APPENDIX D

RESOURCES, PROCESSES, AND TOOLS

The PDT has many resources, processes and tools available to aid the quality management effort. Principal among these are described below.

D-1 Biddability, Constructability, Operability, and Environmental (BCOE) Review. The BCOE review is conducted prior to contract advertisement. The purpose of the review is to ensure that BCOE aspects of a project are considered during design and integrated into the construction procurement documents for all projects. Refer to ER 415-1-11.

D-2 Computer-Aided Design and Drafting (CADD) Systems. The application of CADD and related technology can affect every phase of the design process positively. This technology offers the potential of cost reductions and shorter design schedules by increasing the productivity and capability of the design agency, while maintaining or enhancing the quality of projects. The proponent for CADD in HQUSACE is CEMP-ES. A-E/C CADD standards, documentation and associated utilities can be downloaded from the CADD/GIS Technology Centers web page athttps://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp.

D-3 Construction Criteria Base (CCB). CCB is an extensive electronic library of construction guide specifications, manuals, standards and many other essential criteria documents, published on the Internet at http://www.ccb.org by the non-profit National Institute of Building Sciences (NIBS) in cooperation with the Department of Defense (Naval Facilities Engineering Command and USACE). The proponent office in HQUSACE is CEMP-EA.

D-4 Corps-Wide Centers of Expertise (CX) Program. The program provides an inventory of specialized knowledge and skills within the U.S. Army Corps of Engineers (USACE) that can furnish beneficial assistance to all Corps elements. The CX program is two-tiered: (1) Mandatory Centers of Expertise (MCX), unique or exceptional technical capability in a specialized subject area that is critical to other USACE commands and (2) voluntary centers and experts – Directory of Expertise (DX), database registry of organizations and individuals that posse's expertise and/or exceptional technical capability that is beneficial to other USACE commands. Current listing of Centers of Expertise and their roles and responsibilities are at http://www.usace.army.mil/inet/functions/cw/cecwe/coexpert.

D-5 DA Facilities Standardization Program. This program consists of applying a formal process for selecting types of facilities for standardization; defining requirements; developing, coordinating, approving, and implementing Army standard designs; and reviewing and updating approved Army standard designs. To provide flexibility to meet the varying needs of the Army, the thrust of the program is to develop standard designs in the form of definitive design drawings. This allows each Army standard design package to be adapted to the installations architectural theme. This approach to standardization ensures facility users and installations that their facilities will be "Facilities of Excellence" and supports such new concepts as the Army Chief of Staffs "Communities of Excellence". Approval and implementation of standard designs

are based on the recommendations of the Department of Army Committee, USACE Facilities Standardization Committee, and facility type subcommittees. These designs are mandatory for use in the Army for the planning, programming, design, and construction of the facility types for which they were intended. Copies of approved Army standard design packages are available from the U.S. Army Engineer Division, Huntsville. The proponent office for this program is CEMP-EA. Refer to ER 1110-3-113.

D-6 Design Charrette. The design charrette is an extensive process where the PDT (designers, users, and installation decision makers) team together to focus their input on the design of a specific project. The process involves the gathering of information and the definition of project requirements both in written and visual form. This process maximizes the customer's access to the PDT and the PDT's access to both the site and the installation during design development. A facilitator is normally used to conduct the charrette proceedings.

D-7 Design Quality Lessons Learned (DQLL^{sm}). DQLL^{sm} is a project lessons learned repository module in ProjNet^{sm}. DQLL^{sm} allows reviewers to identify possible lessons learned as they conduct reviews using DrChecks^{sm}. Lessons learned can also be entered directly into DQLL^{sm} without going through DrChecks$^{sm.}$ The DQLL^{sm} module can be accessed at www.projnet.org.

D-8 Document Review and Checking System (DrChecks^{sm}). DrChecks^{sm} is an automated, easy-to-use, web-based module in ProjNet^{sm} that facilitates the formal review of project documents. DrChecks^{sm} automatically tracks, collates, and documents technical discussions by capturing the continuing dialogue between reviewer and designer. ER 1110-1-8159 mandates the use of DrChecks^{sm} for the review of military and civil works project documents. The DrChecks^{sm} module can be accessed at www.projnet.org.

D-9 Field investigation/site visits. Site visits are made to verify that field conditions match those envisioned during project design and to discuss any issues concerning construction with appropriate field personnel. Guidance for construction site visits by design personnel is given in ER 1110-2-112.

D-10 Lessons-learned System for Hazardous Toxic and Radioactive Waste & Environmental Lessons-Learned System (HTRWELL) Program. This system has been developed to provide a means to identify real or potential problem areas in the HTRW & Environmental programs, collect ideas on solutions to these problems and to make the information available to all USACE Commands engaged in this work. Ideas are loaded to the central electronic file through district and MSC channels. Design and construction personnel use personal computers to access the central file. Omaha District is the HTRW Center of Expertise and maintains the database at http://hq.environmental.usace.army.mil/tool_info/lessons/lessons.html.

D-11 Micro Computer Aided Cost Engineering System (MCACES). MCACES is an automated cost estimating tool that can be used throughout the project delivery process. ER 1110-1-1300 mandates MCACES for USACE cost estimating.

D-12 Modular Design System (MDS). MDS is a Computer-Aided-Design System developed by Louisville District for the Army Reserve. This system has built-in logic and algorithms, which

essentially create a partially complete set of design drawings for certain types of Army Reserve facilities.

D-13 Partnering. The process of partnering is a dynamic excursion into the world of mutual business cooperation. The simple yet sophisticated process allows two or more people (lets call them partners) to reach agreement and understanding of the rules under which they will operate and exactly what constitutes success. The partnering concept seeks a cooperative environment, not a confrontational one. A win/win outcome for all parties is the ultimate goal. Experience has demonstrated that when win/lose strategies are employed by one or more parties to gain advantage, a lose/lose reality results (i.e., quality degradation and/or unreasonable cost and time growth for the Corps and its customers, and unprofitable ventures for private sector A-E firms and construction contractors). A facilitator is normally used to conduct the proceedings.

ProjNet^{sm}. The PROJect extraNet (ProjNet^{sm}) is a web service that allows the secure exchange of design and construction information among authorized business partners in the context of specific business processes. ProjNet^{sm} hosts a number of specific applications. The most widely used of these applications are the Design Review and Checking System (DrChecks^{sm}), Filer^{sm} (a secure file exchange program), and the Design Quality Lessons Learned (DQLL^{sm}) repository. The ProjNet^{sm} internet home page is www.projnet.org.

D-14 Regional Technical Specialist (RTS). RTSs are a resource throughout USACE who are senior technical staff representing the best engineering talent that USACE has to offer. RTSs are available to serve on District PDTs and ITR Teams. They promote technical expertise and technology transfer, promote awareness of technical advances and methodologies, and participate in lessons learned systems.

D-15 Simplified Design Method (SDM). The SDM is intended for small, non-complex maintenance projects for installations. The basic idea is to use unique and innovative design methods and present these on plans, specifications and design analyses that are printable on a standard copier. The proponent office in HQUSACE for SDM is CEMP-EA.

D-16 SPECSINTACT. SpecsIntact (Specifications-Kept-Intact) is a state-of-the-art automated specification processing system, copyrighted by the National Aeronautics and Space Administration, mandated by ER 1110-1-8155 for use in producing USACE project specifications (except for overseas) and maintaining guide specifications. SpecsIntact is available at the SpecsIntact Internet home page at http://specsintact.ksc.nasa.gov and links through TECHINFO and CCB.

D-17 TechInfo. Techinfo is a website of technical information maintained by HNC. The site contains links to Design-Build Contracting Guidance, Federal technical publications, software, Whole Building Design Guide (WBDG), and Criteria Change Requests. The web page is located at http://www.hnd.usace.army.mil/techinfo.

D-18 Technical Excellence Network (TEN). The TEN is a web site that is organized around the Communities of Practice within USACE. The site offers subject matter experts links to training,

automated information systems, technical criteria (criteria change requests), and more of interest to the E&C Community. The web site is at http://ten.usace.army.mil.

D-19 Unified Facilities Guide Specifications (UFGS). UFGS are a joint effort of the U.S. Army Corps of Engineers (USACE), the Naval Facilities Engineering Command (NAVFAC), and the Air Force Civil Engineer Support Agency (AFCESA). UFGS is a system of master guide specifications that define the qualitative requirements for products, materials, and workmanship for features that occur in USACE construction projects on a repetitive basis. The UFGS are maintained in accordance with MIL-STD-3007C, STANDARD PRACTICE FOR UNIFIED FACILITIES CRITERIA AND UNIFIED FACILITIES GUIDE SPECIFICATIONS. The UFGS provide state-of-the-art technology that maximizes construction economy consistent with functional, aesthetic, and environmental requirements, energy conservation, and sound architectural and engineering practices. UFGS are published only in electronic format at http://www.ccb.org/docs/ufgshome/UFGSToc.htm. Requirements for using UFGS are contained in ER 1110-1-8155.

D-20 Value Engineering (VE). VE is an effective tool to reduce the construction costs of a project. VE should be implemented early in the design process to minimize impacts on the design schedule and lost design effort. VE shall be performed on the earliest document available that satisfies the projects functional requirements including a valid cost estimate. Approved VE changes will result in a more life cycle cost-effective design, and will not reduce quality or adversely affect the function of the project. The availability of the VE tool, however, does not relieve the designer of his responsibilities to investigate and analyze alternate systems/approaches during the initial design phases. The proponent office in HQUSACE for VE is CEMP-EV. Refer to ER 11-1-321.