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2015 Virginia Energy Conservation Code Compliance Form

Name: Kris Schnitgen   Phone: (614)-228-2180
Job Address: Kroger
Project Type: Retail

Method of Compliance: 2015 Virginia Energy Conservation Code Performance Compliance Path

Software: Trane Trace 700
Version: 6.3.1.2
Modeled By: Benjamin Cahall

SEE ENERGY COMPLIANCE SUPPORTING DOCUMENTS FOR ADDITIONAL INFORMATION

IECC 2015 Performance Method Compliance

- ✓ C502
- ✓ C503
- ✓ C504
- ✓ C505
- ✓ C507

Total Building Area:	94,256 sqft	Total Glazing Area:	1,120 sqft
Total Wall Area:	24,940 sqft	Total Skylight Area:	0 sqft
Total Roof Area:	91,217 sqft	% of Window Area:	4.5%
Total Floor Area:	94,256 sqft	% of Skylight Area:	0%

System Analysis		
	Standard Reference Building	Proposed Design
Orientation	As Designed	As Designed
Total Roof Insulation R value	6	7.32
Total Wall Insulation R value	19	21
Total Window U value	.38	.38
SHGC	.48	.48
Heating and Cooling Controls		
Heating Set-Point	72	72
Cooling Set-Point	74	74
Lighting		
Total Interior Watts per Sqft	1.5	0.9
Exterior Lighting Power	NA	NA
Plumbing		
Service Water Heating Load	199 MBH	199 MBH
Service Water Heating Efficiency	80%	80%
Energy Use		
Total Annual Energy Use	[illegible] kBtu/yr	[illegible] kBtu/yr
Total Annual Energy Cost	$501,704.00	[illegible]

HVAC Performance

Equipment Type	Size Category	Subcategory or Rating	Heating Type	Minimum Efficiency	Installed Efficiency	Reference Btuh/sqft	Proposed Btuh/sqft
RTU-1	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	10.7EER	11.79	12.11
RTU-2	65-135Mbh	Single Packaged	All Other (Gas)	11EER	11.4EER	16.11	19.94
RTU-3	65-135Mbh	Single Packaged	All Other (Gas)	11EER	11.4EER	14.96	21.14
RTU-4	65-135Mbh	Single Packaged	All Other (Gas)	11EER	11.1EER	12.29	17.36
RTU-5	65-135Mbh	Single Packaged	All Other (Gas)	11EER	11.1EER	13.17	18.62
RTU-6	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.4EER	17.32	17.80
RTU-7	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.4EER	15.11	15.52
RTU-8	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.1EER	21.44	22.03
RTU-9	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.1EER	27.35	25.32
RTU-10	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.1EER	19.82	20.37
RTU-11	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.4EER	23.74	24.39
RTU-12	65-135Mbh	Single Packaged	All Other (Gas)	11EER	11.8EER	75.21	41.03
RTU-13	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	12.2EER	102.79	79.68
RTU-14	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.8EER	72.26	92.64
RTU-15	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11.8EER	72.22	92.59
RTU-16	<65Mbh	Single Packaged	All Other (Gas)	11.1EER	11.6EER	24.62	25.25
RTU-17	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	13.3EER	96.92	100.00
RTU-18	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11EER	72.34	74.32
RTU-19	135-240Mbh	Single Packaged	All Other (Gas)	10.8EER	11EER	59.93	64.38
RTU-20	65-135Mbh	Single Packaged	All Other (Gas)	11EER	11.4EER	36.75	40.84

Building Envelope Mandatory IECC 2015 requirements for PRM Models

Insulation:
1. Open-blown or poured loose-fill insulation has not been used in attic roof spaces with ceiling slope greater than 3 in 12.
2. Wherever vents occur, they are baffled to deflect incoming air above the insulation.
3. Recessed lights, equipment and ducts are not affecting insulation thickness.
4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
5. All exterior insulation is covered with protective material.
6. Cargo and loading dock doors are equipped with weather seals.

Fenestration and Doors:
7. Windows and skylights are labeled and certified by the manufacturer for U-factor and SHGC.
8. Fixed windows and skylights unlabeled by the manufacturer have been labeled using the default U-factor and SHGC.
9. Other unlabeled vertical fenestration, operable and fixed, that are unlabeled by the manufacturer have been site labeled using the default U-factor and SHGC. No credit has been given for metal frames with thermal breaks, low-emissivity coatings, gas fillings, or insulating spacers.

Air Leakage and Component Certification:
10. All joints and penetrations are caulked, gasketed, weather-stripped, or otherwise sealed.
11. Windows, doors, and skylights certified as meeting leakage requirements.
12. Component R-values & U-factors labeled as certified.
13. 'Other' components have supporting documentation for proposed U-Factors.
14. Building entrances that separate conditioned space from the exterior have an enclosed vestibule with all doors equipped with self-closing devices. Interior and exterior doors in the closed position are no less than 7 ft apart. Conditioned vestibules comply with the requirements for a conditioned space. Unconditioned vestibules comply with the requirements of an unheated space.
    Exceptions:
    Building entrances with revolving doors.
    Doors not intended to be used as a building entrance.
    Doors opening directly from a dwelling unit.
    Buildings less than four stories above grade and less than 10,000 sq. ft. in area.
    Doors that open directly from a space less than 3000 sq. ft. in area and is separate from the building entrance.

Mechanical Mandatory IECC 2015 requirements for PRM Models

Requirements Specific To: Kroger

1. Hot gas bypass limited to 50% of total cooling capacity
2. 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.
3. 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.

Generic Requirements: Must be met by all systems to which the requirement is applicable:
1. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in.
Chilled water/refrigerant/brine pipe insulation: 1 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 60 and 105°F.
    Fluid not heated or cooled.
    Runouts <4 ft in length.
    Pipe unions in heating systems.
2. Load calculations per acceptable engineering standards and handbooks
3. 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.
4. 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.
5. Where separate thermostats are used for heating and cooling, acceptable measures are used to prevent simultaneous heating and cooling
6. Stair and elevator shaft vents are equipped with motorized dampers
    Exception(s):
    Ventilation systems serving unconditioned spaces.
    Gravity (non-motorized) dampers are acceptable in buildings less than three stories in height above grade.
7. Acceptable measures used to prevent simultaneous humidification and dehumidification
    Exception(s):
    Desiccant systems and systems for uses requiring specific humidity levels (approval required)
8. Automatic controls for freeze protection systems present
9. Duct, plenum, and piping insulation surfaces suitably protected from weather, moisture, or likely damage
10. Duct Sealing:
    a) Pressure sensitive tape used as the primary sealant is certified to comply with UL-181A or UL-181B,
    b) longitudinal and transverse seams for ducts in unconditioned spaces,
    c) longitudinal and transverse seams and duct wall penetrations for ducts outside the building,
    d) transverse seams on buried ducts
11. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings
Exception(s):
    Gravity dampers acceptable in buildings <3 stories
    Gravity dampers acceptable in systems with outside or exhaust air flow rates less than 300 cfm where dampers are interlocked with fan
12. R-6 for supply air ducts located outside the building, in ventilated attics and in unvented attic above insulated ceiling
R-3.5 for supply air ducts in unvented attic with roof insulation, unconditioned and underground spaces
R-3.5 for return air ducts located outside the building, in ventilated attics and in unvented attic above insulated ceiling
13. Humidistat controls prevent reheating, recooling, and mixing of mechanically heated air with mechanically cooled air
    Exception(s):
    Capability of first reducing supply air volume 50% or less of the design rate or minimum outdoor air ventilation, or per regulatory standard, whichever is larger, before combined heating/cooling occurs.
    Cooling capacity <80 kBtu/h and capability to unload cooling equipment.
    Cooling capacity <40 kBtu/h.
    Rigid humidity requirements.
    Site-recovered or site-solar energy sources or
    Use of a desiccant systems.
14. Kitchen hoods >5,000 cfm provided with 50% makeup air that is uncooled and heated to no more than 60°F unless specifically exempted
    Exception(s):
    Where hoods are used to exhaust ventilation air that would otherwise exfiltrate or be exhausted by other fan systems.
    Certified grease extractor hoods that require a face velocity no >60 fpm.
15. Buildings with fume hood systems having an exhaust rate > 15,000 cfm has at least one of the following features:
    a) VAV hood exhaust and room supply systems capable of reducing exhaust and makeup air volume to 50% or less of design values.
    b) Direct makeup air supply equal to at least 75% of the exhaust rate, heated no warmer than 2°F below room setpoint, cooled to no cooler than 3°F above room setpoint, no humidification added, and no simultaneous heating and cooling used for dehumidification control.
    c) Heat recovery systems to precondition makeup air from fume hood exhaust.
16. Exhaust air heat recovery included for systems 5,000 cfm or greater with more than 70% outside air fraction or specifically exempted.
    Exception(s):
    Laboratory fume hood systems with a total exhaust rate <= 5000 cfm.
    Systems serving spaces that are not cooled and heated to <60°F.
    Systems with more than 60% of the outdoor heating energy is provided from site-recovered or site solar energy.
    Systems exhausting toxic, flammable, paint, or corrosive fumes or dust.
    Commercial kitchen hoods.
    Systems requiring dehumidification with cooling coil energy recovery in series with the cooling coil.
    Where the largest exhaust source is less than 75% of the design outdoor airflow.

Lighting Mandatory IECC 2015 requirements for PRM Models

Lighting Wattage:
1. Total proposed watts must be less than or equal to total allowed watts.
2. Exit signs 5 Watts or less per sign.

Controls, Switching, and Wiring:
3. Independent manual or occupancy sensing controls for each space (remote switch with indicator allowed for safety or security).
4. Occupant sensing control in class rooms, conference/meeting rooms, and employee lunch and break rooms.
Exceptions:
Spaces with multi-scene control; shop classrooms, laboratory classrooms, and preschool through 12th grade classrooms.
5. Automatic shutoff control for lighting in >5000 sq.ft buildings by time-of-day device, occupant sensor, or other automatic control.
Exceptions:
24 hour operation lighting; patient care areas; where auto shutoff would endanger safety or security.
6. Master switch at entry to hotel/motel guest room.
7. Separate control device for display/accent lighting, case lighting, task lighting, nonvisual lighting, lighting for sale, and demonstration lighting.
8. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).
Exceptions:
Electronic high-frequency ballasts.
Luminaires not on same switch.

Name - Title   Signature   Date

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Kroger

DATE	ISSUE
10/23/2018	90% OWNER REVIEW
11/01/2018	100% BID/PERMIT

DATE   REVISION

PROJECT TITLE
KROGER STORE R543
MERCURY BLVD.
HAMPTON, VA

COMMISSION NO. 517315
ISSUE DATE 10/23/2018

SHEET TITLE
COMPLIANCE REPORTS SUMMARY

SHEET NO.
G0.4

3" REFERENCE LINE