

## **ENGINEERING AND TECHNICAL SERVICES**

## ENGINEERING SUBPLAN

**1. Purpose.** This subplan establishes policy, procedures, and responsibilities for providing quality control (QC) and quality assurance (QA) on Civil Works (CW), Work for Others (WFO) and Support For Others (SFO) engineering and design projects. The framework for implementing a uniform system for conducting QC/QA reviews for the Detroit District's engineering and design products is defined herein.

**2. Applicability.** This appendix supplements the guidelines provided in the main body of the Quality Management Plan (QMP) and applies to all engineering activities of the Engineering and Construction Division having responsibility for the preparation of engineering products. The quality management process outlined herein applies to all engineering services and products. The quality management processes for the construction function products are covered under Appendix B-2, Construction Subplan.

**3. Goal.** The goal of the Engineering and Construction Division is to deliver quality engineering and design products, in accordance with applicable design standards and criteria, on schedule, and within the established budget that fully meet the prescribed requirements and expectations of our sponsors and customers.

### **4. Definitions**

a. Project Delivery Team (PDT). An interdisciplinary group formed to develop a project, consisting, as required, of representatives from Engineering and Construction Division (Design Branch and Contract Administration Branch), Real Estate Division, Contracting Division, Planning Division (Environmental Branch and Plan Formulation Branch), Hydraulics & Hydrology Office, Project Management Division, Area Offices, Architect-Engineering Firms, Customers and other disciplines necessary for the project development.

b. Design Review. An independent review of the designer's work to verify that an acceptable design has been provided for a particular design phase of a project.

c. Products. All engineering deliverables, including but not limited to, engineering appendices, design documentation reports, engineering documentation reports, plans and specifications, inputs to environmental assessments, and reconnaissance and feasibility studies.

d. Design Team. The project delivery team members in the Design Branch or the Architect-Engineering firm responsible for product development to support the project requirements in the Project Management Plan.

e. Contract Compliance Review. A processes oriented review by the Quality Assurance Team on work performed by Contractors. The review verifies that the product meets the requirements of the Scope-of-Services and that the concepts and overall assumptions of the Contractor are justifiable.

f. Quality Manager (QM). Engineering & Construction Division engineering point-of-contact (POC) for QC/QA. These duties and functions are assigned to the Chief, Design Branch, Engineering and Construction Division.

g. Technical Coordinator (TC). The Technical Coordinator for Engineering and Construction Division. The TC is the Division POC with the PM and the coordinator of the technical engineering and design support requirements for the project.

h. Quality Assurance Team (QAT). A team consisting of the QM, the TC, and other appropriate staff members who perform quality assurance on Contractor (A-E) products.

i. Independent Technical Review (ITR). A review by a qualified person or team, not directly affiliated with the development of a project/product, to insure it is consistent with established criteria, guidance, policy and procedures. There are six primary objectives as outlined in ER 1110-2-1150: concepts are valid; plan is feasible, safe and functional; reasonable cost estimate is developed; analysis is correct; complies with engineering policy and complies with accepted engineering practices within USACE.

j. Independent Technical Review Team (ITRT). An interdisciplinary group formed to perform the ITR. The team may be from the District, from another district, from a center of expertise, regional technical specialists, or a USACE team by contract or a combination of these services.

k. Independent Technical Review Conference. Meeting held, as required, between the Design Team and the ITRT to discuss, clarify, and resolve ITR comments.

l. Biddability, Constructibility, Operability and Environmental Review (BCOE). A separate review to assure solicitation documents are readily understood; the product can be bid, built, operated and maintained efficiently; and environmental concerns are protected as identified in the Environmental Impact Statement or Assessment. See DR 1180-1-7 for policy and responsibilities for BCOE.

m. Dr Checks (Design Review and Checking System). A web-based system to record design review comments, share design submittals and respond to design comments.

## **5. Responsibilities**

a. Chief, Engineering and Technical Services. Responsible for the quality of engineering products being released to the public for bids or decisions. Approves documents being issued.

b. Chief, Engineering and Construction Division. Responsible for the quality of engineering services and products produced within Engineering and Construction Division, contractor produced products, and the development of and adherence to QC and/or QA Plans for all engineering product deliverables.

c. Engineering and Construction Division Branch Chiefs (Design and Contract Administration). Resolve impasses between the design team and the ITRT within respective areas of responsibility. Monitor the quality of the products and services produced by team members.

d. Supervisor/Chief of the Functional Element. Responsible to provide resources for project development and for product quality in respective areas. Responsible for the competency of the staff by teaching, coaching, mentoring and training staff to maintain a quality workforce. Ensure scope, schedule and budget are accurate.

e. Project Delivery Team Members. Responsible for product development and quality in respective areas of responsibility. Keep the commitments for completion of their portion of the project as documented in the project-specific project management plan (PMP). Advise team leaders and supervisor of any prospective changes that could impact the delivery schedule or budget of individual subproducts.

f. Quality Manager

- Facilitates brokering with the Division and other Districts when needed for work leveling or to find additional technical expertise
- Performs random quality audits on selected products
- Serves as engineering and construction POC for Quality Control and Quality Assurance
- Provides all documentation needed for Division quality assurance audits (QAA)
- Shares lessons learned.

g. ITRT Members. Perform timely and thorough reviews of products developed by the project delivery team.

## **6. Quality Control for In-House Products**

a. Quality Control Process. The quality control process is an appropriate risk-based evaluation of engineering and design products to ensure that they fully meet the prescribed requirements and expectations of our sponsors and customers and comply with laws, regulations, and sound technical practices of the disciplines involved. The quality control process is focused on continual quality improvements. In accordance with ER 5-1-11 and the Project Management Business Process Manual, quality is managed through the Plan-Do-Check-Act cycle for project execution.

(1) Plan:

(a) Quality Control Plans. A key part of the quality process is the preparation and execution of a Quality Control Plan (QCP). The Engineering and Construction Division will prepare a QCP for each technical product for which it is responsible. The QCP can be very simple or elaborate depending on the risk, complexity, and type of product.

(b) Generic Quality Control Plans. Generic QCPs can be prepared for programs where the products are of a routine, recurring nature. Risk, complexity and visibility shall be the criteria used to determine if a product specific or generic QCP is required.

(2) Do:

(a) Quality Production. Throughout the engineering and design process, the design team assigned to the project delivery team is assigned the responsibility for the production of a quality product. The goal of the team is to provide quality work according to the approved PMP and the appended QCP. A thorough understanding of the work is required, and must be assigned to the appropriate professionals by the supervisor/chief of the functional element. The work shall be undertaken with full communication between team members to ensure product functionality.

(b) Lessons-learned. Ensure lessons-learned are implemented in the project delivery process. Lessons-learned will be collected, analyzed, and documented according to guidance in the PMBP Manual and ER 1110-1-8159, Dr Checks.

(3) Check:

(a) Design Review. Each member of the design team shall ensure a quality product in their functional area through internal detailed checks, reviews and supervisory review by the appropriate Section or Branch Chiefs. Only internally checked quality products shall be released for use by other team members.

(b) Checks. Perform sufficient independent technical review, management oversight, and verification to ensure that quality objectives are met consistent with the PMP. A check is a detailed evaluation of the engineering analysis, design documentation report and contract documents prepared by each engineering discipline. All checked drawings, computations, and analyses shall be annotated to show the initials of the designer and the checker and the date of action. The checker shall be qualified to originate the product that they check. A check shall include a comprehensive evaluation of at least the following:

- correct application of methods
- adequacy of basic data and assumptions
- correctness of calculations
- complete, logical, neat and articulate documentation
- testing, modeling, assumptions, calculations, text, and graphic presentations in all documents are complete, satisfy appropriate design criteria, and utilize sound engineering practice
- biddability, constructibility, operability, and environmental issues

(c) Independent Technical Review. The ITR process involves an evaluation of the adequacy of project design and formulation as the project progresses and a final evaluation of the completed product. The team shall comprise individuals who demonstrate senior-level competence in the type of work being performed. The QCP shall indicate milestones where

scheduled reviews and meetings are required. The ITR shall comply with the guidelines in ER 1110-2-1150. After these reviews, an ITR Conference will be conducted, if required, between the Design Team and the ITRT to discuss each comment and response to establish clarity and intent. The ITRT leader shall bring unresolved comments to the functional Section or Branch Chief of the responsible element for resolution. The Chief, Engineering and Construction Division shall make final resolution of all unresolved technical issues and document the resolution in the Certification of Independent Technical Review.

(4) Act

(a) Customer Involvement. The customer and sponsor shall be invited to participate on the ITRT when appropriate.

(b) If performance measures are not met, take corrective actions to fix the systemic cause of any non-conformance and deficiency. Document quality improvements to include revisions to the quality control or quality management plans. Document lessons-learned in the Dr Checks database.

(5) Documentation. The Technical Coordinator shall document the quality process and furnish all correspondence to the QM. Sample documentation is included as Exhibit B-1-1.

(6) Construction. The quality control process for engineering and design during construction (EDDC) shall include instructions to the Resident Engineer, contract modifications, support to the field, timely reviews of submittals, and field visits to ensure that the design intent is accomplished for major design features. Any output products will follow normal chain-of-command review channels.

(7) QA for in-house District Products. The Great Lakes and Ohio River Division (CELRD) shall perform QA on selected work accomplished by the District. QA includes a management review of the District's programs and processes. Quality Assurance shall assess the effectiveness of programs and processes, identify potential problems, resolve and remedy circumstances before problems occur, recommend modification of processes to improve products, verify that the independent review processes are in place, and strengthen programs to ensure District viability. A biannual Quality Assurance Audit by the Division will normally achieve this objective.

b. Quality Control Plan. The QCP is a document that defines a step-by-step approach to ensure quality in engineering and design products. Generally, data acquisition by in-house labor is not considered a design product (a QCP is not required). The QCP shall be product specific and shall describe a step-by-step process regarding determination as to who will be involved, their respective area of responsibility, and what will be reviewed. The QCP shall not duplicate definitions or procedures described herein. The QCP shall be developed for each engineering project, focusing on deliverables. The QCP is required as an appendix to the PMP and must be developed in conjunction with the PMP development. The QCP shall be prepared and signed by the TC and certified by the Chief of the functional element responsible for performing the work. The QCP shall address the following:

(1) Purpose. A brief statement of purpose for the QCP. A description of the products to be prepared to support the agreed upon requirements of the customer.

(2) Applicability. A statement regarding the applicability of the plan. Outline the scope of work for the QCP. For multiple product projects, address how the plan will be modified to include future products.

(3) References. A list of references to any information that is part of the QCP by name or title. Include a reference to the QMP.

(4) General. A general paragraph that provides descriptive information about the project including type of project, location, authority, customer/sponsor, project description, and the customers requirements and expectations.

(5) Project Risk. A description of the risks inherent to the project. The risk analysis shall be from the perspective of the customer as well as the government. The appropriate level of checks, reviews and independent review is a function of management of relative risk. In general, the greater the risk, the greater the level of QC required. Risk consideration should address such topics as:

- potential for loss of life
- potential for significant property damage
- complexity of the project
- product cost
- customer certainty of goals
- potential effects on health and safety
- environmental impacts
- project schedule flexibility

(6) Technical Criteria Statement. The identification of the technical criteria (standards, codes, etc.) to be used in product formulation. Do not list specific codes for each discipline, but list by generic type.

(7) Design Team. The members of the team shall be identified in the QCP, together with their functional discipline and phone extension.

(8) ITRT. The QCP shall identify the disciplines required for the independent technical reviews, along with the name and phone extension of the independent technical reviewers. For small, uncomplicated jobs, this may be one person. The plan shall also include the reviewers' responsibilities.

(9) Special Considerations. A statement regarding any special considerations and/or crucial design features that must be addressed.

(10) Quality Assurance. A statement identifying the office responsible for QA.

(11) Customer Involvement. A statement defining the expected customer involvement.

(12) Review Schedule. A list of review milestones that defines the level of in-progress review that will be performed.

(13) Review Budget. The ITR budget for the included products in terms of allotted review time and dollars.

(14) QCP Approval. The QCP signed by the TC and certified by the Chief of the functional element responsible for performing the work constitutes approval for those QCPs that can be approved at the district level.

c. Responsibilities:

(1) Technical Coordinator. The engineer or technical specialist responsible for product development is delegated the responsibility for ensuring overall product quality. In carrying out these quality control responsibilities, the TC shall:

- develop a draft QCP as the first step of the project design
- recommend the appropriate disciplines needed for the ITRT and request the assignment of team members
- coordinate with functional area supervisor to ensure design reviews are performed
- initiate in-progress and end-product independent reviews
- serve as POC for the ITRT leader
- keep the ITRT abreast of project schedules
- assign team member actions for each ITRT comment
- consolidate design team written comment responses and provide to ITRT
- schedule and lead the ITR Conference
- document all meetings between the team and the ITRT and keep a record of issues, concerns, and decisions
- verify that all ITRT comments have been resolved and incorporated into the product
- provide copies of all correspondence to the QM.

(2) The Design Team:

- is responsible and accountable for project design
- ensures quality product development and design checks and reviews are performed
- ensures deliverables or products are reviewed by supervisors/functional chiefs and comments are incorporated prior to release from section/branch
- assists the TC in identifying the disciplines required for the ITRT
- responds to all ITRT written comments
- makes all appropriate changes to the design documents



- participates in the ITR Conference
- keeps supervisors/functional chiefs abreast of scope, schedule, budget and other changes.

(3) Design Team Member Supervisor/Functional Chief:

- assigns team members as appropriate in coordination with the TC and PM
- ensures design checks are performed to result in quality products
- reviews all products prior to release from functional area for reviews
- ensures product is on schedule and within budget for area of responsibility
- reviews functional area product prior to release for inclusion in final coordination package.

(4) Branch Chief:

- ensures products are on schedule and within budget for the branch
- ensures branch product is reviewed by functional chiefs prior to release
- reviews final coordination package for completeness, the ITR has been accomplished, and all issues settled
- ensures products are fully coordinated between sections
- coordinates with PDT members to ensure QCPs are developed for all projects.

(5) Chief, Engineering and Construction Division:

- Ensures quality products are released to the public, signs the final routing packages
- Ensures ITRs are completed, all issues are resolved and signs the Certification of Independent Technical Review.

(6) ITRT Leader:

- coordinates all activities with the independent technical review team
- coordinates review activities with the TC
- reviews ITRT comments; ensures that all comments are value-added
- ensures an overall review of the product
- assembles and consolidates review comments into one document to be forwarded to the TC for resolution
- participates in the ITR Conference
- obtains certification that the review has been completed.

(7) Independent Technical Review Team:

- participates in the development of the specific tasks to be performed as part of the QCP
- participates in product reviews

- reviews the deliverables for conformity to previously approved plans and reports, technical product accuracy and adequacy, functionality of unproven and unique design features or assumptions and criteria
- provides written comments through Dr Checks
- participates in the ITR Conference.

(8) Quality Manager:

- maintains a central record-keeping file of QC activities
- assists the TC in the development of the QC plan.

## 7. Quality Assurance of Architect-Engineer (A-E) Work

a. Quality Assurance Process. The QA process involves a management review of the A-E's QC programs and processes and a contract compliance review on the A-E's work. Engineering and Construction Division and the A-E shall establish and maintain an "Owner-Client" relationship. The A-E is contractually required to perform QC and will be required to submit a QCP as the first item of work in his contract or delivery order for an indefinite delivery contract. The QCP shall follow the requirements of paragraph 8 below. The QA team shall conduct the QA review during the life of the contract. The A-E is responsible for addressing any findings resulting from QA audits.

(1) Documentation. The Technical Coordinator shall document the quality assurance process and furnishes all correspondence to the QM. Sample documentation is included as Exhibit B-1-2.

b. Quality Assurance Plan. The QA plan is a document that defines a step-by-step approach to ensure that the A-E's quality control program is being undertaken properly. The QAP will be developed for each contract or delivery order for engineering services not including data acquisition. The QAP shall be signed by the TC and certified by the Chief of the functional element responsible for overseeing the work. The QAP shall address the following:

(1) Purpose. A brief statement of purpose for the QAP. Name the A-E.

(2) Applicability. A statement regarding the applicability of the plan. Outline the scope of work for the QAP.

(3) References. A list of references to any information that is part of the QAP by name or title. Include a reference to the QMP.

(4) General. A general paragraph that provides descriptive information about the project including type of project, location, authority, customer/sponsor, project description, and the customers requirements and expectations.

(5) Project Risk. A description of the risks inherent to the project from the perspective of the client as well as the government.

(6) QA Team. Identify the QA Team. Defines specifically what is to be reviewed, to include but not limited to; scope of services is complete and products delivered meet the requirements, A-E QCP, perform contract compliance review, concepts and overall assumptions, conclusions, perform QA audits, A-E QC correspondence and ITR comments and responses, design reviews by A-E were completed including calculations, drawings checked and signed and signs quality assurance certification.

(7) Project Schedule. A submittal and milestone schedule.

(8) Review Budget. The QA budget for the included products in terms of allotted review time and dollars.

(9) QA Plan approval. The QAP signed by the TC and certified by the Chief of the functional element responsible for performing the work constitutes approval of the QAP.

c. Responsibilities

(1) Engineering and Construction Division:

- confirms that the A-E's QC program is being undertaken appropriately
- ensures that QA reviews are process oriented and not QC reviews
- verifies that products received meet the requirements of the Scope-of-Services.

(2) Architect-Engineer:

- performs Quality Control including Independent Technical Reviews
- is professionally and legally responsible for the design process and resulting products
- is held accountable for increased costs resulting from deficient designs.

(3) Quality Assurance Team:

- reviews A-E's Scope-of-Services for completeness
- verifies that products received meet the requirements of the Scope-of-Services
- reviews concepts, overall assumptions and conclusions
- consults with A-E to clarify and resolve issues without directing the work
- minimizes direct input regarding the details of the A-E's design
- reviews A-E QCP (QC program and processes, the technical disciplines of the ITRT, ITRT members experience and knowledge)
- performs QA audits periodically (scheduled and unscheduled) to assure that an active QC process is in place and is followed

- reviews A-E's QC correspondence and the ITRT comments and responses, and assures that design computations, calculations, and drawings are checked.

(4) Technical Coordinator:

- serves as QA Leader
- develops a QAP prior to contract award
- coordinates Contract Compliance Reviews
- assembles and consolidates QA comments
- serves as POC with A-E
- furnishes all correspondence to the QM
- Signs Completion of Quality Assurance Review document.

(5) Quality Manager:

- member of all QA teams
- ensures coherence and understanding of the QA team's mission and its bearing on the product
- maintains a central record keeping file of QC/QA activities
- assists the TC in the development of the QA plan.

**8. Architect-Engineer Quality Control Plan.** The A-E Quality Control Plan is the management plan for executing the contract. The QCP describes the way in which the A-E will produce the deliverables, and the step-by-step approach that will be taken to ensure the quality of the engineering and design services and the products derived from those services. As stated in paragraph 7. Quality Assurance of Architect-Engineers work, a QCP is required for each delivery order. In addition to the requirements of the quality control plan as described above, the following items are key components of the QCP:

a. Management Philosophy. The A-E QCP shall discuss the organization's technical management philosophy relative to its commitment to quality. The Quality Control Program shall include as a minimum Quality Production, Internal Quality Checks and Reviews, and Independent Technical Review.

b. Management Structure. The QCP shall delineate the organizational composition of the A-E firm to clearly show the interrelationships of management, design team components, and the independent quality control team, including all consultants. An organizational chart identifying by name the key design and independent review team members, and showing their specific responsibilities related to the project shall be included.

c. Management Approach. The QCP shall define the specific management methodology to be followed during the performance of the work, including such aspects as, documentation management and control, communications, design coordination procedures, design checks and reviews, and managerial continuity and flexibility. Design checks and reviews should include a comprehensive evaluation of:

- correct application of methods
- adequacy of basic data and assumptions
- correctness of calculations
- organization and completeness of documentation
- testing, modeling, assumptions, calculations, text, and graphic presentations in all documents for completeness and to satisfy appropriate design criteria and use of sound engineering practice
- compliance with guidance, standards, regulations, and laws
- biddability, constructibility, operability, and environmental issues.

NOTE: If the A-E's organization has a Quality Management Plan that addresses the non-project specific discussion of the above topics, then a brief summary statement can be made for each of the topics and reference the applicable sections of the contractor's QMP. The project specific discussion must still be addressed.

d. Independent Technical Reviews. ITRs shall be conducted by senior, technically qualified professionals, who have not been directly involved with product development and who will assure that:

- concepts, assumptions, features, methods, analyses, and details are appropriate, fully coordinated, valid and correct
- an appropriate range of feasible alternatives was evaluated
- problems and issues are properly defined and scoped
- analytical methods used are appropriate and yield reliable results
- results and recommendations are feasible, within policy guidelines, safe, functional and supported by the presentation
- any deviations from policy, guidance, and standards are appropriately identified and have been properly approved or coordinated
- the products meet the customers' needs.

e. Documentation. All internal review documents and associated comments and responses shall be retained in the A-E's files in auditable condition and submitted to the Government at each review cycle. The A-E shall use Dr Checks for all external reviews (BCOEs) to document comments and responses. Upon project completion, the A-E must submit a Contractor Statement of Technical Review and Completion of Independent Technical Review, signed by the Design Team and the ITRT (See Exhibit B-1-2).

f. Design Tools. The design tools that will be used in executing the contract, such as, CADD, MCACES, SPECSINTACT, and computer applications programs, shall be described.

g. Scheduling. A design schedule shall be included showing the sequence of events involved in carrying out specific tasks within the specified period of service. The design review and correction periods scheduled prior to submittals shall be clearly shown.

h. Construction Cost Estimate Control. The organization's internal controls to minimize construction cost overruns shall be described to ensure the accuracy and integrity of the construction cost estimate. The A-E shall state how construction cost information will be handled and communicated to the Government.

i. Communications. Methods shall be discussed by which clear and accurate communications are to be achieved both within and outside the organization. The names of all parties authorized to request modifications to the contract shall be furnished and specifically how these modifications will be coordinated and documented.

## **QC CORRESPONDENCE – SAMPLES**

- 1 **Statement of Technical Review (In-House Work).** Certifies and documents that QC, including ITR, was accomplished and approved.
- 2 **Certification of Independent Technical Review**
- 3 **Electronic Bid Set (EBS) Issuance.** Certification that plans and specifications (P&S) and other supporting documents are approved.

*Sample Statement of Technical Review (In-House Work): Certifies and Documents that QC including ITR was accomplished and approved.*

**STATEMENT OF TECHNICAL REVIEW  
IN-HOUSE DESIGN - SAMPLE**

**COMPLETION OF INDEPENDENT TECHNICAL REVIEW**

The District has completed the (type of study) of (project name and location). Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions was verified. This included review of assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The study/design was accomplished by (a District team/personnel from XX District/by A-E contractor); and the independent technical review was accomplished by (an independent District team/personnel from XX District/by A-E contractor).

\_\_\_\_\_  
(Signature)  
Design Team Leader

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Signature)  
Independent Technical Review Team Leader

\_\_\_\_\_  
(Date)



## CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

(Project Title)  
(Product Reviewed)  
Date

Significant concerns and the explanation of the resolution are as follows:

None.

As noted above, all concerns resulting from independent technical review of the project have been considered and resolved.

\_\_\_\_\_  
(Signature)  
(Name) Chief, Engineering & Construction Division

\_\_\_\_\_  
(Date)

cf:  
(Quality Manager) [for Quality File]  
(Project File)

*Sample Memorandum: Certification that P&S and other supporting documents are approved for Electronic Bid Set (EBS) issuance.*

Office Symbol of Signatory (1110)

Date:

MEMORANDUM FOR FILE

SUBJECT: (Project Title)  
Solicitation No. DACW35-XX-B-XXXX

As the Chief of Engineering and Technical Services, my signature below indicates my approval of drawings, technical specifications, and other documents prepared and issued in the Electronic Bid Set (EBS) format for the above subject solicitation number.

(Name)  
Chief, Engineering & Technical Services  
USAED, Detroit

cf:  
(Quality Manager) [for Quality File]  
(Project File)

## **QA CORRESPONDENCE – SAMPLES**

## COMPLETION OF INDEPENDENT TECHNICAL REVIEW

The A-E firm of (Name) has completed the (deliverable for Project Title). Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. During the independent technical review, compliance with established policy, principles and procedures, utilizing justified and valid assumptions were verified. This included review of assumption; methods, procedures, and material used in analyses, alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy.

\_\_\_\_\_ (Signature)  
(Signature)  
A-E Design Team Leader

A-E ITR Team Leader

**CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW**

**CONTRACTOR STATEMENT OF TECHNICAL REVIEW**

(Project Title)

Significant concerns and the explanation of the resolution are as follows:

None. (If applicable)

As noted above, all concerns resulting from independent technical review of the project have been considered.

\_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)  
(Principal w/A-E firm)

cf:  
(Quality Manager) [for Quality File]  
(Project File)

*Sample Statement of Technical Review (Contractor Work): Certifies and Documents that  
QA was accomplished and approved.*

**STATEMENT OF TECHNICAL REVIEW**

(Project Title)  
(Date)

**COMPLETION OF QUALITY ASSURANCE REVIEW**

The A-E firm of (Firms Name) (Deliverable and project title). The District has completed a quality assurance audit and the subject project is in compliance with the contract requirements.

\_\_\_\_\_  
(Signature)  
QA Leader / Technical Coordinator

cf:  
(Quality Manager) [for Quality File]  
(Project File)