1. Cover Page

[CompanyName]

[FacilityAddress1] | [FacilityAddress2]
[FacilityPhone]

Quality Manual

Operating Policies of the
[CompanyName] Welding Quality Program

Management acceptance

This Quality Manual has been reviewed and excepted

Endorsed By: (Name / Title)	Most Senior Individual Responsible for this Facility (President)		
Signature:	[PresidentName]	Date:	[Date]
Version:	1	Effective Date	[EffectiveDate]

QUALITY MANUAL TABLE OF CONTENTS

The Quality Manual conforms to the quality management system requirements in accordance with AWS B5.17:2025*, Specification for the Qualification of Welding Fabricators Clause 6*.

AWS B5.17:2025 Clause 6 Compliance Cross-Reference

This table provides a cross-reference between the requirements of AWS B5.17:2025 Clause 6 – Quality Manual Requirements and the corresponding sections, SOPs, and forms in this Quality Manual. Its purpose is to assist auditors in quickly verifying how each requirement of Clause 6 is addressed within the manual and supporting documentation.

AWS B5.17 Clause	Requirement Summary	Quality Manual Section
6.1 Cover Page	Company name, address, revision status	Cover Page; Revision History
6.2 Management Support & Responsibilities	Statement of Authority; mgmt. support; QC independence; QC authority; exec signature/date	Section 2.1 Statement of Authority; Cover Page signature
6.3 Organization	Org chart; Delegation of authority; QC inspector qualifications	Section 3.1 Org Chart; 3.2 Delegation; 3.4 Personnel Qualifications
6.4 Document Control	Manual control; contract docs; drawings; 15 required records; record retention	Section 4 Document Control; SOP-01; Records Retention
6.5 Material Control	Purchasing; Receiving; Identification & traceability; MTR review; Filler material controls	Section 5 Material Control; Section 6.3 Filler Metals; SOP-06; SOP-07
6.6 Welding	WPS/PQR system; Welder qualification & continuity; Filler metal issue/storage/logs	Section 6 Welding; SOP-03; SOP-07; SOP-08; SOP-09
6.7 Inspection	Types/frequency/criteria; Weld/NDE inspector quals; Vision exams; Written NDE procedures; Subcontractor approvals	Section 7 Inspection & NDE; SOP-10; SOP-11; SOP-12; Forms (Visual Weld Inspection Report, Vision Exam Record, NDE Subcontractor Review)
6.8 Nonconformance	Authority; NCRs; dispositions: Rework/Repair/Scrap/Use As Is; identification/segregation	Section 8.1 Nonconformance; SOP-13; Nonconformance Report Form
6.9 Corrective Action	Threshold; CARs include identification, root cause, plan, implementation, verification, closure	Section 9.1 Corrective Actions; SOP-14; Corrective Action Report Form
6.10 Measuring & Testing Equipment	Equipment & responsibility; Calibration traceable; Annual machine verification; ID labels; Calibration records (7 elements)	Section 10 Measuring & Testing Equipment; SOP-15; Test Equipment Calibration Plan & Log
6.11 Internal Quality Audits	Annual audits; Auditor authority & qualifications; Documentation; Mgmt. review	Section 11.1 Internal Audit; SOP-16; Quality Program Audit Form
6.12 Sample Forms	Sample blank forms included	Appendix C Sample Forms

2. MANAGEMENT SUPPORT AND RESPONSIBILITY

2.1. STATEMENT OF AUTHORITY AND RESPONSIBILITY

The Company has established and maintains this Quality Manual in compliance with AWS B5.17:2025. This manual identifies the AWS codes and specifications governing the welding processes performed at this facility, including [insert applicable codes/specifications, e.g., AWS D1.1, D1.5, D17.1].

Executive management accepts full responsibility for the implementation of this Quality Manual and for ensuring that all quality requirements are met.

Responsible Quality Control (QC) personnel have the full support of management and report directly to executive management. While QC personnel may coordinate with production on quality matters, they do not report to production management.

QC personnel are authorized to:

- Identify quality problems;
- Verify the implementation of corrective measures;
- Limit or stop processing and delivery of nonconforming items until proper disposition is made; and
- Resolve disputes related to quality, with final authority resting with executive management.

2.2. QUALITY MANUAL CONFORMANCE

For this Quality Manual, the following codes determine the rules for controlling welding process including weld acceptance at the [CompanyName] facility.

Reference Standard No.	Reference Standard Title
D1 .1/D1.1 M	Structural Welding Code – Steel

2.2.1. LIBRARY OF REFERENCE STANDARDS

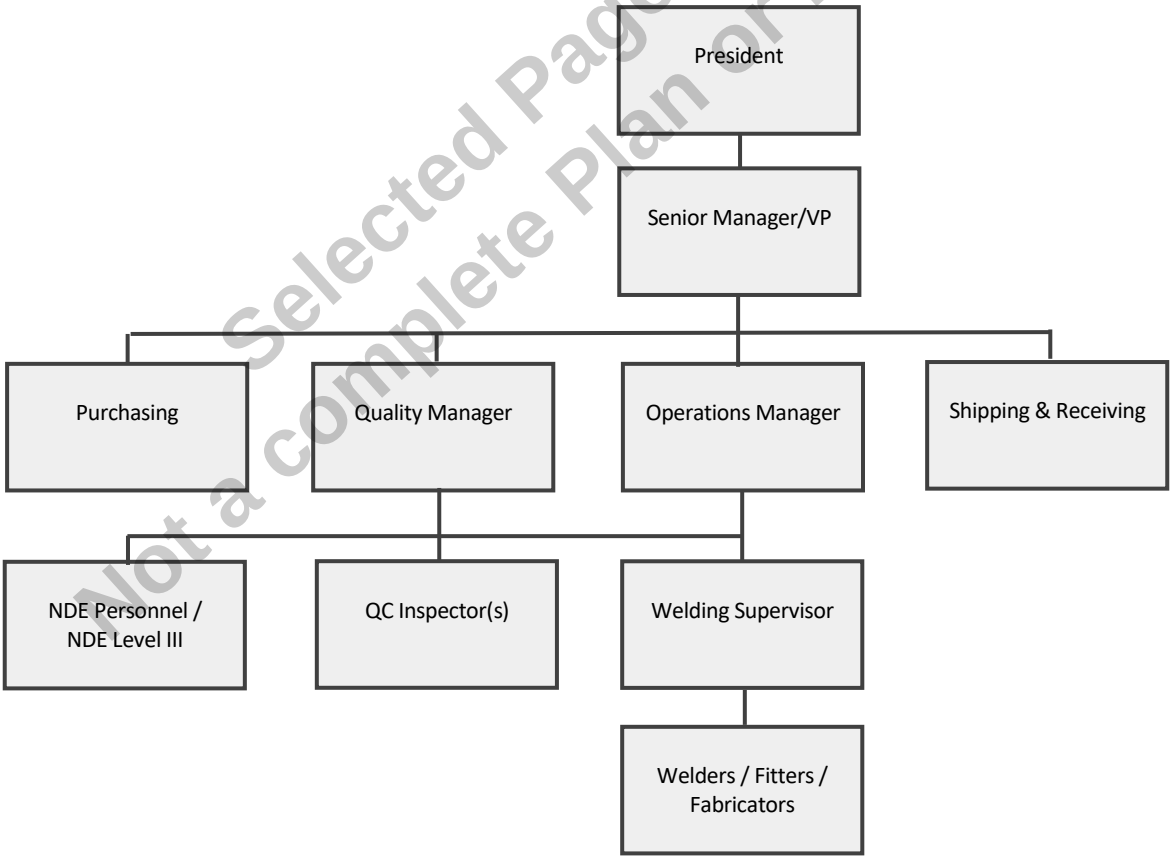
In accordance with AWS B5.17:2025 Clause 7, [CompanyName] maintains the latest editions of the minimum reference standards required for qualification of welding fabricators. These standards are made readily available to supervisors, inspectors, and welding personnel as applicable. The Quality Manager verifies the availability and currency of these standards at least annually and ensures they are accessible at the facility.

3. ORGANIZATION

3.1. ORGANIZATION CHART

The Organization Chart shows the relationship among management functions (e.g., purchasing, quality control, receiving, production, weld inspection, and shipping).

The organizational chart includes job titles, names of assigned personnel, and organizational and administrative interfaces with the customer. The organization chart defines lines of authority as indicated by solid connection. The lines of authority preserve independence of quality control personnel from the pressures of production.



3.2. DELEGATION OF AUTHORITY

When a person with authority is unavailable only a person with higher authority may assume the responsibility of the unavailable person.

3.3. QUALITY DUTIES, RESPONSIBILITIES, AND AUTHORITY

All personnel assigned to quality have the authority to identify quality problems, verify implementation of solutions, and stop or control further processing or delivery of

6. WELDING PROCEDURE SPECIFICATIONS AND PROCEDURES FOR QUALIFICATION RECORDS

6.1. WELDING PROCEDURE SPECIFICATIONS (WPS)

Welding procedure specifications 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*. Table 6.1 lists the codes or specifications to which welding procedure and procedure qualification will be certified.

[Edit the table below to include codes relevant to your scope of work (remove this text when done)]

Table 6.1

Welding Procedure Codes, Specifications and Standards		
Reference Standard No.	**Title / Application**	**Notes**
AWS D1.1/D1.1M	Structural Welding Code – Steel	Common for structural steel fabrication
AWS D1.2/D1.2M	Structural Welding Code – Aluminum	Use if fabricating aluminum structures
AWS D1.3/D1.3M	Structural Welding Code – Sheet Steel	Thin-gauge carbon steel
AWS D1.4/D1.4M	Structural Welding Code – Reinforcing Steel	Rebar welding
AWS D1.6/D1.6M	Structural Welding Code – Stainless Steel	Stainless steel fabrication
AWS D1.7/D1.7M	Structural Welding Code – Strengthening & Repair	Repair/retrofit work
AWS D9.1M	Sheet Metal Welding Code	HVAC, sheet metal shops
AWS D10.18	Recommended Practices for Welding Austenitic Stainless-Steel Pipe	Pipe welding
AWS D11.2	Welding of Cast Iron	Specialty welding
AWS D14.X	Welding Codes for Machinery & Equipment	Equipment/machinery shops
AWS D15.1	Railroad Welding Code	Railcar and track components
AWS D17.1/D17.1M	Aerospace Welding Code	Aerospace/aviation welding
AWS B2.1/B2.1M	Specification for Welding Procedure and Performance Qualification	Used for qualifying WPSs/PQRs
Other		

When the governing AWS Welding Code(s) mandates that welding procedures be qualified by test, the [CompanyName] 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 a Certified Welding Inspector (CWI) reviews and approves the welding procedure before being used in production welding operations.

Revisions to 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.

The Quality Manager is responsible for selecting and assigning welding procedures. The Quality Manager or qualified designee shall ensure that welding procedures are listed on applicable project documents (drawings, weld maps, travelers, or inspection/test plans).

6.2. Welder Performance Qualifications

Only welders who have been certified to perform specific welding activities by welder performance qualification testing will be approved for those welding activities. Welders must be certified and maintain a valid certification in accordance with the AWS Welder Certification Program and have completed the necessary tests in accordance with QC7, Standard for AWS Certified Welders.

The Quality Manager or a Certified Welding Inspector (CWI) will review and approve the welder and welding operator's qualification record for compliance with the necessary code(s) before they begin welding on a specific project.

6.2.1. Retesting Based on Quality of Work

In addition to welder certification, welding personnel may be required to be retested based on the following criteria:

- An interview of the welder
- Increased visual inspection for a limited time period
- Observation of the welding, or a simplified weld test developed to evaluate the issue of concern
- Requalification in compliance with Clause 6 or Clause 10 for tubulars of the D1.1/D1.1 M code

6.2.2. Retesting Based on Qualification Expiration

If evidence cannot be supplied that shows a welder, welding operator, or tack welder has used the welding process within the last six months, he or she is not considered qualified to weld using that process without new qualification testing.

6.2.3. Welder ID

Welders must stamp their welds with their unique welder ID stamp, which may be a number, letter or symbol. [Edit this policy or remove if not relevant]

6.3. Filler Metal Controls

The Quality Manager ensures that filler material use will conform to the specifications of the D1.1/D1.1 M code.

6.3.1. Weld Filler Material (WFM) Control Program

[CompanyName] has a Weld Filler Material Control Program in place that includes procurement, receipt, storage, issuance, and return of filler materials. The Quality Manager ensures that issuers, welders and procurement / receipt inspectors are trained on the WFM controls.

6.3.1.1. Filler Material Procurement

The Operations Manager considers the end use of the weldment when procuring filler materials. Requirements will vary depending on the application. WFM procurement will be in accordance with ANSI/AWS A5.01, *Filler Metal Procurement Guidelines*.

6.3.2. Filler Material Receipt

To confirm that the requirements of the Purchase Order are met, the Welding Supervisor or a qualified receipt inspector will perform a material receipt inspection for all WFM in accordance

6.3.3. Filler Material Storage

Electrodes, particularly low hydrogen, have specific storage conditions, temperatures, and rebaking requirements. The Quality Manager ensures that storage ovens are clearly labeled to trace the specific heat and lot information.

The Quality Manager ensures that WFM is stored in temperature and humidity-controlled area. Segregation within storage and issuance areas will be maintained. Alloyed materials will be clearly identified, and containers segregated from other materials and alloys.

When control of material is lost, it will be taken out of service and salvaged / scrapped.

6.3.4. Filler Material Issue

7. Inspection and Nondestructive Testing

7.1. Inspection of Welding Work

7.1.1. Dimensional Inspections – Size, Length, and Location of Welds

A qualified welding inspector inspects all weld dimensions to ensure that the size, length, and location of all welds conform to the requirements of the applicable AWS Structural Welding Code(s) or Specification(s) governing the welding work performed (e.g., D1.1 Steel, D1.2 Aluminum, D1.6 Stainless, D17.1 Aerospace) and to the detail drawings; and that no unspecified welds have been added without the approval of the contract Engineer.

7.1.2. Weld Inspections

During the welding process, at suitable intervals, weld inspections are performed by a qualified welding inspector. Such inspections will be conducted, on a sampling basis, prior to assembly, during assembly, and during welding. The welding inspector will observe joint preparation, assembly practice, and the welding techniques, and performance of each welder, welding operator, and tack welder to endure that the applicable requirements of the Applicable AWS Structural Welding Code(s) or Specification(s) governing the welding work performed (e.g., D1.1 Steel, D1.2 Aluminum, D1.6 Stainless, D17.1 Aerospace) are met.

7.1.3. Final Inspections

After completion of the work, a certified welding inspector performs a final visual inspection of every weld to ensure that the requirements of the applicable sections of code are met. Other acceptance criteria, different from those described in the Applicable AWS Structural Welding Code(s) or Specification(s) governing the welding work performed (e.g., D1.1 Steel, D1.2 Aluminum, D1.6 Stainless, D17.1 Aerospace), may be used when approved by the Engineer on the contract.

Size and contour of welds will be measured with suitable gauges. Visual inspection for cracks in welds and base metal and other discontinuities will be observed with the aid of a strong light, magnifiers, or such other devices as may be found helpful.

7.1.4. Weld Inspection and Test Status

The inspector identifies final acceptance or rejection of the work either by marking on the work or with other recording methods.

Final product acceptance inspection shall be indicated by permanent stamping or marking adjacent to the weld or must be unambiguously identified in the inspection report.

7.1.5. Weld Inspection Records

The inspector shall make a record of the inspection which shall include the following information:

- Unique part identifier (serial number, shop order, or batch number)
- Drawing number and revision
- Procedure and applicable acceptance criteria
- Inspector identity and date of inspection
- Record of defect findings
- Nominal
- Actual
- Tolerance

The Inspector will record inspection results on the Visual Weld Inspection Report or other form if approved by the contract Engineer.

An example of the Visual Weld Inspection Report is included in the Appendix at the end of this Manual.

7.1.6. Weld Test Records

Test result data will include as appropriate:

- Reference to the inspection and test plan item
- Description or title of the inspection activity
- Drawing identification number and version, if applicable
- Technical specification number and version, if applicable

AWS Forms will be used for recording Magnetic Particle Examination, Radiographic Examination, and Reporting of UT Welds unless otherwise specified by the contract or contract Engineer.

7.1.7. Weld Inspection and Test Acceptance Criteria

Inspections assess conformance of materials, welds, and fabrication work to the requirements of this Quality Manual, governing codes, and customer contract specifications. Acceptance criteria shall be based on:

- The applicable AWS welding code(s) identified in this Quality Manual (see Table 7.1), such as AWS D1.1 for structural steel, AWS D1.2 for aluminum, AWS D1.6 for stainless steel, AWS D17.1 for aerospace, or other codes as specified by contract.
- Applicable nondestructive testing standards, including AWS B1.11, ASTM E164, ASTM E165, ASTM E709, and ASTM E94.
- Contract technical specifications and project drawings.
- Approved shop drawings, product submittals, allowances, and unit prices.
- [CompanyName] quality standards and approved procedures.

A material or weld shall be accepted only when it meets all applicable acceptance criteria defined in the governing AWS code(s), referenced ASTM standards, and contract requirements.

Reference standards for weld inspection and testing are summarized in Table 7.1.

Table 7.1

Reference Standard No.	Title / Application	Notes
AWS B1.11	Guide for the Visual Examination of Welds	General visual inspection reference
ASTM E164	Standard Practice for Contact Ultrasonic Testing of Weldments	UT acceptance
ASTM E165	Standard Practice for Liquid Penetrant Examination	PT acceptance
ASTM E709	Standard Guide for Magnetic Particle Testing	MT acceptance
ASTM E94	Standard Guide for Radiographic Examination	RT acceptance
AWS D1.1/D1.1M	Structural Welding Code – Steel	For carbon/structural steel applications (if applicable)
AWS D1.2/D1.2M	Structural Welding Code – Aluminum	For aluminum fabrication (if applicable)
AWS D1.6/D1.6M	Structural Welding Code – Stainless Steel	For stainless steel fabrication (if applicable)
AWS D17.1/D17.1M	Aerospace Welding Code	For aerospace components (if applicable)

7.2. Weld Inspector Qualifications

[CompanyName] uses only qualified weld inspectors. If an AWS Certified Welding Inspector is not used, the Quality Manager will ensure that the weld inspector is qualified and certified in accordance with [CompanyName]'s written practice based on current ASNT (American Society for Nondestructive Testing) SNT-TC-1A (VT). The certification process will include the educational, training, experience and testing provisions described in SNT-TC-1A (VT).

Inspectors may also be qualified under ASNT CP-189. If qualified under SNT-TC-1A, the employer's written practice shall be applied with no variances.

The Quality Manager will ensure that inspectors are knowledgeable with the code(s) which applies to the fabrication work being performed.

7.3. NDE Inspector Qualifications

[CompanyName] uses only qualified NDE Inspectors. The Quality Manager will ensure that Radiographic Interpreters are certified in accordance with AWS B5.15, *Specification for the*

yoke method only) may be established if training, experience, and testing are clearly defined.

7.3.1. Vision Examinations

Personnel performing VT, MT, PT, or RT shall undergo vision examinations at intervals not exceeding 12 months. Near-vision acuity shall be Jaeger #2 (or equivalent) at ≥12 inches. Color contrast perception shall be verified for VT/MT/PT, and gray-scale perception for RT. Vision examination records shall be maintained.

7.4. NDE Procedures

The Quality Manager ensures that NDE shall be performed in accordance with written NDE procedures by a certified NDE inspector.

The NDE procedures shall be approved by a Level III in the NDE method(s) that the procedure is based on. The Level III shall be qualified and certified in accordance with the [CompanyName]'s written practice based on ASNT SNT-TC-1A: *Personnel Qualification and Certification in Nondestructive Testing*. The certification process shall include the educational, training, experience, and testing provisions described in SNT-TC-1A.

The Quality Manager ensures that NDE test procedures will be issued, revised and distributed according to the Documents and Record control procedures described in the Document Controls section of this Quality Manual.

10. MEASURING AND TESTING EQUIPMENT

10.1. CALIBRATION

[CompanyName] uses measuring and testing equipment in its fabrication process to measure dimensions and perform flaw detection on sheet, tube, or pipe.

Prior to the start of every project, 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.
- National measurement standard
- Calibration procedure requirements including the calibration technique, frequency of calibration or conditions when recalibration is required.

The Quality Manager ensures that measuring and test equipment is controlled, calibrated, and maintained. Calibration will be performed by qualified welding personnel using a written calibration procedure.

The Quality Manager ensures that all calibration procedures are traceable to national measurement standards.

A list of measuring and test equipment that [CompanyName] uses to control fabrication quality is included on Table 9.1 including reference to a written calibration procedure and the national measurement standards it complies with. [Edit/Complete table 9.1 below and then remove this text. Add additional calibration procedures to the SOP section as needed.]

Table 9.1

Measuring and Test Equipment	Calibration Procedure #	National Measurement Standard	Notes
Vernier Calipers (0–6 in, 0–12 in)	CAL-01	NIST Traceable Gauge Blocks	Dimensional inspection of parts and fit-up
Micrometers (outside, 0–1 in, 1–2 in)	CAL-01	NIST Traceable Gauge Blocks	Thickness and diameter checks
Welding Machines (arc welders, power sources)	CAL-02	NIST Traceable Electrical Standards	Verified annually with load bank or auxiliary meters
Digital Thermometers / Temp Sticks	CAL-03	ASTM E230 Thermocouple Calibration	Preheat and interpass temperature verification
Gas Flow Meters / Regulators	CAL-04	NIST Traceable Flow Standard	Shielding gas flow verification
Clamp Meters / Multimeters	CAL-05	NIST Traceable Electrical Standard	Voltage and amperage verification

Weld Gauges (Fillet, Hi-Lo, Bridge Cam)	CAL-06	AWS B1.11 / NIST Reference Blocks	Weld throat/leg size, alignment, misalignment
Pressure Gauges (hydro/pneumatic testing)	CAL-07	NIST Traceable Pressure Standard	Hydro/pneumatic test monitoring
Ultrasonic Thickness Gauges	CAL-08	NIST Traceable Step Wedge / Reference Block	Weld and base metal thickness measurement

10.2. Verification and Validation of Welding Machines

At least annually, The Quality Manager ensures that welding machines are verified as specified by the manufacturer. At a minimum, the following will be checked:

- Condition of volt meters, amp meters and gas flow meters (if equipped)
- Condition of cables
- Condition of hoses (if equipped)
- Condition of wire feeders (if equipped)
- Auxiliary volt/amp meters and load banks used to verify WPS parameters shall be calibrated annually. Wire-feed tachometers used in place of amperage shall also be calibrated annually.

10.3. Calibration Identification

The Quality Manager ensures that a calibration identification label or tag is securely fixed to each piece of measuring and test equipment that will be controlled, calibrated and maintained. The label or tag will indicate the date of the last calibration and the due date of the next calibration.

The Quality Manager ensures that the information on the calibration identification label or tag matches the information on the Test Equipment Calibration Plan and Log form.

A sample Test Equipment Calibration Plan and Log for is included in the Appendix at the end of this Manual.

10.4. Calibration Records

A record of all measuring and test equipment that will be controlled, calibrated, and maintained is listed on the Test Equipment Calibration Plan and Log included as an exhibit in Appendix of this Manual.

The Test Equipment Calibration Plan and Log includes the following information:

- Type of equipment
- Serial number
- Calibration frequency
- Calibration tolerance
- Date calibrated
- Next calibration due date

APPENDIX A: SOP/FORMS CROSS REFERENCE

This index maps each Standard Operating Procedure (SOP) to its supporting forms and records. It ensures traceability between documented procedures and the quality records maintained by [CompanyName].

SOP #	SOP Name	Supporting Forms	Forms
SOP-01	Document and Record Control	System Document Control Form, Records Control Form	WPS/PQR Revision Log (optional)
SOP-02	Management Review	Quality Program Audit Form	Management Review Record
SOP-03	Welder Qualification & Continuity	Welding Personnel Qualification Form, Welding Personnel Certifications and Licenses	Welder Continuity Log (updated)
SOP-04	QC Inspector & NDE Personnel Qualification	Subcontractor and Supplier Certifications and Licenses	Vision Examination Record, NDE Subcontractor Qualification Review
SOP-05	Training	Training Record	Annual Training Plan (optional)
SOP-06	Material Receiving & MTR Review	Material Inspection and Receiving Report, Metals Material Receiving Inspection Report	Signed/dated MTRs
SOP-07	Filler Metal Control	Weld Filler Material Issue Log	Electrode Oven Log
SOP-08	WPS & PQR Control	Form N-1, N-3, N-4 (WPS/PQR forms)	WPS/PQR Revision Log
SOP-09	Production Welding	Project-specific weld maps/travelers	Traveler Template
SOP-10	Weld Inspection	Visual Weld Inspection Report	N/A
SOP-11	NDE Procedure Control	AWS Forms (M-8, M-11, N-7, N-8, etc.)	N/A
SOP-12	NDE Subcontractor Approval	Subcontractor and Supplier Certifications and Licenses	NDE Subcontractor Qualification Review
SOP-13	Nonconformance Control	Nonconformance Report	N/A
SOP-14	Corrective Action	N/A	Corrective Action Report
SOP-15	Calibration & Equipment Verification	Test Equipment Calibration Plan and Log	Calibration Certificates (if not vendor-issued)
SOP-16	Internal Audit	Quality Program Audit Form	Audit Checklist (Excel/Word)
SOP-17	Continuous Improvement	Preventive Action training/records	Continuous Improvement Log

APPENDIX B: STANDARD OPERATING PROCEDURES (SOPS)

These SOPs contain the documented procedures that support the [CompanyName] Quality Program. Each SOP is controlled, reviewed, and approved in accordance with AWS B5.17:2025 Clause 6.

SOP 01: Document and Record Control

Purpose

To define the process for preparing, reviewing, approving, issuing, revising, distributing, and archiving quality documents and records to ensure accuracy, consistency, traceability, and compliance with AWS B5.17:2025 Clause 6.4.

Scope

This SOP applies to all quality-related documents and records at [CompanyName], including the Quality Manual, welding procedure documents, inspection and test records, calibration records, training records, subcontractor qualifications, nonconformance reports, and forms used to demonstrate compliance with the Quality Program.

References

- AWS B5.17:2025, Specification for the Qualification of Welding Fabricators (Clause 6.4)
- AWS QC17, Specification for AWS Accreditation of Certified Welding Fabricators
- [CompanyName] Quality Manual, Section 4 Document Control and Records Retention
- System Document Control Form
- Records Control Form

Responsibilities

- Quality Manager: Administers document and record control, approves revisions, maintains master list, ensures compliance.
- Document Control Clerk or Designee: Maintains distribution lists, ensures obsolete documents are removed, tracks records, archives files.
- Department Managers: Ensure controlled documents in their work area are current and obsolete copies are removed.
- All Employees: Use only current, approved documents and records in daily work.

Procedure

1. Preparation and Review: Documents are drafted by the responsible party and reviewed for accuracy and completeness.
2. Approval: The Quality Manager or authorized senior management approves all controlled documents prior to release.
3. Issuance and Distribution: Controlled copies are distributed by the Document Control Clerk. Distribution records are kept on the System Document Control Form.
4. Revision Control: Revisions are identified by date, letter, or number. Revision indicators such as vertical bars or change logs are used. Obsolete documents are removed or marked 'VOID' to prevent unintended use.
5. Record Retention: Records are maintained for a minimum of project completion or as specified by contract, but not less than five years. Records are stored securely in either paper or electronic format.

6. Archiving and Disposal: After retention requirements are met, obsolete records are disposed of by shredding (paper) or deletion (electronic) with Quality Manager approval.

7. Contract documents, drawings, and quality records are controlled in accordance with the policies defined in the Quality Manual (Sections 4.2–4.5).

Records and Forms

- System Document Control Form
- Records Control Form
- Document distribution lists
- Change logs and revision histories

Revision History

REV.	DATE	DESCRIPTION OF CHANGE	APPROVED BY
0	[Date]	Initial issue	[Name/Title]

SOP 15: Calibration and Equipment Verification

Purpose

To establish the process for calibrating, verifying, and maintaining measuring and welding equipment to ensure accuracy, traceability, and compliance with AWS B5.17:2025 Clause 6.10.

Scope

This SOP applies to all measuring devices, test equipment, and welding machines used in fabrication and inspection at [CompanyName].

References

- AWS B5.17:2025, Specification for the Qualification of Welding Fabricators (Clause 6.10)
- [CompanyName] Quality Manual, Section 9 Measuring and Testing Equipment
- Test Equipment Calibration Plan and Log

Responsibilities

- Quality Manager: Maintains calibration program, ensures records are complete, verifies compliance with standards.
- Calibration Technician / Designee: Performs calibration and verification of equipment, applies calibration labels, records results.
- Department Managers: Ensure equipment under their control is made available for calibration on schedule.

Procedure

1. Identification: All equipment requiring calibration is logged in the Test Equipment Calibration Plan and Log with unique ID numbers.
2. Calibration: Equipment is calibrated at specified intervals against national standards or manufacturer specifications. Load banks, auxiliary meters, and wire-feed tachometers are calibrated annually.
3. Verification: Welding machines are verified at least annually for condition and accuracy of meters, cables, hoses, and feeders.
4. Labeling: Calibrated equipment is tagged with last calibration date, next due date, and technician initials.
5. Records: Calibration records include type, serial number, frequency, tolerance, date calibrated, next due date, and standard used.
6. Disposition: Equipment found out of tolerance is removed from service until recalibrated or repaired.

Records and Forms

- Test Equipment Calibration Plan and Log
- Calibration certificates and reports
- Calibration labels/tags

Revision History

REV.	DATE	DESCRIPTION OF CHANGE	APPROVED BY
0	[Date]	Initial issue	[Name/Title]

PROCEDURE CAL-02: WELDING MACHINES (VERIFICATION WITH LOAD BANK / AUXILIARY METERS)

1. Purpose

To define the method for verifying welding machines for accuracy and condition.

2. Scope

Applies to all welding machines used in fabrication.

3. Responsibility

The Quality Manager ensures annual verification using qualified personnel or service providers.

4. Frequency

Annually, and after repair or suspected malfunction.

5. Method

1. Inspect exterior, cables, hoses, feeders.
2. Connect calibrated auxiliary meters or load bank.
3. Set machine to typical operating ranges.
4. Compare readings against calibrated meters.
5. Check gas flow meter accuracy if equipped.
6. Document results in Calibration Log.

6. Acceptance Criteria

Within ±10% of set values or as required by WPS/contract.

7. Records

Verification results logged with ID, serial, readings, date, initials.

8. Identification

Verification sticker with last/next date, initials affixed.

APPENDIX C: SAMPLE FORMS

[CompanyName]
Sample Inspection and Test Plan (ITP) – Structural Steel Welding

Project ID	Project Name	Prepared By	Date	Notes
[ProjectNumber]	[ProjectName]			

Activity / Inspection Point	Inspection Method / Check	Acceptance Criteria	Reference Standard / Code	Responsibility	Record / Form
Material Receiving	Verify steel grade, dimensions, MTR review (signed & dated)	Matches PO and AWS D1.1 requirements	AWS D1.1, Project Specs	QC Inspector, Receiving	Material Inspection and Receiving Report; MTRs
Material Storage	Check segregation, protection, condition	Materials protected, filler metals stored per procedure	AWS A5.xx, Manufacturer Specs	Welding Supervisor, QC Inspector	Storage/Oven Log
Fit-Up / Joint Preparation	Dimensional check of bevel angle, root opening, alignment	Within tolerances of WPS and drawings	AWS D1.1, WPS	QC Inspector	Fit-up Inspection Report (or Traveler)
Nondestructive Testing (if required by contract)	MT/PT on selected welds; UT/RT on CJP welds	Per project specification or contract (typically UT on CJP > 5/16")	AWS D1.1 Clause 6; AWS B1.11	NDE Level II / III	MT/PT/UT/RT Report
Dimensional Inspection – Final	Verify member dimensions, hole locations, camber	Within project tolerances	AWS D1.1, Project Drawings	QC Inspector	Dimensional Inspection Report

Activity / Inspection Point	Inspection Method / Check	Acceptance Criteria	Reference Standard / Code	Responsibility	Record / Form
Nonconformance Control	Document and segregate defects	NCR disposition: Rework, Repair, Scrap, Use-as-is (with approval)	AWS B5.17 Clause 6.8	QC Inspector, QM	Nonconformance Report
Corrective Action (if required)	Issue CAR for recurring defects or systemic issues	CAR defines root cause, corrective action, verification	AWS B5.17 Clause 6.9	Quality Manager	Corrective Action Report
Final Acceptance	Review of ITP, records, and inspection reports	All inspections/tests complete and signed	Project Specs, Contract	Quality Manager, Client Rep	Signed ITP with records

[CompanyName]
Visual Weld Inspection Report

Report ID #	Unique Part ID (Serial #, Shop order, or batch number)	Project ID	Project Name	Drawing # & Rev.	Date of Inspection

Procedure and Acceptance Criteria / Ref#	Inspection Result Pass/Fail	Nominal	Actual	Tolerance	Comments

Final acceptance of completed work (sign and date)

Inspector Sign and Date	Welding Supervisor Sign and Date

[CompanyName]
Welder Continuity Log

Welder ID	Process	Last Weld Date	Continuity Maintained (Y/N)	Signature	Next Due Date

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 _____
Company Name _____
Welding Process(es) _____ Type—Manual ☐ Semiautomatic ☐
Supporting PQR No.(s) _____ 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 _____

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		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)

For More Information:

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www.firsttimequalityplans.com

or

Contact: First Time Quality

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