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LIGHTING PRACTICE:
THE COMMISSIONING PROCESS APPLIED TO LIGHTING AND CONTROL SYSTEMS

AN AMERICAN NATIONAL STANDARD

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1.0 Introduction and Scope

1.1 Introduction

The lighting design intent should be monitored throughout the entire construction process, particularly in the final installation. The correct luminaires, lamps, ballasts, drivers, and controls should be properly installed and perform according to criteria that achieve user acceptance and satisfy the owner's operational needs.

Commissioning describes a process undertaken to achieve this goal for buildings and their systems, including lighting. It is a quality assurance process used to verify that buildings and their installed systems satisfy owner and designer performance criteria initially and throughout the life of the building.

To be more specific, the term *commissioning* in this document is defined as the Commissioning Process for buildings and systems as described within *Guideline 0-2005, The Commissioning Process*, published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).[1] The guideline was also published by the National Institute of Building Sciences (NIBS) as *Guideline 0, The Total Building Commissioning Process*.

This overall building Commissioning Process is illustrated in **Figure 1-1**. As shown, commissioning occurs throughout the delivery of the project. It begins at project inception (during the pre-design phase), proceeds through design and construction, and subsequently continues for the life of the facility (through the occupancy and operations phase). Emphasis is placed upon documentation of the owner's performance criteria at the inception of the project and proper transfer of this information from one party to the next throughout the life of the project.

It is important to note that while the process interacts within the design and construction process to increase quality, it does not interfere with the competency, authority, or responsibility of licensed professionals, nor upon the obligations between owners, designers, or contractors contained in contract forms or project-specific contracts.

1.1.1 Benefits. Potential benefits of the Commissioning Process include:

- Reduced energy consumption and operating costs
- User acceptance and satisfaction
- Enhanced marketability and value of commercial property
- Full accountability by project participants for the quality of their work (and reduced risk exposure across the project team)
- Verification that a building and its systems generally perform as intended

These benefits can apply to existing as well as new buildings. In existing buildings, commissioning may correct unaddressed design and installation errors while calibrating the building to address the inevitable fact of building systems falling out of alignment with the design intent and owner's operational needs over time. While engaging the Commissioning Process may produce significant benefits for a building and its owner and occupants, avoiding commissioning, or implementing commissioning incorrectly, may present significant risks that performance problems will go unaddressed.

Besides the obvious overriding benefit of owners being able to "get what they pay for," the economic benefits of correcting energy-related problems alone can produce satisfactory owner return for investing in commissioning. A study conducted by the California Energy Commission involving new and existing commercial buildings found that commissioning produced 13% median whole-building energy savings in new buildings, at a median cost of $1.16/sq.ft., or 0.4% of the total construction cost, and 16% energy savings in existing buildings, at a median cost of $0.30/sq.ft. Calculated payback projections were 4.2 and 1.1 years, respectively.[2]

1.1.2 Commissioning and Lighting Design. Lighting is the most visible area of electrical system design and affects all users. As a result, commissioning can make a significant difference between acceptance or rejection of more advanced lighting strategies, such as automatic lighting controls or newer energy-efficient lighting technologies.