

**SAN FRANCISCO PUBLIC UTILITIES COMMISSION  
INFRASTRUCTURE CONSTRUCTION  
MANAGEMENT PROCEDURES**

<b>SECTION: SFPUC INFRASTRUCTURE CONSTRUCTION MANAGEMENT</b>	<b>APPROVED:</b> 
<b>PROCEDURE NO: 028</b>	<b>DATE: 6/7/2019</b>
<b>TITLE: CONSTRUCTION QUALITY MANAGEMENT</b>	<b>REVISION: 1</b>

**1.0 Policy**

The Contractor is required to employ the means and methods and quality control necessary to achieve the contractual quality requirements. The Project CM team monitors construction services and activities to assure that the Contractor is complying with the quality requirements of the Contract Documents.

Documentation of Construction Quality Management activities by the Contractor and the Project CM team are to be maintained as a part of the project record.

This SFPUC Infrastructure CM Procedure applies to all personnel working on SFPUC Infrastructure projects during construction to the extent that their work is affected by this CM Procedures and does not conflict with specific SFPUC policies or the Contract under which the Work is executed.

**2.0 Description**

This SFPUC Infrastructure CM Procedure defines the requirements, tasks, sequence, and responsibilities for the planning, execution, and documentation of Construction Quality Management during construction. This CM Procedure also describes how issues of deficiency or non-conformance will be managed and resolved.

The purpose of this CM Procedure is to establish a standardized Construction Quality Management process to be employed during construction.

**3.0 Definitions**

**3.1 Contractor's Quality Contractual Obligations**

The Contractor is responsible for quality and inspection as specified in the Contract Specification General Conditions Section 00 72 00-8.02, General Requirements (Division 1) and as found in Divisions 2 through 48.

3.1.1 The Contractor shall additionally provide the necessary contractual notification of readiness for, and safe access to the work areas for the “Structural Tests and Special Inspections” as required to be carried out by the SFPUC in accordance with the requirements of Chapter 17 of the latest version of the California Building Code (CBC).

3.1.2 The Contractor shall further note that in accordance with the requirements of the latest version of the CBC Chapter 17, the referred to “Special Inspections” are “in addition to and not substitutes for” those measures made as part of the Quality Control obligations of the Contractor as part of the Contract with the SFPUC.

### **3.2 Corrective Action Report (CAR)**

The CAR is one of two possible responses by the Contractor to the Non-Conformance Notice (NCN). A response must be transmitted to the RE within five (5) working days of the receipt of the NCN.

3.2.1 A CAR is one possible response that describes the corrective action the Contractor intends to take to correct the non-conforming work in accordance with SFPUC Infrastructure CM Procedure No. 029, Non-Conformance Notice.

3.2.2 The second possible response by the Contractor is to reject the NCN and provide an explanation for the rejection.

### **3.3 Daily Inspection Report**

The Daily Inspection Report is a report prepared by the Construction Inspector(s) at the end of each work day or shift or prior to the next shift at the beginning of the following work day. The Daily Inspection Report provides the daily record of observations of the Contractor’s progress work activities, conformance to the Contract requirements and significant events occurring at the work site. The report should include details of differing site conditions or other events that affect the Contractor’s scheduled activities.

### **3.4 Contractor’s Daily Construction Report**

A report issued each work day by the Contractor, in accordance with Contract Specification General Conditions Section 00 72 00, to the RE that provides progress information, status, and results of all quality activities and applicable test results.

### **3.5 Supplier Quality Surveillance (SQS) Plan**

The SQS Plan is another component of Quality Management which is performed at the supplier, manufacturer or fabrication facility in accordance with SFPUC Infrastructure CM Procedure No. 032, SQS Plan and Surveillance Process.

3.5.1 The SQS Plan is developed prior to purchase and furnishing of equipment or material for the Contract work by the SQS Manager. A typical SQS Quality Assurance Form is provided in Attachment 028-1.

### **3.6 Quality Deficiency**

Quality Deficiency is defined as documentation, drawings, material, equipment or work not conforming to the specified requirements or procedures.

3.6.1 A Quality Deficiency should be communicated to the Contractor at the time it is observed and documented in the Daily Inspection Report.

### **3.7 Special Inspections – CM Role**

Special Inspections will be part of the CM team's work plan which should include the following requirements to be acceptable and successful:

3.7.1 Review the Structural Information sheets as part of the Structural Drawings for the project. The Structural Engineer has listed these Special Inspection requirements under the heading "Special Inspections".

3.7.2 Determine the discipline, level of effort and whether the inspection(s) are periodic or continuous as defined by the code, and coordinate the performance period for the implementation in conjunction with the approved project CPM Schedule.

3.7.3 Determine the availability of the type of resources necessary to carry out the "Special Inspections" for the particular project.

3.7.4 The performance of any Special Inspection by the Owner or designated Owner's representative in no way relieves the CM and/or the Contractor from their respective contractual responsibilities under the agreements.

3.7.5 The CM must prepare documentation of all Special Inspections, including test data, so they can be communicated to the Structural Engineer.

### **3.8 Quality Non-Conformance Documentation**

Quality Non-Conformance is a quality deficiency that the Contractor has not or cannot correct within a reasonable period of time. Quality Nonconformance requires written notice from the RE to the Contractor.

### **3.9 Construction Management Information System (CMIS)**

The Construction Management Information System (CMIS) is an on-line management tool for the processing of contract documents based on established SFPUC Infrastructure CM Business Processes. It serves as a tool for effective storage and retrieval of various documents generated

during a construction project. Processing of Quality Management documents will utilize the CMIS.

#### **4.0 Responsibilities**

##### **4.1 Contractor**

The Contractor is responsible for providing the Work to meet all of the requirements of the Contract. The Contractor is responsible for Quality Control and Material Testing (as required by the Contract), and for providing verification that the products and services meet these requirements.

##### **4.2 Construction Management Bureau (CMB) Manager**

The CMB Manager manages the Construction and Closeout Phases of all Projects.

4.2.1 The CMB Manager can authorize third party participation for Supplier Quality Surveillance of Contractor materials and equipment.

##### **4.3 Lead Construction Inspector**

The Lead Construction Inspector assists the RE with planning for inspections and resources, assessing performance of the Contractor in accordance with the Contract, reviewing and compiling Daily Inspection Reports and monitoring resolution and closeout of deficiencies and non-conformances.

##### **4.4 Construction Inspectors**

The Construction Inspectors assure that the construction work is performed and completed in accordance with the Contract Documents and conduct periodic observations and inspections of the work, monitor the Contractor's quality progress, and coordinate field sampling and verification testing for quality.

4.4.1 Various specialty discipline inspectors will be assigned as needed for the specific work activities. Disciplines may include special inspection, civil, piping, welding, mechanical, coatings, electrical/ instrumentation, and process SCADA/ automation. Construction Inspectors report to the Lead Construction Inspector.

4.4.2 Construction Inspectors are responsible for preparing Daily Inspection Reports and for entering data into the CMIS Daily Inspection Report module.

4.4.3 The Construction Inspectors are NOT the independent third party SQS Surveillance personnel performing quality assurance services at the Vendor's fabrication facilities.

##### **4.5 Resident Engineer (RE)**

The RE manages the construction contract, verifies that the construction work is completed in conformance to the Contract Documents, and determines when contractual action is necessary to bring the Contractor into compliance. The RE is the single point of contact with the Contractor and is the designated "City Representative" as defined by the Contract Documents.

#### **4.6 Project Engineer (PE)**

The PE oversees the development of the technical specifications and the quality requirements specified therein. The PE is also responsible for defining the quality and performance requirements for vendors providing SFPUC purchased and furnished materials and equipment, the storage requirements, and the requirements for acceptance and verification by the Contractor.

4.6.1 The PE participates in final inspections, as requested by the RE, and serves as the primary point of contact with the Engineer(s) of Record for the project.

### **5.0 Implementation**

#### **5.1 Contractor's Quality Control Program:**

**5.1.1 Specifications section 01 45 00 describes the Contractor's responsibility to establish and maintain an effective Quality Control ("QC") program which shall include a Contractor's Quality Control Plan.**

#### **5.2 Contractor's Quality Control Plan:**

**5.2.1 Contractor shall prepare and submit for approval a Project Quality Control Plan which shall define specific standards, methods and procedures to be used for QC inspection and testing of the work of the contract. These procedures shall manage and control Contractor's equipment, materials, and personnel so that the completed project will comply with the contract documents. (Contract section 01 45 00)**

#### **5.3 Inspection and Non-Conformance**

5.3.1 Construction Inspectors will provide inspection of their respective portions of the work and prepare Daily Inspection Reports utilizing the CMIS. The Construction Inspectors will collect and organize test results, take progress digital images, and record observations about the execution of the work. Construction Inspectors are required to document all quality deficiencies in the Daily Inspection Reports and notify the Contractor of same.

5.3.2 Deficiencies are noted in the Daily Inspection Report by the Construction Inspector on the day they are observed. If the

Contractor corrects the deficiency, the Construction Inspector re-inspects the work, enters the results in a subsequent Daily Inspection Report.

- 5.3.3 When a deficiency is not corrected within a reasonable time or when it is expected that the progress of the work will be impacted, the RE will issue a NCN to the Contractor through the CMIS. A NCN records a breach of quality and as such is issued to the Contractor. The Contractor must respond with a CAR or written rejection within five (5) working days. The proposed CAR must be approved by the RE before implementation.

#### **5.4 Materials Testing**

The Contractor is required to perform materials testing to conform to the requirements of the Contract Documents and provide records of all tests to the RE. The Construction Inspectors may perform periodic independent materials testing to verify the results by the Contractor or when systemic quality problems dictate independent testing is needed.

- 5.4.1 In addition to regular testing, Construction Inspectors must take care to assure the materials being installed are the same as the tested samples.

#### **5.5 Verify Survey Control**

The Contractor is required to perform survey control during construction and to provide records of all surveys to the RE. The RE may establish independent control monuments and shall conduct independent surveys to verify the Contractor's results in accordance with SFPUC Infrastructure CM Procedure No. 017, Pre-Construction and Post-Construction Site Surveys and CM Procedure No. 018, System Testing and Startup.

#### **5.6 Maintain Documentation and Records**

- 5.6.1 Implementation of Quality Management requires the generation, maintenance, and consolidation of reports, documents and records of the actions taken to verify that the quality requirements are complied with and, where needed, corrective action is taken. Responsibility for the generation of these records lies primarily with the Construction Inspectors, testing firms, and in-factory inspectors, with support from the Lead Construction Inspector and oversight by the RE.
- 5.6.2 Quality documentation includes the Contractor's quality plans and reports required by the Contract, and the plans and reports of inspections, testing and audits performed by the CM team.
- 5.6.3 The RE is responsible for the maintenance of all project quality records and files, including results of quality audits and corrective actions.

#### **5.7 City Furnished Pre-Purchased Materials and Equipment**

- 5.7.1 Quality requirements for Vendors providing City furnished and pre-purchased materials and equipment will be defined by the PE in each Purchase Order. These requirements shall include site storage, acceptance inspection and verification by the Contractor per the Contract Documents in accordance with SFPUC Infrastructure CM Procedure No. 015, City Furnished Materials and Equipment and SFPUC Infrastructure CM Procedure No. 032, SQS Plan and Surveillance Process.
- 5.7.2 The PE is responsible for defining the requirements for the Quality Plan required from each supplier.
- 5.7.3 If independent third party Factory Acceptance Testing of City furnished materials or equipment is required, the PE will define the scope and the requirements, and secure the resources.
- 5.7.4 SQS personnel will inspect the City furnished materials and/or equipment materials and equipment at the Vendor's fabrication facility in accordance with the SQS Plan, and will then prepare the SQS Report.

## **6.0 Other Procedural Requirements**

None

## **7.0 References**

### **7.1 Technical Specifications**

- Section 00 72 00 General Conditions
- Section 00 73 00 Supplementary Conditions
- Section 01 33 00 Submittal Procedures
- Section 01 45 00 Quality Control
- Section 01 69 50 Shutdowns
- Section 01 75 60 Test and Start-Up

### **7.2 SFPUC Infrastructure CM Procedures**

- No. 015 City Furnished Materials and Equipment
- No. 017 Pre-Construction and Post-Construction Site Surveys System Testing and Startup
- No. 018 System Testing and Startup
- No. 019 Shutdown/Specific Condition Coordination
- No. 020 Project History, Lessons Learned
- No. 029 Non-Conformance Notice (NCN)
- No. 030 Daily Inspection Reports

No. 032 SQS Plan and Surveillance Process

**7.3 Others**

Construction Management Plan

Supplier Quality Surveillance (SQS) Plan (for each project)

California Building Code, California Code of Regulations Title 24,  
Chapter 17 Structural Tests and Special Inspections



**8.0 Attachments**

- 028 - 1      Supplier Quality Surveillance (SQS) Plan – *Sample*
- 028 - 2      Revision Control Log

**Attachment 028 – 1**  
*Page 1 of 4*  
**Supplier Quality Surveillance (SQS) Plan – Sample**

	A	B	C	D	E	F	G	H				
1	<b>Project Name:</b>											
2	<b>Contract or Purchase Order:</b>											
3	<b>Project Manager:</b>											
4	<b>Project Engineer</b>											
5	<b>SQS Plan approved:</b>	<signature>				<enter CMB Mgr Name>						
6	<b>Date:</b>					<b>SQS Plan Updated:</b>						
7												
8	<b>Product:</b>											
9	<b>Vendor:</b>					<b>Vendor Location:</b>						
10					<b>Contact:</b>							
11					<b>Contact numbers:</b>							
12					Date sched.				Date Compl.			
13												
14												
15	<b>QA REQUIREMENTS</b>	<b>REF.</b>	<b>Surveil- lance</b>	<b>Doc.</b>			<b>SURVEILLANCE ASSIGNMENT/ORG.</b>	<b>NOTES</b>				
16			Y or N									
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27					Name/ City and/or Engr.		number of trips based on number of manufacturers					

SQS <enter project number here>

**Attachment 028 – 1**  
**Page 2 of 4**  
**Supplier Quality Surveillance (SQS) Plan – Sample**

	A	B	C	D	E	F	G	H				
28												
29							<QA inspector>	number of trips based on number of manufacturers				
30												
31												
32												
33							Name/ City and/or Engr.	number of trips based on number of manufacturers				
34												
35												
36												
37	ESTIMATED BUDGET				Basis of Estimate							
38		qty	\$	Extension	Manhours @ \$100/hr							
39	Number of trips				Trips @ \$300/trip							
40	Number of manhours											
41												
42	Total estimated budget											
43												
44												
45												
46	Product:											
47	Vendor:						Vendor Location:					
48							Contact:					
49							Contact numbers:					
50							Date sched.		Date Compl.			
51												
52												
53	QA REQUIREMENTS	REF.	Surveil- lance	Doc.			SURVEILLANCE ASSIGNMENT/ORG.	NOTES				
54			Y or N									
55							< QA inspector>	number of trips based on number of				

SQS <enter project number here>

**Attachment 028 – 1**  
**Page 3 of 4**  
**Supplier Quality Surveillance (SQS) Plan – Sample**

56	A	B	C	D	E	F	G	H
57								manufacturers
58								
59							<QA Inspector> (Certified NACE Coatings Inspector)	number of trips based on number of manufacturers
60							<QA Inspector>	number of trips based on number of manufacturers
61								
62								
63								
64								
65	ESTIMATED BUDGET						Basis of Estimate	
66		qty	\$	Extension			Manhours @ \$100/hr	
67	Number of trips						Trips @ \$300/trip	
68	Number of manhours							
69								
70	Total estimated budget							
71								
72								
73								
74	Product:							
75	Vendor:					Vendor Location:		
76							Contact:	
77					Date sched.	Date Compl.	Contact numbers:	
78								
79								
80	QA REQUIREMENTS	REF.	Surveil- lance	Doc.	Date sched.	Date Compl.	SURVEILLANCE ASSIGNMENT/ORG.	NOTES
81			Y or N					
82							<QA Inspector>	number of trips based on number of manufacturers

SQS <enter project number here>

**Attachment 028 – 1**  
*Page 4 of 4*  
**Supplier Quality Surveillance (SQS) Plan – Sample**

	A	B	C	D	E	F	G	H
83								
84								
85	<b>ESTIMATED BUDGET</b>							
86		qty	\$	Extension			Basis of Estimate	
87	Number of trips						Manhours @ \$100/hr	
88	Number of manhours						Trips @ \$300/trip	
89								
90								
91	Total estimated budget			\$0				
92								
93								
94	<b>Total ESTIMATED BUDGET</b>							
95		qty	\$	Extension			Basis of Estimate	
96	Number of trips						Manhours @ \$100/hr	
97	Number of manhours						Trips @ \$300/trip	
98								
99								
100	Total estimated budget			\$0				
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114								
115								
116								

SQS <enter project number here>

**Attachment 028 - 2  
Revision Control Log**

<b>Revision No.</b>	<b>Revision Date</b>	<b>What changed?</b>
Rev 1	6/7/19	<ul style="list-style-type: none"><li>• Minor format changes;</li><li>• Attachments revised;</li><li>• Revision Control Log updated.</li></ul>
Rev 0	11/14/16	Signed