



Massachusetts Bay Transportation Authority

CAPITAL PROGRAMS USER GUIDE:

DESIGN QUALITY AUDIT PROCEDURE

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1.0 Policy

A Design Quality Audit is a controlled and documented practice that uses standardized procedures and checklists for planning, performing, reporting, and closing external and internal audits. The MBTA Capital Support Quality Assurance Design Audit Team (Audit Team) shall conduct independent Design Quality Assurance Audits (Design QA Audits) during all phases of a project.

Auditors shall have no direct responsibility for the activities to be audited and shall possess the necessary experience and/or training commensurate with the scope, complexity, and nature of the activities to be audited. An audit should not be confused with an inspection or Quality Control (QC) check. It is a primarily Quality Assurance (QA) activity that involves some QC.

All Capital Delivery, Transformation, Expansion Programs, and TOD projects that construct MBTA assets, projects and programs that engage an Owner's Representative and/or a Contract Manager/Project Manager, and internal departments participating in the Project Development Group process, may be subject to audit.

2.0 Purpose

The purpose of the Design QA Audit procedure is to establish, by examination and evaluation of objective evidence, whether the auditee has effectively implemented its approved Project Quality Plan. The process and audit team responsibilities are based on the MBTA Quality Management System Manual, Professional Services contract, and the requirements of the most recent version of the MBTA QMS and FTA Quality Management System Guidelines, including the ISO 9000 family of standards as allowed by reference by FTA.

The MBTA Design QA Audit Team aggregates information from multiple audits to develop Lessons Learned to identify to reduce design quality problems that result in design errors or omissions.

3.0 Responsibilities

3.1 MBTA Deputy Chief for QA/QC

- 3.1.1 Reviews and approves the annual audit schedule.
- 3.1.2 Identifies audit teams in coordination with quality reviews of milestone design deliverables submittals assignment.
- 3.1.3 Reviews reports of systemic quality issues revealed in the audit process for positive and negative trends, and reports to upper management.
- 3.1.4 Develops Lessons Learned to ensure that the QA program remains effective.
- 3.1.5 Reviews and approves proposed deficiencies and recommendations from the Design Audit Team.

3.2 MBTA Design Quality Assurance Team

Comprises the Lead Auditor, Associate Auditor, QA Administrator and representatives from the Office of the Chief Engineer and Project Controls as required.

- 3.2.1 Develops and updates the fiscal year audit schedule based on Audit Criteria, and performs audits identified.
- 3.2.2 Schedules quality audits.
- 3.2.3 Uses the QA Audit Checklist to perform Design Quality Assurance Audits and documents and retains records of audit findings.
- 3.2.4 Coordinates audit planning with the Project Office and audits its management of Design Team implementation of corrective action.
- 3.2.5 Ensures open items identified during audit are resolved.
- 3.2.6 Compiles reports of quality issues and Lessons Learned for Deputy Chief review.

3.3 MBTA Project Office

Comprises the Project Manager and assigned Project Coordinator, Budget Analyst and Project Controls staff, and includes the Resident Engineer during the construction phase.

- 3.3.1 Notifies the Engineer of Record of any deficiencies and/or recommendations from the Audit process.
- 3.3.2 Monitors the progress and documents the status of any ongoing corrective action, and coordinates with the Lead Auditor to schedule follow-up surveillance audits as necessary to verify completion of corrective action.

3.4 Design Team Quality Assurance Manager

- 3.4.1 Provides the MBTA with required documentation to verify implementation of approved Quality Assurance Plan and adherence to project specifications.
- 3.4.2 Retains quality records such as check prints, markups, etc., as required by contract.
- 3.4.3 Resolves open issues identified through quality audit process.

3.5 Office of the Chief Engineer

- 3.5.1 Participates as Subject Matter Experts (SME) when requested by audit team.

3.6 Project Controls

- 3.6.1 Participates as Subject Matter Experts (SME) in the Design QA Audit Team.
- 3.6.2 Collaborates with the Design QA Audit Team and PMIS Teams to document Lessons Learned.

3.7 PMIS Team

- 3.7.1 Collaborate with the Design QA Audit Team and Project Controls to develop data for Lessons Learned.

3.8 Other MBTA Groups

- 3.8.1 Other internal groups responsible for the delivery of Capital Projects shall collaborate with the Audit Team when audited to identify areas requiring improvement.

4.0 Instructions

Please navigate to the [PMIS Quick Reference & User Guides](#) if you need further assistance.

4.1 Planning Phase

The Audit Team shall use the templates provided to develop all documents used in this process.

- 4.1.1 When the Deputy Chief confirms the fiscal year audit schedule, the Audit Team shall review the approved QMP and project scope to develop the audit scope.
- 4.1.2 For Design Team Audits, the MBTA Design QA Team shall:
- 4.1.2.1 Use the MBTA Design Quality Assurance Audit Checklist to develop the Audit Attributes.
 - 4.1.2.2 Notify the Design Team QA Manager and MBTA Project Office of the audit and request a meeting with the Design Team Quality Assurance Manager.
 - 4.1.2.3 Draft and issue the Audit Notification Letter to the Design Team Quality Manager and MBTA Project Office at least two weeks in advance of the Opening Meeting.
- 4.1.3 For internal MBTA audits, the Audit Team shall:
- 4.1.3.1 Determine whether a formal or informal audit and whether audit of multiple groups and/or individuals will be most efficient and effective groups to highlight systematic issues identified as requiring improvement.
 - 4.1.3.2 Request auditee collaboration when required.

4.2 Performance Phase

The Audit Team shall conduct the Opening Meeting

- 4.2.1 For Design Team Audits please refer to the following steps.
- 4.2.1.1 The Audit team shall:
 - ❖ Facilitate introductions of the Audit Team and the Design Team
 - ❖ Provide an overview of the audit process, steps, and anticipated timeframe
 - ❖ Review the Audit Attribute including the list of requested documents
 - ❖ Establish lines of communication.
 - 4.2.1.2 The Design Team QA Manager shall provide requested documents and other information to the Audit Team within seven business days from the meeting.
 - 4.2.1.3 The Audit Team shall review the requested documents and determine:

- ❖ Whether there are any deviations from the Design Team’s approved QMP and contract requirements and quantify the number of instances in which any requirement has not been met requirements of the executed contract.
- ❖ Interview auditees and document participation by name, role, contact, and sessions attended.

4.2.1.4 The Audit Team may amend the list of requested documents at any time.

4.2.1.5 An Interim Meeting will be held to discuss any deficiencies discovered and request additional clarifications or additional documentation if required to make an accurate analysis.

4.2.1.6 If any additional responses are required after the Closing Meeting, the Auditee will send responses to the Audit Team in within seven calendar days.

4.2.2 Internal formal audits of MBTA groups and individuals shall follow the same procedures as above procedure for Design Team Audits. Internal informal audits shall follow processes that are suited for their specific purposes. Observations shall be documented and reported to upper management if results identify opportunities for improvement.

4.3 Reporting Phase

4.3.1 The Audit Team shall:

4.3.1.1 Issue a formal audit report to the Project Office for distribution to the Design Team Quality Manager at least fourteen (14) calendar days in advance of the Reporting Meeting.

4.3.1.2 Any deficiencies or effective practices will be identified as one of the following:

- ❖ Corrective Action Request: Major and/or systemic violation of the approved QMP, supported by audit evidence with a corrective action plan required.
- ❖ Observation: Identification of minor or possible future problems, supported by audit evidence with a corrective action plan required.
- ❖ Best Practice: Any aspect of the system/process that is very effective.

4.3.1.3 The Auditee response to the Audit Report shall be submitted to the MBTA within fourteen (14) calendar days of receiving the report.

4.3.2 The Design Team Quality Assurance Manager may request a time extension not to exceed 30 business days if circumstances prevent timely response to the audit, by submitting a written request to the Audit Team

4.3.2.1 Conduct the Reporting Meeting with members of the Design Team to discuss deficiencies identified and discuss corrective actions, recommendations and best practices identified.

4.4 Follow-Up Phase

4.4.1 The Audit Team shall review the Auditee response to the Audit Report and determine whether the plan effectively addresses the root cause of the issue(s) identified.

- 4.4.2 The Audit Team shall accept or reject the corrective action plan based on whether the Design Team has:
 - 4.4.2.1 Addressed all Corrective Action Recommendations and/or Observations.
 - 4.4.2.2 Identified the root cause correctly.
 - 4.4.2.3 Included all required information.
- 4.4.3 The Audit Team shall:
 - 4.4.3.1 Generate and document the results of the audit in a formal audit report.
 - 4.4.3.2 Issue a final audit closure notification documenting resolution of audit deficiencies and declaring the audit's closure to the Project Office for distribution to the Design Team Quality Assurance Manager and members of the Audit Team when all audit findings have been resolved.
- 4.4.4 Escalate serious and/or continual breach of QA/QC procedures through the appropriate Director of Capital Delivery and bring Issues that cannot be resolved to the attention of the Chief of Capital Program Support.
- 4.4.5 Schedule a follow-up audit after audit closure to assess the effectiveness of the approved corrective action plans when necessary.

5.0 **Exceptions**

No exceptions.

6.0 **Document History**

Document Owner: Capital Programs Support – Quality Assurance/Quality Control

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7.0 **Appendices**

7.1 **Templates**

- ❖ [MBTA Design QA Audit Checklist](#)
- ❖ [MBTA Design Audit Criteria](#)

7.2 **Reference Documents**

- ❖ [FTA Quality Management System Guidelines](#), most current version
- ❖ MBTA Quality Management System Manual, most current version