



**US Army Corps  
of Engineers®**

***Demonstration Program on  
Reduction in Long-Term  
Facility Maintenance Cost  
aka  
Design, Construct,  
Commissioning (DCCx)***

# Objectives

- Include requirement in building construction contract to have Contractor responsible for maintenance for 5 years.
- “Determining whether such requirements facilitate *reductions in the long-term facility maintenance costs* of the military departments.”

# Definition of Building Commissioning (Cx)

*A quality-focused process for enhancing the delivery of a project. The process 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 Guideline O-P (2002)*

# Project in Pilot Program

## Active Army:

- 2002 Fort Gillem, GA Criminal Investigation Forensic Lab
- 2003 Fort Lewis, WA Battle Simulation Center
- 2004 Hunter AAF, GA Physical Fitness Training Center
- 2004 Fort Campbell, KY Barracks Complex 36403, \$31M,
- 2004 Fort Bliss, TX Air Missile Defense Instructional Facility 55367, \$15M,

## Army Reserve:

- 2002 Rochester, NH Reserve Center/OMS
- 2003 Fort Story, VA Reserve Center/OMA
- 2004 Fort Meade, MD Reserve Center/OMS

## Army National Guard

- 2003 Topeka, KS Armed Forces Reserve Center
- 2004 Lenoir, NC Readiness Center

# Project in Pilot Program

## NAVFAC: 2003 Projects

Quantico, VA Bachelors Enlisted Quarters

Bangor, WA Small Arms Training Center

Great Lakes Training Center, IL Recruit Barracks

## NAVFAV 2004 Projects

(final list to be reduced to three)

Camp Pendleton, CA Sewage Treatment Plant

San Diego, CA Bachelors Enlist Quarters

Panama, FL Littoral Warfare Research Complex

Dahlgren, VA Naval Networks Operations Center Addition

# Hypothesis

- Projects employing the preventive maintenance and continuous commissioning improve the building and occupant performance.
  - Resulting in life cycle savings even though initial O&M cost will most likely be higher than current process.
  - Will improve occupant and customer satisfaction.

# Reporting Requirements

- *January 31, 2005*, the Secretary of the Defense shall submit to Congress a report on the demonstration program, including the following:
  - *A description of all contracts that contain requirements.*
  - *An evaluation of the demonstration program* and a *description of the experience* of the Secretary with respect to such contracts.
  - *Any recommendations, including recommendations for the termination, continuation, or expansion of the demonstration program*, that the Secretary considers appropriate.

# *Minimum Required Data For Reporting*

- Physical condition before and after – (both baseline and pilot buildings)
- Cost of maintenance for both baseline and pilot buildings
- Cost savings in energy usage due to better maintained equipment efficiencies
- Occupant satisfaction & "Quality of Life"



# *Bid Results*

## *(Project Under Construction)*

### ➤ Ft. Gillem, CID Lab LI 42032

- Building Cost - \$25,700,000
- Square Footage – 91,482.15
- O&M Cost Yr 1 – \$392,800 ~ 1.53% > \$4.29/sq.ft.
- O&M Cost Yr 2 – \$455,100 ~ 1.77% > \$4.97/sq.ft.
- O&M Cost Yr 3 – \$565,700 ~ 2.20% > \$6.18/sq.ft.
- O&M Cost Yr 4 – \$481,700 ~ 1.87% > \$5.26/sq.ft.
- O&M Cost Yr 5 – \$568,300 ~ 2.21% > \$6.21/sq.ft.

# *Bid Results*

## *(Project Under Construction)*

### ➤ Ft. Lewis, WA, Battle Simulation Center

- Building Cost - \$18,550,000
- Square Footage – 67,597
- O&M Cost Yr 1 – \$200,000 ~ 1.08% >\$2.96 /sq.ft.
- O&M Cost Yr 2 – \$175,000 ~ 0.94% >\$2.59 /sq.ft.
- O&M Cost Yr 3 – \$190,000 ~ 1.02% >\$2.81 /sq.ft.
- O&M Cost Yr 4 – \$210,000 ~ 1.13% >\$3.11 /sq.ft.
- O&M Cost Yr 5 – \$250,000 ~ 1.35% >\$3.70 /sq.ft.

# *Bid Results*

## *(Project Under Construction)*

### ➤ Rochester, NH, Reserve Center/OMS

- Building Cost - \$8,704,741
- (Training Bldg, OSM Bldg, Unheated Storage Bldg)
- Square Footage – 53044 total
- Total O&M Cost - \$682,800 > 7.85%
- O&M Cost Yr 1 thru 5 > \$2.57 / sq.ft

# *Bid Results*

## *(Project Under Construction)*

- Fort Story, VA, Reserve Center/OMA
  - Building Cost - \$11,775,497
  - Square Footage – 62,952
  - Total PM Maintenance Cost - \$63,743 ~ 0.54%
  - O&M Cost Yr 1 thru 5 – 0.11% > \$0.20 / sq.ft.
  
- \* This project only had Preventive Maintenance as a contract requirement, not the continuous commissioning.

# *Challenges*

- Point metering vs. Energy consumption by area.
  - Energy usage will be reported by area because we do not have point metering, thus comparison will be by building type. Premise is that buildings are operated in same manner, personnel load or same number of hours.
  - EMCS systems do not provide means of individual equipment energy consumption.
- Survey results of O&M operations by Contractor

# *DCCx Program*

# *Questions*