US Army Corps of Engineers

# ENGINEERING AND CONSTRUCTION BULLETIN

**No. 2002-23 Issuing Office: CECW-ET Issued: 15 July 2002 Expires: 15 July 2004**

**Subject: Approval of the Heating, Ventilating, and Air-Conditioning (HVAC) Directory of Expertise (DX)**

**Applicability**: Information

1. Reference ER1110-18158, Corps-Wide Centers of Expertise Program, 16 January 1998.

2. In accordance with ER-1110-1-8158, the Huntsville Center HVAC DX is approved and authorized to perform the services listed in the enclosed Approval Report.

3. The HVAC DX is assigned to the Huntsville Center and includes the following individuals: Sandy Wood (CEHNC-ED-ME-M), Randy Miller (CEHNC-ED-ME-M), David Aldridge (CEHNC-ED-ME-M), and Rod Bridgeman (CEHNC-ED-ME-M).

4. The HVAC DX will maintain state-of-the-art technical expertise regarding all-types of HVAC systems for use on Army, Air Force, and Corps facilities. This expert knowledge includes, but is not limited to: equipment, instrumentation, strategies and concepts for design and testing of HVAC systems; inspection techniques; specification development; failure analysis; formal training; operations and maintenance assistance, consulting and expert witness; as well as environmental and safety issues relating to HVAC systems.

5. The enclosed DX Approval Report documents the selection criteria and process that was used to establish the HVAC DX.

6. The HVAC DX proponents are Joe McCarty, CECW-ET-E and Gary Bauer, CECW-ET-C.

Encl

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Directorate of Civil Works

ECB 2002- 23
Subject: Approval of the Heating, Ventilating, and Air-Conditioning (HVAC) Directory of Expertise

# DIRECTORY OF EXPERTISE
# APPROVAL REPORT

## 1.0 TYPE, TITLE, AND LOCATION

The new Center of Expertise will be the Directory of Expertise (DX) type as defined by ER 1110-1-8158 and will be titled the "Heating, Ventilating, and Air Conditioning (HVAC)" DX. The new DX will be assigned to the United States Army Engineering and Support Center, Huntsville (CEHNC).

## 2.0 NUMBER OF PERSONNEL

The HVAC DX at CEHNC will consist primarily of 4 mechanical engineers (Mr. Sandy Wood, Mr. Randy Miller, Mr. David Aldridge, and Mr. Rod Bridgeman) each of whom have extensive experience in the evaluation, planning, design, construction, and operation & maintenance (O&M) of HVAC systems. Additional qualified mechanical and electrical engineers within CEHNC will be used on the program as needed to provide matrix support. In order to fully complement CEHNC's in-house resources and bring synergy to the program, a virtual team or working group of HVAC experts will be established. The group will include the talents of the identified CEHNC individuals as well as individuals from other Corps and DPW offices. Establishing such a group will provide the Corps with a very diverse and broad knowledge base, which will be optimally leveraged to solve the complex HVAC problems encountered across the vast climatic conditions that exist around the United States.

## 3.0 EXECUTIVE SUMMARY

The primary goal of creating the new DX is to enhance the Corps' current knowledge base regarding HVAC equipment and systems in order to provide all of the Corps' customers (Army, Air Force, etc.) with the best quality HVAC systems possible. Over the years, HVAC systems have become very complex in nature and as a result the planning, design, construction, and O&M requirements associated with these systems have mandated very specialized expertise. Unfortunately for the Corps, this type of overall expertise has not been widely available. As a result, overall customer satisfaction with HVAC systems in general has been very low. In addition, similar problems with HVAC systems and equipment have been seen to be recurrent. In an effort to improve customer satisfaction and minimize the recurring problems with HVAC systems, the new HVAC DX was created. Additional benefits of the DX will be to:

a. Provide subject matter experts (SME)

b. Provide advice to HQUSACE and ACSIM for policy and guidance

c. Create and maintain standardization

d. Promote modernization (new technologies)

e. Provide quality assurance

f. Disseminate lessons learned

**4.0 MISSION AND FUNCTIONS**

The primary mission of the HVAC DX will be to provide HVAC support to the Corps and its customers throughout the life-cycle of a HVAC related project (i.e., planning, design, construction, and O&M). Functions provided by the new DX will include the following as a minimum. (Note: Since the new DX is totally reimbursable, the majority of the following functions will only be provided upon request and provision of funding.)

a. Act as a SME on HVAC related issues

b. Develop and maintain HVAC criteria and technical guidance (including design-build)

c. Provide a web site dedicated to addressing HVAC related issues and criteria

d. Act as a central repository for HVAC technology and criteria

e. Develop specific career training for HVAC designers in coordination with the Corps' training center

f. Prepare and participate in HVAC PROSPECT training courses

g. Work with HQ in the development of a HVAC working group

h. Develop HVAC related 1391 planning criteria

i. Provide SME assistance in planning and MILCON programming actions regarding HVAC

j. Assist DPWs in the development of HVAC design guidance tailored for their installation (Installation Design Guidance)

k. Assist Transformation Installation Management (TIM) organization in the preparation of DD 1391s in regards to HVAC requirements

l. During the design phase of a project, assist DPWs in determining the O&M requirements that will be needed after construction to support the facility or facilities from an HVAC perspective

m. Attend planning and/or design charrettes to clarify HVAC related issues

n. Review and validate HVAC design projects at the concept stage for compliance with current criteria, lessons learned, indoor air quality, energy budgets, etc.

o. Participate in the design review of HVAC projects at the pre-final and/or final stages of development

p. Develop needed HVAC related studies (i.e., feasibility studies, energy budgets, etc.) either in-house or by contract

q. Prepare A/E scopes of work

r. Prepare design checklists

s. Prepare HVAC design packages

t. Work as a virtual team member along side the primary design District/Division

u. Assist Districts/Divisions in the development of bid sets (HVAC related)

v. Assist Districts/Divisions in the development of Design-Build contracts (HVAC related)

w. Participate in the review of technical proposals for design-build contracts (HVAC related)

x. For complex or unique projects, schedule and present specific briefings shortly after contract award, for area and resident engineering personnel, ensuring an adequate understanding of HVAC construction problems including an overall critique of the specific project requirements and the Contractor's capabilities/experience

y. Assist field offices in HVAC submittal reviews

z. Attend system performance tests

aa. Review submittals on test results (i.e., TAB, performance tests, etc.)

bb. Participate in HVAC commissioning efforts

cc. For complex or unique projects, conduct post completion evaluations for HVAC systems at least one year after expiration of warranty in order to document deficiencies, operational readiness, effectiveness including payback data, and recommendations for improvement

dd. Maintain a database of post completion findings in order to share lessons learned, actual savings, actual costs, etc.

ee. Revise existing HVAC criteria as needed to correct deficiencies found in the field

ff. Provide HVAC preventive and/or predictive maintenance service contracts to DPWs

gg. Provide services to evaluate indoor air quality of facilities

hh. Provide services to define existing HVAC systems and their associated maintenance requirements

**5.0 Evaluative Criteria**

a. Category Selection Criteria. CEHNC's current charter includes programs that are national or broad in scope; require integrated facilities or systems that cross geographical boundaries; require a centralized management structure; require commonality, standardization, multiple-site adaptation and/or technology transfer. Because of their extremely broad charter, CEHNC has developed in-house resources which have a vast amount of experience and lessons learned with HVAC systems as related to planning, design, construction, and operations and maintenance (O&M).

b. Justification for Organizational DX. Planning, designing, construction, and O&M of HVAC equipment and systems requires very unique skills and experience. CEHNC has a cadre of HVAC specialists who maintain detailed, state-of-the-art expertise in the latest HVAC equipment and systems. The combination of requisite skills and experience does not reside in any one individual. Therefore, this function can only be effectively accomplished by a cohesive organization, such as the HVAC DX.

c. Selection of Candidates

(1) Experience. Personnel at the HVAC DX have extensive detailed experience in all types of HVAC applications.

(2) Job classifications. All personnel at the HVAC DX are mechanical engineers (Series 0830).

(3) Education. All personnel at the HVAC DX have a college degree in mechanical engineering.

(4) Professional Certification. Professional registration and membership in engineering related professional organizations are beneficial, but not required.

(5) Technical Qualifications. All personnel at the HVAC DX have intimate knowledge of DoD and Army regulations on the application of HVAC systems. Personnel also have extensive experience in the planning, design, construction, and O&M issues related to HVAC systems.

(6) Selection Method. In March 2002, HQ issued a memorandum to all major subordinate commands requesting offices interested in becoming a DX on HVAC to complete and submit answers to a HVAC questionnaire. HQ formed a committee to evaluate all of the submittals

and then selected the office that provided the most viable response. The committee selected CEHNC as the HVAC DX.

(7) Management Support. The HVAC DX has the full support of CEHNC.