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REVISIONS

REVISION SYMBOL	NO. SYMS.	AMD. / C.O.R.	DESCRIPTION	DATE	APPROVED

AIR HANDLING UNIT SCHEDULE

MARK	TYPE	FAN DATA							CHILLED WATER COOLING DATA											HOT WATER PREHEAT COIL DATA								FILTER DATA		
		TOTAL AIR L/s	OUTSIDE AIR L/s	EXTERNAL STATIC PRESSURE MM H_2O	FAN MOTOR KW	ELECTRICAL DATA VOLTS	PHASE	HERTZ	MAX. FACE VEL M/MIN.	TOT COOLING CAP KW	LATENT. COOLING CAP. KW	ENTERING AIR TEMP. °Cdb	°Cwb	CHILLED WATER DATA L/s	°C ENT.	MAX WPD M W.G.	CONTROL VALVE TYPE	Cv	PIPE RUNOUT SIZE (MM)	MAX. FACE VEL. M/MIN	MIN. OUTPUT CAP. KW	AIR TEMP. DATA °C ENT.	HOT WATER DATA L/s	°C ENT.	MAX WPD	CONTROL VALVE TYPE	Cv	PIPE RUNOUT SIZE (MM)	MAX. FACE VEL. M/L PER MIN.	EFFICIENCY PRE, FINAL (%, %)	THICKNESS PRE, FINAL (mm, mm)
AHU-1	HDT	2445	1420	70	7.46	460	3	60	152.4	92.8	42.1	31.0	23.2	4.0	5.6	3.05	3-WAY	32	65	213.4	18.6	0.3	0.4	82.2	1.52	3-WAY	3.1	25	91.2	30, 85	50, 305
AHU-2	HDT	11880	4720	100	37.3	460	3	60	152.4	385.8	141.5	29.3	20.7	16.62	5.6	3.05	3-WAY	130	100	213.4	63.6	0	1.37	82.2	1.52	3-WAY	11.0	40	91.2	30, 85	50, 305

AHU NOTES:

VDT – VERTICAL DRAW THRU
HDT – HORIZONTAL DRAW THROUGH

PROVIDE EXTENDED LUBE LINES TO OUTSIDE OF UNIT CASING ON THE SIDE WHICH IS ACCESSIBLE FOR SERVICING ON ALL UNITS.

PROVIDE VARIABLE FREQUENCY DRIVES W/ SURGE PROTECTION.

ADJUST LOCATION OF UNITS IN MECHANICAL ROOMS AS REQUIRED FOR SERVICE AS RECOMMENDED BY MANUFACTURER.

PIPE ALL CONDENSATE FROM UNITS TO DRAIN WITH TRAP.

UNITS MAY REQUIRE SETTING BEFORE WALL ARE INSTALLED OR UNITS MAY NEED DISASSEMBLY AND REASSEMBLY IN MECHANICAL ROOM.

PROVIDE A MINIMUM 150MM THICK CONCRETE PAD & 150 M BASE RAILS FOR EACH UNIT.

MAX CHW COIL FIN DENSITY SHALL BE 1– FINS PER 25.4 MM

CHW COILS SHALL BE 8 ROWS DEEP MINIMUM. DRAIN PANS SHALL BE INSULATED STEEL.

FAN SCHEDULE

MARK	LOCATION	TYPE	DRIVE	PERFORMANCE DATA AIR FLOW L/s	E.S.P. MM W.G.	MAX. RPM	MAX. SONES	ELECTRICAL MAX. WATTS	VOLTS	PHASE	Hz	CONTROL	NOTES
EF-1	FLIGHT KITCHEN	UB	BD	989	28	1213	15.2	560	208	3	60	VENTILATOR PANEL	BS, BDD
EF-2	KITCHEN	UB	BD	3297	41	887	18.5	2238	208	3	60	VENTILATOR PANEL	BS, BDD
EF-3	KITCHEN	UB	BD	3297	41	887	18.5	2238	208	3	60	VENTILATOR PANEL	BS, BDD
EF-4	KITCHEN	UB	BD	2543	56	1245	23.0	2238	208	3	60	VENTILATOR PANEL	BS, BDD
EF-5	DISHWASHER	CRV	DD	471	4.5	1060	6.3	125	120	1	60	DEDICATED WALL SWITCH	BS, BDD
EF-6	MECH. ROOM	CRV	DD	824	4.5	928	7.7	249	120	1	60	LINE VOLTAGE T'STAT	BS, BDD
EF-7	BOILER ROOM	CRV	DD	353	4.5	860	4.1	125	120	1	60	LINE VOLTAGE T'STAT	BS, BDD
EF-8	PUBLIC TOILETS	CRV	DD	504	6.4	877	5.4	125	120	1	60	INTERLOCK W/ AHU-1 OCCUPIED MODE	BS, BDD
EF-9	EMPLOY. TOILETS	CRV	DD	480	6.4	850	5.1	125	120	1	60	INTERLOCK W/ AHU-2 OCCUPIED MODE	BS, BDD
EF-10	JANITOR	CRV	DD	66	6.4	1365	3.9	40	120	1	60	DEDICATED WALL SWITCH	BS, BDD

FAN SCHEDULE LEGEND

DD – DIRECT DRIVE
BD – BELT DRIVE
EF – EXHAUST FAN
BS – BIRD SCREEN
CB – CENTRIFUGAL BLOWER
ILC – INLINE CENTRIFUGAL FAN
ESP – EXTERNAL STATIC PRESSURE
CEF – CEILING EXHAUST FAN (CENTRIFUGAL)
UB – UPBLAST ROOFTOP CENTRIFUGAL EXHAUST FAN
BDD – BACKDRAFT DAMPER
FF – FLY FAN (AIR CURTAIN)
CRV – CENTRIFUGAL ROOF VENTILATOR

FAN NOTES

1. ALL EXHAUST FANS SHALL BE INSTALLED WITH FLEXIBLE DUCT CONNECTION, VIBRATION ISOLATORS, AND FLEXIBLE CONDUIT. FAN SHALL NOT BE IN CONTACT WITH ANY OTHER DUCT, PIPING, CONDUIT, OR STRUCTURAL MEMBERS.
2. FANS SHALL BE PROVIDED WITH BACKDRAFT DAMPERS.
3. THE ROOF MOUNTED FANS SHALL BE PROVIDED WITH PREFABRICATED ROOF CURBS AND BACKDRAFT DAMPER.
4. ALL DIRECT DRIVE FANS WITH MOTORS LESS THEN 375 WATTS SHALL BE PROVIDED WITH AN ADJUSTABLE ELECTRONIC SPEED CONTROLLER.
5. COLOR SHALL MATCH ROOF COLOR.

EXPANSION TANK SCHEDULE

MARK	VOLUME (LITERS) TANK MIN.	ACCEPTANCE MIN.	CHARGE PRESSURE kPa	NOTES
ET-1	60 L	38 L	82.7	REPLACEABLE BLADDER
ET-2	125 L	68 L	82.7	REPLACEABLE BLADDER

AIR SEPARATOR SCHEDULE

MARK	FLOW RATE L/s	FLOW MAX WPD kPa	WORKING PRESSURE kPa	INLET SIZE MM	OUTLET SIZE MM
AS-1	22.73	7	862	100	100
AS-2	3.53	7	862	75	75

CONSTANT VOLUME REGULATOR SCHEDULE

MARK	MAXIMUM PRIMARY AIR L/s	MINIMUM PRIMARY AIR L/s	INLET SIZE MM (1)	NOTES
CVR-1	1420	0	405x405	(2) (4)
CVR-2	4720	0	660x660	(3) (4)

CONSTANT VOLUME REGULATOR SCHEDULE NOTES:

(1) INLET DUCT CONNECTION SHALL NOT BE SMALLER THAN DUCT SIZES INDICATED ON DRAWINGS.

(2) AIR TERMINAL UNIT OR FLOW MEASURING AND METERING STATION MANUFACTURED SPECIFICALLY FOR MEASURING AND METERING OF OUTSIDE AIR.

(3) FLOW MEASURING AND METERING STATION MANUFACTURED SPECIFICALLY FOR MEASURING AND METERING OF OUTSIDE AIR.

(4) CVR AND CONTROLLER SHALL BE CAPABLE OF CONTROLLING AIRFLOW AT ANY SETPOINT BETWEEN MAXIMUM AND MINIMUM PRIMARY FLOW INDICATED WITHOUT REQUIRING RECALIBRATION AT THE FACTORY.

AIR TERMINAL UNIT SCHEDULE (VAV)

MARK (3)	MAXIMUM PRIMARY AIR L/s	MINIMUM PRIMARY AIR L/s	ROUND INLET SIZE (1) MM	HEATING DATA TOTAL HEATING L/s (2)	MINIMUM OUTPUT CAPACITY KW	HW PIPE RUNOUT SIZE MM	HOT WATER COIL DATA L/s	MAXIMUM PRESSURE DROP M W.G.	CONTROL VALVE TYPE	Cv
ATU-1/1	310	200	205	200	3.3	15	0.07	1.52	3-WAY	0.7
ATU-1/2	970	560	305	560	9.8	20	0.21	1.52	3-WAY	2.0
ATU-1/3	1165	740	355	740	14.5	25	0.31	1.52	3-WAY	2.5
ATU-2/1	1350	590	355	590	6.4	20	0.14	1.52	3-WAY	1.7
ATU-2/2	560	240	255	240	2.6	15	0.06	1.52	3-WAY	0.7
ATU-2/3	880	280	305	280	4.2	15	0.09	1.52	3-WAY	0.7
ATU-2/4	1200	520	355	520	5.6	15	0.12	1.52	3-WAY	1.0
ATU-2/5	270	115	150	115	1.5	15	0.03	1.52	3-WAY	0.6
ATU-2/6	115	50	125	50	1.4	15	0.03	1.52	3-WAY	0.6
ATU-2/7	1290	555	355	555	6.1	20	0.13	1.52	3-WAY	1.0
ATU-2/8	115	45	125	45	1.2	15	0.03	1.52	3-WAY	0.6
ATU-2/9	240	110	205	110	2.0	15	0.04	1.52	3-WAY	0.6
ATU-2/10	95	40	125	40	0.7	15	0.01	1.52	3-WAY	0.6
ATU-2/11	110	45	125	45	1.0	15	0.02	1.52	3-WAY	0.6
ATU-2/12	155	70	150	70	1.2	15	0.03	1.52	3-WAY	0.6
ATU-2/13	1440	625	405	625	6.9	20	0.15	1.52	3-WAY	1.1
ATU-2/14	150	60	205	60	1.6	15	0.03	1.52	3-WAY	0.6
ATU-2/15	175	75	150	75	2.2	15	0.05	1.52	3-WAY	0.7
ATU-2/16	1080	475	355	475	5.3	15	0.11	1.52	3-WAY	1.0
ATU-2/17	175	70	150	70	1.9	15	0.04	1.52	3-WAY	0.6
ATU-2/18	100	45	125	45	1.3	15	0.03	1.52	3-WAY	0.6
ATU-2/19	1420	535	405	535	5.7	15	0.12	1.52	3-WAY	1.0
ATU-2/20	800	340	305	340	4.2	15	0.09	1.52	3-WAY	0.7

AIR TERMINAL UNIT NOTES

(1) ROUND INLET DUCT CONNECTION SHALL NOT BE SMALLER THAN SIZE INDICATED.

(2) MINIMUM PRIMARY AIR.

MAXIMUM INTERNAL RESISTANCE OF AIR TERMINAL UNIT (INLET TO DISCHARGE STATIC PRESSURE DIFFERENTIAL) WITH PRIMARY AIR DAMPER FULL OPEN AT MAXIMUM PRIMARY AIR FLOW INDICATED SHALL BE 13 MM H_2O.

MAXIMUM END DISCHARGE SOUND POWER LEVEL SHALL BE 25 NC. (NOISE EMITTED FROM UNIT DISCHARGE INTO DOWNSTREAM DUCTWORK) AT REFERENCE AIRFLOW INDICATED AND WITH 25 MM WATER GAGE DIFFERENTIAL STATIC PRESSURE ACROSS AIR TERMINAL UNIT.

MAXIMUM RADIATED SOUND POWER LEVEL SHALL BE 25 NC (NOISE TRANSMITTED THRU CASING WALLS) AT REFERENCE AIR FLOW INDICATED. FOR VAV UNITS MAXIMUM RADIATED SOUND POWER LEVEL IS WITH 25 MM WATER GAGE DIFFERENTIAL STATIC PRESSURE ACROSS AIR TERMINAL UNIT.

ACOUSTIC PERFORMANCE OF AIR TERMINAL UNITS SHALL BE BASED UPON TESTS CONDUCTED IN ACCORDANCE WITH ARI STANDARD 880. MAXIMUM SOUND POWER LEVELS INDICATED ARE EXPRESSED IN DECIBELS REFERENCE TO 10^{-12} WATTS AT OCTAVE BANDS AND MID FREQUENCIES INDICATED, AND INCLUDES 10 db ALLOWANCE FOR CEILING ABSORPTION.

(3) ALL ATU CONTROLS SHALL BE PRESSURE INDEPENDENT.

DIRECT FIRED MAKE-UP AIR UNIT SCHEDULE

MARK	TYPE	FAN DATA TOTAL AIR L/s	OUTSIDE AIR L/s	EXTERNAL STATIC PRESSURE MM W.G.	FAN MOTOR KW	ELECTRICAL DATA VOLTS	PHASE	HERTZ	CHILLED WATER COOLING DATA MAX. FACE VEL M/MIN	TOT COOLING CAP KW	SENSIBLE COOLING CAP. KW	LEAVING AIR TEMP. °Cdb	°Cwb	ENTERING AIR TEMP. °Cdb	°Cwb	CHILLED WATER DATA L/s	°C ENT.	MAX WPD M W.G.	CONTROL VALVE TYPE	Cv	PIPE RUNOUT SIZE (MM)	HEATING DATA OUTPUT KW	INPUT KW	DISCHARGE AIR TEMP °C	AMBIENT TEMP °C	GAS PRESSURE kPa	FILTER DATA TYPE	THICK mm
MAU-1	H&V	5286	5286	61	11.19	460	3	60	152.4	37.4	37.4	28	24	33.9	25.6	1.61	5.6	3.05	3-WAY	12.5	50	135.7	135.7	17.1	-2.2	13.8	35%	50
MAU-2	H&V	1586	1586	56	3.73	460	3	60	152.4	11.7	11.7	28	24	33.9	25.6	0.5	5.6	3.05	3-WAY	4.0	32	39.5	39.5	17.2	-2.2	13.8	35%	50

MAKE-UP AIR UNIT NOTES:

H&V – HEATING AND VENTILATING WITH CHW COOLING COIL

PROVIDE 150 MM THICK CONCRETE PAD FOR EACH UNIT.

PROVIDE MANUFACTURERS CONTROL PANEL CAPABLE OF COMMUNICATING WITH THE CENTRAL DDC SYSTEM.

CONTROL PANEL SHALL INCLUDE REMOTE CONTROL AND MONITORING CONSOLE, MOTOR CONTACTOR, INTERMITTENT SPARK PILOT WITH SPARK TRANSFORMER, LOW FIRE START CONTROL, AND CONTROL POWER TRANSFORMER.

GAS TRAIN CONTROLS SHALL INCLUDE ELECTRONIC MODULATING VALVE, DUAL GAS SOLENOID VALVES, MAIN PRESSURE REGULATOR, PILOT PRESSURE REGULATOR, PILOT SOLENOID VALVE, PILOT NEEDLE VALVE, MAIN SHUTOFF, PILOT SHUTOFF, MANUAL SHUTOFF LEAK TEST VALVES, AND SHALL MEET ANSI STANDARDS.

SAFETY CONTROLS SHALL INCLUDE ULTRAVIOLET FLAME SUPERVISOR, HIGH AND LOW AIRFLOW PROVING SWITCHES, AUTOMATIC AND MANUAL HIGH TEMPERATURE LIMITS, AND A PRE-PURGE TIME DELAY RELAY.

RUN GAS VENT PIPES OUT THROUGH MECHANICAL ROOM WALL A MINIMUM DISTANCE OF 3050 MM AWAY FROM OUTSIDE AIR INTAKES.

GAS HOT WATER BOILER SCHEDULE

MARK	TYPE UNIT	BOILER RATINGS NET OUTPUT KW	OPERATING PRESSURE kPa	BURNER DATA FIRING RATE KW	EFFICIENCY PERCENT	GAS PRESSURE AVAILABLE kPa	TYPE	FUEL	FLUE SIZE MM	COMBUSTION CONTROL	WATER DATA L/s	°C LVG	MAX WPD M W.G.	ELECTRICAL DATA VOLTS	PHASE	HERTZ
B-1	WATER-TUBE	163.9	413.7	205	80	13.8	ATMOSPHERIC	NATURAL GAS	457	ELECTRONIC	3.53	82.2	1.2	115	1	60

BOILER NOTES:

BOILERS AND BURNERS SHALL BE UL LISTED, AND FACTORY TESTED. BOILERS SHALL BE APPROVED BY AGA, ASME INPECTED AND STAMPED FOR WORKING PRESSURE, COMPLETE WITH MANUFACTURERS DATA REPORT. BOILERS SHALL BE PROVIDED WITH RELIEF VALVES AS REQUIRED BY ASME CODE. THE EFFICIENCY IS STEADY STATE AT HIGH FIRE.

PROVIDE IRI GAS TRAIN

'AS-BUILT'
JANUARY, 2003

NOTE: ALL DIMENSIONS AND/OR DIMENSIONS SHOWN IN CALLOUTS/NOTES ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

DESIGNED BY: R. CANEKERATNE	BULLOCK TICE ASSOCIATES 909 E. CERVANTES ST., SUITE B PENSACOLA, FL. 32501	U.S. ARMY ENGINEER DISTRICT, MOBILE CORPS OF ENGINEERS MOBILE, ALABAMA
DRAWN BY: A. REMSKI	EGLIN AIR FORCE BASE, FLORIDA FY-00 EGLIN DINING FACILITY HVAC SCHEDULES	
CHECKED BY: R. CANEKERATNE		
SUPERVISED BY: G. PETERSON	SH REF NO M-105	CADD FILE NAME 277M105F.DWG
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