U.S. DOT Federal Railroad Administration

Office of Passenger and Freight Programs

Monitoring Procedure 24 - Quality Assurance/Quality Control Review

# PURPOSE

The success of a Grantee's major capital High Speed Intercity Passenger Rail (HSIPR) project depends to a large degree on a sound quality assurance and quality control program developed and executed by the Grantee and its design and construction contractors.

The purpose of this Monitoring Procedure (MP) is to describe how the Monitoring and Technical Assistance Contractor (MTAC) will review the Grantee’s QA/QC program.

# KEY PRINCIPLES

The QA/QC program is a vital part of a Grantee's Project Management Plan (PMP). At a minimum it should define the functions, procedures, and responsibilities for designing and constructing a major capital project.

1. Quality Assurance covers planning quality management activities and verifying those activities are carried out
2. Quality Control covers implementing the quality management plan activities that will result in quality deliverables

Specifically, a typical QA/QC program should address, but not be limited to:

* Management responsibility
* Documented quality system
* Design and construction quality
* Document control
* Purchasing
* Product identification and traceability
* Material testing
* Inspection, measuring and test equipment
* Corrective action
* Quality records
* Quality audits
* Training

# REQUIRED DOCUMENTS

The MTAC will obtain current versions of documents appropriate to the current project development phase, including but not limited to:

1. Project Management Plan
2. Quality Assurance/Quality Control Program Plan (PMP sub plan)
3. Grantee Technical Capacity and Capability Plan (PMP sub plan)
4. Other sub plans

# scope of work

This review will cover grantee compliance with FRA requirements for a QA/QC Program review.

## Quality Management Program

1. The MTAC will verify that the Grantee has a documented, implemented, and maintained Quality Management Program supporting the entire Grantee organization and the project. Procedures and activities may include document configuration and change control, design review, soil and material inspection, and material testing.
2. The Grantee will set up an internal audit to ensure that the Quality Management Program functions as intended.
3. The MTAC will verify that the Quality Management Program satisfies project quality objectives related to:
   1. Document control
   2. Design
   3. Procurement
   4. Construction
   5. Start-up
   6. Operations
4. The MTAC should verify and assess how the Grantee has defined its quality policy and the quality responsibilities for the project team.
5. The MTAC should ensure that the Grantee has assigned qualified personnel—independent of those with direct responsibility for the work being performed—to carry out QA/QC.
6. The MTAC should verify and ensure that such personnel are in fact implementing and maintaining the Grantee’s quality policy.
7. The MTAC should review the Grantee’s quality control and assurance procedures and determine their adequacy.

### Quality Assurance

1. The MTAC will evaluate the Grantee’s:
   1. Plan for quality management activities
   2. Ability to establish quality systems
   3. Identification and evaluation of quality problems and solutions

### Quality Control

1. The MTAC will evaluate how the Grantee:
   1. Implemented quality management activities
   2. Documented quality management activities

## Document Control

1. The MTAC will ensure that the Grantee has a Document Control Program as part of its QA/QC Plan.
2. The MTAC will ensure that the Grantee’s document control procedures include:
   1. Document review
   2. Distribution and storage
   3. Adequate quality assurance procedures to ensure document controls are in place and implemented

## Design Control

1. The MTAC will ensure that the Grantee has a Design Control Plan as part of its QA/QC plan that includes procedures for design verification and design review.
2. The MTAC’s design verification procedures will include activities such as:
   1. Independent checks on design drawings and specifications to document:
      1. Completeness
      2. Coordination
      3. Constructability
      4. Operability
      5. Maintainability
   2. Design calculations for:
      1. Structural
      2. Mechanical
      3. Electrical
      4. Other systems
   3. Confirmation that the consultant(s) responsible for design have established procedures for controlling their design processes
   4. Confirmation that the Grantee has procedures for design consultants to review the design review
   5. Confirmation that the Grantee has procedures for design and specification changes, including signoff and documenting these changes
   6. Confirmation that the Grantee has documented procedures and requirements for as-built documents
   7. Confirmation that the Grantee QA is adequate to ensure design control procedures are in place and being implemented

## Procurement and Construction and Inspection

1. The MTAC will ensure that the Grantee has competitive bid procedures to ensure that bids for desired services are obtained from a number of qualified contractors.

### Procurement Plan

1. The Grantee will include in its Procurement Plan:
   1. A statement of general requirements, including:
      1. Quality requirements
      2. Any past, demonstrated capability, and performance requirements

### Procurement

1. The MTAC will ensure quality control requirements are included within Grantee proposals and bids and are formally communicated to:
   1. Potential consultants
   2. Contractors
   3. Subcontractors
2. The MTAC will ensure Grantee procurement documents, in particular construction contract documents, are reviewed and approved by a designated authority before they are released:
   1. General conditions
   2. Specific conditions
   3. QC requirements
3. The MTAC will review and assess the Grantee’s procedures and requirements for product identification and traceability of equipment manufacturers or other manufacturers supplying products for the project.
4. The MTAC will review and assess the Grantee’s procedures and requirements for product identification and traceability when products and materials are turned over to the owner at project conclusion.
5. The above requirements will be placed in contract documents where appropriate.

### Construction and Inspection

1. The MTAC will review and assess the Grantee’s requirements for a QC inspection and testing program covering all phases of the work:
   1. Inspection and testing procedures for special processes
   2. Requirements for calibrating and inspecting maintenance, measuring, or test equipment
2. The MTAC will ensure and confirm that:
   1. The QA/QC plan adequately describes required inspection and testing and expected standards
   2. Testing and inspection requirements are referenced in the project specifications
   3. Grantee QA procedures are adequate to ensure that the QC program is successfully implemented during construction
3. The MTAC will review and assess the Grantee’s procedures for handling nonconforming work and verifying that such procedures define:
   1. Responsibilities
   2. Conditions that would cause work to stop
   3. How to record nonconforming work
4. The MTAC will review and assess the Grantee’s procedures for taking corrective action.

## Operations, Startup, and Training

### Control Procedures

1. The MTAC will review and assess the Grantee’s control procedures for testing:
   1. Systems
   2. Vehicles
   3. Service equipment

### Training Procedures

1. The MTAC will review and assess the Grantee’s training procedures for operations and maintenance to ensure a smooth transition to operations.
2. The MTAC will confirm that Grantee QA procedures are adequate to ensure the training program is implemented successfully.

# Proposed Approach

## QA/QC Review

The MTAC’s review of the adequacy and soundness of the Grantee’s QA/QC Program will occur at the completion of the Planning and Preliminary Engineering phases. FRA may require subsequent reviews if there are updates or changes to the Grantee’s QA/QC Plan.

Appendix A in this MP contains a typical Table of Contents for a QA/QC Program Plan and the milestones for completing the elements within the plan.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Quality Control / Quality Assurance Table of Contents** | | | **Planning/ Concept Design** | **Preliminary Engineering** | **Final Design** | **Construction** |
| Quality Management Program | | |  |  |  |  |
|  | Introduction | | **C** | **U** |  |  |
|  | Quality Policy | | **C** | **U** |  |  |
|  | Quality Objectives | | **C** | **U** |  |  |
|  | Quality Management Responsibility | | **C** | **U** |  |  |
|  | Quality Management Training Procedures | | **C** | **U** |  |  |
| Document Control Procedures and Activities | | |  |  |  |  |
|  | Project Document Review, Distribution, Storage Procedures | | **C** | **U** |  |  |
|  | Quality Records Distribution, Maintenance, Storage Procedures | | **C** | **U** |  |  |
|  | Document Control Quality Assurance Procedures | | **C** | **U** |  |  |
| Design Control Procedures and Activities | | |  |  |  |  |
|  | Design Verification Procedures | | **C** | **U** |  |  |
|  | Design Review Procedures for Drawings and Specifications | | **C** | **U** |  |  |
|  | Design Change Procedures | | **P** | **C** | **U** |  |
|  | Design Control Quality Assurance Procedures | | **C** | **U** |  |  |
| Procurement Procedures and Construction Procedures | | |  |  |  |  |
|  | Construction Procurement Procedures, Identification of Contract Requirements | |  | **C** | **U** |  |
|  | Construction Contract Document Review Procedures including General and Supplementary Conditions | |  | **C** | **U** |  |
|  | Equipment and Vehicle Procurement Procedures | |  | **C** | **U** |  |
|  | Product Identification | |  | **C** | **U** |  |
|  |  | Product Identification Procedures |  | **C** | **U** |  |
|  |  | Inventory Control Procedures |  | **C** | **U** |  |
|  |  | Routing Documentation Procedures |  | **C** | **U** |  |
|  | Special Process Procedures | |  | **C** | **U** | **U** |
|  | Construction Inspection Procedures (project site and fabrication site) | |  | **C** | **U** | **U** |
|  |  | Measuring and Test Equipment Quality Control Procedures |  | **C** | **U** | **U** |
|  | Testing Procedures (soils, materials) | |  | **C** | **U** | **U** |
|  | Nonconformance Procedures | |  | **C** | **U** | **U** |
|  | Corrective Action Procedures | |  | **C** | **U** | **U** |
|  | Procurement/Construction Quality Assurance Procedures | |  | **C** | **U** | **U** |
| Operations, Startup and Training | | |  |  |  |  |
|  | Testing Procedures for Systems, Vehicles, Service Equipment | |  | **C** | **U** | **U** |
|  | Training Procedures | |  | **C** | **U** | **U** |
|  | Operations, Startup, Training Quality Assurance Procedures | |  | **C** | **U** | **U** |

