

[CompanyName]

**Fabrication and Installation
Quality Assurance/Quality Control Plan**

[ProjectName]
[ProjectNumber]

Management acceptance

This fabrication and installation Quality Assurance/Quality Control Plan has been reviewed and excepted

Endorsed By: (Name / Title)	[QualityManagerName], Quality Manager		
Signature:	<i>[QualityManagerName]</i>	Date:	[Date]
Version	1.0	Notes	Initial Issue

PROJECT-SPECIFIC QUALITY PLAN

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E. 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 fabrication and installation.

[CompanyName] personnel, 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] fabrication and installation activities comply with generally accepted good workmanship practices and industry standards.

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 to 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.

LOCAL FABRICATION CODES

For More Information, Visit www.firsttimequalityplans.com
Or Call: 410-451-8006

Applicable fabrication codes that apply to this project are listed on the Project Building Codes form. A Project fabrication Codes form exhibit is included in this subsection.

COMPLIANCE WITH INDUSTRY WELDING STANDARDS

Codes that may apply to this project include those listed below.

Description	Reference Standard No.	Reference Standard Title
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
Detailing standards for the design of structural steel details	AISC Detailing for Steel Construction	Detailing for Steel Construction
Minimum spacings and edge distances for screws	AISI SG02-KIT	North American Specification for the Design of Cold-Formed Steel Structural Members
Standard design symbols	ANSI/AWS A2.4	Symbols
Standard terms	ANSI/AWS A3.0	Terms and Definitions
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
QA recommended practices	AWS Welding Quality Assurance Guideline for Fabricators (WQAG)	Welding Quality Assurance Guideline for Fabricators (WQAG)
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
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
Framing and reinforcing openings through a steel deck	SDI DDP	Deck Damage and Penetrations

Form N-1 Welding Procedure Specification Prequalification

ANNEX N

AWS D1.1/D1.1M:2010

WELDING PROCEDURE SPECIFICATION (WPS) Yes
PREQUALIFIED _____ QUALIFIED BY TESTING _____
or PROCEDURE QUALIFICATION RECORDS (PQR) Yes

Company Name _____
Welding Process(es) _____
Supporting PQR No.(s) _____

Identification # _____
Revision _____ Date _____ By _____
Authorized by _____ Date _____
Type—Manual Semiautomatic
Mechanized Automatic

JOINT DESIGN USED
Type: _____
Single Double Weld
Backing: Yes No
Backing Material: _____
Root Opening _____ Root Face Dimension _____
Groove Angle: _____ Radius (J-U) _____
Back Gouging: Yes No Method _____

POSITION
Position of Groove: _____ Fillet: _____
Vertical Progression: Up Down

ELECTRICAL CHARACTERISTICS
Transfer Mode (GMAW) Short-Circuiting
Globular Spray
Current: AC DCEP DCEN Pulsed
Power Source: CC CV
Other _____
Tungsten Electrode (GTAW)
Size: _____
Type: _____

BASE METALS
Material Spec. _____
Type or Grade _____
Thickness: Groove _____ Fillet _____
Diameter (Pipe) _____

FILLER METALS
AWS Specification _____
AWS Classification _____

SHIELDING
Flux _____ Gas _____
Composition _____
Electrode-Flux (Class) _____ Flow Rate _____
Gas Cup Size _____

TECHNIQUE
Stringer or Weave Bead: _____
Multi-pass or Single Pass (per side) _____
Number of Electrodes _____
Electrode Spacing _____ Longitudinal _____
Lateral _____
Angle _____
Contact Tube to Work Distance _____
Peening _____
Interpass Cleaning: _____

PREHEAT
Preheat Temp., Min. _____
Interpass Temp., Min. _____ Max. _____

POSTWELD HEAT TREATMENT
Temp. _____
Time _____

WELDING PROCEDURE

Pass or Weld Layer(s)	Process	Filler Metals		Current		Volts	Travel Speed	Joint Details
		Class	Diam.	Type & Polarity	Amps or Wire Feed Speed			

Form N-1 (Front)

ANNEX N AWS D1.1/D1.1M:2010

Procedure Qualification Record (PQR) # _____
Test Results

TENSILE TEST

Specimen No.	Width	Thickness	Area	Ultimate Tensile Load, lb	Ultimate Unit Stress, psi	Character of Failure and Location

GUIDED BEND TEST

Specimen No.	Type of Bend	Result	Remarks

VISUAL INSPECTION

Appearance _____
 Undercut _____
 Piping porosity _____
 Convexity _____
 Test date _____
 Witnessed by _____

Radiographic-ultrasonic examination
 RT report no. _____ Result _____
 UT report no. _____ Result _____

FILLET WELD TEST RESULTS

Minimum size multiple pass	Maximum size single pass
Macroetch	Macroetch
1. _____ 3. _____	1. _____ 3. _____
2. _____	2. _____

Other Tests

All-weld-metal tension test
 Tensile strength, psi _____
 Yield point/strength, psi _____
 Elongation in 2 in, % _____
 Laboratory test no. _____

Welder's name _____ Clock no. _____ Stamp no. _____
 Tests conducted by _____ Laboratory _____
 Test number _____
 Per _____

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M, (_____) *Structural Welding Code—Steel*.
 (year)

Signed _____
 Manufacturer or Contractor
 By _____
 Title _____
 Date _____

Form N-1 (Back)

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

Form N-3 WPS QUALIFICATION TEST RECORD ELECTROSLAG and ELECTROGAS WELDING

ANNEX N	AWS D1.1/D1.1M:2010			
WPS QUALIFICATION TEST RECORD FOR ELECTROSLAG AND ELECTROGAS WELDING				
<p style="text-align: center;">PROCEDURE SPECIFICATION</p> <p>Material specification _____</p> <p>Welding process _____</p> <p>Position of welding _____</p> <p>Filler metal specification _____</p> <p>Filler metal classification _____</p> <p>Filler metal _____</p> <p>Flux _____</p> <p>Shielding gas _____ Flow rate _____</p> <p>Gas dew point _____</p> <p>Thickness range this test qualifies _____</p> <p>Single or multiple pass _____</p> <p>Single or multiple arc _____</p> <p>Welding current _____</p> <p>Preheat temperature _____</p> <p>Postheat temperature _____</p> <p>Welder's name _____</p> <p>Guide tube flex _____</p> <p>Guide tube composition _____</p> <p>Guide tube diameter _____</p> <p>Vertical rise speed _____</p> <p>Traverse length _____</p> <p>Traverse speed _____</p> <p>Dwell _____</p> <p>Type of molding shoe _____</p> <p>VISUAL INSPECTION (Table 6.1, Cyclically loaded limitations)</p> <p>Appearance _____</p> <p>Undercut _____</p> <p>Piping porosity _____</p> <p>Test date _____</p> <p>Witnessed by _____</p>	<p style="text-align: center;">TEST RESULTS</p> <p>Reduced-section tensile test</p> <p>Tensile strength, psi</p> <p>1. _____</p> <p>2. _____</p> <p>All-weld-metal tension test</p> <p>Tensile strength, psi _____</p> <p>Yield point/strength, psi _____</p> <p>Elongation in 2 in, % _____</p> <p>Side-bend tests</p> <p>1. _____ 3. _____</p> <p>2. _____ 4. _____</p> <p>Radiographic-ultrasonic examination</p> <p>RT report no. _____</p> <p>UT report no. _____</p> <p>Impact tests</p> <p>Size of specimen _____ Test temp _____</p> <p>Ft-lb: 1. _____ 2. _____ 3. _____ 4. _____</p> <p>5. _____ 6. _____ Avg. _____</p> <p>High _____ Low _____</p> <p>Laboratory test no. _____</p>			
WELDING PROCEDURE				
Pass No.	Electrode Size	Welding Current		Joint Detail
		Amperes	Volts	
<p>We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M, (_____) <i>Structural Welding Code—Steel</i>.</p> <p style="text-align: center;">(year)</p> <p>Procedure no. _____ Manufacturer or Contractor _____</p> <p>Revision no. _____ Authorized by _____</p> <p>Form N-3 Date _____</p>				
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<http://www.aws.org/technical/forms/N-3.pdf>

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

Variables		Record Actual Values Used in Qualification	Qualification Range
Process/Type [Table 4.12, Item (1)]			
Electrode (single or multiple) [Table 4.12, Item (7)]			
Current/Polarity			
Position [Table 4.12, Item (4)]			
Weld Progression [Table 4.12, Item (5)]			
Backing (YES or NO) [Table 4.12, Item (6)]			
Material/Spec.			
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)]			
Gas/Flux Type (Table 4.12)			
Other			

VISUAL INSPECTION (4.9.1)			
Acceptable - YES or NO _____			
Guided Bend Test Results (4.31.5)			
Type	Result	Type	Result

Fillet Test Results (4.31.2.3 and 4.31.4.1)			
Appearance	_____	Fillet Size	_____
Fracture Test Root Penetration	_____	Macroetch	_____
(Describe the location, nature, and size of any crack or tearing of the specimen.)			

Inspected by _____	Test Number _____
Organization _____	Date _____

RADIOGRAPHIC TEST RESULTS (4.31.3.2)					
Film Identification Number	Results	Remarks	Film Identification Number	Results	Remarks

Interpreted by _____	Test Number _____
Organization _____	Date _____

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 4 of AWS D1.1/D1.1M, (_____) *Structural Welding Code—Steel*.

(year)

Manufacturer or Contractor _____	Authorized By _____
Form N-4	Date _____

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Form N-9 STUD WELDING APPLICATION QUALIFICATION TEST DATA

ANNEX N
AWS D1.1/D1.1M:2010

STUD WELDING APPLICATION QUALIFICATION TEST DATA FORM PER SUBCLAUSE 7.6 Yes
PRE-PRODUCTION TEST PER SUBCLAUSE 7.7.1 (WPS) Yes
OR PROCEDURE QUALIFICATION RECORD (PQR) Yes
OR WELDER QUALIFICATION RECORD (WQR) Yes

Company name _____
 Operator name _____
 Test number _____
 Weld stud material _____
 Weld stud size and PN#/Manufacturer _____

Base Material
 Specification _____
 Alloy and temper _____
 Surface condition HR CR
 Coating _____
 Cleaning method _____
 Decking gage _____

Shape of Base Material
 Flat Round Tube
 Angle Inside Outside Inside radius
 Thickness _____

Ferrule
 Part No./Manufacturer _____
 Ferrule description _____

Equipment Data
Application Settings, Current, and Time Settings
 Make _____ Model _____
 Stud gun: Make _____ Model _____
 Weld time (seconds) _____
 Current (amperage) _____
 Polarity: DCEN _____ DCEP _____
 Lift _____
 Plunge (protrusion) _____
 Weld cable size _____ Length _____
 Number of grounds (workpiece leads) _____

Welding Position
 Flat (Down hand) Horizontal (Side hand) Angular—degrees from normal Overhead

Shielding Gas
 Shielding gas(es)/Composition _____
 Flow rate _____

Stud Base Sketch/Application Detail

WELD TEST RESULTS

Stud No.	Visual Acceptance	Option #1 Bend Test	Option #2 Tension Test	Option #3 Torque Test*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

*Note: Torque test optional for threaded fasteners only.

Mechanical tests conducted by _____ Date _____
(Company)

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in conformance with the requirements of Clause 7 of AWS D1.1/D1.1M, (_____) *Structural Welding Code—Steel*.
(year)

Signed by _____ Title _____ Date _____
(Contractor/Applicator/Other)

Form N-9 _____ Company _____

F. 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]
Controlled Materials Form**

Contract ID	Contract Name	Preparer	Date	
[ProjectNumber]	[ProjectName]			

Contract Section/ Activity ID	Material	Intended Use (if description is necessary)	Lot Traceability Requirements	Method for identification of Approved Inspection Status

Selected Pages
Not a Complete Plan or Manual

[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.	Description	Quantity Received	Condition	Marking	Accept	Conditional Use	Reject
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Quality Control								
ACCEPTANCE Listed items have been accepted by me or under my supervision <input type="checkbox"/> Conform to contract specifications EXCEPT as noted herein or on supporting documents. <input type="checkbox"/> Received in apparent good condition EXCEPT as noted Signature of authorized person and date: _____								
EXCEPTIONS:								

Not a Complete Plan or Manual



For More Information:

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www.firsttimequalityplans.com

or

Contact: First Time Quality

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