## Nonresidential Appendix NA7 – 2008

# Appendix NA7-2008 – Acceptance Requirements for Nonresidential Buildings

### NA7.1 Purpose and Scope

This appendix defines acceptance procedures that must be completed on certain controls and equipment before the installation is deemed to be in compliance with the Standards. These requirements apply to all newly installed equipment for which there are acceptance requirements in new and existing buildings. The procedures apply to nonresidential, high-rise residential and hotel/motel buildings as defined by the California Energy Commission's Energy Efficiency Standards for Nonresidential Buildings.

The purpose of the acceptance tests is to assure:

1. The presence of equipment or building components according to the specifications in the compliance documents.

2. Installation quality and proper functioning of the controls and equipment to meet the intent of the design and the Standards.

### NA7.2 Introduction

Acceptance requirements are defined as implementation of targeted inspection checks and functional and performance testing to determine whether specific building components, equipment, systems, and interfaces between systems conform to the criteria set forth in the Standards and to related construction documents (plans or specifications). Acceptance requirements improve code compliance effectiveness and help meet the expected level of performance.

Prior to signing a Certificate of Acceptance the installing contractor, engineer of record or owners agent shall be responsible for reviewing the plans and specifications to assure they conform to the acceptance requirements. Persons eligible to sign the Certificate of Acceptance are those responsible for its preparation; and licensed in the State of California as a civil engineer, mechanical engineer, licensed architect or a licensed contractor performing the applicable work or a person managing work on a structure or type of work described pursuant to Business and Professions Code sections 5537, 5538, and 6737.1.

### NA7.3 Responsible Party

The installing responsible party shall certify compliance with the acceptance requirements. They shall be responsible for performing data analysis, calculation of performance indices, and crosschecking results with the requirements of the Standard. They shall be responsible for issuing a Certificate of Acceptance as well as copies of all measurement and monitoring results for individual test procedures to the enforcement agency. The enforcement agency shall not release a final Certificate of Occupancy until a Certificate of Acceptance, and all applicable acceptance requirements for code compliance forms, are approved and submitted by the responsible party. A responsible party who is licensed shall record their State of California contractor's license number or their State of California professional registration license number on each Certificate of Acceptance that they issue.

## NA7.7 Outdoor Lighting Acceptance Tests

### NA7.7.1 Outdoor Motion Sensor Acceptance

#### NA7.7.1.1 Construction Inspection

Prior to Functional testing, verify and document the following:

- Motion sensor has been located to minimize false signals.
- Sensor is not triggered by motion outside of adjacent area.
- Desired motion sensor coverage is not blocked by obstructions that could adversely affect performance.

#### NA7.7.1.2 Functional testing

Step 1: Simulate motion in area under lights controlled by the motion sensor. Verify and document the following:

- Status indicator operates correctly.
- Lights controlled by motion sensors turn on immediately upon entry into the area lit by the controlled lights near the motion sensor.
- Signal sensitivity is adequate to achieve desired control.

Step 2: Simulate no motion in area with lighting controlled by the sensor but with motion adjacent to this area. Verify and document the following:

- Lights controlled by motion sensors turn off within a maximum of 30 minutes from the start of an unoccupied condition per §119(d).
- The occupant sensor does not trigger a false "on" from movement outside of the controlled area
- Signal sensitivity is adequate to achieve desired control.

### NA7.7.2 Outdoor Lighting Shut-off Controls

#### NA7.7.2.1 Construction Inspection

Prior to Functional testing, verify and document the following:

- Controls to turn off lights during daytime hours are installed.
- Astronomical and standard time switch control is programmed with acceptable weekday, weekend, and holiday (if applicable) schedules.
- Demonstrate and document for the owner time switch programming including weekday, weekend, holiday schedules as well as all set-up and preference program settings.
- Lighting systems that meet the criteria of §132(c)2 of the Standards shall have a scheduling control (time switch) installed which is able to schedule separately:
- a reduction in outdoor lighting power by 50 to 80 percent
- turning off all outdoor lighting covered by §132(c)2
- Verify that the correct time and date is properly set in the standard and astronomical time switch.
- Verify that the correct latitude, longitude and time zone are set in the astronomical time switch.
- Verify the battery back-up (if applicable) is installed and energized in the standard and astronomical time switch.

### NA7.7.2.2 Outdoor Photocontrol Functional testing

Note photocontrol must be used in conjunction with time switch or motion sensor to meet the requirements of §132(c)2.

Step 1: Nighttime test. Simulate or provide conditions without daylight. Verify and document:

- Controlled lights turn on.

Step 2: Sunrise test: Provide between 10 and 30 horizontal footcandles (fc) to photosensor. Verify and document the following:

- Controlled lights turn off.

### NA7.7.2.3 Astronomical Time Switch Functional testing

Step 1: Power off test. Program control with location information, local date and time, and schedules. Disconnect control from power source for at least 1 hour. Verify and document:

- Control retains all programmed settings and local date and time

Step 2: Night schedule ON test. Simulate or provide times when the sun has set and lights are scheduled to be ON. Verify and document:

- Controlled lights turn on

Step 3: Night schedule OFF test. Simulate or provide times when the sun has set and lights are scheduled to be OFF. Verify and document:

- Controlled lights turn off

Step 4: Sunrise test: Simulate or provide the programmed offset time after the time of local sunrise.

- Controlled lights turn off

### NA7.7.2.4 Standard (non-astronomical) Time Switch Functional Testing

Note: this control must be used in conjunction with a photocontrol to meet requirements of §132(c).

Step 1: Power off test. Program control with local date and time and schedules. Disconnect control from power source for at least 1 hour. Verify and document:

- Control retains all programmed schedules and local date and time

Step 2: On schedule test. Simulate or provide times when lights are scheduled to be ON. Verify and document:

- Controlled lights turn on

Step 3: Schedule test. Simulate or provide times when the sun has set and lights are scheduled to be OFF. Verify and document:

- Controlled lights turn off

## NA7.8 Sign Lighting Acceptance Tests

Reserved For Future Use

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[1] From AEC, Distributed Energy Storage for Direct-Expansion Air Conditioners, January 27, 2005.