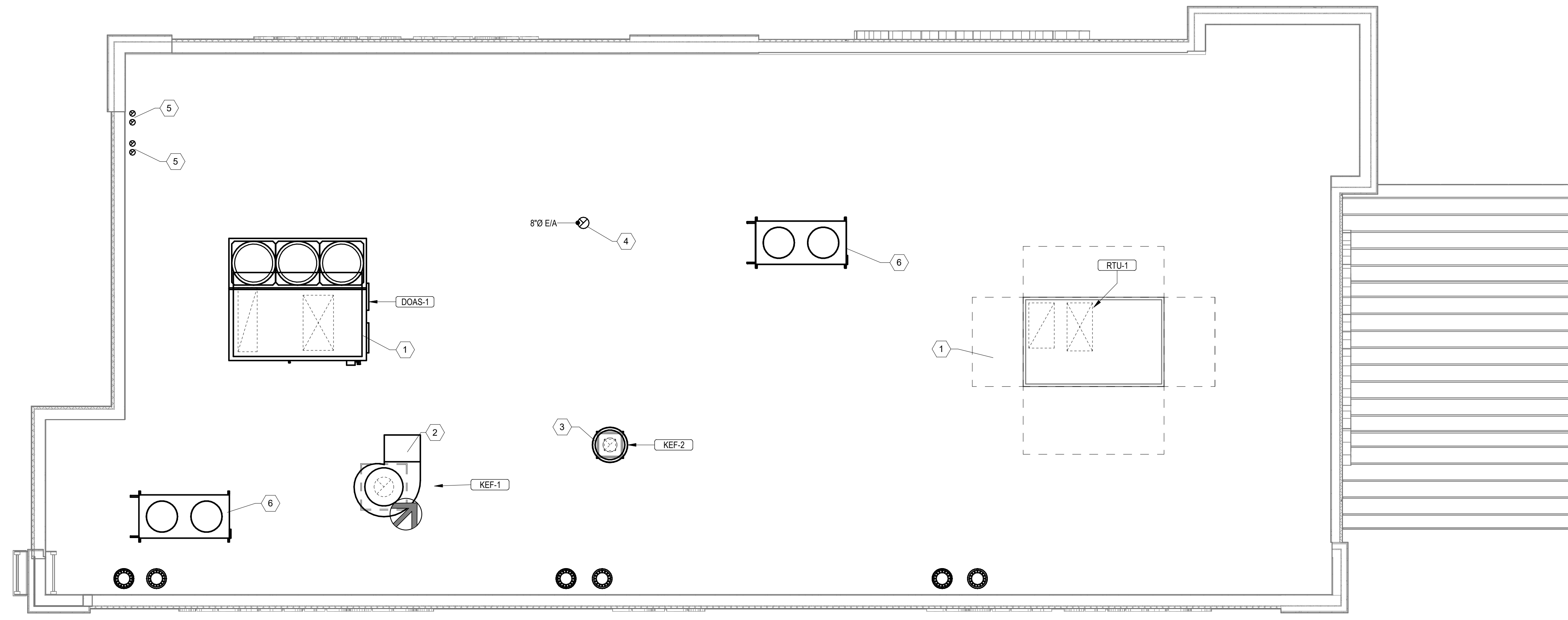
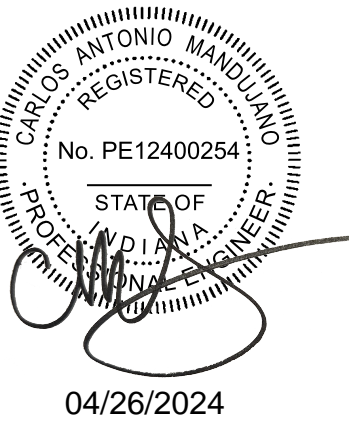


GENERAL MECHANICAL SYMBOLS		HVAC SYMBOLS		PIPING SYMBOLS	
	REVISION NUMBER - SHOWN ON PLANS		SQUARE DUCT SIZE TAG (WIDTH X HEIGHT)		CHWR CHILLED WATER RETURN
	POINT WHERE NEW CONNECTS TO EXISTING		OVAL DUCT SIZE TAG (WIDTH / HEIGHT)		CHWS CHILLED WATER SUPPLY
	NUMBER OF DETAIL ON SHEET		ROUND DUCT SIZE TAG (DIAMETER)		CD CONDENSATE DRAINAGE
	NUMBER OF SHEET WHERE DETAIL APPEARS		EXISTING DUCT TAG		CWR CONDENSER WATER RETURN
	KEYNOTE		DUCT BEING DEMOLISHED		CWS CONDENSER WATER SUPPLY
	CONTINUATION SYMBOL		SUPPLY AIR		GWR GEOTHERMAL WATER RETURN
	ROOM NAME AND NUMBER		CONDITIONED OUTSIDE AIR		GWS GEOTHERMAL WATER SUPPLY
	ITEM TO BE DEMOLISHED		OUTSIDE AIR		HWR HEATING WATER RETURN
	AREA NOT IN CONTRACT		RETURN AIR		HWS HEATING WATER SUPPLY
	PIPE SIZE TAG (DIAMETER)		TRANSFER AIR		G NATURAL GAS
	ABOVE GROUND PIPING		EXHAUST AIR		PG PROPANE GAS
	PIPE SLOPE TAG		RELIEF AIR		REF-L REFRIGERANT-LIQUID
	BELOW GROUND PIPING		GREASE EXHAUST AIR		REF-S REFRIGERANT-SUCTION
	PIPE INVERT ELEVATION TAG		CONDENSATE EXHAUST AIR		REF-HG REFRIGERANT-HOT GAS
	EXISTING PIPE TAG		SMOKE EXHAUST AIR		STM STEAM
	PIPING BEING DEMOLISHED		EXHAUST GAS FLUE		CDR CONDENSATE RETURN
ABBREVIATIONS			COMBUSTION AIR	PIPE ACCESSORY TAGS	
Ø	ROUND	LVR	LOUVER		2\"/>
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE		2\"/>
AC	AIR CONDITIONING	MIA	MIXED AIR		2\"/>
AD	AREA DRAIN	MA	MAXIMUM		2\"/>
ADD	ADDENDUM	MBH	ONE THOUSAND BTU PER HOUR		2\"/>
AFF	ABOVE FINISHED FLOOR	MCF	ONE THOUSAND CUBIC FEET		2\"/>
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER		2\"/>
ALT	ALTERNATE	MECH	MECHANICAL		2\"/>
AP	ACCESS PANEL	MFR	MANUFACTURER		2\"/>
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM		2\"/>
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS		2\"/>
BLW	BELOW	MTR	MOTOR		2\"/>
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR		2\"/>
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA		2\"/>
CAP	CAPACITY	NC	NORMALLY CLOSED		2\"/>
CB	CATCH BASIN	NIC	NOT IN CONTRACT		2\"/>
CFM	CUBIC FEET PER MINUTE	NO	NUMBER		2\"/>
CLG	CEILING	NO	NORMALLY OPEN		2\"/>
CO	CLEAN OUT	NTS	NOT TO SCALE		2\"/>
CW	COLD WATER	O	OXYGEN		2\"/>
D	DEGREE	O/A	OUTSIDE AIR		2\"/>
DB	DRY BULB	ORD	OVERFLOW ROOF DRAIN		2\"/>
DIA	DIAMETER	PD	PRESSURE DROP		2\"/>
DN	DOWN	PV	POST INDICATOR VALVE		2\"/>
DW	DISTILLED WATER	PLBG	PLUMBING		2\"/>
EA	EACH	PRESS	PRESSURE		2\"/>
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE		2\"/>
ELEC	ELECTRICAL	PSI	POUNDS PER SQUARE INCH		2\"/>
EQUIP	EQUIPMENT	PSIG	POUNDS PER SQUARE INCH GAUGE		2\"/>
EW	ELECTRIC WATER COOLER	PWR	POWER		2\"/>
EWT	ENTERING WATER TEMPERATURE	R	ROOF RISER		2\"/>
E/A	EXHAUST AIR	R/A	RETURN AIR		2\"/>
EXIST	EXISTING	RCP	RADIANT CEILING PANEL		2\"/>
F	DEGREES FAHRENHEIT	RD	ROOF DRAIN		2\"/>
FCO	FLOOR CLEAN OUT	REC	RECESSED		2\"/>
FD	FLOOR DRAIN	RED	REDUCER		2\"/>
FDC	FIRE DEPARTMENT CONNECTION	RH	RELATIVE HUMIDITY		2\"/>
FL	FLOOR	RL/A	RELIEF AIR		2\"/>
FO	FUEL OIL	RM	ROOM		2\"/>
FOV	FUEL OIL VENT	RPM	REVOLUTIONS PER MINUTE		2\"/>
FOR	FUEL OIL RETURN	RW	RAIN WATER		2\"/>
FOS	FUEL OIL SUPPLY	SF	SQUARE FOOT		2\"/>
FPM	FEET PER MINUTE	SIA	SUPPLY AIR		2\"/>
FS	FLOOR SINK	SAN	SANITARY		2\"/>
FT	FOOT/FEET	SF	SQUARE FOOT		2\"/>
FTR	FIN TUBE RADIATION	SD	SMOKE DAMPER		2\"/>
GAL	GALLON	SM	SURFACE MOUNT		2\"/>
GF	GAS-FIRED	SP	STANDPIPE		2\"/>
GC	GENERAL CONTRACTOR	SP	STATIC PRESSURE		2\"/>
GPM	GALLONS PER MINUTE	STM	STEAM		2\"/>
GW	GREASE WASTE	T	THERMOSTAT		2\"/>
HB	HOSE BIB	TD	TEMPERATURE DROP		2\"/>
HP	HORSE POWER	TDR	TRENCH DRAIN		2\"/>
HTG	HEATING	TEMP	TEMPERATURE		2\"/>
HTR	HEATER	TYP	TYPICAL		2\"/>
HW	HOT WATER	UG	UNDERGROUND		2\"/>
HYD	HYDRANT	VAC	VACUUM		2\"/>
ID	INDIRECT	V	VENT		2\"/>
IN	INCH	VAV	VARIABLE AIR VOLUME		2\"/>
INV	INVERT	VENT	VENTILATION		2\"/>
LB	POUND	VTR	VENT THROUGH ROOF		2\"/>
LB/HR	POUNDS PER HOUR	W	WASTE		2\"/>
LAT	LEAVING AIR TEMPERATURE	WB	WET BULB		2\"/>
LP	LOW PRESSURE	WCO	WALL CLEAN OUT		2\"/>
LPG	LIQUEFIED PETROLEUM GAS	WH	WATER HEATER		2\"/>
EQUIPMENT ABBREVIATIONS		MECHANICAL EQUIPMENT TAGS		PIPE ACCESSORY TAGS	
AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK		2\"/>
ACCU	AIR COOLING CONDENSING UNIT	EPH	ELECTRIC WATER HEATER		2\"/>
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT		2\"/>
AS	AIR SEPARATOR	FP	FIRE PUMP		2\"/>
B	BOILER	GI	GREASE INTERCEPTOR		2\"/>
CH	CHILLER	GRV	GRAVITY ROOF VENTILATOR		2\"/>
CT	COOLING TOWER	HWP	HEATING WATER PUMP		2\"/>
CUH	CABINET UNIT HEATER	HRU	HEAT RECOVERY UNIT		2\"/>
CHWP	CHILLED WATER PUMP	PRV	POWER ROOF VENTILATOR		2\"/>
DBP	DOMESTIC WATER BOOSTER PUMP	RE	RETURN/EXHAUST FAN		2\"/>
DS	DUCT MOUNTED COIL	RTU	ROOFTOP UNIT		2\"/>
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP		2\"/>
EF	EXHAUST FAN	UH	UNIT HEATER		2\"/>
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER		2\"/>
* NOTE *		DAMPER TAGS		PIPE ACCESSORY TAGS	
ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET. THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.			Smoke Damper		2\"/>
			Fire Damper		2\"/>
			Comb. Fire/Smoke Damper		2\"/>
			Manual Damper		2\"/>
			Motorized Damper		2\"/>
			Backdraft Damper		2\"/>

DESCRIPTION	DATE
PROJECT NO:	24-0101
STORE NO:	XXXX
DATE:	04/19/2024
DRAWN BY:	CM
CHECKED BY:	CM



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

MECHANICAL PLAN NOTES

- 1 PROVIDE RTU/DOAS IN LOCATION AS SHOWN ON PLANS. COORDINATE EXACT RTU LOCATION AND DUCT DROPS WITH STRUCTURAL TRUSS LAYOUT. MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN OUTDOOR AIR INTAKES AND EXHAUST TERMINATIONS.
- 2 PROVIDE TYPE I EXHAUST FAN IN LOCATION AS SHOWN ON PLANS. CONNECT 14" DIAMETER EXHAUST DUCT FROM EXHAUST HOOD UP TO KEF-1 ON ROOF. COORDINATE EXHAUST DUCT ROUTING WITH STRUCTURAL TRUSS LAYOUT.
- 3 PROVIDE TYPE I EXHAUST FAN IN LOCATION AS SHOWN ON PLANS. CONNECT 10" DIAMETER EXHAUST DUCT FROM EXHAUST HOOD UP TO KEF-2 ON ROOF. COORDINATE EXHAUST DUCT ROUTING WITH STRUCTURAL TRUSS LAYOUT.
- 4 8" EXHAUST DUCT ROUTED TO ROOF CAP AS REQUIRED.
- 5 PROVIDE MANUFACTURER'S CONCENTRIC TERMINATION VENT KIT SERVING HOT WATER HEATER BELOW. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. ENSURE AT LEAST 10'-0" DISTANCE BETWEEN OUTDOOR AIR INTAKES.
- 6 MOUNT CONDENSING UNIT ON ROOF AS DETAILED AND AS REQUIRED BY THE MANUFACTURER. CONNECT REFRIGERANT PIPING TO EVAP COIL AS REQUIRED BY THE MANUFACTURER. SEE SHEET M200 FOR MOUNTING DETAIL. CONNECT TO ROOF STRUCTURE PER THE STRUCTURAL DRAWINGS.

Z:\P\A\1\2\3\4\5\6\7\8\9\10\11\12\13\14\15\16\17\18\19\20\21\22\23\24\25\26\27\28\29\30\31\32\33\34\35\36\37\38\39\40\41\42\43\44\45\46\47\48\49\50\51\52\53\54\55\56\57\58\59\60\61\62\63\64\65\66\67\68\69\70\71\72\73\74\75\76\77\78\79\80\81\82\83\84\85\86\87\88\89\90\91\92\93\94\95\96\97\98\99\100\101\102\103\104\105\106\107\108\109\110\111\112\113\114\115\116\117\118\119\120\121\122\123\124\125\126\127\128\129\130\131\132\133\134\135\136\137\138\139\140\141\142\143\144\145\146\147\148\149\150\151\152\153\154\155\156\157\158\159\160\161\162\163\164\165\166\167\168\169\170\171\172\173\174\175\176\177\178\179\180\181\182\183\184\185\186\187\188\189\190\191\192\193\194\195\196\197\198\199\200\201\202\203\204\205\206\207\208\209\210\211\212\213\214\215\216\217\218\219\220\221\222\223\224\225\226\227\228\229\230\231\232\233\234\235\236\237\238\239\240\241\242\243\244\245\246\247\248\249\250\251\252\253\254\255\256\257\258\259\260\261\262\263\264\265\266\267\268\269\270\271\272\273\274\275\276\277\278\279\280\281\282\283\284\285\286\287\288\289\290\291\292\293\294\295\296\297\298\299\300\301\302\303\304\305\306\307\308\309\310\311\312\313\314\315\316\317\318\319\320\321\322\323\324\325\326\327\328\329\330\331\332\333\334\335\336\337\338\339\340\341\342\343\344\345\346\347\348\349\350\351\352\353\354\355\356\357\358\359\360\361\362\363\364\365\366\367\368\369\370\371\372\373\374\375\376\377\378\379\380\381\382\383\384\385\386\387\388\389\390\391\392\393\394\395\396\397\398\399\400\401\402\403\404\405\406\407\408\409\410\411\412\413\414\415\416\417\418\419\420\421\422\423\424\425\426\427\428\429\430\431\432\433\434\435\436\437\438\439\440\441\442\443\444\445\446\447\448\449\450\451\452\453\454\455\456\457\458\459\460\461\462\463\464\465\466\467\468\469\470\471\472\473\474\475\476\477\478\479\480\481\482\483\484\485\486\487\488\489\490\491\492\493\494\495\496\497\498\499\500\501\502\503\504\505\506\507\508\509\510\511\512\513\514\515\516\517\518\519\520\521\522\523\524\525\526\527\528\529\530\531\532\533\534\535\536\537\538\539\540\541\542\543\544\545\546\547\548\549\550\551\552\553\554\555\556\557\558\559\560\561\562\563\564\565\566\567\568\569\570\571\572\573\574\575\576\577\578\579\580\581\582\583\584\585\586\587\588\589\590\591\592\593\594\595\596\597\598\599\600\601\602\603\604\605\606\607\608\609\610\611\612\613\614\615\616\617\618\619\620\621\622\623\624\625\626\627\628\629\630\631\632\633\634\635\636\637\638\639\640\641\642\643\644\645\646\647\648\649\650\651\652\653\654\655\656\657\658\659\660\661\662\663\664\665\666\667\668\669\670\671\672\673\674\675\676\677\678\679\680\681\682\683\684\685\686\687\688\689\690\691\692\693\694\695\696\697\698\699\700\701\702\703\704\705\706\707\708\709\710\711\712\713\714\715\716\717\718\719\720\721\722\723\724\725\726\727\728\729\730\731\732\733\734\735\736\737\738\739\740\741\742\743\744\745\746\747\748\749\750\751\752\753\754\755\756\757\758\759\760\761\762\763\764\765\766\767\768\769\770\771\772\773\774\775\776\777\778\779\780\781\782\783\784\785\786\787\788\789\790\791\792\793\794\795\796\797\798\799\800\801\802\803\804\805\806\807\808\809\810\811\812\813\814\815\816\817\818\819\820\821\822\823\824\825\826\827\828\829\830\831\832\833\834\835\836\837\838\839\840\841\842\843\844\845\846\847\848\849\850\851\852\853\854\855\856\857\858\859\860\861\862\863\864\865\866\867\868\869\870\871\872\873\874\875\876\877\878\879\880\881\882\883\884\885\886\887\888\889\890\891\892\893\894\895\896\897\898\899\900\901\902\903\904\905\906\907\908\909\910\911\912\913\914\915\916\917\918\919\920\921\922\923\924\925\926\927\928\929\930\931\932\933\934\935\936\937\938\939\940\941\942\943\944\945\946\947\948\949\950\951\952\953\954\955\956\957\958\959\960\961\962\963\964\965\966\967\968\969\970\971\972\973\974\975\976\977\978\979\980\981\982\983\984\985\986\987\988\989\990\991\992\993\994\995\996\997\998\999\1000

Freddy's Frozen Custard & Steakhangers
 2701 CASSOPOLIS STREET, ELKHART, IN 46514
 SMALL PROTOTYPE

DESCRIPTION	DATE
PROJECT NO:	24-0101
STORE NO:	XXXX
DATE:	04/19/2024
DRAWN BY:	CM
CHECKED BY:	CM

MECHANICAL ROOF PLAN

M-101



ROOFTOP UNIT																							
MARK	MANUFACTURER	MODEL NO.	EVAP CFM	EKT. STATIC P. IN. WG.	COOLING				HOT GAS REHEAT	HEATING (GAS)			ELECTRICAL				SUPPLY FAN TYPE	MINIMUM OUTDOOR AIR	SEER/EER	TOTAL WEIGHT (LBS)	NOTES		
					STAGES	TOTAL	SENSIBLE	AMB		EVAP.EAT DBWB	INPUT	OUTPUT	HEATING STAGES	VOLTPH/Hz	BLOWER MOTOR	POWER EXHAUST						MCA	MCCP
RTU-1	Trane	YS-150--	5000 CFM	1.000	3	149000 Btu/h	105000 Btu/h	105.0 °F	80.0 °F / 67.0 °F	Yes	250000 Btu/h	202000 Btu/h	3	208 V / 3 / 60 Hz	3.00 hp	Yes	65.0 A	90.0 A	VFD	981 CFM	0 / 12.2	1108 lb	1-8

ALTERNATE ROOFTOP UNIT MANUFACTURER																							
MARK	MANUFACTURER	MODEL NO.	EVAP CFM	EKT. STATIC P. IN. WG.	COOLING				HOT GAS REHEAT	HEATING (GAS)			ELECTRICAL				SUPPLY FAN TYPE	MINIMUM OUTDOOR AIR	SEER/EER	TOTAL WEIGHT (LBS)	NOTES		
					STAGES	TOTAL	SENSIBLE	AMB		EVAP.EAT DBWB	INPUT	OUTPUT	HEATING STAGES	VOLTPH/Hz	BLOWER MOTOR	POWER EXHAUST						MCA	MCCP
RTU-1	Carrier	48HCFE14	5000 CFM	1.000	2	154800 Btu/h	116100 Btu/h	95.0 °F	-459.7 °F / -459.7 °F	Yes	240000 Btu/h	192000 Btu/h	2	208 V / 3 / 60 Hz	5.00 hp	Yes	71.0 A	90.0 A	VFD	981 CFM	0 / 10.8	1363 lb	1-8
RTU-1	YORK	Z150240	5000 CFM	1.000	2	154800 Btu/h	116100 Btu/h	95.0 °F	-459.7 °F / -459.7 °F	Yes	240000 Btu/h	192000 Btu/h	2	208 V / 3 / 60 Hz	5.00 hp	Yes	71.0 A	90.0 A	VFD	981 CFM	0 / 10.8	1363 lb	1-8

NOTES:

- PROVIDE DIGITAL CONTROLS, HIGH PERFORMANCE WITH FDD OUTDOOR AIR ECONOMIZER WITH DRY BULB CONTROL, SINGLE ZONE VAV (MSAV), BAROMETRIC RELIEF DAMPER, TIME DELAY ON COMPRESSOR RE-START, CRANKCASE HEATER, BAROMETRIC RELIEF DAMPER, DRAIN PAN OVERFLOW SWITCH, DISCHARGE AIR TEMPERATURE SENSING, HINGED ACCESS DOORS, SMOKE DETECTOR MOUNTED IN RETURN, AND STANDARD COOLING DOWN TO OFF FOR EACH UNIT. OUTDOOR AIR DAMPER TO FULLY CLOSE W/ FAN SHUTDOWN FOR ALL UNITS.
- EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC EQUIPMENT INCLUDING BUT NOT LIMITED TO FILTERS, COILS AND ECONOMIZERS. THE FAN AND MOTOR SHALL BE SIZED APPROPRIATELY TO MEET THIS DEFINITION OF EXTERNAL STATIC PRESSURE.
- PROVIDE COMMERCIAL 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER THERMOSTAT WITH ECONOMIZER OUTPUT AND REMOTE, TEMPERATURE AND HUMIDITY SENSOR FOR EACH UNIT (HONEYWELL VISION PRO 8000 OR EQUAL), ECONOMIZER/OUTDOOR AIR DAMPER IS TO CLOSE DURING UNOCCUPIED HOURS.
- PROVIDE 14" HIGH (AT LOWEST POINT) PRE-FABRICATED INSULATED ROOF CURB.
- PROVIDE HAIL GUARDS FOR EACH UNIT.
- PROVIDE FACTORY INSTALLED UNIT MOUNTED CIRCUIT BREAKERS.
- MECHANICAL CONTRACTOR SHOULD PROVIDE ALL NEW FILTERS ON DAY OF TURNOVER.
- PROVIDE HOT GAS REHEAT FOR HUMIDITY CONTROL AND ALL ASSOCIATED ACCESSORY COMPONENTS.

NATIONAL ACCOUNT INFORMATION

FREDDY'S FROZEN CUSTARD HAS NATIONAL ACCOUNT AGREEMENTS FOR ROOF TOP UNITS WITH TRANE AND CARRIER. NO ALTERNATE MANUFACTURERS ARE ALLOWED.

FOR TRANE EQUIPMENT EQUAL TO THE UNITS SPECIFIED CONTACT:
JUSTIN BARNES, TRANE ACCOUNT MANAGER - NATIONAL ACCOUNTS, (303) 228-2896
JOBARNES@TRANE.COM

FOR CARRIER EQUIPMENT CONTACT:
TERRI BURNS, ACCOUNT ORDER MANAGER, (315) 432-3653
nationalaccounts@carrier.com

FAN SCHEDULE													
ID	LOCATION	MANUFACTURER	MODEL NO.	TYPE	FAN			MOTOR			PH	REMARKS	
					DESIGN AIRFLOW	ESP	DRIVE TYPE	POWER	RPM	ECM			VOLT
EF-1	Ceiling	Greenheck	SP-A200-390	Premium (Constant Chm)	75 CFM	0.250	Direct	0.09 hp	900	Yes	120 V	1	SEE NOTE 1.
EF-2	Ceiling	Greenheck	SP-A200-390	Premium (Constant Chm)	75 CFM	0.250	Direct	0.08 hp	900	Yes	120 V	1	SEE NOTE 1.

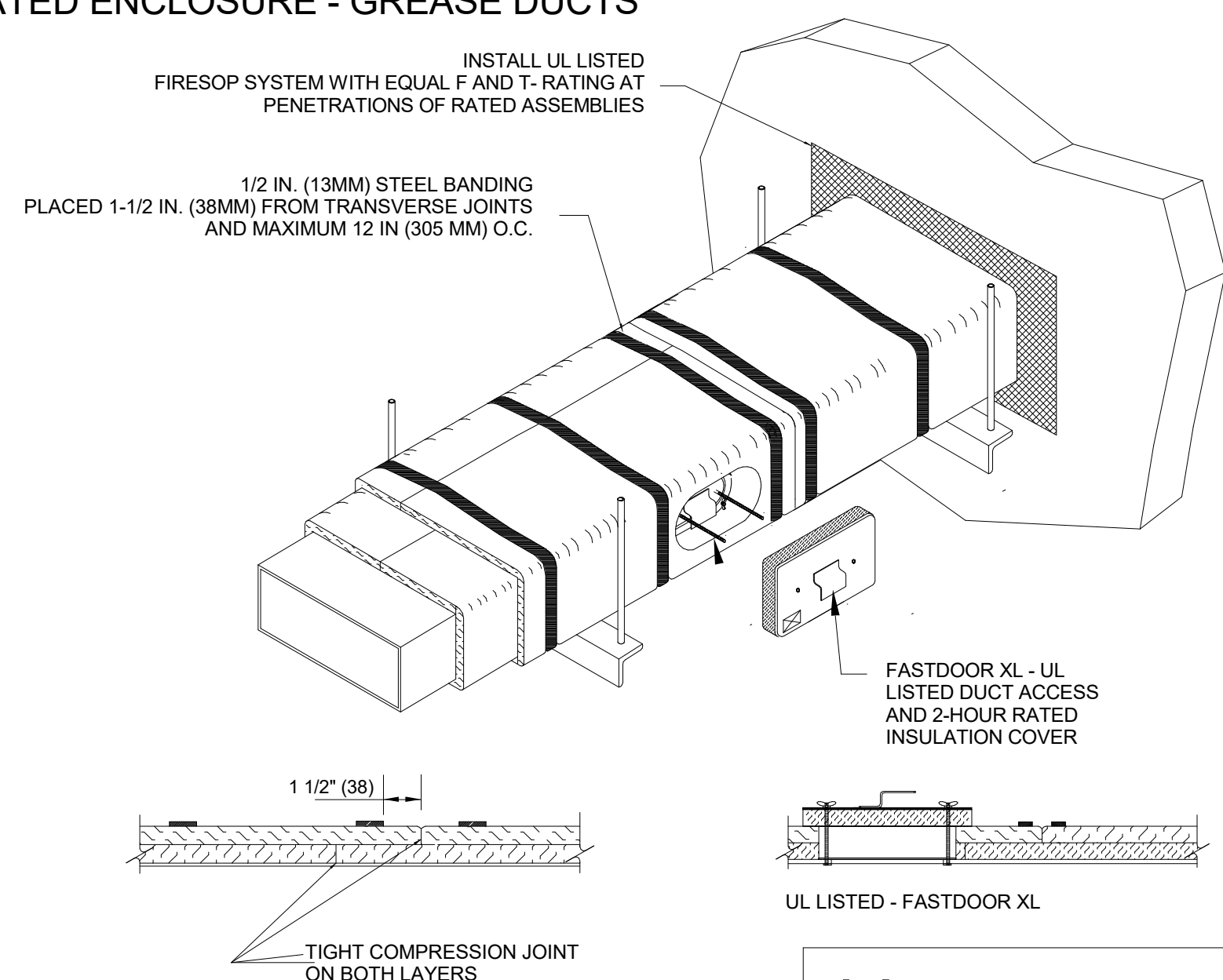
NOTES: 1. PROVIDE CEILING GRILLE, INTEGRAL BACKDRAFT DAMPER, AND ROOF CAP.

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE									
ID	MANUFACTURER	MODEL	MATERIAL	FINISH	NECK			NOTES	
					SIZE	WIDTH	HEIGHT		
RG-1	AMER. LOUVER CO.	STRATUS	Aluminum	White Enamel	16"	0"	0"	SEE NOTE 1.	
RG-2	Titus	350RL	Steel	White Enamel	0"	6"	6"		
RG-2	Titus	350RL	Steel	White Enamel	0"	10"	6"		
RG-2	Titus	350RL	Steel	White Enamel	0"	<varies>	6"		
SD-1	Titus	TMR	Steel	White Enamel	12"	0"	0"	FIELD PREP FOR PAINTING	
SD-2	Titus	TMS-AA	Aluminum	WHITE ENAMEL	10"	0"	0"		
SD-3	Titus	PAR	Steel	White Enamel	10"	0"	0"	RETURN - NO DEFLECTOR	
SD-4	Titus	T3SQ-4	Steel	WHITE ENAMEL	8"	0"	0"	THERMAL VAV DIFFUSER	
SD-5	Titus	TMS	Steel	White Enamel	<varies>	0"	0"	WITH O.B. DAMPER AND TRM KIT	

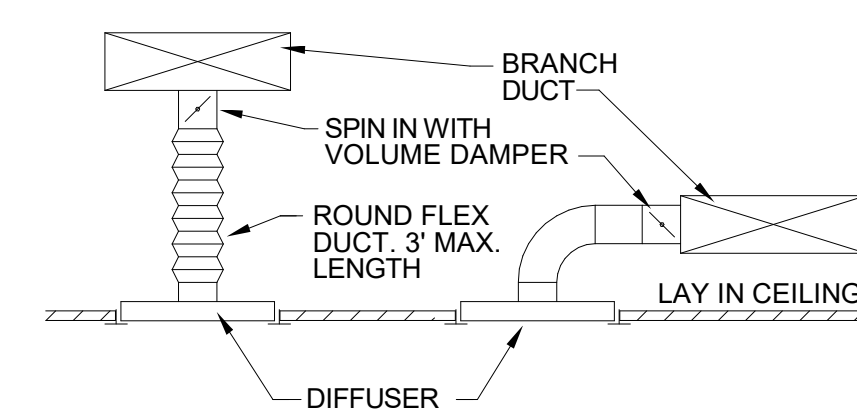
NOTES: 1. RETURN GRILLE TO BE PLASTIC FILTER RETURN, FILTER TO BE AMERICAN AIR FILTER (AAF) FRONTLINE GREEN 1", WITH AAF-AMERIFRAME SIZE: 20X20X1.

FIRE RATED ENCLOSURE - GREASE DUCTS

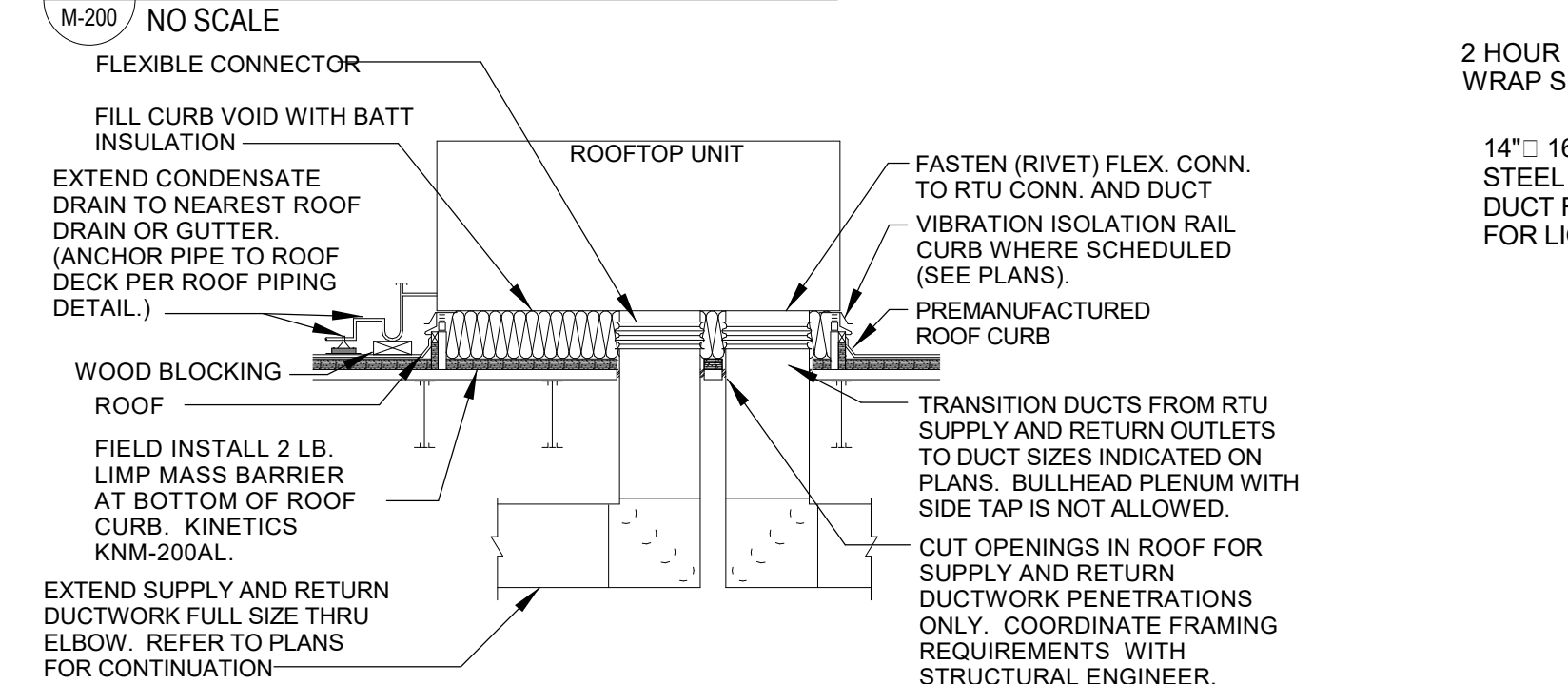
- THERMAL CERAMICS FIREMASTER FASTWRAP XL IS TESTED TO ASTM E2336 AND UL LISTED PER HNK1 G18 TO PROVIDE ZERO CLEARANCE TO COMBUSTIBLES AND TO PROVIDE A 1- OR 2-HOUR ENCLOSURE. THROUGH PENETRATIONS FIRESTOP SYSTEMS ARE TESTED IN ACCORDANCE WITH ASTM E 814 (UL 1479). ICC-ES APPROVAL PER REPORT ESR 2213 OR ESR 2832.
- COMPLIANT TO THE FOLLOWING CODES:
NFPA 96
INTERNATIONAL MECHANICAL CODE
UNIFORM MECHANICAL CODE
CALIFORNIA MECHANICAL CODE
- INSULATION APPLIED IN TWO LAYERS WITH TIGHT COMPRESSION JOINT ON BOTH LAYERS AT ALL JOINTS.
- MINIMUM 16 GAUGE CARBON STEEL (OR 18 GAGE STAINLESS STEEL) RECTANGULAR OR ROUND GREASE EXHAUST DUCT
- INSTALL UL LISTED AND LIQUID TIGHT THERMAL CERAMICS FASTDOOR XL ACCESS DOORS AT ALL CHANGES IN DIRECTION AND AT MINIMUM EVERY 20 FT ON HORIZONTAL RUNS.
- SUPPORT HANGER SYSTEMS DO NOT NEED TO BE WRAPPED PROVIDED THE HANGER RODS ARE MINIMUM OF 3/8 IN. DIAMETER AND SUPPORTS ARE MINIMUM 2 X 2 X 1/8 IN. STEEL ANGLE OR SMACNA EQUIVALENT SUPPORT SYSTEM.
- THERMAL CERAMICS DUCT WRAP SHALL BE INSTALLED DIRECTLY ONTO THE DUCT AND APPLIED FROM THE HOOD CONNECTION TO THE CONNECTION TO THE FAN.
- THERMAL CERAMICS DUCT ENCLOSURE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND UL LISTINGS.



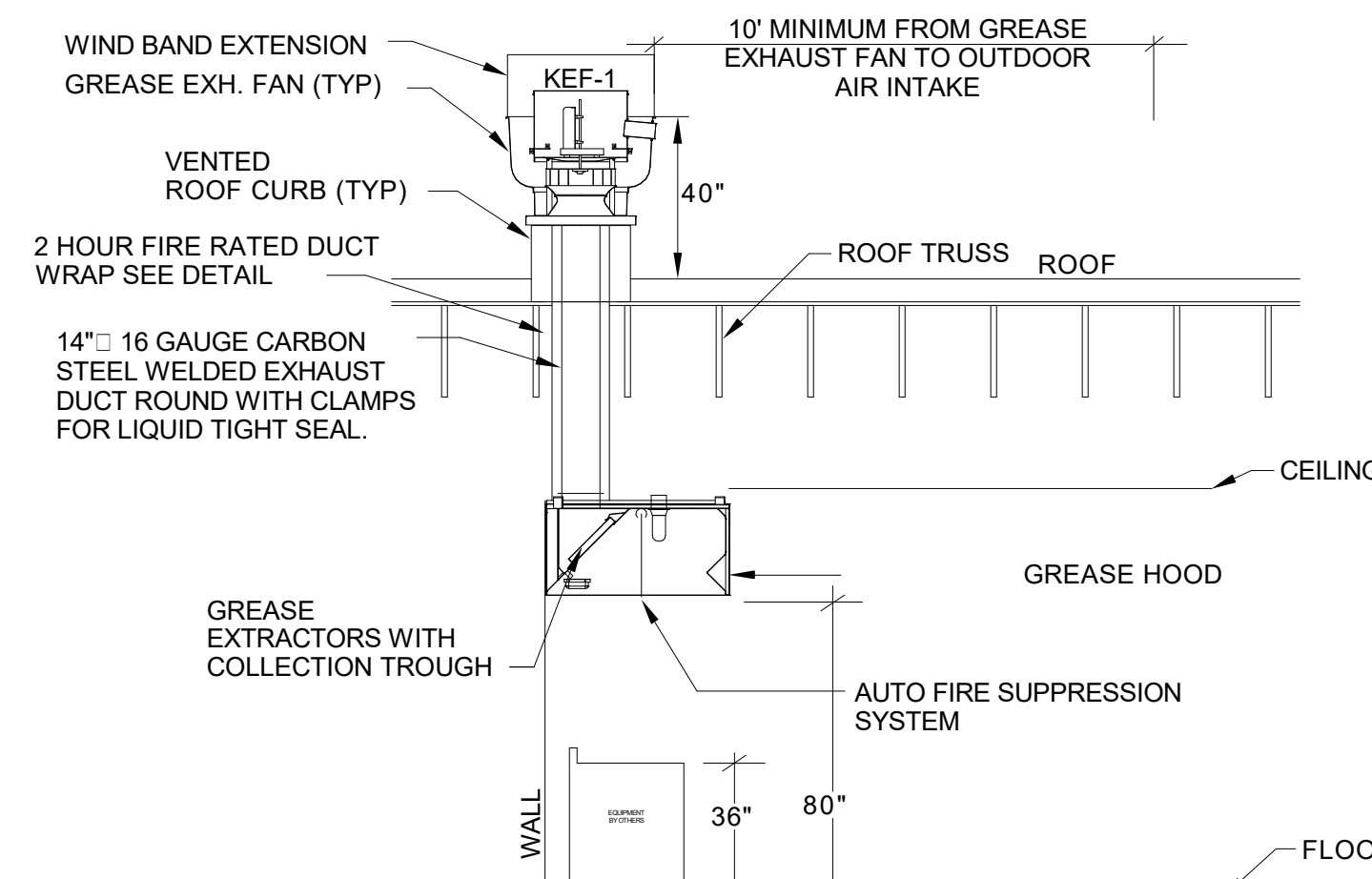
P.O. Box 923
Augusta, Georgia 30903-0923
Phone: (706) 560-4038



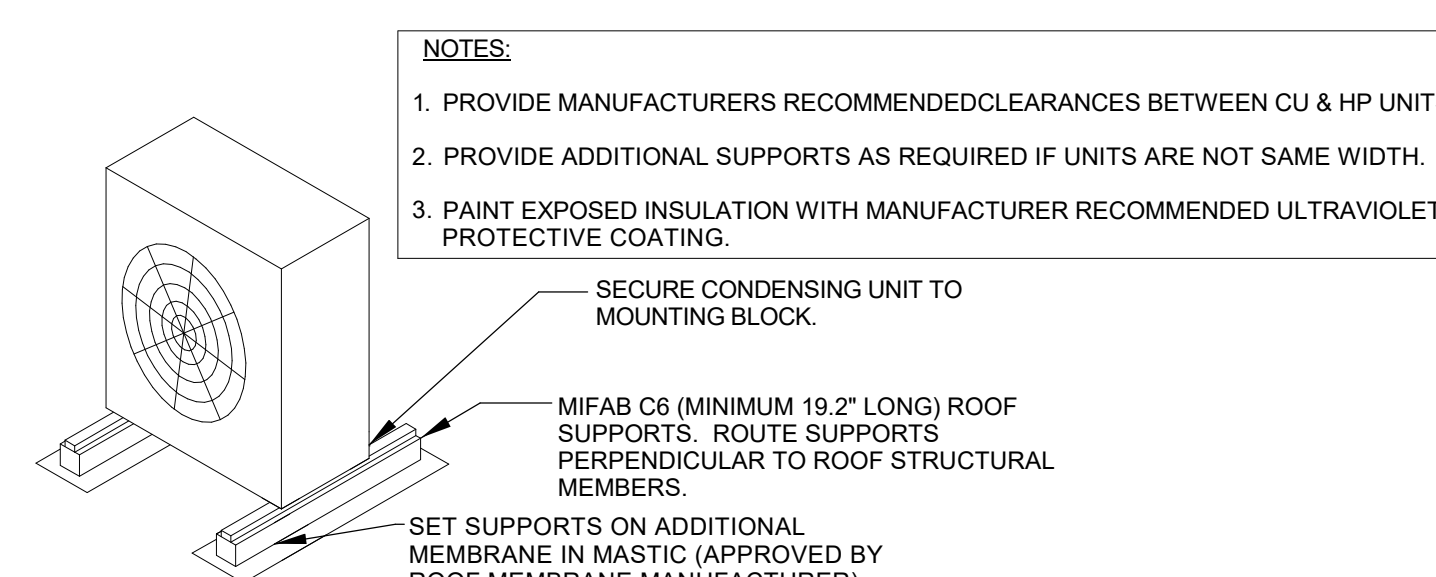
6 DIFFUSER DETAIL
NO SCALE



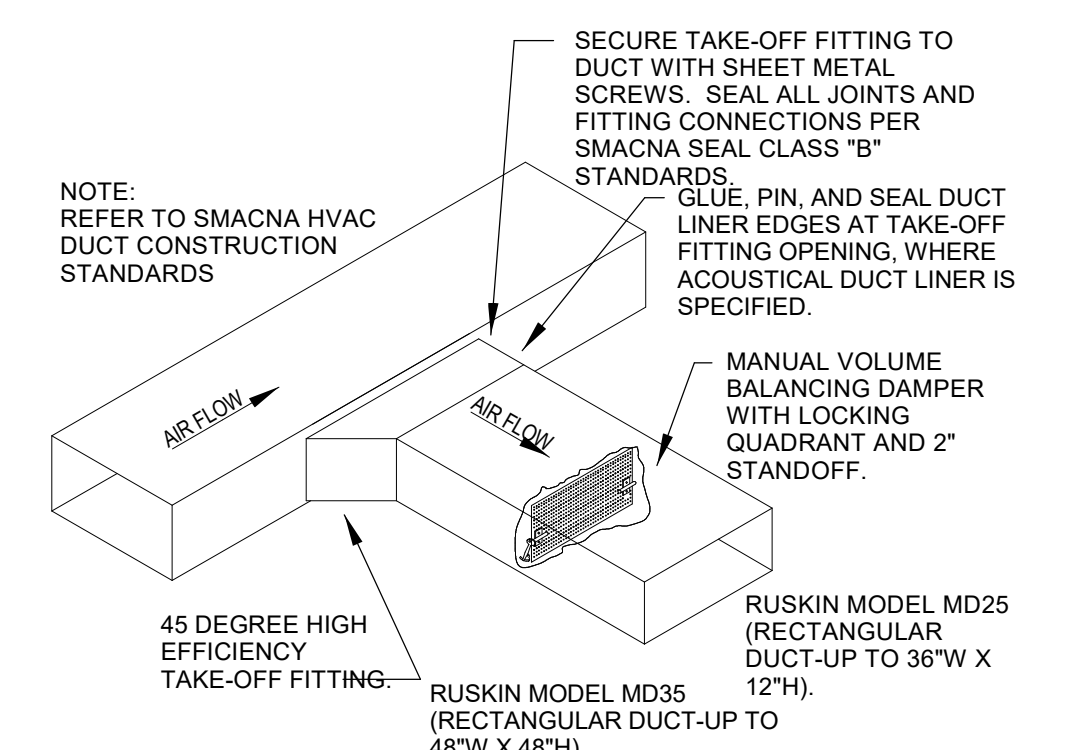
7 DOWNFLOW ROOFTOP UNIT DETAIL
NO SCALE



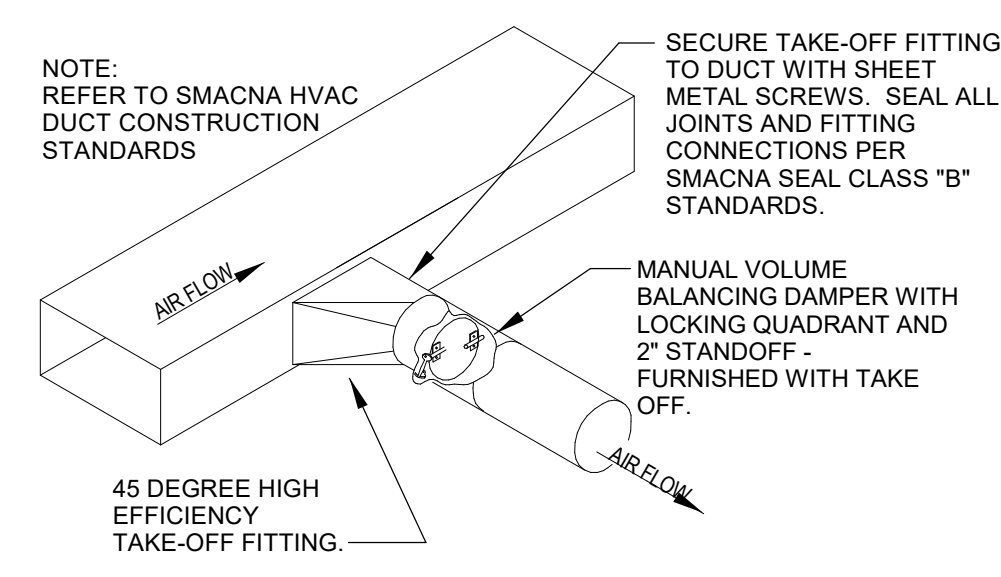
4 GREASE HOOD DETAIL
NO SCALE



5 ROOFTOP CONDENSING UNIT DETAIL
NO SCALE

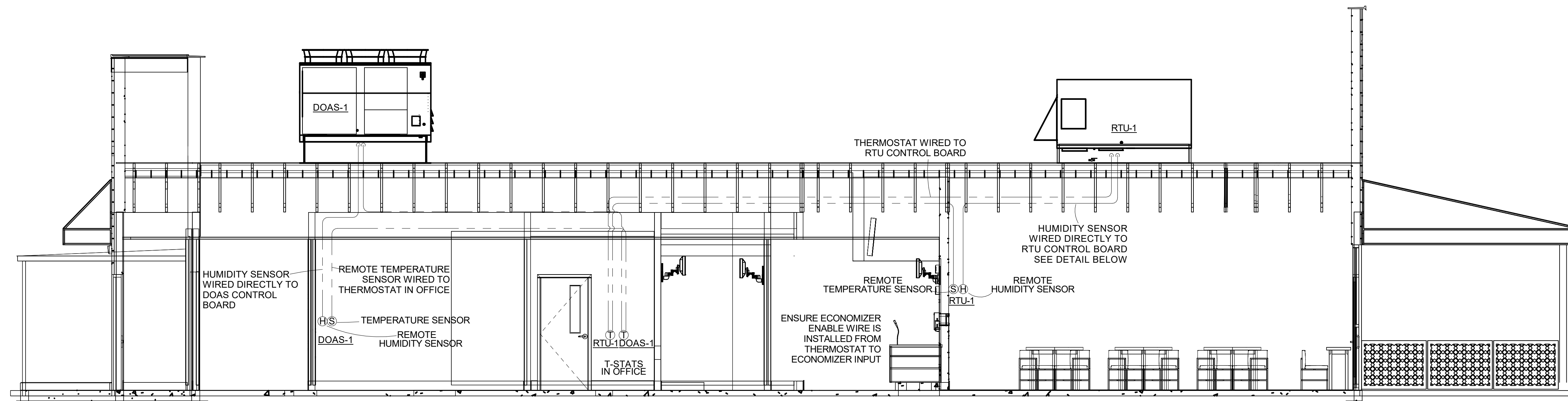
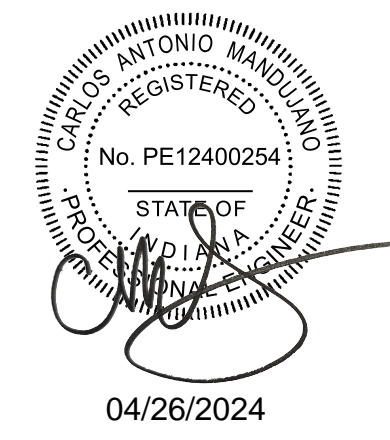


9 RECTANGULAR DUCT TAKE OFF DETAIL
NO SCALE



8 ROUND DUCT TAKE OFF DETAIL
NO SCALE

DESCRIPTION	DATE
PROJECT NO.	24-0101
STORE NO.	XXXX
DATE:	04/19/2024
DRAWN BY:	CM
CHECKED BY:	CD



REMOTE TEMPERATURE AND HUMIDITY SENSOR WIRING
ALL LOW VOLTAGE WIRING FOR THE HVAC SYSTEM IS TO BE PROVIDED AND INSTALLED BY THE HVAC CONTRACTOR.

Installation

DC Conductors

Table 11. Zone sensor module wiring

Distance from Unit to Control	Recommended Wire Size
0 - 150 feet	22 gauge
0 - 45.7 m	0.33 mm ²
151 - 240 feet	20 gauge
46 - 73.1 m	0.50 mm ²
241 - 385 feet	18 gauge
73.5 - 117.3 m	0.75 mm ²
386 - 610 feet	16 gauge
117.7 - 185.9 m	1.3 mm ²
611 - 970 feet	14 gauge
186.2 - 295.7 m	2.0 mm ²

Figure 58. Typical field wiring diagrams for electromechanical

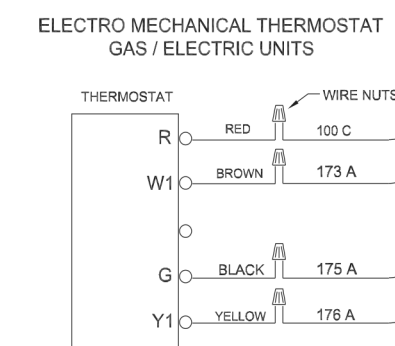
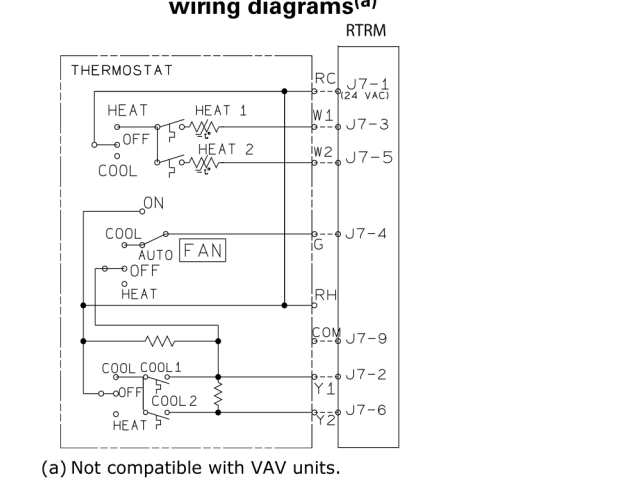


Figure 59. ReliaTel™ conventional thermostat wiring diagram



(A) Not compatible with VAV units.

Figure 60. ReliaTel™ options module (RTOM board)

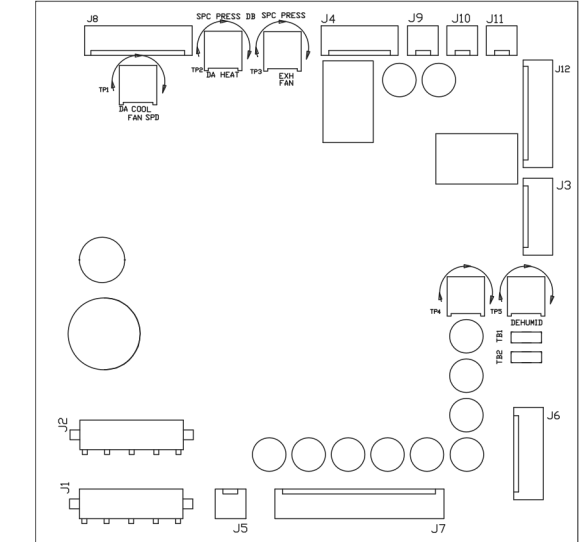


Figure 61. ReliaTel™ relative humidity sensor (dehumidification option)

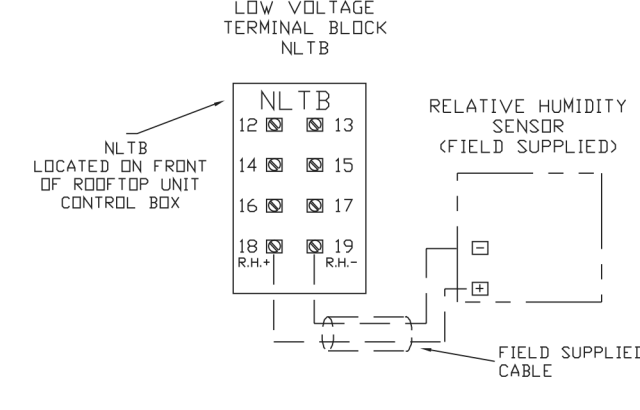
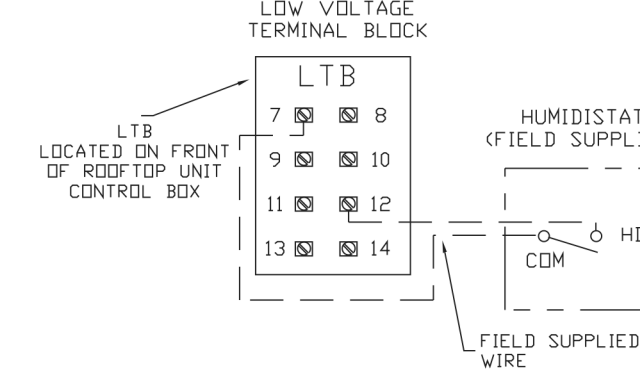


Figure 62. ReliaTel™ humidistat (dehumidification option)



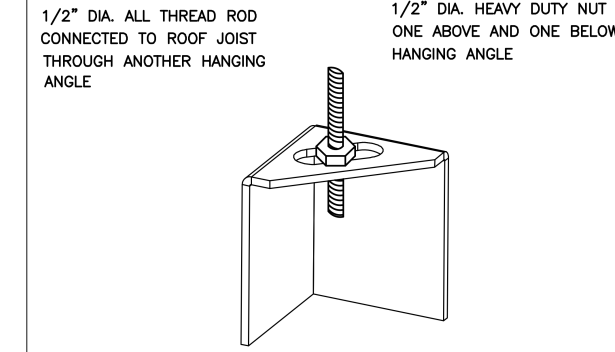
TRANE HUMIDITY SENSOR WIRING
FOR GENERAL INFORMATION ONLY
REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS
PROVIDED WITH THE EQUIPMENT FOR EXACT INSTALLATION INSTRUCTIONS AND REQUIREMENTS.

DESCRIPTION	DATE
PROJECT NO:	24-0101
STORE NO:	XXXX
DATE:	04/19/2024
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CHECKED BY:	Checker



04/26/2024

ND-2 HANGING ANGLE DETAIL



*HOOD AND RISER TO BE SUPPLIED BY INSTALLING CONTRACTOR. HANGING ANGLE IS DELIVERED AT FACTORY.

HANGING ANGLE LOCATIONS

HOOD STYLE	DIM FROM REAR	DIM FROM FRONT	DIM FROM FRONT (C/O H)
CANOPY ND2	4.166"	2.246"	2.246"
ND2-PSDF	4.166"	2.246"	2.246"
BACKSHELF ND-2	4.166"	2.246"	-
VHB/VHB-G	36"x36"	42"x42"	48"x48"
FRONT/BACK DIMS BY SIZE	2.246"	2.246"	2.246"

CALCULATIONS UTILIZED

EXHAUST CAPACITY OF HOOD X CFM/(AFLT. (L/60S))
 SUPPLY CAPACITY OF FAN X PERCENTAGE REQUIRED
 TOTAL DUCT HEAD=144 F (CFM)
 DUCT LENGTH= TOTAL DUCT AREA
 DUCT DEPTH

*CAPTIVE-AIRE DUCT CONNECTION SIZES ARE CALCULATED USING AN EXHAUST VELOCITY OF 1000-1500 FPM AND A SUPPLY VELOCITY OF 200-400 FPM.

BUILDING CODES

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:
 LISTED UNDER ETL FILE NUMBER 3054884-001/002

CLEARANCE TO COMBUSTIBLES

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

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

GENERAL NOTES

- INSTALLATION**
- ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
 - ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
 - HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGING MATERIALS PROVIDED BY INSTALLING CONTRACTOR.
 - ALL CONNECTIONS FROM CAPTIVE-AIRE DUCT PER MECHANICAL CONTRACTOR'S PLANS.
 - COOKING EQUIPMENT TO SHUT OFF IN EVENT OF FIRE.
 - EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
 - ALL LEADS FROM THE HOOD SHALL BE PROTECTED BY CAPTIVE-AIRE AIR FACTORY PREWIRED INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES BY ELECTRICAL CONTRACTORS.
 - LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
 - SEALING RESISTANCE AND RESPONSIBILITY OF INSTALLING CONTRACTOR.
 - INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITIES FOR THE PROTECTION OF DIMENSIONAL GAIN CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTEGRATION AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT DRAWINGS.
- BALANCE**
- KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
 - RESTROOMS SHALL BE NEGATIVE WITH RESPECT TO AMBIENT PRESSURE.
 - RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.
- ADDITIONAL**
- WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
 - OWNER AND "APPROVED" COPIES OF THIS DOCUMENT SHALL BE SUBMITTED TO PLUMBING CONTRACTOR PRIOR TO INSTALLATION.

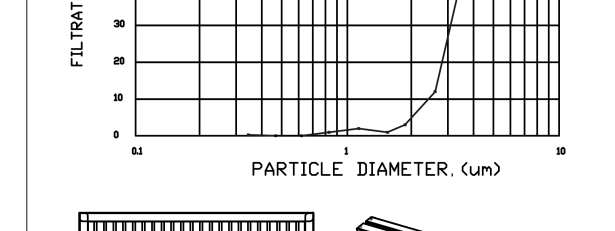
INSTALLATION

- ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
- ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
- HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGING MATERIALS PROVIDED BY INSTALLING CONTRACTOR.
- ALL CONNECTIONS FROM CAPTIVE-AIRE DUCT PER MECHANICAL CONTRACTOR'S PLANS.
- COOKING EQUIPMENT TO SHUT OFF IN EVENT OF FIRE.
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- LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
- SEALING RESISTANCE AND RESPONSIBILITY OF INSTALLING CONTRACTOR.
- INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITIES FOR THE PROTECTION OF DIMENSIONAL GAIN CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTEGRATION AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT DRAWINGS.

INSTALLATION

- WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
- OWNER AND "APPROVED" COPIES OF THIS DOCUMENT SHALL BE SUBMITTED TO PLUMBING CONTRACTOR PRIOR TO INSTALLATION.

INSTALLATION



CaptiveAire Captivate Solo Filter
 ETL Listed Grease Extracting Filter
 Made From 430 Stainless Steel

HOOD INFORMATION - JDBA502222

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX EXHAUST TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	HOOD CONSTRUCTION	HOOD FINISH	END TO END	ROV
1	GRIDDLE HOOD	S484 ND-2	CAPTIVEAIRE	6' 0"	450 SS	1	MEDIUM	200	1600	430 SS WHERE EXPOSED	ALONE	ALONE	
2	FRYER HOOD	S484 ND-2	CAPTIVEAIRE	3' 0"	450 SS	1	MEDIUM	155	775	430 SS WHERE EXPOSED	ALONE	ALONE	

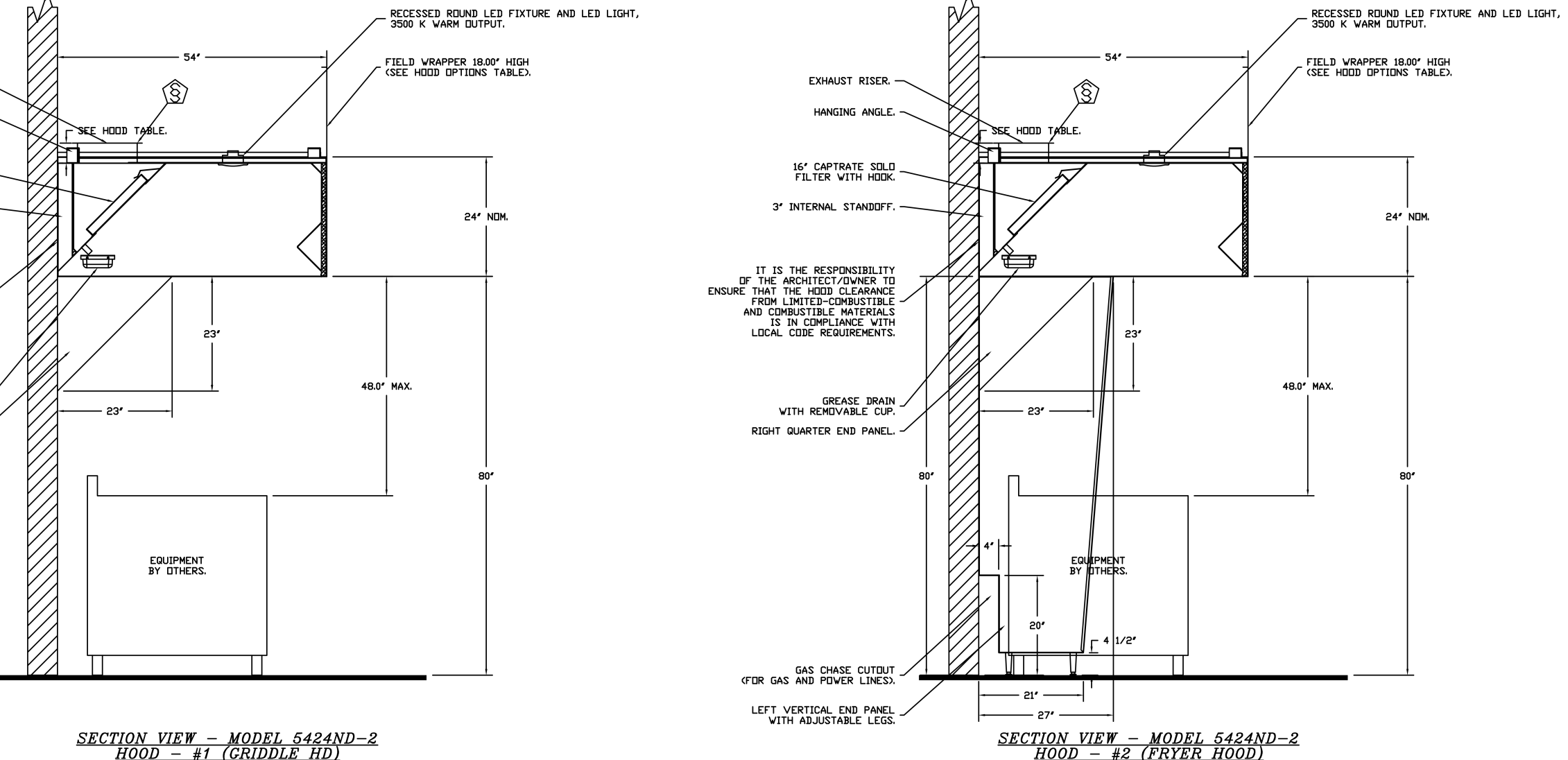
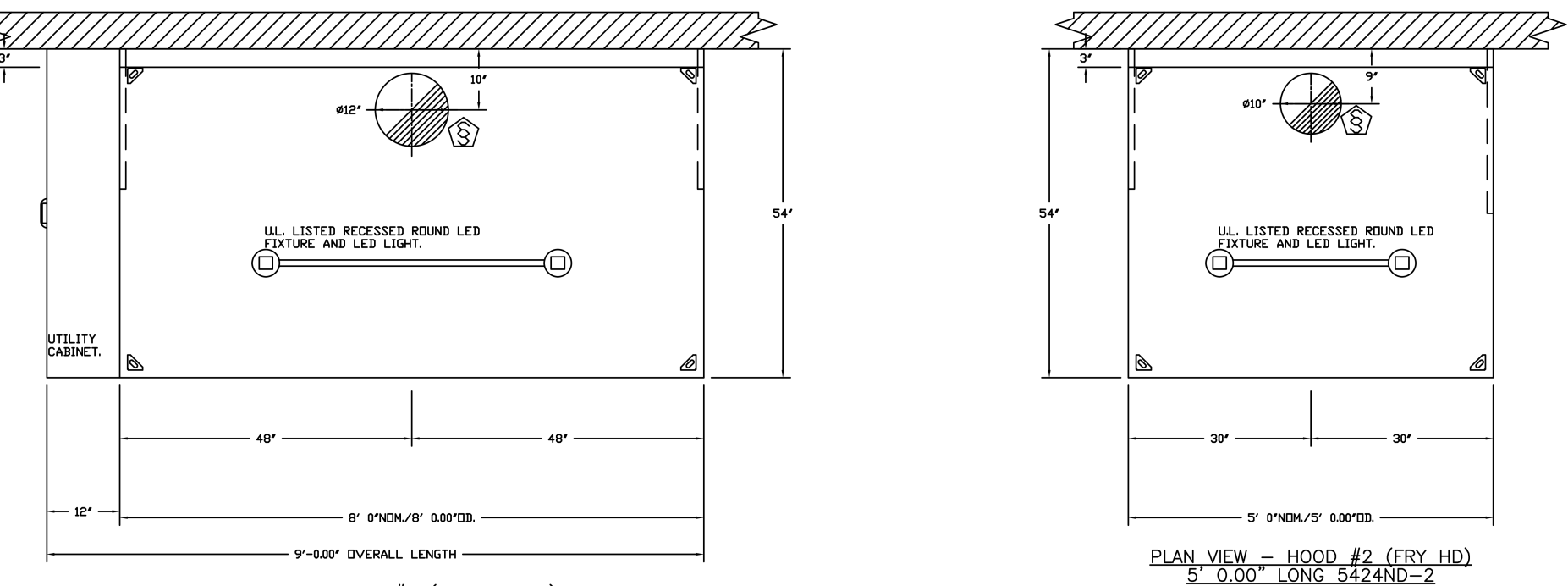
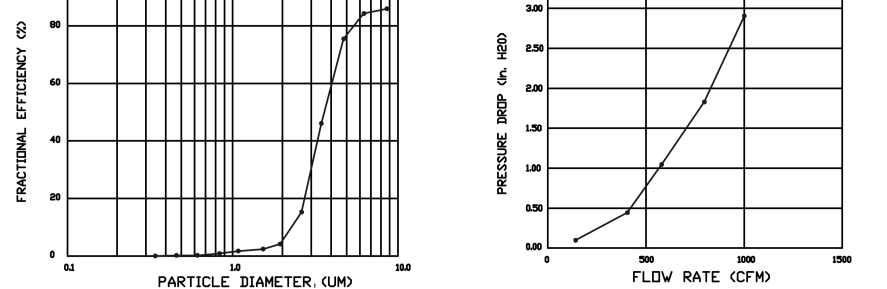
HOOD INFORMATION

HOOD NO	TRIG	TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY # 7 HOODS	QTY	TYPE	WIRE GAUGE	LOCATION	SIZE	TYPE	SIZE	ELECTRICAL MODEL #	QUANTITY	SWITCHES	FIRE HOOD SYSTEM	HOOD WEIGHT
1	GRIDDLE HOOD	CAPTIVATE SOLID FILTER	5	16"	16"	85% SEE FILTER SPEC	2	RECESSED ROUND	NO	LEFT	18"x18"x18"			SCV-1001	1	FAN	NO	210 LBS
2	FRYER HOOD	CAPTIVATE SOLID FILTER	3	16"	16"	85% SEE FILTER SPEC	2	RECESSED ROUND	NO								NO	240 LBS
							0										NO	161 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1	GRIDDLE HOOD	FIELD WRAPPER 1800" HIGH FRONT, LEFT, RIGHT. RIGHT QUARTER END PANEL. 23" TOP WIDTH, 12" BOTTOM WIDTH, 23" HIGH 430 SS. LEFT QUARTER END PANEL. 23" TOP WIDTH, 12" BOTTOM WIDTH, 23" HIGH 430 SS.
2	FRYER HOOD	FIELD WRAPPER 1800" HIGH FRONT, LEFT, RIGHT. RIGHT QUARTER END PANEL. 23" TOP WIDTH, 12" BOTTOM WIDTH, 23" HIGH 430 SS. RISER SENSOR INSTALL 6IN PLEN. LEFT VERTICAL END PANEL. 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.

SPECIFICATION: CAPTIVATE GREASE-STOP SOLID FILTER
 THE CAPTIVATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A 14" INCHES 5" INCHES DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO BELIEVE EXCEPTIONAL FILTRATION EFFICIENCY. THE CAPTIVATE GREASE-STOP SOLID FILTER IS STAINLESS STEEL CONSTRUCTION AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNELS.
 UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.
 GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL BE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 80% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE. THE CAPTIVATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F852-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SHAMM ARRESTER. EFFICIENCY VS PARTICLE SIZE AND PRESSURE DROP VS FLOW RATE.



FOR QUESTIONS, CALL THE KANSAS CITY REGIONAL OFFICE
 1120 SWIFT STREET, KANSAS CITY, MO 64116
 PHONE: (816) 221-8575
 FAX: (816) 321-8511

CUSTOMER APPROVAL TO MANUFACTURE:
 Approved as Noted
 Approved with NO Exception Taken
 Revised and Resubmit
 SIGNATURE: _____
 TITLE: _____
 DATE: _____

***** NOTE *****
 ALL WALLS AND STRUCTURES THAT COME WITHIN 18" OF HOOD MUST BE METAL STUDS AND SHEETROCK. HOOD STUDS OR ANY OTHER COMBUSTIBLE MATERIAL WITHIN 18" OF HOOD IS NOT ALLOWED.

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

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

REVISIONS

NO.	DESCRIPTION	DATE

CAPTIVE
 HBT Foodservice
 100 W. 9th St. Suite 204, Kansas City, MO 64105 PHONE: (816) 221-8575 FAX: (816) 221-8511 EMAIL: rep@captivate.com
 www.captiveaire.com

Freddy's - New Proto 2022
 WICHITA, KS, 67201

DATE: 2/14/2022
 DWG.#: 5327222
 DRAWN BY: michael.co
 SCALE: 1/2" = 1'-0"
 MASTER DRAWING

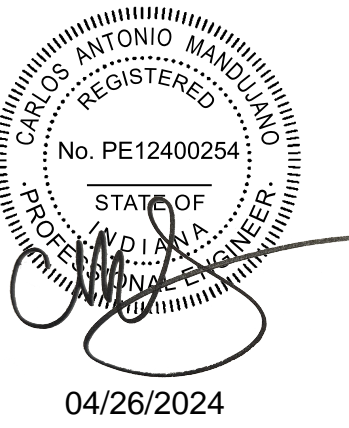
SHEET NO. 1

Freddy's Frozen Custard & Steaksburgers
 2701 CASSOPOLIS STREET, ELKHART, IN 46514
 SMALL PROTOTYPE

DESCRIPTION	DATE
PROJECT NO.	24-0101
STORE NO.	XXXX
DATE:	04/19/2024
DRAWN BY:	CM
CHECKED BY:	CM

MECHANICAL HOOD PLANS

M-300

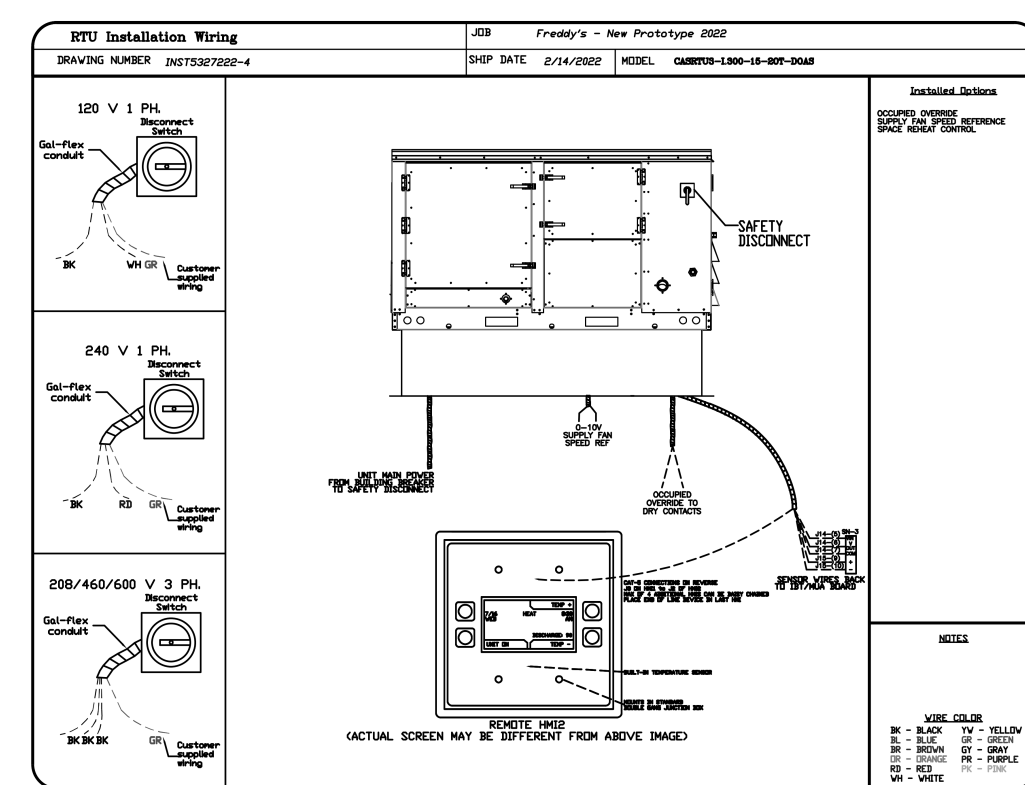
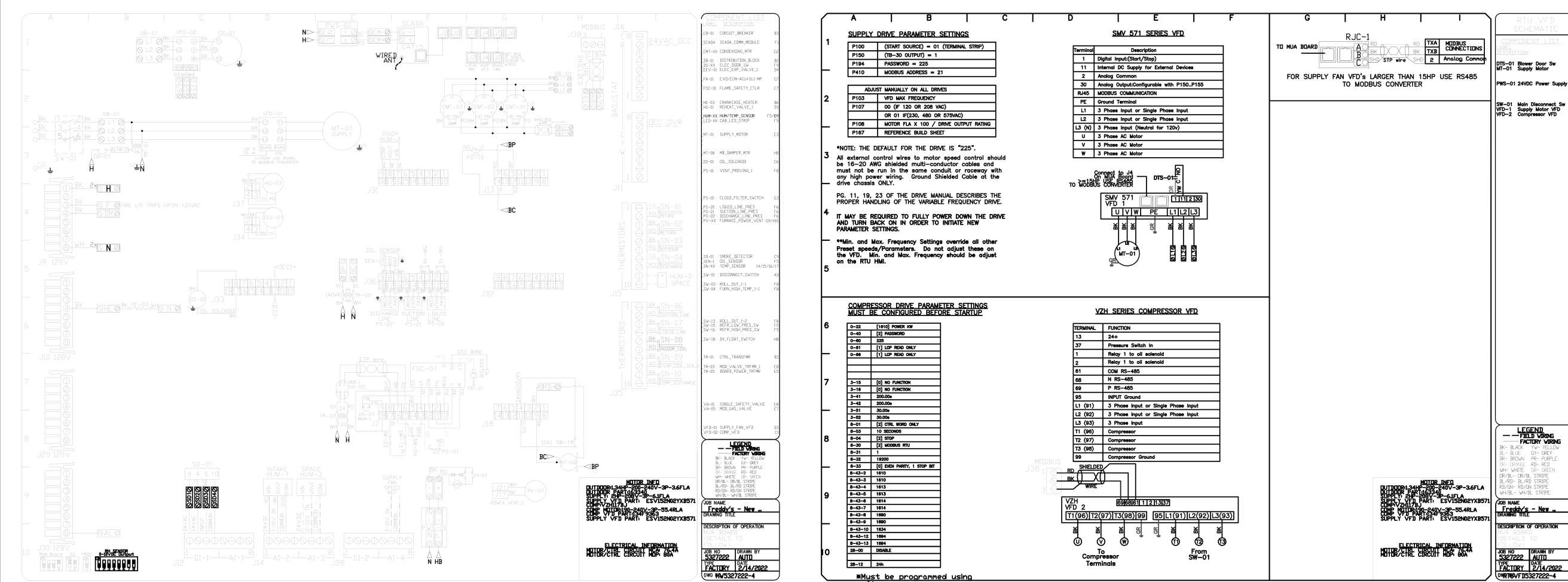
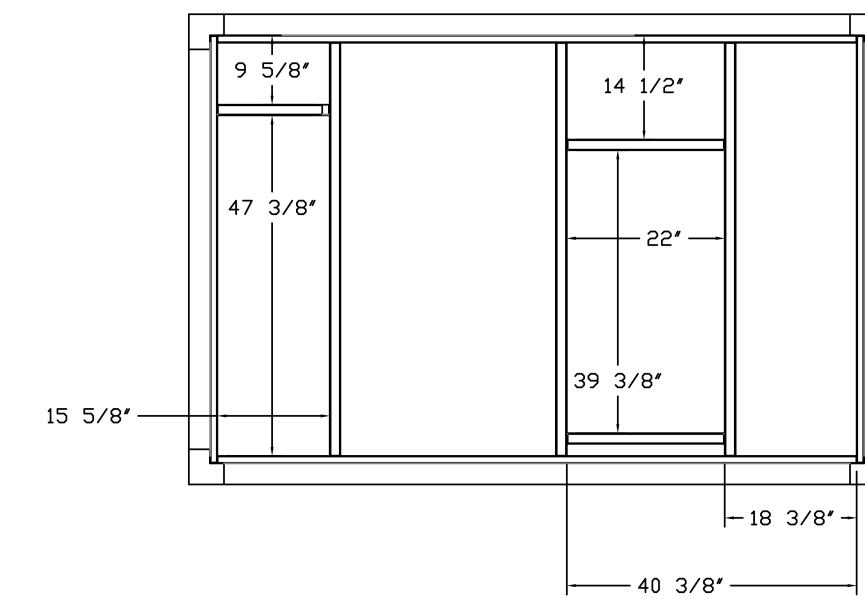
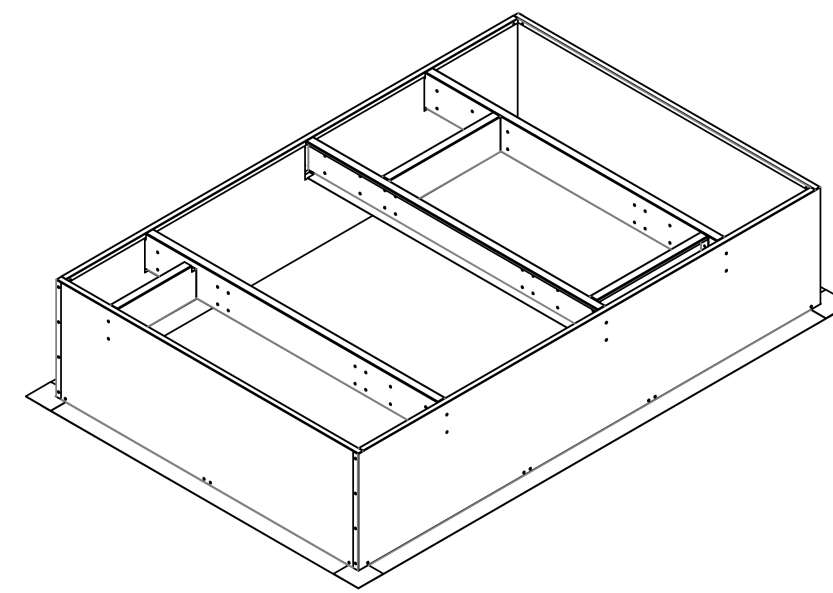
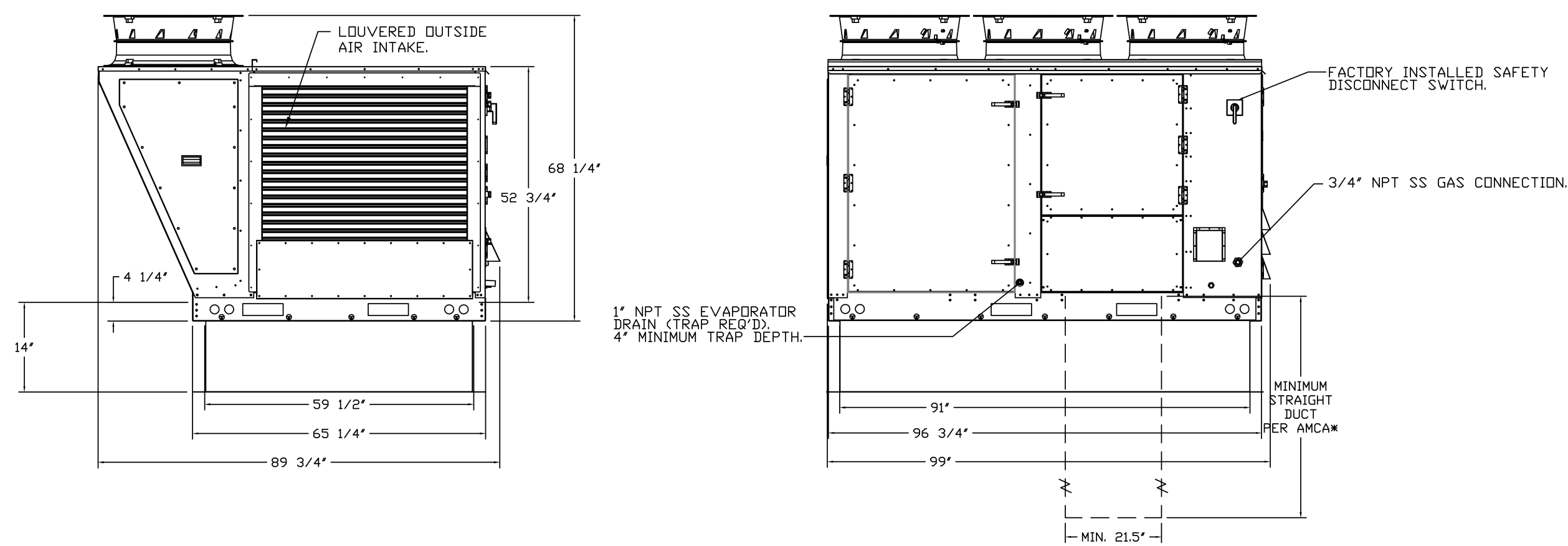
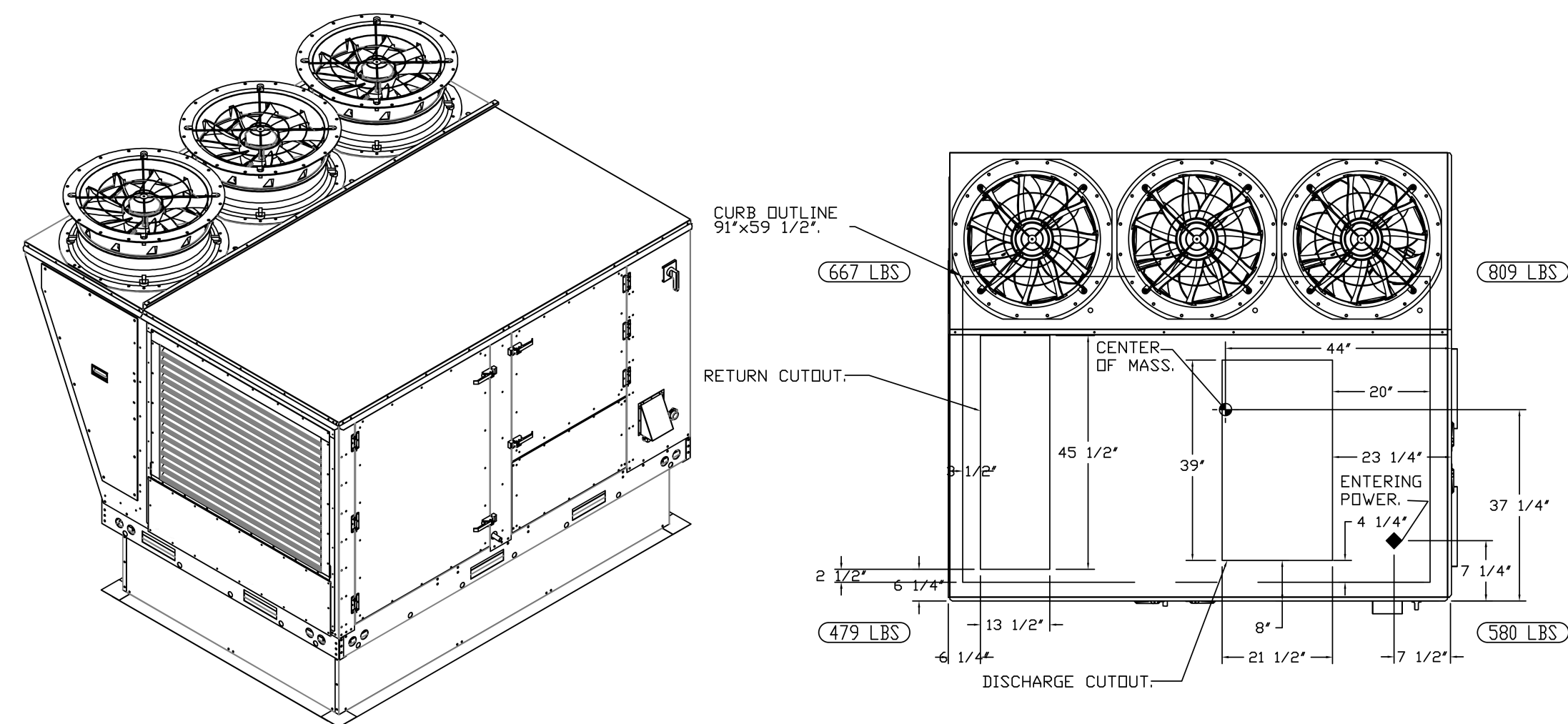


FAN #4 CASRTU3-1300-15-20T-DDAS - HEATER (DDAS-1)

NOTES:

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

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



REVISIONS	
DESCRIPTION	DATE

CAPTIVE
HBT Foodservice
104 W 9th St Suite 204 - Kansas City, MO 64106 PHONE: (816) 221-8575 FAX: (816) 221-8311 EMAIL: ngf@hbt.com
www.captivehbt.com

Freddy's - New Proto 2022
WICHITA, KS, 67201

DATE: 2/14/2022
DWG.#: 5327222
DRAWN BY: michael.co
SCALE: 1/2" = 1'-0"
MASTER DRAWING

SHEET NO.
3

Freddy's Frozen Custard & Steakhouses
2701 CASSOPOLIS STREET, ELKHART, IN 46514
SMALL PROTOTYPE

DESCRIPTION	DATE
PROJECT NO:	24-0101
STORE NO:	XXXX
DATE:	04/19/2024
DRAWN BY:	CM
CHECKED BY:	CM

MECHANICAL HOOD PLANS

M-302



04/26/2024

MECHANICAL/PLUMBING SPECIFICATIONS

1. GENERAL PROVISIONS:

- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.
B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS WITH MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.

7. PIPING:

- A. DOMESTIC COLD, HOT, AND HOT WATER RECIRCULATING (ABOVEGROUND).
1. TYPE 1/2" DRAWN COPPER TUBING, ASTM B152.
a. WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOW C12200, ANSI B16.22, MSS SP-104.
b. MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS, ASME B16.22, ASME B16.51, OR ASME B16.18. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO ASTM F10117 OR ASME B16.51.
2. PEK, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM B758 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTES IN ACCORDANCE WITH TR-403.
a. PEVA AND PE-XB MEETING ANSISF321 AND ANSISF372 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "P-W-C", "NSF 61-02" OR OTHER NSF-APPROVED MARKING. ASTM F2003 FOR USE WITH CHLORINATED WATER. (MUST BE INSTALLED PER THE MANUFACTURER'S REQUIREMENTS FOR PLUMBING USE)
b. PE-X MECHANICAL CRIMP/SET OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE. INCREASE PIPE PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS. (MUST BE INSTALLED PER THE MANUFACTURER'S REQUIREMENTS FOR PLUMBING USE)
3. VALVES
a. TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE.
b. TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.
c. TYPES:
1. GATE VALVE - JOMAR 7/8-3010 OR EQUAL, LEAD-FREE NSF 81, ANSI B1.20.1.
2. BALL VALVE - JOMAR JP100P/P OR EQUAL COMPACT LEAD FREE BRASS BALL VALVE UL842, CSA 3371-12 & 3371-92, FM, CALIFORNIA CODE AB193, NSF1 ANNEK G APPROVED.
4. BALL VALVE - JOMAR J100M OR EQUAL, UL842, FM, CSA, NSF 61-8, MSS SP-110

8. WATER HEATERS

- A. COMMERCIAL, HIGH EFFICIENCY, DIRECT-VENT, GAS-FIRED, STORAGE, DOMESTIC-WATER HEATERS:
1. STANDARD: ANSI Z21.10.5 CSA 4.5
2. DESCRIPTION: MANUFACTURER'S PROPRIETARY DESIGN TO PROVIDE AT LEAST 95 PERCENT COMBUSTION EFFICIENCY AT OPTIMUM OPERATING CONDITIONS STORAGE-TANK CONSTRUCTION: STEEL
a. PRESSURE RATING: 150 PSIG
b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING LINING MATERIAL INTO TAPPINGS
3. FACTORY INSTALLED STORAGE-TANK APPURTENANCES:
a. ANODE ROD, REIN. ACCEPTABLE MAGNESIUM.
b. DRIP TUBE: REQUIRED UNLESS COLD-WATER INLET IS NEAR BOTTOM OF TANK.
c. DRAIN VALVE: CORROSION-RESISTANT METAL WITH HOSE-END CONNECTION.
d. INSULATION: COMPLY WITH NSF 61 AND NSF 61-02 "OR OTHER NSF-APPROVED MARKING.
e. JACKET: STEEL WITH ENAMELED FINISH.
f. HEAT-TRAP FITTINGS: INLET TYPE IN COLD-WATER INLET AND OUTLET TYPE IN HOT-WATER OUTLET.
g. BURNER: FOR USE WITH DIRECT-VENT, GAS-FIRED, DOMESTIC WATER HEATERS AND NATURAL-GAS FUEL.
h. IGNITION: STANDING PILOT OR ANSI 211.2005A C22.2 NO. 60730-25. ELECTRIC, AUTOMATIC, GAS-IGNITION SYSTEM.
i. TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT.
j. COMBINATION TEMPERATURE-AND-PRESSURE RELIEF VALVE: ANSI RELIEF CAPACITY AT LEAST AS GREAT AS HEAT INPUT, AND INCLUDE PRESSURE SETTING LESS THAN WORKING-PRESSURE RATING OF DOMESTIC-WATER HEATER. SELECT RELIEF VALVE WITH SENSING ELEMENT THAT EXTENDS INTO STORAGE TANK.
4. DIRECT VENT SYSTEM THROUGH ROOF OR WALL, COAXIAL, OR DOUBLE-CHANNEL VENT ASSEMBLY WITH DOMESTIC-WATER HEATER MANUFACTURER'S OUTSIDE INTAKE/EXHAUST SCREEN.
5. DOMESTIC-WATER EXPANSION TANKS:
a. DESCRIPTION: STEEL, PRESSURIZED-TANK CONSTRUCTION WITH WELDED JOINTS AND VENT-FLY. INSTALLED, BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.
2. CONSTRUCTION:
a. TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING. INCLUDE ASME 11.20.1 PIPE THREAD.
b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.
c. AIR-CHARGE VALVE: FACTORY INSTALLED.
3. CAPACITY AND CHARACTERISTICS:
a. WORKING-PRESSURE RATING: 150 PSIG.

9. INSULATION AND DUCT LINING:

- A. ALL ELECTRICAL AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 26, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATIO OF NOT OVER 50, IN ACCORDANCE WITH NFPA.
B. PIPE INSULATION - ABOVE GRADE:
1. THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu per in-hr-ft²/F OR LESS.
2. FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASU, JACKET, FACTORY APPLIED PRESSURE SEALING, CONDUIT LAP JOINT, NO STAPLES, ZESTION PREMOULDED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSUIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND SEALING, EQUAL TO ARMSTRONG-AR ARMAFLEX.
4. FOR NON CIRCULATING SYSTEMS, THE FIRST 8 FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.
5. FOR CIRCULATING SYSTEMS, ALL HOT WATER PIPING IN THE CIRCULATION LOOP MUST BE INSULATED AS SPECIFIED BELOW.
6. INSULATION SCHEDULE:
a. DOMESTIC COLD WATER 1/2"
b. DOMESTIC HOT WATER 1" FOR PIPING UP TO 1-1/4", & 1-1/2" FOR 1-1/2" TO 2" AND LARGER
c. HOT WATER RECIRCULATING 1"
d. CONDENSATE DRAINS INSIDE BUILDING 1/2"
e. REFRIGERANT SUCTION 3/4" FOR PIPING UP TO 1-1/4", & 1" FOR 1-1/2" TO 2" AND LARGER
f. HORIZONTAL STORM PIPE PIPING 1-1/2" AND LARGER
g. HORIZONTAL STORM OVERFLOW PIPE 1/2"
h. ROOF DRAINS 1/2"
i. INSULATION SHALL BE PROVIDED AT ROOF DRAIN BODY AND A MINIMUM OF 10' OF COMBINATION OF HORIZONTAL AND VERTICAL DRAIN BODY DOWNSTREAM OF ROOF.
C. EQUIPMENT INSULATION:
1. FLEXIBLE FIBERGLASS, CLASS FIBER INSULATION, ASTM C 563, TYPE 1, CLASS A-4, SEMI-RIGID BOARD, WITH FACTORY LAMINATED KRAFT ALUMINUM FOL (ALL SERVICE JACKET), VAPOR BARRIER, OWENS-CORNING FIBERGLASS, ACoustICAL INSULATION.
2. DUCTWORK: ACoustICAL INSULATION.
1. DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS.
a. DUCT LINING SCHEDULE:
1. RECTANGULAR SUPPLY DUCT 1/2" THROUGHOUT THE FIRST 10 FEET OF DUCT.
2. RETURN AIR DUCT DUCT 1/2" THROUGHOUT THE FIRST 10 FEET OF DUCT.
E. DUCTWORK: THERMAL INSULATION (WHERE CONCEALED ABOVE CEILING)
1. DUCT COVERING: 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING, THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
a. DUCT COVERING SCHEDULE: MINIMUM R VALUE:
1. ROUND SUPPLY DUCT 2"
2. RECTANGULAR SUPPLY DUCT 2"
3. RETURN AIR DUCT 2"
2. EXPOSED SPIRAL DUCT
a. SPIRAL DUCT LINING: JOHNS MANVILLE SPIRA-COUSTIC PLUS ROUND DUCT LINER SYSTEM, VSD, SD, AND LD SIZES, 8" TO 48" UP, MEETS ASTM E 84 2550 FLAME AND SMOKE, ASHRAE 62, MEA2017-36-M, SMACNA APPLICATION STANDARDS FOR DUCT LINERS, NAIMA FIBERGLASS DUCT LINER STANDARD, 1" THICKNESS, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS.
10. DUCTWORK:
A. ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 572, LOCKFORMING QUALITY, WITH G 90 ZINC COATING IN ACCORDANCE WITH ASTM A 525 AND MILL PHOSPHORUS FOR COPIED LOCATIONS.
B. WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS, INCLUDING PITTING, SCAB MARKS, ROLLING MARKS, STAMPING MARKS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR PAINTING.
C. DUCTWORK: METAL GAUGES, REINFORCING, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC PRESSURE.
1. RECTANGULAR DUCT:
a. ELBOWS, UNLESS INDICATED OTHERWISE SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1 1/2 DUCT WIDTH OR SQUARE ELBOW WITH DOUBLE WALL STREAMLINE VANES.
b. TURN AIR ACoustICAL ELBOWS AND SOUND BOUNTS SHALL BE A SQUARE ELBOW WITH NO TURNING VANES.
c. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.
2. ROUND AND OVAL SPIRAL SEAL DUCT:
a. PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION, UNLESS SPECIFICALLY DETAILED OTHERWISE. USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS, WHERE 90 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL TYPE TEES.
b. SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.
c. AS AN OPTION, PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS, IN LEU OF SHOP-FABRICATED DUCT AND FITTINGS.
1. ELBOWS: ONE-PIECE CONSTRUCTION FOR 90 DEGREES AND 45 DEGREE ELBOW 1/4" AND SMALLER, PROVIDE MULTIPLE-PIECE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.
2. DIVIDED FLOW FITTINGS: 90 DEGREE TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY.
3. ROUND LONGITUDINAL TAKEOFF: USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT IN CONCEALED LOCATIONS FOR EXTENSION TO FLUO FOR DIFFUSERS, UNLESS OTHERWISE INDICATED. AND DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEETMETAL SIZES. ALLOWANCE FOR DUCT LINER HAS BEEN MADE AND IS NOT TO BE CONSIDERED.
E. INSTALLATION OF METAL DUCTWORK:
GENERAL ASSEMBLY AND INSTALL ALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIR-TIGHT SYSTEMS (MAXIMUM 1% LEAKAGE) WITH NO OBJECTIONABLE LEAKS, AND CAPABLE OF WITHSTANDING INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS IN OCCUPIED AREAS USING STRAPS, BRACKETS, HANGERS AND ANCHORS IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION. DUCT HANGERS SHALL BE OF THE TYPE WHICH WILL HOLD DUCTS TRUE TO SHAPES AND TO PREVENT BUCKLING. SUPPORT VERTICAL DUCTS AT EVERY FOUR (4) FEET HORIZONTALLY AND AVOID DIAGONAL RUNS WHERE POSSIBLE. LOCATE RUNS AS INDICATED BY DRAWINGS. DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING, WHETHER POSSIBLE IN FINISHED AND OCCUPIED SPACES, COMPLY WITH LOCAL BUILDING CODES. MECHANICAL LOCATING IN HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS. DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.
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