



‡ **AWS j**
Manual Sample

Selected Pages out of 49

This is a sample, not a complete manual

Contact:

First Time Quality

410-451-8006

[CompanyName]

[CompanyAddress]

[CompanyPhone]

Fabrication

Quality Manual

Operating Policies of the [CompanyName] Quality System

Version: 20150303

Version	Version notes
20141228	Initial issue

Approval Signature and Date: _____

President/ Date

Documents provided by [CompanyName] disclose proprietary information as well as copyright information registered with the U.S. Patent and Trademark Office. Please hold these documents in confidence and do not share them with other organizations, even if you do not charge a fee. Submittal of documents does not transfer copyright ownership.

QUALITY MANUAL

TABLE OF CONTENTS

1. Quality System Management and Responsibilities	7
1.1. Overview.....	7
1.2. [CompanyName] Quality Policy.....	7
1.3. Quality Duties, Responsibilities, and Authority.....	7
1.4. Quality System Performance Measures.....	10
1.5. Customer Satisfaction Performance Measures.....	10
1.6. Exceptions.....	10
2. Project Quality Assurance/Quality Control Manual	11
2.1. Overview.....	11
2.2. [CompanyName] Project License and Qualification Requirements.....	11
2.3. Project Personnel and Qualifications.....	12
2.4. Project Quality Assurance/Quality Control Manual.....	16
2.5. Identification of Quality Controlled Work Tasks.....	16
2.6. Project Quality Inspection and Test Plan.....	16
2.7. Project Quality Communications Plan.....	16
2.8. Project Quality Training Plan.....	16
2.9. Customer Training On Operation and Maintenance.....	17
2.10. Project Records and Documentation Plan.....	17
2.11. Project Audit Plan.....	17
3. Contract Specifications	18
3.1. Overview.....	18
3.2. Contract Technical Specifications.....	18
3.3. Contract Drawings.....	18
3.4. Contract Submittals.....	18
3.5. Customer Submittal Approval.....	20
3.6. Contract Warranty.....	21
3.7. Contract Review and Approval.....	21
4. Design Review and Control	22
4.1. Overview.....	22
4.2. Design Input Review.....	22
4.3. Project Design Quality Assurance/Quality Control Manual.....	22
4.4. Design Progress Reviews.....	23
4.5. Design Output Verification and Approval.....	23
5. Project-Specific Quality Standards	24
5.1. Overview.....	24
5.2. Regulatory Codes.....	24

Questions? Call First Time Quality 410-451-8006

5.3. Industry Quality Standards	24
5.4. Material and Equipment Specifications.....	26
5.5. Work Process Specifications.....	27
5.6. Controlled Material Identification and Traceability	27
5.7. Measuring Device Control and Calibration.....	27
5.8. [CompanyName] Quality Standards	27
5.9. Application of Multiple Sources of Specifications	28
6. Project Purchasing	29
6.1. Overview.....	29
6.2. Qualification of Outside Organizations and Company Departments	29
6.3. Quality Responsibilities of Key Subcontractor and Supplier Personnel.....	30
6.4. Requirements for Subcontractor QC Plan	31
6.5. Subcontractor and Supplier Quality Policy	31
6.6. Project Subcontractor and Supplier List	32
6.7. Purchase Order Requirements	32
6.8. Project Purchase Order Approvals.....	32
7. Process Controls.....	33
7.1. Overview.....	33
7.2. Project Startup and Quality Control Coordination Meeting.....	33
7.3. Preparatory Project Quality Assurance/Quality Control Manual Planning	33
7.4. Weekly Quality Planning and Coordination Meetings.....	34
7.5. Process Control Standards.....	34
7.6. Daily Quality Control Report.....	36
7.7. Monthly Quality Control Report.....	36
8. Inspections and Tests	38
8.1. Overview.....	38
8.2. Required Work Task Quality Inspections and Tests.....	38
8.3. Material Inspections and Tests.....	38
8.4. Work in Process Inspections.....	39
8.5. Work Task Completion Inspections	39
8.6. Inspection of Special Processes	40
8.7. Independent Measurement and Tests	40
8.8. Commissioning Functional Acceptance Tests.....	40
8.9. Hold Points for Customer Inspection.....	40
8.10. Quality Inspection and Test Specifications	40
8.11. Inspection and Test Acceptance Criteria	41
8.12. Inspection and Test Status.....	42
8.13. Independent Quality Assurance Inspections	42
8.14. Inspection and Test Records.....	43
8.15. Project Completion and Closeout Inspection	43
9. Nonconformances and Corrective Actions	45
9.1. Overview.....	45

Questions? Call First Time Quality 410-451-8006

9.2. Nonconformances	45
9.3. Corrective Actions	46
10. Preventive Actions	47
10.1. Overview.....	47
10.2. Identify Preventive Actions for Improvement	47
10.3. Train Preventive Actions for Improvement	47
11. Quality System Audits	49
11.1. Overview.....	49
11.2. Project Quality System Audit.....	49
11.3. Company-wide Quality System Audit	49
12. Record and Document Controls.....	51
12.1. Overview.....	51
12.2. Quality System Documents	51
12.3. Document Controls.....	51
12.4. Record Controls	52
13. Appendix.....	54
13.1. Definitions of Terms	54
14. Forms	57

Selected Pages

7. PROCESS CONTROLS

HOW WORK IS CARRIED OUT

7.1. OVERVIEW

The fabrication process plan defines how project work is to be done and approved for the overall project. The fabrication process plan is communicated to all key personnel, subcontractors and suppliers in a startup meeting. As the project proceeds, work task plans provide additional details of how each individual work task is carried out. Work tasks planning meetings are used to communicate expectations of the work task plan to key personnel responsible for carrying out the work task.

7.2. PROJECT STARTUP AND QUALITY CONTROL COORDINATION MEETING

Prior to the commencement of work, the Project Manager holds a meeting to discuss and coordinate how project work will be performed and controlled. Key personnel from [CompanyName], subcontractors and suppliers meet to review expectations for project quality results as well as quality assurance and quality control policies and procedures including:

- Key requirements of the project
- The Project Quality Assurance/Quality Control Manual
- Required quality inspections and tests
- The project submittal schedule
- Quality policies and heightened awareness of critical quality requirements
- Project organization chart and job responsibilities
- Methods of communication and contact information
- Location of project documents and records

7.3. PREPARATORY PROJECT QUALITY ASSURANCE/QUALITY CONTROL MANUAL PLANNING

7.3.1. WORK TASK REQUIREMENTS REVIEW

In preparation for the start of an upcoming work task, the Superintendent reviews an integrated and coordinated set of documents that collectively define quality requirements for the work task including:

- Objectives and acceptance criteria of the work task
- Quality standards that apply to the work task
- Work instructions, process steps, and product installation instructions that apply to the work task
- Shop drawings
- Submittals
- Tools and equipment necessary to perform the work
- License, certification, or other qualification requirements of personnel assigned to work
- Required records of the process and resulting product
- The subcontractor contracted to perform the work, if applicable
- Customer contract requirements
- Required quality inspections and tests
- Method for clearly marking nonconformances to prevent inadvertent use
- Location of quality system records and documents
- Personnel training

Questions? Call First Time Quality 410-451-8006

7.3.2. PREPARATORY SITE INSPECTION

The Superintendent also performs a quality inspection of the work area and:

- Assesses completion of required prior work
- Verifies field measurements
- Assures availability and receiving quality inspection status of required materials
- Identifies any nonconformances to the requirements for the work task to begin
- Identifies potential problems

7.3.3. WORK TASK PREPARATORY QUALITY PLANNING MEETINGS

Prior to the start of a work task, the Superintendent conducts a meeting with key company, subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

During the meeting, the Superintendent communicates the work task quality requirements and reinforces heightened awareness for critical requirements. Topics for a work task quality plan meeting include:

- Conflicts that need resolution
- Required quality documents and a verification of availability to personnel carrying out, supervising, or inspecting the work task
- Record keeping requirements and the availability of necessary forms
- Review methods and sequences of installation
- Special details and conditions
- Standards of workmanship
- Heightened awareness of critical quality requirements
- Quality risks
- Work tasks quality inspection form

7.4. WEEKLY QUALITY PLANNING AND COORDINATION MEETINGS

The Superintendent conducts a meeting with key company, subcontractor and supplier personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

The meeting is held on a nominal weekly schedule. During the meeting, the Superintendent facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

The Superintendent maintains a record of the meeting event on the Daily Quality Control Report.

7.5. PROCESS CONTROL STANDARDS

7.5.1. JOB-READY START WORK STANDARDS

Work on a work task starts only when conditions do not adversely impact quality, comply with government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental start-work requirements that apply to a specific project when they are necessary to assure quality results.

Questions? Call First Time Quality 410-451-8006

7.5.2. WORK IN PROCESS STANDARDS

Work is conducted only when conditions do not adversely impact quality; comply with government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental work in process requirements that apply to a specific project when they are necessary to assure quality results.

7.5.3. PROTECTION OF COMPLETED WORK STANDARDS

[CompanyName] will preserve and protect work in process, completed work, component parts, materials, and when applicable, delivery to the destination so as to maintain so that compliance with project requirements and standards. This includes handling, storage, protection from natural elements, and reducing risks of damage.

Completed work is protected from damage as specified by government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental protection requirements that apply to a specific project when they are necessary to assure quality results.

7.5.4. MATERIAL STORAGE

The Superintendent ensures all materials will be delivered, stored and handled in a manner that protects them from damage, moisture, dirt and intrusion of foreign materials.

Delivery of materials will be planned according to the work progress to minimize storage on site, where there are higher possibilities of damages and deterioration of materials.

Stored materials will be segregated to prevent cross contamination and limit losses should a delivery be rejected.

The Superintendent surveys stored materials during daily jobsite reviews and identifies any material that have incurred damage or otherwise become defective and therefore unfit for use.

7.5.5. CONTROLLED USE OF MATERIALS

The Project Manager ensures that contracts and purchase orders are awarded only to outside organizations qualified to perform the work task and/or supply materials as required for the specific project.

Only approved materials are used in the fabrication process. Only approved materials are specified in purchase and/or subcontracts.

Materials that are defective, deteriorated, damaged, or not approved are not used. The Superintendent clearly marks such materials for non-use or otherwise holds them aside.

When customer-supplied materials are lost, damaged, or otherwise found unsuitable for use, the Superintendent reports such findings to the customer.

When subcontractor-supplied materials are damaged or otherwise found unsuitable for use, the Superintendent reports such findings to the subcontractor.

Questions? Call First Time Quality 410-451-8006

The Superintendent ensures that fabrication uses only materials specified in the contract technical specifications, contract drawings, and approved submittals. Substitutions are made only by agreement of the customer and documented by a change order (see section 2.1.3.6).

7.5.5.1. FILLER MATERIALS CONTROLS

Welders must verify the filler material meets specification and welding procedure requirements before welding.

Filler materials of different filler metal types, sizes and heat numbers (if applicable) will be labeled and stored in separately to prevent intermixing.

Filler materials will be stored in a controlled environment to prevent contamination and degradation. The storage environment will conform to any elevated temperature holding requirements of the filler metal manufacturer and the applicable AWS code or filler metal specification.

Filler material issuance and return log sheets will be used to control time sensitive filler materials.

Filler metals which have exceeded the maximum allowable exposure time to the atmosphere must not be used. They may be used only after redrying (baking) requirements of the filler manufacturer are met.

Unusable or damaged filler metals must be clearly marked to prevent inadvertent use and removed from the filler material storage area.

7.5.6. CONTROLLED PRODUCT USE AND INSTALLATION

[CompanyName] fabrication activities conform to manufacturers' product use and installation instructions that apply to the fabrication process.

When installing a product, the Superintendent has access to all applicable product installation instructions.

7.6. DAILY QUALITY CONTROL REPORT

The Superintendent records a summary of daily work activities. The report will include:

8. INSPECTIONS AND TESTS

ASSURE COMPLIANCE

8.1. OVERVIEW

Inspections are necessary to verify that work processes and results conform to both contract requirements and [CompanyName] quality standards.

Qualified personnel inspect every project throughout the fabrication process. Additional reviews validate the accuracy of the field quality inspections and ensure that the quality standards apply uniformly.

An inspection and test plan defines the quality inspections and tests required for a specific project.

Personnel may only inspect work activities for which they are have been qualified by the Quality Manager.

8.2. REQUIRED WORK TASK QUALITY INSPECTIONS AND TESTS

The Quality Manager identifies each Task that is a phase of fabrication that requires separate quality controls to assure and control quality results. Each Task triggers as set of requirements for quality control inspections before, during and after work tasks.

Tasks are divided into two categories:

- Discrete Tasks are standard type of work where a completion inspection is performed one time at the completion of a phase of work.
- Process Tasks are tasks where completion inspections are performed continuously. Continuous inspections are required when there is a limited window of time to perform a completion inspection before the next task begins. Process tasks may also be characterized by independent monitoring of a work process, such as welding, where the observer verifies conformance to work procedures.

Process tasks undergo additional quality controls that continuously monitor compliance to specifications.

Independent quality audits are conducted to verify that the task quality controls are operating effectively.

Fabrication projects may execute a work task multiple times in a project, in which case a series of quality inspections are required for each work task.

8.3. MATERIAL INSPECTIONS AND TESTS

Material quality inspections and tests ensure that purchased materials meet purchase contract quantity and quality requirements.

8.3.1.1. MATERIAL RECEIVING INSPECTION

The Superintendent inspects or ensures that a qualified inspector inspects materials prior to use for conformance to project quality requirements. The receiving inspection includes a verification that the

Correct material has been received

The material is identified and meets the traceability requirements for the material

Material certifications and/or test reports meet the specified requirements

Materials are tested and approved for the specific application

Questions? Call First Time Quality 410-451-8006

The Superintendent ensures that each work task that uses the source inspected materials proceed only after the material has been accepted by the material quality inspection or test.

8.3.1.2. SOURCE INSPECTIONS

Source quality inspections are required when quality characteristics cannot or will not be verified during subsequent processing. The Quality Manager determines if a source inspection is necessary to validate supplier quality before materials are delivered to the project jobsite.

The Superintendent ensures that each work task that uses the source inspected materials proceed only after the material has been accepted by the source inspection.

8.4. WORK IN PROCESS INSPECTIONS

Work in process quality inspections continuously verify compliance project quality standards beginning at the start of a work task, as work is conducted, and continues until the work task is complete.

8.4.1.1. INITIAL JOB-READY INSPECTIONS

For each work task, the Superintendent or a qualified inspector performs job-ready quality inspections to ensure that work activities begin only when they should begin. Job-ready quality inspections verify that conditions conform to the project quality requirements.

8.4.1.2. INITIAL WORK IN PROCESS INSPECTION

For each work task, the Superintendent or a qualified inspector performs an initial work in process inspection when the first representative portion of a work activity is completed.

8.4.1.3. FOLLOW-UP WORK IN PROCESS INSPECTIONS

The Superintendent or a qualified inspector performs ongoing work in process quality inspections to ensure that work activities continue to conform to project quality requirements. Punch Items

If the Superintendent or inspector observes an item for correction prior to a work task completion inspection, the item is identified for correction. During the work task completion inspection each punch item correction is verified.

Any outstanding punch items remaining after the work task completion inspection is deemed a nonconformance.

8.4.2. ADDITIONAL INSPECTION REQUIREMENTS FOR PROCESS TASKS

For each process task, a qualified person inspects the ongoing completion work for conformance to project quality requirements. This is in addition to discrete task completion inspections that are performed one time at the end of a phase of work.

The continuous monitoring inspections are conducted before starting other work activities that may interfere with an inspection.

8.5. WORK TASK COMPLETION INSPECTIONS

14. FORMS

[CompanyName] Controlled Materials Form	58
[CompanyName] Material Inspection and Receiving Report	59
[CompanyName] Daily Production Report	60
[CompanyName] Work Task Inspection Form	61
[CompanyName] Nonconformance Report	62
Form N-1 Welding Procedure Specification Prequalification	63
Form N-3 WPS QUALIFICATION TEST RECORD_ELECTROSLAG and ELECTROGAS WELDING	65
Form N-4 WELDER, WELDING OPERATOR, OR TACK WELDER QUALIFICATION TEST RECORD	66
Form N-9 STUD WELDING APPLICATION QUALIFICATION TEST DATA.....	67
Form M-8 Ultrasonic Unit Calibration Report-AWS	68
Form M-9 dB Accuracy Evaluation.....	69
Form M-10 Decibel (Attenuation or Gain) Values Nomograph	70
Form M-11 Report of UT of Welds	71
Form N-7 REPORT OF RADIOGRAPHIC EXAMINATION OF WELDS.....	73
Form N-8 REPORT OF MAGNETIC-PARTICLE EXAMINATION OF WELDS	74
Form S-15 Report of UT (Alternative Procedure).....	75

Selected Pages

Questions? Call First Time Quality 410-451-8006

[CompanyName] Nonconformance Report <small>Version 20141020</small>		
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	<input type="checkbox"/> Replace <input type="checkbox"/> Repair <input type="checkbox"/> Rework <input type="checkbox"/> Use As-is	
	Approval of disposition required by customer representative? Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Customer approval signature /date: _____	
Corrective Actions	<input type="checkbox"/> Corrective actions completed Name/Date: _____ Customer acceptance of corrective actions required? Yes <input type="checkbox"/> No <input type="checkbox"/> Name/Date: _____	
Preventive Actions	<input type="checkbox"/> Preventive actions completed Name/Date: _____	

Selected Pages

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

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

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

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)

Form M-8 Ultrasonic Unit Calibration Report-AWS

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

Ultrasonic Unit Calibration Report—AWS

Ultrasonic Unit Model _____ Serial No. _____

Search Unit—Size _____ Type _____ Frequency _____ MHz

Calibration—Date _____ Interval _____ Method _____

Block Serial No. _____ Data _____ As Found _____ As Adjusted _____

SUPPLEMENTAL INSTRUCTIONS

- Start with the lowest dB level that you can obtain a 40 percent display height indication from directly over the two in section of the DS block. Add 6 dBs and record this dB reading "a" and display height "b" as the starting point on the tabulation chart.
- After recording these values in Rows "a" and "b," slide the transducer to obtain a new 40 percent display height. Without moving the transducer add 6 dBs and record the new dB reading and the new display height in the appropriate row. Repeat this step as many times as the unit allows.
- Find the average % screen values from Row "b" by disregarding the first 3 and the last 3 tabulations. Use this as %₂ in calculating the corrected reading.
- The following equation is used to calculate Row "c":
 %₁ is Row "b"
 %₂ is the average of Row "b" disregarding the first and last three tabulations.

$$dB_2 = 20 \times \log\left(\frac{\%_2}{\%_1}\right) + dB_1$$
 dB₁ is Row "a"
 dB₂ is Row "c"
- The dB Error "d" is established by subtracting Row "c" from Row "a": (a - c = d).
- The Collective dB Error "e" is established by starting with the dB Error "d" nearest to 0.0, collectively add the dB Error "d" values horizontally, placing the subtotals in Row "e."
- Moving horizontally, left and right from the Average % line, find the span in which the largest and smallest Collective dB Error figures remain at or below 2 dB. Count the number of horizontal spaces of movement, subtract one, and multiply the remainder by six. This dB value is the acceptable range of the unit.
- In order to establish the acceptable range graphically, Form M-8 should be used in conjunction with Form M-9 as follows:
 (1) Apply the collective dB Error "e" values vertically on the horizontal offset coinciding with the dB reading values "a."
 (2) Establish a curve line passing through this series of points.
 (3) Apply a 2 dB high horizontal window over this curve positioned vertically so that the longest section is completely encompassed within the 2 dB Error height.
 (4) This window length represents the acceptable dB range of the unit.

Row	Number	1	2	3	4	5	6	7	8	9	10	11	12	13
a	dB Reading													
b	Display Height													
c	Corrected Reading													
d	dB Error													
e	Collective dB Error													

Accuracy Required: Minimum allowable range is _____ . %₂ (Average) _____ %

Equipment is: Acceptable for Use _____ Not Acceptable for Use _____ Recalibration Due Date _____

Total qualified range _____ dB to _____ dB = _____ dB Total error _____ dB (From the Chart above)

Total qualified range _____ dB to _____ dB = _____ dB Total error _____ dB (From Form M-9)

Calibrated by _____ Level _____ Location _____

Form M-8

344

<http://www.aws.org/technical/forms/M-8.pdf>

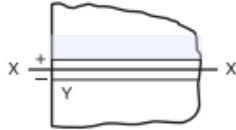
Form M-11 Report of UT of Welds

ANNEX M

AWS D1.1/D1.1M:2010

Report of UT of Welds

Project _____ Report no. _____



Weld identification _____
 Material thickness _____
 Weld joint AWS _____
 Welding process _____
 Quality requirements—section no. _____
 Remarks _____

Line number	Indication number	Transducer angle	From Face	Leg*	Decibels				Discontinuity				Discontinuity evaluation	Remarks	
					Indication level a	Reference level b	Attenuation factor c	Indication rating d	Length	Angular distance (sound path)	Depth from "A" surface	Distance			
												From X			From Y
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															

We, the undersigned, certify that the statements in this record are correct and that the welds were prepared and tested in conformance with the requirements of Clause 6, Part F of AWS D1.1/D1.1M, (_____) *Structural Welding Code—Steel*.
 (year)

Test date _____ Manufacturer or Contractor _____
 Inspected by _____ Authorized by _____
 Date _____

Note: This form is applicable to Clause 2, Parts B or C (Statically and Cyclically Loaded Nontubular Structures). Do NOT use this form for Tubular Structures (Clause 2, Part D).

Form M-11



For More Information:

Contact: Ed Caldeira

410-451-8006

www.firsttimequality.com

EdC@FirstTimeQuality.com

For More Information, contact: Ed Caldeira • Caldeira Quality, LLC • First Time QualitySM

410-451-8006 • www.firsttimequality.com • EdC@FirstTimeQuality.com