

HVAC GENERAL NOTES

- ALL CONTROL WIRING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 70. ALL WIRING SHALL BE CONCEALED.
- CONTRACTOR SHALL INSTALL ALL ROOF CURBS FOR ROOFTOP UNITS LEVEL TO HORIZON AT (4) CORNERS.
- AIR TEST AND BALANCE REQUIRED BY INDEPENDENT TAB CONTRACTOR AABC OR NEBB CERTIFIED. SEE TEST AND BALANCE SCOPE ON THIS SHEET.
- EXISTING SMOKE DETECTORS TO REMAIN AND BE REUSED.
- LENNOX START UP TECH SHALL PROGRAM THE PRODIGY[®] BOARDS IN ALL NEW RTU'S. CORE BOARDS SHALL BE PROGRAMMED PRIOR TO CSUBA RECOMMISSIONING THE EMS.
- CONTRACTOR SHALL PROVIDE CLEAN FILTERS IN ROOFTOP UNITS PRIOR TO AIR BALANCE AND AGAIN PRIOR TO OWNER ACCEPTANCE.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2018 INTERNATIONAL MECHANICAL CODE AND THE 2018 INTERNATIONAL FUEL GAS CODE WITH LOCAL AMENDMENTS. ALL EQUIPMENT AND MATERIALS CAPABLE OF BEING UL LABELED OR SHALL BEAR THE UL LABEL.
- CONTRACTOR SHALL PROVIDE A GASKET BETWEEN BASE OF ROOF MOUNTED FANS AND ROOF CURBS TO PROVIDE AN AIRTIGHT JOINT.
- PROVIDE MISCELLANEOUS STEEL AND/OR WOOD BLOCKING AND SUPPORT AT ROOF CURBS AND OPENINGS AS REQUIRED TO SUPPORT ROOF AND EQUIPMENT. SPECIFIC REQUIREMENTS SHALL BE VERIFIED WITH STRUCTURAL ENGINEER AND APPROVED EQUIPMENT DRAWINGS PRIOR TO PLACEMENT.
- NEW SUPPLY AND EXHAUST DUCT SHALL BE 2.0 IN PRESSURE CLASS.
- NEW DUCT SHALL HAVE PAINT GRIP FINISH AND BE EITHER GALVANNEALED OR MILL PHOSPHATIZED.
- ANY NEW SUPPLY DUCT SHALL BE INTERNALLY INSULATED WITH 1" DUCT LINER EQUAL TO OWNER'S CORNING ACQUITEK 13 LB DENSITY, R-3.9. NEW EXHAUST DUCT TO ERV'S IS NOT REQUIRED TO BE INSULATED.

PIPING GENERAL NOTES

- ANY NEW GAS PIPING SHALL BE ASTM A-100, SCHEDULE 40, BLACK STEEL WITH 150 LB. MALLEABLE IRON SCREWED FITTINGS.
- ANY NEW EXTERIOR GAS PIPE SHALL BE PAINTED WITH RUST PROHIBITIVE PAINT.

ROOFTOP UNIT NOTES

- CARMAX AUTO SUPERSTORE, LLC HAS A NATIONAL ACCOUNT WITH LENNOX INDUSTRIES, INC. FOR PRICING AND DELIVERY OF PACKAGED ROOFTOP UNITS IN ACCORDANCE WITH THE FOLLOWING: NO SUBSTITUTIONS WILL BE ALLOWED.
 - ROOFTOP UNITS SHALL BE AS SCHEDULED.
 THE ELECTRICAL PACKAGE SHALL INCLUDE:
 - UNIT DISCONNECT (INSTALLED AND WIRED)
 - BOTTOM GAS/POWER ENTRY
 - STANDARD LOW AMBIENT CONTROL
 - DUAL 120V GFCI TYPE OUTLETS (TO BE FIELD WIRED)
 - GLOBAL DRY BILD ECONOMIZERS W/FAN POWERED EXHAUST (1ST AND LARGER UNLESS OTHERWISE NOTED)
 - GLOBAL ECONOMIZERS W/BAROMETRIC RELIEF (6" AND SMALLER)
 - STAINLESS STEEL HEAT EXCHANGER AND FRESH AIR TEMPERING FOR BYPASS RTU'S AND RTU'S THAT HAVE AN ERV
- THE LENNOX NATIONAL ACCOUNT CONTACT IS: RON JOHNSON 704-621-2606
- HVAC EQUIPMENT PERFORMANCE CHECK (EPC)

UPON COMPLETION OF THE HVAC INSTALLATION AND STARTUP, THE OWNER'S SERVICE CONSULTANT, AT THE OWNER'S EXPENSE, IS TO INSPECT THE JOB AND PERFORM AN EPC. THIS EPC WILL AID THE CONTRACTOR IN CHECKING EACH MACHINE FOR PROPER OPERATION, CHECKING THE CONTROL PANEL AND ADJUSTING CONTROLS AS NECESSARY.

THE OWNER'S SERVICE CONSULTANT: COMFORT SYSTEMS ATTN: VALERIE BEDEL P: 311-246-9181 valerie.beidel@comfortsystemsusa.com

ALL PROBLEMS DISCOVERED WITH THE EQUIPMENT OR ITS INSTALLATION (EXCLUDING NOVAR INSTALLATION) SHALL BE CORRECTED BY THE HVAC SUBCONTRACTOR IN ACCORDANCE WITH THE OWNER'S SERVICE CONSULTANT.

AFTER ALL PROBLEMS HAVE BEEN CORRECTED, CARMAX AUTO SUPERSTORE, LLC SHALL VERIFY ALL EQUIPMENT IS OPERATING PROPERLY THROUGH THE NOVAR CONTROLLERS.

PRIOR TO PERFORMANCE OF THE EPC, THE CONTRACTOR SHALL HAVE SET AND CONNECTED ALL COMPONENTS, COMPLETED THE POWER WIRING, CONNECTED ALL PIPING, REMOVED ALL SHIPPING BLOCKS, COMPLETED THE STARTUP OF ALL UNITS AND FURNISHED THE PRE-EPC CHECKLIST TO THE OWNER'S SERVICE CONSULTANT.

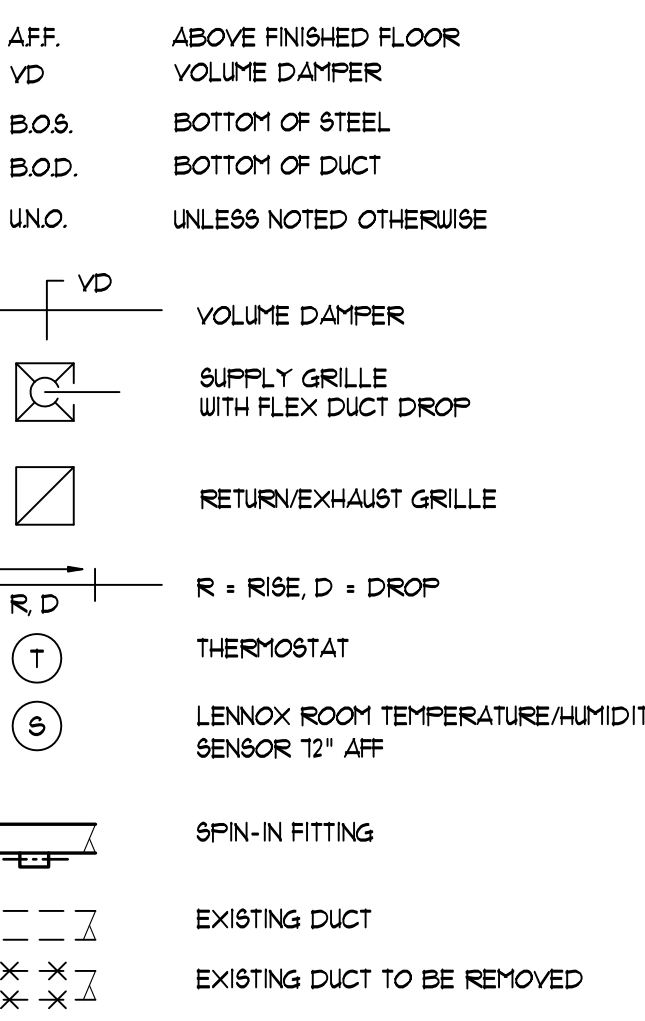
THE EPC INCLUDES A FULL WRITTEN REPORT. COPIES WILL BE SENT TO THE GENERAL CONTRACTOR AND CARMAX AUTO SUPERSTORE, LLC. COPIES OF THE EPC SHALL BE INCORPORATED IN TO THE O 4 M MANUALS BY THE GENERAL CONTRACTOR.

- CONTROLS SCOPE OF WORK:**
- EXISTING RTU'S ARE ON LOGIC ONE BUS. SAVVY COMMUNICATIONS TO ICM ALL RTU'S WITH ETH 20515 IO IS BY THE INTEGRATED ICM IN THE SAVVY.
- ALL NEW RTU'S WILL BE BACNET.
 - THE GENERAL CONTRACTOR SHALL RETAIN COMFORT SYSTEMS USA (CSUSA) TO FURNISH AND INSTALL CONTROLS AS INDICATED BELOW. THE CONTACT AT CSUSA IS: VALERIE BEDEL 311-246-9181
 - PROVIDE PRE-CONSTRUCTION SCREEN SHOTS FROM NOVAR EMS MONITORING TO INCLUDE UNIT STATUS, MODULE COMMUNICATIONS STATUS AND ACTIVE ALARMS.
 - NOT USED
 - CONNECT NEW RTU'S W/CORE BOARDS TO BACNET COMMUNICATION.
 - FOR NEW RTU'S REPLACE RTU NOVAR TEMPERATURE SENSORS WITH LENNOX SENSORS.
 - REPLACE/UPGRADE SAVVY 31 WITH OPUS XCM105 PANEL. SAME BASE PLATE. MINIMAL RE-WIRING REQUIRED.
 - CONNECT BACNET NETWORK AS REQUIRED.
 - TURN OVER SAVVY 31 PANEL AND ETH'S TO CARMAX FOR FUTURE SERVICE CALL INVENTORY SHIP TO COMFORT SYSTEMS USA, ATTN VALERIE BEDEL, CARMAX EMS ACCOUNT CO-ORDINATOR.
 - UPDATE SOFTWARE PER NEW CARMAX TEMPLATE
 - COMMISSION EMS SYSTEM
 - PROVIDE POST CONSTRUCTION SCREEN SHOTS FROM NOVAR EMS MONITORING TO INCLUDE UNIT STATUS, MODULE COMMUNICATIONS STATUS AND ACTIVE ALARMS.
 - LENNOX/CARMAX RTU SET UP SHEET IS TO BE COMPLETED UPON UNIT STARTUP. A COMPLETED SHEET IS TO BE LEFT IN EACH NEW RTU AND A COPY SUBMITTED WITH CLOSE OUT DOCUMENTATION FOR EACH NEW RTU.
 - FURNISH AND INSTALL ADDITIONAL CONTROL WIRE FOR CO2 SENSORS AND UNITS WITH HUMIDITROL.
 - ALL CONTROL COMMUNICATIONS BUS AND SENSOR WIRING NEW AND EXISTING, IS PART OF THE CONTROLS CONTRACTOR SCOPE OF WORK. REPLACE ANY DAMAGED WIRE.

TEST & BALANCE SCOPE					
MARK	TOTAL AIR ACROSS COIL	OUTSIDE AIR	BYPASS AIR	SUPPLY AIR TO REGISTERS	OTHER
RTU-1 THRU 9 RTU-11	AS SCHEDULED	AS SCHEDULED	**	**	**
RTU-11 4 13	4900	4900	**	**	AIR QTY AT REGISTERS. SEE DETAIL 4M140 OUTSIDE AIR 4 EXHAUST AT ERV-1
EF-16 4 18 EF-20 4 21	**	**	**	**	EXHAUST AT FAN AS SCHEDULED AND AS SHOWN ON IM120
RTU-10, 12 4 14	7000	4750	2250	4750	AIR QTY AT REGISTERS. 4#105 CFM EACH
RTU-15 4 16	5000	3800	1200	3800	AIR QTY AT REGISTERS. SEE IM120

- SUGGESTED TEST & BALANCE PROCEDURE FOR BYPASS UNITS:**
- RTU-10, 12 4 14
- CLOSE BYPASS DAMPER 4 MAKE AIR QTY 7000 CFM.
 - GRADUALLY OPEN BYPASS DAMPER UNTIL OUTSIDE AIR IS 4750 CFM. THIS MEANS 2250 CFM IS BEING BYPASSED IN THE CURBS.
 - OUTSIDE AIR SHOULD EQUAL SUM OF SUPPLY AIR AT THE REGISTERS
- RTU-15 4 16
- CLOSE BYPASS DAMPER 4 MAKE AIR QTY 5000 CFM.
 - GRADUALLY OPEN BYPASS DAMPER UNTIL OUTSIDE AIR IS 3800 CFM. THIS MEANS 1200 CFM IS BEING BYPASSED IN THE CURBS.
 - OUTSIDE AIR SHOULD EQUAL SUM OF SUPPLY AIR AT THE REGISTERS

HVAC LEGEND



EXISTING ROOFTOP UNIT SCHEDULE

(SHOWN FOR REFERENCE ONLY)

MARK	ZONE	EER	THERM EFF	VOLT/PH	FAN DATA			COOLING DATA				GAS DATA		MIN. O/A CFM	MODEL	WEIGHT	REMARKS ①
					CFM	TOT IN UC	ESP IN UC	EAT DB/DB	TOTAL TDBH	SENSIBLE TDBH	INPUT TDBH	OUTPUT TDBH	INPUT MBH				
RTU-1	SHOOROOM	12.2	80	480/3	5250	93	3.0	713/64.2	147.5	140.3	260	208	500	LENNOX LGC156H	2900		
RTU-2	SHOOROOM	12.2	80	480/3	5250	93	3.0	713/64.2	147.5	140.3	260	208	500	LENNOX LGC156H	2900		
RTU-3	BREAK/CONF	11.3	80	480/3	1051	62	6	81.7/69.1	42	33.3	78	62.4	240	LENNOX LGA024H	900		
RTU-4	DATA/PBX	11.2	80	480/3	960	62	6	74/61.7	34	23.3	-	-	-	LENNOX LGA036H	900		
RTU-5	BUYERS	11.2	80	480/3	1051	62	6	82.2/66.4	35.2	27.8	78	62.4	140	LENNOX LGA036H	900		
RTU-6	BUSINESS	11.3	80	480/3	1200	62	6	81.3/66	40.5	31.5	78	62.4	200	LENNOX LGA024H	900		
RTU-7	CUSTOMER	11.2	80	480/3	1051	62	6	82.2/65.9	34.9	28.3	78	62.4	120	LENNOX LGA036H	900		
RTU-8	BREAK/TRAIN	11.0	80	480/3	1600	.7	6	81.3/67	59.7	43.3	78	62.4	400	LENNOX LGA060H	900		
RTU-9	PARTS	11.3	80	480/3	1500	69	6	77.9/64.4	45.9	35.7	78	62.4	200	LENNOX LGA048H	900	② ③	
RTU-10	SERVICE AREA	11.0	80	480/3	7000	11	8	90.3/72.3	299	209	470	376	5400	LENNOX LGA300H	4900	② ③	
RTU-11	SERVICE AREA (BP)	11.0	80	480/3	7000	11	8	90.3/72.3	299	209	470	376	5400	LENNOX LGA300H	4900	② ③	
RTU-12	SERVICE AREA (BP)	11.0	80	480/3	7000	11	8	90.3/72.3	299	209	470	376	5400	LENNOX LGA300H	4900	② ③	
RTU-13	SERVICE AREA (BP)	11.0	80	480/3	7000	11	8	90.3/72.3	299	209	470	376	5400	LENNOX LGA300H	4900	② ③	
RTU-14	SERVICE AREA (BP)	11.0	80	480/3	7000	11	8	90.3/72.3	299	209	470	376	5400	LENNOX LGA300H	4900	② ③	
RTU-15	COSMETIC AREA (BP)	11.0	80	480/3	4445	86	8	94.4/74	192	136	470	376	3800	LENNOX LGA180H	4900	② ③	
RTU-16	COSMETIC AREA (BP)	11.0	80	480/3	4445	86	8	94.4/74	192	136	470	376	3800	LENNOX LGA180H	4900	② ③	
RTU-17	FOC	11.3	80	480/3	3000	91	6	80/67	93.8	67.5	130	104	300	LENNOX LGA090H	1600		

- PROVIDE WITH FACTORY INSTALLED NOVAR CONTROL MODULE: LGA UNIT SERIES (MODEL 2051)
- BY PASS CURB AND BY PASS MIXING BOX
- LENNOX AS6 BOARD, FRESH AIR TEMPERING

ROOFTOP UNIT SCHEDULE

MARK	ZONE	EER (SEER)	VOLT/PH	FAN DATA			COOLING DATA ③				GAS DATA		MIN. O/A CFM	MODEL ①	WEIGHT	REMARKS ② ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭
				CFM	TOT IN UC	ESP IN UC	EAT DB/DB	TOTAL TDBH	SENSIBLE TDBH	INPUT TDBH	OUTPUT TDBH	INPUT MBH				
RTU-1	SHOOROOM	12.0	480/3	5250	10	7.5	3.0	80/67	**	**	260	208	500	LENNOX LGT156H4M	2900	⑥ ⑬
RTU-2	SHOOROOM	12.0	480/3	5250	10	7.5	3.0	80/67	**	**	260	208	500	LENNOX LGT156H4M	2900	⑥ ⑬ ⑰
RTU-3	BREAK/CONF	12.8	480/3	1300	80	6	10	80/67	**	**	65	53	240	LENNOX LGT048H4E	1020	⑥ ⑫ ⑱
RTU-4	DATA/PBX	(11.0)	480/3	975	75	6	5	72/65	**	**	**	**	LENNOX LCT036H4E	900	⑬	
RTU-5	BUYERS	13.3	480/3	1050	75	6	5	80/67	**	**	65	53	140	LENNOX LGT036H4E	1020	⑥ ⑫ ⑱
RTU-6	BUSINESS	12.8	480/3	1300	80	6	10	80/67	**	**	65	53	200	LENNOX LGT048H4E	1020	⑥ ⑫ ⑱
RTU-7	CUSTOMER	13.3	480/3	1050	90	7	5	80/67	**	**	65	53	120	LENNOX LGT036H4E	1020	⑥ ⑫ ⑱
RTU-8	BREAK/TRAIN	12.7	480/3	1600	90	7	10	80/67	**	**	108	81	400	LENNOX LGT060H4E	1020	⑥ ⑫ ⑱ ⑳
RTU-9	PARTS	12.8	480/3	1500	90	7	10	80/67	**	**	65	53	200	LENNOX LGT048H4E	1020	⑥ ⑫ ⑱
RTU-10	SERVICE (BP)	11.6	480/3	7000	12	7.5	5.0	87/70	291	223	480	389	4750	LENNOX LGH300H4B	4500	③ ⑥ ⑦ ⑧ ⑩ ⑰
RTU-11	SERVICE (BP)	12.0	480/3	4900	10	7.5	3.0	83/68	194	141	360	292	4900	LENNOX LGT120H4M	4300	③ ⑥ ⑦ ⑧ ⑩ ⑰ ⑱
RTU-12	SERVICE (ERV)	11.6	480/3	7000	12	7.5	5.0	87/70	291	223	480	389	4750	LENNOX LGH300H4B	4500	③ ⑥ ⑦ ⑧ ⑩ ⑰ ⑱
RTU-13	SERVICE (ERV)	12.0	480/3	4900	10	7.5	3.0	83/68	194	141	360	292	4900	LENNOX LGT120H4M	4300	③ ⑥ ⑦ ⑧ ⑩ ⑰ ⑱ ㉔
RTU-14	SERVICE (BP)	11.6	480/3	7000	12	7.5	5.0	87/70	291	223	480	389	4750	LENNOX LGH300H4B	4500	③ ⑥ ⑦ ⑧ ⑩ ⑰ ⑱
RTU-15	COSMETIC (BP)	12.0	480/3	5000	10	7.5	5.0	91/71	229	194	480	389	3800	LENNOX LGT140H4M	4000	③ ⑥ ⑦ ⑧ ⑩ ⑰
RTU-16	COSMETIC (BP)	12.0	480/3	5000	10	7.5	5.0	91/71	229	194	480	389	3800	LENNOX LGT140H4M	4000	③ ⑥ ⑦ ⑧ ⑩ ⑰
RTU-17	FOC	12.1	480/3	3000	12	7.5	3.75	80/67	**	**	180	144	300	LENNOX LGT020H4E	1400	⑫ ⑰

- ONLY ACCEPTABLE MANUFACTURER IS LENNOX. SEE "ROOFTOP UNIT NOTES"
- FIELD ADJUST SUPPLY FAN RPM TO PROVIDE AIR QUANTITIES AS SCHEDULED ABOVE. INSTALL FIELD-SUPPLIED MOTOR AND/OR DRIVE AS REQ'D
- INSTALL F.A.T. DISCHARGE AIR TEMPERATURE SENSOR. SHIPPED LOOSE IN RTU CABINET, INSTALL SENSOR IN SUPPLY IN SUPPLY DUCT APPROX 3FT BELOW ROOF DECK.
- BACNET/CORE CONTROL, NEW TEMPERATURE OR COMBO T/H SENSOR.
- DRAIN FAN OVERFLOW SWITCH MODEL Z186R50A1
- HUMIDITROL 4 COMBO HUMIDITY/TEMPERATURE SENSOR
- NEW MIXING BOX REUSE EXISTING BYPASS CURBS. NEW MIXING BOX BUSHING DUG FILE 9030633 WITH TWO INTAKE HOODS. SEE DETAIL 7M140
- FRESH AIR TEMPERING, 100% OUTSIDE AIR
- 105°F CONDENSER AIR
- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION OF WIRING HARNESS SHIPPED LOOSE W/ RTU THAT ARE ASSOCIATED WITH OUTSIDE AIR DAMPER. THIS WILL INCLUDE CONTROL/INTERLOCK WIRING FOR ERV'S
- 5000 CFM ACROSS THE COIL, 1200 CFM BYPASSED IN THE CURBS, 3800 CFM TO SUPPLY
- GLOBAL ECONOMIZER WITH BAROMETRIC RELIEF
- GLOBAL ECONOMIZER WITH POWERED EXHAUST
- 2 STAGE HEAT (EXCEPT FOR PBX RTU)
- 1000 CFM ACROSS THE COIL, 2250 CFM BYPASSED IN THE CURBS, 4750 CFM TO SUPPLY
- ADAPTER CURB
- RETURN AIR ADAPTER PLATE
- PROVIDE WITH DEMAND VENTILATION CO2 SENSOR. MODULATING OUTSIDE AIR DAMPER. OUTSIDE AIR DAMPER CLOSED. ON A CALL FOR VENTILATION OUTSIDE AIR DAMPER STARTS TO OPEN AT 800 PPM AND AT 1200 PPM MOVES TO 5" OPEN TO GIVE OUTSIDE AIR QUANTITY AS INDICATED IN SCHEDULE ABOVE. INSTALL CO2 SENSOR @ 48" AFF BELOW TEMPERATURE/HUMIDITY SENSOR
- 24" HYBRID CURB
- WEIGHT INCLUDES 1450 LBS FOR ERV

FAN SCHEDULE

MARK	CFM	STATIC PRESS. IN UC	APPROX. FAN RPM	FAN TYPE	DAMPER	VOLT/PH	HP	MANUFACTURER / MODEL		REMARKS
								COOLING	HEATING	
EF-20	2500	25	**	UFBLAST	BACKDRAFT	120/1	3/4	COOK	ACRU-B 150R6B	①
EF-21	2500	25	**	UFBLAST	BACKDRAFT	120/1	3/4	COOK	ACRU-B 150R6B	①
EF-16	3000	25	**	UFBLAST	BACKDRAFT	120/1	3/4	COOK	ACRU-B 180R6B	① ②
EF-18	3000	25	**	UFBLAST	BACKDRAFT	120/1	3/4	COOK	ACRU-B 180R6B	① ②

- EXISTING TO REMAIN
- REPLACE SHEAVE IF REQUIRED FOR REDUCED AIR QTY FROM 3500 CFM ORIGINAL DESIGN

ENERGY RECOVERY WHEEL SCHEDULE

MARK	SERVES	OUTSIDE AIR						③ EXHAUST AIR				MODEL	WEIGHT	REMARKS			
		FAN		CFM	COOLING DATA		HEATING DATA		FAN								
		HP	VOLT/PH		E.A.T.	L.A.T.	TOT	SENS	E.A.T.	L.A.T.	HP				VOLT/PH	CFM	
ERV-1	RTU-13 4 11	5.0	480/3	4900	10/74	83/68	91	81	281	8/7	46/42	5.0	480/3	4600	LENNOX 50R6252XH	1450	① ② ④

- PROVIDE 14" FLASHED EQUIPMENT SUPPORT EQUAL TO FATE-E9-5. SEE IM140
- FIELD FURNISHED 4 INSTALLED DISCONNECT
- EXHAUST AIR TEMP AT 68°F HEAT 4 76°F/66°F COOLING
- ERV BYPASS DAMPER SHALL REMAIN CLOSED. ALL AIR THROUGH WHEEL

AM CERRA, JR. PE
1827 POWERS FERRY ROAD
BLDG # 18, SUITE # 100
ATLANTA, GEORGIA 30339
770-980-0581

