Essentials Fabrication Quality Plan Sample

Selected pages not a complete plan

Includes Standards and Forms for Structural Steel Fabrication

Contact:
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[ImagePlaceHolder]

[CompanyName]

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 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] 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	Welding standards	AWS B2.1/B2.1M	Specification for Welding Procedure and Performance Qualification
5	Standard practices for structural steel fabrication – bound series of standadards	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	Standar 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

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.

Form N-1 Welding Procedure Specification Prequalification

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

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

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

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 _____

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: _____

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

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)

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 — Macroetch
1. _____ 3. _____
2. _____
Maximum size single pass — Macroetch
1. _____ 3. _____
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)

http://www.aws.org/technical/forms/N-1.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]
Controlled Materials Form

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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

[CompanyName]
Material Inspection and Receiving Report

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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:

K. Quality Control of Corrections, Repairs, and Nonconformances

Should a problem occur in the quality of work, we systematically contain the issue and quickly make corrections. Our first action is to clearly mark the item by tape, tag, or other easily observable signal to prevent inadvertent cover-up.

Then we expedite a corrective action that brings the workmanship or material issue into conformance by repair, replacement, or rework. Previously completed work is reinspected for similar nonconformances. In the event that we cannot correct the item to meet contract specifications, the customer will be notified and customer approval of corrective actions is required before proceeding.

Fixing problems found is not sufficient. [CompanyName] systematically prevents recurrences to improve quality. First enhanced controls and management monitoring are put into place to assure work proceeds without incident. Then using a structured problem solving process, [CompanyName] identifies root causes and initiates solutions. Solutions may involve a combination of enhanced process controls, training, upgrading of personnel qualifications, improved processes, and/or the use of higher-grade materials. Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

Nonconformances and their resolution are recorded on a Nonconformance Report form. A Nonconformance Report form exhibit is included in this subsection.

[CompanyName]
Nonconformance Report

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Nonconformance Report Control ID	Project ID	Project Name
	[ProjectNumber]	[ProjectName]

Preparer Signature/ Submit Date	Quality Manager Signature / Disposition Date

Description of the requirement or specification	
Description of the nonconformance, location, affected area, and marking	
Disposition	☐Replace ☐ Repair ☐ Rework ☐ Use As-is Approval of disposition required by customer representative? Yes ☐ No ☐ Customer approval signature /date: _____
Corrective Actions	☐Corrective actions completed Name/Date:_____ Customer acceptance of corrective actions required? Yes ☐ No ☐ Name/Date:_____
Preventive Actions	☐Preventive actions completed Name/Date:_____

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