



# Mechanical Compliance Certificate

## Section 1: Project Information

Energy Code: **2009 IECC**  
Project Title:  
Project Type: New Construction

Construction Site:  
204 Cedar Street  
Summerville, SC 29483

Owner/Agent:

Designer/Contractor:  
Robert Morrison - Designer  
Constantine Engineering Associates  
1350 Ashley River Road  
Charleston, SC 29407

## Section 2: General Information

Building Location (for weather data): North Charleston, South Carolina  
Climate Zone: 3a

## Section 3: Mechanical Systems List

### Quantity System Type & Description

- 1 HVAC System 1 (Single Zone) :  
Heating: 1 each - Unit Heater, Electric, Capacity = 28 kBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Split System, Capacity = 29 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer  
exception: None  
Proposed Efficiency = 14.50 SEER, Required Efficiency: 13.00 SEER  
Fan System: None
- 2 HVAC System 2 (Single Zone) :  
Heating: 1 each - Unit Heater, Electric, Capacity = 33 kBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Split System, Capacity = 37 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer  
exception: None  
Proposed Efficiency = 14.50 SEER, Required Efficiency: 13.00 SEER  
Fan System: None
- 3 HVAC System 3 (Single Zone) :  
Heating: 1 each - Unit Heater, Electric, Capacity = 39 kBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Split System, Capacity = 41 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer  
exception: None  
Proposed Efficiency = 14.00 SEER, Required Efficiency: 13.00 SEER  
Fan System: None
- 1 HVAC System 4 (Single Zone) :  
Heating: 1 each - Unit Heater, Electric, Capacity = 44 kBtu/h  
No minimum efficiency requirement applies  
Cooling: 1 each - Split System, Capacity = 49 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer  
exception: None  
Proposed Efficiency = 14.50 SEER, Required Efficiency: 13.00 SEER  
Fan System: None
- 1 Water Heater 1:  
Electric Storage Water Heater, Capacity: 120 gallons  
Proposed Efficiency: 0.77 EF, Required Efficiency: 0.77 EF
- 10 Water Heater 2:  
Electric Instantaneous Water Heater, Capacity: 0 gallons  
No minimum efficiency requirement applies

## Section 4: Requirements Checklist

### Requirements Specific To: HVAC System 1 :

1. Equipment minimum efficiency: Split System: 13.00 SEER

### Requirements Specific To: HVAC System 2 :

1. Equipment minimum efficiency: Split System: 13.00 SEER

### Requirements Specific To: HVAC System 3 :

1. Equipment minimum efficiency: Split System: 13.00 SEER

### Requirements Specific To: HVAC System 4 :

1. Equipment minimum efficiency: Split System: 13.00 SEER

### Requirements Specific To: Water Heater 1 :

1. Water heating equipment meets minimum efficiency requirements: Electric Water Heater efficiency: 0.77 EF (403 SL, Btu/h (if > 12 kW))
2. First 8 ft of outlet piping is insulated
3. Hot water storage temperature controls that allow setpoint of 90°F for non-dwelling units and 110°F for dwelling units.
4. Heat traps provided on inlet and outlet of storage tanks

### Requirements Specific To: Water Heater 2 :

1. Water heating equipment meets minimum efficiency requirements: No efficiency requirements for electric instantaneous water heater.
2. First 8 ft of outlet piping is insulated

### 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 **PROVIDED BY MECHANICAL CONTRACTOR**
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 ft<sup>2</sup> in spaces >500 ft<sup>2</sup>) 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. 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 2009 IECC requirements in COMcheck Version 4.1.1.0 and to comply with the mandatory requirements in the Requirements Checklist.

Robert W. Morrison

Name - Title



Signature

20-07-20

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

Project Notes:

PME ComCHeck for 204 Cedar Street