Engineering Company Quality Manual

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This is a sample, not a complete manual

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QUALITY MANUAL

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7. Process Controls

HOW WORK IS CARRIED OUT

7.1. Overview

The engineering services process plan defines how project work is to be done and approved for the overall project. The engineering services 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 Field Engineer 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 Field Engineer 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 Field Engineer 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 Field Engineer 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 Field Engineer 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 Field Engineer facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

The Field Engineer 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

[CompanyName] will preserve and protect work in process, completed work, component parts, materials, and when applicable, delivery to the destination so as 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 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 Field Engineer 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 Field Engineer 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 engineering services process. Only approved materials are specified in purchase and/or subcontracts.

Materials that are defective, deteriorated, damaged, or not approved are not used. The Field Engineer 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 Field Engineer reports such findings to the customer.

When subcontractor–supplied materials are damaged or otherwise found unsuitable for use, the Field Engineer reports such findings to the subcontractor.

The Field Engineer ensures that engineering services 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).

7.5.6. Controlled Product Use and Installation

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

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

7.6. Daily Quality Control Report

The Field Engineer 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

7.7. Monthly Quality Control Report

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

8. INSPECTIONS AND TESTS

ASSURE COMPLIANCE

8.1. 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 engineering services 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 are have been qualified by the Quality Manager.

8.2. REQUIRED WORK TASK QUALITY INSPECTIONS AND TESTS

The Quality Manager identifies each Task that is a phase of engineering services that requires separate quality controls to assure and control quality results. Each Task triggers as 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.

Engineering Services 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.

8.3. MATERIAL INSPECTIONS AND TESTS

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

8.3.1.1. MATERIAL RECEIVING INSPECTION

The Field Engineer 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
The material is identified and meets the traceability requirements for the material
Material certifications and/or test reports meet the specified requirements

Materials are tested and approved for the specific application

The Field Engineer 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.

8.3.1.2. Source Inspections

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

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

8.4. 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.

8.4.1.1. Initial Job-Ready Inspections

For each work task, the Field Engineer 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.

8.4.1.2. Initial Work in process Inspection

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

8.4.1.3. Follow-up Work in Process Inspections

The Field Engineer 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 Field Engineer 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.

8.4.2. 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.

8.5. Work Task Completion Inspections

For each work task, the Quality 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.

8.6. Inspection of Special Processes

The Quality 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.

8.7. 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:

- 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.

8.8. 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

8.9. Hold Points for Customer Inspection

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

8.10. 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

14. FORMS

[CompanyName]
Controlled Materials Form

Version 20160426

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

Contract Section/ Activity ID	Material	Intended Use (if description is necessary)	Lot Traceability Requirements	Method for identification of Approved Inspection Status

[CompanyName]
Material Inspection and Receiving Report

Version 20160426

Contract ID	Contract Name	Purchase Order No.	Supplier	Bill of Lading No.	Date
[ProjectNumber]	[ProjectName]				

Item No.	Stock/Part No.	Description	Quantity Received	Condition	Marking	Accept	Conditional Use	Reject
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐

Receiving Quality Control

ACCEPTANCE

Listed items have been accepted by me or under my supervision

☐ Conform to contract specifications EXCEPT as noted herein or on supporting documents.
☐ Received in apparent good condition EXCEPT as noted

Signature of authorized person and date: _____

EXCEPTIONS:

[CompanyName]
Daily Production Report

Version 20160426

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

* On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

	Description
Job-ready and WIP Inspections (Active work tasks)	
Work Tasks Completion Inspections	
Sampling/Tests Performed	
Nonconformance Reports	
Problems encountered, actions taken, problems, and delays	
On Site Subcontractors And Suppliers, Company Crews, and Visitors	
Meetings held and decisions made	
General Remarks and improvement ideas	
Weather conditions	Temperature: Low: _____ F High:_____F Precipitation: ❑ No ❑ Yes, type and amount: _____

[CompanyName]
Work Task Inspection Form

Version 20160426

Work Task :

Project: Id# [ProjectNumber]	Project Name: [ProjectName]	Subcontractor And Supplier Company ID/Name:
Location/Area:	Reference drawing version #:	Crew ID/Name

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 work task completion inspection requirements
- ☐ Compliance with inspection and test plan

Heightened Awareness Checkpoints

- ☐ [Insert items identified at project startup and preparatory meetings]
- ☐
- ☐
- ☐
- ☐

Production Notes:

Reported Nonconformances:

Verification of Work Task Completion (sign and date)

Subcontractor And Supplier Sign and date*: Work task verified complete to specifications (sign and date)	
Project Field Engineer Sign and date*: Work task verified complete to specifications (sign and date)	
Project Field Engineer score subcontractor/crew performance and feedback notes	**Quality:** 5 4 3 2 1 **Safety:** 5 4 3 2 1 **Delivery:** 5 4 3 2 1
Quality Manager Sign and date*: Work task verified complete to specifications (sign and date)	
Quality Manager score quality performance and feedback notes	**Quality: 5 4 3 2 1**

* On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

[CompanyName]
Nonconformance Report

Version 20160426

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	☐Replace ☐ Repair ☐ Rework ☐ Use As-is Approval of disposition required by customer representative? Yes ☐ No ☐ Customer approval signature /date: _____
Corrective Actions	☐Corrective actions completed Name/Date:_____ Customer acceptance of corrective actions required? Yes ☐ No ☐ Name/Date:_____
Preventive Actions	☐Preventive actions completed Name/Date:_____

For More Information:

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