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Selected pages (not a complete plan)

Part 1: Project-Specific Quality Plan

Part 2: Quality Manual

Part 3: Submittal Forms

Part 4: @ # 7

Contact:

FirstTimeQuality

410-451-8006

# PROJECT-SPECIFIC INSTALLATION QUALITY PLAN

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## B. KEY ELEMENTS OF THE COMMUNICATIONS QUALITY PLAN

Key elements of the [CompanyName] Quality Assurance/Quality Control Plan include:

**Quality Management and Responsibilities.** [CompanyName] fully integrates its quality management system into the organizational structure and performance management systems for each project. We:

- Maintain a documented quality system consisting of a quality manual with policies and procedures.
- Tightly control exceptions to the quality system so company standards are applied uniformly to every project
- Systematically maintains quality system documents and records.

**Quality Control Personnel.** [CompanyName] fully integrates its quality management system into the organizational structure and performance management systems for each project. We:

- Appoint a Quality Manager, Superintendent, and Project Manager to each project, each with well-defined quality responsibilities and the authority to carry them out.
- Have well-defined quality responsibilities for every employee with specific quality responsibilities for key job positions.
- Plan project quality records and documentation that will be maintained.
- Tightly control exceptions to the quality system so company standards are applied uniformly to every project
- Enforce policies that monitor work conditions before and during work so that quality results are assured.

**Project Quality Coordination and Communication.** [CompanyName] tightly controls the construction process to ensure quality results. We:

- Plan quality communications through meetings, reporting requirements, and points of contact.
- Have a project startup meeting to communicate project goals and expectations.
- Conduct preparatory meetings in advance of each scheduled work task to communicate requirement details and coordinate work activities.

**Quality Assurance Surveillance.** [CompanyName] audits the quality system to assure it is operating effectively. We:

- Audit the operation of the quality system on each project for conformance to the Project Quality Assurance/Quality Control Plan and the [CompanyName] Quality System requirements.
- Conduct annual company-wide audits to evaluate effectiveness of the [CompanyName] Quality System and improve its operation.

**Employee Qualifications.** [CompanyName] ensures that only knowledgeable, capable employees carry out the planning, execution, and control of our projects. We:

- Identify employee qualification requirements, including licensing requirements, training qualifications, responsibilities, and authority for each job position.
- Train field employees on quality standards and procedures for their job position.
- Validate employee capabilities before they are assigned to carry out quality job responsibilities.

- Review ongoing employee qualifications and evaluate quality practices and performance as part of the employee performance management process.

**Qualification of Subcontractors and Suppliers.** [CompanyName] purchases only from subcontractors and suppliers that consistently meet [CompanyName] standards for quality. We:

- Clearly define outside organization qualification requirements including licensing requirements, compliance with specific quality standards, quality responsibilities, qualification of personnel and quality improvement processes.
- Validate capabilities to meet project quality requirements at planned production levels.
- Verify ongoing quality performance.

**Project-Specific Quality Standards.** [CompanyName] clearly defines standards and specifications that apply to each project. We:

- Identify all relevant regulations, codes and industry standards.
- Identify specifications for materials that meet contract as well as regulatory requirements.
- Specify quality and certification requirements for materials and equipment that affect quality.
- Identify special requirements for calibration of quality measuring devices.
- Supplement the contract and published standards with [CompanyName] quality standards as required to reduce quality risks and assure quality results.

**Inspections and Test Plan.** [CompanyName] quality inspection processes ensure that all work activities comply with the documented standards and specifications. We:

- Identify inspections and tests required by contract specifications and industry standards.
- Record the result of each quality inspection and test.
- Use independent laboratories certified by nationally recognized accreditation agencies

**Work Task Quality Inspections.** [CompanyName] quality inspection processes ensure that all work activities comply with the documented standards and specifications. We:

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# I. COMMUNICATIONS 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 Manager ensures that the information in customer contracts clearly defines customer expectations and that the necessary details are provided to set requirements for construction.

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

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

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

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## COMPLIANCE WITH INDUSTRY INSTALLATION STANDARDS

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

| Regulatory Codes and Industry Standards |   |                        |   |
|---|---|------------------------|---|
| Division                                | Description   | Reference Standard No. | Reference Standard Title  |
| 27                                      | Grounding of systems  | IEEE 142               | Recommended Practice for Grounding of Industrial and Commercial Power Systems |
| 27                                      | System electrical installation  | NFPA 70                | National Electrical Code  |
| 27                                      | Cables not installed in conduit or wireways   | NFPA 70                | National Electrical Code  |
| 27                                      | Cable tray installation   | NEMA VE 2              | Cable Tray Installation Guidelines  |
| 27                                      | Grounding and bonding of cable trays  | NFPA 70                | National Electrical Code  |
| 27                                      | Preparation of record drawings including documentation on cables and termination hardware | TIA/EIA-606            | Administration Standard for the Telecommunications Infrastructure             |
| 27                                      | Installation of telecommunications cabling and pathway systems                            | TIA-568-C.1            | Commercial Building Telecommunications Cabling Standard                       |

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## **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.

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 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 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 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.

#### **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



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### **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.

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# QUALITY MANUAL

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## 7. PROCESS CONTROLS

### *HOW WORK IS CARRIED OUT*

#### 7.1. OVERVIEW

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

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

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

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

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

##### 7.3.1. WORK TASK REQUIREMENTS REVIEW

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

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

### 7.3.2. PREPARATORY SITE INSPECTION

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

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

### 7.3.3. WORK TASK PREPARATORY QUALITY PLANNING MEETINGS

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

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

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

### 7.4. WEEKLY QUALITY PLANNING AND COORDINATION MEETINGS

The Superintendent conducts a meeting with key company, subcontractor and supplier personnel

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

#### 9.2.2. 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.

#### 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 Superintendent or inspector records the nonconformances on a nonconformance report.

The Superintendent sends the nonconformance report to the Quality Manager.

##### 9.2.3.2. QUALITY MANAGER DISPOSITION OF NONCONFORMANCE REPORTS

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

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## **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><br><b>Nonconformance Report</b><br><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"/><br>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"/><br>Name/Date: _____                                  |  |
|  |   |  |
| Preventive Actions   |   |  |
|  | <input type="checkbox"/> Preventive actions completed Name/Date: _____  |  |

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# LIST OF INCLUDED INSPECTION FORMS FOR COMMUNICATIONS

## FROM CSI DIVISIONS

- Communications - 27

## FORMS:

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

Selected Pages

# Communications - Cable Trays for Communications Systems 27.05.36

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

**Compliance Verification**

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

Reported Nonconformances and incomplete items:

**FTQ 2TQ Heightened Awareness Checkpoints**

- Cable Trays mounted securely to structural members and free of sway / rotation
- Cable Trays run level and plumb
- Minimum clearances observed
- Metal Cable Trays grounded and bonded
- Cables secured within Tray system
- Cable Tray expansion joints installed where building expansion joints are traversed
- Firestops installed at penetrations through fire partitions// fire walls// smoke partitions// or floors
- Burrs and sharp edges removed
- Dropouts// conduit connectors// etc. do not impose excessive loads on Cable Trays
- Cable Tray routing and support locations documented on Record Drawings

## FTQ Scores and Completion Sign-off

**Field Mgmt.-91.45.01**

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

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

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

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

Task has been has been verified complete and in compliance with contract drawings and specifications except for non-conformances 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                |



**For More Information:  
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