BETTERBRICKS

BUILDING COMMISSIONING

An Overview

Building commissioning is an important quality assurance service in the building industry. More and more engineering firms are considering commissioning services as a core business component. Commissioning is being integrated into the construction process to ensure that owners and investors get good buildings for their investments. It is a method of risk reduction for new construction projects or major capital improvements (i.e. renovations) and it is a comprehensive way to assess and tune up performance of existing buildings.

> Building commissioning for new buildings "focuses on verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the owner's project requirements."
>
> - ASHRAE Draft Guideline 0-2003

> Commissioning for existing buildings identifies causes and recommends solutions to typical problem areas such as high energy costs and poor comfort or indoor air quality.
>
> -WA Department of General Administration

Commissioning is applicable throughout the lifecycle of a building to assure that the building is built and operates as intended. This assurance is needed not only at the beginning of a buildings life (i.e. design and construction) but also when any renovation work occurs as well as periodically during the on-going operation of a building.

APPLICATIONS

NEW BUILDINGS

Most new buildings can benefit from commissioning. In many larger projects, or those with complicated design and systems, commissioning may be essential to assure integration and operability.

EXISTING BUILDINGS

Existing-building commissioning, also known as retro-commissioning, usually focuses on energy-using equipment such as mechanical equipment, lighting, and related controls with the goal of reducing energy waste, obtaining energy cost savings for the owner, and identifying and fixing existing problems, using diagnostic testing and O&M tune-up activities.

THE PROCESS OF COMMISSIONING

NEW CONSTRUCTION COMMISSIONING activities follow the construction process from pre-design planning through design, construction and acceptance. The commissioning provider becomes an integral part of the building team. New construction commissioning may include review and testing of all building systems (security, fire, life and safety, HVAC, lighting, electrical, etc.). Commissioning ends with assuring the operators are trained and O&M manuals are available and accurate. A facility's O&M personnel, if on board, can assist in commissioning of new buildings through participation in functional testing and O&M training.

EXISTING BUILDING COMMISSIONING is a periodic event in the life of an existing building that applies a systematic investigation process for improving and optimizing a building's O&M. Much of the service is similar to that for new-construction commissioning. The O&M staff work alongside the commissioning authority as they check equipment and make adjustments.

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THE COMMISSIONING SERVICE PROVIDER

The commissioning service provider, often referred to as a commissioning agent, or commissioning authority, is an objective, independent advocate of the building owner. The commissioning provider typically has significant design and hands-on experience with building mechanical and electrical systems. Ideally, the commissioning provider is an independent third party contractor hired or assigned by the owner and is contractually independent of the construction firm, sub-contractors or equipment suppliers. In rare cases where this is not the case, a disclosure of potential conflict of interest and the means of resolving it should be made in writing to the owner.

COST

The costs of commissioning services can vary widely depending on the type of project being commissioned, the scope of commissioning requested, and the size and complexity of the building. A number of studies have assembled cost information and found that commissioning can range from $0.10 per square foot to over $1.30 per square foot. Costs of commissioning of existing buildings is generally lower than the service for new buildings due to the length of time and level of involvement in a new project's design and construction process. Also, costs per square foot are higher for smaller projects due to certain fixed aspects of the service such as developing a plan and reporting. One study in the Northwest found the average for new construction commissioning to be about $0.70 per square foot compared to existing building commissioning of $0.25.

CASE STUDIES

Case Studies can be found at:
www.BetterBricks.com/commissioning

COMMISSIONING BENEFITS

Some of the benefits resulting from commissioning include:

- A fully functional building at first occupancy (within warranty).
- Lower energy and maintenance costs.
- Safer and more comfortable buildings.
- Fewer disputes between building owner and general contractor.
- Fewer change orders where commissioning begins early.
- Problems discovered early when they are less expensive to correct.

Numerous real world case studies have quantified these and other benefits.

GENERAL INFORMATION

(GUIDELINES AND ASSISTANCE)

- OREGON OFFICE OF ENERGY
  www.energy.state.or.us
  503.378.4040
- WASHINGTON DEPARTMENT OF GENERAL ADMINISTRATION
  www.ga.wa.gov/energy
  360.902.7198
- IDAHO DEPARTMENT OF WATER RESOURCES
  www.idwr.state.id.us
  208.327.7977
- MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
  www.deq.state.mt.us/ppa/tfa
  406.444.6697

OTHER RESOURCES

(ON CERTIFICATION, GUIDELINES, LOCATING PROVIDERS)

- BUILDING COMMISSIONING ASSOCIATION
  www.bcxa.org
  425.774.7479
- NORTHWEST ENERGY EFFICIENCY ALLIANCE
  www.BetterBricks.org/commissioning
  800.872.3568

BETTERBRICKS IS AN INITIATIVE OF THE NORTHWEST ENERGY EFFICIENCY ALLIANCE

The Alliance is a non-profit group of electric utilities, state governments, public interest groups and efficiency industry representatives working to make affordable, energy-efficient products and services available in the market place.