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Interior Lighting Compliance Certificate

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 05/17/17

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: ECOMAINE Scale House Copy 4
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B x C)
Office	430	1	430
		Total Allowed Watts =	430

Section 3: Interior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Office (430 sq.ft.)				
LED: LED Panel Unit 33W:	1	8	30	240
			Total Proposed Watts =	240

Section 4: Requirements Checklist

Interior Lighting PASSES: Design 44% better than code.

Lighting Wattage:

q 1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
430	240	YES

Controls, Switching, and Wiring:

q 2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.

q 3. Daylight zones have individual lighting controls independent from that of the general area lighting.

Exceptions:

q Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.

q Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.

q 4. Independent controls for each space (switch/occupancy sensor).

Exceptions:

q Areas designated as security or emergency areas that must be continuously illuminated.

q Lighting in stairways or corridors that are elements of the means of egress.

q 5. Master switch at entry to hotel/motel guest room.

q 6. Individual dwelling units separately metered.

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q 7. Medical task lighting or art/history display lighting claimed to be exempt from compliance has a control device independer of the nonexempt lighting.

q 8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switchin lamp luminaires independently of other lamps, or switching each luminaire or each lamp.

Exceptions:

- q Only one luminaire in space.
- q An occupant-sensing device controls the area.
- q The area is a corridor, storeroom, restroom, public lobby or sleeping unit.
- q Areas that use less than 0.6 Watts/sq.ft.

q 9. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.

Exceptions:

- q Sleeping units, patient care areas; and spaces where automatic shutoff would endanger safety or security.

q 10. Photocell/astronomical time switch on exterior lights.

Exceptions:

- q Lighting intended for 24 hour use.

q 11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

Exceptions:

- q Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COM*check-Web* and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title	Signature	Date

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Exterior Lighting Compliance Certificate

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 05/17/17

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: ECOMAINE Scale House Copy 4
Project Type: New Construction
Exterior Lighting Zone: 2 (Light industrial area with limited nighttime use)

Construction Site: Owner/Agent: Designer/Contractor:

Section 2: Exterior Lighting Area/Surface Power Calculation

A Exterior Area/Surface	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B x C)	F Proposed Watts
Weigh Station (Guarded facility, entrance/inspection area)	430 ft2	0.75	No	322	80
			Total Tradable Watts* =	0	0
			Total Allowed Watts =	322	
			Total Allowed Supplemental Watts** =	600	

* Wattage tradeoffs are only allowed between tradable areas/surfaces.

** A supplemental allowance equal to 600 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior Lighting Fixture Schedule

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Weigh Station (Guarded facility, entrance/inspection area, 430 ft2): Non-tradable Wattage				
LED: LED Other Fixture Unit 16W:	1	4	20	80
			Total Tradable Proposed Watts =	0

Section 4: Requirements Checklist

Lighting Wattage:

q 1. Within each non-tradable area/surface, total proposed watts must be less than or equal to total allowed watts. Across all tradable areas/surfaces, total proposed watts must be less than or equal to total allowed watts.

Compliance: Passes.

Controls, Switching, and Wiring:

q 2. All exemption claims are associated with fixtures that have a control device independent of the control of the nonexempt lighting.

q 3. Lighting not designated for dusk-to-dawn operation is controlled by either a a photosensor (with time switch), or an astronomical time switch.

q 4. Lighting designated for dusk-to-dawn operation is controlled by an astronomical time switch or photosensor.

q 5. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.

Exterior Lighting Efficacy:

q 6. All exterior building grounds luminaires that operate at greater than 100W have minimum efficacy of 60 lumen/watt.

Exceptions:

- q Lighting that has been claimed as exempt and is identified as such in Section 3 table above.
- q Lighting that is specifically designated as required by a health or life safety statue, ordinance, or regulation.
- q Emergency lighting that is automatically off during normal building operation.
- q Lighting that is controlled by motion sensor.

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Approved with Conditions
Date: 05/17/17

Section 5: Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COM*check-Web* and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title	Signature	Date

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Mechanical Compliance Certificat

Reviewed for Code Compliance
Inspections Division
Approved with Conditions
Date: 05/17/17

Section 1: Project Information

Energy Code: **2009 IECC**
Project Title: ECOMAINE Scale House Copy 4
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

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 (Single Zone) : Split System Heat Pump Heating Mode: Capacity = 18 kBtu/h, Proposed Efficiency = 9.00 HSPF, Required Efficiency = 7.70 HSPF Cooling Mode: Capacity = 14 kBtu/h, Proposed Efficiency = 19.00 SEER, Required Efficiency: 13.00 SEER Fan System: FAN SYSTEM 1 | entire building -- Compliance (Motor nameplate HP method) : Passes Fans: fan 1 Supply, Constant Volume, 70 CFM, 0.1 motor nameplate hp fan 2 Exhaust, Constant Volume, 70 CFM, 0.1 motor nameplate hp
1	HVAC System (Unknown w/ Perimeter System) : Heating: 1 each - Unit Heater, Electric, Capacity = 3 kBtu/h No minimum efficiency requirement applies

Section 4: Requirements Checklist

Requirements Specific To: HVAC System :

q 1. Equipment minimum efficiency: Heat Pump: 7.70 HSPF 13.00 SEER

Requirements Specific To: HVAC System :

None

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

q 1. Plant equipment and system capacity no greater than needed to meet loads
Exception(s):
- q Standby equipment automatically off when primary system is operating
- q Multiple units controlled to sequence operation as a function of load

q 2. Minimum one temperature control device per system
q 3. Minimum one humidity control device per installed humidification/dehumidification system
q 4. Load calculations per ASHRAE/ACCA Standard 183.
q 5. Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup
Exception(s):
- q Continuously operating zones

q 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
q 7. R-5 supply and return air duct insulation in unconditioned spaces

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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):

- q Ducts located within equipment
- q Ducts with interior and exterior temperature difference not exceeding 15°F.

q 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment

q 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics

q 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):

- q Piping within HVAC equipment.
- q Fluid temperatures between 55 and 105°F.
- q Fluid not heated or cooled with renewable energy.
- q Piping within room fan-coil (with AHRI440 rating) and unit ventilators (with AHRI840 rating).
- q Runouts <4 ft in length.

q 11. Operation and maintenance manual provided to building owner

q 12. Balancing devices provided in accordance with IMC 603.17

q 13. 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):

- q Systems with heat recovery.
- q Multiple-zone systems without DDC of individual zones communicating with a central control panel.
- q Systems with a design outdoor airflow less than 1200 cfm.
- q Spaces where the supply airflow rate minus any makeup or outgoing transfer air requirement is less than 1200 cfm.

q 14. Motorized, automatic shutoff dampers required on exhaust and outdoor air supply openings

Exception(s):

- q Gravity dampers acceptable in buildings <3 stories

q 15. Automatic controls for freeze protection systems present

q 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):

- q Hazardous exhaust systems, commercial kitchen and clothes dryer exhaust systems that the International Mechanical Code prohibits the use of energy recovery systems.
- q Systems serving spaces that are heated and not cooled to less than 60°F.
- q Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.
- q Heating systems in climates with less than 3600 HDD.
- q Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64°F.
- q Systems requiring dehumidification that employ energy recovery in series with the cooling coil.
- q 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 COM*check-Web* and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title	Signature	Date

Section 6: Post Construction Compliance Statement

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

q Written HVAC balancing and operations report provided to the owner.

The above post construction requirements have been completed.

Principal Mechanical Designer-Name	Signature	Date

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