

COLUMBIA RIVER CROSSING QUALITY ASSURANCE MANUAL

Technical Manual

June 2006





Title VI

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ACRONYMS

AFR	Audit Finding Report
CRC QM	Quality Assurance Manager
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
NCR	Non Conformance Report
PMP	Project Management Plan
QA	Quality Assurance
QC	Quality Control
QAM	Quality Assurance Manual

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1. Management Commitment Statement

The quality of the Columbia River Crossing project is the ultimate measure by which taxpayers of Oregon and Washington, and all people who will ultimately use this new facility, will judge the success of the project. It is the policy of the project team that the project will be planned and constructed with the highest regard for quality in all areas such as environmental, scheduling, design (both preliminary and final), geotechnical investigations, surveys, bidding, construction, maintenance, and ongoing serviceability and usability for years to come.

Quality assurance practices provide one of the most effective means of controlling, guiding, and improving planning, environmental concerns, scheduling, design, safety costs, reliability, construction quality, and longevity of the project. As such, the Columbia River Crossing project team considers the use and implementation of sound quality assurance practices to be of the utmost importance and a critical element in the delivery of the Columbia River Crossing project.

The Project Management team will identify quality objectives, specify quality-related activities, and oversee solutions to any and all issues to achieve these objectives, and will assign responsibilities for implementation and successful completion of the project.

It is the intent of the Columbia River Crossing project that quality assurance be a team effort encompassing all persons and organizations participating in the development of the project from initiation to completion. The entire project team—in providing management, planning, scheduling, design, construction, consulting, or other services—is responsible for producing quality results, and is committed to the full and faithful execution of the Columbia River Crossing Quality Assurance Program.

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2. Introduction

As an obligation to the people of Oregon and Washington, the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA), as well as funding requirements relating to grantees undertaking capital programs, the Columbia River Crossing quality management team is required to prepare a Project Management Plan (PMP) that includes a quality program comprised of written quality policies and procedures, as well as identification of a management team that supports and takes responsibility for quality and personnel who undertake quality assurance (QA) and quality control (QC) activities. The overall requirements of the project's QA program are outlined in the PMP. The Columbia River Crossing Quality Assurance Manual (QAM) provides further requirements, responsibilities, and definitions for the implementation of the project's quality program.

The Columbia River Crossing Quality Assurance Program provides for the implementation of administrative and quality control measures during preliminary investigations, Environmental Impact Statement (EIS), and preliminary engineering design. The controls established within the QAM will facilitate early identification of conditions that might, if not identified, adversely affect satisfactory completion of the project or this phase of the project. The administrative and control measures adopted by the Columbia River Crossing project team will be prepared and implemented in such a manner as to contribute to and document the successful completion of a safe, reliable, economical, and convenient public transit/transportation system.

Throughout the Columbia River Crossing project, all proposal document(s) and contract(s) for engineering or other required services will be reviewed to determine the level of quality-related activities required to be implemented by the QAM. The quality program for each phase or contract is to be based on its size, complexity, uniqueness, and impact on the safe and efficient preliminary design of the Columbia River Crossing project.

The controls necessary for preserving the integrity of quality-related activities and the required documentation of the results are categorized as follows:

- documentation to include a review of the EIS and studies leading to its preparation;
- public involvement efforts at all levels;
- project planning and implementation;
- financial plan development;
- preliminary engineering design; and
- preliminary contract documents to verify that all quality aspects have been considered.

2.1 PURPOSE/OBJECTIVE

The purpose of the QAM is to provide the processes for implementation of the Columbia River Crossing Quality Assurance Program (QA program) through written procedures, plans, and audits, including the documentation of such activities. The objective is to attain the required level

of quality during preliminary investigations, EIS development, public input, and preliminary design.

2.2 SCOPE

The QA program encompasses all activities related to the initial planning, public involvement, preliminary and final site investigation, environmental concerns, and preliminary design of the project. Consultants (including sub-consultants) will conform to the applicable QA program requirements, or utilize approved QC procedures for their work.

It is the intent of the Columbia River Crossing Quality Assurance Manager (CRC QM) and the Columbia River Crossing project team to ensure that the agency has an effective and complete QA program throughout the entire course of the project. As such, each consultant/sub-consultant will be required to abide by the PMP. Their submittal(s) will be reviewed by the CRC QM and other Columbia River Crossing representatives, as required, for comment, approval, and acceptance prior to implementation. The basis for the review, approval, and acceptance may include this document, States of Oregon and Washington guidelines and requirements, FTA quality guidelines of the quality-related specification sections in the contract documents, and other documents and requirements as deemed necessary.

2.3 RESPONSIBILITIES

The CRC QM is responsible for the administration of the QAM. The CRC QM has been delegated the authority and organizational freedom to:

- Identify and evaluate any and all quality problems; and
- Initiate, recommend, or provide solutions and to control further preliminary design, investigations, public input, etc, of non-conforming or deficient items or services until proper disposition is obtained.

The CRC QM will ensure that schedule and cost considerations do not compromise quality and will have complete, unhindered, and ready access to the Project Manager to report on quality concerns. The CRC QM reports administratively to the Project Manager.

2.4 IMPLEMENTATION

The Columbia River Crossing QAM will be implemented in accordance with the project's needs and the procedures contained in this document. The CRC QM has the responsibility to review project proposal documents in order to identify which sections of this QAM are applicable. The need for developing and providing a consultant/sub-consultant QA/QC program(s) will be included in all requests for proposals, as required.

2.5 REVISIONS

Revisions to and maintenance of the QAM are the responsibility of the CRC QM in collaboration with the Project Manager. Revisions will be made as they become necessary. An overall review of the program will be made annually, or more often if necessary, to determine if any revisions are warranted. The CRC QM will perform changes to the QAM. The QAM is a Columbia River Crossing controlled document. Revisions to the program will also be distributed as a controlled document.

Whenever revisions occur, all holders of copies will be distributed copies of the revised procedure.

2.6 PRECEDENCE

In the event that there is any discrepancy between the PMP and this QAM, the PMP will take precedence, and either or both documents will be subsequently revised to return the two documents to alignment.

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3. QUALITY ASSURANCE PROGRAM IMPLEMENTATION

3.1 Management Responsibility

3.1.1 Purpose

This section describes the management responsibility, organizational structure, and chain of command for QA/QC activities to be implemented during the preliminary design of the Columbia River Crossing project by the consultants, sub-consultants, and others involved in the successful completion of the Columbia River Crossing project.

3.1.2 Scope

These QA requirements apply to Columbia River Crossing and its consultants, sub-consultants, and all others who will perform activities that affect the overall quality of the project.

3.1.3 Policy

Authority, accountability, and responsibility of the Columbia River Crossing QA team must be identified for each organization, consultant, and sub-consultant. The management structure, function, and chain of command of each contributing organization should be clearly established.

3.1.4 Quality Program Procedures

Organization

The structure for any organization assigned to perform work affecting quality will be that organization's responsibility, subject to approval by the CRC QM or those delegated by the Columbia River Crossing project team. Each QC program and staff organization will be structured in such a manner that:

1. Quality is achieved and maintained by those who have been assigned responsibility for performing the work. This may be accomplished by utilization of QC plans and procedures already in place or by use of those embodied in the overall Columbia River Crossing QA program.
2. The organization responsible for quality will have sufficient authority, access to work areas, and organizational independence to identify quality problems, verify implementation of solutions, and assure that further processing or delivery is controlled until proper disposition of a deficiency, nonconformance, or unsatisfactory condition has been completed.
3. Appropriately qualified personnel will verify compliance with all aspects of the QA/QC program. To determine its effectiveness, they will perform planned and scheduled audits.

Personnel who do not have direct responsibility for performing the activities being audited will perform these audits in accordance with the Columbia River Crossing project's written procedures and/or checklists. Audit results will be documented and reported to and reviewed by the CRC QM and responsible management. Follow-up responses and corrective actions will be implemented where appropriate.

4. Quality achievement is verified via quality audits, quality surveillance, and first-level QC reviews of work products performed by persons or organizations not directly responsible for performing the work.
5. Quality verification persons or organizations will report to a level of management that provides sufficient authority and organizational freedom to assure that appropriate action is taken to resolve conditions adverse to quality.

Program Assessment

The adequacy and effectiveness of the project quality program will be regularly and formally assessed by the management of organizations implementing the programs and by the CRC QM.

3.1.5 Responsibilities

The Project Manager is ultimately responsible for the overall quality of the Columbia River Crossing project.

The Project Manager has assigned the responsibility of assuring the development, establishment, implementation, and evaluation of the project's QA program to the CRC QM.

The CRC QM is responsible for:

- Assuring that the project's QA program is established and maintained.
- Providing consultation and direction regarding quality issues to design, and other project tasks.
- Monitoring the quality program implementation and evaluating adequacy and effectiveness.
- Coordination of the project's QA program with the consultants' QA/QC plans to ensure that Columbia River Crossing project quality policies are not compromised.
- Resolving conflicts regarding the intent of the QA program.
- Review and approval of consultants' and sub-consultants' QA programs for compliance.

The CRC QM is provided with the complete organizational freedom to investigate quality-related activities in all areas of the project and to identify any quality problems. The CRC QM retains authority to control further preliminary design, investigations, and/or public input of a nonconforming or deficient item or service until proper disposition has been obtained; to initiate, recommend, or provide solutions; and to verify implementation of solutions. In matters of quality, the CRC QM will have complete and ready access to the Project Manager and Task Managers.

Any decision made by the CRC QM regarding the applicability or interpretation of the QA program to consultants, sub-consultants, or others who may work on the project is subject to review only by the Project Manager.

The CRC QM reports to the Project Manager for administration purposes.

Refer to the PMP for a current organizational chart of specific flow of responsibility.

Attachments

None

3.2 Quality Assurance Program and Documentation

3.2.1 Purpose

This section describes the Columbia River Crossing project QA program and assigns responsibility for developing, approving, and implementing quality procedures.

3.2.2 Scope

The QA program described here applies to all project quality-dependent activities and participants.

3.2.3 Policy

The Quality Policy Statement requires a QA program to ensure that the expected level of quality is achieved. Implementation of the Columbia River Crossing QA program is described throughout this QAM.

3.2.4 Plans and Procedures

The QA program for the Columbia River Crossing project consists of three elements, as follows:

1. The governing policies and general requirements specified in the PMP's Quality Policy Statements and this QAM.
2. A Quality Assurance/Quality Control Plan prepared specifically for major tasks for consultants and sub-consultants.
3. Supplemental plans, procedures, or instructions that describe how additional quality-related activities are to be performed, implemented, and verified.

The requirement for implementing an effective QA/QC program will be included in all task order scoping documents.

QA program policies will comply with FTA quality assurance guidelines, quality-related requirements of the contract documents, and other documents or requirements as deemed necessary.

Consultants and sub-consultants will each be required to adhere to the requirements and standards set forth in this QAM and their own internal quality control programs, which will be reviewed and approved by the CRC QM.

All task-specific QC plans must meet the following minimum requirements:

1. Have been reviewed by task managers within the last 12 months.
2. Include provisions for annual review.
3. Be distributed to key project personnel.
4. Include QC procedures for independent or peer review of compiled data, calculations, technical reports, and drawings.
5. Provide for appropriate documentation of undertaking QC activities and written responses to review comments such that quality program implementation can be audited or verified.

Task QC plans will include appropriate approval signatures and must be submitted to the CRC QM for review, comment, and approval. The CRC QM will confer with the Project Manager prior to the issuance of a final decision on acceptance or rejection of the proposed QC plan.

The Columbia River Crossing QA program will be subject to an annual review.

This QAM will be evaluated by Columbia River Crossing upper management to ensure adequacy and effectiveness of policies and personnel.

Consultants' QA/QC plans will be reviewed by the CRC QM to assess the adequacy and effectiveness of policies and personnel.

3.2.5 Responsibilities

The CRC QM's responsibilities are outlined in Section 3.1.5

Columbia River Crossing personnel performing quality functions will be qualified by training and/or experience and be subject to the approval of the CRC QM.

Consultants are responsible for developing, implementing, and maintaining a QA/QC plan that satisfies the requirements of their current contract documents. In the event a consultant subcontracts a portion of the work, the accountability for the QA/QC plan remains with the primary consultant. The primary consultant may, however, delegate responsibility for portions of the plan to the performing sub-consultant, subject to CRC QM approval.

Attachments

None

3.3 Design Control

3.3.1 Purpose

This section describes the requirements for the quality control of design activities associated with the Columbia River Crossing project. Further clarification for design activity requirements can be found in the Technical Document Preparation Quality Control Plan.

3.3.2 Scope

These requirements apply to all transportation activities, both within the Columbia River Crossing office and the offices of any consultant/sub-consultant.

3.3.3 Policy

All design consultants and sub-consultants are required to conform to the QAM, approved by CRC QM, and to govern their work in accordance with this QAM.

3.3.4 Procedures

Preliminary design work will be governed by the most current revision of Columbia River Crossing project Preliminary Design Procedure.

3.3.5 CRC Quality Assurance

The CRC QM will perform audits and/or surveillance of the preliminary design QC process to verify that the QC plan has been implemented. QA activities will include sampling design documents for adequacy and completeness. QA staff will also examine the consultants' QC documentation to verify that the QC records are complete.

3.3.6 Responsibility

The Columbia River Crossing Task Managers are responsible to develop, implement, and maintain review procedures for their assigned work. This includes internal QC review of deliverables according to the requirements of the PMP and the QAM. The Columbia River Crossing Task Managers will designate staff responsible for review of designated deliverables.

In addition, Task Managers will participate to the extent necessary in reviews by Columbia River Crossing project team members exterior to the task groups (DOT, etc.) and in reviews performed by outside entities such as those required by the InterCEP Agreement.

The CRC QM is responsible for verification of all review procedures and disposition of quality issues.

Attachments

None

3.4 Environmental

3.4.1 Purpose

This section describes the requirements for the quality control of environmental activities associated with the project. Further clarification for environmental activity requirements can be found in the Environmental Products Quality Control Procedure.

3.4.2 Scope

These requirements apply to all environmental deliverables produced by Columbia River Crossing project consultants.

3.4.3 Policy

All environmental consultants and sub-consultants are required to conform to the QAM, approved by CRC QM, and to govern their work in accordance with this QAM.

3.4.4 Quality Control Procedures

Environmental work will be governed by the most current revision of Environmental Products Quality Control Procedure.

3.4.5 CRC Quality Assurance

The CRC QM will perform audits and/or surveillance of the environmental QC process to verify that the QC plan has been implemented. QA activities will include sampling environmental documents for adequacy and completeness. QA staff will also examine the consultants' QC documentation to verify that the QC records are complete.

3.4.6 Responsibility

The Columbia River Crossing Task Managers are responsible to develop, implement, and maintain a procedure for their assigned work. This includes internal QC review of deliverables according to the requirements of the PMP and the QAM. The Columbia River Crossing Task Managers will designate staff responsible for review of designated deliverables.

In addition, Task Managers will participate to the extent necessary in reviews by Columbia River Crossing project team members exterior to the Task Groups and in reviews performed by outside entities such as those required by the InterCEP Agreement.

The CRC QM is responsible for verification of all internal QC review procedures for environmental documents and disposition of quality issues.

Attachments

None

3.5 Transportation

3.5.1 Purpose

This section describes the requirements for the quality control of transportation activities associated with the project. Further clarification for transportation activity requirements can be found in the Technical Document Preparation Quality Control Plan..

3.5.2 Scope

These requirements apply to all transportation activities, both within the Columbia River Crossing office and the offices of any consultant/sub-consultant.

3.5.3 Policy

All transportation consultants and sub-consultants are required to conform to the QAM, approved by CRC QM, to govern their work in accordance with this QAM.

3.5.4 Procedures

Transportation work will be governed by the most current revision of Technical Document Preparation Quality Control Plan.

The CRC QM will perform audits and/or surveillance of the transportation QC process to verify that the QC plan has been implemented. QA activities will include sampling transportation documents for adequacy and completeness. QA staff will also examine the consultants' QC documentation to verify that the QC records are complete.

3.5.5 Responsibility

The Columbia River Crossing Task Managers are responsible to develop, implement, and maintain a procedure for their assigned work. This includes internal QC review of deliverables according to the requirements of the PMP and the QAM. The Columbia River Crossing Task Managers will designate staff responsible for review of designated deliverables.

In addition, Task Managers will participate to the extent necessary in reviews by Columbia River Crossing project team members exterior to the task groups (DOT, etc.) and in reviews performed by outside entities such as those required by the InterCEP Agreement.

The CRC QM is responsible for verification of all internal QC procedures relating to transportation planning and work products and disposition of quality issues.

Attachments

None

3.6 Transit

3.6.1 Purpose

This section describes the requirements for the quality control of transit activities associated with the project. Further clarification for transit activity requirements can be found in the Technical Document Preparation Quality Control Plan.

3.6.2 Scope

These requirements apply to all transportation activities, both within the Columbia River Crossing office and the offices of any consultant/sub-consultant.

3.6.3 Policy

All transit consultants and sub-consultants are required to conform to the QAM, approved by CRC QM, and to govern their work in accordance with this QAM.

3.6.4 Procedures

Transit work will be governed by the most current revision of Technical Document Preparation Quality Control Plan.

The CRC QM will perform audits and/or surveillance of the transit QC process to verify that the QC plan has been implemented. QA activities will include sampling transit documents for adequacy and completeness. QA staff will also examine the consultants' QC documentation to verify that the QC records are complete.

3.6.5 Responsibility

The Columbia River Crossing Task Managers are responsible to develop, implement, and maintain a procedure for their assigned work. This includes internal QC review of deliverables according to the requirements of the PMP and the QAM. The Columbia River Crossing Task Managers will designate staff responsible for review of designated deliverables.

In addition, Task Managers will participate to the extent necessary in reviews by Columbia River Crossing project team members exterior to the task groups (DOT, etc.) and in reviews performed by outside entities such as those required by the InterCEP Agreement.

The CRC QM is responsible for verification of all internal QC review procedures relating to transit planning and work products and disposition of quality issues.

Attachments

None

3.7 Document Control

3.7.1 Purpose

This section describes the processes utilized for the systematic control of documents as further described by Columbia River Project Management Plan.

3.7.2 Scope

These requirements apply to all agency staff or consultant/sub-consultant-prepared documents that are issued as Columbia River Crossing project documents and all documents received by the project.

3.7.3 Policy

Project documents will be controlled in accordance with established document control procedures, and quality control measures will be used to verify conformance as outlined in Section 3.2 above.

3.7.4 Procedures

Document Control: The PMP includes requirements for control of documents. An electronic database will be used for cataloging both incoming and outgoing documents. Documents will be assigned a control number for identification and filing. Document control files will be centralized.

Consultants and contractors for the project will be required to develop a filing system for their documents. All project documents sent to the Columbia River Crossing project office or developed for Columbia River Crossing project's issuance will be incorporated into Columbia River Crossing's document control system and central files. Preliminary drawings will be handled separately and are discussed below.

Drawing Control: Columbia River Crossing has established a computerized, internet-based database system for storage, distribution, and management of all project engineering drawings. Consultants are provided access rights to read and/or write to the files, depending on assigned "ownership" of the individual drawing. Drawings are checked out during design activity and are checked back in no more than three days later. Final drawing production and distribution is the responsibility of Columbia River Crossing project team.

Drawings checked back into the database will be checked by Columbia River Crossing Task Managers for adherence to reviewed standards as follows:

- Reference files will be reviewed on the system before being returned to the database.
- Sheet files will be plotted and reviewed to confirm acceptability.
- Random check plot reviews will be conducted on an ongoing basis.

Quality Assurance: The project document control system and the contractor's document and drawing control systems will be subject to review by the CRC QM at any time.

3.7.5 Responsibility

The Project Controls Manager is responsible for development and implementation of the document control system. Consultant and sub-consultant project managers are responsible for organization and control of their internal files and for providing required project documents to the Project Controls Manager for inclusion in the document control system.

The Columbia River Crossing CADD Systems Manager is responsible for the drawing management system.

The CRC QM is responsible for QA verification of the document and drawing control systems.

Attachments

None

3.8 Purchasing, Equipment Procurement, and Construction

Not applicable at this time

3.9 Control of Materials, Product Identification, and Traceability

Not applicable at this time

3.10 Control of Special Processes

Not applicable at this time

3.11 Inspection and Testing Procedures

Not applicable at this time

3.12 Inspection, Measuring, and Testing Equipment

Not applicable at this time

3.13 Inspection and Test Status

Not applicable at this time

3.14 Nonconformance

Not applicable at this time

3.15 Corrective Action

Not applicable at this time

3.16 Quality Records

3.16.1 Purpose

This section describes the requirements for production, collection, filing, and maintenance of QA/QC records.

3.16.2 Scope

These requirements apply to all quality records for the project, including its planning, preliminary design, EIS, public response, etc.

3.16.3 Policy

Written records of QA/QC activities will be prepared, compiled, and stored in a retrievable manner.

3.16.4 Procedures

Quality records will be collected, stored, and preserved in a manner that precludes damage, loss, or deterioration. Quality records may be in either hard copy or electronic form.

Quality records will be maintained to demonstrate conformance to quality-related requirements and the effectiveness of the quality system. They will be available to authorized persons at any time when requested within a reasonable timeframe.

Quality records will be assigned a unique number and a database will be maintained that includes the item description, unique number, location, and responsible authority.

Quality records will be categorized as (1) permanent quality records or (2) non-permanent quality records. Retention time will be as required by applicable law and in accordance with contract requirements.

Permanent quality records, as well as records that may be determined at a later date, are those that involve the following:

- Preliminary design development
- Demonstrated capability for proper function and safe operation of critical items
- Providing required baseline data
- Non Conformance Reports (NCR) and the resolution of the NCR

Non-permanent quality records are those that do not meet any of the above criteria for permanent records.

Quality records are subject to QA audits and or surveillance.

Consultants/sub-consultants are also responsible for retention of their quality records throughout the period of preliminary investigations, preliminary design, etc., in accordance with these requirements.

Storage facilities for quality records should include fire resistant steel file cabinets or other storage containers located within an area having features that preclude damage from fire, condensation, and extreme temperature variation whenever possible. In lieu of fire resistant files, a second (backup) copy of each quality record should be maintained in an area remote from the primary storage area described above.

Columbia River Crossing project staff performing quality control or quality assurance activities are responsible for maintaining quality records in accordance with this section.

All materials generated for the Columbia River Crossing project will be filed in the Columbia River Crossing office at 700 Washington Street, Vancouver, Washington. Unless otherwise stated in the contract, the consultants/sub-consultants' permanent quality records will be turned over to Columbia River Crossing Document Control Manager as they are generated throughout the contract.

Quality Records

Examples of quality records include:

- Design records
- Quality control plans
- Applicable criteria used in preliminary design
- Preliminary design calculations and checks
- Preliminary drawings (standards, reference, directive, contract)
- Preliminary design review report
- Preliminary contract specifications
- Quality assurance system audit and surveillance reports

3.16.5 Responsibility

Consultants/sub-consultants are responsible for establishing and maintaining a comprehensive set of quality records. This item will be addressed in their approved QC plan.

The Columbia River Crossing Document Control Manager is responsible for maintaining, assembling, and preparing all quality records for archiving. While the files are in the possession of the Document Control Manager, accessibility and retrievability of the documents must also be controlled.

The CRC QM or delegated staff will perform audits or surveillance of quality records.

Attachments

None

3.17 Quality Audits

3.17.1 Purpose

This section describes the requirements for performing quality audits.

3.17.2 Scope

These requirements apply primarily to QA audits of project QC activities performed principally by Columbia River Crossing project's QA staff (or consultants or sub-consultants) relative to overall project quality activities. Consultants and sub-consultants performing internal QA audits as part of their QC plans may use this procedure or submit one of their own which meets these requirements.

3.17.3 Policy

A program for planned, periodic audits and routine surveillance will be established to ensure full implementation of the project's QA program and the contractor's QC plans. Formal audit findings will be prepared and reviewed with the affected project participants and maintained in quality records for review by the FTA and others.

Surveillance will be performed on a random basis to check/verify conformance to the QA program. Surveillance is not considered as a scheduled audit and is performed to review and assist the Columbia River Crossing project team in verifying conformance to the QA plan. Deficiencies discovered during the surveillance activity will require corrective action(s) and acceptance by the CRC QM or designated staff.

3.17.4 Procedure

A comprehensive program of planned, periodic audits will be established to verify that applicable elements of the QA program and QC plans are acceptable and have been developed, documented, and effectively implemented in accordance with specified requirements. The activities of consultants and sub-consultants will be audited for compliance and implementation of contractually required quality activities, including evaluation of overall program effectiveness.

An auditor will be assigned for each audit performed and is responsible for all elements of the audit. Audit personnel are to have no direct responsibility in the activities to be audited. Auditors will have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Auditors will be given access to all records necessary to identify problems, recommend solutions, and evaluate corrective actions.

This section also includes information for quality assurance assessments of daily activities performed by Columbia River Crossing project personnel.

The management of the audited organization will be required to respond to the audit report within fifteen (15) working days after receipt of the narrative and the Audit Funding Report (AFR). Circumstances may arise where responses require additional time or further clarification. Such instances will be resolved directly with the auditor and appropriately documented. The

CRC QM will be advised of any extensions to the required response time. CRC's QM is responsible for accepting or rejecting remedial action responses to audits. The reason for rejection will be stated in writing.

The auditor is responsible for scheduling closeout audits as necessary to verify completion and effectiveness of remedial actions. Deficiencies that continue to exist after the closeout audit may be closed to an appropriate document, such as an NCR, or remain open on the AFR to be addressed during a follow-up audit activity. Every reasonable effort will be made to close out audit findings on the AFR that they originated on.

Audit records are to be maintained and included as project quality records and made available for review. Records include audit schedules, audit plans, audit reports, audit checklists, audit performance records, AFR, and Corrective Action Requests as applicable.

3.17.5 Responsibility

The CRC QM is responsible for performing or having performed quality assurance audits and surveillance in accordance with these requirements.

Attachments

1. Quality Assurance Audit Schedule
2. Preliminary Design Activity Audit Checklist
3. Audit Finding Report
4. Instructions for Completing the Audit Finding Report
5. Quality Assurance Audit Log
6. Surveillance Reports

3.18 Training

3.18.1 Purpose

This section describes the requirements for training personnel performing quality-related activities as described herein.

3.18.2 Scope

These requirements apply to all project personnel involved in or responsible for quality-related activities.

3.18.3 Policy

Personnel performing quality-related activities will be technically qualified for their task and familiar with the project QA program procedures.

3.18.4 Procedure

All personnel performing quality-related activities throughout the lifecycle of the project will be technically qualified for their task on the basis of appropriate education, training, and/or experience. Each person will also be familiar with the project QA program and approved QC plans and review procedures pertaining to their work responsibilities.

The consultant or sub-consultant will establish and maintain records as to participation of key project staff in training or briefings regarding the QA program and QC procedures.

3.18.5 Responsibility

CRC's QM is responsible for ensuring that quality training for Columbia River Crossing staff is adequate and complete. The consultant/sub-consultant Project Managers are responsible for the training of their staff.

Attachments

1. Training Record
2. Read and Acknowledge Form for QA Program Training

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4. QUALITY ASSURANCE PROGRAM DEFINITIONS

The following definitions are provided to assure a uniform understanding of terms as they apply to the project QA program.

Audit – A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of the QA/QC program(s) have been developed, documented, and effectively implemented in accordance with specified requirements. An audit should not be confused with surveillance or inspection.

Certification – The action of determining, verifying, and attesting, in writing, to the qualifications of personnel in accordance with applicable requirements.

Certified (Personnel) – An individual certified by a recognized standard or approved as having successfully completed requirements of the standard or procedure.

Change Control – The systematic evaluation, coordination, and approval or disapproval of all changes to the established baseline configuration. It also includes the performance of those actions necessary to ensure that the actual configuration of a system completely matches its technical description in the approved engineering drawings, specifications, and related documents.

Characteristics – Any property or attribute of an item, process, or service that is distinct, describable, and measurable as conforming or nonconforming to specified quality requirements. Quality characteristics are generally identified in specifications and drawings, which describe the item, process, or service.

Configuration Management – A management method of producing an end result which comprises three elements: product identification, change control, and configuration accountability. Configuration management may be distributed throughout a number of organizational entities.

Conformance – An affirmative indication or judgment that an item has met the requirements of the relevant specifications or regulation.

Contractor – Any organization under contract for furnishing items or services. It includes the terms of but is not limited to architect, engineer, consultant, vendor, supplier, sub-consultant, and sub-tier levels of these organizations where appropriate.

Controlled Document – A document that is intended for limited, specified, and tracked distribution and which must be periodically reviewed and updated as required. The use and distribution of controlled documents are tracked and monitored under configuration control procedures.

Corrective Action – Documented commitment of a specific action planned or being implemented to resolve a known or identified condition or conditions adverse to quality.

Corrective Action Request – A document issued to the senior management of a group whose activities are not meeting requirements. This is a significant document that, in effect, warns the consultant/sub-consultants or others that continuing deficient activities will result in consideration of contract default.

Critical Preliminary Design Review – A design review that takes place prior to the issuance of the final preliminary design.

Deficiency – A minor deviation from the QAM and/or the QA/QC documents of the Columbia River Crossing project.

Design – Technical and management processes that create, fashion, execute, or construct documents according to a pre-determined plan or requirement.