

PROJECT-SPECIFIC MEP QUALITY PLAN

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I. MEP 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.

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

LOCAL CONSTRUCTION CODES

COMPLIANCE WITH INDUSTRY MEP 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 | | | | | |
| 26 | Splicing and general conductor installation | NFPA 70 | National Electrical Code | | | | | |
| 26 | Mounting height of wall-mounted outlet and switch boxes | ICC/ANSI A117.1 | Accessible and Usable Buildings and Facilities | | | | | |
| 26 | Install Control devices and protective devices | NFPA 70 | National Electrical Code | | | | | |
| 26,27,28 | Grounding and bonding requirements | NFPA 70 | National Electrical Code | | | | | |
| 26 | Workmanship | NFPA 70 | National Electrical Code | | | | | |
| 26 | Telecommunications grounding | TIA-569 | Commercial Building Standard for Telecommunications Pathways and Spaces | | | | | |
| 26 | Telecommunications pathways | TIA J-STD-607 | Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications | | | | | |
| 26 | Warning Sign placement | NFPA 70E | Standard for Electrical Safety in the Workplace | | | | | |
| 26 | Lightning Protection installation | NFPA 780 | Standard for the Installation of Lightning Protection Systems | | | | | |
| 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 | | | | | |

| [CompanyName] Quality Inspection and Test Plan | | | | | | | | | |
|--|-------------------------|---------------|--|---------------|-----------|--|-------------------|-------------------------------------|---------|
| Project ID | | | Project Name | | | | | CONTRACTOR | |
| [ProjectNumber] [ProjectName] [Compare] | | | | [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 |
| | | | | | 0,0 | | | | |
| | | | | X | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

M. 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 as 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

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



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

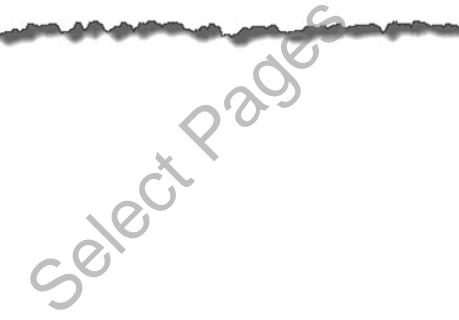
The Superintendent also performs a quality inspection of the work area and:

- 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:



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:

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

| [CompanyName][CompanySuffix] Nonconformance Report | | | | | | | | |
|---|--|--|--|--|--|--|--|--|
| Version 20131125 | | | | | | | | |
| Nonconformance Report Control ID | Project ID | Project Name | | | | | | |
| | [ProjectNumber] | [ProjectName] | | | | | | |
| Preparer Signatu | re/ 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 | | | | | | | |
| Corrective Actions | Customer approval signature /date: Corrective actions completed Name/Date: Customer acceptance of corrective actions required? Yes \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | | | | | | | |
| Preventive Actions | Preventive actions completed Name/Date: | | | | | | | |

LIST OF INCLUDED INSPECTION FORMS FOR: MEP

COMMUNICATIONS

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

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
- Low-Voltage Electrical Service Entrance
- Low-Voltage Switchgear
- Low-Voltage Transformers
- Raceway and Boxes for Electrical Systems

PLUMBING

- Plumbing Insulation
- Electric Domestic Water Heaters
- Facility Potable-Water Storage Tanks
- Facility Sanitary Sewerage
- Facility Storm Drainage
- Fuel-Fired Domestic Water Heaters
- Plumbing Fixtures

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

HVAC/MECHANICAL

- Air Outlets and Inlets
- Air Terminal Units
- Breechings// Chimneys// and Stacks
- Central Cooling Equipment
- Cooling Towers
- Facility Fuel-Oil Piping
- Facility Fuel-Storage Tanks
- Facility Natural-Gas Piping
- Furnaces
- Heating Boilers
- HVAC Air Cleaning Devices
- HVAC Ducts and Casings
- HVAC Fans
- HVAC Insulation
- HVAC Piping and Pumps
- HVAC Water Treatment
- Indoor Central-Station Air-Handling Units
- Instrumentation and Control for HVAC
- Refrigerant Piping
- Testing// Adjusting// and Balancing for HVAC

| Project: | Phase: | | Contract#: | | Subcontractor: | Crew: |
|---|---------------------|---------------|---|-------------------|--|--|
| Compliance Verification □ Compliance with initial jobready 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 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 | | | |
| Field Mgmt <u>91.45</u> Quality 5 4 3 | .01 B 2 1 Notes: | FTQ Scores an | d Comp | etion Sign | n-off | |
| On-Time 5 4 3 Safety 5 4 3 | 3 2 1 Notes: | | | | | |
| On-Time Score $5 =$ | | | 3 = Hotsp 3 = Late b | conformances an o | Date: d incomplete items reported above. $2 = 6 + or \ major \ problems$ $2 = Late \ by \ 2 \ days$ $2 = 4 + or \ major \ problem$ | 1 = Excessive problems 1 = Late more than 2 days 1= Injury |

| Project: Phase: | Contract#: | Subcontractor: | Crew: | |
|---|--------------|--|---|--|
| Compliance Verification Compliance with initial jobready requirements Compliance with material inspection and tests | FTQ 2T | Cuts for Conduits in structure ENGINEER Firestops installed at penetra fire walls// smoke partitions/ | al members approved by ations through fire partitions// | |
| □ 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: | | □ Penetrations through floor// exterior wall and roof sea and made watertight □ Excess wiring// insulation// ties// etc. removed from Conduits □ Conduits secured to prevent movement and chafe □ Remaining snake lines labeled at both ends □ Conduit bends do not exceed minimum for size of Coused and are even □ Metal Conduits bonded and grounded □ Conduits are mechanically continuous | | |
| FTQ Scores and Field Mgmt91.45.01 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 #:: ask has been has been verified complete and in compliance with contract drawings and specification. | | pletion Sign-off | _Date:above. | |
| Quality Score 5 = 100% NO problems 4 = 1 minor problems On-Time Score 5 = 0n Time 4 = Late Safety Score 5 = 100% NO problems 4 = 1 minor problem | $\beta = La$ | tspot or 2-3 minor $2 = 6 + or major pro$ te by 1 day $2 = Late by 2 days$ tspot or 2-3 minor $2 = 4 + or major pro$ | I = Late more than 2 days | |

| Electronic Safet | y and Security - C and S | Conductors an ecurity 28.05. | | ectronic Safety | | |
|--|--|---|--|---|--|--|
| Project: | Phase: | Contract#: | Subcontractor: | Crew: | | |
| | | | | | | |
| Compliance Verification | | FTQ 2TQ Heightened | Awareness Checkpoints | | | |
| □ Compliance with initial ready requirements □ Compliance with mater □ Compliance with work in the compliance with initial ready ready requirements. | ial inspection and tests | □ Conductors and Cables grouped and bundled according to signal being carried (power// audio// video// etc.) □ Insulation// Jackets// & Shielding intact without exposed Conductors and Cables □ Wiring and Cables secured to prevent movement and chaf | | | | |
| article inspection requi | | used | nds do not exceed minim | | | |
| ☐ Compliance with work inspection requirement | | | rounded across splices a uits// boxes// panels// etc | | | |
| ☐ Compliance with Task of requirements | completion inspection | connections | d wire or strap connector s Circuit and Control Wirin | | | |
| ☐ Compliance with inspec | ction and test plan | conduits// r | aceways// trays// etc. | | | |
| ☐ Compliance with safety | policies and procedures | □ □ Conductors and waterp | and Cables entering/exproofed | iting buildings sealed | | |
| Reported Nonconformances and incomplete items: | | | | | | |
| | FTQ Scores a | nd Completion Sign | n-off | | | |
| Field Mgmt <u>91.45.01</u> | | | | | | |
| 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 specification | ons except for non-conformances a n o | d incomplete items reported above. | | | |
| Quality Score 5 = 100% No On-Time Score 5 = 0n Time Safety Score 5 = 100% No | 4 = Late | 3 = Hotspot or 2-3 minor 3 = Late by 1 day 3 = Hotspot or 2-3 minor | 2 = 6+ or major problems 2 = Late by 2 days 2= 4+ or major problem | I = Excessive problems I = Late more than 2 days I = Injury Copyright 2012 First Time Quality | | |

Heating// Ventilating// and Air Conditioning (HVAC) - Air Outlets and Inlets 23.37.00 Contract#: Compliance Verification Heightened Awareness Checkpoints FTQ 2TQ Appearance of Air Outlets and Inlets approved by the ☐ Compliance with initial job-ARCHITECT prior to ordering and installation ready requirements Registers// grills// and diffusers are compatible with wall and ceiling systems ☐ Compliance with material inspection and tests Air Outlets and Inlets clean of dirt// dust// rubbish// and debris □ Compliance with work in process first Air Outlet and Inlet connections to duct work is airtight article inspection requirements Additional supports provided for registers// grills// and ☐ Compliance with work in process diffusers in drop-in ceiling tile systems inspection requirements Internal fans are mounted with vibration isolators ☐ Compliance with Task completion inspection Drive belts properly tensioned requirements Ventilators installed with clearance for inspection and maintenance ☐ Compliance with inspection and test plan Gravity Ventilators installed level and plumb ☐ Compliance with safety policies and procedures Ventilator mountings weatherproof Reported Nonconformances and incomplete items: FTQ Scores and Completion Sign-off Field Mgmt.-91.45.01 Quality **On-Time 5 4 3 2 1** *Notes*: Safety 5 4 3 2 1 Notes: Sign and date*: Cell # / ID #:: Signed: Task has been has been verified complete and in compliance with contract drawings and specifications except for non-conformances and incomplete items reported above Quality Score 5 = 100% NO problems 3 = Hotspot or 2-3 minorI = Excessive problems4 = 1 minor problems2 = 6 + or major problems2 = Late by 2 days3 = Late by 1 day 3 = Hotspot or 2-3 minor1 = Late more than 2 days 5 = On Time 5 = 100% NO problems 4 = 1 minor problem 2= 4+ or major problem I = InjuryCopyright 2012 First Time Quality

| | Plumbing - Plu | mbi | ng | Insulation | on 22.07.00 | |
|--|---|--|----------|--|---|---|
| Project: | Phase: | Contra | ct#: | | Subcontractor: | Crew: |
| | | | | | | |
| Compliance Verification | | FTQ | 2TQ | Heightened | Awareness Checkpoints | |
| ☐ Compliance with initial j ready requirements | ob- | □ □ Plumbing and equipment tested and operational before applying Insulation □ □ Area to be insulated is free of rust// scale// dirt// and | | | | |
| ☐ Compliance with materi | • | | | | | ng utilized is compatible |
| ☐ Compliance with work in article inspection require | | | | with Insulati Insulation th structure | nrough penetrations ma | nintains fire rating of |
| ☐ Compliance with work in inspection requirement | | | | points | | all supports and contact |
| □ Compliance with Task completion inspection requirements | | | | • | f valves and actuators | ng and moisture intrusion not hindered by |
| ☐ Compliance with inspection and test plan | | | | Insulation jo | | |
| ☐ Compliance with safety | policies and procedures | | | | plied in high abuse/train oles caused by testing | |
| Reported Nonconformances | s and incomplete items: | × | | | | |
| | FTQ Scores a | nd C | omp | letion Sign | -off | |
| Field Mgmt <u>91.45.01</u> Quality 5 4 3 2 | 1 Notes: | | | | | |
| On-Time 5 4 3 2 | Notes: | | | | | |
| Safety 5 4 3 2 | Notes: | | | | | |
| Sign and date*: Cell # / ID #:: Task has been has been verified complete and in | n compliance with contract drawings and specification | _Signed | | -conformances and | Date: | |
| Quality Score 5 = 100% NO On-Time Score 5 = On Time Safety Score 5 = 100% NO | 4 = Late | 3 | = Late l | oot or 2-3 minor by 1 day oot or 2-3 minor | 2 = 6 + or major problems 2 = Late by 2 days 2 = 4 + or major problem | I = Excessive problems I = Late more than 2 days I = Injury Copyright 2012 First Time Quality |



For More Information:

Contact: FirstTimeQuality

410-451-8006

www.firsttimequality.com

EdC@FirstTimeQuality.com