



Generated by COMcheck-Web Software

Mechanical Compliance Certificate

Section 1: Project Information

Energy Code: 2009 IECC

Project Title: TD BANK HVAC UPGRADES

Project Type: Alteration

Construction Site:

481 Congress street, TD Bank
Portland, Maine 04101

Owner/Agent:

TD BANK BRANCH 481 CONGRESS
STREET

Designer/Contractor:

PAUL CLEAVES
AIRTEMP INC
20 THOMAS DRIVE
WESTBROOK, Maine 04092
207 774 2300
paul.cleaves@comfortsystemsusa.com

Section 2: General Information

Building Location (for weather data):

Portland, Maine

Climate Zone:

6a

Section 3: Mechanical Systems List

Quantity System Type & Description

- 1 HVAC System (Multiple-Zone) :
- Heating: 1 each - Hydronic or Steam Coil, Steam, Capacity = 120 kBtu/h
No minimum efficiency requirement applies
 - Cooling: 1 each - Field-Assembled DX System, Capacity = 144 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 13.00 EER, Required Efficiency: 10.80 EER
 - Fan System: FAN SYSTEM 1 | basment and first floor -- Compliance (Brake HP method) : Passes

Fans:

FAN 1 Supply, Multi-Zone VAV, 5000 CFM, 5.0 motor nameplate hp, 3.6 design brake hp (3.6 max. BHP)

Section 4: Requirements Checklist

Requirements Specific To: HVAC System :

- 1. Equipment minimum efficiency: Single Package Unit: 10.80 EER
- 2. Specified equipment consists of field-assembled components - efficiency documentation provided
- 3. Minimum one temperature control device per zone
- 4. Balancing and pressure test connections on all hydronic terminal devices
- 5. Integrated economizer is required for this location and system.
- 6. Cooling system provides a means to relieve excess outdoor air during economizer operation.
- 7. Systems serving more than one zone must be VAV systems
- 8. Single-duct VAV terminals reduce primary air before reheating
- 9. Controls capable of resetting supply air temp (SAT) by 25% of SAT-room temp difference
Exception(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.
- 10. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
- 11. Hot gas bypass limited to 50% of total cooling capacity
- 12. 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 the zone requiring the most pressure.
- 13. Systems with DDC of individual zone boxes reporting to the central control panel has static pressure setpoint reset based on the zone requiring the most pressure.
- 14. Hot water pumping systems with multiple boilers automatically reduce hot water flow rates proportionately when boilers are not operating

Generic Requirements: Must be met by all systems to which the requirement is applicable:

- 1. Plant equipment and system capacity no greater than needed to meet loads

Exception(s):

- Standby equipment automatically off when primary system is operating
- Multiple units controlled to sequence operation as a function of load
- 2. Minimum one temperature control device per system
- 3. Minimum one humidity control device per installed humidification/dehumidification system
- 4. Load calculations per ASHRAE/ACCA Standard 183.
- 5. Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup

Exception(s):

- Continuously operating zones
- 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
- 7. R-5 supply and return air duct insulation in unconditioned spaces
R-8 supply and return air duct insulation outside the building
R-8 insulation between ducts and the building exterior when ducts are part of a building assembly

Exception(s):

- Ducts located within equipment
- Ducts with interior and exterior temperature difference not exceeding 15°F.
- 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment
- 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics
- 10. Hot water pipe insulation: 1.5 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in.
Chilled water/refrigerant/brine pipe insulation: 1.5 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in.
Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.

Exception(s):

- Piping within HVAC equipment.
- Fluid temperatures between 55 and 105°F.
- Fluid not heated or cooled with renewable energy.
- Piping within room fan-coil (with AHRI440 rating) and unit ventilators (with AHRI840 rating).
- Runouts <4 ft in length.
- 11. Operation and maintenance manual provided to building owner
- 12. Thermostatic controls have 5°F deadband

Exception(s):

- Thermostats requiring manual changeover between heating and cooling
- Special occupancy or special applications where wide temperature ranges are not acceptable and are approved by the authority having jurisdiction.
- 13. Balancing devices provided in accordance with IMC 603.17
- 14. Demand 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 airflow greater than 3000 cfm.

Exception(s):

- 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.
- Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.
- 15. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings

Exception(s):

- Gravity dampers acceptable in buildings <3 stories
- 16. Automatic controls for freeze protection systems present
- 17. Three-pipe systems not used
- 18. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted

Exception(s):

