

BART Agreement Number: 6M8142

Approval Date: 5/17/2022

Work Plan No.: B.26-02 - Engineering Design Quality Support (Phase 2 & 3)

Scope:

2. Scope of Services

A framework outline of developing a quality program in alignment with ISO9001 requirements is listed below.

The outline below are tasks defined for a Practice as defined above. The scope included in this scope assumes three phases of work:

- Phase I– Discovery and Gap Analysis - Covers both Practice areas from Task 1 to 3; was implemented under Work Plan B.26-01
- Phase II – Implementation – Covers both Practice areas from Task 4 to 5
- Phase III – Audits – Covers both Practice areas from Task 6 to 8

PHASE I (INCLUDED IN WORK PLAN B.26-01)

1. Task 1

AECOM will work with BART staff to develop and roll out a quality program mission, purpose, and scope in alignment with ISO9001 requirements. This effort will include a detailed set of quality goals for the organization to be achieved in 2022. *This effort will build upon existing mission and purpose statements already developed or in place.*

DELIVERABLE:

- *Quality policy including mission, goals, and principles statement*

2. Task 2

Based on the existing quality programs BART has in place, AECOM will work with BART to evaluate and prioritize programs to pursue quality improvement through an ISO implementation process. There will be several 'high level' interviews with BART staff during this task. This process will identify the existing programs, how they're used and the areas for design quality improvement. The initial programs list is:

- a. Design Quality - Control and Monitoring of Project Design
 - i. Quality Control -Design review at major milestones from preliminary engineering to Issue for Bid (IFB)
 - ii. Quality Assurance – ensure process implementation
 - iii. Scope, budget, and schedule
 - iv. Records Management related to Quality Management System (QMS)

DELIVERABLE:

- *List of recommendations for existing programs for ISO9001 implementation and/or process improvement*

3. Task 3

Building on Task 2, AECOM would develop a matrix for BART's core programs to compare the existing policies and procedures baseline with ISO9001:2015 minimum requirements. This task will involve interviewing BART staff at several levels. This would include the following activities:

- a. Consolidate existing records associated with BART's requirements and level of implementation.
- b. Guide BART to develop management principles underlying the ISO standard and Quality goals (at the process level).
- c. Work with BART personnel to identify documentation of existing policies, procedures, and instructions (PPI) including records generated during the process.
- d. Review BART's PPIs to evaluate alignment of existing processes with Quality Goals at the practice level.
- e. Identifying interrelated processes, including potential improvement to increase efficiency.
 - i. How best to implement change management so records drawings are documenting what occurs in the field
- f. Provide recommendations to improve existing PPIs and records to address gaps with ISO9001 core requirements.

Note: *Given the unknown number of BART programs and policies and the variables associated in this discovery process, the scope, budget, and schedule will be re-evaluated and adjusted based on information from this task. This task may identify additional scope and schedule issues.*

DELIVERABLES:

- *Top 10 Opportunities for Improvement (OFI) Summary Table*
- *Improvement Recommendations Memorandum: Draft and Revised which will contain:*
 - *PPI list – Draft and Revised*
 - *Gaps analysis*

PHASE II (INCLUDED IN THIS WORK PLAN)

4. Task 4

Work with BART to align their Quality program for selected practices:

- a. Develop a new Design Quality Plan (DQP) to supplement the existing Quality Assurance Manual.
- b. Develop associated DQP PPIs to address design program needs in alignment with the ISO 9001:2015 international standard and five core process improvement per Table 1-2 of the Improvement Recommendations Memorandum dated February 18, 2022. AECOM will host workshops with BART staff during the development of PPIs to gain their input and buy-in, and to teach them how to properly develop procedures.

Given the large number of BART programs and policies and the variables identified during the discovery process, AECOM will not update existing BART procedures but will supplement them as described in the Improvement Recommendations Memorandum dated February 18, 2022, delivered under task 3 (henceforth called “Memo”). The scope, budget, and schedule have been adjusted accordingly. The Memo defines what PPIs are quality-related and should be the focus of this task, and which will be updated or supplemented under this task 4 upon agreement/buy-in with BART leads.

Based on the initial evaluation, 5 core processes and 10 high level summary items to be actioned during Task 4. The core processes summary and corresponding deliverables are described in detail in the Memo. A summary table is provided here for scoping purposes. An expanded table of the Quality Improvements is included at the end which includes more detail on the associated deliverable, further detail on the estimated Level of Effort (LOE) for the items delivered.

Task 4 Core Processes and Deliverables Summary Table

| Core Process | Item Number | Summary | Deliverables |
|---|--|---|--|
| 1 Document Management and Records Controls | 1 Improved Management of Controlled Documents | Develop a Document Management procedure that connects the existing BECO and BFS update processes with current ISO9001 requirements. | <ul style="list-style-type: none"> • Technical design documents management procedures |
| | 2 Control of Project Records | Develop a Project Records Control Procedure to address inconsistencies in project records repository, indexing, retention, traceability, templates, etc., aligned with the QMS matrix of scalability. | <ul style="list-style-type: none"> • Design project records control procedure |
| 2 Technical Quality Assurance Requirements | 3 Design Review Process | Address gaps on the design process: responsibilities and authorities involved, resources, subsequent provisions and level of control required during the design and development process. | <ul style="list-style-type: none"> • Scalable Design review requirements • Technical quality planning procedure • Interdisciplinary coordination review procedure • Templates and forms to document compliance with these procedures |
| | 4 Technical Quality Planning | Address planning gaps, including scope development, assumptions, and requirements at basis of design. | |
| | 5 Interdisciplinary Coordination | Address gaps in interdisciplinary coordination and required process stages, including applicable design and development reviews, verification, and approvals. | |

Consulting Services Agreement No. 6M8142
BART General Engineering Services
AECOM

| Core Process | Item Number | Summary | Deliverables |
|---|---|---|--|
| | 6 Digital Design Review Records | Address inconsistencies of documented information needed to demonstrate that design and development requirements have been met. | |
| 3 Quality Management System Scalability Matrix | 7 Scalable Quality Requirements | Develop a matrix of scalability to align quality requirements with BART's project classification, fee, and duration. Fit for purpose. | <ul style="list-style-type: none"> Design QMS Scalability Matrix |
| 4 Evaluation and Improvement | 8 Design Program Auditing and Improvement procedures | Develop project audit and improvement procedures to consistently evaluate level of implementation of QMS requirements. Identify deficiencies and opportunities for improvement, implement corrective and continual improvement initiatives. | <ul style="list-style-type: none"> Design Program Audit procedure Design Improvement procedure |
| 5 Design Quality Plan, Policy and Related PPIs | 9 Design Quality | Resolve BART's quality program leadership, planning, resources, training, and communication deficiencies to bring them into alignment with ISO9001. | <ul style="list-style-type: none"> Design Quality Plan (DQP) and attachments: High level process flowchart |
| | 10 Quality Policy | New Design Quality Policy to set baseline and expectations. | <ul style="list-style-type: none"> Design Quality Policy and metrics tracking |

Note that drawings and specification are technical records generated during the design and construction processes. Not to be confused with quality related policies, procedures, instructions, or templates. Therefore, drawing reviews and updates are not included as part of this scope.

5. Task 5

Training and implementation:

- a. Develop 5 training syllabus and presentations based on updated BART procedures (completed after item #3).
 - i. Design document management and records control
 - ii. Alignment of quality requirements with project complexity – Scalability Matrix
 - iii. Technical Design Quality Planning and Reviews
 - iv. DQP, audits and continual improvement for PMs
 - v. Overview of design quality
- b. Train the trainer – AECOM to work with BART Quality Coordinators/Leads to review training materials. It is expected that 2 District team members will be closely involve and become internal trainers.
- c. Program-wide training rollout for each work team to become knowledgeable about their program's work instructions and understand how they will be evaluated in terms of achieving quality goals. Estimated key staff to receive training by AECOM during initial rollout might vary depending on District's assignment to each of the core process training module.
- d. Generate records of training rollout

Consulting Services Agreement No. 6M8142
BART General Engineering Services
AECOM

DELIVERABLES:

- 5 Training course materials
 - Syllabus
 - Slide deck
 - Recording
- Live training for key personnel including 2 trainers – training log

PHASE III (INCLUDED IN THIS WORK PLAN)

Note: Given the unknown baseline Key Performance Indicators and Audit performance for BART quality programs and the variables associated in the certification process, the scope, budget, and schedule for Phase III will be re-evaluated and adjusted upon completion of task 5. The results of task 5 may identify additional scope and schedule issues.

6. Task 6

Manage and monitor whether BART personnel is following the policies and achieving the quality goals.

- a. Set baseline Key Performance Indicators (KPIs)
- b. Obtain feedback from designated leads
- c. Internal Quality Auditors training (for quality coordinators see 5b)
 - i. Audit best practices for staff
- d. Initial-audit of BARTs quality program

DELIVERABLES:

- Audit procedure
- Auditor training materials
 - Syllabus
 - Slide deck
 - Recording
- Quality Coordinators training completion for BART staff

7. Task 6a – Additional Audit

Based on the results of the initial audit in Task 6, AECOM will conduct an Internal Quality Audit follow-up for BART's quality program. A second internal quality is anticipated, as initial audits do not usually have complete compliance and follow-up is recommended. This follow-up audit will focus on corrective actions and resolution of findings in preparation for the external audit to be conducted in Phase 3.

DELIVERABLES:

- Follow-up Audit closure report (contingency)

8. Task 7

Continual improvement:

- a. Non-Conformance resolution
- b. Root Cause Analysis (RCA)
- c. Opportunities for improvement
- d. Best practices management

DELIVERABLE:

- Continual improvement procedure

9. Task 8

External certification support

- a. Follow-up mock audit to confirm that findings have been addressed
- b. BART Auditor coaching to serve as liaison between external certification agency and BART personnel during audit interview

DELIVERABLE:

- *None. Supporting role only.*

Prime: AECOM

Subconsultant: None

Work Plan Value: \$904,425