2003 IECC

Report Date: 01/18/08

Data filename: J:\2007 1920-2699\06 June 2260-2319\2273-00\Reports\802-portland (Lighting including Guestrooms).cck

Section 1: Project Information

Project Title: Residence Inn by Marriott

Construction Site:

Corner of Fore and Hancock Streets

Portland, ME 04101

Owner/Agent:

Ara Aftandilian Norwich Partners LLC c/o: Summit

Properties

218 Boston Street Topsfield, MA, ME (978) 887-3640 Designer/Contractor:

James Ryan Group One 21 West Third Street

Boston, MA 02127 617-268-7000

jim@grouponeinc.com

Section 2: General Information

Building Use Description by:

Project Type:

New Construction

Building Type

Hotel Function

Floor Area

131871

Section 3: Requirements Checklist

Interior Lighting:

| | 1. | Total actua | ai watts mu | ıst be le | ess than | or equal | to total | allowed wa | atts. |
|--|----|-------------|-------------|-----------|----------|----------|----------|------------|-------|
|--|----|-------------|-------------|-----------|----------|----------|----------|------------|-------|

Allowed Watts

Actual Watts

Complies YES

131871 62526

■ 2. Exit signs 5 Watts or less per side.

Exterior Lighting:

☐ 3. Efficacy greater than 45 lumens/W.

Exceptions:

Specialized lighting highlighting features of historic buildings; signage; safety or security lighting; low-voltage landscape lighting.

Controls, Switching, and Wiring:

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

Exceptions:

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

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

- ☐ 5. Master switch at entry to hotel/motel guest room.
- 6. Individual dwelling units separately metered.
- 7. Each space provided with a manual control to provide uniform light reduction by at least 50%. Exceptions:

Only one luminaire in space;

An occupant-sensing device controls the area;

The area is a corridor, storeroom, restroom, public lobby or guest room;

| | Areas that use less than 0.6 Watts/sq.ft. | | |
|-----------------|---|---|---|
| ☐ ^{8.} | Automatic lighting shutoff control in buildings larger t Exceptions: | than 5,000 sq.ft. | |
| <u>9</u> . | Areas with only one luminaire, corridors, storeroo 9. Photocell/astronomical time switch on exterior lights. Exceptions: | | ies. |
| | Lighting intended for 24 hour use. | | |
| ☐ 10 | 10. Tandem wired one-lamp and three-lamp ballasted lu Exceptions: | minaires (No single-lamp ball | asts). |
| | Electronic high-frequency ballasts; Luminaires on | n emergency circuits or with n | o available pair. |
| Sec | ection 4: Compliance Statement | | |
| and o | ampliance Statement: The proposed lighting design repred other calculations submitted with this permit application apter 8, requirements in COMcheck Version 3.4.2 and to hear the submitted with the permit application appears a submitted with the proposed lighting design repred to the proposed lighting design reprediction appears to | n. The proposed lighting syste o comply with the handatory r | m has been designed to meet the 2003 IECC, equirements in the Requirements Checklist. |
| . 10111 | | Signature | Date |



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Section 1: Allowed Lighting Power Calculation

| | Α | | C Allowed Watts / ft2 | D Allowed Watts | |
|----------------|---|--------|-----------------------------|--------------------|--|
| Hotel Function | | 131871 | 1 | 131871 | |
| | | Tol | al Allowed Watts | 131971 | |

Section 2: Actual Lighting Power Calculation

| A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast | B Lamps/ Fixture | C # of Fixtures | D Fixture Watt. | E (C X D) |
|--|------------------------|-----------------------|-----------------------|--------------|
| Hotel Function (131871 sq.ft.) | | | | |
| Linear Fluorescent 1: C010: 48" T8 32W / Electronic | 2 | 3 | 64 | 192 |
| Linear Fluorescent 2: C020: 48" T8 32W / Electronic | 4 | 17 | 128 | 2176 |
| Linear Fluorescent 3: C030: 24" T8 17W / Electronic | 1 | 12 | 20 | 240 |
| Incandescent 17: D010: Incandescent 75W | 3 | 3 | 225 | 675 |
| Incandescent 2: D020: Incandescent 100W | 2 | 1 | 200 | 200 |
| Incandescent 3: D030: Incandescent 100W | 2 | 2 | 200 | 400 |
| HID 5: D050: Metal Halide 150W / Electronic | 1 | 13 | 150 | 1950 |
| HID 6: D060: Metal Halide 150W / Electronic | 1 | 4 | 150 | 600 |
| Incandescent 6: D070: Incandescent 100W | 2 | 1 | 200 | 200 |
| Incandescent 7: D080: Incandescent 60W | 2 | 5 | 120 | 600 |
| Incandescent 8: D090: LED / Other | 1 | 1 | 60 | 60 |
| Incandescent 9: D110: LED / Other | 1 | 12 | 31 | 372 |
| Incandescent 10: D120: Incandescent 60W | 1 | 6 | 60 | 360 |
| Compact Fluorescent 1: D4: Twin Tube 40W / Electronic | 1 | 251 | 40 | 10040 |
| Compact Fluorescent 9: D62: GUESTROOM / Twin Tube 40W / Electronic | 1 | 13 | 40 | 520 |
| Incandescent 18: D64: GUESTROOM / Incandescent 60W | 1 | 8 | 60 | 480 |
| Compact Fluorescent 10: D64A: GUESTROOM / Twin Tube 18W / Electronic | 1 | 3 | 18 | 54 |
| Linear Fluorescent 15: D65: GUESTROOM / 36" T8 25W / Electronic | 2 | 12 | 50 | 600 |
| Linear Fluorescent 16: D65A: GUESTROOM / 24" T8 17W / Electronic | 2 | 3 | 34 | 102 |
| Incandescent 19: D75B: GUESTROOM / Incandescent 60W | 1 | 13 | 60 | 780 |
| Compact Fluorescent 2: D77A: Quad 2-pin 18W / Electronic | 2 | 179 | 26 | 4654 |
| Linear Fluorescent 4: F010: 48" T8 32W / Electronic | 2 | 43 | 64 | 2752 |
| Linear Fluorescent 5: F020: 48" T8 32W / Electronic | 3 | 66 | 96 | 6336 |
| Linear Fluorescent 6: F050: Other / Electronic | 3 | 25 | 120 | 3000 |
| Linear Fluorescent 7: F17: 24" T8 17W / Electronic | 2 | 2 | 34 | 68 |
| Linear Fluorescent 8: F18: 48" T8 32W / Electronic | 2 | 6 | 64 | 384 |
| HID 1: R030: Metal Halide 100W / Electronic | 1 | 41 | 100 | 4100 |
| Compact Fluorescent 3: R040: Quad 2-pin 26W / Electronic | 2 | 65 | 52 | 3380 |
| Compact Fluorescent 3 copy 1: R040D: Quad 2-pin 26W / Electronic | 2 | 8 | 52 | 416 |
| Compact Fluorescent 4: R050: Quad 2-pin 26W / Electronic | 1 | 28 | 26 | 728 |
| HID 2: R060: Metal Halide 150W / Electronic | 1 | 37 | 150 | 5550 |
| Compact Fluorescent 5: R070: Quad 2-pin 26W / Electronic | 2 | 19 | 52 | 988 |
| Incandescent 11: R080: incandescent 75W | 1 | 15 | 75 | 1125 |
| Compact Fluorescent 6: R090: Quad 2-pin 13W / Electronic | 1 | 10 | 13 | 130 |

| Incandescent 12: R100: Incandescent 75W | 1 | 8 | 75 | 600 |
|--|---|----|-----|------|
| Incandescent 13; R101; Other | 1 | 4 | 90 | 360 |
| Incandescent 20: R27: GUESTROOM / Incandescent 35W | 1 | 14 | 35 | 490 |
| Incandescent 21: R29: GUESTROOM / Incandescent 50W | 1 | 43 | 50 | 2150 |
| Incandescent 14: RWH: EM LIGHT / Incandescent 60W | 1 | 4 | 60 | 240 |
| Linear Fluorescent 9: S1: 48" T8 32W / Electronic | 2 | 21 | 64 | 1344 |
| Incandescent 16: S2: Incandescent 150W | 1 | 2 | 150 | 300 |
| Incandescent 15: T010: Incandescent 75W | 8 | 8 | 75 | 600 |
| Linear Fluorescent 17: T03(ALT): BATHROOM / Other / Electronic | 1 | 11 | 32 | 352 |
| Linear Fluorescent 10: U010: Other / Electronic | 1 | 6 | 13 | 78 |
| Linear Fluorescent 11: U030: Other / Electronic | 1 | 6 | 8 | 48 |
| Compact Fluorescent 7: U040: Other / Electronic | 1 | 8 | 3 | 24 |
| Linear Fluorescent 12: U050: Other / Electronic | 1 | 14 | 15 | 210 |
| Compact Fluorescent 12: X020: EXIT SIGN / Other / Electronic | 1 | 96 | 2 | 192 |
| Compact Fluorescent 12 copy 1: X030: EXIT SIGN / Other / Electronic | 1 | 2 | 2 | 4 |
| Compact Fluorescent 14: X040: EXIT SIGN / Other / Electronic | 1 | 4 | 2 | 8 |
| Linear Fluorescent 14: Z010: EXTERIOR / Other / Electronic | 2 | 2 | 80 | 160 |
| Linear Fluorescent 15: Z020: EXTERIOR / Other / Electronic | 2 | 4 | 78 | 312 |
| HID 4: Z030: EXTERIOR / Metal Halide 100W / Electronic | 1 | 1 | 100 | 100 |
| Compact Fluorescent 12: Z050: EXTERIOR / Triple 4-pin 42W / Electronic | 1 | 1 | 42 | 42 |
| HID 3: Z250: EXTERIOR / Metal Halide 100W / Electronic | 1 | 7 | 100 | 700 |
| | | | | |

Total Actual Watts = 62526

Section 3: Compliance Calculation

If the Total Allowed Watts minus the Total Actual Watts is greater than or equal to zero, the building complies.

Total Allowed Watts = 131871 Total Actual Watts = 62526 Project Compliance = 69345

Lighting PASSES: Design 53% better than code



COMcheck Software Version 3.5.2

Mechanical Compliance Certificate

2003 IECC

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Section 1: Project Information

Project Type: New Construction

Project Title: Residence Inn by Marriott

Construction Site:

Corner of Fore and Hancock Streets

Portland, ME 04101

Owner/Agent:

Ara Aftandilian Norwich Partners LLC c/o: Summit

Properties 218 Boston Street

Topsfield, MA, ME

(978) 887-3640

Designer/Contractor:

James Ryan Group One

21 West Third Street Boston, MA 02127

617-268-7000 jim@grouponeinc.com

Section 2: General Information

Building Location (for weather data):

Portland, Maine

Climate Zone:

15 7378

Heating Degree Days (base 65 degrees F): Cooling Degree Days (base 65 degrees F): 268

Section 3: Mechanical Systems List

Quantity System Type & Description

- HVAC System 1: Water Loop Heat Pump, Cooling Capacity >=760 kBtu/h, Water-Cooled Condenser / Single Zone w/ Perimeter System
- Plant 1: Heating: Hot Water Boiler, Capacity >=600 kBtu/h, Gas, with Waterloop Heat Pump

Section 4: Requirements Checklist

Requirements Specific To: HVAC System 1:

- 1. Equipment minimum efficiency: Heat Pump: 4.2 COP, 12.0 EER 2. Heat pump thermostat required when supplemental electric resistance heat is installed ☐ 3. Discharge dampers prohibited with fan motors >25 hp
- 4. Integrated air economizer required
- ☐ 5. Loop temperature controlled with 20 degrees F deadband where neither cooling tower/fluid cooler nor boiler can operate
- 6. Closed-circuit cooling tower has: a) automatic bypass valve for condenser water loop or b) dampers that shut-off air flow through the cooling tower
- 7. Open-circuit cooling tower has automatic bypass valve for condenser water loop
- □ 8. Open-circuit cooling tower with heat exchanger must have automatic shut-off controls for cooling tower
- 9. Two-position valve on each heat pump having total heat pump system power >10hp

Requirements Specific To: Plant 1:

- 1. Equipment minimum efficiency: Boiler Thermal Efficiency >= 75% Et
- 🔟 2. Newly purchased heating equipment meets the efficiency requirements used equipment must meet 80% Et @ maximum capacity
- 🗂 3. Loop temperature controlled with 20 degrees F deadband where neither cooling tower/fluid cooler nor boiler can operate
- 4. Two-position valve on each heat pump having total heat pump system power >10hp
- 5. Systems with multiple boilers have automatic controls capable of sequencing boiler operation

Project Title: Residence Inn by Marriott Data filename: J:\2007 1920-2699\06 June 2260-2319\2273-00\Reports\802-portland.cck Report date: 01/16/08

| Generic Requirements: Must be met by all systems to which the requirement is applicable: 1. Load calculations per 2001 ASHRAE Fundamentals 2. Plant equipment and system capacity no greater than needed to meet loads 3. Minimum on the system capacity no greater than needed to meet loads 4. Minimum one temperature control device per system 4. Minimum one temperature control device per system 5. Automatic Controls: Setback to 55 degrees F (heat) and 85 degrees F (cool); 7-day clock, 2-hour occupant override, 10-hour backup Exception: Continuously operating zones Exception: Continuously operating zones Exception: EW demand or less, submit calculations 6. Automatic Surver of dempers on exhaust systems and supply systems with airflow >3,000 cfm 7. Outside-air source for ventilation; system capable of reducing OSA to required minimum 8. RS 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: Ducts with interior and exterior temperature difference not exceeding 15 degrees F. 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; LU. 181A or 181B tapes and mastics Exception: Continuously wolfed and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification 10. Mechanical fasteners and sealants used to connect ducts and air distribution equipment Exception: Fluid not heated or cooled Exception: Fluid temperatures between 55 and 105 degrees F Exception: Fluid not heated or cooled Exception: Fluid temperatures between 55 and 105 degrees F Exception: Fluid not heated or cooled Exception: Fluid temperatures between 55 and 105 degrees F Exception: Fluid not heated or cooled 15. Stair | | 6. | Hydronic heating systems comprised of a single boiler and >500 kBtu/h input design capacity include either a multistaged or modulating burner |
|---|----|-----|--|
| 2. Plant equipment and system capacity no greater than needed to meet loads Exception: Standby equipment automatically off when primary system is operating Exception: Multiple units controlled to sequence operation as a function of load 3. Minimum one temperature control device per system 4. Minimum one humidity control device per system 5. Automatic Controls: Setback to 55 degrees F (heat) and 85 degrees F (cool); 7-day clock, 2-hour occupant override, 10-hour backup Exception: Continuously operating zones Exception: 2 kW demand or less, submit calculations 6. Automatic shut-off dampers on exhaust systems and supply systems with airflow >3,000 cfm 7. Outside-air source for ventilation; system capable of reducing OSA to required minimum 8. 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: Ducts located within equipment Exception: Ducts with interior and exterior temperature difference not exceeding 15 degrees F. 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; U. 181A or 181B tapes and mastics Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification 10. Mechanical fasteners and sealants used to connect ducts and air distribution equipment 11. Hot water pipe insulation: 1 in. for pipes <1.5 in. and 2 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in. Exception: Fluid not heated or cooled Excep | П | | |
| Exception: Multiple units controlled to sequence operation as a function of load Minimum one temperature control device per system Minimum one humidity control device per installed humidification/dehumidification system Automatic Control: Setback to 55 degrees F (heat) and 85 degrees F (cool); 7-day clock, 2-hour occupant override, 10-hour backup Exception: Continuously operating zones Exception: 2 kW demand or less, submit calculations Automatic shut-off dampers on exhaust systems and supply systems with airflow >3,000 cfm Outside-air source for ventilation; system capable of reducing OSA to required minimum 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: Ducts located within equipment Exception: Ducts bucts with interior and exterior temperature difference not exceeding 15 degrees F. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification 10. Mechanical fasteners and sealants used to connect ducts and air distribution equipment 11. Hot water pipe insulation: 1 in. for pipes <-1.5 in. and 2 in. for pipes <-1.5 in. for pipes <-1.5 in. and 3 in. for pipes >1.5 in. for pipes <-1.5 in. and 2 in. for pipes <-1.5 in. for pipes <-1.5 in. and 3 in. for pipes >1.5 in. for pipes <-1.5 in. and 2 in. for pipes <-1.5 in. or pipes <-1.5 in. and 3 in. for pipes >1.5 in. Steam pipe insulation: 1 in. for pipes <-1.5 in. and 1.5 in. for pipes <-1.5 in. and 2 in. for pipes <-1.5 in. or pipes <-1.5 in. and 3 in. for pipes >-1.5 in. | _ | | |
| 3. Minimum one temperature control device per system 4. Minimum one humidity control device per installed humidification/dehumidification system 5. Automatic Controls: Setback to 55 degrees F (heat) and 85 degrees F (cool); 7-day clock, 2-hour occupant override, 10-hour backup - Exception: Continuously operating zones - Exception: 2 kW demand or less, submit calculations 6. Automatic shut-off dampers on exhaust systems and supply systems with airflow >3,000 cfm 7. Outside-air source for ventilation, system capable of reducing OSA to required minimum 8. 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: Ducts with interior and exterior temperature difference not exceeding 15 degrees F. 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics - Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification 10. Mechanical fasteners and sealants used to connect ducts and air distribution equipment 11. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes <=1.5 in. and 2 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in. Exception: Pliping within HVAC equipment - Exception: Pliping within HVAC equipment - Exception: Riud temperatures between 55 and 105 degrees F - Exception: Riud not heated or cooled - Exception: Riud not heated or cooled - Exception: Riud not heated or cooled - Exception: Pliping within HVAC equipment 13. Balancing devices provided in accordance with IMC 603.15 14. Hot water d | | | - Exception: Standby equipment automatically off when primary system is operating |
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| 6. Automatic shut-off dampers on exhaust systems and supply systems with airflow >3,000 cfm 7. Outside-air source for ventilation; system capable of reducing OSA to required minimum 8. 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: Ducts located within equipment Exception: Ducts with interior and exterior temperature difference not exceeding 15 degrees F. 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification 10. Mechanical fasteners and sealants used to connect ducts and air distribution equipment 11. 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: Piping within HVAC equipment Exception: Fluid temperatures between 55 and 105 degrees F Exception: Runouts <4 ft in length 12. Operation and maintenance manual provided to building owner 13. Balancing devices provided in accordance with IMC 603.15 14. Hot water distribution systems >=300 kBtu/h must have one of the following: a) controls that reset supply water temperature by 25% of supply/return delta T b) mechanical or electrical adjustable-speed pump drive(s) c) two-way valves at all heating coils d) multiple-stag pumps e) other system controls that reduce pump flow by at least 50% based on load - calculations required 15 | | | - Exception: Continuously operating zones |
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Project Title: Residence Inn by Marriott
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