



Communications and Security Contractor QA/QC Plan Sample

Selected pages (not a complete plan)

- ☐ QA/QC Plan Sample
- ☐ Project-Specific Quality Plan
- ☐ Quality Manual
- ☐ Communications and Security
Standards & Inspection Forms

Contact:
Ed Caldeira
410-451-8006



Quality Assurance/Quality Control Plan

[ProjectName]

[ProjectNumber]

Version Date: September 14, 2011

PROJECT-SPECIFIC INSTALLATION QUALITY PLAN

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M. INSTALLATION WORK TASK QUALITY INSPECTIONS

[CompanyName] identifies a list of work tasks, phases of production, which will be quality controlled. Each work task is subject to a series of inspections; before, during, and after the work is complete. Each inspection verifies compliance with full scope of the relevant specifications; not limited to checkpoints for heightened awareness.

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

Incoming material inspections verify that materials are as specified and meet all requirements necessary to assure quality results.

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

At completion of the work task an inspection verifies that work, materials, and tests have been completed in accordance with project quality requirements. When appropriate, functional tests are performed.

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

The Quality 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.

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.

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

IDENTIFICATION OF QUALITY INSPECTED INSTALLATION 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 INSTALLATION WORK TASK

Each work task is subject to a series of inspections before, during, and at completion including:

- Preparatory site inspection
- Material inspections
- Work task-ready inspections
- Work in process inspections
- Work task Completion inspections

Results of inspections will be recorded as follows:

- Task inspection results will be recorded on the Work task Inspection Form.

- Daily inspections of work in process will be recorded on the Daily Quality Control Report.

Each item is described below.

PREPARATORY SITE INSPECTION

The Superintendent 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 task to begin
- Identifies potential problems

TASK-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.

WORK IN PROCESS QUALITY INSPECTIONS

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.

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.

WORK TASK COMPLETION QUALITY 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.

<div style="text-align: center;"> [CompanyName] Quality Inspection and Test Plan </div>												
CONTRACT NUMBER				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

N. CONTROL OF PUNCH ITEMS 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. In the event that 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 paint, 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 marks 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.

<div style="text-align: center;"> [CompanyName] Nonconformance Report <small>Version July 15, 2012</small> </div>		
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: _____	

QUALITY MANUAL

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Selected Pages

7. PROCESS CONTROLS

HOW WORK IS CARRIED OUT

7.1. OVERVIEW

The painting process plan defines how project work is to be done and approved for the overall project. The painting 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:

- Work tasks quality requirements as identified in section 7.3.1
- Findings of the work task preparatory quality inspection in section 7.3.2
- 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

LIST OF INCLUDED INSPECTION FORMS FOR COMMUNICATIONS AND SECURITY

ELECTRICAL

- Conduit for Electrical Systems
- Electrical and Cathodic Protection
- Enclosed Bus Assemblies
- Exterior Lighting
- Grounding and Bonding for Electrical Systems
- Identification for Electrical Systems
- Interior Lighting
- Low-Voltage Circuit Protective Devices
- Low-Voltage Controllers
- Low-Voltage Electrical Power Conductors and Cables (<600V)
- Low-Voltage Electrical Service Entrance
- Low-Voltage Switchgear
- Low-Voltage Transformers
- Raceway and Boxes for Electrical Systems
- Switchboards and Panelboards

ELECTRONIC SAFETY AND SECURITY

- Commissioning of Electronic Safety and Security
- Conductors and Cables for Electronic Safety and Security
- Electronic Access Control and Intrusion Detection
- Electronic Surveillance
- Fire Detection and Alarm
- Mass Notification Systems
- Pathways for Electronic Safety and Security

COMMUNICATIONS

- Audio-Video Communications
- Cable Trays for Communications Systems
- Communications Backbone Cabling
- Communications Equipment Room Fittings
- Data Communications
- Structured Cabling
- Voice Communications

Electronic Safety and Security-Electronic Access Control and Intrusion Detection 28.10.00

Project:	Phase:	Contract#:	Vendor: 9101 Field Operations	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

- ☐ ☐ Proximity sensors aimed for optimum target acquisition **1896**
- ☐ ☐ Position indicators// relays// and other intrusion sensors functional across all sensor indicators / ranges **1897**
- ☐ ☐ Call and Alarm Stations visible and clearly labeled **1898**
- ☐ ☐ Video cameras shielded against tampering **1899**
- ☐ ☐ Firestops installed at penetrations through fire partitions// fire walls// smoke partitions// or floors **1900**
- ☐ ☐ Penetrations through floor// exterior wall and roof sealed and made watertight **1901**
- ☐ ☐ Cables grouped and bundled according to signal being carried (power// data// audio// video// etc.) **1902**
- ☐ ☐ Power and control circuits not readily accessible from the exterior of the structure **1903**
- ☐ ☐ Alarm reporting locations verified with OWNER prior to programming and connection **1904**

FTQ Scores and Completion Sign-off

Field Mgmt.-Superintendent Inspection 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 and incomplete items reported above.

Field Mgmt.-QA Inspection 91.45.02

Quality 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 and 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

Communications-Audio-Video Communications 27.40.00

Project:	Phase:	Contract#:	Vendor: 9101 Field Operations	Crew:
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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

- ☐ ☐ Viewers// Speakers// Screens// Receptacles// and Antenna appearance approved by the ARCHITECT prior to ordering or installation **1847**
- ☐ ☐ Equipment enclosures applicable to the operating environment (NEMA rating) **1848**
- ☐ ☐ Audio-Video Communications Cabling neatly bundled **1849**
- ☐ ☐ Audio-Video Communications Cabling and Connectors secured against movement// chafe// and stress **1850**
- ☐ ☐ Electrical Surge Protection installed **1851**
- ☐ ☐ Audio-Video Communication Cables grouped and bundled according to signal being carried (power// audio// video// etc.) **1852**
- ☐ ☐ Audio-Video Communication Cable routing documented on Record Drawings **1853**
- ☐ ☐ Projection and Display units securely mounted to structural members **1854**
- ☐ ☐ System Operations free of electromagnetic and radio frequency interference **1855**

FTQ Scores and Completion Sign-off

Field Mgmt.-Superintendent Inspection 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 and incomplete items reported above.

Field Mgmt.-QA Inspection 91.45.02

Quality 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 and 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

Electrical-Low-Voltage Controllers 26.29.00

Project:	Phase:	Contract#:	Vendor: 9101 Field Operations	Crew:
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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

- ☐ ☐ Controllers set plumb and level **1730**
- ☐ ☐ Controllers securely mounted to structural members **1731**
- ☐ ☐ Controller housing applicable to the operating environment (NEMA rating) **1732**
- ☐ ☐ Excess wiring// insulation// ties// etc. removed from Switchgear **1733**
- ☐ ☐ Unused open knockouts plugged **1734**
- ☐ ☐ Conduits sealed to prevent water// moisture// dirt// rodent// insect// etc. intrusion **1735**
- ☐ ☐ Ventilation clearances maintained **1736**
- ☐ ☐ Signal and data cabling shielded / sufficiently separated from power cabling **1737**
- ☐ ☐ Controller clearly labeled with motor operational characteristics (V// A// ph// HP// location) **1738**
- ☐ ☐ Operational set points noted in Operation and Maintenance Manuals **1739**

FTQ Scores and Completion Sign-off

Field Mgmt.-Superintendent Inspection 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 and incomplete items reported above.

Field Mgmt.-QA Inspection 91.45.02

Quality 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 and 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

LIBRARY OF INCLUDED QA/QC PLAN FORMS

MILITARY FORMS:

- Preparatory Phase Checklist
- Initial Phase Checklist Form
- Contractor Production Report
- Contractor Quality Control Report
- Testing Plan and Log

STANDARD FORMS:

- Point Of Contact List Form
- Project Quality Communications Plan Form
- Quality Manager Appointment Letter Form
- Project Manager Appointment Letter Form
- Superintendent Appointment Letter Form
- Project Personnel Resumes Form
- Training Plan Form
- Training Log Form
- Project Design Process Plan Form
- Design Review Form
- Controlled Materials Form
- Metals Material Receiving Inspection Report Form
- Material Inspection and Receiving Report Form
- Quality Inspection and Test Plan Form
- Test Equipment Calibration Plan and Log Form
- Quality Controlled Work Task List Form
- Daily Production Report Form
- Work Task Inspection Form
- Punch List Form
- Project License and Qualifications Form
- Project Organization Chart Form
- Project Personnel Qualification Form
- Personnel Certifications and Licenses Form
- Subcontractor And Supplier Quality Communications Plan Form
- Project Quality Training Plan Form
- Project Quality Records Plan Form
- Project Submittals Schedule and Log Form
- Project Submittal Form
- Change Order Form
- Project Design Process Plan Form
- Project Regulatory Building Codes Form

- Laboratory Qualification Form
- Subcontractor And Supplier Qualification Form
- Subcontractor And Supplier Certifications and Licenses Form
- Subcontractor And Supplier Quality Control Policy Requirements Form
- Project Startup Meeting Form
- Work Task Quality Assurance/Quality Control Plan Form
- Work Task Quality Control Planning Meeting Form
- Monthly Quality Control Report Form
- Inspection and Test Report Form
- Project Completion Inspection Form
- Nonconformance Report Form
- Nonconformance Report Control Log Form
- Corrective Action Report Form
- Training Record Form
- Jobsite Quality Review Planning and Log Sheet Form
- Quality System Audit Form
- System Document Control Form
- Project Records Control Form

Selected Pages

INCLUDES REGULATORY CODES, STANDARDS, AND PERSONNEL CERTIFICATIONS

FROM CSI DIVISIONS

- Electrical - 26
- Communications - 27
- Electronic Safety and Security – 28

APPLICABLE REGULATORY CODES AND INDUSTRY STANDARDS FOR DIVISION 28 ELECTRONIC SAFETY AND SECURITY		
Description	Reference Standard No.	Reference Standard Title
Bonding and grounding requirements	NFPA 70	National Electrical Code
Conduit installation	NFPA 70	National Electrical Code
Installation of fire alarm and signaling systems	NFPA 72	National Fire Alarm and Signaling Code
Location of manual fire alarm stations	NFPA 101	Life Safety Code
Modification of an existing fire alarm system	NFPA 241	Standard for Safeguarding Construction, Alteration, and Demolition Operations
Installation of control panel	UL 864	Standard for Control Units and Accessories for Fire Alarm Systems

INSPECTION AND TESTING STANDARDS FOR DIVISION 28 ELECTRONIC SAFETY AND SECURITY		
Description	Reference Standard No.	Reference Standard Title
Ground resistance testing	IEEE 81	Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
Preliminary and acceptance testing	NFPA 72	National Fire Alarm and Signaling Code
Carbon monoxide detector testing	UL 2034	Single and Multiple Station Carbon Monoxide Alarms
Testing of duct smoke detectors	NFPA 72	National Fire Alarm and Signaling Code

Industry-Specific Information Available by Division		
03 Concrete	08 Openings	27 Communications
04 Masonry	09 Finishes	28 Electronic Safety and Security
05 Metals	21 Fire Suppression	31 Earthwork
06 Wood Plastic Composite	22 Plumbing	32 Exterior Improvements
07 Thermal and Moisture Protection	23 HVAC	33 Utilities
	26 Electrical	

Questions? Call Ed Caldeira 410-451-8006



For More Information:

Contact: Ed Caldeira

410-451-8006

www.firsttimequality.com

EdC@FirstTimeQuality.com

For More Information, contact: Ed Caldeira • Caldeira Quality, LLC • First Time QualitySM

410-451-8006 • www.firsttimequality.com • EdC@FirstTimeQuality.com