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	Engineering and Construction BIDDABILITY, CONSTRUCTABILITY, OPERABILITY, ENVIRONMENTAL AND SUSTAINABILITY (BCOES) REVIEWS	
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BIDDABILITY, CONSTRUCTABILITY, OPERABILITY, ENVIRONMENTAL AND SUSTAINABILITY (BCOES) REVIEWS

1. Purpose. The purpose of this regulation is to establish policy and systematic procedures for conducting effective reviews of a project's Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) characteristics. These reviews are done during design for a project using the design-bid-build (D-B-B) method or during development of the request for proposal (RFP) for a design-build (D-B) project. The BCOES review results are to be incorporated into the procurement documents for all construction projects.

2. Applicability. This regulation applies to all U.S. Army Corps of Engineers (USACE) organizations that perform design or award or administer contracts requiring construction or design-build (D-B) construction activities.

3. Distribution. Approved for public release, distribution is unlimited.

4. References.

a. Engineering Regulation (ER) 5-1-11 U.S. Army Corps of Engineers Business Process

b. ER 1110-1-12 Engineering and Design Quality Management

c. ER 1110-1-8159 Engineering and Design DrChecks

d. ER 1110-2-1150 Engineering and Design for Civil Works Projects

e. ER 1110-2-1156 Engineering and Design Safety of Dams Policy and Procedures

f. ER 1110-345-100 Engineering & Design Policy for Military Construction

g. ER 1180-1-6 Contracts – Construction Quality Management

h. ER 1180-1-9 Contracts – Design-Build Contracting

i. ER 11-1-321 Army Programs – Value Engineering

j. Engineer Circular (EC) 1165-2-214 – Civil Works Review

k. Enterprise Standard-08020 Biddability, Constructability, Operability and Environmental Review

5. Definitions. Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Considerations.

a. *Biddability* is defined as the clarity of the acquisition documents, the soundness of the government's evaluation and selection criteria for negotiated acquisitions, and the ease of bidders or proposers to understand the government's requirements, allowing the submission of a competitive bid or proposal that is responsive to the government's requirements.

b. *Constructability* is defined as the ease of constructing a specified or designed project according to the government's requirements, including the proposed construction duration, and the ease of understanding and administering the contract documents during their execution.

c. *Operability* is defined as the ability to efficiently operate and maintain a facility or facilities over their life cycle when the facility or facilities are built according to the project's plans and specifications.

d. *Environmental* is defined as the ability to best achieve stewardship of air, water, land, animals, plants, and other natural resources when constructing and operating the project, and complying with the Environmental Impact Statement or Assessment or other environmental-related project requirements. The USACE Environmental Operating Principles (EOPs) in ER 200-1-5 provide direction on achieving synergy between the environment and the execution of projects. The Environmental part of a BCOES review shall address all EOPs including compliance with all applicable local, state, and Federal environmental requirements.

e. *Sustainability* is defined as using methods, systems, and materials that optimize incorporation of a site's natural land, water, and energy resources as integral aspects of the development and minimize or avoid harm to the air, water, land, energy, human ecology and nonrenewable resources on- and off-site of the project.

6. Policies.

a. Emphasis on BCOES Considerations Throughout Project's Life Cycle. The value of BCOES reviews is based on minimizing problems during the construction phase through effective checks performed by knowledgeable, experienced personnel prior to advertising for a contract. Biddability, constructability, operability, environmental, and sustainability requirements must be emphasized throughout the planning and design processes for all programs and projects, including during planning and design charrettes. This will help to ensure that the government's contract requirements are clear, executable, and readily understandable by private-sector bidders or proposers. It will also help ensure that the construction may be done efficiently and in an environmentally sound manner, and that the construction activities and projects are sufficiently sustainable. Finally, effective BCOES reviews of design and contract documents will reduce risks of cost and time growth, unnecessary changes and claims, as well as support safe, efficient, sustainable operations and maintenance by the facility users and maintenance organization after construction is complete.

b. Applicability of BCOES Reviews to Different Methods of Delivery. The BCOES review processes are applicable to both in-house and Architect-Engineer designs, as well as to requests for proposals (RFPs) developed for D-B construction contracts, and for task orders under indefinite delivery construction contracts. BCOES reviews should also be done on all major

amendments to solicitations before the amendment is issued to bidders or proposers. The BCOES review process is necessarily adjusted to fit different methods of delivery and different types of projects. However, nothing in this ER or in the BCOES review process should be interpreted as a substitute for performance of a complete review of each design or RFP for accuracy, adequacy, quality, sustainability, and interdisciplinary coordination of design and technical requirements documents as required by ER 1110-1-8155, ER 1110-2-1150, ER 1110-2-1156, ER 1110-345-100, EC 1165-2-214 and other applicable directives or instructions. Reviewers will regularly check USACE lessons learned and knowledge management data bases prior to and during BCOES reviews in order to update their knowledge.

c. Effective Involvement of the Project Delivery Team (PDT) in BCOES Reviews. The accomplishment of a quality design or development of an effective RFP package requires the effective involvement of the entire PDT with project management, engineering, construction, contracting, real estate, legal, environmental, and operations or installation user/maintenance personnel each contributing toward a common goal of high quality construction. Errors, conflicts, disputes, delays, cost and time growth, and operational problems may be minimized through effective leadership by the project manager and the project's lead engineer, with effective involvement of the entire PDT throughout the project delivery cycle.

d. Ensure Involvement of Appropriate and Qualified BCOES Reviewers. Project Managers will coordinate project reviews at a variety of points during the project's life-cycle. These reviews will include the customer and/or using agency (including facility users and facility operators/maintenance staff), construction, engineering, project management, operations, and environmental staff to improve the BCOES aspects of designs in the D-B-B method of delivery and RFPs for D-B construction contracts.

(1) Districts will ensure that the reviewers include construction and operations-maintenance staff familiar with the project's location, project site conditions, potential site-related problems, and plans and requirements for post-construction operations and maintenance. These reviewers should have extensive knowledge of the construction market place, site and access constraints, local regulations, facility operations plans and constraints, environmental conditions and requirements, as well as experience in management of construction projects, determining construction durations, scheduling construction trades and activities, and experience in the operations-maintenance of facilities.

(2) The BCOES reviewers also should understand any unique problems and the application of design assumptions, principles, and specifications during construction and operation. Temporary assignment of construction or operations staff to the project design work prior to their assignment at the project site during construction will benefit both the design and the construction phases of the project.

(3) Construction and maintenance-operations staff inputs are necessary and highly beneficial early in the design process to allow effective consideration and incorporation of their recommendations during design or RFP development. Their reviews are also highly beneficial after final design and coordination reviews when the entire solicitation package is ready for advertisement, but sufficiently prior to advertisement to allow corrections in the solicitation documents prior to sending it to industry.

e. Scheduling of BCOES Reviews for Design-Bid-Build Project Delivery. Three specific BCOES reviews will be performed for projects using the Design-Bid-Build method of delivery. An additional review is required when design has been completed and reviewed, but release to prospective bidders has been held in abeyance for a period of time exceeding 6 months from the end of the last BCOES review.

(1) The initial BCOES review for projects using the D-B-B method of delivery will be made at the concept stage or at the on-board review stage when design process cannot be stopped (Military Programs) and after the design is sufficiently complete for substantive comment (Civil Works) (e.g., after basic criteria decisions are recorded in the Design Documentation Report).

(2) The second BCOES review for projects using the D-B-B method of delivery will be made at the final design stage when complete specifications including contract and special clauses are developed and fully incorporated in the solicitation documents, at least 30 calendar days prior to advertisement.

(3) The final BCOES review for projects using the D-B-B method of delivery will be a backcheck review (see paragraph g. below).

(4) Typically, the BCOES review period for large multi-discipline projects using the D-B-B method of delivery should be about 10 calendar days for the first (concept or on-board) BCOES review, about 21-30 calendar days for the second BCOES review, and about 15 calendar days allowed for back checking of comments. Additional BCOES reviews may be held at various stages of the Planning-Engineering-Design (PED) phase as determined by the lead engineer or project manager. The schedule durations for BCOES reviews for smaller, single-discipline projects would be less, and should be tailored to the project's complexity and staffs' capacities.

(a) In all cases, the Project Manager will ensure that BCOES reviews are mandatory parts of the Project Management Plan (PMP) and the PM will allocate adequate time and funding to conduct the needed BCOES reviews. The specific time and resources will be negotiated among the Project Manager and the PDT members and included in the Project Management Plan.

(b) The Project Management Plan schedule will reflect the BCOES review requirements mentioned above and durations of BCOES review times will not be arbitrarily adjusted due to revisions in design schedules or RFP preparation schedules.

(5) Design-Build (D-B) Method of Delivery (MOD). See paragraph 8 in this ER for sequence and scheduling of BCOES reviews for projects using the D-B method of delivery.

f. Use of DrChecks for BCOES Reviews. The BCOES reviewers shall use Dr Checks to transmit their comments to the comment evaluators. DrChecks facilitates and documents the formal review of project documents and it is a module in the ProjNet (www.projnet.org) suite of tools developed by USACE's Construction Engineering Research Lab. The comment evaluators shall also use DrChecks to reply to the BCOES comments. The BCOES comment submitters shall read the reply of the comment evaluators and shall either backcheck their comments or get with the comment evaluator and Project Lead Engineer to find a mutually acceptable solution to the BCOES reviewer's comment and then backcheck their comment.

g. Requirement to Conduct a BCOES Backcheck Review for Certification Prior to Bid Opening or Start of Proposal Evaluation. A BCOES backcheck will be performed by designated staff in Engineering and Construction Divisions (or their equivalent) prior to bid opening or start of proposal evaluation to ensure that all appropriate BCOES review comments have been incorporated or resolved. This backcheck review should be started 30 calendar days prior to advertising, and all comments shall be resolved prior to bid opening or proposal evaluation. This review will serve as the basis for the certification required by paragraph 9 of this regulation. See Appendix A for a Sample BCOES Certification.

h. Resolution of Disputed Comments. Unresolved BCOES comments that cannot be agreed upon by the review team will be elevated promptly to the appropriate Section, Branch, or Division Office Chiefs for resolution.

i. Waiver of BCOES Reviews for Small Projects. If a construction project is small (defined as having a value less than the simplified acquisition procedures threshold of $150,000) and does not involve significant risks or complexities, a waiver of the requirement to conduct BCOES reviews may be requested or proposed by the PM to the Engineering and Construction Chiefs.

(1) The waiver must cite the project's characteristics that make it appropriate to consider a waiver of the BCOES requirements. An example of a project that may be appropriate for submission of a BCOES review waiver request is a $50,000.00 re-roofing construction project on an existing facility using known materials, standard technical specifications, and standard acquisition procedures-documents that have been proven successful in their use during the recent past.

(2) All BCOES waivers requests and approvals of BCOES waivers shall be done in writing and in advance, and documented in the project file and contract file, as appropriate.

j. Streamlining of BCOES Reviews for Military Overseas Contingency Operations (OCO) Projects. The exigent nature of some OCO projects may require tailoring of the BCOES review process to adapt to the capabilities and needs of the organizations performing the BCOES review and the project delivery schedule. Durations of the review phases may be compressed and different criteria will be appropriate for the BCOES considerations of these specialized projects. However, the need and benefits of disciplined BCOES reviews remain high for OCO projects and these BCOES reviews shall be incorporated into the PMP and performed as required by this ER.

k. Certification of Value Engineering Study Compliance. BCOES certification shall include certification by the assigned PM and confirmation by the District Value Engineering Officer that all statutory and regulatory requirements for Value Engineering (VE) for the project have been completed and results incorporated, or waived by legal waiver authority (see reference 4.i. and Appendix A).

l. BCOES reviews for projects subject to the requirements of ER 1110-2-1156 and/or EC 1165-2-214 require careful coordination with the review processes specified therein to avoid duplication of effort and to implement intended roles and responsibilities. For example, the purpose and scope of the BCOES review is different from an Agency Technical Review (ATR).

7. Specific Content of BCOES Review Activities. The BCOES reviews will analyze specific aspects of the Government's requirements documents and criteria. The following describes the specific activities, documents, and aspects of the acquisition that must be reviewed during BCOES reviews.

a. Biddability Review. All biddability reviews will analyze the completeness, correctness, compatibility, clarity, and consistency of the collection of plans, specifications, clauses, forms, bid schedule, and other documents and references that comprise the total solicitation package and the planned contract. The government is responsible for determining its requirements, and the solicitation package should be prepared to help bidders or proposers understand clearly the government's requirements and to allow the submission of a competitive bid or proposal that is responsive to the government's requirements. The biddability review will also include an evaluation of the soundness of the evaluation criteria that are planned for negotiated acquisitions.

b. Constructability Review. In general, the constructability review includes checking the compatibility of the design and invitation for bids document or technical aspects of the D-B RFP with site conditions, materials, equipment, schedules, utility connections, government estimates, and construction methods relevant to the planned construction. It also includes evaluation of safety considerations and other planned project and contract features for their ease of successful, safe execution.

(1) All constructability reviews will include a Plan-In-Hand site visit and review by appropriate Area/Resident Engineer staff to ensure all visible and known existing characteristics of the site described in the project design and acquisition documents are included, accurate, and supportive of the project's successful acquisition and construction. Contractor office and storage areas will be among the items checked. Also, for projects involving acquisition of any real estate interest, coordination will be made with the applicable Chief of Real Estate to ensure all necessary real estate interests to accommodate all aspects of the planned work are available.

(2) All constructability reviews will also specifically review the planned construction phasing, sequencing, and period of performance for the contract to ensure that an adequate construction period is specified. While many designers may initially develop this construction duration, the final evaluation of the adequacy of the specified period properly rests with the construction Area/Resident Engineer to review and concur with the period of performance or to determine if accelerated efforts will be required for a contractor to achieve an aggressive construction schedule. The planned contract's requirements for scheduling systems and quality control also will be checked as part of the constructability review.

(3) The constructability review also needs to evaluate if the procedures used for development of the bid schedule and independent government estimate (IGE) comply with policies, and account for items such as accelerated construction, pre-priced contract line items, and other constructability impacts on the estimated cost for the construction. Additionally, the constructability review will include a review of the basis for calculating any liquidated damages for the project, including validation of any projected estimated additional expenses that would be incurred by the facility customer-user.

c. Operability Review. Review of the operability of the facility or facilities to be constructed must include a good understanding and detailed consideration of the customer's-owner's operations and maintenance requirements, needs, practices, and capabilities after construction completion and turnover. The Area/Resident Engineer staff should jointly conduct an operability review with the facility's planned user(s) and maintainers as a means of improving mutual understanding and planning for the upcoming construction and facilitating the successful transfer and understanding of the operability comments by the USACE PDT. The operability review should include a check of all commissioning requirements, transfer and handover documentation requirements, and warranty requirements and plans.

(1) For Civil Works projects, the review will include evaluation of Plans, Specifications, Engineering Considerations and Instructions for Field Personnel (ECIFP) reports (see reference 4.b., Chapter 7), the operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) plan for the project, and other required documents.

(2) For Civil Works projects, the District's Operations staff should lead the operability review of the planned project, with contributions from other BCOES reviewers. For Military Mission projects, the planned owner-operator-maintainer community such as the facility user and the installation Director of Public Works (DPW) or Base Civil Engineer (BCE) should lead the operability review of the planned project, with contributions from other BCOES reviewers.

d. Environmental Review. Review of the compliance of the project's design, construction, and operation with all applicable environmental laws and regulations, including Environmental Operating Principles (EOPs) in ER 200-1-5, is included in BCOES reviews. The environmental review will address the project's compliance with all applicable local, state, and Federal environmental regulations and requirements, including National Pollutant Discharge Elimination System (NPDES) permits, required permits for earth disturbance, stormwater management, etc., and reports or requirements for any asbestos, lead paint, and other hazardous materials handling , removal, and disposal. Archeological, historical, hazardous, toxic, and radioactive waste (HTRW), and military munitions concerns that may impact the project's execution during the acquisition and construction phases are also addressed during this review. The District's environmental, regulatory, operations, and construction staffs should be engaged in this review for CW projects, and the installation's environmental, public works, and the District's construction staffs should perform this review for military projects.

e. Sustainability Review. Review of the sustainability of the project to be acquired must include a good understanding and detailed consideration of the Federal Guiding Principles for High Performance Sustainable Buildings and compliance with other applicable laws, regulations, polices, standards, codes and criteria for sustainability related to facilities and infrastructure. The review should include, but is not limited to application of integrated design principles; energy performance optimization; water protection and conservation; indoor environmental quality; and the environmental impact of materials (including green purchasing and diverting wastes from landfill); facility siting and orientation; building size and layout; stormwater runoff during and after construction; sourcing and durability; transportation; and certification of facility performance regarding sustainability. The sustainability reviewers should include

engineering and operations staffs of the using organization as well as the District's LEED, Sustainability and construction staff members.

8. BCOES Reviews for Projects Using the Design-Build (D-B) Method of Delivery (MOD).

a. Overview of BCOES in D-B. The D-B MOD combines design and construction within a single construction contract and uses competitive evaluation of technical and price proposals to select a contractor to design and build the project. Design by the D-B contractor usually is done before and sometimes during construction activities under the D-B contract. When parts of the design are being developed concurrent with construction activities, this is termed a "fast-track" approach. In contracts using the D-B MOD, final design solutions are provided by the D-B contractor who is responsible for their own design, construction quality, and for full compliance with the RFP and the selected contractor's proposal. After award of a D-B contract, the USACE organization managing the project and administering the contract will review the D-B contractor's design for compliance with the quality and design intent of the RFP and the terms of the selected proposal by the contractor, as incorporated into the awarded contract.

b. Levels of Technical Criteria in D-B RFP. The Government's Requests for Proposal for a D-B acquisition will state project requirements, criteria, and evaluation factors. The D-B RFP may be prepared using various levels of technical criteria to state the project's requirements. Individual projects may be consistent in their level of technical criteria in the RFP, or a particular project may have varying levels of technical criteria depending upon the specific requirements of the various technical areas, disciplines, features, and customer needs.

(1) One level of technical criteria under D-B is *nominal criteria* where the Government essentially uses an almost total performance specification, stating the purpose, function, and characteristics of the project in sufficient detail to delineate and characterize functional features and the visual appearance of the project.

(2) A second level of technical criteria for a D-B RFP is *partial criteria* where the Government prepares concept floor plans (or their equivalent facility definition) 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 provided for special design requirements. A site plan is provided to indicate the building orientation and circulation to the building entrances.

(3) A third level of technical criteria for a D-B RFP is *full criteria* where the Government uses a more prescriptive approach to the design and construction, and prepares enlarged floor plans (or their equivalent facility definition) which indicate a special mechanical and electrical equipment layout, fire protection information, overall dimensions, desirable or required column locations or other structural features, and typical wall sections to indicate materials usage. Requirements for testing, adjusting, balancing and commissioning would be specified. A preliminary site plan, landscaping plan, exterior elevations, cross sections, floor plans, finish schedule, door schedule, foundation, framing plan, and sections would typically be provided by

the Government in the full criteria approach to D-B MOD. In many cases, the full criteria approach may only apply to critical project elements or features. In other cases, such as in "site-adapt" D-B, the criteria may resemble many parts of a complete design.

c. Timing of BCOES Reviews Under D-B. For D-B RFPs using nominal, partial, or full criteria, the initial BCOES review will be made after the technical criteria are sufficiently complete for substantive comments.

(1) This initial BCOES review may be best accomplished as a combined on-board functional review by senior representatives from applicable functional areas or various disciplines.

(2) The second BCOES review will be performed as part of the review of the completed RFP package prior to it being released to industry. This review will include the requirements of the proposal evaluation and source selection policies and plans. For MILCON projects using directive controls, the certification of the BCOES review occurs prior to the District taking credit for achieving the Ready to Advertise (RTA) milestone (i.e., posting the actual RTA date in P2 system) and HQUSACE issuance of Code A authority to advertise.

(3) After award of the D-B contract and during the design phase, BCOES-type considerations will be included as part of the contractor's QC process and the Government's QA evaluation of the contractor's preliminary and final design documents. These post-award reviews are not formal BCOES reviews, but are part of the overall contract administration and quality management processes for D-B contracts.

d. Focus of BCOES Reviews For D-B RFPs. The BCOES review will focus on the clarity of Government D-B requirements in the RFP versus the project's requirements in the project approval documents; the inclusion of needed, appropriate constraints in the RFP and the absence of unneeded, inappropriate 'designability' and constructability constraints in the RFP; the appropriateness and soundness of the planned proposal evaluation criteria; the clarity and completeness of operability requirements in the performance specifications; clarity and completeness of addressing environmental constraints and requirements in the performance specifications; and clarity, completeness, appropriateness of the sustainability aspects of the performance specifications, and the inclusion of appropriate FAR clauses for green purchasing. Use of the D-B method of delivery creates highly variable levels of design detail among projects. However, the BCOES review of the RFP remains necessary, and the review must be tailored to the D-B MOD, the use of nominal, partial, or full criteria, and other key project characteristics.

e. Scheduling of BCOES Reviews for Projects Using D-B Method of Delivery. The project management plan for projects using the D-B MOD will reflect the BCOES review requirements established above and will allocate adequate time and funding to conduct effective BCOES reviews appropriate for the D-B MOD. BCOES considerations should be an important part of the initial development of functional requirements for the D-B RFP.

(1) The initial BCOES review should be allocated at least 21 calendar days in the PMP for project RFPs using nominal or partial technical criteria, and at least 30 calendar days for project RFPs using full technical criteria.

(2) The second BCOES review should be allocated at least 14 calendar days for project RFPs using nominal or partial technical criteria, and at least 21 calendar days for project RFPs using full technical criteria.

(3) During the design phase of the D-B contract execution, weekly 'over the shoulder' (OTS) conformance reviews by government staff of design development products by the contractor are recommended to ensure the appropriate BCOES considerations required by the awarded contract are incorporated into the design documents. These OTS conformance reviews are especially important in fast-track designs so that sensitive schedules are not delayed or otherwise negatively impacted.

9. Roles and Responsibilities for BCOES Reviews.

a. Chief of Project Management and Project Manager. The Chief of Project Management at the assigned District or Center will ensure that adequate time to accomplish these review activities, as outlined in paragraphs 6.e. and 8.d. above, is included in the project baseline schedule. Further, they will ensure that adequate design funds for the accomplishment of BCOES reviews are reserved in the baseline budget as negotiated and included in the Project Management Plan in accord with ER 5-1-11. The PM assigned to lead the project will rely on the assistance of the Value Engineering officer, and will ensure that the Value Engineering process was completed and certified in accord with ER 11-1-321. The assigned PM shall also ensure timely, effective performance of BCOES reviews and appropriate incorporation of results.

b. Value Engineering (VE) Officer. Upon notification by the responsible PM, the VE officer will ensure that VE requirements are completed (i.e., studied or waived) for projects. The VE officer will verify that all rejected VE proposals indicating potential savings over $1,000,000 have been resolved with approval of the MSC Commander. As required, the District VE officer will sign the appropriate Value Engineering certification (sample at Appendix A) prepared by the assigned PM for the project. Contracting officers shall not advertise projects that do not have the required VE Certification completed, so the BCOES review is critical to ensuring this step is done.

c. Chief of Engineering (or equivalent) and Lead Engineer for the Project. The Chief of Engineering for the District/Center performing the design or developing the RFP will ensure that effective BCOES reviews are systematically accomplished and that the resulting comments are incorporated or resolved in a timely manner. The lead engineer for a project will ensure that appropriate documents are provided for review and backcheck to the BCOES reviewers, that all BCOES review comments are evaluated, and that timely feedback on disposition of comments is provided. The Chief of Engineering for the District/Center or a duly authorized representative, Branch Chief or higher, will certify in writing that all appropriate BCOES review comments have been incorporated in the bid or request for proposal documents, or satisfactorily resolved, and that all BCOES comments, evaluations, and backchecks are documented in DrChecks. The Chief of Engineering for the District/Center will review and act on all appropriate requests for waiver of BCOES reviews for small, low risk projects.

(1) For non-CW projects, some Districts have environmental engineering capabilities in their Engineering Division/Branch, and they may be an appropriate source for environmental and sustainability considerations in BCOES reviews.

(2) Similarly, some of the larger Construction staffs may have significant environmental and sustainability expertise from training, education and experience, and may be fully capable of performing an effective environmental and sustainability review of the IFB/RFP package as part of an overall BCOES review.

d. Chief of Construction (or equivalent) and Area/Resident Engineer for the Project. The Chief of Construction (or equivalent) will ensure that BCOES reviews for biddability, constructability, and operability are performed in a timely manner, including coordinating operability reviews, that review comments are furnished in accord with established suspense dates, and that a backcheck is conducted. The Chief of Construction or a duly authorized representative, Branch Chief or higher, will certify in writing that all appropriate BCOES comments have been incorporated in the bid or request for proposal documents or satisfactorily resolved, and that all comments, evaluations, and backchecks are documented in DrChecks. The Chief of Construction for the District/Center will review and act on all appropriate requests for waiver of BCOES reviews for small, low risk projects. The Area or Resident Engineer for the project will ensure that qualified field office staff are trained, assigned, and conducting effective BCOES reviews for all projects planned to be constructed in their office's area of operations.

e. Chief of Real Estate. For projects involving real estate matters or acquisition of any real estate interest (e.g., purchase, leasehold, easement, etc.), the Chief of Real Estate will ensure that BCOES reviews for compliance with all real estate requirements are performed in a timely manner, that review comments are furnished in accord with established suspenses, and that a backcheck is conducted in DrChecks. If the project involves acquiring any real estate interest, the Chief of Real Estate or a duly authorized representative, Branch Chief or higher, will certify in writing that all necessary real estate interests to accommodate all aspects of the planned work are available or provided for in the planned solicitation.

f. Chief of Planning. For Civil Works projects, the Chief of Planning will ensure that BCOES reviews for environmental considerations are performed in a timely manner, that review comments are furnished in accord with established suspenses, and that a backcheck is conducted. For Civil Works projects, the Chief of Planning or a duly authorized representative, Branch Chief or higher, will certify in writing that all appropriate BCOES review comments have been incorporated in the bid or RFP documents or satisfactorily resolved and that all comments, evaluations, and backchecks are documented in DrChecks.

g. Chief of Operations. For Civil Works projects, the Chief of Operations will ensure that BCOES reviews for operability are performed in a timely manner, that review comments are furnished in accordance with established suspenses, and that a backcheck is conducted. For Civil Works projects, the Chief of Operations or a duly authorized representative, Branch Chief or higher, will certify in writing that all appropriate BCOES comments have been incorporated in the bid documents or satisfactorily resolved and that all comments, evaluations, and backchecks are documented in DrChecks.

h. Installation Director of Public Works (DPW) and Base Civil Engineer (BCE). For military mission projects, the responsible Area/Resident Engineer will coordinate with the appropriate installation DPW or BCE (or equivalent) to ensure that BCOES reviews for operability are performed in a timely manner and that review comments are furnished in DrChecks in accord with established suspenses.

i. Chief of Contracting. The Chief of Contracting will ensure that bid opening or start of proposal evaluation is not made prior to the required BCOES written certification (see Appendix A). When fully justified, the contracting officer, with written advance concurrence of the Chiefs of Engineering and Construction, may determine that it is in the best interest of the government to solicit or award without incorporation of all comments or that a BCOES review has been appropriately waived in writing by the Engineering and Construction Chiefs or their designated representatives. The written waiver of the required BCOES certification shall be signed by the Chiefs of Engineering and Construction, and a determination and findings signed by the contracting officer will be placed in the contract file in place of the certification when solicitation or award is made without this certification.

10. BCOES Review Checklists. See Appendix B for a BCOES review checklist for projects using the design-bid-build method of delivery and Appendix C for a BCOES review checklist for projects using the design-build method of delivery. These checklists may be used by the BCOES reviewers to aid in their review. Districts are expected to evolve, expand, create, and apply their specific lists of items to be checked during BCOES reviews, based on their knowledge, experience, successes, failures, and customers, along with the particular scope of their project workload. Knowledge management sources such as USACE's Enterprise Lessons Learned (eLL) system, Installation Design Guides, DrChecks databases, project approval documents, and relevant engineering and construction industry references should also be consulted when performing BCOES reviews.

11. Implementation Plans and Actions. District and Center commanders will develop and implement appropriate plans for accomplishing the BCOES reviews required by this regulation. These plans will ensure that effective BCOES reviews are accomplished in a timely manner, the results appropriately incorporated in solicitation documents, and all BCOES reviews are adequately documented. The effectiveness and efficiency of BCOES review activities of Districts and Centers will be evaluated during oversight activities conducted by Regional Business Centers and HQUSACE quality assurance activities.

FOR THE COMMANDER:

C. DAVID TURNER
Colonel, Engineer
Chief of Staff

Appendixes:
Appendix A - Sample BCOES Certification
Appendix B - Sample BCOES Review Checklist For D-B-B Method of Delivery
Appendix C - Sample BCOES Review Checklist for D-B Method of Delivery

APPENDIX A

Sample BCOES Certification

Name of Project/Project Number: _____/_____

Phase or Type of Project: _____

Certification Date: _____

I, (the PM), certify that the Value Engineering process as required by ER 11-1-321 (Change 1 or latest version), Army Programs Value Engineering has been completed for this procurement action. I certify compliance with Public Law 99-662 (33 USC 2288) and OMB Circular A-131. A VE study was (completed/waived) on (date) by the appropriate authority. All rejected VE proposals indicating potential savings of over $1,000,000 have been resolved with approval of the MSC Commander.

_____ _____
Assigned Project Manager (dd/mm/yr) Value Engineering Officer (dd/mm/yr)

The Bid or RFP Package has been reviewed for Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) requirements in accord with ER 415-1-11. The undersigned certify that all appropriate BCOES review comments have either been incorporated into the Bid or RFP Package or otherwise satisfactorily resolved. Comments, evaluations, and backchecks are documented in DrChecks.

_____ _____
Chief, Engineering (dd/mm/yr) Chief, Construction (dd/mm/yr)

_____ _____
Chief, Planning (when appropriate) Chief, Operations (when appropriate)

_____
Chief, Real Estate (when appropriate)

APPENDIX B

Sample BCOES Review Checklist for Design-Bid-Build Method of Delivery

BCOES Checklist – D-B-B Method						
Project Title & Location:						
Project Review Phase:						
Date of Documents Reviewed:						
Reviewer Name & Phone:						
Review Date:						
	Item Number		Section for Review	Y	N	NA
Biddability, Constructability, Operability, Environmental, and Sustainability	1	Is the scope of the project consistent with authorizing legislation and program regulations?				
	2	Is scope of the project as reflected by the plans & specs consistent with the approved authorizing document for the project?				
	3	Do plans and specs incorporate the customer's stated needs and objectives?				
	4	Are assumptions made during project development consistent with legislation, approved project documentation, and were they reviewed with local interests?				
	5	Does the acquisition strategy and method of delivery appear appropriate for the project?				
	6	Is scope of construction clear in the project plans and specs?				
	7	Are special installation requirements for the Government and/or the Contractor appropriately addressed?				
	8	Is construction phasing clear, feasible, and appropriate?				
	9	Is the size and configuration of proposed facilities expected to function as intended and meet stated project requirements? Mission goals?				
	10	Is the CWE and appropriate contingency covered by a funded PRC? Do they conform to project approval documents?				
	11	Are there conflicts in the specs regarding Measurement and Payment and Contract Line Items in Bid Schedule?				
	12	Is the measurement and payment section complete and clear?				
	13	Can the quantity of all items be estimated and verified?				
	14	Are the CLINs consistent in the Bid Schedule?				
	15	Are the CLINs appropriately linked to specification sections and definable features of work in the contract?				
	16	If options are included, are limits of work associated with each bid option clearly defined?				
	17	If options are used, is the time for the award of options explicitly specified?				
	18	Has consideration been given to whether the option work is independent of other work?				
	19	Should payment for offsite stored materials be permitted, and is the appropriate clause in solicitation?				
	20	Check bid forms to assure bid schedule is simple, clear, and includes all necessary items of work.				
	21	Are estimated quantities reasonable?				
	22	Do drawings contain definite, definable pay lines for computing quantities in CY, CF, SY, SF, etc…?				

Sample BCOES Review Checklist for Design-Bid-Build Method of Delivery (continued)

	Item Number		Section for Review	Y	N	NA
Biddability, Constructability, Operability, Environmental, and Sustainability	23	If estimated quantity is uncertain and expected to vary substantially, use subdivided items per EFARS/UAI (i.e., excavation, dredging, fill stone, rock excavation, etc.)				
	24	Check specifications to assure that work components of lump sum item are clearly defined.				
	25	Check specifications to assure payment paragraph is also a lump sum item if CLIN is for lump sum amount.				
	26	Check drawings to assure that lump sum items and the quantity for unit price items are not overlapping.				
	27	Are contract sequencing and relations to other work appropriate?				
	28	Are contract performance time, submittal schedule, and quality control system adequately defined?				
	29	Are specifications and plans consistent with each other?				
	30	Do the specifications list submittals needed to effectively administer the contract (ER 415-1-10)?				
	31	Are submittals types (e.g., FIO, GA, etc.) appropriately categorized in accord with ER 415-1-10?				
	32	Does the contract have any unreasonable requirements for Government inspections?				
	33	Are special installation requirements appropriately addressed?				
	34	Are quality control and quality assurance appropriately addressed within the contract documents?				
	35	Are there ambiguous requirements or exculpatory type clauses for which the designer should be more descriptive?				
	36	Is this construction contract consistent with the FAR, DFARS, AFARS, EFARS/UAI?				
	37	Is a conflict resolution process appropriately defined?				
	38	Is coordination on the location of existing utilities and their relocation, if required during construction, clear and complete?				
	39	Are testing, balancing, commissioning and certifications addressed adequately?				
	40	Are O&M manuals/videos, training, spare parts, keys, warranties, warranty response times and sources, as-built drawings, and transfer of O&M data from the construction phase appropriately addressed?				
	41	Do contract documents include all applicable permits to operate facility (if required)?				
	42	Are project and public safety measures adequately addressed?				
	43	Do Spec Sections adequately & accurately reference EM 385-1-1?				
	44	Are abbreviations and nomenclature consistent with construction needs?				
	45	Is there a consistent system used for indicating sections and details?				
	46	Are title blocks consistent and properly filled out?				

Sample BCOES Review Checklist for Design-Bid-Build Method of Delivery (continued)

	Item Number		Section for Review	Y	N	NA
	47	Confirm that all major items can be located from data supplied on drawings.				
	48	Are adequate horizontal alignment and elevation control reference points provided?				
Biddability, Constructability, Operability, Environmental, and Sustainability	49	Are essential details and proper verbiage included in drawings and specs?				
	50	Are exact legal property descriptions shown?				
	51	Is job site erosion control appropriately addressed?				
	52	Do the specifications address the impact of the construction on the environment?				
	53	Is a submittal required for a contractor prepared environmental plan? Does it address mitigation of water, air, soil, noise pollution, other (specify)?				
	54	Will the project encroach on wetlands or endangered species habitat?				
	55	Has the State or local entity been coordinated with and permits issued as needed?				
	56	Have we verified compliance with requirements of NEPA? Specifically, has an EA or EIS been completed, and Record of Environmental Consideration or Finding of No Significant Impact been signed by appropriate authority?				
	57	Are planting and topsoil requirements maintainable and consistent with the environment?				
	58	Is erosion control adequately addressed in rivers/streams and along shorelines?				
	59	Are staging areas well defined (located and dimensioned)?				
	60	Are separate staging areas required for work areas separated by long distances?				
	61	Are access and haul routes to work site well defined?				
	62	Do the Engineering Considerations and Instructions for Field Personnel (ECIFP) Report adequately address construction salient features?				
	63	Verify work limits or rights-of-way are shown, well defined and sufficient for work.				
	64	Is all work completely within the work limits?				
	65	Adequacy of working area and storage space, and access for contractors are addressed?				
	66	Can periodic inspections be accomplished efficiently and effectively?				
	67	Are load restrictions for heavy equipment or water depths adequate for construction equipment expected on site?				
	68	Appropriate water level gauges are highlighted and useful for job?				
	69	Do existing conditions that are mapped depict actual current site conditions; access, utility availability, drainage, storage area, existing underground utilities, general site conditions? Has this accuracy been verified and documented?				
	70	Are datum correct and coordinate system correct?				

Sample BCOES Review Checklist for Design-Bid-Build Method of Delivery (continued)

	Item Number		Section for Review	Y	N	NA
Biddability, Constructability, Operability, Environmental, and Sustainability	71	Is survey data current, dated and adequate to show existing site conditions?				
	72	Are required and existing conditions clearly defined?				
	73	Are Levee Safety and Dam Safety issues addressed if required?				
	74	Have local availability of materials and labor skills been appropriately addressed?				
	75	Architectural compatibility with existing facilities and established installation//base plans is achieved by the design?				
	76	Are provisions made to collect operations and maintenance data during the construction phase for transfer to facility user/owner?				
	77	Are CAD/BIM products compatible with facility user/owner systems?				
	78	Is all coordination with any privatized utility provider/owner accomplished and consistent with the planned contract?				
	79	Are LEED, Guiding Principles and LID requirements clearly and appropriately specified in plans and specs? CLINs?				
	80	Are appropriate Environment & Sustainability FAR clauses and specs associated with included in the specifications/solicitation?				
	81	Are warranty provisions clear and enforceable?				
	82	Is the site clear of any HTRW? Other subsurface obstructions and hazards?				
	83	Has a Plan-in-Hand Review been accomplished & documented?				
	84	Has the operability review been facilitated with the facility owner/user?				
	85	Is there a requirement to coordinate the construction activities with USACE Mandatory Centers of Expertise? If so, is this coordination clear and compatible with all other parts of the contract?				
	86	Has the proposed construction schedule prepared by the designer of record been reviewed to establish a reasonable contract performance period to be used in the solicitation?				
	87	Do solicitation drawings (electronic & paper) comply with current Geospatial Standards (e.g., SDSFIE 3.0 & A/E/C CADD Standards 4.0)?				
	88	Is VECP clause included in contract documents in accord with FAR provisions?				
	89	Is signed Value Engineering Certification included in the project package prior to advertising?				
	90	Is site clear of military munitions/unexploded ordinance?				
	91	Have munitions response site inventory, applicable historical record review & archives search reports records been checked?				
	92	If military munitions/UXO could be present, has planning been completed to address explosives safety hazards (either as separate pre-award munitions response project or inclusion of munitions and explosives of concern construction (MEC) requirements in contract clauses?				
	93	Are there any other outstanding issues?				

APPENDIX C

Sample BCOES Review Checklist for Design-Build (D-B) Method of Delivery

BCOES Checklist – D-B Method						
Project Title & Location:						
Project Review Phase:						
Date of Documents Reviewed:						
Reviewer Name & Phone:						
Review Date:						
	Item Number		Section for Review	Y	N	NA
Biddability, Constructability, Operability, Environmental, and Sustainability	1	Is the scope of the project consistent with authorizing legislation and program regulations?				
	2	Do RFP technical provisions and other documents incorporate the customer's stated needs and objectives?				
	3	Are assumptions made during project development consistent with legislation, approved project documentation, and were they reviewed with local interests/installation/command 'customers'?				
	4	Does the acquisition strategy and method of delivery appear appropriate for the project?				
	5	Are technical & evaluation parts of RFP consistent & compatible?				
	6	Have the existing site conditions (visible and sub-surface, including underground utilities) been adequately investigated and clearly/accurately depicted in the RFP's engineering documents?				
	7	Is scope of construction clear in the project technical criteria and engineering documents in the RFP?				
	8	Are the minimum design criteria for all desired, essential, or mandatory elements of the project clearly stated in the RFP?				
	9	Does the RFP clearly state the detailed drawings, project descriptions, quality, and performance requirements that will be expected as a complete final design after award of the contract?				
	10	Is the design review process including required design submittals/deliverables clearly described in the RFP?				
	11	Does the RFP clearly state the number of design submittals/deliverables the D-B contractor must make and delineate between design submittals to be reviewed only and those to be reviewed and approved by the Government?				
	12	Does RFP clearly state when design activity stops & construction may begin for any particular phase/feature of the project?				
	13	If the RFP requires design in accord with commercial standards, codes, & specs, are government PDT members familiar with and have ready access to all referenced codes, standards, and specs?				
	14	Are the Federal, DoD, or Installation/Sponsor criteria, codes, standards, regulations, etc. applicable in part or in whole to the project clearly indicated in the RFP?				
	15	Does the RFP specifically and clearly require O&M manuals and O&M training at the system level?				
	16	Is the CWE and appropriate contingency covered by a funded PRC? Does it conform to project approval documents?				
	17	Do the proposal requirements align clearly and consistently with the evaluation factors and agree with the project criteria?				

Sample BCOES Review Checklist for Design-Build (D-B) Method of Delivery

Biddability, Constructability, Operability, Environmental, and Sustainability	18	Does the RFP include clear, accurate list of submittal requirements?				
	19	Is construction phasing clear, feasible, and appropriate?				
	20	Are the appropriate evaluation weights clearly assigned to each of the evaluation factors in the RFP and the Source Selection Plan?				
	21	Do the technical specs match the Source Selection Plan and the submission requirements/instructions in the RFP?				
	22	Does the RFP contain options that may be used to determine what can be obtained within available funds?				
	23	If options are included, are limits of work associated with each bid option clearly defined? Time for award of options specified?				
	24	Are the solicitation and contractor performance periods reasonable?				
	25	Are the technical project criteria compatible and consistent with each other, and the non-technical portions of the RFP?				
	26	Should payment for offsite stored materials be permitted, and is appropriate clause in contract?				
	27	Does the RFP contain a construction cost limit (combined design and construction costs)?				
	28	Does RFP state a maximum construction time? If so, is it reasonable?				
	29	Does the RFP clearly describe the requirements for building and systems commissioning, including criteria and lists of systems and their components?				
	30	Does the RFP clearly describe the contractor quality control requirements for all design work? The government QA process for design work?				
	31	Does the RFP clearly describe the contractor quality control requirements for all construction work? The Government QA process for construction work?				
	32	Does the RFP clearly describe mandatory Federal requirements for environmental criteria, standards, and processes?				
	33	Does the RFP clearly indicated that all buildings identified for renovation or demolition have been sampled and tested for the presence of hazardous materials, lead paint, asbestos, etc. either by the building owner or the USACE?				
	34	Are all operating and construction permits, permitting actions, and responsibilities for permits appropriately addressed in the RFP?				
	35	Are all wetland areas and floodplain limits determined and clearly delineated on the drawings included in the RFP?				
	36	Are utility capacity data and tie-in points clearly delineated on drawings included in the RFP?				
	37	Are potable water system pressure and capacity data tests done and the test results provided in the RFP?				
	38	Are sufficient borings and/or test pits done to delineate general subsurface conditions and the results provided in the RFP?				
	39	Are site-specific requirements such as local codes, required materials, materials restrictions, and work restrictions in the RFP?				
	40	Is there a requirement to coordinate RFP, design submittals, and/or construction activities with USACE Mandatory Centers of Expertise? Is this coordination clear & compatible with all other parts of RFP?				
	41	Is VECP clause in contract documents IAW FAR provisions?				
	42	Is signed VE certification included in package before issuing RFP?				
	43	Are LEED, Guiding Principles, and LID requirements clear & in CLINs?				

Sample BCOES Review Checklist for Design-Build (D-B) Method of Delivery

Biddability, Constructability, Operability, Environmental, and Sustainability	44	Have we verified compliance with requirements of NEPA? Specifically, has an EA or EIS been completed, and Record of Environmental Consideration or Finding of No Significant Impact been signed by appropriate authority?				
	45	Is site clear of military munitions/unexploded ordinance?				
	46	Have munitions response site inventory, applicable historical record review & archives search reports records been checked?				
	47	If military munitions/UXO could be present, has planning been completed to address explosives safety hazards (either as separate pre-award munitions response project or inclusion of munitions and explosives of concern construction (MEC) requirements in contract clauses?				
	48	Does the RFP clearly provide guidance for deviating from any shown drawings/layouts? For example, proposed building footprint meets square footage criteria but uses different shape/configuration than shown in the RFP?				
	49	For Standard Design Facilities, has applicable Center of Standardization validated that RFP meets Army Standards and Standard Designs?				
	50	Are there any other outstanding issues?				