

ALL REVISIONS, SPECIFICATIONS, COMPUTER FILES, FIELD DATA AND OTHER DOCUMENTATION PREPARED BY KASPER ARCHITECTS & ASSOCIATES, INC. (K&A) IS INSTRUMENTS OF SERVICE SHALL REMAIN THE PROPERTY OF K&A. K&A SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THEREOF. THE DRAWINGS SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF K&A.

- MECHANICAL GENERAL NOTES
1.

IN PREPARATION OF THESE PLANS, THE ENGINEER HAS USED CERTAIN ABBREVIATIONS, CONVENTIONS, AND SYMBOLS, THE MEANING OF WHICH ARE ILLUSTRATED AND EXPLAINED WITHIN THE LEGEND.
2.

PLANS ARE DIAGRAMMATIC ONLY. THEY ARE INTENDED TO INDICATE CAPACITY, SIZE, LOCATION, DIRECTION, AND GENERAL ARRANGEMENT, BUT NOT EXACT DETAILS OF CONSTRUCTION. THE FACT THAT ONLY CERTAIN FEATURES OF THE INSTALLATION ARE INDICATED MUST NOT BE TAKEN TO MEAN THAT OTHER FEATURES WILL NOT BE REQUIRED.
3.

COORDINATE WITH THE OTHER TRADES TO INSURE THAT EACH TRADE SHALL HAVE SUFFICIENT SPACE TO INSTALL THEIR EQUIPMENT (DUCTWORK, PIPING, ELECTRICAL WORK, ETC.).
4.

IN GENERAL, ALL PIPING AND DUCTWORK SHALL BE RUN IN THE CEILING SPACE UNLESS NOTED OR INDICATED OTHERWISE.
5.

VERIFY ALL DIMENSIONS FROM ARCHITECTURAL PLANS AND FIELD DIMENSIONS.
6.

DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
7.

ALL RISES AND DROPS IN PIPING AND DUCTWORK MAY NOT NECESSARILY HAVE BEEN SHOWN. CONTRACTOR TO VERIFY.
8.

PROVIDE ALL STRUCTURAL MEMBERS, SUPPORT BRACKETS, FLASHING, HARDWARE, ETC. REQUIRED TO INSTALL A COMPLETE SYSTEM.
9.

DIFFUSERS AND REGISTER LOCATIONS SHALL BE COORDINATED WITH LIGHT FIXTURE AND OTHER CEILING DEVICE LOCATIONS. FIELD VERIFY.
10.

MOUNT ALL THERMOSTATS AND/OR SENSORS 4 FEET ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
A	AMPERE
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT PER HOUR
CLG	CEILING
CD	CONDENSATE DRAIN
CU	CONDENSING UNIT
CFM	CUBIC FEET PER MINUTE
Ø	DIAMETER
DX	DIRECT EXPANSION
DN	DOWN
DB	DRY BULB
EL	ELEVATION
EAT	ENTERING AIR TEMPERATURE
EQUIP	EQUIPMENT
EXH	EXHAUST
EA	EXHAUST AIR
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
FPM	FEET PER MINUTE
FB	FILTER BOX
FD	FIRE DAMPER
FPI	FINS PER INCH
FLEX	FLEXIBLE
FLR or FL	FLOOR
GALV	GALVANIZED
HP	HORSEPOWER
KW	KILOWATT
MANUF	MANUFACTURER
VD	MANUAL VOLUME DAMPER
MAX	MAXIMUM
MIN	MINIMUM
OA	OUTSIDE AIR
LBS	POUNDS
RA	RETURN AIR AND/OR ROOM AIR
RTU	ROOFTOP UNIT
OBD	OPPOSED BLADE DAMPER
SQFT	SQUARE FEET
SQIN	SQUARE INCHES
SA	SUPPLY AIR
TEMP	TEMPERATURE
MBH	THOUSAND BTU/H
TAD	TRANSFER AIR DUCT
TYP	TYPICAL
UC	UNDERCUT
V	VOLTS
WB	WET BULB

GENERAL SYMBOLS	
	PLAN OR DETAIL NO. SHEET NUMBER
	KEYED NOTE TO PLAN
	REVISION NUMBER
	NORTH ARROW

MECHANICAL SYMBOL LEGEND	
	CEILING SUPPLY DIFFUSER
	CEILING RETURN GRILLE
	CEILING EXHAUST GRILLE
	CEILING EXHAUST FAN
	IN-LINE EXHAUST FAN
	DYNAMIC FIRE DAMPER, STYLE 'B' FIRE DAMPER, STYLE 'CR' FIRE DAMPER FOR ROUND DUCTS
	DYNAMIC SMOKE DAMPER
	COMBINATION DYNAMIC FIRE / SMOKE DAMPER
	DUCT SMOKE DETECTOR
	RETURN / EXHAUST DUCT TURNING DN
	RETURN / EXHAUST DUCT TURNING UP
	SUPPLY / OUTSIDE DUCT TURNING DN
	SUPPLY / OUTSIDE DUCT TURNING UP
	EXISTING DUCT
	TRANSFER OPENING IN WALL ABOVE CEILING
	3/4\"/>
	RADIANT DAMPER (RD)
	CONNECT TO EXISTING
	DISCONNECT FROM EXISTING
	SIDE WALL SUPPLY GRILLE
	SIDE WALL RETURN GRILLE
	AIR DEVICE TYPE AND SIZE AIR FLOW CFM
	THERMOSTAT
	REFRIGERANT PIPING (LINE SET)
	CONDENSATE DRAIN PIPING
	PIPE TURNING UP
	PIPE TURNING DOWN
	2 POSITION MOTORIZED DAMPER
	MANUAL VOLUME DAMPER
	CHILLED WATER SUPPLY PIPING
	CHILLED WATER RETURN PIPING
	CONDENSING WATER SUPPLY PIPING
	CONDENSING WATER RETURN PIPING
	GATE VALVE
	BALL VALVE
	CHECK VALVE
	STRAINER
	STRAINER WITH BLOW DOWN VALVE
	UNION
	NEEDLE VALVE WITH PRESSURE GAUGE
	THERMOMETER
	BUTTERFLY VALVE
	BALANCING VALVE
	FLEX CONNECTION
	MOTORIZED CONTROL VALVE
	TRIPLE DUTY VALVE
	VERTICAL IN-LINE PUMP (PLAN VIEW)
	PUMP
	AUTOMATIC AIR VENT



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ASHRAE 62.1-2016 VENTILATION CALCULATION														
BUSY BEE ELLISVILLE - RTU-1														
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp VENT. RATE (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez AIR DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAU ST RATE (CFM)	PROVIDED VENTIALTIO N
112 WESTGATE	3,590	70	251	251	7.5	1882.5	0.18		646.2	2528.7	0.8	3161	0	3161
TOTAL	3,590			251		1882.5			646.2	2528.7		3161	0	3161
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXH. RATE PROVIDED VENT. AIR REQUIREMENT = = = 3160 0 3161														
NOTES:														

ASHRAE 62.1-2016 VENTILATION CALCULATION															
BUSY BEE ELLISVILLE - RTU-2															
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp RATE (CFM / P)	VENT. (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAUST RATE (CFM)	PROVIDED VENTILATION
111 STARBUCKS	1,769	70	124	124	7.5		930	0.18		318.4	1248.4	0.8	1561	0	1561
TOTAL	1,769			124			930			318.4	1248.4		1561	0	1561
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXH. RATE PROVIDED VENT. AIR REQUIREMENT = = = 1560 0 1561															
NOTES:															

ASHRAE 62.1-2016 VENTILATION CALCULATION														
BUSY BEE ELLISVILLE - RTU-3														
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp VENT. RATE (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz+Vbzp+Vbza (CFM)	Ez ZONE AIR DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAUST RATE (CFM)	PROVIDED VENTILATION
114 GOURMET STORE STORAGE	4,504	2	9	9	10	90	0.12		540.5	630.5	0.8	788	0	788
115 BREAK ROOM	453	25	11	11	5	55	0.06		27.2	82.2	0.8	103	0	103
116 OFFICE	134	5	1	1	5	5	0.06		8.0	13.0	0.8	16	0	16
118 FACP ROOM	95	2	0	0	5	0	0.06		5.7	5.7	0.8	7	0	7
120 STORAGE	2,323	2	5	5	5	25	0.06		139.4	164.4	0.8	205	0	205
CORRIDOR	1,481	0	0	0	0	0	0.06		88.9	88.9	0.8	111	0	111
TOTAL	8,990			26		175			809.6	984.6		1230	0	1230
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXH. RATE PROVIDED VENT. AIR REQUIREMENT = = = 1230 0 1230														
NOTES:														

ASHRAE 62.1-2016 VENTILATION CALCULATION															
BUSY BEE ELLISVILLE - RTU-4,5,6															
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp VENT. RATE (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez DISTRIBUTION EFFECTIVENESS	ZONE AIR	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAU ST RATE (CFM)	PROVIDED VENTILATIO N
110 STORE	30,409	15	456	490	7.5	3675	0.12		3649.1	7324.1		0.8	9155	0	9155
106 POS	534	15	8	8	7.5	60	0.12		64.1	124.1		0.8	155	0	155
107 POS	333	15	5	8	7.5	60	0.12		40.0	100.0		0.8	125	0	125
101 ENTRY VESTIBULE	1,614	30	48		7.5	0	0.06		96.8	96.8		0.8	121	0	121
TOTAL	32,890			506		3795			3753.1	7548.1			9435	0	9435
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXH. RATE PROVIDED VENT. AIR REQUIREMENT = = = 9440 0 9435															
NOTES:															

ASHRAE 62.1-2016 VENTILATION CALCULATION														
BUSY BEE ELLISVILLE - RTU-8														
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp VENT. RATE (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAU ST RATE (CFM)	PROVIDED VENTIALTIO N
138 TRUCKER STORE	3,025	15	45	36	7.5	270	0.12		363.0	633.0	0.8	791	0	791
TOTAL	3,025			36		270			363.0	633.0		791	0	791
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXH. RATE PROVIDED VENT. AIR REQUIREMENT = = = 790 0 791														
NOTES:														

ASHRAE 62.1-2016 VENTILATION CALCULATION															
BUSY BEE ELLISVILLE - RTU-9															
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp RATE (CFM / P)	VENT. (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAUST RATE (CFM)	PROVIDED VENTILATION
133 GIFT STORAGE	1,906	2	4	4		10	40		0.12	228.7	268.7	0.8	336	0	336
139A OFFICE	75	5	0	0		5	0		0.06	4.5	4.5	0.8	6	0	6
134 OFFICE	76	5	0	0		5	0		0.06	4.6	4.6	0.8	6	0	6
TOTAL	1,906			4			40			228.7	268.7		336	0	336
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXH. RATE PROVIDED VENT. AIR REQUIREMENT = = = 340 0 336															
NOTES:															

ASHRAE 62.1-2016 VENTILATION CALCULATION															
BUSY BEE ELLISVILLE - DOAS-7															
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp VENT. RATE (CFM / P)	Vbzp (CFM)	Ra VENT. RATE (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez ZONE AIR DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAUST RATE (CFM)	PROVIDED VENTILATION		
124 MEN'S RR	1,381	0	0	0	0	0	0	0	0	0	0	1550	1550		
127 WOMEN'S RR	1,388	0	0	0	0	0	0	0	0	0	0	1300	1300		
TOTAL	2,769			0		0		0.0	0.0		0	2850	2850		
MINIMUM VENTILATION AIR REQUIREMENT						=	0								
MINIMUM EXH. RATE						=	2850								
PROVIDED VENT. AIR REQUIREMENT						=	2850								
NOTES:															

ASHRAE 62.1-2016 VENTILATION CALCULATION															
BUSY BEE ELLISVILLE - DOAS-10															
	AREA (SF)	DEFAULT OCCUPANCY (QTY/1000 SF)	CALCULATED OCCUPANCY (PEOPLE)	PEOPLE COUNT (VENT.)	Rp RATE (CFM / P)	VENT. (CFM / P)	Vbzp (CFM)	Ra RATE (CFM / SF)	VENT. (CFM / SF)	Vbza (CFM)	VENTILATION REQUIREMENT Vbz=Vbzp+Vbza (CFM)	Ez DISTRIBUTION EFFECTIVENESS	Vbz CORRECTED VENTILATION REQUIREMENT (CFM)	EXHAUST RATE (CFM)	PROVIDED VENTILATION
142 JANITOR CLOSET	355	0	0	0	0	0	0	0	0	0.0	0.0	0.8	0	200	200
144 SOILED TOWELS	108	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	150	150
145 FRESH TOWELS	108	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	75	75
143A SHOWER TYPE A	105	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143B SHOWER TYPE B	112	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143C SHOWER TYPE A	110	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143D SHOWER TYPE B	112	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
141 LAUNDRY	146	10	1	1	5	5	5	0.12	17.5	22.5	22.5	0.8	28	125	125
143E ADA SHOWER	105	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143F SHOWER TYPE B	109	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143G SHOWER TYPE A	110	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143H SHOWER TYPE B	112	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
143I SHOWER TYPE A	108	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0	125	125
140 CORRIDOR	743	0	0	0	0	0	0	0	0.0	0.0	0.0	0.8	0		0
TOTAL	2,443			1			5			17.5	22.5		28	1675	1175
MINIMUM VENTILATION AIR REQUIREMENT MINIMUM EXHAUST RATE PROVIDED VENTILATION AIR REQUIREMENT = = = 30 1675 1175															
NOTES:															



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MECHANICAL SCHEDULES & CALCULATIONS

DESIGN DEVELOPMENT

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DUCTLESS SPLIT SYSTEM	
SYSTEM NUMBER	DSS-1/DCU-1
AREA SERVED	OFFICE
MANUFACTURER	DAIKIN
MIN. SYSTEM SEER/HSPF	22/11.4
INDOOR UNIT No.	DSS-1
MODEL No.	SLZ-KF12NA
SUPPLY AIR FLOW (cfm)	335
RATED COOLING CAPACITY (MBH)	12
RATED HEATING CAPACITY (MBH)	13
AIR HANDLER FOLTS/PHASE/Hz	208/1/60
AIR HANDLER MCAMCOP	1.0 / -
INDOOR FAN FLA	0.33
OUTDOOR UNIT No.	DCU-1
MODEL No.	SUZ-KA12NA2
UNIT VOLTS/PHASE/Hz	208/1/60
MCAMCOP	9 / 16
REMARKS	
NOTES:	
1. ELECTRICAL TO PROVIDE DISCONNECT SWITCH FOR INDOOR AND OUTDOOR UNIT.	
2. PROVIDE WALL MOUNTED THERMOSTAT	
3. PROVIDE INTEGRAL CONDENSATE DRAIN PUMP.	
4. PROVIDE MOUNTING BASE AND PAD FOR CONDENSING UNITINTEGRAL CONDENSATE DRAIN PUMP.	
5. PROVIDE WIND BAFFLE FOR LOW AMBIENT TEMPERATURE	

AIR DISTRIBUTION DEVICE SCHEDULE	
A - TITUS MODEL TMS-AA LOUVER-FACED CEILING DIFFUSER	
B - TITUS MODEL 50F RETURN/EXHAUST EGGRATE GRILLE	
C - TITUS MODEL 300FL SIDEWALL SUPPLY DIFFUSER (w/O.B.D.)	
D - TITUS MODEL FL-10 LINEAR SLOT DIFFUSER	
E - TITUS MODEL TMRA ROUND DIFFUSER.	
F - TITUS MODEL 350FL LOUVERED FACE RETURN.	
G - TITUS MODEL T3SQ-4 VAV DIFFUSER.	
H - TITUS MODEL PAR PERFORATED DIFFUSER.	
NOTES:	
1. COLOR TO BE SPECIFIED BY ARCHITECT.	
2. NECK SIZES TO MATCH SIZE OF DUCTWORK TO EACH AIR DEVICE.	
EACH AIR DEVICE SHALL HAVE A VOLUME DAMPER IN THE DUCT CONNECTED TO THE DEVICE UNLESS NOTED OTHERWISE. IF AIR DEVICE IS LOCATED IN AN INACCESSIBLE CEILING, VOLUME DAMPER SHALL BE INTEGRAL WITH THE AIR DEVICE.	
EACH AIR DEVICE SHALL HAVE A VOLUME DAMPER IN THE DUCT CONNECTED TO THE DEVICE UNLESS NOTED OTHERWISE. IF AIR DEVICE IS LOCATED IN AN INACCESSIBLE CEILING, PROVIDE INTEGRAL AIR DEVICE ACCESS PANEL EQUAL TO TITUS MODEL TRM, "RAPID MOUNT FRAME" AND LOCATE VOLUME DAMPER WITHIN 2'-0" OF CENTER OF DEVICE.	
4-WAY THROW 3-WAY THROW 2-WAY OPPOSITE THROW 2-WAY CORNER THROW 1-WAY THROW	

PACKAGED ROOFTOP AIR CONDITIONER SCHEDULE										
DESIGNATION	RTU-1	RTU-2	RTU-3	RTU-4	RTU-5	RTU-6	RTU-8	RTU-9	RTU-10	
AREA OF SERVICE	RESTAURANT	RESTAURANT	SEATING	SHOPPING	SHOPPING	SHOPPING	TRUCK STORE	GIFT STORAGE / PREP	KITCHEN	
UNIT TYPE	VAV	VAV	VAV	VAV	VAV	VAV	VAV	VAV	VAV	
MANUFACTURER	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	TRANE	
MODEL NO.	YSJ180A4SAL	YSJ180A4SAL	YSJ300A4SAL	YCD480V4J	YCD480V4J	YCD480V4J	YSK120A4S0L	YSK048A4S0M	YSJ300A4SAL	
NOMINAL TONS	15	15	25	40	40	40	10	4	25	
SUPPLY AIRFLOW (CFM)	5,000	5,000	7,500	12,000	12,000	12,000	3,520	1,400	7,500	
OUTSIDE AIRFLOW (CFM) MIN	750	750	1,500	3,145	3,145	3,145	200	200	1,500	
COOLING COIL ENTERING AIR TEMP. (Db/Wb)	77.4/64.7	77.4/64.7	77.4/64.7	77.4/64.7	77.4/64.7	77.4/64.7	76.2/63.6	77.5/64.8	77.4/64.7	
COOLING COIL LEAVING AIR TEMP (Db/Wb) °F	54.9/52.4	54.9/52.4	53.4/52.6	54.7/53.8	54.7/53.8	54.7/53.8	52.4/51.9	54.1/53.2	53.4/52.6	
GROSS TOTAL COOLING CAPACITY (MBH)	185.5	185.5	271.1	455.1	455.1	455.4	117.1	46.6	271.1	
GROSS SENSIBLE COOLING CAPACITY (MBH)	136.1	136.1	190.25	331.7	331.7	331.7	90.4	34.4	190.25	
EXT. STATIC PRESS. (IN. W.G.)	1.0	1.0	1.0	2.0	2.0	2.0	1.0	1.0	1.0	
TOTAL STATIC PRESS. (IN. W.G.)	1.25	1.25	1.5	3	3	3	1.5	1	1.5	
HEAT OUTPUT (MBH)	202	202	202	324	324	324	121.5	64.8	202	
HEATING EAT (DEG. F)	70	70	70	70	70	70	70	70	70	
HEATING LAT (DEG. F)	105	105	94.7	95.1	95.1	95.1	101.5	112.4	94.7	
SUPPLY FAN #	1	1	2	1	1	1	1	1	2	
SUPPLY FAN HORSEPOWER	3	3	3	15	15	15	3	0.66	3	
COMPRESSOR QTY.	2	2	2	3	3	3	1	1	2	
VOLTAGE/PHASE/Hz	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	
OUTSIDE AIR TEMP. (Db)	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	
UNIT I.E.E.R.	14.5	14.5	13.6	15.7	15.7	15.7	14.6	14.0	13.6	
UNIT E.E.R.	10.8	10.8	10	11.2	11.2	11.2	11	12	10	
SINGLE POINT MCAMCOP	45/50	45/50	62/80	106/125	106/125	106/125	30/40	12/15	62/80	
APPROXIMATE UNIT WEIGHT (LBS.)	2,315	2,315	2,465	6,413	6,413	6,413	1,136	691	2,465	
REMARKS	1-14	1-14	1-14	1-15	1-15	1-15	1-14	1-12	1-14	
NOTES:										
1. DOWNFLOW SUPPLY/ UPFLOW RETURN.										
2. PROVIDE SINGLE POINT CONNECTION.										
3. PROVIDE FACTORY MOUNTED ELECTRICAL NON-FUSED DISCONNECT.										
4. PROVIDE FACTORY MOUNTED POWERED 120V WEATHERPROOF, GFI SERVICE RECEPTACLE FOR EACH RTU.										
5. PROVIDE INSULATED ROOF CURB. COORINATE REQUIRED CURB SLOPE WITH THE ARCHITECTURAL PLANS. ROOF CURBS SHALL BE 24" HIGH.										
6. PROVIDE VARIABLE FREQUENCY DRIVE WITHOUT BYPASS FOR SUPPLY FAN.										
7. PROVIDE WITH R410A REFRIGERANT.										
8. PROVIDE DIRECT DRIVEN PLENUM TYPE SUPPLY FAN.										
9. PROVIDE MERV 8 FILTERS.										
10. PROVIDE PREMIUM EFFICIENCY FAN MOTOR.										
11. PROVIDE MODULATING OUTSIDE AIR DAMPER										
12. PROVIDE BAROMETRIC RELIEF DAMPER										
13. PROVIDE MODULATING HOT GAS REHEAT FOR HUMIDITY CONTROL										
14. PROVIDE CONTROLS NECESSARY FOR SINGLE ZONE VAV OPERATION										
15. PROVIDE VARIABLE SPEED COMPRESSORS										

KITCHEN EXHAUST FAN SCHEDULE																	
NOTES:																	
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION ---[15170] [22 05 13] [23 05 13].																	
ELECTRICAL (NOTE 1)																	
TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	FAN RPM (NOTE F)	DRIVE TYPE	MAX. AMCA SONES	CURB TYPE (NOTE G)					WEIGHT	MANUFACTURER	MODEL	NOTES		
								BHP (NOTE E)	MHP (NOTE E)	VOLTAGE	PHASES						
								DISCONNECT		CONTROLLER / STARTER							
								BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)							
DWEF-1	KITCHEN	600	0.50	1286	DIRECT	6.7	ROOF CURB	0.33	0.33	115	1	EC	NF	MFG	67	COOK	ACRU
KEF-1	KITCHEN	5439	1.25	1141	BELT	13.25	ROOF CURB	2.4	3	208	3	EC	NF	MFG	212	GREENHECK	XCUBE-220HP-30

AIR CURTAIN SCHEDULE												
NOTES: 1.MANUFACTURER SHALL PROVIDE FACTORY WIRED MOTOR STARTER, DISCONNECT, CONTROL TRANSFORMER AS REQUIRED FOR SINGLE POINT POWER CONNECTION, TIME DELAY RELAY, AND REMOTE THERMOSTAT.												
TAG NAME	CFM	HP	VOLTAGE	PHASES	ELECTRICAL		MAX. DIMENSIONS		WEIGHT	MANUFACTURER	MODEL (NOTE 1)	NOTES
							CONTROLLER / STARTER					
					BY (NOTE A)	TYPE (NOTE B)						
ACR-1	0	1.5	208	3	EC	NF	BY (NOTE A)	108"	1' - 0.314"	175	MARS AIR	STD2108-3UG-OB

DEDICATED OUTSIDE AIR SYSTEM SCHEDULE			
PLAN MARK	DOAS-7	DOAS-10	MAU
MANUFACTURER	TRANE	TRANE	TRANE
MODEL NO.	VXE-212-52B	VXE-112-30D	XMSX-P116-H12-MF-8
NOMINAL TONNAGE	17.5	5.0	9.0
UNIT EER/COP			
SUPPLY FAN DATA			
SUPPLY AIR FLOWRATE (CFM)	4040	1200	4350
SUPPLY FAN ESP (IN. W.C.)	1.0	1.0	0.5
SUPPLY FAN HP	3.0	1.0	3.0
EXHAUST FAN DATA			
EXHAUST AIR FLOWRATE (CFM)	4040	1200	--
EXHAUST FAN ESP (IN. W.C.)	1.0	1.0	--
EXHAUST FAN HP	3.0	1.0	--
COOLING PERFORMANCE			
COIL ENTERING AIR DB/WB TEMP (DEG. F)	79.0/69.3	78.5/68.0	94.5 / 80.1
COIL LEAVING AIR DB/WB TEMP (DEG. F)	52.1/52.0	49.1/49.1	74.1 / 74.1
GROSS TOTAL CAPACITY (MBH)	219.8	68.1	109.5
GROSS SENSIBLE COOLING CAPACITY (MBH)	119.9	38.8	90.3
GROSS LATENT CAPACITY (MBH)	99.9	29.3	19.2
MODULATING HOTGAS REHEAT COIL PERFORMANCE			
HOTGAS REHEAT CAPACITY (MBH)	144.6	42.8	--
COIL ENTERING AIR DB TEMP (DEG. F)	52.1	49.1	--
COIL LEAVING AIR DB TEMP (DEG. F)	85.2	82.1	--
ELECTRIC HEATING PERFORMANCE			
TOTAL HEATING CAPACITY (KW)	40.0	15.0	--
COIL ENTERING AIR DB TEMP (DEG. F)	58.9	60.2	--
COIL LEAVING AIR DB TEMP (DEG. F)	90.2	99.7	--
ENERGY RECOVERY DATA			
OUTSIDE AIRFLOW (CFM)	4133	1214	--
EXHAUST AIRFLOW (CFM)	4133	1214	--
OUTSIDE AIR DB/WB TEMP - COOLING (DEG. F)	89.0/80.0	89.0/80.0	--
RETURN AIR DB/WB TEMP - COOLING (DEG. F)	75.0/62.5	75.0/62.5	--
SUPPLY AIR DB/WB TEMP - COOLING (DEG. F)	79.0/69.3	78.5/68.0	--
TOTAL COOLING CAPACITY (MBH)	185.4	61.0	--
OUTSIDE AIR DB/WB TEMP - HEATING (DEG. F)	29.2/24.6	29.2/24.6	--
RETURN AIR DB/WB TEMP - HEATING (DEG. F)	72.0/55.8	72.0/55.8	--
SUPPLY AIR DB/WB TEMP - HEATING (DEG. F)	58.9/47.1	60.2/48.3	--
TOTAL HEATING CAPACITY (MBH)	129.6	40.1	--
ENERGY WHEEL EFFECTIVENESS - COOLING (%)	64.6	72.4	--
ENERGY WHEEL EFFECTIVENESS - HEATING (%)	68.4	73.0	--
UNIT ELECTRICAL DATA			
POWER SUPPLY (V/PH/Hz)	460/3/60	460/3/60	208/60/3
MCAMCOP	75.3/80	28.7/30	50.6/70
UNIT WEIGHT, INCLUDING ERW, CURB (LBS.)	4781	3312	1335
NOTES			
1. POLYMER ENERGY RECOVERY WHEEL W/ VFD			
2. SINGLE POINT POWER CONNECTION			
3. 2" DOUBLE WALL FOAM INJECTED CABINET - R13 INSULATION			
4. PREPAINTED GALVANIZED STEEL CABINET			
5. PHASE FAILURE AND GROUND FAULT PROTECTION			
6. FACTORY MOUNTED ELECTRICAL NON-FUSED DISCONNECT SWITCH			
7. FACTORY INSTALLED 120V WEATHERPROOF GFCI SERVICE RECEPTACLE. RECEPTACLE SHALL BE ACCESSIBLE FROM EXTERIOR OF THE UNIT AND BE CIRCUITED TO LINE SIDE OF UNIT DISCONNECT WITH A SEPARATE DISCONNECT AND OVERCURRENT PROTECTION.			
8. FACTORY MOUNTED, MODULATING HOT GAS REHEAT			
9. DIRECT DRIVE PLENUM SUPPLY AND EXHAUST FANS WITH INVERTER DUTY MOTOR AND VFD			
10. INVERTER SCROLL COMPRESSOR			
11. STAINLESS STEEL DRAIN PAN WITH FLOAT SWITCH			
12. MICRO PROCESSOR CONTROL WITH DISPLAY PANEL			
13. DAC, BACnet MSTP COMMUNICATION CARD			
14. 18 INCH TALL CURB WITH SPRING ISOLATION DAMPERS			
15. ELECTRIC ACTUATED MOTORIZED OUTDOOR AIR DAMPER, LOW LEAKAGE			
16. 2" MERV 8 FILTER RACK			
17. SCR ELECTRIC HEATING CONTROL			



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BUSY BEE
ELLISVILLE

136 SW WEBBS GLN
LAKE CITY, FL 32024

**BUSY BEE
ELLISVILLE**

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.: 22024

DATE: 04/10/2025

PRIOR ISSUES:

**MECHANICAL
FLOOR PLAN**

M1.1

DRAWN BY: DD

CHECKED BY: TF

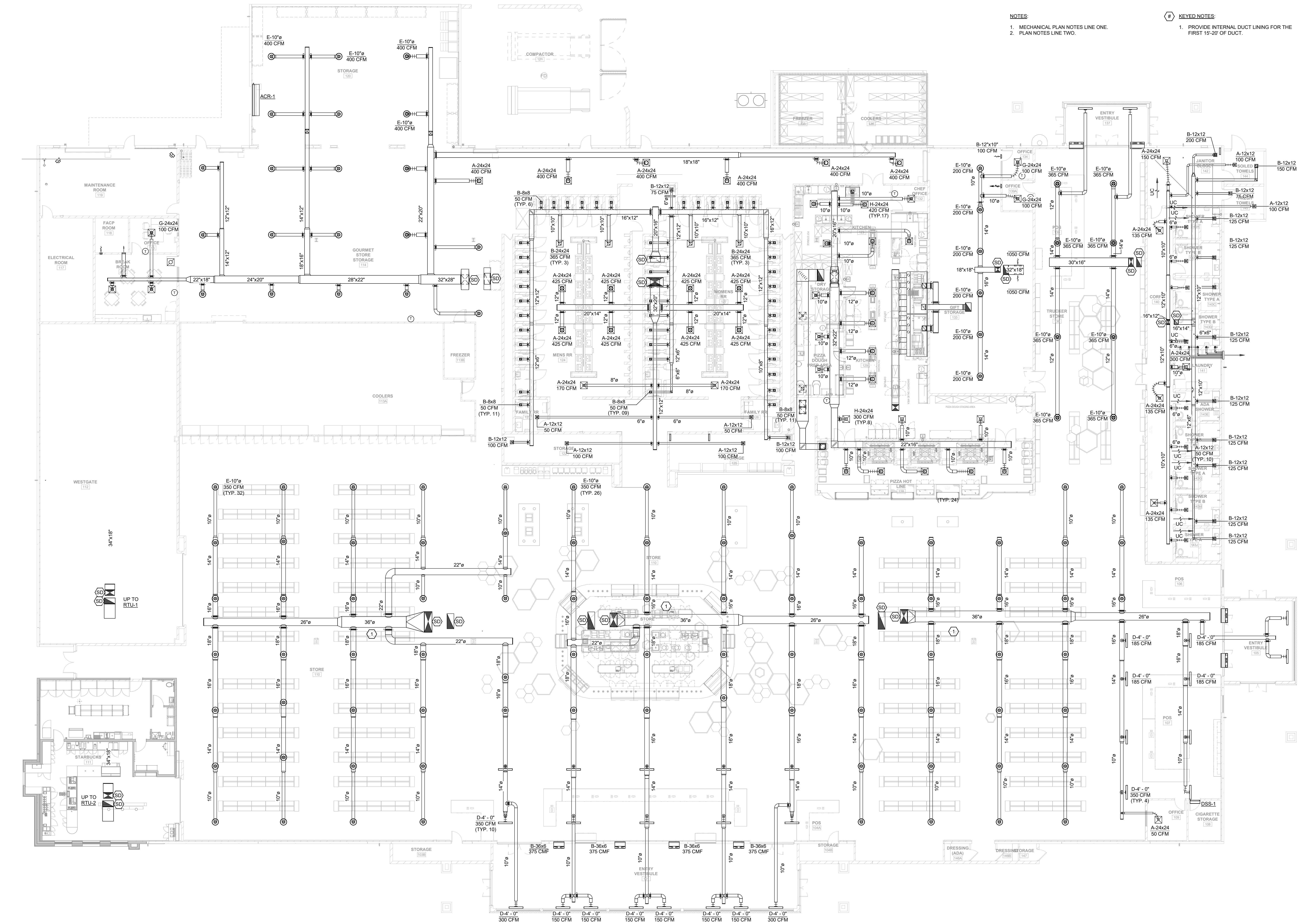
DESIGN DEVELOPMENT

NOTES:

1. MECHANICAL PLAN NOTES LINE ONE.
2. PLAN NOTES LINE TWO.

KEYED NOTES:

1. PROVIDE INTERNAL DUCT LINING FOR THE FIRST 15'-20' OF DUCT.

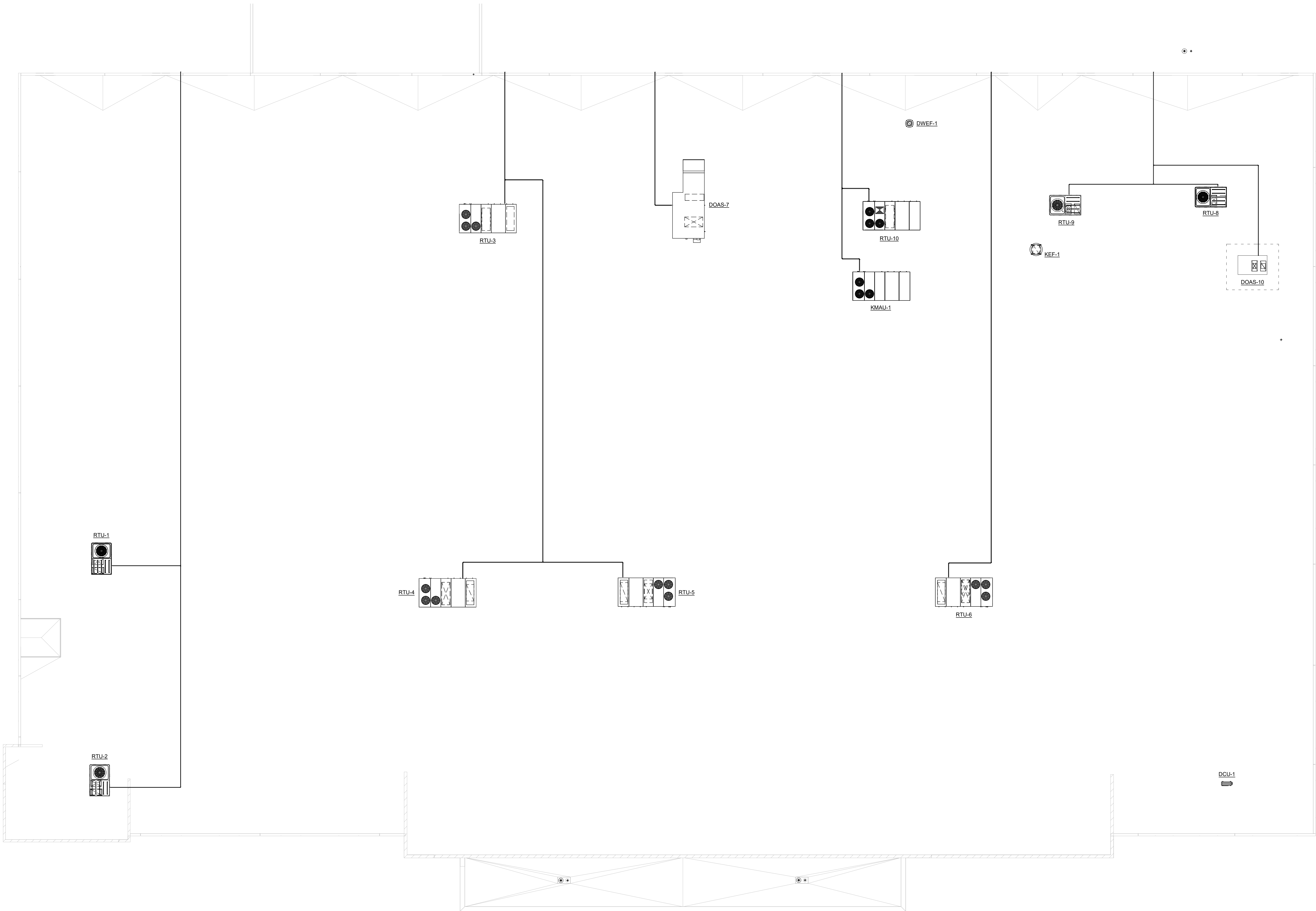


1 RETAIL STORE OVERALL HVAC FLOOR PLAN
SCALE: 3/32" = 1'-0"

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1
M2.1
RETAIL STORE OVERALL HVAC ROOF PLAN
SCALE: 3/32" = 1'-0"



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BUSY BEE ELLISVILLE

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.: 22024

DATE: 04/10/2025

PRIOR ISSUES:

MECHANICAL ROOF PLAN

M2.1

DRAWN BY: DD

CHECKED BY: TF

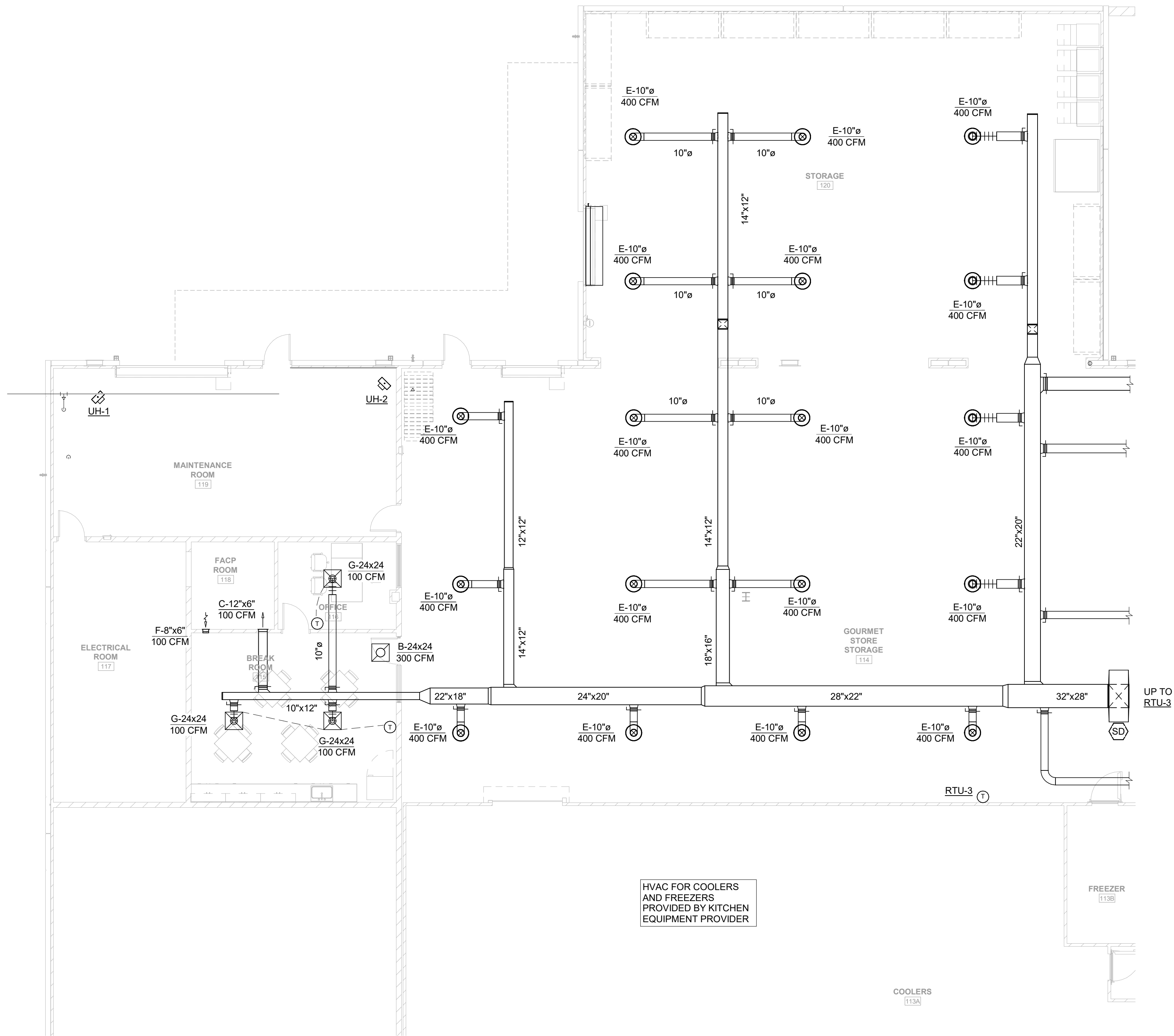
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1 RETAIL STORE PARTIAL A HVAC FLOOR PLAN
M2.2 SCALE: 1/8" = 1'-0"

BUSY BEE ELLISVILLE

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.: 22024
DATE: 04/10/2025
PRIOR ISSUES:

ENLARGED HVAC
PLAN - PARTIAL A

M2.2

DRAWN BY: DD
CHECKED BY: TF

DESIGN DEVELOPMENT

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**BUSY BEE
ELLISVILLE**

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.: 22024

DATE: 04/10/2025

PRIOR ISSUES:

ENLARGED HVAC
PLAN - PARTIAL B

M2.3

DRAWN BY: DD
CHECKED BY: TF

DESIGN DEVELOPMENT

1 RETAIL STORE PARTIAL B HVAC FLOOR PLAN
SCALE: 1/8" = 1'-0"

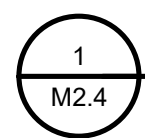
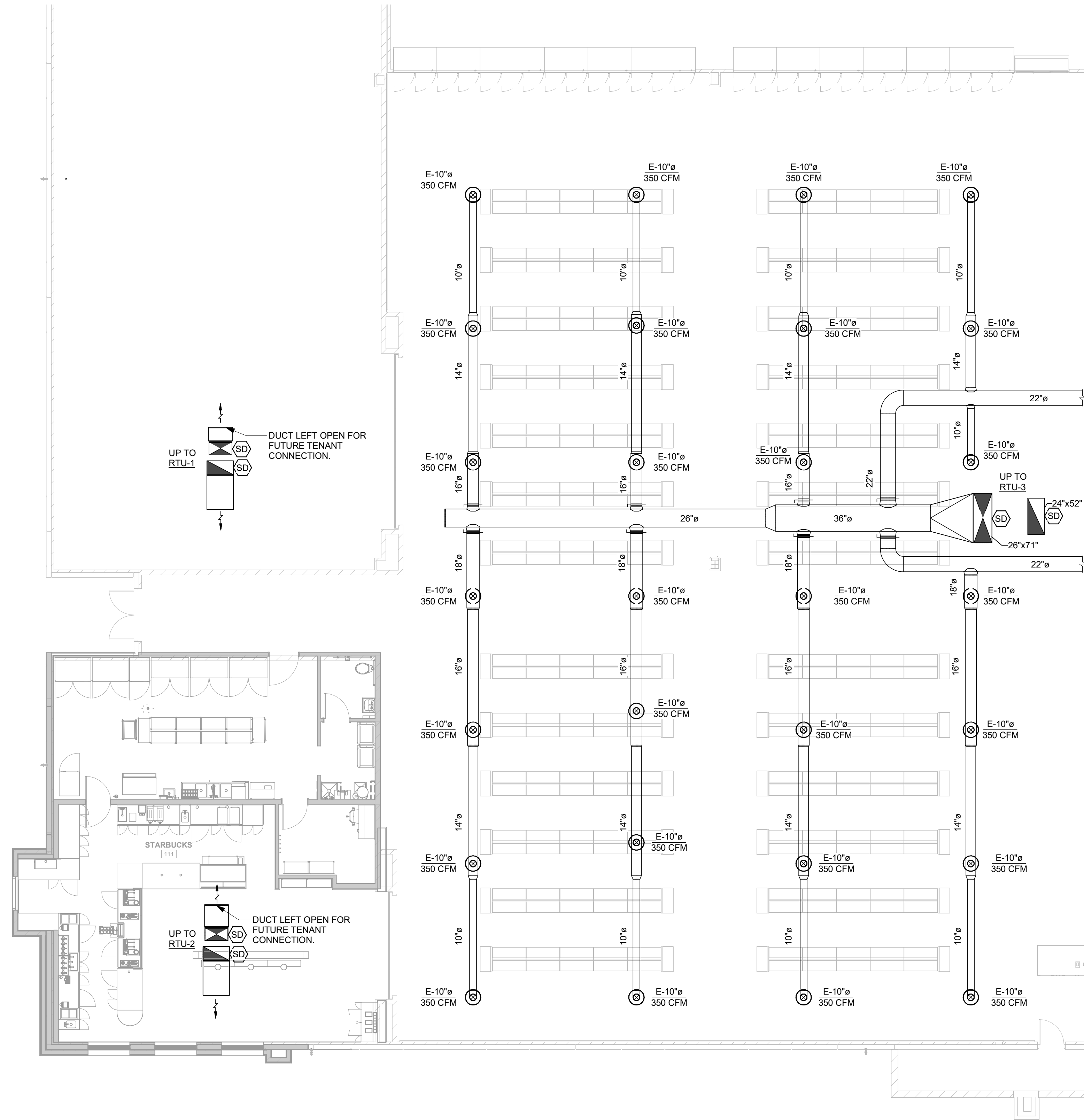
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RETAIL STORE PARTIAL C HVAC FLOOR PLAN

SCALE: 1/8" = 1'-0"

BUSY BEE ELLISVILLE

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.: 22024

DATE: 04/10/2025

PRIOR ISSUES:

ENLARGED HVAC PLAN - PARTIAL C

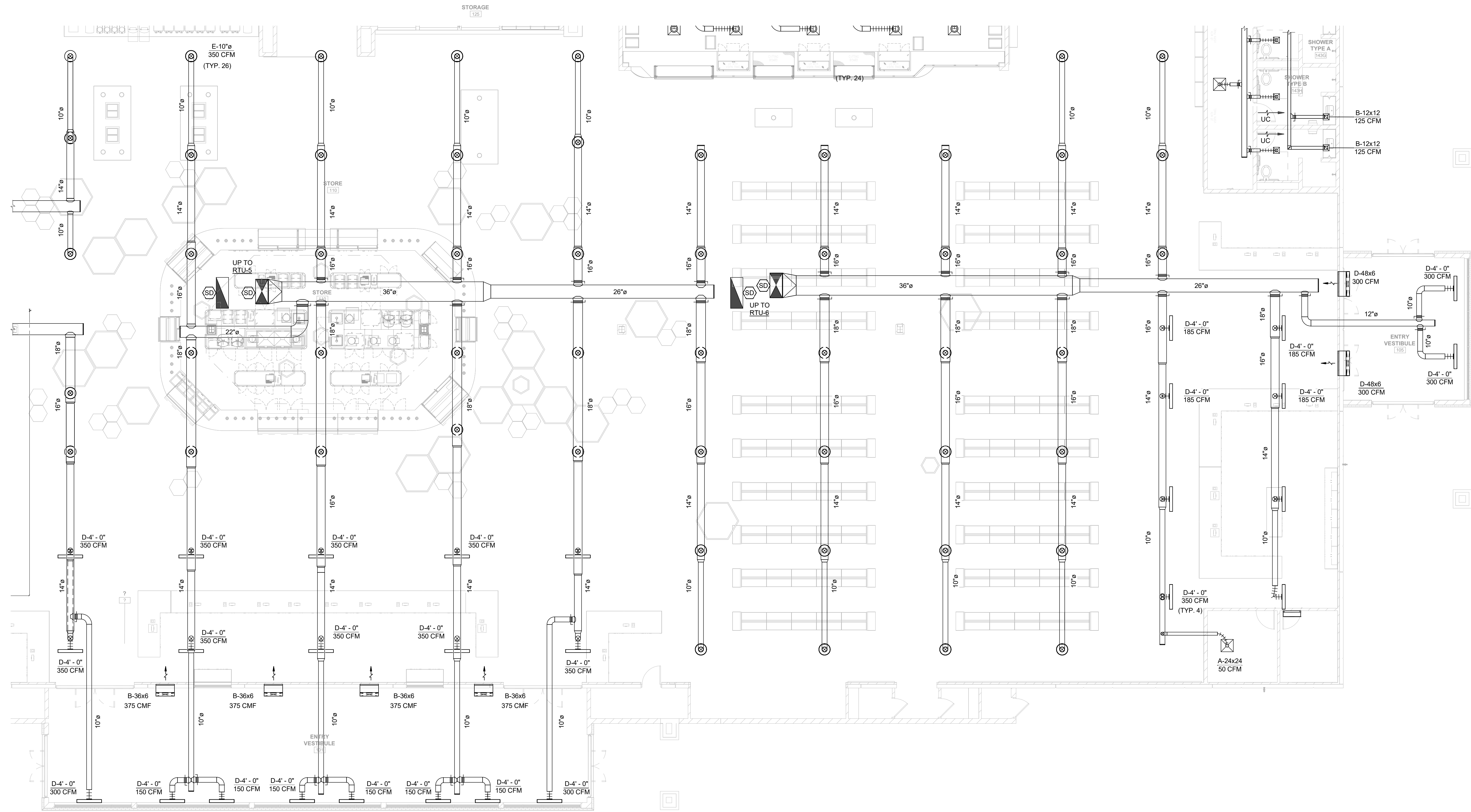
M2.4

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DESIGN DEVELOPMENT

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1
M2.5
RETAIL STORE PARTIAL D HVAC FLOOR PLAN
SCALE: 1/8" = 1'-0"

**BUSY BEE
ELLISVILLE**

136 SW WEBBS GLN
LAKE CITY, FL 32024

PROJECT NO.: 22024

DATE: 04/10/2025

PRIOR ISSUES:

ENLARGED HVAC
PLAN - PARTIAL D

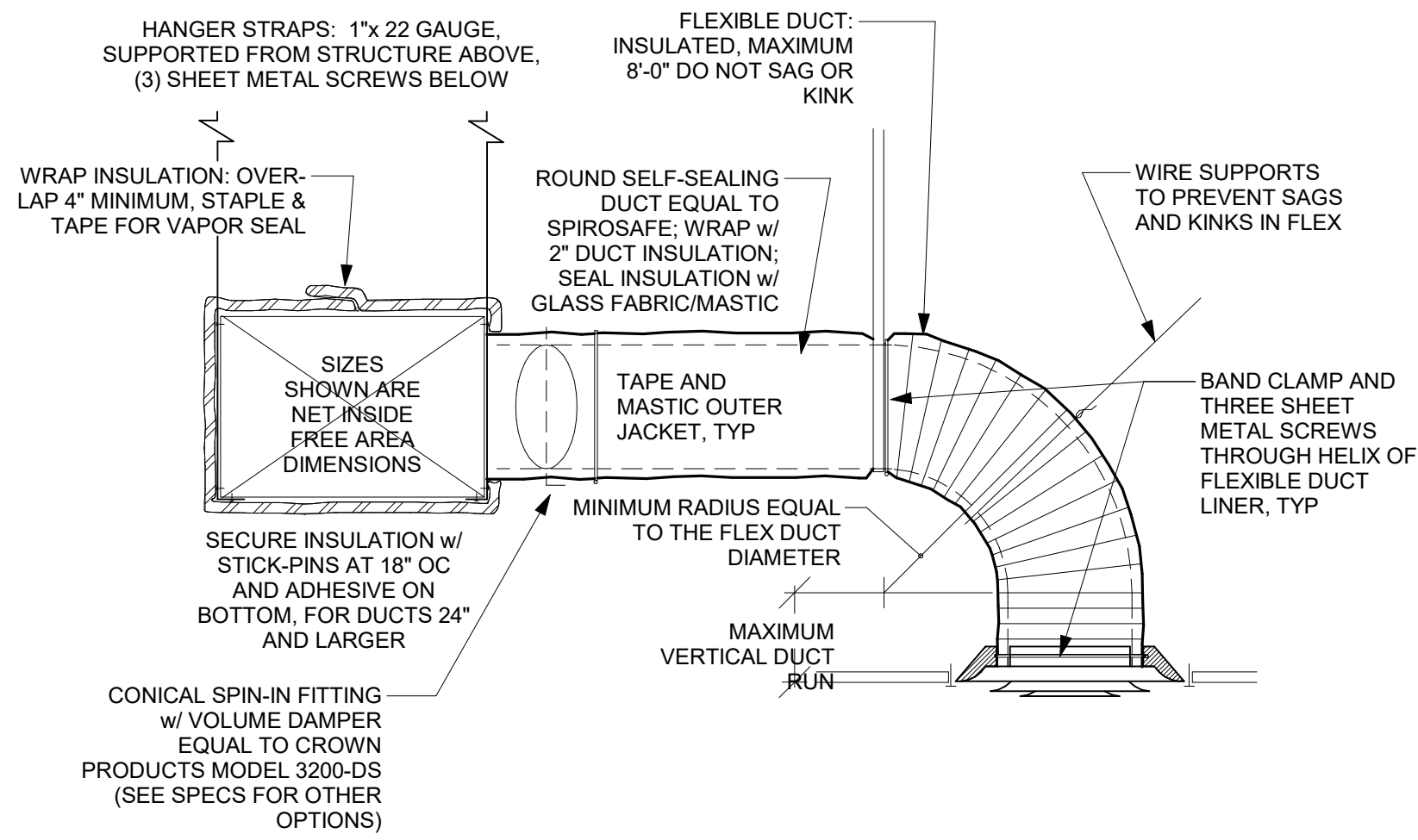
M2.5

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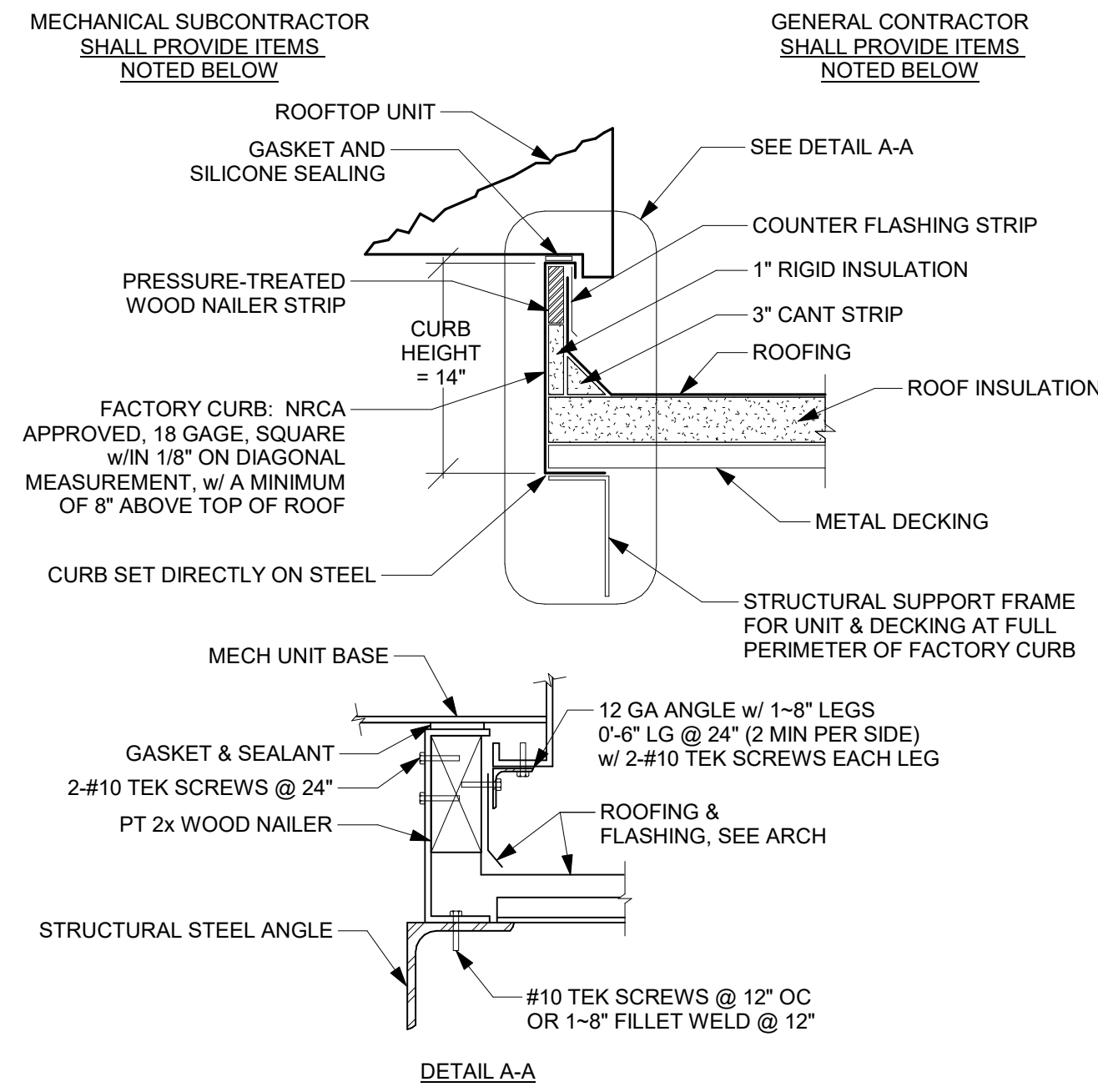
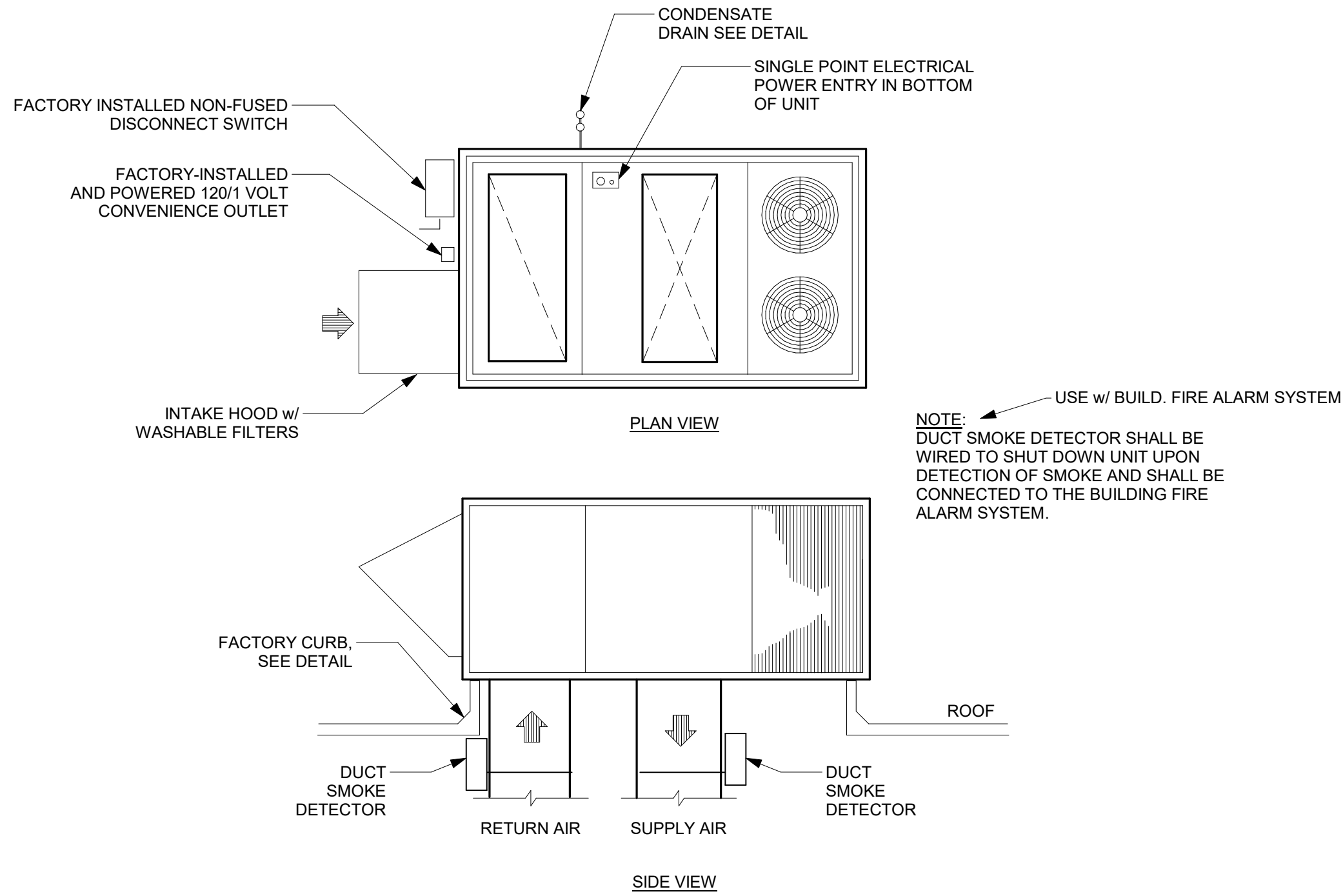
- DUCT FABRICATION NOTES:**
- DUCTS SHALL BE FABRICATED & INSTALLED PER THE LATEST EDITION OF SMACNA DUCT CONSTRUCTION STANDARDS.
 - ALTERNATE INTERPRETATIONS OF SMACNA DUCT MATERIAL, HANGERS AND REINFORCEMENTS ARE SUBJECT TO ENGINEER APPROVAL AND REQUIRE SEPARATE SUBMITTAL OF THE ALTERNATES.
 - FLEXIBLE DUCT CONNECTORS SHALL BE PROVIDED WHERE SHOWN ON THE PLAN.
 - SUPPLY AIR DROPS FROM ROOF TOP UNITS SHALL TRANSITION FROM THE UNIT OPENING SIZE TO SQUARE NECK ELBOWS, w/ SIZES AS SHOWN ON THE PLAN. IF TWO SUPPLY AIR DUCT RUNS ARE AT THE UNIT, THEN TWO SEPARATE DROPS & ELBOWS SHALL BE PROVIDED.
 - RETURN AIR DROPS FROM THE ROOF TOP UNITS SHALL BE FULL SIZE OF THE UNIT OPENING.
 - ELBOWS SHALL BE SQUARE NECK (SAME IN OUT DIMENSION) w/ 2" DOUBLE THICKNESS TURNING VANES.
 - OFFSETS SHALL NOT REDUCE THE FREE AREA, AND SHALL NOT EXCEED 30". A RADIUS HEEL SHALL BE PROVIDED ON 30" OFFSETS. SMALLER OFFSETS SHALL BE MITERED AT BOTH THE HEEL & THROAT.
 - TRANSITIONS SHALL NOT EXCEED 1:3 RATIO (4" TRANSITION PER FOOT SINGLE SIDED TRANSITION, AND 8" PER FOOT DOUBLE SIDED TRANSITION).
 - INSULATION SHALL BE NFPA 90 APPROVED, w/ MINIMUM R-VALUE OF 4.2. WRAP INSULATION SHALL BE 2" THICK w/ ALUMINUM FOIL FACING. LINER SHALL BE 1" THICK, 1-1/2 PCF DENSITY.
 - RECTANGULAR BRANCH CONNECTIONS SHALL BE 45° ENTRY TYPE PER SMACNA FIGURE 2-6.
 - ROUND DUCT CONNECTIONS SHALL BE w/ "CROWN PRODUCTS COMPANY" 3200-DS FITTINGS, DAMPER AND HANDLE. SPRAY PAINT LOCATIONS OF HANDLES.
 - FLEXIBLE DUCT SHALL INCLUDE AN INNER POLYETHYLENE LINER, A SPRING HELIX, 1-1/4" BLANKET INSULATION (R-6.0), A FOIL OUTER VAPOR BARRIER, AND BE UL LISTED CLASS I AIR DUCT.
 - SEAL ALL SUPPLY, RETURN & OUTSIDE AIR DUCT JOINTS w/ DUCT SEALER. SEAL ALL INSULATION JOISTS w/ GLASS FABRIC AND MASTIC.

1 CONCEALED DUCTWORK INSTALLATION DETAIL

M4.1 SCALE: NTS

2 ROOFTOP UNIT DETAIL

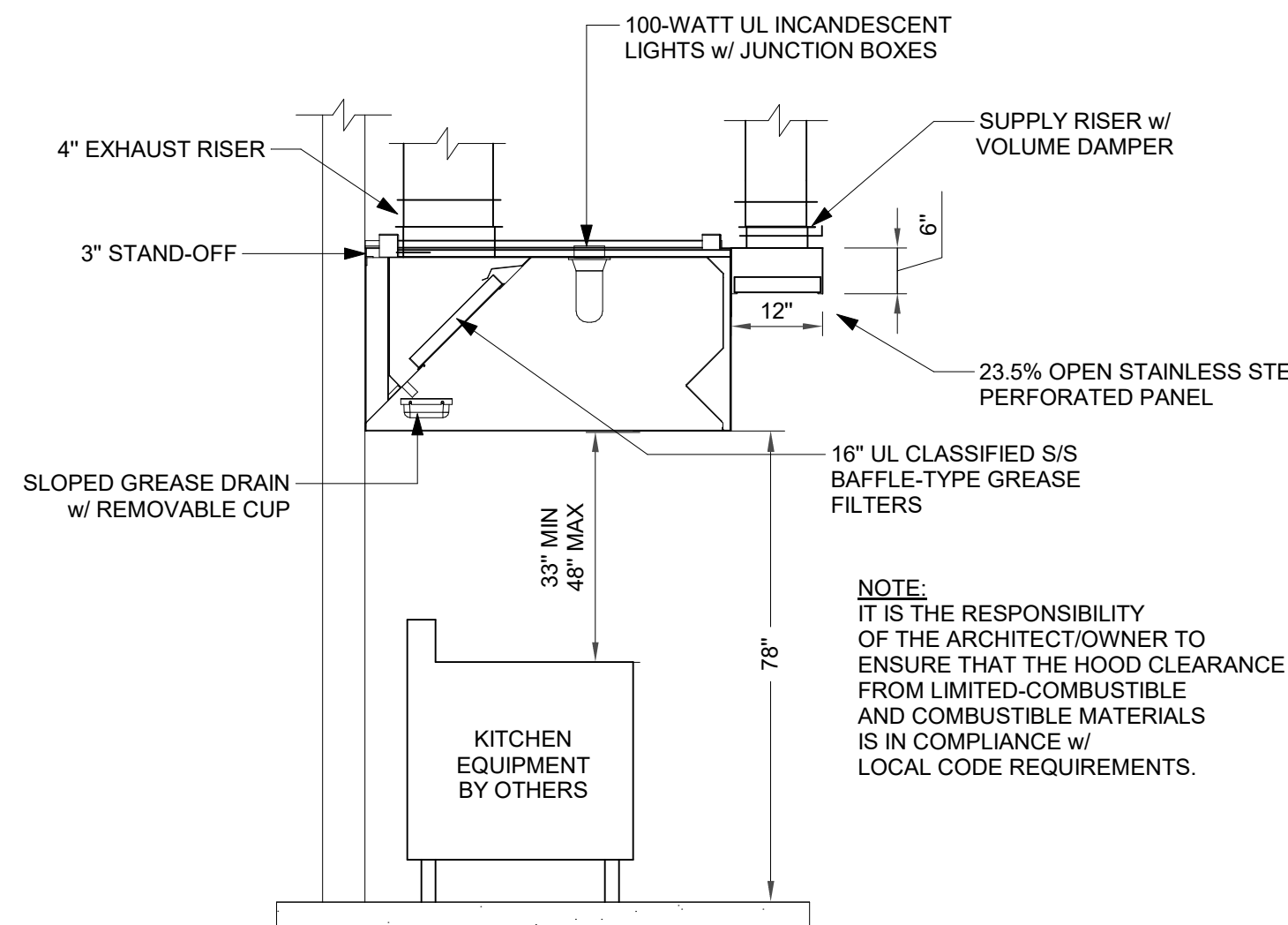
M4.1 SCALE: NTS



- NOTES:**
- MECHANICAL SUBCONTRACTOR SHALL FURNISH ROOF OPENING SIZES & LOCATIONS. FOR STRUCTURAL SUPPORT FRAMING BY GENERAL CONTRACTOR.
 - THIS CURB DETAIL WILL ALLOW THE UNIT TO SLOPE w/ THE SLOPE OF THE ROOF PITCH. THIS DETAIL CAN ONLY BE USED:
A. IF THE CONDENSATE DRAIN PAN OUTLET IS ON THE LOW SIDE OF THE UNIT, OR
B. IF THE CONDENSATE DRAIN PAN IS NOT AFFECTED BY SLOPE. THIS DETAIL CAN NOT BE USED IF THE CONDENSATE DRAIN CONNECTION IS ON THE HIGH SIDE OF THE UNIT.
 - COORDINATE THIS DETAIL w/ ARCHITECTURAL APPLICATIONS FOR THE ROOF.

3 ROOFTOP UNIT CURB DETAIL

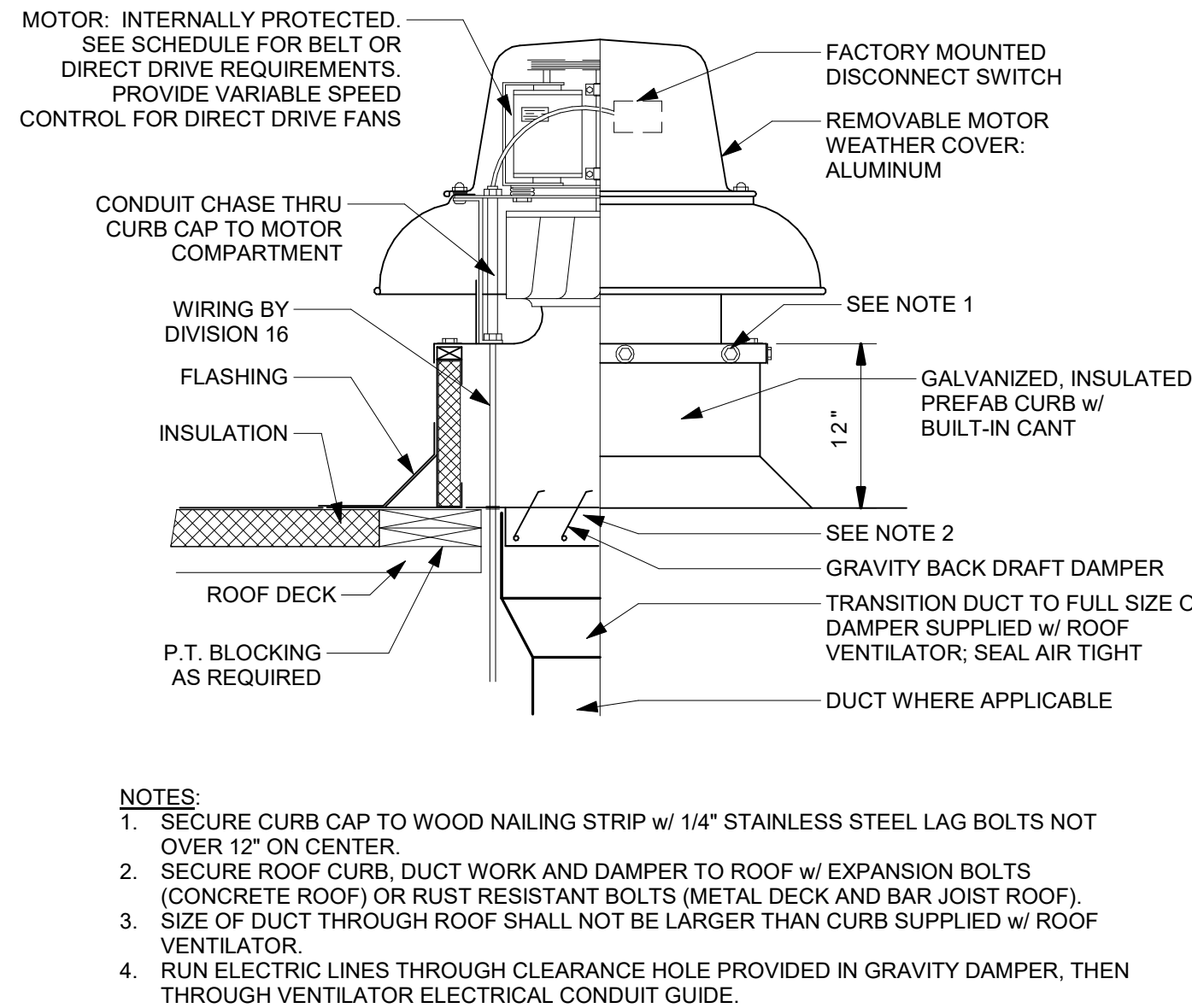
M4.1 SCALE: NTS



- KITCHEN HOOD NOTES**
- KITCHEN EXHAUST DUCT TO BE CONSTRUCTED OF CONTINUOUSLY WELDED 16 GAUGE GALVANIZED STEEL.
 - SLOPE EXHAUST DUCT 1/4" PER FOOT MINIMUM TOWARD HOOD. (SLOPE DUCT 1" PER FOOT MINIMUM FOR HORIZONTAL DUCT LENGTHS GREATER THAN 75 FEET).
 - RADIUS THROAT AND ELBOW EXHAUST DUCT.
 - OFFSETS w/ MINIMUM 6" INNER RADIUS PROVIDE CLEAN-OUTS PER CODE.
 - WHERE PROPER CLEARANCES TO COMBUSTIBLE CONSTRUCTION CANNOT BE MAINTAINED PER NFPA-96, WRAP ENTIRE DUCT w/ UL "FIRE MASTER" BY THERMAL CERAMICS OR FLAME CHECK BY CERTAINTED. FROM HOOD EXHAUST TO FAN DISCHARGE, AND ON TOP OF HOOD AS MAY BE REQUIRED FOR CLEARANCES. CODE.
 - DUCT WRAP TO BE INSTALLED PER MANUFACTURER'S REQUIREMENTS AND UL CLASSIFICATION AND TESTS.
 - GC TO SPACE STRUCTURE TO ACCOMMODATE DUCTS w/ WRAP (MINIMUM 18" CLEAR TO COMBUSTIBLES OR AS REDUCED BY DUCT WRAP PER CODE AND UL).
 - PROVIDE CLEAN-OUTS PER MANUFACTURER'S AND UL REQUIREMENTS.
 - PROVIDE w/ FACTORY PRE-WIRED MOTOR CONTROL PACKAGE.
 - INSTALL HOOD AT HEIGHT ABOVE COOKING SURFACE AS REQUIRED BY CODE.
 - HOOD CAPTURE SIZE IS BASED UPON SCHEDULED EQUIPMENT INFO AND ARCH. PLANS PROVIDED, PLUS MINIMUM 6" ON ALL EXPOSED SIDES. FIELD VERIFY/COORDINATE HOOD SIZE AND FAN CAPACITIES w/ ACTUAL EQUIPMENT PROVIDED.
 - CANOPY EXHAUST HOOD SHALL BE EQUIPPED w/ AN AUTOMATIC FIRE SUPPRESSION SYSTEM EQUAL TO ANSUL. SYSTEM SHALL CONSIST OF SUPPRESSION AGENT TANK, REMOTE MANUAL PULL STATION, DUCT PROTECTION NOZZLES, PLENUM PROTECTION NOZZLES, DETECTORS AND ALL OTHER NECESSARY SYSTEM APPURTENANCES FOR A FULLY OPERATIONAL AUTOMATIC FIRE SUPPRESSION SYSTEM. NATURAL GAS AND ELECTRICAL SERVICES TO EQUIPMENT UNDER HOOD SHALL BE AUTOMATICALLY SHUT DOWN UPON ACTIVATION OF FIRE SUPPRESSION SYSTEM.

4 KITCHEN CANOPY HOOD DETAIL

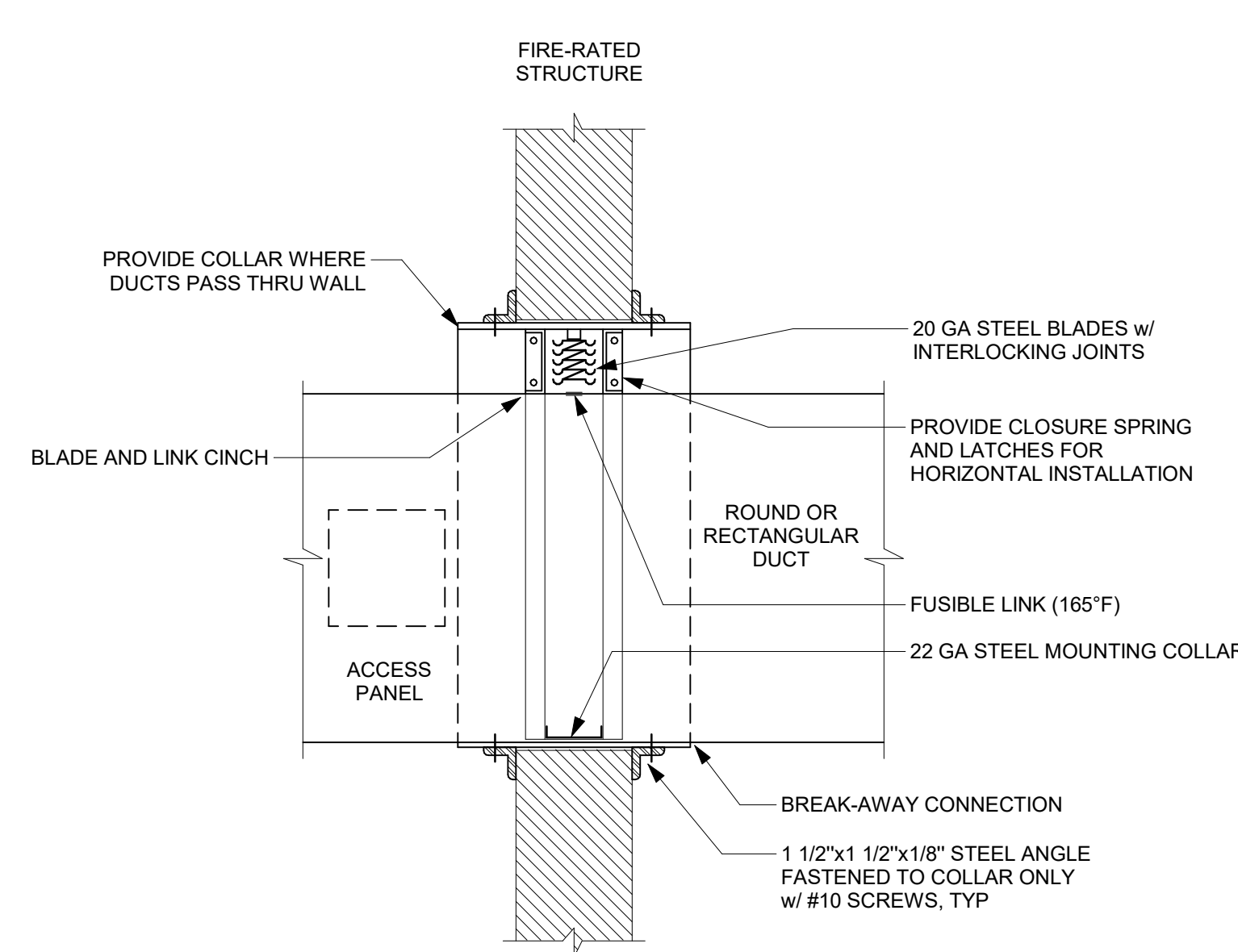
M4.1 SCALE: NTS



- NOTES:**
- SECURE CURB CAP TO WOOD NAILING STRIP w/ 1/4" STAINLESS STEEL LAG BOLTS NOT OVER 12" ON CENTER.
 - SECURE ROOF CURB, DUCT WORK AND DAMPER TO ROOF w/ EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK AND BAR JOIST ROOF).
 - SIZE OF DUCT THROUGH ROOF SHALL NOT BE LARGER THAN CURB SUPPLIED w/ ROOF VENTILATOR.
 - RUN ELECTRIC LINES THROUGH CLEARANCE HOLE PROVIDED IN GRAVITY DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.

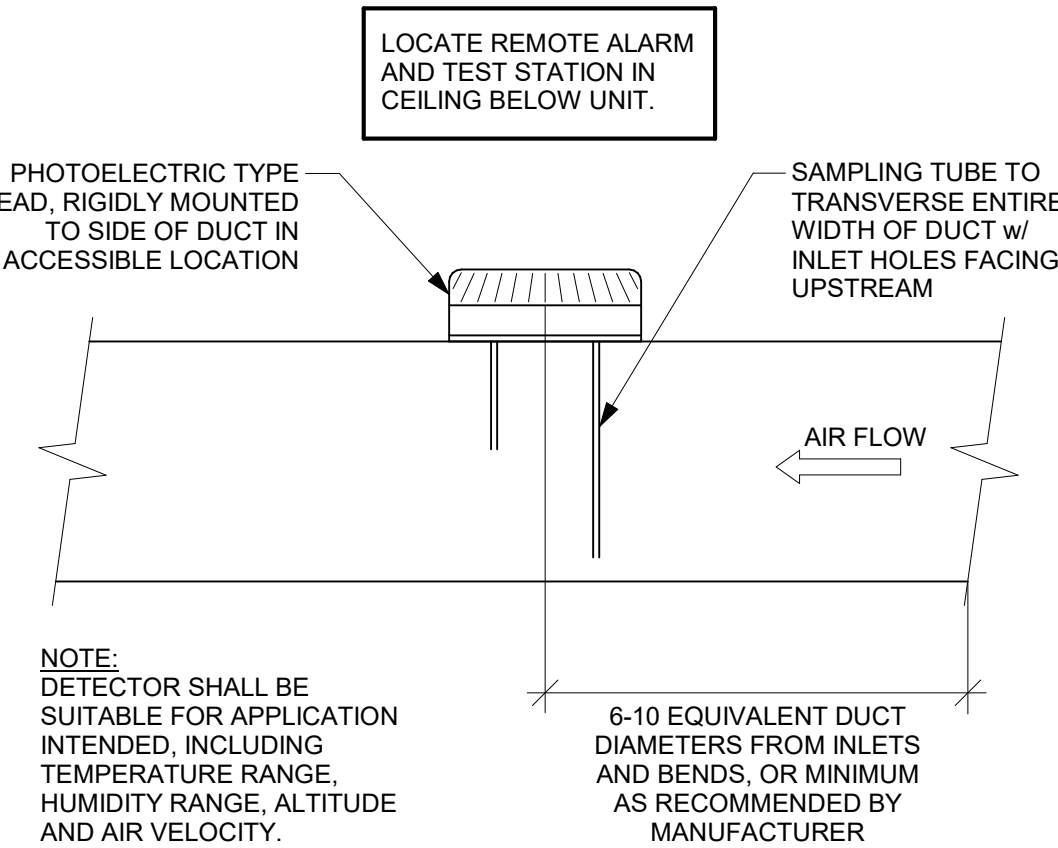
5 CENTRIFUGAL ROOF EXHAUST FAN DETAIL

M4.1 SCALE: NTS



6 UL-555 DYNAMIC FIRE DAMPER DETAIL

M4.1 SCALE: NTS



7 DUCT MOUNTED SMOKE DETECTOR DETAIL

M4.1 SCALE: NTS