COM*check* Software Version 4.1.0.0

Mechanical Compliance Certificate

Section 1: Project Information

Energy Code: **2012 North Carolina Energy Conservation Code**
Project Title: Krispy Kreme Concord
Project Type: New Construction

Construction Site:	Owner/Agent:	Designer/Contractor:
8018 Concord Mills Blvd. Concord, NC 28027	Krispy Kreme Doughnut Corp. 370 Knollwood Street Winston Salem, NC 27103 336-733-3745	WD Partners 7007 Discovery Blvd. Dublin, OH 43017 614-634-7000 chris.lauvray@wdpartners.com

Section 2: General Information

Building Location (for weather data):	Concord (Cabarrus), North Carolina
Climate Zone:	3a

Section 3: Mechanical Systems List

Quantity	System Type & Description
1	RTU-1 (Single Zone) : Heating: 1 each - Central Furnace, Gas, Capacity = 80 kBtu/h Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et (or 78% AFUE) Cooling: 1 each - Single Package DX Unit, Capacity = 61 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 15.00 SEER, Required Efficiency: 13.00 SEER Fan System: RTU-1 | BACK OF HOUSE/KITCHEN -- Compliance (Motor nameplate HP method) : Passes Fans: FAN 1 Supply, Constant Volume, 2000 CFM, 1.0 motor nameplate hp
1	RTU-2 (Single Zone) : Heating: 1 each - Central Furnace, Gas, Capacity = 140 kBtu/h Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et (or 78% AFUE) Cooling: 1 each - Single Package DX Unit, Capacity = 117 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 12.40 EER, Required Efficiency: 11.00 EER Fan System: RTU-2 | FRONT OF HOUSE/DINING -- Compliance (Motor nameplate HP method) : Passes Fans: RTU2 Supply, Constant Volume, 4200 CFM, 2.8 motor nameplate hp
1	DOAS-1 (Single Zone) : Heating: 1 each - Central Furnace, Gas, Capacity = 150 kBtu/h Proposed Efficiency = 80.00% Et, Required Efficiency: 80.00 % Et (or 78% AFUE) Cooling: 1 each - Single Package DX Unit, Capacity = 139 kBtu/h, Air-Cooled Condenser, Air Economizer Proposed Efficiency = 12.90 EER, Required Efficiency: 10.80 EER Fan System: DOAS-1 | KITCHEN -- Compliance (Motor nameplate HP method) : Passes Fans: DOAS1 Supply, Constant Volume, 2000 CFM, 4.0 motor nameplate hp
2	WH-1: Gas Instantaneous Water Heater, Capacity: 0 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump Proposed Efficiency: 0.92 EF, Required Efficiency: 0.62 EF

Section 4: Requirements Checklist

Requirements Specific To: RTU-1 :

- [x] 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
- [x] 2. Equipment minimum efficiency: Single Package Unit: 13.00 SEER

Requirements Specific To: RTU-2 :

- [x] 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
- [x] 2. Equipment minimum efficiency: Single Package Unit: 11.00 EER
- [x] 3. Integrated air economizer required
- [x] 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
- [x] 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
- [x] 6. Hot gas bypass limited to 50% of total cooling capacity

Requirements Specific To: DOAS-1 :

- [x] 1. Equipment minimum efficiency: Central Furnace (Gas): 80.00 % Et (or 78% AFUE)
- [x] 2. Equipment minimum efficiency: Single Package Unit: 10.80 EER
- [x] 3. Integrated air economizer required
- [x] 4. Cooling system provides a means to relieve excess outdoor air during economizer operation.
- [x] 5. Hot gas bypass prohibited unless system has multiple steps of unloading or continuous capacity modulation
- [x] 6. Hot gas bypass limited to 50% of total cooling capacity

Requirements Specific To: WH-1 :

- [x] 1. Water heating equipment meets minimum efficiency requirements: Gas Instantaneous Water Heater efficiency: 0.62 EF
- [x] 2. All piping in circulating system insulated
- [x] 3. Automatic time control of heat tapes and recirculating systems present
- [x] 4. 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:

- [x] 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
- [x] 2. Minimum one temperature control device per system
- [x] 3. Minimum one humidity control device per installed humidification/dehumidification system
- [x] 4. Load calculations per ASHRAE/ACCA Standard 183.
- [x] 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
- [x] 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
- [x] 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.
- [x] 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment
- [x] 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.
- [x] 11. Operation and maintenance manual provided to building owner
- [x] 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.

- [x] 13. Balancing devices provided in accordance with IMC 603.17
- [x] 14. Ventilation systems in buildings over 10,000 ft2 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 ft2 with a maximum occupant load of 40 or more people per 1,000 ft2 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.
- [x] 15. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings
  Exception(s):
  - [ ] Gravity dampers acceptable in buildings <3 stories
- NA [ ] 16. Automatic controls for freeze protection systems present
- NA [ ] 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 makeup 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 COM*check* Version 4.1.0.0 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title ____________ Signature ____________ Date ____________

Section 6: Post Construction Compliance Statement

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

The above post construction requirements have been completed.

Principal Mechanical Designer-Name ____________ Signature ____________ Date ____________

architect + engineer

wd PARTNERS
brand : operations : build

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project no. | KRKDS0003

owner

Krispy Kreme Doughnuts

project info

CONCORD
NORTH CAROLINA

issue dates

submission:	Date
OWNER/LL REVIEW	11/01/2018
BID SET	11/01/2018
PERMIT SET	11/01/2018

revisions:		
#	Description	Date

mechanical

seal

NORTH CAROLINA PROFESSIONAL SEAL 039288 ENGINEER JEFFREY P. BOLYARD

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sheet info

MECHANICAL ENERGY COMPLIANCE FORMS

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