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
Pipe Fabrication
Quality Assurance/Quality Control Plan

[ProjectName]
[ProjectNumber]

Version: 20150308
Effective Date: 20150308

<table>
<thead>
<tr>
<th>Version</th>
<th>Version notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>20150308</td>
<td>Initial issue</td>
</tr>
</tbody>
</table>

Approved

[QualityManagerName], Quality Manager

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## TABLE OF CONTENTS

A. [CompanyName] Quality Policy ........................................................................................................... 3  
B. Key Elements of the Weld Quality Plan ............................................................................................ 4  
C. Project Quality Coordination and Communication ........................................................................... 7  
D. Project QC Personnel .......................................................................................................................... 11  
   - Project QC Job Position Assignments ............................................................................................ 11  
   - Duties, Responsibilities, and Authority of QC Personnel ............................................................... 11  
   - Quality Responsibilities .................................................................................................................. 11  
   - Project QC Organization Chart ...................................................................................................... 14  
E. Personnel Qualifications and Technical Certifications ..................................................................... 15  
   - Personnel Certification and Qualification Requirements .............................................................. 16  
   - Training ......................................................................................................................................... 20  
F. Qualification of Third Party Inspection/Testing Companies and Subcontractors and Suppliers ........ 22  
   - Qualification of Testing Laboratories .............................................................................................. 22  
G. Weld Project Quality Specifications ................................................................................................... 24  
   - Compliance with Industry Welding Standards .............................................................................. 24  
   - Project - Specific Welding Procedure Standards ........................................................................... 25  
H. Material Traceability ............................................................................................................................. 28  
   - Identification of Lot Controlled Materials ...................................................................................... 28  
I. Weld Inspection and Test Plan ............................................................................................................. 31  
   - Welding Inspection and Testing Standards ..................................................................................... 32  
   - Control of Inspection, Measuring, and Test Equipment .................................................................. 32  
J. Welding Work Task Quality Inspections ............................................................................................. 36  
   - Work Tasks Series of Inspections ................................................................................................. 36  
   - Daily Quality Control Report ......................................................................................................... 36  
K. Quality Control of Corrections, Repairs, and Nonconformances ...................................................... 43  
L. Project Completion Inspections .......................................................................................................... 45  
M. Quality Assurance Surveillance ........................................................................................................... 47  
N. Control of Quality Records and Documents ..................................................................................... 49  
O. Servicing and Warranty ....................................................................................................................... 50
G. WELD PROJECT QUALITY SPECIFICATIONS

Fulfilling customer contract expectations is a primary objective of the [Company Name] Quality System. To ensure that customer expectations will be fulfilled, [Company Name] 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.

[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.

All [Company Name] 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.

<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>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></td>
<td>RCSC’s &quot;Specification for Structural Joints Using ASTM A 325 or A 490 Bolts&quot;</td>
</tr>
<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>
</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., 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

### SUGGESTED FORMAT FOR PROCEDURE QUALIFICATION RECORDS (PQR) (See QW-206.2, Section IX, ASME Boiler and Pressure Vessel Code)

**Record Actual Variables Used to Weld Test Coupon**

**Company Name**

**Procedure Qualification Record No.**

**WPS No.**

**Welding Process(es)**

**Types (Manual, Automatic, Semi-Automatic)**

---

**JOINTS (QW-402)**

---

**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)**

- **Percent Composition**
  - **Gas(es)**
  - **(Mixture)**
  - **Flow Rate**

---

**FILLER METALS (QW-404)**

- **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**

---

**POSITION (QW-405)**

- **Position of Groove**
- **Weld Progression (Uphill, Downhill)**
- **Other**

---

**PREHEAT (QW-406)**

- **Preheat Temperature**
- **Intergas Temperature**
- **Other**

---

**ELECTRICAL CHARACTERISTICS (QW-409)**

- **Current**
- **Polarity**
- **Amps.**
- **Volts**
- **Tungsten Electrode Size**
- **Mode of Metal Transfer for GMAW (FCAW)**
- **Heat Input**
- **Other**

---

**TECHNIQUE (QW-410)**

- **Travel Speed**
- **String or Weave Bead**
- **Oscillation**
- **Multipass or Single Pass (Per Side)**
- **Single or Multiple Electrodes**
- **Other**

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### Tensile Test (QW-150)

<table>
<thead>
<tr>
<th>Specimen No.</th>
<th>Width</th>
<th>Thickness</th>
<th>Area</th>
<th>Ultimate</th>
<th>Ultimate Unit Stress, (%) or MPa</th>
<th>Type of Failure and Location</th>
</tr>
</thead>
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</tbody>
</table>

### Guided-Bend Tests (QW-160)

<table>
<thead>
<tr>
<th>Type and Figure No.</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
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</table>

### Toughness Tests (QW-170)

<table>
<thead>
<tr>
<th>Specimen No.</th>
<th>Notch Location</th>
<th>Specimen Size</th>
<th>Test Temperature</th>
<th>Impact Values</th>
<th>Drop Weight Break (VHN)</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

**Comments**

**Fillet-Weld Test (QW-180)**

- Result — Satisfactory: 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: __________________________

(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.)

---

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.
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Stock/Part No.</th>
<th>Description</th>
<th>Quantity Received</th>
<th>Condition</th>
<th>Marking</th>
<th>Accept</th>
<th>Conditional Use</th>
<th>Reject</th>
</tr>
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**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:**

Questions? Call First Time Quality 410-451-8006
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

Questions? Call First Time Quality 410-451-8006
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 ___________________________________________ Order No. ___________________________ P-4A ID No. ________________

2. Manufactured for ___________________________________________ 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 ________________.

Addenda to ___________________________ (if applicable), and Code Cases ___________________________. Number ___________________________.

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 (FP) Designator ___________________________ Expires ___________________________

Date ________________ Signed ___________________________ (Manufacturer or Fabricated)

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 ________________ Commission ___________________________

(Authorized Inspector) ___________________________ [National Board Commission Number and Endorsement]
### FORM P-4A

**P-4A ID No.**

---

**10. Description of Field Fabrication**

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**11. Field Hydraulic Test**

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### 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 specified piping conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE. Our Certificate of Authorization No. , to use the (SI) or (FP) 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 (AI), (S), or (FP) 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 loss of any kind arising from or connected with this inspection.

*Date (mm/dd/yyyy)*  
*(Authorized Inspector)*  
*Commission*  
*[National Board Commission Number and Endorsement]*

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http://files.asme.org/asmeorg/Codes/Publications/BPVC/10716.pdf
For More Information:
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410-451-8006
www.FirstTimeQuality.com
EdC@FirstTimeQuality.com