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	Engineering and Design DESIGN POLICY FOR MILITARY CONSTRUCTION	
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DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

ER 1110-345-100

CEMP-EA

Regulation
No. 1110-345-100

15 February 1994

**Engineering and Design
DESIGN POLICY FOR MILITARY CONSTRUCTION**

1. Purpose.

This regulation establishes policies, responsibilities, and procedures for the design of military facilities.

2. Applicability.

This regulation applies to all Headquarters, U.S. Army Corps of Engineers (HQUSACE) and Office of the Chief of Engineers (OCE) elements, major subordinate commands (MSC), district commands and technical centers, laboratories, and field operating activities (FOA) having military construction (MILCON), and/or Hazardous, Toxic and Radioactive Waste (HTRW), design responsibility.

3. References.

References and additional information sources are listed in Appendix A.

4. General Policy.

The Commanding General (CG) of the U.S. Army Corps of Engineers (USACE) is responsible for the design, engineering, and construction mission of the Army world-wide. The CG is also responsible for the execution of assigned design and construction programs or projects for other military services, Department of Defense (DoD) agencies, other federal agencies, and foreign governments. Highest standards of professional skills, experience and management practice are required to support this responsibility. Required facilities and component parts thereof will be carefully sited, designed, and executed so that the resulting construction is of the highest quality that could possibly be provided within the cost and time authorized, without sacrificing aesthetics, user requirements, life-cycle economy, energy

conservation, environmental protection, or life safety.

5. Basic Design Requirements.

All designs will be accomplished in accordance with the policies outlined in this regulation and in accordance with applicable design criteria and instructions, Federal Acquisition Regulations (FAR) and supplements, Federal Information Resources Management Regulations (FIRMR), Army and Engineer regulations, technical letters, manuals and standards, memorandums issued by HQUSACE, standard designs, design guides, guide specifications, and specific or special design directives and instructions.

a. Design drawings will be developed in accordance with the policies and procedures contained in ER 1110-345-710.

b. Design analyses will be developed in accordance with the policies and procedures contained in ER 1110-345-700.

c. Design specifications will be developed in accordance with the policies and procedures contained in ER 1110-345-720.

d. Construction cost estimates will be developed in accordance with the policies and procedures contained in ER 1110-1-1300 and ER 1110-3-1300.

e. Architect-Engineer (A-E) contracts will be acquired in accordance with the time standards in ER 715-1 -1 5.

f. Designs for medical facilities will be developed in accordance with ER 1110-345-721 and the Architectural and Engineering Instructions (AEI), Medical Design Standards (MDS).

6. Specific Design Policies.

a. **Accessibility.** As a general policy, all buildings and facilities involving new construction, additions, or alterations, worldwide, which are open to the public or to limited segments of the public, or which may be visited by the public in the conduct of normal business, will be designed and constructed to be accessible to physically disabled individuals. All morale, welfare, and recreational facilities, including nonappropriated fund facilities; administrative facilities; educational facilities; manufacturing facilities; or any other facilities where civilian workers may be employed, will be accessible. Every building and facility should be designed to ensure access by physically disabled individuals unless the facility is specifically restricted to use only by able-bodied military personnel during the useful life of the building or facility. Specific accessibility policies and criteria are contained in the AEI, Design Criteria and the AEI, Medical Design Standards.

b. **Comprehensive Interior Design.** Comprehensive interior design includes both building-related and furniture-related interior design. Building-related interior design is required on all buildings. Facilities that provide living and working environments or provide personnel, morale, welfare, or recreation services to the military community should receive comprehensive interior design. This service is critical to fully supporting the customers functional and operational needs. Customer care means providing the user a facility which is ready for operation. Responsibilities and procedures to be used in providing interior design services are defined in ER 1110-345-122.

c. **Computer-Aided Design and Drafting (CADD) Systems.** A CADD system with multiple platforms compatibility has been established as a USACE-wide standard system (EM 1110-1-1807). The application of CADD and related technologies can positively affect every phase of design execution. 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 professional product quality. The HQUSACE proponent of the CADD systems is CEMP-ES and technical support is provided by the Tri-Service CADD/GIS Technology Center located at the U.S. Army Waterways Experiment Station (CEWES-DA).

d. **Historic Preservation.** Identification, evaluation, protection, preservation and management of historic properties and cultural resources, are required by AR 420-40. Designs for the utilization of historic buildings and structures are subject to review by state historic preservation officers and the Advisory Council on Historic Preservation. Care must be taken in the design and construction of projects involving historic structures to ensure that elements essential to the definition of historic character are preserved and protected.

e. **Installation Design Guides.** In accordance with the Army Communities of Excellence Program defined by DA PAM 600-45, Installation Design Guides are required for each Army installation. As part of the overall installation master plan, these guides depict the visual character of the installation and promote such items as architectural harmony, visual order, coordinated signage, and environmental landscaping. Care must be taken during the design process to ensure all project designs are sensitive to the specific rules and concerns of the installation as defined by the Installation Design Guide.

f. **Manufactured and Pre-engineered Buildings.** Pre-engineered structures or manufactured buildings are defined as those buildings in various configurations and sizes that are available from manufacturers as a standard stock item. The use of this type of construction should be considered where it will meet the quality, performance and functional requirements of the project, where it will be architecturally compatible with the environment in which it will be erected, and where such use is indicated by life cycle cost analysis to be economically justified. Because of the great variance in the quality and cost of such structures on the market, extreme care must be used in selection to ensure that the quality of the facility to be provided is commensurate with the project requirements and expected longevity of the mission to be served.

g. Metric. In accordance with the Metric Conversion Act of 1975 (Public Law 94-168) as amended by the Omnibus Trade and Competitiveness Act of 1988 (Public Law 100-418), Executive Order (EO) 12770 dated July 25, 1991, and the metric milestone schedule developed in accordance with EO 12770 by the Construction Subcommittee of the Metrication Operating Committee of the interagency Council on Metric Policy (memorandum dated November 5, 1991), all designs for new facilities (as of January 1, 1994) shall be developed using the metric system of measurement, to the extent that the use is economically feasible. The use of the metric system of measurement is not required where such use would be impractical or cause significant inefficiencies or loss of markets to United States firms.

h. Non-traditional Facility Acquisition Strategies. For the vast majority of projects, the traditional facilities acquisition method of firm-fixed-price design-bid-build will continue to be used. However, other non-traditional project delivery systems, to include design-build (ER 1180-3-1) and third party contracting, should be considered when appropriate.

i. Repetitive Facilities Design Policy: Standard, definitive, or existing designs, as well as other existing guidance will be used to the maximum extent to shorten the time and lower the costs for design.

(1) Standard or definitive designs, if available, will be used for design development. Department of the Army (DA) standard design packages developed under the DA Facilities Standardization Program (ER 1110-3-113) are mandatory for use and unjustifiable deviations will not be made. EP 1110-345-2 contains a listing of mandatory DA standard designs, as well as, other standard or definitive designs by facilities category codes.

(2) If a standard or definitive design, or a mandatory DA standard design does not exist, suitable existing designs for similar projects will be considered for site adaptation. This consideration should not be limited to local designs. Designs prepared in, or for, other USACE offices shall be considered. Factors to be evaluated when considering an existing design should include:

(a) Operational and functional requirements of the users.

(b) Compliance with the current version of the AEI, Design Criteria and other applicable criteria.

(c) Environmental factors, including architectural appearance, theme, and character.

(d) The ease of site adapting the existing project design to the specifics of the current project.

j. Telecommunication Systems. Telecommunication systems will be designed and installed as an integral part of all MCA projects in accordance with ER 1110-3-110.

k. Federal Information Processing (FIP). Federal Information Processing (FIP) Resources will be acquired in accordance with the FIRMR.

l. Recycled or Recovered Materials and Products. In accordance with EO 12856 dated August 3, 1993 and EO 12873 dated October 20, 1993, preference will be given to materials, products, systems or services that use recycled or recovered materials and products that are environmentally preferable as defined by EO 12873.

m. In-house Design Policy.

(1) Operating MSC and districts should perform sufficient engineering and design work in-house to maintain a high order of competence in all management, design, cost estimating, and engineering disciplines required to accomplish the design work programs in a timely manner. Objectives of sustaining this in-house capability include:

(a) The attraction, development, and retention of capable architects, engineers, and other design professionals.

(b) The development and maintenance of a high level of expertise to advance the design professions and to provide adequate definition, direction and review of the work accomplished by A-E contracts.

(c) The development and maintenance of a readily available work force having the capability

and flexibility to quickly expand use of A-E contract assistance during mobilization and in natural disaster situations.

(d) The development and maintenance of expertise required for successful execution of design and construction programs.

(2) For military projects, these objectives generally can be met by in-house design of 25 percent of the total military design program. This percentage figure should be considered by districts and operating MSC when developing manpower and operating plans. Staffing needs will vary for special situations and as annual programs change in character and project mix, but the five-year average (current Program Year \pm two years) of in-house design should be between 20 and 30 percent of the total military program.

(3) In-house design of Superfund HTRW projects executed for the Environmental Protection Agency is limited to a maximum of 10 percent.

n. Design Costs. The cost to design any individual project depends on many factors such as the size of the project, the customer; the design schedule, and the complexity of the project. Districts and operating MSC should use the latest design cost targets published by HQUSACE (CEMP-ES) as a baseline when developing their detailed design cost budgets, but the final design budgets should reflect the total resources required to provide a quality facility at a fair and reasonable cost. Effective internal methods to identify, report, and control lost design shall be established in accordance with ER 1110-3-111.

o. Design Schedules. In establishing design schedules for a project, sufficient time will be allowed for: the formation of an effective in-house design team or for the selection of, and negotiation with, an A-E firm in accordance with ER 715-1-15; the development of an overall technical management plan; site surveys and foundation investigation; basic, functional and aesthetic design development; designer and customer partnering; resolution of criteria issues or wavier; development and checking of design calculations, drawings and specifications; technical review of the design to ensure overall design quality; special or mandatory reviews; compliance with FIRMR;

preparation and review of construction cost estimates; preparation of the draft DD Form 1354, Transfer and Acceptance of Military Real Property (ER 415-345-38); and performance of the biddability, constructibility and operability (BCO) reviews (ER 415-1-11). Schedules for each product produced by the district during the life cycle of the project will be included into an overall district project schedule that is developed early in the design process in conjunction with all the involved district project team members and customers. This up front planning is required as a part of the documentation for the project management plan that will be used to establish a baseline, measure performance, and provide an audit trail for improving accountability to the customer in accordance with ER 5-7-1 (FR).

p. Construction Cost Limitations. It is the responsibility of the MSC and district commanders, within the limits of good practice, to develop designs in such a manner that construction can be accomplished within the authorized construction cost. A current working estimate for control purposes will be prepared for each project at the earliest design stage practicable to determine whether or not construction can be accomplished within the authorization. Control estimates will be prepared and used as required by ER 1110-1-1300 and ER 1110-3-1300. If the estimate reveals that construction cannot be accomplished within the authorized amount, the district or MSC commander will promptly notify the appropriate - using service, MACOM, HQUSACE (CEMP-E and HQUSACE (CEMP-M), giving a complete statement of facts and recommendations. Work that is essential to aesthetics, such as harmonious building exteriors, landscape treatment and recreational areas will not be eliminated because of unforeseen construction costs of the primary facility. Cost limitations for certain facilities are stated in authorizing public laws cited in directives, and are summarized in ER 415-345-10. For contracted design, the A-E will be held responsible for designing within funding limitations in accordance with FAR 52.236-22.

q. Value Engineering (VE). A formal VE study will be used to reduce costs, increase productivity, and improve quality on all construction projects with a current working estimate (CWE) of \$2,000,000 or more. Exceptions to this requirement must be approved by the MSC Commander. Additionally,

VE studies should be performed on projects with a CWE between \$1,000,000 and \$2,000,000 where cost effective. These thresholds are established by the Office of Management and Budget Circular No. A-131, dated 21 May 1993.

(1) All VE studies and Value Engineering Change Proposals (VECP) shall receive the same level of technical and management review as any other design--decision or technical modification. Rejections of VECP (individual or groups within a study) totaling \$1,000,000 or more must be approved by the MSC Commander.

(2) Contractor VECP and the issuance of appropriate contract modifications, are excellent methods of promoting partnering concepts. Contractor VECP should be promoted, and given complete and fair consideration.

7, Design Responsibilities.

a. **HQUSACE.** HQUSACE (CEMP-E) is responsible for standard designs for repetitive facilities as defined in AR 415-15. The actual design preparation, including construction cost estimates, may be assigned to a Center of Standardization (COS), a Center of Expertise, or a MSC or district selected by HQUSACE to be a supporting USACE design agency for developing standard designs for Army facilities (ER 1110-3-109). Standard designs, cost estimates, and specifications prepared by, or for, HQUSACE, are updated periodically by the issuing offices. Except for standard designs, the design responsibilities of the USACE commander are delegated to MSC and district commanders. HQUSACE (CEMP-R) is responsible for designating MSC or district offices that are approved to execute the design of HTRW projects.

b. **Major Subordinate Commands (MSC)/Districts.** Responsibility for the development of functional criteria is set forth in AR 415-15 for Army construction, and AR 415-11 for Air Force construction. MSC and district commanders will follow the policies and fundamental concepts, described in AR 415-11 when performing Air Force construction. MSC and district commanders will coordinate with and use the services of the centers of expertise in accordance with the provisions of ER 1110-3-109

and ER 10-1-41, as they would any other engineering design or consulting service. Project designs will be prepared in strict accordance with established criteria, design directives, and other written instructions applicable to the project. MSC must ensure that district commands have a technical management plan in place for the review of specialized or complex project designs. Designs for HTRW projects will only be accomplished by HTRW design centers designated by HQUSACE (CEMP-R). Design of projects for remediation of ordnance and/or explosive waste (OEW) will only be performed by the U.S. Army Engineer Division, Huntsville (CEHND).

(1) The MSC or district preparing contract documents based on existing project designs, standard designs, or definitive level designs (such as most DA Standard Design Packages) will have complete design responsibility subject to the conditions stated in AR 415-15 or as otherwise stated by design directive. Such designs will be site adapted and modified to meet specific project requirements, such as, unusual foundation conditions, climate conditions, siting, and outside supporting construction such as grading, drainage, erosion control, walks, landscaping, roads, parking areas, information systems, and other utilities.

(2) The A-E will be held fully accountable for design in accordance with the Responsibility of the Architect-Engineer Contractor clause set out in FAR 52.236-23 and in accordance with ER 715-1-10. Other A-E responsibilities also include the preparation of a draft DD Form 1354, Transfer and Acceptance of Military Real Property (ER 415-345-38) and ENG Form 4288, Submittal Register (ER 415-1-10). In addition, A-E design shall be accomplished or reviewed and approved by architects, engineers or other professionals registered to practice in the particular professional field in accordance with FAR 52.236-25.

(3) MSC and district responsibility for design shall include coordination of interface between the functional requirements established by the using service and the criteria and cost controls established by HQUSACE and DA.

c. **Responsibility Interface.** In those instances when design and construction are performed in different districts, for reasons of time,

cost, economy of scale, or other factors, a Memorandum of Understanding (MOU) between districts is recommended. In these cases, the process of Inter-district/Inter-MSD project management continuity will be applied and the basic objectives and goals of project management explained in ER 5-7-1 (FR) will be protected.

d. HQUSACE Consultant Services. When major or unusual design or construction problems are encountered, MSD and district personnel are encouraged to seek the consulting services of specialists from any element of HQUSACE. This service is available upon request but will not constitute participation in the design of the project by HQUSACE except for the particular items for which the service is given. Travel and per diem, if required, will be on a reimbursable basis.

e. Services by Centers of Expertise. The successful execution of military construction projects require a thorough working knowledge of a wide variety of highly specialized engineering, design, and operational activities. The establishment of the centers of expertise in USACE is to provide many specialized engineering services and supports to USACE activities for purposes of economy and/or efficiency. The categories of centers of expertise currently established in USACGE are Mandatory Centers of Expertise (MCX), Technical Centers of Expertise (TCX), Centers of Standardization (COS), Design Centers, Technical Management Centers, and Support Centers. The missions and their respective responsibilities assigned to the centers are defined in ER 1110-3-109. The services to be rendered by each of the centers of expertise are generally advisory in nature, unless it is specifically mandated by HQUSACE, by regulations, or by directives.

8. Design Criteria.

a. General. The specific policies and general procedures herein; the AEI, Design Criteria and other criteria issued by HQUSACE (CEMP-E); and criteria issued by HQUSACE (CEMP-R) will govern all design development, except that:

(1) The special procedures in ER 1110-3-104 will be applicable to Army military family housing.

(2) The AEI, Medical Design Standards (MDS) issued by HQUSACE (CEMP-EM) will be applicable to Army medical facilities and MIL-HDBK 1191, issued by DoD, will be applicable to Army, Air Force and Navy medical facilities.

(3) Other Air Force construction will comply with applicable Air Force standards and criteria publications, as made applicable by directives.

(4) Construction for other agencies will comply with applicable directives.

b. Manuals and Design Criteria. The basic design guides for Army military construction are the HQUSACE AEI, Design Criteria, DA technical manuals (TM) in the TM 5-800- series, DA standard design packages, Engineering Technical Letters (ETL), Engineering Improvement Recommendations System (EIRS) Bulletins, the Corps of Engineers Abridged Guide Specifications (CEAGS), and the Corps of Engineers Guide Specifications (CEGS).

(1) Requests for changes in initial distribution will be submitted to HQUSACE (CEMP-EA), and requests for extra copies of individual DA manuals will be forwarded to the U.S. Army Adjutant General Publications Center, St. Louis, MO 63114-6181. Requests for Air Force publications will be submitted on DD Form 1149 (Requisition invoice Shipping Document) to the Air Force Publications Distribution Center, 2800 Eastern Blvd., Baltimore, MD 21220-2896.

(2) AEI, selected TM and other design criteria documents are available electronically from the Design Criteria Information System (DCIS). The HQUSACE proponent for DCIS is CEMP-EA DCIS is a computer system program in the Programming, Administration, and Execution (PAX) system available to all Army elements worldwide. Newsletter number 38 in the PAX system provides information on DCIS and instructions on obtaining access to DCIS.

(3) USACE Guide Specifications (CEGS), selected TM, standards, and other design criteria have been converted into full electronic text included under the DoD-sponsored Construction Criteria Base (CCB). The CCB utilizes the Compact Disc/Read-only-Memory (CD-ROM) delivery

system for disseminating data files. The HQUSACE proponent for CCB (CD-ROM) is CEMP-EA. Access to the CCB services can be arranged by subscription to the National Institute of Building Sciences, ATTN: CCB, 1201 L Street, NW. Suite 400, WASH, DC 20005.

c. Implementation of New Criteria. New criteria will be implemented as soon as possible consistent with the guidance provided below:

(1) Routine. Routine application requires the use of new criteria in future projects and in current projects, if received prior to initiation of site adaptation of standard drawings or at the 35 percent concept design stage.

(2) Special. Special application requires the use of new criteria in future projects and integration into projects already designed, by issuing amendments to bidding documents where necessary during the bidding period, but only if it is clear that bidders will have adequate time to receive and consider the changes without postponing bid opening.

(3) Immediate. Immediate application requires integration into all projects, including those already under construction, except- where immediate application would cause one or more of the following conditions: (a) delay critical beneficial occupancy dates, (b) result in negative cost/benefit ratio due to removal of construction already in place, (c) result in the loss of materials already delivered, or (d) require further funding which would require further apportionment or jeopardize funding of other items in the construction program. For such exceptions, the MSC is authorized to waive implementation of the change for an Army project, and for an Air Force project, the matter will be referred to the Air Force Center for Environmental Excellence, Construction Management Office (AFCEE/CMO), Brooks Air Force Base, San Antonio, TX for implementation approval. If new criteria are received shortly before bid opening, the changes will be incorporated in the bidding documents by the use of amendments, with postponed bid opening if necessary, rather than by issuing change orders after award of the contract. Unless special or immediate application is specified, new or revised design criteria issued by HQUSACE will receive routine application.

d. Deviations from Criteria. MSC commanders may, for a specific project, authorize deviations from criteria issued by HQUSACE, unless higher authorization is specifically required. MSC commanders may not delegate this authority and will promptly report to HQUSACE (CEMP-E) each instance in which it is exercised. Such report will be made in a timely manner, to permit time for comment by HQUSACE in case of objection and to permit time for any necessary corrective action by the district. While the results of an economic or life-cycle-cost (LCC) study may frequently constitute sufficient justification for a deviation from criteria on economic grounds, the reporting and approval procedure set forth above must still be followed before the deviation can be implemented. This applies not only to routine studies conducted in accordance with the provisions of AEI. Design Criteria, but also to special studies authorized or directed by HQUSACE. It is imperative that a HQUSACE directed economic or LCC study does not constitute a blanket authorization for deviation from criteria.

e. Design Criteria Feedback. MSC and district commanders will ensure participation by designers in Post Completion Inspection and Design Criteria Feedback -programs provided by ER 415-3-11. Suggestions for design improvement generated thereby will be evaluated by HQUSACE and implemented, as appropriate. Where latent deficiencies develop that are attributable to weaknesses in accepted design and construction practices, such deficiencies will be promptly reported by MSC and districts to HQUSACE (CEMP-EA) by letter containing a complete statement of the deficiency, cause or probable cause thereof, and corrective action taken or recommended. Where a case is urgent or of major consequence, a report will be relayed by telephone, followed by a detailed letter. MSC, district and area personnel are encouraged to inform HQUSACE (CEMP-E) of suggested changes to USACE criteria documents based on local experiences, lessons learned, and optional materials and method of construction. As prescribed by ER 1110-345-710 and ER 1110-345-720, ENG Form 3078 (Recommended Changes to Engineering Documents) will be used to recommend changes to standard designs or guide specifications, as prescribed by AR 25-30, chapter 2, section Vi, DA Form 2028 (Recommended

Changes to Publications and Blank Forms) will be used to recommend changes to technical manuals and other Army level publications.

9. Design Review Policy.

a. General. Prior to use for construction, designs will be given an independent review to verify overall design quality. The extent of this review should be commensurate with the complexity of the project and is not intended to be a detailed check, which is the responsibility of the designer. Guidance concerning design review as part of an overall quality control plan is contained in ER 1110-1-12. All design reviews will be accomplished using the Automated Review Management System (ARMS).

b. Levels of Review. Designs prepared by private A-E firms will normally be reviewed by the district office. in-house designs should be reviewed by a distinct, highly qualified, interdisciplinary, in-house team specifically selected based on the project's technical requirements. The use of Technical Centers of Expertise and Centers of Standardization for project reviews is strongly encouraged (ER 1110-3-109). To facilitate the design release process during the programming cycle, and to ensure the timely submission of pre-concept control-data, only a single level of review will be required for the concept design.

c. Special/Mandatory Design Reviews. In accordance with ER 1110-3-109 and other related guidance, certain projects, or portions of projects require special design review procedures or reviews by Mandatory Centers of Expertise (MCX).

(1) The Utility Monitoring and Control System (UMCS) MCX shall review all designs of UMCS, Energy Monitoring and Control Systems (EMCS), Supervisory Control and Data Acquisition (SCADA) Systems, and all other computer based monitoring and control systems which sense and control the physical environment in real time for all MSC and districts.

(2) All designs for HTRW projects will be reviewed by the HTRW MCX.

(3) All project design submittals for electronic security systems including intrusion detection

systems of six or more zones must be reviewed by the Intrusion Detection Systems MCX.

(4) The Protective Design MCX shall review all electromagnetic shielding projects. Special design review procedures are required for protective design, including conventional blast-resistant design and ammunition facility design, in accordance with AR 385-60.

(5) All project designs for Army ranges shall be reviewed by the Army Range and Training Land Program MCX.

(6) All transportation projects shall be reviewed by the Transportation Systems MCX.

d. Specialized or Complex Designs. Specialized or complex designs, or projects that contain compressed schedules, shall receive added quality assurance attention. Each specialized or complex design shall be reviewed by professionals with the appropriate expertise either from a center of expertise, from in-house staff, by A-E contract, or from another USACE activity. Each district command must have a technical plan for managing specialized or complex projects This plan should include all design review discipline requirements regarding scheduling, cost and quality; shall be part of the overall project management plan; and must be performed in a highly efficient manner.

e. Construction Cost Estimates. Preparation, review, and approval of construction cost estimates shall be as described in ER 1110-1-1300 and ER 1110-3-1 300. All estimates prepared by A-E firms will be reviewed and validated by the cost engineering element of the design district or MSC. Estimates prepared by in-house personnel will be reviewed in accordance with established procedures. The quality and integrity of cost estimates will not be compromised in order to meet completion deadlines or imposed budget requirements.

f. Review and Approval by HQUSACE. Drawings, specifications, and cost estimates will not be submitted to HQUSACE except when required by specific regulations, design instructions, or design directives. Approval by HQUSACE or higher echelon where required, does not relieve the

designing or reviewing office, whether MSC, district, or A-E, of responsibility for analysis and review by its own staff to ensure the adequacy of design and agreement with current criteria, policies, standards, and directives.

10. Corrections and Suggestions for Improvements to Designs.

To take full advantage of experience gained through construction and to avoid the repetition of mistakes, errors, and omissions, ambiguities in designs will be reported promptly on discovery. ENG Form 3078 will be used for reporting, except where safety or other urgent considerations warrant immediate notification.

a. Improvements to the Standard Designs.

MSC, district, area and resident personnel are encouraged to inform HQUSACE (CEMP-E) of suggested changes to standard designs to improve construction, functional use or to effect savings. Such information will include suggested improvement based on local experience, lessons learned, and suggested optional materials and methods of construction. ENG Form 3078 will be used for reporting. ENG Form 3078 does not require a letter of transmittal and may be supplemented with ENG Form 3078A, if needed to fully explain the situation. If the standard design was prepared by a COS, TCX, or other USACE activity for HQUSACE, an information copy of the ENG Form 3078 (or teletype notification on urgent matters) and a statement of required corrective action will be furnished by HQUSACE to the COS or activity that supervised preparation of the standard designs.

FOR THE COMMANDER:

Appendix
App A - References and
Additional Resources

b. Improvements to Nonstandard Designs.

Where field-prepared (nonstandard) designs are site-adapted in other than the district performing the original design:

(1) Errors, omissions, and ambiguities discovered by the designing district will be reported promptly to other offices to which copies of such designs have been furnished. Such reports will include lessons learned with recommendations for remedial action.

(2) Errors, omissions, and ambiguities discovered by site-adapting districts will be reported promptly to the designing district, together with a statement of corrective action taken. Such reports will then be disseminated by the designing district, through its respective MSC, to other offices having received copies of the design.



WILLIAM D. BROWN
Colonel, Corps of Engineers
Chief of Staff

APPENDIX A

REFERENCES AND ADDITIONAL RESOURCES

1. Public Laws.

a. Metric Conversion Act of 1975 (Public Law 94-168) as amended by the Omnibus Trade and Competitiveness Act of 1988 (Public Law 100-418).

b. Energy Policy Act of 1992 (Public Law 102-486), October 1992.

2. Executive Orders.

a. Executive Order 12770, dated July 25, 1991, Metric Usage In Federal Government Programs.

b. Executive Order 12856, dated August 3, 1993, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements.

c. Executive Order 12873, dated October 20, 1993, Federal Acquisition, Recycling and Waste Prevention.

3. Federal Acquisition Regulations (FAR).

a. FAR Part 10, Specifications, Standards, and Other Purchase Descriptions. Specifically cited are subparts 10.002, Policy, and 10.004, Selecting specifications or descriptions for use.

b. FAR Part 11, Acquisition and Distribution of Commercial Products. Specifically cited is subpart 11.004, Market research and analysis.

c. FAR Part 14, Sealed Bidding. Specifically cited is subpart 14.208, Amendment of Invitation for bids.

d. FAR 36.203. Government Estimates of Construction Costs.

e. FAR Part 48. Value Engineering.

d. FAR Part 52, Solicitation Provisions and Contract Clauses. Specifically cited are subparts 52.236-22, Design Within Funding Limitations;

52.236-23. Responsibility of the Architect-Engineer Contractor; 52.236-25, Requirements for Registration of Designers; 52.248-1, Value Engineering; and 52.248-3, Value Engineering - Construction.

4. Code of Federal Regulations.

a. 10 CFR 435, Energy Conservation Voluntary Performance Standards for New Buildings, Mandatory for Federal Buildings.

b. 10 CFR 436, Federal Energy Management and Planning Programs.

5. Department of the Army.

a. AR 5-4, chapter 4, Value Engineering Program.

b. AR 25-30, chapter 2, section VI, Coordination, Approval, and Postpublication Comments.

c. AR 385-60. Coordination With Department of Defense Explosives Safety Board.

d. AR 415-11, Air Force Contract Construction.

e. AR 415-15, Military Construction, Army (MCA) Program Development.

f. AR 415-17. Cost Estimating for Military Programming.

g. AR 420-40, Historic Preservation.

h. DA PAM 600-45, Guidelines for Community Excellence.

i. TM 5-800- series.

6. U.S. Army Corps of Engineers.

a. ER 5-7-1 (FR), Project Management.

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b. ER 10-1-41, Corps-wide Centralized Functions and Special Missions Assigned to Divisions and Districts.

c. ER 415-1-10, Contractor Submittal Procedures.

d. ER 415-1-11, Biddability, Constructibility and Operability.

e. ER 415-3-11, Post Completion and Design Criteria Feedback Inspections.

f. ER 415-345-10, Congressional Limitations and Reporting Requirements.

g. ER 415-345-38. Transfer and Warranties.

h. ER 715-1-8, Architect-Engineer Contract Administration Support System.

i. ER 715-1 -10, Architect-Engineer Responsibility Management Program (AERMP).

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