

SEQUENCE OF OPERATION	KEYED NOTES:
<p>A. PROVIDE STAND ALONE OR APPLICATION SPECIFIC CONTROLLERS AS REQUIRED TO PERFORM THE FOLLOWING SEQUENCES OF OPERATIONS.</p> <p>B. PACKAGED ROOFTOP UNITS</p> <ol style="list-style-type: none"> UNIT SHALL CONSIST OF SUPPLY AIR FAN, FILTERS, DX COOLING COIL, GAS-FIRED HEAT SECTION, AND A 1-DAY PROGRAMMABLE THERMOSTAT. PROVIDE AN OVERRIDE SWITCH TO OPERATE THE UNIT DURING UNOCCUPIED HOURS. THIS SWITCH SHALL BE PART OF THE PROGRAMMABLE THERMOSTAT. OVERRIDE SWITCH ALLOWS THE UNIT TO OPERATE FOR TWO HOURS (ADJUSTABLE). OCCUPIED MODE: BASED ON THE ROOFTOP UNITS HOURS OF OCCUPANCY, START THE UNIT AT THE BEGINNING OF OCCUPANCY AND SHUT DOWN THE UNIT AT THE END OF OCCUPANCY (NOTE: OUTSIDE AIR DAMPER WITHIN THE RTU SHALL OPEN AND THEN THE RTU SHALL START). THE UNIT SHALL START EARLIER AS DETERMINED BY THE PROGRAM FOR EARLY WARM-UP OR COOL DOWN. ON A SYSTEM STARTUP, THE RTU FAN SHALL START AND RUN CONTINUOUSLY AND THE INTERNAL FACTORY CONTROLS SHALL BE ENABLED. BASED ON THE SPACE TEMPERATURE SENSOR, THE UNIT SHALL CYCLE THE HEATING/COOLING TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. ECONOMIZER MODE: WHEN ENTHALPHY OF OA IS BELOW 28 BTU/LB, ECONOMIZER MODE SHALL BE ENABLED. ECONOMIZER MODE SHALL LINEARLY MODULATE OUTDOOR AIR CFM FROM MINIMUM OA CFM TO 100% BASED ON ENTHALPHY READINGS. UNOCCUPIED MODE: THE RTU INTERNAL OA DAMPERS SHALL REMAINED CLOSED WHEN THE BUILDING IS NOT OCCUPIED. THE RTU SHALL STOP HEATING/COOLING AND THE FAN SHALL STOP. IF THE SPACE TEMPERATURE FALLS BELOW 60 DEGREE F (ADJUSTABLE) THE UNIT SHALL START AND HEAT UNTIL THE SPACE TEMPERATURE IS 64 DEGREE F (ADJUSTABLE) AND THEN SHUTDOWN. IF THE SPACE TEMPERATURE RISES ABOVE 95 DEGREE F (ADJUSTABLE) THE UNIT SHALL START AND COOL UNTIL THE SPACE TEMPERATURE IS 80 DEGREE F (ADJUSTABLE) AND THEN SHUTDOWN. UPON DETECTION OF SMOKE BY UNIT SMOKE DETECTOR THE RTU SHALL SHUT DOWN AND AN ALARM SHALL BE SENT TO THE RESPECTIVE LOCAL REMOTE ANNUNCIATORS. <p>C. KITCHEN HOOD EXHAUST FAN (HEF-1)</p> <ol style="list-style-type: none"> THE KITCHEN HOOD EXHAUST FAN SHALL BE ENABLED WHEN ANY COOKING APPLIANCE LOCATED UNDER THE HOOD IS IN USE. <p>D. (2HEF-1)</p> <ol style="list-style-type: none"> EXHAUST FANS SHALL BE WIRED TO INDEPENDENT LIGHT SWITCH. <p>E. ANSUL SYSTEM ACTIVATION</p> <ol style="list-style-type: none"> UPON ACTIVATION OF ANSUL SYSTEM, SHUT DOWN RTU-1 AND RTU-2. PROVIDE RELAYS, CONTACTS, INTERLOCKS, TRANSFORMERS AND ALL ASSOCIATED WIRING TO ACCOMPLISH SEQUENCE. MECHANICAL CONTRACTOR SHALL INTERLOCK RTU-1 AND RTU-2 TO ALSO SHUT DOWN. 	<p>1. UP TO HEF-1 ON ROOF. SEE SHEET M2 FOR CONTINUATION.</p> <p>2. INSTALL LED TOUCHSCREEN (WITH CONTROLS LOCKED BY CODE) 24" PROGRAMMABLE THERMOSTAT MOUNTED AT 48" AFF. COORDINATE EXACT LOCATION WITH OWNER.</p> <p>3. UP TO/DOWN FROM RTU ON ROOF. SEE SHEET M2 FOR CONTINUATION.</p> <p>4. REMOTE TEMPERATURE SENSOR MOUNTED IN RETURN AIR DUCT FOR RTU-1. WIRE BACK TO THERMOSTAT IN OFFICE.</p> <p>5. REMOTE TEMPERATURE SENSOR MOUNTED IN RETURN AIR DUCT FOR RTU-2. WIRE BACK TO THERMOSTAT IN OFFICE.</p> <p>6. PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET FOR RTU-1 SMOKE DETECTOR MOUNTED AT 48" AFF.</p> <p>7. PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET FOR RTU-2 SMOKE DETECTOR MOUNTED AT 48" AFF.</p> <p>8. PROVIDE TYPE I KITCHEN EXHAUST DUCTWORK FROM KITCHEN EXHAUST HOOD TO HEF-1 ON ROOF. DUCTWORK TO BE A MINIMUM 16 GAGE CARBON STEEL WITH CONTINUOUSLY WELDED LIQUID TIGHT SEAMS. PROVIDE GREASE RESERVOIR AS REQUIRED BY IMC 506.3.1 AND DUCT CLEANOUTS AS REQUIRED BY IMC 506.3.2. DUCTWORK SHALL BE INSULATED WITH 2-HOUR FLEXIBLE BLANKET TYPE FIRE WRAP WITH A FLAME SPREAD INDEX AT NOT MORE THAN 5 AND A SMOKE DEVELOPED INDEX NOT EXCEEDING 5. WHEN TESTED PER ASTM E-84 METHOD WRAP SHALL COMPLY WITH ALL 5 FIRE TESTS OF STANDARD ASTM E-2236. GREASE DUCT ENCLOSURE SYSTEM, AND DUCT FIRESTOP SYSTEM BE ASTM E-814 CLASSIFIED. FABRICATED DUCT WRAP ENCLOSURE WITH 2 LAYERS OF WRAP TO PROVIDE 2-HOUR FIRE RATING. ALL DUCT ELBOWS ARE TO BE RADIUS ELBOWS.</p> <p>9. AVOID ROUTING DUCTWORK ABOVE MARKED DINING ROOM SCOFF AREA.</p> <p>10. PROVIDE CLEAR PLASTIC INSERT TO BLANK OFF DIFFUSER THROW AT THE EXHAUST HOOD AS SHOWN.</p> <p>11. PROVIDE SURFACE MOUNT FRAME FOR INSTALLATION IN GYP CEILING.</p>

GENERAL NOTES:
<p>A. ALL WORK TO BE PERFORMED TO MEET ALL STATE, CITY & LOCAL CODE REQUIREMENTS.</p> <p>B. ALL DUCTWORK TO BE CONSTRUCTED OF GALVANIZED METAL ACCORDING TO SMACNA STANDARDS.</p> <p>C. ALL WALL PATCHING TO BE BY THE GENERAL CONTRACTOR.</p> <p>D. HVAC CONTRACTOR IS TO COORDINATE WITH OTHER TRADES BEFORE INSTALLING DUCTWORK. IF THE HVAC CONTRACTOR FAILS TO COORDINATE WITH OTHER TRADES AND THE WORK MUST BE ALTERED THE HVAC CONTRACTOR WILL CHANGE IT AT HIS OWN EXPENSE.</p> <p>E. ONCE THE SYSTEM IS COMPLETE AND ALL CEILING TILES ARE INSTALLED THE SYSTEM FILTER SHALL BE CHANGED AND THE AIR SIDE SHALL BE BALANCED. SUBMIT ELECTRONIC COPY OF BALANCE REPORT TO ENGINEER FOR REVIEW.</p> <p>F. COORDINATE THE EXACT LOCATION OF ALL GRILLES, REGISTERS & DIFFUSER WITH ARCHITECTURAL REFLECTED CEILING PLAN. ALSO COORDINATE MOUNTING HEIGHTS OF FIXTURES.</p> <p>G. HVAC CONTRACTOR IS TO VISIT THE SITE PRIOR TO SUBMITTING A BID & INCLUDE IN THE BID ANY ITEMS NECESSARY FOR A COMPLETE & OPERATIONAL SYSTEM.</p> <p>H. PROVIDE TURNING VANES AT ALL 90° CHANGE IN DIRECTION.</p> <p>I. DRAWINGS ARE SCHEMATIC IN NATURE & HVAC CONTRACTOR IS TO INCLUDE ANY ITEMS REQUIRED FOR A COMPLETE & OPERATIONAL SYSTEM WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.</p> <p>J. HVAC CONTRACTOR TO FURNISH ALL PERMITS REQUIRED FOR HIS PORTION OF THE WORK.</p> <p>K. HVAC CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR CONCERNING ELECTRICAL REQUIREMENTS BEFORE ORDERING ANY EQUIPMENT.</p>

ROOFTOP UNIT SCHEDULE		RTU-1	RTU-2
MANUFACTURER	-	LENNOX	LENNOX
MODEL	-	LGH20H4BH	LGH20S4HB
SUPPLY	CFM	4000	3000
OUTSIDE AIR	CFM	750	700
ENTERING AIR	DB/WB	80/61	80/61
LEAVING AIR	DB/WB	56.8/56.1	56.2/55.6
CAPACITY	TONS	15	15
GRASS COOLING	MBH	172,000	93,000
NET COOLING	MBH	118,000	90,000
EXT. SP.	IN. H ₂ O	1.0"	1.0"
GAS HEAT INPUT	BTU	240,000	130,000
GAS HEAT OUTPUT	BTU	193,000	104,000
EVAPORATOR FAN	HP/FLA	3.0 - 10.6	3.0 - 10.6
COMPRESSOR	NO./FLA	2 - 13.5	2 - 11.6
CONDENSING FAN	NO./FLA	2 - 2.4	2 - 2.4
ELECTRICAL DATA	V/A	200/230V, 3P.	200/230V, 3P.
MCA	AMPS	46	42
FUSE/MOCP	-	50	50
EFFICIENCY	SEER/SEER	-/12.0	-/12.5
WEIGHT	LBS.	1300	1300
NOTES	PER BELOW	1-8	1-8

FAN SCHEDULE										
MARK	MANUFACTURER	MODEL	CFM	RPM	SONES	G.P.	WATTS	VOLTS	PH.	NOTES
EF-1	COOK-GEPI	GC-220	1020	1020	1.1	1.25	3.9	120V.	1	1-4
HEF-1	CAPTIVE AIR	DUB61FA	1200	1420	14.6	1.75	5.1	115V.	1	12.5.6

NOTES:
 1. PROVIDE BACKDRAFT DAMPER.
 2. FACTORY PLUG DISCONNECT.
 3. EXTEND TO DISCHARGE POINT AS SHOWN ON THIS SHEET.
 4. FAN SHALL BE CONTROLLED BY ROOM LIGHT SWITCH.
 5. PROVIDE FACTORY 12" HIGH CURB.
 6. FAN SHALL BE CONTROLLED BY HEAT SENSOR IN HOOD.

AIR DISTRIBUTION SCHEDULE									
MARK	MANUFACTURER	MODEL	SIZE	CFM	NECK	LOCATION	MATERIAL	NOTES	
A	EGER	EAS34	24 X 24	SEE PLAN	SEE PLAN	CEILING	PLASTIC		
B	EGER	EFAR	24 X 24	SEE PLAN	SEE PLAN	CEILING	ALUMINUM		

PROVIDE PLASTER FRAME FOR ALL GRILLES IN GYP CEILING.

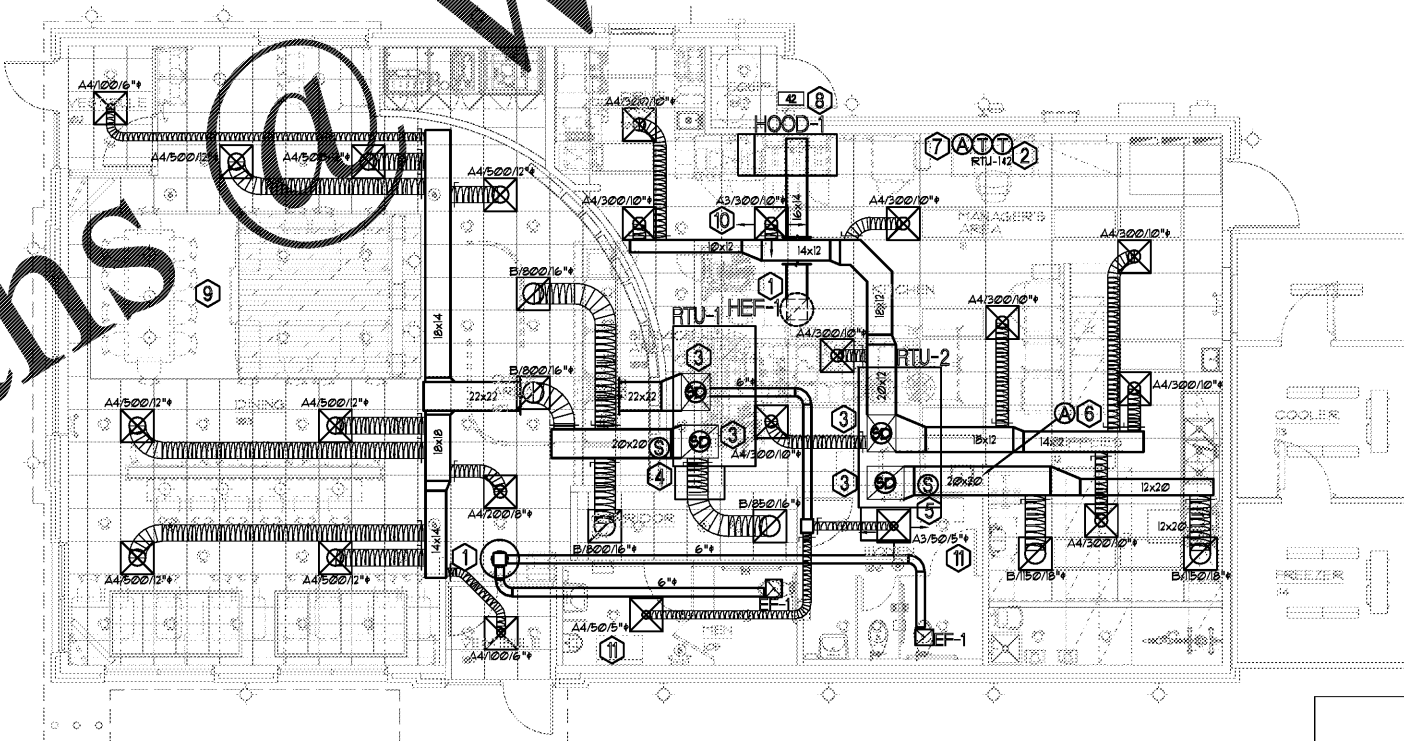
NOTES:
 1. PROVIDE MANUAL VOLUME DAMPER AT MAIN TRUNK FOR BALANCING.
 2. DIFFUSERS/GRILLES FINISH SHALL BE BEIGE IN COLOR IN THE DINING AREA AND RESTROOM AND WHITE IN ALL OTHER AREAS. FIELD VERIFY EXACT NECK SIZE PRIOR TO ORDER.

OUTSIDE AIR CALCULATION:	
(PER TABLE 403.3 FBC MECHANICAL 2014)	
RESTAURANT DINING ROOM OCCUPANCY:	
NET OCCUPIABLE SPACE = 1125 SQ. FT.	
TOTAL PERSONS X 15 x .18 x NET SQ. FT. = REQ'D CFM.	
1125 x 15 = 16875 CFM	
CUSTOMER SEATING: 60 PERSONS	
STAFF: 6 PERSONS	
TOTAL PERSONS X 15 x .18 x NET SQ. FT. = REQ'D CFM	
(66 x 15) x (.18 x 1125) = 693.9 CFM REQUIRED	
OUTSIDE AIR PROVIDED:	
RTU-1 - 750 CFM	
RTU-2 - 700 CFM	
TOTAL: 1450 CFM - IN COMPLIANCE	

HVAC GENERAL NOTES	
1. DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. VERIFY ALL DIMENSIONS AND LOCATIONS PRIOR TO FABRICATION OR INSTALLATION. ALL ANGULAR/SQUARE DUCTWORK SHALL BE FINEST QUALITY GALVANIZED SHEET STEEL WITH 2 3/4 LB. DENSITY FOIL FACED EXTERIOR INSULATION WITH AN R-VALUE OF 6.0. COORDINATE WITH ARCHITECTURE PRIOR TO INSTALLATION. ALL DUCT SHALL BE CONSTRUCTED AND INSTALLED PER SMACNA REQUIREMENTS.	
2. FLEXIBLE DUCT CONNECTIONS SHALL BE CLASS ONE TYPE. PROVIDE TAB COLLARS AT MAIN DUCT WITH MANUAL VOLUME DAMPER WITH LOCKING QUADRANT.	
3. AN IONIZATION PRINCIPLE SMOKE DETECTOR SHALL BE INSTALLED IN THE SUPPLY & RETURN DUCTWORK OF ALL RTU'S AND PROVIDED BY LENNOX WITHIN UNIT. THE DETECTOR SHALL BE WIRED TO APPLICABLE FIRE ALARM SYSTEM BY THE FIRE ALARM CONTRACTOR. PROVIDE LED AND HORN ALARM STATIONS (DUCT SMOKE DETECTOR'S REMOTE TEST SWITCH) LOCATED IN NORMALLY OCCUPIED AREA MOUNTED AT 48" AFF. ALL ROOF AND WALL PENETRATIONS SHALL BE SEALED BY THE GENERAL CONTRACTOR.	
5. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL PLANS PRIOR TO BID TO VERIFY EXISTING CLEARANCES FOR DUCT. COORDINATE WITH THE GENERAL CONTRACTOR PRIOR TO TRUSS ORDER AND AS STRUCTURE IS BEING CONSTRUCTED TO ASSURE ALL CLEARANCES FOR DUCTWORK ARE COORDINATED.	
6. DEVIATION FROM MATERIALS, METHODS, OR PROCEDURES SET FORTH HEREIN MUST BE APPROVED, IN WRITING, BY ENGINEER PRIOR TO SUBMISSION OF BID, ORDER, FABRICATION OR INSTALLATION.	
7. ANY AND ALL QUESTIONS AS TO THE INTENT OF OR PROCEDURES SET FORTH IN THESE DRAWINGS MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO SUBMISSION OF A BID. LACK OF KNOWLEDGE OR UNDERSTANDING OF THE PLANS SHALL NOT JUSTIFY ANY CLAIMS OR ADDITIONAL COMPENSATION.	
8. INSTALLATION SHALL COMPLY WITH 2014 IMC AND ALL APPLICABLE LAWS, CODES AND ORDINANCES.	
9. THE HVAC CONTRACTOR SHALL COORDINATE ALL EQUIPMENT, DUCT, PIPING, LOUVERS, DIFFUSERS, ETC. INCLUDING LOCATIONS AND CLEARANCES, WITH ALL OTHER TRADES ON PROJECT IN PRE-CONSTRUCTION MEETING, PRIOR TO ANY ORDER, FABRICATION OR INSTALLATION.	
10. COORDINATE WITH ELECTRICAL CONTRACTOR AND EQUIPMENT NATIONAL ACCOUNTS ON ALL ELECTRICAL DATA PRIOR TO ORDER.	
11. SUPPLY DUCTWORK SHALL BE CONSTRUCTED, FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA REQUIREMENTS FOR A 1" POSITIVE PRESSURE CLASSIFICATION.	
12. RETURN AND EXHAUST DUCTWORK SHALL BE CONSTRUCTED, FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA REQUIREMENTS FOR A 1" NEGATIVE STATIC PRESSURE.	
13. ALL EXHAUST FAN DISCHARGES AND PLUMBING VENTS SHALL BE A MINIMUM OF 10'-0" FROM FRESH-AIR INTAKES. COORDINATE WITH PLUMBING PLANS PRIOR TO INSTALLATION.	
14. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL SYSTEMS TO WITHIN TEN PERCENT OF DESIGN VALUES SPECIFIED HEREIN.	
15. EXTEND CONDENSATE DRAIN LINES FROM RTUS TO ROOF DRAINS AND/OR DOWNSPOUTS WHICH DRAIN TO STORM SEWER.	
16. CONTROLS SHALL BE PER LENNOX NATIONAL ACCOUNTS. COORDINATE WITH LENNOX REPRESENTATIVE ON ALL NECESSARY CONTROLS PRIOR TO BID SUBMISSION.	
17. PROVIDE AUDIO/VISUAL REMOTE SMOKE DETECTOR ANNUNCIATOR WITH REMOTE KEY OPERATED RESET FOR SMOKE DETECTOR MOUNTED AT 54" AFF. FOR BOTH SYSTEMS.	

BUILDING AIR BALANCE SCHEDULE			
POSITIVE SOURCES:		NEGATIVE SOURCES:	
RTU-1	750 CFM	EF-1	100 CFM
RTU-2	700 CFM	HEF-1	1200 CFM
TOTAL:	1450 CFM	TOTAL:	1400 CFM
RESULTING TOTAL AIR BALANCE: 50 CFM POSITIVE			

HVAC LEGEND	
CEILING SUPPLY DIFFUSER	☒
CEILING RETURN	☑
CEILING EXHAUST FAN	☒
THERMOSTAT	Ⓣ
SENSOR	Ⓢ
SMOKE DETECTOR	Ⓢ
VOLUME DAMPER	☒
NEW RIGID DUCT	▬
CLASS I FLEXIBLE DUCT	▬



MECHANICAL PLAN
SCALE: 3/16" = 1'-0"

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REVISIONS	BY

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Case No. 18-000002
 New Building for
 ARBY'S
 Store #8149
 1058 Dunlawton Ave.
 Port Orange, Florida

Date: 08.24.18
 Project Mgr: DM
 Drawn: BMD
 Job: 18-082
 Sheet
M1