Welding ASME Quality Manual Sample - No Field Installation

Selected pages (not a complete plan)

Part 1: Company Quality Manual

Part 2: Forms

Contact:
First Time Quality
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[CompanyName]

[CompanyAddress1] | [CompanyAddress2]

[CompanyPhone1]

Pipe Fabrication
Quality Manual

Operating Policies of the
[CompanyName] Quality System

Version: 20150305

Version	Version notes
20141228	Initial issue

Approval Signature and Date: _____ _____

President/ Date

QUALITY MANUAL

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3. CONTRACT SPECIFICATIONS

DEFINE CUSTOMER QUALITY EXPECTATIONS

3.1. OVERVIEW

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 Operations Manager ensures that the information in customer contracts clearly defines customer expectations and that the necessary details are provided to set requirements for Welding and Fabrication.

3.2. CONTRACT TECHNICAL SPECIFICATIONS

The Operations Manager obtains contract technical specifications from the customer.

For each specific contract, The President identifies supplemental technical specifications when they are not otherwise specified by the contract or the approved drawings. Welder Foremen have shop access to contract technical specifications for the Welding and Fabrication activities they supervise.

All [CompanyName] activities comply with the contract technical specifications.

3.3. CONTRACT DRAWINGS

The Operations Manager obtains customer supplied drawings that have been approved by local government regulators. Welder Foremen have shop access to approved architectural drawings for the Welding and Fabrication they supervise.

All [CompanyName] activities comply with the drawing details and specifications cited in the drawings.

3.3.1.1. AS-BUILT RED-LINE DRAWINGS

As the job progresses, the Supervisor will mark the original design drawings to indicate as-built conditions including changes to specified materials, dimensions, locations, or other features.

3.4. CONTRACT SUBMITTALS

The Quality Manager prepares submittals that provide additional details of how [CompanyName] plans to carry out quality-related aspects of the customer contract, contract technical specifications, and contract drawings and reporting of quality records to the customer.

The Quality Manager lists, schedules, and approves all quality-related submittals that are required by the contract including submittals prepared by suppliers. The Quality Manager must review all submittals for compliance with the requirements of the [CompanyName] Quality System. The Quality Manager must sign approval of each contract submittal.

[CompanyName] extends compliance to contract specifications to all customer-approved submittals. All [CompanyName] activities comply with customer approved submittals.

3.4.1. CONTRACT SUBMITTAL SCHEDULE

The Operations Manager identifies submittals that apply to a specific contract and when they should be submitted, including:

- Contract requirement reference (if applicable)
- Submittal type: Shop drawing, product data, quality inspection and test plan, request for information, or allowances and unit prices
- Description
- Due date for submission to customer by [CompanyName]
- Due date for approval by the customer. Due dates may be a number of days after a contract milestone.
- Approval date

3.4.2. SHOP DRAWING SUBMITTALS

The Operations Manager or Purchasing and Estimating Manager prepare shop-drawing submittals that supplement contract drawings. Shop drawings are required when additional details are necessary for Welding and Fabrication or installation. The following information is included, as applicable:

- Dimensions established by shop measurement
- Relationships to adjoining Welding and Fabrication
- Identification of products and materials
- Welding and Fabrication and installation drawings
- Shop fabricated Operations instructions
- Templates and patterns
- Design calculations
- Compliance with specified standards
- Seal and signature of professional engineer if required
- Additional requirements as specified in the contract, contract technical requirements, or contract drawings.

[CompanyName] extends contract specifications to include customer approved shop drawings.

3.4.3. PRODUCT DATA SUBMITTALS

The Operations Manager prepares product data submittals that consist of the manufacturer's product information. The information included in this submittal is:

- Manufacturer, trade name, model or type number
- Description
- Intended use
- Size and physical characteristics including drawings when applicable
- Finish and color characteristics
- Product manufacturer's installation instructions, when applicable
- Additional requirements as specified in the contract, contract technical requirements, or contract drawings.

3.4.4. ALLOWANCES AND UNIT PRICES SUBMITTALS

When customer contracts specify allowances and unit prices that the customer will select after the contract is awarded, the Operations Manager prepares an allowance and unit price submittal for customer approval.

When a customer selects or approves an allowances and unit prices, the customer indicates the allowance and unit price selection on the signed submission return.

[CompanyName] extends compliance to contract specifications to customer approved allowances and unit prices.

3.4.5. REQUEST FOR INFORMATION (RFI) SUBMITTALS

The Operations Manager submits a request for additional information to the customer when errors are found or when required information is not contained in the contract, contract technical specifications, or contract drawings.

Should any number of contract technical specifications or contract drawings result in conflicting requirements, the Quality Manager submits a request for information to the customer to select the standard that applies.

[CompanyName] extends compliance to contract specifications to customer requests for information.

3.4.6. CHANGE ORDER SUBMITTALS

Contract requirements or contract technical specifications may require a change after the contract is awarded. The Operations Manager submits the change order to the customer for approval, including any contract price adjustments.

When a customer approves a change order, the customer signs the submission return.

[CompanyName] extends contract specifications to include customer approved change orders.

3.4.7. MOCK-UP SUBMITTALS

The Supervisor prepares mock-up submittals as required by contract. Additionally, the Quality Manager specifies mock-up requirements when they are necessary to ensures customer expectations are clearly identified.

The Quality Manager ensures that each mock-up demonstrates specific elements of form and/or function, and that they are specified in the submittal documents.

[CompanyName] extends contract specifications to include customer approved mock-up submittals.

3.5. CUSTOMER SUBMITTAL APPROVAL

The Operations Manager obtains the signature of an authorized customer representative on the submittal form.

[CompanyName] extends compliance to contract specifications to customer-approved submittals.

Work in the affected area of a pending submittal requirement does not start until the customer approves the submittal.

3.6. Contract Warranty

The Operations Manager ensures that customer contracts clearly specify warranty coverage including:

- Scope
- Starting date
- Duration

The Operations Manager ensures that customer contracts also clearly specify owner responsibility for:

- Restrictions of use
- Maintenance requirements
- Exclusions for customer supplied materials or equipment
- Timely notification of problems

3.7. Contract Review and Approval

The President conducts customer contract reviews to ensure that:

- Customer requirements and specifications are complete
- Customer requirements and specifications are compatible with the relevant regulations, [CompanyName] quality standards, and Quality System requirements
- [CompanyName] has the capability to deliver the completed job in the time allotted

Before Welding and Fabrication begins, the President makes sure that all contract requirements are clearly understood, all discrepancies are resolved, and all requirements are agreed upon. Once these requirements are met, the President signs the contract.

5. QUALITY STANDARDS

APPLICABLE REGULATIONS, INDUSTRY, and COMPANY STANDARDS

5.1. OVERVIEW

[CompanyName] personnel 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 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 [CompanyName] Welding and 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 job.

The Supervisor had shop access to relevant codes and government regulations.

5.3. INDUSTRY QUALITY STANDARDS

All [CompanyName] Welding and 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 job during the Quality Assurance/Quality Control Planning 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 Welding and Fabrication jobs include those listed below.

Regulatory Codes and Industry Standards

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

JOB - 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 by 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 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.

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 Welding and 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 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 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, and markings and/or attached certification documents.

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

The Supervisor 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 Supervisor deems the materials as nonconforming and segregates them and/or clearly marks them to prevent inadvertent use. The Supervisor 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 job 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 during Job Quality Assurance/Quality Control Planning.

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] Welding and 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
- [CompanyName] Quality Manual
- Product installation instructions
- Industry standards
- Generally accepted practices

Should multiple sources of conflicting specifications apply to a job, the Quality Manager defines the standards that apply to the specific job during Job Quality Assurance/Quality Control Planning.

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 quality is not adversely impacted by the event.

A nonconformance is any item that does not meet specifications or [CompanyName] Quality System requirements.

9.2. NONCONFORMANCES

9.2.1. MARKING OF NONCONFORMANCES AND OBSERVATIONS

When the Quality Manager, Supervisor, 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 Supervisor 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 Supervisor 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 Supervisor identifies the limits of the affected area. The Supervisor 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 Supervisor or inspector records the nonconformances on a nonconformance report.

The Supervisor 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 assesses 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 Supervisor 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 Supervisor ensures that previously completed work is reinspected for similar nonconformances and corrective actions are taken to avert future occurrences (see section 9.3 Corrective Actions).

9.3. Corrective Actions

9.3.1. Control of Corrective Actions

When a nonconformance is found, the Supervisor 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
- Supplier qualifications
- Company standards
- Inspection processes

9.3.2. Corrective Action Training

The Supervisor initiates corrective action training to address quality nonconformances. Personnel 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 Supervisor inspects corrective actions during regular quality inspections and records observations on the quality inspection form.

The Supervisor evaluates the effectiveness of the improvements. The Quality Manager reviews improvement results recorded on quality inspection records and monthly 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
- Supervisor quality inspection results
- Code official inspection results
- Post-Welding and Fabrication service
- Management 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
- 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 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 Supervisor inspects hotspots during regular quality inspections and records observations on the quality inspection form.

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

14. FORMS

[CompanyName]
Material Inspection and Receiving Report

Version 20140303

Contract ID	Contract Name	Purchase Order No.	Supplier	Bill of Lading No.	Date
[JobNumber]	**[JobName]**				

Item No.	Stock/Part No.	Description	Quantity Received	Condition	Marking	Accept	Conditional Use	Reject
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐

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

QW-484A SUGGESTED FORMAT A FOR WELDER PERFORMANCE QUALIFICATIONS (WPQ)
(See QW-301, Section IX, ASME Boiler and Pressure Vessel Code)

Welder's name _____ Identification no. _____

Test Description

Identification of WPS followed _____ ☐ Test coupon ☐ Production weld
Specification and type/grade or UNS Number of base metal(s) _____ Thickness _____

Testing Variables and Qualification Limits

Welding Variables (QW-350)	Actual Values	Range Qualified
Welding process(es)		
Type (i.e.; manual, semi-automatic) used		
Backing (with/without)		
☐Plate ☐Pipe (enter diameter if pipe or tube)		
Base metal P-Number to P-Number		
Filler metal or electrode specification(s) (SFA) (info. only)		
Filler metal or electrode classification(s) (info. only)		
Filler metal F-Number(s)		
Consumable insert (GTAW or PAW)		
Filler Metal Product Form (solid/metal or flux cored/powder) (GTAW or PAW)		
Deposit thickness for each process		
Process 1 _____ 3 layers minimum ☐ Yes ☐ No		
Process 2 _____ 3 layers minimum ☐ Yes ☐ No		
Position qualified (2G, 6G, 3F, etc.)		
Vertical progression (uphill or downhill)		
Type of fuel gas (OFW)		
Inert gas backing (GTAW, PAW, GMAW)		
Transfer mode (sprey/globular or pulse to short circuit-GMAW)		
GTAW current type/polarity (AC, DCEP, DCEN)		

RESULTS

Visual examination of completed weld (QW-302.4) _____
☐ Transverse face and root bends [QW-462.3(a)] ☐ Longitudinal bends [QW-462.3(b)] ☐ Side bends (QW-462.2)
☐ Pipe bend specimen, corrosion-resistant weld metal overlay [QW-462.5(c)]
☐ Plate bend specimen, corrosion-resistant weld metal overlay [QW-462.5(d)]
☐ Pipe specimen, macro test for fusion [QW-462.5(b)] ☐ Plate specimen, macro test for fusion [QW-462.5(e)]

Type	Result	Type	Result	Type	Result

Alternative Volumetric Examination Results (QW-191): _____ RT ☐ or UT ☐ (check one)
Fillet weld — fracture test (QW-181.2) _____ Length and percent of defects _____
☐ Fillet welds in plate [QW-462.4(b)] ☐ Fillet welds in pipe [QW-462.4(c)]
Macro examination (QW-184) _____ Fillet size (in.) ____ × ____ Concavity/convexity (in.) _____
Other tests _____
Film or specimens evaluated by _____ Company _____
Mechanical tests conducted by _____ Laboratory test no. _____
Welding supervised by _____
We certify that the statements in this record are correct and that the test coupons were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME BOILER AND PRESSURE VESSEL CODE.

Manufacturer or Contractor _____

Date _____ Certified by _____

(07/10)

http://files.asme.org/asmeorg/Codes/Publications/BPVC/16605.pdf

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