

ENGINEERING & CONSTRUCTION BULLETIN

Issue No. 2018-03

21 May 2018

Type: Policy

Subject: Technical Oversight and Acceptance Testing of Critical Systems**References:**

- (a) ECB 2007-01 Proper Use of Military Construction Funds, 13 October 2006
- (b) BMS B-1.4.6.3 Design Build Quality Management
- (c) BMS B-1.5.5.1 Design Bid Build Construction Quality Management
- (d) BMS B-1.6.7.1 Acceptance Testing of Critical Systems
- (e) BMS B-1.6.7.2.1 Performance Verification Testing – Power Generators
- (f) BMS B-1.6.7.2.2 Performance Verification Testing – Uninterruptible Power Supplies
- (g) BMS B-1.6.7.2.3 Performance Verification Testing – Frequency Converters
- (h) BMS B-1.6.7.3 HVAC Systems Acceptance Program for TAB/PVT/DALT
- (i) BMS B-1.6.7.4 Acceptance Testing – Fire Protection Systems
- (j) BMS B-1.6.7.5 Roofing Systems Acceptance Program

Cancellation:

- (1) ECB 2008-03 Acceptance Testing of Critical Systems, 28 September 2008

1. Purpose

This ECB updates policy and guidance on the Capital Improvements Business Line's (CIBL's) in-house technical oversight and acceptance testing of critical systems in accordance with references (a) through (j). This ECB also provides guidance on the appropriate use of Post Construction Award Services (PCAS) funds for the technical oversight and acceptance testing of these critical systems.

2. Background

System acceptance is an end-to-end process that begins at receipt of initial design submittals and is completed with final performance testing of the system prior to beneficial occupancy. NAVFAC has identified five critical systems and associated sub-systems that have consistently experienced performance issues. The five critical systems include heating, ventilation, & air-conditioning (HVAC); electrical; fire protection/life safety; roofing; and underwater structures. A detailed list of critical area sub-systems is included in section 3 of this bulletin.

In-house technical oversight and the NAVFAC acceptance testing processes are Government quality assurance (QA) functions which are focused to ensure that the Contractor's construction quality control (CQC) program delivers high quality and properly functioning critical systems. Acceptance testing and our in-house technical oversight validate the design, and are correspondingly funded on the E-line, using up to one-half of the PCAS funds on a

project. On-site performance verification and validation of the final testing of facilities and installed components are a crucial part of improving and maintaining individual and NAVFAC technical expertise because it puts design engineers in the field to perform hands on evaluations.

This ECB provides Capital Improvements Business Line's consolidated implementation guidance in conjunction with references (a) through (j), and cancels the previously established ECB referenced above.

The list of systems requiring acceptance testing as part of the in-house acceptance process are shown below in Section 3 "Applicability" of this bulletin.

3. Applicability

This ECB is effective immediately and applies to all construction projects in the Continental United States (CONUS) and Outside Continental United States (OCONUS). More information describing the acceptance process can be obtained from reference (d).

HVAC Systems.

- a. Ductwork Air Leakage and Tests (DALT) of all air moving systems.
- b. Testing, Adjusting, and Balancing (TAB) of all HVAC systems.
- c. Performance Verification Testing (PVT) of all energy consuming systems and HVAC control systems.
- d. Interface HVAC control systems with cyber requirements using Risk Management Framework per reference (d)

Electrical Systems.

- a. Single operation generator sets.
- b. Automatic transfer switches.
- c. Uninterruptible power supplies.
- d. 400-hertz solid state frequency converters.
- e. Cathodic protection.
- f. Transformers.

Fire Protection / Life Safety Systems.

- a. Sprinkler systems (wet pipe, dry pipe, pre-action, deluge, water spray & water mist).
- b. Fire pumps and controllers.
- c. Evacuation / notification detection & releasing systems.
- d. Base-wide fire reporting systems.
- e. Gaseous systems.
- f. Wet and dry chemical systems.
- g. Foam systems.
- h. Smoke control / smoke exhaust systems.
- i. Emergency lighting and egress marking.
- j. Spray Applied Fireproofing.
- k. Opening protection (firestopping / fire dampers / fire doors).

Roofing and associated Roof Drainage Systems.

- a. Low sloped roofs
- b. Steep sloped roofs

Underwater Structure Systems.

- a. Pile foundations.
- b. Sheet piles.
- c. Caissons.
- d. Cofferdams.
- e. Wraps and encasements.
- f. Sheet pile bulkheads.
- g. Gravity walls.
- h. Block walls.
- i. Seawalls.
- j. Boat ramps.
- k. Cut-off walls.
- l. Wave attenuation walls.
- m. Fender piles.
- n. Dolphins.

4. Policy

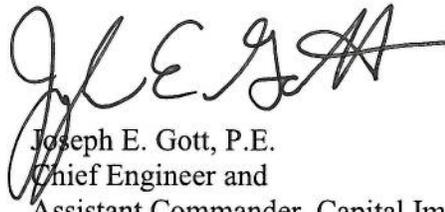
- A. PCAS is projected, authorized, and distributed via the Resource Allocation Plan (RAP) each year which covers critical systems acceptance testing. The project PCAS funds will be managed by the CI Project Manager (PM) in coordination with the Construction Manager (CM). PCAS funds are project-funded and non-severable from the construction contract. For MILCON projects the PM must ensure that PCAS funding is used in accordance with reference (a).
- B. Prioritization of project workload shall be established by the CI Technical Discipline Coordinators (TDCs) in coordination with the FEC OPS. The CI PM will coordinate financial resources with the respective CI Technical Branch Heads.
- C. Applicable contract specifications shall be edited by the appropriate designer(s) on the project technical team to reflect the comprehensive system acceptance testing requirements and associated in-house efforts.
- D. CIBL in-house efforts for the technical oversight and acceptance process may be funded utilizing up to one-half of the total PCAS funds. The E-line designers (engineers and/or architects) must develop an estimate of labor/hours required for the technical oversight and acceptance testing for each specific project to determine the required funding level. These requirements are coordinated with the lead Designer serving as the Design Manager (DM) for the project.
- E. While the CM in the Facilities Engineering and Acquisition Division (FEAD) will be responsible for managing the overall construction project, the E-line engineers/architects from the project technical team will be responsible for the technical oversight and acceptance testing efforts associated with the critical systems. Technical support from the FEAD Project Management and Engineering

(PM&E) Branch can be leveraged as capabilities and resources allow, and the construction manager shall coordinate with the E-line engineers/architects.

- F. Complete documentation of acceptable results of acceptance testing must be received by the CM prior to allowing beneficial occupancy. Under no circumstances shall beneficial occupancy be established while there are known life safety deficiencies.

5. Point of Contact

For further guidance and/or instructions, please contact Mr. Joe Simone, P.E., (202) 685-9177, within the Chief Engineer's Office.



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