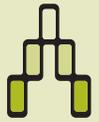


THE HIGH PERFORMANCE PORTFOLIO: COMMISSIONING



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SUMMARY:

Commissioning is a technical verification process of building systems during the design, construction, and early occupancy of a new building. Conducted by a third-party, commissioning acts as a powerful tool to ensure buildings are designed, built, and operated to the owner's requirements.

IN DEPTH:

Developing a high performance building requires a holistic view of how that building will operate. This integrated design approach often requires additional effort and expertise to deliver a property that will save money in energy costs. For building owners and investors, commissioning is a critical exercise in quality control—ensuring that the final product performs as intended.

Commissioning is a new concept to many developers, although the practice emerged in the building industry over 15 years ago. Historically, commissioning originated in the shipping industry as a means of getting new vessels ready for everyday use. Today, building commissioning is a mature discipline, defined by a generally understood set of objectives and criteria:

- Acts as a quality-control process serving building owners and occupants
- Verifies performance goals will be met through planning, design, construction and operation
- Optimizes system operation ensuring energy efficiency, indoor air quality and occupant comfort
- Lays a foundation for minimal operational and maintenance costs
- Focuses decision-making on owner's objectives from the earliest stages of a project—reducing the likelihood of expensive design changes midstream

WHY COMMISSION A BUILDING?

- Improved efficiency
- Reduced change orders
- Improved maintainability
- Improved occupant comfort



Traditional real estate developments typically follow a “testing, adjusting and balancing” process, but commissioning goes significantly further. When involved from the outset of a project to final occupancy, commissioning professionals provide a suite of services to ensure building performance, including:

- Conducting a preliminary performance review of building plans and specifications, ensuring design decisions align with project requirements and are fully documented
- Inspection and functional testing of systems and equipment, checking for correct installation and operation
- Verification of system documents, and training of building operators
- Multi-season testing of systems during early occupancy and/or warranty period

The process ensures that systems operate as intended, realize energy savings, and create a quality building environment. When special building features are incorporated to facilitate renewable energy generation, recycle waste, or reduce other environmental impacts, commissioning becomes even more critical—as these various systems often interact in new and unexpected ways.

Many developers cite cost as the first obstacle to commissioning. To examine this, the Lawrence Berkeley National Lab (LBNL) conducted a comprehensive study of commercial building commissioning, and then devised a uniform methodology for characterizing and analyzing the results. While LBNL found that commissioning involved additional costs (generally less than 1% of construction costs), it was also found that the expense was recouped quickly through energy savings averaging 15%. The study also noted that commissioning is generally more cost effective for large to medium-sized buildings than for smaller properties.



Formal commissioning is recommended for buildings with:

- Significant energy use
- Complex and digitally-controlled HVAC systems
- Renewable energy components
- On-site water treatment systems
- Daylighting or occupancy sensor lighting controls
- Natural ventilation systems integrated with HVAC systems
- Other advanced technologies
- Critical occupancies such as labs, hospitals, and emergency services

Generally, full commissioning is not cost-effective for projects under 20,000 square feet or on projects with little mechanical or electrical complexity. However, certain green building rating systems require commissioning regardless of size, and unique building components and technologies may benefit from some level of performance testing and verification.

Discuss the details of your project with a commissioning professional to determine if commissioning is recommended, and what an appropriate scope of work may involve.

THE BOTTOM LINE:

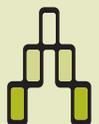
- Mitigates risks associated with faulty construction and underperforming buildings
- Delivers peace of mind that the systems are installed and operating as designed
- Requires additional investment due to a greater scope of work
- Involves a more robust testing and verification process than many contractors are used to, which may add additional time and expense to the bidding process
- Ensures that the building begins operation at the highest level of performance
- Creates a baseline for future performance measures
- Requires commissioning professional's involvement early in the design process for the best results
- Reduces risks of litigation for failures in building performance

USEFUL LINKS:

The High Performance Portfolio Framework
www.betterbricks.com/office/framework

Building Commissioning Association
www.bcxa.org

Portland Energy Conservation, Inc.
www.peci.org/commissioning.htm



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