

[ImagePlaceHolder]

[CompanyName]

[CompanyAddress1] | [CompanyAddress2] [CompanyPhone] | [CompanyPhone2]

Fabrication Quality Manual

For Complia	ance with:		7
•			

Operating Policies of the [CompanyName] Quality System

Version: 20150308

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Approval Signature and Date:

President/ Date

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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

 $\label{thm:continuous} The \ Quality \ Manager \ identifies \ regulatory \ requirements \ that \ apply \ to \ a \ specific \ job.$

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.

	Regulatory	/ Codes and Indu	stry 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	Welding standards	AWS B2.1/B2.1M	Specification for Welding Procedure and Performance Qualification
5	Standard practices for structural steel fabrication – bound series of standards	AISC Code of Standard Practice for Steel Buildings and Bridges	AISC Code of Standard Practice for Steel Buildings and Bridges
5	Specification for steel fabrication for structural steel buildings	AISC Specification for Structural Steel Buildings	AISC Specification for Structural Steel Buildings
5	Structural steel joints	RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts	RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts
5	Standard design symbols	ANSI/AWS A2.4	Symbols
5	Standard terms	ANSI/AWS A3.0	Terms and Definitions
5	QA recommended practices	AWS Welding Quality Assurance Guideline for Fabricators (WQAG)	Welding Quality Assurance Guideline for Fabricators (WQAG)
5	Coating of steel	SSPC Steel Structures Painting Manual, Volume I, Good Painting Practice	Steel Structures Painting Manual, Volume I, Good Painting Practice
5	Coating of steel	SSPC Steel Structures Painting Manual, Volume II, Systems and Specifications	Steel Structures Painting Manual, Volume II, Systems and Specifications
5	Special provisions for seismic applications	AISC Seismic Provisions for Structural Steel Buildings	Seismic Provisions for Structural Steel Buildings
5	Detailing standards for the design of structural steel details	AISC Detailing for Steel Construction	Detailing for Steel Construction
5	Workmanship and techniques for welded construction	AWS D1.1/D1.1M	Structural Welding Code – Steel

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., D1.1, D1.1M) 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.

5.4. 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 6.2 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 job on the Job 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 job, the Quality Manager defines the standards that apply to the specific job on the Job Quality Assurance/Quality Control Manual.

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.

12.3. DOCUMENT CONTROLS

The President controls 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 quality system documents including:

- Approval of all 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
- Contract Management Procedures (including interface and coordination with customers and regulatory agencies)
- 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 CONTRACT DOCUMENTS

The Operations 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
- Inspection and test plans

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 job-specific Quality System records including:

- Annual reviews
- Quality improvement records

12.4.2. CONTRACT RECORDS CONTROL

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

- Inspection and test records
- Quality submittals to the customer
- Quality system audits
- reviews
- Calibration certificates
- Daily log reports
- Incident reports
- Redline drawings
- Qualified personnel approvals
- · Quality improvement records
- Quality records specified by customer contract, or contract technical specifications
- Welding quality records, forms, and reports including:
 - Welder Performance Qualification records (WPQRs)
 - Welding Procedure Specifications (WPSs)
 - o Procedure Qualification Records (PQRs)
 - Material Test Reports (MTRs) (when required by the contract, governing code or specification)
 - Nondestructive Examination (NDE) reports (when required by the contract, governing code, or specification)
 - Nondestructive Examination Personnel Qualification Records

- 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 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 job.

14. FORMS

[CompanyName] Controlled Materials Form	41
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[CompanyName] Daily Production Report	43
[CompanyName] Work Task Inspection Form	44
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Form N-9 STUD WELDING APPLICATION QUALIFICATION TEST DATA	
Form S-15 Report of UT (Alternative Procedure)	58
50,	

Questions? Call First Time Quality 410-451-8006 [ImagePlaceHolder] [CompanyName] Quality Manual

		1	[Cor Material Inspecti	mpanyNarion and Ro				
	_			Version 20150308				_
Contract ID	Contrac	t Name	Purchase Order No.		Supplier	Bill of L	ading No.	Date
[ProjectNumber]	[Project	:Name]			5			
	Stock/Part			Quantity	. (7)		Conditional	
Item No.	No.		escription	Received	Condition Marking	Accept	Use	Reject
)'0'			
				0				
			Receiv	ing Quality Co	ntrol			
ACCEPTANCE			10					
Listed items have be	een accepted by me or	under my supervision						
Conform to cont	ract specifications EXCE	EDT as noted herein or	on supporting documents.					
	arent good condition EX		on supporting documents.					
	_							
Signature of author	ized person and date: _				_			
EXCEPTIONS:								

Form N-1 Welding Procedure Specification Prequalification

ANNEX N								AWS D1.1/D1.1M:2010	
	PI	REQUALI	FIED		SPECIFICATIO QUALIFIED BY ATION RECOR	TÈSTING	à		
					Identification	on#			
					Revision _	Da	ate	By	
Company N					Authorized	by		Date Semiautomatic	
Welding Pro	ocess(es)_				Type—Mar	nual		Semiautomatic	
Supporting	PQR No.(s))			Mechani	zed		Automatic	
JOINT DES	IGN USED				POSITION				
Type:		D						Fillet:	
Single Backing:	∕oo □ No		le Weld		Vertical Pr	ogression:	Up D	own 🔛	
	res				ELECTRIC	AL CHAR	ACTERISTIC	20	
Root Openi			Dimension	,	ELECTRIC	AL CHAR	ACTERISTI		
Groove Ang	ile:	Rad	fius (.I=U)		Transfer M	ode (GMA)	V) Shor	rt-Circuiting	
Back Goug	ng: Yes	No 🗌	Metho	od			Glob	ular Spray Delsed Delsed	
BASE MET	ALS				Power Sou			I diago	
Material Sp					Other				
Type or Gra	de				Tungsten E		GTAW)		
Thickness:	Groove _		Fillet			Size:			
Diameter (F						Type:			
FILLER ME	TALS				TECHNIQ	UE .			
AWS Speci					Stringer or Weave Bead:				
AWS Class	ification				Multi-pass	Multi-pass or Single Pass (per side)			
					Electrode	Spacing		gitudinal	
SHIELDING Flux	à	Gas						ral	
riux		Gas	nposition _		Contact Tu	he to Work	Dietance	e	
Electrode-F	lux (Class)				Peening _	DO TO TYOU	Distance _		
		Gas							
PREHEAT					POSTWEL	D HEAT T	REATMENT		
Preheat Ter					Temp				
Interpass T	emp., Min.	~ \	Max.		Time				
		Filler	Metals		G PROCEDURE Current				
Pass or		- iller I					Torrist		
Weld	Process	Class	Diam.	Type & Polarity	Amps or Wire Feed Speed		Travel Speed	Joint Details	
Layor(s)	1 100033	Oldoo	Diam.	Totality	1 ced opeca	VOILO	Оресс	Contractions	
Form N-1 (Fr	ont)								
					354				

		Procedure	Qualification	n Record (PQR) # _		
				st Results		
			TEN	ISILE TEST		
Specimen No.	Width	Thickness	Area	Ultimate Tensile Load, lb	Ultimate Unit Stress, psi	Character of Failure and Location
			GUIDE	D BEND TEST		•
Specimen No.	Type of Be	end	Result		Remarks	
						6
					-0	
					-AK	
SUAL INSPE	ECTION			Radiographic-u	Itrasonic examinatio	n
ndercut				RT report no.:	Resu	lt
ping porosity					Resu	
est date						um size single pass
				Macroetch	Macro	etch
					i 1	3
ther Tests			•	2All-weld-metal t	2	
ther lests					n, psi	
					III, 76	
				Laborato	ry test no.	
elder's name				Laborato	ry test noStam	
		8		Laborator Clock no.	y test no Stam	p no
		0		Laborator Clock no.	y test no Stam	ip no
		0		Laborator Clock no.	y test no Stam	p no
ests conducte	ed by	that the state	ments in this reco	Clock no Test number Per	y test no Stam Labo	p no
ests conducte	igned, certify			Clock no	y test no Stam Labo t the test welds were) Structural	pratory prepared, welded, an
ests conducte	igned, certify			Clock no Test number Per ord are correct and that AWS D1.1/D1.1M, (y test no Stam Labo	pratory prepared, welded, an
ests conducte	igned, certify			Clock no Test number Per ord are correct and that AWS D1.1/D1.1M, (Signed	Stam Labo t the test welds were (year) Manufacturer or Coni	prepared, welded, and Welding Code—Steel
ests conducte	igned, certify			Laborator Clock no Test number Per ord are correct and that AWS D1.1/D1.1M, (Signed By	Stam Labo I the test welds were (year) Manufacturer or Conf	prepared, welded, and Welding Code—Steel
	igned, certify			Laborator Clock no Test number Per ord are correct and that AWS D1.1/D1.1M, (Signed By Title	stam Labo t the test welds were Structural (year)	prepared, welded, and Welding Code—Steel
ests conducte	igned, certify			Laborator Clock no Test number Per ord are correct and that AWS D1.1/D1.1M, (Signed By Title	Stam Labo I the test welds were (year) Manufacturer or Conf	prepared, welded, and Welding Code—Steel

http://www.aws.org/technical/forms/N-1.pdf

Form N-3 WPS QUALIFICATION TEST RECORD_ELECTROSLAG AND ELECTROGAS WELDING

	AWS D1.1/D1.1M:2010
	N TEST RECORD FOR LECTROGAS WELDING
PROCEDURE SPECIFICATION	TEST RESULTS
Material specification	Reduced-section tensile test
Welding process	Tensile strength, psi
Position of welding	1
Filler metal specification	2.
Filler metal classification	
Filler metal	
Flux	
Shielding gas Flow rate	All-weld-metal tension test
Gas dew point Thickness range this test qualifies	Tensile strength, psi
Single or multiple pass	Yield point/strength, psi
Single or multiple arc	Elongation in 2 in, %
Welding current	
Preheat temperature	
Postheat temperature	Side-bend tests
Welder's name	1
Guide tube flex	2 4
Guide tube composition	
Vertical rise speed	
Traverse length	Radiographic-ultrasonic examination
Traverse speed	RT report no.
Dwell	UT report no.
Type of molding shoe	
X X	
VISUAL INSPECTION (Table 6.1, Cyclically loaded	I
limitations)	Impact tests
AppearanceUndercut	Size of specimen Test temp
Piping porosity	Ft-lb: 1 2 3 4 5 6 Avg.
Test date	High Low
Witnessed by	Laboratory test no.
WELDING	PROCEDURE
WELDING	
Pass Electrode Welding Current	
Walding Current	Joint Detail
Pass Electrode Welding Current	Joint Detail
Pass Electrode Welding Current	Joint Detail
Pass Electrode Welding Current	Joint Detail
Pass Electrode Welding Current	Joint Detail
Pass Electrode Welding Current	Joint Detail
Pass Size Welding Current No. Size Amperes Volts We, the undersigned, certify that the statements in this record	are correct and that the test welds were prepared, welded, and IS D1.1/D1.1M, () Structural Welding Code—Steel.
Pass Electrode No. Size Amperes Volts Welding Current Volts Amperes Volts We, the undersigned, certify that the statements in this record	are correct and that the test welds were prepared, welded, and
Pass Electrode No. Size Amperes Volts Welding Current Amperes Volts We, the undersigned, certify that the statements in this record tested in conformance with the requirements of Clause 4 of AW Procedure no.	are correct and that the test welds were prepared, welded, and S D1.1/D1.1M, () Structural Welding Code—Steel. (year)
Pass No. Size Welding Current Amperes Volts We, the undersigned, certify that the statements in this record tested in conformance with the requirements of Clause 4 of AW	are correct and that the test welds were prepared, welded, and S D1.1/D1.1M, () Structural Welding Code—Steel. (year) Manufacturer or Contractor

http://www.aws.org/technical/forms/N-3.pdf

Form N-4 WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD

THE PERIOD OF ENAMERS OF	R TACK WELDER	QUALIFICATION	ON TEST RECORD
Type of Welder			
			n No
Welding Procedure Specification No.			Date
		Actual Values Qualification	Qualification Range
Variables	Osed II	Qualification	Qualification Harige
Process/Type [Table 4.12, Item (1)]			
Electrode (single or multiple) [Table 4.12, Item (7)]			1
Current/Polarity			
Desiries (Table 4.40 Hear 44)			
Position [Table 4.12, Item (4)] Weld Progression [Table 4.12, Item (5)]			
Weld Progression [Table 4.12, Item (5)]			
Backing (YES or NO) [Table 4.12, Item (6)]			
Material/Spec.		to	
Base Metal			
Thickness: (Plate)			
Groove			
Fillet Thickness: (Pipe/tube)			
Groove			
Fillet			
Diameter: (Pipe)			
Groove			
Fillet			
Filler Metal (Table 4.12)			
Spec. No. Class			-
F-No. [Table 4.12, Item (2)]			1
Gas/Flux Type (Table 4.12)			
Other			
	L INSPECTION (4.9		
	able YES or NO		
Guided B	end Test Results (4	. <u>31</u> .5)	
Guided B		Tuna	Result
Type Result		Type	nesuit
		туре	nesuit
		туре	nesuit
Type Result			
Type Result			
Type Result Fillet Test Re	esults (4.31.2.3 and Fillet Size	4. <u>31</u> .4.1)	
Type Result Appearance Fillet Test Re	esults (4.31.2.3 and Fillet Size Macroete	4. <u>31</u> .4.1)	
Type Result Fillet Test Ro Appearance Fracture Test Root Penetration (Describe the location, nature, and size of any crac	esults (4.31,2.3 and Fillet Size Macroete	4.31.4.1)	
Appearance Fracture Test Root Penetration (Describe the location, nature, and size of any cracinspected by	esults (4.31,2.3 and Fillet Size Macroete	4.31.4.1) e h	
Type Result Fillet Test Re Appearance Fracture Test Root Penetration (Describe the location, nature, and size of any cracenspected by Organization (Describe the location)	esults (4.31,2.3 and Fillet Size Macroete k or tearing of the sp Test Nun Date	4.31.4.1) 3	
Appearance Fracture Test Root Penetration (Describe the location nature, and size of any cracinspected by Drganization RADIOGRAPI	esults (4.31.2.3 and Fillet Size Macroete k or tearing of the sp Test Nun Date HIC TEST RESULTS	4.31.4.1) b	
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http://www.aws.org/technical/forms/N-4.pdf



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