



BETTERBRICKS

BUILDING COMMISSIONING

for better public buildings

CASE STUDY

OTHELLO COMMUNITY HOSPITAL — INSURING OPERATION OF CRITICAL SYSTEMS



Othello Community Hospital addition

Many small-town hospitals find themselves in the financial situation of either having to close down, or expand to become a “regional” hospital. In 1998 Othello chose to expand, adding a three-story, 54,000 square foot, state-of-the-art medical facility.

Included in the hospital addition are surgery rooms, inpatient and outpatient areas, radiology, an emergency department, birthing rooms, offices, and mechanical and electrical rooms.

A few months after construction began, the hospital contacted the Washington State Department of General Administration (GA). Through GA’s building commissioning program, they developed a scope of work and contracted with TestComm, LLC, to commission the facility addition.

COMMISSIONING QUICK FACTS

Building Name	Othello Community Hospital
Location	Othello, Washington
Project	Addition to existing hospital
Commissioning Scope	Mechanical, electrical, emergency, and auxiliary systems; roof membrane and drainage systems
Building Size	54,000 sq.ft. (addition)
Total Construction Cost	\$8,000,000
Total Commissioning Cost	\$67,100
Commissioning as % of Construction Cost	0.8%
Commissioning Cost per Square Foot	\$1.24
First-Year Cost Benefit	\$9,500
Annual Energy Savings	\$7,300 per year

PROJECT PARTNERS

**Washington State
Department of General
Administration**
Roger Wigfield

Othello Community Hospital
Greg Hanoff

TestComm, LLC
(Commissioning Agent)
Gerald D. Ensminger

Bouten Construction
(General Contractor)
Reuben Clouse

MW Consulting Engineers
(Mechanical/Electrical
Contractor)
Paul Allison, Dylan
Cunningham

KDF Architecture
Jon Hopwood

This was the general contractor's first experience with commissioning. Since then, they've contracted with us to commission a \$25 million hospital renovation in Montana.

Jerry Ensminger
TestComm, LLC

PROJECT SCOPE OF WORK

In medical facilities, system operation is critical. Among the systems TestComm commissioned were:

- Energy management controls
- Heating, ventilation and air conditioning
- Plumbing
- Main electrical distribution and emergency power
- Medical gas
- Communications
- Roof membrane and roof drainage

ISSUES IDENTIFIED

Numerous deficiencies were discovered and resolved during the commissioning process. Examples include:

- Improperly calibrated CO₂ sensor in an air-handling duct. This was causing an additional 2000 cfm of unconditioned air to be brought into the building, increasing heating and cooling loads.
- Short-cycling chiller. Because it is oversized to serve multiple purposes, during low-load situations the chiller compressors were continuously cycling. The control sequence was modified so that the chiller is disabled when the outside air temperature is less than 50 degrees F.
- Two boilers cycling on and off together. The boilers (for heating water) were intended to operate individually; proper modulation and other control system changes corrected this inefficiency.
- Roof and drainage problems. Roof flood testing found several leaks and identified problems with drainage from the canopies at the hospital entrances.
- Excessive vibration at the medical air compressor piping. Additional bracing eliminated this problem.
- Signaling devices for the fire alarm system hadn't been installed in the surgery area.
- Condensate drain lines hadn't been installed at cooling fan coil units in the elevator machine room and electrical room. This could have led to damaged electrical equipment.

ENERGY IMPLICATIONS OF COMMISSIONING

During commissioning significant energy savings were achieved from changes made to controls for:

- Chiller
- CO₂ sensor/ventilation setpoint
- Dedicated boiler for sterilizing medical equipment
- Steam boilers for water heating
- Economizers on air handling units

ADDITIONAL BENEFITS

In addition to energy efficiencies, TestComm identified several building operation and long-term maintenance improvements. These included:

- Control changes made to the boilers and chiller will increase equipment life, as well as reduce maintenance.
- Changes made to the HVAC system eliminated comfort complaints in various spaces, including surgery.
- Support bracing for the medical air compressor piping eliminated vibration. This could have become a serious safety issue if the piping failed during critical hospital operations.
- Roof and drainage repairs dealt with the potential for structural damage or growth of mold in the building.

PROJECT BENEFITS

- \$9,500 in first-year cost benefits
- \$7,300 in annual energy savings
- Identified and corrected defects in equipment, systems, and operation
- Problems found and resolved prior to affecting staff and patients
- Owner was assured that building systems would operate properly
- Project completed with few punch list items or warranty issues



Jerry Ensminger documenting test results

FOR INFORMATION ON WASHINGTON'S COMMISSIONING PROGRAM



Washington State Department of
General Administration

Division of Engineering & Architectural Services

206 General Administration Bldg.
P.O. Box 41012
Olympia WA 98504-1012

Roger Wigfield, P.E.

(360) 902-7198

rwigfie@ga.wa.gov

Commissioning website:

<http://www.ga.wa.gov/eas/bcx>

BetterBricks
is an initiative of the



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www.nwalliance.org

WHAT IS COMMISSIONING?

Building commissioning is a systematic and documented process of ensuring that building systems perform according to the design intent and the owner's operational needs.

Commissioning is used in both new construction and existing buildings.

Commissioning:

- Provides a better environment for occupants
- Reduces indoor air quality problems
- Reduces occupant complaints
- Reduces contractor call-backs and warranty issues
- Reduces energy consumption and operational costs

Technical Writing/Editing

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