

AIR HANDLING UNIT																					
MARK	FAN					COOLING							BASIS OF DESIGN				REMARKS				
	SUPPLY AIR CFM	OUTSIDE AIR CFM	EXT. STATIC PRESSURE (IN. W.C)	HORSE POWER	FAN QUANTITY	CURRENT			AIR TEMPERATURE (°F)				WATER		MANUFACTURER	MODEL		MCA	MOCP		
						V	PH	F	ENTERING DRY BULB	ENTERING WET BULB	LEAVING DRY BULB	LEAVING WET BULB	MIN. COOLING CAPACITY	ENTERING TEMP (°F)						GPM	PRESSURE DROP (FT.)
AHU-1-1	6,500	780	2.5	3.0	3	480	3	60	77.0	64.0	55.0	54.5	200,000	45	40.0	10.0	CARRIER	39MN	17.8	20	1,2,3,4,6,7
AHU-1-2	6,500	780	2.5	3.0	3	480	3	60	77.0	64.0	55.0	54.5	200,000	45	40.0	10.0	CARRIER	39MN	17.8	20	1,2,3,4,6,7
AHU-1-3	6,500	780	2.5	3.0	3	480	3	60	77.0	64.0	55.0	54.5	200,000	45	40.0	10.0	CARRIER	39MN	17.8	20	1,2,3,4,6,7
AHU-1-4	6,500	780	2.5	3.0	3	480	3	60	77.0	64.0	55.0	54.5	200,000	45	40.0	10.0	CARRIER	39MN	17.8	20	1,2,3,4,6,7
AHU-2-1	13,500	1,600	2.5	5.0	4	480	3	60	77.0	64.0	55.0	54.5	413,000	45	82.6	10.0	CARRIER	39MN	30.2	35	1,2,3,4,6,7
AHU-2-2	12,000	1,400	2.5	5.0	4	480	3	60	77.0	64.0	55.0	54.5	386,000	45	73.2	10.0	CARRIER	39MN	33.2	40	1,2,3,4,6,7
AHU-2-3	13,500	1,600	2.5	5.0	4	480	3	60	77.0	64.0	55.0	54.5	413,000	45	82.6	10.0	CARRIER	39MN	30.2	35	1,2,3,4,6,7
AHU-3-1	10,500	1,250	2.5	5.0	4	480	3	60	77.0	64.0	55.0	54.5	321,000	45	64.2	10.0	CARRIER	39MN	33.2	40	1,2,3,4,6,7
AHU-3-2	15,000	1,800	2.5	7.5	3	480	3	60	77.0	64.0	55.0	54.5	460,000	45	92.0	10.0	CARRIER	39MN	20.8	25	1,2,3,5,6,7
AHU-4-1	10,500	1,250	2.5	5.0	4	480	3	60	77.0	64.0	55.0	54.5	321,000	45	64.2	10.0	CARRIER	39MN	33.2	40	1,2,3,4,6,7
AHU-4-2	6,500	780	2.5	3.0	3	480	3	60	77.0	64.0	55.0	54.5	200,000	45	40.0	10.0	CARRIER	39MN	17.8	20	1,2,3,5,6,7
GENERAL NOTES:																					
1. EXTERNAL STATIC PRESSURE INCLUDES LOSSES DUE TO DUCTWORK, AIR DEVICES, DAMPERS, AND DUCT MOUNTED HOT WATER COILS WHERE APPLICABLE. DIRTY FILTER AND UNIT CASING MUST BE ADDED TO EXTERNAL STATIC PRESSURE TO OBTAIN TOTAL PRESSURE LOSS. INCREASE HORSEPOWER AS REQUIRED TO MEET YOUR TOTAL PRESSURE LOSS. COORDINATE WITH ELECTRICIAN.																					
2. MAINTAIN MINIMUM CLEARANCE FOR COIL PULL AS RECOMMENDED BY UNIT MANUFACTURER. MAINTAIN MINIMUM CLEARANCE AS REQUIRED TO OPEN ACCESS AND CONTROL DOORS ON UNIT FOR SERVICE, MAINTENANCE, AND INSPECTION. MAINTAIN MINIMUM ELECTRICAL CLEARANCE AS REQUIRED BY NEC.																					
3. APPROVED ALTERNATE: TRANE CSAA																					
4. PROVIDE AND INSTALL KNAUF PERFORMANCE+ INTERNAL DUCT LINER A MINIMUM OF 10 FEET DOWNSTREAM OF DUCTWORK.																					
REMARKS:																					
1. VELOCITY NOT TO EXCEED 500 FPM ON COOLING COIL.																					
2. UNIT TO BE A VARIABLE VOLUME UNIT MOTORS TO BE VARIABLE FREQUENCY DRIVE RATED.																					
3. PROVIDE TOP DISCHARGE.																					
4. PROVIDE TWO-WAY CONTROL VALVES FOR COOLING.																					
5. PROVIDE THREE-WAY CONTROL VALVES FOR COOLING.																					
6. PROVIDE UNIT WITH FLAT FILTER SECTION.																					
7. PROVIDE UNIT WITH BI-POLAR IONIZATION SYSTEM.																					

HOT WATER COIL (DUCT ACCESSORY)									
MARK	CFM	ENTERING AIR TEMP (°F)	GPM	MINIMUM CAPACITY (BTU/H)	MAXIMUM PRESSURE DROP (IN. W.G.)	WATER	MIN. FACE AREA (SQ. FT.)	SERVES	REMARKS
HWC-1	6,500	64	14.7	146,800	0.26	3.0	5.2	AHU-1-4	1
HWC-2	2,870	20	20.3	202,500	0.26	3.0	2.9	MUA-1	1
HWC-3	12,000	64	27.9	270,000	0.26	3.0	6.7	AHU-2-2	1
<b>REMARKS:</b> 1. PROVIDE WITH FLANGE FOR MOUNTING IN DUCTWORK.									

PUMP												
MARK	SERVICE	TYPE	GPM	HEAD (FT.)	MOTOR HORSE POWER	MAX. RPM	CURRENT CHARAC.			MANUFACTURER	MODEL NUMBER	REMARKS
CHWP-1	CHILLED WATER	VERTICAL INLINE	444	140.00	25.0	1760	480	3	60	TACO	KS	1,2
CHWP-2	CHILLED WATER	VERTICAL INLINE	444	140.00	25.0	1760	480	3	60	TACO	KS	1,2
CHWP-3	CHILLED WATER	VERTICAL INLINE	444	140.00	25.0	1760	480	3	60	TACO	KS	1,2
CWP-1	CONDENSER WATER	VERTICAL INLINE	610	90.00	20.0	1760	480	3	60	TACO	KS	1
CWP-2	CONDENSER WATER	VERTICAL INLINE	610	90.00	20.0	1760	480	3	60	TACO	KS	1
CWP-3	CONDENSER WATER	VERTICAL INLINE	610	90.00	20.0	1760	480	3	60	TACO	KS	1
HWP-1	HOT WATER	VERTICAL INLINE	190	120.00	10.0	1760	480	3	60	TACO	KS	1,2
HWP-2	HOT WATER	VERTICAL INLINE	190	120.00	10.0	1760	480	3	60	TACO	KS	1,2
<b>GENERAL NOTES:</b> 1. PUMP IS TO HAVE A NON-OVERLOADING MOTOR. 2. MINIMUM RECOMMENDED CLEARANCE AROUND A PUMP IS 24 INCHES. MAINTAIN MINIMUM CLEARANCES AS REQUIRED FOR SERVICE, MAINTENANCE, AND INSPECTION. 3. APPROVED ALTERNATE: GRUNDFOS VLS  <b>REMARKS:</b> 1. UNIT TO BE VARIABLE FREQUENCY DRIVE RATED. 2. PROVIDE SUCTION DIFFUSER AT PUMP INLET.												

GRILLE									
MARK	SERVICE	TYPE	DAMPER	CONSTRUCTION MATERIAL	FINISH COLOR	MANUFACTURER	MODEL NUMBER	DESCRIPTION	REMARKS
A	SUPPLY AIR	DIFFUSER	AT TAP	STEEL	WHITE	TITUS	OMNI	EXPOSED T-BAR CEILING FRAME STYLE WITH 24"X24" FACE.	
B	SUPPLY AIR	DIFFUSER	OBD	STEEL	WHITE	TITUS	OMNI	SURFACE MOUNT CEILING FRAME STYLE WITH 24"X24" FACE.	1
C	SUPPLY AIR	DIFFUSER	OBD	STEEL	WHITE	TITUS	TDC	SURFACE MOUNT CEILING FRAME STYLE WITH 12"X12" OR 24"X24" FACE. LOUVERED FACE	1
D	SUPPLY AIR	DIFFUSER	AT TAP	STEEL	WHITE	TITUS	TDC	EXPOSED T-BAR FRAME STYLE WITH 12"X12" OR 24"X24" FACE. LOUVERED FACE	-
F	RETURN AIR	DIFFUSER	AT TAP	STEEL	WHITE	TITUS	OMNI	EXPOSED T-BAR CEILING FRAME STYLE WITH A 24"X24" FACE. SQUARE PLAQUE 14" ROUND NECK	-
G	RETURN AIR	DIFFUSER	OBD	STEEL	WHITE	TITUS	OMNI	SURFACE MOUNT CEILING FRAME STYLE WITH A 24"X24" FACE. SQUARE PLAQUE 14" ROUND NECK	-
H	RETURN AIR	DIFFUSER	AT FACE	STEEL	WHITE	TITUS	PXP	EXPOSED T-BAR CEILING FRAME STYLE WITH A 24"X24" FACE. PERFORATED FACE	-
J	SUPPLY AIR	GRILLE	AT FACE	STEEL	WHITE	TITUS	300RL	DOUBLE DEFLECTION SIDEWALL GRILLE WITH HORIZONTAL FRONT BARS. SURFACE MOUNTED.	2,3,4
K	SUPPLY	DRUM LOUVER	AT FACE	STEEL	WHITE	TITUS	DL	LONG THROW SIDE WALL DRUM LOUVER. 40"X12" FACE.	2,4,5
L	SUPPLY	DRUM LOUVER	AT FACE	STEEL	WHITE	TITUS	DL	LONG THROW SIDE WALL DRUM LOUVER. 24"X8" FACE.	2,4,5
M	RETURN AIR	GRILLE	-	STEEL	WHITE	TITUS	350RL	DOUBLE DEFLECTION SIDEWALL GRILLE WITH HORIZONTAL FRONT BARS. SURFACE MOUNTED.	3,4
N	SUPPLY AIR	SLOT	AT FACE	STEEL	BLACK	TITUS	FBPL-10	SINGLE 1" SLOT WITH PLENUM BOX 4'X1'.	1,6,7,8
<b>GENERAL NOTES:</b> 1. DAMPERS NOTED AS U.L. SHALL BE A 'U.L.' CLASSIFIED CEILING RADIATION DAMPER WITH THERMAL BLANKET. 2. COORDINATE FINAL LOCATION OF ALL GRILLES, REGISTERS, AND DIFFUSERS WITH CEILING, LIGHTING, STRUCTURAL MEMBERS, AND ARCHITECTURAL FEATURES PRIOR TO CONSTRUCTION. 3. PROVIDE OPPOSED BLADE DAMPER AT EACH SUPPLY AND EXHAUST UNLESS BALANCING DAMPER IS PROVIDED AT RUNOUT TAKE-OFF. 4. COORDINATE FINISH SELECTIONS WITH ARCHITECT PRIOR TO PURCHASE. COLORS INDICATED ARE TO BE USED WHERE ARCHITECT HAS NO PREFERENCE. 5. APPROVED ALTERNATE: MANUFACTURER PRICE.  <b>REMARKS:</b> 1. PROVIDE BALANCING CABLE FOR AIR BALANCING WHEN LOCATED IN NON-ACCESSIBLE CEILING AREAS. 2. PROVIDE WITH OPTION FOR OPPOSED BADE DAMPER ACCESSIBLE THROUGH FACE OF REGISTER. 3. PROVIDE DUCT MOUNTING KIT. 4. PROVIDE WALL MOUNTING KIT. 5. PROVIDE WITH ADJUSTABLE AIR VANES 6. COORDINATE SLOT WIDTH, COUNT AND LOCATION WITH EXISTING CONDITIONS. 7. PROVIDE FLIGHT TYPE FLOWBAR TRACK AT LENGTH SHOWN ON PLAN. 8. REMAINDER OF SLOT LENGTH TO BE PROVIDED WITH LIGHT SHIELD. PROVIDE FBR-10 TYPE LIGHT SHIELD.									

BOILER																
Mark	TYPE	MINIMUM GAS INPUT (BTU/H)	MINIMUM HEAT OUTPUT (BTU/H)	PRESSURE DROP (FT.H2O)	ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	GPM	FLUE SIZE	BLOWER (AMPS)	ELECTRICAL			MANUFACTURER		MODEL	REMARKS
B-1	CONDENSING	2,000,000	1,874,000	5.0	160 °F	180 °F	190.0	8	20	120	1	60	FULTON	EDR	1,2	
B-2	CONDENSING	2,000,000	1,874,000	5.0	160 °F	180 °F	190.0	8	20	120	1	60	FULTON	EDR	1,2	
<b>GENERAL NOTES:</b> 1. PROVIDE 3 OUNCE GAS PRESSURE TO BOILER. 2. MAINTAIN MINIMUM CLEARANCE AROUND A BOILER OF 24 INCHES PER TEXAS BOILER LAW. MAINTAIN MINIMUM CLEARANCE AS REQUIRED TO OPEN ACCESS AND CONTROL DOORS FOR SERVICE, MAINTENANCE AND INSPECTION. MAINTAIN MINIMUM ELECTRICAL CLEARANCES AS REQUIRED BY NEC. 3. APPROVED ALTERNATE: RIELLO ARRAY  <b>REMARKS:</b> 1. UNIT SHALL INCLUDE BACNET PROTOCOL INTERFACE, MULTI-BOILER CONDENSATE DRAIN TRAP, ACID NEUTRALIZATION KIT, FLUE GAS EXHAUST KIT, OUTDOOR AIR TEMPERATURE SENSOR KIT, AND MASTER BOILER CONTROL PANEL COMMUNICATION BETWEEN BOILERS. 2. PROVIDE SEALED COMBUSTION BOILER.																

COOLING TOWER											
MARK	ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	GPM	AMBIENT WET BULB TEMP (°F)	FAN HP	CURRENT			MANUFACTURER	MODEL	REMARKS
CT-1	95.0	85	610.0	80	10	480	3	60	MARLEY	NC	1,2,3,4,5
CT-2	95.0	85	610.0	80	10	480	3	60	MARLEY	NC	1,2,3,4,5
<b>GENERAL NOTES:</b> 1. APPROVED ALTERNATE: REYMSA RTU  <b>REMARKS:</b> 1. MOTORS TO BE VARIABLE FREQUENCY DRIVE RATED AND/OR MANUFACTURER WITH COMMUNICATION CARD NECESSARY FOR CONNECTION TO NEW BAS. COORDINATE WITH ELECTRICAL AND CONTROLS FOR INSTALL. 2. STAINLESS STEEL CONSTRUCTION. 3. MOTOR SHALL BE OUT OF WATER STREAM. 4. PROVIDE WITH OSHA APPROVED LADDERS WITH SAFETY CAGE AND PLATFORMS. 5. PROVIDE MECHANICAL FLOAT MAKE-UP WATER CONTROL WITH INTEGRAL HIGH/LOW LEVEL ALARM FOR PRIMARY WATER LEVEL CONTROL.											

WATER COOLED CHILLER																			
MARK	MINIMUM CAPACITY (TONS)	EVAPORATOR (FF=0.0001)				CONDENSER (FF=0.00025)				CURRENT CHARAC.				MCA	MOCP	MINIMUM IPLV/IP	MANUFACTURER	MODEL	REMARKS
		ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	GPM	PRESSURE DROP (FT.)	ENTERING WATER TEMP (°F)	LEAVING WATER TEMP (°F)	GPM	PRESSURE DROP (FT.)	V	P	F							
WCC-1	185	55 °F	45 °F	444	20.1	85	95 °F	610	10.1	480	3	60	227	300	0.44	TRANE	RTWD	1,2,3	
WCC-2	185	55 °F	45 °F	444	20.1	85	95 °F	610	10.1	480	3	60	227	300	0.44	TRANE	RTWD	1,2,3	
GENERAL NOTES: 1. APPROVED ALTERNATE: CARRIER 23XR																			
REMARKS: 1. CHILLER SHALL MEET OR EXCEED BOTH ABOVE SCHEDULED FULL-LOAD AND PART-LOAD MINIMUM ASHRAE 90.1 EFFICIENCIES AT ARI 44 LEAVING CHILLED WATER TEMPERATURE AND 85 ENTERING CONDENSER WATER TEMPERATURE. 2. CHILLERS SHALL MEET OR EXCEED CAPACITY AT SCHEDULED WATER TEMPERATURES. 3. PROVIDE WITH VARIABLE FREQUENCY DRIVE.																			

FAN SCHEDULE														
TAG	LOCATION	CFM	EXT. STATIC PRESSURE (N.W.C.)	MAX RPM	HORSE POWER	CURRENT CHAR			INTERLOCK WITH	FAN TYPE	DRIVE TYPE	MANUFACTURER	MODEL NUMBER	REMARKS
						V	P	F						
SF-1-1	MECH ROOM	1600	0.75	1400	1	208	3	60	PRESSURE SENSOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
SF-1-2	MDR ROOM	1600	0.75	1400	1	208	3	60	PRESSURE SENSOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
SF-1-3	VESTIBULE	150	0.50	1100	0.3	120	1	60	TIMECLOCK	INLINE	DIRECT	GREENHECK	CSP	1,2,3,4
SF-1-4	VESTIBULE	150	0.50	1100	0.3	120	1	60	TIMECLOCK	INLINE	DIRECT	GREENHECK	CSP	1,2,3,4
SF-2-1	MECH ROOM	3000	0.75	1400	1	208	3	60	PRESSURE SENSOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
SF-2-2	MECH ROOM	1600	0.75	1400	1	208	3	60	PRESSURE SENSOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
SF-3-1	MECH ROOM	2500	0.75	1400	1	208	3	60	PRESSURE SENSOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
SF-3-2	MECH ROOM	1800	0.75	1400	1	208	3	60	PRESSURE SENSOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
SF-4-1	ROOF	780	0.30	1300	1	208	3	60	PRESSURE SENSOR	ROOF	DIRECT	GREENHECK	RCS	1,2,3,6
EF-1-1	RESTROOM	490	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-1-2	RESTROOM	490	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-1-3	CUSTODIAL	70	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-1-4	MECH ROOM	1900	0.50	1700	1	208	3	60	REFRIGERANT DETECTOR	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
EF-2-1	RESTROOM	350	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-2-2	RESTROOM	350	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-2-3	CUSTODIAL	70	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-2-4	RESTROOM	70	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-3-1	RESTROOM	350	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-3-2	RESTROOM	350	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-3-3	CUSTODIAL	70	0.90	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-4-1	RESTROOM	70	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-4-2	RESTROOM	70	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-4-3	RESTROOM	70	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-4-4	RESTROOM	70	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
EF-4-5	CUSTODIAL	100	0.50	1100	0.3	120	1	60	LIGHTS	CEILING	DIRECT	GREENHECK	CSP	1,2,3,4,5
MUA-1	MECH ROOM	2970	0.50	1400	1	460	3	60	KITCHEN HOOD	INLINE	DIRECT	GREENHECK	SQ	1,2,3,4
PCU-1	ROOF	370	2.30	1400	7.5	460	3	60	KITCHEN HOOD	VENT SET	BELT	ECON-AIR	EA-USB	7
GENERAL NOTES:														
1. EXTERNAL STATIC PRESSURE INCLUDES LOSSES DUE TO DUCTWORK, AIR DEVICES, AND DAMPERS WHERE APPLICABLE. DIRTY FILTER AND UNIT CASING MUST BE ADDED TO EXTERNAL STATIC PRESSURE TO OBTAIN TOTAL PRESSURE LOSS.														
2. INCREASE HORSEPOWER AS REQUIRED TO MEET TOTAL PRESSURE LOSS. COORDINATE WITH ELECTRICIAN.														
3. MINIMUM RECOMMENDED CLEARANCE AROUND UNIT IS 12 INCHES ON NON-SERVICE SIDES AND 30 INCHES ON SERVICE SIDES. MAINTAIN MINIMUM CLEARANCE AS REQUIRED TO OPEN ACCESS AND CONTROL DOORS ON UNIT FOR SERVICE, MAINTENANCE, AND INSPECTION. MAINTAIN MINIMUM ELECTRICAL CLEARANCE AS REQUIRED BY NEC.														
4. PROVIDE WITH ECM FAN TYPE.														
5. IN LINE FAN APPROVED ALTERNATE: COOK SON														
6. CABINET FAN APPROVED ALTERNATE: COOK GEMINI														
7. PCU APPROVED ALTERNATE: CAPTIVEAIRE USB														
8. ROOF-TOP SUPPLY FAN APPROVED ALTERNATE: COOK HES														
REMARKS:														
1. PROVIDE WITH INTEGRAL DISCONNECT.														
2. PROVIDE WITH FAN SPEED CONTROLLER.														
3. PROVIDE WITH GRAVITY BACKDRAFT DAMPER.														
4. PROVIDE WITH HANGING ISOLATION KIT.														
5. PROVIDE WITH DECORATIVE GRILLE.														
6. PROVIDE WITH MANUFACTURER RECOMMENDED MOUNTING HARDWARE AND WIND-RESISTANT ROOF CURB.														
7. REFER TO KITCHEN INFORMATION SHEETS FOR MORE INFORMATION.														