

FAN SCHEDULE

MARK	AREA SERVED	TYPE	CFM	SP. (IN)	RPM	ELECTRICAL VOLTAGE	HP (W)	MAX. SONES	STANDARD OF PERFORMANCE	REMARKS
F-A	TOWER	ROOF CENT.	140	0.375	1433	15/16.0	1/30	4	GREENHECK G-070-D	1, 2, 3, 4, 5, 13
F-B	TOWER	ROOF CENT.	175	0.375	1536	15/16.0	1/30	5	GREENHECK G-070-D	1, 2, 3, 4, 5, 13
F-C	TOWER	ROOF CENT.	210	0.375	1550	15/16.0	1/30	5	GREENHECK G-070-D	1, 2, 3, 4, 5, 13
F-D	TOWER	ROOF CENT.	220	0.375	1550	15/16.0	1/25	5	GREENHECK G-075-D	1, 2, 3, 4, 5, 13
F-E	TOWER	ROOF CENT.	305	0.375	1550	15/16.0	1/20	8	GREENHECK G-080-D	1, 2, 3, 4, 5, 13
F-F	TOWER	ROOF CENT.	20	0.375	1361	15/16.0	1/15	6	GREENHECK G-030-D	1, 2, 3, 4, 5, 13
F-G	TOWER	ROOF CENT.	455	0.375	1300	15/16.0	1/25	6	GREENHECK G-030-G	1, 2, 3, 4, 5, 13
F-1	KITCHEN HOOD	UPBLAST	4340	1.375	1118	208/3/60	3	21	GREENHECK CUBE-220HP	1, 4, 9, 10, 11, 12, 14
F-2	HOOD MAU	IN-LINE	2960	0.50	1140	15/16.0	3/4	12	GREENHECK SQ-160	3, 4, 5, 6, 1, 14
S-1	STAIR A	CENT. SUPPLY	9000	0.375	1836	208/3/60	5	33	GREENHECK LDF-16	1, 4, 7, 8, 15
S-2	STAIR B	CENT. SUPPLY	13000	0.375	1370	208/3/60	5	30	GREENHECK LDF-22	1, 4, 7, 8, 15
S-3	CORRIDOR	UPBLAST	3700	0.375	1140	208/3/60	1	17	GREENHECK CUE-180	1, 2, 3, 4, 5, 16
S-4	LOBBY	IN-LINE	6600	0.375	1293	208/3/60	3	24	GREENHECK B8Q-100	3, 4, 6, 16
S-5	MEETING 1	IN-LINE	1850	0.375	1541	15/16.0	1/2	15	GREENHECK B8Q-130	3, 4, 6, 16
S-6	MEETING 2	IN-LINE	950	0.375	1404	15/16.0	1/4	11	GREENHECK B8Q-100	3, 4, 6, 16
S-7	REFUNCTION	IN-LINE	1600	0.375	1381	15/16.0	1/2	12	GREENHECK B8Q-130	3, 4, 6, 16

- Roof Curb
- Birdscreen
- Baskort/R Damper
- Disconnect
- Speed Control
- Neoprene Isolators
- Supply Configuration
- Motorized Damper
- Non-Stick Ureth
- Grease Trough
- Clean-out Port
- Curb Seal
- Continuous Operation
- Control with Switch at Hood
- Control to maintain pressure between 0.5" to 0.25" via (2) pressure differential sensors, 1 discriminator and a VFD
- Energize via the Fire Alarm Panel

AIR DISTRIBUTION SCHEDULE

MARK	APPLICATION	TYPE	THROW	CEILING	CONSTRUCTION	FINISH (NOTE 5)	STANDARD OF PERFORMANCE	REMARKS
S11	SUPPLY	LOUVER FACE	1-W	LAY-IN	ALUMINUM	WHITE	METALAIR 5000	1, 4
S12	SUPPLY	LOUVER FACE	2-W	LAY-IN	ALUMINUM	WHITE	METALAIR 5000	1, 2, 4
S13	SUPPLY	LOUVER FACE	3-W	LAY-IN	ALUMINUM	WHITE	METALAIR 5000	1, 4
S14	SUPPLY	LOUVER FACE	4-W	LAY-IN	ALUMINUM	WHITE	METALAIR 5000	1, 4
S21	SUPPLY	LOUVER FACE	1-W	SHEETROCK	ALUMINUM	WHITE	METALAIR 5000	1, 3, 4
S22	SUPPLY	LOUVER FACE	2-W	SHEETROCK	ALUMINUM	WHITE	METALAIR 5000	1, 2, 3, 4
S23	SUPPLY	LOUVER FACE	3-W	SHEETROCK	ALUMINUM	WHITE	METALAIR 5000	1, 3, 4
S24	SUPPLY	LOUVER FACE	4-W	SHEETROCK	ALUMINUM	WHITE	METALAIR 5000	1, 3, 4
S15	SUPPLY	SIDEWALL	2-W	SIDEWALL	ALUMINUM	WHITE	METALAIR V1004D	1
R1	SUPPLY	LINEAR	15 DEG	SHEETROCK	ALUMINUM	MILL	METALAIR 1000	1, 4, 5
R1	RETURN	FIXED BLADE	---	LAY-IN	ALUMINUM	WHITE	METALAIR RH-TB	4
R2	RETURN	FIXED BLADE	---	SHEETROCK	ALUMINUM	WHITE	METALAIR RH	3, 4
R3	RETURN	LINEAR	---	SHEETROCK	ALUMINUM	MILL	METALAIR 1000	3, 4, 5
E1	EXHAUST	FIXED BLADE	---	LAY-IN	ALUMINUM	WHITE	METALAIR RH-TB	1, 4
E2	EXHAUST	FIXED BLADE	---	SHEETROCK	ALUMINUM	WHITE	METALAIR RH	1, 3, 4
D.G.	TRANSFER	DBL FLANGE	---	---	ALUMINUM	WHITE	METALAIR DG-DF	-
LOUVER	INTAKE/EXH	EXTRUDED	---	---	ALUMINUM	PER ARCH	GREENHECK B8Q-202	-

- OPPOSED BLADE DAMPER
- WAY DEVICE: AIR PATTERN SHALL BE 90 OR 180 DEGREE, APPROPRIATE FOR LOCATION
- PLASTER FRAME
- VERIFY / COORDINATE COMPATIBILITY OF AIR DISTRIBUTION WITH CEILING FINISH PRIOR TO PURCHASE
- INSULATED SHEET METAL PLENUM

MAKE-UP AIR UNITS: WATER SOURCE HEAT PUMP RTUs

MARK	OA CFM	ESP (IN)	EVAPORATOR COOLING CAPACITY SENSIBLE MBH	TOTAL MBH	AMBIENT: 80.1/80.5 SUMMER AND 23F WINTER				HEATING				ENERGY WHEEL				APPLICATION EER	APPLICATION COP	VOLTAGE	ELECTRICAL DATA MCA	MAX. FUSE (LBS)	STANDARD OF PERFORMANCE					
					EAT	LAT COIL	MODULATING COMPRESSOR	MODULATING HOT GAS REHEAT	EAT	LVTG AIR	CONDENSER WATER GPM	WPD FT.	EUT COOLING	EUT HEATING	Q.A	EXH							CAPACITY MBH COOLING	HEATING			
MUA-1	4950	1.0	148	282	84	12	81	81	YES	YES	0	12	6.0	5.8	90	6.0	4.950	1.00	35.8	10.0	14.4	7	208/3/60	131	115	337B	AAON RN-075
MUA-2	6025	1.0	116	332	84	12	84	84	YES	YES	0	12	8.1	11.6	90	6.0	6.025	1.400	43.0	85.0	14.4	7	208/3/60	136	115	339B	AAON RN-030

SCHEDULE REMARKS:

Roof Top Units: 100% Makeup Air Units, Water-Source-Heat-Pump, with modulating hot gas reheat for temperature control and dehumidification. Factory assembled, piped, wired and tested as a single package.

- Units shall include a Modulating Copeland digital scrolls or Modulating Bitzer variable speed scrolls, two circuits, with a single Modulating Scroll with an additional standard scroll or single circuit with a single digital scroll. Split coil circuits require interlocked DX coil
- The coils in the unit shall be corrosion protected. This includes two coils:
 - The Evaporator Coil
 - The Hot Gas Reheat Coil
- Units shall utilize the reverse cycle heat pump for heating
- Refrigeration circuits shall include a liquid line sight glass
- Each heat exchanger circuit shall have a flow switch that shuts down the compressor if water flow to the condenser is interrupted
- Units shall include factory installed head pressure control module and reset exchanger shall include factory installed head pressure control valve which modulates the condenser water flow based on head pressure and allows cooling operation below 65°F condenser water temperature
 - Provide Phase and Brownout protection (FACTORY WIRED)
 - BA fans shall have VFD's
 - Provide Motorized outside air damper, closed when unit is OFF. Provide an air monitoring system.
 - Provide 2 inch, 30% pleated filters
 - Provide Double-Wall Foam Composite (R3) construction and stainless steel drain pans.
 - Controls: Factory mounted and wired controller with ambient datapoint sensor; electronic sequencing of compressors, modulating hot gas reheat and modulating natural gas heat
 - The unit shall continuously supply a minimum of 35% design ton to the conditioned space
 - If this causes overcooling in the space, the modulating hot gas reheat valve shall open to satisfy the conditioned space requirements
 - All unit mounted controls for complete operation shall be installed by the equipment manufacturer
 - Field mounted controls shall include a duct mounted leaving air stat and corridor h/h/o limit thermostat as shown on the plans
 - Controller shall include a hand-held service tool to be left with the unit for future service
 - CURBS
 - Provide 30" high factory assembled and insulated roof curb/plenum with side discharge.
 - Curbs shall be provided with a heavy neoprene gasketing surface separating the unit from the curb. not neoprene foam tape.

Warranties:
1 yr parts (parts only, not expendables), not to exceed 18 months from shipment. Compressors shall have 5 year warranty (parts only). The parts warranty is to be for unit defects, not for expendables (filters/belts, maintenance, etc.).

Check, Test and Start-Up:

Vendor is to start the equipment and correct any warranty items found at start-up. All peripheral equipment effecting the equipment (natural gas, controls etc.) must be installed and functioning before the request for start-up.

MECHANICAL SPECIFICATIONS

SECTION	GENERAL
15000	<p>GENERAL</p> <p>A. A PERMIT FOR ALL MECHANICAL WORK SHALL BE OBTAINED BY A CONTRACTOR LICENSED IN PORTLAND, MAINE. AND ALL WORK SHALL BE PERFORMED BY THIS CONTRACTOR.</p> <p>B. COOPERATE WITH OTHER TRADES IN ORDER THAT ALL SYSTEMS MAY BE INSTALLED IN THE BEST ARRANGEMENT.</p> <p>C. ALL EQUIPMENT SHALL BE FURNISHED, INSTALLED AND ADJUSTED COMPLETE AND READY FOR USE.</p>
15041	<p>IDENTIFICATION</p> <p>A. ALL HVAC EQUIPMENT SHALL BE IDENTIFIED WITH BLACK BAKELITE TAGS WITH 3/4" HIGH WHITE APPEARING LETTERS.</p> <p>B. ALL GAS PIPING EXPOSED OUTDOOR AND IN MECH. ROOMS SHALL BE PAINTED YELLOW (FED STANDARD 595-37180) AND TAGGED WITH LABELS AS MANUFACTURED BY SETON. LABELS SHALL ALSO INDICATE GAS PRESSURE. TAGS SHALL BE APPLIED AT 10 FT. INTERVALS.</p> <p>C. ALL CONDENSER WATER MAINS EXPOSED IN MECHANICAL ROOMS SHALL BE PAINTED MEDIUM BLUE (FED STANDARD 595-33250) AND HAVE TAGS AS MANUFACTURED BY SETON APPLIED AT 10 FT. INTERVALS.</p> <p>D. ALL CONCEALED CONDENSER WATER PIPING SHALL BE TAGGED AT 10 FT. INTERVALS WITH LABELS MANUFACTURED BY SETON.</p> <p>E. UNINSULATED SUPPLY / RETURN PIPING TO THE COOLING TOWER SHALL BE PAINTED MEDIUM GREEN (FED STANDARD 595-34130) AND HAVE TAGS AS MANUFACTURED BY SETON APPLIED AT 10 FT. INTERVALS.</p> <p>F. IN ADDITION TO LABELS, ALL PIPE IDENTIFICATION SHALL INCLUDE ARROWS INDICATING DIRECTION OF FLOW.</p>
15060	<p>PIPING</p> <p>A. ALL PIPE SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO THE BUILDING WALLS.</p> <p>B. PROVIDE DIELECTRIC UNIONS AT CONNECTIONS BETWEEN DISSIMILAR METALS.</p> <p>C. CONDENSER WATER PIPE 2" TO 12" AND LARGER SHALL BE SCHEDULE 10 VICTALIC PIPE 2" AND LESS SHALL BE TYPE "L" COPPER.</p> <p>D. COOLING CONDENSATE DRIP PIPING SHALL BE TYPE "M" COPPER OR PVC PIPE.</p> <p>E. GAS PIPING SHALL BE SCHEDULE 40 STEEL.</p>
15090	<p>HANGERS AND SUPPORTS</p> <p>A. WHERE PIPES ARE SUSPENDED, CLEVIS TYPE HANGERS SHALL BE USED. HANGERS SHALL BE CONSTRUCTED OF ALUMINUM OR STAINLESS STEEL, BE SIZED TO ACCOMMODATE PIPE AND INSULATION WHEN APPLICABLE AND BE DESIGNED TO ALLOW VERTICAL ADJUSTMENT.</p> <p>B. WHERE INSULATED PIPES PASS THRU HANGERS, SHIELDS SHALL BE PROVIDED TO PROTECT THE INSULATION. SHIELDS SHALL BE 2" LONG, CONSTRUCTED OF 18 GAUGE GALVANIZED SHEETMETAL. SHIELDS SHALL HAVE BOTTOM TABS FOR SECURING TO HANGERS.</p>
15250	<p>INSULATION</p> <p>A. COOLING COIL DRIP PIPING SHALL BE INSULATED WITH 1" THICK ELASTOMERIC PIPE INSULATION.</p> <p>B. CONDENSER WATER PIPE OUTDOORS SHALL BE INSULATED WITH 2" FIBERGLASS w/ ALUMINUM JACKET.</p> <p>C. RECTANGULAR SUPPLY AND RETURN DUCTS SHALL BE INSULATED WITH 1" LINER, UNLESS NOTED OTHERWISE. DUCTS ON THE ROOF SHALL BE INSULATED WITH 2" LINER.</p> <p>D. ROUND SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED WITH 2" THICK FIBERGLASS BLANKET WITH VAPOR BARRIER FOIL UNLESS NOTED OTHERWISE.</p> <p>E. DUCT SIZES INDICATED ARE METAL SIZES, ALLOWANCE HAS BEEN MADE FOR LINER.</p>
15340	<p>DUCTWORK</p> <p>A. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMAN4.</p> <p>B. ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEETMETAL (UNLESS NOTED OTHERWISE). ALL ELBOWS SHALL HAVE TURNING VANES.</p> <p>C. DUCTWORK AT PDH-1, MAU-1, MAU-2, KMAU-1, KMAU-2 & KMAU-3 SHALL BE CONSTRUCTED OF ALUMINUM.</p>
15396	<p>TEST AND BALANCE</p> <p>A. TEST AND ADJUST EACH SYSTEM TO THE SPECIFIED QUANTITY OF SUPPLY, RETURN, OUTSIDE, MAKE-UP AND EXHAUST AIR.</p> <p>B. TEST AND ADJUST EACH AIR DEVICE TO WITHIN 10% OF DESIGN.</p> <p>C. TEST AND ADJUST CONDENSER WATER FLOWS TO THE SCHEDULED VALUES.</p>

WATER HEATER SCHEDULE

MARK	TYPE	GAS INPUT (MBH)	PRESSURE (IN UC)	RECOVERY RATE 40 TO 120 (GPH)	EFFICIENCY	STORAGE CAPACITY (GAL)	CONNECTIONS (IN)				BLOWER		WEIGHT (LBS)		STANDARD OF PERFORMANCE		
							WATER INLET	WATER OUTLET	GAS	VENT	COMB AIR	VOLTAGE	HP	AMPS		SHIP	OPERATE
B-1	CONDENSING	1000	4.5	1400	94%	750	2	2	1	4	6	15/16.0	-	11	2150	421T	FVI POWER VT
B-2	CONDENSING	1000	4.5	1400	94%	750	2	2	1	4	6	15/16.0	-	11	2150	421T	FVI POWER VT

- MOUNT BOILERS ON 4" THICK CONCRETE HOUSEKEEPING PAD WITH CHAMFERED EDGES
- POLYMER LINED STORAGE TANK
- EFFICIENCY SHALL BE IN ACCORDANCE WITH ANSI Z110.3
- WATER HEATERS SHALL BE IN ACCORDANCE WITH ASHRAE 90.1-1999
- VERTICAL TUBE DESIGN, REGISTERED FOR A WORKING PRESSURE OF 150 PSI
- GAS TRAIN SHALL BE IN CONFORMANCE WITH LOCAL CODE REQUIREMENTS
- UL LISTED FOR PLUMB VENTING

- SAFETY CONTROLS
 - SOLID STATE FLAME SAFEGUARD WITH PRE-PURGE, PROGRAMMABLE POST PURGE, FLAME STATUS LIGHT
 - IMMERSION THERMOSTATS (2)
 - IMMERSION TEMPERATURE LIMITING DEVICE
 - STACK TEMPERATURE LIMITING DEVICE
 - ADME TEMPERATURE PRESSURE RELIEF VALVE
- 1 YEAR WARRANTY FOR BURNER AND PARTS
- 5 YEAR TANK WARRANTY
- UL LISTED
- 150-9001 CERTIFIED
- ACCEPTABLE MANUFACTURERS: FVI, AERCO

PUMP SCHEDULE

MARK	SERVICE	TYPE	GPM	HEAD (FT)	RPM	CONNECTIONS (in)		ELECTRICAL		STANDARD OF PERFORMANCE	
						SUCTION	DISCHARGE	EFFICIENCY	VOLTAGE		HP
P-1	CONDENSER LOOP	BASE MOUNTED END SUCTION	635	110	1750	5	4	78	208/3/60	30	AURORA 3344
P-2	CONDENSER LOOP	BASE MOUNTED END SUCTION	635	110	1750	5	4	78	208/3/60	30	AURORA 3344
P-3	TOWER LOOP	BASE MOUNTED END SUCTION	635	70	1750	5	4	78	208/3/60	20	AURORA 3344
P-4	TOWER LOOP	BASE MOUNTED END SUCTION	635	70	1750	5	4	78	208/3/60	20	AURORA 3344
P-5	SNOW MELT	IN-LINE	5	24	1750	1	1	--	15/16.0	1/4	AURORA SERIES 3020

- Pump P-1 shall maintain constant flow through the closed condenser water loop
- Pump P-2 shall serve as a back-up to pump P-1
- Pump P-3 shall cycle and provide flow through the tower/heat exchanger
- Pump P-4 shall serve as a back-up to pump P-3
- Each pump shall be furnished with a suction diffuser, triple duty valve and pressure gauge
- All pumps (including the suction diffuser) shall be mounted on a 4" thick concrete pad
- The pad shall extend beyond the pump by 4 inches on all sides and have chamfered edges
- Provide a 6" air separator (eq Spirotherm), an 80 gallon expansion tank, make-up water valves and an automatic air vent for the closed loop
- Provide a 6" high velocity dirt separator (eq Spirotherm), with removable head, in the return pipe from the cooling tower
- The snow melt system shall be a 40% propylene glycol with inhibitor solution
- Acceptable mfrs Aurora, Bell & Gossett

ELECTRIC HEATER SCHEDULE

MARK	TYPE	ELECTRICAL		STANDARD OF PERFORMANCE	REMARKS
		VOLTAGE	KW		
EWH-1	WALL	208/3/60	3	MARKEL 3450	1, 2
EDH-1	DUCT	208/3/60	60	MARKEL	-

- INTEGRAL THERMOSTAT
- RECESS MOUNT
- DUCT THERMOSTAT

COOLING TOWER

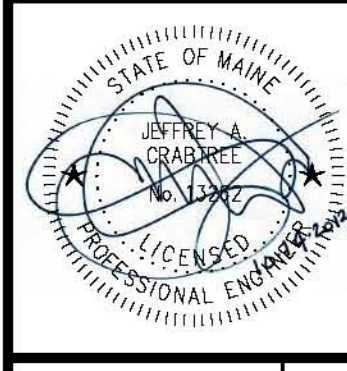
MARK	GPM	EUT	LUT	DESIGN WB	PD (R) LIFT	FAN MOTOR	PUMP HEAT KW TO OP	POWER	MANUFACTURER	MODEL NUMBER
CT-1/CT-2	635	91	80	74	4	(2) 30 HP	2 @ 9 KW	280/3/60	BAC	(2) VT IT - L

- CTI Certification
- Materials of Construction:
 - Drift Eliminators: Polyvinyl Chloride (PVC) Drift Eliminators
 - Non-Corroding PVC Rim Fill Material with a Flame Spread Rating of 5
 - Water Outlet: Side Outlet Pump Suction Connection
 - Steel Support:
 - Basin Heater Options: Electric Immersion Heaters Sized to Maintain +40°F water at -20°F Ambient with Electrical Requirements Matching Fan Motor(s)
 - Basin Heater Controls: Field-mounted-and-wired Heater Control Panel with Contactor and Disconnect
 - Basin Water Level Control: Mechanical Float Valve Assembly
 - Fan Wheel Material: Galvanized Steel Fan Wheel(s) Protected with BALTIBOND® Corrosion Protection System
 - Motors: VFD Duty - see plans detail and specifications

HEAT EXCHANGER

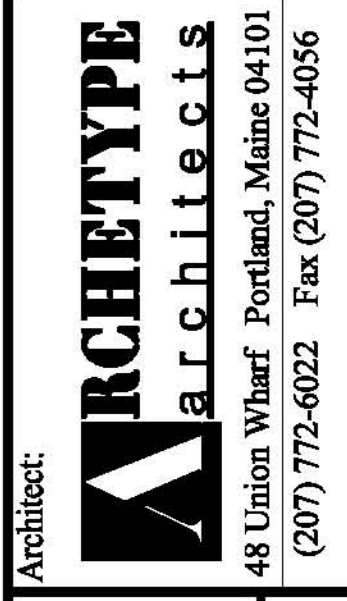
SYSTEM SIDE		TOWER SIDE
635	GPM	635
96	EUT	91
85	LUT	80
15	PD (R)	15
Mfr:		Alfa-Laval
MNI:		AG6

- Notes:
- Heat Exchanger shall be ARI Standard 400 certified and stickered.
 - Rated in accordance with ARI 400 is not acceptable.
 - Use 304 SS plates at 0.4 mm thickness



Prepared For:
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Project:
PRESS HOTEL
390 CONGRESS STREET
PORTLAND, MAINE

- Revisions:
- 13-07-01 30% Marriott Submission
 - 13-09-09 60% Marriott Sub. & Pric.
 - 13-10-14 Issue for Bid & Marriott Revw

Date: 08 OCT 13
Scale: 1/8" = 1'-0"
HVAC SCHEDULES

M10.01