

DRAFT



04/06/2023

EXECUTIVE ARCHITECT TEAM
QUALITY ASSURANCE & QUALITY CONTROL PLAN

City/County of San Francisco Public Works

San Francisco Fire Department Fire Training Facility

SERVICES

Architectural & Engineering Team led by Executive Architect, RossDrulisCusenbery Architecture Inc. (RDC) for a New Fire Training Facility

PROJECT

San Francisco Fire Department (SFFD) Fire Training Facility (FTF), 1236 Carroll Avenue, San Francisco, CA
The following describes RDC's QA/QC plan for this project.

QA/QC Scope

The A/E team's QA/QC efforts will cover all Scope B work inclusive of all site civil work and the coordination of the Scope A and Scope C work into the Contract Documents.

Quality Assurance/Quality Control Plan for the New Fire Training Facility

The A/E team will implement a Quality Assurance/Quality Control (QA/QC) Plan for Scope B to be used throughout the design process for the San Francisco Fire Training Facility (FTF). This QA/QC plan is tailored to the specifics of the project using accepted professional standards of care and principles of RDC's firm-wide Quality Management Program. The plan is developed to facilitate delivery of project documents that are technically sound, complete, and coordinated to accurately communicate the design intent and scope of the project and be in conformance with the project program, budget and scope requirements. The Project QA/QC Plan is based on the following principles of quality management.

PRINCIPLES OF QUALITY MANAGEMENT

- Quality management begins at the outset of the project and is continuous through each phase and during the entire course of the work.

- All project team members are responsible to contribute to the quality management process.
- The ability to affect change and take corrective action diminishes during the course of the project.
- All team consultant team members will implement their own internal QA/QC process and quality check prior to submitting documents to RDC
- All team members agree to participate in regular QA/QC coordination meetings during each phase with RDC

A/E TEAM QA/QC COORDINATORS

RDC's Senior Project Manager, Edwin Wilson AIA and Associate Architect PM, Mike McGroarty, AIA will be the Project's QA/QC Coordinators. They will lead and coordinate the Quality Assurance and Quality Control process for the project. Each A/E team discipline shall identify their respective QA/QC Coordinator and attend regular QA/QC coordination meetings and implement QA/QC design modifications as required for the delivery of complete, accurate and coordinated professional deliverables.

QUALITY ASSURANCE PROCEDURES & GUIDELINES

RDC's QA/QC Coordinators will conduct a QA/QC kick-off meeting with the Consultant team prior to commencing Concept Design. Each discipline will develop and utilize their own QA/QC check list for each phase and coordinate the findings of their individual QA/QC reviews with the rest of the A/E team. The Quality Assurance process will include adoption and use of the following standards and procedures:

1. Teamwide adoption of QA/QC objectives and scope

- a. Teamwide QA/QC program and coordination
- b. All A/E, CMGC and City cost estimators will utilize the same cost estimation format and agree upon this format prior to the development of cost estimates during the Concept Phase.
- c. QA/QC team responsibilities
- d. QA/QC schedule and milestones
- e. Two QA/QC coordination meetings per phase
- f. Regular BIM coordination
- g. Coordination of BOA and BOLA work
- h. Coordination of CMGC input
- i. Utilization of RDC's Quality Control Checklist

2. Common Team Communication Protocols

- a. QA/QC for each discipline shall be led by that firms' QA/QC coordinator
- b. Common teamwide Filing and Data Management standards will be adopted
- c. Communication protocols will be established and agreed to

3. Identification & conformance to Project scope, schedule, budget, approval and deliverable requirements

- a. Project goals and objectives
- b. Scope
- c. Schedule
- d. Budget
- e. Approvals

- 4. Adoption of Document standards**
 - a. Construction document standards
 - b. BIM standards
 - c. Standardized cost estimation formats

- 5. Teamwide Coordination**

- 6. Document Review**
 - a. Milestone Quality Review
 - b. Senior Staff Reviews
 - c. CMGC Constructability Reviews
 - d. Integrated Project Review
 - e. CMGC Clash Detection Response

- 7. Project QA/QC Reconciliation and Reporting**

QUALITY CONTROL

Quality assurance measures shall be employed throughout the design process. Formal milestone reviews will focus on coordination of code compliance, accessibility, architecture and engineering design, clash detection, completeness of the documents and coordination of the drawings with the specifications. These reviews will be performed for verification of quality, coordination, and completeness of the work prior to the milestone deliverables in every phase of every project. All disciplines will be reviewed for coordination and conformance with the contract and program requirements. Critical systems including mechanical, fire/life safety, Class A and Class B live fire props and exterior envelope will undergo a peer review at certain milestones. Comments will be generated, addressed, and tracked for the project record through the use of Bluebeam Studio a cloud-based collaboration tool. All team members shall have access to the same common review documents and will be able to view the comments made by others. This will reduce or eliminate duplicative and contradictory comments. Reports will be generated to capture comments from the quality review and then shared and archived along with the annotated documents in PDF or printed format.

Milestone Quality Reviews will occur at each phase of the project tailored to the relevant information for that phase. Quality reviews are coordinated to include participation of the Project Team, Peer Review, and the independent Quality Reviewers. Comments from the milestone QC review will be address as required with prior to the commencement of the quality review by the client and the CM/GC. At the completion of the review process, comments and feedback from all participants are synthesized with responses documented. Information will be reviewed into the milestone workshops and relevant revisions will be incorporated into the project documents.

A senior project architect or engineer (Quality Reviewer), not assigned to the project, will lead the Quality Review for each discipline. Comments that carry over to a subsequent phase can be added to the project issues log for tracking. This information can be accessed by multiple team members from any location.

1. Quality review:

- a. The Quality Review will be done sufficiently in advance of the milestone deadline to be able to check and incorporate required changes into the work. The Quality Review will focus on the following key issues:
- Codes and Life Safety
 - Accessibility
 - Subject Matter Expert (SME)
 - Interdisciplinary Coordination
 - Sub-Consultants Quality Assurance
 - Building Performance
- b. **Constructability:**
 Constructability reviews will also be independently performed by the CMGC and shared with the A/E team. The A/E team’s Quality Review will be performed using Bluebeam Studio. Comments are color coded by author. The Quality Reviewer will check the deliverables for the phase, including drawings, specifications, and reports against the key issues, marking directly on the documents. Upon the completion of the review, the Project Architect will review all of the comments, and assign the responsibility for each actionable comment to a team member within the file. The team member will either respond to clarify or make the correction and change the comment status to CLOSED. Comments that require review and discussion with the owner will be coded and extracted to an issues log for follow up. A PDF of the Quality Review documents will be provided to the owner at the end of the phase to ensure the transparency and efficacy of the process.

2. Senior Staff QA/QC Reviews:

- a. Concurrent with the Milestone quality review, independent QA/QC Reviews will be performed by one or more senior staff from each primary discipline including: Architecture, Fire Training Center Subject Matter Expert (SME), Civil, Structure, Mechanical, Electrical, Plumbing, Exterior Envelope and Tel/Data. The review will be by staff or consultants outside of the immediate project team to provide a fresh look at the work. The focus of the review will be to evaluate the progress of the work against the milestone deliverable, provide feedback on design considerations, evaluate technical approach and quality, and check for interdisciplinary coordination. Comments will be in a consistent format with the Quality Review, sharing the same Bluebeam session for coordination with other reviewers. The following table summarizes the minimum QA/QC scope per project phase.

Summary of QA/QC Minimum Scope Per Phase

Reviewer	Concept Design	Schematic Design	50% Design Development	Design Development	50% Construction Documents	95% Construction Documents	Construction Documents
A/E Team QA/QC Review Scope	Code Zoning Program Cost SME Architecture Accessibility	Code Zoning Program Cost SME Architecture Accessibility	Code Program Cost SME Architecture Accessibility Enclosure	Code Program Cost SME Architecture Accessibility Enclosure	Code Program Cost SME Architecture Accessibility Enclosure	Code Cost Architecture Accessibility SME Enclosure Site Civil	Code Cost Architecture Accessibility SME Enclosure Site Civil

Reviewer	Concept Design	Schematic Design	50% Design Development	Design Development	50% Construction Documents	95% Construction Documents	Construction Documents
	Site Civil Structure MEP/FP	Enclosure Site Civil Structure MEP/FP LEED	Site Civil Structure MEP/FP LEED	Site Civil Structure MEP/FP LEED	Site Civil Structure MEP/FP LEED	Structure MEP/FP LEED	Structure MEP/FP LEED
CMGC Review	N/A	N/A	Construct- ability MEP BIM Clash	Construct- ability MEP BIM Clash	Construct- ability MEP BIM Clash	Construct- ability MEP BIM Clash	Construct- ability MEP BIM Clash

3. Integrated QA/QC Milestone Review Workshops:

The A/E team will participate in six integrated Milestone Review Workshops at 90% Concept, 90% SD, 50% DD, 100% DD, 50% CD and 90% CD. The integrated Project Review is a partial or full day interactive session held at the beginning of the review period. Project stakeholders (project management, users, facilities and operations, authorities having jurisdiction) gather for the day in a group workshop with the design and beginning in the DD phase the construction team, participating in multiple concurrent discipline and systems-based project reviews. The intent is to orient the greater project team to the design, focus the discussion on the relevant issues in that phase, and daylight overarching concerns in a big room format prior to the client review period. At the end of the day, each focus group will present critical findings for discussion.

4. Client Review:

- a. Documents will be issued electronically to the City for their review and approval. The City will review documents for program compliance, zoning approval, durability, ease of operations and accommodation of City standards, capturing their comments electronically. Client review comments will be issued to the Project Team using the same formats as the CM/GC reviews.

5. CM/GC Review:

- a. Concurrent with the A/E and client reviews, documents will be issued electronically to the CM/GC for cost and constructability review. The CM/GC reviews will commence at 50% DD. CM/GC review comments will be captured and documented in a common format with the Client Review.

6. Reconciliation:

- a. After completion of the Milestone Review, CM/GC and City Reviews, all review comments will be distributed to the design team for review and evaluation. Project team leaders will synthesize information and respond to each of the items identified. Items requiring clarification will be incorporated into the milestone workshops. Review comments with cost implications will be flagged and tracked in the Cost Estimate. At the completion of this process, items will be flagged for integration into the project or synthesized

information will be red-marked by the Project Architect and Discipline leaders into the project Team Check Set. The Team Check Set will be distributed and a 'yellowed-out' set produced for verification to the client that the comments relative to that phase have been incorporated into the documents.

7. Final QA/QC Coordination at Key Phase - 50% DD, 100% DD, 50% CD and 95% CD

- a. The City team, CM/GC and A/E Team will attend a QA/QC coordination meeting immediately following the reconciliation exercise. The intent is to focus on three things – resolution of outstanding questions from the Milestone Reviews, reconciliation of cost, and an evaluation of the team’s progress.
 - i. In order to resolve outstanding comments, the workshop will focus on comments where there is conflicting direction, a deviation from the program or previous design direction, or where there are cost implications. Items that cannot be closed in the workshop will be identified for a research subgroup in the subsequent phase.
 - ii. The cost portion of the workshop will be planned and led collaboratively by both the CM/GC and the design team. The focus will be on Value Analysis instead of Value engineering.
 - Re-confirm priorities for program and goals
 - Analyze contributing design features
 - Seek improvements - Eliminate or reduce the cost of components that add little value. Enhance the value added by components that contribute significantly.
 - iii. As a team, review the results of the previous phase and assess the progress against the project goals. The team will use a plus/delta format to capture feedback from the team, and ideas for improvement going forward.

SCHEDULE & CONTENT OF QA/QC MILESTONE REVIEWS

- 1. Program Verification
 - a. Quality review:
 - i. Program Compliance
 - ii. SME Review
 - iii. Cost
 - b. Client Review
- 2. Concept Phase - 90%:
 - a. QA/QC Kickoff Meeting
 - b. Quality review
 - i. Program compliance
 - ii. Zoning compliance
 - iii. CEQA conditions
 - iv. SME Review
 - v. Site Civil coordination
 - vi. Cost
 - c. Integrated Project Review
 - d. QA/QC Coordination Meeting
 - e. Client Review
- 3. Schematic Design - 90%:

- a. Quality review
 - i. Key Issues
 - ii. SME Review
 - iii. Peer Review
 - iv. Cost
 - b. Integrated Project Review
 - c. Client Review
 - d. QA/QC Coordination Meeting
4. Design Development Phase – 50%
- a. Quality review
 - i. Key Issues
 - ii. SME Review
 - iii. Peer Review
 - iv. Cost
 - b. Integrated Project Review
 - c. CM/GC Review
 - d. Client Review
 - e. QA/QC Coordination Meeting
5. Design Development Phase – 90% (NIC)
- a. Quality review
 - i. Key Issues
 - ii. SME Review
 - iii. Peer Review
 - iv. Cost
 - b. Integrated Project Review
 - c. Client Review
 - d. CM/GC Review
 - e. QA/QC Coordination Meeting
6. Construction Document Phase – 50%
- a. Quality review
 - i. Key Issues
 - ii. SME Review
 - iii. Peer Review
 - iv. Cost
 - b. Integrated Project Review
 - c. CM/GC Review
 - d. Client Review
 - e. QA/QC Coordination Meeting
7. Construction Document Phase – 90%
- a. Quality review
 - i. Key Issue
 - ii. SME Review
 - iii. Peer Review
 - iv. Cost

- b. CM/GC Review
 - c. Client Review
 - d. QA/QC Coordination Review
8. Bid Documents
- a. Quality review
 - i. Key issues
 - ii. Cost
 - b. CM/GC Review
 - c. QA/QC Coordination Meeting