



10 Danforth Street
Portland, ME 04101
Ph : (207) 773-3625

Submittal

Job: 1332
Press Hotel
390 Congress Street
Portland, ME 04101

Spec Section No: 15610
Submittal No: 003
Revision No: 0
Sent Date: 2/5/2014

Spec Section Title: Make-up Air Units
Submittal Title: MAU-2 Data

Contractor:
Wright-Ryan Construction, Inc.
Alyssa Parker

SUBMITTAL REVIEW:
Reviewed for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Subcontractor from compliance with the project plans and specifications, nor departure therefrom. The Subcontractor remains responsible for details and accuracy, for conforming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly and for performing the work in a safe manner.
WRIGHT-RYAN CONSTRUCTION, INC
BY: RRC DATE: 2-5-14

Other:
Archetype Architects

Architect's Stamp

Engineer's Stamp



Unit Rating

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.208 (SN: 5555616-8QQ87YMY)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

RN-030-8-0-E7D9-12A:GELC-E0F-DRF-D00-0HACHKZ-00-00000MAB

Tag: MAU-2

Job Information

Job Name: *The Press Hotel Portland REV7-21-13*
 Job Number: *Revised Conditions*
 Site Altitude: *0 ft*
 Refrigerant: *R-410A*

Unit Information

Approx. Op./Ship Weights: *3452 / 3452 lbs.*
 Supply CFM/ESP: *6025 / 1 in. wg.*
 Final-Filter FV / Qty: *289.20 fpm / 6*
 Exhaust CFM/ESP/TSP: *1110 / 1.00 / 1.36 in. wg.*
 Outside CFM: *6025*
 Ambient Temperature: *86 °F DB / 74 °F WB*
 Return Temperature: *73 °F DB / 60 °F WB*

Static Pressure

External: *1.00 in. wg.*
 Evaporator: *0.32 in. wg.*
 Filters Clean: *0.11 in. wg.*
 Dirt Allowance: *0.35 in. wg.*
 Re-Heat Coil: *0.04 in. wg.*

Economizer: *0.02 in. wg.*
 Heating: *0.09 in. wg.*
 Cabinet: *0.04 in. wg.*
 Heatwheel: *1.27 in. wg.*
 Total: *3.23 in. wg.*

Cooling Section

	Gross	Net
Equivalent Total Capacity:	<i>378.28 MBH</i>	<i>365.34 MBH</i>
Total Capacity:	<i>343.82</i>	<i>330.88 MBH</i>
Sensible Capacity:	<i>187.69</i>	<i>174.75 MBH</i>
Latent Capacity:	<i>156.13 MBH</i>	
HW Total Cooling Capacity:	<i>34.45 MBH</i>	
Mixed Air Temp:	<i>84.41 °F DB</i>	<i>72.64 °F WB</i>
Entering Air Temp:	<i>84.41 °F DB</i>	<i>72.64 °F WB</i>
Lv Air Temp (Coil):	<i>54.67 °F DB</i>	<i>54.40 °F WB</i>
Lv Air Temp (Unit):	<i>56.63 °F DB</i>	<i>55.19 °F WB</i>
Digital Comp. Capacity Ratio:	<i>100%</i>	
Supply Air Fan:	<i>1 x 220 @ 4.55 BHP</i>	
SA Fan RPM / Width:	<i>1646 / 4.871"</i>	
Exhaust Air Fan:	<i>1 x RM220AB70 @ 0.44 BHP</i>	
EA Fan RPM / Width:	<i>937 / 3.450"</i>	
Evaporator Coil:	<i>19.9 ft² / 4 Rows / 14 FPI</i>	
Evaporator Face Velocity:	<i>303.4 fpm</i>	
Energy Recovery Wheel:	<i>1 x ERC-5245</i>	

Heating Section(**)

Primary Heat Type: *Heat Pump*
 Total Equivalent Capacity: *504.9 MBH*
 Total Capacity: *453.0 MBH*
 OA Temp: *0.0 DB / -1.0°F WB*
 RA Temp: *70.0 °F DB / 53.0 °F WB*
 Entering Air Temp: *8.0 DB / 7.1 °F WB*
 Leaving Air Temp: *69.6 DB / 45.3°F WB*

Auxiliary Heat Type: *Electric Heat*
 Heating CFM: *6025*
 Total Capacity: *51.2 MBH*
 OA Temp: *0.0 DB / -1.0°F WB*
 RA Temp: *70.0 °F DB / 53.0 °F WB*
 Entering Air Temp: *8.0 °F DB / 7.1 °F WB*
 Leaving Air Temp: *15.8 °F DB / 13.2 °F WB*
 Input (Emer/Aux) : *15.0 kW / 0.0 kW*
 Heater Qty (Emer/Aux): *2 / 0*
 Electric Heat FLA: *41.6*

Fan Temp Rise: *2.0 °F*

Re-Heat Coil:

Capacity: *132 MBH*
 LA DB / WB: *75.00 °F / 62.07 °F*
 RH: *48%*

Water Side Performance:

Cooling Flow Rate: *70 gpm*
 Cooling PD - Heat Exchanger: *7.66 ft*
 Cooling PD - Pipe, Valves, etc: *8.71 ft*
 Cooling Ent. / Lv. Water Temp: *85 / 97.2 °F*
 Heating Flow Rate: *70 gpm*
 Heating PD - Heat Exchanger: *7.66 ft*
 Heating PD - Pipe, Valves, etc: *8.71 ft*
 Heating Ent. / Lv. Water Temp: *60 / 48.59 °F*

Max Operating Pressure : **125 psig**

Rating Information

Application EER @ Op. Conditions: *13.7*

Application COP_H @ Op. Conditions: *7.12*



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Tag: MAU-2

Job Information

Job Name: *The Press Hotel Portland REV7-21-13*
 Job Number: *Revised Conditions*
 Site Altitude: *0 ft*
 Refrigerant: *R-410A*

Unit Information

Approx. Op./Ship Weights: *3452 / 3452 lbs.*
 Supply CFM/ESP: *6025 / 1 in. wg.*
 Final-Filter FV / Qty: *289.20 fpm / 6*
 Exhaust CFM/ESP/TSP: *1110 / 1.00 / 1.36 in. wg.*
 Outside CFM: *6025*
 Ambient Temperature: *86 °F DB / 74 °F WB*
 Return Temperature: *73 °F DB / 60 °F WB*

Electrical Data

Rating: *208/3/60*
 Unit FLA: *125*

Minimum Circuit Amp: *138*
 Maximum Overcurrent: *175*

	Qty	HP	VAC	Phase	RPM	FLA	RLA
Compressor 1:	1		208	3			51.3
Compressor 2:	1		208	3			51.3
Supply Fan:	1	5.00	208	3	1760	16.7	
Exhaust Fan:	1	1.00	208	3	1760	4.6	
Heatwheel:	1	0.1667	208	1	1760	1.2	

Cabinet Sound Power Levels*

Octave Bands:	63	125	250	500	1000	2000	4000	8000
Discharge LW(dB):	94	91	94	89	80	79	75	69
Return LW(dB):	87	88	83	74	70	68	63	55

*Sound power levels are given for informational purposes only. The sound levels are not guaranteed.
 (**)Fan motor temperature rise is not included in the heat capacity and temps.



Energy Wheel Rating

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Tag: MAU-2

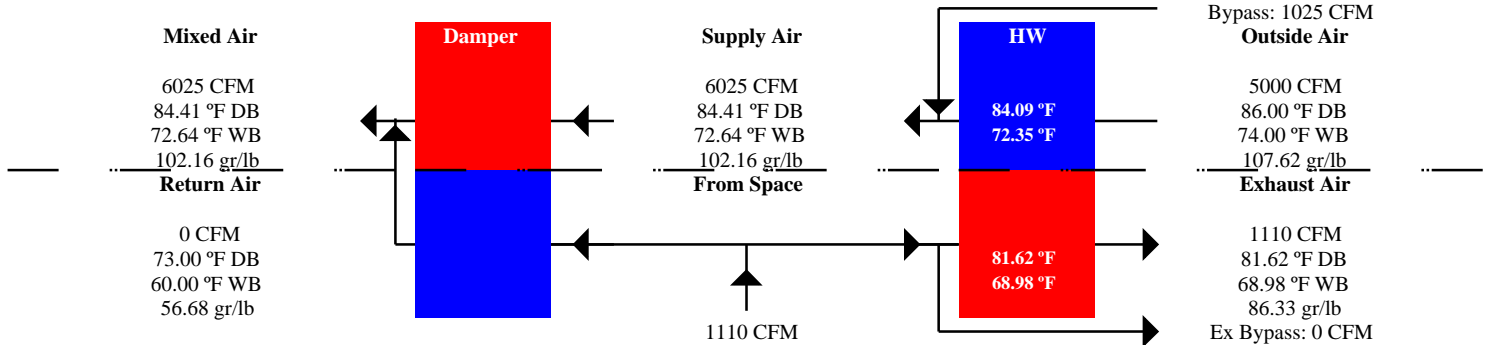
Job Name
Job Number
Site Altitude

The Press Hotel Portla
Revised Conditions
0'

Heat Wheel Type:
Heat Wheel Model:
Heat Wheel Qty:

Total
ERC-5245
1

Summer Conditions



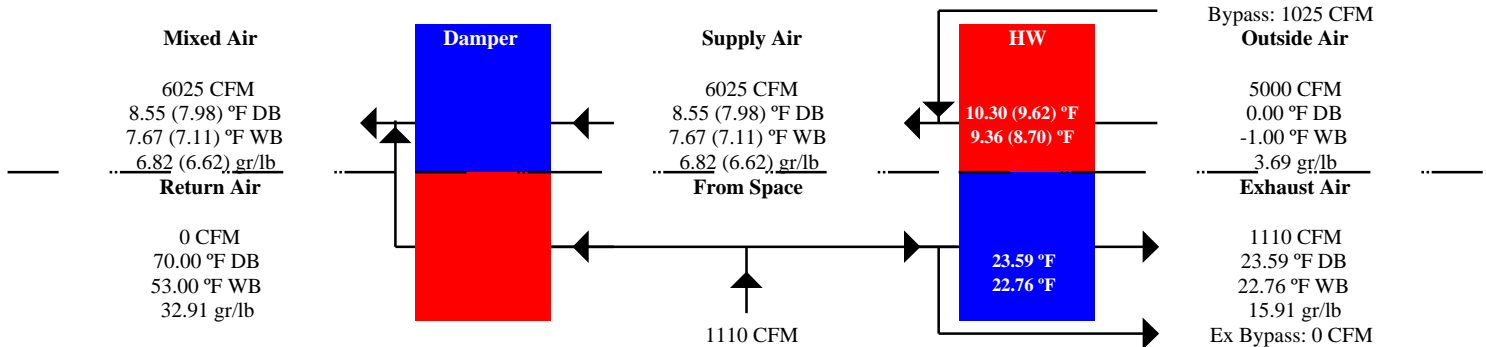
Cooling/Dehumidification

Total Capacity: **34.45 MBH**
Sensible Capacity: **10.59 MBH**
Latent Capacity: **23.86 MBH**

Heating/Humidification

0.00 MBH
0.00 MBH
0.00 MBH

Winter Conditions



Cooling/Dehumidification

Total Capacity: **0.00 (0.00) MBH**
Sensible Capacity: **0.00 (0.00) MBH**
Latent Capacity: **0.00 (0.00) MBH**

Heating/Humidification

67.55 (63.04) MBH
55.60 (51.89) MBH
11.95 (11.15) MBH

() Time Average Performance Due to Heat Wheel Defrost.



22.0" STAR Plenum

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JOB INFORMATION:

Job Name: *The Press Hotel Portland*
 Job Tag: *REV7-21-13*
 Rep Firm: *MAU-2*
 Date: *10/12/2013*

WHEEL SPECIFICATION:

Max RPM: *2,200*
 Diameter x Qty: *22.0 in. x 1*
 Width%: *99*
 Tip Speed: *9,480 FPM*
 Inertia: *5 WR²*

OPERATING CONDITIONS:

Air Flow: *6,025 CFM*
 Static Pressure: *3.23 in. Wg.*
 Plenum DP: *0.00 in. Wg.*
 Inlet Grill DP: *0.00 in. Wg.*
 TSP: *3.23 in. Wg.*
 Site Altitude: *0.00 Ft*
 TSP @ Sea Level: *3.23 in. Wg.*

MOTOR SELECTION:

Rated HP / Bypass: *5 / No*
 Frame Size: *184T*
 Nominal RPM: *1760*
 VAC/PH/Hz: *208/3/60*
 Efficiency: *Premium / 0.895*
 Enclosure Type: *ODP*
 Max Inertial Load: *52 WR²*

FAN PERFORMANCE:

RPM: *1646*
 BHP: *4.55*
 Efficiency: *67.4%*
 In/Out Velocity: *1843/2029 FPM*
 Plenum Out Velocity: *100 FPM*

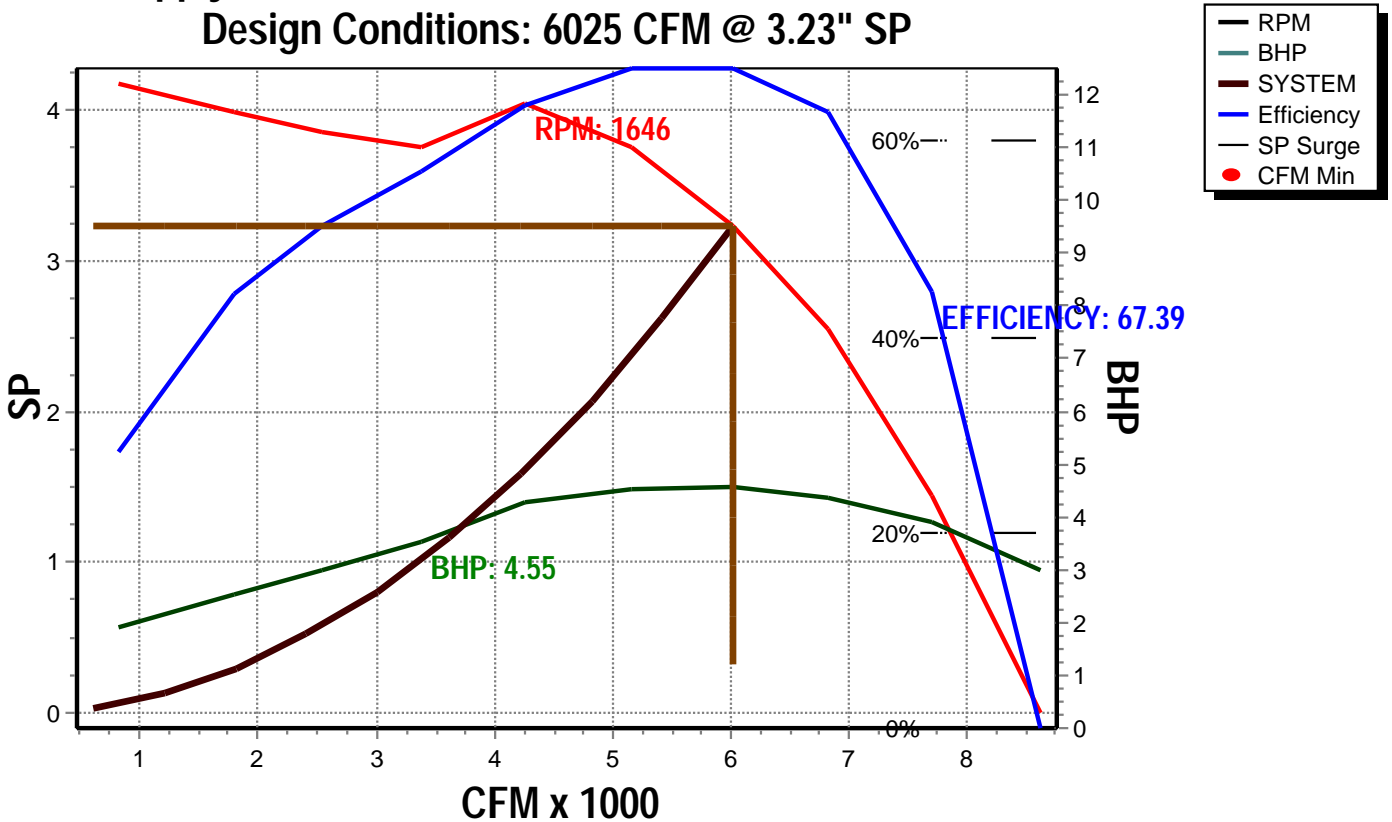
FAN SOUND POWER (Inlet/Outlet):

Octave Band:	(Re 10 ⁻¹² watts)							
	1	2	3	4	5	6	7	8
	94	90	94	90	83	82	79	73
	94	90	94	90	83	82	79	73

SOUND POWER A-Weighted: *95 / 95 dB*

Max Duct SP with Blocked Airway: *4 in. Wg. @ 1646 rpm*

Supply Fan Model: 220 @ 1646 RPM and 99% Width
Design Conditions: 6025 CFM @ 3.23" SP





22.0" STAR Plenum

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JOB INFORMATION:

Job Name: *The Press Hotel Portland*
 Job Tag: *REV7-21-13*
 Rep Firm: *MAU-2*
 Date: *10/12/2013*

WHEEL SPECIFICATION:

Max RPM: *2,200*
 Diameter x Qty: *22.0 in. x 1*
 CFM: *1110*
 Tip Speed: *5,397 FPM*
 Inertia: *5 WR²*

OPERATING CONDITIONS:

Air Flow: *1,110 CFM*
 Static Pressure: *1.25 in. Wg.*
 Relief Dampers DP: *0.11 in. Wg.*
 TSP: *1.36 in. Wg.*
 Site Altitude: *0.00 Ft*
 TSP @ Sea Level: *1.36 in. Wg.*

MOTOR SELECTION:

Rated HP / Bypass: *1 / No*
 Frame Size: *143T*
 Nominal RPM: *1760*
 VAC/PH/Hz: *208/3/60*
 Efficiency: *Premium / 0.855*
 Enclosure Type: *ODP*
 Max Inertial Load: *15 WR²*

FAN PERFORMANCE:

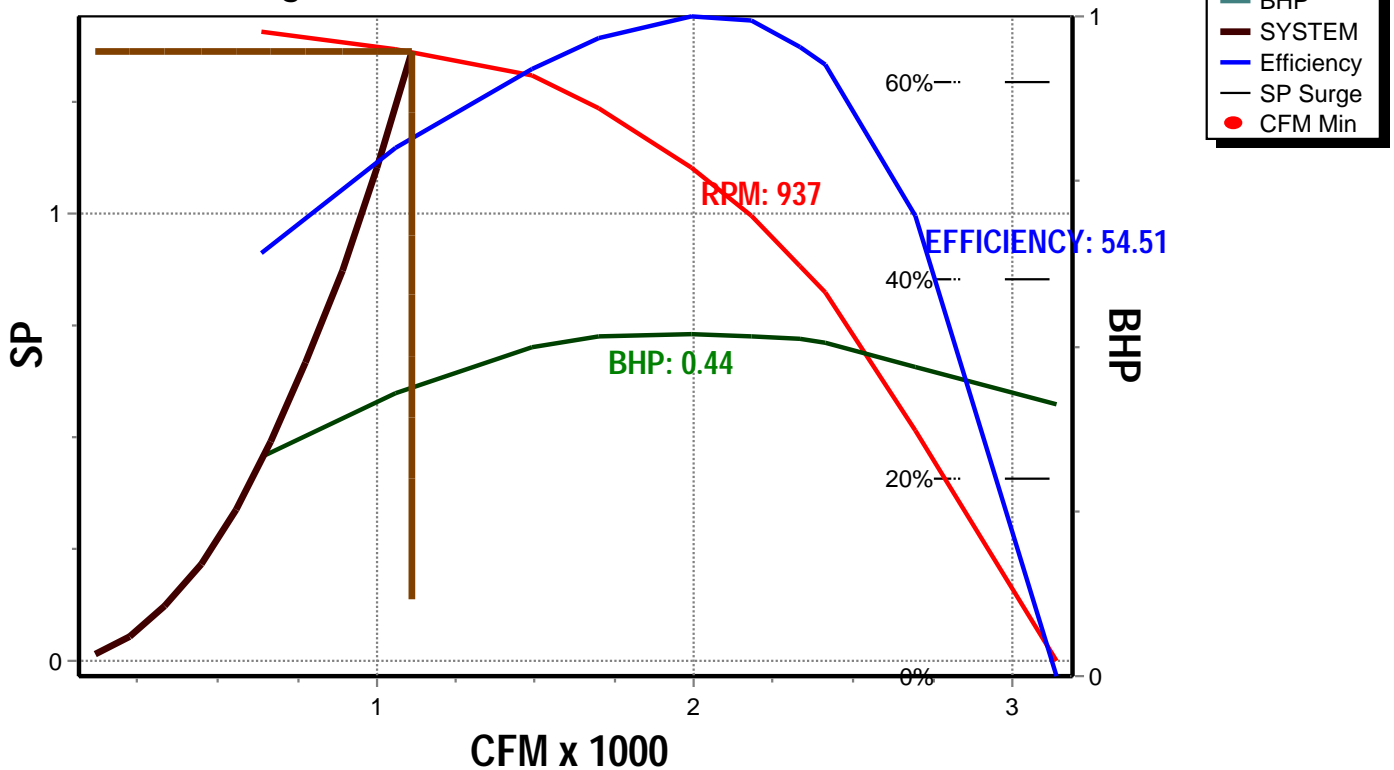
RPM: *937*
 BHP: *0.44*
 Efficiency: *54.5%*
 In/Out Velocity: *339/374 FPM*
 Plenum Out Velocity: *18 FPM*

FAN SOUND POWER (Inlet/Outlet):

Octave Band:	(Re 10 ⁻¹² watts)							
	1	2	3	4	5	6	7	8
	78	88	77	71	68	66	62	56
	78	88	77	71	68	66	62	56

SOUND POWER A-Weighted: **79 / 79 dB**

Exhaust Fan Model: RM220AB70 @ 937 RPM and 100% Width Design Conditions: 1110 CFM @ 1.36" SP





Unit Submittal

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Tag: MAU-2

Job Name:
Job Number:

The Press Hotel Portland REV7-21-13
Revised Conditions

Unit Submittal For:
Unit Submittal Date: July 22, 2013

	Base Option	Description
R	Series	Roof Top Unit
N	Generation	Ninth Generation
030	Unit Size	Thirty
8	Voltage	208V/3Ø/60Hz
0	Interior Protection	Standard
E	Refrigerant Style	R-410A Variable Capacity Scroll Compressor (VCC)
7	Unit Configuration	Water-Source/Geothermal Heat Pump
D	Coil Coating	Stainless Steel Cooling Coil Casing
9	Cooling/Heat Pump Staging	Modulating Heat Pump + No Auxiliary Heat - 1 VCC + 1 On/Off Comp.
1	Heating Type	Electric Heat
2	Heating Designation	Heat 2 - 15 kW
A	Heating Staging	Modulating/SCR Electric - 0-10V Control Signal

	Feature Option	Description
G	1A. RA/OA Section	AAONAIRE® Energy Recovery Wheel + Bypass Damper - Total + Low CFM
E	1B. RA/EA Blower Configuration	1 Blower + Premium Efficiency Motor + 1 VFD
L	1C. RA/EA Blower	22" Backward Curved Plenum - 70% Width with Banding
C	1D. RA/EA Blower Motor	1.0 hp - 1760 rpm
E	2. OA Control	DDC Actuator
0	3. Heat Options	Standard - No Auxiliary Heat
F	4. Maintenance Options	115V Convenience Outlet - Field Wired + Remote Start/Stop Terminals - LVTB
D	5A. SA Blower Configuration	1 Blower + Premium Efficiency Motor + 1 VFD
R	5B. SA Blower	22" Direct Drive Backward Curved Plenum
F	5C. SA Motor	5.0 hp - 1760 rpm
D	6A. Pre Filter Type	Energy Recovery Wheel 2" Pleated EA Filter - 30% Eff
0	6B. Unit Filter Type	2" Pleated - 30% Eff
0	6C. Filter Options	Standard
0	7. Refrigeration Control	Standard - Fixed 55°F Comp. Cooling Lock Out + Adjustable Comp. Heating Lock Out
H	8. Refrigeration Options	HGB Lag + MHGR
A	9. Refrigeration Accessories	Sight Glass
C	10. Power Options	Power Switch - 225 amps
H	11. Safety Options	Remote Safety Shutdown Terminals
K	12. Controls	Phase & Brown Out Protection + ERW Defrost
Z	13. Special Controls	Constant Volume (CV) Heat Pump Unit Controller - CV Cool + CV Heat
0	14A. Preheat Configuration	Standard - None
0	14B. Preheat Sizing	Standard - None
0	15. Glycol Percent	Water or No WSHP
0	16. Interior Cabinet Options	Standard - Double Wall + R-13 Foam Insulation + Stainless Steel Drain Pan
0	17. Exterior Cabinet Options	Standard
0	18. Customer Code	Standard
0	19. Code Options	Standard - ETL U.S.A. Listing
0	20. Crating	Standard
M	21. Water-Cooled Cond.	Balancing Valves + Water Flow Switch + Head Pressure Control
A	22. Control Vendors	Wattmaster Controls
B	23. Type	Standard - Includes AAON Gray Paint



VCMX Components

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Tag: MAU-2

Job Name:

The Press Hotel Portland VCMX For:
REV7-21-13

Job Number:

Revised Conditions

VCMX Date:

July 22, 2013

Hardware Included For VCMX Controller

Part #	Included Parts	Assigned Channel
V07140	VCMX Controller with WSHP and EBUS	
P94320	Space Temp Sensor - Field Installed	MainController\AI1
R82890	Supply Air Temp Sensor - Field Installed	MainController\AI2
R81550	Outside Air Temp Sensor	MainController\AI4
R69190	VCMX Large Expansion Module	
R37030	Building Static Pressure Sensor	LargeExpansionModule\AI4
P62520	Proof of Flow Sensor	LargeExpansionModule\BI3
R34690	Space Humidity Sensor - Field Installed	LargeExpansionModule\AI2
R88350	WSHP Module (Water Only)	
R28390	Suction Pressure Transducer	
R28390	Suction Pressure Transducer	
R32960	Water Temp Sensor	
R70490	Water Flow Switch	
R90230	VCMX Head Pressure Module	
R22020	Head Pressure Sensor	
R22020	Head Pressure Sensor	

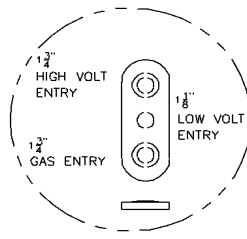
	1	2	3	4	5	6	7
VCMX Controller with WSHP and EBUS	Analog In	X	X	X			
	Analog Out	X	X				
	Binary In						
	Relay Out	X	X	X	X	X	
	Digital Sensor(s)						

	1	2	3	4	5	6	7	8
VCMX Large Expansion Module	Analog In		X	X				
	Analog Out		X	X				
	Binary In	X		X	X			
	Relay Out	X	X					

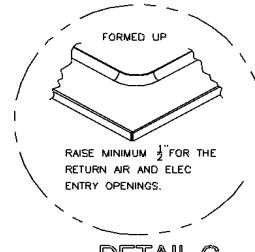
RN SERIES

C - CABINET WATER - COOLED CONDENSER OR CHILLED WATER AIR HANDLER ~ 16 - 30 TON WITH ECONOMIZER, ENERGY RECOVERY SECTION RETURN AIR FILTER AND POWER EXHAUST

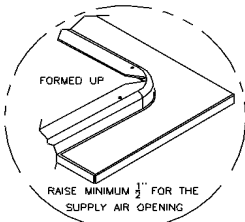
CLEARANCES	
LOCATION	UNIT SIZE
	16 - 30 TON
OUTSIDE AIR (BACK)	48
CONTROLS SIDE (FRONT)	48
LEFT SIDE	48
RIGHT SIDE	60
TOP	UNOBSTRUCTED



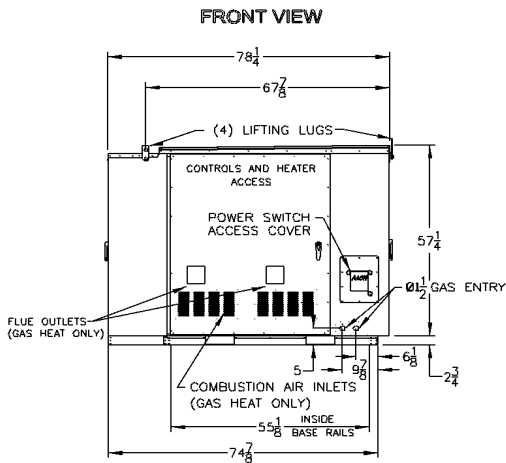
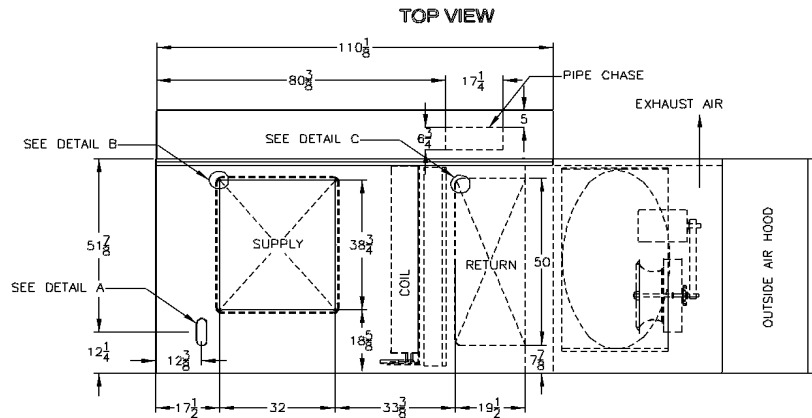
DETAIL A



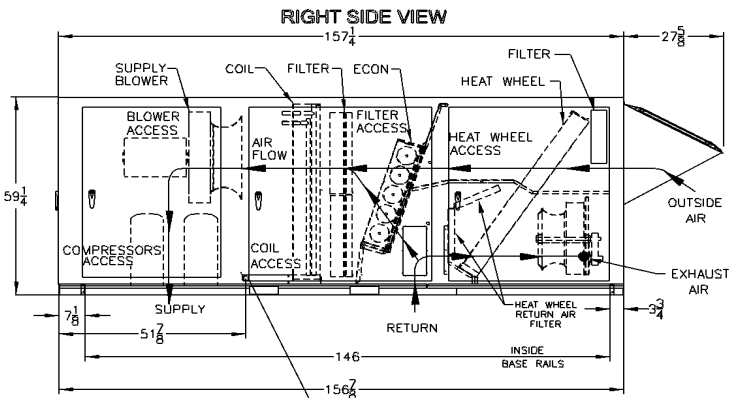
DETAIL C



DETAIL B



RNC-00141 NEW 07/03/12 JRL
NOTE: ALL DIMENSIONS ARE IN INCHES

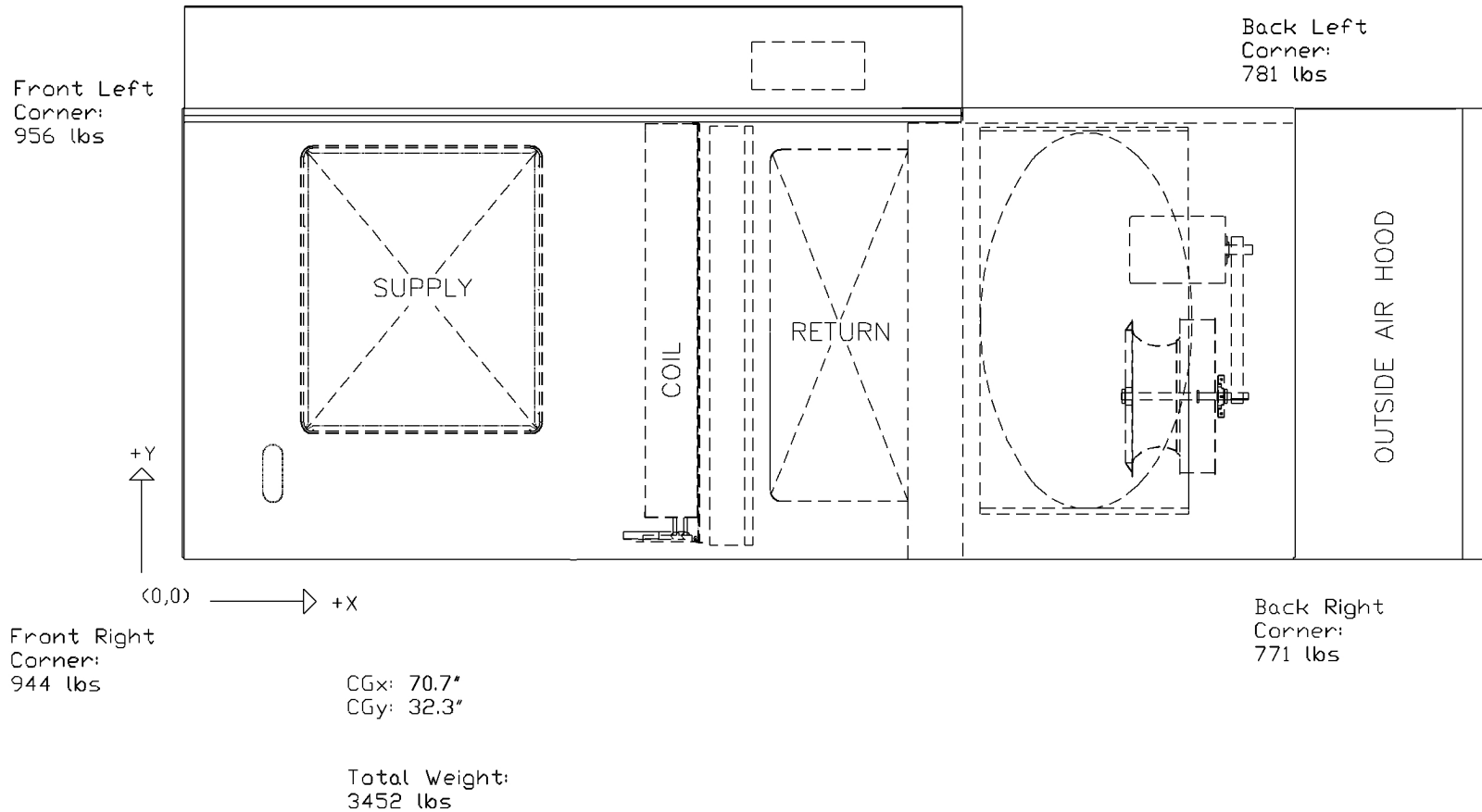


1" MPT STAINLESS CONDENSATE CONNECTION. 'P' TRAP FURNISHED BY MANUFACTURER FOR DRAIN CONNECTION.

RNC CABINET WATER COOLED CONDENSING UNIT OR CHILLED WATER UNIT WITH ENERGY RECOVERY SECTION

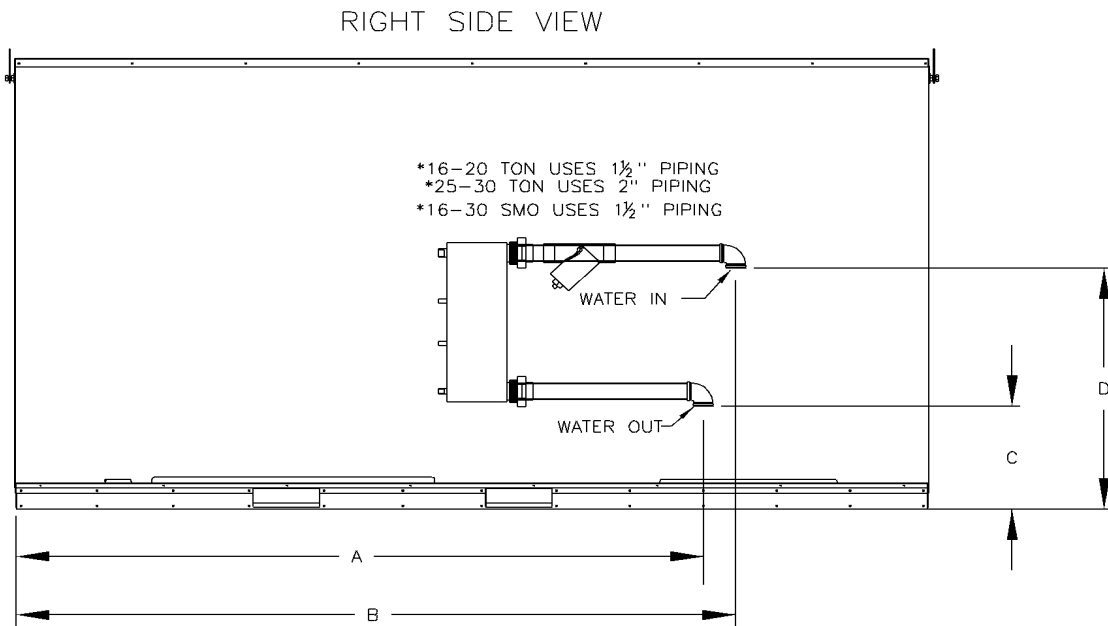
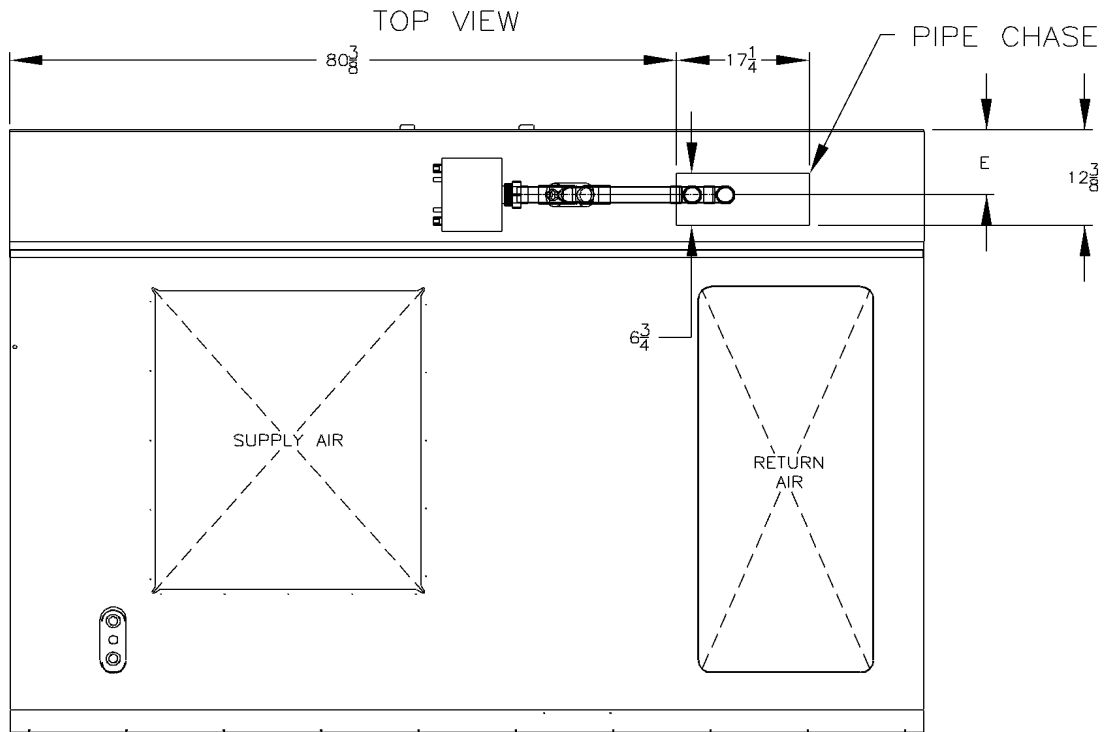


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Disclaimer:
 This weight estimate does not account for any SPAs.

RN SERIES C-CABINET
 WATER SOURCE HEAT PUMP PIPING ~16-30 TON



NOTE: ALL DIMENSION ARE +/- 1/2"

MODEL	A	B	C	D	E
16-30	90 1/2	94	14 3/4	29 1/4	8 3/8
SMO	92 1/2	95 1/4	15 1/2	34 1/4	7 3/8

RNC-00094 REV:A 03/17/11 JWC
 NOTE: ALL DIMENSIONS ARE IN INCHES