



COMcheck Software Version 4.1.1.0

# Mechanical Compliance Certificate

## Section 1: Project Information

Energy Code: **2012 North Carolina Energy Conservation Code**  
Project Title: 18144 BISCUITVILLE  
Project Type: New Construction

Construction Site:

NC Highway 24 and Andrews Dr.  
Spout Springs, NC 28326

Owner/Agent:

Designer/Contractor:

National Restaurant Designers  
3005 Carrington Mill Blvd.  
Suite 150  
Morrisville, NC 27560  
919-544-0087

## Section 2: General Information

Building Location (for weather data):

Lillington, North Carolina

Climate Zone:

4a

## Section 3: Mechanical Systems List

### Quantity System Type & Description

- 1 RTU-1 (Single Zone) : Single Package Heat Pump  
Heating Mode: Capacity = 84 kBtu/h,  
Proposed Efficiency = 3.82 COP, Required Efficiency = 3.30 COP  
Cooling Mode: Capacity = 113 kBtu/h, , Air Economizer  
Proposed Efficiency = 11.20 EER, Required Efficiency: 11.00 EER  
Fan System: FAN SYSTEM 1 | kitchen -- Compliance (Motor nameplate HP method) : Passes  
  
Fans:  
FAN 1 Supply, Constant Volume, 3000 CFM, 2.0 motor nameplate hp
- 1 RTU-2 (Single Zone) : Single Package Heat Pump  
Heating Mode: Capacity = 67 kBtu/h,  
Proposed Efficiency = 4.00 COP, Required Efficiency = 3.30 COP  
Cooling Mode: Capacity = 94 kBtu/h, , Air Economizer  
Proposed Efficiency = 11.20 EER, Required Efficiency: 11.00 EER  
Fan System: FAN SYSTEM 2 | dining -- Compliance (Motor nameplate HP method) : Passes  
  
Fans:  
FAN 2 Supply, Constant Volume, 3000 CFM, 2.0 motor nameplate hp
- 1 MUA-1 (Single Zone) :  
Heating: 1 each - Central Furnace, Electric, Capacity = 128 kBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Single Package DX Unit, Capacity = 104 kBtu/h, Air-Cooled Condenser, Air Economizer  
Proposed Efficiency = 12.10 EER, Required Efficiency: 11.20 EER  
Fan System: FAN SYSTEM 3 | make up air -- Compliance (Motor nameplate HP method) : Passes  
  
Fans:  
FAN 3 Supply, Constant Volume, 2800 CFM, 2.0 motor nameplate hp
- 1 Water Heater 1:  
Electric Storage Water Heater, Capacity: 50 gallons w/ Circulation Pump  
Proposed Efficiency: 0.86 EF, Required Efficiency: 0.86 EF

## Section 4: Requirements Checklist

Requirements Specific To: RTU-1 :

- 1. Equipment minimum efficiency: Heat Pump: 3.30 COP 11.00 EER
- 2. Integrated air economizer required
- 3. Cooling system provides a means to relieve excess outdoor air during economizer operation.

**Requirements Specific To: RTU-2 :**

- 1. Equipment minimum efficiency: Heat Pump: 3.30 COP 11.00 EER
- 2. Integrated air economizer required
- 3. Cooling system provides a means to relieve excess outdoor air during economizer operation.

**Requirements Specific To: MUA-1 :**

- 1. Equipment minimum efficiency: Single Package Unit: 11.20 EER
- 2. Newly purchased equipment meets the efficiency requirements
- 3. Integrated air economizer required
- 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
- 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
- 6. Hot gas bypass limited to 50% of total cooling capacity

**Requirements Specific To: Water Heater 1 :**

- 1. Water heating equipment meets minimum efficiency requirements: Electric Water Heater efficiency: 0.86 EF (267 SL, Btu/h (if > 12 kW))
- 2. All piping in circulating system insulated
- 3. Hot water storage temperature controls that allow setpoint of 90°F for non-dwelling units and 110°F for dwelling units.
- 4. Automatic time control of heat tapes and recirculating systems present
- 5. Controls will shut off operation of circulating pump between water heater/boiler and storage tanks within 5 minutes after end of heating cycle

**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. Ventilation systems in buildings over 10,000 ft<sup>2</sup> of conditioned area have demand controls. DCV systems are capable of reducing outside supply air to at least 50% below design ventilation rates. In all buildings, spaces larger than 500 ft<sup>2</sup> with a maximum occupant load of 40 or more people per 1,000 ft<sup>2</sup> of floor area control ventilation supply air flow by monitoring indoor air quality conditions.  
Exception(s):
  - Systems with heat recovery.
  - Building spaces where the primary ventilation needs are for process loads, including laboratories and hospital.
  - Individual units with less than 65 kBtu/h of cooling capacity.
- 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. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted  
Exception(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.
  - 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.

## Section 5: Compliance Statement

**Compliance Statement:** The proposed mechanical design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2012 North Carolina Energy Conservation Code requirements in COMcheck Version 4.1.1.0 and to comply with the mandatory requirements in the Requirements Checklist.

Robert Brown - Mech. Designer            2/13/19  
 Name - Title      Signature      Date

## Section 6: Post Construction Compliance Statement

- HVAC record drawings of the actual installation, system capacities, calibration information, and performance data for each equipment provided to the owner.
- HVAC O&M documents for all mechanical equipment and system provided to the owner by the mechanical contractor.
- Written HVAC balancing and operations report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name

Signature

Date