

FAN SCHEDULE

MARK	AREA SERVED	TYPE	CFM	SP (IN)	RFM	ELECTRICAL VOLTAGE	HP/W	MAX. SONES	STANDARD OF PERFORMANCE	REMARKS
F-A	TOWER	ROOF CENT.	140	0.375	143	15/1/60	1/30	4	GREENHECK G-010-D	1, 2, 3, 4, 5, 13
F-B	TOWER	ROOF CENT.	175	0.375	156	15/1/60	1/30	5	GREENHECK G-010-D	1, 2, 3, 4, 5, 13
F-C	TOWER	ROOF CENT.	210	0.375	190	15/1/60	1/30	5	GREENHECK G-010-D	1, 2, 3, 4, 5, 13
F-D	TOWER	ROOF CENT.	280	0.375	250	15/1/60	1/25	5	GREENHECK G-015-D	1, 2, 3, 4, 5, 13
F-E	TOWER	ROOF CENT.	385	0.375	350	15/1/60	1/20	8	GREENHECK G-020-D	1, 2, 3, 4, 5, 13
F-F	TOWER	ROOF CENT.	20	0.375	136	15/1/60	1/15	6	GREENHECK G-020-D	1, 2, 3, 4, 5, 13
F-G	TOWER	ROOF CENT.	495	0.375	1300	15/1/60	1/25	6	GREENHECK G-030-G	1, 2, 3, 4, 5, 13
F-H	HOUSEKEEPING	CLG. CENT.	50	0.25	500	15/1/60	(40)	2	GREENHECK 9P-B10	3, 4, 5, 6, 11

F-J	TOWER	UTILITY SET	140	0.375	909	15/1/60	1/4	5	GREENHECK 9UD-1-VG	2, 4, 5, 13, 11
F-1	KITCHEN HOOD	UPBLAST	4940	1375	118	208/3/60	3	21	GREENHECK CUE-220HP	1, 4, 9, 10, 11, 12, 14
S-1	STAIR A	CENT. SUPPLY	9000	0.375	1926	208/3/60	5	33	GREENHECK L9F-16	1, 4, 7, 8, 15
S-2	STAIR B	CENT. SUPPLY	13000	0.375	1370	208/3/60	5	30	GREENHECK L9F-22	1, 4, 7, 8, 15
S-3	CORRIDOR	UPBLAST	3700	0.375	140	208/3/60	1	11	GREENHECK CUE-90	1, 2, 3, 4, 5, 16
S-4	LOBBY	N-LINE	6600	0.375	1293	208/3/60	3	24	GREENHECK B5Q-200	3, 4, 6, 16
S-5	MEETING 1	N-LINE	1850	0.375	154	15/1/60	1/2	15	GREENHECK B5Q-130	3, 4, 6, 16
S-6	MEETING 2	N-LINE	950	0.375	1404	15/1/60	1/4	11	GREENHECK B5Q-100	3, 4, 6, 16
S-7	PREFRANCTION	N-LINE	1600	0.375	1381	15/1/60	1/2	12	GREENHECK B5Q-130	3, 4, 6, 16

- Roof Curb
- Brokecrown
- Backdraft Damper
- Disconnect
- Speed Control
- Neoprene Isolators
- Supply Configuration
- Motorized Damper
- Non-Stick Wheel
- Grease Trough
- Clean-out Port
- Curb Seal
- Continuous Operation
- Control with Switch at Hood

- Control to maintain pressure between 0.25" to 0.25" via (2) pressure differential sensors, a discriminator and a VFD
- Energize via the Fire Alarm Panel
- THYRISTOR RAILS AT 16" ABOVE ROOF

AIR DISTRIBUTION SCHEDULE

MARK	APPLICATION	TYPE	THROW	CEILING	CONSTRUCTION	FINISH (NOTE 6)	STANDARD OF PERFORMANCE	REMARKS
B1	SUPPLY	LOUVER FACE	1-W	LAY-IN	ALUMINUM	NOTE 6	METALAIR 5000	1, 4
B2	SUPPLY	LOUVER FACE	2-W	LAY-IN	ALUMINUM	NOTE 6	METALAIR 5000	1, 2, 4
B3	SUPPLY	LOUVER FACE	3-W	LAY-IN	ALUMINUM	NOTE 6	METALAIR 5000	1, 4
B4	SUPPLY	LOUVER FACE	4-W	LAY-IN	ALUMINUM	NOTE 6	METALAIR 5000	1, 4
B21	SUPPLY	LOUVER FACE	1-W	SHEETROCK	ALUMINUM	NOTE 6	METALAIR 5000	1, 3, 4
B22	SUPPLY	LOUVER FACE	2-W	SHEETROCK	ALUMINUM	NOTE 6	METALAIR 5000	1, 2, 3, 4
B23	SUPPLY	LOUVER FACE	3-W	SHEETROCK	ALUMINUM	NOTE 6	METALAIR 5000	1, 3, 4
B24	SUPPLY	LOUVER FACE	4-W	SHEETROCK	ALUMINUM	NOTE 6	METALAIR 5000	1, 3, 4
B5	SUPPLY	SIDEWALL	2-W	SIDEWALL	ALUMINUM	NOTE 6	METALAIR V4004D	1
B6	SUPPLY	LINEAR	15 DEG	SHEETROCK	ALUMINUM	NOTE 6	METALAIR 2000	1, 4, 5
R1	RETURN	FIXED BLADE	---	LAY-IN	ALUMINUM	NOTE 6	METALAIR RH-TB	4
R2	RETURN	FIXED BLADE	---	SHEETROCK	ALUMINUM	NOTE 6	METALAIR RH	3, 4
R3	RETURN	LINEAR	---	SHEETROCK	ALUMINUM	NOTE 6	METALAIR 2000	3, 4, 5
E1	EXHAUST	FIXED BLADE	---	LAY-IN	ALUMINUM	NOTE 6	METALAIR RH-TB	1, 4
E2	EXHAUST	FIXED BLADE	---	SHEETROCK	ALUMINUM	NOTE 6	METALAIR RH	1, 3, 4
D.G.	TRANSFER	DBL FLANGE	---	---	ALUMINUM	NOTE 6	METALAIR DG-DF	-
LOUVER	INTAKE/EXH	EXTRUDED	---	---	ALUMINUM	PER ARCH	GREENHECK E8D-202	-

- OPPOSED BLADE DAMPER
- 2-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 FLENUM
- FACTORY PRIMED FOR CUSTOM FINISH PAINTING BY G.C.

MAKE-UP AIR UNITS: WATER SOURCE HEAT PUMP RTUS

MARK	OA CFM	ESP (IN)	EVAPORATOR COOLING CAPACITY (TONS)	AMBIENT, 92°F/60°F SUMMER AND 29°F WINTER				HEATING				ENERGY WHEEL				ELECTRICAL DATA	WEIGHT (LBS)	STANDARD OF PERFORMANCE									
				EAT	DB	WB	WB	EAT	LVG. AIR DB	CONDENSER WATER GPM	WPD FT.	EUT COOLING	EUT HEATING	CFM	OA				EXH	CAPACITY TON	APPLICATION EER	APPLICATION COP	VOLTAGE	MCA	MAX. FUSE		
MUA-1	4550	10	148	282	84	72	51	91	YES	YES	0	72	60	5.8	90	60	4550	110	35.8	10.0	14.4	7	208/3/60	131	175	3379	AAON RN-075
MUA-2	6025	10	176	332	84	72	54	54	YES	YES	0	72	81	11.6	90	60	6,025	1400	43.0	85.0	14.4	7	208/3/60	136	175	3391	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 scroll(s) or Modulating Bitzer variable speed scroll, 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 compressors if water flow to the condenser is interrupted
 - Unit shall include factory installed head pressure control module and each heat 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 Branchout protection (FACTORY WIRED)
 - SA fans shall have VFDs
 - 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 (RD) construction and stainless steel drain pans.
 - Controls: Factory mounted and wired controller with ambient datapoint sensors electronic sequencing of compressors, modulating hot gas reheat and modulating natural gas heat
 - The unit shall continuously supply a maximum of 55F datapoint to the conditioned space
 - If this causes overcooling in the space, the modulating hot gas reheat valve shall open to satisfy the conditioned space requirement
 - 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/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 36" high factory assembled and insulated roof curb/pulpit 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 affecting the equipment (natural gas, controls etc.) must be installed and functioning before the request for start-up.

MECHANICAL SPECIFICATIONS

- 15000 GENERAL
- 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.
 - COOPERATE WITH OTHER TRADES IN ORDER THAT ALL SYSTEMS MAY BE INSTALLED IN THE BEST ARRANGEMENT.
 - ALL EQUIPMENT SHALL BE FURNISHED, INSTALLED AND ADJUSTED COMPLETE AND READY FOR USE.
 - ALL CONTRACTORS SHALL BE TOTALLY SILENT SOLID STATE OR MERCURY TYPE
- 15041 IDENTIFICATION
- ALL HVAC EQUIPMENT SHALL BE IDENTIFIED WITH BLACK BAKELITE TAGS WITH 3/4" HIGH WHITE APPEARING LETTERS.
 - ALL GAS PIPING EXPOSED OUTDOOR AND IN MECH. ROOMS SHALL BE PAINTED YELLOW (RED STANDARD 999-37590) AND TAGGED WITH LABELS AS MANUFACTURED BY SETON. LABELS SHALL ALSO INDICATE GAS PRESSURE. TAGS SHALL BE APPLIED AT 10 FT. INTERVALS.
 - ALL CONDENSER WATER MAINS EXPOSED IN MECHANICAL ROOMS SHALL BE PAINTED MEDIUM BLUE (RED STANDARD 999-33750) AND HAVE TAGS AS MANUFACTURED BY SETON APPLIED AT 10 FT. INTERVALS.
 - ALL CONCEALED CONDENSER WATER PIPING SHALL BE TAGGED AT 10 FT. INTERVALS WITH LABELS MANUFACTURED BY SETON.
 - UNINSULATED SUPPLY / RETURN PIPING TO THE COOLING TOWER SHALL BE PAINTED MEDIUM GREEN (RED STANDARD 999-34100) AND HAVE TAGS AS MANUFACTURED BY SETON APPLIED AT 10 FT. INTERVALS.
 - IN ADDITION TO LABELS, ALL PIPE IDENTIFICATION SHALL INCLUDE ARROWS INDICATING DIRECTION OF FLOW.
- 15060 PIPING
- ALL PIPE SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO THE BUILDING WALLS.
 - PROVIDE DIELECTRIC UNIONS AT CONNECTIONS BETWEEN DISSIMILAR METALS.
 - CONDENSER WATER PIPE SHALL BE SCHEDULE 40 CPVC OR PEX PIPE AT THE BOILERS AND WITHIN 40 FT. DOWNSTREAM OF THE BOILERS SHALL BE SCHEDULE 40 STEEL.
 - ALTERNATE TO CONDENSER WATER PIPING SCHEMATIC INDICATED IS A SINGLE PIPE LOAD MATCH SYSTEM. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE SYSTEM TO THE ENGINEER.
 - COOLING CONDENSER DRIP PIPING SHALL BE TYPE "H" COPPER OR PVC PIPE.
 - GAS PIPING SHALL BE SCHEDULE 40 STEEL.
- 15020 HANGERS AND SUPPORTS
- 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.
 - WHERE INSULATED PIPES PASS THRU HANGERS, SHIELDS SHALL BE PROVIDED TO PROTECT THE INSULATION. SHIELDS SHALL BE 12" LONG, CONSTRUCTED OF 18 GAUGE GALVANIZED SHEETMETAL. SHIELDS SHALL HAVE BOTTOM TABS FOR SECURING TO HANGERS.
- 15250 INSULATION
- COOLING COIL DRIP PIPING SHALL BE INSULATED WITH 1" THICK ELASTOMERIC PIPE INSULATION.
 - CONDENSER WATER PIPE OUTDOORS SHALL BE INSULATED WITH 2" FIBERGLASS w/ ALUMINUM JACKET.
 - RECTANGULAR SUPPLY AND RETURN DUCTS SHALL BE INSULATED WITH 1" LINER, EQUAL TO JOINS MANVILLE TYPE RC, UNLESS NOTED OTHERWISE. DUCTS ON THE ROOF SHALL BE INSULATED WITH 2" LINER.
 - ROUND SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED WITH 2" THICK FIBERGLASS BLANKET WITH VAPOR BARRIER POLYURETHANE UNLESS NOTED OTHERWISE. DUCT SIZES INDICATED ARE METAL SIZES, ALLOWANCE HAS BEEN MADE FOR LINER.
- 15840 DUCTWORK
- ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SMACNA.
 - ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEETMETAL (UNLESS NOTED OTHERWISE). ALL ELBOWS SHALL HAVE TURNING VANES.
 - DUCTWORK AT FDU-1, MAU-1, MAU-2, KMAU-1, KMAU-2, 4 KMAU-3 SHALL BE CONSTRUCTED OF ALUMINUM.
- 15896 TEST AND BALANCE
- TEST AND ADJUST EACH SYSTEM TO THE SPECIFIED QUANTITY OF SUPPLY, RETURN, OUTSIDE, MAKE-UP AND EXHAUST AIR.
 - TEST AND ADJUST EACH AIR DEVICE TO WITHIN 10% OF DESIGN.
 - TEST AND ADJUST CONDENSER WATER FLOWS TO THE SCHEDULED VALUES.
- 15900 CONTROLS
- DELETE EMBEDDED GRAPHICAL WEB SERVER APPLIANCES
 - ACCEPTABLE ALTERNATE CONTROL SYSTEM IS WORKS AS PROVIDED BY TACO

REVISED PER DESIGN FROM ED LANDIS



WATER HEATER SCHEDULE

MARK	TYPE	GAS INPUT (MBH)	PRESSURE (IN WC)	RECOVERY RATE 40 TO 120 (GPH)	EFFICIENCY	STORAGE CAPACITY (GALS)	CONNECTIONS (IN)				BLOWER			WEIGHT (LBS)		STANDARD OF PERFORMANCE	
							WATER INLET	WATER OUTLET	GAS	VENT	COYB AIR	VOLUME	HP	AMP	SHIP		OPERATE
B-1	CONDENSING	1000	4.5	1400	94%	250	1	2	1	4	6	15/1/60	-	11	250	4211	PVI POWER VT
B-2	CONDENSING	1000	4.5	1400	94%	250	2	2	1	4	6	15/1/60	-	11	250	4211	PVI 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
- USE LINER FOR PASTIC VENTING
- SAFETY CONTROLS
 - SOLID STATE FLAME SAFEGUARD WITH PRE-FLAME PROGRAMMABLE POST PURGE, FLAME STATUS LIGHT
 - IMPRESSION THERMOSTATS (2)
 - IMPRESSION TEMPERATURE LIMITING DEVICE
 - STACK TEMPERATURE LIMITING DEVICE
 - ASME TEMPERATURE RELIEF VALVE
- 1 YEAR WARRANTY FOR BURNER AND PARTS
- 5 YEAR TANK WARRANTY
- UL LISTED
- ISO 9000 CERTIFIED
- ACCEPTANCE MANUFACTURERS: PVI, AERCO

PUMP SCHEDULE

MARK	SERVICE	TYPE	GPM	HEAD (FT)	RFM	CONNECTIONS (IN)		EFFICIENCY	ELECTRICAL		STANDARD OF PERFORMANCE
						SUCTION	DISCHARGE		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

- 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 Spiritherm), 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 Spiritherm), with removable head, in the return pipe from the cooling tower
- Acceptable mfrs Aurora, Bell 4 Gossett

ELECTRIC HEATER SCHEDULE

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

- INTEGRAL THERMOSTAT
- RECESS MOUNT
- DUCT THERMOSTAT

COOLING TOWER

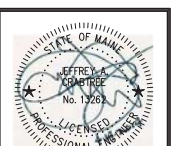
MARK	GPM	EWT	LWT	DESIGN WBT	PD (FT) LIFT	FAN MOTOR	PUMP HEAT KW TO GF	POWER	MANUFACTURER	MODEL NUMBER
CT-1/CT-2	635	91	80	74	4	(2) 30 HP	2 * 9 KW	280/3/60	BAC	(2) VT III - L

- CTI Certification: CTI Certified Thermal Performance
- Materials of Construction: Galvanized Stainless Steel Construction at Water Contact Areas
- Drift Eliminators: Polyvinyl Chloride (PVC) Drift Eliminators
- Wet Deck Surface: Non-Corroding PVC Film Fill Material with a Flame Spread Rating of 5
- Water Outlet: Side Outlet Pump Suction Connection Standard Unit Anchorage
- 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 Controller and Disconnect
- Basin Water Level Control: Mechanical Float Valve Assembly
- Fan Wheel Material: Galvanized Steel Fan Wheel(s) Protected with BALTIMOND Corrosion Protection System
- Motors: VFD Duty - see plans detail and specifications

HEAT EXCHANGER

SYSTEM SIDE		TOWER SIDE
635	GPM	635
96	EWT	91
85	LWT	80
15	PD (FT)	15
Mfr:		Alfa-Laval
M.N.:		A06

- 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



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PROJECT: PRESS HOTEL
390 CONGRESS STREET
PORTLAND, MAINE

Revisions:
1 13_10-14 Issue for Bid & Marrott Rev
2 13_10-21 Addendum #2
3 13_10-31 Addendum #3
4 13_12-18 Addendum #4 VE Items
5 14_04-14 Misc RFTs

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

M10.01