSULATION UNLESS OTHERWISE NOTED. INSULATION SHALL BE 1-1/2" THICK (2" THICK FOR SUPPLY AND RETURN IN TRUSS SPACE), 1.5 PCF. DENSITY WITH FRK JACKET .002 THICK REINFORCED ALUMINUM FOIL VAPOR BARRIER. INSULATION SHALL CONFORM TO NFPA 90A AND 90B PER ASTM E-84 FOR FLAME SPREAD AND SMOKE DEVELOPED RATING.

INSULATE ALL EXTERIOR SUPPLY AND RETURN DUCTWORK WITH RIGID FIBERGLASS BOARD INSULATION WITH OUTDOOR JACKET. INSULATION SHALL BE 2" THICK WITH A "K" VALUE OF 0.23 AT 75 F. INSTALL ON DUCTWORK USING IMPALE ANCHORS AND WIRES. SEAL VAPOR BARRIER WITH VAPOR BARRIER ADHESIVE.

PROVIDE INSULATION ON ALL CONCEALED SUPPLY, RETURN DUCTWORK. ALL LINERS, INSULATION AND ADHESIVES SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

RIGID FIBERGLASS DUCTWORK INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE II, WITHOUT FACING AND WITH VAPOR BARRIER ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM. INSULATION SHALL HAVE A MINIMUM R VALUE AS REQUIRED BY CODE.

FLEXIBLE FIBERGLASS DUCTWORK INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE II, WITHOUT FACING AND WITH VAPOR BARRIER ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM. INSULATION SHALL HAVE A MINIMUM R VALUE AS REQUIRED BY CODE.

VAPOR BARRIER MATERIAL FOR DUCTWORK: PAPER-BACKED ALUMINUM-FOIL, EXCEPT AS OTHERWISE INDICATED; STRENGTH AND PERMEABILITY RATIO EQUIVALENT TO FACTORY-APPLIED VAPOR BARRIERS ON INSULATING DUCTWORK INSULATION, WHERE AVAILABLE; WITH FOLLOWING ADDITIONAL CONSTRUCTION CHARACTERISTICS:

- HIGH PUNCTURE RESISTANCE: LOW VAPOR TRANSMISSION (FOR DUCTS IN EXPOSED AREAS: MECH. ROOMS, ETC.)
- MODERATE PUNCTURE RESISTANCE: MEDIUM VAPOR TRANSMISSION (FOR DUCTS IN CONCEALED AREAS).

INSTALLATION IS NOT PERMITTED ABOVE DRYWALL CEILINGS AND INACCESSIBLE CEILINGS.

23 09 93 SEQUENCE OF OPERATION

ROOFTOP UNIT

STARTUP

THE UNIT SHALL OPERATE ON A 7 DAY/NIGHT PROGRAMMABLE THERMOSTAT. DURING STARTUP, THE FAN SHALL RUN WITH THE DAMPERS IN THE FULL RECIRCULATION POSITION. PROVIDE OCCUPIED CHANGEOVER SEQUENCE WITH OPTIMUM START FUNCTION. WHEN THE RETURN AIR TEMPERATURE REACHES OCCUPIED SETPOINT (ADJUSTABLE), THE MINIMUM OUTSIDE AIR DAMPER SHALL OPEN TO THE CONTROLLED MINIMUM OUTDOOR AIR POSITION.

SUPPLY FAN CONTROL

THE SUPPLY FAN SPEED SHALL BE CONSTANT AND SET TO THE REQUIRED CFM.

SPACE TEMPERATURE CONTROL

PROVIDE LOCAL WALL MOUNTED ROOM TEMPERATURE THERMOSTAT WITH DIGITAL DISPLAY OF ROOM TEMPERATURE AND SETPOINT (+/- DEG. F. ADJUSTABLE), AND OVERRIDE FEATURE. PROVIDE REMOTE SENSOR TO MONITOR SPACE TEMPERATURE AND MAINTAIN THERMOSTAT SETPOINT.

MINIMUM OUTSIDE AIR CONTROL

DURING OCCUPIED MODE THE MINIMUM OUTSIDE AIR DAMPER SHALL BE OPEN. PROVIDE MOTORIZED OUTDOOR AIR DAMPER.

ECONOMIZER CONTROL

DRY BULB CONTROLLED ECONOMIZER: OPERATED TO AUTOMATICALLY USE OUTDOOR AIR FOR "FREE COOLING" WHEN OUTDOOR AIR TEMPERATURE IS AT ACCEPTABLE LEVELS. AUTOMATICALLY MODULATED OUTDOOR AND RETURN AIR DAMPERS MAINTAIN PROPER DISCHARGE AIR TEMPERATURE INTO THE CONDITIONED SPACE. ADJUSTABLE MINIMUM POSITION CONTROL IS STANDARD. ECONOMIZER SHALL HAVE POWERED OR BAROMETRIC RELIEF, AS SCHEDULED.

COOLING CONTROL

COOLING SHALL BE CONTROLLED TO MAINTAIN SPACE TEMPERATURE SETPOINT. ON A CALL FOR COOLING THE HEATING SHALL BE OFF. ON A FURTHER CALL FOR COOLING, ENABLE THE ECONOMIZER MODE. ON A FURTHER CALL FOR COOLING, DISABLE THE ECONOMIZER MODE AND THE MECHANICAL COOLING SHALL BE STAGED ON.

HEATING CONTROL

HEATING SHALL BE CONTROLLED TO MAINTAIN SPACE TEMPERATURE SETPOINT. ON A CALL FOR HEATING, THE MECHANICAL COOLING SHALL BE OFF. ON A FURTHER CALL FOR HEATING, THE ECONOMIZER MODE SHALL BE DISABLED. ON A FURTHER CALL FOR HEATING THE GAS HEATING SHALL BE STAGED ON.

DEHUMIDIFICATION

PROVIDE HOT GAS REHEAT FOR DEHUMIDIFICATION. PROVIDE SPACE HUMIDITY SENSOR. WHEN THE SPACE HUMIDITY RISES ABOVE 60% (ADJUSTABLE), PROVIDE FULL COOLING AND MODULATE THE HOT GAS REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN THE SPACE HUMIDITY REACHES SETPOINT, RESUME WITH NORMAL HEATING & COOLING OPERATION.

SMOKE DETECTOR

WHEN THE SMOKE DETECTOR IS ALARMED, THE SYSTEM SHALL BE ALARMED AND THE RTU SHALL FAIL SAFE WITH MANUAL RESET. ELECTRICAL CONTRACTOR SHALL FURNISH, HVAC CONTRACTOR SHALL MOUNT & ELECTRICAL CONTRACTOR SHALL WIRE A UL LISTED PHOTOELECTRIC SMOKE DETECTOR PER LOCAL CODE AUTHORITY HAVING JURISDICTION.

UNOCCUPIED MODE

DURING THE UNOCCUPIED MODE OF OPERATION, THE RTU SHALL GO INTO NIGHT SETBACK MODE. AT NIGHT SETBACK/SHUTDOWN THE RTU SHALL GO TO FAIL SAFE POSITION. FAIL SAFE POSITION IS DEFINED BY THE FOLLOWING: THE SUPPLY FAN IS OFF, THE OUTDOOR AIR INTAKE DAMPER IS CLOSED, THE HEATING IS OFF AND THE MECHANICAL COOLING IS OFF. THE SUPPLY FAN SHALL CYCLE IN CONJUNCTION WITH EITHER THE HEATING OR COOLING

SYSTEM TO MAINTAIN A MINIMUM/MAXIMUM SPACE TEMPERATURE DEPENDING ON THE SEASON.

LOW VOLTAGE THERMOSTATS SHALL BE PROVIDED AND WIRED BY THE HVAC CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE 4" SQUARE X 1- 1/2" DEEP WALL OUTLET BOXES (WITH SINGLE-GANG RINGS) FOR ALL THERMOSTATS/SENSORS. ELECTRICAL CONTRACTOR SHALL PROVIDE ONE 3/4" EMPTY CONDUIT FROM EACH THERMOSTAT/SENSOR LOCATION, TURNED OUT ABOVE ACCESSIBLE CEILINGS (IN JOIST SPACE OR AGAINST OVERHEAD SLAB/DECK). HVAC/TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE ALL OTHER NECESSARY CONDUIT, RACEWAY AND WIRING RELATED WORK. CONDUIT SHALL BE IDENTIFIED IN CEILING CAVITY AND SHALL BE PROVIDED WITH SWEEP BENDS, BUSHINGS AND DRAGLINE.

EXHAUST FANS SHALL BE TIED TO LIGHT SWITCH, WHICH SHALL BE FURNISHED, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. WHEN ACTIVATED, EXHAUST FAN MOTOR DAMPER SHALL OPEN AND FAN SHALL START.

**KITCHEN HOOD EXHAUST FANS:** PROVIDE HEAT DETECTOR IN HOOD COLLAR INTERLOCKED TO FAN OPERATION. KITCHEN HOOD EXHAUST SYSTEM SHALL BE INITIATED BY THE HEAT DETECTOR. PROVIDE INDICATOR LIGHT ON FACE OF HOOD. AT STARTUP, ENERGIZE EXHAUST FAN MOTOR. INTERLOCK TO MAKEUP AIR SYSTEM (WHETHER DEDICATED MAKEUP AIR OR MAKEUP AIR FROM HVAC SYSTEM), SO THAT MAKEUP AIR IS PROVIDED WHENEVER EXHAUST FAN IS RUNNING. EXHAUST FAN SHALL RUN CONTINUOUSLY AT CONSTANT SPEED. AT SHUTDOWN, THE EXHAUST FAN SHALL STOP.

PROVIDE ALL CONTROLS AND WIRING FOR COMPLETE INTERLOCK AND OPERATION OF KITCHEN HOOD, EXHAUST FAN, ROOFTOP UNIT, ETC. AND ALL ASSOCIATED MOTOR DAMPERS.

ALL DUCT SMOKE DETECTORS WILL BE FURNISHED BY ELECTRICAL CONTRACTOR, INSTALLED BY THE HVAC CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR PER LOCAL CODES. HVAC CONTRACTOR WILL INTERLOCK FAN WITH SMOKE DETECTOR.

**MOTOR OPERATED DAMPERS:** ALL FRESH AIR INTAKES AND EXHAUST LOUVERS SHALL HAVE MOTOR OPERATED DAMPERS. DAMPERS SHALL BE LOW LEAK WITH BLADE AND EDGE SEALS. 24 V MOTOR OPERATED DAMPERS SHALL BE PROVIDED AND WIRED BY THE MECHANICAL CONTRACTOR, UNLESS OTHERWISE NOTED. PROVIDE ALL NECESSARY TRANSFORMERS, CONTACTORS, CONTROLS AND WIRING FOR INTERLOCKING EQUIPMENT TO MOTOR OPERATED DAMPERS.

23 22 00 CONDENSATE DRAIN PIPING

INSTALL TRAP AT EVAPORATOR COIL DRAIN. EXTEND DRAIN LINE FROM COIL TRAP TO DRAIN. PIPING SHALL BE STANDARD WEIGHT, PVC PIPE AND FITTINGS AND WITH JOINTS OF PVC SOLVENT CEMENT. PROVIDE CLEANOUTS THROUGHOUT RUN AND AT TOPS OF TRAPS.

23 30 00 AIR DISTRIBUTION SYSTEM

CEILING AIR DIFFUSERS:

SQUARE: SQUARE HOUSING, CORE OF SQUARE CONCENTRIC LOUVERS, SQUARE OR ROUND DUCT CONNECTION.

VAV DIFFUSER: THE VAV SQUARE PLAQUE DIFFUSER SHALL BE SUPPLIES TO DELIVER A 360 DEGREE RADIAL, HORIZONTAL AIR FLOW PATTERN. THE BACK CONE SHALL BE A ONE-PIECE DIE-FORMED DESIGN WITH SMOOTH, AERODYNAMICALLY DESIGNED SURFACES AND NO CORNER JOINTS.

CONSTRUCTION: DIFFUSER CONSTRUCTION SHALL BE 24x24 STEEL WITH ONE-PIECE BACK PAN, AERODYNAMICALLY DESIGNED INNER CONE DAMPER ASSEMBLY, AND PLAQUE FACEPLATE.

A PLAQUE ASSEMBLY SHALL BE INCORPORATED AND SHALL DROP NO MORE THAN 1/4 INCH BELOW THE CEILING PLAN TO ASSURE PROPER AIR DISTRIBUTION PERFORMANCE.

THE PLAQUE ASSEMBLY SHALL BE COMPLETELY REMOVABLE FROM THE DIFFUSER FACE TO ALLOW FOR FULL ACCESS TO ANY DAMPERS OR OTHER DUCTWORK COMPONENTS LOCATED NEAR THE DIFFUSER NECK.

POWER REQUIREMENTS: THE VAV DIFFUSERS SHALL BE POWERED BY 24VAC, 3.0 VA PER UNIT, WITH SUPPLY POWER FREQUENCY: 60 HZ

MODULATING DAMPER ASSEMBLY: THE MODULATING DAMPER ASSEMBLY SHALL HAVE THE FOLLOWING FEATURES:

- QUIET, ULTRA-LONG LIFE BRUSHLESS A DRIVE MOTOR
- DIRECT DRIVE SYSTEM WITHOUT GEARS, BELTS, OR LEVERS, RESULTING IN ZERO MAINTENANCE AND LONG LIFE

DIFFUSER SHALL BE SUPPLIED WITH A 120 VOLT 277 VOLT, 24 VAC 20 VA TRANSFORMER

A WALL MOUNTED THERMOSTAT WILL PROVIDE ROOM TEMPERATURE SENSING AS WELL AS SET-POINT ADJUSTMENT FOR HEATING AND COOLING.

LINEAR: EXTRUDED ALUMINUM CONTINUOUS SLOT, SINGLE OR MULTIPLE.

DIFFUSER MOUNTINGS: SURFACE MOUNT: DIFFUSER SHALL HAVE ROLLED EDGE BELOW FINISHED CEILING FOR SURFACE MOUNTING OR DIFFUSER SHALL BE FURNISHED WITH ACCESSORY PLASTER FRAME.

LAY-IN: DIFFUSER HOUSING SIZED TO FIT BETWEEN CEILING EXPOSED SUSPENSION TEE BARS AND REST ON TOP SURFACE OF TEE BAR.

DIFFUSER ACOUSTIC PERFORMANCE: NC LESS THAN OR EQUAL TO 30

DIFFUSER ACCESSORIES: PLASTER RING: PERIMETER RING DESIGNED TO ACT AS PLASTER STOP AND DIFFUSER ANCHOR.

DIFFUSER FINISHES: WHITE ENAMEL: SEMI-GLOSS WHITE ENAMEL PRIME FINISH.

REGISTER AND GRILLE FINISHES: WHITE ENAMEL: SEMI-GLOSS WHITE ENAMEL PRIME FINISH.

REGISTER AND GRILLE ACOUSTIC PERFORMANCE: NC LESS THAN OR EQUAL TO 30

23 31 13 METAL DUCTS

CONSTRUCTION, INSTALLATION AND SUPPORT OF ALL DUCTWORK SHALL CONFORM TO THE LATEST EDITION OF SMAACNA "HVAC DUCT CONSTRUCTION STANDARD -METAL AND FLEXIBLE".

ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ACHIEVE AIR-TIGHT (5% LEAKAGE FOR SYSTEMS RATED 3" AND UNDER; 1% FOR SYSTEMS RATED OVER 3") AND NOISELESS (NO OBJECTIONABLE NOISE) SYSTEMS. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY AT CONNECTIONS, WITHIN 1/8" MISALIGNMENT TOLERANCE AND WITH INTERNAL SURFACES SMOOTH.

SUPPORT VERTICAL DUCTS AT EVERY FLOOR. SUPPORT DUCT WITH APPROVED HANGERS AT INTERVALS NOT EXCEEDING 10 FEET.

DUCTS SHALL BE GALVANIZED SHEET METAL, OF STANDARD GAUGES. DUCTWORK SHALL HAVE A MINIMUM THICKNESS OF .24 GAUGE. ALL DUCT ELBOWS SHALL BE EITHER FULL RADIUS OR WITH TURNING VANES.

WHERE DUCTWORK IS INDICATED TO BE EXPOSED IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR PAINTING.

EXPOSED DUCTWORK WHICH IS TO BE PAINTED SHALL HAVE PAINT GRIP APPLIED.

PROVIDE VOLUME DAMPERS IN ALL BRANCH DUCTS OR AS REQUIRED FOR BALANCING TO REQUIRED AIR FLOWS.

PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEG. CHANGE OF DIRECTION PER SECTION, UNLESS DETAILED OTHERWISE, USE 45 DEG. LATERALS AND 45 DEG. ELBOWS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEG. BRANCHES ARE INDICATED, PROVIDE CONICAL TYPE TEES.

FLEXIBLE DUCTS SHALL EITHER BE SPIRAL-WOUND SPRING STEEL WITH FLAMEPROOF VINYL SHEATHING OR CORRUGATED ALUMINUM. THE MAXIMUM LENGTH OF FLEX DUCT ON THE SUPPLY EQUALS 5 FEET. FLEX IS NOT ALLOWED FOR RETURN, RELIEF OR EXHAUST APPLICATIONS.

SHALL BE SO IDENTIFIED.

WHERE INSTALLED IN UNCONDITIONED SPACES OTHER THAN RETURN AIR PLENUMS, PROVIDE 1" THICK 1-1/2 LB. CONTINUOUS FLEXIBLE FIBERGLASS SHEATH WITH VINYL VAPOR BARRIER JACKET.

SHOP FABRICATE DUCTWORK IN 4, 8, 10 OR 12-FT LENGTHS, OR REQUIRED TO COMPLETE RUNS.

FABRICATE DUCTWORK WITH DUCT LINER IN EACH SECTION OF DUCT WHERE INDICATED. LAMINATE LINER TO INTERNAL SURFACES OF DUCT IN ACCORDANCE WITH INSTRUCTIONS BY MANUFACTURERS OF LINING AND ADHESIVE, AND FASTEN WITH MECHANICAL FASTENERS. DUCT LINER TO BE 3-LB DENSITY FOR ACOUSTIC REQUIREMENTS 1" THICK OR AS NOTED. SIZE OF DUCTWORK SHOWN ON THE DRAWINGS IS FREE NET AREA, OUTSIDE DIMENSION OF DUCTS WILL NEED TO BE INCREASED IF LINED DUCT IS USED.

DUCT LINER SHALL BE OF FIBROUS GLASS OF THICKNESS INDICATED. 3-LB DENSITY. ALL LINERS, INSULATION AND ADHESIVES SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

23 33 13 DAMPERS

DAMPERS WITH LOCKING DEVICE, WHERE ACCESSIBLE, SHALL BE RUSKIN MD-35. OPPOSED BLADE FOR RECTANGULAR DUCTS 12 INCHES AND ABOVE, AND MODEL MD-25 PARALLEL BLADE FOR DUCTS 10 INCHES AND BELOW, AND MODEL MD05-25 FOR ROUND DUCTS. INSTALL PER MANUFACTURER'S INSTRUCTIONS. SINGLE BLADE ROUND DAMPERS WITH LOCKING DEVICE SHALL BE IN SPIN-IN COLLARS.

FIRE DAMPERS SHALL BE RUSKIN MODEL 1BD, STYLE B WITH BLADE PACKAGE OUT OF AIR STREAM. HORIZONTAL, INSTALL WHERE INDICATED ON DRAWINGS AND AS REQUIRED BY AUTHORITY HAVING LOCAL JURISDICTION.

ELECTRIC MOTORIZED DAMPER SHALL BE SIZED TO OPERATE WITH SUFFICIENT RESERVE POWER TO PROVIDE SMOOTH MODULATING ACTION OR TWO-POSITION ACTION. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

23 38 13.00 - COMMERCIAL KITCHEN HOODS AND DUCTWORK

TYPE I HOOD

REFER TO CAPTIVE AIRE DRAWINGS FOR SPECIFICATIONS.

**INSPECTION** GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH EQUIPMENT IS TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

**INSTALLATION** COORDINATE WORK WITH WORK OF ROOFING, WALLS, AND CEILINGS, AS NECESSARY FOR PROPER INTERFACING. DUCT CONNECTIONS TO BE PROVIDED BY THE HVAC CONTRACTOR.

REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.

ELECTRICAL WIRING: INSTALL ELECTRICAL DEVICES FURNISHED BY MANUFACTURER BUT NOT SPECIFIED TO BE FACTORY-MOUNTED. FURNISH COPY OF MANUFACTURER'S WIRING DIAGRAM SUBMITTAL TO ELECTRICAL INSTALLER.

VERIFY THAT ELECTRICAL WIRING INSTALLATION IS IN ACCORDANCE WITH MANUFACTURER'S SUBMITTAL AND INSTALLATION REQUIREMENTS OF DIVISION-16 SECTIONS.

ENSURE THAT ROTATION IS IN DIRECTION INDICATED AND INTENDED FOR PROPER PERFORMANCE.

DO NOT PROCEED WITH CENTRIFUGAL FAN START-UP UNTIL WIRING INSTALLATION IS ACCEPTABLE TO FAN INSTALLER.

**FIELD QUALITY CONTROL** TESTING: AFTER INSTALLATION OF HOOD EXHAUST SYSTEM HAS BEEN COMPLETED, TEST EACH SYSTEM TO DEMONSTRATE PROPER OPERATION OF UNITS AT PERFORMANCE REQUIREMENTS SPECIFIED. WHEN POSSIBLE, FIELD CORRECT MALFUNCTIONING UNITS, THEN RETEST TO DEMONSTRATE COMPLIANCE. REPLACE UNITS WHICH CANNOT BE SATISFACTORILY CORRECTED.

PROVIDE TESTING, PERMITS AND APPROVALS AS REQUIRED BY STATE AND LOCAL AUTHORITIES.

**ADJUSTING AND CLEANING** CLEAN FACTORY-FINISHED SURFACES. REPAIR ANY MARRED OR SCRATCHED SURFACES.

**TYPE I KITCHEN GREASE DUCT SPECIFICATION** FURNISH SINGLE WALL 16 GAUGE CARBON STEEL DUCTWORK WITH CONTINUOUS LIQUID TIGHT WELDS. ALL DUCTWORK SHALL BE WRAPPED WITH A FIRE RESISTIVE MATERIAL. THE DUCT WRAP SYSTEM SHALL BE UL LISTED PER ASTM E 2336 FOR ZERO CLEARANCE TO COMBUSTIBLES AND SHALL MAINTAIN A FLAME/SMOKE RATING LESS THAN 25/50.

THE TERMINATION OF KITCHEN EXHAUST OUTLETS SHALL NOT BE LESS THAN 10 FEET HORIZONTALLY FROM PARTS OF THE SAME OR CONTIGUOUS BUILDINGS, ADJACENT PROPERTY LINES AND AIR INTAKES.

OUTLET SHALL NOT BE LESS THAN

**COMcheck Software Version 4.1.5.5**  
**Mechanical Compliance Certificate**

**Project Information**  
Energy Code: 2015 IECC  
Project Title: Papa John's - Sussex, WI  
Location: Sussex, Wisconsin  
Climate Zone: 6a  
Project Type: Alteration

Construction Site: W249 N5245 Executive Drive, Sussex, WI 53089  
Owner/Agent: JOHN QUILLEN, MARQUE ENGINEERING, CINCINNATI, OH  
Designer/Contractor: JOHN QUILLEN, MARQUE ENGINEERING, CINCINNATI, OH

**Mechanical Systems List**  
**Quantity System Type & Description**  
1 RTU-1 (Single Zone)  
Heating: 1 each - Other, Gas, Capacity = 115 MBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Single Packaged DX Unit, Capacity = 59 MBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None  
Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER  
Fan System: None  
1 RTU-2 (Single Zone)  
Heating: 1 each - Other, Gas, Capacity = 110 MBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Single Packaged DX Unit, Capacity = 59 MBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None  
Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER  
Fan System: None

**Mechanical Compliance Statement**  
Compliance Statement: The proposed mechanical alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COMcheck version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

John Quillen, PE  
Name - Title: Signature: Date: 05/24/23

Project Title: Papa John's - Sussex, WI  
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**COMcheck Software Version 4.1.5.5**  
**Inspection Checklist**  
Energy Code: 2015 IECC

Requirements: 100.0% were addressed directly in the COMcheck software  
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 (F121)	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	<input checked="" type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
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Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.2.4 (F09)	Snow/ice melting system sensors for future connection to controls. Freeze protection systems have automatic controls installed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.6 (ME41)	Thermally ineffective panel surfaces of sensitive heating panels have insulation >= R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME65)	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system blp.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME65)	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system blp.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME117)	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME117)	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.13 (ME71)	Unenclosed spaces that are heated use only radiant heat.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.3 (ME55)	HVAC equipment efficiency verified.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
C403.2.6 (ME59)	Demand control ventilation provided for spaces >500 ft <sup>2</sup> and >25 people/1000 ft <sup>2</sup> occupant density and served by systems with air side economizer, auto modulating gas/air damper control, or design airflow >2.000 cfm.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.6 (ME115)	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.7 (ME37)	Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.8 (ME116)	Kitchen exhaust systems comply with replacement air and conditions supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.9 (ME60)	HVAC ducts and plenums insulated in or under a slab, verification may be required during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.6 (ME41)	Thermally ineffective panel surfaces of sensitive heating panels have insulation >= R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.12 (ME65)	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system blp.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Individual exhaust fans with motor nameplate horsepower less than 1 hp. See the Mechanical Systems list for values.
C403.2.12 (ME65)	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system blp.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Individual exhaust fans with motor nameplate horsepower less than 1 hp. See the Mechanical Systems list for values.
C403.2.12 (ME117)	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Single fans with motor nameplate horsepower = 5 hp.
C403.2.12 (ME117)	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Single fans with motor nameplate horsepower = 5 hp.
C403.2.13 (ME71)	Unenclosed spaces that are heated use only radiant heat.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.3 (ME55)	HVAC equipment efficiency verified.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
C403.2.6 (ME59)	Demand control ventilation provided for spaces >500 ft <sup>2</sup> and >25 people/1000 ft <sup>2</sup> occupant density and served by systems with air side economizer, auto modulating gas/air damper control, or design airflow >2.000 cfm.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.6 (ME115)	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.7 (ME37)	Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.8 (ME116)	Kitchen exhaust systems comply with replacement air and conditions supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.9 (ME60)	HVAC ducts and plenums insulated in or under a slab, verification may be required during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.9 (ME107)	Ducts and plenums sealed based on static pressure and location.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.9 (ME111)	Ductwork operating >3 in. water column requires air leakage testing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.9 (ME111)	Ductwork operating >3 in. water column requires air leakage testing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.4.4 (ME110)	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply. See the Mechanical Systems list for values.
C403.4.4 (ME110)	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply. See the Mechanical Systems list for values.
C408.2.2 (ME53)	Air outlets and zone terminal devices have means for air balancing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Fans with fan motors of 1 hp (0.74 kW) or less.
C403.5.1 (ME123)	Refrigerated display cases, walk-in coolers or walk-in freezers served by condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.5 (F18)	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.2 (F121)	HVAC systems and equipment capacity does not exceed calculated loads.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.4 (F147)	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.4 (F147)	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.4 (F138)	Thermostatic controls have a 5 °F deadband.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.4 (F120)	Temperature controls have setpoint overlap restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.4 (F139)	Each zone equipped with setback controls using automatic time clock or programmable control system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.4 (F140)	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.1 (F128)	Commissioning plan developed by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.3 (F131)	HVAC equipment has been tested to ensure proper operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.3 (F110)	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.4 (F129)	Preliminary commissioning report completed and certified by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Papa John's - Sussex, WI  
Data filename: G:\-Projects\12369 - Papa John's - Sussex, WI\COMcheck.cck  
Report date: 05/24/23  
Page 7 of 9

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.5 (F17)	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.5 (F43)	An air and/or hydronic system balancing report is provided for HVAC systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.5 (F30)	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

**Additional Comments/Assumptions:**

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Papa John's - Sussex, WI  
Data filename: G:\-Projects\12369 - Papa John's - Sussex, WI\COMcheck.cck  
Report date: 05/24/23  
Page 8 of 9

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C403.2.6 (ME41)	Thermally ineffective panel surfaces of sensitive heating panels have insulation >= R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME65)	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system blp.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME65)	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system blp.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME117)	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.12 (ME117)	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.13 (ME71)	Unenclosed spaces that are heated use only radiant heat.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.3 (ME55)	HVAC equipment efficiency verified.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
C403.2.6 (ME59)	Demand control ventilation provided for spaces >500 ft <sup>2</sup> and >25 people/1000 ft <sup>2</sup> occupant density and served by systems with air side economizer, auto modulating gas/air damper control, or design airflow >2.000 cfm.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.6 (ME115)	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<b>Exception:</b> Requirement does not apply.
C403.2.7 (ME37)	Exhaust air energy recovery on systems meeting Table C403.2.7(1) and C403.2.7(2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.8 (ME116)	Kitchen exhaust systems comply with replacement air and conditions supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.2.9 (ME60)	HVAC ducts and plenums insulated in or under a slab, verification may be required during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Papa John's - Sussex, WI  
Data filename: G:\-Projects\12369 - Papa John's - Sussex, WI\COMcheck.cck  
Report date: 05/24/23  
Page 9 of 9

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WI LICENSE NO.: E-44907

PROJECT #12369

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PROTOTYPE VERSION: P\_J\_INLINE\_1.0

PROJECT STATUS:  
PERMIT SET 05.25.23  
SHEET ISSUE:  
NO. DATE DESCRIPTION  
0 05.25.23 ORIGINAL CD

JOHN J. WILCOX, INC.  
PROFESSIONAL ENGINEER  
JOHN J. GRAVES  
E-44907  
VILLA HILLS, KY

ORIGINAL CD 05.25.23

SHEET TITLE:  
**MECHANICAL ENERGY COMPLIANCE**

SHEET NO.  
**M5-1**

FOR QUESTIONS, CALL THE  
 Detroit Mechanical  
 REGION 123  
 PHONE: (248) 658-0509  
 EMAIL: reg123@captiveaire.com

**PATENT NUMBERS**  
 AC-PSP (UNITED STATES) - US PATENT 7963830 B2.  
 AC-PSP WALL (CANADA) - CA PATENT 2820509.  
 AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

**HOOD INFORMATION - JOB#5950724**

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)				MUA CFM	AC CFM	HOOD CONSTRUCTION	HOOD CONFIG				
										WIDTH	LENG	HEIGHT	DIA				CFM	VEL	SP	END TO END	ROW
1		7824 ND-ZW-PO-AC-PSP-F	CAPTIVEAIRE	11' 0"	600 DEG	I	HEAVY	136	1500			4"	14"	1500	1403	-0.578"	1350	500	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	FIRE SYSTEM	SIZE			ELECTRICAL MODEL #	SWITCHES QUANTITY
1		CAPTRATE SOLO FILTER	8	16"	16"	85% SEE FILTER SPEC	5	L55 SERIES E26	NO	RIGHT	12"x78"x24"	TANK FS	4.0/4.0	SC-111110MA	1 LIGHT 1 FAN	YES	1121 LBS

**HOOD OPTIONS**

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT, BACK. FINISHED BACK-ISL/REV INSTALL 132.00" LONG, (FILTERS TO THE BACK). RISER SENSOR INSTALL 3IN DBL.

**PERFORATED SUPPLY PLENUM(S)**

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)				
							WIDTH	LENG	DIA	CFM	SP
1		Front	144"	22"	6"	MUA	8"	36"		675	0.163"
						MUA	8"	36"		675	0.163"
						AC			8"	125	0.049"
						AC			8"	125	0.049"
						AC			8"	125	0.049"

**GREASE DUCT & CHIMNEY SPECIFICATIONS:**  
 PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.  
 PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".  
 DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.  
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CAPTIVEAIRE SYSTEMS RECOMMENDS THE USE OF LISTED, PRE-FABRICATED ROUND GREASE EXHAUST DUCT TO REDUCE STATIC PRESSURE IN THE SYSTEM, MINIMIZE INSTALLATION AND INSPECTION TIMES, AND ENSURE DUCT IS LIQUID TIGHT

**HVAC DISTRIBUTION NOTE**  
 HIGH VELOCITY DIFFUSERS OR HVAC RETURNS SHOULD NOT BE PLACED WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

**VERIFY CEILING HEIGHT**  
 \_\_\_\_\_' - \_\_\_\_\_"  
 HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS

**CUSTOMER APPROVAL TO MANUFACTURE:**

APPROVED AS NOTED	<input type="checkbox"/>
APPROVED WITH NO EXCEPTION TAKEN	<input type="checkbox"/>
REVISE AND RESUBMIT	<input type="checkbox"/>
SIGNATURE _____	
YOUR TITLE _____	DATE _____

**SPECIFICATION: CAPTRATE GREASE-STOP SOLO FILTER**

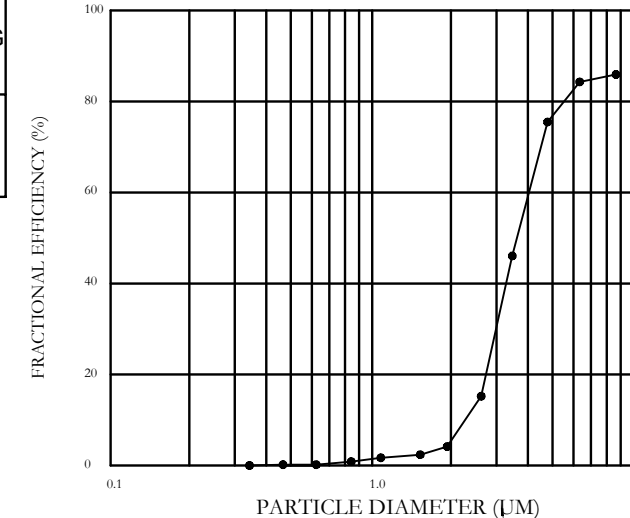
THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

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

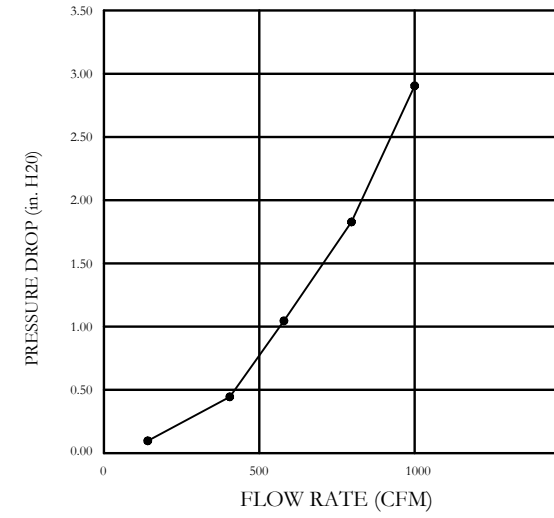
UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

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. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

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.



**REVISIONS**

DESCRIPTION	DATE

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 Detroit Mechanical  
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Papa Johns Sussex WI  
 Sussex, WI, 53089

DATE: 4/13/2023  
 DWG.#: 5950724  
 DRAWN BY: jacob.puff  
 SCALE: 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
1

CAPTIVEAIRE DRAWINGS ARE ENGINEERED BY OTHERS AND INCLUDED FOR REFERENCE ONLY

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PROJECT #12369

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 PAPA JOHN'S- INLINE  
 W249 N5245 Executive Drive  
 Sussex, WI 53089  
 STORE NUMBER: TBD

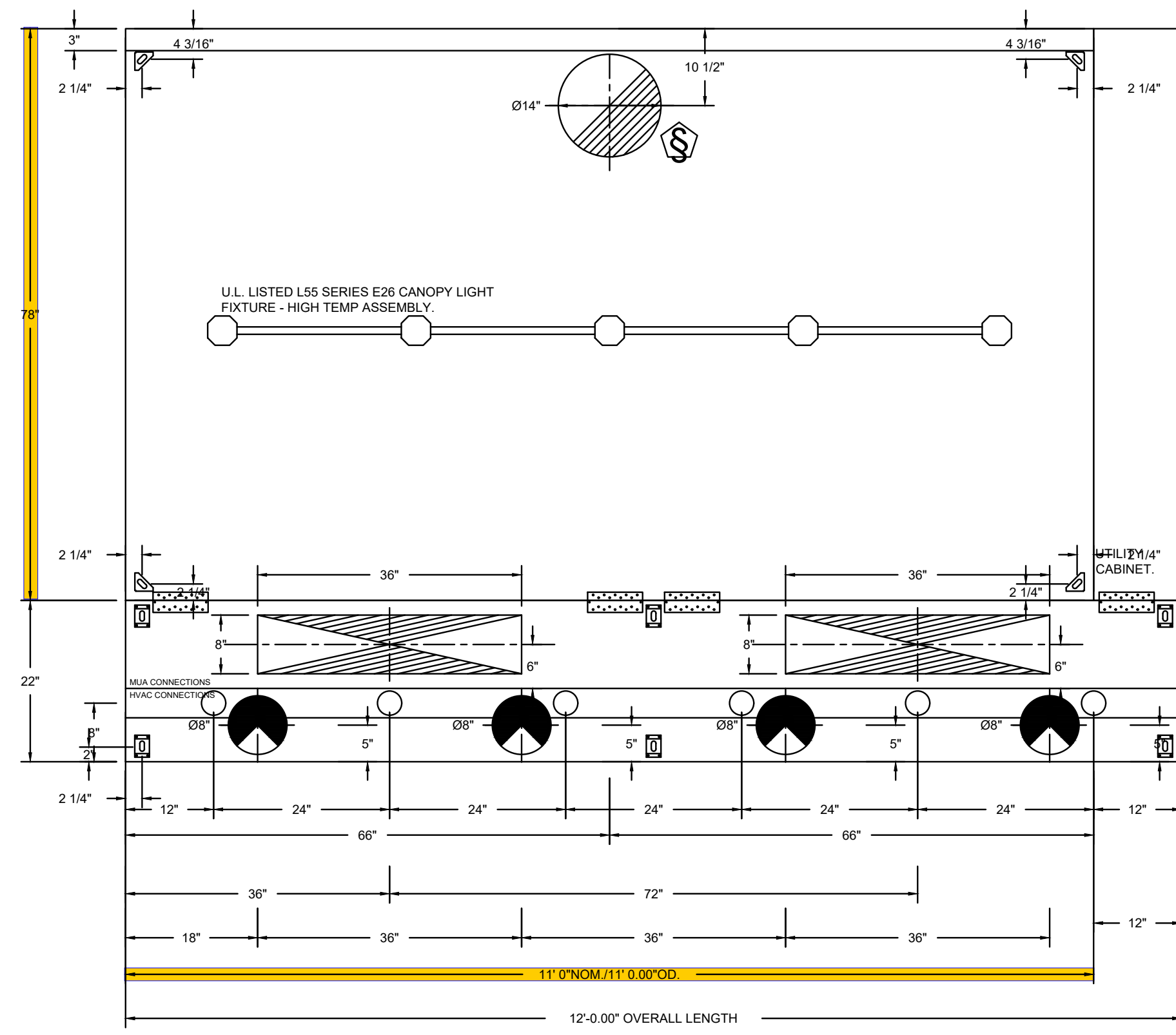
**PAPA JOHN'S**  
 PAPA JOHN'S INTERNATIONAL INC.  
 788 CIRCLE 75 PARKWAY  
 ATLANTA, GA 30339  
 PROTOTYPE VERSION: P\_J\_INLINE\_1.0

PROJECT STATUS:  
 PERMIT SET 05.25.23  
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ORIGINAL CD 05.25.23

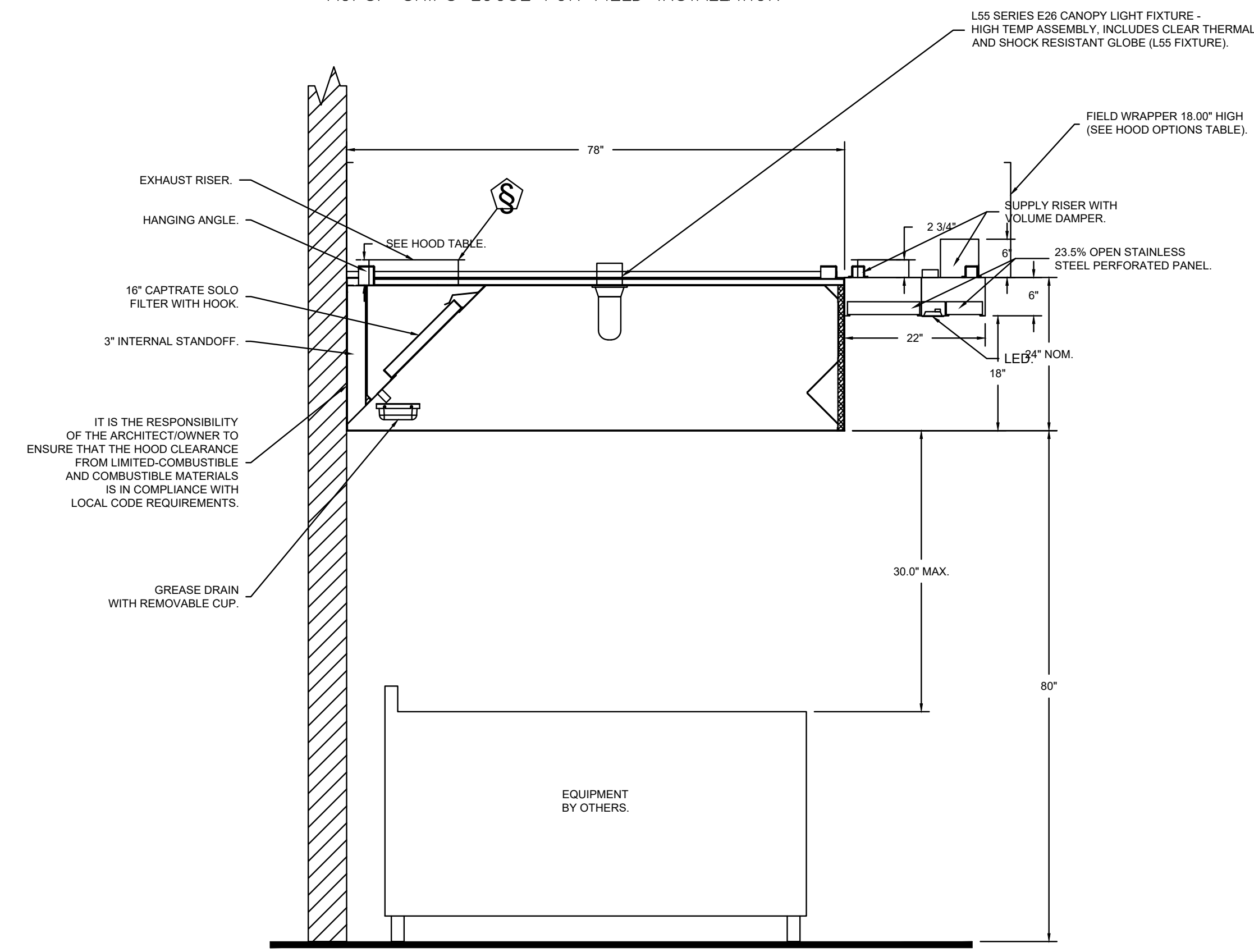
SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO.  
**H1-1**

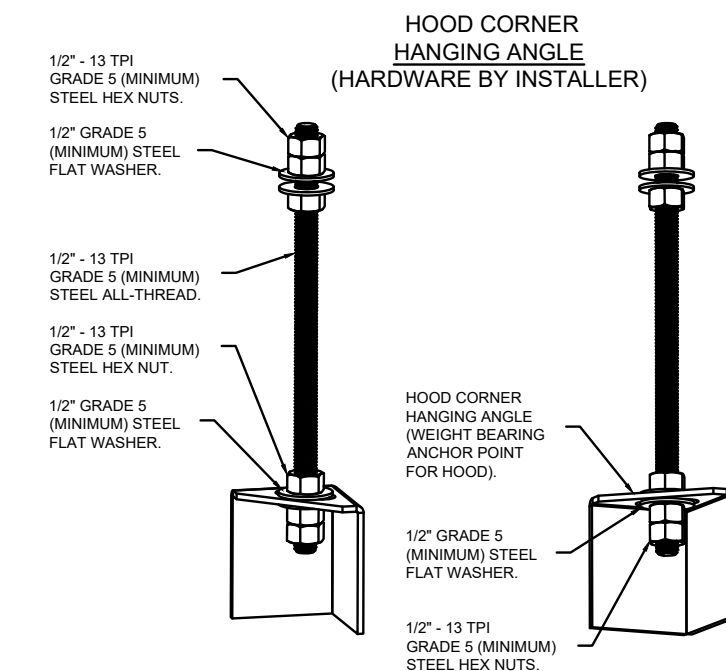


PLAN VIEW - HOOD #1  
11' 0.00" LONG 7824ND-2WI-PO-ACPSP-F

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION

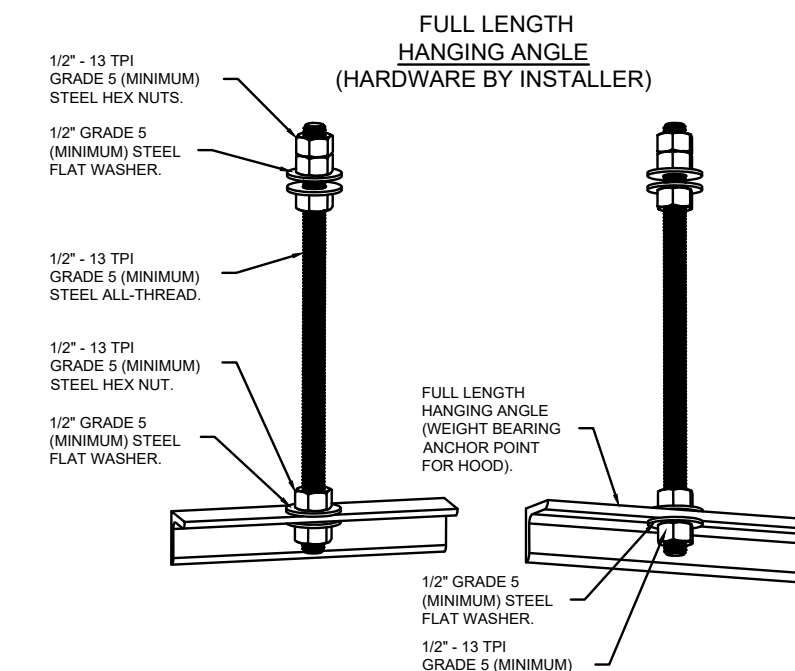


SECTION VIEW - MODEL 7824ND-2WI-PO-ACPSP-F  
HOOD - #1



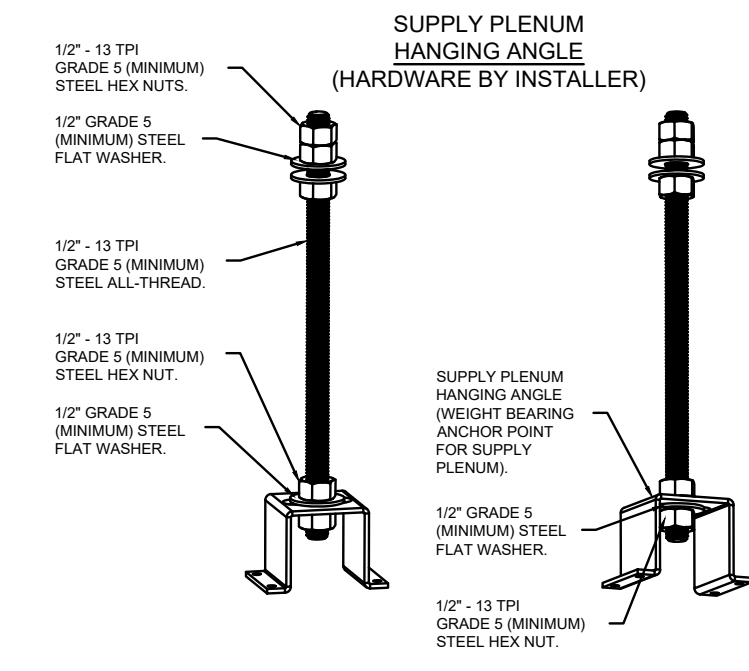
ASSEMBLY INSTRUCTIONS

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



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.



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

**CAPTIVE**  
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DATE: 4/13/2023  
 DWG.#: 5950724  
 DRAWN BY: jacob.puff  
 SCALE: 3/4" = 1'-0"  
 MASTER DRAWING

SHEET NO. 2

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**acs**  
 ARCHITECTURAL CONSULTANTS & SERVICES

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 WI LICENSE NO.: E-44907

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 STORE NUMBER: TBD

PAPA JOHN'S INTERNATIONAL INC.  
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 0 05.25.23 ORIGINAL CD

ORIGINAL CD 05.25.23

SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO.  
**H1-2**

**FIRE SYSTEM INFORMATION - JOB#5950724**

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0	28	FIRE CABINET RIGHT	RIGHT, HOOD 1

**GAS VALVE(S)**

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

**FIRE SYSTEM PARTS LIST KEY**


FIRE SYSTEM NO	TAG	KEY NUMBER - PART DESCRIPTION	QTY BY FACTORY	QTY BY DIST
1		0-0 - TANK FIRE SUPPRESSION POST-DISCHARGE PROCEDURE UTILITY CABINET LABEL SHEET.	1	0
1		0-0 - TANK FIRE SUPPRESSION MAINTENANCE GUIDE UTILITY CABINET LABEL SHEET.	1	0
1		0-0 - 12-F28021-32144-OT-360 DUCT FIRE THERMOSTAT WITH 12 FOOT WIRE LEADS. NO. CLOSE ON TEMP RISE AT 360°F.	1	0
1		0-0 - 4429K153 1/2" MALE NPT TO 1/2" FEMALE NPT ELBOW, BRASS.	2	0
1		0-0 - 4429K422 1/2" X 1/4" BRASS REDUCING BUSHING.	1	0
1		0-0 - 79525 1/2" 90 PRO-PRESS ELBOW WITH 1/2" NPT FEMALE CONNECTION, VIEGA.	1	0
1		0-0 - 79580 1/2" X 1/2" PRO-PRESS TEE X 1/2" NPT FEMALE CONNECTION, VIEGA.	2	0
1		0-0 - 87-120042-001 SECONDARY ACTUATOR VALVE (SVA) - SINGLE ACTUATOR, REQUIRES PRIMARY RELEASE ACTUATOR, TANK FIRE SUPPRESSION.	1	0
1		0-0 - 87-120045-001 HOSE, SECONDARY ACTUATOR HOSE, 7.5' BRAIDED STAINLESS STEEL, TANK FIRE SUPPRESSION.	1	0
1		0-0 - 87-30001-001 TANK - PRESSURIZED TANK USED FOR TANK FIRE SUPPRESSION.	2	0
1		0-0 - 87-300030-001 PRIMARY ACTUATOR KIT (PAK) - ACTUATOR AND RELEASE SOLENOID ASSEMBLY, ONE NEEDED PER FIRE SYSTEM, SUPERVISED, TANK FIRE SUPPRESSION.	1	0
1		0-0 - 87-300152-001 HARDWARE, SVA BOLTS, TANK FIRE SUPPRESSION.	8	0
1		0-0 - 9055455PC PRO PRESS 1/2 PRESS X PRESS 90 ELBOW LD.	6	0
1		0-0 - 9097200PC PRO PRESS PC611 1/2 PRESS TEE LD.	4	0
1		0-0 - 98694A115 HARDWARE, DATANKLOCK LOCKING BRACKET SQUARE NUTS 5/16" ZINC, TANK FIRE SUPPRESSION.	4	0
1		0-0 - A0034332 JUNCTION BOX FOR MANUAL PULL STATION, 1.5" DEEP BACK BOX, RED COLOR.	1	0
1		0-0 - A31484 1/4" NPT SCHRADER VALVE AND CAP, JB INDUSTRIES. 1/4" FLARE X 1/4" MPT HALF UNION, USED ON TANK SERVICE PORT.	1	0
1		0-0 - BI145 3/8" BLACK IRON 90 ELL.	3	0
1		0-0 - CB1-104 CHROME PLATED PIPE FITTING 3/8" NPT TEE.	2	0
1		0-0 - CB1-106 CHROME PLATED PIPE FITTING 3/8" NPT 90 DEGREE ELBOW.	2	0
1		0-0 - CB1-107 CHROME PLATED PIPE FITTING 3/8" NPT UNION.	2	0
1		0-0 - DATANKLOCK DISCHARGE ADAPTER TANK LOCKING PLATE FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
1		0-0 - TANK STRAP TANK STRAP - USED FOR TANK FIRE SUPPRESSION.	6	0
1		0-0 - TFS-UCTANKBRACKET TANK BRACKET FOR FIRE SYSTEM TANK INSTALLATION IN UTILITY CABINETS, TANK FIRE SUPPRESSION.	2	0
1		0-0 - WK-283952-000 DISCHARGE ADAPTER, TANK FIRE SUPPRESSION.	2	0
1		16 - 16 - 79210 1/2" X 3/8" NPT MALE ADAPTER, VIEGA.	5	0
1		16 - 16 - OL-F NOZZLE - TANK PROTECTION APPLIANCE COVERAGE NOZZLE (INCLUDES METAL BLOW OFF CAP, LANYARD, USED WITH CHROME-PLATED PIPE), 4 FLOW POINTS.	7	0
1		26 - 26 - QSA-3/8 QUIK SEAL - 3/8" (UL).	5	0
1		34 - 34 - A0034331 24VDC SINGLE ACTION MANUAL ACTUATION DEVICE (PUSH/PULL STATION) WITH PROTECTIVE COVER, ONE (1) NORMALLY OPEN CONTACT, RED COLOR.	1	0

REVISIONS	
DESCRIPTION	DATE

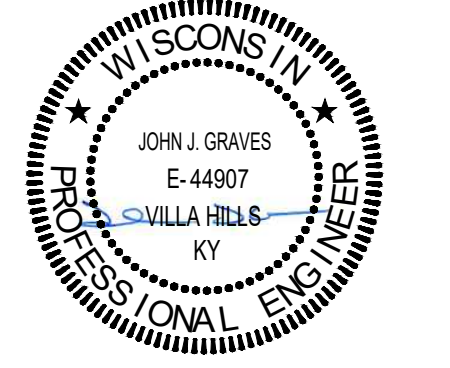
**CAPTIVEAIRE**  
 Detroit Mechanical  
 www.captiveaire.com  
 38255 West Ten Mile Road, Farmington Hills, MI, 48335 PHONE: (248) 658-0509 FAX: (919) 516-8739 EMAIL: reg.23@captiveaire.com

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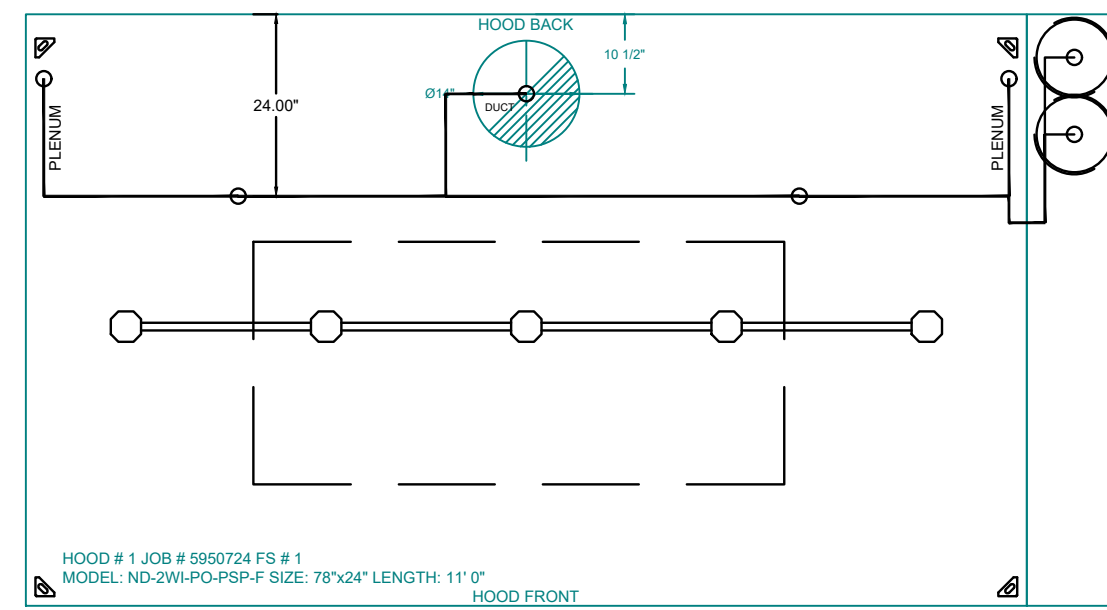
Papa Johns Sussex WI  
 Sussex, WI, 53089  
 DATE: 4/13/2023  
 DWG.#: 5950724  
 DRAWN BY: jacob.puff  
 SCALE: 3/4" = 1'-0"  
**MASTER DRAWING**  
**SHEET NO. 3**

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 1010 W. WISCONSIN AVENUE  
 SUITE 200  
 VILLAGE HILLS, KY 41017  
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 ARCHITECTS PROJECT # 1510000.00  
  
**PROJECT #12369**  
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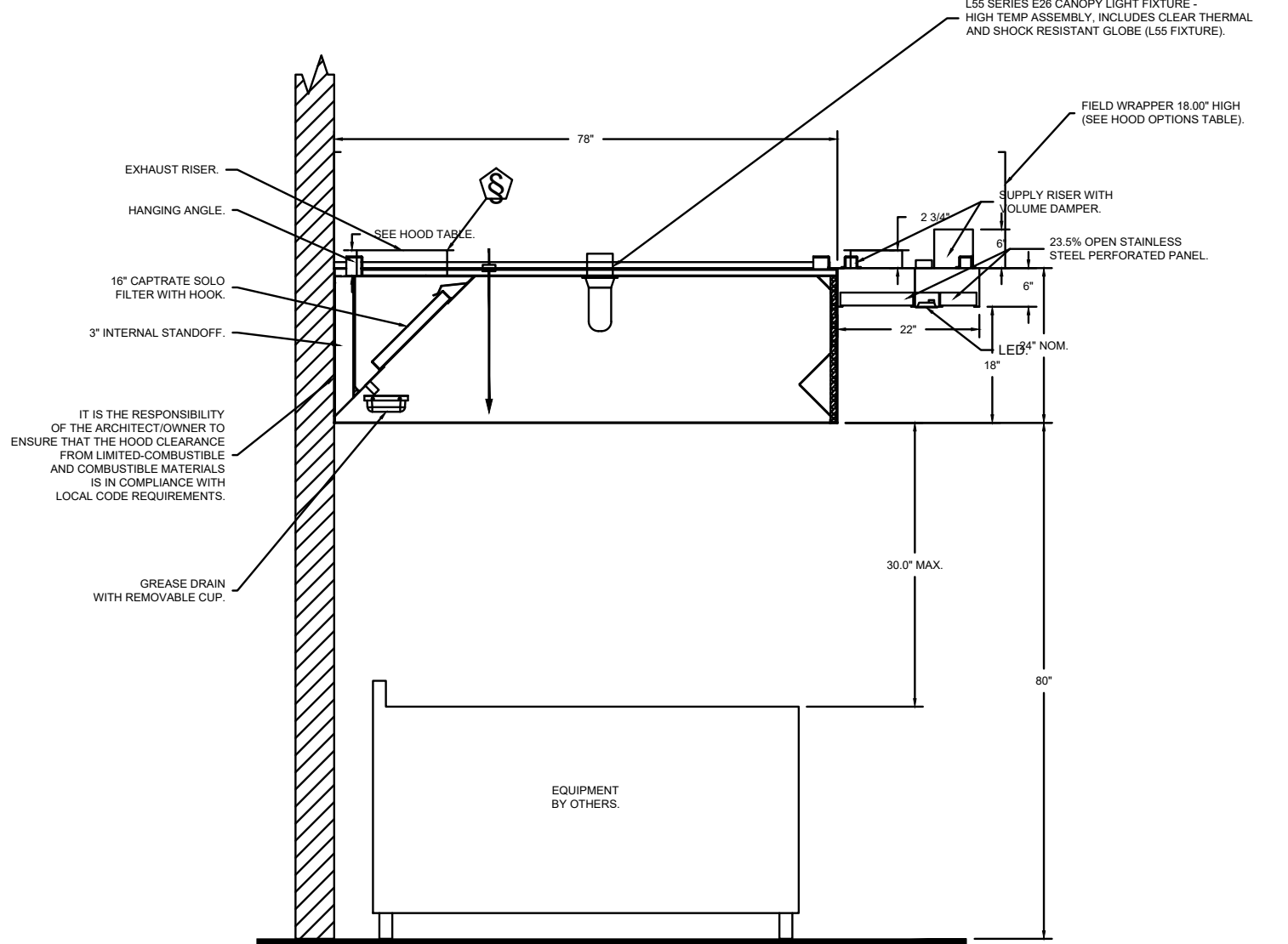
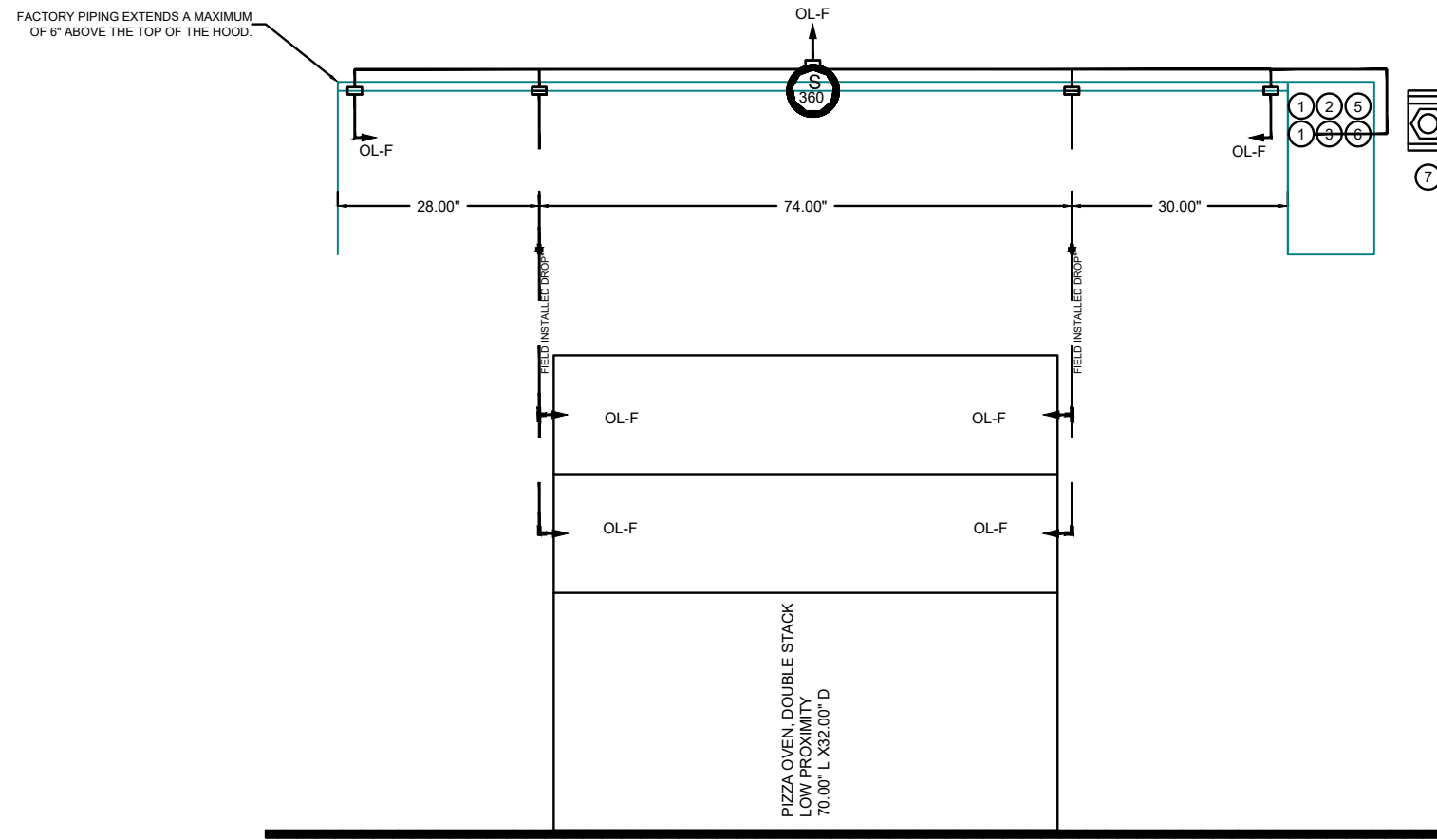
**PAPA JOHN'S**  
 PAPA JOHN'S- INLINE  
 W249 N5245 Executive Drive  
 Sussex, WI 53089  
 STORE NUMBER: TBD  
 PAPA JOHN'S INTERNATIONAL INC.  
 788 CIRCLE 7E PARKWAY  
 ATLANTA, GA 30339  
 PROTOTYPE VERSION: PJ\_INLINE\_1.0

PROJECT STATUS:  
 PERMIT SET 05.25.23  
 SHEET ISSUE:  
 NO. DATE DESCRIPTION  
 0 05.25.23 ORIGINAL CD  
  
 ORIGINAL CD 05.25.23

SHEET TITLE:  
**HOOD DRAWINGS**  
 SHEET NO.  
**H1-3**



SYSTEM REQUIRES A MINIMUM OF 7 FT OF  
EQUILIBRIUM PIPE LENGTH BETWEEN TANK AND  
NEAREST APPLIANCE NOZZLE FOR BEST APPLIANCE  
EACH 90 DEGREE ELBOW ADDS 1.0 FT OF  
EQUILIBRIUM LENGTH. SEE MANUAL FOR DETAILS



- NOTES
- FIELD PIPE DROPS AS SHOWN
  - PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
  - 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.
  - OL-F NOZZLE PART NUMBER REPLACES 3070-318H-10-SS

JOB # 5950724  
JOB NAME: PAPA JOHNS SUSSEX WI.

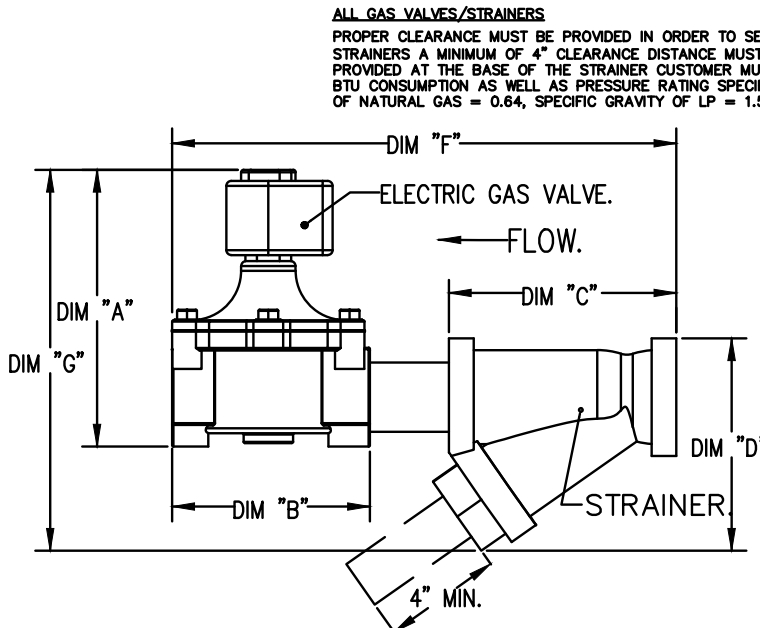
SYSTEM SIZE: TANK-SP-2 TOTAL FP REQUIRED: 28.  
HOOD # 1 11'0.00" LONG x 78" WIDE x 24" HIGH.  
RISER # 1 SIZE: 14" DIA.  
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.

- 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.

GAS VALVES AND STRAINERS																
TYPE	SIZE	VOLTAGE	GAS VALVE SIZING			GAS VALVE DIMENSIONS					INSTALLATION ORIENTATION	PART NUMBERS		GAS VALVE / STRAINER KIT		
			MIN. INLET PRESSURE	MAX. INLET PRESSURE	FLOW AT 1 IN.W.C. DROP NATURAL GAS	FLOW AT 1 IN.W.C. DROP PROPANE	DM "A"	DM "B"	DM "C"	DM "D"		DM "E"	GAS VALVE PART NUMBER		STRAINER PART NUMBER	
ELECTRICAL	2"	120 VAC	0 PSI (0 IN.W.C.)	9 PSI (1.38 IN.W.C.)	230000 BTU/HR	130000 BTU/HR	7-5/8"	8-3/8"	7-1/4"	7-13/16"	15-5/8"	13-15/16"	HORIZONTAL / VERTICAL	8214380	4417608	(SEE VALVE)



REVISIONS	
DESCRIPTION	DATE

**CAPTIVE**

Detroit Mechanical

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Sussex, WI, 53089

DATE: 4/13/2023  
DWG.#: 5950724  
DRAWN BY: jacob.puff  
SCALE: 1/2" = 1'-0"  
MASTER DRAWING

SHEET NO. 4

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**ACS**

PROJECT #12369

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VILLA HILLS, KY 41017  
WI LICENSE NO.: E-44907

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STORE NUMBER: TBD

PROTOTYPE VERSION: PJ\_INLINE\_1.0

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ATLANTA, GA 30339

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788 CIRCLE 75 PARKWAY  
ATLANTA, GA 30339

PROJECT STATUS:  
PERMIT SET 05.25.23  
SHEET ISSUE:  
NO. DATE DESCRIPTION  
0 05.25.23 ORIGINAL CD

WISCONSIN PROFESSIONAL ENGINEER  
JOHN J. GRAVES  
E-44907  
VILLA HILLS, KY

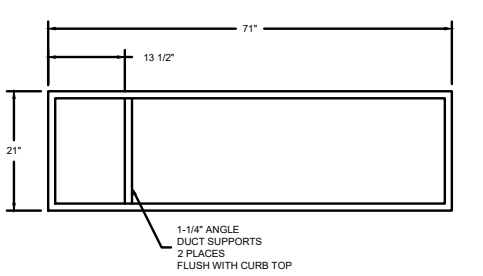
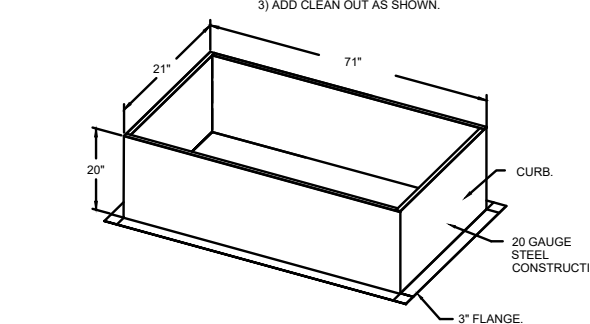
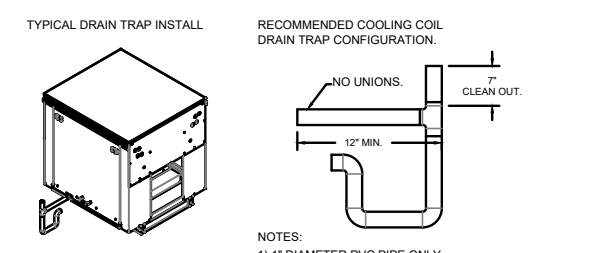
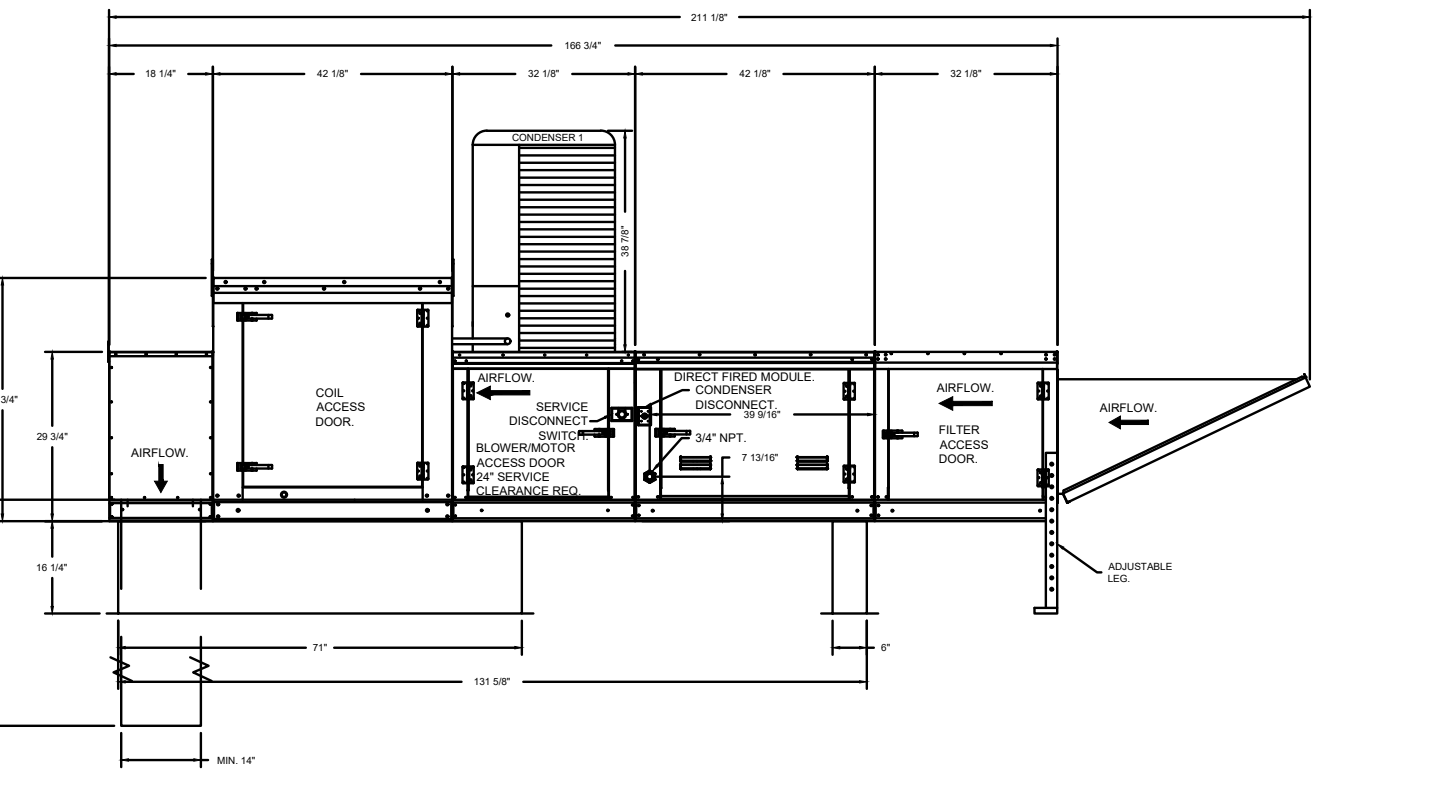
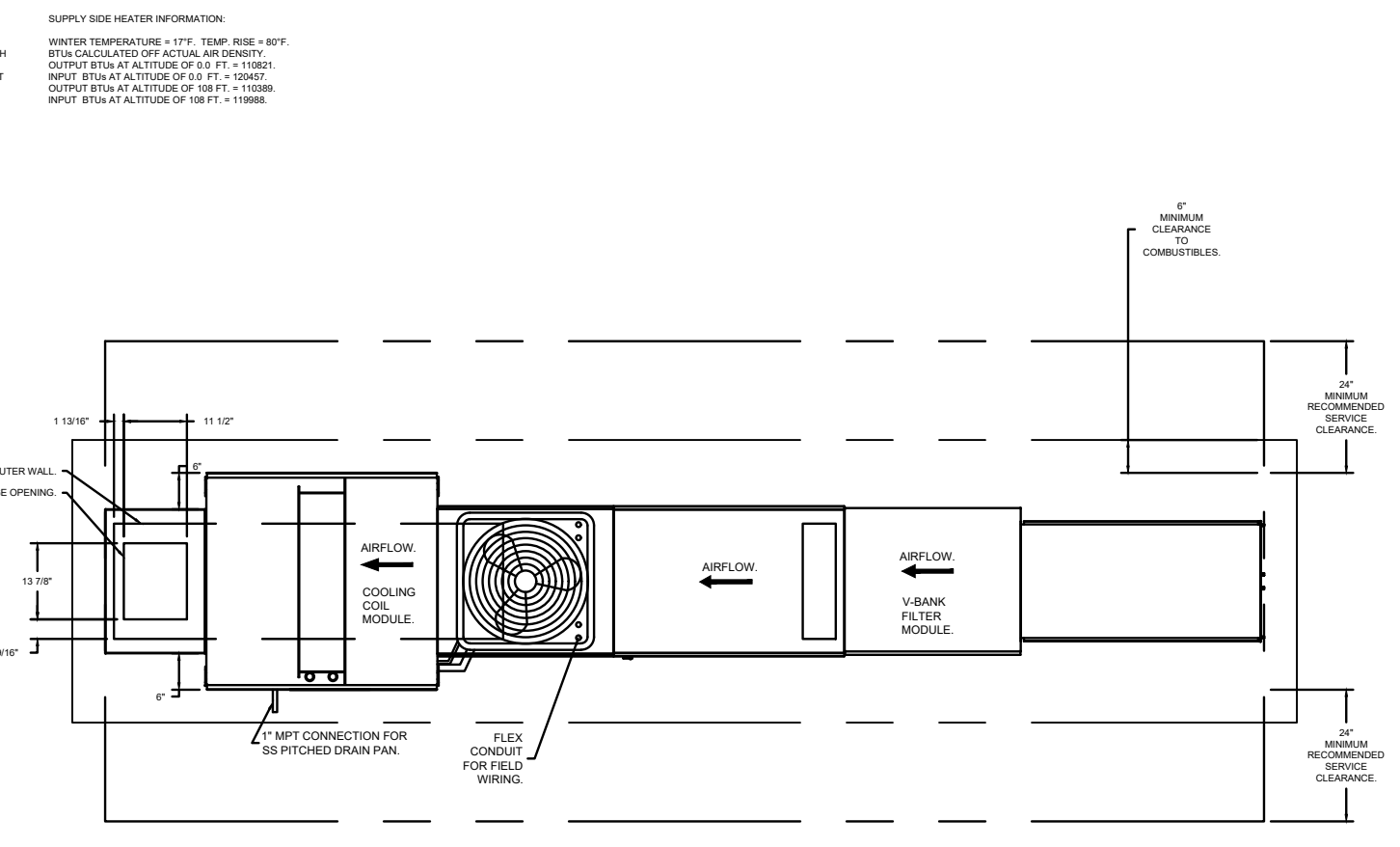
ORIGINAL CD 05.25.23

SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO. **H1-4**



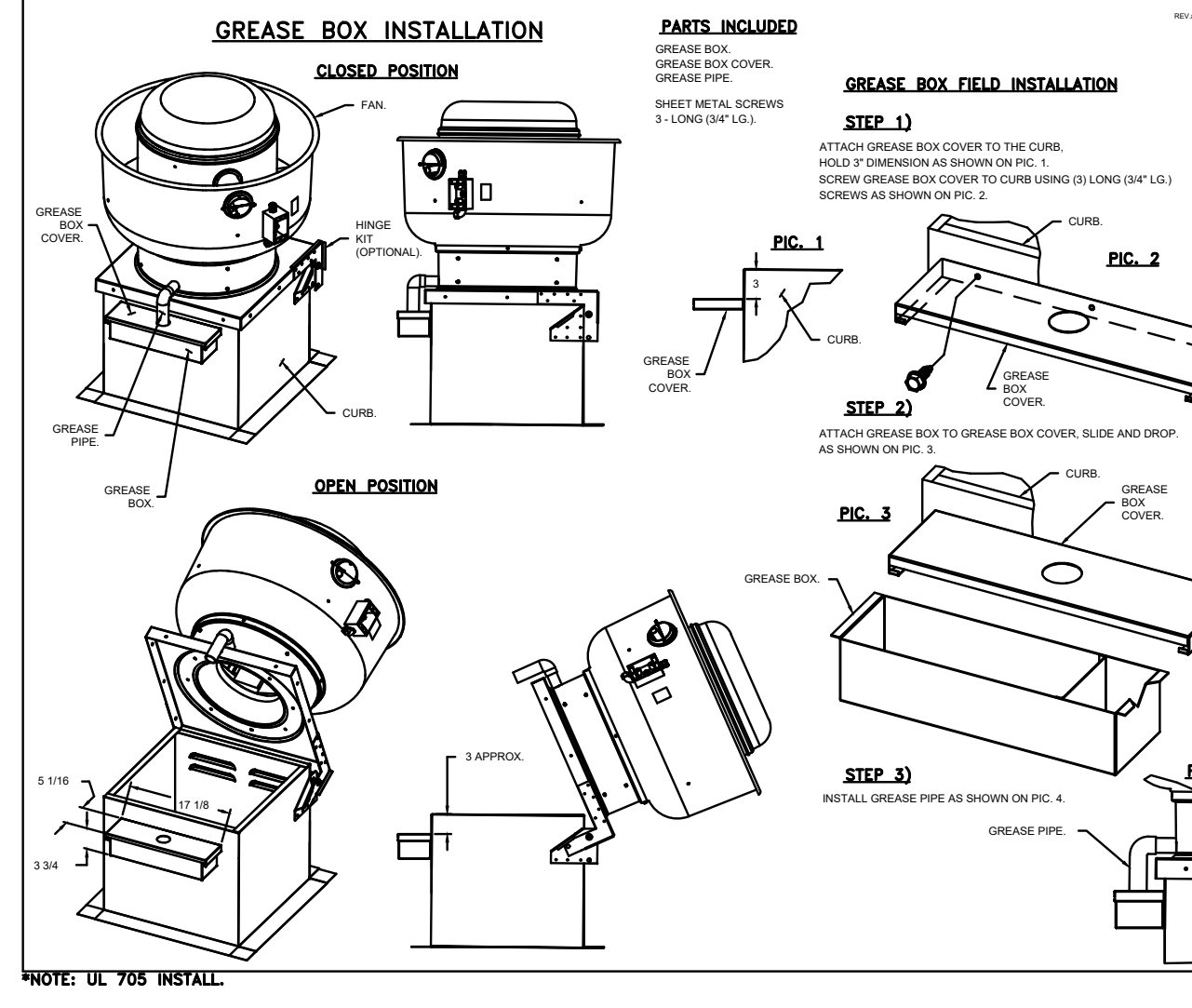
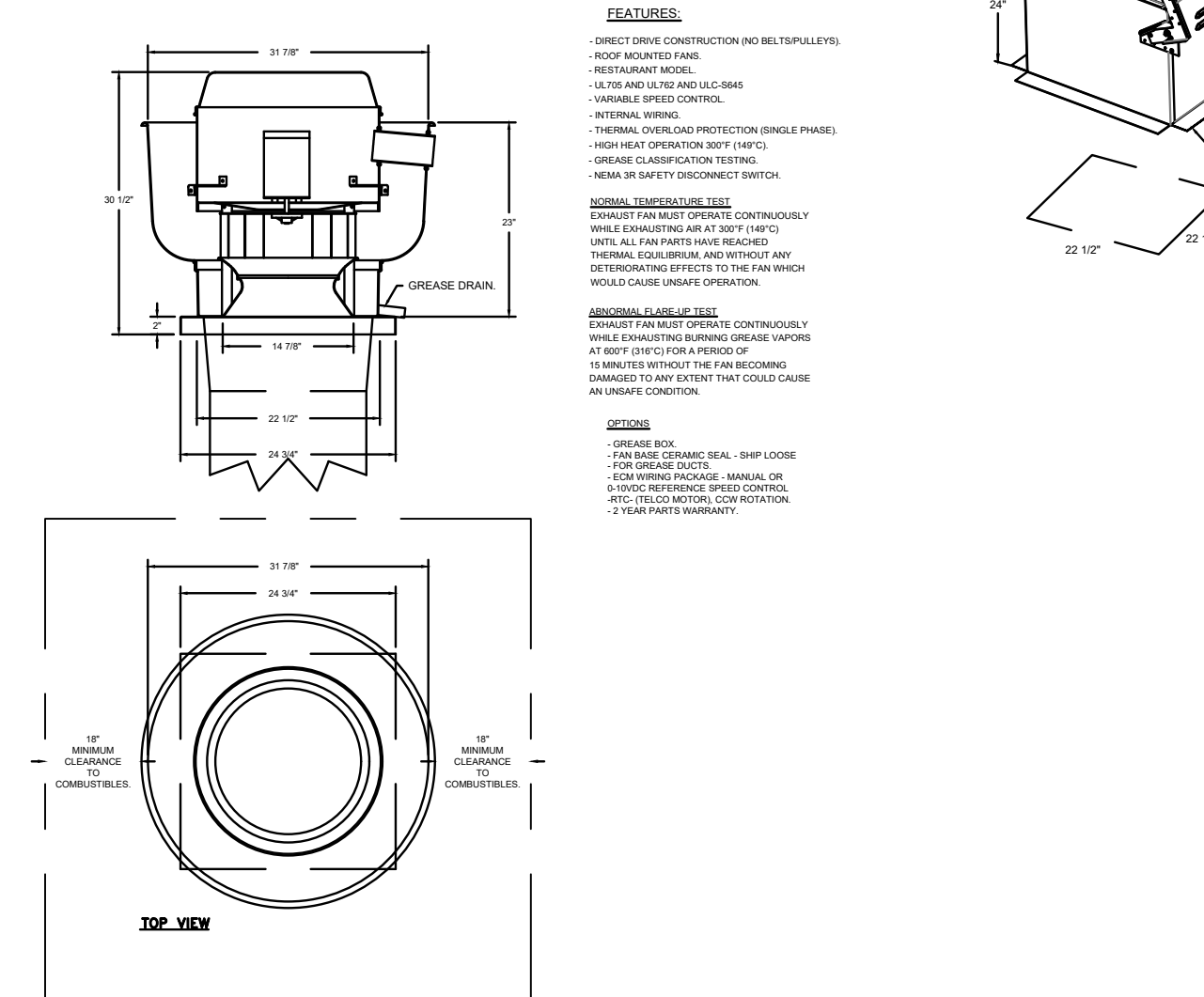
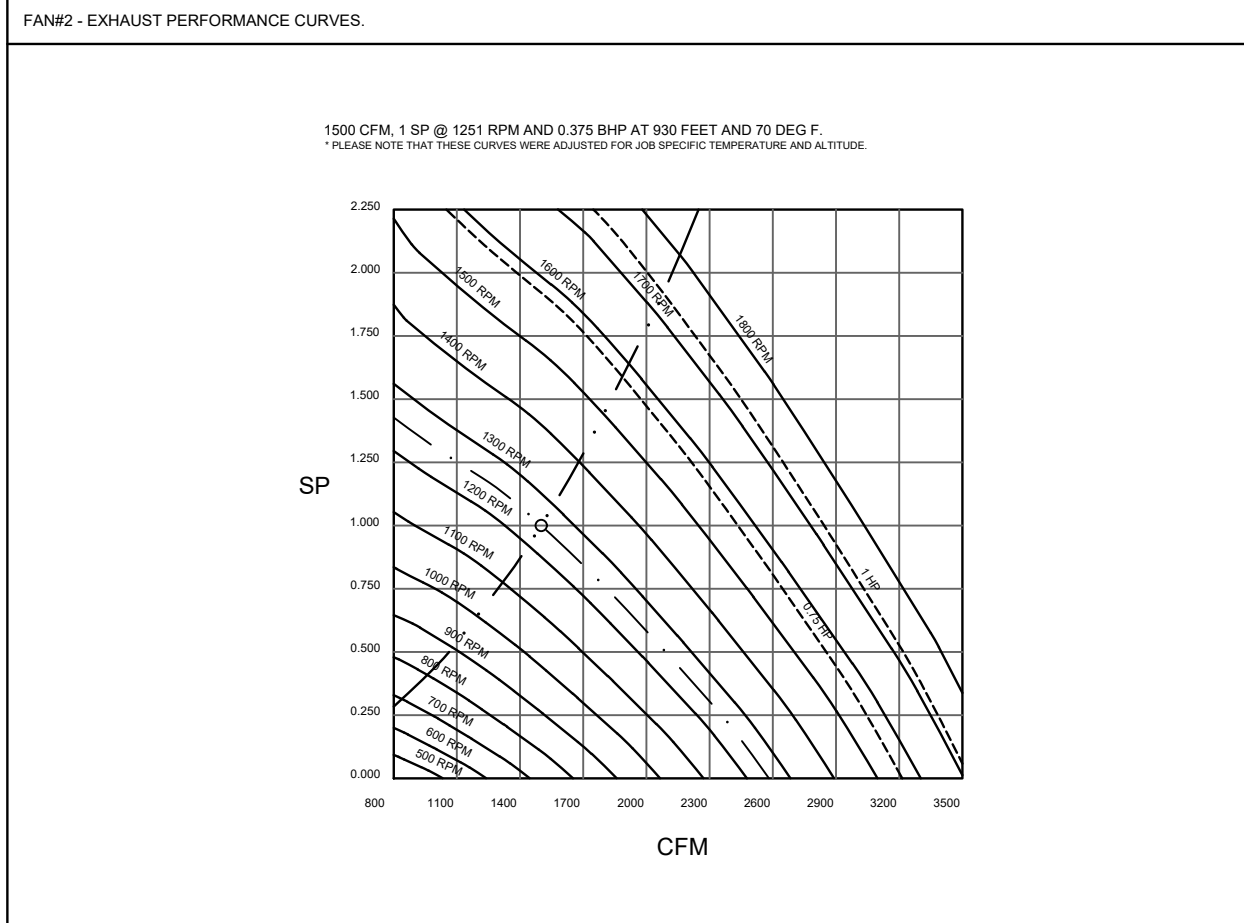
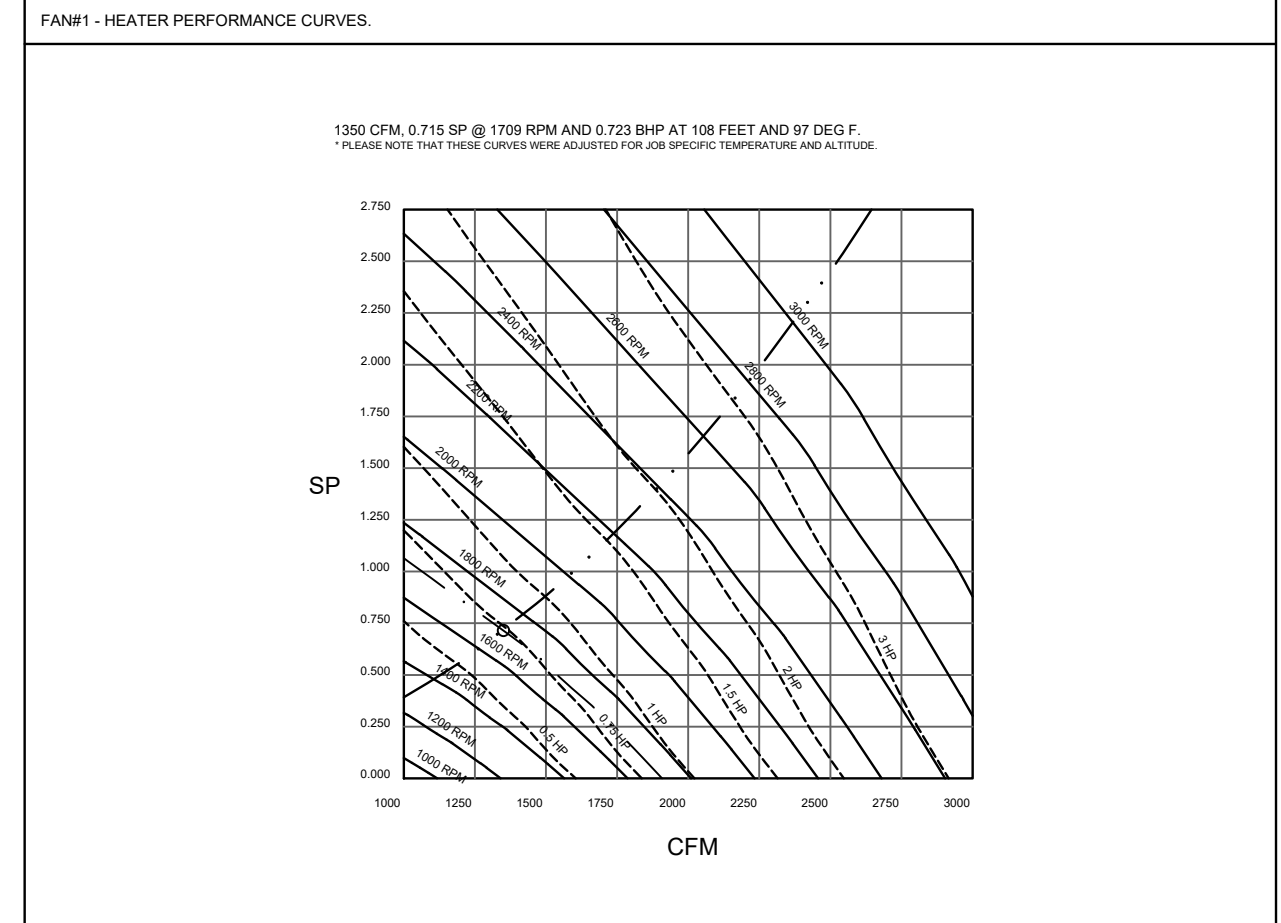
1. UNITS SHALL BE MANUFACTURED BY THE MANUFACTURER OF THE EQUIPMENT. THE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE EQUIPMENT. THE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE EQUIPMENT. THE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF THE EQUIPMENT.



**GREASE DUCT & CHIMNEY SPECIFICATIONS:**  
 PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-197B AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURERS INSTALLATION GUIDE.  
 PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURERS LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12". HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.  
 IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW-2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

**CUSTOMER APPROVAL TO MANUFACTURE:**

APPROVED AS NOTED	<input type="checkbox"/>
APPROVED WITH NO EXCEPTION TAKEN	<input type="checkbox"/>
APPROVED WITH RESERVATION	<input type="checkbox"/>
SIGNATURE	_____
YOUR TITLE	_____



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DESCRIPTION	DATE

**DETROIT MECHANICAL**  
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Papa Johns Sussex WI  
 Sussex, WI, 53089

DATE: 4/13/2023  
 DWG.#: 5950724  
 DRAWN BY: jacob.puff  
 SCALE: 3/8" = 1'-0"  
 MASTER DRAWING

SHEET NO. 6

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 www.dlrarchitect.com

**JOHN GRAVES, P.E.**  
 2696 PINEVIEW DRIVE  
 VILLA HILLS, KY 41017  
 WI LICENSE NO.: E-44907

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 PAPA JOHN'S-INLINE  
 W249 N5245 Executive Drive  
 Sussex, WI 53089  
 STORE NUMBER: TBD

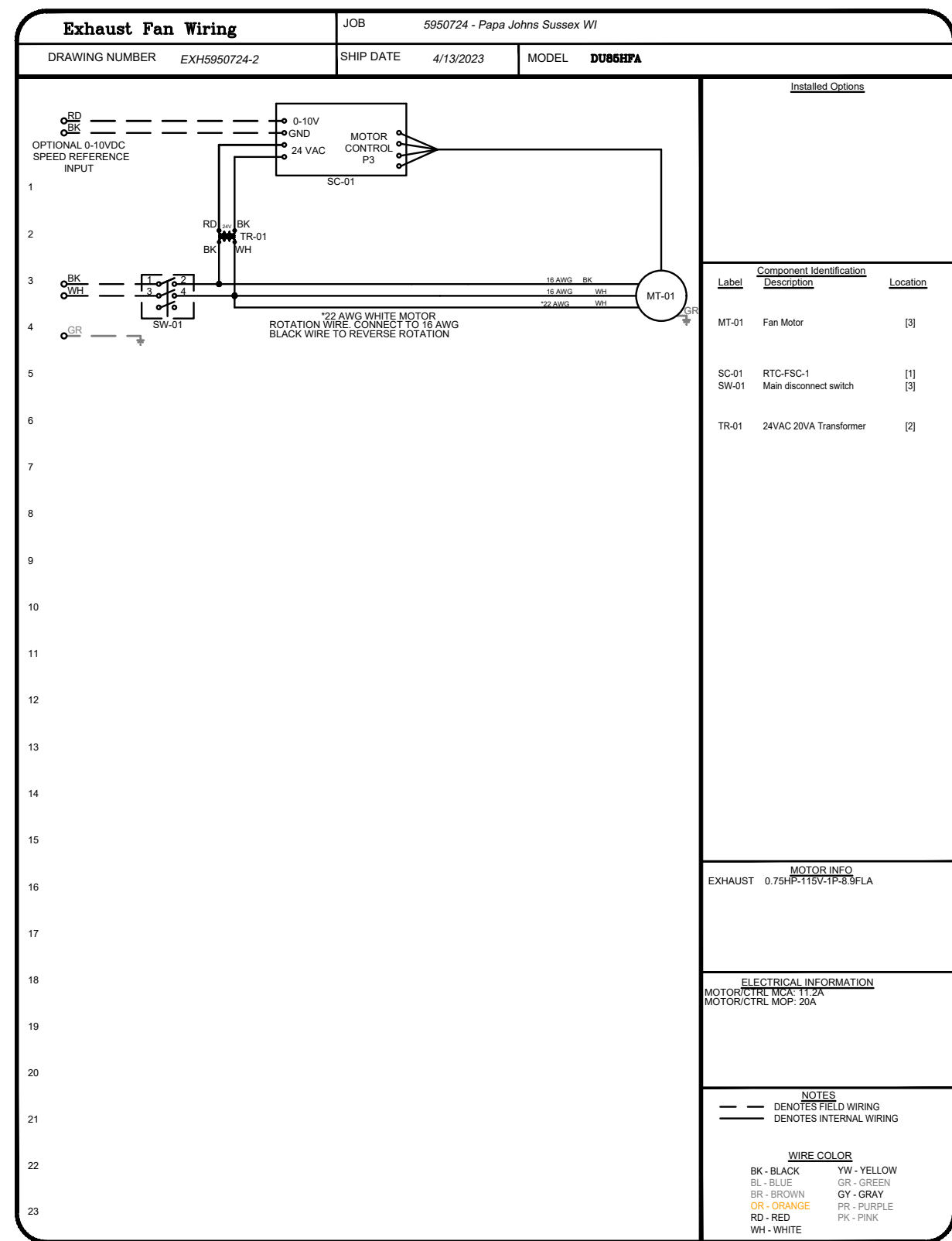
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PROJECT STATUS: PERMIT SET 05.25.23  
 SHEET ISSUE: NO. DATE DESCRIPTION ORIGINAL CD  
 0 05.25.23 ORIGINAL CD

PROFESSIONAL ENGINEER  
 JOHN J. GRAVES  
 E-44907  
 VILLA HILLS, KY

ORIGINAL CD 05.25.23

SHEET TITLE: HOOD DRAWINGS  
 SHEET NO. H1-6



REVISIONS	
DESCRIPTION	DATE

**CAPTIVE AIR**

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Papa Johns Sussex WI  
 Sussex, WI, 53089

DATE: 4/13/2023  
 DWG.#: 5950724  
 DRAWN BY: jacob.puff  
 SCALE: 3/4" = 1'-0"  
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**SHEET NO.**  
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**PAPA JOHN'S**

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STORE NUMBER: TBD

**PAPA JOHNS**

PAPA JOHN'S INTERNATIONAL, INC.  
 788 CIRCLE 75 PARKWAY  
 ATLANTA, GA 30339

PROTOTYPE VERSION: P\_J\_INLINE\_1.0

PROJECT STATUS:  
 PERMIT SET 05.25.23  
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ORIGINAL CD 05.25.23

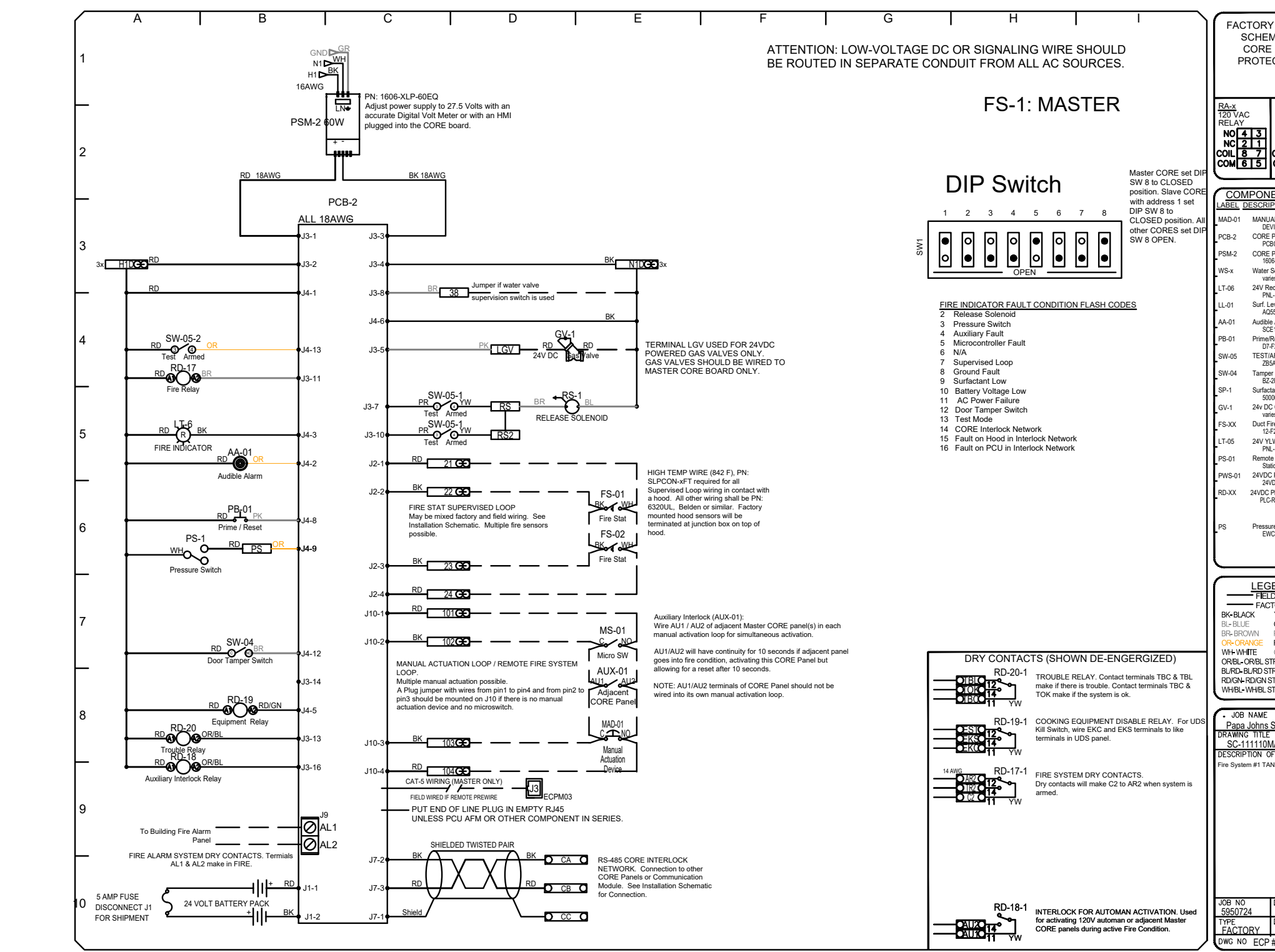
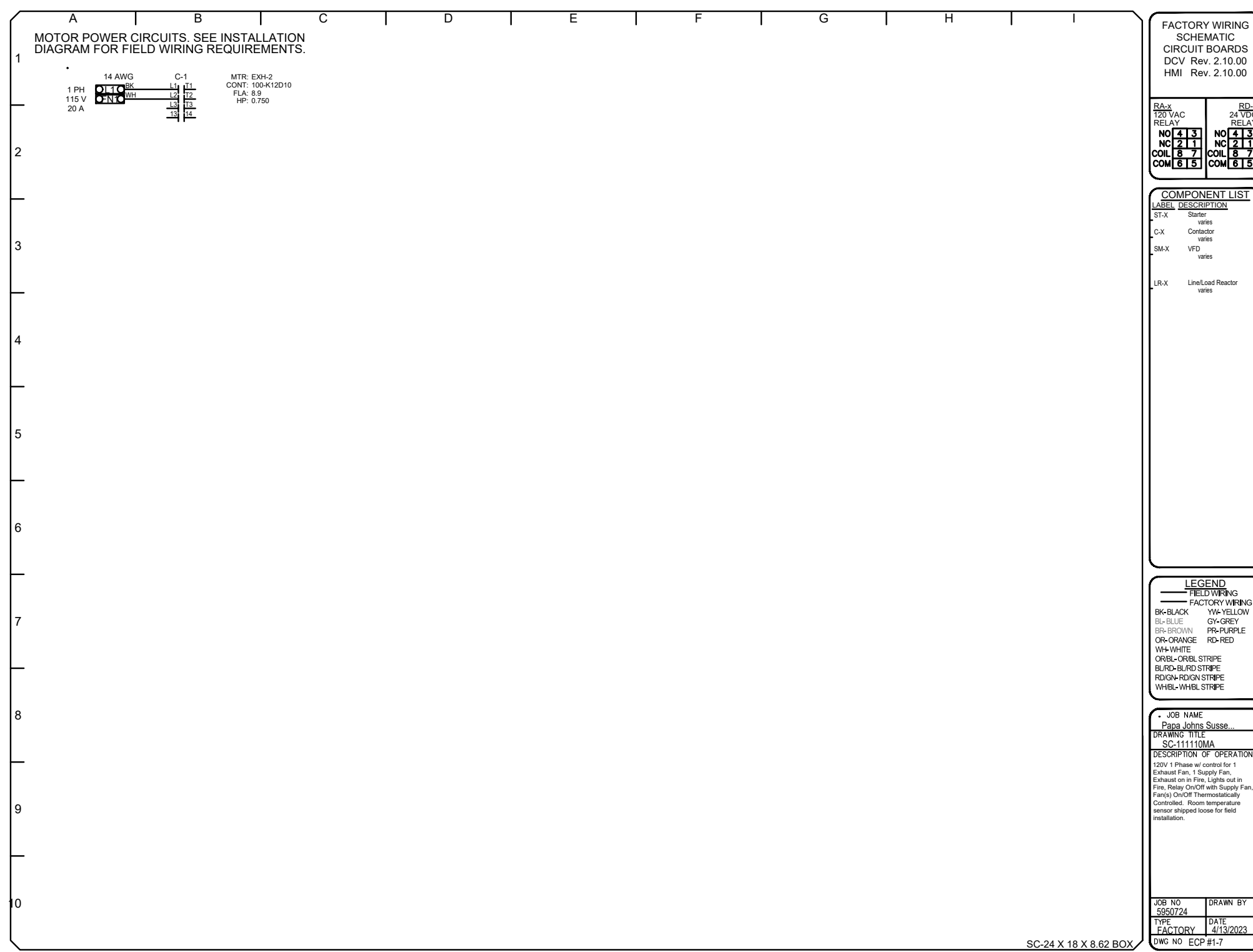
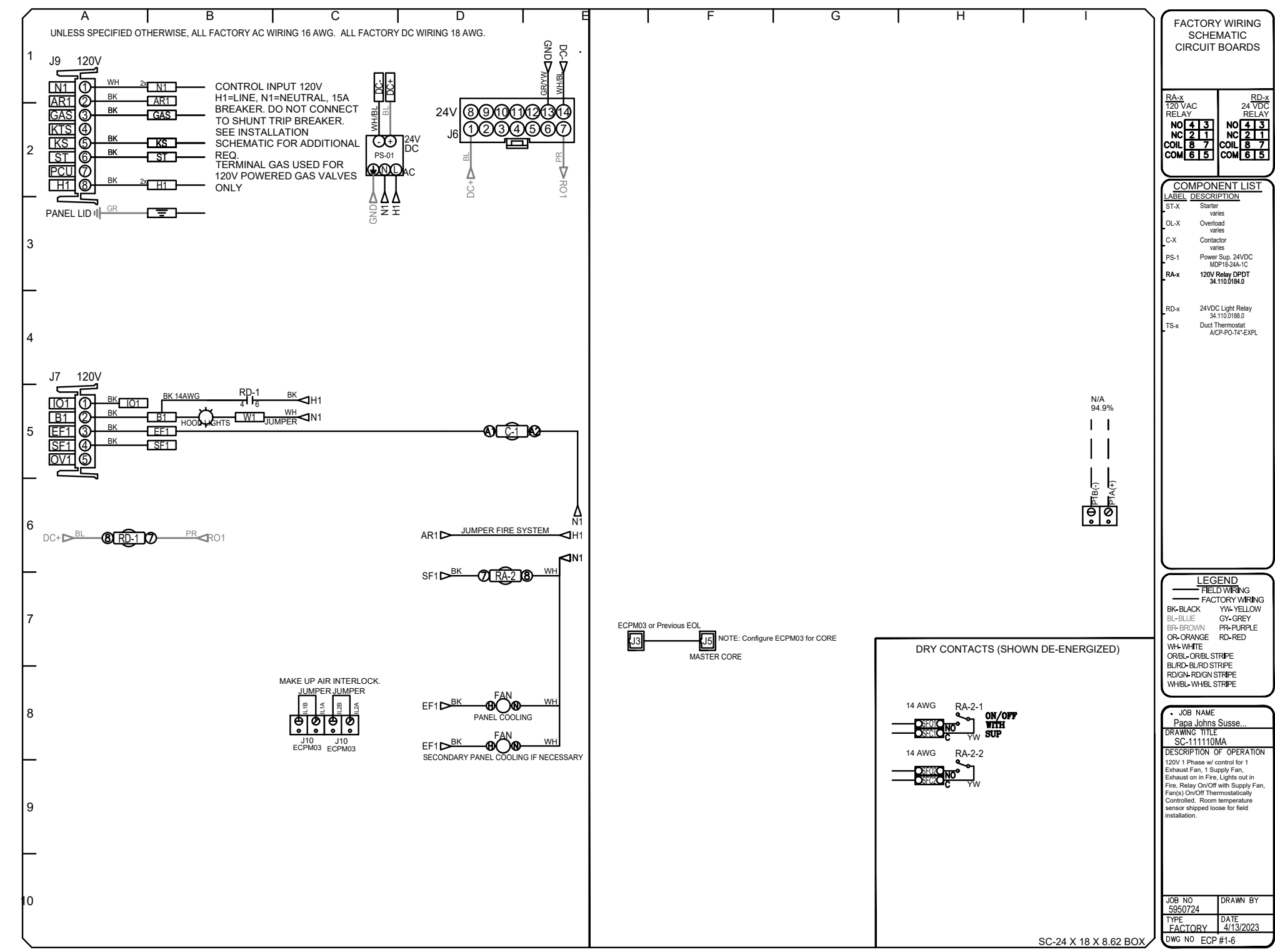
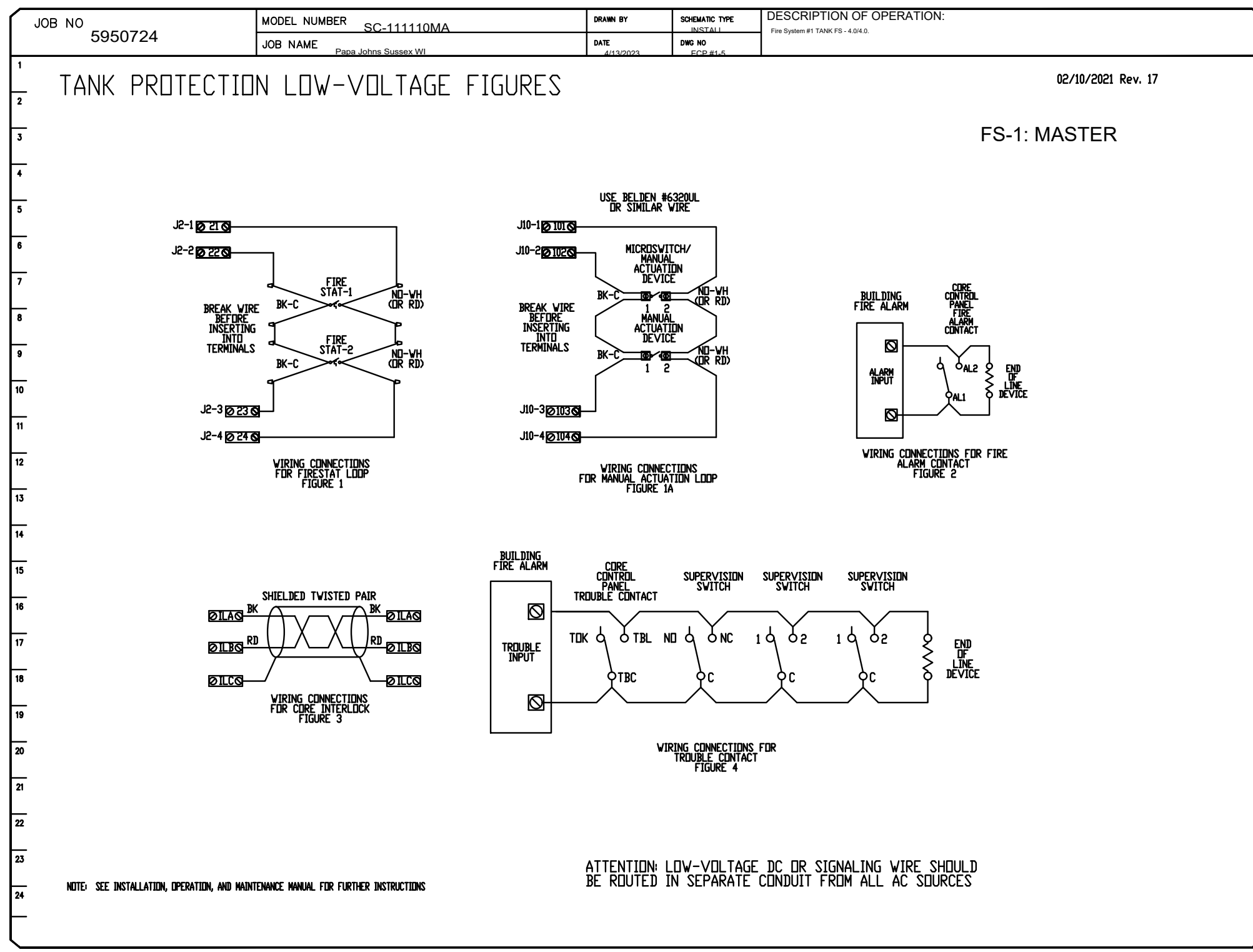
PROFESSIONAL ENGINEER  
 JOHN J. GRAVES  
 E-44907  
 VILLA HILLS, KY

SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO.  
**H1-7**







**REVISIONS**

NO.	DESCRIPTION	DATE

**DATE:** 4/13/2023  
**DWG.#:** 5950724  
**DRAWN BY:** jacob.puff  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO. 10**

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WI LICENSE NO.: E-44907

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**PAPA JOHN'S**

**PAPA JOHN'S - IN-LINE**

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Sussex, WI 53089

STORE NUMBER: TBD

**PAPA JOHN'S INTERNATIONAL, INC.**  
788 CIRCLE 75 PARKWAY  
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PROTOTYPE VERSION: P\_J\_INLINE\_1.0

**PROJECT STATUS:** PERMIT SET 05.25.23

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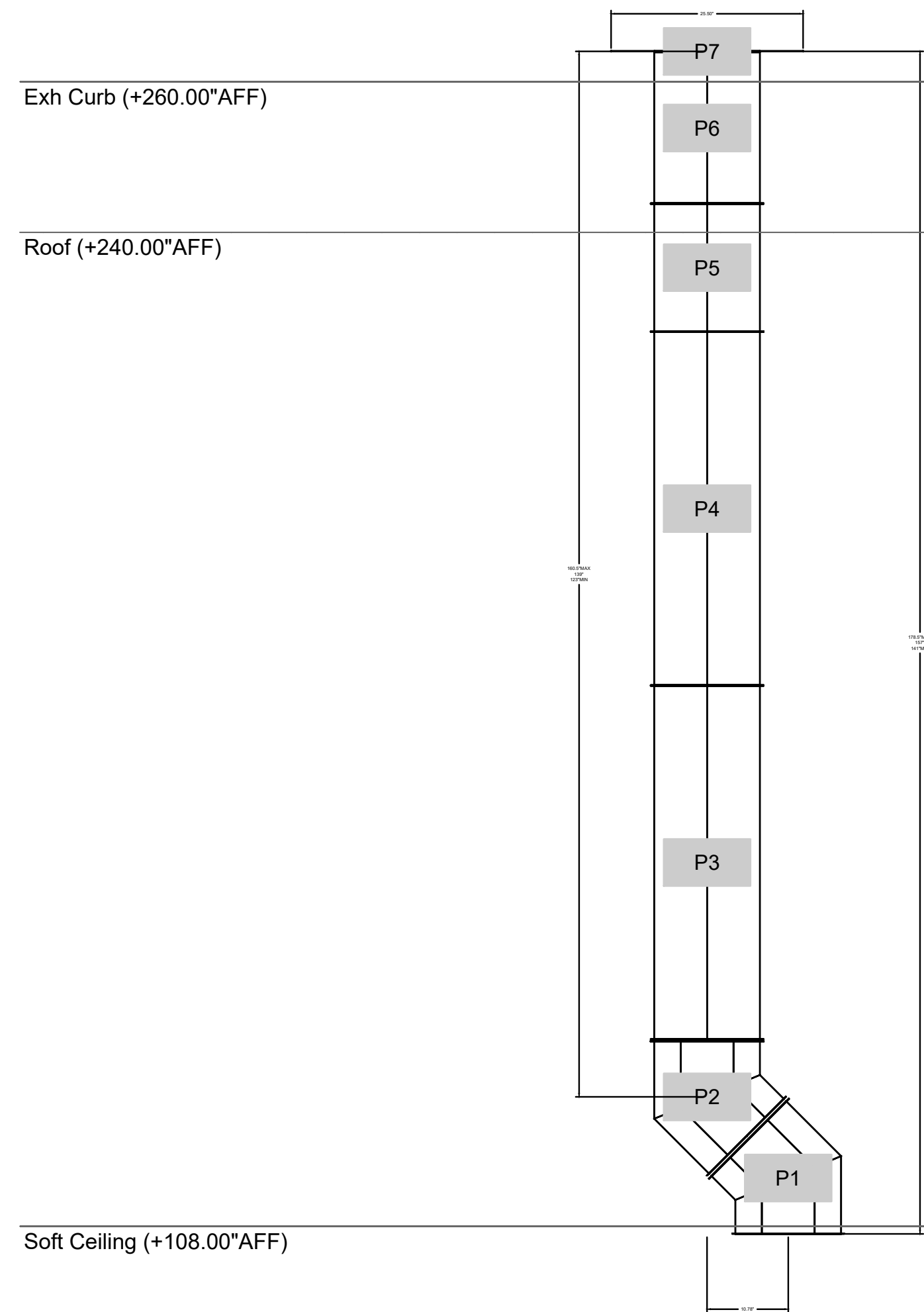
**ORIGINAL CD 05.25.23**

**SHEET TITLE:** HOOD DRAWINGS

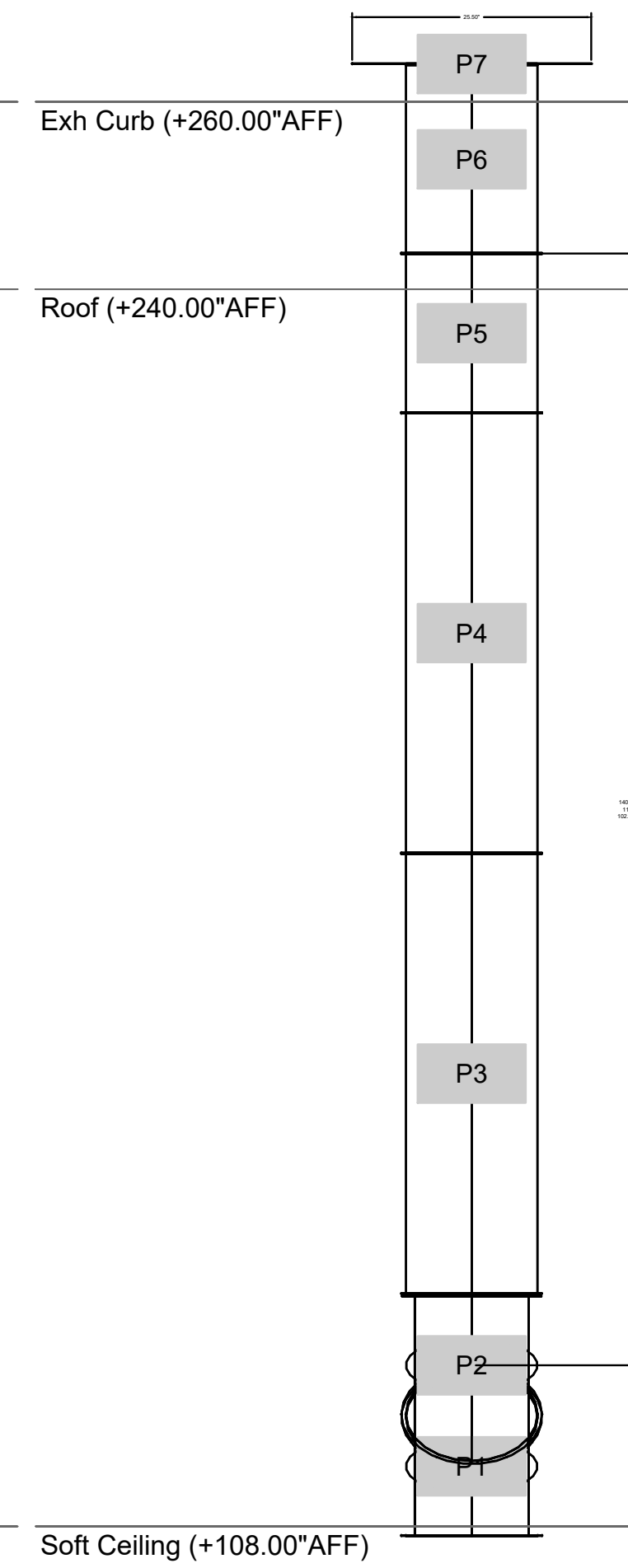
**SHEET NO. H1-10**



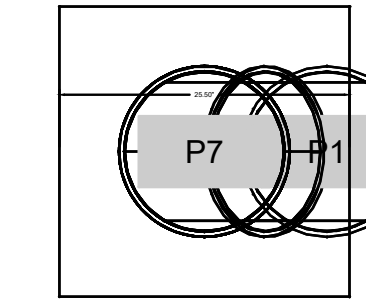
DUCTWORK #1 FRONT VIEW



DUCTWORK #1 SIDE VIEW



DUCTWORK #1 TOP VIEW



REVISIONS	
DESCRIPTION	DATE

**CAPTIVE AIR**  
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Papa Johns Sussex WI  
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**DRAWN BY:** jacob.puff  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
 12

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 NO. DATE DESCRIPTION  
 0 05.25.23 ORIGINAL CD

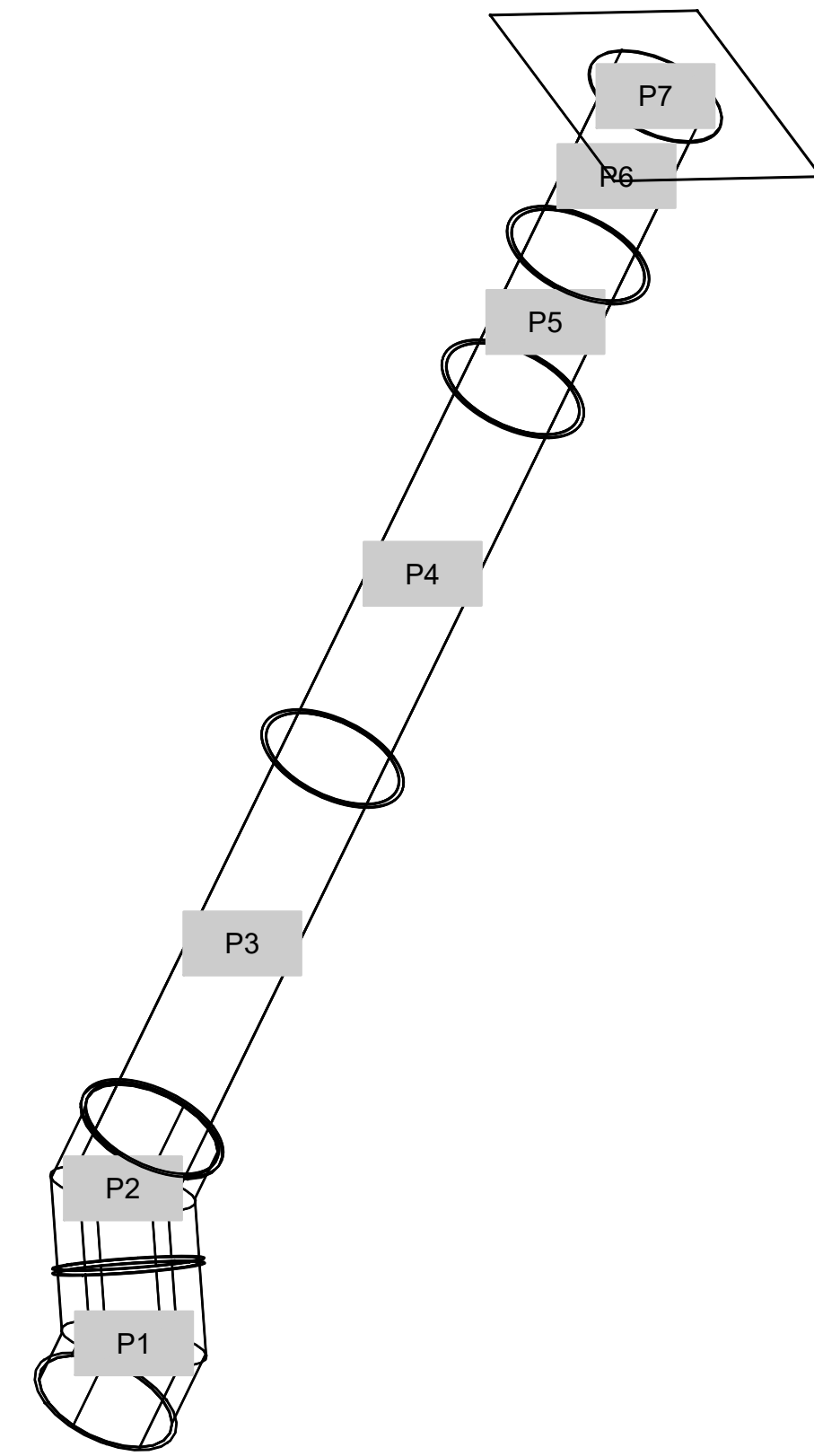
PROFESSIONAL ENGINEER  
 JOHN J. GRAVES  
 E-44907  
 VILLA HILLS  
 KY

ORIGINAL CD 05.25.23

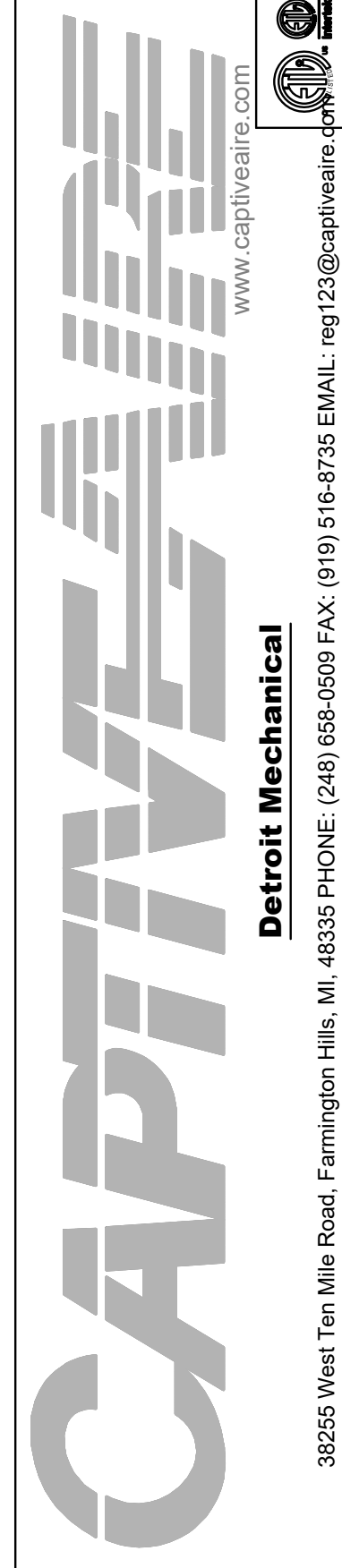
SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO.  
**H1-12**

DUCTWORK #1 SE VIEW



REVISIONS	
DESCRIPTION	DATE



Papa Johns Sussex WI  
Sussex, WI, 53089

**DATE:** 4/13/2023  
**DWG.#:** 5950724  
**DRAWN BY:** jacob.puff  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
13

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PROJECT #12369

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PROTOTYPE VERSION: P\_J\_INLINE\_1.0

PROJECT STATUS:  
PERMIT SET 05.25.23  
SHEET ISSUE:  
NO. DATE DESCRIPTION  
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KY

ORIGINAL CD 05.25.23

SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO.  
**H1-13**

**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



Papa Johns Sussex WI  
Sussex, WI, 53089

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**DRAWN BY:** jacob.puff  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
14

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PROJECT STATUS:  
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PROFESSIONAL ENGINEER  
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KY

ORIGINAL CD 05.25.23

SHEET TITLE:  
**HOOD DRAWINGS**

SHEET NO.  
**H1-14**