

COMcheck Software Version 4.0.3.0

Mechanical Compliance Certificate

Section 1: Project Information

Energy Code: 2009 IECC

Project Title: Bangor Savings Bank - Marginal Way

Project Type: New Construction

Construction Site:

20 Marginal Way

Portland, ME 04101

Owner/Agent:

Jason Donovan

Bangor Savings Bank

PO Box 930

Bangor, ME 04402-0930

207-942-5211

Jason.Donovan@bangor.com

Designer/Contractor:

Mason Rowell

Landry/French Construction 160 Pleasant Hill Road Scarborough, ME 04074

207-730-5566

mrowell@landryfrenchconstruction.com

Section 2: General Information

Building Location (for weather data):

Portland, Maine

Climate Zone:

Section 3: Mechanical Systems List

Quantity System Type & Description

1 Boiler System (Multiple-Zone w/ Perimeter System): Heating: 1 each - Other, Hot Water, Capacity = 229 kBtu/h No minimum efficiency requirement applies

Fan System: None

SSD-1 (Single Zone): Split System Heat Pump

Heating Mode: Capacity = 54 kBtu/h,

Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF

Cooling Mode: Capacity = 40 kBtu/h,

Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER

Fan System: FAN SYSTEM 2 | SSD-2 -- Compliance (Brake HP method): Passes

Fans:

FAN 2 Supply, Constant Volume, 1377 CFM, 0.8 motor nameplate hp, 0.6 brake hp

SSD-2,3,5,11 (Single Zone): Split System Heat Pump

Heating Mode: Capacity = 14 kBtu/h,

Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF

Cooling Mode: Capacity = 10 kBtu/h,

Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER

Fan System: FAN SYSTEM 3 | SSD-2,3,5,11 -- Compliance (Brake HP method): Passes

FAN 1 Supply, Constant Volume, 335 CFM, 0.5 motor nameplate hp, 0.3 brake hp

SSD-4 (Single Zone): Split System Heat Pump

Heating Mode: Capacity = 34 kBtu/h,

Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF

Cooling Mode: Capacity = 25 kBtu/h,

Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER

Fan System: FAN SYSTEM 3 | SSD-2,3,5,11 -- Compliance (Brake HP method): Passes

FAN 1 Supply, Constant Volume, 335 CFM, 0.5 motor nameplate hp, 0.3 brake hp

SSD-6,8,10 (Single Zone): Split System Heat Pump

Heating Mode: Capacity = 8 kBtu/h,

Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF

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Report date: 06/06/16

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Cooling Mode: Capacity = 6 kBtu/h. Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER Fan System: FAN SYSTEM 5 | SSD-6,8,10 -- Compliance (Brake HP method): Passes FAN 4 Supply, Constant Volume, 317 CFM, 0.5 motor nameplate hp, 0.1 brake hp SSD-7 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 40 kBtu/h, Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF Cooling Mode: Capacity = 30 kBtu/h, Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER Fan System: FAN SYSTEM 6 | SSD-7 -- Compliance (Brake HP method): Passes FAN 5 Supply, Constant Volume, 1138 CFM, 0.8 motor nameplate hp, 0.5 brake hp SSD-9 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 27 kBtu/h, Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF Cooling Mode: Capacity = 20 kBtu/h, Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER Fan System: FAN SYSTEM 7 | SSD-9 - Compliance (Brake HP method): Passes Fans: FAN 6 Supply, Constant Volume, 688 CFM, 0.5 motor nameplate hp, 0.3 brake hp SSD-12,13 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 20 kBtu/h, Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF Cooling Mode: Capacity = 15 kBtu/h, Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER Fan System: FAN SYSTEM 8 | SSD-12,13 -- Compliance (Brake HP method) : Passes FAN 7 Supply, Constant Volume, 635 CFM, 0.5 motor nameplate hp, 0.3 brake hp HRU-1 (Single Zone): 1 Cooling: 1 each - Single Package DX Unit, Capacity = 38 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 13.20 SEER, Required Efficiency = 13.00 SEER Fan System: FAN SYSTEM 8 | Heat Recovery Unit -- Compliance (Brake HP method) : Passes Fans: FAN 8 Supply, Single-Zone VAV, 1165 CFM, 1.3 motor nameplate hp, 0.9 brake hp FAN 9 Exhaust, Single-Zone VAV, 1165 CFM, 1.3 motor nameplate hp, 0.7 brake hp Pressure Drop Credits: Heat recovery device, 0.2454 credit DSS-1,ACCU-2 (Single Zone): 1 Cooling: 1 each - Split System, Capacity = 12 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None Proposed Efficiency = 18.00 SEER, Required Efficiency = 13.00 SEER Fan System: FAN SYSTEM 3 | SSD-2,3,5,11 -- Compliance (Brake HP method): Passes Fans: FAN 1 Supply, Constant Volume, 335 CFM, 0.5 motor nameplate hp, 0.3 brake hp Heating: Hot Water Boiler, Capacity 229 kBtu/h, Gas No minimum efficiency requirement applies Water Heater 1: Electric Storage Water Heater, Capacity: 50 gallons Proposed Efficiency: 100.00 EF, Required Efficiency: 0.86 EF

Section 4: Requirements Checklist

	Requi	rements Specific To: Boiler System :	
t	1. Mini	mum one temperature control device per zone	
1	2. Systems serving more than one zone must be VAV systems		
3. Controls capable of resetting supply air temp (SAT) by 25% of SAT-room temp differen			
	Exce	ption(s):	
		Systems that prevent reheating, recooling or mixing of heated and cooled supply air	

	Seventy five percent of the energy for reheating is from site-recovered or site solar energy sources.						
. /.	Zones with peak supply air quantities of 300 cfm (142 L/s) or less.						
D '4.	VAV fans with static pressure sensors are placed in a position such that the controller setpoint is no greater than one-third the total design fan static pressure. If placement results in the sensor being located downstream of major duct splits, multiple sensors are						
	installed in each major branch. Exception(s):						
	Systems with DDC of individual zone boxes reporting to the central control panel and reset of static pressure setpoint based on						
њ/5.	the zone requiring the most pressure. Systems with DDC of individual zone boxes reporting to the central control panel has static pressure setpoint reset based on the zone						
(3 **	requiring the most pressure.						
Requirements Specific To: SSD-1 :							
Ú /1.	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
,	equirements Specific To: SSD-2,3,5,11 :						
<u>rj</u> 1.	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
	equirements Specific To: SSD-4 :						
_	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
	equirements Specific To: SSD-6,8,10 :						
_	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
	equirements Specific To: SSD-7:						
	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
	equirements Specific To: SSD-9:						
_	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
_	equirements Specific To: SSD-12,13:						
	Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER						
	equirements Specific To: HRU-1 : Equipment minimum efficiency: Single Package Unit: 13.00 SEER						
_							
	equirements Specific To: DSS-1,ACCU-2: Equipment minimum efficiency: Split System: 13.00 SEER						
	equirements Specific To: Plant 1 : Newly purchased heating equipment meets the heating efficiency requirements						
	Two-pipe changeover heating/cooling controls must have:						
_	a) 15 degrees F deadband where boiler and chiller can not operate, b) allow operation in either heating or cooling for at least 4 hrs. and						
	c) prevent difference between heating and cooling set points greater than 30 degrees F						
	Exception(s):						
ги 3.	☐ Air/evap condenser and extensive outside-air filtration Systems with multiple boilers have automatic controls capable of sequencing boiler operation						
	quirements Specific To: Water Heater 1 :						
	Water heating equipment meets minimum efficiency requirements: Electric Water Heater efficiency: 0.86 EF (267 SL, Btu/h (if > 12						
	kW))						
(2) (a) 3.	First 8 ft of outlet piping is insulated Hot water storage temperature controls that allow setpoint of 90°F for non-dwelling units and 110°F for dwelling units.						
	Heat traps provided on inlet and outlet of storage tanks						
G	neric Requirements: Must be met by all systems to which the requirement is applicable:						
	ழ் ். Plant equipment and system capacity no greater than needed to meet loads Exception(s):						
	☐ Standby equipment automatically off when primary system is operating						
r	☐ Multiple units controlled to sequence operation as a function of load						
	Minimum one temperature control device per system						
	Minimum one humidity control device per installed humidification/dehumidification system Load calculations per ASHRAE/ACCA Standard 183.						
<u>~</u> √5.	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup						
	xception(s):						

, E	Continuously operating zones
1 6, €	Outside-air source for ventilation; system capable of reducing OSA to required minimum
	-5 supply and return air duct insulation in unconditioned spaces
	l-8 supply and return air duct insulation outside the building l-8 insulation between ducts and the building exterior when ducts are part of a building assembly
	ception(s):
	Ducts located within equipment
- 	Ducts with interior and exterior temperature difference not exceeding 15°F.
гъ̀/ 8. М	lechanical fasteners and sealants used to connect ducts and air distribution equipment
_	ucts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics
T c	tot water pipe insulation: 1.5 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in. Initially water/refrigerant/brine pipe insulation: 1.5 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in. Iteam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.
	ception(s):
Ĺ	5 5 140 5 5 5 140 5 5
±√11 C] Runouts <4 ft in length. peration and maintenance manual provided to building owner
	alancing devices provided in accordance with IMC 603.17
<u></u>	emand control ventilation (DCV) present for high design occupancy areas (>40 person/1000 ft2 in spaces >500 ft2) and served by systems with any one of 1) an air-side economizer, 2) automatic modulating control of the outdoor air damper, or 3) a design outdoor irflow greater than 3000 cfm. ception(s):
2	Systems with heat recovery.
	Multiple-zone systems without DDC of individual zones communicating with a central control panel.
	Systems with a design outdoor airflow less than 1200 cfm.
. 0	Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.
	otorized, automatic shutoff dampers required on exhaust and outdoor air supply openings ception(s):
<u> </u>	utomatic controls for freeze protection systems present xhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted ception(s):
	Hazardous exhaust systems, commercial kitchen and clothes dryer exhaust systems that the International Mechanical Code prohibits the use of energy recovery systems.
	Systems serving spaces that are heated and not cooled to less than 60°F.
	Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.
	Heating systems in climates with less than 3600 HDD.
Ę	Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64°F.
	Systems requiring dehumidification that employ energy recovery in series with the cooling coil.
	Laboratory fume hood exhaust systems that have either a variable air volume system capable of reducing exhaust and makeup air volume to 50 percent or less of design values or, a separate make up air supply meeting the following makeup air requirements: a) at least 75 percent of exhaust flow rate, b) heated to no more than 2°F below room setpoint temperature, c) cooled to no lower than 3°F above room setpoint temperature, d) no humidification added, e) no simultaneous heating and cooling.
Sect	ion 5: Compliance Statement
and other	nce Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications realculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2009 IECC tents in COMcheck Version 4.0.3.0 and to comply with the mandatory requirements in the Requirements Checklist.
Kw./ Name -	Title Signature Signature Date

Section 6: Post Construction Compliance Statement

provided to the owner.	al installation, system capacities, calibration inform thanical equipment and system provided to the ow tions report provided to the owner.	
The above post construction requirements We will be the construction requirements	s have been completed.	