LINK21

CONNECT NORTHERN CALIFORNIA

STRATEGIC PROGRAM PLAN

CHAPTER 7: QUALITY

November 2022

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ISSUE AND REVISION RECORD

REVISION	DATE	PREPARER(S)	PMC REVIEWER(S)	APPROVER	DESCRIPTION/ NOTES
			BART/CCJPA REVIEWER(S)	BART/CCJPA APPROVER	
1.A	10/18/2019	Kieran Kelly-Sneed, HNTB	Gay Knipper, HNTB	Peter Gertler, HNTB	WPA.01 Initial DRAFT submittal
	10/29/2019	---	Sadie Graham, BART	Sadie Graham, BART	WPA.01 Initial DRAFT submittal review
1.B	02/06/2020	Kieran Kelly-Sneed, HNTB	Gay Knipper, HNTB	Peter Gertler, HNTB	WPA.01 DRAFT submittal
	02/10/2020	---	Sadie Graham, BART	Sadie Graham, BART	WPA.01 DRAFT submittal review
2.A	07/30/2020	Kieran Kelly-Sneed, HNTB	Gay Knipper, HNTB	Peter Gertler, HNTB	WPA.02 V1 DRAFT submittal
	08/06/2020	---	Sadie Graham, BART	Sadie Graham, BART	WPA.02 V1 DRAFT submittal review
2.B	10/30/2020	Kieran Kelly-Sneed, HNTB	Gay Knipper, HNTB	Peter Gertler, HNTB	WPA.02 V1 DRAFT FINAL submittal
		---			*No review requirement*
3.A	04/19/2021	Kieran Kelly-Sneed, HNTB	Steve Lavelle, Intueor	Peter Gertler, HNTB	WPA.03 V2 Working DRAFT submittal
	05/13/2021	---	Sadie Graham, BART	Sadie Graham, BART	WPA.03 V2 Working DRAFT submittal review
3.B	06/04/2021	Kieran Kelly-Sneed, HNTB	Steve Lavelle, Intueor	Peter Gertler, HNTB	WPA.03 V2 DRAFT submittal
	08/13/2021	---	Sadie Graham, BART	Sadie Graham, BART	WPA.03 V2 DRAFT submittal review

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| REVISION | DATE | PREPARER(S) | PMC REVIEWER(S) | APPROVER | DESCRIPTION/ NOTES |
			BART/CCJPA REVIEWER(S)	BART/CCJPA APPROVER	
3.C	11/23/2021	Kieran Kelly-Sneed, HNTB	Steve Lavelle, Intueor	Peter Gertler, HNTB	WPA.03 V2 DRAFT FINAL submittal
		---			*No review requirement*
4	04/07/2022	Kieran Kelly-Sneed, HNTB	Steve Lavelle, Intueor	Peter Gertler, HNTB	WPA.04 DRAFT submittal
		---			*No review requirement*
5.A	09/23/2022	Kieran Kelly-Sneed, HNTB	Sudhish Verma, HNTB	Peter Gertler, HNTB	WPA.01-01 Working DRAFT submittal
	10/21/2022	---	Sadie Graham, BART	Sadie Graham, BART	WPA.01-01 Working DRAFT submittal review
5.B	11/11/2022	Kieran Kelly-Sneed, HNTB	Sudhish Verma, HNTB	Peter Gertler, HNTB	WPA.01-01 DRAFT FINAL submittal
		---			*No review requirement*

SHAREPOINT PATH

Records Center/PRGM Record Center/WPA.01-01/SPP/
2-PRGM-PH1-SPP_CH07_Quality- DRAFT_FINAL

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ACRONYMS AND ABBREVIATIONS

ACRONYM/ABBREVIATION	DEFINITION
BART	San Francisco Bay Area Rapid Transit District
CCJPA	Capitol Corridor Joint Powers Board
CDQM	Client Deliverable Quality Matrix
DCRM	Document Control and Records Management
FTA	Federal Transit Administration
ISO	International Standards Organization
PMC	Program Management Consultants
PMT	Program Management Team
PQM	Program Quality Manager
PQP	Program Quality Plan
QA	Quality Assurance
QC	Quality Control
QMP	Quality Management Plan
QMS	Quality Management System
SPP	Strategic Program Plan
TDLU	Travel Demand and Land Use

LINK21 PROGRAM TEAM NAMES

TEAM NAME	TEAM MEMBERS
PMC	The HNTB Team
PMT	BART/CCJPA + PMC
Consultants	Consultants supporting program identification/project selection
Link21 Team	PMT + Consultants

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7.   QUALITY MANAGEMENT

7.1. Purpose

The Program Management Consultants (PMC) have adopted a process-based, systematic approach to quality management to meet the requirements of the Link21 Program (Link21). According to the International Standards Organization (ISO), a Quality Management System (QMS) is a set of interrelated or interacting elements that organizations use to direct and control how quality policies are implemented and quality objectives are achieved. A process-based QMS uses an approach to manage and control the implementation of quality policies and the achievement of quality objectives.

The process-based model is highly advantageous for a program of this magnitude and complexity. In an environment of rapid concurrent and sequential activities, it is important for the San Francisco Bay Area Rapid Transit District (BART)/Capitol Corridor Joint Powers Authority (CCJPA), PMC, and Consultants supporting program identification/ project selection (Consultants) — collectively known as the Link21 Team — to collaboratively maintain quality program-wide.

The Link21 QMS includes a quality plan that guides the PMC's work and separate quality plans for each of the Consultants that govern their work, all of which share common features described in the Federal Transit Administration (FTA) *Quality Management System Guidelines* (October 2019). The *Strategic Program Plan* (SPP) and collective management plans may also be considered part of the Link21 QMS, as they describe additional actions and policies implemented by management to assure the needs of Link21 are met.

The PMC reinforces the implementation and maintenance of a comprehensive QMS program that is adopted by all members of the Link21 Team. The QMS program supports the management and delivery of Link21 and is guided by the following objectives:

▫ Provide a thorough understanding of program requirements.

▫ Select and assign the right resources to meet Link21's unique needs.

▫ Fulfill program requirements.

▫ Identify and mitigate conditions that may adversely impact the program or project performance.

▫ Implement corrective action to address nonconforming conditions and prevent recurrence.

▫ Maintain quality records that provide objective evidence of QMS program execution.

There are critical components necessary to implement a successful QMS, many of which the SPP addresses. The PMC's approach to quality management relies upon the policies, procedures, workflows, and systems presented in the SPP. The QMS program

incorporates many of the SPP chapters with a broad focus on integrating people, processes, and tools. Such an approach enables a QMS that is effective and measurable.

- **People:** A critical component of the QMS is the documentation and publication of clear and concise goals and objectives, and the identification of individual roles and responsibilities assigned to accomplish them. Chapter 2: Business Case includes goals, objectives, and performance metrics. Chapter 4: Organization and Management details the team's structure, roles, and responsibilities.

- **Process:** Another critical component of the QMS is the development, implementation, and monitoring/auditing of detailed, documented workflows, processes, and procedures. Chapter 5: Stage Gate Process addresses the required actions and information at key milestones, which helps to ensure the appropriate inputs are considered in developing Link21. Chapter 6: Program Controls discusses key policies, processes, and workflows that are utilized to manage the project scope(s)/context, risk, technical elements, schedules, estimates/cost, and finance. Chapter 10: Delivery and Integration describes the strategy and approach to ensure effective collaboration between the service category delivery managers by proper identification, management, and documentation of interfaces.

- **Tools:** The Link21 SharePoint Collaboration Site (SharePoint) facilitates a vital role in quality management collaboration, enforcement, and execution. The site is planned to automate and directly support rigorous adherence to established workflows and procedures for the Link21 Team. Further, the site provides effective document management, version control, and traceability of business actions. This reduces errors and assists in quality audits and ongoing improvement efforts. Additionally, the site recognizes established roles and responsibilities, includes clear permissions and authorities, and enhances communication between the Program Management Team (PMT).[1] Chapter 6: Program Controls presents the details of the site as it is developed.

7.2. Strategy

The PMC's strategy is to provide consistent quality throughout the planning and delivery of Link21. The QMS framework delineates interrelationships and responsibilities of process owners across various delivery phases from an accountability perspective, and it allows the process owners to operate and fit within the rules and boundaries of the QMS; thereby, enabling necessary and consistent quality control. This chapter summarizes the quality management plans and their implementation for Link21, and it will evolve over time to reflect updates to the QMS.

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[1] BART/CCJPA and PMC

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7.2.1. PMC Approach to Quality Management

The PMC developed and maintains a process-based *Program Quality Plan* (PQP) that applies to quality management of PMC services and deliverables through the program development and implementation cycles. The PQP defines the quality policy, responsibilities, objectives, processes, procedures, and required activities for the PMC. PMC team members are expected to adopt and follow the PQP, unless otherwise indicated by their contract. The program quality manager (PQM) oversees implementation of the PQP.

The PQP-defined quality management approach is characterized by the activities of quality planning, quality control (QC), and quality assurance (QA). Quality planning is a deliberate approach to identify the procedures, activities, and resources to be applied. By performing the identified QC activities, the PMC verifies that the program deliverables meet applicable requirements. The PQM and deliverable managers perform QA to confirm that the required QC activities were performed and that they were effective. Quality records required by the PQP provide objective evidence of the reviews and are stored within the SharePoint site as described by the *Document Control and Records Management (DCRM) Plan*. These records are available to BART/CCJPA upon request.

7.2.2. Consultants' Approach to Quality Management

The Consultants' approach is similar in many ways to the PMC's, as all are founded upon BART and FTA policies and guidelines. Elements common to all plans include roles and responsibilities, required QC reviews and records, and QA functions to ensure the plans are effectively implemented.

The Engagement and Outreach Quality Management Plan (QMP) is based on ISO 9001:2015 standards for quality management. Work is checked for accuracy as part of production prior to the documented QC review to verify conformance with requirements. The QA program includes audits to confirm compliance with the Consultant's QMS, and office leadership assesses performance through scheduled project reviews.

The Planning and Engineering QMP is based on applicable elements of the FTA's *Quality Management System Guidelines* and ISO 9001:2015 standards to which the Planning and Engineering Consultant joint venture is certified. The plan places heavy emphasis on design criteria, drawings, and calculations. Quality checks and reviews include color-coded markups and check print stamps common for this type of work. The plan also allows for collaborative web-based reviews of deliverables. The QMP provides for internal QA audits by either of the joint venture partners to satisfy ISO 9001:2015 certification requirements in addition to QA audits by the joint venture itself.

The Environmental QMP is based on applicable elements of the FTA's *Quality Management System Guidelines*. It sets forth goals and objectives by which to measure

and monitor quality performance. The plan uses a three-step formal quality review process that consists of technical review for content, editorial review, and lead or senior review to verify requirements are met. It provides for annual or more frequent QA reviews based on work plan duration.

The Travel Demand and Land Use (TDLU) QMP is based on applicable elements of the FTA's *Quality Management System Guidelines*. Review procedures are focused on reports and technical documents, TDLU model inputs, the TDLU model itself, and application of the model output to the evaluation of program alternatives. The quality manager performs QA audits to assess adherence to the QMP and to identify opportunities for improvement.

7.3. Implementation

The PMC and four Consultant teams operate under their respective QMPs. Each entity is responsible for the quality of their work product and performs independent QC and QA activities. The PMC is also responsible for quality management oversight to confirm the Consultants are following their respective plans.

7.3.1. Phase 0

During Phase 0, the PMC established the PQP that governs its work and that established the requirements for the Consultants' plans. Training introduced team members to the plan requirements and procedures. These procedures were applied to deliverables, and the PQM performed several audits to assess adherence to the PQP and to the *DCRM Plan*. The Consultants developed and implemented their respective QMPs.

A QC review workflow for PMC deliverables was established to coordinate reviews and to facilitate completion and storage of required quality records. Although the workflow is automated, the Quality Team checks in with deliverable authors and reviewers ahead of reviews to confirm QC expectations, and they periodically check the resulting records to confirm they meet requirements.

A similar submittal workflow was established to facilitate PMT reviews of and comments on Consultant submittals. Incoming submittals are checked by the DCRM Team for completeness and basic requirements, and reviewers are assigned. Once the review is complete and comments are consolidated, the BART/CCJPA delivery manager confirms that the submittal is ready to be returned to the Consultant. They receive those comments from the submittal workflow and implement the processes that are governed by their respective QMPs to address and track the comments within their team before resubmitting revised deliverables, if required.

7.3.2. Phase 1 and Future Phases

Quality checks, audits, and submittal reviews described under Phase 0 will continue in all future phases. In addition, the PMC will audit each Consultant to determine, based on objective evidence, if the Consultants are following the written processes and procedures contained in their QMPs and to gauge their effectiveness.

Continual improvement is a fundamental element of quality management. Link21's approach will be reviewed for effectiveness and to assess its readiness for all phases. It is expected that the QMPs will be updated during Phase 1 based on the outcomes from the audits, reviews by project leadership, and implementation of the Stage Gate Process.