

# **UNIFIED FACILITIES CRITERIA (UFC)**

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## **DESIGN BUILD TECHNICAL REQUIREMENTS**



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**UNIFIED FACILITIES CRITERIA (UFC)**

**DESIGN BUILD  
TECHNICAL REQUIREMENTS**

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U.S. ARMY CORPS OF ENGINEERS (Preparing Activity)

NAVAL FACILITIES ENGINEERING COMMAND

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Record of Changes (changes are indicated by \1\ ... /1/)

<b>Change No.</b>	<b>Date</b>	<b>Location</b>

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This UFC supersedes TI 800-03, dated 1 July 1998. The format of this UFC does not conform to UFC 1-300-01; however, the format will be adjusted to conform at the next revision. The body of this UFC is a document of a different number.

## FOREWORD

\1\

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with [USD\(AT&L\) Memorandum](#) dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States is also governed by Status of forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the more stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and Air Force Civil Engineer Support Agency (AFCEA) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: [Criteria Change Request \(CCR\)](#). The form is also accessible from the Internet sites listed below.

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- Whole Building Design Guide web site <http://dod.wbdg.org/>.

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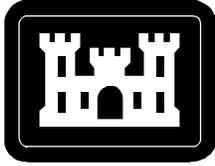
AUTHORIZED BY:

  
DONALD L. BASHAM, P.E.  
Chief, Engineering and Construction  
U.S. Army Corps of Engineers

  
DR. JAMES W. WRIGHT, P.E.  
Chief Engineer  
Naval Facilities Engineering Command

  
KATHLEEN I. FERGUSON, P.E.  
The Deputy Civil Engineer  
DCS/Installations & Logistics  
Department of the Air Force

  
Dr. GET W. MOY, P.E.  
Director, Installations Requirements and  
Management  
Office of the Deputy Under Secretary of Defense  
(Installations and Environment)



TI 800-03  
1 July 1998

**US Army Corps  
of Engineers®**

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# Technical Instructions

# Technical Requirements for Design-Build

Headquarters  
U.S. Army Corps of Engineers  
Engineering and Construction Division  
Directorate of Military Programs  
Washington, DC 20314-1000

## TECHNICAL REQUIREMENTS FOR DESIGN-BUILD

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**This Technical Instruction supersedes AEI, Technical Requirements for Design-Build (DB), dated 1 July 1997**

## FOREWORD

These technical instructions (TI) provide design and construction criteria and apply to all US Army Corps of Engineers (USACE) commands having military construction responsibilities. TI will be used for all Army projects and for projects executed for other military services or work for other customers where appropriate criteria are not available.

TI are living documents and will be periodically reviewed, updated, and made available to users as part of the HQUSACE responsibility for technical criteria and policy for new military construction. CEMP-ET is responsible for administration of the TI system; technical content of the TI is the responsibility of the HQUSACE element of the discipline involved. Recommended changes to the TI, with rationale for the changes, should be sent to HQUSACE, ATTN: CEMP-ET, 20 Massachusetts Ave., NW, Washington, DC 20314-1000.

TI are effective upon issuance. TI are distributed only in electronic media through the TECHINFO Internet site <http://www.hnd.usace.army.mil/techinfo/index.htm> and the Construction Criteria Base (CCB) system maintained by the National Institute of Building Sciences at Internet site <http://www.nibs.org/ccb/>. Hard copies of these instructions produced by the user from the electronic media should be checked against the current electronic version prior to use to assure that the latest instructions are used.

FOR THE DIRECTOR OF MILITARY PROGRAMS:



KISUK CHEUNG, P.E.  
Chief, Engineering Division  
Directorate of Military Programs

## DESIGN-BUILD

## TABLE OF CONTENTS

	Page
CHAPTER 1. GENERAL	
Paragraph 1-1. PURPOSE .....	1-1
1-2. WHAT IS A DESIGN-BUILD ACQUISITION PROCESS? .....	1-1
1-3. DEFINITIONS .....	1-2
1-4. DESIGN CRITERIA PROFESSIONAL TEAM .....	1-3
1-5. PROJECT CRITERIA APPROACH .....	1-3
1-6. KEY POINTS TO BE OBTAINED FROM THIS INSTRUCTION .....	1-5
CHAPTER 2. THE DESIGN-BUILD PROCESS	
Paragraph 2-1. GENERAL .....	2-1
2-2. DESIGN-BUILD PROCESS .....	2-1
2-3. DESIGN-BUILD REQUEST FOR PROPOSAL .....	2-2
2-4. DEVELOPING SPECIFICATIONS AND DESIGN CRITERIA FOR DESIGN-BUILD RFP .....	2-6
CHAPTER 3. ENVIRONMENTAL REQUIREMENTS	
Paragraph 3-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	3-1
3-2. LESSONS LEARNED .....	3-2
CHAPTER 4. CIVIL REQUIREMENTS	
Paragraph 4-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	4-1
4-2. LESSONS LEARNED .....	4-2
CHAPTER 5. ARCHITECTURAL REQUIREMENTS	
Paragraph 5-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	5-1
5-2. LESSONS LEARNED .....	5-2
CHAPTER 6. INTERIOR DESIGN REQUIREMENTS	
Paragraph 6-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	6-1
6-2. LESSONS LEARNED .....	6-1

<b>Table of Contents (continued)</b>	<b>Page</b>
CHAPTER 7. STRUCTURAL REQUIREMENTS	
Paragraph 7-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	7-1
7-2. LESSONS LEARNED .....	7-1
CHAPTER 8. FIRE PROTECTION REQUIREMENTS	
Paragraph 8-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	8-1
8-2. LESSONS LEARNED .....	8-1
CHAPTER 9. MECHANICAL/HVAC REQUIREMENTS	
Paragraph 9-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	9-1
9-2. LESSONS LEARNED .....	9-3
CHAPTER 10. MECHANICAL/PLUMBING REQUIREMENTS	
Paragraph 10-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	10-1
10-2. LESSONS LEARNED .....	10-2
CHAPTER 11. ELECTRICAL REQUIREMENTS	
Paragraph 11-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	11-1
11-2. LESSONS LEARNED .....	11-1
CHAPTER 12. COST ENGINEERING REQUIREMENTS	
Paragraph 12-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	12-1
12-2. LESSONS LEARNED .....	12-1
CHAPTER 13. VALUE ENGINEERING REQUIREMENTS	
Paragraph 13-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	13-1
13-2. LESSONS LEARNED .....	13-1
CHAPTER 14. DESIGN-BUILD CONTRACTOR'S DESIGN SUBMITTAL AND GOVERNMENT REVIEW	
Paragraph 14-1. MANDATORY DESIGN CRITERIA AND STANDARDS .....	14-1
14-2. LESSONS LEARNED .....	14-1

<b>Table of Contents (continued)</b>		<b>Page</b>
APPENDIX A.	SAMPLE PROJECT TABLE OF CONTENTS FOR DESIGN-BUILD RFP .....	A-1
APPENDIX B.	EXAMPLE TECHNICAL PROJECT CRITERIA TO BE PROVIDED BY THE GOVERNMENT IN ALL RFP'S .....	B-1
APPENDIX C.	EXAMPLE ADDITIONAL TECHNICAL PROJECT CRITERIA (TO APPENDIX B) TO BE PROVIDED BY THE GOVERNMENT IN PROJECTS WITH NOMINAL PROJECT CRITERIA .....	C-1
APPENDIX D.	EXAMPLE OFFEROR REQUIRED PROPOSAL RESPONSES TO AN RFP WITH <u>NOMINAL</u> PROJECT CRITERIA .....	D-1
APPENDIX E.	EXAMPLE ADDITIONAL TECHNICAL PROJECT CRITERIA (TO APPENDIX B) TO BE PROVIDED BY THE GOVERNMENT IN PROJECTS WITH <u>PARTIAL</u> PROJECT CRITERIA .....	E-1
APPENDIX F.	EXAMPLE ADDITIONAL OFFEROR REQUIRED PROPOSAL RESPONSES TO (TO APPENDIX D) TO AN RFP WITH <u>PARTIAL</u> PROJECT CRITERIA .....	F-1
APPENDIX G.	EXAMPLE ADDITIONAL TECHNICAL PROJECT CRITERIA (TO APPENDIX B) TO BE PROVIDED BY THE GOVERNMENT IN PROJECTS WITH <u>FULL</u> PROJECT CRITERIA .....	G-1
APPENDIX H.	EXAMPLE OFFEROR REQUIRED PROPOSAL RESPONSES TO AN RFP WITH <u>FULL</u> PROJECT CRITERIA .....	H-1

## CHAPTER 1 GENERAL

**1-1. PURPOSE.** The primary intent of this document is to provide instructions for preparing technical specifications contained in a Request for Proposal (RFP).

a. Specifically, this Architectural and Engineering Instructions (AEI) will:

(1) Ensure that RFP technical specifications for Design-Build (D-B) construction projects clearly define program/project requirements, performance attributes, performance factors, submittal procedures, as well as other mandatory requirements such as building envelopes. The Design-Build process can be applied to all types, sizes, and complexities of projects. This instruction focuses on the technical preparation of RFP's issued for D-B projects such as barracks, administration facilities, hangers, pavement, site preparation, and similar projects. The AEI, "Army Family Housing," provides instructions for family housing projects.

(2) Ensure Corps of Engineers' districts using D-B contracting methods have instituted good requirements in their Design-Build process so that D-B contractors incorporate public laws, executive orders, and mandatory design inputs into the final constructed product. These requirements should ensure all facilities are designed and constructed with the equivalent quality of traditional Corps of Engineers' constructed facilities.

(3) Identify mandatory Federal, technical, regulatory, fire protection, life safety code, and quality requirements that must be included in the RFP technical specifications.

(4) Establish a consistency in Corps of Engineers' prepared Design-Build RFP's.

(5) Provide the Corps of Engineers' designers with an understanding of their involvement in the D-B process so they can contribute to the corporate approach for D-B acquisition.

### **1-2. WHAT IS A DESIGN-BUILD ACQUISITION PROCESS?**

a. In contrast to the traditional method of design-bid-build where one contractor is selected for design and one contractor for construction of a project, Design-Build combines design and construction within a single contract. The D-B method uses competitive evaluation of technical proposals to select a contractor to design and build the project. For a contract award, the selection decision may be based on the best value to the Government from the combination of quality, management expertise, and price, but not necessarily the lowest price. Another selection method may be based on the lowest priced, technically acceptable proposal. This second method often is used for smaller scale or less complex projects that do not require a detailed technical proposal. See ER 1180-1-9, "Design-Build Contracting" for additional information.

b. Design by the D-B contractor usually takes place before and sometimes during construction activities in the D-B contract. When a design is being developed concurrent with

construction activities, this is called the "fast-track" approach. The fast-track approach is commonly used to combine design and construction time, which results in the project being completed in a shorter time period. Fast-track approach allows the D-B contractor to design portions of the work, start construction on those designs completed, and continue work while reviewing and designing other portions of the work. The phasing of these portions of work should be defined in the RFP to the extent of importance to the Government.

c. In the Design-Build process, final design solutions are provided by the D-B contractor, not the Government. The D-B contractor is responsible for his or her own design, construction quality, and for full compliance with the RFP and his or her accepted proposal. Unlike conventional design-bid-build, the goal of the RFP is to ensure that the adequacy and quality of desired construction are built into the criteria and documented during the evaluation process. The Design Criteria Professional Team must provide enough criteria in the RFP's technical specifications to ensure that the accepted proposal will result in a contractor-prepared design which meets the project requirements, and a completed project that meets the original quality and design intent of the RFP.

d. After award of the contract, the Corps of Engineers will review the D-B contractor's design (plans, specifications, shop drawings, and equipment cut sheets) for compliance with the RFP as contained in the offeror's the accepted proposal.

### 1-3. DEFINITIONS.

a. Management Team is a Corps of Engineers' corporate team established to guide the D-B project from the design directive through construction completion. The team consists of members from the customer, project management, engineering, construction, contracting, counsel, real estate, and others as required by the nature of the project. They examine key features and requirements peculiar to the project, select an acquisition strategy, and initiate the management plan for the project.

b. Design Criteria Professionals are senior level Corps of Engineers' in-house design professionals from architecture and engineering, or senior level architect and engineer design professionals from an outside architect-engineering firm, or other appropriate experts who prepare the technical requirements of the RFP. At least one representative from each major discipline will be included on the Management Team.

c. Customers are individuals or organizations that use the services provided by the Corps of Engineers. Possible customers are the users (tenants) of the facility, owner, Directorate of Public Works, base civil engineer, and major commands.

d. A Request for Proposal is the procurement document normally used to procure D-B projects. An RFP for a Design-Build contract should state project requirements, criteria, and evaluation factors. It provides the information as well as framework necessary for offerors to submit proposals.

e. Corporate Approach involves all key organizational elements of the Corps of Engineers (program management, engineering, construction, contracting, counsel, real estate, customer, and others as appropriate) at all times throughout the project.

f. Design-Build contractors are contractors experienced in combination design and construction projects from inception until final completion and the fast-track approach. Design-Build contractors are responsible for the quality of design and the quality of construction for the completed project.

g. Offerors are Design-Build contractors responding to the RFP with proposals.

h. A proposal is the official response from an offeror to the RFP. The proposal from the successful offeror will compliment the RFP, and both the RFP and proposal will become the official contract requirements.

i. Designers of Record are members of the contractor's Design-Build team. Team members check, approve, sign, date, and certify, prior to submitting the proposal to the Government, that the contractor's D-B design submittals comply with the contract requirements. There should be a designer of record for each area of work that requires submittal approval.

**1-4. DESIGN CRITERIA PROFESSIONAL TEAM.** When the D-B contracting process is considered as the procurement method, a Design Criteria Professional Team will be formed. This Team will develop the technical requirements of the RFP, evaluate the technical proposals, review the Design-Build contractor's design, and monitor the project throughout the construction stages of the project. The Design Criteria Professionals are key members of the Management Team and work closely with the Management Team to develop a corporate approach to the Design-Build acquisition process. The Design Criteria Professionals will assume the lead in preparing the technical requirements of the RFP within their own technical area of expertise and will remain an integral part of the Management Team from project inception to proposal evaluation to project completion. Along with the Management Team, they also are responsible for ensuring that a quality end-product meets or exceeds the requirements and expectations of the customer and that all essential and mandatory requirements are incorporated into the final constructed facility. The Design Criteria Professional Team may include non-Government organizations, such as A-E firms, that develop RFP's, but non-Government personnel will not participate on evaluation boards except as nonvoting advisors to Government personnel or as stated in FAR 15.413-2(f).

**1-5. PROJECT CRITERIA APPROACH.** Maintaining flexibility and innovation in design (and cost) solutions are important considerations when making decisions on the amount and type of technical criteria necessary in Design-Build projects. Design Criteria Professionals should include only as much criteria as necessary to ensure that essential and mandatory technical criteria will be met. The emphasis should be on performance criteria, in lieu of prescriptive criteria, to the extent practicable.

a. A project criteria approach is a strategic level assessment by the Management Team of how the project criteria should be developed to satisfy the project conditions and requirements. The selected approach will vary from project to project and will depend on how much control the Government must exercise over the design and how much latitude the Government intends to allow offerors in generating design solutions. The approach determines the level of criteria required in the RFP and the level of effort necessary in preparing the RFP. The approach also affects the proposal, the design after award, and the

Government's review of the contractor's design. The extent of criteria in the RFP can range from little to full project definition. The Management Team will determine the level of criteria necessary in the RFP. The Team should consider all the information available about the project and then determine the minimum criteria necessary to obtain a firm fixed-price contract which meets the Government's design intent and achieves the desired quality end-product.

b. An RFP can be prepared using one of three levels of criteria discussed below. The resulting offeror's proposal shall respond to the level of criteria established in the RFP. Appendices A through H are attached and provide examples of what may be required in the RFP and the offeror's proposal. The Management Team will determine among these three levels what is appropriate for the specific project. Or, a particular project may have some aspects of all three levels of criteria depending upon the specific requirements of the various technical areas, disciplines, and features. For example, the customer may want a specific layout and architectural theme, but solutions for structural, electrical, and mechanical may be left to the D-B contractor. The goal is to provide a balance between the RFP and the proposal development which provides the Government and the Design-Build contractor a clear, mutual understanding of the contractually required end-product. The three levels of criteria with resulting offeror's proposal are listed below.

(1) Nominal Criteria. Use appendix B plus C to prepare the RFP. Nominal criteria are typical of many Design-Build projects and essentially represent an almost total performance specification approach. The Government states the purpose, function, and characteristics of the project in sufficient detail to delineate and characterize functional features and the image or visual appearance of the project. For nominal criteria special site, architectural, structural, and mechanical requirements are identified. Minimum requirements for mechanical and electrical equipment layouts including provisions for testing, adjusting, balancing, and commissioning should be specified. Appendix B plus C provides an example of technical project criteria to be provided by the Government in RFP's. Appendix D provides an example of an offeror's minimum, required proposal to an RFP with nominal criteria.

An example of the Government's RFP versus offeror's proposal at the nominal criteria level for structural requirements follows:

- Appendix B indicates that the Government will provide the following information in the RFP technical specifications for structural.

Design criteria including codes to be used for design, minimum strengths, and basic design loads.

Special structural requirements including specific load conditions and deviations from National codes.

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Appendix D requires the offeror to provide the following information to the Government as part of the response or proposal to the RFP for structural roof framing).

Codes used for design, complete design loads, and material strengths. Special structural requirements including specific load conditions and deviations from the national codes.

Preliminary foundation and framing plans (includes typical foundations, floors, and roof framing).

Outline specifications (describing all structural elements and systems including soil compaction for foundations).

(2) Partial Criteria. Use appendix B plus E to prepare the RFP. Partial criteria represent the middle ground. The Government prepares concept floor plans which indicate a special mechanical and electrical equipment layout, overall dimensions, and desirable column locations. Enlarged floor plans are provided, as required, to explain special design conditions. Minimum requirements for mechanical and electrical equipment layouts including provisions for testing, adjusting, balancing, and commissioning should be specified. Preliminary exterior elevations and cross sections are required for special design requirements. A site plan is required to indicate the building orientation and circulation to the building entrances. Appendix F provides an example of an offeror's minimum required response to an RFP with partial criteria.

(3) Full Criteria. Use appendix B plus G to prepare the RFP. Full criteria represent a more prescriptive approach. The Government provides enlarged floor plans, fire protection information, typical wall sections to indicate materials' usage, and structure. The following would be included: Preliminary site plan, landscaping plan, exterior elevations, cross sections, floor plans, finish schedule, door schedule, foundation, framing plan, and sections. The criteria begin to resemble the traditional design of the design-bid-build approach. In many cases, the full criteria approach may only apply to critical project elements or features. In other cases, such as in "site-adapt" projects, the criteria may resemble a complete design. Appendix H lists the offeror's minimum required response to an RFP with full criteria.

c. Some Design-Build projects have project criteria developed in the RFP that essentially provide a complete design, with the minor details left to the D-B contractor. In this case, it must be made clear in the RFP that to be technically acceptable, the Design-Build contractor must provide the design and construction as indicated in the RFP. The award process is based upon "best value" considering past performance, experience, and technical capabilities of the construction contractor, as well as price. This can be an advantage when the Government wants to obtain a specific design and/or select a highly-qualified contractor for construction of specialized or critical facilities.

d. The Government's responsibility is to review the Design-Build contractor's design for compliance with the RFP. Review for compliance is normally limited to the RFP technical specifications and accepted proposal requirements. The Project Criteria Approach determines the extent of design and other requirements provided in the RFP technical specifications by the Government. The number of reviews, percentage of completion for review, and the design detail expected at each submittal must be determined as part of the Project Criteria Approach. The Government must specify in the RFP the submittal requirements for the Design-Build contractor's design.

**1-6. KEY POINTS TO BE OBTAINED FROM THIS INSTRUCTION.** The following are important points that should be obtained from this instruction in order to ensure quality and provide a successful project with the Design-Build Acquisition process.

a. When using the D-B process, a "corporate approach" should be used for project execution from design directive to project completion. With this process, engineering will not hand off a completed design to contracting for an advertisement, nor will contracting hand off the contract to construction with little or no engineering involvement after award. Each organizational element will stay involved in the project at all times.

b. After a contract award, the D-B contractor is fully responsible for his own design and construction and is liable for its faults. The Government should not place itself in an approval position unless there are critical designs such as energy feeds, heating, ventilating and air-conditioning (HVAC), energy budget limitations, utility monitoring and control systems (UMCS) preparation, electronic security systems (ESS), etc., in which the Government wants to share the risk in design with the D-B contractor.

c. The team of Design Criteria Professionals is an essential part of the overall corporate approach and should remain involved in the D-B project from inception to project completion.

d. The Management Team should decide the project criteria approach during acquisition planning. The goal is to provide a balance between the RFP and the proposal development which provides the Government and the D-B contractor a clear, mutual understanding of the contractually required end-product.

e. Any condition or element absolutely essential to the project must be stated in the RFP. The D-B contractor is only required to meet the minimum requirements of the RFP and his or her accepted proposal. The D-B contractor may elect to increase his or her technical evaluation advantage or conform to engineering and construction practices and standards that exceed the minimum requirements contained in the RFP. If the D-B contractor does propose higher quality or standards than the minimum requirements in the RFP, those standards will become part of the contract. The RFP should make it clear as to what advantage an offeror may gain (if any), by adding enhancements or innovative features in the proposal, or by conforming to higher engineering practices and standards than as specified in the RFP. The Design Criteria Professionals and other members of the Management Team are then responsible for reviewing the contractor's design to verify compliance with the combined RFP and accepted proposal. Reviewers should avoid making review comments requiring features or conformance to standards outside the requirements of the RFP and the accepted proposal. If the Corps of Engineers and customer requirements are not clearly defined and required in

the RFP, or specified in the accepted Design-Build contractor's proposal, the contractor will not be obligated to provide any of those preferences.

f. Evaluation teams should be instructed in evaluation processes and procedures. The procedures should be contained in a booklet or manual and given to the team. The instruction is normally provided by an advisor who is either a professional advisor or a contract specialist at a pre-evaluation meeting. Non-government personnel cannot be included on the evaluation team.

g. Partnering sessions are recommended between customers and the Corps of Engineers. The partnering relationship should help develop an understanding of the minimum quality standards required to create the project scope and to formally agree on all essential and mandatory design requirements prior to RFP preparation.

h. Partnering sessions are also recommended between the D-B contractor and the Government. This partnering relationship should help to develop and formally document a joint commitment between the Government and the D-B contractor in achieving specific goals and providing a quality end-product.

i. The D-B contractor should not begin construction work until the Government has reviewed the contractor's final design and has cleared it for construction. However, full final design for the entire project is normally not required before the D-B contractor may begin work. If fast-tracking is allowed in the project, the contractor may submit final designs for specific portions of work. Work may start on those specific portions after Government review and clearance for construction to begin. **Clearance for construction does not normally mean Government approval.** The risk for the design is assumed by the D-B contractor. However, there may be certain elements of design that the Government will want to share in the risk of design and require the D-B contractor to submit those elements for review and approval by the Government. Critical elements should be identified in the RFP technical specifications as requiring review and approval by the Government before clearance for construction will be given by the Government.

j. The RFP should state that no payment for materials incorporated into the work will be made if the required designer of record or required Government approvals have not been obtained.

## CHAPTER 2 THE DESIGN-BUILD PROCESS

**2-1. GENERAL.** A major responsibility of the Corps of Engineers is to ensure that customer requirements, construction quality, public laws, executive orders, and mandatory design inputs are incorporated into the final constructed product, resulting in a high quality project delivered within the programmed dollar amount. Fulfilling this responsibility is different for the Design Criteria Professionals in a Design-Build project than from a conventional design-bid-build project because the Design Criteria Professionals provide criteria not detailed in final design specifications. In order to fulfill this responsibility, a sound understanding of the D-B process is very important.

**2-2. DESIGN-BUILD PROCESS.** Normally, there are six basic phases in the Design-Build process. They are: Acquisition Planning, Predesign Activities, Develop Request for Proposal, Issue RFP and Receive Proposals, Evaluations and Contract Award, and Administer Awarded Contract. ER 1180-1-9 "Design-Build Contracting" provides detailed explanations of phases and activities. Design Criteria Professionals should be knowledgeable of the responsibilities that occur at each of these phases to ensure a quality product in the final design. Activities that Design Criteria Professionals should be involved in include:

- (1) Determining whether a project is suited to be acquired by the Design-Build Acquisition.
- (2) Determining if the Government agency has the necessary resources to complete the project as a Design-Build project.
- (3) Determining whether Design-Build RFP technical specifications should be prepared in-house or by an A-E firm.
- (4) Determining evaluation factors.
- (5) Determining the Project Criteria Approach.
- (6) Establishing project schedule and budget.
- (7) Scheduling data gathering.
- (8) Preparing RFP schedule.
- (9) Preparing, or reviewing if prepared by an A-E firm, the technical aspects of the RFP.
- (10) Conducting discussions during negotiations.
- (11) Preparing schedule for amendments.
- (12) Evaluating technical and cost proposals.

- (13) Participating in the pre-work conference.
- (14) Reviewing design after award.

### 2-3. DESIGN-BUILD REQUEST FOR PROPOSAL

a. General. Design-Build projects are normally procured through a one-step Request for Proposal solicitation; all offerors are screened and evaluated based on one submittal of their qualifications. Another method that may be used is a two-step RFP solicitation: Step 1 screens all offerors down to 3 or 5 based upon qualifications; price or detailed technical proposals are not reviewed. Step 2 includes awards based upon proposal evaluation for price versus technical tradeoff analysis. An RFP for a D-B contract should state proposal submission requirements, project requirements, criteria, and evaluation factors. The RFP should provide the framework and requirements necessary for offerors to submit proposals. The major parts of an RFP include:

- Instructions to Proposers
- Solicitation/Contract Form 1442
- Bidding Schedule
- Contract Clauses
- Special Contract Requirements
- Contract Forms
- Proposal Submission Requirements
- Evaluation Factors for Award
- Design Criteria
- Specification Criteria
- Design after Award
- Review Process
- Construction

Many of the standard construction contract items such as contract clauses, special contract requirements, and contract forms do not differ greatly from a conventional invitation for bid package. A major difference between conventional and design-build is in the technical and evaluation parts of the RFP. These include the Proposal Submission Requirements, Evaluation Factors for Award, Design Criteria, Specification Criteria, Design after Award, Review Process, and Construction. The information in these parts is prepared by the Corps of Engineers' Design Criteria Professionals. Each part is discussed below.

Unless a single design solution is requested in the RFP, the Government is soliciting a variety of designs. Each new project must have a Project Criteria Approach based upon what information is available, how much latitude is to be allowed to the offeror, and how much control the Government will exercise over the design and construction methods. All the technical evaluation areas of the RFP must adhere to this Project Criteria Approach and support or reinforce each other.

(1) Proposal Submission Requirements. This part must reflect the evaluation factors and agree with the Project Criteria Approach. Design Criteria Professionals must convey in the RFP the required data format, extent of design required by discipline and facility feature, and

specific technical information to be submitted by the offeror at the proposal stage to verify that the offeror's design solution will comply with the RFP. Specific technical information will be items such as site plans showing major location of buildings, floor plans, and descriptive information about heating, ventilating, and air conditioning systems. Normally, deviations from the technical requirements in the RFP will not be allowed. However, in those cases where allowing such deviations are in the best interest of the Government, the RFP technical specifications must specifically indicate where deviations may be allowed in the offeror's technical submittal, and how these deviations must be identified for evaluation by the Government. A checklist of submittal requirements including technical requirements may be included in the RFP.

(2) Evaluation Factors for Award. This part indicates major evaluation factors for an award and indicates the relative importance of each. Examples of these are the technical approach, management plan, past performance, construction time, and cost. The technical approach, management plan, and past performance will be scored. Cost will not be scored. An identifiable correspondence between evaluation factors, submittal requirements, and specification criteria must be maintained. Extreme care must be used to ensure that contract technical specifications match the Source Selection Plan and Section: 000110 SUBMISSION REQUIREMENTS AND INSTRUCTIONS of the RFP. Those items that are mandatory or critical to the operation of the facility must be provided in the project. Other features required by the Government will be included in the RFP as minimum criteria that must be provided for a proposal to be considered responsive. Evaluation factors for other features or systems and for improvements that exceed the minimums in the RFP should be distributed based upon project requirements and the relative importance of the various features and systems. Using a technical approach, there is a tendency to apply most of the points to size, shape, and aesthetics of the project. Other technical features such as long-term maintenance and repair, energy efficiencies, UMCS, electronic security systems, HVAC, lighting, energy conservation, and upgrading of finishes for durability should be considered. Superiority in these other technical features may provide better value to the Government and better meet the objectives and requirements of the customer. Using a management approach, the demonstrated qualifications, experience, and expertise of offerors should be evaluated.

**IMPORTANT:** Design Criteria Professionals are responsible for ensuring that appropriate evaluation weights are assigned. Overlooking the assignment of proper evaluation weight factors may cause offerors to emphasize features that are relatively unimportant to the user at the expense of other features that may affect facility operations, productivity, and customers' satisfaction. Where completion time of construction is critical, appropriate evaluation and weight factors should also be assigned.

(3) Design Criteria. In this part, the design intent of the project is conveyed to the offeror. Customer needs, expectations, and latitude of design must be made clear. Technical drawings and specifications will vary in completeness depending upon the Project Criteria Approach for that particular item or facility feature. The minimum design criteria requirements in the RFP, supported by the evaluation factors, indicate what the customer will be provided by the D-B contractor in the final project. Evaluation factors will not ensure desired, essential, or mandatory elements are obtained in the final project. The design criteria must specify minimum requirements of the desired, essential, or mandatory elements in the RFP.

(4) Specification Criteria. In this part, any general specification as well as specific specification criteria must be given to the offeror. It consists of outline specifications, narratives, or when appropriate, complete specifications.

(5) Design after Award. This part must clearly describe to the offeror what will be expected as a complete final design after an award of the contract. It must specifically describe or define what will be minimally acceptable to the Government as a final design. As a minimum, the final design should consist of detailed drawings, project descriptions, and quality and performance requirements.

(6) Review Process. This part must clearly convey to the offeror the number of design submittals that the D-B contractor must make. It must also delineate between those submittals to be reviewed only and those to be reviewed and approved by the Government. This will define the responsibilities of the D-B contractor and the responsibilities of the Government.

(7) Construction. This part must convey to the D-B contractor when design stops and construction may begin for any particular phase of the project. It will explain all construction requirements such as drawing submittal requirements, quality control, network analysis, and any other items required during construction.

b. Appendix A provides a recommended table of contents for a typical RFP and describes the location of major sections in the RFP. Design-Build projects accomplished with non-appropriated funds (NAF) will use a different format. For NAF projects use the format recommended by the NAF program. NOTE: NAF facilities are Federal facilities by definition and will require compliance with all Federal laws and mandates.

c. It is important to note that if the level of quality of an item is not clearly defined or otherwise required in the RFP technical specifications, the D-B contractor is not obligated to provide a Government preference. The Design-Build contractor's only responsibility is to comply with the RFP minimum requirements and the accepted proposal.

d. If the RFP requires D-B contractors to provide facilities in accordance with codes, standards, and specifications familiar to the contractor, Government reviewers must become familiar with the local codes, standards, and specifications. However, these local codes, standards, and specifications should be used only when they are acceptable for design of Corps of Engineers' projects. There are certain Federal requirements that are established by executive orders, public laws, local requirements, and other directives that are not contained in the potential D-B contractors' codes, standards, and specifications. In those cases, local codes must be revised as necessary to include all Federal requirements.

e. Almost all nationally recognized and industry accepted standards may be used for D-B projects. The Construction Criteria Base (CCB) distributed by the National Institute of Building Sciences (NIBS) provides an index of commercial specifications and standards referenced in Corps of Engineers' projects as well as most industry and Government standards. Industry standards, trade and manufacturing associations provide reference for establishing performance standards. The Construction Specification Institute (CSI) Manual of Practice suggests a list of attributes to consider when specifying building systems, equipment, products, and materials. It also lists tests for determining compliance with each attribute. It is

the D-B contractor's responsibility to use current, applicable codes and standards only to the extent referenced in the RFP or in the proposal submitted by the successful D-B contractor. Each Design Criteria Professional should review the D-B contractor's design to determine compliance with the codes and standards referenced in the RFP and the accepted proposal.

f. Existing Corps of Engineers' guide specifications, engineering instructions, technical manuals, and Architectural and Engineering Instructions (AEI) include most statutory or mandatory requirements and lessons learned. It is recommended that the RFP technical specifications advise offerors as to the availability of these criteria and that those items required by law, regulation, good engineering practice, and other items essential for the specific project is included in the RFP.

g. Government standards (ETL's, CE guide specifications, EC's, ER's, EI's, etc.) may be used in preparing the RFP, but should not be included by reference. Mandatory and essential requirements should be extracted from the applicable standards and included in the RFP technical specifications, or the standards may be included as an appendix to the RFP.

h. The RFP should specifically and clearly require O&M manuals and O&M training at the system level (i.e., HVAC system, electrical distribution system, etc.). During the design phase, the D-B contractor should develop a list of systems for which O&M manuals and training will be provided. During the construction phase, the D-B contractor shall complete the systems O&M manuals based upon actual equipment installed and provide O&M training to the user.

i. Preparers of RFP's should coordinate the RFP, design submittals, and construction activities with Corps of Engineers' Mandatory Centers of Expertise. ER 1110-1-8158 lists these Centers of Expertise; HQUSACE mandates their involvement. For example, coordination with the ESS and UMCS Centers of Expertise is critical to ensure successful integration and implementation of the associated systems and equipment.

j. Past experience has shown it is desirable to list the construction cost limitation (combined design and construction cost) in the RFP. This establishes a level of quality and places all the offerors on a level playing field. It avoids a misunderstanding by the offeror in cases where they provide a very high cost proposal when a proposal of lesser scope, quality, and performance was funded and required.

k. The use of additive alternates in Design-Build RFP's is discouraged. If it is suspected that the funds available for the project will not be sufficient to obtain all the scope in the initial RFP, options or bid items should be used to determine what can be obtained within the funds available.

l. When possible, the offerors should establish the contract period (design and construction). However, in the RFP the Government may feel it necessary to establish a maximum construction period. When early completion offers significant advantages to the Government, the RFP should strongly consider a time-emphasized evaluation factor with an appropriate weight factor assigned.

m. The D-B contractor is required to provide a design or proposal that meets the requirements of the RFP. If the RFP allows deviations and the Design-Build contractor is

submitting a deviation, these deviations should be clearly identified so the Government can easily identify and evaluate those areas.

n. The Government will review the D-B contractor's design for compliance with the RFP. Reviews are not normally for approval. Design risk is assumed by the Design-Build contractor. However, there may be certain elements of design that the Government will want to share the risk of design and require the D-B contractor to submit these elements for review and approval. These critical elements should be identified in the RFP technical specifications as requiring review and approval by the Government.

o. Project criteria for unique applications (Security, Tempest, etc.) which private industry firms have little experience with must be specifically identified in the RFP. When the Corps of Engineers has project criteria for these applications, they should be included in the RFP.

p. Commissioning (prove-out) is a critical issue. It should be required for not only HVAC but all complex systems such as plumbing, emergency generators, electronic security systems, UMCS, and integrated systems like fire alarms. The requirements for commissioning should be included in the RFP.

#### **2-4. DEVELOPING SPECIFICATIONS AND DESIGN CRITERIA FOR DESIGN-BUILD RFP.**

To the extent practical, the Government's needs will be stated in terms of functions to be performed, performance required, and essential characteristics.

a. General. Criteria can be performance or prescriptive as needed to meet the project requirements. In most cases there will be a combination of the two. An advantage of a D-B project is it allows the construction industry to propose a variety of design and technical solutions for a given project requirement. To maximize this advantage, the technical specifications and design criteria for a project should allow a wide range of designs and construction methods and materials while at the same time ensuring the quality levels required. Performance-oriented technical specifications and design criteria should be used to the extent possible in ensuring a quality product, in compliance with essential technical requirements. However, Design Criteria Professionals should be aware that the wider the range, the more difficult it is to evaluate proposals. Prescriptive requirements should be included when needed to ensure quality, comply with the minimum needs of the Government, and when only one or several selected alternate solutions are appropriate. The content and composition of the technical specifications and design criteria depend on the specific requirements and conditions for each project and project feature.

b. Performance Specifications and Design Criteria. Performance specifications and design criteria set forth ends to be achieved and not the means of achieving desired results. The features desired must be delineated completely and clearly, measurable or observable criteria must be established, conformance to criteria must be verifiable, and the specification must be free from unnecessary material and process limitations. Conformance with performance requirements can be verified through calculation analyses, materials testing, or simple observation. Verification may occur at the proposal evaluation stage, during final design review, or field testing during and after construction.

c. Prescriptive Specifications and Design Criteria. Prescriptive requirements can range from listing a minimum number of mandatory codes and standards to a requirement to use

Corps of Engineers' guide specifications, manuals, and similar documents in the design. Products, equipment, or system characteristics such as size, capacity, and efficiency, may be defined as minimum requirements in the RFP technical specifications.

d. Controls for Adequacy and Quality. When technical specifications are performance-oriented, many elements of final design and material or systems selections are delegated to the Design-Build contractor. However, the specifications should include controls to ensure minimum level of adequacy and quality. Design Criteria Professionals can exercise varying degrees of control over proposed design and construction solutions according to the specific project requirements. When developing performance-oriented specifications, the appropriate degree of control, the minimum level of quality, and the appropriate technical evaluation factors must all be determined to place priorities from most desired to least desired.

e. Maximizing Offerors Innovation. Optimum latitude is enhanced by specifying building elements in mainly performance terms and minimizing constraints on the configuration, materials, and methods. A specification of "Superstructure," for example, would include loading, seismic, fire safety, and other fundamental performance criteria. Performance requirements are qualified by prescriptive criteria to the extent necessary, such as by design standards for each structural approach.

f. Limiting Option. If the Corps of Engineers must retain greater control over configurations, materials, methods, and costs, it is necessary to limit the potential options available to the offerors. This control is ensured by more specific requirements, or by more precisely describing the specified building elements. The inclusion of specific data reduces the offeror's options to only those appropriate for specific project conditions.

g. Minimum Technical Requirements. Maximizing the use of performance specifications and minimizing the amount of design prior to receipt of proposals is not always appropriate. The use of prescriptive requirements is relative to the type of project and the need to clearly delineate specific project requirements in the RFP. Minimum features that the Government really want must be clearly stated as minimum technical requirements.

### CHAPTER 3 ENVIRONMENTAL REQUIREMENTS

**3-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. Executive Order 11514, Protection and Enhancement of Environmental Quality, March 5, 1970 as amended by Executive Order 11991, May 24, 1977 directs Federal agencies to implement NEPA (42 U.S.C. 4321-4361, The National Environmental Policy Act of 1962-19). Further, it requires that Federal agencies provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life. Among other items, the Executive Order requires that Federal agencies monitor, evaluate, and control, on a continuing basis, activities so as to protect and enhance the quality of the environment.

b. Public Law 95-217, Clean Water Act of 1977, as amended. Among other items, this Act establishes the National Pollutant Discharge Elimination System (NPDES) and requires Federal agencies to apply for a permit for each point source of wastewater discharge and comply with the conditions of each permit. Wastewater sent to a publicly owned treatment plant must meet pretreatment standards prescribed by this Act and by the agency that owns the treatment plant. The Act also requires that construction of facilities for the treatment of wastewater at Federal facilities after 30 September 1979, not be initiated unless alternative methods for wastewater treatment using innovative treatment processes and techniques are used. This requirement is not applicable when the life cycle cost of the alternative treatment works exceeds the life cycle cost of the most cost-effective alternative by more than 15 percent. This Act also requires that for certain pollutants, point source discharges will be treated using the best available technology economically achievable.

c. Clean Air Act, Public Law 95-90, Clean Air Act, as amended. Among other items, this Act requires Federal agencies to apply for permits to operate and to construct facilities which control stationary air pollutant sources and to comply with the conditions of each permit.

d. Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act, and Amendments (RCRA), Public Law 94-580, Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. Among other items, this Act requires Federal agencies to properly manage hazardous waste from its time of generation to its disposal. Agencies must obtain permits for their hazardous waste treatment, storage, and disposal facilities. Proper shipping papers (manifests), packaging, and labeling must be used when transporting hazardous waste. The 1984 amendments apply the requirements to persons who generate as little as 100 kilograms of hazardous waste in any month, and require registration and controls on underground tanks used for storing oil and hazardous waste.

e. Toxic Substances Control Act, Public Law 94-469, as amended. Among other items, this Act requires Federal agencies to properly manage the use and disposal of all toxic substances and management of Polychlorinated Biphenols (PCB) and items that contain PCB.

f. Executive Order 12088, Federal Compliance with Pollution Control Standards, October 13, 1978 outlines the policies that govern compliance with Federal, State, and local environmental standards by Federal facilities. The head of each executive agency is responsible for ensuring that Federal facilities are at all times designed, constructed, operated, and maintained in compliance with all Federal, state, and local environmental requirements. The Executive Order further requires that a plan be sent annually to the Office of Management and Budget (OMB) to provide for improvements necessary to meet applicable standards. Exemptions from applicable control standards may only be granted by the President. Furthermore, the construction or operation of Federal facilities outside the United States will comply with the environmental pollution control standards of general applicability in the host country or jurisdiction.

g. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, January 4, 1979, requires that responsible officials of Federal agencies take into consideration pertinent environmental considerations when making decisions on major Federal actions outside the geographic borders of the United States and its territories and possessions.

h. Executive Order 12316, Responses to Environmental Damage, August 14, 1981, delegates to the Secretary of Defense the responsibility for investigation and removal of hazardous substance releases from DOD facilities and vessels.

i. 42 U.S.C. 9601, Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended explains Federal agencies course of action for cleaning up sites where the agencies may have been wholly or partially responsible for contaminating the soil or groundwater. Also, the Act requires reporting of hazardous substance releases and previous disposal actions.

j. For Army sites, Army Regulation 200-1, Environmental Protection and Enhancement provides specific requirements for storing hazardous materials and compliance with local waste management and pollution abatement programs.

**3-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a high level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. Government should ensure that all buildings identified for renovation or demolition have been sampled and tested for the presence of hazardous materials, lead paint, or asbestos either by the customer or the Government. The RFP should include tests and corrective actions required by the Design-Build contractor to eliminate the hazard.

b. Government should identify the following information concerning construction permits: (Provide in a matrix format with this information as column headers)

Permitting authority (Federal, State, and/or local)  
Type permit required (construction and/or operation),  
who must obtain the permit  
When permit must be obtained  
Cost of permits

Who is responsible for paying permit cost

Provide sample permit applications forms in the RFP.

c. Identify operating permits as well as construction permits. Operating permits are permits for equipment operation such as air source permits for exhaust systems. Identify the permits the Government will obtain and those the Design-Build Contractor must obtain.

**NOTE:** Assigning responsibility for permits can become a Government liability issue. Design Criteria Professionals should exercise care and sound judgment in determining what permits should be the responsibility of the Government and what should be the Design-Build contractor's responsibility.

d. The Government must accept responsibility for permits or preparation of permit data that are out of the control of the Design-Build contractor.

e. The Government must accept the probability that permits on certain environmental project-related requirements can change from the time the RFP was developed until the actual time the design, construction or permit is executed. The RFP should contain the best available information. The Government will have to modify the Design-Build contractor's contract as changes occur.

f. Wetland areas and floodplain should be determined by the Government prior to advertising the RFP. Wetlands should be shown on the drawings included in the RFP.

## CHAPTER 4 CIVIL REQUIREMENTS

**4-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. Safe Drinking Water Act, Public Law 95-190 as amended. Among other items, this Act requires Federal agencies who own or operate drinking water distribution systems to ensure that the water meets primary drinking water standards, and where required, that such systems are registered, licensed, or permitted. This Act also requires that special attention be paid to the protection of designated sole source aquifers during construction and operation of Department of Defense (DOD) facilities.

b. Protection of Historic and Cultural Properties. Policies are issued by the following documents:

(1) Public Law 89-665, National Historic Preservation Act of 1966, October 15, 1966, as amended by Public Law 95-515, December 12, 1980.

(2) Archaeological Resources Protection Act of 1979, Public Law 96-95, 93 STAT-721.

(3) AR 420-40, Historic Preservation, 15 May 1984.

(4) TM 5-801-1, Historic Preservation, Administrative Procedures, November 1995.

(5) TM 5-801-2, Historic Preservation Maintenance Procedures, February 1977.

(6) Secretary of the Interior's Standards and Guidelines. For construction on military installation, plans must be coordinated with the local Environmental Coordinator or Environmental Manager.

c. Wastewater Collection and Conveyance System. The wastewater collection and conveyance system shall be designed in accordance with the Water Environment Federation Manual of Practice No. FD-4, Design of Wastewater and Stormwater Pumping Stations, and No. FD-5, Gravity Sanitary Sewer Design and Construction, except asbestos and asbestos cement products shall not be allowed. In addition, the designer shall comply with regulations and specific requirements of the installation.

d. Federal Standard 595, Uniform Federal Accessibility Standards.

e. Water Supply/Distribution Systems. The water system shall be designed in accordance with TM 5-813-5, Water Supply, Water Distribution Systems; American Water Works Association (AWWA) Standards; and National Fire Protection Association (NFPA)

Standard 24, Private Fire Service Mains and their Appurtenances. TM 5-813-5 should not be included in the RFP by reference. Applicable portions of the TM 5-813-5 should be bound in the RFP or the TM included as an appendix.

f. Storm Drainage System. EPA National Pollution Discharge Elimination System (NPDES) permits for construction activities may be required. The Design-Build contractor should be made aware of this in the RFP. The Design-Build contractor's design will determine the need for the permit. If the permit is required, the D-B contractor will prepare the documentation for the Storm Water Pollution Prevention Plan (SWPPP) and monitoring plan. This documentation will be submitted to the Contracting Officer's Representative (COR). The COR will submit the documentation for permit application.

**4-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a high level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

- a. Government should determine utility capacity and tie-in points.
- b. Potable water system pressure and capacity data tests (static and residual) should be done by the Government. Tests should be done in the last year or since the last major addition.
- c. Government should investigate acceptability and proximity of on-base borrow pits and spoil areas and include the results in the RFP technical specifications.
- d. Sufficient borings and/or test pits to delineate general subsurface conditions should be performed by the Government and data provided in the RFP technical specifications.
- e. The Government should provide in the RFP site-specific requirements such as local codes, required materials, materials restrictions, and work restrictions.
- f. Water meters are required for all new Army facilities with estimated water demands of 100,000 gallons per year or more. Add water metering requirements in the RFP when required.
- g. Points of connection to existing utilities should be identified. Adequate utility capacities should be verified at the points of connections.
- h. If available, topographic/planimetric should be accomplished via 3-D CADD and made available along with the RFP to offerors that request it.
- i. Utility locations should be shown to the extent known. Elevation data that would result in the profile of utilities can be extremely helpful if the D-B contractor is allowed to propose solutions to utility issues.

j. If possible, avoid using existing base maps or aerial photography for the site survey information. Change orders are costly during construction and delay the project. A current site survey should be obtained.

k. Consider a requirement to design for future expansion.

INACTIVE

## CHAPTER 5 ARCHITECTURAL REQUIREMENTS

**5-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. Occupational Safety and Health Act Considerations. The Occupational Safety and Health Act of 1970 requires that safety standards issued by the Secretary of Labor be followed in the work place. Section 19 of this Act requires Federal agencies to establish and maintain effective and comprehensive programs, consistent with the standards issued by the Secretary of Labor. Those standards issued by the Secretary of Labor that affect the design of buildings are principally found in the General Industry Standards, 20 CFR 1910, Occupational Safety and Health Administration, Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210. The design of all Army facilities that serve as places of employment will conform to, or be consistent with, all applicable standards published under the Occupational Safety and Health Act (OSHA) of 1970. In the case of an apparent conflict between this document and OSHA Standards, the standard providing the greatest degree of safety will govern.

b. Master Plan. Master plan development will consider the planning goals and objectives of the communities surrounding Army installations. Review and coordination will be in accordance with AR 210-70, Intergovernmental Coordination of DOD Federal Development Program and Activities, 31 December 1984. Master plans and proposed designs for individual projects on installations located within the National Capital Region (NCR) will be submitted in accordance with instructions contained herein as directed by AR 415-15, Army Military Construction Program Development and Execution to the National Capital Planning Commission (NCP) and The Commission of Fine Arts (CFA). The Management Team should review the Master Plan and provide guidance in the RFP so that offerors will be knowledgeable about how the Master Plan applies.

c. Physical Disabilities Background. Design and construction of Department of Defense buildings and facilities must ensure that they will be readily accessible to individuals with physical disabilities. Design and Construction must conform to the Uniform Federal Accessibility Standards (UFAS) and the Americans With Disabilities Act (ADA) of 1990. The Americans With Disabilities Act (ADA) of 1990 provides comprehensive civil rights protection to individuals with physical disabilities in the area of public accommodations, employment, State and local government services, transportation, and telecommunications.

d. The project shall be designed in accordance with all regional and national applicable codes (such as the Uniform Building Code, NFPA 101 and 13, etc.). The RFP must reference codes and standards the offeror shall comply with.

e. Building construction. Building construction criteria are listed in Military Handbook, MIL-HDBK 1008C, Fire Protection For Facilities. FRT plywood will not be used, except in nonstructural applications that are not subject to elevated temperatures or high humidity. FRT plywood will not be used in any part of the roof or roofing system.

**5-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a high level of quality. These lessons learned should be reviewed and included as appropriate in each new project.

a. There should be a minimum quality standard established between the Corps of Engineers and the customer. All customer requirements should be approved by the customer's major command.

b. All design requirements should be agreed upon during the pre-design activities. The customer and Corps of Engineers are responsible to review the RFP and to verify that the pre-design expectations and requirements are accurately represented and understandable in the RFP technical specifications.

c. The Government should collect equipment and furniture lists from the customer. These lists should include all existing equipment to be reused, Government-furnished and Design-Build Contractor-furnished equipment. These lists should be included in the RFP technical specifications.

d. Entrance Doors to Main Mechanical Equipment Rooms. Entrance doors to heater/boiler rooms and to main mechanical equipment rooms should have entrance doors directly from the outside only.

e. Chillers and mechanical equipment located outside the central plant should be shielded from view.

f. Mechanical and electrical rooms and spaces, and telecommunications rooms and closets, must comply with applicable codes, and be sized to house all necessary equipment and provide easy access for maintenance, testing, repair, and removal of equipment. In addition, sufficient space must be provided to allow for testing, adjusting and balancing of air and hydronic systems and for commissioning and recommissioning of the facility. Future expansion of communications rooms and closets shall be considered. Where standard designs are used, the size of mechanical and electrical rooms and spaces, and telecommunications rooms and closets must be modified, as necessary, to accommodate all the equipment installed.

g. Past projects have shown problems with roof leaks. The RFP shall make it clear that the Design-Build contractor is responsible for providing a roof that does not leak. Areas with potential leak problems should be pointed out in the RFP. The Offeror's proposal and the D-B contractor's design after award should be thoroughly reviewed by the Government for materials, installation, and constructibility, to ensure that roofs will not leak.

h. Critical design requirements must be clearly defined in the RFP to ensure that the successful offeror will provide them in the finished project. Critical requirements may include, but not be limited to, maximum U-values for walls and roofs, specific wall designs with vapor barriers to preclude high humidity problems, thermal analyses and testing of building envelopes, and special type windows with the percent of glazing allowed specified.

i. Consider a requirement to design for future expansion.

## CHAPTER 6 INTERIOR DESIGN REQUIREMENTS

**6-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. In accordance with ER-1110-345-122, Engineering and Design, Interior Design, interior design is required on all new building construction and renovation projects regardless of funding sources. Two types of interior design services can be included in the development of the RFP technical specifications. These two types of services are (1) building-related interior design and (2) furniture-related interior design. Follow the regulation indicated for design criteria and standards in the planning, design, and procurement of building related and furniture related items.

b. In accordance with FAR 8.6, all furniture and prewired workstations must be procured from UNICOR, Federal Prison Industries (FPI), unless a waiver is obtained from the FPI prior to advertisement of the RFP.

**6-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in future RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. Prior to preparing the RFP technical specifications, the Government should identify customer furniture and equipment requirements, existing furniture to be used in the new project, basic space layouts, and functional adjacencies. Building related and furniture related designs should be fully coordinated and considered during concept development.

b. Prior to preparing the RFP technical specifications, if prewired workstations are to be part of the construction contract, the Government should determine customer requirements and determine the number of typical workstations required.

c. Determine the image the customer wants to project through the use of building-related finishes.

d. If required, state in the RFP technical specifications that the D-B contractor must provide the following information in the Interior Design Package after award review. Display books or illustration boards are typically provided in 8-inch by 11-inch format and contain the following:

**Building-Related Interior Design Package**

- (1) Title Page
- (2) Table of Contents
- (3) Narrative of interior design objectives
- (4) Interior Color Placement Plan
- (5) Color Boards
- (6) Interior signage color boards
- (7) Pre-wired workstation color boards
- (8) Interior Floor Plans
- (9) Signage plans
- (10) Material, Finish, and Color Schedules
- (11) Pre-wired workstation floor plans
- (12) Pre-wired workstation elevations, panel, and component lists.
- (13) Pre-wired workstation electrical, data, and voice plans

**Furniture-Related Interior Design Package**

- (1) Title Page
- (2) Table of Contents
- (3) Narrative of furniture related design objectives
- (4) Interior Renderings if required
- (5) Composite furniture and systems furniture floor plans
- (6) Manufacturer's summary list
- (7) Furniture Location Code
- (8) Furniture Placement Plans
- (9) Furniture Illustration Sheets
- (10) Artwork illustration Sheets
- (11) Itemized Cost Estimate
- (12) Furniture Order Forms
- (13) Letters of Justification and/or Waivers
- (14) Color Boards

**NOTE:** The Government must verify that furniture requirements do not exceed the programmed amount.

## CHAPTER 7 STRUCTURAL REQUIREMENTS

**7-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

**Requirement:** Design loads and load combinations, except seismic shall be in accordance with the American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures, ASCE 7-latest edition.

**Seismic Requirements:** Seismic requirements are not addressed in this instruction. However, seismic requirements should be reviewed for each individual project, and the applicable seismic requirements and required codes for the project location should be included in the RFP.

**7-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a high level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. State the national and local codes to be used for design, minimum material strengths as required, and design loads. Design loads shall include design wind pressure, seismic zone, building classification or occupancy category, ground snow load, frost penetration depth, etc., as applicable. Design wind speed shall be taken from ASCE 7-latest edition. Building classification category, ground snow load, and frost penetration depth shall be taken from Engineering Instruction (EI) 01S901, Load Assumptions for Buildings.

b. Specify in the RFP technical specifications project-specific load conditions such as vehicular loads, cranes, special equipment loads, etc. State locations, weights, and special support requirements.

c. Specify in the RFP technical specifications special load conditions which must deviate from the national codes. Load conditions not included in the national codes shall be assigned by the structural design professional after consultation with other disciplines using the areas.

d. Available, accurate geotechnical information should be furnished in the RFP technical specifications. A sufficient amount of borings and/or test pits which adequately delineate subsurface conditions should be performed by the Government and be provided in the RFP technical specifications. The extent of Government-furnished data provided in the RFP should be carefully determined to maintain the Design-Build contractor's responsibility for the complete design and construction of foundations. It should be made explicitly clear that "The Design-Build contractor is fully responsible for an acceptable foundation." Some detail and definition may be necessary in the RFP to clarify what is required as an acceptable foundation.

e. The structural design is not normally described in detail in the RFP technical specifications. The structural system presents a significant opportunity for design innovation

and economy. Describing the structural system in detail in the RFP technical specifications makes the Government responsible for sharing potential Value Engineering savings with the Design-Build contractor, should the Design-Build contractor propose a different structural system. It also involves the Government in determining the structural system, which carries a certain amount of responsibility for the structural design.

- f. Identify location and weight of structurally hung equipment imposing loads.
- g. Provide location of in-slab pits and trenches on floor plans. This information should be obtained early in the design so that the locations can be confirmed to be in the proper location.
- h. Consider a requirement to design for future expansion--upward or lateral additions to the facility.
- i. Consider restrictions on framing systems. For example, will timber or light gage cold-formed, stud-bearing walls and floor/roof systems be allowed?
- j. Consider floor flatness, isolated floor areas, and special deflection criteria.

## CHAPTER 8 FIRE PROTECTION REQUIREMENTS

**8-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. The mandatory design criteria are those contained in MIL-HDBK 1008C, Fire Protection for Facilities, Engineering, Design, and Construction. MIL-HDBK 1008C contains fire protection and life safety requirements in the following areas:

- (1) Type of construction.
- (2) Height and area limitation.
- (3) Building separation.
- (4) Fire resistive construction.
- (5) Flame-spread and smoke-developed ratings.
- (6) Means of egress.
- (7) Special hazard protection.
- (8) Automatic sprinkler and fire suppression systems.
- (9) Water supplies for fire protection.
- (10) Standpipe systems and fire extinguishers.
- (11) Fire alarm and detection systems,
- (12) Connection to the base fire reporting system.

When MIL-HDBK 1008C is referenced in the RFP, it should be included as an appendix in the RFP.

b. MIL-HDBK 1008C may not include all the latest Federal requirements, established by executive orders, public laws, local requirements, and other directives that relate to fire protection and life safety. These requirements must be reviewed and included in the RFP as required for each project.

**8-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in future RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. Fire Protection Design Analysis. Require that the Design-Build contractor perform a fire protection design analysis in accordance with MIL-HDBK 1008C. The analysis should be submitted with the concept and/or preliminary design submittals.

b. Services of a Fire Protection Engineer. Require that the Design-Build contractor provide the services of a qualified fire protection engineer who shall be an integral part of the design team and be involved in all aspects of the design as it relates to fire protection, in accordance with MIL-HDBK 1008C. A "fire protection engineer" is defined in MIL-HDBK 1008C.

c. The Government should perform a preliminary hydraulic analysis to determine the adequacy of the existing water supply for required fire protection. The Government may use a recent flow test or historical data for this purpose. This analysis should not be used as the basis for design, but for project scope definition and for budgetary cost purposes. Hydraulic analysis needed for the design must be based on recent and accurate water supply test data, as stated below in paragraph 2d.

d. Water Supply Flow Testing for Fire Protection. The RFP should require that a water supply flow test be conducted by the Design-Build contractor to determine water supply available for the fire protection systems and for hose streams from fire hydrants. The test must determine the static pressure and the residual pressure at a flow rate which is equal to or greater than the combined sprinkler and hose stream demand. The test data will be used in the hydraulic analysis and as the basis for the design of the sprinkler system, the underground mains and the fire hydrants. However, if the Government can provide flow test data from a recent flow test, performed near the point of connection and conducted or witnessed by a trained engineer or technician, the requirement that the Design-Build contractor conduct a flow test can be deleted from the RFP.

e. The RFP should provide a detailed description of the required fire sprinkler protection, fire suppression systems and fire alarm/detection systems.

f. The Government should provide design narratives for each fire alarm system. The narrative should state how the Design-Build contractor will design each system. The RFP should indicate the required zoning of the fire alarm and detection systems. For non-addressable systems, the fire alarm and detection systems should be zoned by building, by floor and area, and by type of device.

g. The RFP should specify connection to the base-wide fire reporting system for monitoring of the fire suppression systems, and the building fire alarm/detection system. A detailed description of the base-wide fire reporting system should be indicated in the RFP.

h. Consider a requirement to design for future expansion.

## CHAPTER 9 MECHANICAL/HVAC REQUIREMENTS

**9-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains lists of Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included in the RFP as applicable for each new project. Force protection shall be considered and included in the project requirements. Requirements should be established in conjunction with the Corps of Engineers Mandatory Centers of Expertise for Protective Design and Electronic Security Systems.

a. Life Cycle Costs. As mandated by Federal laws and regulations, design decisions for all types of construction projects will be based on life cycle cost determinations and the impact on productivity and operating efficiency of the functions within the facility. Studies or other analyses will be made to consider the life cycle cost of the facility to arrive at an economical cost that takes into consideration not only the initial construction costs, but also the operating and maintenance costs of the building and its associated impact on the mission performance over the anticipated life of the facility.

b. Energy and Water Conservation. Where commercial standards, guide specifications, or codes are used, all laws, Federal regulations, Executive Orders, and lessons-learned applicable and essential to Federal facilities must be identified and specifically included in the RFP as a supplement to commercial criteria.

**NOTE:** The Corps guide specifications, engineering instructions, technical manuals, Architectural and Engineering Instructions, and Air Force Engineering Technical Letters represent current, maintained criteria in which all the mandatory and essential requirements for Federal facilities have been included. It is recommended that preparers of the RFP be thoroughly familiar with all the requirements of Federal-constructed facilities.

Preparers of the RFP are responsible for ensuring that all requirements are clearly stated in the RFP and that proposals accepted will result in final constructed facilities that meet or exceed all Federal laws and mandates. Current Energy and Water Conservation mandates and regulations include the following:

(1) Presidential Executive Order 12902. EO 12902 has many new energy and water conservation requirements including a mandate to specify and install all equipment with higher minimum efficiencies than those specified in Code of Federal Regulations 10 CFR Part 435 and that are competitively available and life cycle cost effective. Higher minimum efficiencies are being researched and are being incorporated into the CE guide specifications as newer, nonproprietary products become commercially available. These minimum efficiencies must be included in the RFP.

EO 12902 requires agencies to construct Showcase facilities to demonstrate new and innovative technologies. Many Design-Build projects are excellent candidates for Showcase facilities since the emphasis on Design-Build contracting allows for maximum innovation by contractors. Design Criteria Professionals should assess which projects will be good candidates for Showcase Facilities. The RFP may be developed with added emphasis and

requirements for innovative energy and/or water conservation features and nominated as a Showcase facility prior to or during the preparation of the RFP. A Design-Build project may also be nominated as a Showcase facility based on the selected contractor proposal. The point of contact for this effort is HQUSACE, CEMP-ET, (202) 761-8619, DSN 763-8619.

EO 12902 emphasizes demand side management, shared energy savings, utility incentive opportunities, and similar innovative contracting initiatives. Design Criteria Professionals should consider all opportunities, to the maximum extent practicable, to ensure that these opportunities for savings are included in Design-Build projects. The point of contact for this effort is Mr. Bobby Starling, CEHNC-PM-CR, (205) 895-1531, DSN 760-1531.

(2) Energy Policy Act of 1992 (Public Law 102-486) and Federal Regulation 10 CFR 436. This law and 10 CFR 436 mandates energy and water conservation and requires that, to the maximum extent practicable, all life cycle cost effective energy and water conservation features be implemented into new construction.

(3) Code of Federal Regulations 10 CFR Part 435. This Federal regulation is the basis for most energy conservation requirements and is mandatory for Federal facilities. Materials, U-factors, building orientation, glass ratings, energy efficient equipment including electric motors, temperature control systems, economizer cycles, heat reclaim, shading, etc., shall be used to the extent practicable and life cycle cost effective to provide an energy efficient facility in full compliance with 10 CFR 435. In design-bid-build projects, compliance is assured by use of Corps criteria and by achieving a design energy use less than the stated design energy target. The design energy targets are defined in Chapter 11 of the "Architectural and Engineering Instructions - Design Criteria" and are established in accordance with the specific weather region for each installation. For Design-Build projects, a similar approach may be used and the design energy use calculated by the criteria professionals if the RFP is to include sufficient design and prescriptive/performance requirements to insure that the completed facility will meet the requirements of 10 CFR 435. In most cases the RFP will not include sufficient detailed design requirements to allow effective calculation of the design energy use prior to evaluation of proposals and design by the successful Design-Build contractor. In this case, the RFP will include a requirement that the design and construction comply with ASHRAE Standard 90.1 in lieu of calculating a design energy use that is less than a given design energy target. ASHRAE Standard 90.1 is essentially identical to 10 CFR 435 and, like 10 CFR 435, presents several alternative conformance paths with the exception of a design energy target. It is the basis for local energy conservation building codes and should be familiar to private sector design and construction professionals. This approach will require that the Design Criteria Professionals be familiar with ASHRAE Standard 90.1, that they carefully evaluate each proposal and carefully review each design submittal, and that construction oversight and monitoring be provided by properly trained quality assurance professionals. In either case, the RFP will also include all of the minimum performance/prescriptive energy and water conservation requirements of public law, federal regulation, executive orders, etc.

c. The HVAC systems shall be designed and specified to the latest industry standards, codes, and Government regulations. The RFP shall ensure high quality, life cycle cost effective HVAC equipment and systems with minimum maintenance. Design documents shall be submitted and reviewed prior to commencing work on the HVAC system.

d. Sound and vibration. Latest edition ASHRAE Handbook, HVAC Applications, Chapter 42, and TM 5-805-4.

e. Single-Loop Controller (SLC) systems are currently the Army's standard. They are nonproprietary and may be connected to essentially any Utility Monitoring Control System (UMCS). The RFP must include the necessary Corps of Engineers' SLC technical manuals and guide specifications to ensure that the HVAC control systems installed are effective and reliable. Nonproprietary Direct Digital Control (DDC) systems may be allowed with an approved waiver. Proprietary or brand-specific DDC systems compatible with the installation's existing UMCS may be allowed as a Design-Build contractor's option to the SLC system. If DDC systems are allowed, the Corps of Engineers' standard drawings for DDC and guide specifications must also be included in the RFP. If a proprietary DDC system is allowed as an option, the brand name and other necessary features of the existing DDC or UMCS system, as well as the level of graphical interface that must be provided will be included in the RFP. Selection of systems to be allowed in the RFP should consider the desires of the customer, systems used in the existing facilities on the installation, and the facility management capabilities.

f. Utility Monitoring and Control Systems shall be designed in accordance with requirements of TM 5-815-2 and Corps of Engineers Guide Specification.

**9-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. During predesign phase, determine customer's requirements for HVAC. Determine if central energy plants are available. Discuss customer desired type of environmental systems (i.e., personnel comfort, process or computer cooling, freeze protection, etc.). HVAC system requirements included in the RFP should be approved and accepted by the customer and major command.

b. Discuss any requirements for connection to the installation energy monitoring control system or utility monitoring control system.

c. Discuss requirements for natural gas, fuel oil, and water flow meters.

d. The customer, major command, and Corps of Engineers must come to an agreement as to the type of building desired and list acceptable or unacceptable features and systems.

e. Selecting HVAC systems. HVAC system selections should be based on energy conservation, life cycle cost, and maintenance considerations as well as the functional requirements of the facility and the comfort levels in the spaces. Life cycle cost studies and energy analyses shall be performed by the Design Criteria Professionals when preparing the technical requirements for the RFP. The RFP should clearly indicate the HVAC system or systems to be used. Where appropriate, provide a listing of optional HVAC systems for the Design-Build contractor's selection. However, Design-Build contractors will tend to select from the allowable options based on initial cost.

f. HVAC system design. The completeness of the HVAC design included in the RFP will vary by project and the Design Criteria Approach selected for the HVAC design. The complete HVAC final design must be developed by the Design-Build contractor. HVAC system construction should not begin until HVAC final design has been reviewed and cleared for construction by the Government.

g. If interfacing with existing EMCS or UMCS systems is required, describe these existing systems in the RFP technical specifications. Ensure that the design/build RFP, design submittals, and construction activities are properly coordinated with Corps of Engineers Mandatory Centers of Expertise. ER 111-1-8158 lists these Centers of Expertise whose involvement is mandated by HQUSACE. For example, coordination with the ESS and UMCS Mandatory Centers of Expertise is critical to ensure successful integration and implementation of the associated systems and equipment..

h. Provide in the RFP technical specifications, the kind of air distribution (duct) system or systems required or allowable including the use of internal liners, external insulation and vapor barrier requirements and any plastic, FRP, or stainless steel ductwork. In humid areas, the external insulation should be restricted to cellular glass with vapor barrier.

**NOTE:** Corps criteria prohibits underground ductwork because of potential problems such as Radon, groundwater leakage, contamination from chemicals, maintenance and renovation, and testing and balancing difficulties. This is an example of where Corps criteria considers the health and well-being of our customers and future maintenance problems for installation as opposed to some practices that may be acceptable in the commercial sector.

i. Radon Mitigation. Identify the extent of Radon mitigation necessary and ensure that these concerns are specifically addressed in the RFP and in final constructed facilities, as appropriate. The Corps has recently completed EI 15M001, which supplements currently available commercial criteria on Radon. EI 15M001 provides specific information about when Radon mitigation is needed and the requirements for the mitigation.

j. Indoor Air Quality and Air Pollution. Special or additional ventilation requirements, or other pollution abatement requirements, must be clearly specified in the RFP. For example, there could include a user requirement for more air changes per hour, or special dehumidification/humidification needs. Another example may be that laboratory fume hoods may require special exhaust/ventilation systems or boilers may require special pollution abatement systems.

k. Testing, adjusting and balancing (TAB) of HVAC systems should be required in the RFP and confirmed in the field by a quality assurance professional. The HVAC systems should be accepted only after the required performance has been demonstrated.

l. HVAC system commissioning should be considered and included in the RFP on large or complex projects where the added expense is justified. Effective HVAC commissioning will require the combined efforts of the Design Criteria Professionals, quality assurance professionals, and the customer in partnership with the Design-Build contractor. Commissioning should demonstrate that the HVAC systems were constructed and will perform in accordance

with the RFP requirements, the accepted proposal, and the Design-Build contractors final design. In order to perform proper commissioning, the HVAC final design must include the following:

- (1) Duct layout and sizing with supporting calculations.
- (2) Maximum and minimum air flow at each terminal unit and at each diffuser/grill.
- (3) Mechanical Room layout and equipment positioning.
- (4) Piping layout and sizing.
- (5) Equipment Schedules.
- (6) Load Calculations.
- (7) Sequence of operation.
- (8) Location where TAB and commissioning measurements can and will be taken.

CEGS 15995, entitled COMMISSIONING OF HVAC SYSTEMS, provides detailed information on how commissioning of HVAC systems can be performed. The extent of commissioning required in the RFP should be based upon the size of the project and the complexity of the HVAC systems.

m. If the project is expected to have HVAC system components in high bay areas or in attic spaces, the RFP should require reasonable access to these components for routine maintenance. This access should not require the customer to employ unusual types of equipment.

n. Ensure that the design-build RFP, design submittals, and construction activities are properly coordinated with Corps of Engineers Mandatory Centers of Expertise. ER 1110-1-8158 lists these Centers of Expertise whose involvement is mandated by HQUSACE. For example, coordination with the ESS and UMCS Centers of Expertise is critical to ensure successful integration and implementation of the associated systems and equipment.

o. Consider a requirement to design for future expansion.

**CHAPTER 10**  
**MECHANICAL/PLUMBING AND OTHER SYSTEMS REQUIREMENTS**

**10-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. Mandatory Energy and Water Conservation Criteria. Title 10 CFR, Subpart A, Part 435, Energy Conservation Voluntary Performance Standards for New Commercial and Multi-family High Rise Residential Buildings, Mandatory For New Federal Buildings Published January 30, 1989; Public Law 100-615, Federal Energy Management Improvement Act of 1988, November 5, 1988; Public Law 102-486, Energy Policy Act of 1992; Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities, dated March 8, 1994; and Department of Defense energy goal requirements.

b. Codes and Standards. Water supply, backflow prevention, and drainage at Army installations will comply with the National Standard Plumbing Code [National Association of Plumbing-Heating-Cooling Contractors (NAPHCC), P.O. Box 6808, Falls Church, VA 22046] and other national codes.

c. Plumbing. All plumbing work shall be in accordance with NAPHCC-01 unless otherwise stated and as specified hereinafter. Water supply piping shall not be buried under concrete floors except where it is economically unfeasible to do otherwise. Hot water delivered to toilet facilities shall not exceed 100 degrees F and 110 degrees F to showers. Traps subject to drying out shall be fitted with trap primers.

d. Electrical Water Coolers. Mechanically refrigerated drinking water coolers shall conform to ARI 1010, and Lead Contamination Control Act of 1988, Public Law 100-572, October 31, 1991.

e. Design for the Physically Handicapped. Appropriate modifications to plumbing fixtures as required by Uniform Federal Accessibility Standards shall be included in all projects designated to be suitable for access by the physically handicapped.

f. Heat Distribution Systems. The following requirements are Headquarters requirements due to Army and DOD policy. There are no commercial standards for these systems. Therefore, ensure that the following is adhered to and included in the RFP:

Heat distribution systems for all sites will be selected by the Government and included in the RFP. The following order of preference will be used to determine type of system:

Aboveground  
Shallow Concrete Trench  
Direct-buried

Direct-buried systems shall only be provided where aesthetics or functional requirements preclude the use of aboveground or shallow concrete trench systems. Require direct-buried systems to use fixed-end seals only. Do not allow gland-type end seals. Direct-buried systems, when used, shall be in accordance with CEGS 02695 and the following criteria. Definitions for site classification are included in CEGS 02695.

**Buried Class A Sites:**

Where a direct-buried system is required, only allow prefabricated, drainable, dryable, air pressure testable (DDT) systems with steel casings.

**Buried Class B Sites:**

Where a direct-buried system is to be provided, only allow prefabricated DDT systems with steel casings or water spread limiting systems.

**Buried Class C and D sites:**

Where a direct-buried system is to be provided, only allow prefabricated DDT systems with steel casings, prefabricated water spread limiting systems, or field-fabricated, insulating, powder systems.

**10-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. Fixture Selection. Fixture descriptions shall be as described by the American Society of Mechanical Engineers, ASME A112.19, or other equivalent commercial item descriptions.

b. Compressed Air. If capacity requirements are known or can best be determined by the Government, they will be included in the RFP. This may include size and capacity of the air compressor and accessories. Also, pipe sizes, air outlet locations and similar features may be included, as appropriate. If the air compressor design is dependent upon the equipment, layout, or other facility options or alternatives selected by offerors, the criteria for designing the compressed air system must be included in the RFP, and the final, detailed, design must be provided by the successful Design-Build contractor. When appropriate, the compressed air system design or features will be included as part of each proposal and used in the evaluations.

c. Gas Piping and Gas Distribution Systems, Fuel Piping, and Heat Distribution Systems. If we want the Design-Build contractor to submit record copies of procedures or reports they should be required in the RFP specifications.

d. Natural Gas Distribution Systems. Require the design and installation of natural gas distribution systems and equipment to be in conformance with the manufacturer's recommendations and applicable sections of ASME B31.8, AGA-01 and CFR 49 Part 192.

Require the abandonment of existing gas piping be done in accordance with ASME B31.8, and require that any abandoned pipe be physically disconnected from any possible source of gas supply (with a minimum three foot section of the abandoned pipe removed).

e. Interior Natural Gas Piping Systems. Require the design and installation of the interior gas piping system to be in conformance with the manufacturer's recommendations and applicable provisions of NFPA 54, and AGA-01.

f. Fuel Storage and Piping Systems. Design and installation of fuel storage tanks and piping must be in compliance with the criteria guidance in CEGS 13202. Note that fuel systems shall conform to environmental regulations except that underground fuel storage tanks and piping shall be double wall. Also, note that the interior of fuel storage tanks must be coated in accordance with CEGS 09873. A reference requirement to CEGS 13202 will insure that fueling systems will offer necessary protection of the environment in accordance with Army and DOD policy for fuel systems. A coating requirement reference to CEGS 09873 will ensure compliance with Defense Fuel Supply Center policy and will ensure that the most life cycle cost-effective coatings will be provided. Include applicable portions of the CEGS specification in the RFP. There are also some standard designs for Fuel Storage and Piping. If appropriate, these may be used by including them in the RFP. Additional information for liquid fuel systems is available in MIL-HDBK-1022, Petroleum Fuel Facilities.

g. Elevators. Refer to Engineering Instruction (EI) 14M001, Elevator Systems; CEGS 14210, Elevators, Electric; and CEGS 14240, Elevators, Hydraulic. Government elevator inspectors use the provisions of those documents for certification. If elevators do not comply, there is a good chance that the elevators will not be certified, resulting in an expensive contract modification prior to acceptance. Compliance only to ASTM A17.1 is not adequate. There are many general provisions in that standard which could be interpreted by Contractors in ways that may not be considered safe, or in accordance with good engineering practice.

h. Consider a requirement to design for future expansion.

## CHAPTER 11 ELECTRICAL REQUIREMENTS

**11-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. Nonlinear loads. In all areas with raised floors and in areas (including but not limited to open office spaces and computer center) where nonlinear load type equipment predominates, such as computers, printers, uninterruptible power supply (UPS), motors with variable speed drives, electronic ballasts and dimmers and other similar loads, ETL 1110-3-403, "Electrical Power Systems for Nonlinear Loads," dated 30 June 1989; IEEE Std 1100 "Powering and Grounding Sensitive Electronic Equipment", IEEE Std. 519, "Practices and Requirements for Harmonic Control in Electrical Power Systems" shall be used as design guides. Additionally, the use of 75 or 90 degree C (minimum) terminals and insulated conductors is required and shall be so stated in the project and identified in the RFP documents. Use of 75 degree C conductors on circuits with protective device terminals rated for 60 degree C is inappropriate. National Electrical Code (NEC) and Underwriter's Laboratory (UL) rules and instructions shall be followed in applying the ampacity tables in the NEC beginning with Table 31-6. Since virtually all electrical equipment that meets the approval required by article 110-2 of the NEC is UL listed, the equipment must be installed in accordance with UL instructions. The basic rule of the UL Electrical Construction Materials Directory states that in general "the termination provisions are based on the use of 60 degree C ampacities for wire sizes No. 14-1 AWG, and 75 degree C ampacities for wire sizes Nos. 1/0 AWG and larger, as specified in table 310-16 of the National Electrical Code." Higher rated conductors than specified may be used if the size is based upon the previous statements.

b. ETL 1110-3-412, "Transformer Application Guide", will be used in the selection and application of transformers and dielectrics. For those areas with high nonlinear load, "K" factor rated transformers are required. Provide a schedule identifying the "K" factor rating for each area.

c. Engineering and design of Cathodic Protection and coatings are required as indicated in accordance with Army Engineer Technical Letter (ETL) No. 1110-3-474. Include requirements in the RFP. Requirements should not be included by reference to the ETL.

d. Interior voice and data communications systems will be designed in accordance with the applicable Telecommunications Industry Association (TIA) and Electronic Industries Association (EIA) documents. Specify in the RFP the applicable standard based upon the size of the project.

e. The design-build RFP must include the Corps of Engineers Electronic Security Systems Technical Manual (TM5-853-4) and appropriate Corps of Engineers Guide Specification to ensure that electronic security systems are reliable and effective.

**11-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in future RFP's in order to avoid past problems, define engineering

requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. Prior to preparation of the RFP, the Government should validate project power requirements and power source requirements. Also address power reliability, available unobligated capacity of base substation, and status of distribution lines to site. Ensure that the customer will commit the electrical capacity to the project. The point of connection to existing power should be specified in the RFP.

b. Prior to preparation of the RFP, the Government should determine all electrical/electronic systems that are required for the project. Provide performance requirements for those systems required. A list of some of the possible electrical/electronic components and/or systems that may be required on a given project are as follows:

- Telecommunication/Data Systems
- Cathodic Protection
- Special Grounding Systems
- Public Address Systems
- Security Systems
- Lightning Protection
- Special Power Systems (i.e., 400 Hz etc.)
- Power Conditioning Systems including UPS Systems
- Explosion-proof fixtures
- Standby or Emergency Generators
- UMCS

c. Provide a lightning protection system, in accordance with NFPA-780, if the risk analysis indicates that it is necessary.

d. Prior to the RFP technical specifications preparation, the Government should determine if the exterior power to the facility is to be overhead or underground. Whenever possible unless other factors direct otherwise, electrical service to the building should be underground.

e. Lighting design shall incorporate the latest techniques of energy savings applied to lighting systems.

f. Describe electrical metering equipment to be provided. If the facility has an UMCS or EMCS System, address method to provide signals to master station.

g. K-rated transformers shall be supplied to serve nonlinear loads. Ratings will be based upon type of load served. Generators serving nonlinear loads shall be derated in accordance with the ETL to prevent overheating. Panel boards and load centers serving nonlinear loads shall have double-rated neutral buses. Motors connected to the same power source as nonlinear loads shall also be upgraded in size similarly. True RMS sensing meters, relays, and circuit breaker trip elements shall be used with nonlinear loads. Lighting intensities shall conform to those recommended in the Corps of Engineers AEI Design Criteria.

h. If emergency/standby systems are required provide descriptions in the RFP. Include loads that will be connected to the emergency/standby system.

i. Cathodic protection and protective coatings shall be provided for the following buried or submerged ferrous metallic structures regardless of soil or water resistivity:

- (1) Natural gas and propane piping
- (2) Liquid fuel piping
- (3) Underground storage tanks
- (4) Fire protection piping
- (5) Ductile or cast iron pressurized piping under floor (slab on grade) in soil
- (6) Underground heat distribution and chilled water piping in ferrous metallic conduit in soils with resistivity of 30,000 ohm-cm or less.
- (7) Other structures with hazardous products
- (8) Steel casing for underground hydraulic elevator jack
- (9) Oxygen piping

j. Require the D-B contractor to have all predesign surveys, cathodic protection designs, and acceptance surveys performed by a person that is accredited or certified by the National Association of Corrosion Engineers (NACE) as a NACE Accredited Corrosion Specialist or a NACE certified CP Specialist or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metallic piping and tank systems.

k. Coordinate with the local Director of Information Management (DOIM) or equivalent personal to determine existing telecommunication capability and whether or not the existing facilities will need to be upgraded to support any new telecom-munications equipment and distribution systems installed as part of this project. Involve the DOIM during the design process.

l. Provide requirement of at least 25% spare spaces and capacity for electrical equipment (transformer, panelboards).

m. If prewired work stations are to be installed by the Government, it is critical that the occupancy and load requirements be described in the RFP or describe circuit organization and capacities the Government will need when they install workstations.

n. Require in the RFP, the Design-Build contractor provide training for each electrical system (generators, UPS systems, electronic systems, etc.)

o. Identify in the RFP any environmental conditions (humidity, highly corrosive areas, etc.) and special requirements for exterior cable, power and electronic equipment which will affect the selection and application.

p. Provide a minimum of one general purpose 120 volt, 20 ampere duplex receptacle outlet in each room. In rooms where walls exceed 3 meters, provide an additional duplex outlet for each additional 3 meters of wall or fraction there of. Receptacles spacing shall not exceed 3 meters. The general purpose receptacles are in addition to the special purpose and dedicated outlets for special equipment.

q. Each LAN workstation signed will be provided with an additional well-defined adjacent duplex receptacle on an independent single phase (20 ampere, 120 volt) circuit having not more than four duplex receptacles and a nonshared neutral. Where a 20 ampere, 120 volt receptacle is incorporated in the same metal box with a television, or LAN outlet, a partitioned metal box with separate power and signal conduits will be provided.

r. Provide independent circuits for FAX and copy equipment and laser printers and coordinate the location with the customers.

s. Discuss any requirements for connection to the installation electronic security system.

t. If interfacing with existing electronic security systems is required, describe these existing systems in the RFP technical specifications.

u. Consider a requirement to design electronic security systems for future expansion.

INACTIVE

## CHAPTER 12 COST ENGINEERING REQUIREMENTS

**12-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

a. FAR 36.203 requires that an independent Government estimate of construction costs be prepared for each proposed contract and for each contract modification anticipated to cost \$100,000 or more. The Government estimate is the formal, approved construction cost estimate prepared to support contract award. The Government estimates are used to evaluate reasonableness of proposals, to analyze Design-Build contractor's proposals during negotiations, and to serve as a guide in estimating a schedule of payments.

b. The authority, directives, and procedures for preparing construction cost estimates throughout all phases of project development including planning, program-ming, and design are provided in ER 1110-1-1300, ER 1110-3-1300, and ER 1110-3-1301. Technical guidance and procedures for preparation and review of cost estimates are contained in Engineering Instruction (EI) 01D010, Construction Cost Estimates.

**12-2. LESSONS LEARNED.** The following paragraph contains recommended information that should be considered in future RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. Review scope of work and Programmed Amount (PA). Verify that the cost estimate is based on the approved scope of work and the project can be designed and constructed within the PA.

b. The construction cost estimate should be prepared in accordance with the approved scope, latest design criteria, and construction requirements, and must include the design costs to be incurred by the D-B contractor. The construction cost estimate should be developed as accurately as possible, in as much detail as can be assumed, and be based upon the latest available information.

c. The cost estimate should be developed using the latest required and approved work breakdown structure as described in cost engineering regulations and technical manuals.

d. The project cost estimate includes all costs to complete the project regardless of funding source or fund type. Allowances such as inflation, construction contingencies, and supervision and administration are included.

e. Government cost engineers should perform independent review of all the cost estimate, whether prepared in-house or by outside private Architect Engineer contract.

- f. The cost engineer should participate in the development of project/construction schedule to ensure that the schedule reflects compatibility with the cost estimate in the application of manpower, equipment, material resources, and the project work.
- g. It is the responsibility of the Design Criteria Professionals to include project design criteria in the RFP technical specifications to ensure that the construction cost including allowances and design costs are within the funding cost limitation. Throughout the entire Design-Build process, close coordination between the Design Criteria Professional, the cost engineers, and the customer should be exercised to achieve cost control. All cost charges to the current working estimate must be explained and be properly documented in the estimate.
- h. If at any time, prior to contract award, the estimated costs (including design costs) are likely to exceed the programmed amount or budget, inform the project manager. When required, prepare and submit a ENG Form 3086. The form should indicate causes for the cost variation (e.g., revisions to scope, site conditions, Customer requirements). The prompt reporting of cost changes is imperative, as this will have a direct impact on the successful execution of the project.
- i. The bid schedule required by the solicitation documents should be completed as part of the Government estimate and must include a separate line identifying the design costs to be incurred by the D-B contractor. The format of the bid schedule should be anticipated in the planning and design estimates. As part of the Design Criteria Professional Team, the cost engineer should be involved in development of the bid schedule.
- j. Provide a requirement in the RFP that the offeror's construction cost estimate must be broken down to the systems level for buildings. Specify the estimate format and minimum level of cost data/breakdown to be provided by the Design-Build offeror and the time of submission (for example, three days after receipt of proposal). The lowest level of cost data/breakdown will allow a realistic review of cost items that may be eliminated during negotiations to bring the project within construction cost limitations. Cost engineering personnel will assist during negotiations, as required.
- k. The construction cost estimate should be prepared using the HQUSACE approved cost estimating software programs and data bases.
- l. The use of additive alternates in Design-Build RFP's is discouraged. If it is suspected that the funds available for the project will not be sufficient to obtain all the scope in the initial RFP, options or bid items should be used to determine what can be obtained within the funds available.
- m. Since electronic security systems are typically funded with procurement appropriations (OPA-3), cost estimates must separately identify electronic security system equipment and installation costs to facilitate proper resourcing.

## CHAPTER 13 VALUE ENGINEERING REQUIREMENTS

**13-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Although not all-inclusive, this paragraph contains Federal requirements that are established by executive orders, public laws, local requirements, and other directives. These requirements and all other Federal requirements must be reviewed and included, as applicable, in the RFP for each new project.

- a. Section 4306, PL 104-106, National Defense Authorization Act, February 10, 1996.
- b. Engineering Regulation 5-7-1, Project Management Dated 30 Sep 92
- c. Office of Management & Budget Circular A-131, Value Engineering, 21 May 1993.
- d. Section 911, Water Resources Development Act of 1986
- e. HQUSACE Policy (Feb 96)
- f. Federal Acquisition Regulation Parts 48, and 52.248

**13-2. LESSONS LEARNED.** The following paragraph contains recommended information that should be considered in future RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. The Government shall perform Value Engineering on the RFP prior to solicitation on any construction project with programmed amount (PA) or current working estimate (CWE) greater than or equal to \$2,000,000, and on any supply and/or service contract with PA or CWE greater than or equal to \$1,000,000. During the initial data gathering and field investigations, the Government should document all areas that have a potential for successful VE. The VE study should review design criteria as a minimum.

b. During the pre-work conference, the review of Value Engineering Change Proposals (VECP) will be discussed to ensure a consensus of how they will be reviewed during construction.

c. Include in any contract over \$1,000,000, the appropriate Value Engineering clause (either FAR 52.248.1 or FAR 52.248.3).

d. Value engineering change proposals should not permit substitution of lessor means, methods, or materials in any area where offering a higher solution was considered in awarding the contract.

## CHAPTER 14

### DESIGN-BUILD CONTRACTOR'S DESIGN SUBMITTAL AND GOVERNMENT REVIEW

**14-1. MANDATORY DESIGN CRITERIA AND STANDARDS.** Develop design submittal and Government review requirements based upon the selected Design Criteria Approach.

**14-2. LESSONS LEARNED.** The following subparagraphs contain recommended information that should be considered in future RFP's in order to avoid past problems, define engineering requirements, define design submittal requirements, and ensure a level of quality. These lessons learned should be reviewed and incorporated as appropriate in each new project.

a. State in the RFP technical specifications that the D-B contractor shall provide a complete, detailed design of the project and be fully responsible for that design. Provide a description of what is expected as a "complete, detailed design", as appropriate for the project.

b. For each project, during the Acquisition Phase of the Design-Build process, the Management Team will establish a realistic project schedule, identify a need for fast-tracking, decide the number of D-B contractor's design submittals, and identify the overall direction of the project.

c. For each project, the Management Team will attend a pre-work conference. The Contracting Officer's Representative will chair the conference. At this conference, the appropriate Design Criteria Professionals will ensure there is an understanding of how activities during construction will take place relative to a design review process and approval provisions. The minutes of this meeting should be formally documented with a copy furnished to the D-B contractor by official correspondence.

d. State the project's final design will have final specifications prepared from some nationally known specification system such as MasterSpec or the Corps of Engineers Guide Specifications.

e. After award of the Design-Build contract, Design Criteria Professionals shall review the contractor's design for technical compliance with the contract. During the review, Design Criteria Professionals' should avoid making comments on preferences desired for the project; preferences will not change the scope of the RFP. The D-B contractor will only be responsible to provide what is required by the RFP and the accepted proposal. Design review comments will be furnished to the Contracting Officer's Representative who will furnish the comments to the D-B contractor. Any changes or comments that the D-B contractor does not intend to comply with must be reported to the Contracting Officer's Representative.

f. Provide the Design-Build contractor's submittal requirements in the RFP as follows:

(1) Number of submittals required by the D-B contractor during the design.

(2) Contents of each submittal.

(3) Designate the submittals for D-B contractor approval only, and the submittals that require both D-B contractor and Government approval.

(4) The length of time the Government will require to review the submittals and return all comments to the D-B contractor.

(5) What constitutes final submittal of the D-B contractor's design (When is the D-B contractor's design cleared for construction).

(6) Copies, distribution, and mailing of submittals

The Project Criteria Approach will greatly determine the need, frequency, and detail of reviews required for each project. Design-Build contractor submittal requirements should be sufficient enough for the Government to ensure compliance with the RFP, the accepted proposal, and the desired quality of the end-product. Corp's District design manuals or standard operating procedures may provide a good source of information to determine review requirements.

g. Require that the D-B contractor have within in his organization a Designer of Record for each area of design or submittals that requires approval. One Designer of Record may be responsible for more than one area of design or approval submittal. Prior to submittal to the Government, all design submittals and approval submittals shall be checked and approved by the D-B contractor's Designer of Record, and each submittal shall be stamped, signed, and dated by the Designer of Record certifying that the submittal compiles with the contract requirements. Require in the RFP that all Designers of Record be registered professional designers.

h. Require Network Analysis for Total Schedule to include Design and Construction.

i. Ensure that the design-build RFP, design submittals, and construction activities are properly coordinated with Corps of Engineers' Mandatory Centers of Expertise.

**APPENDIX A  
SAMPLE PROJECT TABLE OF CONTENTS  
FOR DESIGN-BUILD RFP**

**PROPOSAL REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT**

00010	SOLICITATION, OFFER, & AWARD - SF 1422 BIDDING SCHEDULE
00100	INSTRUCTIONS, CONDITIONS & NOTICES TO OFFERORS
00110	SUBMISSION REQUIREMENTS AND INSTRUCTIONS
00120	PROPOSAL EVALUATION AND CONTRACT AWARD
00600	REPRESENTATIONS AND CERTIFICATIONS
00700	CONTRACT CLAUSES
00800	SPECIAL CONTRACT REQUIREMENTS

**SPECIFICATIONS**

**DIVISION 01 GENERAL REQUIREMENTS**

01010	GENERAL PROJECT DESCRIPTION AND GENERAL DESIGN REQUIREMENTS
01011	SPECIFIC ENGINEERING AND DESIGN CRITERIA
01012	DESIGN AFTER AWARD
01013	GENERAL CONSTRUCTION REQUIREMENTS
01300	SUBMITTAL DESCRIPTIONS
01310	CONTRACTOR PREPARED NETWORK ANALYSIS SYSTEM (NAS)
01440	CONTRACTOR QUALITY CONTROL
01561	ENVIRONMENTAL PROTECTION

The following specifications are for design requirements. They specify minimum requirements that shall be required in the final design and construction of this project. Final specifications shall be prepared incorporating these requirements as specified in Section: 01012 CONSTRUCTION DOCUMENT PREPARATION.

**DIVISION 02 SITEWORK**

02513	CONCRETE PAVEMENT FOR AIRFIELDS
02580	PAVEMENT MARKINGS

**DIVISION 16 ELECTRICAL**

16526	AIRFIELD LIGHTING AND VISUAL NAVIGATION AIDS
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**APPENDIX**

APPENDIX A	- Photographs
APPENDIX B	- Geotechnical Information

**APPENDIX B**  
**EXAMPLE TECHNICAL PROJECT CRITERIA TO BE PROVIDED**  
**BY THE GOVERNMENT IN RFP'S**

**General**

Offeror response requirements, elements/format.

General project description or mission statement addressing Government prioritized issues such as:

- Project size
- Functional priorities
- Time critical construction completion requirements
- Sustainable (permanence, quality)
- Image - "High" Profile (major urban facility) vs. "Low" Profile (infill, industrial park)
- Cost effectiveness
- Aesthetics and historical context (if appropriate)
- "Green design" environmentally-friendly
- Site complexity
- Future expansion parameters

Project specific design criteria including required guidelines, standard details, handicapped elements, security, etc., and all special or unusual criteria requirements believed to have a significant impact on the facility above those in a typical facility of same type.

List of Government-Furnished/Government-Installed Furniture and Equipment. Indicate the Design-Build's contractor's responsibilities for the equipment (comp. air, power, water, structural support, clearances etc.).

List of Government-Furnished/Design-Build Contractor-Installed Furniture and Equipment. Indicate the Design-Build's contractor's responsibilities for the equipment (comp. air, power, water, structural support, clearances etc.).

List of Design-Build Contractor-Furnished/Contractor Installed Equipment.

Agreements and jurisdictional constraints (with local utilities, site restrictions, permits obtained/needed and contacts on above.)

Environmental issues including impact statement/assessment, special investigations, any agreements or permits with other agencies and mitigation work.

Asbestos and lead paint reports. Identify who is responsible (the Government or the Design-Build Contractor) for removal of asbestos or lead paint.

Outline specifications briefly describing performance and quality for all disciplines.

Construction phasing (schedule of critical dates, allowed utility outages, security, times Design-Build Contractor is allowed to work in certain areas and other government restraints.)

Drawings/specifications of existing building if project is renovation or expansion.

Evaluation and selection criteria weighted matrix.

Exterior signage requirements.

### Site

Site Location/Zoning Analysis.

Geotechnical Report (include soils test analysis, permeability, CBR, site preparation requirements, and foundations requirements).

Site and Topographical Surveys (includes property lines, utility locations, easements, set-backs, all structures above and below grade, trees, wetlands, environmentally-protected areas, streets, roads, etc.). Provide finish contours as needed and required for completion of design by the Design-Build Contractor.

NOTE: The Corps should ensure that the site and topographical surveys and all other existing conditions provided to the Design-Build Contractor are accurate. The installation and other organizations should not be permitted to provide site and topographical surveys, and other information/conditions, directly to the Design-Build Contractor without verification. The Design-Build Contractor must be required to verify all site and topographical surveys and other existing conditions. The Corps should take extra precautions to ensure that the Design-Build Contractor verifies the site and topographical surveys, and other information/conditions, prior to beginning any work. These requirements should be made explicit in the RFP.

On-base borrow pits and spoil areas that the Design-Build Contractor may use during his Contract.

Water pressure and flow test.

Utility tie in points.

Stormwater Management System description.

Demolition drawings

Volume and traffic composition, so Design-Build Contractor can determine pavement thickness and structure.

Identify conceptual Landscaping, Planting and Turfing requirements. Describe existing site conditions, including indication of existing plant material that is to remain. Include a list of suggested types and minimum sizes of plant materials which are to be used. Indicate specific plant locations if specific plants are required by Customer or special site problems.

**Architectural**

Special requirements and use areas (furniture, signage, kitchen equipment, shops, auditorium seating, security, communications rooms, conference rooms, etc.)

User space requirements

Number of Employees including projections (M/F and shifts).

Major Dimensions.

Clear Heights required.

Demolition and Phasing Plan (for renovation/expansion projects).

If the Design-Build Contractor is expected to produce exterior elevations to match existing installation Architectural guidelines, Architectural guidelines from the installation should be provided in the RFP technical specifications. They should include style, details and other excerpts that explain the installation's overall Architectural Theme. (Pictures of acceptable buildings may be used to provide the information)

A narrative that discusses building related materials, finishes and colors. The narrative should define the building's aesthetic aspects with regards to life safety, image, budget, function, appearance retention, durability and maintainability. If specific applied materials are required to obtain an image or support a function these should be discussed.

A building related design narrative that emphasizes what image the interiors are to project, the materials to use in specific areas. If particular design related items are required such as crown moldings, corner guards, blinds, auditorium seating provide and narrative and be specific about where these items are installed.

Provide typical interior signage and any additional requirements for directional, informational, and regulatory requirements for interior signage. If prewired workstations are included in the Construction, require workstation signs.

**Structural**

Design criteria including codes to be used for design, minimum strengths and basic design loads.

Special structural requirements including specific load conditions and deviations from the national codes.

**Plumbing**

Special Plumbing Requirements (handicap requirements, low flow requirements, maximum hot water requirements, dilution basins, grease separators, sewage ejection, etc.).

**HVAC**

Design parameters listing for required conditions for all areas, number of occupants, hours of operation.

State the design conditions including indoor and outdoor temperatures, relative humidities for summer and winter conditions, filtration and ventilation requirements, personnel loads, and special equipment loads.

State the proposed building characteristics including 'U' Factors of walls, floors, roofs, windows, etc., orientation of the building, latitude and longitude of location, and any special conditions that would have an impact on HVAC design.

Energy budget target values, design temperatures and humidity requirements (Summer outside design dry bulb and wet bulb temperatures, winter outside design dry bulb, indoor design dry bulb and relative humidity range, special conditions such as room pressurization, 100% exhaust, 100% outside air, etc.). Special Services; i.e., compressed air natural gas.

Types of Equipment or systems Government does not desire; i.e., roof-top units, direct gas-fired vs. hot water or direct heating systems, chilled water or direct expansion, no fancoil terminals in humid areas, cooling towers on bases which demand air cooled chillers only, pneumatic control systems not desired, etc.

List of types of equipment or systems Government requires; i.e., chilled water insulation must be cellular glass, when single loop control systems are required, utility management and control systems, required interface with Utility Monitoring and Control Systems (UMCS), etc.

Monitor/Control Systems levels required.

Heat loads for Government furnished equipment

List required studies such as active solar water-heating feasibility study, life cycle cost (LCC) study, etc. Advise offerors of the availability of Corps of Engineers' programs such as SOLFEAS, the Corps Generic Study, and LCCID, where appropriate.

List acceptable HVAC loads programs, energy budget and life cycle cost software. Examples: BLAST, LCCID, Trane Trace 600, Carrier HAP, etc.

### **Fire Protection**

List areas Requiring Fire Protection or require the Design-Build Contractor to make selection of area fire protection requirements based upon applicable codes and standards for the use of the area.

If fire protection system is preferred, indicate the type.

### **Electrical**

Design Criteria (including type of fixtures, lighting levels, daylighting requirements, distribution, mechanization listing with power requirements, etc.).

Definition/Location of primary service.

Universal Wiring Concept requirements.

**Special Mechanical Equipment**

Narrative Description.

Outline of Deliverables and preliminary testing schedules.

Intermediate Engineering Drawings

Outline Specifications.

Concept Mechanical Equipment Plan (includes power, compressed air and heat load requirements).

INACTIVE

**APPENDIX C**  
**EXAMPLE ADDITIONAL TECHNICAL PROJECT CRITERIA (TO APPENDIX "B") TO BE PROVIDED BY THE GOVERNMENT IN PROJECTS WITH NOMINAL PROJECT CRITERIA**

Site

Special Site Design Requirements.

Pre-Concept Plot Plan (if available).

Architectural

Single-Line Cross Sections (two indicating clear heights).

Specific Exterior Aesthetic Parameters

Concept Floor Plans (includes special mechanical equipment layout, overall dimensions, desirable column spacing, expansion layouts for areas/departments).

Structural

Special Loading Criteria (including mechanical, electrical, and other specialized equipment. In cases where specific equipment has not been selected, an assumed load shall be given. After selection of the equipment, a review shall be made of the actual weight/load to ascertain its agreement with the design weight/load).

Required Bay Spacing.

**APPENDIX D**  
**EXAMPLE OFFEROR REQUIRED PROPOSAL RESPONSES TO AN RFP WITH NOMINAL**  
**PROJECT CRITERIA**

**General**

Firm Fixed-Price with RFP required breakdown of design fees, construction fees and major scopes of work.

Management Plan with project organization, staffing, previous experience, past performance, quality assurance plan, management approach and subcontracting plan.

Proposed Schedule including construction phasing, permitting, design and all major scopes of work.

Discussion of recommendations of revisions to Government-issued criteria (If allowed in the RFP technical specifications).

**Site**

Preliminary Site Plan (includes project boundaries, building orientation, location of streets - existing and proposed, parking lot layouts, service entrances, stormwater management, utility services, paving, curbing, walks).

Site Paving, Grading, Drainage Plan if contours are provided in the RFP technical specifications and requires this plan as a Proposal submission.

Typical road and parking lot sections.

Pavement Design Analysis.

Typical utility trench detail (with select backfill)

Preliminary Landscaping Plan (including kind, size and type trees, shrubs and ground covering).

Outline Specifications (includes preliminary specifications on all sitework items, including paving sections, earthwork, utilities, fire protection supply systems, miscellaneous site improvements).

**Architectural**

Preliminary Floor Plans (includes all levels and all rooms, furniture, preliminary equipment, doors, windows, special doors, shelves, vanities, counters, built-in cabinets and any special design features).

Preliminary Life Safety Plan and code analysis.

Enlarged Floor Plans as required to explain design solutions.

Artists Rendering.

Roof Plan (includes roof slope and drainage).

Preliminary Cross Sections (indicating building heights, structures, general construction).

Preliminary Exterior Elevations (includes material indications, windows, doors, signs, etc.).  
Typical Wall Sections (includes general construction and insulation).

Preliminary Finish Schedule.

Preliminary Door Schedule.

Details of special construction.

Outline Specifications (includes all architectural elements).

### **Structural**

Codes to be used for design, complete design loads, and material strengths.

Special structural requirements including specific load conditions and deviations from the national code.

Preliminary Foundation and Framing Plans (includes typical foundations, floor and roof framing).

Outline Specifications (describing all structural elements and systems including soil compaction for foundations).

### **Plumbing**

Preliminary Plumbing Plans (includes plumbing fixtures, diagram of mains for water supply, sanitary waste and compressed air system).

Outline Specifications (describing all systems and major equipment).

### **HVAC**

Preliminary HVAC Plans (includes single line diagrams indicating zoning, distribution, capacities of equipment and central plant layout, if applicable).

Systems Selection Analysis and discussion (Life cycle cost plus discussion of why system was picked).

Outline Specifications (describing all systems and major equipment).

### **Fire Protection**

Preliminary Fire Protection Plans (includes site, fire system, densities, and occupancy/hazardous classification for each area).

A description of the control system such as activation of the system, interlocks with HVAC system and connection to detection and alarm system.

Define the type of Automatic Fire Detection that will be provided.

Outline Specifications (describing all systems and major equipment).

**Electrical**

Preliminary Electrical Plans (includes typical lighting and power layout, handicap requirements, fire alarm, telephone and sound systems, site lighting, service type and size).

Outline Specifications (includes all electrical items and electrical/electronic systems).

Define any hazardous area by class, division, and group as defined in the National Electrical Code, and indicate type of equipment proposed for use in the area.

Ensure that the design/build RFP, design submittals, and construction activities are properly coordinated with Corps of Engineers Mandatory Centers of Expertise. ER 111-1-8158 lists these Centers of Expertise whose involvement is mandated by HQUSACE. For example, coordination with the Electronic Security Systems and Utility Monitoring and Control System Mandatory Centers of Expertise is critical to ensure successful integration and implementation of the associated systems and equipment.

**Special Mechanical Equipment**

Discussion of Deviations (if allowed in the RFP technical specifications) from Government-issued criteria.

**APPENDIX E**  
**EXAMPLE ADDITIONAL TECHNICAL PROJECT CRITERIA (TO APPENDIX B) TO BE PROVIDED BY THE GOVERNMENT IN PROJECTS WITH PARTIAL PROJECT CRITERIA**

**Site**

Special Site Design Requirements

Pre-Concept Plot Plan (if available)

**Architectural**

Concept Floor Plans (includes special mechanical equipment layout, overall dimensions, desirable column spacing, expansion layouts for areas/departments).

Enlarged Floor Plans as required to explain special design conditions.

Preliminary Exterior Elevations for special design conditions (includes material indication, windows, doors, signs.)

Preliminary Cross Sections for special design conditions (indicating building heights, structures, general construction.)

**Structural**

General description of structural system to be used for gravity and lateral loads.

Special Loading Criteria (including equipment)

Required Bay Spacing

**HVAC**

HVAC Systems Description

**Electrical**

Electrical Systems Description

**APPENDIX F**  
**EXAMPLE ADDITIONAL OFFEROR REQUIRED PROPOSAL RESPONSES (TO APPENDIX D)**  
**TO AN RFP WITH PARTIAL PROJECT CRITERIA**

**STRUCTURAL**

Descriptions of any deviation to structural system furnished by the Government, if deviations are allowed in the RFP technical specifications.

**Special Mechanical Equipment**

Discussion of Deviations (if allowed in the RFP) from Government-issued criteria.

INACTIVE

**APPENDIX G**  
**EXAMPLE ADDITIONAL TECHNICAL PROJECT CRITERIA (TO APPENDIX B) TO BE**  
**PROVIDED BY THE GOVERNMENT IN PROJECTS WITH FULL PROJECT CRITERIA**

**Site**

Preliminary Site Plan (includes grading, stormwater management, utility services, paving, curbing, walks.)

Preliminary Landscaping Plan or allowance amount.

Pavement Design Analysis.

Outline Specifications (includes preliminary specifications on all sitework items including paving sections, earthwork, utilities.)

**Architectural**

Enlarged Floor Plans as required to explain design solutions.

Preliminary Exterior Elevations (includes all levels and all rooms, furniture, preliminary equipment, doors, windows, special doors, shelves, vanities, counters, built-in cabinets and any special design features).

Preliminary Cross Sections (indicating building heights, structures, general construction.)

Preliminary Floor Plans (includes all levels with all rooms, doors, windows, and dock doors.

Preliminary Life Safety Plan and code analysis.

Artist's Rendering.

Roof Plan (includes roof slope and drainage).

Typical Wall Sections (includes general construction and insulation).

Preliminary Finish Schedule.

Preliminary Door Schedule.

Outline Specifications (for all architectural elements).

**Structural**

Preliminary Foundation, Framing Plans and Sections (including foundations, floor and roof framing).

Outline Specifications (describing all structural elements and systems).

**Plumbing**

Preliminary Plumbing Plans (includes plumbing fixtures, diagram of mains for water supply, sanitary waste and compressed air system.)

Outline Specifications (includes all plumbing elements).

**HVAC**

HVAC Systems Description.

Systems Selection Analysis and discussion.

Preliminary HVAC Plans (single line diagrams, zoning, distribution, capacities and layout of equipment).

Outline Specifications (includes all major HVAC equipment and systems).

**Fire Protection**

Preliminary Fire Protection Plans (including site, fire protection systems, densities, flow test).

Outline Specifications (describing all fire protection equipment and systems).

**Electrical**

Electrical Systems Description

Preliminary Electrical Plans (include typical lighting and power layout, fire alarm, telephone and sound systems, site lighting, service type and size).

Outline Specifications includes all electrical items.

Ensure that the design/build RFP, design submittals, and construction activities are properly coordinated with Corps of Engineers Mandatory Centers of Expertise. ER 111-1-8158 lists these Centers of Expertise whose involvement is mandated by HQUSACE. For example, coordination with the Electronic Security Systems and Utility Monitoring and Control System Mandatory Centers of Expertise is critical to ensure successful integration and implementation of the associated systems and equipment.

**APPENDIX H**  
**EXAMPLE OFFEROR REQUIRED PROPOSAL RESPONSES TO AN RFP WITH**  
**FULL PROJECT CRITERIA**

**Site**

No technical response required. All information needed for Firm Fixed Price furnished with RFP by Government as listed below.

Preliminary Site Plan not required. Furnished by Government in RFP technical specifications.

Preliminary Landscaping Plan not required. Furnished by Government in RFP technical specifications.

Pavement Design analysis not required. Furnished by Government in RFP technical specifications.

Outline Specifications not required. Furnished by Government in RFP technical specifications.

**Architectural**

No technical response required. All information needed for Firm Fixed Price furnished with RFP by Government as listed below.

Enlarged Floor Plans - Furnished by Government.

Preliminary Exterior Elevations - Furnished by Government.

Preliminary Cross Sections - Furnished by Government.

Preliminary Floor Plans - Furnished by Government.

Preliminary Life Safety Plan - Furnished by Government.

Artists Rendering - Furnished by Government.

Roof Plan - Furnished by Government.

Typical Wall Sections - Furnished by Government.

Preliminary Finish Schedule - Furnished by Government.

Preliminary Door Schedule - Furnished by Government

Preliminary Foundation and Framing Plans - Furnished by Government.

Outline Specifications - Furnished by Government.

**Structural**

No technical response required. All information needed for Firm Fixed-Price furnished with RFP by Government as listed below.

Preliminary foundation Framing Plans - Furnished by Government.

Outline Specifications - Furnished by Government.

**Plumbing**

No technical response required. All information needed for Firm Fixed-Price furnished with RFP by Government as listed below.

Preliminary Plumbing Plans - Furnished by Government.

Outline Specifications - Furnished by Government.

**HVAC**

No technical response required. All information needed for Firm Fixed-Price furnished with RFP by Government as listed below.

HVAC Systems Description.

Systems Selection Analysis - Furnished by Government.

Preliminary HVAC Plans - Furnished by Government.

Outline Specifications - Furnished by Government.

**Fire Protection**

No technical response required. All information needed for Firm Fixed-Price furnished with RFP by Government as listed below.

Preliminary Fire Protection Plan - Furnished by Government.

Outline Specifications - Furnished by Government.

**Electrical**

No technical response required. All information needed for Firm Fixed-Price furnished with RFP by Government as listed below.

Preliminary Electrical Plans - Furnished by Government.

Outline Specifications - Furnished by Government.

**Special Mechanical Equipment**

Discussion of Deviations (if allowed in the RFP) from Government-issued criteria.

INACTIVE