FANS

MARK	TYPE	DRIVE	SERVICE	CFM	EXTERNAL S.P. INCHES	MAX. FAN RPM	ELECTRICAL HP	ELECTRICAL VOLT	ELECTRICAL PH.	MOTOR CONTROLLER	MAX. SONES	REMARKS	EQUAL TO MFR	EQUAL TO MODEL	APPROX WEIGHT (LBS)
F-23B	SQUARE INLINE CENTRIFUGAL	DIRECT	OSA FOR AHU-8B	500	0.5	1440	1/6	120	1	INTERNAL OVERLOAD PROTECTION	8	INLINE CENTRIFUGAL FAN WITH INTAKE AND DISCHARGE DUCT COLLARS, DISCONNECT SWITCH, FACTORY WIRED MANUAL SPEED CONTROLLER, & VIBRATION ISOLATION HANGERS	COOK	100SQN	120
F-24B	SQUARE INLINE CENTRIFUGAL	DIRECT	OSA FOR AHU-9B	500	0.5	1440	1/6	120	1	INTERNAL OVERLOAD PROTECTION	8	INLINE CENTRIFUGAL FAN WITH INTAKE AND DISCHARGE DUCT COLLARS, DISCONNECT SWITCH, FACTORY WIRED MANUAL SPEED CONTROLLER, & VIBRATION ISOLATION HANGERS	COOK	100SQN	120
F-32B	SQUARE INLINE CENTRIFUGAL	DIRECT	OSA FOR AHU-16B	400	0.375	1577	1/6	120	1	INTERNAL OVERLOAD PROTECTION	8	INLINE CENTRIFUGAL FAN WITH INTAKE AND DISCHARGE DUCT COLLARS, DISCONNECT SWITCH, FACTORY WIRED MANUAL SPEED CONTROLLER, & VIBRATION ISOLATION HANGERS	COOK	90SQN	100

FAN SCHEDULE NOTES
1. MANUAL SPEED CONTROLLERS SHALL BE FACTORY MOUNTED ON FANS.

VAV TERMINAL UNITS

MARK	AHU SERVED	COOLING CFM MAXIMUM CFM	COOLING CFM MINIMUM CFM	HEATING CFM	ENTERING AIR TEMP. °F	COIL HEATING CAPACITY, BTUH	GPM AT 180° F ENTERING WATER TEMP.	MAX. WATER P.D., FT.	MAX. COIL AIR P.D. IN W.G.	MAX. TERMINAL UNIT AIR P.D., IN. W.G. (WITHOUT COIL)	MAX SP LOSS D'STREAM IN. W.G.	MAXIMUM SPACE NC RADIATED	MAXIMUM SPACE NC DISCH.	PIPING RUNOUTS, HWS & HWR, IN.	EQUAL TO MANUFACTURER	EQUAL TO MODEL NO.
5	RTU-1	860	260	260	55/110	15540	.7	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
7	RTU-1	300	90	90	55/110	5800	0.3	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-06
8	RTU-1	300	90	90	55/110	5800	0.3	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-06
9	RTU-1	1500	450	450	55/110	26850	1.3	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
10	RTU-1	950	285	285	55/110	16930	0.85	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
11	RTU-1	995	300	300	55/110	17900	0.90	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
13	RTU-1	720	215	215	55/110	13540	0.70	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
14	RTU-1	1150	360	360	55/110	21380	1.0	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
22	RTU-1	1100	385	385	55/110	22870	1.1	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
23	RTU-1	1500	525	525	55/110	31190	1.6	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
1	RTU-2	800	240	240	55/110	14260	0.7	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
2	RTU-2	1150	345	345	55/110	20490	1.0	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
3	RTU-2	1400	260	260	55/110	24950	1.25	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
4	RTU-2	860	260	260	55/110	15540	0.7	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
6	RTU-2	300	920	920	55/110	5800	0.3	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-06
12	RTU-2	1200	360	360	55/110	21380	1.0	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
15	RTU-2	460	180	180	55/110	10890	0.5	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-08
24	RTU-3	900	315	315	55/110	18710	1.9	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
25	RTU-3	2340	850	850	55/110	50470	2.5	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-16
26	RTU-3	1490	450	450	55/110	26800	1.4	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
27	RTU-3	1380	480	480	55/110	28520	1.4	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
28	RTU-3	450	105	105	55/110	6250	0.3	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-08
30	RTU-3	1080	360	360	55/110	21400	1.0	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
16	RTU-4	1580	480	480	55/110	28520	1.4	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
17	RTU-4	1790	600	600	55/110	35640	1.8	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
18	RTU-4	2340	850	850	55/110	50490	2.5	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-16
19	RTU-4	900	315	315	55/110	18710	0.9	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-10
20	RTU-4	1500	525	525	55/110	31190	1.6	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-14
21	RTU-4	1300	460	460	55/110	27360	1.4	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-12
29	RTU-4	540	280	280	55/110	16630	0.85	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-08
TU7E08	AHU-7E	4200	600	600	53/95	27200	2.0	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-24X16
TU7E09	AHU-7E	400	0	0	N/A	N/A	N/A	N/A	N/A	0.15	0.25	35	35	N/A	TRANE	VCCF-08
TU7I08	AHU-7I	4200	600	600	53/95	27200	2.0	8	0.3	0.15	0.25	35	35	3/4"	TRANE	VCWF-24X16
TU7I09	AHU-7I	400	0	0	N/A	N/A	N/A	N/A	N/A	0.15	0.25	35	35	N/A	TRANE	VCCF-08

NOTES
1. PROVIDE WITH CONTROL TRANSFORMER, FLOW RING, DAMPER, AND TERMINAL STRIP FOR DDC CONTROLLER CONNECTION.

BUILT-UP AHU SUPPLY AND RETURN FAN SCHEDULE

MARK	AHU SERVED	RETURN AIR CFM	TOTAL S.P., IN. WG	EXTERNAL S.P., IN. WG	RETURN AIR FAN MOTOR HP	PH	VOLTS	FAN VIBRATION ISOLATION* BASE TYPE	ISOLATION TYPE	MINIMUM DEFLECTION (INCHES)	MOTOR CONTROLLER	REMARKS	EQUAL TO MFR.	MODEL
VVRAF-1	AHU-22A	35950	N/A	0.8	15	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	① ③④⑤	LOREN COOK	402-QMXHPD
VVRAF-2	AHU-22A	35950	N/A	0.8	15	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	① ③④⑤	LOREN COOK	402-QMXHPD
VVRAF-3	AHU-23A	35950	N/A	0.8	15	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	① ③④⑤	LOREN COOK	402-QMXHPD
VVRAF-4	AHU-23A	35950	N/A	0.8	15	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	① ③④⑤	LOREN COOK	402-QMXHPD
VVRAF-5	AHU-24A	45550	N/A	0.8	25	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	① ③④⑤	LOREN COOK	402-QMXHPD
VVRAF-6	AHU-24A	45550	N/A	0.8	25	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	① ③④⑤	LOREN COOK	402-QMXHPD
VVSAF-1	AHU-22A	40000	N/A	7.5	75	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	②③④⑤	LOREN COOK	445-QMXHPD
VVSAF-2	AHU-22A	40000	N/A	7.5	75	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	②③④⑤	LOREN COOK	445-QMXHPD
VVSAF-3	AHU-23A	40000	N/A	7.5	75	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	②③④⑤	LOREN COOK	445-QMXHPD
VVSAF-4	AHU-23A	40000	N/A	7.5	75	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	②③④⑤	LOREN COOK	445-QMXHPD
VVSAF-5	AHU-24A	50000	N/A	7.4	100	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	②③④⑤	LOREN COOK	QMXHPD
VVSAF-6	AHU-24A	50000	N/A	7.4	100	3	460	B	3	2.5	VARIABLE FREQUENCY CONTROLLER	②③④⑤	LOREN COOK	QMXHPD

* VIBRATION ISOLATION TYPES AND DESIGNATIONS ARE PER 2007 ASHRAE HANDBOOK—HVAC APPLICATIONS, CHAPTER 47, TABLE 48.

RETURN FAN SCHEDULE REMARKS

① THE EXISTING RETURN FAN SHALL BE REPLACED WITH THE SCHEDULED FAN. REPLACE EXISTING RETURN FAN WITH A MIXED FLOW FAN OR VANE AXIAL FAN ON ISOLATED FRAME WITH TEFC-PREMIUM EFFICIENCY INVERTER RATED MOTOR.

② THE EXISTING SUPPLY FAN SHALL BE REPLACED WITH THE SCHEDULED FAN. REPLACE EXISTING SUPPLY FAN WITH A MIXED FLOW FAN OR VANE AXIAL FAN ON ISOLATED FRAME WITH TEFC-PREMIUM EFFICIENCY INVERTER RATED MOTOR.

③ CONTRACTOR SHALL INCLUDE THE DISASSEMBLY/REASSEMBLY OF THE FANS AS REQUIRED FOR COMPONENT EGRESS INTO THE BUILDING AND EGRESS INTO THE AHU CASING. CONTRACTOR SHALL PROVIDE WITH SPLIT CASING FOR BUILDING ENTRY. PROVIDE WITH MANUFACTURER'S MOTOR/ FAN ALIGNMENT WITH FIELD ASSEMBLY AND BALANCING.

④ PROVIDE FAN WITH BELT TUNNEL AND GUARD, INLET PIEZOMETRIC RING, DRAIN, ALUMINUM WHEEL, SPRING ISOLATORS, & A FAN INLET BELLMOUTH FITTING. FOR RETURN FANS, ALSO PROVIDE A FAN DISCHARGE BELLMOUTH FITTING.

⑤ REPLACE EXISTING VARIABLE FREQUENCY CONTROLLERS.

DUCT MOUNTED HEATING COILS

MARK	AHU SERVED	AIRFLOW, CFM	E.A.T., °F DB	L.A.T., °F DB	COIL HEATING CAPACITY, MBH	GPM AT 105°F E.W.T./ 85°F L.W.T	MAX WATER P.D., FT	MAX AIR P.D., IN. W.G.	ESTIMATED COIL DIMENSIONS	HWS&R PIPE RUNOUT SIZE
HC-21A	AHU-21A	1200	55	85	38.9	2	8	0.2	16X14	3/4"
HC-22A	AHU-21A	1950	55	105	105.3	5.3	8	0.2	20X16	1"
HC-5B	AHU-11B	225	55	94.9	10.0	1.0	8	0.1	12x8	3/4"
HC-6B	AHU-11B	1930	55	82.9	58.3	5.9	8	0.1	20x18	1"
HC-7B	AHU-11B	220	55	77.5	5.9	0.6	8	0.1	10x9	3/4"
HC-8B	AHU-16B	400	55	75	9.5	1.0	8	0.1	14x10	3/4"
HC-9B	AHU-16B	1950	55	75	86.3	8.7	8	0.1	36x18	1 1/4"

SCHEDULE NOTES
1. VERIFY COIL DIMENSIONS WITH EXISTING COIL/DUCT SIZE BEFORE ORDERING.

PUMP SCHEDULE

MARK	SERVICE	TYPE-MOUNTING	GPM (EA)	HEAD FT.	MIN. EFF.	MOTOR H.P.	MOTOR V/PH/HZ	MOTOR RPM	EQUAL TO
P-14A	AHU-22A COOLING COIL	INLINE	400	15	60%	3	460/3/60	1750	BELL & GOSSETT SERIES 80-5x5x7
P-15A	AHU-23A COOLING COIL	INLINE	400	15	60%	3	460/3/60	1750	BELL & GOSSETT SERIES 80-5x5x7
P-16A	AHU-24A COOLING COIL	INLINE	545	15	55%	5	460/3/60	1750	BELL & GOSSETT SERIES 80-5x5x7

GENERAL NOTES
1. MECHANICAL CONTRACTOR SHALL INSTALL CONTROL DAMPERS AND OTHER CONTROL COMPONENTS PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR
2. THE OUTSIDE AIR DAMPER CONFIGURATION IN AHU-22A, 23A, AND 24A IS BEING MODIFIED TO REMOVE AN UNUSED DAMPER SECTION AND REPLACING IT WITH A MINIMUM OUTSIDE AIR INTAKE DAMPER. PROVIDE INSULATED SHEETMETAL IN THE SPACE OF THE REMOVED PORTION OF THE DAMPER, AND INSTALL THE SMALLER OUTSIDE AIR INTAKE DAMPER. SEE CONTROL DRAWINGS FOR ADDITIONAL INFORMATION. EXTEND A MINIMUM OUTSIDE AIR INTAKE DUCT INTO THE AIR HANDLING UNIT FOR INSTALLATION OF THE AIRFLOW MEASURING STATION AND FOR MIXING WITH THE RETURN AIR.
3. REBALANCE THE VFC's FOR AHU-7E AND AHU-7I SO THAT THEY OPERATE AT FULL SPEED. THESE TWO AHU'S WERE SET TO OPERATE AT REDUCED SPEEDS UNTIL THEIR ASSOCIATED DUCT SYSTEMS WERE EXTENDED TO INCLUDE AN ADDITIONAL COURTROOM EACH. BALANCE EACH AHU'S MINIMUM OUTSIDE AIR QUANTITY TO 800 CFM.
4. PIPING SHALL BE MODIFIED IN A MANNER SO THAT THE EXISTING CHILLED WATER AND HEATING WATER SYSTEMS SERVING OTHER AIR HANDLING EQUIPMENT ARE NOT DRAINED BY PROVIDING A PLUG-FORMING TYPE SYSTEM SUCH AS A CRYOLATOR FREEZE KIT, LIQUID NITROGEN, AND MONITOR, OR CRYOLATOR'S ASSOCIATED ON-SITE FREEZING SERVICES; USING RIGID TOOL HOT TAP TOOLS; OR EQUAL "PLUG" FORMING TYPE SYSTEMS.
5. REMOVE AND REINSTALL CEILING TILES IN THE AREAS WHERE CONTROL CONDUIT NEEDS TO BE RUN. IF CEILING TILE OR GRID IS DAMAGED, REPLACE WITH NEW CEILING TILES OR GRID.
6. REMOVE AND REINSTALL SECURITY CEILING TILES IN THE AREAS WHERE CONTROL CONDUIT NEEDS TO BE RUN. IF SECURITY CEILING TILE OR GRID IS DAMAGED, REPLACE WITH NEW CEILING TILES OR GRID. AREAS THAT HAVE SECURITY CEILINGS INCLUDE, BUT ARE NOT LIMITED TO, THE FIFTH FLOOR AND SIXTH FLOORS (SHOWN ON SHEETS M-135 AND M-136) WHERE VAV TERMINAL UNITS ARE BEING REPLACED.
7. PROVIDE WORK PLATFORMS ON THE SERVICE SIDE OF ALL NEW HVAC EQUIPMENT ABOVE A SUSPENDED CEILING THAT IS MOUNTED 10' OR MORE ABOVE THE FLOOR. PLATFORMS SHALL BE APPROXIMATELY 24"x24" AND CONSTRUCTED OF SHEET METAL SUSPENDED FROM THE BUILDING STRUCTURE. PLATFORMS ARE REQUIRED FOR ALL EQUIPMENT WITH MOTORS AND OTHER COMPONENTS REQUIRING SERVICE. PLATFORM IS FOR TOOLS AND SPARE PARTS. DO NOT RESTRICT SERVICE ACCESS. PLATFORM INSTALLATION SHALL MEET APPROVAL OF LOCAL CODE OFFICIALS. THE REQUIREMENT FOR THIS WORK PLATFORM DOES NOT TYPICALLY APPLY TO SINGLE DUCT VAV BOXES WITH HOT WATER REHEAT COILS ONLY.
8. COORDINATE REPLACEMENT VAV BOX CONTROL PANEL AND CONTROL VALVE/ISOLATION VALVE LOCATION WITH EXISTING CONDITION TO MAINTAIN ACCESSIBILITY.
9. REPLACEMENT VAV BOX LOCATION IS BASED ON EXISTING DRAWINGS. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATION OF BOXES AND SHALL PROVIDE ALL NECESSARY TRANSITIONS TO CONNECT TO EXISTING DUCTS.
10. PROVIDE AIR VENTS FOR "HIGH POINT" VENTING OF REPLACEMENT VAV BOXES.
11. REPAIR ALL EXISTING PIPING AND DUCT INSULATION DAMAGED DURING THE COURSE OF THIS WORK WITH INSULATION TYPES AS SPECIFIED IN THE PROJECT MANUAL.
12. CLOSELY COORDINATE WITH SHELBY COUNTY GOVERNMENT SUPPORT SERVICES FOR EQUIPMENT ACCESS AND SCHEDULING OF ALL WORK, AS WELL AS THE REQUIRED SHUTDOWN OF EXISTING SYSTEMS OR UTILITIES.

REVISIONS:

PROJECT #: 24308.00
DATE: APRIL 10, 2015
DRAWN BY: JTC
DESIGNER: JTC
CHECKED BY: AMS

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SBI-000320
HVAC RETROFIT PHASE II
SHELBY COUNTY CRIMINAL JUSTICE CENTER
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MEMPHIS, TENNESSEE 38103

SEAL:
JONATHAN R. FOSHEE REGISTERED ENGINEER AGRICULTURE COMMERCE No. 23386 STATE OF TENNESSEE 4/10/15

SHEET NUMBER:
M-602

DESCRIPTION:
MECHANICAL SCHEDULES II

4/8/2015 10:58 AM ELBERT KUYKINDOLL