

# [CompanyName]

## Fire Suppression Quality Assurance/Quality Control Plan

[ProjectName]  
[ProjectNumber]

Management acceptance

This Fire Suppression Quality Assurance/Quality Control Plan has been reviewed and accepted.

|                                |                                       |       |               |
|--------------------------------|---------------------------------------|-------|---------------|
| Endorsed By:<br>(Name / Title) | [QualityManagerName], Quality Manager |       |               |
| Signature:                     | <i>[QualityManagerName]</i>           | Date: | [Date]        |
| Version                        | 1.0                                   | Notes | Initial Issue |

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## SIGNATURE SHEET

### Plan Preparer

This [CompanyName] Project Quality Assurance/Quality Control Plan was prepared in accordance with the contract specifications and requirements of the [CompanyName] quality system and approved by:

*[QualityManagerName]* / [Date]

---

[QualityManagerName], Quality Manager /Date

### Approval by Company Officer

This [CompanyName] Project Quality Assurance/Quality Control Plan is approved by:

*[SeniorManagerName]* / [Date]

---

[SeniorManagerName], Senior Manager /Date

### Plan Concurrence

[CompanyName] Project Quality Assurance/Quality Control Plan concurrence by:

*[ProjectManagerName]* / [Date]

---

[ProjectManagerName], Project Manager /Date

*[SuperintendentName]* / [Date]

---

[SuperintendentName], Superintendent /Date

# PROJECT-SPECIFIC FIRE SUPPRESSION QUALITY PLAN

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## C. PROJECT QUALITY COORDINATION AND COMMUNICATION

[CompanyName] has regular, planned communications with customers, subcontractors, and suppliers to coordinate quality expectations, priorities, activities, and improvements.

The process begins when we hold a project startup meeting where we discuss how quality of the project will be controlled and the quality responsibilities of key personnel. We also coordinate a schedule for weekly production meetings, monthly quality management meetings, and protocols for telephone and internet communications.

Throughout the project, [CompanyName] holds preparatory meetings prior to the start of upcoming milestones, tasks, or phases of work. These meetings are attended by key company, subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives. We review quality requirements, coordinate quality inspections and hold points. In the process, we listen to each stakeholder to understand their concerns for critical details. We add the critical details to inspection checklists. We also train production personnel on these details in weekly and toolbox talk meetings.

[CompanyName] weekly team meetings deploy findings of the preparatory meeting to field personnel. The venue is used to train personnel on technical requirements, reinforce critical details for heightened awareness, and institute improvements to work methods. It is also a forum for team communications and coordination.

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| <b>[CompanyName]<br/>Point of Contact List</b> |                      |                        |                              |              |
|--|----------------------|------------------------|------------------------------|--------------|
| <b>Project ID</b>                              | <b>Project Name</b>  | <b>Preparer</b>        | <b>Date</b>                  |              |
| [ProjectNumber]                                | [ProjectName]        | [ProjectManagerName]   |                              |              |
| <b>Company</b>                                 | <b>Name</b>          | <b>Job Position(s)</b> | <b>Phone Contact Numbers</b> | <b>Email</b> |
| [CompanyName]                                  | [PresidentName]      | President              |                              |              |
| [CompanyName]                                  | [SeniorManagerName]  | Senior Manager         |                              |              |
| [CompanyName]                                  | [ProjectManagerName] | Project Manager        |                              |              |
| [CompanyName]                                  | [SuperintendentName] | Superintendent         |                              |              |
| [CompanyName]                                  | [QualityManagerName] | Quality Manager        |                              |              |
| [CompanyName]                                  | [SafetyManagerName]  | Safety Manager         |                              |              |
|  |                      |                        |                              |              |
|  |                      |                        |                              |              |

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**[CompanyName]  
Project Quality Communications Plan**

| Project ID   | Project Name  | Preparer | Date |
|--|---------------|----------|------|
| [ProjectNumber]  | [ProjectName] |          |      |
| <b>Distribution of project organization chart and assigned responsibility and authority of the Project Manager, Quality Manager, and Superintendent:</b> |               |          |      |
| All personnel listed on contact list   |               |          |      |
| <b>Points of contact list distribution:</b>  |               |          |      |
| All personnel listed on contact list   |               |          |      |
| <b>RFI response distribution:</b>  |               |          |      |
| All personnel listed on contact list   |               |          |      |
| <b>Project startup meeting participants, date, location:</b>   |               |          |      |
| TBD  |               |          |      |
| <b>Work task quality plan meeting participants, nominal location:</b>  |               |          |      |
| TBD  |               |          |      |
| <b>Weekly project communication meeting participants, and nominal day of week, time, and location:</b>   |               |          |      |
| TBD  |               |          |      |
| <b>Daily quality report distribution, frequency, and due date:</b>   |               |          |      |
| Friday of every week for the previous 7 days   |               |          |      |
| <b>Monthly project quality status report distribution and due date:</b>  |               |          |      |
| Third day of every month   |               |          |      |
| <b>Distribution of quality inspection and test records, and due date:</b>  |               |          |      |

Friday of every week for the previous 7 days

**Nonconformance report distribution and customer approval authority:**

Immediately

**Location of project quality records storage and point of contact for records access:**

In the job office trailer. Superintendent is point of contact

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## D. PROJECT QC PERSONNEL

[CompanyName] ensures that quality control personnel remain independent from the pressures of production through our organizational lines of authority as defined by our QC Organization Chart.

The Senior Manager appoints a Quality Manager, Superintendent, and Project Manager, and then assigns each with specific quality responsibilities and authorities of their job position.

### PROJECT QC JOB POSITION ASSIGNMENTS

Table D-1 shows the job positions assigned to personnel on this project.

Table D-1

| QC Personnel Name    | Job Position    |
|----------------------|-----------------|
| [SeniorManagerName]  | Senior Manager  |
| [ProjectManagerName] | Project Manager |
| [SuperintendentName] | Superintendent  |
| [QualityManagerName] | Quality Manager |
| [SafetyManagerName]  | Safety Manager  |

## H. SUBMITTALS

### CONTRACT SUBMITTALS

The Quality Manager prepares submittals that provide additional details of how [CompanyName] plans to carry out quality-related aspects of the customer contract, contract technical specifications, and contract drawings and reporting of quality records to the customer.

The Quality Manager lists, schedules, and approves all quality-related submittals that are required by the project including submittals prepared by subcontractors and suppliers. The Quality Manager must review all submittals for compliance with the requirements of the [CompanyName] Quality System. The Quality Manager must sign approval of each contract submittal.

[CompanyName] extends compliance to contract specifications to all customer approved submittals. All [CompanyName] activities comply with customer approved submittals.

### SHOP DRAWING SUBMITTALS

The Project Manager or Purchasing and Estimating Manager prepare shop drawing submittals that supplement contract drawings. Shop drawings are required when additional details are necessary for fabrication or installation. The following information is included, as applicable:

- Dimensions established by field measurement
- Relationships to adjoining construction
- Identification of products and materials
- Fabrication and installation drawings
- Diagrams showing locations of field-installations
- Shop fabricated manufacturing instructions
- Templates and patterns
- Design calculations
- Compliance with specified standards
- Seal and signature of professional engineer if required
- Additional requirements as specified in the contract, contract technical requirements, or contract drawings.

[CompanyName] extends contract specifications to include customer approved shop drawings.

### PRODUCT DATA SUBMITTALS

The Project Manager prepares product data submittals that consist of the manufacturer's product information. The information included in this submittal is:

- Manufacturer, trade name, model or type number
- Description
- Intended use
- Size and physical characteristics including drawings when applicable
- Finish and color characteristics
- Product manufacturer's installation instructions, when applicable
- Additional requirements as specified in the contract, contract technical requirements, or contract drawings.

### ALLOWANCES AND UNIT PRICES SUBMITTALS

When customer contracts specify allowances and unit prices that the customer will select after the contract is awarded, the Project Manager prepares an allowance and unit price submittal for customer approval.

When a customer selects or approves an allowances and unit prices, the customer indicates the allowance and unit price selection on the signed submission return.

[CompanyName] extends compliance to contract specifications to customer approved allowances and unit prices.

### **REQUEST FOR INFORMATION (RFI) SUBMITTALS**

The Project Manager submits a request for additional information to the customer when errors are found or when required information is not contained in the contract, contract technical specifications, or contract drawings.

Should any number of contract technical specifications or contract drawings result in conflicting requirements, the Quality Manager submits a request for information to the customer to select the standard that applies.

[CompanyName] extends compliance to contract specifications to customer requests for information.

### **CHANGE ORDER SUBMITTALS**

Contract requirements or contract technical specifications may require a change after the contract is awarded. The Project Manager submits the change order to the customer for approval, including any contract price adjustments.

When a customer approves a change order, the customer signs the submission return.

[CompanyName] extends contract specifications to include customer approved change orders.

### **MOCK-UP SUBMITTALS**

The Superintendent prepares mock-up submittals as required by contract. Additionally, the Quality Manager specifies mock-up requirements when they are necessary to ensure customer expectations are clearly identified.

The Quality Manager ensures that each mock-up demonstrates specific elements of form and/or function, and that they are specified in the submittal documents.

[CompanyName] extends contract specifications to include customer approved mock-up submittals.

## **SUBMITTAL SCHEDULE AND LOG**

The Project Manager identifies submittals that apply to a specific contract and when they should be submitted, including:

- Contract requirement reference (if applicable)
- Submittal type: Shop drawing, product data, quality inspection and test plan, request for information, or allowances and unit prices
- Description
- Due date for submission to customer by [CompanyName]
- Due date for approval by the customer. Due dates may be a number of days after a project plan milestone.
- Approval date

## **SUBMITTAL REVIEW AND APPROVAL**

The Quality Manager prepares submittals that provide additional details of how [CompanyName] plans to carry out quality-related aspects of the customer contract, contract technical specifications, and contract drawings and reporting of quality records to the customer.

The Quality Manager lists, schedules, and approves all quality-related submittals that are required by the project including submittals prepared by subcontractors and suppliers. The Quality Manager must review all submittals for compliance with the requirements of the [CompanyName] Quality System. The Quality Manager must sign approval of each contract submittal.

[CompanyName] extends compliance to contract specifications to all customer approved submittals. All [CompanyName] activities comply with customer approved submittals.

## **SUBMISSION TO CUSTOMER**

See Submittal Forms exhibits in this subsection for all the forms that will be used to submit submittals on this project.

## **CUSTOMER APPROVED SUBMITTALS**

The Project Manager obtains the signature of an authorized customer representative on the submittal form.

[CompanyName] extends compliance to contract specifications to customer approved submittals.

Work in the affected area of a pending submittal requirement does not start until the customer approves the submittal.

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| <b>[CompanyName]<br/>Project Submittal Form</b>  |                 |  |      |
|--|-----------------|--|------|
| Submittal ID#  | Project ID      | Project Name   | Date |
|  | [ProjectNumber] | [ProjectName]  |      |
| To:  |                 | From: [CompanyName]<br>Location:   |      |
| Type of Submittal:<br><input type="checkbox"/> Shop drawing<br><input type="checkbox"/> Product data<br><input type="checkbox"/> Request for information<br><input type="checkbox"/> Completed form or quality record<br><input type="checkbox"/> Quality system document<br><br><input type="checkbox"/> Other: |                 | Description of submittal:  |      |
| List of attachments:   |                 | Remarks:   |      |
| Submittal Prepared by:<br>[CompanyName]<br><br>Name:<br><br>Title:<br><br>Signature / Date:  |                 | Submittal Approved by [CompanyName] Quality Manager:<br><br>Name:<br><br>Title:<br><br>Signature / Date: |      |
| Customer Disposition:<br><input type="checkbox"/> Approved<br><input type="checkbox"/> Conditionally approved, resubmission not required (see comments)<br><input type="checkbox"/> Disapproved, resubmission required<br><br><input type="checkbox"/> Other:  |                 | Customer Representative:<br><br>Name:<br><br>Title:<br><br>Signature / Date:                             |      |
| Comments:  |                 |  |      |

| [CompanyName]<br>Project Submittals Schedule and Log |               |                      |      |       |
|--|---------------|----------------------|------|-------|
| Contract ID  | Contract Name | Preparer             | Date | Notes |
| [ProjectNumber]                                      | [ProjectName] | [ProjectManagerName] |      |       |

| Contract Section Activity ID | Technical Specification Reference / Version Date | Type/Description of Submittal | Version /Date | Required Submittal Date | Date Submitted to Customer | Required Customer Approval Date | Customer Approval Date |
|------------------------------|--|-------------------------------|---------------|-------------------------|----------------------------|---------------------------------|------------------------|
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |
|                              |  |                               |               |                         |                            |                                 |                        |

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## J. FIRE SUPPRESSION PROJECT QUALITY SPECIFICATIONS

[CompanyName] personnel and subcontractors and suppliers are accountable for compliance to standards-based written specifications.

To achieve expectations reliably and consistently, specifications are clearly spelled out, not only for results but also for processes. Specifications apply to materials, work steps, qualified personnel and subcontractors and suppliers, safe work rules, and environmental work conditions.

Standards ensure that results are specified rather than left to discretionary practices.

### REGULATORY CODES

All [CompanyName] activities comply with the relevant regulations. The Quality Manager identifies regulatory requirements applicable to the jurisdictions served, including:

- Applicable Federal regulations
- Applicable State regulations
- Applicable building codes and local addenda to building codes
- Applicable Fire Code
- Additional regulations specified by the purchaser contract

The Quality Manager identifies regulatory requirements that apply to a specific project. The Superintendent had jobsite access to relevant codes and government regulations.

### MATERIAL SPECIFICATIONS

The Quality Manager ensures that all types of materials and equipment that affect quality are identified and controlled.

The Quality Manager evaluates the expected use of materials and equipment and identifies types of materials and equipment that may affect project quality. For each item, the Quality Manager sets specifications for their intended use, including:

- Compliance to contract requirements
- Compliance to code and industry standards and listing requirements
- Structural integrity
- Performance
- Durability
- Appearance
- Product identification for traceability.

The Quality Manager identifies controlled material and equipment that apply to the project. Only approved materials are used in the construction process.

### EQUIPMENT SPECIFICATIONS

The selection and use of equipment are controlled to assure the use of only correct and acceptable equipment on the project.

The Quality Manager determines specifications of required equipment that affect quality and the specifications of quality-controlled equipment.

When equipment is received, the Superintendent verifies that equipment is as specified.

## WORK PROCESS SPECIFICATIONS

The Quality Manager ensures that work processes are controlled to ensure that the specified requirements are met. When appropriate, the Quality Manager will specify project quality standards for work processes that may include:

- References to documented procedures such as manufacturer's installation instructions
- Procedures for carrying out process steps
- Methods to monitor and control processes and characteristics
- Acceptability criteria for workmanship
- Tools, techniques and methods to be used to achieve the specified requirements.

## [COMPANYNAME] QUALITY STANDARDS

All [CompanyName] activities comply with generally accepted good workmanship practices and industry standards.

The Quality Manager identifies supplemental requirements for industry standards that apply to a specific project when it is not otherwise specified by the contract, contract technical specifications, or approved drawings.

[CompanyName] quality standards supplement contract requirements when they are necessary to ensure quality.

When [CompanyName] quality standards differ from industry standards or product manufacturer instructions, the Quality Manager justifies that the standard reliably achieves quality results and then documents the justification.

All [CompanyName] activities conform to the company quality standards.

### COMPLIANCE WITH INDUSTRY FIRE SUPPRESSION STANDARDS

Codes that may apply to this project include those listed below.

| Description                                     | Reference Standard No. | Reference Standard Title  |
|---|------------------------|---|
| Flush the piping system with potable water      | NFPA 14                | Standard for the Installation of Standpipes and Hose Systems                        |
| Disinfection of water mains                     | AWWA C651              | Standard for Disinfecting Water Mains   |
| Sprinkler system installation                   | NFPA 13                | Standard for the Installation of Sprinkler Systems                                  |
| Control and fire alarm wiring installation      | NFPA 70                | National Electrical Code  |
| Installation of underground piping and fittings | NFPA 24                | Standard for the Installation of Private Fire Service Mains and Their Appurtenances |
| Joints anchoring                                | NFPA 24                | Standard for the Installation of Private Fire Service Mains and Their Appurtenances |



|  |              |  |
|--|--------------|--|
| Installation of High Density Polyethylene (HOPE) Piping  | PIP PNSC0036 | Installation of High Density Polyethylene (HOPE) Piping  |
| Site Preparation, Excavation, and Backfill Specification | PIP CVS02100 | Site Preparation, Excavation, and Backfill Specification |

## APPLICATION OF MULTIPLE SOURCES OF SPECIFICATIONS

Should multiple sources of specifications apply to a work task, the higher level of specification applies. When there are equal levels of specifications that conflict, the specifications are applied in this order:

- Submittals approved by the purchaser
- Contract technical specifications
- Contract drawings
- Government regulations that exceed requirements of items below
- [CompanyName] quality specifications, including subcontract specifications
- [CompanyName] Quality Manual
- Product installation instructions
- Industry standards
- Generally accepted practices

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## L. CONSTRUCTION INSPECTION AND TEST PLAN

The Quality Manager prepares quality inspection and test plans for a project that identifies:

- Each required quality inspection and/or test
- Inspection and test specifications for each required quality inspection or test
- Hold points for purchaser quality inspection
- Specification requirements for each quality inspection and test

The Quality Inspection and Test Plan form lists inspections and tests (other than work task inspections) that will be performed on this project.

Results of inspections and tests will be recorded on the Inspection and Test Form. An Inspection and Test Plan and Log form exhibit is included as an exhibit in this subsection.

### INDEPENDENT MEASUREMENT AND TESTS

The Quality Manager ensures that quality tests that apply to a specific project are clearly identified. Tests for a project include:

- Purchaser required quality tests as specified by the contract, contract technical specifications, contract drawings, and approved submittals.
- Additional quality tests necessary to assure quality results.

### HOLD POINTS FOR PURCHASER INSPECTION

The Superintendent stops work when reaching a hold point specified on the inspection and test plan. The Superintendent ensures that work proceeds only with purchaser approval.

### FIRE SUPPRESSION INSPECTION AND TESTING STANDARDS

Inspection and testing standards that may apply to this project include those listed below.

| Description         | Reference Standard No. | Reference Standard Title                                     |
|---------------------|------------------------|--|
| Hydrostatic testing | NFPA 14                | Standard for the Installation of Standpipes and Hose Systems |

**[CompanyName]  
Inspection and Test Plan and Log**

|                       |                     |  |
|-----------------------|---------------------|--|
| <b>Project Number</b> | <b>Project Name</b> |  |
| [ProjectNumber]       | [ProjectName]       | (All tests verified by Superintendent and/or QC Manager) |

| Item | Spec Section Number and Title | Applicable Standard | Inspections & Tests Description | Test and Inspection Methods | Number required | Time Schedule/Frequency | Inspection/Test By | Sample Req. Yes/No | Unique characteristics of QC Service |
|------|-------------------------------|---------------------|---------------------------------|-----------------------------|-----------------|-------------------------|--------------------|--------------------|--------------------------------------|
| 1.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 2.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 3.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 4.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 5.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 6.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 7.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 8.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 9.   |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 10.  |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 11.  |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 12.  |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 13.  |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 14.  |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |
| 15.  |                               |                     |                                 |                             |                 |                         |                    |                    |                                      |

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## **N. CONTROL OF CORRECTIONS AND NONCONFORMANCES**

Should a problem occur in the quality of work, we systematically contain the issue and quickly make corrections. Our first action is to clearly mark the item by tape, tag, or other easily observable signal to prevent inadvertent cover-up.

Then we expedite a corrective action that brings the workmanship or material issue into conformance by repair, replacement, or rework. Previously completed work is reinspected for similar nonconformances. If we cannot correct the item to meet contract specifications, the customer will be notified, and customer approval of corrective actions is required before proceeding.

Fixing problems found is not sufficient. [CompanyName] systematically prevents recurrences to improve quality. First enhanced controls and management monitoring are put into place to assure work proceeds without incident. Then using a structured problem-solving process, [CompanyName] identifies root causes and initiates solutions. Solutions may involve a combination of enhanced process controls, training, upgrading of personnel qualifications, improved processes, and/or the use of higher-grade materials. Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

Nonconformances and their resolution are recorded on a Nonconformance Report form. A Nonconformance Report form exhibit is included in this subsection.

### **MARKING OF NONCONFORMANCES AND OBSERVATIONS**

When the Quality Manager, Superintendent, inspector, or customer identifies a nonconformance or an observation, the item is quickly and clearly marked by tape, tag, or other easily observable signal to prevent inadvertent cover-up.

### **CONTROL THE CONTINUATION OF WORK**

After the item is marked, the Superintendent determines if work can continue in the affected area:

**CONTINUE WORK:** When continuing work does not adversely affect quality or hide the defect, work may continue in the affected area while the disposition of the item is resolved. The Superintendent may place limitations on the continuation of work.

**STOP WORK ORDER:** When continuing work can adversely affect quality or hide the defect, work must stop in the affected area until the disposition of the item resolved. The Superintendent identifies the limits of the affected area. The Superintendent quickly and clearly identifies the boundaries of the stop work area.

### **RECORDING OF NONCONFORMANCES**

If nonconformances or observed items exist by the work task completion inspection, the Superintendent or inspector records the nonconformances on a nonconformance report.

The Superintendent sends the nonconformance report to the Quality Manager.

## QUALITY MANAGER DISPOSITION OF NONCONFORMANCE REPORTS

When the Quality Manager receives a Nonconformance Report, he or she assesses the affect the reported nonconformance has on form, fit, and function. The Quality Manager may assign a disposition of either:

**REPLACE:** The nonconformance can be brought into conformance with the original specification requirements by replacing the nonconforming item with a conforming item.

**REPAIR:** The nonconformance can be brought into conformance with the original requirements through completion of required repair operations.

**REWORK:** The nonconformance can be made acceptable for its intended use, even though it is not restored to a condition that meets all specification requirements. The Quality Manager may specify standards that apply to the completion of rework. Rework nonconformances must be approved by the customer.

**USE AS-IS:** When the nonconforming item is satisfactory for its intended use. Any use as-is items that do not meet all specification requirements must be approved by the customer.

## CORRECTIVE ACTIONS

The Superintendent verifies that corrective actions eliminate the nonconformance to the requirements of the original specifications or as instructed by the disposition of the nonconformance report, and then removes, obliterates, or covers the nonconformance marker.

Furthermore, the Superintendent ensures that previously completed work is reinspected for similar nonconformances and corrective actions are taken to avert future occurrences (see section 9.3 Corrective Actions).

### CONTROL OF CORRECTIVE ACTIONS

When a nonconformance is found, the Superintendent ensures that:

- Previously completed work is reinspected for similar nonconformances
- Corrective actions are taken to avert future occurrences

The Quality Manager identifies requirements for corrective actions with respect to frequency, severity, and detectability of quality nonconformances items found during and after completion of work activities.

When a solution requires changes to [CompanyName] quality standards, the Quality Manager makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor and Supplier qualifications
- Company standards
- Inspection processes

### CORRECTIVE ACTION TRAINING

The Superintendent initiates corrective action training to address quality nonconformances. Personnel and subcontractors and suppliers performing or inspecting work participate in the training.

| <b>[CompanyName]<br/>Nonconformance Report</b>                          |   |  |
|---|---|--|
| Nonconformance Report Control ID  | Project ID  | Project Name                                 |
|   | [ProjectNumber]   | [ProjectName]                                |
| Preparer Signature/ Submit Date   |   | Quality Manager Signature / Disposition Date |
|   |   |  |
| Description of the requirement or specification                         |   |  |
| Description of the nonconformance, location, affected area, and marking |   |  |
| Disposition   | <input type="checkbox"/> Replace <input type="checkbox"/> Repair <input type="checkbox"/> Rework <input type="checkbox"/> Use As-is |  |
|   | Approval of disposition required by customer representative? Yes <input type="checkbox"/> No <input type="checkbox"/>               |  |
|   | Customer approval signature /date: _____  |  |
| Corrective Actions  | <input type="checkbox"/> Corrective actions completed Name/Date: _____  |  |
|   | Customer acceptance of corrective actions required? Yes <input type="checkbox"/> No <input type="checkbox"/>                        |  |
|   | Name/Date: _____  |  |
| Preventive Actions  |   |  |
|   | <input type="checkbox"/> Preventive actions completed Name/Date: _____  |  |

| <b>[CompanyName]<br/>Nonconformance Report Control Log</b> |  |                    |                                      |   |             |
|--|--|--------------------|--------------------------------------|---|-------------|
| <b>Project ID</b>  | <b>Project Name</b>                      | <b>Preparer</b>    |                                      | <b>Date</b>                             |             |
| [ProjectNumber]  | [ProjectName]                            |                    |                                      |   |             |
| <b>Nonconformance<br/>Report ID #</b>                      | <b>Description of<br/>Nonconformance</b> | <b>Report Date</b> | <b>Disposition<br/>Decision Date</b> | <b>Corrective Action<br/>Completion</b> |             |
|  |  |                    |                                      | <b>Initial</b>                          | <b>Date</b> |
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# [CompanyName]

## Quality Manual

### Operating Policies of the [CompanyName] Quality System

Management acceptance

This Quality Manual has been reviewed and accepted

|                                |                            |       |               |
|--------------------------------|----------------------------|-------|---------------|
| Endorsed By:<br>(Name / Title) | [PresidentName], President |       |               |
| Signature:                     | <i>[PresidentName]</i>     | Date: | [Date]        |
| Version                        | 1.0                        | Notes | Initial Issue |



# QUALITY MANUAL

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## 2. PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN

### 2.1. OVERVIEW

After [CompanyName] is awarded a contract to carry out a construction project, the Senior Manager forms a team consisting of a Quality Manager, Project Manager, and Superintendent.

First, the Quality Manager develops a set of project specifications that align project requirements with customer specifications and requirements, regulations, industry standards, product instructions, and [CompanyName] quality standards.

The Quality Manager evaluates personnel, subcontractors and suppliers, materials, and suppliers, and ensures that only those that are capable and qualified are included on the project. Training is provided to ensure that all personnel involved in the project understand their quality responsibilities and authorities.

The Quality Manager then details how the quality is controlled throughout the construction process through a quality inspection and test plan that specifies requirements and pass/fail criteria for quality inspections and tests. [CompanyName] operating policies assure compliance to the project specifications.

As the project proceeds and prior to starting each construction task, the Superintendent coordinates detailed requirements and resources, site conditions, and communicates them through a meeting with all interested parties. The Superintendent amends inspection specific checklists with items for heightened awareness based on the concerns of all parties.

The subcontractors and suppliers and Superintendent use the quality inspection forms to monitor execution of the construction process through a series of quality inspections before, during, and at the completion of each construction task. Laboratory and functional tests are performed to assure performance results.

Should nonconformances occur, they are systematically controlled and corrected. Improvements are made to prevent recurrences.

Throughout the project there are standard operating procedures and forms for creating, maintaining, and controlling quality documents and records.

Throughout the project, the Quality Manager performs on-site quality audits to ensure that the [CompanyName] Quality System is operating effectively.

### 2.2. [COMPANYNAME] PROJECT LICENSE AND QUALIFICATION REQUIREMENTS

The Quality Manager identifies company license and qualification credentials required by contract specifications and government regulators. The Quality Manager obtains records, certificates, and license records that provide verification of [CompanyName] credentials.

#### 2.2.1.1. REQUIRED COMPANY LICENSES AND CERTIFICATIONS

The Quality Manager defines quality-related company credentials for each project work task that affects quality.

### 2.3. PROJECT PERSONNEL AND QUALIFICATIONS

### **2.3.1. PROJECT ORGANIZATION CHART**

The Senior Manager defines the organization chart for the project. The organizational chart includes job titles, names of assigned personnel, and organizational and administrative interfaces with the customer. The organization chart defines lines of authority as indicated by solid connection; dotted lines indicate lines of communication. The lines of authority preserve independence of quality control personnel from the pressures of production.

The Senior Manager assesses the qualification requirements for each position on the project organization chart, qualifications of each person, and then appoints only qualified persons to the project organization.

### **2.3.2. APPOINTMENT OF KEY PROJECT PERSONNEL**

The Senior Manager forms a project management team consisting of:

- A Quality Manager
- A Project Manager
- A Superintendent
- A Quality Manager (if required)

The Senior Manager appoints qualified persons to each project management job position with specific quality responsibilities and authorities. The Senior Manager assesses the qualifications of each person before the appointment is made.

The Senior Manager keeps a record of the appointment and signs the document. The person accepts the appointment by signing a declaration as a competent person.

Work steps for maintaining appointment of key project personnel are specified in Standard Operating Procedure 2.3.2 Appointment of Key Project Personnel.

### **2.3.3. PERSONNEL QUALIFICATIONS**

The Quality Manager qualifies employee capabilities to ensure that they are capable of completely carrying out their assigned quality responsibilities including the following capabilities:

- Knowledge of Company quality standards
- Knowledge of job responsibilities and authority
- Demonstrated skills and knowledge
- Demonstrated ability
- Demonstrated results
- Required training
- Required experience

The Quality Manager also evaluates independent contractor personnel on the same standards that apply to employees.

#### **2.3.3.1. REQUIRED LICENSES AND CERTIFICATIONS**

The Quality Manager defines quality-related credentials for each project job position that affects quality.

## **2.4. PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN**

Before project work begins, the Project Manager prepares a construction process plan that defines the sequence of each work task and related quality inspections. The construction process plan is documented through an integrated and coordinated set of documents that includes:

- A schedule consisting of a sequence of each work task and activities required to complete a project
- The customer contract (Section 3 Contract Specifications) including contract technical specifications and contract drawings
- Required quality inspections and tests (Section 8.2 Required Work Task Quality Inspections and Tests ) and the project Quality Inspection and Test Plan when required
- The Contract Submittal Schedule (Section 3.4.1 Contract Submittal Schedule)

## **2.5. IDENTIFICATION OF QUALITY CONTROLLED WORK TASKS**

The Quality Manager identifies each phase of construction work task that requires separate quality controls. Each work task triggers a set of requirements for quality control inspections before, during and after work tasks.

## **2.6. PROJECT QUALITY INSPECTION AND TEST PLAN**

The Quality Manager prepares quality inspection and test plans for a project that identifies:

- Each required quality inspection and/or test
- Inspection and test specifications for each required quality inspection or test
- Hold points for customer quality inspection
- Specification requirements for each quality inspection and test

## **2.7. PROJECT QUALITY COMMUNICATIONS PLAN**

After [CompanyName] is awarded a contract, the Project Manager plans the methods of communications among the customer, subcontractors and suppliers and [CompanyName].

## **2.8. PROJECT QUALITY TRAINING PLAN**

The Quality Manager ensures that all employees receive training relevant to their quality responsibilities.

The Quality Manager ensures that all subcontractors and suppliers receive training on relevant elements of the [CompanyName] Quality System, Project Quality Assurance/Quality Control Plan, and quality standards.

The Quality Manger identifies the training needs of all personnel performing activities that affect quality. Training topics may include:

- The [CompanyName] Quality System
- The [CompanyName] Quality Policy
- Operating policies identified in the Quality Manual
- Quality standards cited in the Quality Manual, or project documents, or records
- Relevant quality standard operating procedures

## **2.9. CUSTOMER TRAINING ON OPERATION AND MAINTENANCE**

During the project closeout phase, the Quality Manager trains customers on the operation and maintenance of the completed project, including as applicable:

- A review of as-built drawings
- Installed product identification and warranty requirements
- A review of documentation regarding start-up, operation, and shutdown
- Normal adjustments and maintenance requirements

- Limitations on use

### **2.10. PROJECT RECORDS AND DOCUMENTATION PLAN**

The Quality Manager identifies the quality records that will be maintained during the planning and execution of the project. Considerations include:

- Contract requirements for maintaining records
- The size of the project
- Types of activities
- The complexity of processes and their interactions
- The competence of personnel
- The duration of the project
- The need to demonstrate completion of work
- The need to demonstrate due diligence for quality system related activities
- Balancing the cost and benefits of maintaining the record

### **2.11. PROJECT AUDIT PLAN**

The Quality Manager identifies the frequency of project quality audit that will be conducted during the project and the job position that will conduct the audits. Considerations include:

- The size of the project
- The complexity of processes and their interactions
- The duration of the project

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# 7. PROCESS CONTROLS

## *HOW WORK IS CARRIED OUT*

### **7.1. OVERVIEW**

The construction process plan defines how project work is to be done and approved for the overall project. The construction process plan is communicated to all key personnel, subcontractors and suppliers in a startup meeting. As the project proceeds, work task plans provide additional details of how each individual work task is carried out. Work tasks planning meetings are used to communicate expectations of the work task plan to key personnel responsible for carrying out the work task.

### **7.2. PROJECT STARTUP AND QUALITY CONTROL COORDINATION MEETING**

Prior to the commencement of work, the Project Manager holds a meeting to discuss and coordinate how project work will be performed and controlled. Key personnel from [CompanyName], subcontractors and suppliers meet to review expectations for project quality results as well as quality assurance and quality control policies and procedures including:

- Key requirements of the project
- The Project Quality Assurance/Quality Control Plan
- Required quality inspections and tests
- The project submittal schedule
- Quality policies and heightened awareness of critical quality requirements
- Project organization chart and job responsibilities
- Methods of communication and contact information
- Location of project documents and records

### **7.3. PREPARATORY PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN PLANNING**

#### **7.3.1. WORK TASK REQUIREMENTS REVIEW**

In preparation for the start of an upcoming work task, the Superintendent reviews an integrated and coordinated set of documents that collectively define quality requirements for the work task including:

- Objectives and acceptance criteria of the work task
- Quality standards that apply to the work task
- Work instructions, process steps, and product installation instructions that apply to the work task
- Shop drawings
- Submittals
- Tools and equipment necessary to perform the work
- License, certification, or other qualification requirements of personnel assigned to work
- Required records of the process and resulting product
- The subcontractor contracted to perform the work, if applicable
- Customer contract requirements
- Required quality inspections and tests
- Method for clearly marking nonconformances to prevent inadvertent use
- Location of quality system records and documents
- Personnel training



### **7.3.2. PREPARATORY SITE INSPECTION**

The Superintendent also performs a quality inspection of the work area and:

- Assesses completion of required prior work
- Verifies field measurements
- Assures availability and receiving quality inspection status of required materials
- Identifies any nonconformances to the requirements for the work task to begin
- Identifies potential problems

### **7.3.3. WORK TASK PREPARATORY QUALITY PLANNING MEETINGS**

Prior to the start of a work task, the Superintendent conducts a meeting with key company, subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

During the meeting, the Superintendent communicates the work task quality requirements and reinforces heightened awareness for critical requirements. Topics for a work task quality plan meeting include:

- Conflicts that need resolution
- Required quality documents and a verification of availability to personnel carrying out, supervising, or inspecting the work task
- Record keeping requirements and the availability of necessary forms
- Review methods and sequences of installation
- Special details and conditions
- Standards of workmanship
- Heightened awareness of critical quality requirements
- Quality risks
- Work tasks quality inspection form

### **7.4. WEEKLY QUALITY PLANNING AND COORDINATION MEETINGS**

The Superintendent conducts a meeting with key company, subcontractor and supplier personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

The meeting is held on a nominal weekly schedule. During the meeting, the Superintendent facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

The Superintendent maintains a record of the meeting event on the Daily Quality Control Report.

### **7.5. PROCESS CONTROL STANDARDS**

#### **7.5.1. JOB-READY START WORK STANDARDS**

Work on a work task starts only when conditions do not adversely impact quality, comply with government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental start-work requirements that apply to a specific project when they are necessary to assure quality results.

#### **7.5.2. WORK IN PROCESS STANDARDS**

Work is conducted only when conditions do not adversely impact quality, comply with government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental work in process requirements that apply to a specific project when they are necessary to assure quality results.

#### **7.5.3. PROTECTION OF COMPLETED WORK STANDARDS**

Completed work is protected from damage as specified by government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental protection requirements that apply to a specific project when they are necessary to assure quality results.

#### **7.5.4. MATERIAL STORAGE**

The Superintendent ensures all materials will be delivered, stored and handled in a manner that protects them from damage, moisture, dirt and intrusion of foreign materials.

Delivery of materials will be planned according to the work progress to minimize storage on site, where there are higher possibilities of damages and deterioration of materials.

Stored materials will be segregated to prevent cross contamination and limit losses should a delivery be rejected.

The Superintendent surveys stored materials during daily jobsite reviews and identifies any material that have incurred damage or otherwise become defective and therefore unfit for use.

#### **7.5.5. CONTROLLED USE OF MATERIALS**

The Project Manager ensures that contracts and purchase orders are awarded only to outside organizations qualified to perform the work task and/or supply materials as required for the specific project.

Only approved materials are used in the construction process. Only approved materials are specified in purchase and/or subcontracts.

Materials that are defective, deteriorated, damaged, or not approved are not used. The Superintendent clearly marks such materials for non-use or otherwise holds them aside.

When customer-supplied materials are lost, damaged, or otherwise found unsuitable for use, the Superintendent reports such findings to the customer.

When subcontractor-supplied materials are damaged or otherwise found unsuitable for use, the Superintendent reports such findings to the subcontractor.

The Superintendent ensures that construction uses only materials specified in the contract technical specifications, contract drawings, and approved submittals. Substitutions are made only by agreement of the customer and documented by a change order (see section 2.1.3.6).

##### **7.5.5.1. CONTROLLED PRODUCT USE AND INSTALLATION**

[CompanyName] construction activities conform to manufacturers' product use and installation instructions that apply to the construction process.

# 10. PREVENTIVE ACTIONS

## *PREVENT NONCONFORMANCES*

### **10.1. OVERVIEW**

Fixing problems found during quality inspections is not sufficient. Systematic prevention of recurrences is essential for improving quality.

[CompanyName] makes changes to solve the problem. Solutions may involve a combination of enhanced process controls, training, upgrade personnel qualifications, improved processes, or use of higher-grade materials.

Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

### **10.2. IDENTIFY PREVENTIVE ACTIONS FOR IMPROVEMENT**

The Quality Manager identifies preventive action improvement priorities with respect to frequency, severity, and detectability of quality correction items found during and after completion of work activities. The Quality Manager also reviews company quality performance and customer feedback.

More specifically, the Quality Manager assesses:

- Customer corrective items
- Superintendent quality inspection results
- Code official inspection results
- Post-construction service
- Management field reviews
- Annual system review
- Customer satisfaction surveys

The Quality Manager documents quality items requiring preventive action improvement.

The Quality Manager leads the company in finding solutions to address the causes of problems.

When a solution requires changes to [CompanyName] quality standards, the Quality Manager makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor and Supplier qualifications
- Company standards
- Inspection processes

### **10.3. TRAIN PREVENTIVE ACTIONS FOR IMPROVEMENT**

The Quality Manager initiates preventive action training to address quality improvement items. Personnel and subcontractors and suppliers performing or inspecting work participate in the training.

Heightened awareness during quality inspections verifies and documents compliance with the preventive action improvement items. A qualified Superintendent inspects hotspots during regular quality inspections and records observations on the quality inspection form.

The Quality Manager notifies affected subcontractors and suppliers of selected preventive action training requirements.

The Quality Manager evaluates the effectiveness of the improvements. The Quality Manager reviews improvement results recorded on quality inspection records and monthly field reviews. When the Quality Manager determines that the improvement actions are effective, the item is no longer treated as a preventive action.

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# 11. QUALITY SYSTEM AUDITS

## *AUDITS and IMPROVEMENT*

### 11.1. OVERVIEW

Audits ensure that the elements of the [CompanyName] Quality System are functioning as intended.

### 11.2. PROJECT QUALITY SYSTEM AUDIT

The Quality Manager conducts monthly Project Quality System audits that verify proper operation of the Quality System on a project. At least monthly, the Quality Manager audits:

- Quality system framework
- Quality system management and responsibilities
- Customer contract specifications
- Design control
- Project-specific quality standards
- Project purchasing
- Process control plans
- Inspections and tests
- Nonconformances and corrective actions
- Preventive actions
- Quality records and documents

The Quality Manager takes corrective actions to ensure compliance with Quality System requirements. The effectiveness of changes is then evaluated and documented.

Requirements for managing audit nonconformances are addressed in section 9.2 Nonconformances.

### 11.3. COMPANY-WIDE QUALITY SYSTEM AUDIT

At least annually, the Quality Manager audits the suitability and effectiveness of the [CompanyName] Quality System.

The audit assesses:

- [CompanyName] quality improvement activities
- Customer performance evaluations and satisfaction measurement results
- Quality performance measures
- Monthly field reviews
- Internal and external Quality Audit results
- Process performance and product conformance results
- Preventive and corrective action status
- Follow up on actions from previous Management Reviews
- Other changes (i.e., business climate, scope of work changes, etc.) that could affect the Quality System

Changes are initiated to improve Quality System performance. The Quality Manager documents Quality System changes in the [CompanyName] Quality Assurance Manual, initiates needed improvements, and assesses their effectiveness.

**Questions? Call First Time Quality (410) 451-8006**

## **LIST OF INCLUDED INSPECTION FORMS FOR FIRE SUPPRESSION**

### **FROM CSI DIVISIONS**

- Fire Suppression - 21

### **FORMS:**

- Facility Fire-Suppression Water-Service Piping
- Fire Pumps
- Fire Suppression Sprinkler Systems
- Fire-Suppression Standpipes
- Fire-Suppression Water Storage

Select Pages

## Questions? Call First Time Quality (410) 451-8006

### Fire Suppression - Facility Fire-Suppression Water-Service Piping 21.11.00

|          |        |            |                |       |
|----------|--------|------------|----------------|-------|
| Project: | Phase: | Contract#: | Subcontractor: | Crew: |
|----------|--------|------------|----------------|-------|

**Compliance Verification**

- Compliance with initial job-ready requirements
- Compliance with material inspection and tests
- Compliance with work in process first article inspection requirements
- Compliance with work in process inspection requirements
- Compliance with Task completion inspection requirements
- Compliance with inspection and test plan
- Compliance with safety policies and procedures

Reported Nonconformances and incomplete items:

**FTQ 2TQ Heightened Awareness Checkpoints**

- Piping pitched to allow complete drainage
- Piping not placed above electrical panels or switchgear
- Firestops installed at penetrations through fire partitions// fire walls// smoke partitions// or floors
- Penetrations through floor// exterior wall and roof sealed and made watertight
- Piping secured to prevent movement and chafe
- Piping bends and fittings restrained
- System pressure tested and without leaks
- Valves provided with tamper-proof seals
- Wet piping not exposed to freezing conditions
- Fire department connection type verified with Local Fire Department prior to product ordering and installation

#### FTQ Scores and Completion Sign-off

**Field Mgmt.-91.45.01**

**Quality**     5   4   3   2   1   *Notes:*

**On-Time**    5   4   3   2   1   *Notes:*

**Safety**     5   4   3   2   1   *Notes:*

Sign and date\*: Cell # / ID #: \_\_\_\_\_ Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Task has been has been verified complete and in compliance with contract drawings and specifications except for non-conformances a n d incomplete items reported above.

|                      |                      |                      |                          |                          |                           |
|----------------------|----------------------|----------------------|--------------------------|--------------------------|---------------------------|
| <u>Quality Score</u> | 5 = 100% NO problems | 4 = 1 minor problems | 3 = Hotspot or 2-3 minor | 2 = 6+ or major problems | 1 = Excessive problems    |
| <u>On-Time Score</u> | 5 = On Time          | 4 = Late             | 3 = Late by 1 day        | 2 = Late by 2 days       | 1 = Late more than 2 days |
| <u>Safety Score</u>  | 5 = 100% NO problems | 4 = 1 minor problem  | 3 = Hotspot or 2-3 minor | 2 = 4+ or major problem  | 1 = Injury                |



**For More Information:**

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**410-451-8006**

**[edc@firsttimequality.com](mailto:edc@firsttimequality.com)**