HVAC SEQUENCE OF OPERATIONS

M.C. SHALL SET THERMOSTAT 'OCCUPIED' AND 'UNOCCUPIED' MODES TO OWNER'S OPERATION SCHEDULE. EVAPORATOR FANS SHALL BE SET TO "ON" UNDER NORMAL CONDITIONS. RTU-1, WHEN ACTIVATED BY THE "OCCUPIED" SWITCH (INTERIOR OVERRIDE SWITCH) LOCATED ON THE CONTROL PANEL, SHALL FORCE EVAPORATOR FANS TO RUN.

NORMAL OPERATION (OCCUPIED):
EF-1; EVAPORATOR FANS, AND ECONOMIZERS (IF APPLICABLE) ON RTU-1 SHALL OPERATE CONTINUOUSLY UPON ACTIVATION OF THE "OCCUPIED" SWITCH. NORMALLY OPEN CONTACTS FOR THIS ARE INCLUDED INTERNALLY IN THE CONTROL BOX. SEE DETAILS THIS SHEET AND SHEET E6.0.

THE TEMPERATURE SCHEDULE SET POINTS SHALL BE SPECIFIC FOR EACH RTU AND SHALL BE FIELD ADJUSTABLE.
SPACE TEMPERATURE SET POINTS: RTU-1: 73°F COOLING, 68°F HEATING

SPACE HUMIDITY SET POINTS: RTU-1: 50% RH

EF-2 SHALL BE CONTROLLED BY THE DINING ROOM LIGHTING CIRCUIT.

EVAPORATOR FANS, AND ECONOMIZERS (IF APPLICABLE) ON RTU-2 SHALL BE SET TO OWNER'S OPERATION SCHEDULE.

THE TEMPERATURE SCHEDULE SET POINTS SHALL BE SPECIFIC FOR EACH RTU AND SHALL BE FIELD ADJUSTABLE.
SPACE TEMPERATURE SET POINTS: RTU-2: 73°F COOLING, 68°F HEATING

SPACE HUMIDITY SET POINTS: RTU-2: 50% RH

ALL RTU'S COOLING/HEATING SWITCH/OVER SHALL BE AUTOMATIC BASED ON THE SPACE DEMAND. EVAPORATOR FANS SHALL BE SET TO RUN CONTINUOUSLY(ON) DURING "OCCUPIED" PERIODS. OUTSIDE AIR INTAKE ON ECONOMIZERS OR DAMPERS SHALL BE IN MINIMUM OPEN POSITION TO DELIVER CFM'S INDICATED IN AIR BALANCE SCHEDULE ON SHEET M1.0 OR SHALL FOLLOW THE ECONOMIZER OPERATION DESCRIBED BELOW.

UPON DEACTIVATION OF THE "OCCUPIED" SWITCH THE KITCHEN AND DINING ROOM LIGHTS, EF-1 AND EF-2, EVAPORATOR FANS AND ECONOMIZERS ON RTU-1 AND RTU-2 SHALL START TIME DELAYED OFF (SUBJECT TO HOODSTAT AND/OR ZONESENSOR OVERRIDE).

ECONOMIZER OPERATION (IF APPLICABLE)
THE RTU'S EQUIPPED WITH ECONOMIZERS (SEE UNITS SCHEDULE ON SHEET M1.0) SHALL UTILIZE "FREE COOLING" AS THE FIRST STAGE OF COOLING. WHEN OUTDOOR AIR ENTHALPY IS LOWER THAN THE MIXED AIR ENTHALPY, OUTSIDE AIR INTAKE DAMPERS SHALL MODULATE FROM MIN. TO MAX. OPEN POSITION AND SPACE RETURN AIR DAMPERS SHALL MODULATE FROM MAX. TO MIN. RELIEF DAMPERS SHALL BE CONTROLLED RESPECTIVELY VIA INTEGRAL RTU CONTROL. IF THE OUTSIDE AIR ALONE CANNOT SATISFY THE SPACE COOLING DEMAND, THE COMPRESSORS SHALL BE ENERGIZED IN STAGES. WHEN OUTDOOR AIR ENTHALPY IS HIGHER THAN MIXED AIR ENTHALPY, OR WHEN THE LOW LIMIT SENSOR LOCATED IN DISCHARGE AIR REACHES ITS SET POINT (55°F -ADJ.), THEN OUTDOOR AIR AND RETURN AIR DAMPERS SHALL BE SET TO DELIVER MINIMUM O.A. CFM'S INDICATED IN THE AIR BALANCE SCHEDULE.

NIGHT SETBACK OPERATION (UNOCCUPIED)
SPACE TEMPERATURE SET POINTS: RTU-1 AND RTU-2: 85°F COOLING, 60°F HEATING.

ALL RTU'S EVAPORATOR FANS, COMPRESSORS AND HEATER SHALL RUN ON DEMAND ONLY.(AUTO) ANY MOTORIZED OUTSIDE AIR DAMPERS SHALL BE IN CLOSED POSITION. M.C. SHALL VERIFY REQUIREMENT FOR AUTOMATIC SETBACK CONTROL WITH LOCAL AUTHORITIES AND COORDINATE WITH EQUIPMENT SUPPLIER.

FIRE PROTECTION GLOBAL SHUTDOWN:
IF LOCAL CODE OFFICIAL REQUIRES GLOBAL SHUTDOWN OF ALL RTU's UPON SMOKE DETECTION IN ANY RTU DUCTWORK, THE MECHANICAL CONTRACTOR SHALL PROVIDE A RELAY IN EACH RTU TIED TO THE STAND ALONE SMOKE ALARM SMOKE DETECTION SYSTEM TO SHUT DOWN ALL RTU's SIMULTANEOUSLY.

HOOD:
THE INTERIOR OVERRIDE SWITCH SHOULD BE TURNED ON BY THE MANAGER UPON ARRIVAL. WHEN FINISHED FOR THE DAY, THE MANAGER SHOULD TURN THE INTERIOR OVERRIDE SWITCH OFF AND TIME DELAYED OFF (SUBJECT TO HOODSTAT AND/OR ZONESENSOR OVERRIDE) COMMENCES.

AUTOMATIC BACK-UP OPERATION: WHEN THE HOOD TEMPERATURES ARE GREATER THAN 15 DEGREES ABOVE THE ROOM TEMPERATURE (AS MEASURED BY DUCT STAT IN HOOD RISER AND COMPARED TO BASE ROOM SENSOR TEMPERATURE), ALL FAN LIGHTS WILL BE FORCED ON IF NOT PREVIOUSLY ON BY OTHER MEANS (SWITCH).

FAN/LIGHTS WILL REMAIN ON AS LONG AS EITHER OF THE FOLLOWING CONDITIONS EXIST 1) "OCCUPIED" SWITCH IS IN THE "ON" POSITION, OR 2) AUTOMATIC OPERATION I.E. HOOD TEMPERATURES ARE GREATER THAN 15 DEGREES ABOVE ROOM TEMPERATURE.

Installation, Start Up and Pre-Commissioning Checklist

= Responsible Party

Initial When Completed

Standard Unit	eFlex	Reference #	PROCESS	GC - General Contractor	EC - Electrical Contractor	MC-Mechanical Contractor	PC-Plumbing Contractor	AB-Air Balance Agency	Remarks	CA-Commissioning Agent Functional Verification (CA Contracted by Owner)
		1	**Package Units**							
X	X	2	Reference and abide to all instructions in manufacturers Installation, Startup, Operation and Maintenance literature							
X	X	3	Units are set level							
X	X	4	Unit and plenums align to each other							
X	X	5	Units and plenums are properly sealed to each other							
X	X	6	All loose shipped components are relocated and installed per manufacturers instructions							
X	X	7	a) economizer eyebrow, skirts and mist eliminator installed							
X	X	8	b) economizer dampers and linkage installed and operable							
X	X	9	c) economizer wiring connected and completed							
X	X	10	d) relief damper or power exhauster installed and operable							
X	X	11	e) smoke detectors and sample tubes relocated and installed per manufacturers instructions							
X	X	12	Utilities are installed and ON to the units							
X	X	13	a) power on and breakers sized to unit rating							
X	X	14	b) phases correct							
X	X	15	c) gas on							
X	X	16	d) gas gooseneck or pipe capacity meets or exceeds unit capacity							
X	X	17	e) condensate line is piped per plan							
X	X	18	f) condensate vent is on leaving side of trap							
	X	19	Discharge Temperature Limit potentiometer is set to the 9 o'clock position							
X	X	20	No thermostat, smoke detector, remote enunciator or any other wiring runs though the plenums							
X	X	21	Manufacturers start up procedure has been followed and all units evaporator fan operates through all fan stages per manufacturers							
X	X	22	Manufacturers start up procedure has been followed and all units cycle through all heating stages per manufacturers instructions							
X	X	23	Manufacturers start up procedure has been followed and all units cycle through all cooling stages per manufacturers instructions							
X	X	24	Manufacturers start up procedure has been followed and all units cycle through all economizer stages per manufacturers instructions							
		25								
		26								
		27								
		28	**Ductwork**							
X	X	29	All ductwork and registers are installed per plan							
X	X	30	All starters and or take offs are radiused per plan.							
X	X	31	Ductwork from the exhaust register over production line to EF-2 fan base is 100% rigid per plan							
X	X	32	Balance dampers are in sleeves on axles with locking quadrant, not located in any starter collars, "T"s or "Y"s and located per plan							
X	X	33	Balance damper handles are flagged to identify their location							
		34								
		35								
		36	**Economizer**							
X	X	37	All mechanical components related to the economizer have been installed							
X	X	38	"Blank off" plate under economizer eyebrow has been installed							
X	X	39	Barometric relief damper operates freely							
X	X	40	Input sensors for the Economizer have been properly located and connected to the Economizer							
X	X	41	Economizer has been tested to perform "Free" cooling when ambient conditions are below 55 degrees							
X	X	42	Mechanical cooling stages on when Economizer cooling is not available							
X	X	43	Mechanical cooling stages on with the Economizer cooling when							
X	X	44	Economizer damper positions to minimum damper position when set							
		45								
		46								
		47	**Smoke Detectors**							
X	X	48	Smoke detector option has been included in package unit							
X	X	49	Return side smoke detector has been relocated from its shipping position to the factory provided installation location in the return section of the package unit							
X	X	50	All smoke detector sample tubes are properly located per manufacturers design							
X	X	51	The return smoke detector in each unit has been tested for unit shutdown							
X	X	52	The supply smoke detector in each unit has been tested for unit shutdown							
		53								
		54	**Remote Smoke Detector Enunciators and Resets**							
X	X	55	A remote smoke detector enunciator and reset has been installed in the managers office for each package unit							
X	X	56	RTU 1 return side smoke detector alarm sets off the visual and audible							
X	X	57	After triggering RTU 1 return side smoke detector alarm, resetting the remote smoke detector reset for RTU 1 returns RTU 1 to normal operation							
X	X	58	RTU 1 return side smoke detector alarm sets off the visual and audible remote enunciator alarms and shuts down RTU 1							
X	X	59	After triggering RTU 1 return side smoke detector alarm, resetting the remote smoke detector reset for RTU 1 returns RTU 1 to normal operation							
X	X	60	RTU 2 return side smoke detector alarm sets off the visual and audible remote enunciator alarms and shuts down RTU 2							
X	X	61	After triggering RTU 2 return side smoke detector alarm, resetting the remote smoke detector reset for RTU 2 returns RTU 2 to normal operation							
X	X	62	RTU 2 return side smoke detector alarm sets off the visual and audible remote enunciator alarms and shuts down RTU 2							
X	X	63	After triggering RTU 2 return side smoke detector alarm, resetting the remote smoke detector reset for RTU 2 returns RTU 2 to normal operation							
		64								
		65								
		66								
		67								
		68								

Installation, Start Up and Pre-Commissioning Checklist

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Initial When Completed

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		69	**Zonesensor**							
	X	70	Baysens 135 Zonesensor is installed							
	X	71	Zonesensor to unit wiring is landed on proper terminals per detail							
	X	72	Remote sensor wiring is landed on proper terminals (8 and 9) of Zonesensor per detail							
	X	73	Jumper on back of Zonesensor is configured for remote sensor							
	X	74	Zonesensor is set up for eFlex operation							
	X	75	a)Fahrenheit selected							
	X	76	b)Whole degrees selected							
	X	77	c) Dual Setpoint selected							
	X	78	d)Heat/Cool/Auto/Off selected							
	X	79	e)Occupancy (Timed Override) Disabled							
	X	80	Zonesensor is programmed to Taco Bell parameters							
		81								
		82	**Thermostat**							
X		83	Thermostats are wired to package units per thermostat and unit wiring diagrams							
X		84	Package units equiped with two stage cooling have each cooling stage individualy wired and controled from their thermostat.							
X		85	Package units equiped with two stage heating have each heating stage individualy wired and controled from their thermostat.							
X		86	Thermostats are wired to Interlock Control Box per Detail on plan sheet E-6							
X		87	Thermostats are programmed to Taco Bell parameters							
		88	**Hoodstat**							
X	X	89	Hoodstat has been installed in duct or hood per plan							
X	X	90	Hoodstat is wired to terminals 1 and 2 of the Interlock Control Box							
X	X	91	Hoodstat microswitch closes at 85 degrees							
		92								
		93								
		94	**Interlock**							
X	X	95	Unswitched power is provided to H=HOT and N=Neutral terminals in the Control Box							
X	X	96	Hoodstat wires are landed on terminals 1 and 2 of the Control Box							
X	X	97	Terminal 16 of Control Box is wired to terminal 11 of RTU 1 RTRM (J6)							
X	X	98	Terminal 17 of Control Box is wired to terminal 12 of RTU 1 RTRM (J6)							
X	X	99	Terminal 19 of Control Box is wired to terminal 11 of RTU 2 RTRM (J6)							
X	X	100	Terminal 20 of Control Box is wired to terminal 12 of RTU 2 RTRM (J6)							
X	X	101	"Occupied" switch is installed so that it is "Hot" when switch is in "Unoccupied or OFF" position and landed on terminal 7 of the Control Box							
X	X	102	"Occupied" switch in "ON" position activates Kitchen Lights, EF-1, RTU 1 and							
X	X	103	"Occupied" switch in "OFF" position turns off Kitchen Lights, Dining Room lights, EF-2 and starts time delayed off of EF-1 and RTU 1 &2 evaporator fans (subject to Hoodstat and or Zonesensor override)							
		104								
		105								
		106								
		107	**Ansul Shutdown**							
X	X	108	Metal jumper clip on EPO terminals 5 and 6 of RTU 2 LTB 1 has been removed							
X	X	109	Terminals 5 and 6 of RTU 2 LTB 1 are wired to "Closed when Cocked"							
X	X	110	Upon activation of the fire suppression system discharge (microswitch opens) RTU 2 immediately shuts off							
		111								
		112								
		113								
		114	**Lighting**							
X	X	115	A 3 way switch, installed as a single switch and open in the UP throw position, has been installed as an "Occupied" switch in the managers office							
X	X	116	Up position of "Occupied" switch activates kitchen lighting via Control Box							
X	X	117	Up position of "Occupied" switch provides power, via the Control Box, to the Dining Room light switch in the managers office							
X	X	118	Photocell is wired to the Greengate Box per detail							
X	X	119	Exterior lights are wired to the Greengate Box per detail							
X	X	120	Sign lights are wired to the Greengate Box per detail							
X	X	121	Greengate Box is programmed to Taco Bell parameters							
X	X	122	Manual override of Greengate box activates lighting circuits							
		123								
		124								
		125								
		126								
		127	**Air Balance Supplement**							
X	X	128	Balancing performed in accordance to ASHRAE Standard 111-2008, NEBB, TABB or AABC standards							
X	X	129	Perform full fan speed adjustments after exhaust fan adjustments and supply air distribution adjustments have been made							
X	X	130	Perform outside air adjustment after all other balance adjustments are complete							
X	X	131	Perform outside air adjustment at full evaporator fan speed operating point							
	X	132	Perform outside air adjustment at medium fan speed operating point							
	X	133	Perform outside air adjustment at low fan speed operating point							
X	X	134	Verify lobby doors closures have been adjusted for ADA compliance							
X	X	135	Verify lobby doors closure operation during full economizer function of both package units and note result in air balance report							
X	X	136	Verify pressure relief system operation in full economizer operation							
X	X	137	Adjust power exhauster "ON" and "OFF" positions to mitigate door closure issues. Note if no power exhauster is available.							
X	X	138	Provide copy of air balance report to Commissioning Agent							
		139								
		140								
		141								
		142								

PROJECT # 22204

national restaurant designers
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A Division of LMHT Associates

5.19.22

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 38897
MICHAEL JOSEPH MORGAN JR.

SOUTH CAROLINA
LMHT ASSOCIATES,PA
No. C02215
CERTIFICATE OF AUTHORIZATION

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CONTRACT DATE: XXXXX
BUILDING TYPE: XXXXX
PLAN VERSION: XXXXX
SITE NUMBER: 315669
STORE NUMBER: XXXXX

TACO BELL

SPEARS CREEK CHURCH RD.
ELGIN, SC 29045

TACO BELL

ENDEAVOR 2.0

INSTALLATION START-UP PRE-COMM CHECK LIST

M5.0