Essentials Pipe Fabrication Quality Plan Sample

Selected pages not a complete plan

Includes Standards and Forms for and Process and Power Piping

Contact:
First Time Quality
410-451-8006

[ImagePlaceHolder]

[CompanyName]

Pipe Fabrication
Quality Assurance/Quality Control Plan

[ProjectName]
[ProjectNumber]

Version: 20150308

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Version	Version notes
20150308	Initial issue

Approved

_____

[QualityManagerName], Quality Manager

PROJECT-SPECIFIC WELDING QUALITY PLAN

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G. Weld 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 pipe fabrication.

[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] pipe fabrication activities comply with generally accepted good workmanship practices and industry standards.

Compliance with Industry Welding 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
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"
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

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., D1.1., D1.5) 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.

Form QW-483 Welding Procedure Qualification Record

QW-483 SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORDS (PQR)
(See QW-200.2, Section IX, ASME Boiler and Pressure Vessel Code)
Record Actual Variables Used to Weld Test Coupon

Company Name _____
Procedure Qualification Record No. _____ Date _____
WPS No. _____
Welding Process(es) _____
Types (Manual, Automatic, Semi-Automatic) _____

JOINTS (QW-402)

Groove Design of Test Coupon
(For combination qualifications, the deposited weld metal thickness shall be recorded for each filler metal and process used.)

BASE METALS (QW-403)
Material Spec. _____
Type/Grade, or UNS Number _____
P-No. ____ Group No. ____ to P-No. ____ Group No. ____
Thickness of Test Coupon _____
Diameter of Test Coupon _____
Maximum Pass Thickness _____
Other

POSTWELD HEAT TREATMENT (QW-407)
Temperature _____
Time _____
Other

GAS (QW-408)

	Gas(es)	Percent Composition (Mixture)	Flow Rate
Shielding			
Trailing			
Backing			
Other			

FILLER METALS (QW-404)	1	2
SFA Specification		
AWS Classification		
Filler Metal F-No.		
Weld Metal Analysis A-No.		
Size of Filler Metal		
Filler Metal Product Form		
Supplemental Filler Metal		
Electrode Flux Classification		
Flux Type		
Flux Trade Name		
Weld Metal Thickness		
Other		

ELECTRICAL CHARACTERISTICS (QW-409)
Current _____
Polarity _____
Amps. _____ Volts _____
Tungsten Electrode Size _____
Mode of Metal Transfer for GMAW (FCAW) _____
Heat Input _____
Other

POSITION (QW-405)
Position of Groove _____
Weld Progression (Uphill, Downhill) _____
Other

TECHNIQUE (QW-410)
Travel Speed _____
String or Weave Bead _____
Oscillation _____
Multipass or Single Pass (Per Side) _____
Single or Multiple Electrodes _____
Other

PREHEAT (QW-406)
Preheat Temperature _____
Interpass Temperature _____
Other

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QW-483 (Back)

PQR No. _____

Tensile Test (QW-150)

Specimen No.	Width	Thickness	Area	Ultimate Total Load	Ultimate Unit Stress, (psi or MPa)	Type of Failure and Location

Guided-Bend Tests (QW-160)

Type and Figure No.	Result

Toughness Tests (QW-170)

Specimen No.	Notch Location	Specimen Size	Test Temperature	Impact Values			
				ft-lb or J	% Shear	Mils (in.) or mm	Drop Weight Break (Y/N)

Comments _____

Fillet-Weld Test (QW-180)

Result — Satisfactory: Yes ☐ No ☐ Penetration into Parent Metal: Yes ☐ No ☐

Macro — Results _____

Other Tests

Type of Test _____

Deposit Analysis _____

Other

Welder's Name _____ Clock No. _____ Stamp No. _____

Tests Conducted by _____ Laboratory Test No. _____

We certify that the statements in this record are correct and that the test welds 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 _____

(Detail of record of tests are illustrative only and may be modified to conform to the type and number of tests required by the Code.)

03/08

http://files.asme.org/asmeorg/Codes/Publications/BPVC/14033.pdf

H. MATERIAL TRACEABILITY

Products and materials are controlled to assure the use of only correct and acceptable items. Controls include identification of the inspection status. Materials that require lot control traceability and the method of traceability are listed on the Controlled Materials form included as an exhibit in this subsection.

IDENTIFICATION OF LOT CONTROLLED MATERIALS

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.

[CompanyName]
Material Inspection and Receiving Report

Version 20150308

Contract ID	Contract Name	Purchase Order No.	Supplier	Bill of Lading No.	Date
[ProjectNumber]	[ProjectName]				

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:

[CompanyAddress1] • [CompanyAddress2] • [CompanyPhone] • [CompanyPhone2]

J. WELDING WORK TASK QUALITY INSPECTIONS

[CompanyName] identifies a list of work tasks, phases of production, which will be quality controlled.

WORK TASKS SERIES OF INSPECTIONS

Each work Task is subject to a series of inspections; before, during, and after the work is complete. Each inspection verifies compliance with full scope of the relevant specifications; not limited to checkpoints for heightened awareness.

- The initial task-ready inspection occurs when crews are ready to start work and ensures that work begins only when it does not adversely impact quality results.
- Incoming material inspections verify that materials are as specified and meet all requirements necessary to assure quality results.
- Work-in-process inspections continuously verify that work conforms to project specifications and workmanship expectations. Work continues only when it does not adversely impact quality results.
- At completion of the Task an inspection verifies that work, materials, and tests have been completed in accordance with project quality requirements. When appropriate, functional tests are performed.

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

SPECIAL PROCESS INSPECTIONS

The Quality Manager identifies special processes where the results cannot be verified by subsequent inspection or testing and determines if continuous work in process inspections are required. For these special processes, a qualified inspector continuously inspects the work process.

MATERIAL QUALITY INSPECTION AND TESTS

Material quality inspections and tests ensure that purchased materials meet purchase contract quantity and quality requirements.

DAILY QUALITY CONTROL REPORT

The Superintendent records a summary of daily work activities. The report will include:

- Schedule Activities Completed
- General description of work activities in progress.
- Problems encountered, actions taken, problems, and delays
- Meetings held, participants, and decisions made
- Subcontractor and Supplier and Company Crews on site
- Visitors and purpose
- General Remarks
- Improvement Ideas
- Weather conditions

Form P-4A Welded Piping Inspection

FORM P-4A MANUFACTURER'S DATA REPORT FOR FABRICATED PIPING
As Required by the Provisions of the ASME Code Rules, Section I

1. Manufactured by _____ (Name and address of manufacturer) Order No. _____ P-4A ID No. _____

2. Manufactured for _____ (Name and address of purchaser) Order No. _____

3. Location of installation _____ Boiler Registration No. _____

4. Identification _____ (Main steam, boiler feed, blow-off, or other service piping — state which) Piping Registration No. _____

5. Design Conditions of Piping _____ (Pressure) _____ (Temperature) . Specified by _____ (Name of Co.)

Code Design by _____

6. The chemical and physical properties of all piping meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The construction and workmanship conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE _____ (Year).

Addenda to _____ (Date) (if applicable), and Code Cases _____ (Numbers).

7. Description of Piping (include material identifications by ASME specification or other recognized Code designation)

8. Shop Hydrostatic Test _____ .

9. Remarks

CERTIFICATE OF SHOP COMPLIANCE

We certify the statement in this data report to be correct and that all details of design, material, construction, and workmanship of the described piping conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE.

Our Certificate of Authorization No. _____ to use the (S) or (PP) Designator _____ Expires _____ .

Date _____ (mm/dd/yyyy) Signed _____ (Manufacturer or Fabricator) by _____ (Authorized Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by _____ have inspected the piping described in this Manufacturer's Data Report and state that, to the best of my knowledge and belief, the manufacturer has constructed this piping in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ (mm/dd/yyyy)

_____ (Authorized Inspector) Commission _____ (National Board Commission Number and Endorsement)

(07/11)

[CompanyAddress1] • [CompanyAddress2] • [CompanyPhone] • [CompanyPhone2]

FORM P-4A

P-4A ID No. _____

10. Description of Field Fabrication

11. Field Hydrostatic Test _____ .

CERTIFICATE OF FIELD FABRICATION COMPLIANCE

We certify the statement in this data report to be correct and that all details of design, material, construction, and workmanship of the described piping conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE.

Our Certificate of Authorization No. _____ to use the (S) or (PP) Designator expires _____ .

Date _____ (mm/dd/yyyy) Signed _____ (Authorized Representative) Name _____ (Fabricator)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly of the described piping conforms with the requirements of Section I of the ASME BOILER AND PRESSURE VESSEL CODE. Our Certificate of Authorization No. _____ to use the (A), (S), or (PP) Designator expires _____ .

Date _____ (mm/dd/yyyy) Signed _____ (Authorized Representative) Name _____ (Assembler)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by _____ have compared the statements in this Manufacturer's Data Report with the described piping and state that the parts referred to as Data Items _____, not included in the Certificate of Shop Inspection, have been inspected by me and that, to the best of my knowledge and belief, the manufacturer and/or assembler has constructed and assembled this piping in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE. The described piping was inspected and subjected to a hydrostatic test of _____ .

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ (mm/dd/yyyy)

_____ (Authorized Inspector) Commission _____ [National Board Commission Number and Endorsement]

http://files.asme.org/asmeorg/Codes/Publications/BPVC/10716.pdf

Form P-4B Assembled Piping Inspection

FORM P-4B MANUFACTURER'S DATA REPORT FOR FIELD INSTALLED MECHANICALLY ASSEMBLED PIPING
As Required by the Provisions of the ASME Code Rules, Section I

1. Manufactured by _____ (Name and address of manufacturer) Order No. _____ P-4B ID No. _____
2. Manufactured for _____ (Name and address of purchaser) Order No. _____
3. Location of Installation _____ Boiler Registration No. _____
4. Identification _____ (Main steam, boiler feed, blow-off, or other service piping — state which) Piping Registration No. _____
5. Design Conditions of Piping _____ (Pressure) _____ (Temperature) · Specified by _____ (Name of Co.)

   Code Design by _____
6. The chemical and physical properties of all piping meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The construction and workmanship conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE _____ (Year), Addenda to _____ (Date) (if applicable), and Code Cases _____ (Numbers).
7. Description of Piping (include material identifications by ASME specification or other recognized Code designation)

8. Field Hydrostatic Test _____ .
9. Remarks

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly of the described piping conforms with the requirements of Section I of the ASME BOILER AND PRESSURE VESSEL CODE. Our Certificate of Authorization No. _____ to use the (A), (S), or (PP) Designator expires _____ .

Date _____ (mm/dd/yyyy) Signed _____ (Authorized Representative) Name _____ (Assembler)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by _____ have compared the statements in this Manufacturer's Data Report with the described piping and state that the parts referred to as Data Items _____ have been inspected by me and that, to the best of my knowledge and belief, the manufacturer and/or assembler has assembled this piping in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE. The described piping was inspected and subjected to a test of _____ .

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ (mm/dd/yyyy)

_____ (Authorized Inspector) Commission _____ (National Board Commission Number and Endorsement)

(07/11)

http://files.asme.org/asmeorg/Codes/Publications/BPVC/10717.pdf

[CompanyAddress1] • [CompanyAddress2] • [CompanyPhone] • [CompanyPhone2]

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