Welding ASME Quality Manual Sample - With Field Installation
Selected pages (not a complete plan)

Part 2: Forms

Contact:
First Time Quality
410-451-8006
[CompanyName]

[CompanyAddress1] | [CompanyAddress2]

[CompanyPhone]

Pipe Fabrication

Quality Manual

Operating Policies of the
[CompanyName] Quality System

Version: 20150305

<table>
<thead>
<tr>
<th>Version</th>
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<tbody>
<tr>
<td>20141228</td>
<td>Initial issue</td>
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Approval Signature and Date: ________________________________ _____________________

President/ Date

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# QUALITY MANUAL

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5. **PROJECT-SPECIFIC QUALITY STANDARDS**

**APPLICABLE REGULATIONS, INDUSTRY, and COMPANY STANDARDS**

5.1. **OVERVIEW**

[Company Name] 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.

5.2. **REGULATORY CODES**

All [Company Name] fabrication activities comply with the relevant regulations. The Quality Manager identifies regulatory requirements applicable to the jurisdictions served, including:

- Applicable Federal regulations
- Applicable State regulations
- Applicable building codes and local addenda to building codes
- Applicable Fire Code
- Applicable Fuel and Gas Code
- Applicable Mechanical Code
- Applicable Plumbing Code
- Additional regulations specified by the customer contract

The Quality Manager identifies regulatory requirements that apply to a specific project on the Project Quality Assurance/Quality Control Manual.

The Superintendent had jobsite access to relevant codes and government regulations.

5.3. **INDUSTRY QUALITY STANDARDS**

All [Company Name] fabrication activities comply with generally accepted good workmanship practices and industry standards.

The Quality Manager identifies supplemental requirements for industry standards that apply to a specific project on the Project Quality Assurance/Quality Control Manual when it is not otherwise specified by the contract, contract technical specifications, or approved drawings.
COMPLIANCE WITH INDUSTRY WELDING STANDARDS

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

<table>
<thead>
<tr>
<th>Division</th>
<th>Description</th>
<th>Reference Standard No.</th>
<th>Reference Standard Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Beveling, alignment, heat treatment, and inspection of weld</td>
<td>ASME B31.1</td>
<td>Power Piping</td>
</tr>
<tr>
<td>5</td>
<td>Requirements for piping of fluids</td>
<td>ASME B31.3</td>
<td>Process Piping</td>
</tr>
<tr>
<td>5</td>
<td>Minimum spacings and edge distances for screws</td>
<td>AISI SG02-KIT</td>
<td>North American Specification for the Design of Cold-Formed Steel Structural Members</td>
</tr>
<tr>
<td>5</td>
<td>Installation of bracing and permanent bracing and bridging</td>
<td>CFSEI</td>
<td>Field Installation Guide for Cold-Formed Steel Roof Trusses</td>
</tr>
<tr>
<td>5</td>
<td>Installation of chimneys, vents, and smokestacks</td>
<td>NFPA 211</td>
<td>Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances</td>
</tr>
<tr>
<td>5</td>
<td>Framing and reinforcing openings through a steel deck</td>
<td>SDI DDP</td>
<td>Deck Damage and Penetrations</td>
</tr>
<tr>
<td>5</td>
<td>Install high-strength bolts</td>
<td>RCSC’s “Specification for Structural Joints Using ASTM A 325 or A 490 Bolts”</td>
<td></td>
</tr>
</tbody>
</table>

PROJECT - SPECIFIC WELDING PROCEDURE STANDARDS

The Quality Manager approves welding procedures before they can be used to fabricate metal.

Records of approved welding procedures are maintained on Form QW-483 Welding Procedure Qualification Record, included as an exhibit.

Welding procedures shall be qualified and approved, in accordance with the applicable ASME Welding Code(s) or Specification(s) (i.e., B31.1, B31.3) or AWS B2.1, Specification for Welding Procedure and Performance Qualification.

The welding procedure must identify the filler material.

When the governing ASME Welding Code(s) mandates that welding procedures be qualified by test, the Welding Fabricator shall have PQRs that support the applicable WPSs. When prequalified WPSs or Standard Welding Procedure Specifications (SWPSs) published by the ASME are permitted, PQRs are not required.

The Quality Manager or Certified Welding Inspector (CWI) reviews and approves the welding procedure before being used in production welding operations.

The WPSs and PQRs are controlled by the Quality Manager according to the document and record control procedures specified in the relevant section of this Quality Manual.

The applicable WPSs shall be available to welders or welding operators during testing and production welding.
5.4. MATERIAL AND EQUIPMENT SPECIFICATIONS

The Quality Manager ensures that all types of materials and equipment that affect quality are identified and controlled.

The Quality Manager evaluates the expected use of materials and equipment and identifies types of materials and equipment that may affect project quality. For each item, the Quality Manager sets specifications for their intended use, including:

- Compliance to contract requirements
- Compliance to code and industry standards and listing requirements
- Structural integrity
- Performance
- Durability
- Appearance
- Product identification for traceability.

The Quality Manager identifies controlled material and equipment that apply to the project.

The Quality Manager ensures that purchase orders for listed materials and equipment include the relevant specifications as specified in section 6.7 Purchase Order Requirements.

Only approved materials are used in the fabrication process.

5.5. WORK PROCESS SPECIFICATIONS

The Quality Manager ensures that work processes are controlled to ensure that the specified requirements are met. When appropriate, the Quality Manager will specify project quality standards for work processes that may include:

- References to documented procedures such as manufacturer’s installation instructions
- Procedures for carrying out process steps
- Methods to monitor and control processes and characteristics
- Acceptability criteria for workmanship
- Tools, techniques and methods to be used to achieve the specified requirements.

5.6. CONTROLLED MATERIAL IDENTIFICATION AND TRACEABILITY

The Quality Manager determines types of project materials that require quality controls.

For each type of quality controlled material, the Quality Manager determines lot control traceability requirements, if any, and specifies the means of lot identification. Identification methods may include physical labels, tags, markings and/or attached certification documents.

When lot controlled materials are received, the Superintendent verifies that materials have the specified lot identifications.

The Superintendent maintains lot identification at all production phases from receipt, through production, installation, or assembly, to final completion. Acceptable methods for preserving lot identification include physically preserving observable lot identifications, recording the lot identification on a work task quality inspection form or other work record, or collecting the physical lot identifier as a record along with supplemented with location.

If lot controlled materials are without lot identification, the Superintendent deems the materials as nonconforming and segregates them and/or clearly marks them to prevent inadvertent use. The
Superintendent treats the material according to the company policy for nonconformances. Only the Quality Manager can re-identify or re-certify the materials.

5.7. **Measuring Device Control and Calibration**

The Quality Manager evaluates the project requirements and determines if there are measuring devices that require controls to assure quality results.

For each type of device the Quality Manager identifies:

- Restrictions for selection
- Limitations on use.
- Calibration requirements including the frequency of calibration. All calibrations must be traceable to national measurement standards.

When a measurement device is found not to conform to operating tolerances, the Quality Manager validates the accuracy of previous measurements.

5.8. **[CompanyName] Quality Standards**

[CompanyName] quality standards supplement contract requirements when they are necessary to ensure quality.

The Quality Manager identifies supplemental requirements for [CompanyName] Quality standards that apply to a specific project on the Project Quality Assurance/Quality Control Manual.

When [CompanyName] quality standards differ from industry standards or product manufacturer instructions, the Quality Manager justifies that the standard reliably achieves quality results and then documents the justification.

All [CompanyName] fabrication activities conform to the company quality standards.

5.9. **Application of Multiple Sources of Specifications**

Should multiple sources of specifications apply to a work task, the higher level of specification applies. When there are equal levels of specifications that conflict, the specifications are applied in this order:

- Submittals approved by the customer
- Contract technical specifications
- Contract drawings
- Government regulations that exceed requirements of items below
- [CompanyName] quality specifications, including subcontract specifications
- [CompanyName] Quality Manual
- Product installation instructions
- Industry standards
- Generally accepted practices

Should multiple sources of conflicting specifications apply to a project, the Quality Manager defines the standards that apply to the specific project on the Project Quality Assurance/Quality Control Manual.
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:

**REPLACE**: The nonconformance can be brought into conformance with the original specification requirements by replacing the nonconforming item with a conforming item.

**REPAIR**: The nonconformance can be brought into conformance with the original requirements through completion of required repair operations.
REWORK: The nonconformance can be made acceptable for its intended use, even though it is not restored to a condition that meets all specification requirements. The Quality Manager may specify standards that apply to the completion of rework. Rework nonconformances must be approved by the customer.

USE AS-IS: When the nonconforming item is satisfactory for its intended use. Any use as-is items that do not meet all specification requirements must be approved by the customer.

9.2.4. CORRECTION OF NONCONFORMANCES

The Superintendent verifies that corrective actions eliminate the nonconformance to the requirements of the original specifications or as instructed by the disposition of the nonconformance report, and then removes, obliterates, or covers the nonconformance marker.

Furthermore, the Superintendent ensures that previously completed work is reinspected for similar nonconformances and corrective actions are taken to avert future occurrences.

9.3. CORRECTIVE ACTIONS

9.3.1. CONTROL OF CORRECTIVE ACTIONS

When a nonconformance is found, the Superintendent ensures that:

- Previously completed work is reinspected for similar nonconformances
- Corrective actions are taken to avert future occurrences

The Quality Manager identifies requirements for corrective actions with respect to frequency, severity, and detectability of quality nonconformances items found during and after completion of work activities.

When a solution requires changes to [CompanyName] quality standards, the Quality Manager makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor and Supplier qualifications
- Company standards
- Inspection processes

9.3.2. CORRECTIVE ACTION TRAINING

The Superintendent initiates corrective action training to address quality nonconformances. Personnel and subcontractors and suppliers performing or inspecting work participate in the training.

Heightened awareness during quality inspections verifies and documents compliance with the corrective action improvement items. A qualified Superintendent inspects corrective actions during regular quality inspections and records observations on the quality inspection form.

The Superintendent notifies affected subcontractors and suppliers of selected preventive action training requirements.

The Superintendent evaluates the effectiveness of the improvements. The Quality Manager reviews improvement results recorded on quality inspection records and monthly field reviews. When the Quality Manager determines that the improvement actions are effective, the item is no longer treated as a preventive action.
10. PREVENTIVE ACTIONS
PREVENT NONCONFORMANCES

10.1. OVERVIEW
Fixing problems found during quality inspections is not sufficient. Systematic prevention of recurrences is essential for improving quality.

[CompanyName] makes changes to solve the problem. Solutions may involve a combination of enhanced process controls, training, upgrade personnel qualifications, improved processes, or use of higher-grade materials.

Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

10.2. IDENTIFY PREVENTIVE ACTIONS FOR IMPROVEMENT
The Quality Manager identifies preventive action improvement priorities with respect to frequency, severity, and detectability of quality correction items found during and after completion of work activities. The Quality Manager also reviews company quality performance and customer feedback.

More specifically, the Quality Manager assesses:

- Customer corrective items
- Superintendent quality inspection results
- Code official inspection results
- Post-fabrication service
- Management field reviews
- Annual system review
- Customer satisfaction surveys

The Quality Manager documents quality items requiring preventive action improvement.

The Quality Manager leads the company in finding solutions to address the causes of problems.

When a solution requires changes to [CompanyName] quality standards, the Quality Manager makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor and Supplier qualifications
- Company standards
- Inspection processes

10.3. TRAIN PREVENTIVE ACTIONS FOR IMPROVEMENT
The Quality Manager initiates preventive action training to address quality improvement items. Personnel and subcontractors and suppliers performing or inspecting work participate in the training.

Heightened awareness during quality inspections verifies and documents compliance with the preventive action improvement items. A qualified Superintendent inspects hotspots during regular quality inspections and records observations on the quality inspection form.
The Quality Manager notifies affected subcontractors and suppliers of selected preventive action training requirements.

The Quality Manager evaluates the effectiveness of the improvements. The Quality Manager reviews improvement results recorded on quality inspection records and monthly field reviews. When the Quality Manager determines that the improvement actions are effective, the item is no longer treated as a preventive action.
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[CompanyName]
Material Inspection and Receiving Report
Version 20140303

<table>
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<th>Contract Name</th>
<th>Purchase Order No.</th>
<th>Supplier</th>
<th>Bill of Lading No.</th>
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</table>

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:
Form QW-484A Welding Operator Qualification

<table>
<thead>
<tr>
<th>Welder’s name</th>
<th>Identification no.</th>
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<tbody>
<tr>
<td>Identification of WPS followed</td>
<td>Test Description</td>
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<tr>
<td>Specification and type (grade or UNS Number of base metals)</td>
<td>Thickness</td>
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Testing Variables and Qualification Limits

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<thead>
<tr>
<th>Welding Variables (GW-150)</th>
<th>Actual Values</th>
<th>Range Qualified</th>
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<tr>
<td>Welding process(es)</td>
<td>Type (i.e.; manual, semi-automatic used)</td>
<td>Backing (with/without)</td>
</tr>
<tr>
<td></td>
<td>Plate</td>
<td>Pipe (enter diameter if pipe or tube)</td>
</tr>
<tr>
<td></td>
<td>Filler metal or electrode specification(s) (ISF) (info. only)</td>
<td>Filler metal or electrode classification(s) (info. only)</td>
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<tr>
<td></td>
<td>Consumable insert (GTAW or PAW)</td>
<td>Filler Metal Product Form (solid/metal or flux cored/powder) (GTAW or PAW)</td>
</tr>
<tr>
<td></td>
<td>Deposited thickness for each process</td>
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</tr>
<tr>
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<td>Process 1</td>
<td>3 layers minimum</td>
</tr>
<tr>
<td></td>
<td>Process 2</td>
<td>3 layers minimum</td>
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RESULTS

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<thead>
<tr>
<th>Visual examination of completed weld (GW-362.4)</th>
<th>Longitudinal bend (GW-362.3(b))</th>
<th>Side bend (GW-362.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Transverse face and root bend (GW-362.3(a))</td>
<td>□ Pipe bend specimen, corrosion-resistant weld metal overlay (GW-462.5(a))</td>
<td>□ Plate bend specimen, corrosion-resistant weld metal overlay (GW-462.5(d))</td>
</tr>
<tr>
<td>□ Pipe specimen, macro test for fusion (GW-462.5(b))</td>
<td>□ Plate specimen, macro test for fusion (GW-462.5(e))</td>
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</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative Volumetric Examination Results (GW-111)</td>
<td>RT or UT (check one)</td>
</tr>
<tr>
<td>Fillet weld – fracture test (GW-181.2)</td>
<td>Length and percent of defects</td>
</tr>
<tr>
<td>□ Fillet welds in place (GW-462.4(a))</td>
<td>□ Fillet welds in pipe (GW-462.4(c))</td>
</tr>
<tr>
<td>Macro examination (GW-184)</td>
<td>Fillet size (in.) × Concavity/convexity (in.)</td>
</tr>
<tr>
<td>Other tests</td>
<td></td>
</tr>
<tr>
<td>Film or specimens evaluated by</td>
<td>Company</td>
</tr>
<tr>
<td>Mechanical tests conducted by</td>
<td>Laboratory test no.</td>
</tr>
</tbody>
</table>

Date Certified by |

(07/0)
For More Information:
Contact: FirstTimeQuality

410-451-8006

www.FirstTimeQuality.com

EdC@FirstTimeQuality.com