



## **Engineering Design QA/QC Plan Sample**

**Selected pages (not a complete plan)**

**Part 1: Project-Specific Quality Plan**

**Part 2: Quality Manual**

**Part 3: Submittal Forms**

**Contact:**

**FirstTimeQuality**

**410-451-8006**

## **PROJECT-SPECIFIC DESIGN QUALITY PLAN**

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## **I. DESIGN PROJECT QUALITY SPECIFICATIONS**

Fulfilling customer contract expectations is a primary objective of the [CompanyName] Quality System. To ensure that customer expectations will be fulfilled, [CompanyName] clearly defines the requirements for each contract before it is approved.

The Project Design Manager ensures that the information in customer contracts clearly defines customer expectations and that the necessary details are provided to set requirements for design.

[CompanyName] personnel and architects, engineers, and subcontractors 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 architects, engineers, and subcontractors, safe work rules, and environmental work conditions.

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

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

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## **J. DESIGN REVIEW PROCESS**

Design design controls are in place to assure the quality of design designs for this project.

A design plan is used to document the design control process. The Design Plan is included as an exhibit in this subsection.

Intermediate reviews will be carried out as indicated on the design control plan. The last review is the design output review.

A record of all reviews will be recorded on the Design Review form. A Design Review form exhibit is included in this subsection.

The President has appointed [DesignerRecordName] as the Designer of Record. [DesignerRecordName] will control the design process with specific quality responsibilities, duties, and the authority to carry them out.

### **DESIGN REVIEWS**

The DQC Manager holds review meetings with interested parties at key design milestones. The DQC Manager identifies the key design milestones, the design output required for the review, and a list of reviewers.

Two design reviews are required: one is an input design review and the other is the final design review. The DQC Manager identifies other design reviews necessary to ensure a quality result. Design reviews may be specified at the completion of design work tasks, site assessments, preliminary engineering, preliminary design, percentage completion stages, and on a calendar schedule.

The DQC Manager identifies customer and company reviewers appropriate for each design milestone. Reviewers may include persons that have a stake in any of the following: quality, safety, constructability, scheduling, maintenance, purchasing, estimating, or cost control.

At each review, the DQC Manager reviews reviewer recommendations for amendments to the design specifications. The DQC Manager submits selected design amendments for customer approval. Customer approved design amendments are design requirements.

### **DESIGN OUTPUT REVIEWS**

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<b>[CompanyName]</b> <b>Project Design Review Plan</b> <small>Version 20140915</small>					
<b>Project ID</b>		<b>Project Name</b>		<b>Preparer</b>	
[ProjectNumber]		[ProjectName]			
<b>Design Appointments</b>					
<b>Designer of Record</b>					
<b>Designer(s)</b>					
<b>Design QC Reviewer</b>					
<b>Design Review Milestones</b>					
	<b>Ref#</b>	<b>Work Task</b>	<b>Output required for review</b>	<b>Scheduled date/milestone</b>	<b>Review participants</b>
<b>Design Input Review</b>					
<b>Work in Process Review:</b>					
<b>Work in Process Review:</b>					
<b>Final Design Review:</b>					

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[CompanyName] Quality Inspection and Test Plan												
Project ID			Project Name						CONTRACTOR			
[ProjectNumber]			[ProjectName]						[CompanyName]			
SPECIFICATION SECTION AND PARAGRAPH NUMBER		SCHEDULE ACTIVITY ID	TEST REQUIRED	ACCREDITED/ APPROVED LAB YES /NO		SAMPLED BY	TESTED BY	LOCATION OF TEST ON/OFF SITE/SITE		DATE COMPLETED	DATE FORWARDED TO CUSTOMER	REMARKS

## **L. WORK TASK QUALITY INSPECTIONS**

[CompanyName] identifies a list of work tasks which will be quality controlled. Each work task is subject to a series of inspections; before, during, and after completion.

Each inspection verifies compliance with full scope of the relevant specifications; not limited to inspection form checkpoints.

The initial work task-ready inspection occurs when work is ready to start and ensures that work begins only when it does not adversely impact quality results.

Work-in-process inspections continuously verify that work conforms to project specifications and quality expectations. Work continues only when it does not adversely impact quality results.

At completion of the work task an inspection verifies that work has been completed in accordance with project quality requirements.

Inspection results are recorded and maintained as part of the project files.

The DQC Manager identifies each Task that is a phase of design 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.

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

Design 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.

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

### **IDENTIFICATION OF QUALITY INSPECTED WORK TASKS**

A listing of project work tasks is included on the Quality Control work task List and included as an exhibit in this subsection.

### **REQUIRED INSPECTIONS FOR EACH WORK TASK**

Each work task is subject to a series of inspections before, during, and at completion as described below. Results of inspections are recorded.

#### **TASK-READY INSPECTIONS**

For each work task, the Design 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.

#### **WORK IN PROCESS QUALITY INSPECTIONS**

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

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



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### WORK TASK COMPLETION QUALITY INSPECTIONS

For each work task, the DQC 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.

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# **QUALITY MANUAL**

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## **7. PROCESS CONTROLS**

### *HOW WORK IS CARRIED OUT*

#### **7.1. OVERVIEW**

The design process plan defines how project work is to be done and approved for the overall project. The design process plan is communicated to all key personnel, architects, engineers, and subcontractors 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 Design Manager holds a meeting to discuss and coordinate how project work will be performed and controlled. Key personnel from [CompanyName], architects, engineers, and subcontractors 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 Design 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. WEEKLY QUALITY PLANNING AND COORDINATION MEETINGS**

The Design Engineer conducts a meeting with key company, architect, engineer, and subcontractor 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 Design Engineer facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

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

#### **7.4. MONTHLY QUALITY CONTROL REPORT**

When a monthly quality control report is required by the Project Quality Plan, the Design Engineer 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

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- Project status with current project costs and estimated completion date
- A cost analysis summarizing actual costs to date and estimated future costs
- Project pictures as appropriate

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## **9. NONCONFORMANCES AND CORRECTIVE ACTIONS**

### **9.1. 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.

### **9.2. NONCONFORMANCES**

#### **9.2.1. MARKING OF NONCONFORMANCES AND OBSERVATIONS**

When the DQC Manager, Design Engineer, 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.

#### **9.2.2. CONTROL THE CONTINUATION OF WORK**

After the item is marked, the Design Engineer 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 Design Engineer 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 Design Engineer identifies the limits of the affected area. The Design Engineer quickly and clearly identifies the boundaries of the stop work area.

#### **9.2.3. NONCONFORMANCE REPORT**

##### **9.2.3.1. RECORDING OF NONCONFORMANCES**

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

The Design Engineer sends the nonconformance report to the DQC Manager.

##### **9.2.3.2. DQC MANAGER DISPOSITION OF NONCONFORMANCE REPORTS**

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

## **List of Included Forms**

### **Standard Forms:**

- Point Of Contact List
- Project Organization Chart
- Project Quality Communications Plan
- Quality Manager Appointment Letter
- Project Manager Appointment Letter
- Superintendent Appointment Letter
- Personnel Certifications and Licenses
- Project Personnel Resumes
- Project Subcontractor and Supplier List
- Training Plan
- Training Log
- Regulatory Codes and Industry Standards
- Project Regulatory Building Codes
- Controlled Materials Form
- Metals Material Receiving Inspection Report
- Material Inspection and Receiving Report
- Inspection and Testing Standards
- Quality Inspection and Test Plan
- Test Equipment Calibration Plan and Log
- Quality Controlled Work Task List
- Daily Production Report
- Work Task Inspection Form
- Nonconformance Report
- Punch List
- Project Completion Inspection Form
- System Document Control Form
- Project Records Control Form
- Project Quality System Audit Form

<b>[CompanyName][CompanySuffix]</b> <b>Nonconformance Report</b> <small>Version 20131125</small>		
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: _____	





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