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	Construction BIDDABILITY, CONSTRUCTIBILITY AND OPERABILITY	
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DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
Washington, DC 20314-1000

ER 415-1-11

Regulation
No. 415-1-11

1 September 1994

Construction
BIDDABILITY, CONSTRUCTIBILITY, OPERABILITY, AND
ENVIRONMENTAL REVIEW

1. Purpose. This regulation establishes a system to ensure that the biddability, constructibility, operability and environmental (BCOE) aspects of a project are considered during design and a high degree of BCOE review is integrated into the construction procurement documents for all projects.

2. Applicability. This regulation applies to all HQUSACE/OCE elements, major subordinate commands, districts, laboratories and field operating activities (FOA) responsible for awarding and supervising construction contracts.

3. References.

- a. ER 5-7-1(FR)
- b. ER 10-1-3
- c. ER 37-345-10
- d. ER 415-1-10
- e. ER 1110-2-1200
- f. ER 1110-345-100
- g. ER 1180-1-6

4. Definitions. Constructibility and biddability are defined as the ease with which a designed project can be built and the ease with which the contract documents can be understood, bid, administered and executed. Operability refers to the ease with which a project can be operated and maintained. Environmental review refers to the protection of air, water, land, animals, plants and other natural resources from the effects of construction and operation of the project as stated in the Environmental Impact Statement or Assesment.

5. General. Biddability, constructibility, operability and the environment must be emphasized throughout the planning and design

process to ensure efficient construction that is environmentally sound, to minimize cost and time growth, to avoid unnecessary changes and claims, as well as to ensure safe efficient operations by the user. However, nothing in this concept should be interpreted as a substitute for complete design review for accuracy, adequacy and interdisciplinary coordination of design documents as required by ER 1110-345-100 and ER 1110-2-1200. The accomplishment of a quality design package requires the cooperation of project management, design, construction and operations personnel each contributing toward a common goal. Through such a coordinated effort, errors, conflicts and operational discrepancies can be minimized, and the most usable facility possible provided to the customer. These principles are applicable to both in-house and Architect/Engineer designs.

6. Guidance.

a. Division and district offices will coordinate project reviews by construction, engineering, project management, and operations personnel to improve the BCOE aspects of designs. Districts will ensure that construction and operations personnel, who are as familiar as possible with the project location and potential site related problems, participate in the reviews. These personnel should have extensive knowledge of the construction market place and experience in supervision and/or management of construction projects. They also should understand any unique problems and the application of design assumptions, principles, and specifications during construction and operation. Participation may extend to temporary assignment of construction and operations personnel to the project design effort prior to their assignment at the project site. Construction and operations personnel input is desirable both early enough in the design process to allow its incorporation during design development, and after final design and coordination reviews when the entire contract document is ready for advertisement, but sufficiently prior to advertisement to allow for corrections. Therefore, a minimum of two specific reviews will be performed by these personnel; the first will be made at the concept stage or at the on-board review when design process cannot be stopped (Military Programs) and after the design is sufficiently complete for substantive comment (Civil Works) (e.g., at completion of the feature design memorandum); the second will be made at final design stage with complete specifications including special clauses at least 30 days prior to advertisement. An additional review will be required when design has been completed and reviewed but release to prospective bidders has been held in abeyance for a period of time exceeding six months. The review comments shall be transmitted to the design branch thru the

Automated Review Management System (ARMS) from the area/resident office (Military Programs). In all cases, reviewers will be allowed adequate time in which to conduct their review. This time will be negotiated with the Project Delivery Team and included in the Project Management Plan. Reviewers will be advised, prior to advertisement, of actions taken on their comments. Design schedules will reflect these requirements and review times will not be adjusted due to slippages in design. A BCOE backcheck review for certification will be performed by Engineering and Construction Divisions prior to bid opening to ensure that all appropriate comments have been incorporated or resolved. This review will serve as the basis for the certification required by paragraph 7 of this regulation.

b. Items to be addressed in biddability and constructibility reviews performed by the Area Engineer, Resident Engineer and Construction Staff personnel will include, but not be limited to:

(1) Accurate depiction and adaptation of design structures and features to site conditions and restrictions such as access, utility availability, drainage, storage, existing underground utilities and general configuration.

(2) Appropriateness of contract sequencing, relationship to other work, contract performance time, contractor quality control (QC), submittal requirements and network analysis system provisions for the specific project.

(3) Adequacy of working area and storage space and access for all site contractors as well as provisions for coordination to preclude on-site conflicts.

(4) Clarity, simplicity and essentiality of the bid schedule.

(5) Local availability of special materials and labor skills.

(6) Have special installation requirements been addressed?

(7) Are the drawings and specifications free of ambiguities?

(8) Are essential details and proper verbiage included?

(9) Do the specifications include the list of submittals as required by ER 415-1-10? Does the list include only submittals

which are required to effectively administer the contract?

(10) Do the specifications address the impact of the construction on the environment? Is the contractor required to submit an environmental plan addressing how he will mitigate water, air, soil and noise pollution?

(11) Do the drawings adequately depict the site environment? Will the project encroach upon wetlands or endangered species habitat? Is erosion control adequately addressed?

c. Items of operability reviews to be addressed by the facilities engineer or responsible operations engineer personnel will include, but not be limited to:

(1) Architectural compatibility with existing facilities and established base plans.

(2) Adequacy of size and configuration of proposed facilities to meet the expected function or mission and inclusion of all necessary features.

(3) Compatibility of proposed installations and equipment with existing facilities for ease of maintenance and replacement.

(4) Adequate size of mechanical equipment and maintenance spaces to facilitate maintenance.

(5) Ease on maintenance and upkeep of planting and landscaping.

(6) Adequacy of position indicators on operating equipment.

(7) Adequacy of periodic inspection capability and ability to accomplish periodic maintenance.

(8) Provision of features for safe, efficient and economic operation including maximum energy conservation.

(9) Appropriate level of operation sensitivity and/or complexity.

(10) Design provides for operations which will be environmentally safe.

7. Responsibilities.

a. CHIEFS OF PROJECT MANAGEMENT will ensure that adequate time to accomplish these review activities, as outlined in paragraph 6.a, above, is included in the project baseline schedule. Further, they will ensure that adequate design funds for the accomplishment of BCOE reviews are reserved in the baseline budget as negotiated and included in the Project Management Plan in accordance with ER 5-7-1(FR).

b. CHIEFS OF ENGINEERING will ensure that BCOE reviews and incorporation or resolution of resulting comments are accomplished. They will provide documents for review and backcheck, evaluate comments, and provide feedback on disposition of comments. The Chief of Engineering or a duly authorized representative, Branch Chief or higher, will certify, in writing, that all appropriate BCOE comments have been incorporated in the bid documents or satisfactorily resolved and that feedback on all comments has been provided to reviewers.

c. CHIEFS OF CONSTRUCTION will ensure that BCOE reviews are performed in a timely manner, that review comments are furnished in accordance with established suspense, and conduct a backcheck. The Chief of Construction or a duly authorized representative, Branch Chief or higher, will certify, in writing, that all appropriate BCOE comments have been incorporated in the bid documents or satisfactorily resolved and that feedback has been provided to reviewers for all comments.

d. CHIEFS OF CONTRACTING will ensure that bid opening is not made prior to the above certification unless the contracting officer determines that it is in the best interest of the government to award without incorporation of all comments. A determination and findings signed by the contracting officer will be placed in the contract file in place of the certification when award is made without this certification. A sample certification is at Appendix A.

8. Action to be Taken. Division and district commanders will prepare implementation plans for accomplishing the reviews required by this regulation. These plans will ensure that effective BCOE reviews are accomplished in a timely manner and adequately documented. The necessary organizational structure to accomplish the functions stated herein will be developed

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consistent with ER 10-1-3. Manpower resources must be evaluated in light of the work requirements and supported within the existing district organization.

FOR THE COMMANDER:



1 Appendix
APP A - Sample Certification

R. L. VANANTWERP
Colonel, Corps of Engineers
Chief of Staff

APPENDIX A
SAMPLE CERTIFICATION

BCOE Certification

Project Title:

Specification Number:

Installation:

I certify that all appropriate biddability, constructibility, operability and environmental comments received and reviewed by this office by (Date) have been incorporated into the bid package. Feedback has been provided to reviewers for all comments.

Date

Chief, Engineering Division

Date

Chief, Construction Division