

CONTROL VALVE SCHEDULE						
MARK	BASIS OF DESIGN BELIMO	FLOW (GPM)	EQUIP/SYSTEM/SERVICE	LINE SIZE (IN)	QTY.	NOTES
UCV000		1725	UCT### CWR ISOLATION	10	3	1.2.4:
UCV000		1725	UCT CW BYPASS	10	1	1.2.4:
UCV000		1725	UCT### CWS ISOLATION	10	3	1.2.4:
UCV000		1725	UCH### CWR ISOLATION	10	3	1.2.4:
UCV000		1207	UCH### CHW ISOLATION	10	3	1.2.4:
UCV000		224.3	UAHU101 CHR MODULATING	4	1	1.2.5:
UCV000		31.9	UAHU101 HWR MODULATING	2	1	1.3.5:
UCV000		4	UPIU101-120 HWR MODULATING	3/4	20	1.3.5:
UCV000		50	UAHU201 CHR MODULATING	3	1	1.2.5:
UCV000		14.1	UAHU201 HWR MODULATING	2	1	1.3.5:
UCV000		80.54	UAHU202-204 CHR MODULATING	3	3	1.2.5:
UCV000		15.15	UAHU202-204 HWR MODULATING	2	3	1.3.5:
UCV000		117.8	UAHU301-314 CHR MODULATING	3	14	1.2.5:
UCV000		18.52	UAHU301-314 HWR MODULATING	2	14	1.3.5:
UCV000		300	CHW LOOP DP CTRL MODULATING	4	1	1.2.5:
UCV000		200	HW LOOP DP CTRL MODULATING	3	1	1.3.5:
1. MIN. PD = 2 PSI, MAX. PD = 5 PSI; BACNET COMPATIBLE DDC INTERFACE; 120V/1PH ACTUATOR; TWO WAY CONTROL VALVE 2. LINE SIZE LUG BUTTERFLY VALVE; 175 PSI CLOSE-OFF PRESSURE 3. LINE FEMALE TO FEMALE THREADED BALL VALVE; 200 PSI CLOSE-OFF PRESSURE 4. NON SPRING RETURN, 2 POSITION 5. SPRING RETURN, NORMALLY OPEN, MODULATING						

FILTRATION SKID SCHEDULE								
MARK	PUROFLUX MODEL NO.	SYSTEM	VOLUME (GAL.)	GPM	APPROX HEAD FT.	ELECTRICAL		NOTES
						MOTOR HP	VOLT/ PH	
UFS001	PF-64-060(A)-AP	UCT001-003	40	900	30	20	460/3	1: 2:
1. FULLY ASSEMBLED SKID PACKAGE; REMOVES PARTICULATES AS LOW AS 45 MICRONS, 150 PSI WORKING PRESSURE, 1400 LBS DRY WEIGHT, 1732 LBS OPERATING WEIGHT 2. SEPARATOR WITH MANUAL AIR BLEED VALVE, INLET/OUTLET PRESSURE GAUGES, CENTRIFUGAL PUMP WITH TEFC MOTOR AND CAST IRON PRE-STRAINER, ELECTRICAL CONTROLS WITHIN UL LABELED CONTROL PANEL WITH NEMA 4X ENCLOSURE, DOOR DISCONNECT SWITCH, SHORT CIRCUIT AND MOTOR OVERLOAD PROTECTION, HAND-OFF-AUTO SWITCHES, ELECTRICALLY ACTUATED AUTOMATIC PURGE BALL VALVE WITH ADJUSTABLE PURGE TIMER.								

GLYCOL MAKEUP UNIT SCHEDULE							
MARK	BELL & GOSSETT MODEL NO.	SYSTEM	SYSTEM CONN. SIZE (IN)	FILL PRESSURE (PSI)	ELECTRICAL		NOTES
					MOTOR HP	VOLT/ PH	
UGMU001	GMU-30	CHILLED WATER	3/4"	30	1/2	115/1	1: 2:
UGMU002	GMU-30	HOT WATER	3/4"	30	1/2	115/1	1: 2:
1. AUTOMATICALLY MAINTAINS SYSTEM MINIMUM PRESSURE; GLYCOL ADDITION IS CONTROLLED BY PRESSURE SWITCH; LOW LEVEL ALARM CONTACT; STEEL FITTINGS; 10GPM @ 70' TDH. 2. FILLED WITH 30% PROPYLENE GLYCOL.							

BLADDER EXPANSION TANK SCHEDULE					
MARK	BELL & GOSSETT MODEL NO.	SYSTEM	MIN ACCEPTANCE VOLUME GALLONS (3 CELL TOWERS)	TANK ACCEPTANCE VOLUME GALLONS	NOTES
UET001	UBLR002500	CHILLED WATER	550	660	1: 2:
UET002	UBLR001000	HOT WATER	660	792	1: 3:
1. FULL ACCEPTANCE BLADDER EXPANSION TANK WITH REPLACEABLE BLADDER 2. 48" DIAMETER, 100" TALL, 6600# FULL; BASED ON 30-75PSI, 40-100F, 36,300 GALLONS 3. 48" DIAMETER, 118" TALL, 8164# FULL; BASED ON 30-75PSI, 40-100F, 14,100 GALLONS					

AIR SEPARATOR SCHEDULE					
MARK	BELL & GOSSETT MODEL NO.	SYSTEM	MAX CONNECTED SYSTEM GPM	MAX SEPARATOR CAPACITY GPM	NOTES
UAS001	CRS-12F-HV	CHILLED WATER	2,414	3,500	1:
UAS002	CRS-10F	HOT WATER	1,500	1,530	1:
1. COALESCING AIR AND DIRT REMOVAL SEPARATOR; STAINLESS STEEL MEDIA; REMOVABLE END COVER; CONNECTIONS FOR AIR VENT, BLOW DOWN AND SKIM VALVE; FLANGED CONNECTIONS					

ELECTRIC HEAT TRACE SCHEDULE						
MARK	THERMON MODEL NO	ELECTRICAL			SYSTEM	NOTES
		VOLT	PHASE	AMPS		
UHT001	BSX 8-2	277	1	20	CONDENSER WATER SUPPLY LOOP	1:
UHT002	BSX 8-2	277	1	20	CONDENSER WATER RETURN LOOP	1:
1. COORDINATE LOCATION OF JUNCTION BOXES WITH ELECTRICAL.						

SUCTION DIFFUSER SCHEDULE								
MARK	BELL & GOSSETT MODEL NO.	SERVICE		FLOW (GPM)	PD (FT)	SYSTEM SIDE (IN)	PUMP SIDE (IN)	NOTES
USD101	JH-3X	UCHP001	CHW SYS PRIMARY	1207	1.6	10	8	1.2:
USD102	JH-3X	UCHP002	CHW SYS PRIMARY	1207	1.6	10	8	1.2:
USD103	JH-3X	UCHP003	CHW SYS PRIMARY	1207	1.6	10	8	1.2:
USD104	JH-3X	UCHP004	CHW SYS SECONDARY	1150	1.6	10	8	1.2:
USD105	JH-3X	UCHP005	CHW SYS SECONDARY	1150	1.6	10	8	1.2:
USD106	JH-3X	UCHP006	CHW SYS SECONDARY	1150	1.6	10	8	1.2:
USD107	JH-3Z	UCWP001	CW SYS PUMPS	1725	3.3	10	8	1.3:
USD108	JH-3Z	UCWP002	CW SYS PUMPS	1725	3.3	10	8	1.3:
USD109	JH-3Z	UCWP003	CW SYS PUMPS	1725	3.3	10	8	1.3:
USD201	GG-3X	UHWP001	HW SYSTEM	800	1.2	6	6	1.2:
USD202	GG-3X	UHWP002	HW SYSTEM	800	1.2	6	6	1.2:
USD203	GG-3X	UHWP003	HW SYSTEM	800	1.2	6	6	1.2:
1. ANGLE TYPE CAST IRON BODY, FLANGED CONNECTIONS, CARBON/STAINLESS STEEL STRAIGHTENING VANES AND COMBINATION DIFFUSER-STRAINER-ORIFICE WITH 3/16" DIAMETER OPENINGS FOR PUMP PROTECTION, DISPOSABLE FINE MESH START-UP STRAINER. 2. CAST IRON BODY, STEEL INLET VANES AND ORIFICE CYLINDER, 16 MESH BRONZE START-UP STRAINER FOR CLOSED SYSTEM. 3. CAST IRON BODY, STAINLESS STEEL INLET VANES AND ORIFICE CYLINDER, 16 MESH BRONZE START-UP STRAINER FOR OPEN SYSTEM.								

CHILLER SCHEDULE

MARK	TRANE MODEL NO.	NOM CAPACITY TONS	EVAPORATOR				CONDENSER				ELEC. VOLT/ PH	MAX KW INPUT	REFRIG. EFF. kW/ton	NPLV/IP	NOTES							
			EWT °F	LWT °F	GPM	PD	EWT °F	LWT °F	GPM	PD												
UCH001	CVHF	575	54	42	1207	17.6	85	95	1725	22.8	460/3	330.8	0.5753	0.3695	1.2:3.4:5.6:							
UCH002	CVHF	575	54	42	1207	17.6	85	95	1725	22.8	460/3	330.8	0.5753	0.3695	1.2:3.4:5.6:							
UCH003	CVHF	575	54	42	1207	17.6	85	95	1725	22.8	460/3	330.8	0.5753	0.3695	1.2:3.4:5.6:							
1. NEW CENTRIFUGAL LIQUID CHILLER WITH VARIABLE SPEED MOTOR/COMPRESSOR. COMPRESSOR SIZE 570, IMPELLER SIZE, 291, ORIFICE SIZE 835, MOTOR SIZE 363. 29,928 LB OPERATING WEIGHT. 2. CHILLER PERFORMANCE AND CAPACITIES ARE BASED ON 30% PROPYLENE GLYCOL WITH 0.028" TUBE THICKNESS, 0.00010 FOULING FACTOR ON THE EVAPORATOR AND TREATED WATER WITH 0.028" TUBE THICKNESS, 0.00025 FOULING FACTOR ON THE CONDENSER. 3. 2-PASS EVAPORATOR AND 2-PASS CONDENSER, CONDENSER HAVING HINGED MARINE WATER BOX ON THE CONNECTION SIDE AND HINGED COVER ON THE TUBE PULL END. ADDITIONAL ACCESSORIES INCLUDE THE FOLLOWING: EVAPORATOR AND CONDENSER PROOF OF FLOW - THERMAL DISPERSION, FACTORY PROVIDED, FIELD INSTALLED; NEOPRENE ISOLATOR PADS AS STANDARD; ADAPTIVE FREQUENCY DRIVE (AFD); 3 YEAR LEAK-TIGHT WARRANTY. 4. ADDITIONAL ELECTRICAL INFORMATION: MOTOR LRA 2819 A; PRIMARY RLA 435.8 A; COMPRESSOR MOTOR RLA 455.70 A; MCA 544 A; MOPC 800 A 5. REFRIGERANT BASIS OF DESIGN: 1000 LBS OF R-514A. REFRIGERANT SHALL HAVE AN OZONE DEPLETION POTENTIAL (ODP) OF ZERO (0), HFC OR HFO. CFC/HFCs ARE NOT ACCEPTABLE. 6. CHILLER PART LOAD CHARACTERISTICS:																						
UNLOADING PERFORMANCE AMR/ CONDENSER RELIEF: EVAP LWT 42°F, EVAP FR 1207, COND FR 1725																UNLOADING PERFORMANCE CONSTANT EWT/2029: EVAP LWT 42°F, EVAP FR 1207, COND EWT 85°F, COND FR 1725						
LOAD %	CAP TONS	EVAP EWT	EVAP PD	COND EWT	COND PD	COND KW	AMPS	EFF.		EVAP EWT	EVAP PD	COND EWT	COND KW	AMPS	EFF.							
100	575.0	54.0	17.6	85	94.38	22.8	330.8	455.7	0.5753	54.0	17.6	94.38	22.8	330.8	455.7	0.5753						
80	517.5	52.8	17.4	81	89.32	23.1	294.7	395.1	0.5115	52.8	17.4	93.44	22.8	292.3	419.2	0.5646						
60	460.0	51.6	17.2	77	84.30	23.5	210.0	342.8	0.4565	51.6	17.2	92.52	22.8	263.0	386.3	0.4717						
70	402.5	50.4	17.0	73	79.32	23.8	163.8	297.3	0.4071	50.4	17.0	91.61	22.9	235.1	353.1	0.5841						
60	345.0	49.2	16.9	69	74.35	24.2	123.8	258.7	0.3586	49.2	16.9	90.72	22.9	212.2	324.3	0.6151						
50	287.5	48.0	16.6	65	69.41	24.6	91.52	229.4	0.3183	48.0	16.6	89.83	22.9	190.1	256.7	0.6611						
40	230.0	46.8	16.4	65	68.56	24.6	77.95	213.0	0.3389	46.8	16.4	88.92	23.0	165.5	263.5	0.7196						
30	172.5	45.6	16.2	65	67.70	24.7	64.86	195.9	0.3760	45.6	16.2	88.00	23.0	137.5	226.7	0.7956						
20	115.0	44.4	16.0	65	66.83	24.7	48.98	176.9	0.4259	44.4	16.0	87.07	23.0	107.2	187.9	0.9318						
13	74.7	43.6	15.8	65	66.22	24.8	38.36	161.9	0.5131													

COOLING TOWER SCHEDULE													
MARK	BAC MODEL NO.	NOM TONS	GPM	EWT °F	LWT °F	AMBIENT WB °F	STATIC LIFT	TOTAL MOTOR HP	ELEC. VOLT/ PH	BASIN HEATER KW	NOTES		
UCT001	XES3E-1424-07N (3 CELL TOWERS)	1725 (TOTAL)	5175 (TOTAL)	95	85	78	4.91 PSI	(1) 25	460/3	(2)x14	1:2:3:4:		
UCT002								(1) 25	460/3	(2)x14			
UCT003								(1) 25	460/3	(2)x14			
1. CROSSFLOW COOLING TOWER. INDIVIDUAL CELLS ARE GIVEN A UNIQUE MARK. CELL 1: UCT001, CELL 2: UCT002, CELL 3: UCT003, WITH COMBINED CAPACITY AS INDICATED. 2. PROVIDE OSHA APPROVED LADDERS, WITH EXTENSION DOWN TO GRADE (COOLING TOWER WILL BE SUPPORTED ON STRUCTURE 12'-0" ABOVE FINISHED FLOOR) AND FULL PERIMETER HAND RAILS TO ACCESS FAN MOTORS. INVERTER RATED MOTORS WITH SHAFT GROUNDING RINGS; ELECTRONIC LEVEL SWITCH; VIBRATION SWITCH AND OTHER REQUIRED ACCESSORIES. BASIN HEATERS, UCBH101, UCBH102, UCBH201, UCBH202, UCBH301, UCBH302, ARE 2 PER CELL, 460V/3PH, FACTORY PROVIDED, AND FIELD WIRING OF BASIN HEATERS BY DIVISION 26. VFDs BY DIVISION 26. 4. TOP OF TOWER SOUND PRESSURE (dB) CRITERIA: OCTAVE BAND @ 5 FT: 1 2 3 4 5 6 7 8 76 74 70 70 71 65 65 64 OCTAVE BAND @ 50 FT: 1 2 3 4 5 6 7 8 68 67 63 61 59 53 52 51													

BOILER SCHEDULE											
MARK	BASIS OF DESIGN AERCO	INPUT MBH	OUTPUT MBH	EWT °F	LWT °F	GPM	VENT SIZE	ELECTRICAL			NOTES
								VOLT/PH	FLA	MOPC	
UBLR001	BMK-5000	5,000	4,550	120	160	228	14"	460/3	9	20	1:2:3.4:5.6:7.8.9:10:11:
UBLR002	BMK-5000	5,000	4,550	120	160	228	14"	460/3	9	20	1:2:3.4:5.6:7.8.9:10:11:
UBLR003	BMK-5000	5,000	4,550	120	160	228	14"	460/3	9	20	1:2:3.4:5.6:7.8.9:10:11:
1. NATURAL GAS FIRED, CONDENSING FIRETUBE BOILER WITH VENTLESS GAS TRAIN AND MINIMUM 10:1 TURNDOWN. 2. PROVIDE WITH ASME APPROVED PRESSURE RELEASE VALVE, FACTORY SET FOR 75 PSIG, LOW WATER CUTOFF AND HIGH TEMPERATURE LIMIT WITH MANUAL RESET. 3. HEATING FLUID IS 30% PROPYLENE GLYCOL SOLUTION. 4. PROVIDE BACNET DDC INTERFACE MODULE. 5. COMBUSTION O2 LEVELS SHALL NOT EXCEED 7% THROUGH THE ENTIRE FIRING RANGE. COMBUSTION SYSTEM SHALL BE PROVIDED WITH AN O2 SENSOR TO ALERT IF THE UNIT IS EXPERIENCING NON-OPTIMUM COMBUSTION CONDITIONS. 6. PROVIDE BOILER SEQUENCING WITH HOT WATER RESET, BOILER STAGING POINT NOT TO EXCEED 40%; 7. PROVIDE FACTORY CONDENSATE TRAP AND CONDENSATE NEUTRALIZER FOR EACH BOILER, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. 8. BOILER MANUFACTURER TO PROVIDE LETTER OF GUARANTEE FOR AS BUILT FLUE AND COMBUSTION AIR INSTALLATION. 9. BOILER EXHAUST VENT MUST BE UL LISTED FOR USE WITH CATEGORY II AND IV, NON-POSITIVE AND POSITIVE VENT PRESSURE CONDENSING APPLIANCE. BOILER EXHAUST VENT SHALL BE 14" DIAMETER, AL29-4C WITH MINIMUM WALL THICKNESS OF 0.020". VERTICAL DISCHARGE VENT SHALL TERMINATE MINIMUM 3 FEET ABOVE ROOF, 2 FEET ABOVE ANY GRAVITY AIR INLET OR OBJECT WITHIN 10 FEET, OR 3 FEET ABOVE ANY FORCED-AIR INLET WITHIN 10 FEET; DESIGNED TO PREVENT RAIN FROM ENTERING THE VENT, WITH APPROVED RAIN CAP, STORM COLLAR, ROOF JACK AND ROOF FLASHING, AS REQUIRED. 10. DIRECT VENT/DUCTED COMBUSTION AIR: 1167 SCFH AT 60 DEGREES F; MINIMUM 14" DIAMETER METAL OR PVC DUCT. DIRECT AIR INTAKE MUST BE LOCATED AT LEAST 3 FEET BELOW ANY VENT TERMINATIONS WITHIN 10 FEET. PROVIDE INTAKE TERMINAL, DESIGNED TO PREVENT RAIN FROM ENTERING, INTAKE HOOD OR SIMILAR, WITH MESH SCREEN NOT SMALLER THAN 1"x1" INSTALLED ON THE INLET OF THE COMBUSTION AIR INLET. 11. ALTERNATE MANUFACTURERS MUST COMPLY WITH ALL BASIS OF DESIGN PERFORMANCE, SAFETY, DURABILITY WARRANTY AND SYSTEM DESIGN REQUIREMENTS.											

AIR HANDLING UNIT SCHEDULE

MARK	TRANE MODEL NO.	FAN SUPPLY CFM	OA CFM	APPROX. SA ESP IN. WC	SUPPLY FAN HP	RETURN FAN HP	APPROX. RA ESP IN. WC	RETURN FAN HP	COOLING COIL								HUMIDIFIER			HEATING COIL						SERVES	APPROX. OPERATING WEIGHT (LBS.)	ELECTRICAL				NOTES	
									CFM	EDB	EWB	LDB	LWB	TOTAL MBH	SENS. MBH	GPM	PIPE RUNOUT SIZE	CFM	EDB	LB/HR	CFM	EDB	LDB	MBH	GPM			CONN. RUNOUT PIPE SIZE	FLA	MCA	MOCp		VOLT/PH
UAHU101	CSAA050UB	24,000	6600	1.5	(2) 15	24,000	1.0	(2) 10	24,000	83	68	51	50.8	1244	846	224.3	2 1/2" : 4"	-	-	-	24,000	41.8	65	603.85	31.9	1 1/2" : 2"	OFFICE AREA	13,360	68.30	78.30	110	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19:20
UAHU201	CSAA040UB	7,000	2,475	2.0	(1) 10	7,000	1.0	(1) 8kW ECM	7,000	80.6	65.9	52	51.7	291	218	50	2" : 3"	-	-	-	7,000	49.4	85	267	14.1	2" : 2"	MAINTENANCE	5,050	21.72	25.22	35	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19:20
UAHU202	CSAA030UB	15,250	3660	2.0	(2) 10	15,250	1.0	(3) 8kW ECM	15,250	83.9	68.7	63	59.9	446	351	80.54	2 1/2" : 3"	-	-	-	6,000	40	84.8	287	15.15	2 1/2" : 2"	RAW STORAGE	10,965	50.47	57.22	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU203	CSAA030UB	15,250	3660	2.0	(2) 10	15,250	1.0	(3) 8kW ECM	15,250	83.9	68.7	63	59.9	446	351	80.54	2 1/2" : 3"	-	-	-	6,000	40	84.8	287	15.15	2 1/2" : 2"	RAW STORAGE	10,965	50.47	57.22	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU204	CSAA030UB	15,250	3660	2.0	(2) 10	15,250	1.0	(3) 8kW ECM	15,250	83.9	68.7	63	59.9	446	351	80.54	2 1/2" : 3"	-	-	-	6,000	40	84.8	287	15.15	2 1/2" : 2"	RAW STORAGE	10,965	50.47	57.22	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU301	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU302	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU303	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU304	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU305	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU306	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU307	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU308	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU309	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU310	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU311	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU312	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU313	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19
UAHU314	CSAA040UB	20,000	4260	1.5	(2) 10	20,000	1.0	(3) 8kW ECM	20,000	79	63	52	51	653	592	117.8	2 1/2" : 3"	11,425	70	98	8,000	44	84.4	351	18.52	2 1/2" : 2"	PACKAGING	12,149	47.56	54.31	80	460/3	1:2,3:4:5:6:7:8:9:10:11:12:13:14:15:16:17:18:19

1. MODULAR CENTRAL STATION AIR HANDLING UNIT
2. BOTTOM DISCHARGE AND BOTTOM INLET
3. PROVIDE ANGLED FILTER SECTION. MAXIMUM FILTER VELOCITY: 350 FPM
4. MAXIMUM COIL FACE VELOCITY: 500 FPM
5. COOLING CAPACITIES BASED ON 42°F ENTERING CHILLED 30% PROPYLENE GLYCOL SOLUTION, 54°F LEAVING
6. HEATING CAPACITIES BASED ON 180°F ENTERING HOT 30% PROPYLENE GLYCOL SOLUTION, 120°F LEAVING
7. FAN TYPE: (2) DIRECT DRIVE PLENUM. EACH SUPPLY AND RETURN, 480-3, WITH INVERTER BALANCE AND SHAFT GROUNDING ON MOTORS
8. REFER TO AHU ELEVATION DETAIL FOR MORE DETAILED UNIT ARRANGEMENT AND LAYOUT INFORMATION.
9. PROVIDE MARINE LED LIGHT IN FILTER SECTION
10. PROVIDE VARIABLE FREQUENCY SPEED CONTROLLER FOR EACH SUPPLY FAN. ECM PLENUM FANS ON RETURN.
11. SEE FLOOR PLANS FOR LEFT OR RIGHT ACCESS. PIPING CONNECTIONS MUST BE THE SAME SIDE AS ACCESS DOORS
12. PROVIDE 4" THICK PLEATED FILTER MEDIA MERV 13
13. PROVIDE OPPOSED BLADE MOTORIZED DAMPERS IN FILTERMIXING SECTION DUCT COLLARS
14. DOUBLE WALL CONSTRUCTION WITH SANDWICHED INSULATION
15. PROVIDE (2) OA DAMPERS (1) NORMAL OPERATION AND (1) ECONOMIZER, INSECT SCREENS AND MOISTURE ELIMINATORS.
16. HEAT COIL IN REHEAT SECTION
17. PROVIDE MIN 6" HIGH CONTINUOUS BASE RAILS, STANDARD 26" HIGH SLOPED ROOF CURB, AND PIPE CHASE
18. PROVIDE UNIT WITH OUTDOOR AIR FLOW STATION TO MONITOR WITHIN 10% ACCURACY OF THE MINIMUM DESIGN AIR FLOW RATES
19. CONTROLLER, CONTROL DEVICES, AND WIRING BY AUTOMATIC LOGICS, INSTALLED ON SITE. UNIT SHALL HAVE SINGLE POINT POWER CONNECTION AND DISCONNECT, WITH SEPARATE 120V POWER FOR SERVICE RECEPTICAL.
20. SMOKE DETECTOR, FURNISHED AND WIRED BY DIVISION 26, INSTALLED BY DIVISION 23, MOUNTED ON THE RETURN AIR DUCTWORK.

MAKE-UP AIR UNIT SCHEDULE

MARK	GREENHECK MODEL NO.	SERVICE	APPROX. OPERATING WEIGHT (LBS.)	AIR FLOW CONFIGURATION	SUPPLY CFM	APPROX. ESP IN. WG	HEAT INPUT MBH	HEAT OUTPUT MBH	AIR Δ t °F	ELECTRICAL				NOTES
										MOTOR HP	MCA	MOCp	VOLT/PH	
UAMU201	DGX-P124-H32-MF	TIPPING	1883	80/20%, RECIRC.	10,000	0.5	940	846	80	5	10.4	15	460/3	1: 2
UAMU202	DGX-P127-H32-MF	RECEIVING	1962	80/20%, RECIRC.	12,000	0.5	1127	1037	80	7-1/2	14.6	25	460/3	1: 2
UAMU203	DGX-P127-H32-MF	SILO	1962	80/20%, RECIRC.	12,000	0.5	1127	1037	80	7-1/2	14.6	25	460/3	1: 2
UAMU204	DGX-P124-H32-MF	PARTNER	1883	80/20%, RECIRC.	10,000	0.5	940	846	80	5	10.4	15	460/3	1: 2
UAMU205	DGX-P222-H35-II	TRASH/RECYCLE	3776	80/20%, RECIRC.	25,000	0.5	2348	2160	80	(2) 15	53.4	60	460/3	1: 2
UAMU206	DGX-P128-H32-MF	PROCESSING	2303	80/20%, RECIRC.	15,000	0.5	1409	1296	80	15	27.1	45	460/3	1: 2
UAMU207	DGX-P128-H32-MF	PROCESSING	2303	80/20%, RECIRC.	15,000	0.5	1409	1296	80	15	27.1	45	460/3	1: 2
UAMU208	DGX-P128-H32-MF	PROCESSING	2303	80/20%, RECIRC.	15,000	0.5	1409	1296	80	15	27.1	45	460/3	1: 2
UAMU209	MSX-P128-H32	PROCESSING	1419	100%, VAV	15,000	0.5	0	0	0	15	27.1	45	460/3	1: 2
UAMU210	MSX-P128-H32	PROCESSING	1419	100%, VAV	15,000	0.5	0	0	0	15	27.1	45	460/3	1: 2
UAMU211	MSX-P128-H32	PROCESSING	1419	100%, VAV	15,000	0.5	0	0	0	15	27.1	45	460/3	1: 2
UAMU301	DGX-P128-H32-MF	CHILLER PLANT	2303	80/20%, RECIRC.	15,000	0.5	1409	1296	80	15	27.1	45	460/3	1: 2
UAMU302	DGX-P128-H32-MF	BOILER PLANT	2303	80/20%, RECIRC.	15,000	0.5	1409	1296	80	15	27.1	45	460/3	1: 2
UAMU303	DGX-P227-H42-II	COMPRESSOR ROOM	4380	100%, VAV	40,000	0.5	3757	3456	80	(2) 25	85.9	110	460/3	1: 2
UAMU304	MSX-P227-H42-II	COMPRESSOR ROOM	3353	100%, VAV	40,000	0.5	0	0	0	(2) 20	67.7	80	460/3	1: 2
UAMU305	MSX-P227-H42-II	COMPRESSOR ROOM	3353	100%, VAV	40,000	0.5	0	0	0	(2) 20	67.7	80	460/3	1: 2
UAMU401	DGX-P127-H32-MF	FINISHED GOODS/DC	1580	100%, CAV	12,000	0.5	1127	1037	80	7-1/2	14.6	25	460/3	1: 2
UAMU402	DGX-P127-H32-MF	FINISHED GOODS/DC	1580	100%, CAV	12,000	0.5	1127	1037	80	7-1/2	14.6	25	460/3	1: 2
UAMU403	DGX-P127-H32-MF	FINISHED GOODS/DC	1580	100%, CAV	12,000	0.5	1127	1037	80	7-1/2	14.6	25	460/3	1: 2
UAMU404	DGX-P127-H32-MF	FINISHED GOODS/DC	1580	100%, CAV	12,000	0.5	1127	1037	80	7-1/2	14.6	25	460/3	1: 2

1. ROOF MOUNTED, DIRECT FIRED UNIT FIRING NATURAL GAS. CAPACITIES BASED ON FIRING NATURAL GAS AND 18°F ENTERING AIR TEMPERATURE. PROVIDE FULL PERIMETER 14" HIGH ROOF CURB, SLOPED TO MATCH ROOF SLOPE. PROVIDE 100% OUTDOOR AIR INLET HOOD WITH INSECT SCREEN AND MOTORIZED DAMPER. PROVIDE DOWN-TURN DISCHARGE PLENUM. PROVIDE V-BANK **FILTER SECTION MERV 13**. PROVIDE 2" THICK DISPOSABLE FILTERS. PROVIDE DISCONNECT SWITCH, FULL MODULATING GAS VALVE AND ELECTRONIC SPARK IGNITION. PROVIDE BACKWARD CURVED PLENUM FAN, AND FACTORY INSTALLED VFD
2. PROVIDE UNIT WITH OUTDOOR AIR FLOW STATION TO MONITOR WITHIN 10% ACCURACY OF THE MINIMUM DESIGN AIR FLOW RATES.

HUMIDIFIER SCHEDULE

MARK	NEPTRONIC MODEL NO.	AREA SERVED	SYSTEM NUMBER	STREAM DISPERSION	AIR VOLUME CFM	REQUIRED CAPACITY [AVAIL. CAP.] (LBS/HR)	ELECTRICAL		NOTES
							KW	VOLT/PH	
UHUM301	SKE4-N40	PACKAGING	UAHU301	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM302	SKE4-N40	PACKAGING	UAHU302	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM303	SKE4-N40	PACKAGING	UAHU303	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM304	SKE4-N40	PACKAGING	UAHU304	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM305	SKE4-N40	PACKAGING	UAHU305	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM306	SKE4-N40	PACKAGING	UAHU306	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM307	SKE4-N40	PACKAGING	UAHU307	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM308	SKE4-N40	PACKAGING	UAHU308	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM309	SKE4-N40	PACKAGING	UAHU309	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM310	SKE4-N40	PACKAGING	UAHU310	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM311	SKE4-N40	PACKAGING	UAHU311	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM312	SKE4-N40	PACKAGING	UAHU312	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM313	SKE4-N40	PACKAGING	UAHU313	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:
UHUM314	SKE4-N40	PACKAGING	UAHU314	PRESSURE	11,425	98 [120]	40	460/3	1:2,3:4,5:

FAN POWERED INDUCTION UNITS

MARK	BASIS OF DESIGN		INLET SIZE	OUTLET SIZE	PRIMARY AIR CFM		FAN CFM	FAN HP	MINIMUM INLET STATIC PRESSURE IN WG	EXTERNAL STATIC PRESSURE IN WG	REHEAT				COIL EAT DB	UNIT LAT DB	VOLTAGE/ PHASE	NOTES
	MAKE	MODEL			MAX	MIN					EWT	LWT	GPM	MBH				
UPIU101	TITUS	DTQP	10"		830	400	430	0.75		0.35	140	120	1.76	17.56	63.10	85	277/1	1,2,3,4,5,6,7
UPIU102	TITUS	DTFS	12"		1020	1200	-180	1		0.35	140	120	3.73	37.33	58.00	85	277/1	1,2,3,4,5,6,7
UPIU103	TITUS	DTQP	8"		540	340	200	0.75		0.35	140	120	1.22	12.17	60.56	85	277/1	1,2,3,4,5,6,7
UPIU104	TITUS	DTQP	8"		510	180	330	0.75		0.35	140	120	0.95	9.54	64.71	85	277/1	1,2,3,4,5,6,7
UPIU105	TITUS	DTQP	6"		280	100	180	0.75		0.35	140	120	0.53	5.25	64.64	85	277/1	1,2,3,4,5,6,7
UPIU106	TITUS	DTQP	10"		1075	465	610	1		0.35	140	120	2.13	21.29	63.51	85	277/1	1,2,3,4,5,6,7
UPIU107	TITUS	DTQP	8"		785	400	385	0.75		0.35	140	120	1.64	16.38	62.36	85	277/1	1,2,3,4,5,6,7
UPIU108	TITUS	DTQP	6"		370	200	170	0.75		0.35	140	120	0.79	7.88	61.89	85	277/1	1,2,3,4,5,6,7
UPIU201	TITUS	DTQP	6"		440	275	165	0.75		0.35	140	120	0.99	9.88	60.63	85	277/1	1,2,3,4,5,6,7
UPIU202	TITUS	DTQP	6"		265	205	60	0.75		0.35	140	120	0.65	6.50	58.40	85	277/1	1,2,3,4,5,6,7
UPIU203	TITUS	DTQP	8"		620	325	295	0.75		0.35	140	120	1.31	13.06	62.14	85	277/1	1,2,3,4,5,6,7
UPIU204	TITUS	DTQP	8"		695	310	385	0.75		0.35	140	120	1.39	13.89	63.31	85	277/1	1,2,3,4,5,6,7
UPIU205	TITUS	DTQP	10"		1285	650	635	1		0.35	140	120	2.68	26.75	62.41	85	277/1	1,2,3,4,5,6,7
UPIU206	TITUS	DTQP	6"		495	330	165	0.75		0.35	140	120	1.14	11.41	60.00	85	277/1	1,2,3,4,5,6,7
UPIU207	TITUS	DTQP	6"		490	300	190	0.75		0.35	140	120	1.09	10.92	60.62	85	277/1	1,2,3,4,5,6,7
UPIU208	TITUS	DTQP	6"		190	150	30	0.75		0.35	140	120	0.46	4.56	57.50	85	277/1	1,2,3,4,5,6,7
UPIU209	TITUS	DTQP	10"		1380	700	680	1		0.35	140	120	2.88	28.76	62.39	85	277/1	1,2,3,4,5,6,7
UPIU210	TITUS	DTQP	8"		510	180	330	0.75		0.35	140	120	0.95	9.54	64.71	85	277/1	1,2,3,4,5,6,7
UPIU211	TITUS	DTQP	10"		1215	385	830	1		0.35	140	120	2.21	22.12	65.21	85	277/1	1,2,3,4,5,6,7
UPIU212	TITUS	DTQP	6"		380	255	125	0.75		0.35	140	120	0.88	8.78	59.93	85	277/1	1,2,3,4,5,6,7
UPIU213	TITUS	DTQP	6"		390	255	135	0.75		0.35	140	120	0.89	8.92	60.19	85	277/1	1,2,3,4,5,6,7
UPIU214	TITUS	DTQP	10"		1290	385	905	0.75		0.35	140	120	1.65	16.52	62.67	85	277/1	1,2,3,4,5,6,7
UPIU215	TITUS	DTQP	8"		515	185	330	0.75		0.35	140	120	0.97	9.68	64.61	85	277/1	1,2,3,4,5,6,7
UPIU216	TITUS	DTFS	6"		145	145	0	0.75		0.35	140	120	0.40	4.01	55.00	85	277/1	1,2,3,4,5,6,7
UPIU217	TITUS	DTQP	10"		1150	345	805	1		0.35	140	120	2.07	20.67	65.50	85	277/1	1,2,3,4,5,6,7
UPIU218	TITUS	DTQP	8"		520	160	360	0.75		0.35	140	120	0.94	9.40	65.38	85	277/1	1,2,3,4,5,6,7
UPIU219	TITUS	DTQP	10"		980	720	260	0.75		0.35	140	120	2.35	23.50	58.98	85	277/1	1,2,3,4,5,6,7

1. 277 / 10 EC MOTOR. PROVIDE CONTROL TRANSFORMER AND 24V ELECTRIC DAMPER ACTUATOR.
2. MAXIMUM WATER PRESSURE DROP ACROSS HEATING COIL SHALL BE NO MORE THAN 10 FEET.
3. UNIT FAN SHALL BE POSITIONED IN PARALLEL CONFIGURATION.
4. **PROVIDE WITH MERV 13 FILTER**
5. PROVIDE BACNET COMPATIBLE DDC INTERFACE MODULE.
6. INSTALL UNIT AS SO TO MAINTAIN ACCESS TO CONTROL PANEL AND ALL OTHER ACCESS POINTS.
7. PROVIDE WITH UNIT MOUNTED DISCONNECT SWITCH AND FIBER FREE LINER.

VAV TERMINAL

MARK	BASIS OF DESIGN		MAX CFM	MIN CFM	MAX APD IN WG	INLET SIZE (IN)	OUTLET SIZE (IN x IN)	NOTES
	MAKE	MODEL						
UVAV021								
UVAV101	TITUS	DESV	575	355		8"		1,2,3,4,5,6
UVAV102	TITUS	DESV	145	105		6"		1,2,3,4,5,6
UVAV103	TITUS	DESV	390	320		8"		1,2,3,4,5,6
UVAV104	TITUS	DESV	525	465		8"		1,2,3,4,5,6
UVAV105	TITUS	DESV	865	110		10"		1,2,3,4,5,6
UVAV106	TITUS	DESV	410	290		8"		1,2,3,4,5,6
UVAV107	TITUS	DESV	2190	2190		14"		1,2,3,4,5,6
UVAV108	TITUS	DESV	165	100		6"		1,2,3,4,5,6
UVAV109	TITUS	DESV	380	355		8"		1,2,3,4,5,6
UVAV110	TITUS	DESV	680	535		10"		1,2,3,4,5,6
UVAV111	TITUS	DESV	200			6"		1,2,3,4,5,6
UVAV112	TITUS	DESV	400			8"		1,2,3,4,5,6
UVAV113	TITUS	DESV	800			10"		1,2,3,4,5,6
UVAV114	TITUS	DESV	325			6"		1,2,3,4,5,6
UVAV115	TITUS	DESV	1275			12"		1,2,3,4,5,6

1. SINGLE DUCT VARIABLE AIR VOLUME TERMINAL UNIT.
2. PRESSURE INDEPENDENT OPERATION.
3. PROVIDE BACNET COMPATIBLE DDC INTERFACE MODULE.
4. PROVIDE 120V CONTROL TRANSFORMER AND 24V ELECTRIC DAMPER ACTUATOR.
5. INSTALL UNIT SO AS TO MAINTAIN ACCESS TO CONTROL PANEL AND ALL OTHER ACCESS POINTS
6. PROVIDE WITH UNIT MOUNTED DISCONNECT.

SPLIT SYSTEM CASSETTE A/C / HEAT PUMP SCHEDULE

MARK		BASIS OF DESIGN MITSUBISHI	CFM	CFM OA	ESP	COOLING		HEATING (MBH)	MOUNTING	EFFICIENCY		ELECTRICAL			NOTES
OUTDOOR	INDOOR					TOTAL (MBH)	SENSIBLE (MBH)			SEER (EER)	COP	VOLT/PH	MCA	MOCP	
UOAC101	-	MUY-D38NA-1	-	-	-	34.6	-	-	-	15.1	-	208/1	21	25	1,2
-	UIAC101	MSY-D38NA-8	800	0	-	34.6	27.6	-	WALL	15.1	-	208/1	1		3,4

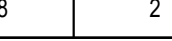
1. DISCONNECT PROVIDED UNDER DIVISION 26.
2. LOW AMBIENT OPERATION.
3. FACTORY PROVIDED WALL MOUNTED CONTROL PANEL/THERMOSTAT.
4. FACTORY PROVIDED CONDENSATE PUMP. ROUTE CONDENSATE DOWN TO TAILPIECE IN BETWEEN SINK DRAIN AND PTRAP IN ROOM ON FIRST FLOOR BELOW. COORDINATE WITH PLUMBING.

DX ROOFTOP AIR CONDITIONING UNIT WITH NATURAL GAS HEATING SCHEDULE

MARK	TRANE MODEL NO.	SERVICE	SYSTEM TYPE	SUPPLY CFM	OA CFM	SUPPLY FAN DATA			COOLING SECTION					GAS HEATER			OPERATING WEIGHT (LBS.)	ELECTRICAL			NOTES	
						CFM	E.S.P. (IN WC)	MOTOR BHP	FAN RPM	EAT DB (°F)	EAT WB (°F)	TOTAL CAP (MBH)	SENS CAP (MBH)	EFF (SEER)	HEATING IN/OUTPUT (MBH)	EAT DB (°F)		LAT WB (°F)	VOLT/PH	MCA		MOCP
URTU201	YHC036E4RMA	BEAN RECEIVING OFFICE	SINGLE-ZONE CAV	1000	275	1000	.75	41	909	80.4	66.8	35.76	25.95	14.4	60/48 LOW	56	100	920	480/3	10.3	15	1,2,3,5,6,7,8,9,10,11,12,13,14,15
URTU202	YHC060E4RMA	RAW MATERIAL RECEIVING OFFICE	MULTI-ZONE VAV	1600	385	1600	.75	.59	934	83.2	68.8	61.05	44.06	14.2	80/65 MED	57	94	1150	480/3	12.3	15	1,2,3,5,6,7,8,9,10,11,12,13,14,15
URTU203	YHC048F4RMA	CONTROL ROOM	MULTI-ZONE VAV	1400	260	1400	.75	.47	919	77.6	64.9	45.10	32.43	15.0	80/65 MED	60	102	1100	480/3	12.8	15	1,2,3,5,6,7,8,9,10,11,12,13,14,15
URTU301	THD180G4R0	ELECTRICAL ROOM	SINGLE-ZONE VAV	6000	350	6000	.75	5	-	81.0	62.0	158.3	131.9	15.0 IEER	N/A	50	-	2800	480/3	37	50	1,2,3,4,5,6,7,9,11,12,13,14,15
URTU302	THD180G4R0	ELECTRICAL ROOM	SINGLE-ZONE VAV	6000	350	6000	.75	5	-	81.0	62.0	158.3	131.9	15.0 IEER	N/A	50	-	2800	480/3	37	50	1,2,3,4,5,6,7,9,11,12,13,14,15
URTU401	YHC060E4RMA	DC SHIPPING OFFICE/BREAK ROOM	SINGLE-ZONE VAV	1900	450	1900	.75	.77	987	78.4	65.2	46.24	37.56	14.2	130/105 MED	57	108	1150	480/3	12.3	15	1,2,3,5,6,7,8,9,10,11,12,13,14,15
URTU402	YHC048E4RMA	DC NORTH OFFICE	SINGLE-ZONE VAV	1600	275	1600	.75	.60	931	78.4	64.9	35.76	25.95	14.2	80/65 HI	61	98	1130	480/3	11.3	15	1,2,3,5,6,7,8,9,10,11,12,13,14,15

1. SINGLE POINT POWER CONNECTION.
2. INTEGRAL DISCONNECT SWITCH PROVIDED BY MANUFACTURER.
3. HINGED ACCESS PANELS.
4. SMOKE DETECTOR, FURNISHED AND WIRED BY DIVISION 26, INSTALLED BY DIVISION 23, MOUNTED ON THE RETURN AIR DUCTWORK.
5. ANTI-SHORT CYCLE CONTROLS.
6. PROVIDE WITH COMPARATIVE ENTHALPY ECONOMIZER WITH POWERED EXHAUST
7. **4" MERV 13 DISPOSABLE FILTERS**
8. FLUE DISCHARGE DEFLECTOR.
9. MEDIUM STATIC DRIVE PACKAGE.
10. UNIT HEATING PERFORMANCE INDICATES HEATING CAPACITY AS INPUT/HEATING OUTPUT (MBH) AND HEATING MODEL (LOW HEAT, MEDIUM HEAT, OR HIGH HEAT)
11. WINTER START KIT AND ACCESSORIES FOR LOW AMBIENT OPERATION DOWN TO 25°F.
12. THRU-THE BASE CONNECTION FOR POWER.
13. FACTORY FABRICATED 22" INSULATED ROOF CURB.
14. SCHEDULED SEER/IEER/RIER IS AT ARI CONDITIONS
15. PROVIDE UNIT WITH OUTDOOR AIR FLOW STATION TO MONITOR WITHIN 10% ACCURACY OF THE MINIMUM DESIGN AIR FLOW RATES.

HIGH-VOLUME, LOW-SPEED (HVLS) FAN SCHEDULE									
MARK	BASIS OF DESIGN BIG ASS FANS MODEL NO.	CFM	DIAMETER (FT)	FAN RPM	WEIGHT (LBS)	ELECTRICAL		LOCATION	NOTES
						MOTOR HP	VOLTI/PH		
UBAF001	PFX3-24	---	24	65	347	2	460/3	FINISHED GOODS	1:2:3:4
UBAF002	PFX3-24	---	24	65	347	2	460/3	FINISHED GOODS	1:2:3:4
UBAF003	PFX3-24	---	24	65	347	2	460/3	FINISHED GOODS	1:2:3:4
UBAF004	PFX3-24	---	24	65	347	2	460/3	FINISHED GOODS SHIPPING	1:2:3:4
UBAF005	PFX3-24	---	24	65	347	2	460/3	CENTRAL PALLETIZING & WRAPPING	1:2:3:4
UBAF006	PFX3-24	---	24	65	347	2	460/3	CENTRAL PALLETIZING & WRAPPING	1:2:3:4
UBAF007	PFX3-24	---	24	65	347	2	460/3	CENTRAL PALLETIZING & WRAPPING	1:2:3:4
UBAF008	PFX3-24	---	24	65	347	2	460/3	FINISHED GOODS SHIPPING	1:2:3:4
UBAF009	PFX3-24	---	24	65	347	2	460/3	CENTRAL PALLETIZING & WRAPPING	1:2:3:4
UBAF010	PFX3-24	---	24	65	347	2	460/3	CENTRAL PALLETIZING & WRAPPING	1:2:3:4
UBAF011	PFX3-24	---	24	65	347	2	460/3	CENTRAL PALLETIZING & WRAPPING	1:2:3:4
UBAF012	PFX3-24	---	24	65	347	2	460/3	FINISHED GOODS SHIPPING	1:2:3:4
1. FAN SUPPORTED/MOUNTED TO STRUCTURE. 2. PROVIDE CONTACT FOR FANS TO BE SHUT DOWN BY FIRE ALARM SYSTEM. 3. PROVIDE AUTO DRIVE RESET UPON POWER LOSS, OR PROVIDE REMOTE DRIVE RESET SO FAN CAN BE RESET FROM THE FLOOR AND BAS. 4. OR EQUIVALENT PRODUCT BY GREENHECK OR MACROAIR.									

GRILLE SCHEDULE								
MARK	SYMBOL	TITUS MODEL NO.	SIZE	LENGTH	NO. SLOTS	TYPE	FINISH	NOTES
CD		TMS	24x24	-----	-----	-----	WHITE	1: 6: 9: 10:
SR		350 FL	-----	-----	-----	-----	WHITE	2:
ND		TBF-AA	-----	-----	-----	-----	WHITE	2:
RG		PAR	24x24	-----	-----	-----	WHITE	3: 6:
EG		CORE 50	8x8	-----	-----	-----	WHITE	4: 8:
LD		ML-38	34"	48	2	-----	WHITE	5:
1. SQUARE ALUMINUM LOUVER FACE CEILING SUPPLY DIFFUSER 2. ALUMINUM DOUBLE DEFLECTION SIDEWALL SUPPLY GRILLE 3. STEEL PERFORATED FACE CEILING RETURN OR EXHAUST REGISTER 4. 1/2"x1/2"x1/2" ALUMINUM EGG-CRATE CEILING RETURN GRILLE 5. LINEAR CEILING DIFFUSER WITH ADJUSTABLE DEFLECTION VANES BEHIND EACH SLOT 6. IN 24x24 PANEL FOR LAY-IN T-BAR CEILING 7. PROVIDE OPPOSED BLADE BALANCING DAMPER 8. CONCEALED FASTENING - NO SCREW HOLES 9. PROVIDE INSULATED SUPPLY PLENUM WITH SIDE INLET 10. 6"Ø NECK 0 - 160, 8"Ø NECK 161 - 280 CFM, 10"Ø NECK 281 - 540 CFM								

DAMPER SCHEDULE									
MARK	GREENHECK MODEL NO.	SIZE (IN.)		CONFIG.	BELIMO ACTUATOR TYPE/MODEL/VOLT	LOCATION	NOTES		
		W	H						
UMOD101	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 1 EXHAUST TO OUTDOORS	2:3:		
UMOD102	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 1 EXHAUST RECIRC TO COMP ROOM	1:3:		
UMOD201	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 2 EXHAUST TO OUTDOORS	2:3:		
UMOD202	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 2 EXHAUST RECIRC TO COMP ROOM	1:3:		
UMOD301	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 3 EXHAUST TO OUTDOORS	2:3:		
UMOD302	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 3 EXHAUST RECIRC TO COMP ROOM	1:3:		
UMOD401	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 4 EXHAUST TO OUTDOORS	2:3:		
UMOD402	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 4 EXHAUST RECIRC TO COMP ROOM	1:3:		
UMOD501	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 5 EXHAUST TO OUTDOORS	2:3:		
UMOD502	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 5 EXHAUST RECIRC TO COMP ROOM	1:3:		
UMOD601	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 6 EXHAUST TO OUTDOORS	2:3:		
UMOD602	VCD-23	48	54	OBD	2 POS / AFBUP / 24V	COMPRESSOR [ROOM] 6 EXHAUST RECIRC TO COMP ROOM	1:3:		
1. DAMPER FAILS CLOSED 2. DAMPER FAILS OPEN 3. PART OF COMPRESSOR ROOM HEAT RECLAIM SYSTEM									

HOOD SCHEDULE									
MARK	GREENHECK MODEL NO.	LOCATION	DUTY	APPROX. OPERATING WEIGHT (LBS.)	TOTAL PRESSURE DROP AT MAX. CFM	MAX AIRFLOW CFM	DAMPER/ACTUATOR MODEL NO. (VOLT)	FREE AREA (FT2)	NOTES
URH201	WRH-48X70	SILOS	RELIEF	324	0.01"	9,600	BAROMETRIC RELIEF RUSKIN CBD6	24	1: 2: 3: 4: 5: 7:
URH202	WRH-48X78	PROCESSING	RELIEF	324	0.094"	18,000	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH203	WRH-48X78	PROCESSING	RELIEF	324	0.094"	18,000	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH204	WRH-48X78	PROCESSING	RELIEF	324	0.094"	18,000	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH205	WRH-48X78	PROCESSING	RELIEF	324	0.094"	18,000	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH206	WRH-48X78	PROCESSING	RELIEF	324	0.094"	18,000	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH207	WRH-48X78	PROCESSING	RELIEF	324	0.094"	18,000	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
UIH301	WIH-48X78	CHILLER ROOM	INTAKE	324	.06"	15,000	WD-200/MP-220A (115V)	26	1: 3: 5: 6:
UIH311	GRSI-24	BOILER ROOM	BOILER INTAKE	76	0.024"	1,200	NONE	4.8	1: 3: 5: 6:
UIH312	GRSI-24	BOILER ROOM	BOILER INTAKE	76	0.024"	1,200	NONE	4.8	1: 3: 5: 6:
UIH313	GRSI-24	BOILER ROOM	BOILER INTAKE	76	0.024	1,200	NONE	4.8	1: 3: 5: 6:
URH331	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	NONE	26	1: 2: 3: 4: 5
URH332	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	NONE	26	1: 2: 3: 4: 5
URH333	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	NONE	26	1: 2: 3: 4: 5
URH334	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	NONE	26	1: 2: 3: 4: 5
URH335	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	NONE	26	1: 2: 3: 4: 5
URH336	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	NONE	26	1: 2: 3: 4: 5
URH337	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH338	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
URH339	WRH 48x78	COMPRESSOR ROOM	RELIEF	324	0.096	20,600	BAROMETRIC RELIEF RUSKIN CBD6	26	1: 2: 3: 4: 5: 7:
1. COORDINATE WITH ROOF CONTRACTOR FOR INSTALLATION. 2. LOUVER STYLE PENTHOUSE ALUMINUM CONSTRUCTION. 3. 12" ROOF CURB MINIMUM. 4. INSECT SCREEN. 5. COLOR SELECTED BY ARCHITECT, PROVIDE FINISH CHART WITH SUBMITTALS. 6. BOILER COMBUSTION AIR INTAKE WITH 1"X1" METAL SCREEN. 7. COUNTERBALANCED BACKDRAFT DAMPER: BLADES START TO OPEN AT 0.01" WG, FULL OPEN AT 0.05" WG									

FAN SCHEDULE										
MARK	BASIS OF DESIGN GREENHECK MODEL NO.	CFM	APPROX. ESP IN. W.G.	FAN RPM	MAX. SONES	APPROX. OPERATING WEIGHT (LBS.)	ELECTRICAL		LOCATION	NOTES
							MOTOR HP	VOLT/ PH		
UEF101	CUE-101-VG	650	0.5	1213	5	56	1/4	115/1	OFFICE ROOF - TOILET EXHAUST	1:
UEF102	CUE-680-VG	225	0.5	1558	7.6	55	1/10	115/1	OFFICE ROOF - LOCKER EXHAUST	1:
UEF201	CUBE-360-VGD-10	8,000	0.25	358	8.1	239	1	460/3	TIPPING	8:9:
UEF202	CUBE-360-VGD-15	9,600	0.25	407	11.9	244	1-1/2	460/3	RECEIVING	8:9:
UEF204	CUBE-360-VGD-10	8,000	0.25	358	8.1	239	1	460/3	PARTNER	8:9:
UEF205	CUBE-360-VGD-50	15,000	0.25	589	23	299	5	460/3	TRASH/RECYCLING	8:9:
UEF206	CUBE-360-VGD-50	15,000	0.25	589	23	299	5	460/3	TRASH/RECYCLING	8:9:
UEF207	CUE-161-VG	2,000	0.5	946	10.5	97	1/2	115/1	CORRIDOR	1:
UEF208	G-097-VG	75	0.5	1119	4.4	56	1/4	115/1	MAINTENANCE TOILET EXHAUST	1:
UEF209	CUE-161-VG	2,400	1.00	1258	15.1	106	1	115/1	MAINTENANCE WELDING EXHAUST	1:
UEF210	CUE-090-VG	300	0.5	1404	6.5	51	1/10	115/1	UTILITY EXHAUST	1:
UEF211	G-080-VG	250	0.5	1594	7.9	43	1/10	115/1	BEAN RECEIVING TOILET	1:
UEF212	G-090-VG	350	0.5	1448	6.7	44	1/10	115/1	RAW MATERIALS RECEIVING TOILET	1:
UEF213	SQ-140-VG	1600	0.5	1126	9.5	100	3/4	115/1	ELECTRICAL EXHAUST	7:
UEF214	CSP-A190	150	0.25	1400	2.0	25	51 WATTS	115/1	FACILITIES COACH	7:
UEF215	CSP-A190	150	0.25	1400	2.0	25	51 WATTS	115/1	MAINT. OFFICE	7:
UEF301	CUBE-480-VGD-20	15,000	0.25	287	10.1	448	2	460/3	CHILLER ROOM VENT & TEMP	3:9:
UEF302	CUBE-480-VGD-20	15,000	0.25	287	10.1	448	2	460/3	CHILLER ROOM VENT & TEMP	3:9:
UEF303	CUE-180-VG	4,000	0.5	1188	16.7	130	2	460/3	CHILLER ROOM REFRIGERANT EXHAUST	1:
UEF311	CUBE-480-VGD-15	12,000	0.25	249	8.2	434	1-1/2	460/3	BOILER ROOM VENT & TEMP	8:9:
UEF401	TAUB-CA-36-15	12,000	0.25	961	26	449	1-1/2	460/3	FINISHED GOODS/DC	2:6:
UEF402	TAUB-CA-36-15	12,000	0.25	961	26	449	1-1/2	460/3	FINISHED GOODS/DC	2:6:
UEF403	TAUB-CA-36-15	12,000	0.25	961	26	449	1-1/2	460/3	FINISHED GOODS/DC	2:6:
UEF404	TAUB-CA-36-15	12,000	0.25	961	26	449	1-1/2	460/3	FINISHED GOODS/DC	2:6:
UEF405	G-090-VG	400	0.5	1494	7.0	44	1/10	115/1	DC SHIPPING TOILET	1:
UEF406	G-080-VG	250	0.5	1594	7.8	43	1/10	115/1	PACKAGING TOILET	1:
UEF407	CUE-090-VG	300	0.5	1404	6.5	51	1/10	115/1	UTILITY EXHAUST	1:
1. ROOF MOUNTED EXHAUST FAN WITH EC MOTOR WITH DIAL OR 0-10VDC INPUT, CONTROL DIAL FOR BALANCING, STANDARD GALVANIZED AND INSULATED 14" HIGH SLOPED ROOF CURB, MOUNTED AND WIRED JUNCTION BOX AND NEMA-1 TOGGLE SWITCH SHIPPED WITH UNIT, GRAVITY DAMPER, STANDARD CONSTRUCTION FEATURES AND 1 YEAR WARRANTY.										
2. ROOF MOUNTED EXHAUST FAN WITH NEMA PREMIUM EFFICIENT MOTOR MEETING NEMA TABLE 12-12; MOTOR VFD RATED; MOTOR WITH SHAFT GROUNDING; MOTOR WITH CLASS F OR GREATER INSULATION; COATING - PERMATECTOR, CONCRETE GRAY-RAL 7023, FAN AND ATTACHED ACCESSORIES; STANDARD GALVANIZED AND INSULATED 14" HIGH SLOPED ROOF CURB; ROOF MOUNTING SUPPORT, ALUMINUM OR STEEL BUTTERFLY DAMPER BLADES; EXTENDED NYLON LUBE LINES; NEMA-3R TOGGLE SWITCH FOR INDOOR/OUTDOOR USE, SHIP SEPARATE; STANDARD CONSTRUCTION FEATURES AND 1 YEAR WARRANTY.										
3. ROOF MOUNTED EXHAUST FAN WITH NEMA PREMIUM EFFICIENT MOTOR MEETING NEMA TABLE 12-12; MOTOR VFD RATED; MOTOR WITH SHAFT GROUNDING; MOTOR WITH CLASS F OR GREATER INSULATION; MOTOR WITH 40 DEGREE C AMBIENT TEMPERATURE; VARI-GREEN DRIVE 100 0-10VDC INPUT SIGNAL, STANDARD GALVANIZED AND INSULATED 14" HIGH SLOPED ROOF CURB; ROOF MOUNTING SUPPORT, MOUNTED AND WIRED JUNCTION BOX AND NEMA-1 TOGGLE SWITCH SHIPPED WITH UNIT, GRAVITY DAMPER; BEARINGS WITH GREASE FITTINGS, L10 LIFE OF 100,000 HOURS; STANDARD CONSTRUCTION FEATURES AND 1 YEAR WARRANTY.										
4. HORIZONTAL, CEILING HUNG, MEDIUM PRESSURE, DIRECT DRIVE AXIAL FAN WITH NEMA PREMIUM EFFICIENT MOTOR MEETING NEMA TABLE 12-12; MOTOR VFD RATED, MOTOR WITH SHAFT GROUNDING; MOTOR WITH CLASS F OR GREATER INSULATION; EXTENDED MOTOR LEADS; COATING - PERMATECTOR, CONCRETE GRAY-RAL 7023, FAN AND ATTACHED ACCESSORIES, UNIVERSAL MOUNTING SUPPORT, NEMA-3R TOGGLE SWITCH FOR INDOOR/OUTDOOR USE, SHIP SEPARATE; STANDARD CONSTRUCTION FEATURES AND 1 YEAR WARRANTY.										
5. CENTRIFUGAL UTILITY FAN, BACKWARD INCLINED WHEEL, WITH NEMA PREMIUM EFFICIENT MOTOR MEETING NEMA TABLE 12-12; MOTOR VFD RATED, MOTOR WITH SHAFT GROUNDING; MOTOR WITH CLASS F OR GREATER INSULATION; US DISCHARGE POSITION; BEARINGS WITH L10 LIFE OF 80k HOURS; UL-LUL-705 POWER VENTILATOR, POLISHED STEEL SHAFT, BOLTED ACCESS DOOR, DRAIN CONNECTION WITH 1" PIPE, THREAD AND PLUG, SLIP FIT INLET AND OUTLET CONNECTIONS; GALVANIZED WEATHERHOOD; NEMA-3R TOGGLE SWITCH FOR INDOOR/OUTDOOR USE, SHIP SEPARATE;; STANDARD CONSTRUCTION FEATURES AND 1 YEAR WARRANTY.										
6. VFD BY DIVISION 26.										
7. CENTRIFUGAL INLINE DIRECT DRIVE FAN, BACKWARDS INCLINED, ALUMINUM CONSTRUCTION.										
8. ROOF MOUNTED EXHAUST FAN WITH NEMA PREMIUM EFFICIENT MOTOR MEETING NEMA TABLE 12-12; MOTOR VFD RATED; MOTOR WITH SHAFT GROUNDING; MOTOR WITH CLASS F OR GREATER INSULATION; MOTOR WITH 40 DEGREE C AMBIENT TEMPERATURE, VARI-GREEN DRIVE 100 0-10VDC INPUT SIGNAL, STANDARD GALVANIZED AND INSULATED 14" HIGH SLOPED ROOF CURB; ROOF MOUNTING SUPPORT, MOUNTED AND WIRED JUNCTION BOX AND NEMA-1 TOGGLE SWITCH SHIPPED WITH UNIT, RUSKIN CBD COUNTERBALANCED BACKDRAFT DAMPER (BLADES START TO OPEN AT 0.01" WG, FULL OPEN AT 0.05" WG); BEARINGS WITH GREASE FITTINGS, L10 LIFE OF 100,000 HOURS; STANDARD CONSTRUCTION FEATURES AND 1 YEAR WARRANTY.										
9. PROVIDE 12" HIGH CURB EXTENSION WITH DAMPER TRAY AND HINGED ACCESS DOOR.										

HVAC DUCT MATERIAL SCHEDULE							
DUCT SYSTEM	OUTDOORS	COMPONENT	INDOORS, EXPOSED		INDOORS, CONCEALED		SPECIFICATION SECTIONS
			PRODUCTION AREAS	OFFICE AND UTILITY AREAS	IN WALLS AND ABOVE CEILINGS THAT ARE NOT PLENUMS	HVAC RETURN AIR PLENUMS	
PACKAGING AND RAW MATERIAL STORAGE AHU SUPPLY DUCTWORK	N/A	DUCTWORK	HVAC GALV, FABRIC	N/A	N/A	N/A	233113
	N/A	INSULATION	MINERAL FIBER BOARD	N/A	N/A	N/A	230723
	N/A	INSULATION THICKNESS	1.5-INCH	N/A	N/A	N/A	230723
	N/A	VAPOR RETARDER	FSK	N/A	N/A	N/A	230723
	N/A	FIELD-APPLIED JACKET	PVC	N/A	N/A	N/A	230723
PACKAGING AND RAW MATERIAL STORAGE AHU RETURN DUCTWORK	N/A	DUCTWORK	HVAC GALV, FABRIC	N/A	N/A	N/A	233113
	N/A	INSULATION	N/A	N/A	N/A	N/A	230723
	N/A	INSULATION THICKNESS	N/A	N/A	N/A	N/A	230723
	N/A	VAPOR RETARDER	N/A	N/A	N/A	N/A	230723
	N/A	FIELD-APPLIED JACKET	N/A	N/A	N/A	N/A	230723
MAU SUPPLY AND RETURN DUCTWORK	N/A	DUCTWORK	N/A	HVAC GALV	HVAC GALV	HVAC GALV	233113
	N/A	INSULATION	N/A	N/A	N/A	N/A	-
	N/A	INSULATION THICKNESS	N/A	N/A	N/A	N/A	-
	N/A	FIELD-APPLIED JACKET	N/A	N/A	N/A	N/A	-
	N/A	DUCTWORK	N/A	HVAC GALV	HVAC GALV	HVAC GALV	233113
AIR CONDITIONING UNIT SERVING OFFICES/SHIPPING AREAS SUPPLY AND RETURN DUCTWORK	N/A	DUCTWORK	N/A	HVAC GALV	HVAC GALV	HVAC GALV	233113
	N/A	INSULATION	N/A	MINERAL FIBER BOARD	MINERAL FIBER BLANKET	MINERAL FIBER BLANKET	230713
	N/A	INSULATION THICKNESS	N/A	1.5-INCH	2.0-INCH	2.0-INCH	230713
	N/A	VAPOR RETARDER	N/A	FSK	FSK	FSK	230713
	N/A	FIELD-APPLIED JACKET	N/A	-	-	-	-
EXHAUST, INTAKE, TRANSFER VENTILATION DUCTWORK	HVAC GALV	DUCTWORK	HVAC GALV	HVAC GALV	HVAC GALV	HVAC GALV	233113
	N/A	INSULATION	N/A	N/A	N/A	N/A	-
	N/A	INSULATION THICKNESS	N/A	N/A	N/A	N/A	-
	N/A	FIELD-APPLIED JACKET	N/A	N/A	N/A	N/A	-
LEGEND							
HVAC GALV G90 GALVANIZED STEEL COMMERCIAL DUCT CONSTRUCTION PER SMACNA "HVAC DUCT CONSTRUCTION STANDARDS"							
FABRIC							

HVAC PIPE AND DUCT SUPPORT MATERIAL SCHEDULE										
APPLICATION		HANGER RODS		DUCT HANGER STRAPS	PIPE HANGERS/ SUPPORTS AND ACCESSORIES INCLUDING NUTS/ BOLTS/WASHERS AND FASTENERS	UNI-STRUT	TRAPEZE HANGERS OR STRUCTURAL SUPPORTS	INSULATION SHIELDS	PIPE PENETRATION SLEEVES	PIPE ESCUTCHEONS
		SMOOTH W/ THREADED ENDS	ALL-THREAD							
OUTDOORS		GALV	GALV	GALV	GALV	GALV	GALV	GALV	GALV	GALV
INDOORS	EXPOSED	GALV	GALV	GALV	GALV	GALV	GALV	GALV	GALV	GALV
	CONCEALED	GALV	GALV	GALV	GALV	GALV	GALV	GALV	GALV	GALV
SCHEDULE NOTES										
1. CADMIUM PLATED HARDWARE IS NOT PERMITTED.										
2. NOT USED.										
3. ALL NUTS TO BE NYLOC TYPE, INCLUDING NUTS FURNISHED AS COMPONENTS OF AN ASSEMBLY.										
4. EXPOSED THREADS IN PRODUCTION SPACES SHALL BE LIMITED TO 2 TO 3 THREADS.										
MATERIAL ABBREVIATIONS										
CSP - COLD STORAGE										
PANEL GALV - GALVANIZED										
STEEL NP - NOT PERMITTED										
SST - STAINLESS STEEL										

HVAC PIPE SUPPORT SPACING SCHEDULE						
PIPE/TUBE SIZE (INCH)	HANGER RODS MINIMUM SIZE (INCH)	MAXIMUM HORIZONTAL SPACING (FEET)				
		BLACK STEEL, GALV. STEEL, CARBON STEEL, STAINLESS STEEL (LIQUID SERVICE)	BLACK STEEL, GALV. STEEL, CARBON STEEL, STAINLESS STEEL (VAPOR SERVICE) (I.E. STEAM)	COPPER (LIQUID SERVICE)	COPPER (VAPOR SERVICE)	PVC (LIQUID SERVICE)
3/8	3/8	7	8	5	6	-
1/2	3/8	7	8	5	6	4
3/4	3/8	7	9	5	7	4
1	3/8	7	9	6	8	4.5
1 1/4	3/8	7	9	7	9	5
1 1/2	3/8	9	12	8	10	5
2	3/8	10	13	8	11	5
2 1/2	1/2	11	14	9	13	6
3	1/2	12	15	10	14	6
4	5/8	14	17	12	16	6.5
6	3/4	17	21	14	20	7.5
8	3/4	19	24	16	23	8
10	7/8	22	26	18	25	8.5
12	7/8	23	30	19	28	9.5
14	1	25	32	-	-	10
16	1	27	35	-	-	10.5
18	1	28	37	-	-	11
SCHEDULE NOTES						
A. MAXIMUM SUPPORT SPACING INDICATED ABOVE UNLESS NOTED OTHERWISE ON DRAWING.						
B. HANGER ROD DIAMETER MAY BE REDUCED ONE SIZE FOR DOUBLE-ROD HANGERS, TO A MINIMUM OF 3/8".						
C. SPACE TRAPEZES FOR SMALLEST PIPE SIZE, OR INSTALL INTERMEDIATE SUPPORTS FOR SMALLER DIAMETER PIPES.						
D. SUPPORT VERTICAL PIPING AND TUBING AT THE BASE AND AT EACH FLOOR.						
E. INSTALL ADDITIONAL ATTACHMENTS AT CONCENTRATED LOADS, INCLUDING VALVES, FLANGES, AND STRAINERS, NPS 2-1/2 AND LARGER.						
F. INSTALL ADDITIONAL ATTACHMENTS AT HORIZONTAL AND VERTICAL CHANGES IN DIRECTION OF PIPING.						
G. INSTALL CONTINUOUS SUPPORTS FOR 1/4-INCH OD STAINLESS STEEL TUBING.						
H. SUPPORT PIPING AND TUBING NOT LISTED ABOVE ACCORDING TO MSS SP-58 AND MANUFACTURER'S WRITTEN INSTRUCTIONS.						
I. MAXIMUM VERTICAL SPACING IS 10 FT. SUPPORT AT ROOF AND EACH FLOOR.						

HVAC PIPE MATERIAL SCHEDULE							
PIPE SYSTEM	COMPONENT	OUTDOORS	INDOORS, EXPOSED		INDOORS, CONCEALED		REMARKS
			PRODUCTION AREAS	OFFICE AND UTILITY AREAS	IN WALLS AND ABOVE CEILINGS THAT ARE NOT PLENUMS	HVAC RETURN AIR PLENUMS	
CHILLED WATER SUPPLY (CHWS) CHILLED WATER RETURN (CHWR)	PIPE, VALVES	N/A	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	232113
	INSULATION	N/A	POLYSTYRENE	POLYSTYRENE	POLYSTYRENE	POLYSTYRENE	230719
	VAPOR RETARDER	N/A	ZERO-PERM	ZERO-PERM	ZERO-PERM	ZERO-PERM	230719
	JACKET	N/A	PVC	PVC	PVC	PVC	230719
	PIPE, VALVES	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	N/A	N/A	232113
CONDENSER WATER SUPPLY (CWS) CONDENSER WATER RETURN (CWR)	INSULATION	POLYSTYRENE	N/A	N/A	N/A	N/A	230719
	VAPOR RETARDER	ZERO-PERM	N/A	N/A	N/A	N/A	230719
	JACKET	ALUMINUM	N/A	N/A	N/A	N/A	DIV 09
HEATING HOT WATER SUPPLY (HWS) HEATING HOT WATER RETURN (HWR)	PIPE, VALVES	N/A	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	C1-01 OR C2-05 B3-24, B7-21	232113
	INSULATION	N/A	MINERAL FIBER	MINERAL FIBER	MINERAL FIBER	MINERAL FIBER	230719
	JACKET	N/A	PVC	ASJ	ASJ	ASJ	230719
COOLING TOWER DRAIN (D) COOLING TOWER OVERFLOW (OF)	PIPE, VALVES	B1-00, B3-00	N/A	N/A	N/A	N/A	232113
	INSULATION	POLYSTYRENE	N/A	N/A	N/A	N/A	230719
	VAPOR RETARDER	ZERO-PERM	N/A	N/A	N/A	N/A	230719
	JACKET	ALUMINUM	N/A	N/A	N/A	N/A	230719
MAKEUP WATER (MU)	PIPE, VALVES	N/A	N/A	C1-01 OR C2-05	N/A	N/A	232113
	INSULATION	N/A	N/A	MINERAL FIBER	N/A	N/A	230719
	VAPOR RETARDER	N/A	N/A	ASJ	N/A	N/A	230719
	JACKET	N/A	N/A	-	N/A	N/A	230719
AHU BURNER CONDENSATE DRAIN	PIPE, VALVES	S1-00 OR S4-00	N/A	S1-00 OR S4-00	N/A	N/A	232213
	INSULATION	N/A	N/A	N/A	N/A	N/A	-
	VAPOR RETARDER	N/A	N/A	N/A	N/A	N/A	-
	JACKET	N/A	N/A	N/A	N/A	N/A	-
AHU HUMIDIFIER STEAM PIPING	PIPE, VALVES	S1-04	N/A	N/A	N/A	N/A	232213
	INSULATION	MINERAL FIBER	N/A	N/A	N/A	N/A	230719
	JACKET	ASJ	N/A	N/A	N/A	N/A	230719
HVAC COOLING COIL CONDENSATE DRAIN (D)	PIPE, VALVES	C1-00 OR C2-00	N/A	C1-00 OR C2-00	C1-00 OR C2-00	C1-00 OR C2-00	232129
	INSULATION	N/A	N/A	N/A	N/A	N/A	-
	JACKET	N/A	N/A	N/A	N/A	N/A	-
HVAC REFRIGERANT LIQUID (RL) HVAC REFRIGERANT GAS (R)	PIPE, VALVES	C8-00	N/A	C8-00	C8-00	C8-00	232300
	INSULATION	FLEX ELASTOMERIC TWO COATS LATEX PAINT	N/A	N/A	N/A	N/A	230719
	JACKET	N/A	N/A	N/A	N/A	N/A	230719
HVAC REFRIGERANT SUCTION (RS)	PIPE, VALVES	C8-00	N/A	C8-00	C8-00	C8-00	232300
	INSULATION	FLEX ELASTOMERIC TWO COATS LATEX PAINT	N/A	FLEX ELASTOMERIC	FLEX ELASTOMERIC	FLEX ELASTOMERIC	230719
	JACKET	N/A	N/A	N/A	N/A	N/A	230719
PIPE SYSTEM MATERIALS AND JOINTS							
BLACK STEEL PIPE							
B1 NPS 2 AND SMALLER: BLACK STEEL, SCH40; CLASS 150 FITTINGS; THREADED JOINTS							
B3 NPS 2-1/2 AND LARGER: BLACK STEEL, SCH40; SCH40 FITTINGS; BUTT WELDED JOINTS							
B7 NPS 2-1/2 AND LARGER: BLACK STEEL, SCH40; GROOVED FITTINGS; PAINTED COUPLINGS; GROOVED JOINTS							
COPPER TUBE							
C1 NPS 2 AND SMALLER: HARD COPPER, TYPE L; WROUGHT COPPER PRESSURE FITTINGS; SOLDER JOINTS							
C2 NPS 2 AND SMALLER: HARD COPPER, TYPE L; WROUGHT COPPER PRESSURE FITTINGS; PRESSED JOINTS							
C8 ALL SIZES: TYPE ACR DRAWN-COPPER TUBING; WROUGHT COPPER FITTINGS; BRAZED JOINTS							
STAINLESS STEEL PIPE							
S1 NPS 2 AND SMALLER: STAINLESS STEEL, T304L, SCH10S; CLASS 150 CAST FITTINGS; SOCKET WELDED JOINTS							
S4 NPS 2 AND SMALLER: STAINLESS STEEL, T304L, SCH10S; T304L SCH10S FITTINGS; PRESSED JOINTS							
SHUTOFF VALVES							
NO VALVES							
-00 NO VALVES PERMITTED							
BALL VALVES							
-01 2-PIECE BRONZE BALL VALVES							
-04 3-PIECE STAINLESS STEEL BALL VALVES							
-05 PRESS JOINT BRONZE BALL VALVES							
BUTTERFLY VALVES							
-21 GROOVED-END 300 PSI DUCTILE IRON BUTTERFLY VALVES							
-24 LUG STYLE 200 PSI DUCTILE IRON BUTTERFLY VALVES (NPS 2-1/2 TO 12)							
REMARKS							
R1 ELECTRIC HEAT TRACE							
SCHEDULE NOTES							
A *CONCEALED* APPLIES TO PIPING IN WALLS, PIPE CHASES, AND ABOVE NON-ACCESSIBLE CEILINGS.							

HVAC PIPE INSULATION SCHEDULE						SPEC 230719	
PIPE SYSTEM	TEMP	PIPE SIZE	INSULATION TYPE	INSULATION CONDUCTIVITY	INSULATION THICKNESS		
					INDOOR	OUTDOOR	
CWS, CHWS CWR, CHWR	40 F TO 60 F	LESS THAN NPS 2	MINERAL FIBER	0.24 @ 100 F	1.5-INCH	1.5-INCH	
		NPS 2 AND LARGER			2.0-INCH	2.0-INCH	
CWS, CHWS CWR, CHWR	35 F TO 60 F	LESS THAN NPS 3	POLYSTYRENE	0.25 @ 75 F	2.0-INCH	2.0-INCH	
		NPS 4 TO NPS 10			3.0-INCH	3.0-INCH	
		NPS 12 AND LARGER			3.5-INCH	3.5-INCH	
RL RS R	LESS THAN 40 F	LESS THAN 1-INCH	FLEXIBLE ELASTOMERIC	0.25 @ 75 F	1.5-INCH	1.5-INCH	
		1-INCH TO 6-INCH			1.5-INCH	1.5-INCH	
	40 F TO 60 F	8-INCH AND LARGER			1.5-INCH	1.5-INCH	
		LESS THAN 1-1/2-INCH			1.5-INCH	1.5-INCH	
		1-1/2-INCH AND LARGER			1.5-INCH	1.5-INCH	
HWS HWR	141 F TO 200 F	LESS THAN NPS 2	MINERAL FIBER	0.29 @ 200 F	1.5-INCH	1.5-INCH	
		NPS 2 AND LARGER			2.0-INCH	2.0-INCH	
D	LESS THAN 50 F	ALL SIZES	POLYSTYRENE	0.25 @ 75 F	1.0-INCH	1.0-INCH	
MU	40 F TO 60 F	ALL SIZES	MINERAL FIBER	0.24 @ 100 F	0.5-INCH	0.5-INCH	