

Piping & Metals Fabrication & Installation Quality Manual Sample

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- ✓ Quality Manual Pages
- **✓** Forms Examples

Contact:

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[CompanyName]

Piping and Metals Fabrication and Installation Quality Manual

Operating Policies of the [CompanyName] Quality System

Effective Date: [Date]

Version	Version notes
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Approval Signature and Date: President/ Date	
The documents provided by [CompanyName] disclosing registered. Please hold these quality documents in coorganizations, even if you do not charge a fee.	

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5. Project-Specific Quality Standards

APPLICABLE REGULATIONS, INDUSTRY, and COMPANY STANDARDS

5.1. OVERVIEW

[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.

5.2. REGULATORY CODES

All [CompanyName] fabrication and installation 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 Plan.

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

5.3. INDUSTRY QUALITY STANDARDS

All [CompanyName] fabrication and installation 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 Plan when it is not otherwise specified by the contract, contract technical specifications, or approved drawings.

COMPLIANCE WITH INDUSTRY WELDING STANDARDS

Description	Reference Standard No.	Reference Standard Title
Minimum spacings and edge distances for screws	AISI SG02-KIT	North American Specification for the Design of Cold-Formed Steel Structural Members
Beveling, alignment, heat treatment, and inspection of weld	ASME B31.1	Power Piping
Requirements for piping of fluids	ASME B31.3	Process Piping
Welding standards	AWS B2.1/B2.1M	Specification for Welding Procedure and Performance Qualification
Workmanship and techniques for welded construction	AWS D1.1/D1.1M	Structural Welding Code – Steel
Installation of bracing and permanent bracing and bridging	CFSEI	Field Installation Guide for Cold-Formed Steel Roof Trusses
Installation of chimneys, vents, and smokestacks	NFPA 211	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
Framing and reinforcing openings through a steel deck	SDI DDP	Deck Damage and Penetrations
Install high-strength bolts		RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts"

5.4. PROJECT - SPECIFIC WELDING PROCEDURE STANDARDS

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

Welding procedures shall be qualified and approved, in accordance with the applicable AWS 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 AWS 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 AWS 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.

5.5. 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 and installation.

5.6. 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.

5.7. 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.

5.8. 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.

5.9. [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 Plan.

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 and installation activities conform to the company quality standards.

5.10. 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 Plan.

12. RECORD AND DOCUMENT CONTROLS

12.1. OVERVIEW

[CompanyName] ensures that quality related documents and records are created, current versions are in use, complete, identifiable, and stored properly.

12.2. QUALITY SYSTEM DOCUMENTS

12.2.1. QUALITY MANUAL

The Quality Manager maintains the [CompanyName] Quality Manual that documents [CompanyName] quality policies. Each policy identifies the titles of personnel responsible.

The Quality Manager ensures that the Quality Manual and documents related to a work task are accessible to personnel performing the work.

The Quality Manager maintains, improves, and updates the manual as necessary. At least annually, the Quality Manager determines if updated versions of standards and product installation instructions are available. If so, the Quality Manager updates the Quality System documentation accordingly.

The President approves revisions to the Quality Manual, then signs and dates the cover.

12.3. DOCUMENT CONTROLS

The Quality Manager assigns a new version number to each version of quality system documents, including the Quality Manual.

The Quality Manager and President control all company-wide quality system documents including:

- Approval of all quality system documents and for adequacy prior to issue or reissue.
- Ensures that applicable documents are available and usable at points of use
- Prevents unintended use of obsolete documents

The Quality Manager controls project-specific quality system documents including:

- Approval of all project quality documents and for adequacy prior to issue or reissue.
- Ensures that applicable documents are available and usable at points of use
- Prevents unintended use of obsolete documents

12.3.1. CONTROL OF SYSTEM DOCUMENTS

The Quality Manager controls documents related to the [CompanyName] Quality System including:

- Quality System Manual
- Quality System Procedures
- Project Management Procedures (including interface and coordination with customers and regulatory agencies with jurisdiction over jobsites)
- Government regulations
- Industry standards
- Procurement specifications

The Quality Manager ensures that records of the distribution of Quality System documents are kept. When new versions are distributed, obsolete versions are destroyed or controlled to prevent inadvertent use.

12.3.2. CONTROL OF PROJECT DOCUMENTS

The Project Manager controls documents related to specific customer contracts including:

- Customer contracts
- Contract technical specifications
- Contract drawings
- Shop drawing submittals and approvals
- Product data submittals and approvals
- Allowances and unit price submittals and approvals
- Requests for information and customer responses
- Subcontracts
- Inspection and test plans

The Quality Manager ensures that records of the distribution of project documents are kept. When new versions are distributed, obsolete versions are destroyed or controlled to prevent inadvertent use.

12.4. RECORD CONTROLS

The Quality Manager verifies records for conformance to the Quality System Requirements and approves all Quality System records.

Records demonstrating conformance with and operation of the Quality System are retrievable for at least five years. The Quality Manager verifies records for conformance to the Quality System Requirements.

12.4.1. QUALITY SYSTEM RECORDS CONTROL

The Quality Manager verifies the completeness, accuracy, and retention of project-specific Quality System records including:

- Annual reviews
- Quality improvement records

12.4.2. PROJECT RECORDS CONTROL

The Quality Manager verifies the completeness, accuracy, and retention of project-specific Quality System records including:

- Inspection and test records
- Quality submittals to the customer
- Project quality system audits
- Field reviews
- Calibration certificates
- Daily log reports
- Incident reports
- Redline drawings
- Qualified personnel approvals
- Qualified subcontractor approvals
- Quality improvement records
- Project Quality records specified by customer contract, or contract technical specifications

- Welding quality records, forms, and reports including:
 - o welder performance qualification records (WPQRs)
 - welding procedure specifications (WPSs)
 - o procedure qualification records (PQRs)
 - material test reports (MTRs) (when required by the contract, governing AWS code or specification)
 - o nondestructive examination (NDE) reports (when required by the contract, governing AWS code, or specification)
 - o nondestructive examination personnel qualification records
 - o weld identification reports (weld mapping) when required
 - o record of final inspection (i.e., traveler, inspection record, check off list)
 - heat treatment records (when required by the contract, governing AWS code, or specification)
 - receiving material inspection reports
 - o nonconformance reports (NCRs)
 - o calibration records of test equipment
 - o internal quality audit rep

The Quality Manager assigns record control responsibilities and document location that apply to a specific project.

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Form QW-484A Welding Operator Qualification

Nelder's name			dentification	no.		
			Test Desc	ription		
dentification of WPS fo	ollowed				Test cou	upon Production wel
	grade or UNS Number of ba	ase metal(s)				
		Testing Va	riables and	Qualification Limits		
v	Velding Variables (QW-350)		illables alla	Actual Value		Range Qualified
Welding process(es)				Actual Value		nange duamieu
Type (i.e.; manual, se						
Backing (with/withou	ut)					
	ter diameter if pipe or tube)				
Base metal P-Number						
	ode specification(s) (SFA) (in					
Filler metal F-Number	ode classification(s) (info. o	niy)				
Consumable insert (
	Form (solid/metal or flux co	red/powder)	(GTAW or P	AW)		
Deposit thickness for						
	3 layers minimum	☐ Yes	□No			
	3 layers minimum	☐ Yes	□No			
Position qualified (2)						
Vertical progression Type of fuel gas (OF)						
Inert gas backing (G						
	y/globular or pulse to short	circuit-GMA	W)			
GTAW current type/p	colarity (AC, DCEP, DCEN)					
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http://files.asme.org/asmeorg/Codes/Publications/BPVC/16605.pdf

Form QW-484B Welding Operator Qualification

QW-484B SU	JGGESTED FORMAT (See QW-301	B FOR WELDING O , Section IX, ASME			ATIONS (WOPQ)
Welding operator's nam	e	I	dentification no		
		Test Description (
Identification of WPS fol	llowed			Test co	oupon Production weld
Specification and type/g	rade or UNS Number of	ase metal(s)		Thickness	
Base metal P-Number	to P-	Number	Position (2G, 6G	, 3F, etc.)	
Plate Pipe (enter	diameter, if pipe or tube)				
	ication Filler n		cation		
	Testing Variables a	nd Qualification Limits V	Vhen Using Automatic	Welding Equipment	
	Welding Variables (O	W-361.1)		Actual Values	Range Qualified
Type of welding (auto	omatic)				
Welding process			_		
Filler metal used (Yes	/No) (EBW or LBW)				
Type of laser for LBW					
Continuous drive or i	_				
	_				
Vacuum or out of vac	dum (EBVV)				
	Testing Variables	and Qualification Limits	When Using Machine		
	Welding Variables (O	W-361.2)		Actual Values	Range Qualified
Type of welding (Mac	chine)		_		
Welding process					
Direct or remote visu	al control				
Automatic arc voltage	e control (GTAW)		\sim \sim \sim		
Automatic joint track					
Position qualified (20	_				
Consumable inserts (
Backing (with/withou			_		
Single or multiple pa	sses per side		_		
		RESL	u Te		
Visual evention of even	ompleted weld (QW-302.4		LIO		
			nel bende IOW 462 20	II Gida bas	4- 1011 462 21
☐ Transverse race and	root bends [QW-462.3(a)]		nal bends [QW-462.3(b		ids (QW-462.2)
		d specimen, corrosion-re			
	☐ Plate be	nd specimen, corrosion-r	esistant weld metal ov	erlay [QW-462.5(d)]	
□ Pine	specimen, macro test for	tusion IOW-462 5(b)1	□ Plate specimen m	acro test for fusion [QW	-482 5(e)1
				1	
Туре	Result	Туре	Result	Type	Result
	~ V)				
Alternative Volumetric E	xamination Results (QW-1	91):	RT 🗆 or UT 🗆	(check one)	
Fillet weld — fracture te	st (QW-181.2)	Le	ngth and percent of de	fects	
		ate [QW-462.4(b)]			
Macro examination (QV	/-184)Fille	t size (in.) ×	Concavity/conv	exity (in.)	
Other tests				,	
	ated by			Company	
	cted by				
				Laboratory test no.	
Welding supervised by				and milded and are	ad to assessed a second to the second
	ements in this record an IX of the ASME Boiler ar			pared, welded, and test	ed in accordance with the
		Manufactu	rer or Contractor		
Date		Certified by	v		
		Certified b			
(07/10)					

http://files.asme.org/asmeorg/Codes/Publications/BPVC/16604.pdf

Form QW-483 Welding Procedure Qualification Record

Company Name	
WPS No	Date
Welding Process(es)	
Types (Manual, Automatic, Semi-Automatic)	
JOINTS (QW-402)	
	lesign of Test Coupon
	al thickness shall be recorded for each filler metal and process used.)
BASE METALS (OW-403) Material Spec.	POSTWELD HEAT TREATMENT (OW-407) Temperature
Type/Grade, or UNS Number	Time
P-No Group No to P-No Group No	
Thickness of Test Coupon	
Diameter of Test Coupon	
Maximum Pass Thickness	
Other	
	GAS (QW-408)
	Percent Composition Gas(es) (Mixture) Flow Rate
	Shielding
FILLER METALS (QW-404) 1 2	Trailing
SFA Specification AWS Classification	Backing Other
Filler Metal F-No.	Other
Weld Metal Analysis A-No.	ELECTRICAL CHARACTERISTICS (QW-409)
Size of Filler Metal	Current
Filler Metal Product Form	Polarity
Supplemental Filler Metal	Amps Volts
Electrode Flux Classification	Tungsten Electrode Size
Flux Type	Mode of Metal Transfer for GMAW (FCAW)
Flux Trade Name	Heat Input
Weld Metal Thickness	Other
Other	-
POSITION (OW-405)	TECHNIQUE (OW 410)
Position of Groove	TECHNIQUE (QW-410) Travel Speed
Weld Progression (Uphill, Downhill)	String or Weave Bead
Other	Oscillation
	Multipass or Single Pass (Per Side)
	Single or Multiple Electrodes
PREHEAT (QW-406)	Other
Preheat Temperature	–
Interpass Temperature	— I
Other	

				QW-483	3 (Back)		
			Ter	nsile Tes	t (QW-1	50)	PQR N	0.
Specimen No.	Width	Thickness Area		9	Ultimate Total Load	Ultimate Unit Stress, (psi or MPa)	Type of Failure and Location	
Guided-Bend Tests (QW-160)								
	Type and Figu	ıre No.					Result	
					+			
			Tougl	hness Te	sts (QW	-170)		
Specimen	Notch	Specimen	Test			Impact Values		7
No.	Location	Size	Tempera	ture ft	-lb or J	% Shear	Mils (in.) or mm	Drop Weight Break (Y/N)
				+			AV	
						7,4		
				+				
				\top				
					A			
Comments						<u> </u>		
			Fillet	-Weld T	est (QW	-180)		
Result — Satisfactory:		No			Penetra	ation into Parent N	Metal: Yes	No
Macro — Results			1) 				
		< C		Other	Tests			
Type of Test		-						
Deposit Analysis Other								
Welder's Name						Clock No		Stamp No
Tests Conducted by _						Labora	tory Test No	
We certify that the sta requirements of Section						prepared, welded	d, and tested in acc	ordance with the
. equirements of decti	S. IA OF DIE MONE	Contra dilu F			Contractor			
-								
(Detail of record of tes	sts are illustrative o	nly and may	be modif	ied to conf			of tests required b	
		,	,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
03/08								

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

[CompanyName] Work Task Quality Assurance/Quality Control Plan							
Project ID	Project Name	Preparer	Date				
[ProjectNumber]	[ProjectName]						
Work Task:		Performing Department/Crew/Subcont	ractor and Supplier:				
Licensing / certification / qualification performing organization:	on requirements of personnel or	Work Task acceptance criteria:					
Reference documents (contract spe	cifications, contract drawings, submittals, c	quality standards, work instructions, produ	ct installation instructions)				
ID#	Title or Description	on	Version / Issue Date				
		0.0					
Required Inspections, process conti	ols, and Tests	O *]				
	n Protocol / Test Points	Acceptance	- Critoria				
пізресто	in rotocory reservants	Acceptance	Contena				
	(0)						
	70						
Required records of work t	ask process and completion						

[CompanyName] Metals Material Receiving Inspection Report					
Project ID	Project Name	P.O.#	Supplier	Receipt Date	
[ProjectNumber]	[ProjectName]		C		
Type of Material (i.e., steel plate)	Material Description (nominal dimensions)	Heat Number/ Serial Number/Markings	Condition / Damage	Color Code Marking	
Receiving Inspector A	pproval Signature / Date		Representative proval Date		
	68			☐ Material Receiving Inspection Passed	

[CompanyName] Material Inspection and Receiving Report									
Contract ID	Contract Name		Purchase Order No.	Supplier			Bill of Lading No.		Date
[ProjectNumber]	[ProjectName]								
Item No.	Stock/Part No.	t Description		Quantity Received	Condition	Marking	Accept	Conditional Use	Reject
) 0				
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:									



For More Information:

Visit our Online Store at:

www.firsttimequalityplans.com

or

Contact: First Time Quality 410-451-8006

edc@firsttimequality.com