

[CompanyName]

[CompanyAddress]

[CompanyPhone]

Quality Management System (QMS) Manual

Operating Policies of the [CompanyName] Quality System

Management acceptance

This QMS Manual has been reviewed and accepted

Endorsed By: (Name / Title)	[SeniorManagerName], Senior Manager		
Signature:	<i>[SeniorManagerName]</i>	Effective Date:	[Date]
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Revision History

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QUALITY MANAGEMENT SYSTEM MANUAL

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CROSS REFERENCES

The [CompanyName] Quality System complies with ANSI/ISO/ASQ Q9001-2015: Quality management systems – Requirements

ISO 9001:2015	[CompanyName] Quality Management System Manual Section
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1. [COMPANYNAME] QUALITY MANAGEMENT SYSTEM

1.1. SCOPE

The [CompanyName][CompanySuffix] Quality Management system applies to all construction projects, contracts, requests, and bids.

1.2. [COMPANYNAME] QUALITY POLICY

[CompanyName] is committed to quality. Our objective is to safely deliver 100 percent complete construction projects that meet all contract and customer expectations the first time, and on-time. Our commitment to quality means:

- Every [CompanyName] employee is responsible for fully implementing and complying with all provisions of the [CompanyName] quality system.
- Our quality standards meet or exceed all applicable regulations, codes, industry standards, and manufacturer specifications as well as with our customers' contract and individual requirements.
- We stand behind our work. We inspect every work task to assure conformance to the project requirements. Should problems be found, we correct them.
- We are always improving. All employees receive regular training to make systematic improvements to remove quality risks and enhance quality performance.

We conduct our work with dignity and respect for the customer, our subcontractor and supplier partners, and ourselves.

1.3. STRUCTURE OF QUALITY SYSTEM

Good documentation is critical for a functional quality management system and must demonstrate the effective planning, operation and control of [CompanyName]'s quality management processes.

The [CompanyName] Quality Management System consists of the following documents:

- Quality Assurance Manual
- Product-specific Quality Control Plan
- Standard Operating Procedures
- Inspection and Test Procedures
- Work Instructions.

The Quality Manager prepares all quality procedures and instructions and identifies the responsible persons or persons who will implement them.

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8. PROCESS CONTROLS

HOW WORK IS CARRIED OUT

8.1. 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.

8.2. 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

Project Startup and Quality Control and Coordination Meetings are held in accordance with SOP 8.2 Project Startup and Quality Control Coordination Meeting in the Standard Operating Procedures section of this Quality Manual.

8.3. PREPARATORY PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN PLANNING

8.3.1. 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

8.3.2. 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

8.3.3. 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

8.4. 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.

8.5. PROCESS CONTROL STANDARDS

8.5.1. CONTROL OF CUSTOMER PROPERTY

Care will be exercised for customer property used by or under [CompanyName] control. [CompanyName] will identify, inspect, verify, control, and protect customer property with the procedures that apply to company purchased materials. If any customer property is lost, damage, or otherwise found to be unsuitable for use [CompanyName] will report this to the customer.

8.5.2. 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 QA/QC Manager identifies supplemental start-work requirements that apply to a specific project when they are necessary to assure quality results.

8.5.3. 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 QA/QC Manager identifies supplemental work in process requirements that apply to a specific project when they are necessary to assure quality results.

8.5.4. PRESERVATION AND PROTECTION OF MATERIALS AND COMPLETED WORK

[CompanyName] will preserve and protect work in process, completed work, component parts, materials, and when applicable, delivery to the destination to maintain so that compliance with project requirements and standards. This includes handling, storage, protection from natural elements, and reducing risks of damage.

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

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

8.5.5. 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.

8.5.6. 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).

8.5.6.1. CONTROLLED PRODUCT USE AND INSTALLATION

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

When installing a product, the Superintendent has access to all applicable product installation instructions.

8.6. DAILY QUALITY CONTROL REPORT

The Superintendent records a summary of daily work activities. The report will include:

- Schedule Activities Completed
- General description of work activities in progress
- Problems encountered, actions taken, problems, and delays
- Meetings held, participants, and decisions made
- Subcontractor and Supplier and Company Crews on site
- Visitors and purpose
- General Remarks
- Improvement Ideas
- Weather conditions

8.7. MONTHLY QUALITY CONTROL REPORT

When a monthly quality control report is required by the Project Quality Plan, the Superintendent records a monthly status report. The report includes:

- A summary of work completed and work in progress
- Outstanding issues
- Issues resolved during the reporting period
- Outstanding potential change orders
- Project status with current project costs and estimated completion date
- A cost analysis summarizing actual costs to date and estimated future costs used to determine cost and schedule impact of quality issues
- Project pictures as appropriate

The Project Manager analyzes the monthly quality control reports and makes improvement recommendations if applicable. The Monthly Quality Control Report is prepared in accordance with SOP 8.7 Monthly Quality Control Report in the Standard Operating Procedures section of this Quality Manual.

9. INSPECTIONS AND TESTS

ASSURE COMPLIANCE

9.1. OVERVIEW

Inspections are necessary to verify that work processes and results conform to both contract requirements and [CompanyName] quality standards.

Qualified personnel inspect every project throughout the construction process. Additional reviews validate the accuracy of the field quality inspections and ensure that the quality standards apply uniformly.

An inspection and test plan defines the quality inspections and tests required for a specific project.

Personnel may only inspect work activities for which they have been qualified by the QA/QC Manager.

9.2. REQUIRED WORK TASK QUALITY INSPECTIONS AND TESTS

The QA/QC Manager identifies each Task that is a phase of construction that requires separate quality controls to assure and control quality results. Each Task triggers a set of requirements for quality control inspections before, during and after work tasks.

Tasks are divided into two categories:

- Discrete Tasks are standard type of work where a completion inspection is performed one time at the completion of a phase of work.
- Process Tasks are tasks where completion inspections are performed continuously. Continuous inspections are required when there is a limited window of time to perform a completion inspection before the next task begins. Process tasks may also be characterized by independent monitoring of a work process, such as welding, where the observer verifies conformance to work procedures.

Process tasks undergo additional quality controls that continuously monitor compliance to specifications.

Independent quality audits are conducted to verify that the task quality controls are operating effectively.

Construction projects may execute a work task multiple times in a project, in which case a series of quality inspections are required for each work task.

9.3. MATERIAL INSPECTIONS AND TESTS

Material quality inspections and tests ensure that purchased materials meet purchase contract quantity and quality requirements.

9.3.1. MATERIAL RECEIVING INSPECTION

The Superintendent inspects or ensures that a qualified inspector inspects materials prior to use for conformance to project quality requirements. The receiving inspection includes a verification that the

- Correct material has been received
- Rejects/Defective Material rates can be tracked, and Supplier performance evaluated
- The material is identified and meets the traceability requirements for the material, if applicable

- Material certifications and/or test reports meet the specified requirements
- Materials are tested and approved for the specific application

The Superintendent ensures that each work task that uses the source inspected materials proceed only after the material has been accepted by the material quality inspection or test.

The Superintendent or qualified inspector performs material receiving inspections and tests in accordance with SOP 9.3. Material Inspections and Tests in the Standard Operating Procedures section of this Quality Manual.

9.3.2. SOURCE INSPECTIONS

Source quality inspections are required when quality characteristics cannot or will not be verified during subsequent processing. The QA/QC Manager determines if a source inspection is necessary to validate supplier quality before materials are delivered to the project jobsite.

The Superintendent ensures that each work task that uses the source inspected materials proceed only the material has been accepted by the source inspection.

9.4. WORK IN PROCESS INSPECTIONS

Work in process quality inspections continuously verify compliance project quality standards beginning at the start of a work task, as work is conducted, and continues until the work task is complete.

9.4.1.1. INITIAL JOB-READY INSPECTIONS

For each work task, the Superintendent or a qualified inspector performs job-ready quality inspections to ensure that work activities begin only when they should begin. Job-ready quality inspections verify that conditions conform to the project quality requirements.

9.4.1.2. INITIAL WORK IN PROCESS INSPECTION

For each work task, the Superintendent or a qualified inspector performs an initial work in process inspection when the first representative portion of a work activity is completed.

9.4.1.3. FOLLOW-UP WORK IN PROCESS INSPECTIONS

The Superintendent or a qualified inspector performs ongoing work in process quality inspections to ensure that work activities continue to conform to project quality requirements. Punch Items

If the Superintendent or inspector observes an item for correction prior to a work task completion inspection, the item is identified for correction. During the work task completion inspection each punch item correction is verified.

Any outstanding punch items remaining after the work task completion inspection is deemed a nonconformance.

9.4.2. ADDITIONAL INSPECTION REQUIREMENTS FOR PROCESS TASKS

For each process task, a qualified person inspects the ongoing completion work for conformance to project quality requirements. This is in addition to discrete task completion inspections that are performed one time at the end of a phase of work.

The continuous monitoring inspections are conducted before starting other work activities that may interfere with an inspection.

9.5. WORK TASK COMPLETION INSPECTIONS

For each work task, the QA/QC Manager or a qualified inspector inspects the completion of each work task to verify that work conforms to project quality requirements.

Completion quality inspections are performed for each work task. Completion quality inspections are conducted before starting other work activities that may interfere with an inspection.

Any outstanding punch items remaining after the work task completion inspection is deemed a nonconformance.

9.6. INSPECTION OF SPECIAL PROCESSES

The QA/QC Manager identifies special processes where the results cannot be verified by subsequent inspection or testing and determines if continuous work in process inspections are required. For these special processes, a qualified inspector continuously inspects the work process.

9.7. INDEPENDENT MEASUREMENT AND TESTS

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

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

9.8. COMMISSIONING FUNCTIONAL ACCEPTANCE TESTS

A functional test is performed on each functional system. A qualified inspector performs functional acceptance tests to verify that a system meets predetermined acceptance criteria including:

- The equipment and systems operate as intended
- The equipment and systems perform as intended
- Documentation for operation and maintenance is complete

Each functional test has a documented testing procedure that includes:

- Step-by-step work instructions for conducting the test
- Data recording requirements
- Acceptance criteria
- A determination of pass or fail

9.9. HOLD POINTS FOR CUSTOMER 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 customer approval.

9.10. QUALITY INSPECTION AND TEST SPECIFICATIONS

Specifications for each inspection or test are clearly understood before the inspection or test is performed including:

- Items to be inspected/tested
- Inspections/tests to be performed
- Testing schedule frequency

- Specification references including contract drawing identification number and version, if applicable, and/or contract technical specification number and version, if applicable
- Performing party
- Witness parties
- Certificates required
- Checklists/procedures
- Reference standards

9.11. INSPECTION AND TEST ACCEPTANCE CRITERIA

Inspections assess conformance of materials or work for each work task to project quality requirements, including applicable:

- Contract technical specification
- Contract drawings
- Approved shop drawings
- Approved product submittals
- Approved allowances and unit prices
- Product identification requirements
- Approved submittals
- [CompanyName] quality standards

The material or completed work task is accepted only when it meets all project quality requirements.

9.12. INSPECTION AND TEST STATUS

The status of each quality control inspection or test is clearly marked by tape, tag, or other easily observable signal to ensure that only items that pass quality inspections is accepted.

For each quality-controlled work task, the QA/QC Manager determines the appropriate method of identification to show inspection and test status.

For each quality-controlled material, the QA/QC Manager determines the appropriate method for identifying quality inspection and test status.

9.13. INDEPENDENT QUALITY ASSURANCE INSPECTIONS

The QA/QC Manager and/or qualified inspectors perform independent quality assurance inspections that verify that task quality controls are operating effectively.

The QA/QC Manager selects a representative portion of task completion inspections performed by the Superintendent. Those tasks are independently inspected by the QA/QC Manager and/or qualified inspectors. The findings are compared to the findings of the inspections performed by the Superintendent. Any deviations are addressed by corrective actions and preventive actions as necessary.

9.14. INSPECTION AND TEST RECORDS

9.14.1. INSPECTION RECORDS

The QA/QC Manager prepares an inspection form for each work task. The QA/QC Manager lists on the form checkpoints for heightened awareness including:

- Initial job-ready inspection requirements
- Inspection and tests

- Work in process inspection requirements
- Completion quality inspections
- Other quality requirements as necessary to reduce quality risks

The person responsible for the inspection, records work task inspection results on the work task inspection form.

9.14.2. TEST RECORDS

Test result data include as appropriate:

- Reference to the inspection and test plan item
- Description or title of the inspection activity
- Drawing identification number and version, if applicable
- Technical specification number and version, if applicable
- Location of the inspection activity
- Acceptance criteria
- Nonconformances
- Validation that nonconformances are corrected, reinspected or retested, and confirmed to meet Quality System requirements.
- Any open items to be completed later.
- Inspector's name and signature indicating compliance with all requirements of the Quality System
- Quality rating scores as appropriate
- Date of inspection or test
- Certificate, if applicable
- Conspicuous statement of final result as either "CONFORMS" or "DOES NOT CONFORM"

9.15. PROJECT COMPLETION AND CLOSEOUT INSPECTION

9.15.1. PRE-FINAL [COMPANYNAME] INSPECTION

Near the end of the project, or a milestone established in the Project Quality Inspection and Test Plan, the QA/QC Manager will inspect the completed project and verify conformance to contract specifications.

The QA/QC Manager records nonconforming items.

The Superintendent assigns a planned date by which the deficiencies will be corrected. The date may be assigned for all items or individual items as necessary. After corrections have been made, the Superintendent verifies the completion of each item.

Then the QA/QC Manager conducts a follow-up inspection and verifies that all nonconforming items have been corrected to meet contract specifications. Any remaining deficiencies are recorded and managed as nonconformances.

When the pre-final [CompanyName] inspection process is complete, the QA/QC Manager then notifies the customer that the project is ready for the customer's final inspection. The customer is also notified of any remaining nonconformances and their planned resolution.

9.15.2. PRE-FINAL CUSTOMER INSPECTION

If the customer performs a pre-final inspection, the QA/QC Manager records nonconforming items and assigns a planned date by which the deficiencies will be corrected.

The Superintendent assigns a planned date by which the deficiencies will be corrected. The date may be assigned for all items or individual items as necessary. After corrections have been made, the Superintendent verifies the completion of each item.

After corrections have been made, the QA/QC Manager will conduct a follow-up inspection and verify that all nonconforming items have been corrected to meet contract specifications. Any remaining deficiencies are recorded and then managed as nonconformances.

When the pre-final customer inspection process is complete, the QA/QC Manager then notifies the customer that the project is ready for the customer's Final inspection. The customer is also notified of any remaining nonconformances and their planned resolution.

9.15.3. FINAL ACCEPTANCE CUSTOMER INSPECTION

If the customer performs a final inspection, the Quality Control Manager, Superintendent, and Project Manager will participate in the inspection. The QA/QC Manager records nonconforming items and assigns a planned date by which the deficiencies will be corrected. The date may be assigned for all items or individual items as necessary. After corrections have been made, the Superintendent verifies the completion of each item.

After corrections have been made, the QA/QC Manager will conduct a follow-up inspection and verify that all nonconforming items have been corrected to meet contract specifications. Any remaining deficiencies are recorded managed as nonconformances.

When the final customer inspection process is complete, the QA/QC Manager then notifies the customer that the project is ready for the customer's follow-up verification. The customer is also notified of any remaining nonconformances and their planned resolution.

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10. NONCONFORMANCES AND CORRECTIVE ACTIONS

10.1. OVERVIEW

Should a nonconformance be identified by an inspection there is a systematic method to control the item, correct it, and ensure that project quality is not adversely impacted by the event.

A nonconformance is any item that does not meet project specifications or [CompanyName] Quality System requirements.

10.2. NONCONFORMANCES

10.2.1. MARKING OF NONCONFORMANCES AND OBSERVATIONS

When the QA/QC 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.

10.2.2. 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.

10.2.3. NONCONFORMANCE REPORT

10.2.3.1. 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 QA/QC Manager.

10.2.3.2. QA/QC MANAGER DISPOSITION OF NONCONFORMANCE REPORTS

When the QA/QC Manager receives a Nonconformance Report, he or she assesses the affect the reported nonconformance has on form, fit, and function. The QA/QC 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 QA/QC 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.

10.2.4. CORRECTION OF NONCONFORMANCES

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 10.3 Corrective Actions).

10.3. CORRECTIVE ACTIONS

10.3.1. 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 QA/QC Manager does a root cause(s) analysis and 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 QA/QC Manager makes modifications as necessary by making changes to:

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

10.3.2. 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.

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

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

The Superintendent evaluates the effectiveness of the improvements. The QA/QC Manager reviews improvement results recorded on quality inspection records and monthly field reviews. When the QA/QC

Manager determines that the improvement actions are effective, the item is no longer treated as a preventive action.

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11. PREVENTIVE ACTIONS

PREVENT NONCONFORMANCES

11.1. OVERVIEW

Fixing problems found during quality inspections is not enough. 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.

11.2. IDENTIFY PREVENTIVE ACTIONS FOR IMPROVEMENT

The QA/QC 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 QA/QC Manager also reviews company quality performance and customer feedback.

More specifically, the QA/QC Manager assesses:

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

The QA/QC Manager documents quality items requiring preventive action improvement.

The QA/QC Manager leads the company in finding solutions to address the causes of problems.

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

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

11.3. TRAINING CERTIFICATION AND PERFORMANCE RECOGNITION IMPROVEMENT PROGRAM

As part of the [CompanyName] Continuous Improvement Program, the QA/QC Manager issues certificates to employees for the completion of company-provided training courses as well as training courses provided by outside organizations.

In addition to certification programs, [CompanyName] recognizes workers and subcontractors who achieve outstanding quality performance ratings based on the findings during the Annual Company

Quality System Audit as specified in section 12.3. Annual Company Quality System Audit included in this Quality Manual.

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13. RECORD AND DOCUMENT CONTROLS

13.1. OVERVIEW

[CompanyName] ensures that quality related documents and records are created, current versions are in use, complete, identifiable, and stored properly.

13.2. QUALITY SYSTEM DOCUMENTS

13.2.1. CORPORATE QUALITY MANUAL

The QA/QC Manager maintains the [CompanyName] Corporate Quality Manual that documents [CompanyName] quality policies. Each policy identifies the titles of personnel responsible.

The QA/QC Manager ensures that the Corporate Quality Manual and documents related to a work task are accessible to personnel performing the work.

The QA/QC Manager maintains, improves, and updates the manual as necessary. At least annually, the QA/QC Manager determines if updated versions of standards and product installation instructions are available. If so, the QA/QC Manager updates the Quality System documentation accordingly.

The President or Vice President approves revisions to the Corporate Quality Manual, then signs and dates the cover.

13.2.2. QUALITY SYSTEM POLICY AND PROCEDURES

The QA/QC Manager prepares procedures when documented work steps are necessary for establishing, implementing, and maintain the [CompanyName] Quality System. Only procedures approved by the QA/QC Manager are a requirement of the [CompanyName] Quality System.

Written procedures are required for the use of forms to record quality data.

Each procedure must contain the following elements:

- Purpose
- Scope
- Definitions
- Responsible Person(s)
- References
- Procedure steps: that describe sequential processes to be followed to accomplish quality objectives

13.3. DOCUMENT CONTROLS

The QA/QC Manager, President or Vice President assigns a new version number to each version of quality system documents, including the Corporate Quality Manual.

The QA/QC Manager and Operations Director control all company-wide quality system documents including:

- Approval of all quality system documents and for adequacy prior to issue or reissue.
- Ensures that applicable documents are available and usable at points of use
- Prevents unintended use of obsolete documents

The QA/QC Manager controls project-specific quality system documents including:

- Approval of all project quality documents and for adequacy prior to issue or reissue.
- Ensures that applicable documents are available and usable at points of use
- Prevents unintended use of obsolete documents

13.3.1. CONTROL OF SYSTEM DOCUMENTS

The QA/QC Manager controls documents related to the [CompanyName] Quality System including:

- Quality System Manual
- Quality System Procedures
- Project Management Procedures (including interface and coordination with customers and regulatory agencies with jurisdiction over jobsites)
- Government regulations
- Industry standards
- Procurement specifications

The QA/QC Manager ensures that records of the distribution of Quality System documents are kept. When new versions are distributed, obsolete versions are destroyed or controlled to prevent inadvertent use.

13.3.2. CONTROL OF PROJECT DOCUMENTS

The Project Manager controls documents related to specific customer contracts including:

- Customer contracts
- Contract technical specifications
- Contract drawings
- Shop drawing submittals and approvals
- Product data submittals and approvals
- Allowances and unit price submittals and approvals
- Requests for information and customer responses
- Subcontracts
- Inspection and test plans

The QA/QC Manager ensures that records of the distribution of project documents are kept. When new versions are distributed, obsolete versions are destroyed or controlled to prevent inadvertent use.

13.4. RECORD CONTROLS

The QA/QC Manager verifies records for conformance to the Quality System Requirements and approves all Quality System records.

Records demonstrating conformance with and operation of the Quality System are retrievable for at least five years. The QA/QC Manager verifies records for conformance to the Quality System Requirements.

13.4.1. QUALITY SYSTEM RECORDS CONTROL

The QA/QC Manager verifies the completeness, accuracy, and retention of project-specific Quality System records including:

- Annual reviews
- Quality improvement records

13.4.2. PROJECT RECORDS CONTROL

The QA/QC Manager verifies the completeness, accuracy, and retention of project-specific Quality System records including:

- Inspection and test records
- Quality submittals to the customer
- Project quality system audits
- Field reviews
- Calibration certificates
- Daily log reports
- Incident reports
- Redline drawings
- Qualified personnel approvals
- Qualified subcontractor approvals
- Quality improvement records
- Project Quality records specified by customer contract, or contract technical specifications

The QA/QC Manager assigns record control responsibilities and document location that apply to a specific project.

Project Quality Records will be maintained for a minimum of five years or more as specified by project specifications, or by the QA/QC Manager for a specific project. Project Quality Records will be filed in the project office during the project. After the project is complete, project records will be stored in file storage area of the main office.

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15. QUALITY SYSTEM STANDARD OPERATING PROCEDURES

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SOP 4.5 CONTRACT RISK CONTRACT RISK AND OPPORTUNITIES ASSESSMENT	
Version	Approved by:
[Date]	QA/QC Manager

Purpose:

To document the contract risk and opportunities assessment process and to retain documented evidence of the process being tracked.

Scope:

All potential construction projects

Definitions:

None:

Responsible Person(s):

Project Manager has overall responsibility

References:

Quality Manual Section 4.5. Contract Risk Contract Risk and Opportunities Assessment

Quality Manual Section 13.4.2 Project Records Control

Procedure:

1. Use the Project Contract Risk and Opportunities Assessment Form in this procedure.
2. The Responsible Person performs a Contract Risk and Opportunities Assessment prior to bidding on a job.
3. The Responsible Person records any decisions made based on the assessment and includes any evidence sited during the assessment.
4. The Responsible Person performs periodic follow up assessments to track project risks and opportunities outcomes as part of SOP 12.2 Project System Audit.
5. The Responsible Person stores the completed form in the field office as required by Quality Manual Section 13.4.2 Project Records Control.

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**[CompanyName][CompanySuffix]
Contract Risk and Opportunities Assessment Form**

Project ID	Project Name	Assessor		Date
[ProjectNumber]	[ProjectName]			
Project Risk	Risk Description	Probability/Priority (Low, Med, High)	Steps for Mitigation or Avoidance	Responsible Person
Project Opportunities	Opportunity Description	Probability/Priority	Steps for Capturing Opportunity	Responsible Person
Decisions made based on assessment				
Follow-up results and date – Use the Project Quality Audit process to track and document evidence of project risks and opportunities outcomes.				

SOP 6.5. EQUIPMENT PREVENTIVE MAINTENANCE	
Version	Approved by:
[Date]	QA/QC Manager

Purpose:

To specify which specify which equipment is to have periodic preventive maintenance and record the way the inspection and maintenance status is to be identified (e.g., tag, sticker, or other observable marking)

Scope:

Company equipment and/or customer-supplied equipment, if applicable

Definitions:

None:

Responsible Person(s):

QA/QC Manager has overall responsibility

Superintendent or qualified inspector

References:

Quality Manual Section 6.5 Equipment Preventive Maintenance

Quality Manual Section 13.4.2 Project Records Control

Procedure:

1. Use the Preventive Maintenance Equipment List Form and Service & Maintenance Report Form included in this procedure.
2. The Responsible Person identifies all company owned and customer supplied equipment that required preventive maintenance and records the information on the Preventive Maintenance Equipment List Form.
3. The Responsible Person performs periodic preventive maintenance on equipment listed on the Preventive Maintenance Equipment List Form as required by the manufacturer's recommendations or other nationally recognized standard if applicable.
4. The Responsible Person completes a Service & Maintenance Report for each piece of equipment serviced and or maintained.
5. The Responsible Person stores the completed form in the main office as required by Quality Manual Section 13.4.2 Project Records Control.

SOP 6.7 CONTROLLED MATERIAL IDENTIFICATION AND TRACEABILITY	
Version	Approved by:
[Date]	QA/QC Manager

Purpose:

To specify which project materials are subject to lot control

Scope:

All projects

Definitions:

None:

Responsible Person(s):

QA/QC Manager has overall responsibility

Project Manager

References:

Quality Manual Section 6.7 Controlled Material Identification and Traceability

Quality Manual Section 13.4.2 Project Records Control

Procedure:

1. The Responsible Person identifies if lot traceable materials are necessary to supplement the contract as required by the Quality Manual.
2. The Responsible Person records types of controlled materials and equipment on the Controlled Materials form as required by Quality Manual. When no controlled materials are required to supplement contract requirements, "none required" is recorded.
3. The Responsible Person records specifications that apply to each type of controlled material and equipment as required by Quality Manual.
4. The Responsible Person updates the Controlled Materials Form as necessary during the project.
5. When a material is listed on the Controlled Materials Form, only that material may be purchased for the intended purpose.
6. The Responsible Person stores the completed form in the field office as required by Quality Manual Section 13.4.2 Project Records Control.

SOP 6.8 INSPECTION, MEASURING AND TEST EQUIPMENT CONTROL AND CALIBRATION	
Version	Approved by:
[Date]	QA/QC Manager

Purpose:

To clearly define measuring devices that require calibration and to keep calibration records.

Scope:

All Inspection, Measuring and Test Equipment that require control and calibration

Definitions:

None:

Responsible Person(s):

Superintendent

References:

Quality Manual Section 6.8 Inspection, Measuring and Test Equipment Control and Calibration

Quality Manual Section 13.4.2 Project Records Control

Procedure:

1. Use the Inspection, Measuring and Test Equipment Calibration Plan and Log Form contained in this procedure unless the customer contract or Project Quality Assurance/Quality Control Plan specifies the use of a modified or customer supplied form. In that case, the specified form replaces the standard form for that contract.
2. The Responsible Person completes the Inspection, Measuring and Test Equipment Calibration Plan and Log Form with information as required by the Quality Manual.
3. The Responsible Person stores the completed form in the field office as required by Quality Manual Section 13.4.2 Project Records Control

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**[CompanyName][CompanySuffix]
Inspection, Measuring and Test Equipment Calibration Plan and Log**

Project ID	Project Name	Preparer	Date
[ProjectNumber]	[ProjectName]		

Type of device or equipment	Calibration Type and Frequency	Device ID	Calibrated By/ Calibration Date	Calibration certificate #	Next Calibration Due Date
					Project Start

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QUALITY MANAGEMENT SYSTEM QUESTIONNAIRE

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4. Product Realization.....	9
5. Measurement, Analysis and Improvement	14

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5. MEASUREMENT, ANALYSIS AND IMPROVEMENT

No.	Question Text	Response	Quality Manual Section	Page
5.1	Does your company have a Quality Management System that addresses Measurement, Analysis and Improvement?	Yes	2.5 Quality System Performance Measures 2.6 Customer Satisfaction Performance Measures 2.7 On-time Delivery Performance Measures 9.14 Inspection and Test Records 12 Annual Company Quality System Audits	Pages 13, 42, 50
5.2	Does your company's quality system and processes utilize specific tools to measure quality performance?	No		
5.3	Does your company's quality system and processes utilize specific tools to analyze quality performance?	No		
5.4	Does your company's quality system and processes utilize specific tools to evaluate quality performance?	No		
5.5	Does your company measure and report to Executive Management on at least 3 key performance indicators (KPIs)? Examples include reduction in rework, increase in customer satisfaction/trust, increase in profitability, increase in competitiveness, etc.	Yes	2.5 Quality System Performance Measures	Page 13
5.6	If you answered YES to the previous question, what KPIs are measured and reported to Senior Management by your company?		-- Number of customer correction items identified at the project closeout quality inspection -- Customer satisfaction feedback -- Reduction in Non-conformance Reports (NCRs) by Dynamic Directional Boring inspectors or Customers	Page 13
5.7	Does your company utilize Cost of Quality Concepts?	N/A		
5.8	If you answered YES to question 7, are the identified categories documented?			
5.9	If you answered YES to question 8, are Cost of Quality categories tracked, analyzed, documented, and reported to Senior Management?			

No.	Question Text	Response	Quality Manual Section	Page
5.10	Which of the following Appraisal Costs does your company employ?		<input checked="" type="checkbox"/> Cost and schedule impact (Monthly Quality Control Report) <input checked="" type="checkbox"/> Non-Conformance Reporting (NCR) <input checked="" type="checkbox"/> Root cause(s) analysis	Pages 45, 46 Page 129
5.11	Which of the following Product/Service Failure Costs does your company employ?		<input checked="" type="checkbox"/> Correction of records <input checked="" type="checkbox"/> Re-inspect/retest <input checked="" type="checkbox"/> Rework product or reprocess service	Pages 45, 46
5.12	Which of the following internal costs of failure does your company employ?		<input checked="" type="checkbox"/> Confirmation of final disposition <input checked="" type="checkbox"/> Cost and schedule impact <input checked="" type="checkbox"/> Determine disposition (as is, rework, reject)	Pages 45, 46
5.13	Which of the following External Costs of Failure does your company employ?		<input checked="" type="checkbox"/> Compensation to stakeholders <input checked="" type="checkbox"/> Rescheduling/loss of services	
5.14	How does your company measure quality performance? (Check all that apply)		<input checked="" type="checkbox"/> Cycle Time <input checked="" type="checkbox"/> Defect Rates <input checked="" type="checkbox"/> Non-Conformance Report (NCR) Frequency <input type="checkbox"/> Other <input checked="" type="checkbox"/> Repair Rates	
5.15	Is your quality performance measure graphically analyzed and evaluated?	No		
5.16	Does your company have a system of recording costs for re-work due to error or omission detected by your internal quality control system and is this on an individual project basis?	No		
5.17	Does your company have a material receiving process (e.g., quality check)?	Yes	9.3.1. Material Receiving Inspection	Page 39
5.18	If you answered YES to question 17, are the reject/defect rates tracked on a year-to-date basis?		We track rejects as indicated on the Material Receiving Inspection forms reviewed during the Annual Company Quality System Audit Material Receiving Inspection Report	
5.19	If reject/defect rates are NOT tracked on a year-to-date basis, describe the frequency?	N/A		
5.20	Does your company system include processes to record and monitor reject/rework rates?	Yes	9.3.1. Material Inspections and Tests 12.3. Annual Company Quality System Audit	Pages 39, 50

No.	Question Text	Response	Quality Manual Section	Page
5.21	Does your company have documented procedures to perform quality checks of received materials?	Yes	SOP 9.3 Material Inspections and Tests	Pages 130-132,
5.22	Does your company have a process for verifying that these requirements (e.g., perform regular surveillances, verification inspections or spot checks on job sites / work deliverables) are being met?	Yes	12.2. Project Quality System Audit	Page 50
5.23	If you answered YES to prior question, are these verifications documented?	Yes	SOP 12.2. Project Quality System Audit	Page 146
5.24	Does your company conduct documented worksite quality reviews/inspections?	Yes	9. Inspections and Tests	Pages 39, 40
5.25	Does your company track the cost of preparing and implementing procedures and work instructions for key project activities?	No		
5.26	Are company, project, and individual welder repair rates tracked?	NA		
5.27	Is your company's quality system externally audited?	No		
5.28	If you answered YES to the previous question, please provide auditor, standard, date of audit and date due for renewal.	N/A		
5.29	Are external audit results of your Company's quality management system available for the prior 5 years?	N/A		
5.30	Does your company prepare and implement inspection and test plans (ITPs)	Yes	3.7. Project Quality Inspection and Test Plan	Page 19
5.31	Does your company have documented procedures for developing project specific inspection and test plans (ITPs)	Yes	SOP 3.7. Project Quality Inspection and Test Plan	Page 73
5.32	Does your company have formal processes for implementing lessons learned or continual improvement recommendations?	N/A		
5.33	Does your company have a process for identifying and controlling Non-Conformances (NCRs) raised by your personnel and your customers? This	Yes	10. Nonconformances and Corrective Actions	Page 45

No.	Question Text	Response	Quality Manual Section	Page
	includes outputs, products/services, personnel issues, etc.			
5.34	Does your company measure delivery performance?	Yes	2.7. On-time Delivery Performance Measures	Page 14
5.35	If you answered Yes to the previous question, please describe how:		<p>We collect on-time performance feedback in three ways.</p> <ul style="list-style-type: none"> --Inspection Forms that include a score for Delivery --Project Quality System Audits that include On-time task completion --Monthly Quality Control Report that includes On-time/Delivery performance analysis <p>The President and/or Operations Director(s) analyzes On-time/Delivery performance data to determine opportunities for improvement and if there are delivery issues due to subcontractor performance, those are addressed directly with the subcontractors as part of the subcontractor performance assessment</p>	
5.36	If you answered Yes to question 34, is this communicated?	Yes	<p>11.2. Identify Preventive Actions for Improvement</p> <p>12.2. Project Quality System Audit</p> <p>12.3. Annual Company Quality System Audit</p>	Page 48, 50, 51
5.37	If you answered Yes to question 36, please describe how:		<p>2.2 Quality Policy Responsibilities</p> <p>11.2 Identifying Preventive Actions for Improvement</p> <p>Upper management communicates delivery performance goals and objectives in an annual statement after completion of the Annual Company Quality System Audit</p> <p>The QA/QC Manager communicates delivery performance improvement measures through corrective action and preventive action training.</p>	Page 10, 48
5.38	Does your company monitor and/or measure delivery performance of your suppliers and manufacturers?	Yes	2.7. On-time Delivery Performance Measures	Page 14

No.	Question Text	Response	Quality Manual Section	Page
5.39	If you answered Yes to the previous question, please describe how:		Subcontractor on-time delivery performance is tracked on inspection forms and jobsite audits.	
5.40	If you answered Yes to question 38, is this communicated to your company's suppliers and manufacturers?	Yes	2.7. On-time Delivery Performance Measures	Page 14
5.41	If you answered Yes to question 38 please describe how:		Subcontractor performance is reviewed during the Annual Company Quality System Audit and a meeting is held with subcontractors to review their performance and make recommendations for improvements	
5.42	For which of the following does your company have detailed quality and work procedures?		<input checked="" type="checkbox"/> Audits <input checked="" type="checkbox"/> Deviations <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> Heat Treatment <input checked="" type="checkbox"/> Inspections <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Non-Conformance reporting <input type="checkbox"/> Non-Destructive Examination (NDE) <input type="checkbox"/> Other <input type="checkbox"/> Pressure Testing <input checked="" type="checkbox"/> Procurement (including supplier control) <input checked="" type="checkbox"/> Quality <input type="checkbox"/> Surface Preparation <input checked="" type="checkbox"/> Training <input type="checkbox"/> Welding	
5.43	If you selected Other in the previous question, please provide the functions:	N/A		
5.44	Does your company evaluate the quality performance and effectiveness of your QMS? This may include conducting customer satisfaction surveys, monitoring and measurement results, etc.	Yes	2.5. Quality System Performance Measures	Page 13
5.45	Does your company perform any type of root cause analysis or other activities to ensure that non-conformances and other issues do not reoccur?	Yes	10.3.1. Control of Corrective Actions	Page 46

No.	Question Text	Response	Quality Manual Section	Page
5.46	Does your company evaluate the effectiveness of corrective actions taken?	Yes	10.3.2. Corrective Action Training	Pages 46, 47

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