PACKAGED ROOF TOP UNIT SCHEDULE

UNIT SYMBOL		AC 1 (NEW)			
LOCATION		ROOF			
BLOWER	CFM	3,000 (7.5-TON)			
	TSP (IN W.G.)	0.6"			
COOLING	TOTAL (BTU/HR)	82,800			
	SENSIBLE (BTU/HR)	67,900			
	AMBIENT (F)	115			
	COIL ENTERING	67 WB/80 DB			
HEATING (BTU/HR)		125,000 (INPUT) / 103,00 (OUTPUT)			
ELECTRICAL	POWER SUPPLY	460V/3PH/60HZ			
	COMPRESSOR (RLA)	(2) 6.1			
	CONDENSER MOTOR (FLA)	(2) 0.8			
	EVAPORATOR MOTOR (FLA)	2.6			
	MIN. CIRCUIT AMPACITY	19.7, MOCP = 25			
PRICING ORDERING AND DELIVERY CONTACT: THERESA DAWSON PHONE: 949-309-9815 E-MAIL: Theresa.Dawson@carrier.utc.com		BY CARRIER 48HCDD08B2M5DOWN DISCHARGE COMPLETE WITH 14" ROOF MOUNT CURB, ELECTRONIC PROGRAMMABLE THERMOSTAT, ENTHALPY ECONOMIZER WITH BAROMETRIC RELIEF. COMB. FAN MOTOR 0.48 AMPS (DOES NOT OPERATE WITH COMPRESSOR). OPER. WT. : 1218 LBS APPROX SEER=- EER=12.0, AFUE=82%			

ALL ITEMS RELATED TO HVAC SYSTEM SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR. CONTACT CARRIER REPRESENTATIVE ABOVE.
- THERMOSTATS: REMOTE SENSOR TYPE, 24/7 PROGRAMMABLE AND CAPABLE OF OPERATING ROOFTOP UNITS AND SHALL ACCESSORIES "CARRIER" COMFORT PRO 33CS PROVIDE REMOTE SENSOR FOR EACH THERMOSTAT
- DUCT MOUNTED SMOKE DETECTORS: IONIZATION TYPE/UL LISTED, CSFM CERTIFIED, 24 VAC, BY EDWARDS, DH HOUSING WITH 1551F SENSOR

NOTE:
1. 1.9 AMPS (5 TON) AND 3.8 AMPS (7.5 AND 10 TON) ECONOMIZER INCLUDED IN ELECTRICAL TOTAL MCA PER MANUFACTURER'S LITERATURE.
2. UNIT WEIGHTS ABOVE INCLUDE ACCESSORIES AND CURB.
3. FACTORY OPTIONS SHALL INCLUDE HAIL GUARD PROTECTION FOR ALL UNIT.
4. FACTORY OPTIONS SHALL INCLUDE FACTORY INSTALLED DISCONNECTS AND CONVENIENCE OUTLETS (FIELD POWERED REFER TO ELECTRICAL DRAWING).
5. PROVIDE THRU THE BASE ELECTRICAL CONNECTION KIT #CRBTMPWR002A01 FOR ALL UNITS.

EXHAUST FAN SCHEDULE

FAN NO.		EF 1	EF 2	
LOCATION		ROOF	ROOF	
AREA SERVED		KITCHEN GREASE EXHAUST HOOD #1	KITCHEN GREASE EXHAUST HOOD #2	
FAN DUTY		AIR EXHAUST	AIR EXHAUST	
FAN TYPE		CENTRIFUGAL BELT-DRIVEN	CENTRIFUGAL BELT-DRIVEN	
FAN ARRANGEMENT		UPBLAST	UPBLAST	
MIN. WHEEL DIAMETER		-	-	
PERFORMANCE	C.F.M.	3,375	3,375	
	T.S.P.	1.25"	1.25"	
	B.H.P.	1.35	1.35	
	FAN R.P.M.	1212	1212	
MOTOR	MOTOR H.P.	2.0	2.0	
	ELEC. CHARACTERISTICS	460V/3PH/60HZ	460V/3PH/60HZ	
	MOTOR R.P.M.	1725	1725	
	MOTOR SPECIAL FEATURES	OPEN DRIP-PROOF	OPEN DRIP-PROOF	
ACCESSORIES		1. VENTED ROOF CURB 2. HINGED AND CHAINED FAN INSTALLATION FOR DUCT ACCESS	1. VENTED ROOF CURB 2. HINGED AND CHAINED FAN INSTALLATION FOR DUCT ACCESS	
MANUFACTURER		CAPTIVEAIRE MODEL: NCA16FA (UL762) WT. 184 LBS	CAPTIVEAIRE MODEL: NCA16FA (UL762) WT. 184 LBS	

HVAC CONTROL SETTINGS

EACH HVAC UNIT SHALL BE PROVIDED WITH CONTROLS AS : FOLLOWS:

THERMOSTAT: CARRIER COMMERCIAL PROGRAMMABLE THERMOSTAT WITH REMOTE TEMPERATURE SENSOR. SEE SHEET M-100 FOR THERMOSTAT AND SENSOR LOCATIONS. (THERMOSTAT WITH AUTOMATIC SETBACK WHEN LIGHT ARE TURNED DOWN, MANUAL OVERRIDE.)

ALL THERMOSTATS SHALL HAVE MANUAL OVERRIDE.

EACH UNIT CONTROL SHALL BE SET UP INITIALLY AS FOLLOWS:

CONTRACTOR SHALL DETERMINE OCCUPIED PERIOD FROM OWNER.

FAN OPERATION SHALL BE CONTINUOUS DURING OCCUPIED PERIOD AND CYCLE WITH COOLING/HEATING DURING UNOCCUPIED PERIOD.

PROGRAMMED SETPOINTS (FOR EACH THERMOSTAT):
COOLING OCCUPIED: 75 DEGREES F.
COOLING UNOCCUPIED: 85 DEGREES F.
HEATING OCCUPIED: 68 DEGREES F.
HEATING UNOCCUPIED: 50 DEGREES F.

NOTE: DEVIATIONS FROM THE ABOVE MAY RESULT IN UNACCEPTABLE AIR QUALITY, COMFORT AND/OR ENERGY CONSUMPTION.

AIR CURTAIN SCHEDULE

EQUIP.	MFR/MODEL	DESCRIPTION
M8A	YOSHIMASA YMAC36	AIR CURTAIN (DOOR). 120/1/60, 3.0 AMP WEIGHT 30 LBS
M9A	QUICK-SERV CF-25	AIR CURTAIN (WINDOW NON-HEATED). 120/1/60, 20 AMP WEIGHT 30 LBS

NOTES:
INSTALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

MECHANICAL SPECIFICATIONS

1. WORK INCLUDES INSTALLATION OF HVAC SYSTEMS, INCLUDING GREASE EXHAUST FANS AND MAKE-UP AIR UNIT FOR KITCHEN HOODS, SPACE HEATING/AIR CONDITIONING SYSTEMS, SUPPLY, RETURN, EXHAUST, AND GREASE EXHAUST DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, COMPLETE CONTROLS SYSTEM, INTERLOCK WIRING FOR OPERATION OF KITCHEN HOODS, EXHAUST FANS, AND MAKE-UP AIR UNIT, DUCT INSULATION, AND RELATED ITEMS NECESSARY FOR A COMPLETE FUNCTIONING SYSTEM AS INDICATED ON THE PLANS. FURNISH ALL NEW MATERIALS AND EQUIPMENT UNLESS NOTED OTHERWISE (U.N.O.).
2. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT AND REQUIRED EQUIPMENT. DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. AS REQUIRED, REFER TO ARCHITECTURAL AND MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. FURNISH AND INSTALL DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND EQUIPMENT SHOWN ON PLANS.
3. CODE COMPLIANCE: ALL WORK COVERED BY THIS SECTION SHALL BE IN ACCORDANCE WITH ALL LOCAL CODES AND ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
4. COORDINATE WORK WITH OTHER TRADES, EQUIPMENT FURNISHED BY OTHERS AND OWNER REQUIREMENTS. PROVIDE DUCT RISES AND DROPS AS REQUIRED FOR INSTALLATION AND/OR TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK. WORK SHALL BE PERFORMED BY EXPERIENCED TRADESMEN AND THEIR WORK SHALL BE OF HIGH STANDARD ACCEPTABLE TO THE OWNER.
5. DUCTWORK: DUCT SYSTEMS SHALL BE CONSTRUCTED, INSTALLED, SEALED AND INSULATED AS PROVIDED IN THE INT'L ENERGY AND MECHANICAL CODES. SHEET METAL SHALL BE IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. SHEET METAL SHALL BE GALVANIZED OF LOCK-FORMING QUALITY, ASTM A-525. UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON DRAWINGS ARE NET INSIDE CLEAR DIMENSIONS ON LINED DUCTS OR SHEET METAL DIMENSIONS ON UNLINED DUCTS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. ROUND RIGID DUCTWORK SHALL CONFORM TO SMACNA TABLE 3-2.
6. SEAL ALL TRANSVERSE AND LONGITUDINAL DUCT SEAMS AIR-TIGHT. PROVIDE TURNING VANES AT ALL ELBOWS OR OFFSETS EXCEEDING 30 DEGREES.
7. GREASE EXHAUST SYSTEM: ALL GREASE EXHAUST DUCTS SHALL BE FABRICATED BY WELDED JOINT CONSTRUCTION OF 16 GAUGE WELDED STEEL OR 18 GAUGE STAINLESS STEEL. PROVIDE RATED ACCESS DOORS AT ALL ELBOWS AND OFFSETS PER CODE. ALL ELBOWS SHALL BE LONG RADIUS. GREASE DUCT SHALL BE INSTALLED EITHER IN A RATED ENCLOSURE PROVIDED BY THE GENERAL CONTRACTOR OR WRAPPED WITH FIREMASTER GREASE DUCT WRAP.
8. DUCT INSULATION: PROVIDE DUCT WRAP FOR ALL DUCTS ABOVE CEILING, INCLUDING VERTICAL, HORIZONTAL, RIGID AND FLEXIBLE DUCTS, EXCLUDING PREFABRICATED PREINSULATED DUCTS AND GREASE DUCTS. DUCT WRAP SHALL BE JOHNS MANVILLE MICROLITE OR EQUAL WITH FOIL/SCRIM/KRAFT, 1 IN THICKNESS, 1.5 POUNDS/FT3 DENSITY. DUCT WRAP SHALL BE BONDED GLASS FIBERS IN THERMOSETTING RESIN MEETING NFPA 90A, WITH K VALUE NOT TO EXCEED 0.23 AT 75 DEGREES F. FLAME SPREAD AND SMOKE DEVELOPED RATINGS SHALL NOT EXCEED 25/50. APPLY 100% ADHESIVE COVERAGE TO SHEET METAL DUCTWORK. PROVIDE ADDITIONAL MECHANICAL FASTENERS ON DUCTS OVER 12" WIDE OR 16" HIGH. MECHANICAL FASTENERS SHALL BE "GRIPNAIL" OR WELDED PIN AND SPEED CLIPS SPACED PER SMACNA STANDARDS.
9. FLEX DUCT: PROVIDE FACTORY ASSEMBLED CLASS 1 AIR DUCT (UL 181) WITH FIBERGLASS INSULATION AND REINFORCED OUTER PROTECTIVE COVER/VAPOR BARRIER. FLEX DUCT SHALL MEET NFPA 90A WITH FLAME SPREAD UNDER 25, SMOKE DEVELOPED UNDER 50 AND SHALL BE RATED FOR 2" W.C. PRESSURE AND 0 TO 250 DEGREE TEMPERATURE. FLEX DUCT MAXIMUM ALLOWED LENGTH TO BE PER LOCAL CODE.
10. PROVIDE INSULATION APPLIED TO COMPLETE BACKPAN OF AIR DEVICES.
11. ACCESS DOOR: PROVIDE HINGED ACCESS PANELS IN DUCTWORK WHERE SHOWN AND AS REQUIRED FOR ACCESS TO DAMPERS OR EQUIPMENT. PROVIDE INSULATED ACCESS DOORS IN INSULATED DUCTWORK.
12. AUTOMATIC TEMPERATURE CONTROL: CONTRACTOR TO PROVIDE AND INSTALL 24/7 PROGRAMMABLE THERMOSTATS AND REMOTE SENSORS.
13. KITCHEN HOOD EQUIPMENT INTERLOCK: PROVIDE ALL INTERLOCK AND CONTROL WIRING FOR KITCHEN HOOD SYSTEMS, WHICH INCLUDES EF1, EF2, MAU1 AND ANSUL SYSTEM SHUT DOWN INTERLOCK TO MAKE-UP AIR FAN. UPON ACTIVATION OF ANSUL SYSTEM, MAKE-UP AIR FAN SHALL BE DEACTIVATED. PROVIDE ALL NECESSARY CONTROLS AND WIRING FOR A COMPLETE AND OPERABLE SYSTEM. INTERLOCK GREASE EXHAUST FANS AND MAKE-UP AIR UNIT TO START SIMULTANEOUSLY FROM SWITCH PROVIDED AT HOOD.
14. TEST AND ADJUST EACH PIECE OF EQUIPMENT AND EACH SYSTEM AS REQUIRED TO ASSURE PROPER AIR BALANCE AND OPERATION. PROVIDE A CERTIFIED AIR BALANCE REPORT TO OWNER SHOWING DESIGN AND MEASURED AIR VOLUMES, STATIC PRESSURES, FAN RPMS, ETC. AIR BALANCE CONTRACTOR SHALL ADJUST SYSTEMS TO MINIMIZE NOISE AND VIBRATION, AND TO ASSURE PROPER FUNCTION OF CONTROLS, MAINTENANCE OF TEMPERATURE AND OPERATION. GENERAL CONTRACTOR TO OBTAIN ALL INSPECTIONS REQUIRED BY LOCAL CODE AND GUARANTEE WORK AND INSTALLATION FOR ONE YEAR AFTER ACCEPTANCE BY OWNER. GENERAL CONTRACTOR TO FURNISH OWNER WITH TWO COMPLETE SETS OF AS-BUILT DRAWINGS INDICATING ALL INSTALLED WORK, INCLUDING ALL CONTROL WIRING DIAGRAMS AND INTERLOCK FOR SYSTEM OPERATION.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ECONOMIZERS INCLUDING INSTALLATION OF ALL NECESSARY SENSORS AND CONNECTIONS TO THERMOSTAT. PROVIDE SUPPORT OF ECONOMIZERS PER MANUFACTURER'S REQUIREMENTS AND TEST FOR PROPER OPERATION PRIOR TO FINAL TEST AND BALANCE.

MAKE-UP AIR UNIT SCHEDULE

SYMBOL	LOCATION & SERVICE AREA	TYPE	COOLING	BLOWER CFM	BLOWER ESP	BLOWER MOTOR	MFR. & MODEL
MA 1	ROOF-TOP FOR KITCHEN HOOD AIR MAKE-UP	PACKAGED MAKE-UP AIR DOWN DISCHARGE	MINIMUM 3 COOLER PADS AND WATER PUMP	5,400	0.75"	5 HP @ 460V/3Ø/60HZ	BY CAPTIVEAIRE MODEL: A3-D.500-G18-MPU WT. 2136 LBS

* FOR MAKE-UP AIR UNIT POSITION CONTROL, SEE CAPTIVE AIRE CONTROL DIAGRAM ON M-4.2.

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	ACTUAL AIR DENSITY?	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
3	YES	342,313	314,928	54 DEG F	7 in. w.c. - 14 in. w.c.	NATURAL

CONDENSER DETAILS

FAN UNIT NO.	FAN UNIT MODEL #	CONDENSER NO.	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX. FUSE SIZE	MIN. WIRE SIZE	SEER
3	A3-D.500-G18-MPU	1	5	460	3 PHASE	60 Hz	10.5 Amps	8.5 Amps	15 Amps	14 AWG	14
		2	5	460	3 PHASE	60 Hz	10.5 Amps	8.5 Amps	15 Amps	14 AWG	14

DIFFUSER & GRILLE SCHEDULE

DESIGNATION	MANUFACTURER	MODEL NO	TYPE	COLOR	NOM NECK SIZE	NOM FACE SIZE	FRAME TYPE	NC MAX	REMARKS
A	PRICE	PDMC3-R6	PERFORATED MODULAR CORE	B-12 WHITE	14"Ø	24" x 24"	LAY-IN T-BAR	< 30	ROUND NECK BUTTERFLY VOLUME DAMPER
B	PRICE	PDMC3-AFI	PERFORATED MODULAR CORE	B-12 WHITE	12"Ø	16" x 16"	SURFACE	< 30	ROUND NECK BUTTERFLY VOLUME DAMPER
C	PRICE	PDMC3-AFI	PERFORATED MODULAR CORE	B-12 WHITE	9"x9"	12" x 12"	SURFACE	< 30	SQ. TO RD. DUCT ADAPTER FOR DIA. AS SHOWN, OPPOSED BLADE DAMPER
D	PRICE	PDDR3	PERFORATED RETURN	B-12 WHITE	22"X22"	24" x 24"	LAY-IN T-BAR	< 35	
E	PRICE	PDDR3-AFI	PERFORATED RETURN	B-12 WHITE	10" DIA.	12" x 12"	SURFACE		WITH VOLUME CONTROLLER
F	PRICE	PDDR3	PERFORATED RETURN	PA-28 BRONZE	22"X22"	24" x 24"	LAY-IN T-BAR	< 35	
G	PRICE	AS210	LINEAR SLOT	B-12 WHITE	2@6" OVAL	1 SLOT	SURFACE	< 35	SEE PLAN FOR LENGTH, PROVIDE WITH FACTORY PLENUM
H	PRICE	PDMC3-R6	PERFORATED MODULAR CORE	PA-28 BRONZE	14" X 14"	24" x 24"	LAY-IN T-BAR	< 30	SQ. TO RD. DUCT ADAPTER FOR DIA. AS SHOWN
J	PRICE	PDMC3-AFI	PERFORATED MODULAR CORE	B-12 WHITE	8"Ø	12" x 12"	LAY-IN T-BAR	< 30	OPPOSED BLADE DAMPER

NOTE: PROVIDE FACTORY INSTALLED BACK PAN INSULATION ON AIR DEVICES.
HVAC CONTRACTOR IS TO PURCHASE ALL AIR DEVICES FROM PANDA APPROVED NATIONAL ACCOUNT VENDOR THERMAIR SYSTEMS INC.
PLEASE CONTACT RON CAMPTON AT 602-705-5010 OR EMAIL ronc@thermairsystems.com

OSA VENTILATION CALCULATION

AREA TYPE	TOTAL AREA (FT2)	OCCUPANCY DENSITY (PEOPLE/FT2)	TOTAL OCCUPANTS	OSA REQ.'D PER SQ.FT. (CFM)	OSA REQ.'D PER PERSON (CFM)	OSA REQ.'D FOR THIS OCCUPANCY CLASSIFICATION (CFM)
STORAGE	105	-	-	0.15	-	16
KITCHEN	963	20/1,000	20	0.15	15	300
		70/1,000				

TOTAL OSA REQUIRED FOR THIS TENANT (CFM)	316
TOTAL OSA PROVIDED (CFM)	500

* VENTILATION SHALL BE BALANCED BY AN APPROVED METHOD. A BALANCE REPORT SHALL VERIFY THAT THE VENTILATION SYSTEM IS CAPABLE OF SUPPLYING THE AIRFLOW RATES REQUIRED BY SECTION 403. SAID REPORT MUST BE PRESENTED TO THE ADMINISTRATIVE AUTHORITY.

AIR BALANCE SCHEDULE

ITEM	SUPPLY AIR	RETURN AIR	MAKE-UP AIR	EXHAUST
MA-1	0	0	+5,400	0
EF-1, EF-2	0	0	0	-3,375 x 2
AC-1	+3,000	-2,325	675	0
MAKE-AIR FROM COMMON AREA (10% OF EXHAUST AIR)			675	0
TOTAL	+3,000	-2,325	+7,520	-6,750

BUILDING PRESSURE = 0 CFM

BALANCE TOLERANCES AS FOLLOWS:
KITCHEN EXHAUST HOODS: 0% TO +10%
OUTDOOR AIR: 0% TO +10%
SUPPLY & RETURN DIFFUSERS: ±10%
TOILET EXHAUST: ±10%
BALANCE RTU SUPPLY AND RETURN PRIOR TO TURNING ON EXHAUST FANS.
KITCHEN EXHAUST FANS SHALL BE BALANCED WITH A 4" ANEMOMETER

NOTES:

1. KITCHEN EXHAUST FANS SHALL BE ELECTRICALLY INTERLOCKED WITH MAKE-UP AIR UNIT AND ROOFTOP UNITS.
2. FOR WIRING DIAGRAM 5/M-501

MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	ABV	ABOVE
	AFF	ABOVE FINISHED FLOOR
	CLG	CEILING
	DN	DOWN
		DUCT SECTIONS (SUPPLY, EXHAUST, RETURN)
		FLEXIBLE DUCT
	MVD	MANUAL VOLUME DAMPER
	OBD	OPPOSED BLADE DAMPER
	MFR	MANUFACTURER
	MIN	MINIMUM
	OSA	OUTSIDE AIR
		ROUND RIGID DUCTWORK
	TSP	TOTAL STATIC PRESSURE
		TURNING VANES
1		CONSTRUCTION NOTES
EF 1		MECHANICAL EQUIPMENT DESIGNATION
S		SMOKE DETECTOR
T1		THERMOSTAT / UNIT
R1		REMOTE SENIOR / UNIT

STATE OF MARYLAND
DONALD J. PENN
No. 22242
PROFESSIONAL ENGINEER

6/19/17

CONSTRUCTION SET - 2017/07/30

PANDA EXPRESS CHINESE KITCHEN

PANDA RESTAURANT GROUP INC.
1683 Walnut Grove Ave.
Rosemead, California
91770
Telephone: 626.799.9898
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REVISIONS:

ISSUE DATE:
1 100% SUBMITTAL

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Professional Certification

I hereby certify that these documents were prepared and approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License number 22242, Expiration Date: 02/03/19

PANDA EXPRESS

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MECHANICAL NOTES
SPECIFICATIONS & SCHEDULES