Motion Sensor Controlled Illumination
Interpretation

Issue Date:	Sept 6, 2011; Revised August 2013
Code/Section:	PBCC 2012, IBC Section 1006.1
Approved by:	Technical Review Team
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Issue: To facilitate the use of Green Building concepts, we have determined that occupancy sensors can be used to control ***means of egress*** lighting. This practice is consistent with our new Green Building Construction Code and will result in reduced energy consumption and lower electricity costs to building owners and tenants.

International Building Code (IBC) Section 1006.1 requires that the ***means of egress***, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied.

Little guidance is given for the use of occupancy sensors to determine when a building is occupied in the IBC, however, 2012 NFPA 101 Section 7.8.1.2.2 permits the use of occupancy sensors for the control of ***means of egress*** lighting.

Interpretation:
The intent of both the IBC and NFPA 101 is that the ***means of egress*** be illuminated whenever the building is occupied. Occupancy sensors are permitted to be used for this purpose if they meet all of the following requirements:

1. Occupancy sensors shall:
   a. Be installed throughout the building to provide full coverage of all areas.
   b. Incorporate both infra-red and ultrasonic technologies within each sensor device.
   c. Be equipped with a time-delay (off) function and shall be set for minimum 15-minute duration.

2. The ***means of egress*** must be illuminated for the entire floor whenever an occupant is sensed anywhere on that floor.

3. Elements of the ***means of egress*** common to all floors shall be illuminated whenever an occupant is sensed anywhere within the building. This shall include, but not be limited to, stairways and common lobbies such as main building lobbies and elevator lobbies.

4. ***Means of egress*** illumination located outside of the building or on the exterior of the building shall not be controlled by occupancy sensors. Typically, this lighting is controlled by photocell(s) and this practice continues to be acceptable.

5. In buildings where a fire alarm system is provided, the means of egress lighting shall be illuminated upon activation of the fire alarm system.

6. The design and sequence of operation of the occupancy sensing system shall be included in the electrical plans submitted for permit and sealed by the professional electrical design engineer. The means of egress shall be clearly defined on the architectural plans.

Emergency means of egress illumination required by IBC Section 1006.3 shall not be controlled by occupancy sensors. Note: if the same luminaires are utilized for both normal ***means of egress*** illumination (IBC 1006.1) and ***emergency means of egress*** illumination (IBC 1006.3), then occupancy sensor control of these luminaires must be by-passed in the event of normal power supply failure by use of an emergency device listed for the purpose.

Definitions: (See the text referenced in the footnote for detail and commentary. Some definitions or portions thereof are paraphrased for brevity and clarity.)

Means of egress. A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way.[1]

Exit discharge. The portion of the ***means of egress*** that typically starts when the building occupants reach the exterior of the building at grade level and ends where the building occupants reach the public way.[2]

Premises' electrical supply. (Paraphrased.) Typically the electric energy delivered from the utility company.

Emergency means of egress. IBC Section 1006.3 requires that in addition to the ***means of egress*** illumination normally provided by the ***premises' electrical supply***, an additional source of power for lighting the ***means of egress*** be installed so that in the event of power supply failure, an emergency electrical system (such as batteries or a generator) shall automatically illuminate specific areas of the building detailed in the code section.

[1] 2012 International Building Code Commentary, International Code Council, Inc., Volume 1, p. 2-66.
[2] 2012 International Building Code Commentary, International Code Council, Inc., Volume 1, p. 2-35.